

CONVENTIONAL SYMBOLS

---	SECTION/QUARTER SECTION LINES
— — — — —	BARBED WIRE FENCE
— — — —	PIPE FENCE
~~~~~	GROUND LINE
---	CATCH LINE
---	ASPHALT EDGE
10+00	BASE LINE
---	GRADE LINES
---	UNDERGROUND TELEPHONE CABLE
---	GAS LINE
---	WATER LINE
---	POWER LINES
R/W	RIGHT-OF-WAY LINES - NEW
---	EASEMENT
XXXXXX	SILT FENCE (TEMPORARY SEDIMENT CONTROL)
XXXXXX	TEMPORARY SILT DIKE
----	RP-RAP (PERMANENT EROSION CONTROL)
+	TEMPORARY SITE BENCHMARK
□	BUILDINGS
○	UTILITY POLE
— —	GUY WIRE
---	DRAINAGE STRUCTURES - IN PLACE
---	ABOVE GROUND TELEPHONE HARDWARE
---	VALVE
HP	HIGH POINT
LP	LOW POINT
○	FOUND IRON PIN

**DESIGN DATA**

ADT 2015	=	450
ADT 2035	=	720
<u>RURAL</u>		
K (DHV/ADT)	=	0.15
D	=	50
T (%DHV)	=	25
T (%ADT)	=	15
T ₃ (%ADT)	=	2
V	=	40mph
	=	RURAL
FLEX ESAL'S 20 YR	=	1,161,270

**SURVEY DATA**

**BASIS OF BEARINGS:**  
STATE PLANE GRID, NAD83, NORTH ZONE

**BASIS OF DATUM ELEVATION:**  
DERIVED FROM TOPCON TOPNET LIVE SERVICE  
ESTABLISHED BY OPUS SOLUTION, NAVD 1988.

All Dimensions are in feet unless otherwise noted on plans.

2009 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION GOVERN, APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, JANUARY 4, 2010.

STATE OF OKLAHOMA  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED  
ENGINEERING PROJECT NO. ACERSTP-221C(032)ER

COUNTY BRIDGE  
BRIDGE AND APPROACHES  
DELAWARE COUNTY

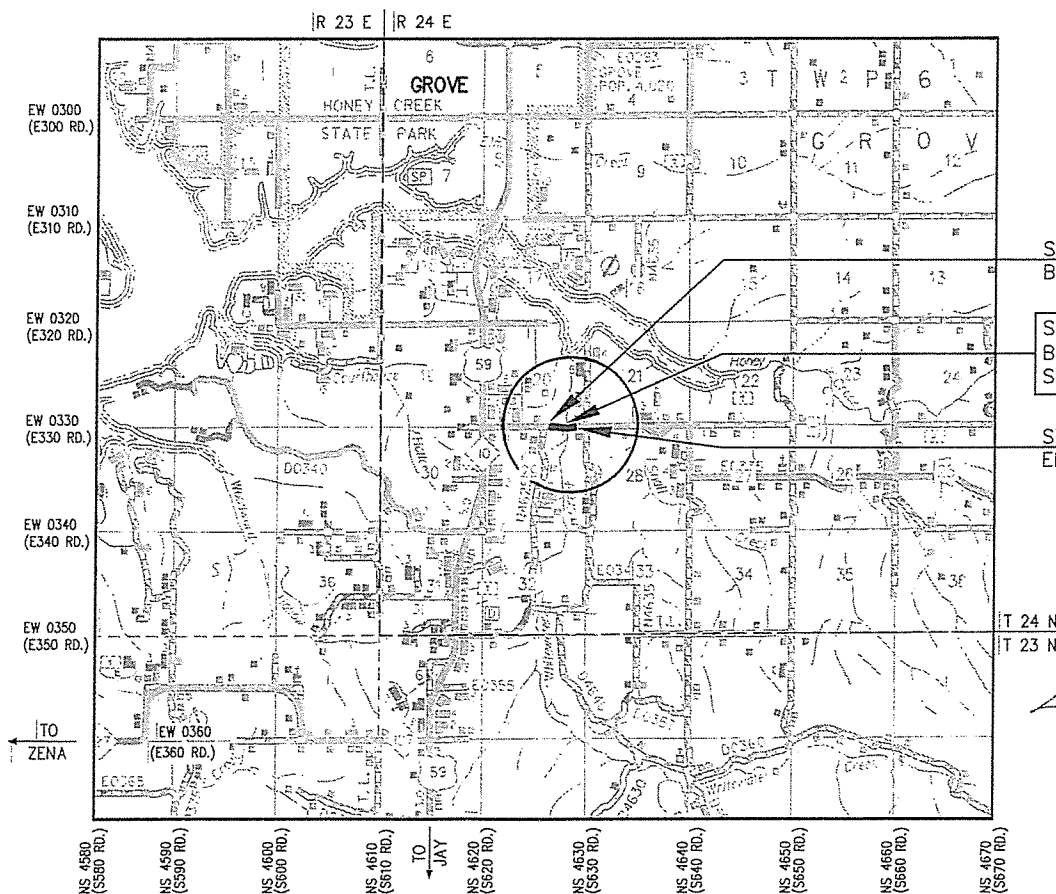
STR No. 27 (WHITE WATER CREEK BRIDGE)

STATE JOB PIECE No. 32598(04)

LOCATION NO. 21E0330N46200008

NEW NBI No. 31705, OLD NBI No. 20247

LATITUDE: 36°32'21.7"N, LONGITUDE: 094°45'33.9"W



**LOCATION MAP**

SCALE = 1" = 5,000'

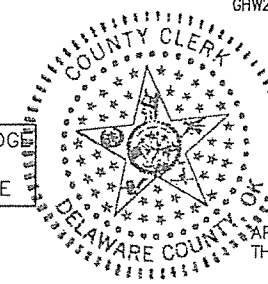
ROADWAY LENGTH	971.83 FT	0.184 MI
BRIDGE LENGTH	153.17 FT	0.029 MI
PROJECT LENGTH		0.213 MI
EQUATIONS :	NONE	
EXCEPTIONS :	NONE	

INDEX OF DRAWINGS	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTIONS
3	SUMMARY OF PAY QUANTITIES AND GENERAL NOTES
4	SUMMARY OF CONSTRUCTION QUANTITIES
5	PLAN AND PROFILE STA 8+50 TO STA 19+75
6	BRIDGE GENERAL PLAN AND ELEVATION
7	BRIDGE FOUNDATION REPORT
8	BRIDGE SUBSTRUCTURE STAKING DIAGRAM
9	BRIDGE PIER DETAILS (SHEET No. 1 OF 2)
10	BRIDGE PIER DETAILS (SHEET No. 2 OF 2)
11	SURVEY DATA SHEET
12	EROSION CONTROL PLAN
13	STORM WATER MANAGEMENT PLAN
14	DRAINAGE AREA MAP
X1-X7	CROSS SECTIONS

**THE FOLLOWING STANDARDS ARE REQUIRED:**

ROADWAY	TRAFFIC CONTROL	TRAFFIC SIGNING	BRIDGE
RDI-3-1	TCS1-1-01	RS1-1-01	CB26-C-SKO-ABUT-PC3-01E
SSS-1-1	TCS4-1-01	SBS1-1-00	CB26-C-SKO-XSECT-PC234-01E
TSD-2-0	TCS5-1-00	GMS1-1-00	CB26-C-SKO-LSECT-PCB-01E
TSC1-3-2	TCS7-1-02	SSA1-1-00	CB26-C-SKO-DKSLB-BLIST-01E
TSC2-3-2	TCS8-1-00	SSP1-1-02	CB26-C-SKO-DIA-END-PC234-01E
PUD-3-2	TCS9-1-01	WSD3-1-00	CB26-C-SKO-SPR-QUAN-PCB-1-01E
			CB26-C-SKO-SPR-QUAN-PCB-2-01E
			CB26-C-SKO.30-PCB-III-75-01E
			CB26-C-SKO.30-DIA-INT-PCB-01E
			CB26-C-SKO.30-BRG-PC3-01E
			CB26.32-C-SKO-ABUT-MISC-01E
			CB26.32-C-SKO-WING-PC3-01E
			CB26.32-C.1-SKO.30-PCB-DTL-1-01E
			CB26.32-C.1-SKO.30-PCB-DTL-2-01E
			CB26.32-C.1-SKO.30-GRAU-BC-00E
			HP1-2-00E
			TR3-2-01E
			EJ-SQ-03E
			EJ-DTL-01E

**TRAFFIC SAFETY**  
SKT-1-00  
GHW1-1-00  
GHW2-1-00



STA. 8+50.00  
BEGIN CONSTRUCTION

STA. 14+52.83 BEGIN BRIDGE  
BRIDGE LENGTH: 153.17'  
STA. 16+06.00 END BRIDGE

STA. 19+75.00  
END CONSTRUCTION



APPROVED  
THIS 4th DAY OF June 2016  
COUNTY COMMISSIONERS  
DELAWARE COUNTY, OKLAHOMA  
CHAIRMAN  
MEMBER  
MEMBER  
ATTEST  
COUNTY CLERK



CA 4716 (PE/LS) EXPIRES 6/30/2017

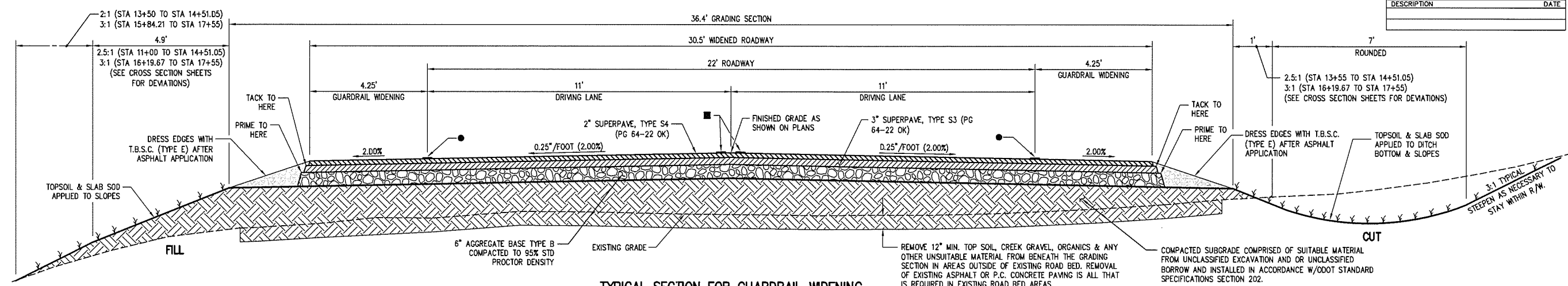
ROSE & McCRARY, P.C.  
ENGINEERING & LAND SURVEYING  
2125 SOUTH BROADWAY  
GROVE, OK. 74344  
918.786.6350 FAX: 918.786.7536 www.roseandmccrary.com

OKLAHOMA DEPARTMENT OF TRANSPORTATION		DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
DATE APPROVED		DATE APPROVED	
BY		BY	
	CHIEF ENGINEER		DIVISION ADMINISTRATOR
PROJECT NO. ACERSTP-221C(032)ER		SHEET NO. 1	
		DELAWARE COUNTY	



CA 4716 (PELIS) EXPIRES 6/30/2017

DESCRIPTION	REVISIONS	DATE

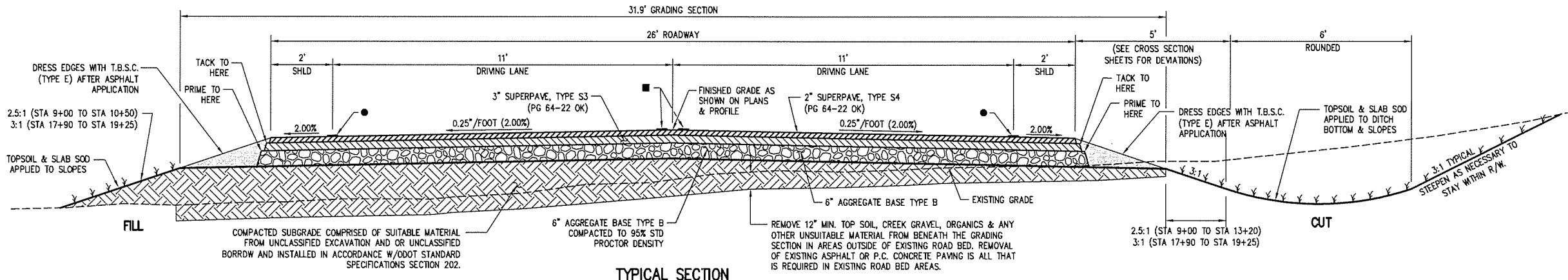


**TYPICAL SECTION FOR GUARDRAIL WIDENING**  
STA 11+00.00 TO STA 14+52.83 LEFT  
STA 13+55.00 TO STA 14+52.83 RIGHT  
STA 16+06.00 TO STA 17+55.0 LEFT & RIGHT

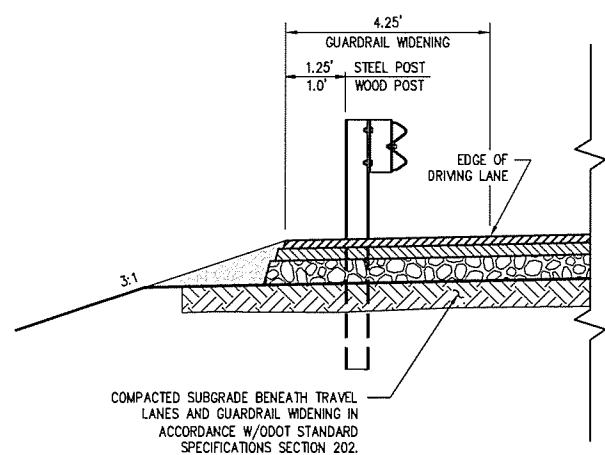
**TRANSITION NOTES:**  
STA 8+50 TO STA 9+00 TRANSITION FROM EXISTING ROADWAY SECTION TO TYPICAL SECTION.  
STA 10+50 TO STA 11+00 TRANSITION LEFT LANE FROM TYPICAL SECTION TO TYPICAL SECTION FOR GUARDRAIL WIDENING, BY VARYING SHOULDER WIDTH.  
STA 13+20 TO STA 13+55 TRANSITION RIGHT LANE FROM TYPICAL SECTION TO TYPICAL SECTION FOR GUARDRAIL WIDENING, BY VARYING SHOULDER WIDTH.  
STA 17+55 TO STA 17+90 TRANSITION FROM TYPICAL SECTION FOR GUARDRAIL WIDENING TO TYPICAL SECTION, BY VARYING SHOULDER WIDTH.  
STA 19+25 TO STA 19+75 TRANSITION FROM TYPICAL SECTION TO EXISTING ROADWAY SECTION.

**LEGEND**

- 4" YELLOW TRAFFIC STRIPE
- 4" WHITE TRAFFIC STRIPE

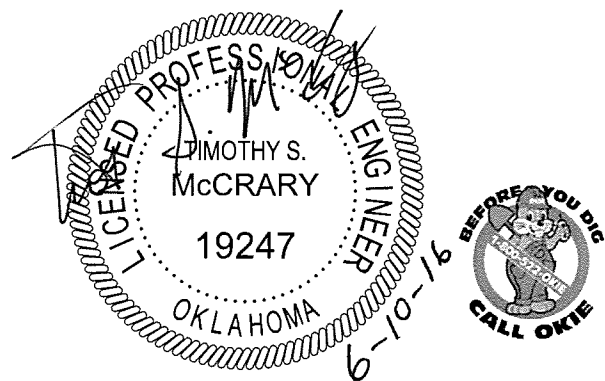


**TYPICAL SECTION**  
STA 9+00.00 TO STA 10+50.0 LEFT  
STA 9+00.0 TO STA 13+20.0 RIGHT  
STA 17+90.0 TO STA 19+25.0 LEFT & RIGHT



**GUARDRAIL PLACEMENT**  
N.T.S.

**NOTES:**  
THE CONTRACTOR SHALL STRIP ALL THE AVAILABLE TOPSOIL, STOCKPILE IT, AND PLACE IT BACK ON THE SECTION IN ACCORDANCE WITH SECTIONS 201 AND 205 OF THE STANDARD SPECIFICATIONS. RESERVE TOPSOIL SHALL BE SPREAD APPROX. 5 INCHES THICK, FIRST ON COMPLETED BACKSLOPES OF CUT SECTIONS AND THE REMAINDER ON COMPLETED FILL SLOPES OR OTHER PRIORITY AREAS LOCATED BY THE ENGINEER. ALL ADDITIONAL COSTS ASSOCIATED WITH OPERATION SHALL BE INCLUDED IN THE PAY ITEM FOR SALVAGED TOPSOIL, LUMP SUM. PRICE BID TO INCLUDE COST OF 18-46-0 FERTILIZER, ESTIMATED AT 150 LBS PER ACRE ON WHICH TOPSOIL IS REPLACED.  
  
THE GRADING LINE AS SHOWN ON THE TYPICAL AND CROSS SECTIONS, IS THE TOP OF THE TOPSOIL. EARTHWORK QUANTITIES WERE NOT ADJUSTED FOR SALVAGE AND THE TOPSOIL QUANTITY IS INCLUDED IN THE MASSLINE BALANCE.  
  
COMPACTED FILL SHALL BE COMPRISED, PLACED AND COMPACTED IN ACCORDANCE WITH SECTIONS 202 AND 209 OF THE STANDARD SPECIFICATIONS.



Design	GLB	4/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	6/16	<b>TYPICAL SECTIONS</b>	
Checked	TSM	6/14		
Approved				
Squad			County: DELAWARE	Project No. J/P 32598(04) Sheet No. 2



REVISIONS	
DESCRIPTION	DATE

SUMMARY OF GUARD RAIL							
LOCATION	Lane		W-Beam-Single 623(A)	Anchor Unit (Type D-BF) 623(F)	End Treatment (GET) 623(G)	Total Panel Length Including Anchor Units	REMARKS
	Lt.	Rt.					
	Station To Station	Lin. Ft.	Each	Each	Lin. Ft.		
11+15.4 to 14+40.2	X		250	1	1	325	
13+65.2 to 14+40.2		X	0	1	1	75	
16+18.7 to 17+44.7	X		50	1	1	125	
16+18.7 to 17+42.7		X	50	1	1	125	
<b>Totals</b>			<b>350</b>	<b>4</b>	<b>4</b>	<b>650</b>	

SUMMARY OF SIGNAGE				
Station Location	MUTCD Designation	Type of Sign	Post Length	Sign Area
			851(D) FT.	850(A) S.F.
5+00 RT	W1-4(R)	RIGHT REVERSE CURVE	12	6.25
5+00 RT	W13-1PE	ADVISORY SPEED (40)		4.00
23+50 LT	W1-4(R)	RIGHT REVERSE CURVE	12	6.25
23+50 LT	W13-1PE	ADVISORY SPEED (40)		4.00
<b>Totals</b>			<b>24</b>	<b>20.50</b>

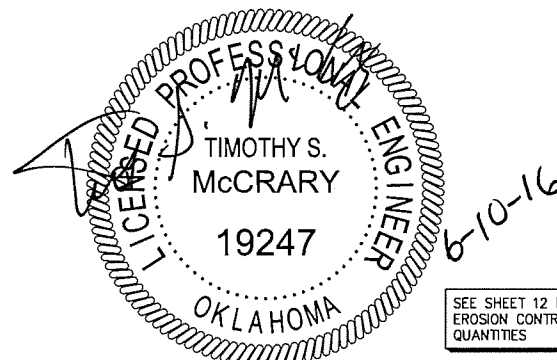
SUMMARY OF EARTHWORK QUANTITIES				REMARKS
Station To Station	Unclassified Excavation 202(A)	Embankment +20%	Spoils	
	Cu. Yd.	Cu. Yd.	Cu. Yd.	
8+50.00 to 14+52.83	1,354	766	588	
14+52.83 to 16+06.00	1,687	75	1,612	Minimum disturbance of channel encouraged
16+06.00 to 19+75.00	474	718	(244)	
<b>Totals</b>	<b>3,515</b>	<b>1,559</b>	<b>1,956</b>	

SUMMARY OF STRIPING					
LOCATION	Lane		STRIPE (PAINT) (WHITE) 856(A) 8530	STRIPE (PAINT) (YELLOW) 856(A) 8530	REMARKS
	Lt.	Rt.	Lin. Ft.	Lin. Ft.	
	Station To Station				
8+40 to 19+85	X		1,145		Edge stripe - 11' offset from centerline
8+40 to 19+85		X		1,145	1/2 of the double yellow centerline stripe
8+40 to 19+85		X		1,145	1/2 of the double yellow centerline stripe
8+40 to 19+85		X	1,145		Edge stripe - 11' offset from centerline
<b>Totals</b>			<b>2,290</b>	<b>2,290</b>	

SUMMARY OF BRIDGE QUANTITIES								
Item No.	Item	Unit	Bridge Abutment No. 1	Bridge Abutment No. 2	Pier 1 Drilled Shaft	Pier 1 Cap	Super-structure	Total
501(B)	SUBSTRUCTURE EXCAVATION COMMON	C.Y.	* 90	* 90				180
501(G)	CLSM BACKFILL	C.Y.	38	38				76
503(A)	PRESTRESSED CONCRETE BEAMS (TYPE III)	L.F.					448.00	448.00
504(B)	SAW-CUT GROOVING	S.Y.					369.6	369.6
504(C)	SEALED EXPANSION JOINT	L.F.					29.17	29.17
504(D)	CONCRETE RAIL (TR3)	L.F.	27.4	27.4			306.4	361.2
506(A)	STRUCTURAL STEEL	LB					800	800
507(A)	WEATHERING STEEL FIXED BEARING ASSEMBLY	EA					6	6
507(B)	WEATHERING STEEL EXPANSION BEARING ASSEMBLY	EA					6	6
509(A)	CLASS AA CONCRETE	C.Y.					116.8	116.8
509(B)	CLASS A CONCRETE	C.Y.	* 33.1	* 33.1		17.8		84.0
511(A)	REINFORCING STEEL	LB	4,240	4,240		2,620	27,320	38,420
511(B)	EPOXY COATED REINFORCING STEEL	LB	** 360	** 360			** 2,063	2,783
514(A)	PILES, FURNISHED (HP 12x53)	L.F.	90	85				175
514(B)	PILES, DRIVEN (HP 12x53)	L.F.	90	85				175
514(A)	PILES, FURNISHED (HP 10x42)	L.F.	44	40				84
514(B)	PILES, DRIVEN (HP 10x42)	L.F.	44	40				84
516(A)	DRILLED SHAFTS 42" DIAMETER	L.F.			***46			46
601(B)	TYPE I-A PLAIN RIPRAP	TON	1194.7	708.5				1,903.2
601(C)	TYPE I-A FILTER BLANKET	TON	298.7	177.1				475.8
613(H)	6" PERFORATED PIPE UNDERDRAIN ROUND	L.F.	26.00	26.00				52
613(I)	6" NON-PERF. PIPE UNDERDRAIN RND.	L.F.	26.00	26.00				52

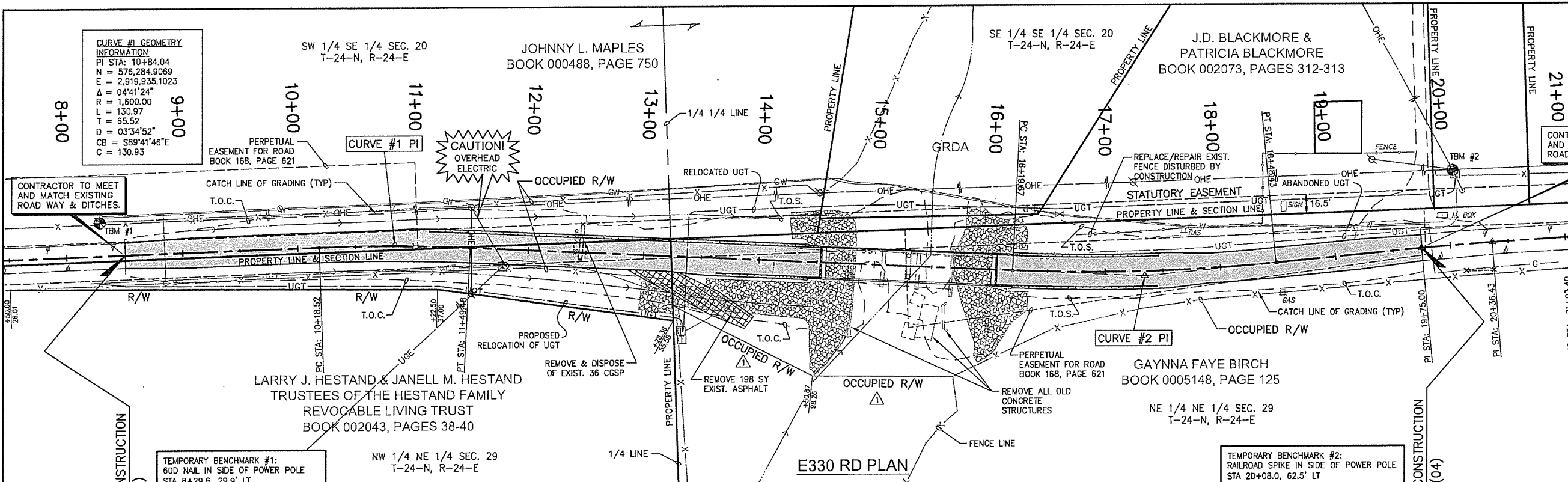
* Includes quantities for (1) Abutment with (2) Wings.  
** SR1 & SR2 Bars shall be epoxy coated bars and shall be placed and tied before Concrete is placed in Deck Slab and Abutment Wings. (See Standards TR3-2 & CB26..32-C-SK30-WING-PC3)  
*** Cost of Drilling, Class AA Concrete, and Steel Reinforcing are included in cost of Drilled Shafts on a Per Foot basis.

SUMMARY OF SURFACING QUANTITIES							
Station To Station	Aggregate Base Type B 303(B)	T.B.S.C. Type E 402(E)	Tack Coat 407(B)	Prime Coat 408	Superpave Type S3 411(B)	Superpave Type S4 411(C)	REMARKS
	Cu. Yd.	Ton	Gal.	Gal.	Ton	Ton	
8+50.00 to 14+52.83	316.0	95.9	142	474	310.2	206.8	
16+06.00 to 19+75.00	194.1	57.9	87	291	190.4	127.0	
<b>Totals</b>	<b>510</b>	<b>153.8</b>	<b>229</b>	<b>765</b>	<b>500.6</b>	<b>333.8</b>	

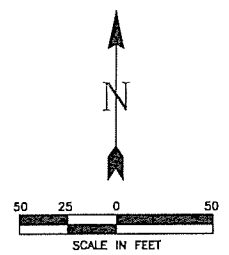


SEE SHEET 12 FOR EROSION CONTROL QUANTITIES

Design	GLB	4/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	6/16	<b>SUMMARY OF CONSTRUCTION QUANTITIES</b>	
Checked	GLB	6/16		
Approved				
Squad				
County: <u>DELAWARE</u>			Project No. <u>J/P 32598(04)</u>	Sheet No. <u>4</u>



REVISIONS	DATE
1 Labeled Occupied R/W	6/24/2016



SEE SHEET 6 FOR TABLE OF HYDRAULIC DATA FOR PROPOSED BRIDGE

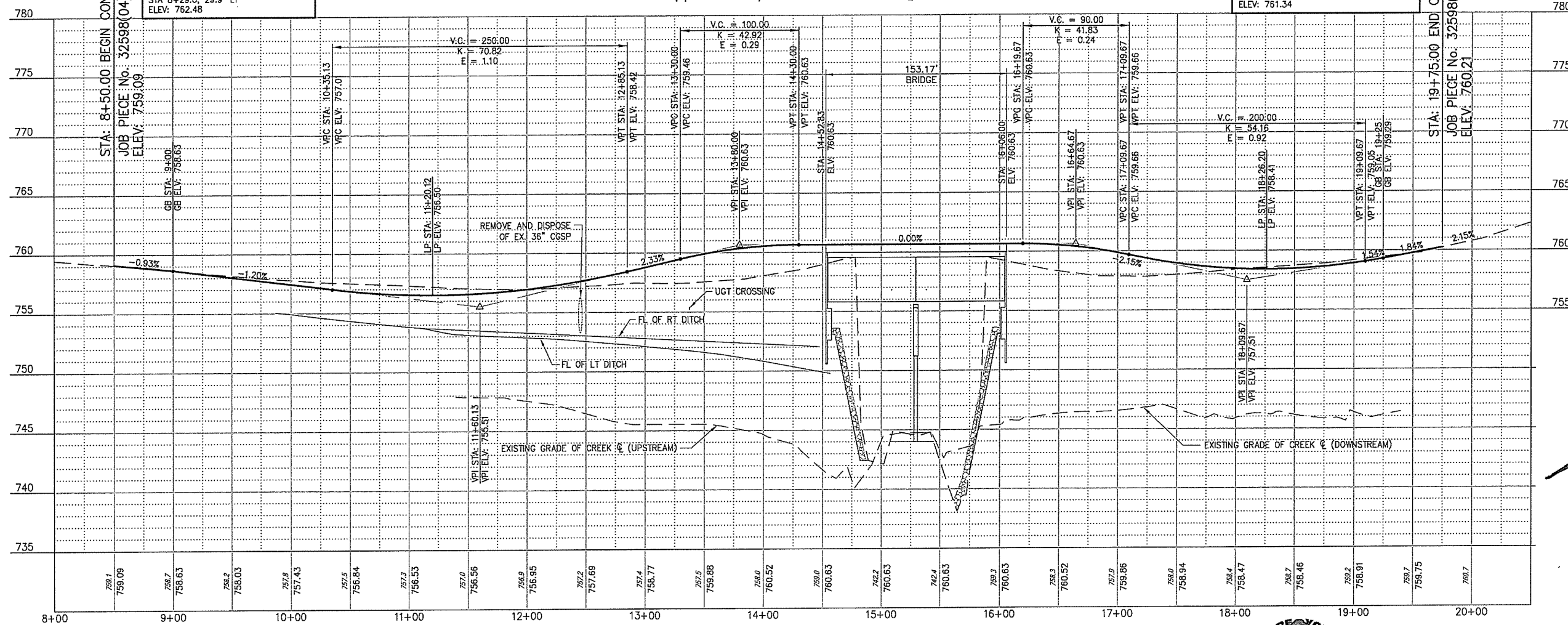
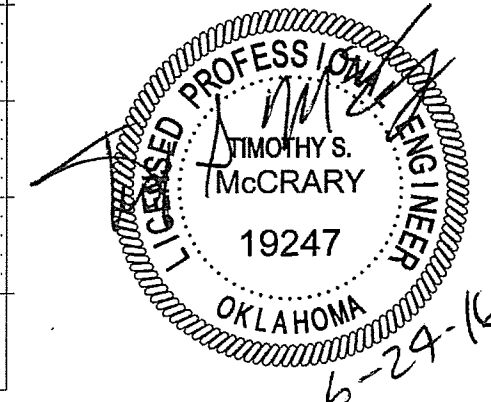
**DELAWARE COUNTY COMMISSIONER**  
DOUG SMITH & TOM SANDERS  
P.O. BOX 550  
JAY, OK 74346  
PHONE: (918) 253-4432

**AT&T**  
BRAD WILLIAMS  
MANAGER OSP PLANNING & ENGINEERING  
105 W. CENTRAL AVE.  
MIAMI, OK 74354  
PHONE: (918) 540-1579

**NORTHEAST OK ELECTRIC COOP**  
TRAVIS LOFGREN  
P.O. BOX 948  
VINITA, OK 74301  
PHONE: (918) 256-6405, EXT. 9378

**GMSA (WATER & GAS)**  
JACK BOWER  
104 W. 3rd  
GROVE, OK 74344  
PHONE: (918) 786-2537

NOTE, APPROXIMATELY 302 LF OF EXISTING W-BEAM GUARDRAIL TO BE REMOVED FOR SALVAGE, SEE NOTE 7 ON SHEET 3.



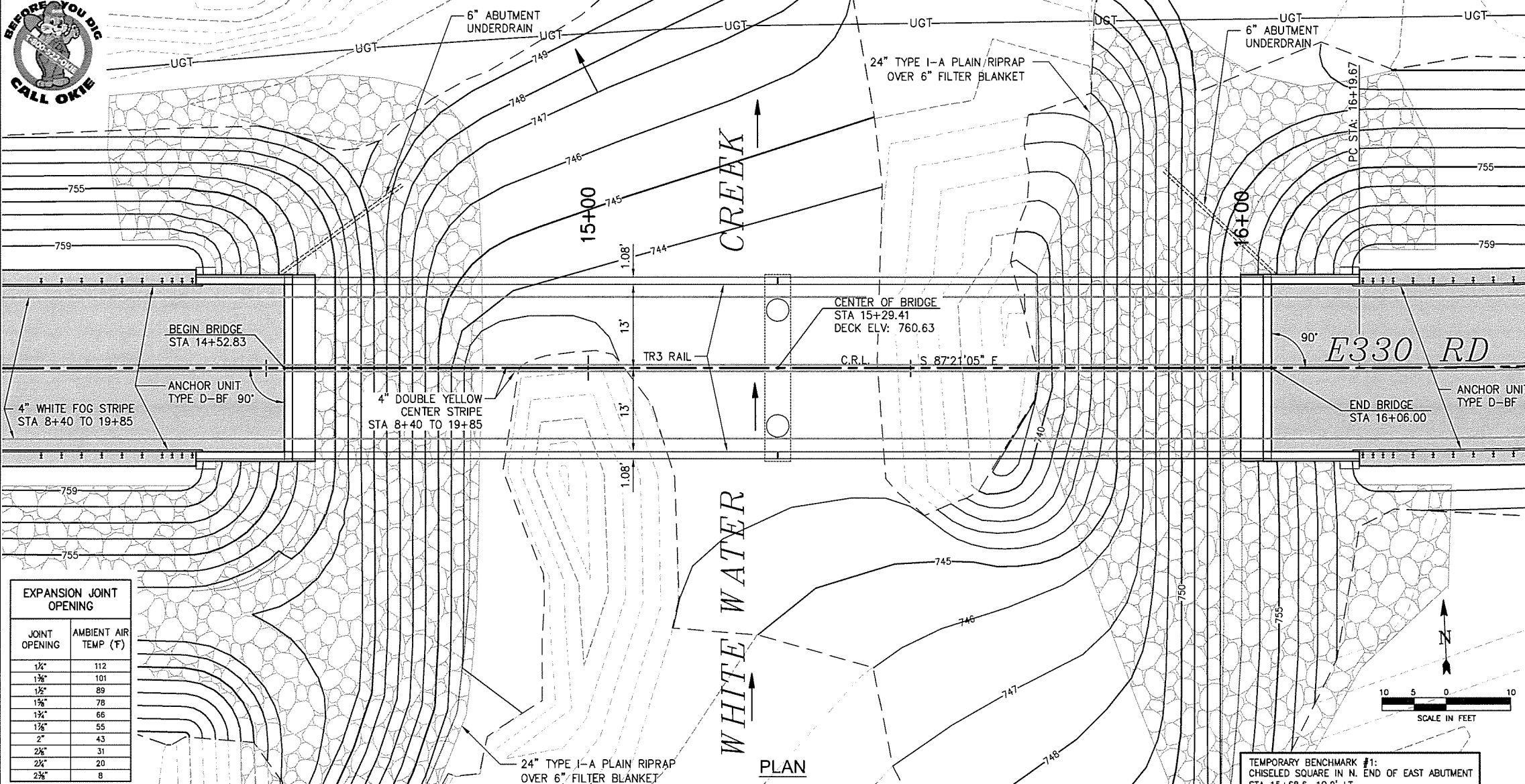
**E330 RD PROFILE**  
STA 8+50 TO STA 19+75

SCALE HORZ: 1"=50'  
SCALE VERT: 1"=5'



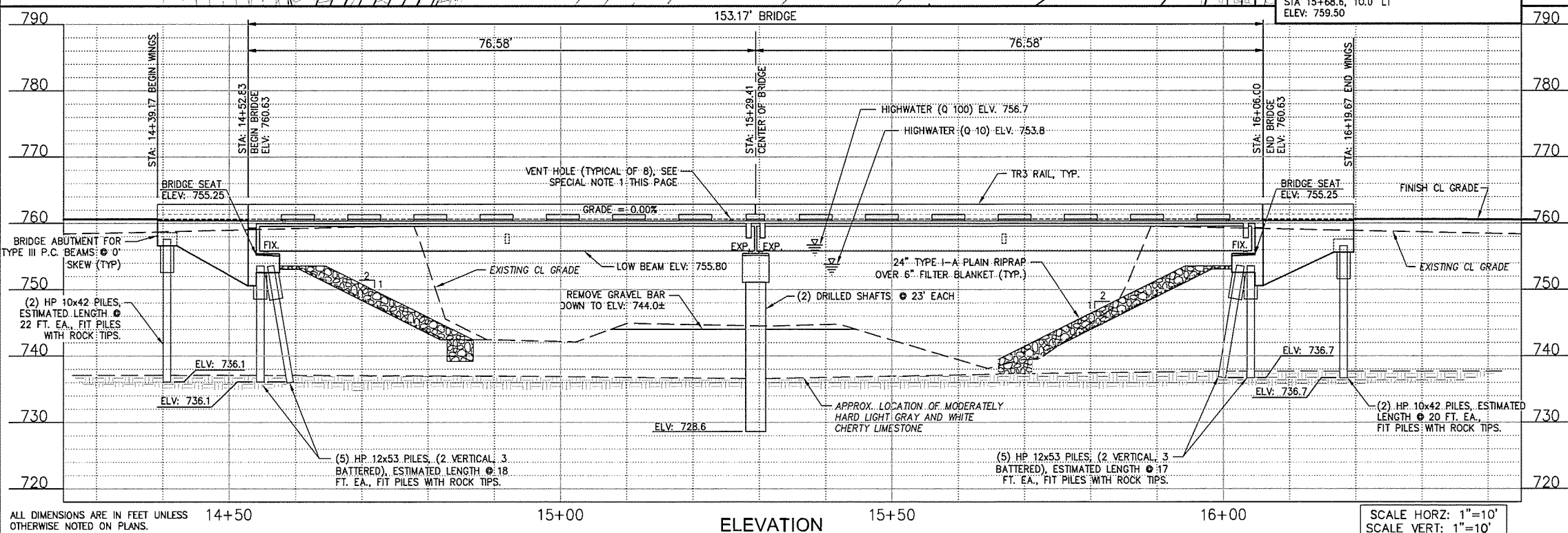
Design	TSM	5/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	6/16		
Checked	GLB	6/16		
Approved				
Squad				

PLAN AND PROFILE  
STA 8+50 TO STA 19+75  
County: DELAWARE Project No. J/P 32598(04) Sheet No. 5



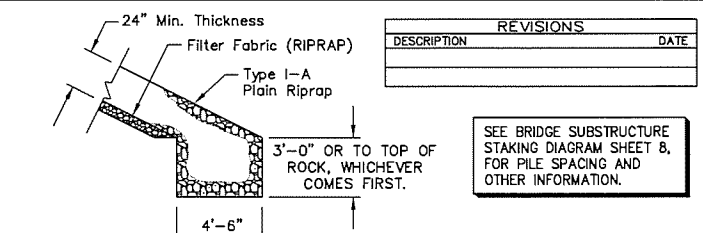
**EXPANSION JOINT OPENING**

JOINT OPENING	AMBIENT AIR TEMP (F)
1/4"	112
1/8"	101
1/2"	89
1 1/8"	78
1 1/4"	66
1 1/2"	55
2"	43
2 1/2"	31
3"	20
3 1/2"	8



ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED ON PLANS.

SCALE HORIZ: 1"=10'  
SCALE VERT: 1"=10'



**RIPRAP TOE DETAIL**  
NTS

**HYDRAULIC DATA**

Q2	2410 cfs
V2	3.2 fps
CHW2	751.5 ft
Q5	4680 cfs
V5	5.0 fps
CHW5	752.9 ft
Q10	6850 cfs
V10	6.4 fps
CHW10	753.8 ft
Q25	10400 cfs
V25	8.6 fps
CHW25	754.7 ft
Q50	12800 cfs
V50	9.6 fps
CHW50	755.3 ft
Q100	15500 cfs
V100	10.1 fps
CHW100	756.7 ft



**RIPRAP ADJOINING BRIDGE SEAT DETAIL**  
NTS

**SPECIAL NOTES:**  
1. VENT HOLES SHALL BE PLACED IN THE BRIDGE DECK TO ALLOW TRAPPED AIR BETWEEN BEAMS TO ESCAPE. VENT HOLES SHALL BE 2" DIA. AND PLACED, ONE AT EACH END OF THE CAVITIES, (B) TOTAL, AND AS FAR AWAY FROM VEHICLE TIRE PATHS AS POSSIBLE. COST OF VENT HOLE CONSTRUCTION WILL BE INCIDENTAL TO THE COST OF THE BRIDGE.

**DESIGN DATA**

CLASS AA CONCRETE	f _c = 4 KSI
CLASS A CONCRETE	f _c = 3 KSI
REINFORCING STEEL, AASHTO M 31 (GRADE 60)	F _y = 60 KSI
STRUCTURAL STEEL, AASHTO M 270 (GRADE 50W)	F _y = 50 KSI

LOADING: HL-93  
20 P.S.F. FUTURE WEARING SURFACE

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION WITH 2010 INTERIMS, EXCEPT AS MODIFIED BY CURRENT ODOT BRIDGE DIVISION DESIGN POLICIES  
ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE

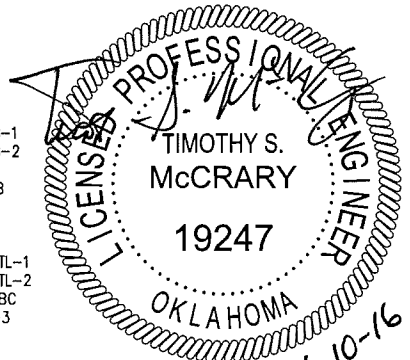
LFD OPERATING RATING: HS 46.3

**FOUNDATION DATA**

FACTORED PILE REACTION (HP 10 x 42 PILING)	= 50 TONS/PILE
FACTORED PILE REACTION (HP 12 x 53 PILING)	= 70 TONS/PILE

ALL ABUTMENT PILING SHALL BE DRIVEN THROUGH THE COMPACTED FILL. ALL PILING SHALL BE DRIVEN TO POINT BEARING ON SOLID FOUNDATION MATERIAL AT THE APPROXIMATE ELEVATION SHOWN ON THE PLANS. IF THE AXIAL LOAD RESISTANCE IS NOT OBTAINED AT THIS ELEVATION, DRIVING SHALL CONTINUE UNTIL THE AXIAL LOAD RESISTANCE IS OBTAINED. THE AXIAL LOAD CAPACITY ACCORDING TO THE GATES EQUATION SHALL BE GREATER THAN OR EQUAL TO THE FACTORED PILE REACTION. THE LENGTH OF THE STEEL PILING SHOWN ON THE PLANS IS FOR ESTIMATING PURPOSES ONLY.

**STANDARDS**  
CB26-C-SK0-ABUT-PC3  
CB26-C-SK0-XSECT-PC234  
CB26-C-SK0-LSECT-PCB  
CB26-C-SK0-DKSLB-BLUST  
CB26-C-SK0-DIA-END  
CB26-C-SK0-SPR-QUAN-PCB-1  
CB26-C-SK0-SPR-QUAN-PCB-2  
CB26-C-SK0.30-PCB-III-75  
CB26-C-SK0.30-DIA-INT-PCB  
CB26-C-SK0.30-BRG-PC3  
CB26.32-C-SK30-ABUT-MISC  
CB26.32-C-SK30-WING-PC3  
CB26.32-C-I-SK0.30-PCB-DTL-1  
CB26.32-C-I-SK0.30-PCB-DTL-2  
CB26.32-C-I-SK0.30-GRAU-BC  
HP1-2 EJ-SQ PUD-3  
TR3-2 EJ-DTL

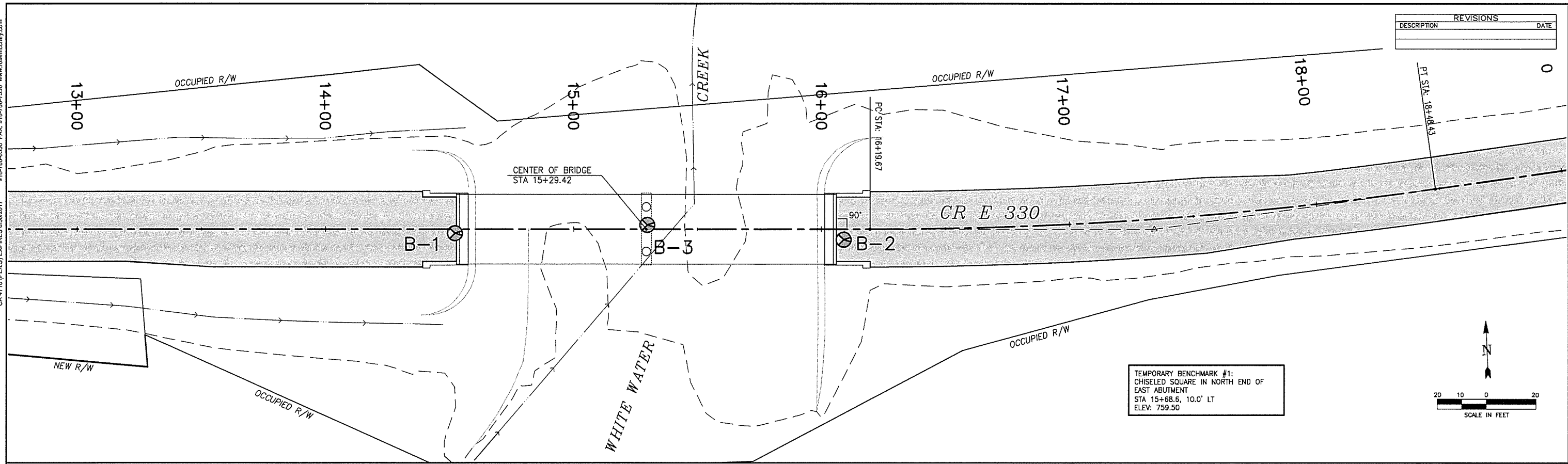


153'-2" BY 26' CLEAR ROADWAY PCB TYPE III BRIDGE  
0' SKEW WITH TR3 TRAFFIC RAILS

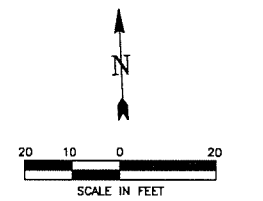
Design	GLB	04/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	06/16		
Checked	GLB	06/16		
Approved				
Squad				

County: DELAWARE Project No. J/P 32598(04) Sheet No. 6

**BRIDGE GENERAL PLAN AND ELEVATION**



TEMPORARY BENCHMARK #1:  
CHISELED SQUARE IN NORTH END OF  
EAST ABUTMENT  
STA 15+58.5, 10.0' LT  
ELEV: 759.50



DESCRIPTION	REVISIONS	DATE

16-056  
Grubbs, Hoskyn, Barton & Wyatt, Inc. Consulting Engineers  
**LOG OF BORING NO. 1**  
White Water Road Bridge  
Grove, Oklahoma

TYPE: Auger to 22 ft./Wash LOCATION: See Plate 2, West Abutment

DEPTH FT	SYMBOL	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT			No. 200 % Recovery	% RGD
					PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT		
0		SURF. EL: 759.1							
0-7		7" Asphalt	28						
7-14		Medium dense brown and gray fine to coarse sand with chert gravel (FILL)	14						32
14-10		Stiff brown and gray sandy clay with chert fragments (EMBANKMENT FILL)	9						
10-11		(occasional organics and wood fragments at 4.5 to 5.5 ft. with dark gray silty clay seams and layers and rootlets below 9 ft.)	11						
11-27		Firm dark gray silty clay with rootlets	27						
27-23		Medium dense brown clayey chert gravel and sand - water at 13 ft	23						
23-25		auger refusal at 22 ft	25						
25-29		Moderately hard light gray and white cherty limestone - weathered and highly fractured to 29 ft - slight water loss	25				12.6%	100	25
29-30							9.96%		
30-32							8.45%		10

COMPLETION DEPTH: 45.0 ft DEPTH TO WATER IN BORING: 13 ft DATE: 4/15/2016  
PLATE 3

16-056  
Grubbs, Hoskyn, Barton & Wyatt, Inc. Consulting Engineers  
**LOG OF BORING NO. 2**  
White Water Road Bridge  
Grove, Oklahoma

TYPE: Auger to 21.5 ft./Wash LOCATION: See Plate 2, East Abutment

DEPTH FT	SYMBOL	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT			No. 200 % Recovery	% RGD
					PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT		
0		SURF. EL: 759.2							
0-6		6" Asphalt	20						
6-35		Medium dense brown fine to coarse sand with some chert gravel (FILL)	35						12
35-42		Very stiff brown sandy clay with chert fragments (EMBANKMENT FILL)	42						
42-16		Firm dark brown silty clay with rootlets, moist - water at 10 ft	16						
16-14		- with some fine sand seams and occasional fine chert gravel below 14 ft	14						
14-11			11						73
11-20			20						
20-13		auger refusal at 21.5 ft	13						
13-25		Moderately hard light gray and white cherty limestone with some horizontal fractures	25				10.82%	100	63
25-30							11.27%		
30-35									
35-40									
40-45									
45-50									
50-55									
55-60									

COMPLETION DEPTH: 45.0 ft DEPTH TO WATER IN BORING: 10 ft DATE: 4/15/2016  
PLATE 4

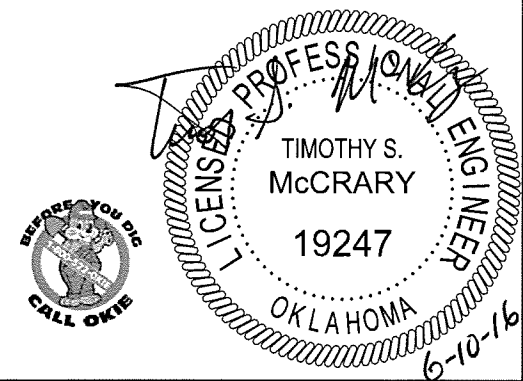
16-056  
Grubbs, Hoskyn, Barton & Wyatt, Inc. Consulting Engineers  
**LOG OF BORING NO. 3**  
White Water Road Bridge  
Grove, Oklahoma

TYPE: Auger LOCATION: See Plate 2

DEPTH FT	SYMBOL	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT			No. 200 % Recovery	% RGD
					PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT		
0		SURF. EL: 759.6							
0-9		Approximately 9 inch bridge deck							
9-10		Water in the creek							
10-20		Loose gravel							
20-23		auger refusal at 23 ft on bedrock							
23-25		Note: Boring performed through a 6-inch hole drilled in the bridge deck.							
25-30									
30-35									
35-40									
40-45									
45-50									
50-55									
55-60									

COMPLETION DEPTH: 23.0 ft DEPTH TO WATER IN BORING: 12 ft DATE: 4/25/2016  
PLATE 5

Time: 4:41 pm  
Scale: 1"=30' (FS)  
Date: 5/31/2016  
Xrefs Used: ENCL, 15edTIM, TB  
© 2016 by Rose & McCrary, P.C.



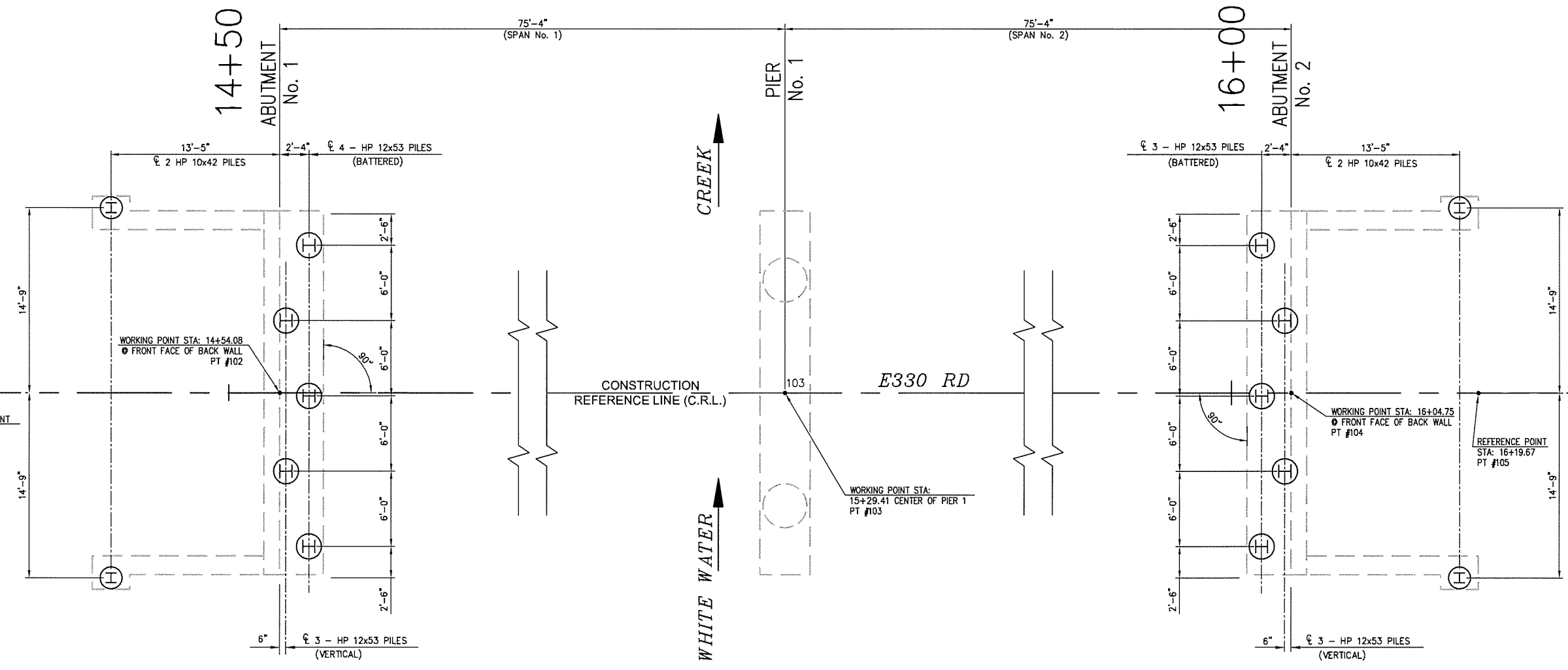
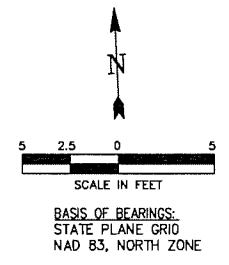
Design	TMC	4/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	6/16	<b>BRIDGE FOUNDATION REPORT</b>	
Checked	GLB	6/16		
Approved			County: DELAWARE	Project No. J/P 32598(04) Sheet No. 7
Squad				



CA 4716 (PELS) EXPIRES 06/02/2017

Time: 5:20 PM  
 Date: 11/15/16  
 Drawing Name: 16046-00(AR)(C)(DWG)\16046-00 Staking Diagram.dwg (francis)  
 Xrefs Used: 00ENG, 1.ssd\TM, TB  
 © 2016 by Rose & McCrary, P.C.

DESCRIPTION	REVISIONS	DATE



**ABUTMENT No. 1**  
 TOP OF PILE ELEVATIONS:  
 ABUTMENT SEAT PILES = 753.58  
 WING PILES = 757.63

**ABUTMENT No. 2**  
 TOP OF PILE ELEVATIONS:  
 ABUTMENT SEAT PILES = 753.58  
 WING PILES = 757.63

**TEMPORARY BENCHMARK #1:**  
 CHISELED SQUARE IN N. END OF EAST ABUTMENT  
 STA 15+68.6, 10.0' LT  
 ELEV: 759.50

**SUBSTRUCTURE STAKING DIAGRAM**

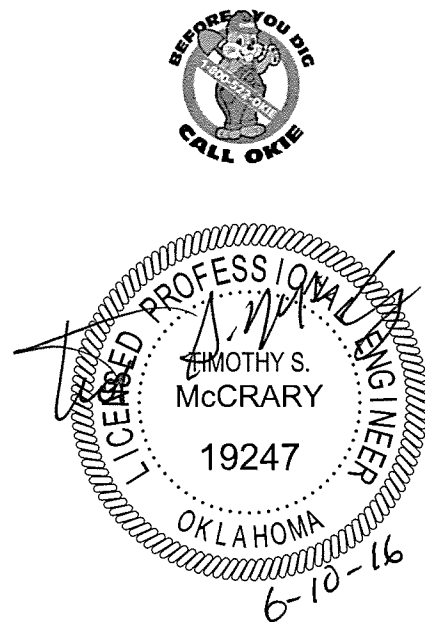
Point #	Northing	Easting
101	576269.1469	2920275.7746
102	576267.8031	2920304.8235
103	576264.3217	2920380.0781
104	576260.8403	2920455.3326
105	576260.1510	2920470.2333

SEE SHEET 6 (BRIDGE GENERAL PLAN & ELEVATION) FOR PILE LENGTHS.

SEE SHEET 7 FOR FOUNDATION REPORT AND BORING LOG.

WARNING:  
 CONTRACTOR MAY ENCOUNTER  
 EXTREMELY HARD ROCK.

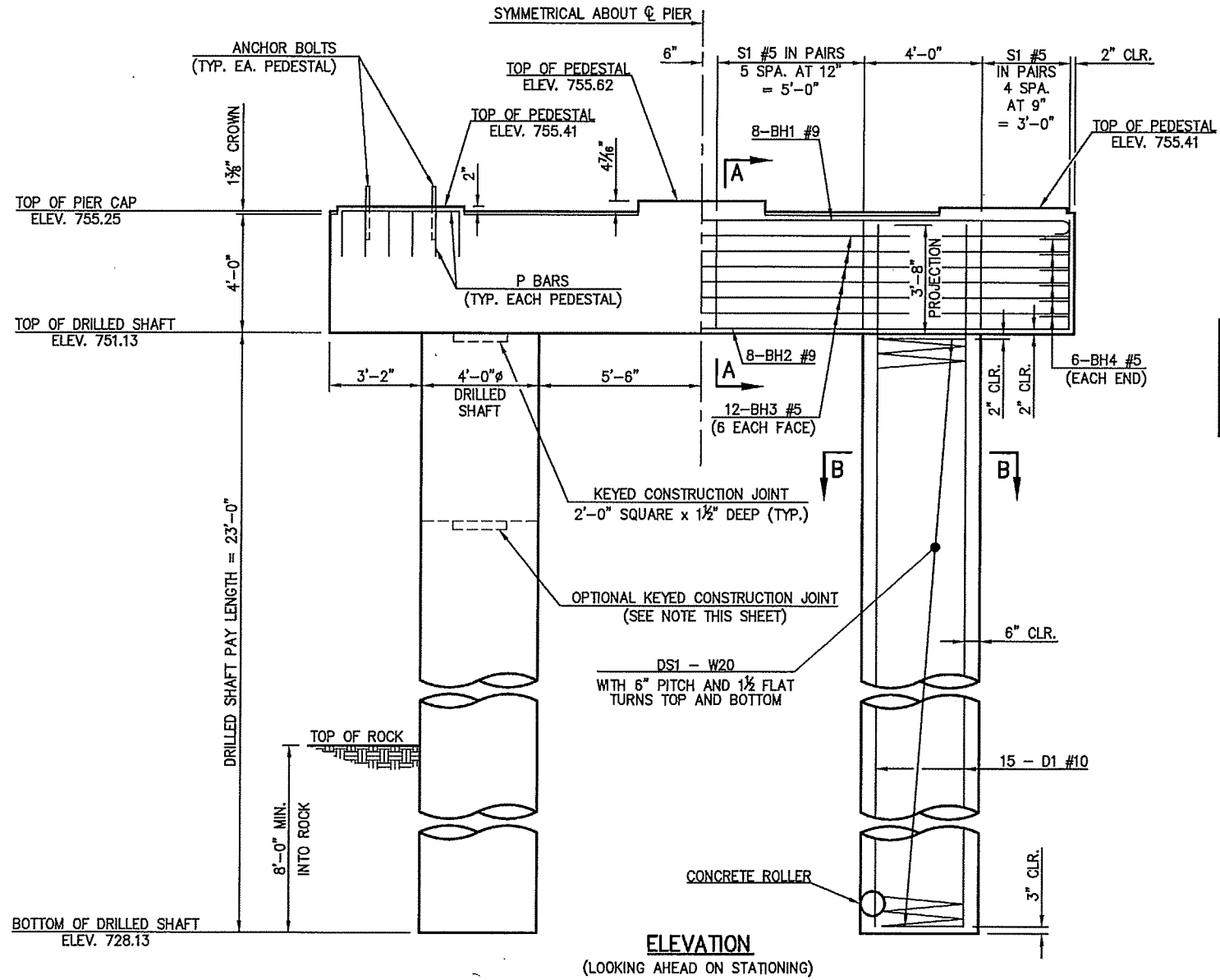
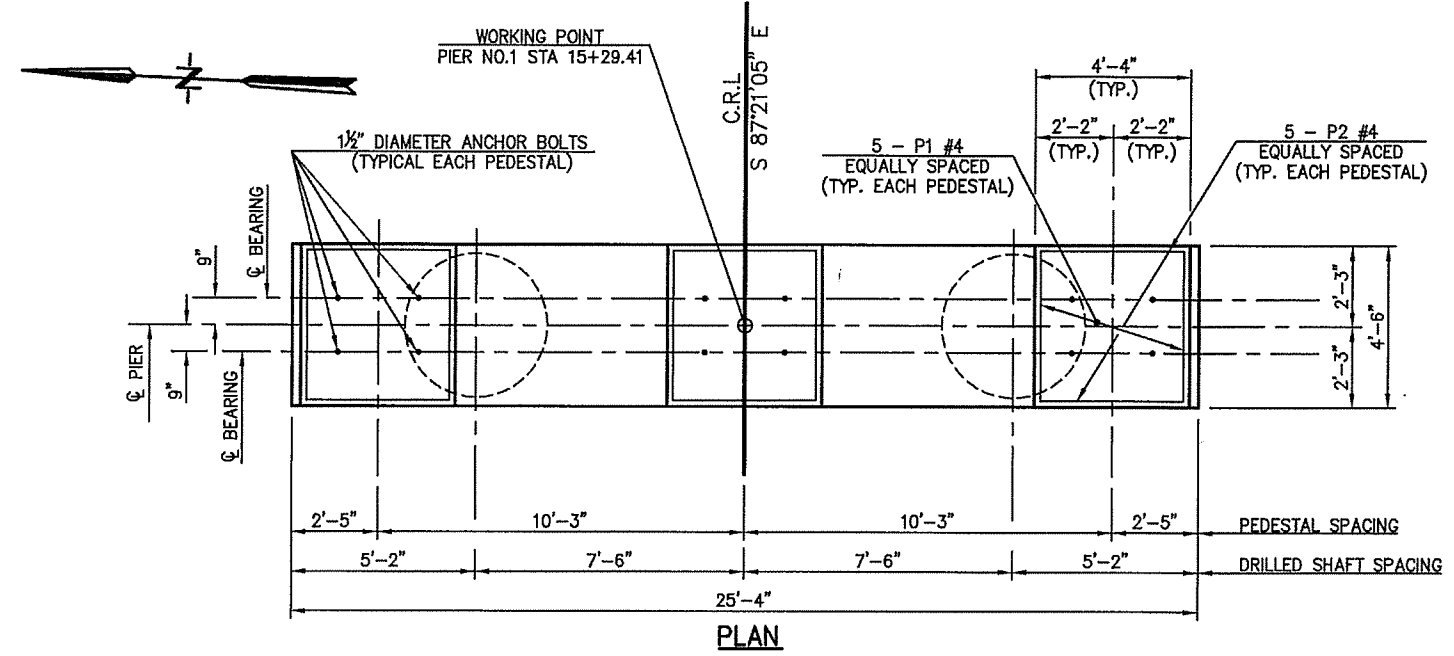
ALL DIMENSIONS ARE IN  
 FEET UNLESS OTHERWISE  
 NOTED ON PLANS.



Design	GLB	04/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	06/16	<b>BRIDGE SUBSTRUCTURE STAKING DIAGRAM</b>	
Checked	GLB	06/16		
Approved				
Squad			County: DELAWARE	Project No. J/P 32598(04) Sheet No. 8




DESCRIPTION	REVISIONS	DATE



NOTE:  
INSTALL DRILLED SHAFTS AT LEAST THE SPECIFIED MINIMUM DISTANCE INTO ROCK. IN NO CASE SHALL THE BOTTOM OF THE DRILLED SHAFT BE HIGHER THAN THE BOTTOM OF DRILLED SHAFT ELEVATION SHOWN IN THE PLANS.

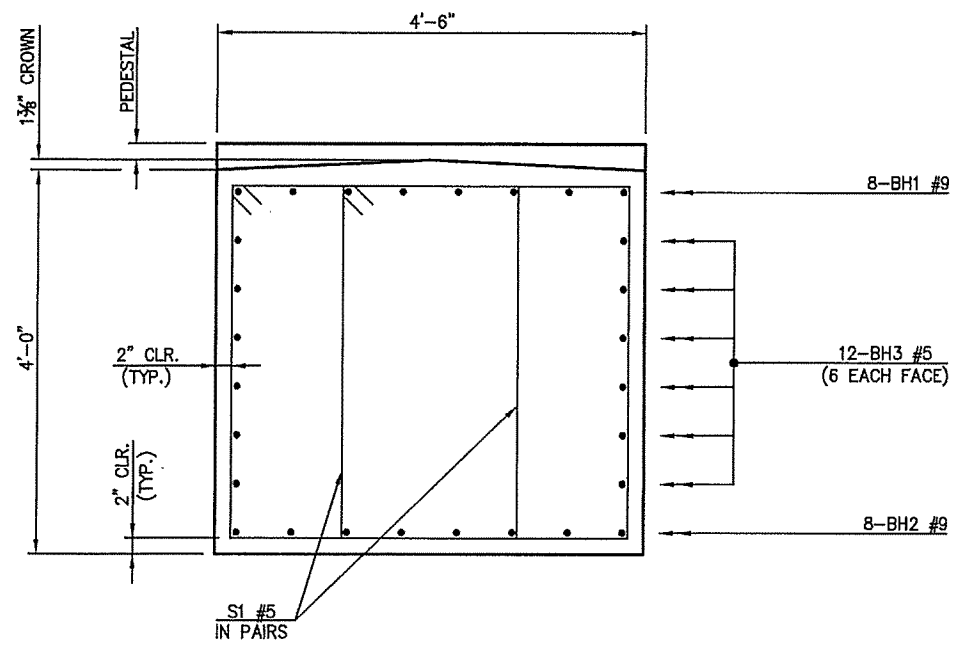
OPTIONAL KEYED CONSTRUCTION JOINT:  
AT HIS OPTION, THE CONTRACTOR MAY ELECT TO FORM A KEYED CONSTRUCTION JOINT A MINIMUM OF 1' ABOVE THE NATURAL GROUND LINE. THE PORTION OF SHAFT ABOVE THE OPTIONAL KEYED CONSTRUCTION JOINT SHALL BE FORMED AND Poured, AND SHALL BE PAID FOR AT THE UNIT PRICE PER LINEAR FOOT OF DRILLED SHAFT.

PIER QUANTITIES		
ITEM	UNIT	TOTAL
CLASS A CONCRETE	C.Y.	17.80
REINFORCING STEEL	LB.	2,620.00
DRILLED SHAFTS 48" DIAMETER	LF.	46.00

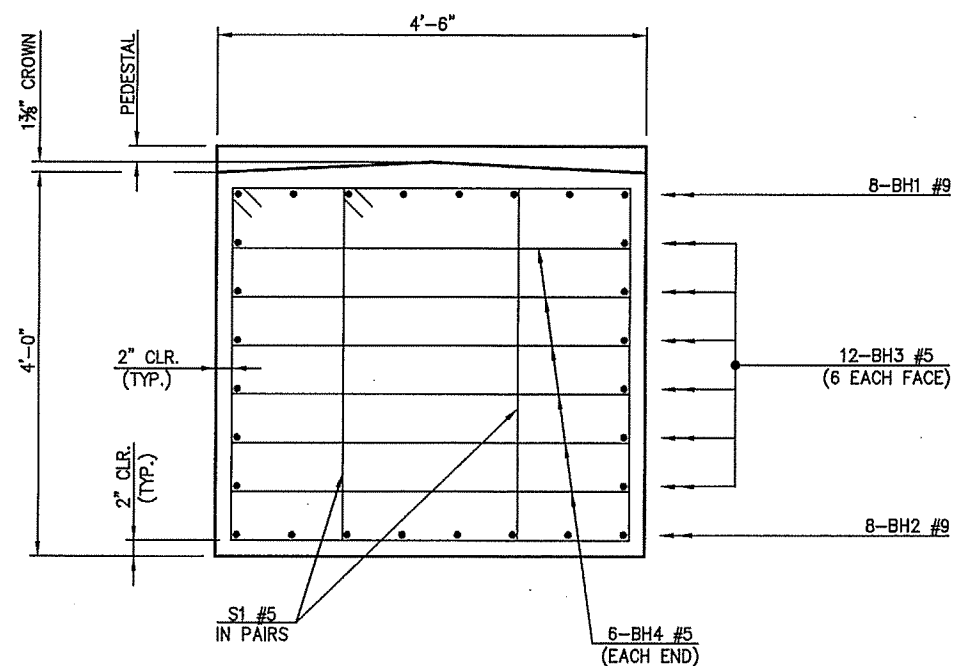
  
 5-18-2016  
 GUY ENGINEERING SERVICES, INC.  
 Certificate of Authorization No. 1427  
 Renewal Date: June 30, 2018

E330 OVER WHITE WATER CREEK BRIDGE "A"	DELAWARE COUNTY	Design	MBS	05/16
<b>BRIDGE PIER DETAILS</b> (SHEET NO. 1 OF 2)		Detail	MZV	05/16
		Check	MBS	05/16
		Spced		
		Eng.		
STATE OF OKLAHOMA	GUY ENGINEERING SERVICES, INC.			
JOB PIER NO. 32598(04)		SHEET NO. 09		

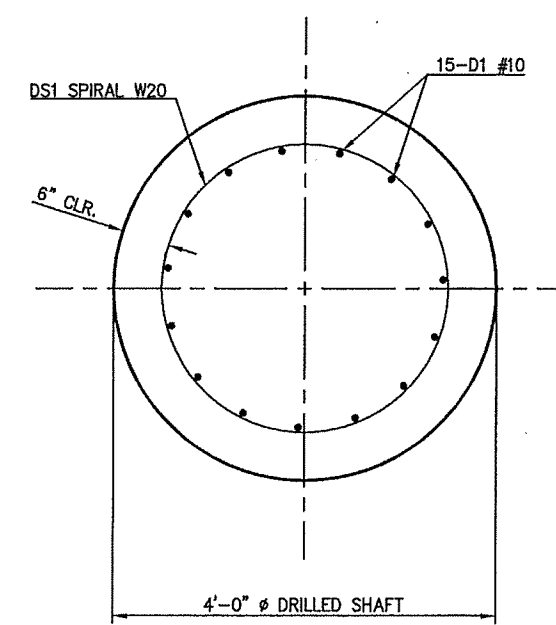
DESCRIPTION	REVISIONS	DATE



SECTION A-A



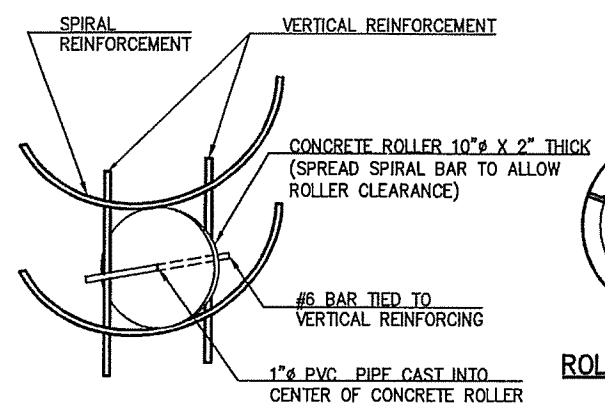
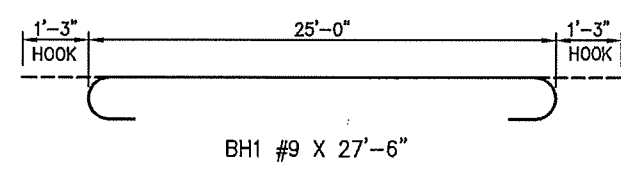
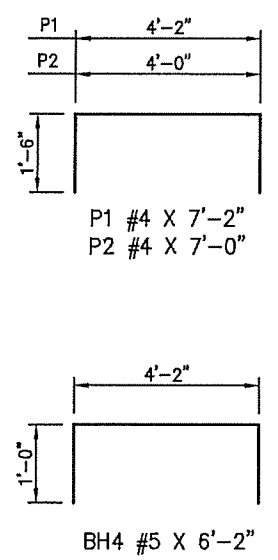
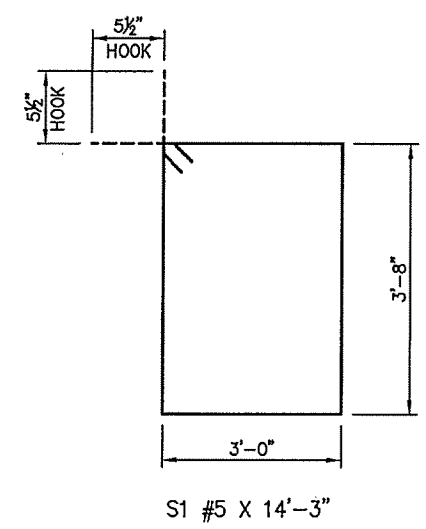
END SECTION



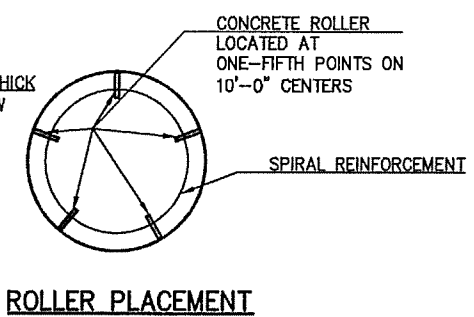
SECTION B-B

BAR LIST - PIER NO. 1				
MARK	SIZE	NO.	FORM	LENGTH
BH1	#9	8	BNT.	27'-6"
BH2	#9	8	STR.	25'-0"
BH3	#5	12	STR.	25'-0"
BH4	#5	12	BNT.	6'-2"
P1	#4	15	BNT.	7'-2"
P2	#4	15	BNT.	7'-0"
S1	#5	44	BNT.	14'-3"
TWO DRILLED SHAFTS ①				
D1	#10	28	STR.	26'-5"
DS1	W20	2	SPIRAL	454'-7"

① INCLUDED IN PRICE BID PER LINEAR FOOT OF DRILLED SHAFT.



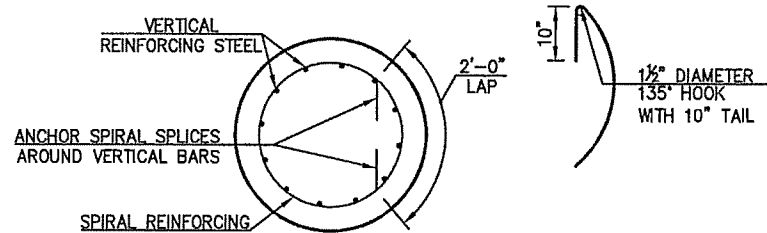
ROLLER INSTALLATION



ROLLER PLACEMENT

**DETAIL OF CONCRETE ROLLER**

NOTE: CONCRETE USED IN THE CONCRETE ROLLERS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 P.S.I. SLAB BOLSTERS, HIGH CHAIRS AND PLASTIC ROLLERS SHALL NOT BE SUBSTITUTED FOR THE CONCRETE ROLLERS.



**DETAIL OF SPIRAL REINFORCING SPLICE**

NOTE: SPIRAL BARS SHALL CONFORM TO AASHTO M-32. SPIRAL BAR LENGTH DOES NOT INCLUDE LAP. IF LAP IS REQUIRED, THE LENGTH OF THE LAP SHALL BE AS SHOWN.



*Michael B. Simmons*  
**5-18-2016**  
 GUY ENGINEERING SERVICES, INC.  
 Certificate of Authorization No. 1427  
 Renewal Date: June 30, 2018

E330 OVER WHITE WATER CREEK BRIDGE "A"	DELAWARE COUNTY	Design	MBS	05/16
<b>BRIDGE PIER DETAILS (SHEET NO. 2 OF 2)</b>		Detail	MZV	05/16
		Check	MBS	05/16
		Squad Egr.		
<b>STATE OF OKLAHOMA</b>	GUY ENGINEERING SERVICES, INC.			
JOB PIECE NO. 32598(04)		SHEET NO. 10		



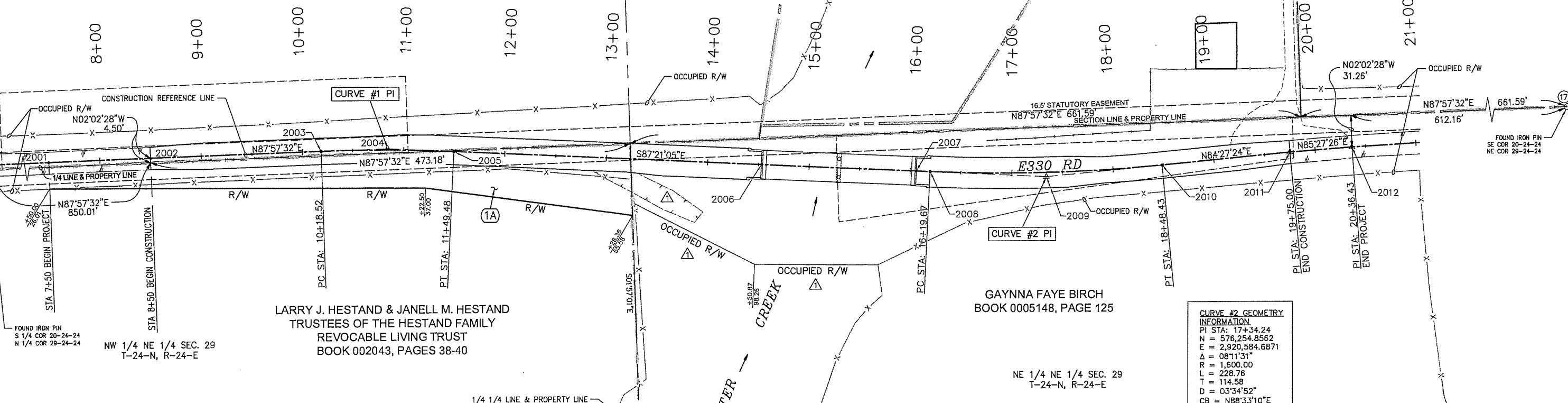
PARCEL	OWNER/OWNERS	EASEMENT TYPE	OCCUPIED ROW	EASEMENT TO BE ACQUIRED	TOTAL INCLUDED IN PARCEL
(1A)	LARRY J. HESTAND & JANELL M. HESTAND	PERMANENT ROW	0.292 AC	0.200 AC	0.492 AC

**CURVE #1 GEOMETRY INFORMATION**  
PI STA: 10+84.04  
N = 576,284.9069  
E = 2,919,935.1023  
Δ = 04°41'24"  
R = 1,600.00  
L = 130.97  
T = 65.52  
D = 03°34'52"  
CB = S89°41'46"E  
C = 130.93

SW 1/4 SE 1/4 SEC. 20  
T-24-N, R-24-E

JOHNNY L. MAPLES  
BOOK 000488, PAGE 750

J.D. BLACKMORE &  
PATRICIA BLACKMORE  
BOOK 002073, PAGES 312-313

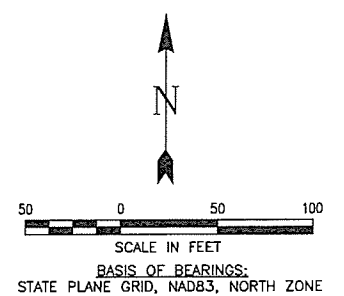


LARRY J. HESTAND & JANELL M. HESTAND  
TRUSTEES OF THE HESTAND FAMILY  
REVOCABLE LIVING TRUST  
BOOK 002043, PAGES 38-40

GAYNNA FAYE BIRCH  
BOOK 0005148, PAGE 125

NE 1/4 NE 1/4 SEC. 29  
T-24-N, R-24-E

REVISIONS	DATE
Labelled Occupied R/W, Showed ex. Asp.	6/24/16

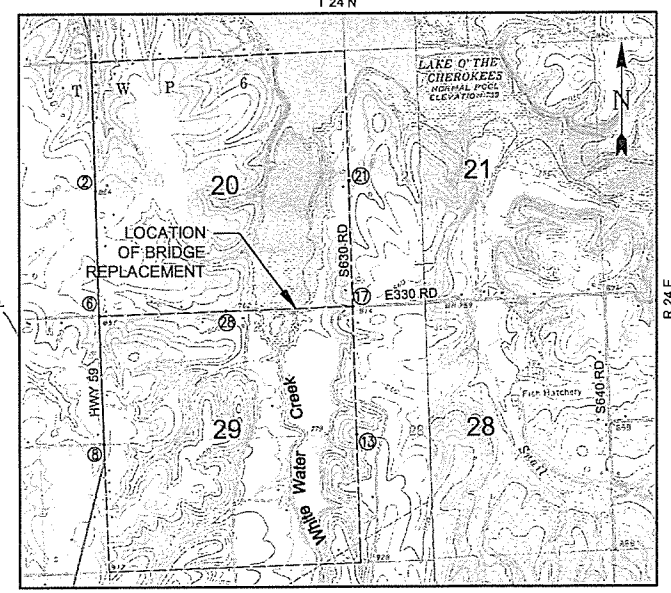


**CURVE #2 GEOMETRY INFORMATION**  
PI STA: 17+34.24  
N = 576,254.8562  
E = 2,920,584.6871  
Δ = 08°11'31"  
R = 1,600.00  
L = 228.76  
T = 114.58  
D = 03°34'52"  
CB = N88°33'10"E  
C = 228.57

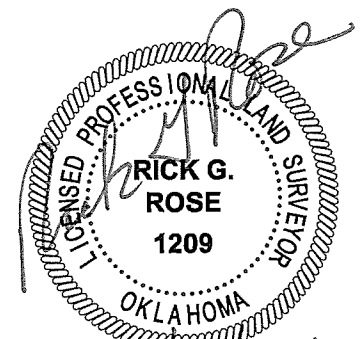
CONSTRUCTION REFERENCE LINE	POINT NO.	C.R.L. STATION	NORTHING	EASTING
BEGIN PROJECT JOB No. 32598(04)	2001	7+50.00	576273.0092	2919601.2777
BEGIN CONSTRUCTION	2002	8+50.00	576276.5710	2919701.2143
CURVE 1 POINT OF CURVATURE	2003	10+18.52	576282.5732	2919869.6242
CURVE 1 POINT OF INTERSECTION	2004	10+84.04	576284.9069	2919935.1023
CURVE 1 POINT OF TANGENCY	2005	11+94.48	576281.8791	2920000.5528
BEGIN BRIDGE	2006	14+52.83	576287.8608	2920303.5749
END BRIDGE	2007	16+06.00	576280.7826	2920456.5812
CURVE 2 POINT OF CURVATURE	2008	16+19.67	576260.1510	2920470.2333
CURVE 2 POINT OF INTERSECTION	2009	17+34.24	576254.8562	2920584.6871
CURVE 2 POINT OF TANGENCY	2010	18+48.43	576285.9239	2920698.7276
END OF CONSTRUCTION	2011	19+75.00	576278.1504	2920824.7070
END PROJECT JOB No. 32598(04)	2012	20+36.43	576283.0162	2920885.9488

SECTION CORNER AND 1/4 CORNER POINTS	POINT NO.	NORTHING	EASTING
W 1/4 CORNER SEC. 20	(2)	578786.8274	2916116.5505
SW CORNER SEC. 20, NW CORNER SEC. 29	(6)	576139.1521	2916206.4291
W 1/4 CORNER SEC. 29	(8)	573501.8864	2916304.2167
E 1/4 CORNER SEC. 29	(13)	573700.0028	2921584.3194
NE CORNER SEC. 29, SE CORNER SEC. 20	(17)	576336.0568	2921496.6027
E 1/4 CORNER SEC. 20	(21)	578979.3230	2921395.9110
S 1/4 CORNER SEC. 20, N 1/4 CORNER SEC. 29	(28)	576241.7982	2918851.9036

- LEGEND**
- FOUND IRON PIN
  - EXISTING PROPERTY LINE
  - X- EXISTING FENCE
  - - - EXISTING ROAD / DRIVE EDGE
  - - - EXISTING ASPHALT EDGE
  - - - CONSTRUCTION REFERENCE LINE
  - - - NEW ROW
  - - - TEMPORARY ROW



VICINITY MAP  
N.T.S.



NOTE:  
DATE OF LAST SITE VISIT WAS: 5/24/2016  
THIS PLAT IS FOR INFORMATION PURPOSES ONLY AND IS NOT AN ACTUAL BOUNDARY SURVEY.

Design	GLB	4/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	4/16	<b>SURVEY DATA SHEET</b>	
Checked				
Approved				
Squad			County: DELAWARE	Project No. J/P 32598(04) Sheet No. 11



CA 4716 (PELS) EXPIRES 6/30/2017

STA: 8+50.00 BEGIN CONSTRUCTION  
JOB PIECE No. 32598(04)

STA: 16+75.00 END CONSTRUCTION  
JOB PIECE No. 32598(04)

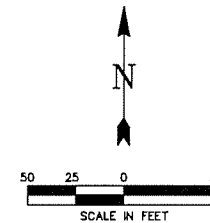
SW 1/4 SE 1/4 SEC.  
20 T-24-N, R-24-E

JOHNNY L. MAPLES  
BOOK 000488, PAGE 750

SE 1/4 SE 1/4 SEC. 20  
T-24-N, R-24-E  
J.D. BLACKMORE &  
PATRICIA BLACKMORE  
BOOK 002073, PAGES 312-313

LARRY J. HESTAND & JANELL M. HESTAND  
TRUSTEES OF THE HESTAND FAMILY  
REVOCABLE LIVING TRUST  
BOOK 002043, PAGES 38-40

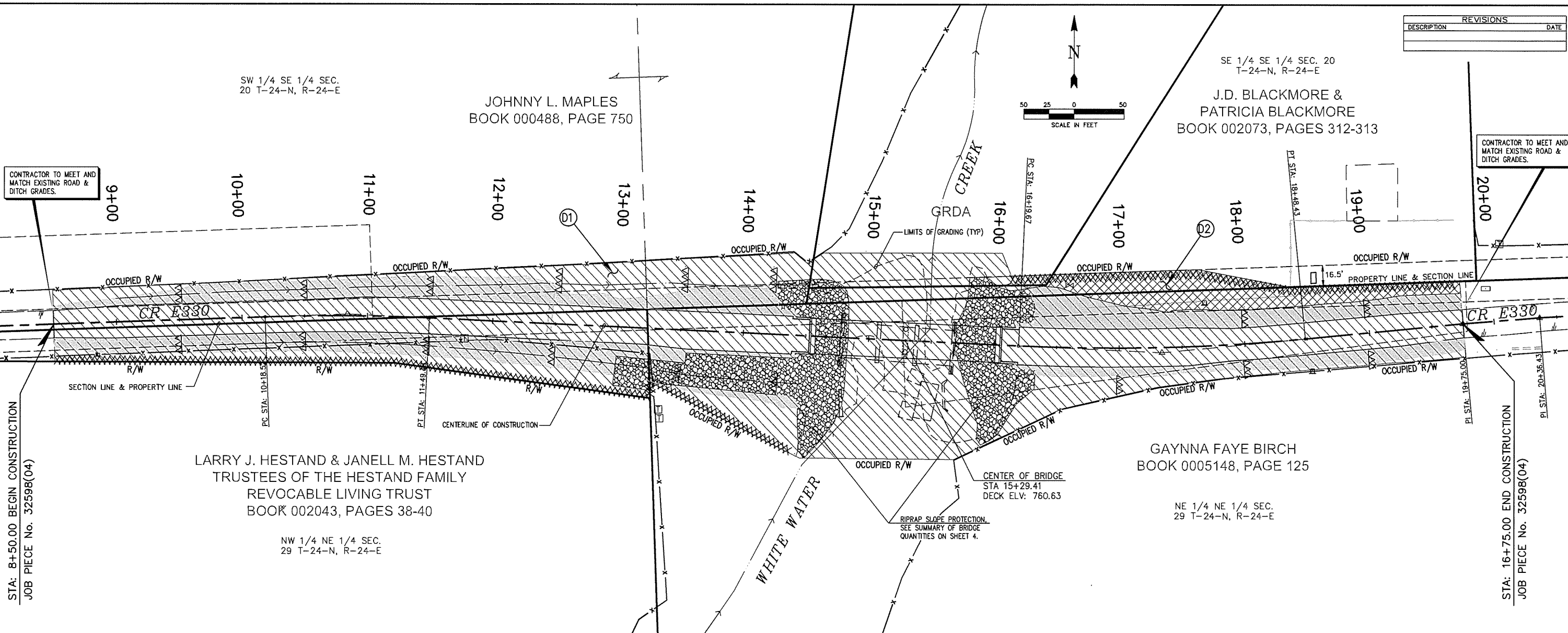
NW 1/4 NE 1/4 SEC.  
29 T-24-N, R-24-E



DESCRIPTION	REVISIONS	DATE

CONTRACTOR TO MEET AND  
MATCH EXISTING ROAD &  
DITCH GRADES.

CONTRACTOR TO MEET AND  
MATCH EXISTING ROAD &  
DITCH GRADES.



DRAINAGE AREA NUMBER	OUTFALL STATION	ACRES	
		CHANNEL FLOW AREA	SHEET FLOW AREA
D1	CRL STA 15+29.41	2.33	0.15
D2	N/A		
TOTAL		2.48	

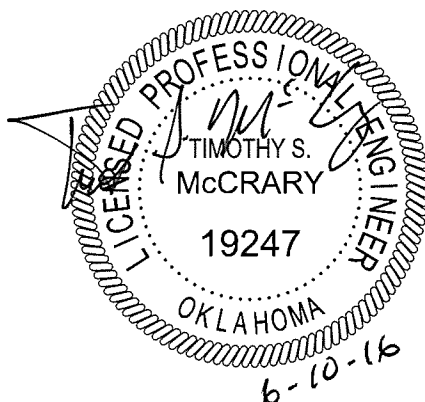
LOCATION	DESCRIPTION	SILT DIKE 221(F)			SILT FENCE 221(C)	SOD 230(A)
		Occurrences	Lineal Feet Each	Total	Lineal Feet	S. Yards
8+50 to 14+45	X				615	
16+12 to 19+74	X				357	
9+50 and 11+50	X					
12+50 to 14+23	X	3	10	30		
9+50 to 14+26	X	3	10	60		
18+00 to 19+00	X	2	20	40		
17+00 to 19+00	X	3	10	30		
8+50 to 14+42	X					887
8+50 to 14+46	X					1,287
16+17 to 19+75	X					622
16+17 to 19+75	X					318
Totals		220	972	3,114		

Note, Lengths of SILT FENCE shown, are measured along the fence, not the C.R.L.

- LEGEND**
- RIGHT-OF-WAY
  - FLOWLINE OF DITCH
  - LIMITS OF GRADING
  - EXISTING FENCE
  - TEMPORARY SILT DIKE
  - TEMPORARY SILT FENCE
  - RIPRAP (PERMANENT EROSION CONTROL)
  - SOLID SLAB SOD (PERMANENT EROSION CONTROL)
  - AREA OF SHEET FLOW
  - AREA OF CHANNEL FLOW

SEE SHEET 3 FOR  
GENERAL NOTES

SEE SHEET 13 FOR  
STORM WATER  
MANAGEMENT PLAN



ALL DIMENSIONS ARE IN  
FEET UNLESS OTHERWISE  
NOTED ON PLANS.

Design	GLB	4/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	4/16	<b>EROSION CONTROL PLAN</b>	
Checked	TSM	6/16		
Approved				
Squad			County: DELAWARE	Project No. J/P 32598(04) Sheet No. 12

Drawing Name: 16046-001.ENG(DWG)\16046-00 Erosion Control.dwg (francis)  
 Scale: 1"=50' (PC)  
 Date: 6/2/2016  
 Xrefs Used: SUR, OBEING, IrselT.M, TB  
 © 2016 by Rose & McCrary, P.C.



# STORM WATER MANAGEMENT PLAN

REVISIONS	
DESCRIPTION	DATE
Added Vegetative Mulching	6/24/2016

## SITE DESCRIPTION

PROJECT LIMITS: REPLACEMENT OF DELAWARE CO. BRIDGE #27 ACROSS WHITE WATER CREEK, LOCATED ON COUNTY ROAD 330, APPROXIMATELY 1.75 MILES SOUTH OF GROVE AND 0.75 MILES EAST OF US HWY 59.

PROJECT DESCRIPTION: DEMOLITION OF EXISTING BRIDGE AND ABUTMENTS, CONSTRUCTION OF NEW ABUTMENTS, NEW BRIDGE, NEW GUARD RAILS, AND IMPROVEMENTS TO EXISTING PAVED COUNTY ROAD ON EACH END OF NEW BRIDGE TOTALING 0.213 MILES.

### SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:

- 1.) PRIOR TO INITIATING SOIL DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL PERIMETER TEMPORARY SEDIMENT CONTROLS AND CONSTRUCTION SIGNAGE.
- 2.) CLEAR AND GRUB ROAD CORRIDOR.
- 3.) REMOVE EXISTING BRIDGE STRUCTURE AND OLD ABUTMENTS
- 4.) CONSTRUCT NEW ABUTMENTS AND BRIDGE.
- 5.) REMOVE OLD ASPHALT PAVING
- 6.) STRIP, STOCKPILE AND STABILIZE TOPSOIL.
- 7.) INSTALL, MAINTAIN AND/OR MOVE TEMPORARY SEDIMENT CONTROL ITEMS AS CONSTRUCTION DICTATES.
- 8.) RECONSTRUCT APPROACHES
- 5.) APPLY TOPSOIL AND GRASS SOD TO ALL EXPOSED SOILS ACCORDING TO TEMPORARY SEDIMENT CONTROL GUIDELINES.
- 6.) WATER AND MAINTAIN UNTIL HARDY PERMANENT VEGETATION IS ESTABLISHED.

SOIL TYPE: USGS TYPES: ELSAH, BRITWATER & RAZORT

AREA TO BE DISTURBED: 2.5 ACRES

OFFSITE AREA TO BE DISTURBED: 0 ACRES  
(FOR CONTRACTOR USE)

MAXIMUM ACRES TO BE DISTURBED AT ANY ONE TIME: 2.5 ACRES  
(FOR CONTRACTOR USE)

LATITUDE & LONGITUDE OF CENTER OF PROJECT: LAT: 36°32'31"N LON: 094°45'34"W

NAME OF RECEIVING WATERS: WHITE WATER CREEK

SENSITIVE WATERS OR WATERSHEDS: YES  NO

303(d) IMPAIRED WATERS: YES  NO

NOTE:  
THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

## EROSION AND SEDIMENT CONTROLS

### SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

### STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

### OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY

### NOTES:

1. "EXCESS DIRT ON ROAD REMOVED" REFERS TO PAVED ROAD AT EITHER END OF THE PROJECT.
2. CONTRACTOR SHALL MAINTAIN A LOG OF ALL MAJOR SOIL DISTURBANCE ACTIVITIES, AND ALSO THE DATES OF INSTALLATION, DATES OF MAINTENANCE, AND DATES OF RETIREMENT OF TEMPORARY SEDIMENT CONTROL MEASURES.
3. CONTRACTOR SHALL REMOVE SEDIMENT CONTROL DEVICES FROM PROJECT LIMITS ONCE PERMANENT SITE STABILIZATION IS ESTABLISHED.

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

### MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

### WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

### HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

### GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEAN UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
  - 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
  - 221 TEMPORARY SEDIMENT CONTROL

### IN ADDITION:

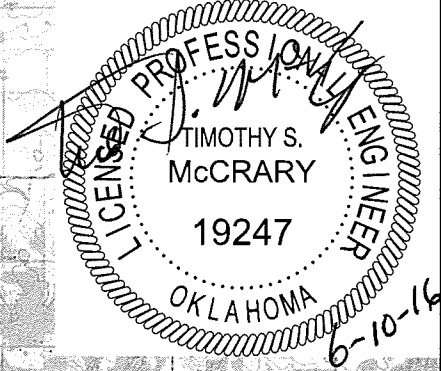
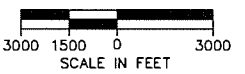
"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2012.



Design	GLB	4/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	4/16	<b>STORM WATER MANAGEMENT PLAN</b>	
Checked	TSM	6/16		
Approved				
Squod				
County: <u>DELAWARE</u>			Project No. <u>J/P 32598(04)</u>	Sheet No. <u>13</u>



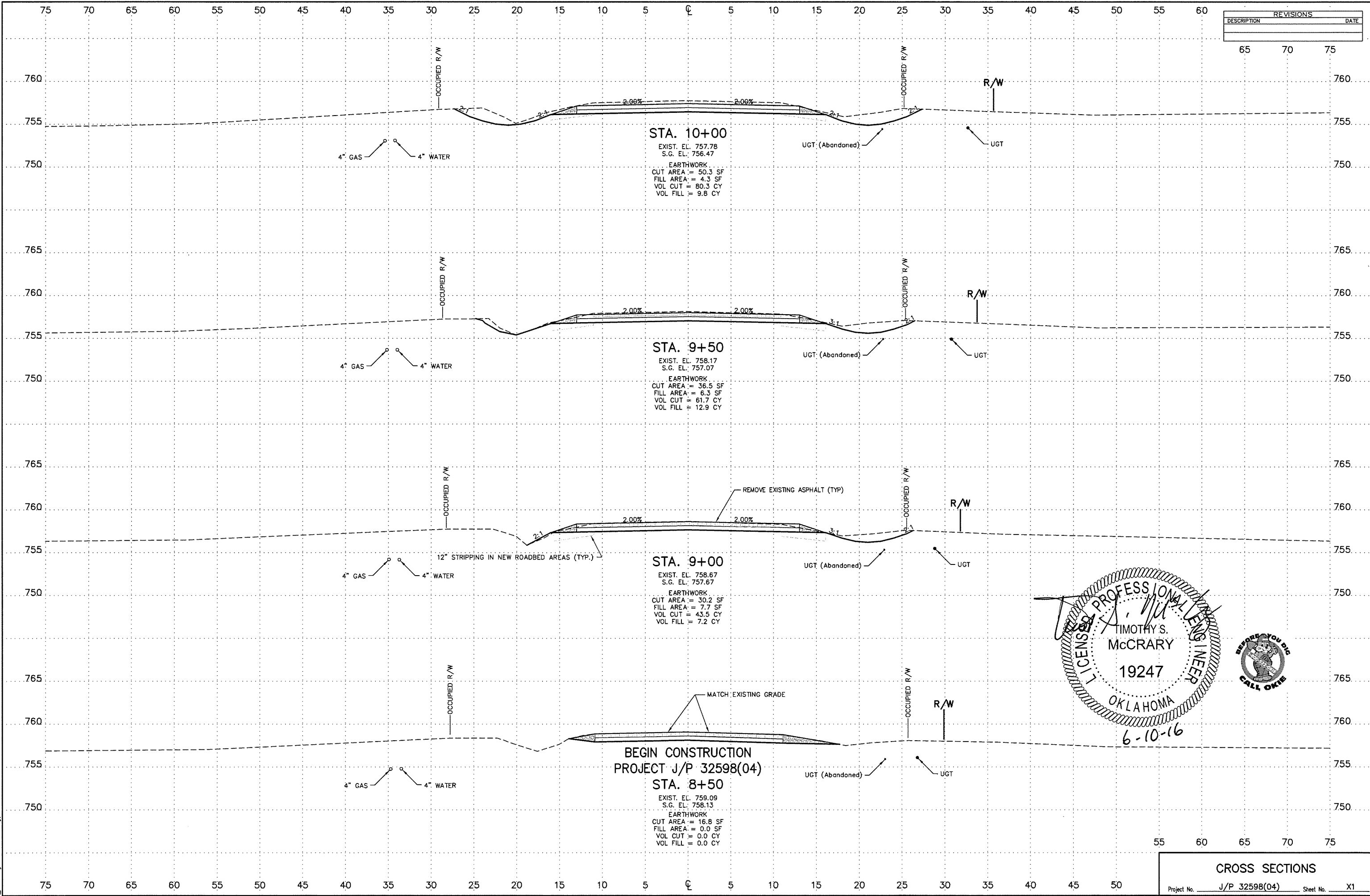
DESCRIPTION	REVISIONS	DATE



Design	GLB	4/16	DELAWARE COUNTY	WHITE WATER CREEK BRIDGE
Drawn	JDF	4/16	<b>DRAINAGE AREA MAP</b>	
Checked	TSM	6/16		
Approved				
Squad			County: DELAWARE	Project No. J/P 32598(04) Sheet No. 14



REVISIONS	
DESCRIPTION	DATE



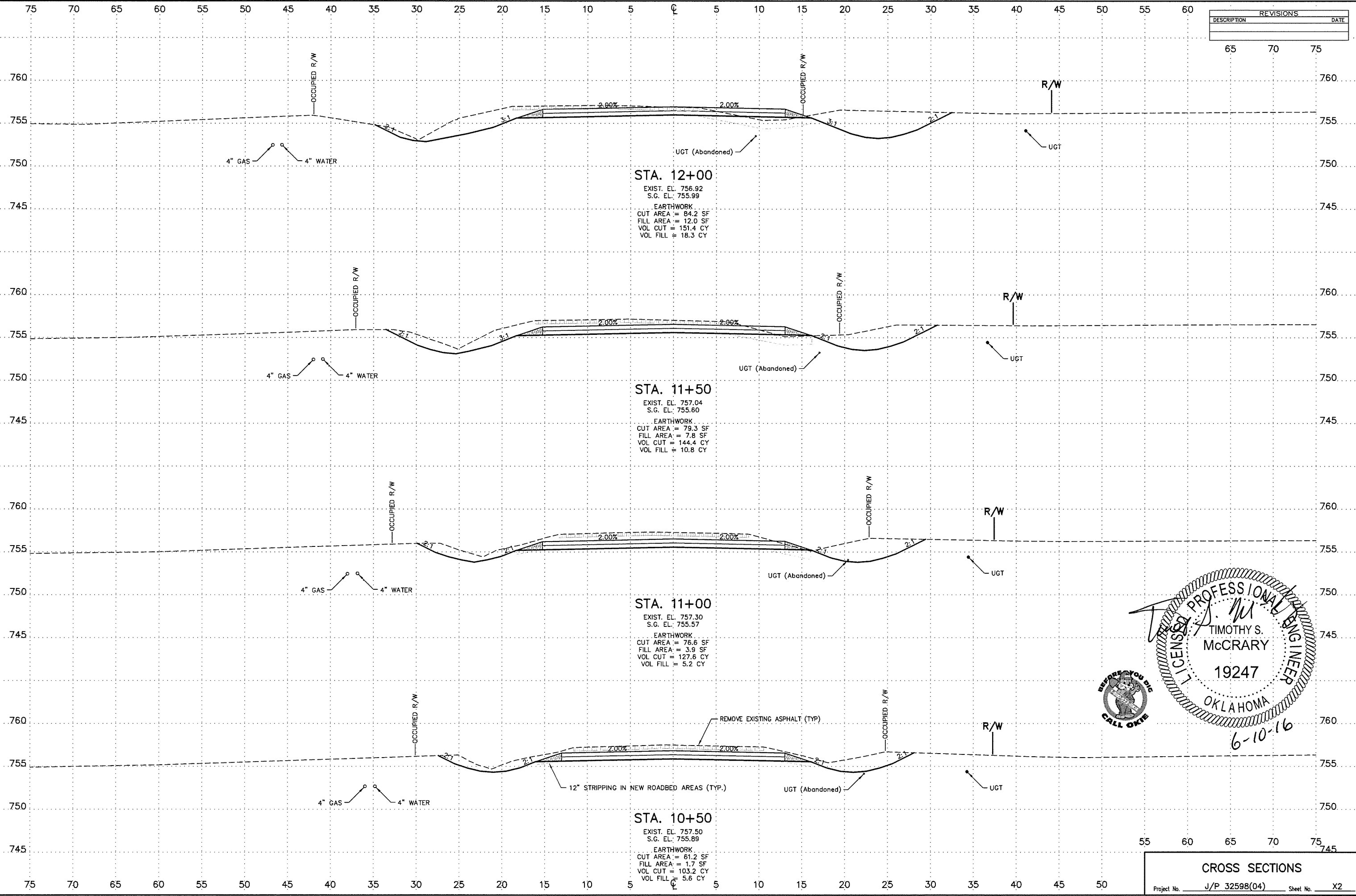
**PROFESSIONAL ENGINEER**  
 TIMOTHY S. McCRARY  
 19247  
 OKLAHOMA  
 6-10-16



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65	70
70	75

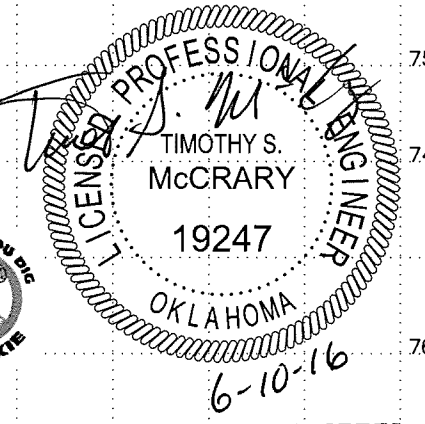


**STA. 12+00**  
EXIST. EL. 756.92  
S.G. EL. 755.99  
EARTHWORK  
CUT AREA = 84.2 SF  
FILL AREA = 12.0 SF  
VOL CUT = 151.4 CY  
VOL FILL = 18.3 CY

**STA. 11+50**  
EXIST. EL. 757.04  
S.G. EL. 755.60  
EARTHWORK  
CUT AREA = 79.3 SF  
FILL AREA = 7.8 SF  
VOL CUT = 144.4 CY  
VOL FILL = 10.8 CY

**STA. 11+00**  
EXIST. EL. 757.30  
S.G. EL. 755.57  
EARTHWORK  
CUT AREA = 76.6 SF  
FILL AREA = 3.9 SF  
VOL CUT = 127.6 CY  
VOL FILL = 5.2 CY

**STA. 10+50**  
EXIST. EL. 757.50  
S.G. EL. 755.89  
EARTHWORK  
CUT AREA = 61.2 SF  
FILL AREA = 1.7 SF  
VOL CUT = 103.2 CY  
VOL FILL = 5.6 CY



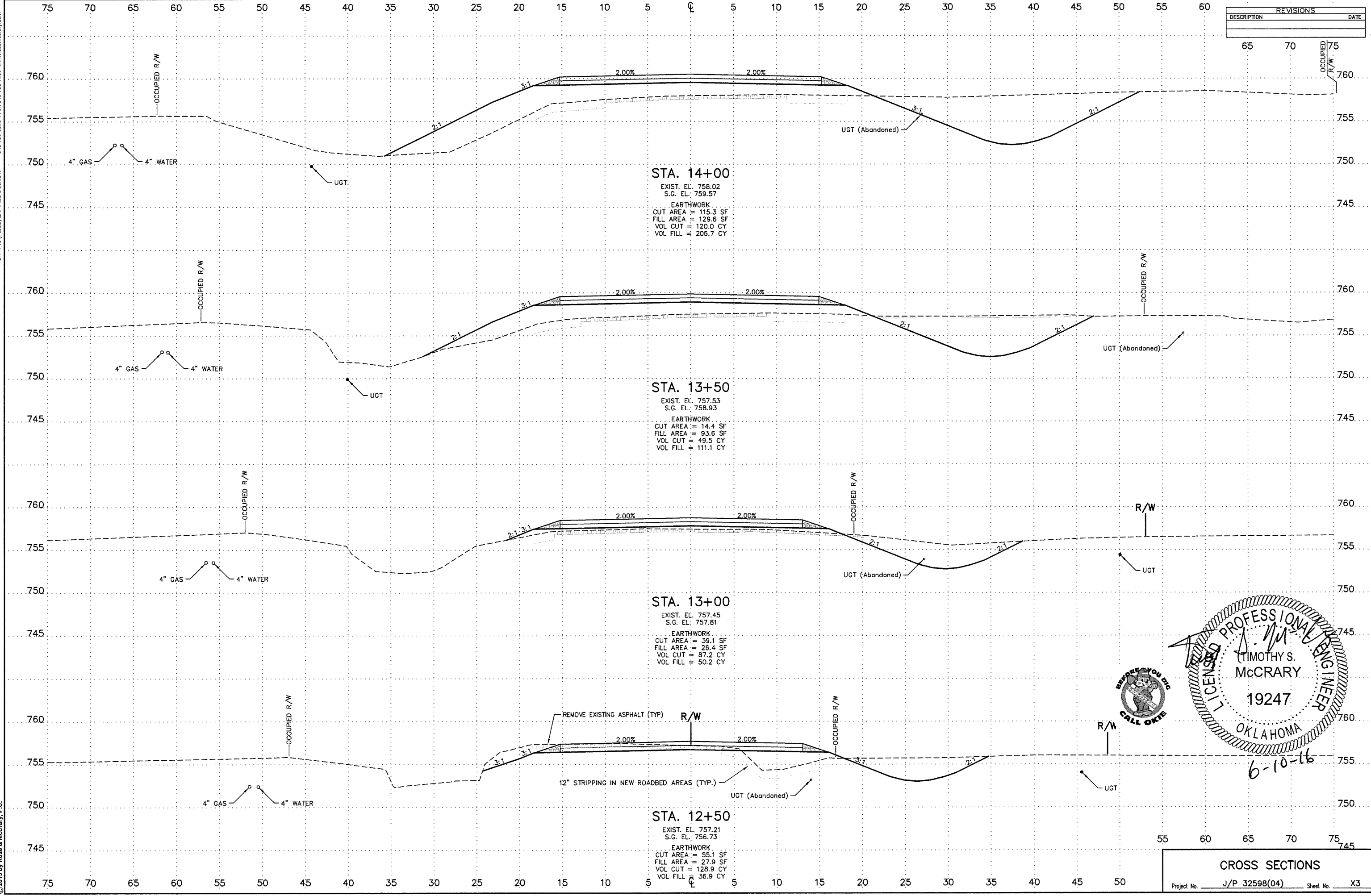




CA 4716 (PELS) EXPIRES 6/30/2017

Drawn: 6/10/2016  
Date: 6/10/2016  
Box: 6/10/2016  
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DESCRIPTION	DATE

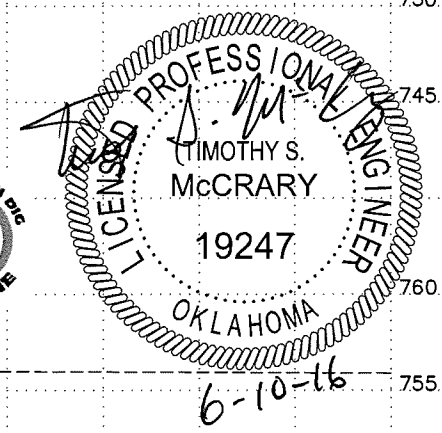


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EXIST. EL: 758.02  
S.G. EL: 759.57  
EARTHWORK  
CUT AREA = 115.3 SF  
FILL AREA = 129.6 SF  
VOL CUT = 120.0 CY  
VOL FILL = 206.7 CY

**STA. 13+50**  
EXIST. EL: 757.53  
S.G. EL: 758.93  
EARTHWORK  
CUT AREA = 14.4 SF  
FILL AREA = 93.6 SF  
VOL CUT = 49.5 CY  
VOL FILL = 111.1 CY

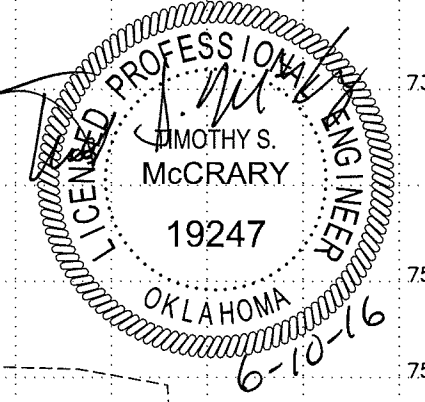
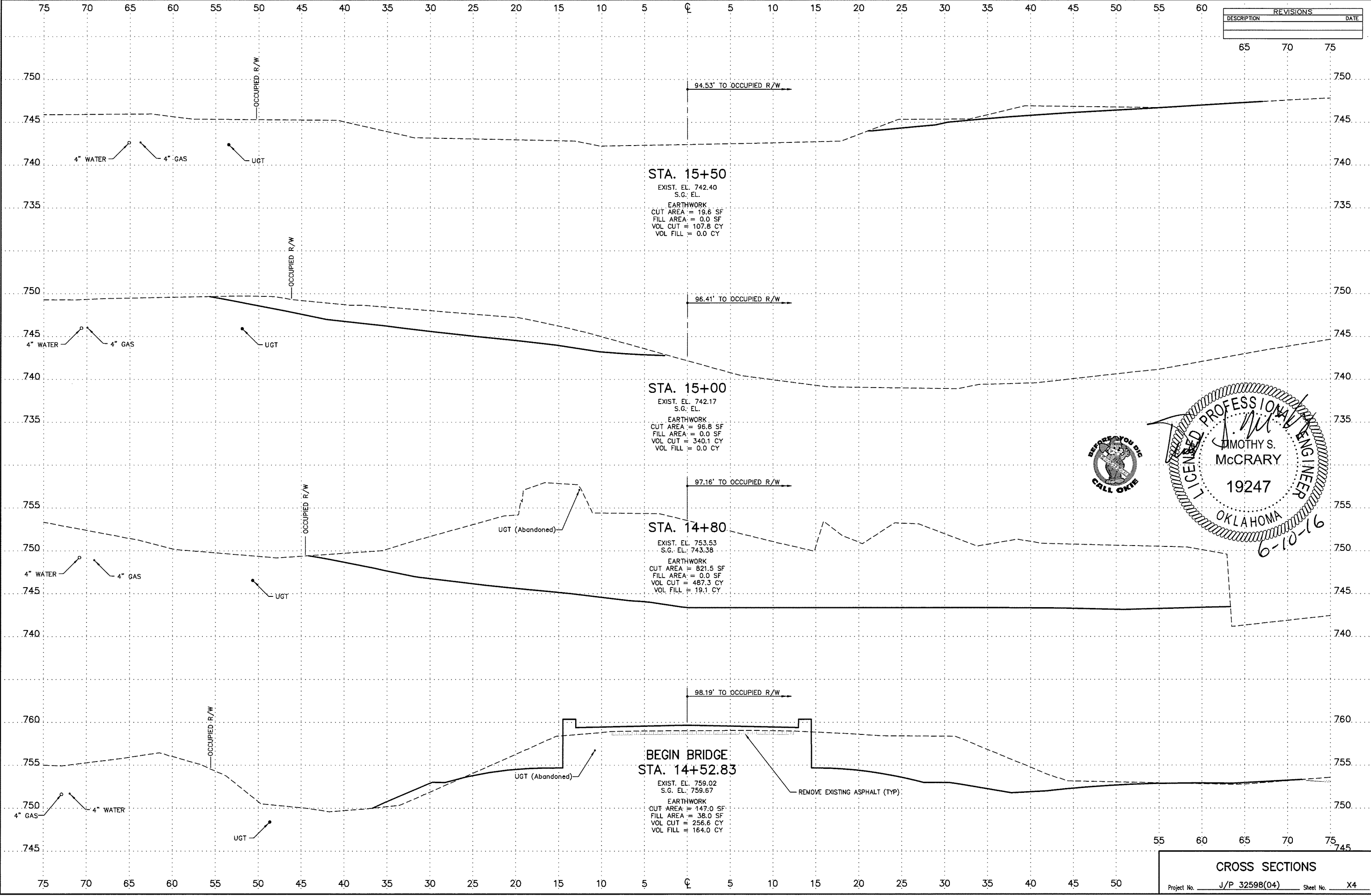
**STA. 13+00**  
EXIST. EL: 757.45  
S.G. EL: 757.81  
EARTHWORK  
CUT AREA = 39.1 SF  
FILL AREA = 26.4 SF  
VOL CUT = 87.2 CY  
VOL FILL = 50.2 CY

**STA. 12+50**  
EXIST. EL: 757.21  
S.G. EL: 756.73  
EARTHWORK  
CUT AREA = 55.1 SF  
FILL AREA = 27.9 SF  
VOL CUT = 128.9 CY  
VOL FILL = 36.9 CY



**CROSS SECTIONS**

DESCRIPTION	REVISIONS	
	NO.	DATE
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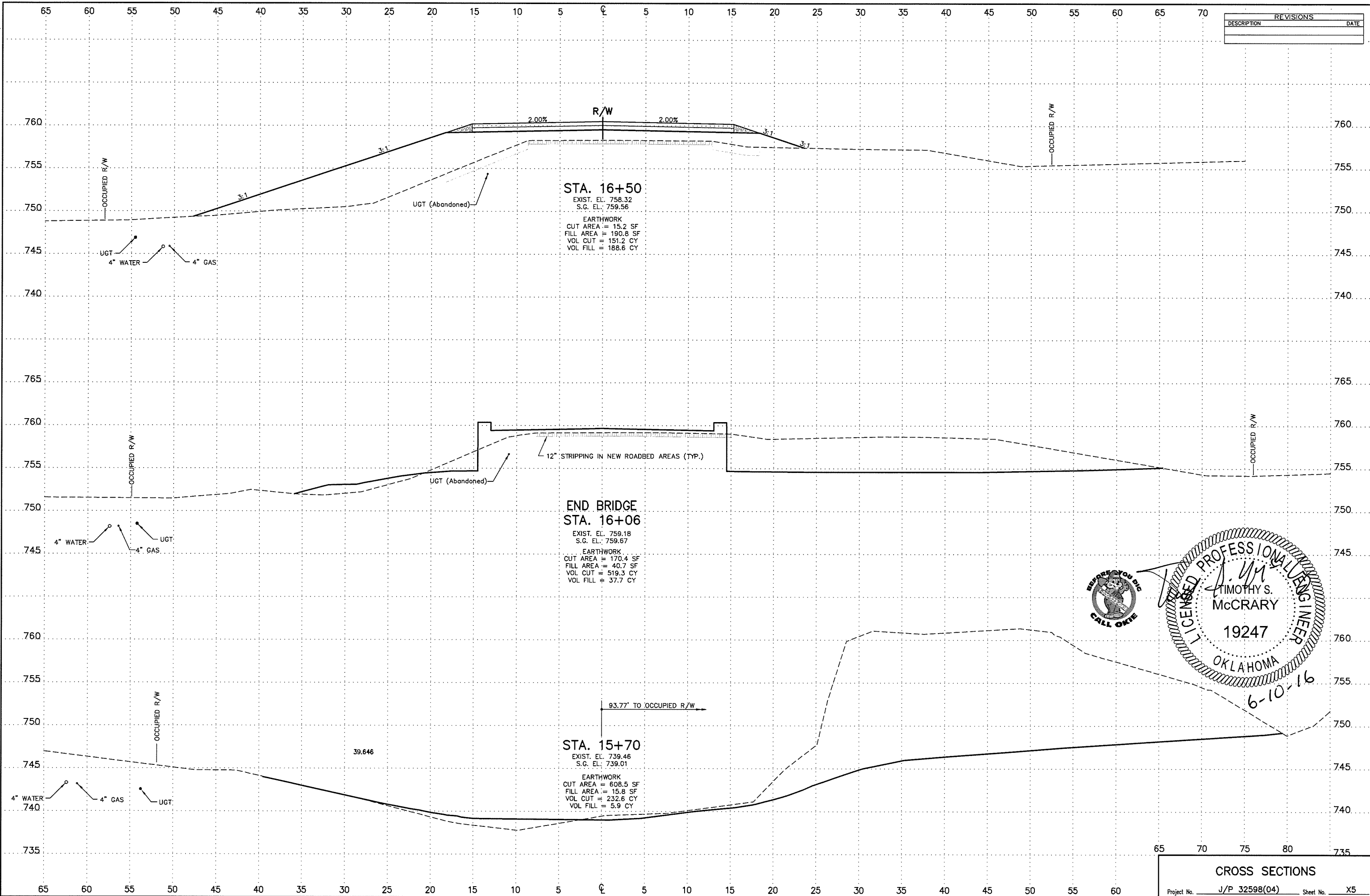




CA-4716 (PELS) EXPIRES 6/30/2017

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User: EAC, TiedTM, TB  
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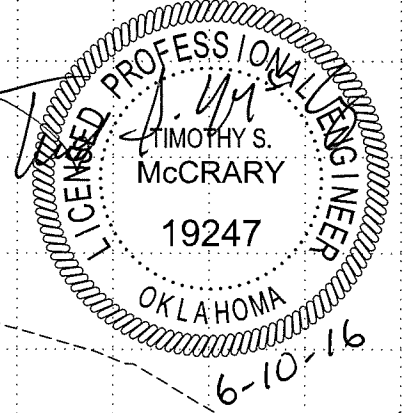
REVISIONS	
DESCRIPTION	DATE



**STA. 16+50**  
EXIST. EL. 758.32  
S.G. EL. 759.56  
EARTHWORK  
CUT AREA = 15.2 SF  
FILL AREA = 190.8 SF  
VOL CUT = 151.2 CY  
VOL FILL = 188.6 CY

**END BRIDGE  
STA. 16+06**  
EXIST. EL. 759.18  
S.G. EL. 759.67  
EARTHWORK  
CUT AREA = 170.4 SF  
FILL AREA = 40.7 SF  
VOL CUT = 519.3 CY  
VOL FILL = 37.7 CY

**STA. 15+70**  
EXIST. EL. 739.46  
S.G. EL. 739.01  
EARTHWORK  
CUT AREA = 608.5 SF  
FILL AREA = 15.8 SF  
VOL CUT = 232.6 CY  
VOL FILL = 5.9 CY



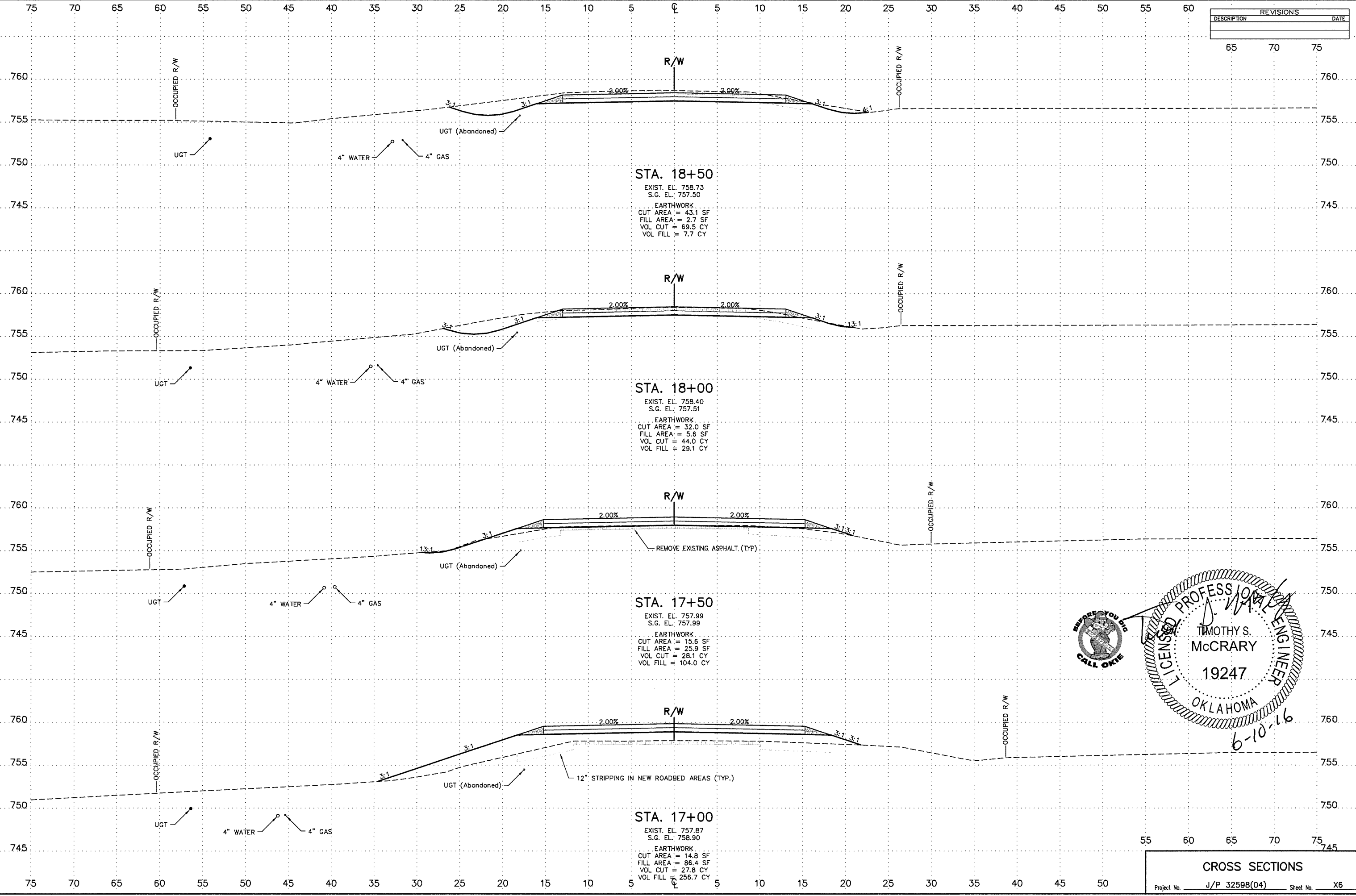
**CROSS SECTIONS**



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Date: 6/7/2016  
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DESCRIPTION	REVISIONS	
	NO.	DATE
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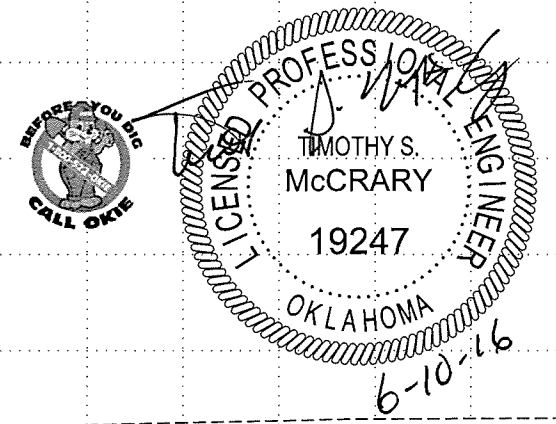


**STA. 18+50**  
EXIST. EL. 758.73  
S.G. EL. 757.50  
EARTHWORK  
CUT AREA = 43.1 SF  
FILL AREA = 2.7 SF  
VOL CUT = 69.5 CY  
VOL FILL = 7.7 CY

**STA. 18+00**  
EXIST. EL. 758.40  
S.G. EL. 757.51  
EARTHWORK  
CUT AREA = 32.0 SF  
FILL AREA = 5.6 SF  
VOL CUT = 44.0 CY  
VOL FILL = 29.1 CY

**STA. 17+50**  
EXIST. EL. 757.99  
S.G. EL. 757.99  
EARTHWORK  
CUT AREA = 15.6 SF  
FILL AREA = 25.9 SF  
VOL CUT = 28.1 CY  
VOL FILL = 104.0 CY

**STA. 17+00**  
EXIST. EL. 757.87  
S.G. EL. 758.90  
EARTHWORK  
CUT AREA = 14.8 SF  
FILL AREA = 86.4 SF  
VOL CUT = 27.8 CY  
VOL FILL = 256.7 CY



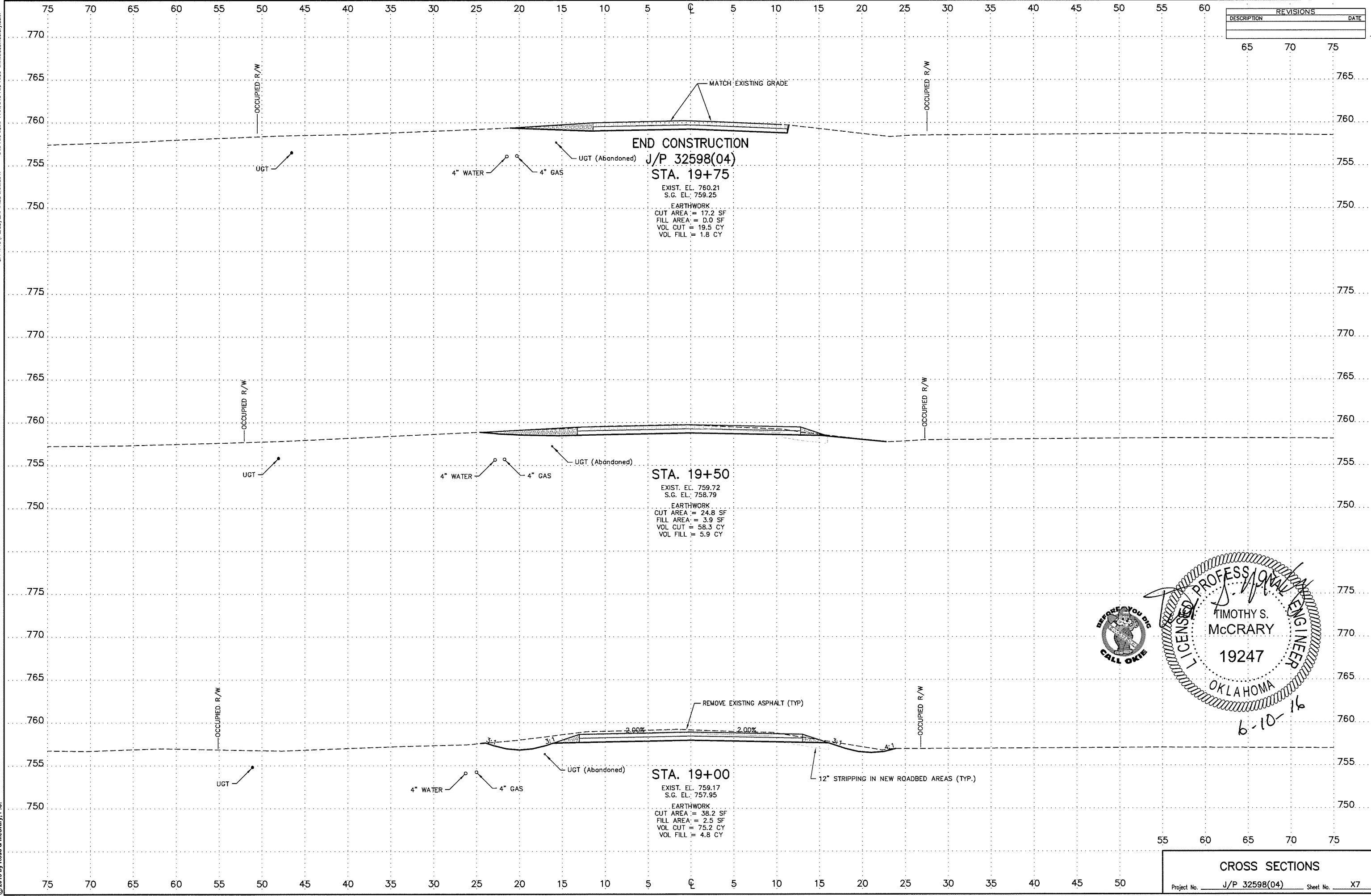


CA 4716 (PELS) EXPIRES 6/30/2017

Drawn: 9/15/16 (TSM)  
Date: 6/10/2016  
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DESCRIPTION	DATE

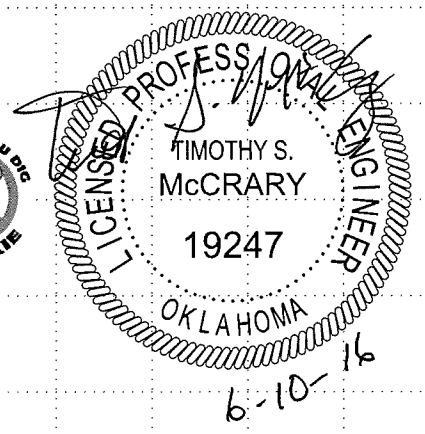
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**END CONSTRUCTION**  
**J/P 32598(04)**  
**STA. 19+75**  
EXIST. EL. 760.21  
S.G. EL. 759.25  
EARTHWORK  
CUT AREA = 17.2 SF  
FILL AREA = 0.0 SF  
VOL CUT = 19.5 CY  
VOL FILL = 1.8 CY

**STA. 19+50**  
EXIST. EL. 759.72  
S.G. EL. 758.79  
EARTHWORK  
CUT AREA = 24.8 SF  
FILL AREA = 3.9 SF  
VOL CUT = 58.3 CY  
VOL FILL = 5.9 CY

**STA. 19+00**  
EXIST. EL. 759.17  
S.G. EL. 757.95  
EARTHWORK  
CUT AREA = 38.2 SF  
FILL AREA = 2.5 SF  
VOL CUT = 75.2 CY  
VOL FILL = 4.8 CY



55 60 65 70 75

**CROSS SECTIONS**