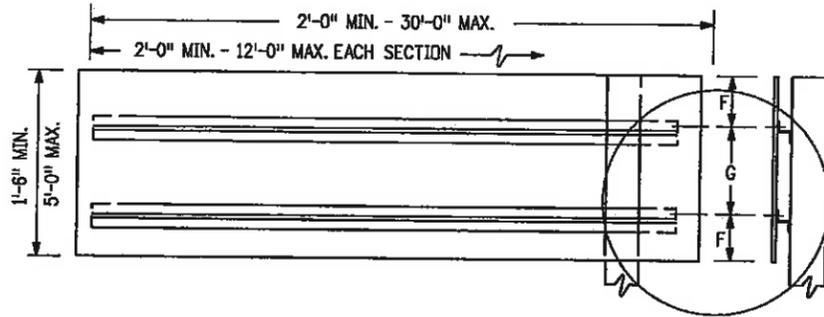


HORIZONTAL SECTIONS

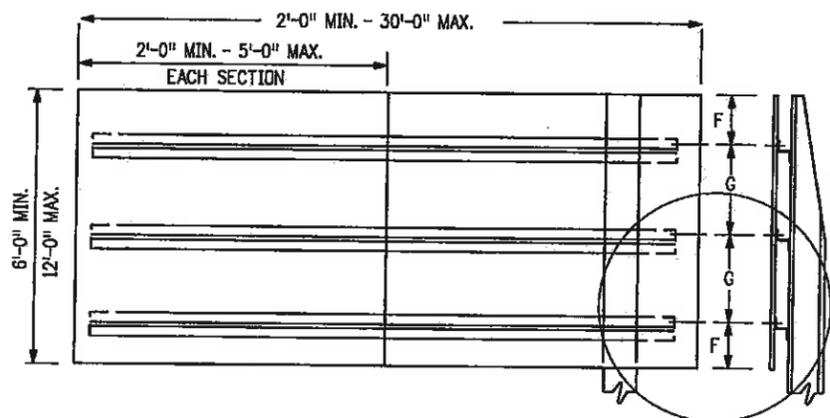


SECTIONS REQUIRED

WIDTH	*SECTIONS
2'-0" TO 12'-0"	1
12'-6" TO 24'-0"	2
24'-6" TO 30'-0"	3

*NUMBER OF SECTIONS SHALL NOT EXCEED MAXIMUM SHOWN IN TABLE
SEE TYPICAL DETAIL ON SHEET 2

VERTICAL SECTIONS

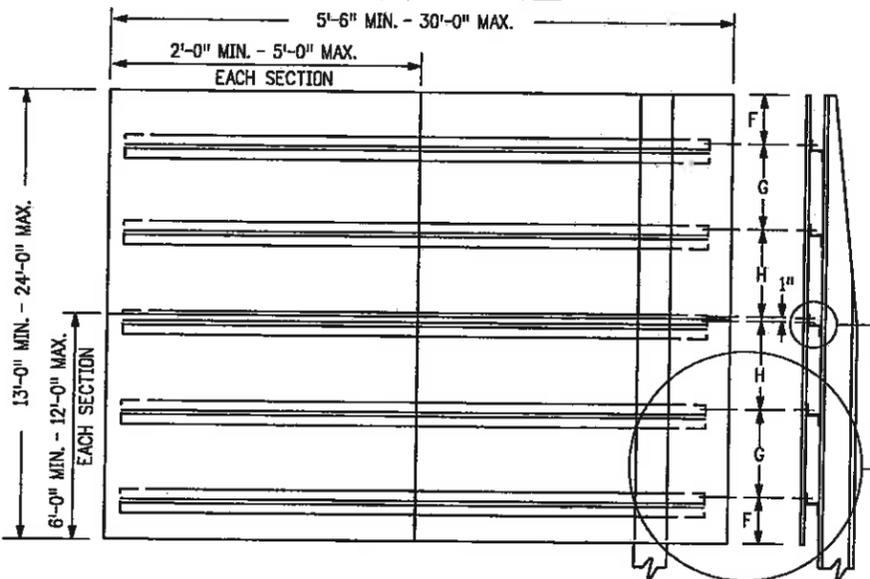


SECTIONS REQUIRED

WIDTH	*SECTIONS
2'-0" TO 5'-0"	1
5'-6" TO 10'-0"	2-3
10'-6" TO 15'-0"	3-4
15'-6" TO 20'-0"	4-5
20'-6" TO 25'-0"	5-7
25'-6" TO 30'-0"	6-8

*NUMBER OF SECTIONS SHALL NOT EXCEED MAXIMUM SHOWN IN TABLE
SEE TYPICAL DETAIL ON SHEET 2

MULTI-VERTICAL SECTIONS



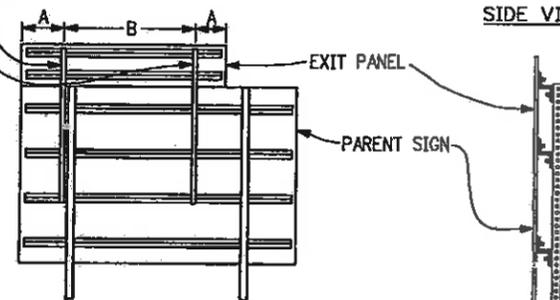
SECTIONS REQUIRED

WIDTH	*SECTIONS
5'-6" TO 10'-0"	4-6
10'-6" TO 15'-0"	6-8
15'-6" TO 20'-0"	8-10
20'-6" TO 25'-0"	10-14
25'-6" TO 30'-0"	12-16

*NUMBER OF SECTIONS SHALL NOT EXCEED MAXIMUM SHOWN IN TABLE
SEE TYPICAL SEAM CLOSURE DETAIL ON SHEET 2
SEE TYPICAL DETAIL ON SHEET 2

TYPICAL PANEL ELEVATIONS

EXIT PANEL SUPPORTS



TYPICAL SIDE VIEW

SUPPORT SPACING TABLE

EXIT PANEL WIDTH	OVERHANG "A"	SPACING "B"
7'	1'-0"	5'
8'	1'-6"	5'
9'	2'-0"	5'
10'	2'-6"	5'
11'	2'-6"	6'
12'	2'-6"	7'

TYPICAL EXIT PANEL INSTALLATION FOR GROUND SIGNS

EXIT PANEL NOTES

1. THE EXIT PANEL SHALL BE MOUNTED WITH TWO SUPPORTS. RIGHT HAND EXITS REQUIRE THE EDGE OF THE EXIT PANEL TO BE MOUNTED EVEN WITH THE RIGHT EDGE OF THE PARENT SIGN. LEFT HAND EXITS REQUIRE THE LEFT EDGE OF THE EXIT PANEL TO BE MOUNTED EVEN WITH THE LEFT EDGE OF THE PARENT SIGN.
2. THE SUPPORTS SHALL BE SQUARE STEEL TUBING A MINIMUM WIDTH OF 2-1/4" WITH 1/16" INCH HOLES PUNCHED OR DRILLED ON 1" CENTERS ALONG THE LENGTH OF EACH SIDE WHILE MAINTAINING A MINIMUM SECTION MODULUS OF 0.499 CUBIC INCHES. THE STEEL MUST HAVE A MINIMUM YIELD STRESS OF 33 KSI. ALTERNATELY, ZEE BAR MAY BE USED FOR THE SUPPORT MEMBERS WITH 1/4" HOLES PUNCHED WHERE NEEDED.
3. THE SUPPORTS SHALL BE FASTENED TO THE BACKING ZEE USING 3/8" BOLTS.
4. THE EXIT PANEL SUPPORT MAY BE MOVED 6" IF IT CONFLICTS WITH THE PARENT SIGN SUPPORT.
5. EXIT PANEL MOUNTING WILL BE PAID FOR AS PART OF THE CLASS III SIGN PANEL.
6. EXIT PANEL SUPPORTS SHALL BE ATTACHED TO A MINIMUM OF THREE BACKING ZEES.

GENERAL NOTES

1. CLASS III SIGN PANELS ARE ALL THOSE WHERE A SINGLE PANEL REQUIRES 3 OR MORE BACKING ZEES (THESE WILL BE SIGN PANELS THAT ARE 72 IN. OR MORE IN HEIGHT) AND ANY PANELS THAT ARE PART OF A CLASS III ASSEMBLY SUCH AS EXIT PANELS. ALL CLASS III PANELS SHALL BE 0.125 IN. MINIMUM THICKNESS SHEET ALUMINUM.
2. SEE THE APPLICABLE STANDARDS FOR SIGN PLACEMENT, FOOTING DETAILS AND POST SPACING TABLES.
3. A 3/4" IN 90° COUNTERSUNK HUCKBOLT AND COLLAR SHALL BE USED TO FASTEN THE SIGN PANEL TO THE BACKING ZEE. A HEX-HEAD BOLT WITH NUT AND WASHERS SHALL BE USED TO FASTEN THE BACKING ZEE TO A TIMBER POST OR TO A STEEL POST.
4. A FLAT WASHER SHALL BE PLACED BETWEEN THE BOLT HEAD AND THE POST FLANGE. A LOCK WASHER SHALL BE PLACED UNDER THE NUT ON A STEEL POST OR A BACKING ZEE. A 1/2" DIAMETER WASHER SHALL BE PLACED UNDER THE BOLT HEAD ON A TIMBER POST.
5. ALL EXPOSED SIGN PANEL SECTION JOINTS, EXCEPT THE MULTI-VERTICAL SECTIONS HORIZONTAL SEAM, SHALL BE COVERED ON THE BACKSIDE OF THE SIGN PANEL WITH AN ALUMINUM CLOSURE STRIP. CLOSURE STRIPS SHALL BE RIVETED OR TAPED. SEE FABRICATIONS NOTES.
6. SECTIONS ILLUSTRATED BASED ON UTILIZING 12' X 5' STOCK. 4" WIDE STOCK MAY BE USED WITH APPROPRIATE ADJUSTMENT IN NUMBER OF SECTIONS.
7. ALL SIGNS SHALL BE FABRICATED USING RETROREFLECTIVE SHEETING CONFORMING TO ASTM D4956. THE TYPE SHALL BE AS DESCRIBED IN THE STANDARD SPECIFICATIONS AND/OR AS SHOWN ON THE PLANS.

Computer File Information

Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 07/04/06	Initials: JSW
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-614-04_1of3.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions

Date:	Comments

Colorado Department of Transportation

4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9458

Safety & Traffic Engineering Branch **KCM/JSW**

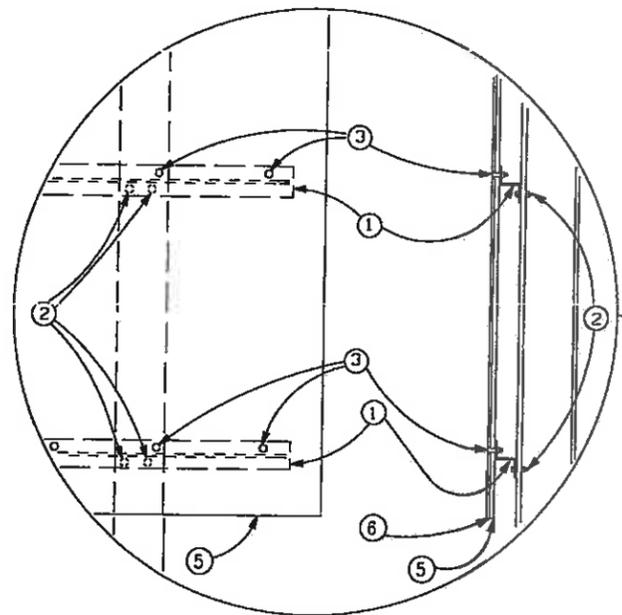
CLASS III SIGNS

Issued By: Safety & Traffic Engineering Branch July 4, 2006

STANDARD PLAN NO.

S-614-4

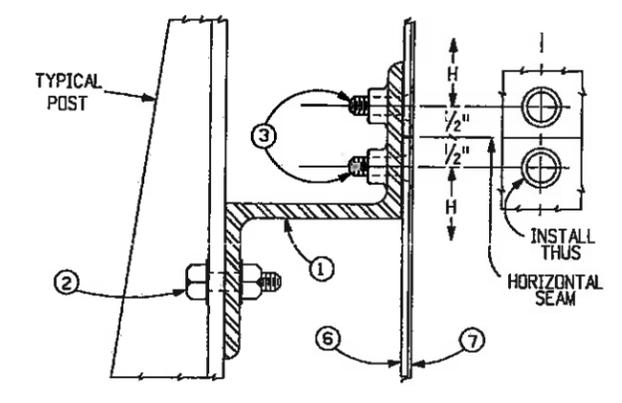
Sheet No. 1 of 3



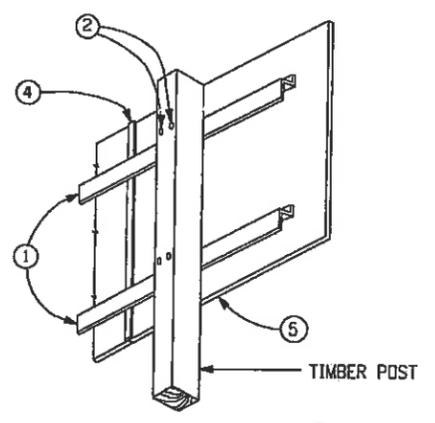
TYPICAL ELEVATION DETAIL

FABRICATION NOTES

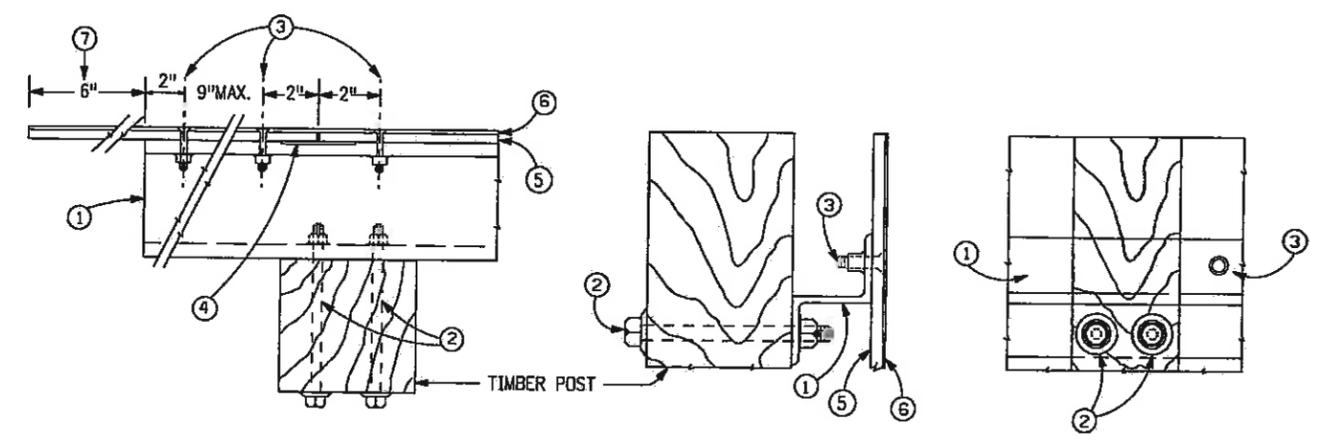
- ① BACKING ZEE. SEE "ZEE SPACING TABLE" ON SHEET 3. ALUMINUM ALLOY 6061-T6. EACH ZEE TO BE PROVIDED WITH A 3/16 IN. X 2 IN. HORIZONTAL SLOT FOR EACH POST MOUNTING BOLT.
- ② 3/8 IN. HEX-HEAD BOLT WITH NUT AND WASHERS; 2 PER BACKING ZEE PER POST REQUIRED. WASHERS ON POST SHALL BE 1/2 IN. DIA.
- ③ 3/8 IN. (NO. 6) 90 DEG. COUNTERSUNK HUCKBOLT WITH COLLAR.
- ④ 2 IN. X 0.025 IN. ALUMINUM CLOSURE STRIP RIVETED ABOVE THE TOP Z AND BELOW THE BOTTOM Z OR ALUMINUM CLOSURE STRIPS ATTACHED ABOVE, BETWEEN, AND BELOW THE ZEES WITH A VERY HIGH BOND (VHB) DOUBLE ACRYLIC FOAM TAPE, OR APPROVED EQUIVALENT. MANUFACTURER'S RECOMMENDATIONS SHALL BE ADHERED TO FOR THIS APPLICATION.
- ⑤ SHEET ALUMINUM: 0.125 IN. MINIMUM THICKNESS.
- ⑥ ADHESIVES SHALL BE CLASS I OR CLASS II ADHESIVES OF ASTM D4956.
- ⑦ BACKING ZEES SHALL EXTEND TO THE EDGE OF THE PANEL ON 6 FT., 7 FT. & 8 FT. WIDE SIGNS.



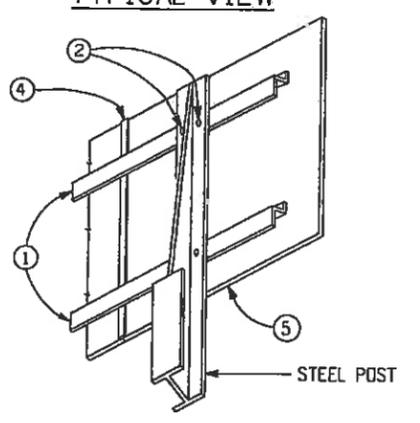
TYPICAL DETAIL SEAM CLOSURE ZEE (MULTIPLE-VERTICAL SECTIONS, HORIZONTAL SEAMS)



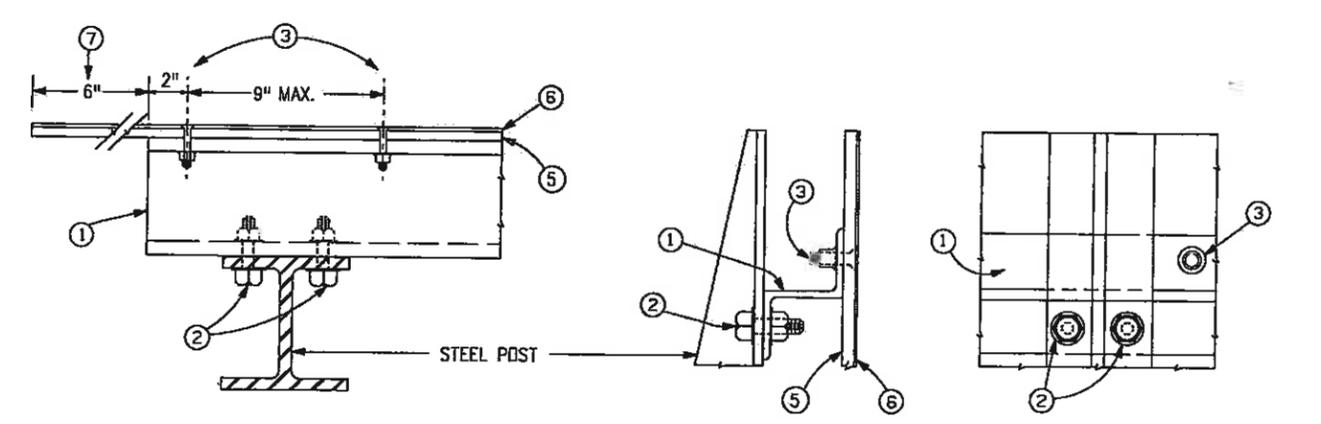
TYPICAL VIEW



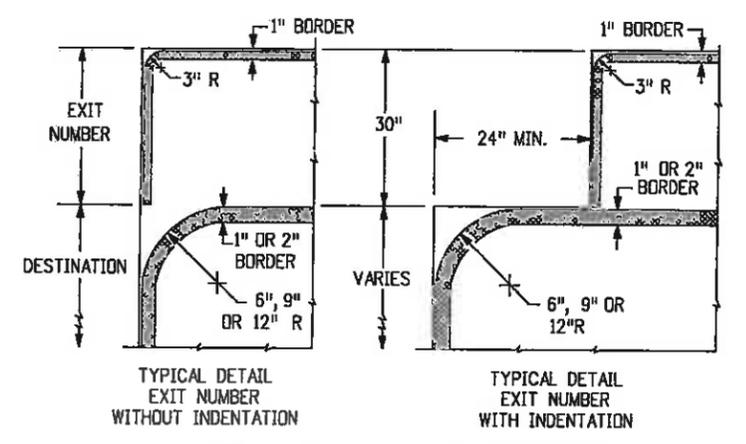
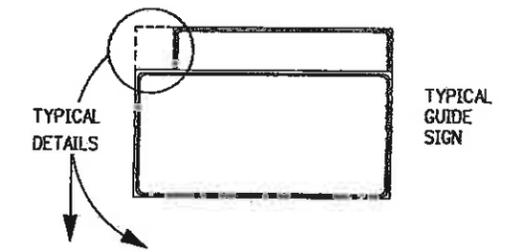
TYPICAL TIMBER POST INSTALLATION PANEL FABRICATION AND MOUNTING DETAILS



TYPICAL VIEW



TYPICAL STEEL POST INSTALLATION PANEL FABRICATION AND MOUNTING DETAILS



TYPICAL BORDER DETAILS WITH EXIT NUMBER

Computer File Information	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 07/04/06	Initials: JSW
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-614-04_2of3.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments

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 4201 East Arkansas Avenue
 Denver, Colorado 80222
 Phone: (303) 757-9543
 Fax: (303) 757-9458

Safety & Traffic Engineering Branch **KCM/JSW**

CLASS III SIGNS

Issued By: Safety & Traffic Engineering Branch July 4, 2006

STANDARD PLAN NO.

S-614-4

Sheet No. 2 of 3

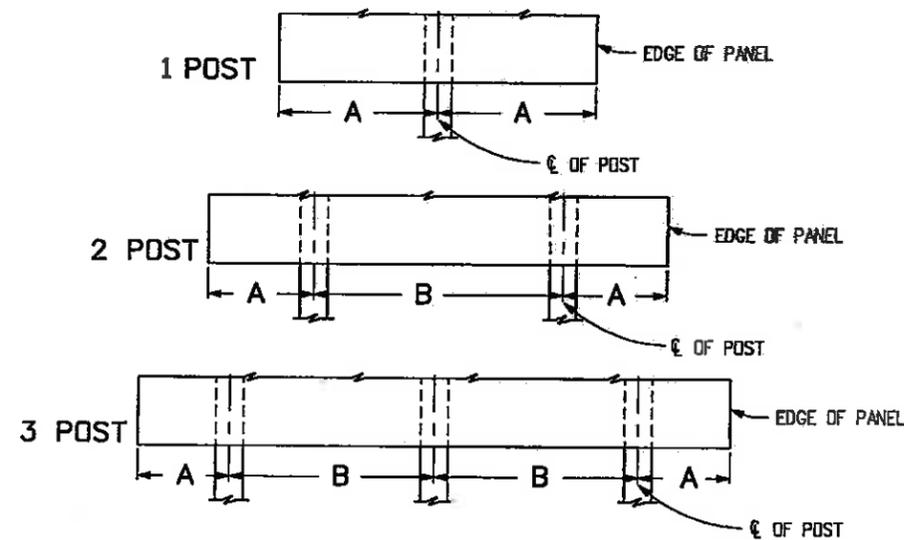
POST SPACING TABLE FOR SHEET ALUMINUM SIGN PANELS			
WIDTH OF SIGN	NO. OF POSTS	OVERHANG "A"	POST SPACING "B"
1'-6"	1	0'-9"	
2'-0"	1	1'-0"	
2'-6"	1	1'-3"	
3'-0"	1	1'-6"	
4'-0"	1	2'-0"	
5'-0"	1	2'-6"	
6'-0"	2	0'-3"	5'-6"
7'-0"	2	0'-3"	6'-6"
8'-0"	2	0'-3"	7'-6"
9'-0"	2	0'-9"	7'-6"
10'-0"	2	1'-3"	7'-6"
11'-0"	2	1'-9"	7'-6"
12'-0"	2	2'-3"	7'-6"
13'-0"	2	2'-6"	8'-0"
14'-0"	2	2'-6"	9'-0"
15'-0"	2	3'-0"	9'-0"
16'-0"	2	3'-3"	9'-6"
17'-0"	2	3'-3"	10'-6"
18'-0"	2	3'-6"	11'-0"
19'-0"	2	3'-9"	11'-6"
20'-0"	2	4'-0"	12'-0"
21'-0"	3	2'-6"	8'-0"
22'-0"	3	3'-0"	8'-0"
23'-0"	3	3'-6"	8'-0"
24'-0"	3	3'-8"	8'-4"
25'-0"	3	4'-0"	8'-6"
26'-0"	3	4'-0"	9'-0"
27'-0"	3	4'-0"	9'-6"
28'-0"	3	4'-0"	10'-0"
29'-0"	3	4'-0"	10'-6"
30'-0"	3	4'-0"	11'-0"

- ①, ②
- ①, ②
- ①

- ① BACKING ZEE SHALL EXTEND TO THE EDGE OF THE PANEL, EXCEPT FOR EXIT PANELS ATTACHED BY SQUARE STEEL TUBING.
- ② 6" X 6" TIMBER POSTS WILL NOT BE USED FOR THESE SIZES OF PANEL.

ZEE SPACING TABLE FOR 3" X 2 1/16" X 2.33 ALUMINUM BACKING ZEES								
SIGN PANEL HEIGHT	NUMBER OF ZEES	OVERHANG "F"	SPACING "G"	SIGN PANEL HEIGHT	NUMBER OF ZEES	OVERHANG "F"	SPACING "G"	SPACING "H"
1'-6"	2	0'-4"	0'-10"	13'-0"	7	1'-0"	1'-10"	1'-9 1/2"
2'-0"	2	0'-5"	1'-2"	14'-0"	7	0'-6"	2'-2"	2'-1 1/2"
2'-6"	2	0'-6"	1'-6"	15'-0"	7	1'-0"	2'-2"	2'-1 1/2"
3'-0"	2	0'-7"	1'-10"	16'-0"	7	0'-6"	2'-6"	2'-5 1/2"
4'-0"	2	0'-11"	2'-2"	17'-0"	7	1'-0"	2'-6"	2'-5 1/2"
5'-0"	2	1'-3"	2'-6"	18'-0"	9	0'-4"	2'-2"	2'-1 1/2"
6'-0"	3	0'-10"	2'-2"	19'-0"	9	0'-10"	2'-2"	2'-1 1/2"
7'-0"	3	1'-0"	2'-6"	20'-0"	9	1'-4"	2'-2"	2'-1 1/2"
8'-0"	4	0'-9"	2'-2"	21'-0"	9	0'-6"	2'-6"	2'-5 1/2"
9'-0"	4	1'-3"	2'-2"	22'-0"	9	1'-0"	2'-6"	2'-5 1/2"
10'-0"	4	1'-3"	2'-6"	23'-0"	11	0'-8"	2'-2"	2'-1 1/2"
11'-0"	5	1'-2"	2'-2"	24'-0"	11	1'-2"	2'-2"	2'-1 1/2"
12'-0"	5	1'-0"	2'-6"					

NOTES: - FOR F, G & H. SEE DETAILS ON SHEET 1.

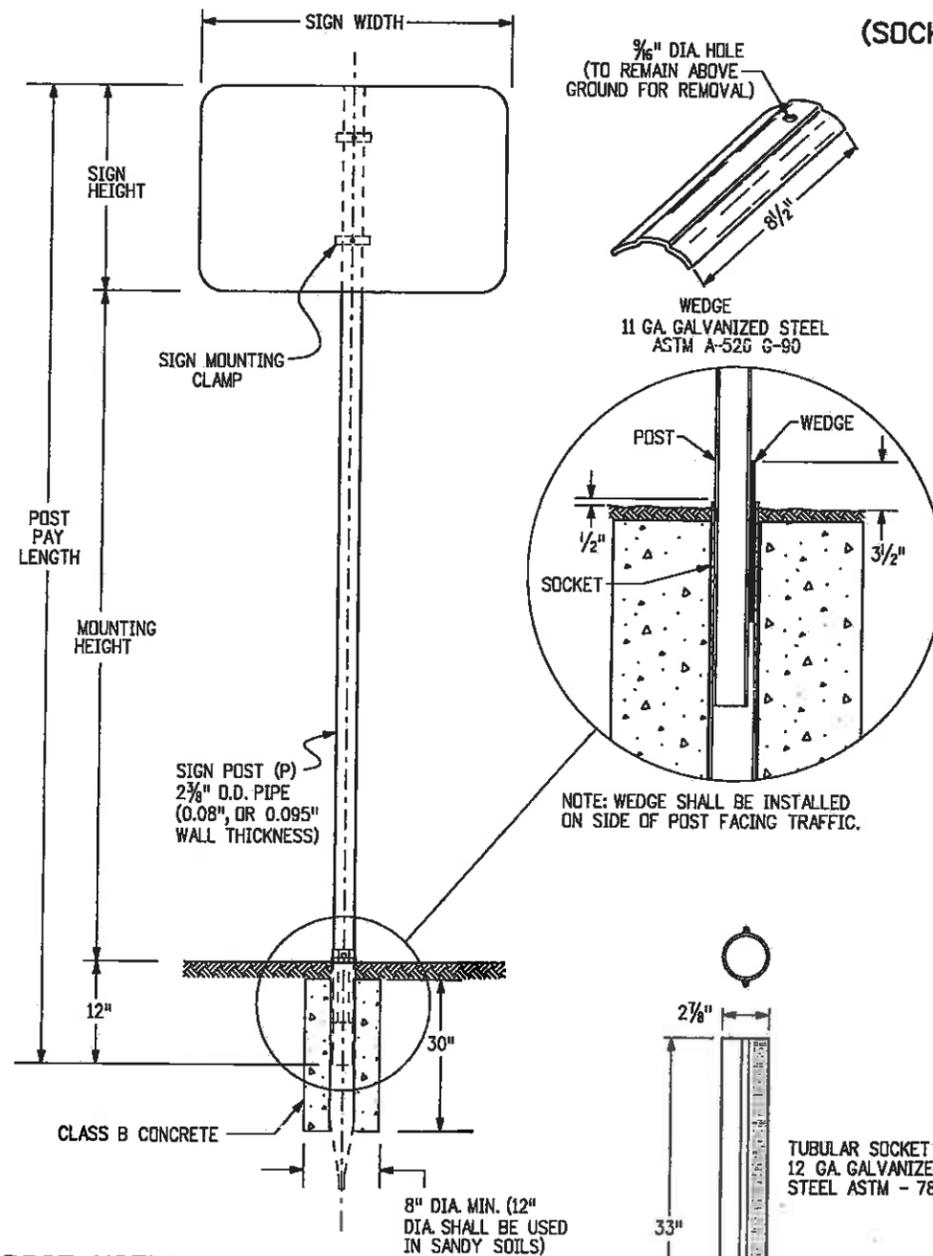


TYPICAL POST SPACING

Computer File Information Creation Date: 07/04/06 Initials: KCM Last Modification Date: 12/29/09 Initials: KEN Full Path: www.dot.state.co.us/DesignSupport/ Drawing File Name: Sheet_S-614-04_3of3.dgn CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English		Sheet Revisions <table border="1"> <thead> <tr> <th>Date:</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>12/29/09</td> <td>REVISED NOTES UNDER "ZEE SPACING" TABLE</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Date:	Comments	12/29/09	REVISED NOTES UNDER "ZEE SPACING" TABLE					Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9543 Fax: (303) 757-9458 Safety & Traffic Engineering Branch KCM/KEN		CLASS III SIGNS Issued By: Safety & Traffic Engineering Branch July 4, 2006		STANDARD PLAN NO. S-614-4 Sheet No. 3 of 3	
Date:	Comments																
12/29/09	REVISED NOTES UNDER "ZEE SPACING" TABLE																

TUBULAR STEEL POSTS
(SOCKET SYSTEM) (SINGLE OR DOUBLE POST)

SIGNPOST SELECTION GUIDE (90 MPH WIND LOAD DESIGN)



SIGN HEIGHT (FT)	7' MOUNTING HEIGHT									8' MOUNTING HEIGHT									9' MOUNTING HEIGHT											
	SIGN WIDTH (FT)									SIGN WIDTH (FT)									SIGN WIDTH (FT)											
	1	2	2.5	3	4	5	6	7	8	9	1	2	2.5	3	4	5	6	7	8	9	1	2	2.5	3	4	5	6	7	8	9
1	P	P	P	P	P	P1	SIZES NOT USED			1	P	P	P	P	P	P1	SIZES NOT USED			1	P	P	P	P	P	P1	SIZES NOT USED			
2	P	P	P	P	P	P1	SIZES NOT USED			2	P	P	P	P	P1	P1	SIZES NOT USED			2	P	P	P	P	P1	P1	SIZES NOT USED			
2.5	P	P	P	P	P1	P1	SIZES NOT USED			2.5	P	P	P	P1	P1	P1	SIZES NOT USED			2.5	P	P	P	P1	P1	P1	SIZES NOT USED			
3	P	P	P	P1	P1	P1	SIZES NOT USED			3	P	P	P1	P1	P1	P1	SIZES NOT USED			3	P	P	P1	P1	P1	P1	SIZES NOT USED			
4	P	P1	P1	P1	P1	P1	SIZES NOT USED			4	P	P1	P1	P1	P1	P1	SIZES NOT USED			4	P	P1	P1	P1	P1	P1	SIZES NOT USED			
5	SIZES NOT USED		P1	P1	P1	P1	SIZES NOT USED			5	SIZES NOT USED		P1	P1	P1	P2	SIZES NOT USED			5	SIZES NOT USED		P1	P1	P1	P2	TWO P2'S			
6	SIZES NOT USED		P1	P1	P1	P2	SIZES NOT USED			6	SIZES NOT USED		P1	P1	P1	P2	SIZES NOT USED			6	SIZES NOT USED		P1	P1	P2	TWO P1'S	TWO P2'S			
7	SIZES NOT USED		P1	P1	P2	TWO P1'S	TWO P2'S		SIZES NOT USED		7	SIZES NOT USED		P1	P1	TWO P1'S	TWO P1'S	TWO P2'S		SIZES NOT USED		7	SIZES NOT USED		P1	P2	TWO P1'S	TWO P1'S	TWO P2'S	

SEE CHART NOTE 4.

CHART NOTES

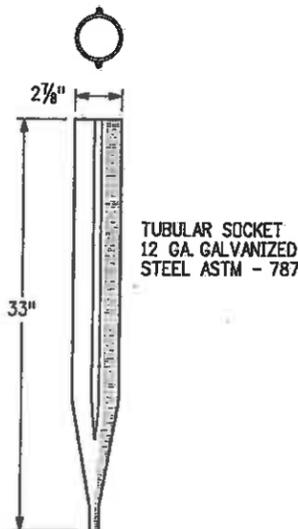
1. TYPICAL POST MOUNTING HEIGHTS FROM GROUND TO BOTTOM OF SIGN PANEL ARE 7, 8 OR 9 FEET. OTHER HEIGHTS MAY BE REQUIRED WHEN SIGNS ARE MOUNTED ON STEEPER HILLS OR CUT SLOPES.
2. FOR SIGNS MOUNTED ON TWO POSTS, THE MINIMUM DISTANCE BETWEEN POSTS SHALL BE 2 FEET AND THE MAXIMUM DISTANCE SHALL BE 8 FEET. DISTANCE FROM POST TO EDGE OF SIGN PANEL(S) SHALL BE 0 TO 4 INCHES. WHEN BACKING ZEES ARE USED, POSTS SHALL BE INSTALLED WITH A MINIMUM OF 2 INCHES TO THE EDGE OF THE BACKING ZEE.
3. ALL SIGN PANELS GREATER THAN 60 INCHES IN WIDTH MUST BE MOUNTED ON TWO POSTS TO PREVENT TURNING.
4. THE POST SIZES SHOWN ARE THE MINIMUM SIZES REQUIRED. TWO P1 POSTS MAY BE SUBSTITUTED WHERE ONE P2 POST IS INDICATED. P2 POSTS MAY BE SUBSTITUTED FOR P1 POSTS WHEN DIRECTED BY THE ENGINEER.

GENERAL NOTES

1. SIGNS BETWEEN 37 IN. AND 60 IN. WIDTH WITH ONE POST INSTALLATION REQUIRE A T OR U SIGN SUPPORT BRACKET IN ADDITION TO THE BACKING ZEE REQUIREMENTS. WHEN DIRECTED BY THE ENGINEER, SIGN PANELS LESS THAN 48 IN. IN WIDTH MAY ATTACHED DIRECTLY TO T OR U BRACKETS WITHOUT ZEES.
2. U-BRACKETS MAY BE USED FOR MULTIPLE SIGN INSTALLATIONS.
3. FOR BACKING ZEE REQUIREMENTS AND DETAILS, SEE STANDARD PLANS S-614-3 AND S-614-4.

POST NOTES

THE POST MAY BE PRE-PUNCHED WITH 3/8" DIA. HOLES AND THE SIGN MOUNTED DIRECTLY TO THE POST, OR AN APPROVED MOUNTING CLAMP MAY BE USED TO MOUNT THE SIGN TO THE POST. IF THE POST IS PRE-PUNCHED, THE HOLES SHALL BE SPACED THE FOLLOWING DISTANCES FROM THE TOP:
1", 3", 10", 16", 21", 23", 24", 27", 33", 37", 39", AND 45"



POST SPECIFICATIONS

POST SIZE	OUTSIDE DIAMETER	WALL THICKNESS	MATERIAL	* COATING	MAX ALLOW MOMENT	PAID FOR AS:
P	2.375"	.080"	ASTM-513	ASTM A-653 G-210 WITH 3.0 MIL POLYMER COATING PER ASTM A123 CLEAR COATING	1.47 KIP FT	STEEL SIGN SUPPORT (2 INCH ROUND)
P1	2.875"	.160"	ASTM-513	GC HOT DIPPED PER ASTM-123	4.02 KIP FT	STEEL SIGN SUPPORT (2 1/2 INCH ROUND NP-40)
P2	2.875"	.276"	ASTM-500		5.13 KIP FT	STEEL SIGN SUPPORT (2 1/2 INCH ROUND SCH 80)

* COLOR POWDER COATING MAY BE ADDED ACCORDING TO MANUFACTURER SPECIFICATIONS FOR SPECIAL LOCATIONS WHEN SHOWN ON THE PLANS.

Computer File Information	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 06/18/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-614-08_1of5.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
06/18/09	REVISE P1 PIPE COATING SPECIFICATION TO MATCH P PIPE'S COATING SPECIFICATION.

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9458

Safety & Traffic Engineering Branch **KCM/KEN**

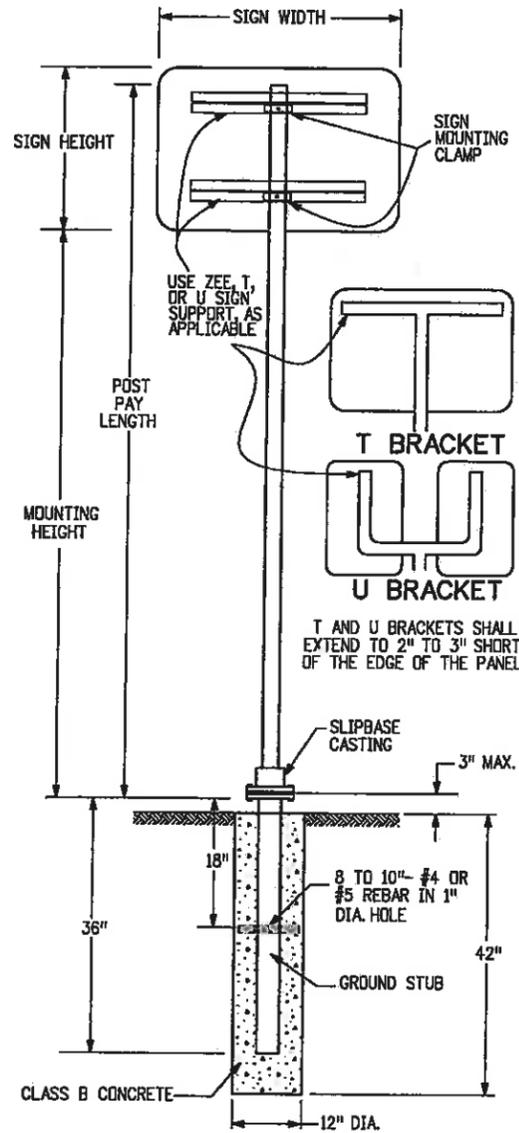
**TUBULAR STEEL SIGN
SUPPORT DETAILS**

Issued By: Safety & Traffic Engineering Branch June 18, 2009

STANDARD PLAN NO.
S-614-8

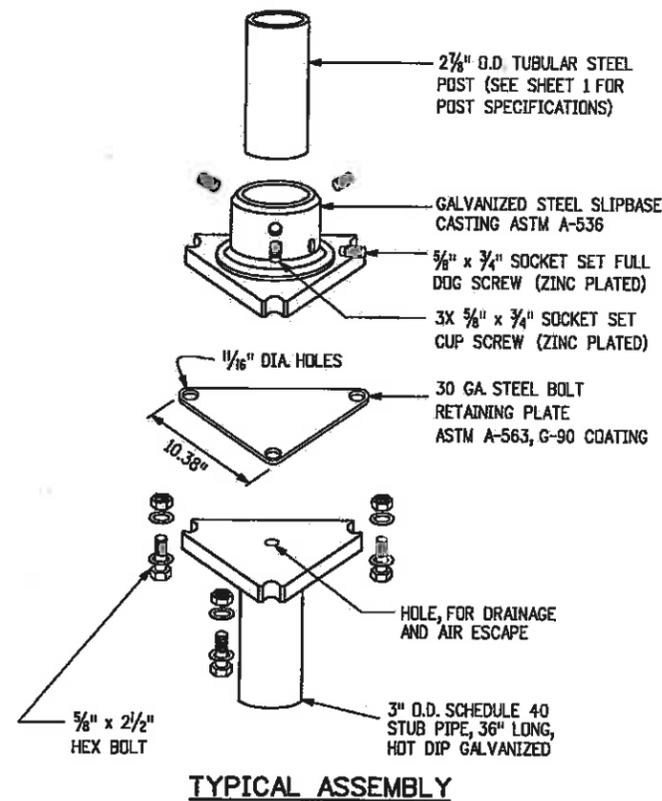
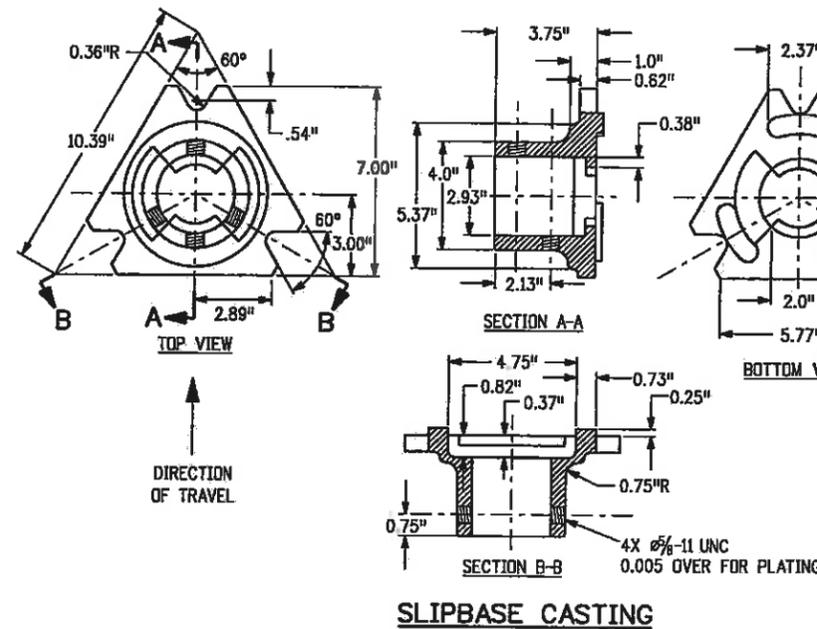
Sheet No. 1 of 5

**TUBULAR STEEL POSTS
(WITH SLIPBASE)
(SINGLE OR DOUBLE POST)**



GENERAL NOTE

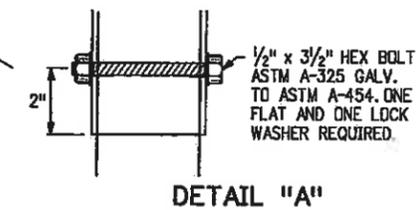
THE CONTRACTOR SHALL INSTALL THE POSTS PER THE MANUFACTURER'S RECOMMENDATIONS WITHOUT ADDITIONAL COMPENSATION.



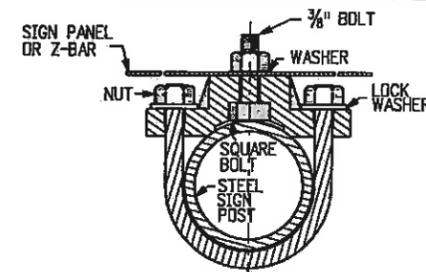
DIMENSIONS FOR MOUNTING CLAMP (ALL DIMENSION ARE IN INCHES)

STANDARD PIPE SIZE	A	B	C	D	E	F	G	K	L	R ₁	R ₂
2	3 3/4	2 3/4	1 1/2	1 1/8	1/2	3/16	1	2 1/16	1 1/32	1/4	1 1/16
2 1/2	4 1/4	3 1/4	2	1 1/4	1/2	1/4	1	3 3/16	1 15/32	1/2	1 1/16

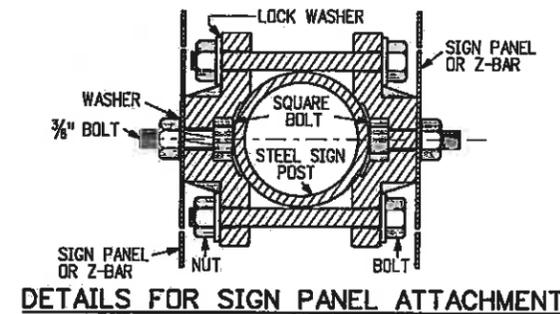
T AND U BRACKET ATTACHMENT



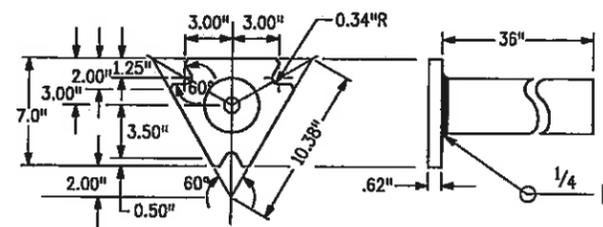
TYPICAL SINGLE BRACKET



TYPICAL BACK TO BACK



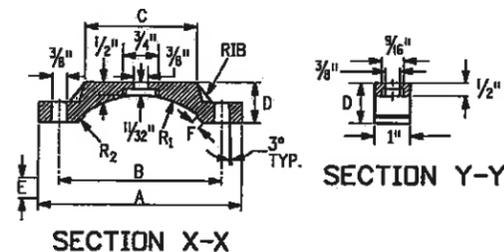
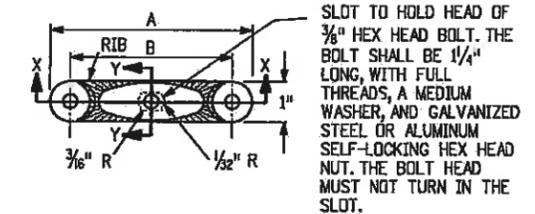
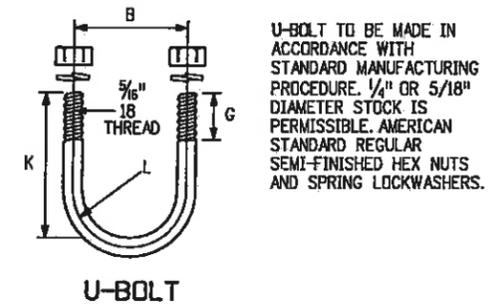
DETAILS FOR SIGN PANEL ATTACHMENT



SLIPBASE STUB POST

PIPE CLAMP CASTING

PIPE CLAMP CASTING SHALL BE ASTM B26 OR B108 ALUMINUM ALLOY A444.0-T4 OR 356.0-F. ALL SIGN MOUNTING CLAMP PARTS NOT MADE FROM ALUMINUM SHALL BE GALVANIZED STEEL IN CONFORMANCE WITH ASTM A153 OR STAINLESS STEEL.



MOUNTING CLAMP FOR SOCKET OR SLIPBASE

Computer File Information

Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: RPR
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-614-08_2of5.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions

Date:	Comments
12/07/09	ADDED GENERAL NOTE

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Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9458

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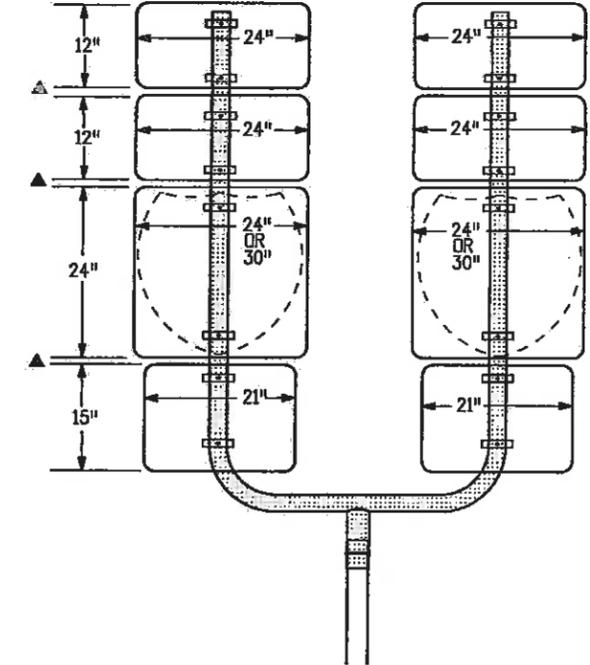
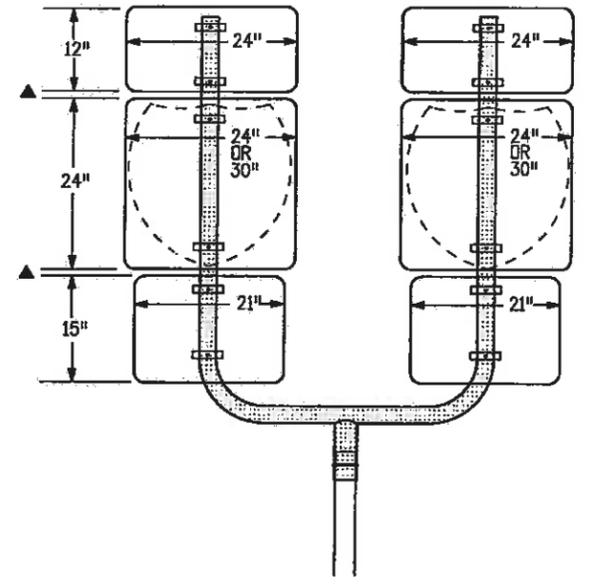
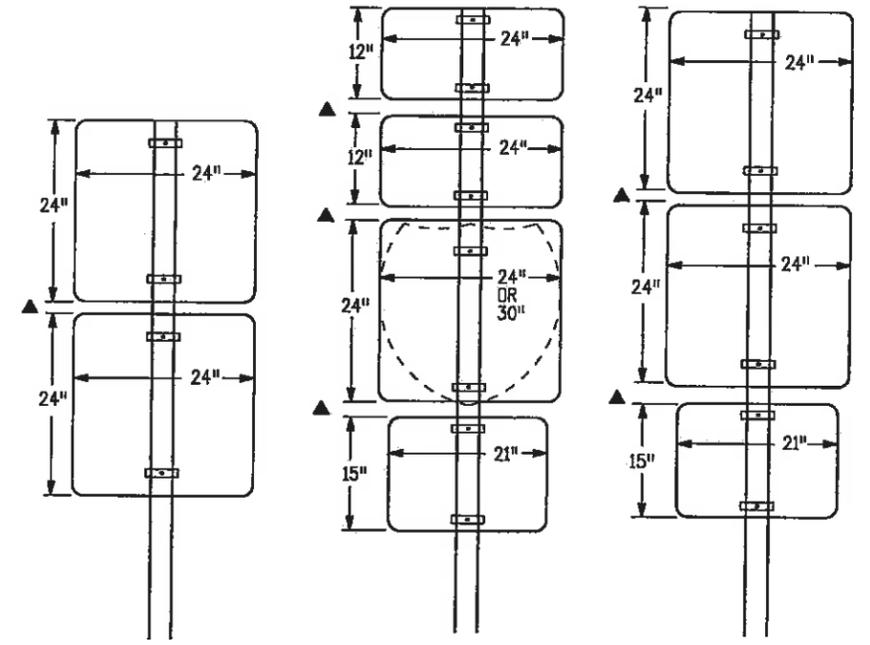
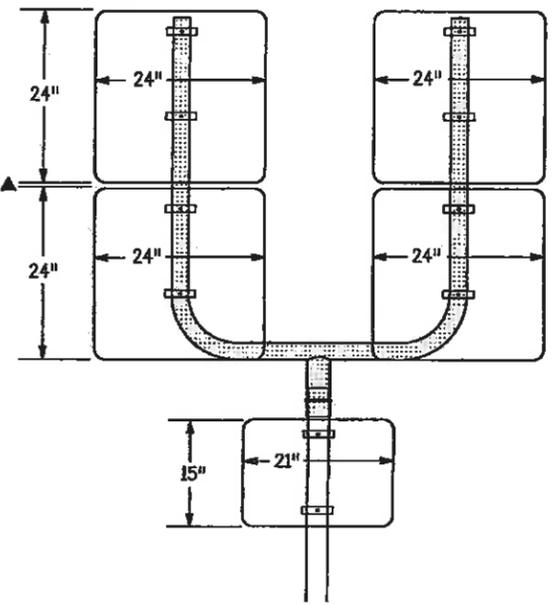
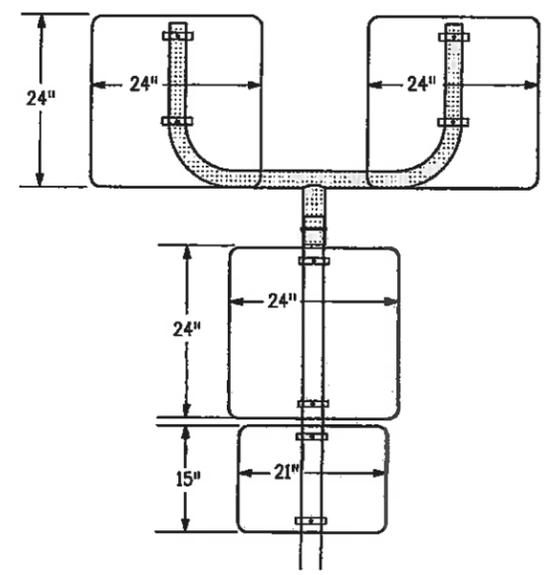
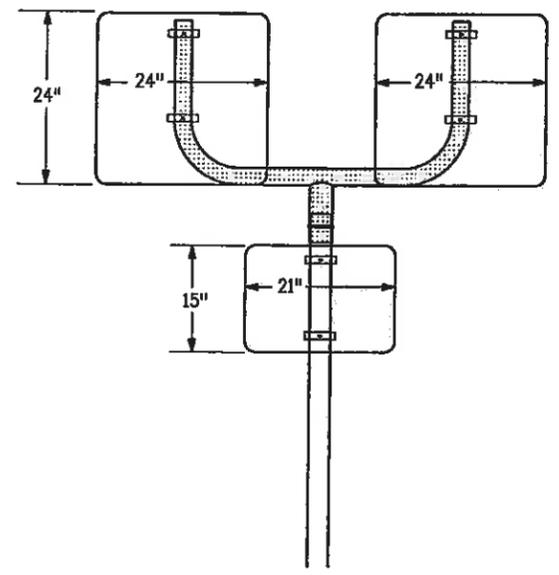
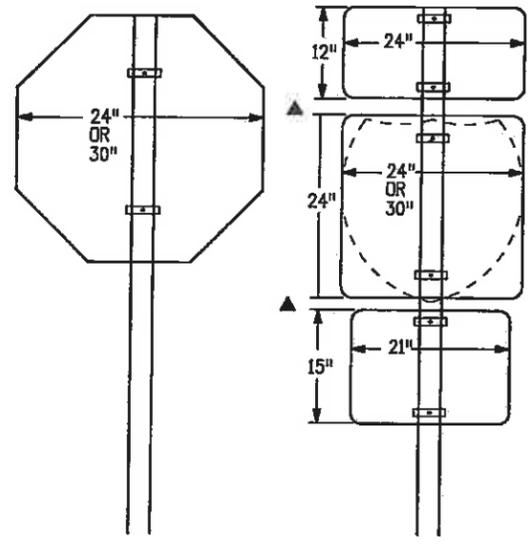
**TUBULAR STEEL SIGN
SUPPORT DETAILS**

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STANDARD PLAN NO.

S-614-8

Sheet No. 2 of 5



CLASS I SIGN COMBINATIONS (DIRECT ATTACHMENT)

▲ SEE NOTE 6 ON SHEET 4

CLASS I SIGN COMBINATIONS USING U-BRACKETS

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Creation Date: 07/04/06	Initials: JSW
Last Modification Date:	Initials:
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-614-08_3of5.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units:English

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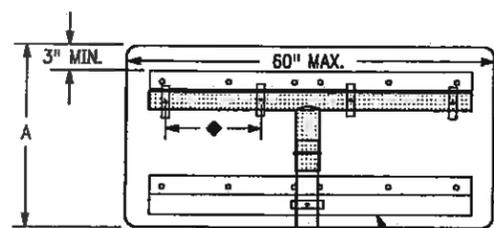
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 Denver, Colorado 80222
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**TUBULAR STEEL SIGN
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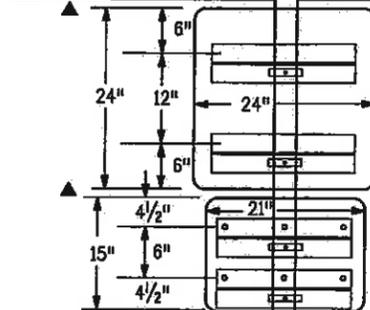
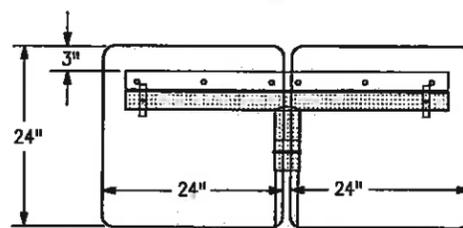
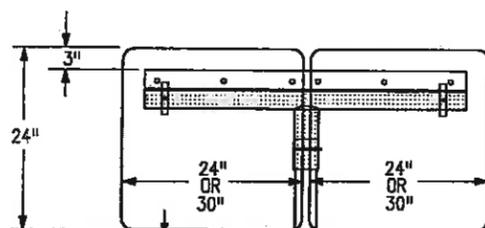
STANDARD PLAN NO.
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Sheet No. 3 of 5



A = 12", 18" OR 24"

◆ 24" MAX. SPACING BETWEEN ADJACENT CLAMPS

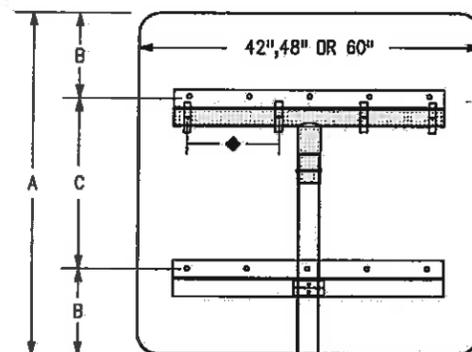
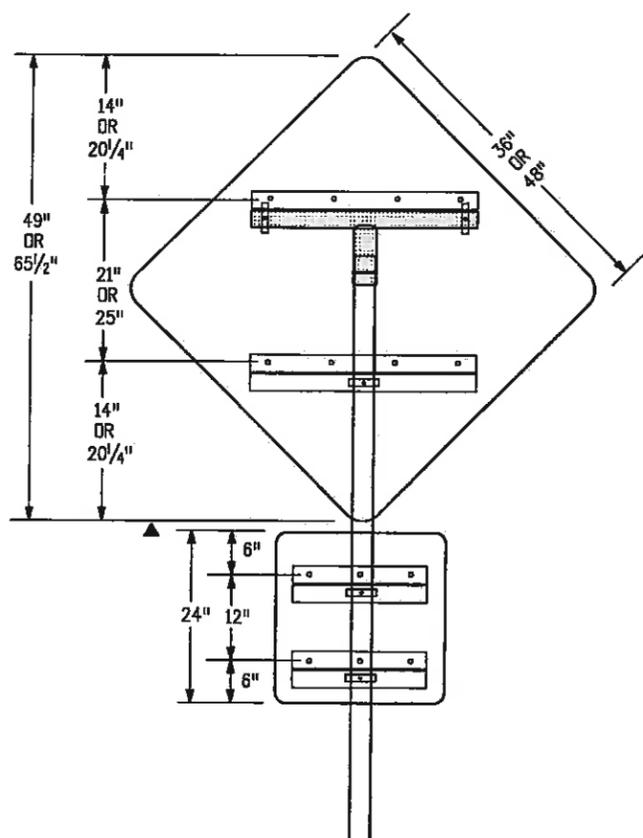
BOTTOM ZEE IS OPTIONAL. WHEN OMITTED, THE T-BRACKET SHALL BE MOUNTED IN THE MIDDLE OF THE SIGN PANEL.



PANEL WIDTHS	ZEE LENGTH
21"	15"
24"	18"
30"	24"
36"	30"
42"	36"
45"	39"
48"	42"
54"	48"
60"	54"
36" DIAMOND	22"
48" DIAMOND	36"
24" & 24"	43"
24" & 30"	49"
30" & 30"	55"
36" & 36"	67"
45" & 36"	76"
24" & 24" & 24"	68"
24" & 24" & 30"	74"
24" & 30" & 24"	74"
30" & 24" & 30"	80"
24" & 30" & 30"	80"
30" & 30" & 30"	86"

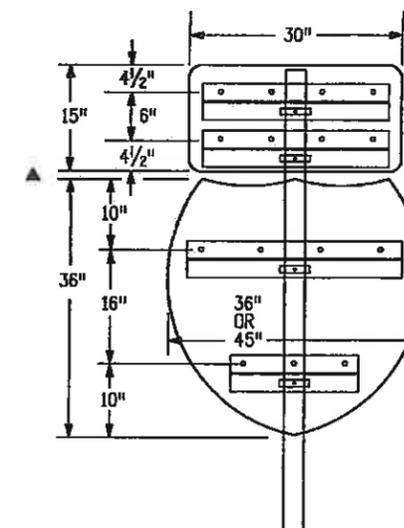
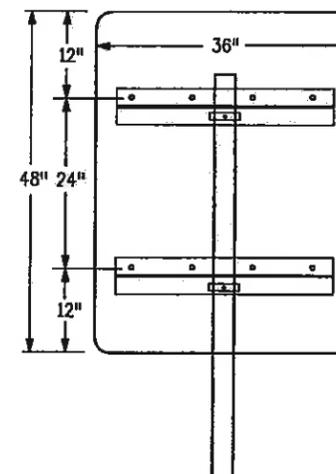
GENERAL NOTES

- Z-BAR LENGTH SHALL BE 3 IN. ($\pm 1/2$ IN.) SHORT OF THE EDGE OF THE SIGN OR ROW OF SIGNS ON BOTH SIDES. THE ACCOMPANYING TABLE GIVES THE Z-BAR LENGTH FOR MOST TYPICAL PANEL COMBINATIONS.
- FIRST AND LAST HOLES SHALL BE 2 IN. FROM EDGE OF Z-BAR. THE HOLES IN BETWEEN SHALL BE 6 IN. TO 8 IN. APART.
- T AND U BRACKETS SHALL TERMINATE 2 IN. TO 3 IN. FROM EDGE OF SIGN PANEL. WHEN A ZEE IS CONNECTED TO A T-BRACKET, THEY SHALL BE THE SAME LENGTH EXCEPT WHEN THE ZEE MUST EXTEND BEYOND THE MAXIMUM LENGTH OF A T-BRACKET.
- TWO MOUNTING CLAMPS ARE REQUIRED ON ZEES WHERE THERE IS ONLY ONE ZEE FOR THE PANEL AND THE ZEE IS ATTACHED TO ONLY ONE POST.
- ZEES SHALL BE ATTACHED TO T-BRACKETS AND U-BRACKETS WITH U-BOLTS OR MOUNTING CLAMPS.
- VERTICAL SPACING BETWEEN SIGN PANELS SHALL BE 1 IN. TO $1/2$ IN. TYPICAL.
- IN SPECIAL CASES U-BRACKETS MAY BE USED TO MOUNT SIGNS THAT FACE DIFFERENT DIRECTIONS. THE ENGINEER SHALL DETERMINE THE ORIENTATION OF THE SIGN PANELS AND VERIFY THAT THE MAXIMUM ALLOWABLE WIND LOADS FOR THE POST ARE NOT EXCEEDED.



A	B	C
30"	9"	12"
36"	9"	18"
42"	9"	24"
48"	12"	24"

◆ 24" MAX. SPACING BETWEEN ADJACENT CLAMPS



CLASS II SIGN COMBINATIONS USING T-BRACKETS WITH Z-BAR

SINGLE POST CLASS II SIGNS USING Z-BAR

Computer File Information	
Creation Date: 07/04/06	Initials: JSW
Last Modification Date:	Initials:
Full Path: www.dot.state.co.us/DesignSupport/	
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Sheet Revisions	
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 Fax: (303) 757-9458

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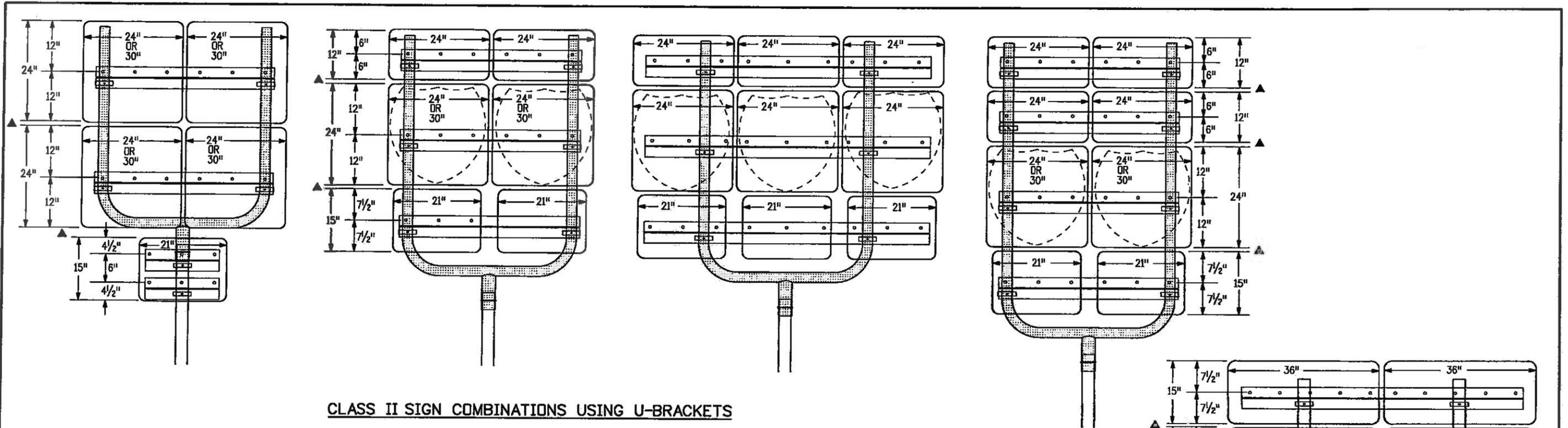
TUBULAR STEEL SIGN SUPPORT DETAILS

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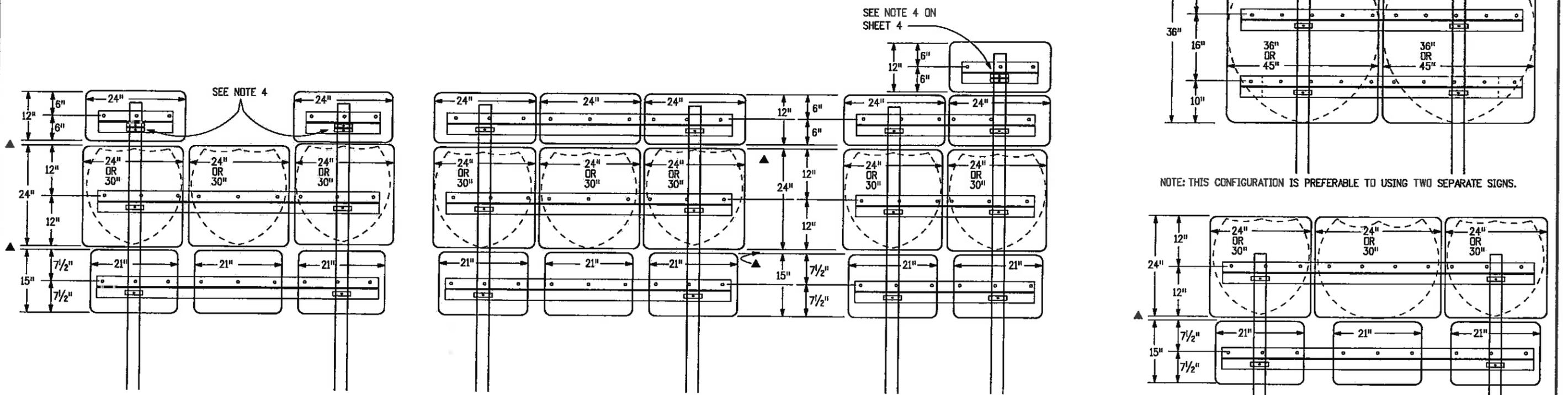
STANDARD PLAN NO.

S-614-8

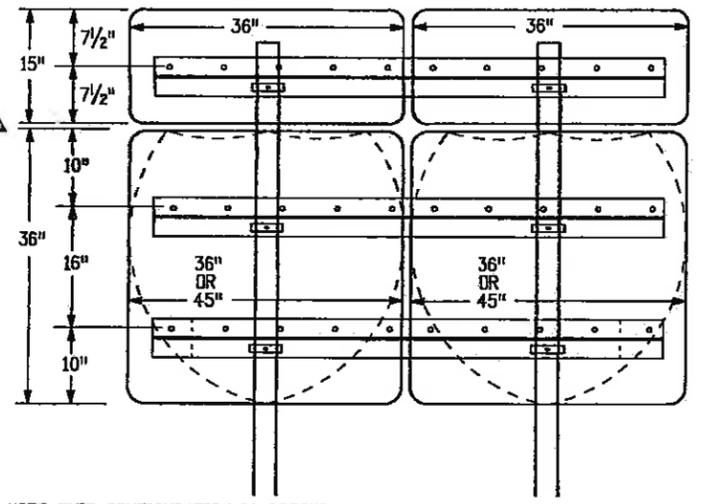
Sheet No. 4 of 5



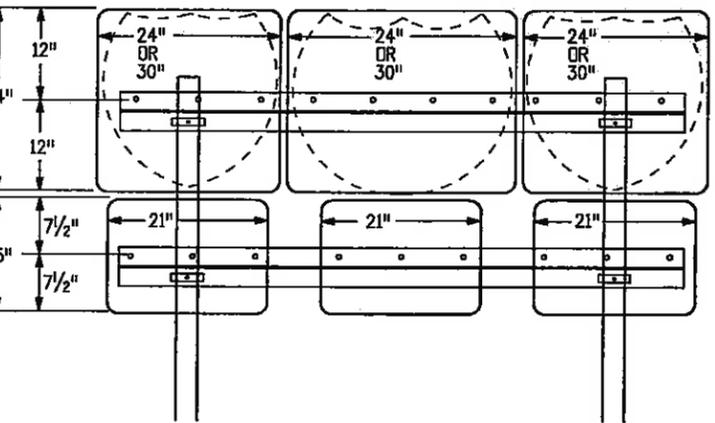
CLASS II SIGN COMBINATIONS USING U-BRACKETS



CLASS II SIGN COMBINATIONS USING TWO POSTS



NOTE: THIS CONFIGURATION IS PREFERABLE TO USING TWO SEPARATE SIGNS.



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**TUBULAR STEEL SIGN
 SUPPORT DETAILS**
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STANDARD PLAN NO.
 S-614-8
 Sheet No. 5 of 5

GENERAL NOTES

1. ALL CONSTRUCTION ZONE TRAFFIC CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO BARRICADES, SIGNS, ARROW PANELS, FLASHING BEACON (PORTABLE), AND CHANNELIZING DEVICES, SHALL BE FURNISHED, INSTALLED, MAINTAINED (INCLUDING WASHING), REPLACED IF DAMAGED, REMOVED WHEN TEMPORARILY NOT IN USE AND RETURNED WHEN REQUIRED, RESET AS NECESSARY DURING THE PROGRESS OF CONSTRUCTION, AND REMOVED ENTIRELY WHEN THE PROJECT IS COMPLETED. ALL DEVICES SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE ATSSA "QUALITY STANDARDS FOR WORK ZONE TRAFFIC CONTROL.
2. WORK ON THE PROJECT SHALL NOT BE STARTED UNTIL ALL REQUIRED TRAFFIC CONTROL DEVICES ARE IN PLACE, AND APPROVED BY THE ENGINEER.
3. WHEN SPEED LIMIT REDUCTION IS REQUIRED, SUCH REDUCTION SHALL BE IN ACCORDANCE WITH CDOT FORM 568, "AUTHORIZATION AND DECLARATION OF TEMPORARY SPEED LIMITS."

WHEN A CHANGE IN AN EXISTING SPEED LIMIT IS REQUIRED, THE R2-1 SIGNS, SHOWN ON THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES, SHOULD BE INSTALLED AT THE LOCATIONS SHOWN ON THE TYPICAL CASES BY R2-1 (OPTIONAL) SIGNS.

AN ADVISORY SPEED PLATE (W13-1) MAY BE USED WITH A WARNING SIGN WHEN THE MAXIMUM RECOMMENDED SPEED FOR CONDITION NAMED IS LOWER THAN THE POSTED SPEED LIMIT.

THE REGULATORY OR ADVISORY SPEED REDUCTION DISPLAYED SHALL NOT EXCEED 15 MPH PER SIGN INSTALLATION.
4. ANY TRAFFIC CONTROL DEVICE THAT IS DAMAGED, WEATHERED, WORN, OR OTHERWISE DEEMED UNACCEPTABLE BY THE ENGINEER, SHALL BE REPLACED.
5. CONTRACTOR AND PERSONAL VEHICLE PARKING IS PROHIBITED WITHIN THE RIGHT-OF-WAY UNLESS DESIGNATED ON THE PLANS, OR APPROVED BY THE ENGINEER.
6. CONSTRUCTION TRAFFIC SIGNS SHALL BE MEASURED BY THE FOLLOWING SIZES AND DESCRIPTIONS:

PANEL SIZE A	0.01 TO 9.00 SQ. FT. (INCLUDING TYPE 1 AND TYPE 2 BARRICADES).
PANEL SIZE B	9.01 TO 16.00 SQ. FT.
PANEL SIZE C	GREATER THAN 16 SQ. FT.

CONSTRUCTION TRAFFIC SIGN (SPECIAL), SQ. FT., MAY BE USED FOR SOME PROJECT SPECIFIC INFORMATION SIGNS.

FOR DETAILED DIMENSIONS OF SIGNS WITH SIGN CODE NUMBERS, SEE "STANDARD HIGHWAY SIGNS" AND THE "COLORADO SUPPLEMENT" THERETO. SIGN LAYOUTS FOR OTHER SIGNS WILL BE FURNISHED IN THE PLANS, TRANSMITTED TO THE ENGINEER AFTER AWARD, OR MAY BE AVAILABLE UPON REQUEST.

W20-5 WARNING SIGNS SHALL BE FURNISHED WITH EXCHANGEABLE PLAQUES READING "RIGHT", "LEFT", "CENTER", "RIGHT 2", ETC. AT NO ADDITIONAL COST.
7. ALL WARNING AND REGULATORY SIGNS SHALL BE POSTED ON BOTH SIDES OF THE ROADWAY ON DIVIDED HIGHWAYS, MULTI-LANE RAMPS, ONE-WAY STREETS, AND AS DIRECTED BY THE ENGINEER, EXCEPT WHERE ONLY ONE SHOULDER IS CLOSED (EX: CASE 11 ON SHEET 6).
8. ADDITIONAL TRAFFIC CONTROL DEVICES ADDRESSING FLAGGING, SPEED REDUCTION, ETC. WILL BE NECESSARY FOR SET-UP AND TAKE-DOWN OF MOST CASE APPLICATIONS; DAILY WORK SITE ACCESS; AND PAVEMENT MARKING REMOVAL AND INSTALLATION OPERATIONS.

9. BASED ON SIGHT DISTANCE AND OTHER CONSIDERATIONS, THE FINAL LOCATIONS OF SIGNS ARE SUBJECT TO APPROVAL OF THE ENGINEER.
10. IF CONSTRUCTION RELATED TRAFFIC CONGESTION BACKS UP BEYOND THE INSTALLED ADVANCE SIGN SEQUENCE, ADDITIONAL ADVANCE SIGNING SHALL BE PLACED BEYOND THE CONGESTION.
11. ALL SIGN MATERIAL SHALL BE SOUND AND DURABLE TO THE DEGREE NECESSARY FOR MAINTAINING EFFECTIVE AND NEAT APPEARING TRAFFIC CONTROLS, AND:
 - a. SIGN PANELS MAY BE FABRICATED FROM PLYWOOD, STEEL, ALUMINUM, OR OTHER SUITABLE MATERIAL.
 - b. REFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956. THE TYPE SHALL BE AS DESCRIBED IN THE STANDARD SPECIFICATIONS AND/OR AS SHOWN ON THE PLANS.
 - c. SYMBOLS AND LEGEND SHALL BE OF GOOD WORKMANSHIP (UNEVEN OR HAND LETTERING WILL NOT BE ACCEPTED).
 - d. PORTABLE OR TEMPORARY MOUNTING SHALL NOT BE CONSTRUCTED OR WEIGHTED BY ANY METHOD OR MATERIAL THAT MAKES THEM HAZARDOUS TO TRAFFIC.
 - e. CERTAIN POST SIZES AND SHAPES REQUIRE A "BREAK-AWAY" DEVICE. SEE THE APPLICABLE STANDARD PLAN. OTHER POST DESIGNS OR SYSTEMS REQUIRE THE SUBMITTAL OF AN FHWA LETTER OF ACCEPTANCE TO THE ENGINEER, AND MUST BE APPROVED BY THE ENGINEER PRIOR TO THEIR USE.
12. ALL CONSTRUCTION SIGN PLACEMENT SHALL BE IN ACCORDANCE WITH STANDARD PLAN "TYPICAL GROUND SIGN PLACEMENT" UNLESS OTHERWISE APPROVED.

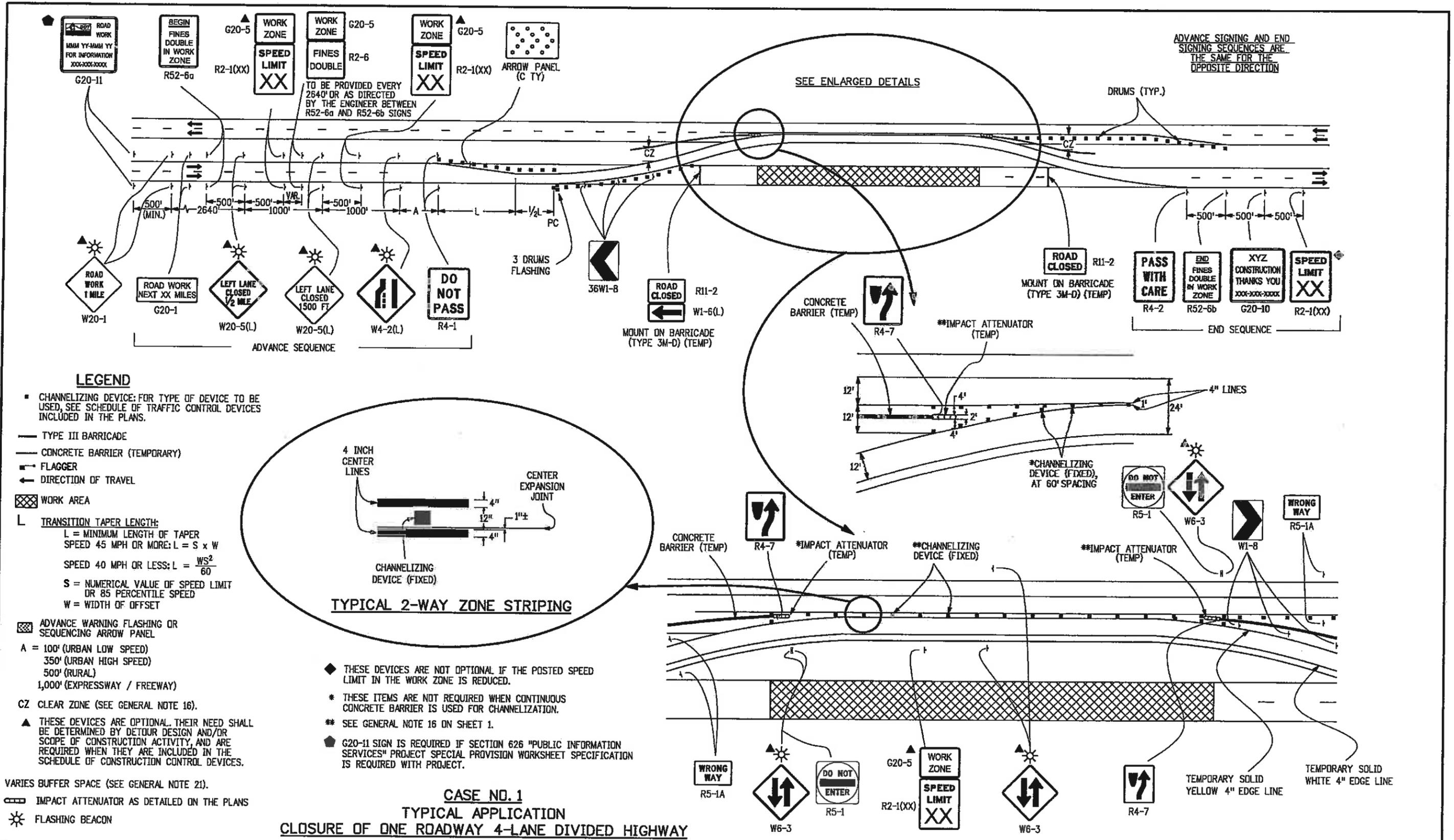
SIGNS APPROVED TO BE MOUNTED ON PORTABLE SUPPORTS, OR APPROPRIATE SIGNS MOUNTED ON BARRICADES, MAY BE AT LOWER HEIGHTS, BUT THE BOTTOM OF THE SIGNS SHALL NOT BE LESS THAN ONE FOOT ABOVE THE PAVEMENT ELEVATION.
13. SIGNS MOUNTED ON THE MEDIAN OF DIVIDED HIGHWAYS WHERE MEDIAN BARRIER IS IN PLACE MAY BE MOUNTED ON THE BARRIER WITH A SADDLE TYPE BRACKET. IF THE BRACKET ALLOWS THE SIGN PANEL TO BE TURNED PARALLEL TO THE ROADWAY, THE SIGN MAY REMAIN IN PLACE WHEN NOT APPLICABLE, BUT LAYING THE SIGN PANEL DOWN IN A HORIZONTAL POSITION IS NOT PERMITTED.
14. TRAFFIC CONES SHALL BE AT LEAST 28 INCHES IN HEIGHT. HOWEVER, THE MINIMUM SIZE SHALL BE 36 INCHES WHEN THEY ARE USED ON FREEWAYS AND EXPRESSWAYS, OR DURING NIGHT TIME WORKING HOURS. THEY SHOULD ALSO BE 36 INCHES WHEN USED ON OTHER HIGH SPEED ROADWAYS (45 MPH OR MORE) WITH AN ADT OF 6,000 OR MORE.
15. TYPE 1 BARRICADES SHALL NOT BE USED ON FREEWAYS, EXPRESSWAYS, OR OTHER HIGH SPEED ROADWAYS (45 MPH OR MORE).
16. WHEN TWO-WAY TRAFFIC IS PLACED ON ONE ROADWAY OF A NORMALLY DIVIDED HIGHWAY, OPPOSING TRAFFIC SHALL BE SEPARATED EITHER WITH CONCRETE BARRIER (TEMPORARY), OR WITH CHANNELIZING DEVICES APPROVED FOR THIS APPLICATION, THROUGHOUT THE LENGTH OF TWO-WAY OPERATION. THE TRANSITION ZONES SHALL HAVE CONCRETE BARRIER (TEMPORARY). THE BARRIER SHALL BE TIED TO AN EXISTING STRUCTURE OR GUARD RAIL, FLARED OR EXTENDED, TO MEET CLEAR ZONE REQUIREMENTS, OR FITTED WITH AN IMPACT ATTENUATION DEVICE.
17. CHANNELIZING DEVICE SPACING, IN FEET, SHALL BE AS FOLLOWS:
 - a. FOR TAPERS AND TRANSITIONS, SPACING EQUALS THE NUMERICAL VALUE OF THE SPEED LIMIT.
(e.g. 45 MPH = 45 FEET)
 - b. FOR TANGENTS ALONG THE BUFFER SPACE OR WORK AREA, SPACING MAY NOT BE GREATER THAN TWO TIMES THE SPEED LIMIT. (e.g. 50 MPH = 50 FEET TO 100 FEET MAXIMUM)

18. FOR DETAILS ON BARRICADES, CONCRETE BARRIER (TEMPORARY), VERTICAL PANELS, AND FLASHING BEACON (PORTABLE), SEE THE APPLICABLE STANDARD PLANS.
19. FLOOD LIGHTS SHALL BE USED TO ILLUMINATE FLAGGER STATIONS DURING THE HOURS OF DARKNESS UNLESS OTHERWISE APPROVED. A TYPICAL LIGHT SHOULD PROVIDE THE FOLLOWING: A FULLY DIRECTIONAL SWIVEL MOUNT QUARTZ LIGHT SOURCE (500 WATT MINIMUM), SELF-SUPPORTING STAND WITH VARIABLE LIGHT HEIGHT FROM A MINIMUM OF EIGHT FEET ABOVE THE ROADWAY, AND A POWER SOURCE. IT SHALL ILLUMINATE THE STATION AREA AND A FLAGGER ESCAPE PATH, BUT SHALL NOT PRESENT ANY GLARE TO TRAFFIC.
20. IF WORK ON THE ROADWAY IS FOR A LONG-TERM STATIONARY PERIOD, AS DEFINED IN SECTION 6G.02 OF THE MUTCD, INAPPLICABLE PAVEMENT MARKINGS ARE TO BE REMOVED, AND FULL COMPLIANCE PAVEMENT MARKINGS ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS, (PAVEMENT MARKING - GENERAL), AND/OR AS DETAILED ON THE PLANS.

FOR ADDITIONAL PAVEMENT MARKING DETAILS, SEE STANDARD PLAN "TYPICAL PAVEMENT MARKINGS".
21. BUFFER SPACE IS OPTIONAL. NEED MUST BE DETERMINED ON A PROJECT OR SITE SPECIFIC BASIS AS DIRECTED BY THE ENGINEER. WHEN A BUFFER SPACE IS USED, DIMENSIONS AND/OR DEVICES USED ARE TO BE INCORPORATED IN THE TRAFFIC CONTROL PLAN (TCP) OR THE CONTRACTOR'S METHOD OF HANDLING TRAFFIC (MHT).
22. ADDITIONAL VMS SIGNAGE SHOULD BE CONSIDERED AT LEAST A MILE IN ADVANCE OF THE SIGNING SHOWN IN THE DETAIL FOR ANY LANE CLOSURES ON INTERSTATE AND OTHER HIGH SPEED FACILITIES ESPECIALLY WHEN THE LEVEL OF SERVICE IS SIGNIFICANTLY REDUCED AS A RESULT OF CONSTRUCTION. THE LEGENDS SHOULD BE CHANGED TO ADVISE MOTORISTS OF UPCOMING TRAFFIC CONDITIONS AND TO ALERT THEM OF UPCOMING LANE USAGE.

ADDITIONAL ADVANCE WARNING SIGNAGE IS ENCOURAGED IN ALL CASES WHERE TRAFFIC VOLUMES AND SPEEDS ARE HIGH AND/OR WHERE THERE ARE INFREQUENT EXITS. ADDITIONAL SIGNAGE IS ALSO ENCOURAGED IN LOCATIONS WHERE DRIVERS' LINE OF SIGHT TO ADVANCE WARNING SIGNS IS OBSTRUCTED.
23. RAISED PAVEMENT MARKERS MAY BE USED TO SUPPLEMENT TEMPORARY STRIPING DURING NON-SNOW PERIODS. THEIR USE IS ENCOURAGED ON HIGHER SPEED FACILITIES WHEN TRAFFIC IS BEING DIVERTED FROM ITS USUAL COURSE.
24. THE TYPICAL CASES DEPICTED IN THIS STANDARD REFLECT THE MINIMUM REQUIREMENTS, UNLESS AS OTHERWISE DIRECTED BY THE PROJECT PLANS AND SPECIFICATIONS, AND/OR THE PROJECT ENGINEER.
25. A SIGNIFICANT PROJECT IS DEFINED AS ONE THAT, ALONE OR IN COMBINATION WITH OTHER CONCURRENT PROJECTS NEARBY, IS ANTICIPATED TO CAUSE SUSTAINED WORK ZONE IMPACTS AT A LOCATION FOR THREE OR MORE CONSECUTIVE DAYS WITH EITHER INTERMITTENT OR CONTINUOUS LANE CLOSURES.

Computer File Information		Sheet Revisions		 <p>Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9543 Fax: (303) 757-9458</p> <p>Safety & Traffic Engineering Branch KCM/KEN</p>	<p style="font-size: 1.2em; font-weight: bold;">TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION</p>	STANDARD PLAN NO.
Creation Date: 07/04/06	Initials: KCM	Date:	Comments			S-630-1
Last Modification Date: 12/07/09	Initials: KEN	06/24/09	REVISED SHEET NUMBER TO 1 OF 19			Sheet No. 1 of 19
Full Path: www.dot.state.co.us/DesignSupport/		06/24/09	REVISED NOTE 20. ADDED NOTE 25.			
Drawing File Name: Sheet_S-630-01_1of19.dgn		12/07/09	REVISED NOTE 15.			
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English				Issued By: Safety & Traffic Engineering Branch July 4, 2006	



LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- ← DIRECTION OF TRAVEL
- ▨ WORK AREA
- L TRANSITION TAPER LENGTH:
 L = MINIMUM LENGTH OF TAPER
 SPEED 45 MPH OR MORE: $L = S \times W$
 SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
 S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
 W = WIDTH OF OFFSET
- ▨ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- A = 100' (URBAN LOW SPEED)
 350' (URBAN HIGH SPEED)
 500' (RURAL)
 1,000' (EXPRESSWAY / FREEWAY)
- CZ CLEAR ZONE (SEE GENERAL NOTE 16).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
- ▨ IMPACT ATTENUATOR AS DETAILED ON THE PLANS
- ⚡ FLASHING BEACON

- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- * THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION.
- ** SEE GENERAL NOTE 16 ON SHEET 1.
- ◆ G20-11 SIGN IS REQUIRED IF SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

**CASE NO. 1
TYPICAL APPLICATION
CLOSURE OF ONE ROADWAY 4-LANE DIVIDED HIGHWAY**

Computer File Information	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
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Drawing File Name: Sheet_S-630-01_2of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
(R-1) 06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 2 OF 19
(R-1) 06/24/09	ADDED * & ** NOTES. EXTENDED FLARED ENDS OF CONCRETE BARRIER
(R-1) 06/24/09	ADDED OPTIONAL FLASHING BEACONS ON ADVANCED WARNING SIGNS
(R-2) 12/07/09	ADDED ADVANCED WARNING SIGNS

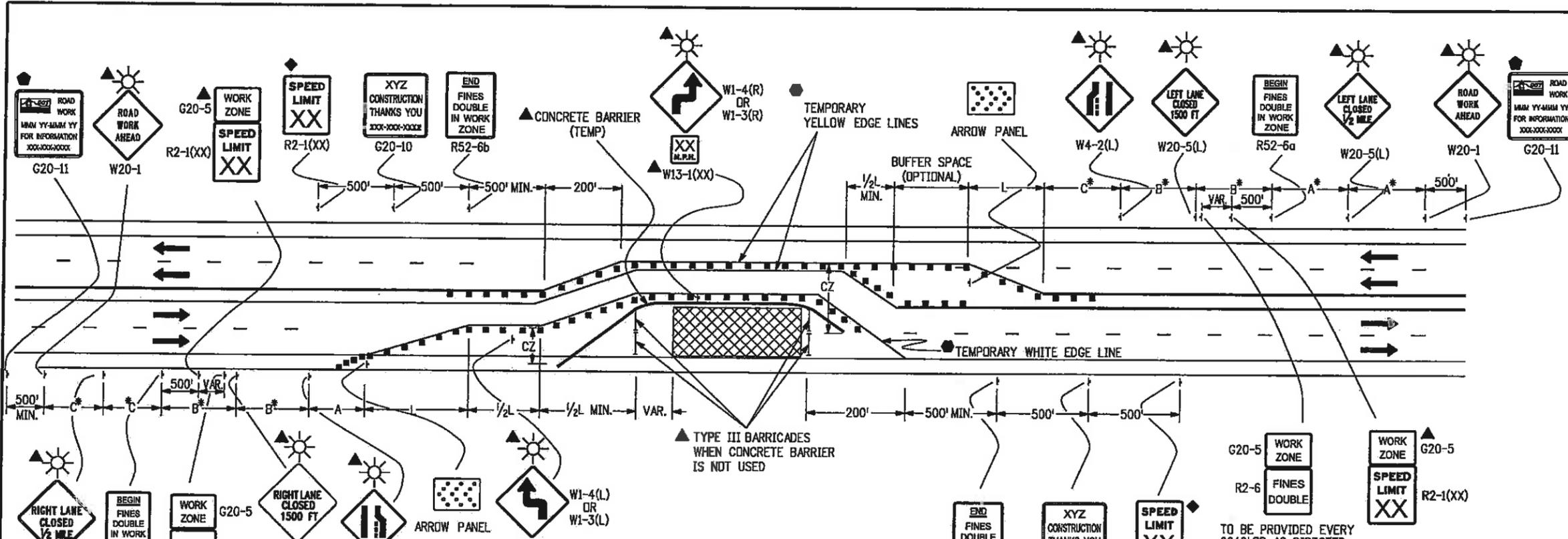
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 4201 East Arkansas Avenue
 Denver, Colorado 80222
 Phone: (303) 757-9543
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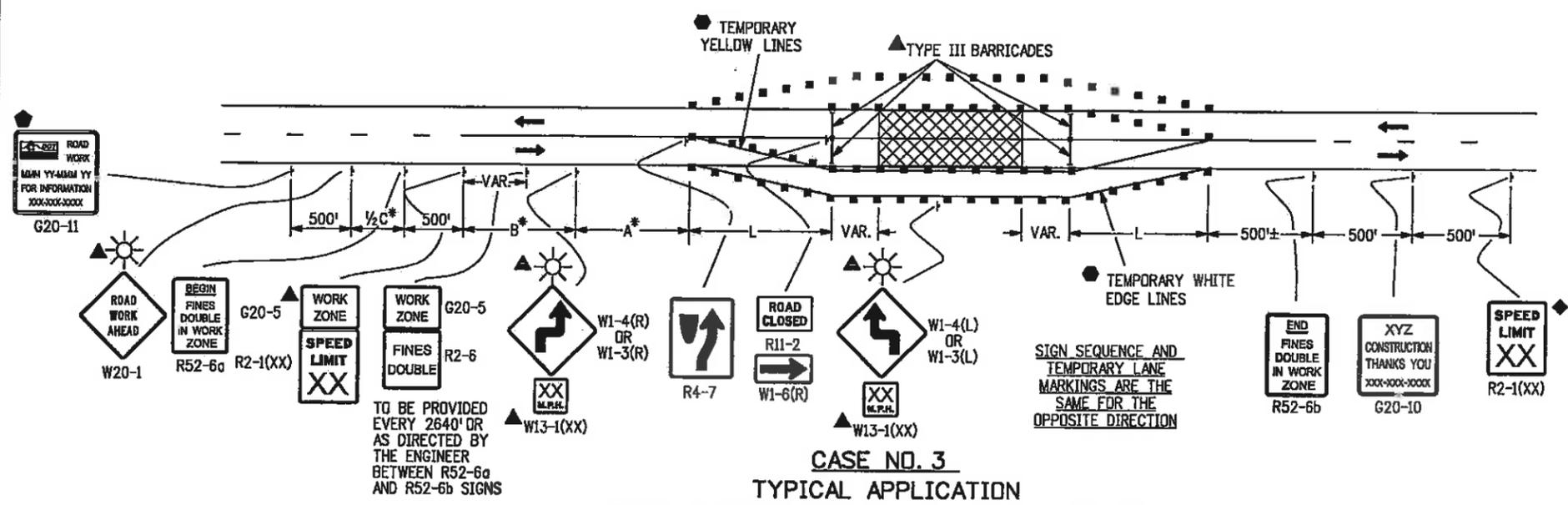
**TRAFFIC CONTROLS
FOR HIGHWAY
CONSTRUCTION**

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S-630-1
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CASE NO. 2
TYPICAL APPLICATION
CLOSURE OF HALF OF 4-LANE HIGHWAY, NOT PHYSICALLY DIVIDED



CASE NO. 3
TYPICAL APPLICATION
ROAD CLOSURE, USE OF ADJACENT SHOULDERS

- LEGEND**
- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
 - TYPE III BARRICADE
 - FLAGGER
 - ← DIRECTION OF TRAVEL
 - ▨ WORK AREA
 - L TRANSITION TAPER LENGTH:
 L = MINIMUM LENGTH OF TAPER
 SPEED 45 MPH OR MORE: $L = S \times W$
 SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
 S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
 W = WIDTH OF OFFSET
 SHOULDER TAPER = 1/3 L
 - ▨ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
 - A = 100' (URBAN LOW SPEED)
 350' (URBAN HIGH SPEED)
 500' (RURAL)
 1,000' (EXPRESSWAY / FREEWAY)
 - CZ CLEAR ZONE (SEE GENERAL NOTE 16).
 - ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
 - ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
 - VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
 - REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
 - G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
 - ☀ FLASHING BEACON

*** KEY TO ADVANCE SIGNING DISTANCES**

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<=40 MPH)	100	100	100
URBAN (>45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

Computer File Information

Creation Date: 04/15/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_3of19.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions

Date	Comments
06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS, REVISED SHEET NUMBER TO 3 OF 19.
06/24/09	DELETED R4-7 SIGN PER MUTCD SEC 6F-11. ADDED OPTIONAL FLASHING BEACONS TO ADVANCED WARNING SIGNS.
12/07/09	REMOVED SPECIFIC SYMBOL FOR WORK ZONE SPEED LIMIT SIGN PER MUTCD 6F-11.1. PLACED ALL SIGNS TO R52-6a, R52-6b & G20-5. RE-ORDERED SIGNS & DISTANCES. ADDED R52-6b, R52-6a, R52-6b & G20-5 SIGNS AND R52-6b & G20-5 SIGNS.

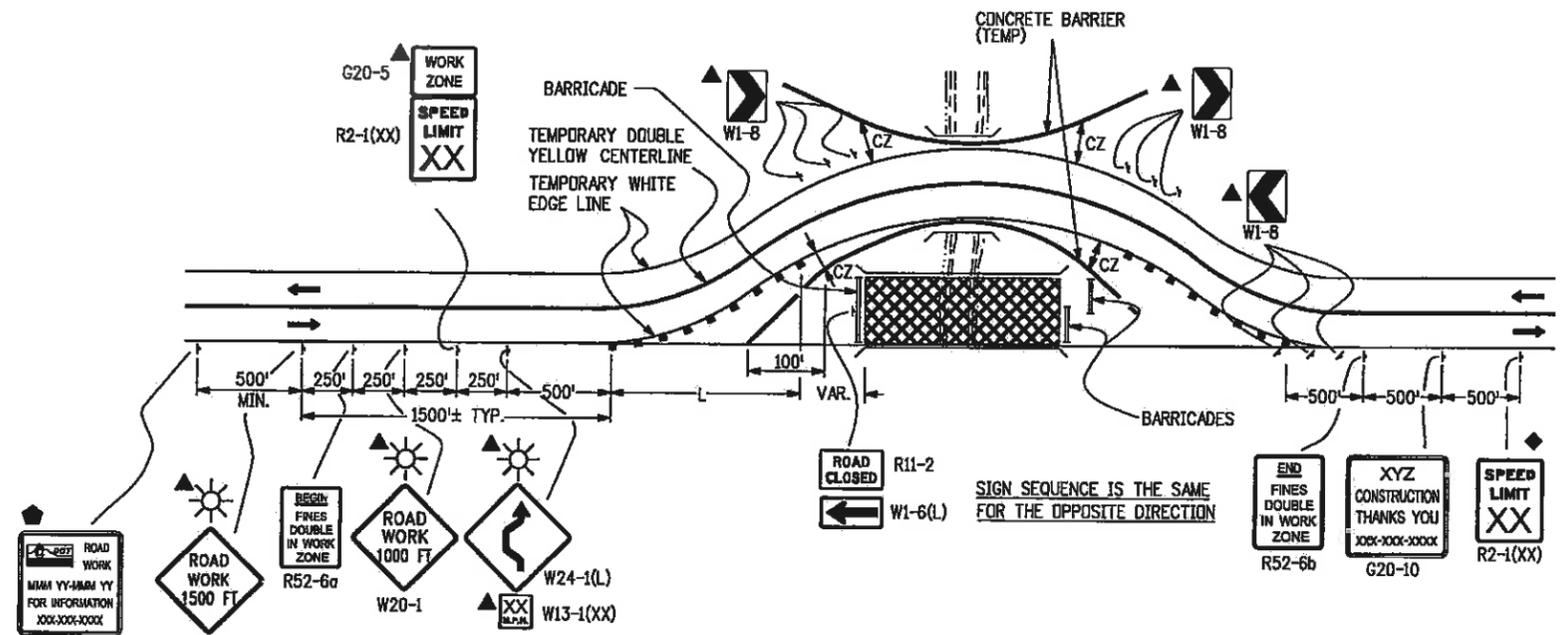
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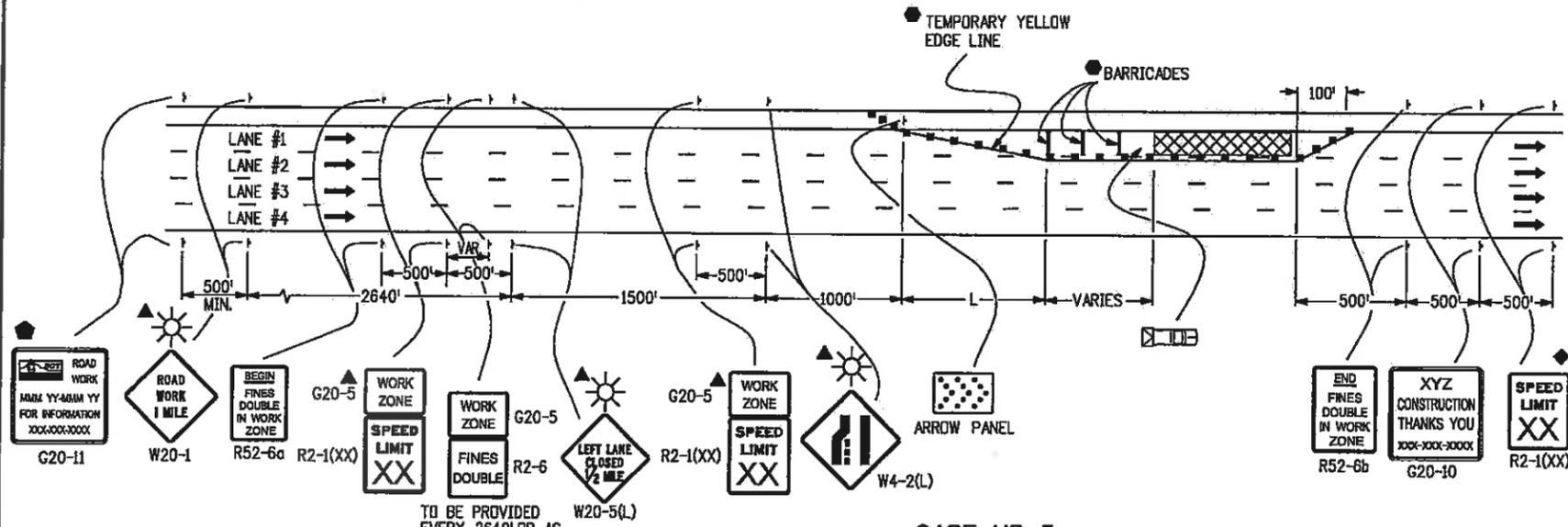
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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CASE NO. 4
TYPICAL APPLICATION
ROAD CLOSURE, BYPASS DETOUR PROVIDED



CASE NO. 5
TYPICAL APPLICATION
LANE #1 CLOSURE, MULTILANE FREEWAY

- LEGEND**
- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
 - TYPE III BARRICADE
 - CONCRETE BARRIER (TEMPORARY)
 - FLAGGER
 - ← DIRECTION OF TRAVEL
 - ▨ WORK AREA
 - L **TRANSITION TAPER LENGTH:**
 $L = \text{MINIMUM LENGTH OF TAPER}$
 SPEED 45 MPH OR MORE: $L = S \times W$
 SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
 $S = \text{NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED}$
 $W = \text{WIDTH OF OFFSET}$
 SHOULDER TAPER = 1/3 L
 - ▨ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
 - CZ CLEAR ZONE (SEE GENERAL NOTE 16).
 - ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
 - ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
 - VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
 - REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
 - ◆ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
 - ▨ TRUCK MOUNTED ATTENUATOR (TMA)
 - ☀ FLASHING BEACON

Computer File Information	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_4of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
06/24/09	ADDED R-52a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 4 OF 19
06/24/09	EXTEND CONCRETE BARRIER IN CASE 4, ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
12/07/09	REMOVED WORKING SIGN FROM WORK ZONE SIGN SEQUENCE ADDED R52-6b AND G20-10 SIGN TO ADVANCED WARNING SIGN SEQUENCE ADDED G20-11 SIGN TO ADVANCED WARNING SIGN SEQUENCE

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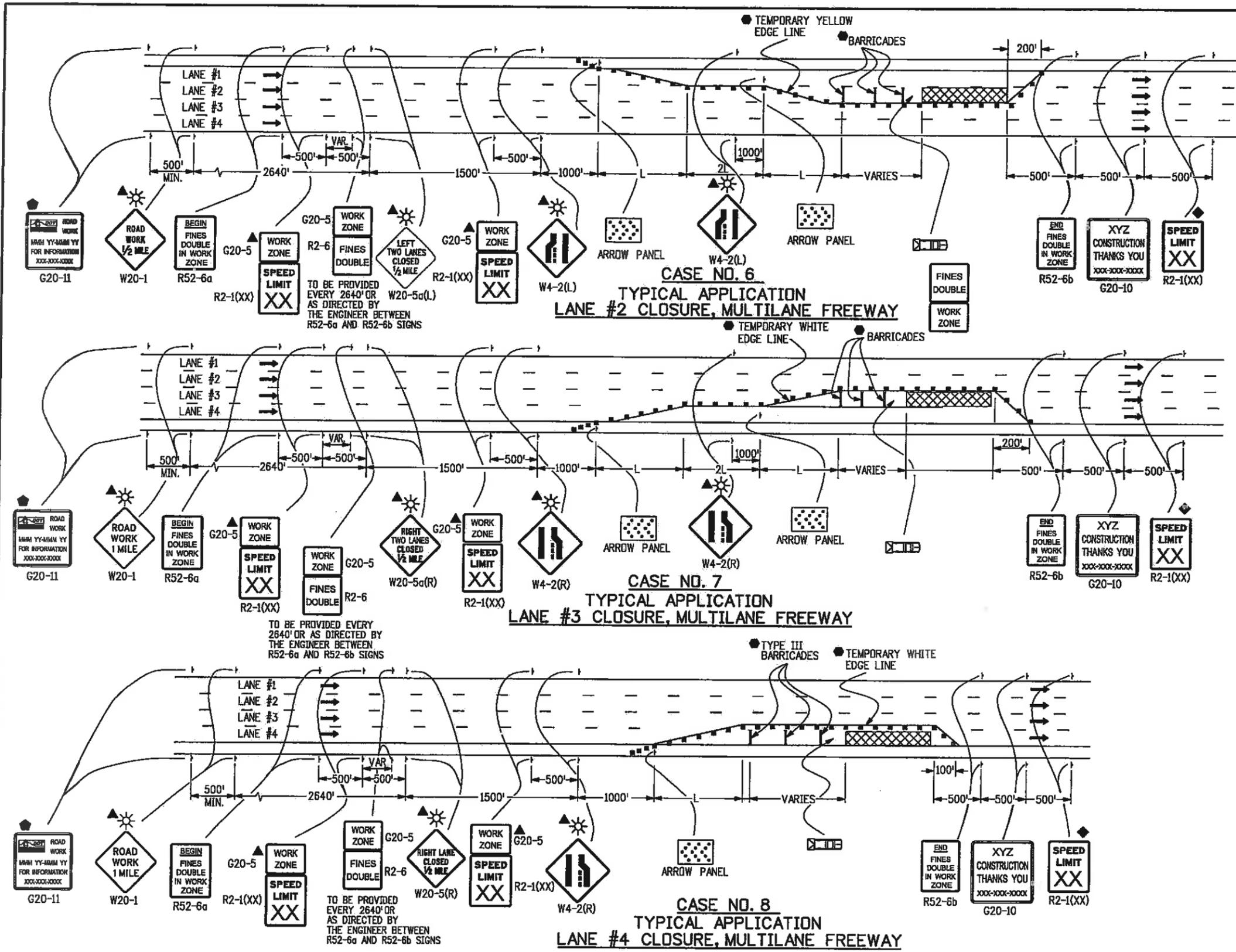
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- ### LEGEND
- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
 - TYPE III BARRICADE
 - CONCRETE BARRIERS (TEMPORARY)
 - FLAGGER
 - ← DIRECTION OF TRAVEL
 - ▨ WORK AREA
 - L TRANSITION TAPER LENGTH:
 L = MINIMUM LENGTH OF TAPER
 SPEED 45 MPH OR MORE: $L = S \times W$
 SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
 S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
 W = WIDTH OF OFFSET
 SHOULDER TAPER = 1/3 L
 - ▨ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
 - CZ CLEAR ZONE (SEE GENERAL NOTE 16).
 - ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
 - ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
 - VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
 - REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
 - ◆ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
 - ▨ TRUCK MOUNTED ATTENUATOR (TMA)
 - ☀ FLASHING BEACON

Computer File Information	
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Last Modification Date: 12/07/09	Initials: KEN
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Drawing File Name: Sheet_S-630-01_5of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 5 OF 19.
06/24/09	ADDED OPTIONAL FLASHING BEACONS TO ADVANCED WARNING SIGNS.
12/07/09	REVIEW OF FLASH SIGNAL FOR WORK ZONE SPEED LIMIT SIGN PROVISION. ADDED 6 SYMBOL IN SPEED LIMIT SIGN (R-100) AFTER R52-6b SIGN. ADDED R2-1(R) PLATES AFTER G20-10 SIGN AND R2-1(R) SIGN.

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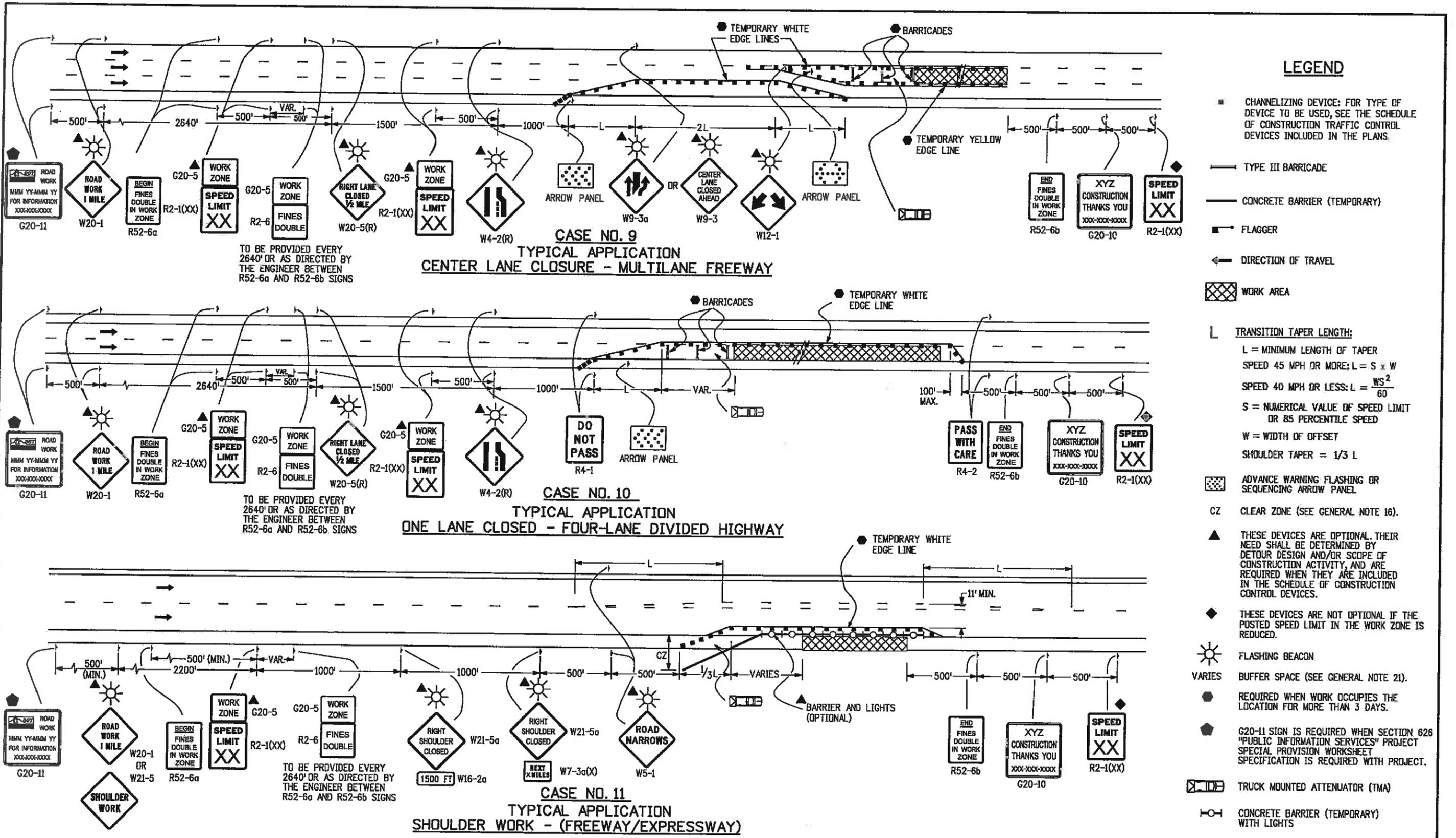
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LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- ← DIRECTION OF TRAVEL
- ▨ WORK AREA
- L TRANSITION TAPER LENGTH:
L = MINIMUM LENGTH OF TAPER
SPEED 45 MPH OR MORE: $L = S \times W$
SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
W = WIDTH OF OFFSET
SHOULDER TAPER = 1/3 L
- ▨ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ CLEAR ZONE (SEE GENERAL NOTE 16).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ☀ FLASHING BEACON
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
- REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ◆ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ▨ TRUCK MOUNTED ATTENUATOR (TMA)
- CONCRETE BARRIER (TEMPORARY) WITH LIGHTS

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Creation Date: 07/04/06	Initials: KCM
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Drawing File Name: Sheet_S-630-01_6of19.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions

Date:	Comments
06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS
06/24/09	REVISED SHEET NUMBER TO 6 OF 18
06/24/09	ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
06/24/09	MINIMUM LANE WIDTH TO 11' AT WORK ZONE.
12/07/09	ADDED OPTION PANEL FOR TRUCK MOUNTED ATTENUATOR (TMA) AND FLAGGER. SEE GENERAL NOTE 16 FOR TMA AND FLAGGER. SEE GENERAL NOTE 16 FOR TMA AND FLAGGER.

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Fax: (303) 757-9458

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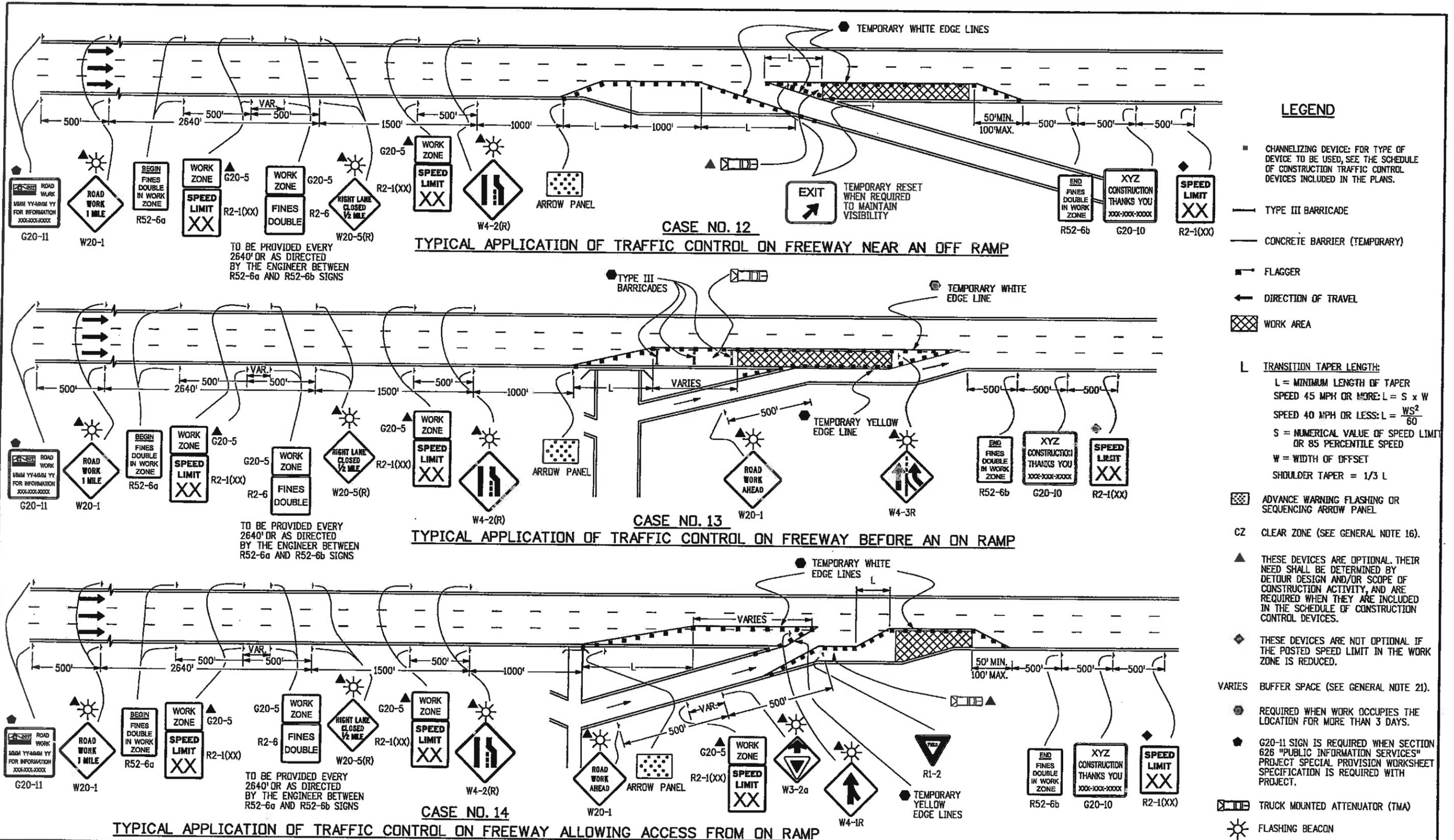
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Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_7of19.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 7 OF 19
06/24/09	ADDED OPTIONAL FLASHING BEACONS TO ADVANCE WARNING SIGNS
12/07/09	

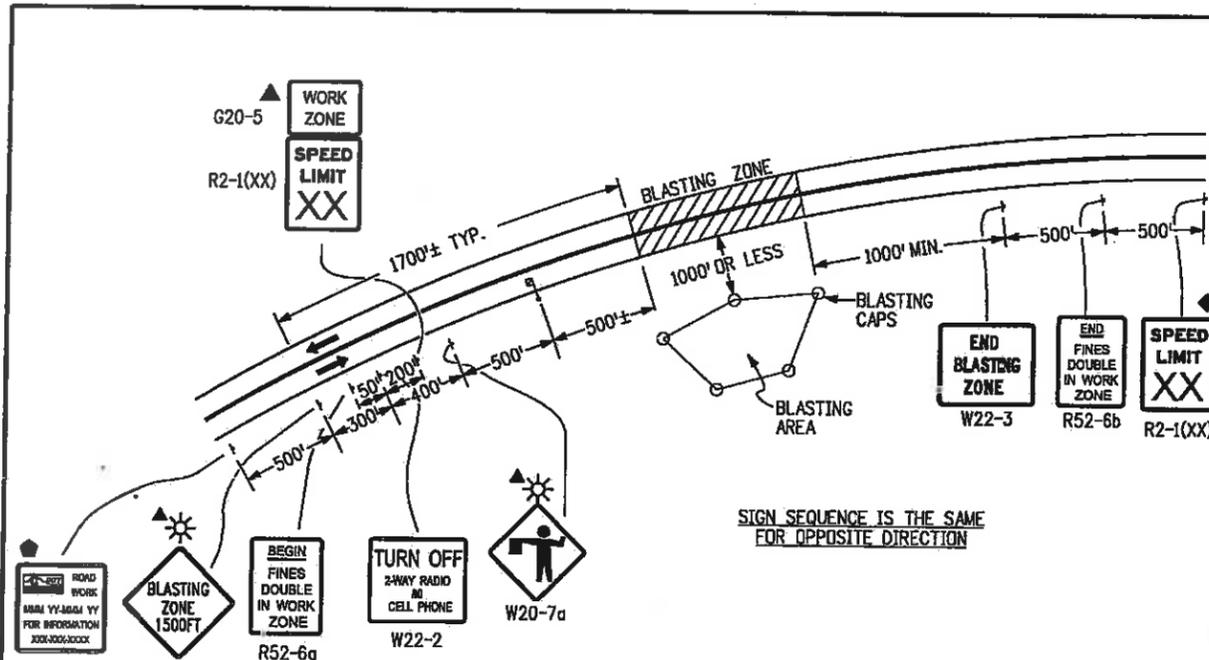
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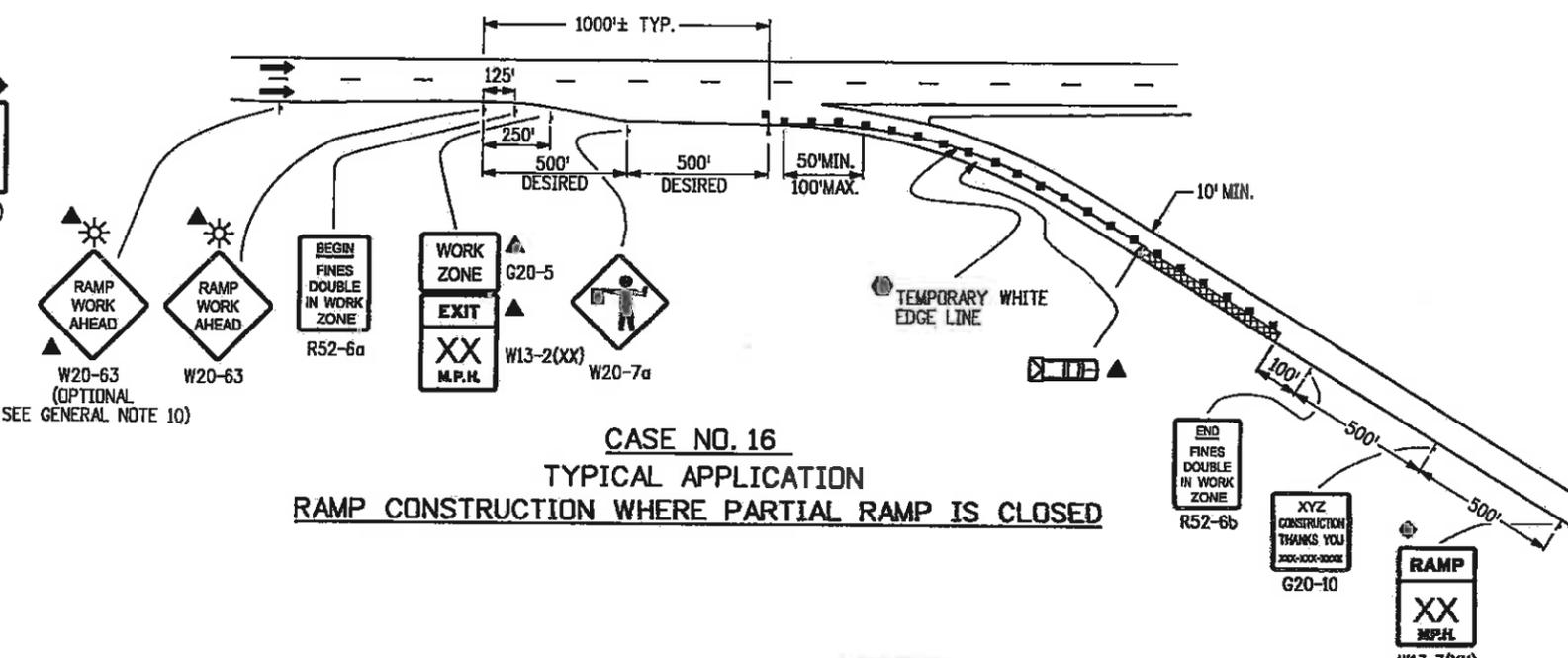
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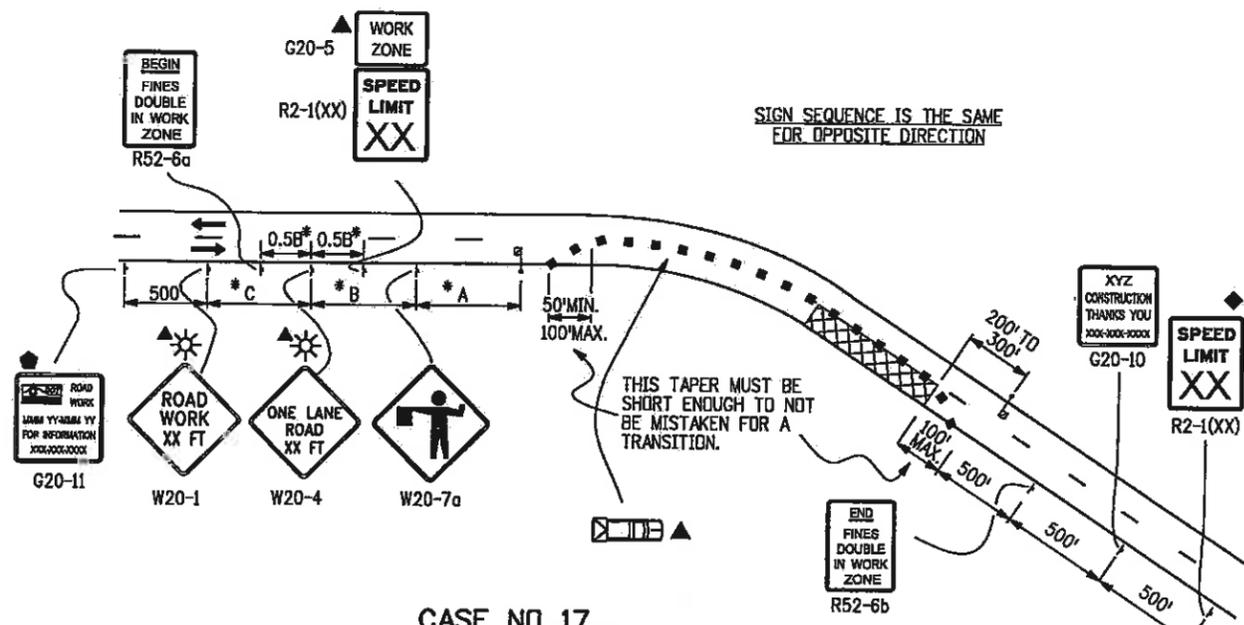
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CASE NO. 15
TYPICAL APPLICATION
BLASTING ZONE



CASE NO. 16
TYPICAL APPLICATION
RAMP CONSTRUCTION WHERE PARTIAL RAMP IS CLOSED



CASE NO. 17
TYPICAL APPLICATION
LANE CLOSURE, 2-LANE HIGHWAY, AT CURVE

LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- ← DIRECTION OF TRAVEL
- ▨ WORK AREA
- L TRANSITION TAPER LENGTH:
L = MINIMUM LENGTH OF TAPER
SPEED 45 MPH OR MORE: $L = S \times W$
SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
W = WIDTH OF OFFSET
SHOULDER TAPER = 1/3 L
- ▤ TRUCK MOUNTED ATTENUATOR (TMA)
- ▤ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ CLEAR ZONE (SEE GENERAL NOTE 16).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ☼ FLASHING BEACON
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
- REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

* KEY TO ADVANCE SIGNING DISTANCES

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<= 40 MPH)	100	100	100
URBAN (>= 45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

Computer File Information

Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_Bof19.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions

Date:	Comments
03/05/07	W20-1 & W20-4 SIGNS REVISED
06/24/09	ADDED R52-6a, R52-6b, G20-5, W13-2 & W13-3 SIGNS. REVISED SHEET NUMBER TO 8 OF 19
06/24/09	ADDED OPTIONAL FLASHING BEACON ON ADVANCED WARNING SIGNS.
12/07/09	ADDED TMA TO BLASTING ZONE AND RAMP CONSTRUCTION. REVISED SHEET NUMBER TO 8 OF 19.

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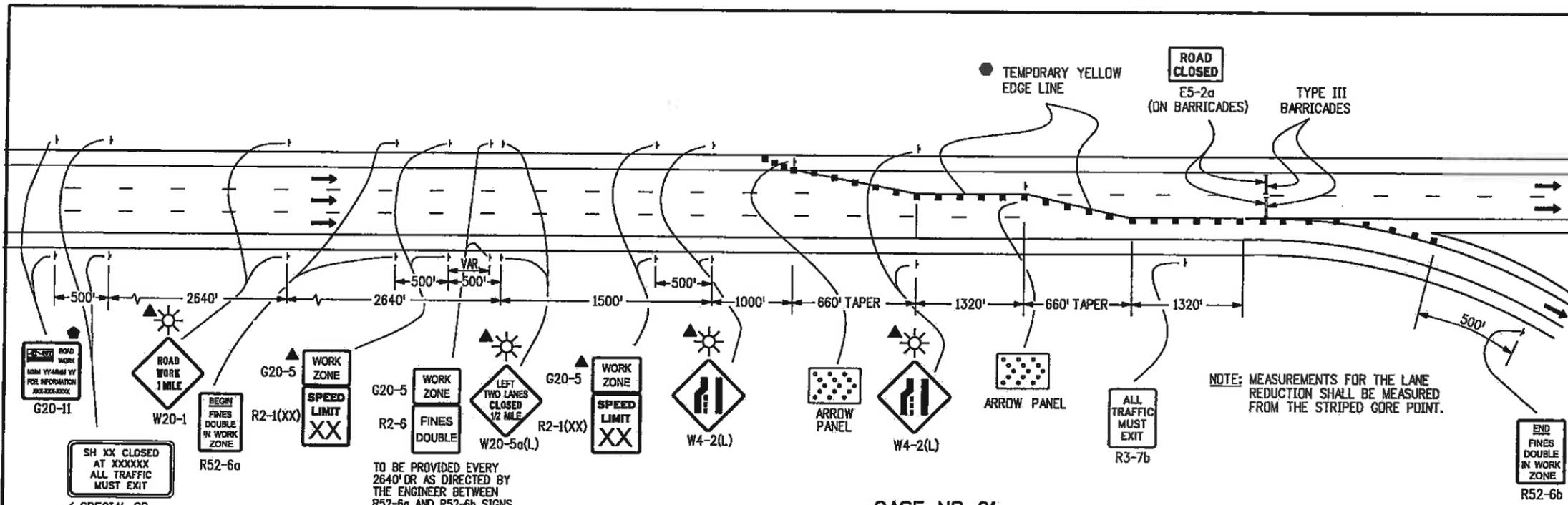
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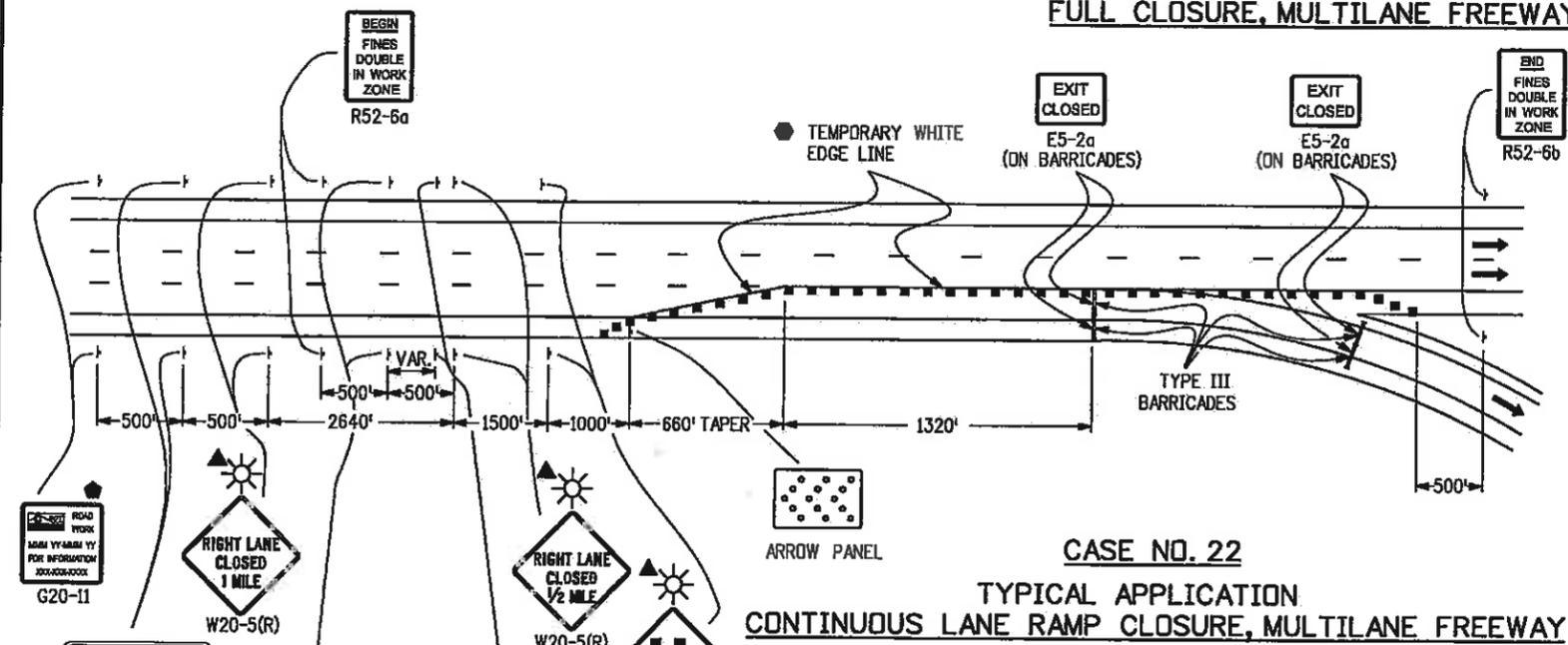
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LEGEND

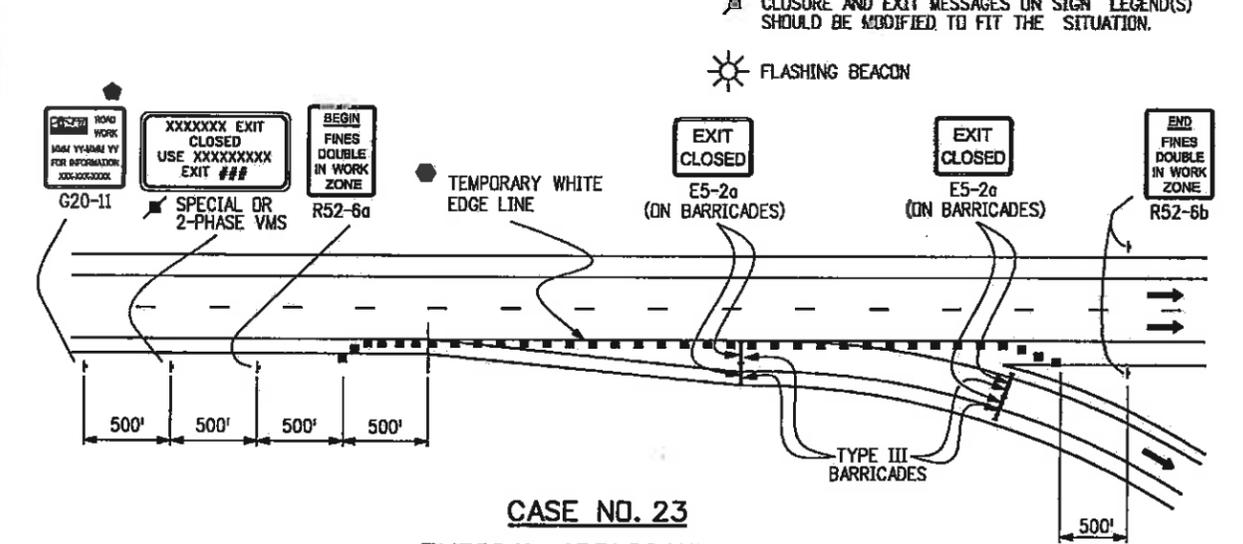
- ▣ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED WILL BE DETERMINED BY THE DESIGNER BASED ON DETOUR DESIGN AND/OR SCOPE OF THE CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE PLANS.
- REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- ← DIRECTION OF TRAVEL
- L TRANSITION TAPER LENGTH:
 L = MINIMUM LENGTH OF TAPER
 SPEED 45 MPH OR MORE: $L = S \times W$
 SPEED 40 MPH OR LESS: $L = \frac{WS^2}{80}$
 S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
 W = WIDTH OF OFFSET
 SHOULDER TAPER = 1/3 L
- ☀ CLOSURE AND EXIT MESSAGES ON SIGN LEGEND(S) SHOULD BE MODIFIED TO FIT THE SITUATION.
- ☀ FLASHING BEACON



CASE NO. 21
TYPICAL APPLICATION
FULL CLOSURE, MULTILANE FREEWAY



CASE NO. 22
TYPICAL APPLICATION
CONTINUOUS LANE RAMP CLOSURE, MULTILANE FREEWAY



CASE NO. 23
TYPICAL APPLICATION
SIMPLE RAMP CLOSURE, MULTILANE FREEWAY

- NOTES:**
1. NOTICE OF EXIT CLOSURE SHALL ALSO BE GIVEN IN ADVANCE OF THE PREVIOUS EXIT TO PROVIDE MOTORISTS WITH THE OPTION TO EXIT AT THAT LOCATION.
 2. ADDITIONAL SIGNING TO REDIRECT DETOURED TRAFFIC SHALL BE PROVIDED FOR IN THE PROJECT'S METHOD OF HANDLING TRAFFIC.
 3. FOR LONG TERM SETUPS, A BLACK ON ORANGE "EXIT CLOSED" (E5-2a) PANEL SHALL BE MOUNTED DIAGONALLY ACROSS ALL EXISTING GUIDE SIGNS THAT PERTAIN TO THE CLOSED EXIT.

Computer File Information	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_10of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
(R-1) 06/24/09	ADD R52-6a, R52-6b & G20-5 SIGNS. REVISED SHEET NUMBER TO 10 OF 18. EXTENDED CHANNELIZING DEVICES TO GORE PT. IN CASE 21. ADDED OPTIONAL FLASHING BEACON ON ADVANCED WARNING SIGNS.
(R-1) 06/24/09	
(R-2) 12/07/09	REMOVED OPTIONAL SIGNING FOR WORK ZONE SPEED LIMIT SIGN (R52-6a) FROM CASE 21 & 22. PLACED BETWEEN R52-6a AND R52-6b SIGNS. ADDED R52-6b SIGN AND # 2 SIGN ABOVE.

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LEGEND

- ← DIRECTION OF TRAVEL
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED WILL BE DETERMINED BY THE DESIGNER BASED ON DETOUR DESIGN AND/OR SCOPE OF THE CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE PLANS.
- ⬢ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ☀ FLASHING BEACON

DOUBLE FINES (SPEED REDUCTION) SIGNING NOTES:

1. SIGNS SHALL NOT BE PLACED SOONER THAN FOUR HOURS BEFORE WORK IS TO BEGIN AND SHALL BE REMOVED AS SOON AS WORK ACTIVITIES ARE CONCLUDED, UNLESS POTENTIAL HAZARDS INTRODUCED AS A RESULT OF THE WORK ARE STILL PRESENT AT THE END OF THE WORK DAY. IF SIGNS ARE LEFT IN PLACE AFTER WORK ACTIVITIES, THE TRAFFIC CONTROL SUPERVISOR SHALL MAKE AN ENTRY IN THEIR DAILY DIARY THAT JUSTIFIES THEIR USE.
- "HAZARDS" INCLUDE BUT ARE NOT LIMITED TO:
 EDGE DROP OFFS
 EQUIPMENT, WORKERS OR NON-SHIELDED OBJECTS IN THE CLEAR ZONE
 ROUGH PAVEMENT
 MAJOR CHANGE IN ALIGNMENT
 REDUCED SHOULDER WIDTH
 TEMPORARY GUARD RAIL OR BARRIER
 LANE CLOSURE
2. SIGNS SHALL ONLY BE PLACED WHERE WORKERS ARE PRESENT IN THE ROADWAY OR CLEAR ZONE OR ARE AT RISK, OR WHERE THERE ARE HAZARDS IN THE TRAVELWAY, SHOULDERS OR CLEAR ZONE.
3. SIGNS SHOULD BE PLACED SO THAT MOTORISTS IMMEDIATELY ASSOCIATE THE SIGNS WITH PRESENT WORK ACTIVITIES. IF THE ZONE OF WORK ACTIVITY MOVES, THE SIGNS SHOULD BE MOVED ACCORDINGLY.
4. SIGNING SHOWN IS REQUIRED TO ENFORCE DOUBLE FINES IN A WORK ZONE. ADDITIONAL SIGNING SHALL BE IN ACCORDANCE WITH THAT NORMALLY REQUIRED FOR THE PARTICULAR WORK ZONE. PLACEMENT OF "FINES DOUBLE" SIGNING MAY BE ADJUSTED AS NEEDED TO PROVIDE A MINIMUM 250' SPACING BETWEEN OTHER SIGNING REQUIRED FOR THE SPECIFIC WORK ZONE SETUP.

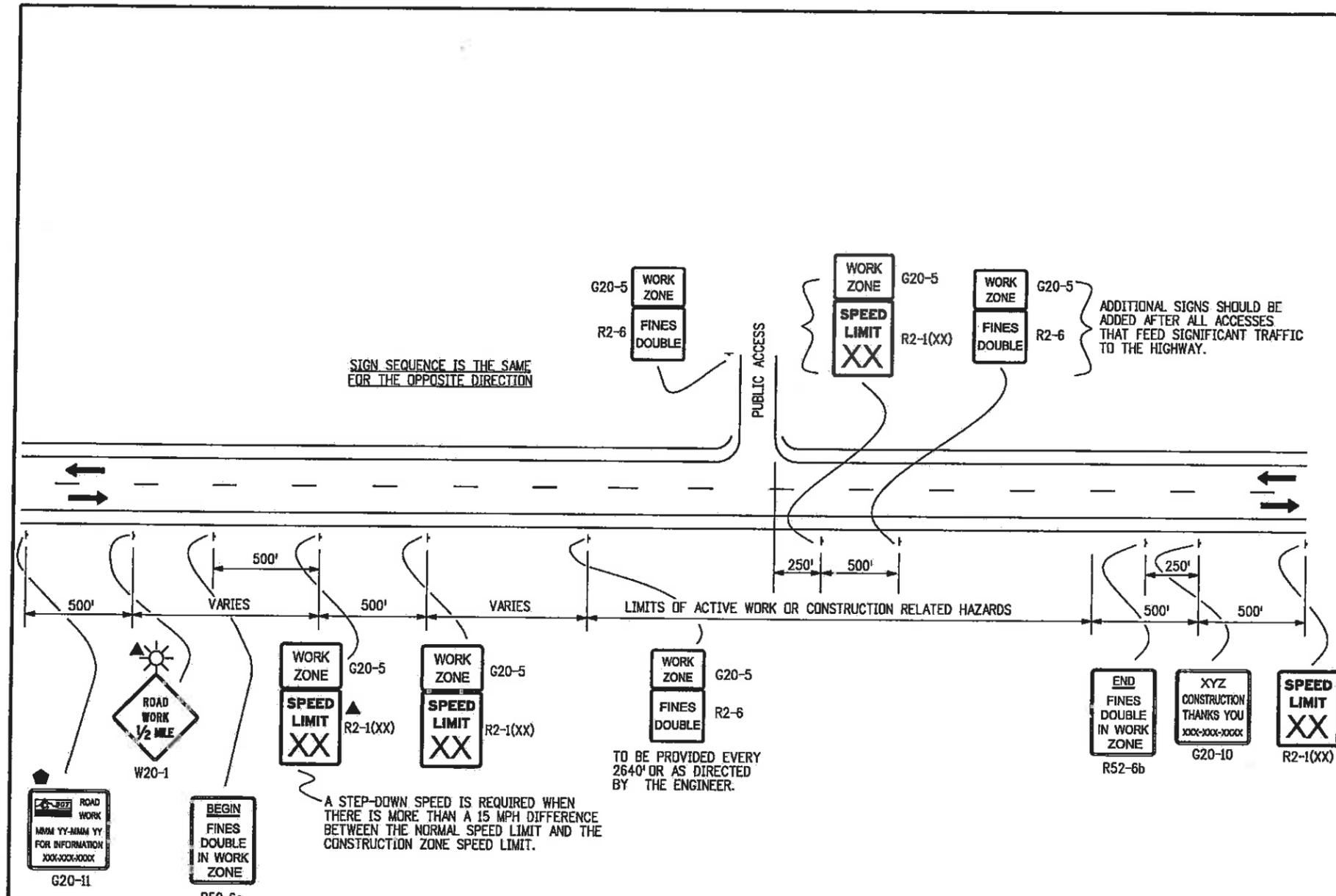
SIGN SEQUENCE IS THE SAME FOR THE OPPOSITE DIRECTION

ADDITIONAL SIGNS SHOULD BE ADDED AFTER ALL ACCESSES THAT FEED SIGNIFICANT TRAFFIC TO THE HIGHWAY.

A STEP-DOWN SPEED IS REQUIRED WHEN THERE IS MORE THAN A 15 MPH DIFFERENCE BETWEEN THE NORMAL SPEED LIMIT AND THE CONSTRUCTION ZONE SPEED LIMIT.

TO BE PROVIDED EVERY 2640' OR AS DIRECTED BY THE ENGINEER.

**CASE NO. 24
 TYPICAL APPLICATION
 "FINES DOUBLE IN WORK ZONE" SIGNING
 (WITH SPEED REDUCTION)**



Computer File Information	
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CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
06/24/09	DELETE CASE NO. 25 TYPICAL APPLICATION CHANGE SIZE OF G20-5 "WORK ZONE" PLACQUES
06/24/09	REVISED SHEET NUMBER TO 11 OF 19. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGN.
12/07/09	CHANGED NOTES REGARDING TO "DOUBLE FINES (SPEED REDUCTION) SIGNING" NOTES. ADDED G20-11 SIGN AND ☀ SYMBOL NOTE.

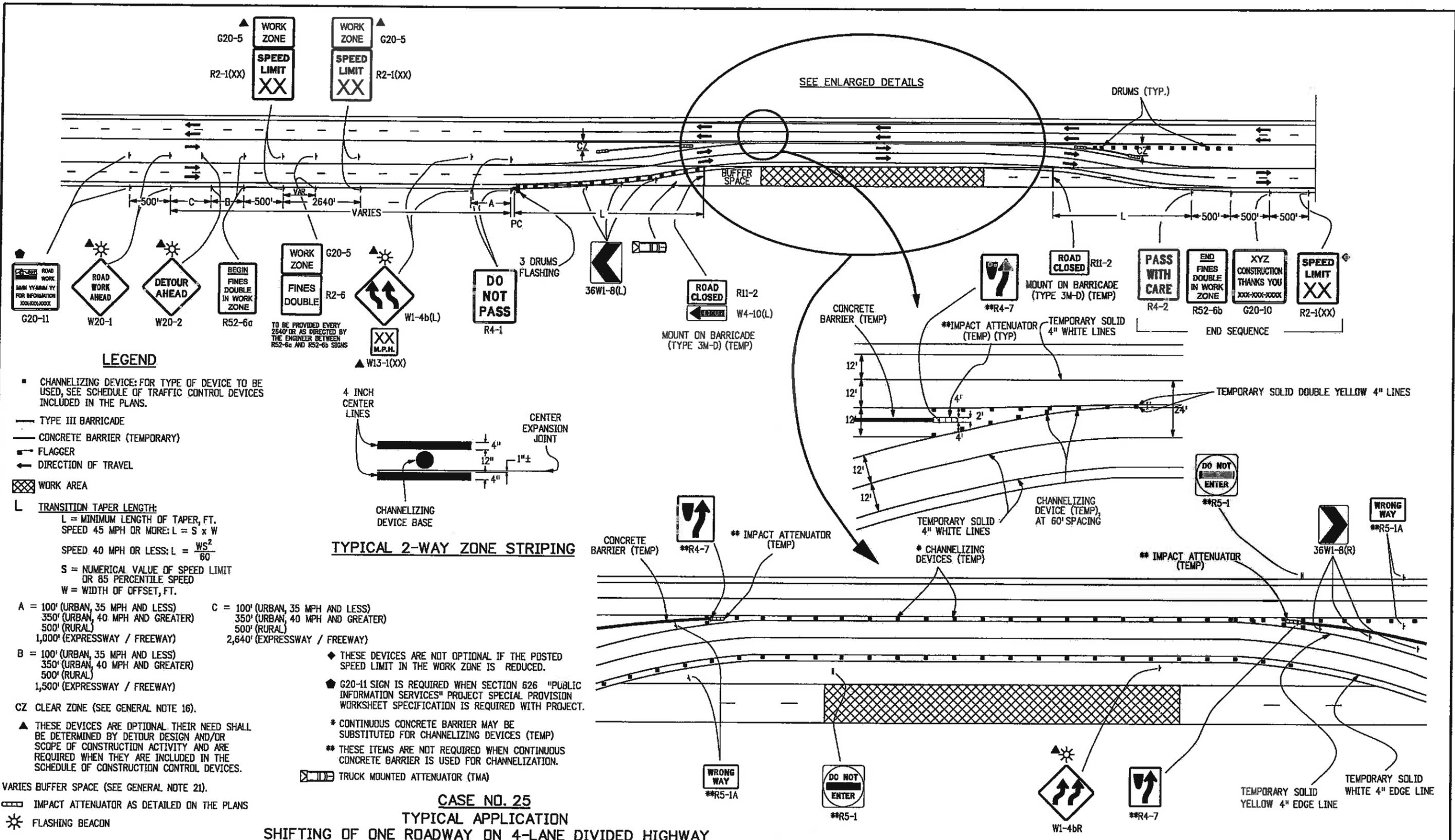
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**TRAFFIC CONTROLS
 FOR HIGHWAY
 CONSTRUCTION**

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LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
 - TYPE III BARRICADE
 - CONCRETE BARRIER (TEMPORARY)
 - FLAGGER
 - ← DIRECTION OF TRAVEL
 - ▨ WORK AREA
- L** TRANSITION TAPER LENGTH:
 L = MINIMUM LENGTH OF TAPER, FT.
 SPEED 45 MPH OR MORE: $L = S \times W$
 SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
 S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
 W = WIDTH OF OFFSET, FT.
- A** = 100' (URBAN, 35 MPH AND LESS)
 350' (URBAN, 40 MPH AND GREATER)
 500' (RURAL)
 1,000' (EXPRESSWAY / FREEWAY)
- C** = 100' (URBAN, 35 MPH AND LESS)
 350' (URBAN, 40 MPH AND GREATER)
 500' (RURAL)
 2,640' (EXPRESSWAY / FREEWAY)
- B** = 100' (URBAN, 35 MPH AND LESS)
 350' (URBAN, 40 MPH AND GREATER)
 500' (RURAL)
 1,500' (EXPRESSWAY / FREEWAY)
- CZ** CLEAR ZONE (SEE GENERAL NOTE 16).
- ▲ THESE DEVICES ARE OPTIONAL THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
- ▭ IMPACT ATTENUATOR AS DETAILED ON THE PLANS
- ⚡ FLASHING BEACON

TYPICAL 2-WAY ZONE STRIPING

- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
 - ◆ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
 - * CONTINUOUS CONCRETE BARRIER MAY BE SUBSTITUTED FOR CHANNELIZING DEVICES (TEMP)
 - ** THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION.
- ▭ TRUCK MOUNTED ATTENUATOR (TMA)

CASE NO. 25
TYPICAL APPLICATION
SHIFTING OF ONE ROADWAY ON 4-LANE DIVIDED HIGHWAY

Computer File Information	
Creation Date: 06/24/09	Initials: KEN
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_12of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
12/07/09	REVISION 1: CORRECTED SPEED LIMIT SIGN (G20-5) FROM 35 TO 40 MPH AND ADDED 40 MPH PLACED BETWEEN 100-40 & 350-40 IN PLAN VIEW. REVISION 2: CORRECTED R2-1 SIGN AND R2-1(X) SIGN TO BE 40 MPH. REVISION 3: CORRECTED R4-1 SIGN TO BE 40 MPH. REVISION 4: CORRECTED R4-7 SIGN TO BE 40 MPH.

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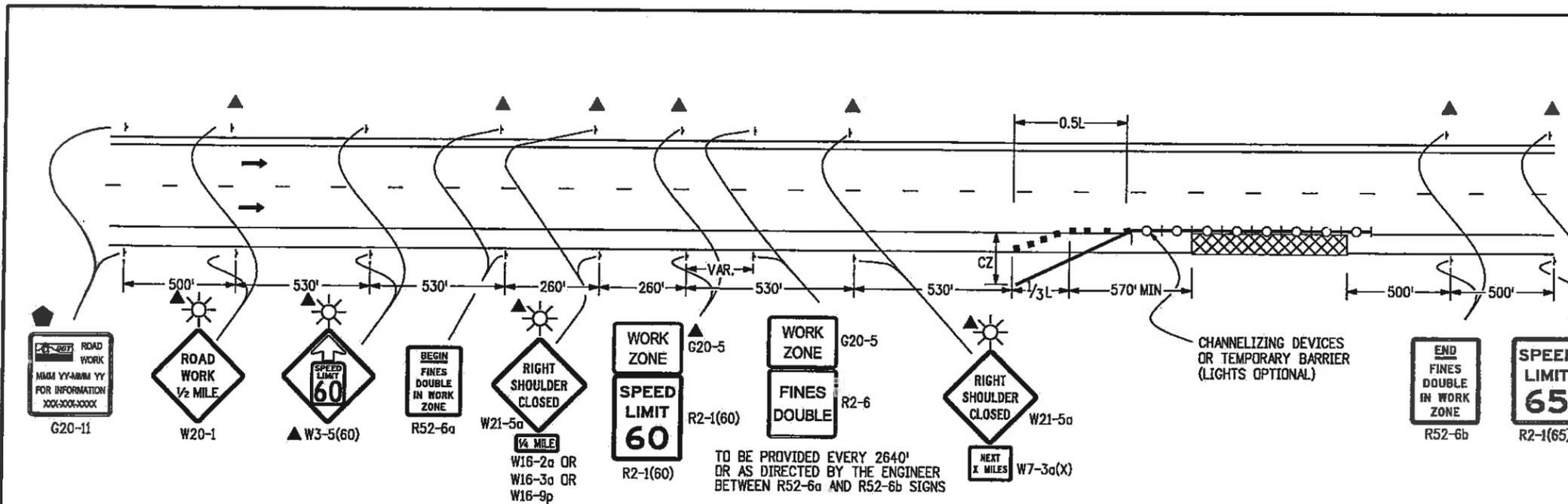
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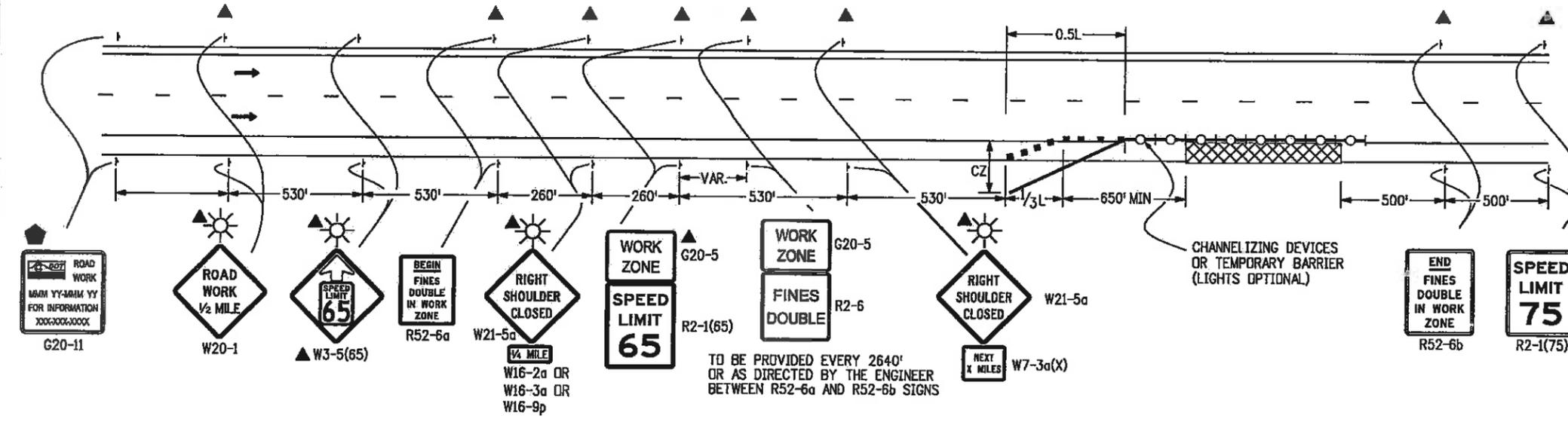
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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CASE NO. 26
TYPICAL APPLICATION
SHOULDER WORK - (FREEWAY/EXPRESSWAY w/ 65 MPH SPEED LIMIT)
 WHEN HAZARDS (WORKERS, EQUIPMENT, OR TEMPORARY BARRIER) ARE WITHIN 8 FT OF TRAVEL WAY



CASE NO. 27
TYPICAL APPLICATION
SHOULDER WORK - (FREEWAY/EXPRESSWAY w/ 75 MPH SPEED LIMIT)
 WHEN HAZARDS (WORKERS, EQUIPMENT, OR TEMPORARY BARRIER) ARE WITHIN 10 FT OF TRAVEL WAY

- LEGEND**
- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
 - TYPE III BARRIAGE
 - CONCRETE BARRIER (TEMPORARY)
 - FLAGGER
 - ← DIRECTION OF TRAVEL
 - ▨ WORK AREA
 - L **TRANSITION TAPER LENGTH:**
 L = MINIMUM LENGTH OF TAPER
 SPEED 45 MPH OR MORE: L = S x W
 S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
 W = WIDTH OF OFFSET
 SHOULDER TAPER = 1/3 L
 - ▨ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
 - CZ CLEAR ZONE
 - ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY TRAFFIC VOLUMES AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
 - BUFFER SPACE (SEE S-630-1 GENERAL NOTE 21).
 - G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
 - REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
 - ▨ TRUCK MOUNTED ATTENUATOR
 - ☀ FLASHING BEACON

Computer File Information	
Creation Date: 06/24/09	Initials: KEN
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_13of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
12/07/09	ADDED G20-5 FLAGGER TO R2-1(65) SIGN, ADDED R2-6 & G20-5 FLAGGER BETWEEN R52-6a AND R52-6b SIGN, ADDED G20-11 SIGN AND SYMBOL NOTE.

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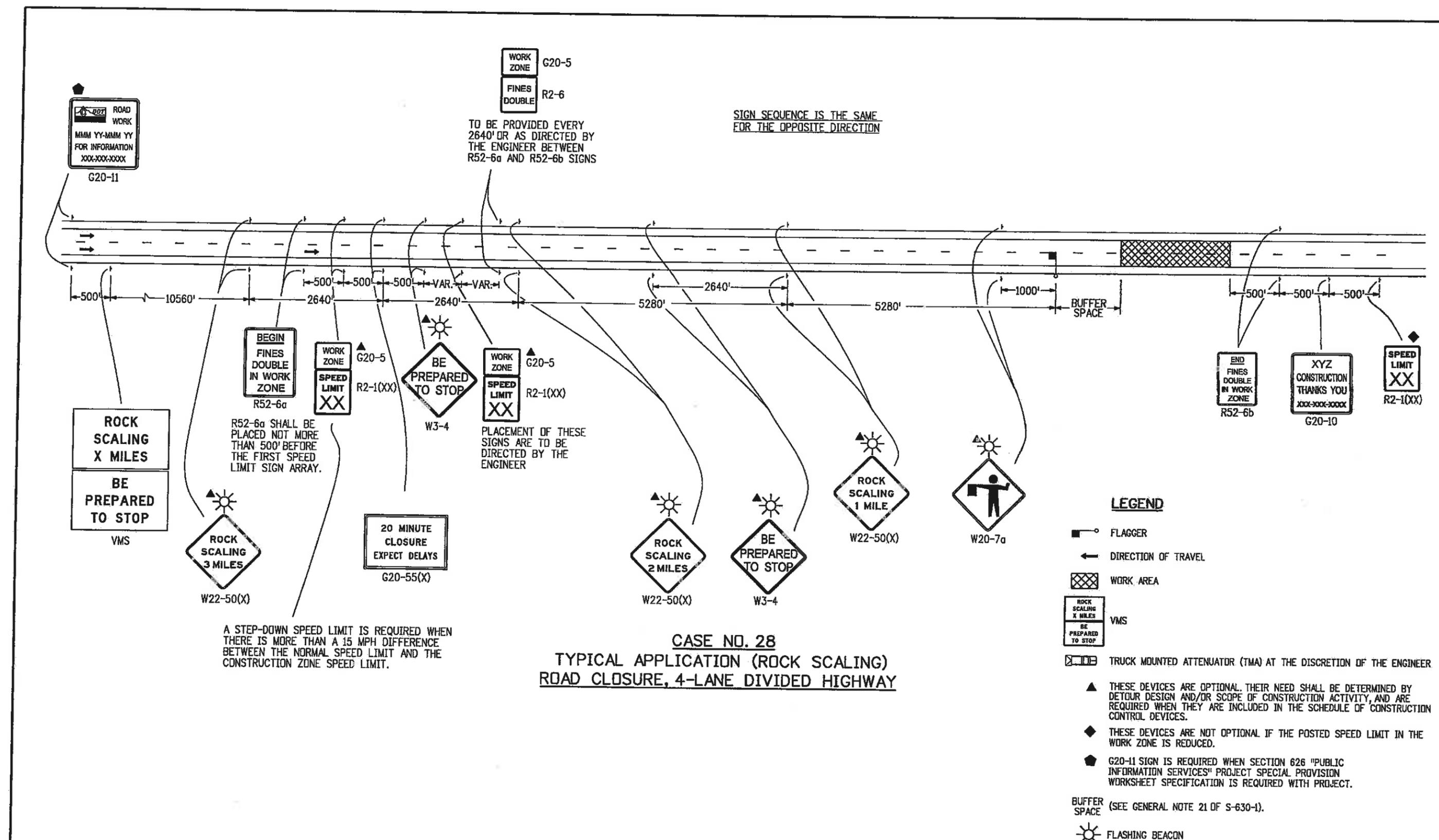
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WORK ZONE G20-5
FINES DOUBLE R2-6
TO BE PROVIDED EVERY 2640' OR AS DIRECTED BY THE ENGINEER BETWEEN R52-6a AND R52-6b SIGNS

SIGN SEQUENCE IS THE SAME FOR THE OPPOSITE DIRECTION

R52-6a SHALL BE PLACED NOT MORE THAN 500' BEFORE THE FIRST SPEED LIMIT SIGN ARRAY.

PLACEMENT OF THESE SIGNS ARE TO BE DIRECTED BY THE ENGINEER

A STEP-DOWN SPEED LIMIT IS REQUIRED WHEN THERE IS MORE THAN A 15 MPH DIFFERENCE BETWEEN THE NORMAL SPEED LIMIT AND THE CONSTRUCTION ZONE SPEED LIMIT.

CASE NO. 28
TYPICAL APPLICATION (ROCK SCALING)
ROAD CLOSURE, 4-LANE DIVIDED HIGHWAY

- LEGEND**
- FLAGGER
 - DIRECTION OF TRAVEL
 - WORK AREA
 - VMS
 - TRUCK MOUNTED ATTENUATOR (TMA) AT THE DISCRETION OF THE ENGINEER
 - THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
 - THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
 - G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
 - BUFFER SPACE (SEE GENERAL NOTE 21 OF S-630-1).
 - FLASHING BEACON

Computer File Information	
Creation Date: 06/24/09	Initials: KEN
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_14of19.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
12/07/09	ADD R2-6 TO R2-6 PLACEMENT BETWEEN R52-6a AND R52-6b SIGN PLACED AT 10-1000 SIGN AFTER R52-6a SIGN AND G20-11 SIGN AND @ STREET MARK

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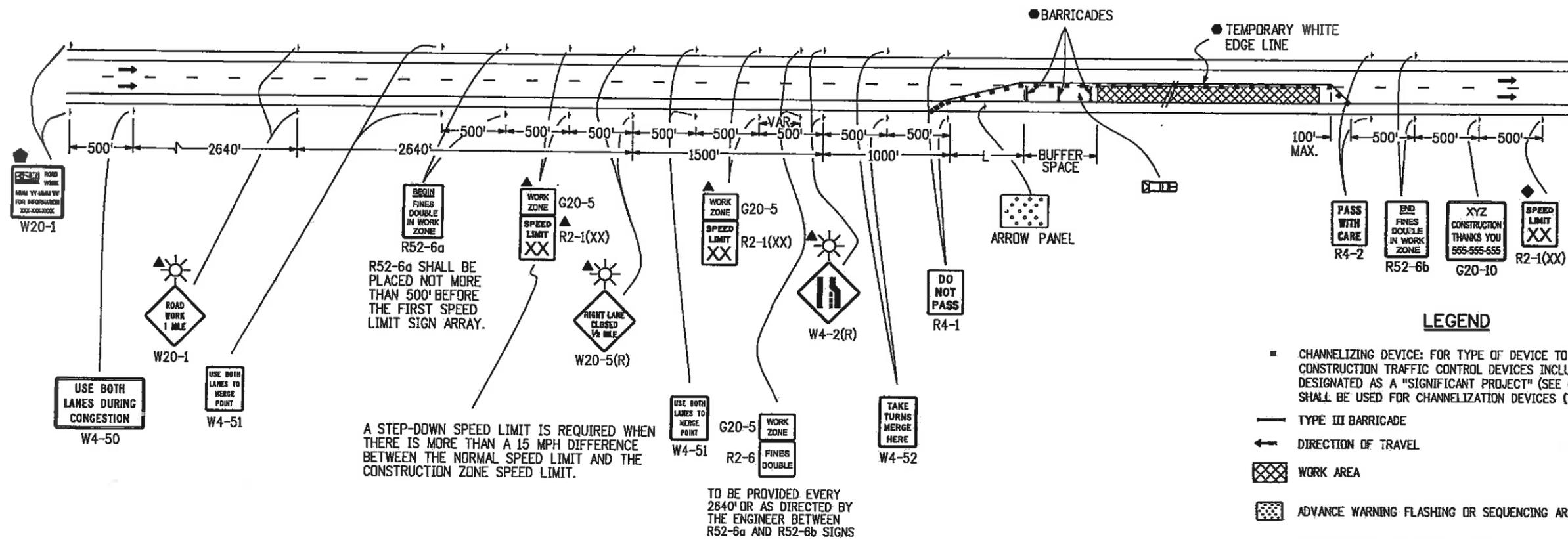
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R52-6a SHALL BE PLACED NOT MORE THAN 500' BEFORE THE FIRST SPEED LIMIT SIGN ARRAY.

A STEP-DOWN SPEED LIMIT IS REQUIRED WHEN THERE IS MORE THAN A 15 MPH DIFFERENCE BETWEEN THE NORMAL SPEED LIMIT AND THE CONSTRUCTION ZONE SPEED LIMIT.

TO BE PROVIDED EVERY 2640' OR AS DIRECTED BY THE ENGINEER BETWEEN R52-6a AND R52-6b SIGNS

LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. IF PROJECT IS DESIGNATED AS A "SIGNIFICANT PROJECT" (SEE GENERAL NOTE 25), CONCRETE BARRIER SHALL BE USED FOR CHANNELIZATION DEVICES (TEMP) AS DETERMINED BY THE ENGINEER.
- TYPE III BARRICADE
- ← DIRECTION OF TRAVEL
- ▨ WORK AREA
- ▤ ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ◆ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ☀ FLASHING BEACON
- REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ▤ TRUCK MOUNTED ATTENUATOR (TMA)
- L TRANSITION TAPER LENGTH:
 - L = MINIMUM LENGTH OF TAPER
 - SPEED 45 MPH OR MORE: $L = S \times W$
 - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
 - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
 - W = WIDTH OF OFFSET
 - SHOULDER TAPER = $1/3 L$

**CASE NO. 29
TYPICAL APPLICATION (LATE MERGING)
ONE LANE CLOSED, 4-LANE DIVIDED HIGHWAY**

BUFFER SPACE (SEE GENERAL NOTE 21 OF S-630-1).

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Creation Date: 06/24/09	Initials: KEN
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_15of19.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
12/07/09	REVISION 1: CORRECTED SIGN PLACEMENTS AND DISTANCES

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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9458

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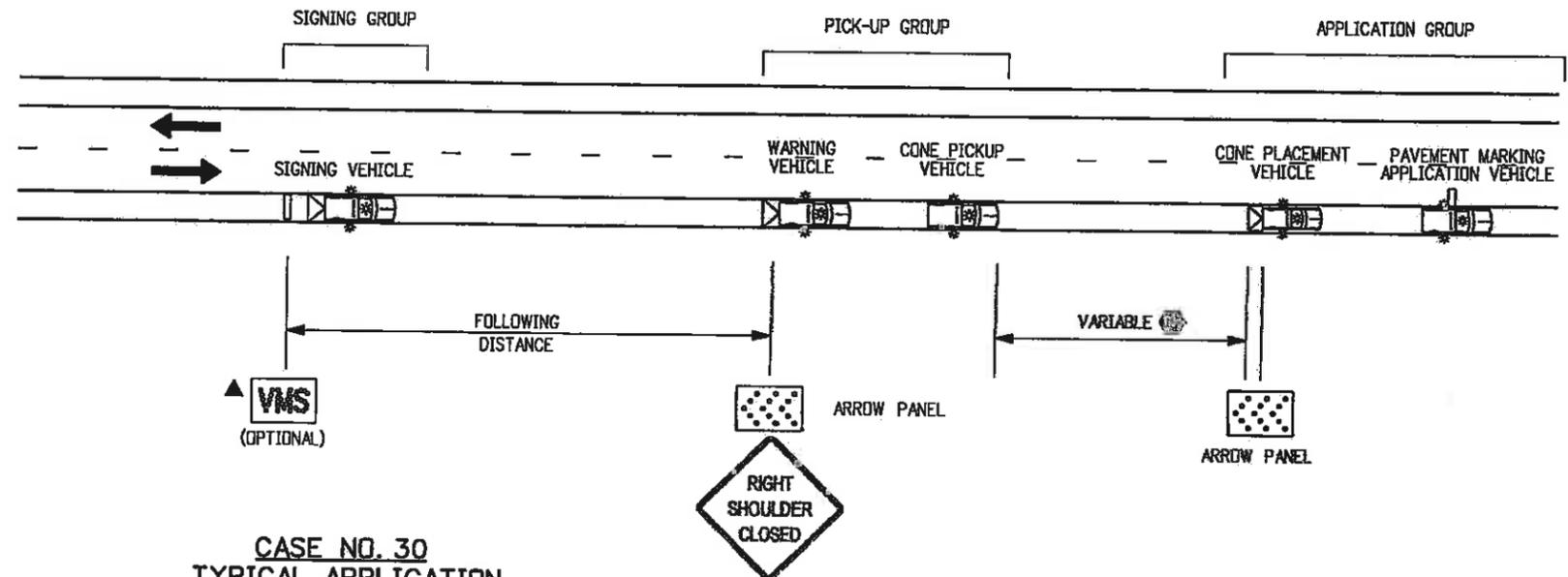
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LEGEND

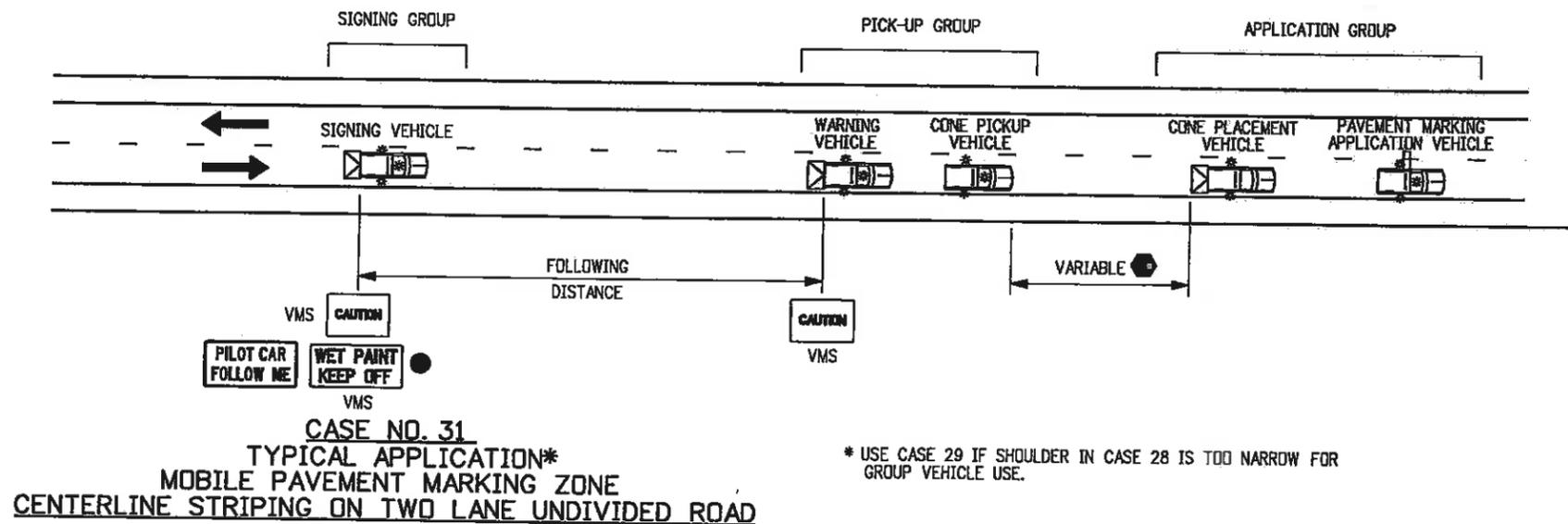
-  VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
-  ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
-  VARIABLE MESSAGE SIGN (VMS).
- ▲ WHEN VMS IS USED, THE "SHOULDER CLOSED" SIGN BECOMES OPTIONAL.
- THE "PICK-UP VEHICLES" OR "WARNING VEHICLE" MAY ENCRDACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.
- IF TRACKING OF THE WET PAINT IS ANTICIPATED, THE USE OF CONES OR STATIONARY "WET PAINT" SIGNS SHALL BE POSTED.
- THE VARIABLE SEPARATION DISTANCE BETWEEN THE "CONE PLACEMENT VEHICLE" AND "CONE PICKUP VEHICLE" SHALL BE DETERMINED BY THE TRACK DRYING TIME OF THE PAVEMENT MARKING MATERIAL.

FOLLOWING DISTANCE CHART FOR WARNING AND SIGNING VEHICLES

POSTED WZ SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 40	325 - 700
45 - 50	600 - 900
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1200 - 1600



CASE NO. 30
TYPICAL APPLICATION
MOBILE PAVEMENT MARKING ZONE
MOBILE SHOULDER CLOSURE



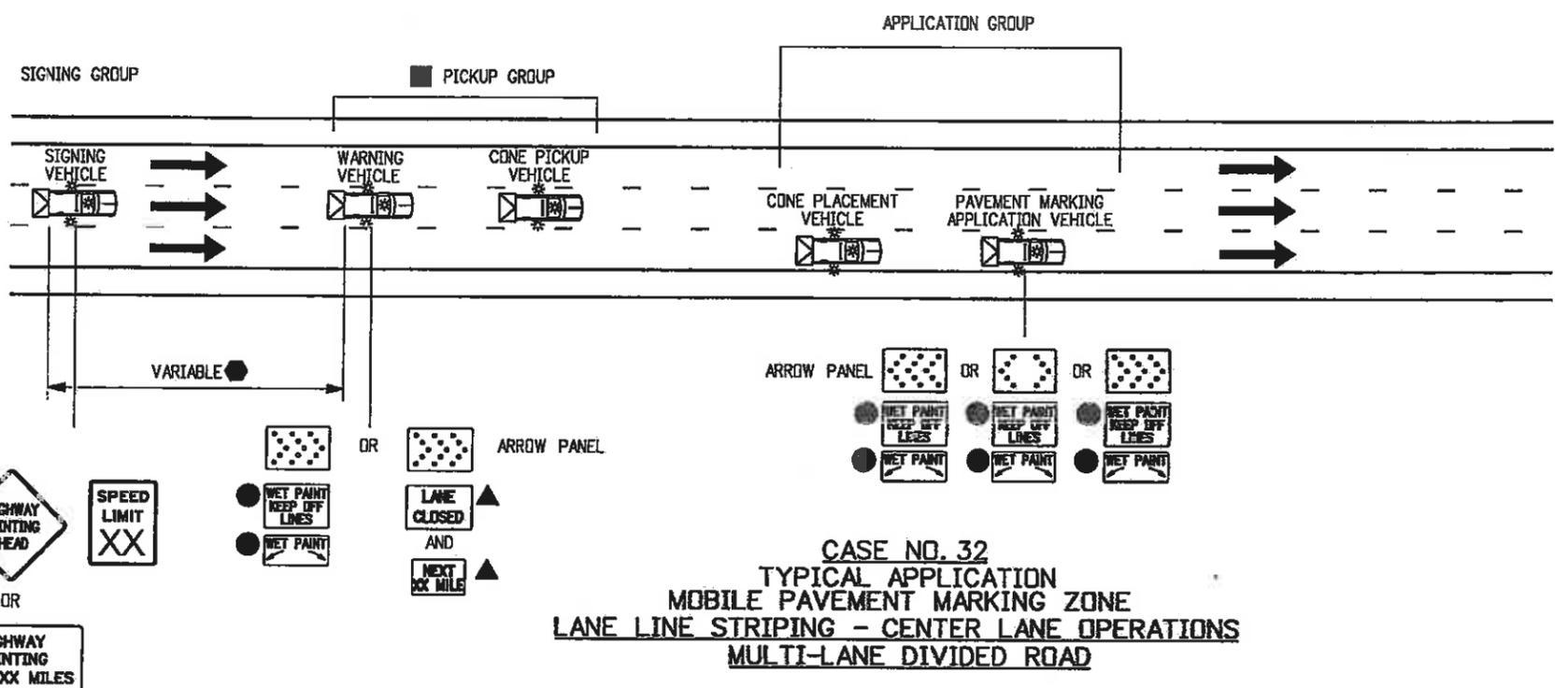
* USE CASE 29 IF SHOULDER IN CASE 28 IS TOO NARROW FOR GROUP VEHICLE USE.

CASE NO. 31
TYPICAL APPLICATION*
MOBILE PAVEMENT MARKING ZONE
CENTERLINE STRIPING ON TWO LANE UNDIVIDED ROAD

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Creation Date: 06/24/09	Initials: KEN	Date:	Comments:			
Last Modification Date:	Initials:			Safety & Traffic Engineering Branch KCM/KEN		
Full Path: www.dot.state.co.us/DesignSupport/						
Drawing File Name: Sheet_S-630-1_16of19.dgn						
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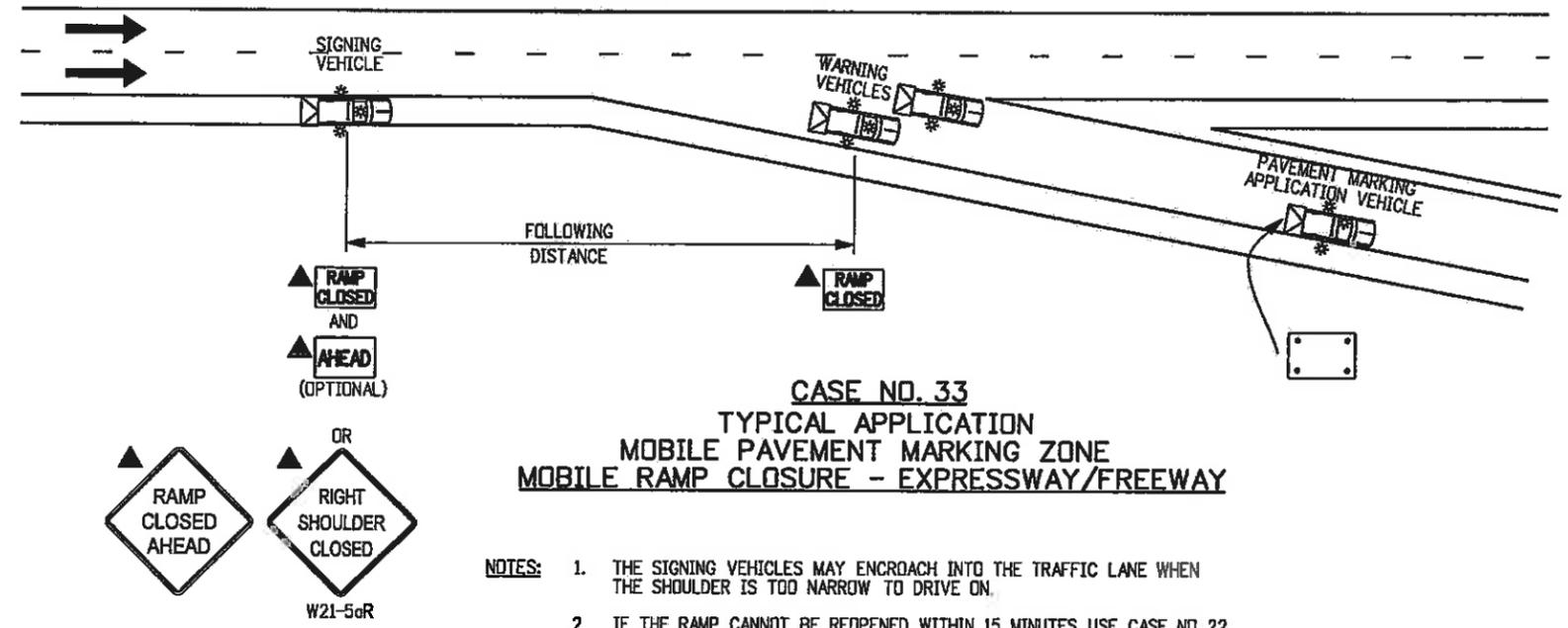
LEGEND

-  VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
-  ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
-  PORTABLE VARIABLE MESSAGE SIGN (VMS).
-  WHEN THE VMS IS USED, THE "SHOULDER CLOSED" (W21-5aX) OR W21-5bX), AND "RAMP CLOSED AHEAD" SIGNS BECOME OPTIONAL.
-  THE "CONE PICK-UP VEHICLE" OR "WARNING VEHICLE" MAY ENCRDACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.
-  IF TRACKING OF THE WET PAINT IS ANTICIPATED, THE USE OF CONES OR STATIONARY "WET PAINT" SIGNS SHALL BE POSTED.
-  THE VARIABLE SEPARATION DISTANCE BETWEEN THE "WARNING VEHICLE" AND "SIGNING VEHICLE" SHALL BE DETERMINED BY THE TRACK DRYING TIME OF THE PAVEMENT MARKING MATERIAL.



FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

POSTED WZ SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 40	325 - 700
45 - 50	600 - 900
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1200 - 1600



- NOTES:**
1. THE SIGNING VEHICLES MAY ENCRDACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.
 2. IF THE RAMP CANNOT BE REDOPENED WITHIN 15 MINUTES, USE CASE NO. 22 OF THE S-630-1 STANDARD PLAN.

Computer File Information

Creation Date: 06/24/09	Initials: KEN
Last Modification Date:	Initials:
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-1_17of19.dgn	
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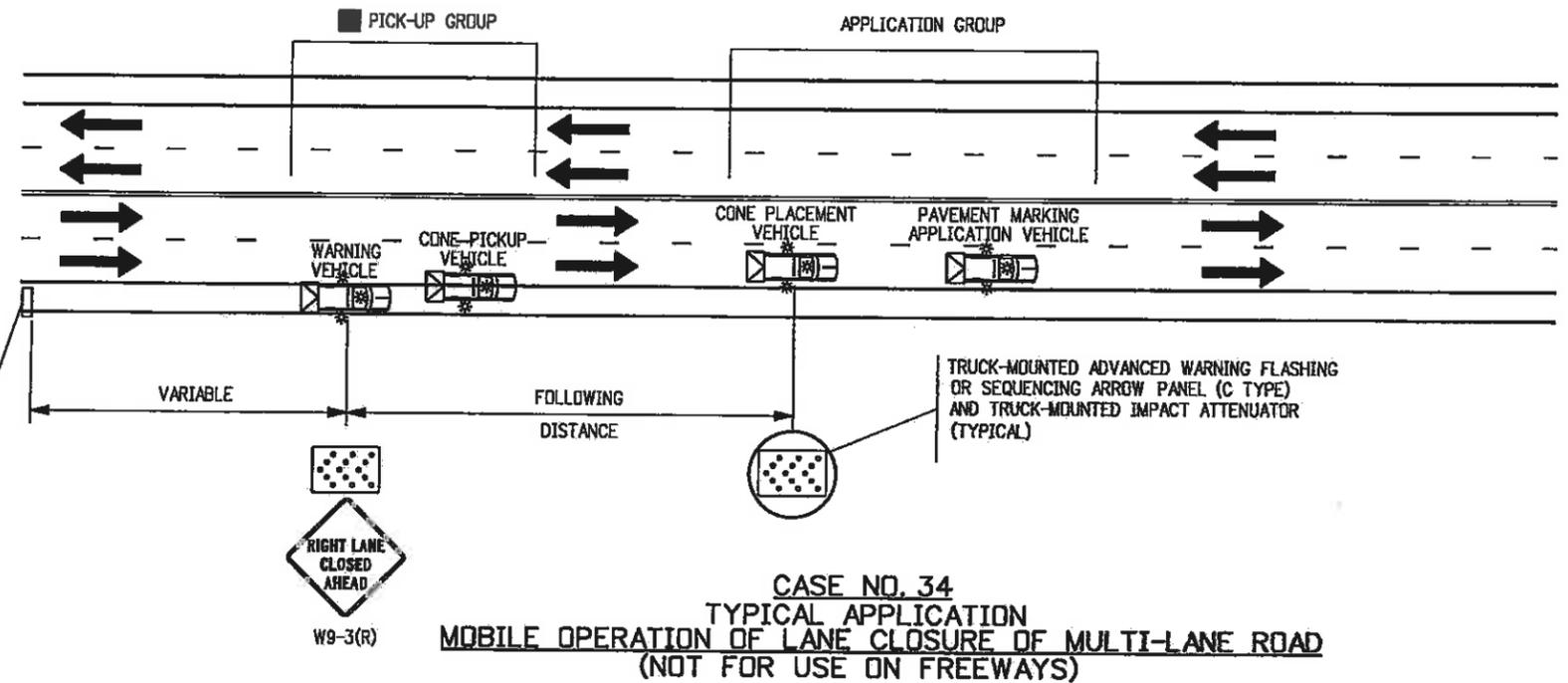
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 Denver, Colorado 80222
 Phone: (303) 757-9543
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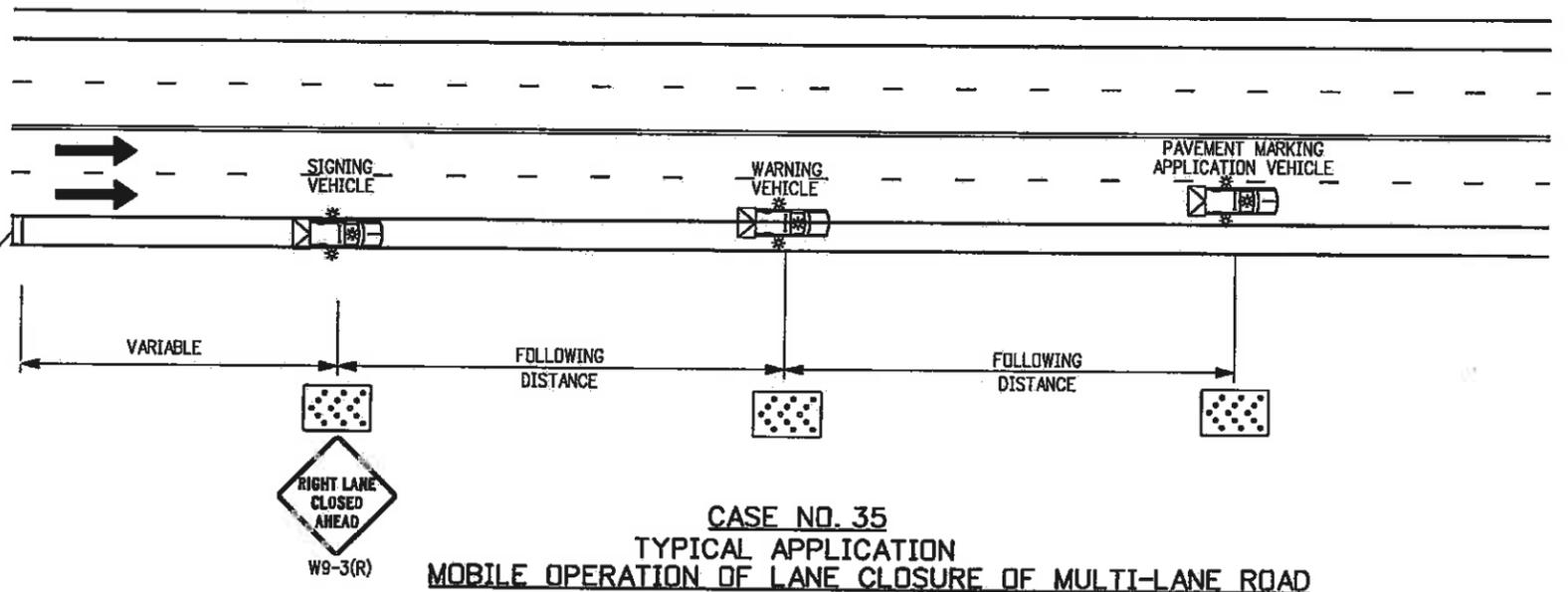
LEGEND

-  VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
-  ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
-  PORTABLE VARIABLE MESSAGE SIGN (VMS).
-  WHEN THE VMS IS USED, THE "RIGHT LANE CLOSED AHEAD" (W9-3X) SIGN BECOMES OPTIONAL.
-  THE "CONE PICK-UP VEHICLE" OR "WARNING VEHICLE" MAY ENCRDACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.



FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

POSTED WZ SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 40	325 - 700
45 - 50	600 - 900
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1200 - 1600



- NOTES:**
1. IN ROADWAY WHERE THE AADT IS 2,000 OR LESS, A SINGLE WORK VEHICLE WITH APPROPRIATE WARNING DEVICES ON THE VEHICLE MAY BE USED.
 2. RADIO COMMUNICATIONS BETWEEN THE WORKCREW AND THE MOVING BLOCKADE ARE REQUIRED TO ADJUST THE BLOCKADE TO INCREASE OR DECREASE THE CLOSURE TIME. RELEASE TRAFFIC ONLY AFTER CONFIRMATION THAT ALL WORKERS AND THEIR VEHICLES ARE CLEAR OF THE ROADWAY.
 3. IF APPLICABLE, ALL RAMPS AND ACCESS BETWEEN THE MOVING BLOCKADE AND WORK OPERATION AREA SHALL BE TEMPORARILY CLOSED USING TRAFFIC CONTROL EQUIPMENT AND PERSONNEL. EACH RAMP MUST REMAIN CLOSED UNTIL THE CREW DOING THE WORK GIVES THE "ALL CLEAR" SIGNAL OR UNTIL THE FRONT OF THE MOVING BLOCKADE PASSES THE CLOSED RAMP(S).

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Date:	Initials:	Date:	Comments:			
Creation Date: 06/24/09	Initials: KEN			 Safety & Traffic Engineering Branch KCM/KEN	Issued By: Safety & Traffic Engineering Branch June 24, 2009	Sheet No. 18 of 19
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Full Path: www.dot.state.co.us/DesignSupport/						
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THESE SIGNING NOTES ARE INTENDED AS A QUICK REFERENCE FOR TYPICAL SIGN USE AND PLACEMENT IN CONSTRUCTION ZONES.

TYPICAL CONSTRUCTION ZONE SIGNS

- G20-1 "ROAD/WORK/NEXT XX MILES" - THIS SIGN SHALL BE ERECTED AT THE LIMITS OF ANY ROAD CONSTRUCTION OR MAINTENANCE PROJECT OF MORE THAN TWO (2) MILES IN LENGTH WHERE TRAFFIC IS MAINTAINED THROUGH THE PROJECT.
- G20-4 "PILOT CAR/FOLLOW ME" - THIS SIGN SHALL BE MOUNTED IN A CONSPICUOUS POSITION ON THE REAR OF A VEHICLE USED FOR GUIDING ONE-WAY TRAFFIC THROUGH OR AROUND THE PROJECT.
- G20-5 "WORK ZONE" - THIS SIGN SHALL BE MOUNTED JUST ABOVE THE WORK ZONE SPEED LIMIT SIGNS PRIOR TO THE WORK ZONE AREA.
- G20-10 THANK YOU SIGN - THIS SIGN SHOULD BE ERECTED APPROXIMATELY 500 FEET BEYOND THE END OF THE PROJECT.
- G20-11 CONSTRUCTION PROJECT INFORMATION SIGN - THIS SIGN SHOULD BE ERECTED AS DESCRIBED IN THE SECTION 626 STANDARD SPECIFICATION.
- G20-55(X) "X MINUTE CLOSURE. EXPECT DELAYS" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE "WORK ZONE"/SPEED LIMIT SIGN.
- M4-9() "DETOUR/XXXX" - THIS SIGN IS USED FOR UNNUMBERED ROUTES; FOR USE IN EMERGENCY SITUATIONS; FOR PERIODS OF SHORT DURATION; OR WHERE, OVER RELATIVELY SHORT DISTANCES, IT IS NOT NECESSARY TO SHOW ROUTE MARKERS TO GUIDE TRAFFIC ALONG THE DETOUR AND BACK TO ITS AUTHORIZED ROUTE.
- M4-10() "DETOUR ARROW" - THIS SIGN SHOULD BE MOUNTED JUST BELOW THE ROAD CLOSED SIGN AT THE POINT WHERE THE DETOUR ROADWAY OR ROUTE HAS BEEN ESTABLISHED DUE TO THE CLOSURE OF THE STREET OR HIGHWAY TO THROUGH TRAFFIC.
- R2-1() "SPEED/LIMIT/XX" - THESE SIGNS ARE INTENDED TO REDUCE TRAFFIC SPEED IN ADVANCE OF THE DAILY WORK AREA WITHIN THE OVERALL PROJECT LIMITS.
- R2-1(XX) "SPEED/LIMIT/XX" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE "THANK YOU" SIGN TO BRING TRAFFIC BACK TO ORIGINAL POSTED SPEED.
- R4-1 "DO NOT PASS" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.
- R4-2 "PASS WITH CARE" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.
- R11-2 "ROAD/CLOSED" - THIS SIGN IS TO BE MOUNTED ON THE BARRICADE THAT IS PLACED BEFORE THE WORK ZONE ENTRANCE TO PROHIBIT TRAFFIC FROM ENTERING THE WORK ZONE.
- R11-3 "ROAD CLOSED/X MILES AHEAD/L.T.O." - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND, BUT WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.
- R11-4 "ROAD CLOSED/TO/THRU TRAFFIC" FOR URBAN USE - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND, BUT WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.
- R52-6a "BEGIN FINES DOUBLE IN WORK ZONE" SIGN IS PLACED AT THE BEGINNING OF THE ADVANCED WARNING AREA OF THE TRAFFIC CONTROL ZONE.
- R52-6b "END FINES DOUBLE IN WORK ZONE" SIGN IS PLACED AFTER WORK ZONE AREA, PAST DOWNSTREAM TAPER SECTION.
- W1-1() "TURN ARROW" - THIS SIGN IS INTENDED FOR USE WHERE ENGINEERING INVESTIGATIONS OF ROADWAY CONDITIONS SHOW THE RECOMMENDED SPEED ON THE TURN TO BE 30 MPH OR LESS.*
- W1-2() "CURVE ARROW" - THIS SIGN IS INTENDED FOR USE WHERE ENGINEERING INVESTIGATIONS OF ROADWAY CONDITIONS SHOW THE RECOMMENDED SPEED ON THE CURVE TO BE IN THE RANGE BETWEEN 30 AND 60 MILES PER HOUR.*
- W1-3() "REVERSE TURN ARROW" - THIS SIGN IS INTENDED FOR USE WHERE TWO TURNS OR THE CURVE AND A TURN IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 600 FEET.*
- W1-4() "REVERSE CURVE ARROW" - THIS SIGN IS INTENDED FOR USE WHERE TWO CURVES IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 800 FEET.*
- W1-6() "ARROW" - THIS SIGN SHOULD BE MOUNTED JUST BELOW THE ROAD CLOSED SIGN AT THE POINT WHERE THE DIVERSION HAS BEEN ESTABLISHED DUE TO THE LANE CLOSURE.
- W3-2 "YIELD AHEAD" - THIS SIGN IS INTENDED FOR USE AT THE APPROACH TO THE YIELD SIGN THAT IS NOT VISIBLE FOR A SUFFICIENT DISTANCE TO PERMIT THE DRIVER TO BRING HIS VEHICLE TO A STOP AT THE YIELD SIGN.*
- W3-4 "BE PREPARED TO STOP" - THIS SIGN TO BE PLACED 1.5 MILES IN ADVANCE OF A FLAGGER.
- W4-2(X) "LEFT (RIGHT) LANE TRANSITION SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE REDUCTION IN THE NUMBER OF TRAFFIC LANES IN THE DIRECTION OF TRAVEL ON THE MULTILANE HIGHWAY.*
- W4-50 "USE BOTH LANES DURING CONGESTION" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE "ROAD WORK X MILE" ADVANCED WARNING SIGN.
- W4-51 "USE BOTH LANES TO MERGE POINT" - THIS SIGN IS INTENDED TO DIRECT MOTORISTS TO USE BOTH TRAVEL LANES UNTIL THE LANES ARE REDUCED TO ONE LANE.
- W4-52 "TAKE TURNS MERGE HERE" - THIS SIGN IS INTENDED TO WARN MOTORISTS IN ADVANCE TO MOVE FROM THE CLOSED TRAVEL LANE TO THE OPEN TRAVEL LANE, USUALLY 500 FEET IN ADVANCE OF THE START OF THE TRANSITION TAPER.
- W5-1 "ROAD NARROWS" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE TRANSITION ON THE ROAD WHERE THE PAVEMENT WIDTH IS REDUCED ABRUPTLY TO A WIDTH SUCH THAT TWO CARS CANNOT PASS WITHOUT REDUCING SPEED.*
- W5-2a "NARROW BRIDGE SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A BRIDGE OR CULVERT HAVING A CLEAR TWO-WAY ROADWAY WIDTH OF 16 TO 18 FEET OR ANY BRIDGE OR CULVERT HAVING A ROADWAY CLEARANCE LESS THAN THE WIDTH OF THE APPROACH PAVEMENT.*

- W5-3 "ONE LANE/BRIDGE" - THIS SIGN SHOULD BE PLACED ON TWO-WAY ROADWAYS IN ADVANCE OF THE BRIDGES OR CULVERTS WHERE THE ROADWAY WIDTH IS LESS THAN 16 FEET (18 FEET FOR COMMERCIAL VEHICLES) OR WHEN THE ALIGNMENT IS POOR ON THE APPROACH TO THE STRUCTURE HAVING A CLEAR ROADWAY WIDTH OF 18 FEET OR LESS.*
- W6-1 "DIVIDED HIGHWAY SYMBOL" - THIS SIGN SHOULD BE PLACED ON THE APPROACHES TO THE SECTION OF HIGHWAY WHERE OPPOSING FLOWS OF TRAFFIC ARE SEPARATED BY A PHYSICAL MEDIAN.
- W6-2 "DIVIDED HIGHWAY ENDS SYMBOL" - THIS SIGN SHOULD BE PLACED AT THE END OF THE SECTION OF PHYSICALLY DIVIDED HIGHWAY AS A WARNING OF TWO-WAY TRAFFIC AHEAD.
- W6-3 "TWO-WAY TRAFFIC SYMBOL" - THIS SIGN IS INTENDED FOR USE TO GIVE WARNING OF TRANSITION FROM A SEPARATED ONE-WAY ROADWAY TO A TWO-WAY ROADWAY.*
- W7-1 "HILL SYMBOL" - THIS SIGN SHOULD BE PLACED AT A POINT IN ADVANCE OF THE DOWNGRADE WHERE THE LENGTH, PERCENT OF GRADE, HORIZONTAL CURVATURE, OR OTHER PHYSICAL FEATURES REQUIRE SPECIAL CONSIDERATION ON THE PART OF DRIVERS.*
- W8-1, W8-2 "BUMP"/"DIP" - THESE SIGNS ARE INTENDED FOR USE TO GIVE WARNING OF A SHARP RISE OR DEPRESSION IN THE PROFILE OF THE ROAD THAT IS SUFFICIENTLY ABRUPT TO AFFECT VEHICLE OPERATION OR CAUSE CONSIDERABLE DISCOMFORT TO PASSENGERS.*
- W8-3a "PAVEMENT ENDS SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE THE PAVEMENT SURFACE CHANGES FROM A HARD-SURFACED PAVEMENT TO THE LOW-TYPE SURFACE OR EARTH ROAD.*
- W8-4 "SOFT SHOULDER" - THIS SIGN IS INTENDED FOR USE TO WARN OF A SOFT SHOULDER CONDITION THAT COULD PRESENT A PROBLEM TO VEHICLES THAT MAY GET OFF THE PAVEMENT.*
- W8-5 "SLIPPERY WHEN WET SYMBOL" - THIS SIGN SHOULD BE PLACED IN ADVANCE OF THE CONDITION WHERE THE HIGHWAY SURFACE IS SLIPPERY BEYOND WHAT IS ORDINARY WHEN WET.*
- W8-9a "SHOULDER DROP-OFF" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A SHOULDER DROP-OFF THAT EXCEEDS THREE INCHES IN HEIGHT.*
- W8-11 "UNEVEN LANES" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN UNEVEN ADJACENT LANE SITUATION THAT EXCEEDS ONE INCH IN HEIGHT.*
- W9-1() "LEFT (RIGHT) LANE ENDS" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE PAVEMENT WIDTH TRANSITION SIGN (W4-2).
- W9-2() "LANE ENDS/MERGE LEFT (RIGHT)" - THIS SIGN IS INTENDED FOR USE AS A SUPPLEMENT TO THE PAVEMENT WIDTH TRANSITION SIGN (W4-2).
- W9-3 OR W9-3a() "CENTER LANE CLOSED AHEAD" - THIS SIGN SHOULD BE USED IN ADVANCE OF THE POINT WHERE WORK OCCUPIES THE CENTER LANE AND TRAFFIC IS DIRECTED TO THE RIGHT OR LEFT OF THE WORK ZONE.*
- W12-1 "DOUBLE ARROW SYMBOL" - THIS SIGN SHOULD BE PLACED AT THE POINT OF THE OBSTRUCTION IN THE ROADWAY, WHERE TRAFFIC IS PERMITTED TO PASS ON EITHER SIDE OF THE OBSTRUCTION.
- W12-2 "LOW CLEARANCE SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN OBSTRUCTION TO WARN VEHICLE OPERATORS OF CLEARANCES LESS THAN THE MAXIMUM VEHICLE HEIGHT PERMITTED PLUS 12 INCHES.*
- W13-1() "ADVISORY SPEED PLAQUE" - THIS SIGN IS INTENDED TO SUPPLEMENT WARNING SIGNS ONLY AND SHALL NOT BE MOUNTED ALONE. IT IS USED TO INDICATE THE MAXIMUM RECOMMENDED SPEED FOR THE INDICATED CONDITION.
- W13-3 "ADVISORY RAMP SPEED" - THIS SIGN IS TO BE POSTED TO INFORM MOTORISTS WHAT THE SUGGESTED SPEED LIMIT IS ON A RAMP.
- W20-1 "ROAD/WORK/AHEAD" - THIS SIGN IS TO BE LOCATED IN ADVANCE OF THE INITIAL ACTIVITY OR DETOUR A DRIVER MAY ENCOUNTER, AND IS INTENDED TO BE USED AS A WARNING OF OBSTRUCTIONS OR RESTRICTIONS.
- W20-2 "DETOUR/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE POINT AT WHICH TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OR ROUTE.
- W20-3 "ROAD/CLOSED/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT AT WHICH A ROADWAY IS CLOSED TO ALL TRAFFIC OR TO ALL BUT LOCAL TRAFFIC.
- W20-4 "ONE LANE/ROAD/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IN BOTH DIRECTIONS MUST USE A SINGLE LANE.
- W20-5() "XXX LANE/CLOSED/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE ONE LANE OF A MULTIPLE-LANE ROADWAY IS CLOSED. IT SHOULD BE PROVIDED WITH INTERCHANGEABLE PLAQUES READING "RIGHT", "LEFT", AND "CENTER" AT NO ADDITIONAL COST TO THE PROJECT.
- W20-7a "FLAGGER SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF ANY POINT AT WHICH A FLAGGER HAS BEEN STATIONED TO CONTROL TRAFFIC THROUGH OR AROUND THE PROJECT.*
- W20-52 "GROOVED/PAVEMENT/AHEAD" - THIS SIGN IS INTENDED TO BE USED IN ADVANCE OF A ROADWAY THAT HAS BEEN GROOVED AND/OR ROTO MILLED.
- W21-1a "WORKER SYMBOL" - THIS SIGN IS INTENDED FOR USE IN CONJUNCTION WITH MINOR MAINTENANCE AND PUBLIC UTILITY OPERATIONS FOR THE PROTECTION OF MEN WORKING IN OR NEAR THE ROADWAY.
- W21-2 "FRESH/OIL" - THIS SIGN IS INTENDED FOR USE WHERE RE-SURFACING OPERATIONS HAVE RENDERED THE SURFACE OF THE PAVEMENT TEMPORARILY WET, AND OBJECTIONABLE SPLASHING ON VEHICLES MAY OCCUR.*
- W21-3 "ROAD/MACHINERY/AHEAD" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE AREAS WHERE HEAVY EQUIPMENT IS OPERATING IN OR ADJACENT TO THE ROADWAY.*

- W21-4 "ROAD/WORK/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF MAINTENANCE FOR MINOR RECONSTRUCTION OPERATIONS IN THE ROADWAY.
- W21-5 "SHOULDER/WORK" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE PROJECT INVOLVING THE SHOULDER, WHERE THE TRAVELED WAY REMAINS UNOBSTRUCTED.
- W21-6 "SURVEY/CREW" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE A SURVEYING CREW IS WORKING IN OR ADJACENT TO THE ROADWAY.*
- W22-1 "BLASTING/ZONE/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF ANY POINT OR WORK SITE WHERE THERE ARE EXPLOSIVES BEING USED. THE W22-2 AND W22-3 SIGNS MUST BE USED IN SEQUENCE WITH THIS SIGN.
- W22-2 "TURN OFF/2-WAY RADIOS/AND/CELLULAR/PHONES" - THIS SIGN IS TO BE USED IN SEQUENCE WITH THE W22-1 AND W22-3 SIGNS AND PLACED AT LEAST 1000 FEET FROM THE BEGINNING OF THE BLASTING ZONE.
- W22-3 "END/BLASTING/ZONE" - THIS SIGN IS TO BE USED TO DENOTE THE END OF THE RADIO INFLUENCE AREA AND SHALL BE PLACED A MINIMUM OF 1000 FEET FROM THE BLASTING ZONE, EITHER WITH OR PRECEDING THE END CONSTRUCTION SIGN.
- W22-50(X) "ROCK SCALING X MILE(S)" - THIS SIGN IS INTENDED TO BE USED IN ADVANCE OF A FLAGGER IN ADVANCE OF THE WORK ZONE AREA.

ADVANCE PLACEMENT OF WARNING SIGNS

POSTED OR 85TH PERCENTILE SPEED	ADVANCE PLACEMENT DISTANCE (FEET)								
	CONDITION A	CONDITION B: DECLARATION TO THE LISTED ADVISORY SPEED (MPH) FOR THE CONDITION							
		MPH							
	+	0	10	20	30	40	50	60	70
20	225	●	●	—	—	—	—	—	—
25	325	●	●	●	—	—	—	—	—
30	450	●	●	●	—	—	—	—	—
35	550	●	●	●	●	—	—	—	—
40	650	125	●	●	●	—	—	—	—
45	750	175	125	●	●	●	—	—	—
50	850	250	200	150	100	●	—	—	—
55	950	325	275	225	175	100	●	—	—
60	1100	400	350	300	250	175	●	—	—
65	1200	475	425	400	350	275	175	●	—
70	1250	550	525	500	425	350	250	150	—
75	1350	650	625	600	525	450	350	250	100

+ CONDITION A: SPEED REDUCTION AND LANE CHANGING IN HEAVY TRAFFIC. TYPICAL SIGNS ARE "MERGE" AND "RIGHT LANE ENDS".

+ + CONDITION B: TYPICAL CONDITIONS ARE THE WARNING OF A POTENTIAL STOP SITUATION AND LOCATIONS WHERE THE ROAD USER MUST DECREASE SPEED TO MANEUVER THROUGH THE WARNED CONDITION. TYPICAL SIGNS ARE "STOP AHEAD", "SIGNAL AHEAD", "YIELD AHEAD", "CURVE", "REVERSE CURVE", "TURN".

● NO SUGGESTED DISTANCES ARE PROVIDED AT THESE SPEEDS, AS THE PLACEMENT IS DEPENDENT ON SITE CONDITIONS AND OTHER SIGNING.

A SUPPLEMENTAL PLAQUE MAY BE USED WITH WARNING SIGNS SPECIFYING THE DISTANCE TO THE CONDITION IF THERE IS AN IN-BETWEEN INTERSECTION THAT MIGHT CONFUSE THE MOTORIST.

* PLACEMENT SHOULD BE IN ACCORDANCE WITH WARNING SIGN PLACEMENT TABLE.

Computer File Information	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_19of19.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
R-1 06/24/09	ADDED NOTES FOR G20-11 SIGNS.
R-2 12/07/09	ADDED NOTES FOR G20-11 SIGNS.

Colorado Department of Transportation

4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9458

Safety & Traffic Engineering Branch KCM/KEN

TRAFFIC CONTROLS
FOR HIGHWAY
CONSTRUCTION

Issued By: Safety & Traffic Engineering Branch July 4, 2006

STANDARD PLAN NO.
S-630-1
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