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

REVISIONS	
DESCRIPTION	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 THIER 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 THIER 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: _____ DATE: 3/21/11

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
TRAFFIC CONTROL CONSTRUCTION NOTES

2009 SPECIFICATIONS

TCS1-1	01
	T-501

$$date$$

REVISIONS		
DESCRIPTION		DATE

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	6	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		265	295	320	8	9	9	40	80	8	40
45	$L = W \times S$	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	TAPER LENGTH
UPSTREAM TAPERS	
MERGING TAPER	L MINIMUM
SHIFTING TAPER	1/2 L MINIMUM
SHOULDER TAPER	1/3 L MINIMUM
TWO-WAY TRAFFIC TAPER	100 FEET MAXIMUM
DOWNSTREAM TAPERS (USE IS OPTIONAL)	100 FEET PER LANE

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.

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

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

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

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

RECOMMENDED DISTANCE BETWEEN SIGNS (MIN.)

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

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. "

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°
		R.	382	521	716	955	1146	1433	1910	2292	2865	3183
20	32		219	256	301	348	382	427	493	541	605	637
30	42		250	293	344	398	437	489	565	619	692	730
40	52		277	325	382	443	485	543	628	688	770	812
50	62		301	354	417	483	529	593	685	751	841	886
60	72		324	381	448	519	570	638	738	809	905	955
70	82		344	405	478	554	608	681	787	863	966	1,018
80	92		363	428	505	586	643	720	833	914	1,023	1,078
90	102		381	450	531	616	676	758	877	962	1,076	1,135
100	112		398	470	555	644	708	793	918	1,007	1,127	1,189
110	122		414	489	578	672	738	827	958	1,050	1,176	1,240
120	132		429	508	601	698	767	860	995	1,092	1,223	1,290

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

APPROVED BY TRAFFIC ENGINEER [signature] DATE: 5/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD

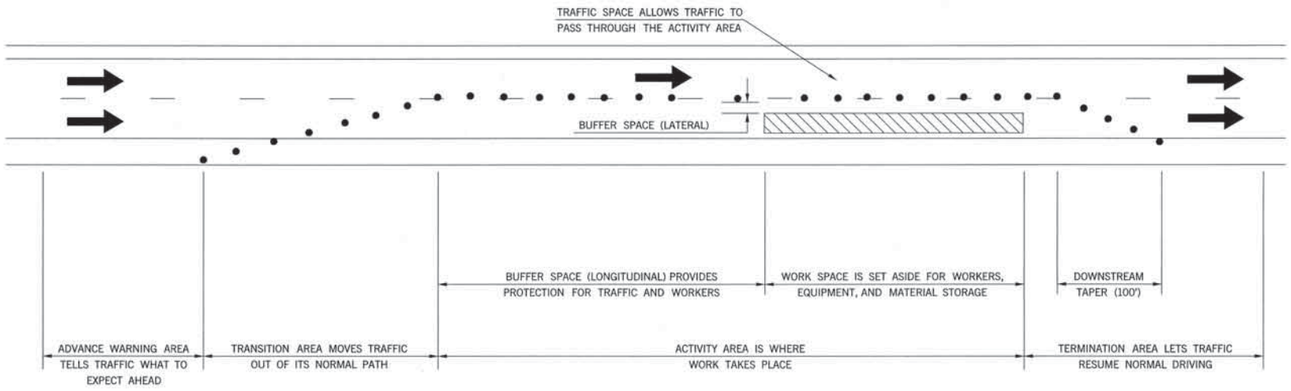
TRAFFIC CONTROL TABLES AND CHARTS

2009 SPECIFICATIONS

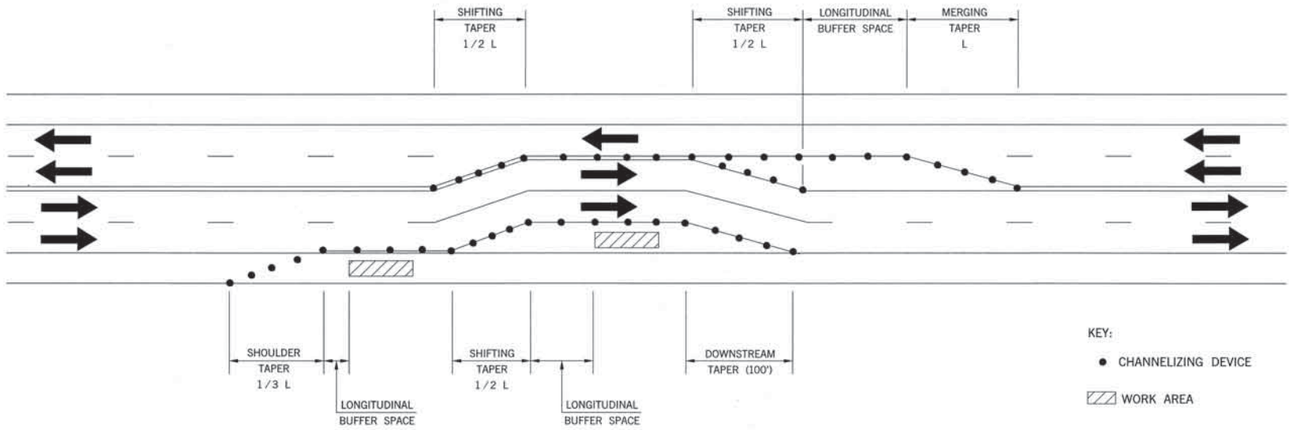
TCS2-1 | 00

T-502

REVISIONS		
DESCRIPTION		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: _____ DATE: 5/31/2011

TRAFFIC STANDARD

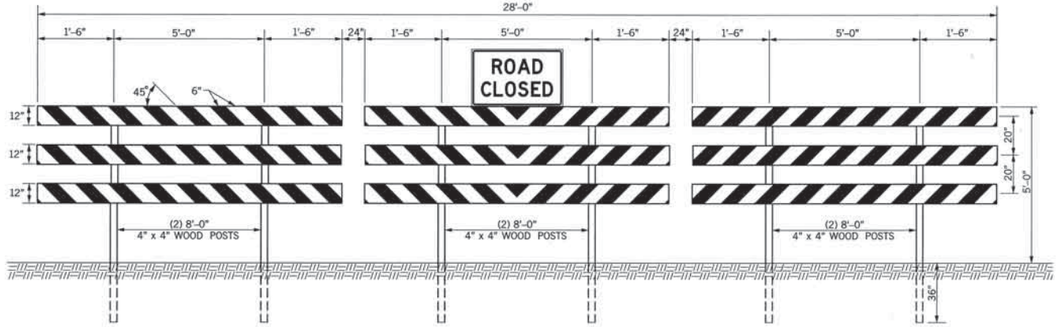
TRAFFIC CONTROL STANDARD
TEMPORARY TRAFFIC CONTROL ELEMENTS

2009 SPECIFICATIONS

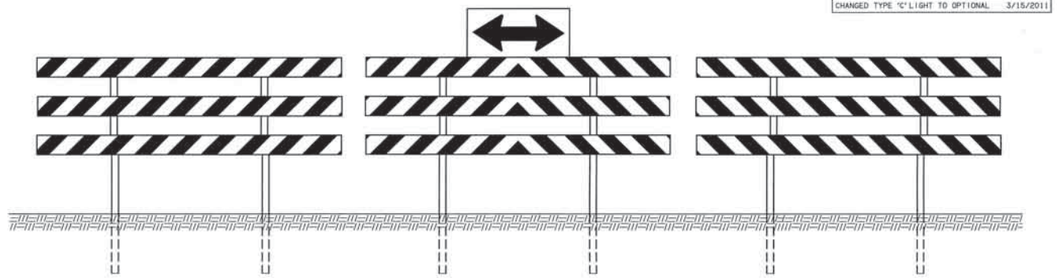
TCS3-1	01
T-503	

$$date$$

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



WHEN ROAD ENDS

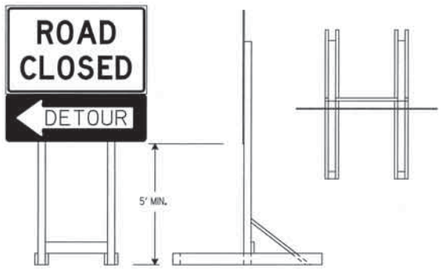


FOR T-INTERSECTIONS

PERMANENT TYPE III(A/B) BARRICADE

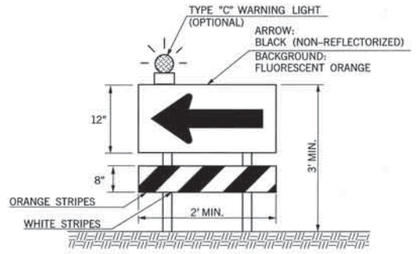
(DIMENSIONS ARE TYPICAL FOR BOTH BARRICADES)

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)

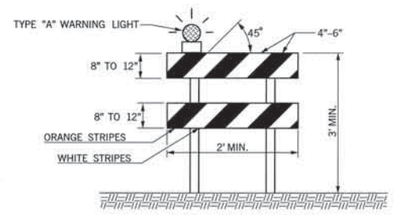


Skid-Mounted
Sign Support
with plywood sign

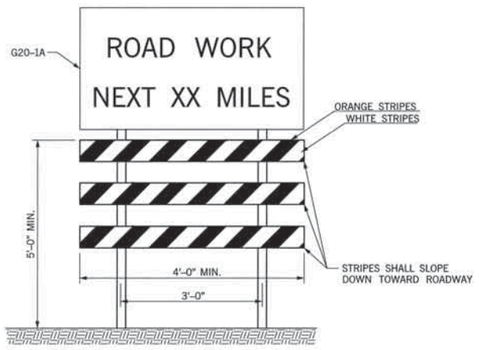
LONG/INTERMEDIATE TERM STATIONARY
PORTABLE SIGN SUPPORTS
5 Foot Mounting Height
(SKID MOUNTED)
(SHALL BE PLACED BEHIND TYPE III BARRICADE)



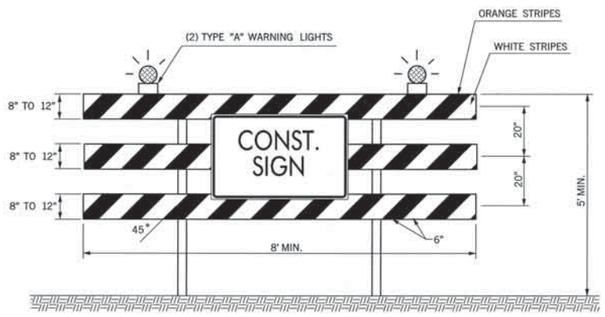
DIRECTION INDICATOR
BARRICADE



TYPE II BARRICADE



WING BARRICADE



TYPE III 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, RETRO-REFLECTIVE 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.

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

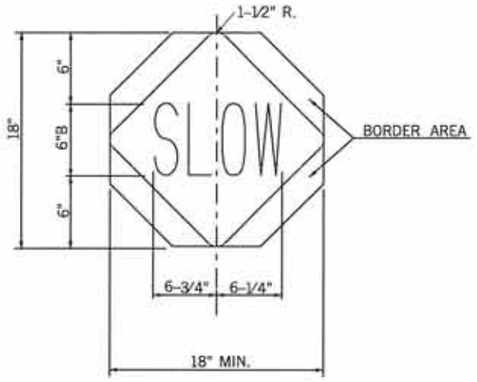
TRAFFIC CONTROL STANDARD
TRAFFIC CONTROL DEVICES

2009 SPECIFICATIONS

TCS4-1	01
T-504	

$$date$$

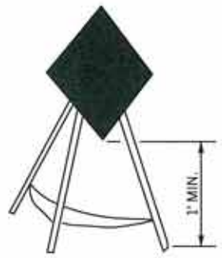
STOP:
LEGEND AND BORDER: WHITE (REFLECTORIZED)
BACKGROUND: RED (REFLECTORIZED)

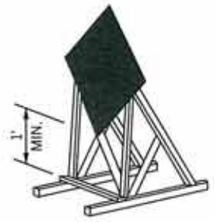


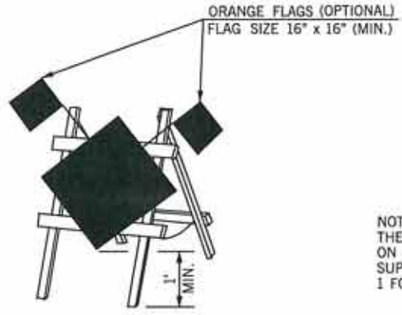
SLOW:
LEGEND AND BORDER AREA: BLACK (NON-REFLECTORIZED)
BACKGROUND: ORANGE (REFLECTORIZED)

STOP–SLOW PADDLE

DESCRIPTION	REVISIONS	DATE

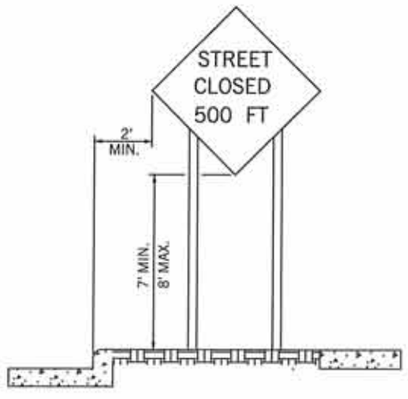




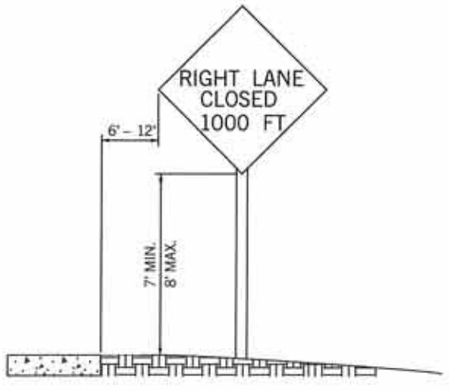


NOTE:
THE BOTTOM OF SIGNS MOUNTED ON BARRICADES OR TEMPORARY SUPPORTS SHALL NOT BE LESS THAN 1 FOOT ABOVE THE TRAVELED WAY.

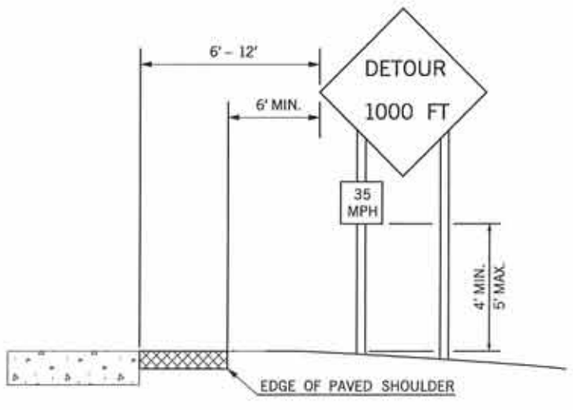
PORTABLE AND TEMPORARY MOUNTINGS
METHODS OF MOUNTING SIGNS OTHER THAN ON POSTS



URBAN DISTRICT
(WITH CURB)



URBAN DISTRICT
(WITHOUT CURB)



RURAL DISTRICT WITH
ADVISORY SPEED PLATE

RURAL DISTRICT

HEIGHT AND LATERAL LOCATIONS OF SIGNS – TYPICAL INSTALLATIONS

APPROVED BY TRAFFIC ENGINEER Chris Smith DATE 6/23/10

TRAFFIC STANDARD

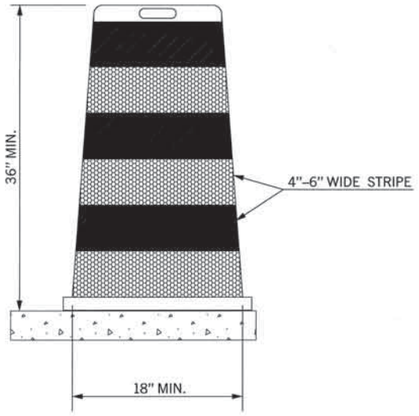
TRAFFIC CONTROL STANDARD
TYPICAL SIGN INSTALLATION

2009 SPECIFICATIONS

TCS5–1	00
	T–505

TRFPC36 M:\2009_Standards_TC\t505.dgn 8:16:51 AM 6/2/2010 d:\usr2\flib\leroyh.pen R:\TRAF_PLOT\bw.tbl

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



DRUM

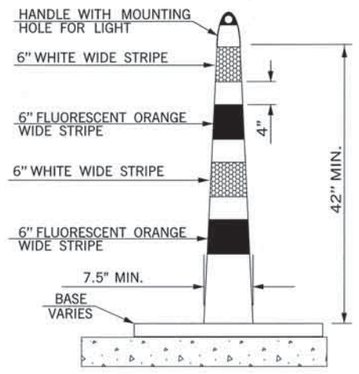
NOTES:

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.



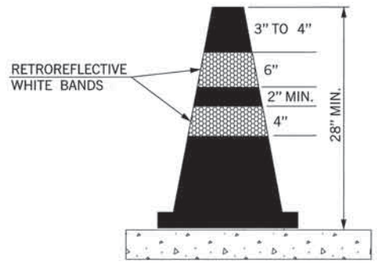
CHANNELIZER CONE

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 CHANNELIZERS 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.

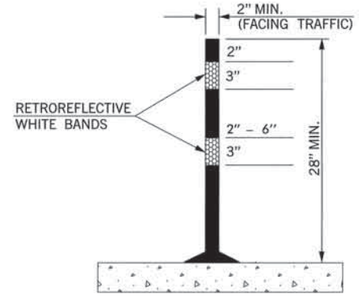


CONE

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.

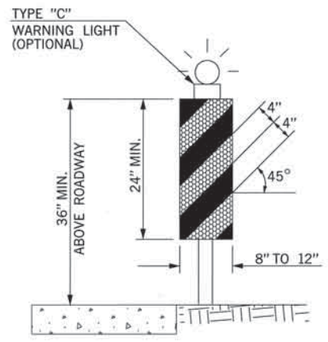


TUBE CHANNELIZER

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.



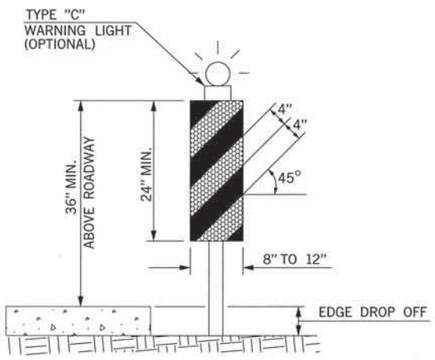
VERTICAL PANEL W/NO DROP OFF

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 RETROEFLECTORIZED STRIPES (SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS).

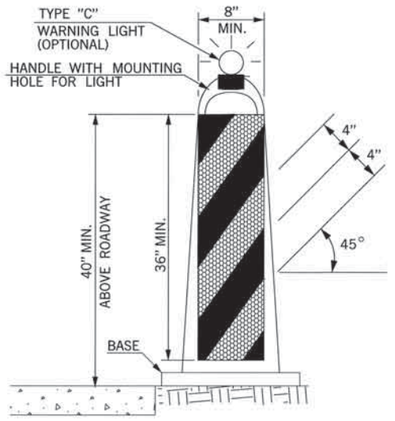
SHALL HAVE A MINIMUM OF TWO (2) FULL FLUORESCENT ORANGE STRIPES.



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(G)	CHANNELIZER CONES	SD

APPROVED BY TRAFFIC ENGINEER: _____ DATE: 3/21/11

TRAFFIC STANDARD

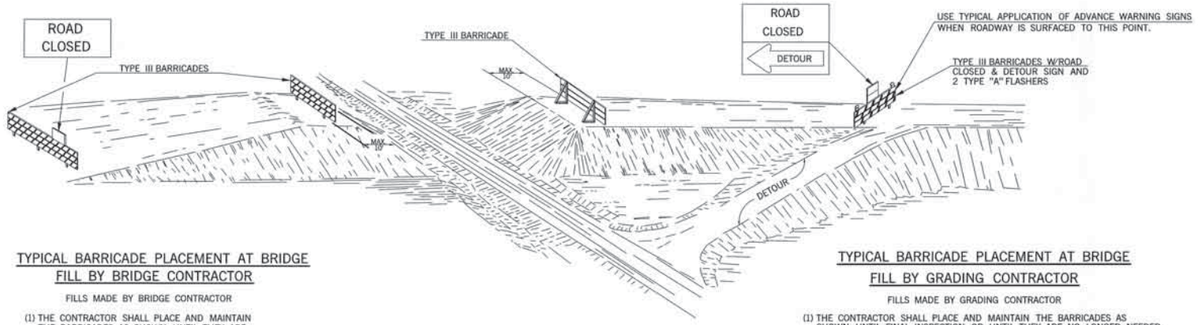
TRAFFIC CONTROL STANDARD
CHANNELIZING DEVICES

2009 SPECIFICATIONS

TCS6-1 | 02

T-506

$$date$$



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.

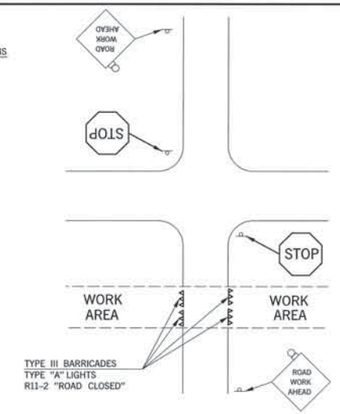
(2) THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO REMOVAL OF THE BARRICADES.

(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) SUFFICENT 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

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.

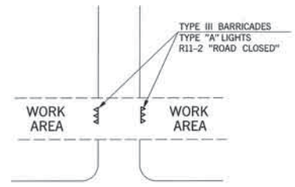
(4) PLACEMENT OF TYPE III BARRICADES SHALL BE APPROVED BY THE ENGINEER.

(5) TYPE II BARRICADES, DRUMS AND/OR VERTICAL PANELS MAY BE SUBSTITUTED FOR TYPE III BARRICADES TO AVOID OBSTRUCTING THE MOTORISTS VIEW.

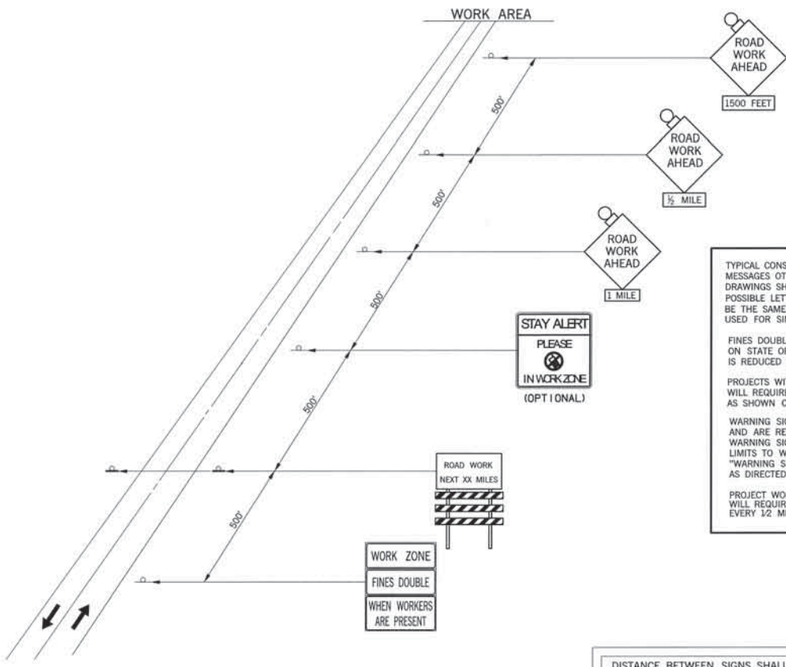
(6) IF TWO OR MORE DRIVEWAYS ARE IN CLOSE PROXIMITY, THE BARRICADES BETWEEN THE DRIVEWAYS MAY BE OMITTED AT THE DISCRETION OF THE ENGINEER.

(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.

REVISIONS	
DESCRIPTION	DATE
MODIFIED NOTE	3/15/2011
ADD "NO CELL PHONE" USAGE IN WORK ZONE, DISTANCE SIGN TO WARNING SIGNS	4/2/2013



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.

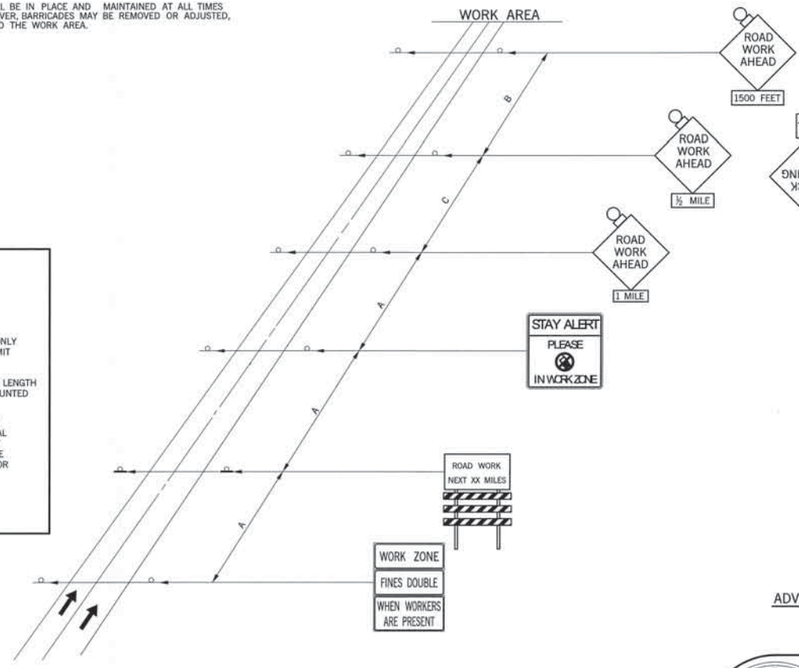
FINES DOUBLE IN WORK ZONE SIGNS ARE TO BE USED ONLY ON STATE OR FEDERAL HIGHWAYS WHERE THE SPEED LIMIT IS REDUCED OR AS DIRECTED BY THE ENGINEER.

PROJECTS WITH WORK LIMITS OF 1.0 MILES OR MORE IN LENGTH WILL REQUIRE THE G20-1A SIGN. THE SIGN SHALL BE MOUNTED AS SHOWN ON TCS4-1-(LATEST REVISION).

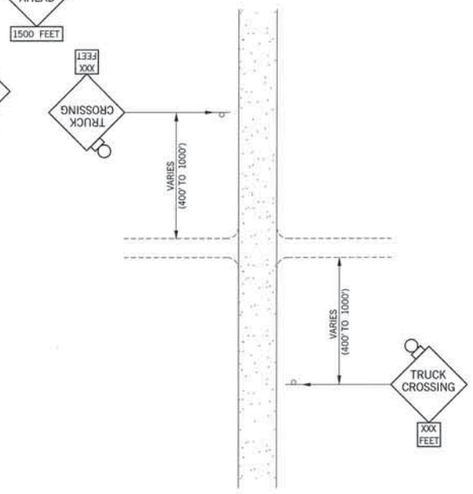
WARNING SIGNS SHOWN ARE "ADVANCE" WARNING SIGNS AND ARE REQUIRED ON ALL STATE HIGHWAYS. ADDITIONAL WARNING SIGNS MAY BE REQUIRED WITHIN THE PROJECT LIMITS TO WARN DRIVERS OF SPECIFIC HAZARDS. ADVANCE "WARNING SIGNS" MAY CHANGE AS CONDITIONS CHANGE OR AS DIRECTED BY THE ENGINEER.

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.

DISTANCE BETWEEN SIGNS SHALL BE A (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



TYPICAL APPLICATION ADVANCE WARNING SIGNS ON A DIVIDED HIGHWAY



TYPICAL APPLICATION ADVANCE SIGNING WHERE TRUCKS ARE CROSSING

APPROVED BY TRAFFIC ENGINEER: _____ DATE: 4/8/2013

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)

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).

REVISIONS		
DESCRIPTION		DATE

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

APPROVED BY TRAFFIC ENGINEER: Chad Smith DATE: 6/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS8-1	00
T-508	

REVISIONS	
DESCRIPTION	DATE
CHANGED SIGN DESIGNATION	3/15/2011

ROAD CLOSED

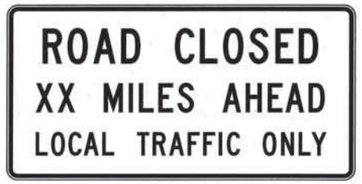
R11-2 48 x 30 10.00 SF

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

LANE CLOSED

R11-2(LANE) 48 x 30 10.00 SF

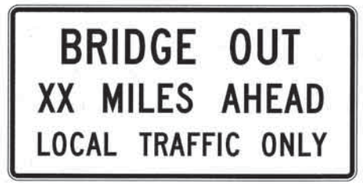
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



ROAD CLOSED XX MILES AHEAD

R11-3a 60 x 30 12.50 SF

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



BRIDGE OUT XX MILES AHEAD

R11-3b 60 x 30 12.50 SF

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

ROAD CLOSED TO THRU TRAFFIC

R11-4 60 x 30 12.50 SF

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

DETOUR SIGN

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

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

DETOUR SIGN

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

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

DETOUR SIGN

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

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

DETOUR SIGN

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

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

DETOUR SIGN

M4-10(R) 48 x 18 6.00 SF

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

DETOUR SIGN

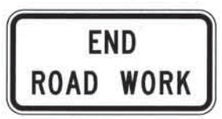
M4-10(L) 48 x 18 6.00 SF

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

ROAD WORK NEXT XX MILES SIGN

G20-1A 36 x 18 4.50 SF

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



END ROAD WORK SIGN

G20-2A 36 x 18 4.50 SF

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

PILOT CAR FOLLOW ME SIGN

G20-4 36 x 18 4.50 SF

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

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

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

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

APPROVED BY TRAFFIC ENGINEER: _____ DATE: 3/21/11

TRAFFIC STANDARD

TRAFFIC CONTROL STANARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS9-1 | 01

T-509

$$date$$

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

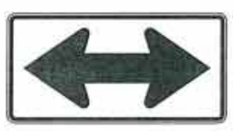
W1-4C(R) 48 x 48 16.00 SF

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

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

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUCTION 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: Arnold Emata DATE: 6/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS10-1 00

T-510

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)

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)

REVISIONS	
DESCRIPTION	DATE
CHANGE DESIGN NUMBER	07/19/10

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

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

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUCTION 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: [signature] DATE: 5/6/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS11-1 01

T-511

DESCRIPTION	REVISIONS	DATE

HILL SIGN

W7-1 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

HILL SIGN

W7-1b 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

HILL SIGN *

W7-1S 24 x 18 3.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

BUMP SIGN

W8-1 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

DIP SIGN

W8-2 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

PAVEMENT ENDS SIGN

W8-3 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

SOFT SHOULDER SIGN

W8-4 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

SLIPPERY WHEN WET SIGN

W8-5 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

SLIPPERY WHEN WET *

W8-5S 24 x 18 3.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

TRUCK CROSSING

W8-6 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

LOOSE GRAVEL SIGN

W8-7 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

ROUGH ROAD SIGN

W8-8 48 x 48 16.00 SF
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

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

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

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUCTION 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: Chad Smith DATE: 6/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS12-1 00
T-512

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)

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)

REVISIONS		
DESCRIPTION		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).

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

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUCTION 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 [signature] DATE 6/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS13-1	00
	T-513

T8FPC36 M:\2009 Standards TC\t513.dgn 8:19:50 AM 6/2/2010 d:\usr2\fiflib\leroyh.pen R:\TRAF PLOT\bw.tbl

DESCRIPTION	REVISIONS	DATE

ROAD WORK SIGN

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

DETOUR SIGN

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

ROAD CLOSED SIGN

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

STREET CLOSED SIGN

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

ONE LANE ROAD SIGN

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

LEFT LANE CLOSED SIGN

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

RIGHT LANE CLOSED SIGN

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

FLAGGER SIGN

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

FLAGGER SIGN

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

WORKERS SIGN

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

FRESH OIL SIGN

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

ROAD MACHINERY AHEAD SIGN

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

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

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

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUCTION 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: Arnold Smalley DATE: 6/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS14-1	00
	T-514

SHOULDER WORK SIGN

W21-5 48 x 48 16.00 SF

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

SURVEY CREW SIGN

W21-6 48 x 48 16.00 SF

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

UTILITY WORK AHEAD SIGN

W21-7 48 x 48 16.00 SF

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

MOWING AHEAD SIGN

W21-8 48 x 48 16.00 SF

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

BRIDGE REPAIR SIGN

W21-9 48 x 48 16.00 SF

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

MATERIAL ON SHOULDER SIGN

W21-10 48 x 48 16.00 SF

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

MATERIAL ON ROADWAY SIGN

W21-11 48 x 48 16.00 SF

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

BLASTING ZONE AHEAD SIGN

W22-1 48 x 48 16.00 SF

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

CELL TELEPHONES SIGN

W22-2 36 x 30 7.50 SF
W22-2E 42 x 36 10.50 SF

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

END BLASTING ZONE SIGN

W22-3 36 x 30 7.50 SF
W22-3E 42 x 36 10.50 SF

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

REVISIONS		
DESCRIPTION		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).

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

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUCTION 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 Streb DATE 6/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS15-1 00

T-515

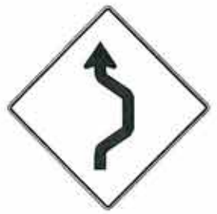
TRFPC36 M:\2009 Standards TC\t515.dgn 8:20:40 AM 6/2/2010 d:\usr2\filib\leroyh.pen R:\TRAF PLOT\bw.tbl

REVISIONS		
DESCRIPTION		DATE

DOUBLE REVERSE CURVE (1 LANE)

W24-1(L) 48 X 48 16.00 SF

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



DOUBLE REVERSE CURVE (1 LANE)

W24-1(R) 48 X 48 16.00 SF

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

DOUBLE REVERSE CURVE (2 LANE)

W24-1a(L) 48 X 48 16.00 SF

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

DOUBLE REVERSE CURVE (2 LANE)

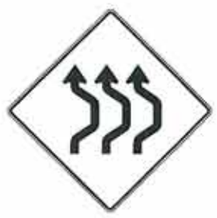
W24-1a(R) 48 X 48 16.00 SF

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

DOUBLE REVERSE CURVE (3 LANE)

W24-1b(L) 48 X 48 16.00 SF

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



DOUBLE REVERSE CURVE (3 LANE)

W24-1b(R) 48 X 48 16.00 SF

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

ALL LANES*

W24-1cP 24 X 24 4.00 SF
W24-1cEP 30 X 30 6.25 SF

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

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

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

* SUPPLEMENTAL SIGNS SHALL ONLY BE USED IN CONJUCTION 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 [signature] DATE 6/23/10

TRAFFIC STANDARD

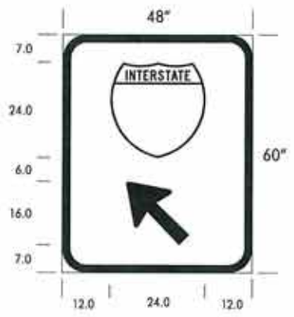
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS16-1 00

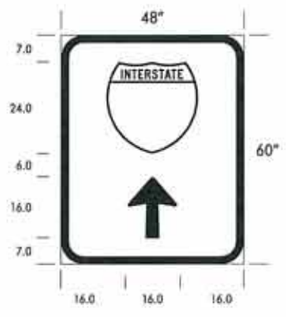
T-516

DESCRIPTION	REVISIONS	DATE



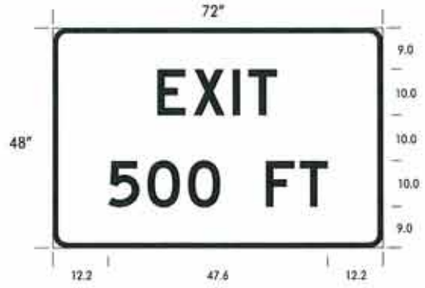
SIGN	CONSTRUCTION SIGN-1
WIDTH x HEIGHT	48" x 60"
BORDER WIDTH	1"
CORNER RADIUS	6"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: GREEN
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE

SYMBOL	X	Y	WID	HT
M1_1_2	12.0	29.0	24.0	24.0
ARLONG,135deg	16.0	7.0	16.0	16.0



SIGN	CONSTRUCTION SIGN-2
WIDTH x HEIGHT	48" x 60"
BORDER WIDTH	1"
CORNER RADIUS	6"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: GREEN
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE

SYMBOL	X	Y	WID	HT
M1_1_2	12.0	29.0	24.0	24.0
ARLONG,90deg	16.0	7.0	16.0	16.0

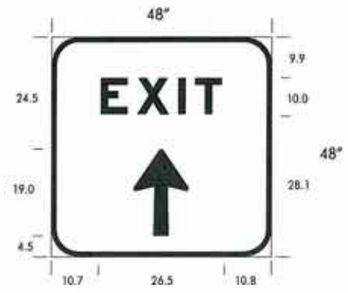


SIGN	CONSTRUCTION SIGN-3
WIDTH x HEIGHT	72" x 48"
BORDER WIDTH	1"
CORNER RADIUS	6"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: GREEN
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE

HT FONT	LETTER SPACINGS										LEN
10.0 D		E	X	I	T						26.5
		22.7	8.0	9.0	3.5	6.0	22.8				72.0
10.0 D		5	0	0		F	T				47.6
		12.2	8.6	8.6	7.0	10.0	7.3	6.1	12.2		72.0

SIGN	CONSTRUCTION SIGN-4
WIDTH x HEIGHT	48" x 48"
BORDER WIDTH	1"
CORNER RADIUS	6"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: GREEN
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE

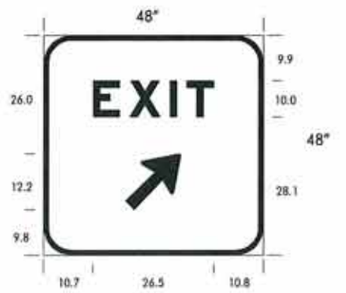
HT FONT	LETTER SPACINGS								LEN
8.0 D		E	X	I	T				26.4
	10.8	7.9	9.0	3.5	6.0	10.8			48.0
8.0 D		O	P	E	N				32.1
	7.9	9.1	8.9	7.8	6.3	8.0			48.0



SIGN	CONSTRUCTION SIGN-5
WIDTH x HEIGHT	48" x 48"
BORDER WIDTH	1"
CORNER RADIUS	6"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: GREEN
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE

SYMBOL	X	Y	WID	HT
ARLONG,90deg	19.0	4.5	12.0	19.0

HT FONT	LETTER SPACINGS								LEN
10.0 D		E	X	I	T				26.5
	10.7	8.0	9.0	3.5	6.0	10.8			48.0



SIGN	CONSTRUCTION SIGN-6
WIDTH x HEIGHT	48" x 48"
BORDER WIDTH	1"
CORNER RADIUS	6"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: GREEN
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE

SYMBOL	X	Y	WID	HT
ARLONG,45deg	18.0	10.0	12.3	12.3

HT FONT	LETTER SPACINGS								LEN
10.0 D		E	X	I	T				26.5
	10.7	8.0	9.0	3.5	6.0	10.8			48.0

BASIS OF PAYMENT

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

APPROVED BY TRAFFIC ENGINEER: Arnold Speer DATE: 5/23/10

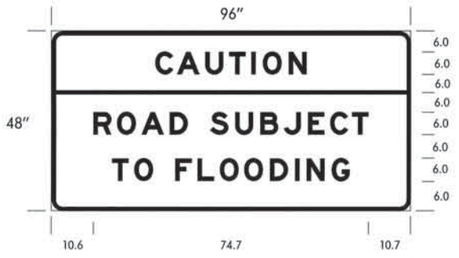
TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

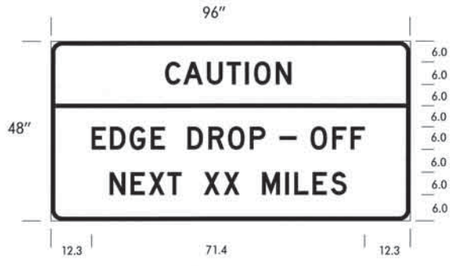
TCS17-1 | 00

T-517



SIGN	CONSTRUCTION SIGN-7
WIDTH x HEIGHT	96" x 48"
BORDER WIDTH	2"
CORNER RADIUS	3"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: ORANGE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

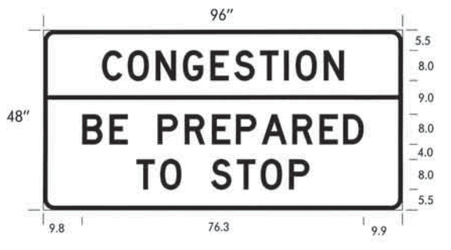
HT FONT	LETTER SPACINGS															LEN
6.0 D		C	A	U	T	I	O	N								40.6
	28.0	5.9	7.6	6.3	6.0	3.5	6.5	4.8	27.9							96.0
6.0 D		R	O	A	D		S	U	B	J	E	C	T			74.7
	10.6	6.3	6.5	7.6	4.8	6.0	6.7	6.3	6.3	6.3	6.0	5.9	6.0	10.7		96.0
6.0 D		T	O		F	L	O	O	D	I	N	G				63.3
	16.3	6.0	6.5	6.0	6.0	6.0	6.5	6.5	4.8	3.5	6.7	4.8	16.4			96.0



SIGN	CONSTRUCTION SIGN-8
WIDTH x HEIGHT	96" x 48"
BORDER WIDTH	2"
CORNER RADIUS	3"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: ORANGE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

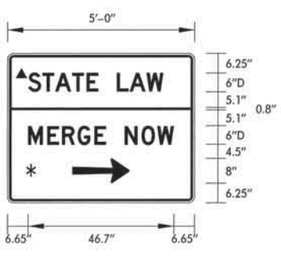
HT FONT	LETTER SPACINGS															LEN
6.0 D		C	A	U	T	I	O	N								40.2
	27.9	5.9	7.6	6.3	6.0	3.1	6.5	4.8	27.9							96.0
6.0 D		E	D	G	E		D	R	O	P	–	O	F	F		71.4
	12.3	4.8	5.2	5.4	3.7	6.0	5.2	5.2	5.7	7.8	8.2	5.7	4.8	3.7	12.3	96.0
6.0 D		N	E	X	T		X	X		M	I	L	E	S		62.3
	16.8	5.6	4.8	4.8	3.7	6.0	5.2	4.1	6.0	6.1	2.4	4.8	4.8	4.1	16.9	96.0

DESCRIPTION	REVISIONS	DATE
CHANGED MOUNTING DECRIPTION		3/15/2011



SIGN	CONSTRUCTION SIGN-9
WIDTH x HEIGHT	96" x 48"
BORDER WIDTH	2"
CORNER RADIUS	3"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: ORANGE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

HT FONT	LETTER SPACINGS															LEN
8.0 D		C	O	N	G	E	S	T	I	O	N					65.3
	15.3	6.9	7.5	7.3	7.3	6.4	6.9	6.5	3.1	8.0	5.4	15.4				96.0
8.0 D		B	E		P	R	E	P	A	R	E	D				76.3
	9.8	7.3	5.0	8.0	7.3	7.3	6.4	7.3	8.1	7.3	5.0	7.3	9.9			96.0
8.0 D		T	O		S	T	O	P								48.1
	23.9	6.4	5.6	8.0	6.9	6.4	7.5	7.3	24.0							96.0



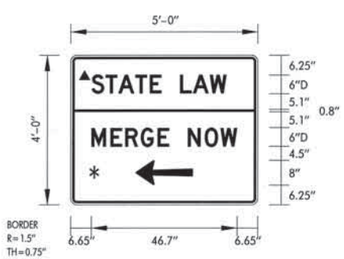
▲ BACKGROUND: REFLECTIVE WHITE
LEGEND/BORDER: NON-REFLECTIVE BLACK

* BACKGROUND: REFLECTIVE ORANGE
LEGEND/BORDER: NON-REFLECTIVE BLACK

Dimensions are in Inches.tenths
Letter locations are paneledge to lower left corner

SIGN NUMBER	CONSTRUCTION SIGN-10			
WIDTH x HGHT.	5'-0" x 4'-0"			
BORDER WIDTH	0.75"			
CORNER RADIUS	1.5"			
MOUNTING	Ground			
SIGN AREA	20.0 Sq.Ft.			
BACKGROUND	TYPE: Reflective			
	COLOR: SEE NOTES			
LEGEND/BORDER	TYPE: Reflective			
	COLOR: Black			
SYMBOL	X	Y	WID	HT
ARLONG	20.8	6.3	8	18.4

LETTER POSITIONS (X)														LENGTH	SERIES-SIZE
S	T	A	T	E		L	A	W							D 2000
6.6	11.2	15.3	20.7	25.4	29.1	35.1	39.2	44.6						43.3	
M	E	R	G	E		N	O	W							D 2000
6.6	12.8	17.5	22.5	27.9	31.6	37.6	43	48						46.7	



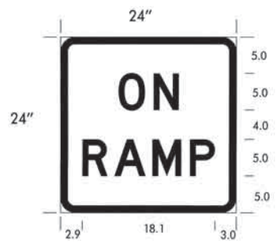
▲ BACKGROUND: REFLECTIVE WHITE
LEGEND/BORDER: NON-REFLECTIVE BLACK

* BACKGROUND: REFLECTIVE ORANGE
LEGEND/BORDER: NON-REFLECTIVE BLACK

Dimensions are in Inches.tenths
Letter locations are paneledge to lower left corner

SIGN NUMBER	CONSTRUCTION SIGN-11			
WIDTH x HGHT.	5'-0" x 4'-0"			
BORDER WIDTH	0.75"			
CORNER RADIUS	1.5"			
MOUNTING	Ground			
SIGN AREA	20.0 Sq.Ft.			
BACKGROUND	TYPE: Reflective			
	COLOR: SEE NOTES			
LEGEND/BORDER	TYPE: Reflective			
	COLOR: Black			
SYMBOL	X	Y	WID	HT
ARLONG	20.8	6.3	8	18.4

LETTER POSITIONS (X)														LENGTH	SERIES-SIZE
S	T	A	T	E		L	A	W							D 2000
6.6	11.2	15.3	20.7	25.4	29.1	35.1	39.2	44.6						43.3	
M	E	R	G	E		N	O	W							D 2000
6.6	12.8	17.5	22.5	27.9	31.6	37.6	43	48						46.7	



SIGN	CONSTRUCTION SIGN-12
WIDTH x HEIGHT	24" x 24"
BORDER WIDTH	1"
CORNER RADIUS	2"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: ORANGE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

HT FONT	LETTER SPACINGS								LEN
5.0 D		O	N						8.2
	7.9	4.8	3.4	7.9					24.0
5.0 D		R	A	M	P				18.1
	2.9	4.4	5.2	5.1	3.4	3.0			24.0

BASIS OF PAYMENT

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

APPROVED BY TRAFFIC ENGINEER: Chad Sweet DATE: 3/21/11

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS18-1 | 01

T-518

$$date$$

REVISIONS		
DESCRIPTION		DATE
CHANGED DECRIPTIONS		3/15/2011

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 — SERIES/SIZE

B	E	G	I	N					
4.8	8.2	11.3	14.9	16.5				14.4	D 2000

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 — SERIES/SIZE

B	E	G	I	N						
7.2	12.3	16.9	22.3	24.7					21.6	D 2000

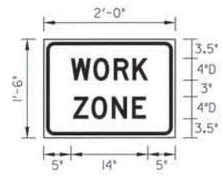
Dimensions are in Inches.tenths

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 — SERIES/SIZE

B	E	G	I	N						
7.1	15.2	22.6	30.9	34.4					33.8	E 2000

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 — SERIES/SIZE

W	O	R	K						
5	9.1	12.8	16.2					14	D 2000
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 — SERIES/SIZE

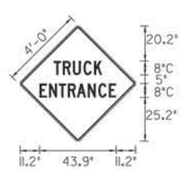
W	O	R	K							
7.5	13.6	19.2	24.3						21	D 2000
Z	O	N	E							D 2000
8.1	13.1	18.7	24.2						19.8	

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 — SERIES/SIZE

W	O	R	K							
7.6	17.2	25.7	33.8						32.9	E 2000
Z	O	N	E							E 2000
8.5	16.4	24.9	33.5						31	

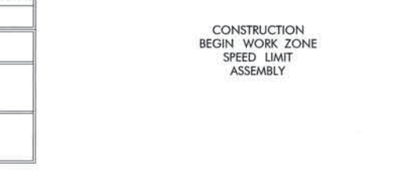


Dimensions are in Inches.tenths

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 — SERIES/SIZE

T	R	U	C	K						
19.3	24.5	30.4	36.5	42.5					27.7	C 2000
E	N	T	R	A	N	C	E			C 2000
11.2	16.7	22.3	27.5	32.7	38.9	45	51.1		43.9	



CS-13, E, F

CS-14, E, F

R2-1, E, F

CONSTRUCTION
BEGIN WORK ZONE
SPEED LIMIT
ASSEMBLY

BASIS OF PAYMENT

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

APPROVED BY TRAFFIC ENGINEER: Chuck Snoddy DATE: 3/21/11

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD CONSTRUCTION SIGNS

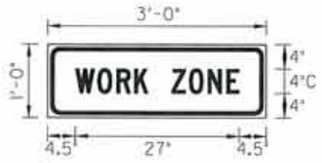
2009 SPECIFICATIONS

TCS19-1 | 01

T-519

$$date$$

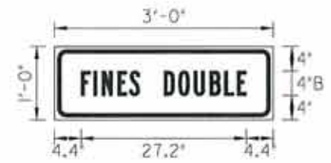
REVISIONS		
DESCRIPTION		DATE



Dimensions are in inches.tenths

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
LEGEND&BORDER	TYPE: Non-Reflective
	COLOR: Black

LETTER POSITIONS (X)											LENGTH SERIES/SIZE
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	



Dimensions are in inches.tenths

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
LEGEND&BORDER	TYPE: Non-Reflective
	COLOR: Black

LETTER POSITIONS (X)													LENGTH SERIES/SIZE
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	

Dimensions are in inches.tenths

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
LEGEND&BORDER	TYPE: Non-Reflective
	COLOR: Black

LETTER POSITIONS (X)													LENGTH SERIES/SIZE
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	

Dimensions are in inches.tenths

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
LEGEND&BORDER	TYPE: Non-Reflective
	COLOR: Black

LETTER POSITIONS (X)											LENGTH SERIES/SIZE
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	

Dimensions are in inches.tenths

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
LEGEND&BORDER	TYPE: Non-Reflective
	COLOR: Black

LETTER POSITIONS (X)												LENGTH SERIES/SIZE
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	

Dimensions are in inches.tenths

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
LEGEND&BORDER	TYPE: Non-Reflective
	COLOR: Black

LETTER POSITIONS (X)													LENGTH SERIES/SIZE
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 [signature] DATE 6/23/10

TRAFFIC STANDARD

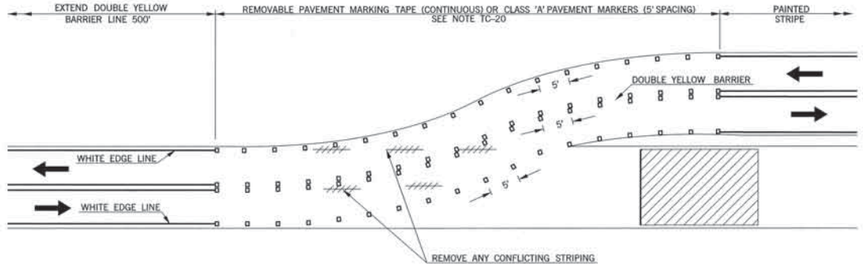
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

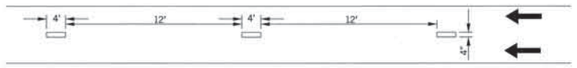
TCS20-1	00
	T-520

TRFPC36 D:\usr2\2009_Standards_TC\t520.dgn 1:36:29 PM 6/18/2010 R:\TRAF_PLOT\leroyh.pen R:\TRAF_PLOT\bw.tbl

REVISIONS	
DESCRIPTION	DATE
ADDED TRAFFIC STRIPE NOTES	4/10/12
REDEFINED TERMS, MOD. PM SPACING	4/2/2013



CONSTRUCTION ZONE PAVEMENT MARKINGS THRU SHOO–FLY



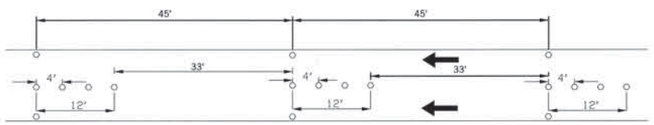
ONE–WAY PAVEMENT MARKING REMOVABLE TAPE OR PAINT

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



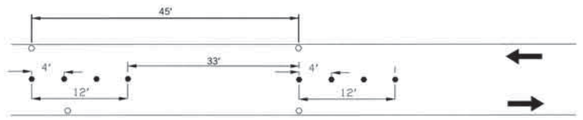
ONE–WAY PAVEMENT MARKING FLEX TABS

PAVEMENT MARKINGS: FLEX TABS

TYPE I – FLEX TAB MARKERS SHALL HAVE REFLECTORIZED MATERIAL ON BOTH SIDES.

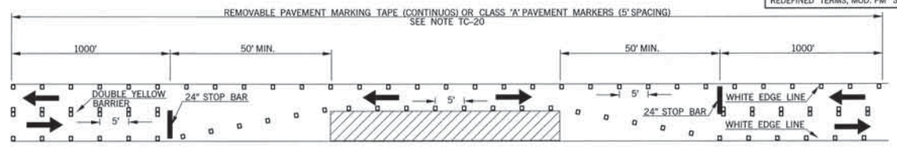
TYPE II – FLEX TAB MARKERS SHALL HAVE REFLECTORIZED MATERIAL ON BOTH SIDES AND SHALL HAVE A CLEAR REMOVABLE COVER.

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.

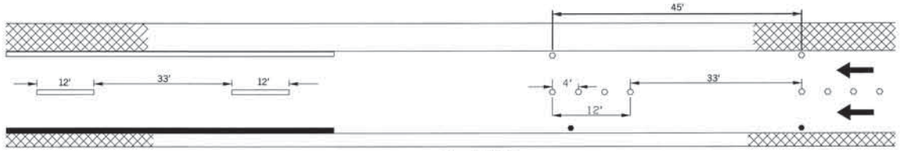
ALL PAVEMENT MARKINGS TO BE PLACED ON TEMPORARY SURFACES OR ON SURFACES SCHEDULED TO BE REMOVED SHALL BE DONE WITH PAINT UNLESS OTHERWISE SHOWN IN THE PLANS OR STANDARD DRAWINGS. ALL FINAL OR FINISHED SURFACES SHALL BE MARKED WITH EITHER REMOVABLE PAVEMENT MARKING TAPE OR CONSTRUCTION ZONE PAVEMENT MARKERS, UNLESS OTHERWISE NOTED ON THE PLANS.

WIDTH OF STRIPED LANE LINES SHALL BE A MINIMUM OF 4".

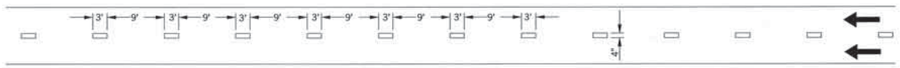
KEY:

- 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 TRAFFIC ENGINEER: _____ DATE: 4/8/2013

TRAFFIC STANDARD

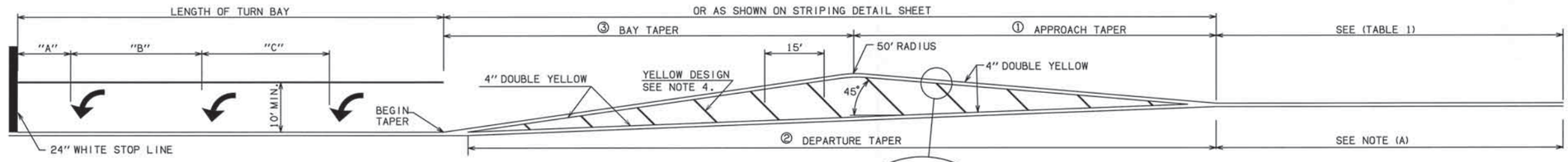
TRAFFIC CONTROL STANDARD CONSTRUCTION ZONE PAVEMENT MARKINGS

2009 SPECIFICATIONS

TCS21–1	02
	T–521

$$date$$

REVISIONS	
DESCRIPTION	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

① 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 $(V^2/60):1$.

② 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 $(V^2/60):1$.

③ SEE RECOMMENDED BAY TAPER RATES TABLE.

RECOMMENDED BAY TAPER RATES

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

THE FOLLOWING MINIMUM VALUES MAY APPLY IN RESTRICTED LOCATIONS:
1. RIGHT-TURN LANES. A 4:1 BAY TAPER MAY BE USED WHERE PAINTED CHANNELIZATION IS USED.
2. 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.

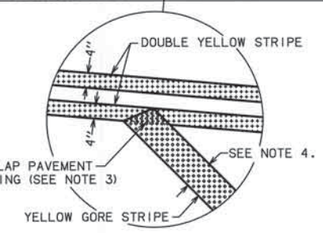
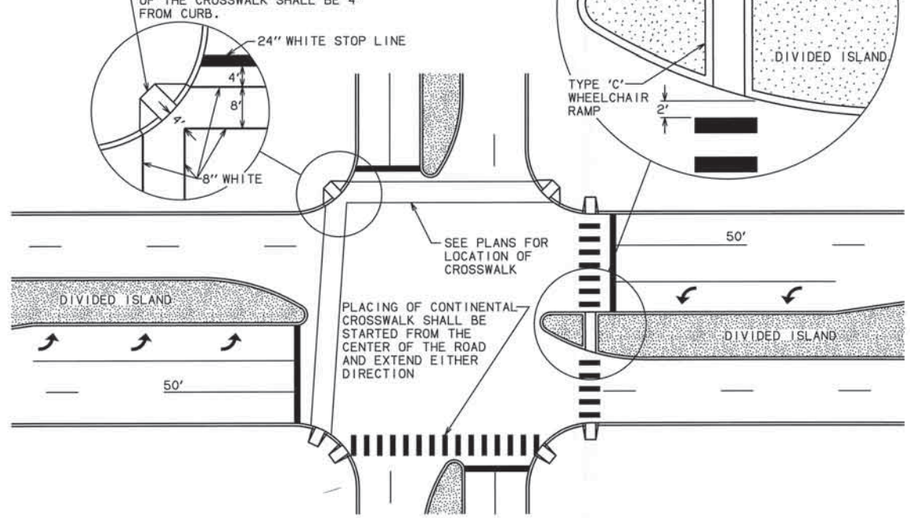


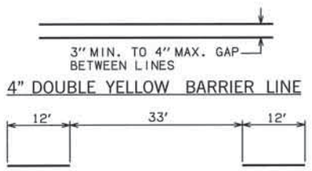
TABLE 1	
POSTED SPEED	NO PASS LENGTH (MINIMUM)
60 MPH	790'
55 MPH	725'
50 MPH	660'
45 MPH	590'
40 MPH	360'
35 MPH	260'
30 MPH	200'
25 MPH	150'

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



CROSSWALK INSTALLATIONS

FOR SPACING OF ARROWS SEE "TURN BAY TABLE"



4" DOUBLE YELLOW BARRIER LINE

4" DASHED WHITE LANE LINE

TYPICAL PAVEMENT MARKING DETAILS

MATERIAL SPECIFICATIONS

A. UNLESS OTHERWISE SPECIFIED, RETROREFLECTIVE PAVEMENT MARKING SHALL BE APPLIED BY THE EXTRUSION METHOD.

B. 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.

C. 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

1. 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.
2. LANE LINES SHALL BE PLACED LEFT OF THE LONGITUDINAL PAVEMENT JOINTS.
3. ALL PAVEMENT MARKING SHALL OVERLAP WHERE IT MEETS OTHER PAVEMENT MARKING.
4. WIDTH OF DIAGONALS ARE AS FOLLOWS:
   ≥45 MPH - 12" WIDE
   <45 MPH - 8" WIDE

BASIS OF PAYMENT

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

APPROVED BY TRAFFIC ENGINEER: _____ DATE: 4/8/2013

TRAFFIC STANDARD

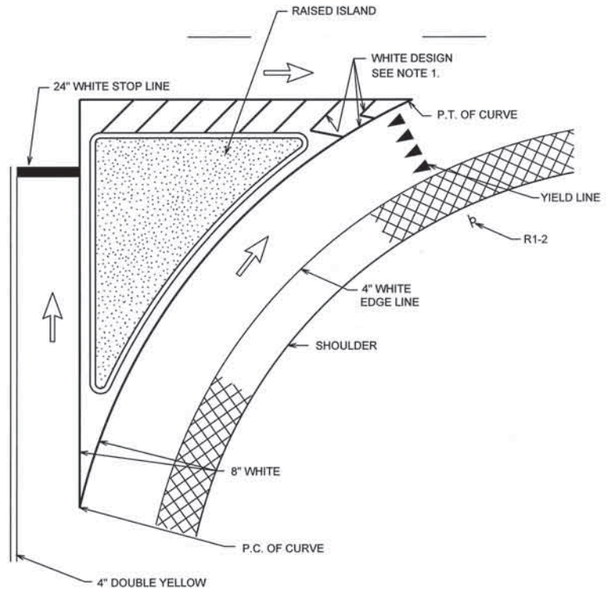
PAVEMENT MARKING (CROSSWALKS AND LEFT TURN BAY)

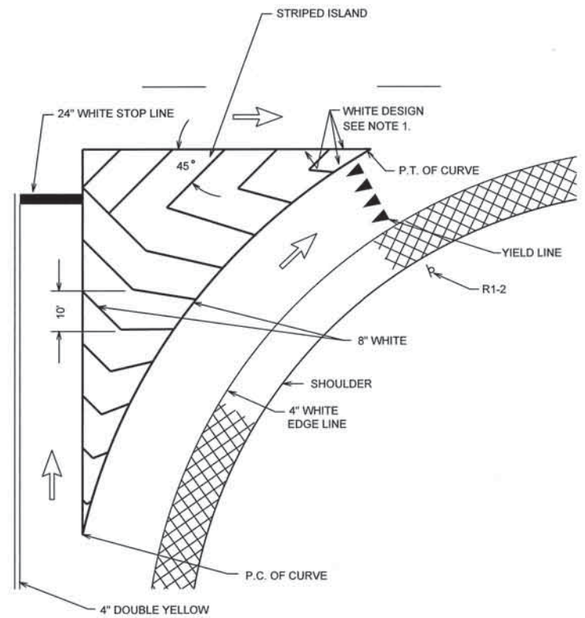
2009 SPECIFICATIONS

PM1-1 | 02

T-101

REVISIONS	
DESCRIPTION	DATE
ADDED GENERAL NOTE 1.	7/08/2011



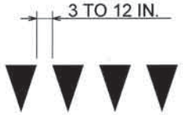


GENERAL NOTE

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

SUGGESTED STRIPING FOR ISLANDS

PAVEMENT MARKING FOR TRAFFIC CHANNELIZING ISLANDS SHALL BE APPLIED FROM P.C. TO P.T. OF CURVE.



YIELD LINE

4" DOUBLE YELLOW BARRIER LINE

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) (8" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (24" WIDE)	LF
855(B)	TRAFFIC STRIPE (PLASTIC) (ARROW)	EA
855(B)	TRAFFIC STRIPE (PLASTIC) (SYMBOLS)	EA
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (4" 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: Chuck Graves DATE: 7/22/2011

TRAFFIC STANDARD

PAVEMENT MARKING (ISLANDS)

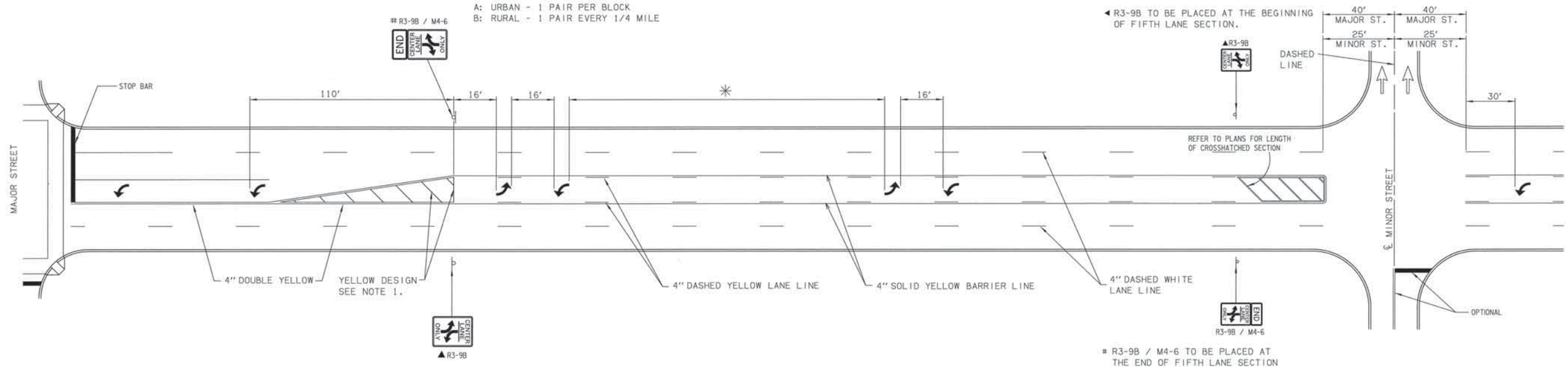
2009 SPECIFICATIONS

PM2-1	01
	T-102

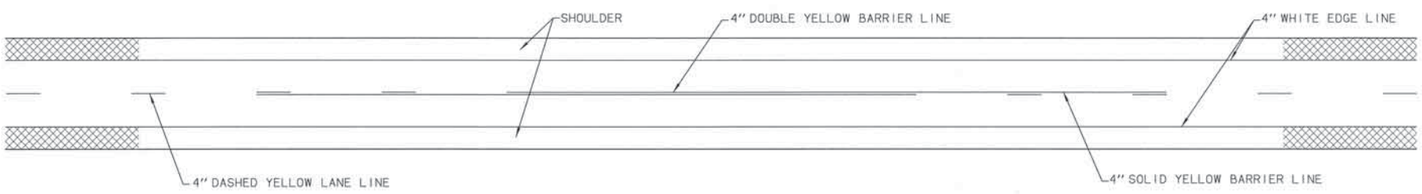
REVISIONS	
DESCRIPTION	DATE
ADDED GENERAL NOTE 1.	7/08/2011
MODIFIED SIGNS	4/10/2012

✳ ARROW SYMBOL PAIRS FOR TWO-WAY LEFT TURN LANES SHALL BE PLACED AS FOLLOWS:

A: URBAN - 1 PAIR PER BLOCK
B: RURAL - 1 PAIR EVERY 1/4 MILE



FIFTH LANE PAVEMENT MARKING DETAIL (URBAN)



TWO LANE RURAL ROADWAY PAVEMENT MARKINGS

GENERAL NOTE

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

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
854(A)	TRAFFIC STRIPE (PAINT) (4" WIDE)	LF
854(B)	TRAFFIC STRIPE (PAINT) (ARROW, WORDS, OR SYMBOLS)	EA
855(A)	TRAFFIC STRIPE (PLASTIC) (4" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (6" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (8" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (24" WIDE)	LF
855(B)	TRAFFIC STRIPE (PLASTIC) (ARROW)	EA
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: _____ DATE: 4/9/12

TRAFFIC STANDARD

PAVEMENT MARKING
(FIFTH LANE AND TWO LANE RURAL)

2009 SPECIFICATIONS

PM3-1 | 02

T-103

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)

ALL-WAY

R1-3P 18 x 6 0.75 SF
R1-3PE 30 x 12 2.50 SF

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

SPEED LIMIT

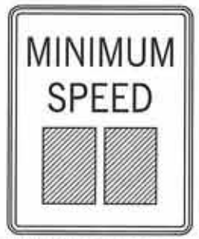
R2-1(SPEED) 24 x 30 5.00 SF
R2-1E( ) 36 x 48 12.00 SF
R2-1F( ) 48 x 60 20.00 SF

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

TRUCK SPEED LIMIT

R2-2P(SPEED) 24 x 24 4.00 SF
R2-2PE( ) 36 x 36 9.00 SF
R2-2PF( ) 48 x 48 16.00 SF

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



MINIMUM SPEED LIMIT

R2-4P(SPEED) 24 x 30 5.00 SF
R2-4PE( ) 36 x 48 12.00 SF
R2-4PF( ) 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)

NO TURN

R3-3 24 x 24 4.00 SF
R3-3E 36 x 36 9.00 SF
R3-3F 48 x 48 16.00 SF

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

NO U TURN

R3-4 24 x 24 4.00 SF
R3-4E 36 x 36 9.00 SF
R3-4F 48 x 48 16.00 SF

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

LEFT TURN ONLY

R3-5(L) 30 x 36 7.50 SF

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

RIGHT TURN ONLY

R3-5(R) 30 x 36 7.50 SF

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

LANE-LEFT

R3-6(L) 30 x 36 7.50 SF

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

LANE-RIGHT

R3-6(R) 30 x 36 7.50 SF

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

DESCRIPTION	REVISIONS	DATE

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

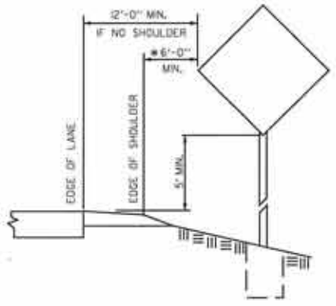
APPROVED BY TRAFFIC ENGINEER: Thad Smart DATE: 2/5/10

TRAFFIC STANDARD
REGULATORY SIGN DETAILS
(R-SERIES)

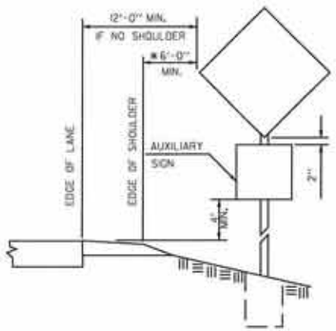
2009 SPECIFICATIONS

RSD1-1 00

T-114

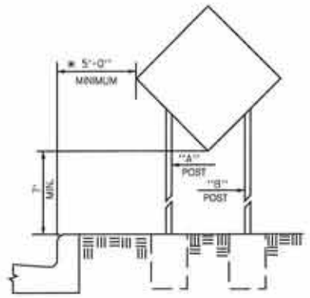


SINGLE POST (RURAL)

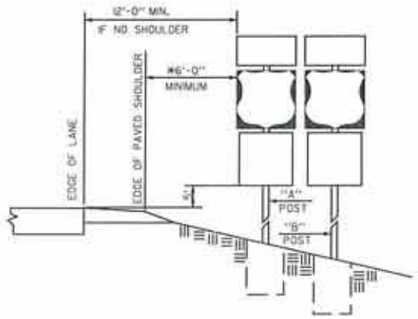


SINGLE POST WITH
AUXILIARY SIGN (RURAL)

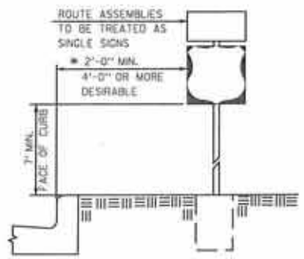
DOUBLE POST MAXIMUM &
MINIMUM SPEED LIMIT SIGNS (RURAL)



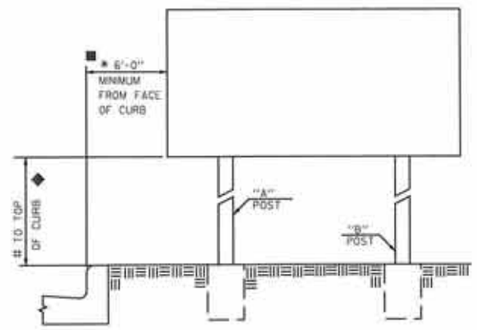
BUSINESS, COMMERCIAL OR
RESIDENTIAL AREA



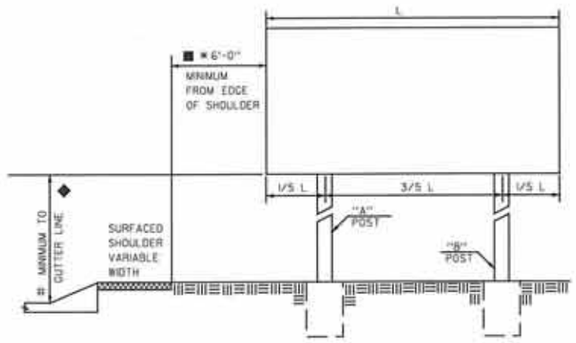
ROADSIDE ASSEMBLY
(RURAL)



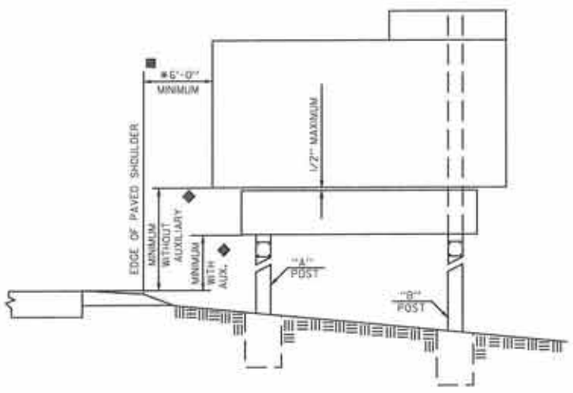
BUSINESS, COMMERCIAL OR
RESIDENTIAL AREA



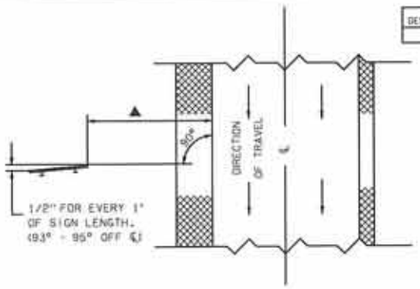
INFORMATION SIGN WITH
NON-MOUNTABLE CURB



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 UNDESIREABLY, 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 (EDGELINE) 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 RAMPS 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.

DESCRIPTION	REVISIONS	DATE

APPROVED BY
TRAFFIC ENGINEER _____ DATE 8/5/10

TRAFFIC STANDARD

TYPICAL INSTALLATIONS OF GROUND MOUNTED SIGNS

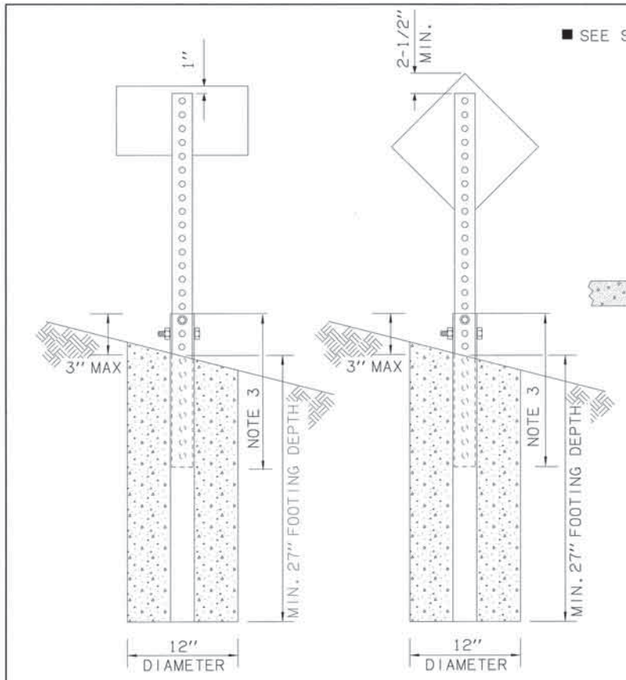
2009 SPECIFICATIONS

GMS1-1 | 00

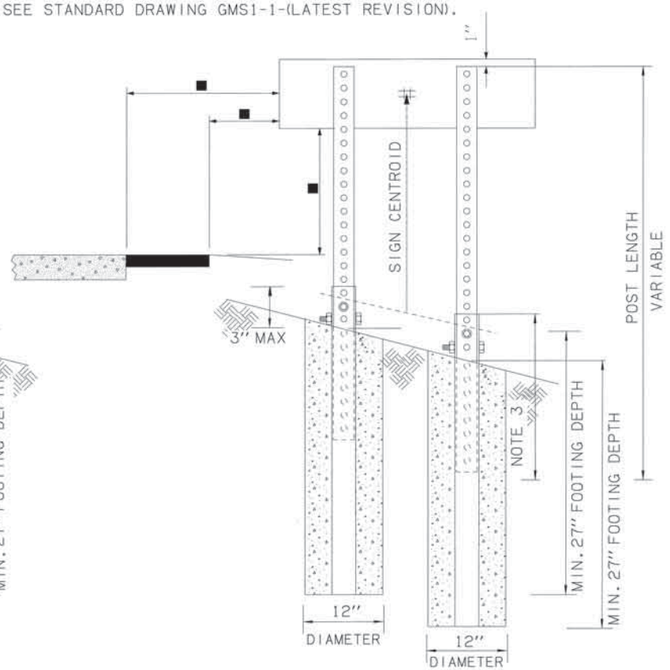
T-136

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

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



TYPICAL SINGLE POST INSTALLATION



TYPICAL DOUBLE POST INSTALLATION

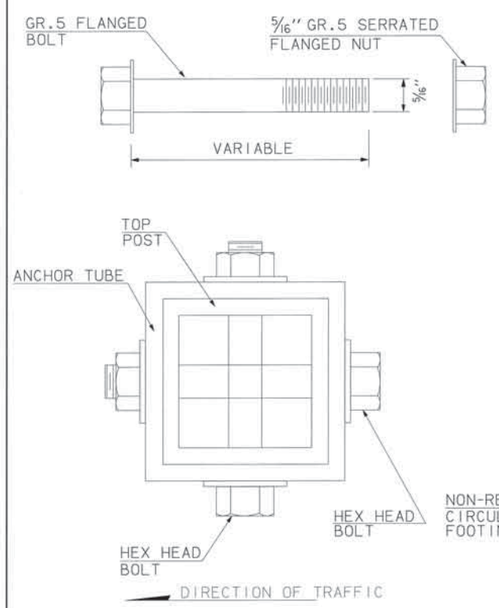
WINDLOAD COORDINATES FOR SQUARE POST AT 90 MPH

SIGN CENTROID	ALLOWABLE SIGN AREA (FT^2) PER SINGLE POST *							
	FHWA APPROVED FOR: 2 POST PER SIGN					FHWA APPROVED FOR: 1 POST PER SIGN		
	1½"x12ga perf.	1¾"x14ga perf.	1¾"x12ga perf.	2"x14ga perf.	2"x12ga perf.	2¼"x14ga perf.	2¼"x12ga perf.	2½"x12ga perf.
16.5'	3.46	3.90	4.85	5.19	6.48	6.67	8.34	10.44
16'	3.57	4.02	5.00	5.36	6.68	6.88	8.60	10.76
15.5'	3.68	4.15	5.17	5.53	6.90	7.11	8.88	11.11
15'	3.81	4.29	5.34	5.71	7.13	7.34	9.17	11.48
14.5'	3.94	4.44	5.52	5.91	7.37	7.60	9.49	11.87
14'	4.08	4.59	5.72	6.12	7.64	7.87	9.83	12.30
13.5'	4.23	4.76	5.93	6.35	7.92	8.16	10.19	12.75
13'	4.39	4.95	6.16	6.59	8.22	8.47	10.59	13.24
12.5'	4.57	5.15	6.41	6.86	8.55	8.81	11.01	13.77
12'	4.76	5.36	6.67	7.14	8.91	9.18	11.47	14.35
11.5'	4.96	5.59	6.96	7.45	9.30	9.58	11.97	14.97
11'	5.19	5.85	7.28	7.79	9.72	10.01	12.51	15.65
10.5'	5.44	6.13	7.63	8.16	10.18	10.49	13.11	16.40
10'	5.71	6.43	8.01	8.57	10.69	11.01	13.76	17.22
9.5'	6.01	6.77	8.43	9.02	11.25	11.59	14.49	18.12
9'	6.34	7.15	8.90	9.52	11.88	12.24	15.29	19.13
8.5'	6.72	7.57	9.42	10.08	12.58	12.96	16.19	20.26
8'	7.14	8.04	10.01	10.71	13.36	13.77	17.20	21.52

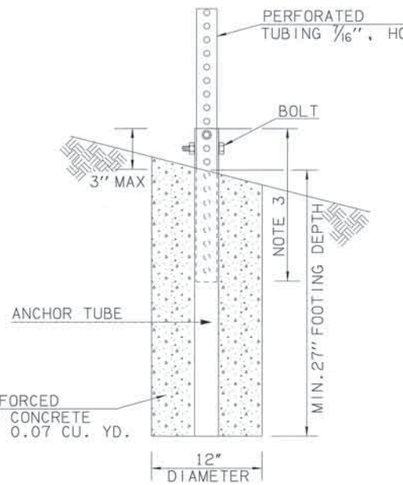
* USE A MULTIPLIER OF 2 OR 3 FOR 2 & 3 POST INSTALLATIONS.

GENERAL NOTES

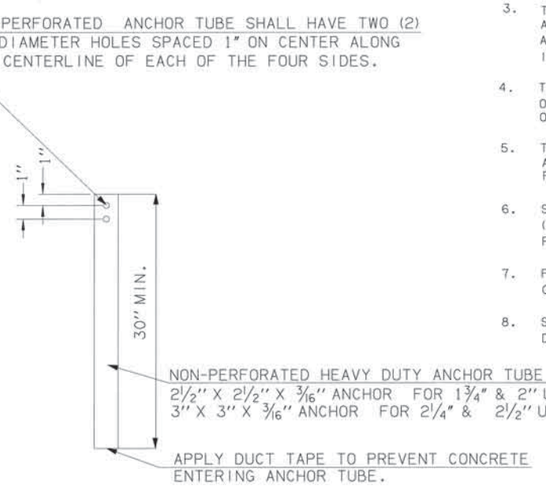
1. POST TUBE SHALL MEET ASTM A1011 GRADE 50.
   POST TUBE GALVANIZED AS PER ASTM A653 GRADE 90.
2. HEAVY DUTY ANCHOR TUBE SHALL MEET ASTM A500 GRADE B STRUCTURAL TUBE AND STEEL SHALL BE HOT DIP GALVANIZED PER ASTM A123.
3. THE UPPER SIGN POST SHALL TELESCOPE INSIDE THE ANCHOR TUBE A MINIMUM OF 12".
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



BOLT DESIGN



ANCHOR TUBE DETAILS WITH CONCRETE FOOTING



HEAVY DUTY ANCHOR TUBE

– DRAWING NOT TO SCALE –

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

APPROVED BY TRAFFIC ENGINEER: Chris Smeltz DATE: 4/9/12

TRAFFIC STANDARD

SQUARE TUBE POST DETAILS

2009 SPECIFICATIONS

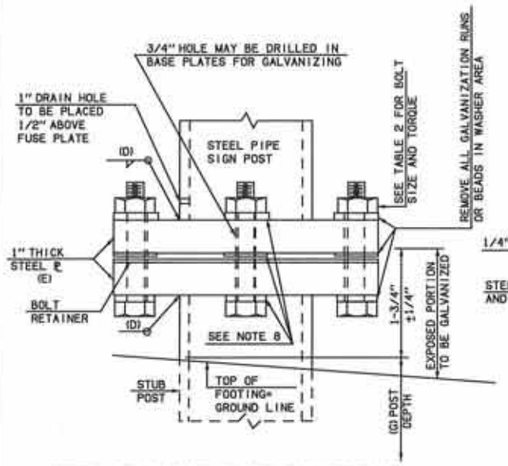
SSP1-1 | 02

T-138

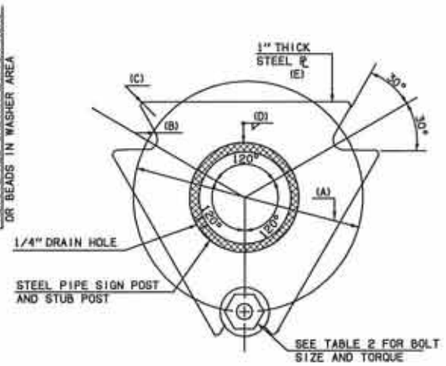
REVISIONS		
DESCRIPTION		DATE

TABLE 1

FTG. DES. NO.	POST SIZE REQUIRED	BASE PLATE DIMENSIONS							FOOTING DIMENSIONS					QUANTITIES	
		TRIANGLE SIZE	A	B	C	D	E		SIZE DIA.	LENGTH	POST (G) DEPTH	VERTICAL BARS	HORIZONTAL BARS	CLASS "A" CONCRETE	REINFORCING STEEL
												NO./SIZE	NO./SIZE		
A-1	1-1/2" ø 2.72 plf	NO BASE PLATE REQUIRED							12"	2'-0"	24"	NONE	NONE	.06 CY	NONE
A-2	2" ø 3.65 plf	NO BASE PLATE REQUIRED							12"	2'-0"	24"	NONE	NONE	.06 CY	NONE
A-3	2-1/2" ø 5.79 plf	9" x 9" x 9"	6-1/4"	9/16"	1/4"	1/4"	1"		18"	3'-0"	24"	4 / #5	4 #4	.20 CY	24 lbs
A-4	3" ø 7.58 plf	9" x 9" x 9"	6-1/4"	9/16"	1/4"	1/4"	1"		18"	3'-6"	24"	6 / #5	4 #4	.23 CY	32 lbs
A-5	3-1/2" ø 9.1plf	10" x 10" x 10"	7-1/16"	11/16"	1/4"	5/16"	1"		18"	4'-0"	30"	6 / #5	5 #4	.26 CY	38 lbs
A-6	4" ø 10.79 plf	10" x 10" x 10"	7-1/16"	11/16"	1/4"	5/16"	1"		18"	4'-6"	30"	6 / #5	5 #4	.30 CY	42 lbs



STEEL PIPE POST BASE CONNECTION



NOTE : BASE PLATE FOR STUB POST SAME AS BASE PLATE FOR SIGN POST.

PIPE POST BASE PLATE

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION

1. ASSEMBLE POST TO STUB WITH BOLTS AND WASHERS. USE ONE FLAT WASHER PER BOLT AND BOLT RETAINER BETWEEN BASE PLATES.
2. SHIM AS REQUIRED TO PLUMB AND ALIGN POST(S) BEFORE OR IMMEDIATELY AFTER POURING CONCRETE FOOTING.
3. TIGHTEN ALL BOLTS, IN A SYSTEMATIC ORDER, TO THE PRESCRIBED TORQUE TO BED WASHERS AND SHIMS AND CLEAN BOLT THREADS.
4. 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"
(3) 1/2" ϕ X 3-1/4" H. S. BOLT
(3) HEX. NUTS
(9) FLAT WASHERS (SEE NOTE 8)

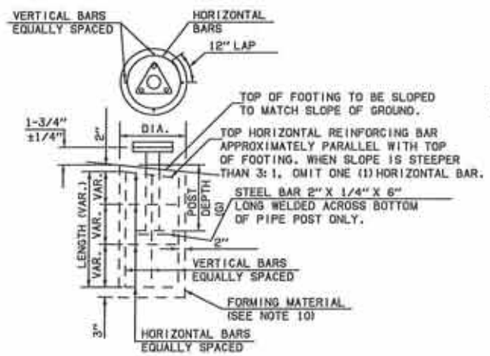
NO. REQ'D. ℄ 10" X 10" X 10"
(3) 5/8" ϕ X 3-3/4" H. S. BOLT
(3) HEX. NUTS
(9) FLAT WASHERS (SEE NOTE 8)

TABLE 2

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

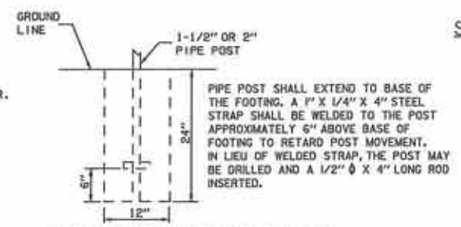
BOLT TORQUE LIMITS

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.



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

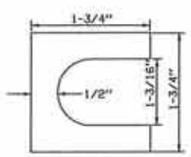


WHEN HOLE FOR FOOTING CAN BE DRILLED AND MAINTAINED AS A "NEAT LINE" HOLE IN THE OPINION OF THE ENGINEER, THE UPPER PORTION NEED NOT BE FORMED. IF FORMING IS REQUIRED, A MINIMUM OF 6" SHALL BE REQUIRED AT THE TOP OF FOOTING. FORMING MAY BE ACCOMPLISHED BY USE OF A CARDBOARD CASING OR SIMILAR MATERIAL 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

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

SHEET METAL BOLT RETAINER



FURNISH 2 ϕ 0.012 THICK AND 2 ϕ 0.32 THICK SHIMS FOR POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM-B36.

SHIM DETAIL

CONSTRUCTION NOTES

1. ALL PIPE AND WIDE FLANGE BEAM POST SHALL CONFORM TO THE 2009 STANDARD SPECIFICATIONS.
2. ALL BOLTS, NUTS AND WASHERS SHALL NOT BE GALVANIZED OR PLATED, BUT SHALL BE PAINTED, AFTER INSTALLATION, WITH A ZINC RICH PAINT.
3. STRUCTURAL STEEL TO BE GALVANIZED AFTER FABRICATION, EXCEPT AS NOTED. IN ACCORDANCE WITH THE 2009 STANDARD SPECIFICATIONS.
4. POST LENGTHS AS SHOWN ON THE PLANS INCLUDE BOTH SIGN POST AND STUB POST WHICH IS SET IN THE CONCRETE FOOTING.
5. ALL WELDING MATERIALS AND METHODS, INCLUDING QUALIFICATIONS OF WELDERS, SHALL CONFORM WITH THE REQUIREMENTS OF THE 2009 STANDARD SPECIFICATIONS.
6. STRUCTURAL EXCAVATION TO BE PAID FOR IN OTHER ITEMS OF WORK.
7. 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.

BASIS OF PAYMENT

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: Harold Lima DATE: 8/5/10

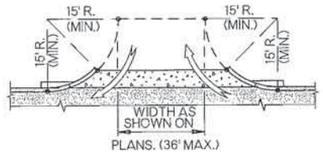
TRAFFIC STANDARD

STANDARD FOOTINGS FOR GROUND MOUNTED SIGNS (GALVANIZED PIPE)

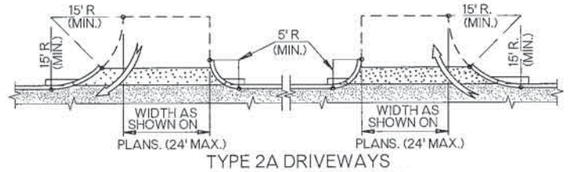
2009 SPECIFICATIONS

FGS1-1	00
	T-141

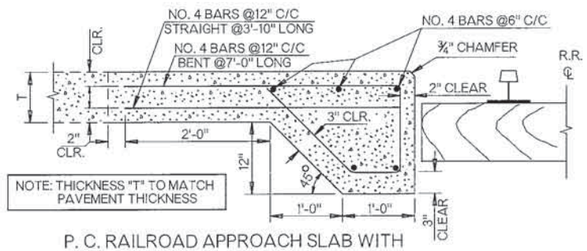
STANDARD REVISIONS	
DESCRIPTION	DATE



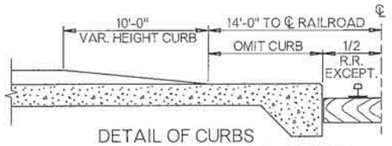
TYPE 2 DRIVEWAY
(TWO -WAY OPERATION)



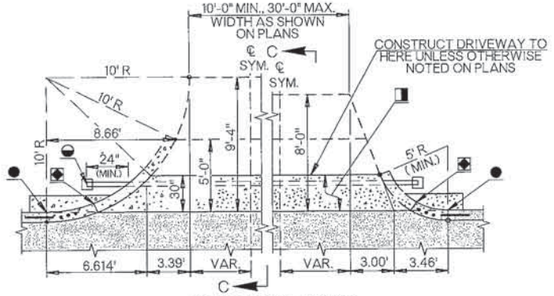
TYPE 2A DRIVEWAYS
(ONE -WAY OPERATION)



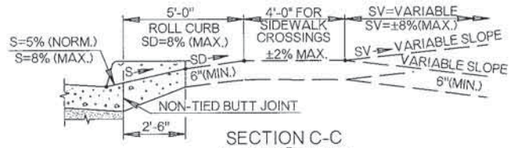
P. C. RAILROAD APPROACH SLAB WITH
THICKENED EDGE AT RAILROAD CROSSING



DETAIL OF CURBS
ADJACENT TO RAILROAD CROSSINGS

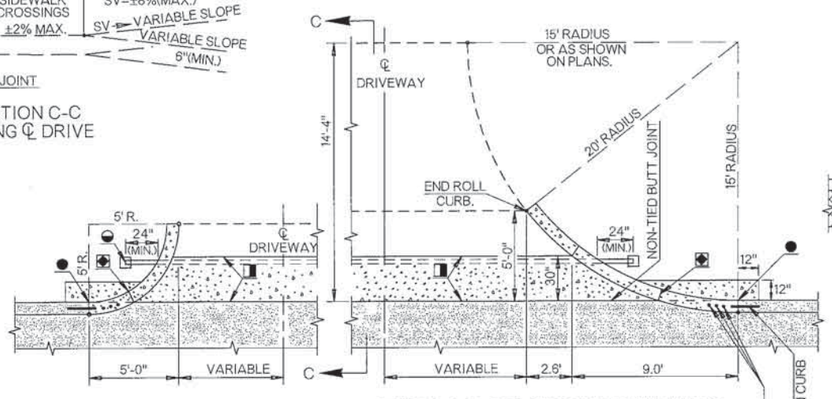


TYPE I DRIVEWAYS
(PRIVATE OR RESIDENTIAL)



SECTION C-C
ALONG ℄ DRIVE

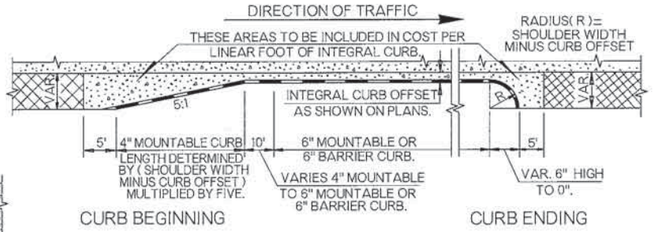
FOR STREET RETURN DETAILS
SEE ROADWAY STD. ASCD-5.



TYPE 2 & 2A COMMERCIAL DRIVEWAYS

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

- ◆ ¾" 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.

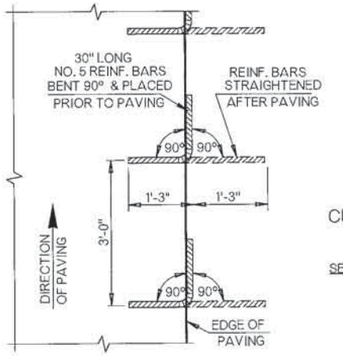


CONCRETE DIVIDING STRIP

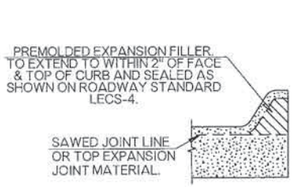
TRANSVERSE EXPANSION JOINTS TO BE 1/2" EXPAN. JOINT FILLER AT 50'-0" C/C, 1/4" EXPANSION JOINT MATERIAL AT 1/3 POINTS BETWEEN 1/2" EXPANSION JOINTS. FILLER MATERIAL TO BE PREMOLDED & JOINTS TO BE SEALED AS SHOWN ON STANDARD DRAWING LECS-4. JOINTS IN DIVIDING STRIP SHOULD ALIGN WITH CURB EXPANSION JOINTS.

GENERAL NOTES

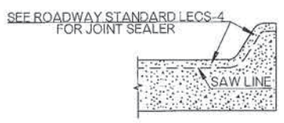
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. ALL COST OF CLASS A CONCRETE & REINFORCING STEEL IN THICKENED EDGE AT RAILROAD CROSSINGS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR APPROACH SLAB-RAILROAD.
3. COST OF JOINT FILLERS, SEALING AND REINFORCING STEEL SHALL BE INCLUDED IN PRICE BID FOR OTHER ITEMS OF WORK.
4. CONTRACTION JOINTS IN JOINTED P.C. PAVEMENT SHALL BE AT APPROXIMATELY 15'-0" CENTERS, UNLESS OTHERWISE SHOWN ON THE PLANS.
5. 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.
6. 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.
7. IF CONDUIT IS NOT CONTINUOUS BETWEEN DRIVEWAYS/RAMPS, CAP BOTH ENDS OF EACH CONDUIT CROSSING AND PLACE MARKER TO PREVENT DAMAGE DURING CONSTRUCTION.
8. CONDUIT SHALL NOT TERMINATE BELOW A SURFACED AREA, BUT SHALL EXTEND MINIMUM OF 24" PAST EDGE OF PAVING.
9. FOR PULL BOX INSTALLATION DETAILS, SEE TRAFFIC STANDARD PBD1-1.



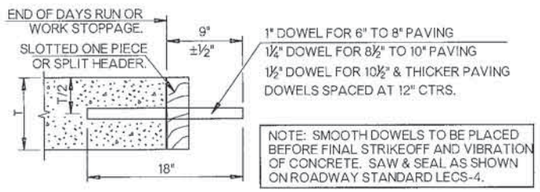
SECTION B-B



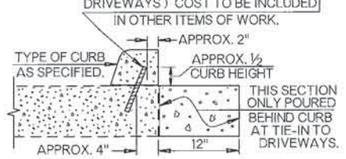
CURB JOINT WITH EXPANSION MATERIAL



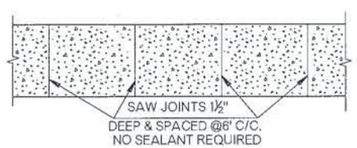
ALTERNATE CURB JOINT



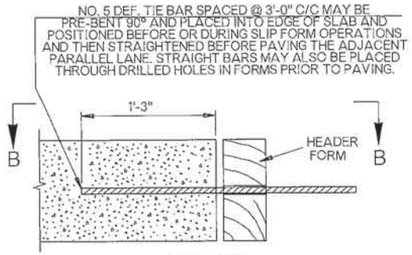
TRANSVERSE CONSTRUCTION JOINT
(TO BE USED AT END OF DAYS PLACEMENT OF CONCRETE OR ANY STOPPAGE OF 30 MINUTES OR MORE.)



OPTIONAL CURB CONSTRUCTION
FOR SLIP FORM PAVING

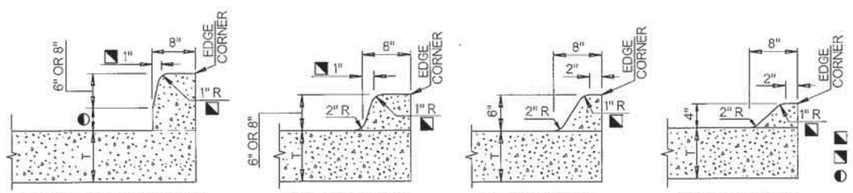


PLAN DETAIL OF CONCRETE SIDEWALK



SECTION
TIED LONGITUDINAL BUTT JOINT
(TO BE USED BETWEEN ADJACENT PAVING LANES)

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



INTEGRAL CURB TYPICAL SECTIONS

- ◥ 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.)

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 Caleb F. A DATE: 04/10/15

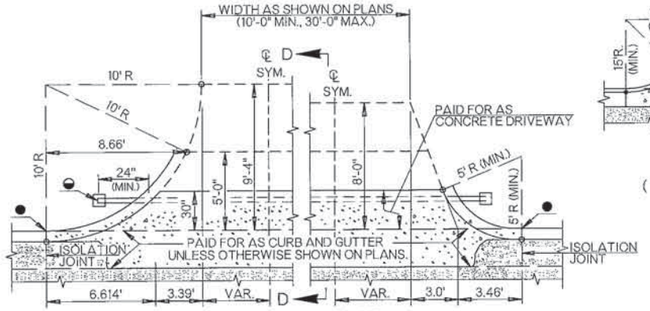
ROADWAY DESIGN DIVISION STANDARD

CONCRETE SURFACING CONSTRUCTION DETAILS

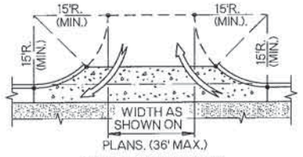
OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

CSCD-5	3
	R-12

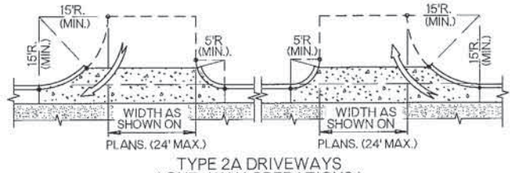
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



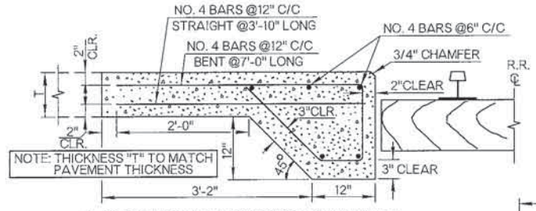
TYPE I DRIVEWAYS
(PRIVATE OR RESIDENTIAL)



TYPE 2 DRIVEWAY
(TWO -WAY OPERATION)

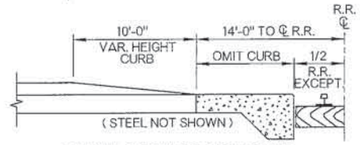


TYPE 2A DRIVEWAYS
(ONE -WAY OPERATIONS)

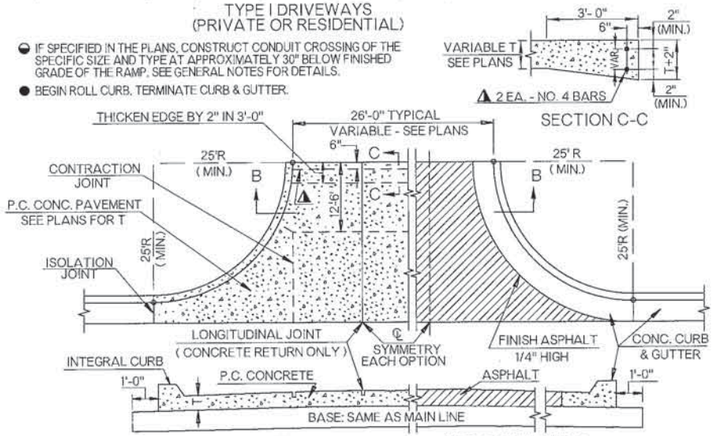


P. C. RAILROAD APPROACH SLAB WITH
THICKENED EDGE AT RAILROAD CROSSING

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

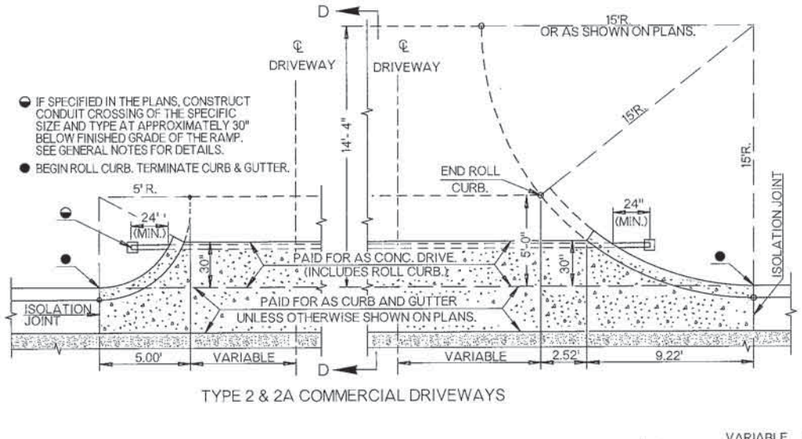
ALT. SECTION B-B
ASPHALT RETURN
(WHERE CURB AND GUTTER IS USED)

TYPICAL STREET RETURN

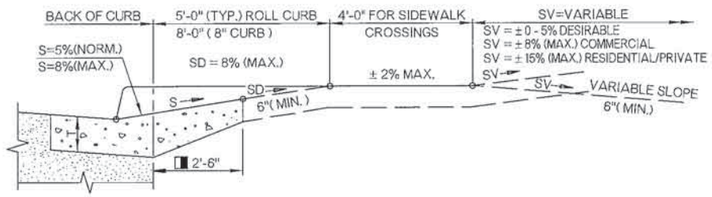
SECTION C-C

● 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.

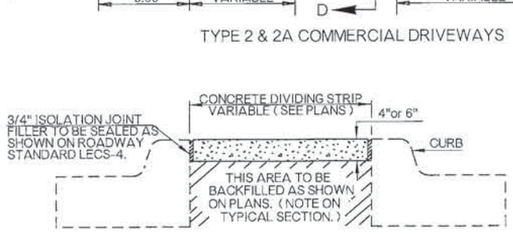


TYPE 2 & 2A COMMERCIAL DRIVEWAYS

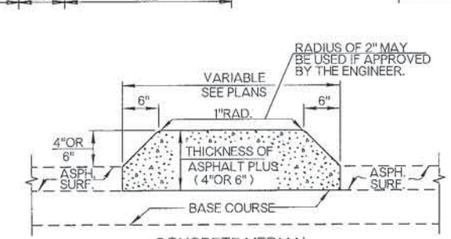


SECTION D-D ALONG ℄ DRIVE

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



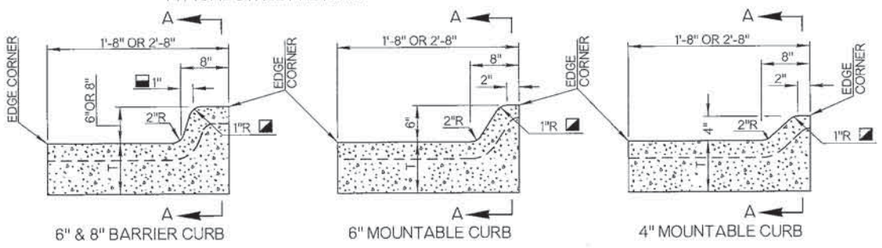
CONCRETE DIVIDING STRIP



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

GENERAL NOTES

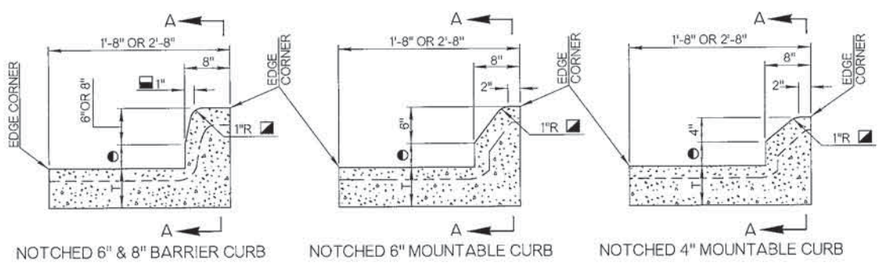
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. COST OF JOINT FILLERS, SEALING AND REINFORCING STEEL SHALL BE INCLUDED IN PRICE BID FOR OTHER ITEMS OF WORK.
3. TRANSVERSE ISOLATION JOINTS FOR CONCRETE DIVIDING STRIP AND CONCRETE MEDIAN (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 PREMOLDED AND JOINTS TO BE SEALED AS SHOWN ON ROADWAY STANDARD LECS-4.
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.
5. 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.
6. IF CONDUIT IS NOT CONTINUOUS BETWEEN DRIVEWAYS OR RAMPS, CAP BOTH ENDS OF EACH CONDUIT CROSSING AND PLACE MARKER TO PREVENT DAMAGE DURING CONSTRUCTION.
7. CONDUIT SHALL NOT TERMINATE BELOW A SURFACED AREA, BUT SHALL EXTEND A MINIMUM OF 2'-0" PAST EDGE OF PAVING.
8. FOR PULL BOX INSTALLATION DETAILS, SEE TRAFFIC STANDARD PBDI-1 (PULL BOX DETAILS).



6" & 8" BARRIER CURB

6" MOUNTABLE CURB

4" MOUNTABLE CURB



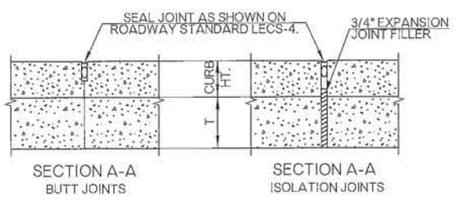
NOTCHED 6" & 8" BARRIER CURB

NOTCHED 6" MOUNTABLE CURB

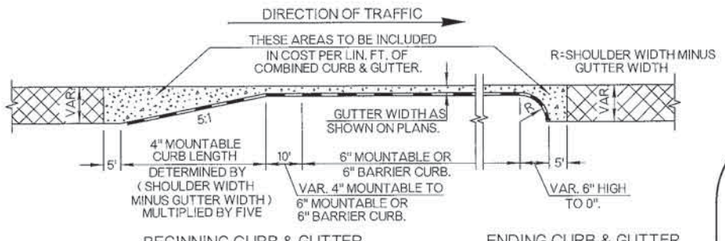
NOTCHED 4" MOUNTABLE CURB

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.



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



BEGINNING CURB & GUTTER

ENDING CURB & GUTTER

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: Caleb L-H DATE 04/14/15

ROADWAY DESIGN DIVISION STANDARD

ODOT

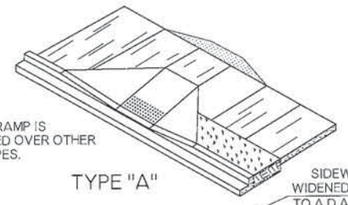
ASPHALT SURFACING
CONSTRUCTION DETAILS

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

ASCD-5	2
	R-11

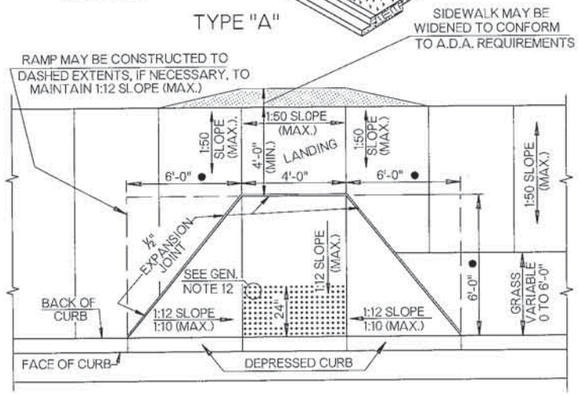
OKLAHOMA DEPARTMENT OF TRANSPORTATION

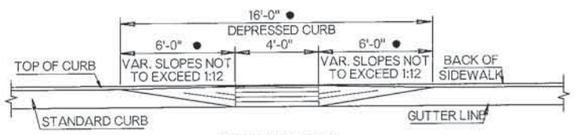
STANDARD REVISIONS	
DESCRIPTION	DATE



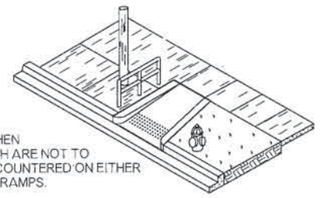
TYPE "A" RAMP IS PREFERRED OVER OTHER RAMP TYPES.

TYPE "A"



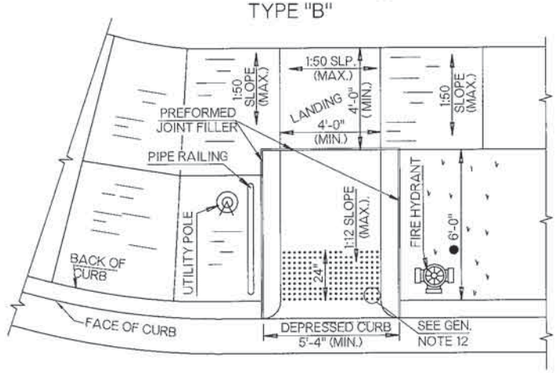


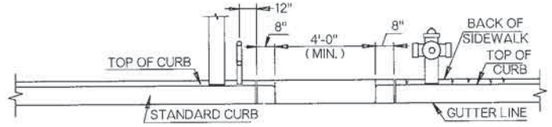
ELEVATION



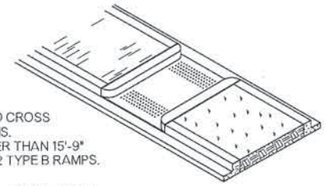
USE TYPE "B" RAMP WHEN OBSTRUCTIONS, WHICH ARE NOT TO BE REMOVED, ARE ENCOUNTERED ON EITHER SIDE OF WHEELCHAIR RAMPS.

TYPE "B"



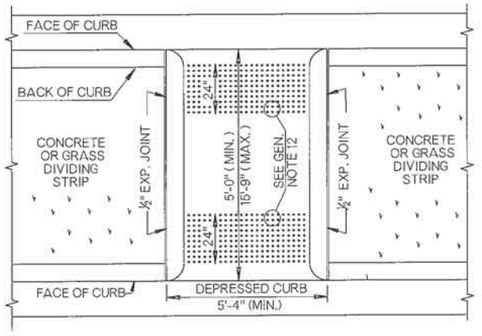


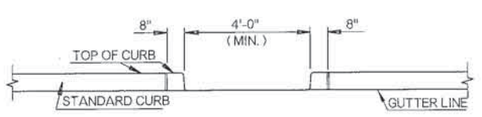
ELEVATION



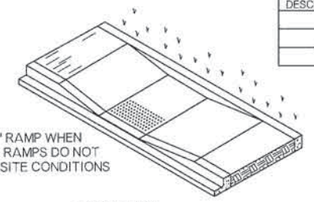
USE TYPE "C" RAMP TO CROSS 15'-9" OR LESS MEDIANS. FOR MEDIANS GREATER THAN 15'-9" USE SIDEWALK WITH 2 TYPE B RAMPS.

TYPE "C"



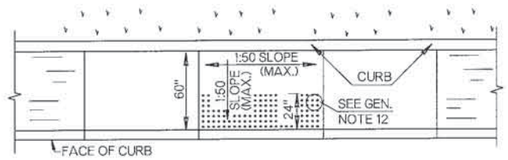


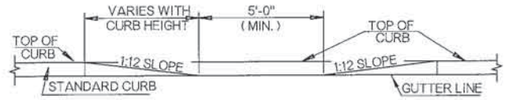
ELEVATION



USE TYPE "D" RAMP WHEN OTHER TYPE RAMPS DO NOT WORK WITH SITE CONDITIONS

TYPE "D"





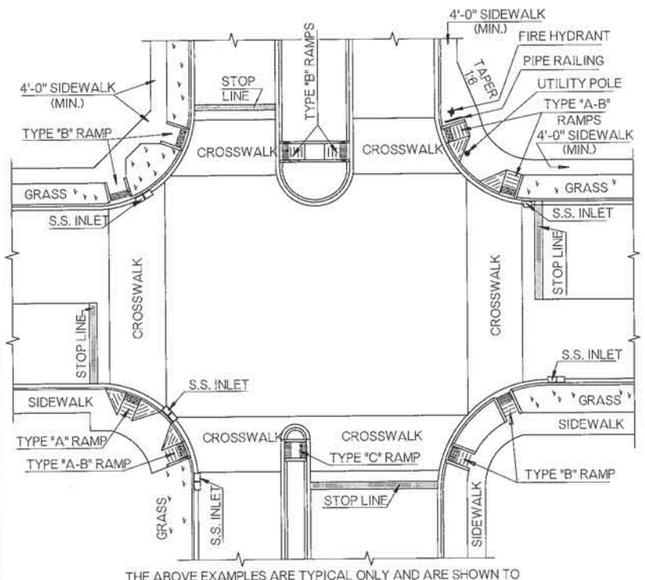
ELEVATION

GENERAL NOTES

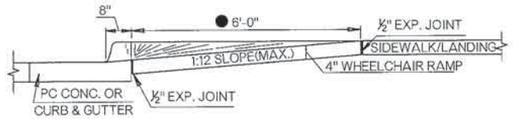
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. THERE WILL BE NO DEDUCTION OF PAYMENT FOR CONCRETE CURB & GUTTER AND/OR INTEGRAL CURB FOR THE LENGTH OF THE DEPRESSED CURB.
3. RAMP DIMENSIONS SHOWN ARE BASED ON A CURB HEIGHT OF SIX INCHES. 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.
4. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH THE RAMPS.
5. THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP WITH A 1:50 SLOPE (MAX.), SEE NOTE NO. 10.
6. WHEELCHAIR RAMPS SHOULD BE LOCATED SO THAT THE RAMP WILL BE ON THE TRAFFIC APPROACH SIDE OF ANY OBSTACLE.
7. 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.
8. PIPE RAILING CONSTRUCTION DETAILS, WHEN REQUIRED AT TYPE B WHEEL CHAIR RAMPS, WILL BE SHOWN ON THE PLANS.
9. 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.
10. 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.
11. ALL WHEELCHAIR RAMP CURBS SHALL BE INCLUDED IN COST OF SIDEWALK.
12. 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

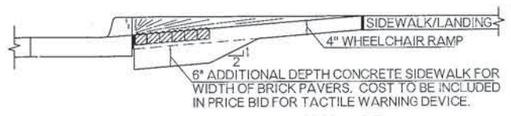
■ SIDEWALK THICKNESS SHALL BE SPECIFIED IN INCHES.



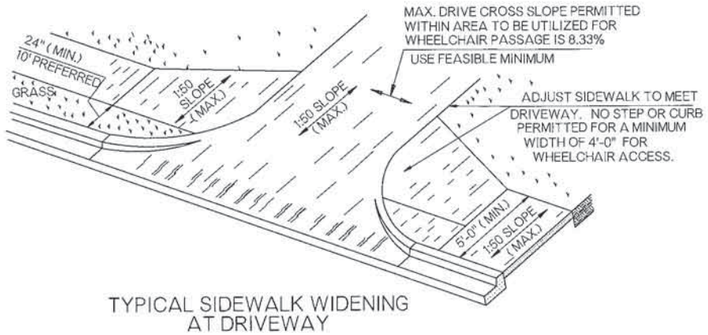
THE ABOVE EXAMPLES ARE TYPICAL ONLY AND ARE SHOWN TO ILLUSTRATE POSSIBLE RAMP TYPES, POSSIBLE RAMP LOCATIONS, POSSIBLE INLET LOCATIONS, AND HOW THE RAMP WILL BE DESIGNATED ON THE PLANS. CARE SHOULD BE EXERCISED TO ASSURE THAT MEDIAN RAMP AND CURB RAMP LINE UP, AND THAT RAMPS THROUGHOUT A PROJECT ARE LOCATED WITH SOME DEGREE OF UNIFORMITY.



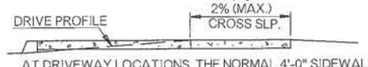
WHEELCHAIR RAMP PROFILES
(TYPE A OR B)



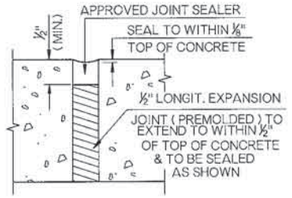
SIDEWALK THICKENING FOR TYPE A TACTILE WARNING DEVICES



TYPICAL SIDEWALK WIDENING AT DRIVEWAY



AT DRIVEWAY LOCATIONS, THE NORMAL 4'-0" SIDEWALK MUST BE WIDENED SO THAT A 4' PORTION OF SIDEWALK IS ALIGNED WITH SIDEWALK CROSSING SHELF IN THE DRIVEWAY PROFILE. A WIDER SIDEWALK (5'-0" TYP.) SHALL ALSO BE USED AT INTERVALS LESS THAN 200 FEET, TO ASSURE WHEELCHAIR PASSAGE.



1/2" EXPANSION JOINT

JOINT FILLER SHALL MEET THE REQUIREMENTS OF SECTION 701.08 OF THE SPECIFICATIONS.

JOINT FILLER SHALL BE USED BETWEEN SIDEWALK AND CURBS, WHEELCHAIR RAMPS, DRIVEWAYS, STREETS, RETAINING WALLS, ETC.

APPROVED BY ROADWAY ENGINEER: Calista K DATE 04/14/15

ROADWAY DESIGN DIVISION STANDARD

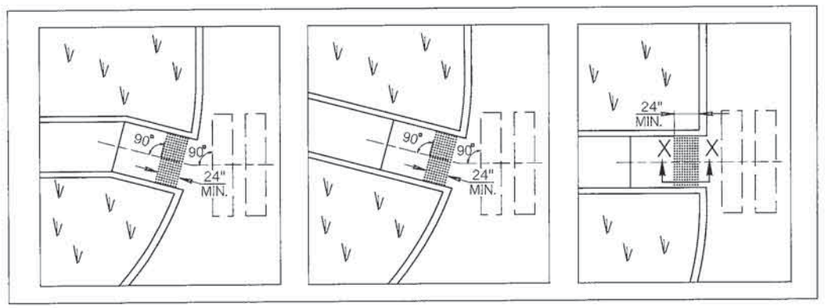
WHEELCHAIR RAMPS

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

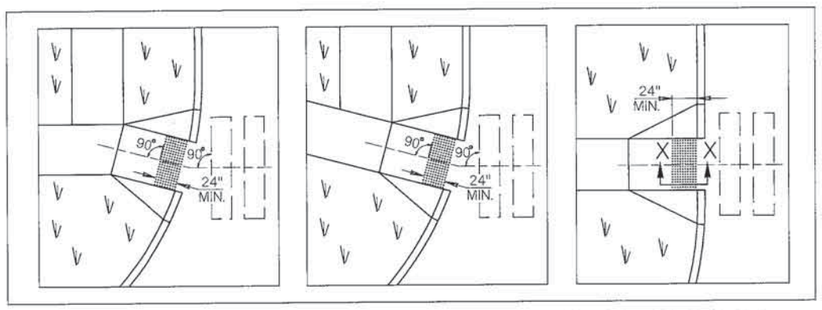
WCR-3 | 1

R-22

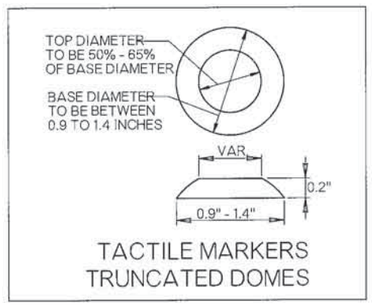
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



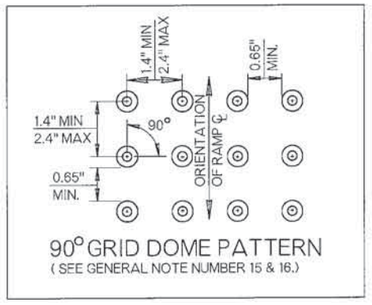
TACTILE SYSTEM ORIENTATION - TYPICAL CURBED RAMPS



TACTILE SYSTEM ORIENTATION - TYPICAL FLARED RAMPS



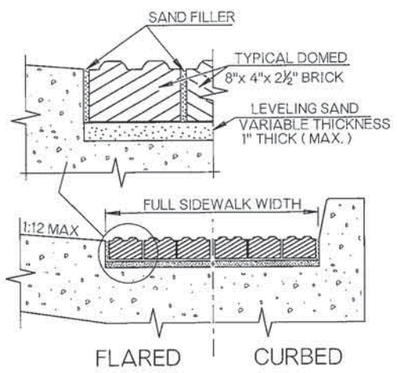
TACTILE MARKERS
TRUNCATED DOMES



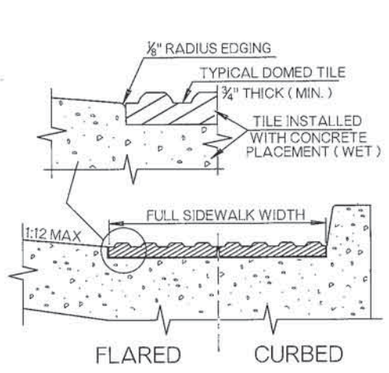
90° GRID DOME PATTERN
(SEE GENERAL NOTE NUMBER 15 & 16.)

GENERAL NOTES

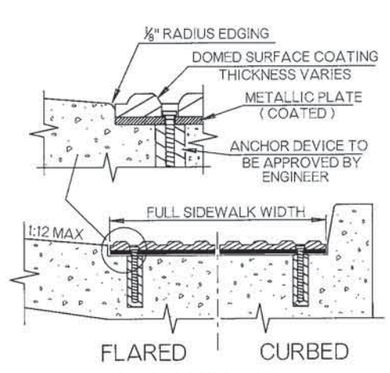
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. ALL FEATURES OF TACTILE WARNING DEVICE DESIGN AND FINAL INSTALLATION SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES (ADAAG). WHERE SPATIAL LIMITATIONS OR 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.
3. TACTILE WARNING SURFACE SHALL EXTEND FROM EDGE TO EDGE OF WALKWAY ENTERING THE CROSSWALK, AT STREET LEVEL.
4. CURB IS NOT SHOWN IN THE SECTION X-X DETAIL ON THIS SHEET.
5. THICKNESS 'T' OF PAVEMENT ABUTTING SIDEWALK/RAMP VARIES.
6. SIDEWALK, RAMP AND FLARE THICKNESS SHALL BE 4" MINIMUM THICKNESS AFTER INSTALLATION OF TACTILE WARNING TREATMENT.
7. 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.
8. LEVELING SAND FOR DOMED BRICK SYSTEMS SHALL MEET THE REQUIREMENTS OF SECTION 703.06B(2) OF THE SPECIFICATIONS.
9. 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.
10. ROWS OF TACTILE DOME TREATMENT SHOULD BE ORIENTED PARALLEL WITH CENTERLINE OF SIDEWALK/RAMP OR TOWARD THE CENTERLINE OF MARKED CROSSWALK.
11. EXPANSION JOINTS DEEMED NECESSARY, BUT NOT SHOWN ON THE PLANS, MAY BE ADDED AND PLACED DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER.
12. 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.
13. 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.
14. 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.
15. 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.
16. WET OR DRY STATIC COEFFICIENT OF FRICTION SHALL BE 0.7 FOR TACTILE SURFACES AND MEET ASTM C1028.
17. TACTILE WARNING SURFACES MAY NOT BE STAMPED IN WET CONCRETE.



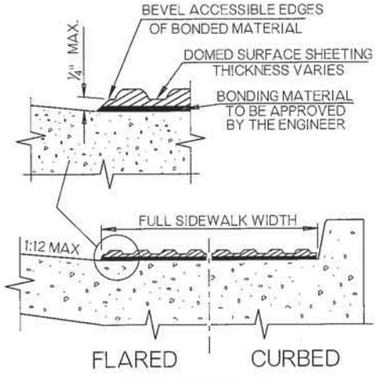
SECTION A - A



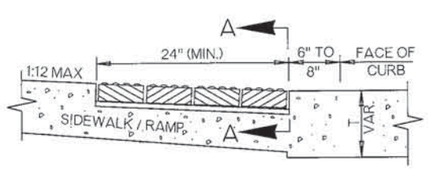
SECTION B - B



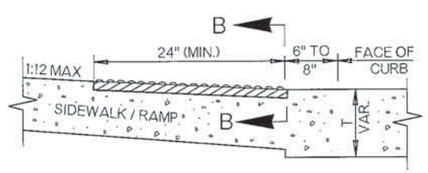
SECTION C - C



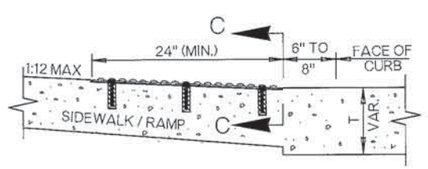
SECTION D - D



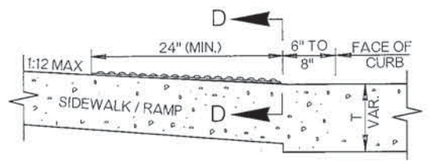
SECTION X - X
TYPE A
DOMED BRICK SYSTEM



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 ( )	TACTILE WARNING DEVICE - NEW	SF
610 ( )	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: Caleb F. A DATE 04/16/15

ROADWAY DESIGN DIVISION STANDARD

TACTILE WARNING DEVICES

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

TWD-1 | 0

R-23

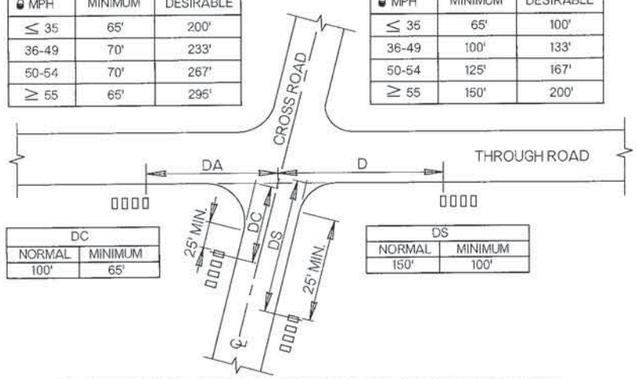
OKLAHOMA DEPARTMENT OF TRANSPORTATION

STANDARD REVISIONS	
DESCRIPTION	DATE

● SPEED FACTOR MAY BE DESIGN SPEED, OBSERVED SPEED OR ASSIGNED SPEED BASED UPON PREDICTABLE GROWTH FACTORS OR PENDING IMPROVEMENTS.

THRU ROAD SPEED ● MPH	DA	
	MINIMUM	DESIRABLE
≤ 35	65'	200'
36-49	70'	233'
50-54	70'	267'
≥ 55	65'	295'

THRU ROAD SPEED ● MPH	D	
	MINIMUM	DESIRABLE
≤ 35	65'	100'
36-49	100'	133'
50-54	125'	167'
≥ 55	150'	200'



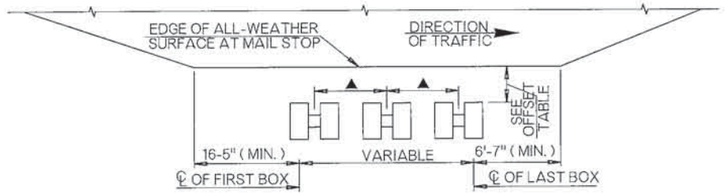
DC	
NORMAL	MINIMUM
100'	65'

DS	
NORMAL	MINIMUM
150'	100'

SUGGESTED MINIMUM CLEARANCE DISTANCES TO NEAREST MAILBOX IN MAIL STOPS AT INTERSECTIONS

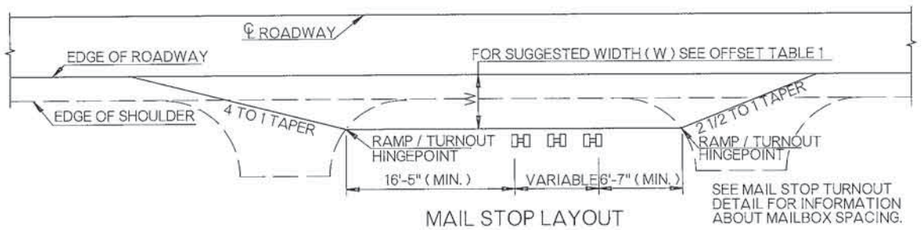
OFFSET TABLE				
HIGHWAY TYPE AND TRAFFIC CONDITIONS	WIDTH OF ALL-WEATHER SURFACE OF TURNOUT OR AVAILABLE SHOULDER AT MAILBOX		DISTANCE ROADSIDE FACE OF MAILBOX IS TO BE OFFSET BEHIND EDGE OF TURNOUT OR USABLE SHOULDER	
	PREFERRED	MINIMUM	PREFERRED	MINIMUM
RURAL HIGHWAY ADT OVER 10,000 VPD	12'	8'	8" TO 12"	0
RURAL HIGHWAY ADT 1,500 TO 10,000 VPD	12'	8'	8" TO 12"	0
RURAL HIGHWAY ADT 400 TO 1,500 VPD	10'	8'	8" TO 12"	0
RURAL ROAD ADT UNDER 400 VPD	8'	6'	8" TO 12"	10"
RURAL ROAD ADT UNDER 50 VPD SPEED 40 MPH OR LESS	6'	2'	8" TO 12"	0
RESIDENTIAL STREET WITHOUT CURB OR ALL-WEATHER SHOULDER	6'	0	8" TO 12"	10" ●
CURBED STREET	NOT APPLICABLE		8" TO 12" BEHIND FACE OF CURB	6" BEHIND FACE OF CURB

ADT-AVERAGE DAILY TRAFFIC, THROUGH ROAD ONLY
VPD-VEHICLES PER DAY
● IF TURNOUT IS PROVIDED, THIS MAY BE REDUCED TO ZERO.



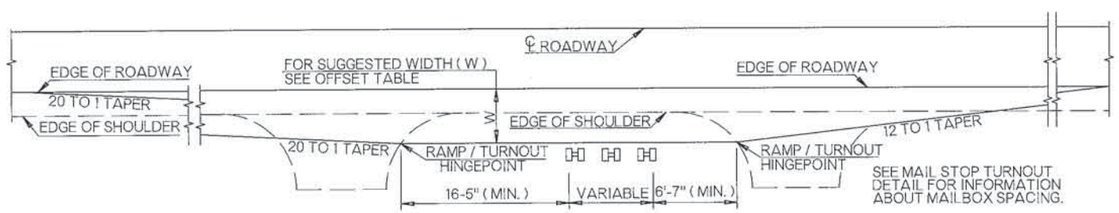
MAIL STOP TURNOUT DETAIL

▲ RECOMMENDED MINIMUM SPACING IS 3/4 OF THE DIMENSION FROM THE GROUND LINE TO THE BOTTOM OF THE MAILBOX



MAIL STOP LAYOUT

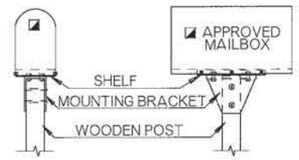
FOR ROADS CARRYING TRAFFIC AT 40 MPH OR LESS OR FOR LOCAL AND COLLECTOR ROADS



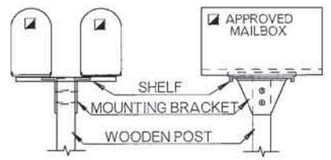
MAIL STOP LAYOUT

ROADS CARRYING TRAFFIC AT SPEED OVER 40 MPH

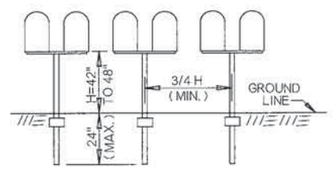
☑ MAILBOX DIMENSIONS & SIZES			
MAILBOX DESIGN TYPE	DIMENSIONS (NOM.)		
	LENGTH	WIDTH	HEIGHT
1	19"	6 1/2"	8 1/2"
1-A	21"	8"	10 1/2"
2	23 1/2"	11 1/2"	13 1/2"



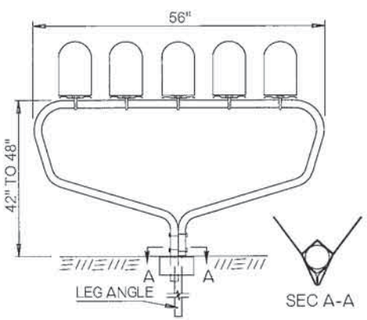
MAILBOX INSTALLATION - SINGLE WOODEN POST SUPPORT & BRACKET ASSEMBLY DETAILS



MAILBOX INSTALLATION - MULTIPLE (DOUBLE OR TWIN BOX)



POST SPACING DETAIL
MULTIPLE BOX INSTALLATION
SINGLE POST SERIES



MAILBOX INSTALLATION - MULTIPLE (MULTIPLE BOX SUPPORT DETAILS)

MAXIMUM NUMBER OF MAILBOXES = 5

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. MAILBOX INSTALLATION, SINGLE OR MULTIPLE TYPE, SHALL BE OF A DESIGN AND MATERIAL THAT HAS BEEN CRASH TESTED AND APPROVED. OTHER DESIGNS OR MAILBOX TYPES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
3. IF MAILBOX IS INSTALLED IN AN AREA WITH GUARDRAIL, MAILBOX AND/OR POST ASSEMBLY SHOULD BE BEHIND OR FLUSH WITH FACE OF RAIL.
4. PRODUCER AND CONTRACTOR SHALL AVOID PATENT INFRINGEMENT OF THE MAILBOX SUPPORT ASSEMBLY AND SHALL SAVE THE STATE HARMLESS IN THE USE OF ANY MAILBOX SUPPORT ASSEMBLY.
5. ALTERNATE WOODEN POST SUPPORT INSTALLATIONS MAY BE USED IN LIEU OF METAL PIPE SUPPORT UNITS IF WOODEN COMPONENTS CONFORM TO CURRENT SPECIFICATIONS.
6. PRICE OF EACH MAILBOX INSTALLATION, SINGLE OR MULTIPLE, INCLUDES PAYMENT FOR INSTALLATION OF THE POST SYSTEM, SUPPORT POST, ALL ATTACHMENT HARDWARE AND MOUNTING OF THE MAILBOX. PAYMENT FOR THE MAILBOX WILL BE PAID FOR BY THE EACH AND SEPARATELY FROM THE SUPPORT SYSTEM.
7. IF MAILBOX IS INSTALLED BEHIND CURB, ANY SIDEWALKS WILL REQUIRE A MINIMUM 3'-0" OF USABLE SPACE BEHIND THE MAILBOX.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
☐ 629 (A)	MAILBOX INSTALLATION - SINGLE	EA
☐ 629 (B)	MAILBOX INSTALLATION - MULTIPLE	EA
629 (C)	MAILBOX	EA
629 (D)	REMOVAL OF MAILBOX INSTALLATION	EA
629 (E)	REMOVE AND RESET MAILBOX	EA

☐ MAILBOX DESIGN TYPE(S) AND LOCATION(S) SHALL BE SPECIFIED IN THE PLANS.

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

ROADWAY DESIGN DIVISION STANDARD

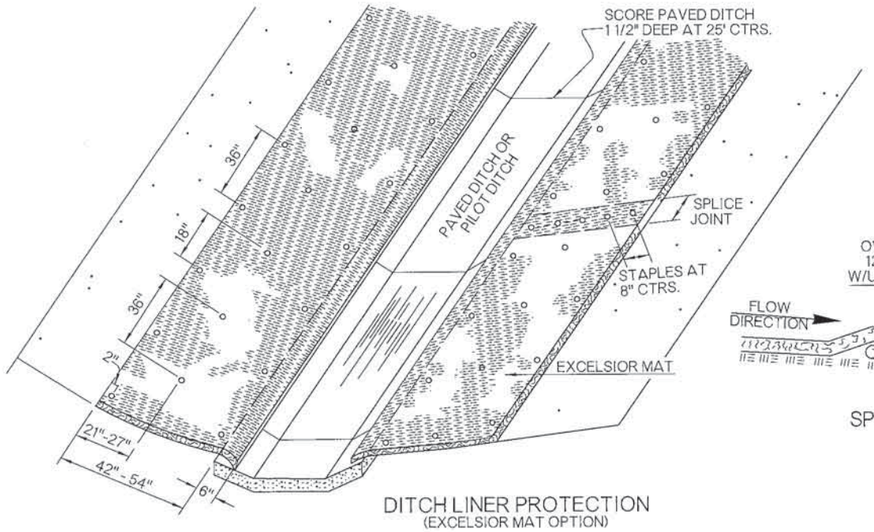
MAILBOX INSTALLATION

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

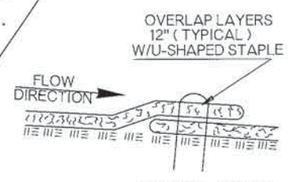
MI-3	0

R-62

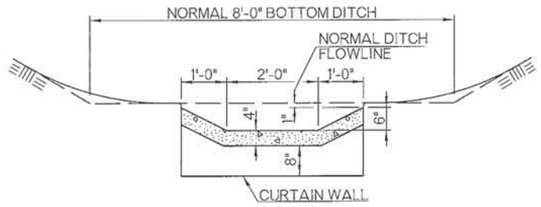
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



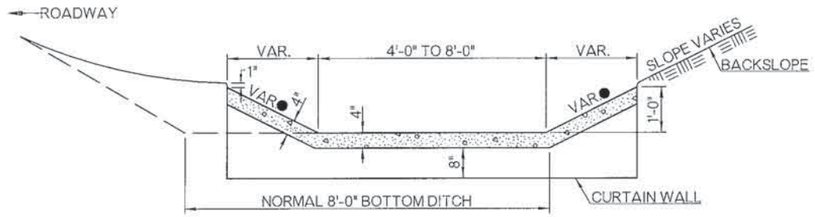
DITCH LINER PROTECTION
(EXCELSIOR MAT OPTION)



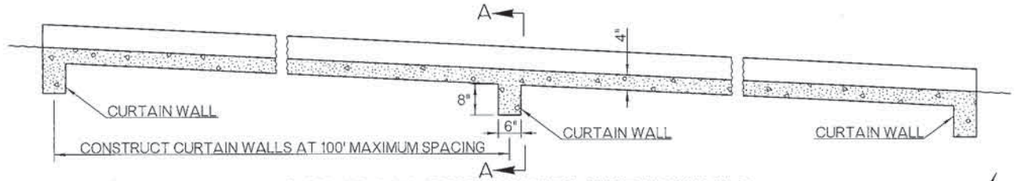
SPLICE JOINT



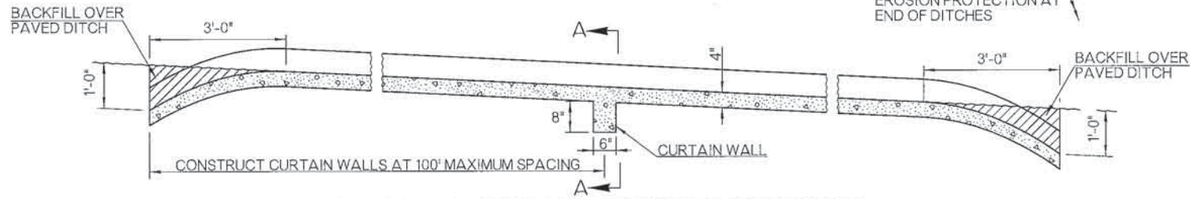
SECTION A - A
DESIGN NO. 1



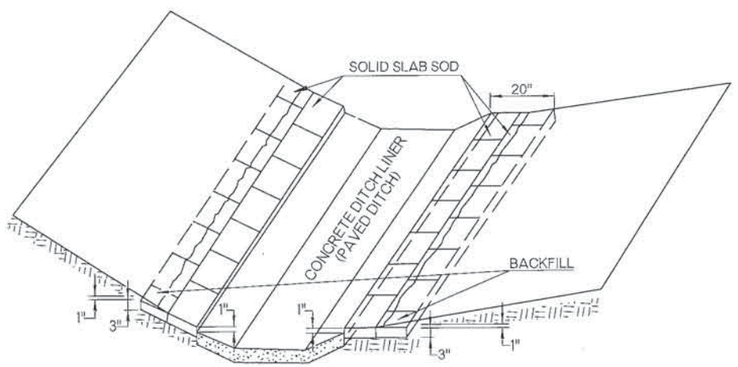
SECTION A - A
DESIGN NO. 2



LONGITUDINAL SECTION WITH CURTAIN WALLS



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



DITCH LINER PROTECTION
(SOLID SLAB SOD OPTION)

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

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

QUANTITIES OF CLASS C CONCRETE PER LF OF PAVED DITCH
QUANTITIES IN CUBIC YARDS

	DESIGN NO. 1					DESIGN NO. 2					
BOTTOM WIDTH	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	
K1	.0522	.0645	.0769	.0892	.1016	.1274	.1397	.1521	.1644	.1768	DES. 2A
K2	.0586	.0709	.0832	.0955	.1078	.1790	.1913	.2036	.2159	.2282	
● VARIABLE AS SHOWN ON PLANS DESIGN 2A = 1:3 SLOPES DESIGN 2B = 1:2 SLOPES DESIGN 2C = 1:1 SLOPES					K1	.1045	.1168	.1292	.1415	.1539	DES. 2B
					K2	.1357	.1480	.1603	.1726	.1850	
					K1	.0923	.1048	.1172	.1295	.1479	DES. 2C
					K2	.1105	.1228	.1352	.1476	.1600	

TOTAL CLASS C CONC.= (LENGTH OF PAVED DITCH) (K1) + (NO. OF CURT. WALLS) (K2)
K1=CU. YDS. OF CONCRETE PER LINEAR FOOT
K2=CU. YDS. OF CONCRETE PER CURTAIN WALL

GENERAL NOTES

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

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

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

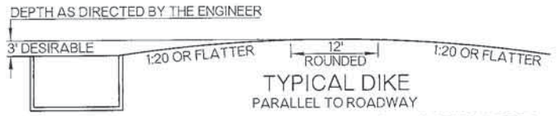
ROADWAY DESIGN DIVISION STANDARD

PAVED DITCHES AND FLUMES

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

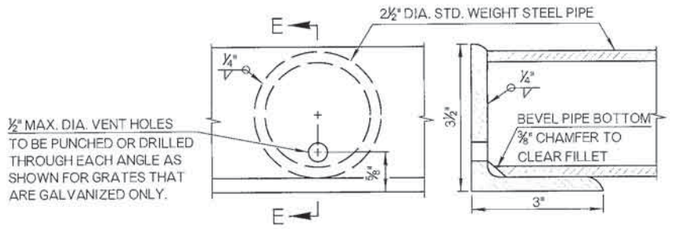
OKLAHOMA DEPARTMENT OF TRANSPORTATION

STANDARD REVISIONS	
DESCRIPTION	DATE

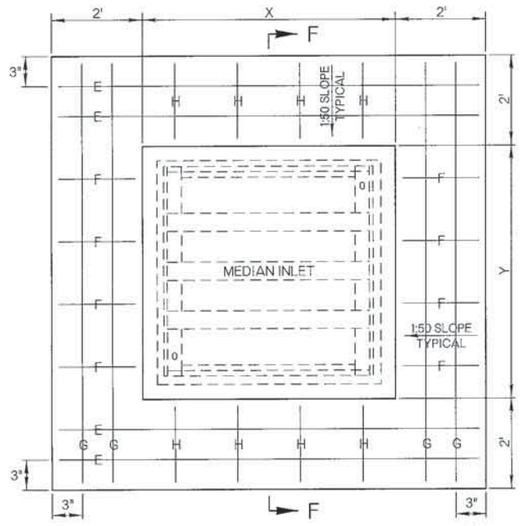


TYPICAL DIKE
PARALLEL TO ROADWAY

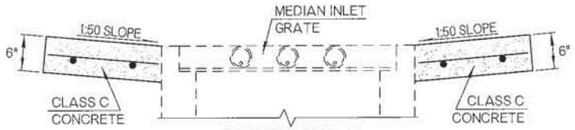
NOTE: WHEN A DIKE IS REQUIRED, IT SHALL BE CONSTRUCTED SLOPING UP FROM THE INLET ON A 1:20 SLOPE TO A DESIRABLE HEIGHT OF 3 FEET. IN NO CASE SHALL THE DIKE TOP BE HIGHER THAN 6" BELOW THE FINISHED GRADE OF THE INNER EDGE OF SURFACING AS SHOWN ON THE PLAN AND PROFILE SHEET.



VENT HOLE DETAIL SECTION E-E



MEDIAN DRAIN CONCRETE APRON DETAIL



SECTION F-F

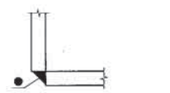
APRON REINFORCING STEEL LOCATION & LENGTHS (#4 BARS - EQUALLY SPACED @ 18" MAXIMUM)*							APRON REINF. STEEL*	APRON CLASS C CONCRETE*
DIAMETER	E - BARS	F - BARS	G - BARS	H - BARS	X	Y		
IN.	(NO.) FT. - IN.	(NO.) FT. - IN.	(NO.) FT. - IN.	(NO.) FT. - IN.	FT. - IN.	FT. - IN.	LB.	C.Y.
18 & 24	(4) 7 - 2⅛	(8) 1 - 9	(4) 7 - 4¾	(8) 1 - 9	3 - 7¾	3 - 5⅛	57	0.41
30	(4) 7 - 10	(8) 1 - 9	(4) 7 - 4¾	(8) 1 - 9	3 - 7¾	4 - 1	59	0.43
36	(4) 8 - 5	(9) 1 - 9	(4) 8 - 5	(9) 1 - 9	4 - 8	4 - 8	66	0.49

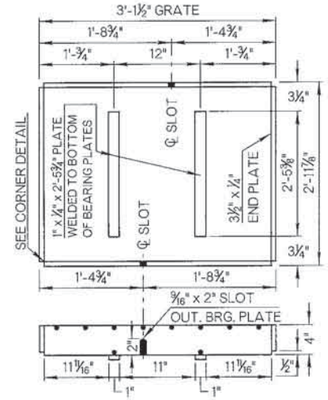
*MINIMUM 1½" COVER OVER STEEL *QUANTITIES ARE FOR ONE APRON

SMD BAR LIST					
BAR	SIZE	NO.	SHAPE	LENGTH	SPACE
TYPE 1 - 18" OR 24" RCP OR CGSP					
A	#4	5	BENT	11'-10"	6" C/C
B	#4	15	BENT	2'-11⅞"	9" C/C
C	#5	7	STR.	3'-1⅛"	6" C/C
D	#5	6	STR.	3'-3⅜"	6" C/C
TYPE 2 - 18" OR 24" RCP OR CGSP					
A	#4	6	BENT	11'-10"	6" C/C
B	#4	16	BENT	3'-6⅛"	9" C/C
C	#5	7	STR.	3'-1⅛"	6" C/C
D	#5	6	STR.	3'-3⅜"	6" C/C
TYPE 2A - 18", 24" OR 30" RCP OR CGSP					
A	#4	7	BENT	12'-11½"	6" C/C
B	#4	18	BENT	4'-1"	9" C/C
C	#5	7	STR.	3'-3¾"	6" C/C
D	#5	7	STR.	3'-7"	6" C/C
TYPE 2B - 18",24",30" OR 36" RCP OR CGSP					
A	#4	8	BENT	16'-2"	6" C/C
B	#4	20	BENT	4'-7"	9" C/C
C	#5	7	STR.	4'-4"	6" C/C
D	#5	8	STR.	4'-4"	6" C/C

GRATES - OVERALL DIMENSIONS
TYPE 1 GRATE: 3'-1½" x 2'-11⅞"
TYPE 2 GRATE: 3'-1¼" x 2'-11¾"
TYPE 2A GRATE: 3'-1¼" x 3'-6½"
TYPE 2B GRATE: 4'-1½" x 4'-1½"
W = 8¼" FOR TYPE 2
W = 9" FOR TYPE 2A & 2B

PIPE GRATE MATERIAL
2½" I.D. STD. WEIGHT STEEL PIPE





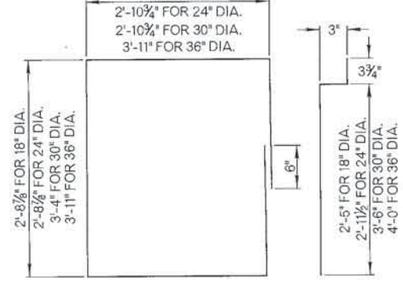
DETAIL ALTERNATE STIFFENER
TYPE 1 GRATE

ESTIMATED SMD QUANTITIES						ADD'L SMD DEPTH PER VERT. FT.	
DESIGNATED PIPE SIZE IN INLET	TYPE OF GRATE	1 PIPE CLASS A CONC.	2 PIPES CLASS A CONC.	REINF. STEEL		CLASS A CONC.	REINF. STEEL
		CY	CY	LB.		CY	LB
18" RCP	1 OR 2	0.75	0.67	115		0.23	27
24" RCP	1 OR 2	0.85	0.76	129		0.23	27
30" RCP	2A	1.06	0.96	160		0.25	29
36" RCP	2B	1.52	1.38	211		0.31	35

■½" DIA. x 3½" STD. HEX BOLT W/ NUT (2 TOTAL)
CROSS BARS - ⅜" DIA. x 2'-11⅞" (10 TOTAL)
END PLATES - 3½" x ¼" x 2'-11⅞" (2 TOTAL)
BEARING PLATES - 4" x ½" x 3'-1" (16 TOTAL)

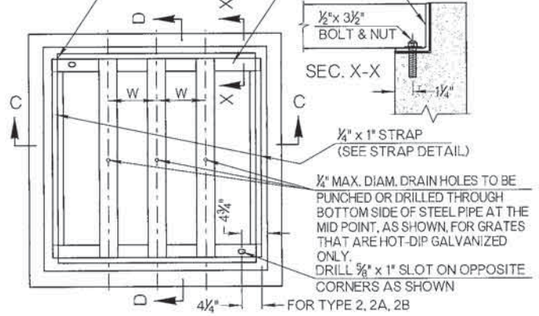
GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. VENT HOLES AND DRAIN HOLES FOR HOT DIP GALVANIZATION SHALL BE DRILLED OR PUNCHED IN GRATE AS SHOWN.
3. BICYCLE AND PEDESTRIAN SAFE GRATES, SIMILAR TO TYPE 1 GRATES, MAY BE SUBSTITUTED FOR TYPE 2A AND 2B GRATES, IF THEY MEET THE MINIMUM EQUIVALENT HYDRAULIC AND STRUCTURAL REQUIREMENTS AND PROPOSED DESIGNS ARE APPROVED BY THE ENGINEER. GRATES SIMILIAR TO TYPE 1 GRATES, USED AS ALTERNATIVES TO TYPE 2A AND 2B GRATES, SHALL BE DESIGNATED TYPES 1A AND 1B GRATES. COST FOR TYPE 1A AND 1B GRATES SHALL BE INCLUDED IN THE PRICE BID FOR THE RESPECTIVE INLET.
4. EXPOSED ROUNDED EDGING. ALL EXPOSED SURFACES SHALL BE FINISHED IN ACCORDANCE WITH SECTION 509.
5. COST OF APRON MATERIALS (INCLUDING REINFORCING STEEL), LABOR, AND INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR SMD INLET.

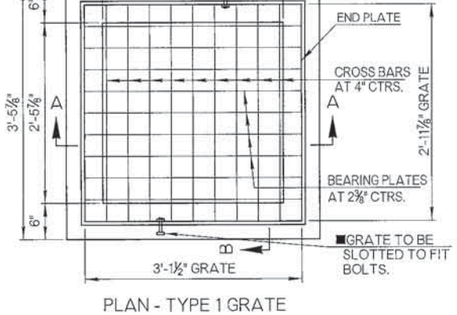


BAR A BAR B

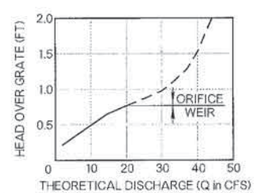
REINFORCING STEEL



PLAN - TYPE 2, 2A, 2B GRATE



PLAN - TYPE 1 GRATE

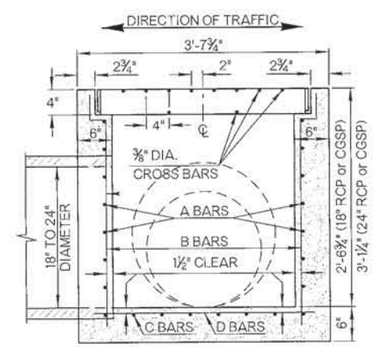


HYDRAULIC PERFORMANCE CHART

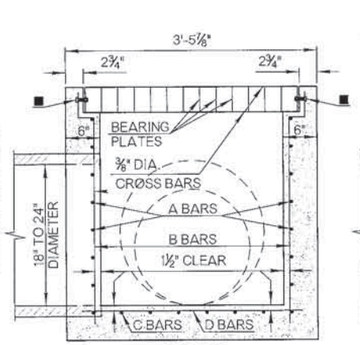
NOTE: TO ALLOW FOR CLOGGING 60% THEORETICAL DISCHARGE IS THE RECOMMENDED FACTOR TO USE IN AREAS SUBJECT TO FLOODING.

BASIS OF PAYMENT		
ITEM. NO.	ITEM	UNIT
611 (G)	INLET (SMD-TYPE 1)	EA
611 (G)	INLET (SMD-TYPE 2)	EA
611 (G)	INLET (SMD-TYPE 2A)	EA
611 (G)	INLET (SMD-TYPE 2B)	EA

NOTE: COST OF INLET GRATE SHALL BE INCLUDED IN THE PRICE BID FOR THE INLET. COST OF ALL CLASS A CONCRETE AND REINFORCING STEEL NECESSARY FOR ADDITIONAL DEPTH SHALL BE INCLUDED IN THE PRICE BID FOR THE INLET. INLET ADDITIONAL DEPTH DATA SHALL BE NOTED ON THE PLANS.

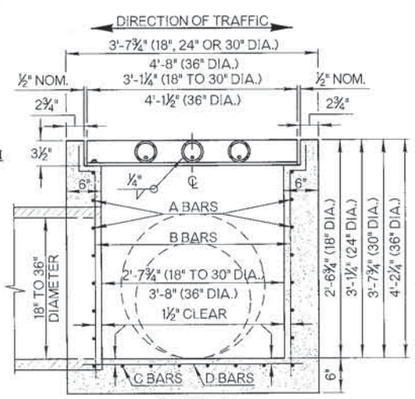


SEC A-A

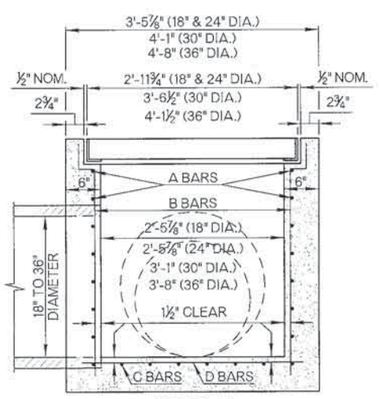


SEC B-B

SMD INLET WITH TYPE 1 GRATE

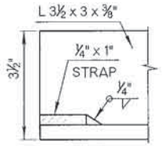


SEC C-C



SEC D-D

SMD INLET WITH TYPE 2, 2A & 2B GRATE



STRAP DETAIL

APPROVED BY ROADWAY ENGINEER: Caleb F. H DATE: 04/14/15

ROADWAY DESIGN DIVISION STANDARD

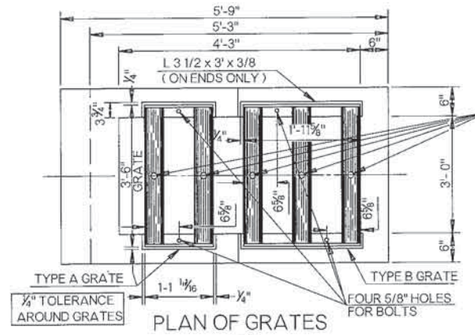
STANDARD MEDIAN DRAINS
(18" TO 36" PIPES)

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

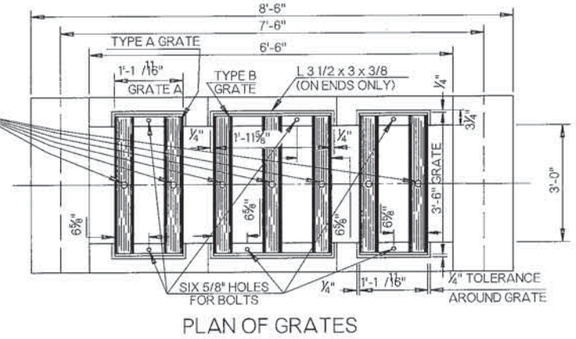
SMD-3 | 1

R-36

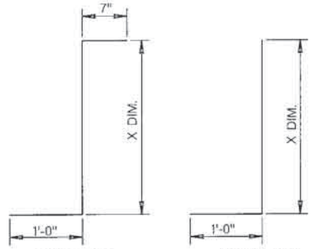
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE

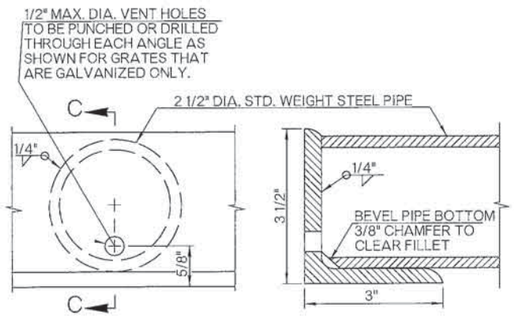


PLAN OF GRATES



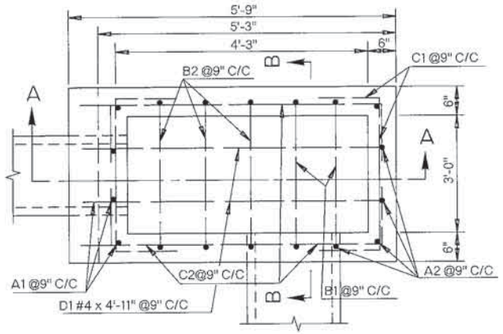
PLAN OF GRATES





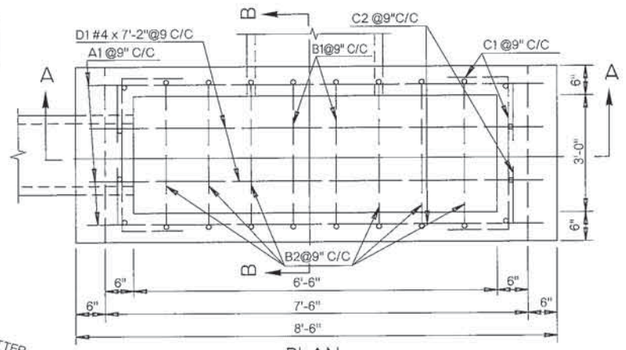
VENT HOLE DETAIL

SECTION C - C

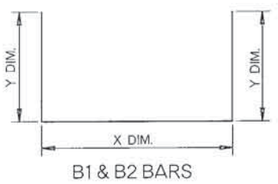


PLAN

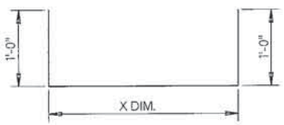
NOTE: REINF. STEEL TO BE CUT AND/OR BENT TO CLEAR PIPE IN FIELD.



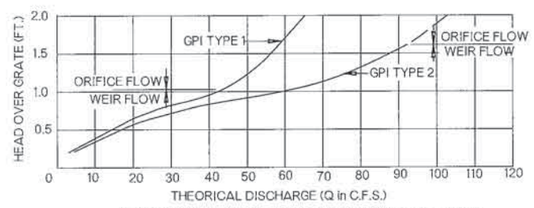
PLAN



B1 & B2 BARS

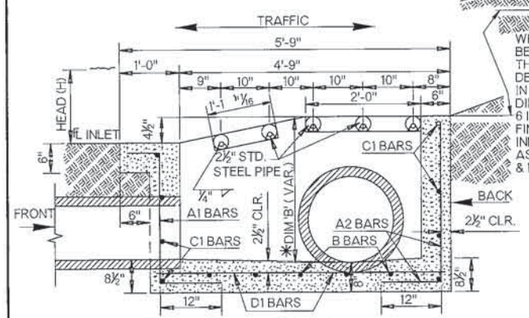


C1 & C2 BARS

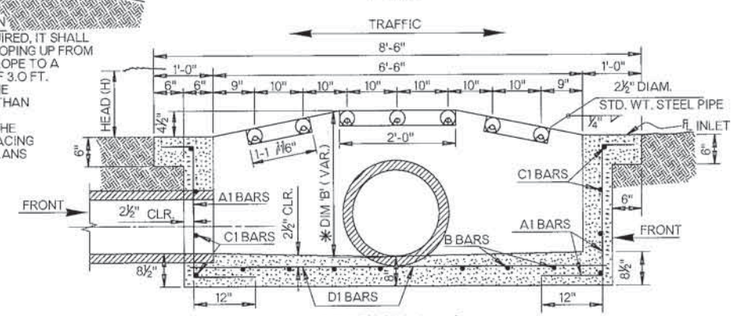


HYDRAULIC PERFORMANCE CHART

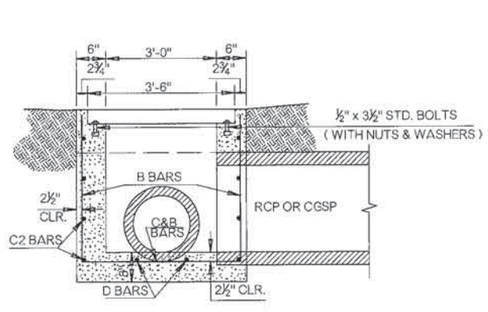
TO ALLOW FOR CLOGGING 60% THEORETICAL DISCHARGE IS THE RECOMMENDED FACTOR TO USE IN AREAS SUBJECT TO DEBRIS.



SECTION A - A
TYPE 1



SECTION A - A
TYPE 2



SECTION B - B

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. VENT HOLES AND DRAIN HOLES FOR HOT-DIP GALVANIZATION SHALL BE DRILLED OR PUNCHED IN THE GRATE AS SHOWN.
3. WHEN INLET DEPTH B (*) EXCEEDS VALUE LISTED IN TABLE SUMMARY SHOWN IN LOWER LEFT CORNER OF SHEET, THE ADDITIONAL DEPTH SHALL BE PAID FOR AS 'ADDITIONAL DEPTH IN INLET'. SPECIFIC ADDITIONAL DEPTH DATA FOR EACH STRUCTURE SHALL BE SHOWN ON THE PLANS.

	DESIGN NO.	PIPE SIZE	* MIN. DIM. "B"	CLASS A CONC.	REINF. STEEL	CONC. PER ADD'L FT. DEPTH	REINF. STEEL PER ADD'L FT. DEPTH	"A1" BARS BENT #4 AT 9" C/C			"A2" BARS BENT #4 AT 9" C/C			"B1" BARS BENT #4 AT 9" C/C			"B2" BARS BENT #4 AT 9" C/C				"C1" BARS BENT #4 AT 9" C/C			"C2" BARS BENT #4 AT 9" C/C			"D1" BARS STR'T. #4 AT 9" C/C	
				CY	LB	CY	LB	NO	LGTH	X DIM.	NO	LGTH	X DIM.	NO	LGTH	X DIM.	Y DIM.	NO	LGTH	X DIM.	Y DIM.	NO	LGTH	X DIM.	NO	LGTH	X DIM.	NO	LGTH
TYPE 1	PIPE AT SIDES OR BACK	1	24"	3'-1¼"	1.40	162.	.31	36.5	6	4'-5"	2'-10"	6	4'- 3"	3'- 3"	2	10'-1"	3'-7"	3'- 3"	3	9'-7" Avg.	3'-7"	2'-10" to 3'-2"	10	5'-6"	3'-6"	10	6'-9"	4'-9"	4	4'-11"
		2	30"	3'-7¾"	1.52	174.	.31	36.5	6	5'-0"	3'- 5"	6	4'- 9"	3'- 9"	2	11'-1"	3'-7"	3'- 9"	3	10'-7" Avg.	3'-7"	3'- 4" to 3'-8"	11	5'-6"	3'-6"	10	6'-9"	4'-9"	4	4'-11"
		3	36"	4'-2¼"	1.63	198.	.31	36.5	6	5'-6"	3'-11"	6	5'- 4"	4'- 4"	2	12'-3"	3'-7"	4'- 4"	3	11'-9" Avg.	3'-7"	3'-11" to 4'-3"	13	5'-6"	3'-6"	12	6'-9"	4'-9"	4	4'-11"
		4	42"	4'-8¾"	1.73	219.	.31	36.5	6	6'-1"	4'- 6"	6	5'-10"	4'-10"	2	13'-3"	3'-7"	4'-10"	3	12'-9" Avg.	3'-7"	4'- 5" to 4'-9"	14	5'-6"	3'-6"	14	6'-9"	4'-9"	4	4'-11"
	PIPE AT FRONT	5	18" or 24"	3'-7¾"	1.57	174.	.31	36.5	6	5'-0"	3'- 5"	6	4'- 9"	3'- 9"	2	11'-1"	3'-7"	3'- 9"	3	10'-7" Avg.	3'-7"	3'- 4" to 3'-8"	11	5'-6"	3'-6"	10	6'-9"	4'-9"	4	4'-11"
		6	30"	4'-2¼"	1.69	198.	.31	36.5	6	5'-6"	3'-11"	6	5'- 4"	4'- 4"	2	12'-3"	3'-7"	4'- 4"	3	11'-9" Avg.	3'-7"	3'-11" to 4'-3"	13	5'-6"	3'-6"	12	6'-9"	4'-9"	4	4'-11"
		7	36"	4'-8¾"	1.79	219.	.31	36.5	6	6'-1"	4'- 6"	6	5'-10"	4'-10"	2	13'-3"	3'-7"	4'-10"	3	12'-9" Avg.	3'-7"	4'- 5" to 4'-9"	14	5'-6"	3'-6"	14	6'-9"	4'-9"	4	4'-11"
TYPE 2	PIPE AT SIDES	8	24"	3'-1¼"	1.89	204.	.39	44.5	12	4'-5"	2'-10"				2	10'-1"	3'-7"	3'- 3"	6	9'-7" Avg.	3'-7"	2'-10" to 3'-2"	10	5'-6"	3'-6"	10	9'-0"	7'-0"	4	7'-2"
		9	30"	3'-7¾"	2.05	213.	.39	44.5	12	5'-0"	3'- 5"				2	11'-1"	3'-7"	3'- 9"	6	10'-7" Avg.	3'-7"	3'- 4" to 3'-8"	10	5'-6"	3'-6"	10	9'-0"	7'-0"	4	7'-2"
		10	36"	4'-2¼"	2.21	243.	.39	44.5	12	5'-6"	3'-11"				2	12'-3"	3'-7"	4'- 4"	6	11'-9" Avg.	3'-7"	3'-11" to 4'-3"	12	5'-6"	3'-6"	12	9'-0"	7'-0"	4	7'-2"
		11	42"	4'-8¾"	2.35	272.	.39	44.5	12	6'-1"	4'- 6"				2	13'-3"	3'-7"	4'-10"	6	12'-9" Avg.	3'-7"	4'- 5" to 4'-9"	14	5'-6"	3'-6"	14	9'-0"	7'-0"	4	7'-2"
		11A	48"	5'-3¼"	2.51	302.	.39	44.5	12	6'-7"	5'- 0"				2	14'-3"	3'-7"	5'- 4"	6	13'-9" Avg.	3'-7"	5'- 0" to 5'-4"	16	5'-6"	3'-6"	16	9'-0"	7'-0"	4	7'-2"
	PIPE AT FRONT	12	18" or 24"	3'-7¾"	2.10	213.	.39	44.5	12	5'-0"	3'- 5"				2	11'-1"	3'-7"	3'- 9"	6	10'-7" Avg.	3'-7"	3'- 4" to 3'-8"	10	5'-6"	3'-6"	10	9'-0"	7'-0"	4	7'-2"
		13	30"	4'-2¼"	2.26	243.	.39	44.5	12	5'-6"	3'-11"				2	12'-3"	3'-7"	4'- 4"	6	11'-9" Avg.	3'-7"	3'-11" to 4'-3"	12	5'-6"	3'-6"	12	9'-0"	7'-0"	4	7'-2"
		14	36"	4'-8¾"	2.42	272.	.39	44.5	12	6'-1"	4'- 6"				2	13'-3"	3'-7"	4'-10"	6	12'-9" Avg.	3'-7"	4'- 5" to 4'-9"	14	5'-6"	3'-6"	14	9'-0"	7'-0"	4	7'-2"

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
611 (G)	INLET GPI ■	EA
611 (H)	ADDITIONAL DEPTH IN INLET ●	VF

■ SPECIFY TYPE AND DESIGN, EXAMPLE: INLET GPI TYPE 1 (DESIGN 2)

● SPECIFY TYPE, EXAMPLE: ADDITIONAL DEPTH IN INLET GPI TYPE 1

NOTE: COST OF INLET PIPE GRATES (TYPES A & B) SHALL BE INCLUDED IN THE PRICE BID FOR THE INLET.

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

ROADWAY DESIGN DIVISION STANDARD

GRATED PIPE DROP INLET
(18" TO 42" PIPE)

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

GPI-4 | 0

R-37

OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE

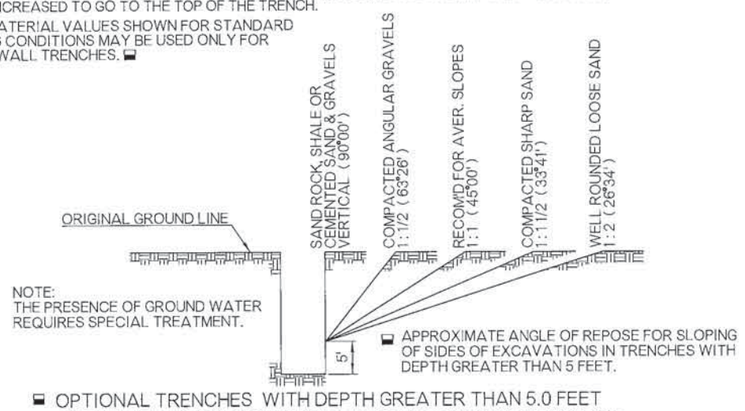
TRENCHING DIMENSIONS AND STANDARD BEDDING MATERIAL QUANTITIES

	PIPE DIAM. OR DESIGN EQUIV.	H ■	T	SINGLE PIPE STANDARD TRENCHING W	SINGLE PIPE STANDARD TRENCHING STANDARD BEDDING MATERIAL ■	DOUBLE PIPE STANDARD TRENCHING W	DOUBLE PIPE STANDARD TRENCHING STANDARD BEDDING MATERIAL ■	TRIPLE PIPE STANDARD TRENCHING W	TRIPLE PIPE STANDARD TRENCHING STANDARD BEDDING MATERIAL ■	SPECIAL TRENCHING SINGLE, DOUBLE & TRIPLE PIPE OPTIONS W+12" ADD'L STANDARD BEDDING MATERIAL
	IN.	FT.	FT.	FT.	CY/LF	FT.	CY/LF	FT.	CY/LF	CY/LF
ROUND PIPE	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	9.50	1.532	17.00	2.521	24.50	3.510	0.271
	⊠ 66	8.08	0.542	10.08	1.757	18.33	2.965	26.58	4.173	0.299
	⊠ 72	8.67	0.583	10.67	1.931	19.67	3.327	28.67	4.724	0.321
	⊠ 78	9.25	0.625	11.25	2.107	20.75	3.615	30.25	5.122	0.343
	⊠ 84	9.83	0.667	11.83	2.288	21.83	3.908	31.83	5.529	0.364
	⊠ 90	10.42	0.708	12.42	2.479	22.92	4.219	33.42	5.959	0.386
	⊠ 96	11	0.75	13.00	2.671	24.00	4.527	35.00	6.383	0.407
ARCH PIPE	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	9.21	1.180	15.71	1.842	22.21	2.504	0.191
	⊠ 54	5.58	0.458	9.83	1.243	17.05	1.946	24.28	2.649	0.207
	⊠ 60	6.08	0.500	10.58	1.392	18.69	2.228	26.81	3.064	0.225
	⊠ 66	6.75	0.542	11.00	1.488	19.56	2.365	28.11	3.242	0.250
	⊠ 72	7.00	0.583	12.00	1.690	21.78	2.803	31.55	3.917	0.259
	⊠ 78	7.83	0.625	12.42	1.854	22.64	3.071	32.86	4.288	0.272
	⊠ 84	7.83	0.667	13.33	1.983	24.67	3.385	36.00	4.788	0.290
	⊠ 90	8.92	0.708	14.50	2.382	27.08	4.131	39.67	5.881	0.330
	⊠ 96	9.46	0.750	15.17	2.625	28.33	4.549	41.50	6.473	0.350
HORIZONTAL ELLIPTICAL PIPE	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	8.04	0.640	11.54	0.893	0.128
	30	3.96	0.312	6.29	0.629	10.51	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	9.42	1.170	16.08	1.788	22.75	2.406	0.200
	⊠ 54	5.92	0.5	10.17	1.311	17.72	2.050	25.28	2.789	0.219
	⊠ 60	6.42	0.541	10.92	1.478	19.36	2.368	27.81	3.259	0.238
	⊠ 66	6.91	0.583	11.58	1.626	20.81	2.648	30.03	3.67	0.256
	⊠ 72	7.41	0.625	12.33	1.807	22.44	3.004	32.56	4.201	0.275
	⊠ 78	7.91	0.667	13.00	1.962	23.89	3.305	34.78	4.649	0.293
	⊠ 84	8.58	0.708	13.75	2.239	25.53	3.850	37.31	5.462	0.318
	⊠ 90	9.00	0.75	14.42	2.364	26.83	4.062	39.25	5.759	0.333
	⊠ 96	9.5	0.791	15.17	2.570	28.25	4.408	41.33	6.245	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.

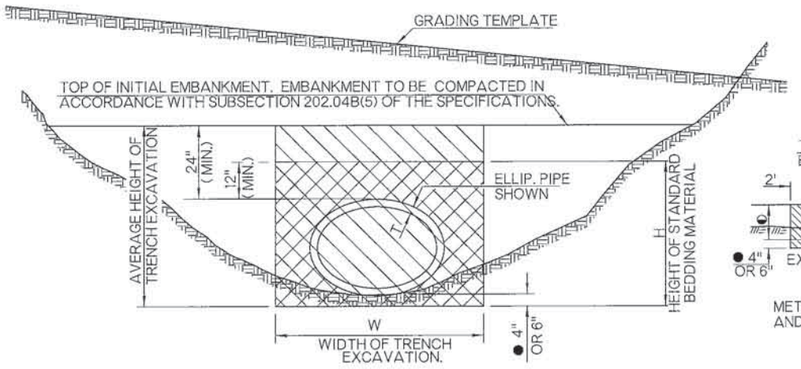
▨ BEDDING MATERIAL VALUES SHOWN FOR STANDARD TRENCHING CONDITIONS MAY BE USED ONLY FOR VERTICAL WALL TRENCHES. ⬓



⬓ APPROXIMATE ANGLE OF REPOSE FOR SLOPING OF SIDES OF EXCAVATIONS IN TRENCHES WITH DEPTH GREATER THAN 5 FEET.

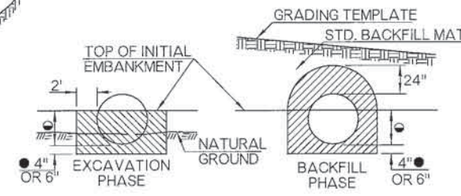
⬓ OPTIONAL TRENCHES WITH DEPTH GREATER THAN 5.0 FEET

EXCAVATION AND BEDDING MATERIAL WILL BE MEASURED AND PAID FOR AS IF SHEETING & SHORING WAS USED. (SPECIAL TRENCHING=STD. WIDTH TRENCH+12")



METHOD NO. 1

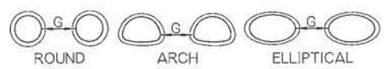
◒ EMBANKMENT HEIGHT PRIOR TO EXCAVATION
PIPE SIZES FROM 18" TO 42" =30"
PIPE SIZES FROM 48" TO 84" =2/3 DIAM.
PIPE SIZES LARGER THAN 84" =60"



METHOD NO. 1 PAY QUANTITIES WILL BE CALCULATED AND PAID FOR WHEN METHOD NO. 2 IS USED.

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

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



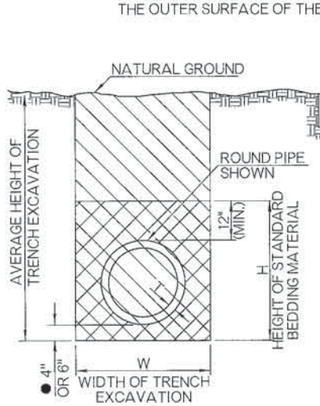
DOUBLE PIPE INSTALLATION
(USED WITH CET END TREATMENTS)

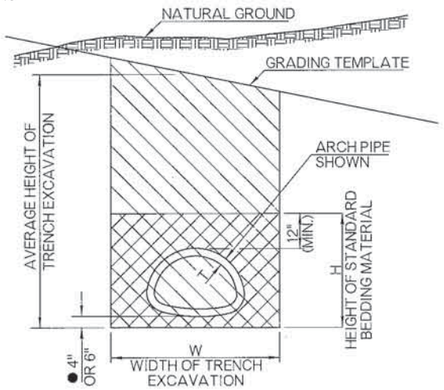
TRENCH EXCAVATION IN EMBANKMENT SECTIONS

LIMITS OF STANDARD BEDDING MATERIAL

QUANTITIES FOR BEDDING MATERIAL DO NOT INCLUDE THE SPACE WITHIN AND BOUNDED BY THE OUTER SURFACE OF THE PIPE CONDUIT.

LIMITS OF TRENCH EXCAVATION





TRENCH EXCAVATION IN CUT SECTIONS

TABLE OF EQUIVALENT PIPES

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.

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. TRENCH EXCAVATION AND BEDDING MATERIAL WILL NOT BE REQUIRED FOR PIPE INSTALLATIONS OF SIDE DRAINS UNLESS OTHERWISE NOTED ON THE PLANS.
3. FOR PIPE UNDERDRAIN INSTALLATIONS, SEE ROADWAY STANDARD PUD-3.
4. ⬓ 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.
5. 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.
6. 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.
7. ○ STANDARD BEDDING QUANTITIES FOR ROUND PIPE ARE BASED ON AASHTO DESIGNATED CLASS III (WALL B) REINFORCED CONCRETE PIPE.
8. ⬓ 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.
9. ⊠ PROPER COMPACTION OF BACKFILL REQUIRES A VERTICAL WALLED TRENCH TO 24 INCHES ABOVE TOP OF PIPE, REGARDLESS OF EXCAVATION ABOVE THAT ELEVATION.
10. ● EQUIVALENT PIPE SIZES 66 INCHES AND LARGER REQUIRE 6 INCHES OF BEDDING MATERIAL BELOW PIPE CONDUIT.
11. ◑ ELLIPTICAL PIPE DIMENSIONS CONFORM TO AASHTO M 207, AS DESIGNATED RISE BY SPAN.
12. FOR COMPUTING TRENCH EXCAVATION & STANDARD BEDDING QUANTITIES, THE LENGTH OF THE CULVERT SHALL INCLUDE END SECTION AND END TREATMENT LENGTHS.
13. 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: Caleb F. H DATE 04/16/15

ROADWAY DESIGN DIVISION STANDARD

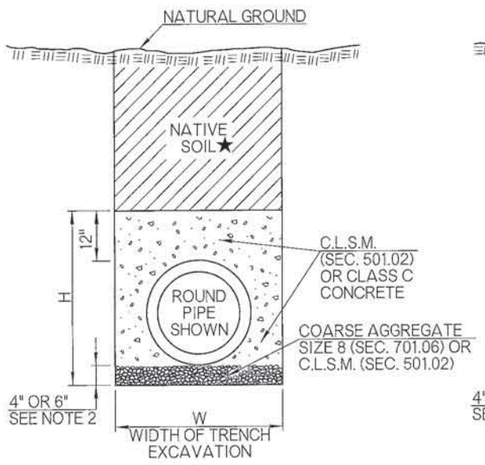
STANDARD PIPE INSTALLATION

OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

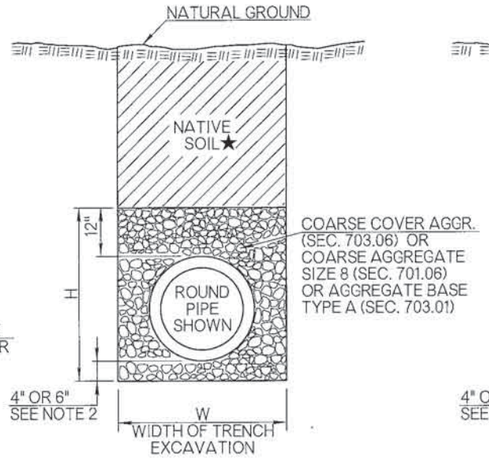
SPI-4 | 1

R-47

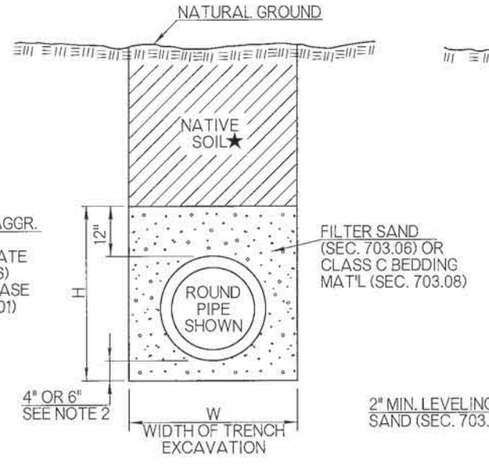
OKLAHOMA DEPARTMENT OF TRANSPORTATION	
STANDARD REVISIONS	
DESCRIPTION	DATE



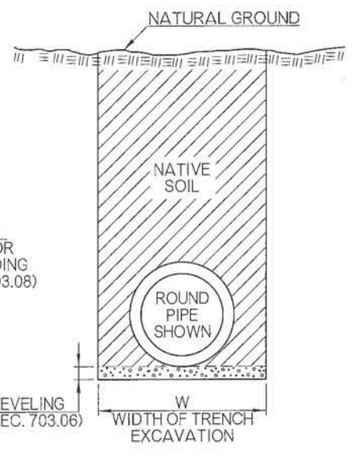
CLASS A BEDDING



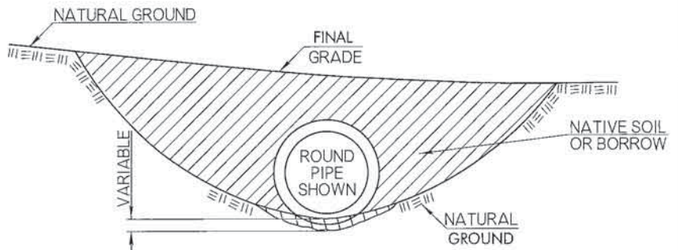
CLASS B BEDDING



CLASS C BEDDING



CLASS D BEDDING
ALTERNATE 1



NATIVE SOIL OR SAND (SEC. 703.06) MAY BE USED TO ADJUST FLOWLINE OF NATURAL DITCH TO PROVIDE SMOOTH BEDDING SURFACE FOR PIPE CONDUIT AND ATTAIN PROPER DESIGN GRADE. SEE SECTION 613.04.G

CLASS D BEDDING
ALTERNATE 2

PIPE BEDDING CLASS/DESIGN TABLE							
	■ UNDER PAVING				OUTSIDE PAVING		
TYPE OF PIPE	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.

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 2009 ODOT STANDARD SPECIFICATIONS.
2. EQUIVALENT PIPE SIZES 66 INCHES AND LARGER REQUIRE 6 INCHES OF BEDDING MATERIAL BELOW PIPE CONDUIT.
3. NATIVE SOIL FOR BACKFILL, TO BE COMPACTED IN ACCORDANCE WITH SECTION 202.04 OF THE STANDARD SPECIFICATIONS.
4. A BETTER CLASS OF BEDDING MAY BY SUBSTITUTED FOR THE NEXT LOWER CLASS. EXAMPLE: CLASS A STANDARD BEDDING CAN BE USED IN LIEU OF CLASS B STANDARD BEDDING.
5. FOR TRENCH WIDTH (W), BEDDING HEIGHT (H), PIPE DATA, MULTIPLE PIPE SPACING & BEDDING DATA, SEE ROADWAY STANDARDS SPI-4 & FPI-3.
6. DATA TABLE WILL DISPLAY 'NA' WHEN PIPE MATERIALS ARE NOT ALLOWED.
7. 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.
8. PIPE MATERIAL(S)/PRODUCT(S) NOT SHOWN IN THE PIPE BEDDING TABLE WILL BE EVALUATED AND APPROVED ON A CASE BY CASE BASIS.
9. ALL TEMPORARY PIPES SHALL HAVE CLASS D BEDDING UNLESS OTHERWISE SHOWN IN THE PLANS.
10. BEDDING MATERIAL TYPE B, C, AND D, SHALL BE PLACED IN 6" LAYERS AND COMPACTED TO THE SPECIFIED DENSITY USING HAND OPERATED EQUIPMENT ONLY.
- ★11. WHEN PIPE INSTALLATION IS UNDER PAVING, IN LIEU OF BACKFILLING WITH NATIVE SOIL, PLACE BEDDING MATERIAL ALL THE WAY TO TOP OF TRENCH.
12. THE USE OF AN ALTERNATE PIPE AND ITS CORRESPONDING BEDDING MATERIAL WILL BE ACCEPTABLE PROVIDED THE CRITERIA IN THE DESIGN TABLE IS MET
13. POLYPROPYLENE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321.

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 F. A DATE: 04/16/15

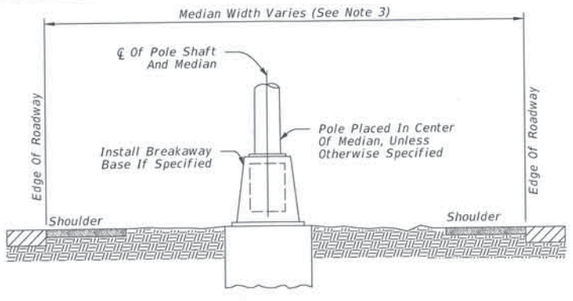
ROADWAY DESIGN DIVISION STANDARD

STANDARD PIPE BEDDING

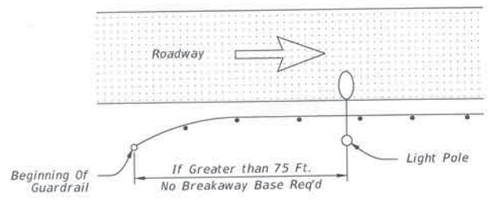
OKLAHOMA DEPARTMENT OF TRANSPORTATION
2009 SPECIFICATIONS

SPB-1 | 4

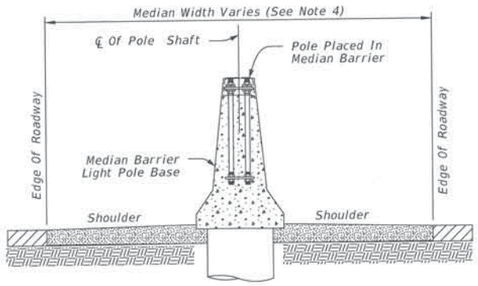
R-49



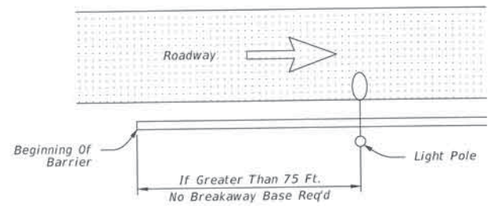
Median Area Placements



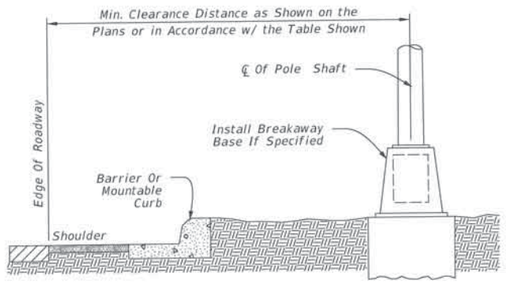
Plan View



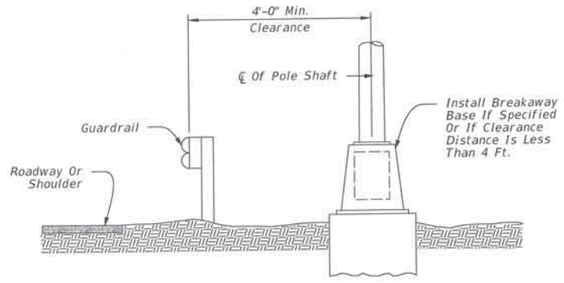
Typical Median Barrier Design X
Median Area Placements



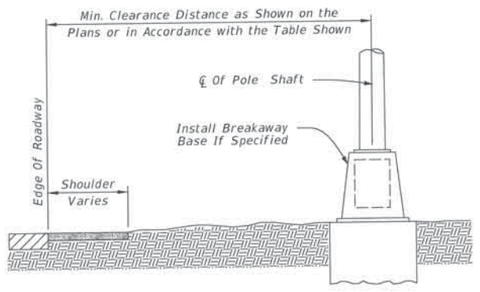
Plan View



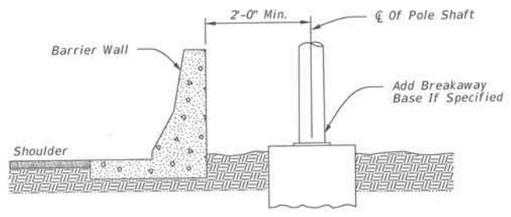
Roadway With Curb Placements



Roadway With Curb Placements



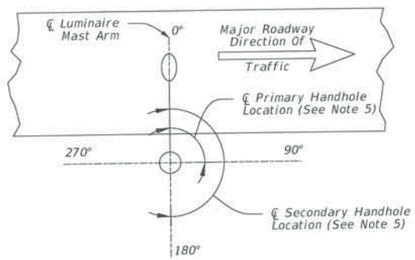
Roadway With Shoulder Placements



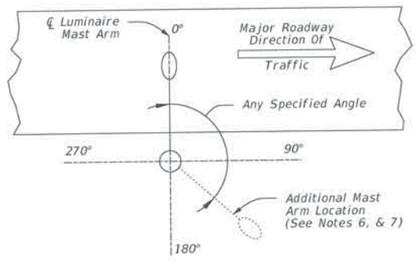
Roadway With Shoulder Placements

General Notes:

1. For construction and installation details of footings and poles, see the Standards PMBD1-1 (Latest Revision).
2. If the clearance distance of clear zone on the plans contradicts what the light pole clearance distance table shows, then the contractor shall install the light poles according to what is specified in the table on this standard.
3. Median width must be greater than pole shaft height unless otherwise specified on the plans.
4. Normally the shoulder width must be wide enough, 10 Ft. or more, to park a maintenance vehicle.
5. All poles, except transformer base poles, shall have hand holes with reinforcing frames and covers. Except for poles mounted on a concrete traffic barrier, hand holes shall be placed 90 degrees to mast arm and opposite the direction of traffic flow unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier.
6. If an additional luminaire mast arm is specified, the normal location is at 180 degrees.
7. For signal pole and mast arm and for combination signal pole with luminaire arm orientations, see signal pole standards or the plans.



Handhole Orientation Detail



Mast Arm Orientation Detail

Light Pole Clearance Distance Table				
Speed Limit or Operating Speed (MPH)	Recommended Clearance Distance or Clear Zone Breakaway Base Not Required (FT)	Minimum Clearance Distance or Clear Zone		
		Roadways With Shoulder or Mountable Curb Breakaway Base Required (FT)	Roadways With Barrier Curb	
			Breakaway Base Required (FT)	Breakaway Base Not Required (FT)
55 or More	30	16	16	NR
50	25	14	14	NR
45	20	12	10	14
40	15	10	8	12
35 Or Less	10	8	4	8

NR = Not Recommended

Approved By Bridge Engineer: _____ Date: 3-24-16

Approved By Traffic Engineer: _____ Date: 2/24/2016

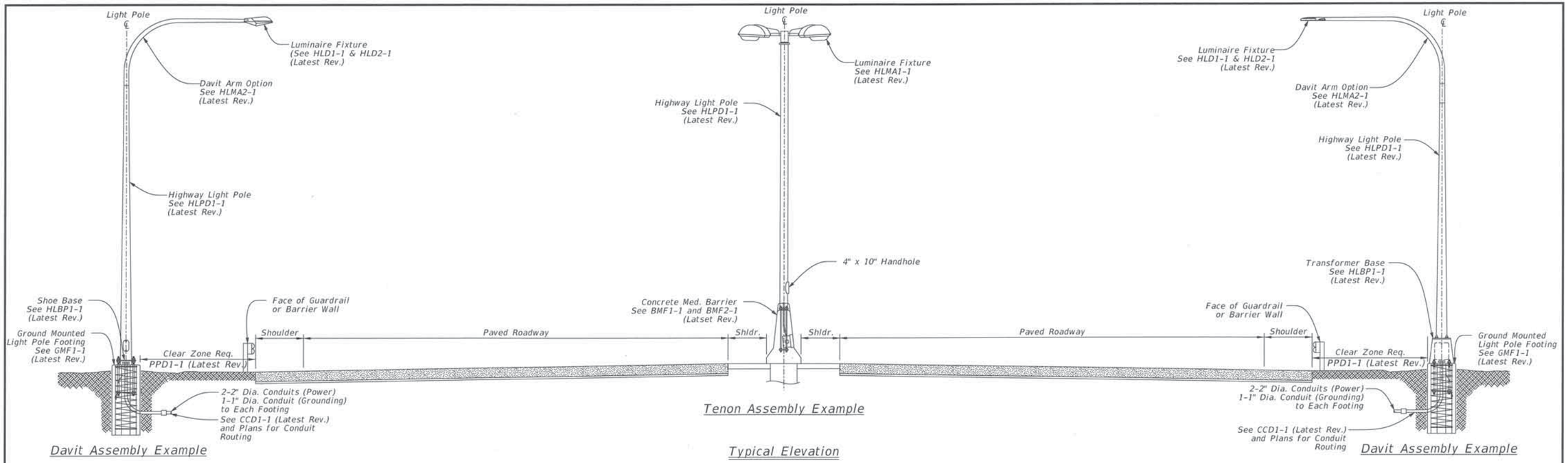
ODOT

Traffic Standard

Typical Light Pole Placement Detail

2009 Specifications

PPD1-2	00
	T-313



General Notes

1. 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 poles and luminaires 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 Designs:
   Steel poles 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 but does not require ODOT approval.

   B. Optional Steel Pole Designs:
   Multi-sided steel poles may be allowed as optional designs for high-mast poles only.
   Other steel pole designs if permitted or required, pending approval by the Department as outlined below.

   1. 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.

   2. Structural Support Design for Luminaires:
   Lighting support structures shall be designed for a 50 year design life in accordance with the 2013 edition of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."
   All poles shall be designed for 90 MPH 3-second gust wind speeds at 33 FT above ground for Exposure C Category.
   An additional 1.14 gust factor shall be applied to the wind loads. For transformer base poles, Fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittal's. All transformer bases shall have been structurally tested to resist 150% of the design moment.
   Certification of the load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo.
   Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.

   3. Mast Arm Attachments:
   All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 50-pound luminaire having an effective projected area of 2.0 square feet.

   4. 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.

Explanation of Roadway Lighting Assembly Pay Items

Type 40 MTG - ST - S (A1 - A2) - D

- 40: Two Numerical Digits Denote Nominal Mounting Height in Feet
- ST: Pole and Mast Arm Must be Galvanized Steel
  SP: Ovalized Steel Pole for Installing on Barrier (CLB). See Standard BMF1-1 or BMF2-1 (Latest Revision)
- S: Type of Base, (S-Shoe Base, T- Transformer Base, or B-Shoe Base Barrier Mount
- A1: First Number Denotes Primary Mast Arm Length (FT)
- A2: Use of Second Mast Arm is Indicated by Second Dashed Number Denoting Length (FT)
- D: Mast Arm Mount Type
  D: Davit
  T: Tenon

Basis of Payment

Item No.	Item	Unit
806(C)	Highway Lighting Pole and Mast Arm	EA
806(D)	Highway Lighting Post Top Pole (Tenon Mount)	EA

Approved By Bridge Engineer: _____ Date: 3-24-16

Approved By Traffic Engineer: _____ Date: 3/14/2016

ODOT

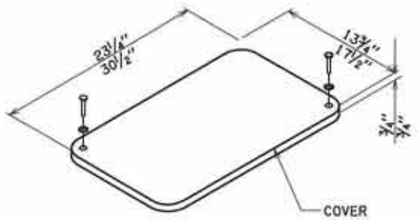
Traffic Standard
Typical Highway Light Pole General Information

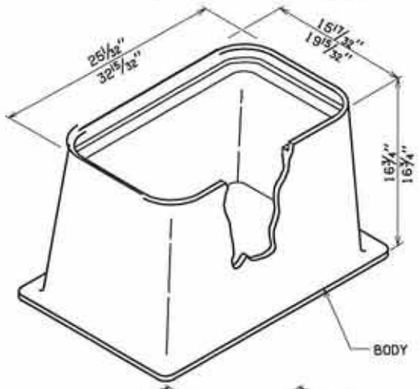
2009 Specifications

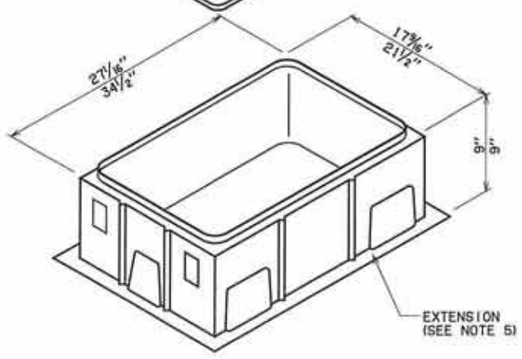
HLGN1-1 | 00

T-309

REVISIONS		
DESCRIPTION		DATE

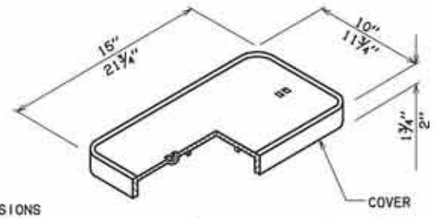


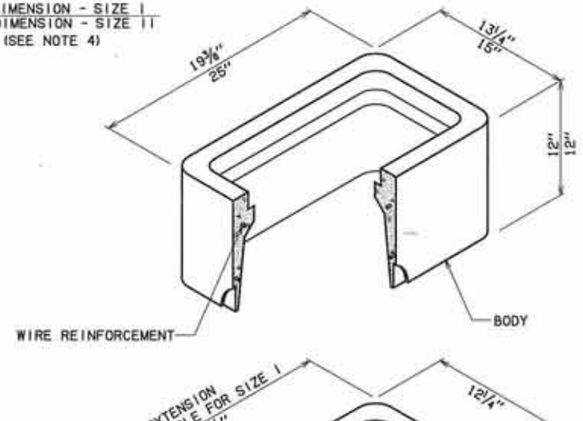


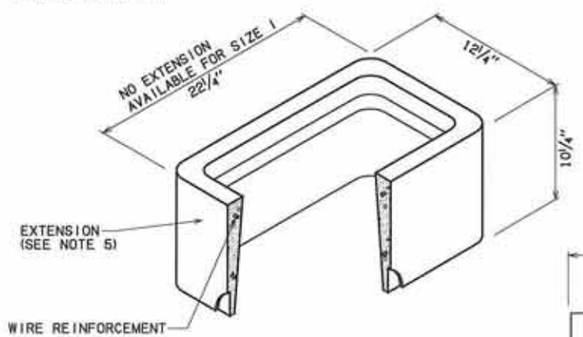


PLASTIC PULL BOX
SIZE I & II

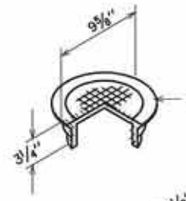
EXPLANATION OF DIMENSIONS
TOP DIMENSION - SIZE I
BOTTOM DIMENSION - SIZE II
(SEE NOTE 4)

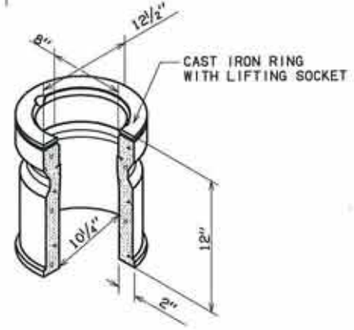




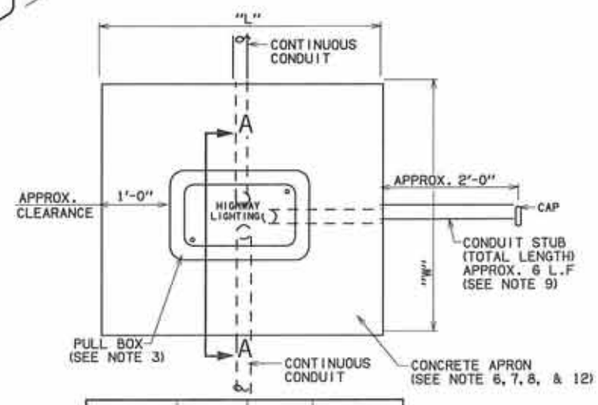


CONCRETE PULL BOX
SIZE I & II





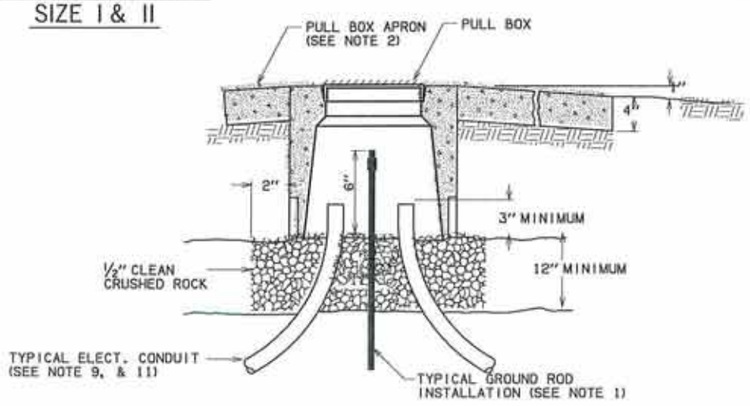
CONCRETE PULL BOX
SIZE III



PULL BOX SIZE	"L"	"W"	CLASS "A" CONCRETE C.Y. **
I	3'-6"	3'-6"	.13
II	4'-0"	4'-0"	.17
III	3'-0"	3'-0"	.11

PULL BOX APRON AND CONDUIT STUB DETAIL

**FOR INFORMATION ONLY



SECTION "A-A"

MATERIAL SPECIFICATIONS

A. THE PRE-CAST CONCRETE BODY AND THE PRE-CAST REINFORCED PLASTIC PULL BOX BODY AND COVER SHALL CONFORM TO THE 2009 STANDARD SPECIFICATIONS OR SPECIAL PROVISIONS.

B. THE GRAY IRON CAST COVER & ELECTRICAL CONDUITS SHALL CONFORM TO THE 2009 STANDARD SPECIFICATIONS.

C. THE CONCRETE APRON SHALL BE CLASS "A" CONCRETE.

D. THE GRAVEL OR CRUSHED ROCK BASE SHALL BE CLEAN, TOUGH, DURABLE, PRACTICALLY FREE FROM CLAY OR OTHER FOREIGN SUBSTANCES AND SHALL PASS A 5/8" SIEVE 100%.

E. THE WIRE REINFORCEMENT SHALL BE 9 GAUGE WELDED WIRE FABRIC.

GENERAL NOTES

1. IF SPECIFIED IN THE PLANS, A GROUND ROD SHALL BE INSTALLED AND ALL COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE "PULL BOX".
2. THE PULL BOX SHALL BE BUILT TO FIT THE EXISTING FIELD CONDITION AND BE PRESENTED WITH A NEAT WORKMAN LIKE APPEARANCE. EACH PULL BOX SHALL BE INSTALLED WITH THE APPROPRIATE SIZED CONCRETE APRON. IF THE PULL BOX IS TO BE INSTALLED IN A SIDEWALK OR OTHER PAVED AREA, NO APRON WILL BE REQUIRED UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. THE PULL BOX COVER SHALL HAVE THE APPROPRIATE LEGEND. WHEN A PULL BOX IS INSTALLED BY THE GRADING OR SURFACING CONTRACTOR THE LEGEND FOR THE COVER SHALL READ "TRAFFIC SIGNALS", UNLESS OTHERWISE SPECIFIED IN THE PLANS. OTHER APROPRIATE LEGENDS ARE: "HIGHWAY LIGHTING", "STREET LIGHTING", "DANGER", ETC... NO ADVERTISING OTHER THAN THE MANUFACTURERS LOGO WILL BE ALLOWED ON THE PULL BOX COVER.
4. THE DIMENSIONS FOR THE PULL BOXES ARE NOMINAL AND MAY VARY SLIGHTLY BY THE MANUFACTURER'S DESIGN.
5. PULL BOX BODY EXTENSIONS SHALL BE INSTALLED BELOW THE PULL BOX BODY AT THE LOCATION SHOWN IN THE PLANS.
6. THE COST OF THE CONCRETE APRON AND GRAVEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PULL BOX UNLESS OTHERWISE SPECIFIED.
7. A CIRCULAR CONCRETE APRON MAY BE USED IN LIEU OF THE SQUARE APRON SHOWN PROVIDING THE 1'-0" MINIMUM CLEARANCE IS MAINTAINED.
8. THE CONCRETE APRON THICKNESS AND SIZE MAY BE ALTERED AT THE DIRECTION OF THE ENGINEER. IF ALTERED, THE ADDITIONAL CONCRETE WILL BE PAID FOR AS "STRUCTURAL CONC." C.Y.
9. THE NUMBER, SIZE, TYPE AND LOCATION OF THE CONDUIT STUBS FOR FUTURE CONDUIT RUNS SHALL BE AS SHOWN ON THE PLANS, SEE STANDARD CCD1-1-(LATEST REVISION).
10. CONDUCTORS HAVING UNLIKE VOLTAGES SHALL HAVE SEPARATE CONDUITS AND PULL BOXES.
11. FOR BENDING RADII OF CONDUIT, SEE STANDARD CCD1-1-(LATEST REVISION).
12. A CONCRETE APRON SHALL BE INSTALLED AROUND ANY RESET PULLBOX OR EXISTING PULLBOX THAT DOES NOT HAVE AN APRON OR IS NOT INSTALLED IN A PAVED AREA. THE CONCRETE AND THE INSTALLATION OF THE APRON SHALL BE PAID FOR IN OTHER ITEMS OF WORK.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
803(A)	PULL BOX	EA

APPROVED BY TRAFFIC ENGINEER Harold Smith DATE 9/5/10

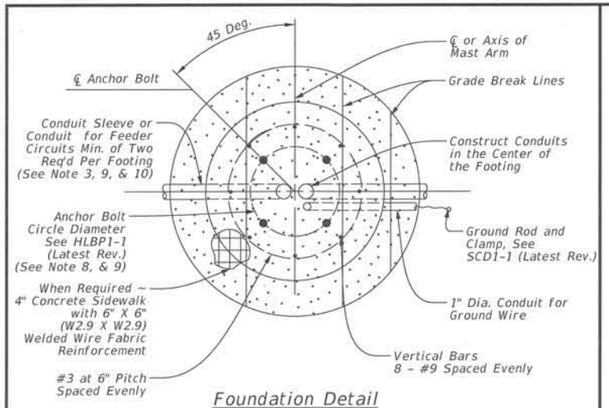
TRAFFIC STANDARD

TYPICAL PULL BOX DETAILS

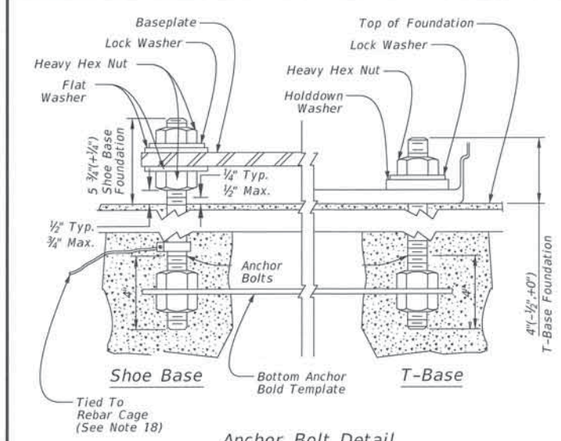
2009 SPECIFICATIONS

PBD1-1 | 00

T-303



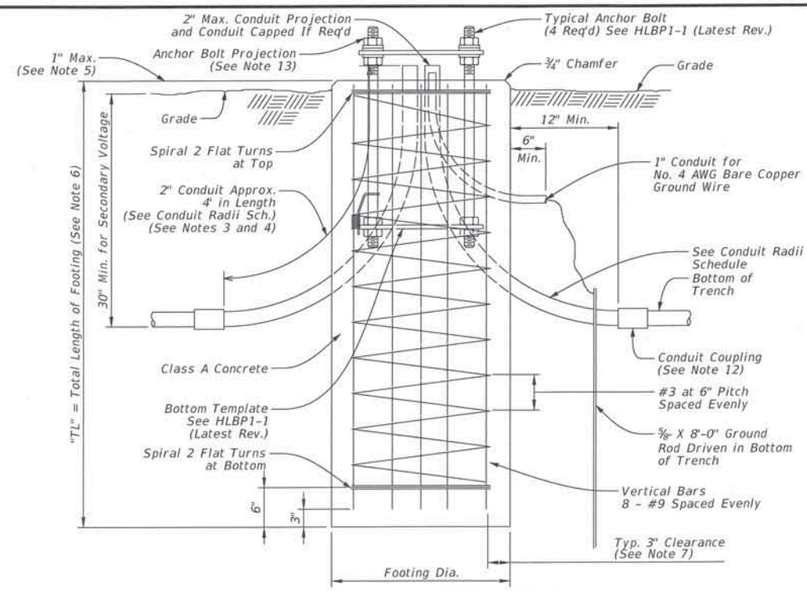
Foundation Detail



Anchor Bolt Detail

Conduit Radii Schedule	
Nominal Conduit or Sleeve Diameter (Inches)	Minimum Radius (Inches)
½, ¾, 1, 1¼	12
1½	18
2	24
2½, 3	30
4	36
5	48

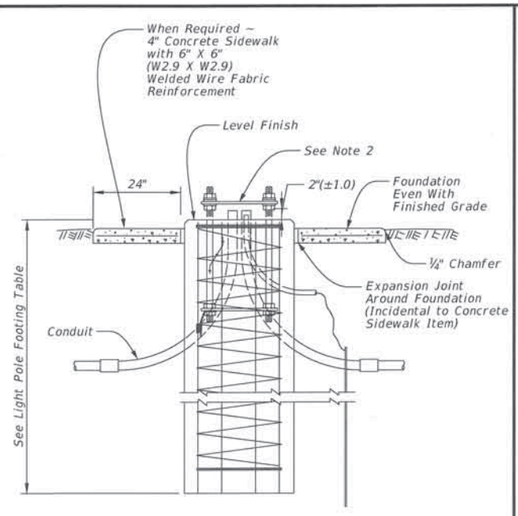
Conduit Radii Schedule



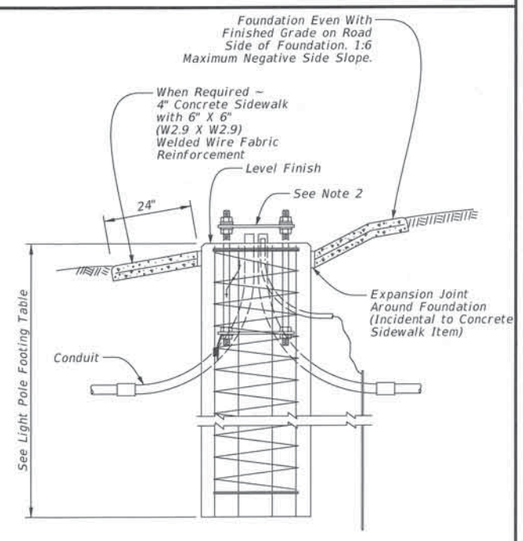
Footing ID. No.	Pole Mounting Height	Footing Dia.	Total Length of Footing "TL"	Class "A" Conc. C.Y.	3" Bar Spiral Length FT.	Reinf. Steel LBS.	Conc. Sidewalk 4" Depth S.Y.
GMF30x108	Up to 40'	2'-6"	9'-0"	1.64	125.60	284	2.79
			Ea. Foot Add	0.18	12.56	32	

Length includes 2 Flat Turns at Top & Bottom of Spiral

Light Pole Footing Detail



Constant Grade
Section of Foundation Detail



Sloped Grade
Section of Foundation Detail

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 ⅛" and both top and bottom need not be galvanized. The top template shall remain the property of the contractor and the top template can be reused for other installations.
3. Footing shall be constructed with at least two electrical 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 lighting contractor, the following additional requirements will apply:
   (A) An anchor bolt template 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 on Standard HLBP1-1 (Latest Revision).
10. If the Contractor elects to install Cable-In-Duct (CID) trenched conduit prior to constructing the footing, the CID conduit may be placed in the concrete footing without a conduit sleeve. If the trenched 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 under Section 804, "Concrete Footings." 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) 5 ¾" (+ ¼") for shoe base.
    (B) 3 ½- minimum to 4" maximum for transformer base.
    (C) As required for double nut leveling.
14. The Contractor shall construct the top of the light 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 811, "Electrical Conductors Highway Lighting."
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, construct footing to full embedment length unless otherwise directed by the Department.
18. Bond anchor bolt to rebar cage with a #4 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete.

Basis of Payment

Item No.	Item	Unit
610(A)	Concrete Sidewalk	SY
802(A)	Galvanized Steel Electrical Conduit	LF
802(B)	Polyvinyl Chloride (PVC) Conduit	LF
802(C)	High Density Polyethylene (HDPE) Conduit	LF
804(A)	Structural Concrete	CY
804(B)	Reinforcing Steel	LB

Approved By Bridge Engineer: _____ Date: 3-24-16

Approved By Traffic Engineer: _____ Date: 3/14/2016

ODOT

Traffic Standard

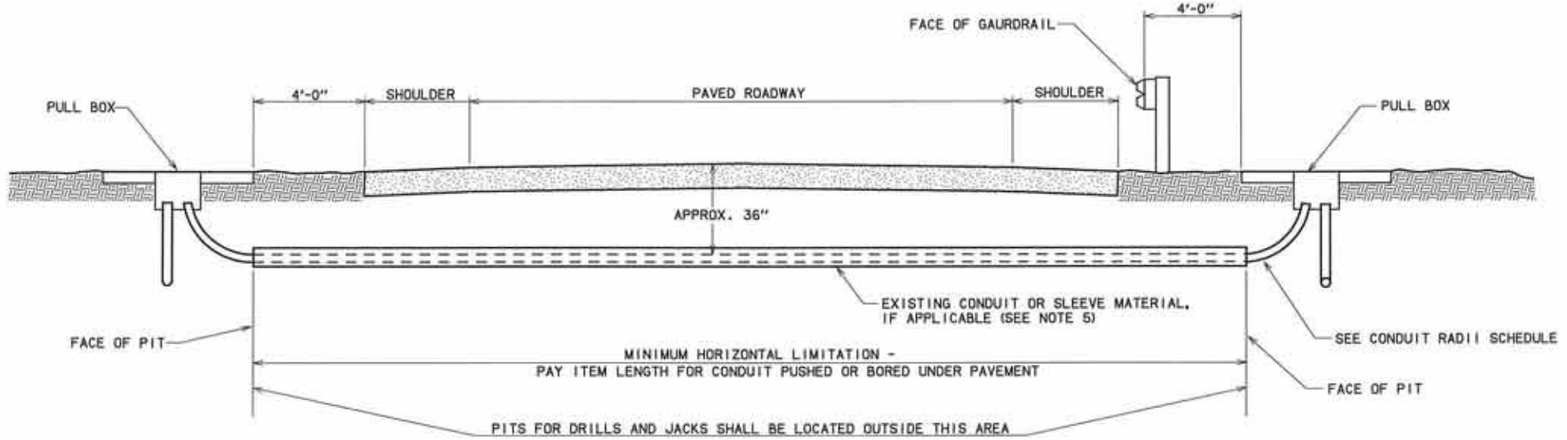
Typical Ground Mounted Light Pole Footing Details

2009 Specifications

GMF1-2 | 00

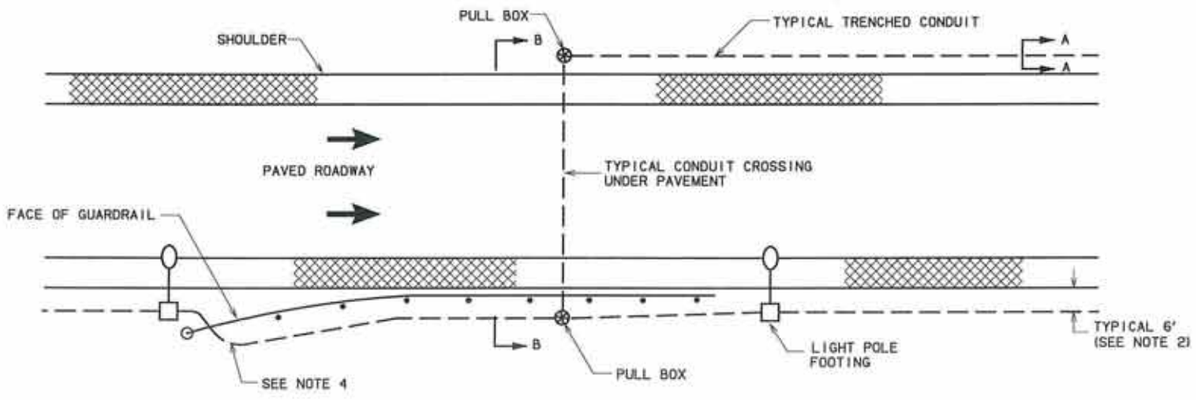
T-304

DESCRIPTION	REVISIONS	DATE

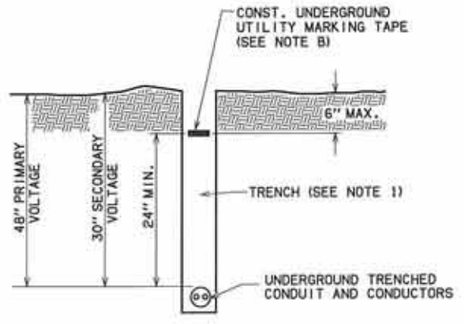


CONDUIT CROSSING UNDER PAVEMENT

SECTION B-B



CONDUIT DETAILS



SECTION "A-A"

MATERIALS SPECIFICATIONS

A. MATERIAL FOR CABLE IN DUCT CONDUIT SHALL BE RIGID GALVANIZED STEEL OR SCHEDULE 40 PVC PLASTIC.

B. THE UNDERGROUND UTILITY MARKING TAPE SHALL BE A MINIMUM OF 4 MIL THICKNESS, 6 " WIDE, POLYETHYLENE TAPE, COLOR SHALL BE IN ACCORDANCE WITH AWPA UNIFORM COLOR CODE. TAPE USED TO MARK UNDERGROUND ELECTRICAL CABLE SHALL BE SAFETY RED COLOR WITH PRINTED LEGEND "CAUTION-ELECTRICAL LINE BURIED BELOW". THE TAPE SHALL BE SIMILAR TO REEF INDUSTRIES, INC. STOCK NO. 0571415 OR APPROVED EQUAL. THE COST OF THE TAPE SHALL BE INCLUDED IN THE TRENCHING.

C. THE CONTRACTOR SHALL INSTALL A PULL LINE IN ALL CONDUIT BETWEEN LIGHT POLE FOOTINGS THAT IS TO BE USED FOR A FUTURE LIGHTING SYSTEM. MATERIAL SHALL BE POLYESTER TAPE OR ROPE, GALVANIZED STEEL WIRE, OR ANY OTHER APPROVED MATERIAL THAT HAS A MINIMUM BREAKING STRENGTH OF 1250 LBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING THE PULL LINE AT EACH END OF THE CONDUIT AND ALSO FOR CAPPING THE CONDUIT ENDS TO PREVENT DEBRIS FROM PLUGGING THE CONDUIT. INSTALLATION, CAPPING AND SECURING PROCEDURES SHALL BE APPROVED BY THE ENGINEER. THE COST OF ALL MATERIAL, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THIS ITEM OF WORK.

GENERAL NOTES

1. THE TRENCH SHALL BE BACKFILLED IN APPROX. 6" LAYERS, AND TAMPED TO 95% DENSITY OF THE SURROUNDING EARTH.
2. THERE SHALL BE APPROXIMATELY 6'-0" BETWEEN THE PAVEMENT AND THE TRENCHED CONDUIT, UNLESS OTHERWISE SPECIFIED IN THE PLANS.
3. ALL CONDUIT SHALL BE INSTALLED TO FIT THE EXISTING FIELD CONDITIONS. HOWEVER, IF MAJOR RELOCATIONS ARE NECESSARY THAT MAY AFFECT THE OVERALL DESIGN OF THE ELECTRICAL SYSTEM, THE CONTRACTOR SHALL RECEIVE APPROVAL OF THE ENGINEER PRIOR TO MAKING THE RELOCATIONS.
4. IF TRENCHED CONDUIT MUST CROSS UNDER EXISTING GUARDRAIL IT SHOULD BE BETWEEN POSTS AND AS CLOSE TO PERPENDICULAR TO THE RAIL AS FEASIBLE.
5. C.I.D. CONDUIT MAY BE INSTALLED THROUGH EXISTING CONDUIT IF AVAILABLE, OTHERWISE THE CONTRACTOR SHALL PROVIDE AN ADEQUATE SIZED SLEEVE FOR CROSSING BELOW PAVED SURFACES. ALL COSTS OF SLEEVE MATERIAL AND INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR "BORED" CONDUIT.
6. THERE SHALL BE NO MORE THAN FOUR (4) 90 DEG. BENDS OR 360 DEG. TOTAL OF ALL THE BENDS IN A SINGLE RUN OF CONDUIT.
7. ALL TRENCHED CONDUIT SHALL BE FOR SECONDARY VOLTAGES, UNLESS OTHERWISE SPECIFIED IN THE PLANS.
8. CONDUCTORS HAVING UNLIKE VOLTAGES SHALL HAVE SEPARATE CONDUITS AND PULL BOXES.
9. THE CONDUIT MUST BE INSTALLED TO FIT EXISTING CONDITIONS AND ALL DISTURBED AREAS MUST BE REPAIRED OR RESTORED TO ORIGINAL CONDITION BY THE CONTRACTOR. THERE WILL BE NO PAY ITEM FOR THIS WORK.
10. WHEN CONDUIT IS INSTALLED FOR FUTURE, ALL CONDUIT ENDS SHALL BE CAPPED.

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

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
802(A)	GALVANIZED STEEL ELECTRICAL CONDUIT	LF
802(B)	POLYVINYL CHLORIDE (PVC) CONDUIT	LF
802(C)	HIGH DENSITY POLYETHYLENE (HDPE) CONDUIT	LF
802(D)	ALUMINUM CONDUIT	LF

APPROVED BY TRAFFIC ENGINEER David A Smith DATE 8/5/10

TRAFFIC STANDARD

TYPICAL CONDUIT CONSTRUCTION DETAILS (FOR UNDERGROUND CONDUIT INSTALLTION)

2009 SPECIFICATIONS	CCD1-1	00
		T-301