



**City of
Santa Clara**
The Center of What's Possible

Public Works Traffic Division

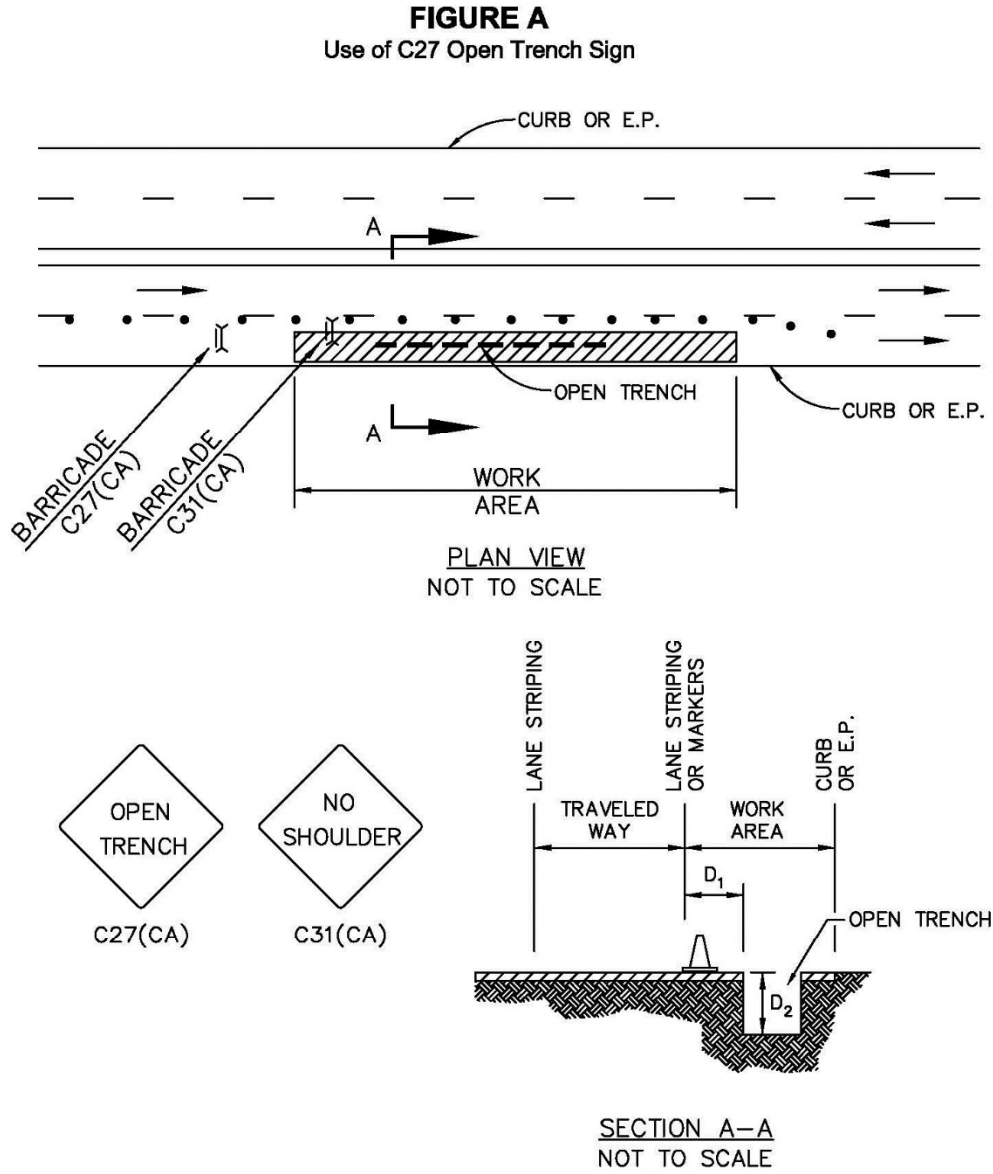
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TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

A- 2 OR 3 LANE STREETS

FIGURE A – Use of C27(CA) Open Trench Sign

C27(CA) and NO SHOULDER (C31A(CA)) signs on Type II or Type III barricades alternately set in the trench at intervals not to exceed every 2,000 feet.



- NOTE:
1. C27 AND C31 SIGNS SHALL BE USED WHEN TRENCH D_1 IS 8-FT OR LESS AND D_2 IS GREATER THAN 0.25-FT (3-INCHES) BUT LESS THAN 2.5-FT.
 2. D_1 SHALL NOT BE LESS THAN 5-FT.

Table A - Recommended Advance Warning Sign Spacing

Posted Speed	Distance Between Signs **		
	A	B	C
Urban 25 mph or less***	100	100	100
Urban more than 25 mph to 40 mph***	250	250	250
Urban more than 40 mph***	350	350	350
Rural	500	500	500
Expressway/Freeway	1,000	1,500	2,640

** Distances are shown in feet. **The column headings A, B, and C are the dimensions shown on drawings No. 1-48.** The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The “first sign” is the sign in a three-sign series that is closest to the TTC zone. The third sign is one in a three sign series encountered by a driver/motorist approaching a TTC zone).

*** **Posted speed limit, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.**

Table B - Taper Length Criteria for Temporary Traffic Control Zones

Type of Taper	Taper Length (L)
Merging Taper	at least L
Shifting Taper	at least 0.5L
Shoulder Taper	at least 0.33L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream taper	50 feet min., 100 feet max. per lane

Table C - Formulas for Determining Taper Lengths

Speed Limit	Taper Length (L) Feet
40 mph or less	$L = WS^2/60$
45 mph or more	$L = WS$

Where: L = taper length in feet
 W = width of offset feet
 S = posted speed limit, or off peak 85th- percentile speed prior to work starting. Or the anticipated operating speed in mph

Channelizing Devices

Channelizing devices (cones, tubular markers, channelizers (CA), portable delineators, barricades, longitudinal channelizing devices, drums or vertical panels) are elements in a total system of temporary traffic control for use during construction and maintenance operations. These elements shall be preceded by a subsystem of warning devices, adequate in size, number and placement for the type of roadway on which the work will take place. See CA MUTCD Figure 6F-7 and 6F-102(CA) for channelizing devices requirements (see page 23 and 24). All channelizing devices shall be crashworthy.

Channelizing devices can be used as follows:

1. To channel and/or divert traffic in advance of a temporary traffic control zone (work zone).
2. To define traffic lanes through the work zone.
3. To define a change in the position of the lanes around a work zone.
4. On detours to define curves and the edges of the roadway.
5. To separate opposing lanes of traffic.

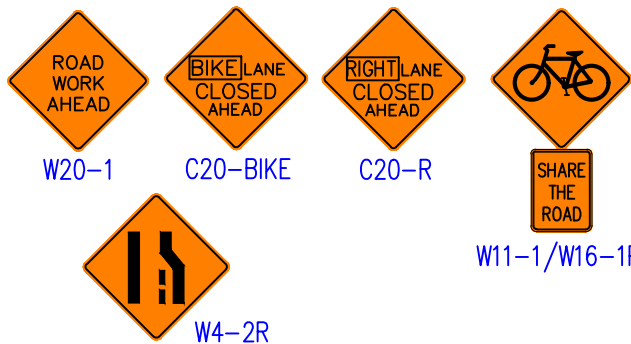
Table F – Maximum Spacing of Channelizing Devices

Speed (mph)	Maximum Channelizer Spacing		
	Taper* (ft)	Tangent (ft)	Conflict** (ft)
20	20	40	10
25	25	50	12
30	30	60	15
35	35	70	17
40	40	80	20
45	45	90	22
50	50	100	25
55	55	110	27
60	60	120	30
65	65	130	32
70	70	140	35

* Maximum channelizer device spacing for all speeds on one-lane/two-way tapers is (20 ft). Maximum channelizer device spacing for all speeds on downstream tapers is (20 ft). All other tapers are as shown.

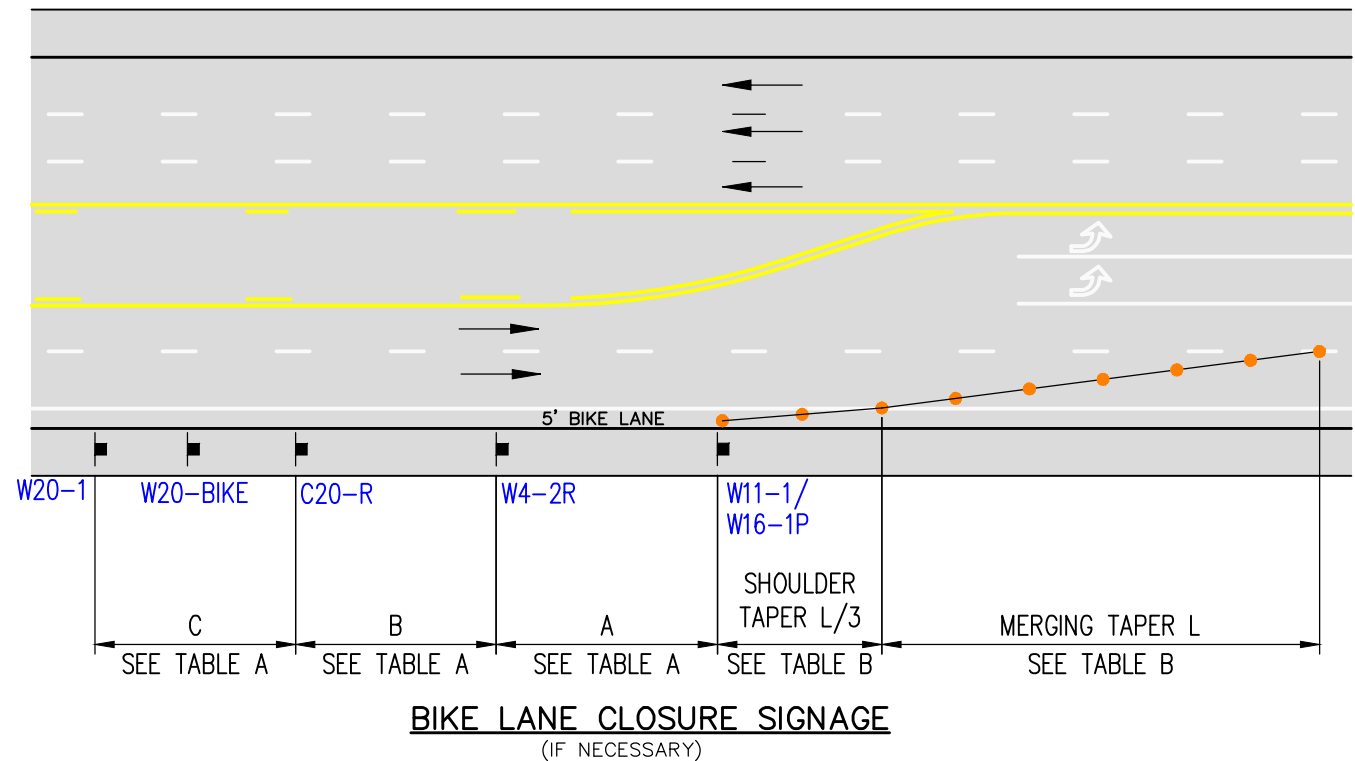
** Use on intermediate and short term projects for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers.

Note: A minimum 10-ft drivable lane width should be provided where possible.

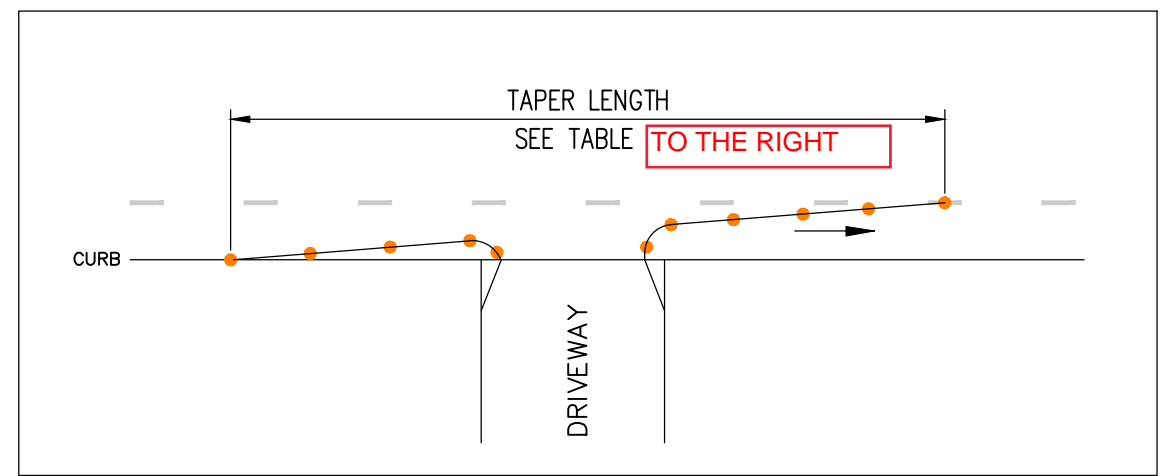


CONSTRUCTION NOTES:

1. PLACE BIKE LANE CLOSED AHEAD SIGN (C20-BIKE) HALF THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS.
2. BICYCLISTS SHALL NOT BE LED INTO DIRECT CONFLICTS WITH MAINLINE TRAFFIC, WORK SITE VEHICLES, OR EQUIPMENT MOVING THROUGH OR AROUND THE TTC ZONE.



CONSTRUCTION NOTE:
ALL DRIVEWAYS TO REMAIN OPEN
(WHENEVER POSSIBLE) THROUGHOUT
TRAFFIC CONTROL ZONE



BELOW

SEE TABLE A-F FOR SIGN AND CHANNELIZER DEVICE SPACING AND TAPER LENGTH

SPEED	APPROACH STREET	TAPER LENGTH	SIGN SPACING	CHANNELIZER SPACING

BELOW

SEE TABLE A-F FOR SIGN AND CHANNELIZER DEVICE SPACING AND TAPER LENGTH

SPEED	APPROACH STREET	TAPER LENGTH	SIGN SPACING	CHANNELIZER SPACING

ABBREVIATIONS:

- MIN = Minimum
- LT = Left
- RT = Right
- LTP = Lane Traffic Panel
- TANSAT = Tow Away, No Stopping Anytime
- TANS = Tow Away, No Stopping

RECOMMENDED DELINEATOR/CONE & SIGN PLACEMENT

POSTED SPEED LIMIT	MINIMUM TAPER LENGTH FOR 12-FT LANE			MAXIMUM CHANNELIZER SPACING		MINIMUM SIGN SPACING (ADVANCE OF TAPER & BETWEEN SIGNS)
	MERGING	SHIFTING	SHOULDER	TAPER	TANGENT	
20 MPH	80 FT.	40 FT.	27 FT.	20 FT.	40 FT.	100 FT.
25 MPH	125 FT.	63 FT.	42 FT.	25 FT.	50 FT.	100 FT.
30 MPH	180 FT.	90 FT.	60 FT.	30 FT.	60 FT.	250 FT.
35 MPH	245 FT.	123 FT.	82 FT.	35 FT.	70 FT.	250 FT.
40 MPH	320 FT.	160 FT.	107 FT.	40 FT.	80 FT.	250 FT.
* 45 MPH	540 FT.	270 FT.	180 FT.	45 FT.	90 FT.	350 FT.
* 50 MPH	600 FT.	300 FT.	200 FT.	50 FT.	100 FT.	350 FT.
* 55+MPH	660 FT.	330 FT.	220 FT.	50 FT.	100 FT.	PER TABLE 'A'

NOTES

1. A Flashing Arrow sign shall be used for each lane closed, at merging taper.
- *2. One lane closure sign (C20) shall be used on the approach to a lane closure. Two signs (separated by a distance derived from table A) should be used with speeds of 45 mph or greater. W20-5 signs may be used in place of C20 signs.

NOTE: This chart based on 12-foot wide lanes.
For lane widths greater than 12 feet,
use the following formulae:

Taper formula:
 $L = S \times W$ for speeds of 45 mph or more.
 $L = \frac{WS^2}{60}$ for speeds of 40 mph or less.

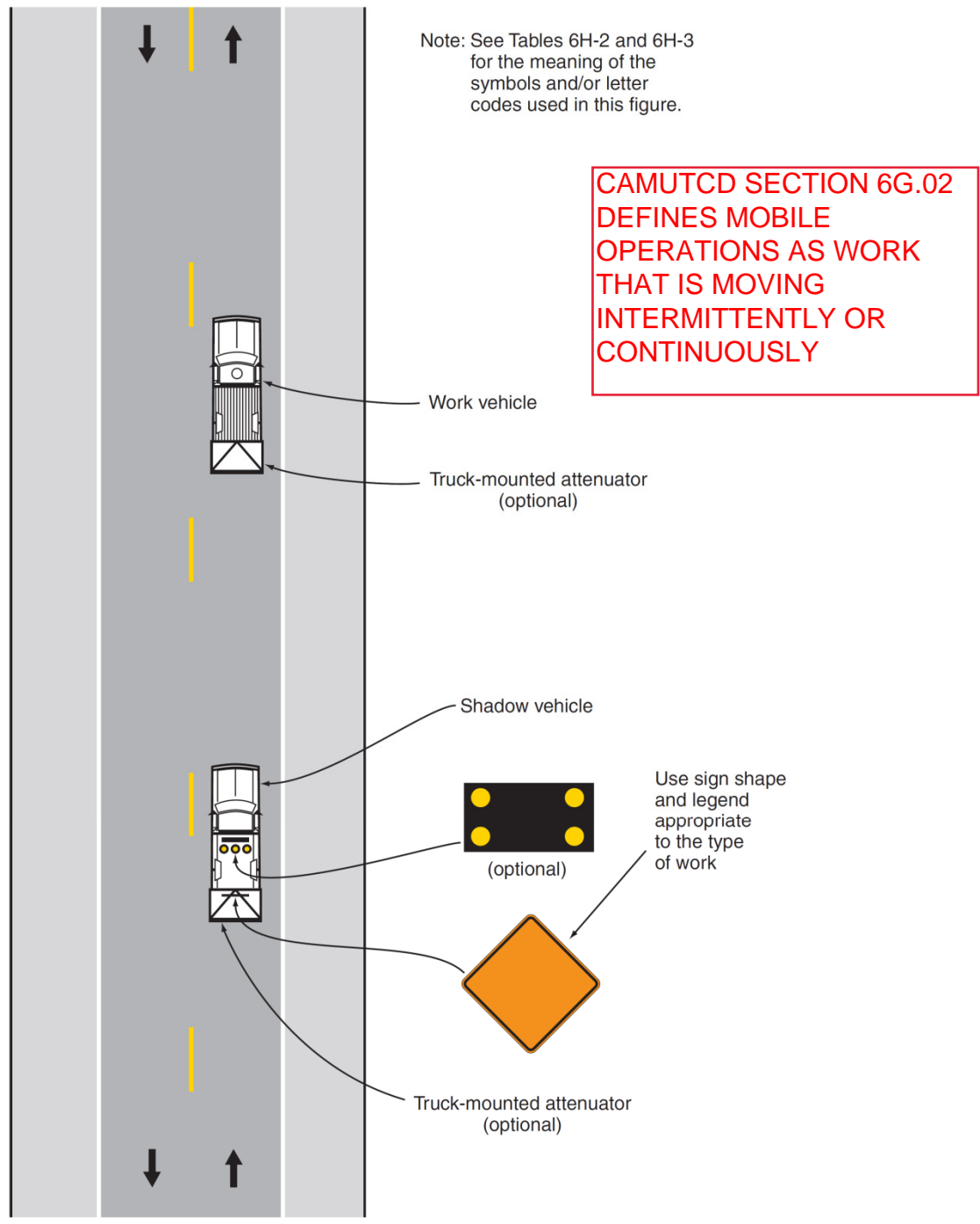
Where:
 L = Minimum length of taper.
 S = Numerical value of posted speed limit prior to work or 85 percentile speed.
 W = Width of offset.
 i.e.: 50 mph and 19' lane;
 $L = 50 \times 19 = 950$ feet

DATES OF TEMPORARY NO PARKING ZONE

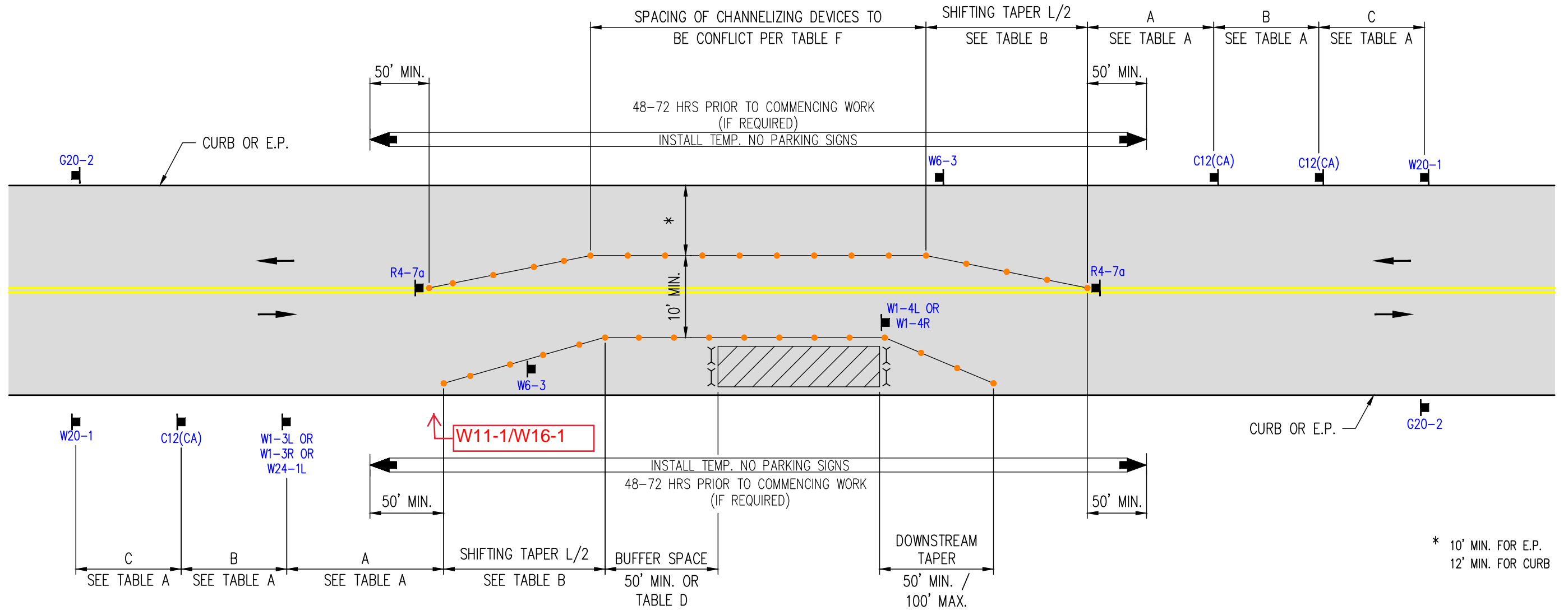
WORKSITE TRAFFIC CONTROL PLAN
STANDARD DETAILS, ABBREVIATIONS
AND REFERENCE CHARTS

DATE	SCALE
	NONE
	DRAWING NO. 49

Figure 6H-17. Mobile Operations on a Two-Lane Road (TA-17)



Typical Application 17



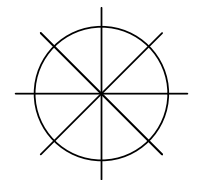
* 10' MIN. FOR E.P.
12' MIN. FOR CURB

LEGEND

- TYPE III BARRICADE W/SIGN
- TYPE III BARRICADE W/O SIGN
- TYPE II BARRICADE W/SIGN
- TYPE II BARRICADE W/O SIGN
- CHANNELIZING DEVICE - SEE TABLE F FOR SPACING
- TRAFFIC CONE WITH CLIP ON SIGN
- SIGN
- SIGNALIZED INTERSECTION
- [FAS] ARROW PANEL (FLASHING ARROW)
- HIGH LEVEL WARNING DEVICE (FLAGTREE) (OPTIONAL)
- FLAGGER
- TANS TOW AWAY NO STOPPING ___ TO ___ (SHOW HOURS)
- TANSAT TOW AWAY NO STOPPING ANY TIME
- WORK ZONE (ACTIVITY AREA) LIMITS
- DIRECTION OF TRAFFIC (NOT PAVEMENT MARKING)
- ROADWAY DESIGNATION

(USED FOR 30 MPH OR LESS OR WHERE THE TANGENT DISTANCE BETWEEN TWO REVERSE CURVES IS LESS THAN 600')	(USED FOR 30 MPH OR LESS)	(USED FOR 30 MPH OR LESS)	(USED FOR 35 MPH OR MORE)	(USED FOR 35 MPH OR MORE)

ADD W11-1 (BIKE WARNING)
ADD W16-1 (SHARED THE ROAD)

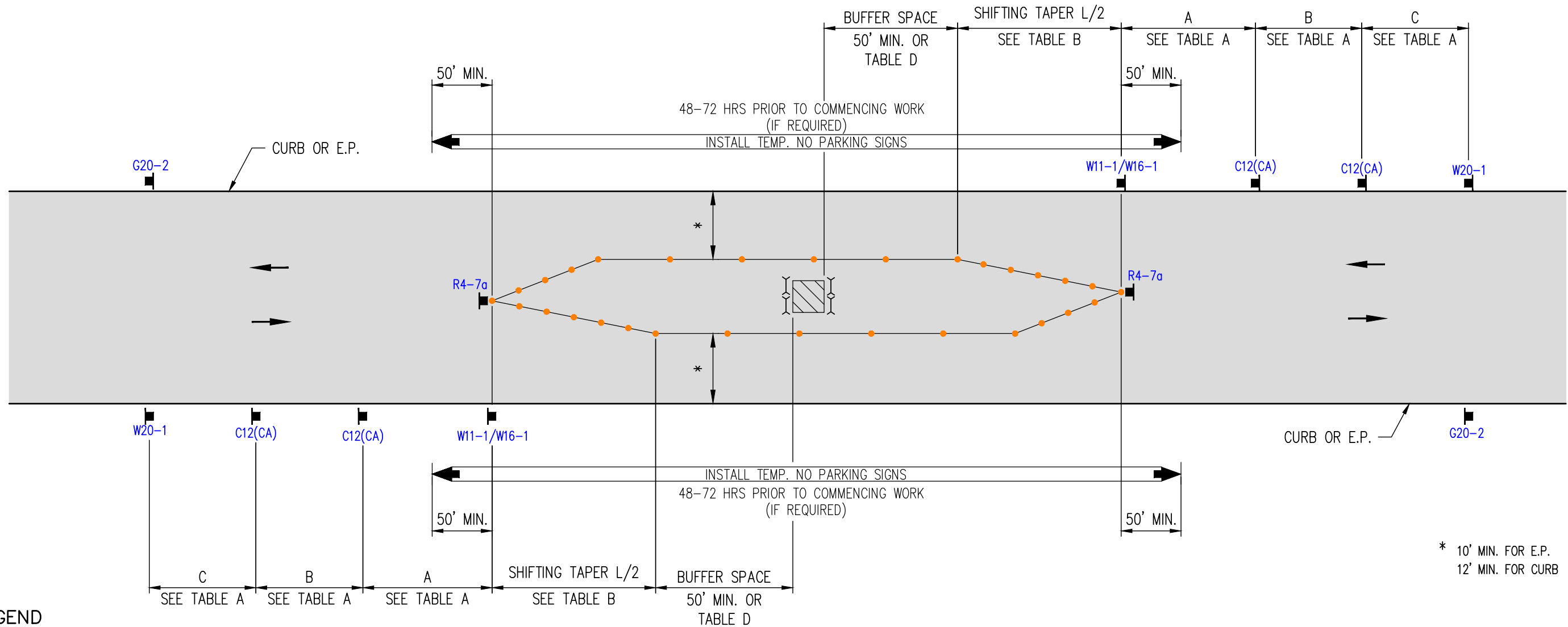


INDICATE NORTH WITH A "N" AND AN ARROW POINT NOT TO SCALE

DATES OF TEMPORARY NO PARKING ZONE		
WORKSITE TRAFFIC CONTROL PLAN		
SIDE OF ROAD WORK AREA TWO LANE TRAFFIC CONTROL WITH CENTERLINE		
DATE	SCALE	NONE
		DRAWING NO. 2

REV. 3/26/2018 CJUTCM-DWG02.DWG

REV. 3/26/2018 CJUTCM-DWG03.DWG



* 10' MIN. FOR E.P.
12' MIN. FOR CURB

LEGEND

- TYPE III BARRICADE W/SIGN
- TYPE III BARRICADE W/O SIGN
- TYPE II BARRICADE W/SIGN
- TYPE II BARRICADE W/O SIGN
- CHANNELIZING DEVICE - SEE TABLE F FOR SPACING
- TRAFFIC CONE WITH CLIP ON SIGN
- SIGN
- SIGNALIZED INTERSECTION
- [FAS] ARROW PANEL (FLASHING ARROW)
- HIGH LEVEL WARNING DEVICE (FLAGTREE) (OPTIONAL)
- FLAGGER
- TANS TOW AWAY NO STOPPING ____ TO ____ (SHOW HOURS)
- TANSAT TOW AWAY NO STOPPING ANY TIME
- WORK ZONE (ACTIVITY AREA) LIMITS
- DIRECTION OF TRAFFIC (NOT PAVEMENT MARKING)
- ROADWAY DESIGNATION

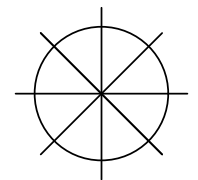
END ROAD WORK
G20-2

NARROW LANE
C12(CA)

ROAD WORK AHEAD
W20-1

KEEP RIGHT
R4-7a

SHARE THE ROAD
W11-1/W16-1
(USE IF APPLICABLE. SEE DWG NO. 49 FOR DETAILS)

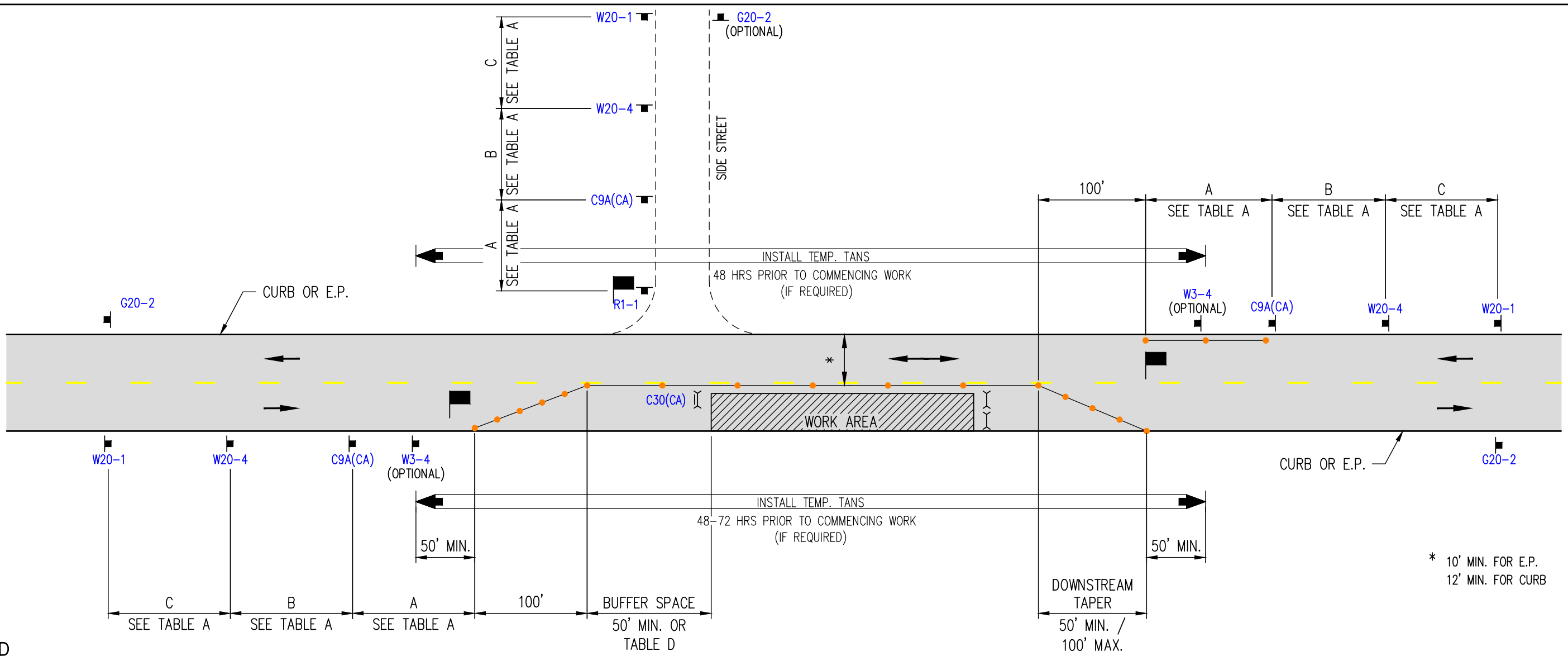


INDICATE NORTH WITH A "N" AND AN ARROW POINT NOT TO SCALE

DATES OF TEMPORARY NO PARKING ZONE

WORKSITE TRAFFIC CONTROL PLAN WORK IN CENTER OF ROAD TWO LANE TRAFFIC CONTROL WITHOUT CENTERLINE		
DATE		SCALE
		NONE
		DRAWING NO. 3

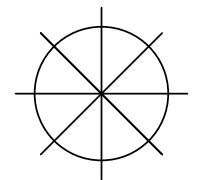
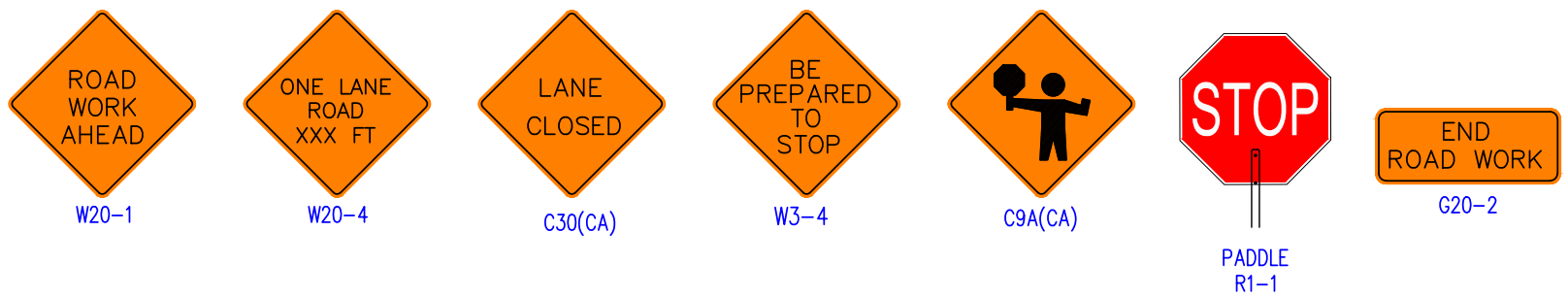
REV. 3/26/2018 CUJTCM-DWG04.DWG



* 10' MIN. FOR E.P.
12' MIN. FOR CURB

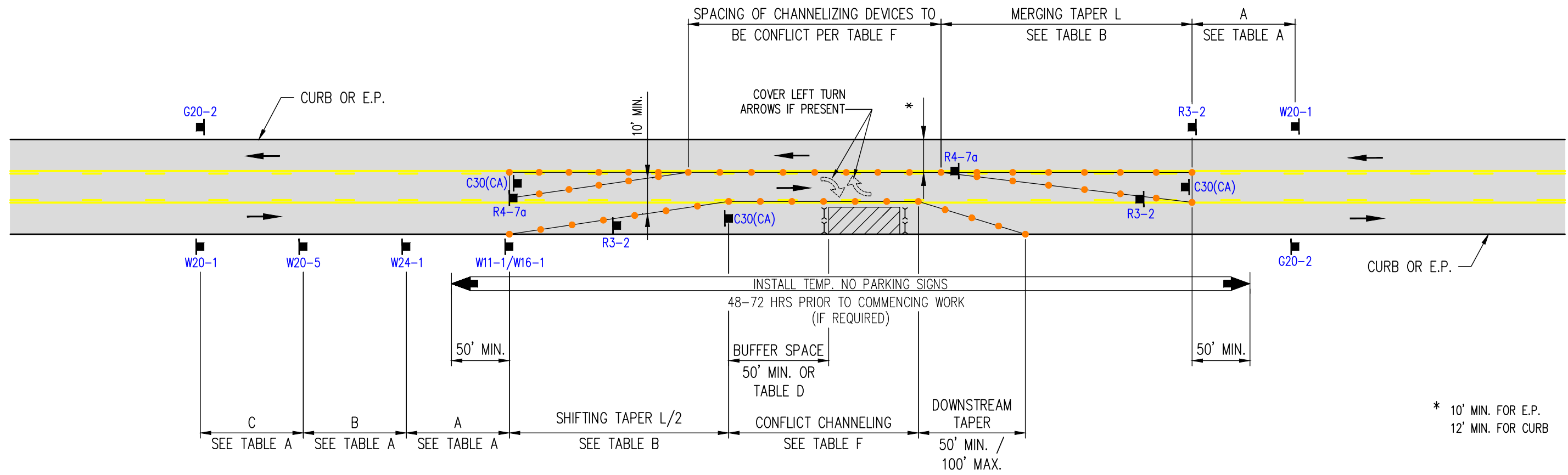
LEGEND

- TYPE III BARRICADE W/SIGN
- TYPE III BARRICADE W/O SIGN
- TYPE II BARRICADE W/SIGN
- TYPE II BARRICADE W/O SIGN
- CHANNELIZING DEVICE - SEE TABLE F FOR SPACING
- TRAFFIC CONE WITH CLIP ON SIGN
- SIGN
- SIGNALIZED INTERSECTION
- [FAS] ARROW PANEL (FLASHING ARROW)
- HIGH LEVEL WARNING DEVICE (FLAGTREE) (OPTIONAL)
- FLAGGER
- TANS** TOW AWAY NO STOPPING ____ TO ____ (SHOW HOURS)
- TANSAT** TOW AWAY NO STOPPING ANY TIME
- WORK ZONE (ACTIVITY AREA) LIMITS
- DIRECTION OF TRAFFIC (NOT PAVEMENT MARKING)
- ROADWAY DESIGNATION



INDICATE NORTH WITH A "N"
AND AN ARROW POINT
NOT TO SCALE

DATES OF TEMPORARY NO PARKING ZONE		
WORKSITE TRAFFIC CONTROL PLAN MIDBLOCK HALF STREET CLOSURE FLAGGER CONTROL		
DATE		SCALE
		NONE
		DRAWING NO. 4



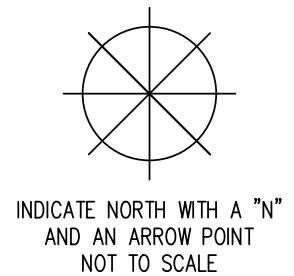
* 10' MIN. FOR E.P.
12' MIN. FOR CURB

LEGEND

- TYPE III BARRICADE W/SIGN
- TYPE III BARRICADE W/O SIGN
- TYPE II BARRICADE W/SIGN
- TYPE II BARRICADE W/O SIGN
- CHANNELIZING DEVICE - SEE TABLE F FOR SPACING
- TRAFFIC CONE WITH CLIP ON SIGN
- SIGN
- SIGNALIZED INTERSECTION
- [FAS] ARROW PANEL (FLASHING ARROW)
- HIGH LEVEL WARNING DEVICE (FLAGTREE) (OPTIONAL)
- FLAGGER
- TANS TOW AWAY NO STOPPING ___ TO ___ (SHOW HOURS)
- TANSAT TOW AWAY NO STOPPING ANY TIME
- WORK ZONE (ACTIVITY AREA) LIMITS
- DIRECTION OF TRAFFIC (NOT PAVEMENT MARKING)
- ROADWAY DESIGNATION

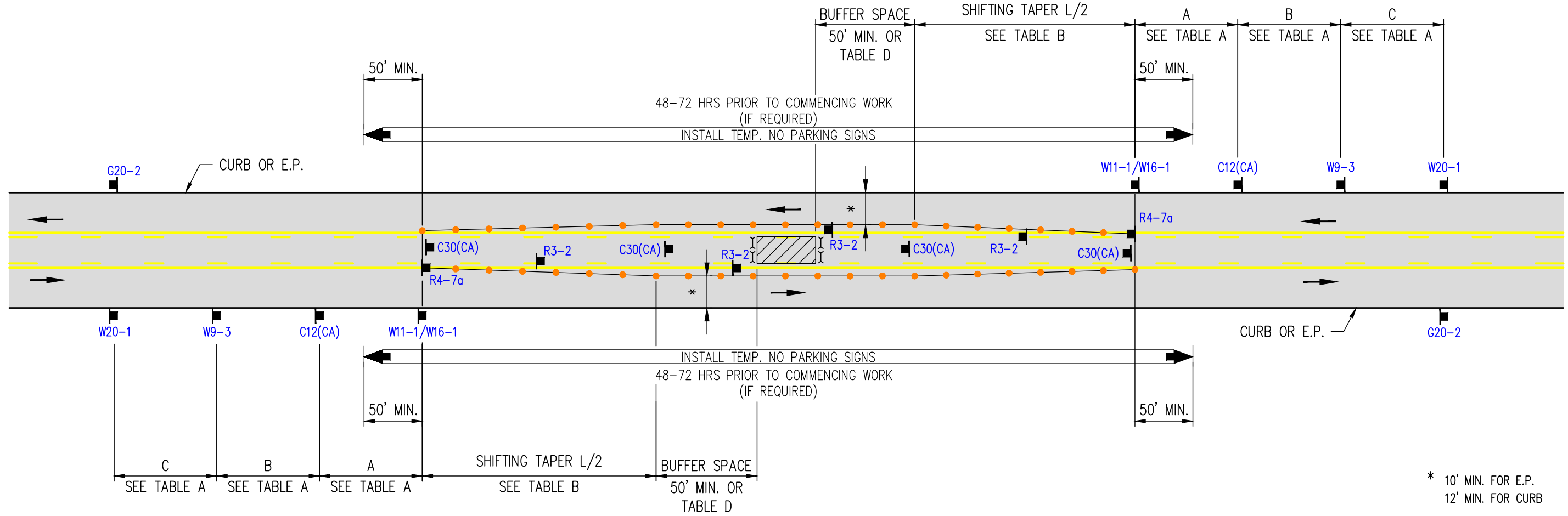
Grid of traffic signs with labels:

- W20-5 INTERCHANGEABLE WITH C20(CA)
- G20-2
- C30(CA)
- W20-1
- R3-2
- R4-7a
- W11-1/W16-1
- W24-1L (USED FOR 30 MPH OR LESS OR WHERE THE TANGENT DISTANCE BETWEEN TWO REVERSE CURVES IS LESS THAN 600')
- W1-3L (USED FOR 30 MPH OR LESS)
- W1-3R (USED FOR 30 MPH OR LESS)
- W1-4L (USED FOR 35 MPH OR MORE)
- W1-4R (USED FOR 35 MPH OR MORE)



DATES OF TEMPORARY NO PARKING ZONE		
WORKSITE TRAFFIC CONTROL PLAN		
SIDE OF ROAD WORK AREA SINGLE LANE CLOSURE - RIGHT LANE USING 2-WAY LEFT TURN LANE		
DATE	SCALE	NONE
		DRAWING NO. 7

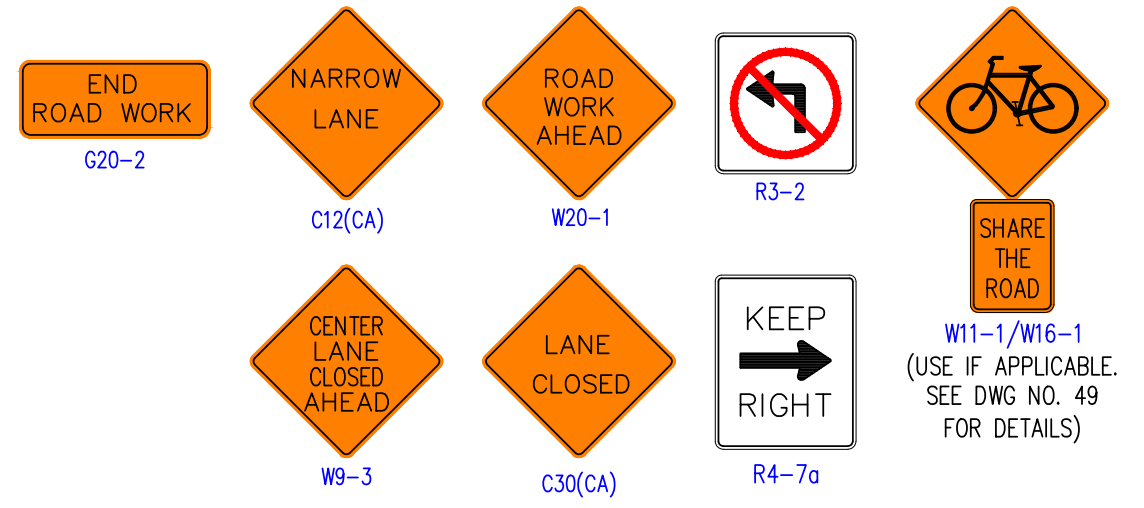
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* 10' MIN. FOR E.P.
12' MIN. FOR CURB

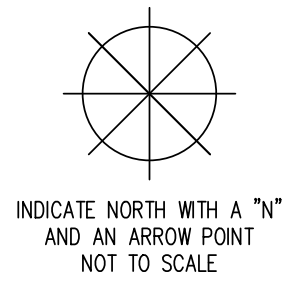
LEGEND

- TYPE III BARRICADE W/SIGN
- TYPE III BARRICADE W/O SIGN
- TYPE II BARRICADE W/SIGN
- TYPE II BARRICADE W/O SIGN
- CHANNELIZING DEVICE - SEE TABLE F FOR SPACING
- TRAFFIC CONE WITH CLIP ON SIGN
- SIGN
- SIGNALIZED INTERSECTION
- [FAS] ARROW PANEL (FLASHING ARROW)
- HIGH LEVEL WARNING DEVICE (FLAGTREE) (OPTIONAL)
- FLAGGER
- TANS TOW AWAY NO STOPPING ____ TO ____ (SHOW HOURS)
- TANSAT TOW AWAY NO STOPPING ANY TIME
- WORK ZONE (ACTIVITY AREA) LIMITS
- DIRECTION OF TRAFFIC (NOT PAVEMENT MARKING)
- ROADWAY DESIGNATION



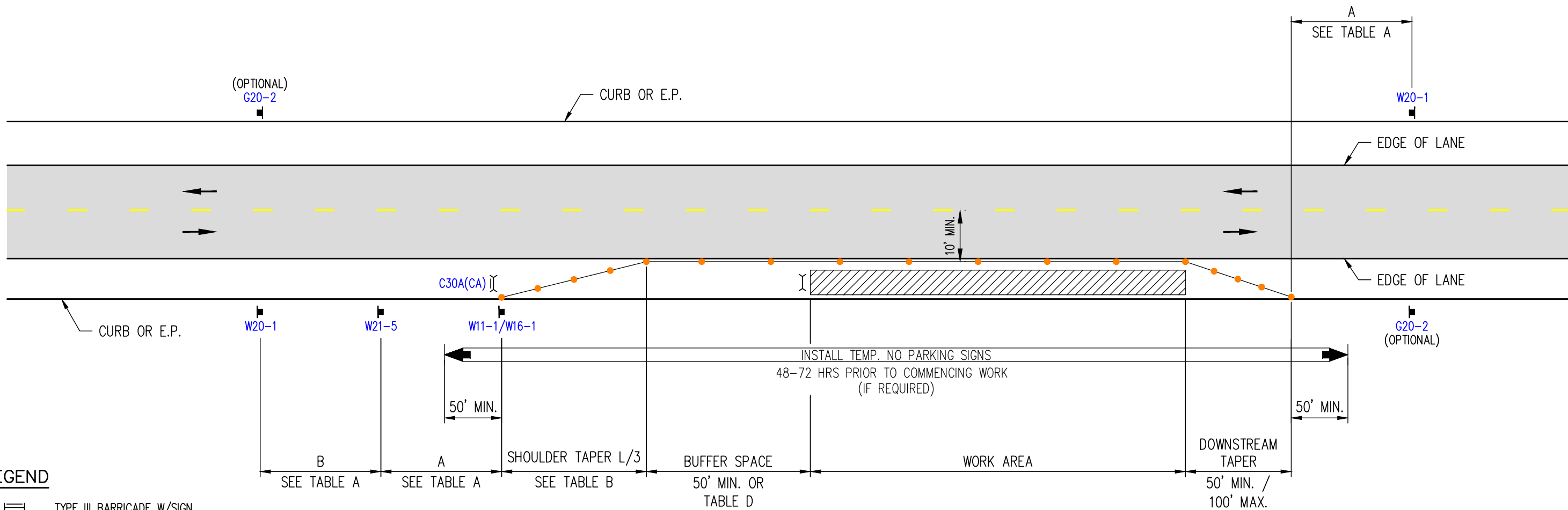
DATES OF TEMPORARY NO PARKING ZONE _____

WORKSITE TRAFFIC CONTROL PLAN		
2-WAY LEFT TURN LANE CLOSURE - MIDBLOCK		
DATE		SCALE
		NONE
		DRAWING NO. 8



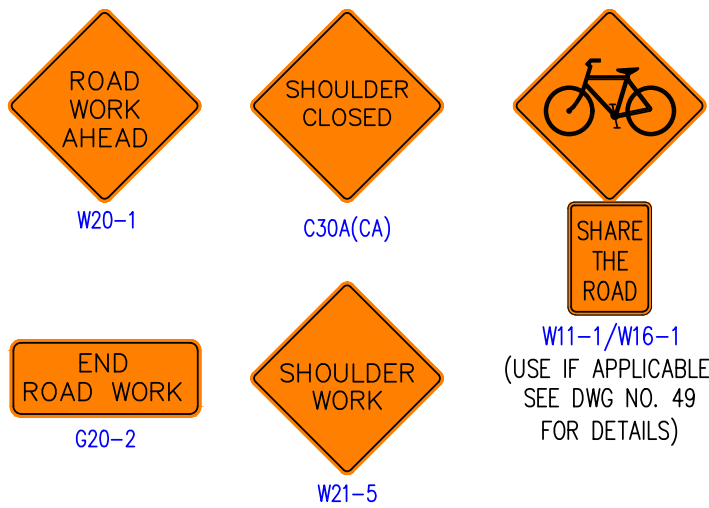
REV. 3/26/2018 CJUTCM-DWG08.DWG

REV. 3/26/2018 CJJTCM-DWG10.DWG

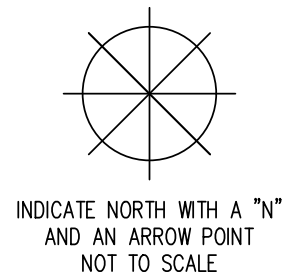


LEGEND

- TYPE III BARRICADE W/SIGN
- TYPE III BARRICADE W/O SIGN
- TYPE II BARRICADE W/SIGN
- TYPE II BARRICADE W/O SIGN
- CHANNELIZING DEVICE - **SEE TABLE F FOR SPACING**
- TRAFFIC CONE WITH CLIP ON SIGN
- SIGN
- SIGNALIZED INTERSECTION
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- WORK ZONE (ACTIVITY AREA) LIMITS
- DIRECTION OF TRAFFIC (NOT PAVEMENT MARKING)
- ROADWAY DESIGNATION



NOTE: WORK GREATER THAN 15' FROM TRAVELED WAY DOES NOT REQUIRE TTC.



DATES OF TEMPORARY NO PARKING ZONE

WORKSITE TRAFFIC CONTROL PLAN SHOULDER CLOSURE		
DATE		SCALE
		NONE
		DRAWING NO. 10