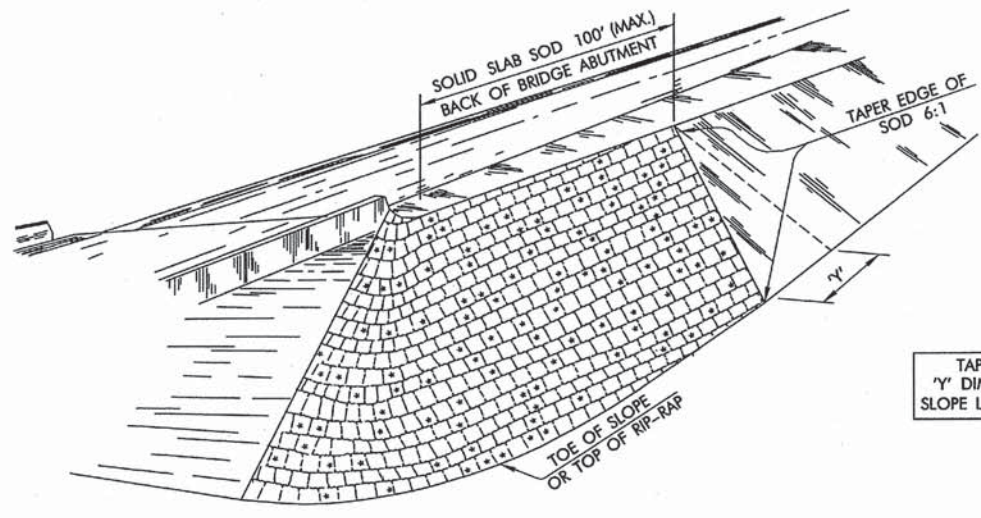
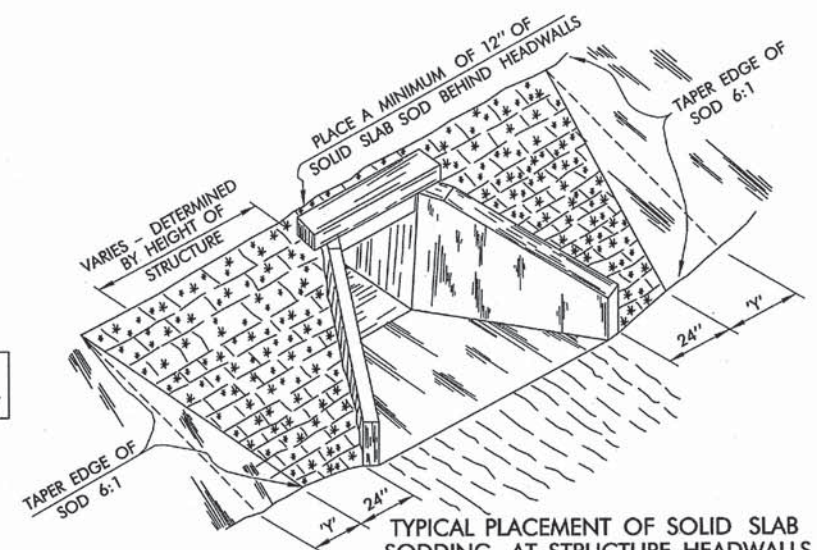


REVISIONS	
DESCRIPTION	DATE



TAPER NOTE
 'Y' DIMENSION =
 SLOPE LENGTH x 0.17

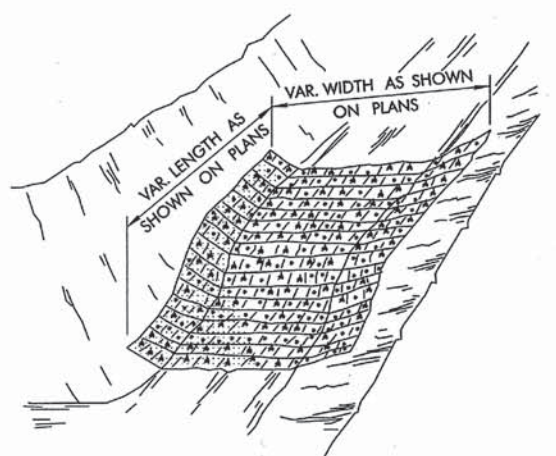
TYPICAL PLACEMENT OF SOLID SLAB SODDING ON FILL SLOPES, APPROACHES TO OVERPASSES AND BRIDGES.



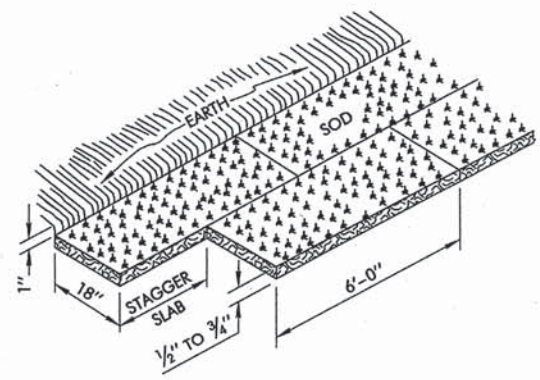
TYPICAL PLACEMENT OF SOLID SLAB SODDING AT STRUCTURE HEADWALLS

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.



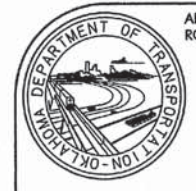
TYPICAL PLACEMENT OF SOLID SLAB SODDING IN DITCHES



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	S.Y.



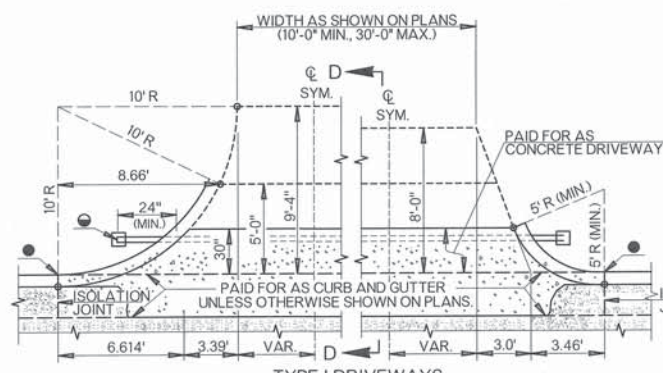
APPROVED BY ROADWAY ENGINEER: *Penelope A. Rogers* DATE: 12/2/09
 ROADWAY STANDARD

SOLID SLAB SODDING

2009 SPECIFICATIONS

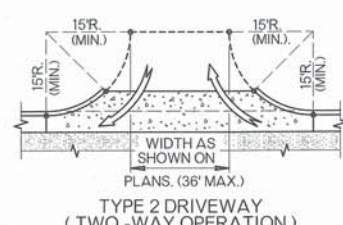
SSS-1	0
R-3	

OKLAHOMA DEPARTMENT OF TRANSPORTATION		
STANDARD REVISIONS		
DESCRIPTION	DATE	

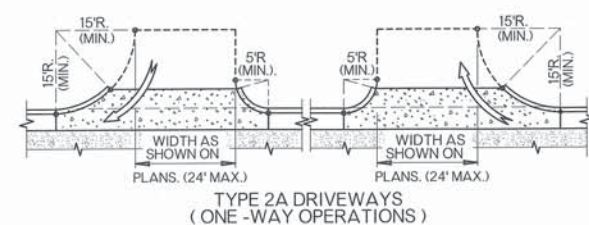


TYPE 1 DRIVEWAYS (PRIVATE OR RESIDENTIAL)

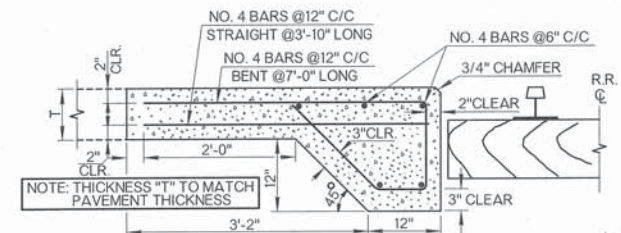
- IF SPECIFIED IN THE PLANS, CONSTRUCT CONDUIT CROSSING OF THE SPECIFIC SIZE AND TYPE AT APPROXIMATELY 30" BELOW FINISHED GRADE OF THE RAMP. SEE GENERAL NOTES FOR DETAILS.
- BEGIN ROLL CURB. TERMINATE CURB & GUTTER.



TYPE 2 DRIVEWAY (TWO-WAY OPERATION)

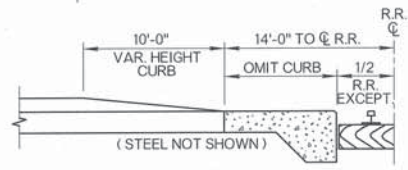


TYPE 2A DRIVEWAYS (ONE-WAY OPERATIONS)

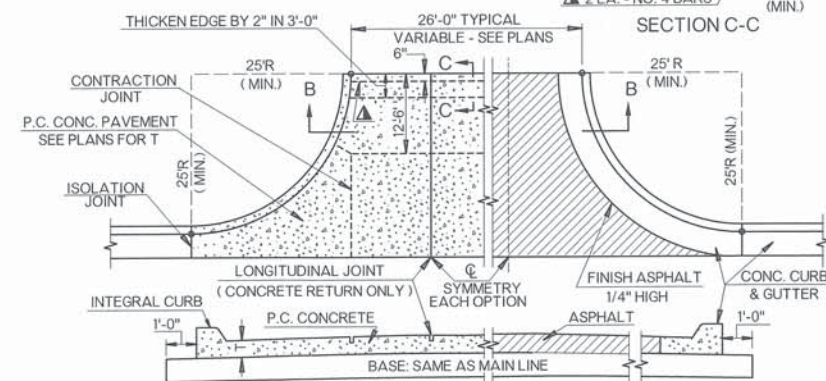


P. C. RAILROAD APPROACH SLAB WITH THICKENED EDGE AT RAILROAD CROSSING

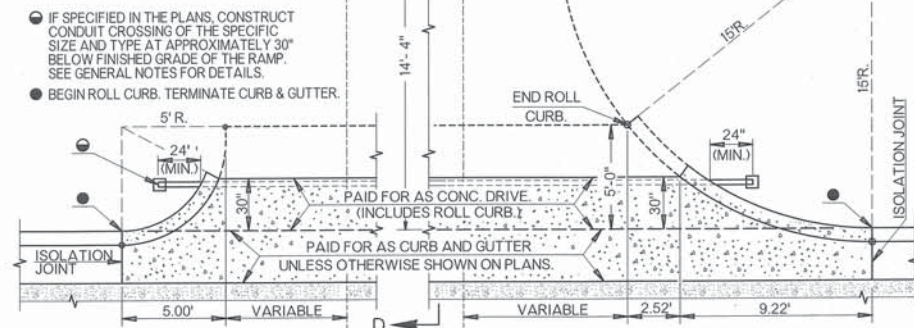
THICKENED EDGE OF CONCRETE RAILROAD APPROACH SLAB SHALL EXTEND FROM OUTSIDE TO OUTSIDE OF SHOULDERS. COST OF CLASS A CONCRETE & REINFORCING STEEL TO BE INCLUDED IN THE PRICE BID FOR RAILROAD APPROACH SLAB.



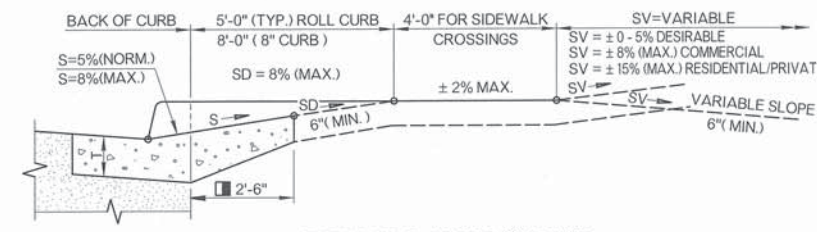
DETAIL OF CURBS ADJACENT TO RAILROAD CROSSINGS



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

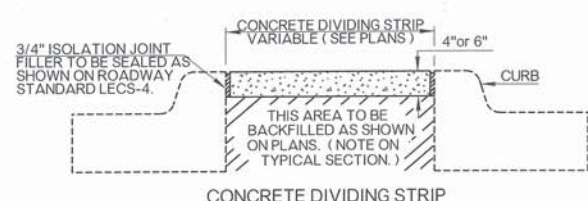


TYPE 2 & 2A COMMERCIAL DRIVEWAYS

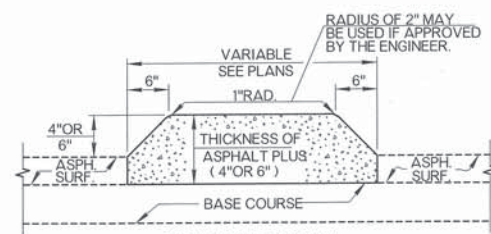


SECTION D-D ALONG DRIVE

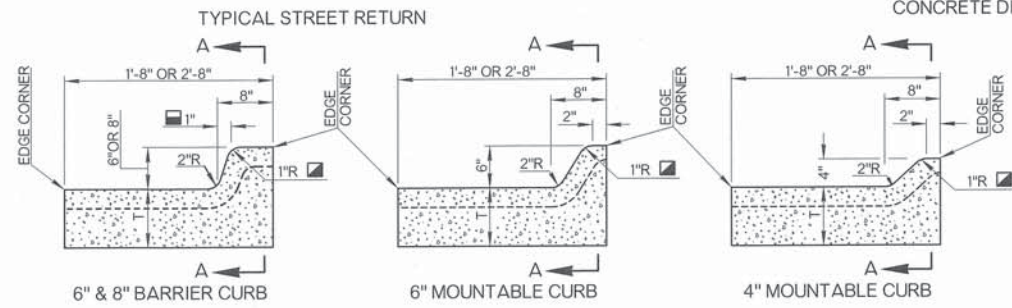
WHEN SIDEWALK IS BUILT DIRECTLY BEHIND CURB, THE CONCRETE DRIVEWAY SHOULD BE CONSTRUCTED & EXTENDED TO THE BACK EDGE OF SIDEWALK.



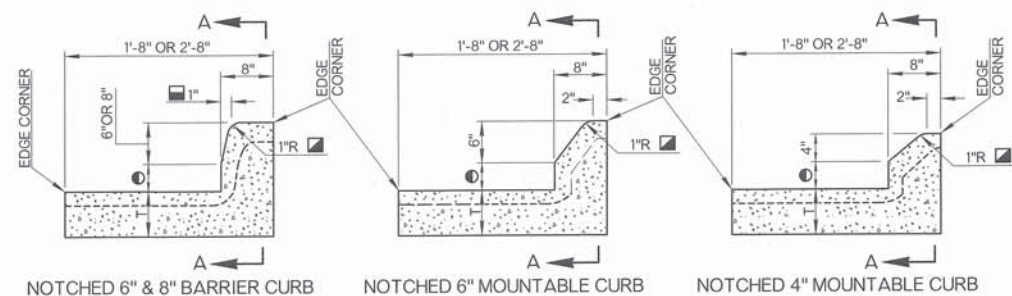
CONCRETE DIVIDING STRIP



CONCRETE MEDIAN MOUNTABLE CURB TYPE (TO BE PAID FOR AS CLASS A CONCRETE.)



6" & 8" BARRIER CURB
6" MOUNTABLE CURB
4" MOUNTABLE CURB

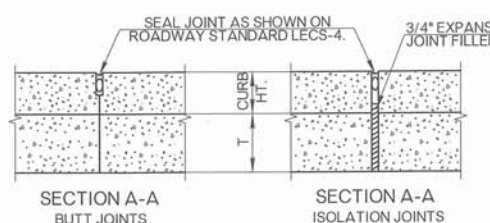


NOTCHED 6" & 8" BARRIER CURB
NOTCHED 6" MOUNTABLE CURB
NOTCHED 4" MOUNTABLE CURB

COMBINED CURB & GUTTER TYPICAL SECTIONS

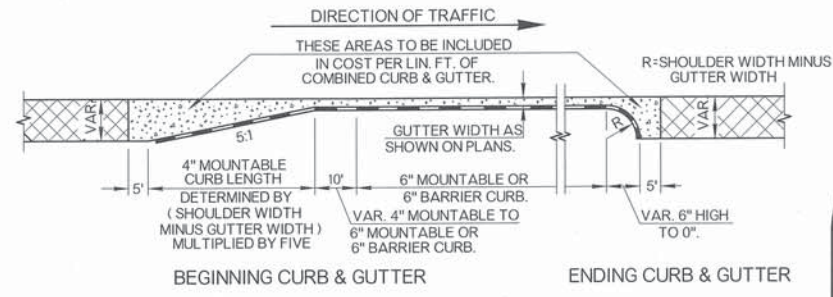
NOTE: T DIMENSION EQUALS THE THICKNESS SHOWN ON TYPICAL SECTION. (MIN=6")

- DIMENSION EQUALS THE THICKNESS ASPHALT CONC. SHOWN ON TYPICAL SECTION. (MIN=2", MAX=4")
- RADIUS OF 2" MAY BE USED IF APPROVED BY THE ENGINEER.
- BATTER OF 2" MAY BE USED IF APPROVED BY THE ENGINEER.



SECTION A-A BUTT JOINTS
SECTION A-A ISOLATION JOINTS

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



BEGINNING CURB & GUTTER

ENDING CURB & GUTTER

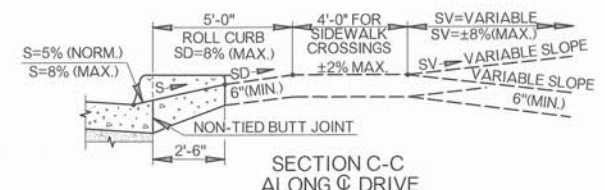
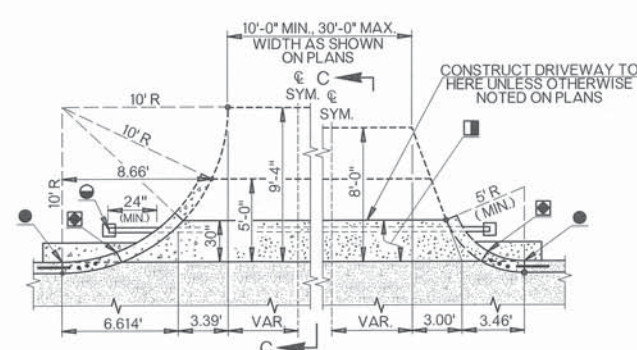
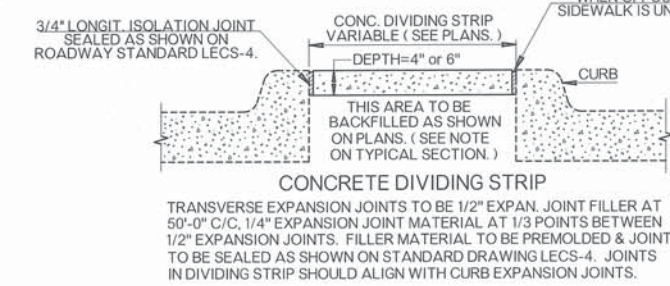
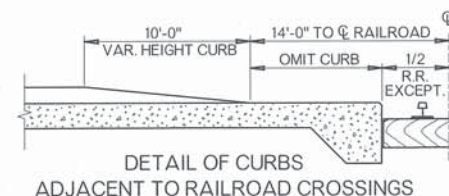
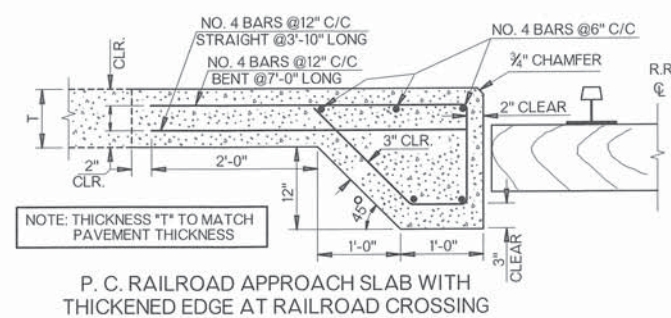
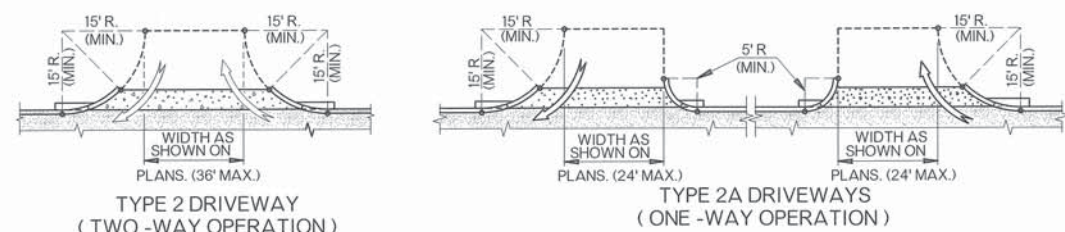
- GENERAL NOTES**
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 - COST OF JOINT FILLERS, SEALING AND REINFORCING STEEL SHALL BE INCLUDED IN PRICE BID FOR OTHER ITEMS OF WORK.
 - TRANSVERSE ISOLATION JOINTS FOR CONCRETE DIVIDING STRIP AND CONCRETE MEDIAN (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 PREMOLED 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 RAMPS, CAP 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).

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

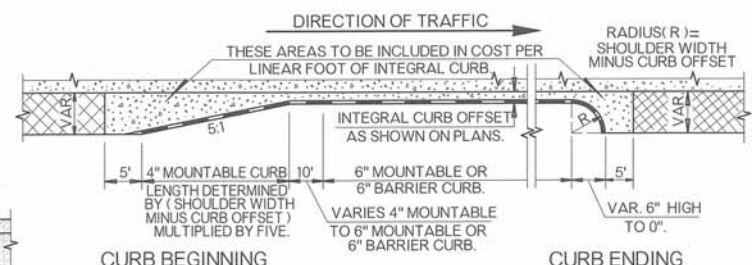
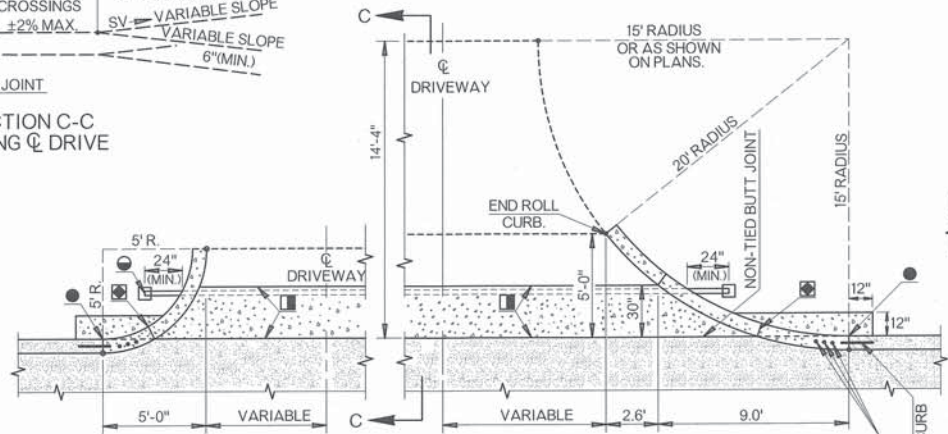
- WIDTH OF CURB & GUTTER WILL BE SPECIFIED.
- HEIGHT & TYPE OF CURB SHALL BE SPECIFIED.
- THICKNESS WILL BE SPECIFIED.

APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE 09/16/15
ROADWAY DESIGN DIVISION STANDARD

OKLAHOMA DEPARTMENT OF TRANSPORTATION		
STANDARD REVISIONS		
DESCRIPTION	DATE	



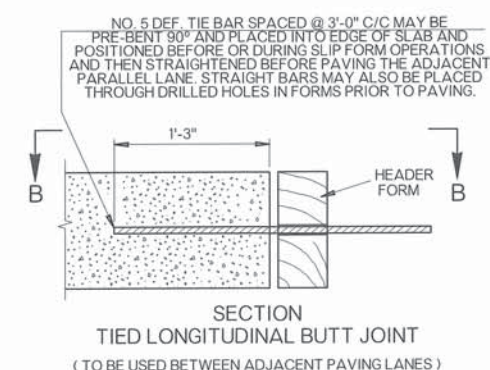
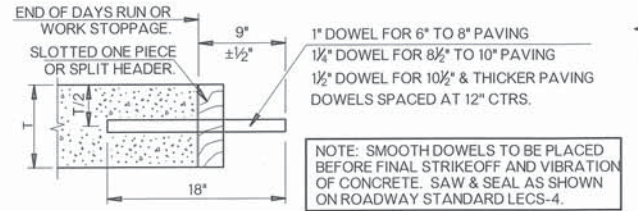
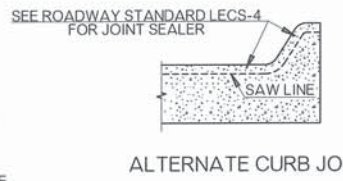
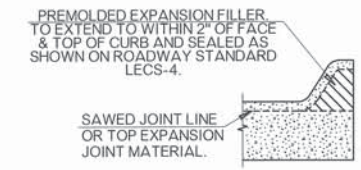
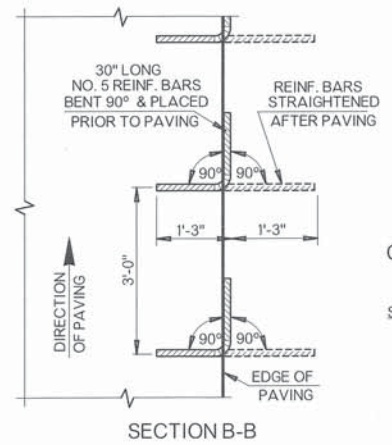
FOR STREET RETURN DETAILS SEE ROADWAY STD. ASCD-5.



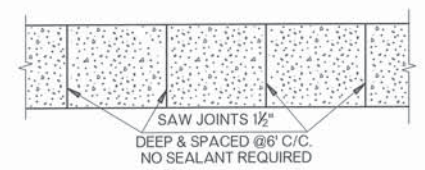
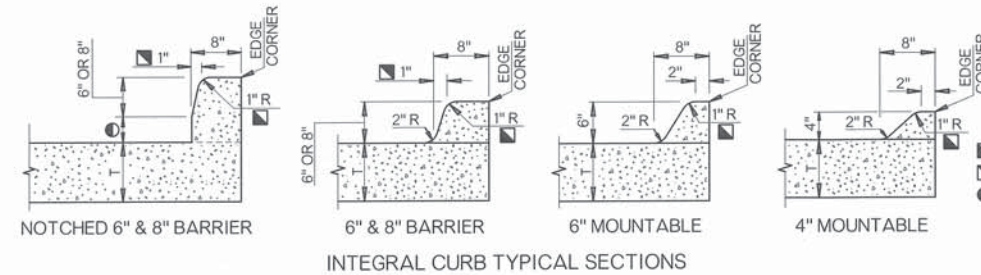
- 3/4" EXPANSION JOINT NO LOAD TRANSFER DEVICES PAID FOR AS CONCRETE DRIVEWAY (INCLUDES CURB)
- BEGIN ROLL CURB & TERMINATE INTEGRAL CURB. POUR APRON & CURB INTEGRAL WITH DRIVEWAY
- IF SPECIFIED IN THE PLANS, CONSTRUCT CONDUIT CROSSING OF THE SAME SIZE & TYPE SPECIFIED AT APPROXIMATELY 30° BELOW FINISHED GRADE OF RAMP. SEE GENERAL NOTES FOR DETAILS.

- 3/4" EXPANSION JOINT NO LOAD TRANSFER DEVICES PAID FOR AS CONCRETE DRIVEWAY (INCLUDES CURB)
- BEGIN ROLL CURB & TERMINATE INTEGRAL CURB. POUR APRON & CURB INTEGRAL WITH DRIVEWAY
- IF SPECIFIED IN THE PLANS, CONSTRUCT CONDUIT CROSSING OF THE SAME SIZE & TYPE SPECIFIED AT APPROXIMATELY 30° BELOW FINISHED GRADE OF RAMP. SEE GENERAL NOTES FOR DETAILS.

NOTE: WHEN SIDEWALK IS BUILT DIRECTLY BEHIND THE CURB THE CONCRETE DRIVEWAY SHOULD BE CONSTRUCTED AND EXTENDED TO THE BACK EDGE OF SIDEWALK.



NOTE: LONGITUDINAL BUTT JOINT TIE BAR STEEL AND PLACEMENT METHOD NOT COVERED ON THIS STANDARD SHALL BE APPROVED BY THE ENGINEER.



- RADIUS OF 2" MAY BE USED IF APPROVED BY THE ENGINEER.
- BATTER OF 2" MAY BE USED IF APPROVED BY THE ENGINEER.
- DIMENSION EQUALS THICKNESS OF ASPHALT CONCRETE SHOWN ON TYPICAL SECTION ASPHALT CONCRETE THICKNESS (2" MIN.; 4" MAX.)

- GENERAL NOTES**
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 - ALL COST OF CLASS A CONCRETE & REINFORCING STEEL IN THICKENED EDGE AT RAILROAD CROSSINGS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR APPROACH SLAB-RAILROAD.
 - COST OF JOINT FILLERS, SEALING AND REINFORCING STEEL SHALL BE INCLUDED IN PRICE BID FOR OTHER ITEMS OF WORK.
 - CONTRACTION JOINTS IN JOINTED P.C. PAVEMENT SHALL BE AT APPROXIMATELY 15'-0" CENTERS, UNLESS OTHERWISE SHOWN ON THE PLANS.
 - CURB & GUTTER SHALL BE PLACED INTEGRAL WITH THE PAVING SLAB UNLESS OTHERWISE SHOWN IN THE PLANS. TRANSVERSE JOINTS SHALL MATCH PAVEMENT JOINTS AND PLACED AT DRAINAGE STRUCTURES. LONGITUDINAL JOINTS SHALL BE TIED WITH #5 DEFORMED TIE BARS 2'-6" LONG AT 3'-0" CTRS. SEE TIED BUTT AND LONGITUDINAL CONSTRUCTION JOINT DETAIL 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/RAMPS, CAP 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 MINIMUM OF 24" PAST EDGE OF PAVING.
 - FOR PULL BOX INSTALLATION DETAILS, SEE TRAFFIC STANDARD PBD1-1.

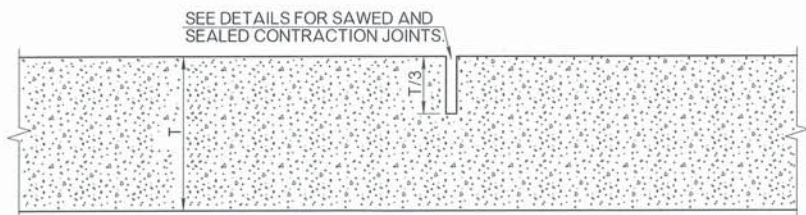
BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
414 (H)	P. C. RAILROAD APPROACH SLABS	SY
609 (A)	CONCRETE CURB (INTEGRAL)	LF
610 (A)	CONCRETE SIDEWALK	SY
610 (B)	CONCRETE DRIVEWAY	SY
610 (C)	CONCRETE DIVIDING STRIP	SY

- HEIGHT & TYPE OF CURB SHALL BE SPECIFIED.
- THICKNESS SHALL BE SPECIFIED IN INCHES.

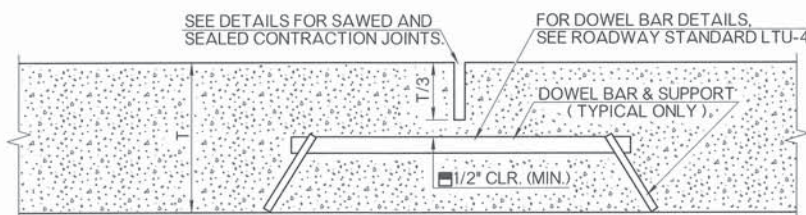
APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE: 04/11/15
 ROADWAY DESIGN DIVISION STANDARD



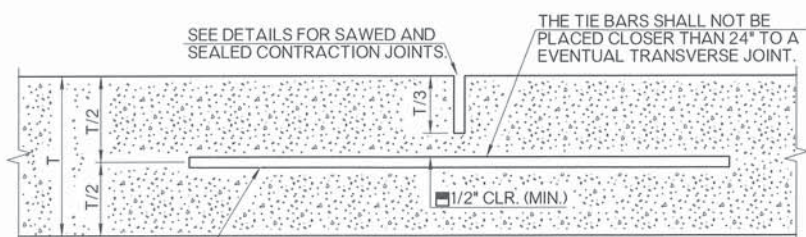
CONCRETE SURFACING CONSTRUCTION DETAILS



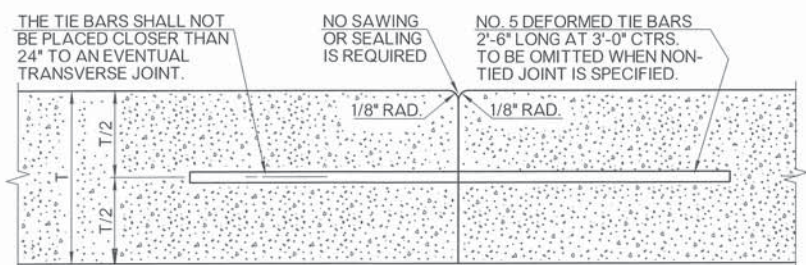
NON-DOWELED CONTRACTION JOINT



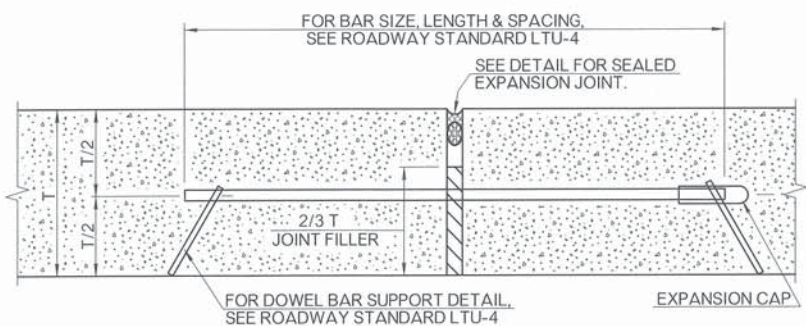
DOWELED CONTRACTION JOINT



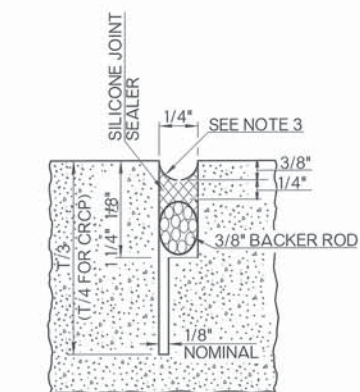
LONGITUDINAL JOINT



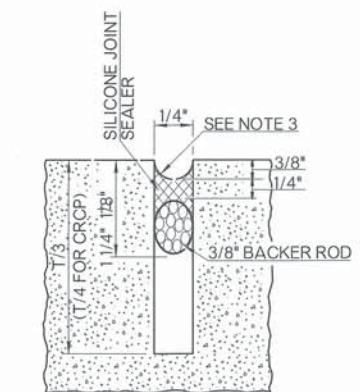
TIED BUTT JOINT AND LONGITUDINAL CONSTRUCTION JOINT



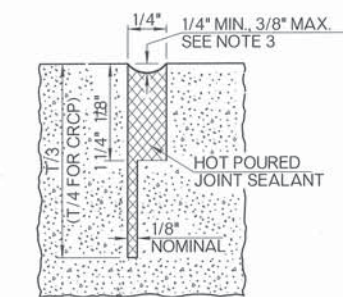
EXPANSION JOINT / ISOLATION JOINT
 OMIT DOWEL BARS, CAPS & SUPPORTS FOR ISOLATION JOINTS



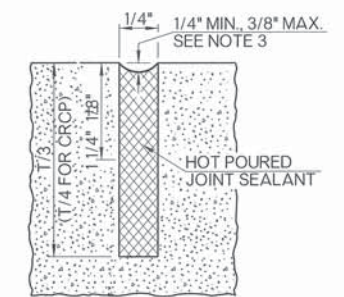
SILICONE SEALANT OPTION



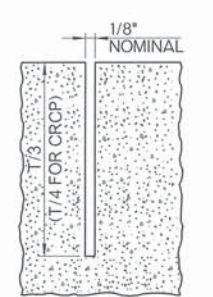
SILICONE SEALANT OPTION



HOT POUR OPTION

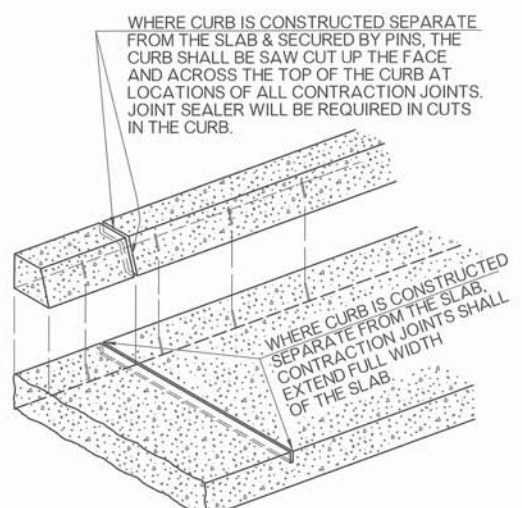


HOT POUR OPTION

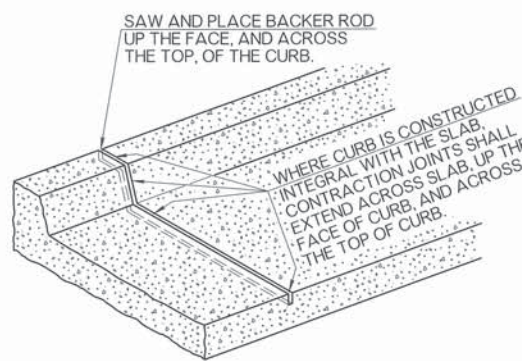


NO SEALANT OPTION

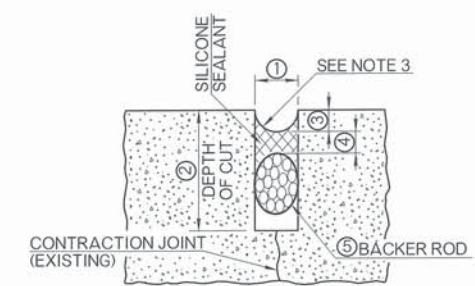
SAWED AND SEALED, CONTRACTION AND LONGITUDINAL JOINTS ALTERNATE DETAILS
 UNLESS OTHERWISE SPECIFIED IN THE PLANS, ONLY THE SILICONE SEALANT OPTIONS WILL BE ALLOWED.



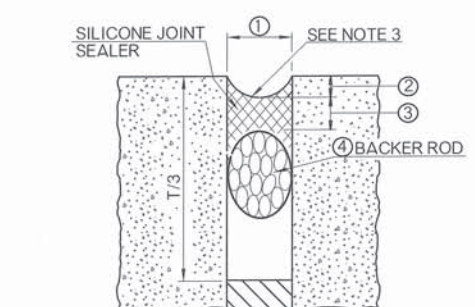
CONTRACTION JOINT WITH SEPARATE CURB



CONTRACTION JOINT WITH INTEGRAL CURB



JOINT REHABILITATION DETAILS



EXPANSION JOINTS / ISOLATION JOINTS
 HOT POURED JOINT SEALANT MAY BE USED IN LIEU OF BACKER ROD AND SILICONE SEALANT, IF APPROVED BY THE ENGINEER

JOINT WIDTH	SEALANT RECESS DEPTH	SILICONE SEALANT THICKNESS	BACKER ROD DIAMETER
①	②	③	④
1/2"	3/8"	1/4"	5/8"
3/4"	3/8"	3/8"	7/8"
1"	3/8"	1/2"	1 1/4"
1 1/2"	1/2"	3/4"	2"
2"	1/2"	3/4"	2 1/2"

EXPANSION OR ISOLATION JOINT WIDTH SHALL BE 1/2", UNLESS OTHERWISE SPECIFIED ON THE PLANS. TABLE VALUES, AS SHOWN THIS TABLE, SHALL BE USED IN THOSE SPECIFIED CASES.

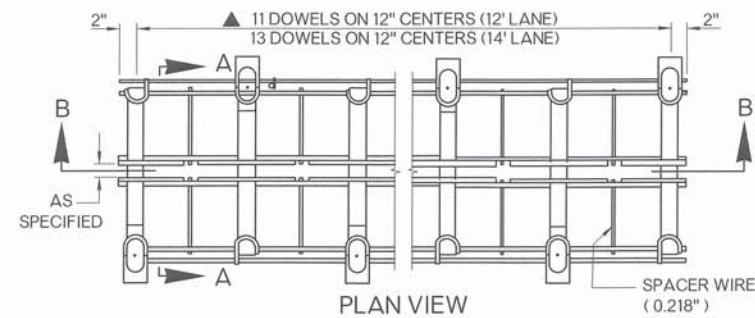
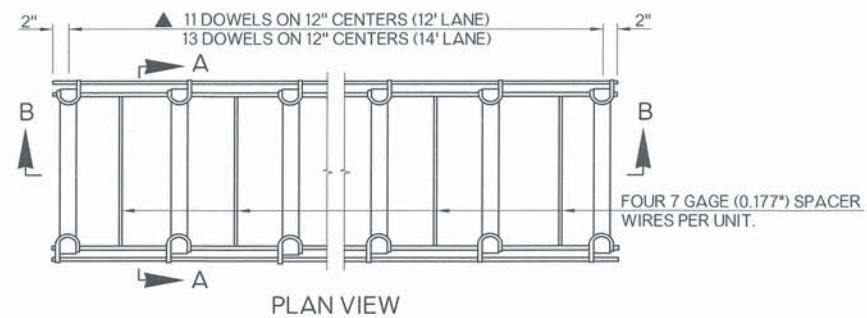
SILICONE SEALANT				
JOINT WIDTH	DEPTH OF CUT	SEALANT RECESS DEPTH	SEALANT THICKNESS	BACKER ROD DIAMETER
①	②	③	④	⑤
3/8"	1 1/4"	3/8"	3/16"	1/2"
1/2"	1 3/4"	3/8"	1/4"	5/8"
3/4"	1 3/4"	3/8"	3/8"	7/8"
7/8"	1 3/4"	1/2"	7/16"	1"
1"	2"	1/2"	1/2"	1 1/8"
OVER 1"	OVER 2"	1/2"	1/2"	1 1/4"

GENERAL NOTES

- ALL CONSTRUCTION AND MATERIALS REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- ALL CONCRETE JOINT SEALING SHALL BE IN ACCORDANCE WITH SECTION 415 OF THE SPECIFICATIONS.
- THE SHAPE FACTOR, COMBINED WITH THE JOINT CLEANLINESS, IS THE CRITICAL COMBINATION NECESSARY TO GUARANTEE DESIRED BONDING AND FUNCTION OF SEALED JOINTS. THE JOINT SHAPE FACTOR IS DEFINED AS THE FINAL PRESSED SHAPE OF THE SILICONE MATERIAL. THE TOOLING OPERATION WILL FIRMLY PRESS THE FRESHLY APPLIED MATERIAL INTIMATELY AGAINST THE CUT SIDES OF THE RECESS AND THE BACKER ROD SURFACES. THE ROUNDED SHAPE ON TOP AND BOTTOM OF THE SILICONE ALLOWS THE SEALANT TO PROPERLY FLEX BUT MAINTAIN ADHERENCE TO THE PAVING. SELF LEVELING SEALANTS WILL BE INSTALLED TO BE FLUSH WITH THE PAVEMENT SURFACE.
- ON JOINTED PORTLAND CEMENT CONCRETE PAVEMENTS, DOWELED CONTRACTION JOINTS SHALL BE USED ON DRIVING LANES ONLY. CONCRETE SHOULDERS SHALL NOT BE DOWELED UNLESS SPECIFIED ON THE PLANS.
- LONGITUDINAL JOINTS BETWEEN PAVEMENT AND TIED CONCRETE SHOULDERS SHALL NOT BE SAWED OR SEALED UNLESS OTHERWISE SHOWN ON THE PLANS.
- ON ALL SAWED JOINTS, THE KERF DEPTH SHALL CLEAR DOWEL BARS, TIE BARS AND/OR REINFORCING STEEL BY A MINIMUM OF 1/2".
- CONTRACTION JOINTS IN JOINTED P. C. PAVEMENT SHALL BE AT APPROXIMATELY 15'-0" CENTERS, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- TRANSVERSE GROOVING SHALL BE CONSTRUCTED TO THE FOLLOWING DIMENSIONS: 1/8" TO 3/16" WIDE, 1/8" TO 3/16" DEEP, AND EQUALLY SPACED AT 1/2" TO 1" APART. GROOVES SHALL BE NEAT IN APPEARANCE, OF UNIFORM DEPTH, AND LOCATED 1" TO 3" FROM NEAREST CONTRACTION JOINTS.

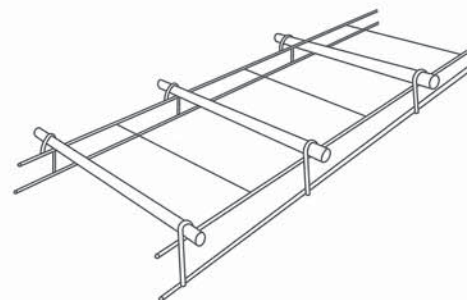
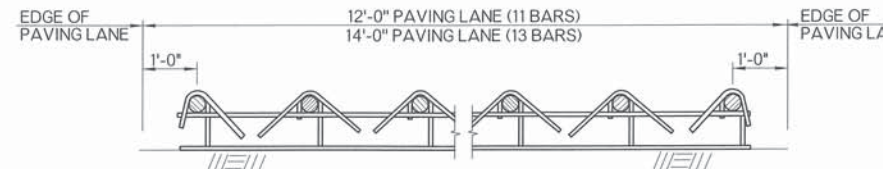
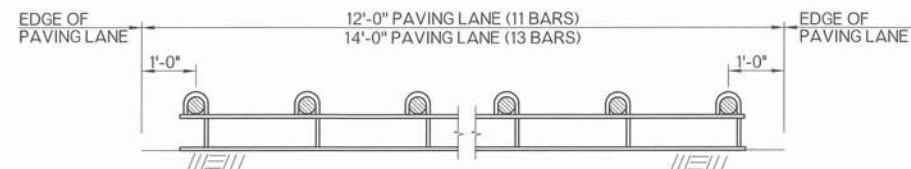
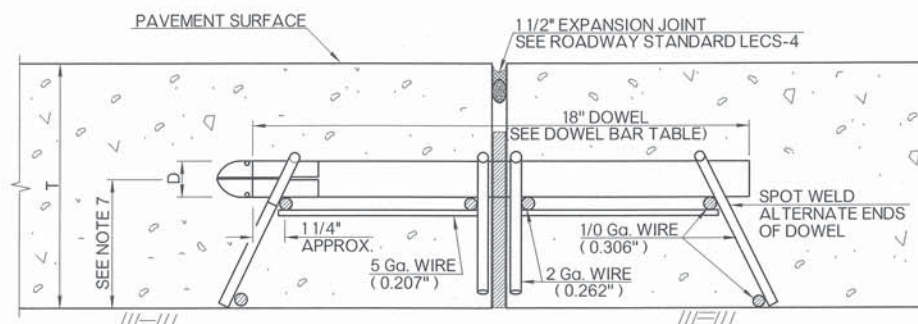
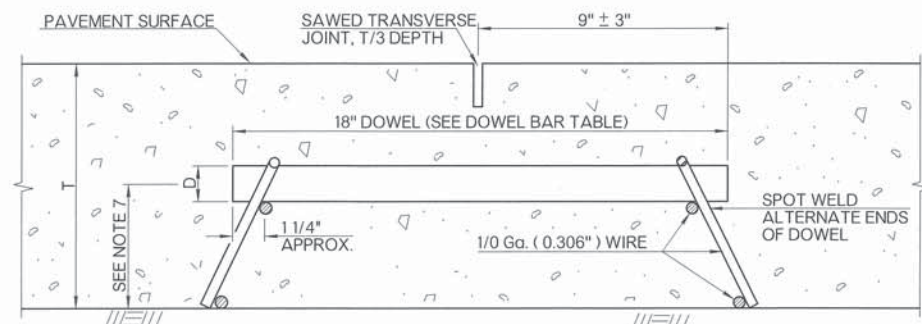
APPROVED BY ROADWAY ENGINEER: *Calvin F. A.* DATE: 04/14/15
 ROADWAY DESIGN DIVISION STANDARD
DOT JOINTS AND SEALERS - LONGITUDINAL, EXPANSION, & CONTRACTION

STANDARD REVISIONS	
DESCRIPTION	DATE

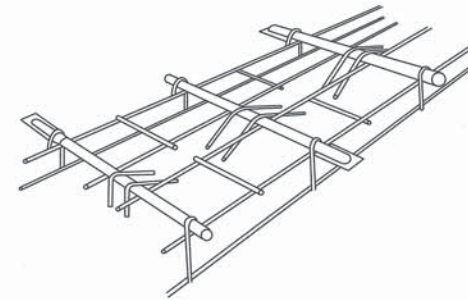


DOWEL BAR TABLE			
▲ SPACING & SIZE DATA			
(T) SLAB DEPTH	DOWEL DIA.	TOTAL DOWEL LENGTH	C/C DOWEL SPACING
6" - 8"	1"	18"	12"
8 1/2" - 10"	1 1/4"	18"	12"
10 1/2" & UP	1 1/2"	18"	12"

DOWEL DIAMETER WILL BE DETERMINED BY THE SLAB DEPTH (T) OR THE NOMINAL DEPTH WHEN SLAB DEPTH VARIES. WHEN NOMINAL DEPTH VALUE IS TO BE USED, THE CALCULATED NOMINAL DEPTH WILL BE SHOWN ON THE PLANS.



WELDED CONTRACTION JOINT ASSEMBLY



WELDED EXPANSION JOINT ASSEMBLY

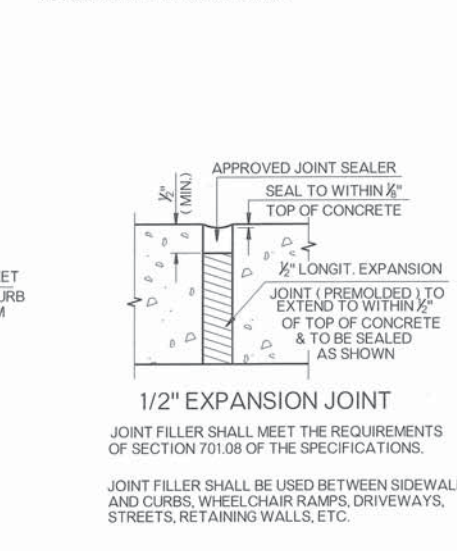
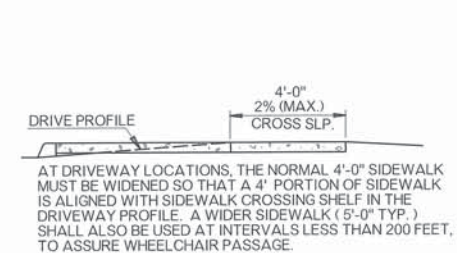
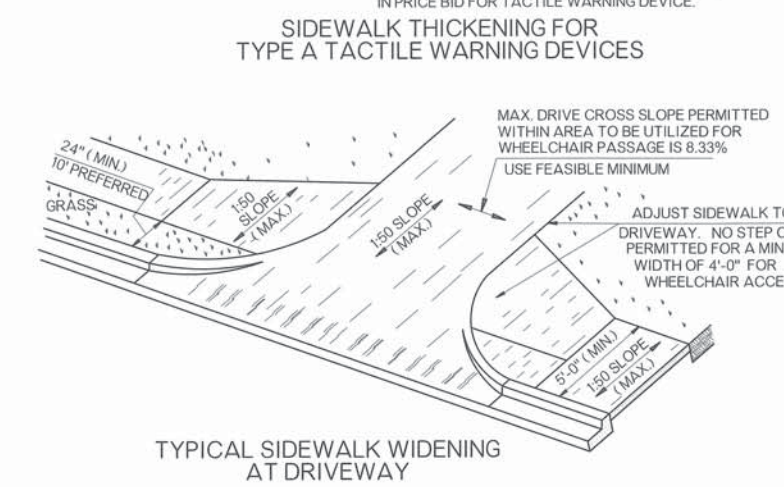
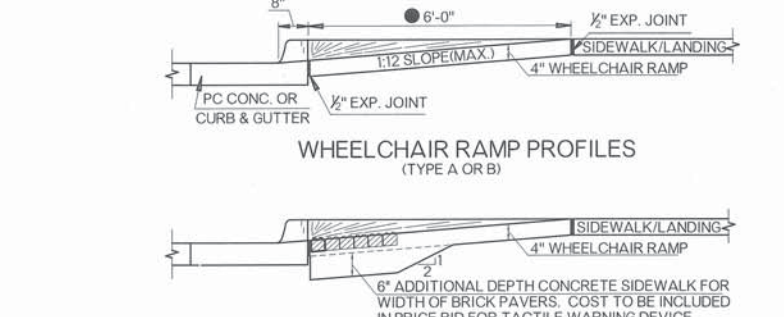
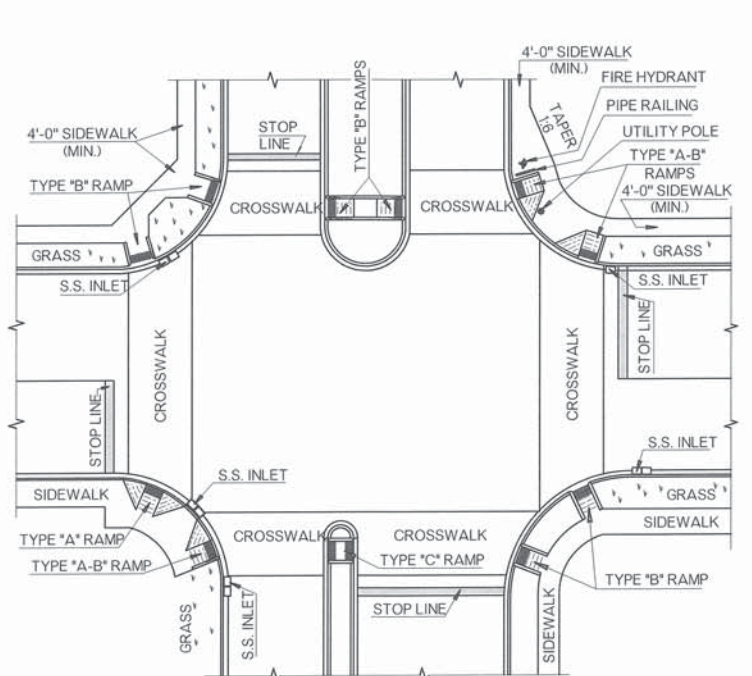
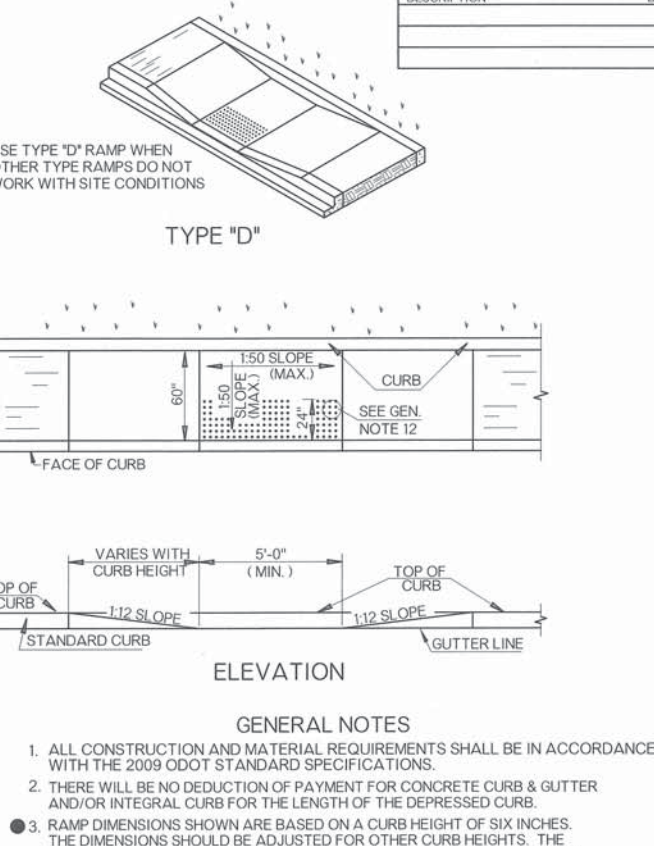
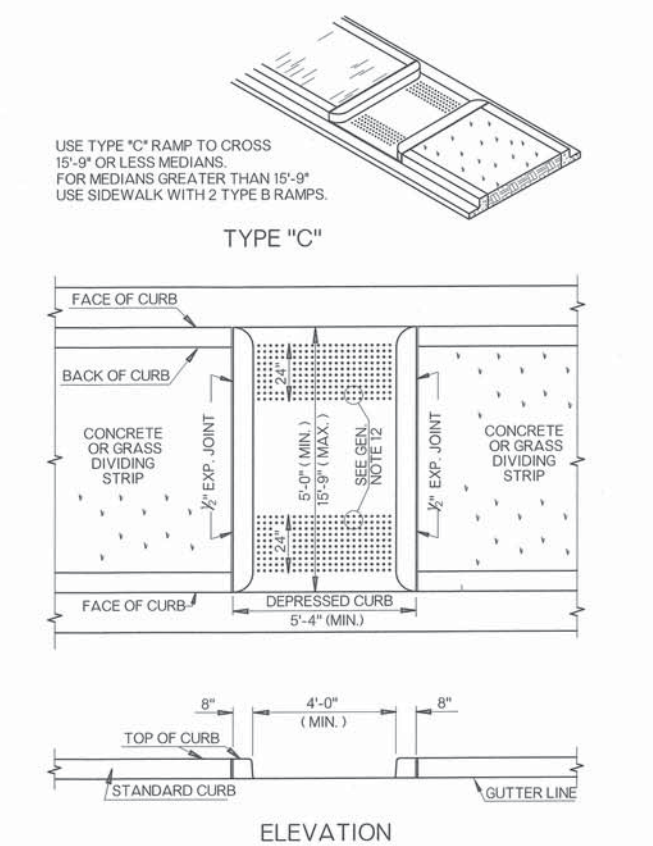
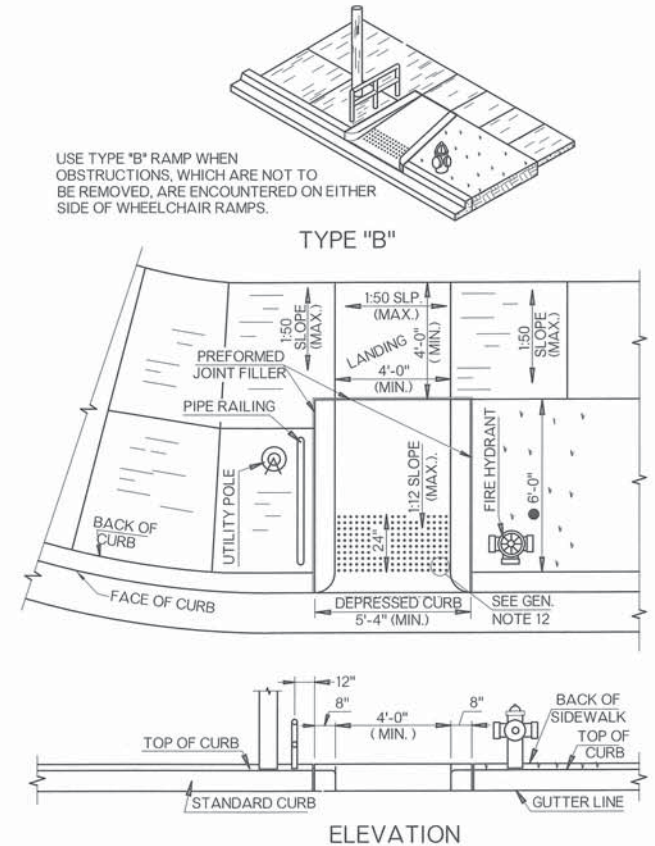
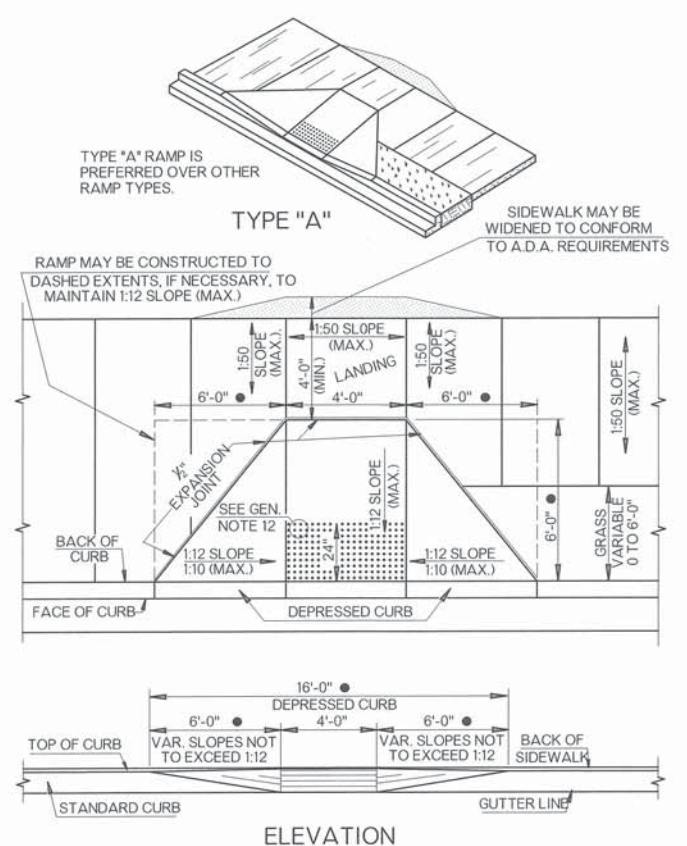
- ### GENERAL NOTES
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 - ANY DEVICE USED FOR SUPPORTING DOWELS SHALL HAVE SUFFICIENT RIGIDITY AND BE HELD IN PLACE DURING CONCRETE PLACEMENT SO THAT DOWELS WILL BE IN SPECIFIED POSITION IN THE FINISHED PAVEMENT. ANY DEVICE NOT PRODUCING THE SPECIFIED RESULTS SHALL BE REJECTED.
 - PRODUCER AND CONTRACTOR SHALL AVOID PATENT INFRINGEMENT OF THE BASKET AND SHALL SAVE THE STATE HARMLESS IN THE USE OF ANY BASKET.
 - THE CONTRACTOR MAY SELECT THE TYPE OF BASKET TO BE USED. AFTER THE SELECTION IS MADE, THE SAME TYPE BASKET SHALL BE USED THROUGHOUT THE PROJECT, UNLESS APPROVED OTHERWISE BY THE ENGINEER.
 - COLD-DRAWN STEEL WIRE, USED FOR DOWEL BASKETS, SHALL BE ACCEPTED BY VISUAL FIELD INSPECTION, AS PROVIDING SUFFICIENT DOWEL BAR SUPPORT DURING PAVING PROCESS.
 - ▲ DOWEL BARS SHALL BE GRADE 60 PLAIN BARS, IN ACCORDANCE WITH SECTION 723.01 OF THE SPECIFICATIONS. DOWEL BARS SHALL BE CENTERED ON THE BASKET REGARDLESS OF THE WIDTH OF THE BASKET OR THE LENGTH OF THE DOWEL BAR.
 - THE HEIGHT OF THE LOAD TRANSFER UNIT (MEASURED TO THE CENTER OF THE DOWEL BAR FROM THE PAVEMENT SURFACE) SHALL BE 1/2 THE THICKNESS OF THE PAVEMENT, PLUS OR MINUS 1/2 THE DIAMETER OF DOWEL BAR OF THE UNIT.
 - DOWEL BARS SHALL HAVE A SHOP APPLIED EPOXY COATING OVER THEIR ENTIRE LENGTH (ENDS EXCEPTED). ADDITIONALLY, DOWELS SHALL BE COMPLETELY COATED WITH A FORM RELEASE AGENT (OR APPROVED EQUIVALENT BOND BREAKER) APPLIED IN THE FIELD, IMMEDIATELY PRIOR TO PAVING. THE FORM RELEASE AGENT SHALL NOT BE ALLOWED TO EVAPORATE FROM THE BARS PRIOR TO PAVING.
 - FOR EXPANSION JOINTS, THE DOWEL BARS SHALL HAVE EXPANSION CAPS WITH A MINIMUM 1" AND A MAXIMUM 2" AIR SPACE IN THE END OF THE EXPANSION CAPS (EXPANSION JOINT ASSEMBLIES).
 - THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER A STAKING PATTERN THAT SHALL SECURE ALL DOWEL BASKETS SUCH THAT THE FINAL DOWEL POSITION IS WITHIN SPECIFICATION LIMITS.
 - FOR EXPANSION JOINTS, IN ADDITION TO THE SUPPORTS INDICATED, THE CONTRACTOR SHALL PROVIDE SUITABLE INSTALLING DEVICES AND SUCH ADDITIONAL STAKES AS MAY BE REQUIRED TO HOLD THE JOINT FILLER VERTICAL AND SECURELY IN LINE AND POSITION. THE CONTRACTOR WILL ALSO BE REQUIRED TO SATISFACTORILY FORM THE UPPER PORTION OF THE JOINT FOR RECEIVING THE SEAL. SEE ROADWAY STANDARD LECS-4.

APPROVED BY ROADWAY ENGINEER: *Caleb F. A.* DATE: *01/14/15*

ROADWAY DESIGN DIVISION STANDARD

DOT LOAD TRANSFER UNITS FOR CONCRETE PAVEMENT JOINTS

OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



- GENERAL NOTES**
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 - THERE WILL BE NO DEDUCTION OF PAYMENT FOR CONCRETE CURB & GUTTER AND/OR INTEGRAL CURB FOR THE LENGTH OF THE DEPRESSED CURB.
 - RAMP DIMENSIONS SHOWN ARE BASED ON A CURB HEIGHT OF SIX INCHES. THE DIMENSIONS SHOULD BE ADJUSTED FOR OTHER CURB HEIGHTS. THE MAXIMUM PERMISSIBLE SLOPES OF THE WHEELCHAIR RAMPS IS 8.33% (1:12). RAMP SLOPE MAY BE 1:10 (MAX.) ALONG FACE OF TAPERED CURB.
 - DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH THE RAMPS.
 - THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP WITH A 1:50 SLOPE (MAX.), SEE NOTE NO. 10.
 - WHEELCHAIR RAMPS SHOULD BE LOCATED SO THAT THE RAMP WILL BE ON THE TRAFFIC APPROACH SIDE OF ANY OBSTACLE.
 - WHEELCHAIR RAMPS SHOULD BE BUILT AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THE TYPE OF RAMP WILL BE DESIGNATED ON THE PLANS. IF A RAMP IS TO BE CONSTRUCTED AS A COMBINATION OF TWO TYPES, (ONE SIDE TYPE A AND ONE SIDE TYPE B) THE RAMP SHALL BE DESIGNATED AS TYPE A-B.
 - PIPE RAILING CONSTRUCTION DETAILS, WHEN REQUIRED AT TYPE B WHEELCHAIR RAMPS, WILL BE SHOWN ON THE PLANS.
 - EXCAVATION, BACKFILL, EXPANSION JOINT MATERIAL, SEALERS, AND OTHER RELATED MISCELLANEOUS ITEMS WILL NOT BE PAID FOR SEPARATELY BUT THE COST THEREOF SHALL BE INCLUDED IN THE COST OF THE SIDEWALK.
 - ALL FEATURES OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURB RAMPS AND CROSSWALK MARKINGS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES (ADAAG), WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THE ADAAG, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURE(S). THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THE ADAAG WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADAAG, FOR WHICH THE CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
 - ALL WHEELCHAIR RAMP CURBS SHALL BE INCLUDED IN COST OF SIDEWALK.
 - FOR DETAILS OF TACTILE WARNING DEVICES, SEE STANDARD TWD-1.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
610 (A)	CONCRETE SIDEWALK	SY
622 (A)	PIPE RAILING	LF

■ SIDEWALK THICKNESS SHALL BE SPECIFIED IN INCHES.

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

ROADWAY DESIGN DIVISION STANDARD

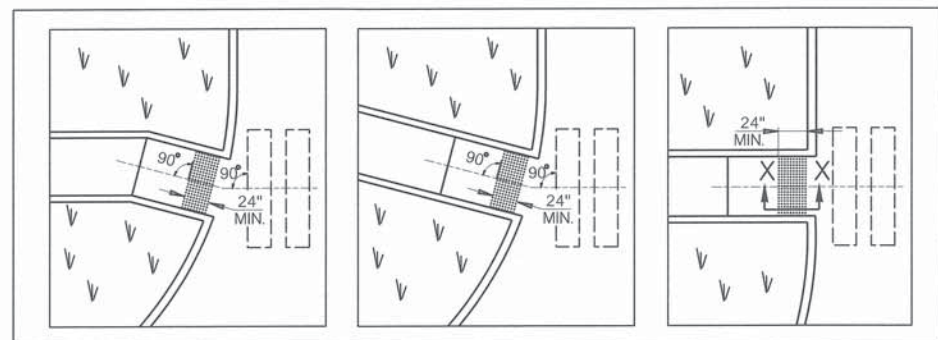
DOT

WHEELCHAIR RAMPS

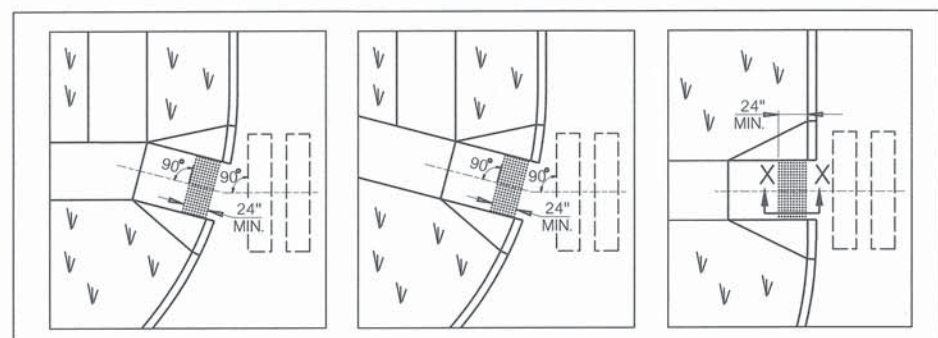
OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

WCR-3	1
R-22	

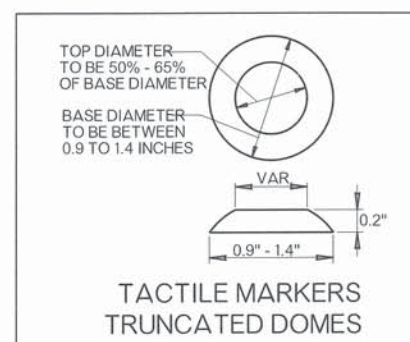
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



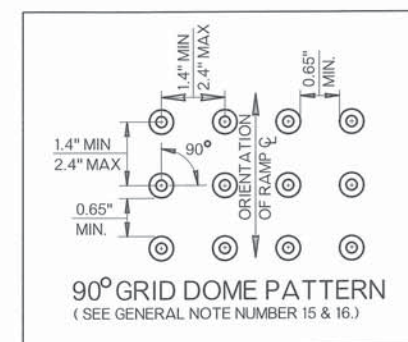
TACTILE SYSTEM ORIENTATION - TYPICAL CURBED RAMPS



TACTILE SYSTEM ORIENTATION - TYPICAL FLARED RAMPS

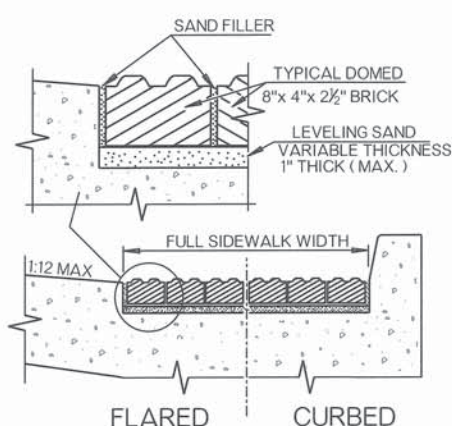


TACTILE MARKERS TRUNCATED DOMES

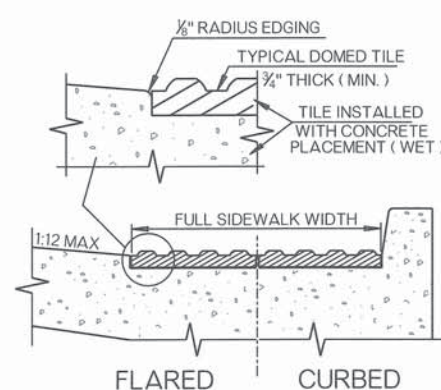


GENERAL NOTES

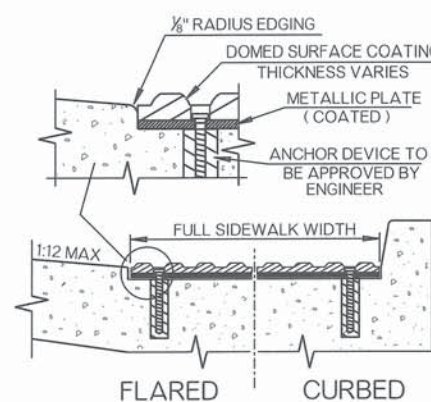
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- ALL FEATURES OF TACTILE WARNING DEVICE DESIGN AND FINAL INSTALLATION SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES (ADAAG). WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THE ADAAG, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURE(S). THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THE ADAAG WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADAAG, FOR WHICH THE CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- TACTILE WARNING SURFACE SHALL EXTEND FROM EDGE TO EDGE OF WALKWAY ENTERING THE CROSSWALK, AT STREET LEVEL.
- CURB IS NOT SHOWN IN THE SECTION X-X DETAIL ON THIS SHEET.
- THICKNESS 'T' OF PAVEMENT ABUTTING SIDEWALK/RAMP VARIES.
- SIDEWALK, RAMP AND FLARE THICKNESS SHALL BE 4" MINIMUM THICKNESS AFTER INSTALLATION OF TACTILE WARNING TREATMENT.
- TRUNCATED DOME SURFACE SHALL CONTRAST VISUALLY WITH THE ADJOINING WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE TRUNCATED SURFACE.
- LEVELING SAND FOR DOMED BRICK SYSTEMS SHALL MEET THE REQUIREMENTS OF SECTION 703.06B(2) OF THE SPECIFICATIONS.
- SURFACE BONDED TACTILE SYSTEMS MAY ONLY BE PLACED ON NEWLY POURED CONCRETE AFTER AN APPROPRIATE PERIOD OF CURING, IN ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
- ROWS OF TACTILE DOME TREATMENT SHOULD BE ORIENTED PARALLEL WITH CENTERLINE OF SIDEWALK/RAMP OR TOWARD THE CENTERLINE OF MARKED CROSSWALK.
- EXPANSION JOINTS DEEMED NECESSARY, BUT NOT SHOWN ON THE PLANS, MAY BE ADDED AND PLACED DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER.
- TACTILE SYSTEMS, DOME PATTERNS OR FEATURES DIFFERING FROM THOSE SHOWN ON THIS DETAIL, BUT MEETING CURRENT ADAAG SPECIFICATIONS, SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.
- THE SAME TACTILE DOME PATTERN AND COLOR SHALL BE USED THROUGHOUT ANY NEW OR RETROFIT PROJECT. DOME PATTERN & LOCATION OF EXISTING RAMPS TO BE RETROFIT WITH TACTILE DEVICES SHALL BE DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- RETROFIT INSTALLATIONS WILL NOT REQUIRE REPLACING EXISTING DEPRESSED CURBING. A NOMINAL 6 TO 8 INCH SETBACK FROM FACE OF CURB SHALL BE ENFORCED FOR NEAR EDGE OF TACTILE DOMES.
- TYPES A & B TACTILE SYSTEMS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 10,000 PSI. TYPES C & D SYSTEMS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI. COMPRESSIVE TESTS MEET ASTM D695.
- WET OR DRY STATIC COEFFICIENT OF FRICTION SHALL BE 0.7 FOR TACTILE SURFACES AND MEET ASTM C1028.
- TACTILE WARNING SURFACES MAY NOT BE STAMPED IN WET CONCRETE.



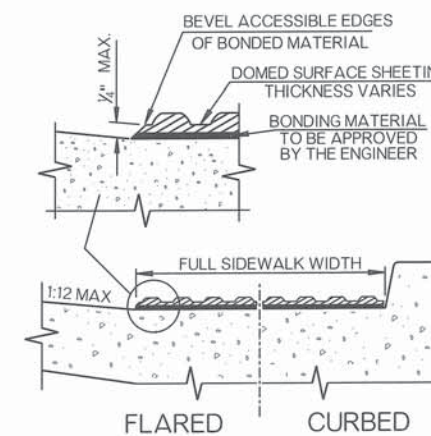
FLARED CURBED SECTION A - A



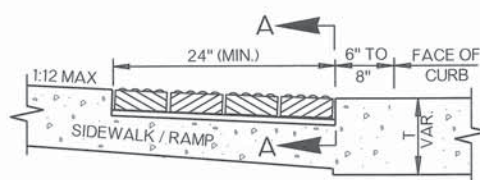
FLARED CURBED SECTION B - B



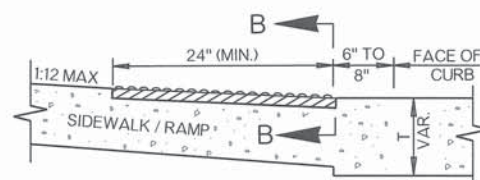
FLARED CURBED SECTION C - C



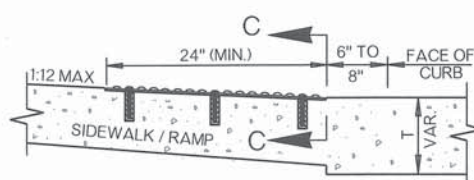
FLARED CURBED SECTION D - D



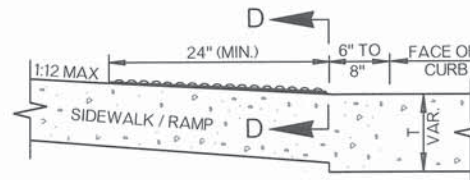
SECTION X - X TYPE A DOMED BRICK SYSTEM



SECTION X - X TYPE B DOMED TILE SYSTEM (WET SET INLAY)



SECTION X - X TYPE C DOME COATED PLATE SYSTEM (TYPICAL RETROFIT)



SECTION X - X TYPE D SURFACE BONDED DOMED SYSTEM (TYPICAL RETROFIT)

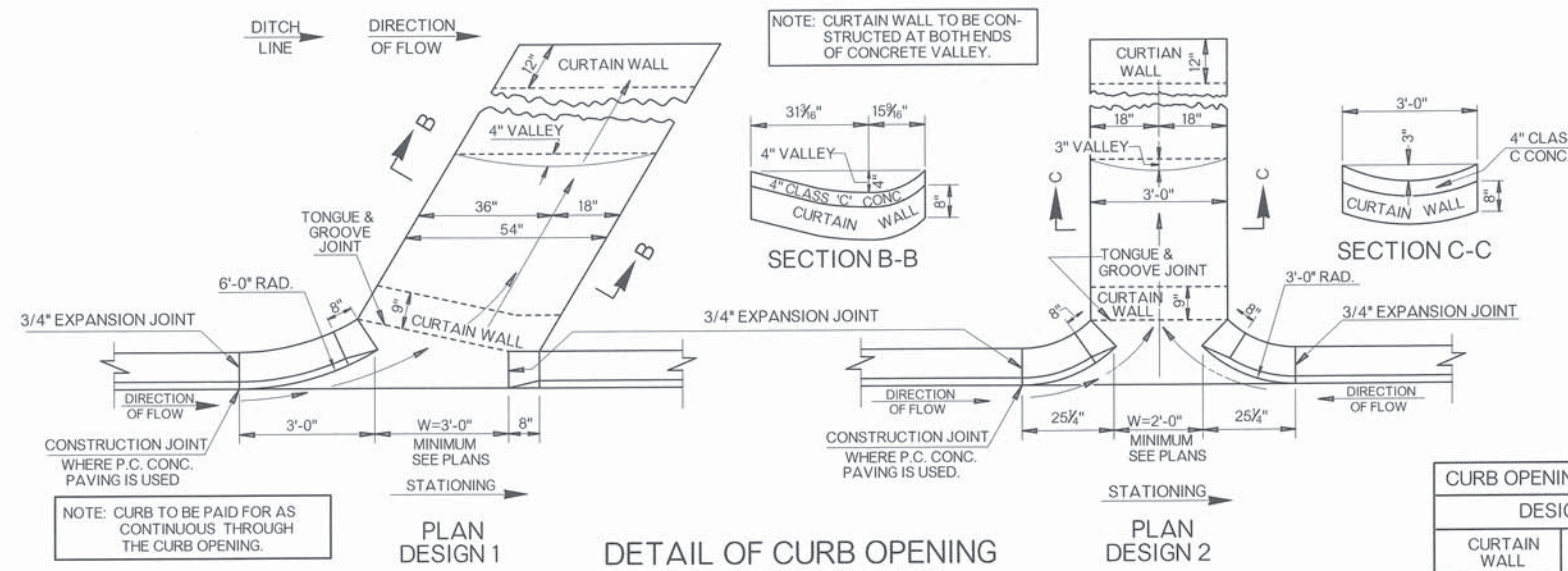
BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
610 (1)	TACTILE WARNING DEVICE - NEW	SF
610 (1)	TACTILE WARNING DEVICE - RETROFIT	SF

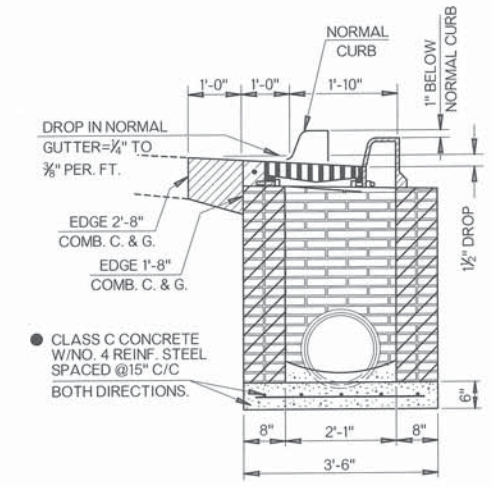
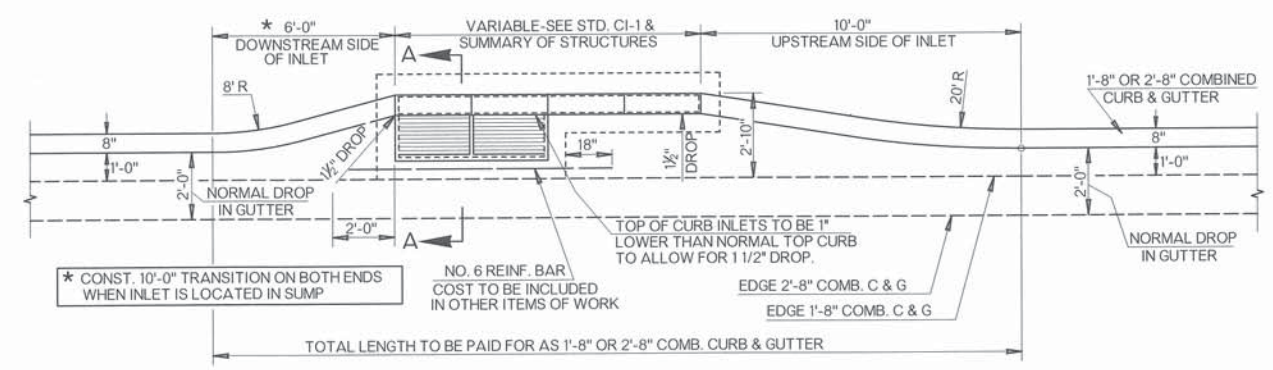
NOTE: TYPE A OR B TACTILE WARNING DEVICE SHALL BE SPECIFIED ON THE PLANS FOR NEW CONSTRUCTION & TYPE C OR D SHALL BE SPECIFIED ON THE PLANS FOR RETROFIT CONSTRUCTION.

APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE: *07/14/15*
 ROADWAY DESIGN DIVISION STANDARD
 TACTILE WARNING DEVICES

OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



DESIGN 1		DESIGN 2	
CURTAIN WALL	PER FOOT OF FLUME	CURTAIN WALL	PER FOOT OF FLUME
0.096 C.Y.	0.048 C.Y.	0.074 C.Y.	0.037 C.Y.



GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- INLET STRUCTURES MAY BE SUPPLIED AS PRECAST UNITS IF PROPOSED PRECAST DESIGN IS SUBMITTED TO THE ENGINEER AND APPROVED FOR USE. SEE ROADWAY STANDARD CI-1.

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
509 (D)	CLASS C CONCRETE	CY

APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE: 02/14/15.

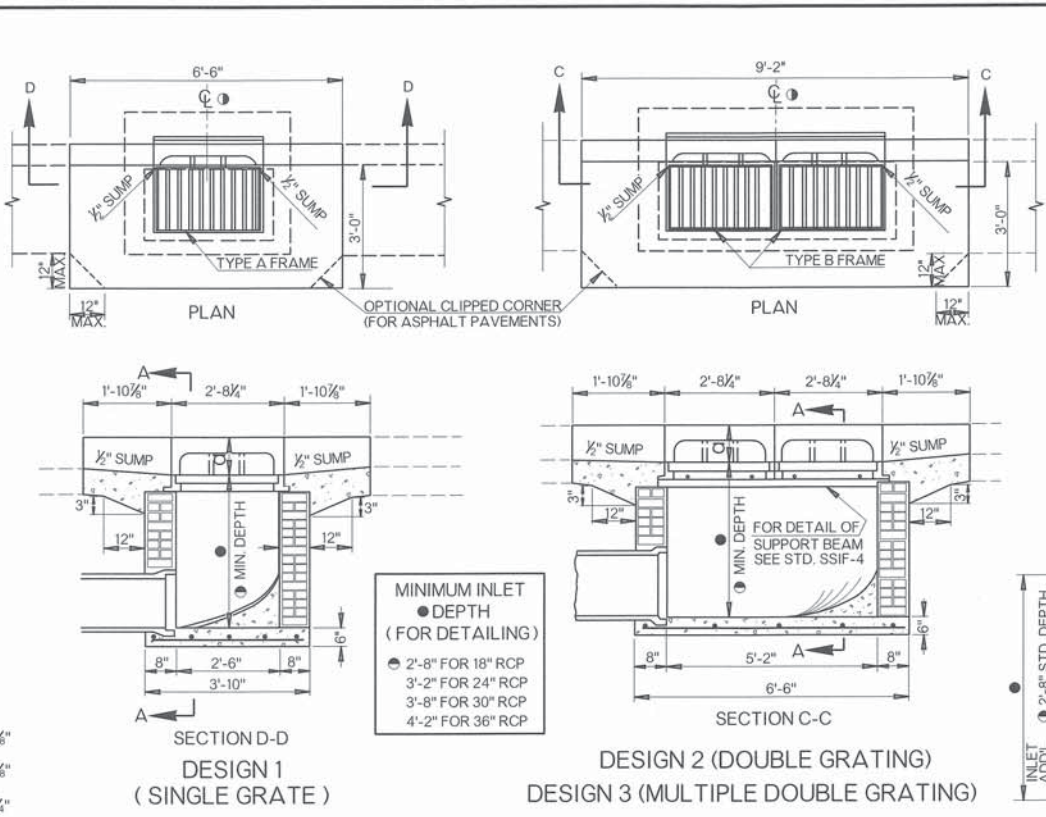
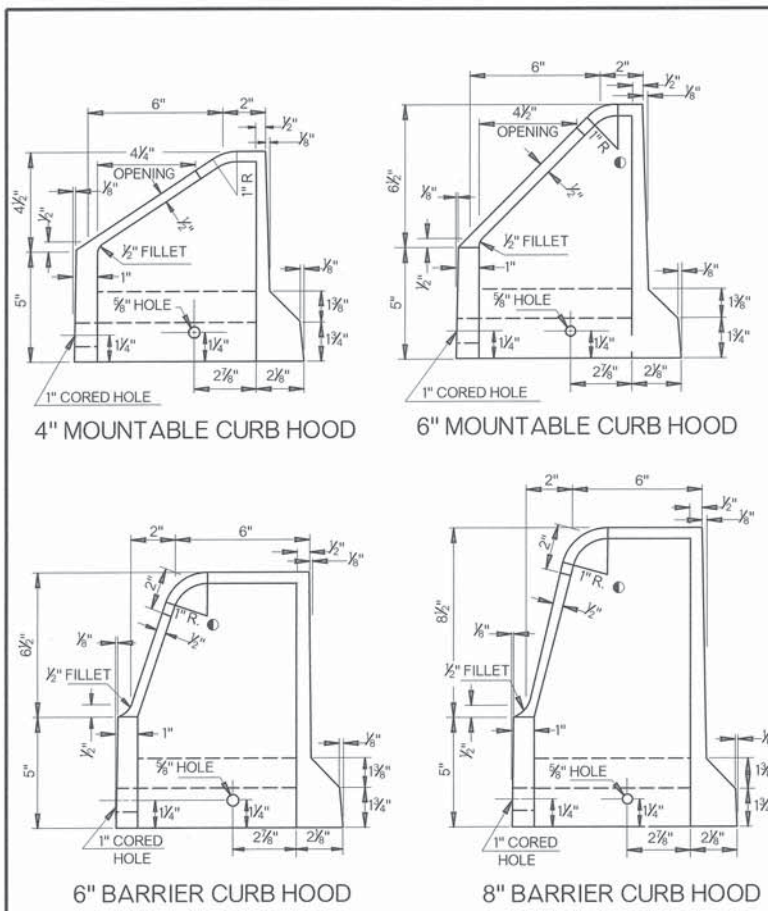
ROADWAY DESIGN DIVISION STANDARD

DOT STORM SEWER CONSTRUCTION DETAILS

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

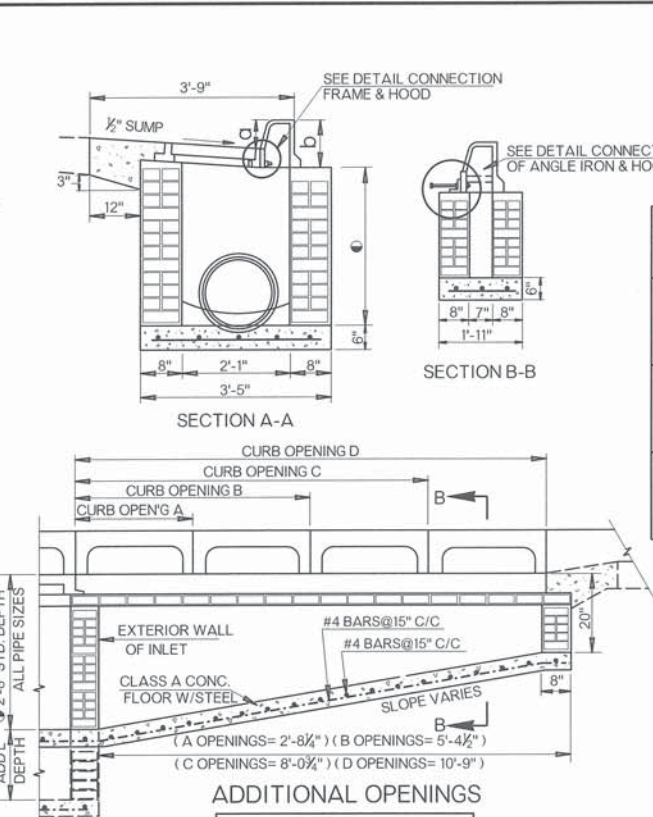
SSCD-3	1
R-38	

OKLAHOMA DEPARTMENT OF TRANSPORTATION		
STANDARD REVISIONS		
DESCRIPTION	DATE	

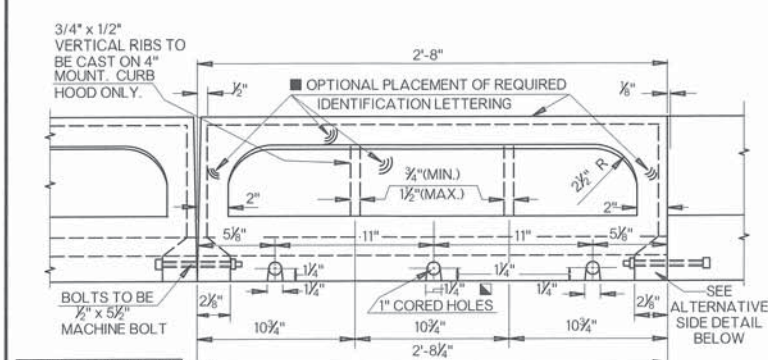


MINIMUM INLET DEPTH (FOR DETAILING)

- 2'-8" FOR 18" RCP
- 3'-2" FOR 24" RCP
- 3'-8" FOR 30" RCP
- 4'-2" FOR 36" RCP

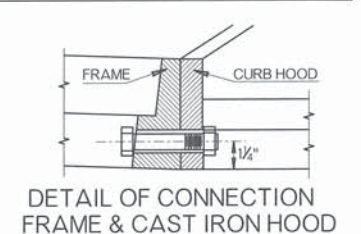


DESIGN NO.	TYPE OF CURB	DIMENSIONS	
		a	b
1	4" MOUNTABLE	4 1/2"	9 1/2"
	6" MOUNTABLE	6 1/2"	11 1/2"
	6" BARRIER	6 1/2"	11 1/2"
	8" BARRIER	8 1/2"	13 1/2"
2	4" MOUNTABLE	4 1/2"	9 1/2"
	6" MOUNTABLE	6 1/2"	11 1/2"
	6" BARRIER	6 1/2"	11 1/2"
	8" BARRIER	8 1/2"	13 1/2"
3	4" MOUNTABLE	4 1/2"	9 1/2"
	6" MOUNTABLE	6 1/2"	11 1/2"
	6" BARRIER	6 1/2"	11 1/2"
	8" BARRIER	8 1/2"	13 1/2"

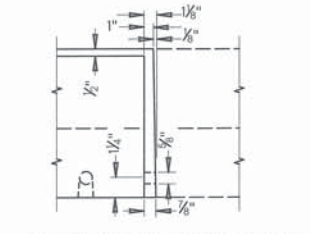


■ BOLT "HOLES" MAY BE CLOSED CORED HOLES OR SLOTS.

■ TOP OF HOOD SHALL STATE "DUMP NO WASTE" AND "DRAINS TO RIVER" OR SIMILAR WORDING.



NOTE: FRAME TO BE BOLTED TO THE HOOD WITH 3 EA. - 3/4" x 4 1/2" MACHINE BOLTS. FOR FRAME DETAILS, SEE ROADWAY STANDARD SSIF-4



QUANTITIES (FOR 18" R.C. PIPE AND MIN. DEPTH)									
DESIGN	DESIGNATION	CU. YD.	BASE AMT.	ADD'L. CF PER VERT FT	INLET FRAME & GRATE	CAST IRON HOOD	ANGLE IRON	NO.	LENGTH
1	STD.	0.24	17.76	7.89	1	1	-	-	-
	A	0.34	23.84	7.89	1	2	1	2'-5 1/2"	-
	B	0.43	30.11	7.89	1	3	1	5'-1 1/2"	-
	C	0.53	36.38	7.89	1	4	1	7'-9"	-
	D	0.63	42.66	7.89	1	5	1	10'-6 1/2"	-
	2A	0.43	29.91	7.89	1	3	2	2'-5 1/2"	2'-5 1/2"
	A-B	0.53	36.19	7.89	1	4	2	2'-5 1/2"	5'-1 1/2"
	A-C	0.62	42.46	7.89	1	5	2	2'-5 1/2"	7'-9 1/2"
	2B	0.62	42.46	7.89	1	5	2	5'-1 1/2"	5'-1 1/2"
	B-C	0.72	48.74	7.89	1	6	2	5'-1 1/2"	7'-9 1/2"
2	2C	0.82	55.01	7.89	1	7	2	7'-9 1/2"	7'-9 1/2"
	STD.	0.41	25.76	11.45	2	2	-	-	-
	B	0.60	38.11	11.45	2	4	1	5'-1 1/2"	-
	C	0.73	44.39	11.45	2	5	1	7'-9"	-
	D	0.79	50.66	11.45	2	6	1	10'-6 1/2"	-
	2B	0.79	50.46	11.45	2	6	2	5'-1 1/2"	5'-1 1/2"
3	2C	0.98	63.01	11.45	2	8	2	7'-9 1/2"	7'-9 1/2"
	B-D	0.98	63.01	11.45	2	8	2	5'-1 1/2"	10'-6 1/2"
	2D	1.17	75.56	11.45	2	10	2	10'-6 1/2"	10'-6 1/2"
	STD.	0.74	41.27	18.34	4	4	-	-	-
	B	0.93	53.62	18.34	4	6	1	5'-1 1/2"	-
	D	1.12	66.17	18.34	4	8	1	10'-6 1/2"	-
3	2B	1.12	65.98	18.34	4	8	1	5'-1 1/2"	5'-1 1/2"
	B-D	1.31	78.52	18.34	4	10	2	5'-1 1/2"	10'-6 1/2"
	2D	1.50	91.07	18.34	4	12	2	10'-6 1/2"	10'-6 1/2"

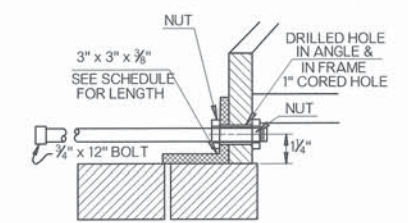
■ DEPTH OF 2'-8" SHALL BE USED FOR STANDARD DEPTH FOR ALL PIPE SIZES AND/OR PIPE TYPES. FOR INLET DEPTHS GREATER THAN STANDARD DEPTH, A PAY ITEM FOR ADDITIONAL DEPTH, VERTICAL FEET, SHALL BE USED. TO DETERMINE TOTAL INLET QUANTITY FOR INLET DEPTHS GREATER THAN 2'-8", MULTIPLY ADDITIONAL DEPTH BY ADDITIONAL CU. FT. PER VERTICAL FOOT AND ADD TO THE BASE AMOUNT.

■ QUANTITIES SHOWN ARE FOR 2 DOUBLE GRATED INLETS.

PAYMENT FOR ALL CLASS A CONCRETE AND ANY REINFORCING STEEL USED TO CONSTRUCT CAST IN PLACE INLET WALLS OR FLOORS SHALL BE INCLUDED IN THE PRICE BID FOR THE INLET. PRECAST INLET ALTERNATIVES MAY BE ACCEPTED, IN LIEU OF BRICK MASONRY OR CAST-IN-PLACE CONCRETE, IF APPROVED BY THE ENGINEER.

SPECIAL DESIGN CASTINGS, HOODS, FRAMES OR GRATES MAY BE USED, IN LIEU OF STANDARD DESIGNS SHOWN ON THIS SHEET, IF APPROVED BY THE ENGINEER.

- GENERAL NOTES**
- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
 - STANDARD SSIF-4 FRAMES AND STANDARD CIG-3 GRATES TO BE USED WITH THESE INLETS UNLESS OTHERWISE SPECIFIED. COST OF THESE ITEMS AND HOODS SHALL BE INCLUDED IN THE COST OF INLET.
 - WHEN THE INLET IS BUILT IN NEW CONCRETE PAVEMENT, THE APRON AROUND THE INLET MAY BE BUILT INTEGRAL WITH PAVEMENT OR MAY BE SEPARATE AND OF THE SIZE AS SHOWN. THE THICKNESS SHALL BE THE SAME AS THE CONCRETE PAVEMENT OR CURB AND GUTTER. IF CONSTRUCTED IN ANY OTHER AREA OR IN EXISTING PAVEMENT, THE APRON AROUND THE INLET SHALL BE THE SIZE AS SHOWN AND BUILT OF P.C. CONCRETE TO A MINIMUM 8 INCH THICKNESS.
 - THERE WILL BE NO DEDUCTION OF PAYMENT FOR CONCRETE CURB AND GUTTER OR P.C. CONCRETE THRU THE EXTENTS OF THE INLET HOODS. DEDUCTION WILL BE MADE FOR THE PAYMENT OF INTEGRAL CURB THROUGH THE EXTENTS OF THE INLET HOODS.
 - ALL LETTERING TO BE RECESSED 1/8 INCH AND SHALL NOT EXCEED ONE INCH IN HEIGHT. INFORMATION REQUIRED SHALL BE AS STATED IN THE SPECIFICATIONS. LOCATION OF LETTERING TO BE AS SHOWN, WITH ADDITIONAL IDENTIFICATION LETTERING AT OTHER LOCATIONS PERMITTED.
 - CAST IN PLACE CONCRETE WALLS MEETING MIX REQUIREMENTS OF CLASS A CONCRETE MAY BE BUILT IN LIEU OF THE BRICK MASONRY TO THE SAME DIMENSIONS AS SHOWN. NO. 4 REINFORCING STEEL BARS SPACED 30" VERTICALLY AND 12" HORIZONTALLY WILL BE REQUIRED FOR ALL CAST IN PLACE INLET WALLS EXCEEDING 5.0 FEET IN DEPTH (GUTTERLINE TO FLOWLINE). COST OF STEEL REINFORCING TO BE INCLUDED IN THE COST OF THE INLET.
 - ALL CAST IN PLACE CLASS A CONCRETE INLET FLOORS SHALL HAVE NO. 4 REINFORCING STEEL PLACED AT 15" MAXIMUM C/C SPACING IN BOTH DIRECTIONS.
 - THE STANDARD DRAWING, DESIGN NO., DESIGNATION NO., AND NUMBER OF ADDITIONAL OPENINGS SHALL BE INDICATED ON THE PLANS, I.E., EXAMPLE: STD. CI-1, DES. 1 (A-B).
 - TYPE B & C FRAMES TO BE USED FOR MULTIPLE DOUBLE GRATES. SEE ROADWAY STD. SSIF-4 FOR DETAILS.
 - BOLT(S) WITH EXPANSION DEVICES OR EPOXY TYPE PUTTY TO BE USED TO INSTALL CAST IRON HOOD INTO CONCRETE CURB. COST OF INSTALLATION TO BE INCLUDED IN PRICE BID FOR THE CURB INLET.
 - CASTINGS AS SHOWN HERE SHALL BE CAST STEEL, DUCTILE IRON OR GRAY IRON CONFORMING TO SECTION 725 OF THE SPECIFICATIONS.
 - TWO INCH RADIUS MAY BE USED IF APPROVED BY THE ENGINEER.
 - CONSTRUCTION STATIONING OF CURB INLETS IS DETERMINED BY THE CENTERLINE (C) OF THE SURFACE GRATES.



BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
611 (G)	INLET (CI DES. ▲)	EA
611 (H)	ADDITIONAL DEPTH IN INLET (CI DES. ▼)	VF
611 (I)	REPLACEMENT OF INLET FRAME AND GRATE▲	EA
611 (J)	REPLACEMENT OF INLET FRAME	EA
611 (K)	REPLACEMENT OF INLET GRATE	EA
611 (M)	REPLACEMENT OF CAST IRON HOOD	EA

▲ SPECIFY INLET DESIGN & CURB OPENING DESIGNATION.

▼ SPECIFY INLET DESIGN 1, 2 OR 3.

▲ TYPE OF FRAME AND TYPE OF GRATE SHALL BE SPECIFIED.

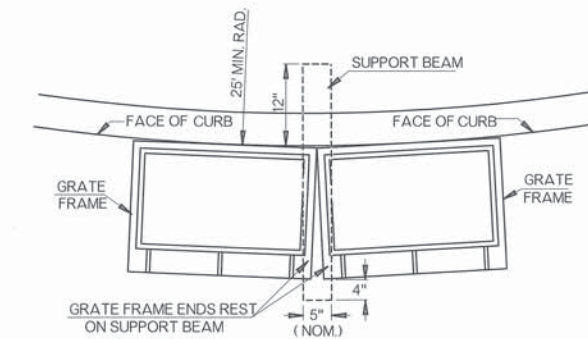
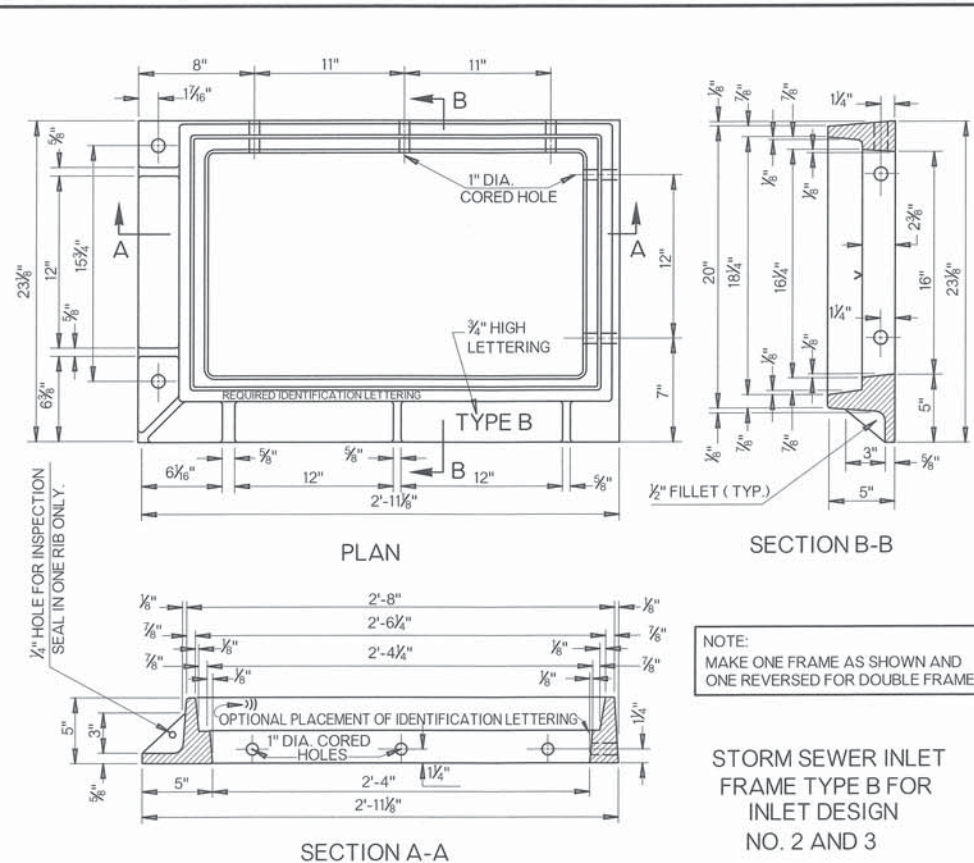
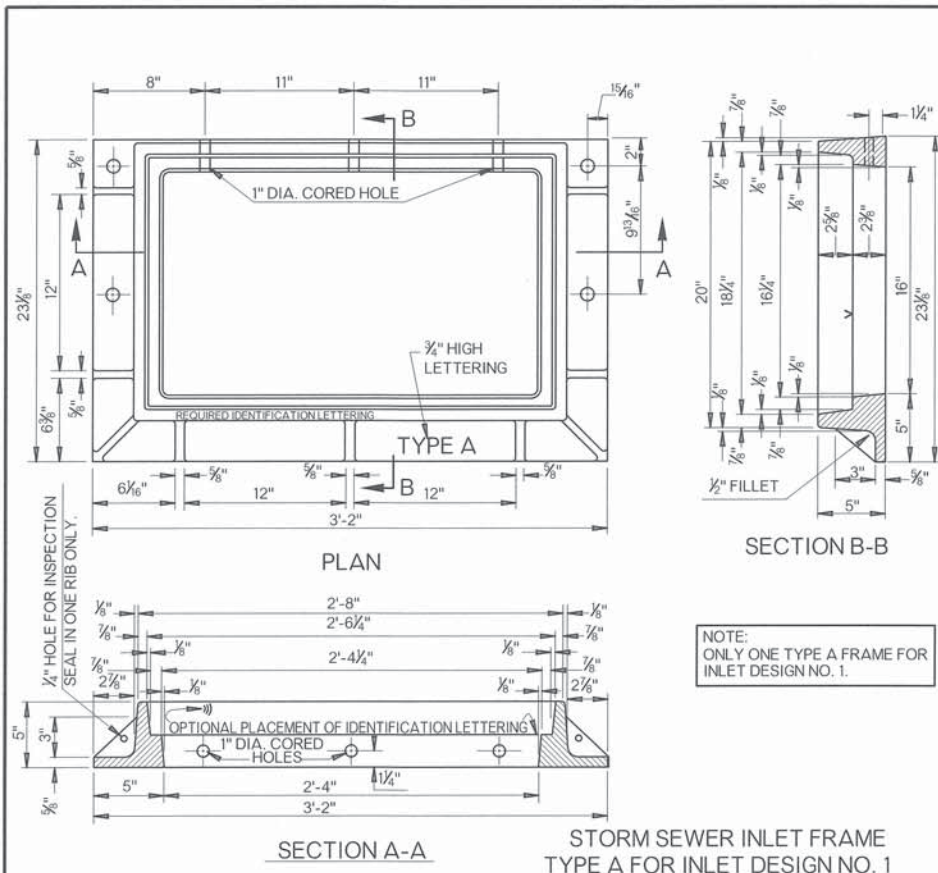
APPROVED BY ROADWAY ENGINEER: *Caleb F. A.* DATE: 04/16/15

ROADWAY DESIGN DIVISION STANDARD

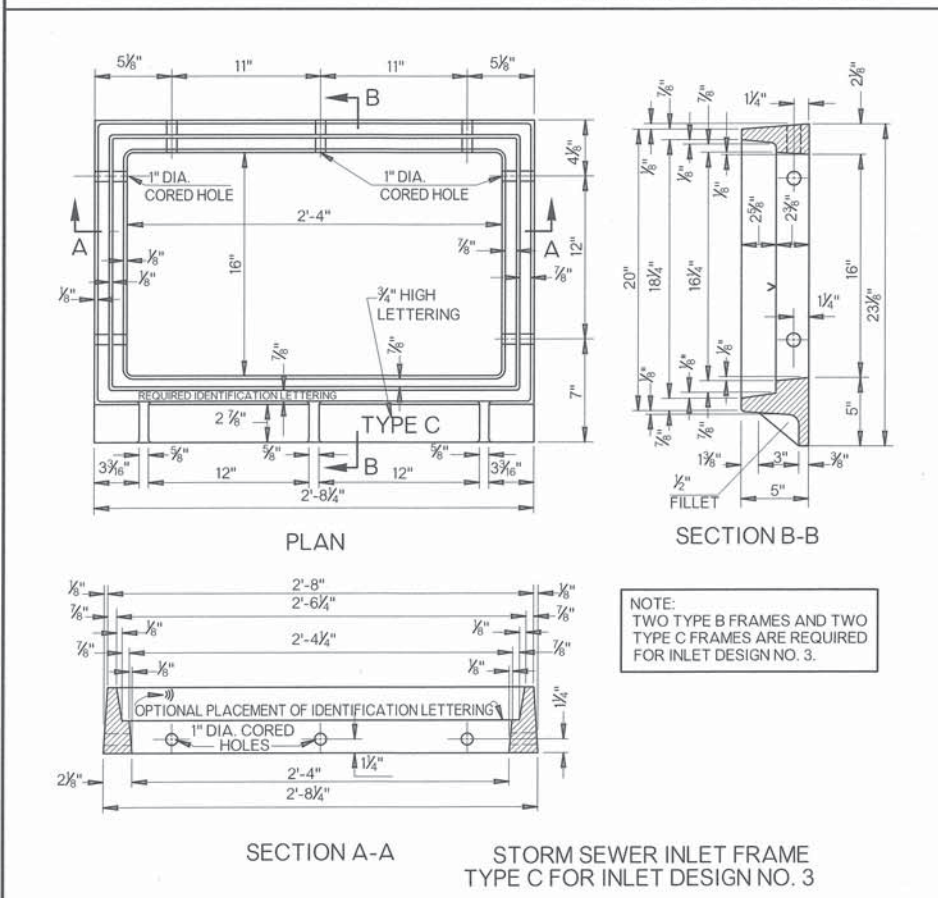
DOT

CURB INLETS

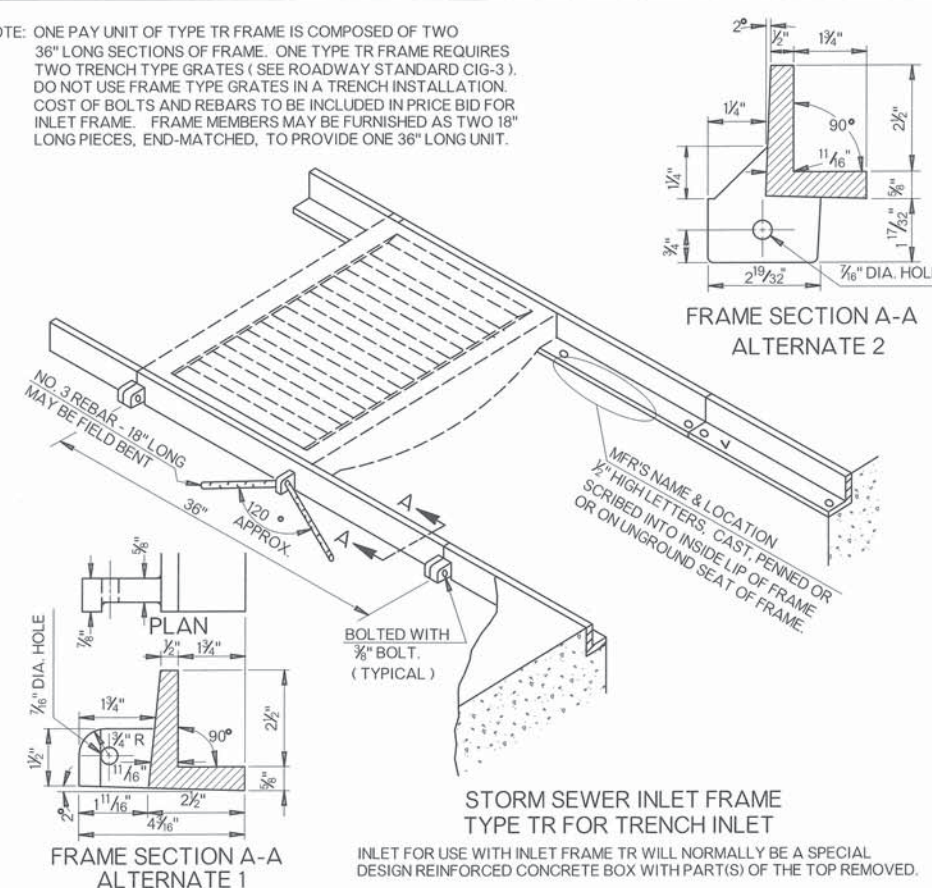
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



M 5 x 18.9 x 3'-4" LONG



NOTE: ONE PAY UNIT OF TYPE TR FRAME IS COMPOSED OF TWO 36" LONG SECTIONS OF FRAME. ONE TYPE TR FRAME REQUIRES TWO TRENCH TYPE GRATES (SEE ROADWAY STANDARD CIG-3). DO NOT USE FRAME TYPE GRATES IN A TRENCH INSTALLATION. COST OF BOLTS AND REBARS TO BE INCLUDED IN PRICE BID FOR INLET FRAME. FRAME MEMBERS MAY BE FURNISHED AS TWO 18" LONG PIECES, END-MATCHED, TO PROVIDE ONE 36" LONG UNIT.



GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- INLET DESIGN NO. 1 REQUIRES ONE TYPE A FRAME.
- INLET DESIGN NO. 2 REQUIRES TWO TYPE B FRAMES AND 2 EA. 3/4" x 5" BOLTS WITH NUTS AND ONE S 4 x 7.7 x 3'-4" LONG SUPPORT BEAM. IF BUILT ON CURVED CURB, THE INLET REQUIRES 1 EA. 3/4" x 5" BOLT WITH NUT AND 1 EA. 3/4" x 6 1/2" BOLT WITH NUT AND ONE M 5 x 18.9 x 3'-4" LONG SUPPORT BEAM.
- INLET DESIGN NO. 3 REQUIRES THE SAME APPURTENANCES AS DESIGN NO. 2 WITH TWO OR MORE TYPE C FRAMES LOCATED BETWEEN THE TWO TYPE B FRAMES AND ONE ADDITIONAL SUPPORT BEAM AND A PAIR OF BOLTS WITH NUTS FOR EACH ADDED TYPE C FRAME, PLUS ONE ADDITIONAL PAIR OF BOLTS AND SUPPORT BEAM.
- ALL LETTERING TO BE RECESSED 1/16" AND SHALL NOT EXCEED 1" IN HEIGHT. INFORMATION REQUIRED SHALL BE STATED IN THE SPECIFICATIONS. LOCATION OF LETTERING TO BE AS SHOWN WITH ADDITIONAL IDENTIFICATION LETTERING AT OTHER LOCATIONS ACCEPTABLE.
- FRAMES SHALL BE CAST STEEL, DUCTILE IRON, OR GRAY IRON CONFORMING TO SECTION 725 OF THE SPECIFICATIONS.
- INLET FRAMES AND GRATES INSTALLED DURING ORIGINAL CONSTRUCTION SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE OF THE ORIGINAL INLET.

NOTE: MACHINING (SYMBOL Δ) MAY BE ACCOMPLISHED BY MILLING OR BY LEVEL GRINDING.

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
611 (I)	REPLACEMENT OF INLET FRAME AND GRATE (■)	EA
611 (J)	REPLACEMENT OF INLET FRAME (■)	EA

■ TYPE OF FRAME AND TYPE OF GRATE SHALL BE SPECIFIED.

TYPE A, B, OR C FRAMES AS SHOWN HERE WITH GRATES FROM STD. CIG-3 (TYPE VG-F OR RVG-F) COMPRISE THE PAY ITEM. SEE NOTE THIS SHEET FOR PAY UNIT.

APPROVED BY ROADWAY ENGINEER: *Caleb A.* DATE 04/16/15
ROADWAY DESIGN DIVISION STANDARD

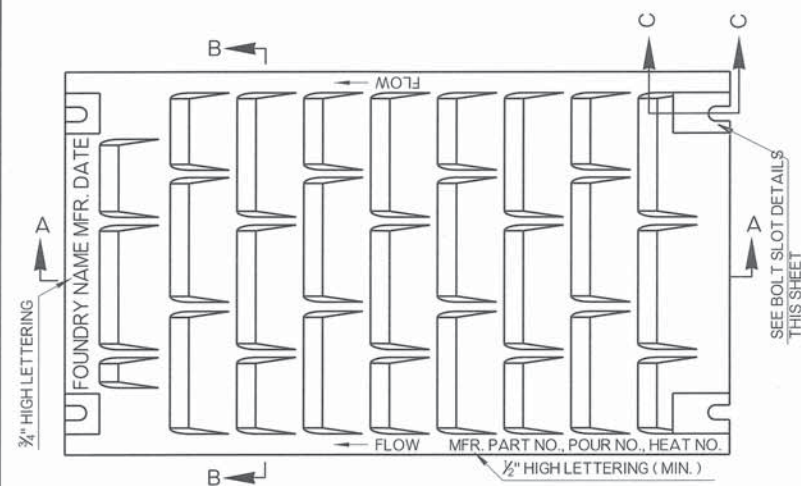


STORM SEWER INLET FRAMES (CURB INLETS)

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

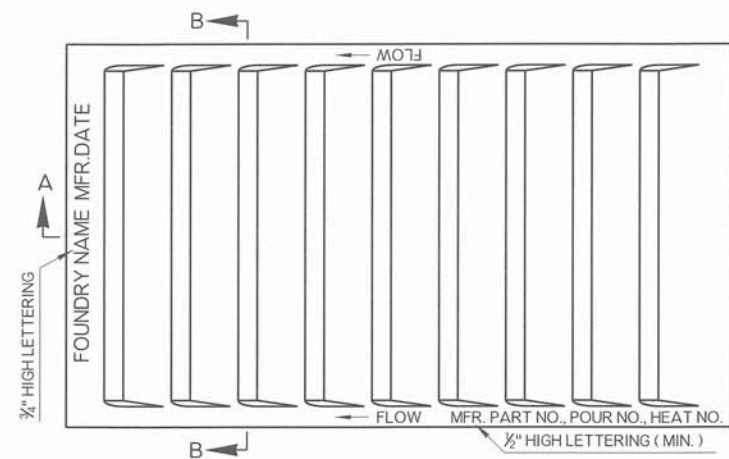
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R-40	

STANDARD REVISIONS	
DESCRIPTION	DATE



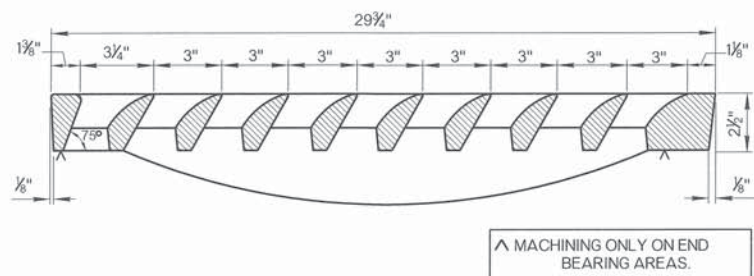
PLAN - RIBBED VANE GRATE
(SHOWN FOR TRENCH INSTALLATION)

TYPE RVG-F (FRAME INSTALLATION)
TYPE RVG-T (TRENCH INSTALLATION)

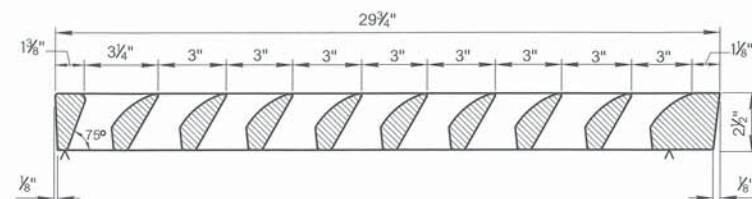


PLAN - VANE GRATE
(SHOWN FOR FRAME INSTALLATION)

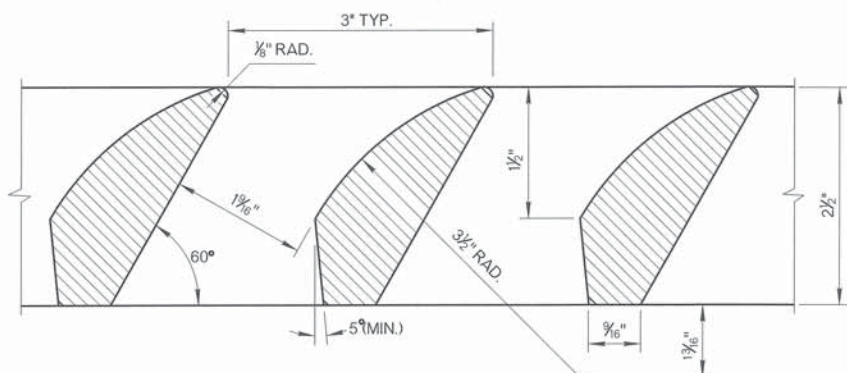
TYPE VG-F (FRAME INSTALLATION)
TYPE VG-T (TRENCH INSTALLATION)



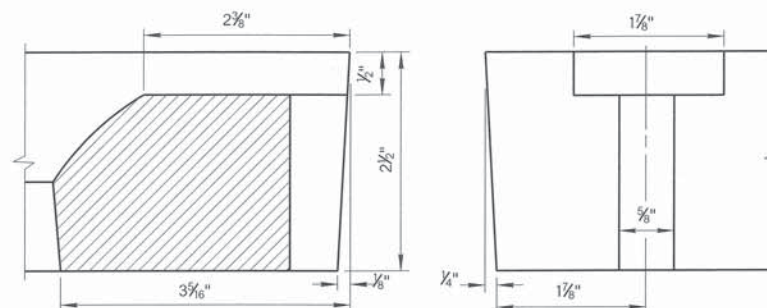
SECTION A - A (TRENCH INSTALLATION)



SECTION A - A (FRAME INSTALLATION)



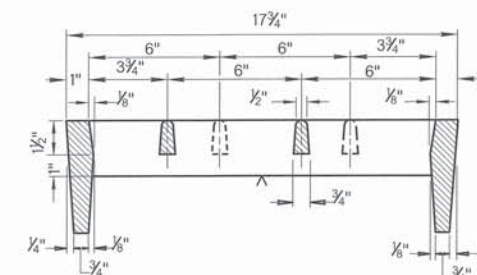
TYPICAL SECTION THRU VANES



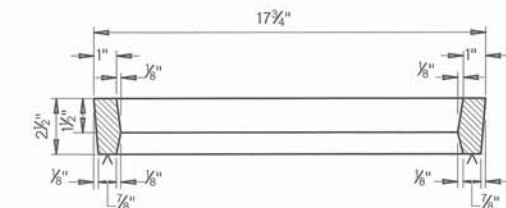
SECTION C - C

END VIEW

BOLT SLOT DETAILS



SECTION B - B (TRENCH INSTALLATION)



SECTION B - B (FRAME INSTALLATION)

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. FRAME TYPE GRATES SHALL NOT TO BE USED IN TRENCH INSTALLATIONS.
3. GRATES SHALL BE INSTALLED IN THE FRAME WITH FLOW ARROW POINTING DOWNSTREAM OR TOWARD THE LOW POINT IN A SUMP.
4. ALL LETTERING IS TO BE RECESSED 1/16". ALL INFORMATION REQUIRED SHALL BE SUFFICIENT FOR IDENTIFICATION, AS SHOWN.
5. GRATES SHALL BE CAST STEEL, DUCTILE IRON, OR GRAY IRON CONFORMING TO SECTION 725 OF THE SPECIFICATIONS.
6. ALL GRATES INSTALLED IN A TRENCH FRAME (STD. SSIF-4) SHALL HAVE A BOLTED HOLD-DOWN FEATURE. IF INSTALLED IN AN ANGLE IRON FRAME OR RESTING ON A CONCRETE SHOULDER, A POSITIVE HOLD-DOWN FEATURE, APPROVED BY THE ENGINEER, SHALL BE USED.
7. INLET FRAMES, GRATES AND COVER GRATES INSTALLED DURING ORIGINAL CONSTRUCTION SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE OF THE ORIGINAL INLET OR MANHOLE.

NOTE: MACHINING (SYMBOL ^) MAY BE ACCOMPLISHED BY MILLING OR BY LEVEL GRINDING.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
611 (I)	REPLACEMENT OF INLET FRAME AND GRATE	EA
611 (K)	REPLACEMENT OF INLET GRATE (TYPE ■)	EA

▼ ANY FRAME TYPE GRATE ON THIS DRAWING INSTALLED IN A PROPER FRAME, AS SHOWN ON ROADWAY STANDARD SSIF-4 (TYPE A, B, C) WILL COMPRISE THE PAY ITEM.

■ CAST INLET GRATE NOMENCLATURE	
TYPE VG-F	VANE GRATE - FRAME TYPE
TYPE VG-T	VANE GRATE - TRENCH TYPE
TYPE RVG-F	RIBBED VANE GRATE - FRAME TYPE
TYPE RVG-T	RIBBED VANE GRATE - TRENCH TYPE

APPROVED BY ROADWAY ENGINEER: *Calvin A. H.* DATE: 04/16/15
ROADWAY DESIGN DIVISION STANDARD



CAST IRON GRATES
(CURB INLETS)

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

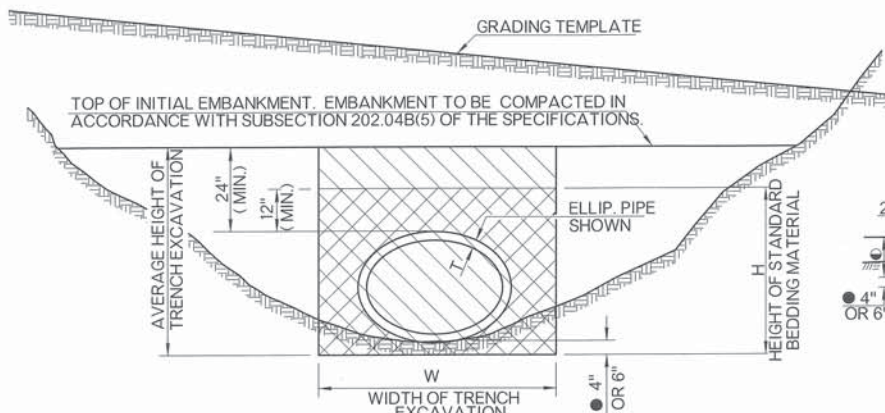
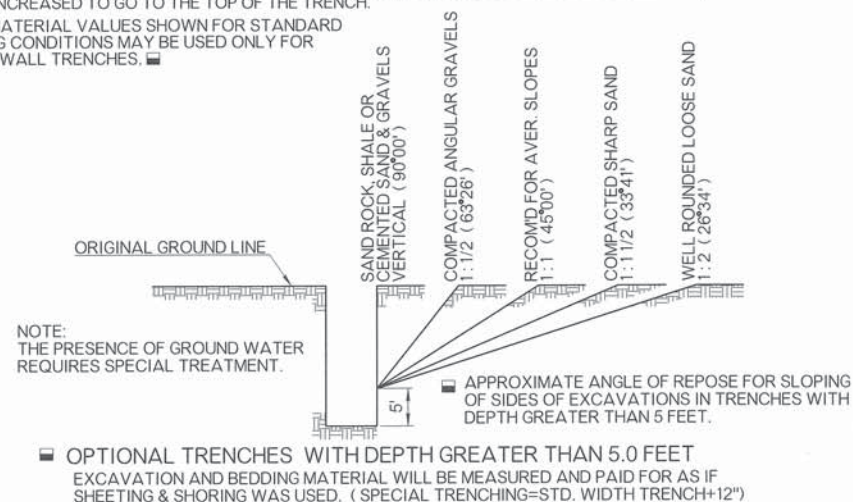
CIG-3	0
R-41	

STANDARD REVISIONS	
DESCRIPTION	DATE

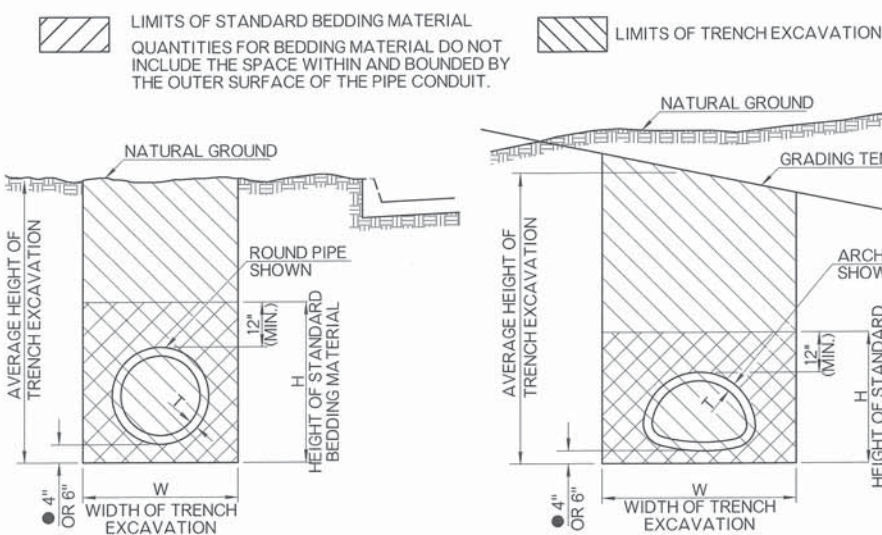
TRENCHING DIMENSIONS AND STANDARD BEDDING MATERIAL QUANTITIES

PIPE DIAM. OR DESIGN EQUIV.	H	T	SINGLE PIPE STANDARD TRENCHING		DOUBLE PIPE STANDARD TRENCHING		TRIPLE PIPE STANDARD TRENCHING		SPECIAL TRENCHING SINGLE, DOUBLE & TRIPLE PIPE OPTIONS W+12"
			W	STANDARD BEDDING MATERIAL	W	STANDARD BEDDING MATERIAL	W	STANDARD BEDDING MATERIAL	ADD'L STANDARD BEDDING MATERIAL
IN	FT.	FT.	FT.	CY/LF	FT.	CY/LF	FT.	CY/LF	CY/LF
18	3.25	0.208	3.17	0.274	5.67	0.468	8.17	0.663	0.120
24	3.83	0.25	4.00	0.386	7.00	0.629	10.00	0.873	0.142
30	4.42	0.292	4.58	0.474	8.33	0.811	12.08	1.146	0.163
36	5	0.333	6.17	0.751	10.67	1.193	15.17	1.636	0.185
42	5.58	0.375	6.75	0.870	12.00	1.429	17.25	1.989	0.207
48	6.17	0.417	7.33	0.996	13.33	1.688	19.33	2.379	0.228
54	6.75	0.458	7.92	1.126	14.67	1.960	21.42	2.794	0.250
60	7.33	0.5	8.50	1.262	16.00	2.251	24.50	3.510	0.271
66	8.08	0.542	9.08	1.408	17.33	2.565	26.58	4.173	0.299
72	8.67	0.583	9.67	1.561	18.67	2.901	28.67	4.724	0.321
78	9.25	0.625	10.25	1.720	20.00	3.260	30.75	5.122	0.343
84	9.83	0.667	10.83	1.885	21.33	3.641	32.83	5.429	0.364
90	10.42	0.708	11.42	2.056	22.67	4.043	34.92	5.759	0.386
96	11	0.75	12.00	2.231	24.00	4.467	37.00	6.123	0.407
18	2.88	0.208	3.50	0.271	6.33	0.471	9.17	0.671	0.106
21	3.08	0.229	4.12	0.338	7.29	0.567	10.46	0.796	0.114
24	3.33	0.250	4.38	0.374	7.75	0.624	11.13	0.874	0.123
30	3.79	0.291	6.10	0.603	10.13	0.915	14.16	1.227	0.140
36	4.20	0.333	6.81	0.700	11.67	1.097	16.53	1.493	0.156
42	4.69	0.375	7.50	0.813	13.17	1.308	18.83	1.802	0.173
48	5.17	0.416	8.21	0.930	14.67	1.546	21.17	2.156	0.191
54	5.58	0.458	8.93	1.057	15.67	1.812	23.53	2.556	0.207
60	6.08	0.500	9.68	1.192	16.67	2.106	25.83	2.996	0.225
66	6.75	0.542	10.45	1.343	17.67	2.427	28.17	3.476	0.250
72	7.00	0.583	11.25	1.500	18.67	2.774	30.53	3.996	0.259
78	7.83	0.625	12.08	1.673	19.67	3.146	32.83	4.456	0.272
84	8.67	0.667	12.93	1.861	20.67	3.544	35.17	4.856	0.290
90	9.50	0.708	13.80	2.064	21.67	3.968	37.53	5.206	0.330
96	10.42	0.750	14.70	2.282	22.67	4.418	39.93	5.506	0.350
18	2.96	0.229	3.62	0.282	6.54	0.487	9.46	0.691	0.109
24	3.46	0.27	4.54	0.387	7.54	0.640	10.54	0.893	0.128
30	3.96	0.312	6.29	0.629	10.54	0.954	14.74	1.28	0.147
36	4.50	0.375	7.00	0.743	12.00	1.153	17.00	1.564	0.167
42	5.00	0.416	7.75	0.862	13.64	1.379	19.53	1.896	0.185
48	5.42	0.458	8.54	1.000	15.33	1.630	22.17	2.270	0.200
54	5.92	0.5	9.33	1.148	17.00	1.906	24.83	2.686	0.219
60	6.42	0.541	10.17	1.306	18.67	2.216	27.53	3.146	0.238
66	6.91	0.583	11.08	1.474	20.33	2.560	30.17	3.650	0.256
72	7.41	0.625	12.00	1.652	22.00	2.938	32.83	4.196	0.275
78	7.91	0.667	13.00	1.840	23.67	3.350	35.53	4.686	0.293
84	8.58	0.708	14.00	2.038	25.33	3.796	38.17	5.126	0.318
90	9.00	0.75	15.00	2.246	27.00	4.276	40.83	5.516	0.333
96	9.5	0.791	16.00	2.464	28.67	4.790	43.53	5.856	0.352

NOTE: QUANTITIES FOR 66" & 78" EQUIV. DIAM. ARCH PIPE BASED ON METAL PIPE & ESTIMATED WALL THICKNESS.
 ■ FOR PIPES UNDER PAVEMENT, THE H DIMENSION AND THE STANDARD BEDDING MATERIAL QUANTITY, SHALL BE INCREASED TO GO TO THE TOP OF THE TRENCH.
 ■ BEDDING MATERIAL VALUES SHOWN FOR STANDARD TRENCHING CONDITIONS MAY BE USED ONLY FOR VERTICAL WALL TRENCHES. ■



METHOD NO. 1
TRENCH EXCAVATION IN EMBANKMENT SECTIONS

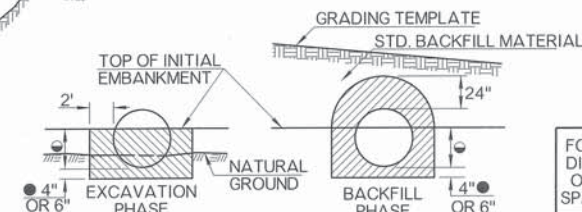


TRENCH EXCAVATION IN CUT SECTIONS

EQUIV. DIA.	REINF. CONC. ARCH PIPE	STEEL ARCH PIPE	ALUMINUM ARCH PIPE	REINF. CONC. ELLIPTICAL PIPE
18"	22" x 13"	21" x 15"	21" x 15"	14" x 23"
21"		24" x 18"	24" x 18"	
24"	28" x 18"	28" x 20"	28" x 20"	19" x 30"
27"				22" x 34"
30"	36" x 22"	35" x 24"	35" x 24"	24" x 38"
36"	43" x 26"	42" x 29"	42" x 29"	29" x 45"
42"	51" x 31"	49" x 33"	49" x 33"	34" x 53"
48"	58" x 36"	57" x 38"	57" x 38"	38" x 60"
54"	65" x 40"	64" x 43"	64" x 43"	43" x 68"
60"	73" x 45"	71" x 47"	71" x 47"	48" x 76"
66"		77" x 52"	77" x 52"	53" x 83"
72"	88" x 54"	83" x 57"	83" x 57"	58" x 91"
78"		87" x 63"	92" x 65" ▲	63" x 98"
84"	102" x 62"	95" x 67"	95" x 67" ▲	68" x 106"
90"	115" x 72"	103" x 71"	103" x 71" ▲	72" x 113"
96"	122" x 77"	112" x 75"	112" x 75" ▲	77" x 121"

▲ STRUCTURAL PLATE ARCH.

● EMBANKMENT HEIGHT PRIOR TO EXCAVATION
 PIPE SIZES FROM 18" TO 42" = 30"
 PIPE SIZES FROM 48" TO 84" = 2/3 DIAM.
 PIPE SIZES LARGER THAN 84" = 60"



METHOD NO. 2 PAY QUANTITIES WILL BE CALCULATED AND PAID FOR WHEN METHOD NO. 2 IS USED.

METHOD NO. 2
(OPTIONAL INSTALLATION FOR R. C. PIPE)

FOR DIA. OR SPAN	CONDUIT SHAPE			DIST.
	ROUND	ARCH	ELLIPTICAL	G
UP TO 24"	UP TO 24"	UP TO 36"	UP TO 36"	12"
25" TO 72"				D/2"
37" TO 108"	37" TO 108"	37" TO 108"		D/3"
OVER 73"	OVER 108"	OVER 108"		36"



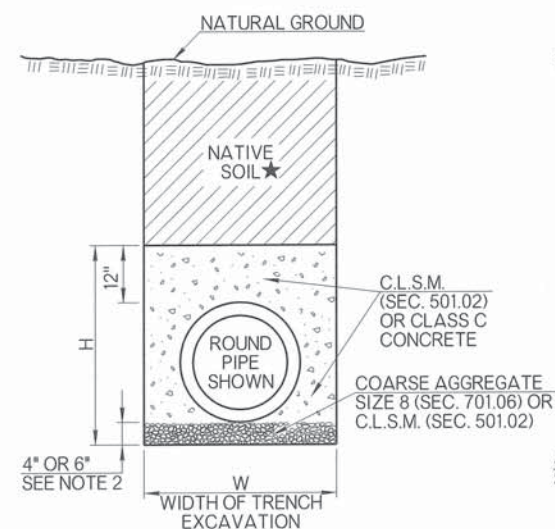
GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- TRENCH EXCAVATION AND BEDDING MATERIAL WILL NOT BE REQUIRED FOR PIPE INSTALLATIONS OF SIDE DRAINS UNLESS OTHERWISE NOTED ON THE PLANS.
- FOR PIPE UNDERDRAIN INSTALLATIONS, SEE ROADWAY STANDARD PUD-3.
- SPECIAL TRENCHING CONDITIONS ARE THOSE AS DEFINED BY O.S.H.A. REGULATIONS, TITLE 29 CFR CHAPTER XVII, PART 1926.650, 1926.651 & 1926.652, SO DEFINED WILL APPLY UNTIL THEY ARE IN CONFLICT WITH CURRENT SPECIFICATIONS. FOR TRENCH DEPTHS OVER FIVE FEET, WHERE O.S.H.A. REGULATIONS FOR SPECIAL TRENCHING ARE APPLIED, QUANTITIES AND DIMENSIONS FOR SPECIAL TRENCHING WILL BE USED FOR COMPUTING QUANTITIES. SEE TABLE OF TRENCHING DIMENSIONS AND STANDARD BEDDING MATERIAL QUANTITIES.
- NORMAL BACKFILLING OPERATIONS SHALL FOLLOW BEDDING AND PIPE INSTALLATION AS CLOSELY AS PRACTICAL. IN NO CASE SHALL A PIPE INSTALLATION SUBJECT TO SUDDEN FLOW DEVELOPMENT BE LEFT WITHOUT SUFFICIENT BACKFILL TO RESTRAIN THE CONDUIT AND PREVENT JOINT SEPARATION AND/OR PIPING SCOUR. PHYSICALLY RESTRAINING THE CONDUIT MAY BE USED TO AUGMENT OR REPLACE THIS IMMEDIATE BACKFILL REQUIREMENT.
- ANY EXCESS EXCAVATION NOT USED FOR BACKFILL WILL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF, BY HIM, IN A MANNER APPROVED BY THE ENGINEER.
- STANDARD BEDDING QUANTITIES FOR ROUND PIPE ARE BASED ON AASHTO DESIGNATED CLASS III (WALL B) REINFORCED CONCRETE PIPE.
- WHEN REQUIRED, THE SIDES OF THE TRENCHES SHALL BE SHEETED AND SHORED OR OTHERWISE SUPPORTED WHEN THE TRENCH IS MORE THAN 5.0 FEET IN DEPTH. IN LIEU OF SHEETING, THE SIDES OF THE TRENCH ABOVE THE 5.0 FOOT LEVEL MAY BE SLOPED TO PRECLUDE COLLAPSE, SEE OPTIONAL TRENCHES DETAIL THIS SHEET.
- PROPER COMPACTION OF BACKFILL REQUIRES A VERTICAL WALLED TRENCH TO 24 INCHES ABOVE TOP OF PIPE, REGARDLESS OF EXCAVATION ABOVE THAT ELEVATION.
- EQUIVALENT PIPE SIZES 66 INCHES AND LARGER REQUIRE 6 INCHES OF BEDDING MATERIAL BELOW PIPE CONDUIT.
- ELLIPTICAL PIPE DIMENSIONS CONFORM TO AASHTO M 207, AS DESIGNATED RISE BY SPAN.
- FOR COMPUTING TRENCH EXCAVATION & STANDARD BEDDING QUANTITIES, THE LENGTH OF THE CULVERT SHALL INCLUDE END SECTION AND END TREATMENT LENGTHS.
- MULTIPLE PIPE INSTALLATIONS WILL REQUIRE A MINIMUM OF 12" BETWEEN PIPES FOR PROPER COMPACTION.

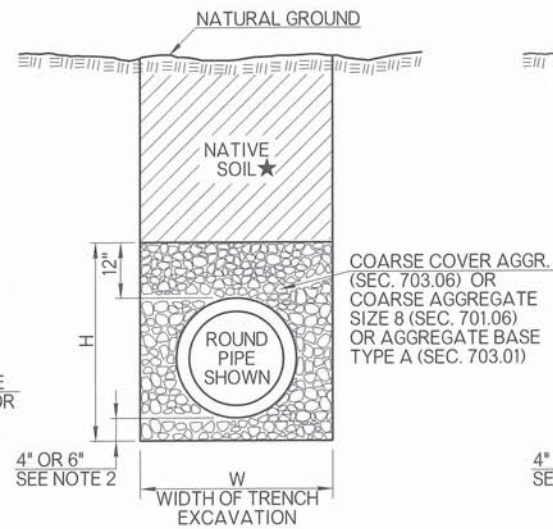
BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
613 (R)	STANDARD BEDDING MATERIAL, CLASS A	CY
613 (S)	STANDARD BEDDING MATERIAL, CLASS B	CY
613 (T)	STANDARD BEDDING MATERIAL, CLASS C	CY
613 (V)	TRENCH EXCAVATION	CY

APPROVED BY ROADWAY ENGINEER: *Calvin A.* DATE: 02/10/15
 ROADWAY DESIGN DIVISION STANDARD
 STANDARD PIPE INSTALLATION

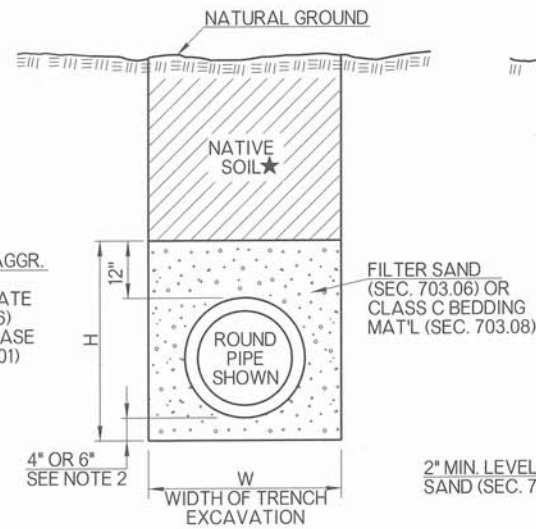
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



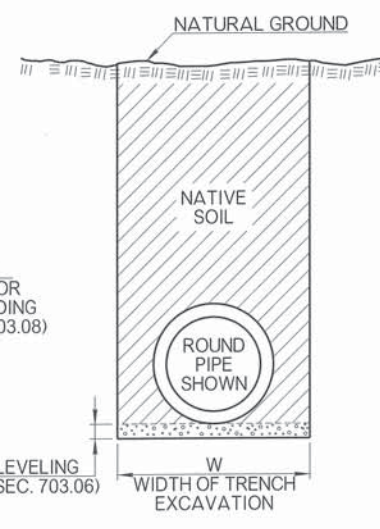
CLASS A BEDDING



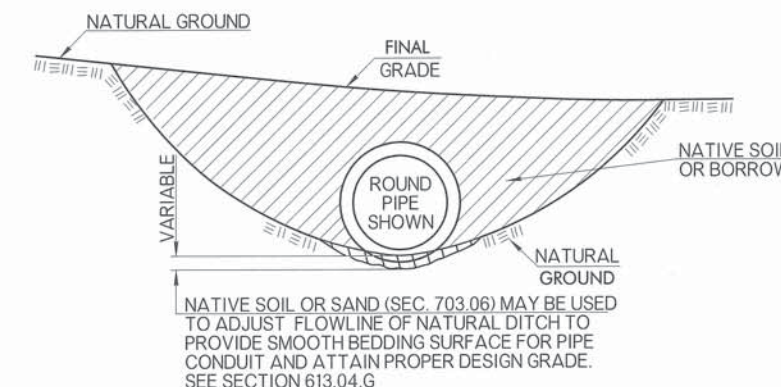
CLASS B BEDDING



CLASS C BEDDING



CLASS D BEDDING ALTERNATE 1



CLASS D BEDDING ALTERNATE 2

GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- EQUIVALENT PIPE SIZES 66 INCHES AND LARGER REQUIRE 6 INCHES OF BEDDING MATERIAL BELOW PIPE CONDUIT.
- NATIVE SOIL FOR BACKFILL, TO BE COMPACTED IN ACCORDANCE WITH SECTION 202.04 OF THE STANDARD SPECIFICATIONS.
- A BETTER CLASS OF BEDDING MAY BE SUBSTITUTED FOR THE NEXT LOWER CLASS. EXAMPLE: CLASS A STANDARD BEDDING CAN BE USED IN LIEU OF CLASS B STANDARD BEDDING.
- FOR TRENCH WIDTH (W), BEDDING HEIGHT (H), PIPE DATA, MULTIPLE PIPE SPACING & BEDDINGS DATA, SEE ROADWAY STANDARDS SPI-4 & FPI-3.
- DATA TABLE WILL DISPLAY 'NA' WHEN PIPE MATERIALS ARE NOT ALLOWED.
- STANDARD BEDDING CLASS D MATERIAL (S) (ALTERNATE 1) WILL BE CONSIDERED AS INCIDENTAL AND NOT BE PAID FOR SEPARATELY. COST FOR BORROW OR FILL MATERIAL, NEEDED FOR ALTERNATE 2, WILL BE INCLUDED IN THE PRICE OF THE PIPE.
- PIPE MATERIAL (S) / PRODUCT (S) NOT SHOWN IN THE PIPE BEDDING TABLE WILL BE EVALUATED AND APPROVED ON A CASE BY CASE BASIS.
- ALL TEMPORARY PIPES SHALL HAVE CLASS D BEDDING UNLESS OTHERWISE SHOWN IN THE PLANS.
- BEDDING MATERIAL TYPE B, C, AND D, SHALL BE PLACED IN 6" LAYERS AND COMPACTED TO THE SPECIFIED DENSITY USING HAND OPERATED EQUIPMENT ONLY.
- ★ WHEN PIPE INSTALLATION IS UNDER PAVING, IN LIEU OF BACKFILLING WITH NATIVE SOIL, PLACE BEDDING MATERIAL ALL THE WAY TO TOP OF TRENCH.
- THE USE OF AN ALTERNATE PIPE AND ITS CORRESPONDING BEDDING MATERIAL WILL BE ACCEPTABLE PROVIDED THE CRITERIA IN THE DESIGN TABLE IS MET
- POLYPROPYLENE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321.

PIPE BEDDING CLASS/DESIGN TABLE							
TYPE OF PIPE	■ UNDER PAVING				OUTSIDE PAVING		
	CROSS DRAIN (NHS OR ADT > 6000 VPD)	CROSS DRAIN (OTHER)	STORM SEWER (NHS OR ADT > 6000 VPD)	STORM SEWER (OTHER)	CROSS DRAIN	SIDE DRAIN	STORM SEWER
REINFORCED CONCRETE PIPE	B	C	B	C	C	D	C
CORRUGATED GALV. STEEL PIPE (CGSP)	NA	B	NA	B	C	D	C
MILL PRECOATED CGSP	NA	B	NA	B	C	D	C
CORRUGATED GALV. STRUCT. PLATE	NA	B	NA	B	C	D	C
ALUMINIZED TYPE II CSP	NA	B	NA	B	C	D	C
CORRUGATED POLYETHYLENE / PVC	NA	A	NA	A	B	B	B
POLYVINYL CHLORIDE (SC 40/80 PVC)	NA	NA	NA	NA	NA	NA	NA
POLYPROPYLENE PIPE (PP) ▲	NA	B	NA	B	C	D	C

- WHEN THERE IS ANY POSSIBILITY OF THE PAVEMENT BEING WIDENED DURING THE LIFE OF THE DRAINAGE STRUCTURE, THE BEDDING SHALL MEET THE 'UNDER PAVING SECTION' CRITERIA FOR THE FULL EXTENT OF ANY ANTICIPATED EXPANSION TO THE FACILITY.
- ▲ BACKFILL WITH A MINIMUM OF TWO (2) FEET OF APPROVED BACKFILL MATERIAL.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
613 (R)	STANDARD BEDDING MATERIAL, CLASS A	CY
613 (S)	STANDARD BEDDING MATERIAL, CLASS B	CY
613 (T)	STANDARD BEDDING MATERIAL, CLASS C	CY

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

ROADWAY DESIGN DIVISION STANDARD

DOT STANDARD PIPE BEDDING

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

SPB-1	4
R-49	

REQUIRED PIPE CLASS FOR REINFORCED CONCRETE ROUND PIPE IN CUT SECTIONS													
PIPE DIAMETER	● MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE												
	1' TO 2'	2' THRU 10'	12'	14'	16'	18'	20'	25'	30'	35'	40'	45'	50'
12" 15" 18"	IV III III	II II	II II	II II	II II	II II	III II	III II	III II	III II	III II	III II	III II
24" 27" 30" 36"	III II II	II II	II III	III III	III IV	III IV	III IV	IV IV	IV IV	IV IV/V	IV IV/V	IV IV/V	IV IV/V
42" 48" 54" 60"	II II II	II II	III III	III III	III IV	IV IV	IV IV	IV IV	IV IV/V	IV/V IV/V	V V	IV/V IV/V	IV/V IV/V
66" 72" 78" 84"	II II II	II II	III III	III III	IV III	IV IV	IV IV	IV IV	IV/V IV/V	IV/V IV/V	V V	V V	V V
90" 96" 102" 108"	II II II	II II	II III	III III	III III	IV IV	IV IV	IV IV	IV/V IV/V	IV/V IV/V	V V	V V	V V

REQUIRED PIPE CLASS FOR REINFORCED CONCRETE ROUND PIPE IN FILL SECTIONS													
PIPE DIAMETER	● MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE												
	1' TO 2'	2' THRU 10'	12'	14'	16'	18'	20'	25'	30'	35'	40'	45'	50'
12" 15" 18"	IV III III	II II	III III	III III	IV IV	IV IV	IV IV	IV/V IV/V	V V	*	*	*	*
24" 27" 30" 36"	III II II	II II	III III	III III	IV IV	IV IV	IV IV	IV/V IV/V	V V	*	*	*	*
42" 48" 54" 60"	II II II	II II	III III	III III	IV III	IV IV	IV IV	IV/V IV/V	V V	*	*	*	*
66" 72" 78" 84"	II II II	II II	II III	III III	III III	IV IV	IV IV	IV/V IV/V	V V	V V	*	*	*
90" 96" 102" 108"	II II II	II II	II III	III III	III III	IV IV	IV IV	IV/V IV/V	V V	V V	*	*	*

* SPECIAL DESIGN PIPE. DESIGN METHOD TO CONFORM TO CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

● FILL HEIGHT MEASURED FROM TOP OF PIPE TO TOP OF SUBGRADE.


REINFORCED CONCRETE ARCH/ELLIPTICAL PIPE					
▲ CLASS A - III ARCH CLASS HE - III HORIZONTAL ELLIPTICAL CLASS VE - IV VERTICAL ELLIPTICAL					
APPROXIMATE EQUIVALENT ROUND PIPE	ARCH SIZE SPAN x RISE	HORIZONTAL ELLIPTICAL SIZE RISE x SPAN	VERTICAL ELLIPTICAL SIZE RISE x SPAN	MINIMUM COVER	MAXIMUM COVER
15"	18" x 11"			12"	10'
18"	22" x 13"	14" x 23"	23" x 14"	12"	10'
24"	28" x 18"	19" x 30"	30" x 19"	12"	10'
30"	36" x 22"	24" x 38"	38" x 24"	12"	10'
36"	43" x 26"	29" x 45"	45" x 29"	12"	10'
42"	51" x 31"	34" x 53"	53" x 34"	12"	10'
48"	58" x 36"	38" x 60"	60" x 38"	12"	10'
54"	65" x 40"	43" x 68"	68" x 43"	12"	10'
60"	73" x 45"	48" x 76"	76" x 48"	12"	10'
66"		53" x 83"	83" x 53"	12"	10'
72"	88" x 54"	58" x 91"	91" x 58"	12"	10'
78"		63" x 98"	98" x 63"	12"	10'
84"	102" x 62"	68" x 106"	106" x 68"	12"	10'
90"	115" x 72"	72" x 113"	113" x 72"	12"	10'
96"	122" x 77"	77" x 121"	121" x 77"	12"	10'
102"		82" x 128"	128" x 82"	12"	10'
108"	138" x 87"	87" x 136"	136" x 87"	12"	10'
114"		92" x 143"	143" x 92"	12"	10'
120"		97" x 151"	151" x 97"	12"	10'

▲ DIMENSIONS LISTED FOR ARCH PIPE IN PAY ITEMS SHOW TRUNCATED INCHES.

GENERAL NOTES

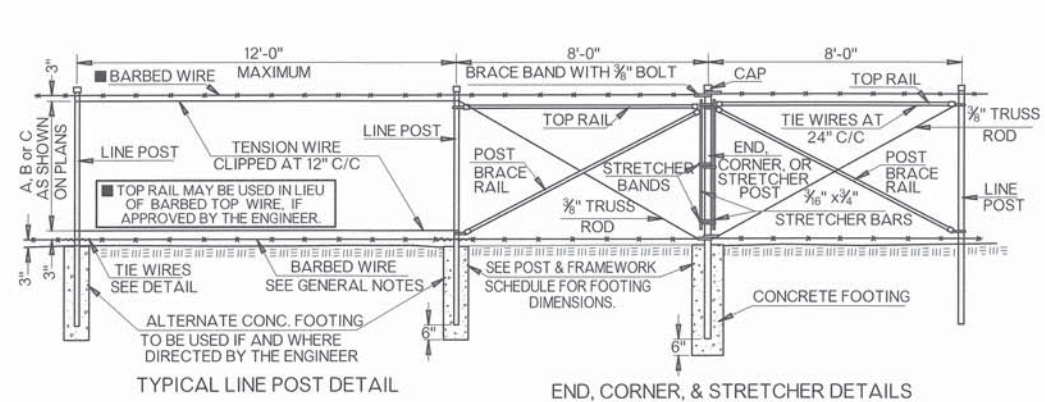
- FILL HEIGHT DESIGNS ARE BASED ON A CLASS B BEDDING, NEGATIVE PROJECTION, HS-20 LIVE LOADING, AND 120 LBS/C.F. SOIL WEIGHT.
- MINIMUM HEIGHT OF COVER FROM TOP OF PIPE TO TOP OF SUBGRADE FOR REINFORCED CONCRETE PIPE SHALL BE 12 INCHES.
- IN THE EVENT LOADS IN EXCESS OF HS-20 ARE TO BE OPERATED OVER OR ADJACENT TO THE PIPE INSTALLATION DURING THE CONSTRUCTION PHASE, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A MINIMUM OF FOUR FEET OF COVER OVER THE PIPE AT WHEEL OR TRACK PATHS.
- PROPER INSTALLATION PRACTICES MUST BE ADHERED TO AS SHOWN ON ROADWAY STANDARDS SPI-4, FPI-3 AND SPB-1.
- ANY PIPE CRACKED PRIOR TO FINAL ACCEPTANCE SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE. SURFACE DISTRESS MUST BE REPAIRED TO THE SATISFACTION OF THE ENGINEER, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- PIPE DIMENSIONS LISTED IN TABLES CONFORM TO 2005 AASHTO DESIGNATIONS.
- CLASS IV/V REINFORCED CONCRETE PIPE SHALL MEET STRENGTH TEST REQUIREMENTS OF A MAXIMUM 2000 POUNDS FOR CLASS IV AND 3000 POUNDS FOR CLASS V PIPE - FORCE PER LINEAR FOOT PER FOOT OF DIAMETER TO PRODUCE A 0.01 INCH CRACK, CONFORMING TO TEST PROCEDURE REFERENCES IN AASHTO M 170.

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

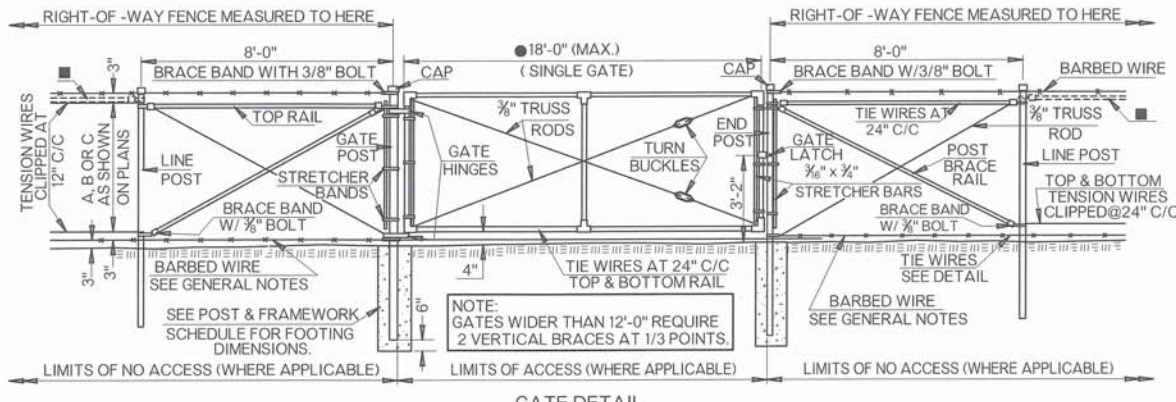


FILL HEIGHT TABLES
(CONCRETE PIPES)

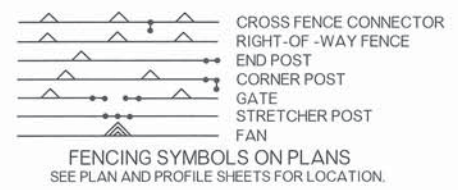
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STANDARD REVISIONS	
DESCRIPTION	DATE



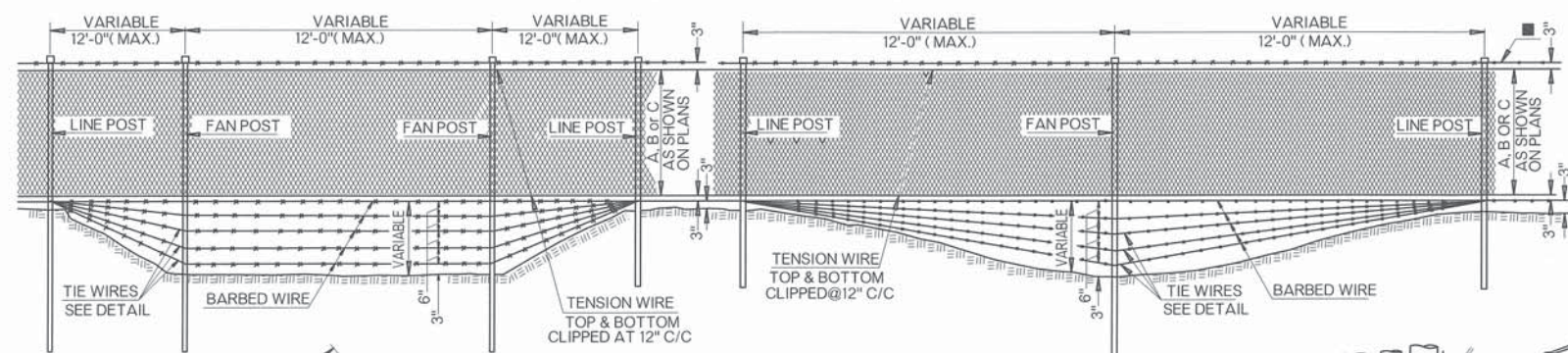
TYPICAL LINE POST DETAIL



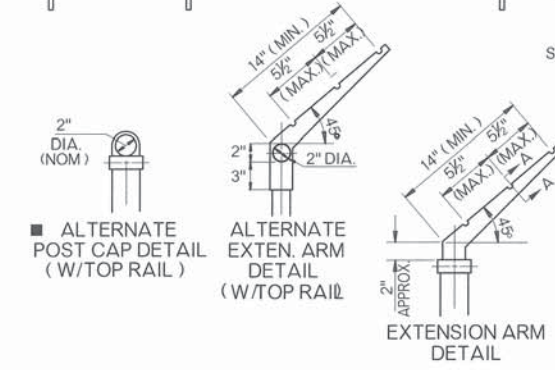
GATE DETAIL



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



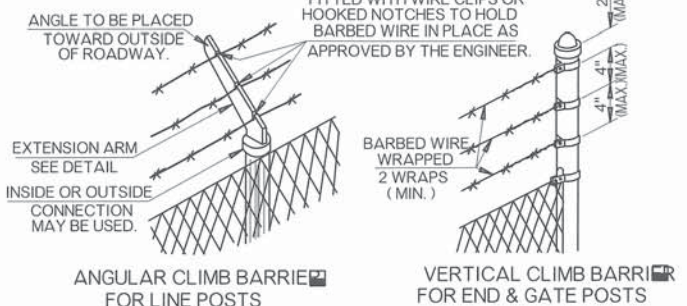
FAN DETAILS
SEE PLANS FOR APPROX. LOCATION OF FANS.



ALTERNATE POST CAP DETAIL (W/TOP RAIL)

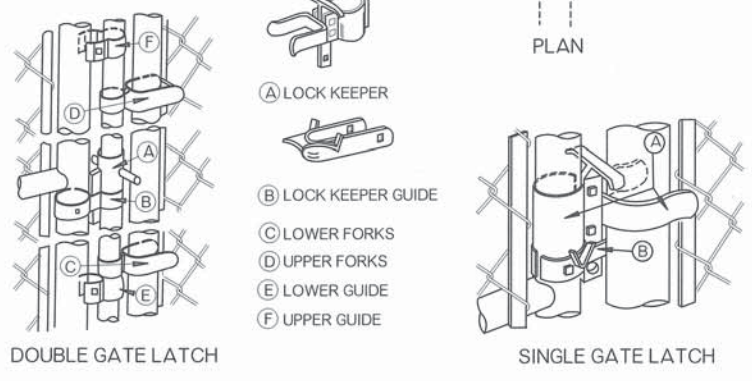
ALTERNATE EXTEN. ARM DETAIL (W/TOP RAIL)

EXTENSION ARM DETAIL



ANGULAR CLIMB BARRIER FOR LINE POSTS

VERTICAL CLIMB BARRIER FOR END & GATE POSTS

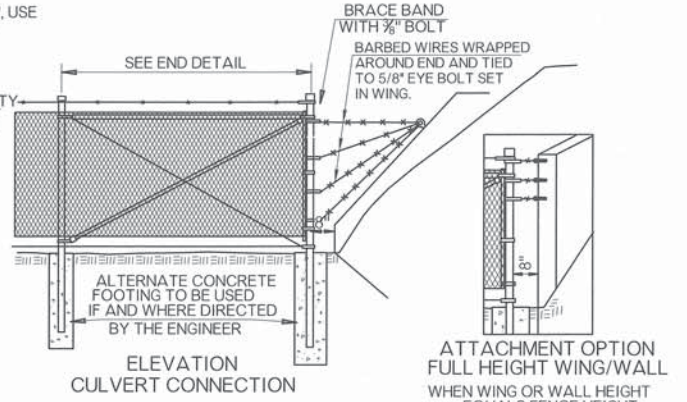


DOUBLE GATE LATCH

SINGLE GATE LATCH

TYPICAL GATE LATCH DETAIL

ALTERNATE TYPE LATCH MAY BE USED IF APPROVED BY THE ENGINEER.



ELEVATION CULVERT CONNECTION

ATTACHMENT OPTION FULL HEIGHT WING/WALL WHEN WING OR WALL HEIGHT EQUALS FENCE HEIGHT

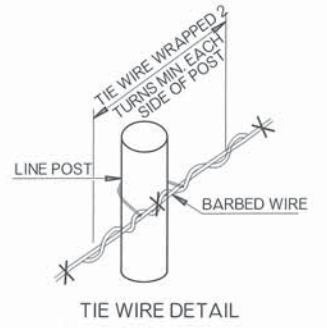
GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
- COST OF BARBED WIRE AND EXTRA LENGTH POSTS FOR FAN TO BE INCLUDED IN PRICE BID FOR CHAIN LINK FENCE.
- THE BOTTOM BARBED WIRE MAY BE OMITTED AND FABRIC INSTALLED 1" CLEAR FROM GROUND LINE IN LOCATIONS APPROVED BY THE ENGINEER.
- ALL MISCELLANEOUS HARDWARE SHALL BE FURNISHED GALVANIZED OR ALUMINUM ALLOY.
- CLIMB BARRIER SHOWN INTENDED ONLY TO SHOW AN ACCEPTABLE TYPE. ALTERNATE CLIMB BARRIERS APPROVED BY THE ENGINEER PRIOR TO INSTALLATION MAY BE USED. FENCE POST EXTENSION ARM SHALL BE MADE OF PRESSED STEEL OR MALLEABLE IRON AND SHALL BE GALVANIZED AFTER FABRICATION.
- CHAIN LINK FABRIC MAY BE ACCEPTED KNUCKLED BOTH SELVAGES IN ALL WIDTHS. NO FABRIC WITH TWISTS AND BARBS ON BOTH SELVAGES WILL BE ACCEPTED.
- STRETCHER POSTS TO BE USED IN GENERAL AT HILL TOPS AND AT BOTTOM OF VALLEYS AND AT A MAXIMUM OF 500 FEET APART.
- ALL POSTS WITH THE EXCEPTION OF LINE POSTS, FAN POSTS AND HEADWALL CONNECTION STRETCHER POSTS SHALL BE EMBEDDED IN CONCRETE WHEN FENCE IS BEING ERECTED ON EARTHEN FOUNDATIONS. OTHER POSTS MAY BE EMBEDDED IN CONCRETE IF AND AS DIRECTED BY THE ENGINEER TO SATISFY SPECIFIC FOOTING REQUIREMENTS.
- WHEN TOP RAIL IS USED IN LIEU OF BARBED TOP WIRE THE COST OF TOP RAIL SHALL BE INCLUDED IN THE PRICE BID FOR FENCE.

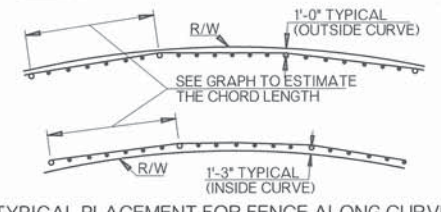
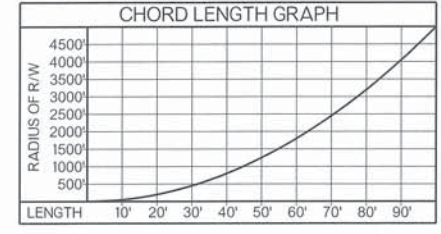
SHAPE	LINE POST				END, CORNER, OR STRETCHER POSTS	GATE POSTS				TOP RAIL OR POST BRACE RAIL		GATE FRAMES		
	○	□	□	□		○	○	○	○	○	□	○	○	○
NOMENCLATURE	1 7/8" O.D. PIPE	ROLL FORMED HEAVY "C"	ROLL FORMED STAND "C"	"H" RAIL	2 3/8" O.D. PIPE	2 7/8" O.D. PIPE	4" O.D. PIPE	5 9/16" O.D. PIPE	1 5/8" O.D. PIPE	ROLL FORMED	1 5/8" O.D. PIPE	1 7/8" O.D. PIPE	1 7/8" O.D. PIPE	
DIMENSIONS	1 9/8" O.D. T=0.145"	2.25" x 1.7" T=0.121"	1.875" x 1.625" T=0.121"	2.25" x 1.7" T=0.125"	2.375" O.D. T=0.154"	2.875" O.D. T=0.203"	4.0" O.D. T=0.226"	5.563" O.D. T=0.258"	1.66" O.D. T=0.111"	1.625" x 1.25" T=0.08"	1.66" O.D. T=0.111"	1.9" O.D. T=0.120"	1.9" O.D. T=0.145"	
CRITICAL AXIS SEC. MODULUS	.326 IN. ³	.506 IN. ³	.368 IN. ³	.661 IN. ³	.561 IN. ³	1.06 IN. ³	2.39 IN. ³	5.45 IN. ³	0.195 IN. ³	0.165 IN. ³	0.195 IN. ³	0.270 IN. ³	0.326 IN. ³	
WEIGHT	2.72 LBS./LIN. FT.	2.78 LBS./LIN. FT.	2.40 LBS./LIN. FT.	3.26 LBS./LIN. FT.	3.65 LBS./LIN. FT.	5.79 LBS./LIN. FT.	9.11 LBS./LIN. FT.	14.63 LBS./LIN. FT.	1.84 LBS./LIN. FT.	1.35 LBS./LIN. FT.	1.84 LBS./LIN. FT.	2.28 LBS./LIN. FT.	2.72 LBS./LIN. FT.	
LENGTH FOR GIVEN FENCE FAB. HT.	4' 6"-10' W/CONC. FOOTING; 7'-4" WHEN DRIVEN	8'-1" W/CONC. FOOTING; 8'-7" WHEN DRIVEN	8'-1" W/CONC. FOOTING; 8'-7" WHEN DRIVEN	9'-10" W/CONC. FOOTING; 9'-10" WHEN DRIVEN	7'-4" W/CONC. FOOTING	8'-7" W/CONC. FOOTING	10'-4"	7'-10"	9'-1"	9'-1"	10'-4"	10'-4"	10'-4"	
EMBEDMENT FOR GIVEN FENCE FAB. HT.	4' 24" IN CONC. FOOTING; 30" WHEN DRIVEN	5' 27" IN CONC. FOOTING; 33" WHEN DRIVEN	6' 30" IN CONC. FOOTING; 36" WHEN DRIVEN	9' 36" IN CONC. FOOTING	30" IN CONC. FOOTING	33" IN CONC. FOOTING	36" IN CONC. FOOTING	39"	42"	42"	42"	42"	42"	
FOOTING DIM. IN EARTH	9" DIA.	9" DIA.	9" DIA.	9" DIA.	9" DIA.	12" DIA.	16" DIA.	18" DIA.	9" DIA.	9" DIA.	9" DIA.	9" DIA.	9" DIA.	
FOOTING DIM. IN ROCK	36" DEEP	4" DIA.	4" DIA.	4" DIA.	4" DIA.	5" DIA.	6" DIA.	8" DIA.	4" DIA.	4" DIA.	4" DIA.	4" DIA.	4" DIA.	

DIAMETERS AS SHOWN ARE MINIMUM VALUES. DEPTHS FOR ROCK ARE MINIMUMS. DEPTHS SHOWN FOR CONCRETE FOOTINGS IN EARTH ARE MINIMUM FOR 6'-0" HIGH FENCE AND MAY BE REDUCED 3" FOR EACH FOOT OF FENCE HEIGHT LESS THAN 6'-0" HIGH.

▲ T = WALL THICKNESS
▼ SECTION MODULUS AS SHOWN IS BASED UPON ASTM A53 AND AASHTO M 181. SEE SPECIFICATIONS FOR SUBSTITUTION FORMULA ON CLASS 2 COLD FORMED STEEL PIPE.
● SECTION MODULUS AS SHOWN IS BASED UPON ASTM A501 AND AASHTO M 181. SEE SPECIFICATIONS FOR SUBSTITUTION FORMULA ON CLASS 2 COLD FORMED STEEL PIPE.



TIE WIRE DETAIL



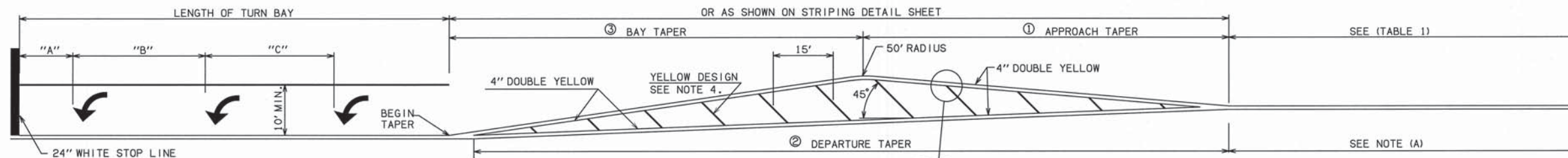
TYPICAL PLACEMENT FOR FENCE ALONG CURVES (WHEN R/W RADIUS IS LESS THAN 5000')

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
624 (E)	FENCE-STYLE CLF (□ FT. HIGH, CLASS □)	LF
624 (F)	GATES-STYLE CLF (□ FT. HIGH X □ FT. LONG)	EA

- HEIGHT OF FENCE OR GATE SHALL BE SPECIFIED.
- CLASS A DESIGNATES FENCE OR GATE WITHOUT CLIMB BARRIER
- CLASS B DESIGNATES FENCE OR GATE WITH CLIMB BARRIER
- LENGTH OF GATE SHALL BE SPECIFIED.

APPROVED BY ROADWAY ENGINEER: *Calvin F. A.* DATE: *6/11/15*
ROADWAY DESIGN DIVISION STANDARD

DOT RIGHT-OF-WAY FENCE STYLE CLF (CHAIN LINK FENCE)



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.

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.

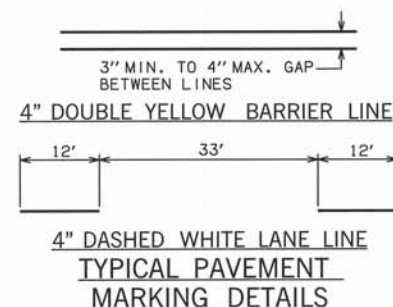
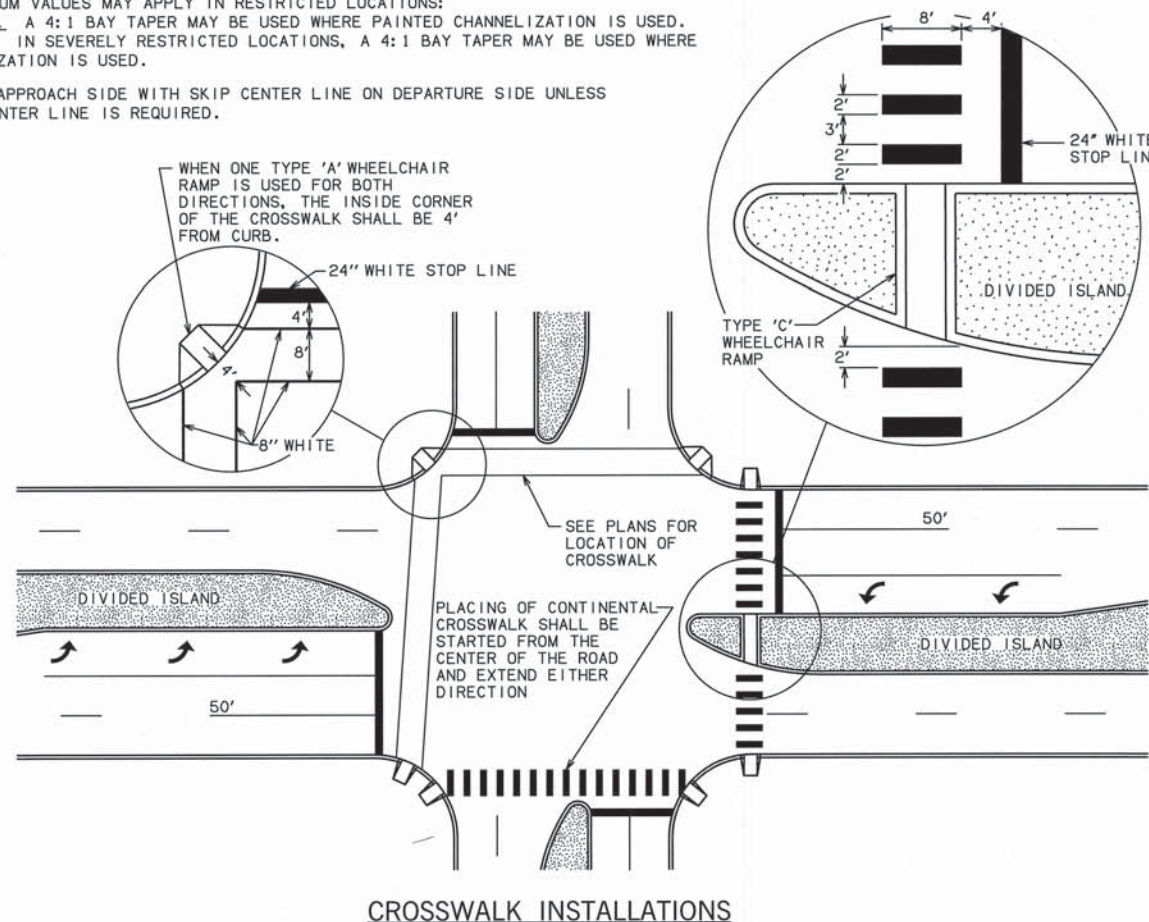
(A) NO PASS LINE ON APPROACH SIDE WITH SKIP CENTER LINE ON DEPARTURE SIDE UNLESS DOUBLE YELLOW CENTER LINE IS REQUIRED.

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

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



FOR SPACING OF ARROWS SEE "TURN BAY TABLE"

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

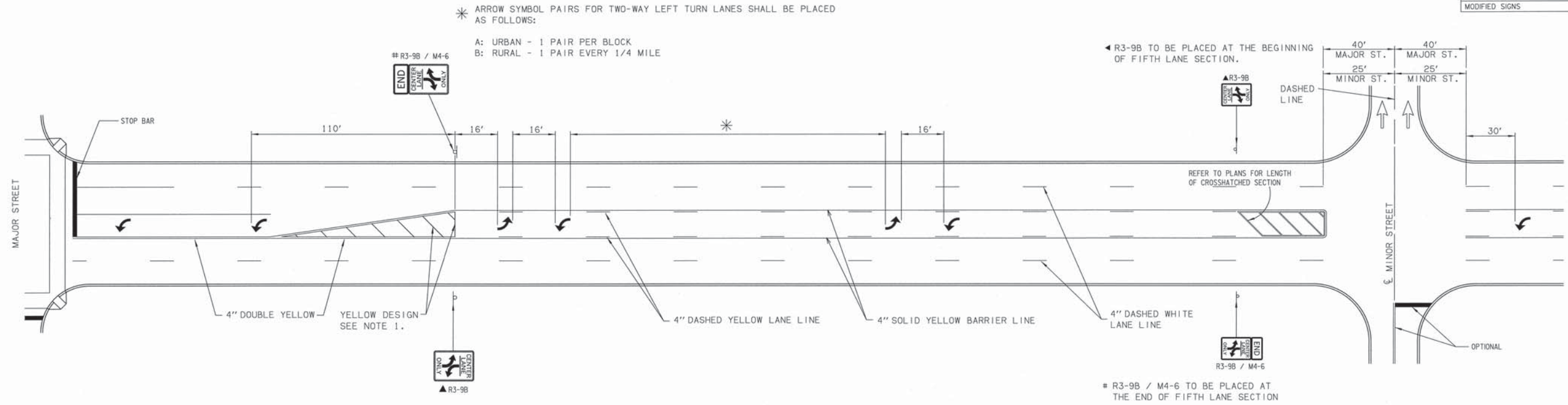
APPROVED BY
TRAFFIC ENGINEER: *David Smith* DATE: 4/8/2013

TRAFFIC STANDARD
PAVEMENT MARKING
(CROSSWALKS AND LEFT TURN BAY)

2009 SPECIFICATIONS

PM1-1	02
T-101	

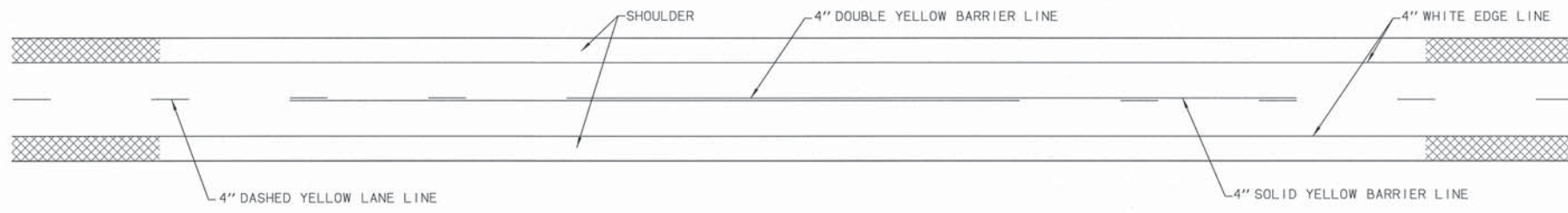
DESCRIPTION	REVISIONS	DATE
ADDED GENERAL NOTE L		7/08/2011
MODIFIED SIGNS		4/10/2012



FIFTH LANE PAVEMENT MARKING DETAIL (URBAN)

GENERAL NOTE

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



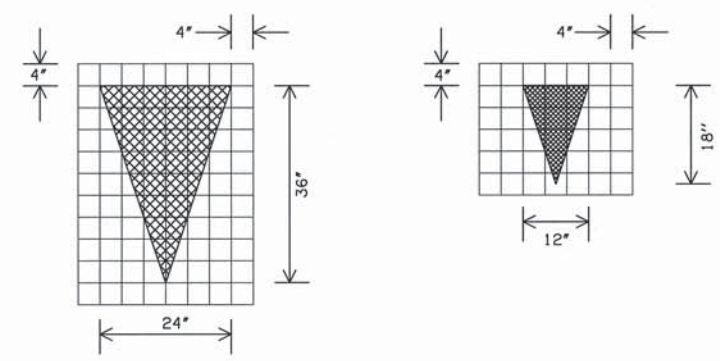
TWO LANE RURAL ROADWAY PAVEMENT MARKINGS

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

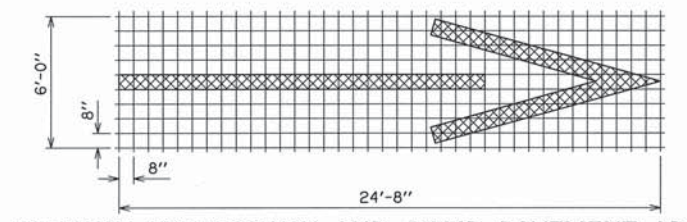
APPROVED BY
 TRAFFIC ENGINEER: *[Signature]* DATE: 4/9/12

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

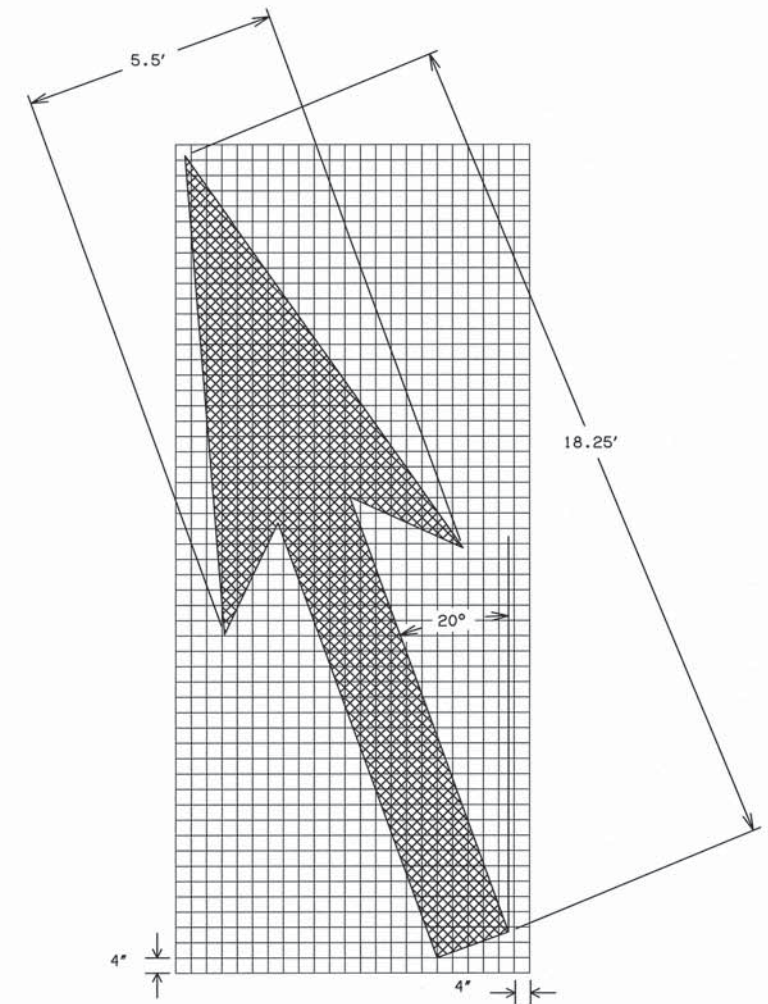
DESCRIPTION	REVISIONS	DATE
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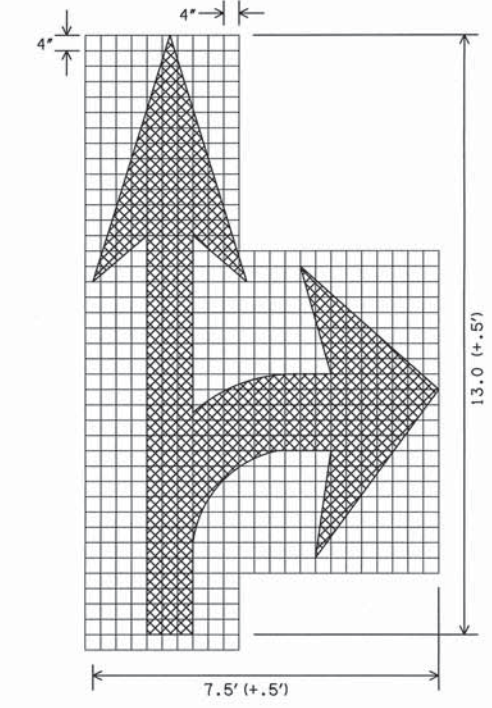
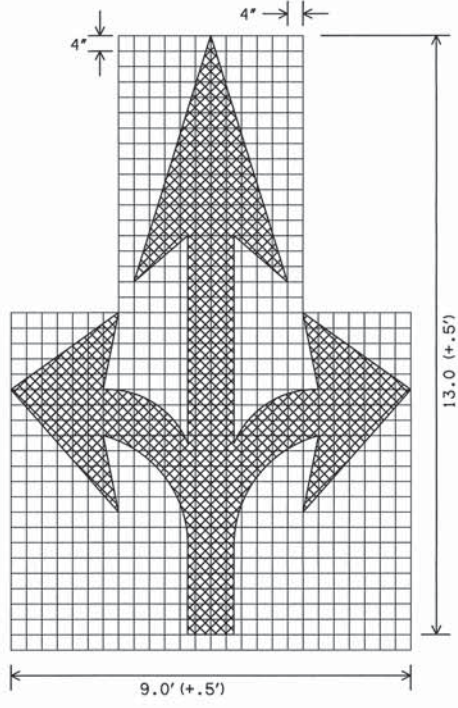
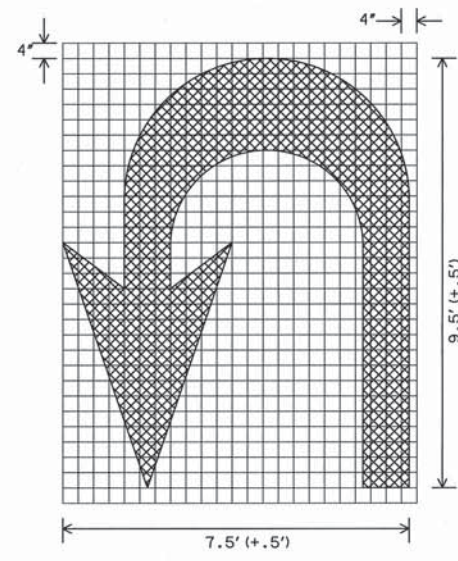
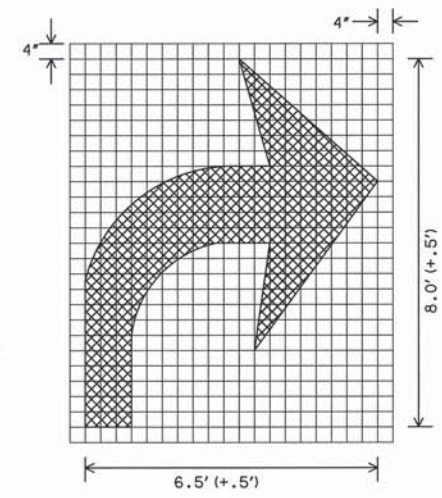
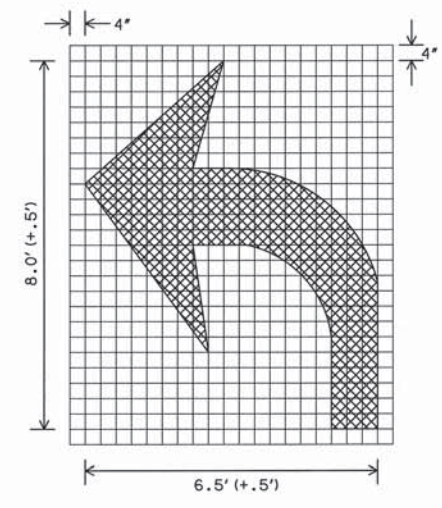
MAXIMUM YIELD LINE TRIANGLE MINIMUM YIELD LINE TRIANGLE



FREEWAY, EXPRESSWAY, AND RAMP PAVEMENT ARROW



LANE-REDUCTION ARROW



GENERAL NOTES

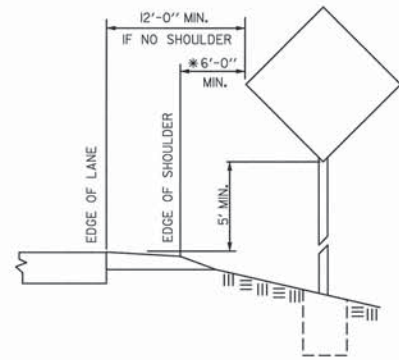
1. PAVEMENT MARKINGS SHALL BE WHITE RETROREFLECTORIZED PLASTIC UNLESS OTHERWISE SPECIFIED. WHEN THE MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD READ "UP" I.E. THE FIRST WORD SHOULD BE NEAREST THE DRIVER. THE SPACE BETWEEN LINES SHOULD BE AT LEAST FOUR TIMES THE HEIGHT OF THE CHARACTERS.
2. ALL PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST REVISION).
3. ALL DIMENSIONS ARE TYPICAL FOR SINGLE LANE UNLESS OTHERWISE NOTED.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
854(B)	TRAFFIC STRIPE (PAINT) (ARROW, WORDS, OR SYMBOLS)	EA
855(B)	TRAFFIC STRIPE (PLASTIC) (ARROW)	EA
855(B)	TRAFFIC STRIPE (PLASTIC) (SYMBOLS)	EA
856(B)	TRAFFIC STRIPE (MULTI-POLYMER) (SYMBOLS, WORDS, ETC)	EA

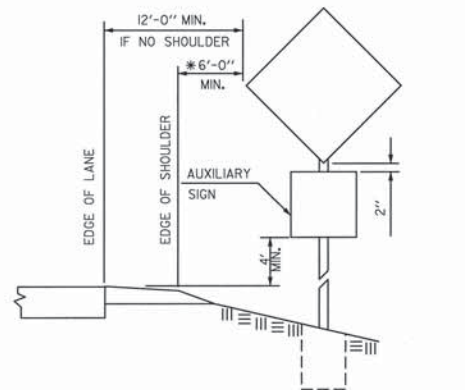


APPROVED BY TRAFFIC ENGINEER: *David Smith* DATE: 8/3/2010

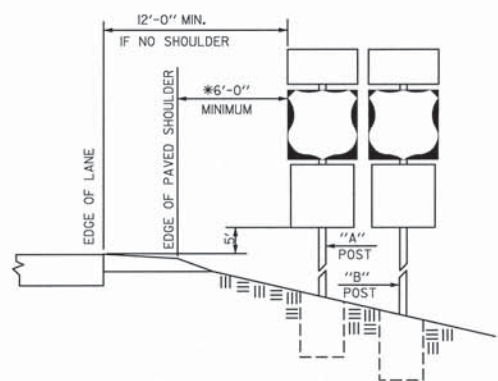
TRAFFIC STANDARD
PAVEMENT MARKING
(ARROWS)



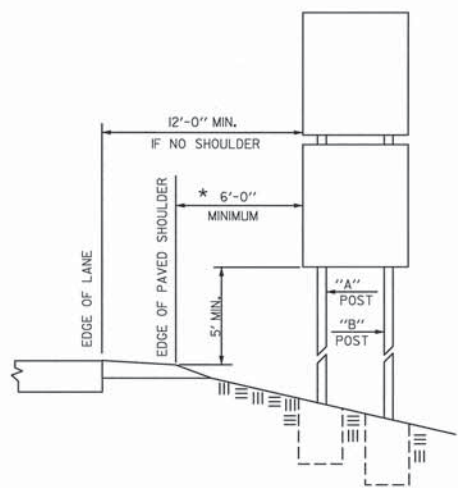
SINGLE POST (RURAL)



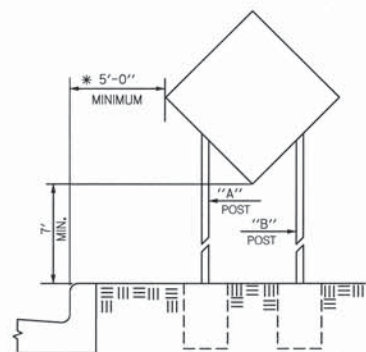
SINGLE POST WITH AUXILIARY SIGN (RURAL)



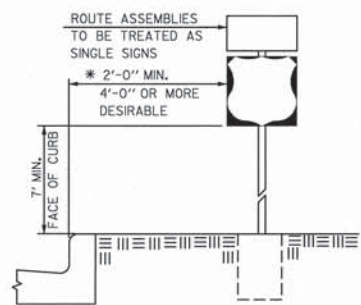
ROADSIDE ASSEMBLY (RURAL)



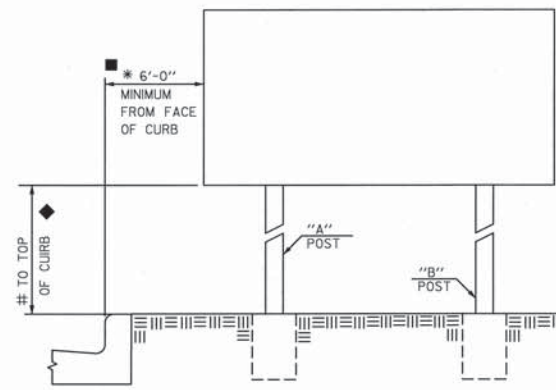
DOUBLE POST MAXIMUM & MINIMUM SPEED LIMIT SIGNS (RURAL)



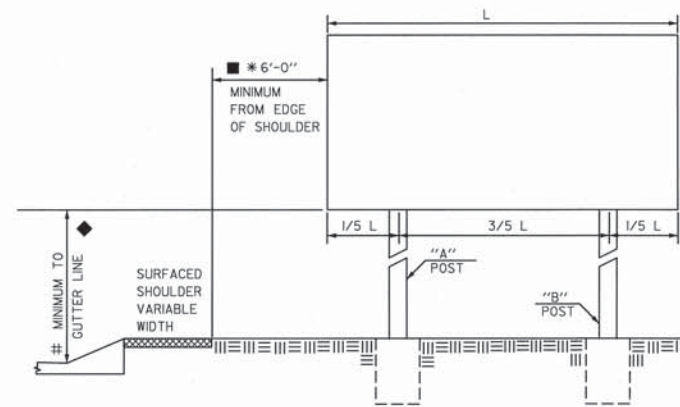
BUSINESS, COMMERCIAL OR RESIDENTIAL AREA



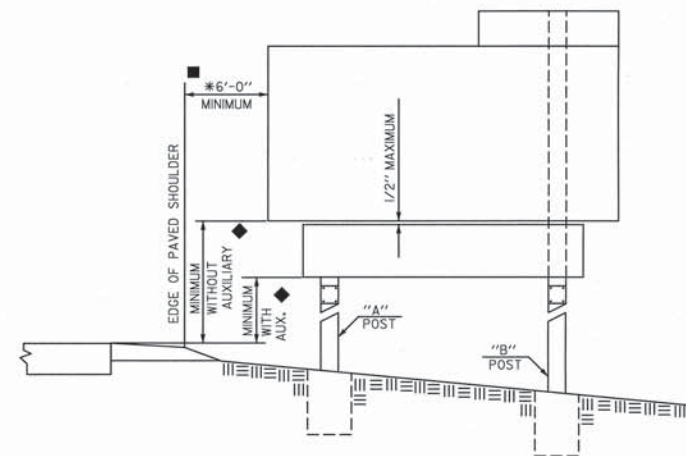
BUSINESS, COMMERCIAL OR RESIDENTIAL AREA



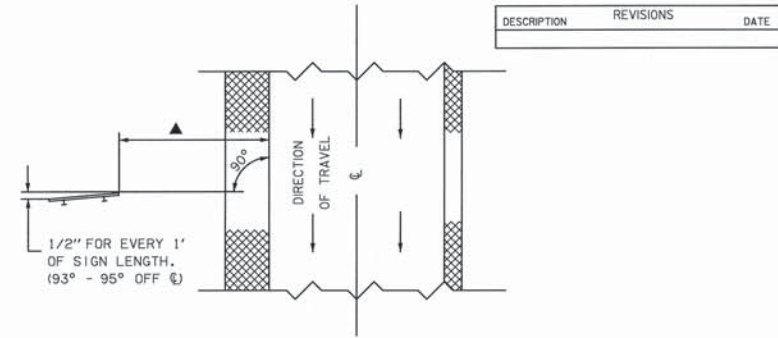
INFORMATION SIGN WITH NON-MOUNTABLE CURB



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.

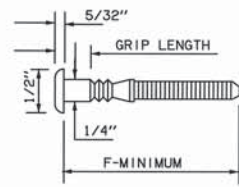


APPROVED BY TRAFFIC ENGINEER: *David Smith* DATE: 8/31/2010

TRAFFIC STANDARD

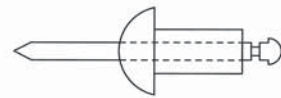
TYPICAL INSTALLATIONS OF GROUND MOUNTED SIGNS

DESCRIPTION	REVISIONS	DATE



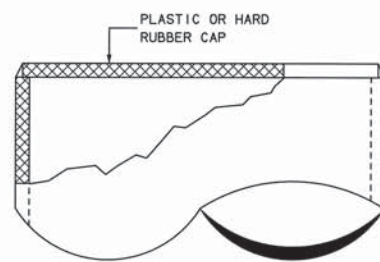
1/4" FASTENER AND 1/4" COLLAR (TYPICAL)

GRIP NO.	GRIP LENGTH	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"

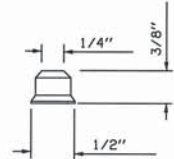


ALUMINUM ALLOY BODY AND MANDREL. GRIP RANGE 1/16" TO 1/4"

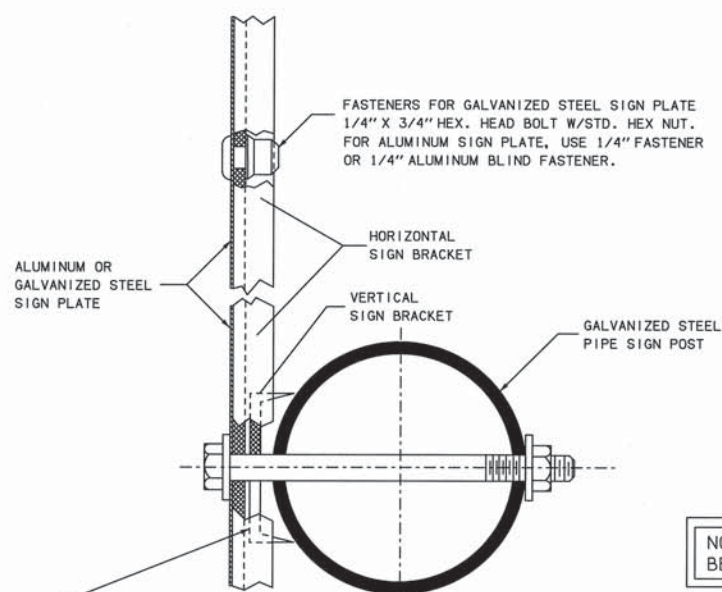
1/4" BLIND FASTENERS



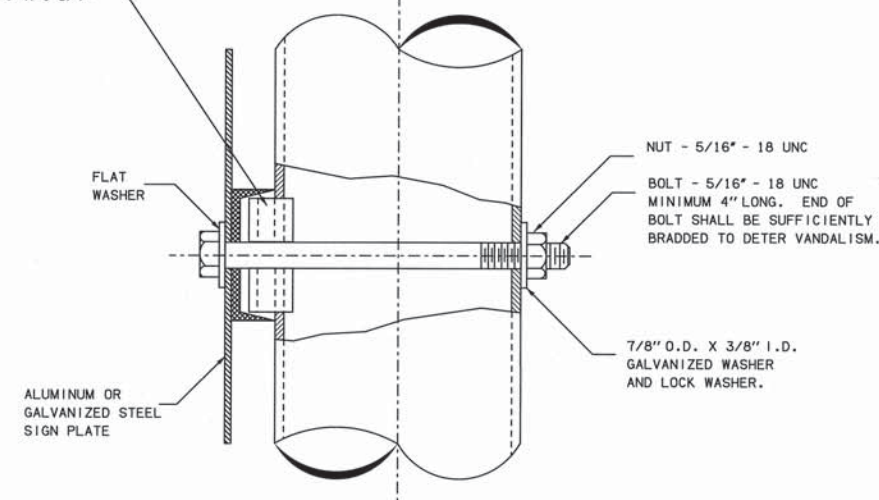
POST CAP NOT REQUIRED FOR 1-1/2" AND 2" PIPE POSTS



WHEN CONSTANT THICKNESS EXTRUDED ALUMINUM SIGN BRACKETS ARE USED THE HORIZONTAL SIGN BRACKET MAY CONTACT THE SIGN POST PREVENTING A SNUG AND PROPER FIT. WHEN THIS OCCURS AN ALUMINUM SPACER EITHER 1-1/4" X 1-1/4" X 1/8" THICK FOR 1-1/2" BRACKETS, OR 1-3/4" X 1-3/4" X 1/8" THICK FOR 2" BRACKETS SHALL BE USED.

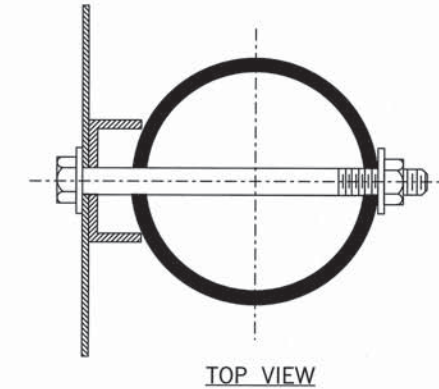


TOP VIEW

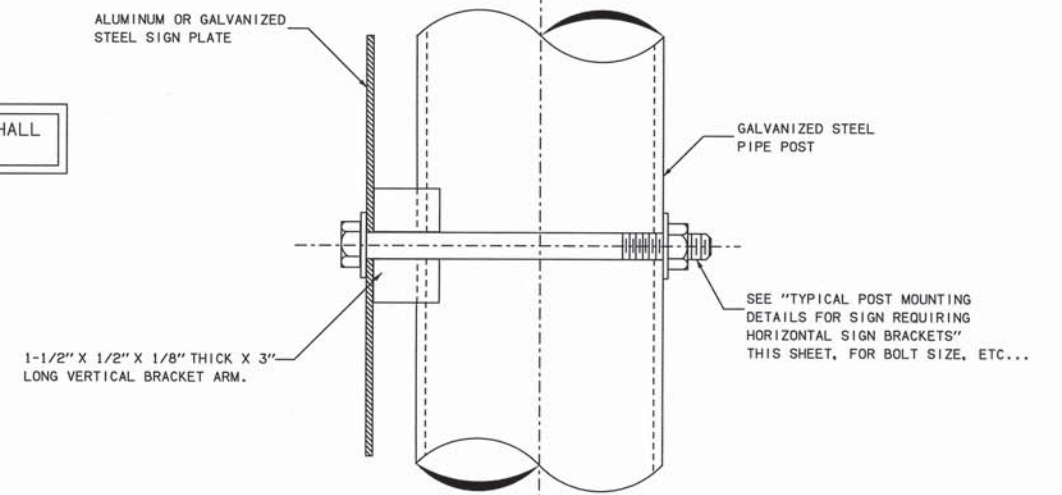


SIDE VIEW
TYPICAL POST MOUNTING DETAILS
FOR SIGN REQUIRING HORIZONTAL
SIGN BRACKETS

NOTE: ALL NUTS SHALL BE SELF-LOCKING.



TOP VIEW



SIDE VIEW
TYPICAL POST MOUNTING DETAILS
FOR SIGN REQUIRING VERTICAL
SIGN BRACKETS ONLY

TRFPC# D:\usr2\2009Standards_ss\1140_SSA2-1-00.dgn 7/29/2010 2:13:09 PM R:\TRAF_PLOT\eroy.pen R:\TRAF_PLOT\bw.cb



APPROVED BY
TRAFFIC ENGINEER: *David J. Amick* DATE: 8/3/2010

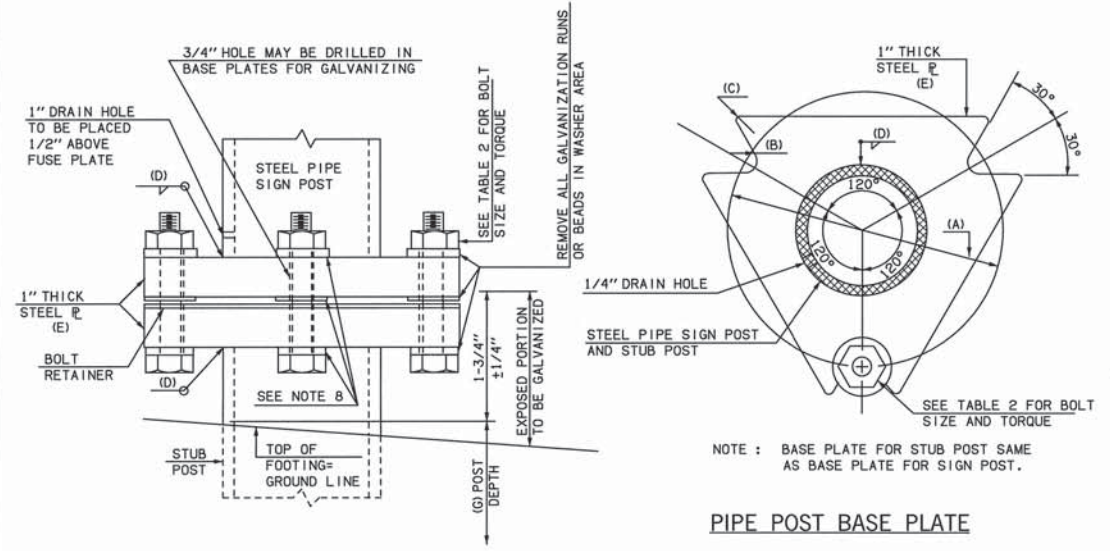
TRAFFIC STANDARD
SHEET SIGN ASSEMBLY DETAIL
(GALVANIZED PIPE)

2009 SPECIFICATIONS

SSA2-1	00
T-140	

DESCRIPTION	REVISIONS	DATE
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FTG. DES. NO.	POST SIZE REQUIRED	BASE PLATE DIMENSIONS					FOOTING DIMENSIONS				QUANTITIES		
		TRIANGLE SIZE	A	B	C	D	SIZE DIA.	LENGTH	POST (G) DEPTH	VERTICAL BARS	HORIZONTAL BARS	CLASS "A" CONCRETE	REINFORCING STEEL
A-1	1-1/2" 2.72 pif	NO BASE PLATE REQUIRED					12"	2'-0"	24"	NONE	NONE	.06 CY	NONE
A-2	2" 3.65 pif	NO BASE PLATE REQUIRED					12"	2'-0"	24"	NONE	NONE	.06 CY	NONE
A-3	2-1/2" 5.79 pif	9" x 9"	9"	6-1/4"	3/16" 1/4"	1/4"	18"	3'-0"	24"	4 #5	4 #4	.20 CY	24 lbs
A-4	3" 7.58 pif	9" x 9"	9"	6-1/4"	3/16" 1/4"	1/4"	18"	3'-6"	24"	6 #5	4 #4	.23 CY	32 lbs
A-5	3-1/2" 9.11 pif	10" x 10"	10"	7-1/16"	1/16" 1/4"	5/16"	18"	4'-0"	30"	6 #5	5 #4	.26 CY	38 lbs
A-6	4" 10.79 pif	10" x 10"	10"	7-1/16"	1/16" 1/4"	5/16"	18"	4'-6"	30"	6 #5	5 #4	.30 CY	42 lbs



STEEL PIPE POST BASE CONNECTION

- PROCEDURE FOR ASSEMBLY OF BASE CONNECTION
- ASSEMBLE POST TO STUB WITH BOLTS AND WASHERS. USE ONE FLAT WASHER PER BOLT AND BOLT RETAINER BETWEEN BASE PLATES.
 - SHIM AS REQUIRED TO PLUMB AND ALIGN POST(S) BEFORE OR IMMEDIATELY AFTER POURING CONCRETE FOOTING.
 - TIGHTEN ALL BOLTS, IN A SYSTEMATIC ORDER, TO THE PRESCRIBED TORQUE TO BED WASHERS AND SHIMS AND CLEAN BOLT THREADS.
 - LOOSEN AND RETIGHTEN TO PRESCRIBED TORQUE IN THE SAME ORDER AS INITIAL TIGHTENING. DO NOT OVER TIGHTEN.

NO. REQ'D.	9" X 9" X 9"	NO. REQ'D.	10" X 10" X 10"
(3)	1/2" 3-1/4" H. S. BOLT	(3)	5/8" 3-3/4" H. S. BOLT
(3)	HEX. NUTS	(3)	HEX. NUTS
(9)	FLAT WASHERS (SEE NOTE 8)	(9)	FLAT WASHERS (SEE NOTE 8)

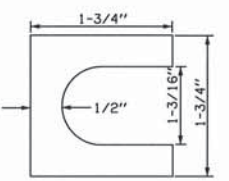
BOLT SIZE	BOLT TORQUE FOR BASE PLATES	
	MINIMUM	MAXIMUM
1/2" 3-1/4"	16.6 FT LBS	25.0 FT LBS
5/8" 3-1/4"	37.5 FT LBS	56.6 FT LBS
3/4" 3"	67.5 FT LBS	88.3 FT LBS

BOLT TORQUE LIMITS
THE HIGH STRENGTH BOLTS AT THE BASE CONNECTION SHOULD BE TORQUED WITHIN THE LIMITS SPECIFIED IN THE ABOVE TABLE. HOWEVER THE LOWER LIMIT SHOWN IN THE "BASE PLATE CONNECTION DATA TABLE" IS MORE DESIRABLE.



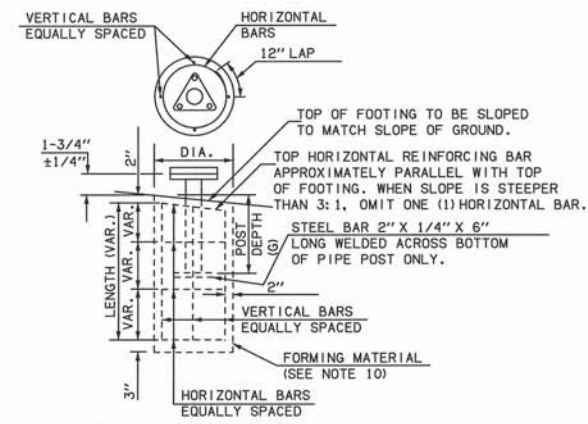
CUT FROM 30 GAUGE GALVANIZED SHEET METAL. PLACE BETWEEN BASE PLATES. SIZE---VARIES TO FIT BASE PLATES.

SHEET METAL BOLT RETAINER



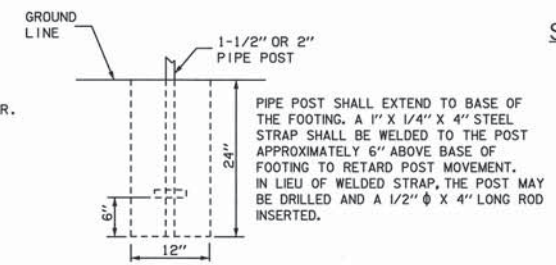
FURNISH 2 @ 0.012 THICK AND 2 @ 0.032 THICK SHIMS FOR POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM-B36.

SHIM DETAIL



NOTE: PIPE STUB POST MAY BE INSTALLED TO THE BASE OF THE FOOTING IF DESIRED, BUT ONLY THE PIPE POST SPECIFIED IN THE FOOTING DESIGN WILL BE PAID FOR. PIPE POST EXTENDING TO THE BASE OF THE FOOTING SHALL HAVE THE STEEL BAR WELDED TO THE POST A MINIMUM OF 6" ABOVE THE BASE OF THE FOOTING.

TYPICAL "A" FOOTING DETAIL



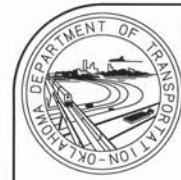
WHEN HOLE FOR FOOTING CAN BE DRILLED AND MAINTAINED AS A "NEAT LINE" HOLE IN THE OPINION OF THE ENGINEER, THE UPPER PORTION NEED NOT BE FORMED. IF FORMING IS REQUIRED, A MINIMUM OF 6" SHALL BE REQUIRED AT THE TOP OF FOOTING. FORMING MAY BE ACCOMPLISHED BY USE OF A CARDBOARD CASING OR SIMILAR MATERIAL THAT MAY BE LEFT IN PLACE. ANY VOID AROUND FINAL FOOTING SHALL BE BACK-FILLED AND FIRMLY TAMPED.

TYPICAL "A-1" & "A-2" FOOTING DETAIL

CONSTRUCTION NOTES

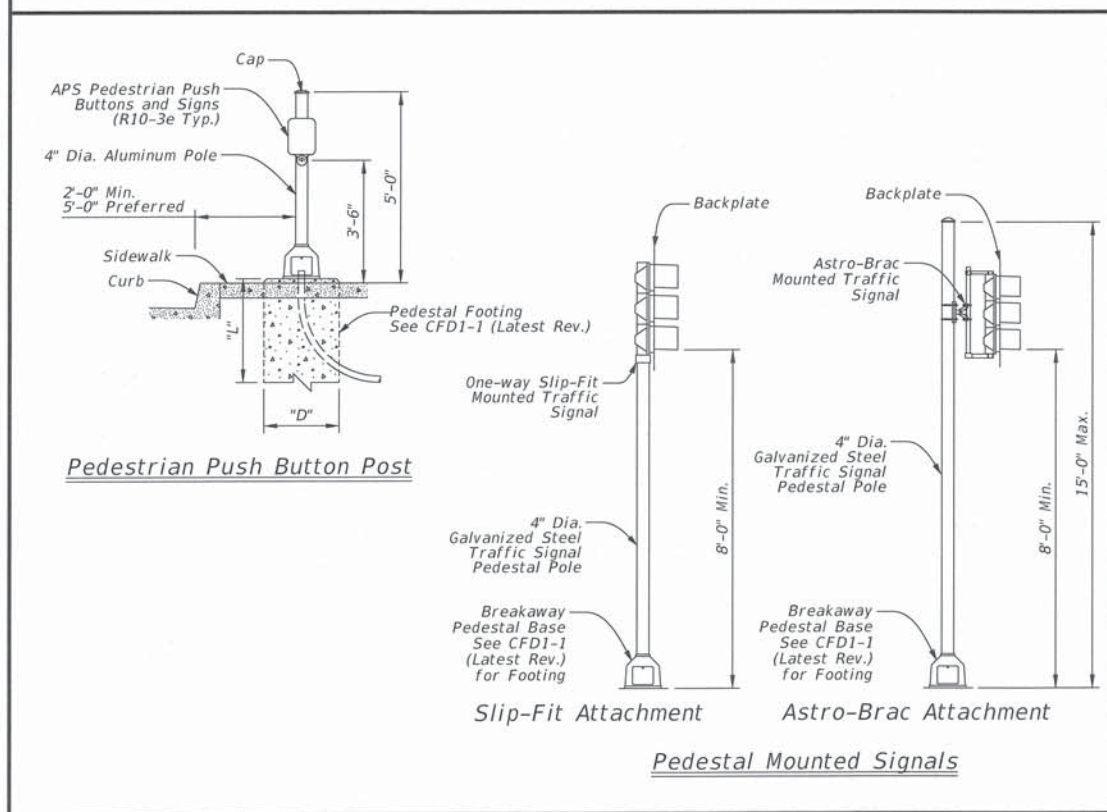
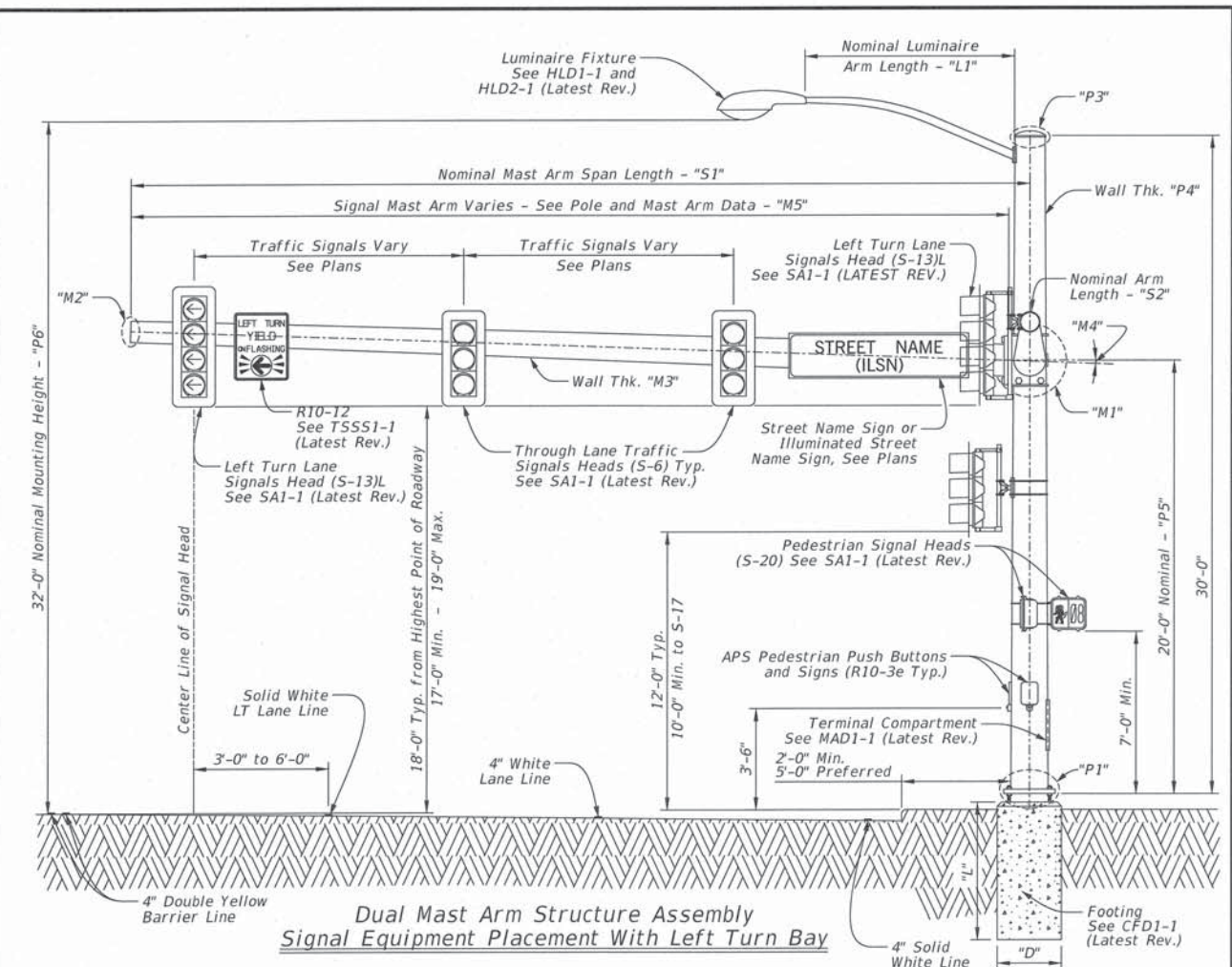
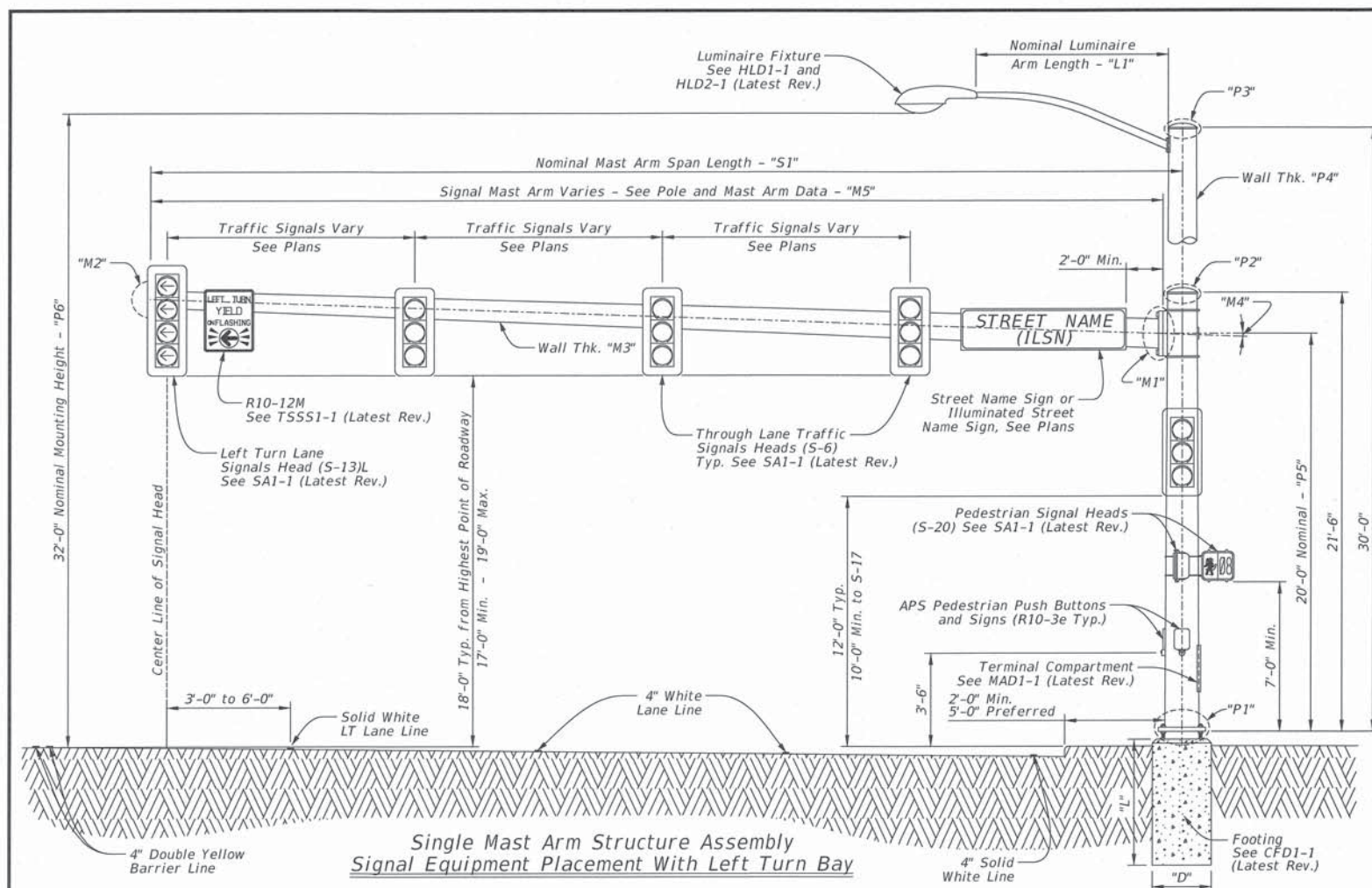
- ALL PIPE AND WIDE FLANGE BEAM POST SHALL CONFORM TO THE 2009 STANDARD SPECIFICATIONS.
- ALL BOLTS, NUTS AND WASHERS SHALL NOT BE GALVANIZED OR PLATED, BUT SHALL BE PAINTED, AFTER INSTALLATION, WITH A ZINC RICH PAINT.
- STRUCTURAL STEEL TO BE GALVANIZED AFTER FABRICATION, EXCEPT AS NOTED, IN ACCORDANCE WITH THE 2009 STANDARD SPECIFICATIONS.
- POST LENGTHS AS SHOWN ON THE PLANS INCLUDE BOTH SIGN POST AND STUB POST WHICH IS SET IN THE CONCRETE FOOTING.
- ALL WELDING MATERIALS AND METHODS, INCLUDING QUALIFICATIONS OF WELDERS, SHALL CONFORM WITH THE REQUIREMENTS OF THE 2009 STANDARD SPECIFICATIONS.
- STRUCTURAL EXCAVATION TO BE PAID FOR IN OTHER ITEMS OF WORK.
- TOP AND BOTTOM WASHERS ON BASE PLATE SHALL BE 1/4" THICK. WASHERS MAY BE ROUND OR SQUARE. USE STANDARD ROUND WASHERS BETWEEN BASE PLATES. REMOVE ALL GALVANIZING RUNS OR BEADS IN WASHER AREA.

ITEM NO.	ITEM	UNIT
804(A)	STRUCTURAL CONCRETE	CY
804(B)	REINFORCING STEEL	LB
851(B)	GALVANIZED STEEL PIPE POST	LF



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

**TRAFFIC STANDARD
STANDARD FOOTINGS FOR
GROUND MOUNTED SIGNS
(GALVANIZED PIPE)**



General Notes

- All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, Contractor shall furnish to the Department such warranties or guarantees. The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Erection and/or removal of signal pole assemblies located near overhead electrical lines shall be accomplished using established industry and utility safety practices and in accordance with laws governing such work. The Contractor shall consult with the appropriate utility company prior to beginning such work.
- A. Standard Steel Pole and Mast Arm Designs:**
Steel poles and mast arms fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings for standard designs are required for project records.
- B. Optional Steel Pole Designs:**
12 sided are acceptable as an alternative to round. Other steel pole designs if permitted or required, pending approval by the Department as outlined below.
 - Shop Drawings:**
Optional designs require submission of shop drawings and design calculations bearing the seal of an Engineer registered in the State of Oklahoma, in accordance with Section 724, "Structural Steel." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the ODOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
 - Structural Design for Signal Poles:**
Designs conform to 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications. Designed for 3-second wind gust speed equal to 90 MPH with a 1.14 gust factor. A wind importance factor of 0.87 is applied to adjust the wind speed to a 50 year recurrence interval. Design moments listed in tables assume base of pole is less than 33' above natural ground level. Fatigue importance Category II is used for fatigue design. Fatigue design loads applied include galloping, natural wind gust pressure range based on a yearly mean wind velocity of 11.2 MPH, and truck-gust pressure range based on a truck speed of 65 MPH. Unless otherwise noted, all steel parts shall be galvanized in accordance with Section 724.06, "Galvanizing." Steel poles shall be fabricated in accordance with Section 724, "Structural Steel." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with the ANSI/AWS Structural Welding Code D1.1. Two-section signal poles will not be permitted. Mast arms may be fabricated in two sections for lengths greater than 40 LF and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint. Ensure longitudinal seam welds that will be in contact at a slip joint splice are ground smooth for the length of splice plus a minimum of six inches.
 - Mast Arm Attachments:**
All poles and attachments shall be structurally designed to support equipment identified above and listed on Standard PFID1-1, latest revision. Poles shall be supplied with mast arm combinations as shown in the plans. All luminaire mast arms shall be designed for a 50-pound luminaire having an effective projected area of 2.0 square feet.
 - Anchor Bolt Assembly:**
Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.
- C. Special Designs:**
Poles with architectural treatments or ornamental designs shall meet the requirements shown elsewhere in the plans and will require shop drawing submission to the Department for review and approval.

Basis of Payment		
Item No.	Item	Unit
806(A)	Traffic Signal Pole and Mastarm	EA
806(B)	Traffic Signal Pedestal Pole	EA

Approved By: *[Signature]* Date: 3-24-16
 Bridge Engineer: *[Signature]*
 Approved By: *[Signature]* Date: 3/14/2016
 Traffic Engineer: *[Signature]*

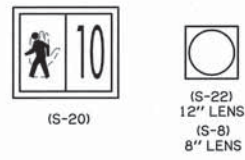
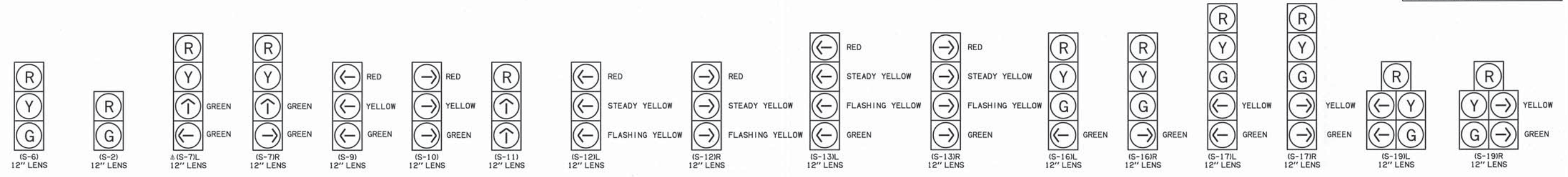
DOT

Traffic Standard
 Traffic Signal
 Support Structures
 Signal Pole and
 Mast Arm Details

2009 Specifications

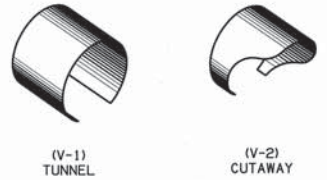
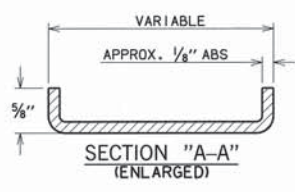
PMAP1-2 00
 T-200

DESCRIPTION	REVISIONS	DATE
ADDED SIGNALS		7/08/2011
UPDATED SYMBOLS		
ADDED RETRO-REFLECTIVE TAPE TO BACKPLATE		4/2/2013

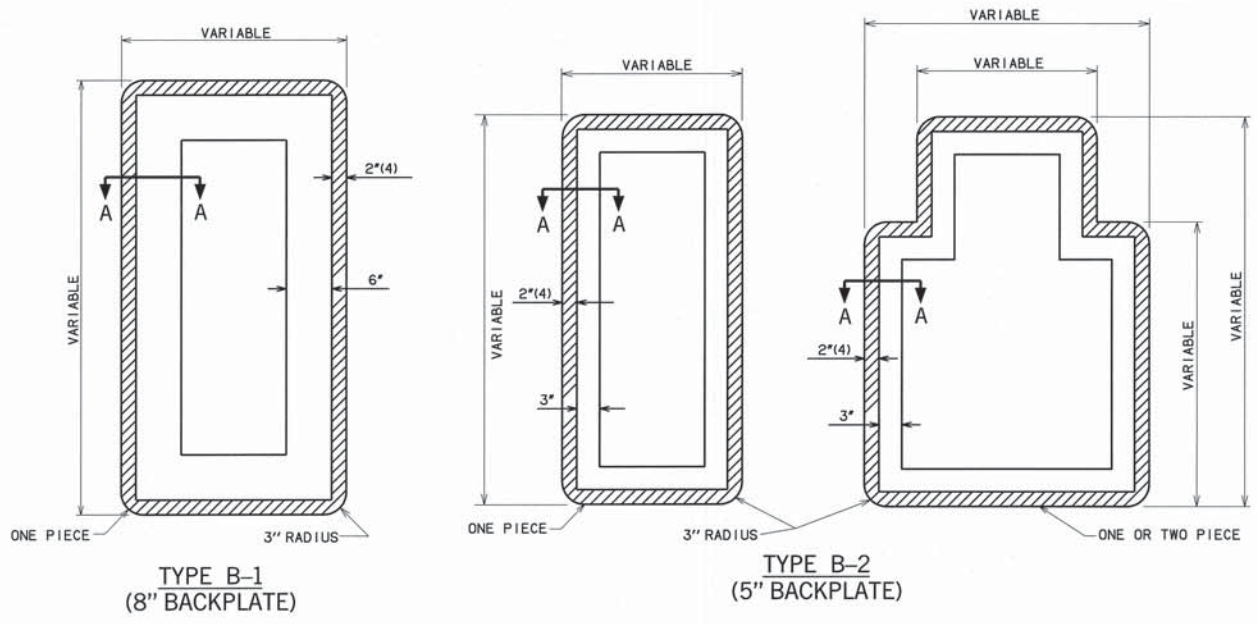


SIGNAL FACE TYPES

R = RED
Y = YELLOW
G = GREEN



VISOR TYPES

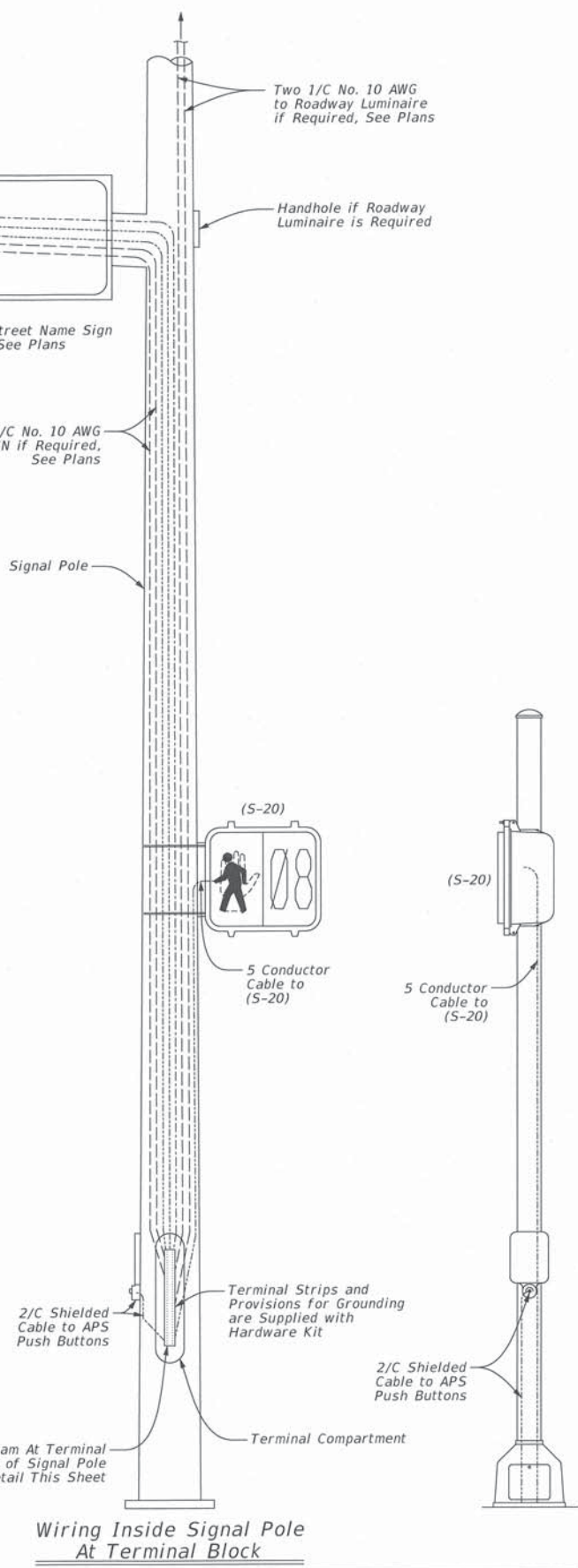
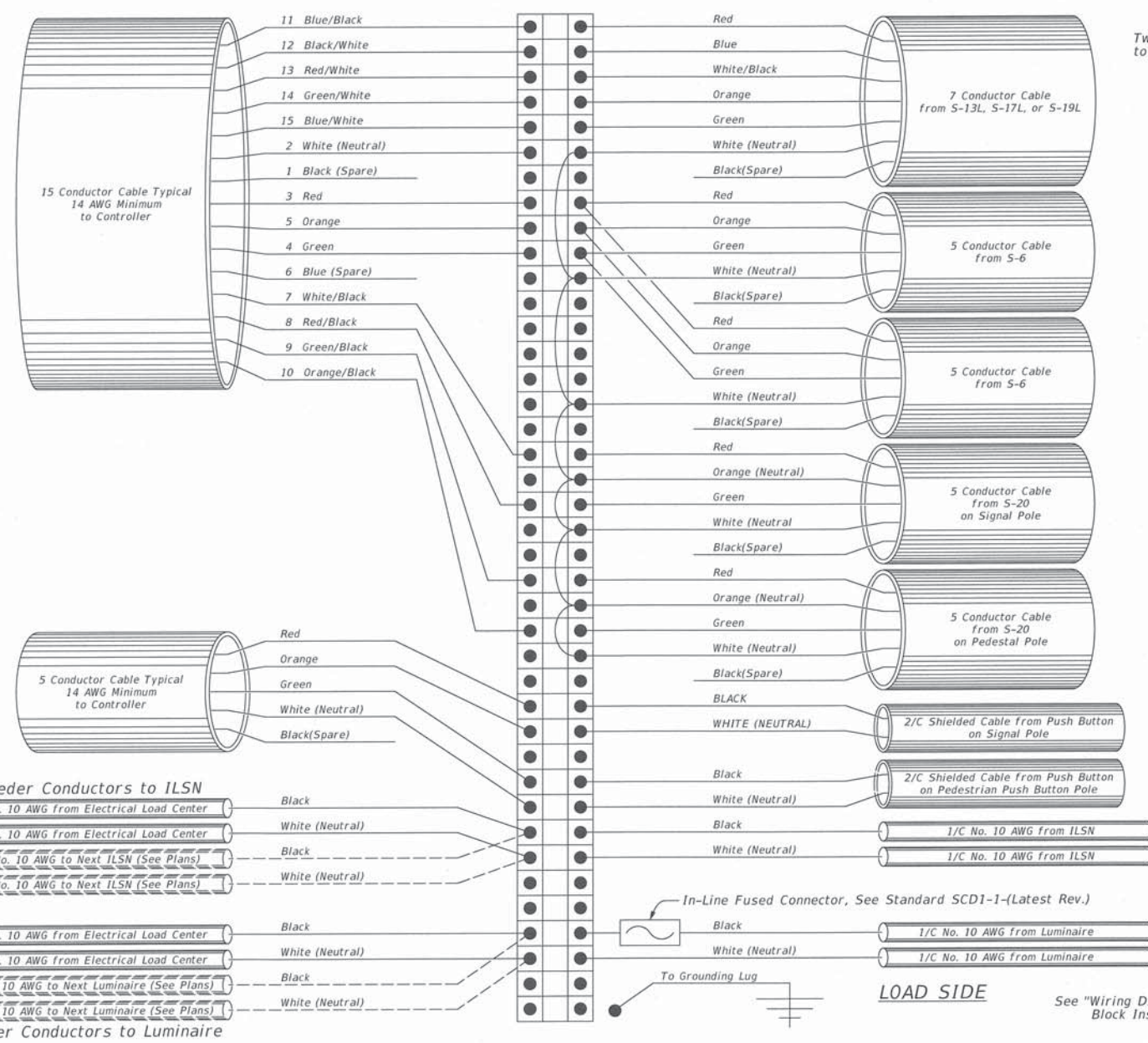
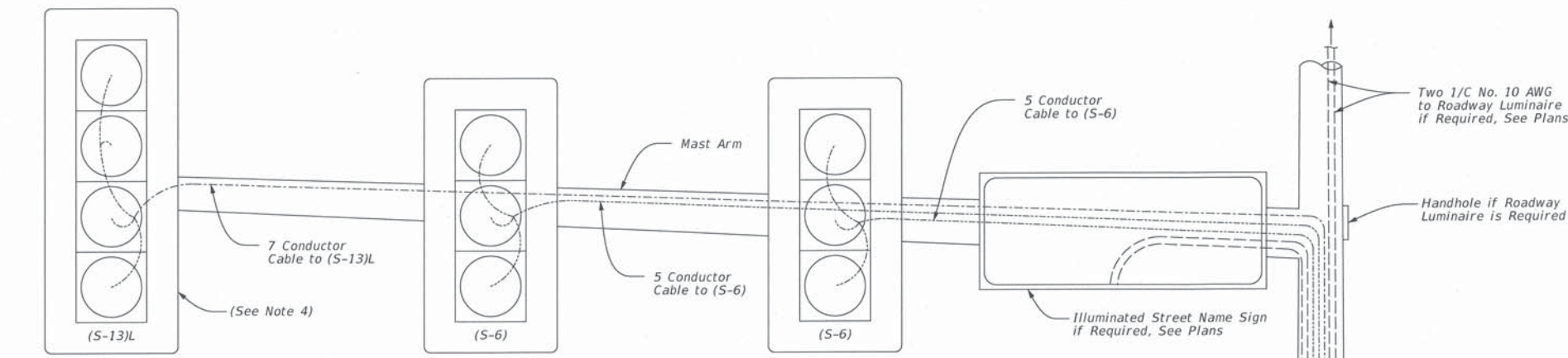


GENERAL NOTES

1. ALL TRAFFIC SIGNAL AND PEDESTRIAN SIGNAL HEADS SHALL BE FURNISHED WITH GLASS LENSES, UNLESS OTHERWISE SPECIFIED. THE LENSES SHALL CONFORM TO THE LATEST STANDARD OF THE INSTITUTE OF TRANSPORTATION ENGINEERS.
2. BACKPLATES SHALL BE INSTALLED WITH TWO RIVETS AND/OR SCREWS PER SECTION, A MINIMUM OF SIX PER SIGNAL, OR AS RECOMMENDED BY THE MANUFACTURER.
3. VACUUM FORMED BACKPLATES SHALL BE USED ON ALL STANDARD TRAFFIC SIGNAL HEADS. UNLESS NOTED ON PLANS, BACKPLATES ARE TO BE BLACK.
4. BACKPLATES SHALL HAVE A 2" FLUORESCENT YELLOW TAPE APPLIED TO THE BACKPLATE. THE TAPE SHALL EITHER BE TYPE 1X OR TYPE X1.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
833	BACKPLATE	EA

APPROVED BY
TRAFFIC ENGINEER: *David Smith* DATE: 4/18/2013
TRAFFIC STANDARD
TRAFFIC SIGNALS AND ACCESSORIES



Traffic Signal Electric Cable Sequence Table

CONDUCTOR NUMBER	BASE/TRACER COLOR	CABLE SIZE									
		2C	5C	7C	9C	12C	15C	18C	21C	25C	
1	BLACK										
2	WHITE										
3	RED										
4	GREEN										
5	ORANGE										
6	BLUE										
7	WHITE/BLACK										
8	RED/BLACK										
9	GREEN/BLACK										
10	ORANGE/BLACK										
11	BLUE/BLACK										
12	BLACK/WHITE										
13	RED/WHITE										
14	GREEN/WHITE										
15	BLUE/WHITE										
16	BLACK/RED										
17	WHITE/RED										
18	ORANGE/RED										
19	BLUE/RED										
20	RED/GREEN										
21	ORANGE/GREEN										
22	BLACK/WHITE/RED										
23	WHITE/BLACK/RED										
24	RED/BLACK/WHITE										
25	GREEN/BLACK/WHITE										

General Notes:

- All electrical connections in the signal pole base, controller cabinet and signal heads shall be made with "Burndy Hylug" or an approved equal.
- Luminaire electrical conductors to be installed in traffic signal poles and from the controller to each traffic signal pole, shall be solid copper type THW or THWN 75 degree Celsius 600 volt. An alternate type of insulation may be used if approved by the resident engineer prior to installation.
- Each traffic signal pole shall be grounded to the ground rod located in the footing. No. 4 AWG solid bare copper wire shall be connected from the ground rod to the grounding lug at the base of the pole. See SCD1-1-(Latest Revision).
- A 4-section S-13L has been shown as an example. A 5-section S-19L or a 5-section S-17L may be placed in lieu of S-13L as shown on the plans.
- APS (Accessible Pedestrian Signal and Pedestrian Pushbutton) is an integrated device that communicates information about the WALK and DON'T WALK Intervals at Signalized Intersections in Non-Visual Formats (i.e., Audible Tones and Vibrotactile Surfaces) to Pedestrians who are Blind or have Low Vision. (Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, Advisory R209) Note that the Manual on Uniform Traffic Control Devices (MUTCD) in Paragraph 2 of Section 4E.11 Requires that APS Provide Both Audible and Vibrotactile Walk Indications. Note that the Draft PROWAG Definition States that an APS Provides information in both audible and vibrotactile formats, while the MUTCD says audible "and/or" vibrating surfaces.
- When a Conductor Signal Cable Run Length from the Traffic Signal Cabinet to a Signal Pole with APS Push Button exceeds 500 feet, Consider the Following Information when Installing Equipment.
 - Less than 500' - Install a single #14 AWG Cable
 - More than 500' but less than 1,000' - Install #12 AWG Cable
 - More than 1,000' - Ask ODOT
- Terminal block shown is diagrammatic and size may vary by wiring need. Provide terminal block appropriately sized to serve equipment as shown in the plans.

Approved By: *[Signature]* Date: 3-24-16
 Bridge Engineer:

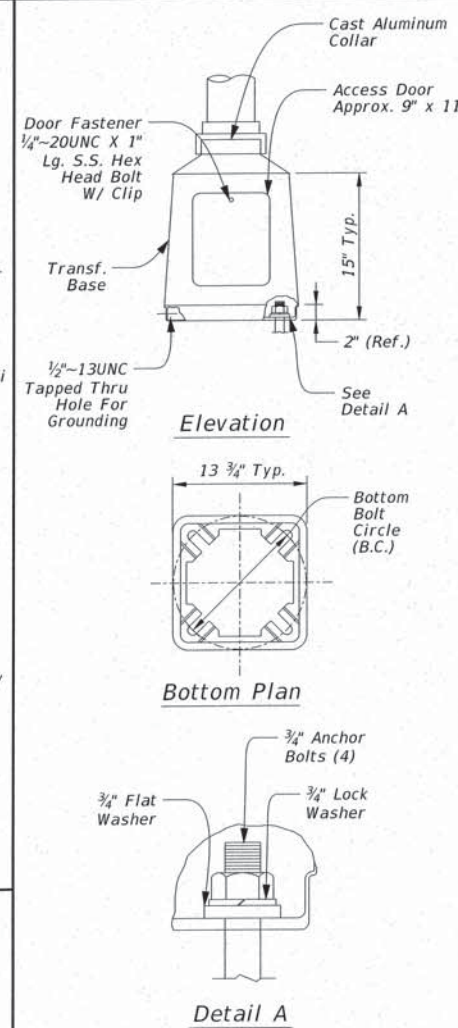
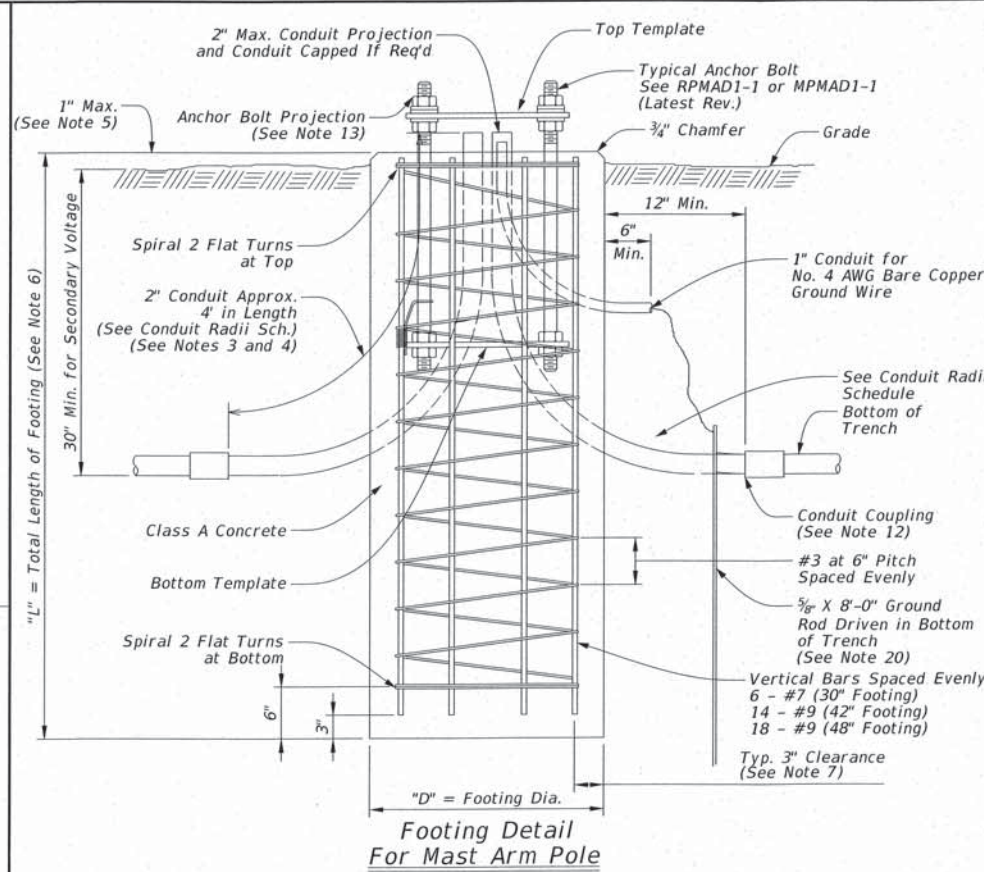
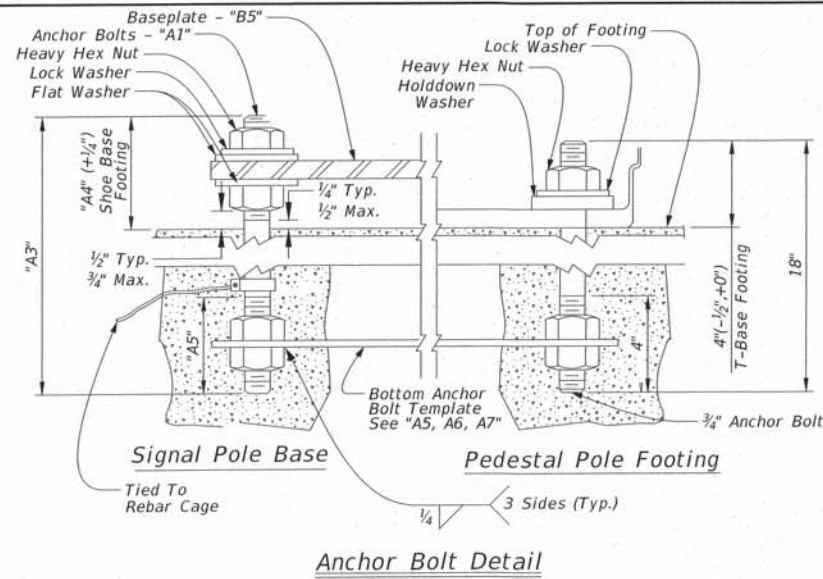
Approved By: *[Signature]* Date: 3/14/2016
 Traffic Engineer:

ODOT

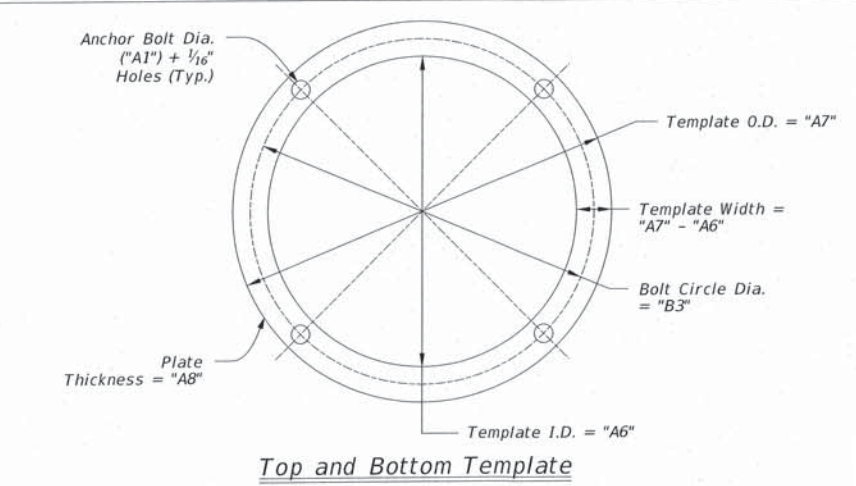
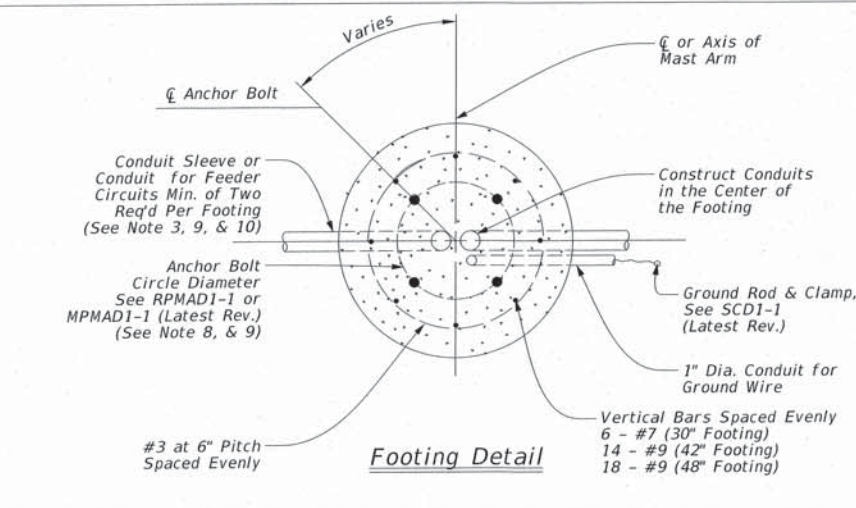
Traffic Standard
 Traffic Signal Pole Wiring and Cable Termination Details

2009 Specifications

PWD1-2 00
 T-206



- General Notes:**
1. A template shall be provided to fix the location of the anchor bolts and conduits that project out of the concrete footing.
 2. Anchor bolt templates shall be ASTM A-36 with a minimum thickness of 1/4" and both top and bottom need not be galvanized.
 3. Footing shall be constructed with at least two service entry conduits, some may require more. See the plans for locations and number of conduits required. Any unused conduit shall be capped on both ends.
 4. Electrical conduit or conduit sleeves shall be in accordance with Section 802, "Electrical Conduit."
 5. If a breakaway device is to be installed, the footing shall be as close to ground level as possible to assure the proper action of the breakaway device and to prevent damage to the footing or underside of an impacting vehicle.
 6. If specified, the footing may be extended extra length either above or below grade, see the plans for location and length. Also the vertical and spiral bar length along with conduit lengths may be adjusted accordingly.
 7. Provide 3 inches of clearance from outside edges, 3 inches of clearance from bottom, and 3 inches clearance from top of footing for all reinforcing steel.
 8. If anchor bolt data is not specified in the plans, the bolt size and placement for new poles shall be in accordance with the approved shop drawings. Anchor bolts shall be installed to fit the pole assembly base plate.
 9. If the footing is constructed by a contractor other than the signal contractor, the following additional requirements will apply:
 - (A) An anchor bolt space plate shall be installed.
 - (B) The conduit sleeves for the power conductors shall be 2 inch rigid galvanized steel or Schd 40 PVC and extend approximately 6 inches from the edge of the footing and be capped on both ends, unless the conduit system is designed to extend to another point of termination.
 - (C) The size of the anchor bolt and the bolt circle dimensions shall be as shown in the plans and detailed herein.
 10. If the Contractor elects to install Cable-In-Duct (CID) trrenched conduit prior to constructing the footing, the CID conduit may be placed in the concrete footing without a conduit sleeve. If the trrenched CID conduit is to be installed after the footing is constructed, a conduit sleeve will be required. The conduit sleeve shall be sized to accommodate the CID specified in the plans. Example: 2 inch CID requires a 3 inch diameter sleeve.
 11. The anchor bolts, conduit sleeves, templates, ground rod, ground wire, clamp and the conduit for the ground wire will not be measured for payment but shall be included in the unit price bid for the footing materials. The electrical conduit shall be measured for payment and paid for at the unit price bid for the electrical conduit of the size/type specified in the plans in accordance with Section 802, "Electrical Conduit."
 12. Install a conduit coupling, adaptor, or compression coupling if necessary to connect conduits of dissimilar materials.
 13. The anchor bolt projection shall be either:
 - (A) "A4" (+ 1/4") for shoe base.
 - (B) 3 1/2" minimum to 4" maximum for transformer base.
 - (C) As required for double nut leveling.
 14. The Contractor shall construct the top of the signal pole footings level to avoid the use of shims when installing the light poles on the footings.
 15. Electrical conductors shall be in accordance with Section 834, "Electrical Conductors For Traffic Signals."
 16. All concrete shall be Class "A" and reinforcing steel shall be in accordance with ASTM A615 Grade 60 or AASHTO M-31 Grade 60.
 17. If rock is encountered, the footing shall extend a minimum of one footing diameter into solid rock.
 18. Bond anchor bolt to rebar cage with a #4 AWG bare stranded copper conductor, using the Cadweld method. Use listed mechanical connectors rated for embedding in concrete.
 19. All breakaway bases shall meet the breakaway requirements of the 2013 Edition of the AASHTO "Standard Specifications For Structural Supports For Highway Signs, Luminaires and Traffic Signals," and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
 20. Ground rod may be located in adjacent signal pull box.



Signal Mast Arm Footing Data							
Single Mast Arm Length (FT)	Design No.	Dimensions			Quantities		
		Footing Dia. "D" (IN)	Footing Length "L" (FT)	Bar #9 Length (FT)	Bar #3 Spiral Length (FT)	Reinforcing Steel (LBS)	Structural Conc. (CY)
Up to 40	S-40	42	12'-6"	12'-0"	264	670.4	4.5
45 - 55	S-55	48	15'-0"	14'-6"	363	1,023.8	7.0

Dual Mast Arm Footing Data							
Longest Dual Mast Arm Length (FT)	Design No.	Dimensions			Quantities		
		Footing Dia. "D" (IN)	Footing Length "L" (FT)	Bar #9 Length (FT)	Bar #3 Spiral Length (FT)	Reinforcing Steel (LBS)	Structural Conc. (CY)
Up to 40	S-40	42	13'-0"	12'-6"	273	697.7	4.6
45 - 55	S-55	48	16'-6"	16'-0"	396	1128.0	7.7

Pedestal Pole Footing Data							
Pole Height (FT)	Design No.	Dimensions			Quantities		
		Footing Dia. "D" (IN)	Footing Length "L" (FT)	Bar #7 Length (FT)	Bar #3 Spiral Length (FT)	Reinforcing Steel (LBS)	Structural Conc. (CY)
5	P-1	30	2'-0"	1'-6"	44	34.9	0.36
8	P-2	30	2'-6"	2'-0"	50	43.4	0.45
10	P-3	30	2'-6"	2'-0"	50	43.4	0.45
12-15	P-4	30	3'-0"	2'-6"	56	51.9	0.55

Transformer Base Table		
Base Type	Bottom B.C.	
	Min.	Max.
PED	12"	14"

Transformer Base Bolt Circle Table
Pedestal Pole Details

Conduit Radii Schedule	
Nominal Conduit or Sleeve Diameter (Inches)	Minimum Radius (Inches)
1/2, 3/4, 1, 1 1/4	12
1 1/2	18
2	24
2 1/2, 3	30
4	36
5	48

Conduit Radii Schedule

Basis of Payment		
Item No.	Item	Unit
804(A)	Structural Concrete	CY
804(B)	Reinforcing Steel	LB

Anchor Bolt Fabrication Tolerances Table	
Dimension	Tolerance
Length	± 1/2"
Threaded Length	± 1/2"
Galvanized Length (If Required)	- 1/4"

Anchor Bolt Tolerances

Footing Design Data

Approved By Bridge Engineer: *[Signature]* Date: 3-24-16

Approved By Traffic Engineer: *[Signature]* Date: 3/11/2016

DOT

Traffic Standard
Traffic Signal
Mast Arm Pole
and Pedestal Pole
Footing Details

CFD1-2	00
T-207	

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: *Sheld Gandy* 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
ASPHALT	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
	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.

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		250	293	344	398	437	489	565	619	692	730	
50	62		277	325	382	443	485	543	628	688	770	812	
60	72		301	354	417	483	529	593	685	751	841	886	
70	82		324	381	448	519	570	638	738	809	905	955	
80	92		344	405	478	554	608	681	787	863	966	1,018	
90	102		363	428	505	586	643	720	833	914	1,023	1,078	
100	112		381	450	531	616	676	758	877	962	1,076	1,135	
110	122		398	470	555	644	708	793	918	1,007	1,127	1,189	
120	132		414	489	578	672	738	827	958	1,050	1,176	1,240	
			429	508	601	698	767	860	995	1,092	1,223	1,290	

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

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

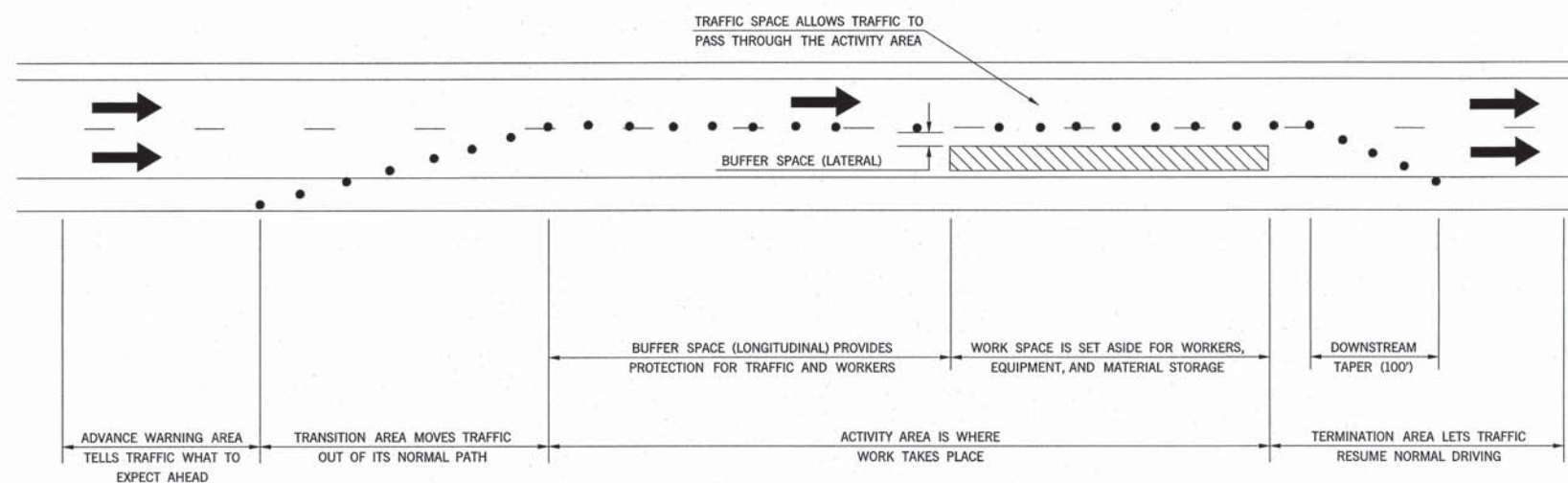


APPROVED BY
TRAFFIC ENGINEER: *David Smith* DATE: 6/23/10

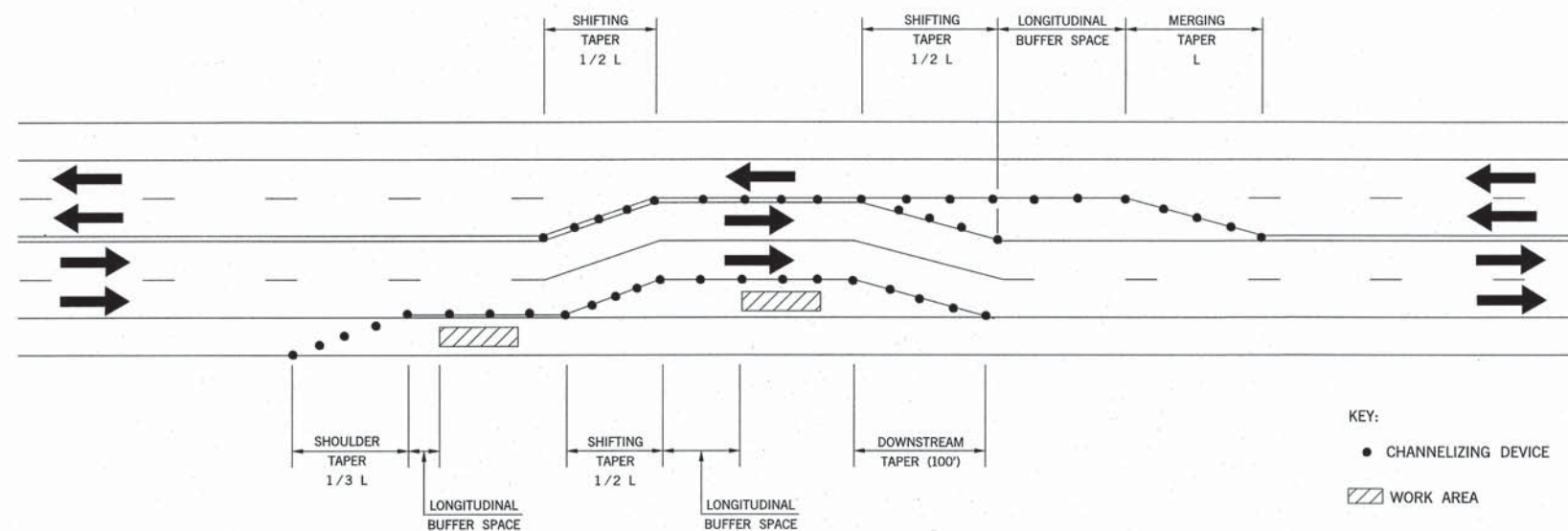
TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
TRAFFIC CONTROL TABLES AND CHARTS

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DESCRIPTION	REVISIONS	DATE
CHANGED TRANSITION NOTATION		5/31/2011



COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL ZONE



TAPERS AND BUFFER SPACE

TEMPORARY TRAFFIC CONTROL ELEMENTS



APPROVED BY TRAFFIC ENGINEER: *[Signature]* DATE: 5/31/2011

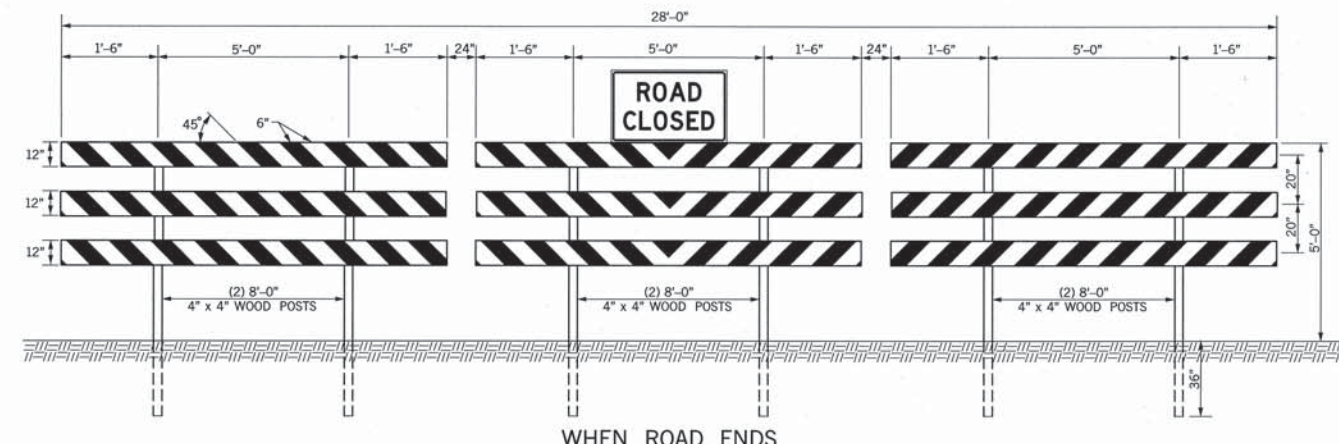
TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
TEMPORARY TRAFFIC CONTROL ELEMENTS

2009 SPECIFICATIONS

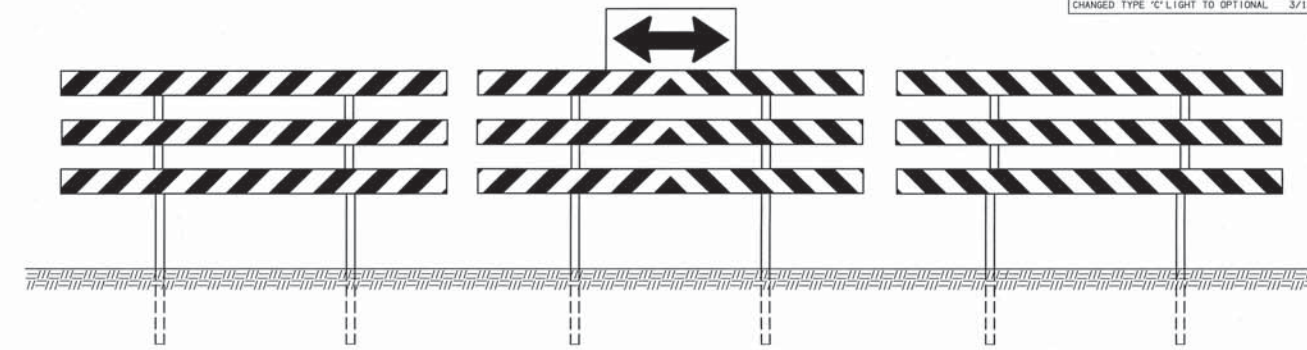
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DESCRIPTION	REVISIONS	DATE
CHANGED TYPE 'C' LIGHT TO OPTIONAL		3/16/2011



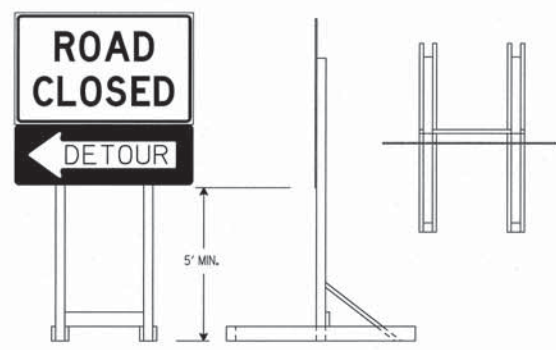
PERMANENT TYPE III(A/B) BARRICADE
(DIMENSIONS ARE TYPICAL FOR BOTH BARRICADES)



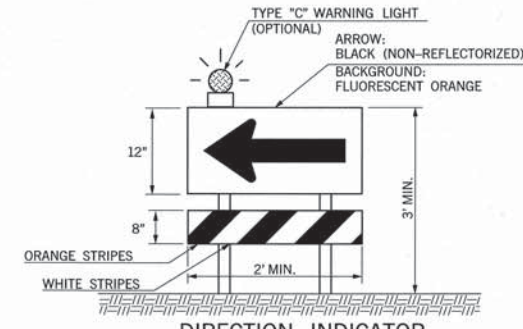
FOR T-INTERSECTIONS

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.

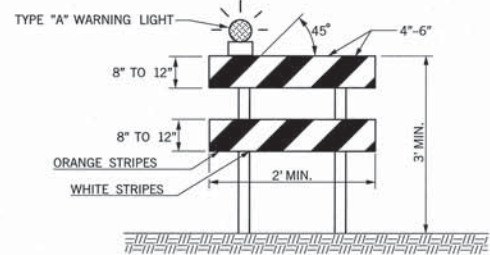
PERMANENT BARRICADE TYPE III(B) WILL BE IDENTICAL TO TYPE III(A) WITH NINE (9) ADDITIONAL REFLECTORIZED 3/4"x12" LUMBER PANELS ATTACHED TO THE BACK SIDE OF THE BARRICADE.
COLOR: BACKGROUND - WHITE (REFLECTORIZED)
DIAGONAL STRIPES - RED (REFLECTORIZED)



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.

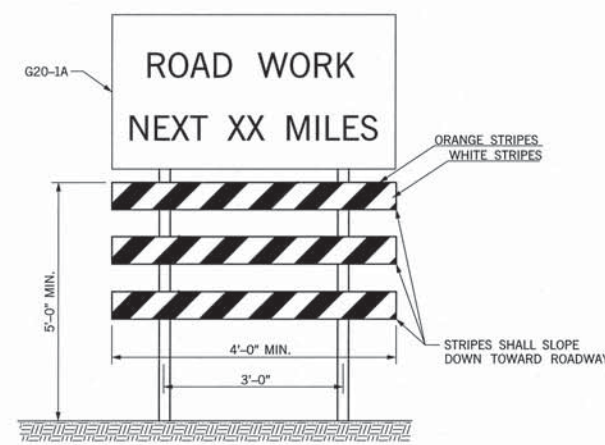
BALLAST SHALL NOT BE PLACED ON TOP OF ANY STRIPED RAIL. BARRICADES SHALL NOT BE BALLASTED BY NONDEFORMABLE OBJECTS SUCH AS ROCKS OR CHUNKS OF CONCRETE. BALLAST SHALL NOT EXTEND INTO THE ACCESSIBLE PASSAGE WIDTH OF 60".

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

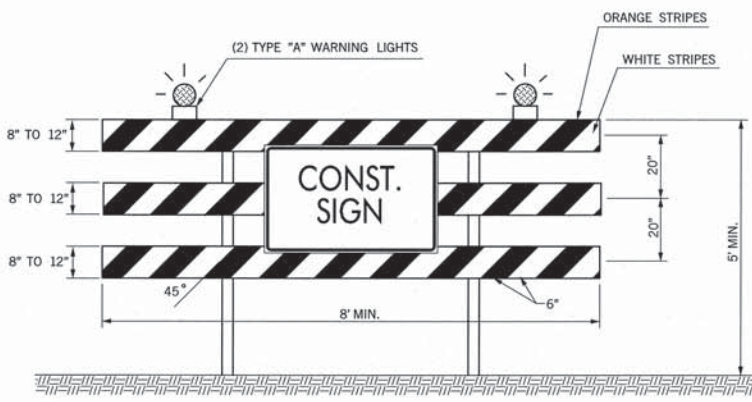
WHERE BARRICADES EXTEND ENTIRELY ACROSS A ROADWAY, THE STRIPES SHOULD SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH ROAD USERS MUST TURN.

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

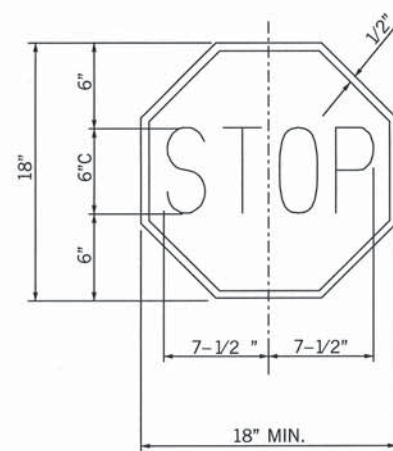
TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
TRAFFIC CONTROL DEVICES

2009 SPECIFICATIONS

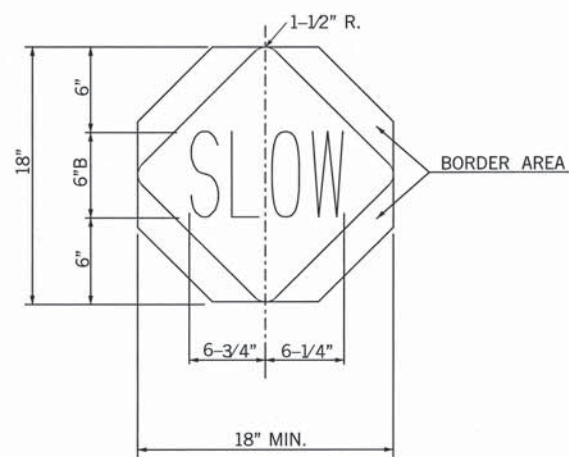
TCS4-1	01
	T-504

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

DESCRIPTION	REVISIONS	DATE

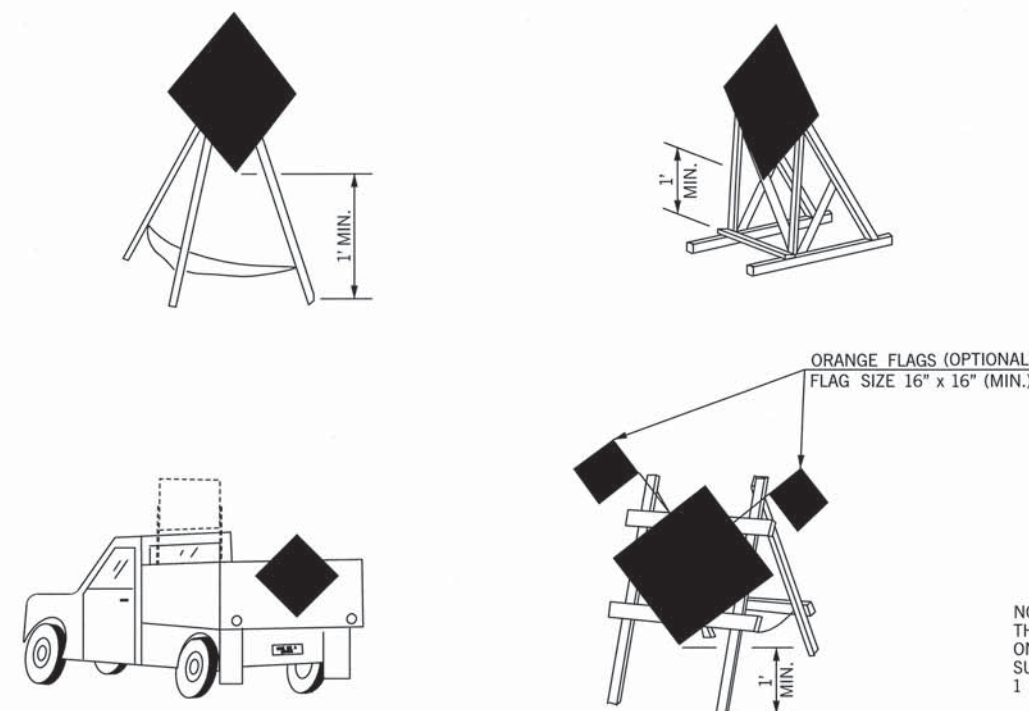


STOP:
 LEGEND AND BORDER: WHITE (REFLECTORIZED)
 BACKGROUND: RED (REFLECTORIZED)



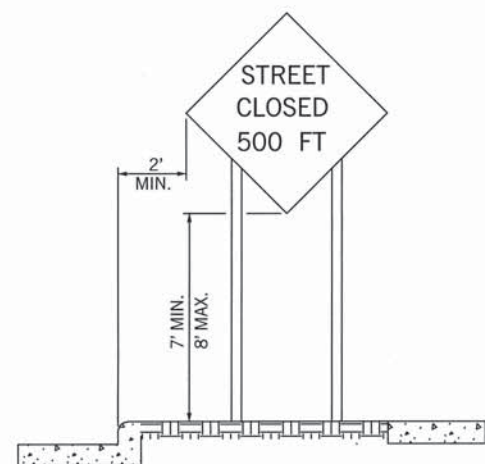
SLOW:
 LEGEND AND BORDER AREA: BLACK (NON-REFLECTORIZED)
 BACKGROUND: ORANGE (REFLECTORIZED)

STOP-SLOW PADDLE

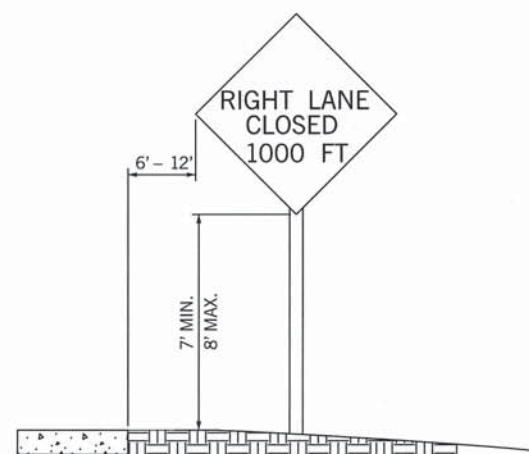


NOTE:
 THE BOTTOM OF SIGNS MOUNTED
 ON BARRICADES OR TEMPORARY
 SUPPORTS SHALL NOT BE LESS THAN
 1 FOOT ABOVE THE TRAVELED WAY.

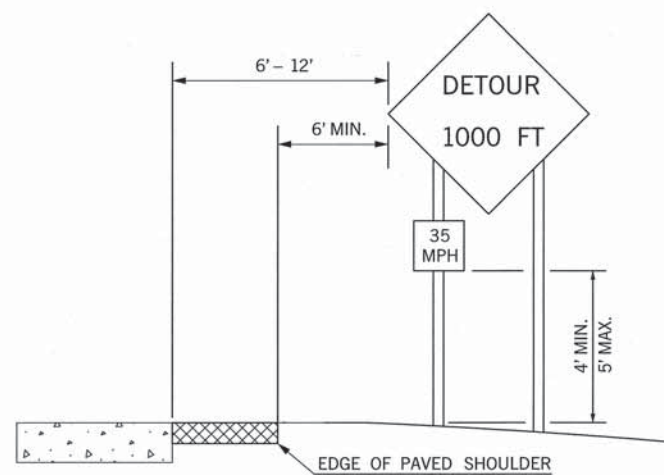
**PORTABLE AND TEMPORARY MOUNTINGS
 METHODS OF MOUNTING SIGNS OTHER THAN ON POSTS**



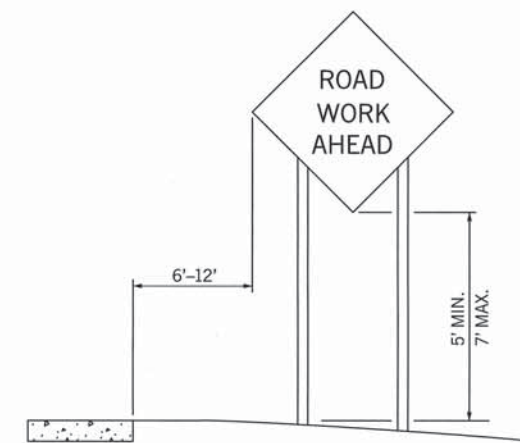
**URBAN DISTRICT
 (WITH CURB)**



**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 J. Smith* DATE: 6/23/10

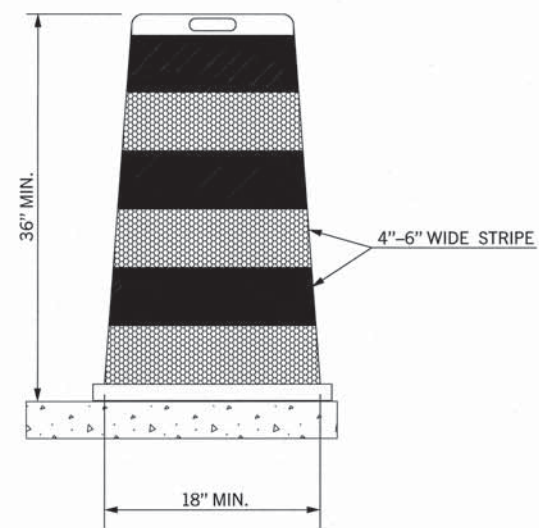
TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
 TYPICAL SIGN INSTALLATION

2009 SPECIFICATIONS

TCSS-1	00
T-505	

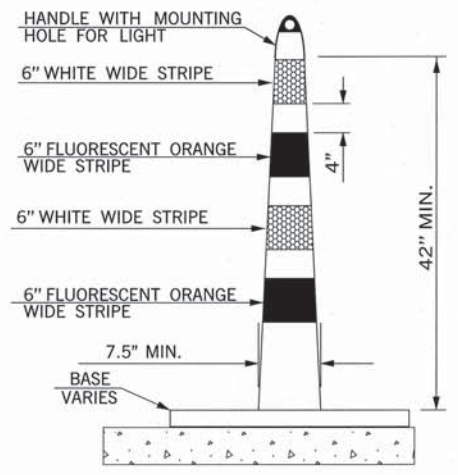
DESCRIPTION	REVISIONS	DATE
ADD NOTE TO VERTICAL PANEL		07/19/10
CHANGED TYPE "C" LIGHT TO OPTIONAL		3/15/2011



DRUM

NOTES:

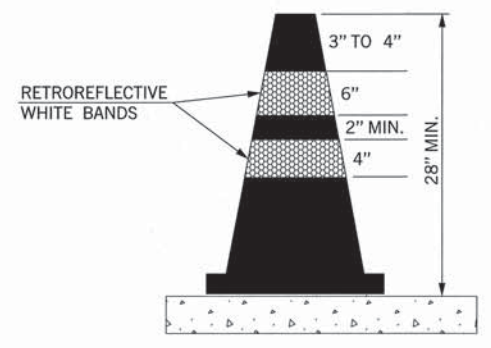
METAL DRUMS SHALL NOT BE USED.
 EACH DRUM SHALL HAVE A MINIMUM OF TWO (2) FLUORESCENT ORANGE STRIPES ALTERNATING WITH A MINIMUM OF TWO (2) WHITE STRIPES. THESE STRIPES SHALL CONSIST OF RETROREFLECTIVE SHEETING.
 BALLAST SHALL NOT BE PLACED ON TOP OF A DRUM.
 DRUMS SHALL NOT BE USED TO DELINEATE AN EDGE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



CHANNELIZER CONE

NOTES:

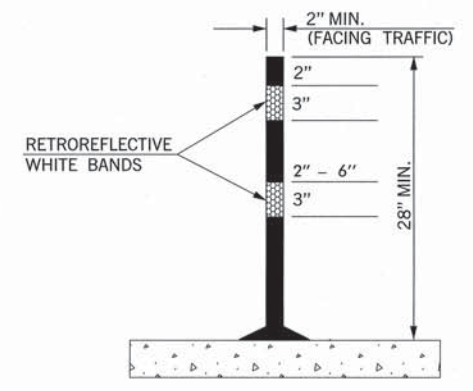
CHANNELIZER CONES USED ON HIGH SPEED ROADWAYS, ON ALL HIGHWAYS DURING NIGHTTIME, OR WHENEVER MORE CONSPICUOUS GUIDANCE IS NEEDED SHALL BE A MINIMUM OF 42 INCHES HIGH.
 EACH CHANNELIZER CONES SHALL HAVE A MINIMUM OF TWO (2) FLUORESCENT ORANGE STRIPES ALTERNATING WITH A MINIMUM OF TWO (2) WHITE STRIPES.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



CONE

NOTES:

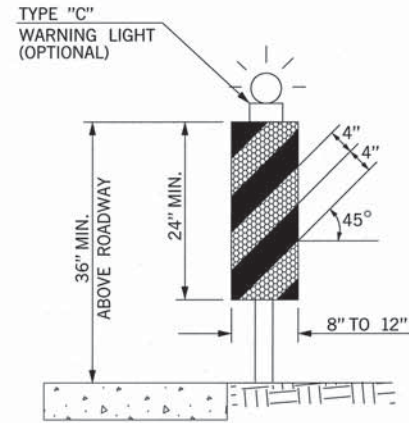
CONES USED ON HIGH SPEED ROADWAYS, ON ALL HIGHWAYS DURING NIGHTTIME, OR WHENEVER MORE CONSPICUOUS GUIDANCE IS NEEDED SHALL BE A MINIMUM OF 28 INCHES HIGH.
 CONES SHALL BE PREDOMINANTLY ORANGE, WITH WHITE RETROREFLECTIVE SHEETING.



TUBE CHANNELIZER

NOTES:

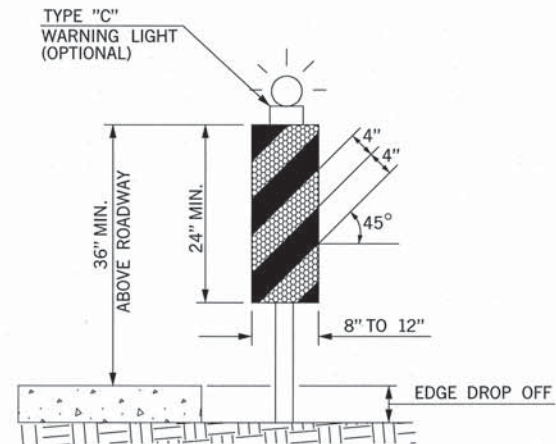
TUBE CHANNELIZERS USED ON HIGH SPEED ROADWAYS, ON ALL HIGHWAYS DURING NIGHTTIME, OR WHENEVER MORE CONSPICUOUS GUIDANCE IS NEEDED SHALL BE A MINIMUM OF 28 INCHES HIGH.
 TUBE CHANNELIZERS SHALL BE PREDOMINANTLY ORANGE, WITH WHITE RETROREFLECTIVE SHEETING.



**VERTICAL PANEL
W/O DROP OFF**

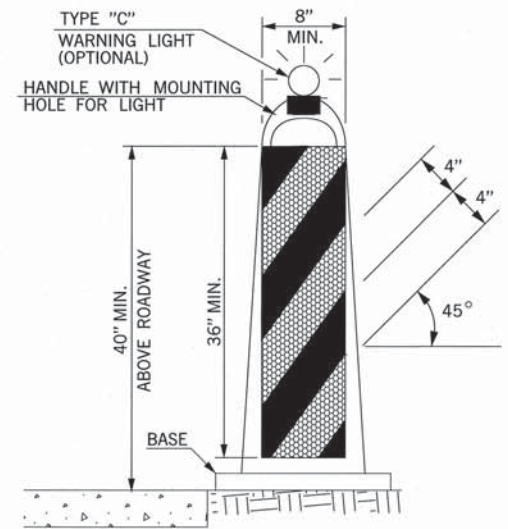
NOTES:

PANEL STRIPE WIDTHS SHALL BE 6 INCHES EXCEPT WHERE PANELS 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)

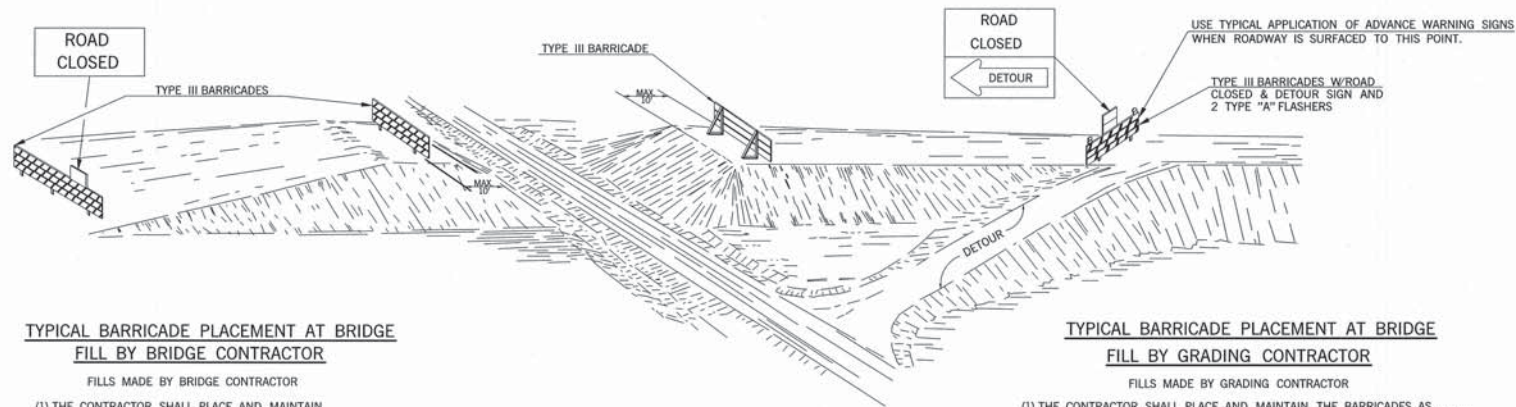
BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
880(D)	VERTICAL PANEL	SD
880(E)	WARNING LIGHTS	SD
880(F)	DRUMS	SD
880(G)	TUBE CHANNELIZERS	SD
880(H)	CONES	SD
880(I)	CHANNELIZER CONES	SD



APPROVED BY
 TRAFFIC ENGINEER: *[Signature]* DATE: 3/15/11

TRAFFIC STANDARD
 CONTROL STANDARD
 CHANNELIZING DEVICES

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

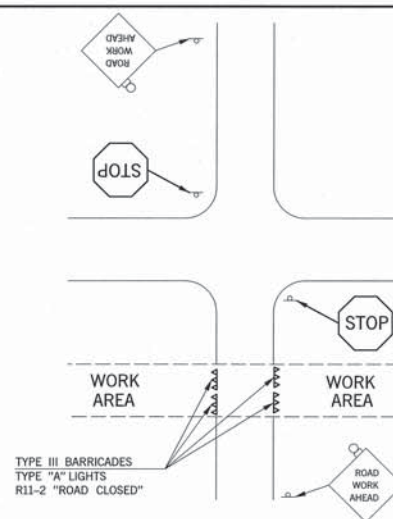


TYPICAL BARRICADE PLACEMENT AT BRIDGE FILL BY BRIDGE CONTRACTOR

- 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

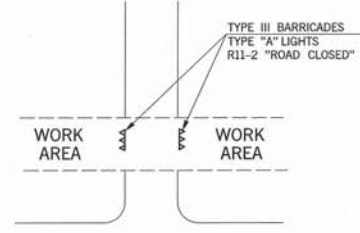
- FILLS MADE BY GRADING CONTRACTOR
- (1) THE CONTRACTOR SHALL PLACE AND MAINTAIN THE BARRICADES AS SHOWN UNTIL FINAL INSPECTION OR UNTIL THEY ARE NO LONGER NEEDED.
 - (2) THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO REMOVAL OF THE BARRICADES.
 - (3) IF THE BRIDGE WORK ORDER IS ISSUED PRIOR TO COMPLETION 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.



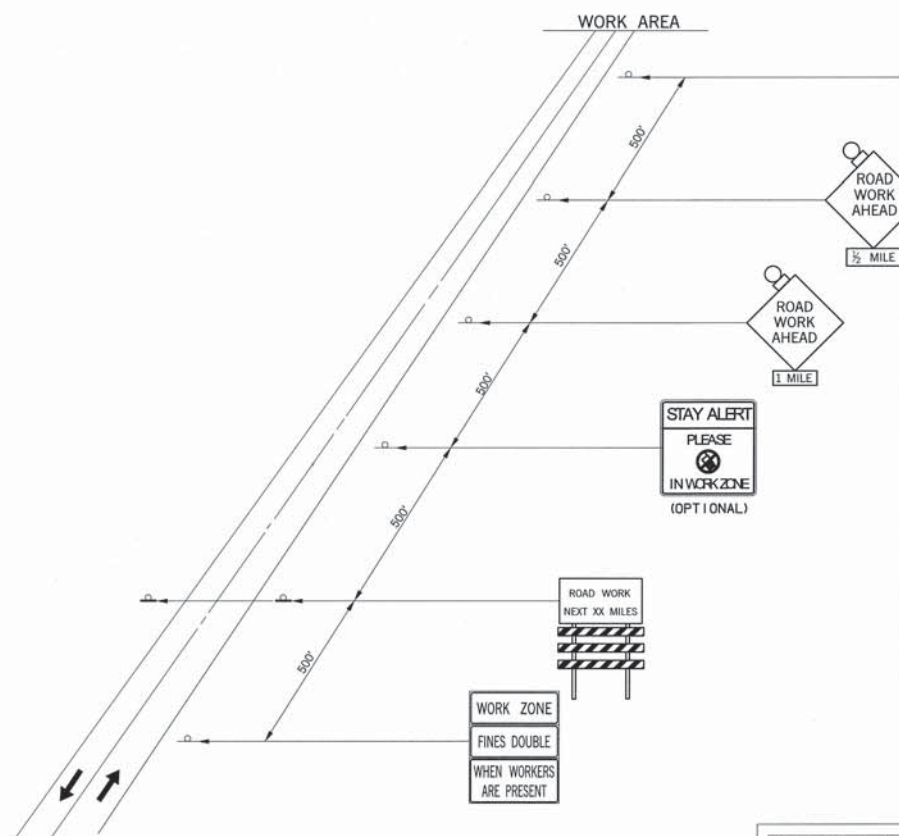
TYPICAL SIGN PLACEMENT FOR INTERSECTING ROADS AND STREETS

DESCRIPTION	REVISIONS	DATE
MODIFIED NOTE		3/15/2011
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 MOTORISTS 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.

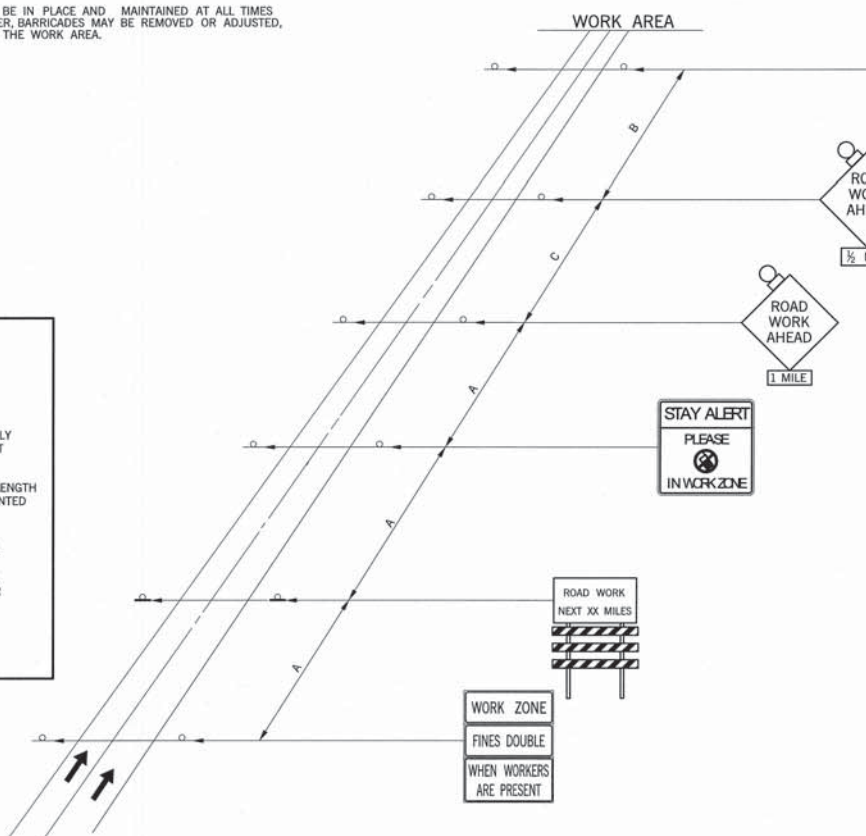
FINES DOUBLE IN WORK ZONE SIGNS ARE TO BE USED ONLY ON STATE OR FEDERAL HIGHWAYS WHERE THE SPEED LIMIT IS REDUCED OR AS DIRECTED BY THE ENGINEER.

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).

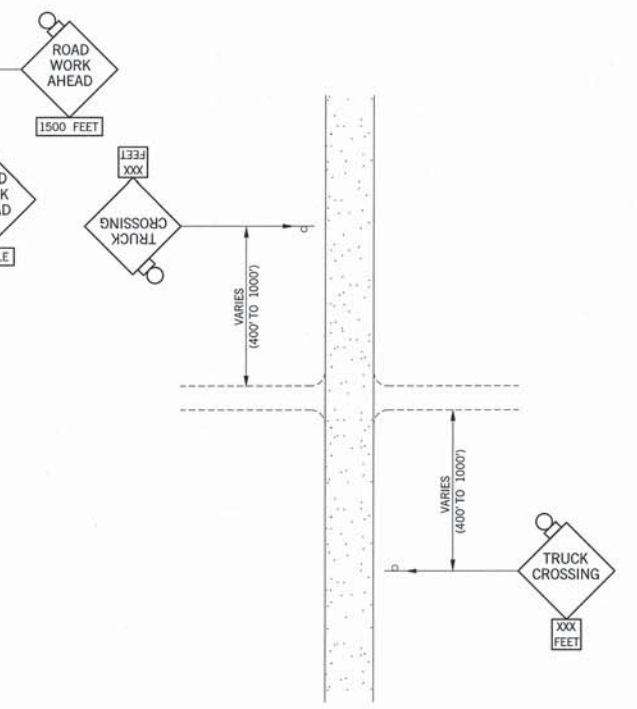
WARNING SIGNS SHOWN ARE "ADVANCE" WARNING SIGNS AND ARE REQUIRED ON ALL STATE HIGHWAYS. ADDITIONAL WARNING SIGNS MAY BE REQUIRED WITHIN THE PROJECT LIMITS TO WARN DRIVERS OF SPECIFIC HAZARDS. ADVANCE "WARNING SIGNS" MAY CHANGE AS CONDITIONS CHANGE OR AS DIRECTED BY THE ENGINEER.

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

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



STOP

R1-1 30 x 30 5.18 SF
R1-1E 36 x 36 7.46 SF
R1-1F 48 x 48 13.26 SF

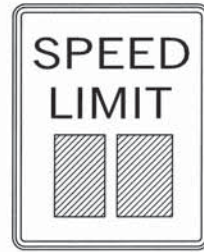
COLOR:
LEGEND AND BORDER:
WHITE (REFLECTORIZED)
BACKGROUND:
RED (TRANSPARENT REFLECTORIZED)



YIELD

R1-2 36 x 36 x 36 3.90 SF
R1-2E 48 x 48 x 48 6.93 SF
R1-2F 60 x 60 x 60 10.83 SF

COLOR:
LEGEND AND BORDER:
RED (TRANSPARENT REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



SPEED LIMIT

R2-1(SPEED) 24 x 30 5.00 SF
R2-1E() 36 x 48 12.00 SF
R2-1F() 48 x 60 20.00 SF

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



NO RIGHT TURN

R3-1 24 x 24 4.00 SF
R3-1E 36 x 36 9.00 SF
R3-1F 48 x 48 16.00 SF

COLOR:
ARROW AND BORDER:
BLACK (NON-REFLECTORIZED)
CIRCLE AND DIAGONAL:
RED (TRANSPARENT REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



NO LEFT TURN

R3-2 24 x 24 4.00 SF
R3-2E 36 x 36 9.00 SF
R3-2F 48 x 48 16.00 SF

COLOR:
ARROW AND BORDER:
BLACK (NON-REFLECTORIZED)
CIRCLE AND DIAGONAL:
RED (TRANSPARENT REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)

DESCRIPTION	REVISIONS	DATE



KEEP RIGHT SIGN

R4-7 24 x 30 5.00 SF
R4-7E 36 x 48 12.00 SF
R4-7F 48 x 60 20.00 SF

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



KEEP LEFT SIGN

R4-8 24 x 30 5.00 SF
R4-8E 36 x 48 12.00 SF
R4-8F 48 x 60 20.00 SF

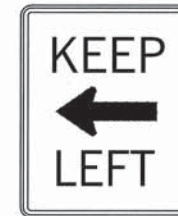
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



KEEP RIGHT

R4-7a(R) 24 x 30 5.00 SF
R4-7a(R)E 36 x 48 12.00 SF
R4-7a(R)F 48 x 60 20.00 SF

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



KEEP LEFT

R4-7a(L) 24 x 30 5.00 SF
R4-7a(L)E 36 x 48 12.00 SF
R4-7a(L)F 48 x 60 20.00 SF

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



DO NOT ENTER

R5-1 30 x 30 6.25 SF
R5-1E 36 x 36 9.00 SF
R5-1F 48 x 48 16.00 SF

COLOR:
SYMBOL: :
RED (TRANSPARENT REFLECTORIZED)
LEGEND AND BACKGROUND: :
WHITE (REFLECTORIZED)



ONE WAY

R6-1(L) 36 x 12 3.00 SF
R6-1E(L) 54 x 18 6.75 SF
R6-1F(L) 54 x 18 6.75 SF

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



ONE WAY

R6-1(R) 36 x 12 3.00 SF
R6-1E(R) 54 x 18 6.75 SF
R6-1F(R) 54 x 18 6.75 SF

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



STOP HERE ON RED

R10-6 24 x 36 6.00 SF

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

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



APPROVED BY TRAFFIC ENGINEER: *[Signature]* DATE: 6/23/10

TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS8-1	00
T-508	



ROAD CLOSED

R11-2 48 x 30 10.00 SF

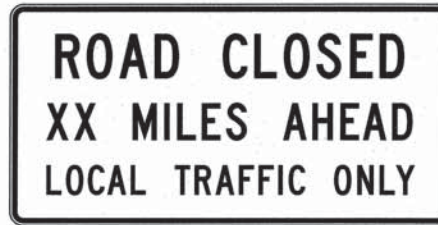
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



LANE CLOSED

R11-2(LANE) 48 x 30 10.00 SF

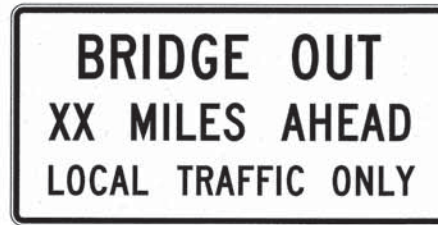
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



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

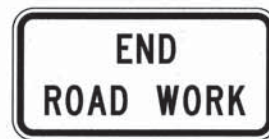
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



ROAD WORK NEXT XX MILES SIGN

G20-1A 36 x 18 4.50 SF

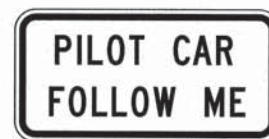
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



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:
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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

TRFPC36 M:\2009 Standards TC\1510.dgn 8:27:40 AM 6/23/2010 R:\TRAF PLOT\eroy.pen R:\TRAF PLOT\bw.cb



TURN LEFT

W1-1(L) 48 x 48 16.00 SF

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



TURN RIGHT

W1-1(R) 48 x 48 16.00 SF

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



CURVE LEFT

W1-2(L) 48 x 48 16.00 SF

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



CURVE RIGHT

W1-2(R) 48 x 48 16.00 SF

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



LEFT REVERSE TURN

W1-3(L) 48 x 48 16.00 SF

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



RIGHT REVERSE TURN

W1-3(R) 48 x 48 16.00 SF

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



LEFT REVERSE CURVE

W1-4(L) 48 x 48 16.00 SF

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



RIGHT REVERSE CURVE

W1-4(R) 48 x 48 16.00 SF

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



LEFT REVERSE CURVE

W1-4B(L) 48 x 48 16.00 SF

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



RIGHT REVERSE CURVE

W1-4B(R) 48 x 48 16.00 SF

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



LEFT REVERSE CURVE

W1-4C(L) 48 x 48 16.00 SF

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



RIGHT REVERSE CURVE

W1-4C(R) 48 x 48 16.00 SF

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

DESCRIPTION	REVISIONS	DATE

NOTES:
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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.

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



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

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS10-1 00
T-510

DESCRIPTION	REVISIONS	DATE
CHANGE DESIGN NUMBER		07/19/10



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

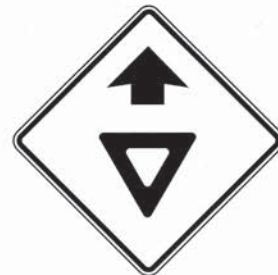
COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE
(REFLECTORIZED)



STOP AHEAD

W3-1 48 x 48 16.00 SF

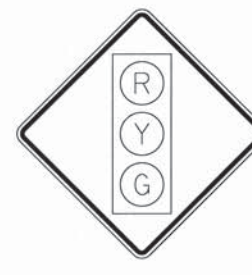
COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)
SYMBOL:
WHITE BORDER ON RED BACKGROUND
(REFLECTORIZED)



YIELD AHEAD

W3-2 48 x 48 16.00 SF

COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)
SYMBOL:
WHITE BORDER ON RED BACKGROUND
(REFLECTORIZED)



SIGNAL AHEAD

W3-3 48 x 48 16.00 SF

COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)
R = RED (REFLECTORIZED)
Y = YELLOW (REFLECTORIZED)
G = GREEN (REFLECTORIZED)



BE PREPARED TO STOP SIGN

W3-4 48 x 48 16.00 SF

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



SPEED REDUCTION

W3-5 48 x 48 16.00 SF

COLOR:
BORDER AND ARROW:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)
SYMBOL:
BLACK BORDER AND TEXT ON
WHITE BACKGROUND (REFLECTORIZED)



LEFT LANE ENDS

W4-2(L) 48 x 48 16.00 SF

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



RIGHT LANE ENDS

W4-2(R) 48 x 48 16.00 SF

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



ROAD NARROWS

W5-1 48 x 48 16.00 SF

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



NARROW BRIDGE

W5-2 48 x 48 16.00 SF

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

NOTES:
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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.



ONE LANE BRIDGE

W5-3 48 x 48 16.00 SF

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



DIVIDED HIGHWAY

W6-1 48 x 48 16.00 SF

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



DIVIDED HIGHWAY

W6-2 48 x 48 16.00 SF

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



TWO WAY TRAFFIC SIGN

W6-3 48 x 48 16.00 SF

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

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
880(B)	CONSTRUCTION SIGNS	SD



APPROVED BY
TRAFFIC ENGINEER: *[Signature]* DATE: 8/6/2010

TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS11-1 01
T-511

TRFC36 U:\Traffic\TRAFFIC STD. CURRENT\2009 DRAWINGS\TCS11-1-01 1511.dgn 3:13:15 PM 7/26/2010 R:\TRAF PLOT\lroy.psn R:\TRAF PLOT\bw.ctb



LOW SHOULDER SIGN

W8-9 48 x 48 16.00 SF

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



UNEVEN LANES SIGN

W8-11 48 x 48 16.00 SF

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



NO CENTER LINE SIGN

W8-12 48 x 48 16.00 SF

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



GROOVED PAVEMENT SIGN

W8-15 48 x 48 16.00 SF

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



MOTORCYCLE (PLAQUE) *

W8-15P 18 x 36 4.50 SF

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

DESCRIPTION	REVISIONS	DATE

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).

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SHOULDER DROP-OFF (SYMBOL)

W8-17 48 x 48 16.00 SF

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



SHOULDER DROP-OFF (PLAQUE) *

W8-17P 18 x 36 4.50 SF

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



LANE ENDS MERGE LEFT SIGN

W9-2(L) 48 x 48 16.00 SF

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



LANE ENDS MERGE RIGHT SIGN

W9-2(R) 48 x 48 16.00 SF

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



TRUCK CROSSING SIGN

W11-10 48 x 48 16.00 SF

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



DOUBLE ARROW SIGN

W12-1 48 x 48 16.00 SF

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



CLEARANCE SIGN

W12-2 48 x 48 16.00 SF

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



ADVISORY SPEED SIGN *

W13-1P 18 x 18 2.25 SF
W13-1PE 24 x 24 4.00 SF

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



XX FEET SIGN *

W16-2P 24 x 18 3.00 SF
W16-2PE 30 x 24 5.00 SF

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

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

TCS13-1 00

T-513

TRFPC36 M:\2009 Standards TC\1513.dgn 8:29:28 AM 6/23/2010 R:\TRAF PLOT\teroy.pcn R:\TRAF PLOT\bw.cb

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)

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 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).

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

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

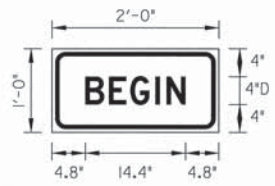


APPROVED BY TRAFFIC ENGINEER: *David Smith* DATE: 6/23/10

TRAFFIC STANDARD
 TRAFFIC CONTROL STANDARD
 CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS14-1	00
T-514	



Dimensions are in Inches.tenths

SIGN NUMBER	CS-13
WIDTH x HGHT.	2'-0" x 1'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	2.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: FLO*
LEGEND BORDER	TYPE: Non-Reflective COLOR: Black

LETTER POSITIONS (X)					LENGTH	SERIESIZE
B	E	G	I	N		D 2000
4.8	8.2	11.3	14.9	16.5		14.4



Dimensions are in Inches.tenths

SIGN NUMBER	CS-13E
WIDTH x HGHT.	3'-0" x 1'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	3.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: FLO*
LEGEND BORDER	TYPE: Non-Reflective COLOR: Black

LETTER POSITIONS (X)					LENGTH	SERIESIZE
B	E	G	I	N		D 2000
7.2	12.3	16.9	22.3	24.7		21.6

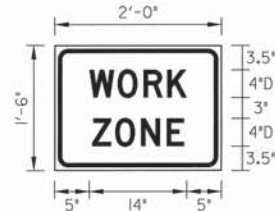


Dimensions are in Inches.tenths

SIGN NUMBER	CS-13F
WIDTH x HGHT.	4'-0" x 1'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	6.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: FLO*
LEGEND BORDER	TYPE: Non-Reflective COLOR: Black

LETTER POSITIONS (X)					LENGTH	SERIESIZE
B	E	G	I	N		E 2000
7.1	15.2	22.6	30.9	34.4		33.8

FLO* = FLUORESCENT ORANGE



Dimensions are in Inches.tenths

SIGN NUMBER	CS-14
WIDTH x HGHT.	2'-0" x 1'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	3.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: FLO*
LEGEND BORDER	TYPE: Non-Reflective COLOR: Black

LETTER POSITIONS (X)					LENGTH	SERIESIZE
W	O	R	K			D 2000
5	9.1	12.8	16.2			14
Z	O	N	E			D 2000
5.4	8.7	12.5	16.1			13.2



Dimensions are in Inches.tenths

SIGN NUMBER	CS-14E
WIDTH x HGHT.	3'-0" x 2'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	6.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: FLO*
LEGEND BORDER	TYPE: Non-Reflective COLOR: Black

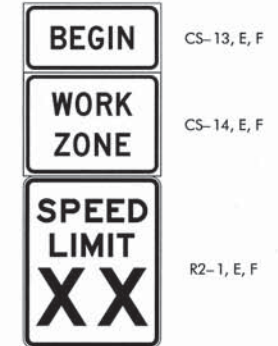
LETTER POSITIONS (X)					LENGTH	SERIESIZE
W	O	R	K			D 2000
7.5	13.6	19.2	24.3			21
Z	O	N	E			D 2000
8.1	13.1	18.7	24.2			19.8



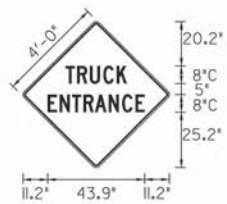
Dimensions are in Inches.tenths

SIGN NUMBER	CS-14F
WIDTH x HGHT.	4'-0" x 3'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	12.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: FLO*
LEGEND BORDER	TYPE: Non-Reflective COLOR: Black

LETTER POSITIONS (X)					LENGTH	SERIESIZE
W	O	R	K			E 2000
7.6	17.2	25.7	33.8			32.9
Z	O	N	E			E 2000
8.5	16.4	24.9	33.5			31



CONSTRUCTION
BEGIN WORK ZONE
SPEED LIMIT
ASSEMBLY



Dimensions are in Inches.tenths

SIGN NUMBER	CS-15
WIDTH x HGHT.	4'-0" x 4'-0"
BORDER WIDTH	0.75"
CORNER RADIUS	1.38"
MOUNTING	Ground
SIGN AREA	16.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: Yellow
LEGEND BORDER	TYPE: Reflective COLOR: Black

LETTER POSITIONS (X)					LENGTH	SERIESIZE	
T	R	U	C	K		C 2000	
19.3	24.5	30.4	36.5	42.5		27.7	
E	N	T	R	A	N	C	E
11.2	16.7	22.3	27.5	32.7	38.9	45	51.1
							43.9

BASIS OF PAYMENT

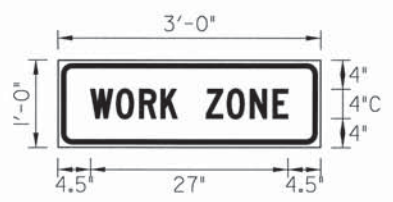
ITEM NO.	ITEM	UNIT
880(B)	CONSTRUCTION SIGNS	SD



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

TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

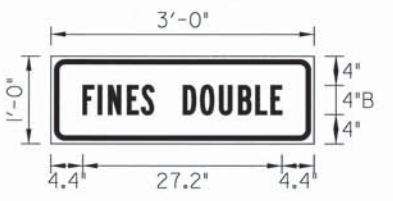
DESCRIPTION	REVISIONS	DATE
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SIGN NUMBER	CS-16
WIDTH x HGHT.	3'-0" x 1'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	3.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: Orange
LEGNDBORDER	TYPE: Non-Reflective COLOR: Black

Dimensions are in Inches.tenths

LETTER POSITIONS (X)										LENGTH	SERIESSIZE
W	O	R	K	Z	O	N	E			C	2000
4.5	8	11.2	14.1	16.3	20.3	23.2	26.3	29.5		27	



SIGN NUMBER	CS-17
WIDTH x HGHT.	3'-0" x 1'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	3.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: White
LEGNDBORDER	TYPE: Non-Reflective COLOR: Black

Dimensions are in Inches.tenths

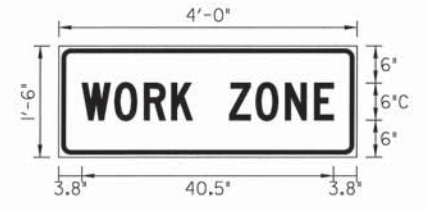
LETTER POSITIONS (X)										LENGTH	SERIESSIZE	
F	I	N	E	S	D	O	U	B	L	E	B	2000
4.4	6.5	7.9	10.5	12.4	14.1	18.1	20.5	23.1	25.7	28	30.1	27.2



SIGN NUMBER	CS-18
WIDTH x HGHT.	3'-0" x 1'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	4.5 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: White
LEGNDBORDER	TYPE: Non-Reflective COLOR: Black

Dimensions are in Inches.tenths

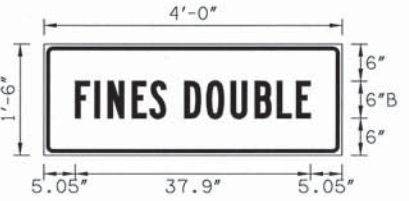
LETTER POSITIONS (X)										LENGTH	SERIESSIZE		
W	H	E	N	W	O	R	K	E	R	S	B	2000	
3	6.1	8.7	10.9	12.6	16.6	19.6	22.2	24.6	27	29.1	31.3	30	
A	R	E	P	R	E	S	E	N	T			B	2000
5.3	8	10.3	11.9	15.9	18.1	20.5	22.4	24.8	26.9	29.2		25.5	



SIGN NUMBER	CS-16E
WIDTH x HGHT.	4'-0" x 1'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	6.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: Orange
LEGNDBORDER	TYPE: Non-Reflective COLOR: Black

Dimensions are in Inches.tenths

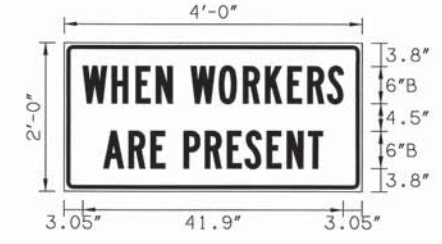
LETTER POSITIONS (X)										LENGTH	SERIESSIZE
W	O	R	K	Z	O	N	E			C	2000
3.8	9	13.8	18.2	21.5	27.5	31.8	36.5	41.2		40.5	



SIGN NUMBER	CS-17E
WIDTH x HGHT.	4'-0" x 1'-6"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Ground
SIGN AREA	6.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: White
LEGNDBORDER	TYPE: Non-Reflective COLOR: Black

Dimensions are in Inches.tenths

LETTER POSITIONS (X)										LENGTH	SERIESSIZE	
F	I	N	E	S	D	O	U	B	L	E	B	2000
5.1	8.2	10.3	14.2	17.1	22.7	26.2	30.1	34	37.5	40.7	37.9	



SIGN NUMBER	CS-18E
WIDTH x HGHT.	4'-0" x 2'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.13"
MOUNTING	Ground
SIGN AREA	8.0 Sq.Ft.
BACKGROUND	TYPE: Reflective COLOR: White
LEGNDBORDER	TYPE: Non-Reflective COLOR: Black

Dimensions are in Inches.tenths

LETTER POSITIONS (X)										LENGTH	SERIESSIZE		
W	H	E	N	W	O	R	K	E	R	S	B	2000	
3	7.7	11.6	14.9	20.4	24.9	28.8	32.4	36	39.2	42.4	41.9		
A	R	E	P	R	E	S	E	N	T			B	2000
6.4	10.5	14	19.3	22.7	26.3	29.1	32.7	35.9	39.3		35.2		



CS-16, E
CS-17, E
CS-18, E

CONSTRUCTION
FINES DOUBLE
ASSEMBLY

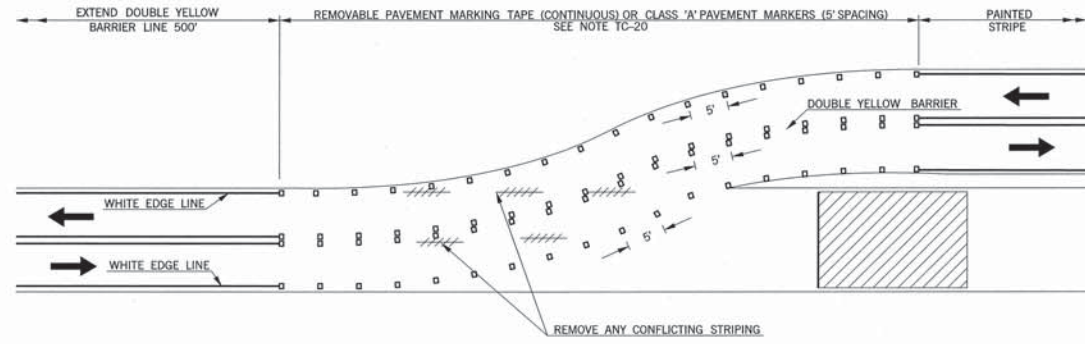
BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
880(B)	CONSTRUCTION SIGNS	SD



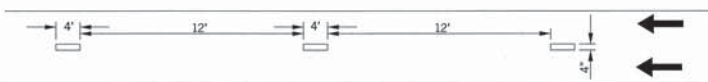
APPROVED BY
TRAFFIC ENGINEER: *David Smith* DATE: 6/23/10

TRAFFIC STANDARD
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

TRFPC36 M:\2009_Standards_TC\1520.dgn 8:42:20 AM 6/23/2010 R:\TRAF_PLOT\lroy.pen R:\TRAF_PLOT\bw.ctb



CONSTRUCTION ZONE PAVEMENT MARKINGS THRU SHOO-FLY

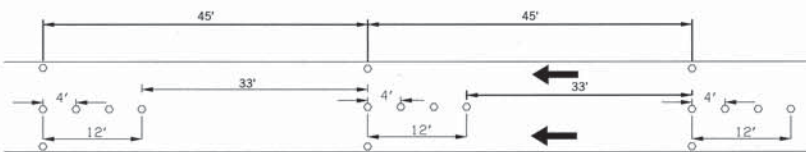


**ONE-WAY PAVEMENT MARKING
REMOVABLE TAPE OR PAINT**

PAVEMENT MARKINGS: REMOVABLE TAPE OR PAINT
WIDTH OF STRIPED LANE LINES SHALL BE A MINIMUM OF 4".
INTERMEDIATE-TERM STATIONARY PAVEMENT MARKINGS ARE THOSE THAT MAY BE USED UNTIL THE EARLIEST DATE WHEN IT IS PRACTICAL AND POSSIBLE TO INSTALL PERMANENT PAVEMENT MARKINGS THAT MEET THE FULL OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARDS FOR PAVEMENT MARKINGS.

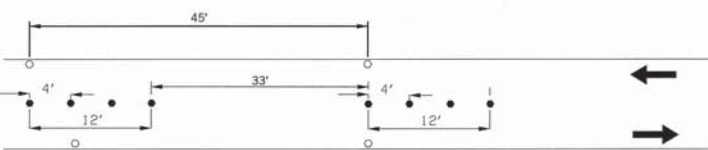


**TWO-WAY PAVEMENT MARKING
REMOVABLE TAPE OR PAINT**



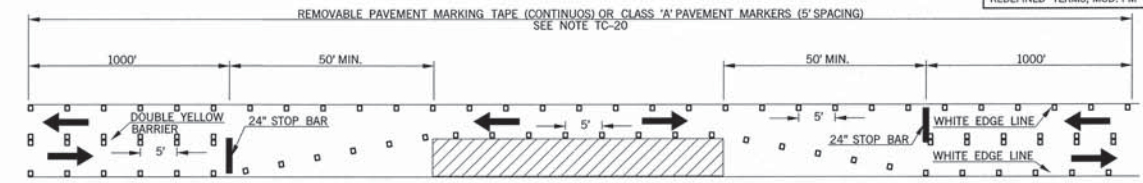
**ONE-WAY PAVEMENT MARKING
FLEX TABS**

PAVEMENT MARKINGS: FLEX TABS
TYPE I - FLEX TAB MARKERS SHALL HAVE REFLECTORIZED MATERIAL ON BOTH SIDES.
TYPE II - FLEX TAB MARKERS SHALL HAVE REFLECTORIZED MATERIAL ON BOTH SIDES AND SHALL HAVE A CLEAR REMOVABLE COVER.
FLEX TABS MAY BE INSTALLED AS SHOWN FOR LONG-TERM STATIONARY PAVEMENT MARKINGS.



**TWO-WAY PAVEMENT MARKING
FLEX TABS**

INTERMEDIATE-TERM STATIONARY PAVEMENT MARKINGS



**TYPICAL PAVEMENT MARKINGS FOR ONE LANE CLOSURE ON TWO LANE /TWO WAY ROADWAY
REMOVABLE TAPE OR CONSTRUCTION ZONE PAVEMENT MARKERS**

NOTES:

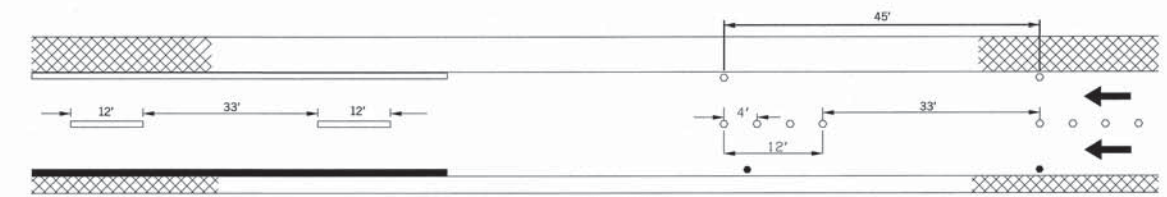
CONSTRUCTION ZONE PAVEMENT MARKINGS SHALL CONSIST OF EITHER PAINT, CONSTRUCTION ZONE PAVEMENT MARKERS (FLEX TABS) OR REMOVABLE MARKING TAPE. THERMO-PLASTIC STRIPE MAY BE USED IN CONJUNCTION WITH PAINT, FLEX TABS OR TAPE WHEN SPECIFIED IN THE PLANS.
ALL PAVEMENT MARKINGS TO BE PLACED ON TEMPORARY SURFACES OR ON SURFACES SCHEDULED TO BE REMOVED SHALL BE DONE WITH PAINT UNLESS OTHERWISE SHOWN IN THE PLANS OR STANDARD DRAWINGS. ALL FINAL OR FINISHED SURFACES SHALL BE MARKED WITH EITHER REMOVABLE PAVEMENT MARKING TAPE OR CONSTRUCTION ZONE PAVEMENT MARKERS, UNLESS OTHERWISE NOTED ON THE PLANS.
WIDTH OF STRIPED LANE LINES SHALL BE A MINIMUM OF 4".

KEY:

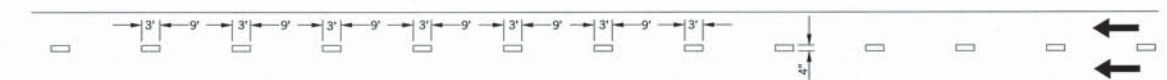
- WORK ZONE
- WHITE LANE LINE (PAINT OR TAPE)
- YELLOW LANE LINE (PAINT OR TAPE)
- WHITE FLEX TAB
- YELLOW FLEX TAB
- CLASS A PAVEMENT MARKER



TWO-LANE /TWO-WAY



**4 -LANE
DIVIDED ROADWAY**



WHITE DOTTED LINE

LONG-TERM STATIONARY PAVEMENT MARKINGS

MUTCD DEFINITIONS OF 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 WORK LASTING 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.



APPROVED BY: *[Signature]* DATE: 4/8/2013
TRAFFIC ENGINEER

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION ZONE PAVEMENT MARKINGS

2009 SPECIFICATIONS

TCS21-1	02
	T-521

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