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

$$date$$

TAPER LENGTH CRITERIA FOR WORK ZONES

SPEED LIMIT M.P.H.	"L" FORMULA	"L" TAPER LENGTH (MINIMUM) (FT) 10' OFFSET	11' OFFSET	12' OFFSET	NUMBER OF CHANNELIZING DEVICES REQUIRED (MINIMUM) 10' OFFSET	11' OFFSET	12' OFFSET	SPACING CHANNELIZING DEVICES (MAXIMUM) ① THRU TAPER SECTION (FT.)	② THRU TANGENT SECTION (FT.)	MAXIMUM HORIZONTAL ALIGNMENT THRU DETOUR (DEGREE) (S=O)	SPEED LIMIT M.P.H.
20	$L = \frac{W \times S^2}{60}$	70	75	80	5	5	5	20	40	—	20
25		105	115	125	6	6	6	25	50	—	25
30		150	165	180	6	7	7	30	60	15	30
35		205	225	245	7	8	8	35	70	11	35
40		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 6:1 OR FLATTER	5:1 OR 4:1	3:1	CUT SLOPES 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

REVISIONS DESCRIPTION	DATE

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: Harold Smith DATE: 6/23/10

TRAFFIC STANDARD

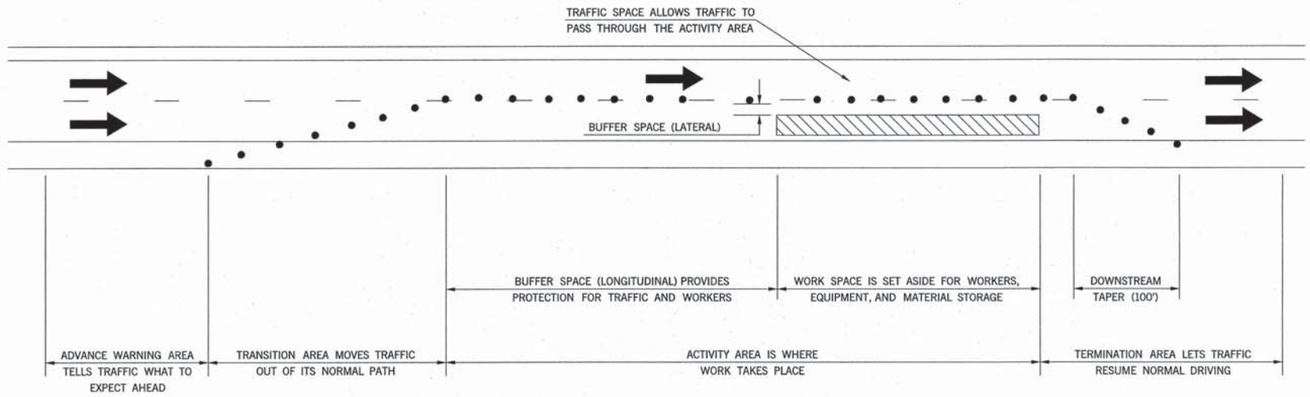
TRAFFIC CONTROL STANDARD TRAFFIC CONTROL TABLES AND CHARTS

2009 SPECIFICATIONS

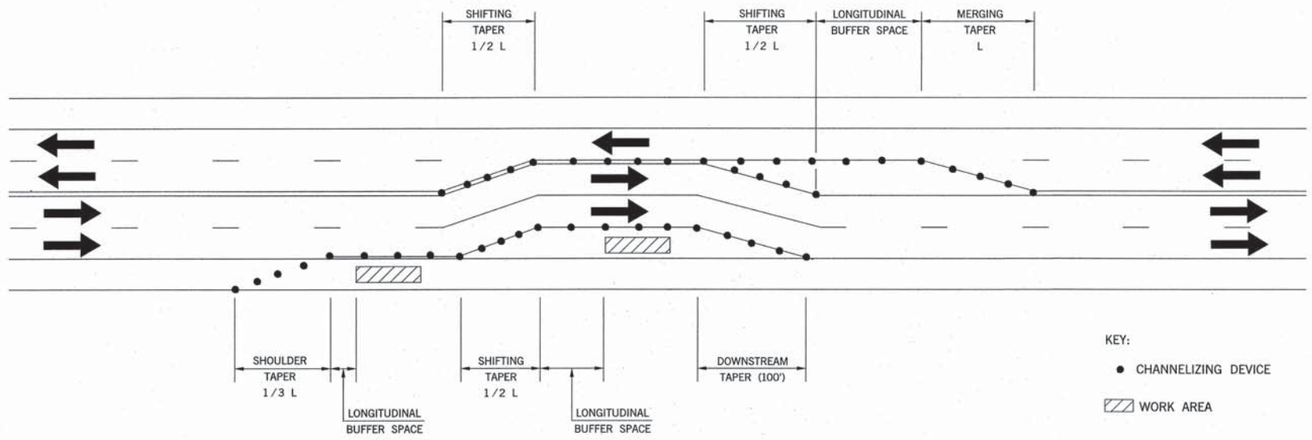
TCS2-1 | 00

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

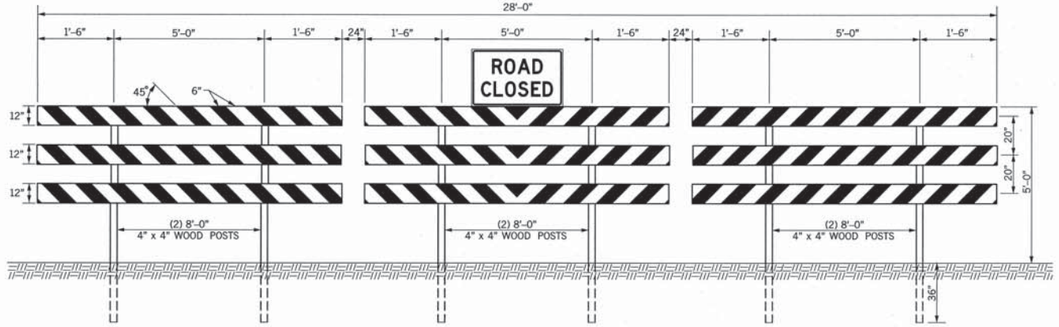
TRAFFIC CONTROL STANDARD
TEMPORARY TRAFFIC CONTROL ELEMENTS

2009 SPECIFICATIONS

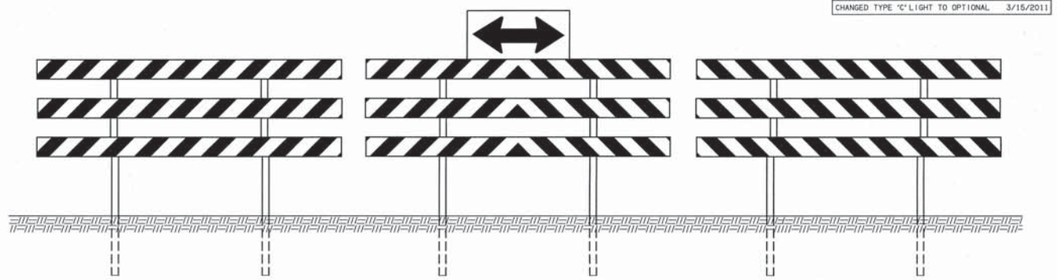
TCS3-1	01
T-503	

$$date$$

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



WHEN ROAD ENDS

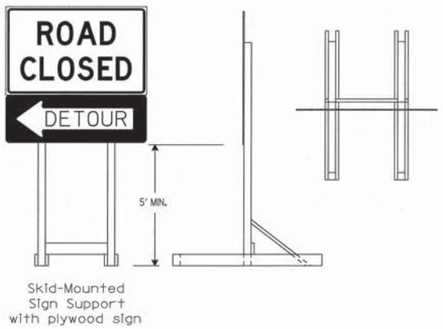


FOR T-INTERSECTIONS

PERMANENT TYPE III(A/B) BARRICADE

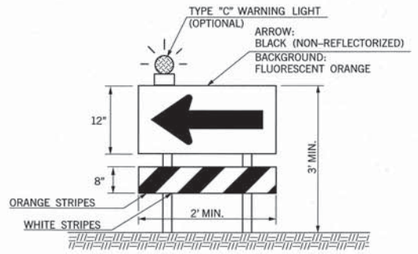
(DIMENSIONS ARE TYPICAL FOR BOTH BARRICADES)

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)

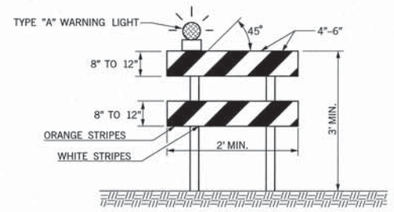


Skid-Mounted
Sign Support
with plywood sign

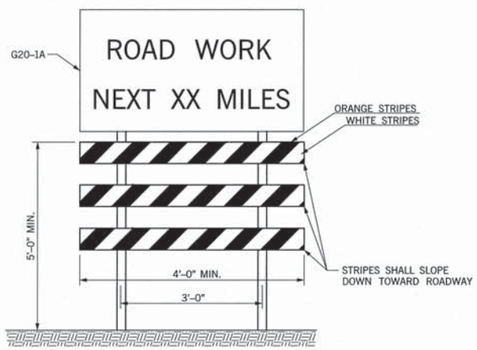
LONG/INTERMEDIATE TERM STATIONARY
PORTABLE SIGN SUPPORTS
5 Foot Mounting Height
(SKID MOUNTED)
(SHALL BE PLACED BEHIND TYPE III BARRICADE)



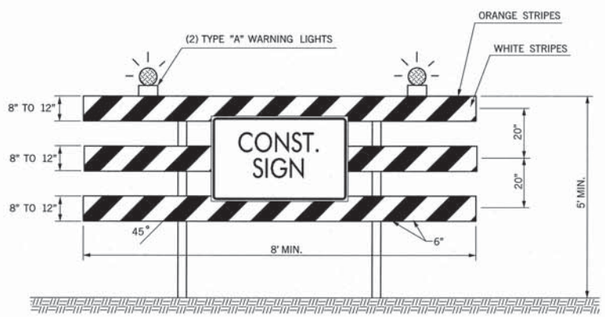
DIRECTION INDICATOR
BARRICADE



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: _____ DATE: 3/21/11

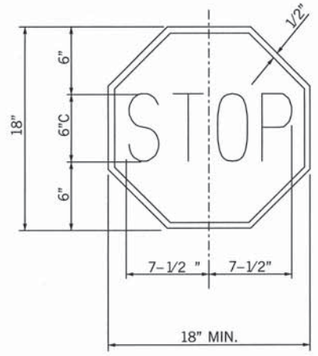
TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
TRAFFIC CONTROL DEVICES

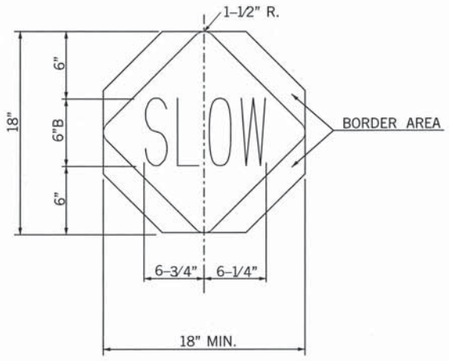
2009 SPECIFICATIONS

TCS4-1	01
	T-504

$$date$$



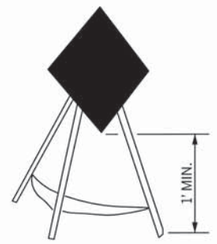
STOP:
LEGEND AND BORDER: WHITE (REFLECTORIZED)
BACKGROUND: RED (REFLECTORIZED)

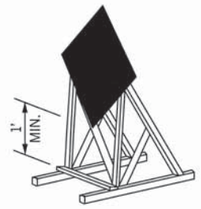


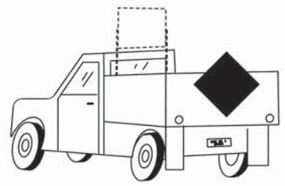
SLOW:
LEGEND AND BORDER AREA: BLACK (NON-REFLECTORIZED)
BACKGROUND: ORANGE (REFLECTORIZED)

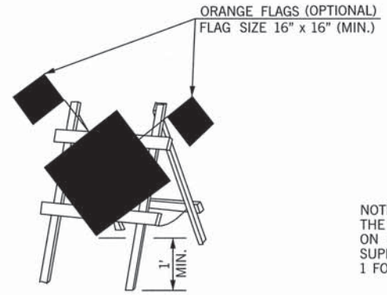
STOP–SLOW PADDLE

REVISIONS	
DESCRIPTION	DATE



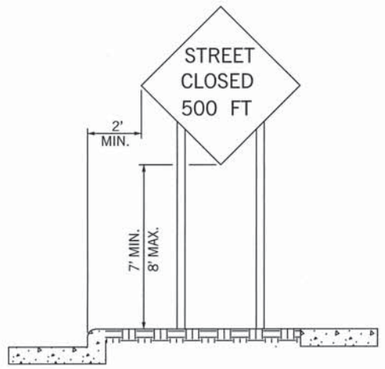




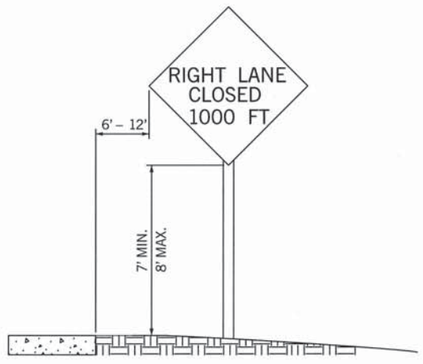


NOTE:
THE BOTTOM OF SIGNS MOUNTED ON BARRICADES OR TEMPORARY SUPPORTS SHALL NOT BE LESS THAN 1 FOOT ABOVE THE TRAVELED WAY.

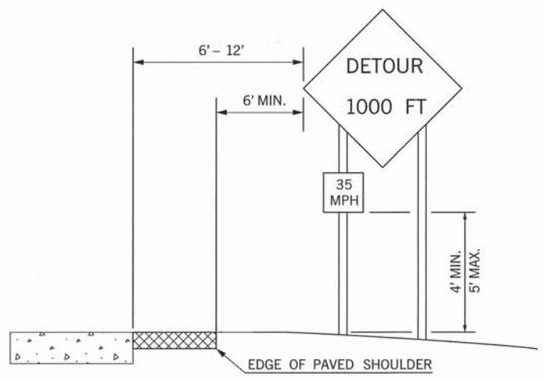
PORTABLE AND TEMPORARY MOUNTINGS
METHODS OF MOUNTING SIGNS OTHER THAN ON POSTS



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: David Streb DATE: 6/23/10

TRAFFIC STANDARD

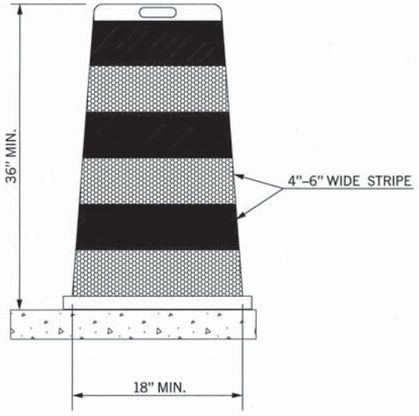
TRAFFIC CONTROL STANDARD
TYPICAL SIGN INSTALLATION

2009 SPECIFICATIONS

TCS5–1	00
	T–505

TRFPC36 M:\2009_Standards_TC\t505.dgn 8:24:30 AM 6/23/2010 R:\TRAF_PLOT\leroy.pen R:\TRAF_PLOT\bw.ctb

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



DRUM

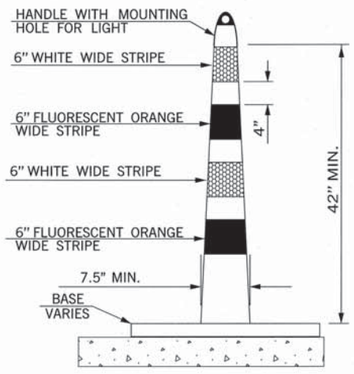
NOTES:

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.



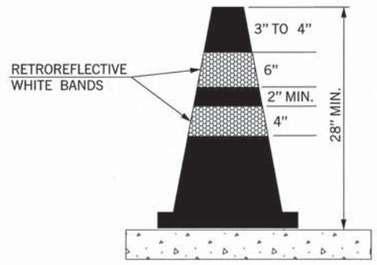
CHANNELIZER CONE

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.

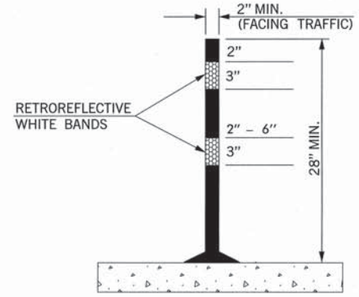


CONE

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.

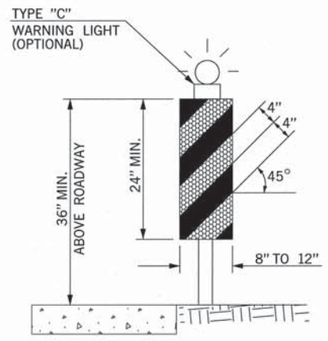


TUBE CHANNELIZER

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.



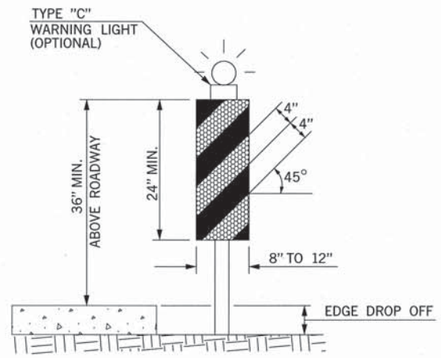
VERTICAL PANEL W/NO DROP OFF

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).

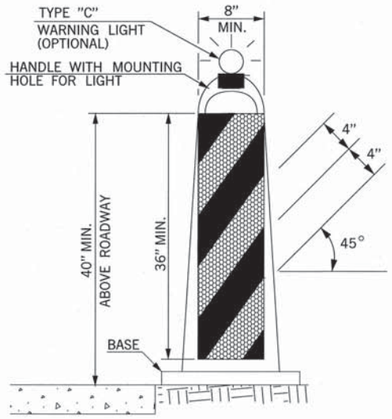
SHALL HAVE A MINIMUM OF TWO (2) FULL FLUORESCENT ORANGE STRIPES.



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: Chad Smaly DATE: 3/21/11

TRAFFIC STANDARD

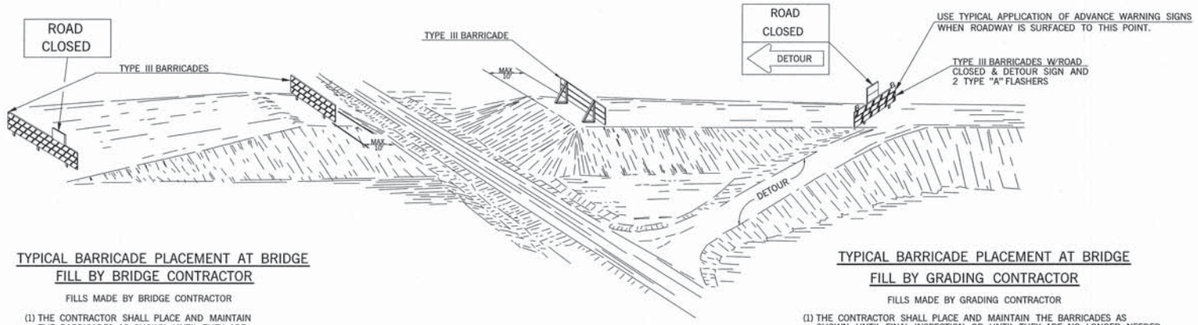
TRAFFIC CONTROL STANDARD
CHANNELIZING DEVICES

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.

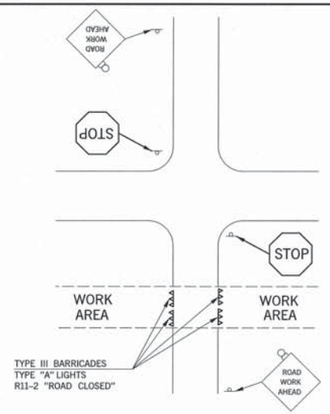
(2) THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO REMOVAL OF THE BARRICADES.

(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) SUFFICIENT NUMBER OF TYPE II BARRICADES WITH SIGNS SHALL BE USED TO COMPLETELY CLOSE THE WORK AREA TO THROUGH TRAFFIC.

(6) BARRICADES AT BRIDGE FILL SHALL BE IN PLACE AND MAINTAINED AT ALL TIMES UNTIL OPENED TO TRAFFIC, HOWEVER, BARRICADES MAY BE REMOVED OR ADJUSTED, AS NEEDED, TO ALLOW ACCESS TO THE WORK AREA.



TYPICAL SIGN PLACEMENT FOR INTERSECTING ROADS AND STREETS

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.

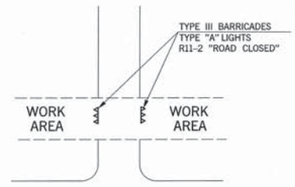
(4) PLACEMENT OF TYPE III BARRICADES SHALL BE APPROVED BY THE ENGINEER.

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

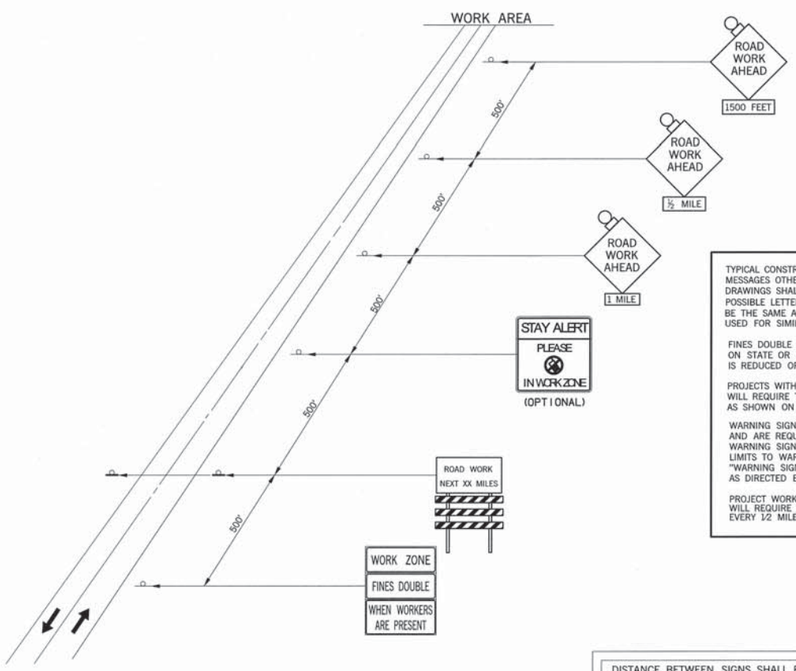
(6) IF TWO OR MORE DRIVEWAYS ARE IN CLOSE PROXIMITY, THE BARRICADES BETWEEN THE DRIVEWAYS MAY BE OMITTED AT THE DISCRETION OF THE ENGINEER.

(7) THE "ROAD WORK AHEAD" SIGN, WHICH SERVES AS A GENERAL WARNING OF OBSTRUCATIONS 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.

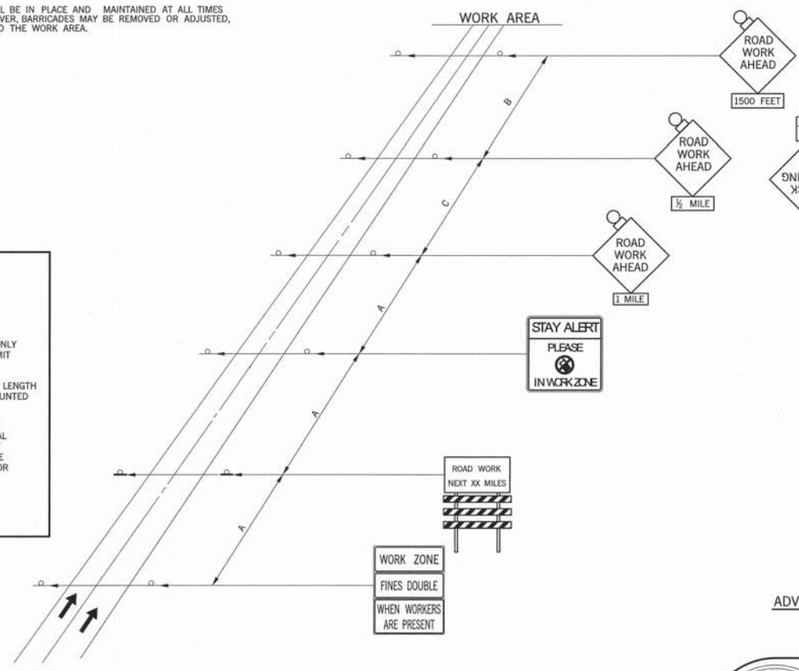
FINES DOUBLE IN WORK ZONE SIGNS ARE TO BE USED ONLY ON STATE OR FEDERAL HIGHWAYS WHERE THE SPEED LIMIT IS REDUCED OR AS DIRECTED BY THE ENGINEER.

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).

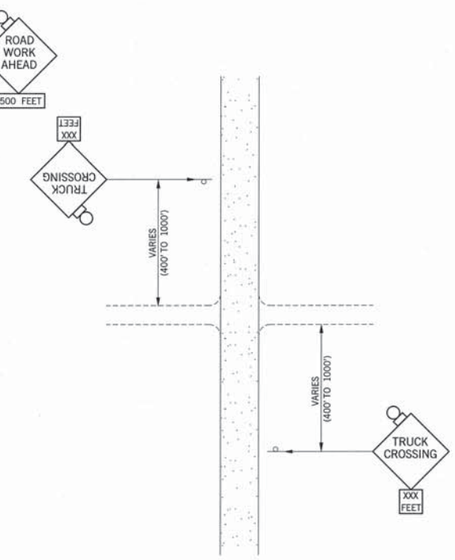
WARNING SIGNS SHOWN ARE "ADVANCE" WARNING SIGNS AND ARE REQUIRED ON ALL STATE HIGHWAYS. ADDITIONAL WARNING SIGNS MAY BE REQUIRED WITHIN THE PROJECT LIMITS TO WARN DRIVERS OF SPECIFIC HAZARDS. ADVANCE "WARNING SIGNS" MAY CHANGE AS CONDITIONS CHANGE OR AS DIRECTED BY THE ENGINEER.

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

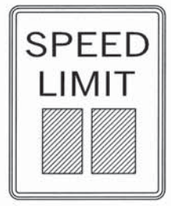
R1-1	30 x 30	5.18 SF
R1-1E	36 x 36	7.46 SF
R1-1F	48 x 48	13.26 SF

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: _____ 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

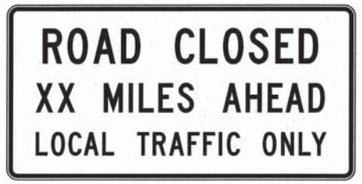
R11-2 48 x 30 10.00 SF

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

LANE CLOSED

R11-2(LANE) 48 x 30 10.00 SF

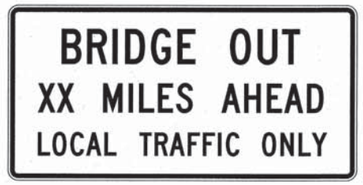
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)



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

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

APPROVED BY
TRAFFIC ENGINEER: David Amaral DATE: 3/21/11

TRAFFIC STANDARD

TRAFFIC CONTROL STANARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS9-1	01
	T-509

$$date$$

REVISIONS	
DESCRIPTION	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: David Smith DATE: 6/23/10

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS14-1	00
T-514	

TRFPC36 M:\2009_Standards_TC\t514.dgn 8:37:49 AM 6/23/2010 R:\TRAF_PLOT\leroy.pen R:\TRAF_PLOT\bw.ctb

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

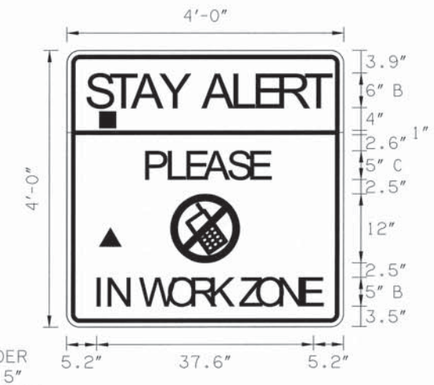
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT ORANGE (REFLECTORIZED)

DESCRIPTION	REVISIONS	DATE
ADDED NO CELL PHONE USE IN WORK ZONE		4/2/2013

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.



NO CELL PHONE WORK ZONE

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

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

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

BASIS OF PAYMENT

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

APPROVED BY
TRAFFIC ENGINEER: _____ DATE: _____

TRAFFIC STANDARD

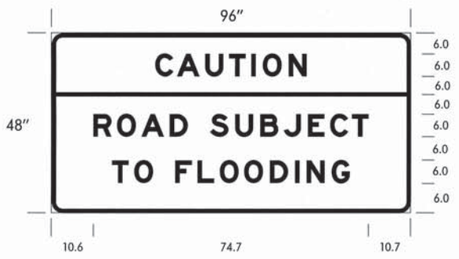
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS15-1 01
T-515

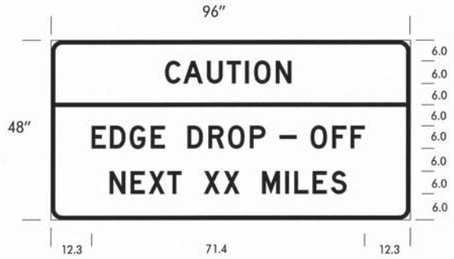
$$date$$

REVISIONS		
DESCRIPTION		DATE
CHANGED MOUNTING DECRIPTION		3/15/2011



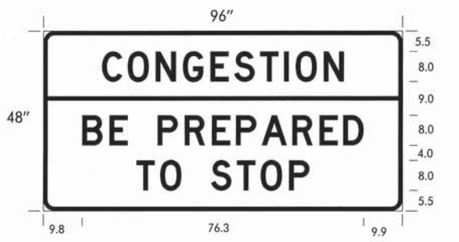
SIGN	CONSTRUCTION SIGN-7
WIDTH x HEIGHT	96" x 48"
BORDER WIDTH	2"
CORNER RADIUS	3"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: ORANGE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

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



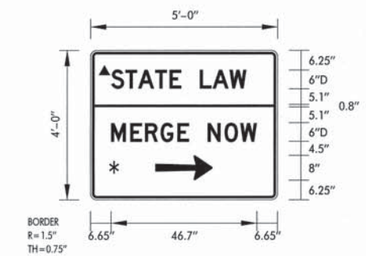
SIGN	CONSTRUCTION SIGN-8
WIDTH x HEIGHT	96" x 48"
BORDER WIDTH	2"
CORNER RADIUS	3"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: ORANGE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

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



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



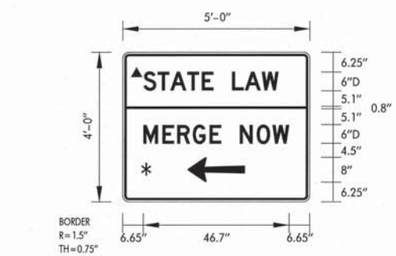
▲ BACKGROUND: REFLECTIVE WHITE
LEGEND/BORDER: NON-REFLECTIVE BLACK

* 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							
6.6	11.2	15.3	20.7	25.4	29.1	35.1	39.2	44.6						43.3	D 2000
M	E	R	G	E		N	O	W							
6.6	12.8	17.5	22.5	27.9	31.6	37.6	43	48						46.7	D 2000



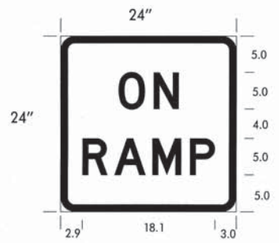
▲ BACKGROUND: REFLECTIVE WHITE
LEGEND/BORDER: NON-REFLECTIVE BLACK

* 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							
6.6	11.2	15.3	20.7	25.4	29.1	35.1	39.2	44.6						43.3	D 2000
M	E	R	G	E		N	O	W							
6.6	12.8	17.5	22.5	27.9	31.6	37.6	43	48						46.7	D 2000



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: David Streeby 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						D 2000
4.8	8.2	11.3	14.9	16.5					14.4	

Dimensions are in Inches.tenths

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

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

Dimensions are in Inches.tenths

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

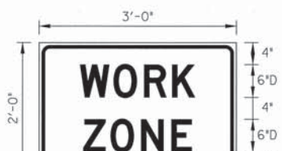
LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
B	E	G	I	N							E 2000
7.1	15.2	22.6	30.9	34.4					33.8		

FLO* = FLUORESCENT ORANGE

Dimensions are in Inches.tenths

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

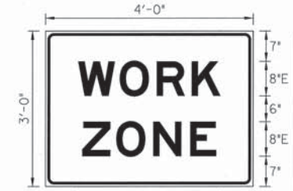
LETTER POSITIONS (X)									LENGTH	SERIES/SIZE
W	O	R	K							D 2000
5	9.1	12.8	16.2						14	
Z	O	N	E							D 2000
5.4	8.7	12.5	16.1						13.2	



Dimensions are in Inches.tenths

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

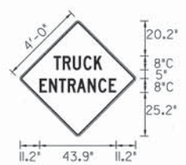
LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
W	O	R	K								D 2000
7.5	13.6	19.2	24.3						21		
Z	O	N	E								D 2000
8.1	13.1	18.7	24.2						19.8		



Dimensions are in Inches.tenths

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

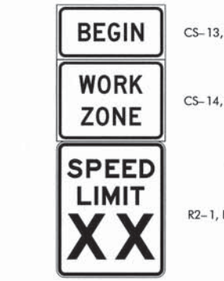
LETTER POSITIONS (X)										LENGTH	SERIES/SIZE
W	O	R	K								E 2000
7.6	17.2	25.7	33.8						32.9		
Z	O	N	E								E 2000
8.5	16.4	24.9	33.5						31		



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							C 2000
19.3	24.5	30.4	36.5	42.5						27.7	
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: Donald Sharp DATE: 3/21/11

TRAFFIC STANDARD

TRAFFIC CONTROL STANDARD CONSTRUCTION SIGNS

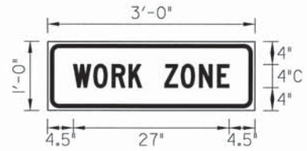
2009 SPECIFICATIONS

TCS19-1 | 01

T-519

$$date$$

DESCRIPTION	REVISIONS	DATE



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

Dimensions are in Inches.tenths

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		

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

Dimensions are in Inches.tenths

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		

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

Dimensions are in Inches.tenths

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		

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

Dimensions are in Inches.tenths

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: Arnold Simmons DATE: 6/23/10

TRAFFIC STANDARD

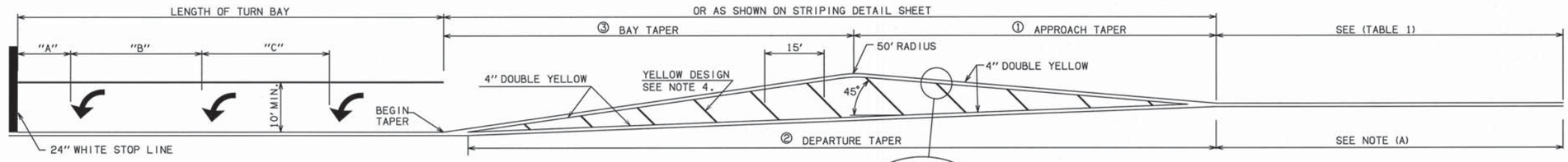
TRAFFIC CONTROL STANDARD
CONSTRUCTION SIGNS

2009 SPECIFICATIONS

TCS20-1 | 00

T-520

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.

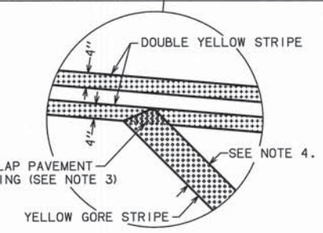
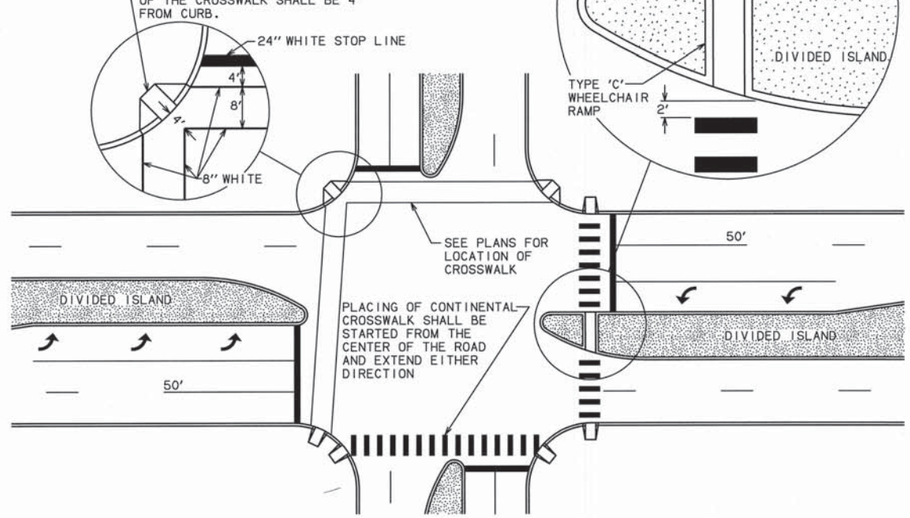


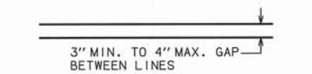
TABLE 1	
POSTED SPEED	NO PASS LENGTH (MINIMUM)
60 MPH	790'
55 MPH	725'
50 MPH	660'
45 MPH	590'
40 MPH	360'
35 MPH	260'
30 MPH	200'
25 MPH	150'

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

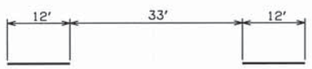


CROSSWALK INSTALLATIONS

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

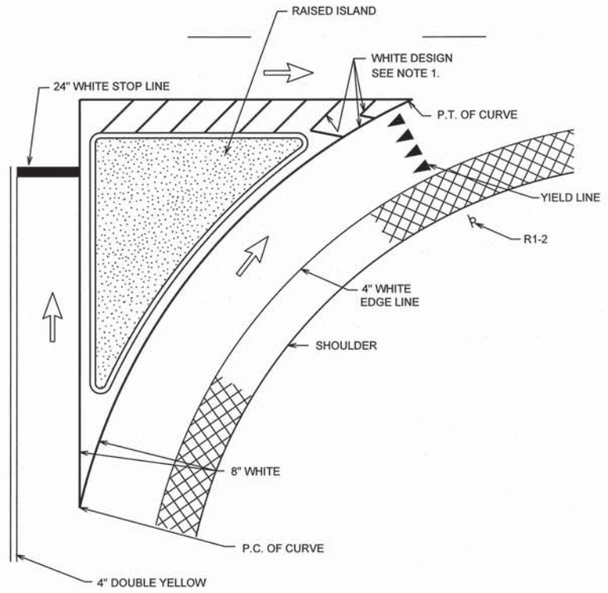
PAVEMENT MARKING (CROSSWALKS AND LEFT TURN BAY)

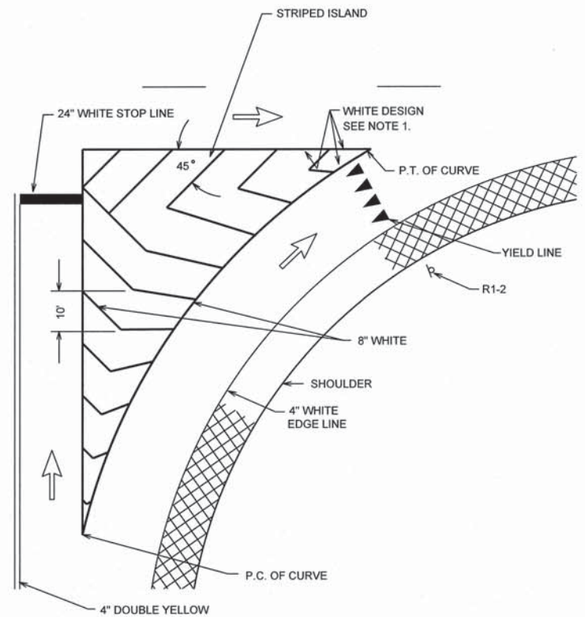
2009 SPECIFICATIONS

PM1-1 | 02

T-101

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



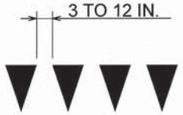


GENERAL NOTE

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: _____ DATE: 7/22/2011

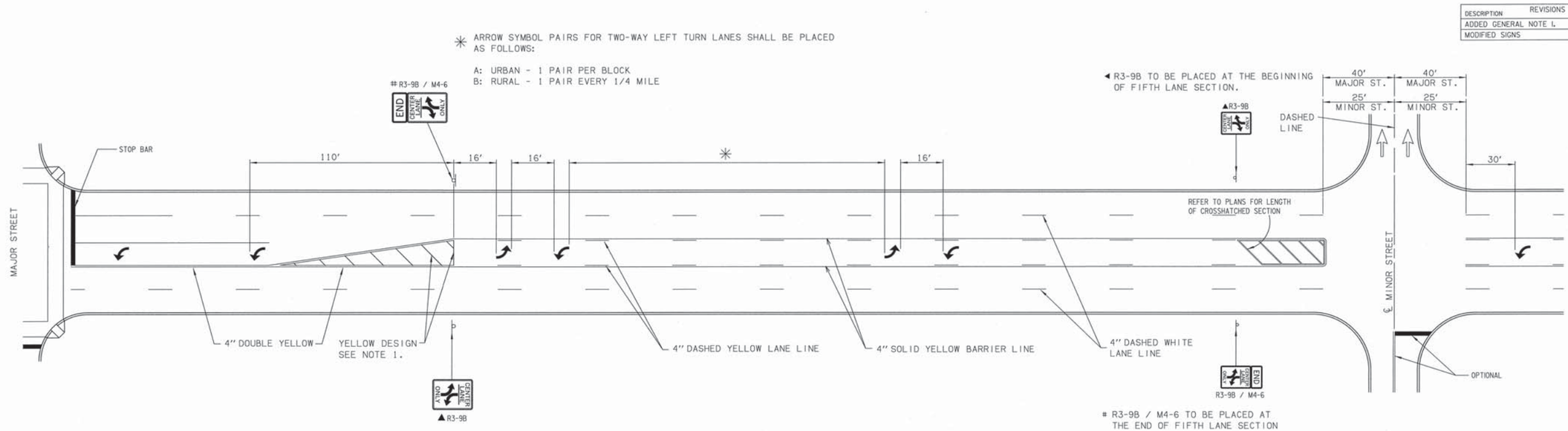
TRAFFIC STANDARD

PAVEMENT MARKING
(ISLANDS)

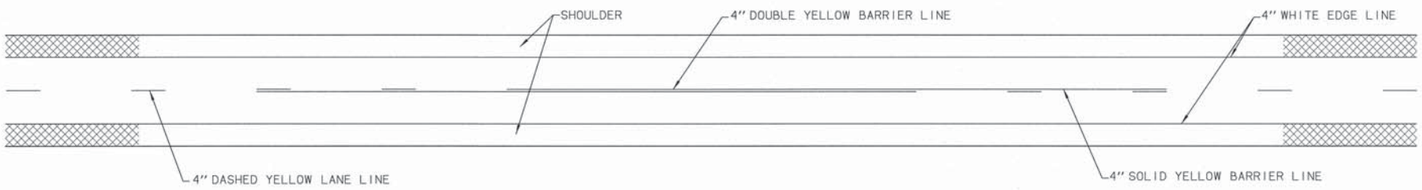
2009 SPECIFICATIONS

PM2-1	01
	T-102

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



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: David Streb DATE: 4/9/12

TRAFFIC STANDARD

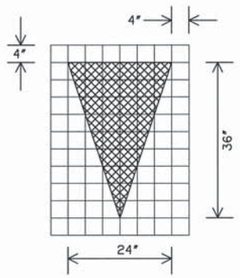
PAVEMENT MARKING
(FIFTH LANE AND TWO LANE RURAL)

2009 SPECIFICATIONS

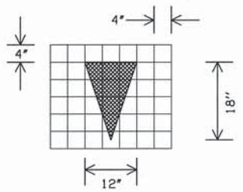
PM3-1 | 02

T-103

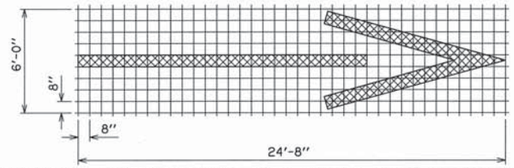
REVISIONS		
DESCRIPTION		DATE



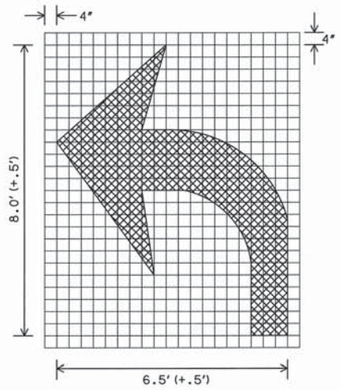
MAXIMUM
YIELD LINE TRIANGLE

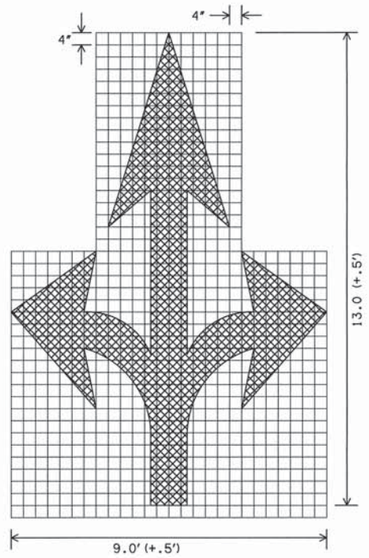


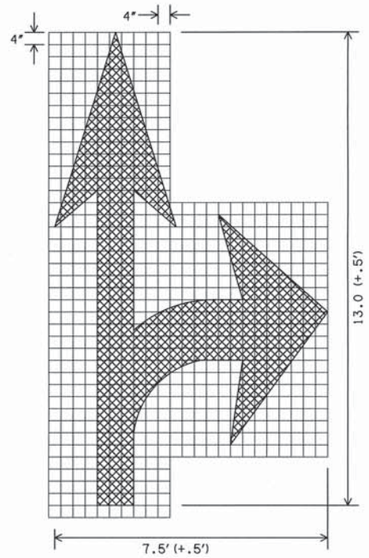
MINIMUM
YIELD LINE TRIANGLE

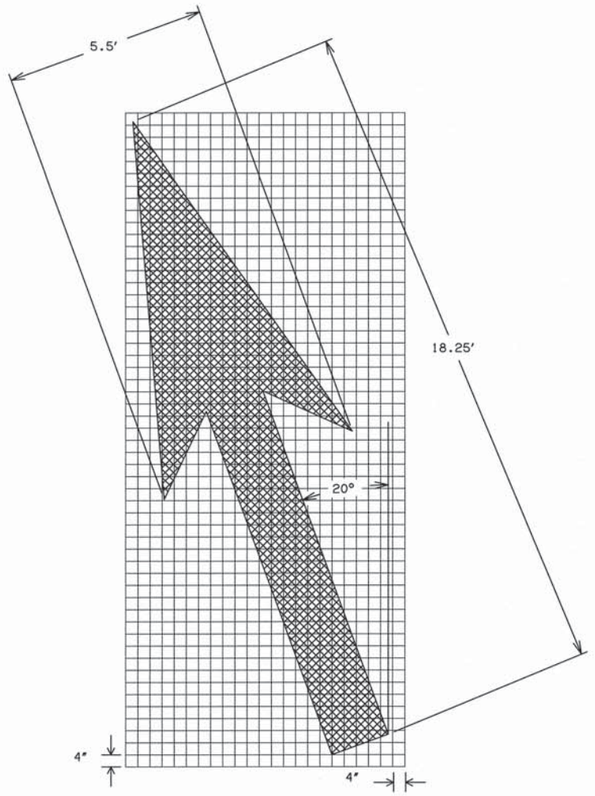


FREEWAY, EXPRESSWAY, AND RAMP PAVEMENT ARROW

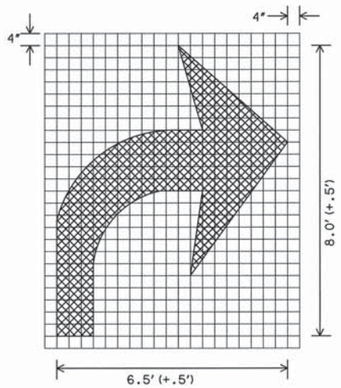


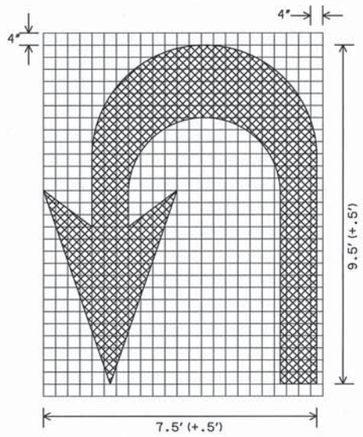


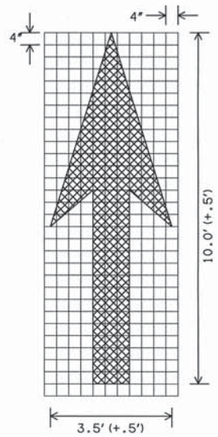




LANE-REDUCTION ARROW







GENERAL NOTES

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

BASIS OF PAYMENT

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

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

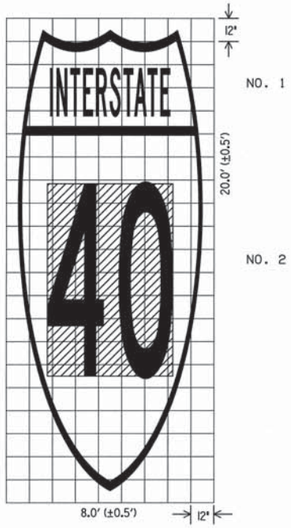
TRAFFIC STANDARD

PAVEMENT MARKING
(ARROWS)

2009 SPECIFICATIONS

PM6-1	00
T-106	

DESCRIPTION	REVISIONS	DATE

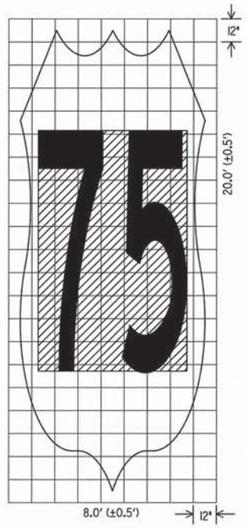


NO. 1

NO. 2

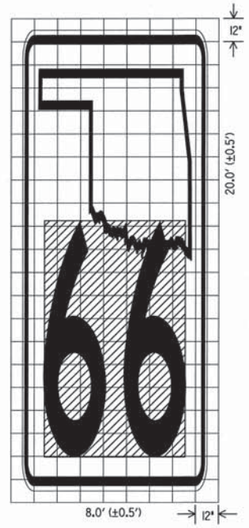
INTERSTATE SHIELD
2 NUMBERS

COLOR: LEGEND AND BORDER...WHITE (REFLECTORIZED)
NO. 1.....RED (TRANSPARENT REFLECTORIZED)
NO. 2.....BLUE (TRANSPARENT REFLECTORIZED)



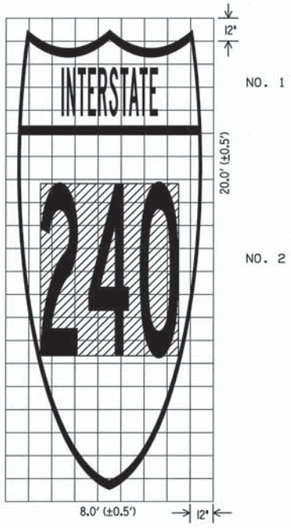
US HIGHWAY SHIELD
2 NUMBERS

*OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED



STATE SHIELD
1 OR 2 NUMBERS

*OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED

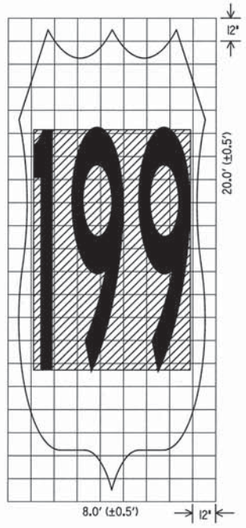


NO. 1

NO. 2

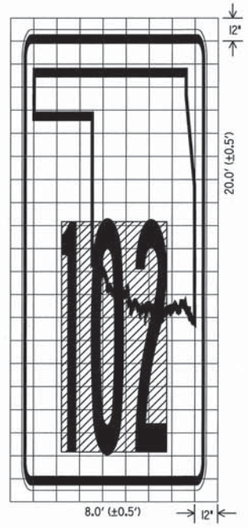
INTERSTATE SHIELD
3 NUMBERS

COLOR: LEGEND AND BORDER...WHITE (REFLECTORIZED)
NO. 1.....RED (TRANSPARENT REFLECTORIZED)
NO. 2.....BLUE (TRANSPARENT REFLECTORIZED)



US HIGHWAY SHIELD
3 NUMBERS

*OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED



STATE SHIELD
3 NUMBERS

*OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
855(B)	TRAFFIC STRIPE (PLASTIC) (SYMBOLS)	EA

APPROVED BY TRAFFIC ENGINEER: Chad Smith DATE: 8/31/2010

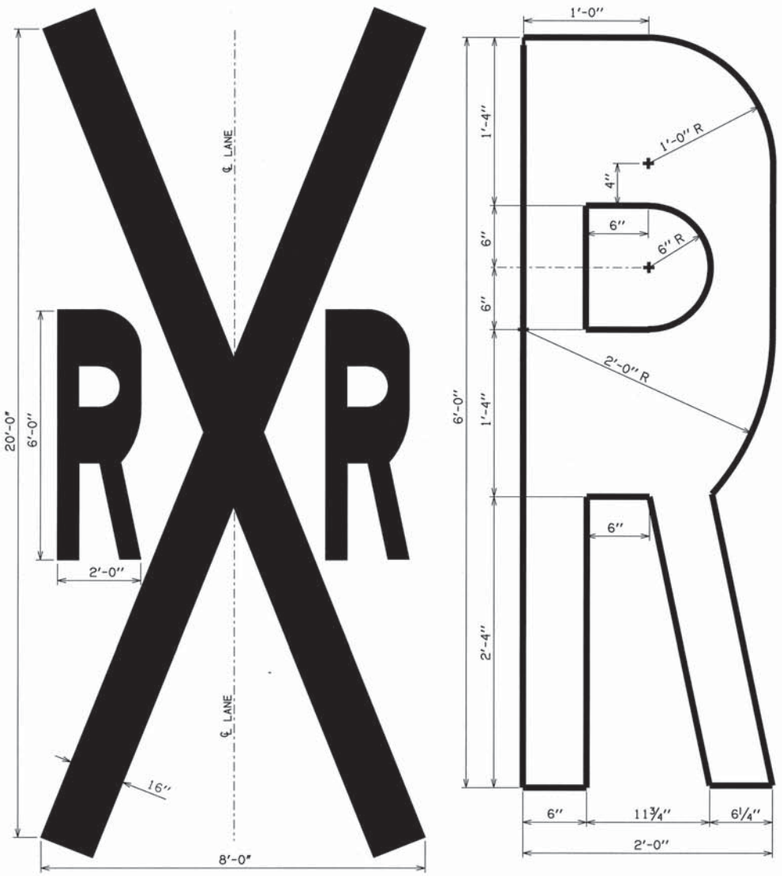
TRAFFIC STANDARD

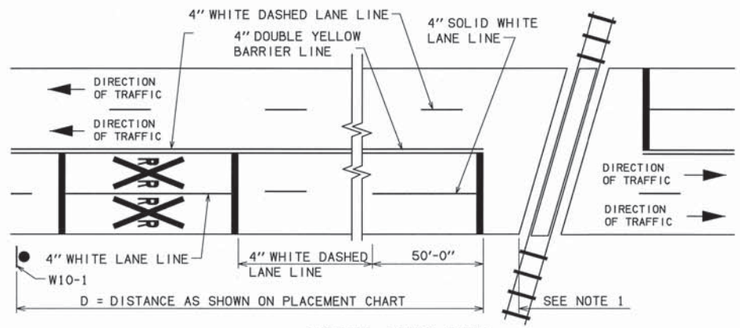
PAVEMENT MARKING
(HIGHWAY SHIELDS)

2009 SPECIFICATIONS

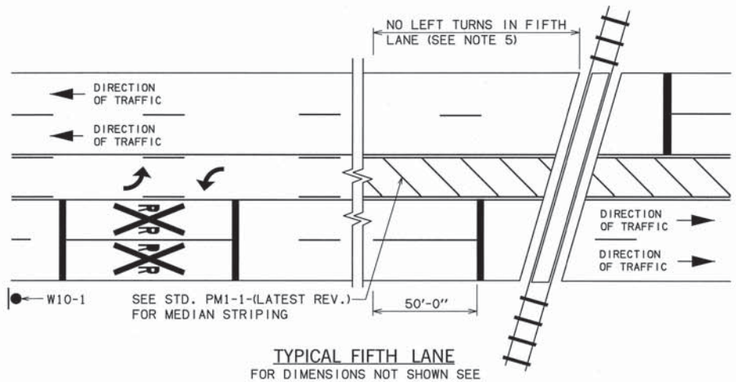
PM7-1	00
	T-107

DESCRIPTION	REVISIONS	DATE





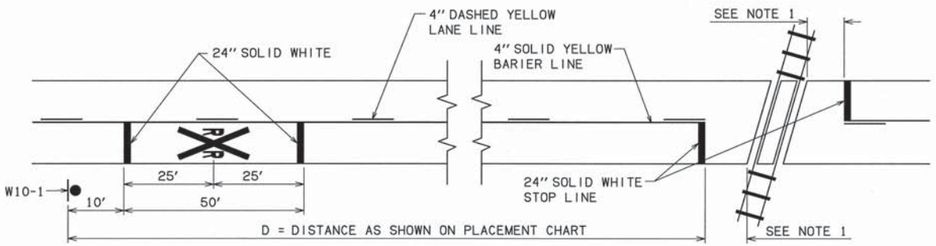
TYPICAL FOUR LANE
FOR DIMENSIONS NOT SHOWN
SEE TYPICAL TWO LANE DETAIL
(SEE NOTE 3)



TYPICAL FIFTH LANE
FOR DIMENSIONS NOT SHOWN SEE
TYPICAL TWO LANE AND FOUR
LANE DETAIL (SEE NOTE 3)

GENERAL NOTES

1. APPROXIMATELY 15' FROM STOP LINE TO NEAREST POINT OF TRACKS. MEASURE DISTANCE OF CENTER LINE WHEN OPPOSITE SKEW.
2. ON TWO LANE ROADWAYS, ONE RAILROAD SYMBOL SHALL INCLUDE THE "X", "R"'S, TRANSVERSE LINES, STOP LINE AND NO PASSING STRIPE.
3. ON MULTI-LANE ROADWAYS, ONE RAILROAD SYMBOL SHALL INCLUDE THE "X", "R"'S, TRANSVERSE LINES, STOP LINE FOR EACH APPROACH LANE, SOLID AND DASHED WHITE LANE LINES AND DOUBLE YELLOW BARRIER LINE WITHIN THE PRESCRIBED RAILROAD SYMBOL LIMITS.
4. WORD AND SYMBOL MARKINGS SHALL BE WHITE REFLECTIVE PLASTIC UNLESS OTHERWISE SPECIFIED.
5. THE FIFTH LANE SHALL NOT BE USED ON THE APPROACH TO AN AT-GRADE RAILROAD CROSSING. THIS CAN BE ACCOMPLISHED BY RAISED ISLANDS, RUMBLE STRIPS OR STRIPING OUT THESE AREAS. (50' MINIMUM LENGTH, 100' RECOMMENDED LENGTH)
6. STRIPING IS TYPICAL FOR BOTH DIRECTIONS OF TRAFFIC AT THE RAILROAD CROSSING.



TYPICAL TWO LANES
ALL DIMENSIONS ARE TYPICAL
(SEE NOTE 2)

PLACEMENT OF W10-1	
POSTED SPEED mph	"D" ft.
BELOW 30	100
35	150
40	225
45	300
50	375
55	450
60	550
65	650

BASIS OF PAYMENT

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

APPROVED BY TRAFFIC ENGINEER: Chad Graves DATE: 8/3/2010

TRAFFIC STANDARD

PAVEMENT MARKING
(RAILROAD CROSSING)

2009 SPECIFICATIONS

PM8-1	00
	T-108

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

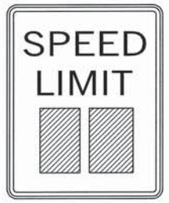
R1-2	36 x 36 x 36	3.90 SF
R1-2E	48 x 48 x 48	6.93 SF
R1-2F	60 x 60 x 60	10.83 SF

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

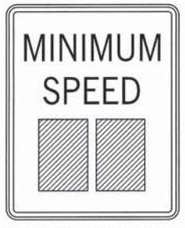
R2-1( )	(SPEED)	24 x 30	5.00 SF
R2-1E( )		36 x 48	12.00 SF
R2-1F( )		48 x 60	20.00 SF

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: Chad Smalley DATE: 2/3/2010

TRAFFIC STANDARD
REGULATORY SIGN DETAILS
(R-SERIES)

2009 SPECIFICATIONS

RSD1-1 | 00

T-114

REVISIONS	
DESCRIPTION	DATE

LEFT LANE MUST TURN LEFT

R3-7(L) 30 x 30 6.25 SF
R3-7(L)E 36 x 36 9.00 SF

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

RIGHT LANE MUST TURN RIGHT

R3-7(R) 30 x 30 6.25 SF
R3-7(R)E 36 x 36 9.00 SF

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

LANE-LEFT ONLY

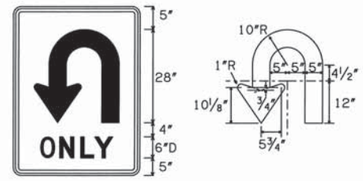
R3-8(L) 30 x 30 6.25 SF
R3-8(L)E 36 x 36 9.00 SF

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

LANE-RIGHT ONLY

R3-8(R) 30 x 30 6.25 SF
R3-8(R)E 36 x 36 9.00 SF

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



LANE-U-TURN ONLY

R3-8(U) 36 x 48 12.00 SF

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

LANE RIGHT OR LEFT ONLY

R3-9a 30 x 36 7.50 SF

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

CENTER LANE TURN LEFT ONLY

R3-9B 24 x 36 6.00 SF
R3-9B(E) 36 x 48 12.00 SF

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

DO NOT PASS

R4-1 24 x 30 5.00 SF
R4-1E 36 x 48 12.00 SF
R4-1F 48 x 60 20.00 SF

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

SLOW TRAFFIC KEEP RIGHT

R4-3 24 x 30 5.00 SF
R4-3E 36 x 48 12.00 SF
R4-3F 48 x 60 20.00 SF

COLOR:
LEGEND AND BORDER:
BLACK (NON-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 RIGHT

R4-7a 24 x 30 5.00 SF
R4-7aE 36 x 48 12.00 SF
R4-7aF 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)

WRONG WAY

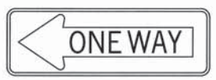
R5-1a 36 x 24 6.00 SF
R5-1aE 36 x 24 6.00 SF
R5-1aF 42 x 30 8.75 SF

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

NO TRUCKS

R5-2 24 x 24 4.00 SF
R5-2E 30 x 30 6.25 SF
R5-2F 36 x 36 9.00 SF

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



ONE WAY

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

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

ONE WAY

R6-1(R)
R6-1E(R)

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

APPROVED BY TRAFFIC ENGINEER: Chad Smith DATE: 8/31/2010

TRAFFIC STANDARD
REGULATORY SIGN DETAILS
(R-SERIES)

2009 SPECIFICATIONS

RSD2-1 00

T-115

TURN LEFT

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

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

TURN RIGHT

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

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

CURVE LEFT

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

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

CURVE RIGHT

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

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

LEFT REVERSE TURN

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

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

DESCRIPTION	REVISIONS	DATE

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

RIGHT REVERSE TURN

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

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

LEFT REVERSE CURVE

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

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

RIGHT REVERSE CURVE

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

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

WINDING ROAD

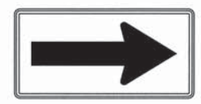
W1-5(R)	30 x 30	6.25 SF
W1-5E(R)	36 x 36	9.00 SF

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

WINDING ROAD

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

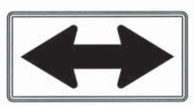
COLOR:
SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLUORESCENT YELLOW
(REFLECTORIZED)



ARROW

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

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



DOUBLE ARROW

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

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

CHEVRON

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

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

CROSS ROAD

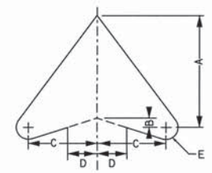
W2-1	30 x 30	6.25 SF
W2-1E	36 x 36	9.00 SF

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

SIDE ROAD

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

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



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

* ARROW DETAIL

BASIS OF PAYMENT

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

APPROVED BY TRAFFIC ENGINEER: DATE: 8/3/2010

TRAFFIC STANDARD
WARNING SIGN DETAILS
(W-SERIES)

2009 SPECIFICATIONS

WSD1-1	00
	T-116

TWO-WAY TRAFFIC

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

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

SLIPPERY WHEN WET

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

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

TRUCK CROSSING

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

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

BRIDGE ICES BEFORE ROAD

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

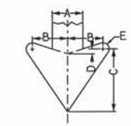
COLOR:
BORDER AND LEGEND:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)

RAILROAD ADVANCE WARNING

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

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

DESCRIPTION	REVISIONS	DATE



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

ARROW DETAILS FOR
W13-6 & W13-7

PEDESTRAIN CROSSING

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

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

TRUCK CROSSING

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

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

DOUBLE ARROW

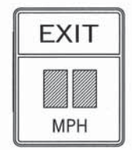
W12-1	30 x 30	6.25 SF
W12-1E	36 x 36	9.00 SF

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

ADVISORY SPEED

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

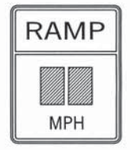
COLOR:
BORDER AND LEGEND:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
FLOURESCENT YELLOW
(REFLECTORIZED)



ADVISORY EXIT SPEED

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

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



ADVISORY RAMP SPEED

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

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

ADVISORY EXIT SPEED

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

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

ADVISORY RAMP SPEED

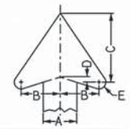
W13-7E	36 x 60	15.00 SF
W13-7F	48 x 84	28.00 SF

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

ARROW

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

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



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

ARROW DETAILS FOR
W6-3 & W6-3E

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

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

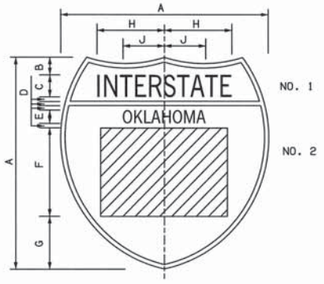
APPROVED BY TRAFFIC ENGINEER: David Streb DATE: 8/3/2010

TRAFFIC STANDARD
WARNING SIGN DETAILS
(W-SERIES)

2009 SPECIFICATIONS

WSD3-1	00
	T-118

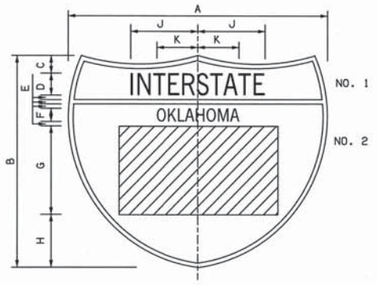
DESCRIPTION	REVISIONS	DATE



COLOR: LEGEND AND BORDER...WHITE (REFLECTORIZED)
NO. 1.....RED (TRANSPARENT REFLECTORIZED)
NO. 2.....BLUE (TRANSPARENT REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)									BLANK STD.
	A	B	C	D	E	F	G	H	J	
24" X 24"	24	2	2-1/2C	1/2	1-1/2D	10D	6	7-13/16	5-9/64	B-24(M)
36" X 36"	36	3	3-3/4C	3/4	2-1/4D	15D	9	11-11/16	7-5/32	B-36(M)

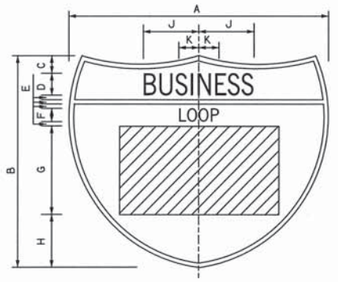
24" X 24" IM1-1(2) 4.00 SQ. FT.
36" X 36" IM1-1E(2) 9.00 SQ. FT.



COLOR: LEGEND AND BORDER...WHITE (REFLECTORIZED)
NO. 1.....RED (TRANSPARENT REFLECTORIZED)
NO. 2.....BLUE (TRANSPARENT REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)										BLANK STD.
	A	B	C	D	E	F	G	H	J	K	
30" X 24"	30	24	2	2-1/2C	1/2	1-1/2D	10D	6	7-13/16	5-9/64	B-3024(M)
45" X 36"	45	36	3	3-3/4C	3/4	2-1/4D	15D	9	11-11/16	7-5/32	B-4536(M)

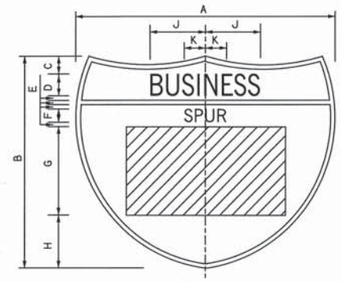
30" X 24" IM1-1(3) 5.00 SQ. FT.
45" X 36" IM1-1E(3) 11.25 SQ. FT.



COLOR: LEGEND AND BORDER...WHITE (REFLECTORIZED)
BACKGROUND.....GREEN (TRANSPARENT REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)										BLANK STD.
	A	B	C	D	E	F	G	H	J	K	
24" X 24"	24	24	2	2-1/2C	1/2	1-1/2D	10D	6	6-15/16	2-9/32	B-24(M)
36" X 36"	36	36	3	3-3/4C	3/4	2-1/4D	15D	9	9-19/32	3-15/32	B-36(M)
30" X 24"	30	24	2	2-1/2C	1/2	1-1/2D	10D	6	6-15/16	2- 9/32	B-3024(M)
45" X 36"	45	36	3	3-3/4C	3/4	2-1/4D	15D	9	9-19/32	3-15/32	B-4536(M)

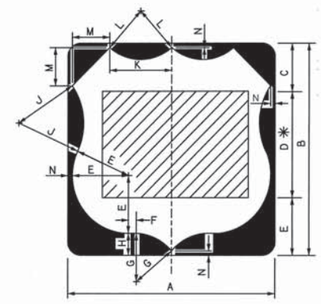
24" X 24" LM1-2(2) 4.00 SQ. FT.
36" X 36" LM1-2E(2) 9.00 SQ. FT.
30" X 24" LM1-2(3) 5.00 SQ. FT.
40" X 36" LM1-2E(3) 11.25 SQ. FT.



COLOR: LEGEND AND BORDER...WHITE (REFLECTORIZED)
BACKGROUND.....GREEN (TRANSPARENT REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)										BLANK STD.
	A	B	C	D	E	F	G	H	J	K	
24" X 24"	24	24	2	2-1/2C	1/2	1-1/2D	10D	6	6-15/16	2-7/16	B-24(M)
36" X 36"	36	36	3	3-3/4C	3/4	2-1/4D	15D	9	9-19/32	3-11/16	B-36(M)
30" X 24"	30	24	2	2-1/2C	1/2	1-1/2D	10D	6	6-15/16	2-7/16	B-3024(M)
45" X 36"	45	36	3	3-3/4C	3/4	2-1/4D	15D	9	9-19/32	3-11/16	B-4536(M)

24" X 24" LM1-3(2) 4.00 SQ. FT.
36" X 36" LM1-3E(2) 9.00 SQ. FT.
30" X 24" LM1-3(3) 5.00 SQ. FT.
40" X 36" LM1-3E(3) 11.25 SQ. FT.

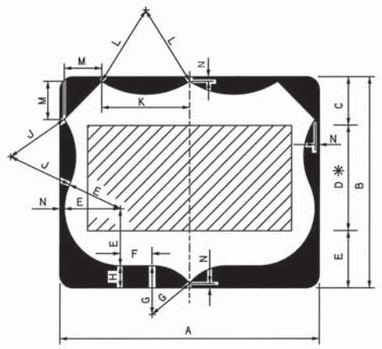


* OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
24" X 24"	24	24	5-1/2	12D	6-1/2	1	5-1/2	2-1/2	7-1/2	7
36" X 36"	36	36	8-1/4	18D	9-3/4	1-1/2	8-1/4	3-3/4	11-1/4	10-1/2

SIGN SIZE	DIMENSIONS (IN)			BLANK STD.
	L	M	N	
24" X 24"	5-1/2	4-1/2	1/2	B-24(S)
36" X 36"	8-1/4	6-3/4	3/4	B-36(S)

24" X 24" M1-4(2) 4.00 SQ. FT.
36" X 36" M1-4E(2) 9.00 SQ. FT.

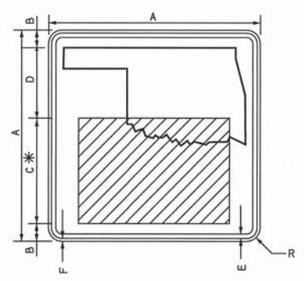


* OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
30" X 24"	30	24	5-1/2	12D	6-1/2	4	5-1/2	2-1/2	7-1/2	10
45" X 36"	45	36	8-1/4	18D	9-3/4	5-1/2	8-1/4	3-3/4	11-1/4	15

SIGN SIZE	DIMENSIONS (IN)			BLANK STD.
	L	M	N	
30" X 24"	9-1/2	4-1/2	1/2	B-24(S)
45" X 36"	14-1/4	6-3/4	3/4	B-36(S)

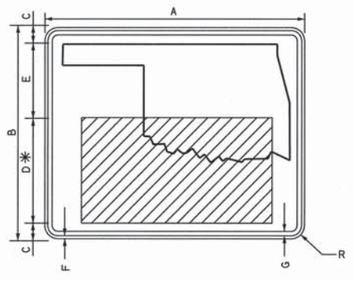
30" X 24" M1-4(3) 5.00 SQ. FT.
45" X 36" M1-4E(3) 11.25 SQ. FT.



* OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)							STATE OUTLINE	BLANK STD.
	A	B	C	D	E	F	R		
24" X 24"	24	3	12D	6	3/8	1/4	1-1/2	1	B-24(S)
36" X 36"	36	3	18D	12	3/4	3/8	2-1/4	1	B-36(S)

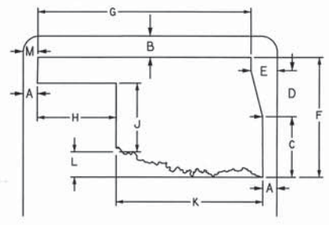
24" X 24" M1-6(2) 4.00 SQ. FT.
36" X 36" M1-6E(2) 9.00 SQ. FT.



* OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
COLOR: LEGEND AND BORDER.....BLACK (NON-REFLECTORIZED)
BACKGROUND.....WHITE (REFLECTORIZED)

SIGN SIZE	DIMENSIONS (INCHES)								STATE OUTLINE	BLANK STD.
	A	B	C	D	E	F	G	R		
30" X 24"	30	24	3	12B	6	1/4	3/8	1-1/2	1	B-3024
45" X 36"	45	36	3	18B	12	3/8	3/4	2-1/4	1-1/4	B-4536

30" X 24" M1-6(3) 5.00 SQ. FT.
45" X 36" M1-6E(3) 11.25 SQ. FT.



STATE OUTLINE

	1 & 2 DIGITS		3 DIGITS	
	12" NUMERALS	18" NUMERALS	12" NUMERALS	18" NUMERALS
	24" X 24" BLANK STD. B-24(S)	36" X 36" BLANK STD. B-36(S)	30" X 24" BLANK STD. B-3024	45" X 36" BLANK STD. B-4536
A	2"	3"	2.5"	2.5"
B	3"	3"	3"	3"
C	6.5"	9.75"	8.1"	13"
D	4"	6.1"	5.1"	8.1"
E	2.3"	4.6"	3.8"	4.7"
F	11.7"	17.6"	14.7"	23.5"
G	18.8"	28.3"	23.5"	37.7"
H	6"	9"	7.5"	12"
J	5"	7.6"	6.4"	10.2"
K	14"	21"	17.5"	28"
L	3.3"	5"	4.2"	6.7"
M	2.1"	3.1"	2.6"	2.6"

STATE OUTLINE TABLE

STATE OUTLINE IS NOT TO COME WITHIN .3" OF TEXT.
* STATE OUTLINE IS TO BE REMOVED FROM INSIDE OF TEXT.

TEXT GAP DETAIL

BASIS OF PAYMENT

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

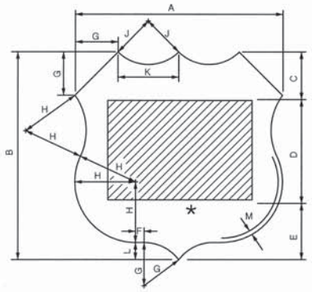
APPROVED BY TRAFFIC ENGINEER: David A. Streb DATE: 8/3/2010

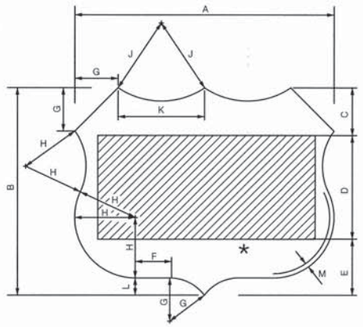
TRAFFIC STANDARD
ROUTE MARKER SIGN DETAILS
(ROUTE ASSEMBLY)

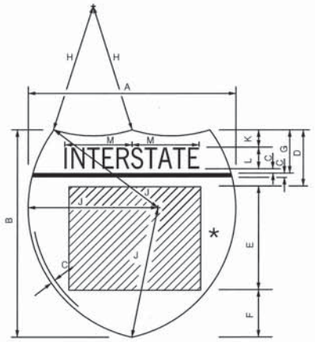
2009 SPECIFICATIONS

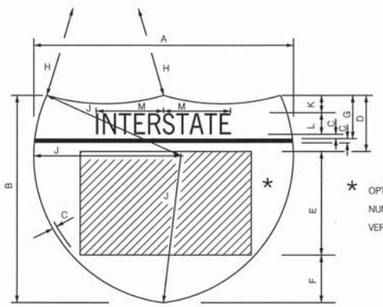
MSD1-1	00
T-120	

DESCRIPTION	REVISIONS	DATE





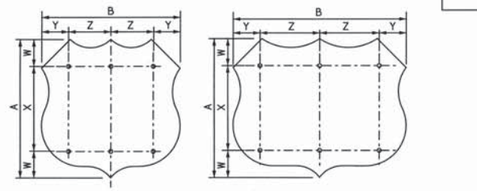




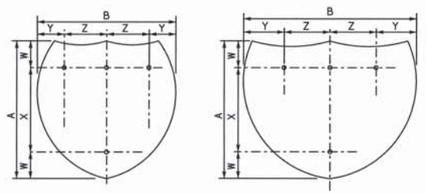
* OPTICALLY SPACE NUMERALS ABOUT VERT. CENTERLINE.

	SIGN DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	J	K	K	M
1 OR 2 DIGITS	24	24	5-1/2	12D	6-1/2	1	5	7	5	7	2	1/2
1 OR 2 DIGITS	36	36	8-1/4	18D	9-3/4	1-1/2	7-1/2	10-1/2	7-1/2	10-1/2	3	3/4
1 OR 2 DIGITS	48	48	11	24D	13	2	10	14	10	14	4	1
3 DIGITS	30	24	5-1/2	12D	6-1/2	4	5	7	9	10	2	1-2
3 DIGITS	45	36	8-1/4	18D	9-3/4	5-1/2	7-1/2	10-1/2	13-1/2	15	3	3/4
3 DIGITS	60	48	11	24D	13	8	10	14	18	20	4	1

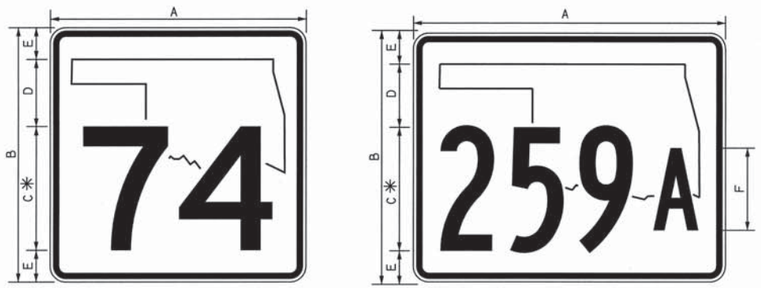
	SIGN DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	J	K	L	M
1 OR 2 DIGITS	24	24	1/2	6-1/2	12D	5-1/2	5	15	15	2	2-1/2C	7-13/16
1 OR 2 DIGITS	36	36	3/4	9-3/4	18D	8-1/4	7-1/2	22-1/2	22-1/2	3	3-3/4C	11-11/16
1 OR 2 DIGITS	48	48	1	13	24D	11	10	30	30	4	5C	15-9/16
3 DIGITS	30	24	1/2	6-1/2	10D	7-1/2	5	24	17	2	2-1/2C	7-13/16
3 DIGITS	45	36	3/4	9-3/4	16D	10-1/4	7-1/2	36	25-1/2	3	3-3/4C	11-11/16
3 DIGITS	60	48	1	13	20D	15	10	48	34	4	5C	15-9/16



	24" X 24"	24" X 30"	36" X 36"	36" X 45"	48" X 48"	48" X 60"
A	24	24	36	36	48	48
B	24	30	36	45	48	60
W	4-1/2	4-1/2	7	7	9	9
X	15	15	22	22	30	30
Y	4-1/2	4-1/2	7	7	9	9
Z	7-1/2	10-1/2	11	15-1/2	15	21



	24" X 24"	24" X 30"	36" X 36"	36" X 45"	48" x 48"	48" x 60"
A	24	24	36	36	48	48
B	24	30	36	45	48	60
W	4-1/2	4-1/2	7	7	9	9
X	15	15	22	22	30	30
Y	4-1/2	5	7	10-1/2	9	10
Z	7-1/2	10	11	12	15	20



	1 & 2 DIGITS		3 DIGITS		3 DIGITS WITH A "LETTER"	
	12" NUMERALS	18" NUMERALS	12" NUMERALS	18" NUMERALS	12" NUMERALS	18" NUMERALS
	24" X 24"	36" X 36"	30" X 24"	45" X 36"	30" X 24"	45" X 36"
A	24	36	30	45	30	45
B	24	36	24	36	24	36
C	12D	18D	12B	18B	12B	18B
D	6	12	6	12	6	12
E	3	3	3	3	3	3
F	-	-	-	-	8B	12B

GENERAL CONSTRUCTION NOTES:

INTERSTATE, U.S., AND STATE ROUTE SHIELDS FOR USE ON GUIDE SIGNS SHALL BE CUT FROM 0.063" THICK ALUMINUM OR 16 GAUGE GALVANIZED STEEL SHEET TO THE DIMENSIONS SHOWN WITH 3/8" DIAMETER MOUNTING HOLES PUNCHED OR DRILLED PRIOR TO APPLICATION OF REFLECTIVE SHEETING SIGN FACE.

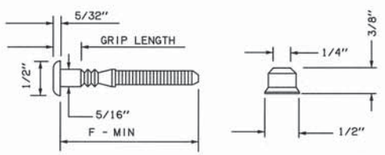
REFLECTIVE SHEETING FOR SIGN FACES SHALL BE TYPE III (OKLAHOMA STANDARD SPECIFICATIONS).

U.S. AND STATE SHIELD FACES SHALL HAVE A WHITE REFLECTIVE BACKGROUND WITH BLACK SCREENED NUMERALS.

INTERSTATE ROUTE SHIELDS SHALL BE REFLECTIVE RED, WHITE, AND BLUE AS SPECIFIED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST REVISION).

ALL PROCESS INKS USED FOR SCREENING FACES SHALL BE AS RECOMENDED BY THE MANUFACTURER OF THE REFLECTIVE SHEETING.

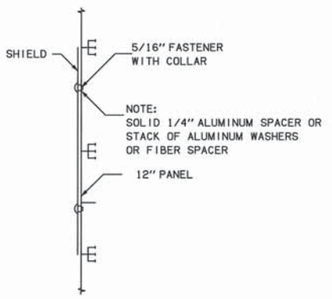
ROUTE SHIELDS FOR GUIDE SIGNS SHALL BE PAID FOR IN PRICE BID FOR PANEL SIGNS UNLESS OTHERWISE NOTED IN PLANS.



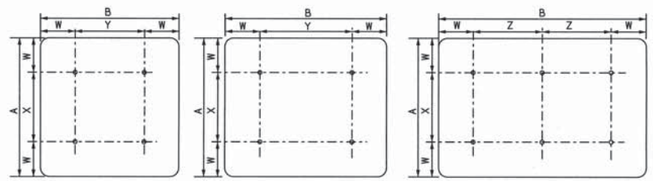
GRIP LENGTH = .422" - .515"
F - MIN = 2"

5/16" ALUMINUM, GALVANIZED STEEL, STAINLESS STEEL OR CADMIUM PLATED BOLTS WITH COMPATIBLE SELF-LOCKING STOP NUTS MAY BE USED.

5/16" FASTENER AND COLLAR (TYPICAL)



TYPICAL MOUNTING DETAIL



	24" X 24"	30" X30"	36" X 36"	24" X 30"	30" X 36"	36" X 42"	24" X 38-1/4"	30" X 45"	36" X 54"	24" X 43-1/2"	30" X 54"	36" X 66"
A	24	30	36	24	30	36	24	30	36	24	30	36
B	24	30	36	30	36	42	38-1/4	45	54	43-1/2	54	66
W	6	7-1/2	9	6	7-1/2	9	6	7-1/2	9	6	7-1/2	9
X	12	15	18	12	15	18	12	15	18	12	15	18
Y	12	15	18	18	21	24	-	-	-	-	-	-
Z	-	-	-	-	-	-	13-1/8	15	18	15-3/4	19-1/2	24

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

APPROVED BY TRAFFIC ENGINEER: Khalid Omar DATE: 8/3/2010

TRAFFIC STANDARD

ROUTE MARKER SIGN DETAILS (GUIDE SIGN)

2009 SPECIFICATIONS

MSD2-1	00
	T-121

REVISIONS	
DESCRIPTION	DATE
CHANGED SIGN SQ.FT.	7/08/2011

21" X 15"	M2-1	2.19 SQ. FT.
21" X 15"	IM2-1	2.19 SQ. FT.
21" X 15"	LM2-1	2.19 SQ. FT.
30" X 21"	M2-1E	4.38 SQ. FT.
30" X 21"	IM2-1E	4.38 SQ. FT.
30" X 21"	LM2-1E	4.38 SQ. FT.

24" X 12"	M3-1	2.00 SQ. FT.
36" X 18"	M3-1E	4.50 SQ. FT.
24" X 12"	IM OR LM3-1	2.00 SQ. FT.
36" X 18"	IM OR LM3-1E	4.50 SQ. FT.

24" X 12"	M3-2	2.00 SQ. FT.
36" X 18"	M3-2E	4.50 SQ. FT.
24" X 12"	IM OR LM3-2	2.00 SQ. FT.
36" X 18"	IM OR LM3-2E	4.50 SQ. FT.

24" X 12"	M3-3	2.00 SQ. FT.
36" X 18"	M3-3E	4.50 SQ. FT.
24" X 12"	IM OR LM3-3	2.00 SQ. FT.
36" X 18"	IM OR LM3-3E	4.50 SQ. FT.

24" X 12"	M3-4	2.00 SQ. FT.
36" X 18"	M3-4E	4.50 SQ. FT.
24" X 12"	IM OR LM3-4	2.00 SQ. FT.
36" X 18"	IM OR LM3-4E	4.50 SQ. FT.

24" X 12"	M4-2	2.00 SQ. FT.
36" X 18"	M4-2E	4.50 SQ. FT.

24" X 12"	M4-3	2.00 SQ. FT.
36" X 18"	M4-3E	4.50 SQ. FT.

24" X 12"	M4-4	2.00 SQ. FT.
36" X 18"	M4-4E	4.50 SQ. FT.

24" X 12"	M4-5	2.00 SQ. FT.
36" X 18"	M4-5E	4.50 SQ. FT.
24" X 12"	IM OR LM4-5	2.00 SQ. FT.
36" X 18"	IM OR LM4-5E	4.50 SQ. FT.

24" X 12"	M4-6	2.00 SQ. FT.
36" X 18"	M4-6E	4.50 SQ. FT.
24" X 12"	IM OR LM4-6	2.00 SQ. FT.
36" X 18"	IM OR LM4-6E	4.50 SQ. FT.

21" X 15"	M5-1(R)	2.19 SQ. FT.
21" X 15"	IM5-1(R)	2.19 SQ. FT.
21" X 15"	LM5-1(R)	2.19 SQ. FT.

21" X 15"	M5-1(L)	2.19 SQ. FT.
21" X 15"	IM5-1(L)	2.19 SQ. FT.
21" X 15"	LM5-1(L)	2.19 SQ. FT.

21" X 15"	M5-2(R)	2.19 SQ. FT.
21" X 15"	IM5-2(R)	2.19 SQ. FT.
21" X 15"	LM5-2(R)	2.19 SQ. FT.

21" X 15"	M5-2(L)	2.19 SQ. FT.
21" X 15"	IM5-2(L)	2.19 SQ. FT.
21" X 15"	LM5-2(L)	2.19 SQ. FT.

21" X 15"	M6-1(R)	2.19 SQ. FT.
21" X 15"	IM6-1(R)	2.19 SQ. FT.
21" X 15"	LM6-1(R)	2.19 SQ. FT.
30" X 21"	M6-1E(R)	4.38 SQ. FT.
30" X 21"	IM6-1E(R)	4.38 SQ. FT.
30" X 21"	LM6-1E(R)	4.38 SQ. FT.

21" X 15"	M6-1(L)	2.19 SQ. FT.
21" X 15"	IM6-1(L)	2.19 SQ. FT.
21" X 15"	LM6-1(L)	2.19 SQ. FT.
30" X 21"	M6-1E(L)	4.38 SQ. FT.
30" X 21"	IM6-1E(L)	4.38 SQ. FT.
30" X 21"	LM6-1E(L)	4.38 SQ. FT.

21" X 15"	M6-2(R)	2.19 SQ. FT.
21" X 15"	IM6-2(R)	2.19 SQ. FT.
21" X 15"	LM6-2(R)	2.19 SQ. FT.
30" X 21"	M6-2E(R)	4.38 SQ. FT.
30" X 21"	IM6-2E(R)	4.38 SQ. FT.
30" X 21"	LM6-2E(R)	4.38 SQ. FT.

21" X 15"	M6-2(L)	2.19 SQ. FT.
21" X 15"	IM6-2(L)	2.19 SQ. FT.
21" X 15"	LM6-2(L)	2.19 SQ. FT.
30" X 21"	M6-2E(L)	4.38 SQ. FT.
30" X 21"	IM6-2E(L)	4.38 SQ. FT.
30" X 21"	LM6-2E(L)	4.38 SQ. FT.

21" X 15"	M6-3	2.19 SQ. FT.
21" X 15"	IM6-3	2.19 SQ. FT.
21" X 15"	LM6-3	2.19 SQ. FT.
30" X 21"	M6-3E	4.38 SQ. FT.
30" X 21"	IM6-3E	4.38 SQ. FT.
30" X 21"	LM6-3E	4.38 SQ. FT.

CODE DESIGNATIONS

"M" SERIES: FOR USE ON U.S. AND STATE ROUTES
SYMBOL AND BORDER: BLACK (NON-REFLECTORIZED)
BACKGROUND: WHITE (REFLECTORIZED)

"IM" SERIES: FOR USE ON INTERSTATE ROUTES
SYMBOL AND BORDER: WHITE (REFLECTORIZED)
BACKGROUND: BLUE (TRANSPARENT REFLECTORIZED)

"LM" SERIES: FOR USE ON OFF INTERSTATE BUSINESS ROUTES
SYMBOL AND BORDER: WHITE (REFLECTORIZED)
BACKGROUND: GREEN (TRANSPARENT REFLECTORIZED)

COLORS

M SERIES LEGEND AND BORDER: BLACK (NON-REFLECTORIZED)
IM SERIES LEGEND AND BORDER: WHITE (REFLECTORIZED)
LM SERIES LEGEND AND BORDER: WHITE (REFLECTORIZED)
M SERIES BACKGROUND: WHITE (REFLECTORIZED)
IM SERIES BACKGROUND: BLUE (TRANSPARENT REFLECTORIZED)
LM SERIES BACKGROUND: GREEN (TRANSPARENT REFLECTORIZED)

BASIS OF PAYMENT

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

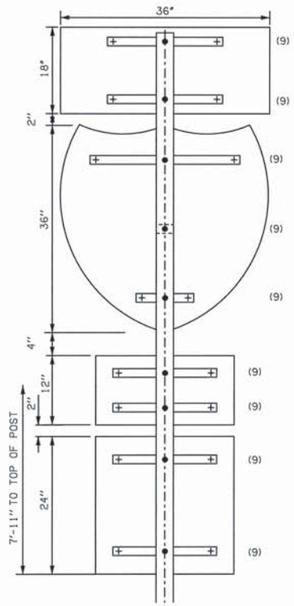
APPROVED BY TRAFFIC ENGINEER: _____ DATE 7/27/2011

TRAFFIC STANDARD
ROUTE MARKER SIGN DETAILS
(M-SERIES)

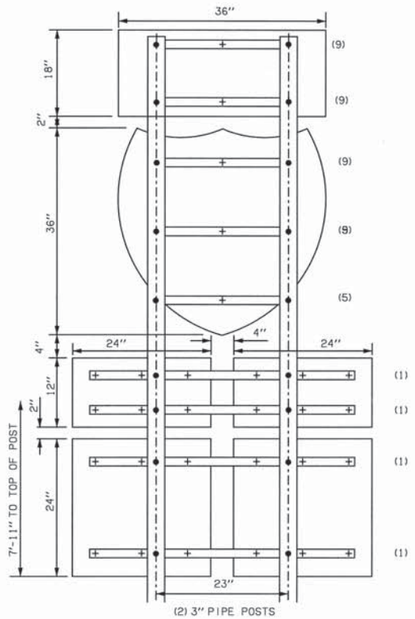
2009 SPECIFICATIONS

MSD3-1 | 01
T-122

DESCRIPTION	REVISIONS	DATE

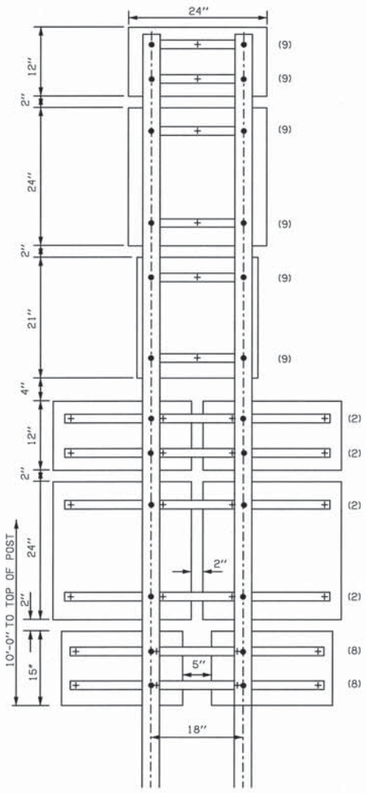


(1) 3" PIPE POST



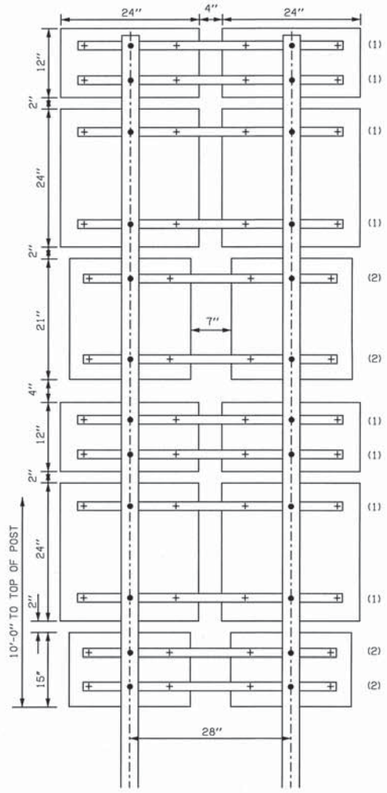
(2) 3" PIPE POSTS

TYPICAL DETAIL FOR MOUNTING
36" ROUTE MARKER WITH 24"
ROUTE MARKER



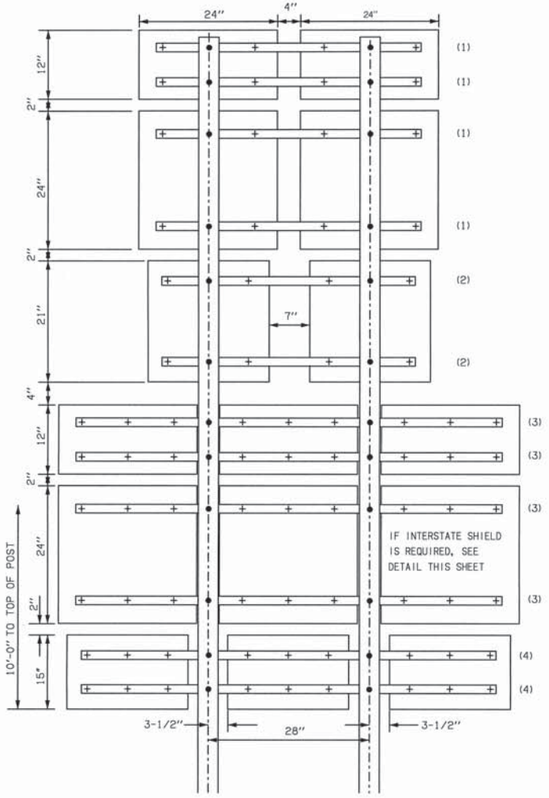
(2) 3" PIPE POSTS

TYPICAL MOUNTING DETAILS FOR
THREE (3) 24" ROUTE MARKERS



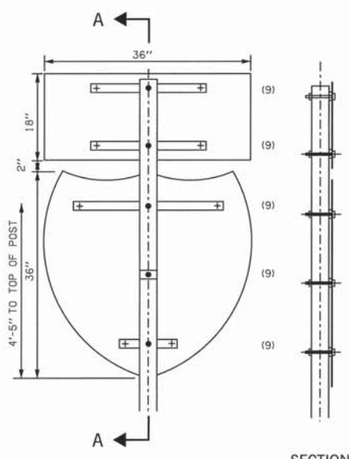
(2) 3-1/2" PIPE POSTS

TYPICAL MOUNTING DETAILS FOR
FOUR (4) 24" ROUTE MARKERS



(2) 4" PIPE POSTS

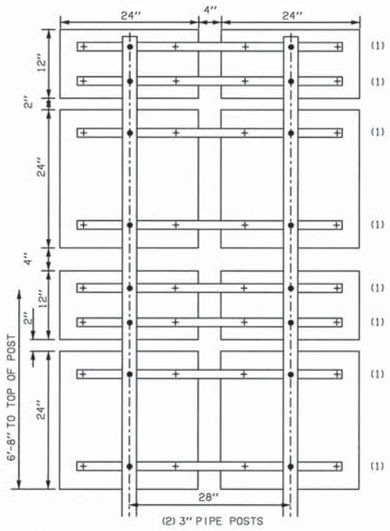
TYPICAL MOUNTING DETAILS FOR
FIVE (5) 24" ROUTE MARKERS



(1) 3" PIPE POST

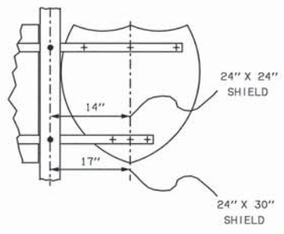
36" ROUTE MARKER
ASSEMBLY

SECTION
"A-A"



(2) 3" PIPE POSTS

TYPICAL MOUNTING DETAIL
FOR FOUR (4) 24" ROUTE MARKERS



TYPICAL MOUNTING DETAILS FOR
24" INTERSTATE SHIELD ON THREE
ROUTE MARKER ASSEMBLY

BRACKET ARM NO.	BRACKET LENGTH
1	46"
2	44"
3	74"
4	72"
5	26"
6	50"
7	56"
8	42"
9	SEE STDS. SBS2-1-, & SBS4-1- (LATEST REVISION)

APPROVED BY
TRAFFIC ENGINEER: _____ DATE: 8/3/2010

TRAFFIC STANDARD

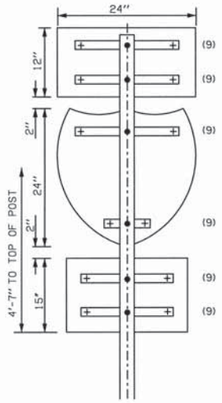
ROUTE MARKER SIGN DETAILS (POSTS & BRACKET DETAILS)

2009 SPECIFICATIONS

MSD4-1	00

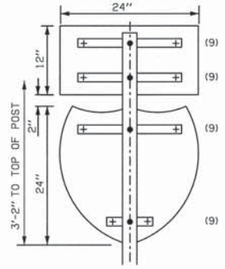
T-123

DESCRIPTION	REVISIONS	DATE



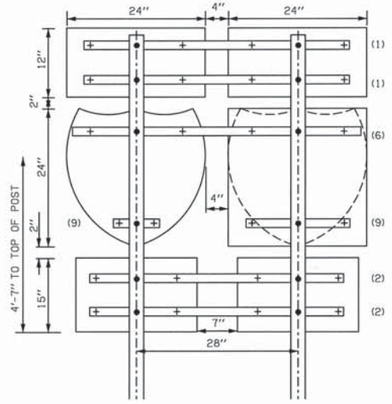
(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST

24" ROUTE MARKER ASSEMBLY



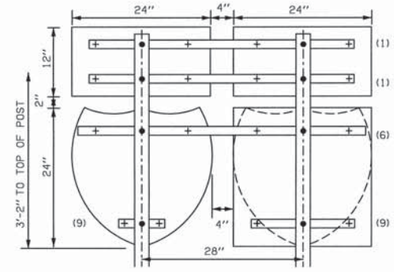
(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST

24" ROUTE MARKER ASSEMBLY



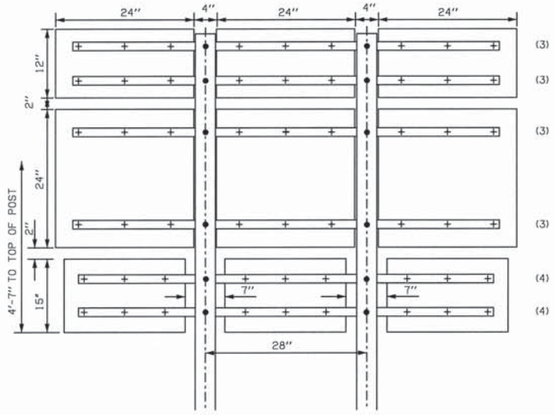
(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS

TYPICAL ROUTE MARKER ASSEMBLY FOR TWO (2) 24" ROUTE MARKERS



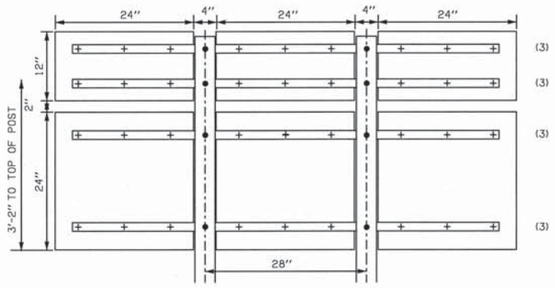
(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS

TYPICAL ROUTE MARKER ASSEMBLY FOR TWO (2) 24" ROUTE MARKERS



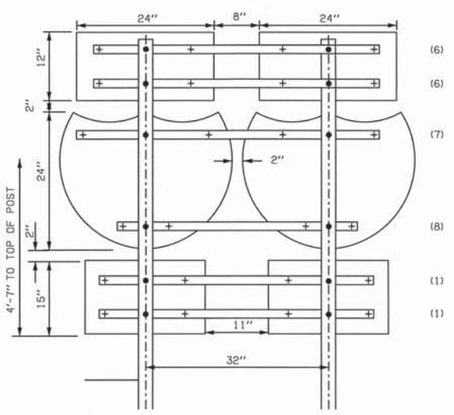
(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS

TYPICAL MOUNTING DETAILS FOR THREE (3) 24" ROUTE MARKERS



(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS

TYPICAL MOUNTING DETAILS FOR THREE (3) 24" ROUTE MARKERS



(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS

TYPICAL MOUNTING DETAILS FOR TWO (2) 24" ROUTE MARKERS USING 24" X 30" SHIELDS

BRACKET ARM NO.	BRACKET LENGTH
1	46"
2	44"
3	74"
4	72"
5	26"
6	50"
7	56"
8	42"
9	SEE STDS. SBS2-1-, & SBS4-1- (LATEST REVISION)

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

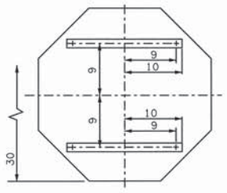
TRAFFIC STANDARD

ROUTE MARKER SIGN DETAILS (POST & BRACKET DETAILS)

2009 SPECIFICATIONS

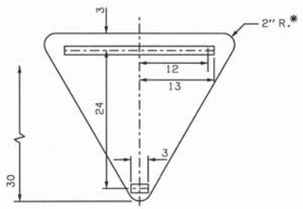
MSD5-1	00
	T-124

DESCRIPTION	REVISIONS	DATE



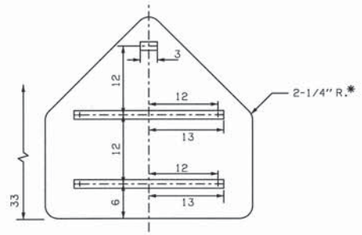
B–30(0)

(1) 2" SQUARE TUBE POST
(1) 2" PIPE POST



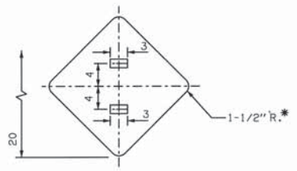
B–36(T)

(1) 2" SQUARE TUBE POST
(1) 2" PIPE POST



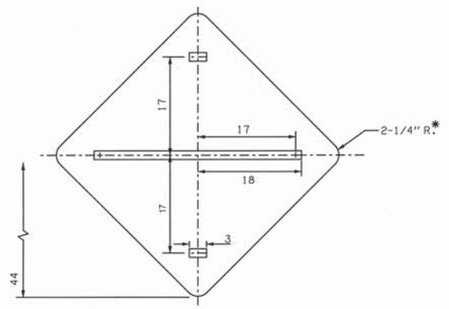
B–36(P)

(1) 2" SQUARE TUBE POST
(1) 2" PIPE POST



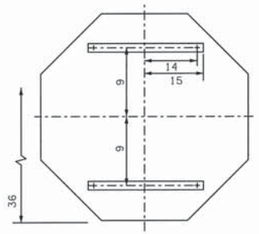
B–18(D)

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIPE POST



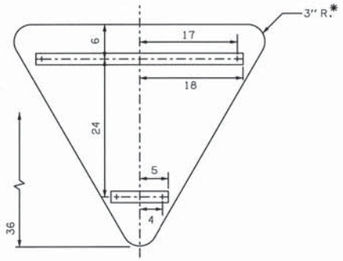
B–36(D)

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST



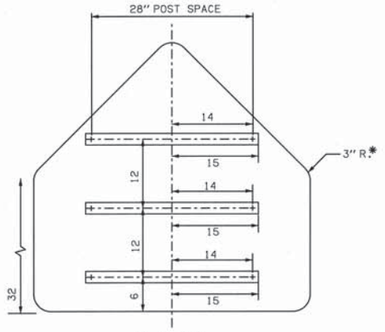
B–36(0)

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST



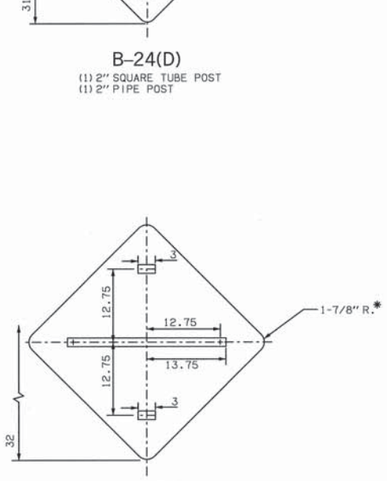
B–48(T)

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



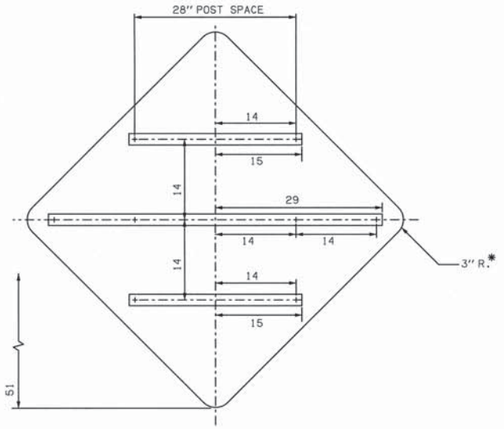
B–48(P)

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS



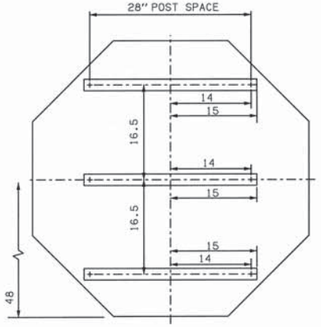
B–30(D)

(1) 2" SQUARE TUBE POST
(1) 2" PIPE POST



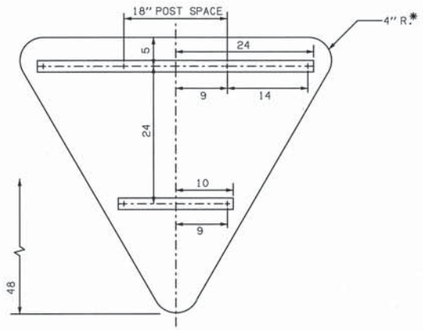
B–48(D)

(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS



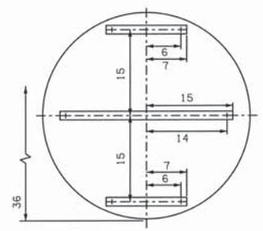
B–48(0)

(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS



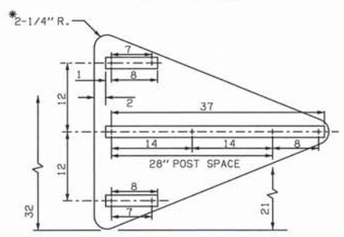
B–60(T)

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS



B–36(R)

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST



B–4836(T)

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS

CONSTRUCTION NOTES:

(1) ALL FLAT SHEET SIGNS SHALL USE GALVANIZED STEEL POSTS.

(2) THICKNESS OF MATERIALS FOR FLAT SHEET SIGNS SHALL BE AS FOLLOWS, DETERMINED BY THE LONGEST DIMENSION OF THE SIGN UNLESS OTHERWISE SPECIFIED.

ALUMINUM ALLOY 6061-T6 OR 5052-H38	GALVANIZED STEEL
0.063" FOR SIGNS THROUGH 24"	16 GAUGE FOR SIGNS THROUGH 24"
0.080" FOR SIGNS 25" THROUGH 35"	14 GAUGE FOR SIGNS 25" THROUGH 35"
0.100" FOR SIGNS 36" AND LARGER	12 GAUGE FOR SIGNS 36" AND LARGER

(3) SIGN BRACKETS SHALL BE GALVANIZED STEEL OR ALUMINUM. HOLES FOR MOUNTING BRACKETS TO SIGN SHALL BE 5/16" D. HOLES FOR MOUNTING SIGN AND BRACKETS TO POST SHALL BE 3/8" D. HOLES SHALL BE PUNCHED BEFORE GALVANIZING. SIZE OF BRACKETS SHALL BE AS FOLLOWS: SIGNS THROUGH 36" SHALL USE A GALVANIZED STEEL OR ALUMINUM CHANNEL 1-1/2" X 1/2" X 1/8". SIGNS LARGER THAN 36" SHALL USE A GALVANIZED STEEL OR ALUMINUM CHANNEL 2" X 1/2" X 1/8". ALUMINUM SIGN BRACKETS SHALL BE ALLOY 6061-T6, 6062-T6 OR 6063-T6.

(4) ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED STEEL OR CADMIUM PLATED. ALL BOLT ENDS SHALL BE SUFFICIENTLY BRADDED AFTER INSTALLATION TO MINIMIZE REMOVAL BY VANDALISM.

(5) ALL POSTS SHALL EXTEND 2" ABOVE THE TOP SIGN BRACKET, BUT NOT ABOVE THE TOP OF THE SIGN.

* (6) CORNER RADIUS FOR ALL FLAT SHEET SIGNS SHALL BE AS SHOWN.

(7) ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

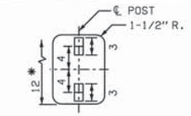
APPROVED BY TRAFFIC ENGINEER: _____ DATE: 8/3/2010

TRAFFIC STANDARD

SIGN BLANK AND BRACKET DETAILS

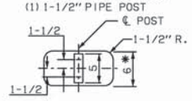
2009 SPECIFICATIONS

SBS1-1	00
	T-130

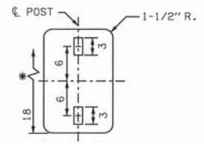


B–0912 ■

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST

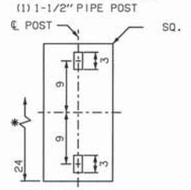


B–1206 ■



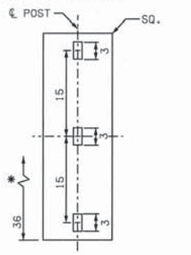
B–1218 ■

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



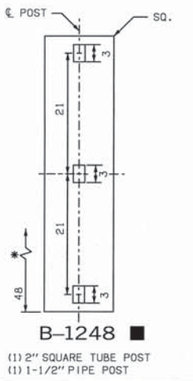
B–1224 ■

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



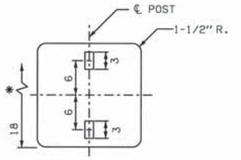
B–1236 ◢ ■

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



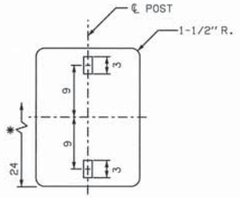
B–1248 ■

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



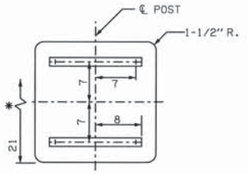
B–18(S) ■

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



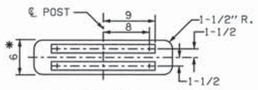
B–1824 ■

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



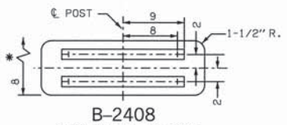
B–21(S)

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



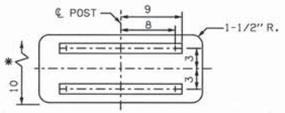
B–2406

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



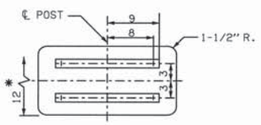
B–2408

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



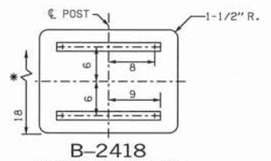
B–2410

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



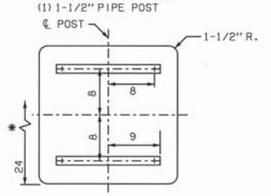
B–2412

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



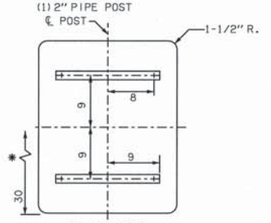
B–2418

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



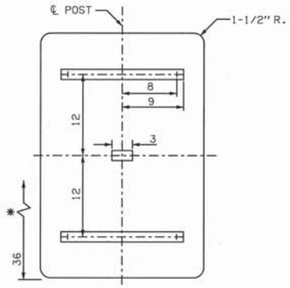
B–24(S)

(1) 2" SQUARE TUBE POST
(1) 2" PIP POST



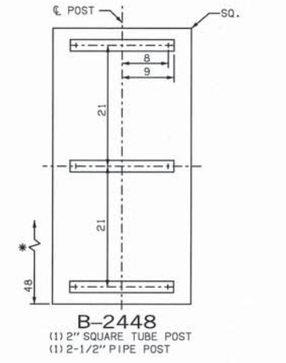
B–2430

(1) 2" SQUARE TUBE POST
(1) 2" PIP POST



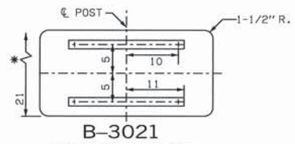
B–2436

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIP POST



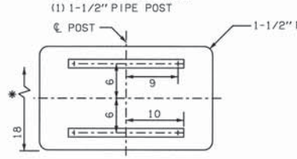
B–2448

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIP POST



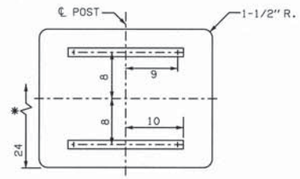
B–3021

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



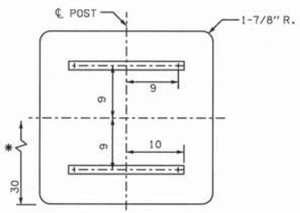
B–3018

(1) 2" SQUARE TUBE POST
(1) 1-1/2" PIP POST



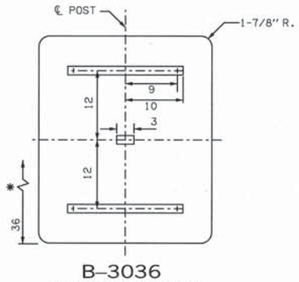
B–3024

(1) 2" SQUARE TUBE POST
(1) 2" PIP POST



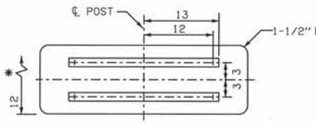
B–30(S)

(1) 2" SQUARE TUBE POST
(1) 2" PIP POST



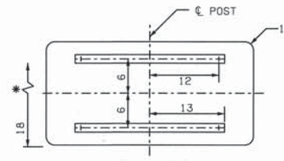
B–3036

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIP POST



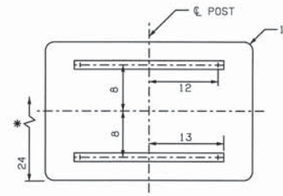
B–3612

(1) 2" SQUARE TUBE POST
(1) 2" PIP POST



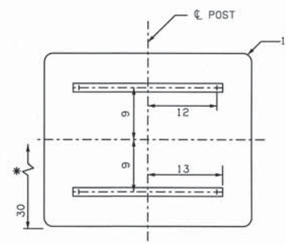
B–3618

(1) 2" SQUARE TUBE POST
(1) 2" PIPE POST



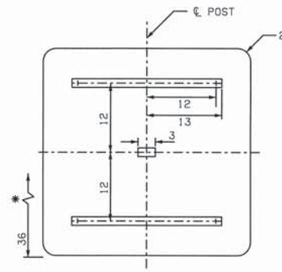
B–3624

(1) 2" SQUARE TUBE POST
(1) 2" PIPE POST



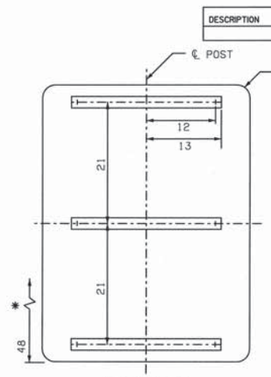
B–3630

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST



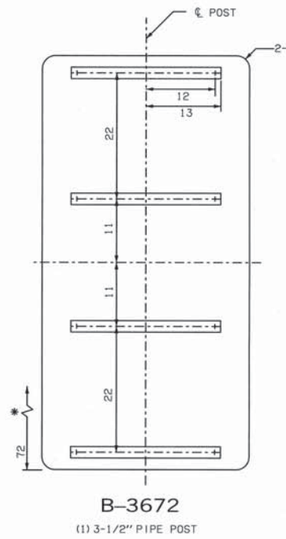
B–36(S)

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST



B–3648

(2) 2" SQUARE TUBE POSTS
(1) 3" PIPE POST



B–3672

(1) 3-1/2" PIPE POST

DESCRIPTION	REVISIONS	DATE

NOTES:

* ALL POSTS SHALL EXTEND 2" ABOVE THE TOP SIGN BRACKET, BUT NOT ABOVE THE TOP OF THE SIGN.

◢ SIGN BLANK THICKNESS SHALL BE .060" ALUMINUM OR 16 GAUGE STEEL.

■ VERTICAL SIGN BRACKET ONLY.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

APPROVED BY TRAFFIC ENGINEER: David Streb DATE: 6/3/2010

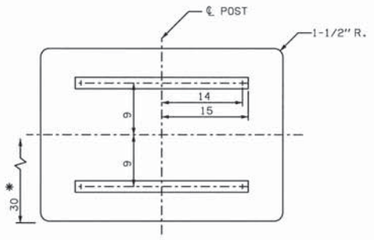
TRAFFIC STANDARD

SIGN BLANK AND BRACKET DETAILS

2009 SPECIFICATIONS

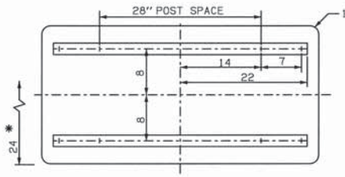
SBS2-1	00
	T-131

REVISIONS		
DESCRIPTION		DATE



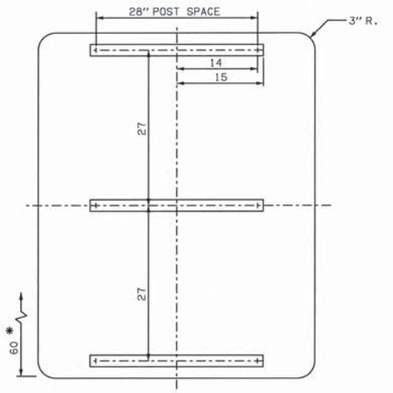
B–4230

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST



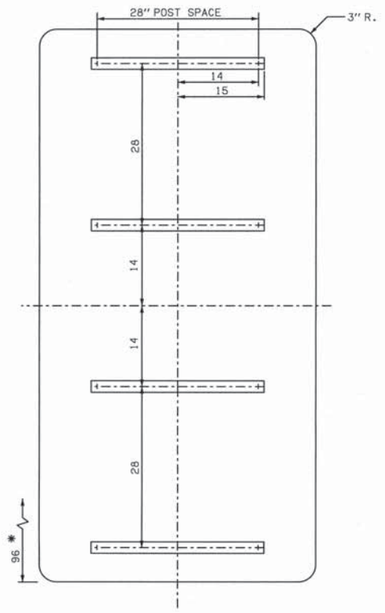
B–4824

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS



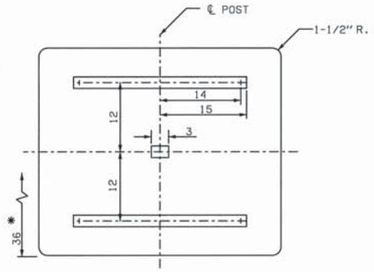
B–4860

(2) 2-1/2" PIPE POSTS WITH SINGLE SIGN BLANK
(2) 3-1/2" PIPE POSTS WHEN 2 SIGN BLANKS ARE USED IN A CLUSTER



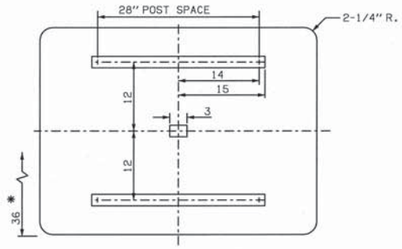
B–4896

(2) 3" PIPE POSTS



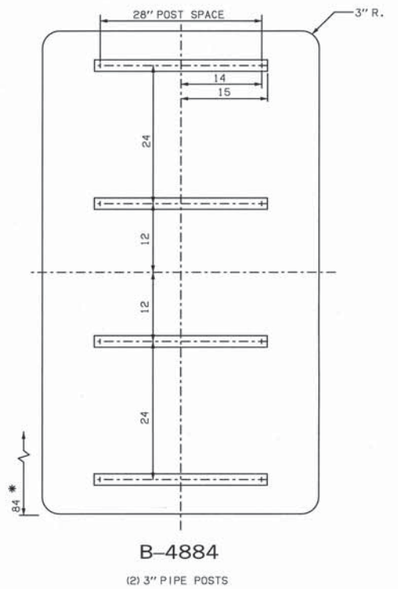
B–4236

(1) 2" SQUARE TUBE POST
(1) 2-1/2" PIPE POST



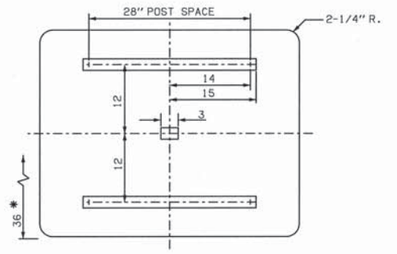
B–4836

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS



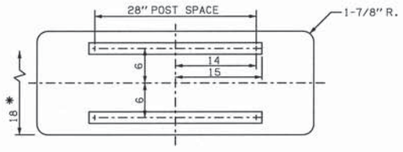
B–4884

(2) 3" PIPE POSTS



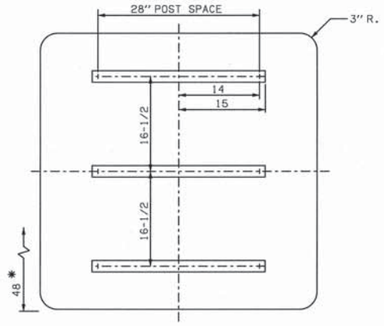
B–4536

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS



B–4818

(2) 2" SQUARE TUBE POSTS
(2) 1-1/2" PIPE POSTS



B–48(S)

(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS

* ALL POSTS SHALL EXTEND 2" ABOVE THE TOP SIGN BRACKET, BUT NOT ABOVE THE TOP OF THE SIGN.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

APPROVED BY TRAFFIC ENGINEER: David Streb DATE: 8/3/2010

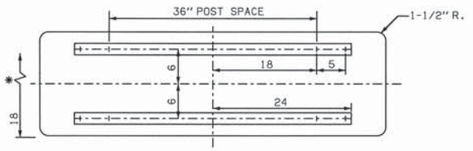
TRAFFIC STANDARD

SIGN BLANK AND BRACKET DETAILS

2009 SPECIFICATIONS

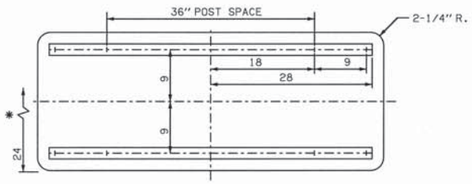
SBS3–1	00
	T–132

DESCRIPTION	REVISIONS	DATE



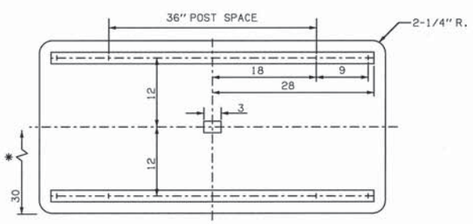
B-6018

(2) 2" SQUARE TUBE POSTS
(2) 1-1/2" PIPE POSTS



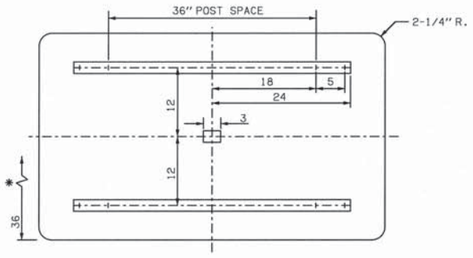
B-6024

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS



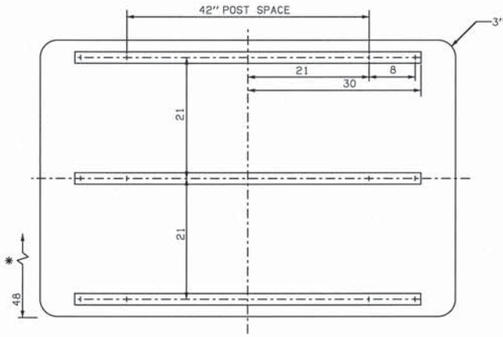
B-6030

(2) 2" SQUARE TUBE POSTS
(2) 2" PIPE POSTS



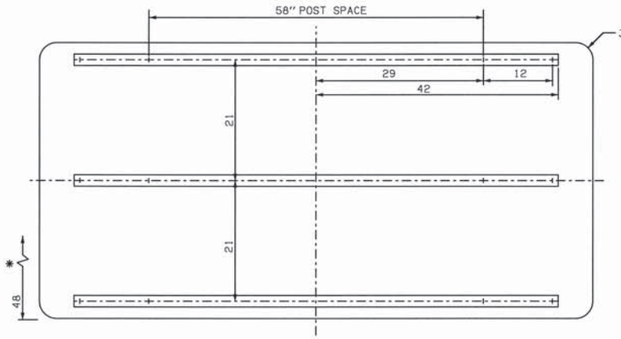
B-6036

(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS



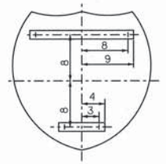
B-7248

(2) 2" SQUARE TUBE POSTS
(2) 2-1/2" PIPE POSTS

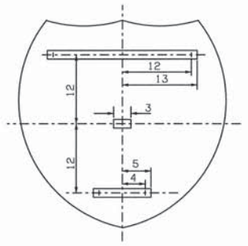


B-9648

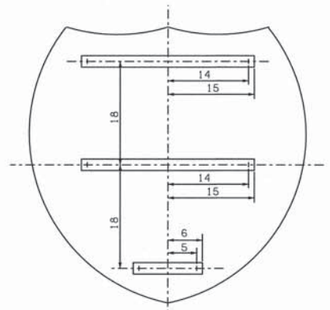
(2) 3" PIPE POSTS



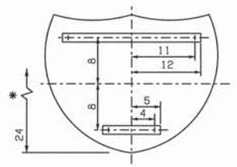
B-24(M)



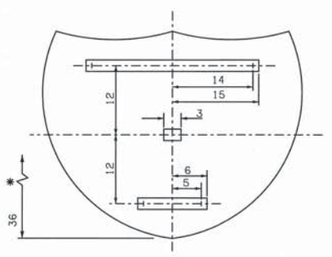
B-36(M)



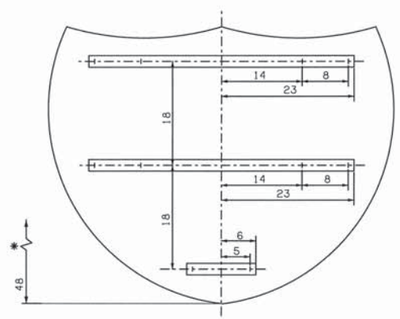
B-48(M)



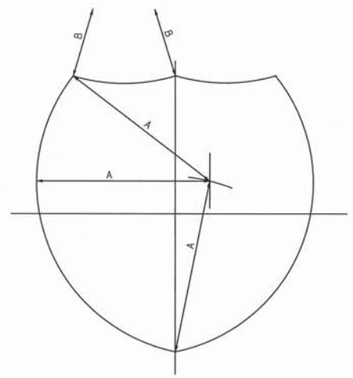
B-3024(M)



B-4536(M)



B-6048(M)



	A (In)	B (In)
24" X 24"	15	15
30" X 24"	17	24
36" X 36"	22-1/2	22-1/2
45" X 36"	25-1/2	36
48" X 48"	30	30
60" X 48"	34	48

NOTES:

BRACKET ARMS SHOWN ARE FOR SIGNS INDIVIDUALLY MOUNTED.

* ALL POSTS SHALL EXTEND 2" ABOVE THE TOP SIGN BRACKET, BUT NOT ABOVE THE TOP OF SIGN.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

APPROVED BY TRAFFIC ENGINEER: Chad Edmondson DATE: 8/3/2010

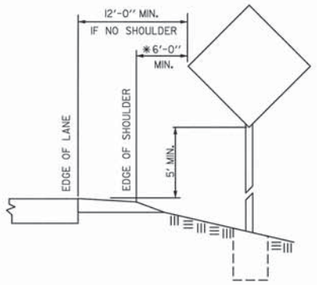
TRAFFIC STANDARD

SIGN BLANK AND BRACKET DETAILS

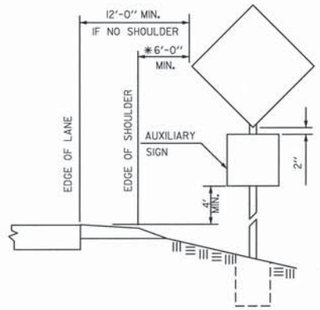
2009 SPECIFICATIONS

SBS4-1	00

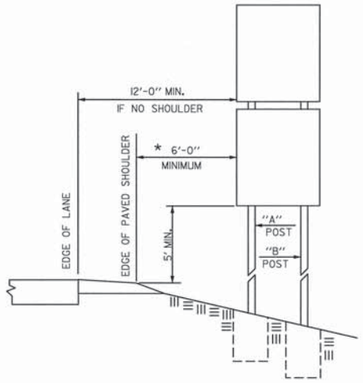
T-133



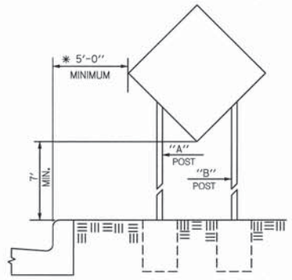
SINGLE POST (RURAL)



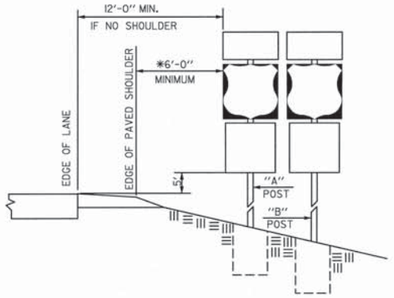
SINGLE POST WITH
AUXILIARY SIGN (RURAL)



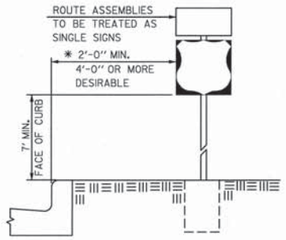
DOUBLE POST MAXIMUM &
MINIMUM SPEED LIMIT SIGNS (RURAL)



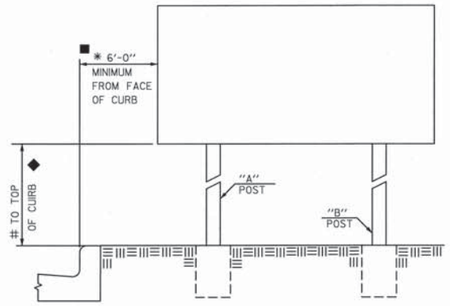
BUSINESS, COMMERCIAL OR
RESIDENTIAL AREA



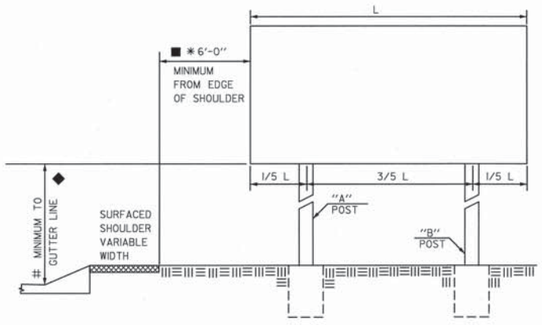
ROADSIDE ASSEMBLY
(RURAL)



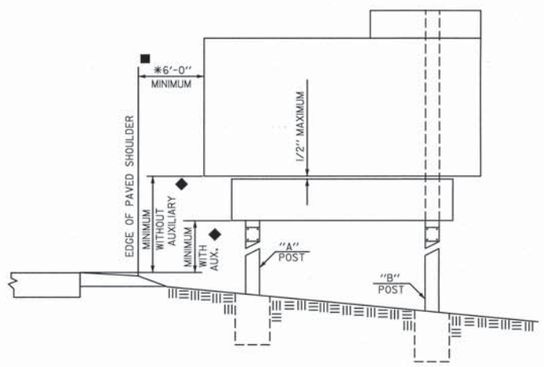
BUSINESS, COMMERCIAL OR
RESIDENTIAL AREA



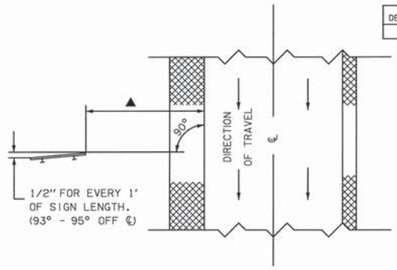
INFORMATION SIGN WITH
NON-MOUNTABLE CURB



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.

APPROVED BY
TRAFFIC ENGINEER: Chad Smith DATE: 8/3/2010

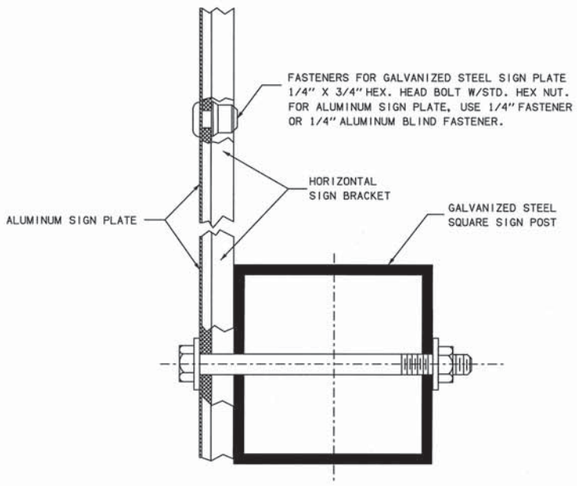
TRAFFIC STANDARD

TYPICAL INSTALLATIONS OF GROUND MOUNTED SIGNS

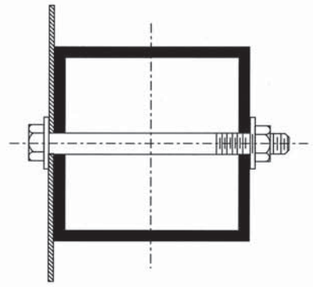
2009 SPECIFICATIONS

GMS1-1	00
	T-136

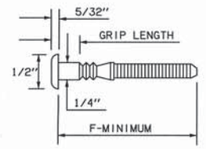
DESCRIPTION	REVISIONS	DATE

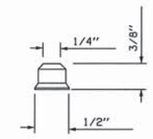


TOP VIEW



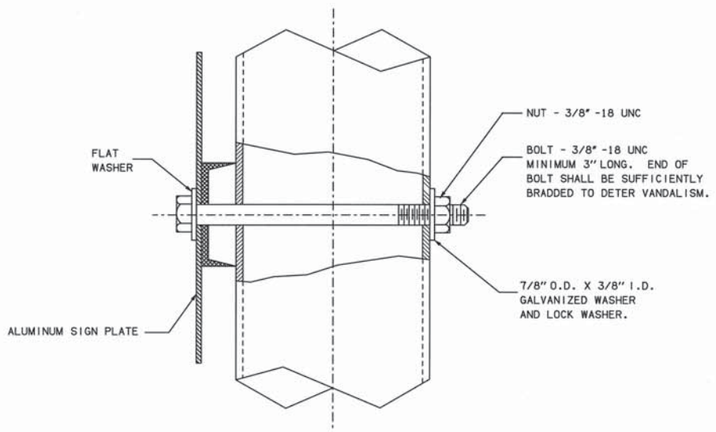
TOP VIEW





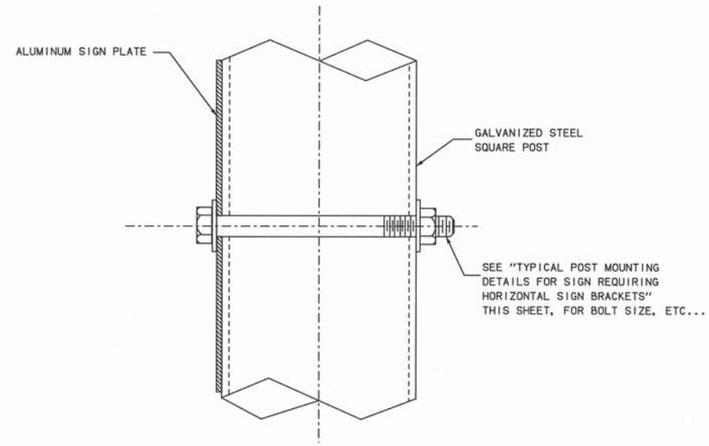
1/4" FASTENER AND 1/4" COLLAR
(TYPICAL)

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



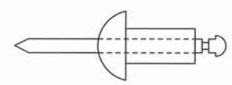
SIDE VIEW

TYPICAL POST MOUNTING DETAILS
FOR SIGN REQUIRING HORIZONTAL
SIGN BRACKETS



SIDE VIEW

TYPICAL POST MOUNTING DETAILS
FOR SIGN 18" WIDE AND UNDER



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

1/4" BLIND
FASTENERS

NOTE: ALL NUTS SHALL
BE SELF-LOCKING.

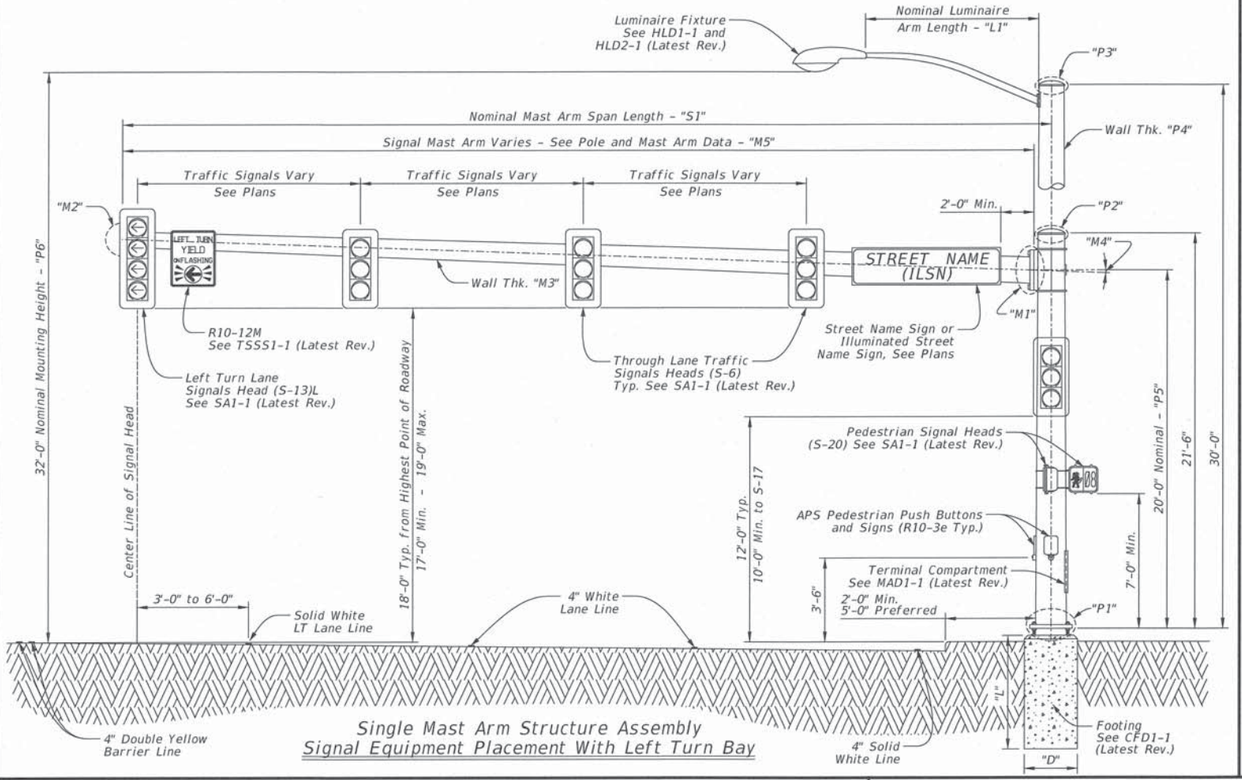
APPROVED BY
TRAFFIC ENGINEER: _____ DATE: 8/3/2010

TRAFFIC STANDARD

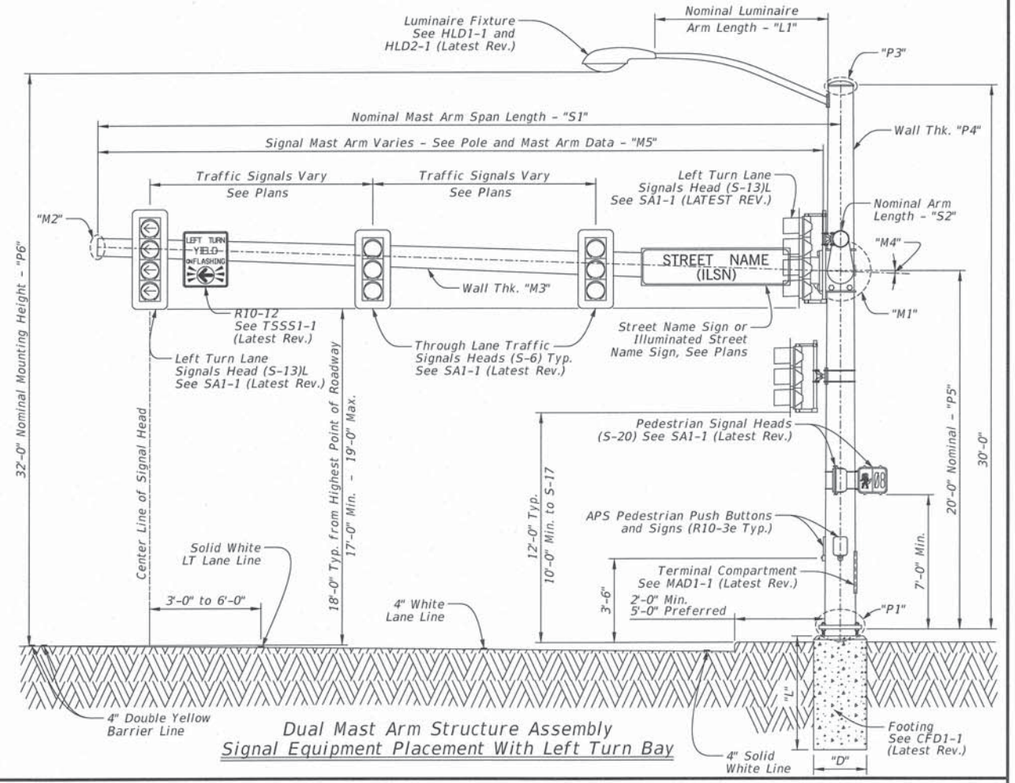
SHEET SIGN ASSEMBLY DETAILS
(SQUARE TUBE)

2009 SPECIFICATIONS

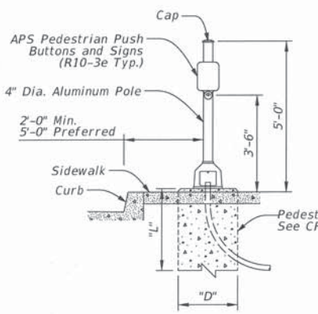
SSA1-1	00
T-139	



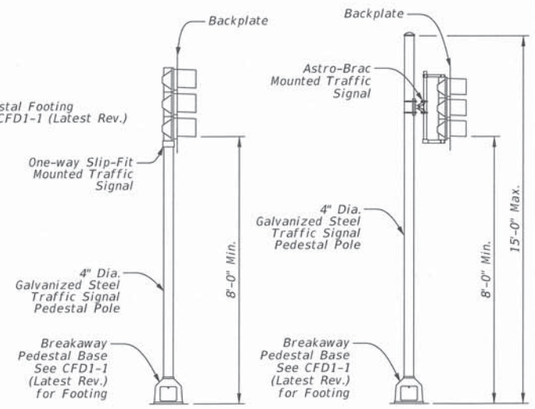
Single Mast Arm Structure Assembly
Signal Equipment Placement With Left Turn Bay



Dual Mast Arm Structure Assembly
Signal Equipment Placement With Left Turn Bay



Pedestrian Push Button Post



Slip-Fit Attachment Astro-Brac Attachment

Pedestal Mounted Signals

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 signal pole assemblies located near overhead electrical lines shall be accomplished using established industry and utility safety practices and in accordance with laws governing such work. The Contractor shall consult with the appropriate utility company prior to beginning such work.

   A. Standard Steel Pole and Mast Arm Designs:
      Steel poles and mast arms fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs.
      Submission of shop drawings for standard designs are required for project records.

   B. Optional Steel Pole Designs:
      12 sided are acceptable as an alternative to round. Other steel pole designs if permitted or required, pending approval by the Department as outlined below.

      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 Design for Signal Poles:
         Designs conform to 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications. Designed for 3-second wind gust speed equal to 90 MPH with a 1.14 gust factor. A wind importance factor of 0.87 is applied to adjust the wind speed to a 50 year recurrence interval. Design moments listed in tables assume base of pole is less than 33' above natural ground level. Fatigue importance Category II is used for fatigue design. Fatigue design loads applied include galloping, natural wind gust pressure range based on a yearly mean wind velocity of 11.2 MPH, and truck-gust pressure range based on a truck speed of 65 MPH. Unless otherwise noted, all steel parts shall be galvanized in accordance with Section 724.06, "Galvanizing." Steel poles shall be fabricated in accordance with Section 724, "Structural Steel." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with the ANSI/AWS Structural Welding Code D1.1. Two-section signal poles will not be permitted. Mast arms may be fabricated in two sections for lengths greater than 40 LF and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint. Ensure longitudinal seam welds that will be in contact at a slip joint splice are ground smooth for the length of splice plus a minimum of six inches.
      3. Mast Arm Attachments:
         All poles and attachments shall be structurally designed to support equipment identified above and listed on Standard PFID1-1, latest revision. Poles shall be supplied with mast arm combinations as shown in the plans. All luminaire mast arms shall be designed for a 50-pound luminaire having an effective projected area of 2.0 square feet.
      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.

Basis of Payment

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

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

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

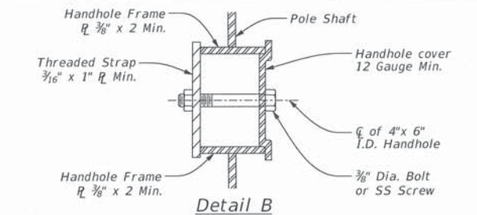
ODOT

Traffic Standard

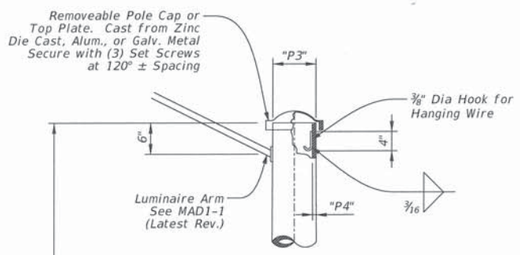
Traffic Signal Support Structures Signal Pole and Mast Arm Details

2009 Specifications

PMAP1-2	00
T-200	

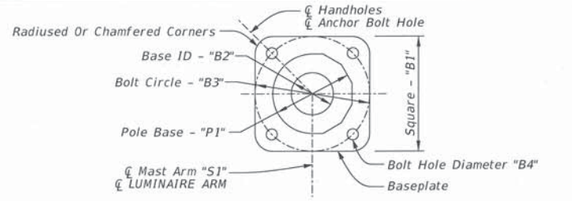


Detail B

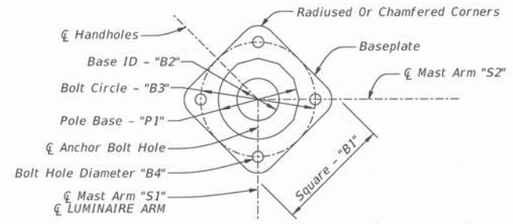


Pole Elevation

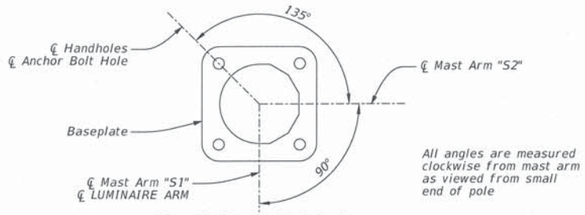
(For 30' Pole with Luminaire)



Single Mast Arm - Shoe Base Baseplate Detail



Dual Mast Arm - Shoe Base Baseplate Detail



Handhole Radial Index

All angles are measured clockwise from mast arm as viewed from small end of pole

Material Data		
Component	ASTM Designation	Min. Yield (Ksi)
Pole Shaft (0.14"/Ft. Taper)	A570 GR. 50, A572 GR. 55, A595 GR. A, A1011 HSLAS GR. 50 CL 2, (2) or A1008 HSLAS GR 50 CL 2	50
Base Plate and Handhole Frame	A572 GR. 50	50
Mast Arm Connecting Bolts and Nuts	A325	80
T-Base Connecting Bolts	A325 (1)	80
Anchor Bolts	F1554 GR 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 GR 2H, or A563 GR DH	
Flat Washers	F436	

(1) Lubricate in the field if necessary in lieu of the requirements in ASTM A325.

(2) A1011 SS GR 50 may be used in lieu of HSLAS, provided the material meets the elongation requirements For HSLAS

Materials Table

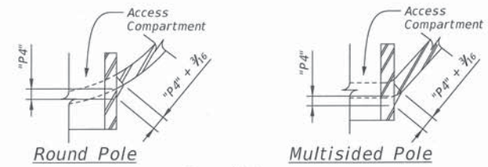
General Notes:

1. Dimensional limits are given to show acceptable variation in design. All of a fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.
2. Each pole arm plate shall be supplied with bolts and lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.
3. Proposed deviations in arm connector dimensions or materials must be submitted to the department for approval.
4. The handhole reinforcement shall be welded to the pole shaft in the 0 deg. location unless otherwise specified, prior to galvanizing the pole shaft.
5. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be ¼-20 stainless flat socket head screws with tamper proof feature.
6. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 ¼" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
7. The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
8. Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.
9. Handhole mounting height may be increased if a decorative pole base cover is installed and exceeds a height of 36" or creates an obstruction to removing the handhole cover.
10. Various terminal block designs exist. Provide terminal block consisting of a minimum of 12 circuits 600 volt compression type HD modules meeting the wiring requirements identified in the plans within the handhole area shown. Provide four (4) #8-32 x 1 1#4" self tapping type "F" stainless steel pan head screws or equivalent. Terminal strips and provisions for grounding shall be supplied with hardware kit.
11. For dual mast arms mounted at an angle greater than 90°, locate the upper handholes evenly spaced from the center line of each mast arm.

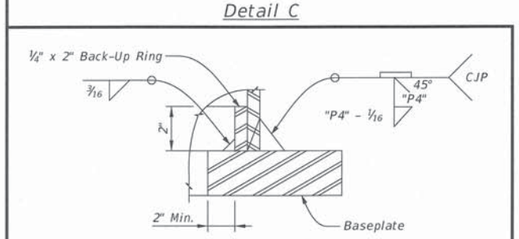
Pole Assembly Fabrication Tolerances Table	
Dimension	Tolerance
Length / Height	± 3"
Rise	± ¾" in 10 Ft
Diameter	+ 3/16"
Overall Length or Width	+ ¼"
Thickness	+ ¼", -1/16"
Deviation From Flat	⅛" in 12"
Spacing Between Holes	+ 3/32"
Bolt Hole Size	± 1/16"
Strut Location in Truss Arms	±1 ½"

Tolerance Table

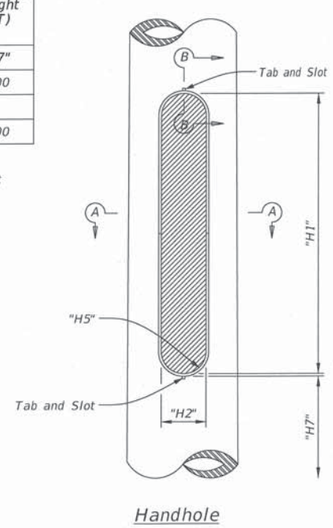
TABLE 6: BASE HANDHOLE DATA						
Vertical Length I.D. (in)	Horizontal Length I.D. (in)	Wall Thk. (in)	Handhole Depth (in)	Handhole Radius (in)	Projected Length from Wall (in)	Mounting Height (FT)
"H1"	"H2"	"H3"	"H4"	"H5"	"H6"	"H7"
26.25	4.50	1.00	3.00	2.25	0.75	3.00
Dual Mast Arm Handhole Data for 45 to 55						
26.25	4.50	1.50	3.00	2.25	0.75	3.00



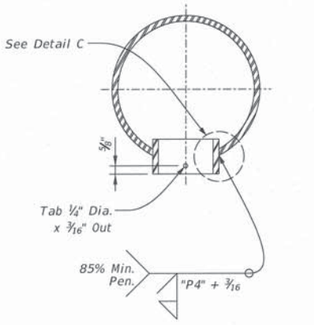
Detail C



Detail A

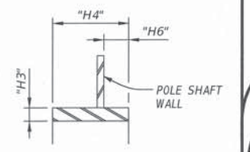


Handhole



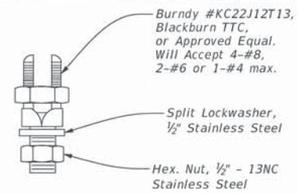
Section A-A

Note - Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



Section B-B

Pole Base Access Compartment



Copper Ground Connector

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

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

DOT

Traffic Standard

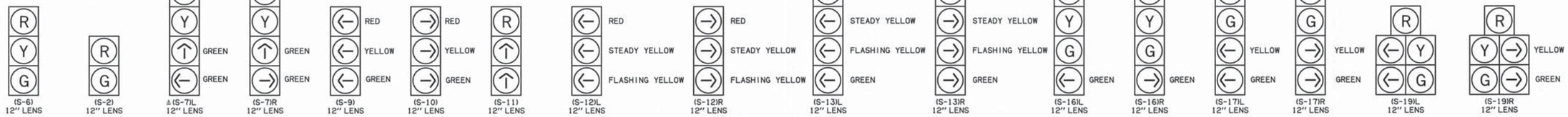
Traffic Signal Support Structures Signal Pole and Base Plate Details

2009 Specifications

SPBP1-1 | 00

T-200A

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



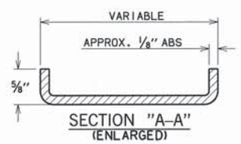
(S-6) 12" LENS
(S-2) 12" LENS
(S-7)L 12" LENS
(S-7)R 12" LENS
(S-9) 12" LENS
(S-10) 12" LENS
(S-11) 12" LENS
(S-12)L 12" LENS
(S-12)R 12" LENS
(S-13)L 12" LENS
(S-13)R 12" LENS
(S-16)L 12" LENS
(S-16)R 12" LENS
(S-17)L 12" LENS
(S-17)R 12" LENS
(S-19)L 12" LENS
(S-19)R 12" LENS

(S-20)

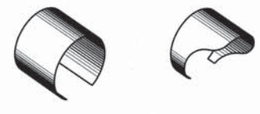
(S-22) 12" LENS
(S-8) 8" LENS

SIGNAL FACE TYPES

R = RED
Y = YELLOW
G = GREEN



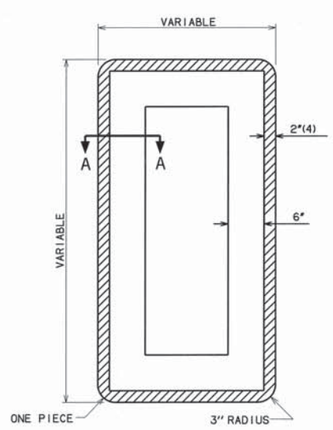
SECTION "A-A" (ENLARGED)



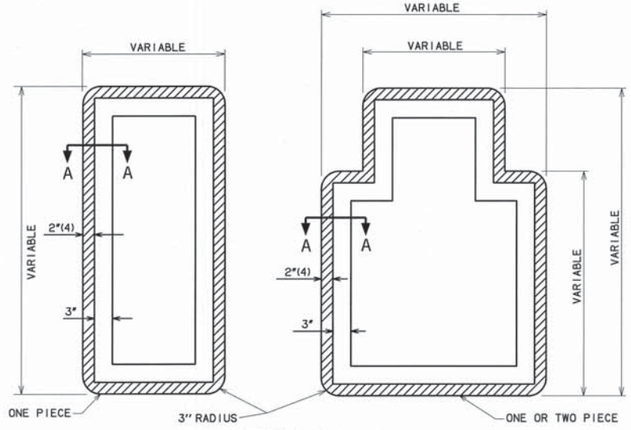
(V-1) TUNNEL

(V-2) CUTAWAY

VISOR TYPES



TYPE B-1
(8" BACKPLATE)



TYPE B-2
(5" BACKPLATE)

GENERAL NOTES

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

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
833	BACKPLATE	EA

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

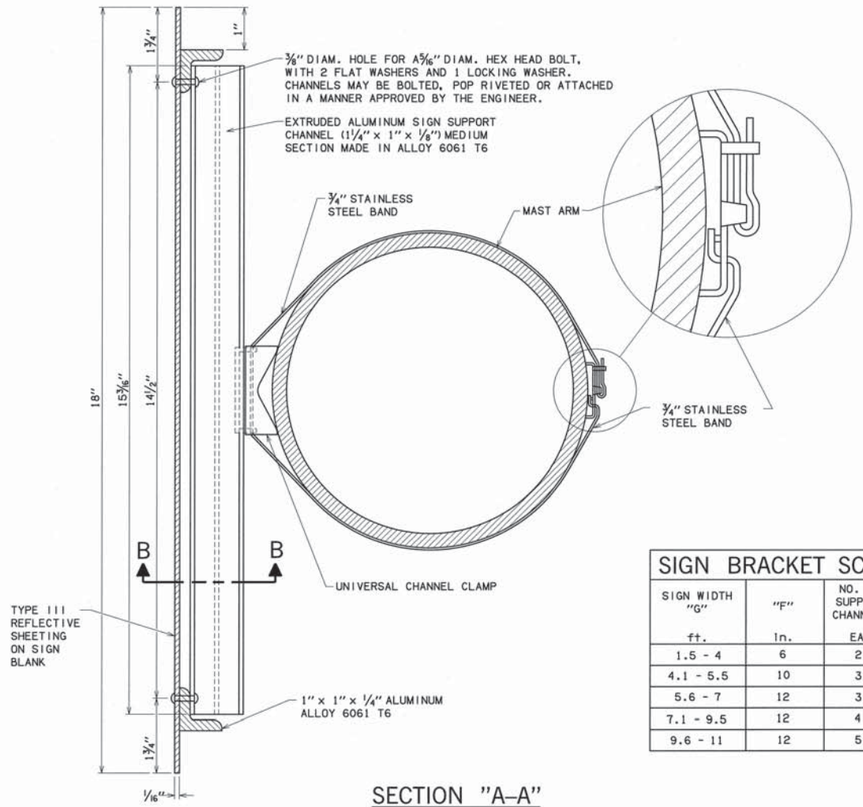
TRAFFIC STANDARD

TRAFFIC SIGNALS AND ACCESSORIES

2009 SPECIFICATIONS

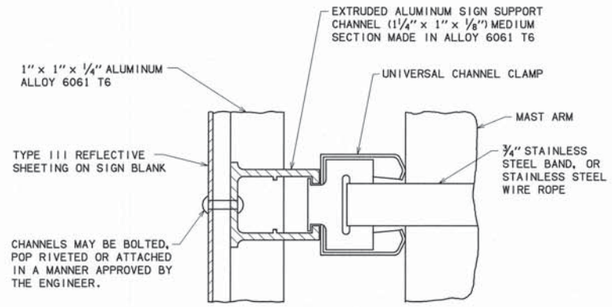
SA1-1	02
	T-201

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



SECTION "A–A"

SIGN BRACKET SCH.		
SIGN WIDTH "G" ft.	"F" In.	NO. OF SUPPORT CHANNELS EA.
1.5 - 4	6	2
4.1 - 5.5	10	3
5.6 - 7	12	3
7.1 - 9.5	12	4
9.6 - 11	12	5

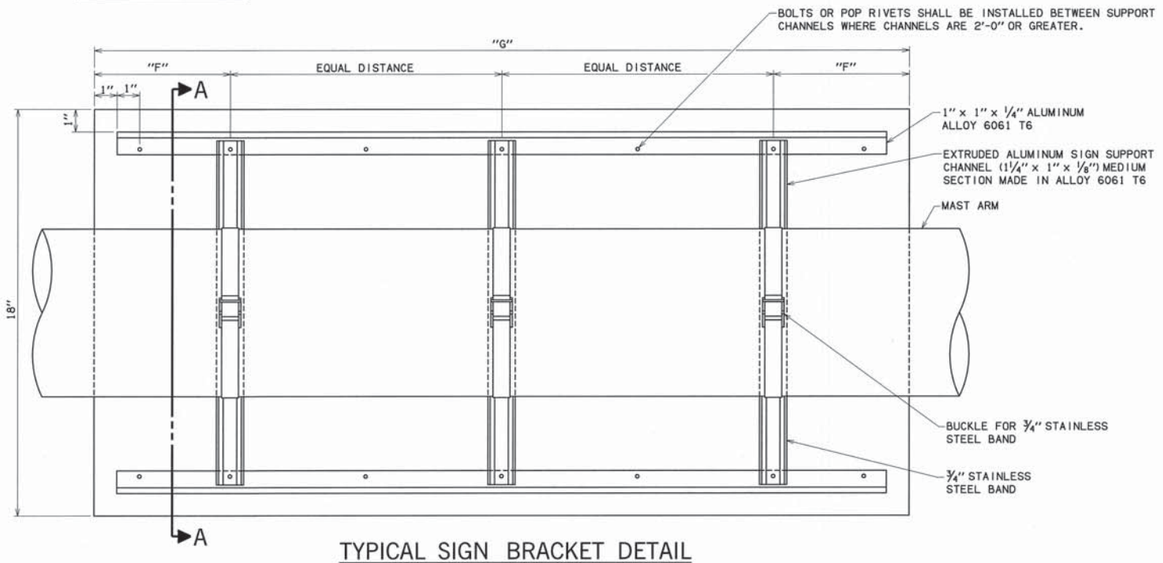


SECTION "B–B"

STREET NAME SIGNS SHALL BE INSTALLED AT APPROX. 2'-0" FROM THE EDGE OF POLE TO EDGE OF SIGN.

GENERAL NOTES

1. STREET NAME SIGNS SHALL BE MOUNTED ON MAST ARMS USING A MODIFIED MOUNTING BRACKET EQUIVALENT TO THOSE USED FOR MOUNTING SIGNAL HEADS. THESE SIGNS SHALL BE LOCATED 2'-0" FROM THE POLE ON THE MAST ARM. THICKNESS OF SIGN MATERIAL SHALL BE 1/16".
2. LETTER SIZES FOR MAST ARM MOUNTED SIGNS SHALL BE 12" UPPER CASE (FIRST LETTER) AND 9" LOWER CASE LETTERS.



TYPICAL SIGN BRACKET DETAIL

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
850(C)	MASTARM MOUNTED SIGNS	SF

APPROVED BY TRAFFIC ENGINEER: Chuck Graves DATE: 4/8/2013

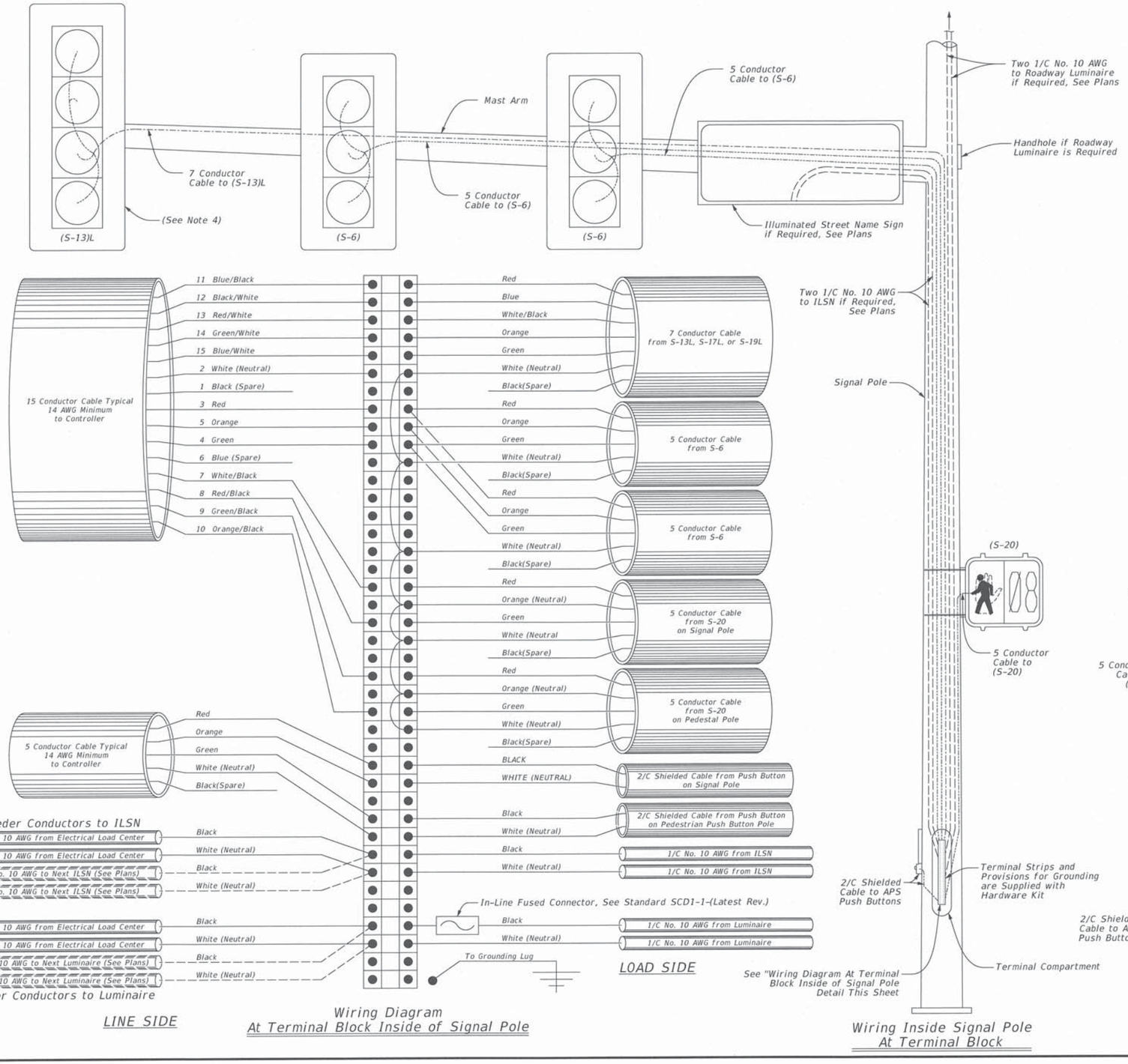
TRAFFIC STANDARD

STREET NAME SIGNS

2009 SPECIFICATIONS

SNS1-1 | 02

T-204



Traffic Signal Electric Cable Sequence Table

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

General Notes:

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

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

Approved By Traffic Engineer: Date: 3/16/2016

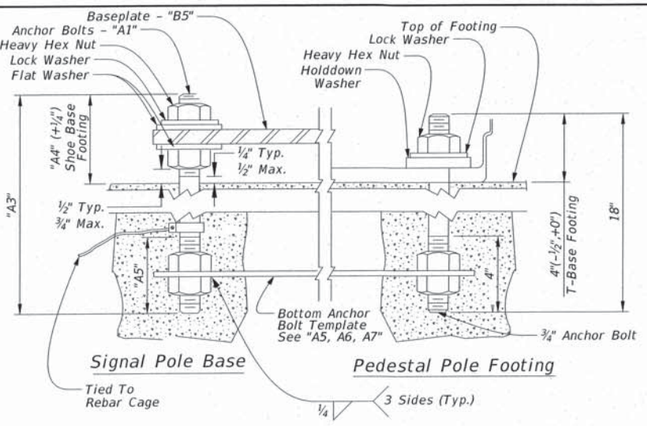
Traffic Standard

Traffic Signal Pole Wiring and Cable Termination Details

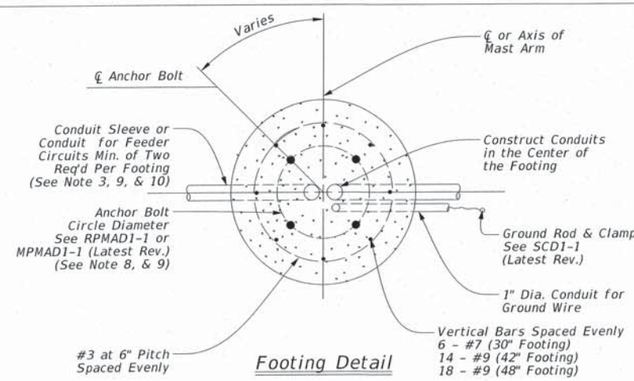
2009 Specifications

PWD1-2 | 00

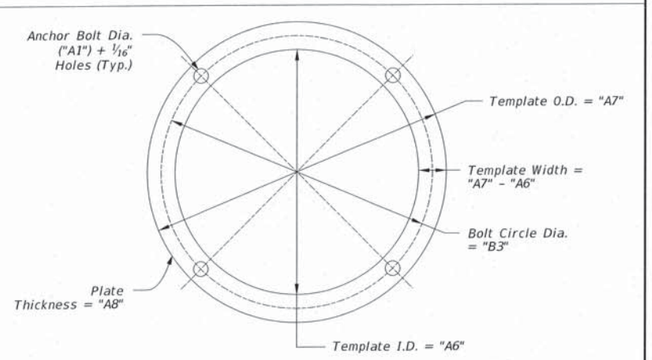
T-206



Anchor Bolt Detail



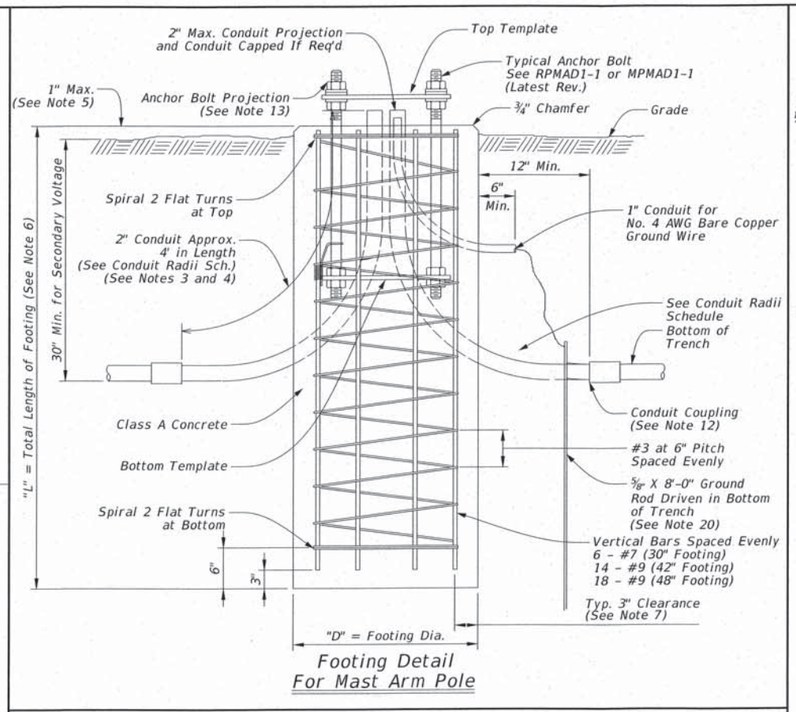
Footing Detail



Top and Bottom Template

Anchor Bolt Fabrication Tolerances Table	
Dimension	Tolerance
Length	± ½"
Threaded Length	± ½"
Galvanized Length (If Required)	– ¼"

Anchor Bolt Tolerances



Footing Detail For Mast Arm Pole

Signal Mast Arm Footing Data

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

Dual Mast Arm Footing Data

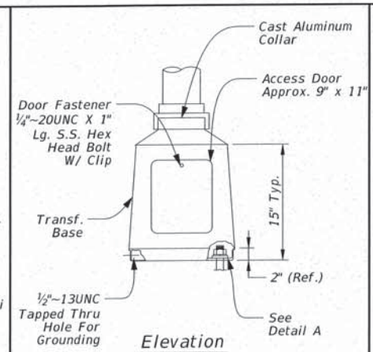
Longest Dual Mast Arm Length	Design No.	Dimensions: Footing Dia. "D"	Dimensions: Footing Length "L"	Dimensions: Bar #9 Length	Dimensions: * Bar #3 Spiral Length	Quantities: Reinforcing Steel	Quantities: Structural Conc.
(FT)		(IN)	(FT)	(FT)	(FT)	(LBS)	(CY)
Up to 40	S-40	42	13'-0"	12'-6"	273	697.7	4.6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

Pedestal Pole Footing Data

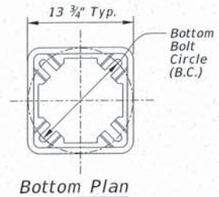
Pole Height	Design No.	Dimensions: Footing Dia. "D"	Dimensions: Footing Length "L"	Dimensions: Bar #7 Length	Dimensions: * Bar #3 Spiral Length	Quantities: Reinforcing Steel	Quantities: Structural Conc.
(FT)		(IN)	(FT)	(FT)	(FT)	(LBS)	(CY)
5	P-1	30	2'-0"	1'-6"	44	34.9	0.36
8	P-2	30	2'-6"	2'-0"	50	43.4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

* – Length includes 2 flat turns at top and bottom.

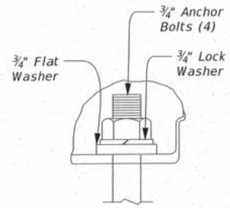
Footing Design Data



Elevation



Bottom Plan



Detail A

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

Transformer Base Bolt Circle Table

Pedestal Pole Details

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 ¼" and both top and bottom need not be galvanized.
3. Footing shall be constructed with at least two service entry conduits, some may require more. See the plans for locations and number of conduits required. Any unused conduit shall be capped on both ends.
4. Electrical conduit or conduit sleeves shall be in accordance with Section 802, "Electrical Conduit."
5. If a breakaway device is to be installed, the footing shall be as close to ground level as possible to assure the proper action of the breakaway device and to prevent damage to the footing or underside of an impacting vehicle.
6. If specified, the footing may be extended extra length either above or below grade, see the plans for location and length. Also the vertical and spiral bar length along with conduit lengths may be adjusted accordingly.
7. Provide 3 inches of clearance from outside edges, 3 inches of clearance from bottom, and 3 inches clearance from top of footing for all reinforcing steel.
8. If anchor bolt data is not specified in the plans, the bolt size and placement for new poles shall be in accordance with the approved shop drawings. Anchor bolts shall be installed to fit the pole assembly base plate.
9. If the footing is constructed by a contractor other than the signal contractor, the following additional requirements will apply:
   (A) An anchor bolt space plate shall be installed.
   (B) The conduit sleeves for the power conductors shall be 2 inch rigid galvanized steel or Schd 40 PVC and extend approximately 6 inches from the edge of the footing and be capped on both ends, unless the conduit system is designed to extend to another point of termination.
   (C) The size of the anchor bolt and the bolt circle dimensions shall be as shown in the plans and detailed herein.
10. If the Contractor elects to install Cable-In-Duct (CID) 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. The electrical conduit shall be measured for payment and paid for at the unit price bid for the electrical conduit of the size/type specified in the plans in accordance with Section 802, "Electrical Conduit."
12. Install a conduit coupling, adaptor, or compression coupling if necessary to connect conduits of dissimilar materials.
13. The anchor bolt projection shall be either;
    (A) "A4" (+ 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 signal pole footings level to avoid the use of shims when installing the light poles on the footings.
15. Electrical conductors shall be in accordance with Section 834, "Electrical Conductors For Traffic Signals."
16. All concrete shall be Class "A" and reinforcing steel shall be in accordance with ASTM A615 Grade 60 or AASHTO M-31 Grade 60.
17. If rock is encountered, the footing shall extend a minimum of one footing diameter into solid rock.
18. Bond anchor bolt to rebar cage with a #4 AWG bare stranded copper conductor. using the Cadweld method. Use listed mechanical connectors rated for embedding in concrete.
19. All breakaway bases shall meet the breakaway requirements of the 2013 Edition of the AASHTO "Standard Specifications For Structural Supports For Highway Signs, Luminaires and Traffic Signals," and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
20. Ground rod may be located in adjacent signal pull box.

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

Basis of Payment

Item No.	Item	Unit
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

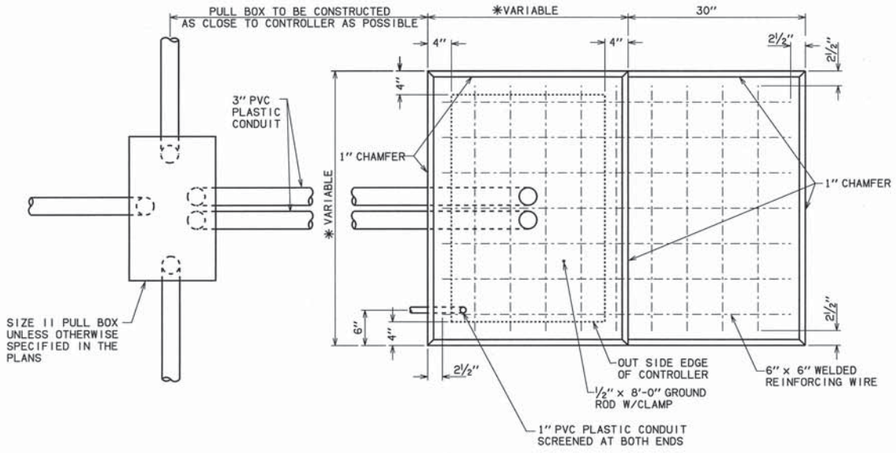
Traffic Standard

Traffic Signal Mast Arm Pole and Pedestal Pole Footing Details

2009 Specifications

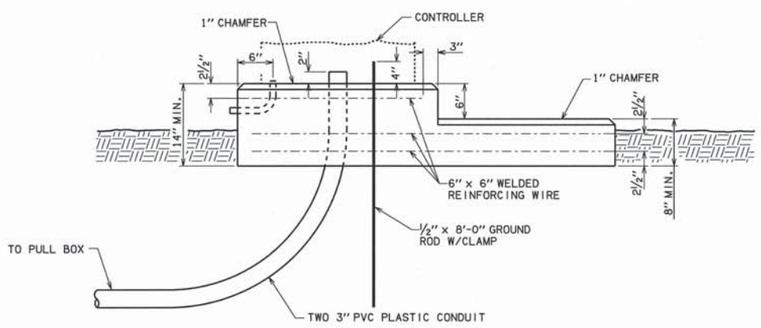
CFD1-2	00
T-207	

REVISIONS	
DESCRIPTION	DATE



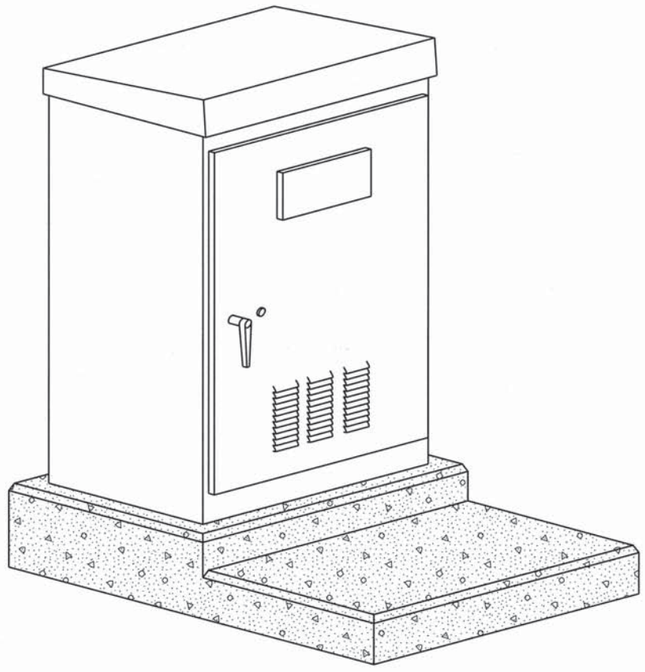
TOP VIEW

*VARIABLE DIMENSIONS WILL BE DETERMINED BY THE SIZE OF CONTROLLER REQUIRED FOR THIS PROJECT

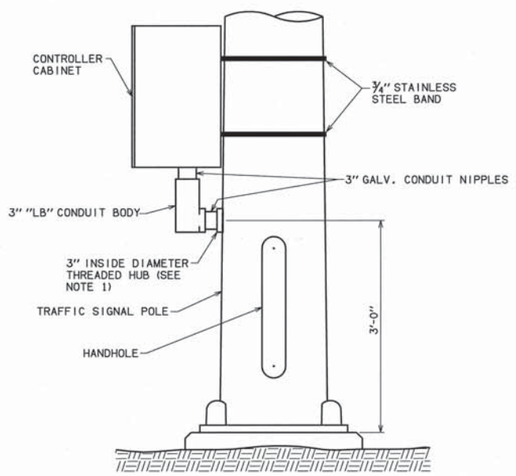


SIDE VIEW

CONCRETE CONTROLLER PAD DETAIL



TYPICAL CONTROLLER CABINET INSTALLATION



TYPICAL POLE MOUNTED CONTROLLER CABINET

MATERIAL SPECIFICATIONS

A. MATERIALS REQUIRED FOR THE CONTROLLER CABINET FOUNDATION, AND ALL PERTINENT EQUIPMENT AND ASSEMBLY SHALL BE INCLUDED IN THE PRICE BID FOR THE CONTROLLER.

B. THE CONTROLLER CABINET FOUNDATION SHALL BE CLASS "A" CONCRETE & 6" X 6" WELDED REINFORCING WIRE SHALL BE PAID FOR WITH THE CONCRETE.

C. A MINIMUM OF 4 EXPANSION BOLTS ARE REQUIRED, ½" x 4½" STAINLESS STEEL KWIK BOLT WITH A MIN. EMBEDMENT OF 3¼", SHALL BE USED TO MOUNT THE CONTROLLER CABINET TO THE CONCRETE PAD.

D. THE CONTROLLER CABINET SHALL BE INSTALLED ON TOP OF SILICANT RUBBER CAULKING COMPOUND FOR WEATHERPROOFING OF THE CABINET.

E. MINIMUM PAD MOUNTED CONTROLLER CABINET SIZE SHALL BE 3'-2½" x 4'-6" x 2'-2" (W x H x D). CABINETS SHALL BE MANUFACTURED WITH TWO DOOR UNLESS OTHERWISE SPECIFIED IN THE PLANS.

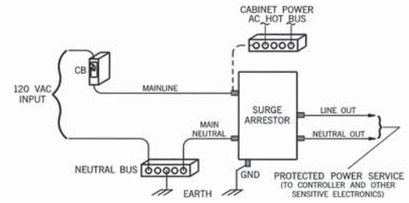
F. 1/C NO. 6 AWG ELECTRICAL CONDUCTOR SHALL BE USED TO SUPPLY POWER FROM THE POWER SOURCE(S) TO THE CONTROLLER.

G. 1/C NO. 10 AWG SOLID BARE COPPER WIRE SHALL BE USED TO GROUND THE CONTROLLER CABINET TO THE GROUND ROD.

H. ALL ELECTRIC CONNECTIONS SHALL BE MADE WITH BURDY HYLUG OR AN APPROVED EQUAL.

I. A SURGE ARRESTOR SHALL BE FURNISHED IN EACH TRAFFIC SIGNAL CONTROLLER. THE ARRESTOR REQUIREMENTS ARE AS FOLLOWS:

PEAK CURRENT.....20,000 AMPS (8 x 20 US WAVESHAPE)
LIFE TEST.....5% CHANGE (VOLTAGE CLAMP BEFORE AND AFTER 25 SURGES OF 20KA WAVESHAPE)
CLAMP VOLTAGE.....250 V. TYPE @ 20KA
RESPONSE TIME.....VOLTAGE NEVER EXCEEDS 250 VOLTS DURING SURGE
CONTINUOUS SERVICE CURRENT.....10 AMPS MAX.; 120 VAC, 60HZ
DIMENSION (INCHES)..... 3.13 x 7.15 x 2.3 (NOT INCLUDING GND)(W x L x H)
OPERATING TEMPERATURE.....-40C TO +85C



GENERAL NOTES

1. THE POLE SHALL BE MANUFACTURED WITH A 3" INSIDE DIAMETER THREADED HUB. THIS HUB SHALL BE MADE AND INSTALLED TO MAINTAIN THE DESIGN STRENGTH OF THE POLE.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
804(A)	STRUCTURAL CONCRETE	CY
825	TRAFFIC SIGNAL CONTROLLER ASSEMBLY	EA

APPROVED BY TRAFFIC ENGINEER: DATE: 9/3/2010

TRAFFIC STANDARD

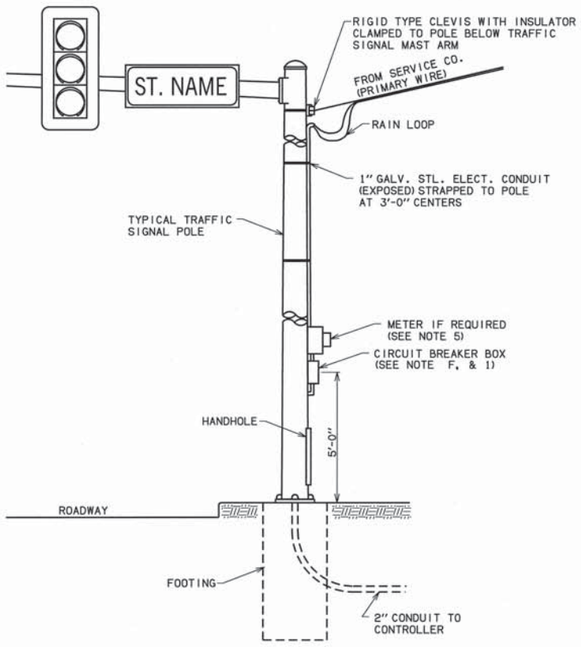
CONTROLLER CABINET DETAILS

2009 SPECIFICATIONS

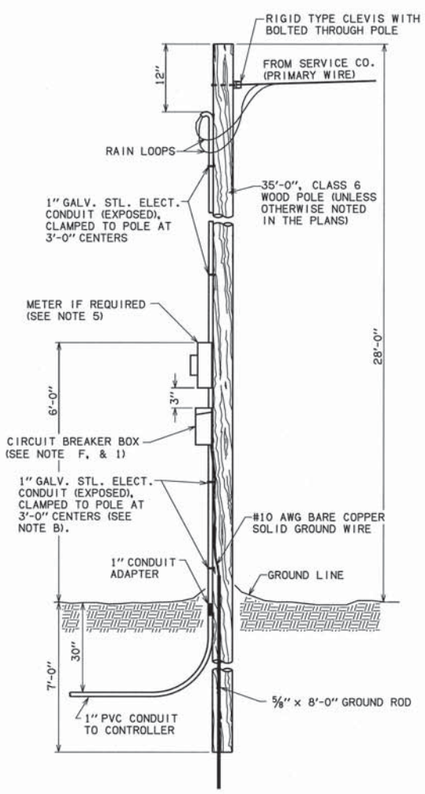
CC1-1	00

T-208

REVISIONS		
DESCRIPTION		DATE



OVERHEAD SERVICE TO TRAFFIC SIGNAL POLE



OVERHEAD SERVICE TO SERVICE POLE

MATERIAL SPECIFICATIONS

A. ELECTRICAL CONDUIT SHALL BE IN ACCORDANCE WITH SECTION 802 OF THE 2009 STANDARD SPECIFICATIONS.

B. 1/C NO. 6 AWG ELECTRICAL CONDUCTOR SHALL BE USED TO SUPPLY POWER FROM THE POWER SOURCE(S) TO THE CONTROLLER.

C. ALL CONDUIT CLAMPS SHALL BE GALVANIZED MALLEABLE IRON AND STRAPS SHALL BE ¾" STAINLESS STEEL BAND.

D. THE SERVICE POLE SHALL BE TREATED FULL LENGTH IN ACCORDANCE WITH AMERICAN WOOD PRESERVERS ASSOCIATION SPECIFICATIONS, TO BE AT LEAST 7.5 LBS. PER CUBIC FOOT RETENTION OF CREOSOTE OR 0.38 PENTACHLOROPHENOL MEASURED BY THE EMPTY CELL PROCESS. WOOD POLES SHALL COMPLY WITH THE LATEST REVISIONS OF ANSI STANDARD 05.1.

E. ALL CONDUIT AND CONDUIT FITTINGS SHALL CONFORM TO SECTION 709 OF THE 2009 STANDARD SPECIFICATIONS.

F. THE ENCLOSURE FOR THE CIRCUIT BREAKER SHALL BE A N.E.M.A. 3R RAINTIGHT ENCLOSURE, AND SHALL BE LOCKED IN ACCORDANCE WITH THE POWER COMPANY REQUIREMENTS. THE BREAKERS SHALL BE SIZED FOR LOAD REQUIREMENTS.

GENERAL NOTES

1. SERVICE POLE:
   PRIMARY SERVICE SHALL BE FURNISHED TO A SERVICE POLE OR TO A TRAFFIC SIGNAL POLE. THE INSTALLATION SHALL INCLUDE GROUND ROD, METER BASE, INSULATORS, CABLES, CONDUIT, SERVICE HEAD, SERVICE BRACKET, CIRCUIT BREAKERS, AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE WORK. WHEN ONLY A TRAFFIC SIGNAL SYSTEM IS INSTALLED ON A PROJECT, A SINGLE CIRCUIT BREAKER SHALL BE FURNISHED. WHERE TRAFFIC SIGNALS AND STREET LIGHT SYSTEMS ARE COMBINED ON ONE PROJECT, TWO CIRCUIT BREAKERS SHALL BE FURNISHED, ONE FOR EACH SYSTEM. THE CONTRACTOR SHALL COORDINATE WITH THE POWER COMPANY TO GET THE CONNECTION AT THE PROPER TIME.
   THE EQUIPMENT, CONSTRUCTION AND INSTALLATION ON THE SERVICE POLE, AND SERVICE SHALL BE SUBJECT TO THE APPROVAL OF THE POWER COMPANY. THE COST OF MATERIALS AND INSTALLATION OF THE SERVICE POLE, AS DESCRIBED ABOVE, INCLUDING ANY PERMITS OR CHARGES BY THE POWER COMPANY FOR THE CONNECTION SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK.

2. ON PROJECTS WHERE SERVICE POLES ARE INSTALLED THE SERVICE POLE SHALL BE INSTALLED AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE. LOCATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

3. INSTALL A CONDUIT COUPLING ADAPTOR, OR COMPRESSION COUPLING IF NECESSARY TO CONNECT CONDUITS OF DISSIMILAR MATERIALS.

4. THE PRIMARY WIRING SHALL BE PROVIDED BY THE LOCAL UTILITY CO., UNLESS OTHERWISE SPECIFIED.

5. THE CONTRACTOR SHALL INSTALL THE REQUIRED METERING EQUIPMENT FURNISHED BY THE LOCAL UTILITY CO., UNLESS OTHERWISE SPECIFIED.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
810(A)	SERVICE POLE	EA

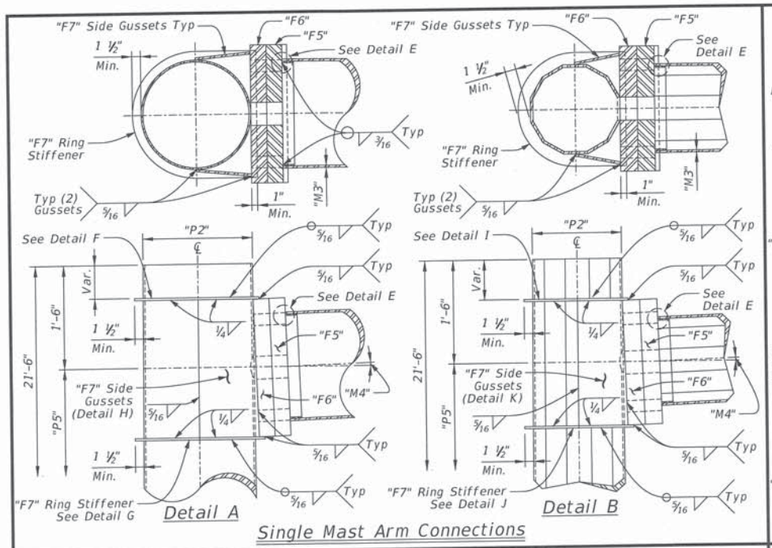
APPROVED BY TRAFFIC ENGINEER: _____ DATE: 8/3/2010

TRAFFIC STANDARD

TRAFFIC SIGNAL SERVICE POLE

2009 SPECIFICATIONS

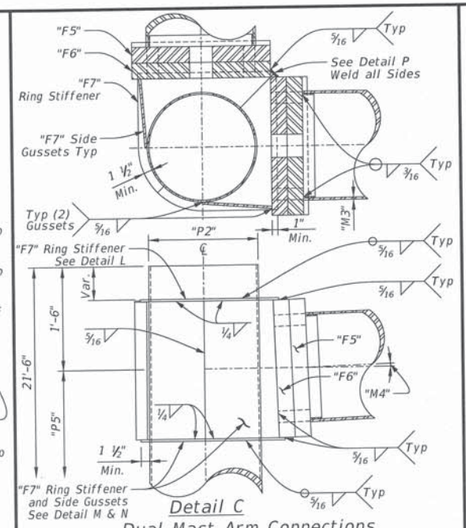
TSSP1-1	00
	T-209



Detail A

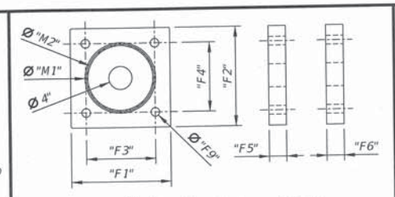
Detail B

Single Mast Arm Connections

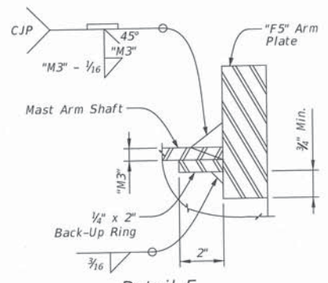


Detail C

Dual Mast Arm Connections

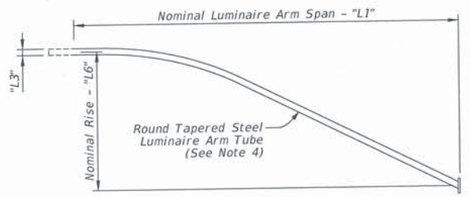


Detail D: Mast Arm Plate

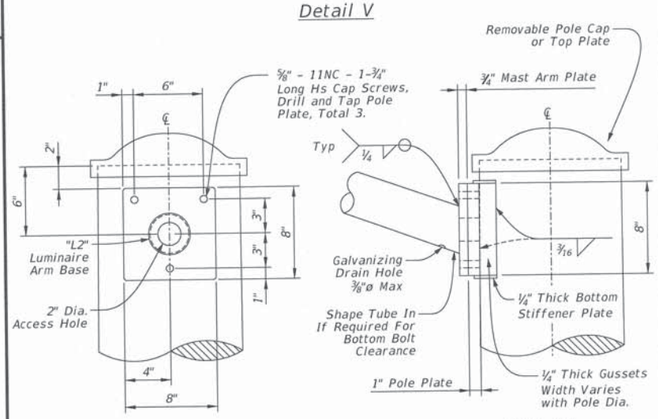


Detail E

Table 5: Luminaire Arm Extension Data					
Nom. Lum. Arm Span Length (ft)	Lum. Arm Shaft				
	Bot. O.D. (in)	Top O.D. (in)	Wall Thk. (in)	Lum. Arm Tube Length	Lum. Arm Rise
"L1"	"L2"	"L3"	"L4"	"L5"	"L6"
8	3.61	2.42	0.1196	8' - 6"	2' - 6"
10	3.88	2.41	0.1196	10' - 6"	2' - 6"



Detail V

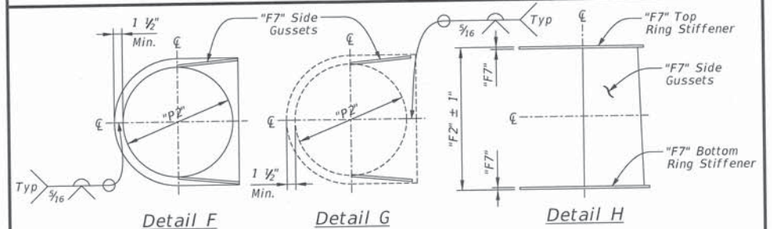


Front View

Side View

Detail W

Luminaire Mast Arm Connection

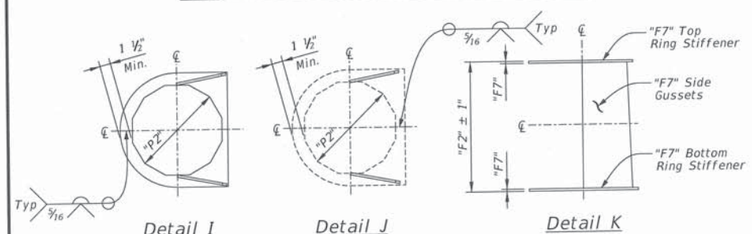


Detail F

Detail G

Detail H

Single Mast Arm Connections to Round Pole

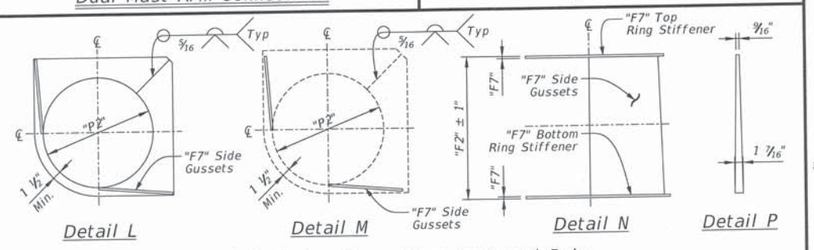


Detail I

Detail J

Detail K

Single Mast Arm Connections to Multisided Pole



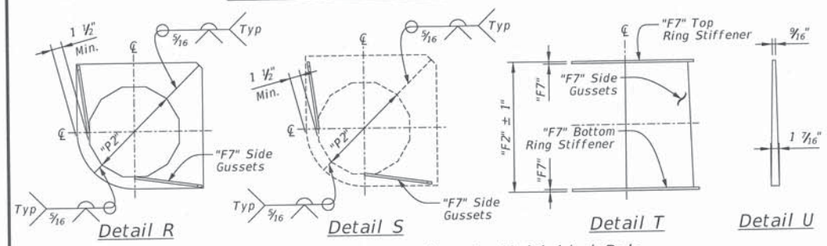
Detail L

Detail M

Detail N

Detail P

Dual Mast Arm Connections to Round Pole



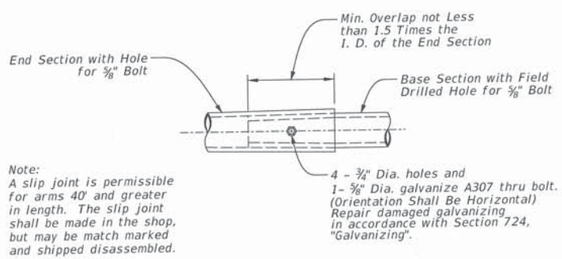
Detail R

Detail S

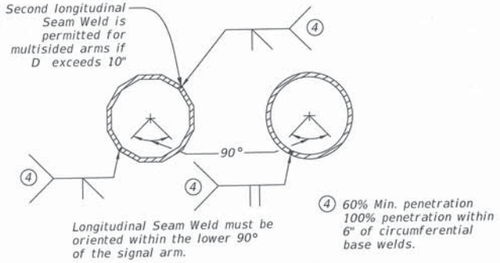
Detail T

Detail U

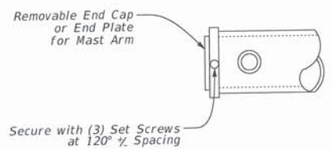
Dual Mast Arm Connections to Multisided Pole



Slip Joint Detail



Arm Weld Detail



Mast Arm End Cap

General Notes:

1. Locate handholes opposite of the direction of travel.
2. For dual mast arms mounted at 90°, locate handholes at 135° from the center line of each mast arm.
3. For dual mast arms mounted at an angle greater than 90°, locate handholes evenly spaced from the center line of each mast arm.
4. Luminaire mast arm with a straight consistent dia. is an approved alternative.

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

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

DOT

Traffic Standard

Traffic Signal Support Structures Mast Arm Assembly Details

2009 Specifications

MAD1-1	00

T-213

TABLE 1: Round Signal Pole Data

Nom. Mast Arm Span Lengths (ft)	Pole Shaft						Base Plate					Anchor Bolt							
	Bot. O.D. (in)	Top O.D. 21'-6" Pole Ht. (in)	Top O.D. 30'-0" Pole Ht. (in)	Wall Thk. (in)	Nom. Arm. Mtg.Ht. (ft)	Nom. Lum.Mtg. Ht. (ft)	Base Sq. (in)	Base I.D. (in)	Bolt Circle Dia. (in)	Bolt Hole Dia. (in)	Base Thk. (in)	Bolt Dia. (in)	No. of Bolts	Length of Bolt Min. (in)	Top Thread Length Min. (in)	Bottom Thread Length Min. (in)	Template I.D. (in)	Template O.D. (in)	Template Thick (in)
"S1"	"P1"	"P2"	"P3"	"P4"	"P5"	"P6"	"B1"	"B2"	"B3"	"B4"	"B5"	"A1"	"A2"	"A3"	"A4"	"A5"	"A6"	"A7"	"A8"
Single Mast Arm Pole Data																			
20 to 40	15.25	12.24	11.05	0.2500	20	32	20.25	10.25	20.25	1.625	2.25	1.50	4	60	7	4	18.25	22.25	0.375
45 to 55	22.00	18.99	17.80	0.2500	20	32	27.00	17.00	27.00	2.125	2.50	2.00	4	70	8	5	25.00	29.00	0.500
Dual Mast Arm Pole Data																			
20 to 40	17.00	13.99	12.80	0.3125	20	32	22.00	11.88	22.00	1.875	3.00	1.75	4	60	8	4	20.00	24.00	0.438
45 to 55	22.00	18.99	17.80	0.3750	20	32	27.00	16.75	27.00	2.375	3.25	2.25	4	70	9	5	25.00	29.00	0.563

TABLE 2: Round Mast Arm Data

Nom. Mast Arm Span Length (ft)	Mast Arm Data					Mast Arm Flange Plate/Gusset Connection Data									
	Fixed End Base O.D. (in)	Free End Top O.D. (in)	Wall Thk. (in)	Angle (Deg) (in)	Arm Length (ft)	Plate Width Min. (in)	Plate Height Min. (in)	Conn. Bolt Width Min. (in)	Conn. Bolt Height Min. (in)	Arm Plate Thk. (in)	Pole Plate Thk. (in)	Gusset Thk. (in)	Flange Bolt Qty	Flange Bolt Dia. (in)	Flange Bolt Length Min. (in)
"S1"	"M1"	"M2"	"M3"	"M4"	"M5"	"F1"	"F2"	"F3"	"F4"	"F5"	"F6"	"F7"	"F8"	"F9"	"F10"
20	9.00	6.32	0.1875	2 Deg.	19.15	17.50	17.50	12.25	12.25	2.00	2.00	0.375	4.00	1.00	4.50
25	10.00	6.62	0.1875	2 Deg.	24.15	17.50	17.50	12.25	12.25	2.00	2.00	0.375	4.00	1.00	4.50
30	10.50	6.43	0.2500	2 Deg.	29.06	17.50	17.50	12.25	12.25	2.50	2.50	0.375	4.00	1.25	5.50
35	11.50	6.74	0.2500	2 Deg.	34.02	17.50	17.50	12.25	12.25	2.75	2.75	0.375	4.00	1.25	6.00
40	12.50	7.04	0.2500	2 Deg.	38.98	17.50	17.50	12.25	12.25	3.00	3.00	0.375	4.00	1.50	6.50
45	16.25	10.13	0.3125	2 Deg.	43.74	24.00	24.00	16.75	16.75	2.75	2.75	0.375	4.00	1.75	6.00
50	17.50	10.68	0.3125	2 Deg.	48.74	24.00	24.00	16.75	16.75	2.75	2.75	0.375	4.00	1.75	6.00
55	19.00	11.48	0.3125	2 Deg.	53.74	24.00	24.00	16.75	16.75	2.75	2.75	0.375	4.00	2.00	6.00

General Notes

1. Designs conform to 2013 AASHTO Standard Specifications For Structural Supports For Highway Signs, Luminaires, and Traffic Signals and Interim Specifications. Designed for 3-second wind gust speed equal to 90 MPH with a 1.14 gust factor. A wind importance factor of 0.87 is applied to adjust the wind speed to a 50 year recurrence interval. Design moments listed in tables assume base of pole is less than 33' above natural ground level.
2. Fatigue importance Category II is used for fatigue design. Fatigue design loads applied include galloping, natural wind gust pressure range based on a yearly mean wind velocity of 11.2 MPH, and truck-gust pressure range based on a truck speed of 65 MPH.
3. Fabrication shall be in accordance with the specifications and with the details, dimensions, and weld procedures shown herein. Submit shop drawings for signal pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein for project records. Weld references call for pre-approved weld procedures which the fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
4. Unless otherwise noted, all steel parts shall be galvanized in accordance with Section 724.06, "Galvanizing."
5. Steel poles shall be fabricated in accordance with Section 724, "Structural Steel." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with the ANSI/AWS Structural Welding Code D1.1.
6. Two-section signal poles will not be permitted. Mast arms may be fabricated in two sections for lengths greater than 40 LF and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint. Ensure longitudinal seam welds that will be in contact at a slip joint splice are ground smooth for the length of splice plus a minimum of six inches.
7. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
8. Lubricate and tighten anchor bolts, when erecting signal poles, in accordance with manufacturer's recommendations.

Approved By Bridge Engineer: _____ Date: 3-21-16

Approved By Traffic Engineer: _____ Date: 3/10/2016

DOT

Traffic Standard

Traffic Signal Round Pole and Mast Arm Data

2009 Specifications

RPMAD1-1 | 00

T-214

TABLE 3: Multisided Signal Pole Data

Nom. Mast Arm Span Lengths (ft)	Pole Shaft							Base Plate					Anchor Bolt							
	Bot. O.D. (in)	Top O.D. 21'-6" Pole Ht. (in)	Top O.D. 30'-0" Pole Ht. (in)	Wall Thk. (in)	Nom. Arm. Mtg. Ht. (ft)	Nom. Lum. Mtg. Ht. (ft)	Internal Bend Radius Min. (in)	Base Sq. (in)	Base I.D. (in)	Bolt Circle Dia. (in)	Bolt Hole Dia. (in)	Base Thk. (in)	Bolt Dia. (in)	No. of Bolts	Length of Bolt Min. (in)	Top Thread Length Min. (in)	Bottom Thread Length Min. (in)	Template I.D. (in)	Template O.D. (in)	Template Thick (in)
"S1"	"P1"	"P2"	"P3"	"P4"	"P5"	"P6"	"P7"	"B1"	"B2"	"B3"	"B4"	"B5"	"A1"	"A2"	"A3"	"A4"	"A5"	"A6"	"A7"	"A8"
Single Mast Arm Pole Data																				
20 to 40	15.25	12.24	11.05	0.3125	20	32	1.56	20.25	10.13	20.25	1.875	2.50	1.75	4	60	8	5	18.25	22.25	0.438
45 to 55	20.25	17.24	16.05	0.3750	20	32	1.88	25.25	15.00	25.25	2.125	3.25	2.00	4	70	9	5	23.25	27.25	0.500
Dual Mast Arm Pole Data																				
20 to 40	15.75	12.74	11.55	0.3750	20	32	1.88	20.75	10.50	20.75	1.875	3.00	1.75	4	60	8	5	18.75	22.75	0.438
45 to 55	21.00	17.99	16.80	0.4375	20	32	2.19	26.00	15.63	26.00	2.375	3.25	2.25	4	70	9	5	24.00	28.00	0.563

TABLE 4: Multisided Mast Arm Data

Nom. Mast Arm Span Length (ft)	Mast Arm Data						Mast Arm Flange Plate/Gusset Connection Data									
	Fixed End Base O.D. (in)	Free End Top O.D. (in)	Wall Thk. (in)	Angle (Deg) (in)	Arm Length (ft)	Internal Bend Radius Min. (in)	Plate Width Min. (in)	Plate Height Min. (in)	Conn. Bolt Width Min. (in)	Conn. Bolt Height Min. (in)	Arm Plate Thk. (in)	Pole Plate Thk. (in)	Gusset Thk. (in)	Flange Bolt Qty	Flange Bolt Dia. (in)	Flange Bolt Length Min. (in)
"S1"	"M1"	"M2"	"M3"	"M4"	"M5"	"M6"	"F1"	"F2"	"F3"	"F4"	"F5"	"F6"	"F7"	"F8"	"F9"	"F10"
20	9.00	6.32	0.1875	2 Deg.	19.16	1.00	17.50	17.50	12.25	12.25	2.00	2.00	0.375	4.00	1.00	4.50
25	10.00	6.62	0.1875	2 Deg.	24.16	1.00	17.50	17.50	12.25	12.25	2.00	2.00	0.375	4.00	1.00	4.50
30	10.75	6.68	0.2500	2 Deg.	29.08	1.25	17.50	17.50	12.25	12.25	2.50	2.50	0.375	4.00	1.25	5.50
35	11.75	6.99	0.2500	2 Deg.	34.03	1.25	17.50	17.50	12.25	12.25	2.75	2.75	0.375	4.00	1.50	6.00
40	12.50	7.04	0.2500	2 Deg.	38.99	1.25	17.50	17.50	12.25	12.25	3.00	3.00	0.375	4.00	1.50	6.50
45	16.50	10.37	0.3125	2 Deg.	43.79	1.56	22.75	22.75	16.00	16.00	3.00	3.00	0.375	4.00	1.75	6.50
50	16.50	9.67	0.3750	2 Deg.	48.79	1.88	22.75	22.75	16.00	16.00	3.00	3.00	0.375	4.00	2.00	6.50
55	17.75	10.22	0.3750	2 Deg.	53.79	1.88	22.75	22.75	16.00	16.00	3.00	3.00	0.375	4.00	2.00	6.50

General Notes

1. Designs conform to 2013 AASHTO Standard Specifications For Structural Supports For Highway Signs, Luminaires, and Traffic Signals and Interim Specifications. Designed for 3-second wind gust speed equal to 90 MPH with a 1.14 gust factor. A wind importance factor of 0.87 is applied to adjust the wind speed to a 50 year recurrence interval. Design moments listed in tables assume base of pole is less than 33' above natural ground level.
2. Fatigue importance Category II is used for fatigue design. Fatigue design loads applied include galloping, natural wind gust pressure range based on a yearly mean wind velocity of 11.2 MPH, and truck-gust pressure range based on a truck speed of 65 MPH.
3. Fabrication shall be in accordance with the specifications and with the details, dimensions, and weld procedures shown herein. Submit shop drawings for signal pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein for project records. Weld references call for pre-approved weld procedures which the fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
4. Unless otherwise noted, all steel parts shall be galvanized in accordance with Section 724.06, "Galvanizing."
5. Steel poles shall be fabricated in accordance with Section 724, "Structural Steel." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with the ANSI/AWS Structural Welding Code D1.1.
6. Two-section signal poles will not be permitted. Mast arms may be fabricated in two sections for lengths greater than 40 LF and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint. Ensure longitudinal seam welds that will be in contact at a slip joint splice are ground smooth for the length of splice plus a minimum of six inches.
7. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
8. Lubricate and tighten anchor bolts, when erecting signal poles, in accordance with manufacturer's recommendations.

Approved By Bridge Engineer: S E Tomke Date: 3/24/16

Approved By Traffic Engineer: David Gmach Date: 3/14/16

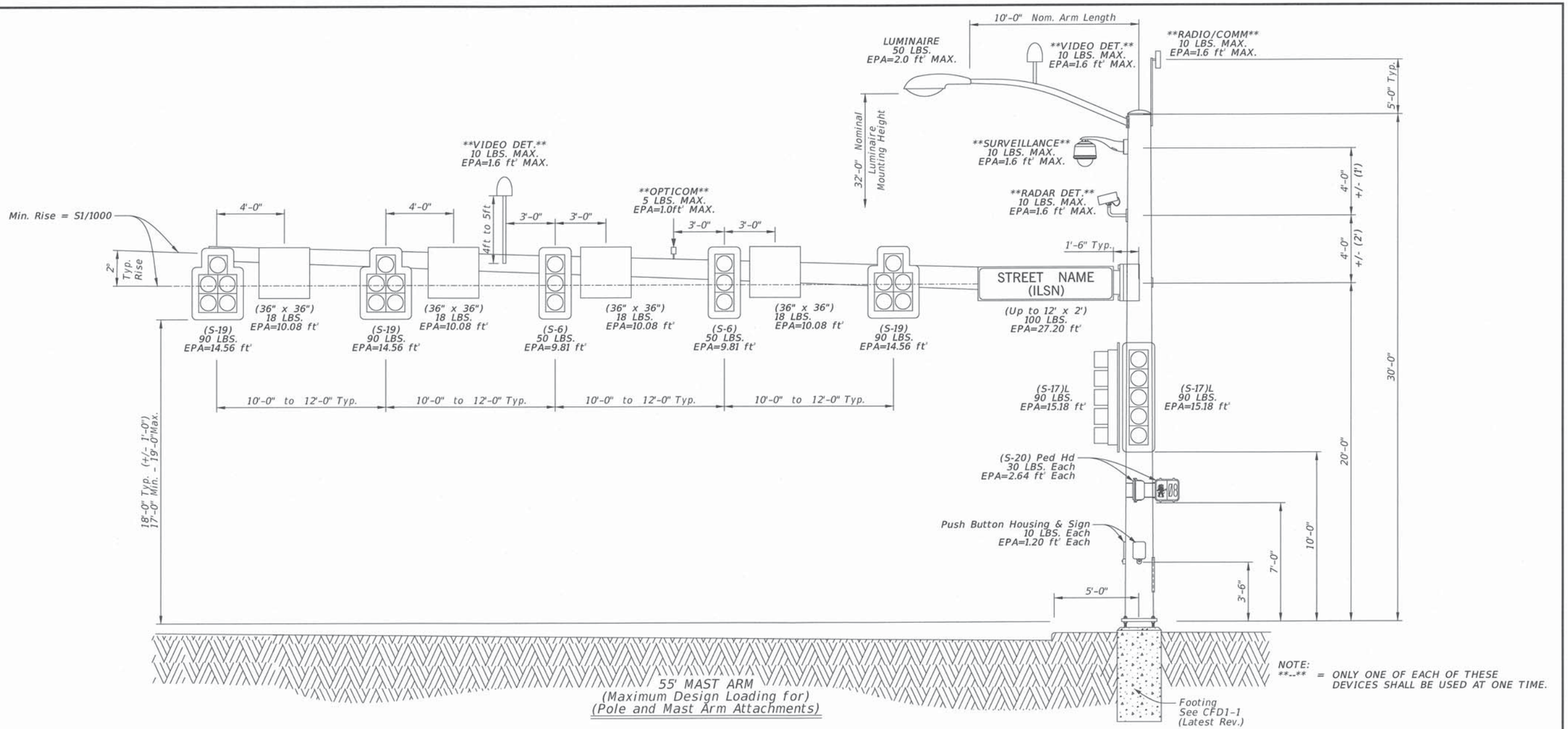
DOT

Traffic Standard

Traffic Signal Multisided Pole and Mast Arm Data

2009 Specifications

MPMAD1-1	00
	T-215



55' MAST ARM
(Maximum Design Loading for)
(Pole and Mast Arm Attachments)

NOTE:
-- = ONLY ONE OF EACH OF THESE DEVICES SHALL BE USED AT ONE TIME.

Design Criteria Notes

1. Reference the following signal pole standard sheets for more information:
   - Traffic Signal Support Structures Signal Pole and Mast Arm Details – PMAP1-1 (Latest Rev.)
   - Traffic Signal Support Structures Pole Assembly Details – MAD1-1 (Latest Rev.)
   - Traffic Signal Support Structures Mast Arm Assembly Details – MAD2-1 (Latest Rev.)
   - Traffic Signal Pole Fabrication and Installation Data – PFID1-1 (Latest Rev.)
   - Traffic Signal Pole Fabrication and Installation Data – PFID2-1 (Latest Rev.)
   - Traffic Signal Mast Arm Pole and Pedestal Pole Footing Details – CFD1-1 (Latest Rev.)
   - Traffic Signal Pole Wiring and Cable Termination Details – PWD1-1 (Latest Rev.)
2. For mast arm assemblies at 45 and 50 LF per arm, maximum design loads accommodate up to the following equipment per assembly:
   - Qty = 3 – 3-Section Signal Head w/ Backplate (50 LBS/EA and EPA = 9.81 sq. ft.)
   - Qty = 1 – 5-Section (Type S-19) Signal Head w/ Backplate (90 LBS/EA and EPA = 14.56 sq. ft.)
   - Qty = 2 – 5-Section (Type S-17) Signal Head w/ Backplate (90 LBS/EA and EPA = 15.18 sq. ft.)
   - Qty = 2 – Pedestrian Signal Head – 1 Section (30 LBS/EA and EPA = 2.64 sq. ft.)
   - Qty = 2 – Push Button Housing (10 LBS/EA and EPA = 1.20 sq. ft.)
   - Qty = 1 – Luminaire (50 LBS/EA and EPA = 2.00 sq. ft.)
   - Qty = 3 – Typical Regulatory Sign (18 LBS/EA and EPA = 10.08 sq. ft.)
   - Qty = 1 – Typical Illuminated Street Name Signs (100 LBS/EA and EPA = 29.52 sq. ft.)
   - Qty = 1 – Opticom (5 LBS/EA and EPA = 1.0 sq. ft.) (If required)
   - Qty = 1 – Video (VIVDS) (10 LBS/EA and EPA = 1.60 sq. ft.)
   - Qty = 1 – Surveillance Camera (10 LBS/EA and EPA = 1.60 sq. ft.)
   - Qty = 1 – Radar Detector (10 LBS/EA and EPA = 1.60 sq. ft.)
3. For mast arm assemblies at 55 LF per arm, maximum design loads accommodate up to the following equipment per assembly:
   - Qty = 3 – 3-Section Signal Head w/ Backplate (50 LBS/EA and EPA = 9.81 sq. ft.)
   - Qty = 2 – 5-Section (Type S-19) Signal Head w/ Backplate (90 LBS/EA and EPA = 16.560 sq. ft.)
   - Qty = 2 – 5-Section (Type S-17) Signal Head w/ Backplate (90 LBS/EA and EPA = 15.18 sq. ft.)
   - Qty = 2 – Pedestrian Signal Head – 1 Section (30 LBS/EA and EPA = 2.64 sq. ft.)
   - Qty = 2 – Push Button Housing (10 LBS/EA and EPA = 1.20 sq. ft.)
   - Qty = 1 – Luminaire (50 LBS/EA and EPA = 2.00 sq. ft.)
   - Qty = 4 – Typical Regulatory Sign (18 LBS/EA and EPA = 10.08 sq. ft.)
   - Qty = 1 – Typical Illuminated Street Name Signs (100 LBS/EA and EPA = 29.52 sq. ft.)
   - Qty = 1 – Opticom (5 LBS/EA and EPA = 1.0 sq. ft.) (If required)
   - Qty = 1 – Video (VIVDS) (10 LBS/EA and EPA = 1.60 sq. ft.)
   - Qty = 1 – Surveillance Camera (10 LBS/EA and EPA = 1.60 sq. ft.)
   - Qty = 1 – Radar Detector (10 LBS/EA and EPA = 1.60 sq. ft.)
4. A 55' mast arm assembly configuration is shown above as an example.
5. For a dual mast arm configuration, loading criteria identified herein also applies to the second mast arm.
6. The typical mast arm rise is 2° from the nominal mast arm mounting height. The minimum rise per AASHTO is S1/1000.

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

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

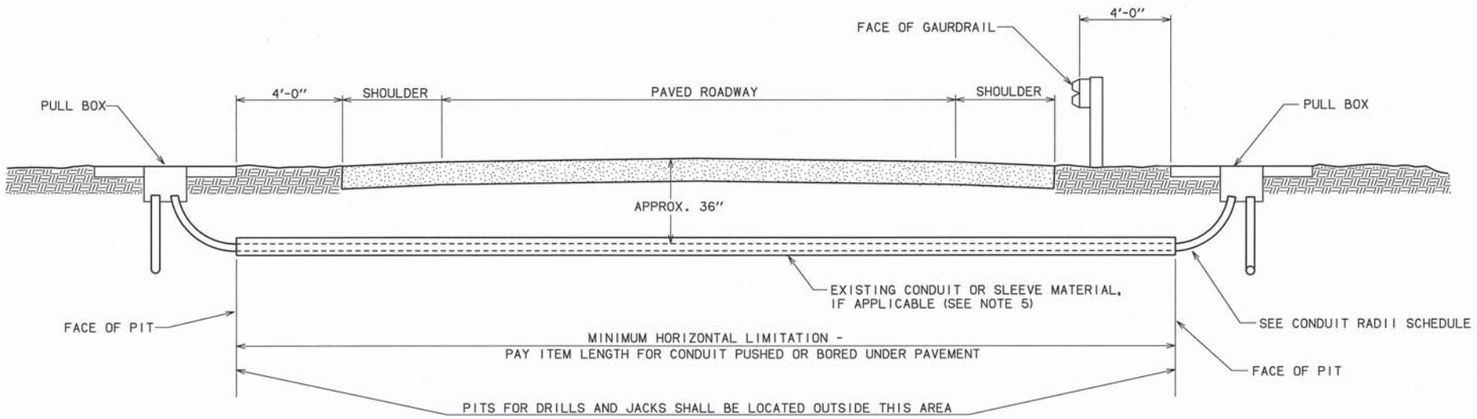
Traffic Standard

Traffic Signal 45 FT to 55 FT Maximum Design Loads

2009 Specifications

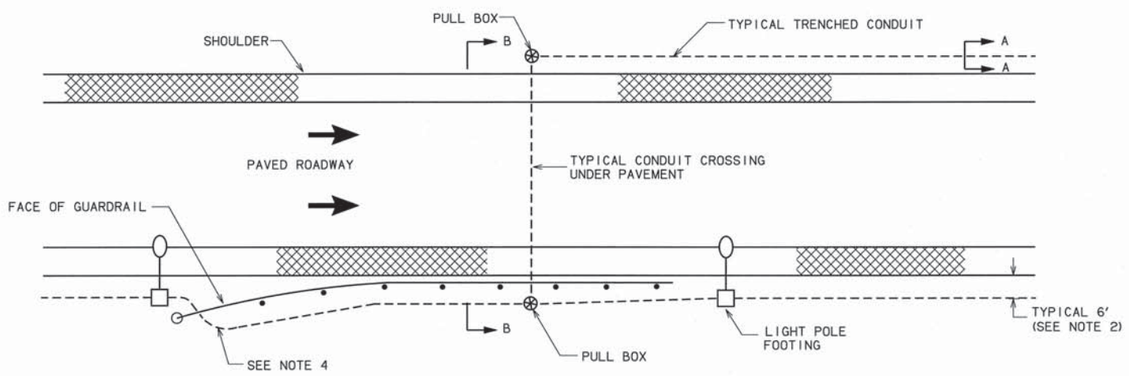
MDL2-1	00
T-217	

DESCRIPTION	REVISIONS	DATE

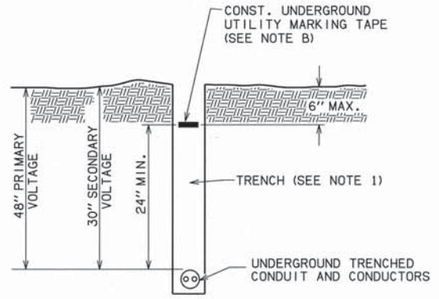


CONDUIT CROSSING UNDER PAVEMENT

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: _____ DATE: 8/3/2010

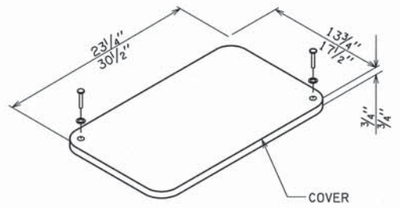
TRAFFIC STANDARD

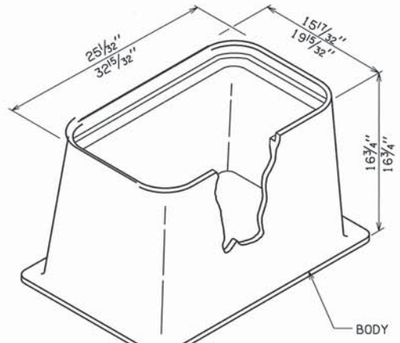
TYPICAL CONDUIT CONSTRUCTION DETAILS (FOR UNDERGROUND CONDUIT INSTALLTION)

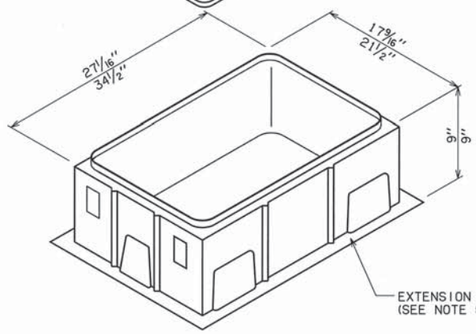
2009 SPECIFICATIONS

CCD1-1	00
	T-301

DESCRIPTION	REVISIONS	DATE

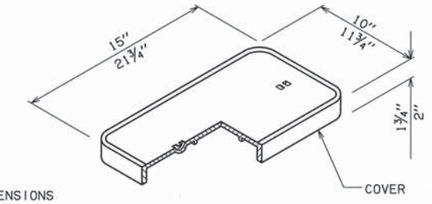


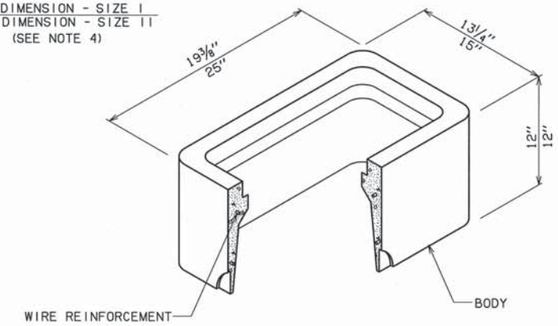


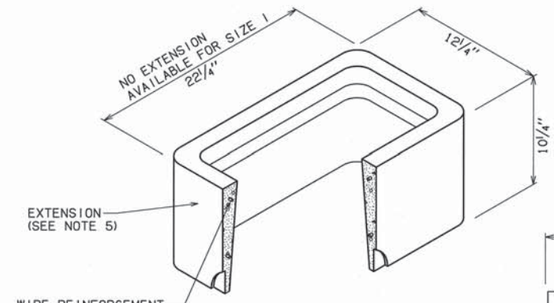


PLASTIC PULL BOX
SIZE I & II

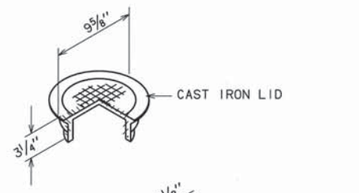
EXPLANATION OF DIMENSIONS
TOP DIMENSION - SIZE I
BOTTOM DIMENSION - SIZE II
(SEE NOTE 4)

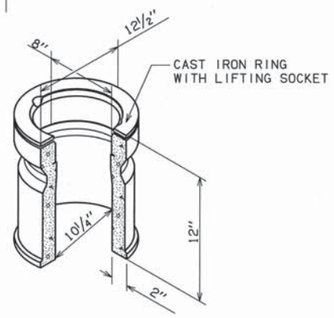






CONCRETE PULL BOX
SIZE I & II





CONCRETE PULL BOX
SIZE III

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.

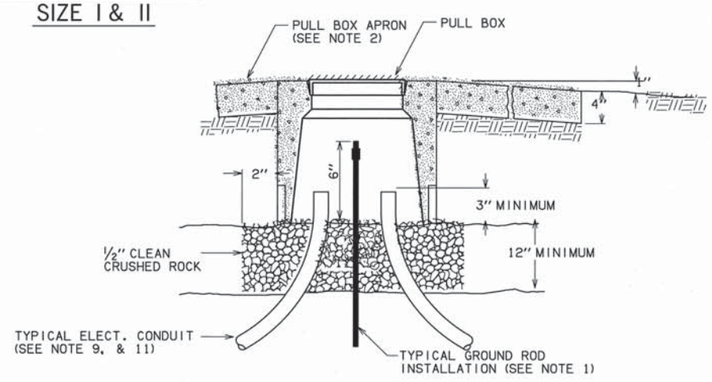
C. THE CONCRETE APRON SHALL BE CLASS "A" CONCRETE.

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%.

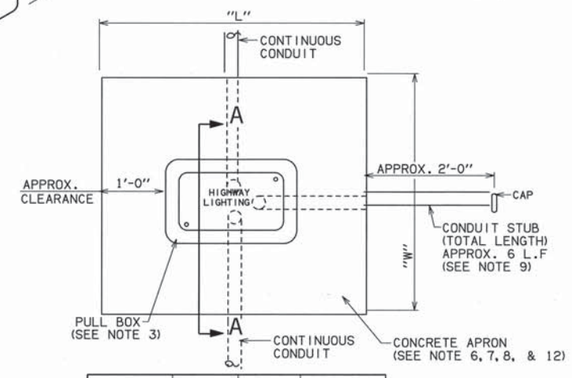
E. THE WIRE REINFORCEMENT SHALL BE 9 GAUGE WELDED WIRE FABRIC.

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 APPROPRIATE 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.



SECTION "A-A"



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

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

APPROVED BY TRAFFIC ENGINEER: _____ DATE: 8/31/2010

TRAFFIC STANDARD

TYPICAL PULL BOX DETAILS

2009 SPECIFICATIONS

PBD1-1	00

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