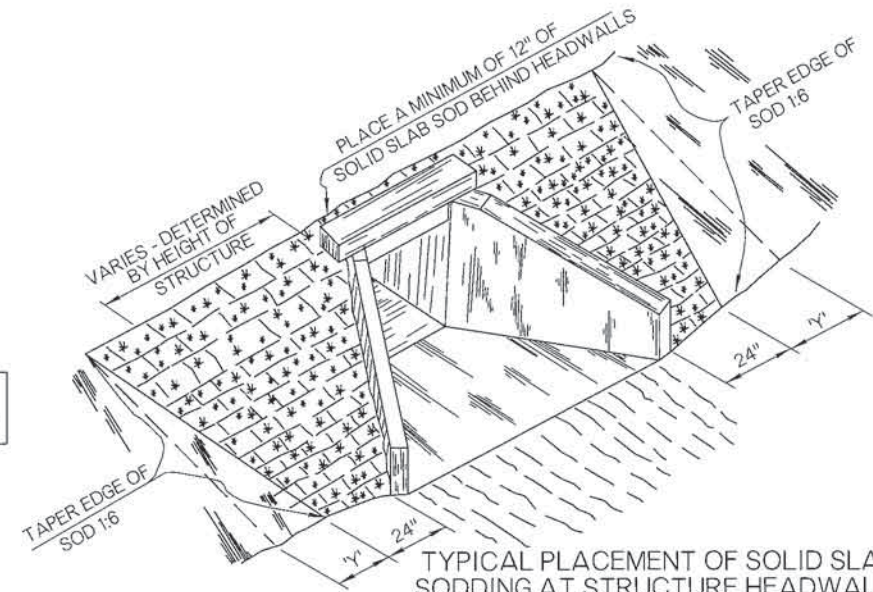


TYPICAL PLACEMENT OF SOLID SLAB SODDING ON FILL SLOPES, APPROACHES TO OVERPASSES AND BRIDGES.

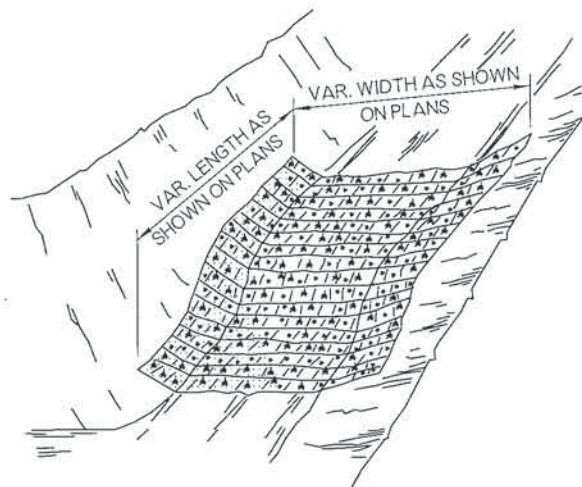
TAPER NOTE
 'Y' DIMENSION =
 SLOPE LENGTH x 0.17



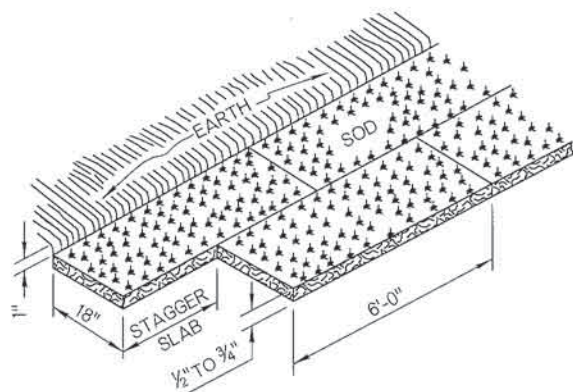
TYPICAL PLACEMENT OF SOLID SLAB SODDING AT STRUCTURE HEADWALLS

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. SOLID SLAB SOD SHALL BE PLACED IN HORIZONTAL ROWS WITH THE LONGEST SIDE OF EACH SLAB RUNNING PARALLEL TO THE ROADWAY, AND THE SLABS IN ALTERNATE ROWS STAGGERED HALF THE LENGTH OF EACH INDIVIDUAL SLAB. ENSURE THE ROWS RUN PARALLEL TO THE ROADWAY.
3. SLABS SHALL BE CUT AND HARVESTED WITH A COMMERCIAL SOD CUTTER TO THE DIMENSIONS SHOWN, THEN LOADED, TRANSPORTED AND HANDLED ON PALLETS.
4. AFTER PLACEMENT OF SOLID SLAB SOD, EARTH AT THE OUTER EDGES OF THE PLACEMENT SHALL BE BACKFILLED AND LOOSELY COMPACTED TO AT LEAST 1" ABOVE THE TOP OF THE SOLID SLAB SODDING.
5. STAKE SOD ON ALL SLOPES 1:2 OR STEEPER, AND ON ANY AREAS THAT ARE IN SUCH CONDITION THAT THERE IS DANGER OF SOD SLIPPING. PERFORM STAKING CONCURRENTLY WITH SOD PLACEMENT AND PRIOR TO TAMPING WITH SOUND WOODEN STAKES APPROXIMATELY 1 INCH SQUARE OR 1 INCH IN DIAMETER AND NOT LESS THAN 12 INCHES IN LENGTH, OR USE METAL STAPLES IN PLACE OF WOODEN STAKES. PLACE, STAKE AND STAPLE THE SOD WHERE NECESSARY, AND AS DETERMINED BY THE ENGINEER.



TYPICAL PLACEMENT OF SOLID SLAB SODDING IN DITCHES



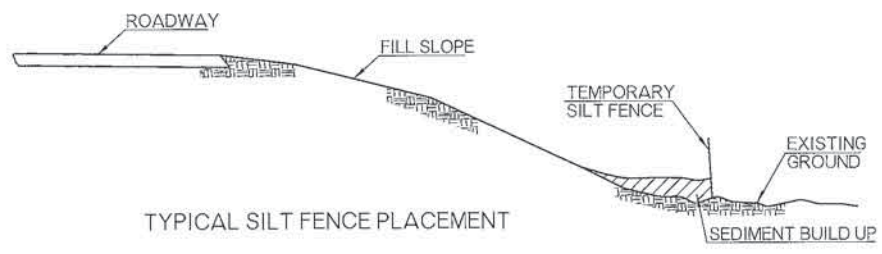
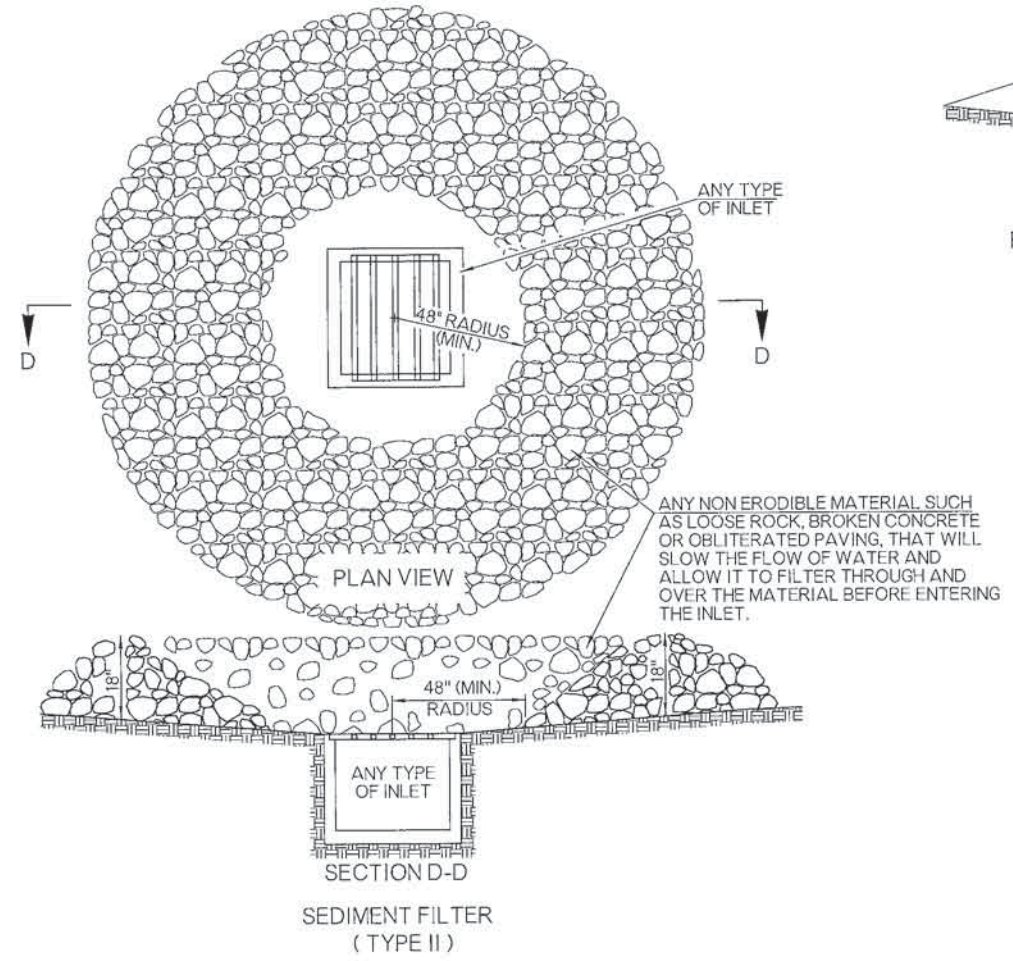
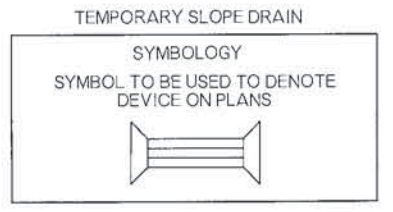
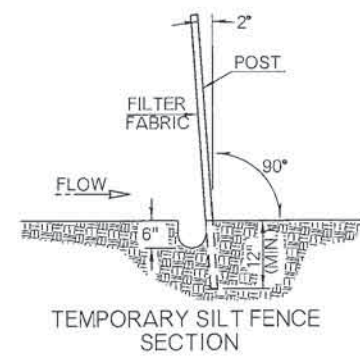
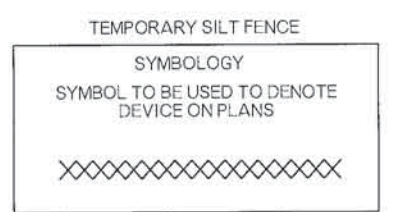
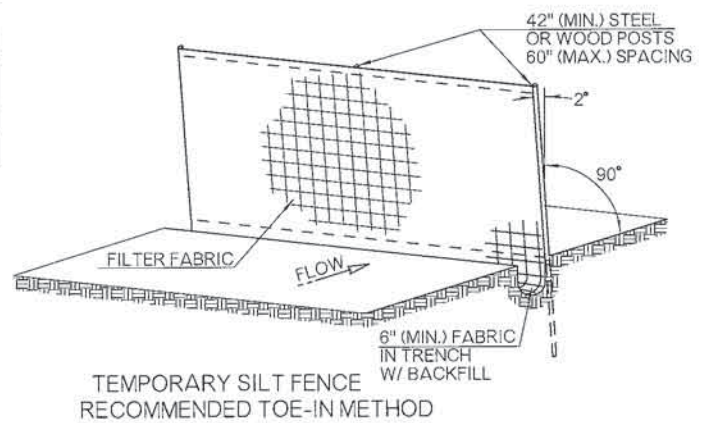
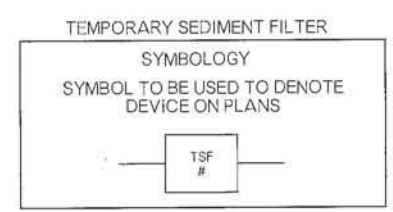
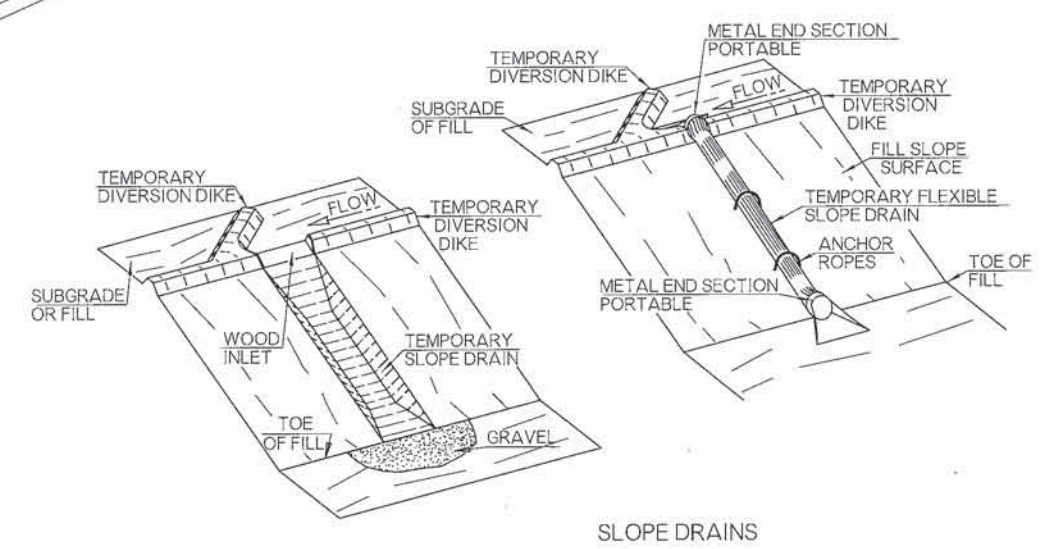
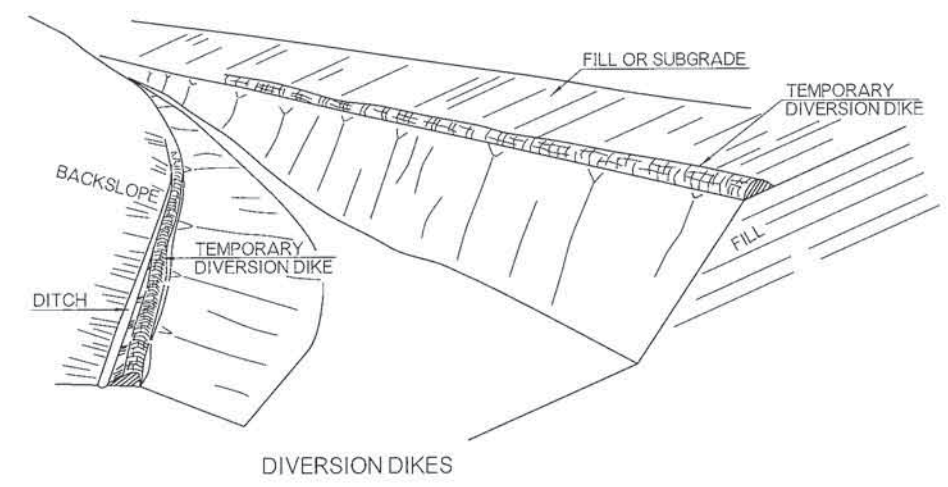
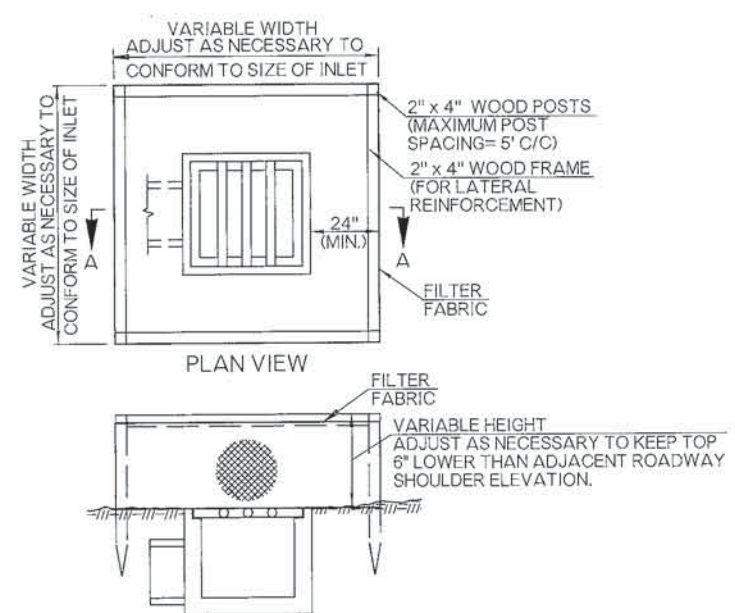
SOLID SLAB SODDING
 (MARCH 1 THRU AUGUST 31)

THE PLACEMENT OF SOLID SLAB SOD SHALL BE RESTRICTED TO THE PERIOD FROM MARCH 1 THRU AUGUST 31, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
230(A)	SOLID SLAB SODDING	SY

APPROVED BY ROADWAY ENGINEER: *Calvin F. A.* DATE: *01/14/12*
 ROADWAY DESIGN DIVISION STANDARD
 SOLID SLAB SODDING

OKLAHOMA DEPARTMENT OF TRANSPORTATION		
STANDARD REVISIONS		
DESCRIPTION	DATE	



- GENERAL NOTES
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 2. COST OF TEMPORARY DIVERSION DIKES TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS OF WORK.

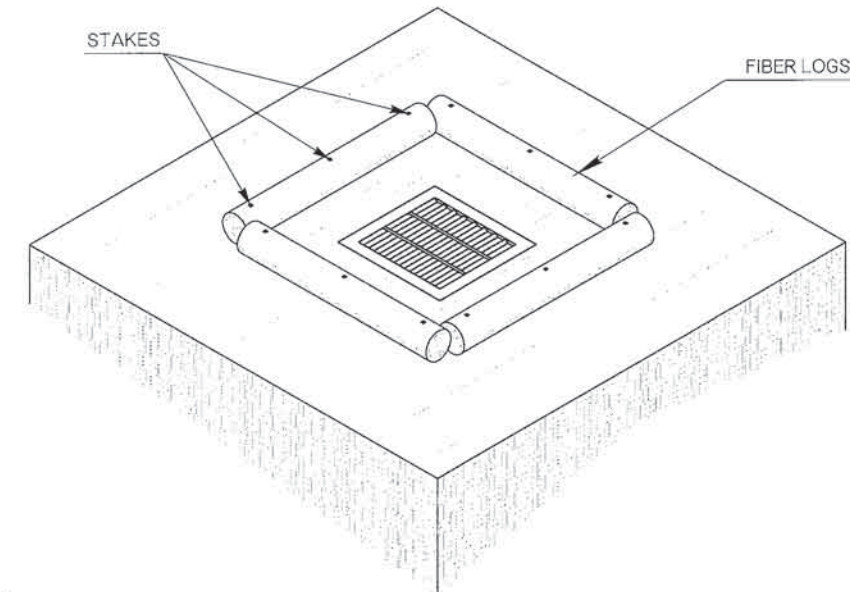
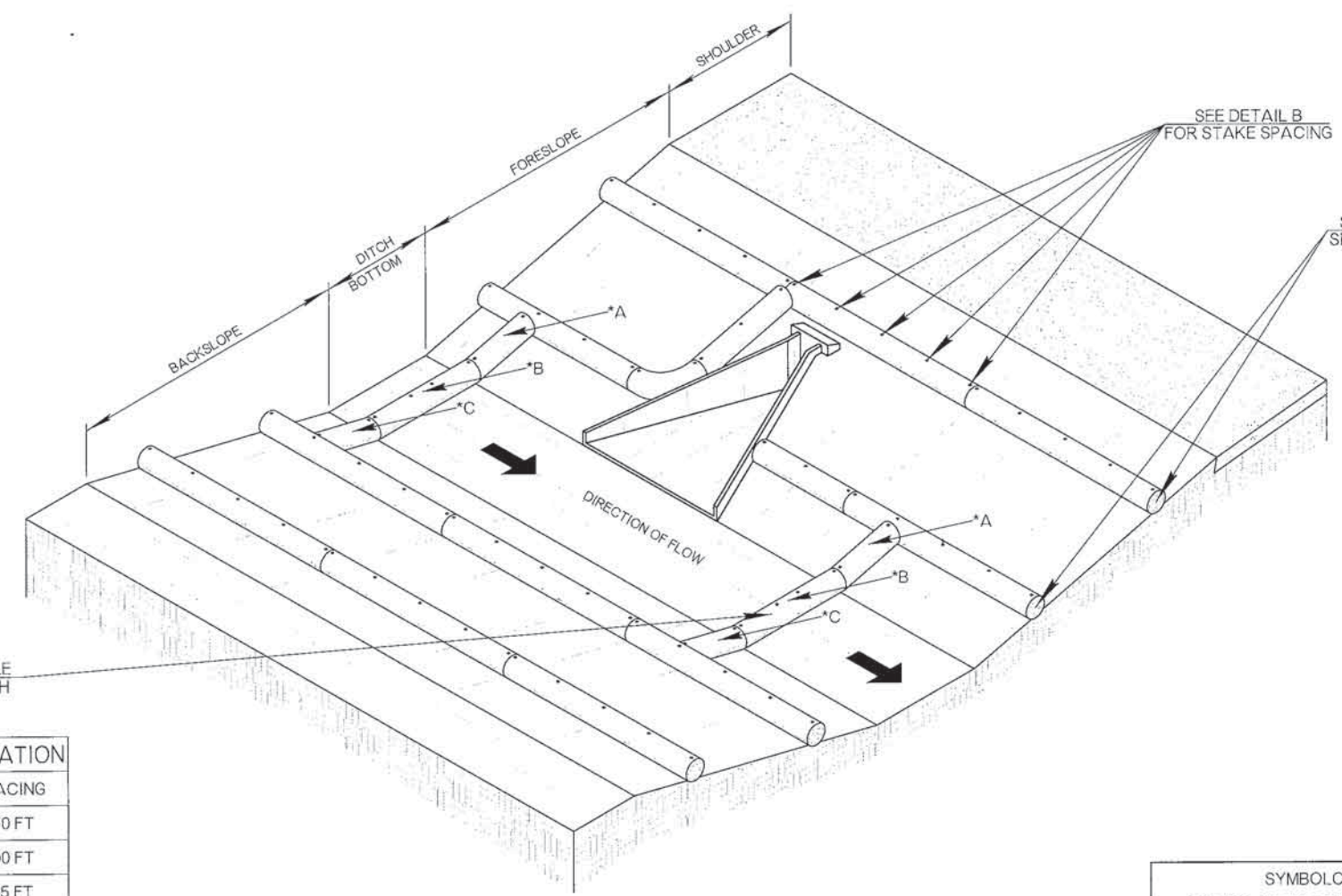
BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
221 (A)	TEMPORARY SLOPE DRAINS	LF
221 (C)	TEMPORARY SILT FENCE	LF
221 (D)	TEMPORARY SEDIMENT FILTER	EA

APPROVED BY ROADWAY ENGINEER: *Calvin F. A.* DATE: *01/16/15*

ROADWAY DESIGN DIVISION STANDARD

DOT

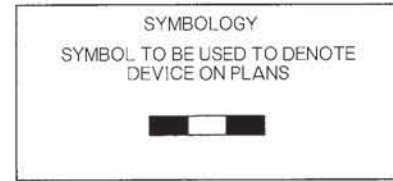
TEMPORARY SEDIMENT CONTROLS



TEMPORARY INLET PROTECTION

SEE DITCH INSTALLATION TABLE FOR LOG SPACING ALONG DITCH

DITCH INSTALLATION	
GRADE	SPACING
2%	150 FT
3%	100 FT
4%	75 FT
5%	50 FT

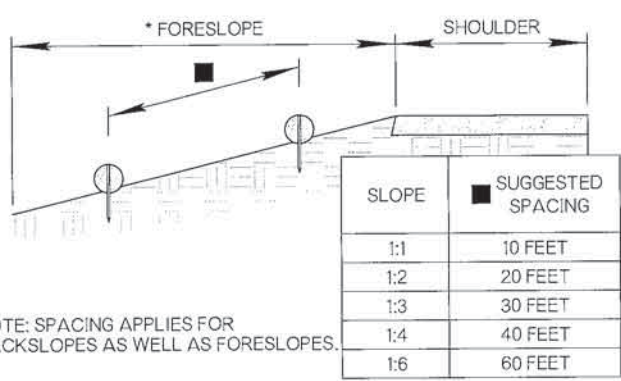


* NOTE: POINTS 'A' AND 'C' ARE HIGHER THAN POINT 'B'.
SUGGESTED PLACEMENT AROUND CROSSDRAINS, ON SLOPES, AND ACROSS DITCH BOTTOM.

GENERAL NOTES

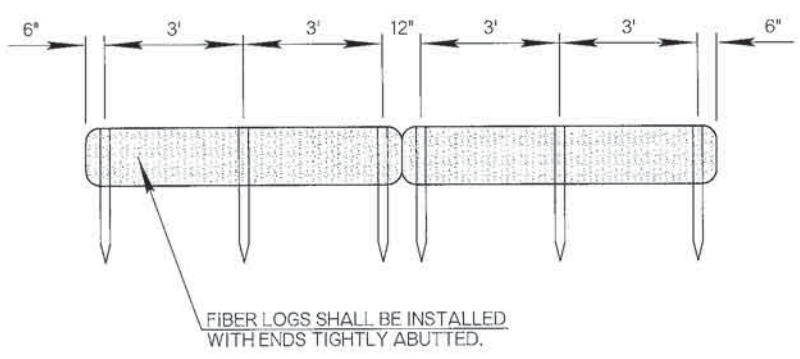
1. FIBER LOGS ARE TO BE INSTALLED AND MAINTAINED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
2. TRENCHING OF LOGS SHALL BE 2" TO 4" INTO SOIL. BEFORE TRENCHING, REMOVE ALL ROCKS, VEGETATION OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED LOGS WILL HAVE DIRECT CONTACT WITH SOIL. THERE SHALL NOT BE ANY GAPS BETWEEN THE LOGS AND THE SOIL.
3. STAKES DRIVEN INTO LOGS SHOULD BE MADE OF WOOD. METAL STAKES MAY BE USED IN PLACE OF WOOD STAKES IN AREAS WHERE WOOD STAKES ARE UNABLE TO BE DRIVEN, OR IF APPROVED BY THE ENGINEER. WOOD STAKES SHALL BE 3/4" BY 3/4" MINIMUM. LENGTH OF STAKES SHALL BE TWICE THE DIAMETER OF THE LOG.
4. LOGS MAY BE MADE OF STRAW, EXCELSIOR, COIR OR OTHER SIMILAR MATERIAL AS APPROVED BY THE ENGINEER. FIBER NET SURROUNDING THE LOG MAY BE SYNTHETIC MATERIAL OR A NATURAL FIBER.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
221 (K)	TEMPORARY FIBER LOG	LF

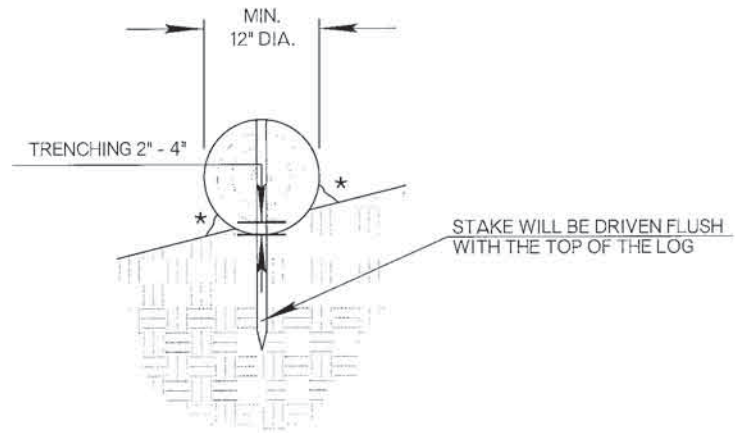


* NOTE: SPACING APPLIES FOR BACKSLOPES AS WELL AS FORESLOPES.

DETAIL A - CROSS SECTION VIEW



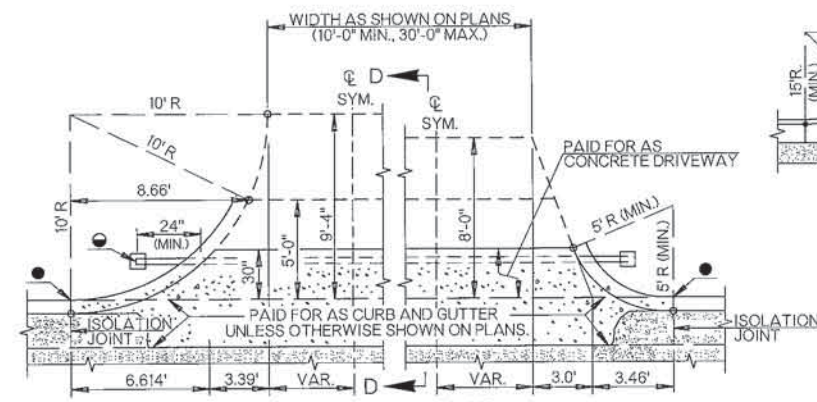
DETAIL B - FIBER LOG FRONT VIEW



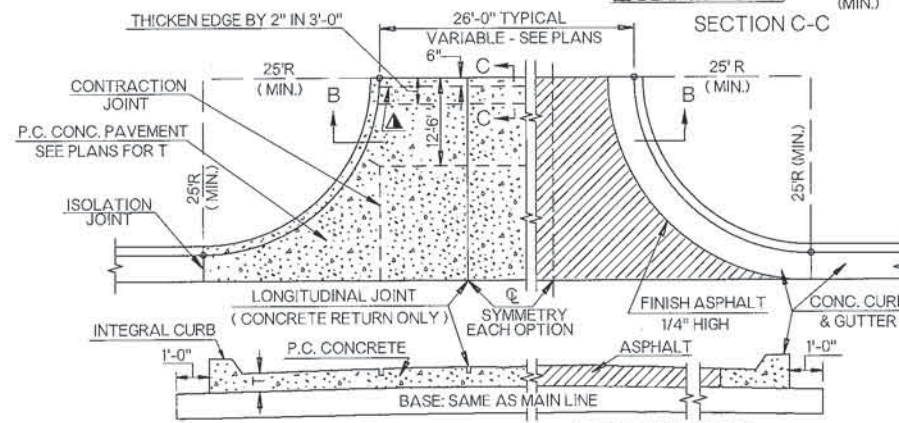
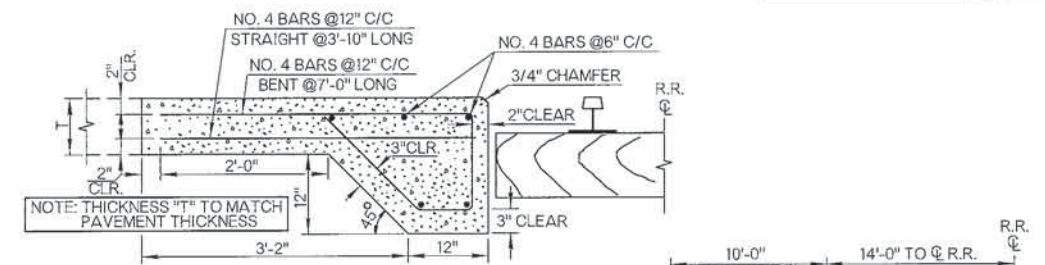
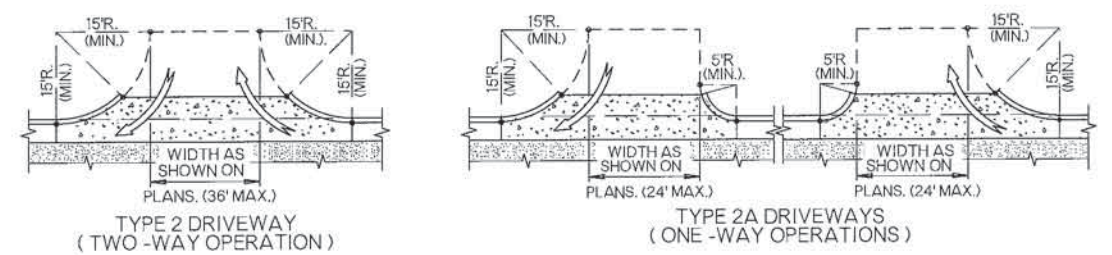
* AREAS TO BE FILLED WITH COMPACTED SOIL TAKEN FROM THE EXCAVATED TRENCH.
DETAIL C - TRENCHING

APPROVED BY ROADWAY ENGINEER *Calder F. A.* DATE *04/16/15*
ROADWAY DESIGN DIVISION STANDARD

TEMPORARY FIBER LOG



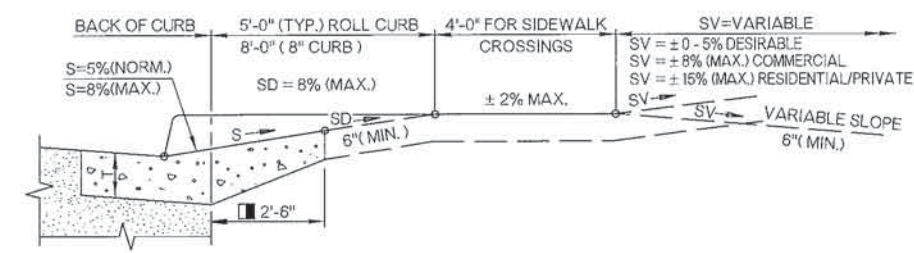
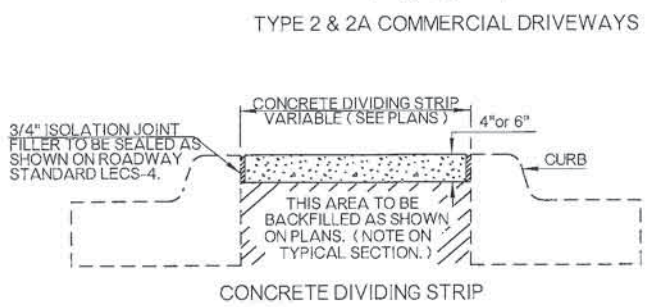
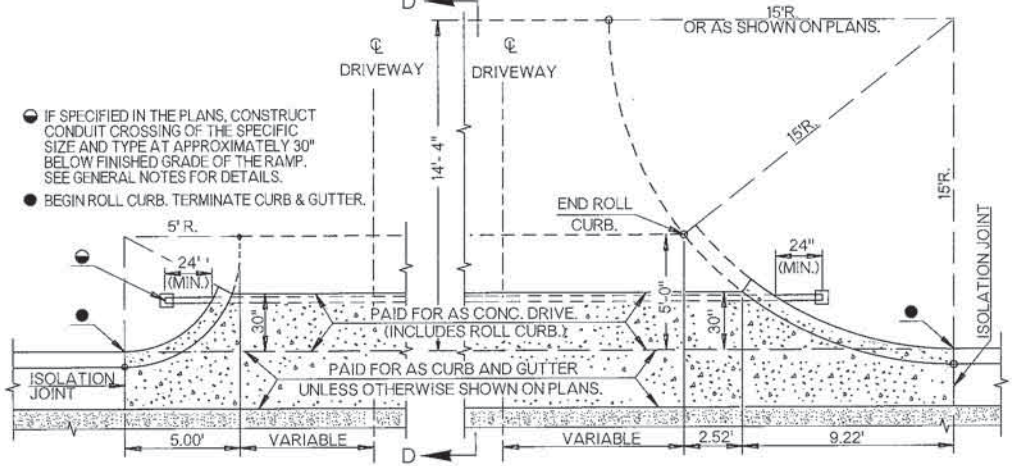
- IF SPECIFIED IN THE PLANS, CONSTRUCT CONDUIT CROSSING OF THE SPECIFIC SIZE AND TYPE AT APPROXIMATELY 30" BELOW FINISHED GRADE OF THE RAMP. SEE GENERAL NOTES FOR DETAILS.
- BEGIN ROLL CURB. TERMINATE CURB & GUTTER.



ALT. SECTION B-B CONCRETE RETURN

ALT. SECTION B-B ASPHALT RETURN (WHERE CURB AND GUTTER IS USED)

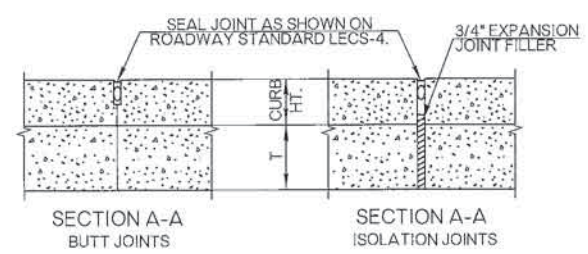
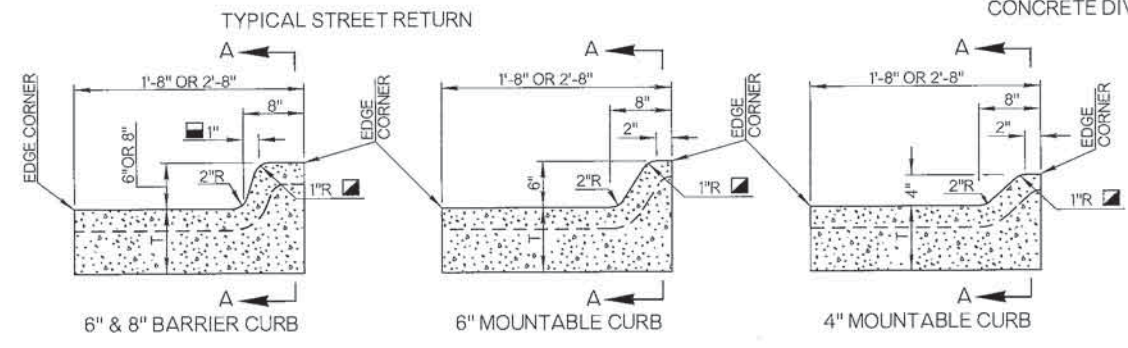
- IF SPECIFIED IN THE PLANS, CONSTRUCT CONDUIT CROSSING OF THE SPECIFIC SIZE AND TYPE AT APPROXIMATELY 30" BELOW FINISHED GRADE OF THE RAMP. SEE GENERAL NOTES FOR DETAILS.
- BEGIN ROLL CURB. TERMINATE CURB & GUTTER.



- WHEN SIDEWALK IS BUILT DIRECTLY BEHIND CURB, THE CONCRETE DRIVEWAY SHOULD BE CONSTRUCTED & EXTENDED TO THE BACK EDGE OF SIDEWALK.

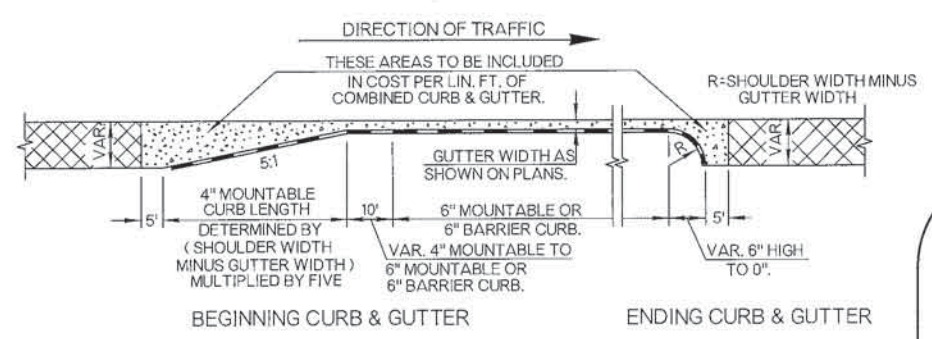
GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- COST OF JOINT FILLERS, SEALING AND REINFORCING STEEL SHALL BE INCLUDED IN PRICE BID FOR OTHER ITEMS OF WORK.
- TRANSVERSE ISOLATION JOINTS FOR CONCRETE DIVIDING STRIP AND CONCRETE MOUNTABLE CURB TYPE TO BE 1/2" ISOLATION JOINT FILLER AT 50' C/C. 1/4" ISOLATION JOINT MATERIAL AT 1/3 POINTS BETWEEN 1/2" ISOLATION JOINTS. FILLER MATERIAL TO BE PREMOULDED AND JOINTS TO BE SEALED AS SHOWN ON ROADWAY STANDARD LECS-4.
- COMBINED CURB & GUTTER SHALL HAVE 3/4" ISOLATION JOINTS AT DRAINAGE STRUCTURES, STREET CURB RETURNS AND AT THOSE LOCATIONS SHOWN ON THE PLANS. BUTT OR SAWED JOINTS SHALL BE SPACED AT 20'-0" CENTERS MAX. JOINT FILLER IN THE CURBS SHALL EXTEND TO WITHIN 2" OF THE FACE & TOP OF CURB. ALL JOINTS SHALL BE SEALED AS SHOWN ON ROADWAY STANDARD LECS-4.
- ALL CONDUIT CROSSINGS ARE TO BE TRENCHED, PLACED, BACKFILLED AND COMPACTED PRIOR TO SURFACING. BORING OR PUSHING PROCEDURES MAY BE USED WHERE SURFACING IS ALREADY IN PLACE AND IF APPROVED BY THE ENGINEER.
- IF CONDUIT IS NOT CONTINUOUS BETWEEN DRIVEWAYS OR RAMP, GAP BOTH ENDS OF EACH CONDUIT CROSSING AND PLACE MARKER TO PREVENT DAMAGE DURING CONSTRUCTION.
- CONDUIT SHALL NOT TERMINATE BELOW A SURFACED AREA, BUT SHALL EXTEND A MINIMUM OF 2'-0" PAST EDGE OF PAVING.
- FOR PULL BOX INSTALLATION DETAILS, SEE TRAFFIC STANDARD PBD1-1 (PULL BOX DETAILS).



CURB & GUTTER JOINTS

BUTT & ISOLATION JOINTS TO EXTEND THROUGH CURB & GUTTER TO BACK OF CURB



BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
414 (H)	P. C. RAILROAD APPROACH SLABS	SY
509 (B)	CLASS A CONCRETE	CY
609 (B)	COMBINED CURB & GUTTER (▲)	LF
610 (B)	CONCRETE DRIVEWAY	SY
610 (C)	CONCRETE DIVIDING STRIP	SY
610 (H)	ASPHALT DIVIDING STRIP	SY

APPROVED BY ROADWAY ENGINEER: *Calvin A. [Signature]* DATE: 04/14/15

ROADWAY DESIGN DIVISION STANDARD

DOT

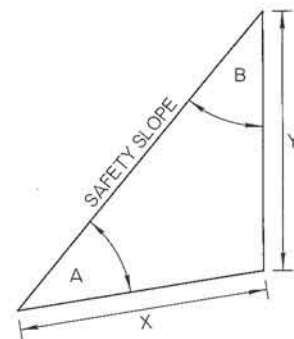
ASPHALT SURFACING CONSTRUCTION DETAILS

OKLAHOMA DEPARTMENT OF TRANSPORTATION 2009 SPECIFICATIONS

ASCD-5 2 R-11

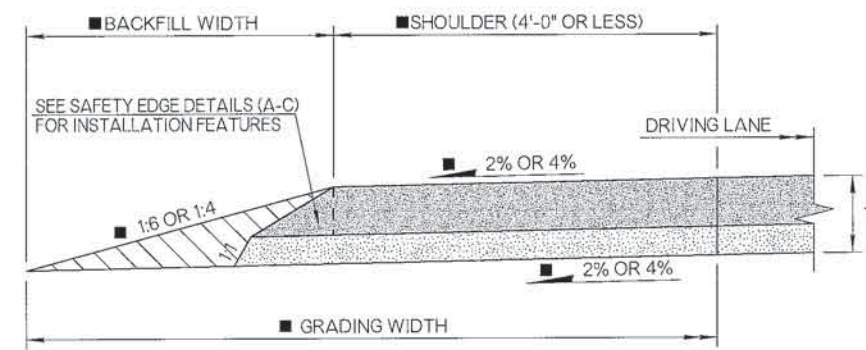
X - ASPHALT PAVEMENT SAFETY EDGE WIDTH

Y	X (2% SLOPE)		X (-4% SLOPE)
	2%	-2%	
IN	IN	IN	IN
0.50	0.86	0.88	0.89
0.75	1.28	1.31	1.33
1.00	1.71	1.75	1.77
1.50	2.57	2.63	2.66
2.00	3.42	3.50	3.54
2.50	4.28	4.38	4.43
3.00	5.14	5.26	5.31
3.50	5.99	6.13	6.20
4.00	6.85	7.01	7.08
4.50	7.70	7.88	7.97
5.00	8.56	8.76	8.85

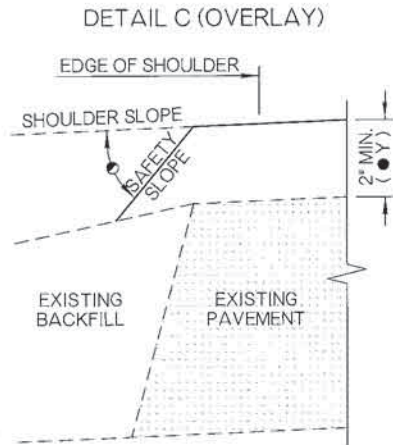
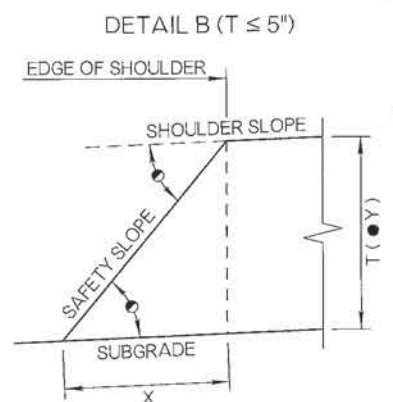
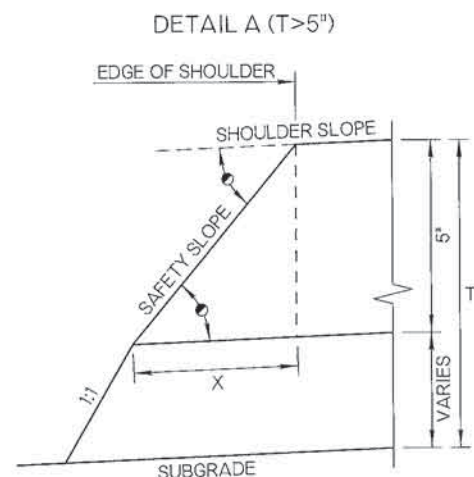


$$X = \frac{Y \cdot \sin(B)}{\sin(A)}$$

CALCULATE X USING 30° FOR ANGLE A.



TYPICAL SECTION VIEW OF AN ASPHALT PAVEMENT SAFETY EDGE
 NOTE: SAFETY EDGE SHALL BE INSTALLED ON SHOULDERS OF WIDTH 4'-0" OR LESS.
 ■ SEE TYPICAL SECTION FOR DIMENSIONS AND SLOPES.



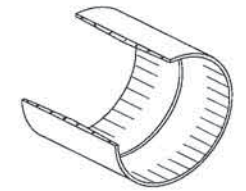
SAFETY EDGE DETAILS (A-C)
 ● VARIES BETWEEN 2" AND 5" WITH A 5" MAXIMUM HEIGHT.
 ● 30°±5° (ANGLE IS MEASURED FROM SLOPED EDGE OF SHOULDER.)

- GENERAL NOTES**
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 2. SAFETY EDGE SHALL BE CONSTRUCTED IN UNION WITH THE ASPHALT CONCRETE PAVEMENT.
 3. THE SAFETY EDGE, AS SHOWN, CAN BE APPLIED TO NEW CONSTRUCTION AND TO OVERLAYS OF AT LEAST 2".
 4. INSTALLATION OF SAFETY EDGE IS NOT REQUIRED IN CURB AND GUTTER AREAS.
 5. ALL SAFETY EDGES MUST MEET THE APPROVAL OF THE ENGINEER. THE ENGINEER MAY REQUIRE PROOF THAT THE SYSTEM HAS BEEN USED ON PREVIOUS PROJECTS WITH ACCEPTABLE RESULTS OR MAY REQUIRE THAT A TEST SECTION BE CONSTRUCTED PRIOR TO THE BEGINNING OF WORK TO DEMONSTRATE THAT THE EDGE SHAPE AND COMPACTION IS TO THE SATISFACTION OF THE ENGINEER.
 6. PRIOR TO PAVING SAFETY EDGE, GRADE AN AREA 10" WIDE BEGINNING AT EDGE OF PAVED SHOULDER TO PROVIDE A LEVEL SURFACE FREE OF VEGETATION.

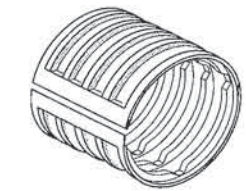
APPROVED BY ROADWAY ENGINEER: *Caleb F. A.* DATE: 04/14/15
 ROADWAY DESIGN DIVISION STANDARD

PAVEMENT SAFETY EDGE

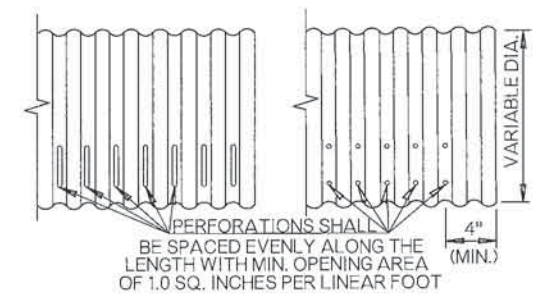
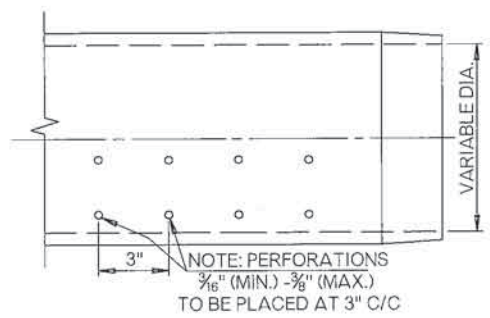
OKLAHOMA DEPARTMENT OF TRANSPORTATION		
STANDARD REVISIONS		
DESCRIPTION	DATE	



TYPICAL COUPLING FOR PVC PIPE UNDERDRAIN
1/4 SECTION REMOVED



TYPICAL CORRUGATED COUPLING
OR AN APPROVED EQUAL



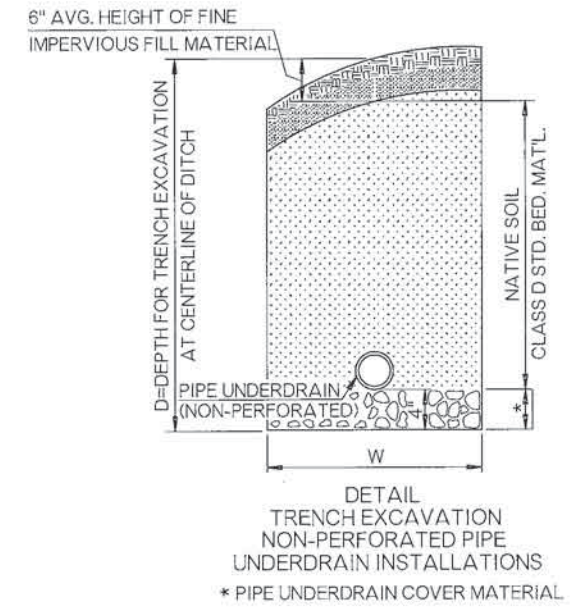
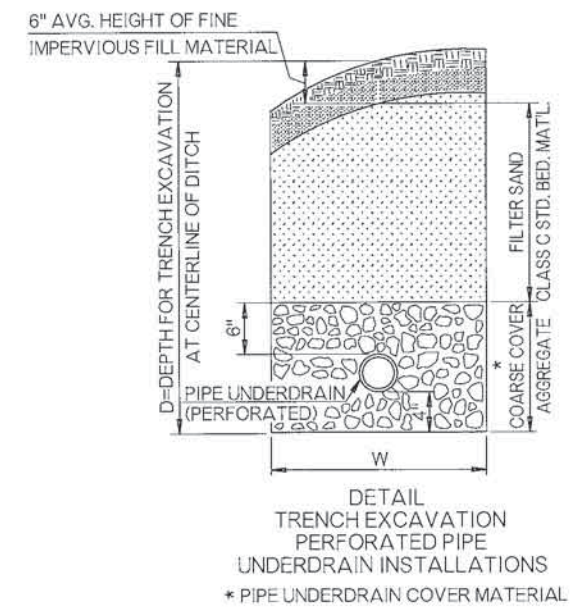
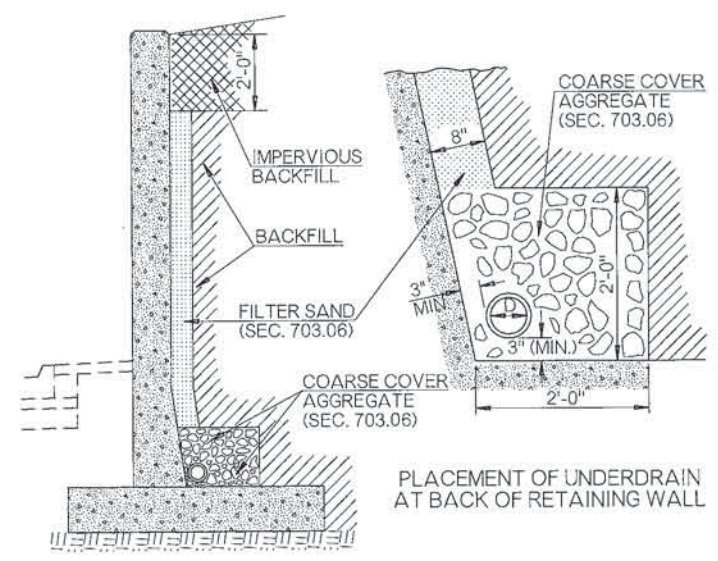
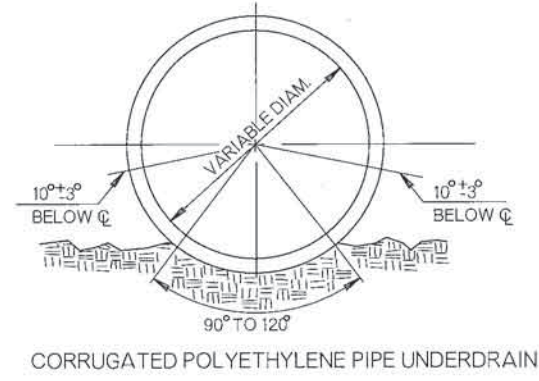
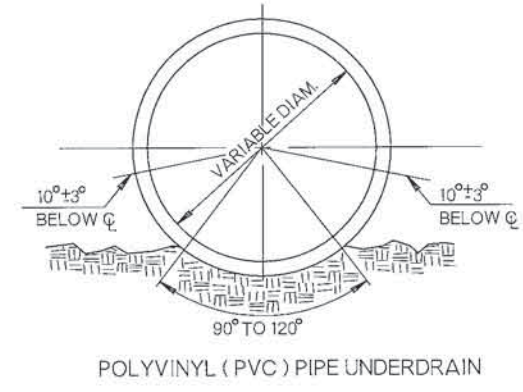
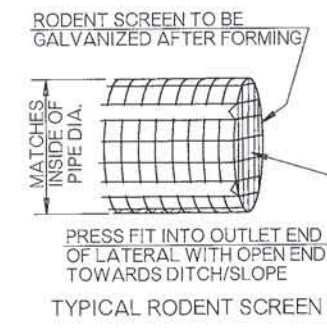
INSTALLATION TECHNIQUE: (12" DIAMETER OR SMALLER)

PERFORATED PIPE UNDERDRAIN, WHEN INSTALLED IN A TRENCH, SHALL BE BEDDED ON 4" OF COARSE COVER AGGREGATE. THE INSTALLED PIPE SHALL THEN BE CAREFULLY BACKFILLED WITH THE REMAINING COARSE COVER AGGREGATE TO 6" ABOVE THE TOP OF THE PIPE. FILTER SAND SHALL BE INSTALLED TO APPROXIMATELY 6" BELOW THE ORIGINAL NATURAL GROUND AS APPROVED BY THE ENGINEER. THE LAYER OF COARSE COVER AGGREGATE SHALL BE PAID FOR AS PIPE UNDERDRAIN COVER MATERIAL AND SHALL CONFORM TO SEC. 703.06. FILTER SAND SHALL BE PAID FOR AS CLASS C STANDARD BEDDING MATERIAL AND SHALL CONFORM TO SEC. 703.06.

NON-PERFORATED PIPE UNDERDRAIN, WHEN INSTALLED IN A TRENCH, SHALL BE BEDDED IN A 4" LAYER CONSISTING OF COARSE AGGREGATE COVER MATERIAL OR A 50-50 MIX OF COARSE AGGREGATE COVER MATERIAL AND FILTER SAND. THIS LAYER OF COVER MATERIAL SHALL CONFORM TO SEC. 703.06, AND SHALL BE PAID FOR AS PIPE UNDERDRAIN COVER MATERIAL. THE REMAINING BACKFILL MAY BE NATIVE SOIL REMOVED IN THE TRENCHING OPERATION, FILTER SAND OR BACKFILLED ACCORDING TO THE ENGINEER. COST TO BE INCLUDED IN OTHER ITEMS OF WORK. SEE GENERAL NOTE NUMBERS 5 & 6.

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. THE EXTENT, LOCATION AND DEPTH OF DRAINS MAY BE ADJUSTED BY THE ENGINEER TO SUIT CONDITIONS FOUND DURING CONSTRUCTION.
3. COST OF ALL FITTINGS TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PIPE UNDERDRAIN.
4. FOR PIPE UNDERDRAIN OF UP TO 12" IN DIAMETER, W = 24" WITHOUT SHEETING AND SHORING. W = 36" WHEN SHEETING AND SHORING IS USED. SEE ROADWAY STANDARD SPI-4 FOR SHEETING & SHORING NOTES.
5. FOR PIPE UNDERDRAIN LARGER THAN 12" IN DIAMETER, SEE ROADWAY STANDARD SPI-4 FOR ADDITIONAL TRENCH EXCAVATION DETAILS.
6. NON-PERFORATED UNDERDRAIN PIPES, LARGER THAN 12", SHALL BE TREATED AS PIPE CONDUITS: I.E., PAY ITEMS SHALL CONSIST OF TRENCH EXCAVATION AND BEDDING MATERIAL. SEE STANDARD SPB-1.
7. MATERIALS SHOWN HERE ARE TYPICAL ONLY AND ARE NOT THE ONLY CHOICE FOR SUBSURFACE DRAINAGE PURPOSES.
8. OUTLET OPENING SHALL HAVE INSTALLED A REMOVABLE RODENT SCREEN HAVING A WIRE MESH DESIGN & 0.23" TO 0.50" (NOM.) SQUARE OPENINGS. SCREEN MATERIAL MAY BE STAINLESS STEEL OR GALVANIZED WITH WIRE THICKNESS OF BETWEEN 0.023" & 0.039". AFTER SHAPING AND FABRICATION, RODENT SCREEN DESIGN SHALL BE APPROVED BY THE ENGINEER.
9. THE FINAL SECTION OF THE OUTLET LATERAL CONDUIT SHALL BE NON-PERFORATED, SCHEDULE 40 OR TYPE S HIGH DENSITY POLYETHYLENE AND A MINIMUM 20'-0" IN LENGTH, INCLUDING COUPLINGS.
10. FOR DETAILS OF OUTLET LATERAL HEADWALL, SEE ROADWAY STANDARD PED-3.



BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
613 (H)	■ PERFORATED PIPE UNDERDRAIN ROUND	LF
613 (I)	■ NON-PERFORATED PIPE UNDERDRAIN RND.	LF
613 (Q)	■ OUTLET LATERAL HEADWALL	EA
613 (T)	STANDARD BEDDING MATERIAL, CLASS C	CY
613 (U)	PIPE UNDERDRAIN COVER MATERIAL	CY
613 (V)	TRENCH EXCAVATION	CY

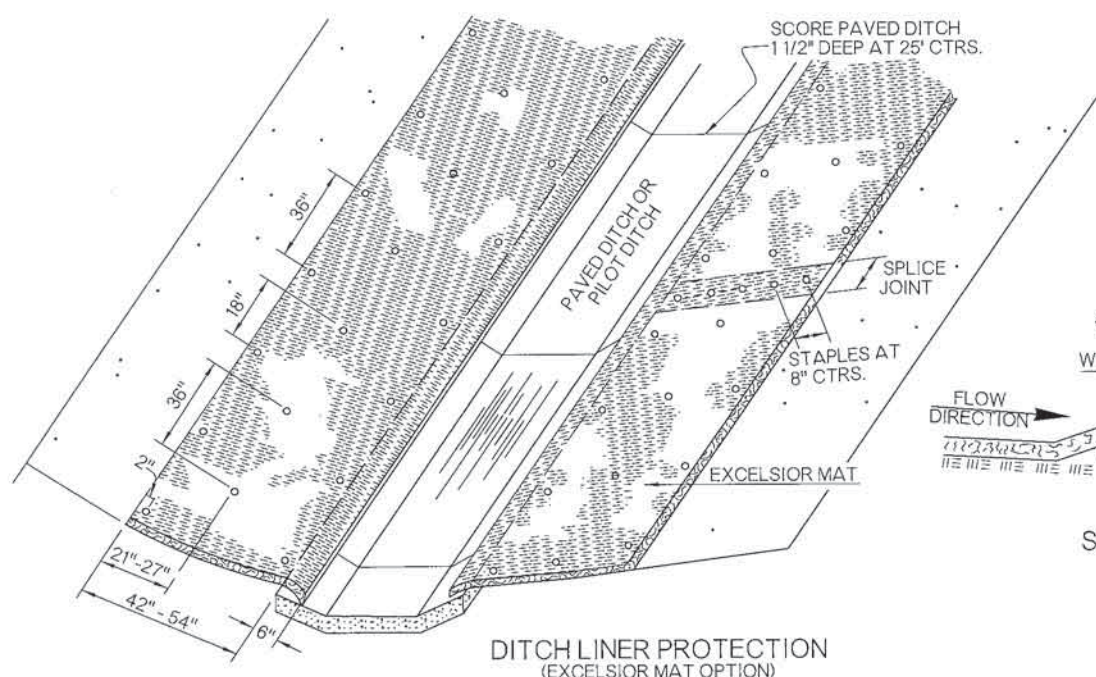
■ DIMENSION TO BE SPECIFIED IN INCHES

APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE: 04/16/15

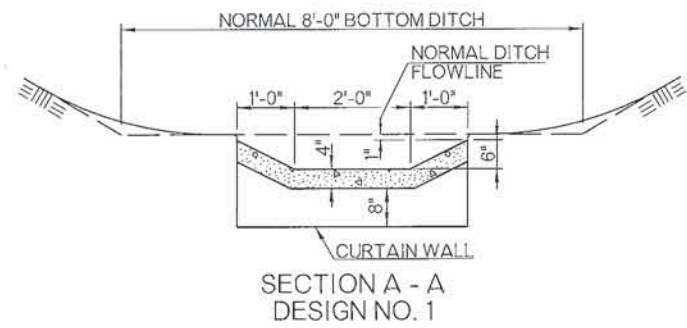
ROADWAY DESIGN DIVISION STANDARD

DOT PIPE UNDERDRAIN INSTALLATION

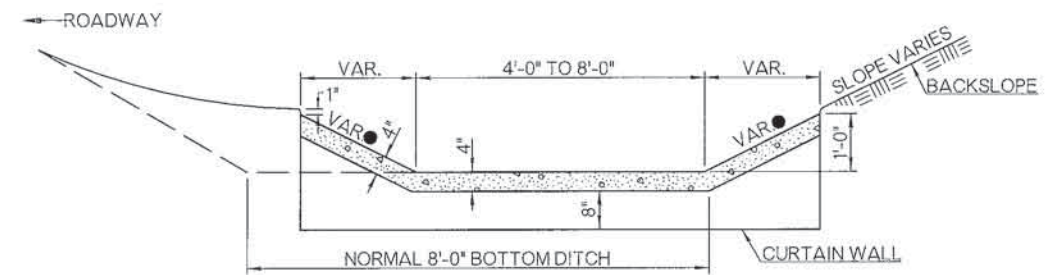
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



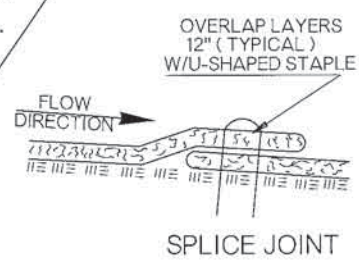
DITCH LINER PROTECTION
(EXCELSIOR MAT OPTION)



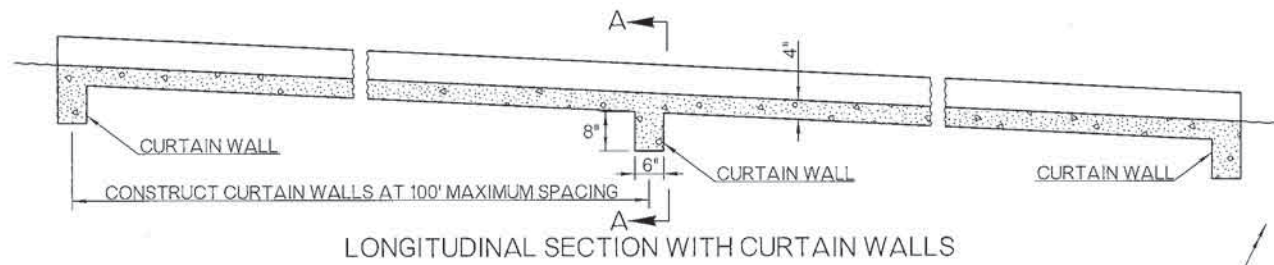
SECTION A - A
DESIGN NO. 1



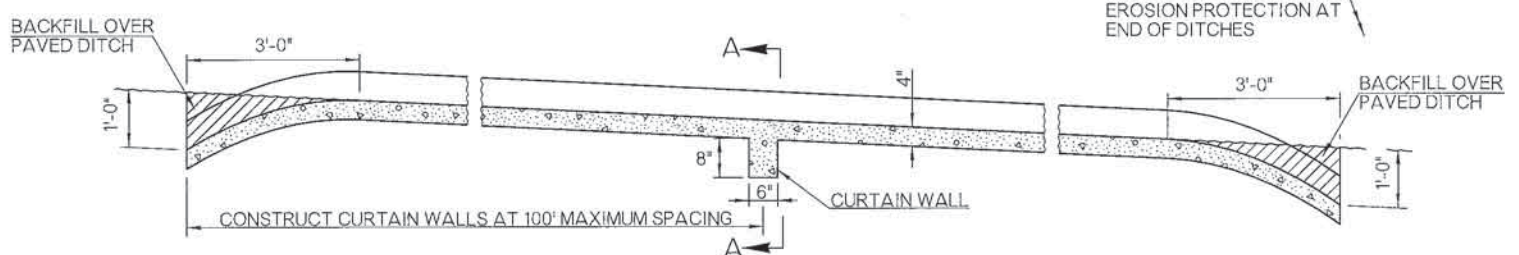
SECTION A - A
DESIGN NO. 2



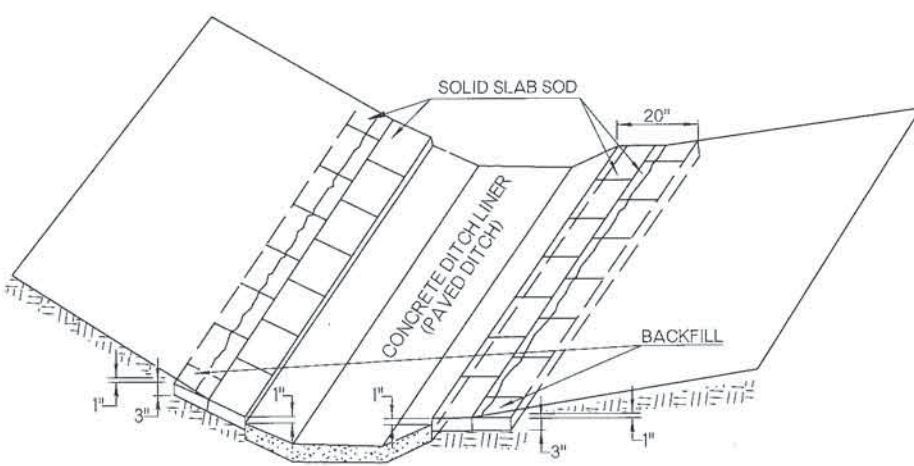
SPLICE JOINT



LONGITUDINAL SECTION WITH CURTAIN WALLS



OPTIONAL LONGITUDINAL SECTION WITH BURIED ENDS
(BURIED ENDS SHALL NOT BE USED ADJACENT TO DRAINAGE STRUCTURES)



DITCH LINER PROTECTION
(SOLID SLAB SOD OPTION)

DESIGN NO. 1 - A PAVED PILOT DITCH TO BE PLACED 6" BELOW THE NORMAL FLOWLINE AND IN THE CENTER OF A STANDARD DITCH

DESIGN NO. 2 - A DITCH THAT IS PAVED AND HAVING THE SAME FLOWLINE AS A STANDARD UNPAVED DITCH

- GENERAL NOTES**
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 2. ALL COST OF ADDITIONAL BORROW OR EXCAVATION, REQUIRED FOR INSTALLING PAVED DITCH, SHALL BE INCLUDED IN PRICE BID FOR CLASS C CONCRETE.
 3. THE DITCH SHALL BE WATERED, AND COMPACTED, BEFORE PLACING CLASS C CONCRETE.
 4. DITCH LINER PROTECTION MAY BE EITHER EXCELSIOR MAT, OR SOLID SLAB SOD, AND SHALL BE MEASURED BY THE LINEAR FOOT OF DITCH (PAVED DITCH), IN PLACE.

QUANTITIES OF CLASS C CONCRETE PER LF OF PAVED DITCH										
QUANTITIES IN CUBIC YARDS										
BOTTOM WIDTH	DESIGN NO. 1					DESIGN NO. 2				
	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"
K 1	.0522	.0645	.0769	.0892	.1016	.1274	.1397	.1521	.1644	.1768
K 2	.0586	.0709	.0832	.0955	.1078	.1790	.1913	.2036	.2159	.2282
● VARIABLE AS SHOWN ON PLANS						K 1	.1045	.1168	.1292	.1415
DESIGN 2A = 1:3 SLOPES						K 2	.1357	.1480	.1603	.1726
DESIGN 2B = 1:2 SLOPES						K 1	.0923	.1048	.1172	.1295
DESIGN 2C = 1:1 SLOPES						K 2	.1105	.1228	.1352	.1476
TOTAL CLASS C CONC. = (LENGTH OF PAVED DITCH) (K1) + (NO. OF CURT. WALLS) (K2)										
K1=CU. YDS. OF CONCRETE PER LINEAR FOOT										
K2=CU. YDS. OF CONCRETE PER CURTAIN WALL										

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
509 (D)	CLASS C CONCRETE	CY
229	DITCH LINER PROTECTION	LF

APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE: 04/14/15

ROADWAY DESIGN DIVISION STANDARD

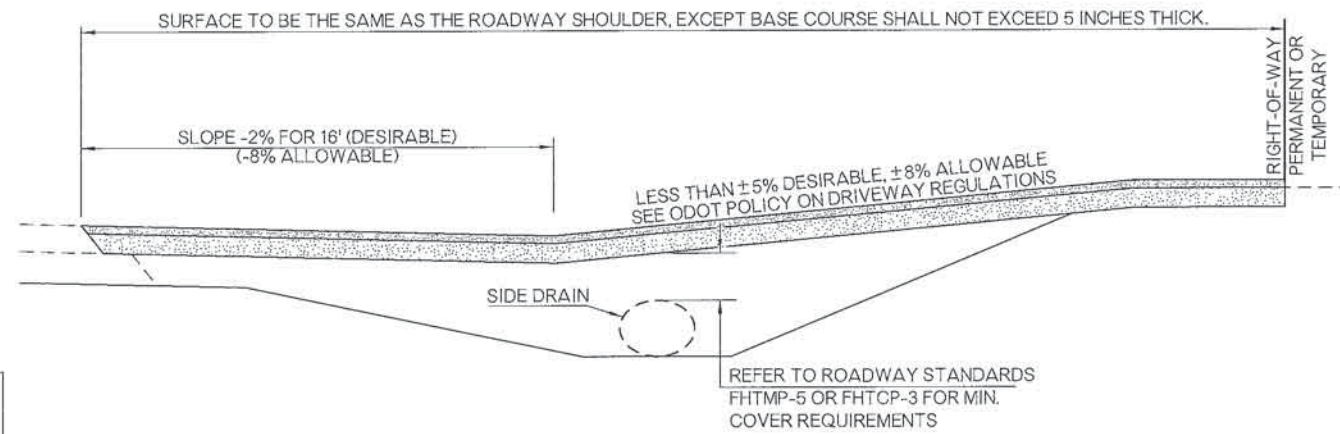
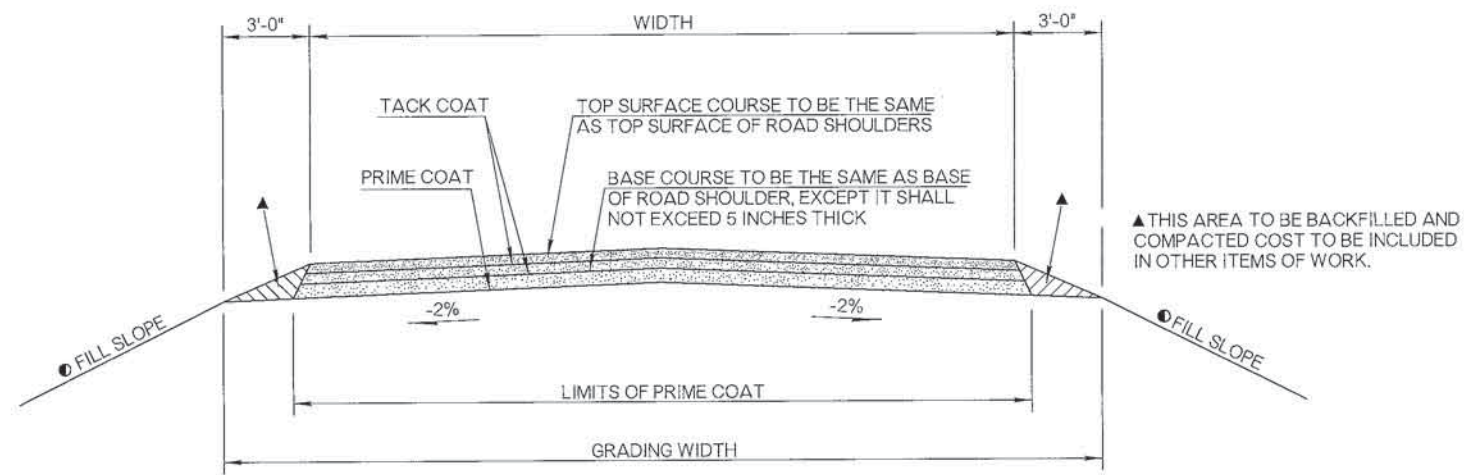
DOT

PAVED DITCHES AND FLUMES

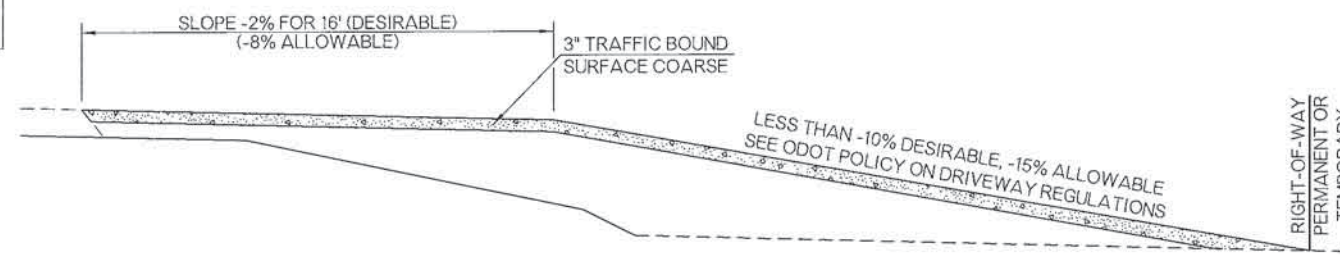
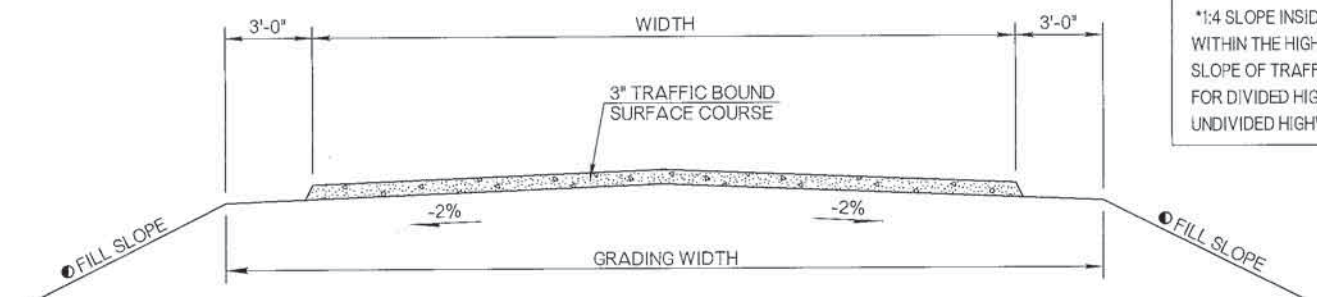
OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

DC-3	2
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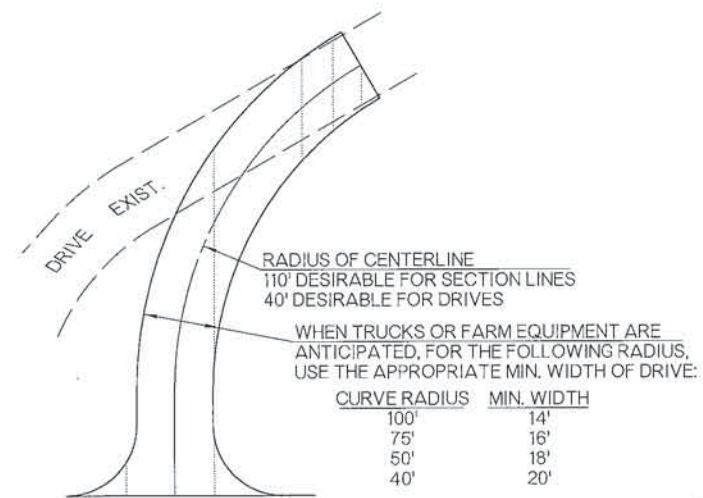
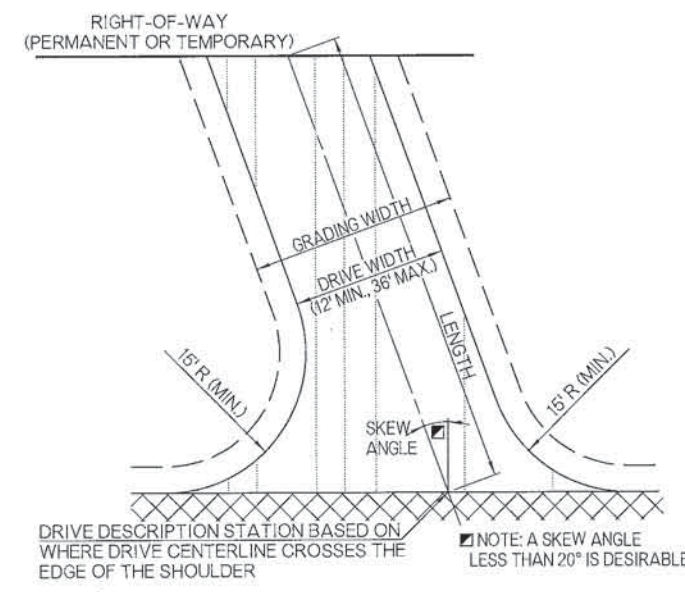
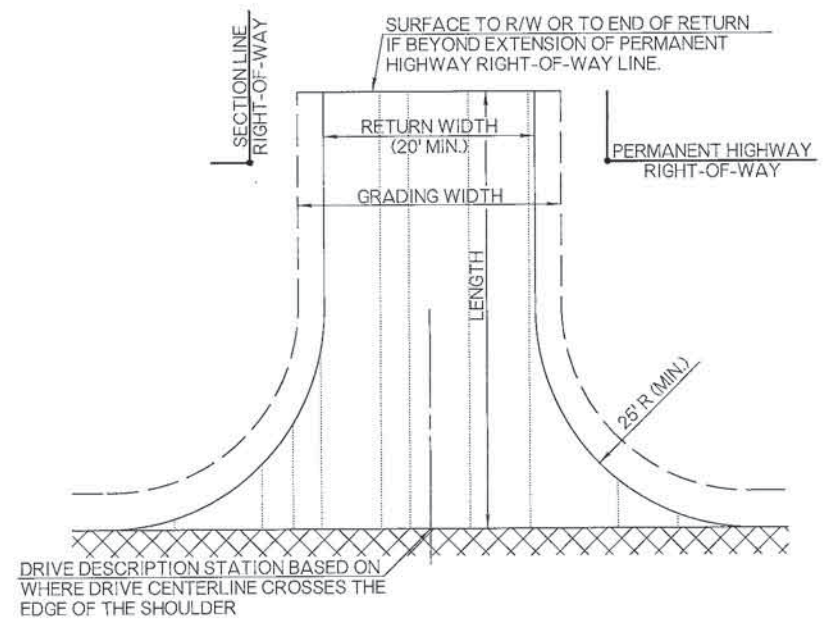
R-64



● FILL SLOPE NOTES:
FILL SLOPE AS SHOWN IN TYPICAL SECTIONS SHALL NOT EXCEED:
*1:3 SLOPE OUTSIDE HIGHWAY CLEARZONE
*1:4 SLOPE INSIDE HIGHWAY CLEARZONE
WITHIN THE HIGHWAY CLEARZONE, ADJUST SLOPE OF TRAFFIC APPROACH END TO 1:10 FOR DIVIDED HIGHWAYS AND 1:5 FOR UNDIVIDED HIGHWAYS.



PROFILE OF TYPICAL T.B.S.C. RETURN/DRIVE ON ROADWAY FILL SECTION



USEFUL ABBREVIATIONS FOR PLAN SHEETS:

ASPH.	ASPHALT
T.B.S.C.	TRAFFIC BOUND SURFACE COARSE
CONC.	CONCRETE
SEC. RET.	SECTION LINE RETURN
FIELD ENT.	FIELD ENTRANCE
PVT. DRIVE	PRIVATE DRIVE
COMM. DRIVE	COMMERCIAL DRIVE
W/S.D.	WITH SIDE DRAIN
AS DIKE	AS DIKE ACROSS DITCH

SECTION LINE OR DRIVE WITH CURVED ALIGNMENT

PROPOSED DRIVES AND RETURNS SHALL MATCH EXISTING EXCEPT WHEN SKEW ANGLE EXCEEDS 20 DEGREES; IT IS THEN DESIRED TO SHIFT THE LOCATION AND CONSTRUCT USING CURVED ALIGNMENT

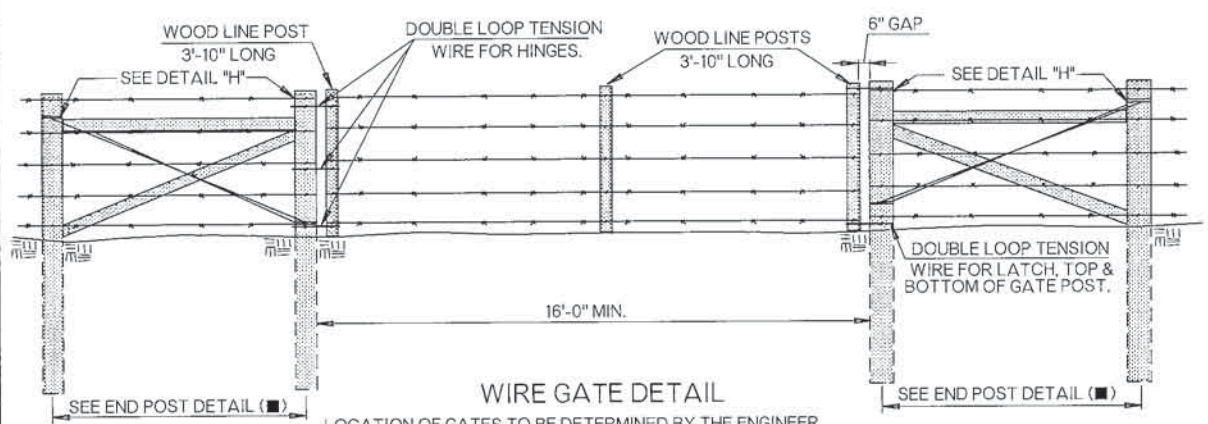
APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE: 04/16/15

ROADWAY DESIGN DIVISION STANDARD

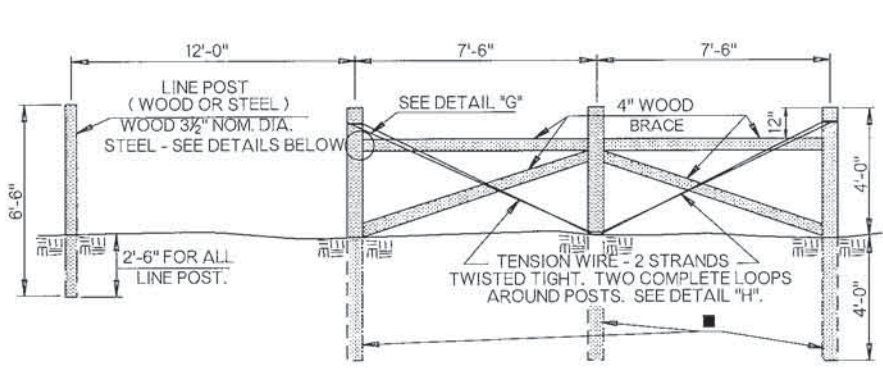
DOT RURAL DRIVEWAY INSTALLATION

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

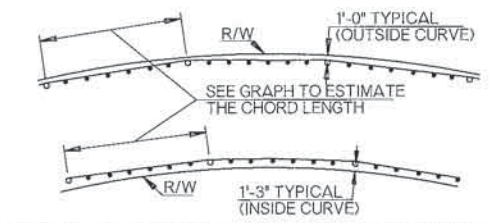
RDI-3	1
R-63	



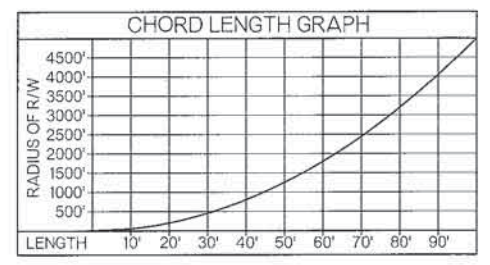
WIRE GATE DETAIL
LOCATION OF GATES TO BE DETERMINED BY THE ENGINEER. OTHER TYPES OF GATES MAY BE SUBSTITUTED FOR THE WIRE GATE, SUCH AS PREFABRICATED PIPE TUBING TYPES OR RANCH STYLE METAL PANEL TYPE, IF APPROVED BY THE ENGINEER. COST OF WIRE GATE SHALL BE INCLUDED IN THE PRICE BID FOR FENCE.



CORNER & STRETCHER POSTS DETAIL
USE STRETCHER DETAILS AT ALL CORNERS, BENDS IN R/W, ON HILLTOPS, IN VALLEYS OR DEEP DEPRESSIONS, AND AT 500' MAXIMUM SPACING.

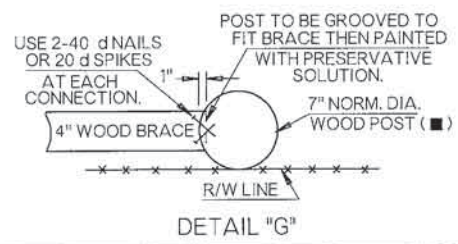
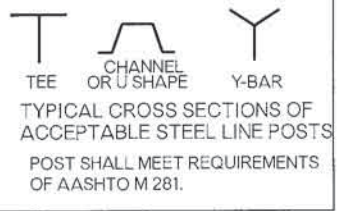


TYPICAL PLACEMENT FOR FENCE ALONG CURVES (WHEN R/W RADIUS IS LESS THAN 5000')

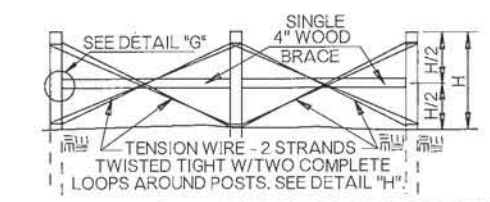


FENCING SYMBOLS ON PLANS - SEE PLAN AND PROFILE SHEETS FOR LOCATION

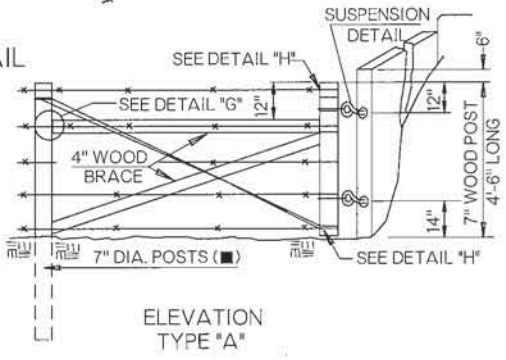
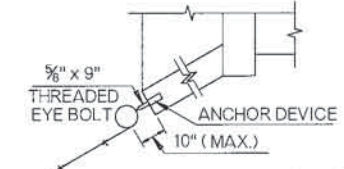
- RIGHT-OF-WAY FENCE
- END POST
- CORNER POST
- GATE
- FAN
- STRETCHER POST
- CROSS FENCE CONNECTOR



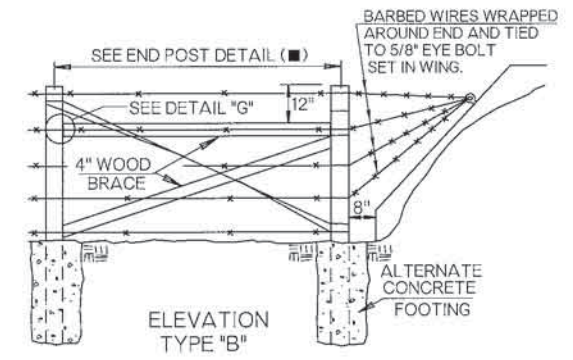
IF 3 1/2" DIA. x 8'-0" LONG GALV. STEEL (SCH. 40) PIPE IS USED AS ALTERNATIVE POST (■), THEN 2" DIA. GALV. STEEL PIPES (SCH. 40) WILL BE USED AS BRACING AND ATTACHED USING STANDARD CHAIN LINK FENCE HARDWARE MEETING THE REQUIREMENTS OF AASHTO M 181 & ASTM A53. SEE CHAINLINK DETAILS ON ROADWAY STANDARD RWF3-2.



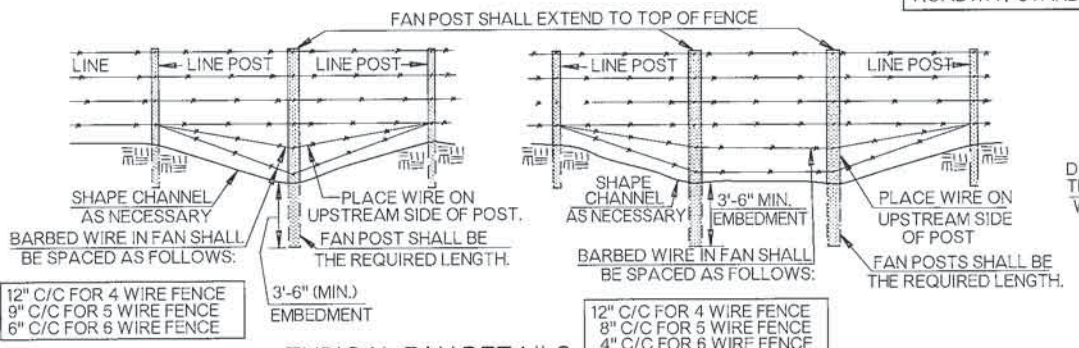
CORNER & STRETCHER POSTS DETAIL ALTERNATIVE



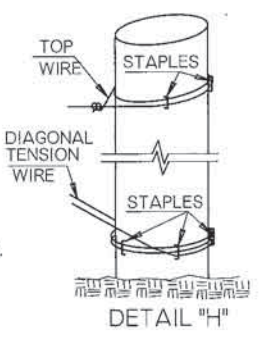
ELEVATION TYPE 'A'



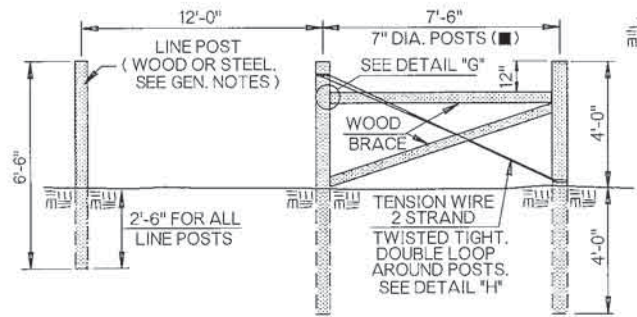
ELEVATION TYPE 'B'



TYPICAL FAN DETAILS
(FOR SMALL DRAINS AND IRREGULAR TERRAIN)

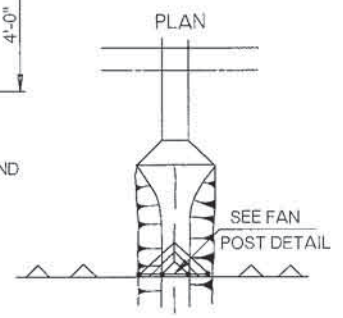


DETAIL 'H'



END POST DETAIL

USE FOR CROSS FENCE CONNECTIONS.
NOTE: ALL WIRES SHALL MAKE TWO COMPLETE WRAPS AROUND END POST, THEN AROUND THEMSELVES TWO TURNS. USE EXTRA STAPLES ON END POSTS. SEE DETAIL 'H'.

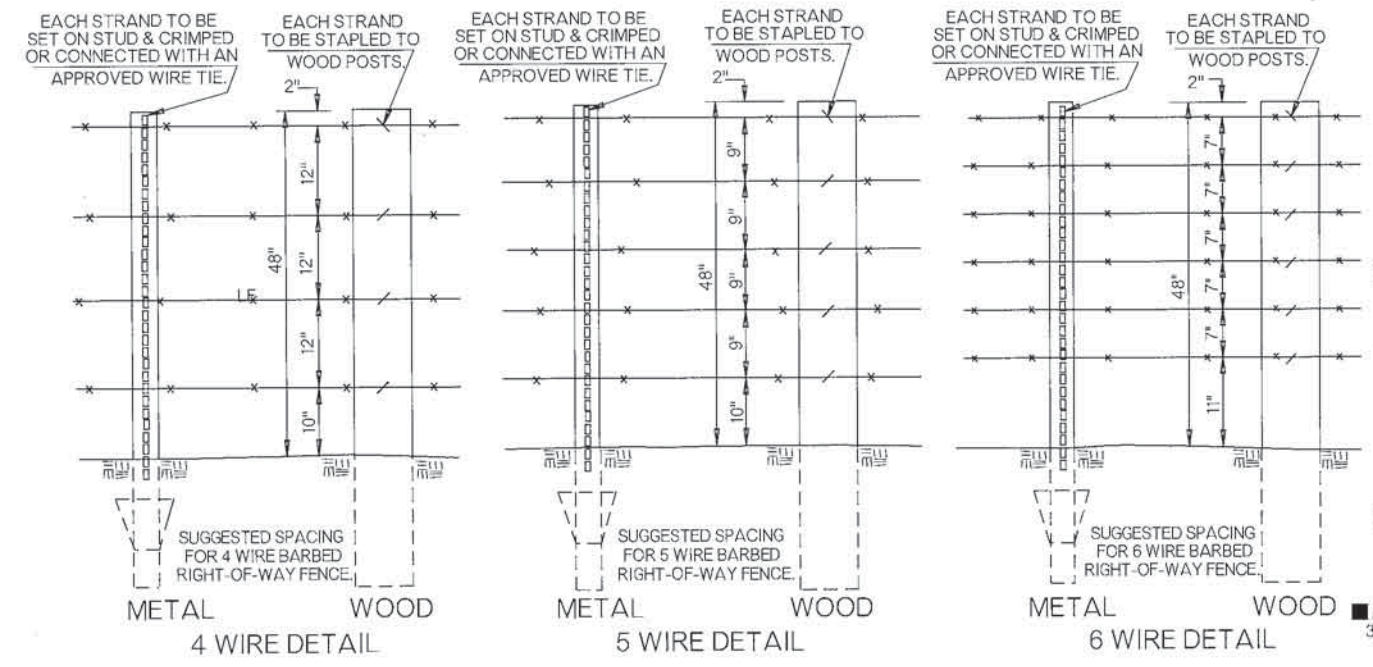


PLAN

CONNECTIONS AT CULVERTS

GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- FENCE, IN GENERAL, SHALL BE ON OUTSIDE OF POSTS AWAY FROM CENTERLINE OF HIGHWAY AND CONSTRUCTED ON THE PERMANENT RIGHT-OF-WAY (EXCEPTIONS ARE CORNERS AND CURVES).
- HINGES AND LOOP LATCH ON WIRE GATES SHALL BE FABRICATED FROM TENSION WIRE. THE HINGES (3 PER POST) SHALL BE FORMED OF DOUBLE LOOPS ON THE GATE POST. THE LOOP HINGES AROUND THE WIRE GATE POST SHALL BE FORMED LOOSE FOR EASE OF MOVEMENT. THE TOP 2 (TOP AND BOTTOM) LOOP STRETCHER POSTS TO BE USED IN GENERAL AT HILL TOPS AND AT BOTTOM OF VALLEYS AND AT A MAXIMUM OF 500 FEET APART.
- ALL MISCELLANEOUS HARDWARE SHALL BE FURNISHED GALVANIZED OR ALUMINUM COATED. ALL ALTERNATIVE METAL PIPE POSTS SHALL BE CAPPED.



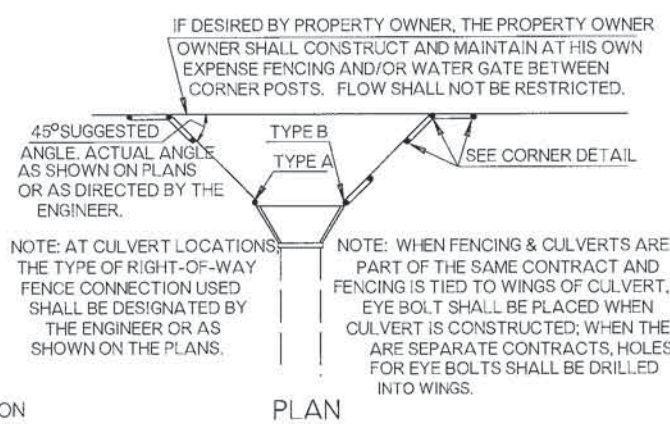
4 WIRE DETAIL

5 WIRE DETAIL

6 WIRE DETAIL



ALTERNATE POST OPTION
3 1/2" DIA. X 8'-0" LG. CAPPED GALV. SCH. 40 STEEL PIPE



PLAN

IF DESIRED BY PROPERTY OWNER, THE PROPERTY OWNER SHALL CONSTRUCT AND MAINTAIN AT HIS OWN EXPENSE FENCING AND/OR WATER GATE BETWEEN CORNER POSTS. FLOW SHALL NOT BE RESTRICTED.

NOTE: AT CULVERT LOCATIONS, THE TYPE OF RIGHT-OF-WAY FENCE CONNECTION USED SHALL BE DESIGNATED BY THE ENGINEER OR AS SHOWN ON THE PLANS.

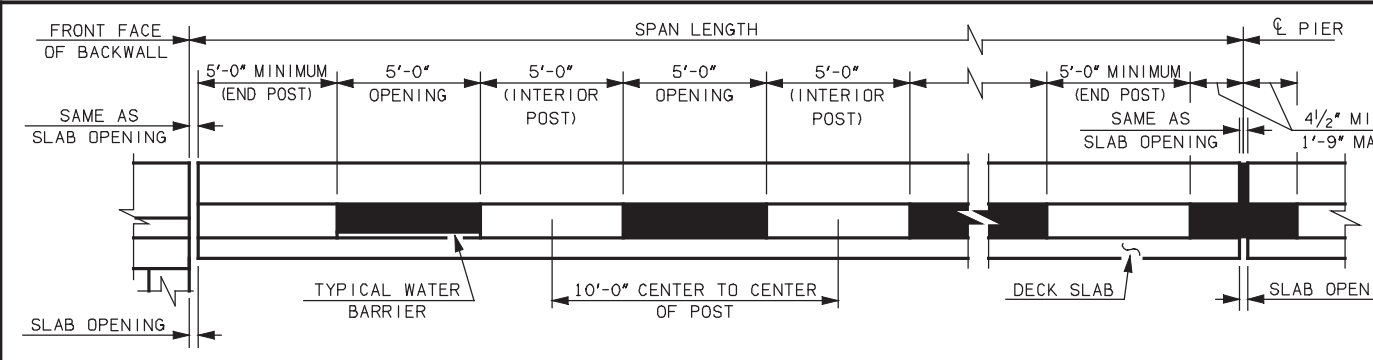
NOTE: WHEN FENCING & CULVERTS ARE PART OF THE SAME CONTRACT AND FENCING IS TIED TO WINGS OF CULVERT, EYE BOLT SHALL BE PLACED WHEN CULVERT IS CONSTRUCTED; WHEN THEY ARE SEPARATE CONTRACTS, HOLES FOR EYE BOLTS SHALL BE DRILLED INTO WINGS.

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
624 (C)	FENCE-STYLE SWF (● BARBED WIRE)	LF
624 (C)	FENCE-STYLE SWF (● SMOOTH WIRE)	LF
624 (C)	FENCE-STYLE SWF (● BARBLESS WIRE)	LF

● NUMBER OF STRANDS

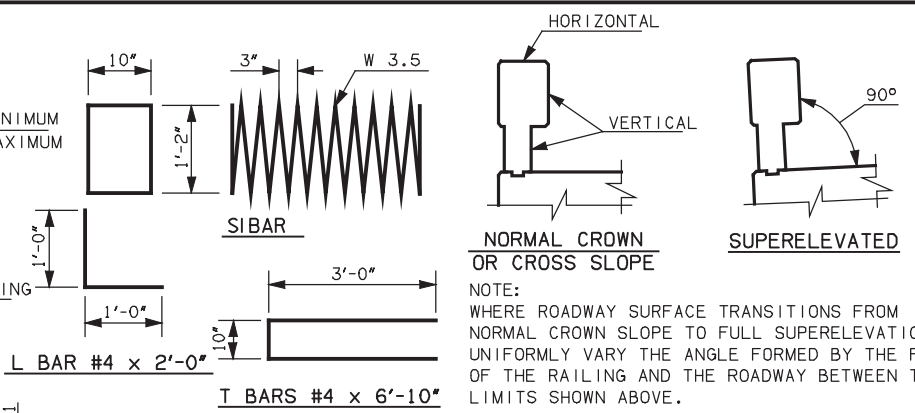
DESCRIPTION	REVISIONS	DATE



AT EXPANSION ABUTMENTS

AT EXPANSION PIERS

ELEVATION OF RAIL WITH EXPANSION JOINTS



NORMAL CROWN OR CROSS SLOPE

SUPERELEVATED

NOTE: WHERE ROADWAY SURFACE TRANSITIONS FROM NORMAL CROWN SLOPE TO FULL SUPERELEVATION, UNIFORMLY VARY THE ANGLE FORMED BY THE FACE OF THE RAILING AND THE ROADWAY BETWEEN THE LIMITS SHOWN ABOVE.

CONCRETE RAIL (TR3) NOTES

CONSTRUCT THE CONCRETE RAIL (TR3) TO MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (ENGLISH) AS WELL AS THE FOLLOWING REQUIREMENTS:

S-BARS (SPIRAL BARS):
WHEN TWO OR MORE S-BARS ARE USED IN A CONTINUOUS RAIL SECTION, BUTT THEIR ENDS TOGETHER WITHIN THE CENTER 3'-0" OF A RAIL POST. S-BARS ARE NOT TO BE EPOXY COATED.

CLASS AA CONCRETE:
CLASS AA CONCRETE SHALL BE USED IN THE CONCRETE RAIL (TR3). ALL COSTS OF CONCRETE TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF "CONCRETE RAIL (TR3)".

SR-BARS (VERTICAL POST BARS):
PLACE AND TIE ALL SRIBARS BEFORE CONCRETE IS PLACED IN THE DECK SLAB, APPROACH SLABS, OR WINGWALLS AS APPLICABLE. ROTATE HORIZONTAL LEGS OF THE SRIBARS TO MAINTAIN CONCRETE COVER IN WINGWALL APPLICATIONS. ALL REINFORCING STEEL SHALL BE EPOXY COATED REINFORCING STEEL AND SHALL BE PAID FOR IN THE PRICE BID PER LB OF "EPOXY COATED REINFORCING STEEL".

WATER BARRIER:
WATER BARRIERS, AS DETAILED, SHALL BE PROVIDED AT RAIL OPENINGS THAT DRAIN ONTO UNDERCROSSING ROADWAYS AND SIDEWALKS AS SHOWN IN THE PLANS AND AT OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. PLACE THE CONCRETE FOR THE WATER BARRIER CONCURRENTLY WITH THE PLACEMENT OF THE CONCRETE IN THE POSTS. INCLUDE THE COST OF WATER BARRIERS IN THE PRICE BID FOR "CONCRETE RAIL (TR3)".

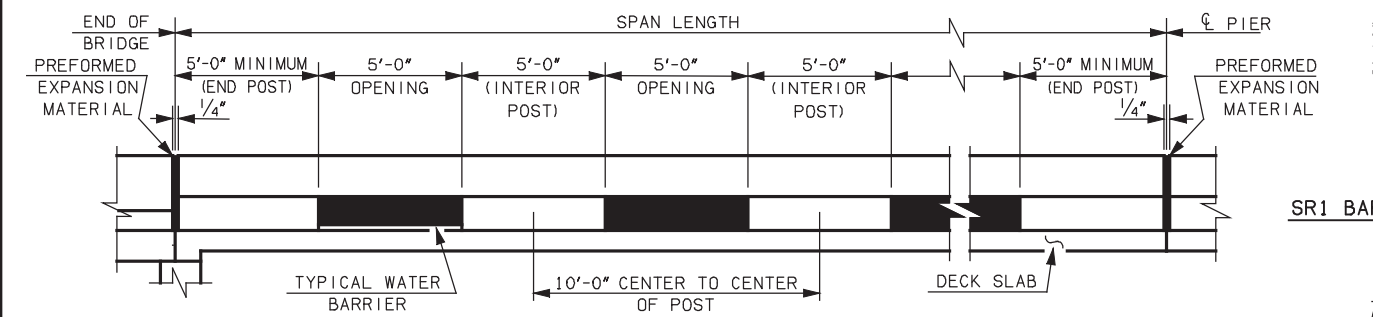
CONCRETE RAIL CONSTRUCTION:
CONSTRUCT RAILING WITHIN THE GUIDELINES AS SHOWN IN THE PLACEMENT DETAILS. LAYOUT THE POSTS AS SHOWN IN THE DETAILS ON THIS SHEET UNLESS OTHERWISE SHOWN IN THE PLANS. CONSTRUCT THE OPENINGS SUCH THAT THE END FACE OF THE POST IS PERPENDICULAR TO THE ROADWAY PROFILE GRADE. FOR RAILS ON A HORIZONTAL CURVE, CONSTRUCT THE RAIL TO THE REQUIRED RADIUS.

CONSTRUCTION JOINTS:
PLACE A CONSTRUCTION JOINT AT EACH FIXED ABUTMENT AND FIXED PIER, AND AT OTHER LOCATIONS AS SHOWN IN THE PLANS. PLACE 1/4" THICK PREFORMED EXPANSION MATERIAL IN THE CONSTRUCTION JOINT, SUCH THAT IT COVERS THE ENTIRE AREA OF THE RAIL AND POST IN ACCORDANCE WITH THE DETAILS SHOWN.

EXPANSION JOINTS:
AT EXPANSION JOINTS IN THE DECKSLAB OR APPROACH SLAB, MATCH THE WIDTH OF THE OPENING BETWEEN THE ENDS OF THE RAILING WITH THE OPENING OF THE EXPANSION JOINT. CONSTRUCT THE OPENING BETWEEN THE END POST AND THE EXPANSION JOINT AS SHOWN ON THE PLANS WITHIN THE MAXIMUM AND MINIMUM DIMENSIONS AS SHOWN ON THIS SHEET.

CONTROL CRACK JOINTS:
WHEN PLANS CALL FOR A CONTROL CRACK JOINT PROVIDE DOUBLE 3/4" CHAMFERS OR 3/4" DEEP SAWCUT IN ACCORDANCE WITH THE DETAILS SHOWN. ALL BARS SHALL BE CONTINUOUS THROUGH THE CONTROL CRACK JOINTS.

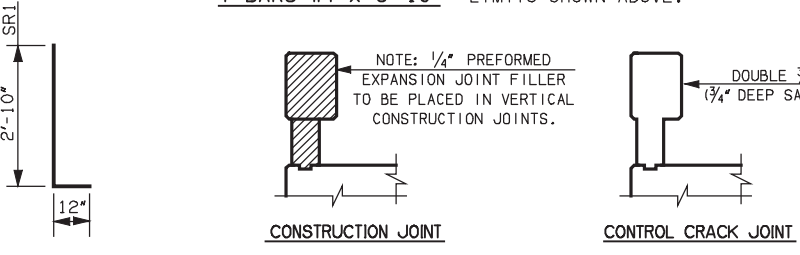
GUARDRAIL CONNECTION:
FORM OR DRILL HOLES, AS SHOWN, FOR THE CONNECTION OF GUARDRAIL BRIDGE CONNECTION AT THE LOCATIONS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. IT IS THE RESPONSIBILITY OF THE BRIDGE CONTRACTOR TO PROVIDE THE HOLES. THE CONTRACTOR THAT INSTALLS THE GUARDRAIL WILL BE RESPONSIBLE FOR INSTALLING THE GUARDRAIL BRIDGE CONNECTIONS. INCLUDE THE COST OF "T" BARS IN THE PRICE BID FOR "CONCRETE RAIL (TR3)".



AT FIXED ABUTMENTS

AT FIXED PIERS

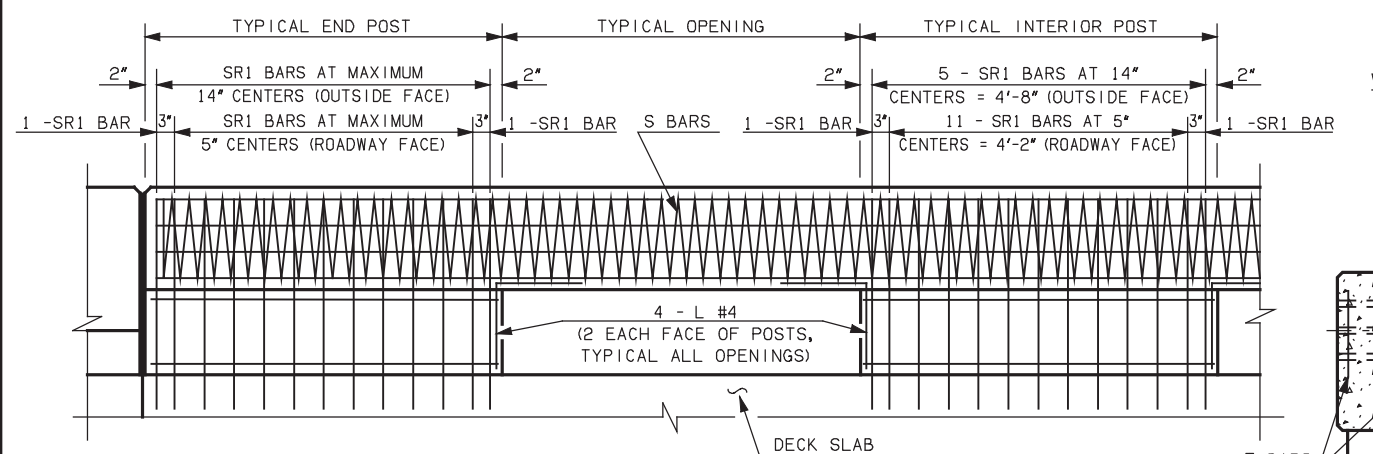
ELEVATION OF RAIL WITH FIXED JOINTS



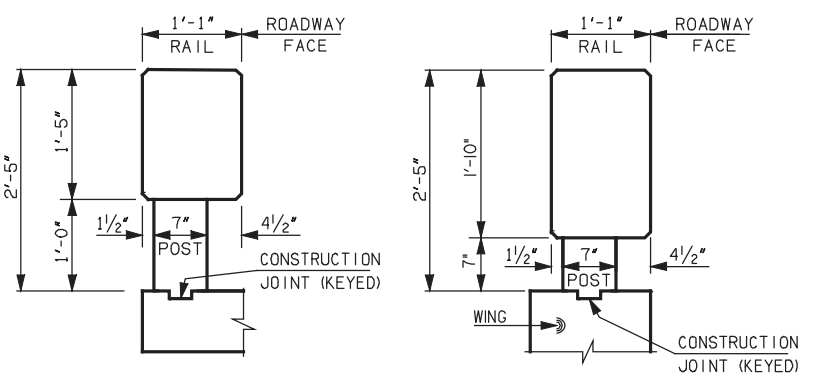
SR1 BARS #5 x 3'-10"

CONSTRUCTION JOINT

CONTROL CRACK JOINT

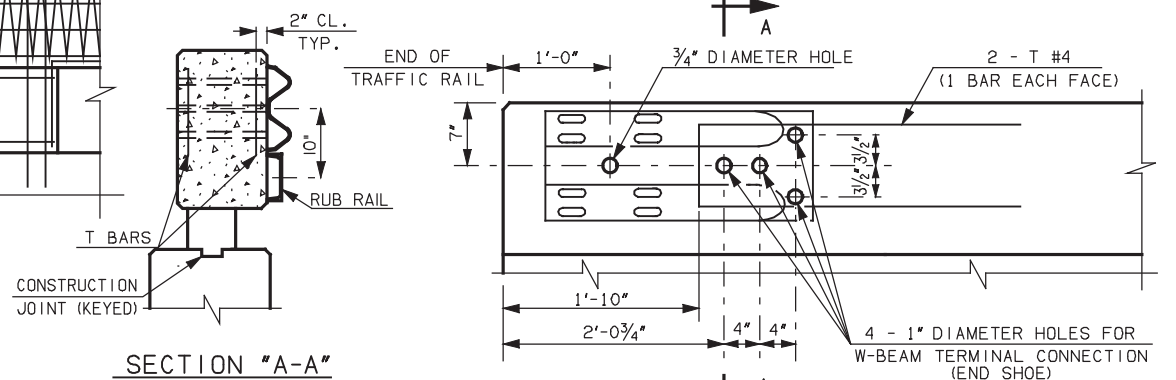


TRAFFIC RAIL REINFORCING



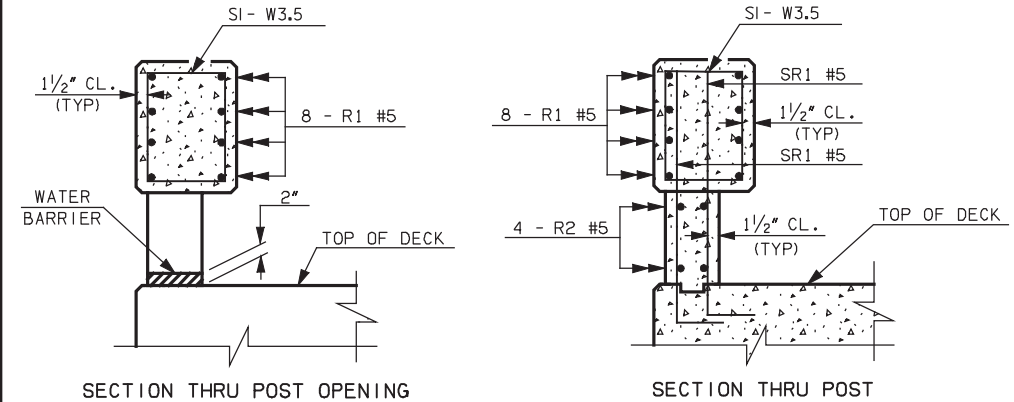
TRAFFIC RAIL DETAIL

TRAFFIC RAIL DETAIL AT WING



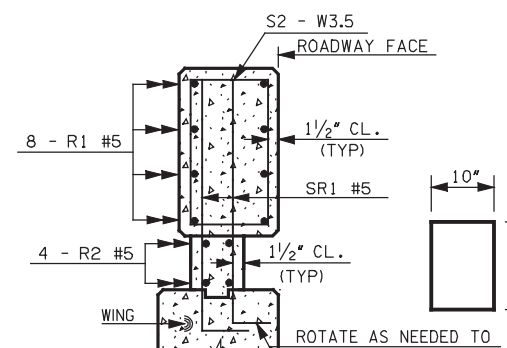
SECTION "A-A"

DETAIL "A"



SECTION THRU POST OPENING

SECTION THRU POST



TRAFFIC RAIL SECTION AT WING

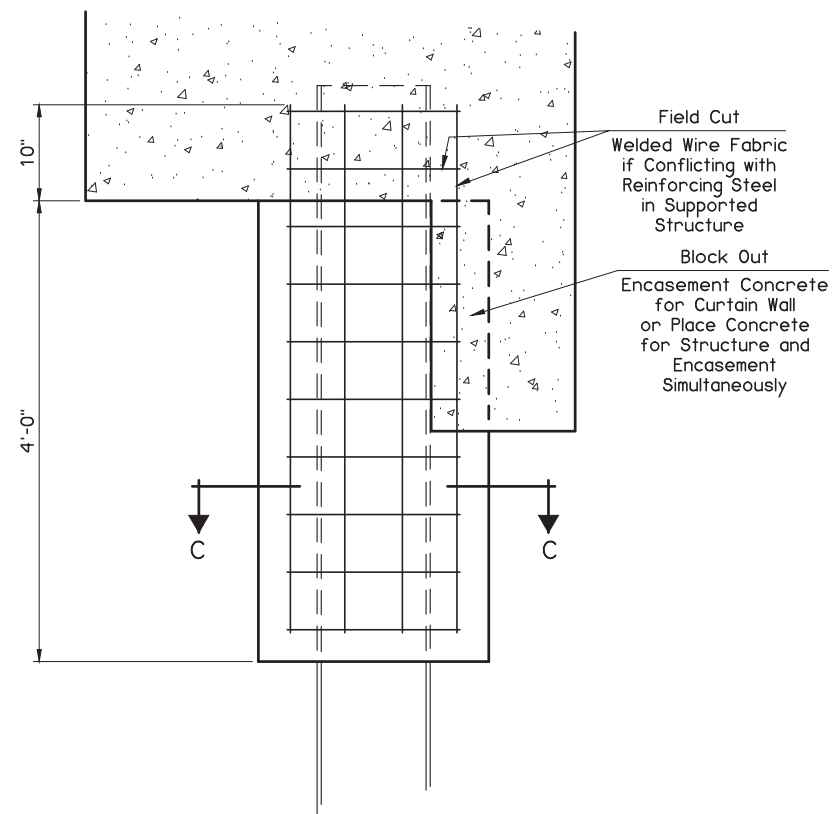
SECTION THRU RAIL AT BRIDGE DECK OR APPROACH SLAB

BASIS OF PAYMENT	
DESCRIPTION	UNIT
CONCRETE RAIL (TR3)	L.F.

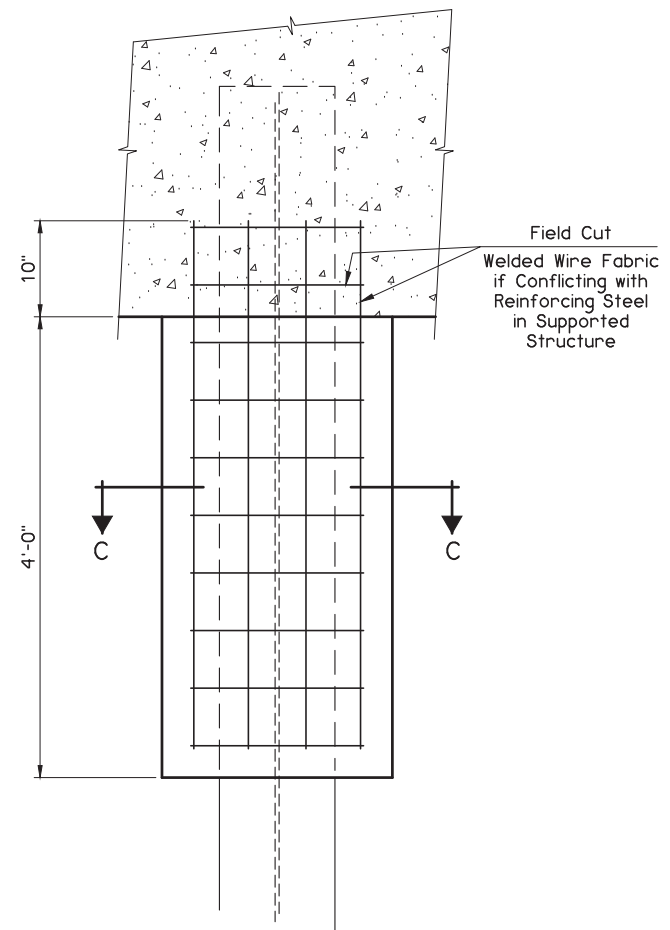
APPROVED BY BRIDGE ENGINEER: [Signature] DATE: 1/17/13

OKLAHOMA DEPT. OF TRANSPORTATION
BRIDGE STANDARD (ENGLISH)

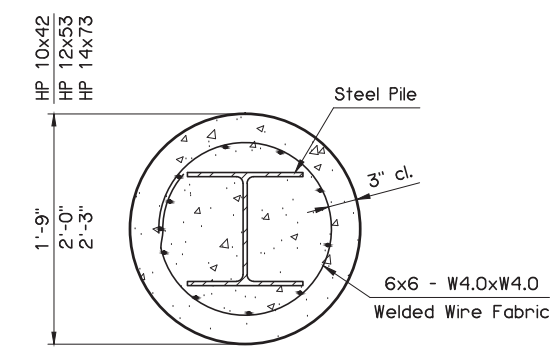
CONCRETE RAIL (TR3)



ELEVATION AT CURTAIN WALL



TYPICAL ELEVATION

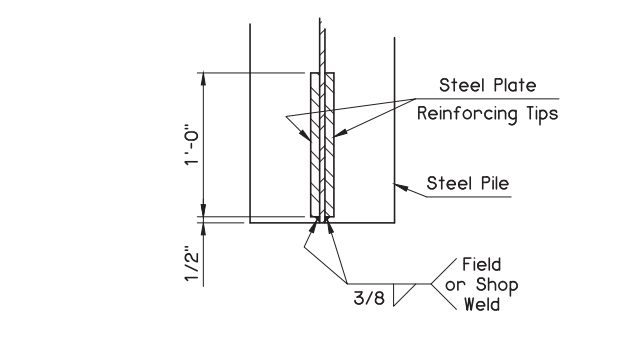


SECTION C-C

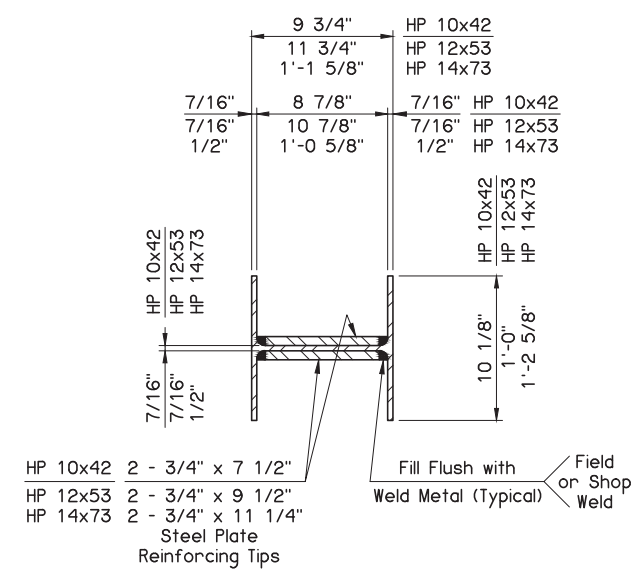
DETAIL OF STEEL PILE ENCASEMENT

NOTE:
Forms for Encasements may be omitted when soil conditions permit. Use only when specified in the plans. The Department considers the cost of Excavation, Forms, Class A Concrete and Welded Wire Fabric Reinforcing Steel for Steel Pile Encasements to be included in the contract unit price of PILES, DRIVEN.

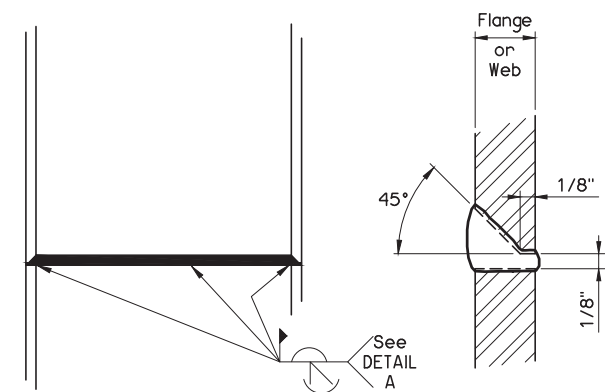
PILE ENCASEMENT QUANTITIES PER PILE				
ITEM	UNIT	HP 10x42	HP 12x53	HP 14x73
CLASS A CONCRETE	C.Y.	0.34	0.45	0.57
REINFORCING STEEL	LB.	16.2	18.3	20.3



SECTION A-A

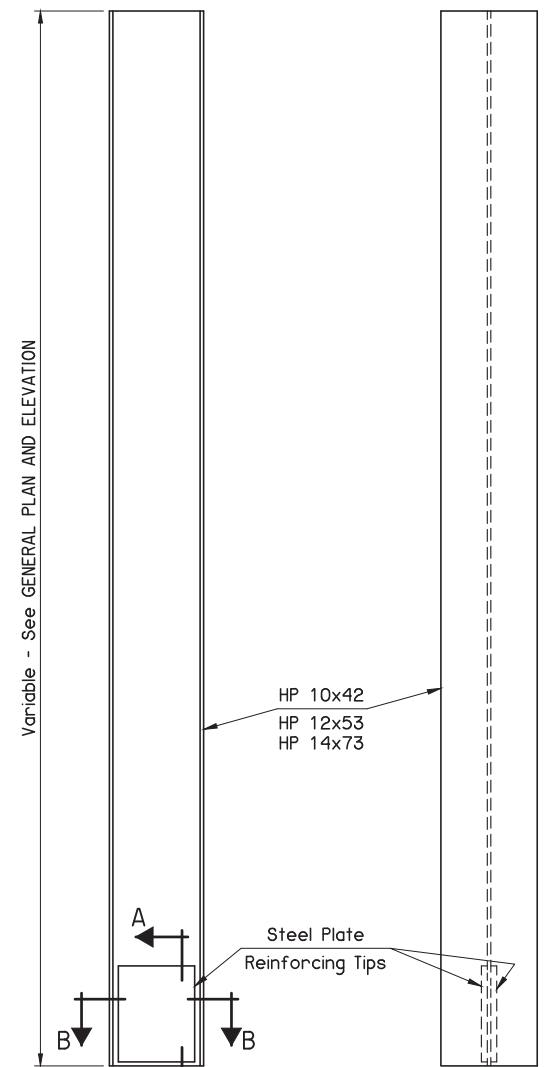


SECTION B-B



DETAIL OF WELDED SPLICE

NOTE:
The Contractor may use an ODOT approved Manufactured Pile Splice as an alternative to the Welded Splice shown.



ELEVATION OF WEB

ELEVATION OF FLANGE

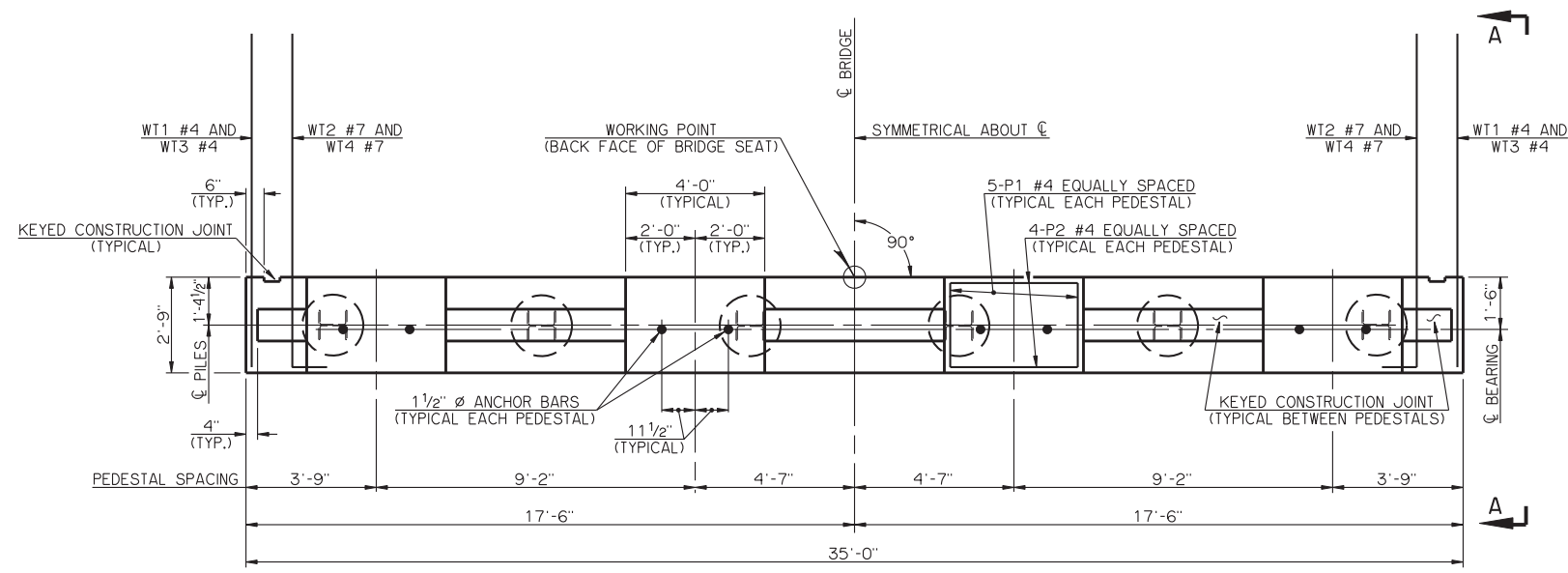
DETAIL OF PILING

NOTE:
Provide structural steel for Piling and Steel Plate Reinforcing Tips in accordance with AASHTO M270 (ASTM A572), Grade 50. Provide Steel Plate Reinforcing Tips for all Piling unless specifically deleted by notes in the Project Plans and Specifications. The Contractor may use Manufactured Driving Tips as an alternative to the Steel Plate Reinforcing Tips shown with approval by the Bridge Engineer. The Department considers the cost of Steel Plate Reinforcing Tips or Manufactured Driving Tips to be included in the contract unit price of PILES, FURNISHED.

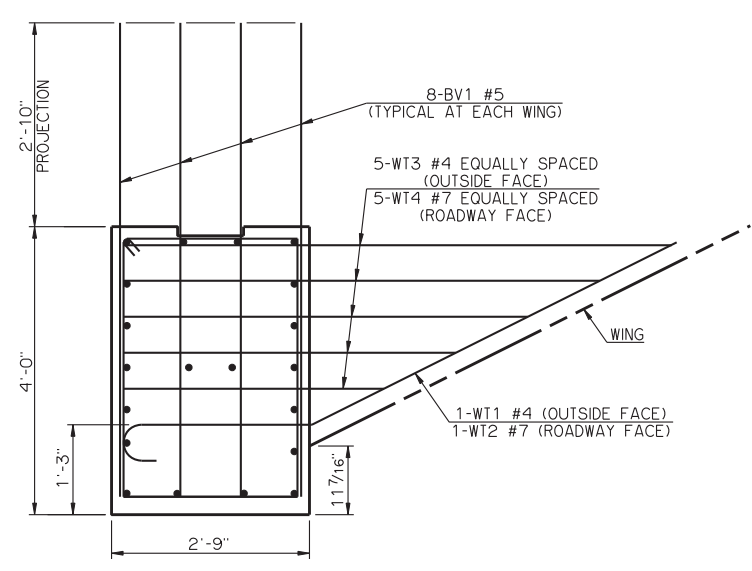
APPROVED BY BRIDGE ENGINEER *St. J.* DATE 12-20-16

OKLAHOMA DEPT. OF TRANSPORTATION
BRIDGE STANDARD (ENGLISH)

STEEL PILING



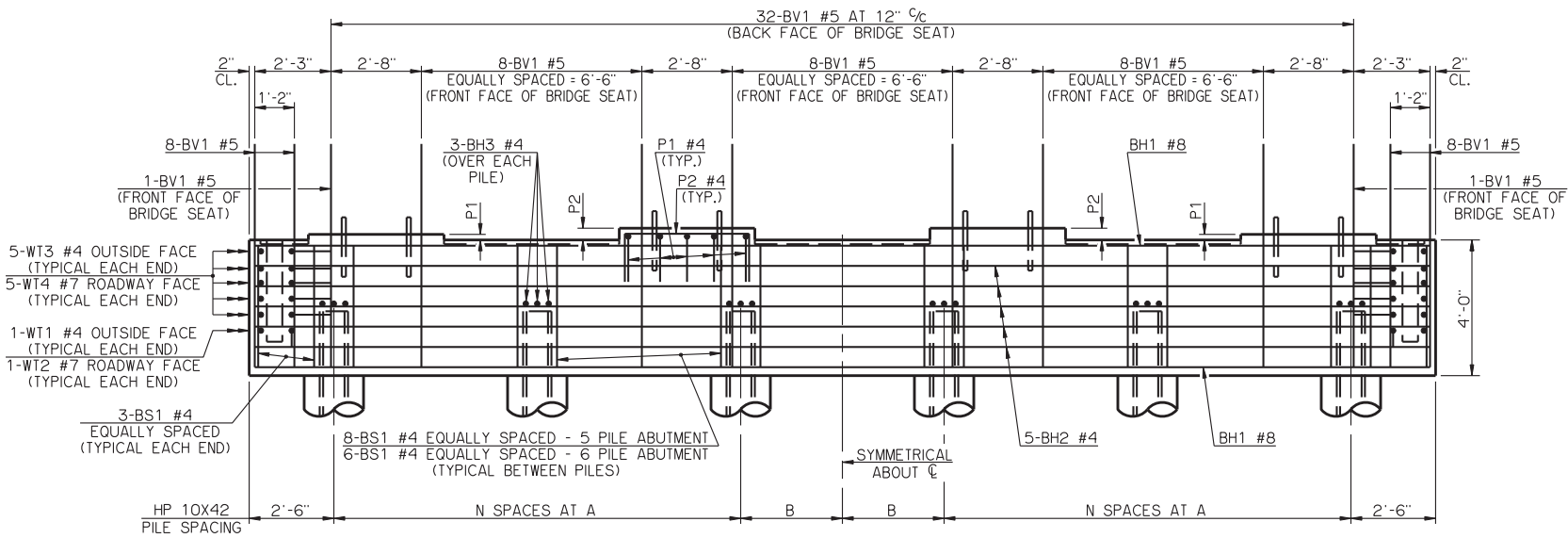
PLAN



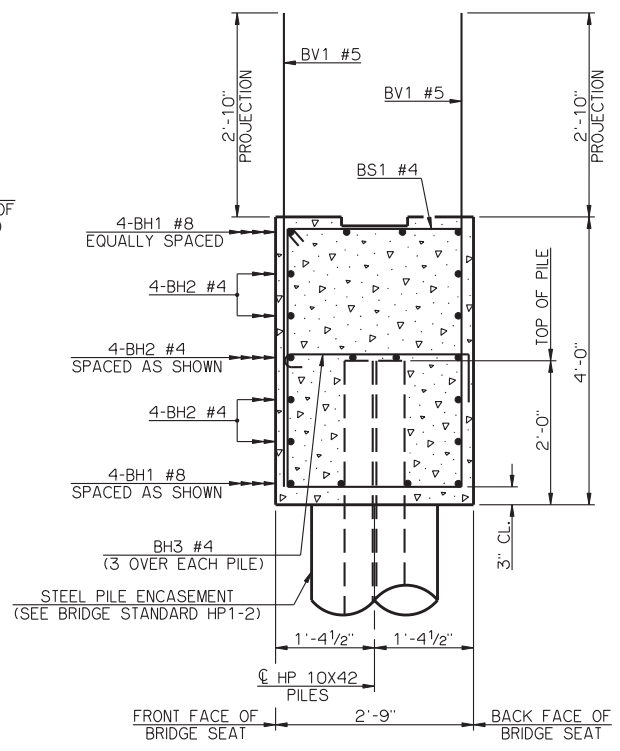
VIEW A-A

PEDESTAL DIMENSIONS		
BEAM TYPE	P1	P2
TYPE II	2"	4 ³ / ₁₆ "
TYPE B	4"	6 ³ / ₁₆ "

PILE SCHEDULE					
SPAN	TOTAL NUMBER OF PILES	N SPACES	A	B	MAXIMUM FACTORED PILE LOAD
30'	5	2	7'-6"	0'-0"	61.8 TON
35'	5	2	7'-6"	0'-0"	65.5 TON
40'	5	2	7'-6"	0'-0"	68.9 TON
45'	5	2	7'-6"	0'-0"	72.2 TON
50'	5	2	7'-6"	0'-0"	75.3 TON
55'	5	2	7'-6"	0'-0"	78.3 TON
60'	6	2	6'-0"	3'-0"	67.7 TON
65'	6	2	6'-0"	3'-0"	70.1 TON



ELEVATION



TYPICAL SECTION THRU BRIDGE SEAT

BAR LIST - ONE ABUTMENT					
MARK	NO.	SIZE	FORM	LENGTH	LENGTH VARIATION
BH1	8	#8	STR.	34'-8"	-
BH2	12	#4	STR.	34'-8"	-
BV1	74	#5	STR.	6'-7"	-
P1	20	#4	BNT.	5'-3"	-
P2	16	#4	BNT.	6'-6"	-
WT1	2	#4	BNT.	5'-2"	-
WT2	2	#7	BNT.	9'-1"	-
WT3	10	#4	STR.	5'-7 ¹ / ₂ " AVG.	3'-7" TO 7'-8"
WT4	10	#7	BNT.	6'-9 ¹ / ₂ " AVG.	4'-9" TO 8'-10"
ADDITIONAL BARS TO BE USED WITH 5 PILE ABUTMENTS					
BH3	15	#4	BNT.	3'-7"	-
BS1	38	#4	BNT.	12'-9"	-
ADDITIONAL BARS TO BE USED WITH 6 PILE ABUTMENTS					
BH3	18	#4	BNT.	3'-7"	-
BS1	36	#4	BNT.	12'-9"	-

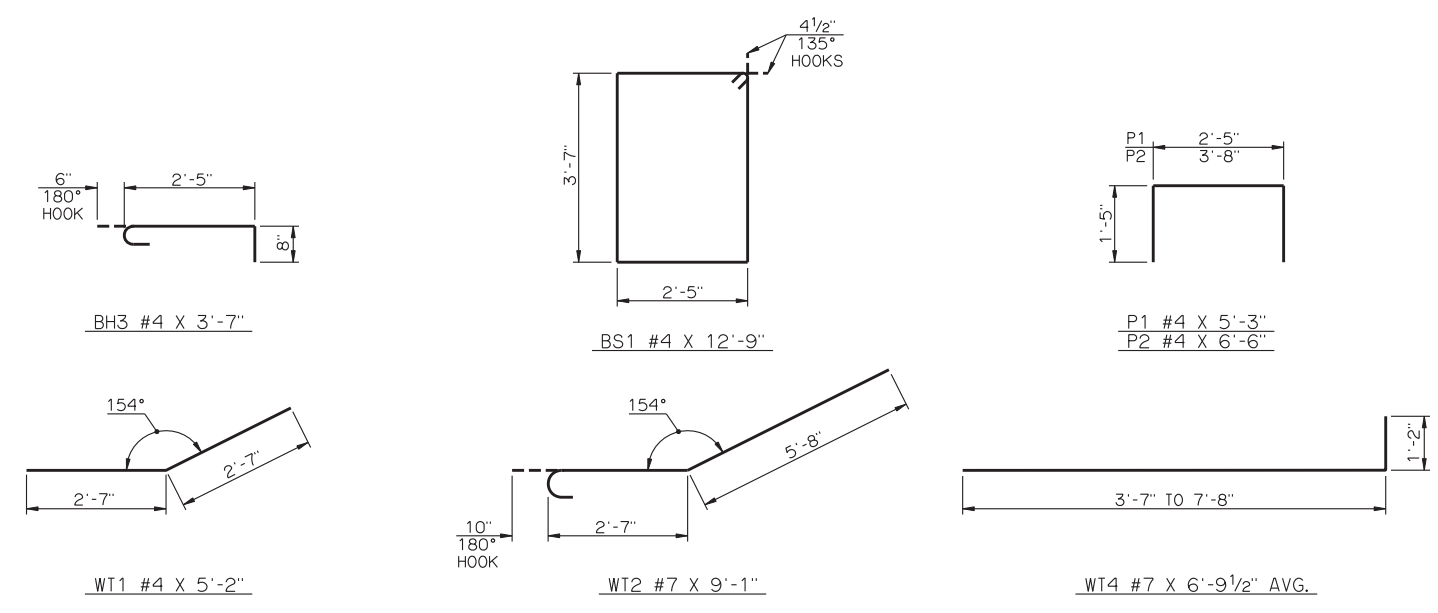
① NO. INCLUDES TWO SETS OF 5 BARS

SUMMARY OF QUANTITIES - ONE ABUTMENT ②			
ITEM	UNIT	TOTAL	
SUBSTRUCTURE EXCAVATION, COMMON	CY	40.00	
GRANULAR BACKFILL	CY	28.00	
CLASS A CONCRETE	CY	14.90	
REINFORCING STEEL	LB	2,250.00	
PILES, FURNISHED (HP 10X42)	LF	-	
PILES, DRIVEN (HP 10X42)	LF	-	
6" PERFORATED PIPE UNDERDRAIN	LF	32.00	
6" NON-PERFORATED PIPE UNDERDRAIN	LF	-	

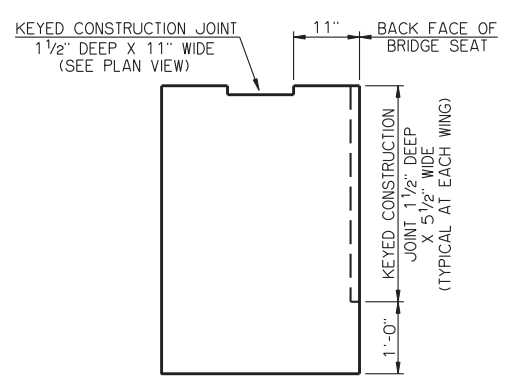
② EXCLUDES WINGS

NOTES

ABUTMENT WING CONCRETE SHALL NOT BE POURED UNTIL THE ABUTMENT DIAPHRAGMS OF THE SUPERSTRUCTURE AND THE DECK SLAB CONCRETE HAVE ATTAINED A STRENGTH OF 3,000 PSI.
 ALL WT WING REINFORCING STEEL TIED TO BRIDGE SEAT REINFORCING STEEL MUST BE IN PLACE PRIOR TO POURING THE BRIDGE SEAT CONCRETE.

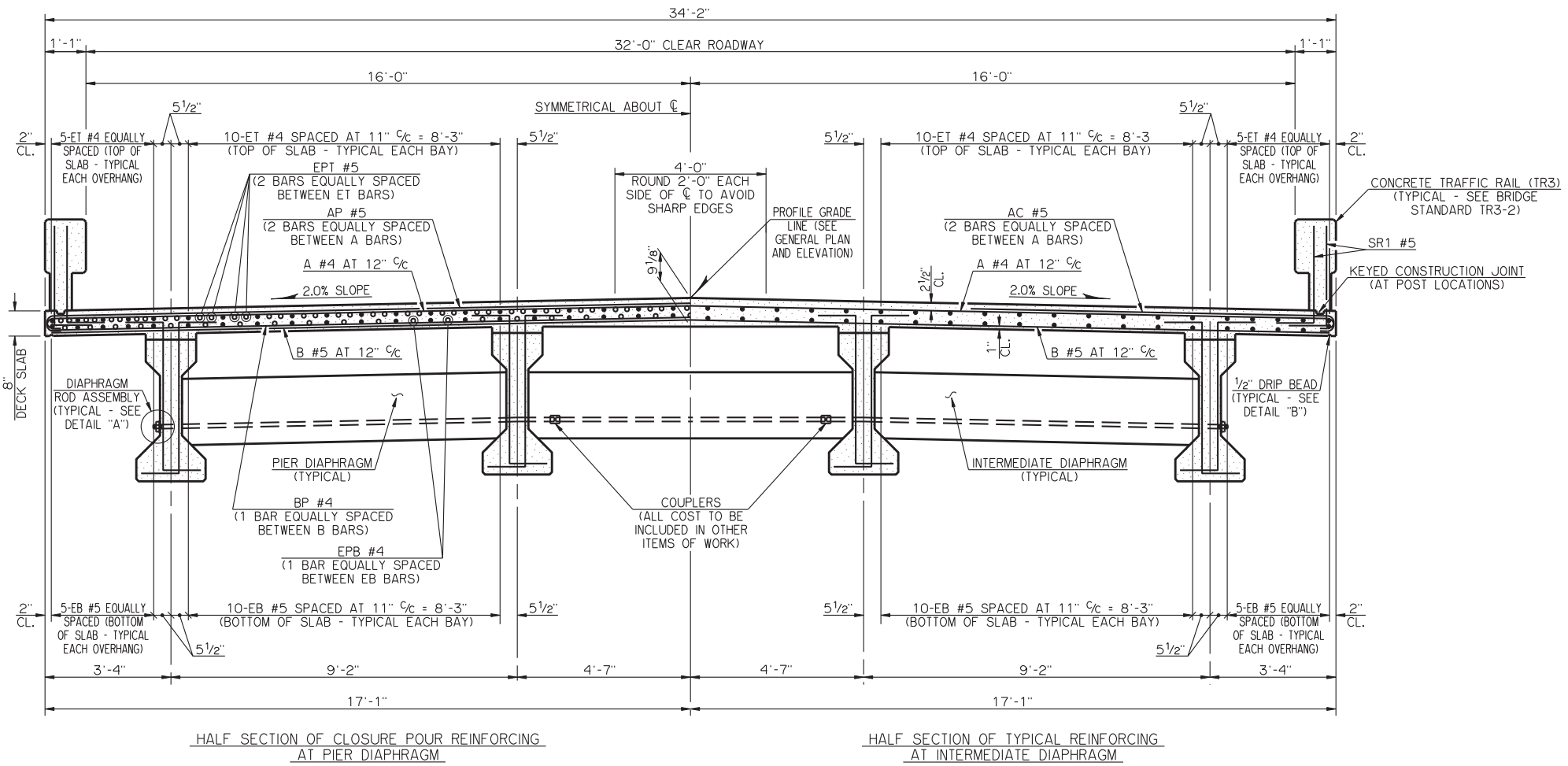


DETAILS OF BENT REINFORCING STEEL



DETAIL OF CONSTRUCTION JOINTS

APPROVED BY BRIDGE ENGINEER *Robert J. Dusch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
ABUTMENT DETAILS
TYPE II AND TYPE B P.C. BEAMS
 32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°
 2009 SPECIFICATIONS CB32-I-SKO-ABUT-PC2 01E
 CB-749E



HALF SECTION OF CLOSURE POUR REINFORCING AT PIER DIAPHRAGM

HALF SECTION OF TYPICAL REINFORCING AT INTERMEDIATE DIAPHRAGM

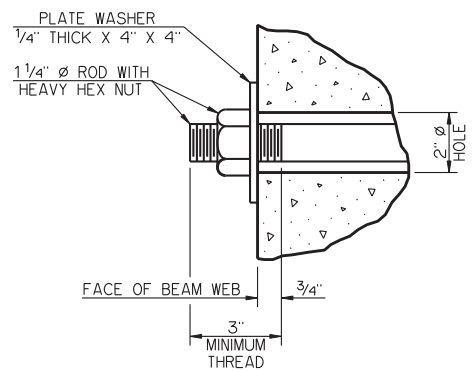
TYPICAL CROSS SECTION

NOTES

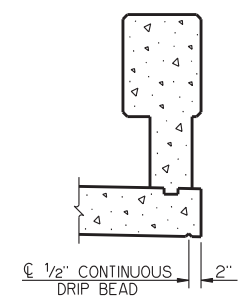
- ROTATE HOOKS ON AC AND AP BARS TO MAINTAIN MINIMUM CLEARANCE.
- DO NOT PLACE THE CONCRETE FOR THE DECK SLAB OR APPLY OTHER MASSIVE LOADS TO THE BEAMS, INTERMEDIATE DIAPHRAGMS OR END DIAPHRAGMS UNTIL THE CONCRETE IN THE INTERMEDIATE AND END DIAPHRAGMS HAS BEEN IN PLACE A MINIMUM OF 10 DAYS OR AT THE DISCRETION OF THE ENGINEER. THIS TIME MAY BE SHORTENED IF THE CONCRETE HAS ATTAINED 80% OF THE SPECIFIED COMPRESSIVE STRENGTH.
- STAY-IN-PLACE STEEL DECK FORMS MAY BE USED IF THE MINIMUM DECK SLAB THICKNESS OF 8" IS OBTAINED BY MEASURING FROM THE TOP OF THE DECK SLAB TO THE TOP PORTION OF THE STEEL CORRUGATION. NO ADDITIONAL CONCRETE WEIGHT OF THE DECK SLAB IS PERMITTED. ADDITIONAL STEEL WEIGHT OF THE DECK FORMS SHALL NOT EXCEED 5 PSF. STAY-IN-PLACE PRESTRESSED CONCRETE DECK FORMS MAY BE USED IF THE FOLLOWING CONDITIONS ARE MET:
 - 1) SHOP DRAWINGS AND STRUCTURAL CALCULATIONS FOR THE FORMS ARE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL.
 - 2) A NEW STRUCTURAL DESIGN, STRUCTURAL CALCULATIONS, AND A NEW REINFORCING SCHEDULE FOR THE DECK SLAB ARE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL.
 - 3) SHOP DRAWINGS, NEW DECK SLAB REINFORCING SCHEDULE AND STRUCTURAL DESIGNS AND CALCULATIONS SHALL BE PREPARED BY AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OKLAHOMA.
- ALL COSTS ASSOCIATED WITH THE USE OF STAY-IN-PLACE FORMS, INCLUDING ALL PROFESSIONAL SERVICES, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS, SHALL BE AT THE CONTRACTOR'S EXPENSE. FOR ADDITIONAL INFORMATION CONCERNING THE USE OF STAY-IN-PLACE FORMS, SEE SECTION 502 OF THE STANDARD SPECIFICATIONS.

THE DECK SLAB SHALL BE POURED ONE SPAN AT A TIME. A SPAN ADJACENT TO A FIXED PIER SHALL NOT BE POURED UNTIL AT LEAST 48 HOURS AFTER THE POUR OF ANY ADJACENT SPAN HAS BEEN COMPLETED.

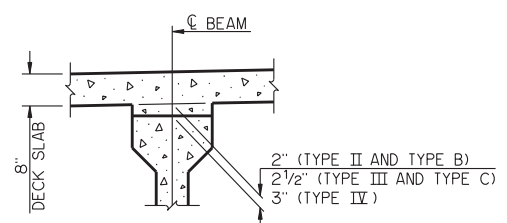
CONSTRUCTION JOINTS AT THE FIXED PIERS SHALL NOT BE KEYED. IN THE EVENT OF AN EMERGENCY, POURING OF THE DECK SLAB MAY BE HALTED WITH A CONSTRUCTION JOINT MADE PERPENDICULAR TO THE DIRECTION OF TRAFFIC AS DIRECTED BY THE ENGINEER. ALL LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS. NO HEAVY EQUIPMENT WILL BE PERMITTED ON THE FINISHED DECK SLAB WITHIN 5'-0" OF ANY CONSTRUCTION JOINT UNTIL THE DECK SLAB IS IN PLACE ON BOTH SIDES OF THE RESPECTIVE JOINT.



DETAIL "A"



DETAIL "B"



DETAIL OF HAUNCH

STRUCTURAL STEEL FOR DIAPHRAGM RODS AND PLATE WASHERS SHALL CONFORM TO AASHTO M 270 (ASTM A 709), GRADE 50W, WEATHERING STEEL (CHARPY V-NOTCH TESTING NOT REQUIRED). A #10 REINFORCING STEEL BAR CONFORMING TO AASHTO M 31, GRADE 60 AND THREADED AT BOTH ENDS AS SHOWN MAY BE SUBSTITUTED FOR THE DIAPHRAGM ROD. HEX NUTS SHALL CONFORM TO AASHTO M 291 (ASTM A 563), PROPERTY CLASS 8S3 OR 10S3. PAINT EXPOSED PARTS OF DIAPHRAGM RODS, PLATE WASHERS AND HEX NUTS WITH TWO (2) COATS OF ZINC-RICH PAINT (6 MIL MINIMUM THICKNESS) AFTER ASSEMBLY. ALL COST OF DIAPHRAGM RODS, PLATE WASHERS AND HEX NUTS SHALL BE INCLUDED IN UNIT PRICE BID PER POUND OF "STRUCTURAL STEEL."

PLAN QUANTITIES FOR "CLASS AA CONCRETE" INCLUDE HAUNCHES OVER BEAMS. HAUNCH HEIGHT SHOWN IS AT CENTERLINE BEARING ONLY, MEASURED FROM BOTTOM OF DECK SLAB TO TOP OF BEAM, AND VARIES ACROSS THE SPAN. HAUNCH HEIGHT TO BE DETERMINED AFTER ERECTION OF BEAMS TO PROVIDE FOR DEAD LOAD DEFLECTION AND GRADE ADJUSTMENT, BUT THE PAY QUANTITY WILL BE AS SHOWN IN THE PLANS.

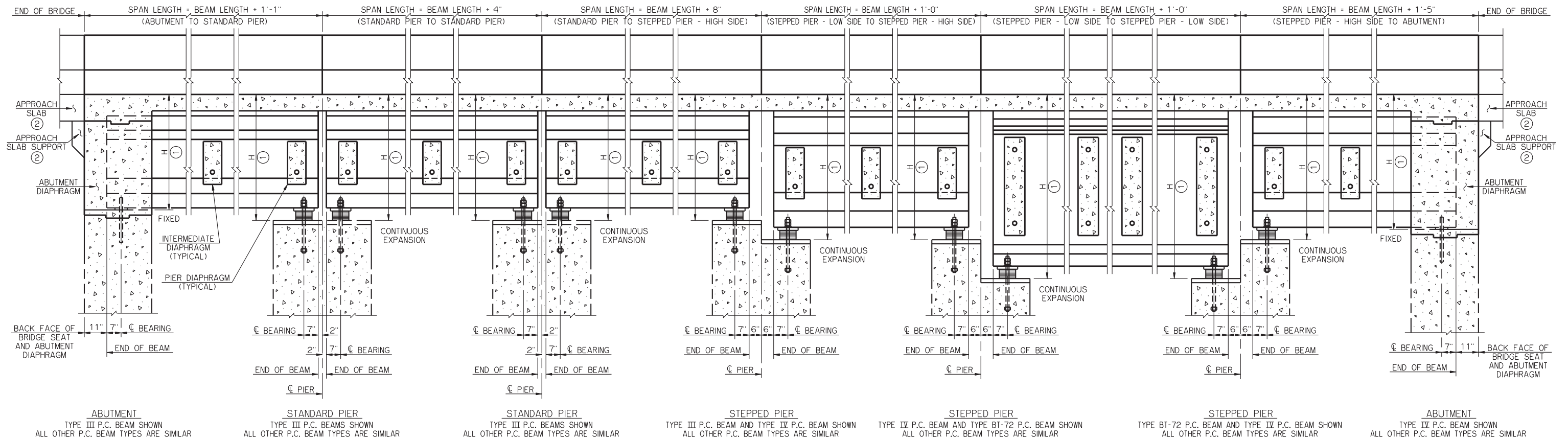
APPROVED BY BRIDGE ENGINEER *Robert J. Dush* DATE 9-9-2011

OKLAHOMA DEPARTMENT OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)

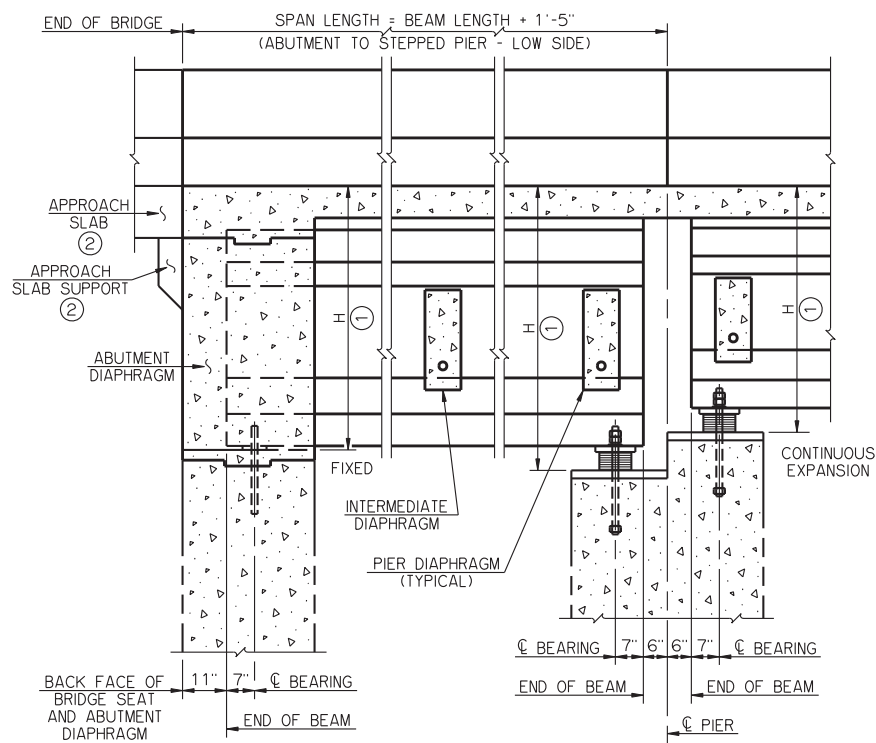
TYPICAL CROSS SECTION
TYPE II, B, III, C AND IV P.C. BEAMS

32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°

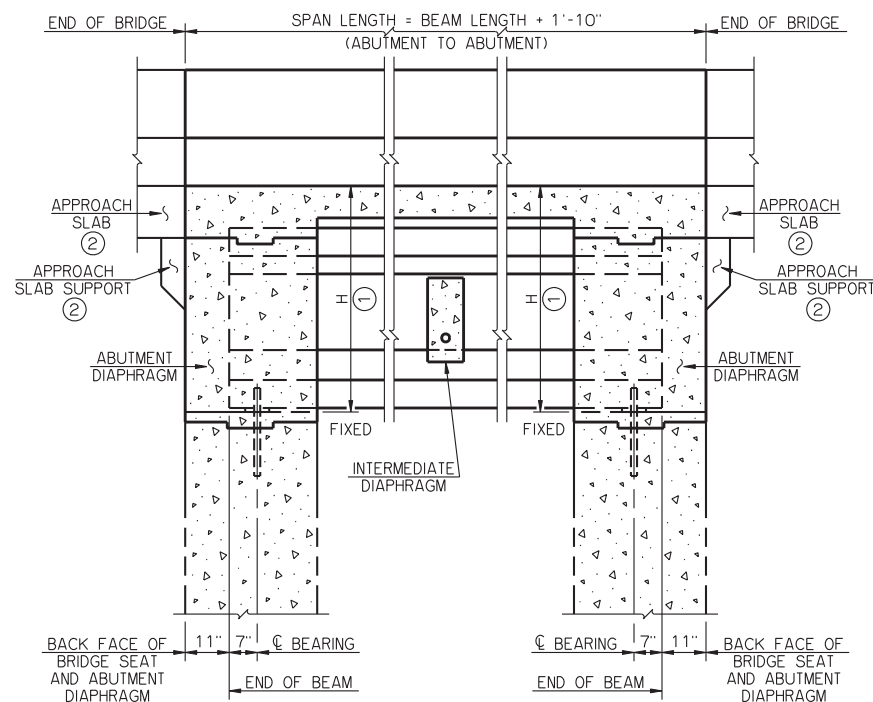
2009 SPECIFICATIONS CB32-I-SKO-XSECT-PC234 01E CB-763E



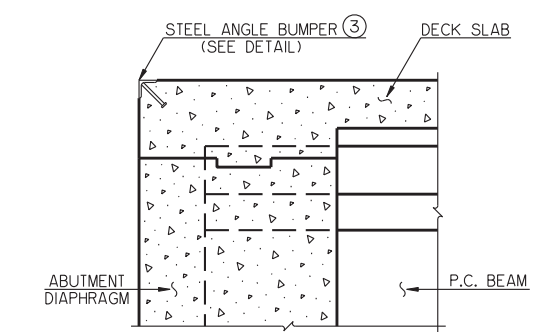
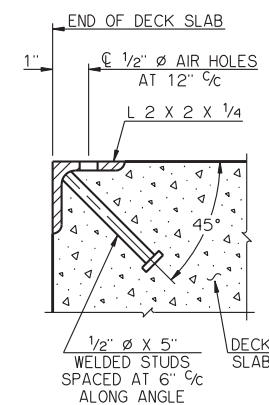
LONGITUDINAL SECTION



LONGITUDINAL SECTION



LONGITUDINAL SECTION



- ① DIMENSION IS FROM TOP OF DECK SLAB TO BOTTOM OF BEARING ASSEMBLY AT \O BEARING.
- ② APPROACH SLAB IS OPTIONAL. FOR DETAILS OF APPROACH SLAB AND APPROACH SLAB SUPPORT SEE APPROACH SLAB DETAILS AND ABUTMENT DIAPHRAGM DETAILS.
- ③ STEEL ANGLE BUMPERS SHALL BE OMITTED FROM ENDS OF DECK SLABS ADJOINING AN APPROACH SLAB OR AN APPROACH ROADWAY COMPRISED OF ASPHALT OR P.C. CONCRETE PAVEMENT.

SCHEDULE FOR DIMENSION H		
P.C. BEAM	H AT ABUTMENT	H AT PIER
TYPE II	3'-11"	4'-3 1/8"
TYPE B	3'-9"	4'-1 1/8"
TYPE III	4'-8 1/2"	5'-0 1/8"
TYPE C	4'-3 1/2"	4'-7 1/8"
TYPE IV	5'-6"	5'-9 9/8"
TYPE BT-72	7'-1"	7'-4 9/8"
TYPE J	7'-1"	7'-5 1/8"

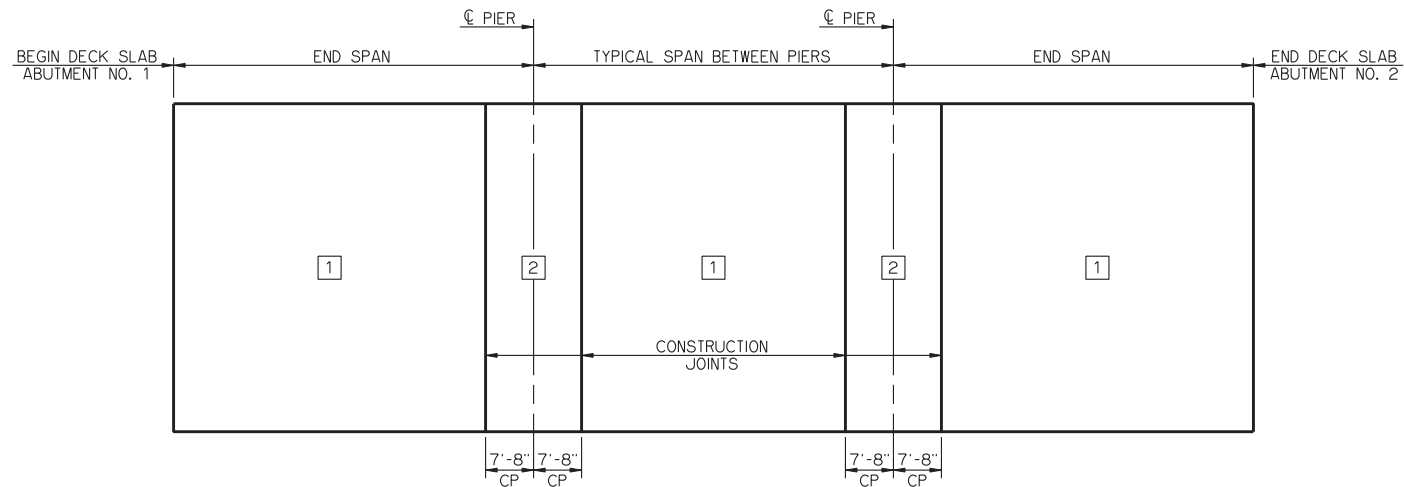
APPROVED BY BRIDGE ENGINEER *Robert D. Smith* DATE 9-9-2011

OKLAHOMA DEPARTMENT OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)

**LONGITUDINAL SECTION
P.C. BEAMS**

32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°

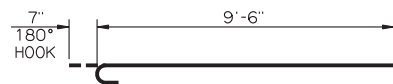
2009 SPECIFICATIONS CB32-I-SKO-LSECT-PCB 01E CB-768E



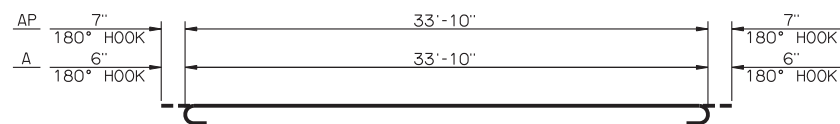
DECK SLAB POURING SEQUENCE DIAGRAM

THE DECK SLAB IS DIVIDED INTO SECTIONS BETWEEN CONSTRUCTION JOINTS AS SHOWN. THE CONCRETE SHALL BE POURED IN EACH SECTION OF THE DECK SLAB IN THE NUMERICAL SEQUENCE INDICATED. SECTIONS OF THE DECK SLAB WITH THE SAME NUMBER MAY BE POURED IN ANY ORDER. HOWEVER, ALL SECTIONS WITH THE SAME NUMBER SHALL BE TOTALLY COMPLETED BEFORE POURING ANY SECTIONS NEXT IN THE SEQUENCE. THERE SHALL BE A LAPSE OF AT LEAST 48 HOURS BETWEEN POURING OF SECTIONS WITH DIFFERENT NUMBERS. DECK SLAB CLOSURE POURS (CP) ARE OVER PIERS ONLY, LABELED SEQUENCE NUMBER 2 IN THE DIAGRAM. CP DIMENSIONS ARE EQUAL FOR ALL BEAM TYPES AND FOR ALL SPAN LENGTHS ON EITHER SIDE OF A PIER AS SHOWN IN THE DIAGRAM.

CONSTRUCTION JOINTS AT THE CLOSURE POURS IN THE DECK SLAB SHALL NOT BE KEYED. IN THE EVENT OF AN EMERGENCY, POURING OF THE DECK SLAB MAY BE HALTED WITH A CONSTRUCTION JOINT MADE PERPENDICULAR TO THE DIRECTION OF TRAFFIC AS DIRECTED BY THE ENGINEER. PRIMARY LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THRU ALL CONSTRUCTION JOINTS. ADDITIONAL LONGITUDINAL REINFORCING WITHIN THE CLOSURE POURS SHALL BE CONTINUOUS THRU THE EMERGENCY CONSTRUCTION JOINT. NO HEAVY EQUIPMENT WILL BE PERMITTED ON THE FINISHED DECK SLAB WITHIN 5'-0" OF ANY CONSTRUCTION JOINT UNTIL THE DECK SLAB IS IN PLACE ON BOTH SIDES OF THE RESPECTIVE JOINT. NO CONSTRUCTION JOINT WILL BE SAWED AND SEALED.



AC #5 X 10'-1"



A #4 X 34'-10"
AP #5 X 35'-0"

DETAILS OF BENT REINFORCING STEEL

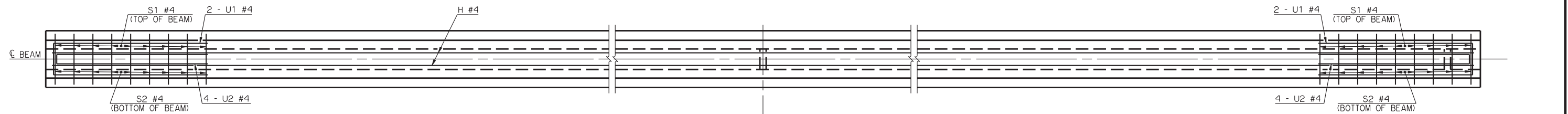
BAR LIST - DECK SLAB LONGITUDINAL REINFORCING STEEL							
SPAN TYPE							
ABUTMENT TO ABUTMENT				ABUTMENT TO STANDARD PIER		ABUTMENT TO STEPPED PIER	STANDARD PIER TO STANDARD PIER STANDARD PIER TO STEPPED PIER STEPPED PIER TO STEPPED PIER
MARK	SIZE	FORM	NUMBER	LENGTH	LENGTH	LENGTH	LENGTH
① EB	#5	STR.	40	SPAN LENGTH - 2"	SPAN LENGTH - 1" ②	SPAN LENGTH - 1" ②	SPAN LENGTH ②
① ET	#4	STR.	40	SPAN LENGTH - 2"	SPAN LENGTH - 1" ②	SPAN LENGTH - 1" ②	SPAN LENGTH ②

BAR LIST - DECK SLAB TRANSVERSE REINFORCING STEEL							
SPAN TYPE							
ABUTMENT TO ABUTMENT				ABUTMENT TO STANDARD PIER		ABUTMENT TO STEPPED PIER	STANDARD PIER TO STANDARD PIER STANDARD PIER TO STEPPED PIER STEPPED PIER TO STEPPED PIER
MARK	SIZE	FORM	LENGTH	NUMBER	NUMBER	NUMBER	NUMBER
A	#4	BNT.	34'-10"	SL - 5 ③	SL - 1 ③	SL - 2 ③	SL + 2 ③
AC	#5	BNT.	10'-1"	4 x (SL - 4) ③	4 x (SL - 9) ③	4 x (SL - 10) ③	4 x (SL - 15) ③
B	#5	STR.	33'-10"	SL - 5 ③	SL - 1 ③	SL - 2 ③	SL + 2 ③
SR1	#5	BNT.	3'-10"	36 x IP + 7.5 x EP ④	36 x IP + 7.5 x EP ④	36 x IP + 7.5 x EP ④	36 x IP + 7.5 x EP ④

- ① THE LENGTHS SHOWN DO NOT INCLUDE LAP SPLICES. THE LENGTH OF ALL REQUIRED LAP SPLICES SHALL BE ADDED TO THE LENGTHS SHOWN. THE MINIMUM LAP SPlice LENGTH FOR #5 REINFORCING STEEL BARS SHALL BE 2'-6", AND THE MINIMUM LAP SPlice LENGTH FOR #4 REINFORCING STEEL BARS SHALL BE 1'-8". THE LAP SPLICES SHALL BE STAGGERED.
- ② THE LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU ALL CLOSURE POUR JOINTS AT PIERS. TO DETERMINE THE ACTUAL REINFORCING STEEL BAR LENGTH, COMBINE THE LENGTHS SHOWN FOR ALL SPAN TYPES CONTAINED WITHIN THE BRIDGE INCLUDING ALL REQUIRED LAP SPlice LENGTHS. NO LAP SPlice SHALL BE PLACED WITHIN 10'-0" OF THE CENTERLINE OF PIERS.
- ③ SL = NUMBER OF FEET IN SPAN LENGTH. EXAMPLE: FOR SPAN LENGTH = 31'-8", SL = 31.
- ④ CALCULATION IN TABLE SHALL BE ROUNDED UP TO THE NEAREST NUMBER OF BARS.
 IP = NUMBER OF INTERIOR POSTS IN CONCRETE TRAFFIC RAIL (TR3) CALCULATED AS FOLLOWS:
 $IP = \text{INTEGER AMOUNT OF } (\text{SPAN LENGTH} - 15) / 10$
 EP = TOTAL LENGTH OF END POSTS IN CONCRETE TRAFFIC RAIL (TR3) CALCULATED AS FOLLOWS:
 $EP = \text{SPAN LENGTH} - 5 - (10 \times IP)$
 EXAMPLE: FOR SPAN LENGTH = 80'-4",
 $IP = (80.34 - 15) / 10 = 6$
 $EP = 80.34 - 5 - (10 \times 6) = 15.34$
- ⑤ FOR ADDITIONAL DETAILS AND INFORMATION, SEE BRIDGE STANDARD TR3-2. SR1 BARS SHALL NOT BE EPOXY COATED AS INDICATED ON THE BRIDGE STANDARD.
- ⑥ THE AP, BP, EPB, AND EBT BARS ARE REQUIRED FOR USE ONLY WHEN THE BRIDGE CONTAINS PIERS. THESE BARS ARE USED WITHIN THE CLOSURE POURS OVER THE PIERS IN ADDITION TO THE MAIN DECK SLAB REINFORCING STEEL. THE CLOSURE POUR BAR LIST CONTAINS THE ADDITIONAL BARS REQUIRED FOR ONE PIER ONLY. FOR A MULTIPLE PIER BRIDGE, MULTIPLY THE NUMBER OF BARS IN THE BAR LIST BY THE NUMBER OF PIERS IN THE BRIDGE.

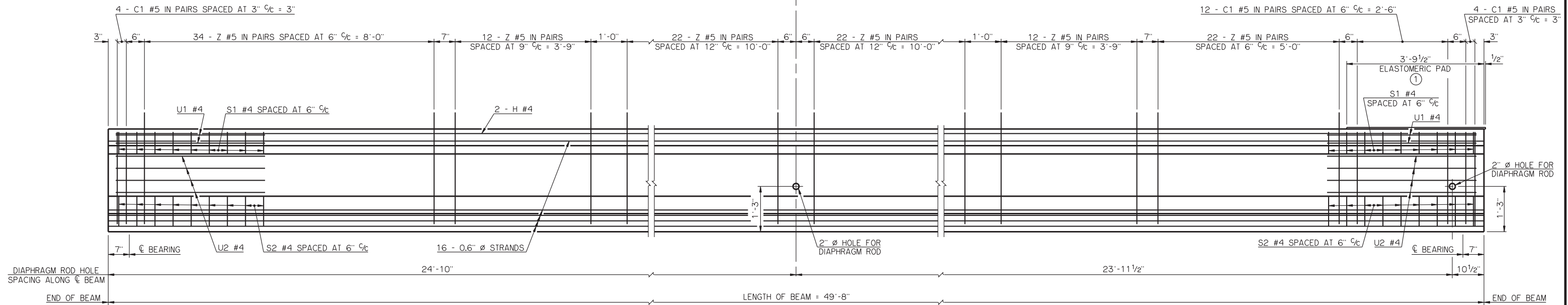
BAR LIST ⑤ ONE CLOSURE POUR				
MARK	NO.	SIZE	FORM	LENGTH
AP	30	#5	BNT.	35'-0"
BP	15	#4	STR.	33'-10"
EPB	39	#4	STR.	15'-0"
EPT	78	#5	STR.	15'-0"

APPROVED BY BRIDGE ENGINEER *Robert J. Dusch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
DECK SLAB BAR LIST
P.C. BEAMS
 32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°
 2009 SPECIFICATIONS CB32-I-SKO-DKSLB-BLIST-PCB 01E CB-772E



HALF PLAN AT ABUTMENT
C1 BARS, Z BARS, STRANDS AND ENCASED PLATES NOT SHOWN

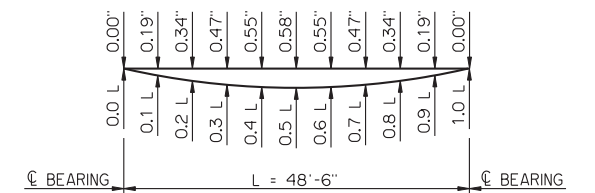
HALF PLAN AT PIER
C1 BARS, Z BARS, STRANDS, ELASTOMERIC PAD AND ENCASED PLATES NOT SHOWN



HALF ELEVATION AT ABUTMENT
ENCASED PLATES NOT SHOWN

HALF ELEVATION AT PIER
ENCASED PLATES NOT SHOWN

① ELASTOMERIC PAD SHALL HAVE A 50 DUROMETER HARDNESS AND CONSIST OF A SINGLE LAYER 1/2" THICK X 1'-0" WIDE X 3'-10" LONG. THE PAD SHALL EXTEND 1/2" BEYOND THE END OF THE BEAM AS SHOWN. THE TOP SURFACE OF THE BEAM BELOW THE ELASTOMERIC PAD SHALL HAVE A SMOOTH FINISH.



DEAD LOAD DEFLECTIONS

THE DEAD LOAD DEFLECTIONS SHOWN ABOVE AT THE TENTH POINTS ARE THE INITIAL THEORETICAL BEAM DEFLECTIONS DUE TO THE DIAPHRAGMS, A 5 PSF STEEL SIP FORMS ALLOWANCE, DECK SLAB, HAUNCH AND CONCRETE TRAFFIC RAIL (TR3). THE DEAD LOAD DEFLECTIONS SHALL BE ACCOUNTED FOR IN THE HAUNCH DEPTH CALCULATIONS.

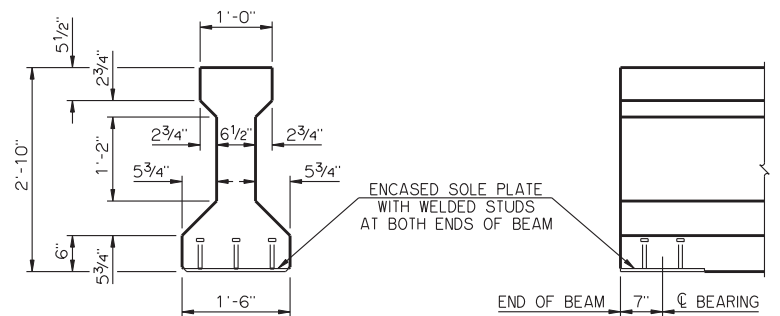
MATERIAL PROPERTIES

THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THE P.C. BEAM SHALL BE NO LESS THAN 5,250 PSI AT THE TIME OF TRANSFER OF THE PRESTRESSING FORCE AND NO LESS THAN 7,000 PSI AT 28 DAYS AFTER THE POURING OF THE CONCRETE.

THE TYPE OF PRESTRESSING STRANDS REQUIRED IN THE P.C. BEAM SHALL BE LOW RELAXATION 7-WIRE STRAND WITH A NOMINAL DIAMETER OF 0.6 INCHES AND AN ULTIMATE TENSILE STRENGTH OF 270 KSI.

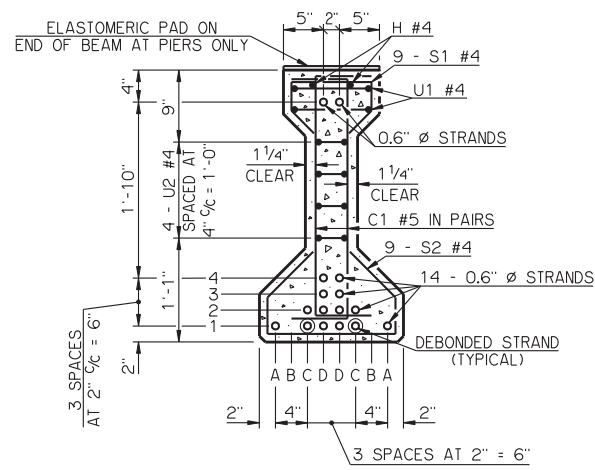
LFD OPERATING RATING - HS 34.7

THE LFD OPERATING RATING SHOWN ABOVE IS FOR THE P.C. BEAM ONLY AND APPLIES ONLY TO THE P.C. BEAMS OF A BRIDGE CONSTRUCTED IN STRICT CONFORMANCE TO ALL RELEVANT DETAILS CONTAINED IN THE COMPLETE SET OF COUNTY BRIDGE STANDARDS AND TO THE ODOT STANDARD SPECIFICATIONS.

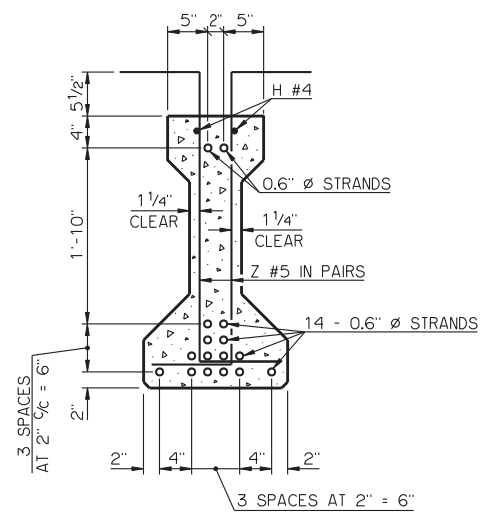


END VIEW
ELASTOMERIC PAD NOT SHOWN

END ELEVATION
ELASTOMERIC PAD NOT SHOWN



END SECTION

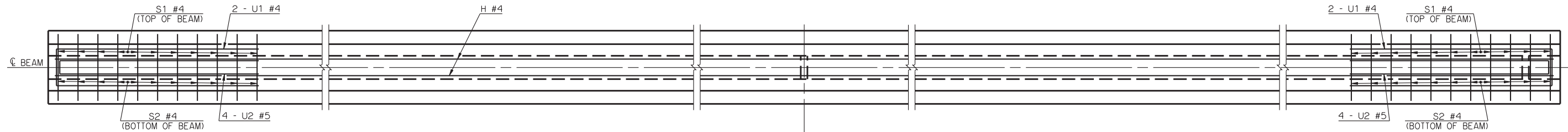


C SECTION

BEAM SECTIONS
(16 - 0.6" Ø STRANDS)

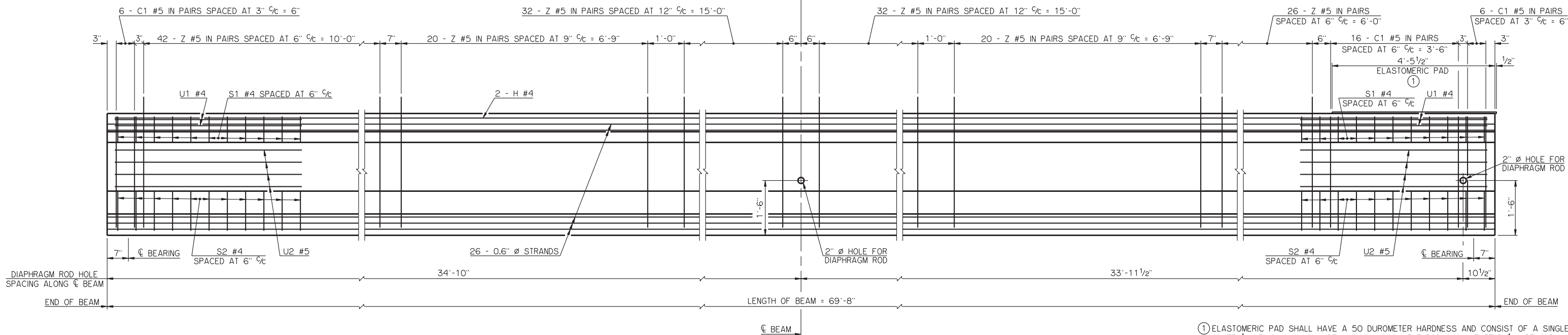
DEBOND SCHEDULE	
DEBOND PAIR	DEBOND LENGTH FROM END OF BEAM
C1	9'-0"

APPROVED BY BRIDGE ENGINEER *Robert J. Dusch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
P.C. BEAM DETAILS
TYPE B - 50' SPAN
 32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°
 2009 SPECIFICATIONS CB32-1-SKO-PCB-B-50 01E
 CB-791E



HALF PLAN AT ABUTMENT
C1 BARS, Z BARS, STRANDS AND ENCASED PLATES NOT SHOWN

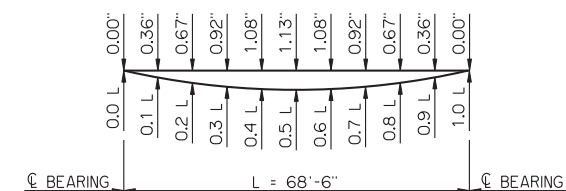
HALF PLAN AT PIER
C1 BARS, Z BARS, STRANDS, ELASTOMERIC PAD AND ENCASED PLATES NOT SHOWN



HALF ELEVATION AT ABUTMENT
ENCASED PLATES NOT SHOWN

HALF ELEVATION AT PIER
ENCASED PLATES NOT SHOWN

① ELASTOMERIC PAD SHALL HAVE A 50 DUROMETER HARDNESS AND CONSIST OF A SINGLE LAYER 1/2" THICK X 1'-2" WIDE X 4'-6" LONG. THE PAD SHALL EXTEND 1/2" BEYOND THE END OF THE BEAM AS SHOWN. THE TOP SURFACE OF THE BEAM BELOW THE ELASTOMERIC PAD SHALL HAVE A SMOOTH FINISH.



DEAD LOAD DEFLECTIONS

THE DEAD LOAD DEFLECTIONS SHOWN ABOVE AT THE TENTH POINTS ARE THE INITIAL THEORETICAL BEAM DEFLECTIONS DUE TO THE DIAPHRAGMS, A 5 PSF STEEL SIP FORMS ALLOWANCE, DECK SLAB, HAUNCH AND CONCRETE TRAFFIC RAIL (TR3). THE DEAD LOAD DEFLECTIONS SHALL BE ACCOUNTED FOR IN THE HAUNCH DEPTH CALCULATIONS.

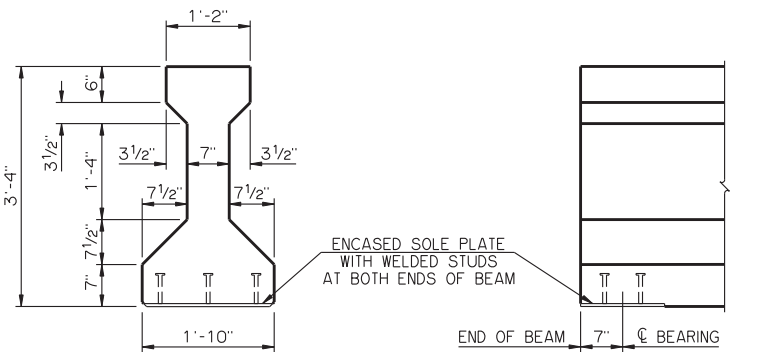
MATERIAL PROPERTIES

THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THE P.C. BEAM SHALL BE NO LESS THAN 6,000 PSI AT THE TIME OF TRANSFER OF THE PRESTRESSING FORCE AND NO LESS THAN 8,000 PSI AT 28 DAYS AFTER THE POURING OF THE CONCRETE.

THE TYPE OF PRESTRESSING STRANDS REQUIRED IN THE P.C. BEAM SHALL BE LOW RELAXATION 7-WIRE STRAND WITH A NOMINAL DIAMETER OF 0.6 INCHES AND AN ULTIMATE TENSILE STRENGTH OF 270 KSI.

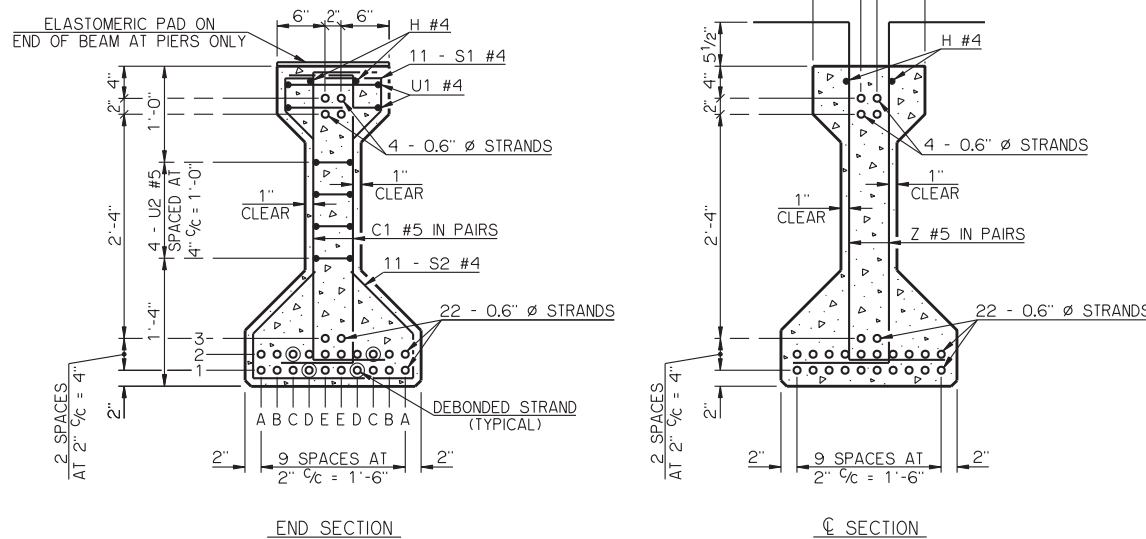
LFD OPERATING RATING - HS 41.9

THE LFD OPERATING RATING SHOWN ABOVE IS FOR THE P.C. BEAM ONLY AND APPLIES ONLY TO THE P.C. BEAMS OF A BRIDGE CONSTRUCTED IN STRICT CONFORMANCE TO ALL RELEVANT DETAILS CONTAINED IN THE COMPLETE SET OF COUNTY BRIDGE STANDARDS AND TO THE ODOT STANDARD SPECIFICATIONS.



END VIEW
ELASTOMERIC PAD NOT SHOWN

END ELEVATION
ELASTOMERIC PAD NOT SHOWN



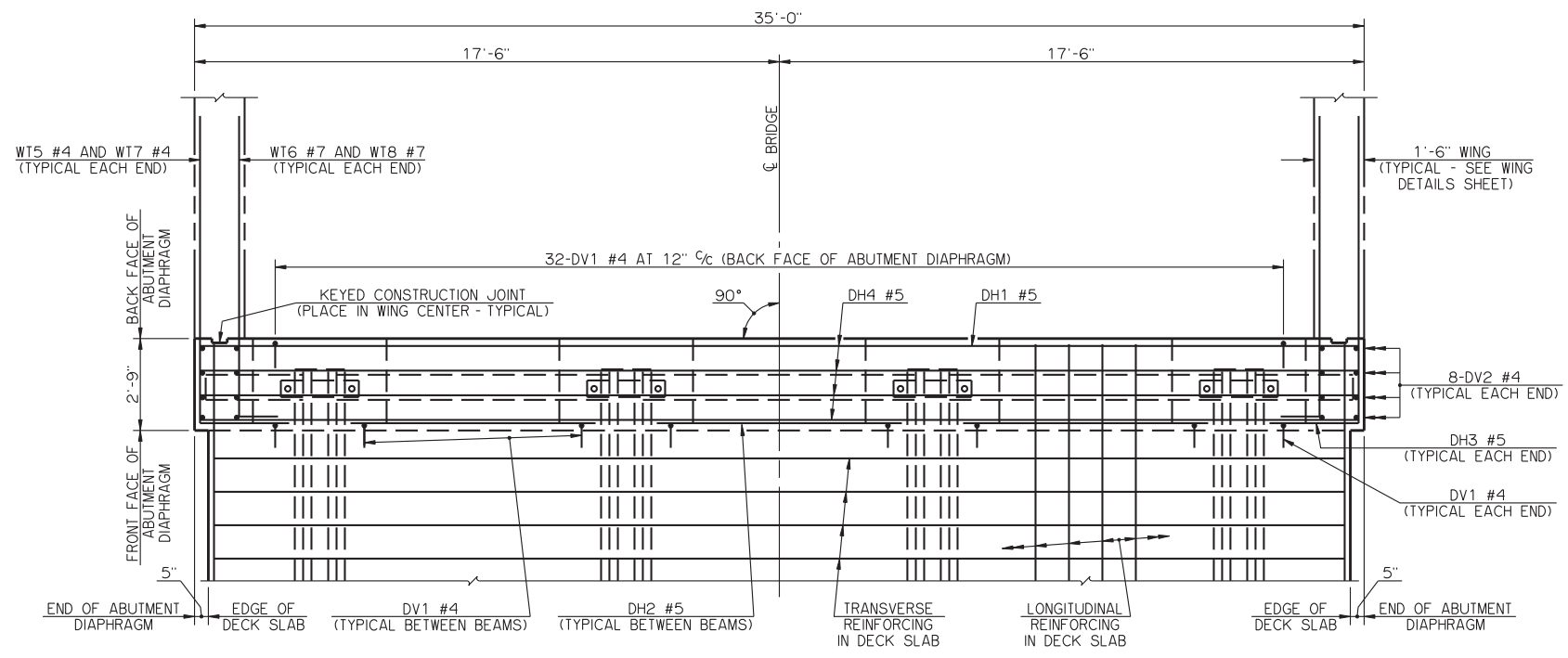
END SECTION

CL SECTION

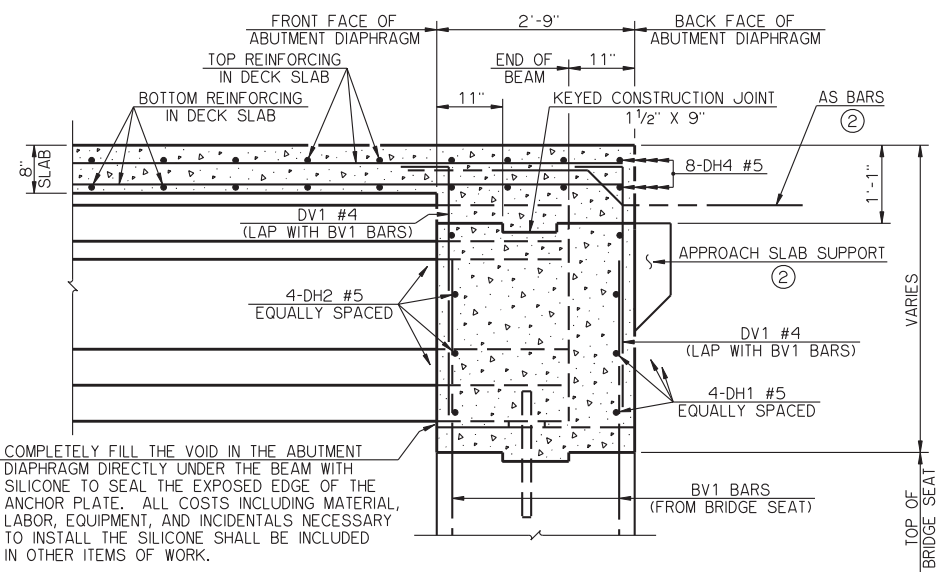
BEAM SECTIONS
(26 - 0.6" STRANDS)

DEBOND SCHEDULE	
DEBOND PAIR	DEBOND LENGTH FROM END OF BEAM
D1	2'-0"
C2	10'-0"

APPROVED BY BRIDGE ENGINEER *Robert J. Duch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
P.C. BEAM DETAILS
TYPE C - 70' SPAN
32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°
 2009 SPECIFICATIONS CB32-1-SKO-PCB-C-70 Q1E
 CB-804E

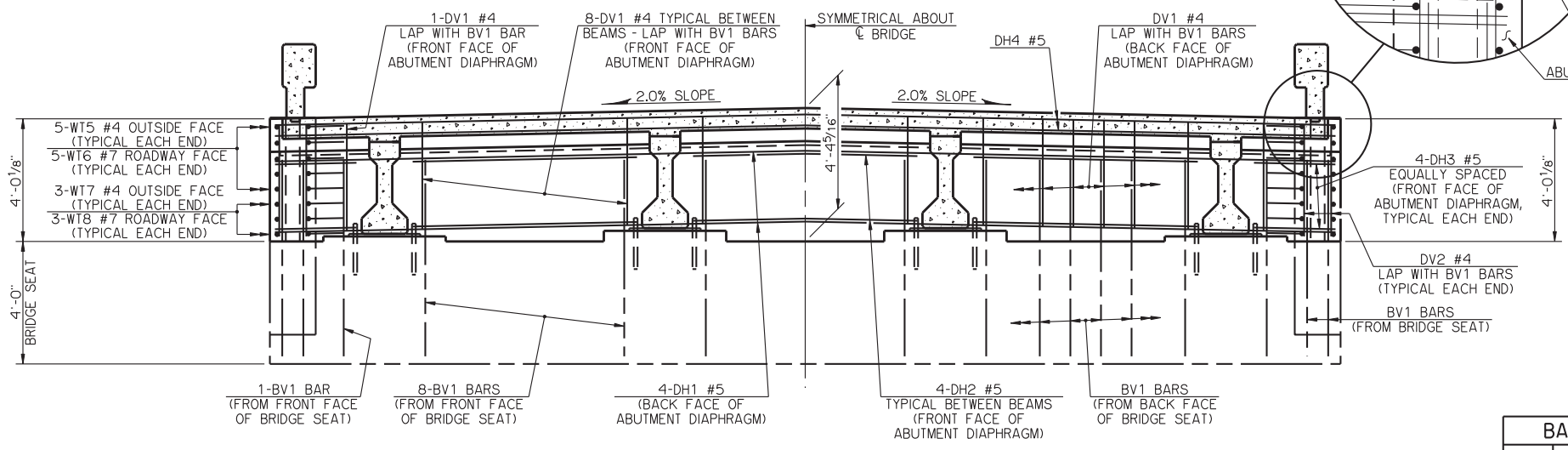
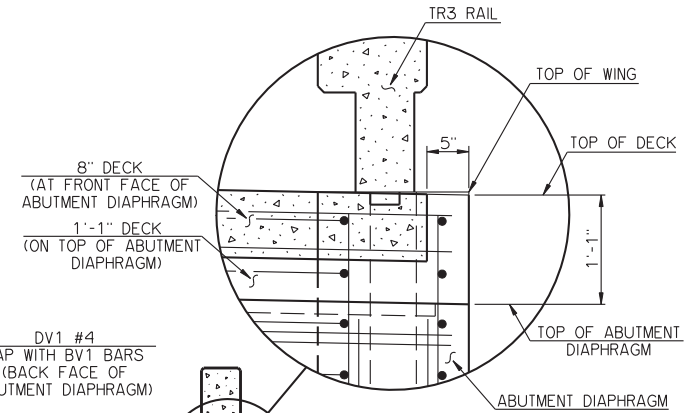


PLAN

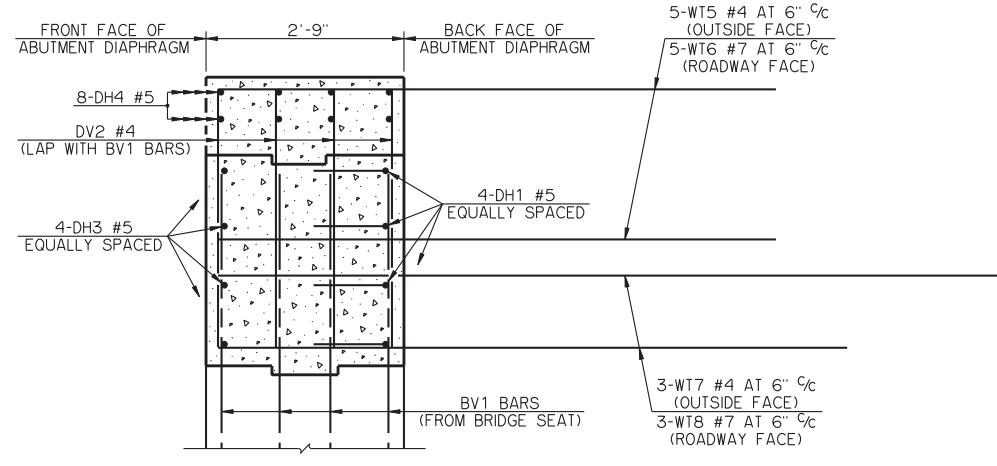


TYPICAL SECTION THRU ABUTMENT DIAPHRAGM

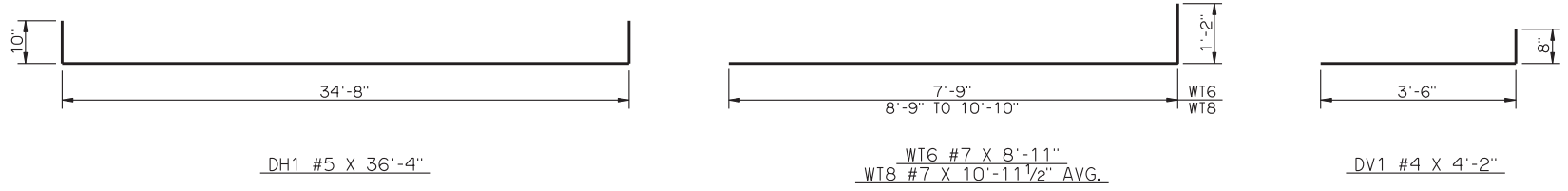
② THE AS BARS AND THE APPROACH SLAB SUPPORT ARE TO BE CONSTRUCTED ONLY IF THE BRIDGE CONTAINS THE OPTIONAL APPROACH SLABS. THE AS BARS IN THE DECK SLAB AND THE BV1 AND SV1 BARS IN THE APPROACH SLAB SUPPORT SHALL BE INSTALLED BEFORE PLACING THE ABUTMENT DIAPHRAGM AND DECK SLAB CONCRETE. FOR ADDITIONAL DETAILS AND INFORMATION SEE APPROACH SLAB DETAILS.



ELEVATION



TYPICAL SECTION THRU ABUTMENT DIAPHRAGM AT WING



DETAILS OF BENT REINFORCING STEEL

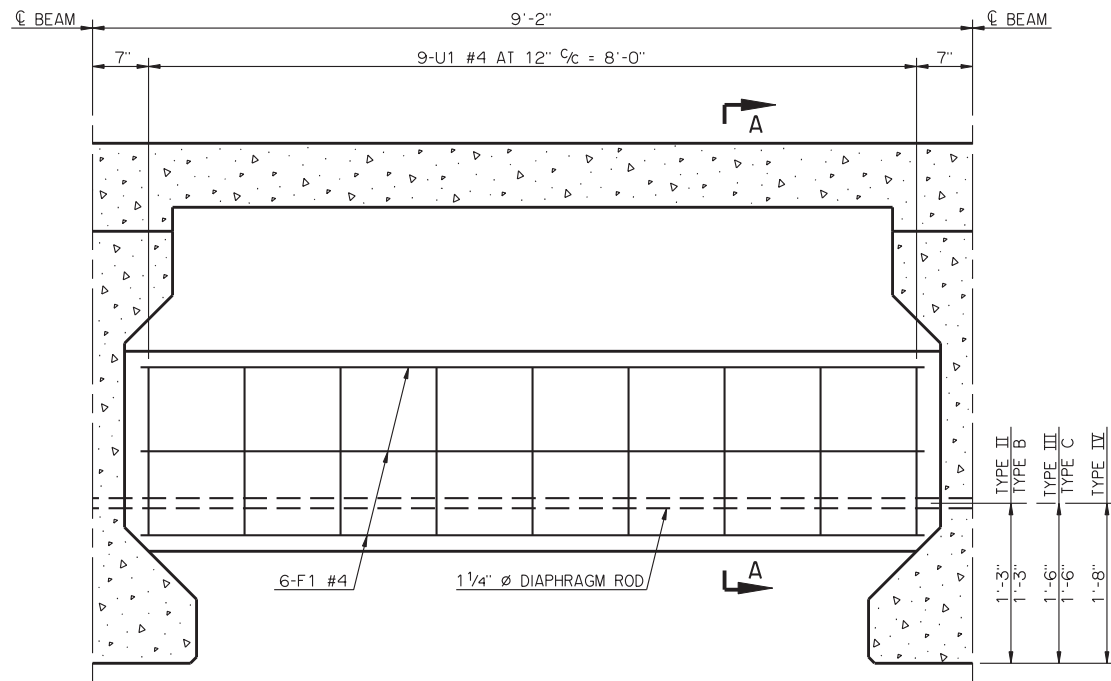
BAR LIST - ONE ABUTMENT DIAPHRAGM					
MARK	NO.	SIZE	FORM	LENGTH	LENGTH VARIATION
	DH1	4	#5 BNT.	36'-4"	-
	DH2	12	#5 STR.	7'-4"	-
	DH3	8	#5 STR.	2'-8"	-
	DH4	8	#5 STR.	34'-8"	-
	DV1	58	#4 BNT.	4'-2"	-
	DV2	16	#4 STR.	3'-6"	-
	WT5	10	#4 STR.	7'-9"	-
	WT6	10	#7 BNT.	8'-11"	-
①	WT7	6	#4 STR.	9'-9 1/2" AVG.	8'-9" TO 10'-10"
①	WT8	6	#7 BNT.	10'-11 1/2" AVG.	9'-11" TO 12'-0"

① NO. INCLUDES TWO SETS OF 3 BARS

NOTES

DECK SLAB CONCRETE SHALL NOT BE POURED UNTIL THE ABUTMENT DIAPHRAGMS HAVE ATTAINED A STRENGTH OF 3,000 PSI.
ALL WT WING REINFORCING STEEL TIED TO ABUTMENT DIAPHRAGM REINFORCING STEEL MUST BE IN PLACE PRIOR TO POURING THE ABUTMENT DIAPHRAGM CONCRETE.

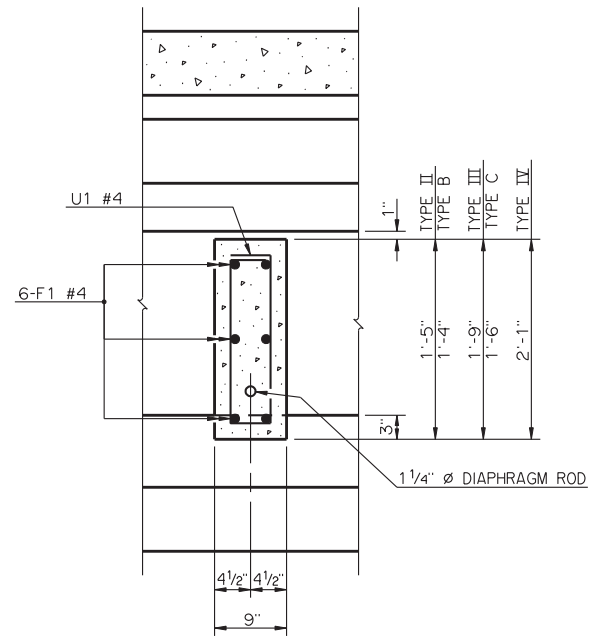
APPROVED BY BRIDGE ENGINEER *Robert J. Duch* DATE 9-9-2011
OKLAHOMA DEPARTMENT OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)
ABUTMENT DIAPHRAGM DETAILS
TYPE II AND TYPE B P.C. BEAMS
32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°
2009 SPECIFICATIONS CB32-I-SKO-DIA-ABUT-PC2 01E CB-868E



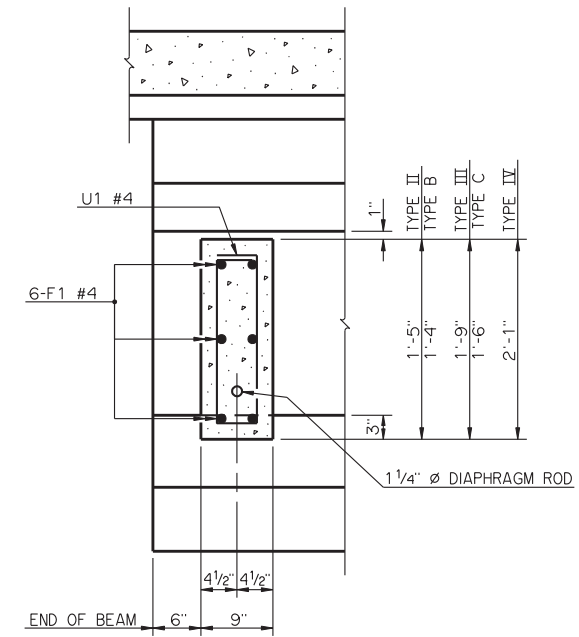
**ELEVATION OF INTERMEDIATE AND PIER DIAPHRAGMS
TYPE II, B, III, C AND IV P.C. BEAMS**

FOR SPANS OF 100' OR LESS IN LENGTH -
INCLUDE ONE LINE OF INTERMEDIATE DIAPHRAGMS PER SPAN AND ONE LINE OF PIER DIAPHRAGMS AT EACH PIER PER SPAN.

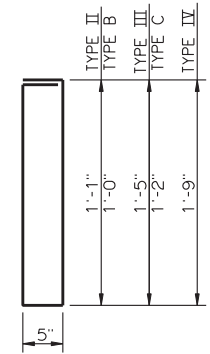
FOR SPANS OVER 100' IN LENGTH -
INCLUDE TWO LINES OF INTERMEDIATE DIAPHRAGMS PER SPAN AND ONE LINE OF PIER DIAPHRAGMS AT EACH PIER PER SPAN.



**SECTION A-A
AT INTERMEDIATE DIAPHRAGM**



**SECTION A-A
AT PIER DIAPHRAGM**

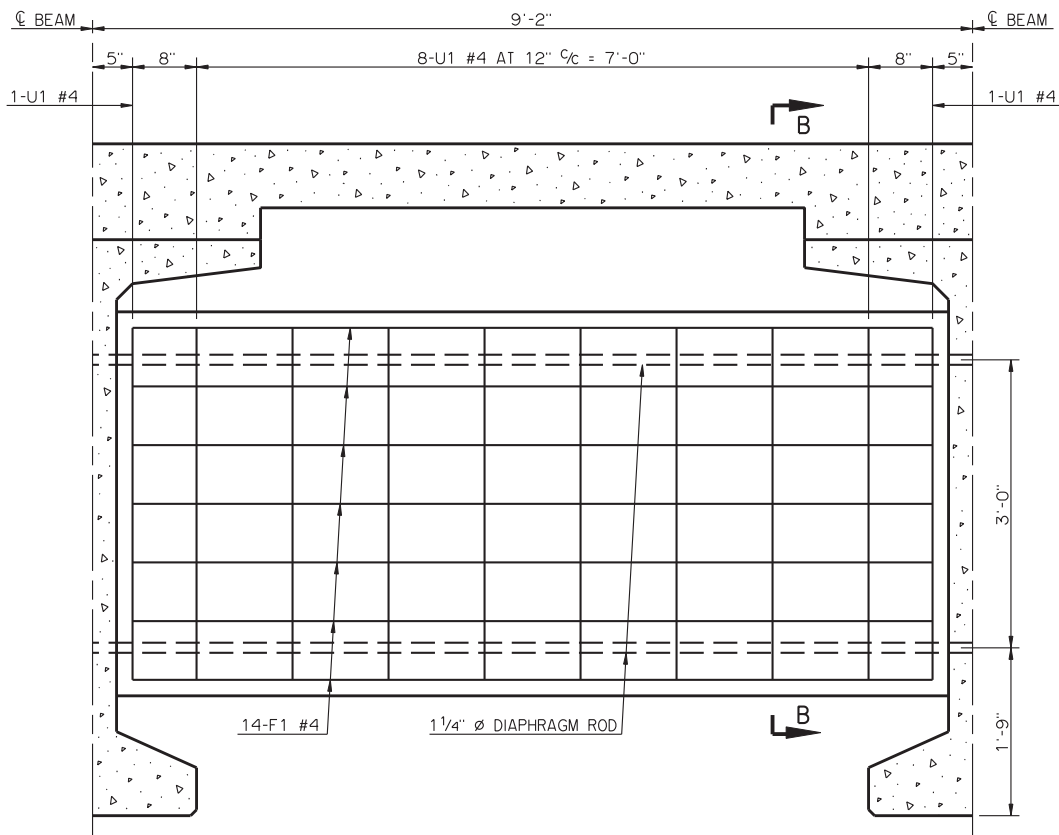


- U1 #4 X 3'-5" - TYPE II
- U1 #4 X 3'-3" - TYPE B
- U1 #4 X 4'-1" - TYPE III
- U1 #4 X 3'-7" - TYPE C
- U1 #4 X 4'-9" - TYPE IV



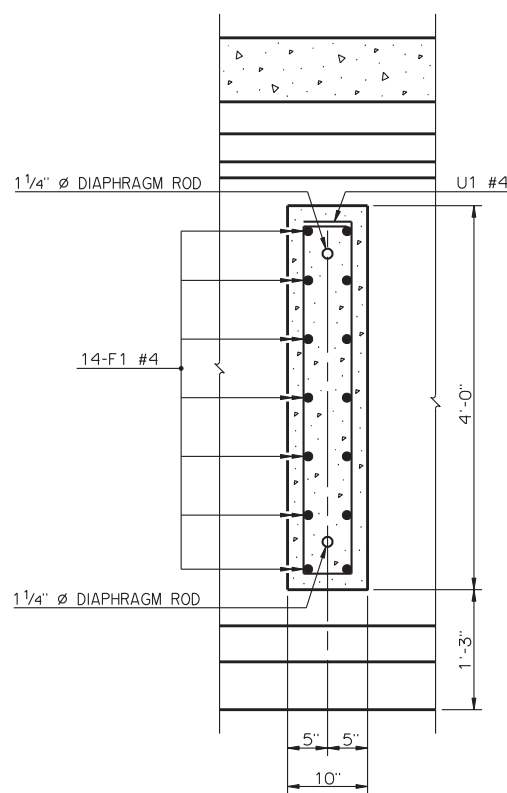
U1 #4 X 8'-10" - TYPE BT-72 AND TYPE J

DETAILS OF BENT REINFORCING STEEL

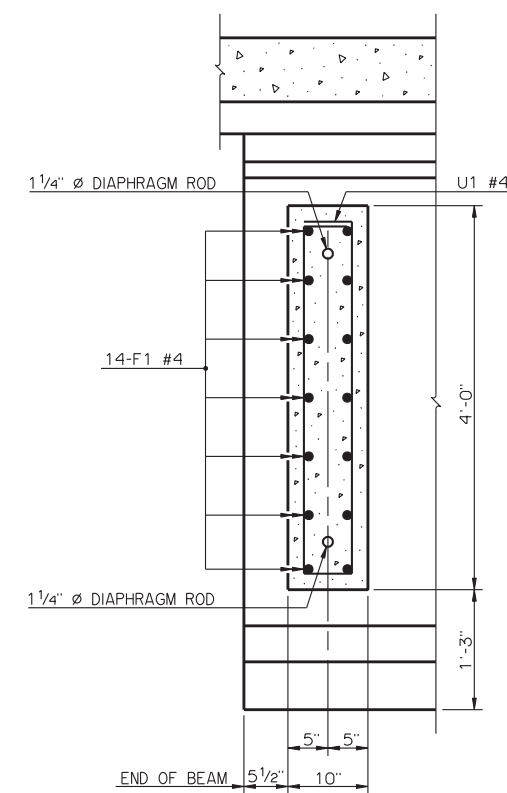


**ELEVATION OF INTERMEDIATE AND PIER DIAPHRAGMS
TYPE BT-72 AND TYPE J P.C. BEAMS**

FOR ALL SPAN LENGTHS -
INCLUDE TWO LINES OF INTERMEDIATE DIAPHRAGMS PER SPAN AND ONE LINE OF PIER DIAPHRAGMS AT EACH PIER PER SPAN.



**SECTION B-B
AT INTERMEDIATE DIAPHRAGM**



**SECTION B-B
AT PIER DIAPHRAGM**

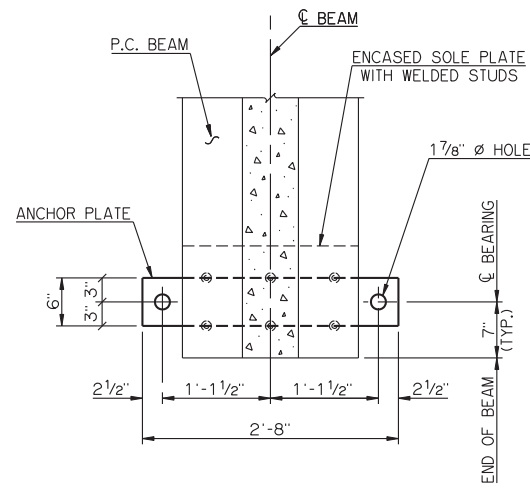
BAR LIST - ONE INTERMEDIATE OR PIER DIAPHRAGM					
P.C. BEAM	MARK	NO.	SIZE	FORM	LENGTH
TYPE II	U1	9	#4	BNT.	3'-5"
	F1	6	#4	STR.	8'-4"
TYPE B	U1	9	#4	BNT.	3'-3"
	F1	6	#4	STR.	8'-3"
TYPE III	U1	9	#4	BNT.	4'-1"
	F1	6	#4	STR.	8'-3"
TYPE C	U1	9	#4	BNT.	3'-7"
	F1	6	#4	STR.	8'-3"
TYPE IV	U1	9	#4	BNT.	4'-9"
	F1	6	#4	STR.	8'-2"
TYPE BT-72	U1	10	#4	BNT.	8'-10"
	F1	14	#4	STR.	8'-4"
TYPE J	U1	10	#4	BNT.	8'-10"
	F1	14	#4	STR.	8'-4"

APPROVED BY BRIDGE ENGINEER *Robert Duch* DATE 9-9-2011

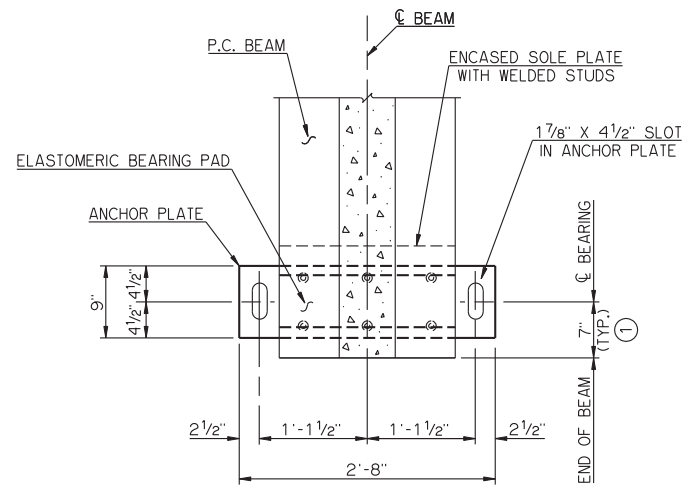
OKLAHOMA DEPARTMENT OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)

**INTERMEDIATE AND PIER DIAPHRAGM DETAILS
P.C. BEAMS**

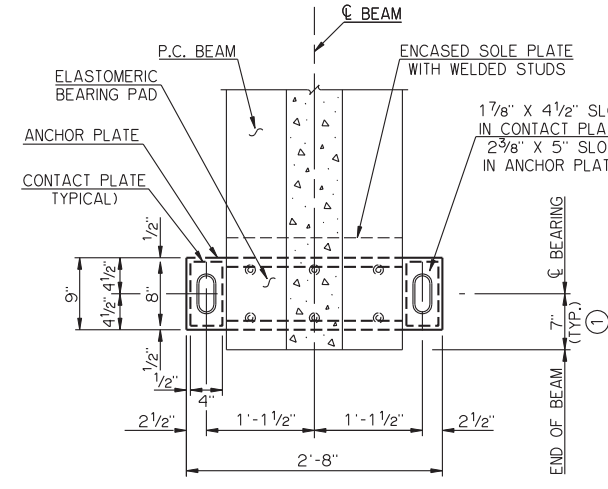
32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°



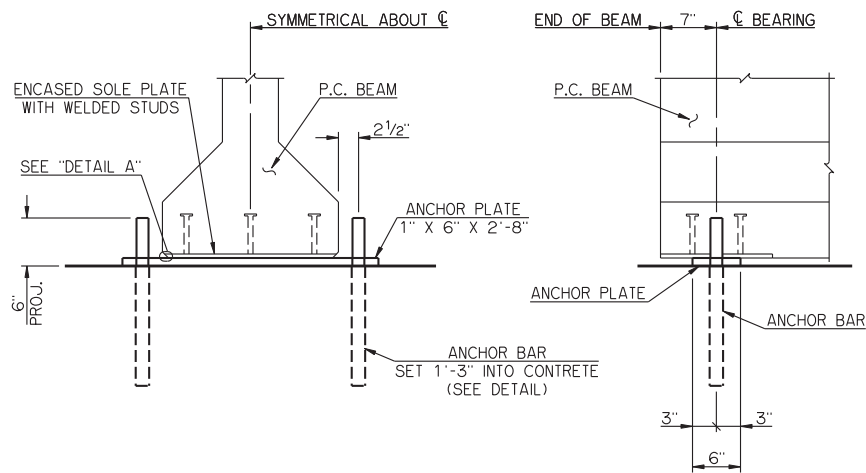
PLAN
ANCHOR BARS NOT SHOWN



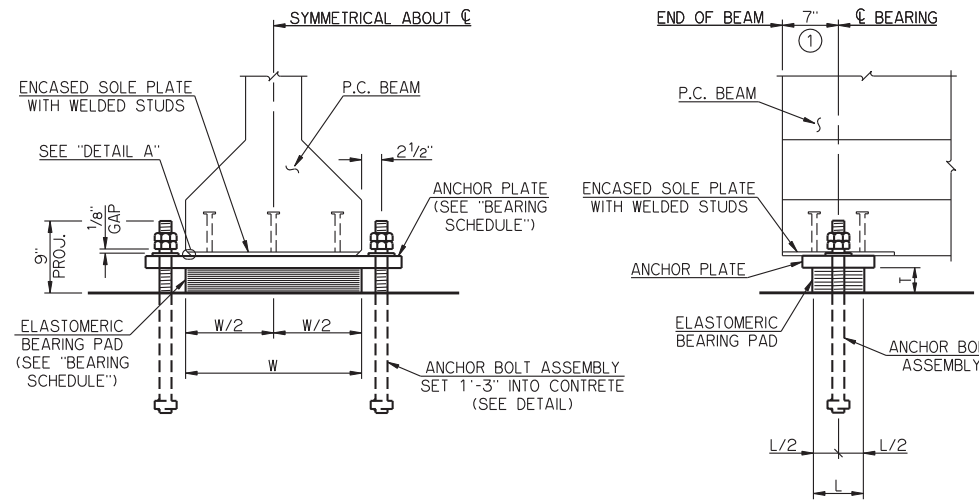
PLAN
ANCHOR BOLT ASSEMBLIES NOT SHOWN



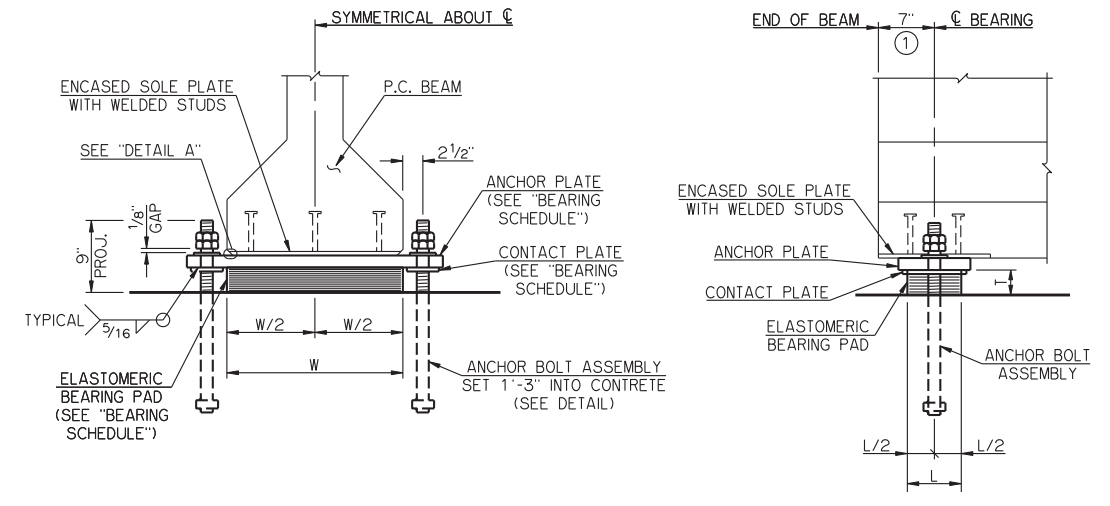
PLAN
ANCHOR BOLT ASSEMBLIES NOT SHOWN



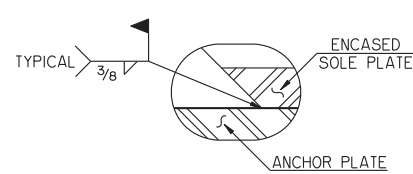
END VIEW
SIDE VIEW
ABUTMENT BEARING DETAILS



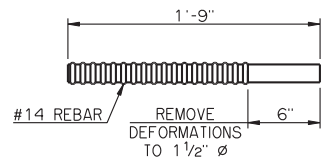
END VIEW
SIDE VIEW
PIER BEARING DETAILS
60' THRU 75' SPANS



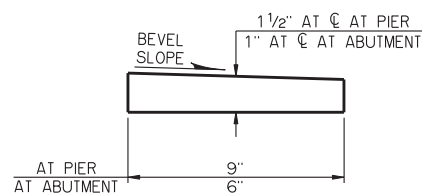
END VIEW
SIDE VIEW
PIER BEARING DETAILS
80' THRU 90' SPANS



DETAIL A

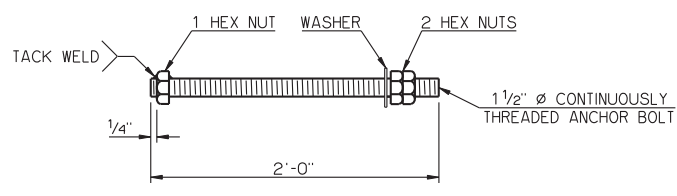


ANCHOR BAR DETAIL



BEVELED ANCHOR PLATE DETAIL

BEVELED ANCHOR PLATE IS REQUIRED WHEN ANGLE BETWEEN UNDERSIDE OF BEAM AND HORIZONTAL EXCEEDS 1.0%. BEVEL SLOPE TO MATCH ANGLE BETWEEN BEAM AND HORIZONTAL. PAINT THICKER EDGE RED.



ANCHOR BOLT ASSEMBLY DETAIL

SPAN	ANCHOR PLATE	CONTACT PLATE	60 DUROMETER ELASTOMERIC BEARING PAD			MAXIMUM EXPANSION LENGTH WITHOUT BONDING	
			SIZE (T X L X W)	COVER LAYER	INNER LAYER		LAMINATE PLATE
60'	1 1/2" X 9" X 2'-8"	---	3 1/8" X 6 1/4" X 1'-10"	2-1/4"	5-3/8"	6-1/8"	220'
65'	1 1/2" X 9" X 2'-8"	---	3 1/8" X 6 1/4" X 1'-10"	2-1/4"	5-3/8"	6-1/8"	240'
70'	1 1/2" X 9" X 2'-8"	---	3 1/8" X 6 1/4" X 1'-10"	2-1/4"	5-3/8"	6-1/8"	260'
75'	1 1/2" X 9" X 2'-8"	---	3 1/8" X 6 1/2" X 1'-10"	2-1/4"	5-3/8"	6-1/8"	260'
80'	1 1/2" X 9" X 2'-8"	1/2" X 4" X 8"	3 1/8" X 6 1/2" X 1'-10"	2-1/4"	5-3/8"	6-1/8"	260'
85'	1 1/2" X 9" X 2'-8"	1/2" X 4" X 8"	3 1/8" X 6 1/2" X 1'-10"	2-1/4"	5-3/8"	6-1/8"	260'
90'	1 1/2" X 9" X 2'-8"	1/2" X 4" X 8"	3 1/8" X 6 3/4" X 1'-10"	2-1/4"	5-3/8"	6-1/8"	260'

NOTES

STRUCTURAL STEEL FOR ANCHOR PLATES, CONTACT PLATES AND CONTINUOUSLY THREADED ANCHOR BOLTS SHALL CONFORM TO AASHTO M 270 (ASTM A 709), GRADE 50W, WEATHERING STEEL (CHARPY V-NOTCH TESTING NOT REQUIRED). HEX NUTS SHALL CONFORM TO AASHTO M 291 (ASTM A 563). WASHERS SHALL CONFORM TO AASHTO M 293 (ASTM F 436), TYPE 3. ANCHOR BARS SHALL BE FABRICATED FROM REINFORCING STEEL CONFORMING TO AASHTO M 31, GRADE 60. ANCHOR BOLT ASSEMBLIES AND ANCHOR BARS SHALL BE GALVANIZED, AND ALL OTHER STEEL PARTS COMPRISING THE BEARING ASSEMBLIES SHALL BE PAINTED WITH THE IZ-E-U PAINT SYSTEM.

ANCHOR BOLTS SHALL BE CENTERED IN SLOTS DURING SETTING OF BEAMS. DIMENSION MAY VARY AT EXPANSION BEARING DEPENDING ON TEMPERATURE AT THE TIME OF BEAM SETTING.

APPROVED BY BRIDGE ENGINEER *Robert D. Duch* DATE 9-9-2011

OKLAHOMA DEPARTMENT OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)

BEARING DETAILS
TYPE III AND TYPE C P.C. BEAMS

32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°

SUMMARY OF QUANTITIES - SUPERSTRUCTURE (PER SPAN)

SPAN	PRESTRESSED CONCRETE BEAM TYPE	ABUTMENT TO ABUTMENT							ABUTMENT TO STANDARD PIER							ABUTMENT TO STEPPED PIER										
		PRESTRESSED CONCRETE BEAMS (TYPE ①)	SAW-CUT GROOVING (SY)	CONCRETE RAIL (TR3) (LF)	STRUCTURAL STEEL ② (LB)	WEATHERING STEEL FIXED BEARING ASSEMBLY ③ (EA)	CLASS AA CONCRETE (CY)	REINFORCING STEEL ⑥ (LB)	PRESTRESSED CONCRETE BEAMS (TYPE ①) (LF)	SAW-CUT GROOVING (SY)	CONCRETE RAIL (TR3) (LF)	STRUCTURAL STEEL ② (LB)	WEATHERING STEEL FIXED BEARING ASSEMBLY ③ (EA)	WEATHERING STEEL EXPANSION BEARING ASSEMBLY ④ (EA)	ELASTOMERIC BEARING PADS ⑤ (EA)	CLASS AA CONCRETE (CY)	REINFORCING STEEL ⑦ (LB)	PRESTRESSED CONCRETE BEAMS (TYPE ①) (LF)	SAW-CUT GROOVING (SY)	CONCRETE RAIL (TR3) (LF)	STRUCTURAL STEEL ② (LB)	WEATHERING STEEL FIXED BEARING ASSEMBLY ③ (EA)	WEATHERING STEEL EXPANSION BEARING ASSEMBLY ④ (EA)	ELASTOMERIC BEARING PADS ⑤ (EA)	CLASS AA CONCRETE (CY)	REINFORCING STEEL ⑦ (LB)
30'	II	118.67	94.9	63.0	390	8	51.3	6,770	118.67	91.0	61.5	380	4	4	4	40.3	8,390	118.67	92.1	62.2	380	4	4	4	40.6	8,420
	B	118.67	94.9	63.0	390	8	51.0	6,770	118.67	91.0	61.5	380	4	4	4	40.0	8,380	118.67	92.1	62.2	380	4	4	4	40.3	8,410
35'	II	138.67	110.5	73.0	390	8	55.7	7,610	138.67	106.6	71.5	380	4	4	4	44.6	9,220	138.67	107.6	72.2	380	4	4	4	44.9	9,260
	B	138.67	110.5	73.0	390	8	55.4	7,610	138.67	106.6	71.5	380	4	4	4	44.4	9,220	138.67	107.6	72.2	380	4	4	4	44.7	9,250
40'	II	158.67	126.0	83.0	390	8	60.0	8,610	158.67	122.2	81.5	380	4	4	4	49.0	10,220	158.67	123.2	82.2	380	4	4	4	49.3	10,250
	B	158.67	126.0	83.0	390	8	59.7	8,600	158.67	122.2	81.5	380	4	4	4	48.8	10,210	158.67	123.2	82.2	380	4	4	4	49.0	10,240
45'	II	178.67	141.6	93.0	390	8	64.4	9,450	178.67	137.7	91.5	380	4	4	4	53.4	11,060	178.67	138.8	92.2	380	4	4	4	53.7	11,090
	B	178.67	141.6	93.0	390	8	64.1	9,440	178.67	137.7	91.5	380	4	4	4	53.1	11,050	178.67	138.8	92.2	380	4	4	4	53.4	11,090
50'	II	198.67	157.2	103.0	390	8	68.8	10,440	198.67	153.3	101.5	380	4	4	4	57.7	12,130	198.67	154.3	102.2	380	4	4	4	58.0	12,160
	B	198.67	157.2	103.0	390	8	68.5	10,440	198.67	153.3	101.5	380	4	4	4	57.5	12,120	198.67	154.3	102.2	380	4	4	4	57.8	12,150
55'	II	218.67	172.7	113.0	390	8	73.1	11,280	218.67	168.8	111.5	380	4	4	4	62.1	12,970	218.67	169.9	112.2	380	4	4	4	62.4	13,000
	B	218.67	172.7	113.0	390	8	72.8	11,280	218.67	168.8	111.5	380	4	4	4	61.8	12,960	218.67	169.9	112.2	380	4	4	4	62.1	12,990
60'	II	238.67	188.3	123.0	390	8	77.5	12,420	238.67	184.4	121.5	380	4	4	4	66.4	13,970	238.67	185.4	122.2	380	4	4	4	66.7	14,000
	C	238.67	188.3	123.0	390	8	82.3	12,650	238.67	184.4	121.5	380	4	4	4	69.1	14,190	238.67	185.4	122.2	380	4	4	4	69.4	14,220
65'	II	258.67	203.8	133.0	390	8	81.8	13,260	258.67	199.9	131.5	380	4	4	4	70.8	14,800	258.67	201.0	132.2	380	4	4	4	71.1	14,840
	C	258.67	203.8	133.0	390	8	86.7	13,490	258.67	199.9	131.5	380	4	4	4	73.5	15,030	258.67	201.0	132.2	380	4	4	4	73.8	15,060
70'	III	278.67	219.4	143.0	390	8	91.8	14,490	278.67	215.5	141.5	380	4	4	4	78.6	16,120	278.67	216.5	142.2	380	4	4	4	78.9	16,150
	C	278.67	219.4	143.0	390	8	91.1	14,480	278.67	215.5	141.5	380	4	4	4	77.9	16,100	278.67	216.5	142.2	380	4	4	4	78.2	16,130
75'	III	298.67	234.9	153.0	390	8	96.2	15,330	298.67	231.0	151.5	380	4	4	4	83.0	16,950	298.67	232.1	152.2	380	4	4	4	83.3	16,990
	C	298.67	234.9	153.0	390	8	95.5	15,320	298.67	231.0	151.5	380	4	4	4	82.3	16,940	298.67	232.1	152.2	380	4	4	4	82.6	16,970
80'	III	318.67	250.5	163.0	390	8	100.6	16,320	318.67	246.6	161.5	380	4	4	4	87.4	17,950	318.67	247.6	162.2	380	4	4	4	87.7	17,980
	C	318.67	250.5	163.0	390	8	99.9	16,310	318.67	246.6	161.5	380	4	4	4	86.7	17,930	318.67	247.6	162.2	380	4	4	4	86.9	17,960
85'	III	338.67	266.0	173.0	390	8	105.1	17,160	338.67	262.2	171.5	380	4	4	4	91.8	18,790	338.67	263.2	172.2	380	4	4	4	92.1	18,820
	IV	338.67	266.0	173.0	390	8	110.7	17,660	338.67	262.2	171.5	380	4	4	4	95.4	19,300	338.67	263.2	172.2	380	4	4	4	95.7	19,330
90'	III	358.67	281.6	183.0	390	8	109.5	18,160	358.67	277.7	181.5	380	4	4	4	96.2	19,790	358.67	278.8	182.2	380	4	4	4	96.5	19,820
	IV	358.67	281.6	183.0	390	8	115.2	18,660	358.67	277.7	181.5	380	4	4	4	99.9	20,300	358.67	278.8	182.2	380	4	4	4	100.2	20,330
95'	IV	378.67	297.2	193.0	390	8	119.6	19,500	378.67	293.3	191.5	380	4	4	4	104.3	21,130	378.67	294.3	192.2	380	4	4	4	104.6	21,170
100'	IV	398.67	312.7	203.0	390	8	124.1	20,490	398.67	308.8	201.5	380	4	4	4	108.8	22,130	398.67	309.9	202.2	380	4	4	4	109.1	22,160
105'	IV	418.67	328.3	213.0	510	8	130.0	21,520	418.67	324.4	211.5	500	4	4	4	114.7	23,150	418.67	325.4	212.2	500	4	4	4	115.0	23,190
110'	IV	438.67	343.8	223.0	510	8	134.5	22,510	438.67	339.9	221.5	500	4	4	4	119.2	24,220	438.67	341.0	222.2	500	4	4	4	119.4	24,250
115'	IV	458.67	359.4	233.0	510	8	138.9	23,350	458.67	355.5	231.5	500	4	4	4	123.6	25,060	458.67	356.5	232.2	500	4	4	4	123.9	25,090
120'	BT-72	478.67	374.9	243.0	750	8	164.3	25,430	478.67	371.0	241.5	870	4	4	4	145.4	27,220	478.67	372.1	242.2	870	4	4	4	145.6	27,250
	J	478.67	374.9	243.0	750	8	164.0	25,430	478.67	371.0	241.5	870	4	4	4	145.2	27,220	478.67	372.1	242.2	870	4	4	4	145.5	27,250
125'	BT-72	498.67	390.5	253.0	750	8	169.1	26,270	498.67	386.6	251.5	870	4	4	4	150.1	28,060	498.67	387.6	252.2	870	4	4	4	150.4	28,100
	J	498.67	390.5	253.0	750	8	168.7	26,270	498.67	386.6	251.5	870	4	4	4	149.9	28,060	498.67	387.6	252.2	870	4	4	4	150.2	28,100
130'	BT-72	518.67	406.0	263.0	750	8	173.8	27,270	518.67	402.2	261.5	870	4	4	4	154.8	29,060	518.67	403.2	262.2	870	4	4	4	155.1	29,090
	J	518.67	406.0	263.0	750	8	173.4	27,270	518.67	402.2	261.5	870	4	4	4	154.6	29,060	518.67	403.2	262.2	870	4	4	4	154.9	29,090
135'	J	538.67	421.6	273.0	750	8	178.2	28,110	538.67	417.7	271.5	870	4	4	4	159.4	29,890	538.67	418.8	272.2	870	4	4	4	159.6	29,930
140'	J	558.67	437.2	283.0	750	8	182.9	29,100	558.67	433.3	281.5	870	4	4	4	164.1	30,890	558.67	434.3	282.2	870	4	4	4	164.4	30,920
145'	J	578.67	452.7	293.0	750	8	187.6	29,940	578.67	448.8	291.5	870	4	4	4	168.8	31,730	578.67	449.9	292.2	870	4	4	4	169.1	31,760

① PRESTRESSED CONCRETE BEAM TYPE SHALL BE TYPE II, TYPE B, TYPE III, TYPE C, TYPE IV, TYPE 72 BT OR TYPE J BT AS APPLICABLE.

② QUANTITIES SHOWN INCLUDE WEIGHT OF STEEL ANGLE BUMPERS AT ABUTMENT ENDS OF DECK SLAB. FOR EACH STEEL ANGLE BUMPER OMITTED FROM END OF DECK SLAB, DEDUCT 130 POUNDS FROM THE QUANTITIES SHOWN.

③ AT THE ABUTMENTS, PROVIDE AND INSTALL FIXED BEARING ASSEMBLIES OF THE SIZE, SHAPE AND LOCATION AS DETAILED IN THE PLANS. SEE SUMMARY FOR THE ESTIMATED TOTAL AMOUNT OF STRUCTURAL STEEL PER EACH FIXED BEARING ASSEMBLY. ALL COST OF PROVIDING AND INSTALLING THE FIXED BEARING ASSEMBLIES INCLUDING THE COST OF ANCHOR PLATES, ANCHOR BARS, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH OF "WEATHERING STEEL FIXED BEARING ASSEMBLY."

④ AT THE PIERS, PROVIDE AND INSTALL EXPANSION BEARING ASSEMBLIES OF THE SIZE, SHAPE AND LOCATION AS DETAILED IN THE PLANS. SEE SUMMARY FOR THE ESTIMATED TOTAL AMOUNT OF STRUCTURAL STEEL PER EACH EXPANSION BEARING ASSEMBLY. ALL COST OF PROVIDING AND INSTALLING THE EXPANSION BEARING ASSEMBLIES INCLUDING THE COST OF STEEL REINFORCED ELASTOMERIC BEARING PADS, ANCHOR PLATES, CONTACT PLATES, CONTACT ANGLES, ANCHOR BOLTS, NUTS, WASHERS, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH OF "WEATHERING STEEL EXPANSION BEARING ASSEMBLY."

⑤ PROVIDE AND INSTALL ELASTOMERIC BEARING PADS BETWEEN THE TOP SURFACE OF THE P.C. BEAMS AND THE BOTTOM SURFACE OF THE DECK SLAB. THE ELASTOMERIC BEARING PADS ARE TO BE OF THE SIZE AND SHAPE AS DETAILED IN THE PLANS AND LOCATED AT EACH BEAM END ABOVE THE PIERS. ALL COST OF PROVIDING AND INSTALLING THE ELASTOMERIC BEARING PADS INCLUDING THE COST OF ELASTOMERIC BEARING PADS, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH OF "ELASTOMERIC BEARING PADS."

⑥ QUANTITY INCLUDES PROVISION FOR LAP SPLICES REQUIRED IN THE LONGITUDINAL REINFORCING STEEL AS FOLLOWS:
30' THRU 55' SPANS - NO LAP SPLICES
60' THRU 115' SPANS - 1 LAP SPLICE
120' THRU 145' SPANS - 2 LAP SPLICES

⑦ QUANTITY INCLUDES PROVISION FOR LAP SPLICES REQUIRED IN THE LONGITUDINAL REINFORCING STEEL AS FOLLOWS:
30' THRU 45' SPANS - 1/2 LAP SPLICE
50' THRU 65' SPANS - 1 LAP SPLICE
70' THRU 105' SPANS - 1 1/2 LAP SPLICES
110' THRU 145' SPANS - 2 LAP SPLICES
LAP SPLICES ACCOUNT FOR ADJACENT SPAN COMBINATIONS AND ARE APPROXIMATE. PAYMENT FOR "REINFORCING STEEL" WILL BE BASED ON PLAN QUANTITY.

SUMMARY OF QUANTITIES - BEARING ASSEMBLY STRUCTURAL STEEL (PER EACH ASSEMBLY)			
PRESTRESSED CONCRETE BEAM TYPE	SPAN	WEATHERING STEEL FIXED BEARING ASSEMBLY (LB)	WEATHERING STEEL EXPANSION BEARING ASSEMBLY (LB)
II AND B	30' THRU 65'	80	150
III AND C	60' THRU 75'	90	160
	80' THRU 90'	90	170
IV AND BT-72	85' THRU 95'	90	190
	100' THRU 120'	90	200
	125' THRU 130'	90	210
J	120' THRU 145'	100	220

APPROVED BY BRIDGE ENGINEER *Robert A. Dusch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
SUPERSTRUCTURE QUANTITIES
P.C. BEAMS
 (SHEET NO. 1 OF 2)
 32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°
 2009 SPECIFICATIONS CB32-I-SKO-SPR-QUAN-PCB-1 01E
 CB-898E

SUMMARY OF QUANTITIES - SUPERSTRUCTURE (PER SPAN)

SPAN	PRESTRESSED CONCRETE BEAM TYPE	STANDARD PIER TO STANDARD PIER							STANDARD PIER TO STEPPED PIER							STEPPED PIER TO STEPPED PIER									
		PRESTRESSED CONCRETE BEAMS (TYPE ①) (LF)	SAW-CUT GROOVING (SY)	CONCRETE RAIL (TR3) (LF)	STRUCTURAL STEEL (LB)	WEATHERING STEEL EXPANSION BEARING ASSEMBLY ② (EA)	ELASTOMERIC BEARING PADS ③ (EA)	CLASS AA CONCRETE (CY)	REINFORCING STEEL ④ (LB)	PRESTRESSED CONCRETE BEAMS (TYPE ①) (LF)	SAW-CUT GROOVING (SY)	CONCRETE RAIL (TR3) (LF)	STRUCTURAL STEEL (LB)	WEATHERING STEEL EXPANSION BEARING ASSEMBLY ② (EA)	ELASTOMERIC BEARING PADS ③ (EA)	CLASS AA CONCRETE (CY)	REINFORCING STEEL ④ (LB)	PRESTRESSED CONCRETE BEAMS (TYPE ①) (LF)	SAW-CUT GROOVING (SY)	CONCRETE RAIL (TR3) (LF)	STRUCTURAL STEEL (LB)	WEATHERING STEEL EXPANSION BEARING ASSEMBLY ② (EA)	ELASTOMERIC BEARING PADS ③ (EA)	CLASS AA CONCRETE (CY)	REINFORCING STEEL ④ (LB)
30'	II	118.67	87.2	60.0	370	8	8	29.3	9,930	118.67	88.2	60.7	370	8	8	29.5	9,960	118.67	89.2	61.4	370	8	8	29.8	9,990
	B	118.67	87.2	60.0	370	8	8	29.1	9,910	118.67	88.2	60.7	370	8	8	29.3	9,940	118.67	89.2	61.4	370	8	8	29.6	9,980
35'	II	138.67	102.7	70.0	370	8	8	33.6	10,760	138.67	103.8	70.7	370	8	8	33.9	10,800	138.67	104.8	71.4	370	8	8	34.2	10,830
	B	138.67	102.7	70.0	370	8	8	33.4	10,750	138.67	103.8	70.7	370	8	8	33.7	10,790	138.67	104.8	71.4	370	8	8	34.0	10,820
40'	II	158.67	118.3	80.0	370	8	8	38.0	11,760	158.67	119.3	80.7	370	8	8	38.3	11,790	158.67	120.3	81.4	370	8	8	38.5	11,830
	B	158.67	118.3	80.0	370	8	8	37.8	11,750	158.67	119.3	80.7	370	8	8	38.1	11,780	158.67	120.3	81.4	370	8	8	38.4	11,810
45'	II	178.67	133.8	90.0	370	8	8	42.3	12,600	178.67	134.9	90.7	370	8	8	42.6	12,630	178.67	135.9	91.4	370	8	8	42.9	12,660
	B	178.67	133.8	90.0	370	8	8	42.1	12,590	178.67	134.9	90.7	370	8	8	42.4	12,620	178.67	135.9	91.4	370	8	8	42.7	12,650
50'	II	198.67	149.4	100.0	370	8	8	46.7	13,670	198.67	150.4	100.7	370	8	8	47.0	13,700	198.67	151.5	101.4	370	8	8	47.3	13,730
	B	198.67	149.4	100.0	370	8	8	46.5	13,660	198.67	150.4	100.7	370	8	8	46.8	13,690	198.67	151.5	101.4	370	8	8	47.1	13,720
55'	II	218.67	164.9	110.0	370	8	8	51.1	14,510	218.67	166.0	110.7	370	8	8	51.3	14,540	218.67	167.0	111.4	370	8	8	51.6	14,570
	B	218.67	164.9	110.0	370	8	8	50.9	14,490	218.67	166.0	110.7	370	8	8	51.1	14,530	218.67	167.0	111.4	370	8	8	51.4	14,560
60'	II	238.67	180.5	120.0	370	8	8	55.4	15,500	238.67	181.5	120.7	370	8	8	55.7	15,530	238.67	182.6	121.4	370	8	8	56.0	15,570
	C	238.67	180.5	120.0	370	8	8	55.9	15,730	238.67	181.5	120.7	370	8	8	56.2	15,760	238.67	182.6	121.4	370	8	8	56.5	15,800
65'	II	258.67	196.0	130.0	370	8	8	60.8	16,380	258.67	197.1	130.7	370	8	8	61.1	16,380	258.67	198.1	131.4	370	8	8	61.3	16,410
	C	258.67	196.0	130.0	370	8	8	60.3	16,570	258.67	197.1	130.7	370	8	8	60.6	16,600	258.67	198.1	131.4	370	8	8	60.9	16,630
70'	III	278.67	211.6	140.0	370	8	8	65.4	17,670	278.67	212.6	140.7	370	8	8	65.7	17,700	278.67	213.7	141.4	370	8	8	66.0	17,730
	C	278.67	211.6	140.0	370	8	8	64.7	17,640	278.67	212.6	140.7	370	8	8	65.0	17,670	278.67	213.7	141.4	370	8	8	65.2	17,700
75'	III	298.67	227.2	150.0	370	8	8	69.8	18,500	298.67	228.2	150.7	370	8	8	70.1	18,540	298.67	229.2	151.4	370	8	8	70.4	18,570
	C	298.67	227.2	150.0	370	8	8	69.1	18,480	298.67	228.2	150.7	370	8	8	69.3	18,510	298.67	229.2	151.4	370	8	8	69.6	18,540
80'	III	318.67	242.7	160.0	370	8	8	74.2	19,500	318.67	243.8	160.7	370	8	8	74.5	19,530	318.67	244.8	161.4	370	8	8	74.8	19,570
	C	318.67	242.7	160.0	370	8	8	73.5	19,470	318.67	243.8	160.7	370	8	8	73.7	19,500	318.67	244.8	161.4	370	8	8	74.0	19,540
85'	III	338.67	258.3	170.0	370	8	8	78.6	20,340	338.67	259.3	170.7	370	8	8	78.9	20,370	338.67	260.3	171.4	370	8	8	79.2	20,400
	IV	338.67	258.3	170.0	370	8	8	80.1	20,860	338.67	259.3	170.7	370	8	8	80.4	20,890	338.67	260.3	171.4	370	8	8	80.7	20,920
90'	III	358.67	273.8	180.0	370	8	8	83.0	21,330	358.67	274.9	180.7	370	8	8	83.3	21,370	358.67	275.9	181.4	370	8	8	83.6	21,400
	IV	358.67	273.8	180.0	370	8	8	84.6	21,860	358.67	274.9	180.7	370	8	8	84.9	21,890	358.67	275.9	181.4	370	8	8	85.2	21,920
95'	IV	378.67	289.4	190.0	370	8	8	89.0	22,690	378.67	290.4	190.7	370	8	8	89.3	22,730	378.67	291.5	191.4	370	8	8	89.6	22,760
100'	IV	398.67	304.9	200.0	370	8	8	93.5	23,690	398.67	306.0	200.7	370	8	8	93.8	23,720	398.67	307.0	201.4	370	8	8	94.1	23,760
105'	IV	418.67	320.5	210.0	500	8	8	99.4	24,710	418.67	321.5	210.7	500	8	8	99.7	24,750	418.67	322.6	211.4	500	8	8	100.0	24,780
110'	IV	438.67	336.0	220.0	500	8	8	103.9	25,780	438.67	337.1	220.7	500	8	8	104.2	25,810	438.67	338.1	221.4	500	8	8	104.4	25,850
115'	IV	458.67	351.6	230.0	500	8	8	108.3	26,620	458.67	352.6	230.7	500	8	8	108.6	26,650	458.67	353.7	231.4	500	8	8	108.9	26,690
120'	BT-72	478.67	367.2	240.0	980	8	8	126.4	29,010	478.67	368.2	240.7	980	8	8	126.7	29,040	478.67	369.2	241.4	980	8	8	126.9	29,080
	J	478.67	367.2	240.0	980	8	8	126.4	29,010	478.67	368.2	240.7	980	8	8	126.7	29,040	478.67	369.2	241.4	980	8	8	126.9	29,080
125'	BT-72	498.67	382.7	250.0	980	8	8	131.1	29,850	498.67	383.8	250.7	980	8	8	131.4	29,880	498.67	384.8	251.4	980	8	8	131.7	29,910
	J	498.67	382.7	250.0	980	8	8	131.1	29,850	498.67	383.8	250.7	980	8	8	131.4	29,880	498.67	384.8	251.4	980	8	8	131.7	29,910
130'	BT-72	518.67	398.3	260.0	980	8	8	135.8	30,840	518.67	399.3	260.7	980	8	8	136.1	30,880	518.67	400.3	261.4	980	8	8	136.4	30,910
	J	518.67	398.3	260.0	980	8	8	135.8	30,840	518.67	399.3	260.7	980	8	8	136.1	30,880	518.67	400.3	261.4	980	8	8	136.4	30,910
135'	J	538.67	413.8	270.0	980	8	8	140.6	31,680	538.67	414.9	270.7	980	8	8	140.9	31,720	538.67	415.9	271.4	980	8	8	141.1	31,750
140'	J	558.67	429.4	280.0	980	8	8	145.3	32,680	558.67	430.4	280.7	980	8	8	145.6	32,710	558.67	431.5	281.4	980	8	8	145.9	32,740
145'	J	578.67	444.9	290.0	980	8	8	150.0	33,520	578.67	446.0	290.7	980	8	8	150.3	33,550	578.67	447.0	291.4	980	8	8	150.6	33,580

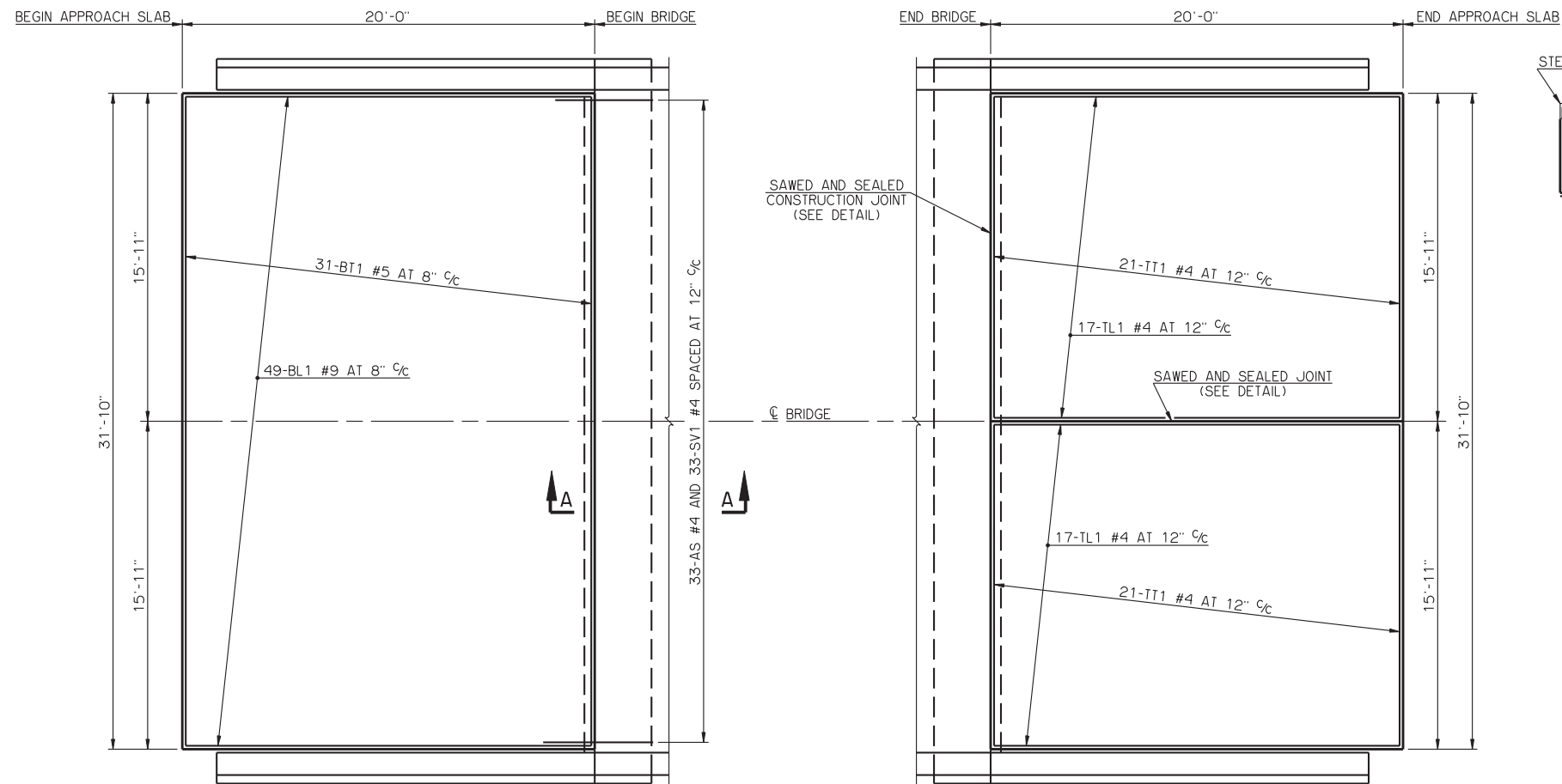
① PRESTRESSED CONCRETE BEAM TYPE SHALL BE TYPE II, TYPE B, TYPE III, TYPE C, TYPE IV, TYPE 72 BT OR TYPE J BT AS APPLICABLE.

② AT THE PIERS, PROVIDE AND INSTALL EXPANSION BEARING ASSEMBLIES OF THE SIZE, SHAPE AND LOCATION AS DETAILED IN THE PLANS. SEE SUMMARY FOR THE ESTIMATED TOTAL AMOUNT OF STRUCTURAL STEEL PER EACH EXPANSION BEARING ASSEMBLY. ALL COST OF PROVIDING AND INSTALLING THE EXPANSION BEARING ASSEMBLIES INCLUDING THE COST OF STEEL REINFORCED ELASTOMERIC BEARING PADS, ANCHOR PLATES, CONTACT PLATES, CONTACT ANGLES, ANCHOR BOLTS, NUTS, WASHERS, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH OF "WEATHERING STEEL EXPANSION BEARING ASSEMBLY."

③ PROVIDE AND INSTALL ELASTOMERIC BEARING PADS BETWEEN THE TOP SURFACE OF THE P.C. BEAMS AND THE BOTTOM SURFACE OF THE DECK SLAB. THE ELASTOMERIC BEARING PADS ARE TO BE OF THE SIZE AND SHAPE AS DETAILED IN THE PLANS AND LOCATED AT EACH BEAM END ABOVE THE PIERS. ALL COST OF PROVIDING AND INSTALLING THE ELASTOMERIC BEARING PADS INCLUDING THE COST OF ELASTOMERIC BEARING PADS, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH OF "ELASTOMERIC BEARING PADS."

④ QUANTITY INCLUDES PROVISION FOR LAP SPLICES REQUIRED IN THE LONGITUDINAL REINFORCING STEEL AS FOLLOWS:
 30' THRU 45' SPANS - 1/2 LAP SPLICE
 50' THRU 65' SPANS - 1 LAP SPLICE
 70' THRU 105' SPANS - 1 1/2 LAP SPLICES
 110' THRU 145' SPANS - 2 LAP SPLICES
 LAP SPLICES ACCOUNT FOR ADJACENT SPAN COMBINATIONS AND ARE APPROXIMATE. PAYMENT FOR "REINFORCING STEEL" WILL BE BASED ON PLAN QUANTITY.

APPROVED BY BRIDGE ENGINEER	<i>Robert J. Dusch</i>	DATE	9-9-2011
OKLAHOMA DEPARTMENT OF TRANSPORTATION COUNTY BRIDGE STANDARD (ENGLISH)			
SUPERSTRUCTURE QUANTITIES			
P.C. BEAMS			
(SHEET NO. 2 OF 2)			
32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°			
2009 SPECIFICATIONS	CB32-I-SKO-SPR-QUAN-PCB-2	01E	CB-899E

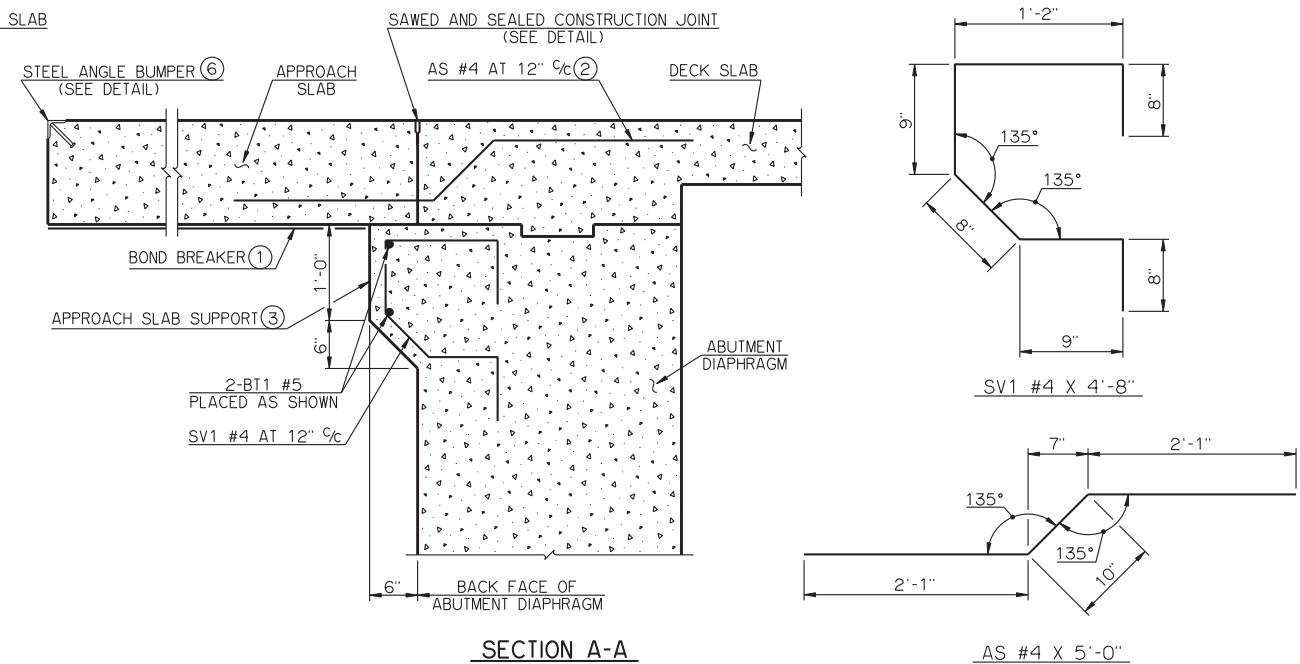


PLAN OF APPROACH SLAB AT BEGIN BRIDGE

BOTTOM LAYER OF REINFORCING STEEL SHOWN. TYPICAL FOR EACH APPROACH SLAB.

PLAN OF APPROACH SLAB AT END BRIDGE

TOP LAYER OF REINFORCING STEEL SHOWN. TYPICAL FOR EACH APPROACH SLAB. DO NOT SAW-CUT GROOVE THE APPROACH SLAB WITHIN 6" OF CONSTRUCTION JOINTS OR SAWED AND SEALED JOINTS.



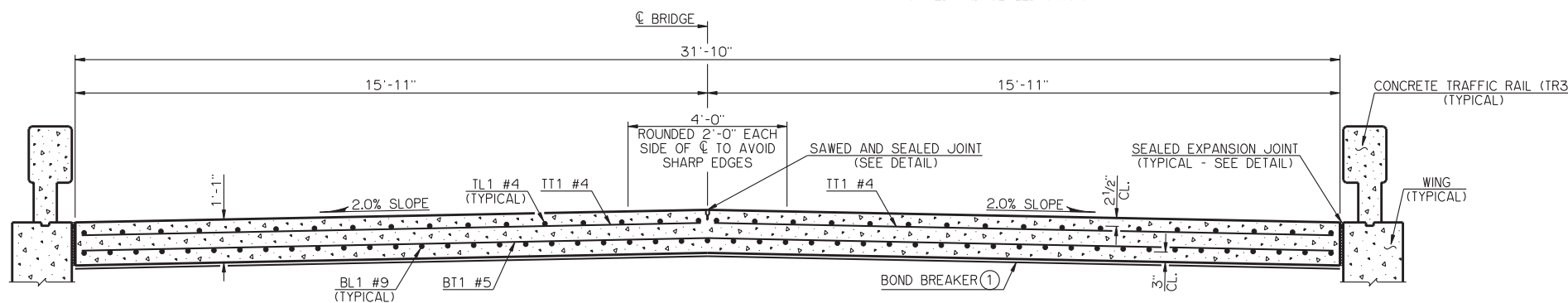
SECTION A-A

DETAILS OF BENT REINFORCING STEEL

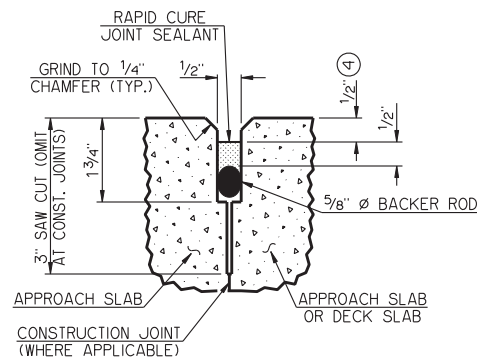
BAR LIST ONE APPROACH SLAB				
MARK	NO.	SIZE	FORM	LENGTH
AS	33	#4	BNT.	5'-0"
BL1	49	#9	STR.	19'-8"
BT1	33	#5	STR.	31'-6"
SV1	33	#4	BNT.	4'-8"
TL1	34	#4	STR.	19'-8"
TT1	42	#4	STR.	15'-7"

SUMMARY OF QUANTITIES - ONE APPROACH SLAB

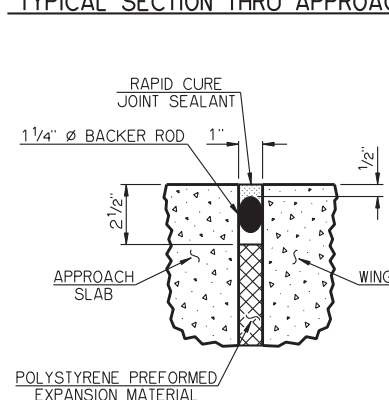
ITEM	UNIT	TOTAL
⑤ APPROACH SLAB	SY	70.80
SAW-CUT GROOVING	SY	57.00
⑥ STRUCTURAL STEEL	LB	130.00



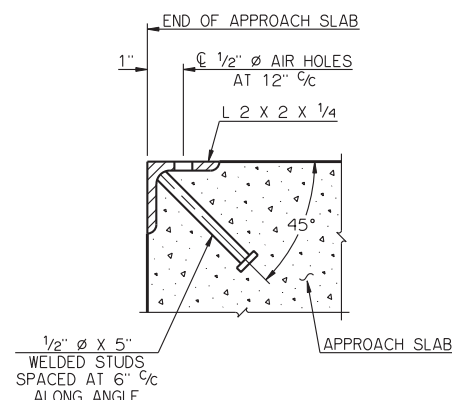
TYPICAL SECTION THRU APPROACH SLAB



DETAIL OF SAWED AND SEALED JOINT



DETAIL OF SEALED EXPANSION JOINT



DETAIL OF STEEL ANGLE BUMPER

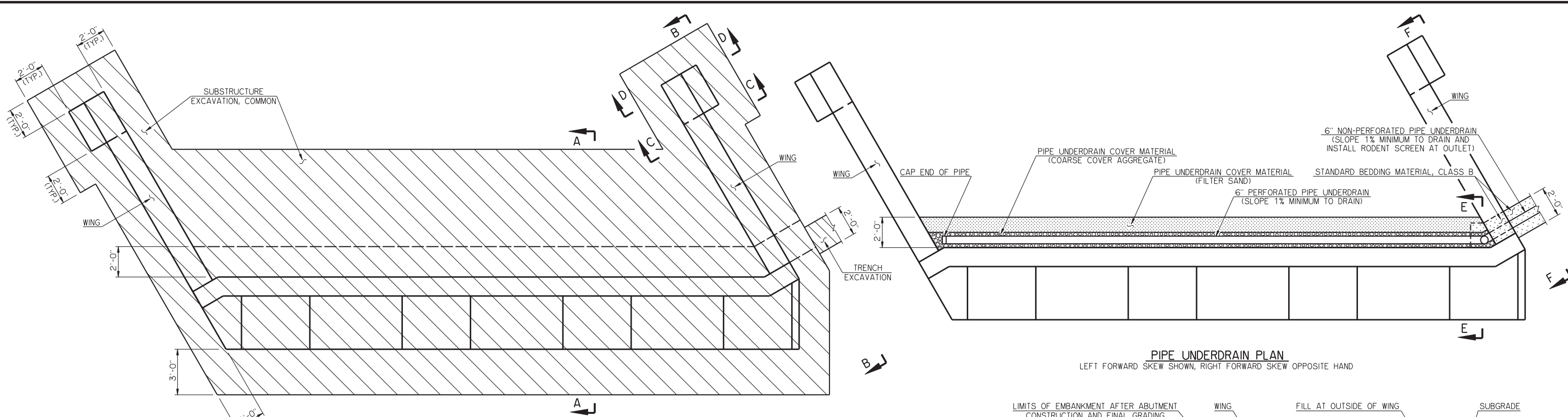
- THE BOND BREAKER SHALL BE ONE 6 MIL OR TWO 4 MIL POLYETHYLENE SHEETS. THE BOND BREAKER SHALL EXTEND THE FULL WIDTH AND LENGTH OF THE APPROACH SLAB BUT SHALL NOT BE PLACED IN THE NOTCH ABOVE THE APPROACH SLAB SUPPORT AT THE BACK FACE OF THE ABUTMENT DIAPHRAGM.
- AS BARS SHALL BE TIED TO THE TOP LAYER OF REINFORCING STEEL IN THE DECK SLAB AND TO THE BOTTOM LAYER OF REINFORCING STEEL IN THE APPROACH SLAB. AS BARS SHALL BE INSTALLED BEFORE PLACING DECK SLAB CONCRETE.
- THE APPROACH SLAB SUPPORT AT THE BACK FACE OF THE ABUTMENT DIAPHRAGM SHALL BE CONSTRUCTED WITH THE ABUTMENT DIAPHRAGM. SV1 AND BT1 BARS SHALL BE INSTALLED BEFORE PLACING THE ABUTMENT DIAPHRAGM CONCRETE.
- AT TRANSVERSE JOINTS ONLY, THIS DIMENSION SHALL TAPER FROM 1/2" AT THE EDGE OF DRIVING LANES TO 1/8" AT FACE OF TRAFFIC RAILS
- THE UNIT PRICE BID PER SQUARE YARD OF "APPROACH SLAB" SHALL INCLUDE ALL COST TO CONSTRUCT THE APPROACH SLAB AND THE APPROACH SLAB SUPPORT AT THE BACK FACE OF THE ABUTMENT DIAPHRAGM INCLUDING THE COST OF ALL CONCRETE, ALL REINFORCING STEEL INCLUDING AS, BT1 AND SV1 BARS, BACKER ROD, RAPID CURE JOINT SEALANT, POLYSTYRENE PREFORMED EXPANSION MATERIAL, POLYETHYLENE SHEETING, SAWING, GRINDING, EXCAVATION, BACKFILL, MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS.
- STEEL ANGLE BUMPERS SHALL BE OMITTED FROM ENDS OF APPROACH SLABS ADJOINING AN APPROACH ROADWAY COMPRISED OF ASPHALT OR P.C. CONCRETE PAVEMENT. STRUCTURAL STEEL QUANTITY SHOWN IS FOR ONE STEEL ANGLE BUMPER.

APPROVED BY BRIDGE ENGINEER *Robert J. Dusch* DATE 9-9-2011

OKLAHOMA DEPARTMENT OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)

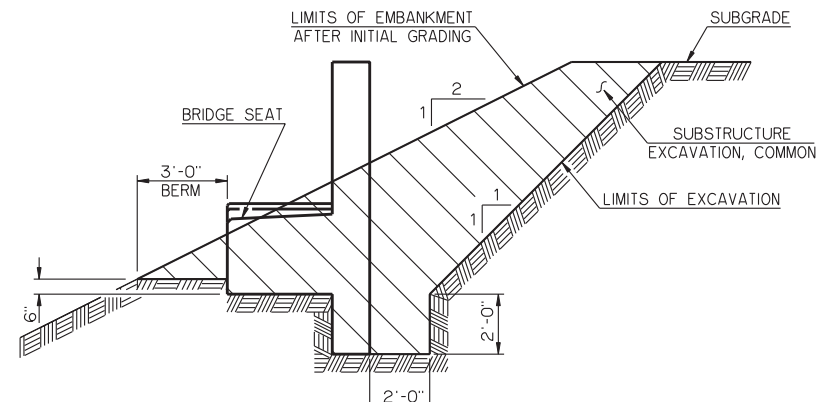
APPROACH SLAB DETAILS

32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°

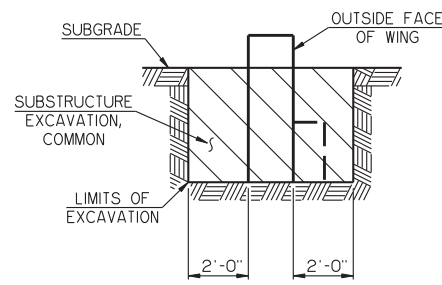


EXCAVATION PLAN
LEFT FORWARD SKEW SHOWN, RIGHT FORWARD SKEW OPPOSITE HAND

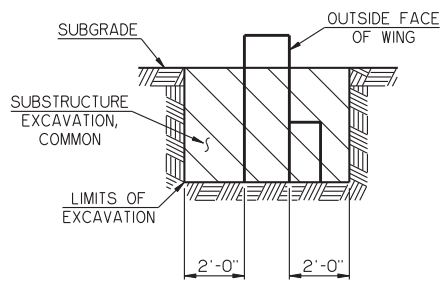
PIPE UNDERDRAIN PLAN
LEFT FORWARD SKEW SHOWN, RIGHT FORWARD SKEW OPPOSITE HAND



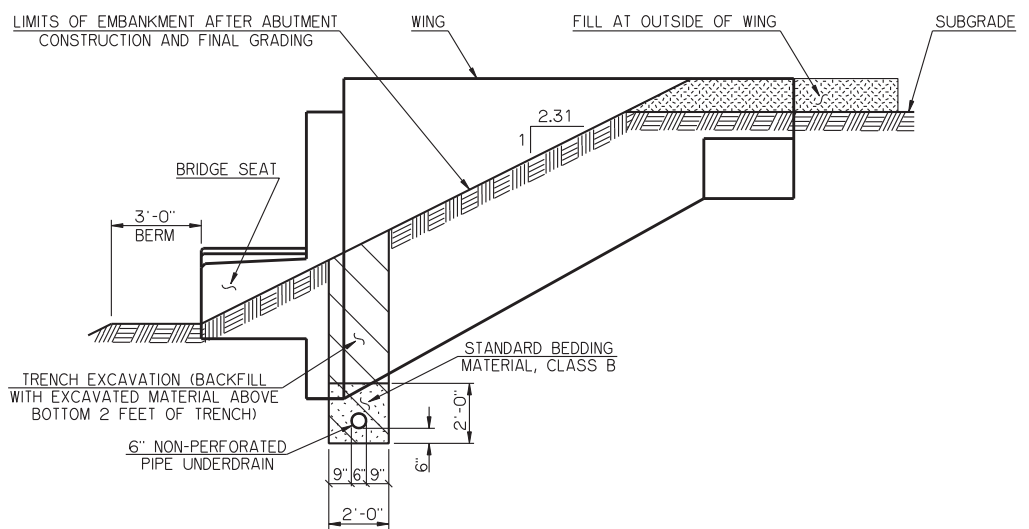
SECTION A-A



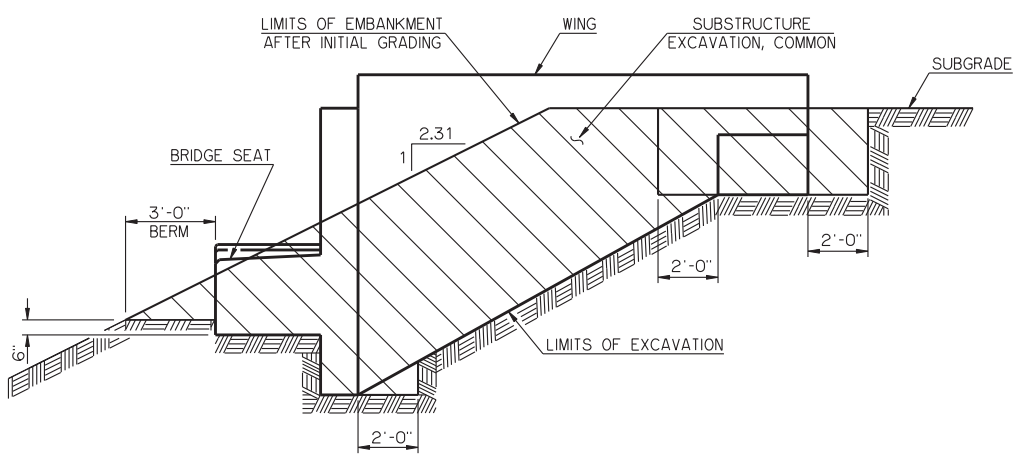
SECTION C-C



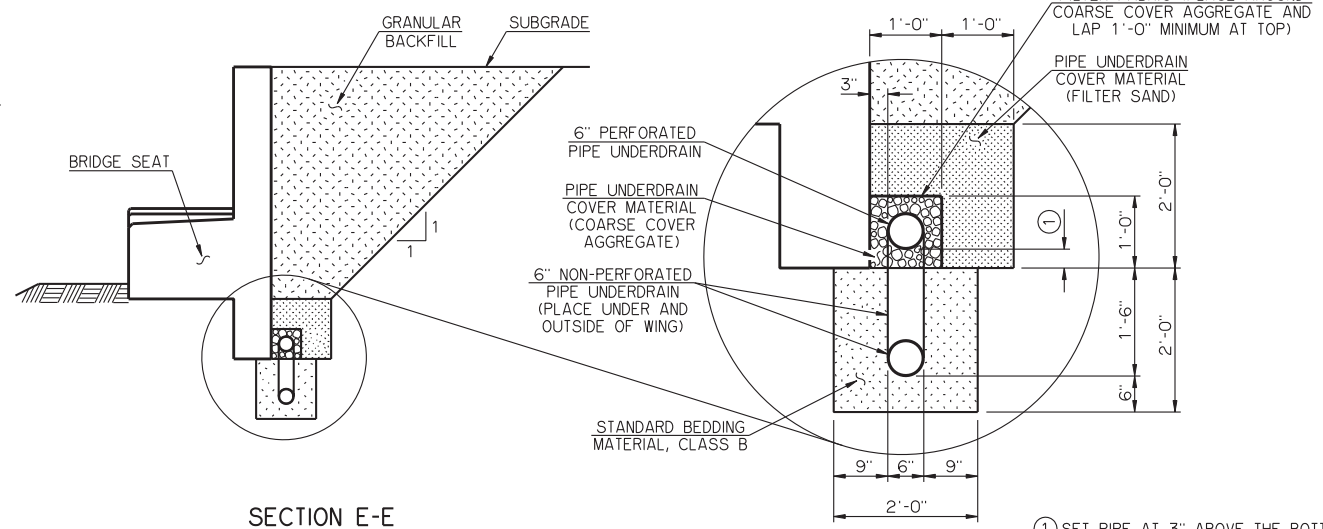
SECTION D-D



SECTION F-F



SECTION B-B



SECTION E-E

NOTES

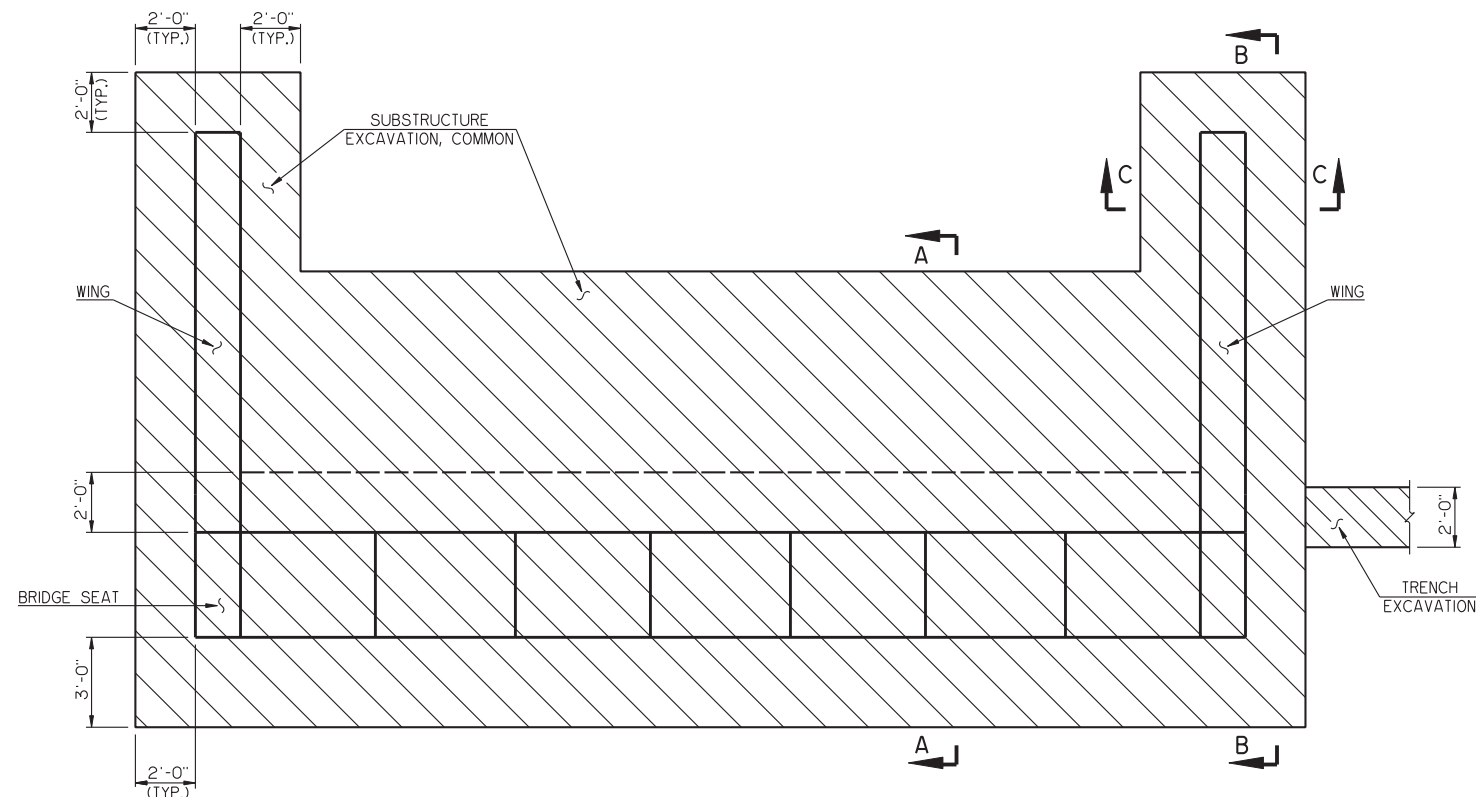
CONCRETE MAY BE PLACED AGAINST THE LIMITS OF EXCAVATION IF THE MATERIAL IS EXCAVATED TO THE NEAT LINES OF THE ABUTMENT AND APPROVED BY THE ENGINEER. IF NECESSARY, FORMS SHALL BE USED ON THE BACK VERTICAL FACE OF THE ABUTMENT AND REMOVED AFTER THE CONCRETE HAS SET. THE MEASUREMENT AND PAYMENT FOR "SUBSTRUCTURE EXCAVATION COMMON" AT THE ABUTMENTS SHALL BE IN ACCORDANCE WITH THE DETAILS SHOWN IN THE PLANS.

GRANULAR BACKFILL SHALL NOT BE PLACED UNTIL THE CONCRETE IN THE ABUTMENT WINGS HAS ATTAINED A STRENGTH OF 3,000 PSI.

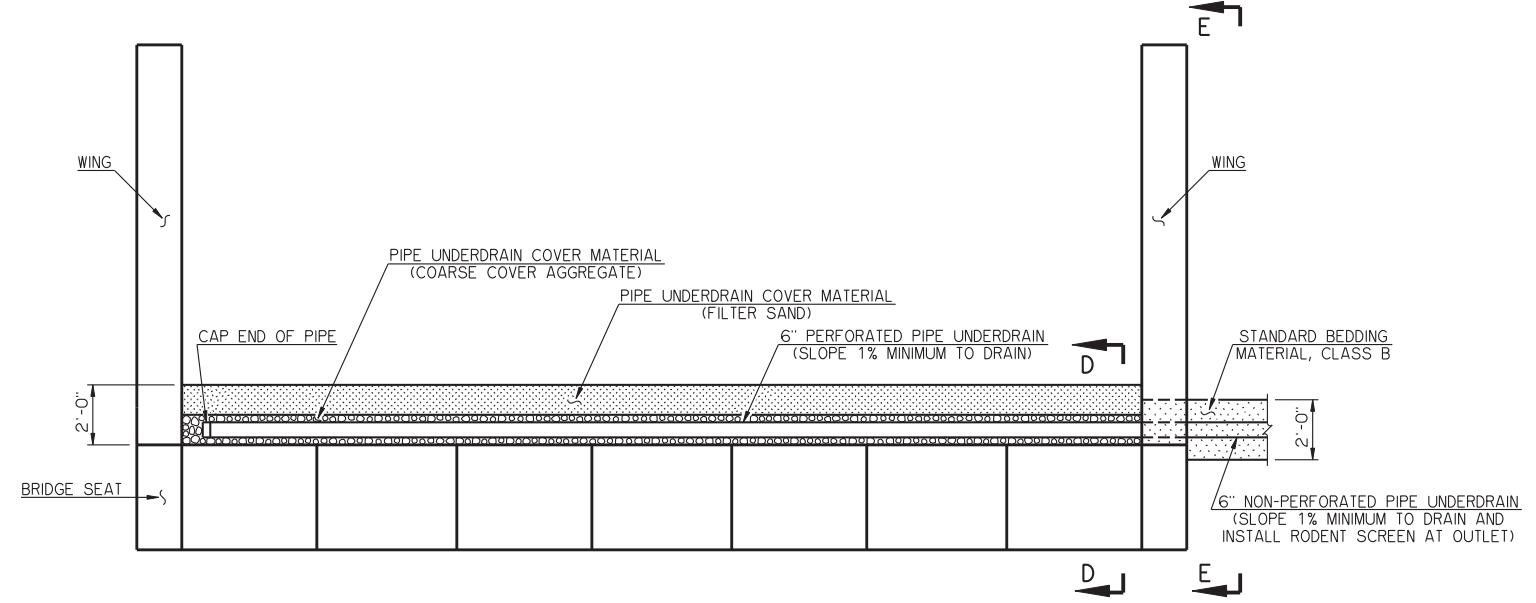
INSTALLATION OF THE PIPE UNDERDRAIN SHALL BE AS SHOWN IN THE PLANS AND ON ROADWAY STANDARD DRAWING PUD-3. THE EXTENT, LOCATION AND DEPTH OF THE 6" NON-PERFORATED PIPE UNDERDRAIN MAY BE ADJUSTED BY THE ENGINEER DURING CONSTRUCTION. ALL COST OF THE PERFORATED AND NON-PERFORATED PIPE, PIPE UNDERDRAIN COVER MATERIAL, FILTER FABRIC, TRENCH EXCAVATION, STANDARD BEDDING MATERIAL, PIPE CAPS, RODENT SCREENS, BACKFILLING OF TRENCH EXCAVATION, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF "6" PERFORATED PIPE UNDERDRAIN" AND "6" NON-PERFORATED PIPE UNDERDRAIN."

APPROVED BY BRIDGE ENGINEER *Robert J. Dusch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
**SUBSTRUCTURE EXCAVATION AND
 PIPE UNDERDRAIN ASSEMBLY DETAILS**
 26' AND 32' CLEAR ROADWAY - CONVENTIONAL - SKEWED 30°
 2009 SPECIFICATIONS CB26.32-C-SK30-ABUT-MISC 01E
 CB-938E

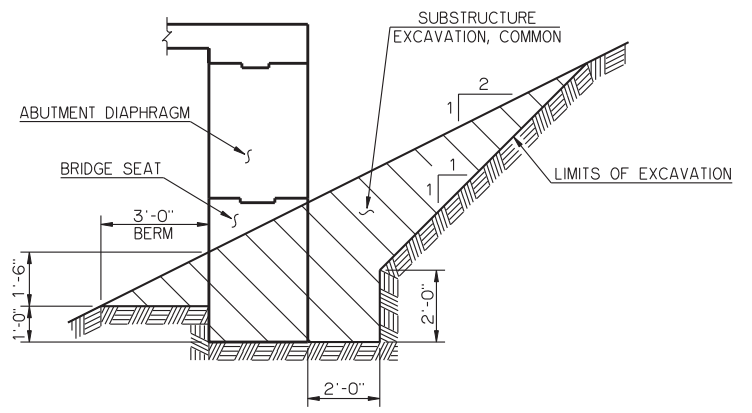
① SET PIPE AT 3" ABOVE THE BOTTOM OF THE ABUTMENT AT THE LOW END.



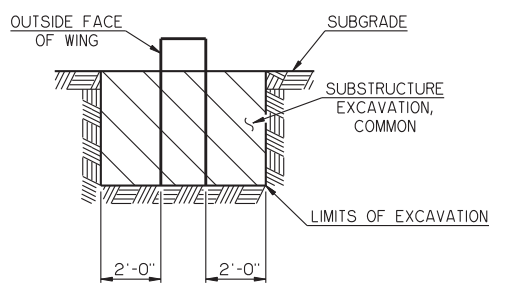
EXCAVATION PLAN



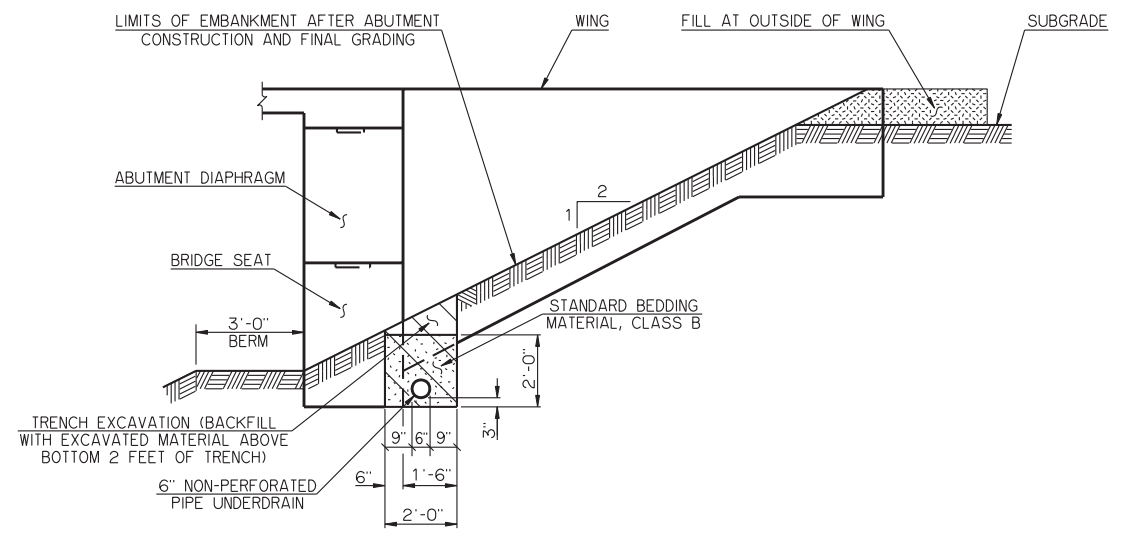
PIPE UNDERDRAIN PLAN



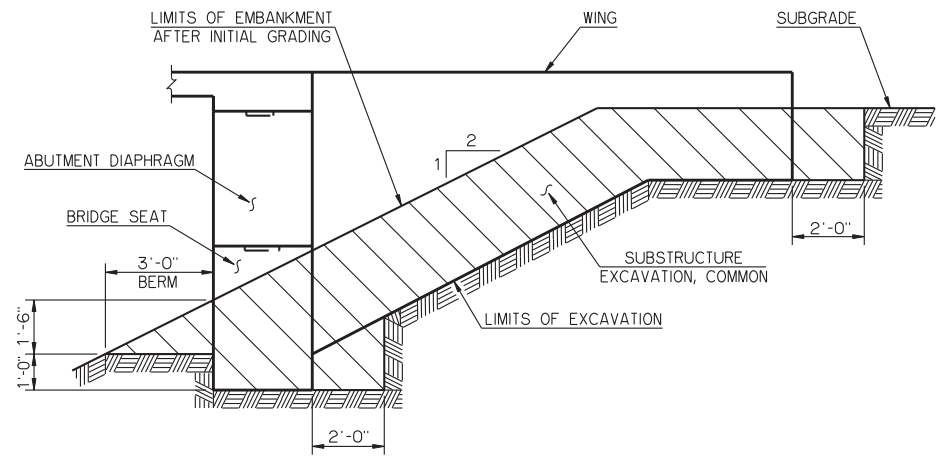
SECTION A-A



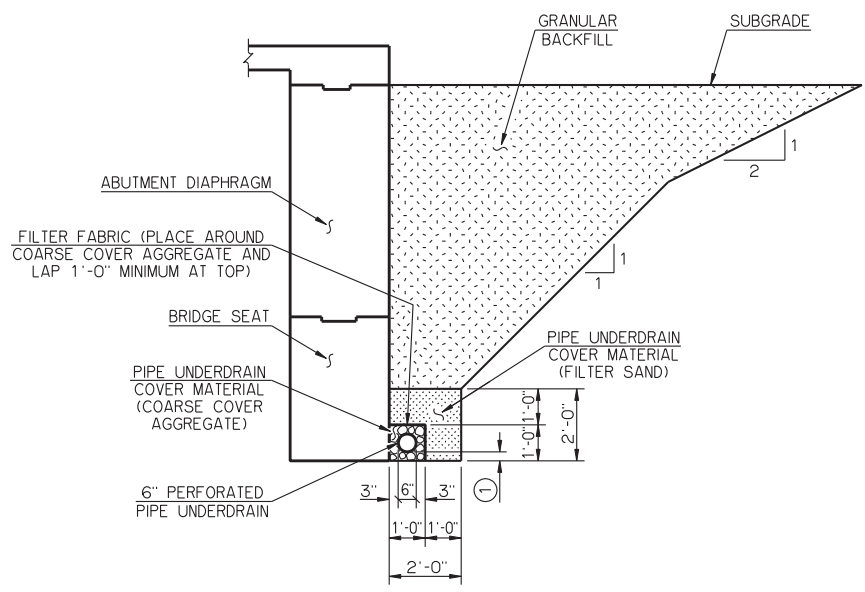
SECTION C-C



SECTION E-E



SECTION B-B



SECTION D-D

NOTES

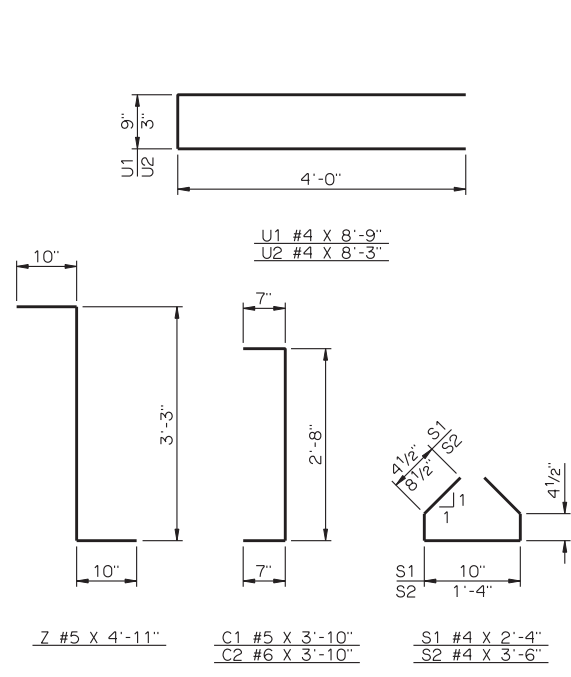
CONCRETE MAY BE PLACED AGAINST THE LIMITS OF EXCAVATION IF THE MATERIAL IS EXCAVATED TO THE NEAT LINES OF THE ABUTMENT AND APPROVED BY THE ENGINEER. IF NECESSARY, FORMS SHALL BE USED ON THE BACK VERTICAL FACE OF THE ABUTMENT AND REMOVED AFTER THE CONCRETE HAS SET. THE MEASUREMENT AND PAYMENT FOR "SUBSTRUCTURE EXCAVATION, COMMON" AT THE ABUTMENTS SHALL BE IN ACCORDANCE WITH THE DETAILS SHOWN IN THE PLANS.

GRANULAR BACKFILL SHALL NOT BE PLACED UNTIL THE CONCRETE IN THE ABUTMENT WINGS HAS ATTAINED A STRENGTH OF 3,000 PSI.

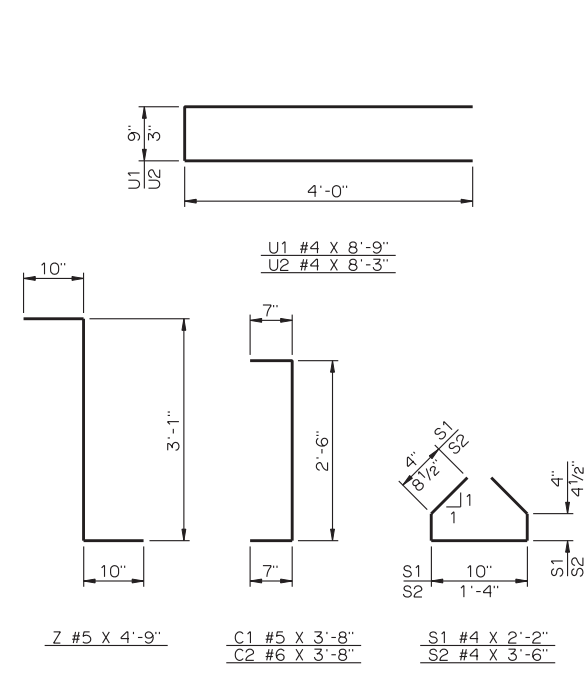
INSTALLATION OF THE PIPE UNDERDRAIN SHALL BE AS SHOWN IN THE PLANS AND ON ROADWAY STANDARD DRAWING PUD-3. THE EXTENT, LOCATION AND DEPTH OF THE 6" NON-PERFORATED PIPE UNDERDRAIN MAY BE ADJUSTED BY THE ENGINEER DURING CONSTRUCTION. ALL COST OF THE PERFORATED AND NON-PERFORATED PIPE, PIPE UNDERDRAIN COVER MATERIAL, FILTER FABRIC, TRENCH EXCAVATION, STANDARD BEDDING MATERIAL, PIPE CAPS, RODENT SCREENS, BACKFILLING OF TRENCH EXCAVATION, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF "6" PERFORATED PIPE UNDERDRAIN" AND "6" NON-PERFORATED PIPE UNDERDRAIN."

APPROVED BY BRIDGE ENGINEER *Robert J. Duch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
**SUBSTRUCTURE EXCAVATION AND
 PIPE UNDERDRAIN ASSEMBLY DETAILS**
 26' AND 32' CLEAR ROADWAY - INTEGRAL - SKEWED 0°
 2009 SPECIFICATIONS CB26.32-I-SKO-ABUT-MISC 01E
 CB-955E

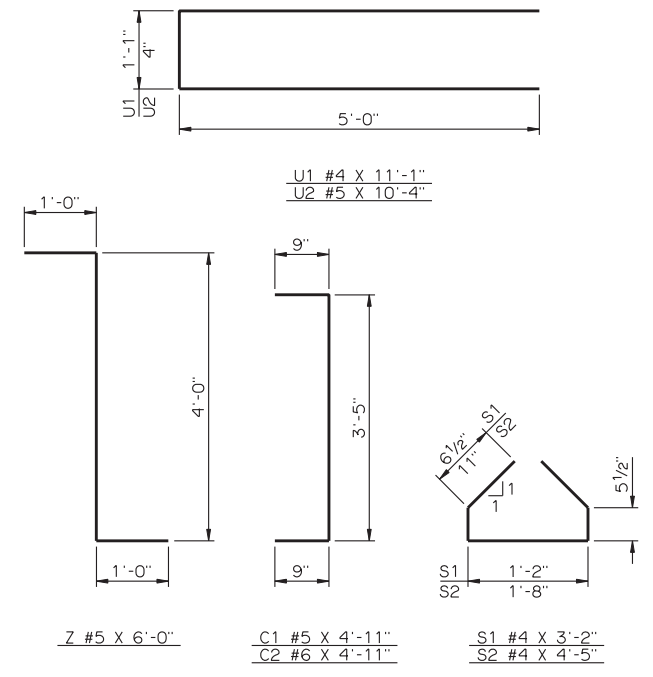
① SET PIPE AT 3" ABOVE THE BOTTOM OF THE ABUTMENT AT THE LOW END.



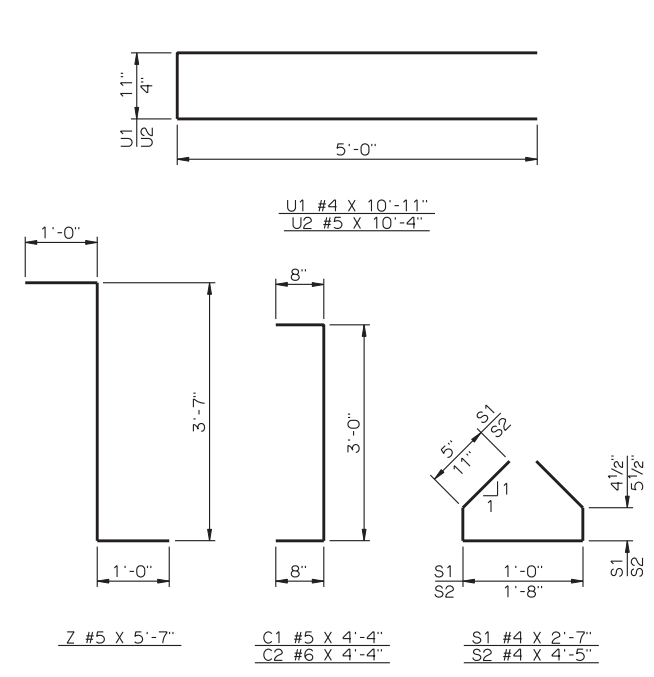
TYPE II P.C. BEAMS



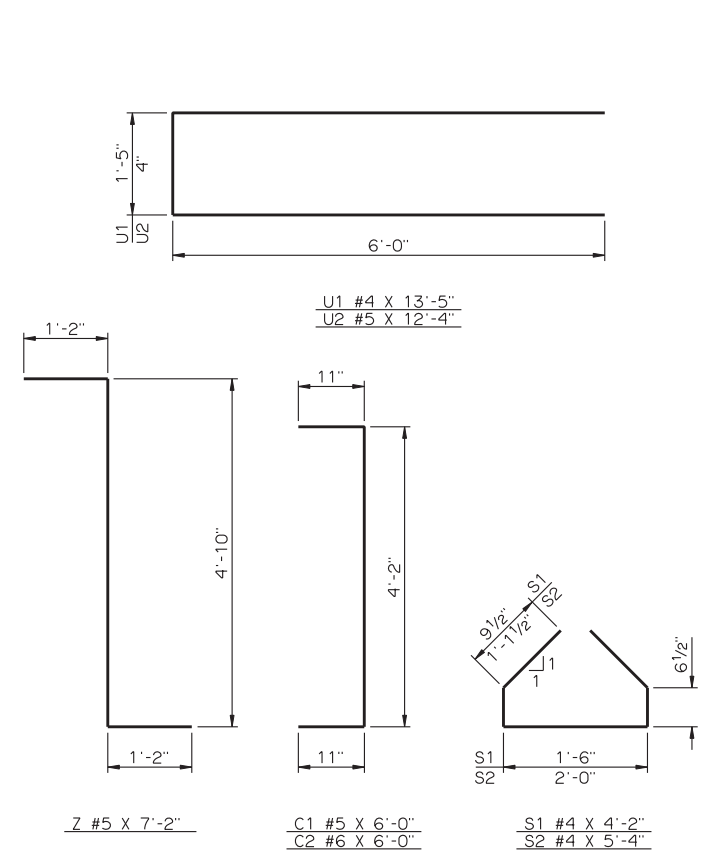
TYPE B P.C. BEAMS



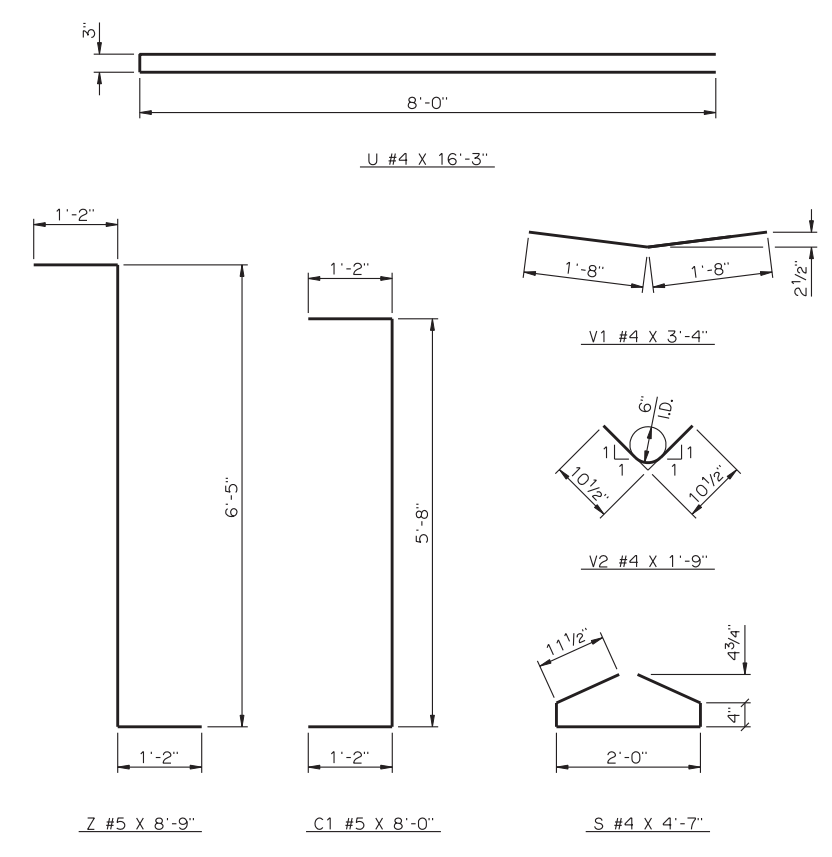
TYPE III P.C. BEAMS



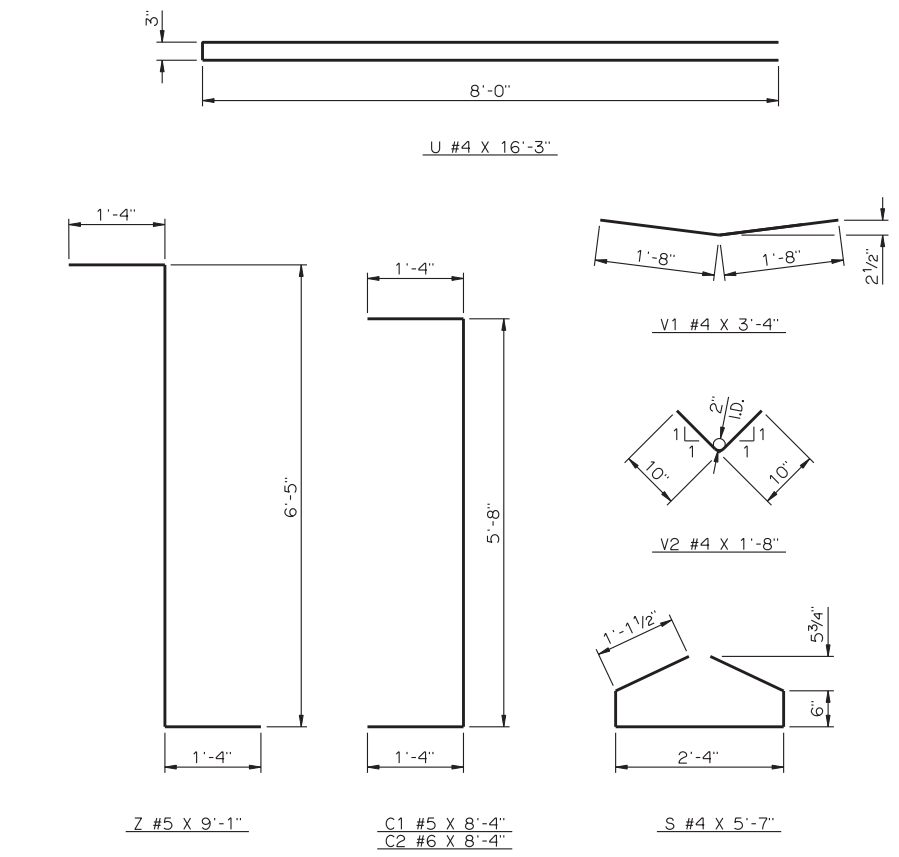
TYPE C P.C. BEAMS



TYPE IV P.C. BEAMS



TYPE BT-72 P.C. BEAMS



TYPE J P.C. BEAMS

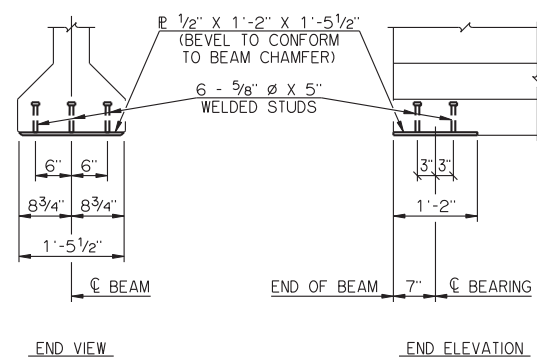
DETAILS OF BENT REINFORCING STEEL

APPROVED BY BRIDGE ENGINEER *Robert A. Dusch* DATE 9-9-2011

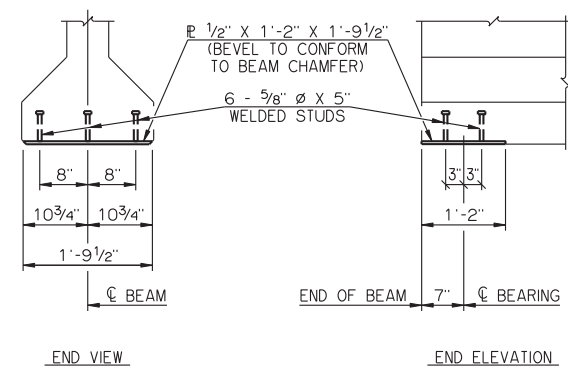
OKLAHOMA DEPARTMENT OF TRANSPORTATION
COUNTY BRIDGE STANDARD (ENGLISH)

P.C. BEAM DETAILS
TYPE II, B, III, C, IV, BT-72 AND J P.C. BEAMS
(SHEET NO. 1 OF 2)

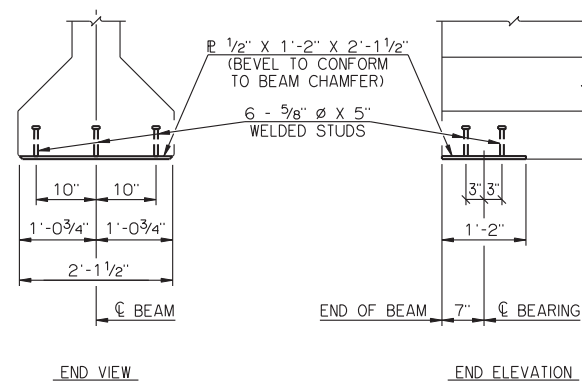
26' AND 32' CLEAR ROADWAYS - CONVENTIONAL AND INTEGRAL - SKEWED 0° AND 30°
2009 SPECIFICATIONS CB26.32-C.I.-SKO.30-PCB-DTL-1 01E
CB-958E



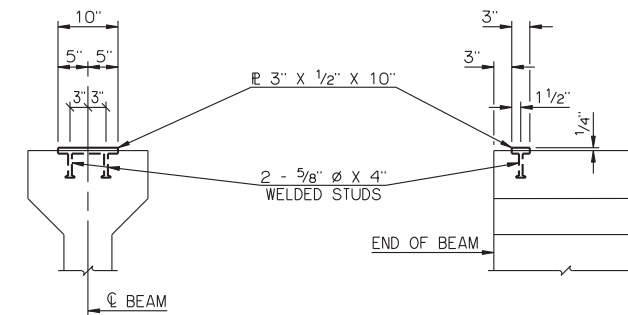
TYPE II AND TYPE B P.C. BEAMS



TYPE III AND TYPE C P.C. BEAMS

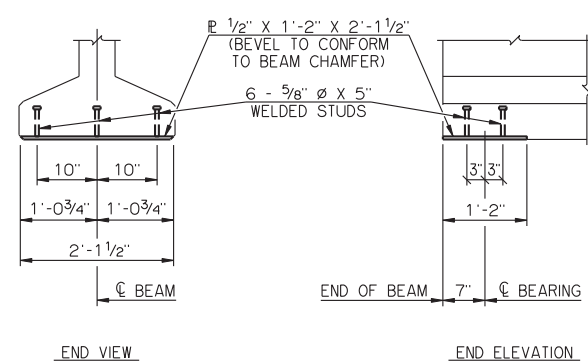


TYPE IV P.C. BEAMS

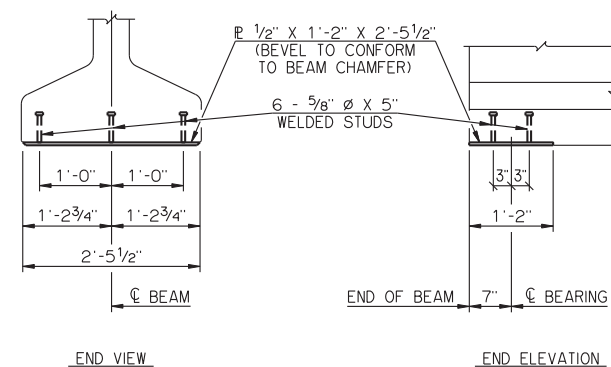


END VIEW

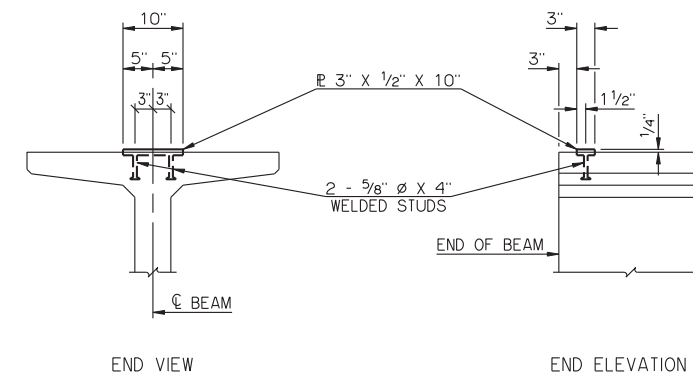
END ELEVATION



TYPE BT-72 P.C. BEAMS



TYPE J P.C. BEAMS

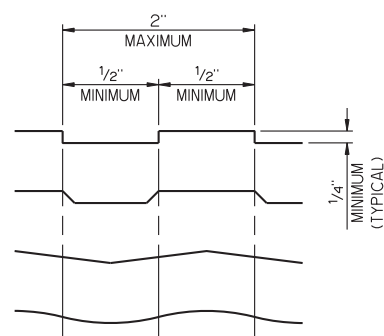


END VIEW

END ELEVATION

ENCASED BEAM PLATE DETAILS

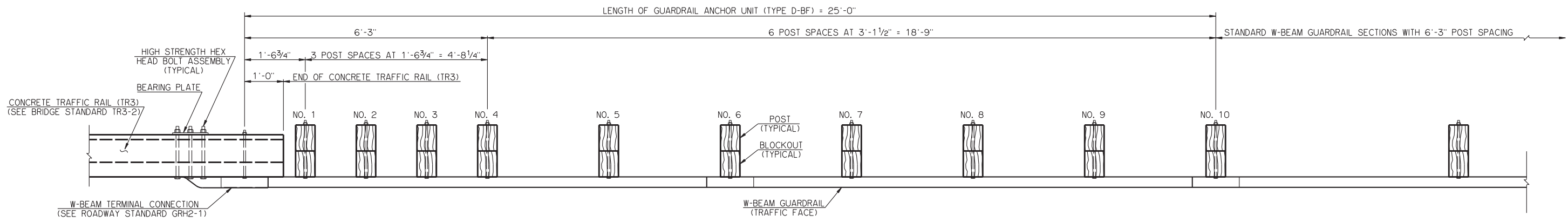
ENCASED SOLE PLATE DETAILS



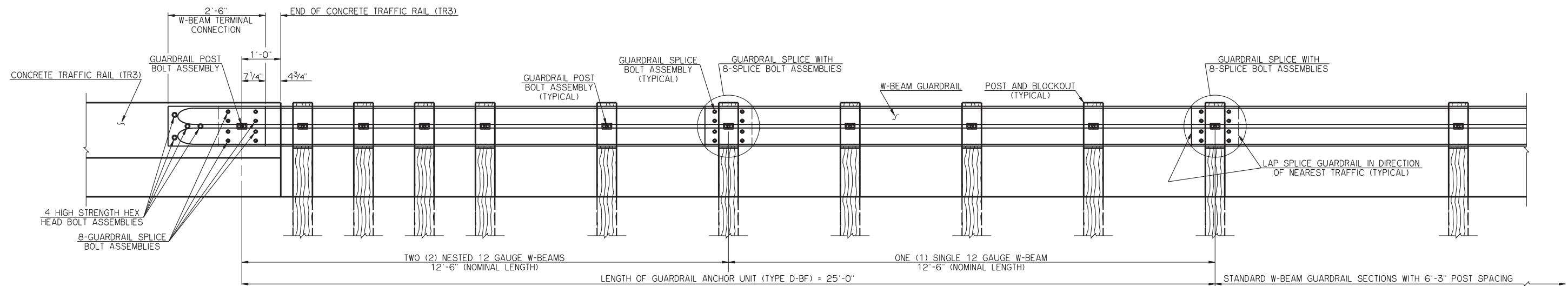
INTENTIONALLY ROUGHENED SURFACE EXAMPLES

TOP SURFACE OF P.C. BEAMS SHALL BE INTENTIONALLY ROUGHENED TO A MINIMUM HEIGHT OF 1/4" OVER A MAXIMUM PITCH OF 2" MEASURED LONGITUDINALLY ALONG THE LENGTH OF THE BEAM. THE CREST AND TROUGH ASSOCIATED WITH THE HEIGHT SHALL NOT BE LESS THAN 1/2" AND SHALL EXTEND THE FULL WIDTH OF THE TOP FLANGE. ROUGHENED SURFACE MAY BE OBTAINED BY A SPECIAL TROWEL AS SHOWN IN THE EXAMPLES, BY CLEANING THE CONCRETE SURFACE WITH A STIFF WIRE BRUSH OR BLASTING TO THE EXTENT THAT AGGREGATE IS EXPOSED TO A HEIGHT OF 1/4", OR BY ANOTHER METHOD APPROVED BY THE ENGINEER.

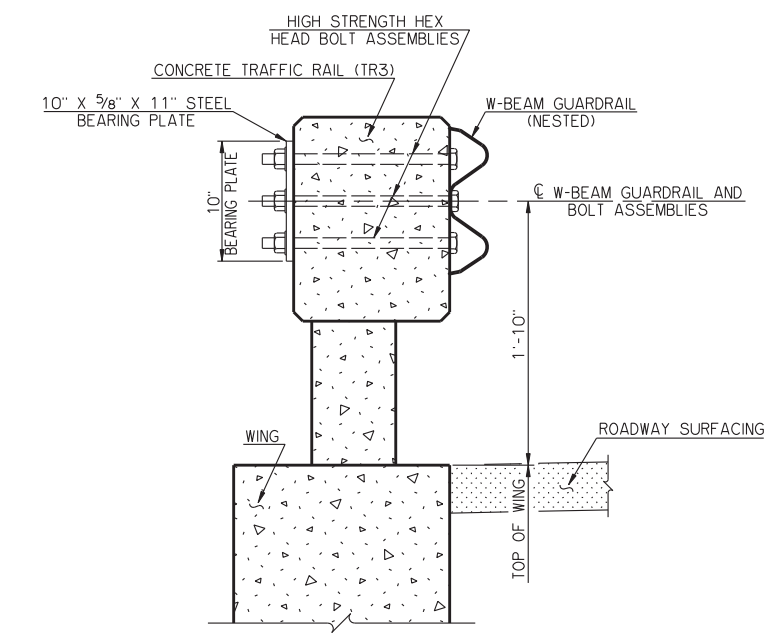
APPROVED BY BRIDGE ENGINEER *Robert D. Smith* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
 P.C. BEAM DETAILS
 TYPE II, B, III, C, IV, BT-72 AND J P.C. BEAMS
 (SHEET NO. 2 OF 2)
 26' AND 32' CLEAR ROADWAYS - CONVENTIONAL AND INTEGRAL - SKEWED 0° AND 30°
 2009 SPECIFICATIONS CB26.32-C.I.-SKO.30-PCB-DTL-2 01E
 CB-959E



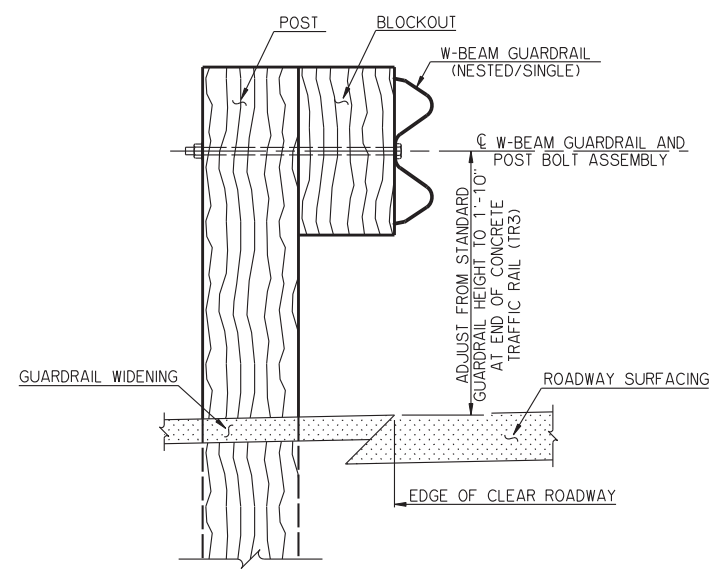
PLAN



ELEVATION



SECTION THRU GUARDRAIL BRIDGE CONNECTION AT CONCRETE TRAFFIC RAIL (TR3)



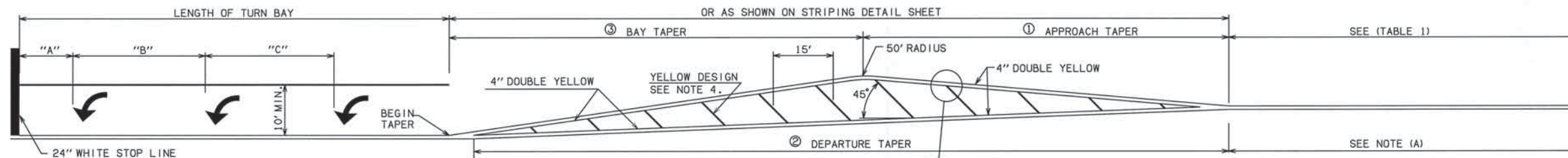
SECTION THRU GUARDRAIL BRIDGE CONNECTION AT GUARDRAIL POST AND BLOCKOUT

NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE ODOT 2009 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
2. SEE ROADWAY STANDARDS GRH1-1 AND GRH2-1 FOR DETAILS OF GUARDRAIL, W-BEAM TERMINAL CONNECTION, POSTS, BLOCKOUTS, BOLT ASSEMBLIES AND HARDWARE NOT SHOWN. SEE "STATE" BRIDGE STANDARD TR3-2 FOR DETAILS OF CONCRETE TRAFFIC RAIL (TR3) NOT SHOWN.
3. ALL GUARDRAIL, METAL POSTS, BEARING PLATES, BOLTS, WASHERS AND NUTS SHALL BE GALVANIZED AFTER FABRICATION.
4. ANY FIELD CUTS OR HOLES MADE IN GALVANIZED MATERIALS SHALL BE COATED WITH A ZINC OXIDE PAINT SATISFYING SECTION 730.02 OF THE STANDARD SPECIFICATIONS.
5. ALL SPLICE BOLT ASSEMBLIES SHALL BE 5/8" DIAMETER BUTTON HEAD BOLTS WITH RECESSED NUTS AS SHOWN ON ROADWAY STANDARDS GRH1-1 OR GRH2-1. ALL POST BOLT ASSEMBLIES SHALL BE 5/8" DIAMETER BUTTON HEAD BOLTS WITH 1 3/4" OUTSIDE DIAMETER WASHERS AND RECESSED NUTS AS SHOWN ON ROADWAY STANDARDS GRH1-1 OR GRH2-1.
6. ALL HIGH STRENGTH HEX HEAD BOLT ASSEMBLIES SHALL BE 7/8" DIAMETER X 1'-4" LONG BOLTS WITH TWO WASHERS AND ONE NUT. ALL NUTS SHALL BE TIGHTENED WITH THE TURN-OF-THE-NUT METHOD TO BETWEEN 1/12 TURN AND 1/4 TURN IN EXCESS OF SNUG TIGHT.
7. THE PAY ITEM "GUARDRAIL ANCHOR UNIT (TYPE D-BF)" INCLUDES ALL COST OF MATERIAL AND INSTALLATION OF THE GUARDRAIL ANCHOR UNIT - BRIDGE CONNECTION INCLUDING THE COST OF POST AND BLOCKOUT NOS. 1 THRU 10, SINGLE AND NESTED W-BEAM GUARDRAIL, W-BEAM TERMINAL CONNECTION, SPLICE BOLT ASSEMBLIES, POST BOLT ASSEMBLIES, HIGH STRENGTH HEX HEAD BOLT ASSEMBLIES, BEARING PLATE, GALVANIZING, PAINTING, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS.

APPROVED BY BRIDGE ENGINEER *Robert J. Dusch* DATE 9-9-2011
 OKLAHOMA DEPARTMENT OF TRANSPORTATION
 COUNTY BRIDGE STANDARD (ENGLISH)
GUARDRAIL ANCHOR UNIT - BRIDGE CONNECTION
 26' AND 32' CLEAR ROADWAYS - CONVENTIONAL AND INTEGRAL - SKEWED 0° AND 30°
 2009 SPECIFICATIONS CB26.32-C.I-SKO.30-GRAU-BC OOE
 CB-969E

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
623(F)	GUARDRAIL ANCHOR UNIT (TYPE D-BF)	EA



DESCRIPTION	REVISIONS	DATE
ADDED GENERAL NOTE 4.		7/08/2011
UPDATED SYMBOLS		4/2/2013

LEFT TURN BAY AND STRIPED MEDIAN DETAIL
SEE PLANS FOR LENGTH OF LEFT TURN BAYS AND TAPERS ON STRIPED MEDIANS

- THE PREFERRED APPROACH TAPER RATE IS V:1, WHERE V IS THE DESIGN SPEED. FOR V≤40 MPH, IT IS ACCEPTABLE FOR THE APPROACH TAPER TO BE (V²/60):1.
- THE PREFERRED DEPARTURE TAPER RATE IS V:1, WHERE V IS THE DESIGN SPEED. FOR V≤40 MPH, IT IS ACCEPTABLE FOR THE DEPARTURE TAPER TO BE (V²/60):1.
- SEE RECOMMENDED BAY TAPER RATES TABLE.

RECOMMENDED BAY TAPER RATES

DESIGN SPEED (MPH)	TAPER RATE
V < 30	8:1
30 ≤ V ≤ 50	10:1
50 > V	15:1

- THE FOLLOWING MINIMUM VALUES MAY APPLY IN RESTRICTED LOCATIONS:
- RIGHT-TURN LANES. A 4:1 BAY TAPER MAY BE USED WHERE PAINTED CHANNELIZATION IS USED.
 - LEFT-TURN LANES. IN SEVERELY RESTRICTED LOCATIONS, A 4:1 BAY TAPER MAY BE USED WHERE PAINTED CHANNELIZATION IS USED.

(A) NO PASS LINE ON APPROACH SIDE WITH SKIP CENTER LINE ON DEPARTURE SIDE UNLESS DOUBLE YELLOW CENTER LINE IS REQUIRED.

TURN BAY TABLE

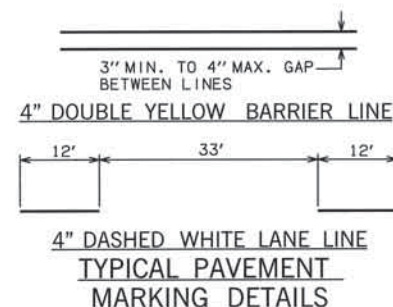
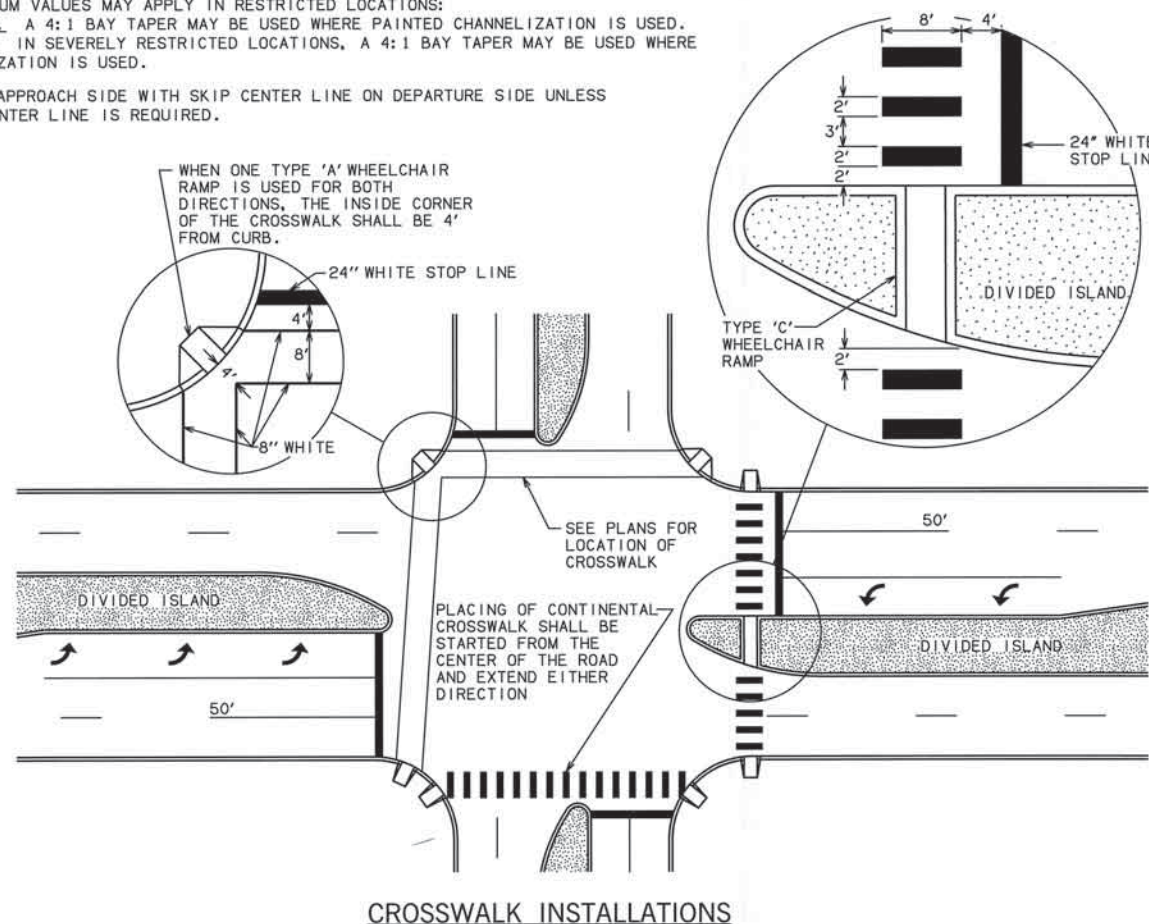
LENGTH OF BAY FT.	"A" FT.	"B" FT.	"C" FT.
75 TO 99	20	35	--
100 TO 149	20	35	35
150 TO 200	30	55	55

TABLE 1

POSTED SPEED	NO PASS LENGTH (MINIMUM)
60 MPH	790'
55 MPH	725'
50 MPH	660'
45 MPH	590'
40 MPH	360'
35 MPH	260'
30 MPH	200'
25 MPH	150'

- MATERIAL SPECIFICATIONS
- UNLESS OTHERWISE SPECIFIED, RETROREFLECTIVE PAVEMENT MARKING SHALL BE APPLIED BY THE EXTRUSION METHOD.
 - THE THICKNESS OF THE PLASTIC PAVEMENT MARKING SHALL BE MEASURED FROM THE PLANE OF THE PAVEMENT SURFACE WITH A DEVICE SUPPLIED BY CONTRACTOR AND SUITABLE TO THE ENGINEER. THICKNESSES ARE AS FOLLOWS:
LANE LINES, STOP LINES, WORDS, ARROWS AND SYMBOLS.....0.120" MIN. & 0.188" MAX.
EDGE, GORE AND DIAGONAL LINES.... 0.090" MIN. & 0.188" MAX.
 - THE THICKNESS OF THE MULTI-POLYMER PAVEMENT MARKING SHALL BE MEASURED FROM THE PLANE OF THE PAVEMENT SURFACE WITH A DEVICE SUPPLIED BY CONTRACTOR AND SUITABLE TO THE ENGINEER. THICKNESSES ARE AS FOLLOWS:
LANE LINES, STOP LINES, WORDS, ARROWS, SYMBOLS, EDGE, GORE AND DIAGONAL LINES.... 0.020" MIN. & 0.025" MAX.

- GENERAL NOTES
- LANE WIDTH IS THE DISTANCE BETWEEN PAVEMENT MARKINGS, OR PAVEMENT MARKING AND EDGE OF PAVEMENT. LANE WIDTH IS MEASURED FROM CENTER OF STRIPE TO CENTER OF STRIPE.
 - LANE LINES SHALL BE PLACED LEFT OF THE LONGITUDINAL PAVEMENT JOINTS.
 - ALL PAVEMENT MARKING SHALL OVERLAP WHERE IT MEETS OTHER PAVEMENT MARKING.
 - WIDTH OF DIAGONALS ARE AS FOLLOWS:
≥45 MPH - 12" WIDE
<45 MPH - 8" WIDE



BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
854(A)	TRAFFIC STRIPE (PAINT) (4" WIDE)	LF
854(B)	TRAFFIC STRIPE (PAINT) (ARROW, WORDS, OR SYMBOLS)	EA
855(A)	TRAFFIC STRIPE (PLASTIC) (4" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (6" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (8" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (24" WIDE)	LF
855(B)	TRAFFIC STRIPE (PLASTIC) (ARROW)	EA
855(B)	TRAFFIC STRIPE (PLASTIC) (WORDS)	EA
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (4" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (6" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (8" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (24" WIDE)	LF
856(B)	TRAFFIC STRIPE (MULTI-POLYMER) (SYMBOLS, WORDS, ETC)	EA

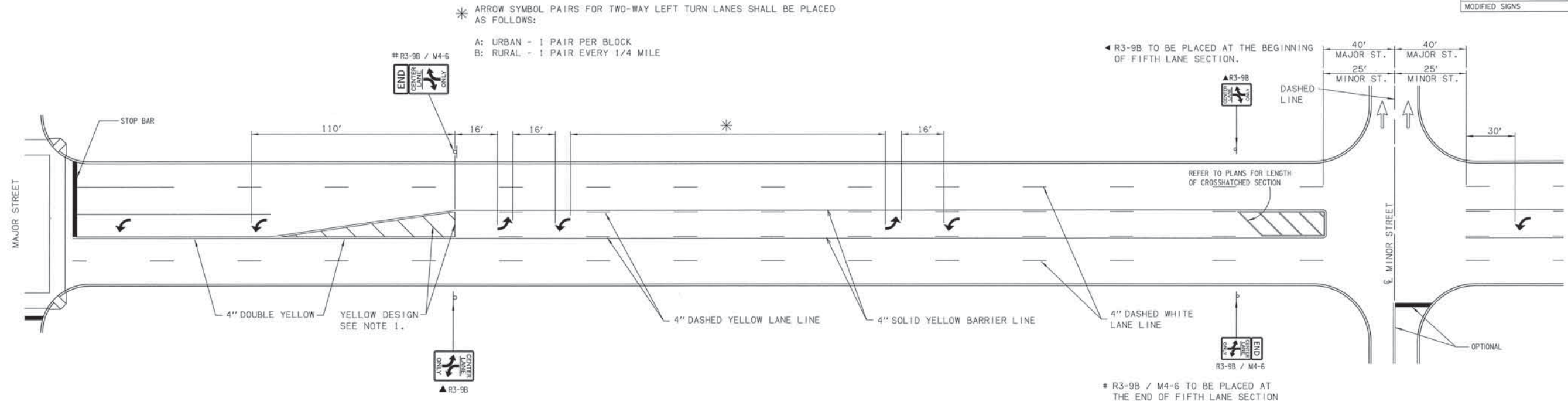
APPROVED BY
TRAFFIC ENGINEER: *David Smith* DATE: 4/8/2013

TRAFFIC STANDARD
PAVEMENT MARKING
(CROSSWALKS AND LEFT TURN BAY)

2009 SPECIFICATIONS

PM1-1	02
T-101	

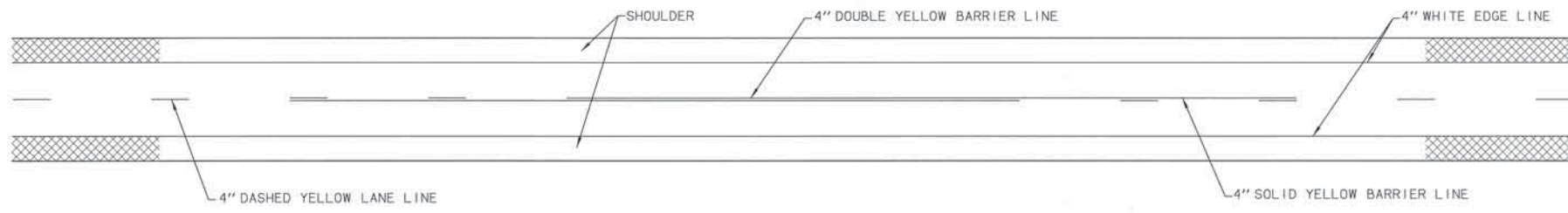
DESCRIPTION	REVISIONS	DATE
ADDED GENERAL NOTE L		7/08/2011
MODIFIED SIGNS		4/10/2012



FIFTH LANE PAVEMENT MARKING DETAIL (URBAN)

GENERAL NOTE

- 1. WIDTH OF DIAGONALS ARE AS FOLLOWS:
 ≥ 45 MPH - 12" WIDE
 < 45 MPH - 8" WIDE



TWO LANE RURAL ROADWAY PAVEMENT MARKINGS

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
854(A)	TRAFFIC STRIPE (PAINT) (4" WIDE)	LF
854(B)	TRAFFIC STRIPE (PAINT) (ARROW, WORDS, OR SYMBOLS)	EA
855(A)	TRAFFIC STRIPE (PLASTIC) (4" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (6" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (8" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (24" WIDE)	LF
855(B)	TRAFFIC STRIPE (PLASTIC) (ARROW)	EA
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (4" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (6" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (8" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (24" WIDE)	LF
856(B)	TRAFFIC STRIPE (MULTI-POLYMER) (SYMBOLS, WORDS, ETC)	EA



APPROVED BY
 TRAFFIC ENGINEER: *[Signature]* DATE: 4/9/12

TRAFFIC STANDARD
 PAVEMENT MARKING
 (FIFTH LANE AND TWO LANE RURAL)

DESCRIPTION	REVISIONS	DATE
-------------	-----------	------



TURN LEFT

W1-1(L) 30 x 30 6.25 SF
W1-1E(L) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



TURN RIGHT

W1-1(R) 30 x 30 6.25 SF
W1-1E(R) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



CURVE LEFT

W1-2(L) 30 x 30 6.25 SF
W1-2E(L) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



CURVE RIGHT

W1-2(R) 30 x 30 6.25 SF
W1-2E(R) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



LEFT REVERSE TURN

W1-3(L) 30 x 30 6.25 SF
W1-3E(L) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)

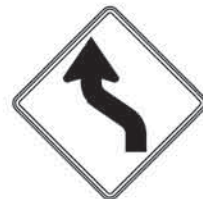
SIGNS	MARGIN	BORDER	BLANK
30 x 30	.500	.750	B-30(D)
36 x 36	.625	.875	B-36(D)



RIGHT REVERSE TURN

W1-3(R) 30 x 30 6.25 SF
W1-3E(R) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



LEFT REVERSE CURVE

W1-4(L) 30 x 30 6.25 SF
W1-4E(L) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



RIGHT REVERSE CURVE

W1-4(R) 30 x 30 6.25 SF
W1-4E(R) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



WINDING ROAD

W1-5(R) 30 x 30 6.25 SF
W1-5E(R) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



WINDING ROAD

W1-5(L) 30 x 30 6.25 SF
W1-5E(L) 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



ARROW

W1-6 48 x 24 8.00 SF
W1-6E 60 x 30 12.50 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



DOUBLE ARROW

W1-7 48 x 24 8.00 SF
W1-7E 60 x 30 12.50 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



CHEVRON

W1-8 18 x 24 3.00 SF
W1-8E 30 x 36 7.50 SF
W1-8F 36 x 48 12.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



CROSS ROAD

W2-1 30 x 30 6.25 SF
W2-1E 36 x 36 9.00 SF

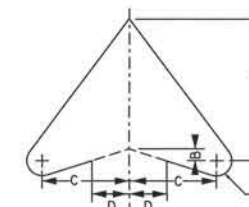
COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



SIDE ROAD

W2-2 30 x 30 6.25 SF
W2-2E 36 x 36 9.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



SIGN SIZE	DIMENSIONS				
	A	B	C	D	E
30" X 20"	8-7/8"	11/16"	5"	2-3/16"	7/8"
36" X 36"	10-5/8"	13/16"	6"	2-5/8"	1-1/16"
48" X 48"	14-5/16"	1-1/16"	8"	3-1/4"	1-3/8"

* ARROW DETAIL

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
850(A)	SHEET ALUMINUM SIGNS	SF



APPROVED BY: *David Smith* DATE: 8/3/2012
TRAFFIC ENGINEER

TRAFFIC STANDARD
WARNING SIGN DETAILS
(W-SERIES)

2009 SPECIFICATIONS



TWO-WAY TRAFFIC

W6-3	36 x 36	9.00 SF
W6-3E	48 x 48	16.00 SF

COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



SLIPPERY WHEN WET

W8-5	30 x 30	6.25 SF
W8-5E	36 x 36	9.00 SF
W8-5F	48 x 48	16.00 SF

COLOR:
BORDER AND SYMBOL:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



TRUCK CROSSING

W8-6	36 x 36	9.00 SF
W8-6F	48 x 48	16.00 SF

COLOR:
BORDER AND LEGEND:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



BRIDGE ICES BEFORE ROAD

W8-13	30 x 30	6.25 SF
W8-13E	36 x 36	9.00 SF
W8-13F	48 x 48	16.00 SF

COLOR:
BORDER AND LEGEND:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)

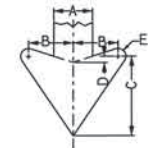


RAILROAD ADVANCE WARNING

W10-1	36 DIA	7.07 SF
W10-1E	48 DIA	12.57 SF

COLOR:
BORDER, LEGEND AND SYMBOL:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)

DESCRIPTION	REVISIONS	DATE
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ARROW DIMENSIONS				
A	B	C	D	E
6"	5-3/16"	9-1/8"	11/16"	7/8"

ARROW DETAILS FOR W13-6 & W13-7



PEDESTRAIN CROSSING

W11-2	30 x 30	6.25 SF
W11-2E	36 x 36	9.00 SF

COLOR:
BORDER AND SYMBOL:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



TRUCK CROSSING

W11-10	30 x 30	6.25 SF
W11-10E	36 x 36	9.00 SF
W11-10F	48 x 48	16.00 SF

COLOR:
BORDER AND SYMBOL:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



DOUBLE ARROW

W12-1	30 x 30	6.25 SF
W12-1E	36 x 36	9.00 SF

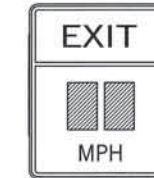
COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



ADVISORY SPEED

W13-1P	18 x 18	2.25 SF
W13-1PE	24 x 24	4.00 SF
W13-1PF	30 x 30	6.25 SF

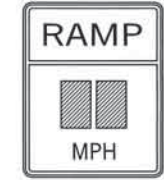
COLOR:
BORDER AND LEGEND:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



ADVISORY EXIT SPEED

W13-2	24 x 30	5.00 SF
W13-2E	36 x 48	12.00 SF
W13-2F	48 x 60	20.00 SF

COLOR:
BORDER AND LEGEND:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



ADVISORY RAMP SPEED

W13-3	24 x 30	5.00 SF
W13-3E	36 x 48	12.00 SF
W13-3F	48 x 60	20.00 SF

COLOR:
BORDER AND LEGEND:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



ADVISORY EXIT SPEED

W13-6E	36 x 60	15.00 SF
W13-6F	48 x 84	28.00 SF

COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



ADVISORY RAMP SPEED

W13-7E	36 x 60	15.00 SF
W13-7F	48 x 84	28.00 SF

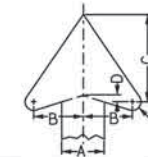
COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



ARROW

W16-7p	24 x 12	2.00 SF
W16-7pE	30 x 18	3.75 SF

COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



SIGN SIZE	DIMENSIONS				
	A	B	C	D	E
30" x 30"	3-3/4"	4-5/16"	7-5/8"	9/16"	3/4"
36" x 36"	4-1/2"	5-3/16"	9-1/8"	11/16"	7/8"
48" x 48"	6"	6-7/8"	12-3/16"	15/16"	1-3/16"

ARROW DETAILS FOR W6-3 & W6-3E

SIGNS	MARGIN	BORDER	BLANK
30 x 30	.500	.750	B-30(D)
36 x 36	.625	.875	B-36(D)
48 x 48	.750	1.250	B-48(D)

BASIS OF PAYMENT

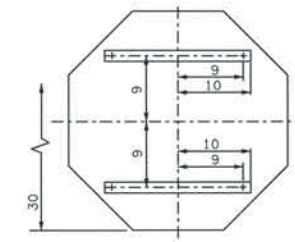
ITEM NO.	ITEM	UNIT
850(A)	SHEET ALUMINUM SIGNS	SF



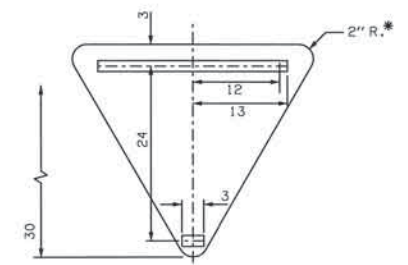
APPROVED BY
TRAFFIC ENGINEER: *David J. Smith* DATE: 8/31/2010

TRAFFIC STANDARD
WARNING SIGN DETAILS
(W-SERIES)

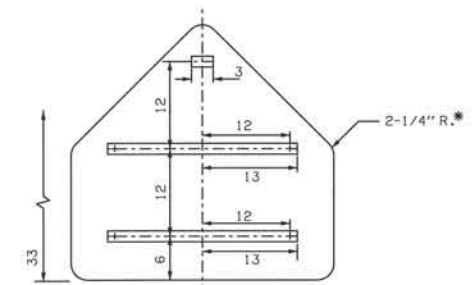
DESCRIPTION	REVISIONS	DATE



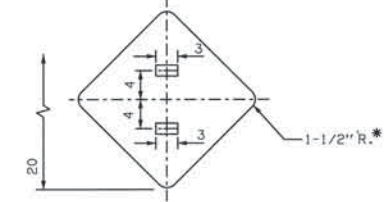
B-30(O)
 (1) 2" SQUARE TUBE POST
 (1) 2" PIPE POST



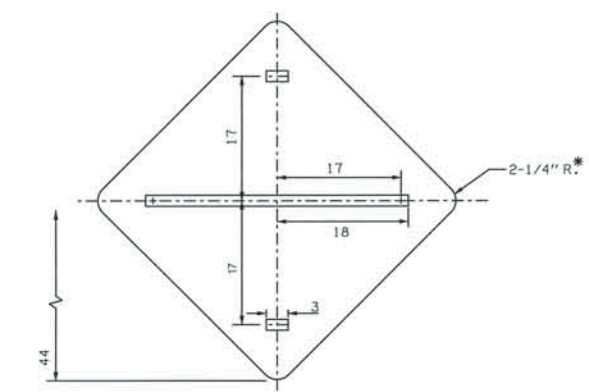
B-36(T)
 (1) 2" SQUARE TUBE POST
 (1) 2" PIPE POST



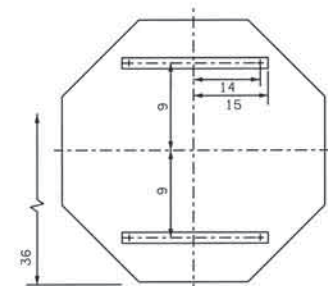
B-36(P)
 (1) 2" SQUARE TUBE POST
 (1) 2" PIPE POST



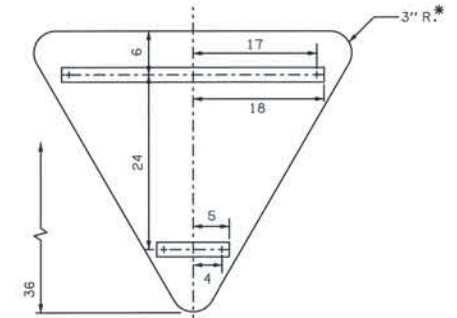
B-18(D)
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



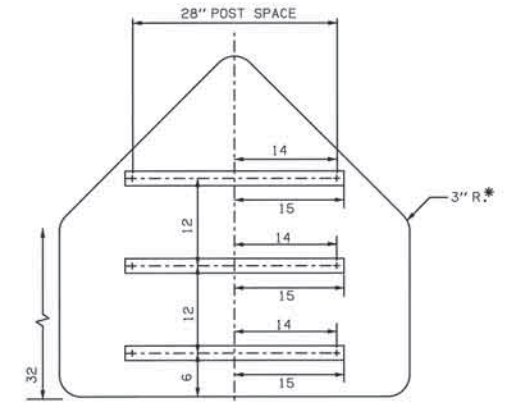
B-36(D)
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



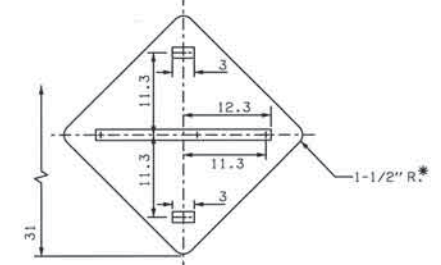
B-36(O)
 (1) 2" SQUARE TUBE POST
 (1) 2-1/2" PIPE POST



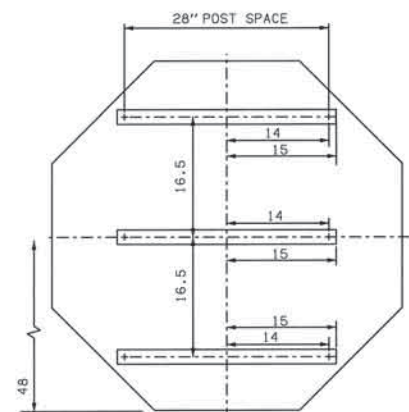
B-48(T)
 (2) 2" SQUARE TUBE POSTS
 (1) 2-1/2" PIPE POST



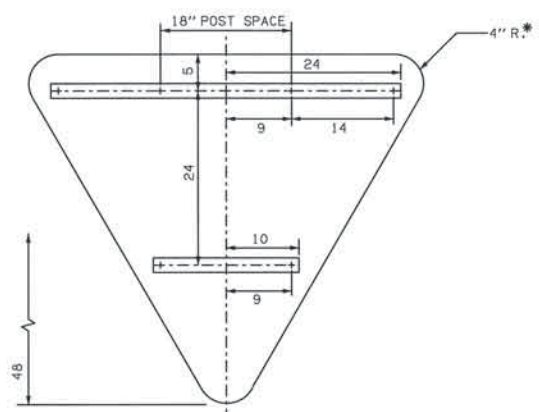
B-48(P)
 (2) 2" SQUARE TUBE POSTS
 (2) 2" PIPE POSTS



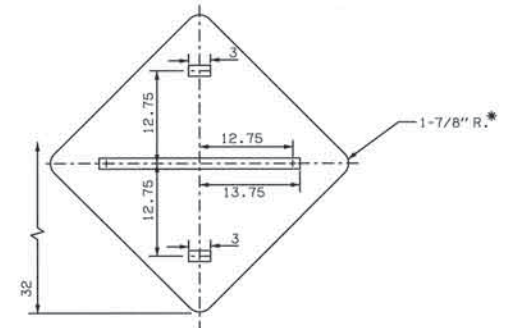
B-24(D)
 (1) 2" SQUARE TUBE POST
 (1) 2" PIPE POST



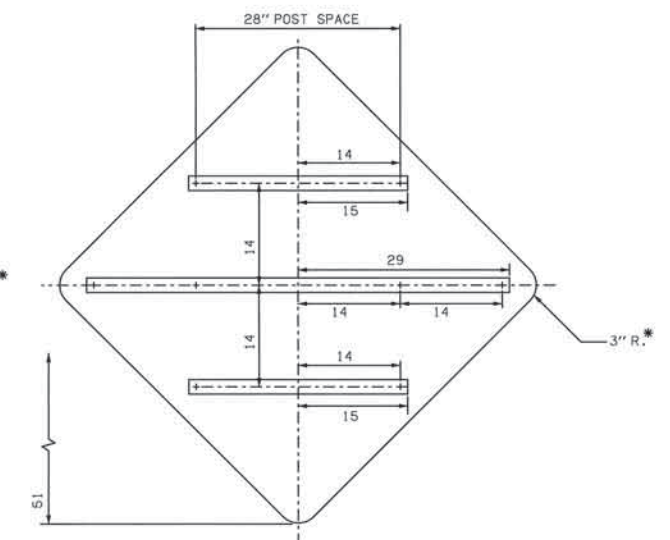
B-48(O)
 (2) 2" SQUARE TUBE POSTS
 (2) 2-1/2" PIPE POSTS



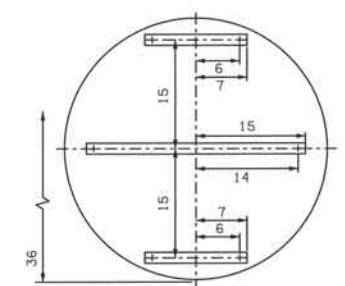
B-60(T)
 (2) 2" SQUARE TUBE POSTS
 (2) 2" PIPE POSTS



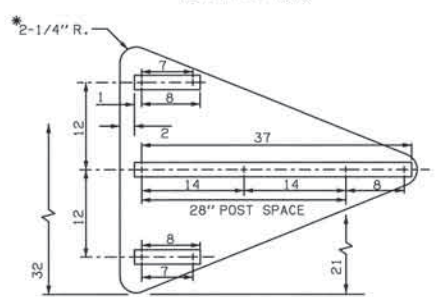
B-30(D)
 (1) 2" SQUARE TUBE POST
 (1) 2" PIPE POST



B-48(D)
 (2) 2" SQUARE TUBE POSTS
 (2) 2-1/2" PIPE POSTS



B-36(R)
 (1) 2" SQUARE TUBE POST
 (1) 2-1/2" PIPE POST



B-4836(T)
 (2) 2" SQUARE TUBE POSTS
 (2) 2" PIPE POSTS

CONSTRUCTION NOTES:

- ALL FLAT SHEET SIGNS SHALL USE GALVANIZED STEEL POSTS.
- THICKNESS OF MATERIALS FOR FLAT SHEET SIGNS SHALL BE AS FOLLOWS, DETERMINED BY THE LONGEST DIMENSION OF THE SIGN UNLESS OTHERWISE SPECIFIED.

ALUMINUM ALLOY 6061-T6 OR 5052-H38	GALVANIZED STEEL
0.063" FOR SIGNS THROUGH 24"	16 GAUGE FOR SIGNS THROUGH 24"
0.080" FOR SIGNS 25" THROUGH 35"	14 GAUGE FOR SIGNS 25" THROUGH 35"
0.100" FOR SIGNS 36" AND LARGER	12 GAUGE FOR SIGNS 36" AND LARGER
- SIGN BRACKETS SHALL BE GALVANIZED STEEL OR ALUMINUM. HOLES FOR MOUNTING BRACKETS TO SIGN SHALL BE 5/16" D. HOLES FOR MOUNTING SIGN AND BRACKETS TO POST SHALL BE 3/8" D. HOLES SHALL BE PUNCHED BEFORE GALVANIZING. SIZE OF BRACKETS SHALL BE AS FOLLOWS: SIGNS THROUGH 36" SHALL USE A GALVANIZED STEEL OR ALUMINUM CHANNEL 1-1/2" X 1/2" X 1/8". SIGNS LARGER THAN 36" SHALL USE A GALVANIZED STEEL OR ALUMINUM CHANNEL 2" X 1/2" X 1/8". ALUMINUM SIGN BRACKETS SHALL BE ALLOY 6061-T6, 6062-T6 OR 6063-T6.
- ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED STEEL OR CADMIUM PLATED. ALL BOLT ENDS SHALL BE SUFFICIENTLY BRADDED AFTER INSTALLATION TO MINIMIZE REMOVAL BY VANDALISM.
- ALL POSTS SHALL EXTEND 2" ABOVE THE TOP SIGN BRACKET, BUT NOT ABOVE THE TOP OF THE SIGN.
- CORNER RADIUS FOR ALL FLAT SHEET SIGNS SHALL BE AS SHOWN.
- ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.



APPROVED BY: *[Signature]* DATE: 8/3/2010
 TRAFFIC ENGINEER

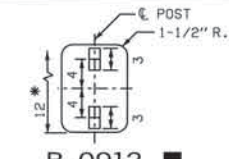
TRAFFIC STANDARD

SIGN BLANK AND BRACKET DETAILS

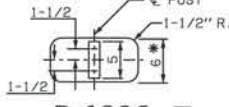
2009 SPECIFICATIONS

SBS1-1	00
T-130	

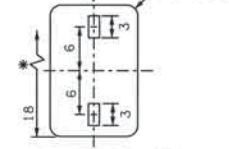
DESCRIPTION	REVISIONS	DATE



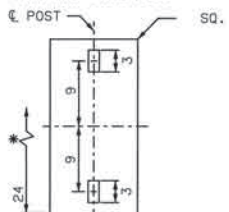
B-0912 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



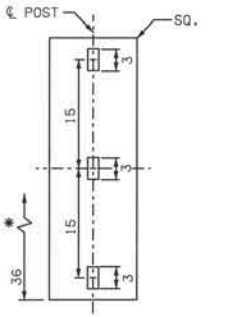
B-1206 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



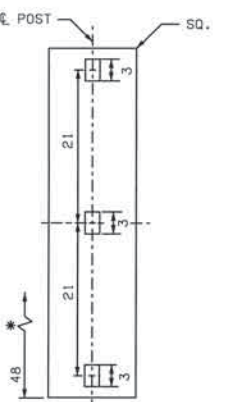
B-1218 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



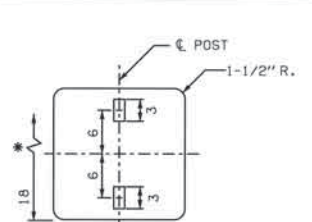
B-1224 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



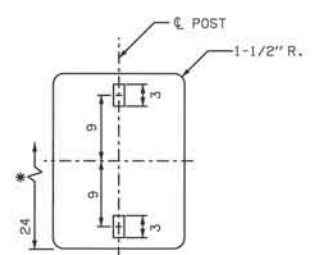
B-1236 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



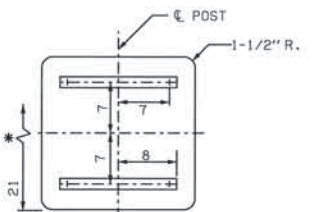
B-1248 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



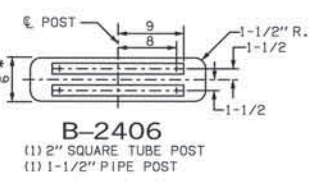
B-18(S) ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



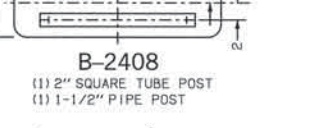
B-1824 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



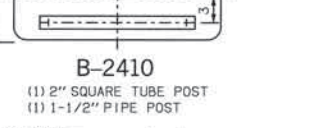
B-21(S) ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



B-2406 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



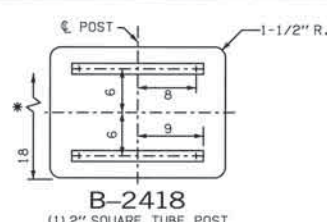
B-2408 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



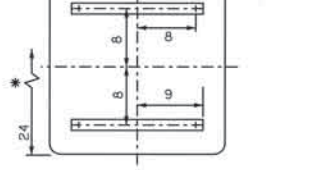
B-2410 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



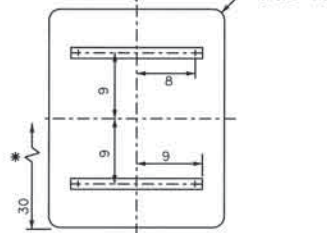
B-2412 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



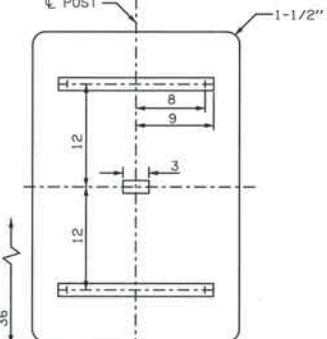
B-2418 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



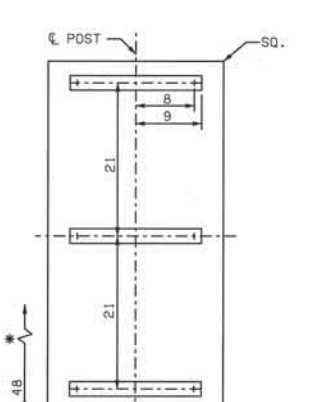
B-24(S) ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



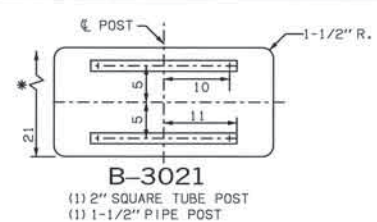
B-2430 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



B-2436 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



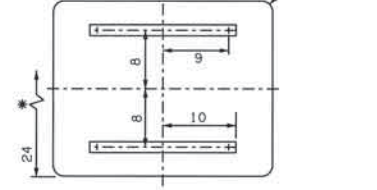
B-2448 ■
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 (1) 1-1/2" PIPE POST



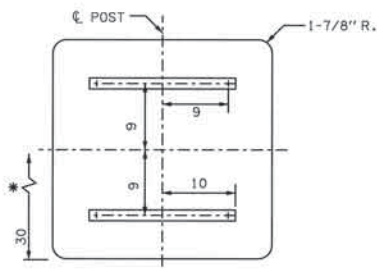
B-3021 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



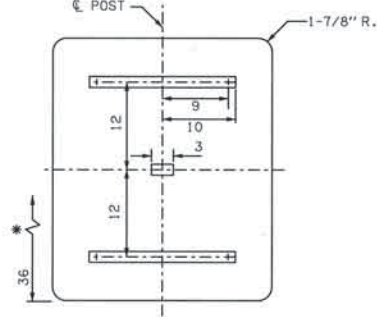
B-3018 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



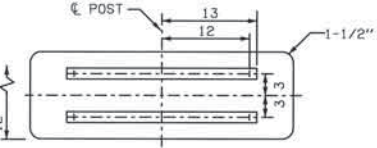
B-3024 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



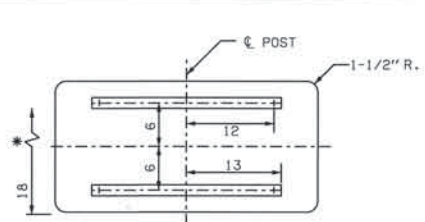
B-30(S) ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



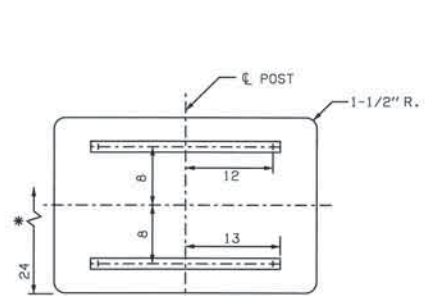
B-3036 ■
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 (1) 1-1/2" PIPE POST



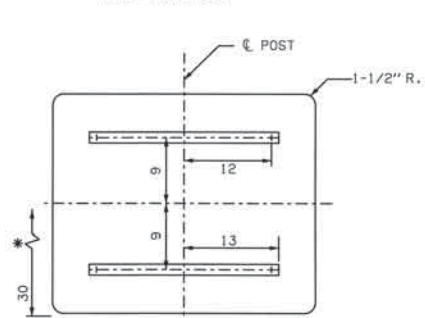
B-3612 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



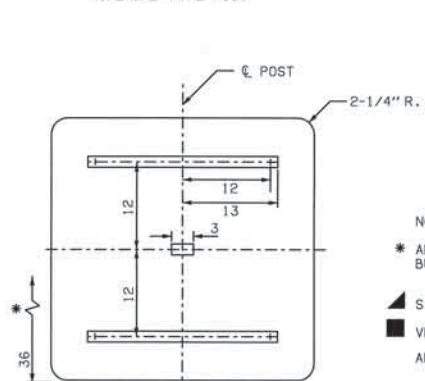
B-3618 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



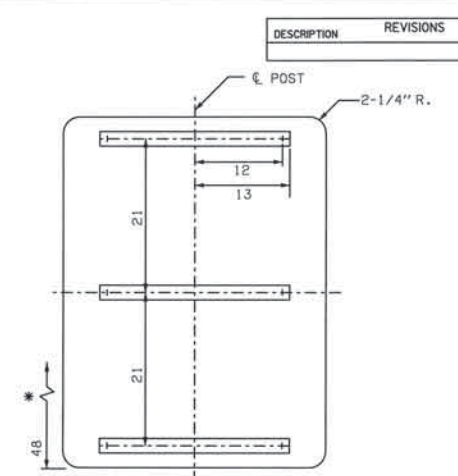
B-3624 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



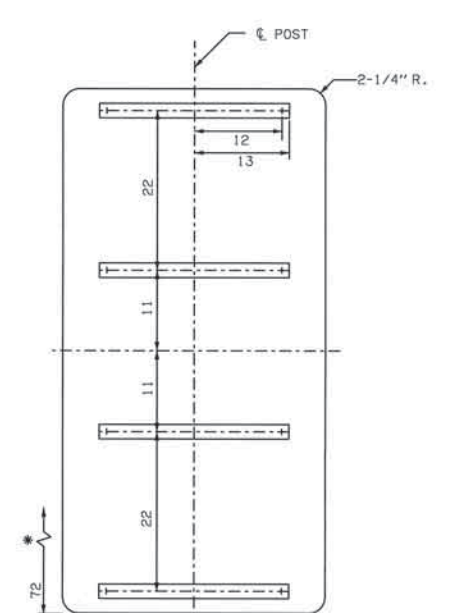
B-3630 ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



B-36(S) ■
 (1) 2" SQUARE TUBE POST
 (1) 1-1/2" PIPE POST



B-3648 ■
 (2) 2" SQUARE TUBE POSTS
 (1) 3" PIPE POST



B-3672 ■
 (1) 3-1/2" PIPE POST

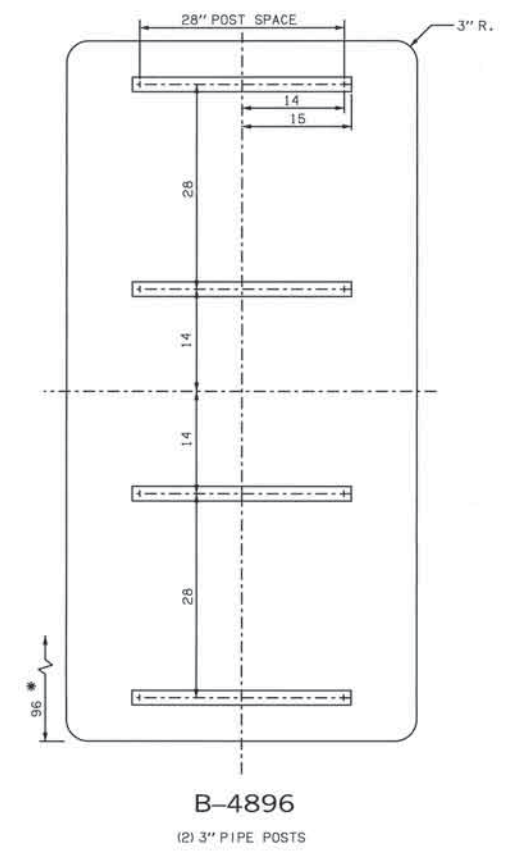
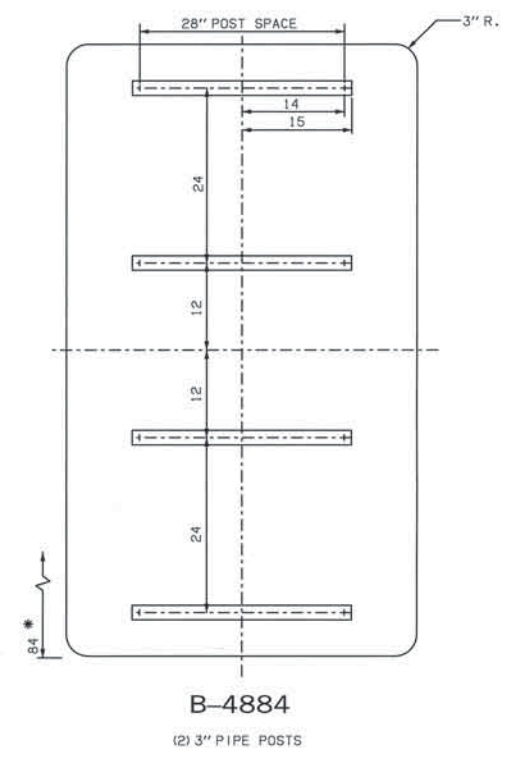
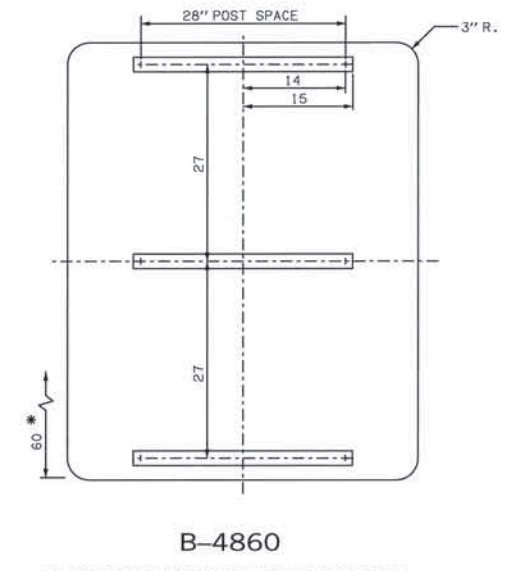
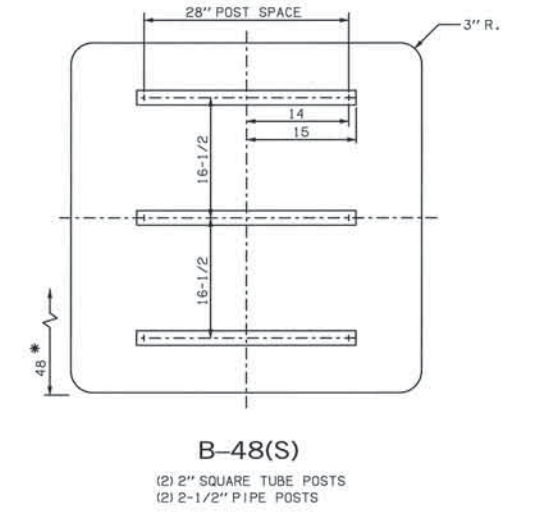
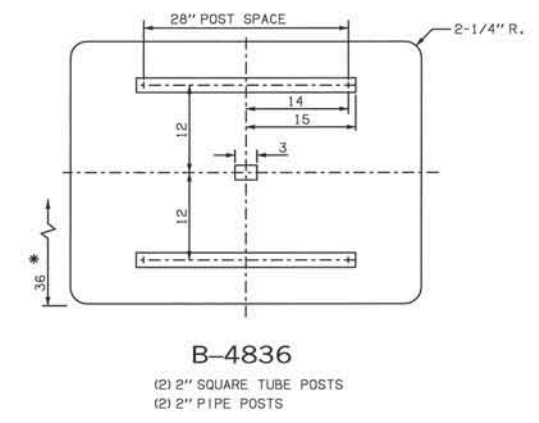
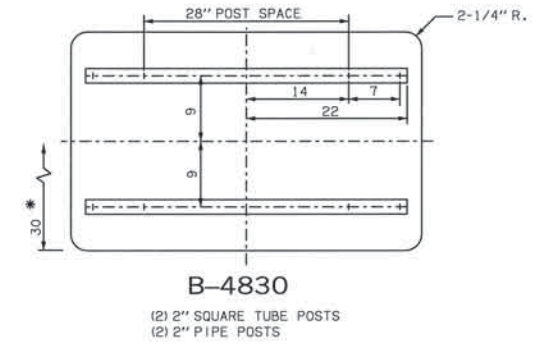
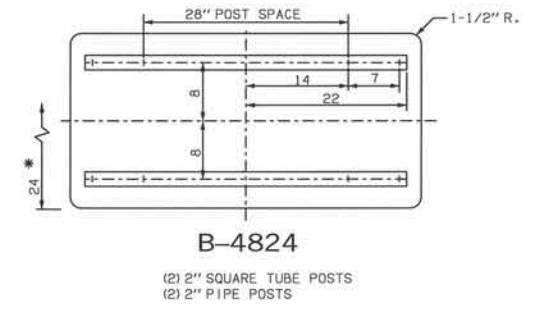
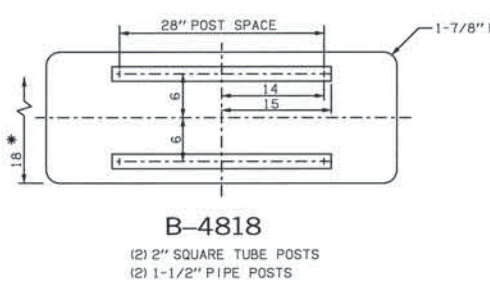
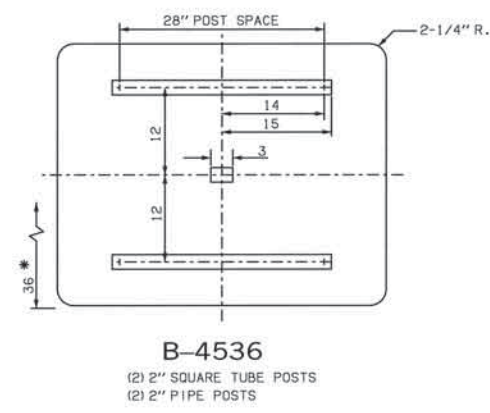
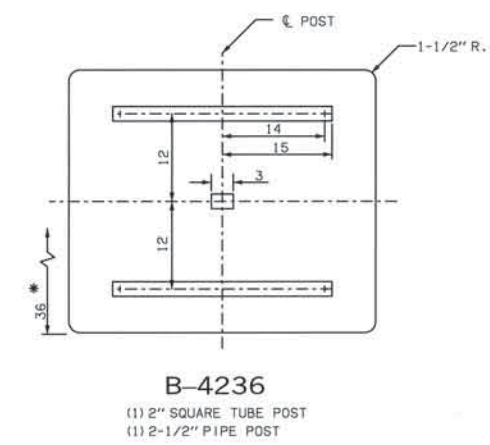
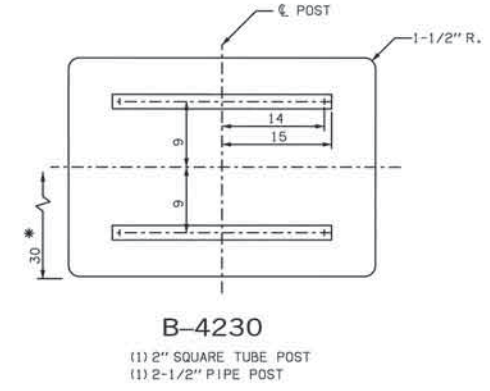
NOTES:
 * ALL POSTS SHALL EXTEND 2" ABOVE THE TOP SIGN BRACKET, BUT NOT ABOVE THE TOP OF THE SIGN.
 ▲ SIGN BLANK THICKNESS SHALL BE .060" ALUMINUM OR 16 GAUGE STEEL.
 ■ VERTICAL SIGN BRACKET ONLY.
 ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.



APPROVED BY
 TRAFFIC ENGINEER: *Dwight Smith* DATE: 8/31/2010

TRAFFIC STANDARD
 SIGN BLANK AND BRACKET DETAILS

DESCRIPTION	REVISIONS	DATE

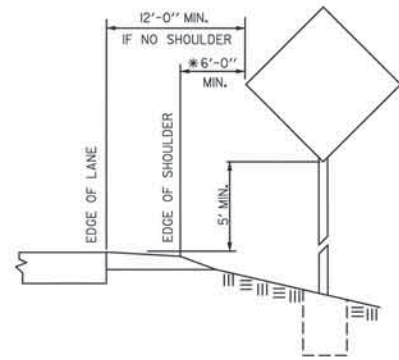


* ALL POSTS SHALL EXTEND 2" ABOVE THE TOP SIGN BRACKET, BUT NOT ABOVE THE TOP OF THE SIGN.
 ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

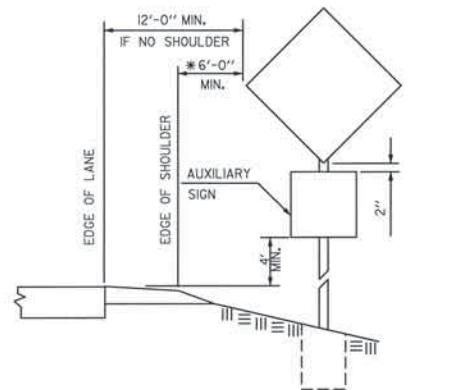


APPROVED BY
 TRAFFIC ENGINEER: *David Smith* DATE: 8/31/2010

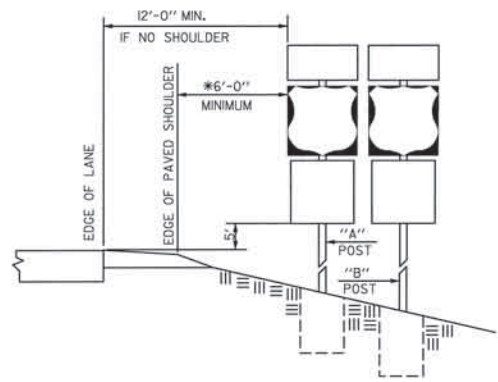
TRAFFIC STANDARD
 SIGN BLANK AND BRACKET DETAILS



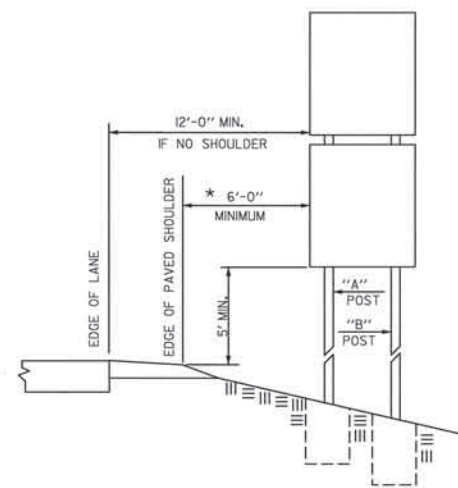
SINGLE POST (RURAL)



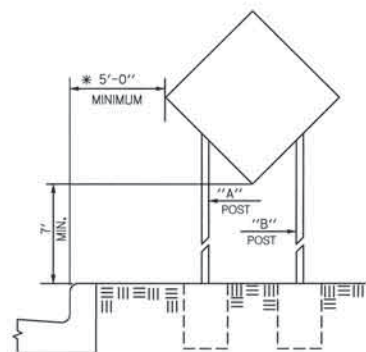
SINGLE POST WITH AUXILIARY SIGN (RURAL)



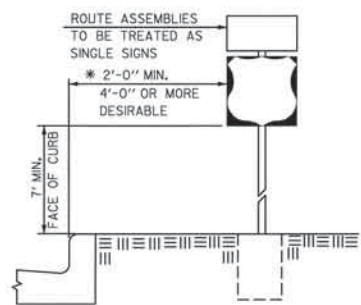
ROADSIDE ASSEMBLY (RURAL)



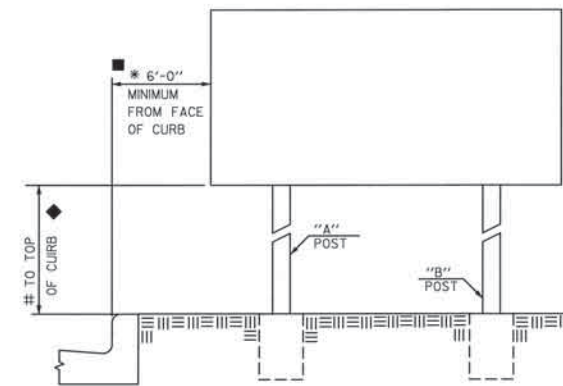
DOUBLE POST MAXIMUM & MINIMUM SPEED LIMIT SIGNS (RURAL)



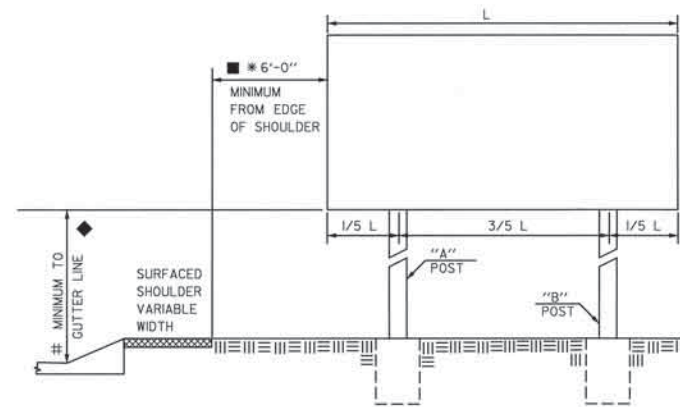
BUSINESS, COMMERCIAL OR RESIDENTIAL AREA



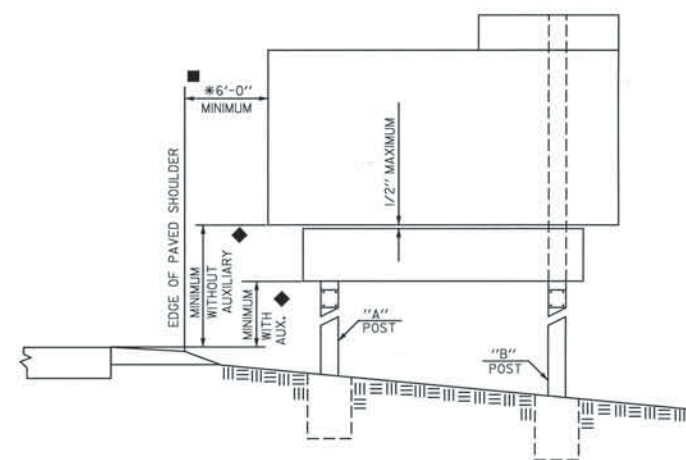
BUSINESS, COMMERCIAL OR RESIDENTIAL AREA



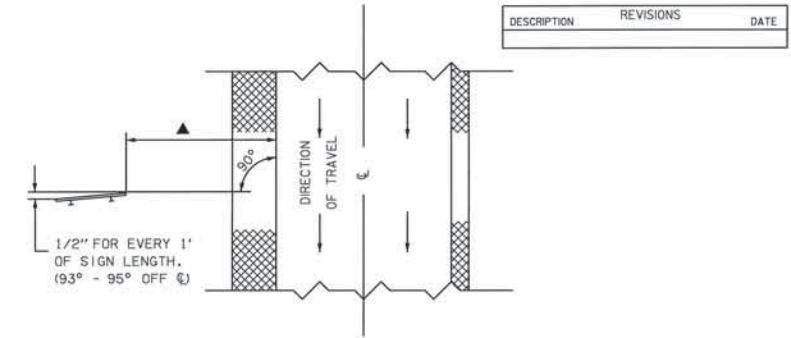
INFORMATION SIGN WITH NON-MOUNTABLE CURB



INFORMATION SIGN WITH MOUNTABLE CURB



FREEWAY OR EXPRESSWAY SIGN (WITH OR WITHOUT AUXILIARY SIGN)



SIGN POSITIONING DETAIL

*1 SIGNS SHALL BE SO POSITIONED TO ELIMINATE OR MINIMIZE SPECULAR REFLECTION. DUE TO THE NUMEROUS VARIATIONS IN ROAD CURVES AND GRADES, THIS GENERAL RULE MAY NOT ALWAYS BE APPLICABLE, AND SIGNS SHALL BE POSITIONED AS DETERMINED BY THE ENGINEER.

*2 IF FURTHER CLARIFICATION OF VERTICAL AND LATERAL CLEARANCES IS REQUIRED, SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST REVISION).

◆ WHEN LATERAL CLEARANCE OF STANDARD OR SPECIAL INFORMATION GUIDE SIGNS IS 30' OR GREATER (AS REQUIRED BY CLEAR ZONE) FROM THE EDGE LINE, THE MINIMUM VERTICAL CLEARANCE IS 7'. IF AN AUXILIARY SIGN IS MOUNTED BELOW A STANDARD OR SPECIAL INFORMATION GUIDE SIGN, THE RECOMMEND VERTICAL CLEARANCE FOR THE STANDARD OR SPECIAL INFORMATION GUIDE SIGN IS MINIMUM 8' AND THE AUXILIARY SIGN IS MINIMUM 5'.

* THE MINIMUM LATERAL CLEARANCE OF THE SIGN FROM THE EDGE OF SHOULDER OR FACE OF CURB SHALL BE AS SHOWN ON THIS STANDARD DRAWING UNLESS OTHERWISE SHOWN OR NOTED ON PLANS. WHEN SIGNS ARE NOTED TO BE PLACED 5' TO 9' FROM SHOULDER, THE TOLERANCE SHALL BE THE DISTANCE SHOWN +2'.

IN INSTANCES WHERE THE LATERAL CLEARANCE SHOWN CAUSES THE FOOTING TO BE LOCATED UNDESIRABLY, SUCH AS THE BOTTOM OF DITCHES, ETC., THE LOCATION MAY BE ADJUSTED OUTWARD FROM THE ROADWAY IF NECESSARY AT THE DISCRETION OF THE ENGINEER.

IN RURAL AREAS THERE SHALL BE A 12' MINIMUM FROM TRAVELWAY (EDGE LINE) TO THE EDGE OF THE SIGN IF NO SHOULDER EXISTS.

■ NORMALLY, ON FREEWAY AND EXPRESSWAY MAINLINE, STANDARD OR SPECIAL INFORMATION SIGNS SHALL BE LOCATED WITH A LATERAL CLEARANCE OF 10' FROM THE FACE OF NON-MOUNTABLE CURBS OR GUARD RAILS, 20' FROM EDGE OF SHOULDER. IN ALL CASES EXCEPT WHEN SIGN SUPPORTS ARE PROTECTED BY BARRIERS, SIGNS SHALL HAVE A LATERAL CLEARANCE OF 30' OR GREATER (AS REQUIRED BY CLEAR ZONE) FROM EDGE OF DRIVING LANE.

ALONG INTERCHANGE RAMP THE LATERAL CLEARANCE SHALL NORMALLY BE 10' OR GREATER (AS REQUIRED BY CLEAR ZONE).

▲ WHEN LATERAL CLEARANCE IS 30'-0" OR GREATER FROM EDGE OF PAVEMENT, THE SIGN IS TO BE APPROXIMATELY PERPENDICULAR TO ROADWAY.



APPROVED BY TRAFFIC ENGINEER: *David Smith* DATE: 8/31/2010

TRAFFIC STANDARD

TYPICAL INSTALLATIONS OF GROUND MOUNTED SIGNS

DESCRIPTION	REVISIONS	DATE
MODIFIED GENERAL NOTE 4.		7/08/2011
REISSUED		4/10/2012

WINDLOAD COORDINATES FOR SQUARE POST AT 90 MPH

SIGN CENTROID	ALLOWABLE SIGN AREA (FT ²) PER SINGLE POST *							
	FHWA APPROVED FOR: 2 POST PER SIGN				FHWA APPROVED FOR: 1 POST PER SIGN			
	1 1/2"x12ga perf.	1 3/4"x14ga perf.	1 3/4"x12ga perf.	2"x14ga perf.	2"x12ga perf.	2 1/4"x14ga perf.	2 1/4"x12ga perf.	2 1/2"x12ga perf.
16.5'	3.46	3.90	4.85	5.19	6.48	6.67	8.34	10.44
16'	3.57	4.02	5.00	5.36	6.68	6.88	8.60	10.76
15.5'	3.68	4.15	5.17	5.53	6.90	7.11	8.88	11.11
15'	3.81	4.29	5.34	5.71	7.13	7.34	9.17	11.48
14.5'	3.94	4.44	5.52	5.91	7.37	7.60	9.49	11.87
14'	4.08	4.59	5.72	6.12	7.64	7.87	9.83	12.30
13.5'	4.23	4.76	5.93	6.35	7.92	8.16	10.19	12.75
13'	4.39	4.95	6.16	6.59	8.22	8.47	10.59	13.24
12.5'	4.57	5.15	6.41	6.86	8.55	8.81	11.01	13.77
12'	4.76	5.36	6.67	7.14	8.91	9.18	11.47	14.35
11.5'	4.96	5.59	6.96	7.45	9.30	9.58	11.97	14.97
11'	5.19	5.85	7.28	7.79	9.72	10.01	12.51	15.65
10.5'	5.44	6.13	7.63	8.16	10.18	10.49	13.11	16.40
10'	5.71	6.43	8.01	8.57	10.69	11.01	13.76	17.22
9.5'	6.01	6.77	8.43	9.02	11.25	11.59	14.49	18.12
9'	6.34	7.15	8.90	9.52	11.88	12.24	15.29	19.13
8.5'	6.72	7.57	9.42	10.08	12.58	12.96	16.19	20.26
8'	7.14	8.04	10.01	10.71	13.36	13.77	17.20	21.52

* USE A MULTIPLIER OF 2 OR 3 FOR 2 & 3 POST INSTALLATIONS.

GENERAL NOTES

- POST TUBE SHALL MEET ASTM A1011 GRADE 50. POST TUBE GALVANIZED AS PER ASTM A653 GRADE 90.
- HEAVY DUTY ANCHOR TUBE SHALL MEET ASTM A500 GRADE B STRUCTURAL TUBE AND STEEL SHALL BE HOT DIP GALVANIZED PER ASTM A123.
- THE UPPER SIGN POST SHALL TELESCOPE INSIDE THE ANCHOR TUBE A MINIMUM OF 12". ANCHOR TUBE SHALL BE MINIMUM OF 30" WITH 3" MAXIMUM AS SHOWN IN DETAILS.
- THE CONCRETE FOOTING SHALL BE CLASS "C" CONCRETE OR AS DIRECTED BY THE ENGINEER. CONCRETE INCLUDED IN THE COST OF SQUARE TUBE POST.
- THE NON-REINFORCED CIRCULAR CONCRETE FOOTING, ANCHOR TUBE AND HARDWARE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE SQUARE TUBE POST.
- SEE STANDARD DRAWINGS SSA1-1, MSD5-1, MSD6-1, SBS1-1, SBS2-1, AND SBS3-1 (LATEST REVISION) FOR PROPER BRACKET PLACEMENT ON THE SIGN AND POST SPACING FOR TWO POST INSTALLATION.
- FOR VERTICAL AND LATERAL CLEARANCE, SEE STANDARD DRAWING GMS1-1, AND GMS2-1-(LATEST REVISION).
- SIGNS SHALL BE ATTACHED TO THE POSTS WITH BOLTS AS SHOWN ON STANDARD DRAWING SSA1-1-(LATEST REVISION).

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
851(C)	SQUARE TUBE POST	LF

APPROVED BY TRAFFIC ENGINEER: *Theresa Gray* DATE: 4/17/12

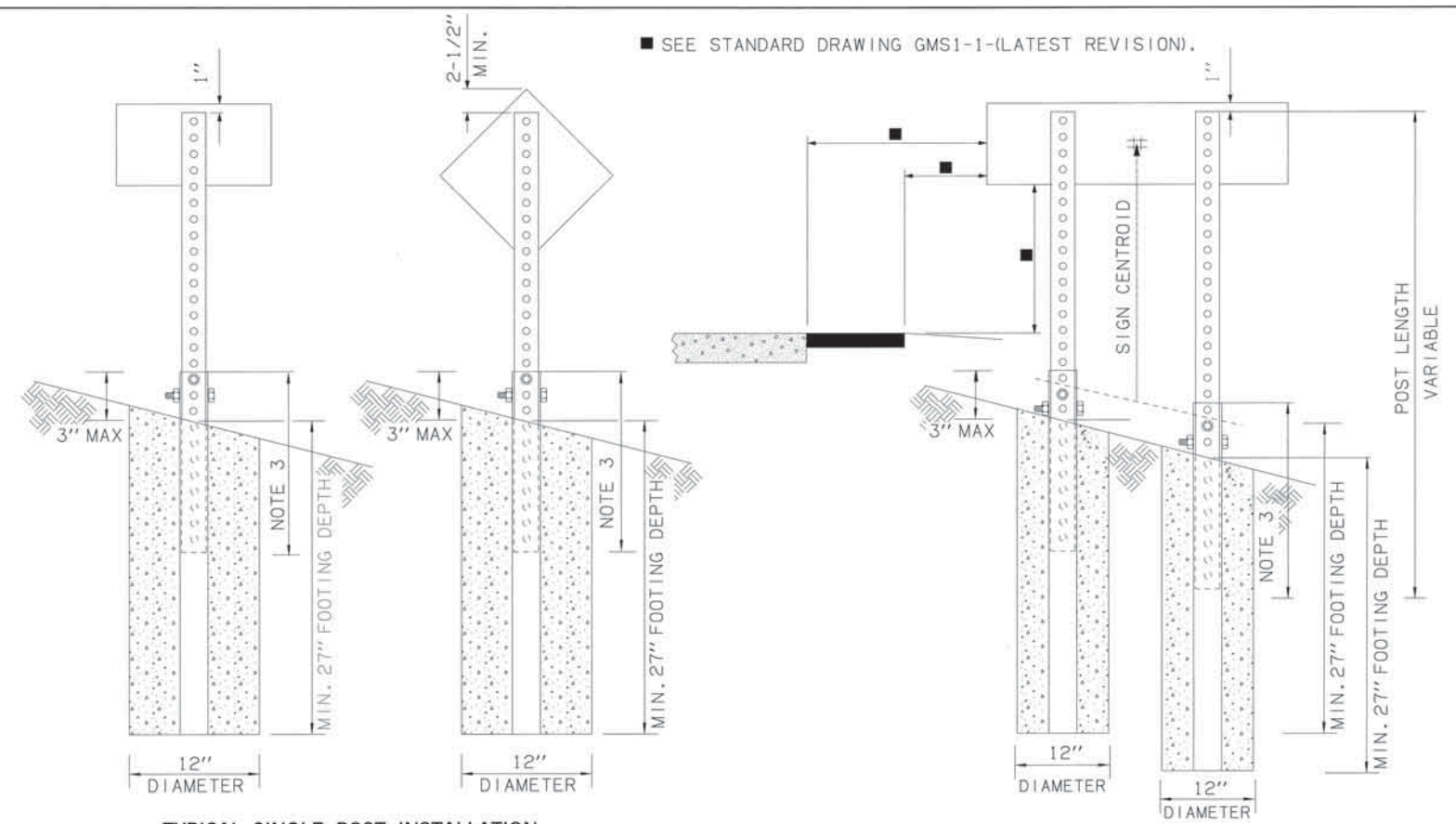


TRAFFIC STANDARD
SQUARE TUBE POST DETAILS

2009 SPECIFICATIONS

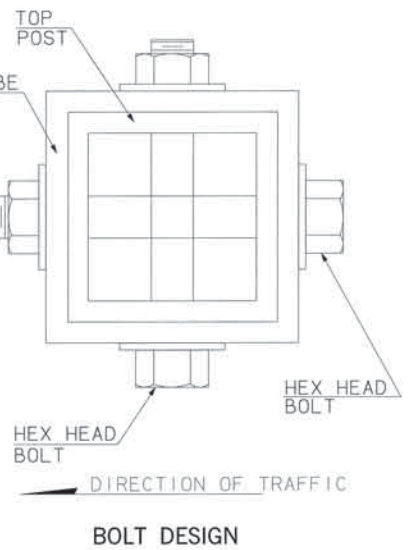
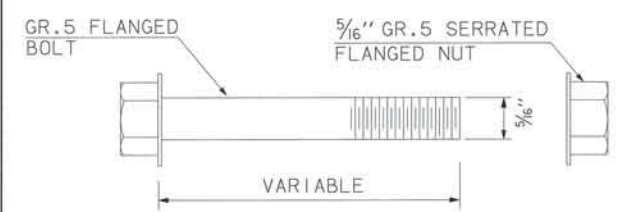
SSP1-1	02
T-138	

SEE STANDARD DRAWING GMS1-1-(LATEST REVISION).

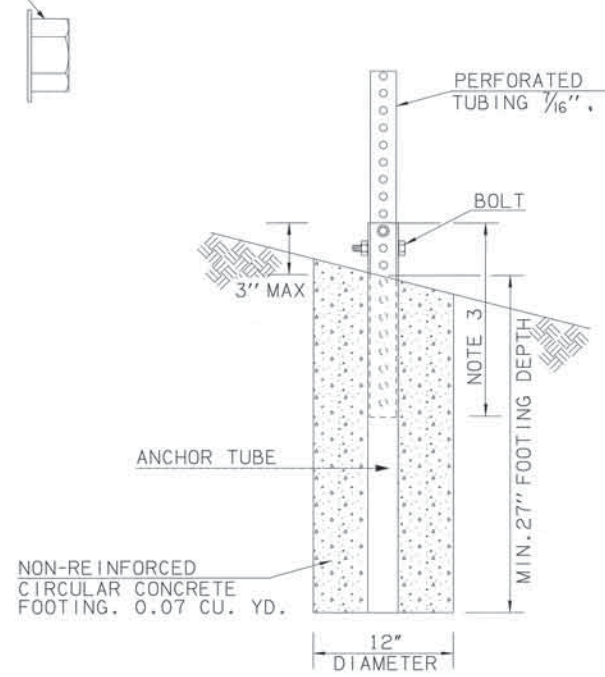


TYPICAL SINGLE POST INSTALLATION

TYPICAL DOUBLE POST INSTALLATION

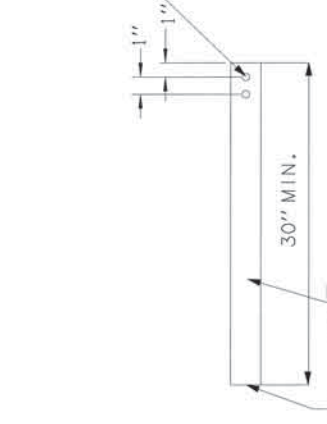


BOLT DESIGN



ANCHOR TUBE DETAILS WITH CONCRETE FOOTING

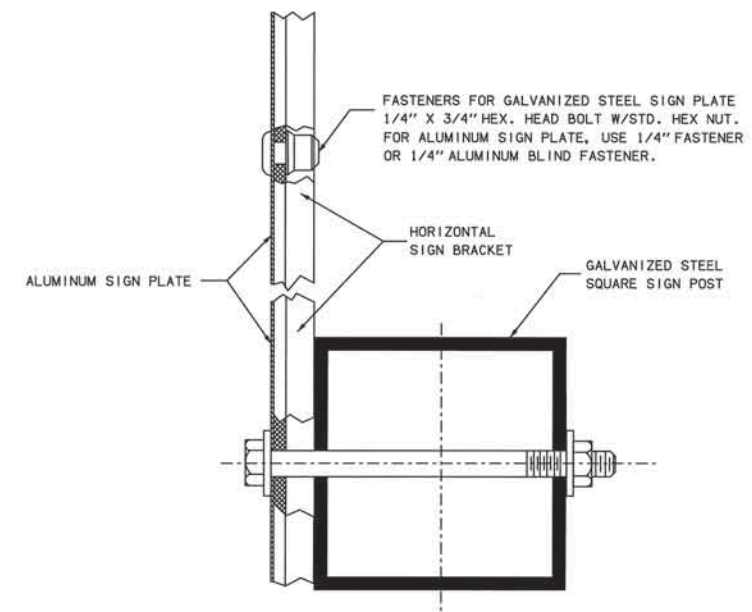
NON-PERFORATED ANCHOR TUBE SHALL HAVE TWO (2) 1/16" DIAMETER HOLES SPACED 1" ON CENTER ALONG THE CENTERLINE OF EACH OF THE FOUR SIDES.



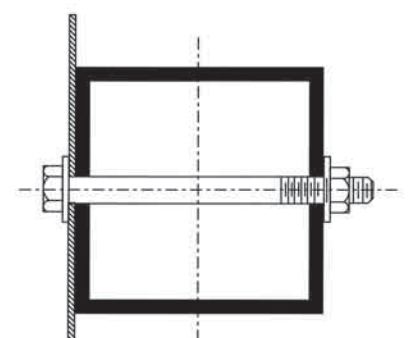
HEAVY DUTY ANCHOR TUBE

- DRAWING NOT TO SCALE -

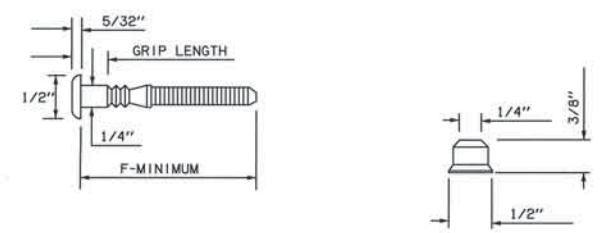
DESCRIPTION	REVISIONS	DATE



TOP VIEW

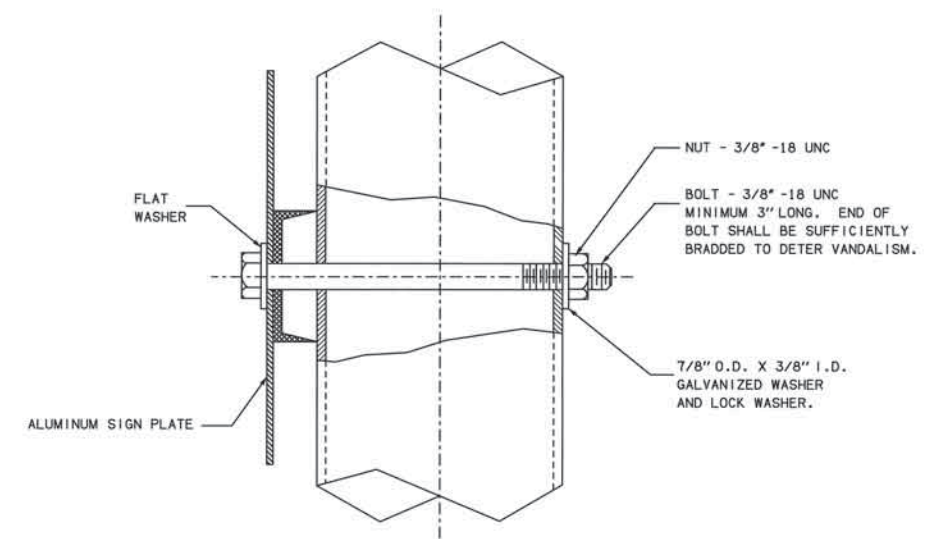


TOP VIEW



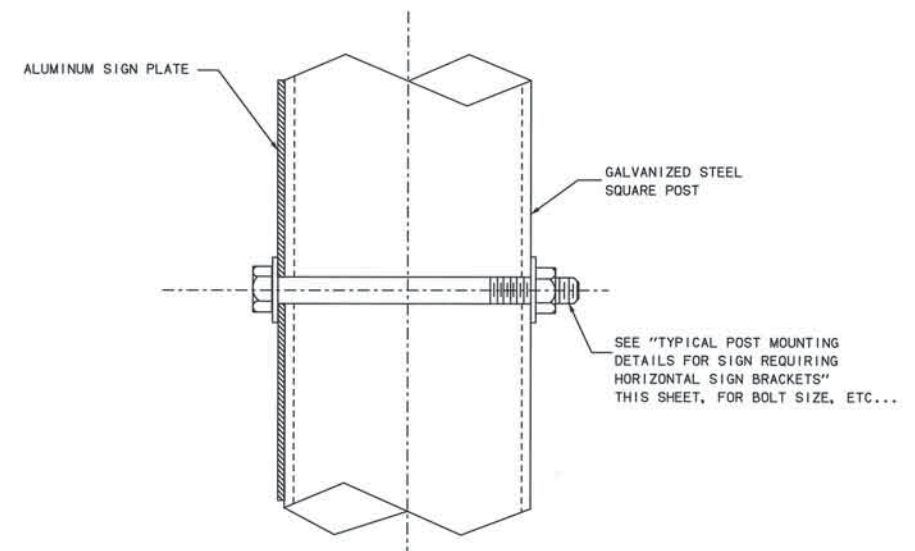
1/4" FASTENER AND 1/4" COLLAR (TYPICAL)

GRIP NO.	GRIP LENGTH (INCHES)	F-MIN.
2	0.094 - 0.156	1-7/16"
3	0.157 - 0.218	1-1/2"
4	0.219 - 0.281	1-9/16"
5	0.282 - 0.343	1-5/8"
6	0.344 - 0.406	1-11/16"
17	0.407 - 1.093	2-3/8"



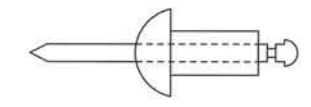
SIDE VIEW

TYPICAL POST MOUNTING DETAILS FOR SIGN REQUIRING HORIZONTAL SIGN BRACKETS



SIDE VIEW

TYPICAL POST MOUNTING DETAILS FOR SIGN 18" WIDE AND UNDER



ALUMINUM ALLOY BODY AND MANDREL. GRIP RANGE 1/16" TO 1/4".

1/4" BLIND FASTENERS

NOTE: ALL NUTS SHALL BE SELF-LOCKING.



APPROVED BY TRAFFIC ENGINEER: *David J. Smith* DATE: 8/31/2010

TRAFFIC STANDARD

SHEET SIGN ASSEMBLY DETAILS (SQUARE TUBE)

2009 SPECIFICATIONS

SSA1-1	00
T-139	

ALL GENERAL NOTES SHOWN BELOW SHALL APPLY TO ALL OF THE STANDARD DRAWINGS IN TCS SERIES

DESCRIPTION	REVISIONS	DATE
MODIFIED NOTES		3/15/2011

CONTRACTOR

ON CONSTRUCTION PROJECTS IT WILL BE THE CONTRACTORS RESPONSIBILITY TO INSTALL THE NECESSARY TRAFFIC CONTROL BEFORE CONSTRUCTION BEGINS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL DEVICES TO ASSURE A HIGH DEGREE OF BOTH DAY AND NIGHT VISIBILITY, WHICH WILL INCLUDE ANY WASHING, REPLACEMENT AND/OR REPOSITIONING WHERE DEEMED NECESSARY BY THE ENGINEER.

THE CONTRACTOR SHALL REPAIR OR REPLACE ANY NEW OR EXISTING PERMANENT STATE OWNED SIGNS WHICH ARE DAMAGED DUE TO HIS NEGLIGENCE OR CARELESS HANDLING DURING THE CONSTRUCTION OF THIS PROJECT. THIS SHALL BE DONE AT THE CONTRACTORS EXPENSE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TEMPORARY TRAFFIC CONTROL WORK ZONE AND EXISTING PAVEMENT MARKINGS ON ALL ROADWAYS OPEN TO TRAFFIC WITHIN THE PROJECT. SUFFICIENT QUANTITIES HAVE BEEN PROVIDED FOR MAINTAINING PAVEMENT MARKINGS FOR PRESCRIBED DETOUR ROUTES WHEN DEEMED NECESSARY BY THE ENGINEER.

SIGN MATERIALS

ALL SIGN BLANK MATERIALS SHALL BE THE OPTION OF THE CONTRACTOR BUT SHALL BE OF SUCH MATERIAL THAT WILL RETAIN A SATISFACTORY APPEARANCE THROUGHOUT THE LIFE OF THE PROJECT.

ALL SIGNS, LIGHTS, FLAGS, ETC. SHALL CONFORM IN SIZE, SHAPE, COLOR, LEGENDS AND APPLICATIONS TO THE STANDARDS SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND/OR OKLAHOMA STATE STANDARD DRAWINGS FOR SIGNS. STANDARD DRAWINGS ARE AVAILABLE FROM THE DEPARTMENT OF TRANSPORTATION. INTERPRETATIONS THAT MAY BE NECESSARY SHALL BE REFERRED TO THE ENGINEER.

SIGN SHEETING

REFLECTORIZATION OF TRAFFIC CONTROL DEVICES SHALL BE BY MEANS OF WIDE ANGLE, FLAT TOP REFLECTIVE SHEETING MEETING THE REQUIREMENTS OF 2009, OKLAHOMA STANDARD SPECIFICATIONS.

SIGN INSTALLATION

ALL SIGNS SHALL BE SECURELY PLACED OR WEIGHTED TO PREVENT BLOWING OVER. ROCKS, BROKEN CONCRETE OR OTHER SUCH OBJECTS SHALL NOT BE CONSIDERED AN ACCEPTABLE SUBSTITUTE FOR SAND BAGS WHEN USED TO OBTAIN ADDED STABILITY FOR MOVABLE SIGNS AND BARRICADES.

SPACING OF SIGNING, ON THE PLANS OR TCS STANDARDS, SHOULD BE NO LESS THAN THE DISTANCES SHOWN. THE DISTANCE BETWEEN SIGNS SHOULD BE INCREASED ON HIGH SPEED OR MORE HEAVILY TRAVELED HIGHWAYS, OR WHERE SIGHT DISTANCE IS RESTRICTED.

IN ALL CONSTRUCTION ZONES, THE 48 INCH X 48 INCH WARNING SIGNS SHALL HAVE ATTACHED THERETO FLORESCENT FLAGS AND TYPE "A" WARNING LIGHTS. THIS SHALL ALSO APPLY WHEN SIGNS ARE USED ON BOTH SIDES OF THE ROADWAY. ADDITIONAL FLASHING LIGHTS MAY BE REQUIRED WHEN SO DESIRED BY THE ENGINEER.

ALL DIAMOND SHAPED CONSTRUCTION WARNING SIGNS ON EXPRESSWAYS OR FREEWAYS SHALL BE 48 INCH X 48 INCH, WITH THE APPROPRIATE ADVISORY SIGN WHERE REQUIRED UNLESS OTHERWISE NOTED IN THE PLANS.

DUE TO THE TEMPORARY NATURE OF CONSTRUCTION, SIGNS WHICH ARE 33 S.F. AND OVER WILL HAVE NO REINFORCING STEEL IN THEIR FOOTINGS.

ALL SIGNS AND SIGN ASSEMBLIES WITH A TOTAL SURFACE AREA OF 10 S.F. OR MORE SHALL BE INSTALLED ON TWO (2) POSTS. THE EXCEPTION BEING SINGLE ROUTE MARKER ASSEMBLIES.

SIGNS MOUNTED ON BARRICADES SHALL BE MOUNTED AS HIGH AS NECESSARY TO BE VISIBLE.

BARRICADES

ONE (1) WING BARRICADE SHALL BE SET ON EACH SIDE OF THE ROADWAY IN ADVANCE OF THE FIRST ADVANCE WARNING SIGN, THE EXCEPTIONS ARE MINOR CROSS STREETS AND SECTION LINE ROADS WHICH INTERSECT THE WORK AREA.

WING BARRICADES SHALL BE INSTALLED ON TWO (2) BREAKAWAY POSTS.

WORK DURATION

THE FIVE CATEGORIES OF WORK DURATION AND THEIR TIME AT A LOCATION SHALL BE:
 A) LONG-TERM STATIONARY IS WORK THAT OCCUPIES A LOCATION MORE THAN 3 DAYS.
 B) INTERMEDIATE-TERM STATIONARY IS WORK THAT OCCUPIES A LOCATION MORE THAN ONE DAYLIGHT PERIOD UP TO 3 DAYS, OR NIGHTTIME WORKLASTING MORE THAN 1 HOUR.
 C) SHORT-TERM STATIONARY IS DAYTIME WORK THAT OCCUPIES A LOCATION FOR MORE THAN 1 HOUR WITHIN A SINGLE DAYLIGHT PERIOD.
 D) SHORT DURATION IS WORK THAT OCCUPIES A LOCATION UP TO 1 HOUR.
 E) MOBILE IS WORK THAT MOVES INTERMITTENTLY OR CONTINUOUSLY.

LIGHTING

TYPE "A" WARNING LIGHTS SHALL BE USED ON BARRICADES (AS REQUIRED) AND WARNING SIGNS.

TYPE "C" WARNING LIGHTS MAY BE USED ON VERTICAL PANELS (OPTIONAL).

CONSTRUCTION NOTES

SHOULD THE REQUIRED WORK ON ANY PROJECT, INCLUDING ANY TRAFFIC CONTROL, OVERLAP OR OTHERWISE INTERFERE WITH THE ON-GOING WORK OR TRAFFIC CONTROL OF ANOTHER PROJECT, IT SHALL BE THE RESPONSIBILITY OF THE RESPECTIVE CONTRACTORS TO COORDINATE THEIR WORK ACTIVITIES TO FACILITATE THE SAFE MOVEMENT OF TRAFFIC THROUGHOUT OR AROUND THEIR COLLECTIVE WORK AREAS. ANY SUCH RECOMMENDED CHANGES SHALL BE SUBMITTED IN WRITING TO EACH PROJECT RESIDENT ENGINEER FOR REVIEW AND APPROVAL.

ALL TRAFFIC CONTROL DEVICES NOT REQUIRED FOR THE SAFE CONDUCT OF TRAFFIC THROUGH THE TEMPORARY TRAFFIC CONTROL ZONE SHALL BE PROMPTLY REMOVED, COMPLETELY COVERED, TURNED AWAY FROM TRAFFIC OR OTHERWISE TAKEN OUT OF SERVICE. DEVICES SHALL NOT BE STORED ALONG THE ROADWAY WITHIN 15 FEET (15') OF AN OPEN DRIVING LANE, EITHER BEFORE OR AFTER THEY ARE TO BE USED UNLESS PROTECTED BY GUARDRAIL, BRIDGE RAIL, AND/OR BARRIERS INSTALLED FOR OTHER PURPOSES. THESE DEVICES SHALL BE REMOVED FROM THE TEMPORARY TRAFFIC CONTROL ZONE WHEN THE ENGINEER DETERMINES THEY ARE NO LONGER NEEDED. WHERE THERE IS INSUFFICIENT RIGHT-OF-WAY TO PROVIDE FOR THIS 15 FEET (15') SETBACK, THE CONTRACTOR SHALL DETERMINE ALTERNATE LOCATIONS AND REQUEST THE ENGINEERS APPROVAL TO USE THEM.

TRAFFIC CONTROL DEVICES, WARNING DEVICES, AND BARRIERS SHALL BE KEPT IN CORRECT POSITION, PROPERLY DIRECTED, CLEARLY VISIBLE AND CLEAN AT ALL TIMES. DAMAGED, DEFACED OR DIRTY DEVICES OR BARRICADES SHALL IMMEDIATELY BE REPAIRED, REPLACED OR CLEANED BY THE CONTRACTOR AND APPROVED FOR USE BY THE ENGINEER.

NO EQUIPMENT OR VEHICLES BELONGING TO THE CONTRACTOR, HIS SUB-CONTRACTORS OR EMPLOYEES SHALL BE PARKED OR STOPPED WITHIN 30 FEET (30') OF A LANE CARRYING TRAFFIC, AT ANY TIME, UNLESS REQUIRED BY ONGOING WORK OPERATIONS.

ALL DETOURS AND DIVERSIONS SHOULD BE IN PLACE, WITH SIGNING, STRIPING AND CHANNELIZING DEVICES, AS SHOWN IN THE PLANS OR STANDARD DRAWINGS, BEFORE THEY ARE OPENED TO TRAFFIC.

WHEN IT BECOMES NECESSARY TO CLOSE THE ROAD TO THROUGH TRAFFIC, NO LESS THAN SEVEN DAYS PRIOR TO THE CLOSURE, THE CONTRACTOR SHALL NOTIFY THE FOLLOWING INDIVIDUALS OR AGENCIES DESCRIBING THE AFFECTED ROAD AND THE APPROXIMATE DURATION OF THE CLOSURE. THOSE TO BE NOTIFIED INCLUDE BUT ARE NOT LIMITED TO 1) LOCAL LAW ENFORCEMENT OFFICIALS, 2) LOCAL FIRE OFFICIALS, 3) AMBULANCE SERVICES, 4) LOCAL SCHOOL SUPERINTENDENT, 5) UNITED STATES POSTAL SERVICE, AND 6) CITY OR COUNTY ROAD SUPERINTENDENT.

ALL TEMPORARY TRAFFIC CONTROL DEVICES, AND THEIR CONDITIONS THROUGHOUT THE LIFE OF THE CONSTRUCTION PROJECT, SHALL MEET O.D.O.T.'S LATEST "QUALITY STANDARDS FOR TEMPORARY TRAFFIC CONTROL DEVICES". THE O.D.O.T. RESIDENT ENGINEER WILL MAKE FINAL DECISION OF ALL TEMPORARY TRAFFIC CONTROL DEVICES BASED ON THE O.D.O.T. GUIDELINES.

NO GENDER BIAS SIGNS ARE ALLOWED.

ARROW DISPLAY

USE OF AN ARROW DISPLAY, IN THE ARROW OR CHEVRON MODE, SHALL BE LIMITED TO STATIONARY OR MOVING LANE CLOSURES.

AN ARROW DISPLAY, IN THE CAUTION MODE, SHALL BE USED ONLY FOR SHOULDER WORK, BLOCKING THE SHOULDER, ROADSIDE WORK NEAR THE SHOULDER, OR FOR MOBILE OPERATIONS (I.E. STRIPING).

AN ARROW DISPLAY IN THE ARROW OR CHEVRON MODE, SHALL NOT BE USED ON A TWO-LANE, TWO-WAY ROADWAY FOR TEMPORARY ONE-LANE OPERATION.

AN ARROW DISPLAY SHALL NOT BE USED ON A MULTI-LANE ROADWAY TO LATERALLY SHIFT TRAFFIC.

CHANNELIZING DEVICES

IN THOSE AREAS WHERE DRIVERS ARE ASKED TO MAKE A DECISION OR MUST BE GUIDED THROUGH A PRECISE MOVEMENT, BY USE OF CHANNELIZING DEVICES, IT IS ESPECIALLY IMPORTANT TO PROVIDE A CLEARLY DEFINED PATH. EXAMPLES OF THIS COULD BE IN DELINEATING A TEMPORARY GORE OR TURNING RADIUS. IN SUCH AREAS THE SPACING OF CHANNELIZING DEVICES MAY BE REDUCED TO 10 FEET FOR SPEEDS OF 40 M.P.H. OR LESS, AND 20 FEET FOR SPEEDS GREATER THAN 40 M.P.H.

WHEN CHANNELIZING DEVICES ARE USED TO DIRECT TRAFFIC ACROSS EXISTING LANE LINES OR EDGE LINES, THE SPACING BETWEEN CHANNELIZING DEVICES SHALL BE REDUCED 50%. SPACING SHOULD ALSO BE REDUCED WHEN CHANNELIZING DEVICES ARE PLACED ON CURVES, HILLS, OR NEXT TO POTENTIAL HAZARDS.

ALL TRAFFIC CONTROL CHANNELIZING DEVICES SHALL MEET MUTCD COLOR REQUIREMENTS.

FLAGGERS

FLAGGERS MUST BE CLEARLY VISIBLE TO APPROACHING TRAFFIC FOR A DISTANCE SUFFICIENT TO PERMIT PROPER RESPONSE BY MOTORISTS TO THE FLAGGING INSTRUCTIONS, AND TO PERMIT TRAFFIC TO REDUCE SPEED OR STOP BEFORE ENTERING THE TEMPORARY TRAFFIC CONTROL ZONE. FLAGGERS SHALL BE POSITIONED TO MAINTAIN MAXIMUM COLOR CONTRAST BETWEEN THE FLAGGER'S REFLECTIVE CLOTHING AND EQUIPMENT AND THE WORK AREA BACKGROUND.

DURING HOURS OF DARKNESS, FLAGGER STATIONS SHALL BE ILLUMINATED SUCH THAT THE FLAGGER WILL BE CLEARLY VISIBLE TO APPROACHING TRAFFIC. LIGHTS TO BE USED FOR ILLUMINATING THE STATION SHALL BE APPROVED BY THE ENGINEER. REFLECTORIZED PADDLES AND REFLECTORIZED VESTS, SHIRTS OR JACKETS SHALL BE USED FOR NIGHTTIME FLAGGING.

UNLESS OTHERWISE SPECIFIED IN THE PLANS, THE COST OF FLAGGING OPERATIONS SHALL BE INCLUDED IN OTHER ITEMS OF WORK.

MINIMUM STANDARDS FOR TRAFFIC CONTROL DEVICES

- (1) WARNING LIGHTS (TYPE A FLASHERS AND TYPE C STEADY BURN)
 - (A) NOT LESS THAN NINETY (90) PERCENT OF THE TOTAL NUMBER OF LIGHTS BEING USED AT ANY ONE TIME SHALL BE FULLY OPERATIONAL.
 - (B) NOT MORE THAN THREE (3) LIGHTS ADJACENT TO ONE ANOTHER SHALL BE FAILING.
- (2) ARROW DISPLAY
 - (A) WHEN IN ARROW MODE, NO MORE THAN TWO (2) LAMPS IN THE STEM AND ZERO (0) LAMPS IN THE HEAD SHALL BE FAILING. THE DIMMING FUNCTION SHALL BE OPERATING PROPERLY.
 - (B) WHEN IN CAUTION MODE (CORNERS), A MINIMUM OF FOUR (4) LAMPS SHALL BE OPERATIONAL. THE DIMMING FUNCTION SHALL BE OPERATING PROPERLY.
 - (C) ANY LAMP WHICH IS LIGHTED BUT IMPROPERLY ALIGNED SHALL NOT BE CONSIDERED OPERATIONAL.
- (3) CHANGEABLE MESSAGE SIGNS
 - (A) NOT LESS THAN NINETY (90) PERCENT OF THE PIXELS SHALL BE FUNCTIONAL IN EACH CHARACTER MODULE.
 - (B) NO SANDBAG BALLASTING OVER 3 FEET IN HEIGHT.
- (4) PAVEMENT MARKING TAPE
 - (A) NOT MORE THAN TEN (10) PERCENT OF ALL TAPE, PAINT, MESSAGE OR SYMBOL SHALL BE MISSING.
 - (B) NOT MORE THAN TWO (2) CONSECUTIVE DASHED LINES SHALL BE MISSING.
 - (C) NOT MORE THAN FIFTY (50) CONTINUOUS FEET OF A SOLID LINE SHALL BE MISSING.
- (5) CONSTRUCTION ZONE PAVEMENT MARKERS
 - (A) NOT MORE THAN TEN (10) PERCENT OF THE TOTAL NUMBER OF MARKERS SHALL BE MISSING.
 - (B) NOT MORE THAN THREE (3) CONSECUTIVE MARKERS SHALL BE MISSING.

STRIPING

WHENEVER THE WORK CAUSES THE OBLITERATION OF PAVEMENT MARKINGS, EITHER TEMPORARY OR PERMANENT MARKINGS SHALL BE IN PLACE PRIOR TO OPENING THE ROADWAY TO TRAFFIC. CENTERLINE PAVEMENT MARKINGS SHALL BE PROVIDED AT ALL TIMES FOR ROADWAYS OPEN TO TRAFFIC.

THE APPLICATION SURFACES FOR PAVEMENT MARKINGS SHALL BE FREE OF DUST, DIRT, MOISTURE OR OTHER FOREIGN MATTER WHICH WOULD INTERFERE WITH ADHESION. INSTALLATION OF ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

ALL TEMPORARY PAVEMENT MARKINGS SHALL BE REMOVED IMMEDIATELY AHEAD OF THE PERMANENT STRIPING OPERATIONS OR RE-STRIPING FOR FOLLOWING CONSTRUCTION PHASES.

WHEN REMOVABLE PAVEMENT MARKINGS TAPE IS TO BE INSTALLED ON NEW CONCRETE PAVEMENT, THE CURING COMPOUND SHALL BE REMOVED PRIOR TO INSTALLATION.

IF REMOVABLE PAVEMENT MARKING TAPE IS INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND FAILS DURING THE FIRST SIX MONTHS OF SERVICE, IT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. REPLACEMENT SHALL BE ACCOMPLISHED IN A TIMELY MANNER UPON BEING NOTIFIED, BY THE ENGINEER, OF SUCH FAILURE.

PILOT CAR

WHEN LANE CLOSURES ARE REQUIRED ON TWO-LANE /TWO-WAY ROADWAYS, THE CONTRACTOR MAY, AT HIS OPTION, UTILIZE A PILOT CAR. IF THE CONTRACTOR ELECTS TO USE A PILOT CAR, CHANNELIZING DEVICES ALONG THE CENTERLINE WILL NOT BE REQUIRED. THE PILOT CAR OPERATOR SHALL BE IN RADIO CONTACT WITH PERSONNEL IN THE TEMPORARY TRAFFIC CONTROL ZONE. MAXIMUM SPEED OF THE PILOT CAR THROUGH THE WORK AREA SHALL BE 25 M.P.H. FULL COMPENSATION FOR FURNISHING AND OPERATING THE PILOT CAR, (INCLUDING DRIVER, RADIOS, AND ANY OTHER EQUIPMENT OR LABOR REQUIRED) SHALL BE CONSIDERED AS INCLUDED IN THE COST OF OTHER ITEMS OF WORK.

MISCELLANEOUS

TRAFFIC CONDITIONS MAY NECESSITATE CHANGES IN THE USE AND/OR QUANTITIES OF THE TRAFFIC CONTROL DEVICES AS SHOWN IN THE PLANS OR IN THE STANDARDS. ANY SUCH CHANGES ARE SUBJECT TO APPROVAL BY THE ENGINEER.

ALL CHANNELIZING DEVICES PROVIDED ON THIS PROJECT SHALL BE IN GOOD CONDITION AND SHALL BE APPROVED FOR USE ON THIS PROJECT BY THE ENGINEER.

THE REGULATORY SPEED LIMITS THROUGH THE WORK ZONE MAY BE ADJUSTED AT THE DISCRETION OF THE ENGINEER WITH THE DOCUMENTED APPROVAL OF THE DIVISION ENGINEER IN ACCORDANCE WITH TITLE 47 OF THE OKLAHOMA MOTOR VEHICLE LAWS.

THE TERMINATION AREA EXTENDS FROM THE DOWNSTREAM END OF THE WORK AREA TO THE TEMPORARY TRAFFIC CONTROL DEVICE SUCH AS "END ROAD WORK" SIGNS, IF POSTED, A SPEED SIGN, OR OTHER SIGNS MAY BE USED TO INFORM ROAD USERS THAT THEY CAN RESUME NORMAL OPERATIONS.

THE CONSTRUCTION SIGNING AND BARRICADE CONTRACTOR SHOULD AFFIX THEIR COMPANY NAME AND/OR LOGO INCONSPICUOUSLY ON EACH TRAFFIC CONTROL DEVICE.



APPROVED BY TRAFFIC ENGINEER: *Shelby Gray* DATE: 3/21/11

TRAFFIC STANDARD
 TRAFFIC CONTROL STANDARD
 TRAFFIC CONTROL CONSTRUCTION NOTES

2009 SPECIFICATIONS

TCS1-1	01
T-501	

\$\$\$date\$\$\$

DESCRIPTION	REVISIONS	DATE
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TAPER LENGTH CRITERIA FOR WORK ZONES

SPEED LIMIT M.P.H.	*L* FORMULA	*L* TAPER LENGTH (MINIMUM) (FT)			NUMBER OF CHANNELIZING DEVICES REQUIRED (MINIMUM)			SPACING CHANNELIZING DEVICES (MAXIMUM)		MAXIMUM HORIZONTAL ALIGNMENT THRU DETOUR (DEGREE) (S=0)	SPEED LIMIT M.P.H.
		10' OFFSET	11' OFFSET	12' OFFSET	10' OFFSET	11' OFFSET	12' OFFSET	① THRU TAPER SECTION (FT.)	② THRU TANGENT SECTION (FT.)		
20	$L = \frac{W \times S^2}{60}$	70	75	80	5	5	5	20	40	—	20
25		105	115	125	6	6	6	25	50	—	25
30		150	165	180	6	7	7	30	60	15	30
35		205	225	245	7	8	8	35	70	11	35
40	$L = W \times S$	265	295	320	8	9	9	40	80	8	40
45		450	495	540	11	12	13	45	90	6	45
50		500	550	600	11	12	13	50	100	5	50
55		550	605	660	12	14	15	50	100	4	55
60		600	660	720	13	15	16	50	100	3	60
65		650	715	780	14	16	17	50	100	2.5	65
70		700	770	840	15	17	18	50	100	2	70
75		750	825	900	16	18	19	50	100	1.8	75

NOTES:

① RECOMMENDED SIGNING TO BE USED THRU LANE TAPER IS (1) CW1-8 ON EVERY OTHER DRUM.

② RECOMMENDED SIGNING TO BE USED THRU TANGENT LANES IS (1) R4-7A(R) OR (1) R4-7A(L) (AS APPLIES) ON EVERY OTHER DRUM.

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED OR OFF-PEAK 85 PERCENTILE SPEED IN MPH

TYPE OF TAPER
UPSTREAM TAPERS
MERGING TAPER
SHIFTING TAPER
SHOULDER TAPER
TWO-WAY TRAFFIC TAPER

TAPER LENGTH
L MINIMUM
1/2 L MINIMUM
1/3 L MINIMUM
100 FEET MAXIMUM
100 FEET PER LANE

DOWNSTREAM TAPERS
(USE IS OPTIONAL)

FLARE RATES FOR CONCRETE MEDIAN BARRIER IN TEMPORARY TRAFFIC CONTROL ZONES

SPEED *	FLARE RATE (MINIMUM)
40 M.P.H.	9 TO 1
45 M.P.H.	10 TO 1
50 M.P.H.	11 TO 1
55 M.P.H.	12 TO 1
60 M.P.H.	13 TO 1
65 M.P.H.	14 TO 1
70 M.P.H.	15 TO 1
75 M.P.H.	16 TO 1

* POSTED SPEED LIMIT PRIOR TO CONSTRUCTION

PAVEMENT MARKINGS THROUGH TEMPORARY TRAFFIC CONTROL ZONE

	DRIVING SURFACE	FLEX TAB MARKERS	TAPE (REMOVABLE)	TAPE (NON-REMOVABLE)	PAINT	CONSTRUCTION ZONE PAVEMENT MARKERS
	EXISTING PAVEMENT TO BE LEFT IN PLACE THRU THE NEXT PHASE	X	X			X
	INTERMEDIATE LIFT	X	X	X	X	X
	MILLED SURFACE	X	X	X	X	X
	FINAL LIFT	X	X			
CONCRETE	EXISTING PAVEMENT TO BE REMOVED OR OVERLAYED IN THE NEXT PHASE	X	X	X	X	X
	EXISTING PAVEMENT TO BE LEFT IN PLACE THRU THE NEXT PHASE	X	X			X
	FINAL SURFACE	X	X		X	X

NOTE: USE OF NON-REMOVABLE TAPE (FOILBACK) SHALL BE LIMITED TO THOSE CONDITIONS SHOWN IN THE TABLE.

RECOMMENDED CLEAR ZONE DISTANCE (FT) (CONSTRUCTION WORK ZONES)

DESIGN SPEED	DESIGN ADT	FILL SLOPES			CUT SLOPES		
		6:1 OR FLATTER	5:1 OR 4:1	3:1	3:1	4:1 OR 5:1	6:1 OR FLATTER
40 MPH OR LESS	UNDER 750	4	4	SEE NOTE 3	4	4	4
	750-1500	5	6		5	5	5
	1500-6000	6	7		6	6	6
	OVER 6000	7	8		7	7	7
45-50 MPH	UNDER 750	5	6		4	4	5
	750-1500	7	8		5	6	7
	1500-6000	8	10		6	7	8
	OVER 6000	10	12		7	9	10
55 MPH	UNDER 750	6	7		4	5	5
	750-1500	8	10		5	7	8
	1500-6000	10	12	7	8	10	
	OVER 6000	11	13	8	10	11	
60 MPH	UNDER 750	8	10	5	6	7	
	750-1500	10	13	6	8	10	
	1500-6000	13	16 *	7	9	12	
	OVER 6000	15	18 *	10	12	13	
65-70 MPH	UNDER 750	9	10	5	7	7	
	750-1500	12	14	6	9	10	
	1500-6000	14	17 *	8	11	13	
	OVER 6000	15	19 *	11	13	14	

NOTES:

* THE CLEAR ZONE MAY BE LIMITED TO 15 FEET FOR PRACTICALITY AND TO PROVIDE A CONSISTENT ROADWAY TEMPLATE.

(1) ALL DISTANCES ARE MEASURED FROM EDGE OF THE TRAVEL LANE.

(2) FOR CLEAR ZONES, THE "DESIGN ADT" WILL BE THE TOTAL ADT ON TWO-WAY ROADWAYS AND DIRECTIONAL ADT ON ONE-WAY ROADWAYS (E.G., RAMPS AND ONE ROADWAY OF A DIVIDED HIGHWAY).

(3) FILL SLOPES WHICH ARE 3:1 OR STEEPER ARE CRITICAL AND MAY REQUIRE A BARRIER. THEREFORE THERE IS NOT A CLEAR ZONE APPLICATION.

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED * (MPH)	LENGTH (FEET)
20 M.P.H.	115
25 M.P.H.	155
30 M.P.H.	200
35 M.P.H.	250
40 M.P.H.	305
45 M.P.H.	360
50 M.P.H.	425
55 M.P.H.	495
60 M.P.H.	570
65 M.P.H.	645
70 M.P.H.	730
75 M.P.H.	820

* POSTED SPEED, OFF-PEAK 85th PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

RECOMMENDED DISTANCE BETWEEN SIGNS (MIN.)

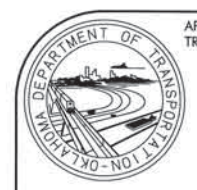
ROAD TYPE	A (FT)	B (FT)	C (FT)
URBAN (LOW SPEED)	100	100	100
URBAN (HIGH SPEED)	350	350	350
RURAL	500	500	500
EXPRESSWAY /FREEWAY	1,000	1,500	2,640

CROSSOVER CRITERIA FOR WORK ZONES

WIDTH OF MEDIAN (W) (FT)	LATERAL SHIFT - (P) (FT)	LENGTH OF CROSSOVER - LC * (FT)											
		V.	30 M.P.H.	35 M.P.H.	40 M.P.H.	45 M.P.H.	50 M.P.H.	55 M.P.H.	60 M.P.H.	65 M.P.H.	70 M.P.H.	75 M.P.H.	
		D.	15°	11°	8°	6°	5°	4°	3°	2.5°	2°	1.8°	
20	32	R.	382	521	716	955	1146	1433	1910	2292	2865	3183	
30	42		219	256	301	348	382	427	493	541	605	637	
40	52		277	325	382	443	485	543	628	688	770	812	
50	62		301	354	417	483	529	593	685	751	841	886	
60	72		324	381	448	519	570	638	738	809	905	955	
70	82		344	405	478	554	608	681	787	863	966	1,018	
80	92		363	428	505	586	643	720	833	914	1,023	1,078	
90	102		381	450	531	616	676	758	877	962	1,076	1,135	
100	112		398	470	555	644	708	793	918	1,007	1,127	1,189	
110	122		414	489	578	672	738	827	958	1,050	1,176	1,240	
120	132		429	508	601	698	767	860	995	1,092	1,223	1,290	

* CROSSOVER = REVERSE CURVE CONNECTION TYING TWO (2) PARALLEL ROADWAYS.

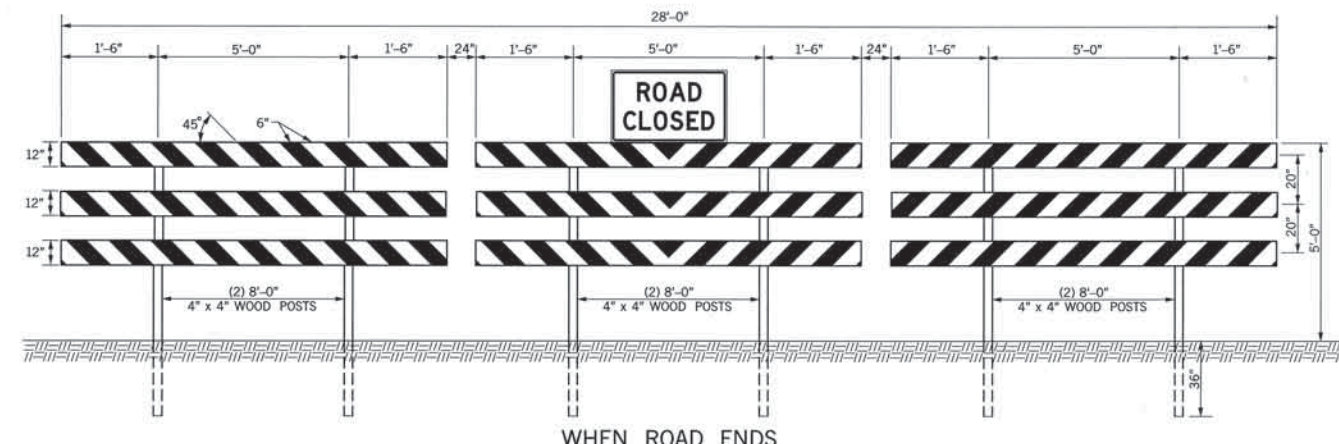
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APPROVED BY TRAFFIC ENGINEER: *David Smith* DATE: 6/23/10

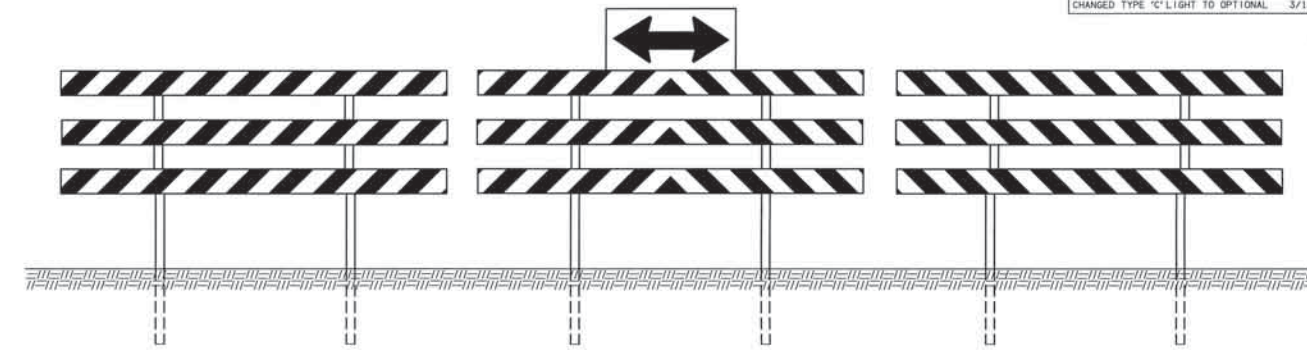
**TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
TRAFFIC CONTROL TABLES AND CHARTS**

DESCRIPTION	REVISIONS	DATE
CHANGED TYPE 'C' LIGHT TO OPTIONAL		3/15/2011



WHEN ROAD ENDS

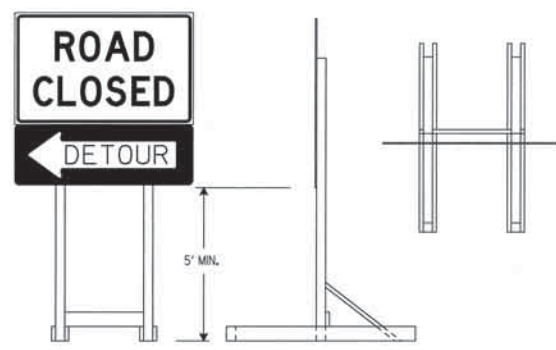
PERMANENT TYPE III(A/B) BARRICADE
(DIMENSIONS ARE TYPICAL FOR BOTH BARRICADES)



FOR T-INTERSECTIONS

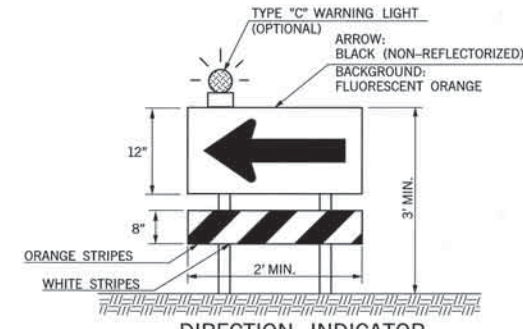
NOTES: A PERMANENT BARRICADE TYPE III(A) SHALL CONSIST OF NINE (9) PANELS AND SIX (6) POSTS.
TYPICAL INSTALLATION AS SHOWN IS FOR AN ABSOLUTE CLOSURE.
BARRICADES SHOULD NOT BE PLACED PARALLEL TO TRAFFIC IF NOT OUTSIDE OF CLEAR ZONE.

PERMANENT BARRICADE TYPE III(B) WILL BE IDENTICAL TO TYPE III(A) WITH NINE (9) ADDITIONAL REFLECTORIZED 3/4"x12" LUMBER PANELS ATTACHED TO THE BACK SIDE OF THE BARRICADE.
COLOR: BACKGROUND - WHITE (REFLECTORIZED)
DIAGONAL STRIPES - RED (REFLECTORIZED)

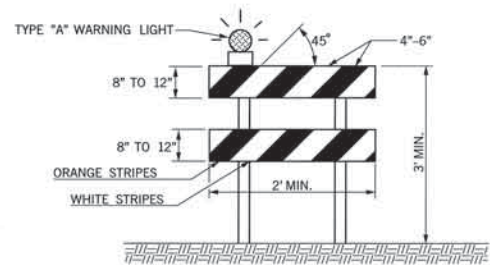


Skid-Mounted Sign Support with plywood sign

LONG INTERMEDIATE TERM STATIONARY PORTABLE SIGN SUPPORTS
5 Foot Mounting Height
(SKID MOUNTED)
(SHALL BE PLACED BEHIND TYPE III BARRICADE)



DIRECTION INDICATOR BARRICADE



TYPE II BARRICADE

NOTES: FOR WOODEN BARRICADES NOMINAL LUMBER DIMENSIONS WILL BE SATISFACTORY.
FOR RAILS LESS THAN 3 FEET LONG, 4 INCH WIDE STRIPES SHALL BE USED.
TYPE III BARRICADES SHALL BE CONSTRUCTED USING A MINIMUM OF TWO (2) POSTS.
FOR WOODEN BARRICADES, PANEL THICKNESS SHALL NOT EXCEED ONE-HALF INCH (1/2").
BARRICADES SHOULD NOT BE PLACED PARALLEL TO TRAFFIC IF NOT OUTSIDE OF CLEAR ZONE.

PROJECTS WITH WORK LIMITS OF 2.0 MILES OR MORE IN LENGTH WILL REQUIRE THE G20-1A SIGN. THE SIGN (G20-1A) WILL BE REQUIRED ON ONE SIDE OF A 2-LANE ROADWAY AND BOTH SIDES OF A DIVIDED HIGHWAY.

ALL BARRICADE STRIPES SHALL BE RETROREFLECTIVE.
COLOR: BACKGROUND - WHITE (REFLECTORIZED)
DIAGONAL STRIPES - FLUORESCENT ORANGE (REFLECTORIZED)

IF BARRICADES ARE USED TO CHANNELIZE PEDESTRIANS, THERE SHALL BE CONTINUOUS DETECTABLE BOTTOM AND TOP RAILS WITH NO GAPS BETWEEN INDIVIDUAL BARRICADES TO BE DETECTABLE TO USERS OF LONG CANES. THE BOTTOM OF THE BOTTOM RAIL SHALL BE NO HIGHER THAN 6 INCHES ABOVE THE GROUND SURFACE. THE TOP OF THE TOP RAIL SHALL BE NO LOWER THAN 36 INCHES ABOVE THE GROUND SURFACE.

SIGNS MOUNTED ON TYPE III BARRICADES SHOULD NOT COVER MORE THAN 50 PERCENT OF THE TOP TWO RAILS OR 33 PERCENT OF THE TOTAL AREA OF THE THREE RAILS

SIGNS MOUNTED ON BARRICADES, OR OTHER PORTABLE SUPPORTS, SHALL BE NO LESS THAN 1' ABOVE THE TRAVELED WAY.

SANDBAGS MAY BE PLACED ON LOWER PARTS OF THE FRAME OR THE STAYS OF BARRICADES TO PROVIDE THE REQUIRED BALLAST.

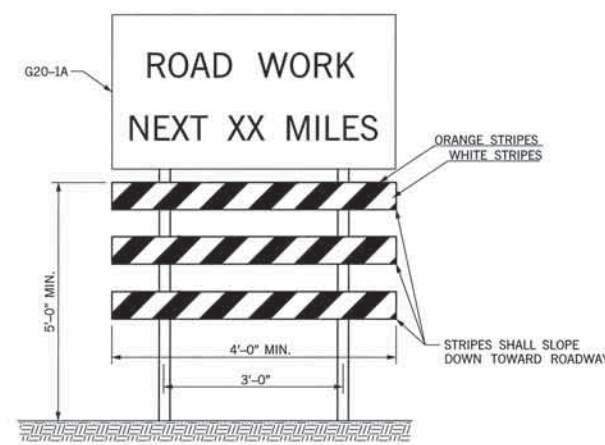
BALLAST SHALL NOT BE PLACED ON TOP OF ANY STRIPED RAIL. BARRICADES SHALL NOT BE BALLASTED BY NONDEFORMABLE OBJECTS SUCH AS ROCKS OR CHUNKS OF CONCRETE. BALLAST SHALL NOT EXTEND INTO THE ACCESSIBLE PASSAGE WIDTH OF 60".

DIRECTION INDICATOR BARRICADE SHALL CONSIST OF A ONE-DIRECTION LARGE ARROW (W1-6) SIGN MOUNTED ABOVE A DIAGONAL STRIPED, HORIZONTALLY ALIGNED, RETROREFLECTIVE RAIL.

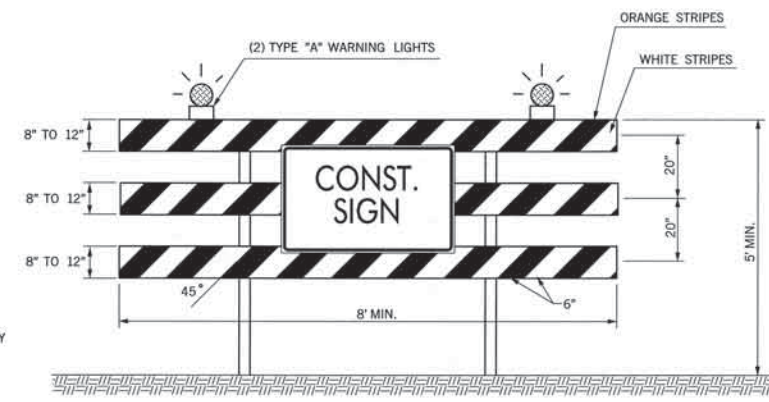
WHERE BARRICADES EXTEND ENTIRELY ACROSS A ROADWAY, THE STRIPES SHOULD SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH ROAD USERS MUST TURN.

WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED, THE BARRICADE STRIPES SHOULD SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE OR BARRICADES.

WHERE NO TURNS ARE INTENDED, THE STRIPES SHOULD BE POSITIONED TO SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.

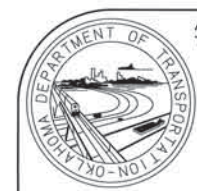


WING BARRICADE



TYPE III BARRICADE

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
880(B)	CONSTRUCTION SIGNS	SD
880(C)	CONSTRUCTION BARRICADES	SD
880(E)	WARNING LIGHTS	SD



APPROVED BY TRAFFIC ENGINEER: *[Signature]* DATE: 3/21/11

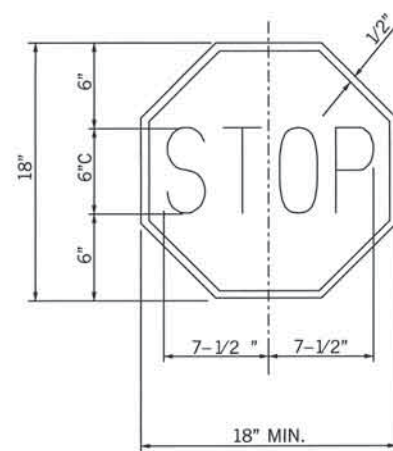
TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
TRAFFIC CONTROL DEVICES

2009 SPECIFICATIONS

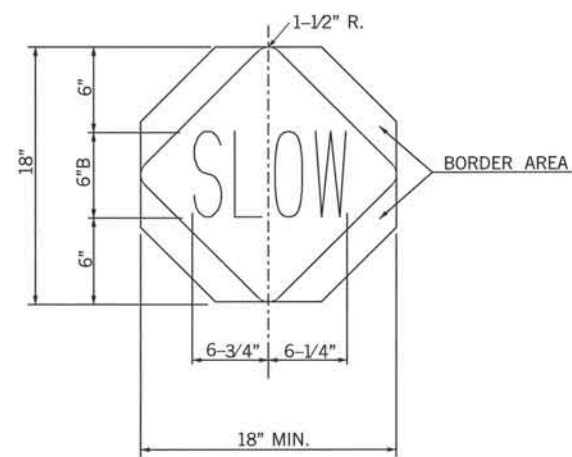
TCS4-1	01
T-504	

\$\$\$date\$\$\$

DESCRIPTION	REVISIONS	DATE

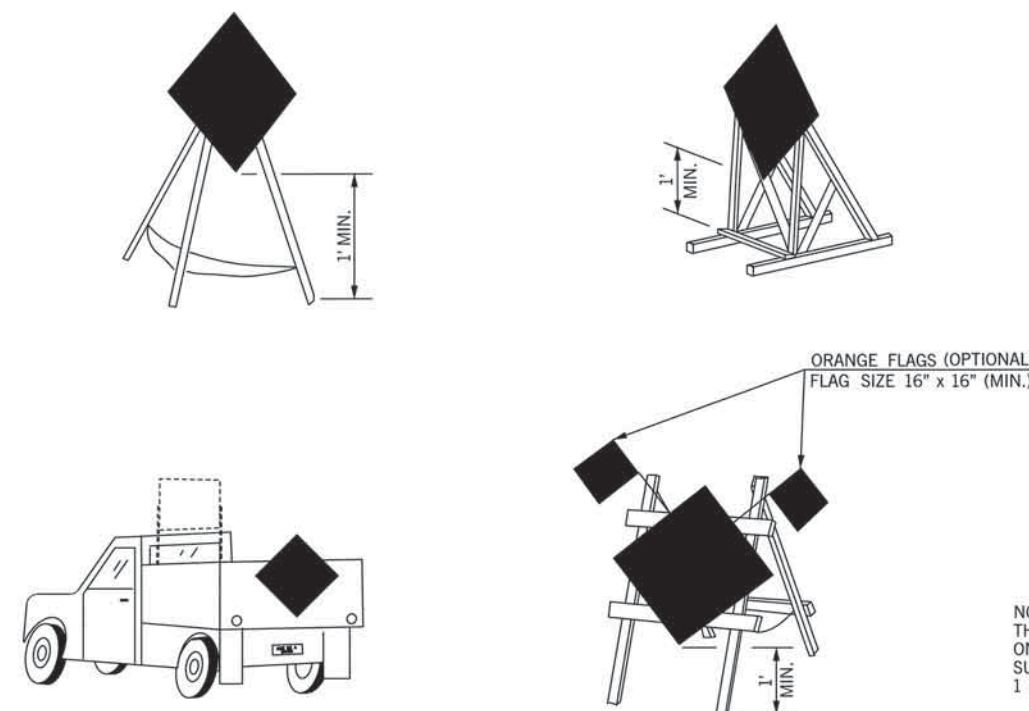


STOP:
 LEGEND AND BORDER: WHITE (REFLECTORIZED)
 BACKGROUND: RED (REFLECTORIZED)

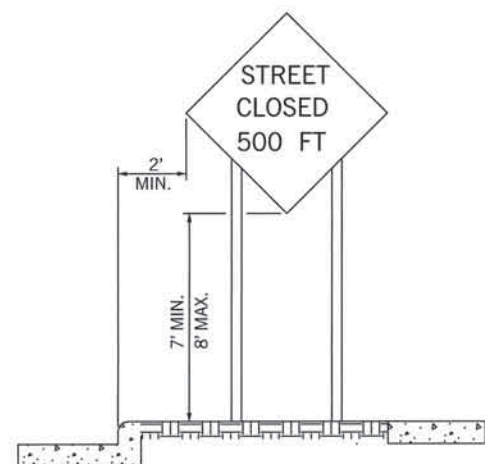


SLOW:
 LEGEND AND BORDER AREA: BLACK (NON-REFLECTORIZED)
 BACKGROUND: ORANGE (REFLECTORIZED)

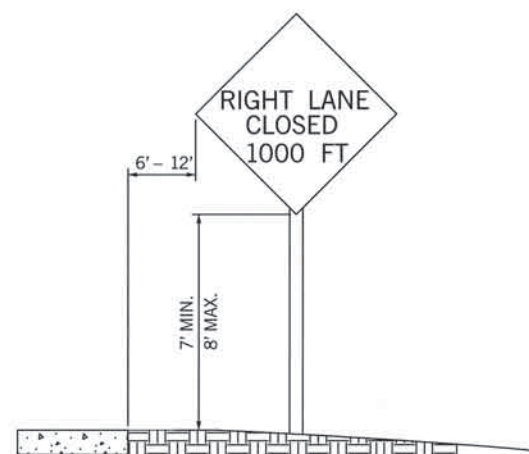
STOP-SLOW PADDLE



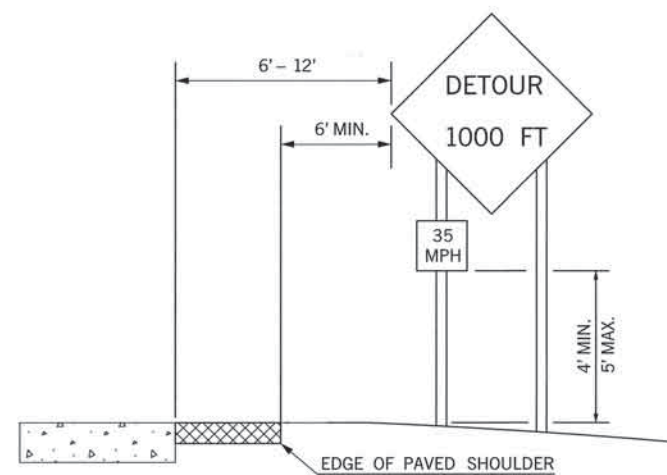
**PORTABLE AND TEMPORARY MOUNTINGS
 METHODS OF MOUNTING SIGNS OTHER THAN ON POSTS**



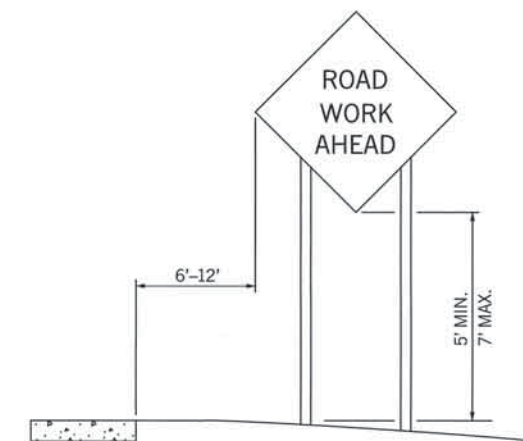
**URBAN DISTRICT
 (WITH CURB)**



**URBAN DISTRICT
 (WITHOUT CURB)**



**RURAL DISTRICT WITH
 ADVISORY SPEED PLATE**



RURAL DISTRICT

HEIGHT AND LATERAL LOCATIONS OF SIGNS – TYPICAL INSTALLATIONS

TRFFC36 M:\2009_Standards_TC\505.dgn 8:24:30 AM 6/23/2010 R:\TBAF_PLOT\teroy.pen R:\TBAF_PLOT\bw.ctb



APPROVED BY
 TRAFFIC ENGINEER: *David G. Smith* DATE: 6/23/10

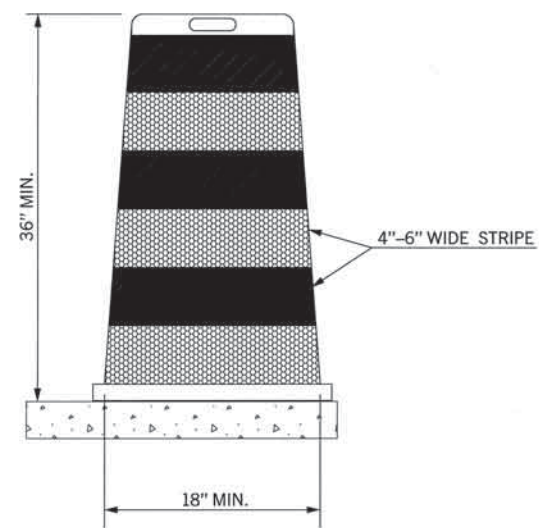
TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
 TYPICAL SIGN INSTALLATION

2009 SPECIFICATIONS

TCSS-1	00
T-505	

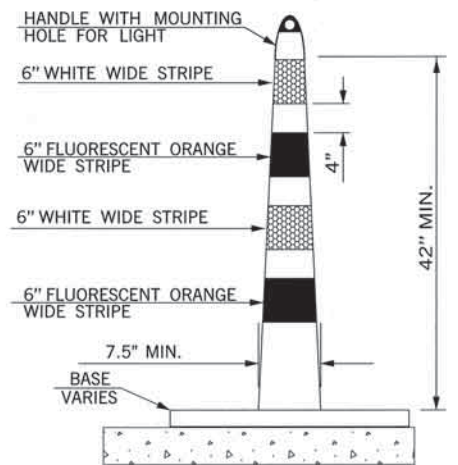
DESCRIPTION	REVISIONS	DATE
ADD NOTE TO VERTICAL PANEL		07/19/10
CHANGED TYPE 'C' LIGHT TO OPTIONAL		3/15/2011



DRUM

NOTES:

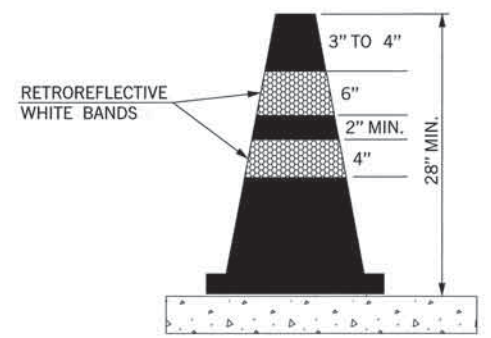
METAL DRUMS SHALL NOT BE USED.
 EACH DRUM SHALL HAVE A MINIMUM OF TWO (2) FLUORESCENT ORANGE STRIPES ALTERNATING WITH A MINIMUM OF TWO (2) WHITE STRIPES. THESE STRIPES SHALL CONSIST OF RETROREFLECTIVE SHEETING.
 BALLAST SHALL NOT BE PLACED ON TOP OF A DRUM.
 DRUMS SHALL NOT BE USED TO DELINEATE AN EDGE DROP OFF IF THEY MUST BE PLACED IN THE DROP OFF AREA BELOW THE LEVEL OF THE DRIVING SURFACE.



CHANNELIZER CONE

NOTES:

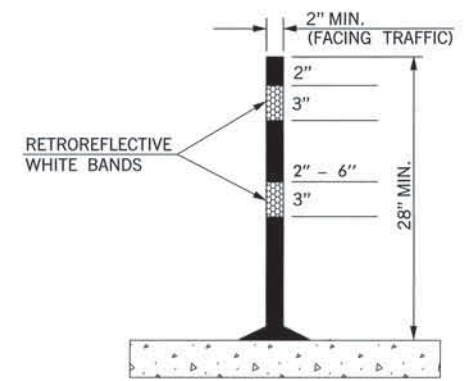
CHANNELIZER CONES USED ON HIGH SPEED ROADWAYS, ON ALL HIGHWAYS DURING NIGHTTIME, OR WHENEVER MORE CONSPICUOUS GUIDANCE IS NEEDED SHALL BE A MINIMUM OF 42 INCHES HIGH.
 EACH CHANNELIZER CONES SHALL HAVE A MINIMUM OF TWO (2) FLUORESCENT ORANGE STRIPES ALTERNATING WITH A MINIMUM OF TWO (2) WHITE STRIPES. THESE STRIPES SHALL CONSIST OF RETROREFLECTIVE SHEETING.
 BASE SHALL WEIGH 30 LBS. OR MORE.



CONE

NOTES:

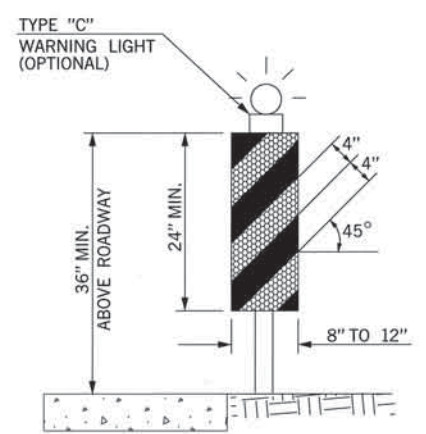
CONES USED ON HIGH SPEED ROADWAYS, ON ALL HIGHWAYS DURING NIGHTTIME, OR WHENEVER MORE CONSPICUOUS GUIDANCE IS NEEDED SHALL BE A MINIMUM OF 28 INCHES HIGH.
 CONES SHALL BE PREDOMINANTLY ORANGE, WITH WHITE RETROREFLECTIVE SHEETING.



TUBE CHANNELIZER

NOTES:

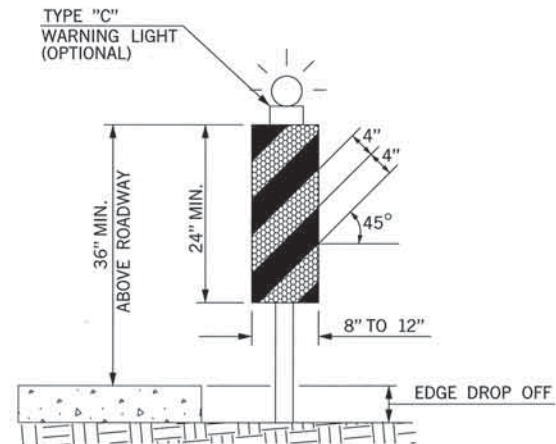
TUBE CHANNELIZERS USED ON HIGH SPEED ROADWAYS, ON ALL HIGHWAYS DURING NIGHTTIME, OR WHENEVER MORE CONSPICUOUS GUIDANCE IS NEEDED SHALL BE A MINIMUM OF 28 INCHES HIGH.
 TUBE CHANNELIZERS SHALL BE PREDOMINANTLY ORANGE, WITH WHITE RETROREFLECTIVE SHEETING.



VERTICAL PANEL W/O DROP OFF

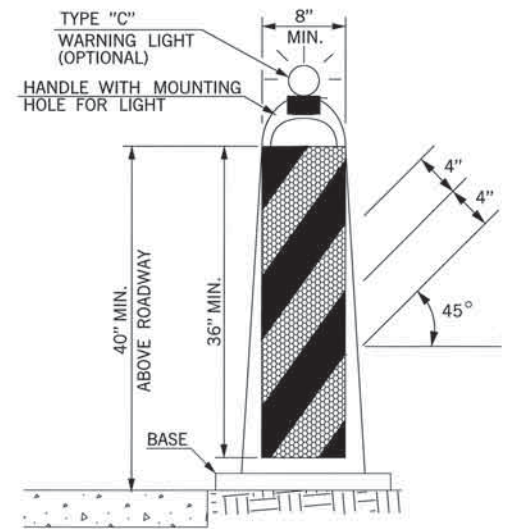
NOTES:

PANEL STRIPE WIDTHS SHALL BE 6 INCHES EXCEPT WHERE PANEL LENGTHS ARE LESS THAN 36 INCHES, THEN 4 INCH WIDE STRIPES MAY BE USED.
 MARKINGS FOR VERTICAL PANELS SHALL BE ALTERNATING FLUORESCENT ORANGE AND WHITE RETROREFLECTORIZED STRIPES (SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS).
 SHALL HAVE A MINIMUM OF TWO (2) FULL FLUORESCENT ORANGE STRIPES.



VERTICAL PANEL W/DROP OFF

ON UNDIVIDED HIGHWAYS, VERTICAL PANELS SHALL HAVE A MINIMUM OF 192 SQUARE INCHES OF RETROREFLECTIVE SHEETING ON EACH PANEL (FRONT AND BACK). WHEN USED ON HIGH SPEED ROADWAYS, VERTICAL PANELS SHALL HAVE MINIMUM OF 270 SQUARE INCHES OF RETROREFLECTIVE SHEETING ON EACH PANEL (FRONT AND BACK). THIS SHALL CONSTITUTE ONE (1) COMPLETE VERTICAL PANEL.
 ON DIVIDED HIGHWAYS A VERTICAL PANEL MAY HAVE SHEETING ON ONLY ONE SIDE.



STACKABLE VERTICAL PANEL

NOTES:

(1) VERTICAL PANEL SIGNS SHALL BE MOUNTED BACK TO BACK WHEN USED FOR TWO-WAY TRAFFIC.
 (2) BASE SHALL BE NO LARGER THAN 28" LONG BY 20" WIDE, AND 2" THICK.
 (3) BASE SHALL WEIGHT 30 LBS. OR MORE.
 (4) THESE DEVICES SHALL BE CONSTRUCTED OF A MATERIAL THAT CAN BE STRUCK WITHOUT DAMAGING VEHICLES ON IMPACT.

KEY:

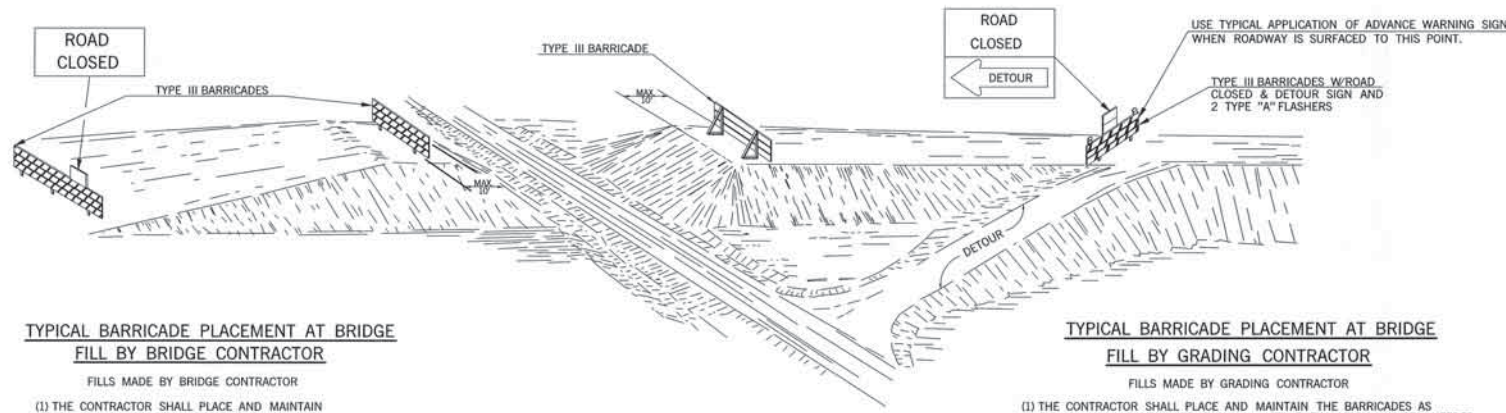
	FLUORESCENT ORANGE (REFLECTORIZED)
	WHITE (REFLECTORIZED)

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
880(D)	VERTICAL PANEL	SD
880(E)	WARNING LIGHTS	SD
880(F)	DRUMS	SD
880(G)	TUBE CHANNELIZERS	SD
880(H)	CONES	SD
880(I)	CHANNELIZER CONES	SD



APPROVED BY TRAFFIC ENGINEER: *[Signature]* DATE: 3/21/11

TRAFFIC STANDARD
 CHANNELIZING DEVICES

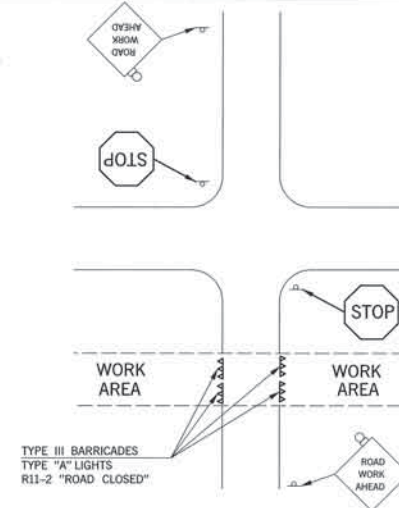


TYPICAL BARRICADE PLACEMENT AT BRIDGE FILL BY BRIDGE CONTRACTOR

- FILLS MADE BY BRIDGE CONTRACTOR
- (1) THE CONTRACTOR SHALL PLACE AND MAINTAIN THE BARRICADES AS SHOWN UNTIL THEY ARE NO LONGER NEEDED.
 - (2) THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO REMOVAL OF THE BARRICADES.
 - (3) THE ENGINEER SHALL NOTIFY THE GRADING CONTRACTOR TO FURNISH AND ERECT HIS BARRICADES "IMMEDIATELY" AFTER THE BRIDGE CONTRACTOR REMOVES HIS BARRICADES. THE GRADING CONTRACTOR SHALL MAINTAIN HIS BARRICADES UNTIL FINAL INSPECTION OR UNTIL THEY ARE NO LONGER NEEDED.
 - (4) BARRICADES AT BRIDGE FILL SHALL BE IN PLACE AND MAINTAINED AT ALL TIMES UNTIL OPENED TO TRAFFIC. HOWEVER, BARRICADES MAY BE REMOVED OR ADJUSTED, AS NEEDED, TO ALLOW ACCESS TO THE WORK AREA.

TYPICAL BARRICADE PLACEMENT AT BRIDGE FILL BY GRADING CONTRACTOR

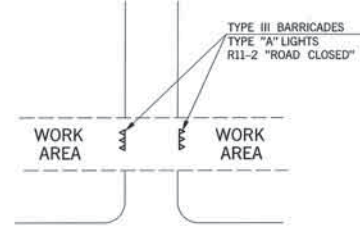
- FILLS MADE BY GRADING CONTRACTOR
- (1) THE CONTRACTOR SHALL PLACE AND MAINTAIN THE BARRICADES AS SHOWN UNTIL FINAL INSPECTION OR UNTIL THEY ARE NO LONGER NEEDED.
 - (2) THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO REMOVAL OF THE BARRICADES.
 - (3) IF THE BRIDGE WORK ORDER IS ISSUED PRIOR TO COMPLETION OF THE GRADING CONTRACT, THE BRIDGE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE GRADING CONTRACTOR TO ASSUME RESPONSIBILITY FOR PROTECTION OF THE BRIDGE WORK AREA. THIS WILL INCLUDE FURNISHING, INSTALLING, AND MAINTAINING ALL BARRICADES AND SIGNS NECESSARY TO PROVIDE THAT PROTECTION UNTIL THE BRIDGE IS COMPLETED AND THE FINAL INSPECTION IS COMPLETED.
 - (4) IF THE BRIDGE WORK ORDER HAS NOT BEEN ISSUED PRIOR TO THE FINAL INSPECTION OF THE GRADING, THEN THE GRADING CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION FOR STATE FORCES TO SUPPLY, INSTALL AND MAINTAIN ANY NECESSARY TRAFFIC CONTROL DEVICES NEEDED TO PROTECT THE WORK AREA. THESE STATE OWNED DEVICES SHALL REMAIN IN PLACE UNTIL SUCH TIME THAT THE BRIDGE WORK ORDER IS ISSUED. AT THAT TIME THE BRIDGE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR TRAFFIC CONTROL AND REPLACE THE STATE OWNED DEVICES WITH HIS OWN.
 - (5) SUFFICIENT NUMBER OF TYPE II BARRICADES WITH SIGNS SHALL BE USED TO COMPLETELY CLOSE THE WORK AREA TO THROUGH TRAFFIC.
 - (6) BARRICADES AT BRIDGE FILL SHALL BE IN PLACE AND MAINTAINED AT ALL TIMES UNTIL OPENED TO TRAFFIC. HOWEVER, BARRICADES MAY BE REMOVED OR ADJUSTED, AS NEEDED, TO ALLOW ACCESS TO THE WORK AREA.



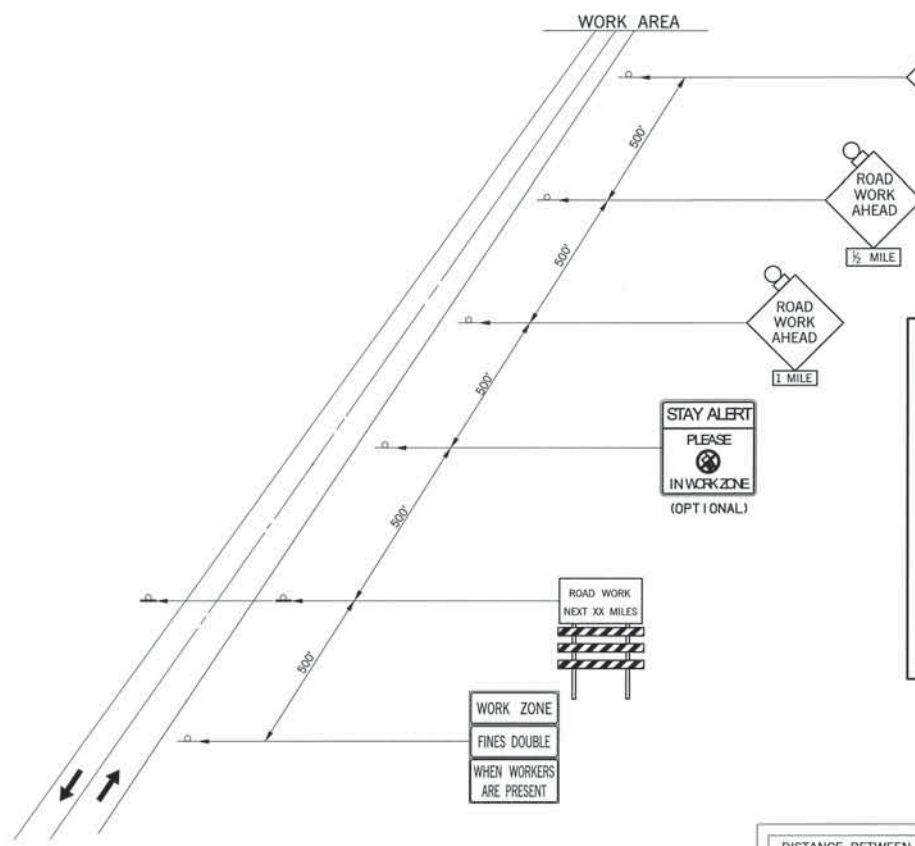
TYPICAL SIGN PLACEMENT FOR INTERSECTING ROADS AND STREETS

DESCRIPTION	REVISIONS	DATE
MODIFIED NOTE		3/16/2011
ADD "NO CELL PHONE" USAGE IN WORK ZONE DISTANCE SIGN TO WARNING SIGNS		4/2/2013

- NOTES:
- (1) SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
 - (2) FLASHING WARNING LIGHTS SHALL BE USED TO CALL ATTENTION TO THE EARLY WARNING SIGNS.
 - (3) WARNING LIGHTS SHOULD BE USED TO MARK CHANNELIZING DEVICES AT NIGHT AS NEEDED.
 - (4) PLACEMENT OF TYPE III BARRICADES SHALL BE APPROVED BY THE ENGINEER.
 - (5) TYPE II BARRICADES, DRUMS AND/OR VERTICAL PANELS MAY BE SUBSTITUTED FOR TYPE III BARRICADES TO AVOID OBSTRUCTING THE MOTORIST'S VIEW.
 - (6) IF TWO OR MORE DRIVEWAYS ARE IN CLOSE PROXIMITY, THE BARRICADES BETWEEN THE DRIVEWAYS MAY BE OMITTED AT THE DISCRETION OF THE ENGINEER.
 - (7) THE "ROAD WORK AHEAD" SIGN, WHICH SERVES AS A GENERAL WARNING OF OBSTRUCTIONS OR RESTRICTIONS, SHALL BE LOCATED ON ALL INTERSECTING ROADS AND STREETS.



TYPICAL SIGN PLACEMENT FOR PRIVATE DRIVE OR RESIDENCE



TYPICAL APPLICATION ADVANCE WARNING SIGNS ON 2-LANE HIGHWAY

TYPICAL CONSTRUCTION WARNING SIGNS WITH MESSAGES OTHER THAN DETAILED ON STANDARD DRAWINGS SHALL BE CONSTRUCTED USING THE LARGEST POSSIBLE LETTER SIZE. SIGN SIZE AND COLOR SHALL BE THE SAME AS OTHER CONSTRUCTION WARNING SIGNS USED FOR SIMILAR CONDITIONS.

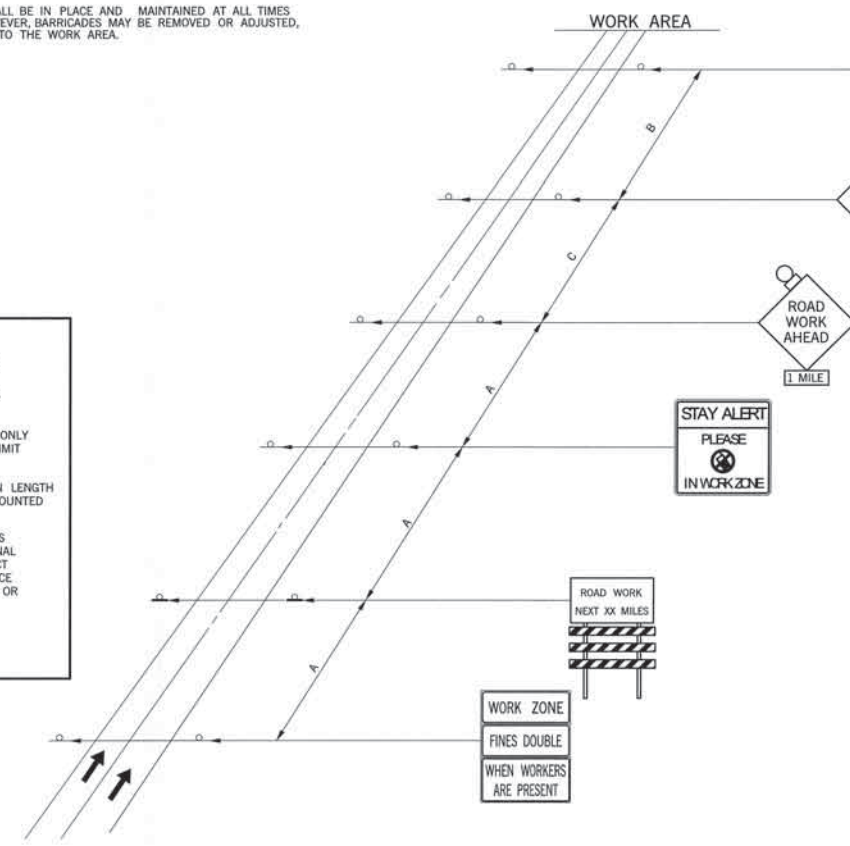
FINES DOUBLE IN WORK ZONE SIGNS ARE TO BE USED ONLY ON STATE OR FEDERAL HIGHWAYS WHERE THE SPEED LIMIT IS REDUCED OR AS DIRECTED BY THE ENGINEER.

PROJECTS WITH WORK LIMITS OF 1.0 MILES OR MORE IN LENGTH WILL REQUIRE THE Q20-1A SIGN. THE SIGN SHALL BE MOUNTED AS SHOWN ON TCS4-1 (LATEST REVISION).

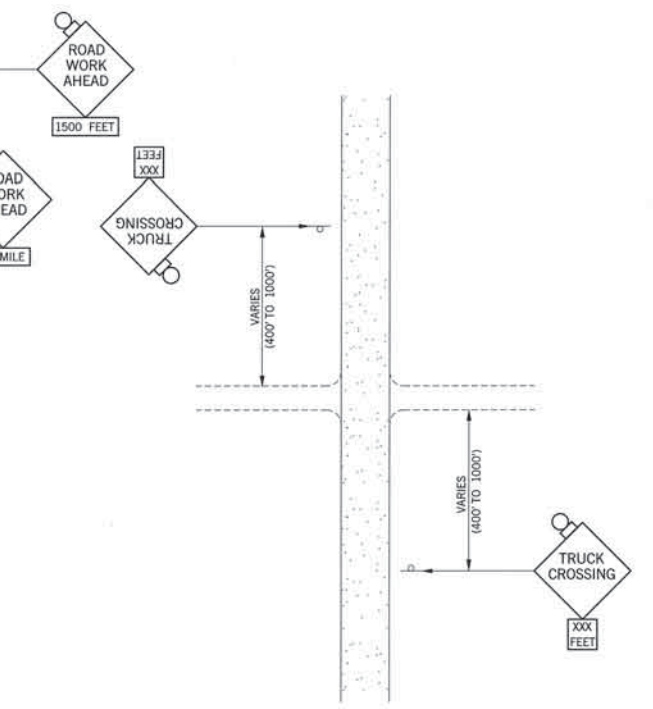
WARNING SIGNS SHOWN ARE "ADVANCE" WARNING SIGNS AND ARE REQUIRED ON ALL STATE HIGHWAYS. ADDITIONAL WARNING SIGNS MAY BE REQUIRED WITHIN THE PROJECT LIMITS TO WARN DRIVERS OF SPECIFIC HAZARDS. ADVANCE "WARNING SIGNS" MAY CHANGE AS CONDITIONS CHANGE OR AS DIRECTED BY THE ENGINEER.

PROJECT WORK OF 1.0 MILE OR MORE IN LENGTH WILL REQUIRE SIGNS CS-14 AND R2-1 TO BE PLACED EVERY 1/2 MILE THROUGH WORK ZONE.

ROAD TYPE	DISTANCE BETWEEN SIGNS SHALL BE A (MIN.)		
	A (FT)	B (FT)	C (FT)
URBAN (LOW SPEED)	100	100	100
URBAN (HIGH SPEED)	350	350	350
RURAL	500	500	500
EXPRESSWAY /FREEWAY	1,000	1,500	2,640



TYPICAL APPLICATION ADVANCE WARNING SIGNS ON A DIVIDED HIGHWAY



TYPICAL APPLICATION ADVANCE SIGNING WHERE TRUCKS ARE CROSSING



APPROVED BY TRAFFIC ENGINEER: *David S. ...* DATE: 4/18/2013

TRAFFIC STANDARD TRAFFIC CONTROL STANDARD PLACEMENT OF ADVANCE WARNING SIGNS

2009 SPECIFICATIONS

TCS7-1	02
	T-507

SSdateSS



ROAD CLOSED

R11-2 48 x 30 10.00 SF

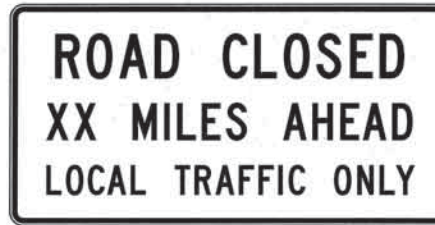
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



LANE CLOSED

R11-2(LANE) 48 x 30 10.00 SF

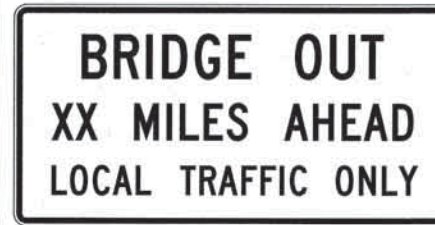
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



ROAD CLOSED XX MILES AHEAD

R11-3a 60 x 30 12.50 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



BRIDGE OUT XX MILES AHEAD

R11-3b 60 x 30 12.50 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



ROAD CLOSED TO THRU TRAFFIC

R11-4 60 x 30 12.50 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



DETOUR SIGN

M4-8 24 x 12 2.00 SF
M4-8E 30 x 15 3.13 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



DETOUR SIGN

M4-9(R) 30 x 24 5.00 SF
M4-9(R)E 48 x 36 12.00 SF
M4-9(R)F 60 x 48 20.00 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



DETOUR SIGN

M4-9(L) 30 x 24 5.00 SF
M4-9(L)E 48 x 36 12.00 SF
M4-9(L)F 60 x 48 20.00 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



DETOUR SIGN

M4-9(V) 30 x 24 5.00 SF
M4-9(V)E 48 x 36 12.00 SF
M4-9(V)F 60 x 48 20.00 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



DETOUR SIGN

M4-10(R) 48 x 18 6.00 SF

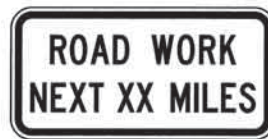
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



DETOUR SIGN

M4-10(L) 48 x 18 6.00 SF

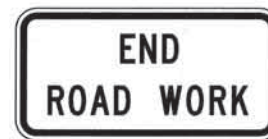
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



ROAD WORK NEXT XX MILES SIGN

G20-1A 36 x 18 4.50 SF

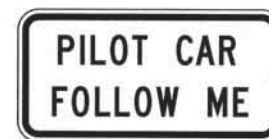
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



END ROAD WORK SIGN

G20-2A 36 x 18 4.50 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



PILOT CAR FOLLOW ME SIGN

G20-4 36 x 18 4.50 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)

NOTES:
WORD SIGNS MAY BE USED IF SYMBOL SIGNS ARE NOT AVAILABLE EITHER IN "STANDARD HIGHWAY SIGNS MANUAL" OR IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) (CURRENT EDITION).

ALL DIAMOND SHAPE CONSTRUCTION WARNING SIGNS SHALL BE 48 INCHES X 48 INCHES UNLESS OTHERWISE NOTED IN THE PLANS.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
880(B)	CONSTRUCTION SIGNS	SD



APPROVED BY
TRAFFIC ENGINEER: *David Gandy* DATE: 3/21/11

TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS9-1 01
T-509

DESCRIPTION	REVISIONS	DATE



ROAD WORK SIGN

W20-1 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



DETOUR SIGN

W20-2 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



ROAD CLOSED SIGN

W20-3 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



STREET CLOSED SIGN

W20-3A 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



ONE LANE ROAD SIGN

W20-4 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



LEFT LANE CLOSED SIGN

W20-5(L) 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



RIGHT LANE CLOSED SIGN

W20-5(R) 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



FLAGGER SIGN

W20-7 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



FLAGGER SIGN

W20-7a 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



WORKERS SIGN

W21-1 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



FRESH OIL SIGN

W21-2 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)



ROAD MACHINERY AHEAD SIGN

W21-3 48 x 48 16.00 SF
 COLOR:
 LEGEND AND BORDER:
 BLACK (NON-REFLECTORIZED)
 BACKGROUND:
 FLUORESCENT ORANGE (REFLECTORIZED)

NOTES:
 WORD SIGNS MAY BE USED IF SYMBOL SIGNS ARE NOT AVAILABLE EITHER IN "STANDARD HIGHWAY SIGNS MANUAL" OR IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) (CURRENT EDITION).

ALL DIAMOND SHAPE CONSTRUCTION WARNING SIGNS SHALL BE 48 INCHES X 48 INCHES UNLESS OTHERWISE NOTED IN THE PLANS.

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUNCTION WITH DIAMOND SHAPE CONSTRUCTION WARNING SIGNS. THE SIZE OF SUPPLEMENTAL SIGNS SHALL BE APPROPRIATE FOR USE WITH A 48 INCH x 48 INCH WARNING SIGN UNLESS OTHERWISE NOTED IN THE PLANS.

TRFPC36 MA\2009_Standard\TC-1514.dgn 8:37:49 AM 6/23/2010 RA\TRAF_PLOT\Veroy.pen RA\TRAF_PLOT\dw.ctb

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
880(B)	CONSTRUCTION SIGNS	SD



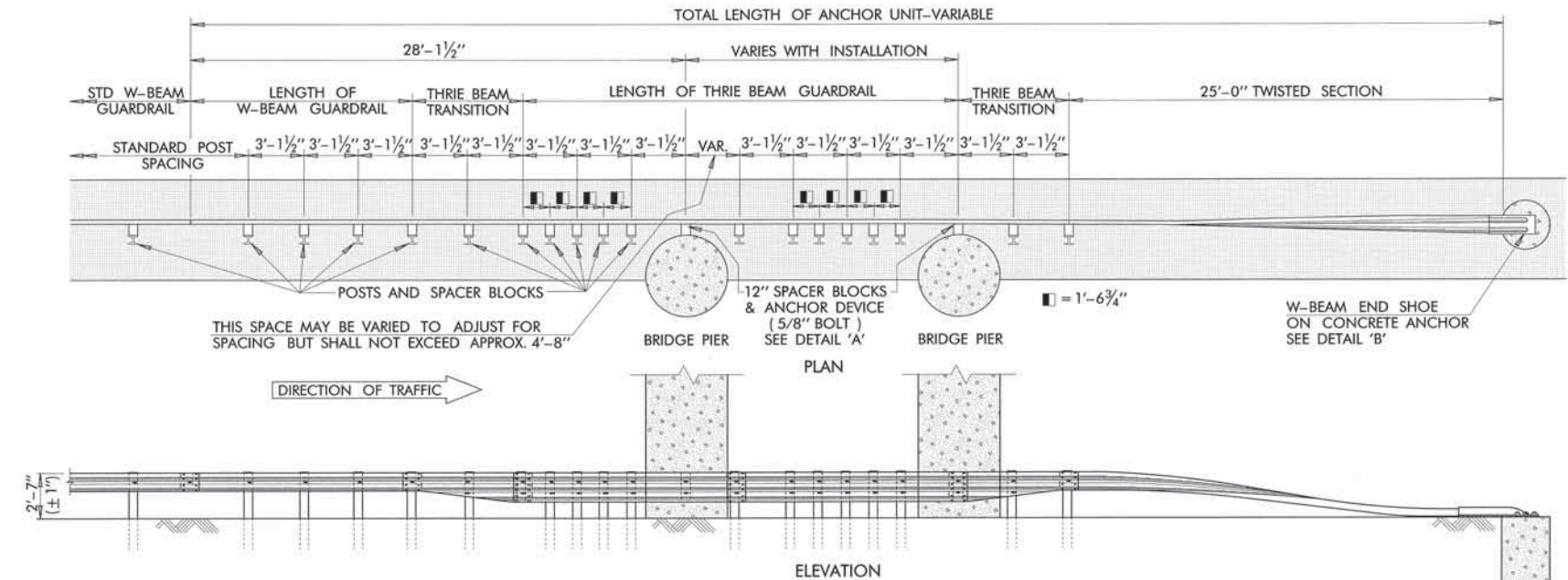
APPROVED BY
 TRAFFIC ENGINEER: *David Smith* DATE: 6/23/10

TRAFFIC STANDARD
 TRAFFIC CONTROL STANDARD
 CONSTRUCTION SIGNS

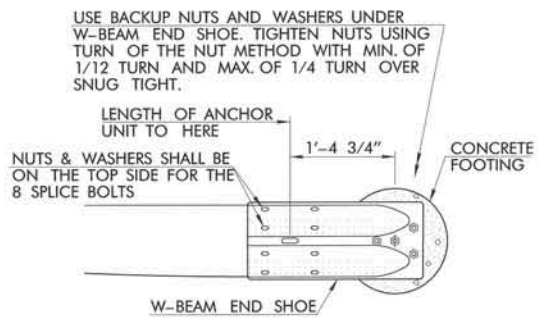
2009 SPECIFICATIONS

TCS14-1	00
T-514	

DESCRIPTION	REVISIONS	DATE



GUARDRAIL SYSTEM - PIER PROTECTION

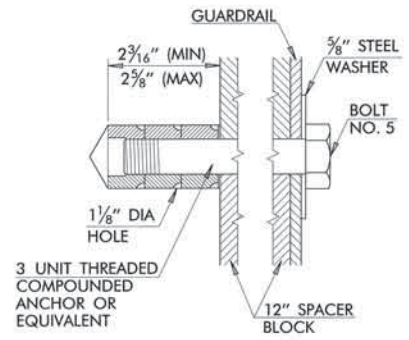


FOUR 7/8" DIA. x 18" LONG HIGH STRENGTH HEX-HEAD BOLTS WITH WASHER AND NUT. BOLTS SHALL PROTRUDE 1/2" FROM TOP SURFACE OF FOOTING.

6" x 6" W1.5 x W1.5 WELDED WIRE FABRIC REINFORCEMENT, 48" x 12" DIA. WITH 6" OVERLAP

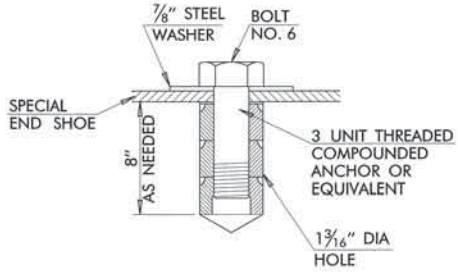
CLASS A CONCRETE FOOTING 18" DIA. X 4'-6" DEEP. SHAPE TOP TO MATCH GRADE.

GROUND ANCHOR FOOTING DETAIL



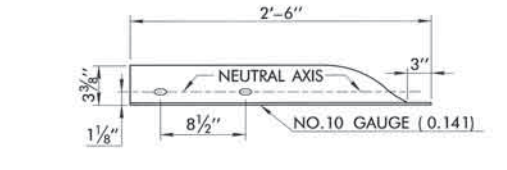
DETAIL 'A' ANCHOR DEVICE (5/8" BOLT)

USE WHEN CONNECTION IS MADE TO ROUND PIERS.



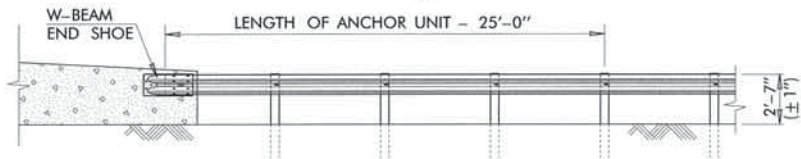
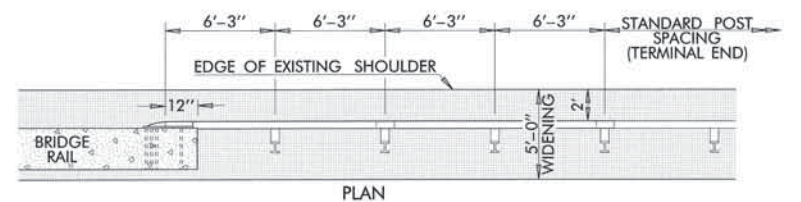
DETAIL 'B' ANCHOR DEVICE (7/8" BOLT)

USE TO ANCHOR SPECIAL END SHOE TO THE BRIDGE PIER, BRIDGE CURB, OR TO CONCRETE PARAPET IN LIEU OF BOLTS THROUGH THE PARAPET.



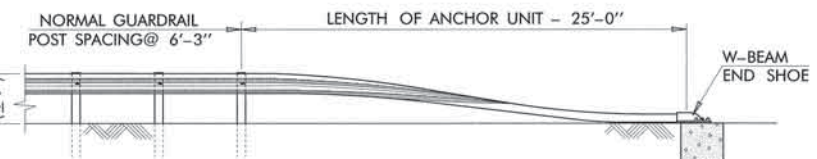
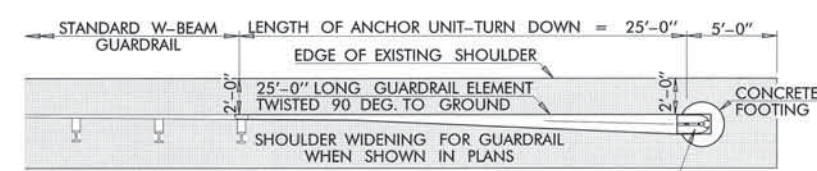
W-BEAM TERMINAL CONNECTION (END SHOE)

4 - 1" HOLES FOR 7/8" DIA. BOLTS WITH NUTS AND STEEL WASHERS.



GUARDRAIL BRIDGE CONN - TRAIL END

NOTE: GUARDRAIL ANCHOR UNIT-BRIDGE LEAVE END, SHOULD ONLY BE USED AT EXITING ENDS OF ONE WAY BRIDGES ALONG ONE WAY ROADS.



GUARDRAIL TRAIL END TURNDOWN

NOTE: GUARDRAIL ANCHOR UNIT-TURN DOWN, SHOULD ONLY BE USED AT EXITING ENDS OF GUARDRAIL ALONG ONE WAY ROADS.

- GENERAL NOTES**
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ENGLISH STANDARD SPECIFICATIONS.
 - GUARDRAIL POST HOLES DRILLED THROUGH THE APPROACH SLAB, CURB, OR DRAIN SHALL BE RESTORED TO THE ORIGINAL SHAPE OF THE SLAB, CURB, OR DRAIN WITH CONCRETE IN A MANNER APPROVED BY THE ENGINEER WITH COST TO BE INCLUDED IN OTHER ITEMS OF WORK.
 - EXTRA LENGTH POSTS OR ADDITIONAL COMPACTED EARTH MAY BE REQUIRED NEAR BRIDGE AS DIRECTED BY THE ENGINEER. SPECIAL BLOCKOUT MAY BE REQUIRED.
 - GUARDRAIL COMPONENTS SHALL MEET NCHRP 350 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 268 B.
 - ALL ANCHOR UNITS SHALL INCLUDE GUARDRAIL, ALL HARDWARE AND OTHER APPURTENANCES NECESSARY TO CONSTRUCT UNIT.

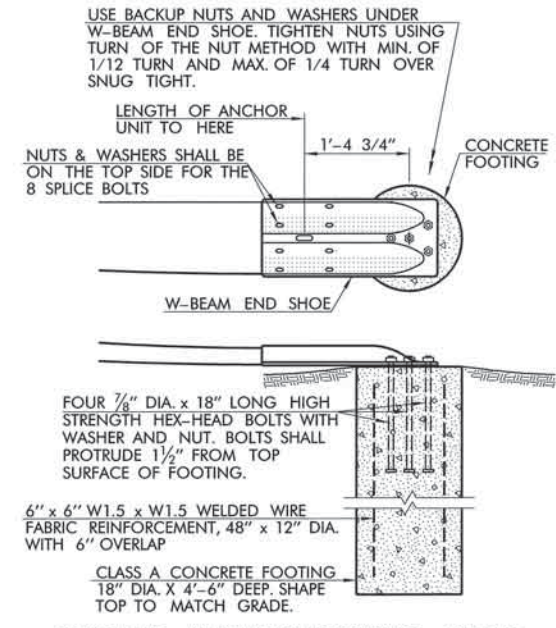
BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
623 (F)	GUARDRAIL BRIDGE CONN-TRAIL END (31")	EA.
623 (F)	GUARDRAIL TRAIL END TURNDOWN (31")	EA.
623 (J)	GUARDRAIL SYSTEM-PIER PROTECTION (31")	EA.



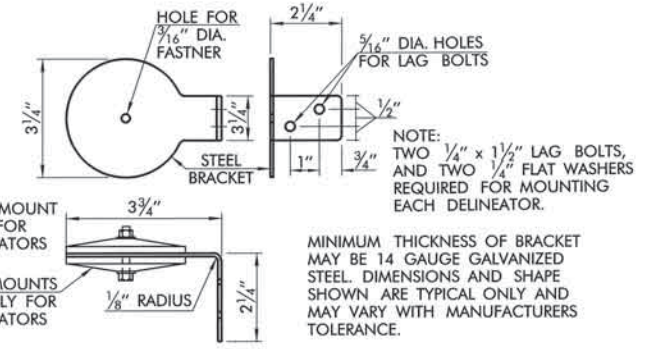
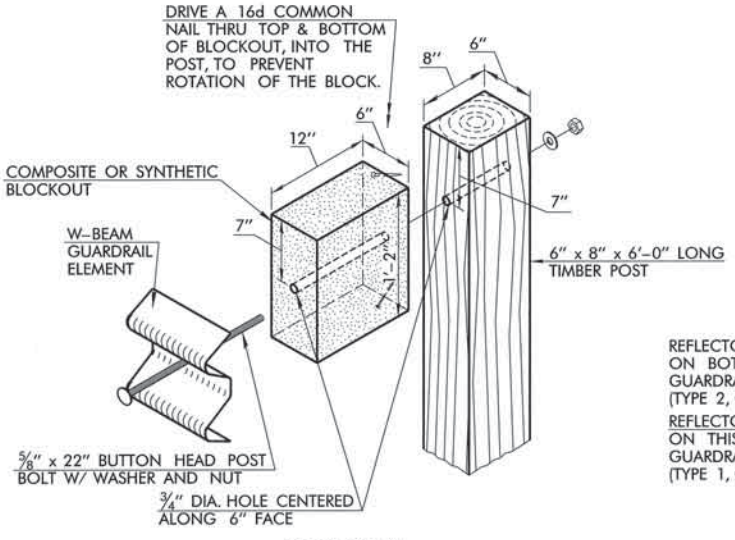
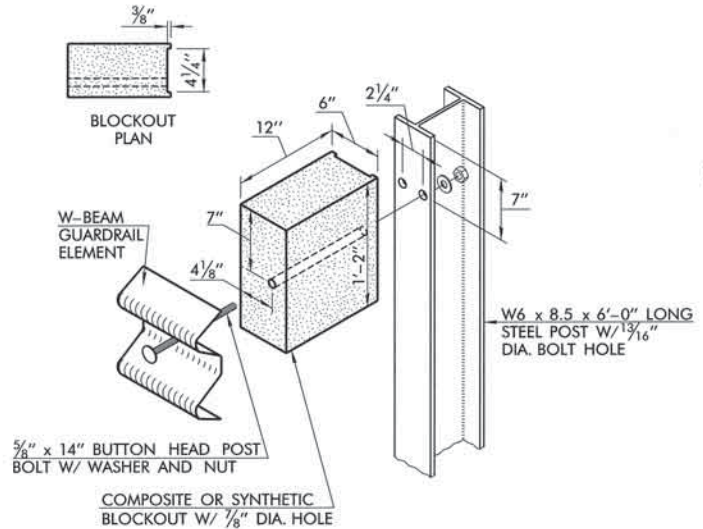
APPROVED BY TRAFFIC ENGINEER: *David Smith* DATE: 4/9/12

TRAFFIC STANDARD
GUARDRAIL ANCHOR UNITS
(31" SYSTEM)

REVISIONS	DATE
DESCRIPTION	

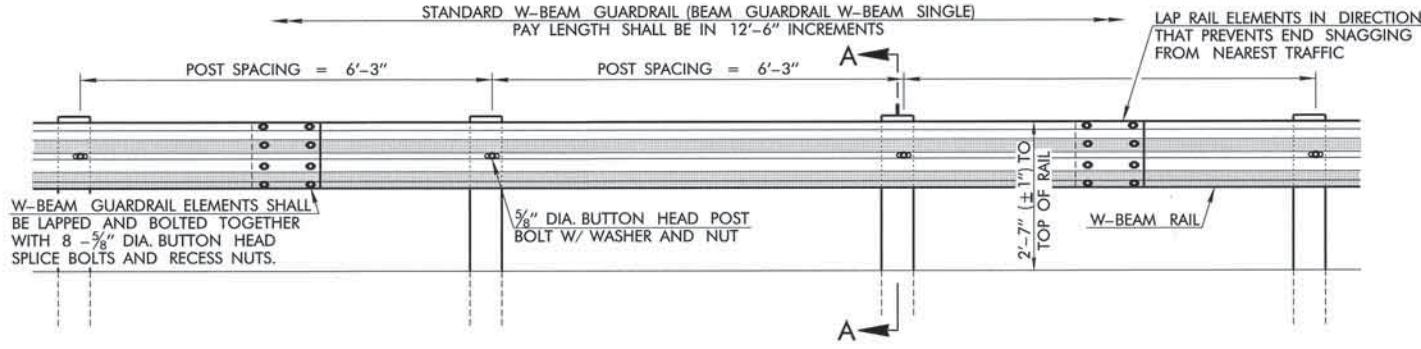


GROUND ANCHOR FOOTING DETAIL

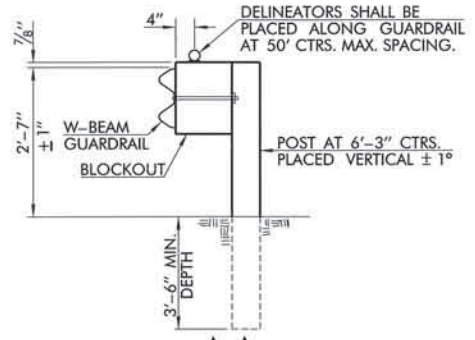


TYPICAL BRACKET FOR MOUNTING 3/4" ROUND DELINEATOR TO GUARD RAIL BLOCKOUT

CONTRACTOR MAY USE ALTERNATE DELINEATORS LISTED ON TRAFFIC ENGINEERING DIVISIONS QUALIFIED PRODUCTS LIST (QPL). THE USE OF ALTERNATE DELINEATORS (NOT DESCRIBED IN THIS STANDARD) MUST BE APPROVED BY THE RESIDENT ENGINEER.



STANDARD W-BEAM GUARDRAIL ELEVATION

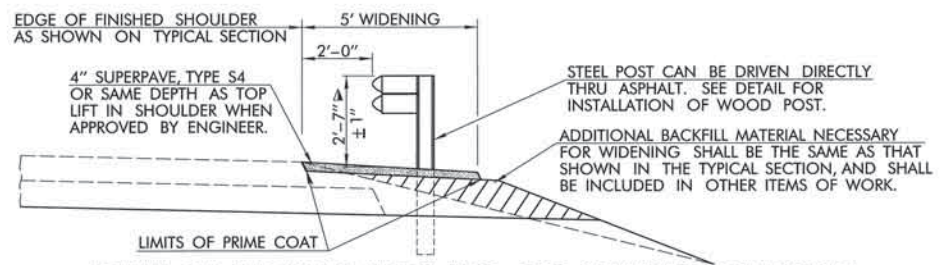


OPTIONAL TYPE POSTS OR BLOCKOUTS FOR STANDARD GUARDRAIL

THE CONTRACTOR MAY, AT HIS OPTION, SELECT AND USE ONE OF THE TYPE POSTS AND BLOCKOUTS SHOWN ABOVE, OR AN APPROVED ALTERNATE. THIS POST & BLOCKOUT CHOICE MUST BE USED ON THE ENTIRE PROJECT. ALTERNATE POST (INCLUDING SPECIAL SHAPES) MAY BE USED UPON THE APPROVAL OF THE ENGINEER. ALTERNATE BLOCKOUTS SUCH AS WOOD MAY BE USED IF PRODUCT HAS BEEN EVALUATED AND APPROVED BY ODOT.

GENERAL NOTES

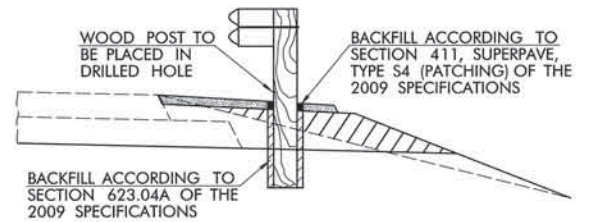
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- STANDARD GUARDRAIL WITH 6'-3" POST SPACING MEETS NHCPR-350, TEST LEVEL 3. IF A RIGID HAZARD IS TO BE LEFT BEHIND THE GUARDRAIL, WITHIN 3'-0" OF THE RAIL, CONSIDER USING A DIFFERENT TREATMENT.
- IF OPTIONAL WOOD POSTS AND BLOCKOUTS ARE USED, THEN THEY SHALL BE STRESS GRADE 1200F.
- ALL STANDARD GUARDRAIL AND GUARDRAIL EXTRUDER TERMINALS SHALL BE OFFSET SO THAT RAIL FACE IS TWO FEET OUTSIDE THE SHOULDER. FOR TRANSITION FROM BRIDGE RAIL TO TWO FOOT OFFSET, BEGINNING AT THE GUARDRAIL BRIDGE CONNECTION, TRANSITION THE STANDARD GUARDRAIL, AT A 30:1 TAPER, UNTIL THE RAIL REACHES THE OFFSET DISTANCE.
- ALL GUARDRAIL, METAL POSTS, PLATES AND HARDWARE SHALL BE GALVANIZED AFTER FABRICATION.
- ANY FIELD CUTS OR HOLES DRILLED IN GALVANIZED MATERIALS SHALL BE COATED WITH A ZINC OXIDE PAINT. SEE SECTION 730 OF THE 2009 SPECIFICATIONS.
- GUARDRAIL DELINEATORS (TYPE 2, CODE 1) WILL BE REQUIRED FOR ALL TWO-LANE ROADWAYS. ALL OTHER ROADWAYS WILL REQUIRE GUARDRAIL DELINEATORS (TYPE 1, CODE 1).



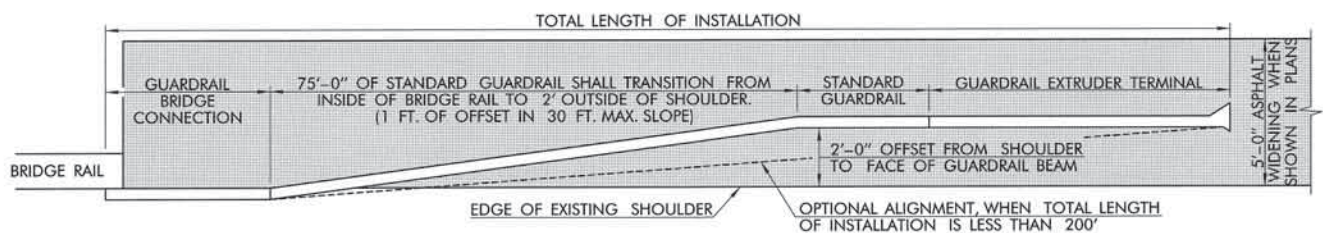
DETAIL OF SHOULDER WIDENING FOR STANDARD GUARDRAIL

MEASURE FROM TOP OF RAIL, GUARDRAIL TO BE INSTALLED WITH THIS DIMENSION. WHEN INSTALLING GUARDRAIL IN AN AREA WITH NO SHOULDER WIDENING, THE RAIL HEIGHT SHALL BE MEASURED AS FOLLOWS:

- FOR NEGATIVE GRADE SHOULDERS, MEASURE TO A LINE FROM THE SHOULDER ON THE SAME SLOPE AS THE SHOULDER.
- FOR POSITIVE GRADE & LEVEL SHLDRS, MEASURE FROM A LINE LEVEL WITH THE EDGE OF SHOULDER.



INSTALLATION OF WOOD POST IN ASPHALT WIDENING



TYPICAL GUARDRAIL INSTALLATION AT BRIDGE

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
623(A)	BEAM GUARDRAIL W-BEAM SINGLE	L.F.
623(F)	GUARDRAIL TRAIL END TURNDOWN (31")	EA.
853	GUARDRAIL DELINEATORS (TYPE 1, CODE 1)	EA.
853	GUARDRAIL DELINEATORS (TYPE 2, CODE 1)	EA.

NOTE: PAY ITEM GUARDRAIL ANCHOR UNIT-TURN DOWN INCLUDES ALL LABOR AND MATERIALS TO INSTALL 25'-0" TWISTED RAIL ELEMENT, W-BEAM END SHOE, CONC. FOOTING, AND FOUR ANCHOR BOLTS.

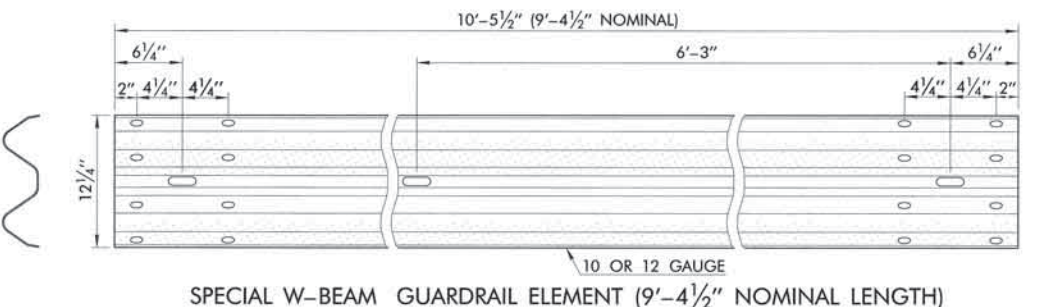
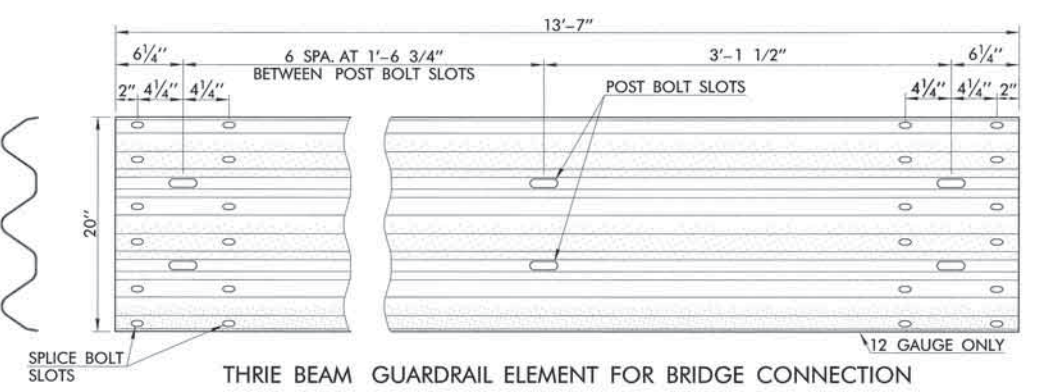
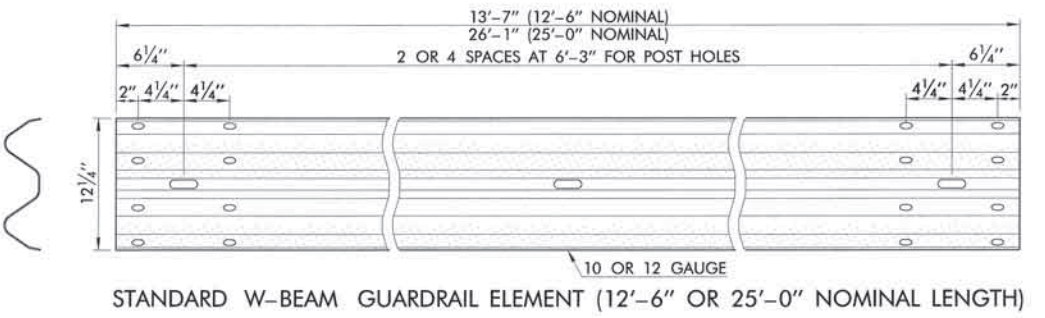
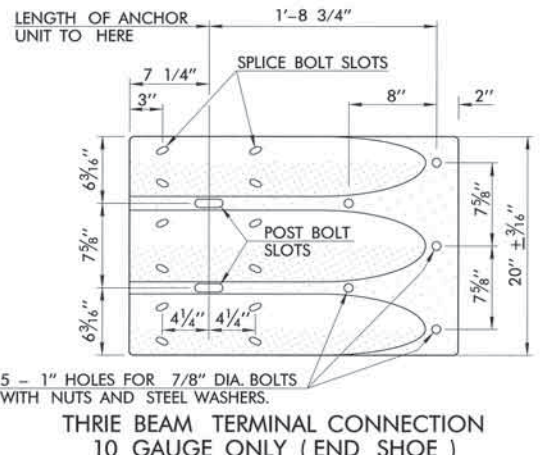
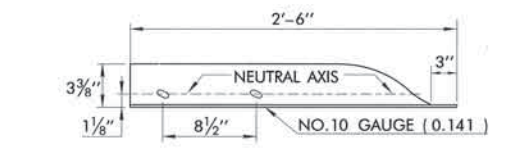
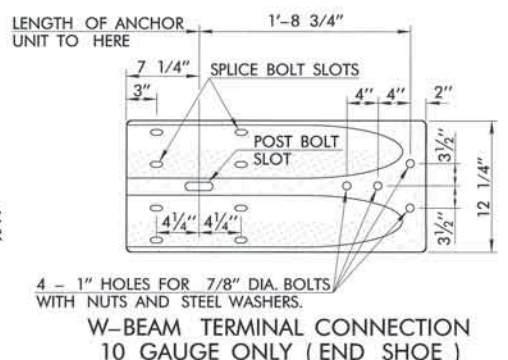
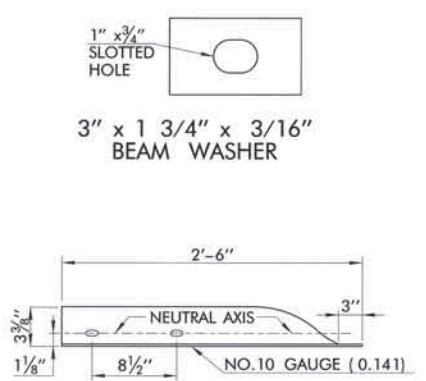
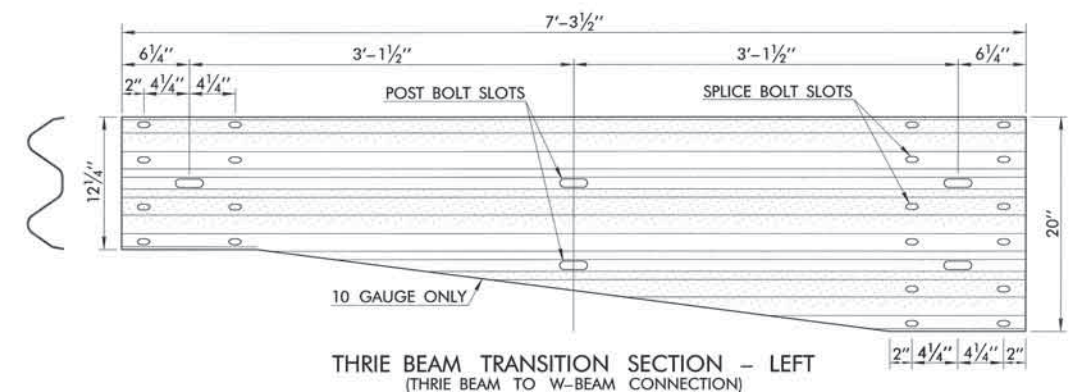
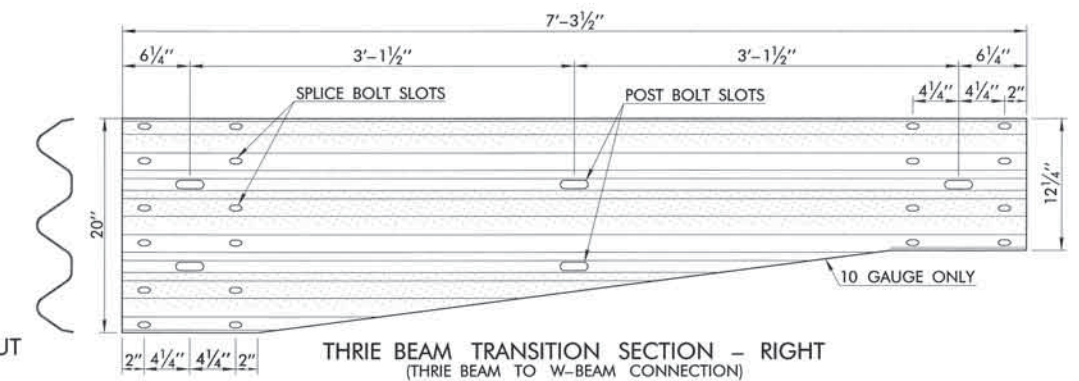
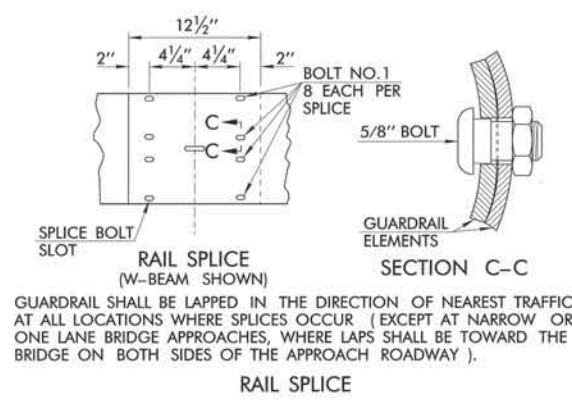
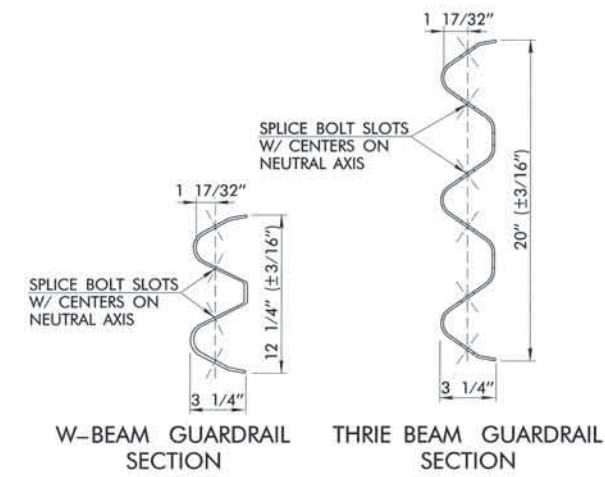
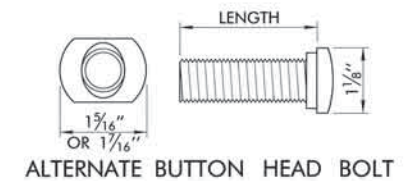
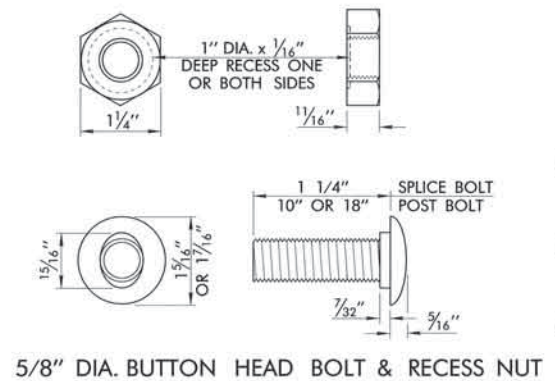


APPROVED BY TRAFFIC ENGINEER: *[Signature]* DATE: 4/9/2012

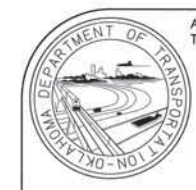
TRAFFIC STANDARD
GUARDRAIL AND HARDWARE
(1 OF 2)
(31" SYSTEM)

2009 SPECIFICATIONS

DESCRIPTION	REVISIONS	DATE



- GENERAL NOTES**
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 2. ALL GUARDRAIL BEAMS, END SHOES, AND END SECTIONS ON THIS STANDARD DRAWING SHALL BE IN ACCORDANCE WITH AASHTO M 180.
 3. ALL SPLICE BOLT SLOTS SHALL BE 29/32" WIDE x 1 1/8" LONG.
 4. ALL POST BOLT SLOTS SHALL BE 3/4" WIDE x 2 1/2" LONG.



APPROVED BY: *Charles Smith* DATE: 4/9/12
TRAFFIC ENGINEER

TRAFFIC STANDARD
GUARDRAIL AND HARDWARE
(2 OF 2)
(31" SYSTEM)