

Oversight / NHS

FHWA REGION VIII OVERSIGHT?  NO  YES

NATIONAL HIGHWAY SYSTEM?  NO  YES

# DEPARTMENT OF TRANSPORTATION STATE OF COLORADO

**Related Projects:**

P. E. UNDER PROJECT:  
Project Number  
Project Code:

**R.O.W. Projects:**

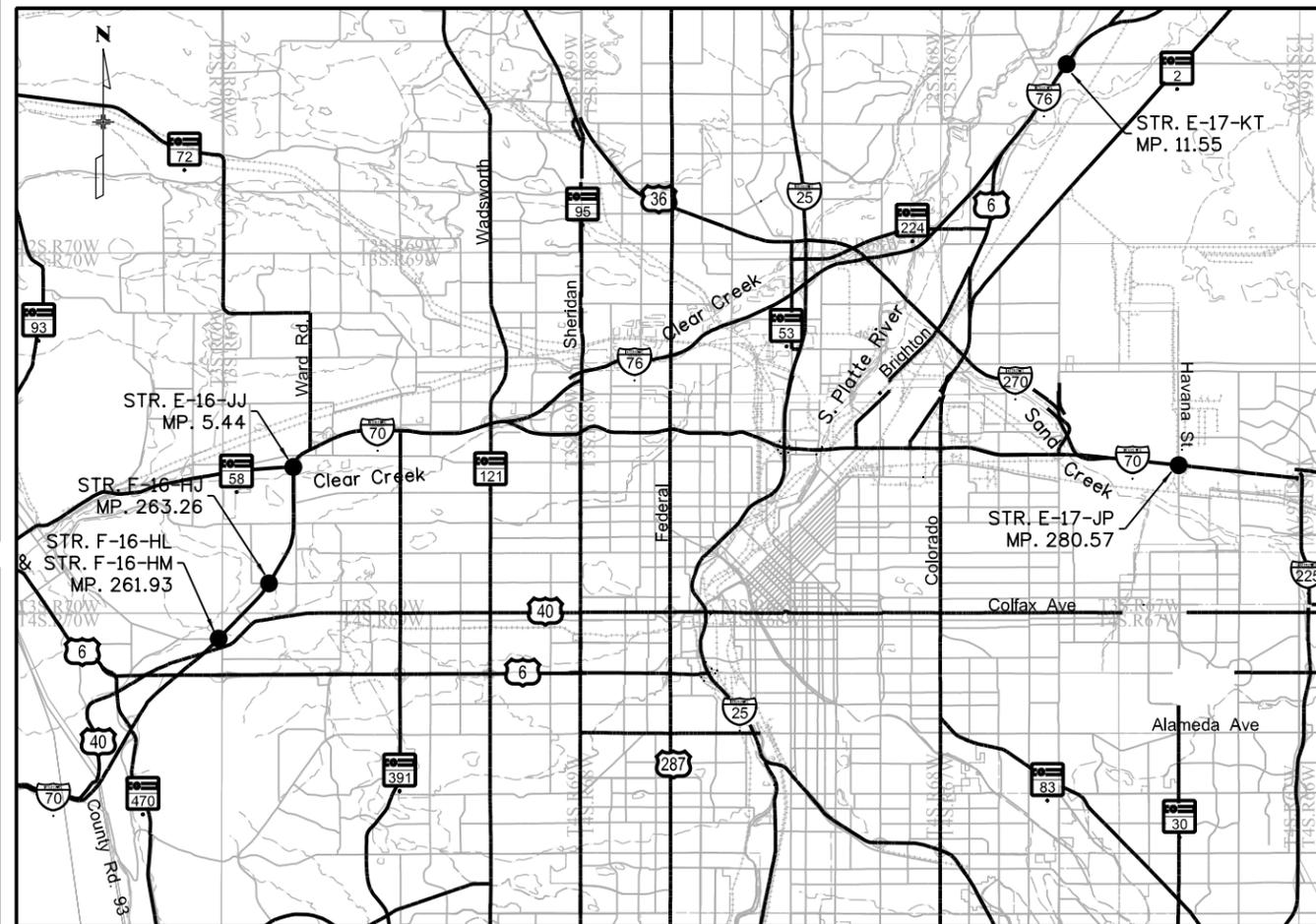
R.O.W. Project Description

**TABULATION OF LENGTH & DESIGN DATA**

LOCATION	ROADWAY	MAJOR STR.
	FEET	FEET
STR. F-16-HL, MP. 261.927 I-70 Over Old Golden Road		174
STR. F-16-HM, MP. 261.928 I-70 Over Old Golden Road		174
STR. F-16-HJ, MP. 263.257 I-70 over 20th Ave.		143
STR. E-16-JJ, MP. 5.437 SH-58 Over I-70		320.5
STR. E-17-JP, MP. 280.567 I-70 Over Havana St.		218
STR. E-17-KT, MP. 11.549 I-76 Over 96th Ave.		194
TOTAL	0	1223.5
SUMMARY OF PROJECT LENGTH	FEET	MILES
ROADWAY	0	0
MAJOR STRUCTURES	1223.5	0.2317
PROJECT GROSS LENGTH	1223.5	0.2317

## HIGHWAY CONSTRUCTION BID PLANS OF PROPOSED FEDERAL AID PROJECT NO. BR R600-412 STATE HIGHWAY I-70, I-76, & 58 ADAMS, JEFFERSON, & DENVER COUNTY CONSTRUCTION PROJECT CODE NO. 18781

NO.	INDEX OF SHEETS
1	TITLE SHEET
2	STANDARD PLANS LIST
3-5	GENERAL NOTES
6-7	SUMMARY OF APPROXIMATE QUANTITIES
8-19	BRIDGE DETAILS
20	STORMWATER MANAGEMENT PLAN
21	TABULATION OF TRAFFIC ENGINEERING ITEMS
22	TABULATION OF PAVEMENT MARKINGS



PROJECT LOCATION MAP

DESIGN DATA	I-70	I-76	SH-58
MAX RADIUS OF CURVE	EX.	EX.	EX.
MAX GRADE	EX.	EX.	EX.
MIN S.S.D. HORIZONTAL	EX.	EX.	EX.
MIN S.S.D. VERTICAL	EX.	EX.	EX.
POSTED SPEED (MPH)	55/65	65	55
EXIST TRAFFIC VOLUME			
DVH	14,160	6,840	2,340
ADT	177,000	76,000	26,000
TRUCK %	8.4	12.5	11.7

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Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation  
4670 Holly Street  
Denver, CO 80216-6408  
Phone: 303-398-6749 FAX: 720-945-1028  
Region 6      DJH

**As Constructed**  
No Revisions:  
Revised:  
Void:

**Contract Information**  
Contractor:  
Resident Engineer: DUANE J HENDRICKSON  
Project Engineer:  
PROJECT STARTED: / /      ACCEPTED: / /  
Comments:

**Project No./Code**  
BR R600-412  
18781  
Sheet Number **1**

PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER	PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER	PLAN NUMBER	NEW OR REVISED	S STANDARD TITLE	PAGE NUMBER
<input checked="" type="checkbox"/> M-100-1		STANDARD SYMBOLS (3 SHEETS).....	1-3	<input type="checkbox"/> M-607-1		WIRE FENCES AND GATES (3 SHEETS).....	84-86	S-612-1	<input type="checkbox"/>	DELINEATOR INSTALLATIONS (6 SHEETS) (REVISED, JULY 01, 2010)...	<del>134-135</del>
<input type="checkbox"/> M-203-1		APPROACH ROADS.....	4	<input type="checkbox"/> M-607-2		CHAIN LINK FENCE (3 SHEETS).....	87-89	<input type="checkbox"/> S-614-1		GROUND SIGN PLACEMENT (2 SHEETS).....	136-137
<input type="checkbox"/> M-203-2		DITCH TYPES.....	5	<input type="checkbox"/> M-607-3		BARRIER FENCE.....	90	<input type="checkbox"/> S-614-2		CLASS I SIGNS.....	138
<input type="checkbox"/> M-203-11		SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS (3 SHEETS).....	6-8	<input type="checkbox"/> M-607-4		DEER FENCE AND GATES (2 SHEETS).....	91-92	<input type="checkbox"/> S-614-3		CLASS II SIGNS.....	139
<input type="checkbox"/> M-203-12		SUPERELEVATION STREETS (2 SHEETS).....	9-10	<input type="checkbox"/> M-607-10		PICKET SNOW FENCE.....	93	S-614-4	<input type="checkbox"/>	CLASS III SIGNS (3 SHEETS) (REVISED, DECEMBER 29, 2009).....	<del>140-142</del>
<input type="checkbox"/> M-206-1		EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS).....	11-12	<input type="checkbox"/> M-607-15		ROAD CLOSURE GATE (9 SHEETS).....	94-102	<input type="checkbox"/> S-614-5		BREAK-AWAY SIGN SUPPORT DETAILS FOR GROUND SIGNS (2 SHEETS).....	143-144
<input type="checkbox"/> M-206-2		EXCAVATION AND BACKFILL FOR BRIDGES (2 SHEETS).....	13-14	M-608-1	<input type="checkbox"/>	CURB RAMPS (6 SHEETS) (REVISED ON MAY 05, 2011).....	<del>103-106</del>	<input type="checkbox"/> S-614-6		CONCRETE FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS (2 SHEETS).....	145-146
M-208-1	<input checked="" type="checkbox"/>	TEMPORARY EROSION CONTROL (12 SHEETS) (REVISED ON JULY 29, 2011).....	<del>15-21</del>	M-609-1	<input checked="" type="checkbox"/>	CURBS, GUTTERS, AND SIDEWALKS (4 SHEETS) (REVISED ON JULY 09, 2009).....	<del>107-109</del>	S-614-8	<input type="checkbox"/>	TUBULAR STEEL SIGN SUPPORT DETAILS (5 SHEETS) (REVISED ON SEPT. 01, 2010).....	<del>147-151</del>
<input type="checkbox"/> M-210-1		MAILBOX SUPPORTS (2 SHEETS).....	22-23	<input type="checkbox"/> M-611-1		CATTLE GUARD (2 SHEETS).....	110-111	<input type="checkbox"/> S-614-10		MARKER ASSEMBLY INSTALLATIONS.....	152
<input type="checkbox"/> M-214-1		PLANTING DETAILS.....	24	<input type="checkbox"/> M-613-1		ROADWAY LIGHTING (4 SHEETS).....	112-115	S-614-11	<input type="checkbox"/>	MILEPOST SIGN DETAIL FOR HIGH SNOW AREAS (NEW, JUNE 22, 2009).....	153
M-412-1	<input type="checkbox"/>	CONCRETE PAVEMENT JOINTS (5 SHEETS) (REVISED ON JULY 29, 2011).....	<del>25-29</del>	<input type="checkbox"/> M-614-1		RUMBLE STRIPS (3 SHEETS).....	116-118	<input type="checkbox"/> S-614-12		STRUCTURE NUMBER INSTALLATION.....	153
<input type="checkbox"/> M-510-1		STRUCTURAL PLATE PIPE H-20 LOADING.....	30	<input type="checkbox"/> M-614-2		SAND BARREL ARRAYS (2 SHEETS).....	119-120	<input type="checkbox"/> S-614-14		FLASHING BEACON AND SIGN INSTALLATIONS (3 SHEETS).....	154-156
<input type="checkbox"/> M-601-1		SINGLE CONCRETE BOX CULVERT (2 SHEETS).....	31-32	<input type="checkbox"/> M-615-1		EMBANKMENT PROTECTOR TYPE 3.....	121	<input type="checkbox"/> S-614-20		TYPICAL POLE MOUNT SIGN INSTALLATIONS.....	157
<input type="checkbox"/> M-601-2		DOUBLE CONCRETE BOX CULVERT (2 SHEETS).....	33-34	<input type="checkbox"/> M-615-2		EMBANKMENT PROTECTOR TYPE 5.....	122	S-614-21	<input type="checkbox"/>	CONCRETE BARRIER SIGN POST INSTALLATIONS (REVISED ON JUNE 24, 2011).....	<del>158</del>
<input type="checkbox"/> M-601-3		TRIPLE CONCRETE BOX CULVERT (2 SHEETS).....	35-36	<input type="checkbox"/> M-616-1		INVERTED SIPHON.....	123	<input type="checkbox"/> S-614-22		TYPICAL MULTI-SIGN INSTALLATIONS.....	159
<input type="checkbox"/> M-601-10		HEADWALL FOR PIPES.....	37	<input type="checkbox"/> M-620-1		FIELD LABORATORY CLASS 1.....	124	<input type="checkbox"/> S-614-40		TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS.....	160-166
<input type="checkbox"/> M-601-11		TYPE "S" SADDLE HEADWALLS FOR PIPE.....	38	<input type="checkbox"/> M-620-2		FIELD LABORATORY CLASS 2.....	125	<input type="checkbox"/> S-614-40A		ALTERNATIVE TRAFFIC SIGNAL INSTALLATION DETAILS (5 SHEETS).....	167-171
<input type="checkbox"/> M-601-12		HEADWALLS AND PIPE OUTLET PAVING.....	39	<input type="checkbox"/> M-620-11		FIELD OFFICE CLASS 1.....	126	<input type="checkbox"/> S-614-50		MONOTUBE OVERHEAD SIGNS (14 SHEETS).....	172-185
<input type="checkbox"/> M-601-20		WINGWALLS FOR PIPE OR BOX CULVERTS.....	40	<input checked="" type="checkbox"/> M-620-12		FIELD OFFICE CLASS 2.....	127	S-627-1	<input checked="" type="checkbox"/>	PAVEMENT MARKINGS (5 SHEETS) (REVISED ON OCTOBER 01, 2010).....	<del>186-190</del>
M-603-1	<input type="checkbox"/>	METAL PIPE (4 SHEETS) (REVISED ON FEBRUARY 25, 2010).....	<del>41-42</del>	<input type="checkbox"/> M-629-1		SURVEY MONUMENTS (2 SHEETS).....	128-129	S-630-1	<input checked="" type="checkbox"/>	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (REVISED ON MARCH 26, 2012) (42-19 SHEETS).....	<del>191-202</del>
<input type="checkbox"/> M-603-2		REINFORCED CONCRETE PIPE.....	43					<input checked="" type="checkbox"/> S-630-2		BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP.) AND VERTICAL PANELS.....	203
M-603-3	<input type="checkbox"/>	PRECAST CONCRETE BOX CULVERT (REVISED ON JULY 29, 2011).....	<del>44</del>					S-630-3	<input type="checkbox"/>	FLASHING BEACON (PORTABLE) DETAILS (REVISED ON JUNE 27, 2011).....	<del>204</del>
M-603-4	<input type="checkbox"/>	CORRUGATED POLYETHYLENE PIPE (AASHTO M294) (REV. ON FEB. 25, 2010).....	<del>45</del>					S-630-4	<input type="checkbox"/>	STEEL SIGN SUPPORT (TEMPORARY) INSTALLATION DETAILS (NEW, MARCH 22, 2010).....	<del>205</del>
M-603-5	<input type="checkbox"/>	POLYVINYL CHLORIDE (PVC) PIPE (AASHTO M304) (NEW ON FEB. 25, 2010).....	<del>46</del>					S-630-5	<input type="checkbox"/>	PORTABLE RUMBLE STRIPS (TEMPORARY)..... (NEW, MAY 05, 2011)	<del>206</del>
<input type="checkbox"/> M-603-10		CONCRETE AND METAL END SECTIONS (2 SHEETS).....	45-46					S-630-6	<input type="checkbox"/>	EMERGENCY PULL-OFF AREA (TEMPORARY)..... (NEW, MAY 05, 2011)	<del>207</del>
<input type="checkbox"/> M-604-10		INLET, TYPE C.....	47					S-630-7	<input type="checkbox"/>	ROLLING ROADBLOCKS FOR TRAFFIC CONTROL..... (NEW, MAY 05, 2011)	<del>208</del>
<input type="checkbox"/> M-604-11		INLET, TYPE D.....	48								
<input type="checkbox"/> M-604-12		CURB INLET TYPE R (2 SHEETS).....	49-50								
<input type="checkbox"/> M-604-13		CONCRETE INLET TYPE 13.....	51								
<input type="checkbox"/> M-604-20		MANHOLES (3 SHEETS).....	52-54								
<input type="checkbox"/> M-604-25		VANE GRATE INLET (5 SHEETS).....	55-59								
M-605-1	<input type="checkbox"/>	SUBSURFACE DRAINS (REVISED ON JULY 09, 2009).....	<del>60</del>								
M-606-1	<input type="checkbox"/>	GUARDRAIL TYPE 3 W-BEAM (18 SHEETS) (REVISED ON MAY 05, 2011).....	<del>61-76</del>								
<input type="checkbox"/> M-606-13		GUARDRAIL TYPE 7 F-SHAPE BARRIER (4 SHEETS).....	77-80								
<input type="checkbox"/> M-606-14		PRECAST TYPE 7 CONCRETE BARRIER (3 SHEETS).....	81-83								

THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

**COLORADO**  
 DEPARTMENT OF TRANSPORTATION  
**STANDARD PLANS LIST**  
**M&S STANDARDS**  
 July 04, 2006  
 Revised on March 26, 2012

<b>Computer File Information</b>		<b>Sheet Revisions</b>		Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820 <b>Project Development Branch</b> DD/LTA	<b>STANDARDS PLANS LIST</b>	<b>STANDARD PLAN NO.</b>	
Creation Date: 07/04/06	Initials: DD	Date:	Comments:			NA	
Last Modification Date: 02/16/12	Initials: LTA	<input checked="" type="checkbox"/>				Sheet No. 1 of 1    2	
Full Path: www.dot.state.co.us/DesignSupport/		<input checked="" type="checkbox"/>					
Drawing File Name: Standards Plans List.dwg		<input checked="" type="checkbox"/>					
CAD Ver.: MicroStation	Scale: Not to Scale	Units: English	<input checked="" type="checkbox"/>		Issued By: Project Development Branch July 04, 2006		

**GENERAL NOTES**

**PROJECT DESCRIPTION**

The project encompasses rehabilitation work on 6 bridges. The work consists of removing and replacing unsound areas of bridge deck, removing riding surface asphalt to the bridge deck surface, cleaning and waterproofing the deck, and overlaying the entire structure surface with a combination of Hot Mix Asphalt and/or Stone Matrix Asphalt.

**GENERAL**

Equipment shall not be left in the work zone while no work is being performed unless approved by the Project Engineer.

Any materials generated by construction operations shall be removed and properly disposed of on a daily basis by vacuuming, sweeping or other methods approved by the Project Engineer. Roadways shall be free of any loose debris before opening to traffic. The cost of the protection, removals, disposal and cleaning will not be paid for separately but shall be included in the cost of the work.

Areas removed shall be saw-cut to a neat line as directed by the Project Engineer. All saw cutting residue shall be contained and not allowed to enter storm drains or waterways. The saw-cut will not be paid for separately but shall be included in the work.

The Contractor shall comply with all Local Agency(s) noise ordinances or other restrictions applicable to nighttime construction activities for projects within the local municipal coverage areas that ordinances apply. Projects falling within unincorporated areas of a County will be governed by County Code. The Contractor shall coordinate with the Local Agency(s) for all necessary noise exemptions, notices and/or noise permit variances as required.

For this project, the Contractor shall submit a nighttime noise ordinance memorandum requesting an exemption (at least two weeks prior to the proposed night work start date) to Jefferson County and/or Golden (as jurisdiction applies) for noise ordinances or other applicable restrictions pertaining to construction work that is scheduled between the hours of 9:00 p.m. and 7:00 a.m. The following information should be included in the exemption request submittals and sent to the City/County Engineer: (1) Requesting entity, (2) Contact person and phone number, (3) Location of the work, (4) Reasons night work is being requested, (5) Type of activities proposed to occur at night, (6) Equipment proposed to be used at night, (7) Start and end date proposed, (8) Total number of nights work is proposed to occur.

All p.m. construction activities subject to noise restrictions cannot start until the necessary documentation and notifications have been approved by the local agency, the CDOT Engineer and/or the Region's Noise Specialist. All exemption requests and permitting requirements will not be paid for separately, but will be included in the work.

If the Contractor chooses to use hydrodemolition methods, the contractor is required to obtain all required permits from CDPHE and forward along to CDOT allinfo, etc.

**PATCHING**

Patching of pavement locations outside of the bridge deck shall be to the depth of the surrounding existing pavement as directed by the Engineer. The top lift must conform to the requirements of SMA (Fibers) (Asphalt). Lower lifts shall conform to the requirements of SMA (Fibers) (Asphalt) or HMA (Grading S) (100) (PG 64-22). The minimum and maximum lift thicknesses shall be 2 and 3 inches, respectively, for SMA (Fibers) (Asphalt) and 2.25 and 3.5 inches, respectively, for HMA (Grading S) (100) (PG 64-22). The thickness of each lift shall be less than or equal to the thickness of lift directly beneath it. All patching shall be per the Engineer.

Neither transverse vertical edges nor longitudinal vertical edges will be allowed. Tapers shall be used to transition to existing pavement. Longitudinal surface tie-ins to existing pavement shall be tapered to not less than a 3:1 slope, transverse milled surface tie-ins to existing pavement shall be tapered to not less than a 90:1 slope. Tapers shall be constructed using methods approved by the Engineer. The Contractor shall be responsible for maintaining the asphalt tapers. All work associated with tapering shall not be paid for separately, but shall be included in the cost of Detour Pavement.

The Contractor shall maintain the temporary transitions for the entire period they are open to traffic. Any distress that affects the ride, safety, or serviceability of the transitions shall be corrected to the satisfaction of the Engineer at the expense of the Contractor.

The Contractor shall have a maintenance plan for all hours of the day (7 days a week) for repair of damaged transitions, and have forces available to perform this work within 24 hours of notice of such damage. The Contractor shall designate a person to be "on call" during all non-working hours, including no work periods as a point of contact for this work.

If the Engineer determines the temporary transition has deteriorated to the point where safety of the traveling public is compromised, the lane(s) in question shall be closed and the Contractor shall be directed to execute their maintenance plan. If the Contractor is unresponsive to this order by the Engineer, CDOT maintenance forces will be mobilized to close the lane and maintain the closure until such time as the Contractor is available to perform this work. CDOT Maintenance forces will be responsible for the lane closure only, and only until such time as the Contractor arrives on site and relieves them. CDOT Maintenance will not be responsible for repair of any of the contract installed temporary transition. All time and expense for CDOT Maintenance work will be tracked by the Engineer, and deducted from money due to the Contractor. Any lane closures CDOT maintenance forces have to install that are required outside of the allowable lane closure hours will be charged as 'working time violation' as established in this contract.

**MATERIAL**

For preliminary plan quantities of pavement material, the following rates of application were used:

SMA/HMA @110 lbs / Sq. Yd. / inch  
Tack Coat Diluted Emulsified Asphalt (Slow Setting) @0.10 Gal / Sq. Yd. (Diluted)

Diluted emulsified asphalt for tack coat shall consist of 1 part emulsified asphalt and 1 part water.

A tack coat is required between layers of bituminous pavement. Rates of application shall be as determined by the Engineer at the time of application.

Sweeping of material from surface to be overlaid will not be paid for separately but shall be included in the cost of item 403.

The nominal maximum aggregate size for the SMA shall be 0.5 inches.

All references to SMA shall be taken to be Stone Matrix Asphalt (Fibers) (Asphalt) or SMA (Fibers) (Asphalt).

Stone Matrix Asphalt (Fibers) (Asphalt) shall not contain any reclaimed asphalt pavement.

All compaction shall be per the 2011 CDOT Standard Specifications for Road and Bridge Construction or as directed by the Engineer.

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File Name: 18781DES_GenNote_2010.dgn		Date:	Comments	Init.		No Revisions:				BR R600-412		
Horiz. Scale: 1:1      Vert. Scale: As Noted						Revised:	Designer: AMS	Structure Numbers			18781	
Unit Information      Unit Leader Initials						Void:	Detailer:		Sheet Subset:	Subset Sheets:	1 of 3	

**GENERAL NOTES**

The Contractor shall provide a water truck for dust control. Water used as a palliative will not be paid for separately.

Any layer of bituminous pavement that is to have a succeeding layer placed thereon shall be completed full-width before a succeeding layer is placed.

To provide for adequate sulfate resistance in all concrete supplied, Severity of Potential Exposure shall be Class 2 for this project. The Contractor may at his own expense have a certified laboratory test the sub grade as per the Field Materials Manual. Testing shall be at the same schedule and frequency as required for a preliminary soil survey. The Contractor may propose a different Class of Exposure for the project based on those test results.

Any sidewalk/curb and gutter areas that will be disturbed by the construction activity shall be saw cut along the joint lines, and the entire slab shall be removed, hauled away and replaced with new concrete. Sawcut, removal and replacement of concrete will not be measured and paid for separately but shall be included in the cost of the work.

Any curb and gutter, asphalt or concrete pavement, which is to remain, and is damaged as a result of the Contractor's operation shall be replaced at the Contractor's expense.

**ENVIRONMENTAL**

All erosion/sediment control and stormwater Best Management Practices as stated in the Stormwater Management Plan and as directed or amended by the Project Engineer shall be in place at each structure location prior to any construction at that site. All measures at each site shall remain in place until the construction at that site has been completed.

The Erosion Control Supervisor (ECS) may be the Superintendent. The Contractor shall ensure that no materials, equipment or vehicles are staged or parked near wetland or drainage areas. The Contractor shall remove in a timely manner all sediment, mud, debris, or other potential pollutants which may be discharged to the waters of the State as a result of construction activities associated with this project.

The Contractor shall protect all storm sewer facilities and waterways adjacent to any location where concrete removal, grinding, sandblasting, and/or concrete placement is to take place. The Contractor shall protect, remove, and properly dispose of all products generated by said operations on a daily basis by means of vacuuming or inlet protection per CDOT 208 Standards, or as approved by the Project Engineer. The discharge of any water contaminated by the waste products from said operations to the storm sewer system or waterway is prohibited. The cost of this work will not be paid for separately but shall be included in the cost of the work.

The Contractor shall provide necessary screening such that no debris from bridge construction activities falls into waterways underneath, as approved by the Engineer. Any debris that falls onto the embankment shall be removed immediately. The cost of the screening and removal of fallen debris will not be paid for separately but will be included in the cost of the work.

The Contractor shall limit construction activities to those areas within the limits of disturbance. Limits of disturbance shall be determined by the Engineer and the Contractor. Any disturbances beyond these limits shall be restored to the original condition by the Contractor at the Contractor's expense. Disturbances within the limits shall be restored by the Contractor and shall be included in the cost of the work. Construction activities in addition to normal construction procedure shall include the parking of vehicles or equipment, disposal of litter, and any other action which would alter existing conditions. Any off road staging areas must be pre-approved by the Engineer.

A thorough inspection of the storm water management system shall be performed every 14 days and after any precipitation or snowmelt event that may have caused erosion. Periodic inspections

shall also include inspecting equipment of leaks and reviewing equipment maintenance practices. All inspections and maintenance shall be documented by the project Erosion Control Supervisor. Water shall be used as a dust palliative where required. Locations shall be as directed by the Engineer.

During construction activities over bike/pedestrian paths, the Contractor shall provide means to protect the traveling public from falling debris by use of traffic control, screening, etc., as approved by the Engineer. Any debris which falls onto the traveled way shall be removed immediately. Any protection or removals will not be paid for separately but will be included in the cost of the work.

All of the structures have been tested for asbestos. No asbestos was found in the expansion joints or deck material on any of the structures. Sampling results are available and can be obtained from the Resident Engineer.

All appropriate erosion and sediment control shall be in place prior to any construction in each phase. If all disturbance activity has ceased and the area is stabilized, the sediment control BMPs may be removed.

Any bike/pedestrian paths located under structures are to remain open at all times during construction. Flaggers are to be posted on both sides of the bridges to control bike and pedestrian traffic during construction. Warning construction signs will be posted to notify trail users of bridge construction and possible brief delays.

Any off-road staging areas must be pre-approved by the Engineer. Proof of written permission from the property owner of any private property used for parking or staging must be provided to the Engineer prior to use.

Avoid staging, parking, and working in wetland, riparian, and stream bank areas.

All six structures have been tested for Lead Based Paint (LBP) and Lead Containing Paint (LCP). LBP was found only on the girder of the E-17-JP structure. However, this project is not expected to include work on the I-beams, columns, bridge girders, bridge rail, or guardrail, and therefore the project is not expected to impact components coated with LBP or LCP. If work is necessary on the bridge girders of the E-17-JP structure, the Contractor shall follow the procedures outlined in the Colorado Department of Transportation (CDOT) Specification 250 and shall coordinate work with the CDOT R6 Project Engineer and the CDOT R6 Hazmat Specialist. Sampling results are available and can be attained from the Resident Engineer.

**UTILITY**

Utility lines shown on the plan sheets are plotted from the best available information. The Contractor's attention is directed to subsection 105.11 of the Standard Specifications concerning utilities.

The Contractor shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavating or grading is planned in the area of underground utility facilities. The Contractor shall notify all affected utilities at least two (2) business days, not including the actual day of notice, prior to commencing such operations. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at 811 or 1-800-922-1987, to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective owner. Utility service laterals shall also be located prior to beginning excavation of grading.

The CDOT Contractor shall submit an Xcel Energy Builders Call Line Application for every Xcel Energy work element that is to be coordinated with the project. The request is to be processed through Xcel Energy-Builder's Call Line at 1-800-628-2121.

It is estimated that 20 hours of potholing will be required on this project as directed by the Project Engineer.

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Print Date: 4/17/2012		<table border="1"> <thead> <tr> <th colspan="3">Sheet Revisions</th> </tr> <tr> <th>Date:</th> <th>Comments</th> <th>Init.</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			Sheet Revisions			Date:	Comments	Init.										<table border="1"> <tr> <td colspan="2">As Constructed</td> </tr> <tr> <td>No Revisions:</td> <td> </td> </tr> <tr> <td>Revised:</td> <td> </td> </tr> <tr> <td>Void:</td> <td> </td> </tr> </table>		As Constructed		No Revisions:		Revised:		Void:		<table border="1"> <tr> <td colspan="4">GENERAL NOTES</td> </tr> <tr> <td>Designer:</td> <td>AMS</td> <td>Structure Numbers</td> <td> </td> </tr> <tr> <td>Detailer:</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Sheet Subset:</td> <td> </td> <td>Subset Sheets:</td> <td>2 of 3</td> </tr> </table>		GENERAL NOTES				Designer:	AMS	Structure Numbers		Detailer:				Sheet Subset:		Subset Sheets:	2 of 3	<table border="1"> <tr> <td colspan="2">Project No./Code</td> </tr> <tr> <td colspan="2">BR R600-412</td> </tr> <tr> <td colspan="2">18781</td> </tr> <tr> <td>Sheet Number</td> <td>4</td> </tr> </table>		Project No./Code		BR R600-412		18781		Sheet Number	4
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File Name: 18781DES_GenlNote_2010.dgn		 Colorado Department of Transportation 4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028 Region 6 DJH																																																							
Horiz. Scale: 1:1      Vert. Scale: As Noted																																																									
Unit Information      Unit Leader Initials																																																									

**GENERAL NOTES**

The Contractor is responsible for positively identifying all utilities on existing structures. The Contractor shall protect all clamps or connectors required for securing existing utilities to any bridge. Cost associated with protecting existing connectors for utility facilities attached under or inside the structure will not be paid for separately but will be included in the cost of the work. Costs associated with replacing existing connectors damaged by the Contractor's operations will not be paid for separately but will be included in the cost of the work.

If deck rehab operations require installation of new conduit for electrical lighting feeds, conduit shall be installed as approved by the Project Engineer. If required, the electrical lighting feeds shall be switched over to the proposed location prior to removal of bridge rail. Junction boxes shall be installed on the structure at locations adjacent to the existing junction boxes. Under deck lighting shall be maintained at all times. Pull boxes shall be installed at the ends of the conduit runs, typically 100 feet beyond the end of the bridge rail. Conduit shall be fastened to the structure as approved by the Engineer. The Contractor shall coordinate all electrical lighting feed work with Xcel Energy. Work as required, shall be paid for in accordance with subsection 109.04 of the Standard Specifications, under the planned force account item Adjust Utilities.

The contractor shall pothole potential conflicts with existing buried electric highway lighting feeds, and the proposed construction as directed by the Engineer. If a conflict exists, the engineer may modify the design and location of the proposed construction to avoid the existing electric facility. If modification cannot be made to avoid the existing electric facility, relocate the existing electric facility to accommodate proposed construction as directed by the engineer. Relocation of existing electric facilities will be paid under 613 Electrical Conduit.

**MISCELLANEOUS**

This project is classified as Significant.

The Contractor shall ensure that no materials are stored or equipment/vehicles are staged or parked in the clear zone.

No Right-of-Way acquisition will be needed for this project. All work will be completed entirely within the existing Right-of-Way.

It is estimated that the following quantities will be required on this project:

Potholing	HR	20
Hot Mix Asphalt (Patching)(Asphalt)	TON	20
Emergency Pothole Repair	TON	20
Mobilization	LS	1
Public Information Services	LS	1
Flagging	HR	3,000
Traffic Control Inspection	DAY	70
Traffic Control Management	DAY	70
Uniformed Traffic Control Coordination	HR	70

One (1) sanitary facility will be required for this project for CDOT forces. This facility will be reset to each site as work progresses. The required resets will not be paid for separately but will be included in the cost of the sanitary facility. Sanitary facilities for the use of the Contractor's forces shall be provided at the Contractor's expense.

The Contractor shall protect all existing survey monumentation designated to remain from damage during construction operations. Any monuments disturbed by the Contractor shall be reset at the Contractor's expense. The Contractor and the Engineer shall note those monuments in the field prior to construction.

All surveying necessary to complete the project will not be paid for separately but will be included in the work.

The Contractor shall maintain drainage for all structures during construction activities. Drainage shall be provided at no additional cost to the project.

For Contractor Information Only - The 4,200 SY of Detour Pavement is estimated at the following for each structure:

E-16-JJ	225 SY
F-16-HJ	380 SY
F-16-HL	515 SY
F-16-HM	645 SY
E-17-JP	2,435 SY
E-17-KT	0 SY

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File Name: 18781DES_GenlNote_2010.dgn		Date:	Comments	Init.		No Revisions:	Designer: AMS Structure Numbers Detailer: . Sheet Subset: . Subset Sheets: 3 of 3			BR R600-412		
Horiz. Scale: 1:1      Vert. Scale: As Noted						Revised:				18781		
Unit Information      Unit Leader Initials						Void:				Sheet Number <b>5</b>		

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INDEX			CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY		STRUCTURE E-16-JJ		STRUCTURE F-16-HJ		STRUCTURE F-16-HL		STRUCTURE F-16-HM		STRUCTURE E-17-JP		STRUCTURE E-17-KT		PROJECT TOTALS		
BOOK	PAGE	SHEET				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN
			202-00246	Removal of Asphalt Mat (Planing) (Special)	SY			1,046		802		997		997		5,045		2,768			11,655	
			202-00250	Removal of Pavement Marking	SF	3,830															3,830	
			202-00453	Removal of Portions of Present Structure (Class 2)	SY			418		481		399		399		1,345		1,108			4,150	
			202-00460	Removal of Portions of Present Structure (Class 3)	SY			42		48		40		40		135		111			416	
			203-01597	Potholing	HOUR	20															20	
			208-00034	Gravel Bag	LF	100															100	
			208-00045	Concrete Washout Structure	EACH	12															12	
			208-00070	Vehicle Tracking Pad	EACH	1															1	
			208-00103	Removal and Disposal of Sediment (Labor)	HOUR	70															70	
			208-00205	Erosion Control Supervisor	HOUR	140															140	
			403-00720	Hot Mix Asphalt (Patching) (Asphalt)	TON	20															20	
			403-00800	Emergency Pothole Repair	TON	20															20	
			403-09221	Stone Matrix Asphalt (Fibers)(Asphalt)	TON			173		132		110		110		370		305			1,200	
			403-33841	Hot Mix Asphalt (Grading S) (100) (PG 64-22)	TON							110		137		925					1,172	
			515-00120	Waterproofing (Membrane)	SY			1,046		802		997		997		3,363		2,768			9,973	
			601-03041	Concrete Class D (Bridge) (Special)	CY			67		70		58		58		234		185			672	
			602-00020	Reinforcing Steel (Epoxy Coated)	LB			500		500		500		500		500		500			3,000	
			620-00012	Field Laboratory (Class 2)	EACH	1															1	
			620-00020	Sanitary Facility	EACH	1															1	
			621-00450	Detour Pavement	SY	4,200															4,200	
			626-00000	Mobilization	L S	1															1	
			626-01000	Public Information Services	L S	1															1	
			627-00005	Epoxy Pavement Marking	GAL	31															31	
			627-00012	Pavement Marking Paint (Low VOC Solvent Base)	GAL	483															483	
			627-01010	Preformed Plastic Pavement Marking (Type I)(Inlaid)	SF	1,968															1,968	
			630-00000	Flagging	HOUR	3,000															3,000	
			630-00007	Traffic Control Inspection	DAY	70															70	
			630-00012	Traffic Control Management	DAY	70															70	
			630-00015	Uniformed Traffic Control Coordination	HOUR	70															70	
			630-80001	Flashing Beacon (Portable)	EACH	4															4	
			630-80335	Barricade (Type 3 M-A) (Temporary)	EACH	20															20	
			630-80341	Construction Traffic Sign (Panel Size A)	EACH	78															78	

Print Date: 4/17/2012  
 File Name: 1878IDES\_SAQ01.dgn  
 Horiz. Scale: 1:200      Vert. Scale: As Noted  
 Unit Information      Unit Leader Initials

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Colorado Department of Transportation  
 4670 Holly Street  
 Denver, CO 80216-6408  
 Phone: 303-398-6749 FAX: 720-945-1028  
 Region 6      DJH

**As Constructed**  
 No Revisions:  
 Revised:  
 Void:

SUMMARY OF APPROXIMATE QUANTITIES			
Designer:	AMS	Structure Numbers	.
Detailer:	.	Structure Numbers	.
Sheet Subset:	SAQ	Subset Sheets:	1 of 2

Project No./Code  
 BR R600-412  
 18781  
 Sheet Number **6**

INDEX			CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY		STRUCTURE E-16-JJ		STRUCTURE F-16-HJ		STRUCTURE F-16-HL		STRUCTURE F-16-HM		STRUCTURE E-17-JP		STRUCTURE E-17-KT		PROJECT TOTALS		
BOOK	PAGE	SHEET				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN
			630-80342	Construction Traffic Sign (Panel Size B)	EACH	97															97	
			630-80343	Construction Traffic Sign (Panel Size C)	EACH	8															8	
			630-80344	Construction Traffic Sign (Special)	SF	64															64	
			630-80355	Portable Message Sign Panel	EACH	8															8	
			630-80358	Advance Warning Flashing or Sequencing Arrow Panel (C Type)	EACH	6															6	
			630-80360	Drum Channelizing Device	EACH	250															250	
			630-80364	Drum Channelizing Device (With Light) (Steady Burn)	EACH	100															100	
			630-80380	Traffic Cone	EACH	550															550	
			630-85041	Mobile Attenuator	DAY	70															70	
			700-70010	FORCE ACCOUNT =====	F A	1															1	
			700-70011	F/A Minor Contract Revisions	F A	1															1	
			700-70016	F/A Fuel Cost Adjustment	F A	1															1	
			700-70019	F/A Asphalt Cement Cost Adjustment	F A	1															1	
			700-70021	F/A On-The-Job Trainee	HOUR	640															640	
			700-70022	F/A OJT Colorado Training Program	F A	1															1	
			700-70042	F/A Railroad Flagging	F A	1															1	
			700-70060	F/A Adjust Utilities	F A	1															1	
			700-70380	F/A Erosion Control	F A	1															1	
			700-73351	F/A Uniformed Traffic Control - CSP	F A	1															1	

Print Date: 4/17/2012  
File Name: 1878IDES\_SAQ02.dgn  
Horiz. Scale: 1:200 Vert. Scale: As Noted  
Unit Information Unit Leader Initials

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation  
  
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Denver, CO 80216-6408  
Phone: 303-398-6749 FAX: 720-945-1028  
Region 6 DJH

As Constructed  
No Revisions:  
Revised:  
Void:

SUMMARY OF APPROXIMATE QUANTITIES			
Designer:	AMS	Structure Numbers	.
Detailer:	.	Subset Sheets:	2 of 2
Sheet Subset:	SAQ		

Project No./Code  
BR R600-412  
18781  
Sheet Number 7

**GENERAL NOTES**

All work shall be done in accordance with the Colorado Department of Transportation Standard Specifications for Road and Bridge Construction and as noted in the drawing.

The following table gives the minimum lap splice length for epoxy coated reinforcing bars placed in accordance with subsection 602.06. These splice lengths shall be increased by 25% for bars spaced at less than 6" on center.

Bar size	#4	#5	#6	#7	#8	#9	#10	#11
Splice length for Class D concrete	1'-3"	1'-7"	2'-5"	2'-10"	3'-8"	4'-8"	5'-11"	7'-3"

All reinforcing steel shall be epoxy coated unless otherwise noted.

Grade 60 reinforcing steel is required.

The Contractor shall be responsible for the stability of the structure during the repair.

Dimensions contained in these plans are approximate. These dimensions may be adjusted to meet the existing structure. The Contractor shall verify all dependent dimensions in the field before ordering or fabricating any material.

All falsework shall conform to the requirements of Subsection 601.11 of the CDOT Standard Specifications for Road and Bridge Construction.

The information shown on these plans concerning the type and location of the utilities on the existing structure is not guaranteed to be accurate or all inclusive. The Contractor shall contact the Utility Notification Center of Colorado at 811 (1-800-922-1987) three business days (two full business days in advance not including the day of notification) prior to any removal, excavation or other earthwork.

Deck rehabilitation locations and quantities shown are approximate. Final locations shall be determined by the Engineer. Payment will be for the actual area repaired and material used as approved by the Engineer.

The Contractor shall sawcut existing concrete prior to removal operations as directed by the Engineer.

All asphalt material shall be removed from the surface of the concrete deck prior to concrete removal in accordance with the Special Provisions (Removal of Asphalt Mat)(Planing)(Special).

The Contractor shall protect pedestrians and traveling public from any falling debris during the construction work. Any debris which falls on the paths shall be removed immediately. This work will not be measured and paid for separately, but shall be included in the cost of the work.

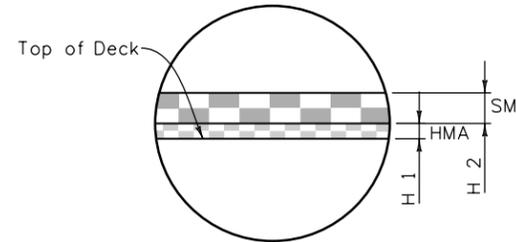
The Contractor shall start and complete one structure at a time unless otherwise approved by the Engineer.

If the deck concrete is protected with waterproofing membrane, removal of waterproofing membrane to expose the deck concrete, will not be measured and paid for separately, but will be included in the work.

Expansion joint material shall meet AASHTO Specification M213.

Falsework and forming may be required.

All saw water, coring waste, concrete washout and any other construction debris shall be collected and disposed of off site in accordance with all applicable federal, state, and local regulations at no additional cost to the project. Under no circumstances shall such material be allowed to enter any natural or manmade water way or storm sewer.



**TYPICAL OVERLAY DETAIL**

Bridge	H 1	H 2
E-16-JJ	0"	3"
F-16-HJ	0"	3"
F-16-HL	2"	2"
F-16-HM	2-3"	2"
E-17-JP	5" *	2"
E-17-KT	0"	2"

\* Two Lifts, 2-3" each

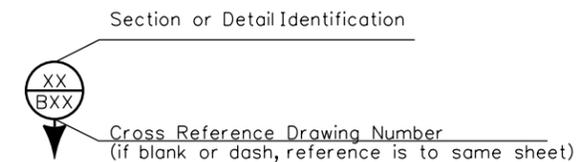
**WORK DESCRIPTION**

The work consists of rehabilitating bridge decks for the listed structures located in Region 6. This work includes but not limited to: removal of asphalt mat, removal of portions of present structures, sandblasting reinforcing steel, surface preparation, replacement of reinforcing steel as needed, replacement of unsound concrete, waterproofing membrane and hot mix and stone matrix asphalt.

**LEGEND**



Conceptual Area of Deck Rehabilitation Only. Final locations shall be determined by the Engineer after deck sounding.



**DESIGN DATA**

Reinforced Concrete:

Class D Concrete: f'c = 4,500 psi (2500 psi @ 3 hours)

Reinforcing Steel: fy = 60,000 psi

Design	INITIAL	DATE	Checked By
	NAA	01/12	
	AJP	01/12	
Detail	INITIAL	DATE	Checked By
	RLD	01/12	
	NAA	01/12	
Quantities	INITIAL	DATE	Checked By
	RD	01/12	
	NAA	01/12	

**INDEX OF DRAWINGS**

- B01 GENERAL INFORMATION
- B02 SUMMARY OF QUANTITIES
- B03 E-16-JJ GENERAL LAYOUT AND TYPICAL SECTION
- B04 F-16-HJ GENERAL LAYOUT AND TYPICAL SECTION
- B05 F-16-HL GENERAL LAYOUT AND TYPICAL SECTION
- B06 F-16-HM GENERAL LAYOUT AND TYPICAL SECTION
- B07 E-17-JP GENERAL LAYOUT AND TYPICAL SECTION
- B08 E-17-KT GENERAL LAYOUT AND TYPICAL SECTION
- B09 CONCRETE DECK REPAIR DETAILS STEEL GIRDER
- B10 PHASING ON STEEL GIRDER
- B11 CONCRETE DECK REPAIR DETAILS CONCRETE GIRDER
- B12 PHASING ON CONCRETE GIRDER

Print Date: 4/17/2012	0000	<b>Sheet Revisions</b>			<b>Colorado Department of Transportation</b>  4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028 <b>Region 6</b>	<b>As Constructed</b>		<b>GENERAL INFORMATION</b>		<b>Project No./Code</b>	
Drawing File Name: 01 General Information.dgn		Date:	Comments	Init.		No Revisions:			R 600-412		
Horiz. Scale: 1:1 Vert. Scale: As Noted						Revised:	Designer: N. Alam	Structure Numbers	Varies		18781
Staff Bridge Branch - Unit 0224 AJP						Void:	Detailer: R. Olmos	Subset Sheets:	B01 of 12		Sheet Number <b>8</b>

**SUMMARY OF QUANTITIES**

ITEM NO	DESCRIPTION	UNIT	E-16-JJ	F-16-HJ	F-16-HL	F-16-HM	E-17-JP	E-17-KT	TOTAL
202-00246	Removal of Asphalt Mat (Planing) (Special)	SY	1046	802	997	997	5045 ✚	2768	11,655
# 202-00453	Removal of Portions of Present Structure (Class 2)	SY	418	481 ✚	399	399	1345	1108	4,150
# 202-00460	Removal of Portions of Present Structure (Class 3)	SY	42	48 ✚	40	40	135	111	416
403-09221	Stone Matrix Asphalt (Fibers) (Asphalt)	TON	173	132	110	110	370	305	1,200
403-33841	Hot Mix Asphalt (Grading S) (100) (PG64-22)	TON	0	0	110	137	925	0	1,172
515-00120	Waterproofing (Membrane)	SY	1046	802	997	997	3363	2768	9,973
# 601-03041	Concrete Class D (Bridge) (Special)	CY	67	70 ✚	58	58	234	185	672
# 602-00020	Reinforcing Steel (Epoxy Coated)	LB	500	500	500	500	500	500	3,000

Note:

# Table shows estimated quantities. Contractor shall be paid for the actual work done and materials used as approved by the Engineer

✚ This quantity has been increased 50% to account for two operations/mobilizations based on construction phasing. Unless approved by the Engineer for Structure E-17-JP, the Contractor shall mill all but 2" of the asphalt on the portion of deck that he is not working on when he mills down to the bare deck (per specifications) on the half he will work on. This is to minimize elevation differentials during normal traffic operations. The remaining 2" will be removed in a separate operation when the Contractor performs work on that portion of deck.

✚ Class 2 Removal Quantities have been calculated with 60% of the deck area based on scanning results. Class 3 Removal Quantity and Concrete Quantity has been adjusted accordingly.

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
NAA	01/12	RD	01/12	NAA	01/12
AJP	01/12	NAA	01/12	NAA	01/12
Designed By	Checked By	Detailed By	Checked By	Quantities By	Checked By

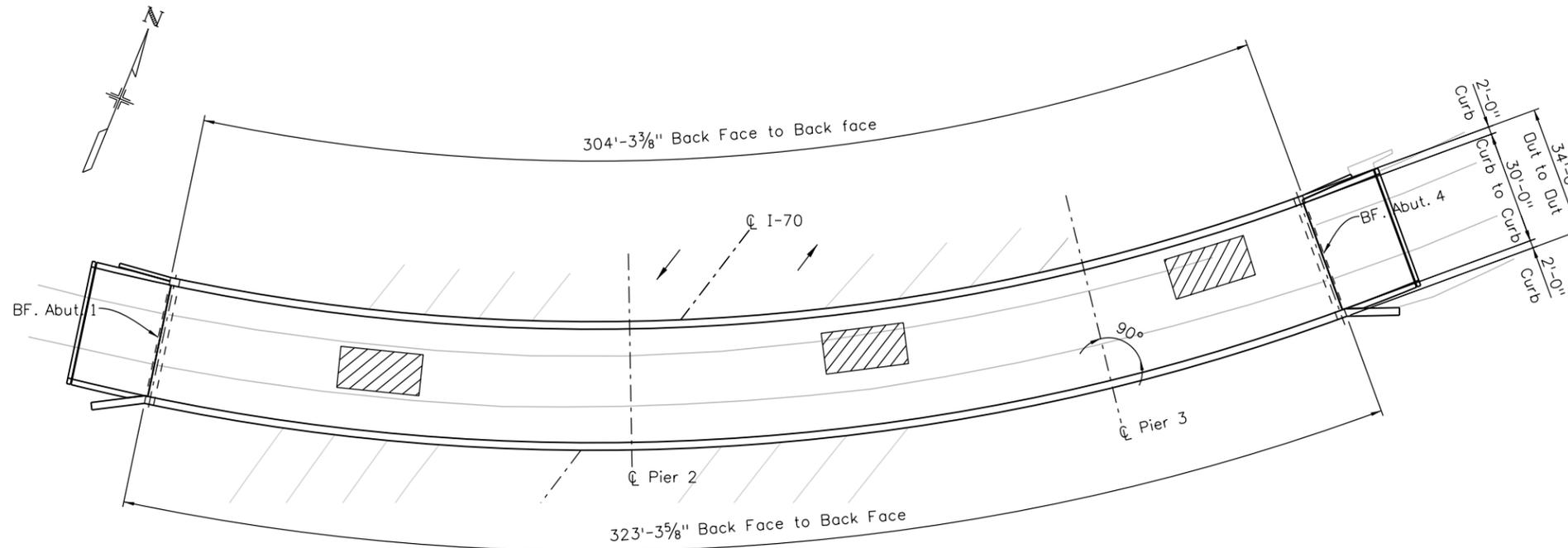
Print Date: 4/17/2012	0000	<b>Sheet Revisions</b>			<b>Colorado Department of Transportation</b>  4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028 <b>Region 6</b>	<b>As Constructed</b>	<b>SUMMARY OF QUANTITIES</b>			<b>Project No./Code</b>	
Drawing File Name: 02 Summary of Quantities.dgn		Date:	Comments:	Init.		No Revisions:				R 600-412	
Horiz. Scale: 1:1      Vert. Scale: As Noted						Revised:	Designer: N. Alam	Structure Numbers	Varies		18781
Staff Bridge Branch - Unit 0224      AJP						Void:	Detailer: R. Olmos	Subset Sheets: B02 of 12	Sheet Number		<b>9</b>

**STR. E-16-JJ EXISTING CONDITIONS**

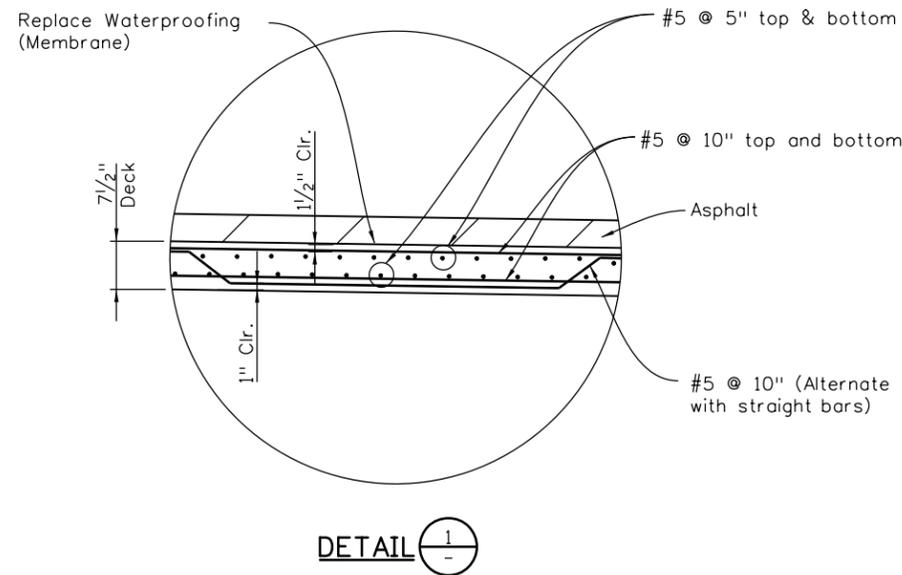
Located on SH 58 EB @ MP 5.437 intersecting I-70 ML  
 Structure Type: CBGC  
 Year Built: 1968  
 Deck Thickness: 7 1/2"  
 Asphalt Thickness: 3"  
 Waterproofing (Membrane)  
 Expansion Joints: Strip Joint Seal  
 Bridge Rail Type: 10

**WORK DESCRIPTION**

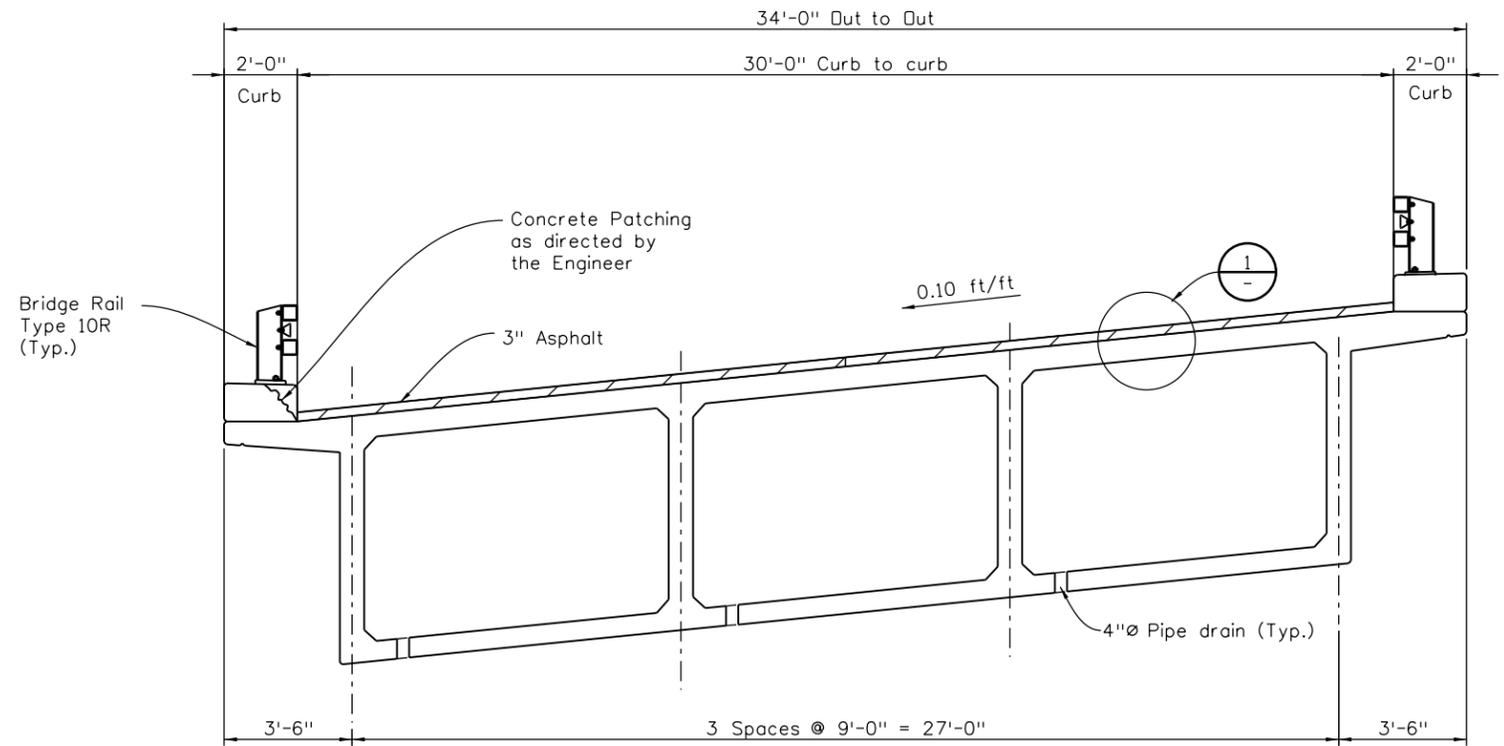
- Remove existing asphalt from entire bridge deck.
- Perform Class 2 and Class 3 Removal from bridge deck as approved by the Engineer.
- Sandblast all exposed reinforcing steel and replace any missing or damaged reinforcing steel with greater than 30% section loss.
- Replace all concrete removed during Class 2 and Class 3 Removals.
- Install Waterproofing (Membrane) then overlay new asphalt to original elevation.



**PLAN**



**DETAIL 1**



**TYPICAL SECTION**

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	01/12	RD	01/12	Quantities By	RD
Checked By	01/12	AJP	01/12	Checked By	NAA

Print Date: 4/17/2012  
 File Name: 03 E-16-JJ GeneralLayout.dgn  
 Horiz. Scale: None      Vert. Scale: As Noted  
 Staff Bridge Branch - Unit 0224      AJP



**Sheet Revisions**

Date:	Comments	Init.

Colorado Department of Transportation



Region 6

4670 Holly Street  
 Denver, CO 80216-6408  
 Phone: 303-398-6749 FAX: 720-945-1028

DJH

**As Constructed**

No Revisions:

Revised:

Void:

**GENERAL LAYOUT AND TYPICAL SECTION**

Designer:	N. Alam	Structure Numbers	E-16-JJ
Detailer:	R. Olmos	Subset Sheets:	B03 of 24
Sheet Subset:	Bridge		

**Project No./Code**

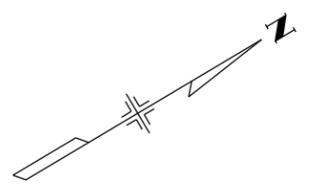
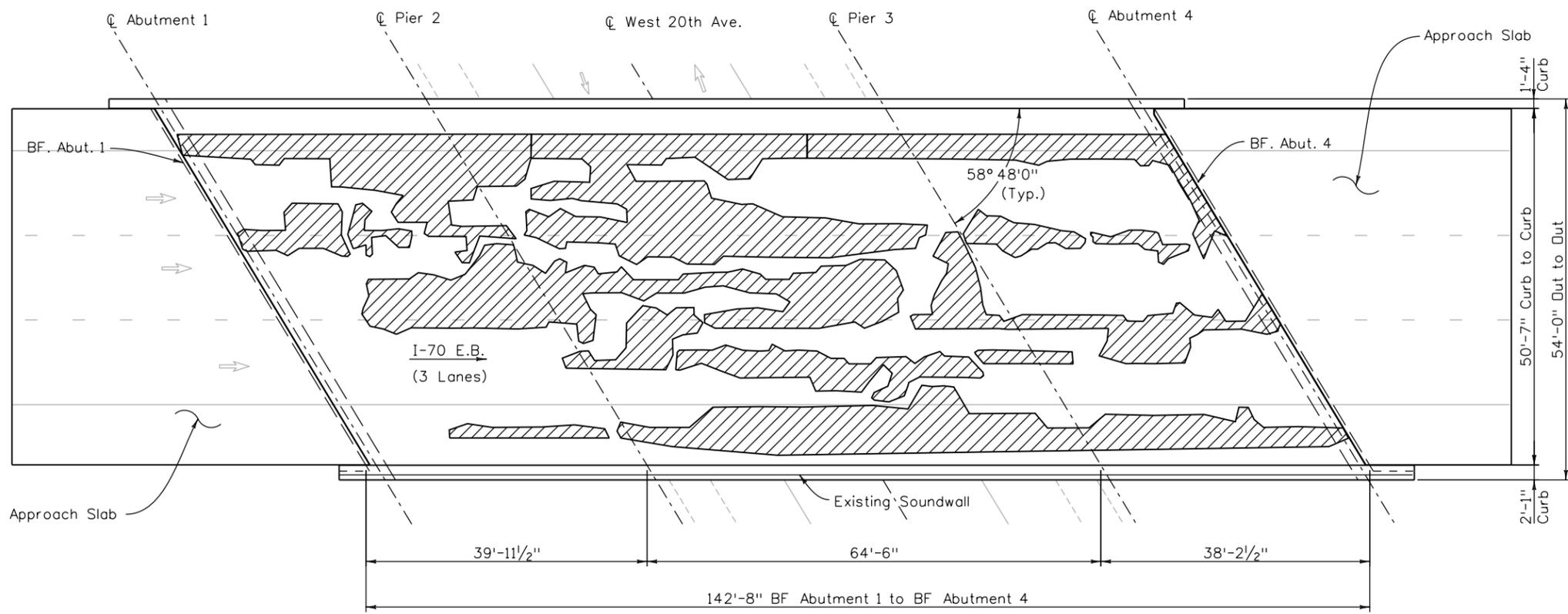
R 600-412

18781

Sheet Number **10**

potta 3:29:32 PM P:\0224\Active Projects (Design)\18781\_R6 Deck Rehab 2012\13\2012 Deck Rehab\04 F-16-HJ General Layout.dgn

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	NAA	01/12	01/12	Quantities By	RD
Checked By	AJP	01/12	01/12	Checked By	NAA



**STR. F-16-HJ EXISTING CONDITIONS**

Located on I-70 EB @ M.P. 263.201 over 20th Ave.  
 Structure Type: CSGC  
 Year Built: 1968  
 Deck Thickness: 7"  
 Asphalt Thickness: 3"  
 No Waterproofing (Membrane).  
 Expansion Joint: Asphaltic Plug Expansion Joint  
 Bridge Rail Type: 10  
 f'c = 3000 psi

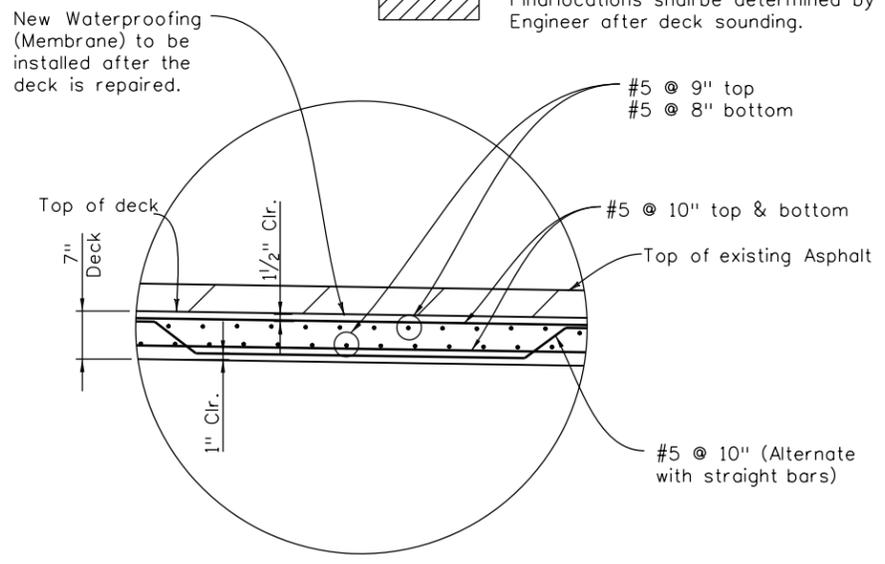
**WORK DESCRIPTION**

- Remove existing asphalt from entire bridge deck.
- Perform Class 2 and Class 3 Removal from bridge deck as approved by the Engineer.
- Sandblast all exposed reinforcing steel and replace any missing or damaged reinforcing steel with greater than 30% section loss.
- Replace all concrete removed during Class 2 and Class 3 Removals.
- Install Waterproofing (Membrane) then overlay new asphalt to original elevation.

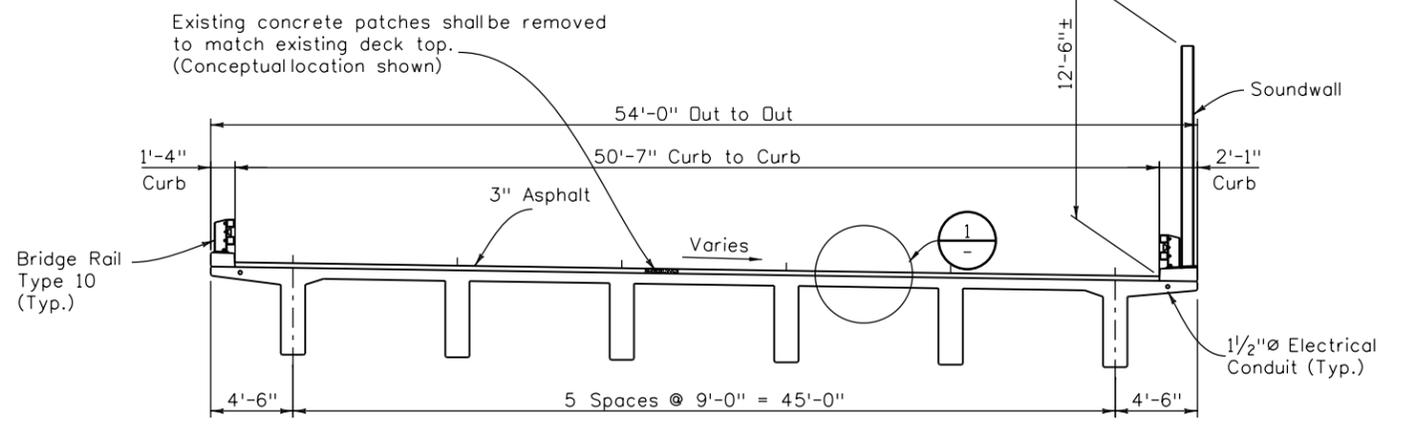
**LEGEND**

Conceptual Area of Deck Rehabilitation Only. Final locations shall be determined by the Engineer after deck sounding.

**PLAN**



**DETAIL 1**



**TYPICAL SECTION**

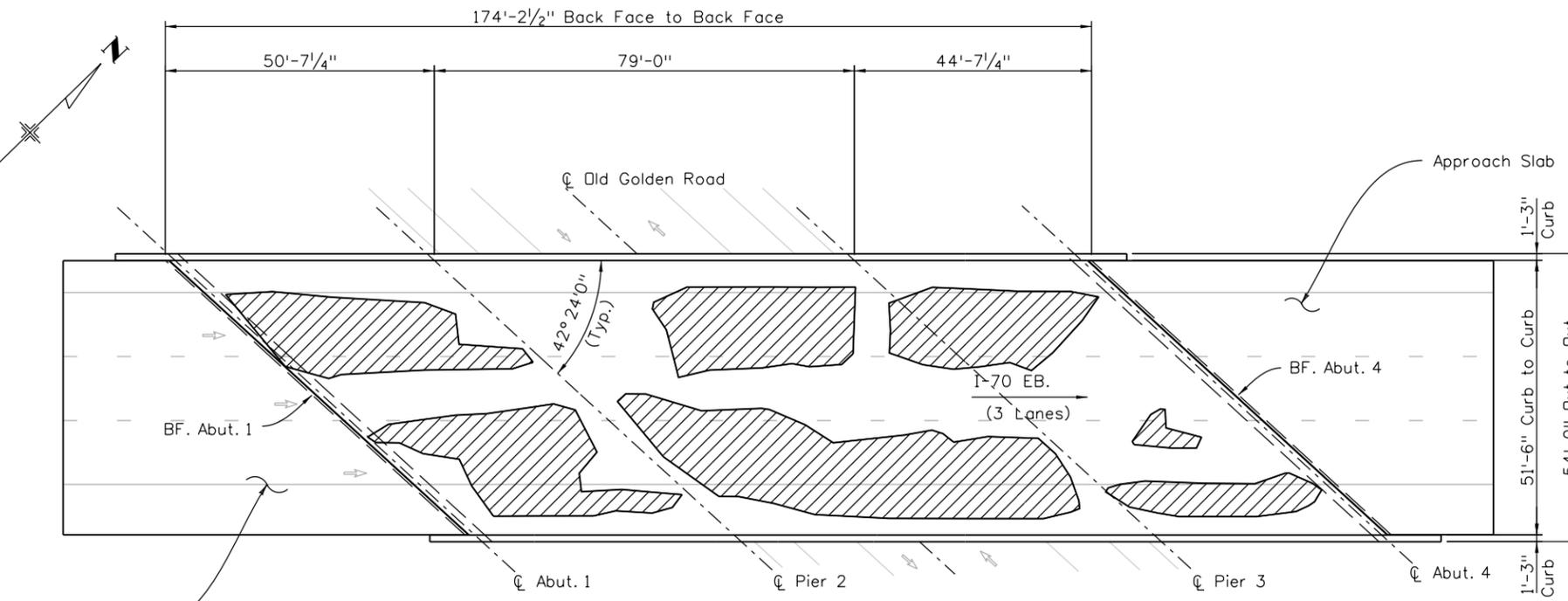
Print Date: 4/17/2012	<b>Sheet Revisions</b>			Colorado Department of Transportation				<b>As Constructed</b>		<b>GENERAL LAYOUT AND TYPICAL SECTION</b>				Project No./Code	
File Name: 04 F-16-HJ GeneralLayout.dgn	Date:	Comments	Init.	4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028 <b>Region 6</b> <span style="float: right;"><b>DJH</b></span>				No Revisions:		Designer: N. Alam		Structure Numbers		R 600-412	
Horiz. Scale: VARIES Vert. Scale: As Noted								Revised:		Detailer: R. Dimos		F-16-HJ		18781	
Staff Bridge Branch - Unit 0224 AJP								Void:		Sheet Subset: Bridge		Subset Sheets: B04 of 12		Sheet Number <b>11</b>	

**STR. F-16-HL EXISTING CONDITIONS**

Located on I-70 EBND @ M.P. 261.871 over Old Golden Road  
 Structure Type: CSGC  
 Year Build: 1968  
 Deck Thickness: 7"  
 Asphalt Thickness: 4"  
 Waterproofing (Membrane).  
 Expansion Joints: Asphaltic Plug Expansion Joint.  
 Bridge Rail Type: 10  
 f'c = 3000 psi

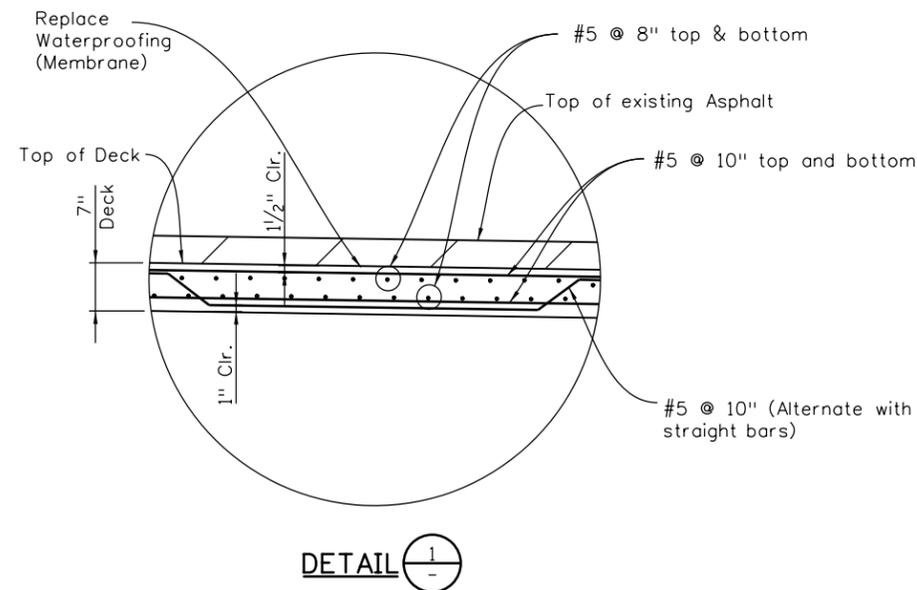
**WORK DESCRIPTION**

- Remove existing asphalt from entire bridge deck.
- Perform Class 2 and Class 3 Removal from bridge deck as approved by the Engineer.
- Sandblast all exposed reinforcing steel and replace any missing or damaged reinforcing steel with greater than 30% section loss.
- Replace all concrete removed during Class 2 and Class 3 Removals.
- Install Waterproofing (Membrane) then overlay new asphalt to original elevation.

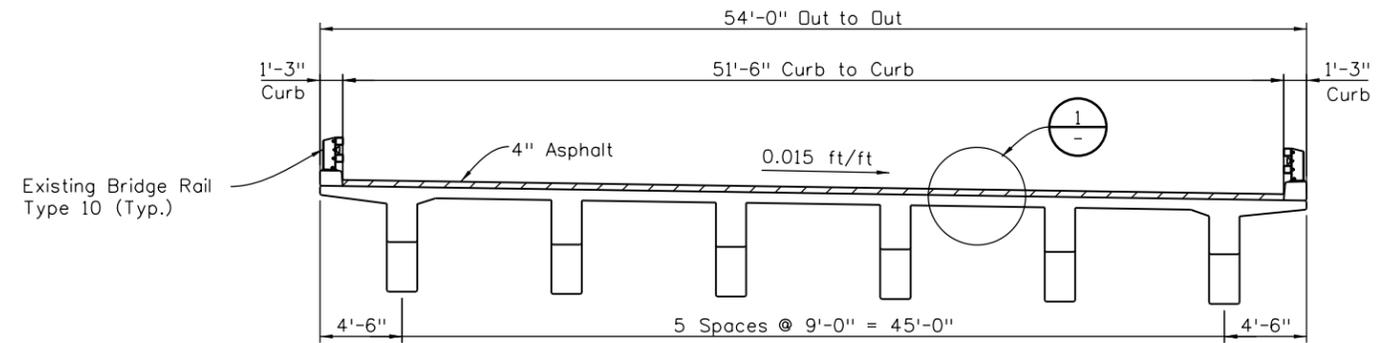


**LEGEND**  
 Conceptual Area of Deck Rehabilitation Only. Final locations shall be determined by the Engineer after deck sounding.

**PLAN**



**DETAIL 1**



**TYPICAL SECTION**

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	NAA	01/12	RD	01/12	RD
Checked By	AJP	01/12	NAA	01/12	NAA

Print Date: 4/17/2012	0000
File Name: 05 F-16-HL generalLayout.dgn	
Horiz. Scale: None      Vert. Scale: As Noted	
Staff Bridge Branch - Unit 0224      AJP	

Sheet Revisions		
Date:	Comments	Init.

**Colorado Department of Transportation**  
 4670 Holly Street  
 Denver, CO 80216-6408  
 Phone: 303-398-6749 FAX: 720-945-1028  
**Region 6**      **DJH**

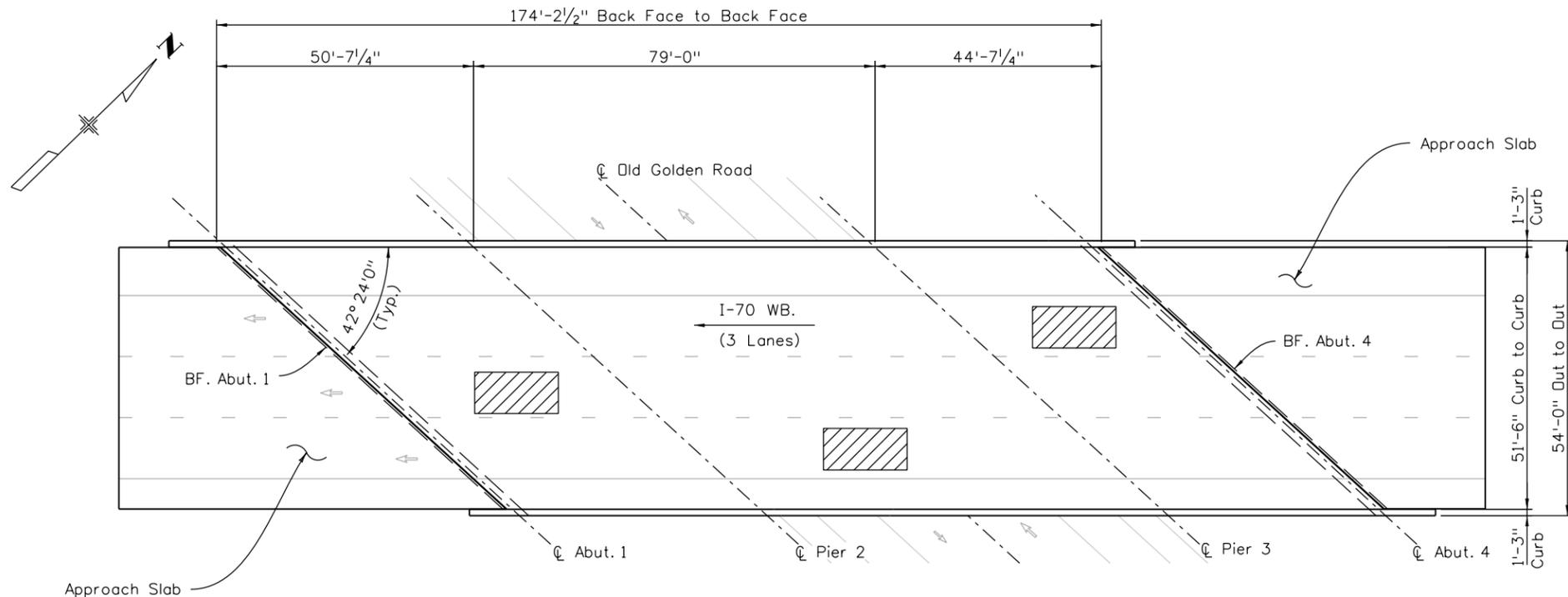
<b>As Constructed</b>
No Revisions:
Revised:
Void:

GENERAL LAYOUT AND TYPICAL SECTION			
Designer:	N. Alam	Structure Numbers	F-16-HL
Detailer:	R. Olmos	Subset Sheets:	B05 of 12
Sheet Subset:	Bridge		

<b>Project No./Code</b>
R 600-412
18781
Sheet Number <b>12</b>

P:\0224\Active Projects (Design)\18781\_R6 Deck Rehab 2012-13\2012 Deck Rehab\06 F-16-HM generalLayout.dgn

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	NAA	RD	07/12	Quantities By	RD
Checked By	AJP	NAA	07/12	Checked By	NAA



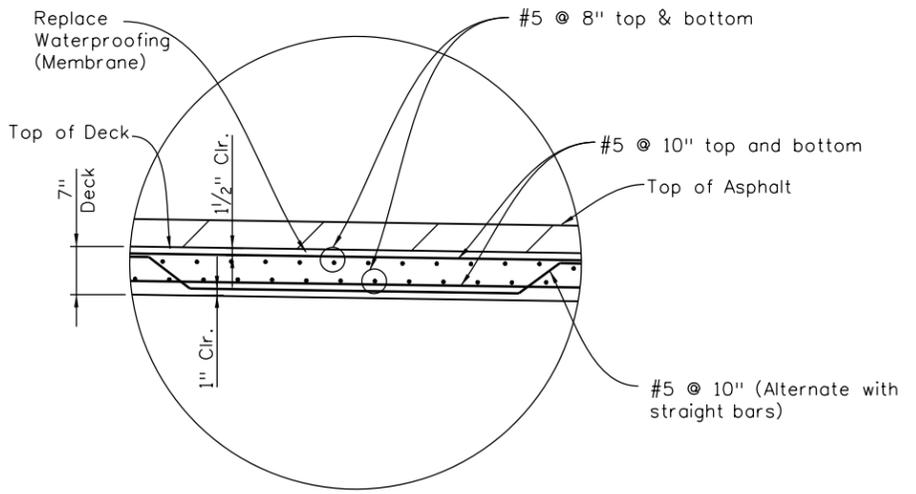
PLAN

**STR. F-16-HM EXISTING CONDITIONS**

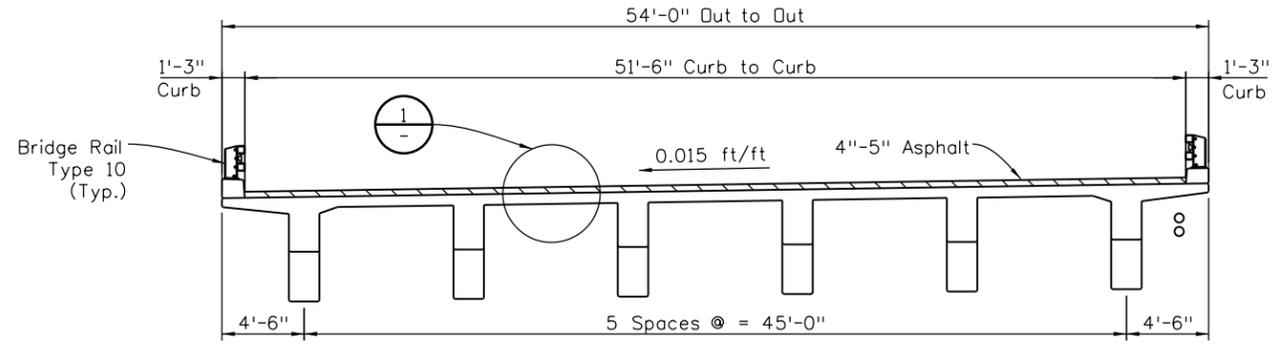
Located on I-70 ML WBND @ PM 261.872 over Old Golden Road.  
 Structure type: CSGC.  
 Year Build: 1968.  
 Deck Thickness: 7".  
 Asphalt Thickness: 4"-5"  
 Waterproofing (Membrane).  
 Expansion Joints: Asphaltic Plug Joints at Abutments.  
 Bridge Rail Type: 10  
 f'c = 3000 psi

**WORK DESCRIPTION (F-16-HM)**

- Remove existing asphalt from entire bridge deck.
- Perform Class 2 and Class 3 Removal from bridge deck as approved by the Engineer.
- Sandblast all exposed reinforcing steel and replace any missing or damaged reinforcing steel with greater than 30% section loss.
- Replace all concrete removed during Class 2 and Class 3 Removals.
- Install Waterproofing (Membrane) then overlay new asphalt to original elevation.



DETAIL 1



TYPICAL SECTION

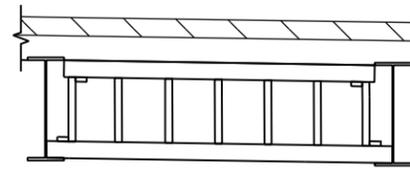
Print Date: 4/17/2012	<b>Sheet Revisions</b>			Colorado Department of Transportation				<b>As Constructed</b>		<b>GENERAL LAYOUT AND TYPICAL SECTION</b>				Project No./Code	
File Name: 06 F-16-HM generalLayout.dgn	Date:	Comments	Init.	4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028 Region 6 DJH				No Revisions:		Designer: N. Alam		Structure Numbers		R 600-412	
Horiz. Scale: None Vert. Scale: As Noted								Revised:		Detailer: R. Olmos		F-16-HM		18781	
Staff Bridge Branch - Unit 0224 AJP								Void:		Sheet Subset: Bridge		Subset Sheets: B06 of 12		Sheet Number 13	

**STR. E-17-JP EXISTING CONDITIONS**

Located on I-70 EB M.P. 280.507 over Havana Street.  
 Year Build: 1964, Widened, 1978  
 Deck Thickness: 8"  
 Asphalt Thickness: 5-8" EB, 6-8" NB  
 Waterproofing (Membrane).  
 Expansion Joints: Pourable expansion joint seal at Abut. 1 and construction.  
 Non expansion joint seal at Abut. 6.  
 Bridge Rail Type: 10  
 f'c = 3000 psi

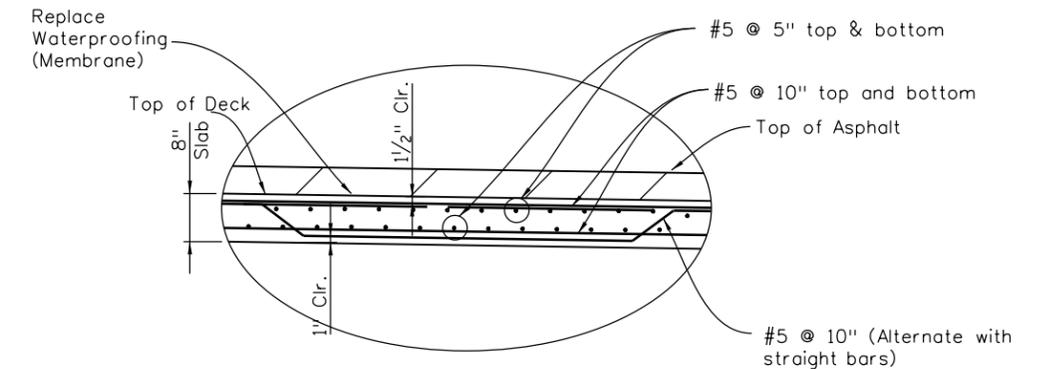
**WORK DESCRIPTION**

- Remove existing asphalt from entire bridge deck.
- Perform Class 2 and Class 3 Removal from bridge deck as approved by the Engineer.
- Sandblast all exposed reinforcing steel and replace any missing or damaged reinforcing steel with greater than 30% section loss.
- Replace all concrete removed during Class 2 and Class 3 Removals.
- Install Waterproofing (Membrane) then overlay new asphalt to original elevation.

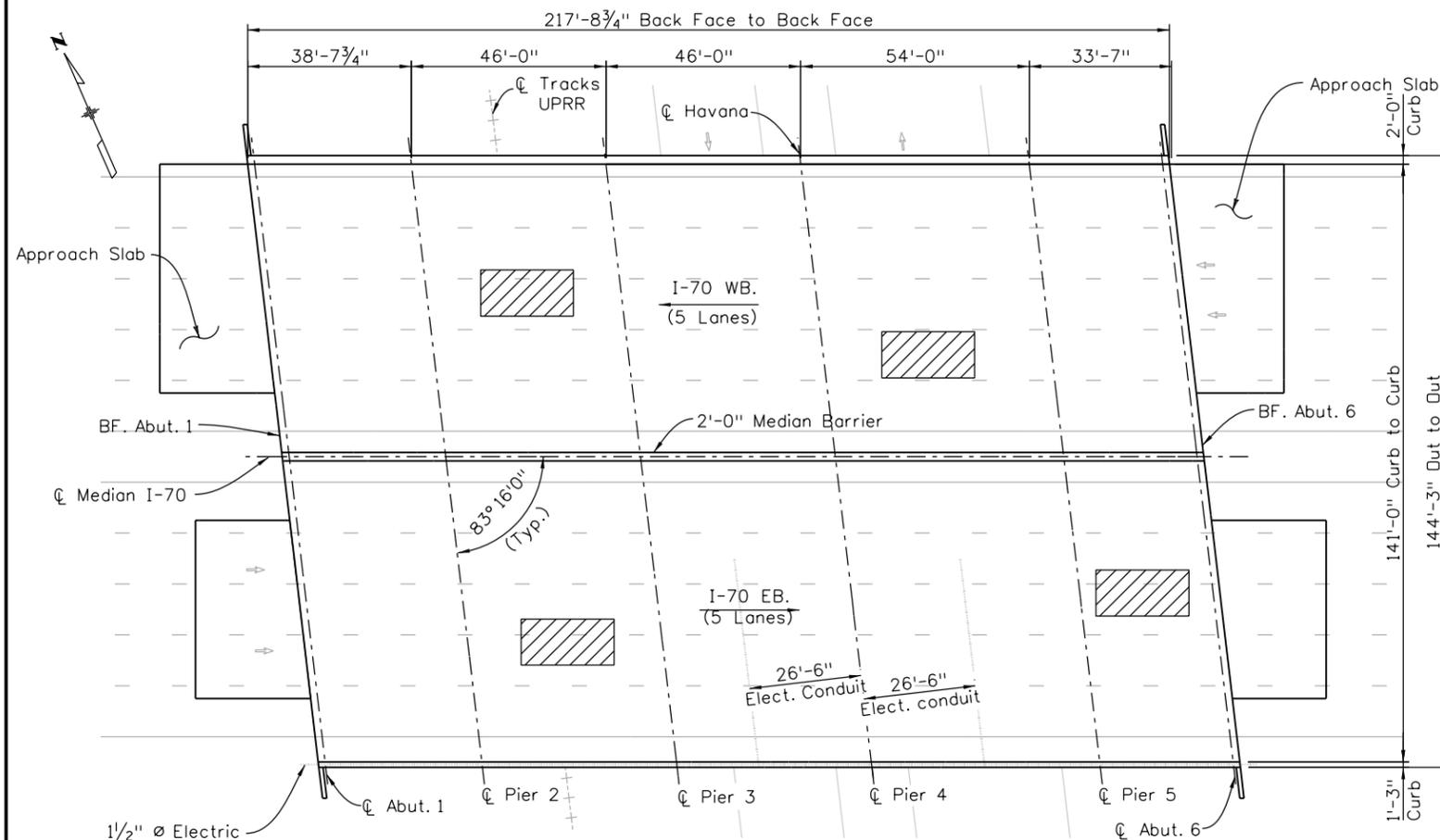


**CONCEPTUAL FALSEWORK**

- Any falsework required shall be included in the cost of the work.
- No interference with regular railway operation is allowed.
- Contractor is responsible for the design, installation and removal of falsework after the work is complete.

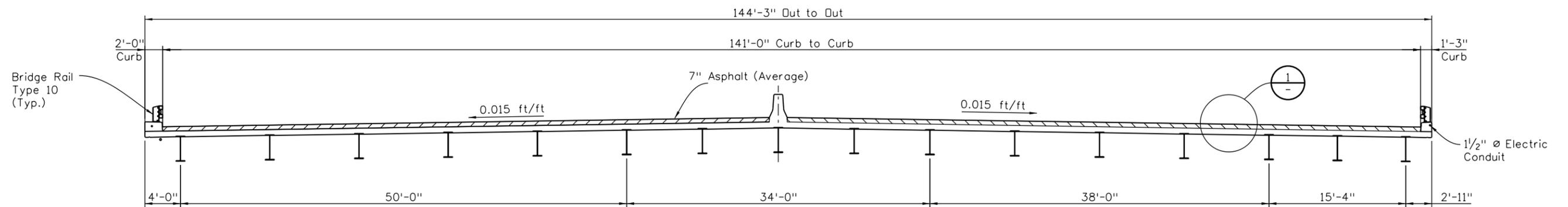


**DETAIL 1**



**PLAN**

**Note:**  
 The Contractor shall comply with all requirements described in the "Railroad Requirements" spec before entering upon railroad property.  
 The Contractor shall schedule all work associated with the railroad location to be on consecutive days to minimize railroad flagging cost.  
 If the Contractor fails to complete work within 20 consecutive days, any additional railroad flagging cost shall be borne by the Contractor.



**TYPICAL SECTION**

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	01/12	RD	01/12	Quantities By	RD
Checked By	01/12	NAA	01/12	Checked By	NAA
		AJP	01/12		

Print Date: 4/17/2012  
 File Name: 07 E-17-JP GeneralLayout.dgn  
 Horiz. Scale: 1:1      Vert. Scale: As Noted  
 Staff Bridge Branch - Unit 0224      AJP

Sheet Revisions		
Date:	Comments	Init.

**Colorado Department of Transportation**  
 4670 Holly Street  
 Denver, CO 80216-6408  
 Phone: 303-398-6749 FAX: 720-945-1028  
**Region 6**      **DJH**

**As Constructed**  
 No Revisions:  
 Revised:  
 Void:

GENERAL LAYOUT AND TYPICAL SECTION			
Designer:	N. Alam	Structure Numbers	E-17-JP
Detailer:	R. Olmos	Subset Sheets:	B07 of 12
Sheet Subset:	BRIDGE		

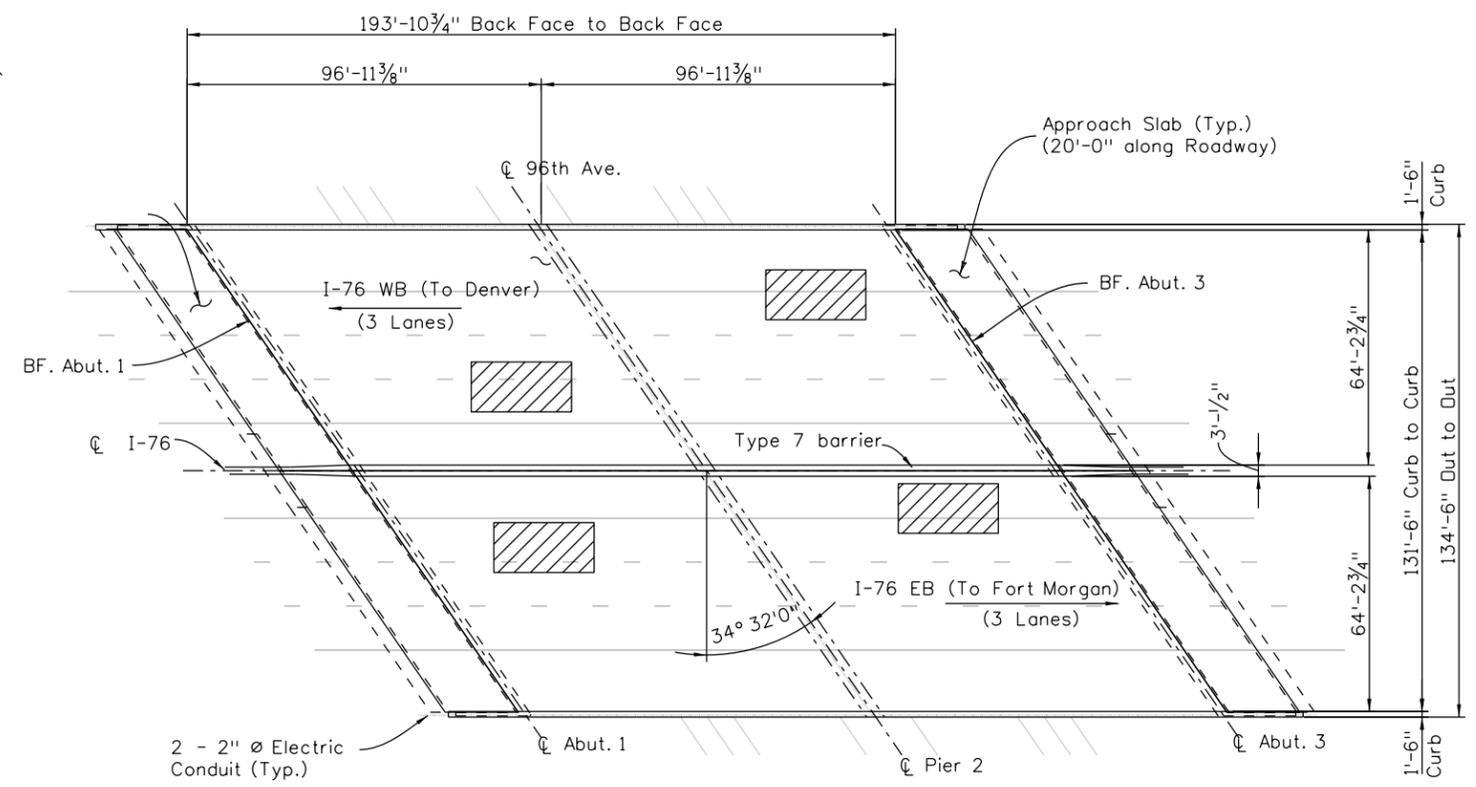
**Project No./Code**  
 R 600-412  
 18781  
 Sheet Number **14**

**STR. E-17-KT EXISTING CONDITIONS**

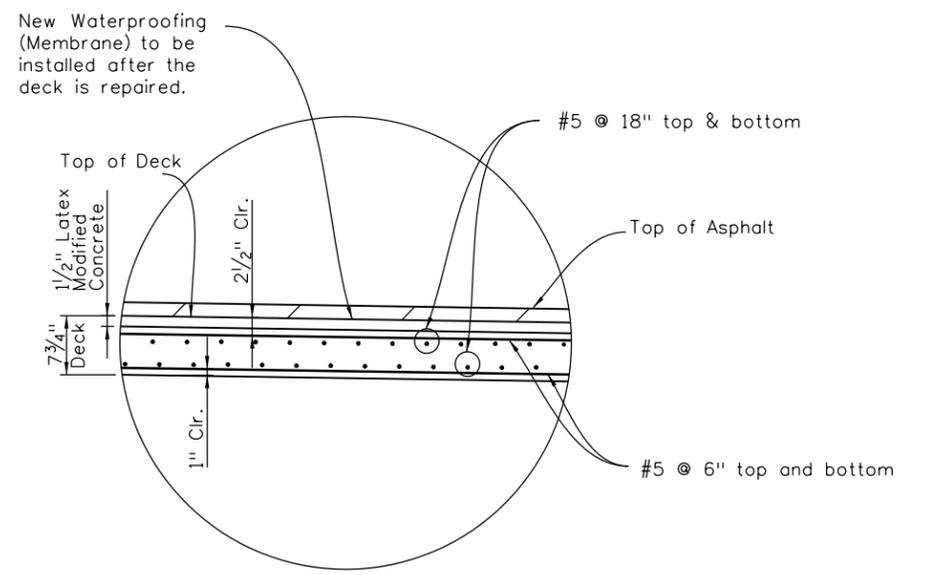
Located on I-76 @ MP 11.547 ML over 96th Ave.  
 Structure Type: CPGC  
 Year Built: 1967  
 Deck Thickness: 7 3/4"  
 Asphalt Thickness: 2"  
 No Waterproofing (Membrane).  
 Expansion Joints: Compression Joint seal at both Abutments and construction non expansion joint seal at centerline of deck.  
 Bridge Rail Type: R  
 f'c = 3000 psi

**WORK DESCRIPTION**

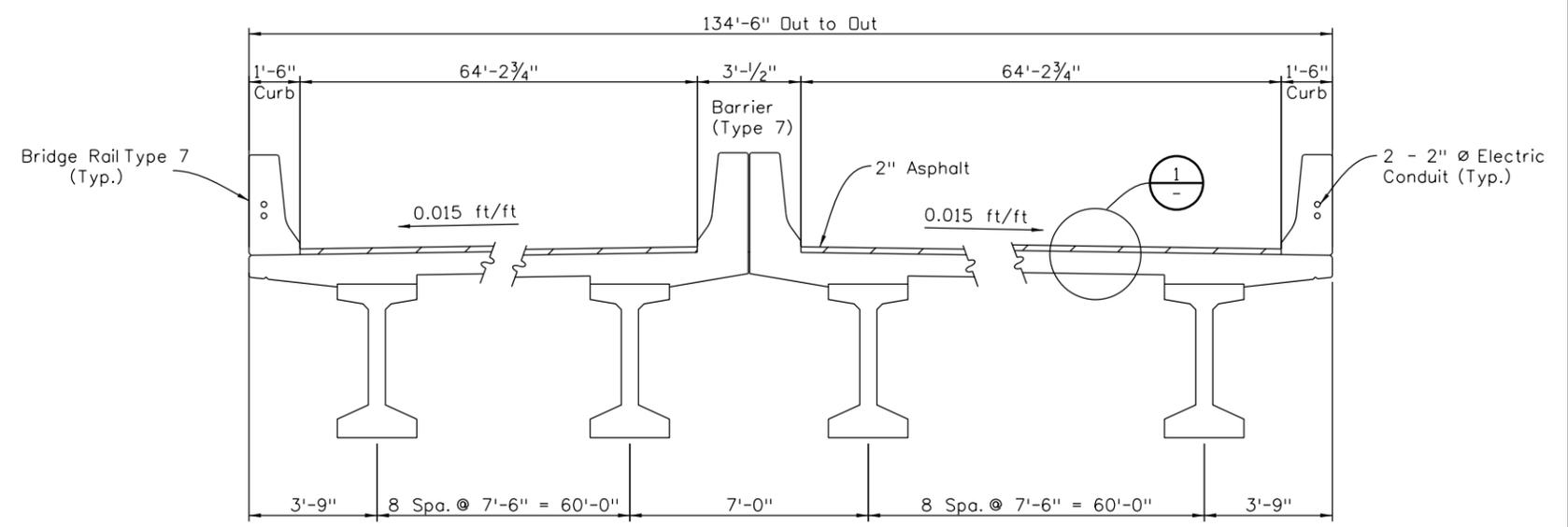
- Remove existing asphalt from entire bridge deck.
- Perform Class 2 and Class 3 Removal from bridge deck as approved by the Engineer.
- Sandblast all exposed reinforcing steel and replace any missing or damaged reinforcing steel with greater than 30% section loss.
- Replace all concrete removed during Class 2 and Class 3 Removals.
- Install Waterproofing (Membrane) then overlay new asphalt to original elevation.



**PLAN**



**DETAIL 1**



**TYPICAL SECTION**

potta 3:29:48 PM P:\0224\Active Projects (Design)\18781\_R6 Deck Rehab 2012-13\2012 Deck Rehab\08 E-17-KT generalLayout.dgn

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	NAA	01/12	01/12	Quantities By	RD
Checked By	AJP	01/12	01/12	Checked By	NAA

Print Date: 4/17/2012  
 File Name: 08 E-17-KT generalLayout.dgn  
 Horiz. Scale: None      Vert. Scale: As Noted  
 Staff Bridge Branch - Unit 0224      AJP

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation  
 4670 Holly Street  
 Denver, CO 80216-6408  
 Phone: 303-398-6749 FAX: 720-945-1028  
 Region 6      DJH

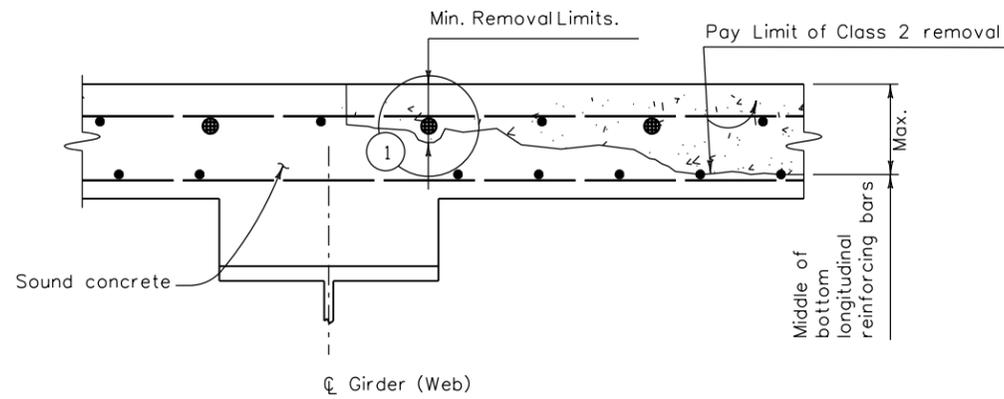
<b>As Constructed</b>
No Revisions:
Revised:
Void:

GENERAL LAYOUT AND TYPICAL SECTION			
Designer:	N. Alam	Structure Numbers	E-17-KT
Detailer:	R. Olmos	Subset Sheets:	B08 of 12
Sheet Subset:	Bridge		

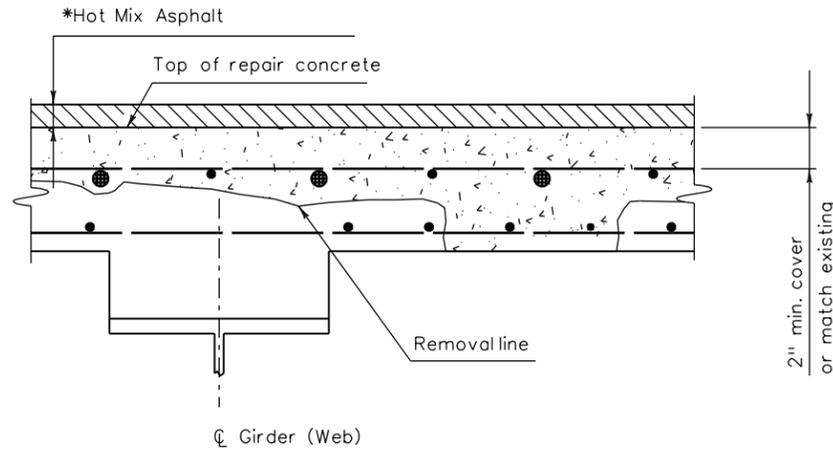
<b>Project No./Code</b>
R 600-412
18781
Sheet Number <b>15</b>

P:\0224\Active Projects (Design)\18781\_R6 Deck Rehab\09 Deck Repair Details on Steel Girders.dgn

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By NAA	01/12	RD	01/12	RD	01/12
Checked By AJP	01/12	NAA	01/12	NAA	01/12



**REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2)**



**CONCRETE REPLACEMENT**

\* Where applicable.

NOTES:  
The Contractor is responsible for the stability of the structure during construction.

These plans were prepared to avoid the need for falsework. If the Contractor proposes to deviate from the phasing plan shown, shoring may be required. The proposed plan shall be coordinated with the Engineer and performed in a manner as required to insure the structural integrity of the bridge. The Contractor shall be responsible for designing and constructing the falsework. Falsework shall not be paid for separately but shall be included in the work.

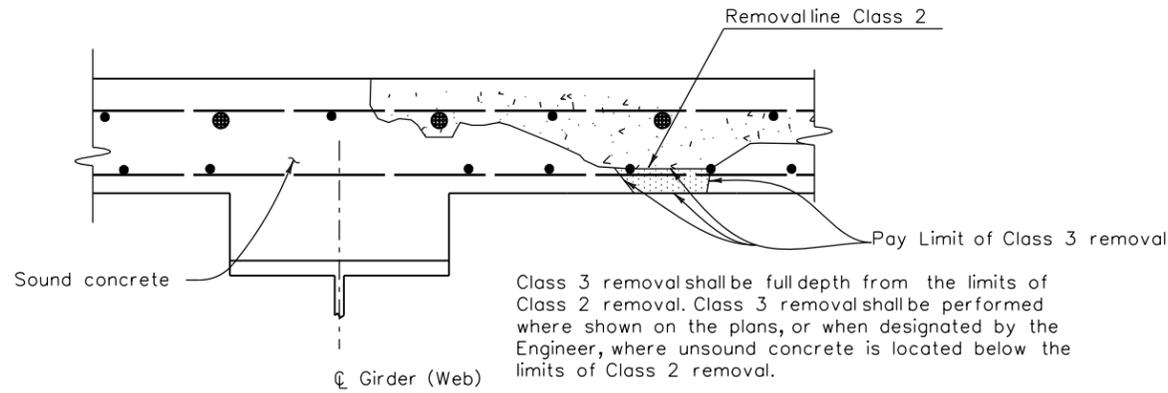
Care shall be taken in removing concrete from around structural steel elements and reinforcing steel to prevent damage to the steel.

These details reflect the scope and nature of the work. They are not intended to represent the actual structure.

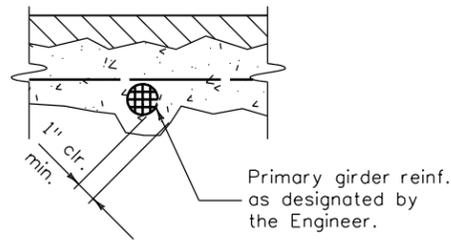
The applicable classes of removal shall be as designated by the summary of quantities in the plans.

For "pothole" repairs, the placed concrete or HMA top level shall match the existing concrete or HMA top level, respectively, unless otherwise approved by the Engineer.

Any damage to the concrete surface of the deck due to error or neglect shall be repaired by the Contractor without compensation or time extension.



**REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 3)**



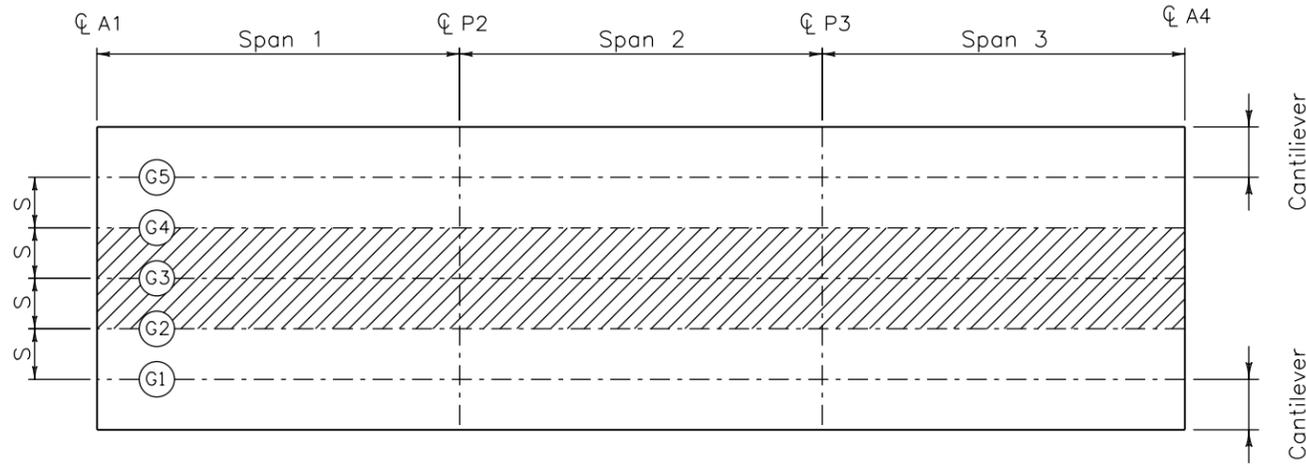
**DETAIL 1**

ESTIMATED REMOVALS STRUCTURE		
CLASS	COMPUTATION METHOD	AREA
CLASS 2	40% OF DECK AREA	A
CLASS 3	10% OF CLASS 2	0.10 x A

Above areas are for information only. Percentages are provided for estimating purposes and are representative of past projects. Conditions may vary at each bridge site.

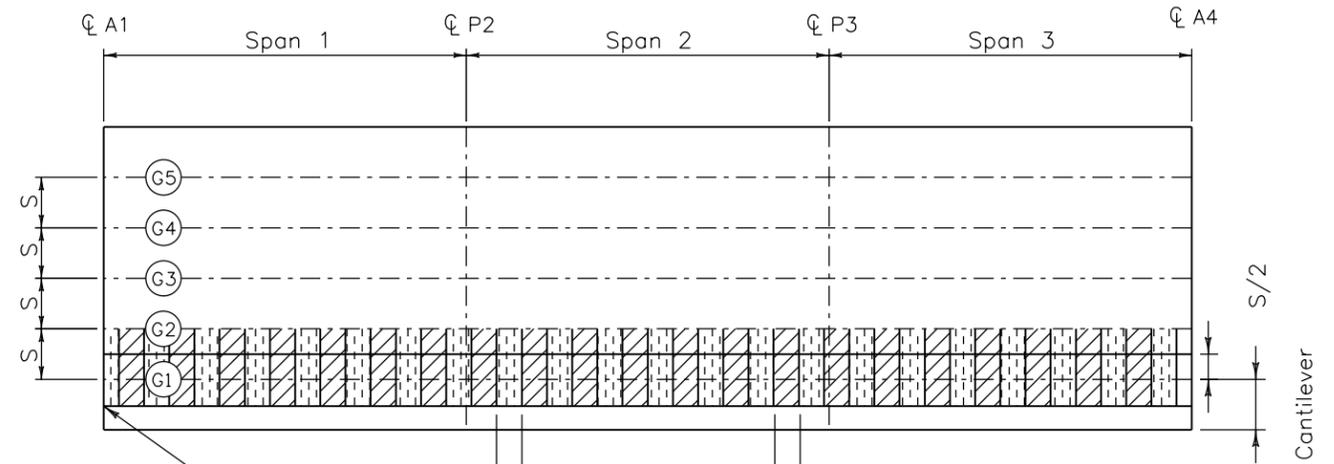
Print Date: 4/17/2012			As Constructed No Revisions: Revised: Void:	<b>CONCRETE DECK REPAIR DETAILS STEEL GIRDER</b>		Project No./Code	
File Name: 09 Deck Repair Details on Steel Girders.dgn						R 600-412	
Horiz. Scale: None    Vert. Scale: As Noted				0000	4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028	Designer: N. Alam Detailer: R. Olmos	Structure Numbers E-17-JP E-17-KT
Staff Bridge Branch - Unit 0224    AJP	Region 6	DJH	Sheet Subset: Bridge Subset Sheets: B9 of 12	Sheet Number		16	

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By NAA	01/12	RO	01/12	Quantities By RO	01/12
Checked By AJP	01/12	NAA	01/12	Checked By NAA	01/12



**PLAN**  
(For inside girders only)

Removal on both sides of the girder simultaneously.



**PLAN**  
(For outside girders only)

Portions of a cantilever section removed simultaneously.

Portions of deck sections removed simultaneously.

Working on both portions concurrently is not permitted.

Note:  
S is defined as the center-to-center girder spacing.  
The Contractor shall be responsible for determining the girder spacing.

**DECK CONCRETE REPAIR WHEN FALSEWORK IS NOT REQUIRED**

Print Date: 4/17/2012
File Name: 10 Phasing on SteelGirders.dgn
Horiz. Scale: None      Vert. Scale: As Noted
Staff Bridge Branch - Unit 0224      AJP



Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation  
 4670 Holly Street  
 Denver, CO 80216-6408  
 Phone: 303-398-6749 FAX: 720-945-1028  
**Region 6**      **DJH**

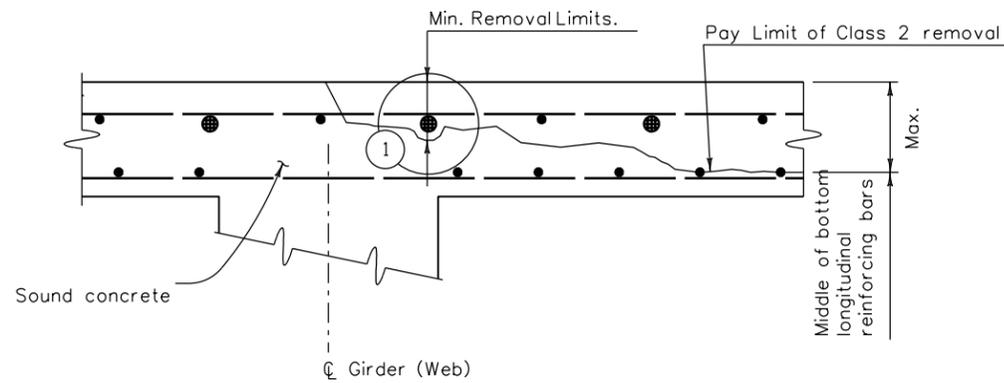
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No Revisions:
Revised:
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PHASING ON STEEL GIRDER			
Designer:	N. Alam	Structure Numbers	E-17-JP
Detailer:	R. Olmos	Structure Numbers	E-17-KT
Sheet Subset:	Bridge	Subset Sheets:	B10 of 12

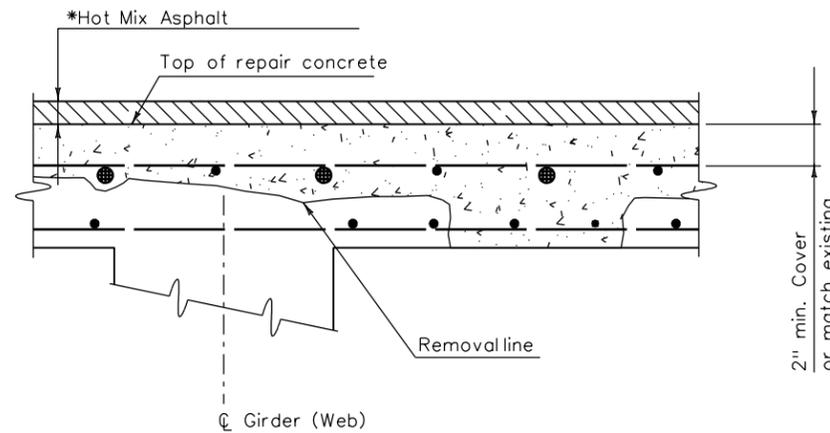
<b>Project No./Code</b>
R 600-412
18781
Sheet Number <b>17</b>

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Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	NAA	RD	07/12	RD	01/12
Checked By	AJP	NAA	07/12	NAA	01/12
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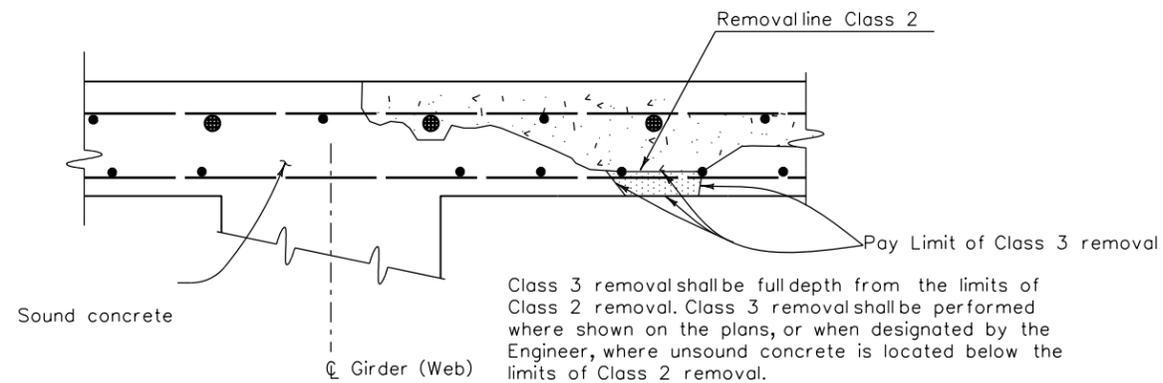


**REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2)**

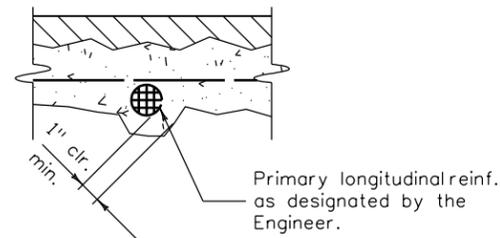


**CONCRETE REPLACEMENT**

\* Where applicable.



**REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 3)**



**DETAIL 1**

**NOTES:**

The Contractor is responsible for the stability of the structure during construction.

These plans were prepared to avoid the need for falsework. If the Contractor proposes to deviate from the phasing plan shown, shoring may be required. The proposed plan shall be coordinated with the Engineer and performed in a manner as required to insure the structural integrity of the bridge. The Contractor shall be responsible for designing and constructing the falsework per CDOT Standard Specifications for Road and Bridge Construction. Falsework shall not be paid for separately but shall be included in the work.

Care shall be taken in removing concrete from around structural steel elements and reinforcing steel to prevent damage to the steel.

These details reflect the scope and nature of the work. They are not intended to represent the actual structure.

The applicable classes of removal shall be as designated by the summary of quantities in the plans.

If Class 3 removal is performed immediately adjacent to, and on both sides of a girder simultaneously within the middle half of a span, that girder shall be shored from the ground at the third points of that span.

If Class 2 or 3 removal is performed on both sides of a girder simultaneously within the quarter of a span on either side of the pier, that girder shall be shored at the third point each side of that pier. This note is not intended to require shoring for "pothole" type repairs of limited extent where at least one half of the longitudinal deck reinforcing is anchored on both sides of the removal area.

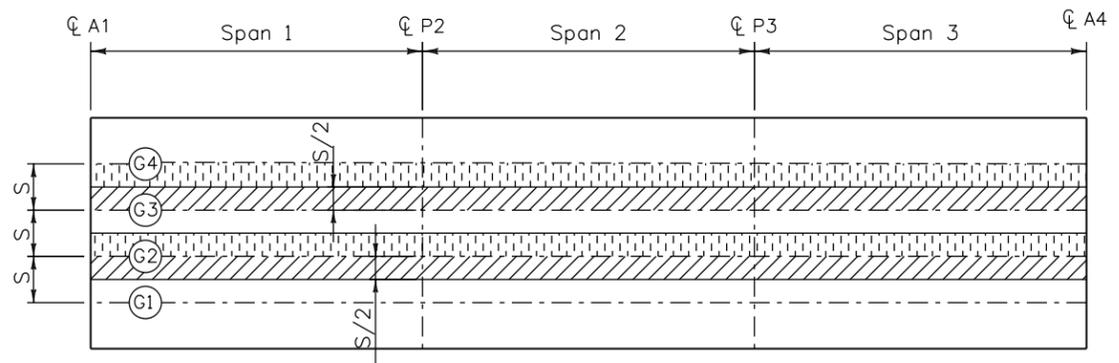
For "pothole" repairs, the placed concrete or HMA top level shall match the existing concrete and HMA top level, respectively, unless otherwise approved by the Engineer.

Any damage to the concrete surface of the deck due to error or neglect shall be repaired by the Contractor without compensation or time extension.

ESTIMATED REMOVALS STRUCTURE		
CLASS	COMPUTATION METHOD	AREA
CLASS 2	40% OF DECK AREA	A
CLASS 3	10% OF CLASS 2	0.10 x A

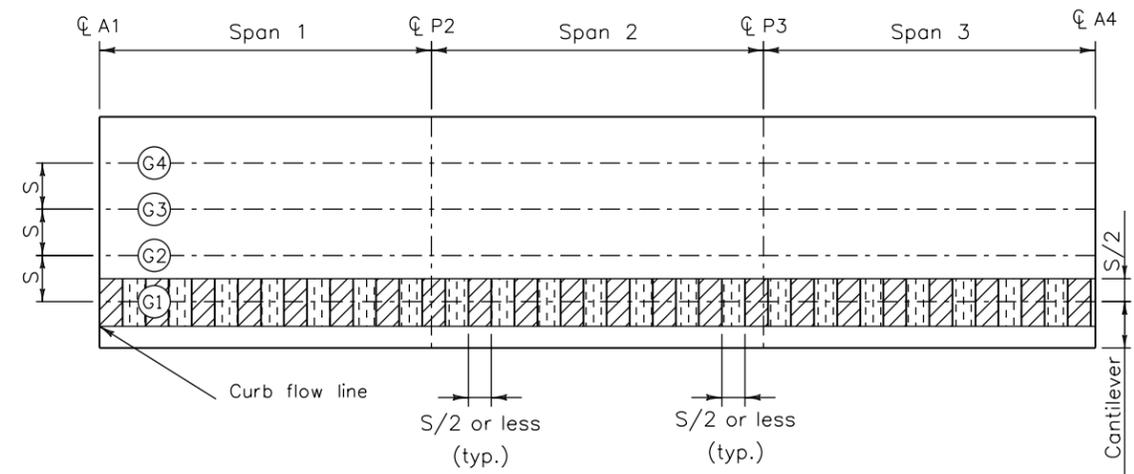
Above areas are for information only. Percentages are provided for estimating purposes and are representative of past projects. Conditions may vary at each bridge site.

Print Date: 4/17/2012	<b>Sheet Revisions</b>			Colorado Department of Transportation	As Constructed	<b>CONCRETE DECK REPAIR DETAILS</b>			Project No./Code	
File Name: 11 Deck Repair Details on Concrete Girders.dgn	Date:	Comments	Init.							No Revisions:
Horiz. Scale: None Vert. Scale: As Noted				 4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028	Revised:	Designer:	N. Alam	Structure	F-16-JJ, F-16-HJ	18781
Staff Bridge Branch - Unit 0224						Region 6	Void:	Detailer:	R. Olmos	Numbers
				DJH		Sheet Subset:	Bridge	Subset Sheets:	B11 of 12	<b>18</b>



**PLAN**  
(For inside girders only.)

Deck repair area at one side of the girder.  
 Deck repair at the other side of the girder.  
 Working on both sides of the same girder concurrently is not permitted.

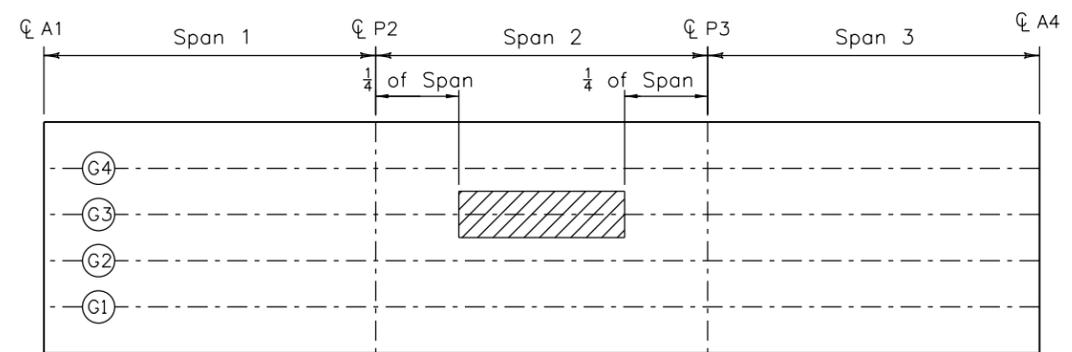


**PLAN**  
(For outside girders only.)

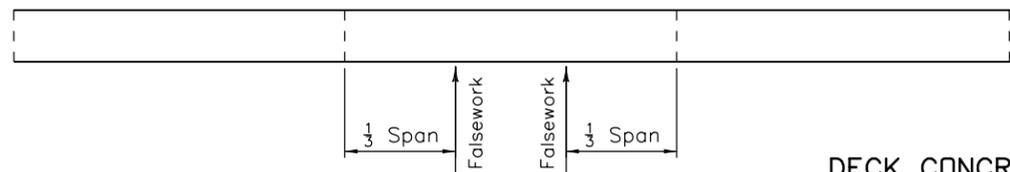
Portions of deck sections removed simultaneously.  
 Portions of deck sections removed simultaneously.  
 Working on both portions concurrently is not permitted.

Note:  
S is defined as the center-to-center girder spacing. The Contractor shall be responsible for determining the girder spacing.

**DECK CONCRETE REPAIR WHEN FALSEWORK IS NOT REQUIRED**

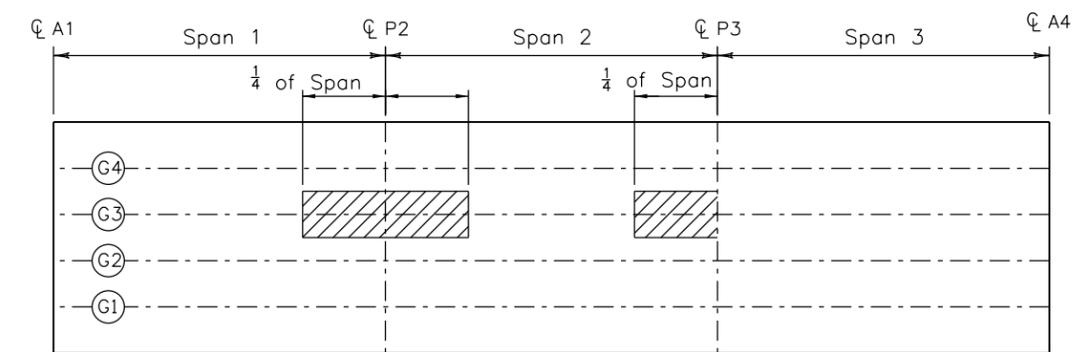


**PLAN**

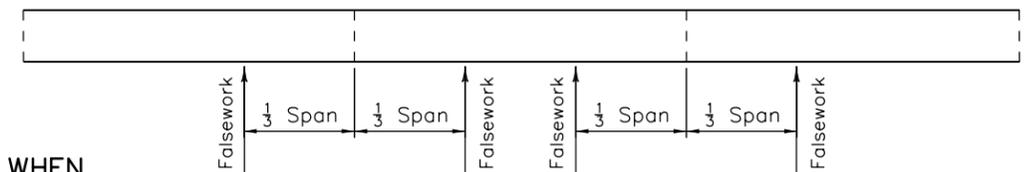


**ELEVATION**

Class 3 removal on both sides of a girder simultaneously within the middle half of a span.



**PLAN**



**ELEVATION**

Class 2 or 3 removal on both sides of a girder simultaneously within the quarter of a span on either side of the pier.

Design		Detail		Quantities	
INITIAL	DATE	INITIAL	DATE	INITIAL	DATE
Designed By	01/12	RO	01/12	Quantities By	RO
Checked By	01/12	NAA	01/12	Checked By	NAA
		AJP			

Print Date: 4/17/2012
File Name: 12 Phasing on Concrete Girders.dgn
Horiz. Scale: None      Vert. Scale: As Noted
Staff Bridge Branch - Unit 0224      AJP

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation

4670 Holly Street  
Denver, CO 80216-6408  
Phone: 303-398-6749 FAX: 720-945-1028

Region 6      DJH

<b>As Constructed</b>
No Revisions:
Revised:
Void:

PHASING ON CONCRETE GIRDER			
Designer:	N. Alam	Structure Numbers	F-16-JJ, F-16-HJ
Detailer:	R. Olmos	Structure Numbers	F-16-HL, F-16-HM
Sheet Subset:	Bridge	Subset Sheets:	B12 of 12

<b>Project No./Code</b>
R 600-412
18781
Sheet Number <b>19</b>

**1. SITE DESCRIPTION**

- A. PROJECT SITE DESCRIPTION - BR R600-412 is a bridge deck rehab project that includes many bridges throughout Region 6. Rehab work includes rotomilling, deck rehab as needed, waterproofing membrane, asphalt overlay, curb repair as required, and replace expansion joint material as required. The project disturbance is less than 1 acre.
- B. RECEIVING WATER - All bridges eventually flow to Clear Creek and Sand Creek and then ultimately to the South Platte River.

**2. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES**

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

- A. POTENTIAL POLLUTANT SOURCES
  - 1. Evaluate, identify and describe all potential sources of pollutants at the site in accordance with subsection 107.25 and place any BMPs required to contain potential pollutants.
- B. OFFSITE DRAINAGE (RUN ON WATER)
  - 1. Place BMPs to address run-on water in accordance with subsection 208.03.
- C. CONSTRUCTION DEWATERING: Not Applicable.
  - 1. Obtain a dewatering permit from CDPHE if conditions of their low risk guidance for Discharges of Uncontaminated Groundwater to Land are not met; see subsection 107.25(b) 8.
- D. BEST MANAGEMENT PRACTICES (BMPs) FOR STORMWATER POLLUTION PREVENTION

**BMP NARRATIVES**

- 1. VEHICLE TRACKING PAD
  - a. BMPs shall be implemented in accordance with subsection 208.04 to prevent the tracking of sediment on to paved surfaces.
- 2. PERIMETER CONTROL
  - a. Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater drainage system (e.g. inlet protection), or discharging to state waters.
  - b. Perimeter control may consist of vegetation buffers, berms, silt fence, erosion logs, existing landforms, or other BMPs as approved.
  - c. Perimeter control shall be in accordance with subsection 208.04.

**3. DURING CONSTRUCTION**

RESPONSIBILITIES OF THE SWMP ADMINISTRATOR/EROSION CONTROL SUPERVISOR DURING CONSTRUCTION

The SWMP should be considered a "living document" that is continuously reviewed and modified. During construction, the following items shall be added, updated, or amended as needed by the Contractor in accordance with Section 208

- A. MATERIALS HANDLING AND SPILL PREVENTION - prior to construction commencing the Contractor shall submit a Spill Prevention, Control and Countermeasure Plan, see subsection 208.06. Materials handling shall be in accordance with subsection 208.06.
- B. STOCKPILE MANAGEMENT - shall be done in accordance with subsection 107.25 and 208.07
- C. CONCRETE WASHOUT - Concrete wash out water or waste from field laboratories and paving equipment shall be contained in accordance with subsection 208.02(j), 208.05(n), and 208.06.
- D. SAW CUTTING - shall be done in accordance with subsection 107.25, 208.04, 208.05
- E. STREET CLEANING - shall be done in accordance with subsection 208.04.
- F. VEHICLE TRACKING PAD - shall be done in accordance with subsection 208.
- G. GRAVEL BAG - shall be done in accordance with subsection 208.02 and 208.05

**4. INTERIM AND FINAL STABILIZATION**

A. SEEDING PLAN

Soil preparation, topsoil, seeding (native), mulching (weed-free), and mulch tackifier are not expected on this project. If it is determined that seeding/revegetation/sod is necessary, the contractor shall contact the R6 Landscape Architect at 303-757-9932 to determine the types, rates, and application of seed that is needed. Any necessary sod or seeding items shall not be paid for separately but shall be considered incidental to the work.

**5. TABULATION OF STORMWATER QUANTITIES**

Pay Item	Description	Unit	Quantity
208	Concrete Washout Structure	Each	12
208	Vehicle Tracking Pad	Each	1
208	Removal and Disposal of Sediment (Labor)	Hour	70
208	Erosion Control Supervisor	Hour	140
208	Gravel Bag	LF	100
700	Erosion Control	FA	1

\*It is anticipated that additional BMPs and BMP quantities not shown on the SWMP Site Maps shall be required on the project for unforeseen conditions and replacement of items that are beyond their useful service life, see subsection 208.03 and 208.04 (e). Quantities for all BMPs shown above are estimated, and have been increased for unforeseen Project conditions.

- A. BMP sediment removal and disposal shall be paid for as: 208 Removal and Disposal of Sediment (Labor). All other BMP maintenance is included in the BMP Device.
- B. Maintenance of seeded areas shall be paid for as: Not Applicable

Print Date: 4/17/2012			As Constructed No Revisions: Revised: Void:	STORMWATER MANAGEMENT PLAN		Project No./Code	
File Name: 18781DES_SWMP_2010.dgn						BR R600-412	
Horiz. Scale: 1:1      Vert. Scale: As Noted				18781			
Unit Information      Unit Leader Initials				Sheet Number 20			
		4670 Holly Street Denver, CO 80216-6408 Phone: 303-398-6749 FAX: 720-945-1028	Region 6      DJH		Designer: J. CORDOVA      Structure Numbers Detailer:      . Sheet Subset:      .      Subset Sheets: 1 of 1		

TABULATION OF TRAFFIC ENGINEERING ITEMS

ITEM NO.	ITEM DESCRIPTION	UNIT	PROJECT TOTALS
202-00250	REMOVAL PAVEMENT MARKING	SF	3830
627-00005	EPOXY PVMT MKG	GAL	31
627-00012	PVMT MKG PAINT (LOW VOC SOLVENT BASE)	GAL	483
627-01010	PREFORM PLASTIC PVMT MKG (TY I)(INLAID)	SF	1968
630-80001	FLASH BEACON (PORT)	EA	4
630-80335	BARRICADE (3 M-A) (TEMP)	EA	20
630-80341	CONST TRAF SIGN (A)	EA	78
630-80342	CONST TRAF SIGN (B)	EA	97
630-80343	CONST TRAF SIGN (C)	EA	8
630-80344	CONST TRAF SIGN (SPECIAL)	SF	64
630-80358	FLASH ARROW PANEL (C TY)	EA	6
630-80355	PORTABLE MESSAGE SIGN PANEL	EA	8
630-80360	DRUM CHANNEL DEV	EA	250
630-80364	DRUM CHANNEL DEV (LIGHT) (SB)	EA	100
630-80380	TRAFFIC CONE	EA	550
630-85041	MOBILE ATTENATOR	DAY	70

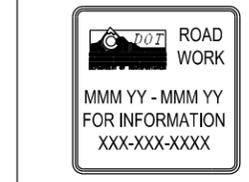
SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES

CONSTRUCTION SIGNS						
SIGN CODE	LEGEND	DIMENSIONS	PANEL SIZE			
			A	B		C
48W20-1	ROAD / WORK / XXXXX			12		
48W20-5R	RIGHT/LANE/CLOSED/_____ FT	48"X48"		8		
48W20-5L	LEFT/LANE/CLOSED/_____ FT	48"X48"		8		
48W4-2()	▲ TRANSITION SYMBOL	48"X48"		8		
48W21-5	SHOULDER / WORK	48"X48"		4		
36G20-5	WORK ZONE ■	36"X12"	8			
48R52-6a	BEGIN / FINES / DOUBLE / IN WORK / ZONE	48"X60"			4	
48R52-6b	END / FINES / DOUBLE / IN WORK / ZONE	48"X60"			4	
36R2-6	FINES / DOUBLE °	36"X36"	8			
48G20-10	XYZ / CONSTRUCTION / THANKS YOU / 555-555-5555 ■	48"X48"		6		
48W20-7a	FLAGGER SYMBOL	48"X48"		6		
48W8-11	UNEVEN / LANES	48"X48"		6		
48W20-3	ROAD / CLOSED / AHEAD	48"X48"	8			
48R11-2	ROAD / CLOSED	48"X30"		6		
36R1-2	YIELD	36"X36"X36"	1			
36R3-1	NO RIGHT TURN	36"X36"	1			
36R3-2	NO LEFT TURN	36"X36"	1			
48W3-2a	YIELD AHEAD	48"X48"		2		
48W9-3	CTR/LANE/CLOSED	48"X48"		2		
48W12-1	SPLIT ARROW	48"X48"		1		
48E-52a	EXIT CLOSED	48"X36"		4		
48W9-3	CTR/LANE/CLOSED	48"X48"		2		
*48G20-11	CONSTRUCTION INFO	48"X48"			64	
24M4-8	DETOUR	24"X12"	10			
21M6-3	ARROW	21"X15"	9			
21M5-1	LEFT ARROW	21"X15"	8			
21M6-1	RIGHT ARROW	21"X15"	8			
48W20-2	DETOUR AHEAD	48"X48"		4		
18M4-10(L)	DETOUR	18"X48"		6		
18M4-10(R)	DETOUR	18"X48"		6		
30R11-3b	BRIDGE OUT XX MILES AHEAD	30"X60"		6		
30R11-3a	ROAD OUT XX MILES AHEAD	30"X60"		6		
30R11-4	ROAD CLOSED TO THRU TRAFFIC	30"X60"		6		
36W13-4	ON RAMP(PLAQUE)	36"X36"	4			
SIGN TOTALS			78	97	8	64

SHEET NOTES

- SEE STANDARD S-630-1 OF THE "COLORADO STANDARD PLANS" FOR TYPICAL PLACEMENT OF THE CONSTRUCTION TRAFFIC CONTROL DEVICES
- \* CONSTRUCTION TRAFFIC SIGN (SPECIAL) PAID BY SQUARE FOOT
- ▲ TO BE PROVIDED WITH INTERCHANGEABLE PLAQUES AT NO ADDITIONAL COST TO THE PROJECT
- ° STENCIL BLACK ON REFLECTIVE WHITE
- STENCIL BLACK ON REFLECTIVE ORANGE
- SEE COLORADO STANDARD PLAN S-630-1 FOR INSTALLATION OF THESE SIGNS
- ROLL-UP TYPE SIGN SHALL NOT BE ALLOWED ON INTERSTATE, FREEWAY, OR EXPRESSWAYS
- CONSTRUCTION INFO SIGNS SHALL USE LOCAL PHONE NUMBERS ONLY WITH NO EXTENTIONS.

CONSTRUCTION INFO SIGNS



G20-11  
 48"X48"  
 Legend - Black (Non-Refl)  
 Background - Fluorescent Orange (Refl)

REV 04-17-2006

Print Date: 4/3/2012		<b>Sheet Revisions</b> Date:                      Comments                      Init.			Colorado Department of Transportation 2000 South Holly Street Denver, CO 80222 Phone: 303-757-9511 FAX: 303-757-9907 <b>Region 6 Traffic and Safety                      LR</b>	<b>As Constructed</b> No Revisions:		<b>TABULATION OF TRAFFIC ENGINEERING ITEMS</b>		<b>Project No./Code</b> BR R600-412	
File Name: 18781 Traf Summary.dgn						Revised:	Designer:                      AK			Structure	
Horiz. Scale: 1:100                      Vert. Scale: As Noted						Void:	Detailer:                      AK	Numbers			
Unit Information                      Unit Leader:                      AK							Sheet Subset:	Subset Sheets:		Sheet Number                      21	

**TABULATION OF PAVEMENT MARKINGS**

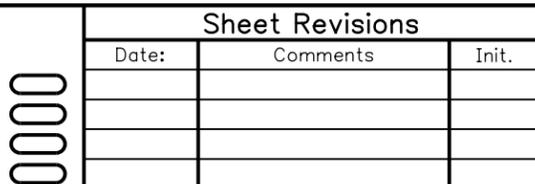
LOCATION	EPOXY PAVEMENT MARKING (LF)															PERFORMED PLASTIC PAVEMENT MARKING (LF)					PERFORMED PLASTIC PAVEMENT MARKING (SF)				
	CENTER				LANE		EDGE		DOTTED		CHANNELIZING		CROSSHATCH		LANE DROP	LANE		CHANNELIZING		LANE DROP		STOP LINES	CROSSWALK LINES	WORD	SYMBOL
	YELLOW SOLID	DOUBLE YELLOW SOLID	YELLOW BROKEN	YELLOW SOLID BROKEN	WHITE BROKEN	WHITE BROKEN	WHITE SOLID	YELLOW SOLID	WHITE BROKEN	WHITE BROKEN	WHITE SOLID	YELLOW SOLID	WHITE SOLID	YELLOW SOLID	WHITE BROKEN	WHITE BROKEN	WHITE BROKEN	WHITE SOLID	WHITE SOLID	WHITE BROKEN	WHITE BROKEN				
4 INCH	4 INCH	4 INCH	4 INCH	4 INCH	8 INCH	4 INCH	4 INCH	4 INCH	8 INCH	8 INCH	4 INCH	7 INCH	8 INCH	11 INCH	8 INCH	11 INCH									
E-16-JJ							600	600																	
F-16-HJ							600	600								1200									
F-16-HL							600	600								1200									
F-16-HM							600	600								1200									
E-17-JP							1150	1150								10416									
E-17-KT							1400	1400								9600									
TOTAL (LF)	0	0	0	0	0	0	4950	4950	0	0	0	0	0	0	0	23616	0	0	0	0	0				
TOTAL (SF)																1968.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
TOTAL (GAL)	0.00	0.00	0.00	0.00	0.00	0.00	15.71	15.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00										

**SUMMARY OF PAVEMENT MARKING QUANTITIES**

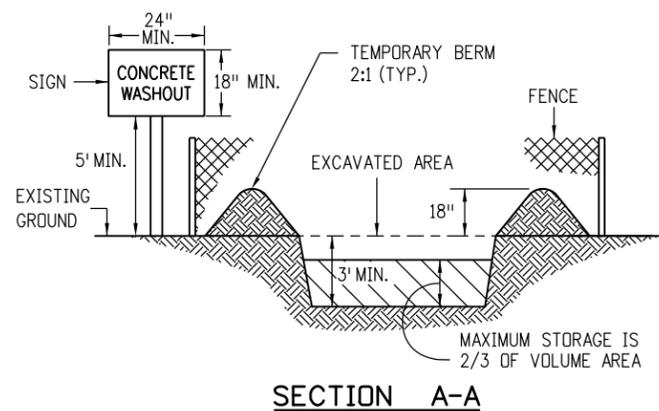
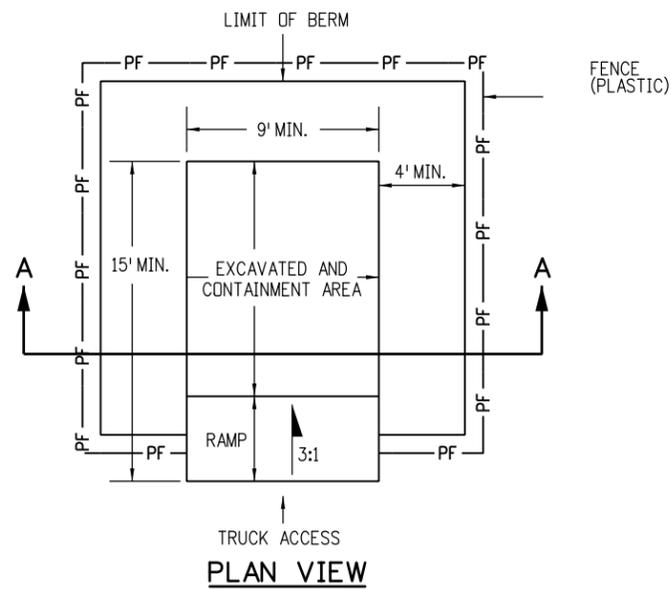
	EPOXY PAVEMENT MARKING (GAL)		PERFORMED PLASTIC PAVEMENT MARKING (TYPE I) (SF)	PERFORMED PLASTIC PAVEMENT MARKING (TYPE II) (SF)	PERFORMED PLASTIC PAVEMENT MARKING (TYPE III) (SF)		PAVEMENT MARKING PAINT (LOW VOC SOLVENT BASE) (GAL)	
	YELLOW	WHITE			WORD - SYMBOL	XWALK - STOPLINE	YELLOW	WHITE
PROJECT TOTALS	15.71	15.71	1968	0	0	0	483	

6      Approximate Number of Temporary Applications     
 Low VOC      Temporary Pavement Marking Material

- NOTES:**
- FOR DETAILS OF PAVEMENT MARKINGS AND LINE PLACEMENT, SEE STANDARD S-627-1.
  - THE CONTRACTOR SHALL MAINTAIN FULL COMPLIANCE OF PAVEMENT MARKINGS ON THE PROJECT AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
  - QUANTITIES PROVIDED FOR TEMPORARY PAVEMENT MARKINGS ARE SUFFICIENT FOR 6 APPLICATIONS DURING CONSTRUCTION.
  - THE CONTRACTOR WILL BE RESPONSIBLE FOR THE INVENTORY OF EXISTING PAVEMENT MARKINGS AND RECORDING THEM SO THAT NEW MARKINGS CAN BE INSTALLED TO MATCH WHERE APPLICABLE. A COPY OF THE EXISTING INVENTORY OF PAVEMENT MARKINGS SHALL BE PROVIDED TO THE PROJECT ENGINEER AND ACCEPTED PRIOR TO PHASE CHANGES OR THE REMOVAL OF ANY EXISTING PAVEMENT MARKINGS.
  - PAVEMENT MARKING "ARROWS" AND THE WORD "ONLY" SHALL BE RELPACED ONLY IF THEY ARE JUSTIFIED BY THE CURRENT REGION POLICY ON INSTALLATION OF SUCH MARKINGS AND AS DIRECTED BY THE ENGINEER. QUANTITIES SHOWN ARE ESTIMATED AND SHALL BE INSTALLED ONLY AS DIRECTED BY THE ENGINEER.

Print Date: 4/3/2012		 Colorado Department of Transportation 2000 South Holly Street Denver, CO 80222 Phone: 303-757-9511 FAX: 303-757-9907 Region 6 Traffic and Safety      LR	As Constructed	TABULATION OF PAVEMENT MARKINGS		Project No./Code	
File Name: 18781Traf_004Tab of Pvmt Mkgs01.dgn			No Revisions:			BR R600-412	
Horiz. Scale: 1:100      Vert. Scale: As Noted			Revised:	Designer: KOUPRIEVITCH	Structure Numbers	18781	
Unit Information: 6580      Unit Leader: XX	Void:	Detailer: KOUPRIEVITCH	Subset Sheets:	Sheet Number 22			
		Sheet Subset: TRAFFIC					

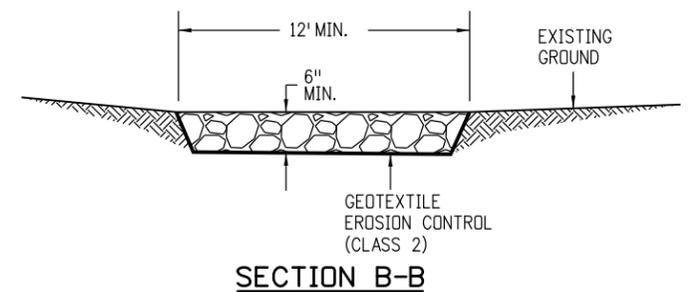
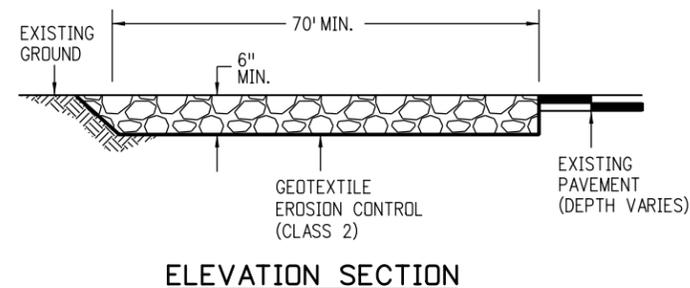
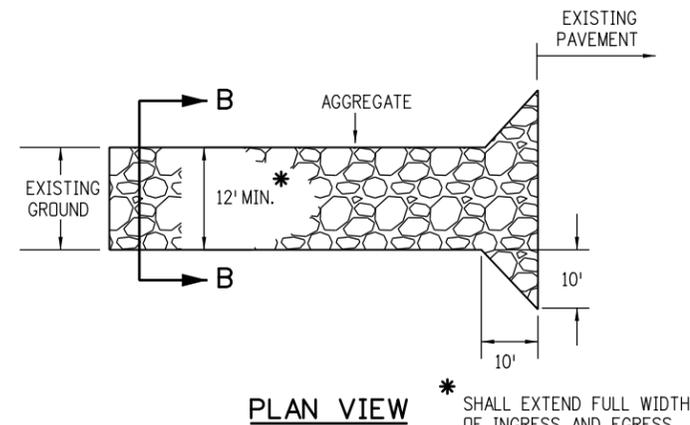
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**NOTES:**

1. EROSION BALES MAY BE USED AS AN ALTERNATIVE FOR THE BERM.
2. A FENCE (PLASTIC) CONFORMING TO SUBSECTION 607.02 SHALL BE INSTALLED AROUND THE CONCRETE WASHOUT AREA, EXCEPT AT THE OPENING.
3. THE CONCRETE WASHOUT SIGN SHALL HAVE LETTERS AT LEAST 3 INCHES HIGH AND CONFORM TO SUBSECTION 630.02.

**CONCRETE WASHOUT STRUCTURE**



**NOTES:**

1. AGGREGATE FOR THE CONSTRUCTION ENTRANCE SHALL CONFORM TO SUBSECTION 208.02 (K).
2. THE CONTRACTOR SHALL PROTECT CURB AND GUTTER THAT CROSSES THE ENTRANCE FROM DAMAGE. PROTECTION OF THE CURB AND GUTTER WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.

**VEHICLE TRACKING PAD**

Computer File Information	
Creation Date: 06/08/10	Initials: DD
Last Modification Date: 07/29/11	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 2080101012.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
(R-X) 08/26/10	Revised to meet new water quality standards.
(R-X) 07/29/11	Revised sheets 1-7 and added sheets 8-12.
(R-X) 07/29/11	Revised sheet 5 of 12.

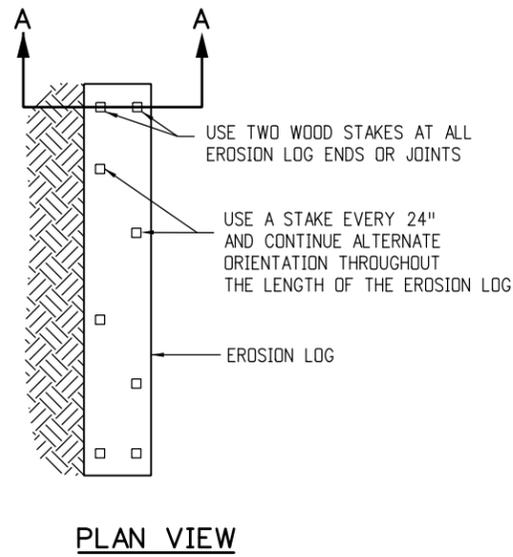
Colorado Department of Transportation  
 4201 East Arkansas Avenue  
 Denver, Colorado 80222  
 Phone: (303) 757-9083  
 Fax: (303) 757-9820

**Project Development Branch** DD/LTA

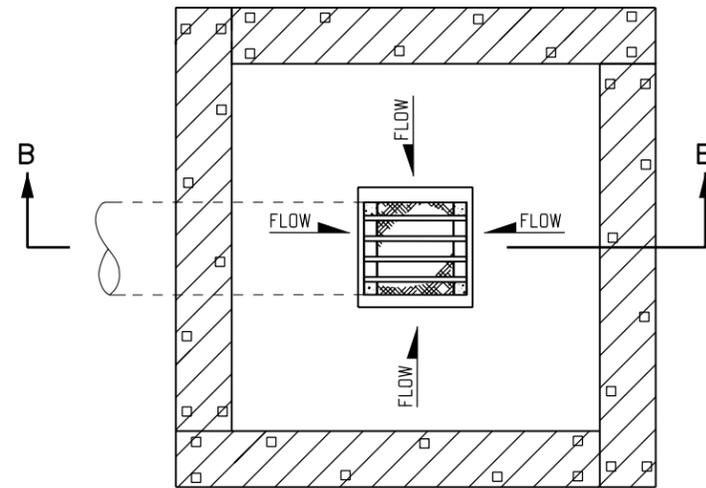
**TEMPORARY EROSION CONTROL**

Issued By: Project Development Branch on July 04, 2006

STANDARD PLAN NO.
M-208-1
Sheet No. 1 of 12

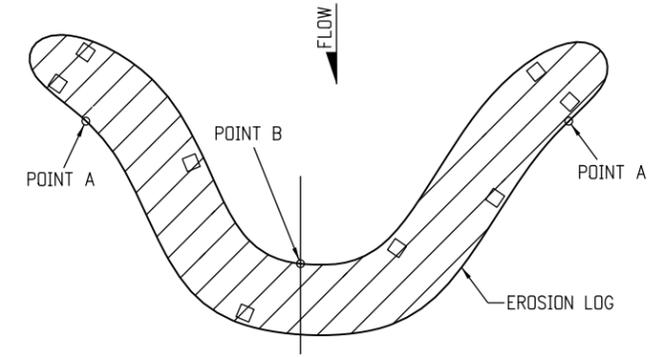


**PLAN VIEW**

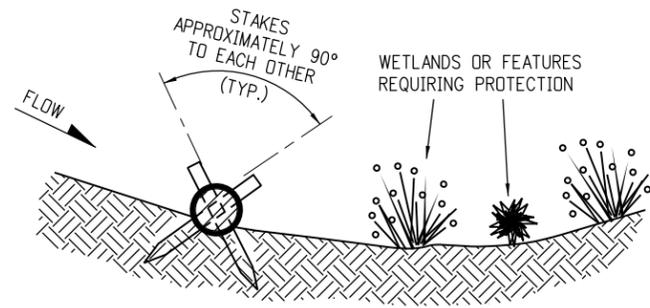


**PLAN VIEW**

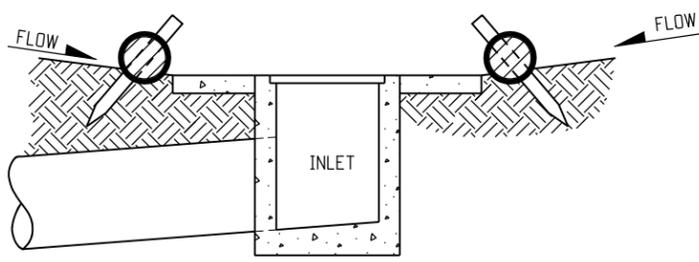
- NOTES**
1. EROSION LOGS SHALL BE EMBEDDED 2 INCHES INTO THE SOIL.
  2. STAKES SHALL BE EMBEDDED TO A MINIMUM DEPTH OF 12 INCHES.
  3. EROSION LOGS SHALL BE TIGHTLY ABUTTED WITH NO GAPS.



**PLAN VIEW**

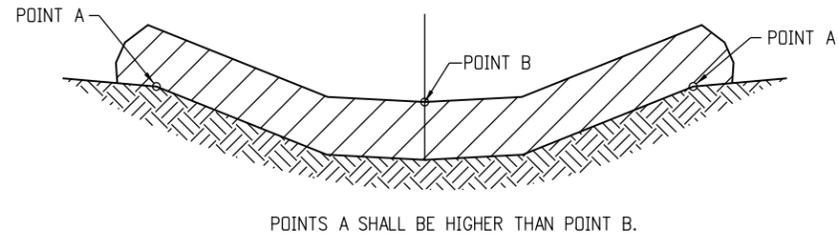


**SECTION A-A**  
**TYPICAL STAKE INSTALLATION**



**SECTION B-B**  
**EROSION LOG FILTER AT DROP INLET**

NOTE: LOCATE EROSION LOGS AT THE OUTSIDE EDGE OF THE CONCRETE APRON.



**ELEVATION**  
**EROSION LOG DITCH INSTALLATION**

**EROSION LOG APPLICATIONS**

Computer File Information	
Creation Date: 06/08/10	Initials: DD
Last Modification Date: 07/29/11	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 2080102012.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
08/26/10	Revised to meet new water quality standards.
	Revised sheets 1-7.
	Added sheets 8-12.

Colorado Department of Transportation



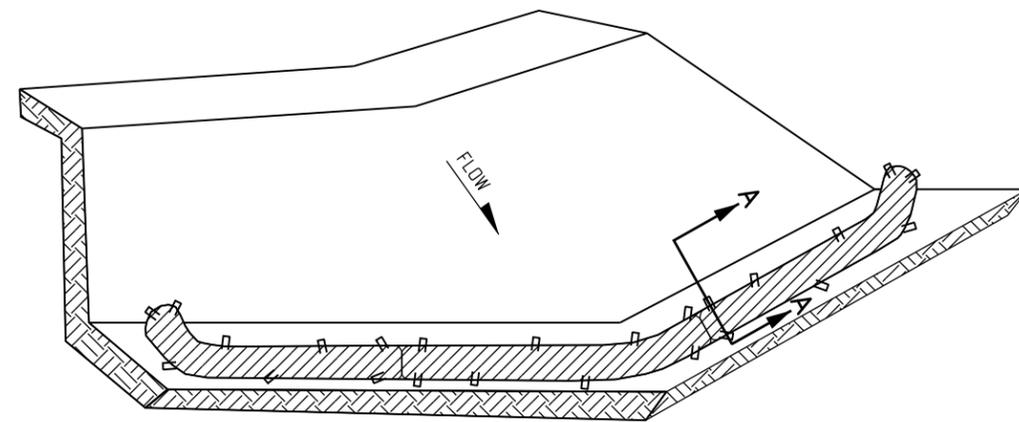
4201 East Arkansas Avenue  
Denver, Colorado 80222  
Phone: (303) 757-9083  
Fax: (303) 757-9820

Project Development Branch DD/LTA

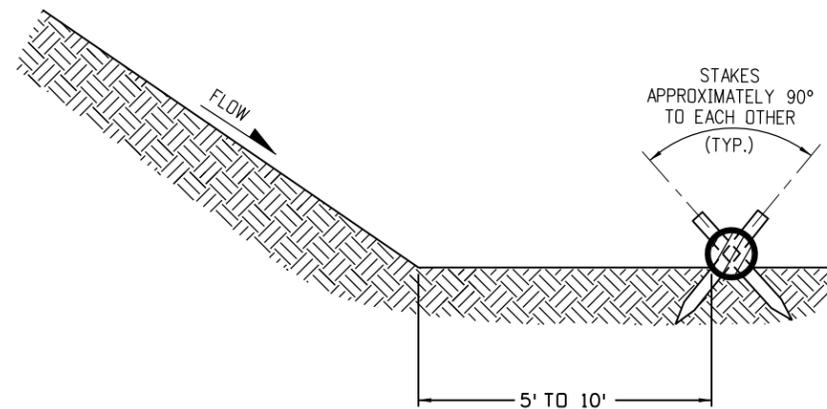
**TEMPORARY EROSION CONTROL**

Issued By: Project Development Branch on July 04, 2006

STANDARD PLAN NO.
M-208-1
Sheet No. 2 of 12



**ISOMETRIC VIEW**



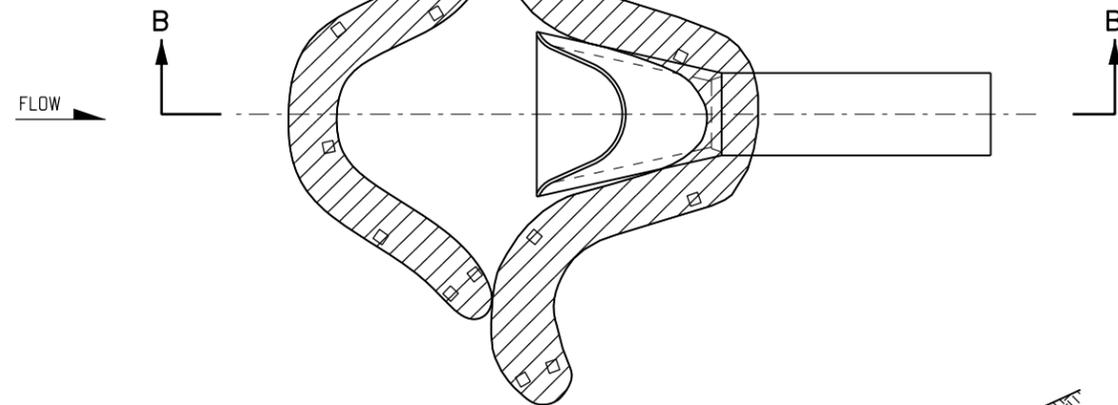
**SECTION A-A**

**NOTES:**

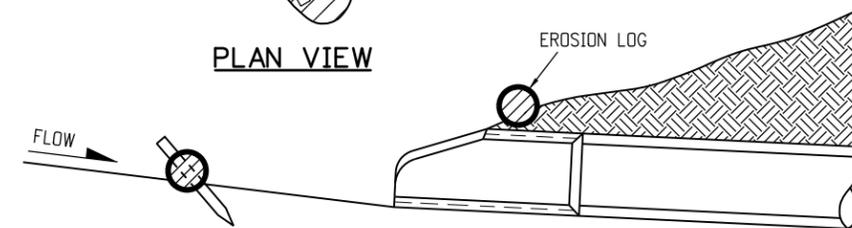
1. EROSION LOGS USED AT TOE OF SLOPE SHALL BE PLACED 5 TO 10 FEET BEYOND TOE OF SLOPE TO PROVIDE STORAGE CAPACITY.
2. EROSION LOGS SHALL BE PLACED ON THE CONTOUR, WITH ENDS FLARED UP SLOPE.

**EROSION LOG TOE OF SLOPE PROTECTION**

EROSION LOGS SHALL BE TIGHTLY ABUTTED WITH NO GAPS (TYP.)

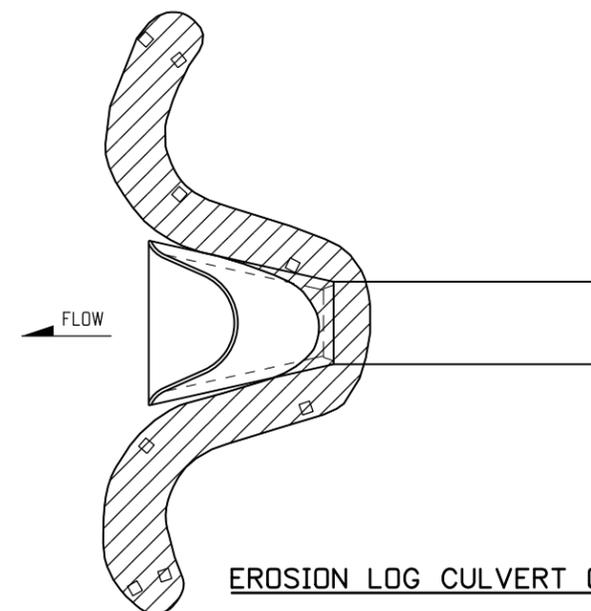


**PLAN VIEW**



**SECTION B-B**

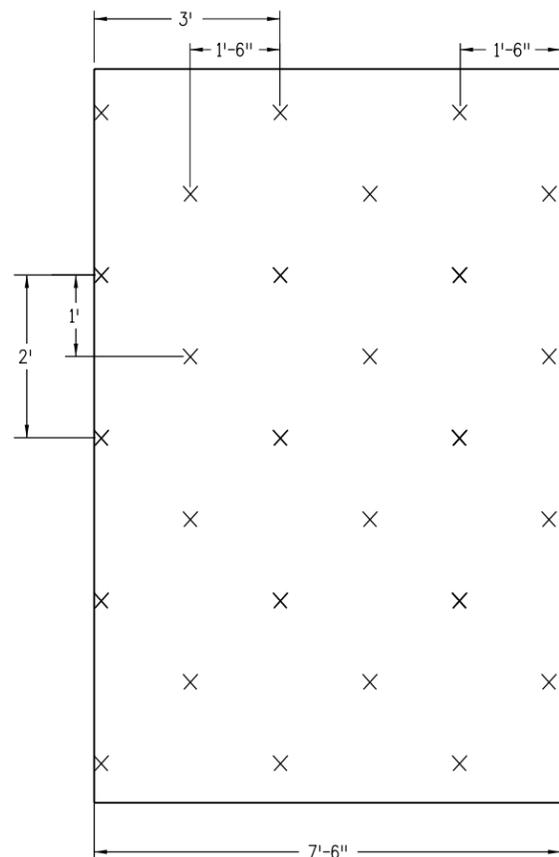
**EROSION LOG CULVERT INLET PROTECTION**



**EROSION LOG CULVERT OUTLET PROTECTION**

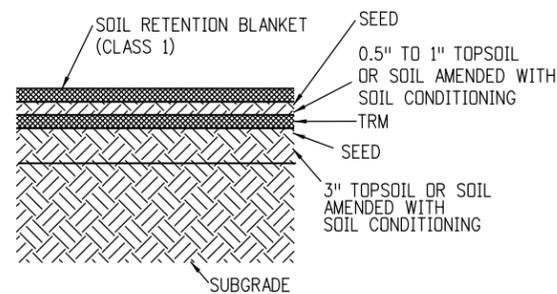
**EROSION LOG APPLICATIONS**

<b>Computer File Information</b>		<b>Sheet Revisions</b>		 Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820 Project Development Branch DD/LTA	<b>TEMPORARY EROSION CONTROL</b> Issued By: Project Development Branch on July 04, 2006	<b>STANDARD PLAN NO.</b>	
Creation Date: 06/08/10	Initials: DD	Date:	Comments			M-208-1	
Last Modification Date: 07/29/11	Initials: LTA	08/26/10	Revised to meet new water quality standards.			Sheet No. 3 of 12	
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)		Revised sheets 1-7.				
Drawing File Name: 2080103012.dgn	(R-X)		Added sheets 8-12.				
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English	(R-X)				



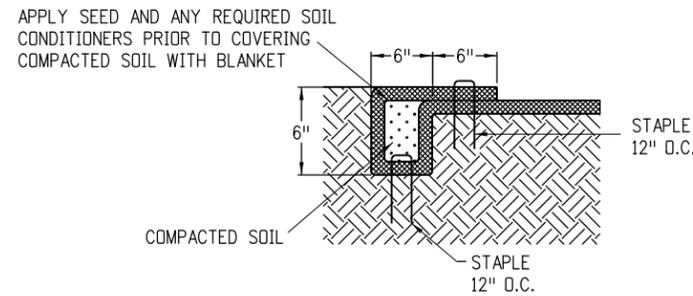
**TYPICAL STAPLE PATTERN FOR CHANNEL APPLICATION**

SEE SUBSECTION 216.05.



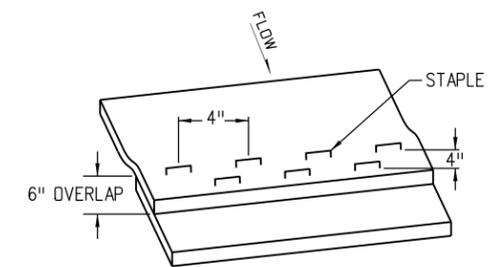
**SOIL FILLED TRM APPLICATION**

1. PLACE 3" TOPSOIL OR SOIL AMENDED WITH SOIL CONDITIONING.
2. APPLY SEED AND RAKE INTO SOIL.
3. INSTALL TRM.
4. PLACE 0.5" TO 1" TOPSOIL OR SOIL AMENDED WITH SOIL CONDITIONING.
5. APPLY SEED AND RAKE INTO SOIL.
6. INSTALL SOIL RETENTION BLANKET (CLASS 1).



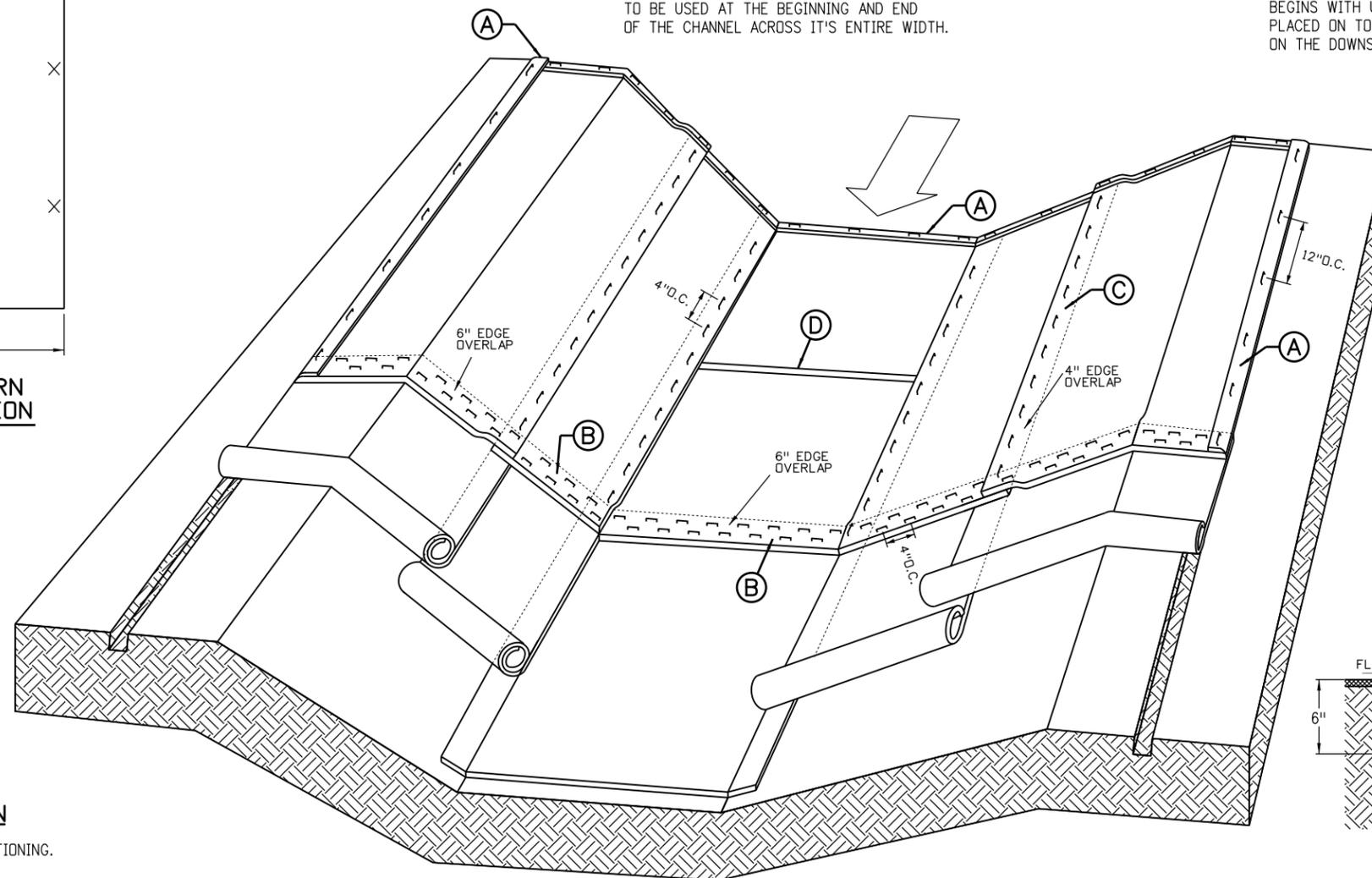
**ANCHOR TRENCH SECTION (A)**

TO BE USED AT THE BEGINNING AND END OF THE CHANNEL ACROSS IT'S ENTIRE WIDTH.



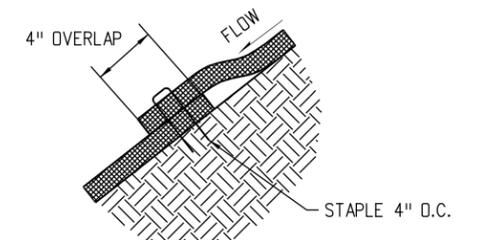
**CONSECUTIVE ROLL OVERLAP SECTION (B)**

TO BE USED WHEREVER ONE ROLL OF BLANKET ENDS AND ANOTHER BEGINS WITH UPSTREAM BLANKET PLACED ON TOP OF THE BLANKET ON THE DOWNSTREAM SIDE.



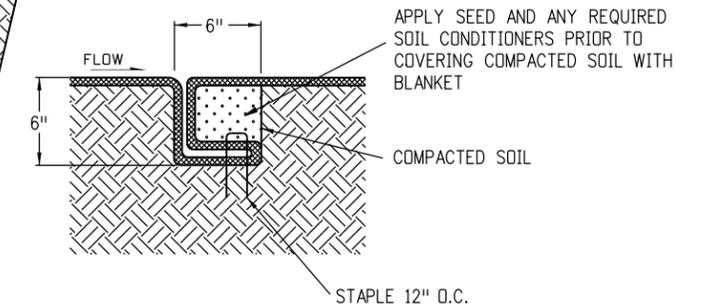
**SOIL RETENTION BLANKETS/TURF REINFORCEMENT MATS (TRM) CHANNEL APPLICATION**

IN ACCORDANCE WITH SECTION 216.



**SIDE SEAM OVERLAP SECTION (C)**

TO BE USED FOR OVERLAP WHEN 2 WIDTHS OF BLANKET ARE APPLIED SIDE BY SIDE WITH THE UPHILL BLANKET PLACED ON TOP OF THE BLANKET ON THE DOWNHILL SIDE.



**CHANNEL CHECK SLOT SECTION (D)**

TO BE USED AT 30' INTERVALS IN CHANNEL FLOWLINE.

**Computer File Information**

Creation Date: 06/08/10	Initials: DD
Last Modification Date: 07/29/11	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 2080104012.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

**Sheet Revisions**

Date:	Comments
08/26/10	Revised to meet new water quality standards.
	Revised sheets 1-7.
	Added sheets 8-12.

**Colorado Department of Transportation**

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Project Development Branch DD/LTA

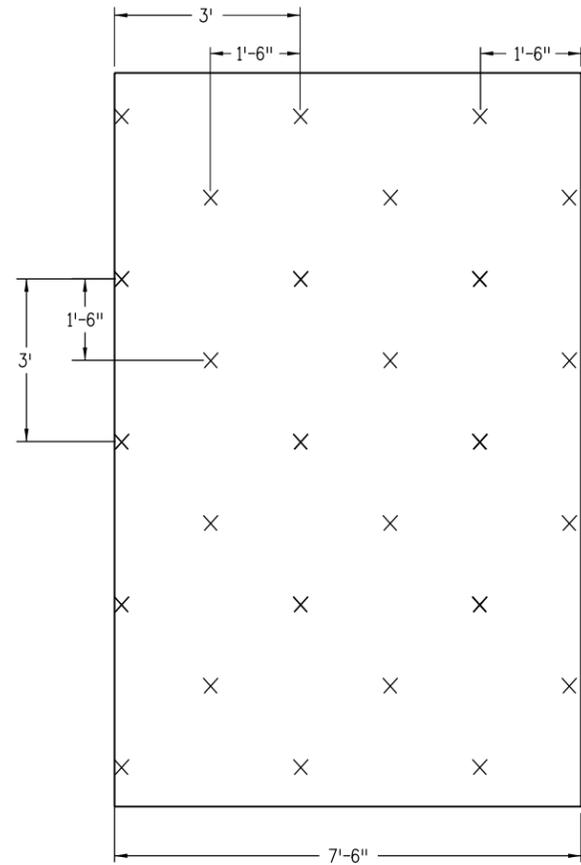
**TEMPORARY EROSION CONTROL**

Issued By: Project Development Branch on July 04, 2006

**STANDARD PLAN NO.**

M-208-1

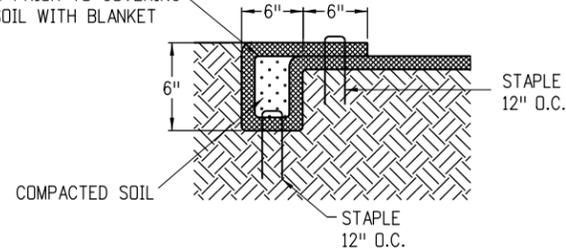
Sheet No. 4 of 12



**TYPICAL STAPLE PATTERN FOR SLOPE APPLICATION**

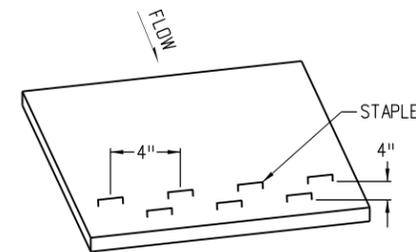
SEE SUBSECTION 216.04.

APPLY SEED AND ANY REQUIRED SOIL CONDITIONERS PRIOR TO COVERING COMPACTED SOIL WITH BLANKET



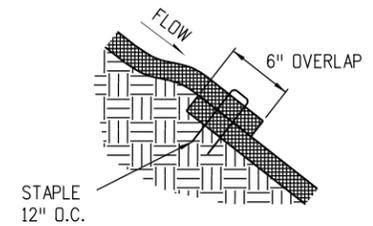
**ANCHOR TRENCH SECTION (A)**

TO BE USED AT THE UPSLOPE AND DOWNSLOPE ENDS OF BLANKET ACROSS THE ENTIRE WIDTH OF SLOPE UNLESS SLOPE RUNS INTO RECEIVING WATER. (SEE DOWNSLOPE END STAPLE CHECK).



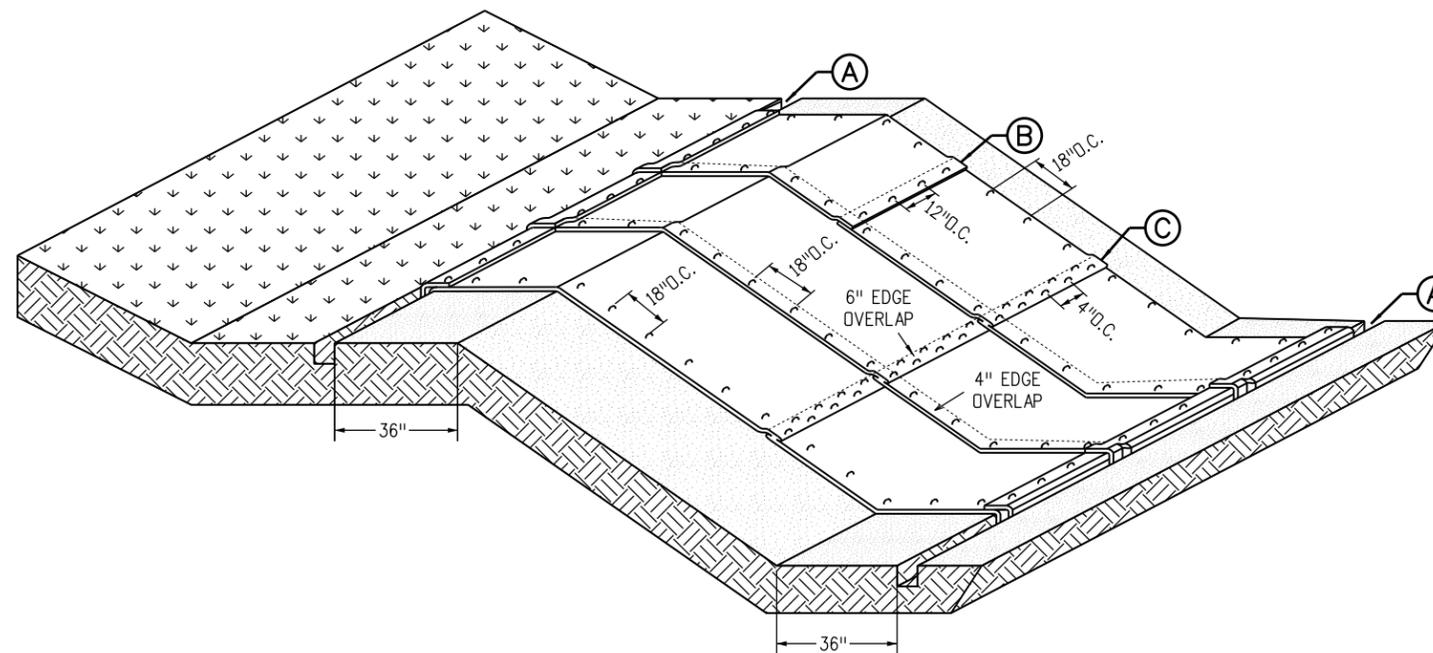
**DOWNSLOPE END STAPLE CHECK**

TO BE USED WHEN SLOPE RUNS INTO A RECEIVING WATER AND CANNOT BE EXTENDED 3 FEET BEYOND SLOPE.



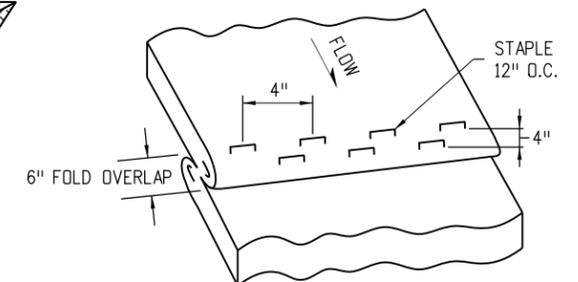
**CONSECUTIVE ROLL OVERLAP SECTION (B)**

TO BE USED WHEREVER ONE ROLL OF BLANKET ENDS AND ANOTHER BEGINS WITH THE UPHILL BLANKET PLACED ON TOP OF THE BLANKET ON THE DOWNHILL SIDE.



**SOIL RETENTION BLANKETS/TURF REINFORCEMENT MATS (TRM) SLOPE APPLICATION**

IN ACCORDANCE WITH SECTION 216.



**STAPLE CHECK SECTION (C)**

**NOTES:**

1. Z SHAPED FOLD TO BE USED ON SLOPE EVERY 35 FEET MAXIMUM.
2. STAPLE CHECK LOCATIONS SHOULD BE AT LEAST 15 FEET FROM THE BOTTOM OF SLOPE.

Computer File Information	
Creation Date: 06/08/10	Initials: DD
Last Modification Date: 07/29/11	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 2080105012.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

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Date:	Comments
(R-X)	Revised to meet new water quality standards.
(R-X) 08/26/10	Revised sheets 1-7.
(R-X)	Added sheets 8-12.
(R-X) 07/29/11	Revised Staple Check Detail.

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**TEMPORARY EROSION CONTROL**

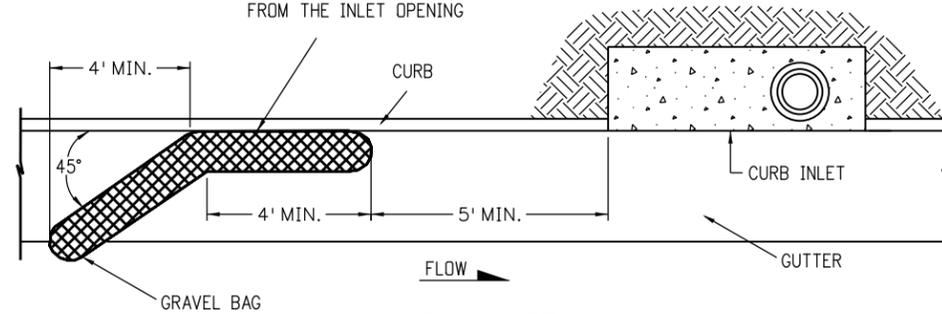
Issued By: Project Development Branch on July 04, 2006

**STANDARD PLAN NO.**

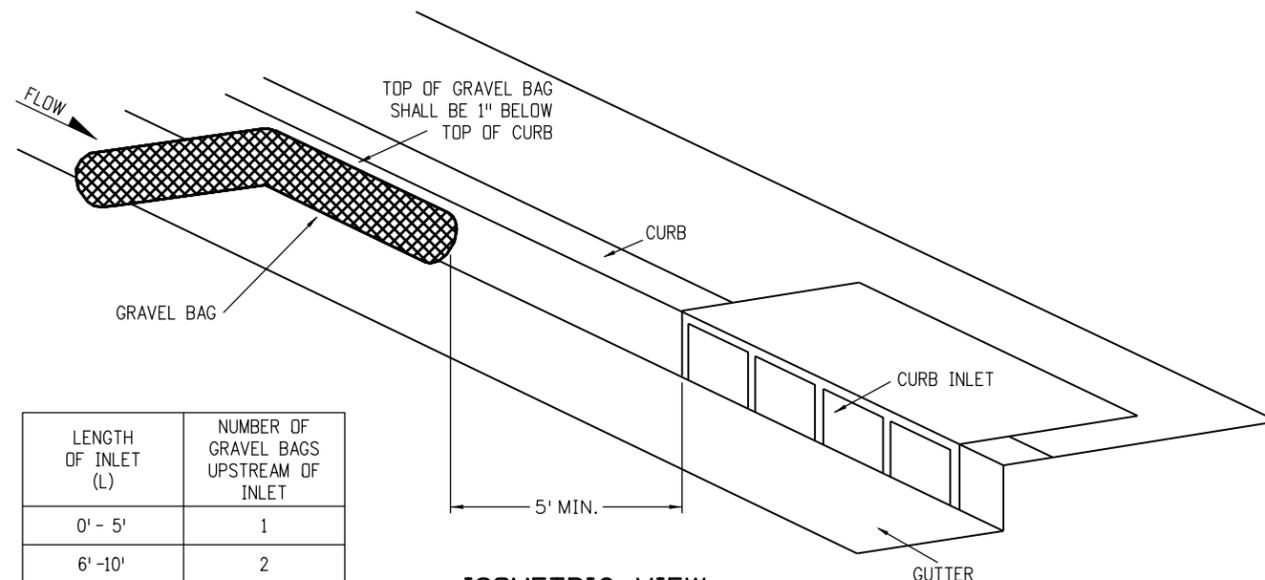
M-208-1

Sheet No. 5 of 12

GRAVEL BAG SHALL BE PLACED TIGHTLY AGAINST CURB FACE AND SHALL BE PLACED 5' UPSTREAM FROM THE INLET OPENING

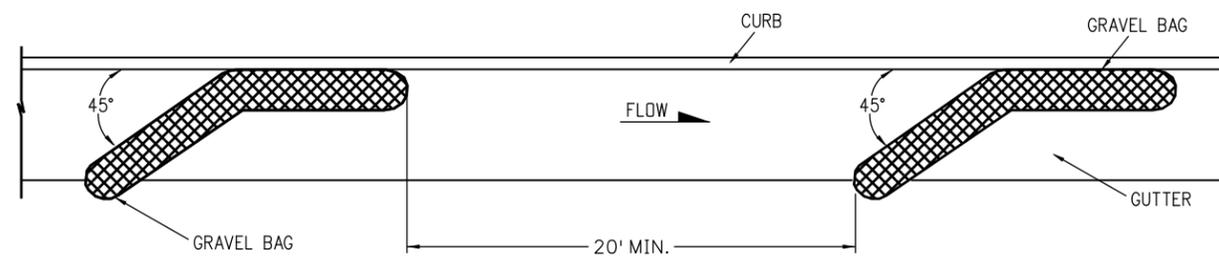


PLAN VIEW



ISOMETRIC VIEW

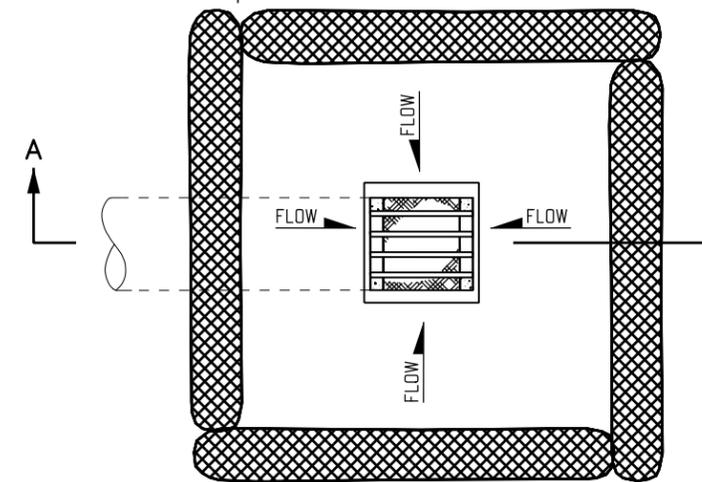
LENGTH OF INLET (L)	NUMBER OF GRAVEL BAGS UPSTREAM OF INLET
0' - 5'	1
6' - 10'	2
L > 10'	3



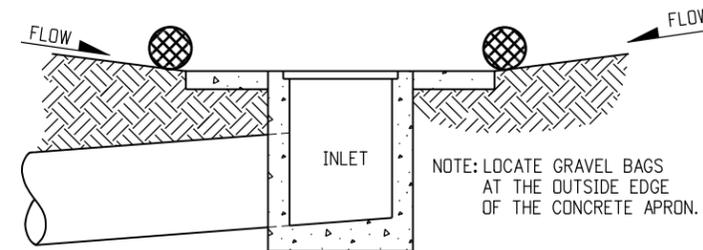
PLAN VIEW FOR MULTIPLE GRAVEL BAGS

GRAVEL BAG CURB CHECK

GRAVEL BAGS SHALL BE TIGHTLY ABUTTED WITH NO GAPS (TYP.)



PLAN VIEW



SECTION A-A

GRAVEL BAG FILTER AT DROP INLET

GRAVEL BAG APPLICATIONS

Computer File Information

Creation Date: 07/04/06 Initials: DD  
 Last Modification Date: 07/29/11 Initials: LTA  
 Full Path: www.dot.state.co.us/DesignSupport/  
 Drawing File Name: 2080106012.dgn  
 CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English

Sheet Revisions

Date:	Comments
08/26/10	Revised to meet new water quality standards.
	Revised sheets 1-7.
	Added sheets 8-12.

Colorado Department of Transportation



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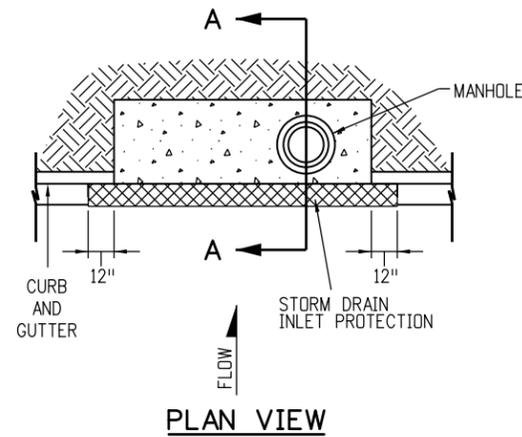
TEMPORARY  
 EROSION CONTROL

Issued By: Project Development Branch on July 04, 2006

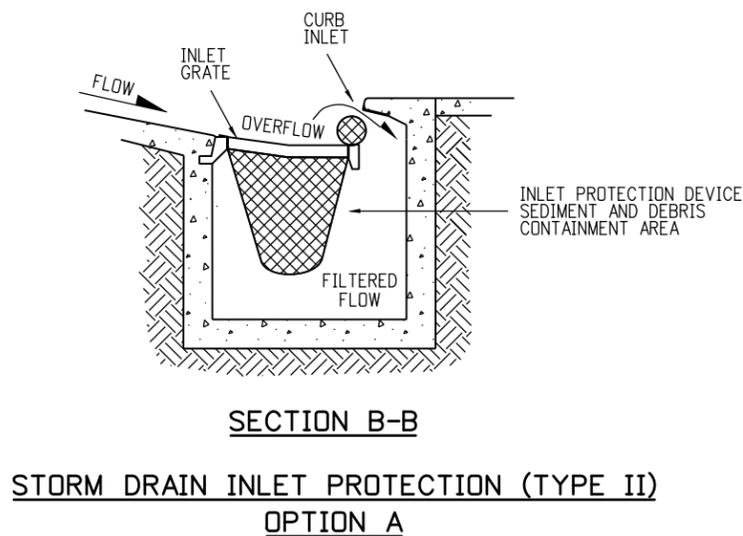
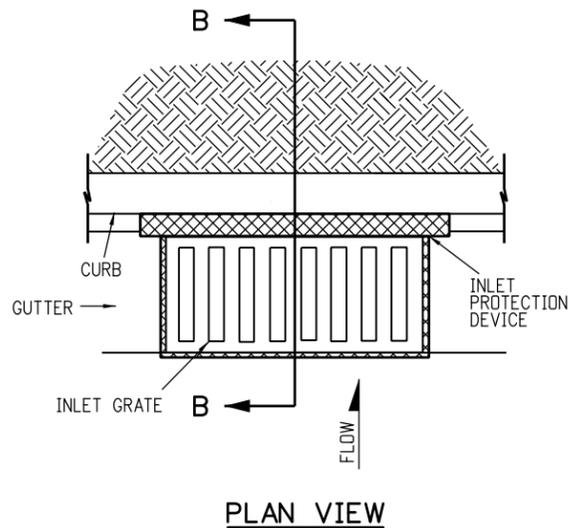
STANDARD PLAN NO.

M-208-1

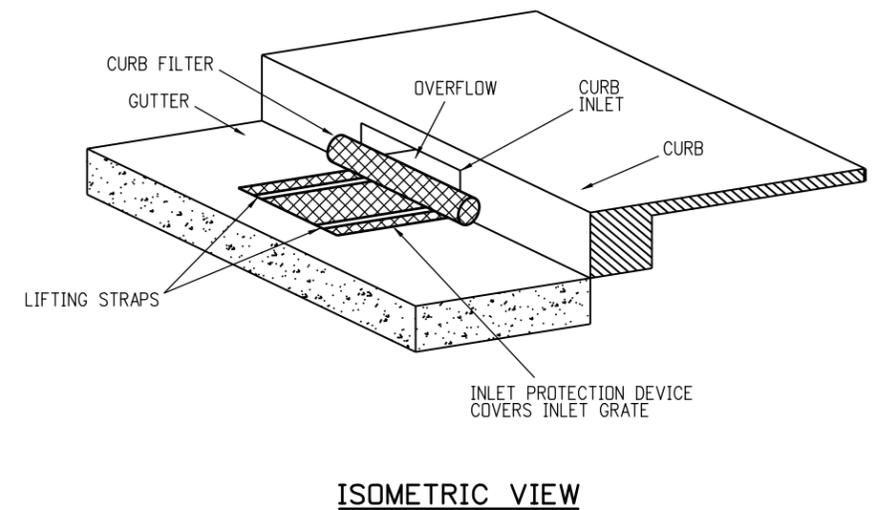
Sheet No. 6 of 12



**SECTION A-A**  
**STORM DRAIN INLET PROTECTION (TYPE I)**  
 INLET PROTECTION SHALL EXTEND 12 IN. PAST EACH END OF THE INLET.



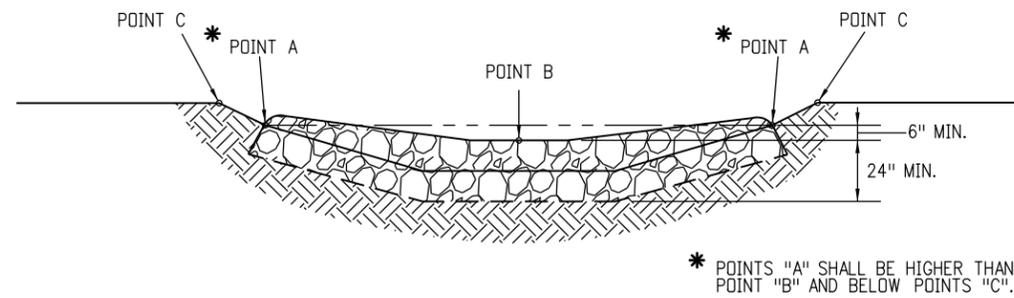
**SECTION B-B**  
**STORM DRAIN INLET PROTECTION (TYPE II)**  
**OPTION A**



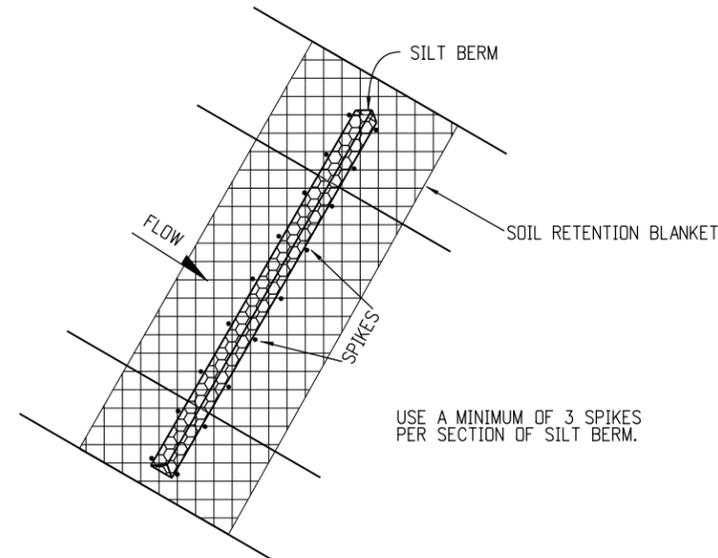
**ISOMETRIC VIEW**  
**STORM DRAIN INLET PROTECTION (TYPE II)**  
**OPTION B**

**STORM DRAIN INLET PROTECTION**

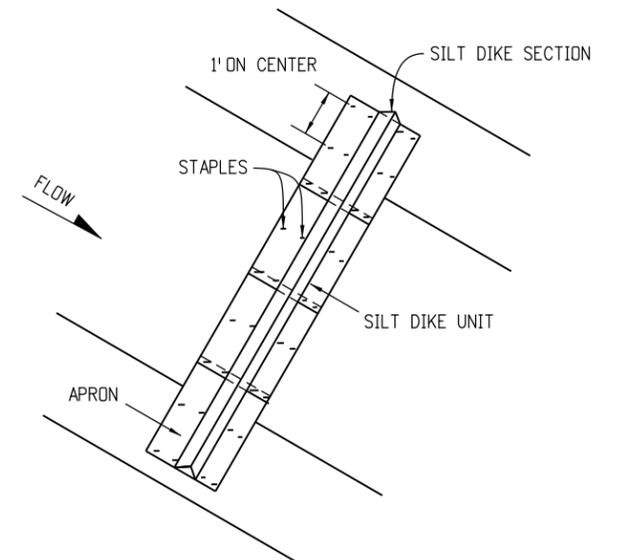
<b>Computer File Information</b>		<b>Sheet Revisions</b>		Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820 <b>Project Development Branch</b> <b>DD/LTA</b>	<b>TEMPORARY</b> <b>EROSION CONTROL</b>	<b>STANDARD PLAN NO.</b>	
Creation Date: 07/04/06	Initials: DD	Date:	Comments			<b>M-208-1</b> <b>Sheet No. 7 of 12</b>	
Last Modification Date: 07/29/11	Initials: LTA	08/26/10	Revised to meet new water quality standards.				
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)		Revised sheets 1-7.				
Drawing File Name: 2080107012.dgn	(R-X)		Added sheets 8-12.				
CAD Ver.: MicroStation V8	Scale: Not to Scale		Units: English	(R-X)			



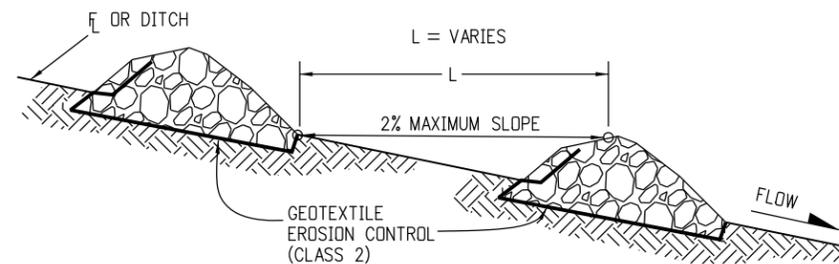
**TYPICAL SECTION VIEW**



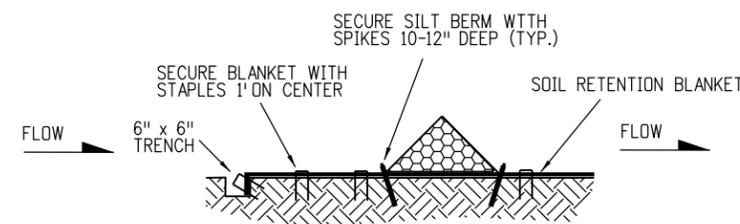
**PLAN VIEW**



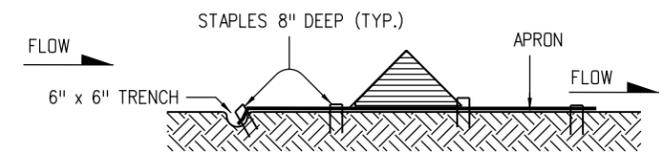
**PLAN VIEW**



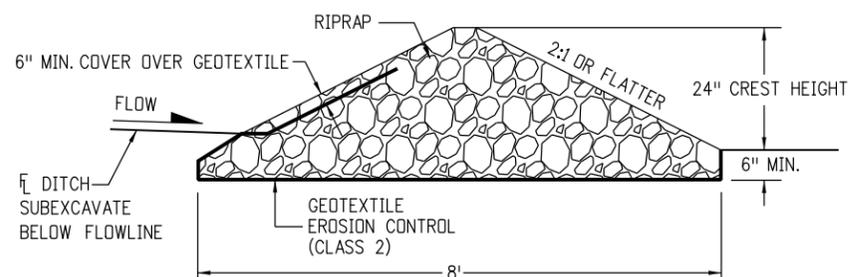
**SECTION VIEW ALONG DITCH FLOWLINE**



**TYPICAL SECTION VIEW**



**TYPICAL SECTION**

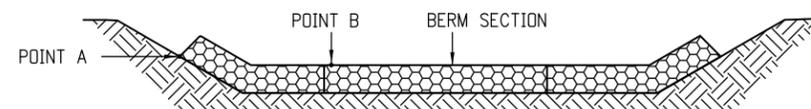


**SECTION DETAIL**

- NOTES:
1. RIPRAP SIZE  $D_{50} = 6"$  OR AS SHOWN ON THE PLANS.
  2. THE ENDS OF RIPRAP CHECK DAM SHALL BE A MINIMUM OF 6 IN. HIGHER THAN CENTER OF CHECK DAM.

**ROCK CHECK DAM**

- NOTES:
1. ANCHOR SOIL RETENTION BLANKET INTO TRENCH WITH 8" MINIMUM STAPLES PLACED AT 1.5' INTERVALS ALONG EDGE.
  2. FILL AND COMPACT TRENCH.
  3. SECTIONS OF THE SILT BERM SHALL BE OVERLAPPED WITH NO GAPS.



**FRONT VIEW**

**SILT BERM-VELOCITY CHECKS**

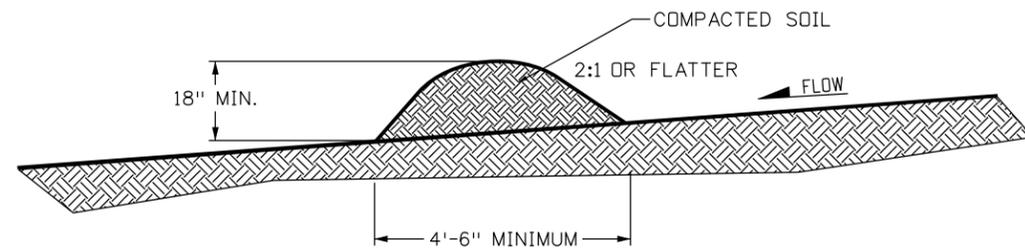


**FRONT VIEW**

**SILT DIKE-INSTALLATION**

**DRAINAGE DITCH APPLICATIONS**

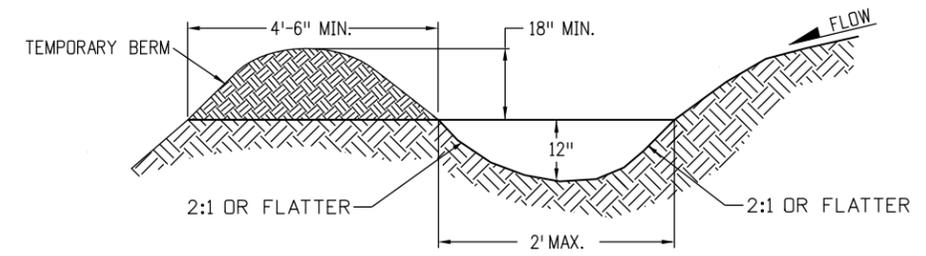
<b>Computer File Information</b>		<b>Sheet Revisions</b>		Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820 Project Development Branch DD/LTA	<h1>TEMPORARY EROSION CONTROL</h1>	<b>STANDARD PLAN NO.</b>	
Creation Date: 07/04/06	Initials: DD	Date:	Comments:			<h2>M-208-1</h2>	
Last Modification Date: 07/29/11	Initials: LTA	08/26/10	Revised to meet new water quality standards.				
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)		Revised sheets 1-7.				
Drawing File Name: 2080108012.dgn	(R-X)		Added sheets 8-12.			<h2>Sheet No. 8 of 12</h2>	
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English	(R-X)		Issued By: Project Development Branch on July 04, 2006		



**TEMPORARY BERM**

NOTES:

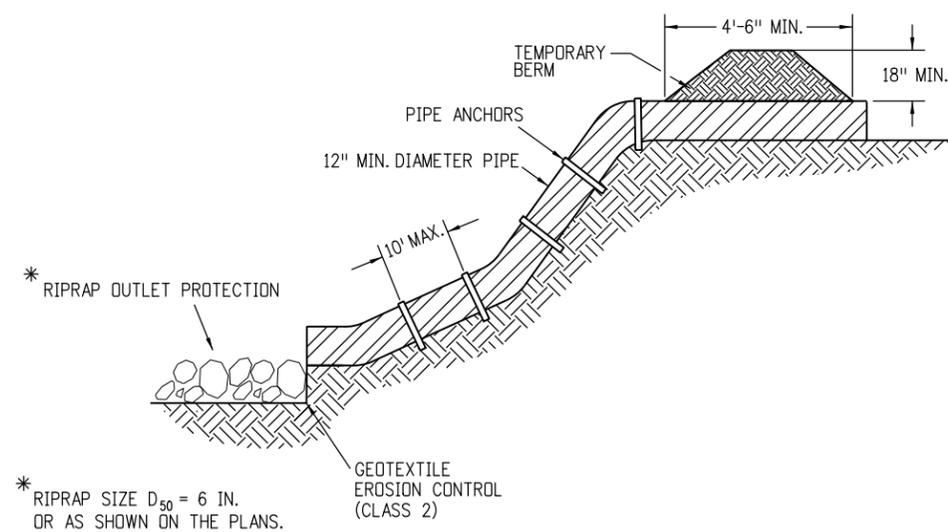
1. BERMS SHALL HAVE A HEIGHT OF 18 INCHES, SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM BASE WIDTH OF 4.5 FEET.
2. BERMS SHALL BE USED TO INTERCEPT AND DIVERT DRAINAGE TO A DESIGNATED OUTLET.
3. BERMS SHALL NOT BE USED WHERE DRAINAGE AREA EXCEEDS 10 ACRES.



**TEMPORARY DIVERSION**

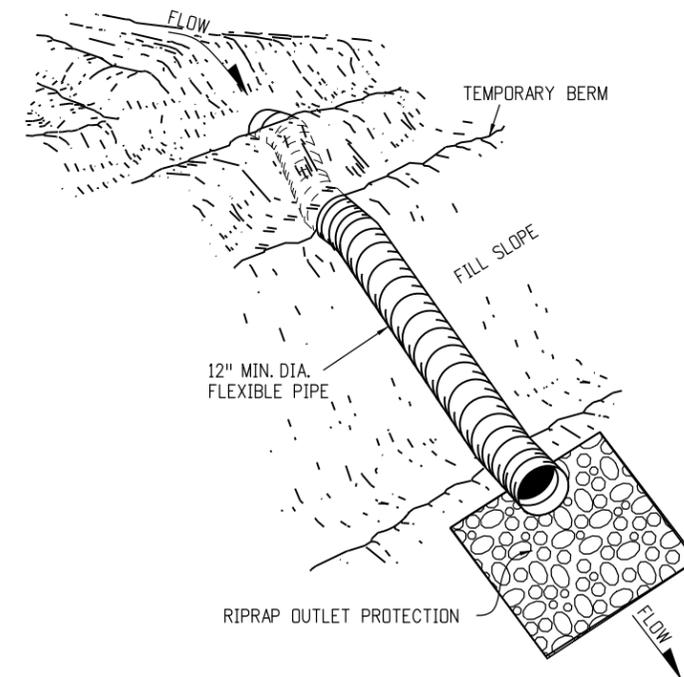
NOTES:

1. TEMPORARY DIVERSION DITCH SHALL BE CONSTRUCTED ACROSS THE SLOPE TO INTERCEPT RUNOFF AND DIRECT IT TO A STABLE OUTLET OR SEDIMENT TRAP.
2. USE IMMEDIATELY ABOVE A NEW CUT OR FILL SLOPE OR AROUND THE PERIMETER OF A DISTURBED AREA.
3. GRADIENT ALONG THE FLOW PATH SHALL HAVE A POSITIVE GRADE TO ASSURE DRAINAGE, BUT SHALL NOT BE SO STEEP AS TO RESULT IN EROSION DUE TO HIGH VELOCITY.

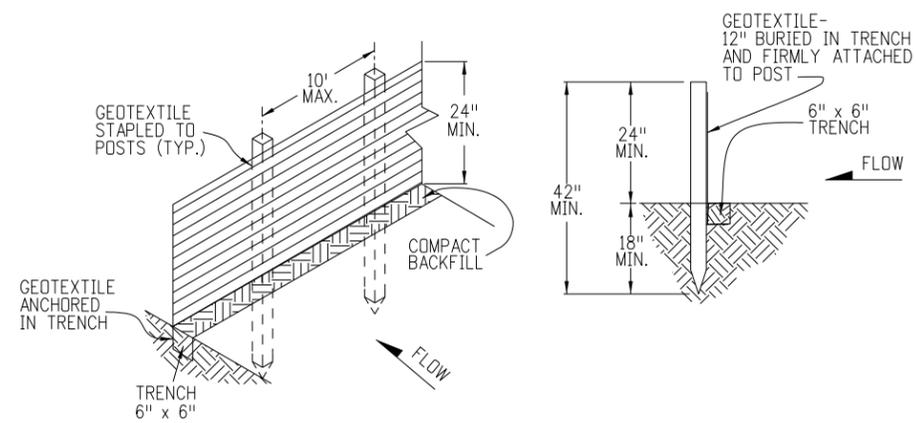


**TEMPORARY SLOPE DRAIN**

ANCHOR SIZE VARIES ACCORDING TO PIPE SIZE.

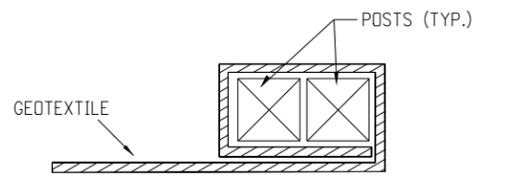


<b>Computer File Information</b>		<b>Sheet Revisions</b>		Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820 <b>Project Development Branch</b> <b>DD/LTA</b>	<b>TEMPORARY EROSION CONTROL</b>	STANDARD PLAN NO.
Creation Date: 06/08/10	Initials: DD	Date:	Comments			M-208-1
Last Modification Date: 07/29/11	Initials: LTA	08/26/10	Revised to meet new water quality standards.			Sheet No. 9 of 12
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)		Revised sheets 1-7.			
Drawing File Name: 2080109012.dgn	(R-X)		Added sheets 8-12.			
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English			Issued By: Project Development Branch on July 04, 2006	



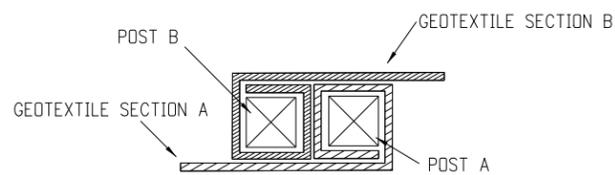
**SILT FENCE**

GEOTEXTILE SHALL BE ATTACHED TO WOOD POSTS WITH THREE OR MORE STAPLES PER POST.  
 STAPLES SHALL BE 1/2"  
 WOOD POST SHALL BE 1 1/2" X 1 1/2" NOMINAL.



**END SECTION DETAIL (PLAN VIEW)**

GEOTEXTILE SHALL BE FOLDED AROUND TWO POSTS ONE FULL TURN. SECURE GEOTEXTILE TO POST WITH THREE STAPLES MINIMUM.

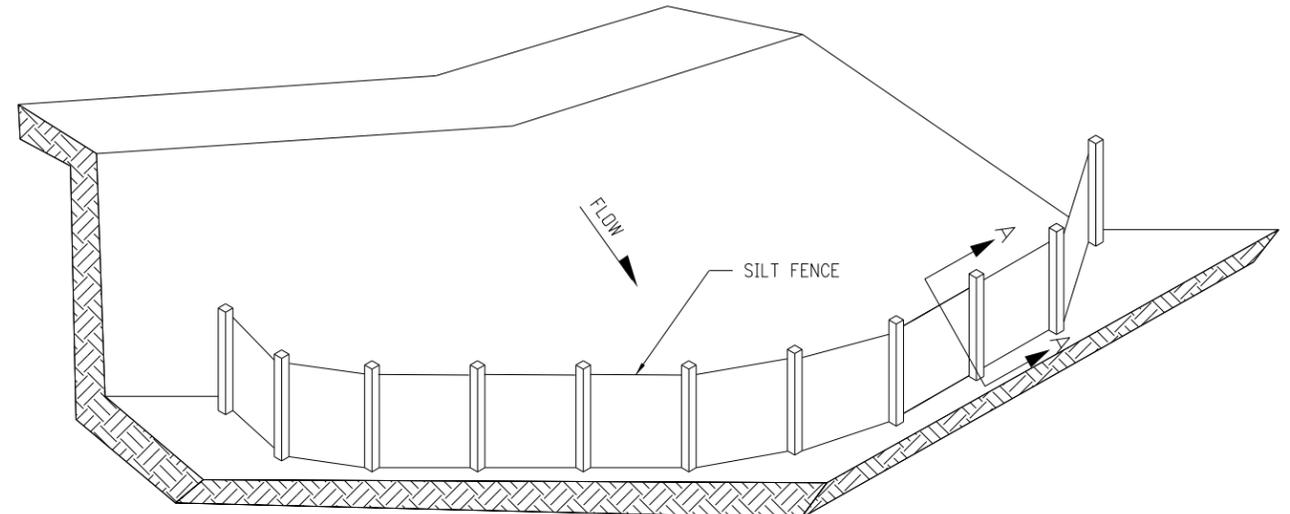


**JOINING SECTION DETAIL (PLAN VIEW)**

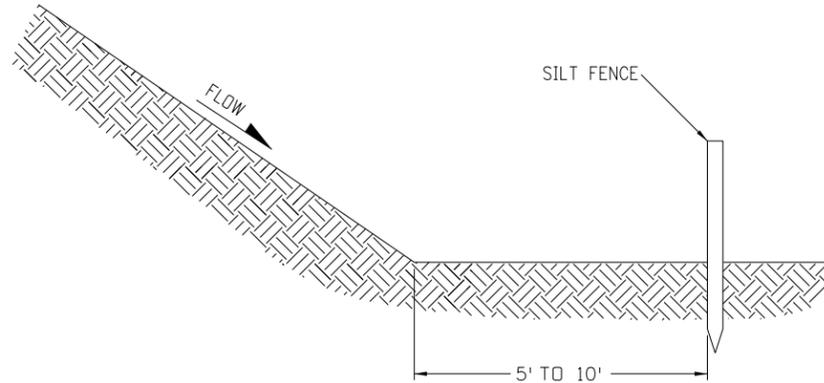
FOLD GEOTEXTILE AROUND EACH POST ONE FULL TURN. SECURE GEOTEXTILE TO POST WITH THREE STAPLES MINIMUM.  
 POSTS SHALL BE TIGHTLY ABUTTED WITH NO GAPS TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT.

**NOTES**

1. SILT FENCE SHALL HAVE A MAXIMUM DRAINAGE AREA OF ONE-QUARTER ACRE PER 100 FEET OF SILT FENCE LENGTH; MAXIMUM SLOPE LENGTH BEHIND BARRIER IS 100 FEET; MAXIMUM GRADIENT BEHIND THE BARRIER IS 2:1.
2. SILT FENCE USED AT TOE OF SLOPE SHALL BE PLACED 5 TO 10 FEET BEYOND TOE OF SLOPE TO PROVIDE STORAGE CAPACITY.
3. SILT FENCE SHALL BE PLACED ON THE CONTOUR, WITH ENDS FLARED UP SLOPE.



**ISOMETRIC VIEW**

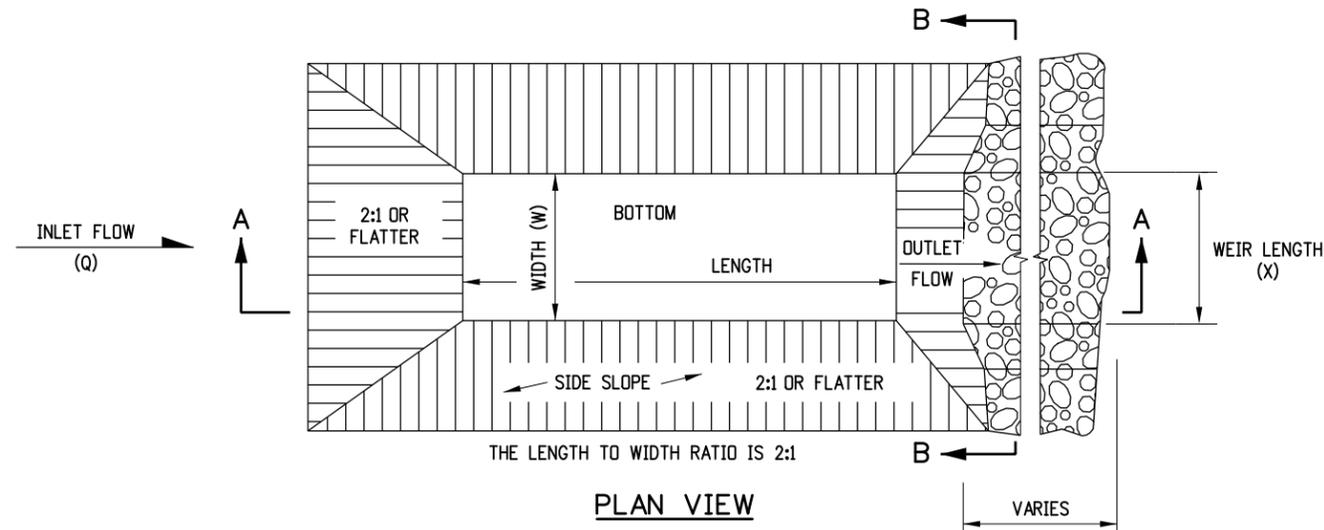


**SECTION A-A**

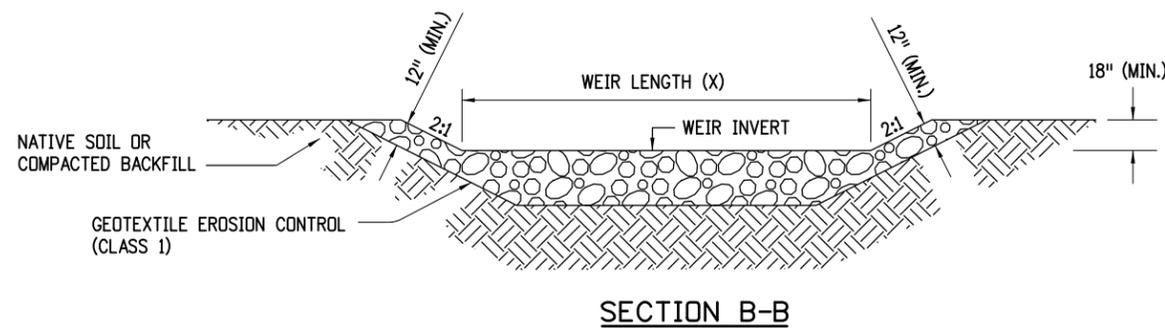
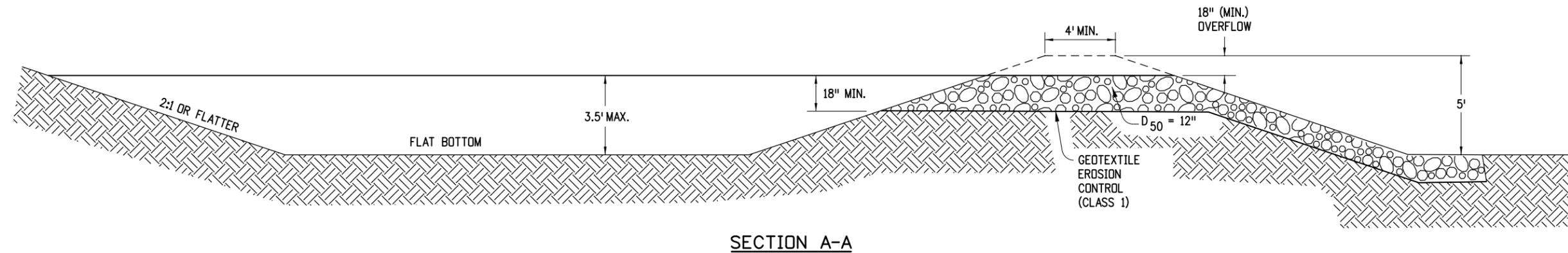
**TOE OF SLOPE PROTECTION**

**SILT FENCE APPLICATION**

<b>Computer File Information</b> Creation Date: 06/08/10 Initials: DD Last Modification Date: 07/29/11 Initials: LTA Full Path: www.dot.state.co.us/DesignSupport/ Drawing File Name: 20801010012.dgn CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English		<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date:</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>08/26/10</td> <td>Revised to meet new water quality standards.</td> </tr> <tr> <td></td> <td>Revised sheets 1-7.</td> </tr> <tr> <td></td> <td>Added sheets 8-12.</td> </tr> </tbody> </table>		Date:	Comments	08/26/10	Revised to meet new water quality standards.		Revised sheets 1-7.		Added sheets 8-12.	Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820 Project Development Branch DD/LTA		<b>TEMPORARY EROSION CONTROL</b> Issued By: Project Development Branch on July 04, 2006		<b>STANDARD PLAN NO.</b> M-208-1 Sheet No. 10 of 12	
Date:	Comments																
08/26/10	Revised to meet new water quality standards.																
	Revised sheets 1-7.																
	Added sheets 8-12.																



- NOTES**
1. THE MAXIMUM DRAINAGE AREA IS 5 ACRES.
  2. THE MAXIMUM STRUCTURE LIFE IS 2 YEARS.
  3. THE STORAGE AREA IS 1800 CUBIC FEET PER ACRE.
  4. THE MAXIMUM EMBANKMENT HEIGHT SHALL BE 5 FT. MEASURED ON THE DOWNSTREAM SIDE.
  5. THE LENGTH/WIDTH RATIO MAY BE ADJUSTED TO MEET SITE CONDITIONS WHEN APPROVED BY THE ENGINEER.
  6. WIDTH (W) OF SEDIMENT TRAP IS APPROXIMATELY EQUAL TO THE WEIR LENGTH (X).
  7. SEDIMENT TRAP DESIGN SHALL BE APPROVED BY THE ENGINEER.



DRAINAGE AREA (ACRES)	WEIR LENGTH (FEET)
1	4
2	6
3	8
4	10
5	12

**WEIR LENGTH TABLE**

**SEDIMENT TRAP**

Computer File Information	
Creation Date: 06/08/10	Initials: DD
Last Modification Date: 07/29/11	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 20801011012.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
08/26/10	Revised to meet new water quality standards.
	Revised sheets 1-7.
	Added sheets 8-12.

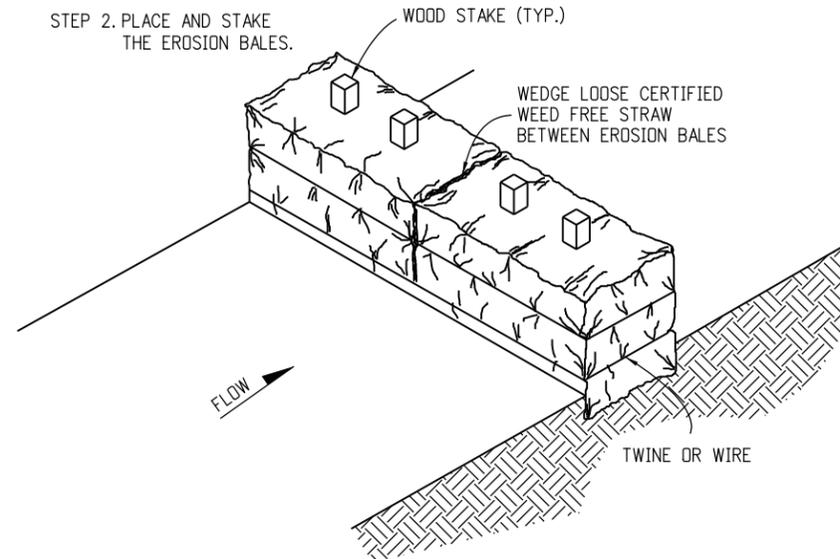
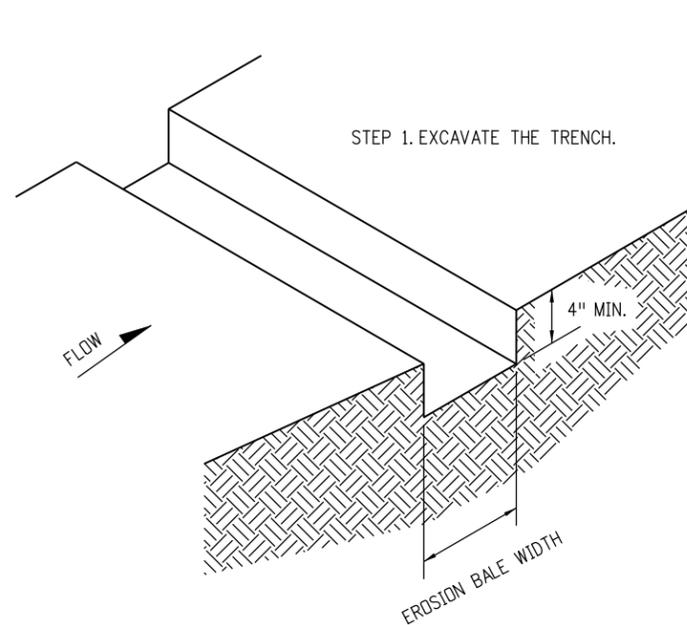
Colorado Department of Transportation  
 4201 East Arkansas Avenue  
 Denver, Colorado 80222  
 Phone: (303) 757-9083  
 Fax: (303) 757-9820

**Project Development Branch** DD/LTA

**TEMPORARY EROSION CONTROL**

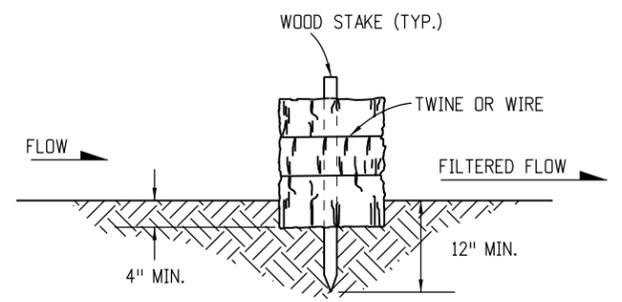
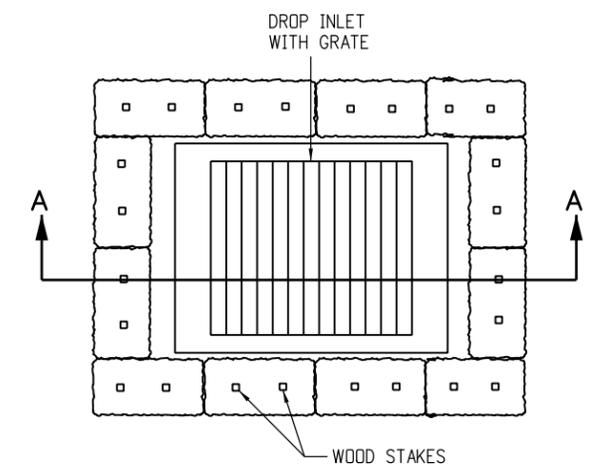
Issued By: Project Development Branch on July 04, 2006

STANDARD PLAN NO.
M-208-1
Sheet No. 11 of 12

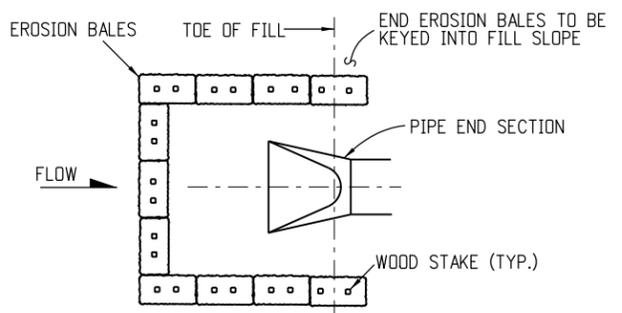


**NOTES**

1. STAKES SHALL BE WOOD AND SHALL BE 2" X 2" NOMINAL.
2. EROSION BALES SHALL BE 18" X 18" X 36".
3. EROSION BALES SHALL BE ENTRENCHED 4 IN. MINIMUM INTO THE SOIL, TIGHTLY ABUTTED WITH NO GAPS, STAKED, AND BACKFILLED AROUND THE ENTIRE OUTSIDE PERIMETER.

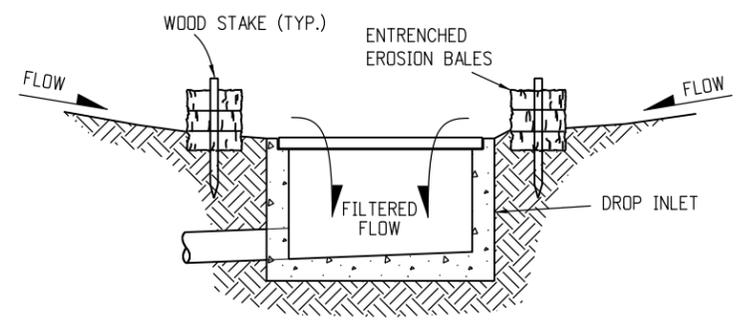


**EROSION BALE TRENCHING AND STAKING**



**PLAN VIEW**

**EROSION BALE CULVERT INLET PROTECTION**



**SECTION A-A**

**EROSION BALE FILTER AT DROP INLET**

**EROSION BALE APPLICATIONS**

Computer File Information	
Creation Date: 06/08/10	Initials: DD
Last Modification Date: 07/29/11	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 20801012012.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
08/26/10	Revised to meet new water quality standards.
	Revised sheets 1-7.
	Added sheets 8-12.

Colorado Department of Transportation

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**Project Development Branch** DD/LTA

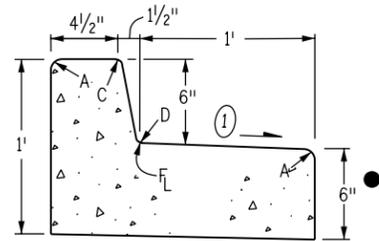
**TEMPORARY EROSION CONTROL**

Issued By: Project Development Branch on July 04, 2006

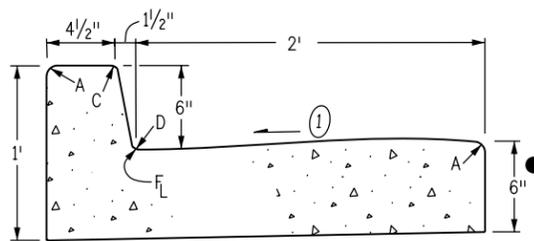
STANDARD PLAN NO.

M-208-1

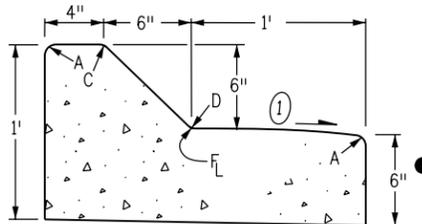
Sheet No. 12 of 12



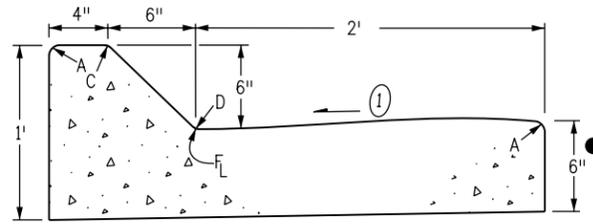
**CURB AND GUTTER TYPE 2**  
(SECTION IB)  
(6 IN. BARRIER - 1 FT. GUTTER)



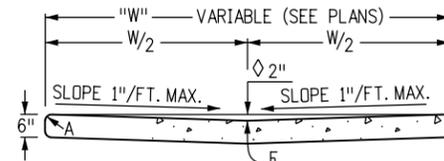
**CURB AND GUTTER TYPE 2**  
(SECTION IIB)  
(6 IN. BARRIER - 2 FT. GUTTER)



**CURB AND GUTTER TYPE 2**  
(SECTION IM)  
(6 IN. MOUNTABLE - 1 FT. GUTTER)

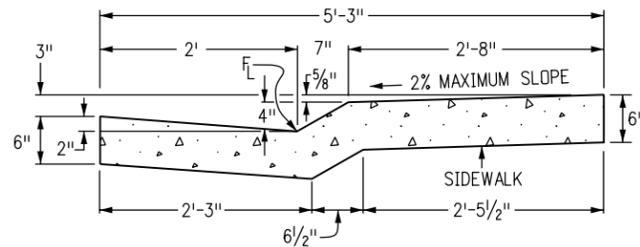


**CURB AND GUTTER TYPE 2**  
(SECTION IIM)  
(6 IN. MOUNTABLE - 2 FT. GUTTER)



2 IN. DEPTH WHEN USED AS A CROSSSPAN IN AN INTERSECTION

**GUTTER TYPE 2**

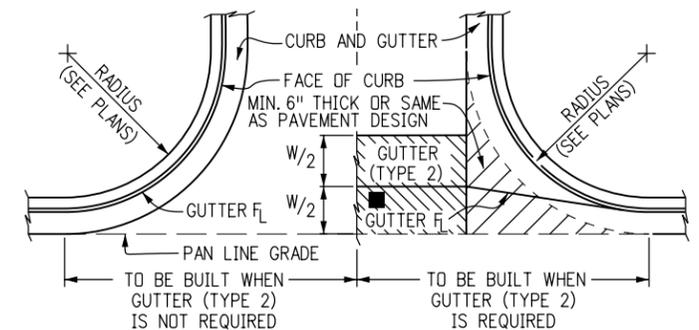


**CURB AND GUTTER TYPE 2**  
(SECTION MS)  
(4 IN. MOUNTABLE WITH SIDEWALK)

**GENERAL NOTES**

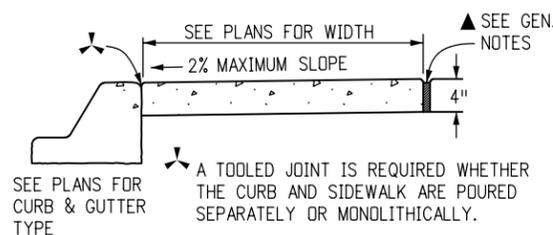
- ON ROADWAY CURVES WITH A RADIUS OF 1,900 FT. OR LESS, CURBS AND GUTTERS ARE TO BE PLACED ON THE ARC OF THE CURVE, UNLESS OTHERWISE NOTED ON THE PLANS. A MAXIMUM CHORD LENGTH OF 10 FT. MAY BE USED WHEN THE CURVE RADIUS IS GREATER THAN 1,900 FT.
  - CONCRETE SHALL BE CLASS B.
  - PROFILE GRADE OF CURBS AND GUTTERS SHALL BE LOCATED AT THE FLOW LINE.
  - CURB TYPE 4 (KEY-WAY) MAY BE USED IN LIEU OF CURB AND GUTTER TYPE 2 (SECTIONS IB AND IM) UNLESS OTHERWISE SPECIFIED ON THE PLANS.
  - GUTTER CROSS SLOPES MAY BE ADJUSTED TO FACILITATE DRAINAGE FOR PROFILE GRADES AS SHOWN ON THE PLANS.
  - THICKNESS OF CURB AND GUTTER SECTION SHALL MATCH CONCRETE PAVEMENT THICKNESS IF SHOWN ON THE PLANS. CURB AND GUTTER SHALL BE CLASS P CONCRETE IF PLACED MONOLITHICALLY WITH CONCRETE PAVEMENT.
  - INCREASE SIDEWALK THICKNESS TO 6 IN. AT LOCATIONS SHOWN ON THE PLANS.
- ▲ EXPANSION JOINTS SHALL BE INSTALLED WHEN ABUTTING EXISTING CONCRETE OR FIXED STRUCTURE. EXPANSION JOINT MATERIAL SHALL BE 1/2 IN. THICK AND SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE.
- ① GUTTER CROSS SLOPES SHALL BE 1/2 IN./FT. WHEN DRAINING AWAY FROM CURB AND 1 IN./FT. WHEN DRAINING TOWARD CURB.
- WHEN TIE BARS ARE REQUIRED, THE GUTTER THICKNESS SHALL BE INCREASED TO THE PAVEMENT THICKNESS (T). BARS SHALL BE EPOXY-COATED #4 CONFORMING TO AASHTO M 284 AND SPACED AT 2 FT.-6 IN. INTERVALS. THEY SHALL BE INSERTED 1/2 AND 1/2 LENGTH INTO THE GUTTER.

LEGEND FOR RADII	
A	= 1/8" TO 1/4"
B	= 1"
C	= 1 1/2"
D	= 1 1/2" TO 2"

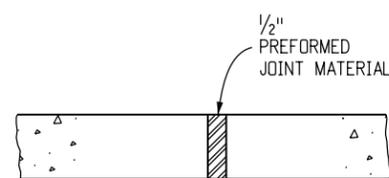


- THIS AREA SHALL BE POURED MONOLITHICALLY WITH CURB AND GUTTER AND PAID FOR AS "CONCRETE PAVEMENT".
- FLOW LINE LOCATION WILL BE ESTABLISHED BY W/2 SHOWN ON PLANS.

**CONSTRUCTION OF CONCRETE GUTTERS AT INTERSECTION**



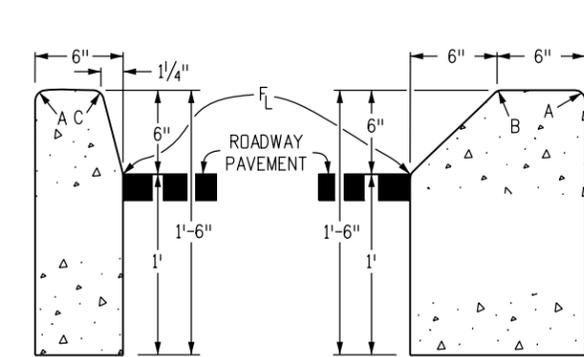
**CONCRETE SIDEWALK**



- NOTES: 1. EXPANSION JOINTS SHALL BE PLACED IN THE SIDEWALK AT INTERVALS OF NOT MORE THAN 500 FT.
2. EXPANSION JOINTS MAY BE SEALED WHEN SPECIFIED ON THE PLANS.

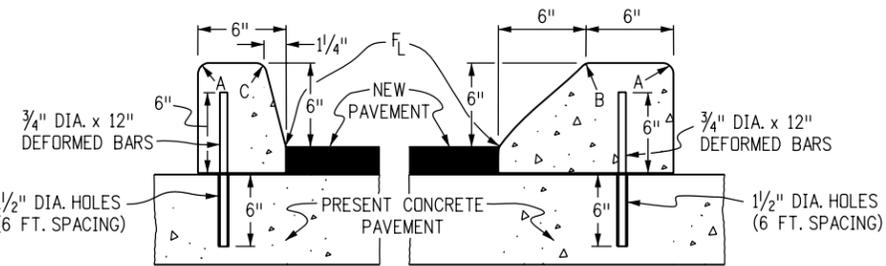
**SIDEWALK EXPANSION JOINT**

Computer File Information		Sheet Revisions		Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820	<b>CURB, GUTTERS, AND SIDEWALKS</b>	STANDARD PLAN NO.	
Creation Date: 07/04/06	Initials: DD	Date:	Comments			Project Development Branch	DD/LTA
Last Modification Date: 07/09/09	Initials: LTA	07/09/09	Added Note 2 to Sidewalk Expansion Joint detail.	Sheet No. 1 of 4			
Full Path: www.dot.state.co.us/DesignSupport/		07/09/09	Revised General Note 4.				
Drawing File Name: 609010104.dgn		07/09/09	Rev sheets 1 and 2. Add sheet 4.				
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English				Issued By: Project Development Branch on July 04, 2006			



**CURB TYPE 2**  
(SECTION B)  
6 IN. BARRIER

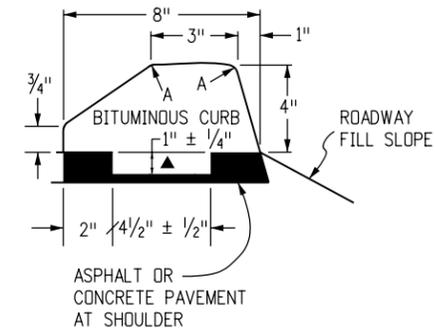
**CURB TYPE 2**  
(SECTION M)  
6 IN. MOUNTABLE



**CURB TYPE 4**  
(SECTION B)  
6 IN. BARRIER

**CURB TYPE 4**  
(SECTION M)  
6 IN. MOUNTABLE

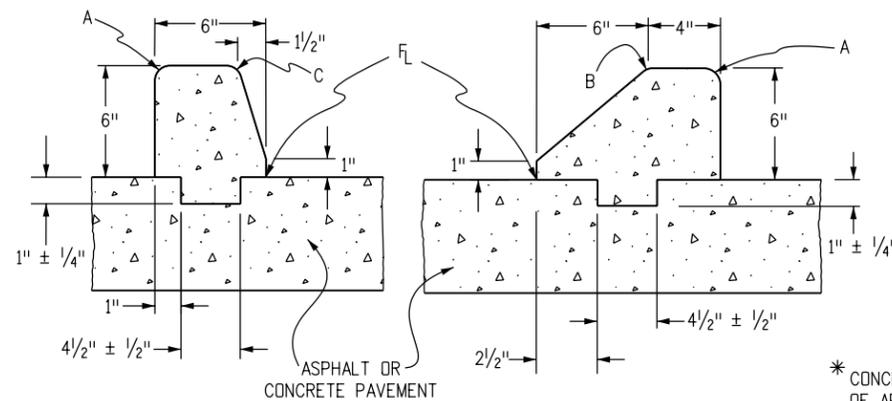
3/4" DIA. x 12" DEFORMED REINFORCING BARS AT 6 FT. SPACING SHALL BE GROUTED IN 1/4" DIA. HOLES IN EXISTING CONCRETE. GROUT SHALL CONSIST OF 2 PARTS CLEAN SAND AND 1 PART CEMENT. COST OF INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR CURB.



**CURB TYPE 6**  
(SECTION M)  
4 IN. MOUNTABLE

NOTE: BITUMINOUS OR CONCRETE \* UNLESS OTHERWISE SPECIFIED ON THE PLANS.

▲ KEY-WAY MAY BE OMITTED WHEN PLACED UNDER GUARDRAIL.



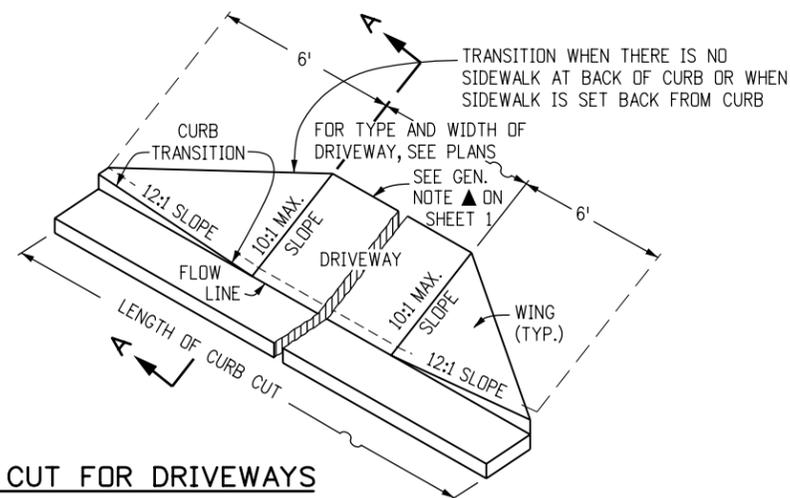
(SECTION B)

(SECTION M)

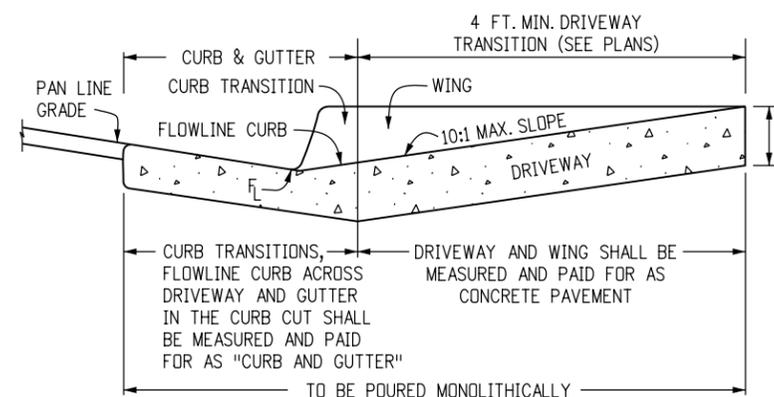
**CURB TYPE 4 (KEY-WAY) \***

\* CONCRETE SHALL CONTAIN 1.5 POUNDS PER CUBIC YARD OF APPROVED POLYPROPYLENE FIBERS AND MAY HAVE A NOMINAL AGGREGATE SIZE OF 3/8 IN. THE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

LEGEND FOR RADII	
A	= 1/8 TO 1/4"
B	= 1"
C	= 1 1/2"
D	= 1 1/2" TO 2"

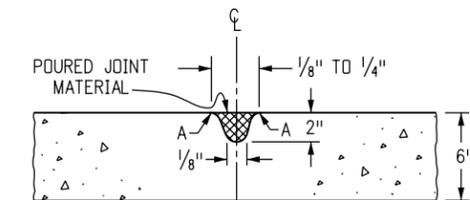


**CURB CUT FOR DRIVEWAYS**  
(WITHOUT ATTACHED SIDEWALK)



SECTION A-A

**CONCRETE PAVEMENT (DRIVEWAYS)**



NOTE: RECOMMENDED JOINT SPACING IS EVERY 8 FOOT ALONG THE WIDTH AND LENGTH OF DRIVEWAY. FOR DRIVEWAYS WIDER THAN 12 FEET, JOINTS ARE REQUIRED.

**TRANSVERSE CONTRACTION JOINT FOR CONCRETE PAVEMENT (DRIVEWAYS)**

**Computer File Information**

Creation Date: 07/04/06	Initials: DD
Last Modification Date: 7/09/09	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 609010204.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

**Sheet Revisions**

Date:	Comments
07/09/09	Added Keyway to Bituminous Curb detail.
07/09/09	Revised notes to Transverse Joint and Curb Type 6 details.

**Colorado Department of Transportation**

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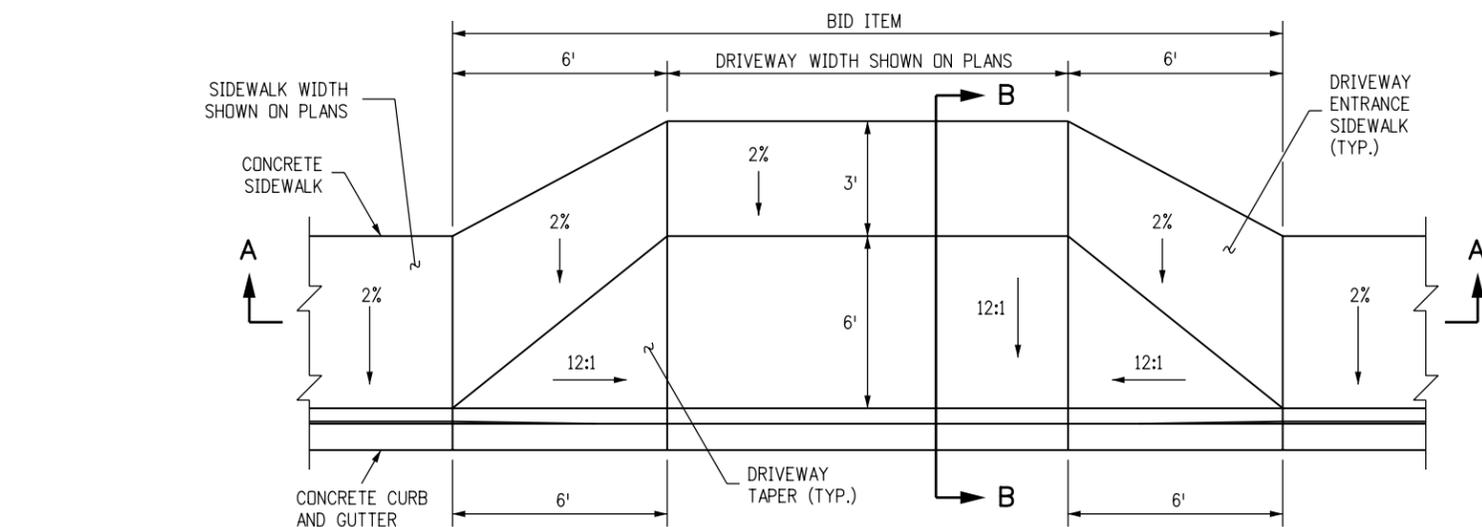
**CURB, GUTTERS,  
AND SIDEWALKS**

Issued By: Project Development Branch on July 04, 2006

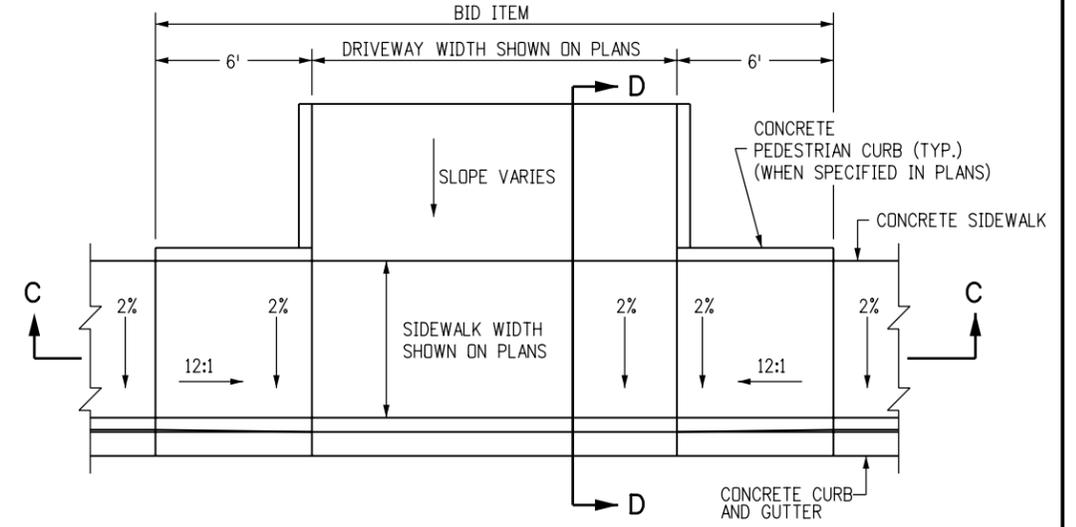
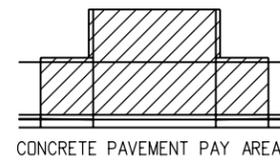
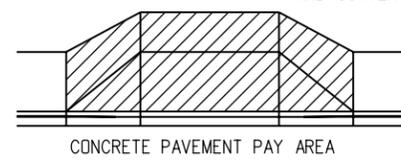
**STANDARD PLAN NO.**

M-609-1

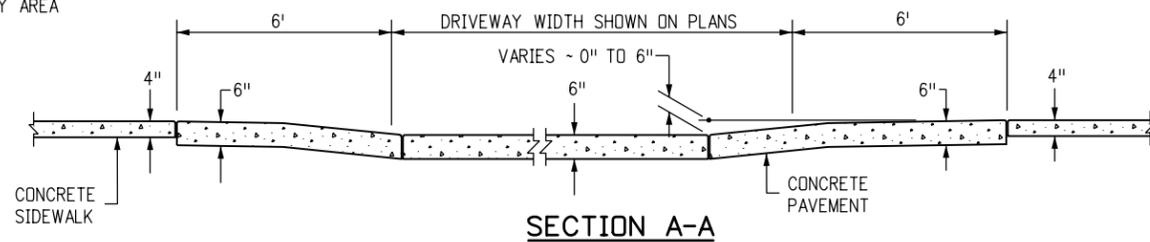
Sheet No. 2 of 4



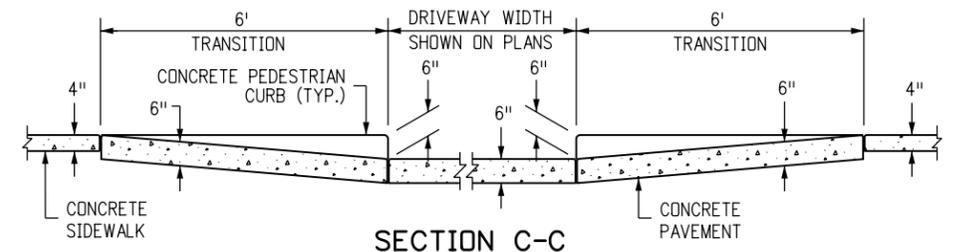
**CONCRETE DRIVEWAY ENTRANCE TYPE 1**



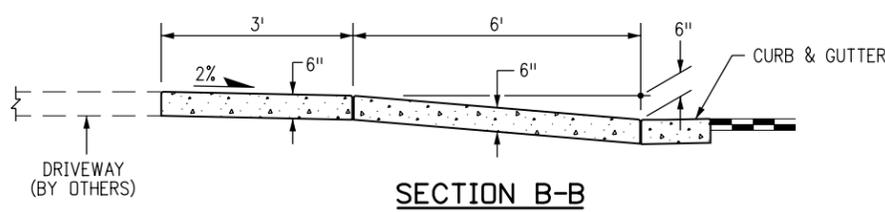
**CONCRETE DRIVEWAY ENTRANCE TYPE 2**



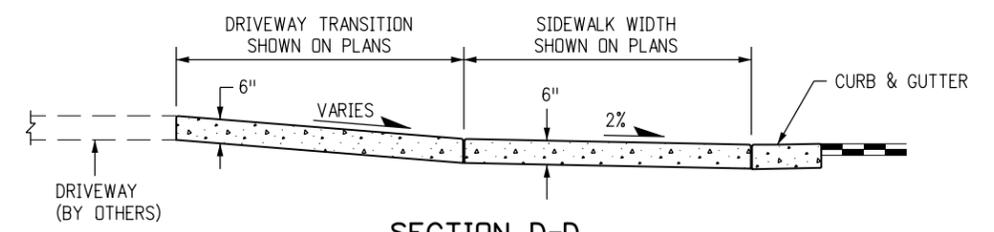
**SECTION A-A**



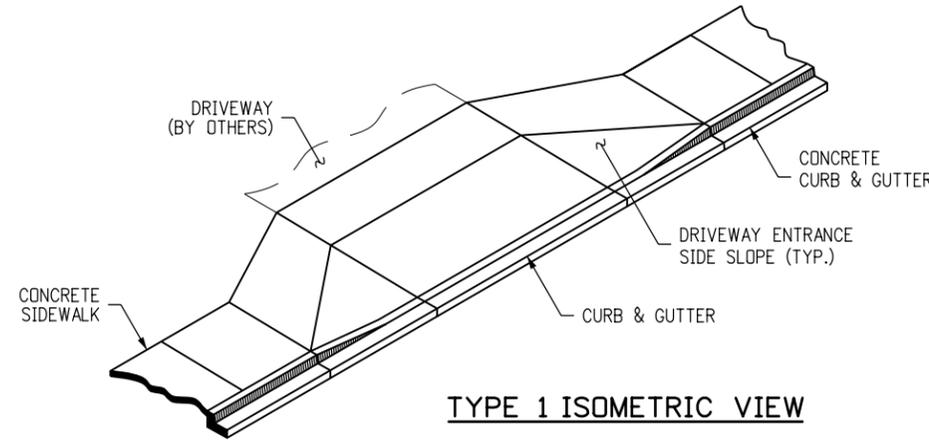
**SECTION C-C**



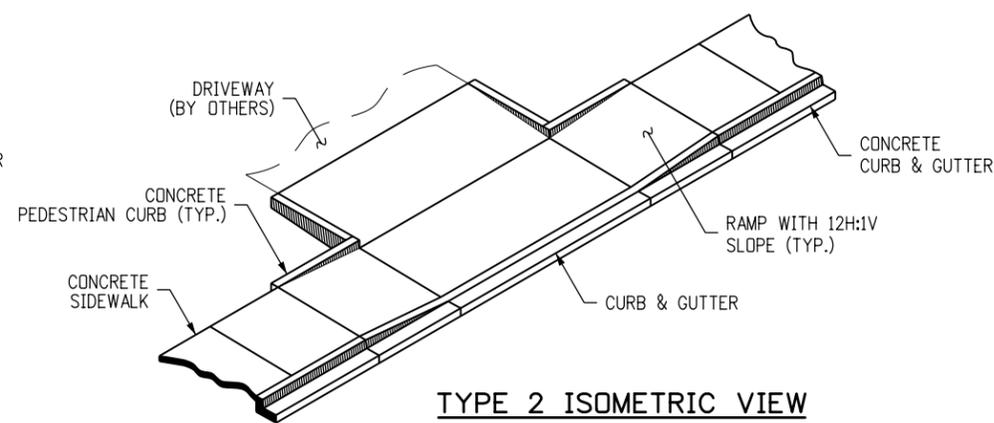
**SECTION B-B**



**SECTION D-D**



**TYPE 1 ISOMETRIC VIEW**



**TYPE 2 ISOMETRIC VIEW**

**NOTES**

1. DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, JUNCTION BOXES, AND OTHER OBSTRUCTIONS SHOULD NOT BE PLACED IN FRONT OF THE DRIVEWAY RAMP ACCESS AREAS.
2. FOR THE CURB AND GUTTER SHOWN, SEE PLANS FOR CURB TYPE.
3. RAMP SLOPES SHALL BE 12:1 OR FLATTER.
4. CONSTRUCTION OF THE CONCRETE PEDESTRIAN CURB SHALL BE INCLUDED IN THE BID PRICE OF THE CONCRETE PAVEMENT.

Computer File Information	
Creation Date: 07/04/06	Initials: DD
Last Modification Date: 07/09/09	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 609010304.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
(R-X)	
(R-X)	
(R-X)	
(R-X)	

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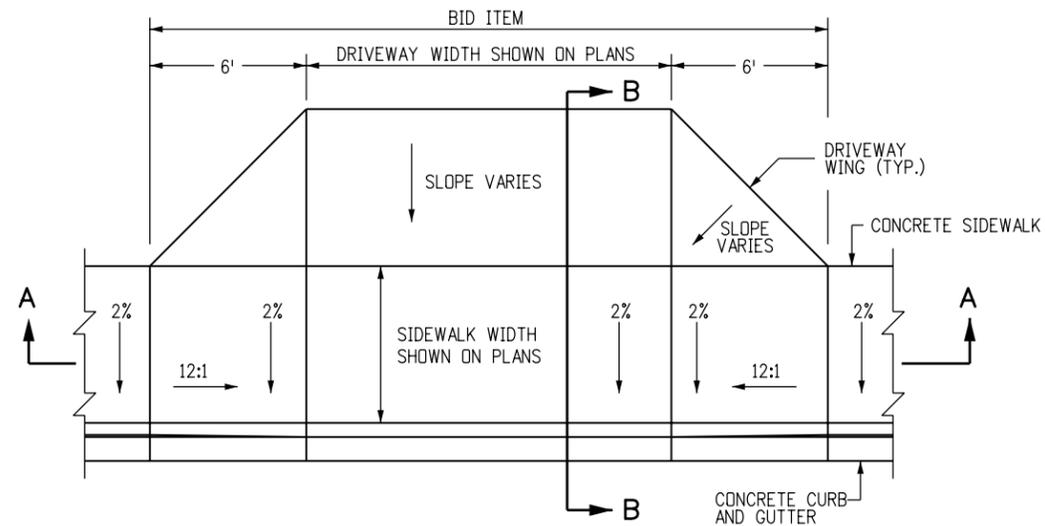
**CURB, GUTTERS, AND SIDEWALKS**

Issued By: Project Development Branch on July 04, 2006

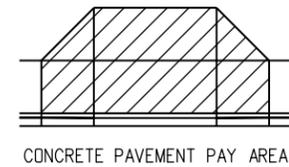
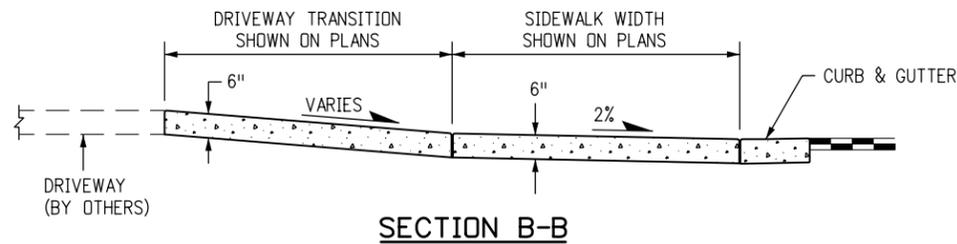
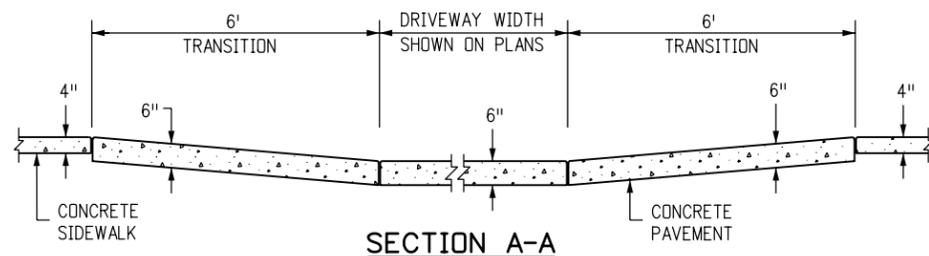
**STANDARD PLAN NO.**

M-609-1

Sheet No. 3 of 4

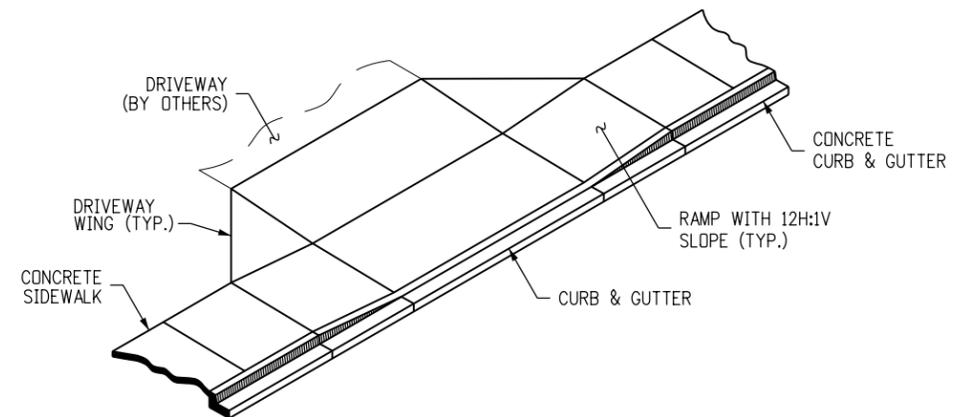


**CONCRETE DRIVEWAY ENTRANCE TYPE 3**



**NOTES**

1. DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, JUNCTION BOXES, AND OTHER OBSTRUCTIONS SHOULD NOT BE PLACED IN FRONT OF THE DRIVEWAY RAMP ACCESS AREAS.
2. FOR THE CURB AND GUTTER SHOWN, SEE PLANS FOR CURB TYPE.
3. RAMP SLOPES SHALL BE 12:1 OR FLATTER.



**TYPE 3 ISOMETRIC VIEW**

Computer File Information	
Creation Date: 07/09/09	Initials: DD
Last Modification Date: 07/09/09	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 609010404.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
(R-1) 07/09/09	Added Sheet 4 with Concrete Driveway Entrance Type 3.
(R-X)	
(R-X)	

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**Project Development Branch DD/LTA**

**CURB, GUTTERS,  
AND SIDEWALKS**

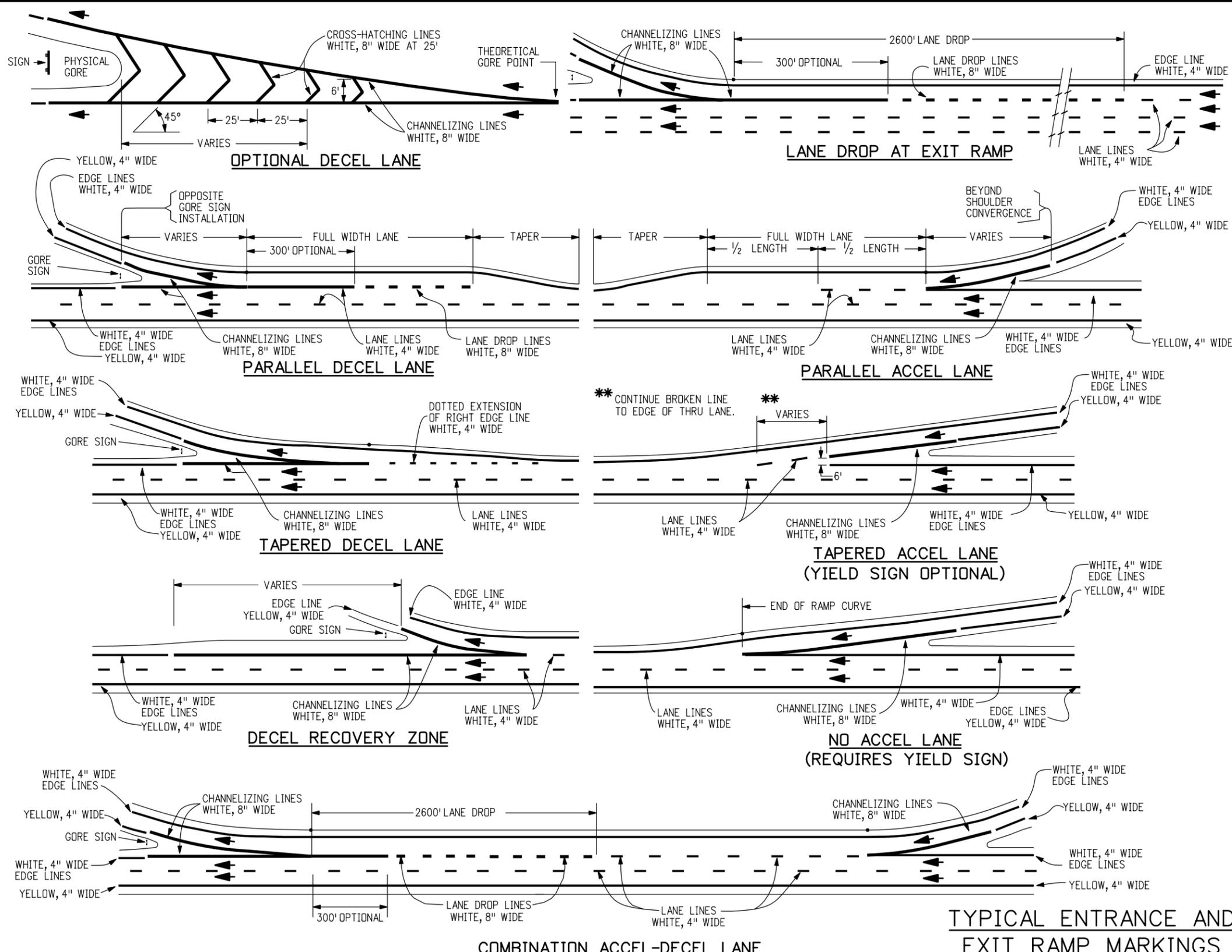
Issued By: Project Development Branch on July 04, 2006

STANDARD PLAN NO.
M-609-1
Sheet No. 4 of 4

**GENERAL NOTES**

1. **CENTER LINES**  
 BROKEN YELLOW, 4 IN. WIDE - 10 FT. SEGMENTS WITH 30 FT. GAPS.  
 SOLID YELLOW, 4 IN. WIDE.  
 THESE LINES SEPARATE ADJACENT-OPPOSITE DIRECTION TRAFFIC LANES. DOUBLE LINES SHALL BE SPACED 4 IN. APART.
2. **LANE LINES**  
 BROKEN WHITE, 4 IN. WIDE - 10 FT. SEGMENTS WITH 30' GAPS.  
 SOLID WHITE, 4 IN. WIDE.  
 THESE LINES SEPARATE ADJACENT-SAME DIRECTION TRAFFIC LANES. A SOLID LINE MAY BE USED TO DISCOURAGE LANE CHANGING, WHILE TWO PARALLEL SOLID WHITE LINES ARE REQUIRED TO PROHIBIT LANE CHANGING.
3. **EDGE LINES**  
 SOLID WHITE OR YELLOW EDGE LINES SHALL BE 4 IN. WIDE.  
 YELLOW EDGE LINES SHALL BE USED ONLY FOR LEFT EDGE, IN THE DIRECTION OF TRAVEL OF DIVIDED STREETS AND HIGHWAYS (SEPARATED BY OTHER THAN A PAINTED MEDIAN) AND ONE-WAY ROADWAYS (INCLUDING RAMP).  
 EDGE LINES ARE NOT CONTINUED THROUGH INTERSECTIONS AND ARE NOT BROKEN FOR DRIVEWAYS. CARE MUST BE TAKEN TO AVOID EDGE LINE APPEARING AS LANE LINE ALONG ROADWAYS WITH WIDE SHOULDERS AND/OR CLOSELY SPACED DRIVEWAYS.
4. **DOTTED LINES**  
 BROKEN WHITE, WIDTH MATCHING THE LINE BEING EXTENDED-2 FT. SEGMENTS WITH 4 FT. GAPS. THESE LINES ARE USED TO DELINEATE THE EXTENSION OF A LINE THROUGH AN INTERSECTION OR INTERCHANGE AREA.
5. **CHANNELIZING LINES**  
 SOLID WHITE, 8 IN. WIDE. THESE LINES ARE USED WITH ACCELERATION-DECELERATION LANES, PAVEMENT WIDTH TRANSITIONS, AND LEFT-RIGHT TURN SLOTS OR ISLANDS.
6. **CROSS-HATCHING LINES**  
 SOLID WHITE OR YELLOW, 8 IN. WIDE-45 DEGREE DIAGONAL, SPACED AT 25 FT. INTERVALS. THESE LINES ARE OPTIONAL AND MAY BE PLACED AT LOCATIONS INDICATED ON THE PLANS OR DETERMINED BY THE ENGINEER. YELLOW SHALL BE USED FOR PAINTED MEDIANS OR PAVEMENT WIDTH TRANSITIONS ONLY.  
 OPTIONAL DIAGONAL SHOULDER MARKINGS SHALL BE SOLID WHITE, 8 IN. WIDE, SPACED AT INTERVALS OF 20 FT. MINIMUM TO 100 FT. MAXIMUM.
7. **PARKING LINES**  
 SOLID WHITE, 3 IN. WIDE-DIAGONAL OR PARALLEL AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.
8. **STOP LINES**  
 SOLID WHITE, 24 IN. WIDE-EXTEND PARALLEL TO INTERSECTED ROADWAY ACROSS ALL APPROACH LANES OR AS INDICATED AT LOCATIONS ON THE PLANS. LOCATE AT THE DESIRED STOPPING POINT, NOT MORE THAN 30 FT. NOR LESS THAN 4 FT. FROM THE NEAREST EDGE OF THE INTERSECTED TRAFFIC LANE.
9. **LANE DROP MARKINGS**  
 BROKEN WHITE, 8 IN. WIDE - 3 FT. SEGMENTS WITH 12 FT. GAPS. THESE LINES SHOULD BEGIN 2600 FT. IN ADVANCE OF THE THEORETICAL GORE POINT TO DISTINGUISH THE LANE DROP FROM A CONTINUOUS LANE. THE CHANNELIZING LINE MAY BE EXTENDED APPROXIMATELY 300 FT. UPSTREAM.

(CONTINUED ON SHEET NO. 2)



**TYPICAL ENTRANCE AND EXIT RAMP MARKINGS**

Computer File Information	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 09/24/08	Initials: KEN
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-627-01_1of5.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
09/24/08	REVISE TO 4 IN. NOTE 1, LINE 5

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

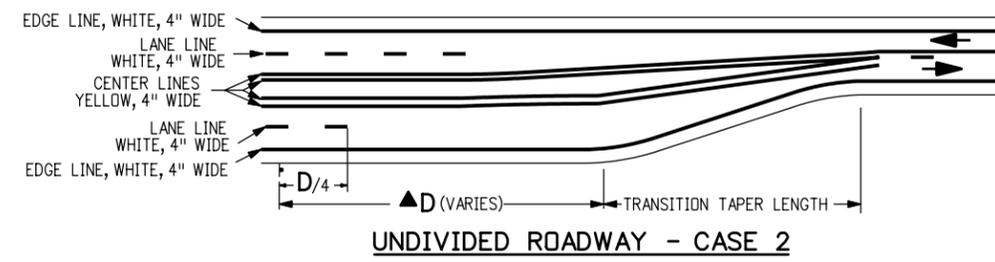
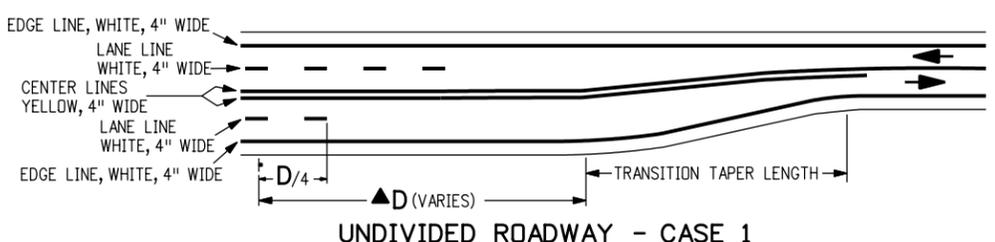
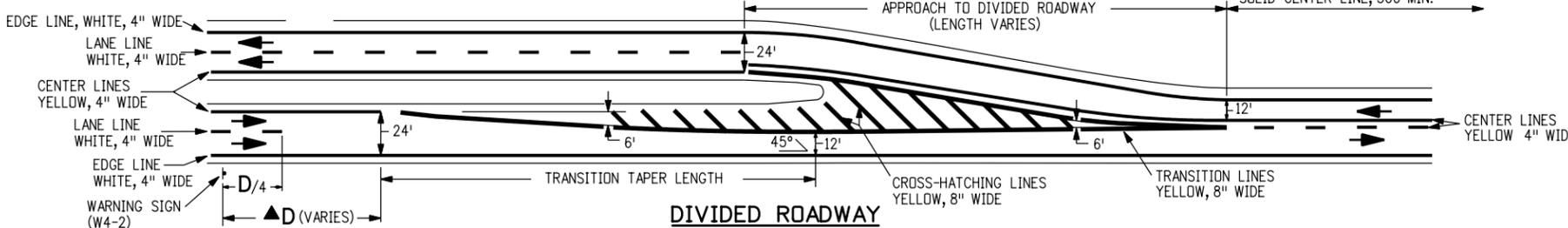
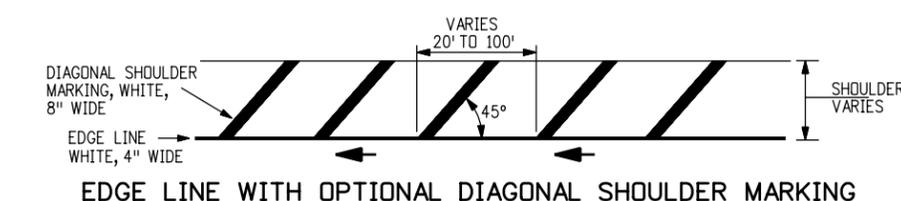
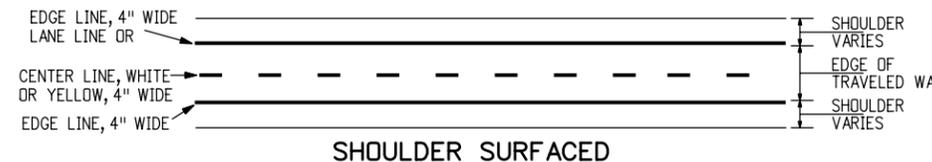
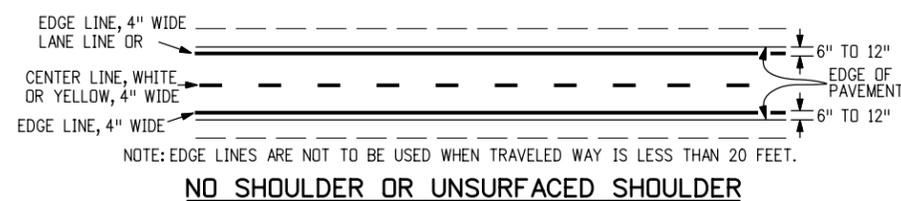
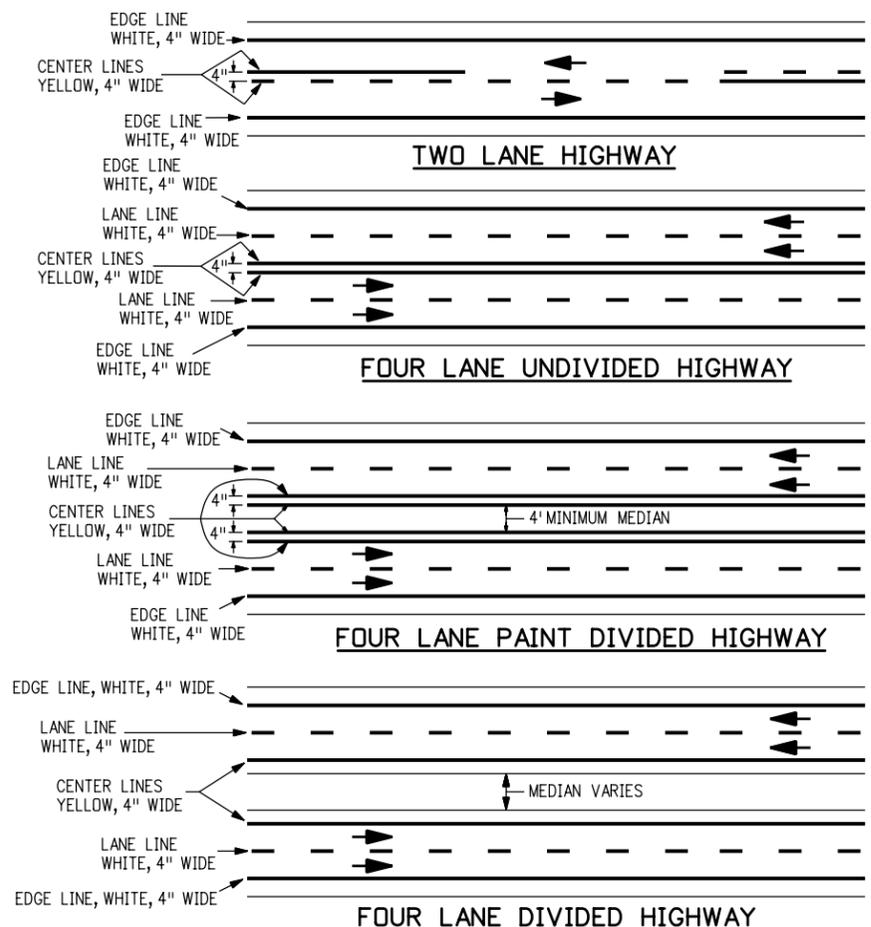
**PAVEMENT MARKINGS**

Issued By: Safety & Traffic Engineering Branch September 24, 2008

**STANDARD PLAN NO.**

**S-627-1**

**Sheet No. 1 of 5**

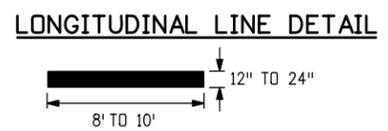
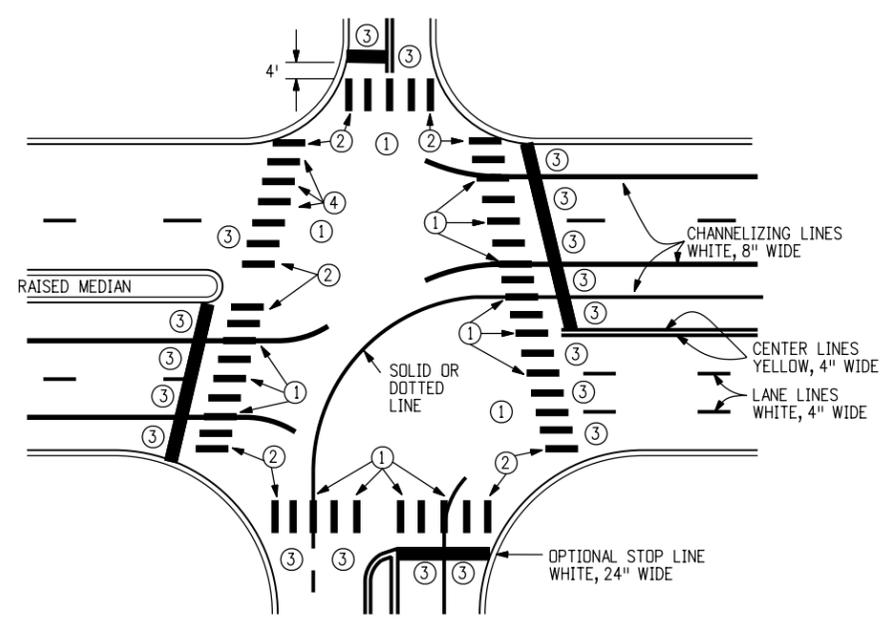
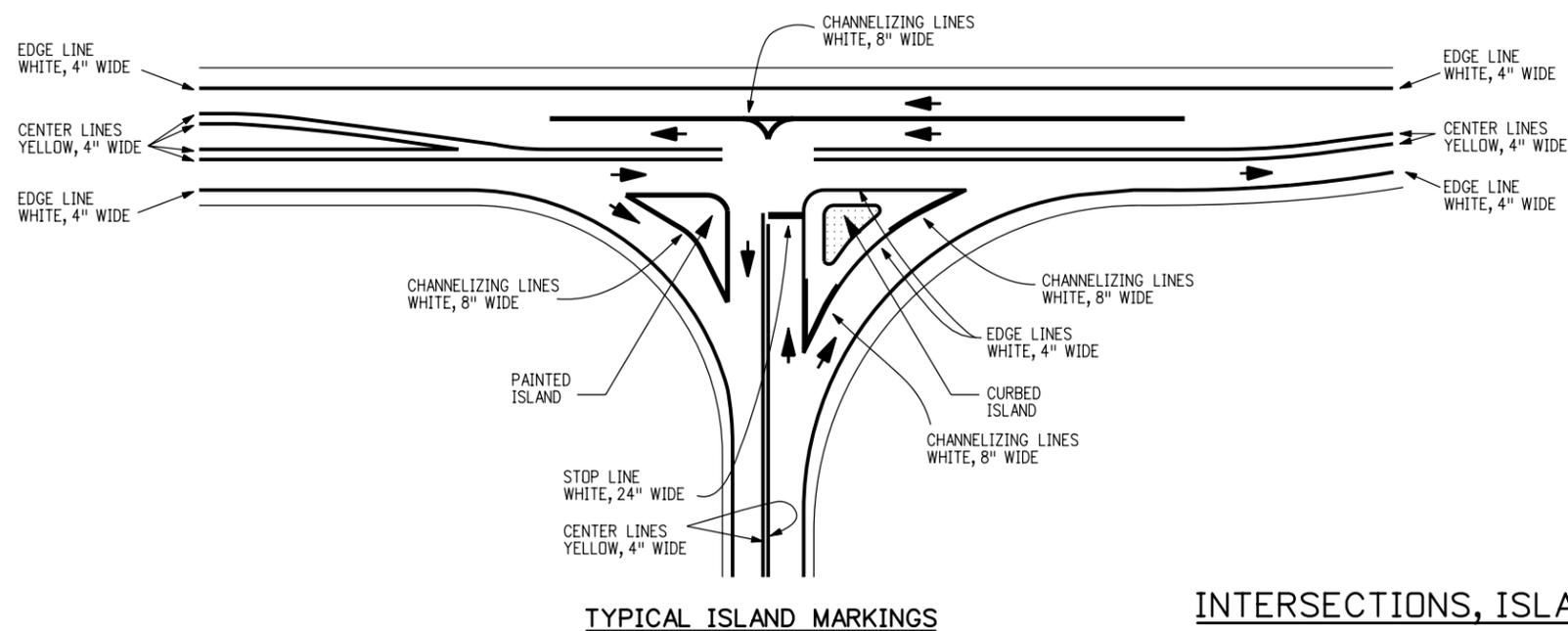
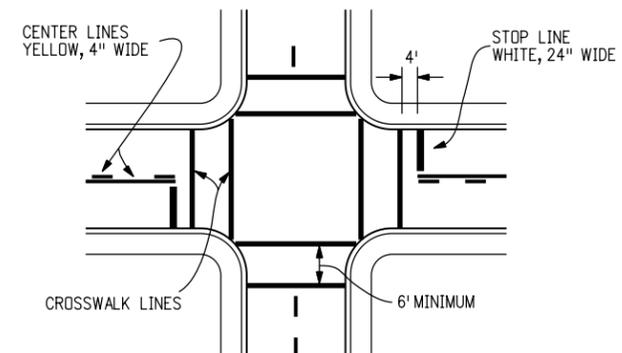
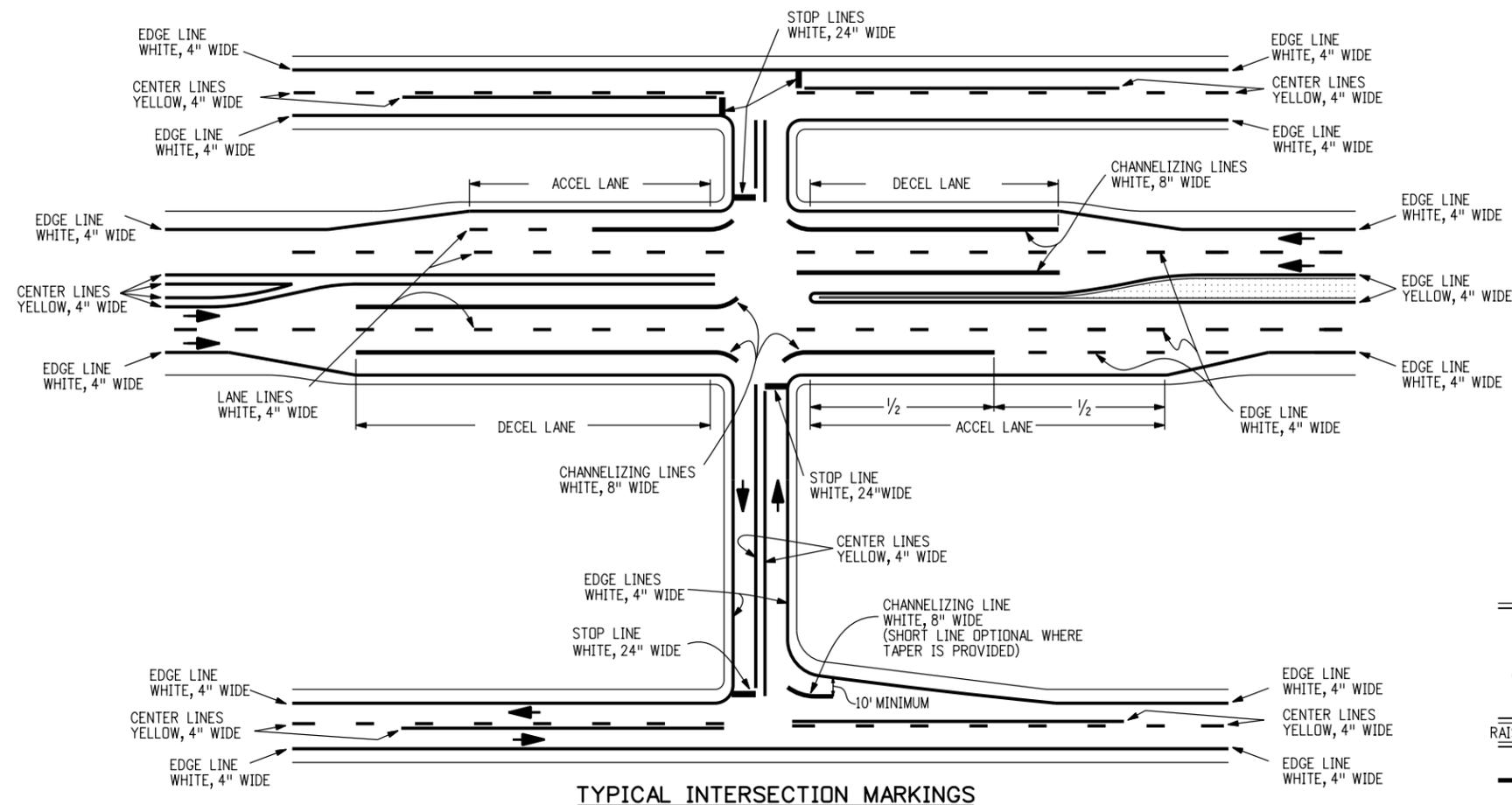


**GENERAL NOTES**  
(CONTINUED FROM SHEET NO. 1)

- CROSSWALK LINES**  
SOLID WHITE, 12 IN. WIDE FOR TRANSVERSE LINE TYPE - EXTEND ACROSS ENTIRE WIDTH OF PAVEMENT. IF NO ADVANCE STOP LINE IS PROVIDED, INCREASE THE WIDTH OF THE CROSSWALK LINES TO 24 IN. THE DISTANCE BETWEEN THE LINES IS USUALLY DETERMINED BY THE WIDTH OF THE SIDEWALKS SO CONNECTED, HOWEVER, IN NO CASE SHALL THIS BE LESS THAN 6 FT.
- WORD, ARROW AND SYMBOL MARKINGS**  
ALL LETTERS, ARROWS AND SYMBOLS SHALL BE IN CONFORMANCE WITH "THE STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" ADOPTED BY THE FEDERAL HIGHWAY ADMINISTRATION.
- TRANSITION TAPER LENGTH**  
L = MINIMUM LENGTH OF TAPER.  
S = DESIGN SPEED FOR NEW CONSTRUCTION OR NUMERICAL VALUE OF THE POSTED SPEED LIMIT OF THE 85TH PERCENTILE SPEED OF EXISTING TRAFFIC.  
W = WIDTH TRANSITIONED  
FORMULA: FOR SPEED 45 MPH OR MORE,  $L = S \times W$   
FOR SPEED 40 MPH OR LESS,  $L = \frac{WS^2}{60}$
- NOTE:**  
D = THE DISTANCE FROM THE PAVEMENT WIDTH TRANSITION SIGN (W4-2) TO THE BEGINNING OF THE TRANSITION TAPER.
- TRANSITION LINES**  
SOLID YELLOW, 8 IN. WIDE. THESE LINES ARE USED WHERE ADDITIONAL EMPHASIS OR VISIBILITY IS DESIRABLE AT PAVEMENT WIDTH TRANSITIONS. PLACE AT LOCATIONS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- SPEED MEASURING MARKING**  
SOLID WHITE, 24 IN. - EXTEND 4 FT. FROM OUTSIDE OF EDGE LINES ON SHOULDERS.

**TYPICAL PAVEMENT WIDTH TRANSITION MARKINGS**

<b>Computer File Information</b>		<b>Sheet Revisions</b>		Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9543 Fax: (303) 757-9458 <b>Safety &amp; Traffic Engineering Branch</b> <b>KCM/KEN</b>	<h1>PAVEMENT MARKINGS</h1>	<b>STANDARD PLAN NO.</b>
Creation Date: 07/04/06	Initials: KCM	Date:	Comments:			S-627-1
Last Modification Date: 09/24/08	Initials: KEN	09/24/08	CHANGED SPACING BETWEEN DOUBLE YELLOW STRIPES FROM 3 IN. TO 4 IN.			Sheet No. 2 of 5
Full Path: www.dot.state.co.us/DesignSupport/	(R-I)					
Drawing File Name: Sheet_S-627-01_2of5.dgn	(R-X)					
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English			Issued By: Safety & Traffic Engineering Branch September 24, 2008	



- CROSSWALK NOTES**
- CENTER CROSSWALKS ON CURB RAMPS. IF SUCH RAMPS ARE NOT PROVIDED CENTER ON SIGNAL POLES WHEREVER PRACTICAL.
- ① CENTER ON LANE, CENTER OR CHANNELIZING LINE.
  - ② CENTER OR EXTENDED FLOW LINE.
  - ③ CENTER BETWEEN ADJACENT LINES.
  - ④ LINES AND SPACES TO APPROXIMATE ADJACENT PATTERN.

**INTERSECTIONS, ISLANDS AND CROSSWALKS**

**Computer File Information**

Creation Date: 07/04/06	Initials: JSW
Last Modification Date:	Initials:
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-627-01_3of5.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

**Sheet Revisions**

Date:	Comments:
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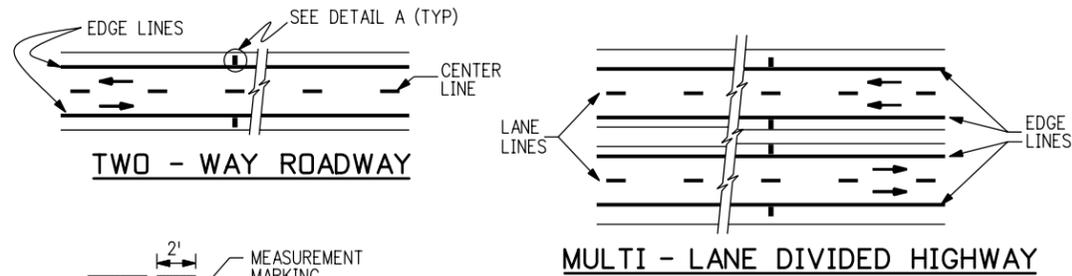
**PAVEMENT MARKINGS**

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

**STANDARD PLAN NO.**

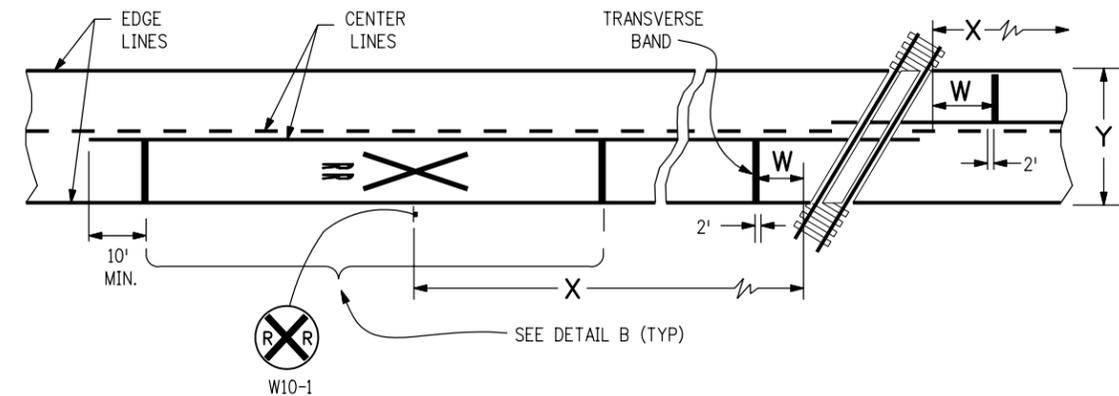
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**Sheet No. 3 of 5**

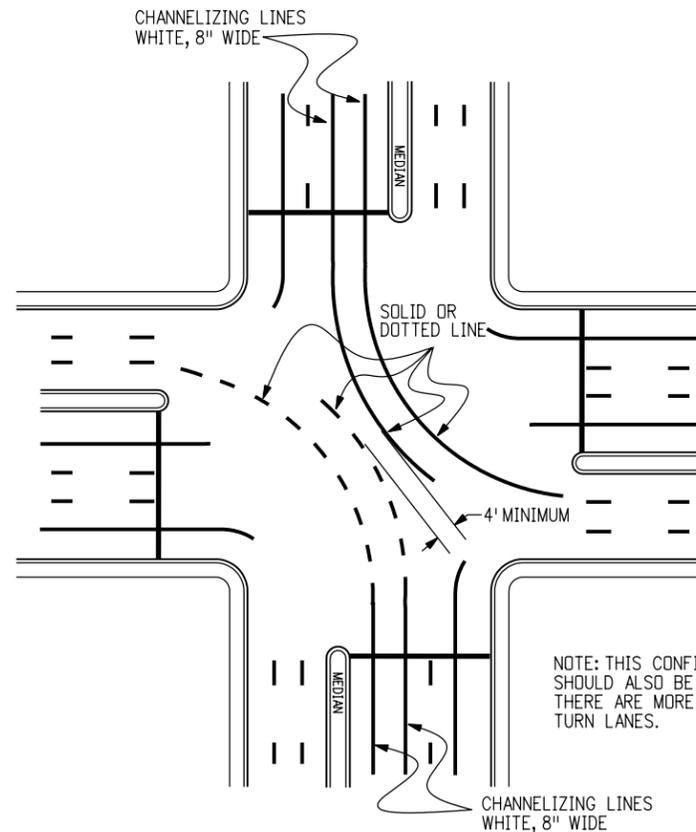


**DETAIL A**

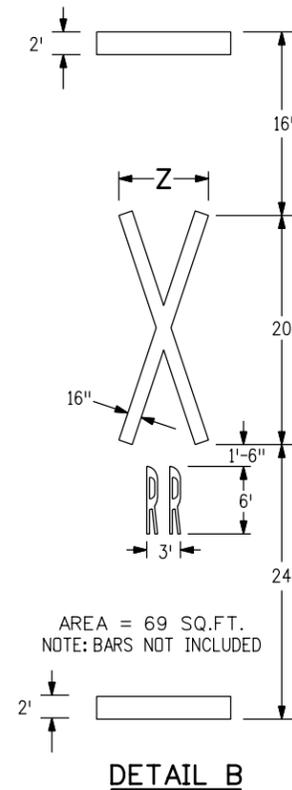
**TYPICAL SPEED MEASUREMENT MARKING**



**TYPICAL PAVEMENT MARKING AT RAILROAD CROSSING**



**TYPICAL DOUBLE LEFT TURN MARKINGS**



**RAILROAD CROSSING NOTES:**

- W** = APPROXIMATELY 15 FT. (STOP LINE SHOULD BE 8' IN ADVANCE OF ACTIVE TRAFFIC CONTROL SYSTEMS; I.E., AUTOMATIC GATES AND/OR FLASHING SIGNALS).
  - X** = THE DISTANCE FROM THE RAILROAD CROSSING MARKING TO THE NEAREST TRACK WILL VARY ACCORDING TO THE APPROACH SPEED AND THE SIGHT DISTANCE OF THE VEHICULAR TRAFFIC APPROACHING, BUT NOT LESS THAN 50 FT. (REFERENCE NOTE 1).
  - Y** = ON MULTI-LANE ROADS THE TRANSVERSE BANDS SHOULD EXTEND ACROSS ALL APPROACH LANES, AND INDIVIDUAL **RR** SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.
  - Z** = NORMALLY 8 FT. (WIDTH MAY VARY ACCORDING TO LANE WIDTH).
1. THE WARNING SIGN SHALL BE PLACED ACCORDING TO THE WARNING SIGN PLACEMENT TABLE IN THE MUTCD. IF CONDITIONS DO NOT ALLOW PLACEMENT ACCORDING TO THE TABLE, IT SHALL BE AS APPROVED BY THE ENGINEER.
  2. REFER TO "THE STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", ADOPTED BY THE FEDERAL HIGHWAY ADMINISTRATION, FOR **RR** SYMBOL DETAILS.

Computer File Information	
Creation Date: 07/04/06	Initials: JSW
Last Modification Date:	Initials:
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-627-01_4of5.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
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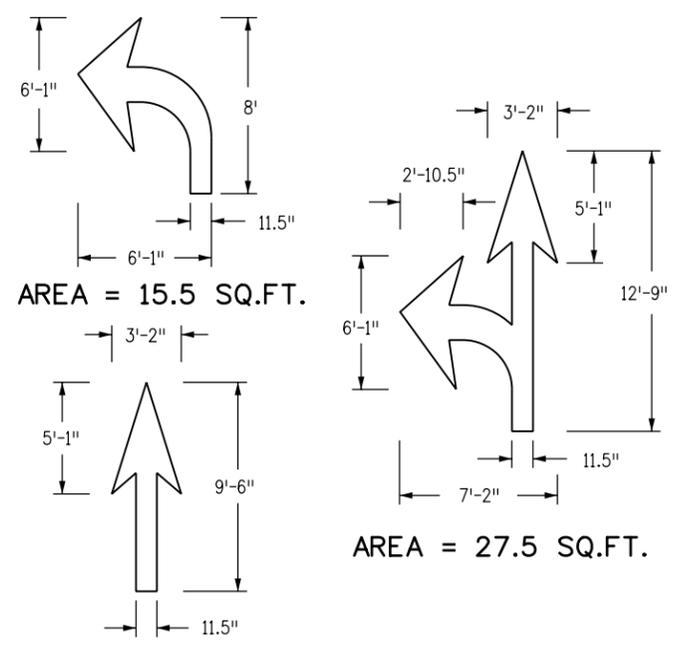
**PAVEMENT MARKINGS**

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

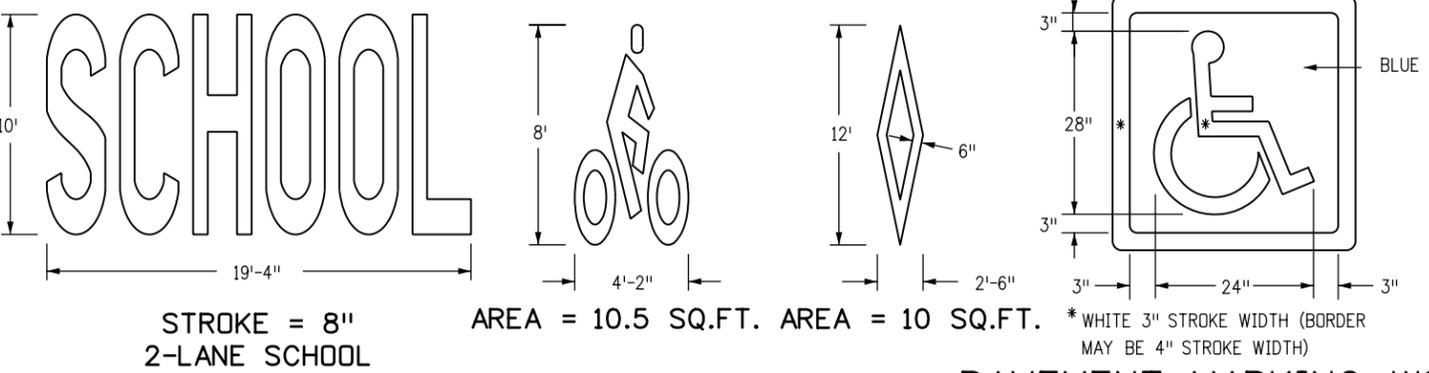
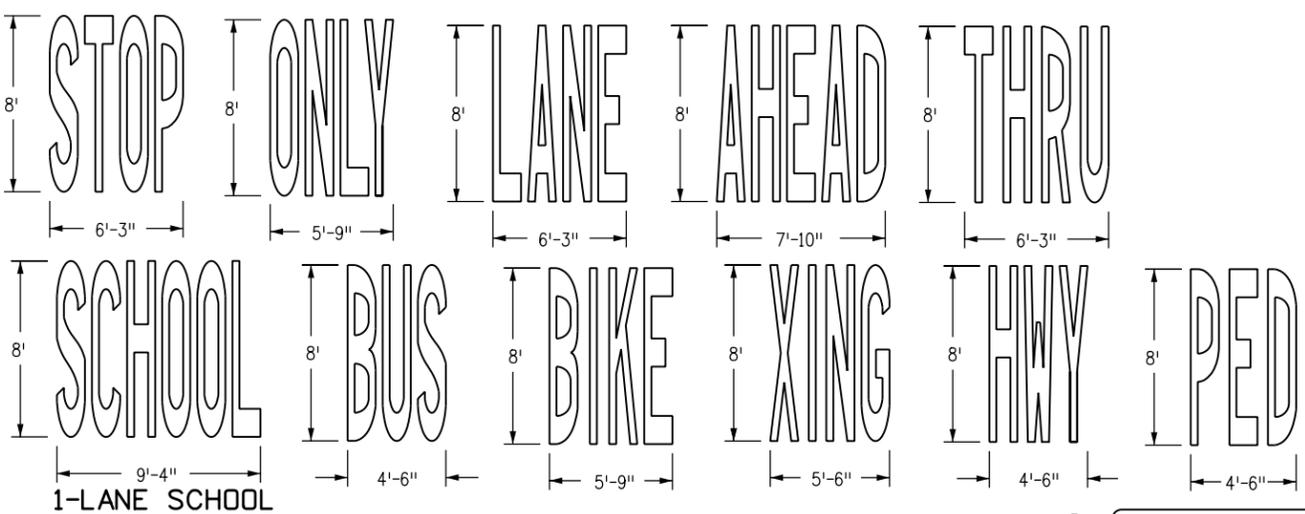
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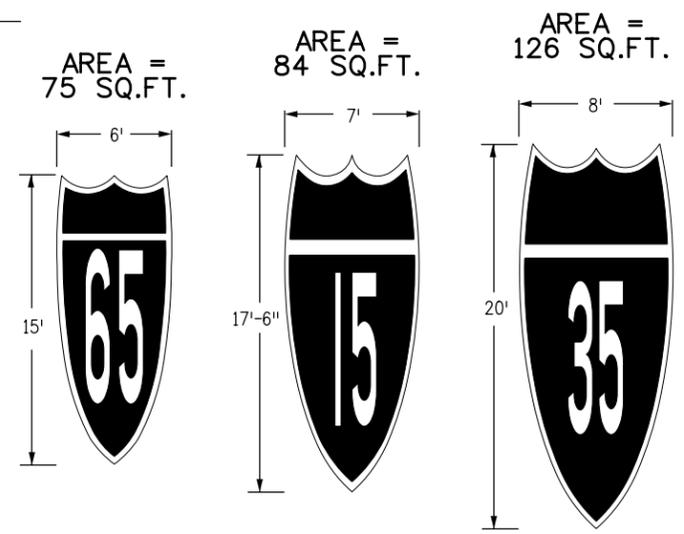
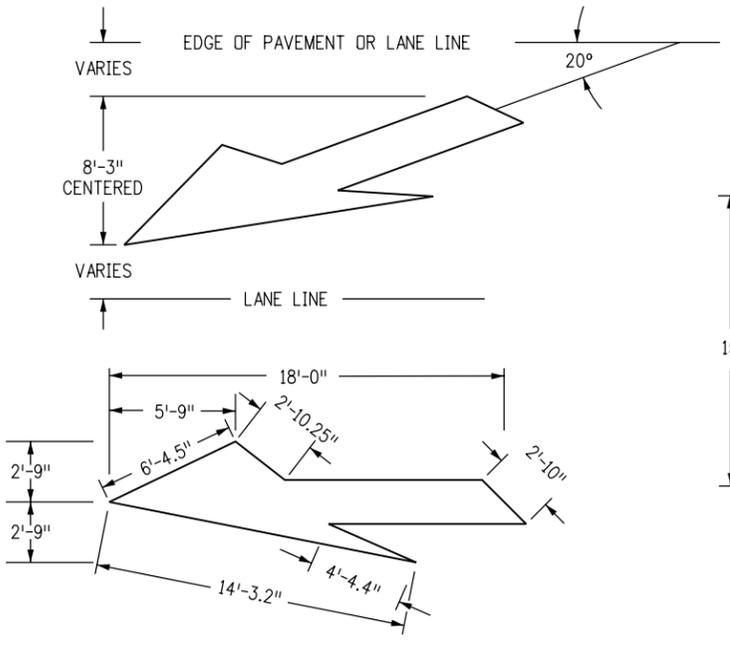
**Sheet No. 4 of 5**



AREA = 12.5 SQ.FT.



AREA = 58 SQ.FT.



**ELONGATED ROUTE SHIELDS**

**ELONGATED ROUTE SHIELD NOTES**

ELONGATED ROUTE SHIELDS SHALL BE AT LEAST 8'x20' WHEN USED ON HIGH SPEED ROADWAYS (45 MPH OR MORE).

PER FIGURE 3B-25 OF THE 2009 MUTCD ELONGATED ROUTE SHIELD COLORS SHALL CONFORM WITH THE STANDARD HIGHWAY SIGNS AND MARKINGS BOOK.

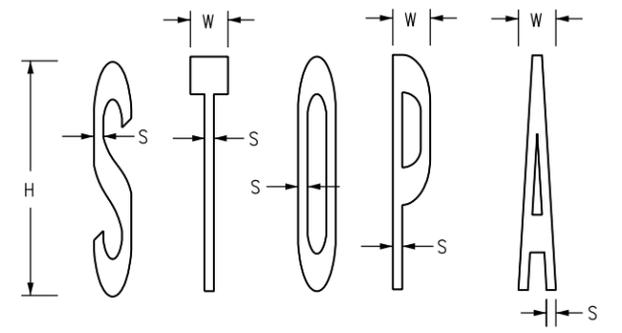
**DESIGNATED PAYMENT AREAS**

FOR THE FOLLOWING H, W, AND S DIMENSIONS PAY:

H = 4' WORDS	
BIKE - 5.5 SQ.FT.	LANE - 6.0 SQ.FT.
ONLY - 6.0 SQ.FT.	XING - 5.0 SQ.FT.

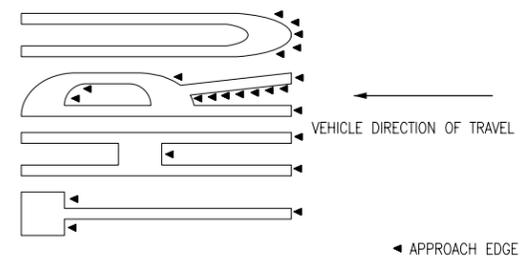
  

H = 8' WORDS	
STOP - 23.0 SQ.FT.	XING - 20.0 SQ.FT.
ONLY - 22.5 SQ.FT.	LANE - 22.5 SQ.FT.
AHEAD - 29.0 SQ.FT.	BIKE - 21.0 SQ.FT.
BUS - 18.5 SQ.FT.	HWY - 16.5 SQ.FT.
THRU - 22.0 SQ.FT.	SCHOOL(1L) - 33.0 SQ.FT.
PED - 17.5 SQ.FT.	SCHOOL(2L) - 85.0 SQ.FT.

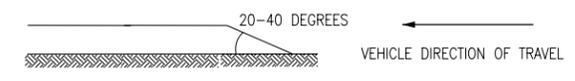


H = HEIGHT	H = 8'	H = 4'
W = WIDTH	W = 1'-3.4" TO 1'-4"	W = 7.7" TO 8"
S = STROKE	S = 3.8" TO 4"	S = 1.9" TO 2"

**TYPICAL LETTER MEASUREMENTS**



**TYPICAL APPROACH EDGE TAPERING VIEW**



**TYPICAL APPROACH EDGE TAPERING PROFILE VIEW**

**WORD AND SYMBOL NOTES**

IF HEIGHT IS INCREASED OR DECREASED THEN ALL MEASUREMENTS CHANGE PROPORTIONATELY. EXAMPLE: "H" MEASUREMENT FOR STOP IS REDUCED TO 4' FROM 8' THEN SQUARE FEET = 5.75 (1/4 OF 23.0 SQ. FT.).

PAVEMENT WORD AND SYMBOL MARKINGS, TRANSVERSE AND LONGITUDINAL (CONTINENTAL) CROSSWALK LINES, AND STOP LINES WILL BE PAID FOR IN SQUARE FEET USING THEIR SPECIFIC BID ITEMS.

**TAPERING NOTES**

ALL PAVEMENT MARKING APPROACH EDGES FROM THE VEHICLE DIRECTION OF TRAVEL SHALL BE TAPERED USING A PUTTY KNIFE OR SIMILAR TOOL.

**PAVEMENT MARKING WORDS AND SYMBOLS**

Computer File Information		Sheet Revisions		Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9543 Fax: (303) 757-9458	PAVEMENT MARKINGS	STANDARD PLAN NO.
Creation Date: 07/04/06	Initials: JSW	Date:	Comments			Safety & Traffic Engineering Branch
Last Modification Date: 10/01/10	Initials: SCL	(R-2) 07/24/09	ADDED TAPERING VIEWS AND NOTES	Issued By: Safety & Traffic Engineering Branch July 4, 2006	Sheet No. 5 of 5	
Full Path: www.dot.state.co.us/DesignSupport/		(R-X) 09/15/10	ADDED ELONGATED ROUTE SHIELDS/NOTES			
Drawing File Name: Sheet_S-627-01_5of5.dgn		(R-X) 09/15/10	LANE DROP ARROW TO 58 SQ.FT			
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English				

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 CDDT 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 (W13-1P) 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. WHEN ARROW BOARDS ARE USED TO CLOSE MULTIPLE LANES, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH CLOSED LANE.

IF ARROW BOARDS ARE USED FOR SHOULDER WORK, BLOCKING THE SHOULDER, FOR ROADSIDE WORK NEAR THE SHOULDER, OR FOR TEMPORARILY CLOSING ONE LANE ON A TWO-LANE, TWO-WAY ROADWAY, USE THE ARROW BOARDS ONLY IN THE CAUTION MODE.

24. 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.

25. 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.

26. 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.

Sheet Revisions		
	Date:	Comments
(R-1)	03/05/07	REVISED SHEET 8
(R-2)	06/24/09	SHEET 1 - REV. NOTE 20, ADD NOTE 25
(R-2)	06/24/09	ADDED SHEETS 13-19.
(R-2)	06/24/09	REVISED SHEETS 2-11 & 19
(R-3)	12/07/09	REVISED SHEETS 2-15 & 19
(R-4)	02/17/10	REVISED SHEET 7
(R-5)	02/24/11	REVISED SHEET 16
(R-6)	02/13/12	SHEET 1 - REV. NOTES 24-26, ADD NOTE 23
(R-7)	03/26/12	SHEET 1 - REVISED NOTE 23

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Colorado Department of Transportation



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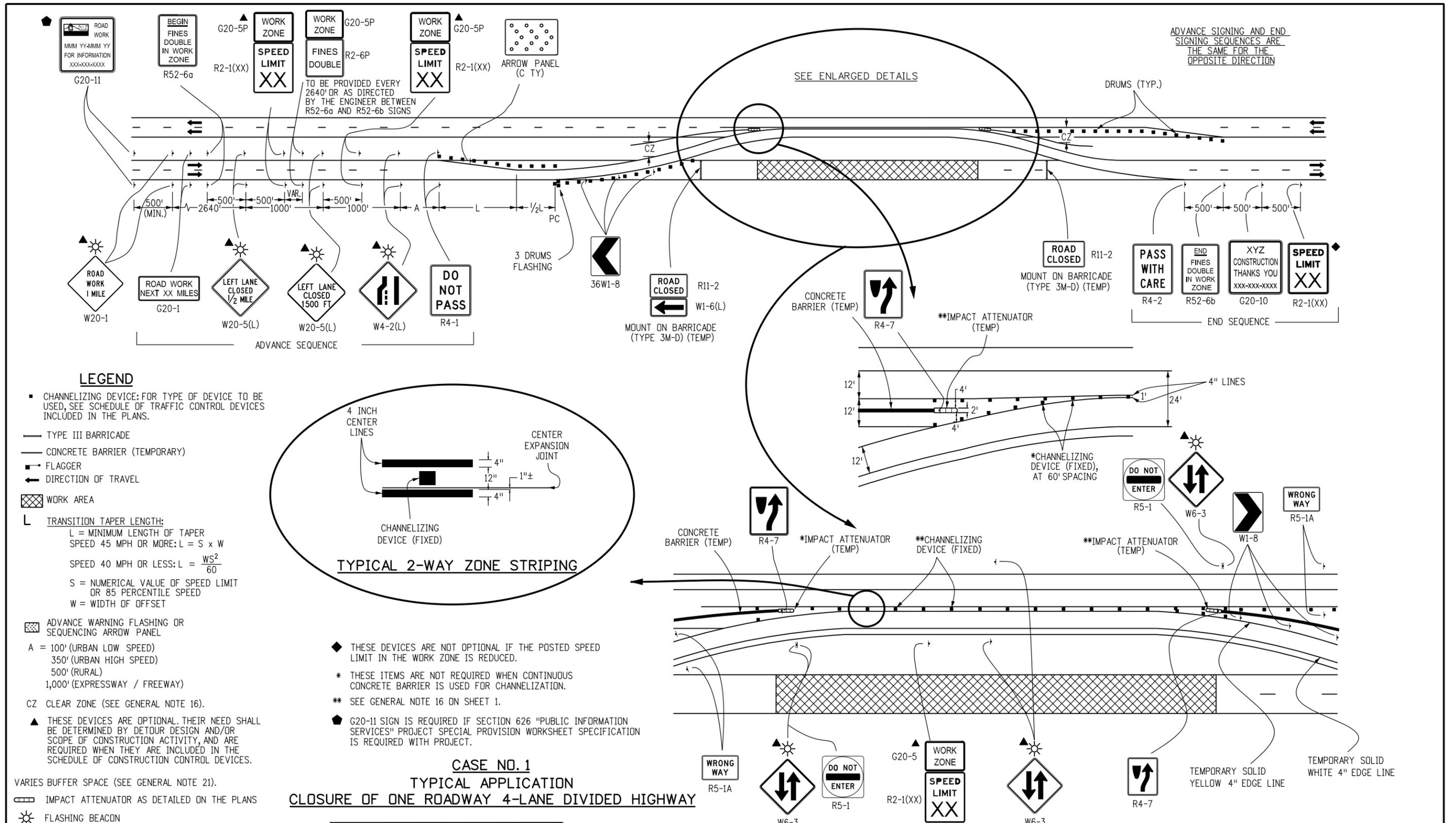
**TRAFFIC CONTROLS  
 FOR HIGHWAY  
 CONSTRUCTION**

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

**STANDARD PLAN NO.**

**S-630-1**

**Sheet No. 1 of 19**

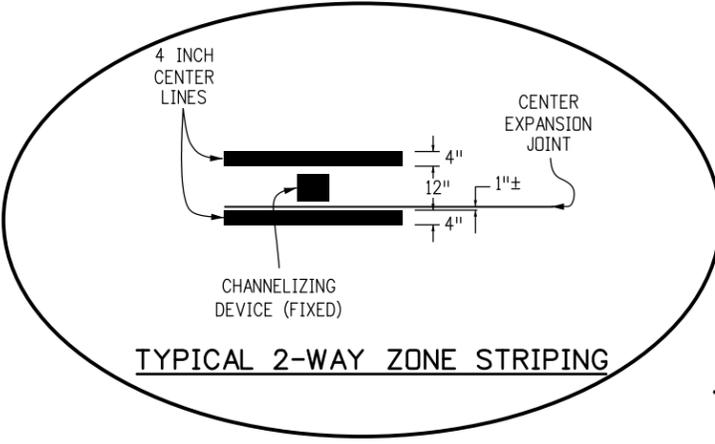


ADVANCE SIGNING AND END SIGNING SEQUENCES ARE THE SAME FOR THE OPPOSITE DIRECTION

SEE ENLARGED DETAILS

**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**

Sheet Revisions	
Date:	Comments
(R-2) 06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 2 OF 19
(R-2) 06/24/09	ADDED * & ** NOTES, EXTENDED FLARED ENDS OF CONCRETE BARRIER.
(R-2) 06/24/09	ADDED OPTIONAL FLASHING BEACONS ON ADVANCED WARNING SIGNS.
(R-3) 12/07/09	RELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1000). ADDED * SYMBOL IN SPEED LIMIT SIGN (R2-1000) AFTER R52-6b SIGN. ADDED R2-6/G20-6 PLACES. ADDED G20-11 SIGN AND * SYMBOL NOTE.

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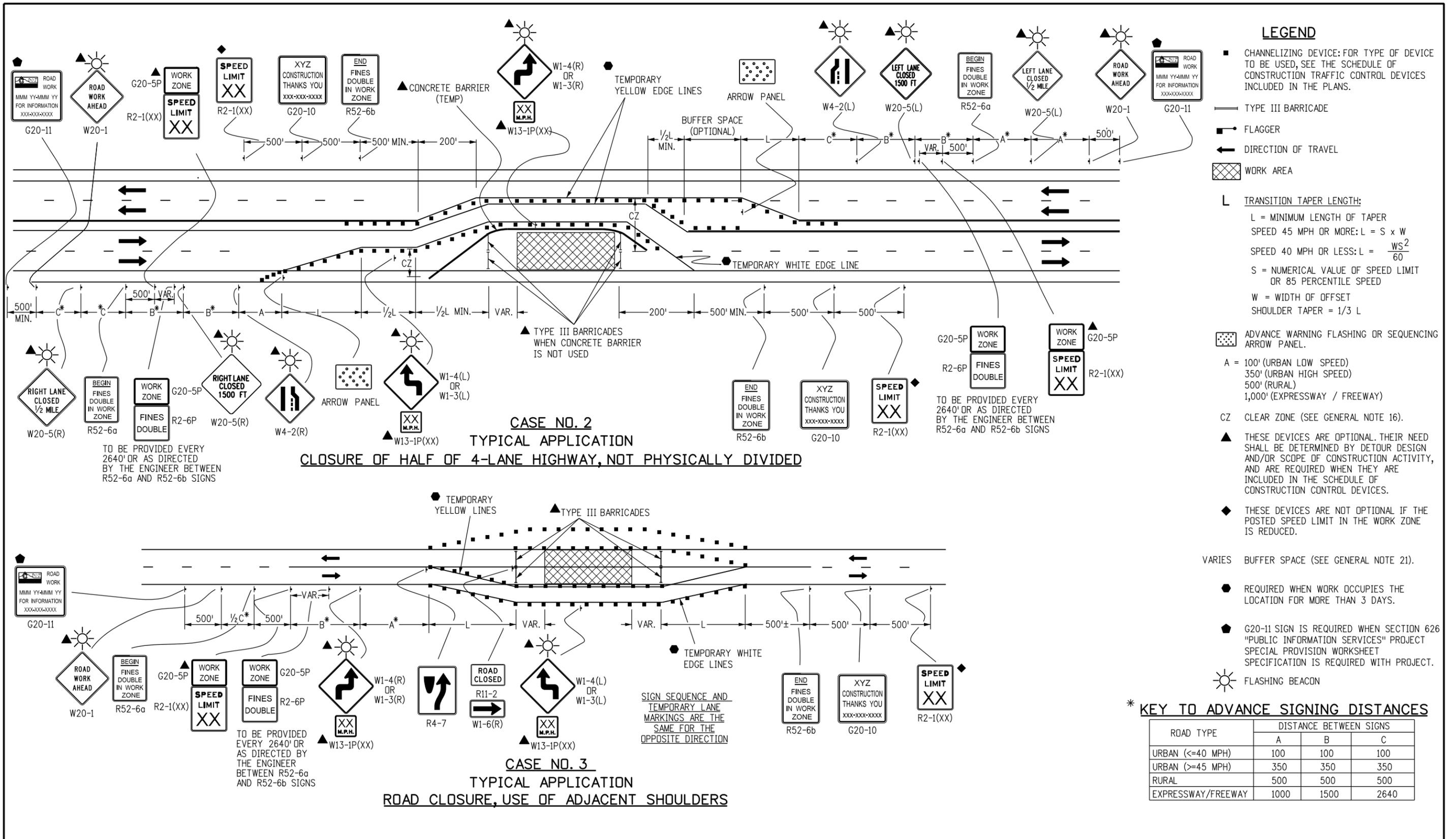
**TRAFFIC CONTROLS  
FOR HIGHWAY  
CONSTRUCTION**

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**STANDARD PLAN NO.**

**S-630-1**

**Sheet No. 2 of 19**



**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

**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**

**Computer File Information**

Creation Date: 04/15/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	
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**Sheet Revisions**

Date:	Comments
R-2 06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS. REVISED SHEET NUMBER TO 3 OF 19.
R-2 06/24/09	DELETED R4-9 SIGN PER MUTCD SEC 6F-11. ADDED OPTIONAL FLASHING BEACONS TO ADVANCED WARNING SIGNS.
R-3 12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-10XX). R52-6b SIGN PLACED 500' PRIOR TO R2-1 SIGN. ADDED SYMBOL IN SPEED LIMIT SIGNS (R-10XX) AFTER R52-6b SIGNS. ADDED R2-6/200-2 PLACED. ADDED G20-11 SIGN AND SYMBOL NOTE.

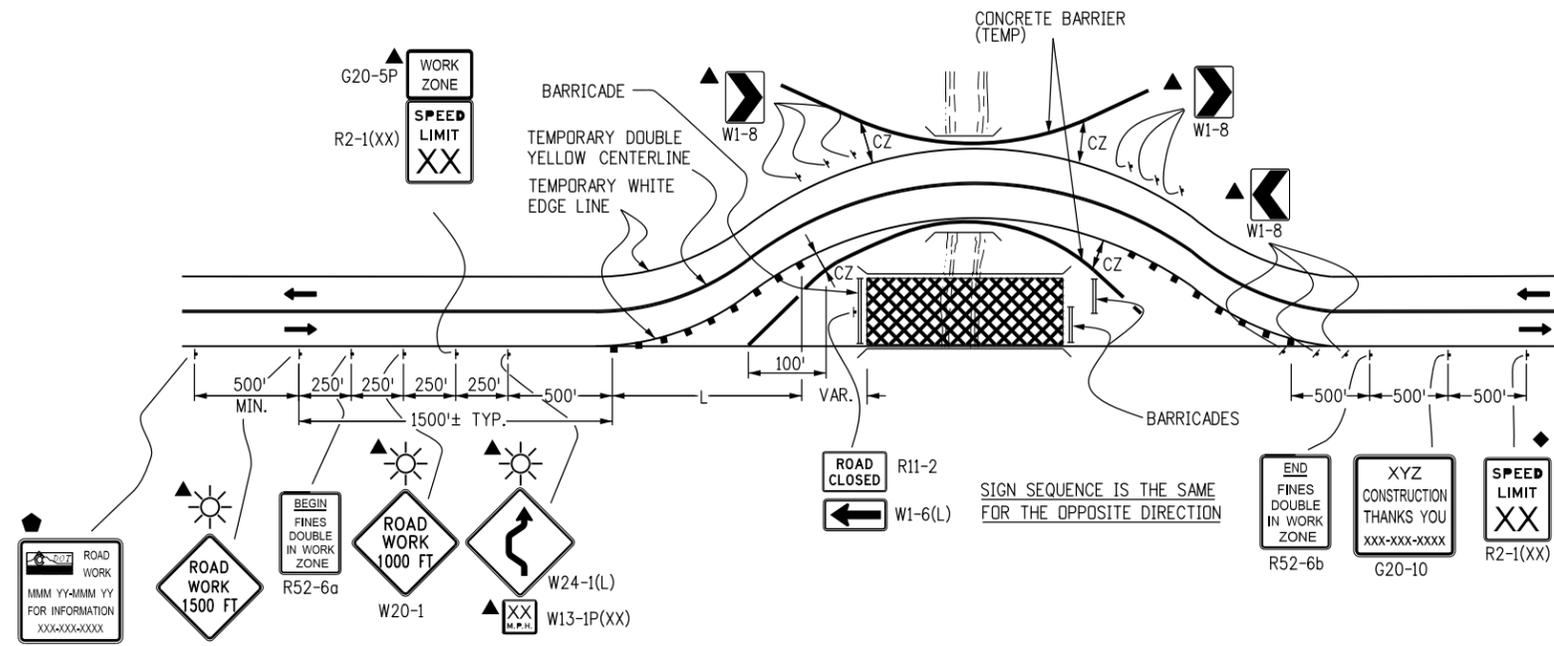
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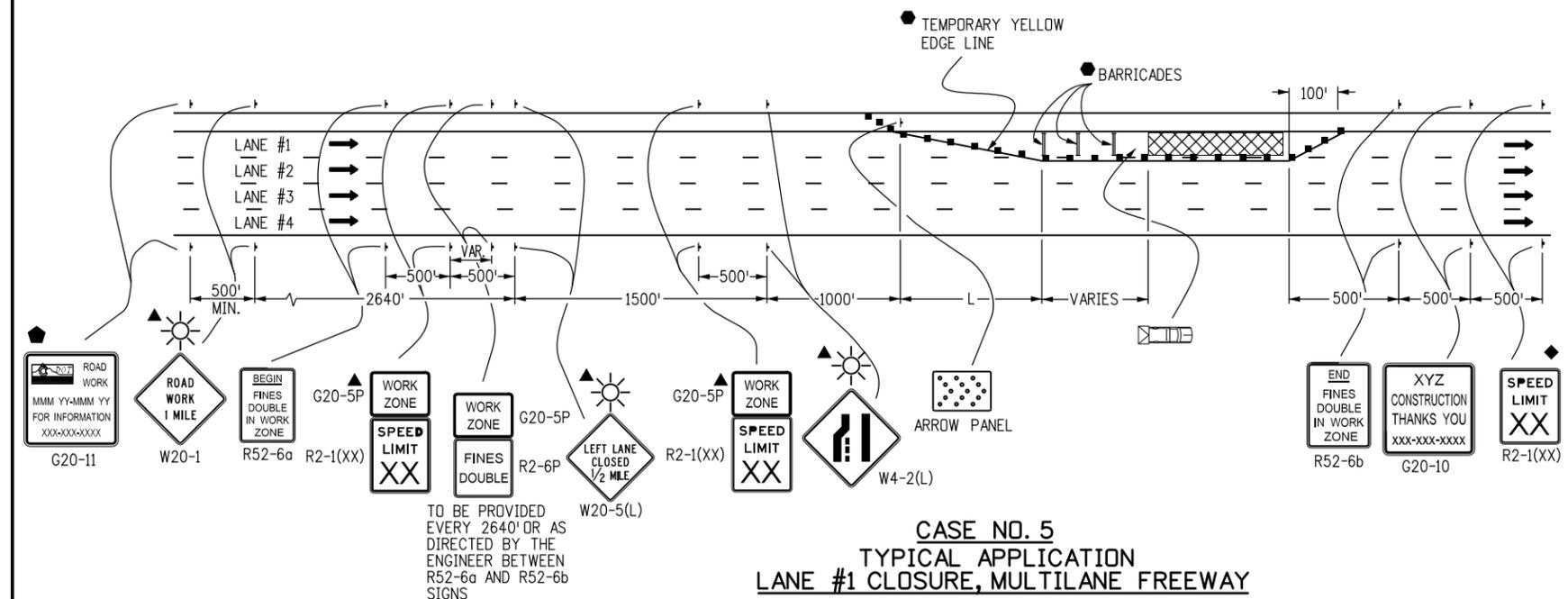
**TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION**

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**STANDARD PLAN NO.**  
**S-630-1**  
**Sheet No. 3 of 19**



**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 = 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	
Creation Date: 07/04/06	Initials: KCM
Last Modification Date: 12/07/09	Initials: KEN
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	
Drawing File Name: 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 & G20-5P SIGNS REVISED SHEET NUMBER TO 4 OF 18
06/24/09	EXTEND CONCRETE BARRIER IN CASE 4. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX) AND R2-1(XX)) G20-5 AND R2-6 PLANKS BETWEEN R52-6a AND R52-6b SIGNS. ADDED 4 SYMBOL FOR SPEED LIMIT SIGN (R-1000) AFTER R52-6b SIGN. ADDED G20-11 SIGN AND 4 SYMBOL NOTE.

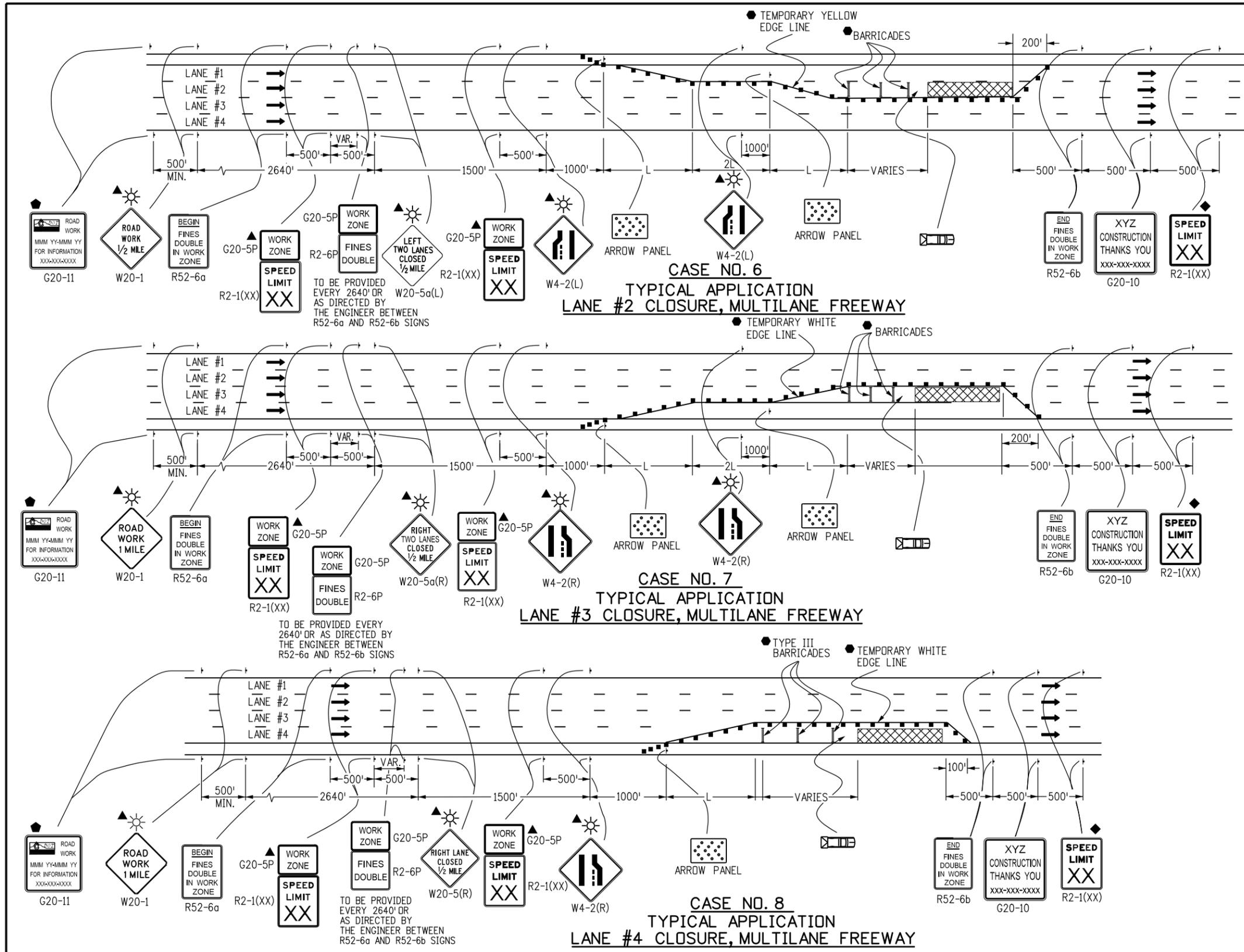
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**STANDARD PLAN NO.**  
 S-630-1  
 Sheet No. 4 of 19



- ### 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.
  - 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
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Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	
Drawing File Name: S-630-01_5of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
R-2 06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 5 OF 19.
R-2 06/24/09	ADDED OPTIONAL FLASHING BEACONS TO ADVANCED WARNING SIGNS.
R-3 12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1XX). ADDED * SYMBOL IN SPEED LIMIT SIGN (R-1XX) AFTER R52-6b SIGN. ADDED R2-6P (G20-5 PLACES). ADDED G20-11 SIGN AND * SYMBOL NOTE.

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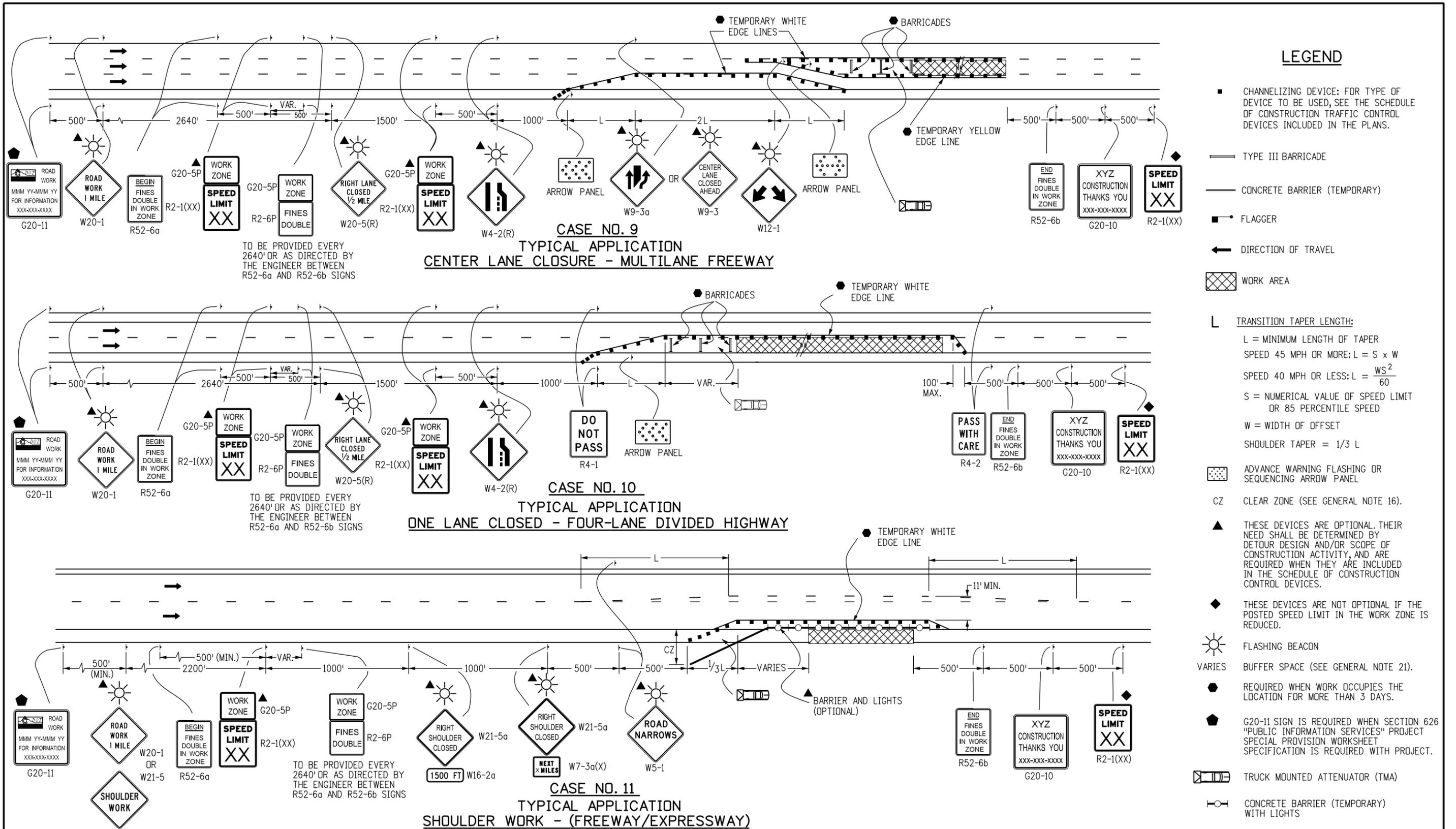
**TRAFFIC CONTROLS  
FOR HIGHWAY  
CONSTRUCTION**

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

**STANDARD PLAN NO.**

**S-630-1**

**Sheet No. 5 of 19**



**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.
- ☀ 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 BARRIERS (TEMPORARY) WITH LIGHTS

Computer File Information	
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Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	
Drawing File Name: S-630-01 (6of19).dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
R-2 06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 6 OF 18
R-2 06/24/09	ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
R-2 06/24/09	MINIMUM LANE WIDTH TO 11' AT WORK ZONE.
R-3 12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1XX), R52-6a SIGN PLACED 500' MIN FROM TO 12' FROM, ADDED 4 SYMBOL TO SPEED LIMIT SIGN (R2-1XX) AFTER R52-6b SIGN, ADDED R2-4 AND G20-5 PLACED, ADDED R2-1 SIGN AND 4 SYMBOL, NOTE.

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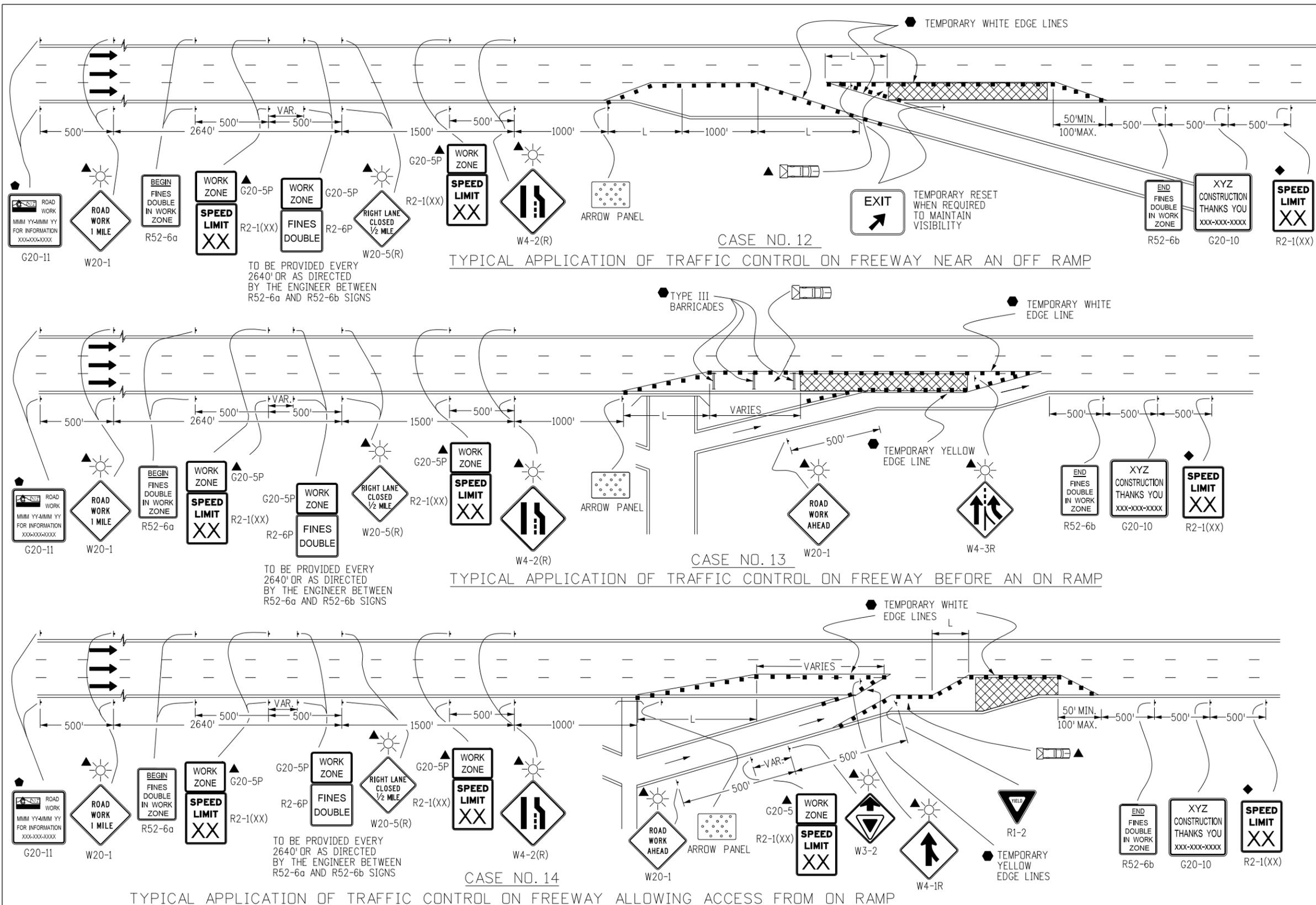
**TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION**

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

**STANDARD PLAN NO.**

**S-630-1**

**Sheet No. 6 of 19**



- 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 REQUIRED 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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CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

**Sheet Revisions**

Date:	Comments
(R-2) 06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 7 OF 19
(R-2) 06/24/09	ADDED OPTIONAL FLASHING BEACONS TO ADVANCE WARNING SIGNS.
(R-3) 12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1XX) ADDED SYMBOL IN SPEED LIMIT SIGN (R2-1XX) AFTER R52-6b SIGN ADDED R2-1 AND R2-6P PLACES WITHIN R52-6a AND R52-6b SIGNS ADDED R2-1 AND R2-6P SIGN CODE IN CASE 14 OF DRAWING ADDED R2-1 AND R2-6P SYMBOLS.
(R-4) 02/17/10	CHANGED YIELD AHEAD SYMBOL SIGN CODE IN CASE 14

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Safety & Traffic Engineering Branch KCM/KEN

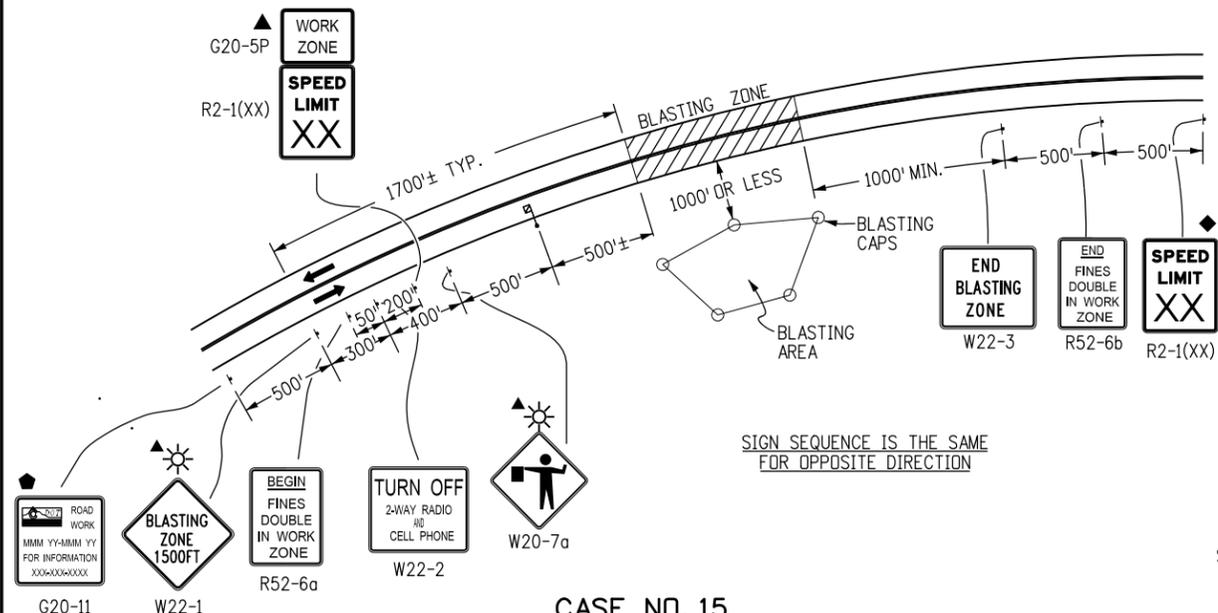
**TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION**

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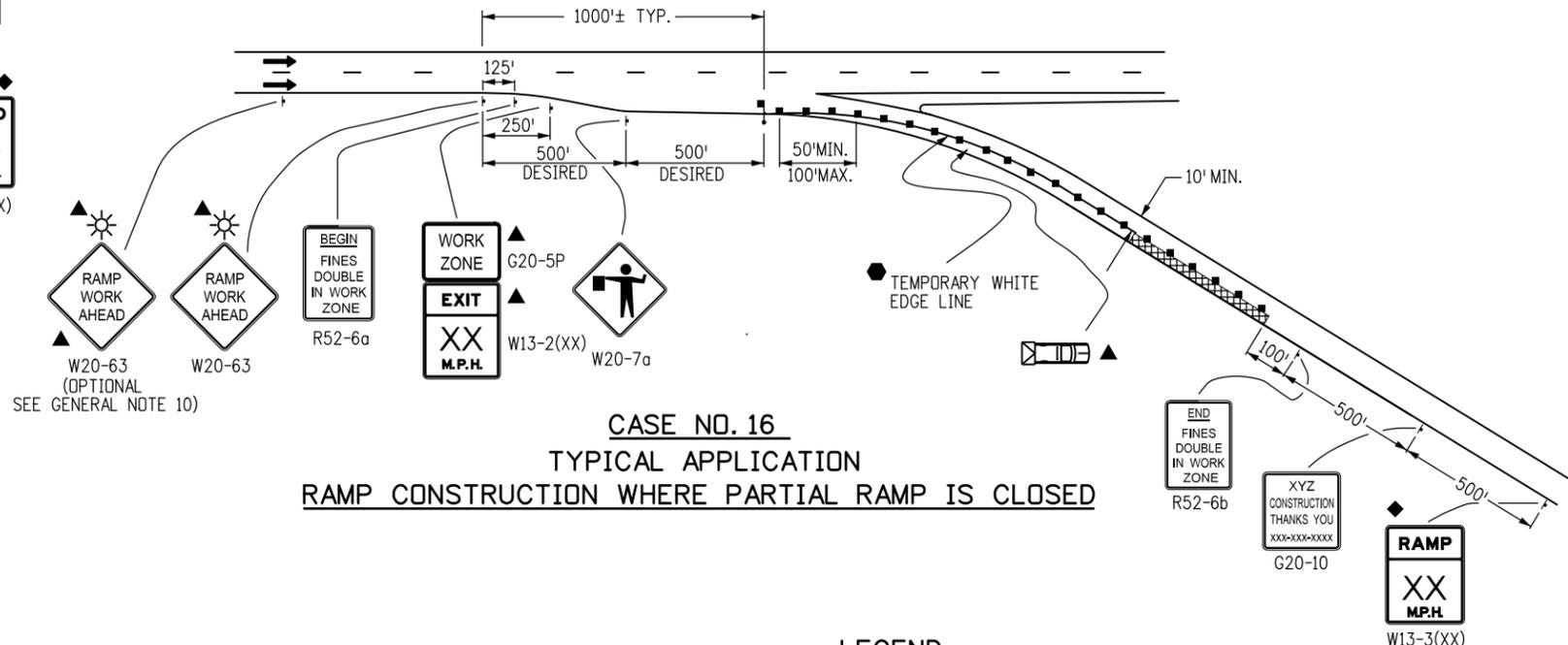
**STANDARD PLAN NO.**

**S-630-1**

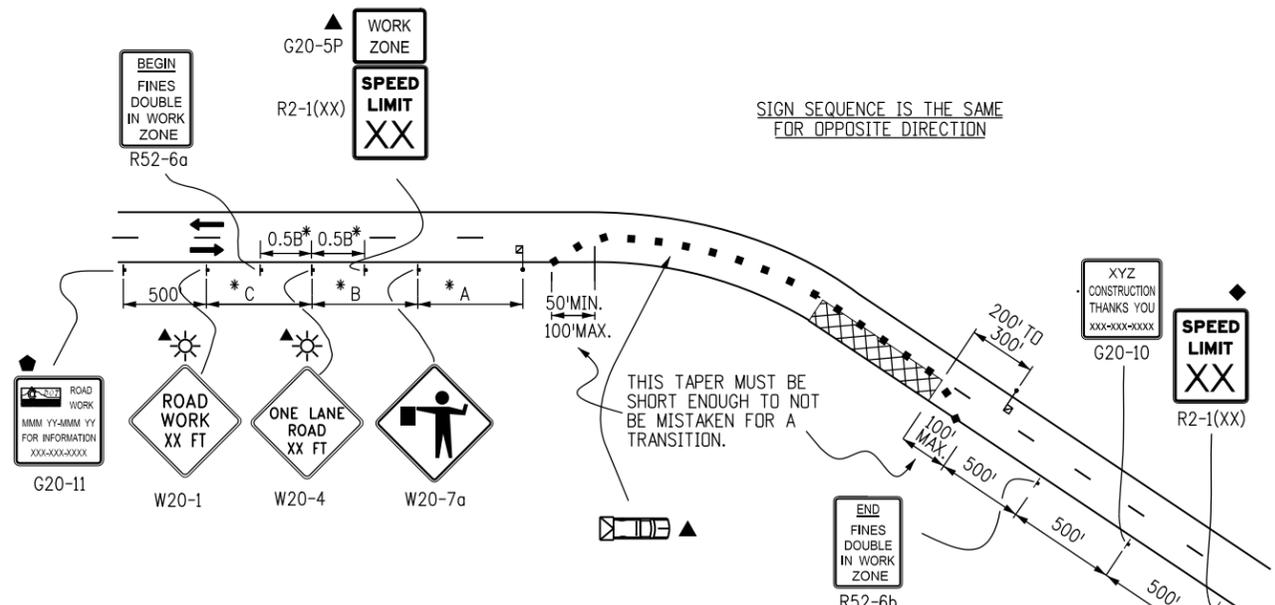
**Sheet No. 7 of 19**



**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**

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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	SELECTED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)) TO BE PLACED PRIOR TO R2-1(XX) SIGN. ADDED SYMBOL IN SPEED LIMIT SIGN (R-2000) AFTER R52-6b SIGN. ADDED G20-5 SIGN AND SYMBOL.

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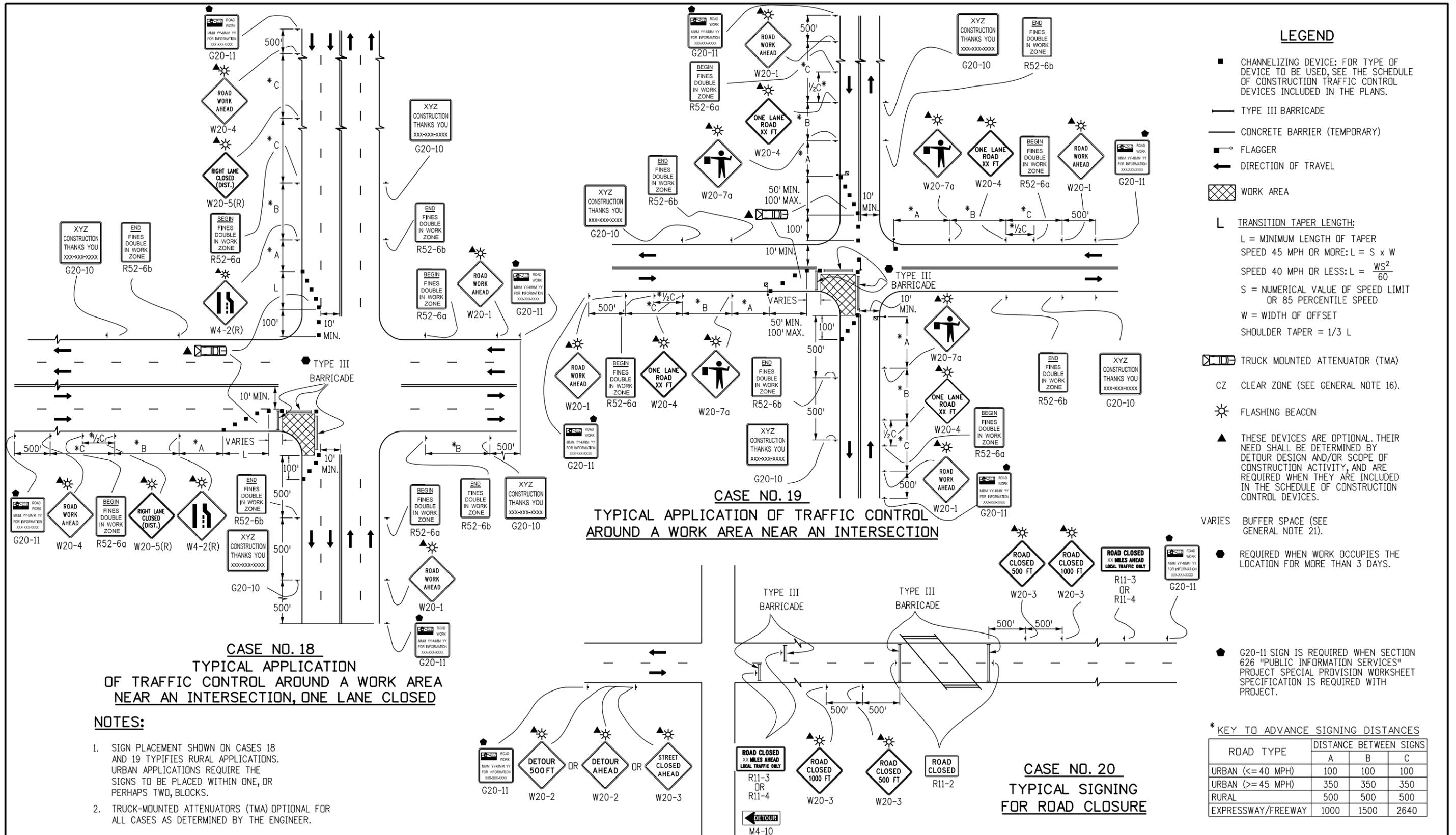
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**STANDARD PLAN NO.**

**S-630-1**

**Sheet No. 8 of 19**



**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
- ▩ TRUCK MOUNTED ATTENUATOR (TMA)
- CZ CLEAR ZONE (SEE GENERAL NOTE 16).
- ☀ FLASHING BEACON
- ▲ 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).
- 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

**CASE NO. 18**  
TYPICAL APPLICATION OF TRAFFIC CONTROL AROUND A WORK AREA NEAR AN INTERSECTION, ONE LANE CLOSED

**CASE NO. 19**  
TYPICAL APPLICATION OF TRAFFIC CONTROL AROUND A WORK AREA NEAR AN INTERSECTION

**CASE NO. 20**  
TYPICAL SIGNING FOR ROAD CLOSURE

- NOTES:**
- SIGN PLACEMENT SHOWN ON CASES 18 AND 19 TYPIFIES RURAL APPLICATIONS. URBAN APPLICATIONS REQUIRE THE SIGNS TO BE PLACED WITHIN ONE, OR PERHAPS TWO, BLOCKS.
  - TRUCK-MOUNTED ATTENUATORS (TMA) OPTIONAL FOR ALL CASES AS DETERMINED BY THE ENGINEER.

**Computer File Information**

Creation Date: 07/04/06	Initials: KCM
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Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	
Drawing File Name: S-630-01 (9of19).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 # TO 9 OF 19.
12/07/09	ADDED NOTE 2 IN LEGEND. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS. ADDED G20-11 SIGN AND SYMBOL NOTE.

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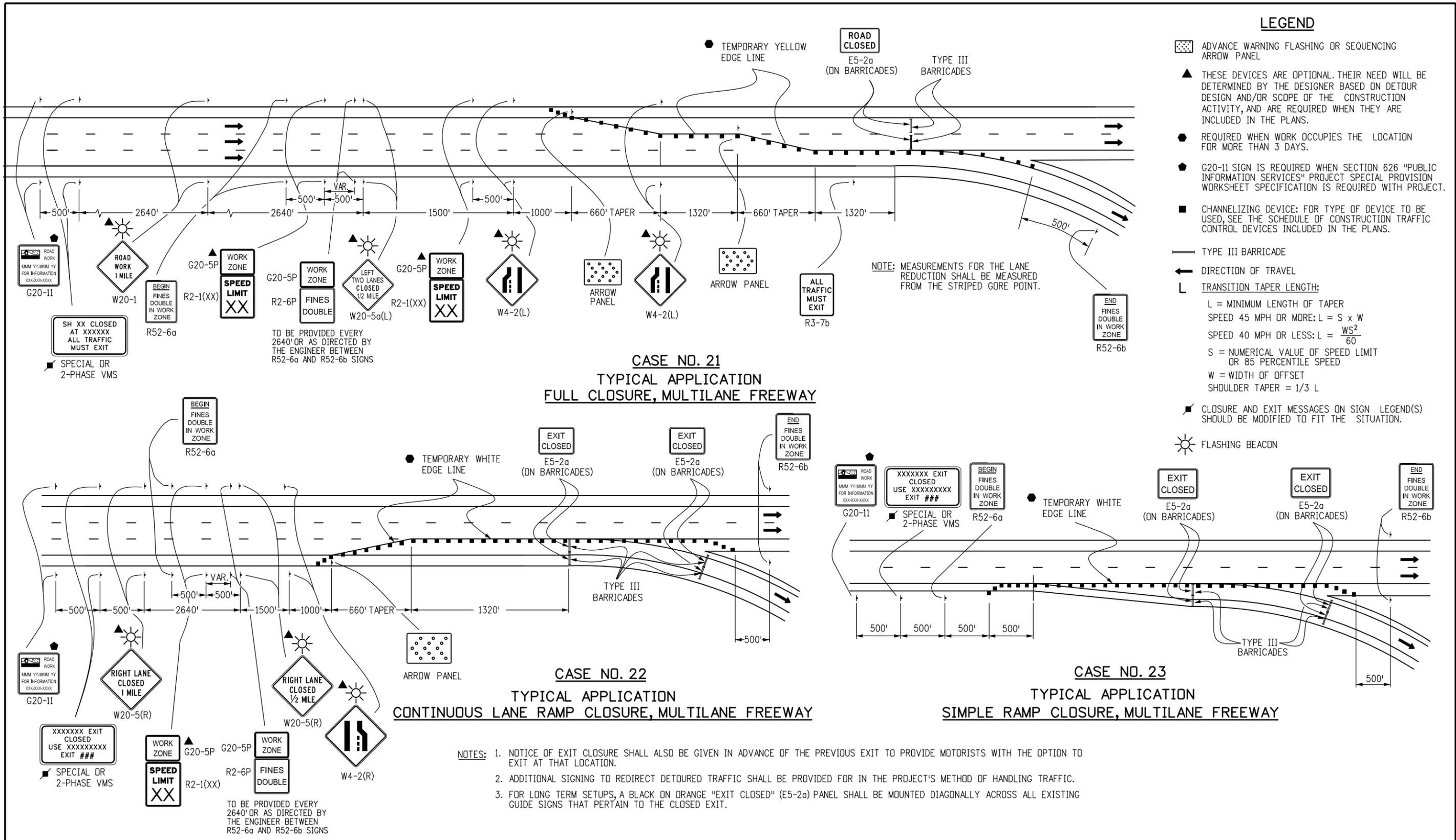
**TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION**

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

**STANDARD PLAN NO.**

**S-630-1**

**Sheet No. 9 of 19**



Computer File Information	
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Sheet Revisions	
Date:	Comments
06/24/09	ADD R52-6a, R52-6b & G20-5 SIGNS, REVISED SHEET NUMBER TO 10 OF 19, EXTENDED CHANNELIZATION DEVICES TO GORE PT.
06/24/09	IN CASE 21, ADDED OPTIONAL FLASHING BEACON ON ADVANCED WARNING SIGNS.
12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1XX). ADDED R2-6 & G20-5 PLAQUES BETWEEN R52-6a AND R52-6b SIGNS. ADDED G20-11 SIGN AND SYMBOL ANGLE.

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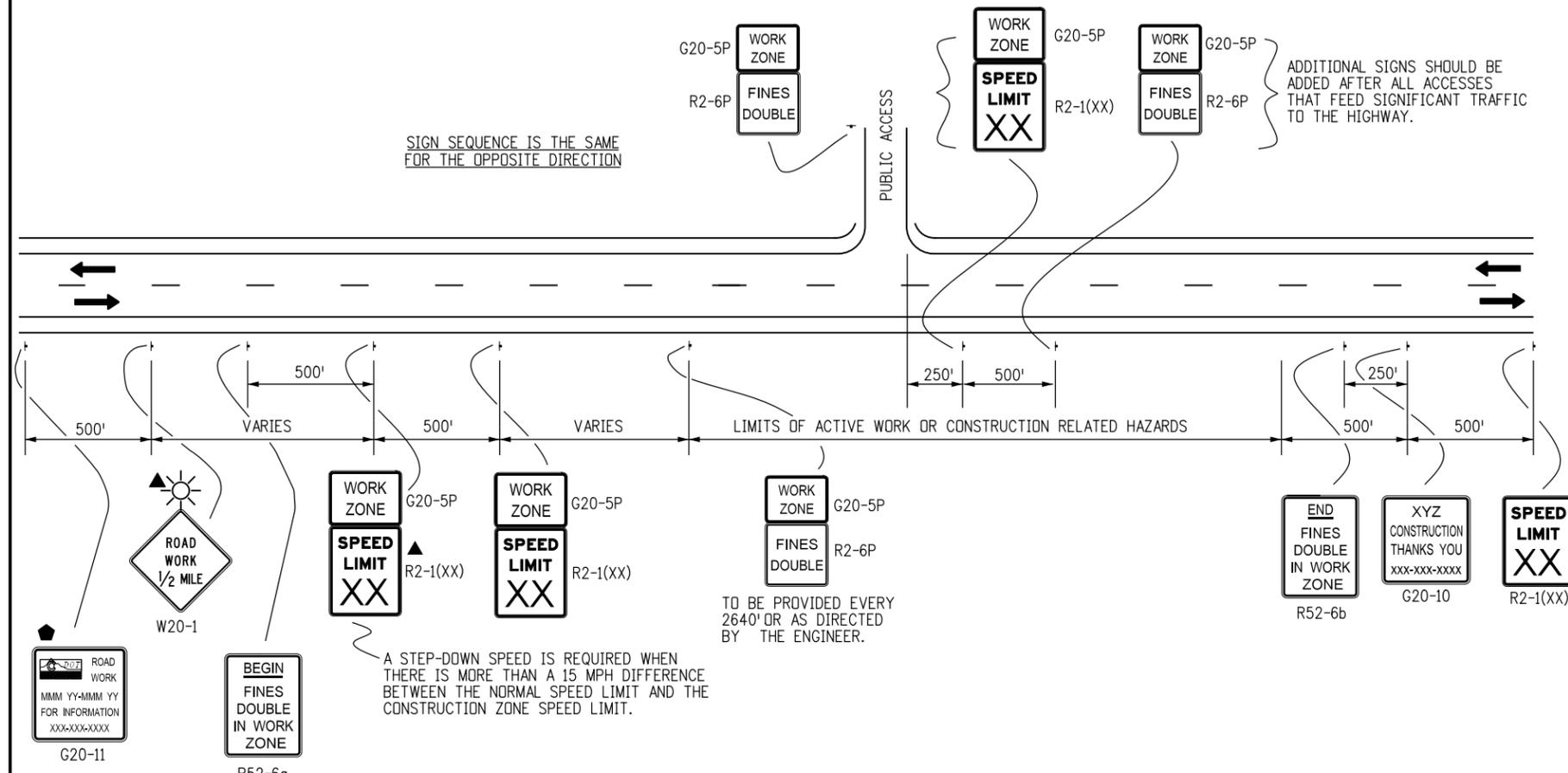
**STANDARD PLAN NO.**

S-630-1

Sheet No. 10 of 19

**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)**

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

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Drawing File Name: S-630-01 (11of19).dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

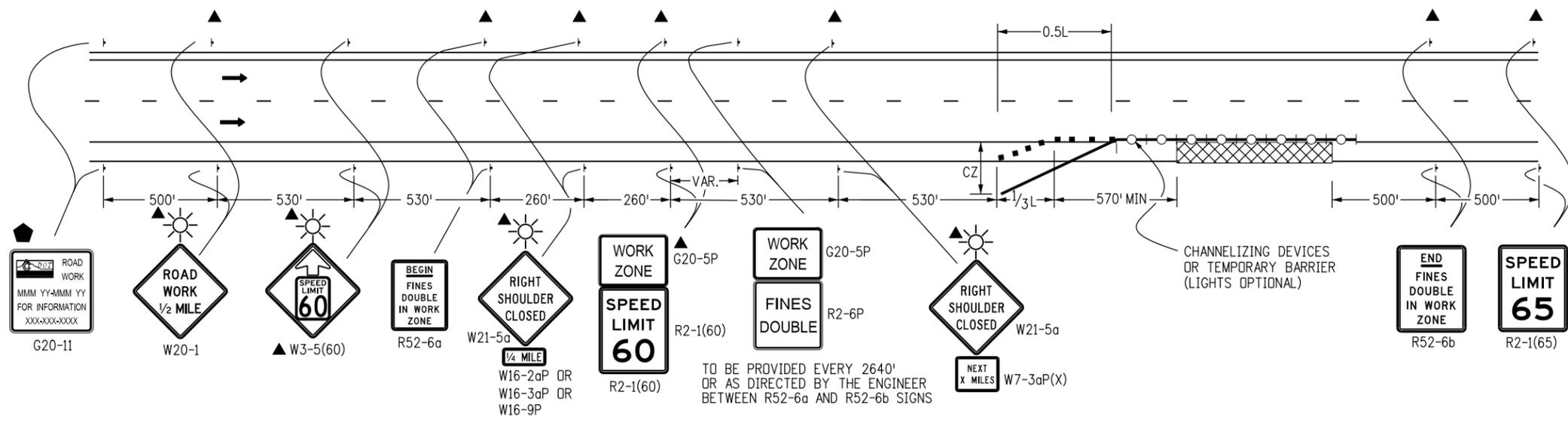
Sheet Revisions	
Date:	Comments
06/24/09	DELETE CASE NO. 25 TYPICAL APPLICATION CHANGE SIZE OF G20-5 "WORK ZONE" PLAQUES
06/24/09	REVISED SHEET NUMBER TO 11 OF 19. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGN
12/07/09	CHANGED NOTES HEADING TO "DOUBLE FINES (SPEED REDUCTION) SIGNING NOTES.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

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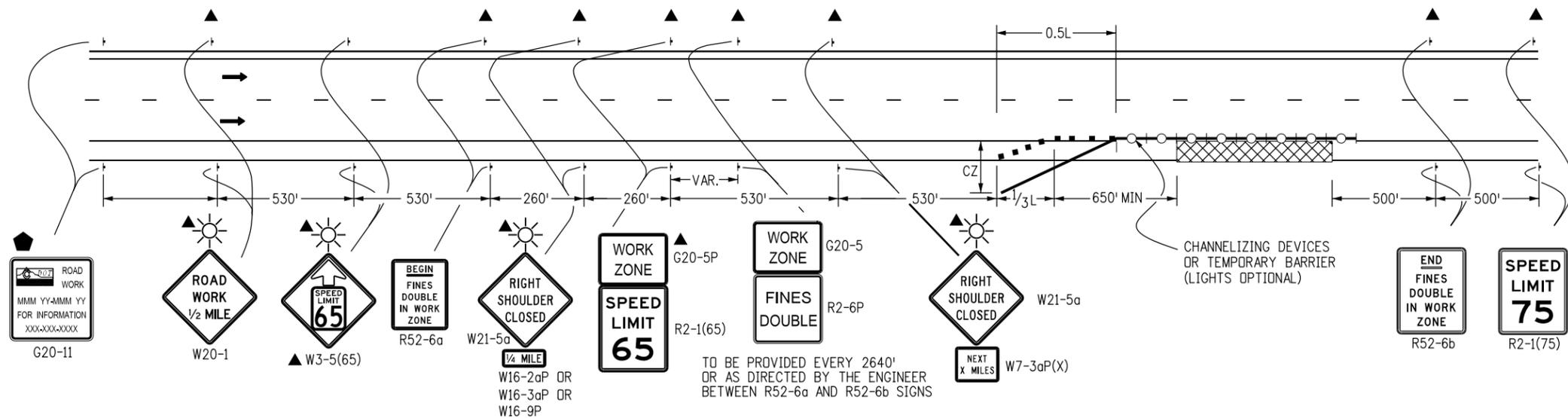
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FOR HIGHWAY  
CONSTRUCTION**  
 Issued By: Safety & Traffic Engineering Branch July 4, 2006

**STANDARD PLAN NO.**  
**S-630-1**  
**Sheet No. 11 of 19**





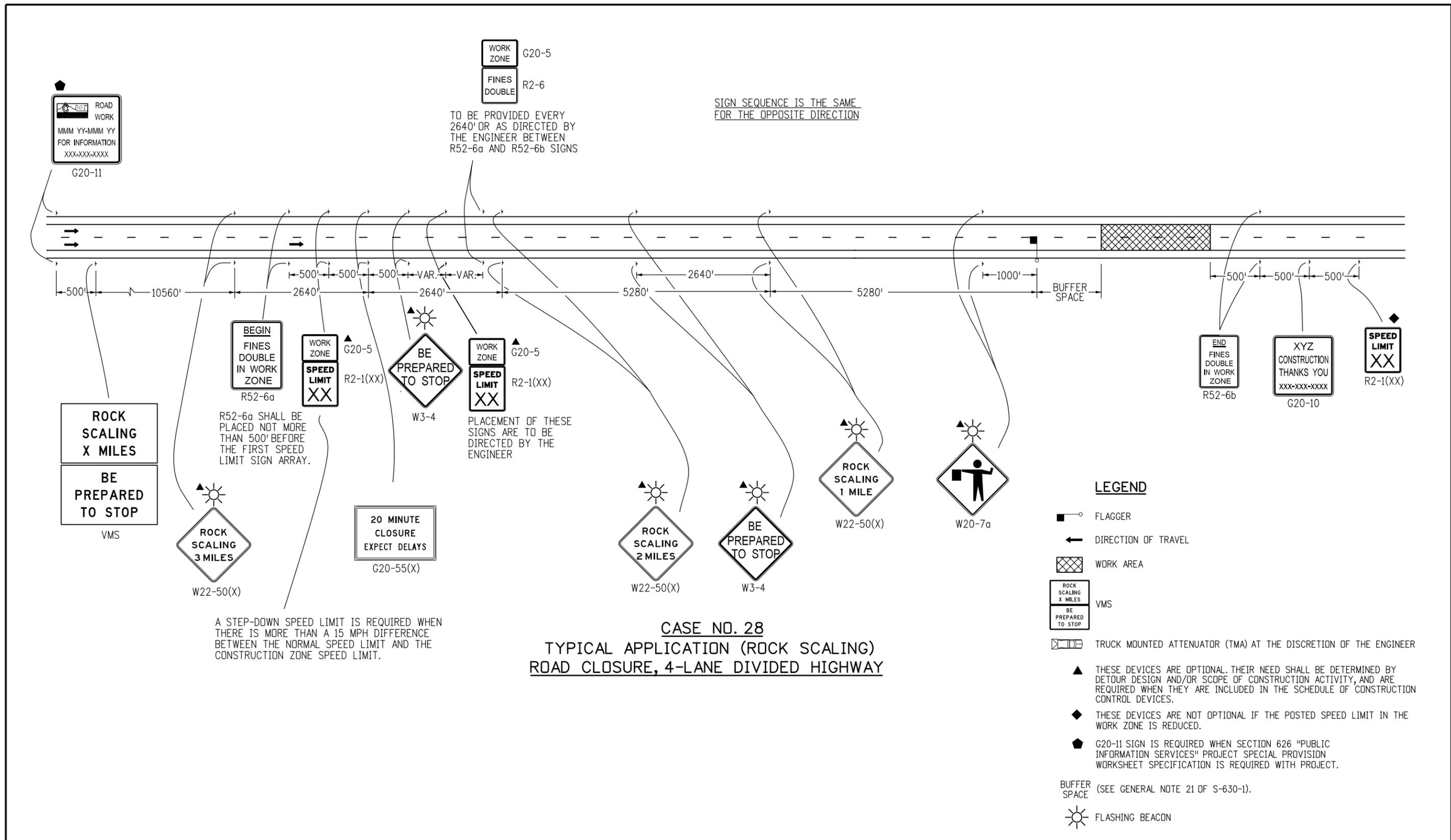
**CASE NO. 26**  
**TYPICAL APPLICATION**  
**SHOULDER WORK - (FREEWAY/EXPRESSWAY w/ 65 MPH SPEED LIMIT)**  
 WHEN HAZARDS (WORKERS, EQUIPMENT, OR TEMPORARY BARRIER) ARE WITHIN 8 FT OF TRAVEL WAY



**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 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 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

<b>Computer File Information</b>		<b>Sheet Revisions</b>		<b>Colorado Department of Transportation</b>  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9543 Fax: (303) 757-9458 <b>Safety &amp; Traffic Engineering Branch</b> <b>KCM/KEN</b>	<b>TRAFFIC CONTROLS          FOR HIGHWAY          CONSTRUCTION</b>	<b>STANDARD PLAN NO.</b>
Creation Date: 06/24/09	Initials: KEN	Date:	Comments			<b>S-630-1</b>
Last Modification Date: 12/07/09	Initials: KEN	12/07/09	ADDED G20-5 PLAKES TO R2-1(65) SIGNS. ADDED R2-4 & G20-5 PLAKES BETWEEN R52-6a AND R52-6b SIGNS. ADDED G20-11 SIGNS AND ● SYMBOL/NOTE.			
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans						
Drawing File Name: S-630-01 (13of19).dgn						
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English			<b>Sheet No. 13 of 19</b>	



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

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Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	
Drawing File Name: S-630-01 (14 of 19).dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
12/07/09	ADDED R2-6 & G20-5 PLAQUES BETWEEN R52-6a & R52-6b SIGNS. PLACED SYMBOL AT 52-1000 SIGN AFTER R52-6b SIGN. ADD G20-11 SIGN AND SYMBOL. NOTE.

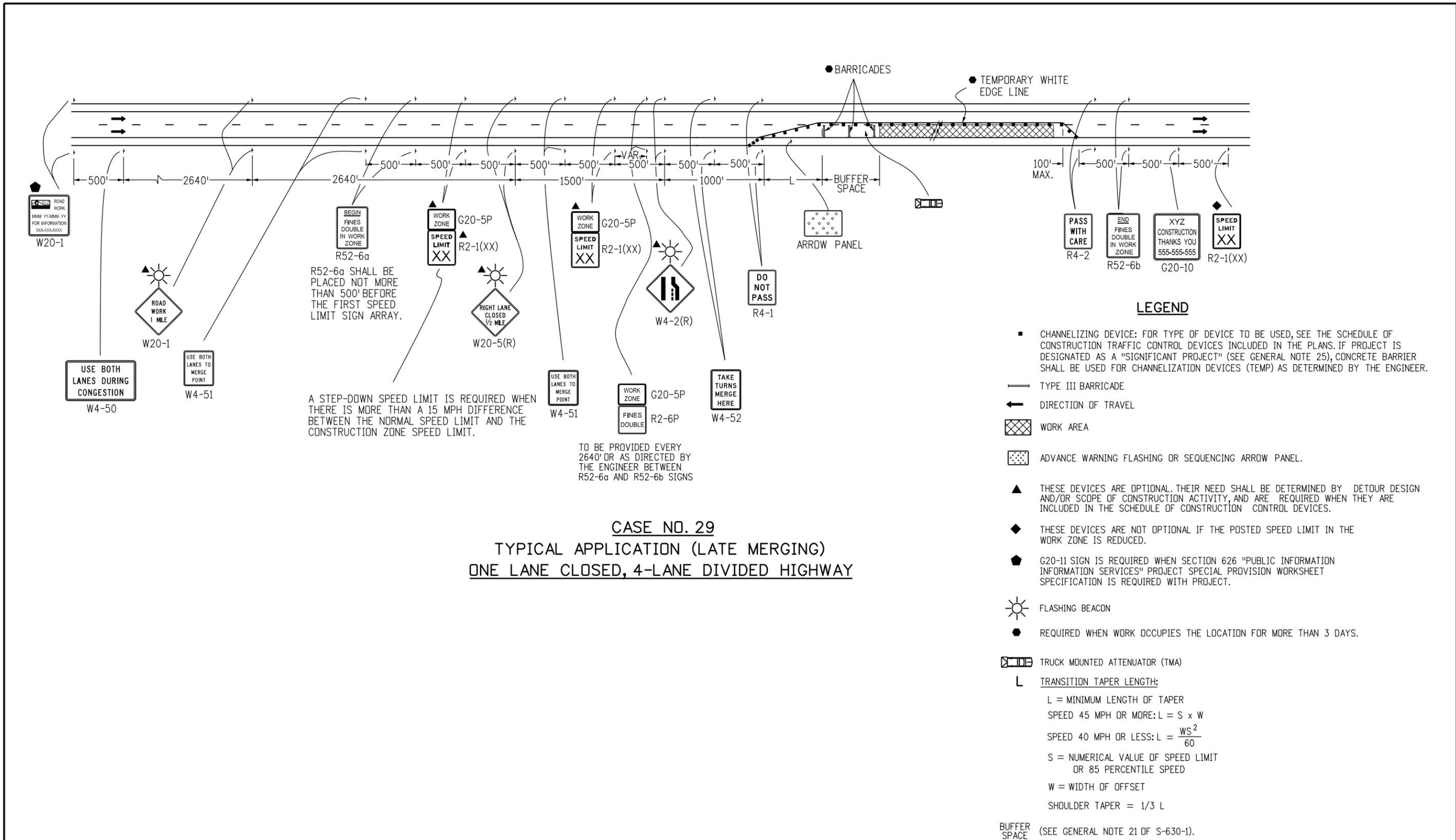
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**TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION**

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**STANDARD PLAN NO.**  
**S-630-1**  
**Sheet No. 14 of 19**



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

Computer File Information	
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Sheet Revisions	
Date:	Comments
12/07/09	ADDED R2-5 & G20-5 PLACES BEHIND R52-6a & R52-6b SIGNS. ADDED * SYMBOL AT R2-1(XX) SIGN AFTER R52-6b SIGN ADDED. G20-11 SIGN AND * SYMBOL NOTE.

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**STANDARD PLAN NO.**

**S-630-1**

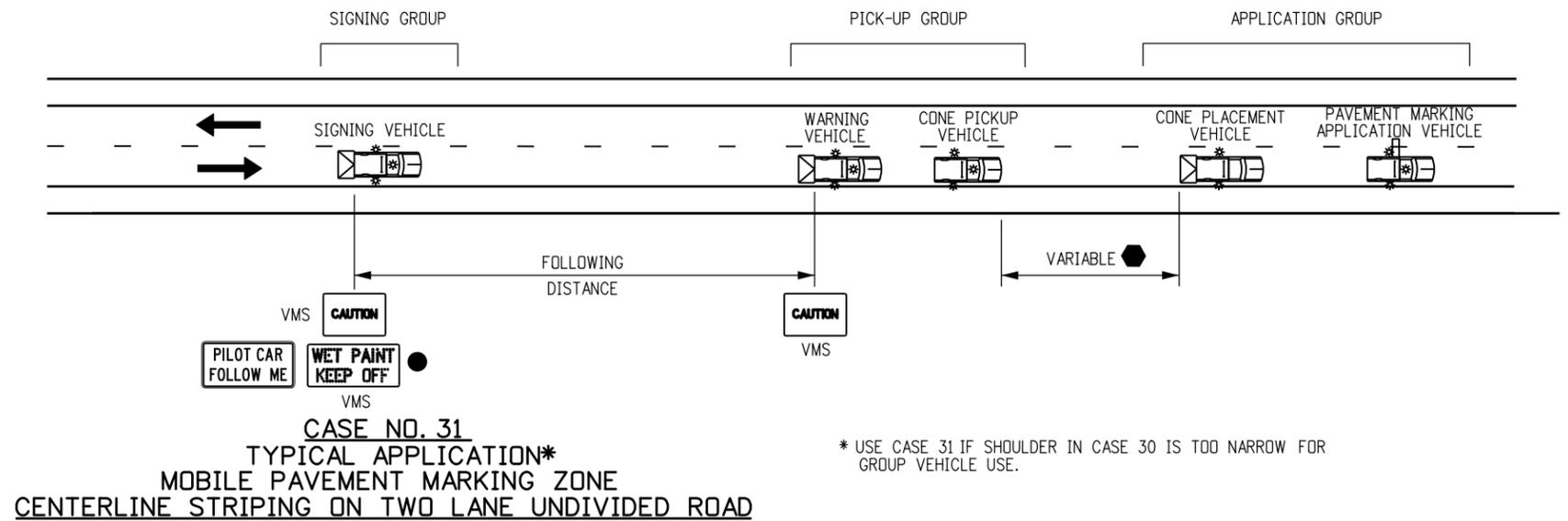
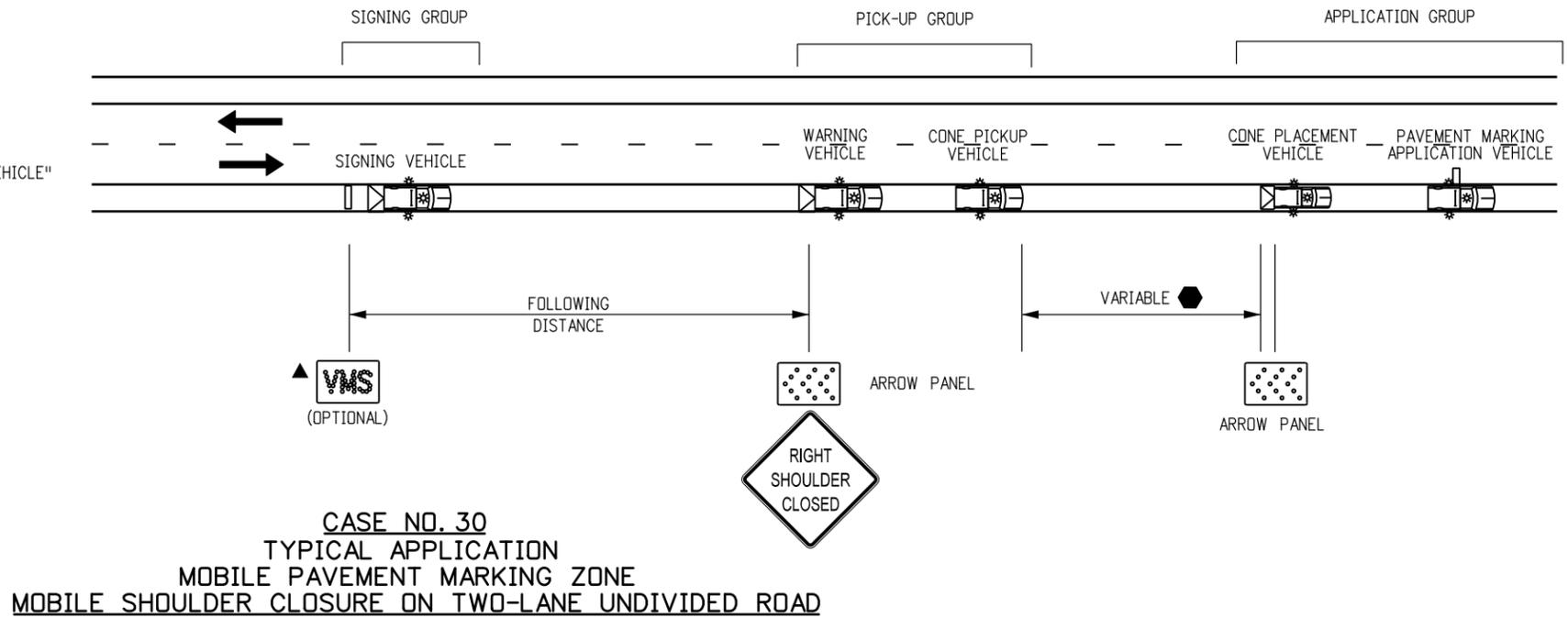
**Sheet No. 15 of 19**

**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**

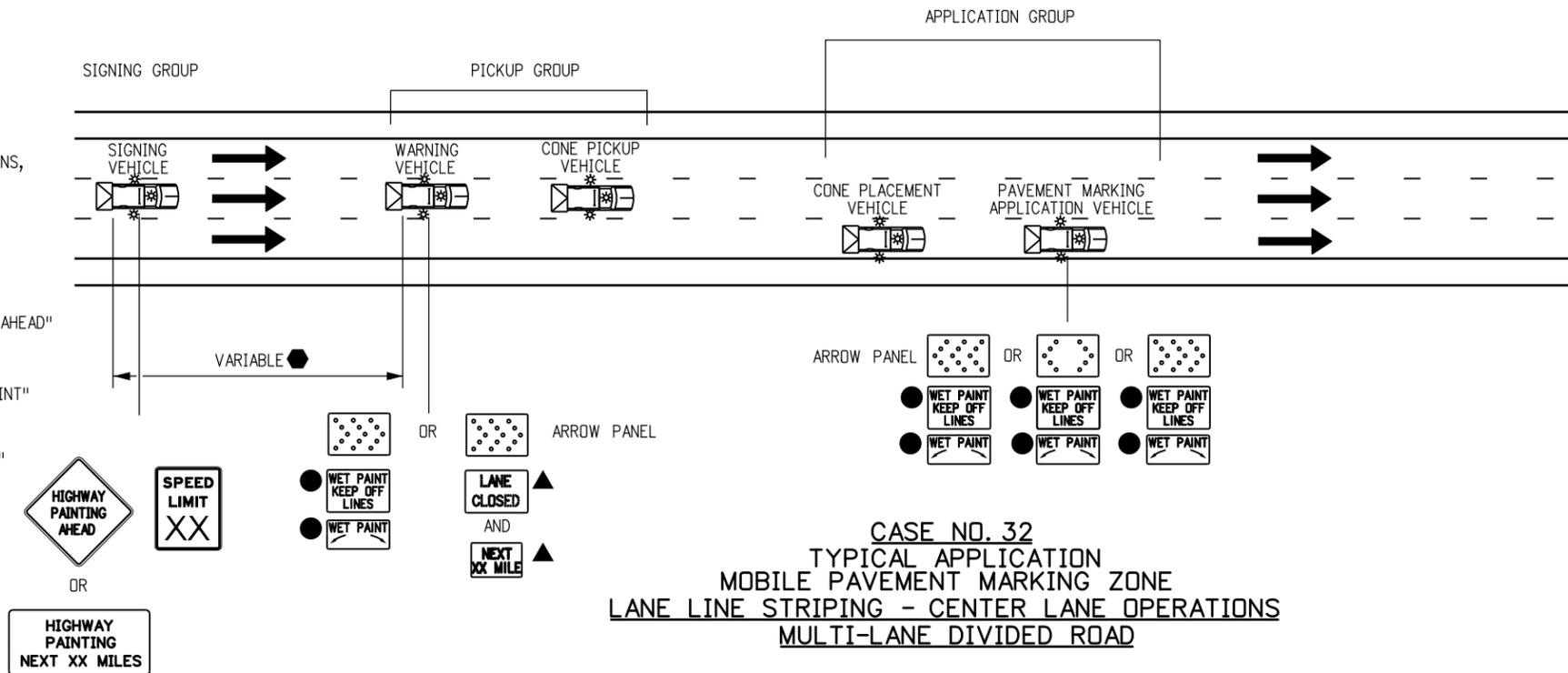
POSTED WZ SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 40	325 - 700
45 - 50	600 - 900
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1200 - 1600



<b>Computer File Information</b>		<b>Sheet Revisions</b>	<b>Colorado Department of Transportation</b>	<b>TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION</b>	<b>STANDARD PLAN NO.</b>
Creation Date: 06/24/09 Initials: KEN		Date: 2/24/11 Comments: CORRECTING TEXT ERRORS	 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9543 Fax: (303) 757-9219	Issued By: Safety & Traffic Engineering Branch July 4, 2006	S-630-1
Last Modification Date: 02/24/11 Initials: KEN					Sheet No. 16 of 19
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Drawing File Name: S-630-1 (16of19).dgn					
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English			Safety & Traffic Engineering Branch KCM/KEN		

**LEGEND**

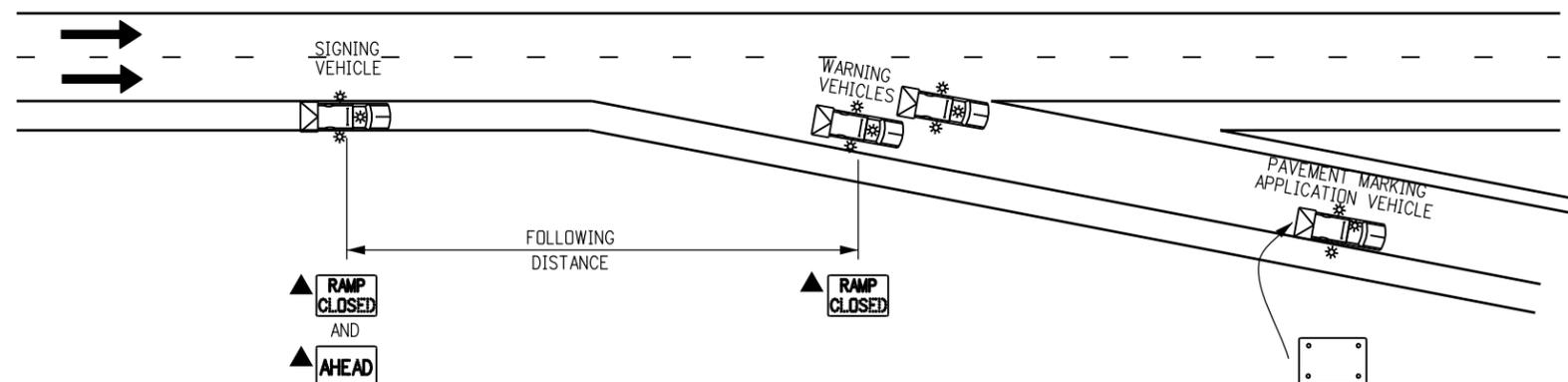
-  VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
-  ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
-  PORTABLE VARIABLE MESSAGE SIGN (VMS).
-  WHEN THE VMS IS USED, THE "SHOULDER CLOSED" (W21-5aX) OR W21-5bX), AND "RAMP CLOSED AHEAD" SIGNS BECOME OPTIONAL.
-  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.



**CASE NO. 32**  
**TYPICAL APPLICATION**  
**MOBILE PAVEMENT MARKING ZONE**  
**LANE LINE STRIPING - CENTER LANE OPERATIONS**  
**MULTI-LANE DIVIDED ROAD**

**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



**CASE NO. 33**  
**TYPICAL APPLICATION**  
**MOBILE PAVEMENT MARKING ZONE**  
**MOBILE RAMP CLOSURE - EXPRESSWAY/FREEWAY**

- 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 REOPENED WITHIN 15 MINUTES, USE CASE NO. 22 OF THE S-630-1 STANDARD PLAN.

Computer File Information	
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**TRAFFIC CONTROLS**  
**FOR HIGHWAY**  
**CONSTRUCTION**

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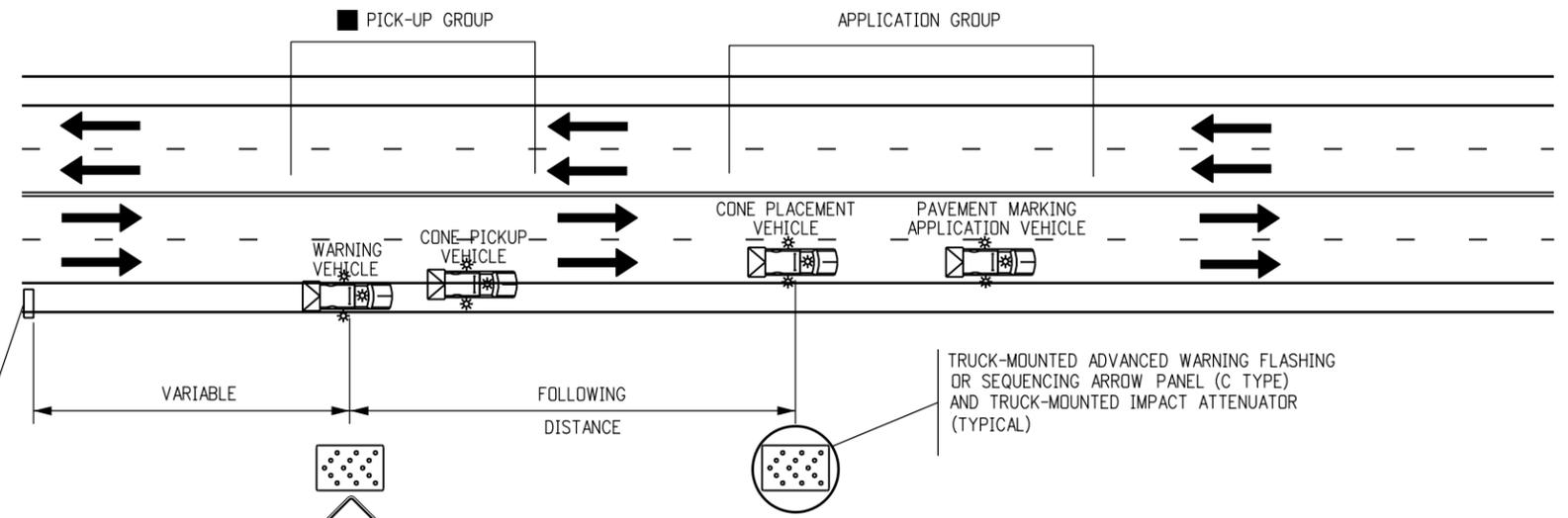
**STANDARD PLAN NO.**

**S-630-1**

**Sheet No. 17 of 19**

**LEGEND**

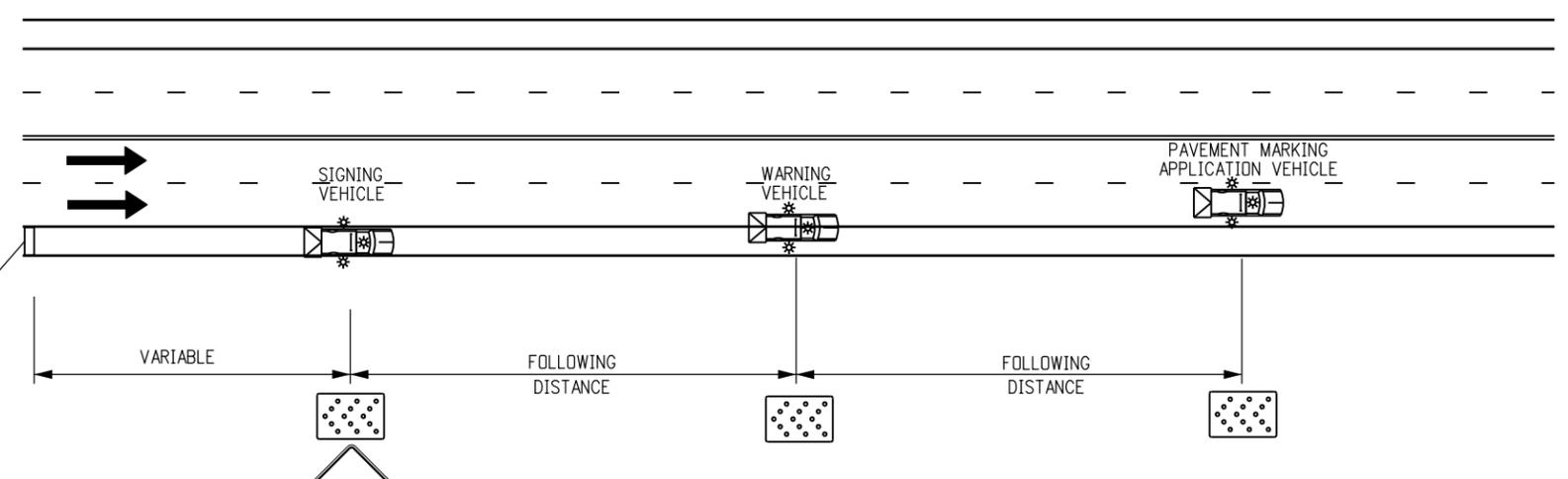
-  VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
-  ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
-  PORTABLE VARIABLE MESSAGE SIGN (VMS).
-  WHEN THE VMS IS USED, THE "RIGHT LANE CLOSED AHEAD" (W9-3X) SIGN BECOMES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



**CASE NO. 34**  
**TYPICAL APPLICATION**  
**MOBILE OPERATION OF LANE CLOSURE OF MULTI-LANE ROAD**  
**(NOT FOR USE ON FREEWAYS)**

**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



**CASE NO. 35**  
**TYPICAL APPLICATION**  
**MOBILE OPERATION OF LANE CLOSURE OF MULTI-LANE ROAD**

- 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 RAMP 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).

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.

G20-5P "WORK ZONE" - THIS PLAQUE 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/⟨⟨⟨" - 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.

R2-6P "FINES DOUBLE" - THIS SIGN IS INTENDED FOR USE WITHIN WORK ZONES TO PROVIDE NOTICE OF INCREASED FINES FOR TRAFFIC VIOLATIONS WITHIN WORK ZONES.

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 600 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 ADVANCED 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 ADVANCED TO MOVE FROM THE CLOSED TRAVEL LANE TO THE OPEN TRAVEL LANE, USUALLY 500 FEET IN ADVANCED 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. \*

W13-1P( ) "ADVISORY SPEED PLAQUE" - THIS PLAQUE 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 ADVANCED 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.

<b>Computer File Information</b>		<b>Sheet Revisions</b>		<b>Colorado Department of Transportation</b>  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9543 Fax: (303) 757-9458 <b>Safety &amp; Traffic Engineering Branch</b> <b>KCM/KEN</b>	<b>TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION</b> Issued By: Safety & Traffic Engineering Branch July 4, 2006	<b>STANDARD PLAN NO.</b> S-630-1 Sheet No. 19 of 19
Creation Date: 07/04/06	Initials: KCM	Date:	Comments			
Last Modification Date: 12/07/09	Initials: KEN	06/24/09	REVISION CHANGED FROM 12 TO 18 ADDED NOTES FOR R52-6a, R52-6b, W20-5, W4-1, W4-2, W4-3, W4-4, W4-5, W4-51, W4-52, W13-3 & W21-3(X) SIGNS.			
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans		12/07/09	ADDED NOTES FOR G20-11 SIGNS.			
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CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English				