

STATE OF OKLAHOMA
DEPARTMENT OF TRANSPORTATION

COUNTY BRIDGE PROGRAM

FEDERAL AID Project Number STP-272D(090)CI
STATE JOB NO. 27822(04)

Bridge and Approaches on Brady Street
Over Bigheart Creek

TULSA COUNTY

LOCATION 72E0593N3890007 (#227)

OLD NBI NO. 00959

NEW NBI NO. 32012

LAT 36°09'26"

LONG 96°04'15"

FED. ROAD DIST. NO.	PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. NO.		DESCRIPTION	DATE
1		Renamed Sheet R001	8-28-17



INDEX OF SHEETS

SHEET NO.	TITLE
0001	TITLE SHEET
0002	TYPICAL SECTIONS & DETAILS
AB01	SUMMARY OF PAY QUANTITIES
B001	GENERAL PLAN
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B003	BEGR1-2-00E
B004	BEGR2-2-00E
R001	SWMP
R002	PLAN & PROFILE
X001-X002	CROSS-SECTIONS

STANDARDS USED ON THIS PROJECT:

ASCD-5-0	GRH1-1-0
SPI-4-0	GRH2-1-0
SPB-1-0	PCES-4-0
FHTCP-3-0	RDI-3-0
SBI-4-0	TSC1-3-0
TR3-2-01E	TSC2-3-0
	SSS-1-0

SURVEY DATA

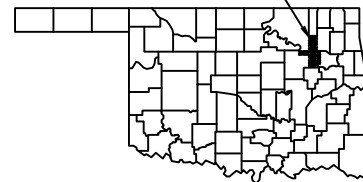
- HORIZONTAL CONTROL:
 - HORIZONTAL CONTROL FOR THIS SURVEY IS THE USC&GS OKLAHOMA STATE PLANE COORDINATE SYSTEM, LAMBERT PROJECTION (NORTH ZONE).
 - ACCURACY - 2ND ORDER OR BETTER
- BEARINGS:

THE BEARINGS SHOWN HEREIN OR HERON ARE GRID BEARINGS DERIVED FROM THE USC&GS OKLAHOMA STATE PLANE COORDINATE SYSTEM AND ARE NOT ASTRONOMICAL. THE ANGLE OF VARIANCE BETWEEN GRID NORTH (GN) AND THE ASTRONOMICAL TRUE NORTH (TN) IS DEPICTED DIAGRAMMATICALLY.
- VERTICAL CONTROLS:
 - LEVEL DATUM IS NAVD 88 MEAN SEAL LEVEL - (NGS)

DESIGN DATA

ADT-2009	50
ADT-2025	80
VEL.	= 25 MPH
FLEX ESALs	0.006 M

TULSA COUNTY



LOCATION MAP

SCALES

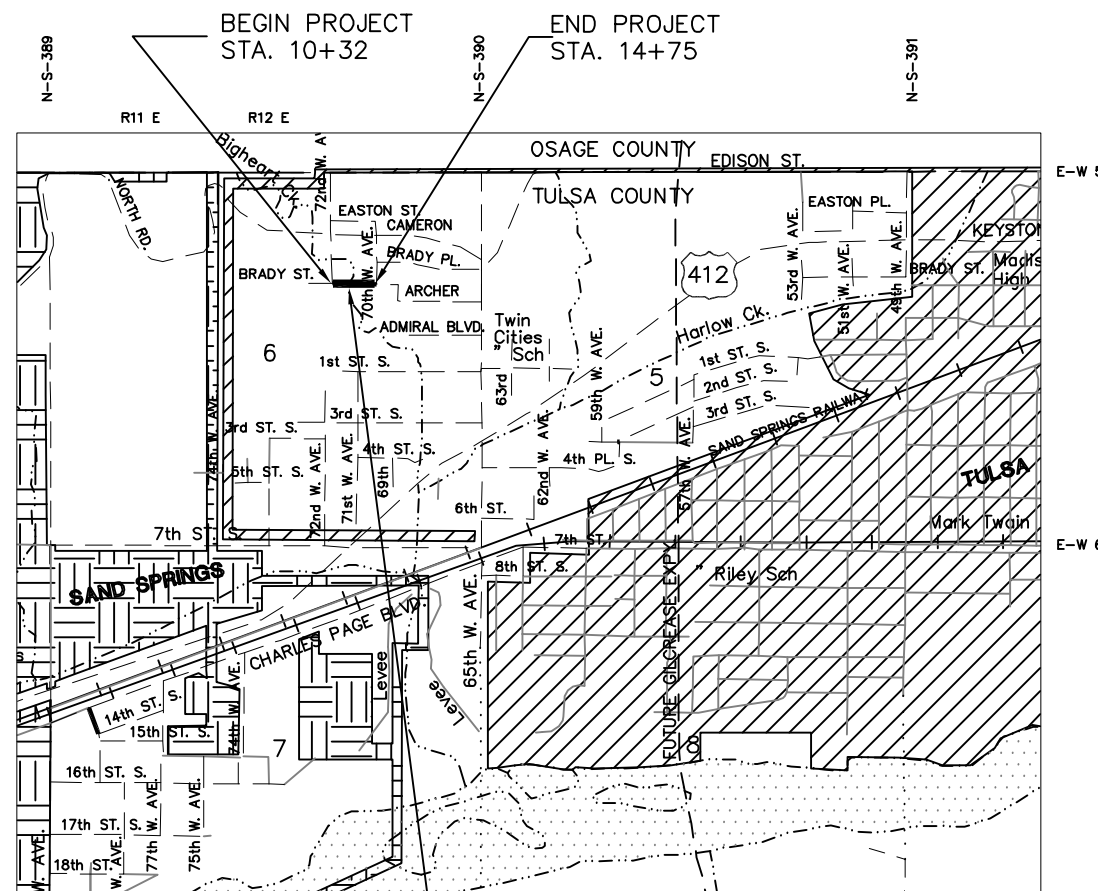
PLAN 1"=20'
PROFILE-HOR. 1"=20'
VER. 1"=4'
LAYOUT MAP 1"= 1000'

LEVEL DATUM IS MEAN SEA LEVEL (USC & GS)

CONVENTIONAL SIGNS

	PROPOSED ROAD		STORM
	CONTROLLED ACCESS		UNDERGROUND TRAFFIC SIGNAL
	RIGHT-OF-WAY FENCE		UNDERGROUND CATV
	RAILROADS		OVERHEAD CATV
	RANGE & TOWNSHIP LINES		MANHOLE
	SECTION LINES		METER
	QUARTER SECTION LINES		SIGN
	FENCES		VALVE
	GROUND LINE		TELEPHONE PEDESTAL
	EXISTING ROADS		FIRE HYDRANT
	BASE LINE		DOWN GUY
	GRADE LINE		MAIL BOX
	POWER OR TELEPHONE POLE		TREE
	OVERHEAD POWER LINES		OIL WELLS
	OVERHEAD TELEPHONE		INACTIVE GAS & OIL WELL
	POWER UNDERGROUND		BUILDINGS
	TELEPHONE UNDERGROUND		DRAINAGE STRUCTURES - IN PLACE
	LIGHT POLE		DRAINAGE STRUCTURES - NEW
	TRAFFIC SIGNAL		R/W LINES - EXISTING
	SANITARY SEWER		R/W LINES - NEW
	WATER LINE		R/W MARKERS - IN PLACE
	GAS LINE		R/W MARKERS - REMOVE & RESET
	PROPERTY LINE		R/W MARKERS - NEW

WM - WATER METER WV - WATER VALVE GM - GAS METER GV - GAS VALVE
2009 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION GOVERN
APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY
ADMINISTRATION, JANUARY 4, 2010.



PROJECT LOCATION

ROADWAY LENGTH	388.15 FT.	0.074 MI.
BRIDGE LENGTH	54.85 FT.	0.010 MI.
PROJECT LENGTH		0.084 MI.

EXCEPTIONS: NONE
EQUATIONS: NONE

APPROVED
BOARD OF COUNTY COMMISSIONERS

John M. Smallegange District 1
Debra K. Keith District 2
Ron Peters District 3

ATTEST
Michael Willis 7/19/17
Michael Willis - Tulsa County Clerk Date

APPROVED
TULSA COUNTY ENGINEER

Thomas Rains 7-13-17
THOMAS RAINS
12541
OKLAHOMA REGISTERED PROFESSIONAL ENGINEER

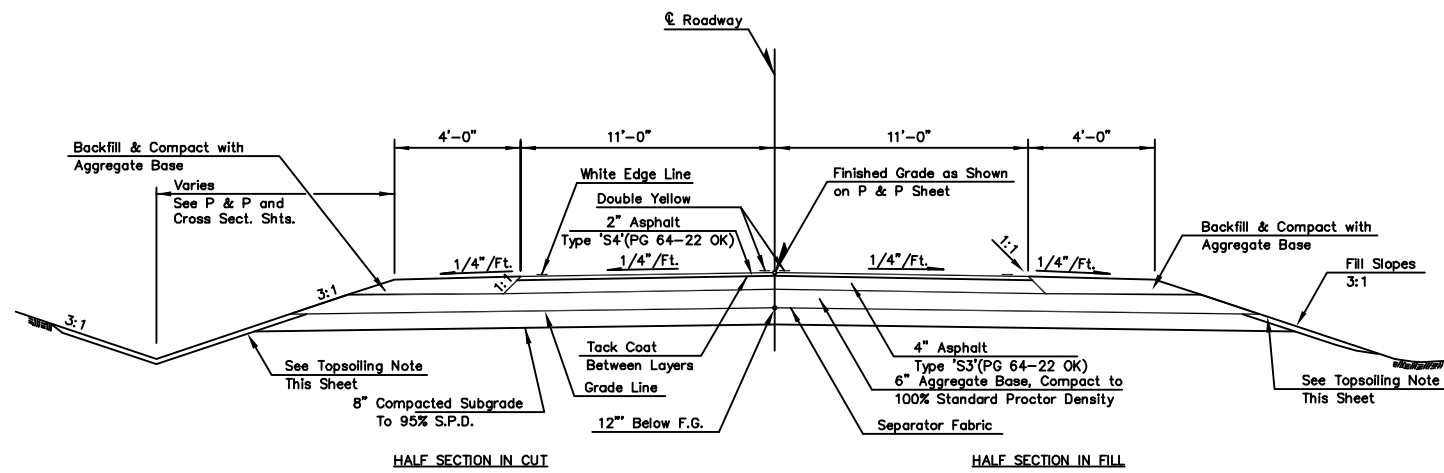
August 24, 2017

OKLAHOMA DEPARTMENT OF TRANSPORTATION	DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
DATE APPROVED _____	DATE APPROVED _____
BY _____	BY _____
CHIEF ENGINEER	DIVISION ADMINISTRATOR
STATE JOB NO. 27822(04)	SHEET NO. 0001

COUNTY COMMISSIONER DISTRICT NO. TWO

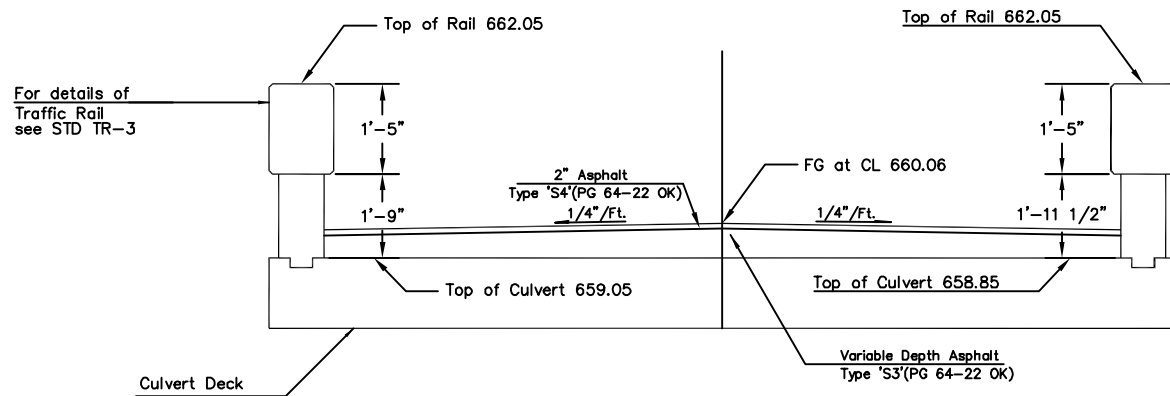
JAMES PRUETT
LOCAL GOVERNMENT DIVISION
P.E. NO. 27822(01)

ACAD BRADY.TLL.dwg

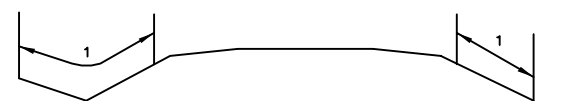


TYPICAL SECTION No. 1 - Asphalt

Sta 10+32 to Sta 14+75
 Note: Eliminate Rock Base and Use Full Depth Asphalt over Structure to obtain Finished Grade on P&P From Sta. 12+06.78 to Sta. 12+61.63
 Note: Contractor is responsible for matching existing paving sections at ends of the project.
 Note: Stripe Double Yellow and White Edge Lines in Full Width Section Only.

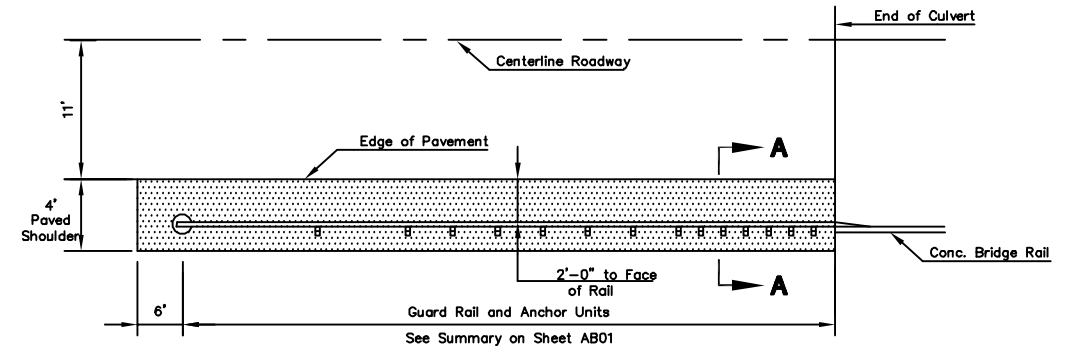


**SPECIAL DETAIL
 FULL DEPTH ASPHALT
 & TR3 RAIL**
 Sta. 12+06.78 to Sta. 12+61.63

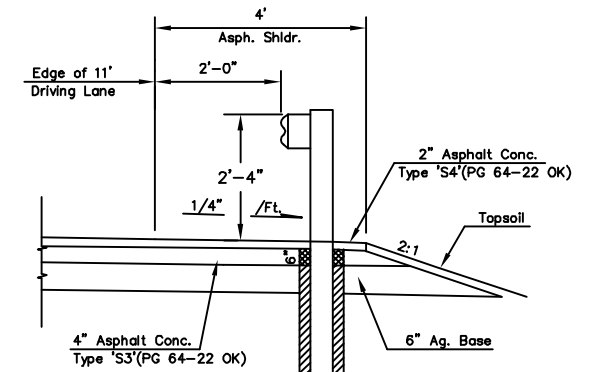


EROSION CONTROL TYPICAL SECTION

1 - SLAB SODDING



DETAIL OF PAVED SHOULDER FOR GUARD RAIL



**SECTION A-A
 GUARD RAIL/SHOULDER
 DETAILS**

GENERAL NOTES

- Subgrade soils shall be constructed as specified in ODOT Standards Section 310.04, Method B with the following exceptions: Subgrade soils shall be scarified to a depth of not less than 8 inches, the moisture content of the scarified soil adjusted to not less than optimum and compacted with a range of 94% to 98% of standard density as determined by AASHTO T-99.
- Aggregate base shall be crushed stone meeting the gradation requirements of Type A as specified in ODOT Standards Section 703.01(d). Type A aggregate base shall be placed on the separation fabric and compacted to not less than 95% of Standard Proctor Density as determined by AASHTO T-180. Aggregate base shall be placed and compacted in lifts which will result in a maximum compacted thickness of 6 inches.
- Normal cross slope will be as shown on the typical sections. Transition to match at existing pavements and at intersections. See plan and profile sheets for transitions.

TOPSOILING NOTE
 The Contractor Shall Strip All of the Available Topsoil, Stockpile It and Place It Back on the Section in Accordance with Section 205 of the Standard Specifications. Reserved Topsoil shall be spread First on the Completed Slopes of the 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 Earthwork, Lump Sum.

The Grading Line as Shown on the Typical and Cross Sections is to the Top of the Topsoil. Earthwork Quantities were not adjusted for Salvage and the Topsoil Quantity is included.

Design	BB	11/13	Tulsa County Engineering
Drawn	BB	11/13	TYPICAL SECTIONS & DETAILS BRADY ST. BRIDGE
Checked	TR	8/15	
Revised			
Scale	NONE		
STATE JOB NO 27822(04)			Sheet No. 0002

REVISIONS		
REV. NO.	DESCRIPTION	DATE
1	Modified Pay Quantities	10-13-17
2	Modified Envir. Notes	10-18-17

GENERAL NOTES -- BRIDGE

EXISTING ROAD WILL BE CLOSED TO THROUGH TRAFFIC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BARRICADES, CONSTRUCTION SIGNS, LIGHTS, ETC., WITHIN THE LIMITS OF CONSTRUCTION. ALL CONSTRUCTION SIGNING WILL BE DONE ACCORDING TO STANDARDS SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", CURRENT EDITION, AND AS SHOWN ON TCS STANDARD DRAWINGS. CONTRACTOR TO PLACE "ROAD CLOSED TO THRU TRAFFIC" SIGNS AT 70TH WEST AVENUE AND BRADY, AND AT CAMERON AND 72ND WEST AVENUE IN A MANNER APPROVED BY THE ENGINEER.

SPECIFICATIONS: COMPLY WITH THE REQUIREMENTS OF THE 2009 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EXCEPT AS MODIFIED BY THE PLANS AND SPECIAL PROVISIONS.

CONSTRUCTION TRAFFIC CONTROL

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION SIGNS, BARRICADES, LIGHTS, ETC., ACCORDING TO THE STANDARDS SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", CURRENT EDITION, AND AS SHOWN ON THE TCS STANDARDS. COST OF ALL NECESSARY ITEMS FOR CONSTRUCTION SIGNING WILL BE INCLUDED IN THE PRICE BID FOR "CONSTRUCTION TRAFFIC CONTROL".

GENERAL CONSTRUCTION NOTES

ALL EROSION AND SEDIMENT CONTROL MEASURES (I.E., VEGETATIVE PLANTINGS) WILL BE CONSCIENTIOUSLY IMPLEMENTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION OF THIS PROJECT.

AREAS FOR PARKING EQUIPMENT AND STORAGE OF POTENTIALLY TOXIC MATERIALS SHALL BE ABOVE THE 10 YEAR FLOOD ELEVATION.

ALL CLEARING OF VEGETATION SHALL BE HELD TO A MINIMUM. USE OF RIPRAP ALONG THE CREEK BANK SHALL BE MINIMIZED TO ALLOW WOODY VEGETATION TO BECOME REESTABLISHED.

MINIMIZE ALL FILL ENCROACHMENT TO THAT WHICH IS NECESSARY FOR COMPLETION OF THE JOB.

THE CONTRACTOR SHALL GIVE NOTICE TO THE COUNTY AND ODOT DIVISION 8, IN WRITING, FOURTEEN (14) CALENDAR DAYS BEFORE WORK BEGINS ON THE PROJECT.

PAY QUANTITY NOTES

- (R-3) SOLID SLAB SODDING QUANTITY INCLUDES AN ADDITIONAL 300 SQUARE YARDS TO BE USED IN A MANNER APPROVED BY THE ENGINEER. INCLUDES THE COST OF WATERING AND FERTILIZING. THE CONTRACTOR SHALL APPLY THESE ITEMS AS NECESSARY IN ORDER TO ESTABLISH SUBSTANTIAL GROWTH OF SOD IN A MANNER APPROVED BY THE ENGINEER.
- (F-50) INCLUDES COST OF 4 TYPE 1, CODE 3 DELINEATORS (AMBER COLOR).
- (F-66) EST. AT 112 LB. PER SQ. YD. PER 1" THICKNESS.
- (1) PAYMENT FOR THIS ITEM WILL BE BASED ON PLAN QUANTITIES. SEE THE 2009 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, "PLAN QUANTITIES", SECTION 109.01(b).
- (2) INCLUDES ALL EARTHWORK REQUIRED TO CONSTRUCT THIS PROJECT IN A MANNER APPROVED BY THE ENGINEER. SEE SUMMARY OF GRADING SHEET NO. 4. COMPACTION SHALL BE IN ACCORDANCE WITH SEC. 202.04 OF THE 2009 STANDARD SPECIFICATIONS. ALSO INCLUDES CLEARING & GRUBBING, TOPSOIL, AND WIDENING FOR GUARD RAIL.
- (3) ALL ASPHALT SHALL BE REMOVED FROM STA. 10+15 TO 14+75 APPROX. 14' WIDE. TO BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER. PRICE BID TO INCLUDE COST OF PAVEMENT SAWING.
- (4) PRICE BID TO INCLUDE COST OF SALVAGED TOPSOIL AND 18-46-0 FERTILIZER EST. AT 150 LB. PER ACRE.
- (5) PRICE BID TO INCLUDE COST OF REMOVAL OF TRASH AND DEBRIS ON BOTH SIDES OF BRIDGE.
- (6) ESTIMATED QUANTITY, TO BE USED FOR TEMPORARY EROSION AND POLLUTION CONTROL IN A MANNER APPROVED BY THE ENGINEER. PRICE BID TO INCLUDE COST OF SILT REMOVAL AND RESTORATION ON ERODED SLOPES.
- (7) INCLUDES COST OF 130.0 GAL TACK COAT, ESTIMATED AT 0.05 GAL. PER SQ. YD. PRIOR TO DILUTION.
- (8) INCLUDES 430 L.F. OF WHITE AND 430 L.F. OF YELLOW PLASTIC TRAFFIC STRIPE, TO BE APPLIED TO FULL WIDTH SECTION ONLY.
- (9) TO BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF IN A MANNER ACCEPTABLE TO THE ENGINEER.
- (10) INCLUDES STAKING OF CENTERLINE, BENCH MARKS, AND RIGHT OF WAY.
- (11) PAYMENT FOR THIS ITEM BASED ON THE THEORETICAL CROSS SECTION.

COUNTY RESPONSIBILITIES

TULSA COUNTY SHALL BE RESPONSIBLE FOR DETOUR SIGNING OUTSIDE THE LIMITS OF CONSTRUCTION.

TULSA COUNTY SHALL BE RESPONSIBLE FOR REGULATORY SIGNING AT THE COMPLETION OF THE PROJECT.

TULSA COUNTY SHALL BE RESPONSIBLE FOR RIGHT-OF-WAY ACQUISITION, RELOCATION OF FENCES, AND UTILITIES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF THE EXISTING BRIDGE STRUCTURE.

ENVIRONMENTAL MITIGATION NOTES

Migratory Bird:
Migratory birds are protected by the federal Migratory Bird Treaty Act. Many birds commonly use bridges and culverts for nesting. The nesting season for most migratory bird species extends from March 1 to August 31. Migratory bird nesting use of the Brady St. Bigheart Creek bridge (NBI: 00959) involved with this project was observed. Painting, repair, retrofit, rehabilitation or demolition of the existing bridge/structures shall be conducted between September 1, and February 28, when migratory bird nests are not occupied. If painting, repair, retrofit, rehabilitation or demolition cannot be completed between September 1 and February 28, the bridge shall be protected from new nest establishment prior to March 1, by means that do not result in bird death or injury. Options include the exclusion of adult birds from suitable nest sites on or within a structure by the placement of weather-resistant polypropylene netting with 0.25-inch or smaller openings, prior to March 1. Methods other than netting must be pre-approved by the ODOT Biologist.

Locations outside the project area in the following area must not be utilized for borrow, equipment staging, haul roads, spoil dumps or any off-site project-related activity.

T20N R11 E: Section 36: NE/4 SE/4 NE/4

This project is in close proximity to areas that have historically been used for the exploration and extraction of crude oil. As a result, there is a potential to encounter crude oil product and related wastes. If such materials are found, the Resident Engineer should be notified immediately.

In addition, there is a potential to encounter gathering lines and other piping, and abandoned oil, gas or saltwater disposal wells. Any wells encountered during construction activities must be plugged, by properly licensed personnel, in accordance with all applicable Oklahoma Corporation Commission rules and regulations.

American Burying Beetle Note:
The American burying beetle is a large carrion burying beetle that occurs within the action area. No artificial lighting shall be used during construction. Carcasses and all food trash shall be removed from the permanent and temporary right-of-way throughout project activities. Following construction, topsoil shall be placed on top of all areas of ground disturbance, prior to re-vegetation.

Bat Tree Removal Limits Note:
The northern long-eared bat is a listed bat species that occurs within the project's action area. In order to avoid and minimize adverse impacts to the species, the removal of trees and shrubs shall be restricted to areas within the actual limits of construction (toe of slope/top of cut). The Resident Engineer shall install bright-colored flagging/fencing to indicate which trees are not to be removed and ensure limits of tree removal are visibly and clearly defined for the contractor. The Resident Engineer shall also provide before and after photo-documentation to the ODOT Biologist of extent of tree clearing within the project area.

Bat Light Note:
The northern long-eared bat is a listed bat species that occurs within the project's action area. In order to avoid and minimize adverse impacts to listed bat species, if any permanent lighting is installed or replaced, downward-facing full cut-off lens lights shall be installed and directed away from wooded areas and streams.

SCHEDULE OF GUARD RAIL

LOCATION	LANE		ANCHOR UNITS	TOTAL PANEL LENGTH INCLUDING ANCHOR UNITS	TOTAL RAIL BETWEEN ANCHOR UNITS	NOTES
	STATION TO STATION	LT. RT.				
11+40.00 to 12+15.00	X		1	75.00	0	
11+25.00 to 12+00.00		X	1	75.00	0	
12+68.00 to 13+43.00	X		1	75.00	0	
12+53.00 to 13+28.00		X	1	75.00	0	
TOTAL			4	300.00	0	

SEE STD. BEGR1-2-00E, BEGR2-2-00E, GRH1-1-0 & GRH2-1-0

27822(04) PAY QUANTITIES					
0100 ROADWAY ITEMS					
ITEM		DESCRIPTION		UNIT	QUANTITY
202(H)	0185	(PL) EARTHWORK	(2)(5)	LSUM	1.00
221(C)	2801	TEMPORARY SILT FENCE	(6)	LF	800.00
221(F)	0100	TEMPORARY SILT DIKE	(6)	LF	80.00
230(A)	2806	SOLID SLAB SODDING	(4)(R-3)	SY	1,400.00
232(A)	2813	SEEDING METHOD A		AC	0.10
233(A)	2817	VEGETATIVE MULCHING		AC	0.10
303(A)	2100	AGGREGATE BASE TYPE A	(11)	CY	220.00
325	5271	SEPARATOR FABRIC	(1)	SY	1,300.00
411(B)	5945	SUPERPAVE, TYPE S3 (PG 64-22 OK)	(7)(F-66)	TON	345.00
411(C)	5960	SUPERPAVE, TYPE S4 (PG 64-22 OK)	(7)(F-66)	TON	155.00
613(A)	0491	18" R.C. PIPE CLASS III		LF	24.00
613(A)	0492	24" R.C. PIPE CLASS III		LF	30.00
613(O)	4373	SPECIAL END SECTION OF 18" RCP ROUND		EA	2.00
613(O)	4375	SPECIAL END SECTION OF 24" RCP ROUND		EA	2.00
619(B)	4728	REMOVAL OF ASPHALT PAVEMENT	(3)	SY	704.00
629(A)	4958	MAILBOX INSTALLATION SINGLE		EA	1.00
855(A)	8812	TRAFFIC STRIPE (PLASTIC) 4" WIDE	(8)	LF	860.00

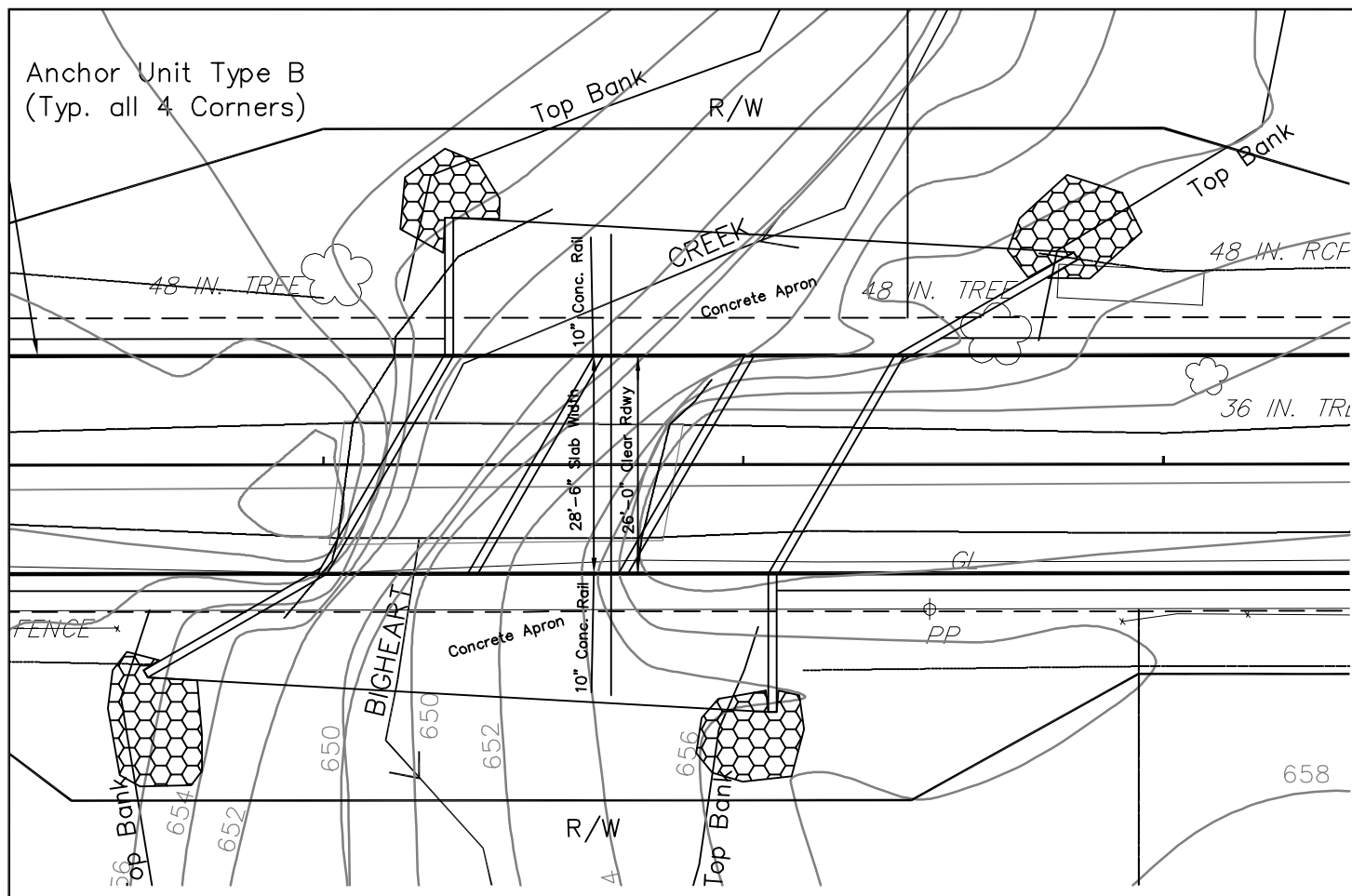
27822(04) PAY QUANTITIES					
0200 BRIDGE ITEMS BRIDGE "A", 3-14.5'x9.5'x28.5' RDY W/TR3 & CONC APRON					
ITEM		DESCRIPTION		UNIT	QUANTITY
202(A)	1301	UNCLASSIFIED EXCAVATION	(1)	CY	2,293.00
501(A)	1306	STRUCTURAL EXCAVATION UNCLASSIFIED	(1)	CY	110.00
501(G)	6309	CLSM BACKFILL	(1)	CY	28.00
504(D)	6239	CONCRETE RAIL (TR3)	(1)	LF	109.70
509(B)	1328	CLASS A CONCRETE	(1)	CY	326.50
511(A)	1332	REINFORCING STEEL	(1)	LB	48,614.00
601(B)	1353	TYPE 1-A PLAIN RIPRAP		TON	96.00
601(C)	1355	TYPE 1-A FILTER BLANKET		TON	17.00
601(I)	6312	FILTER FABRIC (RIPRAP)		SY	52.00
619(D)	1397	REMOVAL OF EXISTING BRIDGE STRUCTURE	(9)	LSUM	1.00
623(F)	6034	GUARDRAIL ANCHOR UNIT (TYPE III)	(F-50)	EA	4.00
880(J)	8905	CONSTRUCTION TRAFFIC CONTROL		LSUM	1.00

27822(04) PAY QUANTITIES					
0600 STAKING					
ITEM		DESCRIPTION		UNIT	QUANTITY
642(B)	0096	CONSTRUCTION STAKING LEVEL II	(10)	LSUM	1.00

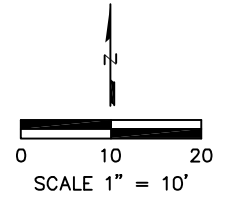
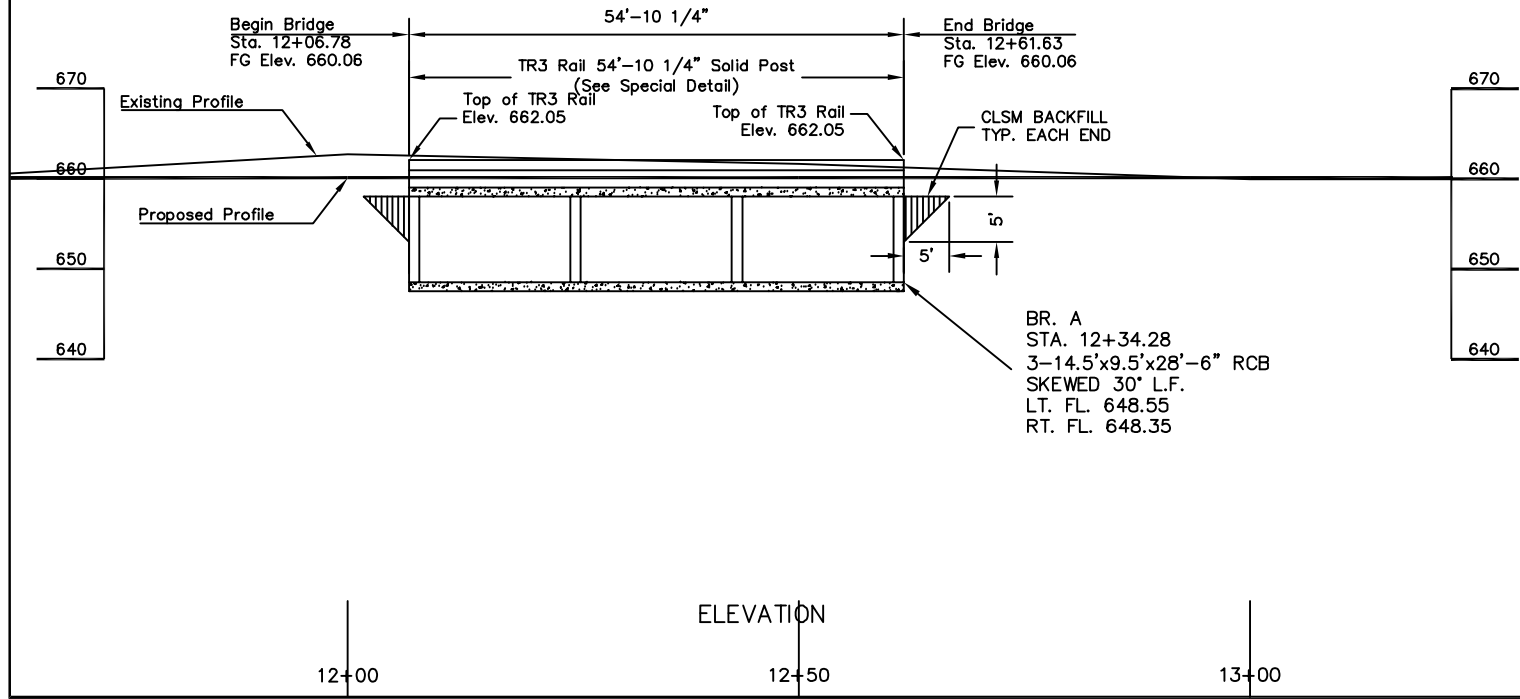
27822(04) PAY QUANTITIES					
0640 CONSTRUCTION					
ITEM		DESCRIPTION		UNIT	QUANTITY
220	2800	(SP) SWPPP DOCUMENTATION AND MANAGEMENT		LSUM	1.00
641	1399	MOBILIZATION		LSUM	1.00

Design	TR	11/13	Tulsa County Engineering
Drawn	TR	11/13	
Checked	TR	8/15	
Revised	TR	10/17	
Scale	None		
STATE JOB NO. 27822(04)			Sheet No. AB01

SUMMARY OF PAY QUANTITIES
BRADY STREET OVER BIGHEART CREEK



PLAN



SUMMARY OF QUANTITIES			
ITEM NO.	ITEM	UNIT	QTY.
202(C)	Unclassified Excavation	C.Y.	2293.0
501(A)	Structural Excavation, Unclassified	C.Y.	110.0
501(G)	CLSM Backfill	C.Y.	28.0
504(E)	Concrete Rail (TR3)	LF.	109.7
509(B)	Class A Concrete	(1) C.Y.	326.5
511(A)	Reinforcing Steel (Grade 60)	(2) LB.	48,614.0
601(A-1)	Type 1-A Plain Riprap	(3) TON	96.0
601(A-2)	Type 1-A Filter Blanket	(3) TON	17.0
601(E)	Filter Fabric (Riprap)	(5) S.Y.	52.0

- (1) Includes 69 C.Y. for Aprons
- (2) Includes 2490 Lb. for Aprons
- (3) To be Used in a Manner Approved by the Engineer.

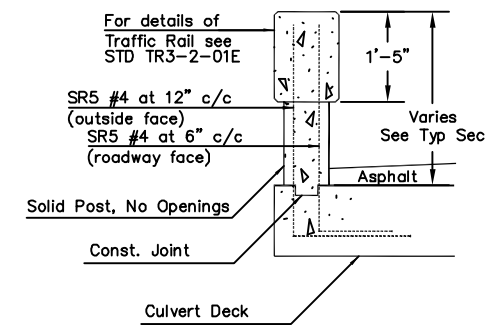
DESIGN DATA

CLASS A CONCRETE ===== $f'_c = 3 \text{ KSI} @ 28 \text{ days}$
 REINFORCING STEEL (GR. 60) ===== $f_y = 60 \text{ KSI}$
 STRUCTURAL STEEL (A36) ===== $f_y = 36,000 \text{ psi}$
 LOADING: HS 20
 DESIGN: Load Factor Design

HYDRAULIC DATA

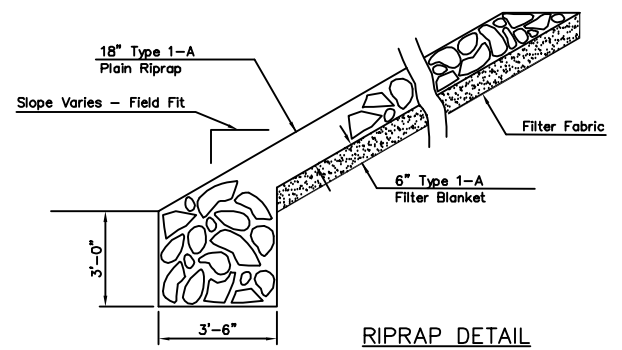
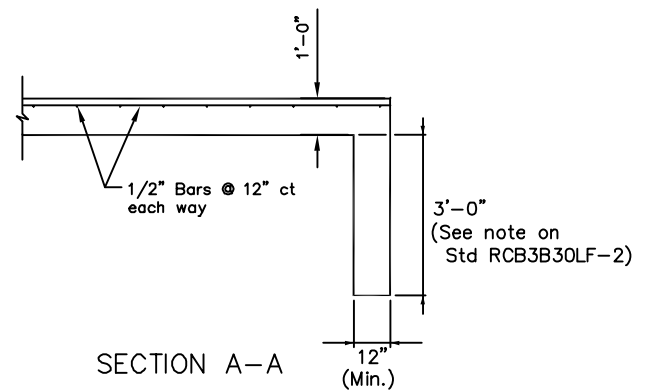
D.A. = 2.53 Sq. Mi. (1620 Ac.)

Q10 = 1,810 cfs	Q100 = 3,970 cfs
V10 = 4.10 fps	V100 = 6.48 fps
Q10 Comp. H.W. = 657.54'	Q100 Comp. H.W. = 660.63'
Q50 = 3,170 cfs	Q500 = 6,140 cfs
V50 = 5.65 fps	V500 = 6.29 fps
Q50 Comp. H.W. = 659.85'	Q500 Comp. H.W. = 661.75'

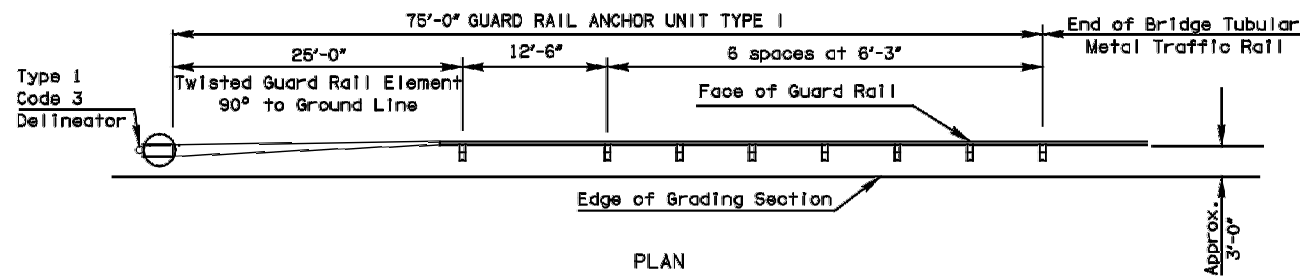


SPECIAL DETAIL
TR3 RAIL

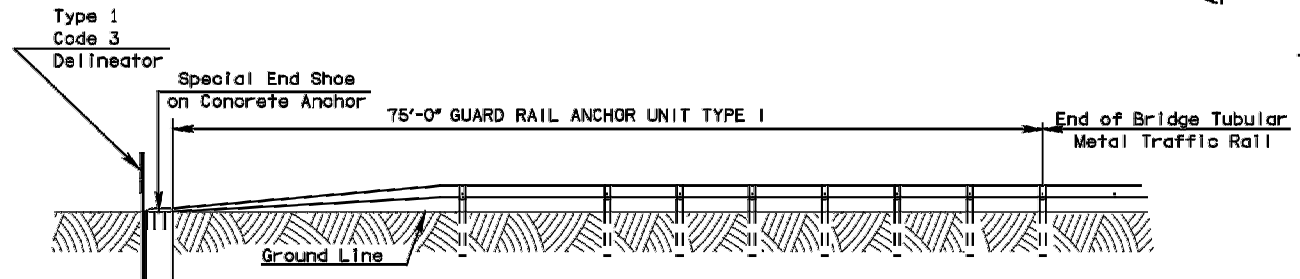
NOTE:
Add Apron Between Wings and
Construct Toe at End of
Apron in Place of Toe at the
End of the Barrels and along
the Wingwalls.



BRIDGE 'A'		Tulsa County Engineering	
Design	TR 2/14	GENERAL PLAN & ELEVATION CL STA. 12+34.28 CONST. 3-14.5'X9.5'X28.5' RCB SKEW 30° LF W/TR3	
Drawn	TR 2/14		
Checked	TR 8/15		
Revised			
Scale	1"=10'	STATE JOB NO. 27822(04)	
		Sheet No. B001	

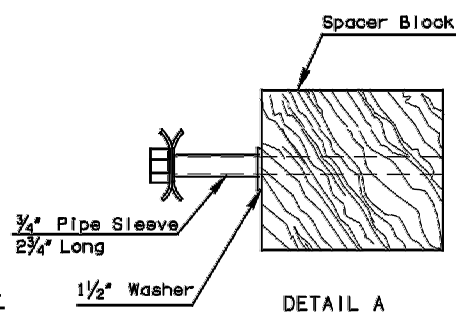


PLAN

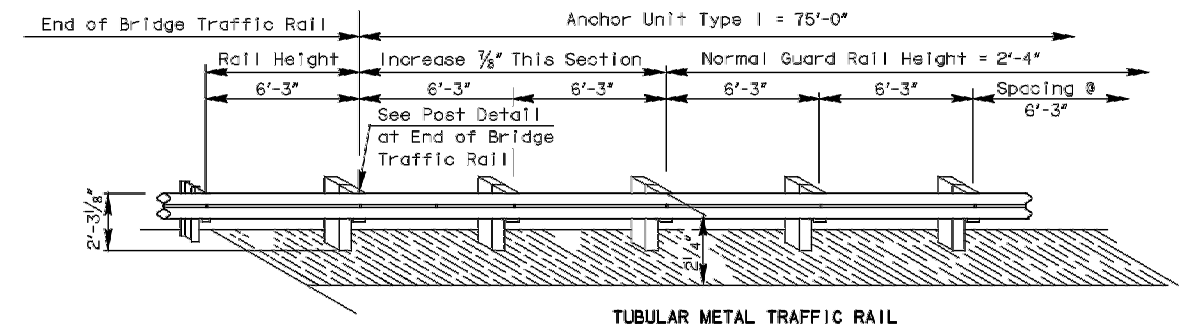


ELEVATION

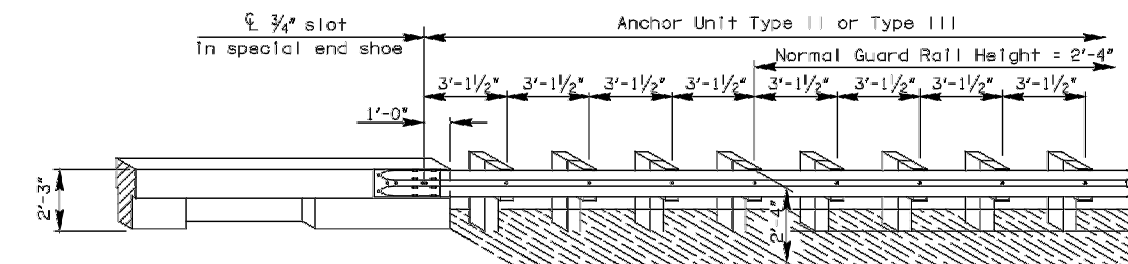
BRIDGE END GUARD RAIL ANCHOR UNIT - TYPE I
USE ON BRIDGE WITH TUBULAR METAL TRAFFIC RAIL



DETAIL A

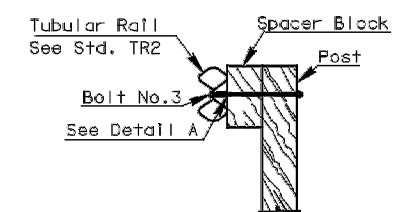


TUBULAR METAL TRAFFIC RAIL



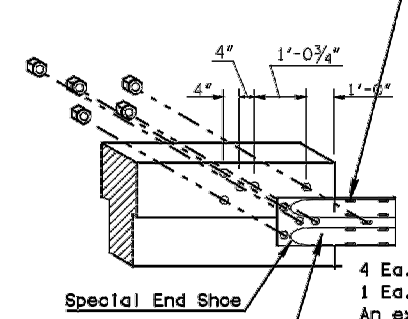
CONCRETE TRAFFIC RAIL

PICTORIAL VIEW OF ANCHOR UNITS AT END OF BRIDGE



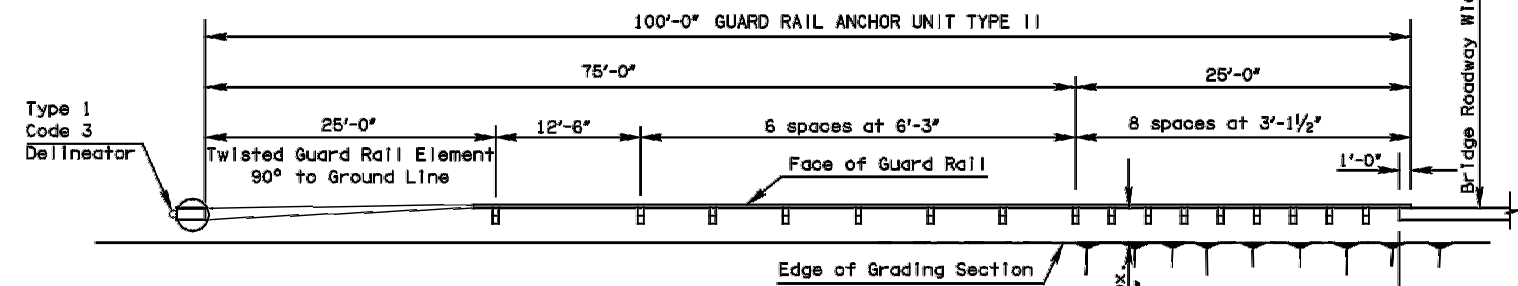
POST DETAIL AT END OF BRIDGE TRAFFIC RAIL

8 Ea. Required- Bolt No.1 & Assembly with steel washer. See Table of Bolts, Nuts, & Washers

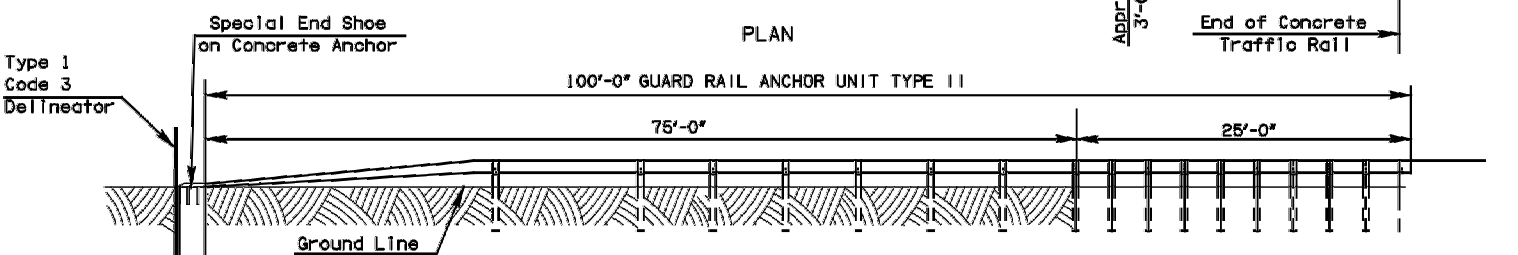


4 Ea. - Bolt No. 7 and assembly;
1 Ea. - Bolt No. 6 and assembly;
An extra washer shall be used under the bolt head. Bolts shall be of sufficient length to extend through the full thickness of the nut at least 1/2" beyond. They shall be tightened by the Turn - of - Nut Method with a minimum of 1 / 12 turn and maximum of 1 / 4 turn over snug tight condition.

NOTE: SEE STD BEGR2-2 FOR DETAILS OF SPECIAL END SHOE, POSTS & SPACER BLOCK AND TABLE OF BOLTS, NUTS & WASHERS.

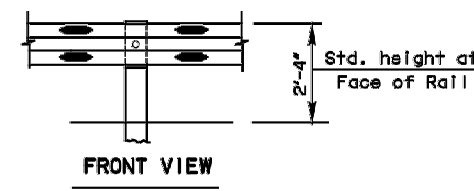


PLAN

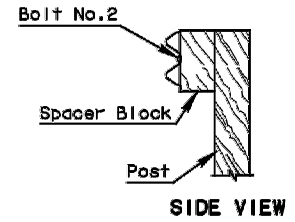


ELEVATION

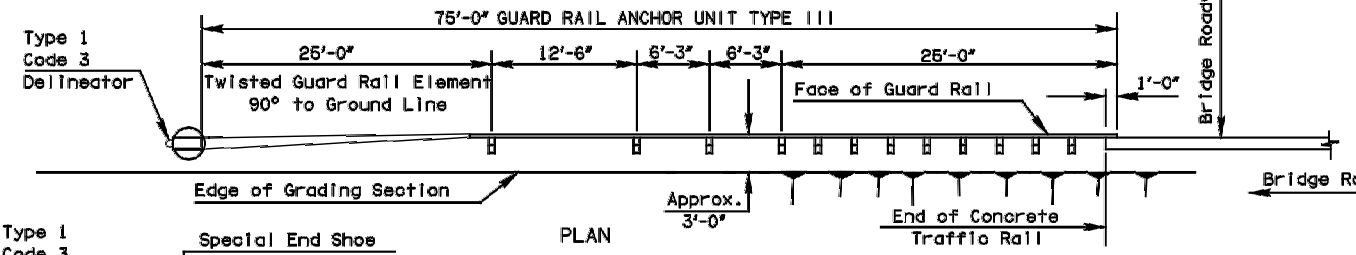
BRIDGE END GUARD RAIL UNIT FOR TRAFFIC SPEEDS 35 mph AND OVER
USE - ANCHOR UNIT - TYPE II FOR BRIDGES WITH CONCRETE TRAFFIC RAIL.



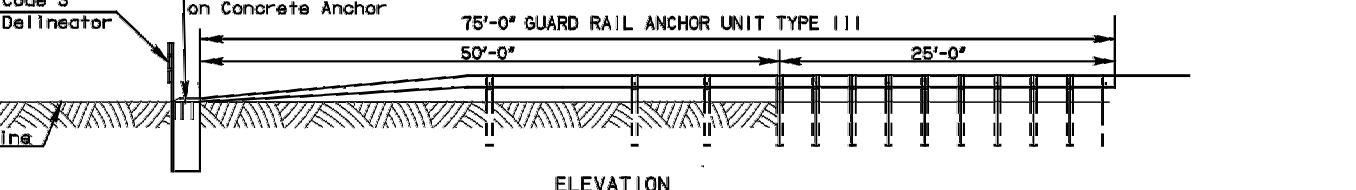
FRONT VIEW



SIDE VIEW

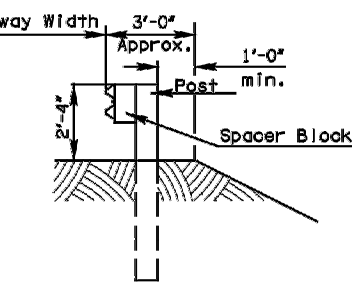


PLAN



ELEVATION

BRIDGE END GUARD RAIL UNIT FOR TRAFFIC SPEEDS UNDER 35 mph
USE - ANCHOR UNIT - TYPE III FOR BRIDGES WITH CONCRETE TRAFFIC RAIL.



DETAIL OF GUARD RAIL POST

See Traffic Std. DU-1 For Standard Delineator Type 1, Code 3

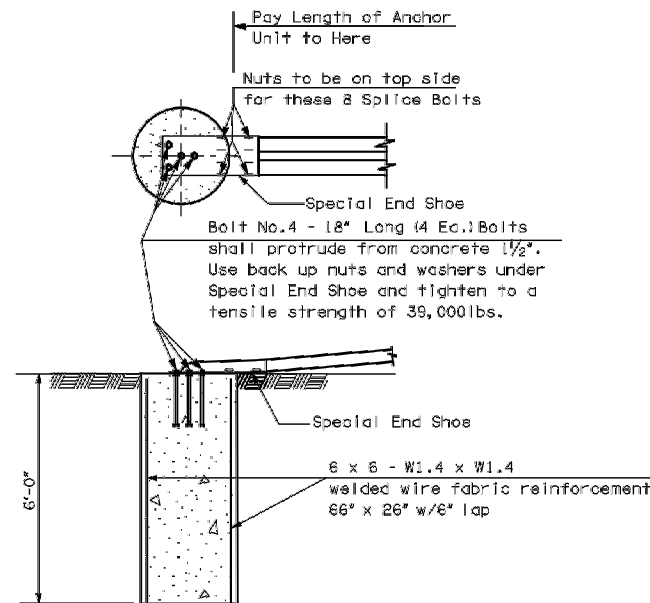
BASIS OF PAYMENT	
ITEM	UNIT
* Guard Rail Anchor Unit (Type I)	Ea.
* Guard Rail Anchor Unit (Type II)	Ea.
* Guard Rail Anchor Unit (Type III)	Ea.

* Includes post, guard rail, all hardware, concrete, Type 1, Code 3 Delineator (Amber Color) and other appurtenances necessary to construct Guard Rail Anchor Unit.

APPROVED BY BRIDGE ENGINEER: _____ DATE: _____

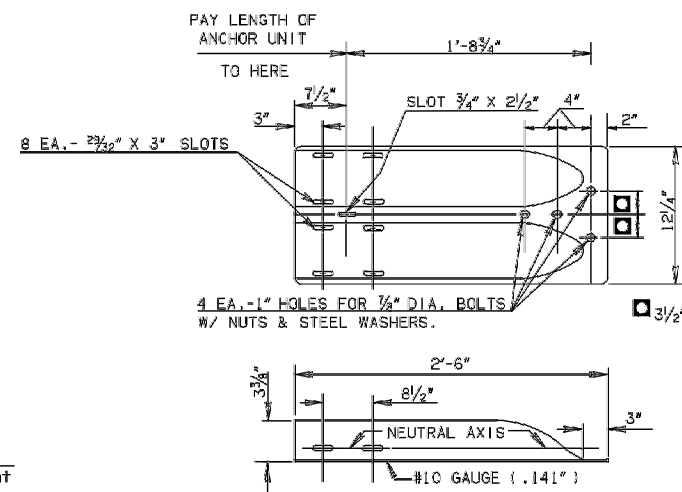
OKLAHOMA DEPT. OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)

BRIDGE END GUARD RAIL

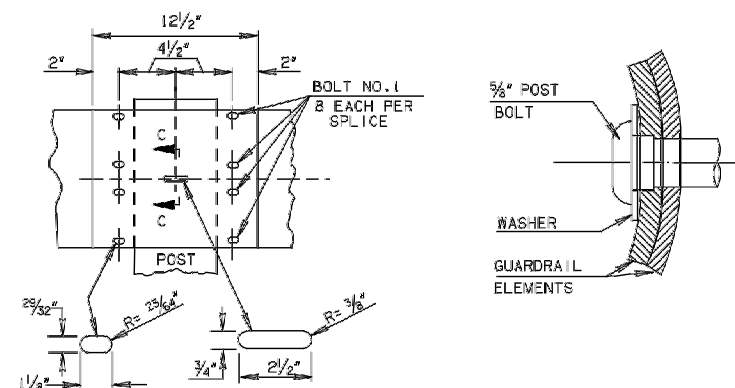


Class A Concrete to be placed into 30" Dia. hole to a depth of approx. 8'-0". Slope top of concrete to fit slope.
Class A Concrete = 1.09 c.y.

DETAIL OF SPECIAL END SHOE ON CONCRETE ANCHOR



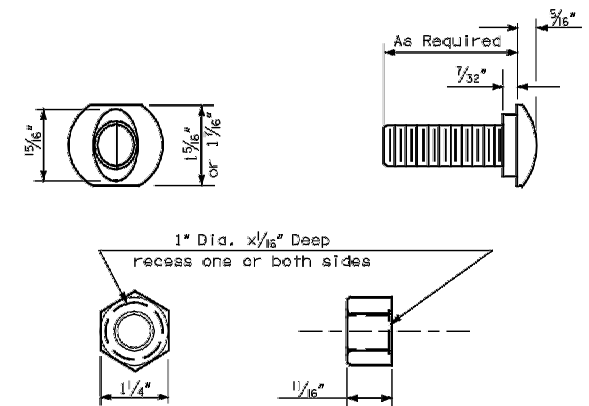
SPECIAL END SHOE



RAIL SPLICE

SECTION C-C

GUARDRAIL SHALL BE LAPPED IN THE DIRECTION OF NEAREST TRAFFIC AT ALL LOCATIONS WHERE SPLICES OCCUR (EXCEPT AT NARROW OR ONE LANE BRIDGE APPROACHES, WHERE LAPS SHALL BE TOWARD THE BRIDGE ON BOTH SIDES OF THE APPROACH ROADWAY).

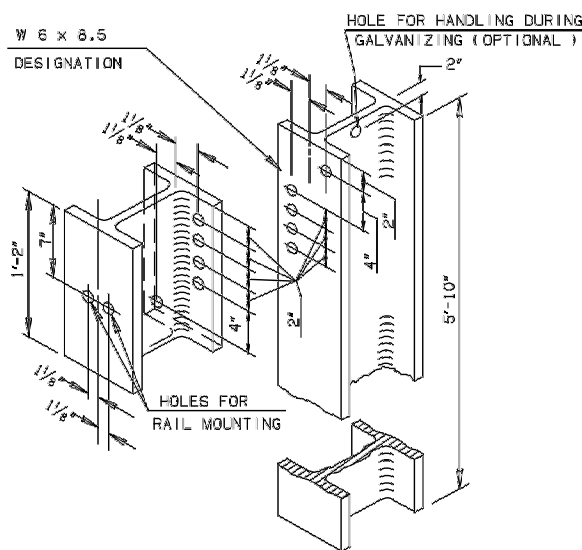


5/8" Dia. Ø BUTTON HEAD BOLT & RECESS NUT



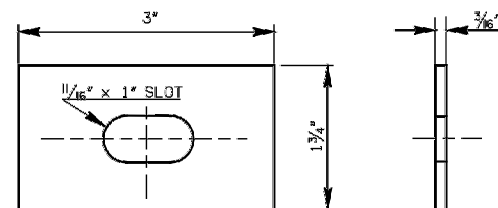
ALTERNATE BUTTON HEAD BOLT

NOTE: Guard rail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Rail Hardware" prepared and approved by the AASHTO-ARTBA-AGC Joint Cooperative Committee, Technical Bulletin Number 268B.



STEEL POST & SPACER BLOCK

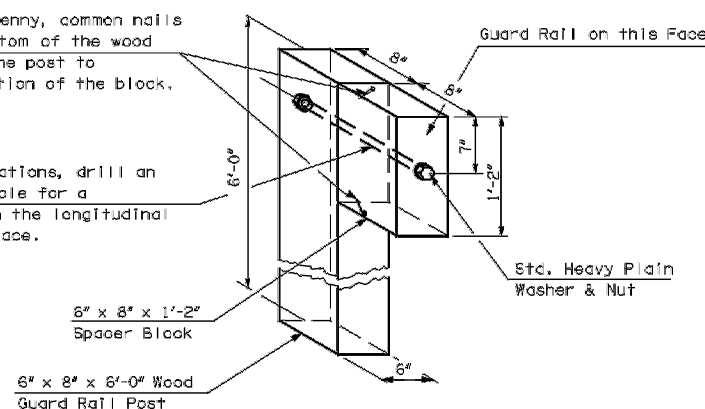
NOTE: All holes in steel to be 3/4" and shall be punched before galvanizing. Holes in back of block, and in face of post shall be punched to same dimensions as holes on back of post. Use Bolt No. 1 & post washer to mount rail to block; use Bolts No. 5 and lock washers to mount block to post. See Schedule of Bolts on this sheet. Steel designation shall be W 6 x 8.6.



WASHER DETAIL (POST BOLT)

Drive (2) 16 penny, common nails on top & bottom of the wood block into the post to prevent rotation of the block.

On normal installations, drill an approximate 11/16" hole for a 5/8" bolt (Bolt 2) on the longitudinal center of the 6" face.



WOOD POST & SPACER BLOCK

TABLE OF BOLTS, NUTS & WASHERS

ITEM	ASSEMBLY	NOMENCLATURE & DIMENSIONS
Bolt No. 1	Recess Nut & Specified Washer	5/8-11 UNC - 2Ax1 1/4" Lg. Button Head with Oval Shoulder
Bolt No. 2	Recess Nut & Steel Washer	5/8-11 UNC - 2Ax1 9/16" Lg. Button Head with Oval Shoulder
Bolt No. 3	Recess Nut & 3/8" Steel Washer	5/8-11 UNC - 2Ax2 5/8" Lg. Button Head with Oval Shoulder
Bolt No. 4	3/8" Steel Washer & 1/2" Hex Nut	7/8-9 UNC - 2Ax1 8" High Strength Steel Hex-Head Bolt
Bolt No. 5	Hex Nut & Lock washer	5/8-11 UNC - 2Ax1 1/2" Lg. Hex-Head Bolt
Bolt No. 6	Recess Nut & 3/8" Steel Washer	5/8-11 UNC - 2Ax1 2" Lg. Button Head with Oval Shoulder
Bolt No. 7	3/8" Steel Washers & 7/8" Hex Nut	7/8-9 UNC - 2Ax1 2" Lg. High Strength Steel Hex-Head Bolt
Recess Nut		5/8-11 UNC - 2B Semi-Finished
3/8" Hex Nut		5/8-11 UNC - 2B Semi-Finished
1/2" Hex Nut		7/8-9 UNC - 2B Semi-Finished
3/8" Steel Washer		1 1/8" x 1 3/4" x 0.141" Type A Plain Washer
1/2" Steel Washer		1 3/8" x 2 1/4" x 0.156" Type A Plain Washer
Lock Washer		1 1/16" I.D. Galvanized Standard Hardware Item
Rectangular Plate Washer		1 3/4" x 3" Lg. x 0.187" with a 1 1/8" x 1" Slotted Hole

- ① Not a Standard Item in "A Guide to Standardized Highway Barrier Rail Hardware", Technical Bulletin No. 268-B.
- ② Shall meet requirement of A.S.T.M. A307 & A153.
- ③ Shall meet requirement of A.S.T.M. A325 or A449, & A153.
- ④ Shall meet requirement of A.S.T.M. A153 & A563, Grade A or Better.
- ⑤ Shall meet requirement of A.S.T.M. A153 & A563 Grade B or better.
- ⑥ Shall meet requirement of A.S.T.M. A153 & A.N.S.I. B27.2.
- ⑦ Shall meet current requirements of A.A.S.H.T.O. M180.

MATERIALS SHALL MEET THE REQUIREMENTS OF THE FOLLOWING SUBSECTIONS OF THE 1999 STD. SPECS.
P.C. Concrete-----701
Reinforcing Steel-----723
Materials For Guard Rail-----732
All dimensions are subject to Manufacturer's Tolerance.

APPROVED BY BRIDGE ENGINEER: _____ DATE: _____

**OKLAHOMA DEPT. OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)
BRIDGE END GUARD RAIL HARDWARE**

STORM WATER MANAGEMENT PLAN

REV. NO.	DESCRIPTION	REVISIONS	DATE
1	Modified Description and Practices Information		8-28-17

SITE DESCRIPTION

PROJECT LIMITS: BRADY STREET BEGINNING 32 FEET EAST OF 72ND WEST AVENUE RUNNING 443 FEET EAST ACROSS BIGHEART CREEK.

PROJECT DESCRIPTION: GRADING, SURFACING & BRIDGE PROJECT TO PROVIDE APPROXIMATELY 0.07 MILES OF ROADWAY & 0.01 MILES OF BRIDGE IN TULSA COUNTY

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:

1. CLEAR AND GRUB.
2. EXCAVATE FOR ROADWAY & UTILITIES.
3. PILE TOPSOIL.
4. INSTALL SEDIMENT FILTERS & SILTATION SCREENS AS AREAS BECOME DISTURBED
5. CONSTRUCT BRIDGE AND DRAINS.
6. COMPLETE FINAL ROADWAY GRADING.
7. CONSTRUCT SUBGRADE, PAVEMENT, ETC.
8. COMPLETE GRADING & INSTALL PERMANENT SODDING.

SOIL TYPE: Radley Silt Loam △

TOTAL AREA OF THE CONSTRUCTION SITE: 0.40 AC.

ESTIMATED AREA TO BE DISTURBED: 0.34 AC. △

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.19 AC. △

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.22 AC. △

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: 0.60

LATITUDE & LONGITUDE OF CENTER OF PROJECT: 36°09'26" -96°04'15" △

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: E Coli & Fish Bioassessments △

SENSITIVE WATERS OR WATERSHEDS: YES NO

303(d) IMPAIRED WATERS: YES NO △

IF YES, LIST IMPAIRMENT: E Coli & Fish Bioassessments △

LOCATED IN A TMDL: YES NO

LAKE THUNDERBIRD TMDL: YES NO

MS4 ENTITY YES NO △

IF YES, LOCATION: Tulsa County △

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
- TARP/AULIN/EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

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.

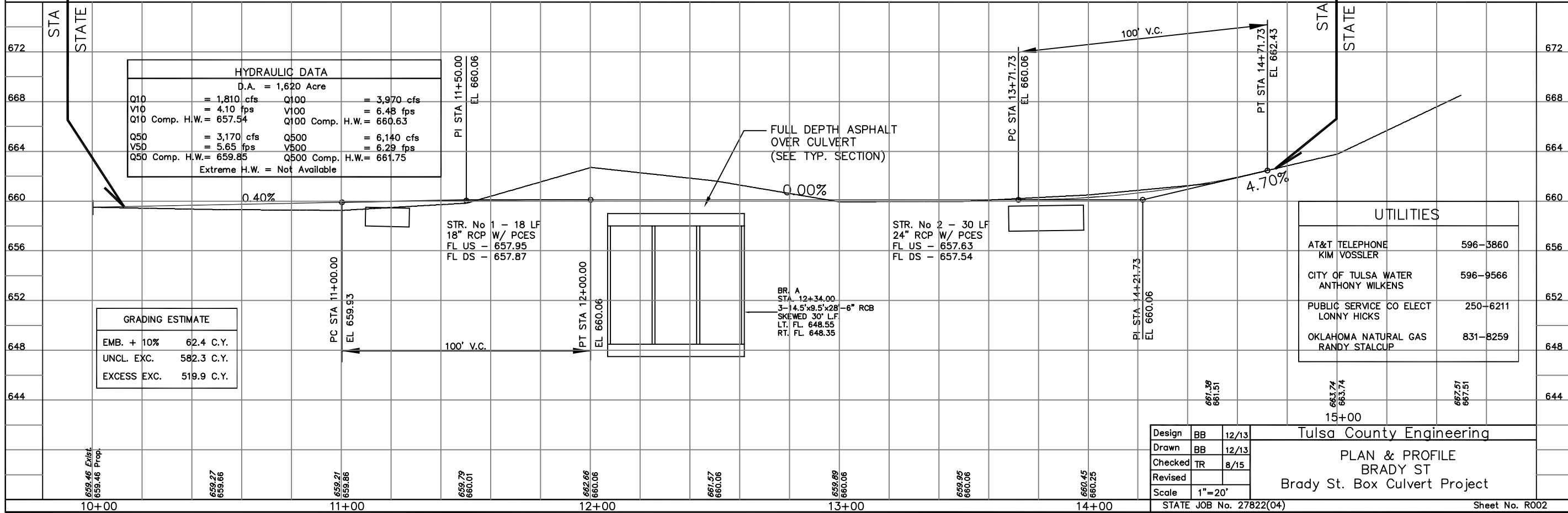
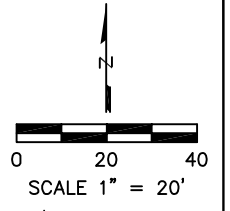
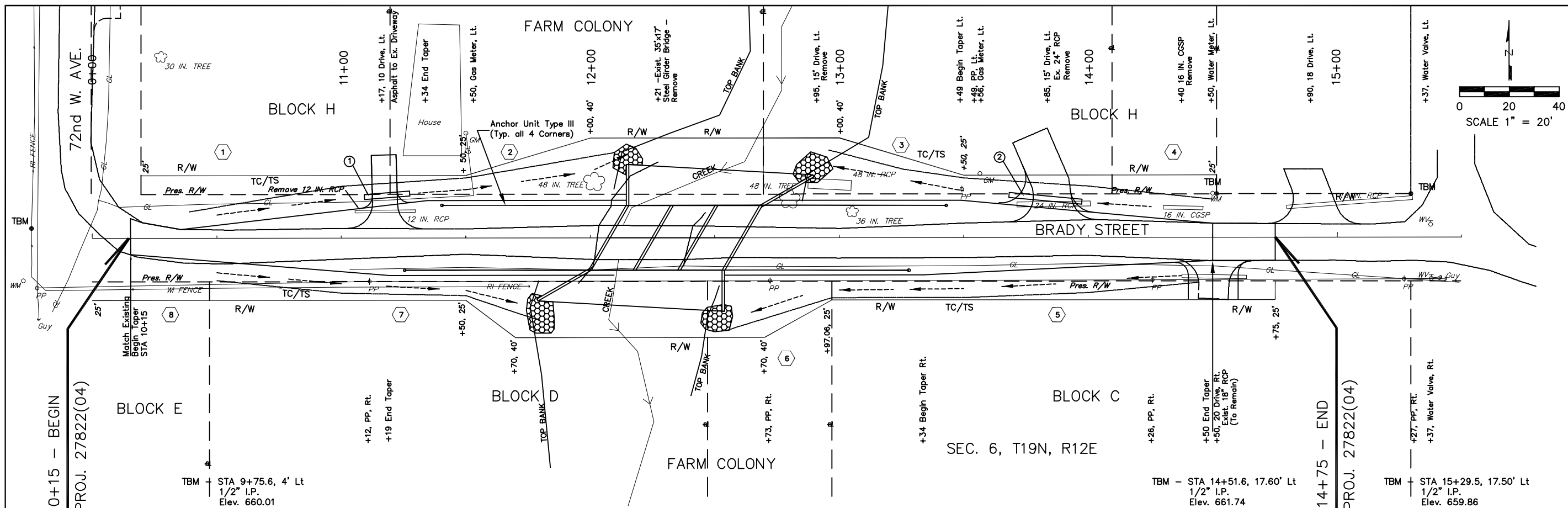
THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING 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, 2017.

DESIGN	TR	8/17	OKLAHOMA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION <h2 style="margin: 0;">STORM WATER MANAGEMENT PLAN</h2>
DRAWN	TR	8/17	
CHECKED	TR	8/17	
APPROVED			
SQUAD			
STATE JOB NO. JP27822(04)			COUNTY TULSA
			SHEET NO. R001



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