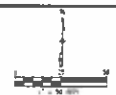


Sheet Revisions		Sheet Revisions	
No.	Description	No.	Description



Right of Way Plans	
Plan Sheet	
Project Number: H&EP 2873-112	Project Location: Federal Boulevard
7th Avenue to W. Holden Place	Sheet No.
100	101

DETAIL FOR OWNERSHIP 38

POINT OF BEGINNING TABLE

FROM	TO	BEARING	DISTANCE	PARCEL
874	434	S06°01'12"E	720.50'	PE-38

LINE TABLE PE-38

LINE	BEARING	DISTANCE
L348	N88°48'08"E	3.00'
L349	S01°13'53"E	10.00'
L350	S88°48'08"W	3.00'

1"=50'

DETAIL FOR OWNERSHIP 39

POINT OF BEGINNING TABLE

FROM	TO	BEARING	DISTANCE	PARCEL
874	375	S01°59'25"W	302.40'	RW-39

LINE TABLE RW-39

LINE	BEARING	DISTANCE
L362	S89°39'56"W	3.50'
L363	N00°32'51"W	62.47'
L364	N89°40'58"E	3.50'
L365	S00°32'51"E	62.47'

1"=50'

DETAIL FOR OWNERSHIP 40

POINT OF BEGINNING TABLE

FROM	TO	BEARING	DISTANCE	PARCEL
874	350	S06°09'48"E	656.59'	RW-40

LINE TABLE RW-40

LINE	BEARING	DISTANCE
L370	S89°46'29"W	9.25'
L371	N00°32'51"W	296.77'
L372	N89°46'49"E	21.72'
L373	S44°27'09"W	29.30'
L374	S00°32'51"E	84.00'
L375	N89°27'09"E	9.00'
L376	S00°32'51"E	32.00'
L377	S89°27'09"W	3.00'
L378	S00°32'51"E	104.35'

CURVE TABLE RW-40

NUMBER	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD DIRECTION	CHORD LENGTH
CS	3398.50'	55.68'	00°56'21"	S02°51'32"E	55.67'

1"=50'

DETAIL FOR OWNERSHIP 41

POINT OF BEGINNING TABLE

FROM	TO	BEARING	DISTANCE	PARCEL
210	752	N00°22'09"E	12500.29'	RW-41

LINE TABLE RW-41

LINE	BEARING	DISTANCE
L389	N00°32'51"W	12.50'
L390	N89°44'22"E	10.00'
L391	S00°32'51"E	12.50'
L392	S89°44'22"W	10.00'

1"=50'

DETAIL FOR OWNERSHIP 39

POINT OF BEGINNING TABLE

FROM	TO	BEARING	DISTANCE	PARCEL
874	63	S07°25'01"W	841.15'	TE-39

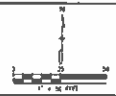
LINE TABLE TE-39

LINE	BEARING	DISTANCE
L389	N89°40'58"E	3.00'
L387	S89°45'14"W	3.00'
L366	N00°32'51"W	39.43'
L367	N89°40'58"E	3.00'

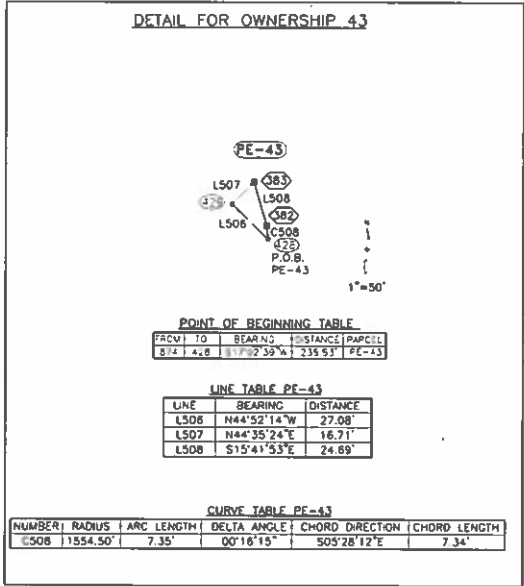
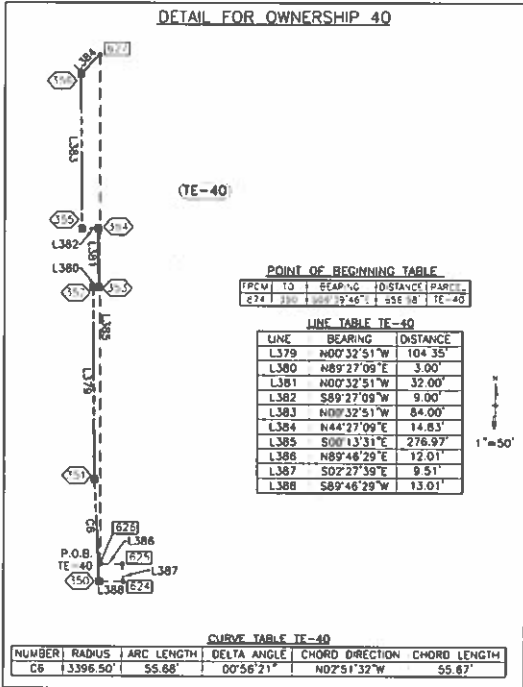
1"=50'

Sheet Revisions			Sheet Revisions		
No.	Description	Date	No.	Description	Date

Sheet Revisions			Sheet Revisions		
No.	Description	Date	No.	Description	Date



Right of Way Plans			
Plan Sheet			
Project Number	1899 28 3-172	Sheet No.	10
Project Location	Easton Boulevard	Scale	1" = 50'
Project Contain. Map No.	2nd Avenue to W. Holden Place	Sheet No.	10
1927	01-17-2015	7-21-21	1-21

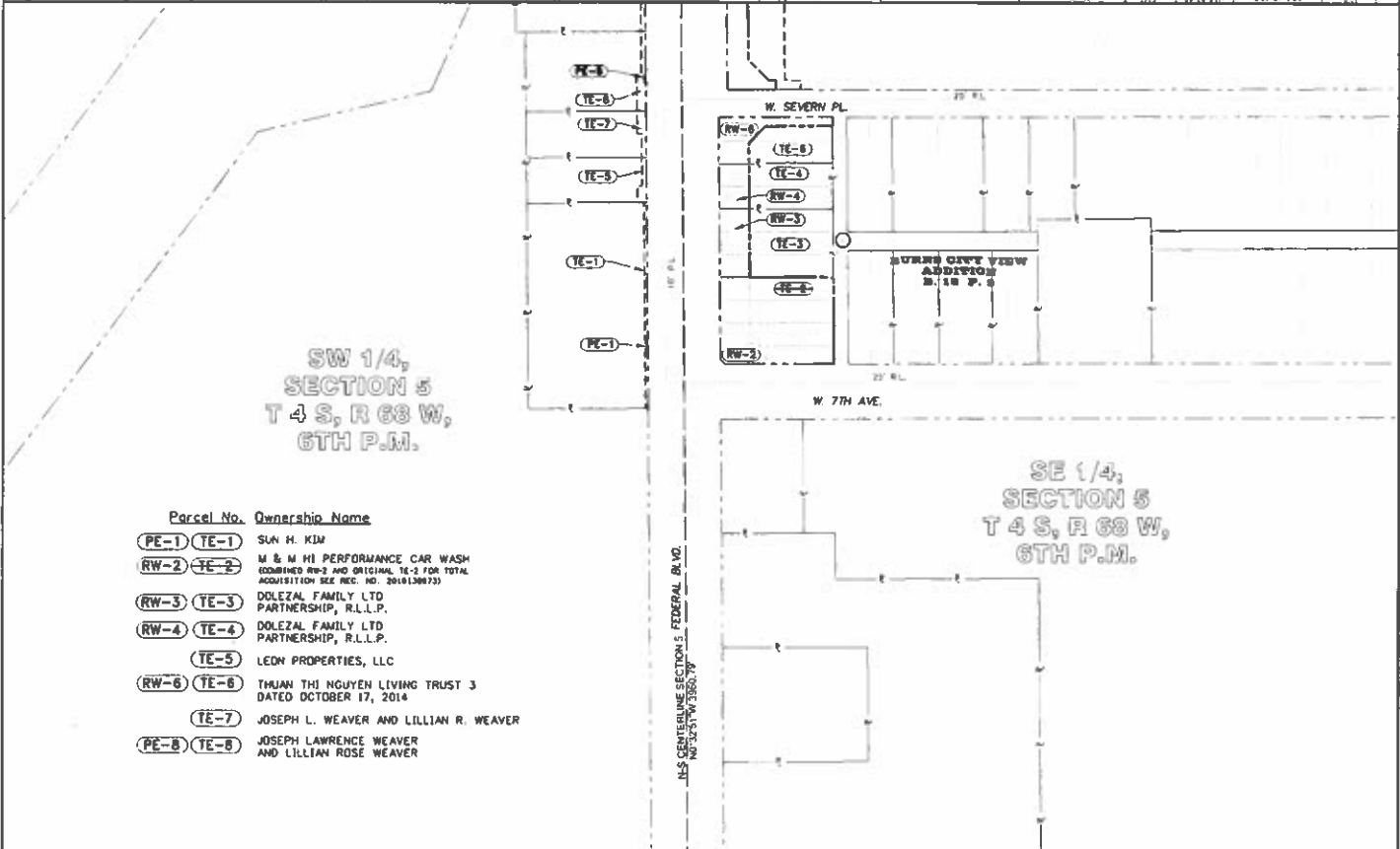


Sheet Revisions		
Date	Description	By
1/24/2018	Added note to section #6.7 and #6.8	QJ
	U.L. Weaver, Lillian R. Weaver	

Sheet Revisions		
Date	Description	By

LUND
 1201 W. Beaver Ave. # 400
 Denver, CO 80202
 Phone: (303) 733-1111

Right of Way Plans			
Ownership Sheet			
Project Number	WPP-2013-122	Sheet No.	1 of 4
Project Location	Federal Boulevard	Scale	AS SHOWN
Project Control	7th Avenue to W. Holden Blvd	Drawn	
Date	1/24/2018	Checked	



Parcel No.	Ownership Name
PE-1 TE-1	SUN H. KIM
RW-2 TE-2	M & M HI PERFORMANCE CAR WASH <small>COMBINED RW-2 AND ORIGINAL TE-2 FOR TOTAL ACQUISITION SEE REC. NO. 2016130673</small>
RW-3 TE-3	DOLEZAL FAMILY LTD PARTNERSHIP, R.L.L.P.
RW-4 TE-4	DOLEZAL FAMILY LTD PARTNERSHIP, R.L.L.P.
TE-5	LEON PROPERTIES, LLC
RW-6 TE-6	THUAN THI NGUYEN LIVING TRUST 3 <small>DATED OCTOBER 17, 2014</small>
TE-7	JOSEPH L. WEAVER AND LILLIAN R. WEAVER
PE-8 TE-8	JOSEPH LAWRENCE WEAVER AND LILLIAN ROSE WEAVER

COLORADO DEPARTMENT OF TRANSPORTATION
 Region I Right of Way SLK

Rev	Description	Date
01	Project No. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42	01/15/18
02	Project No. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42	01/15/18
03	Project No. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42	01/15/18

Rev	Description	Date
01	Project No. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42	01/15/18
02	Project No. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42	01/15/18
03	Project No. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42	01/15/18

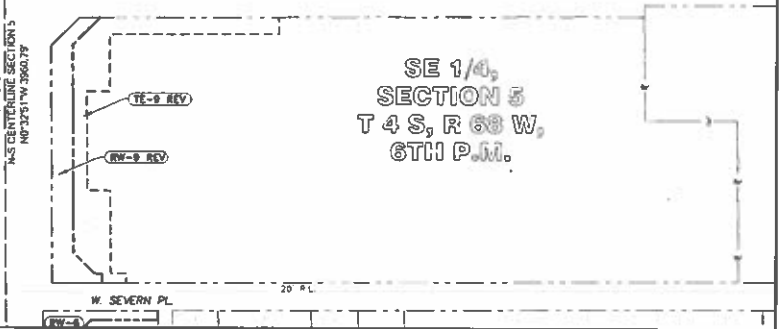
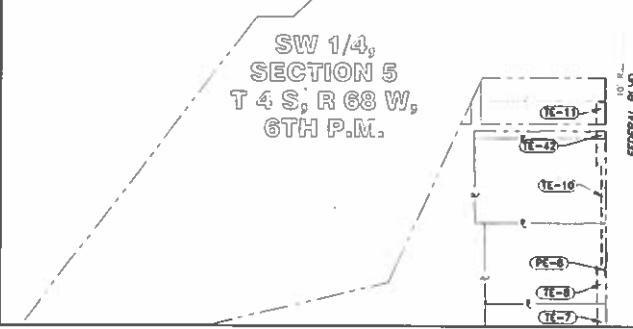
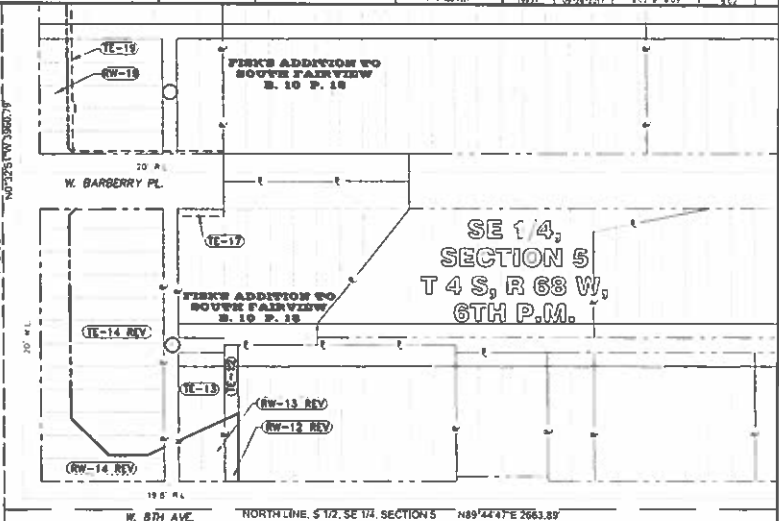
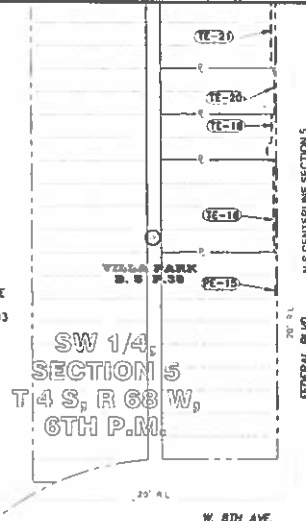


LUND
 1281 W. Federal Blvd. Suite 100
 Denver, Colorado 80202
 P: 303.733.1100 F: 303.733.1101



Right of Way Plans	
Ownership Sheet	
Project Number: NRP 25-3-172	Job Name: Federal Boulevard
Project Location: Federal Boulevard	Sheet Title: Ownership Sheet
Sheet Code: 0101	Scale: 1" = 100'

- Parcel No. Ownership Name
- (PE-8) (TE-8) JOSEPH LAWRENCE WEAVER AND LILLIAN ROSE WEAVER
 - (RW-9 REV) (TE-9 REV) SCHOOL DISTRICT NO. 1
 - (TE-10) SOLOMON ASLANY
 - (TE-11) OMAR JUDEH
 - (RW-12 REV) (TE-12) DONG SIK KIM AND GAMILA KIM
 - (RW-13 REV) (TE-13) 830 GAMILA AND DONG KIM LLC
 - (RW-14 REV) (TE-14 REV) 830 GAMILA AND DONG KIM LLC
 - (PE-15) HOPE E. GARCIA AKA HOPE ESPERANZA GARCIA, AS TRUSTEE OF THE GARCIA FAMILY LIVING TRUST DATED JANUARY 30, 2003
 - (TE-16) MICHAEL A. MITCHELL
 - (TE-17) DONG SIK KIM AND GAMILA KIM
 - (TE-18) TYSON HOFF
 - (RW-19) (TE-19) ROBERT A. REED AND BETTY J. REED
 - (TE-20) FELIX R. ROMERO
 - (TE-21) 877 FEDERAL LLC
 - (TE-42) SARA H. STANEK



AD SUBMITTAL - JANUARY 2, 2018

COLORADO DEPARTMENT OF TRANSPORTATION
 4670 Holly Street
 Denver, CO 80216
 Phone: (303) 398-6728

Sheet Revisions				Sheet Revisions			
No.	Description	Date	By	No.	Description	Date	By
105-25	Revised C-2	07/1					
124-201	Revised E-2	07/1					

Sheet Revisions			
No.	Description	Date	By

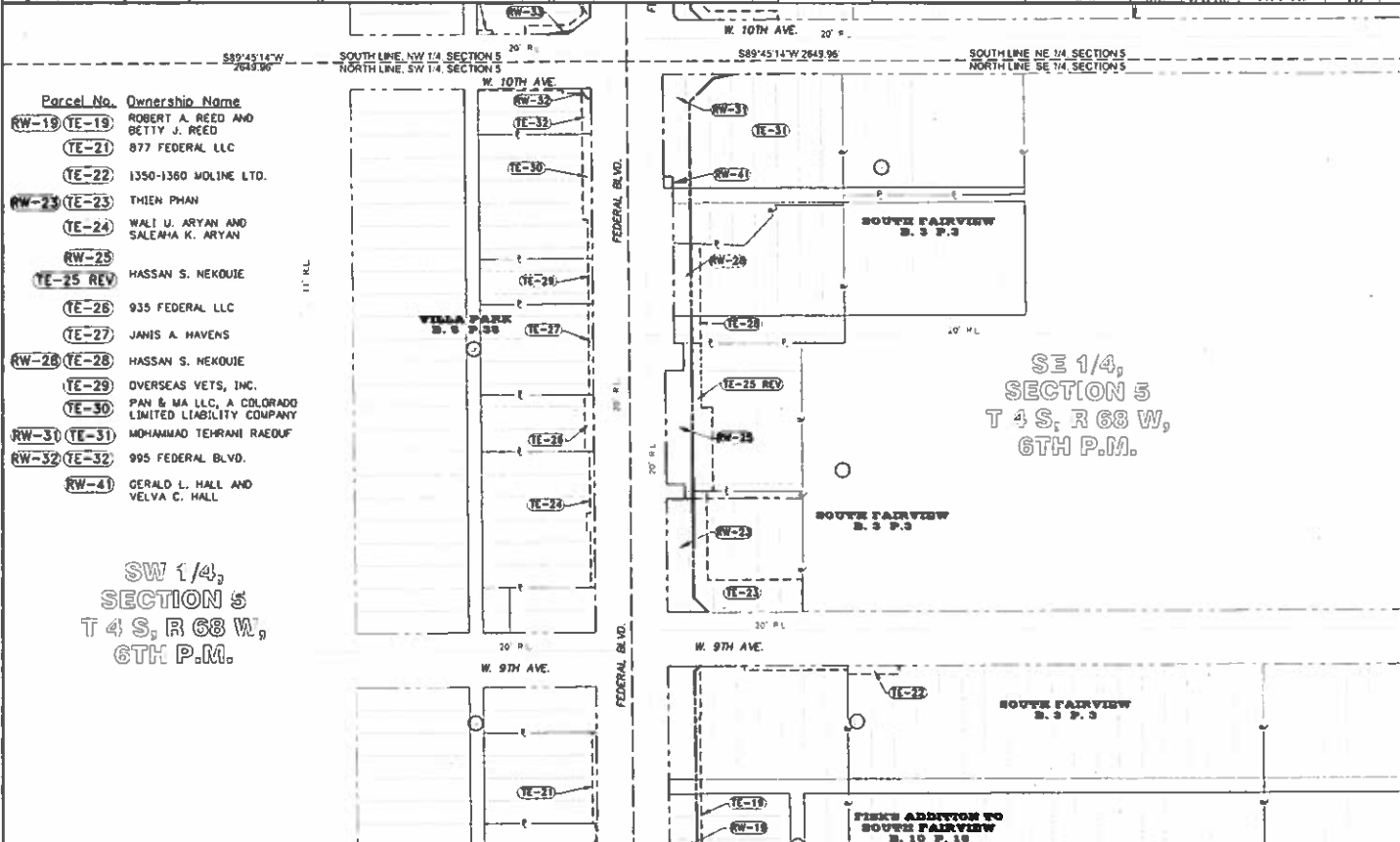


LUND
 1221 W. South Ave. # 300-100
 Denver, Colorado 80202
 P: 303.733.1417 F: 303.733.1424



Right of Way Plans
Ownership Sheet
 Project Number: **APP 2873172**
 Project Location: **Federal Boulevard**
 7th Avenue to W. Hidden Place

Sheet No.	105-25	106-26	107-27	108-28	109-29	110-30
Sheet To	111-31	112-32	113-33	114-34	115-35	116-36

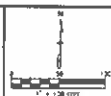


COLORADO DEPARTMENT OF TRANSPORTATION
 4870 Holly Street
 Denver, CO 80216
 Phone: (303) 368-8728

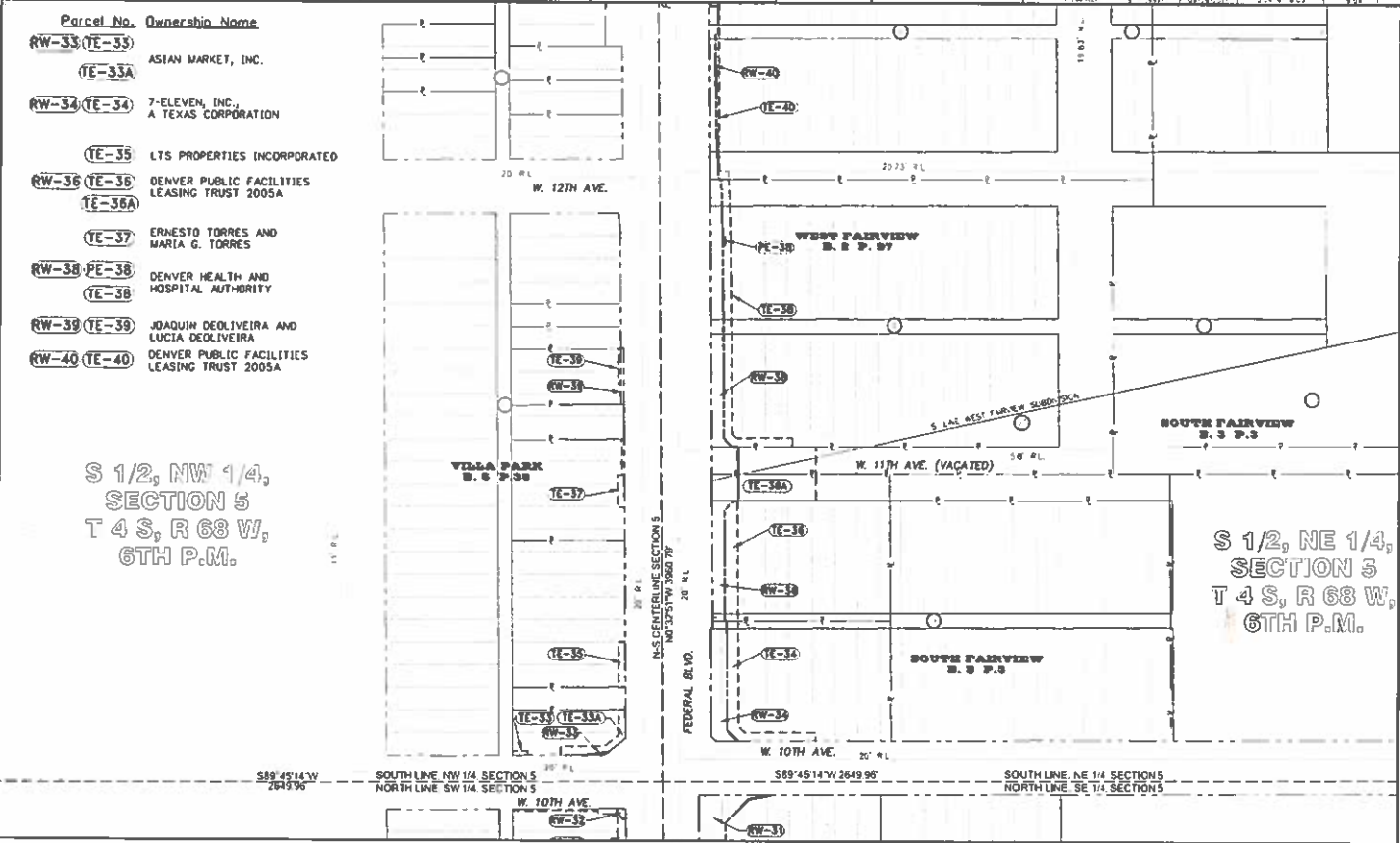
Region I Right of Way SLK

Sheet Revisions			
No.	Description	Date	By

Sheet Revisions			
No.	Description	Date	By



Right of Way Plans			
Ownership Sheet			
Project Number:	MPP 2873112		
Project Location:	Federal Boulevard		
Project Segment:	1st Ave	2nd Ave	3rd Ave
Sheet No.:	1	2	3



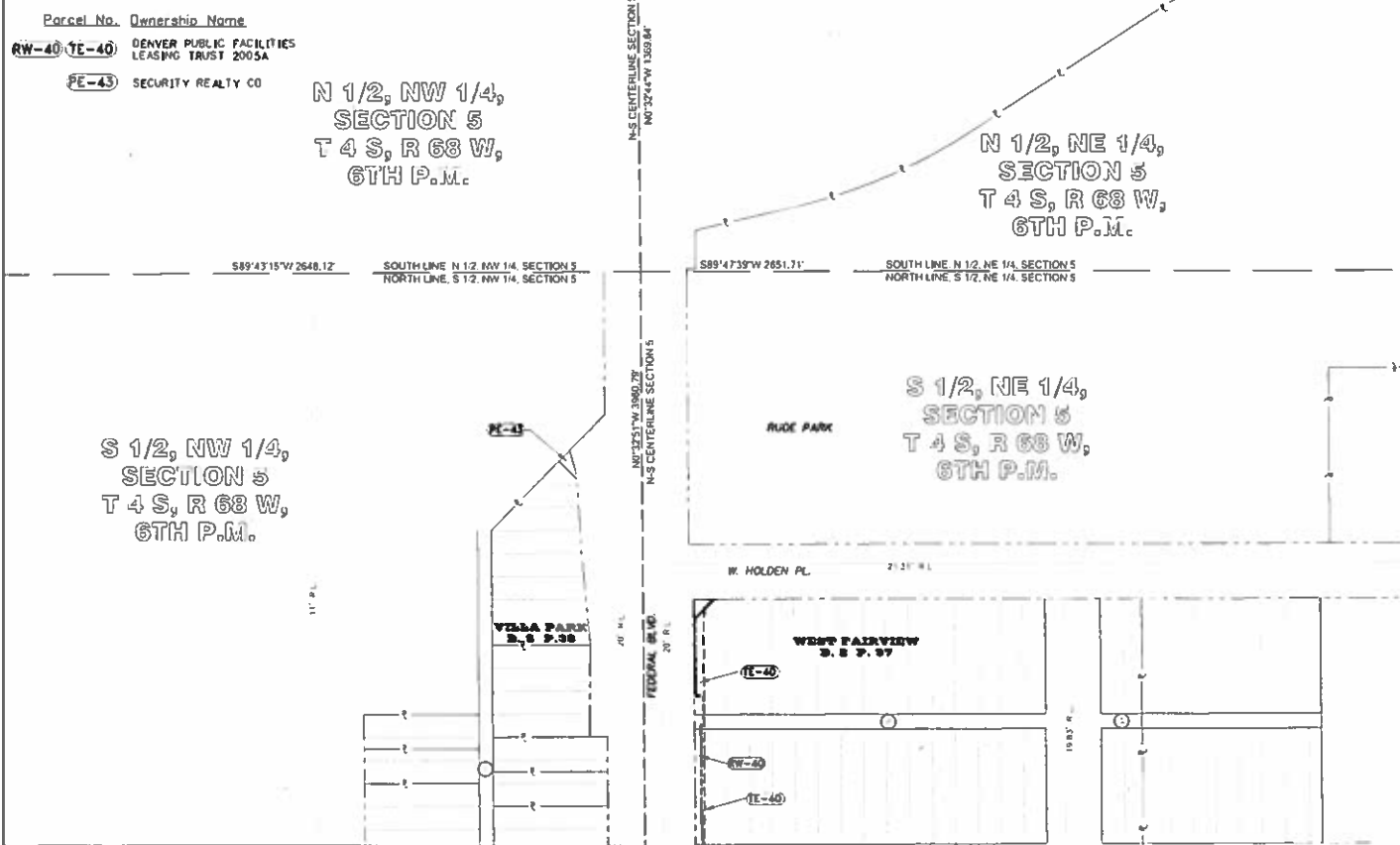
AD SUBMITTAL - JANUARY 2, 2018

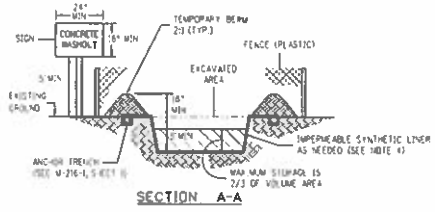
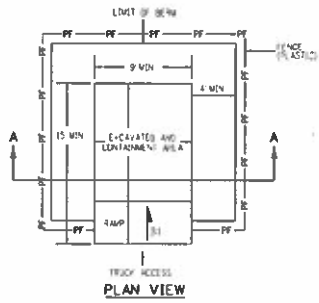
Sheet Revisions		Sheet Revisions	
Date	Description	Date	Description

Sheet Revisions		Sheet Revisions	
Date	Description	Date	Description



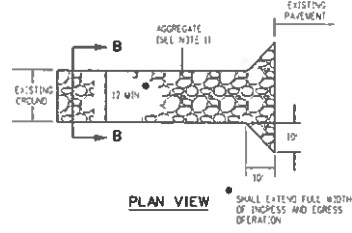
Right of Way Plans	
Ownership Sheet	
Project Number:	N-PP 2073.172
Project Location:	Federal Boulevard
7th Avenue to W Holden Place	
Project Start Date:	01/01/11
Project End Date:	01/01/11



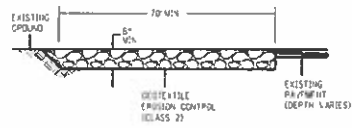


- NOTES:**
- 1 A FENCE (PLASTIC) CONFORMING TO SECTION 107 SHALL BE INSTALLED AROUND THE CONCRETE WASHOUT AREA, EXCEPT AT THE OPENING.
 - 2 THE CONCRETE WASHOUT SIGN SHALL HAVE LETTERS AT LEAST 3 INCHES HIGH AND CONFORM TO SUBSECTION 630.02.
 - 3 ALL MATERIALS AND LABOR TO COMPLETE THE CONCRETE WASHOUT STRUCTURE SHALL BE INCLUDED IN THE COST OF RUM AND NOT PAID FOR SEPARATELY.
 - 4 THE BOTTOM OF EXCAVATION SHALL BE A MINIMUM OF FIVE FEET ABOVE GROUND WATER. IF NOT, IT SHALL BE LINED WITH AN IMPERMEABLE SYNTHETIC LINER THAT IS DESIGNED TO CONTROL SEEPAGE AT A MAXIMUM RATE OF 6 TO 10 CENTIMETERS PER SECOND.
 - 5 THE PAY ITEM NUMBER FOR CONCRETE WASHOUT STRUCTURE (EACH) IS 208-00045.

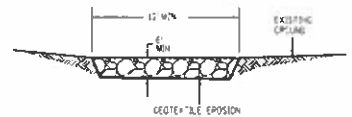
CONCRETE WASHOUT STRUCTURE



PLAN VIEW



ELEVATION SECTION



SECTION B-B

- NOTES:**
- 1 AGGREGATE SHALL CONFORM TO SUBSECTION 208.02 (4).
 - 2 THE CONTRACTOR SHALL PROTECT CURB AND GUTTER THAT CROSSES THE ENTRANCE FROM DAMAGE. PROTECTION OF THE CURB AND GUTTER SHALL BE INCLUDED IN THE COST OF RUM AND NOT PAID FOR SEPARATELY.
 - 3 GEOTEXTILE SHALL CONFORM TO SUBSECTION 712.08.
 - 4 ALL MATERIALS AND LABOR TO COMPLETE THE VEHICLE TRACKING PAD SHALL BE INCLUDED IN THE COST OF RUM AND NOT PAID FOR SEPARATELY.
 - 5 THE PAY ITEM NUMBER FOR VEHICLE TRACKING PAD (EACH) IS 208-00070.

VEHICLE TRACKING PAD

Computer File Information	
Creation Date: 07/04/12	In: JBC
Last Modification Date: 08/10/17	Initials: LTA
Full Path: \\www.coloradodot.info\business\des\cnsupport	
Draw to File Name: 208C1010.dgn	
CAD Ver: MaxStation V8	Scale: Not to Scale

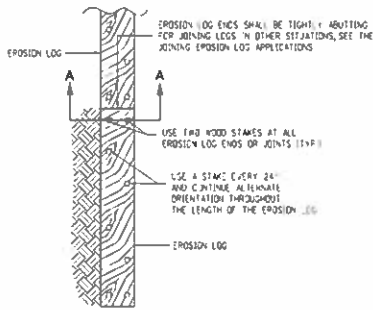
Sheet Revisions	
Date:	Comments
07/15/15	Scale to fit (Project Support)
03/28/16	Other revisions to: some dimensions and some notes

Colorado Department of Transportation
 1701 East Mancoske Avenue
 Denver, CO 80222
 Phone: 303 757 9021 Fax: 303 757 9869
 Division of Project Support JBC/LTA

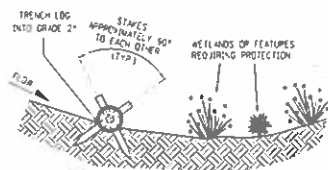
**TEMPORARY
EROSION CONTROL**

Issued By: Project Development Branch on July 4, 2012

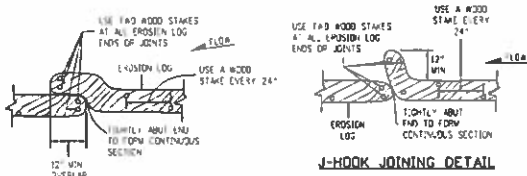
STANDARD PLAN NO.
M-208-1
Sheet No. 1 of 11



PLAN VIEW



SECTION A-A
TYPICAL STAKE INSTALLATION



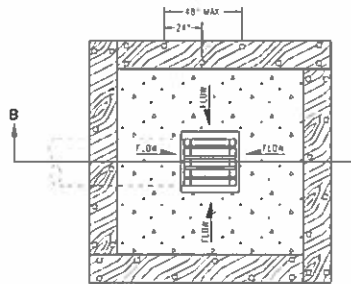
OVERLAP JOINING DETAIL

JOINING EROSION LOG APPLICATIONS

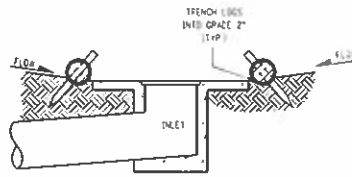
SHEET REVISIONS

Date:	Comments:
03/29/16	REVISED TO SHOW STAKE ORIENTATION

NUMBER	DESCRIPTION
208-00012	TYPE 1 (P)
208-00022	TYPE 1 (12)
208-00013	TYPE 1 (20)
208-00027	TYPE 2 (8)
208-00028	TYPE 2 (12)
208-00029	TYPE 2 (18)



PLAN VIEW

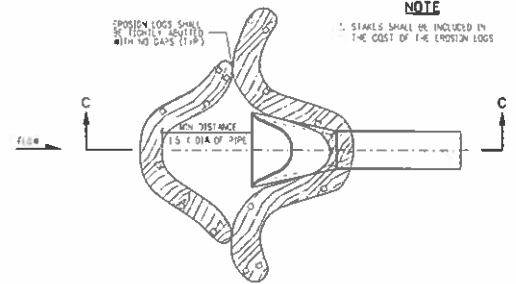


SECTION B-B

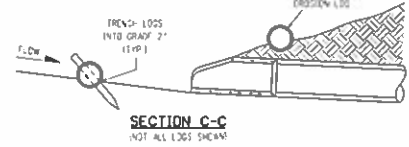
NOTE: LOCATE EROSION LOGS AT THE OUTSIDE EDGE OF THE CONCRETE APRON

EROSION LOG FILTER AT DROP INLET

EROSION LOG APPLICATIONS



PLAN VIEW



SECTION C-C

NOTE: NOT ALL LOGS SHEAR

EROSION LOG CULVERT INLET PROTECTION

EROSION LOG CULVERT OUTLET PROTECTION

Computer File Information

Creation Date: 07/04/12	In/Iss: JBK
Last Modification Date: 08/10/17	Initials: LTA
Full Path: \\coloradodot.info\business\des\consuport\	
Drawing File Name: 208C102111.dgn	
CID Ver: MerStation V8	Scale: Not to Scale

Colorado Department of Transportation

4201 East Arapahoe Avenue	4201 East Arapahoe Avenue
DOT HQ, 4th Floor	DOT HQ, 4th Floor
Denver, CO 80222	Denver, CO 80222
Phone: 303 757 9021	FAX: 303 757 9865
Division of Project Support	JBK/LTA

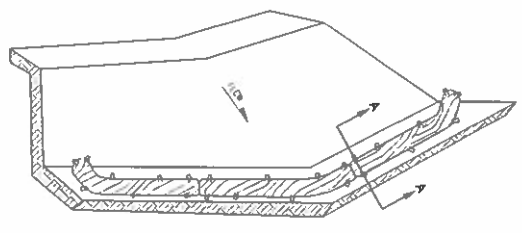
TEMPORARY
EROSION CONTROL

Issued By: Project Development Branch on July 4, 2012

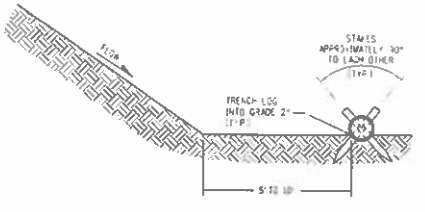
STANDARD PLAN NO.

M-208-1

Sheet No. 2 of 11



ISOMETRIC VIEW



SECTION A-A

NOTES:

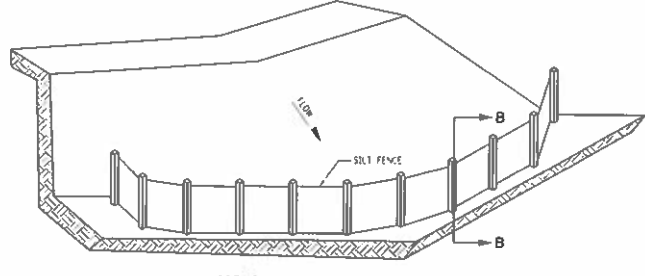
1. EROSION LOGS USED AT TOE OF SLOPE SHALL BE PLACED 5 TO 10 FEET BEYOND TOE OF SLOPE TO PROVIDE STORAGE CAPACITY.
2. EROSION LOGS SHALL BE PLACED ON THE CONTOUR WITH ENDS FLARED UP SLOPE.
3. SEE SHEET 2 OF 11 FOR JOINING LOGS DETAIL.

EROSION LOG TOE OF SLOPE PROTECTION

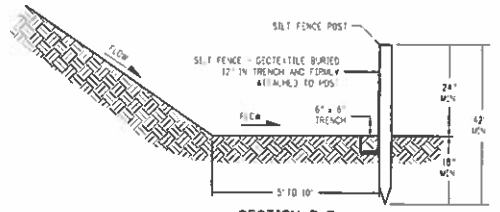
EROSION LOG PAY ITEMS	NUMBER	DESCRIPTION
208-00012	TYPE 1 (9')	
208-00022	TYPE 1 (12')	
208-00013	TYPE 1 (20')	
208-00037	TYPE 2 (8')	
208-00028	TYPE 2 (12')	
208-00039	TYPE 2 (18')	

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.
4. THE MAXIMUM LENGTH OF EXPOSURE LOGS ON SILT FENCES WITHOUT A FLARED END TURNING UPSLOPE IS 150 FEET.



ISOMETRIC VIEW



SECTION B-B

SILT FENCE TOE OF SLOPE PROTECTION

NOTE: THE PAY ITEM NUMBER FOR SILT FENCE (L7) IS 208-00020

TOE OF SLOPE PROTECTION APPLICATIONS

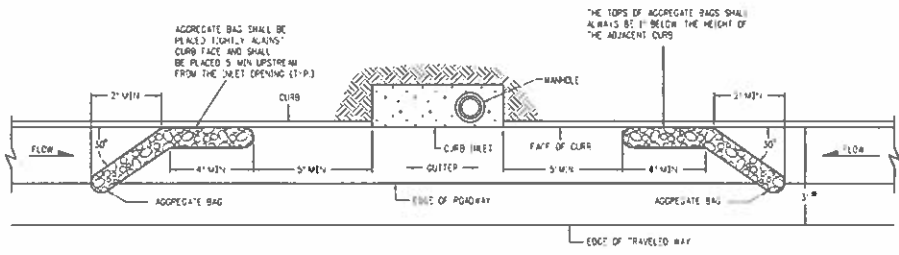
Computer File Information	
Creation Date: 07/14/12	In: jbk
Last Modification Date: 06/10/17	In: lta
File Path: \\msf001\info\business\des\support	
Drawing File Name: 208C10301.dgn	
CAD Ver: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments:
03/22/16	ADD STAKES TO NEW SLOPE

Colorado Department of Transportation
 4201 East Arapahoe Avenue
 8001 MO, 4th Floor
 Denver, CO 80222
 Phone: 303 757 9031 FAX: 303 757 9869
 Division of Project Support **JBK/LTA**

TEMPORARY EROSION CONTROL
 Issued By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.
M-208-1
Sheet No. 3 of 11

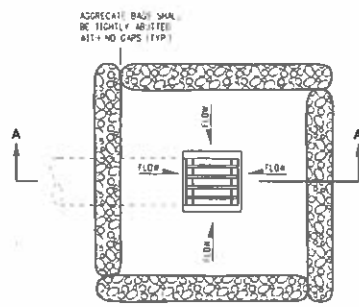


PLAN VIEW

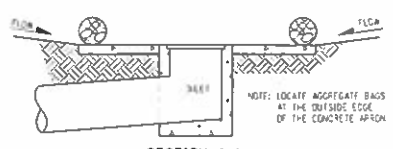
* NOTE: USE AGGREGATE BAGS ONLY WHEN THERE IS A MINIMUM CLEARANCE OF 3 FEET FROM THE EDGE OF THE TRAVELED WAY TO THE FACE OF CURB.

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

AGGREGATE BAGS AT STORM DRAIN INLET (TYPE I)



PLAN VIEW



SECTION A-A

AGGREGATE BAGS AT DROP INLET

AGGREGATE BAG APPLICATIONS

NOTE: THE PLAN ITEM NUMBER FOR AGGREGATE BAG (S) IS 208-00075.

Computer File Information	
Creation Date: 02/04/12	Initials: JBK
Last Modification Date: 05/10/17	Initials: LTA
Full Path: \\www.coloradodot.nia/business/designsupport	
Drawing File Name: 208C(1)(4)(1) dgn	
CAD Ver: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
03/29/10	Added some dimensions and hgt's

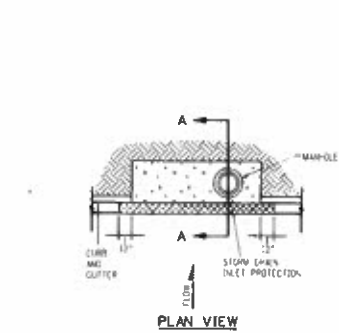
Colorado Department of Transportation
 4201 East Arapahoe Avenue
 CDOT HQ, 6th Floor
 Denver, CO 80222
 Phone: 303.757.9021 Fax: 303.757.9885

Division of Project Support JBK/LTA

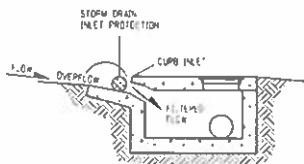
TEMPORARY EROSION CONTROL

Issued By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.
M-208-1
Sheet No. 4 of 11



PLAN VIEW

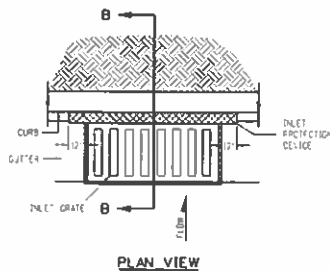


SECTION A-A

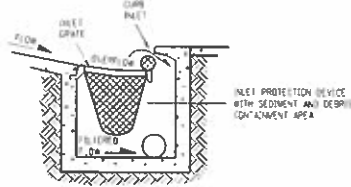
STORM DRAIN INLET PROTECTION (TYPE I)

NOTES

1. INLET PROTECTION DEVICE SHALL EXTEND 12 INCHES PAST EACH END OF THE INLET.
2. THE P&I ITEM NUMBERS FOR STORM DRAIN INLET PROTECTION (TYPE I) ARE 208-00081 (12"), 208-00053 (24" LEACH), 208-00057 (48" LEACH), AND 208-00055 (204" LEACH).
3. FOR STORM DRAIN INLET TYPES I AND II, IF THERE IS A MINIMUM CLEARANCE OF 3 FEET FROM THE EDGE OF THE TRAVELED WAY TO THE FACE OF CURB, USE THE APPROPRIATE BAGS AT STORM DRAIN INLET (TYPE II) DETAIL ON SHEET 4 INSTEAD.



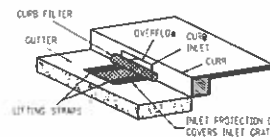
PLAN VIEW



SECTION B-B

OPTION A

STORM DRAIN INLET PROTECTION (TYPE II)

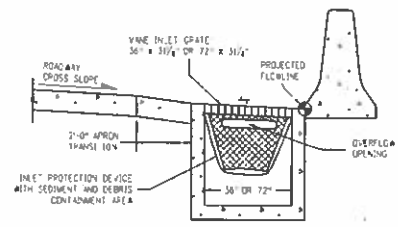


ISOMETRIC VIEW

OPTION B

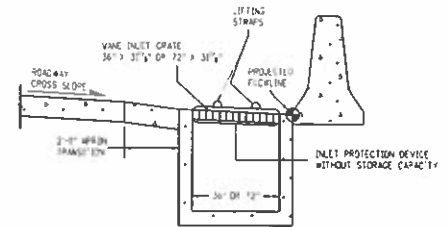
STORM DRAIN INLET PROTECTION (TYPE II)

NOTE: THE P&I ITEM NUMBERS FOR STORM DRAIN INLET PROTECTION (TYPE II) ARE 208-00051 (12") AND 208-00054 (LEACH).



OPTION A

STORM DRAIN INLET PROTECTION (TYPE III)



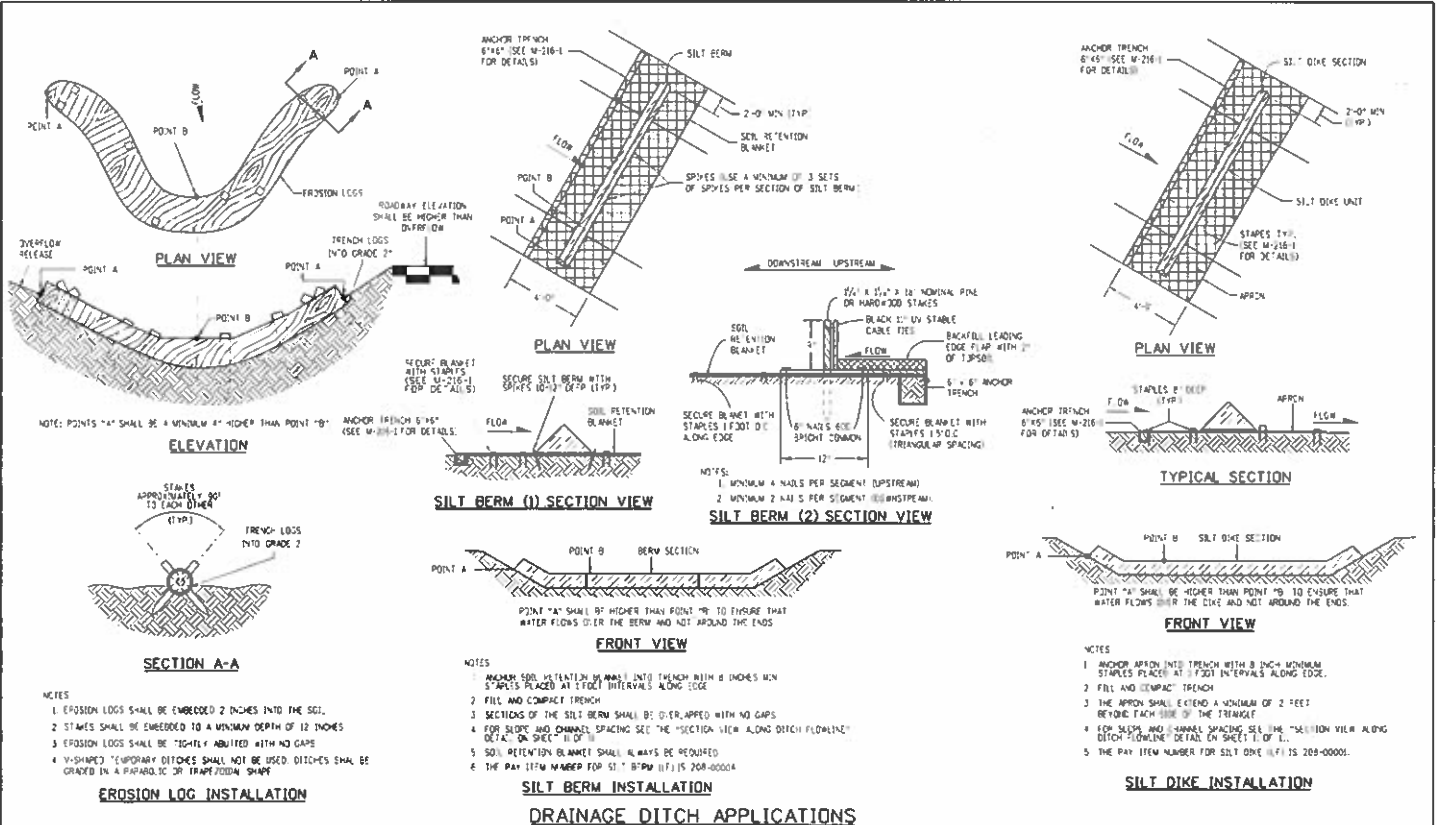
OPTION B

STORM DRAIN INLET PROTECTION (TYPE III)

NOTE: THE P&I ITEM NUMBER FOR STORM DRAIN INLET PROTECTION (TYPE III) EACH IS 208-00056.

STORM DRAIN INLET PROTECTION TYPES

Computer File Information Creation Date: 07/04/12 Initials: JBC Last Modification Date: 08/10/17 Initials: JLT Full Path: \\c:\data\asat\info\business\des\support Drawing File Name: 208-105011.dgn CAD Ver: MicroStation V2 Scale: Not to Scale Units: English		Sheet Revisions <table border="1"> <tr> <th>Date</th> <th>Comments</th> </tr> <tr> <td>03/29/18</td> <td>Added Note 3.</td> </tr> <tr> <td>08/10/17</td> <td>Added Note 3.</td> </tr> </table>		Date	Comments	03/29/18	Added Note 3.	08/10/17	Added Note 3.	Colorado Department of Transportation 2501 East Arapahoe Avenue 2001 HQ, 4th Floor Denver, CO 80222 Phone: 303-797-9021 Fax: 303-757-9869 Division of Project Support JBC/LTA		TEMPORARY EROSION CONTROL Issued By: Project Development Branch on July 4, 2012		STANDARD PLAN NO. M-208-1 Sheet No. 5 of 11	
Date	Comments														
03/29/18	Added Note 3.														
08/10/17	Added Note 3.														



Computer File Information	
Creation Date: 07/04/12	Initials: JBK
Last Modification Date: 08/10/17	Initials: LTA
File Path: \\www.coloradodot.mta/business/oes/ent-support	
Drawing File Name: 20E106011.dgn	
CAD Ver: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments:

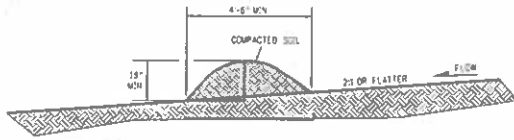
Colorado Department of Transportation
 4201 East Hampden Avenue
 8001 HQ, 4th Floor
 Denver, CO 80222
 Phone: 303.757.9021 Fax: 303.757.9869

Division of Project Support **JBK/LTA**

**TEMPORARY
EROSION CONTROL**

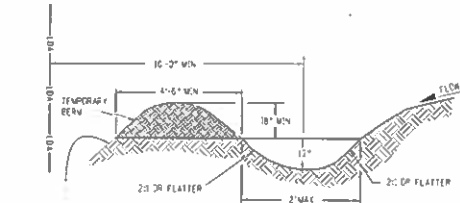
Issued By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.
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- NOTES:**
- BERMS SHALL HAVE A HEIGHT OF 18 INCHES, SIX SLOPES OF 2:1 OR FLATTER AND A MINIMUM BASE WIDTH OF 4'-6" FEET.
 - BERMS SHALL BE USED TO INTERCEPT AND DIVERT DRAINAGE TO A DESIGNATED OUTLET.
 - BERMS SHALL NOT BE USED WHERE DRAINAGE AREA EXCEEDS 10 ACRES.
 - BERMS SHALL BE CONSTRUCTED OUT OF MATERIAL COMPACTED WITH AT LEAST A MINIMUM OF ONE HEAVY ROLLED COMPACTION.
 - THE PAY ITEM NUMBER FOR TEMPORARY BERM (L7) IS 208-00300.
 - BERMS SHALL BE CONSTRUCTED OUT OF ACCEPTABLE MATERIAL THAT CAN BE COMPACTED AND RECEIVE AT A MINIMUM HEAVY EQUIPMENT WHEEL ROLLED COMPACTION.

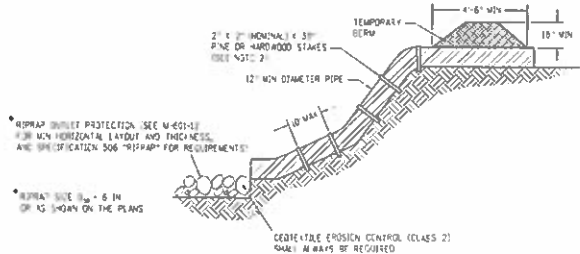
TEMPORARY BERM



FOR BERMS TALLER THAN 2', INSTALL TOP OF SLOPE SHIP. SEE SHEET 3 OF 11 FOR DETAILS.

- NOTES:**
- TEMPORARY DIVERSION DITCHES SHALL BE CONSTRUCTED ACROSS THE SLOPE TO INTERCEPT RUNOFF AND DIRECT IT TO A STABLE OUTLET OR SEDIMENT TRAP.
 - USE THE TEMPORARY DIVERSION DITCH IMMEDIATELY ABOVE A NEW CUT, FILL SLOPE, OR AROUND THE PERIMETER OF A DISTURBED AREA.
 - THE 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.
 - THE DIVERSION FLOWLINE SHALL ALWAYS BE LOCATED A MINIMUM 10 FEET FROM THE OUTSIDE LIMITS OF DISTURBED AREA BOUNDARY.
 - THE PAY ITEM NUMBER FOR TEMPORARY DIVERSION (L7) IS 208-00301.

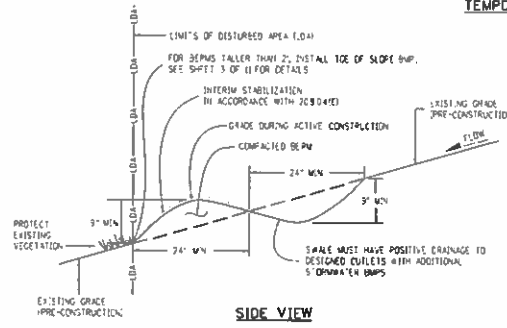
TEMPORARY DIVERSION



- REPAIR INLET PROTECTION. SEE M-603-11 FOR MIN HORIZONTAL LAYOUT AND THICKNESS, AND SPECIFICATION 306 "DRIPAP" FOR REQUIREMENTS.
- MINIMUM SLOPE SHALL BE 6 IN PER 100 HORIZONTAL ON THE PLANS.

- NOTES:**
- ANCHOR SIZE VARIES ACCORDING TO PIPE SIZE.
 - TO SECURE THE PIPE, DRIVE STAKES INTO GROUND, THEN DRAG A 12 GAUGE WIRE BETWEEN THEM ABOVE AND ACROSS THE PIPE'S WIDTH.
 - THE OUTLET SHALL BE ALIGNED WITH THE FLOW DIRECTION OF THE EXISTING GRADE. PERPENDICULAR DISCHARGE TO A CHANNEL SHALL NOT BE ACCEPTABLE.
 - THE GRASS AROUND THE INLET TO THE PIPE SHALL BE COMPACTED.
 - THE PAY ITEM NUMBER FOR TEMPORARY SLOPE DRAINS (L7) IS 208-00050.

TEMPORARY SLOPE DRAINS



SIDE VIEW

TEMPORARY BERM (AT EDGE OF DISTURBANCE)

- NOTES:**
- BERMS CAN ONLY BE USED IF CONDITIONS ALLOW UNTEMPERED POSITIVE GRADE (MINIMUM GRADIENT 3:1) TO AN OUTLET PROTECTED WITH ADDITIONAL BERMS.
 - MAXIMUM DRAINAGE AREA FOR EACH OUTLET FROM THE SHALE SHALL BE LIMITED TO 2 ACRES.
 - CONTRACTOR SHALL SALVAGE TOPSOIL AND PLACE AFTER BERM IS REMOVED FOR FINAL SECTING OF ALL DISTURBED AREAS.
 - ALL ACTIVITIES REQUIRED TO ACCOMPLISH TEMPORARY BERM (INCLUDING SURFACE WORKING) SHALL BE INCLUDED IN THE COST OF BERM AND WILL NOT BE PAID FOR SEPARATELY.
 - BERMS SHALL BE CONSTRUCTED OUT OF ACCEPTABLE MATERIAL THAT CAN BE COMPACTED AND RECEIVE AT A MINIMUM HEAVY EQUIPMENT WHEEL ROLLED COMPACTION.
 - THE PAY ITEM NUMBER FOR TEMPORARY BERM (L7) IS 208-00300.

GRADING APPLICATIONS

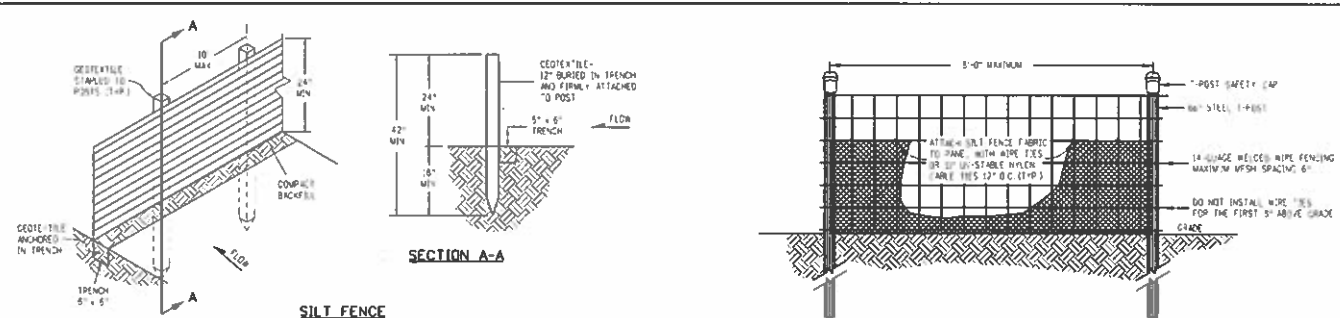
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Last Modification Date: 08/10/17	Initials: LTA
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Sheet Revisions	
Date:	Comments:
02/29/16	Revisions to same dimensions and notes

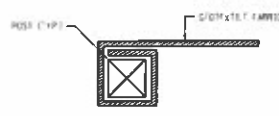
Colorado Department of Transportation
 3201 East Mancos Avenue
 80011 MO, 4th Floor
 Denver, CO 80222
 Phone: 303-757-9021 FAX: 303-757-9655
 Division of Project Support JBK/LTA

TEMPORARY EROSION CONTROL
 Issued By: Project Development Branch on July 4, 2012

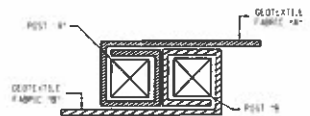
STANDARD PLAN NO.
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Sheet No. 7 of 11



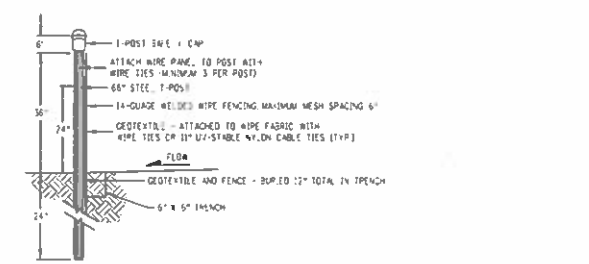
- NOTES**
1. GEOTEXTILE SHALL BE ATTACHED TO WOOD POSTS WITH THREE OR MORE STAPLES PER POST. STAPLES SHALL BE HEAVY DUTY WIRE AND AT LEAST 1" INCH LONG.
 2. WOOD POST SHALL BE 1 1/2" x 1 1/2" NOMINAL.
 3. THE PAY ITEM NUMBER FOR SILT FENCE (L.F.) IS 254-00020.
 4. THE SILT FENCE SHALL BE PLACED ON THE CONTIGUOUS (AT THE SAME ELEVATION ±5'). THE ENDS SHALL BE FLARED UP SLOPE WITH MINIMUM ELEVATION GAIN OF 10%.



- NOTE**
1. THE END OF THE SILT FENCE FABRIC SHALL BE WRAPPED AROUND 6 INCHES AROUND A WOODEN POST ONE FULL TURN, THEN SECURED ALONG THE POST WITH 6 HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG.



- NOTES**
1. THE ENDS OF THE SILT FENCE FABRIC SHALL BE JOINED TOGETHER BY WRAPPING APPROX 6 INCHES OF EACH END AROUND A WOODEN POST ONE FULL TURN, THEN SECURED ALONG THE POST WITH 6 HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG.
 2. POSTS SHALL BE TIGHTLY ADJUSTED WITH NO GAPS TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT.

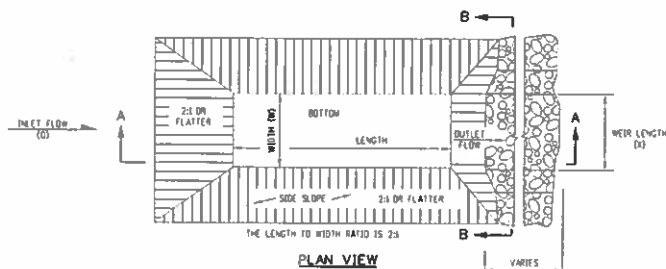


- NOTES**
1. THE ENDS OF THE SILT FENCE FABRIC SHALL BE JOINED TOGETHER BY WRAPPING APPROX 6 INCHES OF EACH END AROUND A STEEL 1-POST, THEN SECURED ALONG THE POST WITH WIRE TIES (MINIMUM 3 PER POST).
 2. POSTS SHALL BE TIGHTLY ADJUSTED WITH NO GAPS TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT.
 3. SILT FENCES SHALL NOT BE USED FOR CHECK DAMS.
 4. THE PAY ITEM NUMBER FOR SILT FENCE (REINFORCED) (L.F.) IS 204-00021.

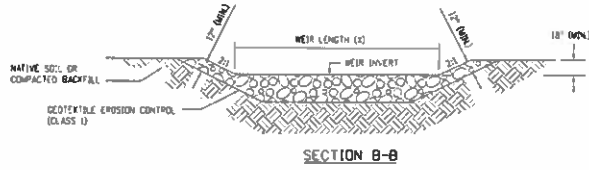
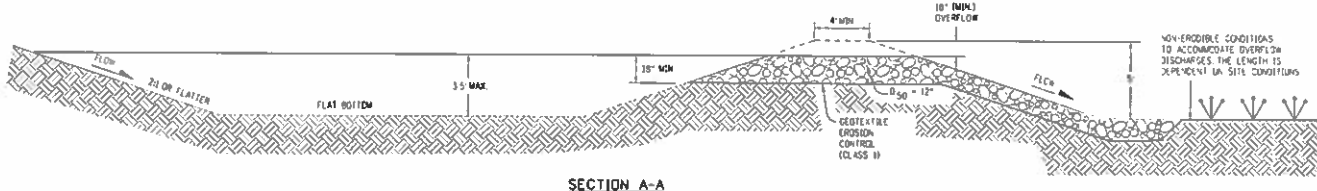
SILT FENCE APPLICATIONS

SILT FENCE (REINFORCED)

Computer File Information		Sheet Revisions		Colorado Department of Transportation 4201 East Africa Avenue CDD1 HQ, 4th Floor Denver, CO 80222 Phone: 303 757-9021 FAX: 303 757-9668 Division of Project Support JBK/LTA	TEMPORARY EROSION CONTROL Issued By: Project Development Branch on July 4, 2012	STANDARD PLAN NO.
Creation Date: 02/04/12	Initials: JBK	Date: 03/29/16	Comments:			M-208-1
Last Modification Date: 08/10/17	Initials: LTA	05/26/16	REVISION 24: NOTE TO BE ADDED TO THE PLAN TO CORRECT A BOUNDING BOX ERROR.			Sheet No. 8 of 11
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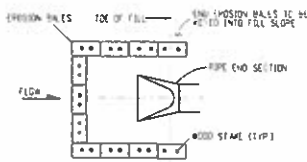
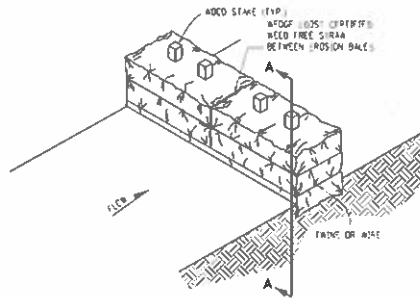
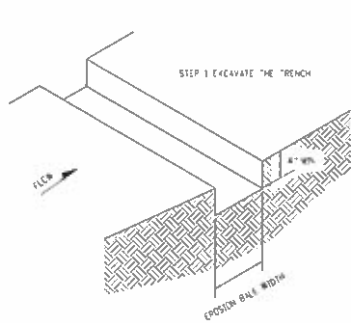
- NOTES**
- 1 THE MAXIMUM DRAINAGE AREA IS 5 ACRES.
 - 2 THE MAXIMUM STRUCTURE LIFE IS 2 YEARS.
 - 3 THE STORAGE AREA IS 1000 CUBIC FEET PER ACRE.
 - 4 THE MAXIMUM EMBANKMENT HEIGHT SHALL BE 5 FT. MEASURED ON THE DOWNSTREAM SIDE.
 - 5 THE LENGTH/WIDTH RATIO MAY BE ADJUSTED TO MEET SITE CONDITIONS WHEN APPROVED BY THE ENGINEER.
 - 6 WIDTH (W) OF SEDIMENT TRAP IS APPROXIMATELY EQUAL TO THE WEIR LENGTH (L).
 - 7 SEDIMENT TRAP DESIGN SHALL BE APPROVED BY THE ENGINEER.
 - 8 THE DOWN GRADE FROM WEIR SHALL BE STABLE AND NON-ERODIBLE.
 - 9 THE PAY ITEM NUMBER FOR SEDIMENT TRAP (L7) IS 205-00033.



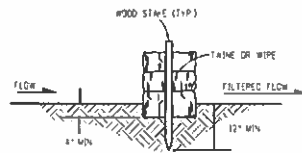
DRAINAGE AREA (ACRES)	WEIR LENGTH (FEET)
1	4
2	6
3	8
4	10
5	12

SEDIMENT TRAP

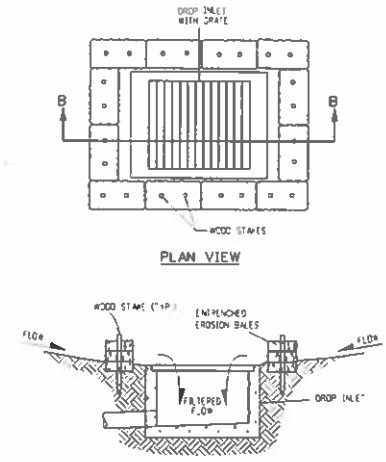
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Date	Comments											
03/29/18	Minor revisions to some dimensions											



PLAN VIEW
EROSION BALE CULVERT INLET PROTECTION



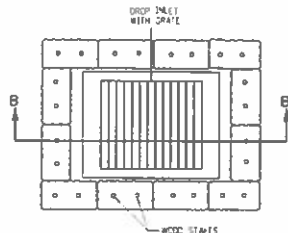
SECTION A-A
EROSION BALE TRENCHING AND STAKING



SECTION B-B
EROSION BALE FILTER AT DROP INLET

NOTES

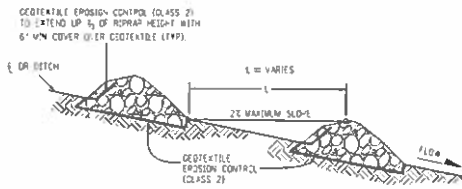
1. STAKES SHALL BE 4"X4" AND SHALL BE 2'-3" 2" X 30" NOMINAL.
2. EROSION BALES SHALL BE 15" X 18" X 36".
3. EROSION BALES SHALL BE ENRICHED 4" IN MINIMUM IN TO THE SOIL. HIGHLY ABLETTED WITH NO GAPS, STAKES, AND BACKFILLED AROUND THE ENTIRE OUTSIDE PERIMETER.
4. EROSION BALES (MAY) BE (S.E.) FOR CHECK (DMS).
5. THE PART NUMBER FOR EROSION BALES (MAY) BE (MAY) IS 208-0001.



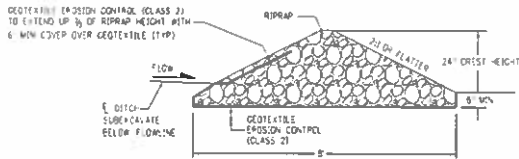
PLAN VIEW

EROSION BALE APPLICATIONS

Computer File Information		Sheet Revisions		<p>Colorado Department of Transportation 1200 East Arapahoe Avenue Denver, CO 80222 Phone: 303 757-9021 FAX: 303 757-9868 Division of Project Support JBK/LTA</p>	<p>TEMPORARY EROSION CONTROL</p> <p>Issued By: Project Development Branch on July 4, 2012</p>	STANDARD PLAN NO.	
Creation Date: 07/04/12	Author: JSK	Date:	Comments:			M-208-1	
Last Modification Date: 08/10/17	Info: LTA	03/29/18	Minor revisions to some dimensions	Sheet No. 10 of 11			
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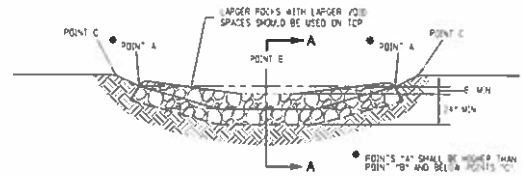


SECTION VIEW ALONG DITCH FLOWLINE



SECTION A-A

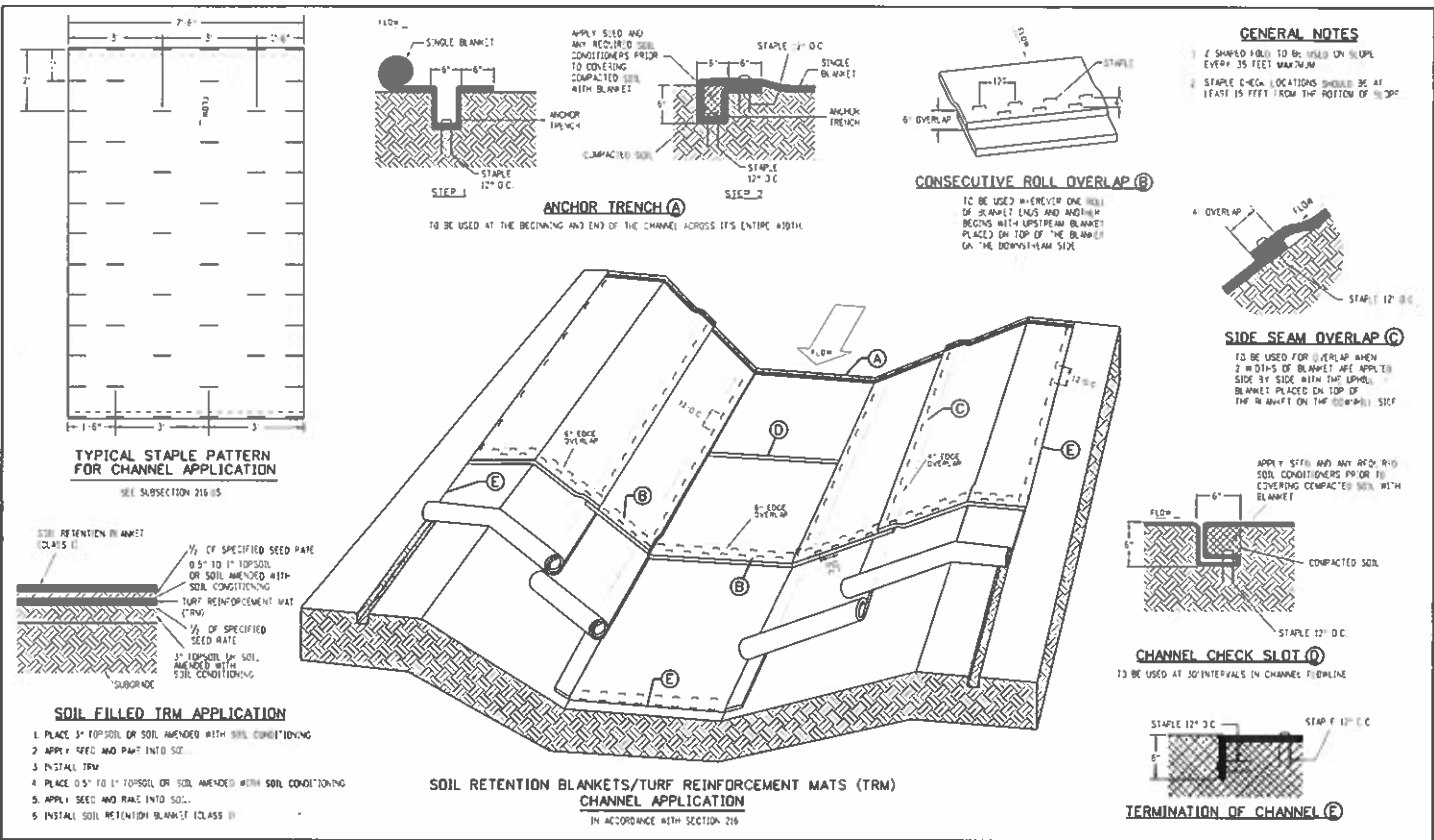
- NOTES:
1. RIPRAP SIZE $D_{50} = 6"$ OR AS SHOWN ON THE PLANS.
 2. THE GEOTEXTILE EROSION CONTROL SHALL BE CLASS 2 AND CONFORM TO THE REQUIREMENTS OF SUBSECTION 112.28.
 3. THE ENDS OF RIPRAP CHECK DAM SHALL BE A MINIMUM OF 6 IN HIGHER THAN CENTER OF CHECK DAM.
 4. FOR USE AS TEMPORARY CHECK DAMS ONLY AND NOT FOR PERMANENT INSTALLATIONS.
 5. THE PAT. ITEM NUMBER FOR ROCK CHECK DAM IS 2004-0204.



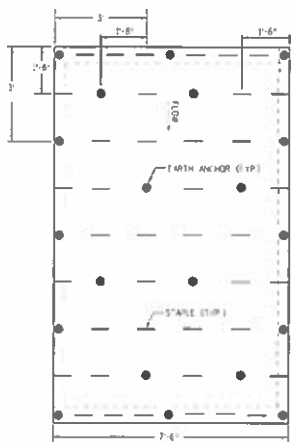
TYPICAL SECTION VIEW

ROCK CHECK DAM

Computer File Information		Sheet Revisions		Colorado Department of Transportation  2201 East Arkansas Avenue 2001 W. 4th Floor Denver, CO 80222 Phone: 303-757-9021 FAX: 303-757-9668 Division of Project Support JBK/LTA	TEMPORARY EROSION CONTROL Issued By: Project Development Branch on July 4, 2012	STANDARD PLAN NO. M-208-1 Sheet No. 11 of 11
Creation Date: 07/04/12	Initiator: JBK	Date: 03/29/16	Comments: Minor revisions to some notes.			
Last Modification Date: 08/10/11	Initiator: LTA					
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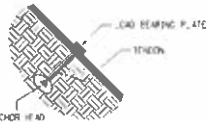


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Date:	Comments:																



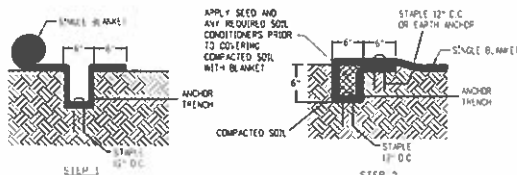
TYPICAL STAPLE OR EARTH ANCHOR PATTERN FOR SLOPE APPLICATION

IF EARTH ANCHORS ARE NOT SPECIFIED ON THE PLANS, ONLY STAPLES SHALL BE USED. SEE SUBSECTION 2.6.04.



EARTH ANCHOR

- NOTES: 1. EARTH ANCHORS SHALL BE USED, INSTEAD OF STAPLES WHEN SPECIFIED IN THE PLANS.
2. EARTH ANCHORS SHALL BE PAID FOR SEPARATELY AS SPECIFIED IN SECTION 216.



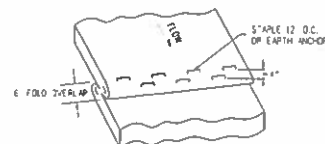
ANCHOR TRENCH (A)

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).

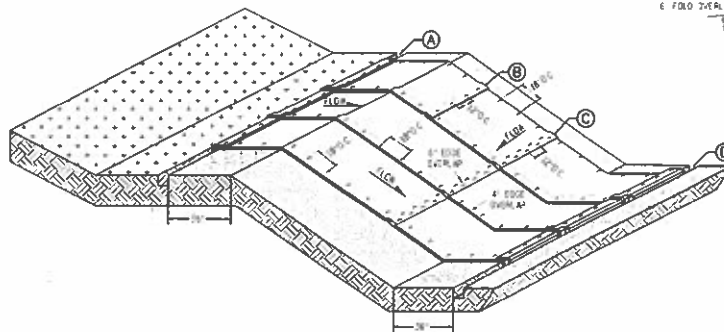


CONSECUTIVE ROLL OVERLAP (B)

TO BE USED WHEN PLAN END HOLE IN BLANKET LAYS AND ANCHOR BEGINS WITH THE UPROLL BLANKET PLACED ON TOP OF THE BLANKET ON THE DOWNHILL SIDE.

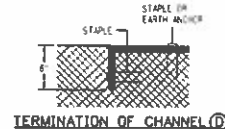


STAPLE CHECK (C)

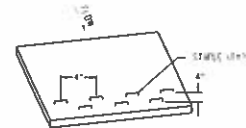


SOIL RETENTION BLANKETS/TURF REINFORCEMENT MATS (TRM) SLOPE APPLICATION

IN ACCORDANCE WITH SECTION 216.



TERMINATION OF CHANNEL (D)



DOWNSLOPE END STAPLE CHECK

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

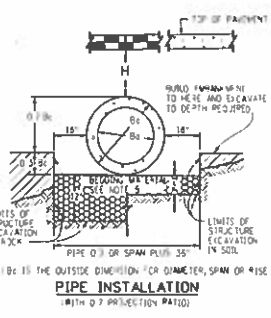
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Creation Date: 07/04/12	Initials: DLM
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Full Path: www.colorado.gov/info/business/des.cnsupport	
Drawing File Name: 2016E10202.dgn	
CAD Ver: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Order	Comments

Colorado Department of Transportation
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 Division of Project Support DLM/LTA

SOIL RETENTION COVERING
 Issued By: Project Development Branch on July 16, 2015

STANDARD PLAN NO.
 M-216-1
 Sheet No. 2 of 2



CIRCULAR (CON)			VERTICAL ELLIPTICAL (VE)			HORIZONTAL ELLIPTICAL (HE)				
PIPE SIZE - B_o	WALL THICKNESS	O.S. B_c	SPAN	RISE	WALL THICKNESS	O.D. OUTSIDE RISE	SPAN	RISE	WALL THICKNESS	O.D. OUTSIDE RISE
IN		FT	IN	IN		FT	IN	IN		FT
12	2	2.40					23	14	1/2	0.49
15	2-1/2	0.49								
18	2-1/2	3.58								
21	2-3/4	0.66					30	19	1/2	0.66
24	3	3.75					34	22	1/2	0.73
27	3-1/4	3.84								
30	3-1/2	3.92					38	24	1/2	0.73
33	3-3/4	1.18								
36	4	1.10	29	45	4-1/2	1.55	45	29	4-1/2	0.95
42	4-1/2	1.28	34	53	5	1.58	53	34	5	1.10
48	5	1.45	38	60	5-1/2	1.74	60	38	5-1/2	1.23
54	5-1/2	1.62	43	68	6	2.00	68	43	6	1.18
60	6	1.80	48	76	6-1/2	2.23	76	48	6-1/2	1.53
66	6-1/2	1.97	51	83	7	2.43	83	51	7	1.68
72	7	2.15	55	91	7-1/2	2.65	91	58	7-1/2	1.83
78	7-1/2	2.32	63	98	8	2.85	98	63	8	1.98
84	8	2.50	68	106	8-1/2	3.08	106	65	8-1/2	2.13
90	8-1/2	2.69	72	113	9	3.28	113	72	9	2.25
96	9	2.85	77	121	9-1/2	3.50	121	77	9-1/2	2.40
102	9-1/2	3.02	82	128	9-3/4	3.69	128	82	9-3/4	2.54
108	10	3.20	87	136	10	3.90	136	87	10	2.68

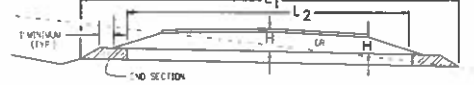
GENERAL NOTES

- REINFORCED CONCRETE PIPE**
- FILL HEIGHTS (GREATER THAN MAXIMUM ALLOWED) IN THE HEIGHTS OF FILL TABLE ON THIS SHEET REQUIRE SPECIAL DESIGN OF STRUCTURE.
 - PIPE DESIGN IS BASED ON SAFETY FACTOR OF 1.33 ON ULTIMATE STRENGTH.
 - THE HEIGHTS OF FILL OVER TOP OF PIPE ARE BASED ON UNIT WEIGHT OF SOIL AT 125 LB PER CUBIC FT.
 - PIPE CLASS IS DETERMINED FROM O.D. IN ORCA D-LOAD.
 - BEDDING IS CLASS B (MODIFIED) FROM CONCRETE PIPE DESIGN MANUAL (AMERICAN CONCRETE PIPE ASSOCIATION) WITH SETTLEMENT RATIO $R = 0.1$ (INCLUDING BEH) BEDDING MATERIAL FOR RIGID PIPE IN SOIL SHALL BE 3 IN. LOOSE THICKNESS STRUCTURE BACKFILL CLASS 2 BEDDING MATERIAL FOR FLEXIBLE PIPE IN ROCK SHALL BE 12 IN. (CONCRETE THICKNESS STRUCTURE BACKFILL CLASS 1).
 - CHANGES IN DESIGN FACTORS REQUIRE COMPENSATING CHANGES IN PIPE DESIGN.
 - MINIMUM WALL THICKNESS DIMENSIONS ARE BASED ON AASHTO M 170 (RACE) RIFOR CIRCULAR PIPE, AND AASHTO M 207 FOR ELLIPTICAL PIPE.
 - SPACING FOR MULTIPLE PIPE INSTALLATIONS SHALL CONFORM TO THE DETAILS SHOWN ON STANDARD PLAN SP-206-1.
 - WHEN A PIPE IS TO BE EXTENDED, THE SAME PIPE MATERIAL AND SIZE AS IN THE ORIGINAL PIPE INSTALLATION SHALL BE USED.

NONREINFORCED CONCRETE PIPE

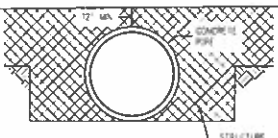
- AT THE OPTION OF THE CONTRACTOR, NONREINFORCED CONCRETE PIPE CONFORMING TO AASHTO M 26 MAY BE USED IN THE H OF REINFORCED CONCRETE PIPE FOR ALL SIZES 36 INCHES IN DIAMETER AND SMALLER. THE NONREINFORCED CONCRETE PIPE SHALL MEET THE SAME D-LOAD TO PRODUCE THE ULTIMATE LOAD UNDER THE THREE-EDGE BENDING METHOD AS SPECIFIED FOR REINFORCED CONCRETE PIPE IN CONFORMANCE WITH AASHTO M 170. THE CONTRACTOR SHALL PROVIDE WRITTEN CERTIFICATION OF CONFORMANCE OF THE WALL THICKNESS OF THE NONREINFORCED PIPE MAY BE INCREASED AS REQUIRED TO MEET D-LOAD REQUIREMENT.
- ALL REQUIREMENTS FOR REINFORCED CONCRETE PIPE, EXCEPT THOSE REFERRING TO REINFORCEMENT, SHALL APPLY TO NONREINFORCED CONCRETE PIPE.

DIMENSIONS FOR REINFORCED CONCRETE PIPE
(FOR INFORMATION ONLY)

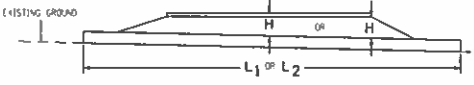


CONCRETE PIPE WITH END SECTIONS
NOTE USE THE H THAT IS GREATER FOR MAXIMUM ALLOWABLE FILL HEIGHT

H = HEIGHT OF FILL OVER TOP OF PIPE, INCLUDING PAVEMENT THICKNESS
L1 = LENGTH OF PIPE TO BE MEASURED WHEN PLACED IN ACCORDANCE WITH SECTION 624
L2 = LENGTH OF PIPE TO BE MEASURED WHEN PLACED IN ACCORDANCE WITH SECTION 683



CONSTRUCTION MINIMUM COVER FOR RIGID PIPE



CONCRETE PIPE WITHOUT END SECTIONS
NOTE USE THE H THAT IS GREATER FOR MAXIMUM ALLOWABLE FILL HEIGHT

TYPE OF PIPE	HEIGHT OF FILL OVER TOP OF PIPE, H (FEET)				
	CLASS OF PIPE		O.D. IN ORCA D-LOAD		
	CLASS CIP II	CLASS CIP III	CLASS CIP IV	CLASS CIP V	CLASS VE VI
	CLASS VE II	CLASS VE III	CLASS VE IV	CLASS VE V	CLASS VE VI
	3000 O	1250 O	2000 O	3000 O	4000 O
CIRCULAR (CON)	1 TO 10	1 TO 25	1 TO 37	1 TO 45	1 TO 62
VERTICAL ELLIPTICAL (VE)	1 TO 18	1 TO 25	1 TO 37	1 TO 45	1 TO 62
HORIZONTAL ELLIPTICAL (HE)	1 TO 18	1 TO 25	1 TO 37	1 TO 45	1 TO 62

ALLOWABLE RANGE OF HEIGHTS FOR FILL OVER REINFORCED CONCRETE PIPE

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Division of Project Support **DLM/LTA**

REINFORCED CONCRETE PIPE

Issue 2 By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.

M-603-2

Sheet No. 1 of 1

GENERAL NOTES

- TOLERANCE FOR TOP OF GUARDRAIL BEAM IS ±1/4 IN.
- RATE OF SLOPE DEPENDS ON GUARDRAIL LOCATION:
 - FOR GUARDRAIL FACE 7 FT. OR LESS FROM THE NORMAL EDGE OF PAVED SHOULDER, CONTINUE THE RATE OF SLOPE OF THE NORMAL PAVED SHOULDER TO THE BREAKPOINT.
 - FOR GUARDRAIL FACE MORE THAN 7 FT. FROM THE NORMAL EDGE OF THE PAVED SHOULDER, THE SLOPE SHALL BE 10:1 OR FLATTER.
- WHEN SPECIFIED ON THE PLANS, EXTEND A 2 IN. MINIMUM THICKNESS PAVED SURFACE TO 1 FT. BEHIND THE GUARDRAIL. POSTS TO THE EROSION CONTROL CURB AS SHOWN ON P. 1015. ASPHALT CUTTING & PATCHING OR OTHER APPROVED METHOD SHALL BE USED TO MINIMIZE DAMAGE TO ALL PAVED SURFACES UNDER GUARDRAIL. INSTALL ALL REPAIRS TO THE PAVED AREA WITH USE OF MEASURED AND PAID FOR SPARSELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK. A MINIMUM 3 IN. THICK FIBER REINFORCED CONCRETE PAVEMENT MAY ALSO BE USED FOR PAVING BETWEEN THE GUARDRAIL. INSTALL THE POSTS IN A 1/2 IN. OVERSIZED FORMED HOLE FOR GUARDRAIL POSTS AND TERMINALS AS DIRECTED. PAVEMENT FOR THIS PAVED SURFACE WILL BE MADE UNDER A PAVEMENT OR CONCRETE PAVEMENT WITH QUANTITIES SHOWN ON THE PLANS.
- THE MINIMUM GUARDRAIL OFFSET FROM PAVED SHOULDER EDGE SHALL BE:
 - 0 FT. FOR SHOULDERS 8 FT. OR WIDER
 - 2 FT. FOR SHOULDERS 6 FT. OR LESS
 THE GUARDRAIL OFFSET FROM PAVED INSIDE SHOULDER EDGE OF A DIVIDED HIGHWAY SHALL BE:
 - 0 FT. MINIMUM FOR SHOULDERS 6 FT. OR WIDER
 - 2 FT. DESIRABLE FOR 4 FT. SHOULDERS
- THE ABOVE 2 FT. GUARDRAIL TO SHOULDER OFFSET IS DESIRABLE BUT NOT REQUIRED FOR:
 - FOR AN EXISTING HIGHWAY WITH A DESIGN SPEED LESS THAN 50 MPH, THE MINIMUM OFFSET IS 4 FT. FROM THE TRAVELLED WAY.
 - FOR A ONE-WAY ONE-LANE RAMP, AND WHERE ONE OR MORE OF THE FOLLOWING ARE TRUE:
 - THE NON-OFFSET GUARDRAIL BEGINS AT LEAST 100 FT. BEHIND RAMP NOSE
 - THE NON-OFFSET GUARDRAIL IS NOT LOCATED ON THE RAMP EXIT OR ENTRANCE DRIVE CONNECTION TO THE MAJOR HIGHWAY
 - THE RAMP SHOULDERS ARE 4 FT. OR WIDER.
- USE OF GREATER THAN MINIMUM OFFSET DIMENSIONS IS ENCOURAGED TO MEET THE DESIRABLE GOAL OF PLACING THE GUARDRAIL AS FAR AS POSSIBLE FROM THE TRAVEL WAY, EVEN FOR SHORT DISTANCES, WHILE PROVIDING A SMOOTH CHANGE IN GUARDRAIL ALIGNMENT.
- IF 2 FT. CANNOT BE PROVIDED BETWEEN THE BACK OF THE GUARDRAIL POST AND THE BREAKPOINT, USE 7 FT. GUARDRAIL POSTS REFER TO THE "RESTRICTIVE ROADSIDE INSTALLATION" DETAIL.
- WHEN SPECIFIED ON THE PLANS, INSTALL 4 IN. HIGH TYPE 6 CURB WITH ITS FACE AT OR BEHIND THE RAIL FACE AS AN ALTERNATIVE WHEN SPECIFIED ON THE PLANS, INSTALL A 2 IN. x 6 IN. TREATED (SIGHTS) 4x4 (S) WOOD CURB FASTEN WITH A 4 IN. DIA. BOLT WITH WASHER AND NUT AT EACH STEEL POST. IF THE 2 IN. x 6 IN. WOOD CURB IS SPECIFIED, IT WILL BE INCLUDED IN THE COST OF THE GUARDRAIL AS APPROVED BY THE ENGINEER. A 2 IN. x 4 IN. TREATED WOOD CURB MAY BE SUBSTITUTED FOR THE 2 IN. x 6 IN. CURB AND SET ON TOP OF PAVEMENT SURFACE AND ATTACHED AS DESCRIBED ABOVE. NO SPACING SHALL BE ALLOWED IN WOOD CURB JOINTS. JOINTS SHALL BE BUTTED TOGETHER AND BOLTED AT A POST LOCATION. JOINTS SHALL BE LOCATED AT THE POSTS.
- SEE SHEETS 7 AND 9 FOR CURB TREATMENTS AT GUARDRAIL TERMINALS.
- IF THIS DIMENSION WILL BE LESS THAN 23 INCHES, RESET GUARDRAIL HEIGHT TO 28 INCHES OR ABOVE.
- ALL #BEAM SPLICES AND SPLICES OF TERMINAL CONNECTORS TO #BEAM SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC UNLESS OTHERWISE NOTED.
- MATERIAL TYPE AND SHAPE OF POSTS AND BLOCKS SHALL BE THE SAME THROUGHOUT THE PROJECT EXCEPT WHEN SPECIFIC POSTS AND BLOCKS ARE SPECIFIED AT END ANCHORAGES AND BOX CULVERTS.

THE GENERAL NOTES CONTINUE ON SHEET 2

NORMAL CENTER-TO-CENTER POST SPACING

LOCATION	SPACING
ALL LOCATIONS EXCEPT BRIDGE RAIL LOCATIONS	6'-3"
BRIDGE OR STRUCTURE APPROACH	SEE SHEETS 12 & 20

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Date	Comments
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Colorado Department of Transportation

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Division of Project Support **DLM/LTA**

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch July 4, 2012

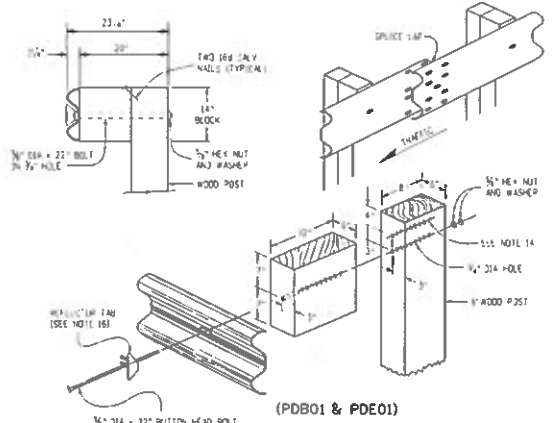
STANDARD PLAN NO.

M-606-1

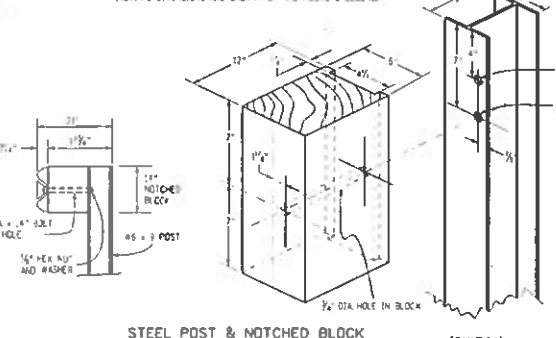
Sheet No. 1 of 20

GENERAL NOTES (CONTINUED FROM SHEET 1)

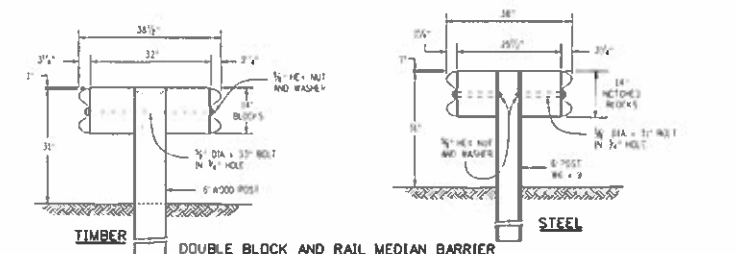
- 11. WHEN SPECIFIED IN THE CONTRACT, 7 FT POSTS SHALL BE INSTALLED INSTEAD OF THE STANDARD 6 FT POSTS. THE 7 FT POSTS SHALL BE MARKED WITH THE NUMBER 7 TO INSURE PROPER IDENTIFICATION. STEEL POSTS SHALL BE STAMPED PRIOR TO GALVANIZING THE NUMBER 7 SHALL BE A MINIMUM 2 IN. TALL AND LOCATED AS SHOWN ON THE ELEVATION VIEW ON SHEET 1.
- 12. THE STANDARD 2 IN x 1 1/2 IN x 3/8 IN RETROREFLECTOR WASHER WOOD UNDER POST BOLT HEADS IN THE PAST MAY REMAIN IN EXISTING INSTALLATIONS BUT SHALL NOT BE USED IN NEW CONSTRUCTION, REPAIRS, OR RESETTING OF RAIL, EXCEPT WHEN SPECIALLY IDENTIFIED ON THE STANDARD PLAN.
- 13. STANDARD ON-VISIBILITY ROUND SHEET WASHERS SHALL BE USED TO MAINTAIN ALL RAILS IN CONTACT WITH WOOD POSTS.
- 14. AN ADDITIONAL HOLE SHALL BE PROVIDED IN THE POSTS TO FACILITATE FUTURE RAISING OF THE RAIL ELEMENTS AND BLOCKS FOR OVERLAYS.
- 15. RETROREFLECTOR TABS SHALL BE INSTALLED AT 25 FT INTERVALS (SEE SHEETS 6 AND 8 FOR EXCEPTIONS). RETROREFLECTOR TABS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK. THE TABS SHALL BE MOUNTED SO THE BOLT SLOT FACES AWAY FROM TRAFFIC AND THE RETROREFLECTOR SURFACE FACES THE APPROACHING TRAFFIC FOR ONE WAY ROADS, BOTH SIDES OF THE ROAD. THE TABS SHALL BE RETROREFLECTIVE, SO THAT IN OPERATION, PROVIDED FOR BOTH DIRECTIONS OF TRAVEL, THE RETROREFLECTIVE SHEETING COLOR SHALL MATCH THE COLOR OF THE ADJACENT TRAFFIC WAY EDGE LINE. SEE THE RETROREFLECTOR TAB DETAIL ON SHEET 3.
- 16. AT THE TIME OF INSTALLATION, WOOD POSTS OR BLOCKS WITH WEARINGS CHECKS GREATER THAN 1/8 IN. SHALL NOT BE USED WHEN THE CHECK EXTENDS THE FULL LENGTH OF THE PIECE.
- 17. WOOD BLOCKS SHALL BE CUT FROM THE SAME GROWTH-SECTION, SPECIES, AND GRADE, AND SHALL RECEIVE THE SAME PRESERVATIVE TREATMENT AS THE POSTS WHEN WOOD POSTS ARE USED.
- 18. REFERENCES SUCH AS BOPROD1, BOPROD1, AND BOPROD2 IN THIS STANDARD PLAN SPECIFY HARDWARE DETAILS FROM 904 GUIDE TO STANDARDIZE HIGHWAY BARRIER HARDWARE PARTS BY THE ASHTO/ACI/ARIZONA JOINT COOPERATIVE COMMITTEE.
- 19. NOTCHED RAIL BLOCKS MANUFACTURED FROM SYNTHETIC MATERIAL WILL BE ACCEPTED AS ALTERNATIVES TO WOOD NOTCHED BLOCKS FOR USE WITH STEEL POSTS PROVIDED THAT THE BLOCKS HAVE RECEIVED FHWA APPROVAL AND ARE CERTIFIED AS IDENTICAL TO THE SPECIMENS USED FOR TESTING AND APPROVAL.
- 20. WOOD POSTS SHALL BE MADE OF TIMBER WITH AN EXTREME FIBER STRESS IN BENDING OF 1200 PSI. PRESS GRADING AND POST DIMENSIONS SHALL CONFORM WITH THE RULES OF THE WEST COAST DISCRETION BUREAU OR THE SOUTHERN PINE BUREAU, OR THE WESTERN WOOD PRODUCTS ASSOCIATION. TIMBER FOR POSTS SHALL BE EITHER ROUND SAWN DIAPLANE OR S4S (SUFFICIENT FOR USES WITH NOMINAL DIMENSIONS INDICATED). ONLY ONE TYPE OF SURFACE FINISH SHALL BE USED FOR POSTS AND BLOCKS IN ANY ONE CONTINUOUS LENGTH OF QUADRAIL.
- 21. QUALITY POSTS AND BLOCKS WILL BE ACCEPTED AS ALTERNATIVES PROVIDED THAT THE SUBMITTED MATERIALS HAVE RECEIVED FHWA APPROVAL AND ARE CERTIFIED AS IDENTICAL TO THE SPECIMENS USED FOR TESTING AND APPROVAL.
- 22. PRESSURE TREATMENT OF POSTS AND BLOCKS SHALL CONFORM TO ASHTO M 113 EXCEPT THAT BLOCKS NEED NOT BE TREATED. PRESERVATION ASHTO M 113 ENHANCED APPROVALS SHALL BE SUBMITTED TO THE ENGINEER. THE CONTRACTOR SHALL CERTIFY THAT THE SPECIES AND GRADE MEET THE REQUIREMENTS OF THE CONTRACT.
- 23. W-BEAM AND TRIPLE-BEAM GUARDRAIL POSTS SHALL BE MANUFACTURED USING ASHTO M 270 (ASTM A 709) GRADE 56 STEEL UNLESS CORROSION RESISTANT STEEL IS REQUIRED, IN WHICH CASE THE POST SHALL BE MANUFACTURED FROM ASHTO M 270 (ASTM A 109) GRADE 50A STEEL. THE DIMENSIONS OF THE CROSS-SECTION SHALL CONFORM TO A 48 x 9 SECTION AS DEFINED IN ASHTO M 150 (ASTM A 60) AS A 95 WIDE FLANGE STEEL PROFILE AN ACCEPTABLE ALTERNATIVE TO THE W6 x 9.
- 24. AFTER THE SECTION IS CUT AND ALL HOLES ARE DRILLED OR PLANED, THE COMPONENT SHALL BE ZINC-COATED CONFORMING TO ASHTO M 113 (ASTM A 123) UNLESS CORROSION-RESISTANT STEEL IS USED. WHEN CORROSION-RESISTANT STEEL IS USED, THE POSITION OF THE POST TO BE EMBEDDED IN SOIL SHALL BE ZINC-COATED CONFORMING TO ASHTO M 113 (ASTM A 151) AND THE PORTION ABOVE THE SOIL SHALL NOT BE ZINC-COATED, PAINTED OR OTHERWISE TREATED.
- 25. FIELD MODIFICATION TO RAIL ELEMENTS ONLY IS ALLOWED BY SAWING AND DRILLING OF HOLES, AND CUTTING IS NOT PERMITTED. POSTS SHALL NOT BE MODIFIED COMPONENTS ON WHICH THE SPECTER COATING HAS BEEN DAMAGED SHALL, EITHER REGALVANIZED OR REPAINTED IN CONFORMANCE WITH ASHTO M 113, OR PAINTED WITH ONE FULL THICKNESS COAT OF ZINC RICH PAINT CONFORMING TO MILITARY SPECIFICATION DOD P 21035A.



WOOD POST & BLOCK (PDB01 & PDE01)
NOMINAL DIMENSIONS ARE SHOWN FOR THE POSTS & BLOCKS



STEEL POST & NOTCHED BLOCK (PWE01)
ADDITIONAL DIMENSIONS ARE SHOWN FOR THE POSTS & BLOCKS



DOUBLE BLOCK AND RAIL MEDIAN BARRIER GUARDRAIL TYPE 3 (DOUBLE)

Computer File Information		Sheet Revisions		Colorado Department of Transportation		MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES		STANDARD PLAN NO. M-606-1	
Creation Date: 08/19/15	Project: DLM	Date:	Comments:	4200 East 4th Avenue 8001 HQ, 4th Floor Denver, CO 80222 Phone: 303 757 9000 FAX: 303 757 9869		Drawn By: Project Development Branch July 4, 2012 DLM/ATA		Sheet No. 2 of 20	
Last Modification Date: 12/29/15	Issue: LTA	12/29/15	ADD BOPROD1 & BOPROD2 TO SHEET TO REFLECT REVISIONS TO STANDARD PLAN						
File Path: www.sds01.gov/business/designs/depot									
Drawing File Name: 6060102020.dgn									
CAD Ver: MicroStation V8	Scale: Not to Scale	Units: English							

TERMINAL SECTION (FLARED)

27 1/2" (TYPICAL)
 10" (TYPICAL)
 1 1/2" (TYPICAL)
 1/2" x 2 1/2" POST BOLT SLOT
 1/2" x 2 1/2" x 1/4" SLOTTED
 WASTE MATCH 4 OUTER
 RAIL SPICE SLOTS
 12 GAUGE (104")
 10" (TYPICAL)
 3/16" (TYPICAL)

TERMINAL SECTION (CONNECTOR)

10 GAUGE (134")
 3/4" x 2 1/2" POST BOLT SLOT
 1/2" x 2 1/2" x 1/4" SLOTTED
 WASTE MATCH RAIL SPICE SLOTS
 11 1/2" x 1/2" DIA. HOLES
 3/4" (TYPICAL)

RETROREFLECTOR TAB

RETROREFLECTOR TABS SHALL BE MANUFACTURED FROM
 12 TO 14 GAUGE STEEL RETROREFLECTIVE SHEETING SHALL
 CONFORM TO ASTM D4936 TYPE III SEE NOTE 5 ON SHEET 5

W-BEAM RAIL SECTION

TRAFFIC DIRECTION FOR
 "THE SPICE LAP SHEW"

POST AND BLOCK
 POST BOLT THRU
 CUT OF TMBER
 POST AND BLOCK
 QUARDRAIL SPICE BOLTS
 (TYPICAL)
 POST BOLT THRU
 CUT OF TMBER
 POST AND BLOCK
 POST AND BLOCK
 12 GAUGE
 10 GAUGE
 12 GAUGE
 1/2" x 2 1/2" x 1/4" SLOTTED
 WASTE MATCH RAIL SPICE SLOTS
 NEUTRAL AXIS
 LOCATES C'AS
 OF SPICE
 SLOTS
 1/2" x 2 1/2" POST BOLT SLOT (OPTIONAL)
 NINE 7/8" x 1 3/4" SLOTS
 SMALL MATCH RAIL SPICE SLOTS LOCATIONS

W-BEAM RAIL SPICE

TRAFFIC DIRECTION FOR
 "THE SPICE LAP SHEW"

POST AND BLOCK
 POST BOLT THRU
 CUT OF TMBER
 POST AND BLOCK
 QUARDRAIL SPICE BOLTS
 (TYPICAL)
 POST BOLT THRU
 CUT OF TMBER
 POST AND BLOCK
 POST AND BLOCK
 12 GAUGE
 10 GAUGE
 12 GAUGE
 1/2" x 2 1/2" POST BOLT SLOT (OPTIONAL)
 NINE 7/8" x 1 3/4" SLOTS
 SMALL MATCH RAIL SPICE SLOTS LOCATIONS

**THRIE BEAM
 TERMINAL SECTION (CONNECTOR)**

FILE 1" DIA HOLES
 EXTRA HOLES PERMITTED
 10 GAUGE
 3/4" x 2 1/2" POST BOLT SLOT (OPTIONAL)
 NINE 7/8" x 1 3/4" SLOTS
 SMALL MATCH RAIL SPICE SLOTS LOCATIONS

**THRIE BEAM
 DETAIL**

10 GAUGE
 3/4" x 2 1/2" POST BOLT SLOT (TYP.)
 1" x 3/4" SPICE BOLT
 SLOT (TYP.)

RECTANGULAR WASHER
 (TO BE USED ONLY WHERE SPECIFIED)

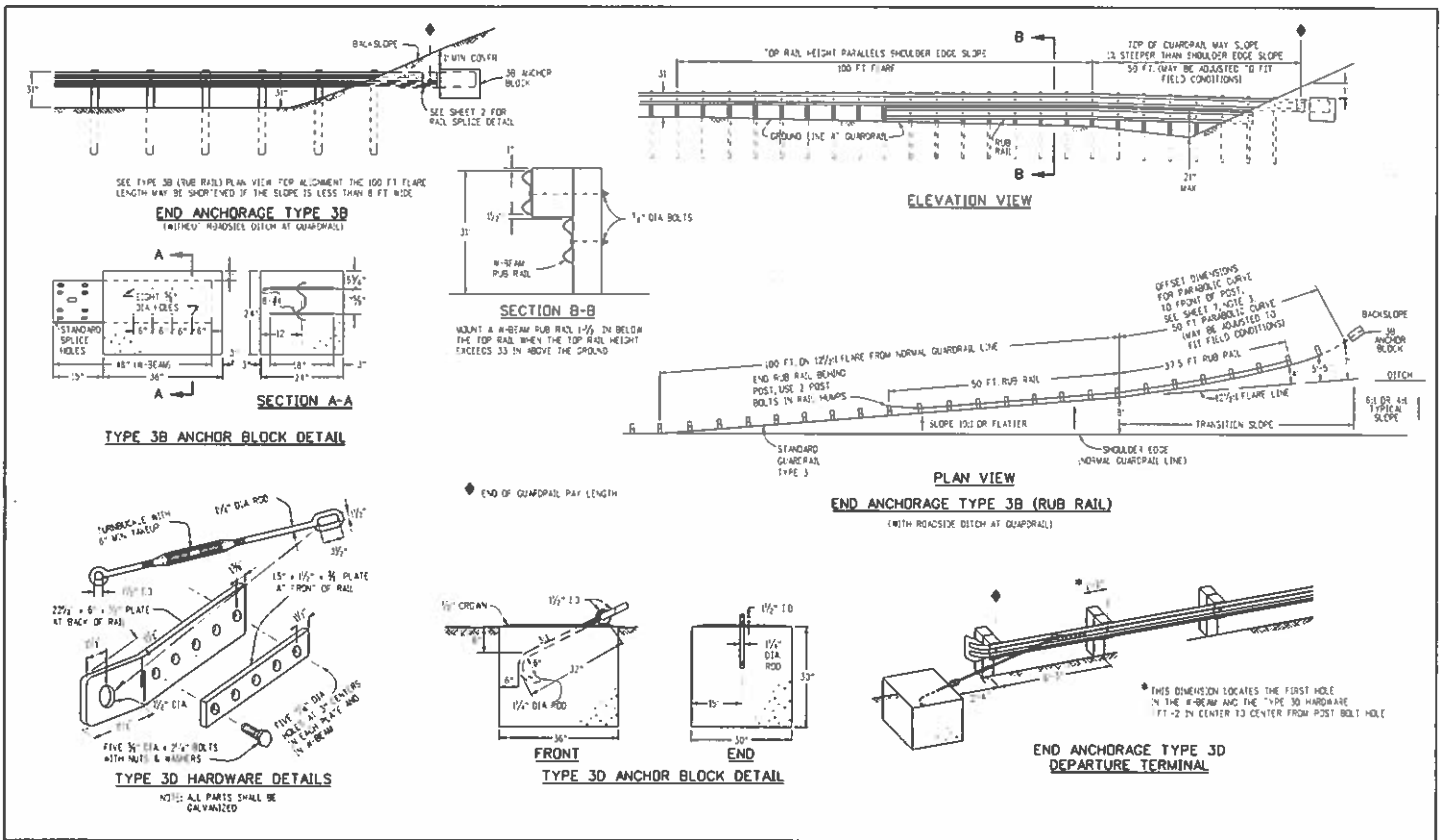
PART	MATERIAL SPEC	CALCINIZING SPEC	CORROSION-RESISTANT SPEC
A-BEAM RAIL & TERMINAL SECTIONS	AASHTO M 180, CLASS A OR B	AASHTO M 180, TYPE 1 OR 2	AASHTO M 180, TYPE A
BASE PLATE	ASTM A 36	AASHTO M 180	N/A
NUTS, BOLTS & SLOTS FOR GENERAL USE	ASTM A 337		
HIGH STRENGTH BOLTS & NUTS	ASTM A 325		AASHTO M 232, CLASS C
HIGH STRENGTH SLOTS & NUTS	ASTM A 449		OR
ROUND STEEL WASHERS	ASTM F 436		ASTM B 635 CLASS 50 TYPE 1
RECTANGULAR WASHERS	AASHTO M 180		
OTHER FITTINGS	ASTM A 36	AASHTO M 180	

THE FABRICATION OF QUARDRAIL W-BEAM SHALL SPECIFY THE TYPE OF CORROSION PROTECTION GALVANIZED OR CORROSION-RESISTANT STEEL. STEEL POSTS SHALL HAVE THE SAME CORROSION PROTECTION AS SPECIFIED FOR THE METAL BEAM RAIL PUNCHING, SPILLING, CUTTING, OR WELDING OF POSTS WILL NOT BE PERMITTED WITH GALVANIZING.

DIMETER & TYPE (INCHES)	12" BENCH L x LENGTH (INCHES)	THREAD LENGTH (INCHES)	INTENDED USE	AASHTO AGC NUMBER	NC BOLTS, NUTS & WASHERS
5/8"	11 1/2"	FULL (1 1/2")	ALL RAIL SPICES	F9803	6 PER SPICE
BUTTONHEAD	22	MIN 2 1/2"	SINGLE BLOCK & POST (TIMBER)	F9804	1 PER POST
OVAL SHADR	15	MIN 1"	DOUBLE BLOCK & POST (TIMBER)	F9805	1 PER POST
	14	MIN 2"	FASTEN NOTCHED BLOCK TO STEEL POST	F9802	1 PER BLOCK

WASHERS NOT USED AT RAIL SPICES

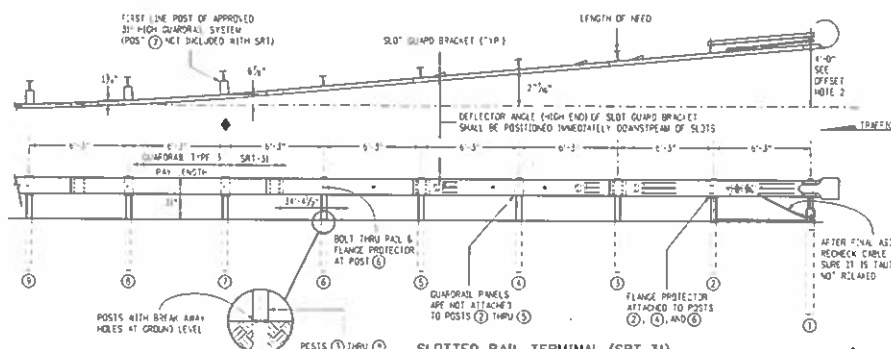
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Computer File Information		Sheet Revisions		<p>Colorado Department of Transportation 4201 East Arapahoe Avenue Denver, CO 80222 Phone: 303 757 9021 FAX: 303 757 9869 Division of Project Support</p>	<p>MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES</p> <p>Issued By: Project Development Branch July 8, 2012</p>	<p>STANDARD PLAN NO.</p> <p>M-606-1</p> <p>Sheet No. 4 of 20</p>
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CD No: 606010402	Scale: Not to Scale	Units: English				

OFFSET NOTES

- 1 POST OFFSET DIMENSIONS ARE GIVEN TO THE CENTER OF THE TRAFFIC FACE OF POSTS, EXCEPT AT POSTS ① & ②, WHERE DIMENSION IS TO CENTER OF THE TRAFFIC FACE OF THE BLOCKOUTS
- 2 THE QUARREL BETWEEN POST ① THRU ⑦ IS ON A STRAIGHT LINE FLARE.

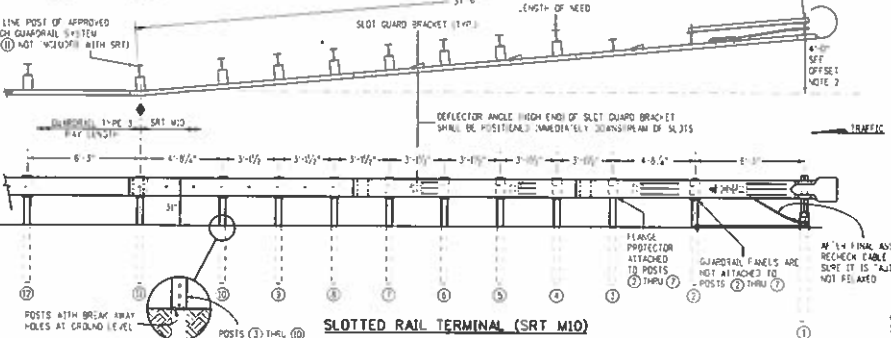


NOTES

- 1 THE END ANCHORAGES (FLARED) SHALL EITHER BE THE SLOTTED RAIL TERMINAL (SRT-31) OR SRT M10 AS MANUFACTURED BY TRINITY HIGHWAY PRODUCTS LLC (TEL: 800-773-1976), THE FLEAT-350, AS MANUFACTURED BY ROAD SYSTEMS, INC. (TELEPHONE: 812-253-2435), OR THE CALITE AS MANUFACTURED BY BARRIER SYSTEMS, INC. (TELEPHONE: 818-600-3400). ONE END ANCHORAGE (FLARED) SHALL INCLUDE A/E, POST, RAIL, AND ALL HARDWARE ITEMS REQUIRED FOR A COMPLETE UNIT. THE END ANCHORAGE (FLARED) SHALL BE INSTALLED CONFORMING TO THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PARTS LIST TO THE ENGINEER PRIOR TO INSTALLATION OF THE DEVICE.
- 2 IN HEAVY TRAFFIC LOCATIONS, TRIP POSTS ① AND ② (IF THEY ARE NECESSARY) SHALL BE INSTALLED WITH PAIR TOP AND TREAT END WITH SEALANT, IN CONFORMANCE WITH AASHTO M 152.
- 3 POSTS SHALL BE ORDERED FOR ORDER NUMBER ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
- 4 SEE SHEETS 1, 3 AND 4 FOR STANDARD QUARREL TYPE 3 AND INSTALLATION DETAILS.
- 5 METROPOLITAN TABS SHALL NOT BE USED ON END TERMINAL POSTS.
- 6 DELINEATION SHALL BE APPLIED TO THE END PIECE, AND SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.

OFFSET NOTES

- 1 POST OFFSET DIMENSION IS GIVEN TO THE CENTER OF THE TRAFFIC FACE OF POST ①.
- 2 THE QUARREL BETWEEN POSTS ① THRU ⑩ IS ON A STRAIGHT LINE FLARE.



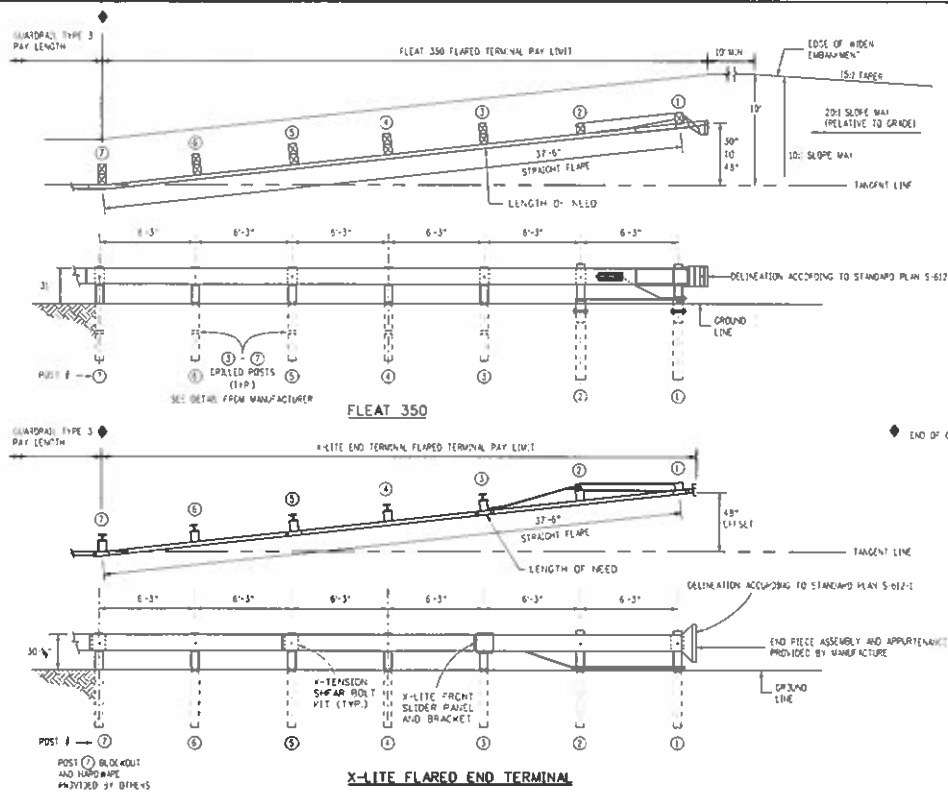
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Sheet Revisions	
Enter	Comments
01	12/29/15 New SRT End Anchorages 31" High
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Colorado Department of Transportation
 4201 East Arkansas Avenue
 4001 West 4th Floor
 Denver, CO 80222
 Phone: 303-757-3022 Fax: 303-757-9859
 Division of Project Support DLM/LTA

MIDWEST
 GUARDRAIL SYSTEM (MGS)
 TYPE 3 W-BEAM 31 INCHES
 Issued By: Project Development Branch July 4, 2012

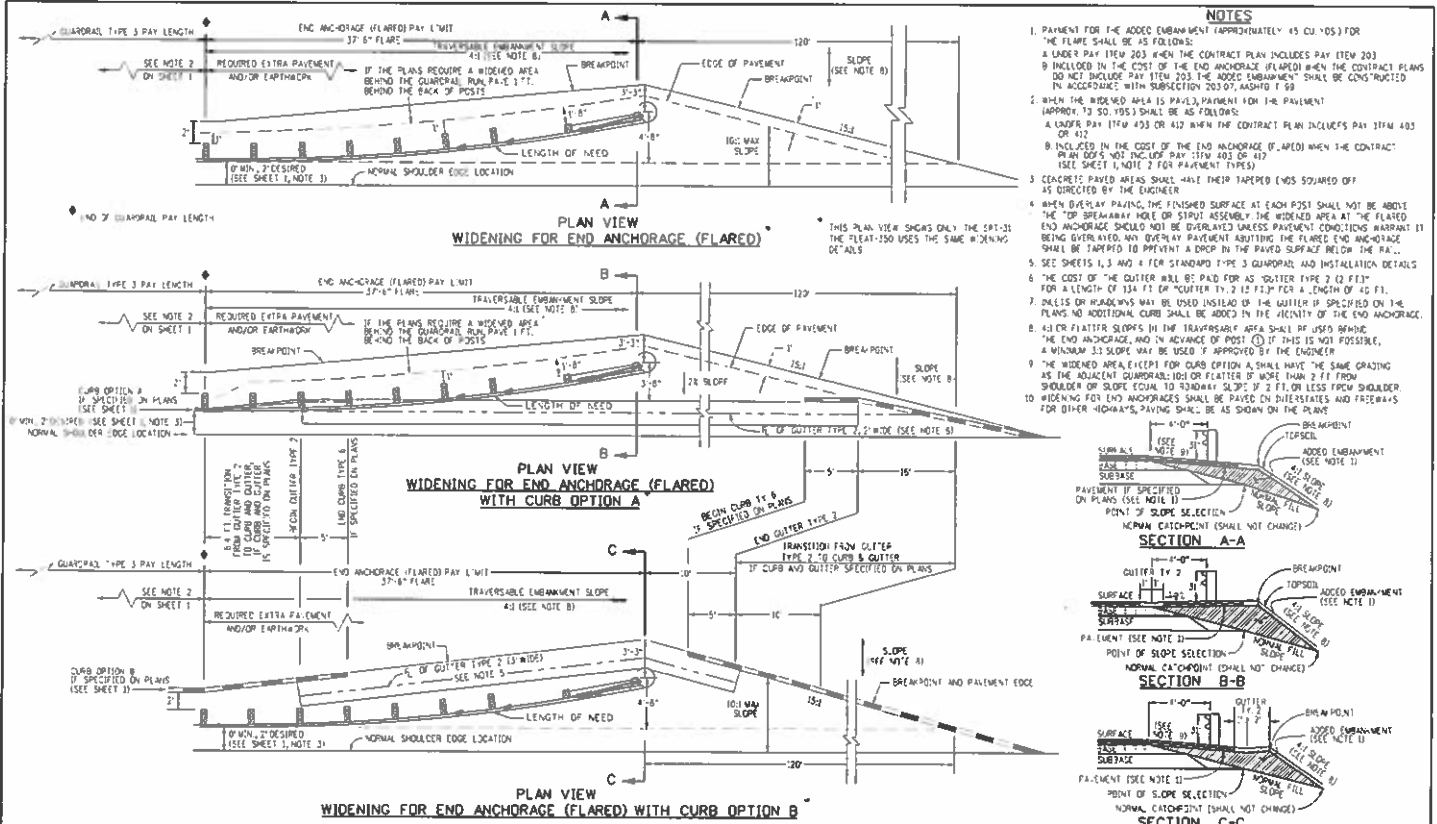
STANDARD PLAN NO.
M-606-1
Sheet No. 5 of 20



SEE M-606-1, SHEET 5 OF 20, FOR "NOTES".

END ANCHORAGES (FLARED)

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	Date: 12/29/15 Comments: Flared End Anchorage to 31"	Issue: 1 Description:			Sheet No. 6 of 20

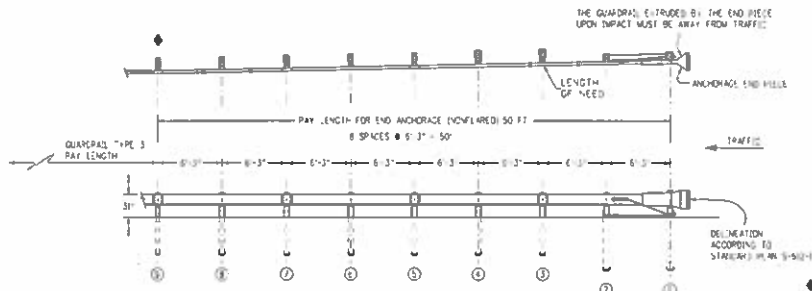


- NOTES**
1. PAYMENT FOR THE ADDED EMBANKMENT (APPROXIMATELY 45 CU YDS) FOR THE FLARE SHALL BE AS FOLLOWS:
 A. UNDER PAY ITEM 203 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 203
 B. INCLUDED IN THE COST OF THE END ANCHORAGE (FLARED) WHEN THE CONTRACT PLANS DO NOT INCLUDE PAY ITEM 203. THE ADDED EMBANKMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBSECTION 203.07.04(SH) 1.00
 2. WHEN THE WIDENED AREA IS PAVED, PAYMENT FOR THE PAVEMENT (APPROX. 73 SQ. YDS) SHALL BE AS FOLLOWS:
 A. UNDER PAY ITEM 403 OR 412 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 403 OR 412
 B. INCLUDED IN THE COST OF THE END ANCHORAGE (FLARED) WHEN THE CONTRACT PLAN DOES NOT INCLUDE PAY ITEM 403 OR 412 (SEE SHEET 1, NOTE 2 FOR PAVEMENT TYPES)
 3. CONCRETE PAVED AREAS SHALL HAVE THEIR TAPERED ENDS SQUARED OFF AS DIRECTED BY THE ENGINEER
 4. WHEN OVERLAY PAVERS, THE FINISHED SURFACE AT EACH POST SHALL NOT BE ABOVE THE TOP BREAKAWAY MOLE OR STIPUT ASSEMBLY. THE WIDENED AREA AT THE FLARED END ANCHORAGE SHOULD NOT BE OVERLAYED UNLESS PAVEMENT CONDITIONS WARRANT IT BEING OVERLAYED. ANY OVERLAY PAVEMENT ADDITION TO THE FLARED END ANCHORAGE SHALL BE TAPERED TO PREVENT A DIP IN THE PAVED SURFACE BELOW THE FLARE.
 5. SEE SHEETS 1, 3 AND 4 FOR STANDARD TYPE 3 GUARDRAIL AND INSTALLATION DETAILS
 6. THE COST OF THE CUTTER WILL BE PAID FOR AS "CUTTER TYPE 2 (2 FEET)" FOR A LENGTH OF 134 FT OR "CUTTER TYPE 2 (2 FEET)" FOR A LENGTH OF 45 FT.
 7. DRESS UP SIDEWAYS MAY BE USED INSTEAD OF THE CUTTER IF SPECIFIED ON THE PLANS. NO ADDITIONAL CURB SHALL BE ADDED IN THE VICINITY OF THE END ANCHORAGE.
 8. ALL FLATTER SLOPES IN THE TRANSVERSABLE AREA SHALL BE USED BEHIND THE END ANCHORAGE AND IN ADVANCE OF POST (C) IF THIS IS NOT POSSIBLE, A MINIMUM 3:3 SLOPE MAY BE USED IF APPROVED BY THE ENGINEER
 9. THE WIDENED AREA (EVEN FOR CURB OPTION A) SHALL HAVE THE SAME CRAGGING AS THE ADJACENT GUARDRAILS OR FLATTER IF MORE THAN 2 FEET FROM SHOULDER OR SLOPE EQUAL TO ROADWAY SLOPE OF 2 FEET OR LESS FROM SHOULDER.
 10. WIDENING FOR END ANCHORAGES SHALL BE PAID IN DIFFERENTIALS AND FREEWAYS FOR OTHER HIGHWAYS, PAYING SHALL BE AS SHOWN ON THE PLANS.

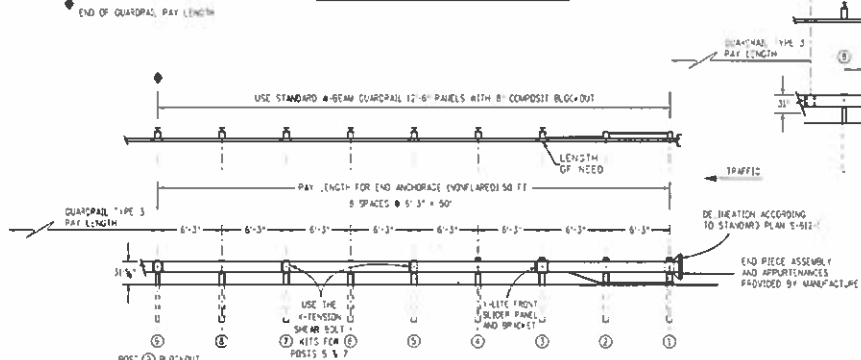
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Date	Comments												
12/23/15	Revised guardrail height to 3"												

NOTES FOR NONFLARED

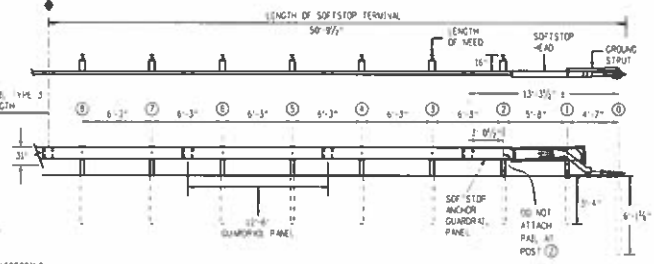
- THE END ANCHORAGE (NONFLARED) SHALL EITHER BE THE SKT GUARDRAIL AS MANUFACTURED BY ROAD SYSTEMS, INC. (TEL # 437-263-2433), OR THE X-LITE AS MANUFACTURED BY BARRIER SYSTEMS, INC. (TEL # 800-500-3833), OR THE SOFTSTOP AS MANUFACTURED BY TRINITY HIGHWAY PRODUCTS, L.L.C. (TEL # 800-729-2876). THE END ANCHORAGE (NONFLARED) SHALL INCLUDE ALL POST, RAIL, AND HARDWARE ITEMS REQUIRED FOR A COMPLETE UNIT. THE END ANCHORAGE (NONFLARED) SHALL BE INSTALLED CONFORMING TO THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PARTS LIST TO THE ENGINEER PRIOR TO THE INSTALLATION OF THE DEVICE.
- WOOD POSTS SHALL BE DRILLED FOR BREAKAWAY CONFORMING TO THE MANUFACTURER'S INSTRUCTIONS.
- HINGED BREAK AWAY (BEM) STYLE POSTS MAY BE USED CONFORMING TO THE MANUFACTURER'S INSTRUCTIONS.
- RETROREFLECTOR TABS SHALL NOT BE USED ON END TERMINAL POSTS.
- USE THE MANUFACTURER'S SPECIFIED STEEL FOUNDATION TUBE FOR POSTS ① AND ② FOR SKT END ANCHORAGES (NONFLARED).
- USE THE MANUFACTURER'S SUPPLIED POSTS FOR X-LITE END ANCHORAGE AS FOLLOWS:
POST 1 = X-LITE, CRIMPED POST SLOTS, GALVANIZED
POST 2 = X-LITE, POST II, GALVANIZED
POST 3 = X-LITE, CRIMPED POST HOLES, GALVANIZED
FOR POSTS 4 THRU 8 = USE STANDARD LINE POST, GALVANIZED
- DELINEATION SHALL BE APPLIED TO THE END PIECE AND SHALL NOT BE PAID FOR SEPARATELY BUT BE INCLUDED IN THE COST OF THE WORK. SEE STANDARD PLAN S-612-1.



SKT END ANCHORAGE (NONFLARED)



X-LITE TERMINAL END ANCHORAGE (NONFLARED)



SOFTSTOP TERMINAL END ANCHORAGE (NONFLARED)

END ANCHORAGES (NONFLARED)

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Sheet Revisions	
Date:	Comments:
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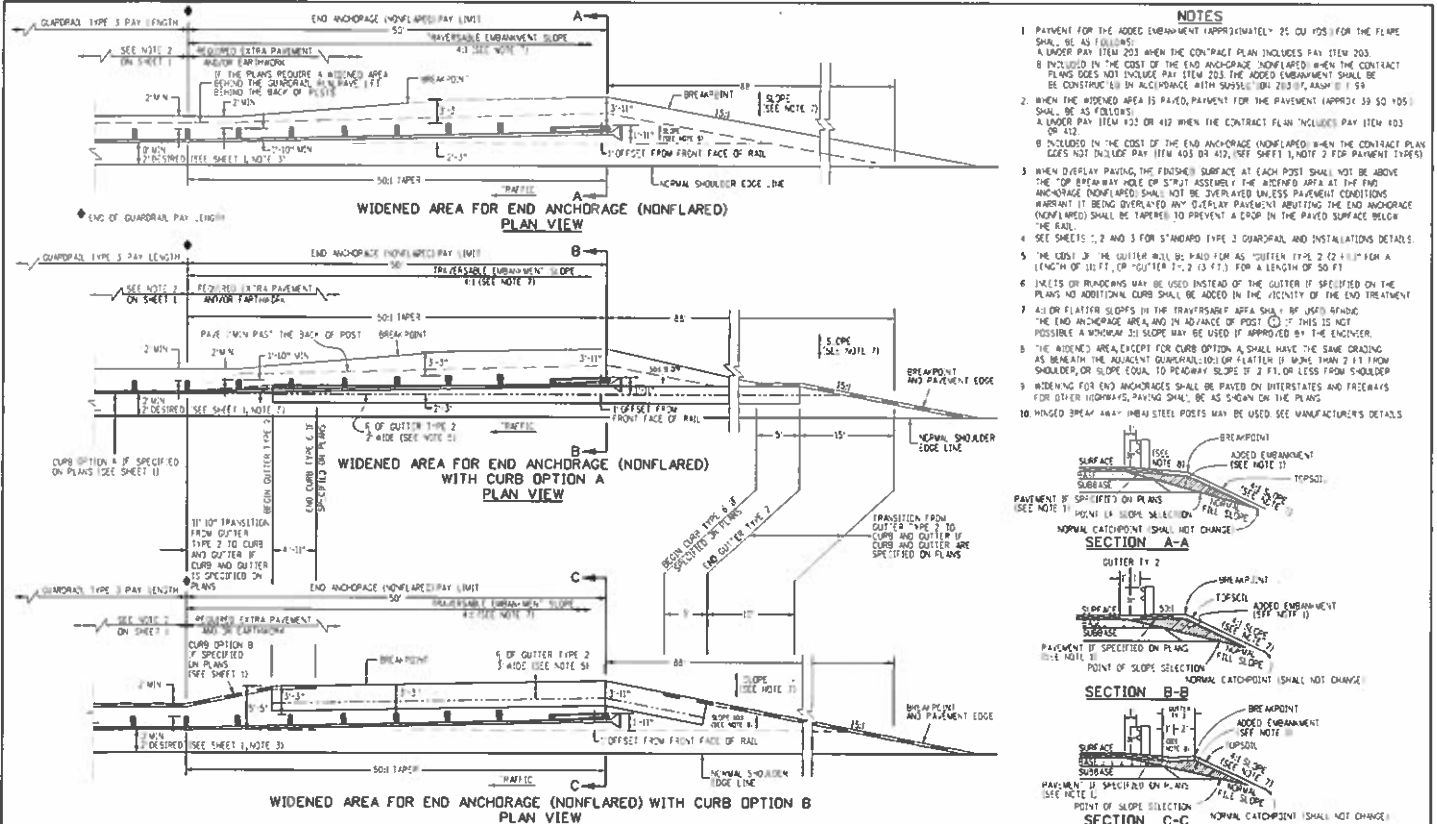
Colorado Department of Transportation
 4201 East Michigan Avenue
 CDOT HQ, 4th Floor
 Denver, CO 80222
 Phone: 303.757.3000 FAX: 303.757.9868

Division of Project Support **DLM/LTA**

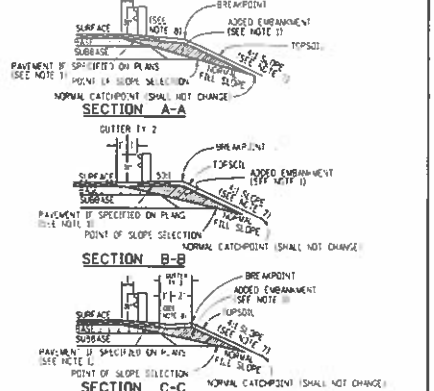
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Issued By: Project Development Branch July 4, 2012

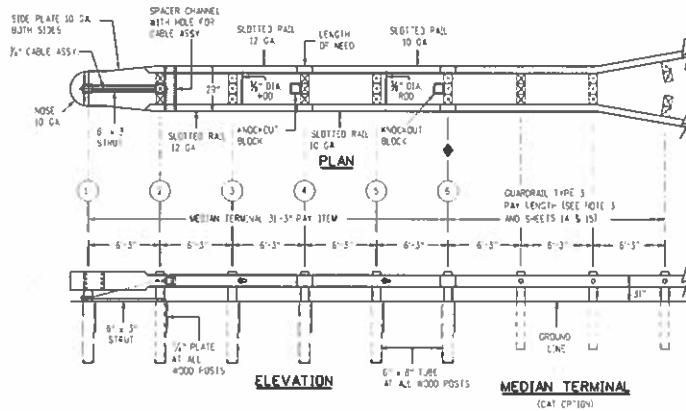
STANDARD PLAN NO.
M-606-1
Sheet No. 8 of 20



- NOTES**
1. PAYMENT FOR THE ADDED EMBANKMENT (APPROXIMATELY 2% CUT FILL) FOR THE FLARE SHALL BE AS FOLLOWS:
 A. UNDER PAY ITEM 203 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 203.
 B. INCLUDED IN THE COST OF THE END ANCHORAGE (NONFLARED) WHEN THE CONTRACT PLAN DOES NOT INCLUDE PAY ITEM 203. THE ADDED EMBANKMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBSECTION 203.03.01, AASHTO 11.59.
 2. WHEN THE WIDENED AREA IS PAVED, PAYMENT FOR THE PAVEMENT (APPROX. \$9.50 FOS) SHALL BE AS FOLLOWS:
 A. UNDER PAY ITEM 412 OR 412 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 412 OR 412.
 B. INCLUDED IN THE COST OF THE END ANCHORAGE (NONFLARED) WHEN THE CONTRACT PLAN DOES NOT INCLUDE PAY ITEM 412 OR 412. (SEE SHEET 1, NOTE 2 FOR PAVEMENT TYPES)
 3. WHEN OVERLAY PAVING, THE FINISHED SURFACE AT EACH POST SHALL NOT BE ABOVE THE TOP BREAKWAY HOLE OF STRUT ASSEMBLY. THE ADDED AREA AT THE END ANCHORAGE (NONFLARED) SHALL NOT BE OVERLAYED UNLESS PAVEMENT CONDITIONS WARRANT IT BEING OVERLAYED. ANY OVERLAY PAVEMENT ABUTTING THE END ANCHORAGE (NONFLARED) SHALL BE TAPERED TO PREVENT A DROP IN THE PAVED SURFACE BELOW THE RAIL.
 4. SEE SHEETS 2, 3 AND 4 FOR STANDARD TYPE 3 GUARDRAIL AND INSTALLATION DETAILS.
 5. THE COST OF THE CUTTER SHALL BE PAID FOR AS "CUTTER TYPE 2 (2' H) FOR A LENGTH OF 10 FT." OR "CUTTER TYPE 2 (3' H) FOR A LENGTH OF 50 FT."
 6. CUTTERS OR BRIDGES MAY BE USED INSTEAD OF THE CUTTER IF SPECIFIED ON THE PLANS. NO ADDITIONAL CURB SHALL BE ADDED IN THE VICINITY OF THE END TREATMENT.
 7. AS OR FLATTER SLOPES IN THE TRANSVERSE AREA SHALL BE USED. BEING THE END ANCHORAGE AREA AND IN ADVANCE OF POST (C) IF THIS IS NOT POSSIBLE A MINIMUM 2% SLOPE MAY BE USED IF APPROVED BY THE ENGINEER.
 8. THE WIDENED AREA EXCEPT FOR CURB OPTION A SHALL HAVE THE SAME GRADING AS BEHIND THE ADJACENT GUARDRAILS OR FLATERS IF MORE THAN 2 FT FROM SHOULDER, OR SLOPE EQUAL TO ROADWAY SLOPE IF 2 FT OR LESS FROM SHOULDER.
 9. WIDENING FOR END ANCHORAGES SHALL BE PAVED ON INTERSTATES AND FREEWAYS FOR OTHER HIGHWAYS, PAVING SHALL BE AS 5-0-0-0 ON THE PLANS.
 10. WIDENED BREAKAWAY BEAM STEEL POSTS MAY BE USED. SEE MANUFACTURER'S DETAILS.

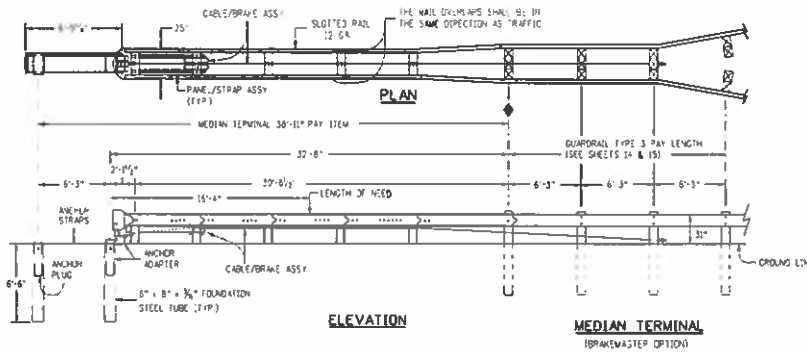


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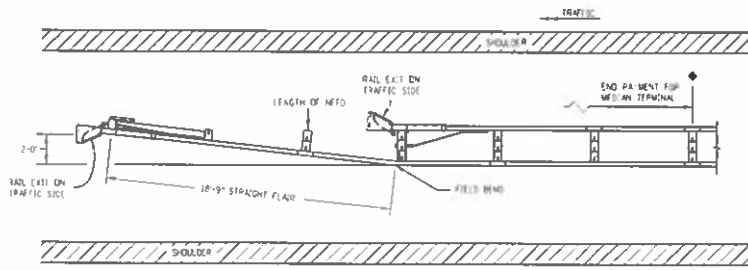


MEDIAN TERMINAL NOTES

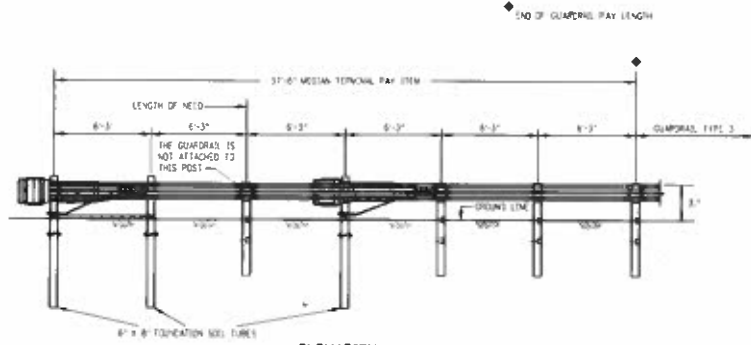
- 1 THE MEDIAN TERMINAL SHALL BE THE CAT 350 AS MANUFACTURED BY TRINITY INDUSTRIES INC (TEL # 800-722-7916), OR THE BRAINMASTER AS MANUFACTURED BY ENERGY ABSORPTION SYSTEMS, INC AS DISTRIBUTED BY INTEREST SAFETY SUPPLY (TEL # 303-757-9021), OR THE FLEAY-WAY MEDIAN TERMINAL AS MANUFACTURED BY W3AD SYSTEM INC (TEL # 432-263-7430).
- 2 THE MEDIAN TERMINAL SHALL INCLUDE ALL POSTS, RAIL, AND HARDWARE ITEMS REQUIRED FOR A COMPLETE UNIT. THE DEVICE SHALL BE INSTALLED IN CONFORMANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PARTS LISTS TO THE ENGINEER PRIOR TO THE INSTALLATION OF THE DEVICE.
- 3 UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE MEDIAN TERMINAL SHALL BE INSTALLED FOR BIDIRECTIONAL TRAFFIC APPLICATION.
- 4 MEDIAN QUADRANT POSTS MAY BE STEEL OR WOOD.
- 5 EACH INSTALLATION SHALL BE SUPERVISED AND CERTIFIED AS CORRECT UPON COMPLETION BY A REPRESENTATIVE OF THE DEVICE MANUFACTURER OR BY AN EMPLOYEE OF THE CONTRACTOR WHO IS A CERTIFIED INSTALLER. THE CERTIFIED INSTALLER SHALL HAVE COMPLETED DEVICE TRAINING AND SHALL BE REGISTERED WITH THE MANUFACTURER AS A CERTIFIED INSTALLER.
- 6 DIMENSIONAL IF REQUIRED, SHALL BE APPLIED TO THE END PIECE AND WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK SEE STANDARD PLAN S-612-1.
- 7 IF THE MEDIAN TERMINAL IS LESS THAN 31 INCHES HIGH A TRANSITIONAL PIECE SHALL BE INSTALLED TO REACH THE 31 INCHES HIGH HEIGHT.



<p>Computer File Information</p> <p>Creation Date: 02/19/15 In: FILE: DLM Last Modification Date: 12/29/15 In: FILE: LTA File Path: www.cdot.gov/business/ces/signs/psd/01 Drawing File Name: 60601010020.dgn CAD Ver: MicroStation V8 Scale: Not to Scale Author: Engler</p>	<p>Sheet Revisions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Date:</th> <th>Comments:</th> </tr> </thead> <tbody> <tr> <td>12/29/15</td> <td>Raised quadrant height to 3"</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Date:	Comments:	12/29/15	Raised quadrant height to 3"							<p>Colorado Department of Transportation</p> <p>4201 East Mississippi Avenue CDDT HQ, 4th Floor Denver, CO 80222 Phone: 303.757.9021 Fax: 303.757.9668</p> <p>Division of Project Support DLM/LTA</p>	<p>MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES</p> <p>Issued By: Project Development Branch July 4, 2012</p>	<p>STANDARD PLAN NO.</p> <p>M-606-1</p> <p>Sheet No. 10 of 20</p>
Date:	Comments:													
12/29/15	Raised quadrant height to 3"													



PLAN



ELEVATION

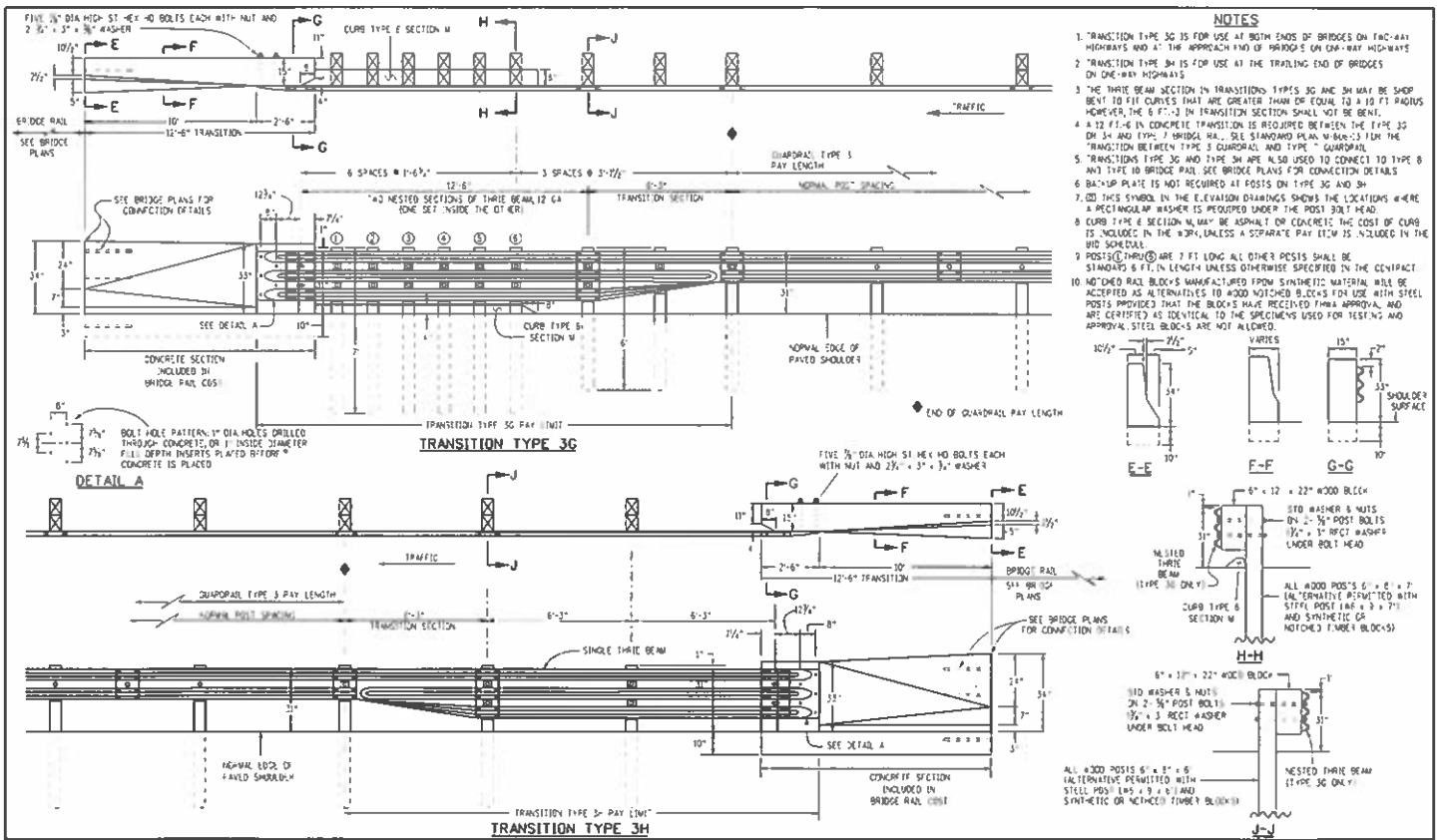
MEDIAN TERMINAL
(FLEAT-MT OPTION)

FLEAT-MT NOTES

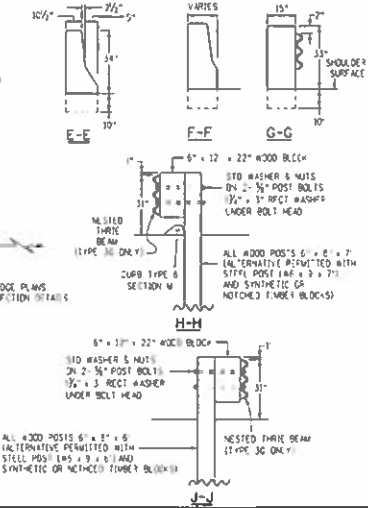
- 1 THE FLEAT-MT MAY BE SELECTED AS A MEDIAN TERMINAL UNLESS OTHERWISE SHOWN IN THE PLANS
- 2 BREAKAWAY POSTS ARE REQUIRED WITH THE FLEAT-MT
- 3 THE SOIL TUBES SHALL NOT PROTRUDE MORE THAN 4 INCHES ABOVE GROUND (MEASURED ALONG A 3 FEET CORO). SITE GRADING MAY BE NECESSARY TO MEET THIS REQUIREMENT
- 4 THE SOIL TUBES SHALL BE DRIVEN WITH AN APPROVED DRIVING HEAD AND NOT BE DRIVEN WITH THE POST IN THE TUBE IF THE TUBES ARE PLACED IN FIELDED HELLS, THE BACKFILL MATERIAL MUST BE SATISFACTORILY COMPACTED TO PREVENT SETTLEMENT
- 5 WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA POST HOLE, 20 INCH DEEP MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROX 2 1/2 INCH DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.
- 6 THE BREAKAWAY CABLE ASSEMBLY MUST BE TAUT DO NOT TWIST THE CABLE WHEN TIGHTENING NUTS

Computer File Information		Sheet Revisions		<p>Colorado Department of Transportation 9200 East Wagonway Avenue Denver, CO 80222 Phone: 303 757 9021 FAX: 303 757 9859 Division of Project Support DLM/LTA</p>	MIDWEST	STANDARD PLAN NO.
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Last Modification: 12/29/15	Initials: LTA	12/29/15	Posted guardrail height to 3'		TYPE 3 W-BEAM 31 INCHES	
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CAD Ver: MaxStation v8	Scale: Not to Scale	Units: Engr				

Issued By: Project Development Branch July 4, 2012



- NOTES**
1. TRANSITION TYPE 3G IS FOR USE AT BOTH ENDS OF BRIDGES ON TWO-WAY HIGHWAYS AND AT THE APPROACH ENDS OF BRIDGES ON ONE-WAY HIGHWAYS.
 2. TRANSITION TYPE 3H IS FOR USE AT THE TRAILING END OF BRIDGES ON ONE-WAY HIGHWAYS.
 3. THE THREE BEAM SECTION IN TRANSITIONS TYPES 3G AND 3H MAY BE SHOP BENT TO FIT CURVES THAT ARE GREATER THAN OR EQUAL TO A 10 FT RADIUS. HOWEVER, THE 6 FT-3 IN TRANSITION SECTION SHALL NOT BE BENT.
 4. A 12 FT-6 IN CONCRETE TRANSITION IS REQUIRED BETWEEN THE TYPE 3G OR 3H AND TYPE 3 BRIDGE RAIL. SEE STANDARD PLAN M-606-1 FOR THE TRANSITION BETWEEN TYPE 3 GUARDRAIL AND TYPE 3 BRIDGE RAIL.
 5. TRANSITIONS TYPE 3G AND TYPE 3H ARE ALSO USED TO CONNECT TO TYPE 8 AND TYPE 10 BRIDGE RAIL. SEE BRIDGE PLANS FOR CONNECTION DETAILS.
 6. BACKUP PLATE IS NOT REQUIRED AT POSTS ON TYPE 3G AND 3H.
 7. THE "X" SYMBOL IN THE ELEVATION DRAWINGS SHOWS THE LOCATIONS WHERE A RECTANGULAR WASHER IS REQUIRED UNDER THE POST BOLT HEAD.
 8. CURB TYPE E SECTION M MAY BE ASPHALT OR CONCRETE. THE COST OF CURB IS INCLUDED IN THE WORK, UNLESS A SEPARATE PAY ITEM IS INCLUDED IN THE BID SCHEDULES.
 9. POSTS (THRU) ARE 7 FT LONG. ALL OTHER POSTS SHALL BE STANDARD 8 FT IN LENGTH UNLESS OTHERWISE SPECIFIED IN THE CONTRACT.
 10. NO CHD RAIL BLOCKS MANUFACTURED FROM SYNTHETIC MATERIAL WILL BE ACCEPTED AS ALTERNATIVES TO CHD NOTCHED BLOCKS FOR USE WITH STEEL POSTS PROVIDED THAT THE BLOCKS HAVE RECEIVED FHWA APPROVAL AND ARE CERTIFIED AS IDENTICAL TO THE SPECIMENS USED FOR TESTING AND APPROVAL. STEEL BLOCKS ARE NOT ALLOWED.



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Date:	Comments:
12/29/15	Final Design

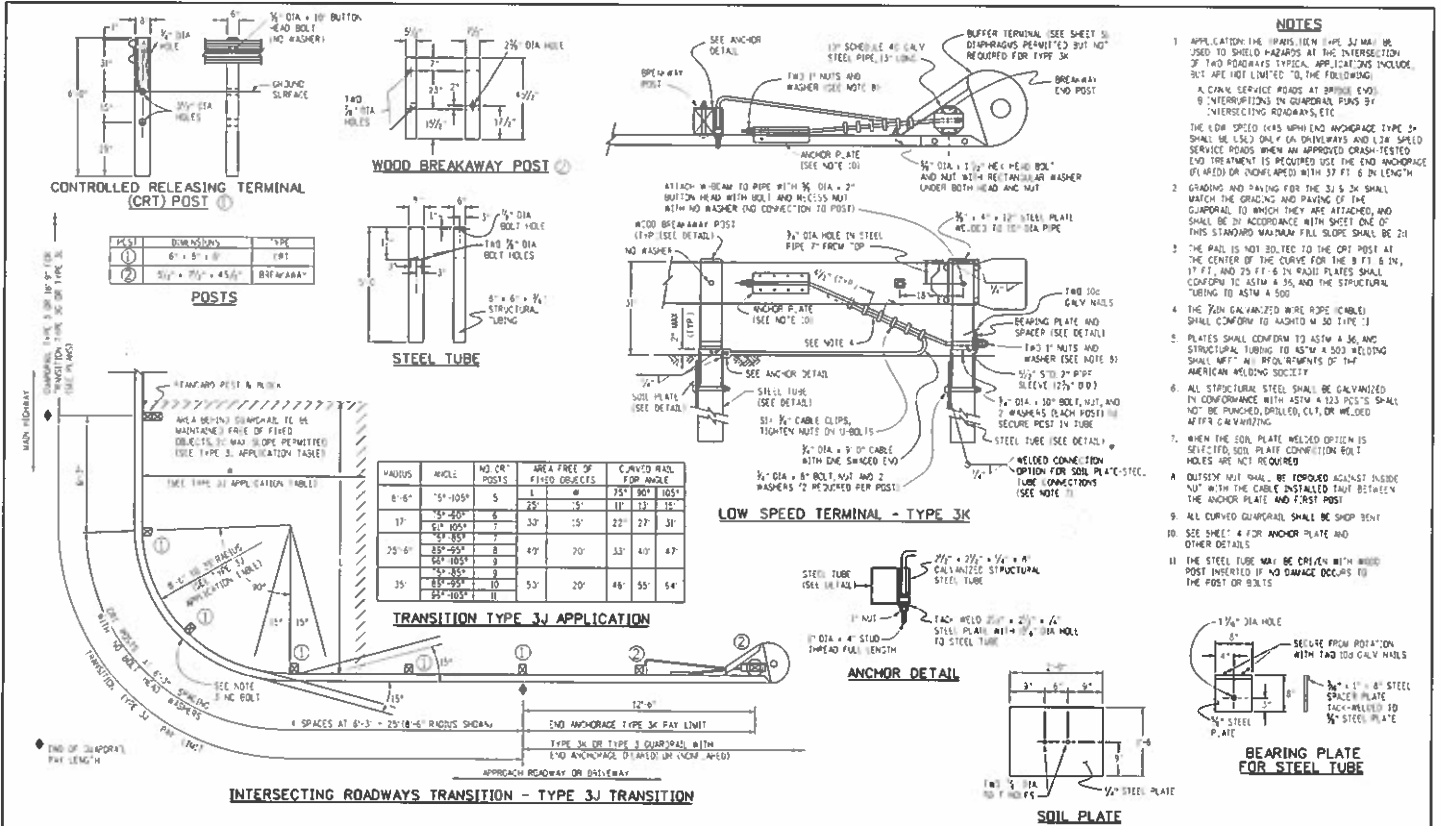
Colorado Department of Transportation
 4201 East Arkansas Avenue
 0001 HQ, 4th Floor
 Denver, CO 80222
 Phone: 303-757-8021 Fax: 303-757-9888

Division of Project Support DLM/LTA

MIDWEST
 GUARDRAIL SYSTEM (MGS)
 TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch July 4, 2012

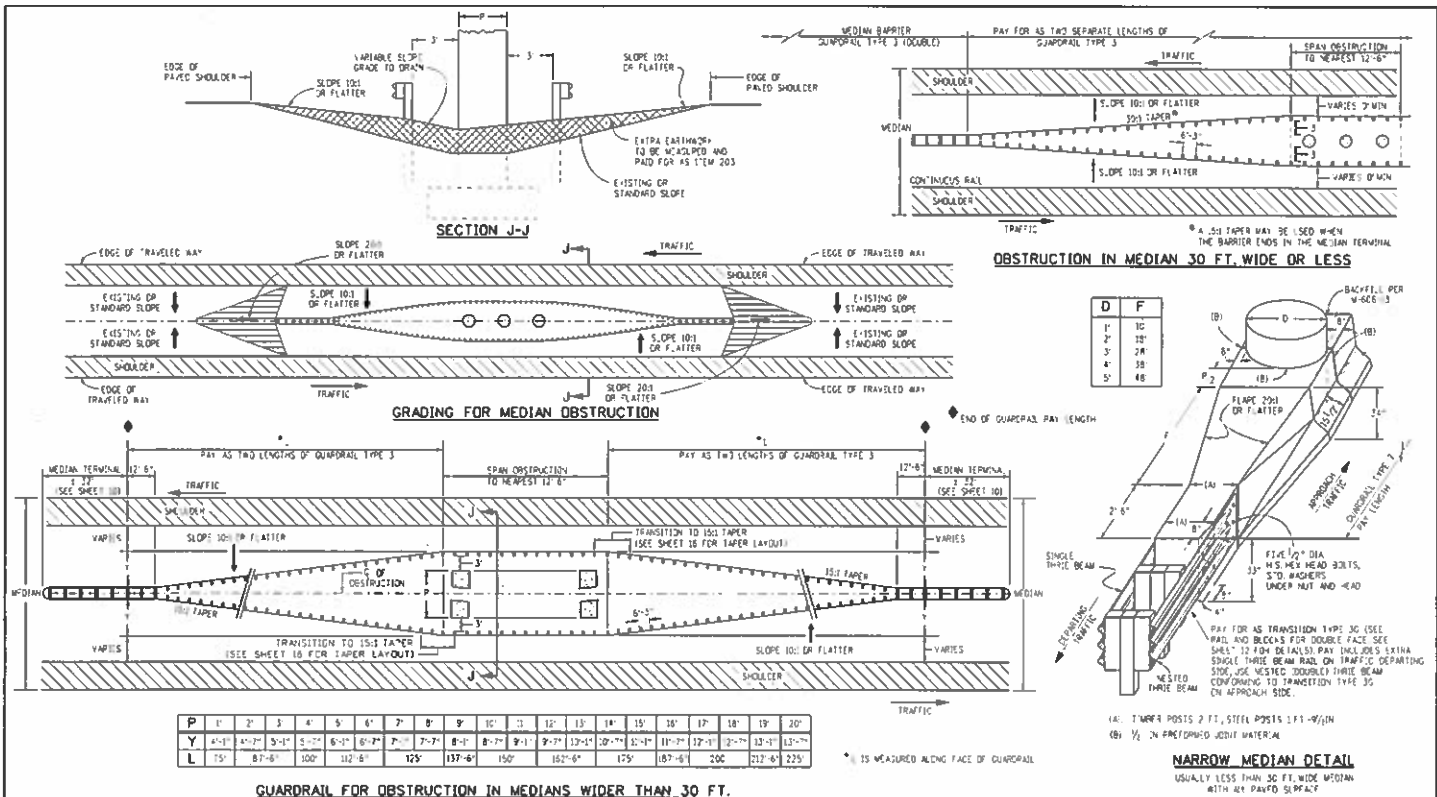
STANDARD PLAN NO.
M-606-1
Sheet No. 12 of 20



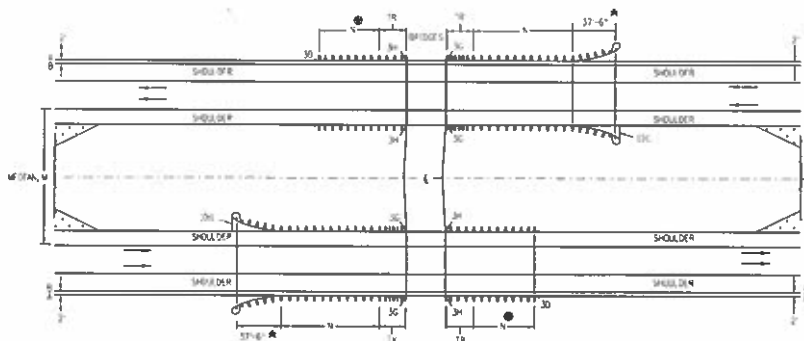
NOTES

- APPLICATION OF THE TRANSITION TYPE 3J MAY BE USED TO SHIELD HAZARDS AT THE INTERSECTION OF TWO ROADWAYS. TYPICAL APPLICATIONS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
 - A. CROWN SERVICE ROADS AT BRIDGE ENDS
 - B. INTERRUPTIONS IN GUARDRAIL PLANS BY INTERSECTING ROADWAYS, ETC.
- THE LOW SPEED (K45) WITH END ANCHORAGE TYPE 3K SHALL BE USED ONLY ON DRIVEWAYS AND LOW SPEED SERVICE ROADS WHEN AN APPROVED CRASH-TESTED END TREATMENT IS PROVIDED USE THE END ANCHORAGE (K45) OR (K45) WITH 33 FT. 6 IN. LENGTH.
- GRADING AND PAVING FOR THE 3J & 3K SHALL MATCH THE GRADING AND PAVING OF THE GUARDRAIL TO WHICH THEY ARE ATTACHED, AND SHALL BE IN ACCORDANCE WITH SHEET ONE OF THIS STANDARD MAINMAN FILL SLOPE SHALL BE 2:1.
- THE 20M GALVANIZED WIRE ROPE (CABLE) SHALL CONFORM TO ASTM A 36 AND STRUCTURAL TUBING TO ASTM A 503. WELDING SHALL MEET ALL REQUIREMENTS OF THE AMERICAN WELDING SOCIETY.
- ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN CONFORMANCE WITH ASTM A 123. POSTS SHALL NOT BE PUNCHED, BURNED, CUT, OR WELDED AFTER GALVANIZING.
- WHEN THE SOIL PLATE WELDED OPTION IS SELECTED, SOIL PLATE CONNECTION BOLT HOLES ARE NOT REQUIRED.
- OUTSIDE RAIL SHALL BE TYPED ACROSS INSIDE NOT WITH THE CABLE INSTALLED TAUT BETWEEN THE ANCHOR PLATE AND FIRST POST.
- ALL CURVED GUARDRAIL SHALL BE SHOP BENT. SEE SHEET 4 FOR ANCHOR PLATE AND OTHER DETAILS.
- THE STEEL TUBE MAY BE CRUSHED WITH WOOD POST INSERTED IF NO DAMAGE OCCURS TO THE POST OR BOLTS.

Computer File Information Creation Date: 02/19/15 Initials: DLM Last Modification Date: 12/29/15 Initials: LTA File Path: \\sdc\cadd\qa\business\caslon\adocrt Drawing File Name: 60601013270.cad LTO Ver: Macrolisten V2 Scale: Not to Scale Units: Eng/ft		Sheet Revisions Date: 12/29/15 Comments: Picked quarter height to 3.		Colorado Department of Transportation 221 East Arkansas Avenue DOT HQ, 4th Floor Denver, CO 80222 Phone: 303 757 3021 FAX: 303 757 9869 Division of Project Support DLM/LTA		MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES Issued By: Project Development Branch July 4, 2012		STANDARD PLAN NO. M-606-1 Sheet No. 13 of 20	
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Computer File Information		Sheet Revisions		Colorado Department of Transportation 4201 East Northgate Avenue CODD HQ, 4th Floor Denver, CO 80222 Phone: 303.757.3021 Fax: 303.757.9868	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES	STANDARD PLAN NO. M-606-1
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Full Path: www.codot.gov/business/ceas/ceasupport						
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MULTILANE DIVIDED HIGHWAYS FOR STEEP EMBANKMENTS IN MEDIAN

NOTES

1. MEDIAN BARRIERS TANGENT TO THE ROADWAY MAY BE USED WHERE THE SHOULDER SLOPES IN THE MEDIAN ARE STEEP.
2. BARRIER LENGTHS SHALL BE INCREASED TO ACCOMMODATE STEEP EMBANKMENTS OR OTHER HAZARDS WITHIN CLOSE PROXIMITY OF BRIDGE.

⊗ - DO NOT CONSTRUCT THE TR AND GUARDRAIL ON THE TRAILING BRIDGE ENDS IF SITE LIMITATIONS DO NOT WARRANT THE USE OF GUARDRAIL.

4 - SHOWN IN PLANS LENGTH TO SHIELD ALL HAZARDS IS BASED ON GUARDRAIL LENGTH OF NEED COMPUTATION. SEE AASHTO ROADWAY DESIGN GUIDE. THE MINIMUM SHALL BE 17 FT. + 5' + N, WHERE SITE CONDITIONS ALLOW. THE TOTAL LENGTH OF NEED SHALL INCLUDE THE LENGTH OF TRANSITION, THE LENGTH OF RAIL END, AND ANY REDUCTIVE LENGTH IN THE RAIL END TREATMENT.

TR = 15 FT. + 9 IN FOR 30 AND 34

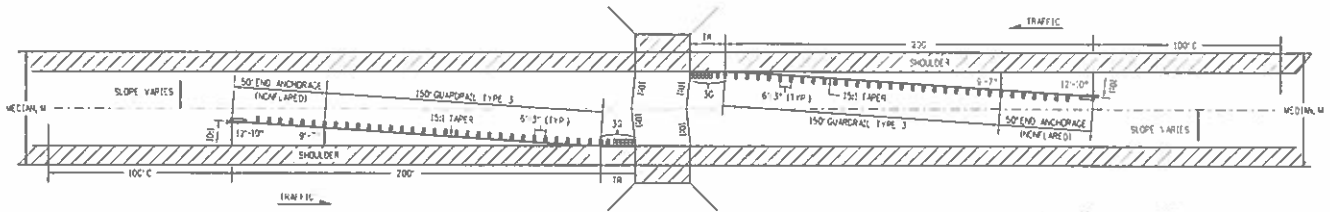
A = EDGE OF 5 FT OR 10 FT SHOULDER

B = EDGE OF 6 FT OR LESS SHOULDER

★ END ANCHORAGE CAN BE FLARED OR NON-FLARED.

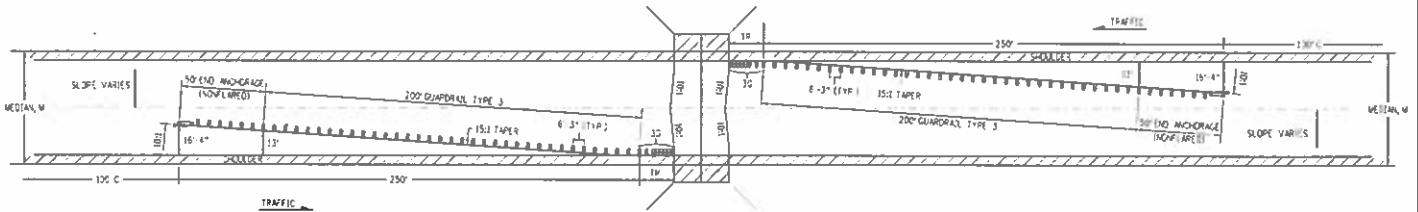
AD SUBMITTAL - JANUARY 2, 2018

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Code	Comments																		

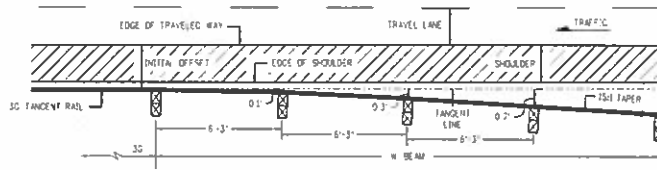


MEDIANS 60 FT. AND OVER WITH 10 FT. OR WIDER SHOULDERS.

TR = 18 FT. 9 IN FOR TRANSITION TYPE 3G
 C = CHANGE 100 FT TRANSITION TO NORMAL SLOPE
 M = MEDIUM OF MEDIAN



MEDIANS 60 FT. AND OVER WITH 4 TO 8 FT. SHOULDERS.



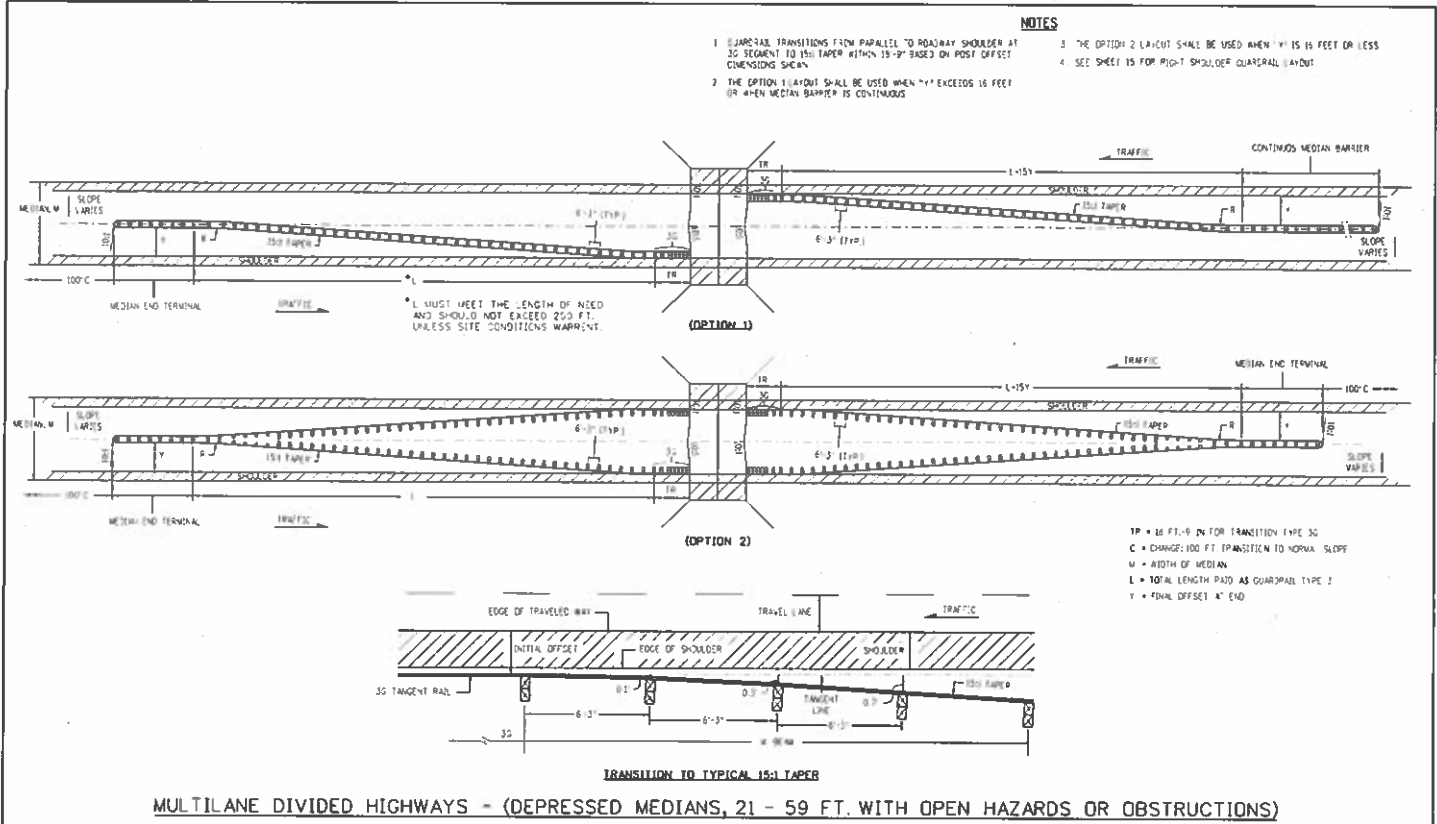
TRANSITION TO TYPICAL 15:1 TAPER

NOTES

- 1 GUARDRAIL TRANSITIONS FROM PARALLEL TO ROADWAY SHOULDER 4" 3G SEGMENT TO 15:1 TAPER WITHIN 18'-9" BASED ON POST OFFSET DIMENSIONS SHOWN
- 2 SEE SHEET 15 FOR THE RIGHT SHOULDER GUARDRAIL LAYOUT

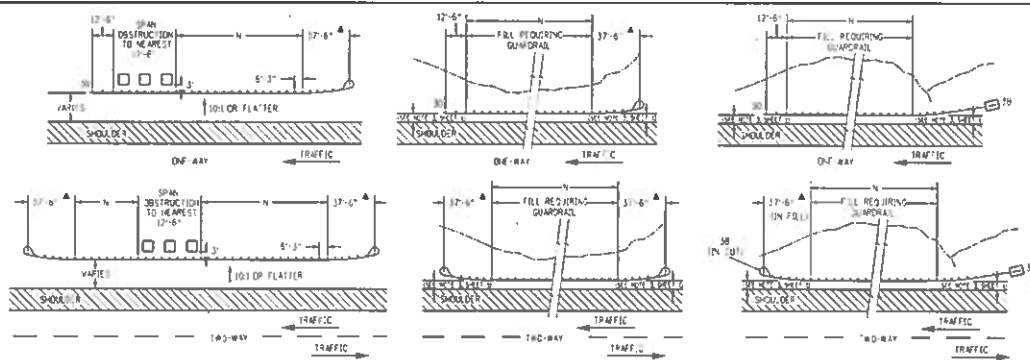
MULTILANE DIVIDED HIGHWAYS - (DEPRESSED MEDIANS, 60 FT. AND OVER WITH OPEN HAZARDS OR OBSTRUCTIONS)

Computer File Information		Sheet Revisions		<p>Colorado Department of Transportation 4201 East Arkansas Avenue CDDT HQ, 4th Floor Denver, CO 80222 Phone: 303.757.8021 FAX: 303.757.9869</p> <p>Division of Project Support DLM/LTA</p>	<p>MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES</p> <p>Issued By: Project Development Branch July 4, 2012</p>	STANDARD PLAN NO.	
Creation Date: 02/19/15	Author: DLM	Date:	Comments:			M-606-1	
Last Modification Date: 12/29/15	Revisors: LTA						
File Path: www.codot.gov/business/casigns/casort							
Drawing File Name: 03601016320.dgn						Sheet No. 16 of 20	
CAD Ver: MicroStation V8	Scale: Not to Scale	Units: English					



MULTILANE DIVIDED HIGHWAYS - (DEPRESSED MEDIANS, 21 - 59 FT. WITH OPEN HAZARDS OR OBSTRUCTIONS)

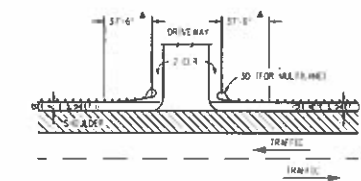
Computer File Information	Sheet Revisions	Colorado Department of Transportation	MIDWEST	STANDARD PLAN NO.
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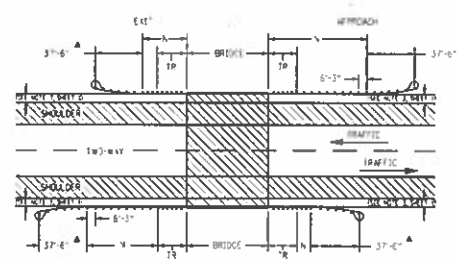
- NOTES**
1. THE TYPE 3G OR 3H TRANSITIONS (SEE SHEET 12) SHALL BE USED TO CONNECT A TYPE 3 W-BEAM TO TYPE 7 CONCRETE BARRIER (P) TO A TYPE 2, 6, 3P OR BRIDGE RAIL FOR A TRANSITION FROM A ROADWAY TYPE 3 W-BEAM TO A BRIDGE RAIL, TYPE 3 WITH BACKING TUBES, THE TRANSITION TYPE 2L SHOWN ON SHEET 20 SHALL BE USED.
 2. 17'-6" WILL BE 18 FT - 9 IN FOR THE TRANSITIONS TYPE 3G AND 3H AND 25 FT FOR THE TRANSITION TYPE 3L.
 3. THE GUARDRAIL HEIGHT DIMENSION "H" IS THE LENGTH AS DETERMINED BY THE LENGTH OF NEEDS COMPUTATION AND IS SHOWN ON THE PLANS. THE MINIMUM IS 12 FT - 6 IN WHERE SITE CONDITIONS ALLOW. THE OVERALL REQUIRED LENGTH OF NEEDS CAN INCLUDE THE LENGTH OF TRANSITION, THE LENGTH OF PAD (N) AND ANY REDIRECTIVE LENGTH IN THE PAD. END TREATMENT A TRANSVERSE SLOPE SHALL BE PROVIDED BEYOND THE TERMINAL TO DIVERSION "M" PRIOR TO THE OBSTRUCTION UNLESS OTHERWISE APPROVED BY THE FIELD OFF.

▲ END ANCHORAGE CAN BE FLARED OR NON-FLARED

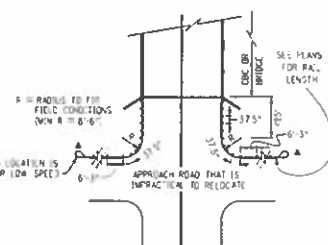
GUARDRAIL FOR ROADSIDE OBSTRUCTIONS **GUARDRAIL FOR ROADSIDE FILL CONSTRUCTION** **GUARDRAIL FOR ROADSIDE CUT-TO-FILL CONDITION**



LAYOUT FOR DRIVEWAY APPROACH



2-WAY NORMAL BRIDGE APPLICATION



INTERRUPTED STRUCTURE APPROACH

BRIDGE RAIL TYPE 3 WITH BLOCKED OUT POSTS SPACED AT 3'-0" FROM STRUCTURE NORMAL CURVE. (USE TYPE 3L ON SHEET 12 WHEN PRACTICAL)

2-WAY NARROW APPLICATION

Computer File Information	
Creation Date: 08/19/15	In-Holder: DLW
Last Modification Date: 12/29/15	In-Holder: LTA
File Path: \\www.10881.com\business\designs\project	
Drawing File Name: 80603815020.cgn	
CAD Ver: MicroStation V8	Source: Not to Scale Units: English

Sheet Revisions	
Date:	Comments:

Colorado Department of Transportation
 4200 East 93rd Avenue
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Division of Project Support **DLM/LTA**

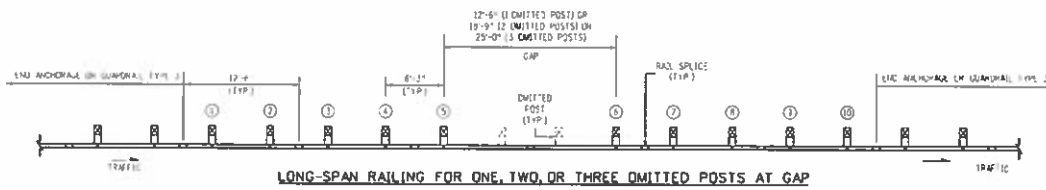
MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch July 4, 2012

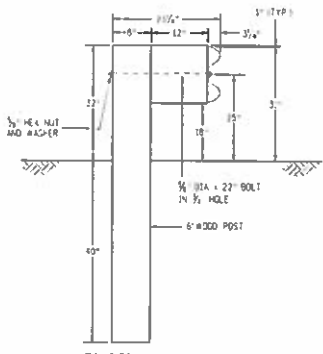
STANDARD PLAN NO.
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NOTES

- 1. POSTS ①, ②, ③, and ⑩ MAY BE TIMBER OR STEEL
- 2. THE NUMBER OF OMITTED POSTS IS DEPENDENT ON THE LENGTH OF THE GAP

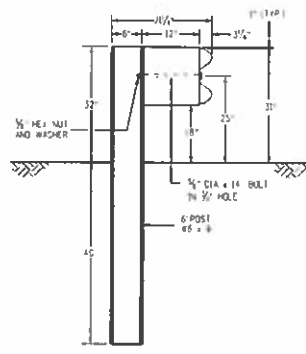


LONG-SPAN RAILING FOR ONE, TWO, OR THREE OMITTED POSTS AT GAP



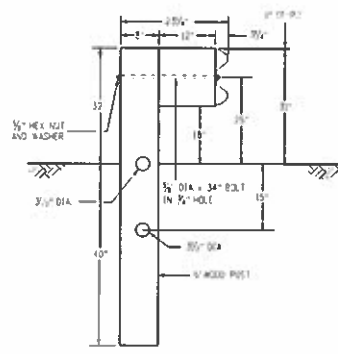
TIMBER POST

POSTS ①, ②, ③, and ⑩
(SEE NOTE 1)



STEEL POST

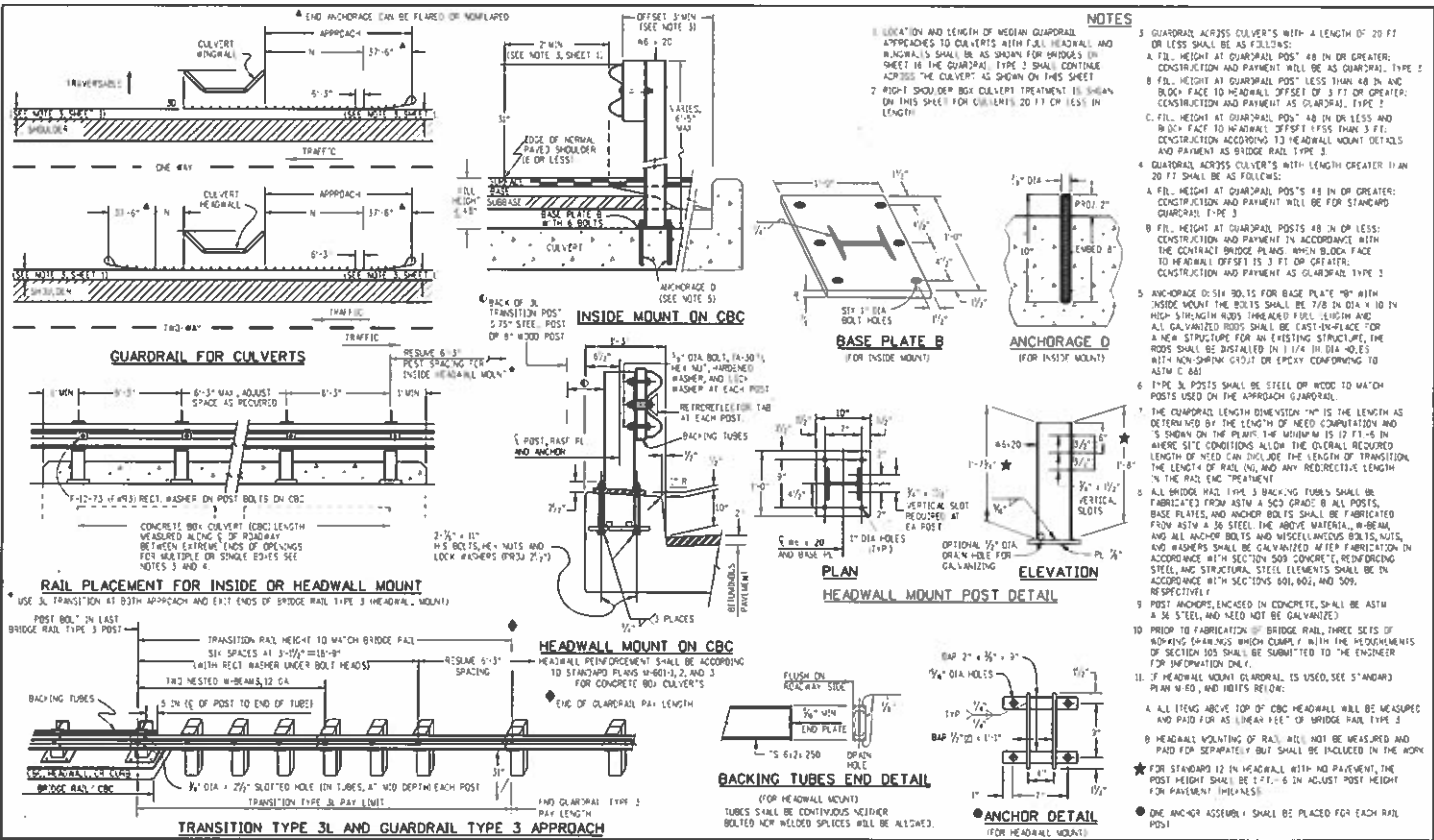
POSTS ④, ⑤, and ⑥-⑨
(SEE NOTE 1)



BREAKWAY TIMBER POST

POSTS ① - ③

Computer File Information Creation Date: 08/19/15 In: Pals: DLM Last Modification Date: 12/29/15 In: Ops: LTA Full Path: \\s-sd01.qov/business/casopsupport Drawing File Name: 60601019220.dgn CAD Ver: MicroStation V8 Scale: Not to Scale Units: English		Sheet Revisions <table border="1"> <tr> <th>Date</th> <th>Comments</th> </tr> <tr> <td>12/23/15</td> <td>Raised guardrail height to 37"</td> </tr> <tr> <td>12/23/15</td> <td>Changed hollow steel posts. Revised General Notes. Changed 1, 2, and 3 omitted posts. Deleted 4, 5, and 6.</td> </tr> </table>		Date	Comments	12/23/15	Raised guardrail height to 37"	12/23/15	Changed hollow steel posts. Revised General Notes. Changed 1, 2, and 3 omitted posts. Deleted 4, 5, and 6.	Colorado Department of Transportation 1231 East Arapahoe Avenue 1001 HQ, 4th Floor Denver, CO 80222 Phone: 303 757-9021 Fax: 303 757-9889 Division of Project Support DLM/LTA		MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES Issued By: Project Development Branch July 4, 2012		STANDARD PLAN NO. M-606-1 Sheet No. 19 of 20	
Date	Comments														
12/23/15	Raised guardrail height to 37"														
12/23/15	Changed hollow steel posts. Revised General Notes. Changed 1, 2, and 3 omitted posts. Deleted 4, 5, and 6.														



- NOTES**
1. LOCATION AND LENGTH OF MEDIAN GUARDRAIL APPROACHES TO CULVERTS WITH FULL HEADWALL AND RAILINGS SHALL BE AS SHOWN FOR BRIDGES ON SHEET 16. THE GUARDRAIL TYPE 3 SHALL CONTINUE ACROSS THE CULVERT AS SHOWN ON THIS SHEET.
 2. ROAD-TYPE SHOULDER BOX CULVERTS TREATMENT IS SHOWN ON THIS SHEET FOR CULVERTS 20 FT OR LESS IN LENGTH.
 3. GUARDRAIL ACROSS CULVERTS WITH A LENGTH OF 20 FT OR LESS SHALL BE AS FOLLOWS:
 - A. FILL HEIGHT AT GUARDRAIL POSTS 48 IN OR GREATER: CONSTRUCTION AND PAYMENT WILL BE AS GUARDRAIL TYPE 3.
 - B. FILL HEIGHT AT GUARDRAIL POSTS LESS THAN 48 IN AND BLOCK FACE TO HEADWALL OFFSET OF 3 FT OR GREATER: CONSTRUCTION AND PAYMENT AS GUARDRAIL TYPE 3.
 - C. FILL HEIGHT AT GUARDRAIL POSTS 48 IN OR LESS AND BLOCK FACE TO HEADWALL OFFSET LESS THAN 3 FT: CONSTRUCTION ACCORDING TO HEADWALL MOUNT DETAILS AND PAYMENT AS BRIDGE RAIL TYPE 3.
 4. GUARDRAIL ACROSS CULVERTS WITH LENGTH GREATER THAN 20 FT SHALL BE AS FOLLOWS:
 - A. FILL HEIGHT AT GUARDRAIL POSTS 48 IN OR GREATER: CONSTRUCTION AND PAYMENT WILL BE FOR STANDARD GUARDRAIL TYPE 3.
 - B. FILL HEIGHT AT GUARDRAIL POSTS 48 IN OR LESS: CONSTRUCTION AND PAYMENT IN ACCORDANCE WITH THE CONTRACT BRIDGE PLANS WHICH BLOCK FACE TO HEADWALL OFFSET IS 3 FT OR GREATER: CONSTRUCTION AND PAYMENT AS GUARDRAIL TYPE 3.
 5. ANCHORAGE D: SIX BOLTS FOR BASE PLATE "B" WITH INSIDE MOUNT. THE BOLTS SHALL BE 7/8 IN DIA X 10 IN HIGH STRENGTH RODS. UNBLENDED FUEL LENGTH AND ALL GALVANIZED RODS SHALL BE CAST-IN-PLACE FOR A NEW STRUCTURE FOR AN EXISTING STRUCTURE, THE RODS SHALL BE INSTALLED IN 1/4 IN DIA HOLES WITH NON-SHARP EDGES OR SPECK CONFORMING TO ASTM A66.
 6. TYPE 3L POSTS SHALL BE STEEL OR WOOD TO MATCH POSTS USED ON THE APPROACH GUARDRAIL.
 7. THE GUARDRAIL LENGTH DIMENSION "N" IS THE LENGTH AS DETERMINED BY THE LENGTH OF NEED COMPUTATION AND IS SHOWN ON THE PLANS. THE MINIMUM IS 10 FT. IN ADVERSE SITE CONDITIONS ALLOW THE CLEARANCE REQUIRED LENGTH OF NEED CAN INCLUDE THE LENGTH OF TRANSITION. THE LENGTH OF RAIL AND ANY REDUCTIVE LENGTH IN THE RAIL END TREATMENT.
 8. ALL BRIDGE RAIL TYPE 3 BACKING TUBES SHALL BE FABRICATED FROM ASTM A 563 GRADE B RAIL POSTS. BASE PLATES, AND ANCHOR BOLTS SHALL BE FABRICATED FROM ASTM A 36 STEEL. THE ABOVE MATERIAL, W-BEAM, AND ALL ANCHOR BOLTS AND MISCELLANEOUS BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 509 CONCRETE, REINFORCING STEEL, AND STRUCTURAL STEEL ELEMENTS SHALL BE IN ACCORDANCE WITH SECTIONS 501, 502, AND 509, RESPECTIVELY.
 9. POST ANCHORS ENCASED IN CONCRETE SHALL BE ASTM A 36 STEEL AND NEED NOT BE GALVANIZED.
 10. PRIOR TO FABRICATION OF BRIDGE RAIL, THREE SETS OF BOLDING DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 505 SHALL BE SUBMITTED TO THE ENGINEER FOR INFORMATION ONLY.
 11. IF HEADWALL MOUNT GUARDRAIL IS USED, SEE STANDARD PLAN M-60, AND IBI-15 BELOW:
 - A. ALL ITEMS ABOVE TOP OF CRC HEADWALL WILL BE MEASURED AND PAID FOR AS LINEAR FEET OF BRIDGE RAIL TYPE 3.
 - B. HEADWALL MOUNTING OF RAIL WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
 12. FOR STANDARD 12 IN HEADWALL WITH NO PAVEMENT, THE POST HEIGHT SHALL BE 1 FT. 6 IN. ADJUST POST HEIGHT FOR PAVEMENT (IF APPLICABLE).
 13. ONE ANCHOR ASSEMBLY SHALL BE PLACED FOR EACH RAIL POST.

Computer File Information Creation Date: 08/19/15 In-Notes: DLM Last Modification Date: 12/29/15 In-Notes: LFA Full Path: \\caddal.gov\business\caddal\project Drawing File Name: 6060102020.dgn CAD Ver: MicroStation V8 Scale: Not to Scale Units: English		Sheet Revisions <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>12/29/15</td> <td>Passed quarter straight to 31"</td> </tr> </tbody> </table>		Date	Comments	12/29/15	Passed quarter straight to 31"	Colorado Department of Transportation 4201 East Northcreek Avenue 0001 HQ, 4th Floor Denver, CO 80222 Phone: 303 737 9021 Fax: 303 757 9869 Division of Project Support DLM/LTA		MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES Issued By: Project Development Branch July 4, 2012		STANDARD PLAN NO. M-606-1 Sheet No. 20 of 20	
Date	Comments												
12/29/15	Passed quarter straight to 31"												

WARNING SIGN PLACEMENT

CLASS III SIGN PLACEMENT

REGULATORY, RECREATIONAL AND CULTURAL INFORMATION SIGN PLACEMENT

ROUTE MARKER ASSEMBLY PLACEMENT

MILE MARKER PLACEMENT

CLASS III SIGNS, PANEL GROUND CLEARANCE

SEE COLORADO STANDARD PLAN 5 614 21 FOR ADDITIONAL INFORMATION

GENERAL NOTES

- THE ENGINEER WILL ESTABLISH GRADES AND LOCATIONS FOR ALL SIGN POSTS IN ACCORDANCE WITH DETAILS SHOWN ON THE PLANS.
- SPECIAL CARE SHALL BE TAKEN IN SIGN LOCATION TO ENSURE AN UNOBSTRUCTED VIEW OF EACH SIGN.
- MINIMUM POST EMBEDMENT SHALL BE 3 FT FOR 8'-2 POSTS AND 4 IN X 4 IN TOWER POSTS, AND 5 FT FOR 8 IN X 8 IN TOWER POSTS FOR FOOTING DEPTH SEE THE APPLICABLE STANDARDS.
- IF A SHOULDER IS WIDER THAN 6 FEET, THE MINIMUM LATERAL OFFSET DISTANCE SHOULD BE 5 FEET FROM EDGE OF SHOULDER, ELSE 4 FT. FOR WIDER SHOULDER SEE FIGURE 2A-219 OF THE 2009 MUTCD.
- NORMAL LATERAL PLACEMENT IS MEASURED FROM THE EDGE OF TRAVEL LANE.
- IN URBAN AREAS, A LATERAL CLEARANCE OF 1 FT FROM THE CURB FACE IS PERMISSIBLE WHERE 3'-6" MAX WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.
- TYPICAL POST MOUNTING HEIGHTS FROM GROUND TO BOTTOM OF SIGN PANEL ARE 7, 8 & 9 FEET. OTHER HEIGHTS MAY BE REQUIRED WHEN SIGNS ARE MOUNTED ON STEEPER FALL OR CUT SLOPES.
- EDUCATIONAL PLASERS FOR SYMBOL SIGNS WILL NOT BE CONSIDERED WHEN DETERMINING VERTICAL PLACEMENT FOR DIMENSION OF EDUCATIONAL PLASER. SEE PAGE 3 OF THE 2012 CDOT OUTSIDE SIGNING POLICIES & PROCEDURES AND SECTION 210.04 OF THE 2009 MUTCD.
- WHEN LATERAL PLACEMENT IS 30 FT OR MORE FOR SIGNS WITHOUT A SUPPLEMENTAL PLACER, VERTICAL PLACEMENT B MAY BE REDUCED TO 5 FT WHEN LATERAL PLACEMENT IS 30 FT OR MORE. FOR SIGNS WITH A SUPPLEMENTAL PLACER, VERTICAL PLACEMENT C DOES NOT APPLY - USE ONLY VERTICAL PLACEMENT B.
- NORMAL ANCHOR PLACEMENT IS 0 DEG SIGNS CLOSER THAN 10 FT SHOULD BE TYPED SLIGHTLY AWAY TO MINIMIZE SPEED LIMIT PERFECTION SIGNS PLACED 30 FT OR MORE SHOULD GENERALLY BE TURNED TOWARD THE ROAD.
- THE EXIT PANEL IS MOUNTED ON THE RIGHT HAND SIDE FOR RIGHT HAND EXITS AND THE LEFT SIDE FOR LEFT HAND EXITS.
- POST SHALL BE INSTALLED PLUMB, VERTICAL DEVIATION SHALL NOT EXCEED 1/2 IN IN 30 FT.
- ON ALL TWO-LANE UNDIVIDED HIGHWAYS, THE MILE MARKER AND POST SHALL BE INSTALLED ON THE RIGHT SHOULDER IN THE ASCENDING DIRECTION, WITH THE MILE MARKER PANELS DISPLAYED ON THE FRONT AND BACK SIDE OF THE POST.
- ON ALL UNDIVIDED MULTI-LANE AND DIVIDED HIGHWAYS AND INTERSTATES, THE MILE MARKER AND POST SHALL BE INSTALLED ON THE OUTSIDE SHOULDER FOR SIDEWAYS IF APPLICABLE IN BOTH DIRECTIONS OF TRAVEL.
- VERTICAL SPACING BETWEEN SIGN PANELS SHALL BE 1 TO 1 1/2 IN, TYPICAL.

LATERAL PLACEMENT TABLE

KEY	ALL CLASSES OF STREETS AND EXPRESSWAYS		VERTICAL PLACEMENT				
	MINIMUM	NORMAL	KEY	MIN	MAX	MIN	MAX
A	2'-0"	15'-0" PLUS CURB	D	7'-0" OR NOTE NO. 9	12'-0"	7'-0"	8'-0"
B	7'-0"	30' OR MORE INCLUDING CURB	E	7'-0"	8'-0"	7'-0"	8'-0"
C	7'-0"	8'-6" PLUS CURB OF 6'-6" WIDE SHOULDER IF NONE, 15'-0" FROM EDGE OF TRAVEL LANE	F	8'-0" OR NOTE NO. 9	12'-0"	8'-0"	9'-0"
			G	8'-0"	7'-0"	8'-0"	7'-0"
			H	5'-0"	12'-0"	5'-0"	7'-0"

Computer File Information

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 CAD Ver: MicroStation V8 Scale: Not to Scale Units: English

Sheet Revisions

Date	Comments
07/24/12	ADDED NOTES 16 AND 15 TO SHEET 1
03/07/14	SHEET 1 - UPDATED DIMENSIONS TO MATCH VEG
12/12/14	SHEET 1 - ADDED SIGN PANELS TO PLAN

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Safety & Traffic Engineering Branch KCM/KEN

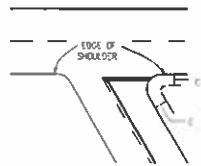
GROUND SIGN PLACEMENT

Issued By: Safety & Traffic Engineering Branch July 4, 2012

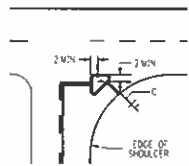
STANDARD PLAN NO.

S-614-1

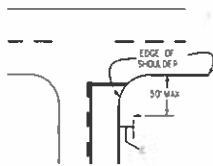
Sheet No. 1 of 2



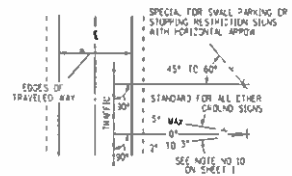
ACUTE ANGLE INTERSECTION



CHANNELLED INTERSECTION

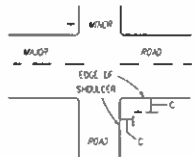


WIDE THROAT INTERSECTION

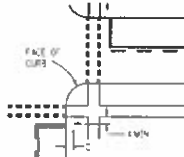


NORMAL ANGULAR PLACEMENT IS 0°. SIGNS CLOSER THAN 33 FT SHOULD BE TURNED SUFFICIENTLY AWAY TO MINIMIZE SPECULAR REFLECTION. SIGNS PLACED 33 OR MORE SHOULD GENERALLY BE TURNED TOWARD THE ROAD.

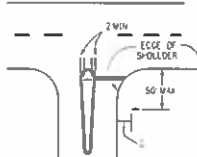
ANGULAR PLACEMENT



MINOR CROSSROAD



URBAN INTERSECTION



DIVISION ISLAND

TYPICAL LOCATIONS-STOP SIGNS AND YIELD SIGNS

PLACEMENT TABLES

LATERAL PLACEMENT		VERTICAL PLACEMENT (MINIMUM) (STANDARD)				
ALL CLASSES OF STREETS AND HIGHWAYS		KEY	FREeways AND EXPRESSWAYS		CONVENTIONAL STREETS AND HIGHWAYS	
MINIMUM	NORMAL		URBAN	RURAL		
2'-0" & NOTE NO 4	15'-0" PLUS CURB OR 5'-0" FROM 10' MIN	D	7'-0" OR NOTE NO 10	7'-0"	5'-0"	
2'-0" & NOTE NO 4	5'-0" OR MORE INCLUDES CURB OR SHOULDER	E	6'-0"	7'-0"	5'-0"	
2'-0" & NOTE NO 4	1'-0" OR CURB OR SHOULDER 10'-0" OR MORE 15'-0"	F	2'-0" OR NOTE NO 10	7'-0"	5'-0"	
2'-0" & NOTE NO 4	1'-0" OR CURB OR SHOULDER 10'-0" OR MORE 15'-0"	G	5'-0"	6'-0"	4'-0"	
2'-0" & NOTE NO 4	1'-0" OR CURB OR SHOULDER 10'-0" OR MORE 15'-0"	H	4'-0"	6'-0"	4'-0"	

* SEE NOTE NO 6 ON SHEET 1

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

Sheet Revisions	
Date	Comments

Colorado Department of Transportation
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 Denver, Colorado 80222
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Safety & Traffic Engineering Branch KCM/XEN

GROUND SIGN PLACEMENT

Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.
S-614-1
Sheet No. 2 of 2

-SPAN WIRE GENERAL NOTES-

GENERAL NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY THAT THE HEIGHT OF THE SIGNALS ABOVE THE ROADWAY SURFACE MEETS THE CLEARANCE REQUIREMENTS AS SHOWN ON SHEET 2 OF 13 PRIOR TO DRILLING HOLES FOR TETHER AND SPAN WIRE EYEBOULDS.
2. ORIENT SPAN WIRE HOLES ON A STRAIGHT LINE BETWEEN POLES WITHOUT KINKS.
3. POLES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE SECTION 559.24 OF THE STANDARD SPECIFICATIONS AS CALLED FOR ON THE ROADWAY PLANS.
4. CAISSONS SHALL BE PLACED AGAINST UNDISTURBED EARTH. HOLE DRILLING HOLES SHALL BE BACK-FILLED WITH FLOW-FILL AND RE-CURED AFTER A THREE DAY CURING PERIOD WITHOUT THE USE OF A CASING.
5. CAISSON CONCRETE SHALL REACH 80% OF THE REQUIRED STRENGTH PRIOR TO INSTALLING SPAN WIRE AND TETHER CABLES.
6. WELDING OF STEEL SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AISC D11. ALL AREAS TO BE WELDED SHALL BE GRIND TO BRIGHT METAL. ALL WELDING AND REQUIRED TESTING SHALL BE COMPLETE BEFORE ANY MATERIAL IS GALVANIZED. ALL CIRCUMFERENTIAL WELDS SHALL BE NON-DESTRUCTIVELY TESTED USING THE ENHANCED MAGNETIC PARTICLE METHOD IN ACCORDANCE WITH SUBSECTION 509.11 (02) OF THE STANDARD SPECIFICATIONS. THE ACCEPTANCE CRITERIA IS STATED IN TABLE 61 OF ANSI/AISC D11. ALL LONGITUDINAL WELDS WITHIN 8 INCHES OF FULL PENETRATION CIRCUMFERENTIAL JOINT WELDS AND FULL PENETRATION GROOVE WELDS SHALL BE INSPECTED AS SPECIFIED ABOVE. MAXIMUM WELD UNDERCUT SHALL BE 0.02 INCHES.
7. ALL ELECTRICAL CONNECTIONS TO THE SIGNALS SHALL BE GROUNDED IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES.
8. WORKING DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW IN ACCORDANCE WITH SUBSECTION 105.02 OF THE STANDARD SPECIFICATIONS.
9. DEFINITIONS:
 ID = INSIDE DIAMETER
 OD = OUTSIDE DIAMETER
 NPS = NOMINAL PIPE SIZE

DESIGN DATA

SPAN WIRE LOADING IS BASED ON THE SIGN AND SIGNAL LOCATIONS SHOWN ON SHEET 2. THE DESIGNER HAS ASSUMED THAT SIGNALS ARE INSTALLED WITHIN THE ROADWAY PAVEMENT WITH THE FOLLOWING SOIL PARAMETERS:
 SOIL DENSITY = 110 LB/CUFT
 SOIL COHESION = 150 LB/20FT²
 SOIL PHREASE = FINELY TO MEDIUM DENSE, UNSATURATED, CLAYEY SILT
 SF = 2.0 FOR FLEXURAL RESISTANCE (OVERLAPPING)
 CONTACT THE ENGINEER IF ANY OF THE FOLLOWING SOIL CONDITIONS ARE ENCOUNTERED DURING DRILLING:
 (A) SPAN POLES WILL NOT BE INSTALLED WITHIN THE ROADWAY PAVEMENT
 (B) THE SOIL HAS A HIGH ORGANIC CONTENT OR CONSISTS OF SATURATED SILT AND CLAY
 (C) THE SOIL DOES NOT SUPPORT THE WEIGHT OF THE DRILLING RIG
 (D) THE FOUNDATION SOILS ARE NOT HOMOGENEOUS
 (E) FIRM BEDROCK IS ENCOUNTERED
 SPAN WIRE STRUCTURES HAVE BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY BRIDGES, ESTUARIES, AND TRAFFIC SIGNALS, FOURTH EDITION, 2001 WITH CURRENT INTERNS (2006).
 A DESIGN WIND VELOCITY OF 110 MPH WAS USED IN THE DESIGN.
 AN IMPORTANCE FACTOR OF 0.75 WAS USED IN THE DESIGN.

MATERIAL DATA

ELEMENT	STANDARDS (ASTM/AASHTO/CODI)	NOTES
SPAN AND TETHER RIMS	A475	SEE NOTE 1
STRAIN POLE	A57	SEE NOTE 2
EYEBOULDS	A507	SEE NOTE 3
BARBS, PLATES AND CURVED WASHERS	A709M-270	GRADE 50 OR 50
NUTS	A563 W-291	
HARDCOAT WASHERS	F436	
POLES, BARS AND PLATES	VARIABLE	SEE NOTE 4
POLES	VARIABLE	SEE NOTE 5
CAISSON CONCRETE	CONC	SEE NOTE 6

NOTES:

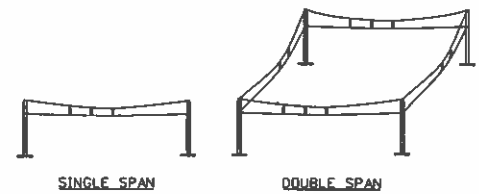
1. SPAN WIRE SHALL BE STEEL WIRE STRAND, ZINC COATED STEEL WIRE UTILITIES GRADE OR BETTER. TETHER WIRE SHALL BE 9/16" STEEL WIRE STRAND, ZINC COATED STEEL WIRE UTILITIES GRADE OR BETTER.
2. GRADE B.
3. SPAN WIRE EYEBOULDS SHALL BE 1" x TETHER WIRE EYEBOULDS SHALL BE 3/4"
4. POLES, BARS AND PLATES SHALL COMPLY WITH THE DIMENSIONAL TOLERANCES THAT ARE SPECIFIED IN ASTM A500, A501, 515 OR AS APPLICABLE.
5. CERTIFIED WELD TEST REPORTS INCLUDING CHARTS, NOTCH TENSILE TEST RESULTS, WELD INSPECTION REPORTS AND ENHANCED MAGNETIC PARTICLE TEST REPORTS SHALL BE SUBMITTED TO CDOT STAFF BRIDGE, 4700 E. ARAPAINGO AVE., DENVER, COLORADO 80222 AS SOON AS THEY BECOME AVAILABLE. CHART TEST RESULTS FOR ASTM A572, GRADES 42, 50 AND 65 STEEL SHALL HAVE A MINIMUM VALUE OF 15 FT-LBS AT 60°F AS PER THE FREQUENCY TEST REQUIREMENTS IN AASHTO T243 (ASTM A673).
6. CAISSONS SHALL BE CONSTRUCTED WITH ACR ENHANCED (S1 TO S7) CLASS BC CONCRETE IN ACCORDANCE WITH SECTION 503 OF THE STANDARD SPECIFICATIONS.

ROADWAY TRAFFIC SIGNAL PLANS SHALL SHOW:

1. STRAIN POLE SIZES AND LOCATIONS (INTERSECTION, E & Y COORDINATES)
2. LENGTH OF SPAN WIRE BETWEEN EACH SET OF STRAIN POLES
3. TRAFFIC SIGN AND SIGNAL SIZE AND LOCATIONS ALONG EACH SPAN WIRE
4. SPAN WIRE AND TETHER CABLE SIZE
5. HOLE LINE LOCATIONS UNDER SPAN WIRES
6. POLE HEIGHT AT EACH CORNER
7. CAISSON PILE LENGTH
8. SIGN/ARM LOCATIONS AND ORIENTATION ANGLES

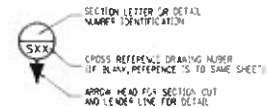
INDEX

1. SPAN WIRE GENERAL NOTES
2. SPAN WIRE DETAILS (1 OF 3)
3. SPAN WIRE DETAILS (2 OF 3)
4. SPAN WIRE DETAILS (3 OF 3)
5. FOUNDATION DETAILS
6. EXAMPLES
7. SINGLE SPAN SELECTION CHARTS
8. DOUBLE SPAN STRAIN POLE SELECTION CHARTS (1 OF 4)
9. DOUBLE SPAN STRAIN POLE SELECTION CHARTS (2 OF 4)
10. DOUBLE SPAN STRAIN POLE SELECTION CHARTS (3 OF 4)
11. DOUBLE SPAN STRAIN POLE SELECTION CHARTS (4 OF 4)
12. DOUBLE SPAN SPAN WIRE DIAMETER SELECTION CHARTS (1 OF 2)
13. DOUBLE SPAN SPAN WIRE DIAMETER SELECTION CHARTS (2 OF 2)



SINGLE SPAN

DOUBLE SPAN



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Last Modification Date: 07-24-14	Initials: mh
Full Path: www.dot.state.co.us/DesignSupport/	
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	Units: English

Sheet Revisions	
Date:	Comments
11-14-14	REMOVED PEDestal, POLE DETAILS ON SHEET 1 AND ADDED SHEET'S 2 TO 13

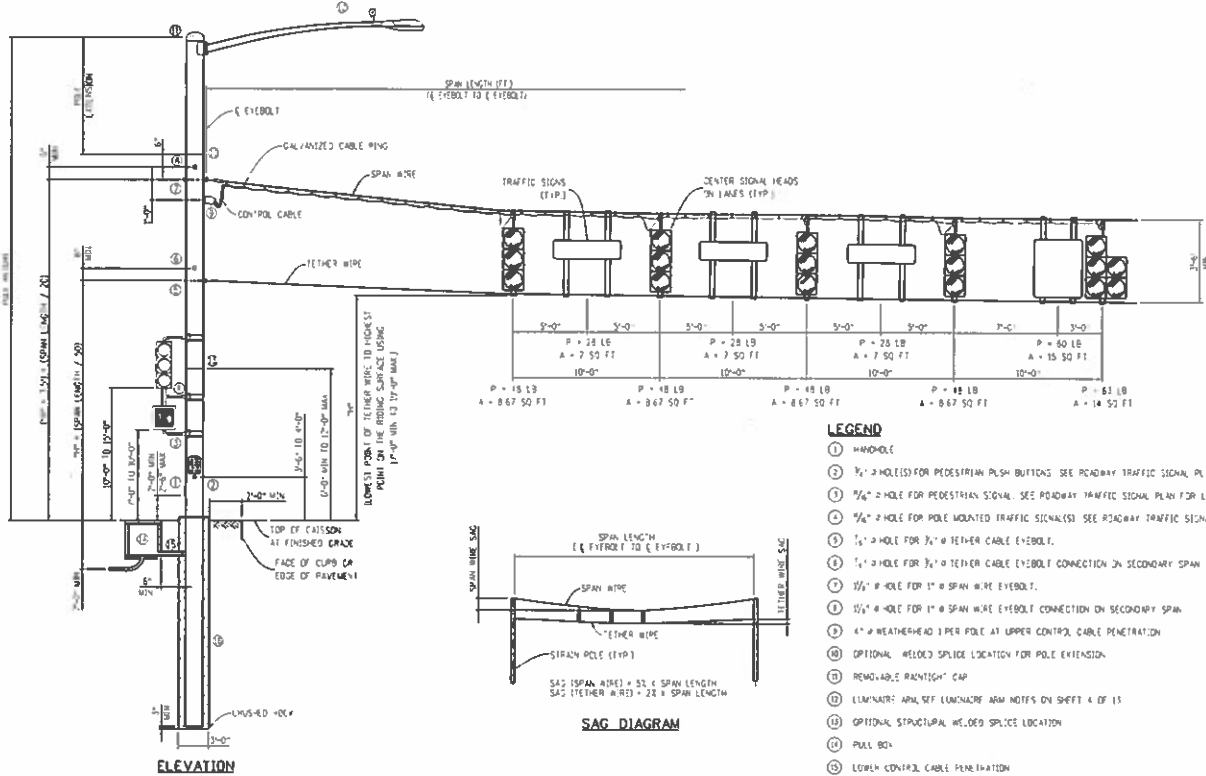
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 4201 East Arapahoe Avenue
 Denver, Colorado 80222
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 Fax: (303) 797-9219
Safety & Traffic Engineering Branch KCM/RLD

TEMPORARY SPAN WIRE SIGNALS
 Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.
 S-614-41
Sheet No. 1 of 13

AD SUBMITTAL - JANUARY 2, 2018

-SPAN WIRE DETAILS (1 OF 3)-



- LEGEND**
- ① HOLE
 - ② 3/4" Ø HOLE(S) FOR PEDESTRIAN PUSH BUTTONS. SEE ROADWAY TRAFFIC SIGNAL PLAN FOR LOCATIONS.
 - ③ 3/8" Ø HOLE FOR PEDESTRIAN SIGNAL. SEE ROADWAY TRAFFIC SIGNAL PLAN FOR LOCATIONS.
 - ④ 3/4" Ø HOLE FOR POLE MOUNTED TRAFFIC SIGNAL(S). SEE ROADWAY TRAFFIC SIGNAL PLAN FOR LOCATIONS.
 - ⑤ 1/2" Ø HOLE FOR 3/4" Ø TETHER CABLE EYE BOLT.
 - ⑥ 1/2" Ø HOLE FOR 3/4" Ø TETHER CABLE EYE BOLT CONNECTION ON SECONDARY SPAN.
 - ⑦ 3/8" Ø HOLE FOR 1" Ø SPAN WIRE EYE BOLT.
 - ⑧ 1/2" Ø HOLE FOR 1" Ø SPAN WIRE EYE BOLT CONNECTION ON SECONDARY SPAN.
 - ⑨ 4" x WEATHERHEAD 1 PER POLE AT UPPER CONTROL CABLE PENETRATION.
 - ⑩ OPTIONAL WELDED SPLICE LOCATION FOR POLE EXTENSION.
 - ⑪ REMOVABLE RAIN/TWIG CAP.
 - ⑫ LUMINAIRE ARM, SEE LUMINAIRE ARM NOTES ON SHEET 4 OF 13.
 - ⑬ OPTIONAL STRUCTURAL WELDED SPLICE LOCATION.
 - ⑭ PULL BOX.
 - ⑮ LOWER CONTROL CABLE PENETRATION.
 - ⑯ FOUNDATION.

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03/20/15	ADD POLE SEE BACK NOTES

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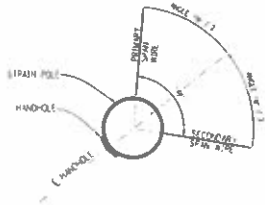
Safety & Traffic Engineering Branch **KCM/RLO**

TEMPORARY SPAN WIRE SIGNALS

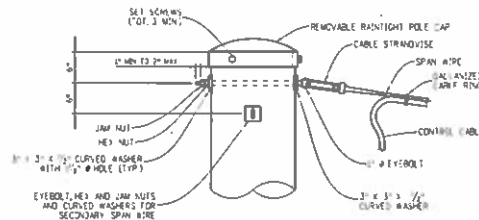
Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.
 S-614-41
 Sheet No. 2 of 13

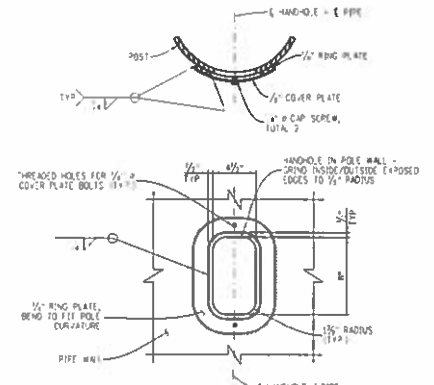
-SPAN WIRE DETAILS (2 OF 3)-



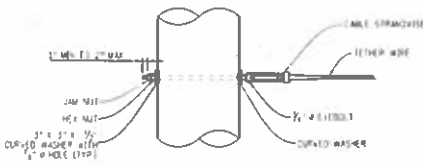
SPAN WIRE ORIENTATION
(EYEBOLTS AND WASHERS NOT SHOWN FOR CLARITY)



STRAIN POLE WITHOUT LUMINAIRE ARM EXTENSION

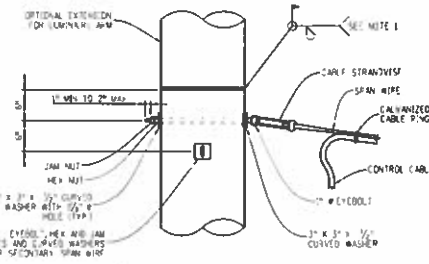


HANDHOLE DETAILS

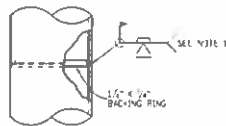


TETHER WIRE CONNECTION TO STRAIN POLE

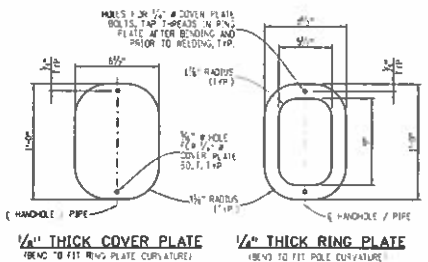
NOTES:
1. OPTIONAL FIELD WELD: REPAIR DAMAGED HOT-DIP GALVANIZING WITH ZINC-BASED ALLOY COULDS AS PER ASTM AND ANNEAL OR SPRAYED ZINC METALLIZING AS PER ANSI A3 TO PROVIDE A NOMINAL COATING THICKNESS OF 3.0 MILS IN ACCORDANCE WITH TABLE 2 FOR COATING GRADE 75



SPAN WIRE CONNECTION TO STRAIN POLE



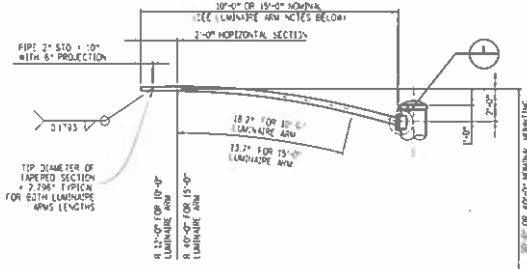
STRUCTURAL WELDED SPLICE



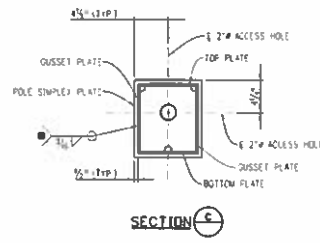
1/4\"

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Date:	Comments:																

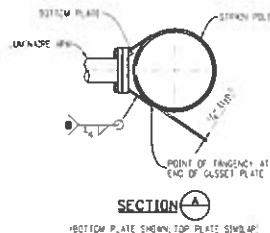
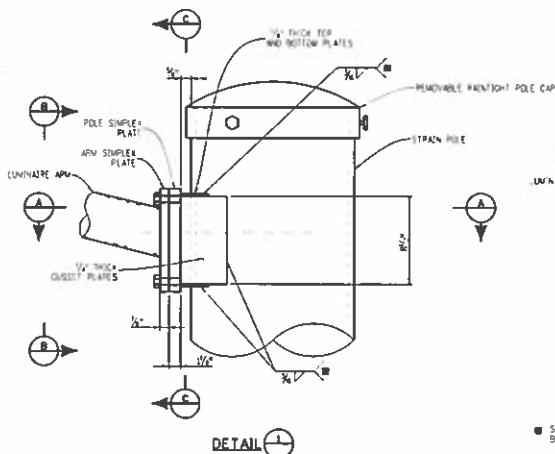
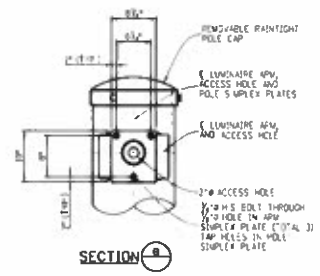
-SPAN WIRE DETAILS (3 OF 3)-



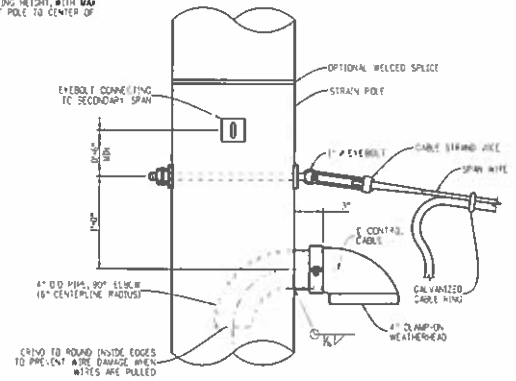
LUMINAIRE ARM



- LUMINAIRE ARM NOTES
- 10'-0" LUMINAIRE ARM SHAFT WALL THICKNESS = 0.1232"
LINEAR TAPER = 0.16 IN./FT.; DIAMETER AT ARM SIMPLEX PLATE = 4.063"
 - 15'-0" LUMINAIRE ARM SHAFT WALL THICKNESS = 0.1232"
LINEAR TAPER = 0.16 IN./FT.; DIAMETER AT ARM SIMPLEX PLATE = 4.679"
 - THE 30°-0" OR 45°-0" HEIGHT IS MEASURED FROM THE EDGE OF SHOULDER OR OUTER FLOW LINE TO THE CENTER OF THE LUMINAIRE POLE ASSEMBLY SHALL BE AT SUFFICIENT LENGTH TO OBTAIN MOUNTING HEIGHT, WITH MAX PERMISSIBLE MAX. H/W RISE OF 2'-0" FROM TOP OF POLE TO CENTER OF LUMINAIRE



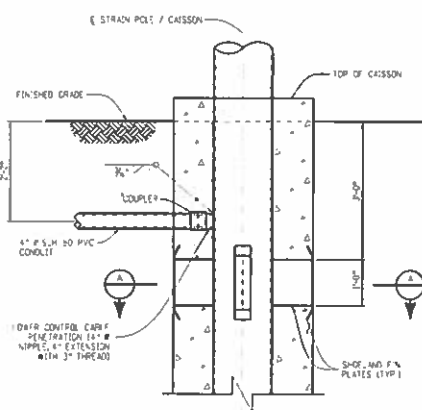
STOP ALL WELDS 1/2" SHORT OF PLATE EDGES AND BOLT HOLES



UPPER CONTROL CABLE PENETRATION DETAIL

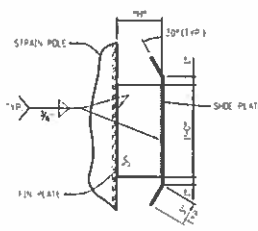
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Date:	Comments:																

-FOUNDATION DETAILS-



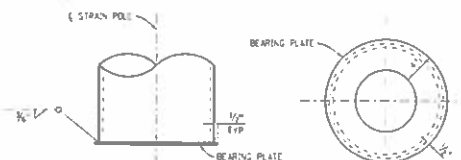
DETAIL

OPTIONAL CENTRALIZER WITH SHOE AND FIN PLATES, AND PULL BOX NOT SHOWN FOR CLARITY



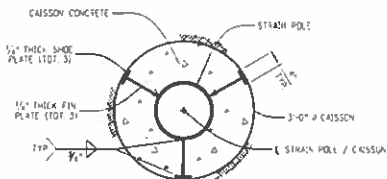
SHOE AND FIN PLATE DETAILS

(1/2" THICK)



BEARING PLATE DETAILS

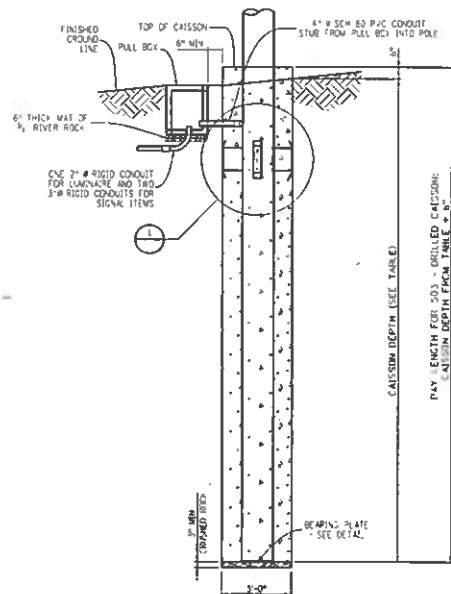
(1/2" THICK)



SECTION

CAISSON DETAILS

STRAIN POLE SIZES (N x IN)	CAISSON DEPTHS		TOP (IN.)
	CONCRETE SOIL (FT)	CONCRETELESS SOIL (FT)	
12.75 x 0.500	14.5	12.5	10 3/4
14 x 0.500	15.5	12.5	10 3/4
16 x 0.500	17.5	12.5	9 3/4
18 x 0.500	18.5	14.5	8 3/4
20 x 0.500	20.5	14.5	7 3/4
21 x 0.500	22.5	15.5	5 3/4
24 x 0.588	23.5	15.5	5 3/4



SPAN WIRE POLE CAISSON

CAISSON DEPTH (SEE TABLE)

PULL LENGTH FOR 203 - DRILLED CAISSON: CAISSON DEPTH FROM TABLE + 8"

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Creation Date: 07-01-11 In: cc
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Sheet Revisions

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TEMPORARY SPAN WIRE SIGNALS

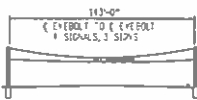
Drawn By: Timothy B. Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.

S-614-41

Sheet No. 5 of 13

EXAMPLE 1:



SELECT THE STRAIN POLE SIZE, SPAN-WIRE DIAMETER, AND CAISSON DEPTH FOR A SINGLE SPAN INSTALLATION FOUNDED IN COHESIONLESS SOIL AS SHOWN ABOVE.

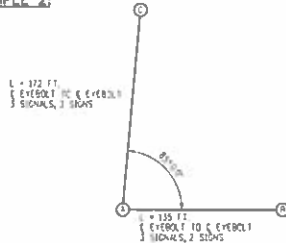
SOLUTION:

1. DETERMINE THE LOAD KEYS AS SHOWN HEREON OR ON SHEETS 7 TO 13.
4 SIGNALS AND 3 SIGNS - (A) LOADS FOR 4 SIGNALS AND 4 SIGNS MAX.
2. DETERMINE THE STRAIN POLE SIZE BY USING SINGLE SPAN STRAIN POLE SELECTION CHART ON SHEET 7.
FIND THE 112'-SPAN LENGTH ON THE HORIZONTAL AXIS OF THE CHART, THEN GO VERTICALLY TO MEET WITH LINE (B). THE REQUIRED STRAIN POLE SIZE IS 18" # 45 PIPE.
3. DETERMINE THE SPAN-WIRE DIAMETER BY USING THE SINGLE SPAN SPAN-WIRE DIAMETER SELECTION CHART ON SHEET 7.
FIND THE 112'-SPAN LENGTH ON THE HORIZONTAL AXIS OF THE CHART, THEN GO VERTICALLY TO MEET WITH LINE (C). THE REQUIRED SPAN-WIRE DIAMETER IS 3/4" # 4.
4. DETERMINE THE CAISSON DEPTH BY USING THE TABLE ON SHEET 5.
LOOK UP THE CAISSON DEPTH FOR COHESIONLESS SOIL AND IS # STRAIN POLE. THE REQUIRED CAISSON DEPTH IS 14.5'.

LOAD KEY

- (A) - 5 SIGNALS AND 4 SIGNS MAX.
- (B) - 4 SIGNALS AND 4 SIGNS MAX.
- (C) - 3 SIGNALS AND 2 SIGNS MAX.
- (D) - 2 SIGNALS AND 2 SIGNS MAX.
- (E) - 1 SIGNAL AND 1 SIGN MAX.

EXAMPLE 2:

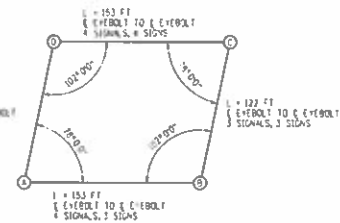


SELECT THE STRAIN POLE SIZES, SPAN-WIRE DIAMETERS, AND CAISSON DEPTHS FOR A DOUBLE SPAN INSTALLATION FOUNDED IN COHESIONLESS SOIL AS SHOWN ABOVE.

SOLUTION:

1. DETERMINE THE LOAD KEYS AS SHOWN HEREON OR ON SHEETS 7 TO 13.
SPAN AC: 3 SIGNALS AND 3 SIGNS - (A) LOADS FOR 3 SIGNALS AND 3 SIGNS MAX.
SPAN AB: 3 SIGNALS AND 2 SIGNS - (B) LOADS FOR 3 SIGNALS AND 3 SIGNS MAX.
2. DETERMINE THE SIZES OF STRAIN POLES (A), (B), AND (C).
FOR POLE (A) USING THE DOUBLE SPAN STRAIN POLE SELECTION CHART FOR 100° ≤ θ < 90° ON SHEET 8:
EITHER THE HORIZONTAL CHART OR THE VERTICAL CHART CAN BE USED FOR SPAN AC. OP SPAN AB USING THE HORIZONTAL CHART FOR SPAN AC AND THE VERTICAL CHART FOR SPAN AB. LOCATE THE 112'-SPAN AC ON THE HORIZONTAL CHART, THEN GO VERTICALLY TO MEET WITH LINE (C). LOCATE THE 135'-SPAN AB ON THE VERTICAL CHART, THEN GO HORIZONTALLY TO MEET WITH LINE (C). FROM THESE INTERSECTION POINTS, GO HORIZONTALLY AND VERTICALLY TO THE SQUARE (C) TO LOCATE THE REQUIRED PIPE DIAMETER FOR POLE (A) IS 20" # 45 PIPE.
FOR POLES (B) AND (C) USE THE SINGLE SPAN POLE SELECTION CHART ON SHEET 7 AND FOLLOW THE SAME LOGIC AS SHOWN ON STEP 2 OF EXAMPLE 1 TO DETERMINE THE POLE SIZE. USING THIS LOGIC, THE REQUIRED POLE SIZE IS 18" # 45 PIPE FOR STRAIN POLE (B) AND 18" # 45 PIPE FOR STRAIN POLE (C).
3. DETERMINE THE SPAN-WIRE DIAMETER BY USING THE DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 20" POLE ON SHEET 11.
SPAN AC: LOCATE THE 112'-SPAN LENGTH ON THE HORIZONTAL AXIS, THEN GO VERTICALLY TO MEET WITH LINE (D). THE REQUIRED SPAN-WIRE DIAMETER IS 3/4" # 4.
SPAN AB: DO THE SAME FOR THE 135'-LONG SPAN AC. THE REQUIRED SPAN-WIRE IS 3/4" # 4.
4. DETERMINE THE CAISSON DEPTHS BY USING THE TABLE ON SHEET 5.
LOOK UP THE CAISSON DEPTH FOR COHESIONLESS SOIL. THE REQUIRED CAISSON DEPTH FOR 20" STRAIN POLE (A) IS 20.5', THE REQUIRED DEPTH FOR 18" STRAIN POLE (B) IS 17.5', AND THE REQUIRED DEPTH FOR 18" STRAIN POLE (C) IS 15.5'.

EXAMPLE 3:



SELECT THE STRAIN POLE SIZES, SPAN-WIRE DIAMETERS AND CAISSON DEPTHS FOR CAISSONS FOR A DOUBLE SPAN INSTALLATION FOUNDED IN COHESIONLESS SOIL AS SHOWN ABOVE.

SOLUTION:

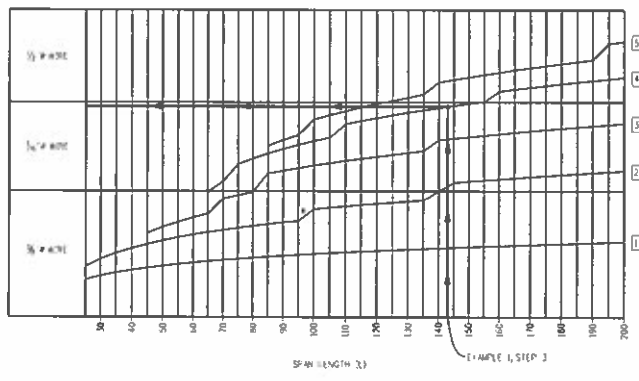
1. DETERMINE THE LOAD KEYS AS SHOWN HEREON OR ON SHEETS 7 TO 13.
SPAN AB: 4 SIGNALS AND 3 SIGNS - (A) LOADS FOR 4 SIGNALS AND 4 SIGNS MAX.
SPAN BC: 3 SIGNALS AND 3 SIGNS - (B) LOADS FOR 3 SIGNALS AND 4 SIGNS MAX.
SPAN CD: 4 SIGNALS AND 4 SIGNS - (C) LOADS FOR 4 SIGNALS AND 4 SIGNS MAX.
SPAN AD: 3 SIGNALS AND 2 SIGNS - (D) LOADS FOR 3 SIGNALS AND 3 SIGNS MAX.
2. DETERMINE THE SIZE OF POLES (A), (B), AND (C).
FOR POLE (A) USING THE DOUBLE SPAN STRAIN POLE SELECTION CHART FOR 70° ≤ θ < 90° ON SHEET 8:
EITHER THE HORIZONTAL CHART OR THE VERTICAL CHART CAN BE USED FOR SPAN AB OR SPAN AD. USING THE HORIZONTAL CHART FOR SPAN AB AND THE VERTICAL CHART FOR SPAN AD, LOCATE THE 112'-SPAN AB ON THE HORIZONTAL CHART, THEN GO VERTICALLY TO MEET WITH LINE (E). LOCATE THE 153'-SPAN AD ON THE VERTICAL CHART, THEN GO HORIZONTALLY TO MEET WITH LINE (E). FROM THESE INTERSECTION POINTS, GO HORIZONTALLY AND VERTICALLY TO THE SQUARE (A) TO LOCATE THE REQUIRED PIPE DIAMETER FOR POLE (A) IS 24" # 45 PIPE.
FOR POLE (B) USING THE DOUBLE SPAN STRAIN POLE SELECTION CHART FOR 90° ≤ θ < 100° ON SHEET 10:
EITHER THE HORIZONTAL CHART OR THE VERTICAL CHART CAN BE USED FOR SPAN BC OR SPAN BC. USING THE HORIZONTAL CHART FOR SPAN BC AND THE VERTICAL CHART FOR SPAN BC, LOCATE THE 112'-SPAN BC ON THE HORIZONTAL CHART, THEN GO VERTICALLY TO MEET WITH LINE (F). LOCATE THE 122'-SPAN BC ON THE VERTICAL CHART, THEN GO HORIZONTALLY TO MEET WITH LINE (F). FROM THESE INTERSECTION POINTS, GO HORIZONTALLY AND VERTICALLY TO THE SQUARE (B) TO LOCATE THE REQUIRED PIPE DIAMETER FOR POLE (B) IS 20" # 45 PIPE.
FOR POLE (C) USING THE DOUBLE SPAN STRAIN POLE SELECTION CHART FOR 100° ≤ θ < 110° ON SHEET 10:
EITHER THE HORIZONTAL CHART OR THE VERTICAL CHART CAN BE USED FOR SPAN CD OR SPAN CD. USING THE HORIZONTAL CHART FOR SPAN CD AND THE VERTICAL CHART FOR SPAN CD, LOCATE THE 122'-SPAN CD ON THE HORIZONTAL CHART, THEN GO VERTICALLY TO MEET WITH LINE (G). LOCATE THE 153'-SPAN CD ON THE VERTICAL CHART, THEN GO HORIZONTALLY TO MEET WITH LINE (G). FROM THESE INTERSECTION POINTS, GO HORIZONTALLY AND VERTICALLY TO THE SQUARE (C) TO LOCATE THE REQUIRED PIPE DIAMETER FOR POLE (C) IS 20" # 45 PIPE.
LIKELIHOOD, STRAIN POLE (C) IS 24" # 45 PIPE AND STRAIN POLE (D) IS 20" # 45 PIPE.
3. DETERMINE THE SPAN-WIRE DIAMETER BY USING THE DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 24" POLE ON SHEET 11. FOR THIS CASE, THE 24" STRAIN POLES (A) AND (C) CONTROL THE DESIGN.
SPAN AB: LOCATE THE 112'-SPAN LENGTH ON THE HORIZONTAL AXIS, THEN GO VERTICALLY TO MEET WITH LINE (H). THE REQUIRED SPAN-WIRE IS 3/4" # 4.
SPAN BC: DO THE SAME AS FOR SPAN AB FOR DIFFERENT LOAD KEYS, THE REQUIRED SPAN-WIRE DIAMETERS FOR SPAN BC AND BC IS 3/4" # 4 AND 3/4" # 4 FOR SPAN BC.
SPAN CD: DO THE SAME AS FOR SPAN AB FOR DIFFERENT LOAD KEYS, THE REQUIRED SPAN-WIRE DIAMETERS FOR SPAN CD AND CD IS 3/4" # 4 AND 3/4" # 4 FOR SPAN CD.
4. DETERMINE CAISSON DEPTH BY USING TABLE ON SHEET 5.
LOOK UP THE CAISSON DEPTH FOR COHESIONLESS SOIL ON SHEET 5. THE REQUIRED CAISSON DEPTH FOR 24" STRAIN POLES (A) AND (C) IS 15.5', AND THE REQUIRED DEPTH FOR 20" STRAIN POLES (B) AND (D) IS 14.5'.

-EXAMPLES-

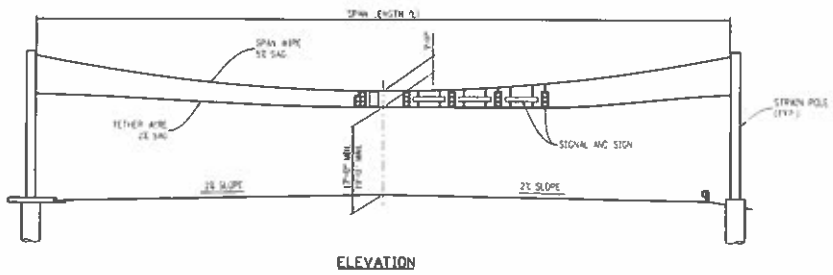
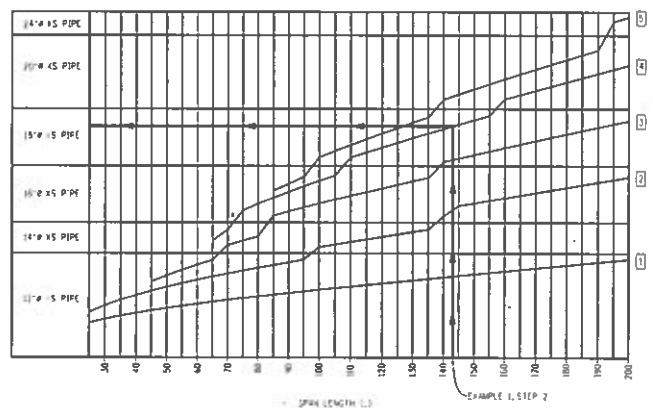
Computer File Information		Sheet Revisions		Colorado Department of Transportation 4221 East Alameda Avenue Denver, Colorado 80222 Phone: (303) 757-9243 Fax: (303) 757-9219 Safety & Traffic Engineering Branch KCM/RLD	TEMPORARY SPAN WIRE SIGNALS Issued By: Safety & Traffic Engineering Branch July 4, 2012	STANDARD PLAN NO. S-614-41 Sheet No. 6 of 13
Creation Date: 07-01-11	Initials: EC	Date:	Comments:			
Last Modification Date: 07-28-14	Initials: HMB					
Full Path: www.dot.state.co.us/DesignSupport/						
Drawing File Name: S-614-41 (E of 13).dgn						
CAD Ver: MicroStation V8	Scale: Not to Scale					

-SINGLE SPAN SELECTION CHARTS-

SINGLE SPAN SPAN-WIRE DIAMETER SELECTION CHART



SINGLE SPAN STRAIN POLE SELECTION CHART



ELEVATION

- LOAD KEY**
- 5 = 5 SIGNALS AND 4 SIGNS MAX
 - 4 = 4 SIGNALS AND 4 SIGNS MAX
 - 3 = 3 SIGNALS AND 3 SIGNS MAX
 - 2 = 2 SIGNALS AND 2 SIGNS MAX
 - 1 = 1 SIGNAL AND 3 SIGNS MAX

LEGEND
 ** TYPICAL AMP CAUSED BY CHANGE IN PILE SIZE WITHIN SPAN LENGTH INCREMENT OF 5'

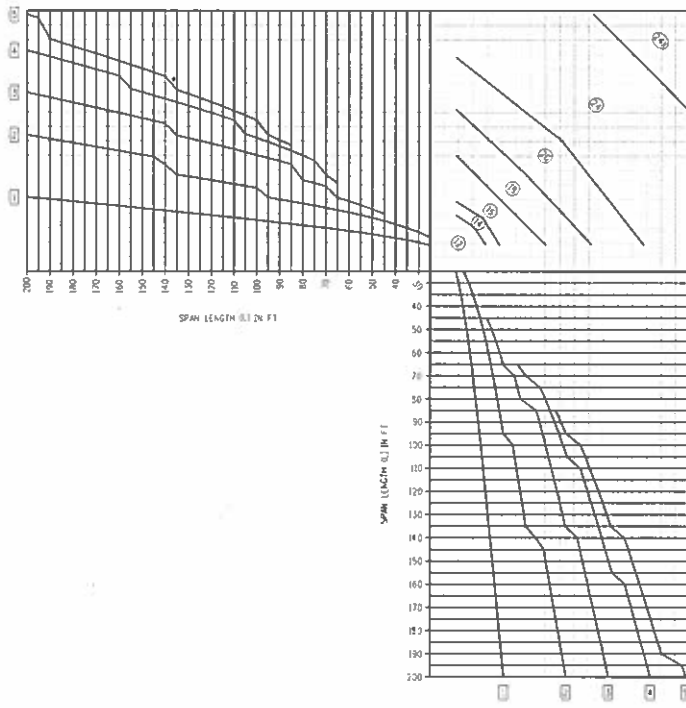
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Date	Comments													

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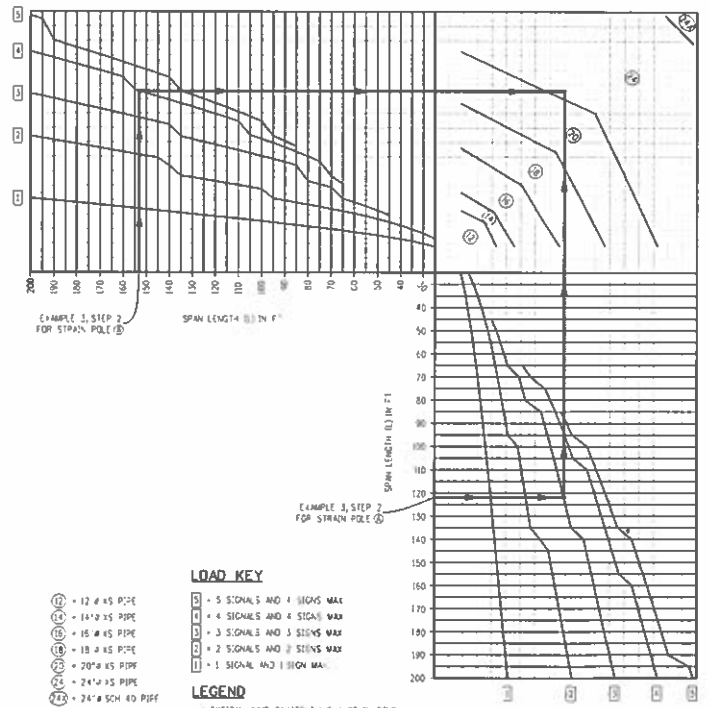
AD SUBMITTAL - JANUARY 2, 2018

-DOUBLE SPAN STRAIN POLE SELECTION CHARTS (1 OF 4)-

DOUBLE SPAN STRAIN POLE SELECTION CHART FOR $60^\circ \leq \theta < 70^\circ$



DOUBLE SPAN STRAIN POLE SELECTION CHART FOR $70^\circ \leq \theta < 80^\circ$



- LOAD KEY**
- ① - 12 # 45 PIPE
 - ② - 14 # 25 PIPE
 - ③ - 16 # 45 PIPE
 - ④ - 18 # 45 PIPE
 - ⑤ - 20 # 45 PIPE
 - ⑥ - 24 # 35 PIPE
 - ⑦ - 24 # 50 PIPE
- LEGEND**
- ① - 5 SIGNALS AND 4 SIGNS MAX
 - ② - 4 SIGNALS AND 4 SIGNS MAX
 - ③ - 3 SIGNALS AND 3 SIGNS MAX
 - ④ - 2 SIGNALS AND 2 SIGNS MAX
 - ⑤ - 1 SIGNAL AND 1 SIGN MAX

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Sheet Revisions

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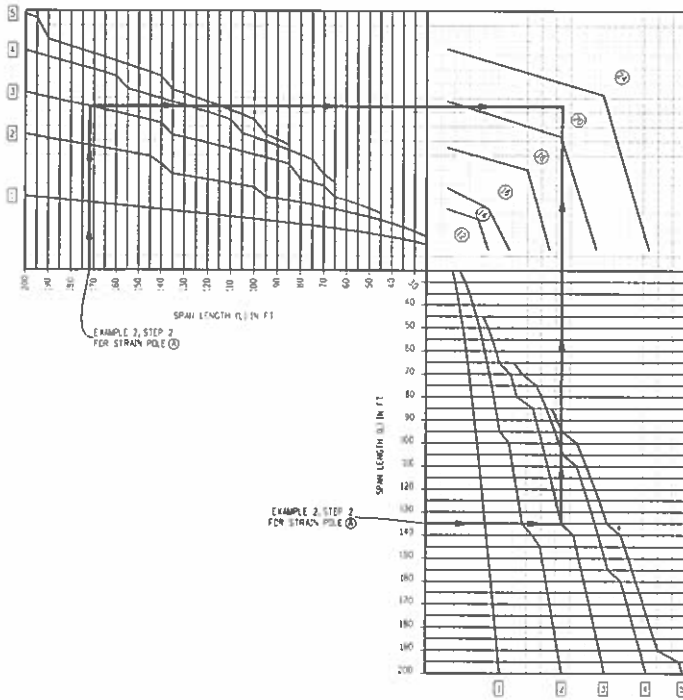
Safety & Traffic Engineering Branch KCM/RLD

TEMPORARY SPAN WIRE SIGNALS

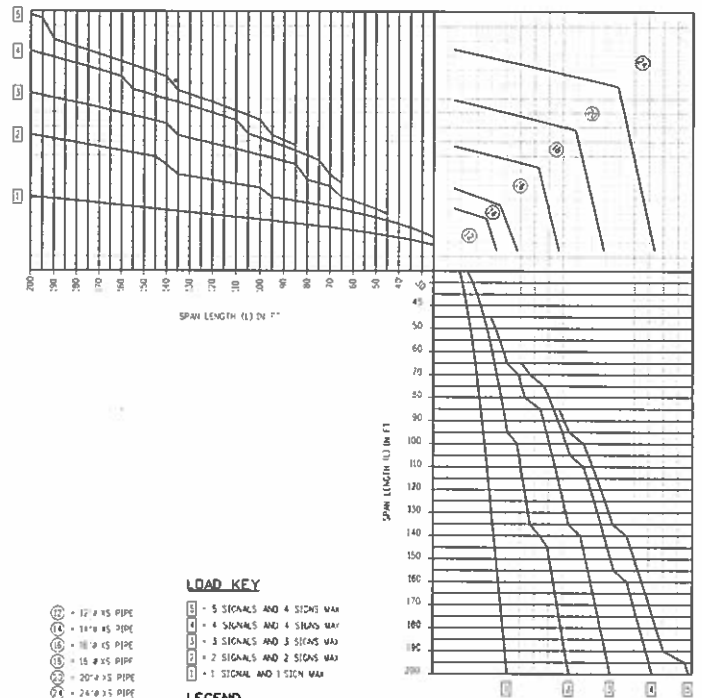
Issued By: Safety & Traffic Engineering Branch July 4, 2012

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DOUBLE SPAN STRAIN POLE SELECTION CHART FOR $80^\circ \leq \theta < 90^\circ$



DOUBLE SPAN STRAIN POLE SELECTION CHART FOR $90^\circ \leq \theta < 100^\circ$



Computer File Information

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Last Modification Date: 07-26-14	In: bils:REB
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Units: English	

Sheet Revisions

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TEMPORARY SPAN WIRE SIGNALS

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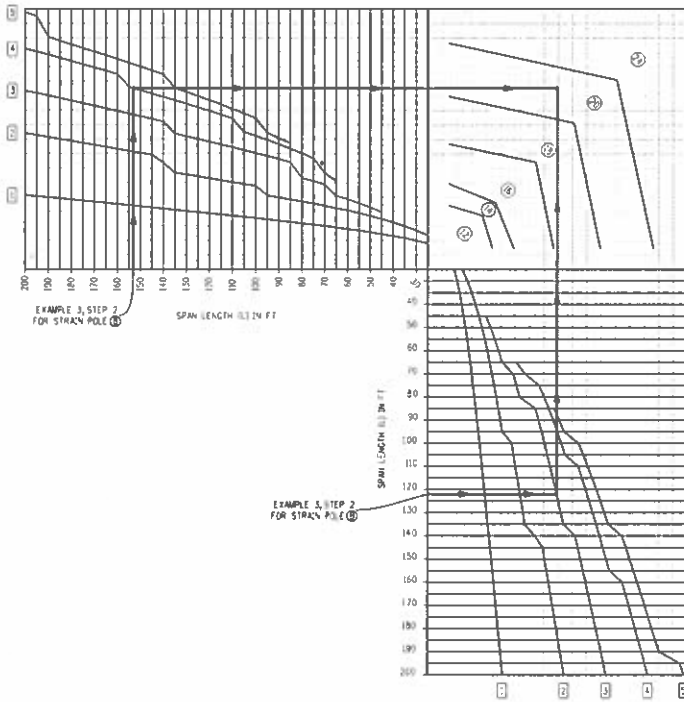
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S-614-41

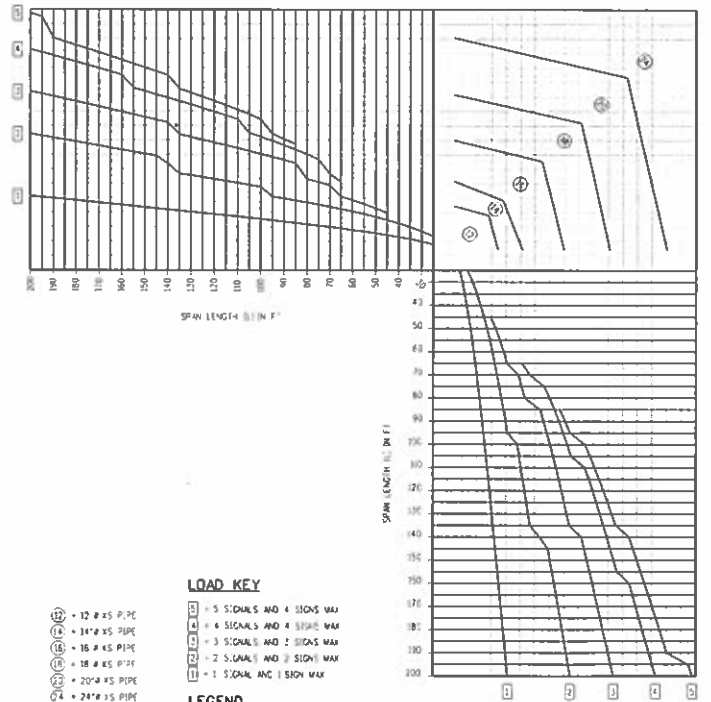
Sheet No. 9 of 13

-DOUBLE SPAN STRAIN POLE SELECTION CHARTS (3 OF 4)-

DOUBLE SPAN STRAIN POLE SELECTION CHART FOR $100^\circ \leq \theta < 110^\circ$



DOUBLE SPAN STRAIN POLE SELECTION CHART FOR $110^\circ \leq \theta < 120^\circ$



- ① - 12 # 25 PIPE
- ② - 34" # 35 PIPE
- ③ - 16 # 45 PIPE
- ④ - 18 # 45 PIPE
- ⑤ - 20" # 45 PIPE
- ⑥ - 24" # 45 PIPE

LOAD KEY

- ① - 5 SIGNS AND 4 SIGN MAX
- ② - 6 SIGNS AND 4 SIGN MAX
- ③ - 3 SIGNS AND 2 SIGN MAX
- ④ - 2 SIGNS AND 2 SIGN MAX
- ⑤ - 1 SIGN AND 1 SIGN MAX

LEGEND

•• TYPICAL JUMP CAUSED BY CHANGE IN POLE SIZE USING SPAN LENGTH INCREASEMENT OF 1'

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Units: English	

Sheet Revisions

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GO
 Safety & Traffic Engineering Branch KCM/RLD

TEMPORARY SPAN WIRE SIGNALS

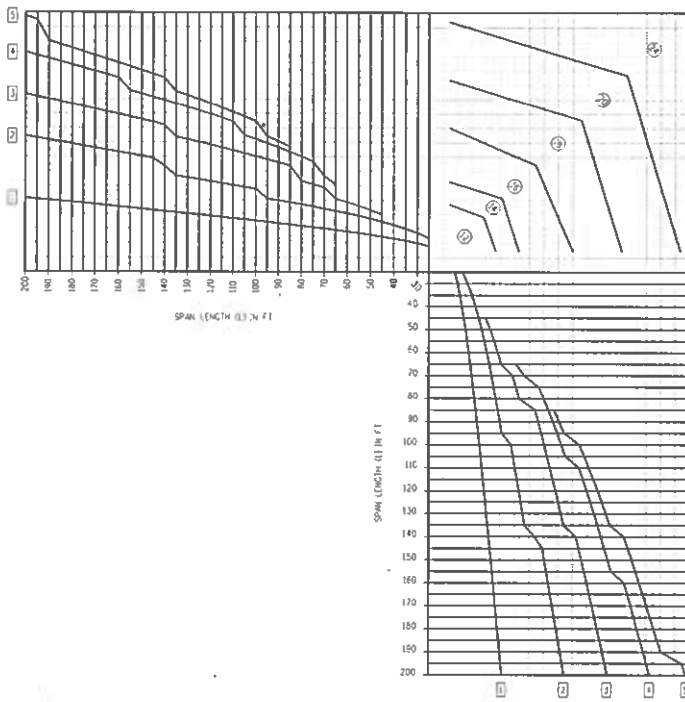
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DOUBLE SPAN STRAIN POLE SELECTION CHART FOR $\theta \geq 120^\circ$



- ① - 12" x 35 PIPE
- ② - 14" x 45 PIPE
- ③ - 16" x 45 PIPE
- ④ - 18" x 45 PIPE
- ⑤ - 20" x 35 PIPE
- ⑥ - 24" x 35 PIPE

LOAD KEY

- ① - 5 SIGNALS AND 4 SIGNS MAX.
- ② - 4 SIGNALS AND 4 SIGNS MAX.
- ③ - 3 SIGNALS AND 3 SIGNS MAX.
- ④ - 2 SIGNALS AND 2 SIGNS MAX.
- ⑤ - 1 SIGNAL AND 1 SIGN MAX.

LEGEND

** TYPICAL JUMP CAUSED BY CHANGE IN POLE SIZE USING SPAN LENGTH INCREASEMENT OF 5'

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Last Modification Date: 07-26-14	In-charge: HMB
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By:	Description:

Colorado Department of Transportation
 4221 East Arapahoe Avenue
 Denver, Colorado 80222
 Phone: (303) 757-9543
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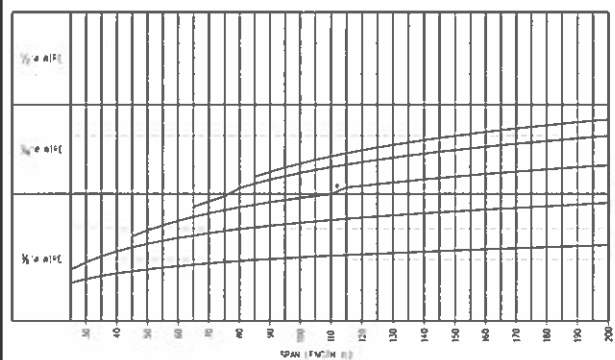
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TEMPORARY SPAN WIRE SIGNALS

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 S-614-41
 Sheet No. 11 of 13

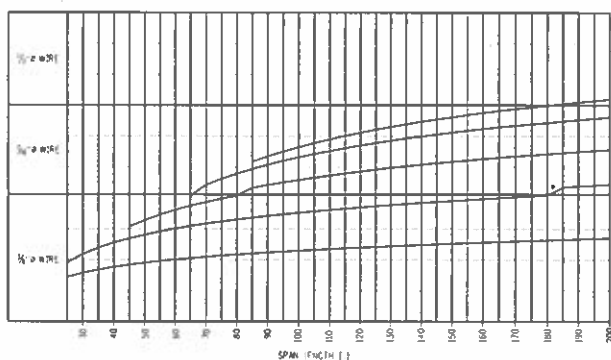
DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 12" @ XS POLE



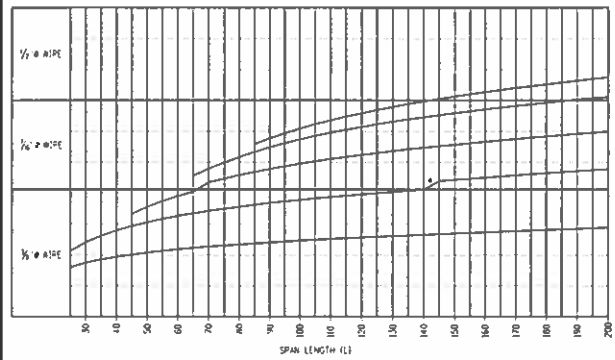
LOAD KEY

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- 4 SIGNALS AND 4 TIEBACKS
- 3 SIGNALS AND 3 TIEBACKS
- 2 SIGNALS AND 2 TIEBACKS
- 1 SIGNAL AND 1 TIEBACK

DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHARTS (1 OF 2)-
DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 14" @ XS POLE



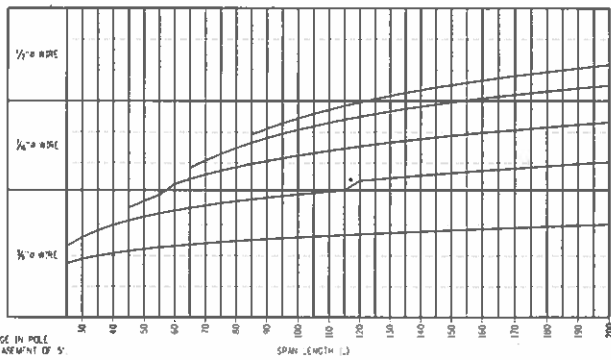
DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 16" @ XS POLE



LEGEND

TYPICAL JUMP CAUSED BY CHANGE IN POLE SIZE USING SPAN LENGTH INCREMENT OF 5'

DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 18" @ XS POLE



Computer File Information	
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Last Modification Date: 07-28-14	Initials: MB
Full Path: \\w\dotstore\c\us\DesignSupport\	
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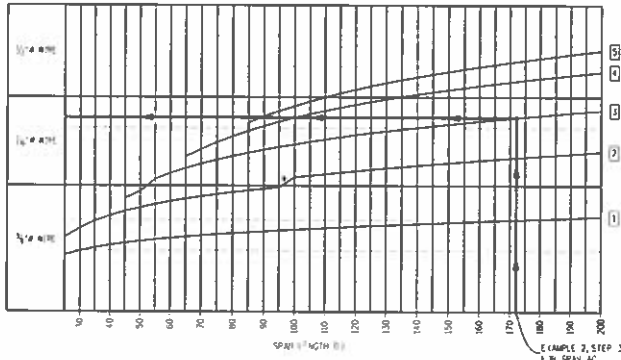
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TEMPORARY SPAN WIRE SIGNALS

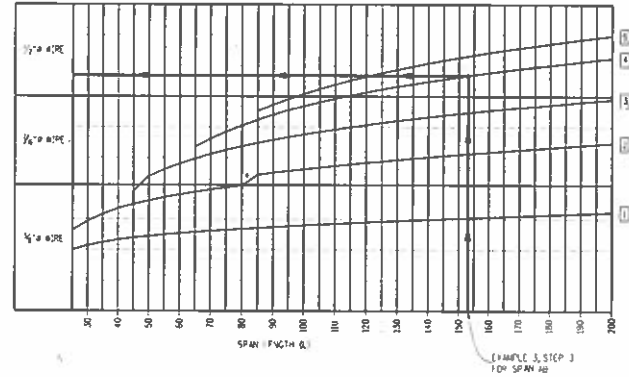
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 Sheet No. 12 of 13

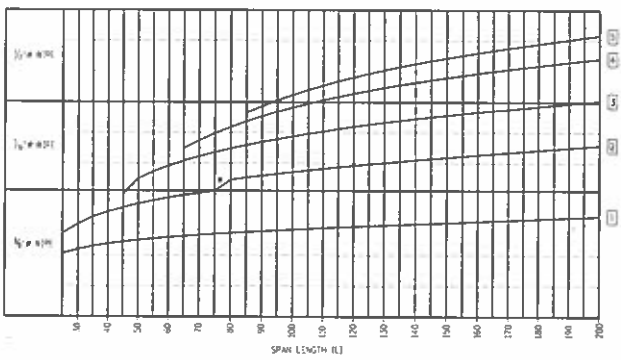
DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 20" @ XS POLE



-DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHARTS (2 OF 2)-
DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 24" @ XS POLE



DOUBLE SPAN SPAN-WIRE DIAMETER SELECTION CHART FOR 24" @ SCH 40 POLE



LOAD KEY

- 1 - 1 SIGNAL AND 1 SIGN MAX
- 2 - 2 SIGNALS AND 2 SIGNS MAX
- 3 - 3 SIGNALS AND 3 SIGNS MAX
- 4 - 4 SIGNALS AND 4 SIGNS MAX

LEGEND

** TYPICAL JUMP (CAUSE) BY CHANGE IN WIRE SIZE USING SPAN LENGTH INCREMENT OF 5'

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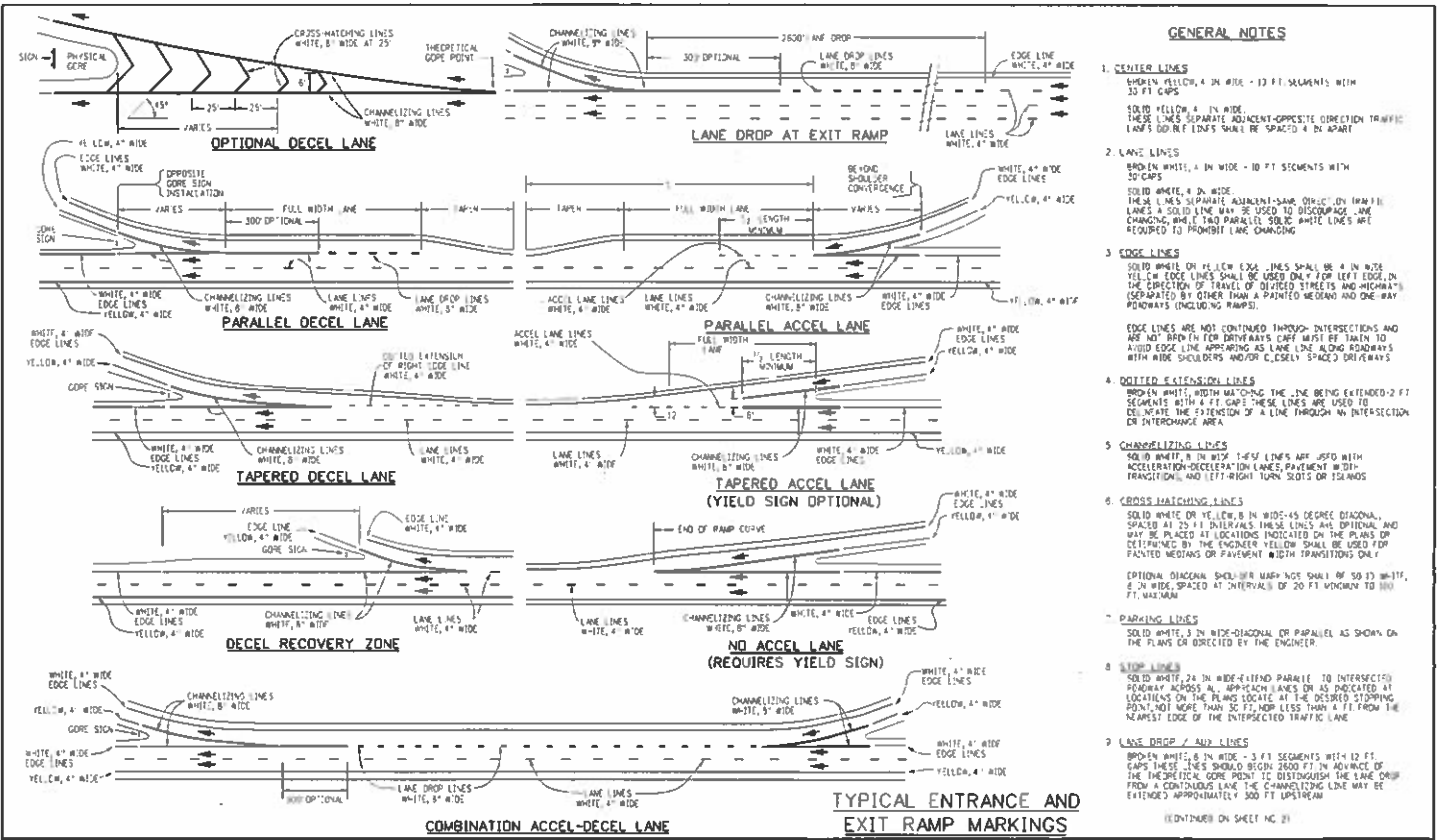
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TEMPORARY SPAN WIRE SIGNALS

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STANDARD PLAN NO.
 S-614-41
 Sheet No. 13 of 13

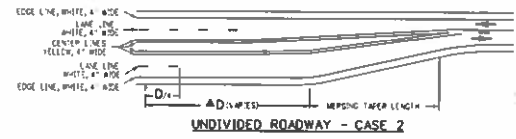
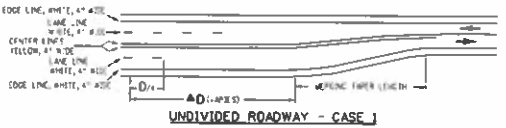
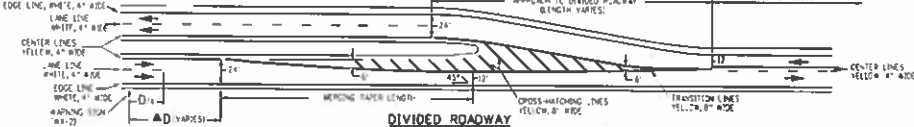
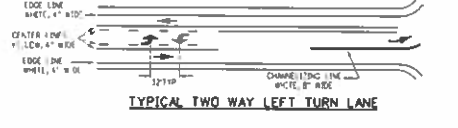
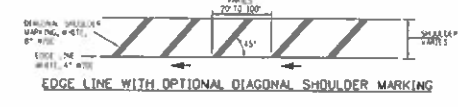
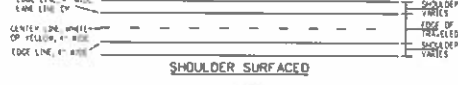
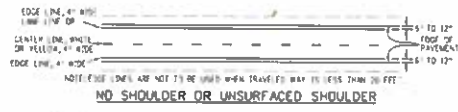
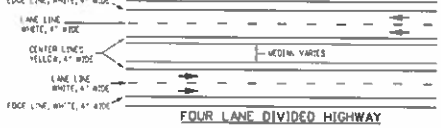
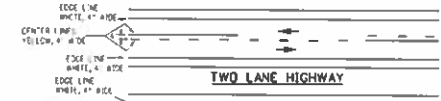
www.dti.state.co.us/DesignSupport/



GENERAL NOTES

- CENTER LINES**
 6" MIN YELLOW, 4" IN WIDE - 12 FT SEGMENTS WITH 30 FT GAPS
 SOLID YELLOW, 4" IN WIDE
 THESE LINES SEPARATE ADJACENT-OPPOSITE DIRECTION TRAFFIC LANE'S DOUBLE LINES SHALL BE SPACED 4' IN APART
- LANE LINES**
 BROWN WHITE, 4" IN WIDE - 10 FT SEGMENTS WITH 30 FT GAPS
 SOLID WHITE, 4" IN WIDE
 THESE LINES SEPARATE ADJACENT-SAME DIRECTION TRAFFIC LANE'S A SOLID LINE MAY BE USED TO DISCOURAGE LANE CHANGING WHILE TWO PARALLEL SOLID WHITE LINES ARE REQUIRED TO PROHIBIT LANE CHANGING
- EDGE LINES**
 SOLID WHITE OR YELLOW, 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 PARKS))
 EDGE LINES ARE NOT CONTINUED THROUGH INTERSECTIONS AND ARE NOT BORN FOR DRIVEWAYS CARE MUST BE TAKEN TO AVOID EDGE LINE APPEARING AS LANE LINE ALONG ROADWAYS WITH WIDE SHOULDERS AND/OR CLOSELY SPACED DRIVEWAYS
- OPTIONAL EXTENSION LINES**
 BROWN WHITE, WITH AN OPTION 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
- CHANNELIZING LINES**
 SOLID WHITE, 8" IN WIDE 1-4' SPACING NOT USED WITH ACCELERATION/DECELERATION LANES PAVEMENT WITH TRANSITION AND LEFT/RIGHT TURN SLOTS OR ISLANDS
- CROSS HATCHING LINES**
 SOLID WHITE OR YELLOW, 8" IN WIDE 45 DEGREE DIAGONAL, SPACED AT 20 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 50 FT WIDE, 8" IN WIDE SPACED AT INTERVALS OF 20 FT THROUGH TO 100 FT WASTEWATER
- PARKING LINES**
 SOLID WHITE, 3" IN WIDE-DIAGONAL OR PARALLEL AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER
- STOP LINES**
 SOLID WHITE, 24" IN WIDE-FLARED PARALLEL TO INTERSECTED ROADWAY ACROSS ALL APPROACH LINES 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
- LANE DROP / AWAY LINES**
 BROWN WHITE, 8" IN WIDE - 3 FT SEGMENTS WITH 12 FT GAPS THESE LINES SHOULD BEGIN 1600 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)

<p>Computer File Information</p> <p>Creation Date: 07/04/12 In: SCL</p> <p>Last Modification Date: 02/08/17 In: SCL</p> <p>Full Path: \\colorado\csl\work\projects\171217\171217-standards</p> <p>Drawing File Name: S-627-01.dwg</p> <p>CRD Ver: MacroStation v.8 Scale: Not to Scale Units: English</p>	<p>Sheet Revisions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">Date</th> <th style="width: 95%;">Comments</th> </tr> </thead> <tbody> <tr> <td>02/08/17</td> <td>REVISED TO INCLUDE THE LANE DROP TO ACCEL LANE</td> </tr> <tr> <td>02/08/17</td> <td>REVISED DIMENSION IN COMB ACCEL-DECEL</td> </tr> <tr> <td>02/08/17</td> <td>REVISED DIMENSION IN PARALLEL ACCEL</td> </tr> </tbody> </table>	Date	Comments	02/08/17	REVISED TO INCLUDE THE LANE DROP TO ACCEL LANE	02/08/17	REVISED DIMENSION IN COMB ACCEL-DECEL	02/08/17	REVISED DIMENSION IN PARALLEL ACCEL	<p>Colorado Department of Transportation</p> <p>4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-757-9343 Fax: 303-757-9219</p> <p>Safety & Traffic Engineering KCM</p>	<p>PAVEMENT MARKINGS</p> <p>Issued By: Safety & Traffic Engineering Branch July 4, 2012</p>	<p>STANDARD PLAN NO.</p> <p style="text-align: center;">S-627-1</p> <p style="text-align: center;">Sheet No. 1 of 8</p>
Date	Comments											
02/08/17	REVISED TO INCLUDE THE LANE DROP TO ACCEL LANE											
02/08/17	REVISED DIMENSION IN COMB ACCEL-DECEL											
02/08/17	REVISED DIMENSION IN PARALLEL ACCEL											



TYPICAL PAVEMENT WIDTH TRANSITION MARKINGS

GENERAL NOTES
(CONTINUED FROM SHEET NO. 0)

10. **ACCELERATION LINES**
BROKEN WHITE, 4 IN. WIDE - 3 FT. SEGMENTS WITH 12 FT. GAPS.
THOSE LINES SHOULD BE USED UNLESS TWO THRU LANES OR AN ACCELERATION MERGE INTO ONE THRU LANE.
11. **CROSSHAATCH MARKINGS**
SOLID WHITE, 12 IN. WIDE FOR TRANSVERSE LINE TAPER - EXTEND ACROSS ENTIRE WIDTH OF PAVEMENT IF NO ADVANCE STOP LINE IS PROVIDED. INCREASE THE WIDTH OF THE CROSSHAATCH LINES TO 24 IN. IN THE DISTANCE BETWEEN THE LINES IS USUALLY 10 FEET OR BY THE WIDTH OF THE CROSSHAATCHES CONNECTED, HOWEVER, IN NO CASE SHALL THESE BE LESS THAN 6 FT.
12. **COMPLEXED AND/OR CHANNELIZED INTERSECTIONS AND MID-BLOCK CROSSINGS**
SOLID WHITE, 12 IN. TO 24 IN. WIDE AND 8 FT. TO 10 FT. LONG FOR LONGITUDINAL LINE TAPER AS DETAIL IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
13. **ROAD, SHOULDER AND SHOULDER MARKINGS**
ALL LETTERS, MARKS AND SYMBOLS SHALL BE IN CONFORMANCE WITH THE STANDARD SYMBOLS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS ADOPTED BY THE FEDERAL HIGHWAY ADMINISTRATION.
14. **MERGING TAPER LENGTH**
L = MINIMUM LENGTH OF TAPER
S = DESIGN SPEED FOR NEW CONSTRUCTION OR MAINTENANCE VALUE OF THE EXISTING ROADWAY
W = WIDTH TRANSITIONED
FORMULA: FOR SPEED 45 MPH OR MORE, $L = 0.5 \cdot S^2 \cdot W$
FOR SPEED 40 MPH TO 45 MPH, $L = 0.5 \cdot S^2 \cdot W$
15. **TRANSITION LINES**
SOLID YELLOW, 8 IN. WIDE THESE LINES ARE USED WHERE ADDITIONAL WARNING OR VISIBILITY IS DESIRABLE. ALL PAVEMENT WIDTH TRANSITIONS SHALL BE LOCATED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
16. **SPEED MEASURING MARKINGS**
SOLID WHITE, 24 IN. - EXTEND 4 FT. FROM OUTSIDE OF EDGE LINES ON SHOULDER.

NOTE:
D = THE DISTANCE FROM THE LAST TRANSITION MARKING TO THE BEGINNING OF THE MERGING TAPER. FOR MORE INFORMATION ON THE "D" VALUE REGARDING SIGN AND PAVEMENT MARKING PLACEMENT SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, TABLE 10-4, CONDITION 4, SPEED REDUCTION AND THE CHANGING IN THE WAY TRAFFIC AND POSTINGS 2 REGARDING TRAFFIC CONDITIONS.

LEGEND
→ Direction of Travel

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Last Modification Date: 02/08/17	Inch: W80
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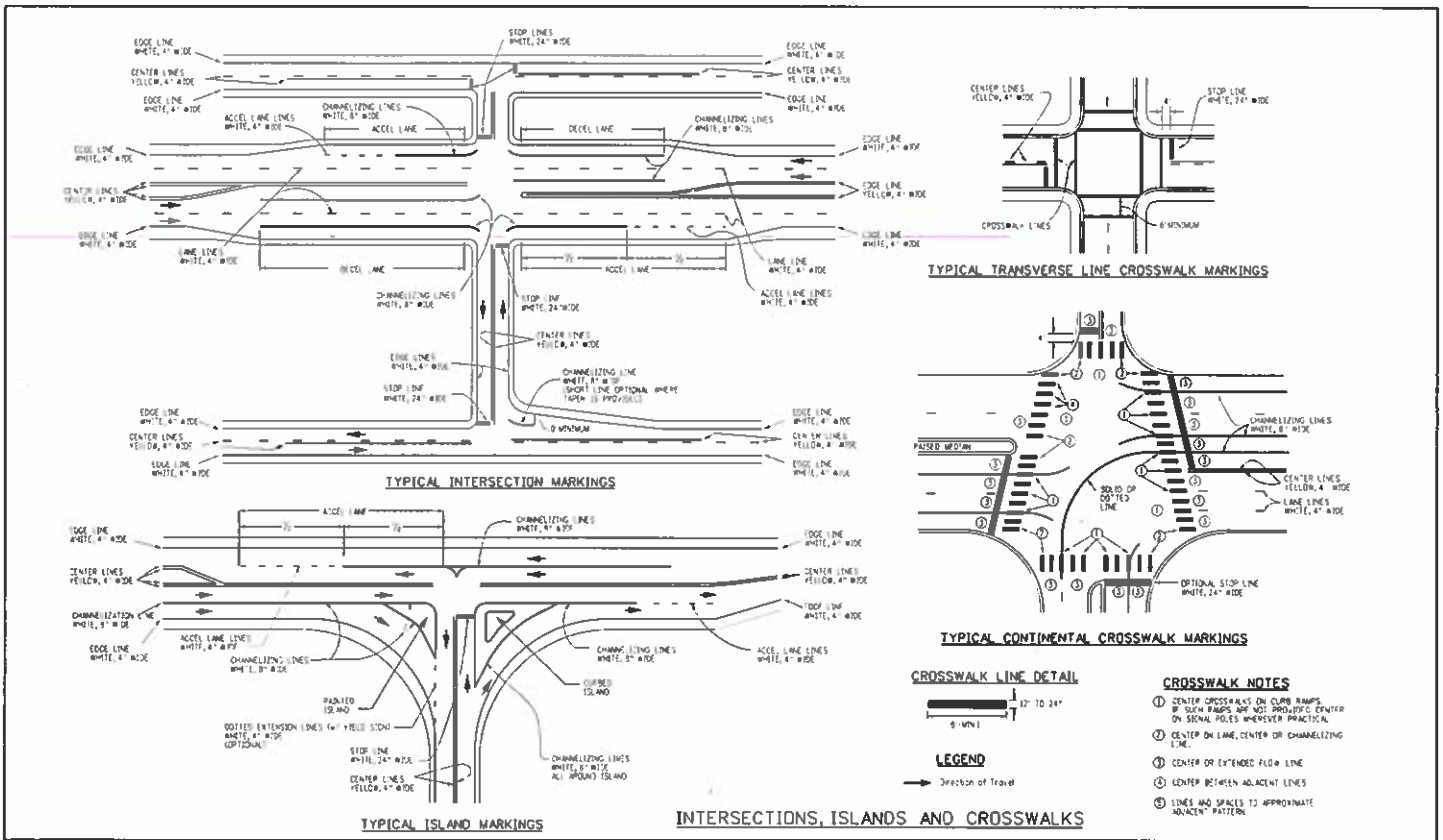
Sheet Revisions	
Date: 02/08/17	Comments: ADD MORE NOTES ON "D" VALUE
Date: 07/04/12	Comments: ADD LEGEND
Date: 07/04/12	Comments: UPDATE SIGN TRANSITION TO MERGING TAPER
Date: 07/04/12	Comments: UPDATE SIGN TRANSITION TO MERGING TAPER

Colorado Department of Transportation

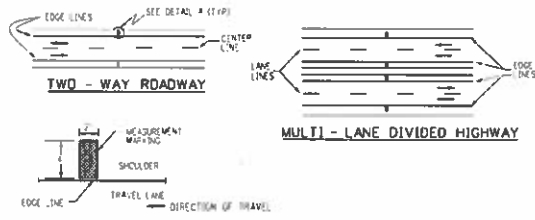
 4201 East Arkansas Avenue
 Denver, Colorado 80222
 Phone: 303-737-9043 FAX: 303-757-7219
Safety & Traffic Engineering KCM

PAVEMENT MARKINGS
 Issued By: Safety & Traffic Engineering Branch July 4, 2012

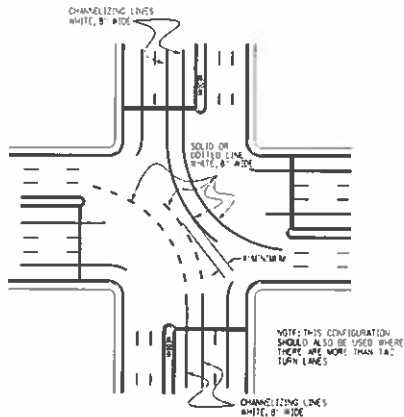
STANDARD PLAN NO.
 S-627-1
 Sheet No. 2 of 8



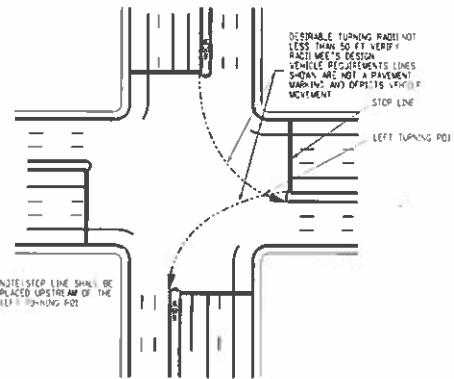
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Date	Comments																
02/08/17	POST LANE AND LINES TO ACCEL LANE																
	ADD ISLAND																
	POST LANE AND LINES TO ACCEL LANE																
	POST LANE AND LINES TO CROSSWALK																
PAVEMENT MARKINGS Issued By: Safety & Traffic Engineering Branch July 4, 2012																	



DETAIL A
TYPICAL SPEED MEASUREMENT MARKING

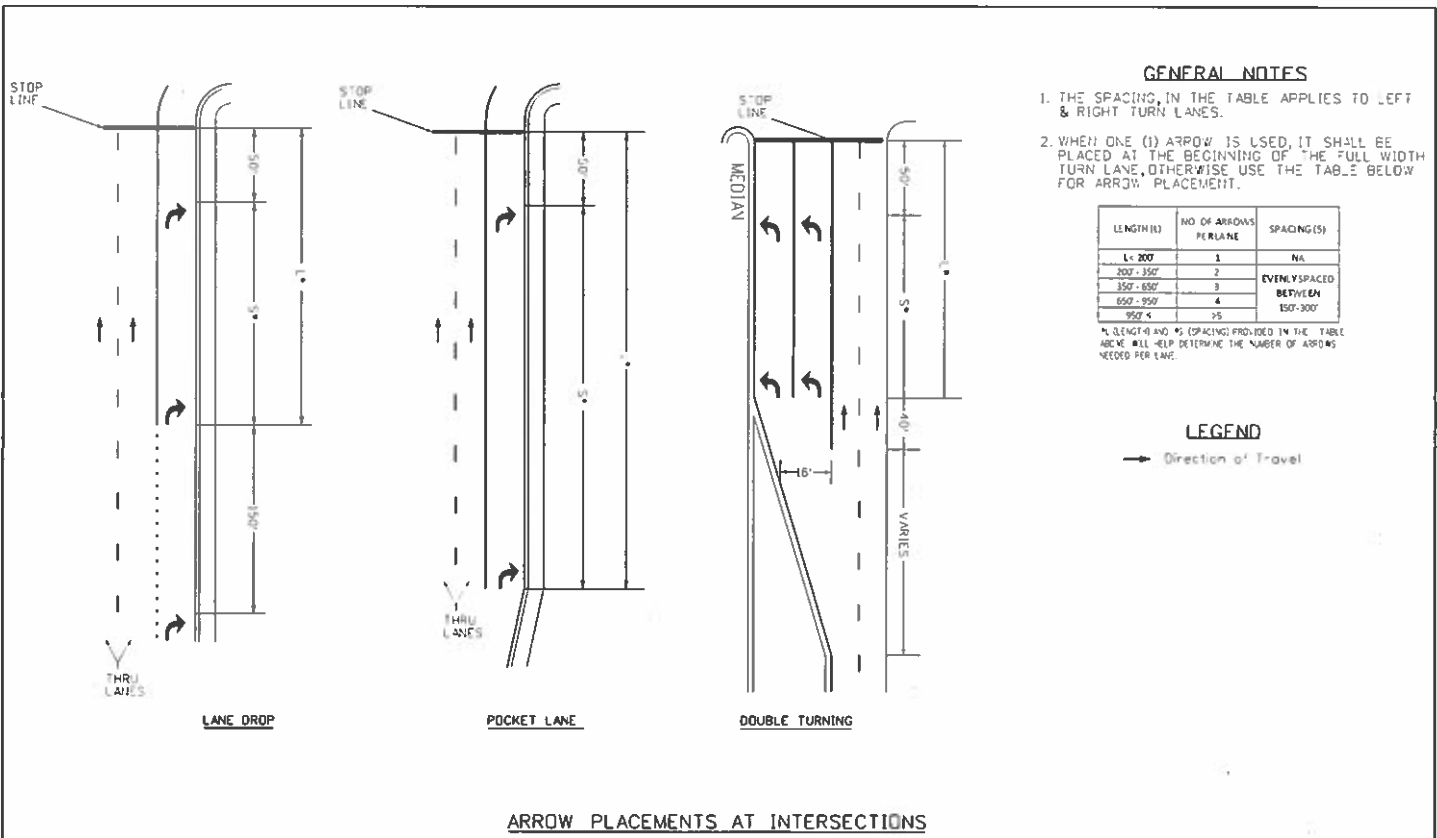


TYPICAL DOUBLE LEFT TURN MARKINGS



TYPICAL STOP LINE PLACEMENT

Computer File Information		Sheet Revisions		<p>Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-757-9545 FAX: 303-757-9219</p>	<p>PAVEMENT MARKINGS</p>	STANDARD PLAN NO.
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Last Modification Date: 02/08/17	Revised: vbnat			<p>Safety & Traffic Engineering KCM</p>	<p>Based By: Safety & Traffic Engineering Branch July 4, 2012</p>	Sheet No. 4 of 8
Full Path: \\colorado\nta\trg\traffic\plans\standard\						
Drawing File Name: S-627-01.dgn						
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GENERAL NOTES

1. THE SPACING, IN THE TABLE APPLIES TO LEFT & RIGHT TURN LANES.
2. WHEN ONE (1) ARROW IS USED, IT SHALL BE PLACED AT THE BEGINNING OF THE FULL WIDTH TURN LANE, OTHERWISE USE THE TABLE BELOW FOR ARROW PLACEMENT.

LENGTH (L)	NO. OF ARROWS PER LANE	SPACING (S)
L < 200'	1	NA
200' - 350'	2	EVENLY SPACED BETWEEN 150'-300'
350' - 650'	3	
650' - 950'	4	
950' <	>5	

* L (LENGTH) AND * S (SPACING) PROVIDED IN THE TABLE ABOVE WILL HELP DETERMINE THE NUMBER OF ARROWS NEEDED PER LANE.

LEGEND

→ Direction of Travel

ARROW PLACEMENTS AT INTERSECTIONS

Computer File Information Creation Date: 02/08/17 Author: VBH/ML Last Modification Date: In File: Full Path: s:\caddoc\civil\pavement\pavement\standard plan Drawing File Name: S-627.dwg CAD Ver: MicroStation v8 Title: Pav to Trade Units: English		Sheet Revisions <table border="1"> <tr> <th>Date</th> <th>Comments</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>		Date	Comments							Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-751-9943 Fax: 303-757-9219 Safety & Traffic Engineering KCM		PAVEMENT MARKINGS Issued By: Safety & Traffic Engineering Branch July 4, 2012		STANDARD PLAN NO. S-627-1 Sheet No. 5 of 8	
Date	Comments																

AREA = 16.1 SQ.FT.
AREA = 27.5 SQ.FT.
AREA = 12.1 SQ.FT.
AREA = 39.8 SQ.FT.
AREA = 58 SQ.FT.

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: THE MEASUREMENT FOR STOP IS REDUCED TO 4" FROM 8" WHEN SQUARE FEET = 5.75 (i.e. OF 230 SQ FT))
 PAVEMENT WORD AND SYMBOL MARKINGS, TRANSVERSE AND LONGITUDINAL, REGIMENTAL CROSSWALK LINES, AND STOP LINES WILL BE PAID FOR IN SQUARE FEET USING THEIR SPECIFIC R.O.S. ITEMS
 LETTER SPACING SHALL BE 8 INCHES EXCEPT FOR THE LETTER "A" WHICH IS 5 INCHES
 USE THE MARKING WORDS "BIKE" IF 6 FT TO 8 FT BIKE LANES ARE INSTALLED.

TAPERING NOTES
 ALL PAVEMENT MARKING APPROACH EDGES FROM THE VEHICLE DIRECTION OF TRAVEL SHALL BE "TAPERED" USING A PAVEMENT PAVER OR SIMILAR TOOL.

DESIGNATED PAYMENT AREAS
 FOR THE FOLLOWING H, W, AND S DIMENSIONS PAI:
H = 4" WORDS
 BIKE - 55 SQ.FT. LANE - 60 SQ.FT.
 ONLY - 60 SQ.FT. XING - 50 SQ.FT.
H = 8" WORDS
 STOP - 230 SQ.FT. XING - 200 SQ.FT.
 ONLY - 225 SQ.FT. LANE - 225 SQ.FT.
 AHEAD - 290 SQ.FT. BIKE - 210 SQ.FT.
 BUS - 185 SQ.FT. HWY - 165 SQ.FT.
 SCHOOL(L) - 330 SQ.FT. THRU - 220 SQ.FT.
 SCHOOL(L) - 850 SQ.FT. PED - 175 SQ.FT.
 NORTH - 306 SQ.FT. SOUTH - 285 SQ.FT.
 EAST - 221 SQ.FT. WEST - 237 SQ.FT.

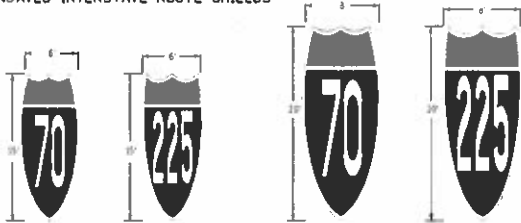
TYPICAL LETTER MEASUREMENTS

PAVEMENT MARKING WORDS AND SYMBOLS

STROKE = 8"
 2-LANE SCHOOL
 1-LANE SCHOOL
 AREA = 11.9 SQ.FT.
 AREA = 10 SQ.FT.

Computer File Information Creation Date: 07/04/12 In: SCL Last Modification Date: 02/08/17 In: SCL; W5M1 Full Path: ... \projects\p13\p13\p13\p13\standards\plans Drawing File Name: S-627-01.dwg CAD Ver: MicroStation V8i Scale: Not to Scale Units: English		Sheet Revisions Date: 02/08/17 Comments:		Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-733-9545 Fax: 303-733-9219 Safety & Traffic Engineering KCM		PAVEMENT MARKINGS Issued By: Safety & Traffic Engineering Branch July 4, 2017		STANDARD PLAN NO. S-627-1 Sheet No. 6 of 8	
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ELONGATED INTERSTATE ROUTE SHIELDS



DESIGNATED PAYMENT AREAS

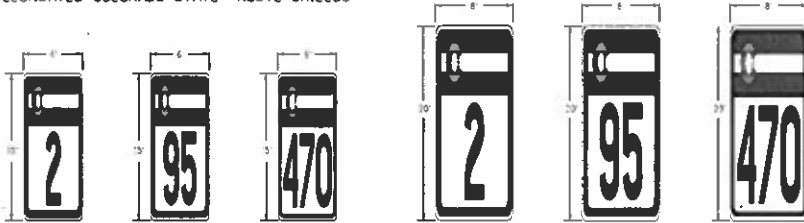
FOR THE FOLLOWING ROUTE SHIELDS & CARDINAL DIRECTIONS DIMENSIONS PAY:

INTERSTATE	
6' x 10' 75" SO.FT.	6' x 20' 125" SO.FT.
COLORADO STATE	
6' x 10' 90" SO.FT.	6' x 20' 160" SO.FT.
US HIGHWAYS	
6' x 10' 112" SO.FT.	6' x 20' 169" SO.FT.
CARDINAL	
6' x 10' 80" SO.FT.	6' x 12' 90" SO.FT.

GENERAL NOTES

- DIMENSIONS**
ELONGATED ROUTE SHIELDS SHALL BE AT LEAST 6' X 20' WHEN USED ON HIGH SPEED ROADWAYS (55 MPH OR MORE).
PER FIGURE 38-25 OF THE 2009 MUTCD ELONGATED ROUTE SHIELD COLORS SHALL CONFORM WITH THE STANDARD HIGHWAY SIGNS AND MARKINGS BOOK.
- CARDINAL DIRECTIONS**
USE CARDINAL DIRECTIONS WITH WHITE ON BLUE WHEN USING INTERSTATE ROUTE SHIELDS.
USE CARDINAL DIRECTIONS WITH BLACK ON WHITE WHEN USING EITHER COLORADO STATE OR US HIGHWAY ROUTE SHIELDS.
CARDINAL DIRECTION MARKING WORD SPREAD FROM PAGE 7 OF 8 MAY BE USED INSTEAD OF PLATE.

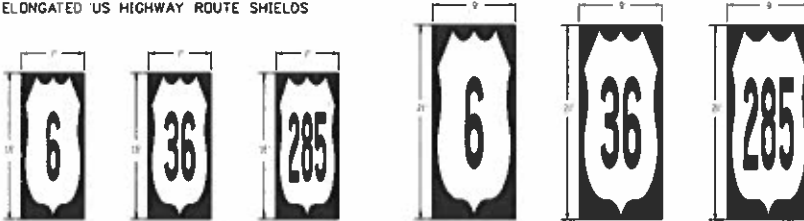
ELONGATED COLORADO STATE ROUTE SHIELDS



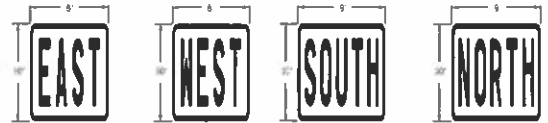
**CARDINAL DIRECTIONS
(WHITE LETTERING ON BLUE BACKGROUND)**



ELONGATED US HIGHWAY ROUTE SHIELDS

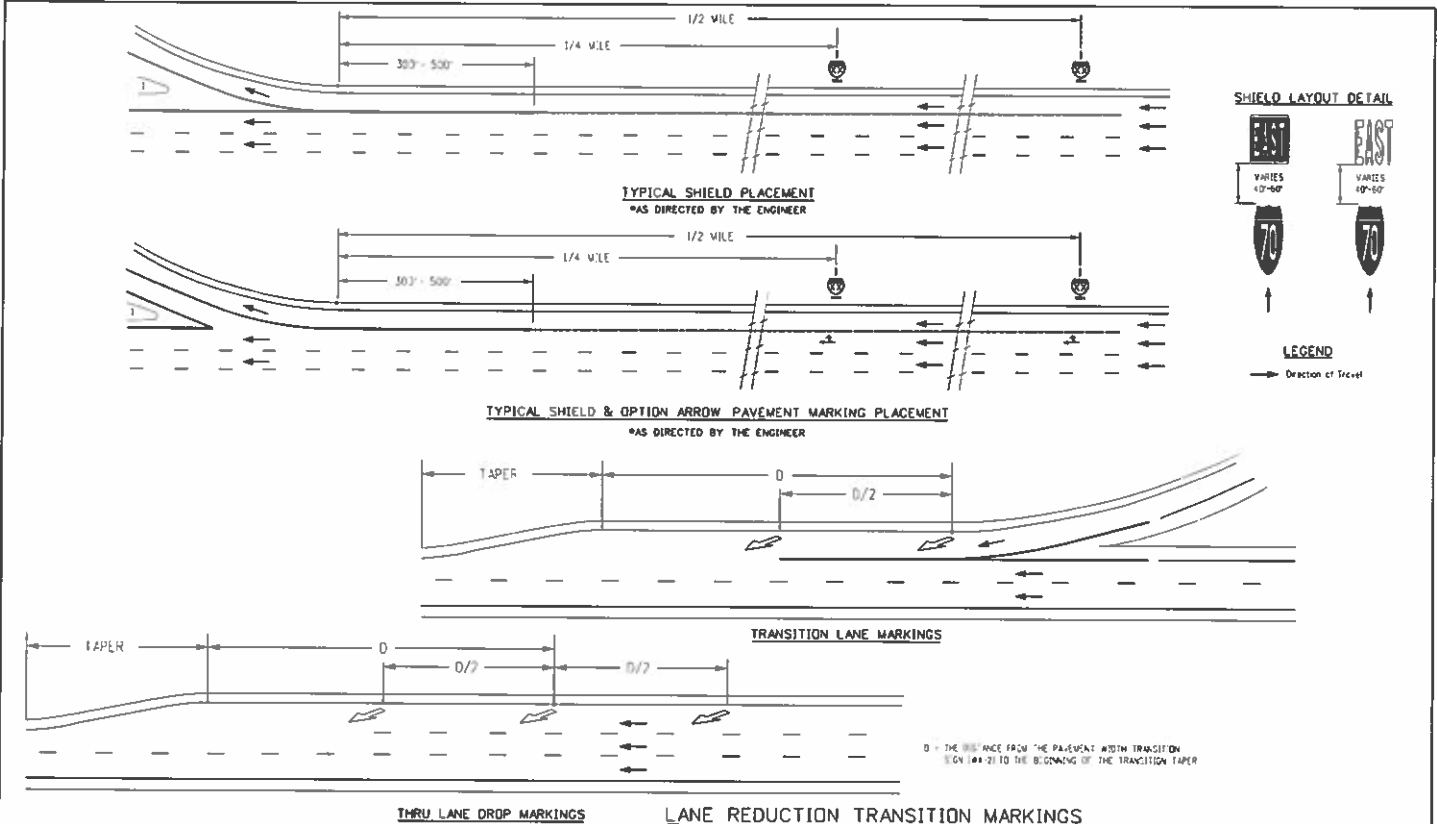


**CARDINAL DIRECTIONS
(BLACK LETTERING ON WHITE BACKGROUND WITH BLACK BORDER)**



ELONGATED ROUTE SHIELDS & CARDINAL DIRECTION MARKINGS

Computer File Information		Sheet Revisions		<p>Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-757-4954 Fax: 303-757-2219</p>	<p>PAVEMENT MARKINGS</p> <p>Drawn: Pictability & Traffic Engineering Branch July 4, 2012</p>	<p>STANDARD PLAN NO.</p> <p>S-627-1</p> <p>Sheet No. 7 of 8</p>	
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AD SUBMITTAL - JANUARY 2, 2018

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Date:	Comments:											

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 REPOSITION, REPAIRED, OR DAMAGED, PLACED 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 MSA QUALITY GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES & FEATURES.
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, SIGN REDUCTION SHALL BE IN ACCORDANCE WITH CODE FORM 563, "AUTHORIZATION AND DECLARATION OF TEMPORARY SPEED LIMITS." WHEN A CHANGE IN AN EXISTING SPEED LIMIT IS REQUIRED, THE P21 SIGNS, SHOWN ON THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES, SHOULD BE INSTALLED AT THE LOCATIONS SHOWN ON THE TYPICAL CASES BY P21 (OPTIONAL) SIGNS. AN ADVISORY SPEED PLATE (A13-12) 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 10 MPH PER SIGN INSTALLATION.
4. ANY TRAFFIC CONTROL DEVICE THAT IS DAMAGED, WEATHERED, WORKN, OR OTHERWISE DEEMED UNACCEPTABLE BY THE ENGINEER, SHALL BE REPLACED.
5. CONTRACTOR AND PEDESTAL "NO-HIT" 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	001 TO 900 50 FT (INCLUDING TYPE 1 AND TYPE 2 SIGNPOSTS)
PANEL SIZE B	901 TO 1500 50 FT
PANEL SIZE C	GREATER THAN 1500 FT

CONSTRUCTION TRAFFIC SIGN (SPECIAL) 50 FT, MAY BE USED FOR SOME PROJECT SPECIFIC INFORMATION SIGNS.

FOR DETAILED DIMENSIONS OF SIGNS WITH SIGN NUMBER, SEE STANDARD HIGHWAY SIGNS AND THE "COLORADO SUPPLEMENT" TO THE SIGN MANUALS FOR OTHER SIGNS WILL BE FURNISHED IN THE PLANS, TRANSMITTED TO THE ENGINEER WITHIN APPROXIMATELY 10 BUSINESS DAYS OF THE PROJECT START DATE.

P21-5 WARNING SIGNS SHALL BE FURNISHED WITH ENCLOSED PLACARDS 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, MULTILANE RAMP, ONE-WAY STREETS, AND AS DIRECTED BY THE ENGINEER, EXCEPT WHERE ONE OR MORE SHOULDERS IS CLOSED (E.G. CASE 11 ON SHEET 7).
8. ADDITIONAL TRAFFIC CONTROL DEVICES ADDRESSING FLAGGING, SPEED REDUCTION, ETC. WILL BE NECESSARY FOR SET-UP AND TAKE-DOWN OF MOST CASE APPLICATIONS, INCLUDING SITE ACCESS AND PAVEMENT MARKING REPAIR AND INSTALLATION OPERATIONS.
9. BASED ON SIGN 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 SCIENCE, 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 CONTROL, 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 LETTERING SHALL BE OF GOOD WORKMANSHIP (EVEN OR HAND LETTERING WILL NOT BE ACCEPTED).
 - d. PORTABLE OR TEMPORARY MOUNTING SHALL NOT BE CONSTRUCTED OR WEIGHTED BY ANY METHOD OR MATERIAL THAT WAIVES THEM HAZARDOUS TO TRAFFIC.
 - e. CERTAIN POST SIZES AND SHAPES REQUIRE A "BREAK AWAY" DEVICE. SEE THE APPLICABLE STANDARD PLAN. OTHER POST DESIGNS OF SYSTEMS REQUIRE THE SUBMITTAL OF AN ENGINEER'S 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.

12.1 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 20 FEET 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 SHOCKE TYPE BRACKET IF THE BRACKET ALLOWS THE SIGN PANEL TO BE TURNED PARALLEL TO THE ROADWAY. THE SIGN MAY REMAIN IN PLACE WHEN NOT APPROVED, BUT LOCATING THE SIGN PANEL SOON 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 (AS MUCH OF MORE WITH AN AOT OF 5000 OR MORE).
15. TYPE 1 BARRICADES SHALL NOT BE USED ON FREEWAYS, EXPRESSWAYS, OR OTHER HIGH SPEED ROADWAYS (AS MUCH 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 FILLED WITH AN IMPACT ATTENUATION DEVICE.
17. CHANNELIZING DEVICE SPACING, IN FEET, SHALL BE AS FOLLOWS:
 - a. FOR TAPER AND TRANSITION, SPACING SHALL BE THE NUMERICAL VALUE OF THE SPEED LIMIT (E.G. 35 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. 35 MPH = 70 FEET TO 100 FEET MAXIMUM).
18. FOR DETAILS ON BARRICADES, CONCRETE BARRIER (TEMPORARY), 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 FULL DIRECTIONAL SPREAD, MOUNT QUARTIC LIGHT SOURCE, 1500 WATT MAXIMUM, SELF-SUPPORTING STAND WITH VARIABLE LIGHT HEIGHT FROM A MINIMUM OF 8 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. FOR TEMPORARY PAVEMENT MARKINGS AND CONTROL POINTS FOR INSTALLING "HOST PAVEMENT MARKINGS" FOR DIVIDED ROADWAYS THAT ARE BEING CONSTRUCTED UNDER TRAFFIC, FULL COMPLIANCE CENTER LINE, SHOULDER LINE, AND FOOT LINE TEMPORARY MARKINGS SHALL BE IN PLACE AT THE END OF EACH WORK DAY IN ACCORDANCE WITH SECTION 627.01(02) 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. TOP OF THE CONTRACTOR'S METHOD OF HANDLING TRAFFIC MUST.
22. ADDITIONAL YAW SIGNAGE SHOULD BE CONSIDERED AT LEAST A MILE IN ADVANCE OF THE SIGNAGE 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 INSUFFICIENT EXITS. ADDITIONAL SIGNAGE IS ALSO ENCOURAGED IN LOCATIONS WHERE DIVERGENCE OF SIGNS 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. PAVED PAVEMENT MARKINGS MAY BE USED TO SUPPLEMENT TEMPORARY SIGNING DURING NON-SHOW PERIODS. THEIR USE IS ENCOURAGED ON HIGH 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, 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:
02/06/12	SHEET 13 UPDATE TO 2009 MCDOT STD
02/26/13	SHEET 11 UPDATE TO NOTE 1
02/27/13	SHEET 8 UPDATE TAPER TO MCDOT STD
07/28/13	SIGNS 8, 10, 15 & 20 UPDATE TO NEW MCDOT
03/27/14	SIGNS 17 & 18 UPDATE SIGNS AND TAPER
07/22/14	SHEET 11 UPDATE TO NOTE 10
12/8/14	REVISION TO 2014 MCDOT STANDARD

Computer File Information	
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CAD User: Modification VB	Sign: Not to Scale
Unit: English	

Colorado Department of Transportation

4201 East Arapahoe Avenue
Denver, Colorado 80222
Phone: 303-757-9543 Fax: 303-757-9210

Safety & Traffic Engineering KCM

TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.

S-630-1

Sheet No. 1 of 24

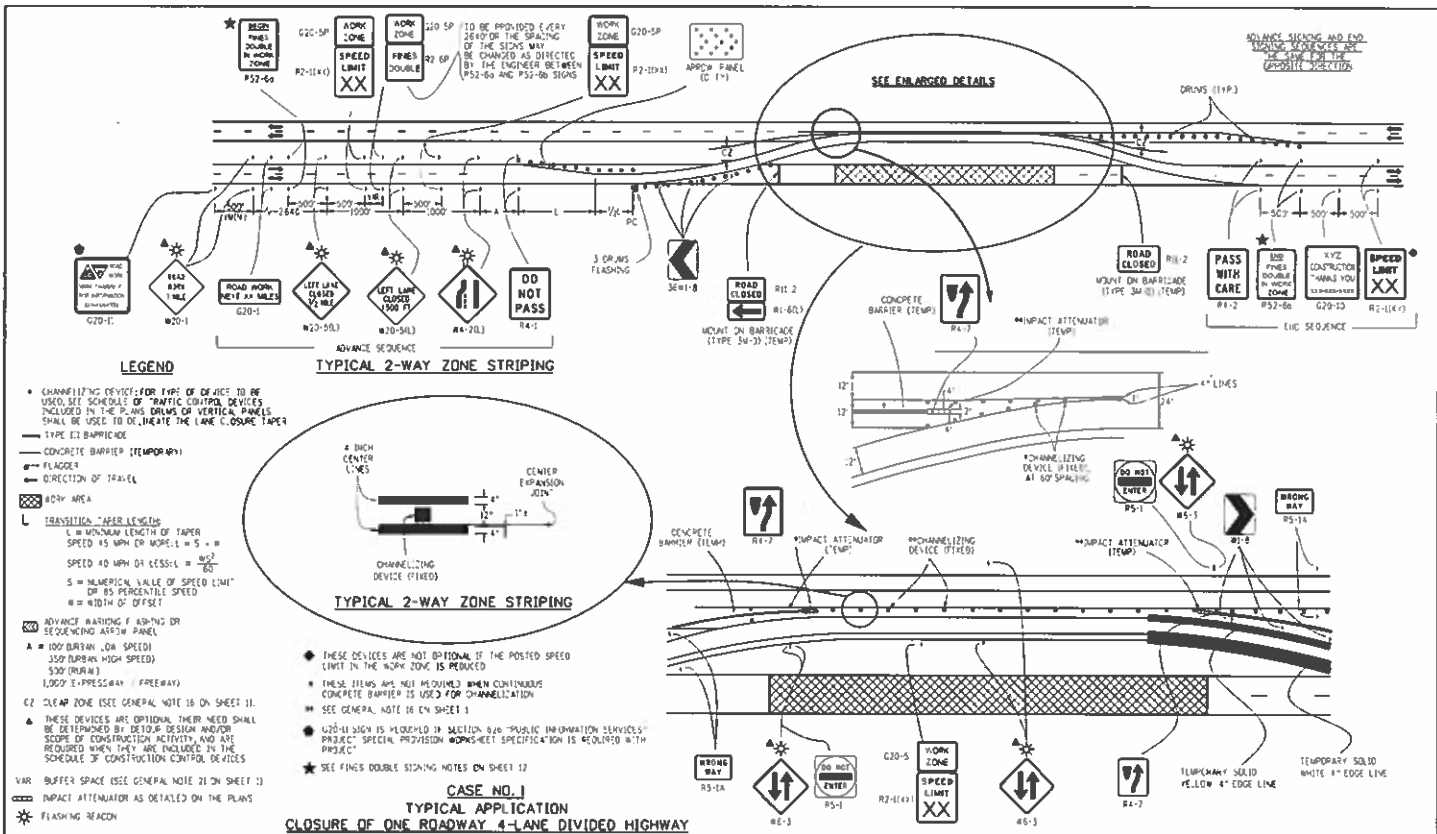
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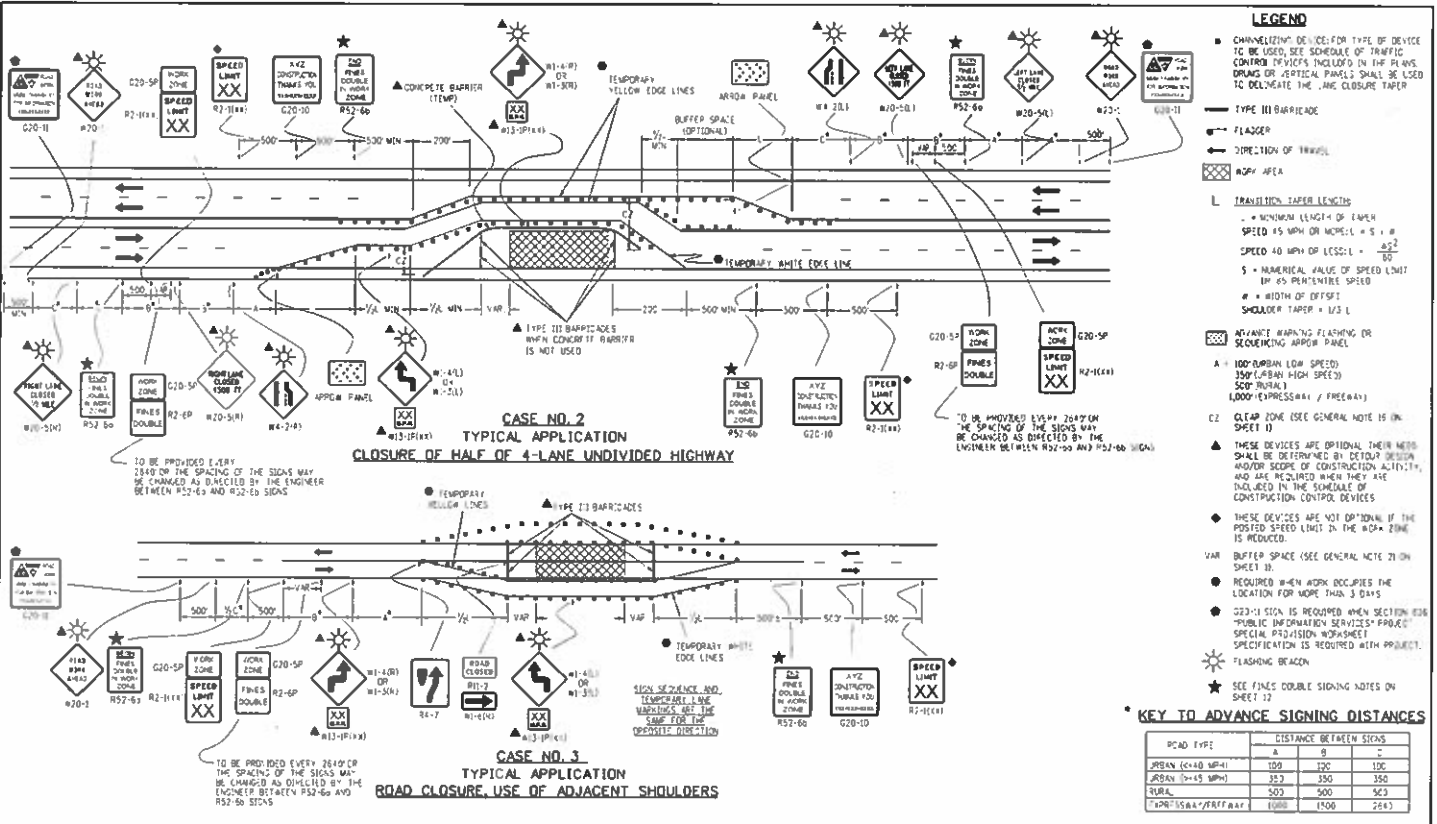
TYPICAL CASE DESCRIPTION	CASE NO.	SHEET NO.
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Date	Comments							
05/19/16	ADD CASES AND UPDATED SHEET NUMBERS							

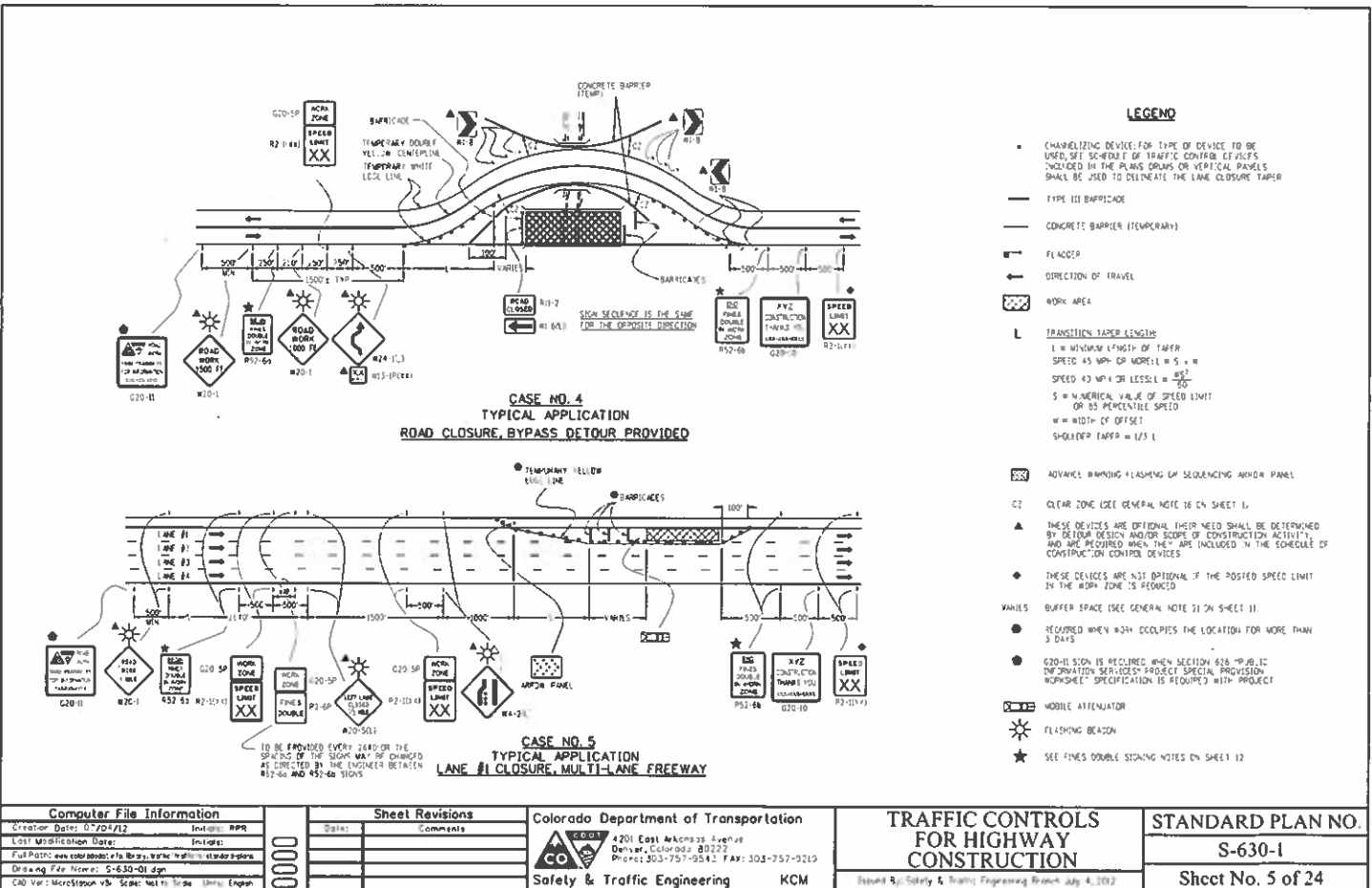


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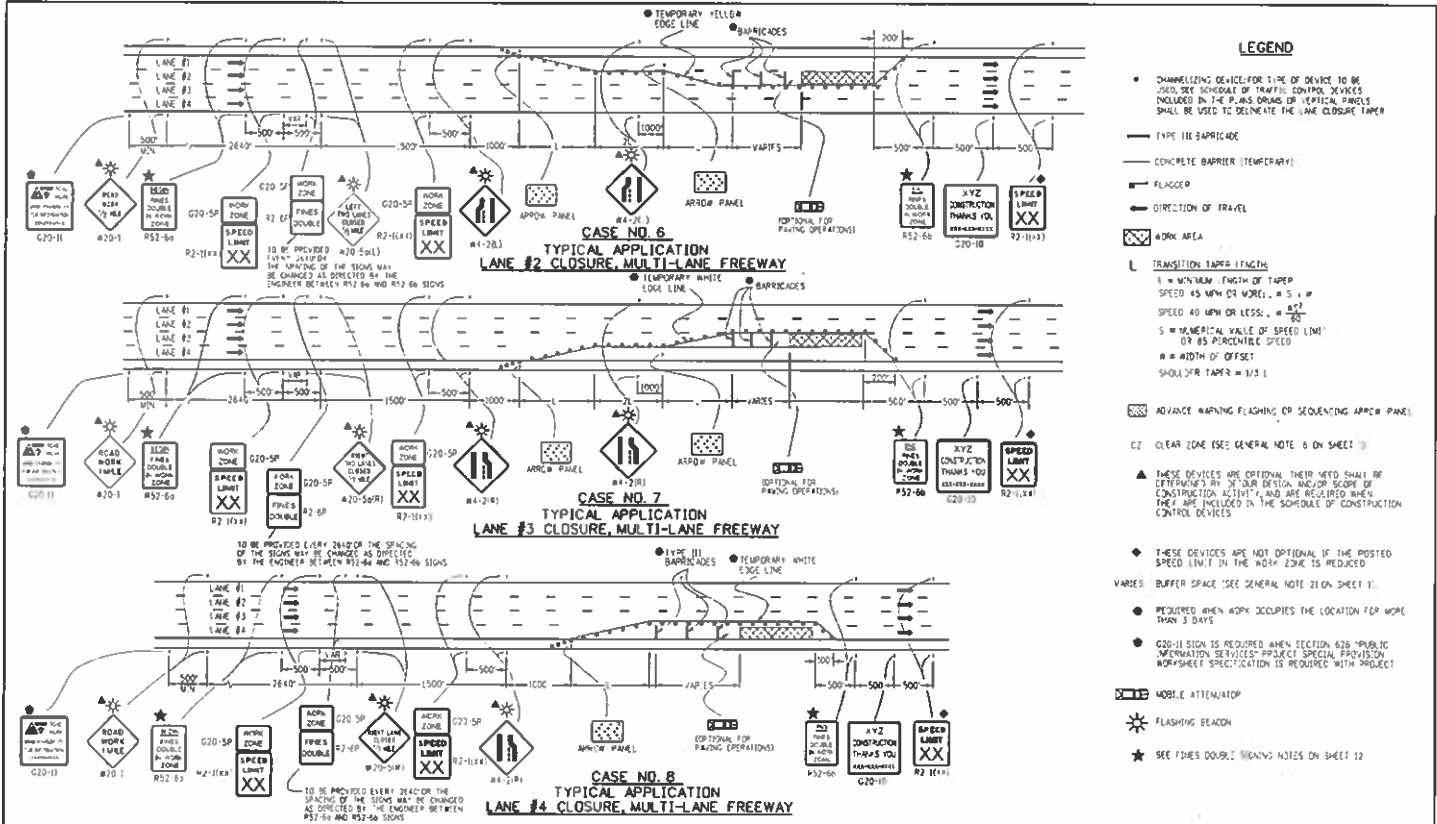


- LEGEND**
- CHANGELINE DEVICE FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR FLASHER PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
 - TYPE III BARRICADE
 - FLAGGER
 - DIRECTION OF TRAVEL
 - ADWP AREA
 - TRANSITION TAPER LENGTHS
 - S = MINIMUM LENGTH OF TAPER
 - SPEED 45 MPH OR MORE: $L = S + \#$
 - SPEED 40 MPH OR LESS: $L = \frac{S^2}{60}$
 - S = NUMERICAL VALUE OF SPEED LIMIT
 - # = WIDTH OF DEFSI
 - SHOULDER TAPER = $L/3$
 - ADVANCE WARNING FLASHING OR SLOWING ARROW PANEL
 - A = 100' (URBAN LOW SPEED)
350' (RURAL HIGH SPEED)
500' (RURAL)
1,000' (EXPRESSWAY / FREEWAY)
 - C2 CLEAR ZONE (SEE GENERAL NOTE 15 ON SHEET 1)
 - THESE DEVICES ARE OPTIONAL, THEIR NEED SHALL BE DETERMINED BY DETAIL 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.
 - VAR BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1)
 - REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS
 - G23-1 SIGN IS REQUIRED WHEN SECTION 808 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
 - FLASHING BEACON
 - SEE LINES DOUBLE SIDING NOTES ON SHEET 12
- KEY TO ADVANCE SIGNING DISTANCES**
- | ROAD TYPE | DISTANCE BETWEEN SIGNS | | |
|----------------------|------------------------|------|------|
| | A | B | C |
| URBAN (<45 MPH) | 100 | 200 | 100 |
| URBAN (45-55 MPH) | 250 | 350 | 350 |
| RURAL | 500 | 500 | 500 |
| EXPRESSWAY / FREEWAY | 1000 | 1500 | 2000 |

Computer File Information Creation Date: 02/04/12 Initia: RRR Last Modification Date: 02/27/13 Initia: MEY Full Path: www.colorado.gov/transportation/traffic-control/standard-plans Drawing File Name: S-630-01.dgn CAD Ver: MicroStation V8i Scale: Not to Scale Units: English		Sheet Revisions Date: 02/27/13 Comments: UPDATE TAPER TO MUTCD STD		Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-737-9543 Fax: 303-737-9219		TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION Issued By: Safety & Traffic Engineering Branch July 4, 2012		STANDARD PLAN NO. S-630-1 Sheet No. 4 of 24	
Safety & Traffic Engineering		KCM							

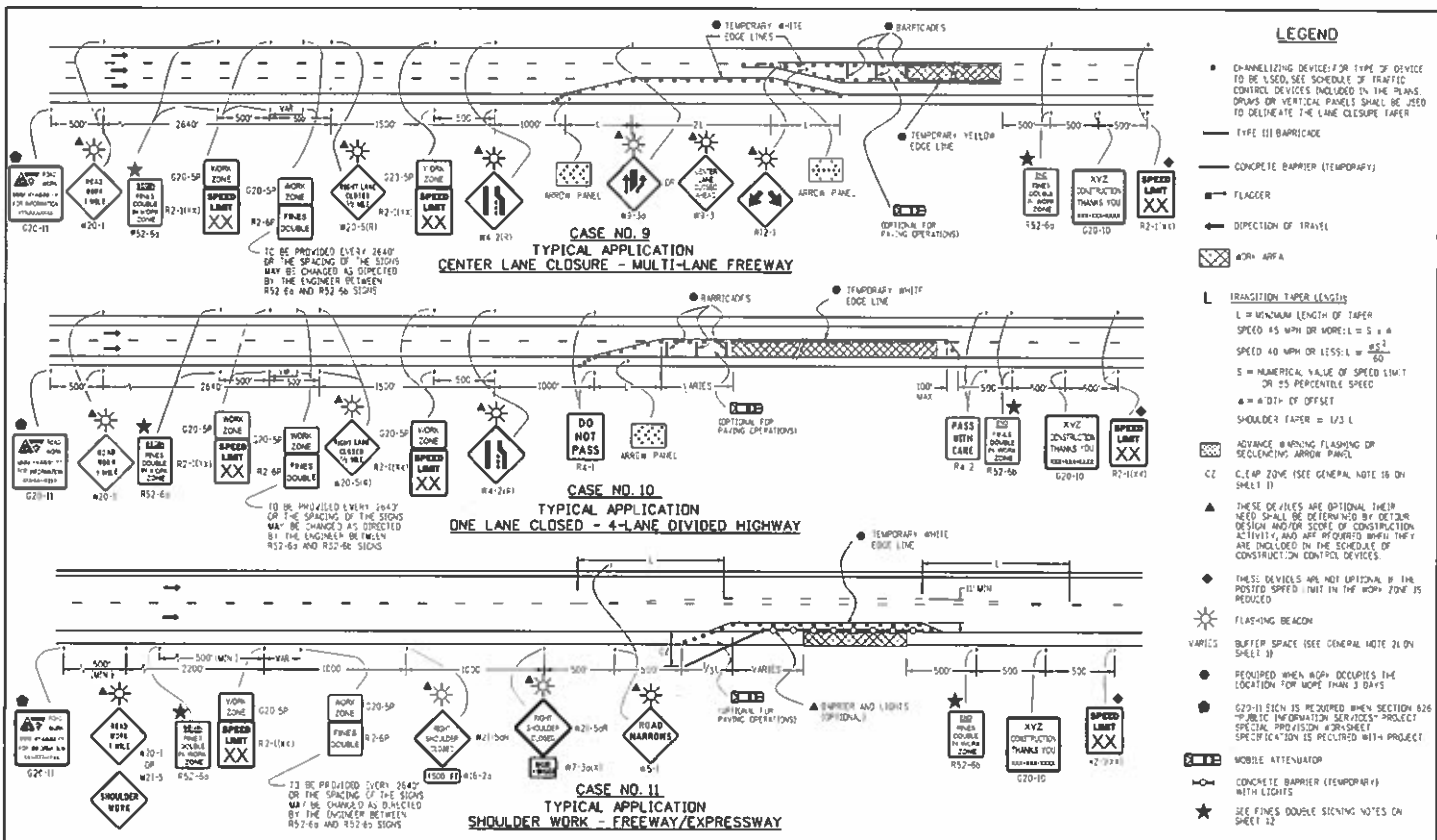


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Last Modification Date:				Project: 303-757-0043	Fax: 303-757-0210	Sheet No. 5 of 24			
Full Path: see color book: rfa library, traffic controls standard options				Safety & Traffic Engineering KCM		Sheet No. 5 of 24			
Drawing File Name: S-630-01.dgn									
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- ### LEGEND
- CHANNELIZING DEVICE FOR 1/8" OF DEVICE TO BE USED SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS DRAWING OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER
 - TYPE III BARRICADE
 - CONCRETE BARRIER (TEMPORARY)
 - FLAGGER
 - DIRECTION OF TRAVEL
 - ▨ WORK AREA
 - L TRANSITION TAPER LENGTH
 $L = \text{MINIMUM LENGTH OF TAPER}$
 $S = \text{SPEED 45 MPH OR LESS, } \# = \frac{S^3}{30}$
 $S = \text{NUMERICAL VALUE OF SPEED LIMIT}$
 $\# = \text{WIDTH OF OFFSET}$
 $\text{SHOULDER TAPER} = 1/3 L$
 - ⏏ ADVANCE WARNING FLASHING OR SEQUENCING APPROX PANEL
 - C2 CLEAR ZONE (SEE GENERAL NOTE 6 ON SHEET 1)
 - ▲ THESE DEVICES ARE OPTIONAL THEIR NEED SHALL BE DETERMINED BY YOUR 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
 - VARIABLES BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1)
 - 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
 - ⏏ MOBILE ATTENUATOR
 - ⚡ FLASHING BEACON
 - ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12

Computer File Information Creation Date: 07/04/12 Invt: RRR Last Modification: 05/19/16 Invt: MB/ML Full Path: \\c:\projects\m\18\16\ad\traffic\standards\plan Drawing File Name: S-630-01.dgn CAD Ver: MicroStation V8 Scale: Not to Scale Units: English		Sheet Revisions <table border="1"> <tr><th>Date</th><th>Comments</th></tr> <tr><td>05/19/16</td><td>ADD TO THE PLAN THE WORK ZONE CHANGES TO THE PLAN TO BE USED</td></tr> </table>		Date	Comments	05/19/16	ADD TO THE PLAN THE WORK ZONE CHANGES TO THE PLAN TO BE USED	Colorado Department of Transportation 4200 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-757-9545 FAX: 303-757-9219 Safety & Traffic Engineering KCM	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION Issued By: Safety & Traffic Engineering Branch July 4, 2013	STANDARD PLAN NO. S-630-1 Sheet No. 6 of 24
Date	Comments									
05/19/16	ADD TO THE PLAN THE WORK ZONE CHANGES TO THE PLAN TO BE USED									



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05/19/16	AWA, AWA FOR PAVING OPERATIONS
	CONCRETE BARRIER WITH LIGHTS

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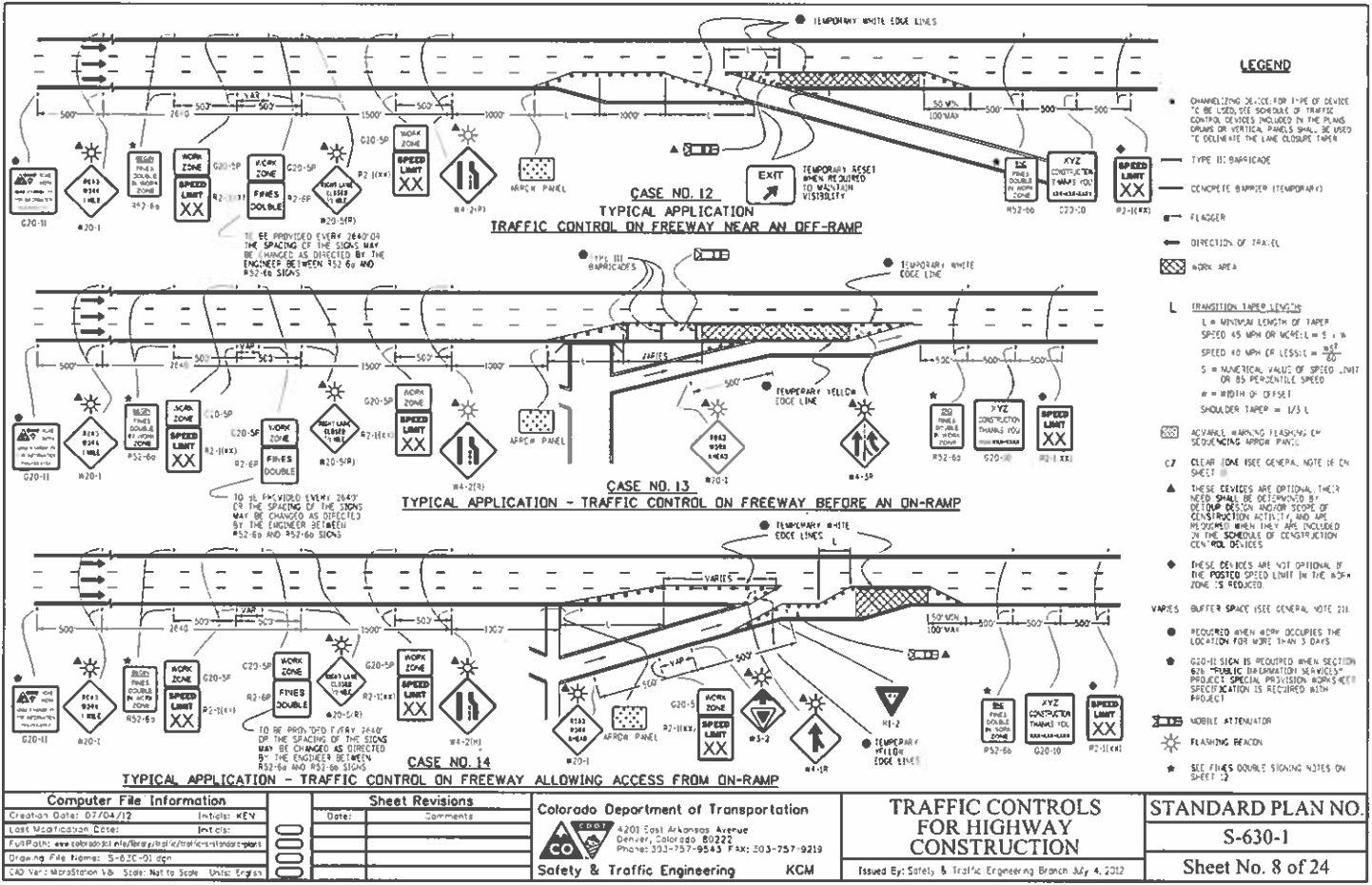
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

Issued by Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.

S-630-1

Sheet No. 7 of 24



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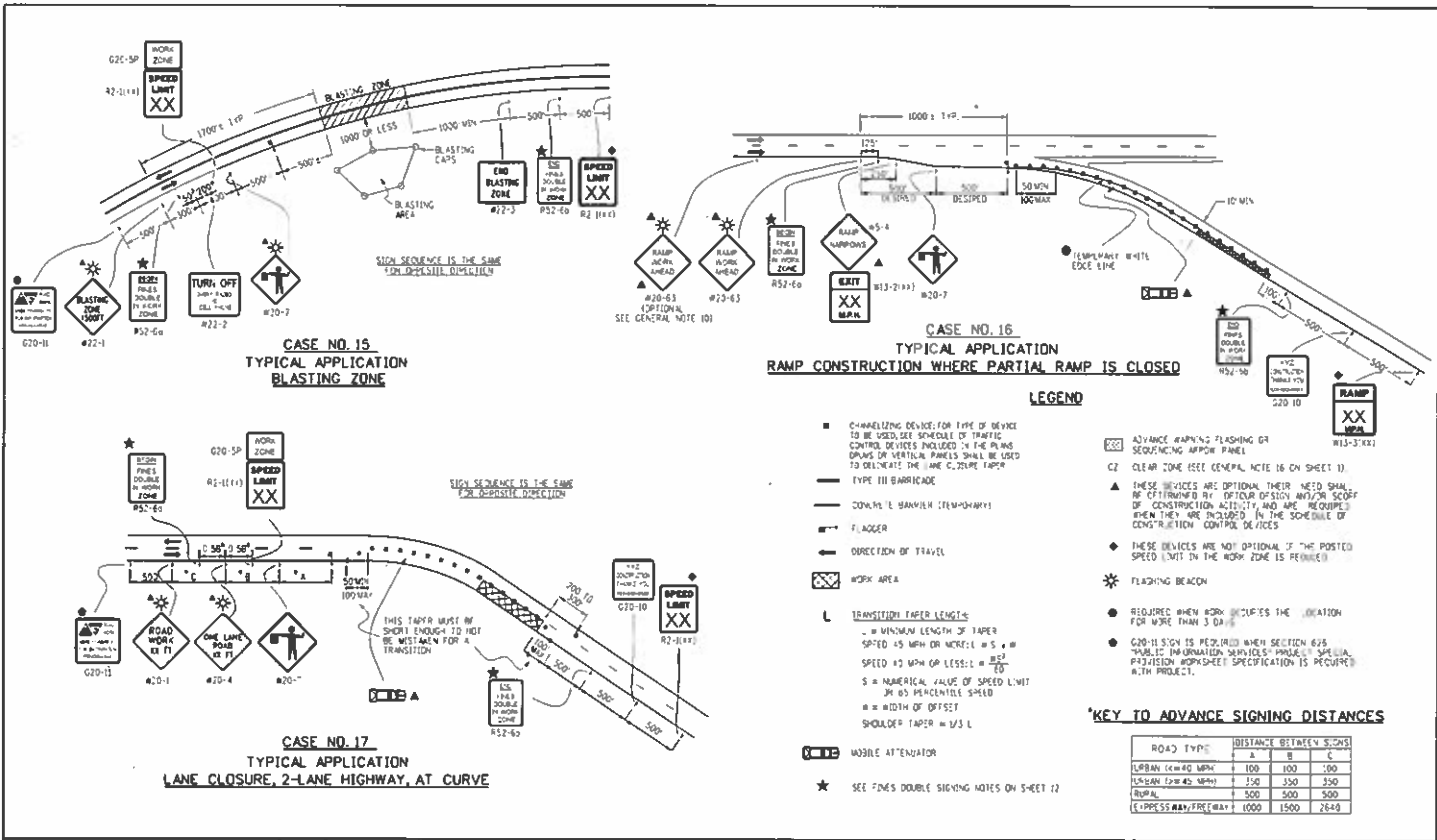
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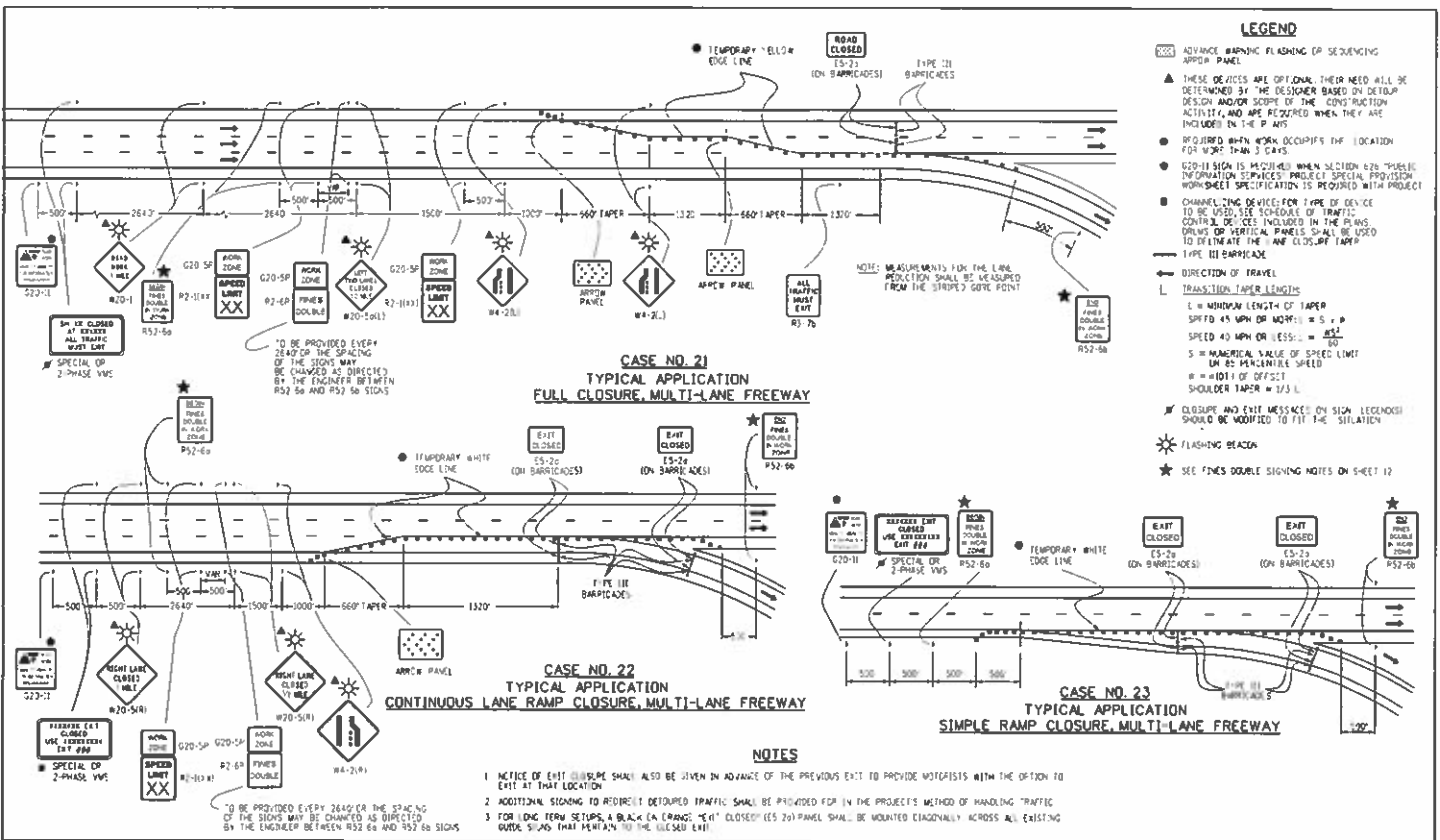
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Issued By: Safety & Traffic Engineering Branch July 4, 2012

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 S-630-1
 Sheet No. 8 of 24



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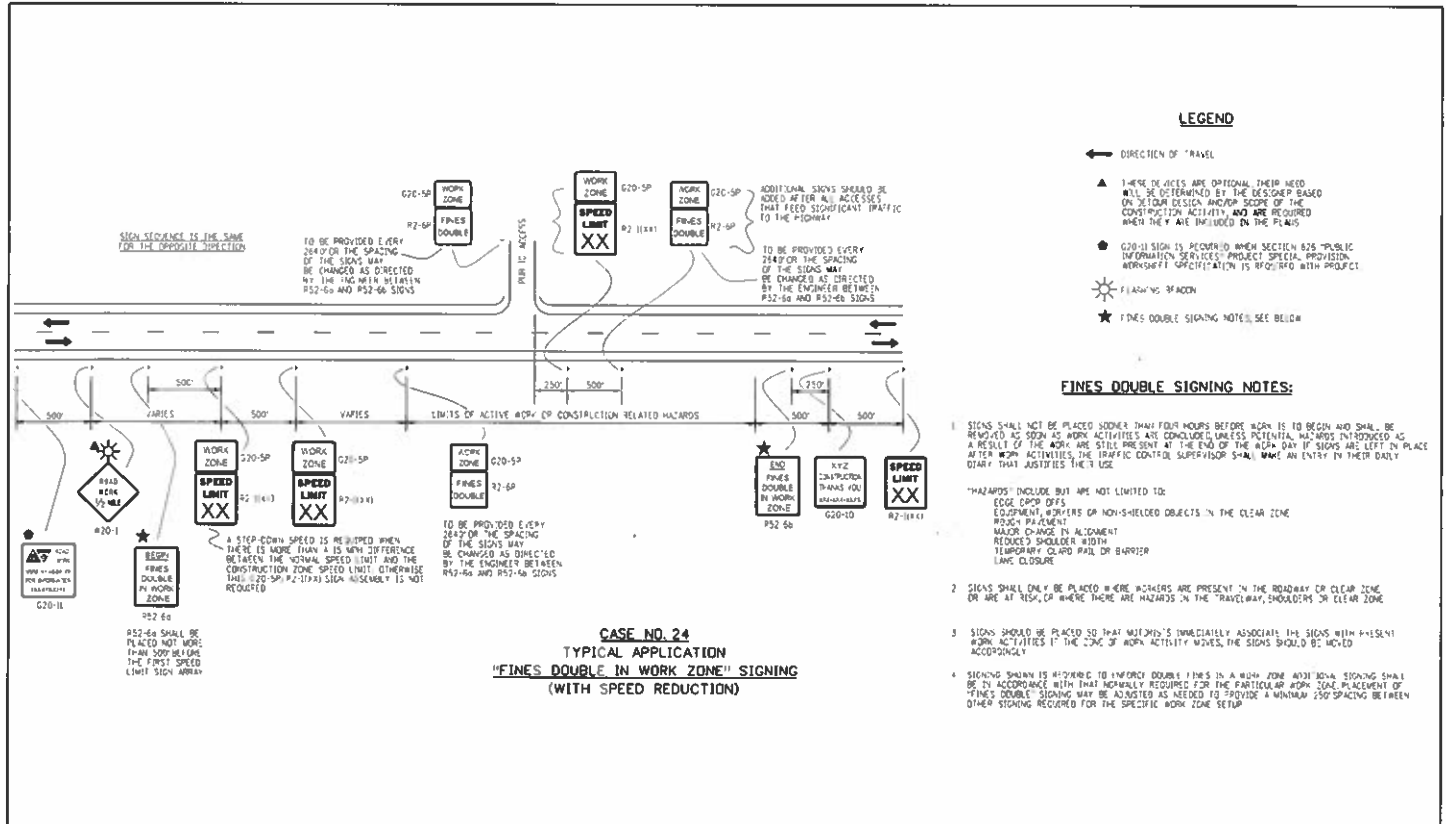
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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: 303-757-9543 FAX: 303-757-9219

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

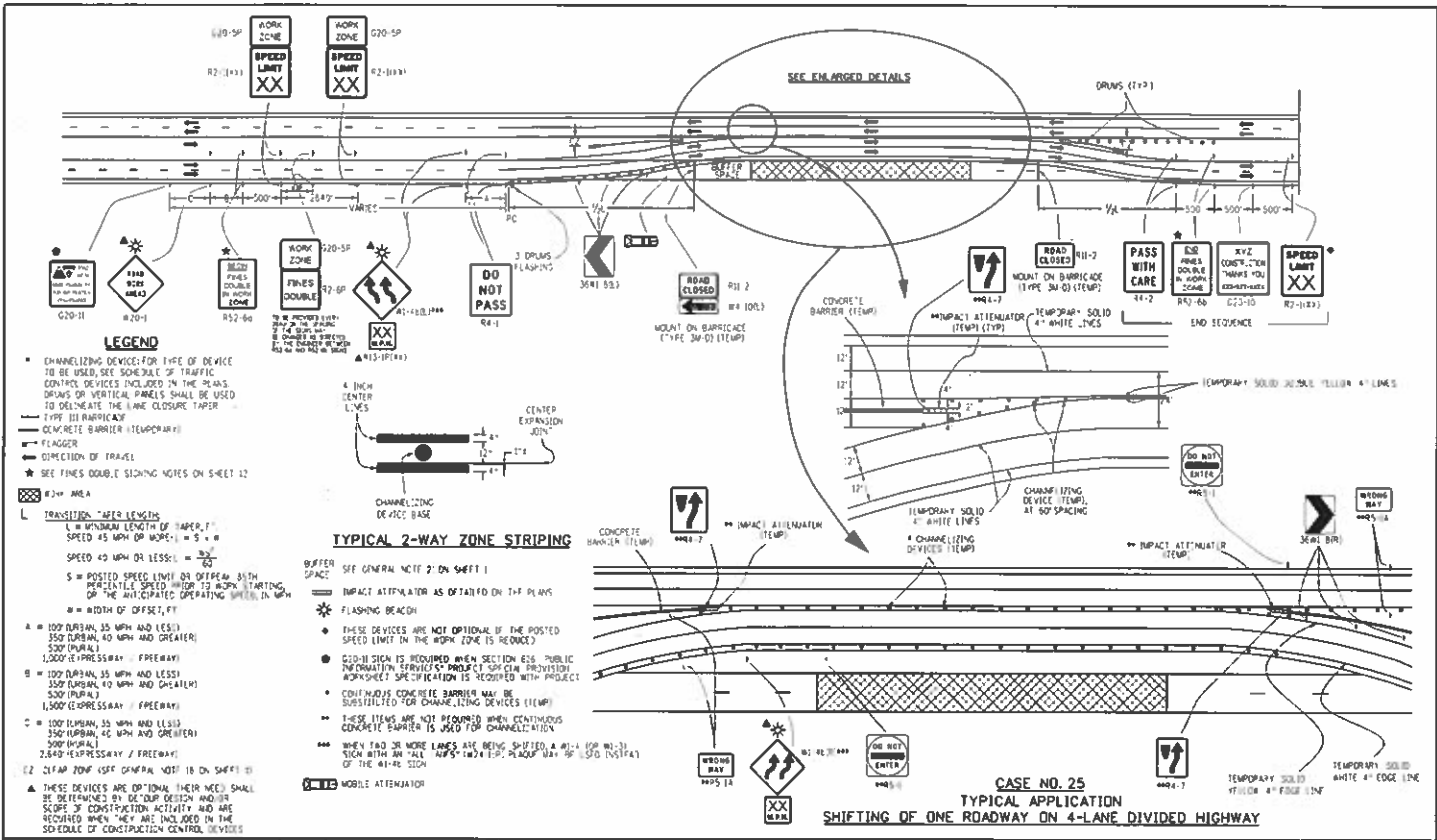
Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.
S-630-1
Sheet No. 11 of 24



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

Computer File Information Create Date: 07/05/12 Initials: ARR Last Modification Date: Initials: Full Path: \\co\adobe\info\bray\traffic\signs\plans\pdp Drawing File Name: S-630-01.dgn CAD File: MacroStation v8r Scale: Units: English		Sheet Revisions <table border="1"> <tr><th>Date</th><th>Description</th></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>		Date	Description							Colorado Department of Transportation 3001 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-737-9543 Fax: 303-737-9219 Safety & Traffic Engineering KCM		TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION Issued By: Safety & Traffic Engineering March July 4, 2012		STANDARD PLAN NO. S-630-1 Sheet No. 12 of 24	
Date	Description																



- LEGEND**
- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DIMENSIONS OF VERTICAL PANELS SHALL BE USED TO DETERMINE THE LINE CLOSURE TAPER.
 - TYPE III BARRICADE
 - CONCRETE BARRIER (TEMPERARY)
 - FLAGGER
 - DIRECTION OF TRAVEL
 - SEE FINES DOUBLE SIGNING NOTES ON SHEET 12
 - R2+ AREA
 - L TRANSITION "AFTER LENGTH"
 - L = MINIMUM LENGTH OF TAPER, FT.
 - SPEED 45 MPH OR MORE: $L = S \times W$
 - SPEED 40 MPH OR LESS: $L = \frac{300}{S}$
 - S = POSTED SPEED LIMIT OR OPERATING SPEED, MPH
 - W = WIDTH OF OFFSET, FT.
 - A = 100' (URBAN, 35 MPH AND LESS) / 350' (URBAN, 40 MPH AND GREATER) / 500' (RURAL) / 1,000' (EXPRESSWAY / FREEWAY)
 - B = 100' (URBAN, 35 MPH AND LESS) / 350' (URBAN, 40 MPH AND GREATER) / 500' (RURAL) / 1,000' (EXPRESSWAY / FREEWAY)
 - C = 100' (URBAN, 35 MPH AND LESS) / 350' (URBAN, 40 MPH AND GREATER) / 500' (RURAL) / 1,000' (EXPRESSWAY / FREEWAY)
 - D CLEAR ZONE (SEE GENERAL NOTE 18 ON SHEET 12)
 - THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY AND ARE REQUIRED WHEN THEY ARE INDICATED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- TYPICAL 2-WAY ZONE STRIPING**
- SEE GENERAL NOTE 2 ON SHEET 1
 - IMPACT ATTENUATOR AS OBTAINED ON THE PLANS
 - FLASHING BEACON
 - THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED
 - G20-II SIGN IS REQUIRED WHEN SECTION 616 PUBLIC INFORMATION SERVICES PROJECT SYSTEM PROVISION WORKSHEET SPECIFICATION IS ADOPTED WITH PROJECT
 - CONTINUOUS CONCRETE BARRIER MAY BE SUBSTITUTED FOR CHANNELIZING DEVICES (TEMP)
 - THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION
 - WHEN TWO OR MORE LANES ARE BEING SHIFTED, A R2+ AREA WITH AN IMPACT ATTENUATOR SHALL BE USED TO PROTECT THE 41-RE SIGN
 - R2+ MOBILE ATTENUATOR

Computer File Information	
Creation Date: 07/04/12	Intc: RRR
Rev: 01	Intc: RRR
Mod: 02/06/13	Intc: RRR
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Scale: Not to Scale	Units: English

Sheet Revisions	
Date:	Comments:
02/06/13	UPDATE TO 2009 M/C/O STANDARD

Colorado Department of Transportation

200 East Arkansas Avenue
Denver, Colorado 80222
Phone: 303-757-0543 FAX: 303-757-0210

Safety & Traffic Engineering KCM

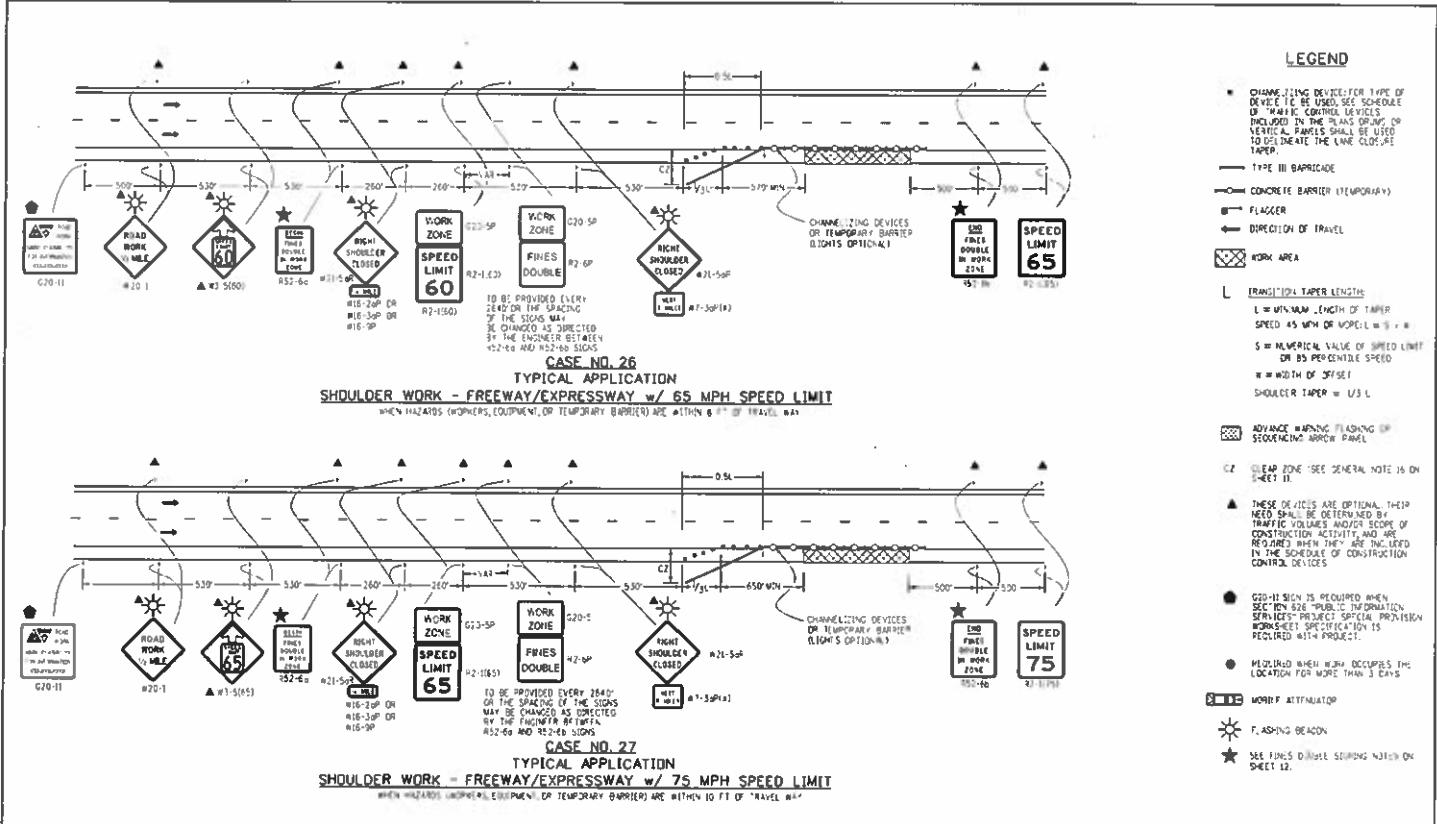
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

Issued By: Safety & Traffic Engineering Branch July 4, 2012

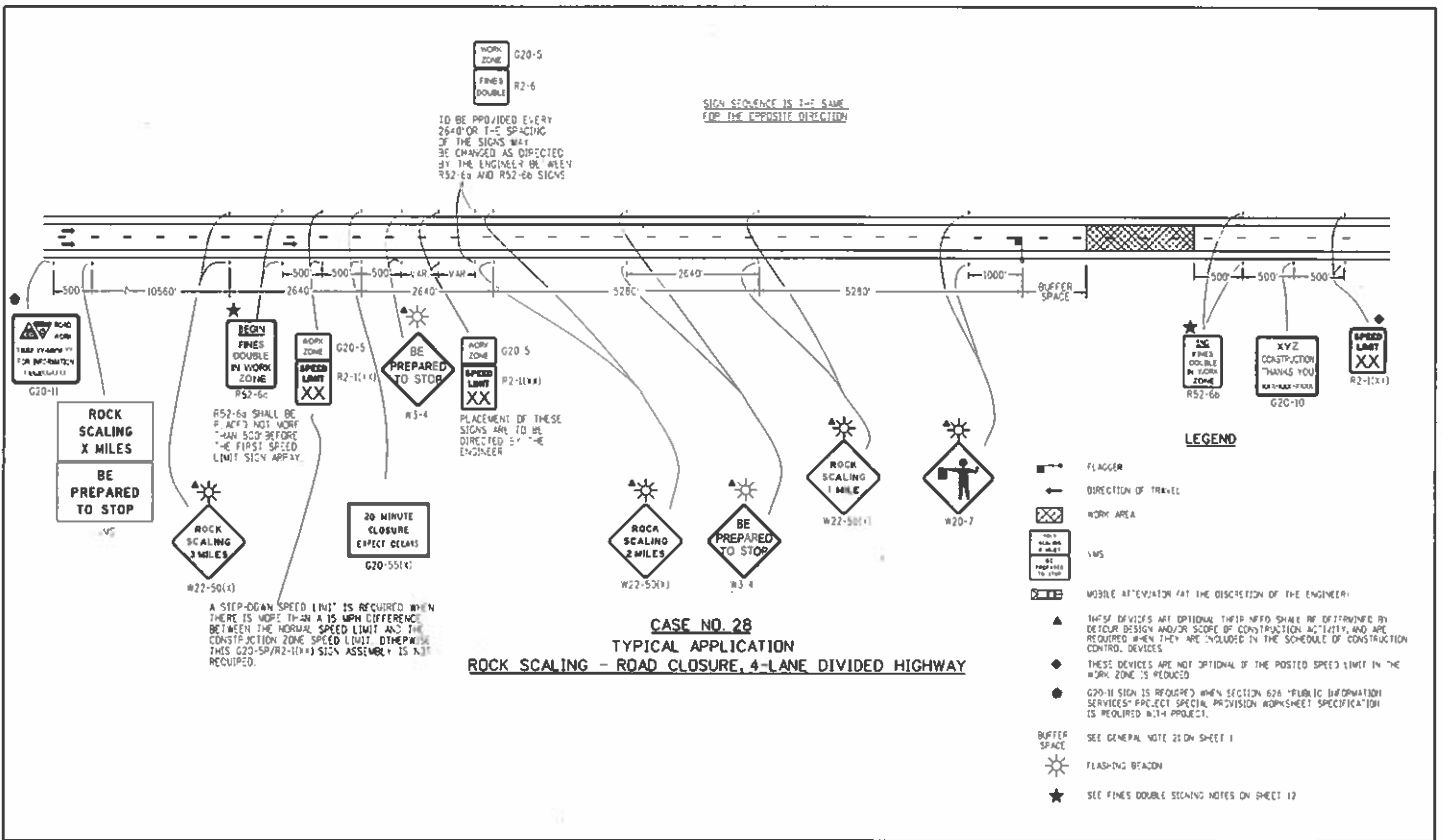
STANDARD PLAN NO.

S-630-1

Sheet No. 13 of 24



Computer File Information		Sheet Revisions		Colorado Department of Transportation 4201 East Arapahoe Avenue Denver, Colorado 80222 Phone: 303-757-9543 Fax: 303-757-9219 Safety & Traffic Engineering KCM	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION Issued By: Safety & Traffic Engineering Branch July 4, 2012	STANDARD PLAN NO. S-630-1 Sheet No. 14 of 24
Creation Date: 07/04/12	Units: RRS	Date:	Comments:			
Last Modification Date:	Units:					
Full Path:						
Drawing File Name:	S-630-01.dgn					
CAD User:	MarsStation V&P	Scale:	Not to Scale	Units:	English	



Computer File Information	
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Sheet Revisions	
Date	Comments
07/26/13	CHANGES TO SIGN ASSEMBLY FOR ROAD CLOSURE

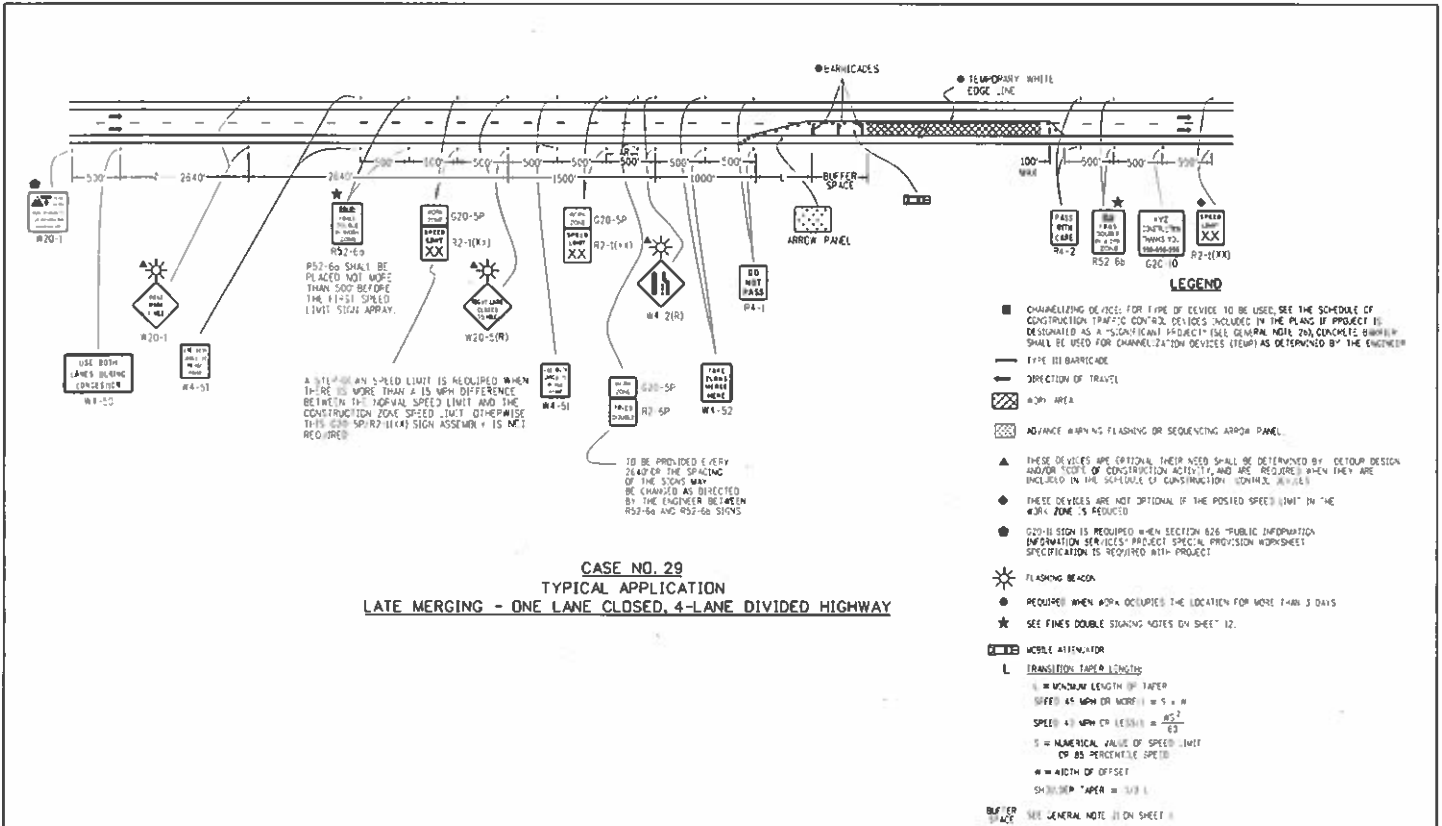
Colorado Department of Transportation
 4201 East Arkansas Avenue
 Denver, Colorado 80222
 Phone: 303-757-9543 FAX: 303-757-9219

Safety & Traffic Engineering **KCM**

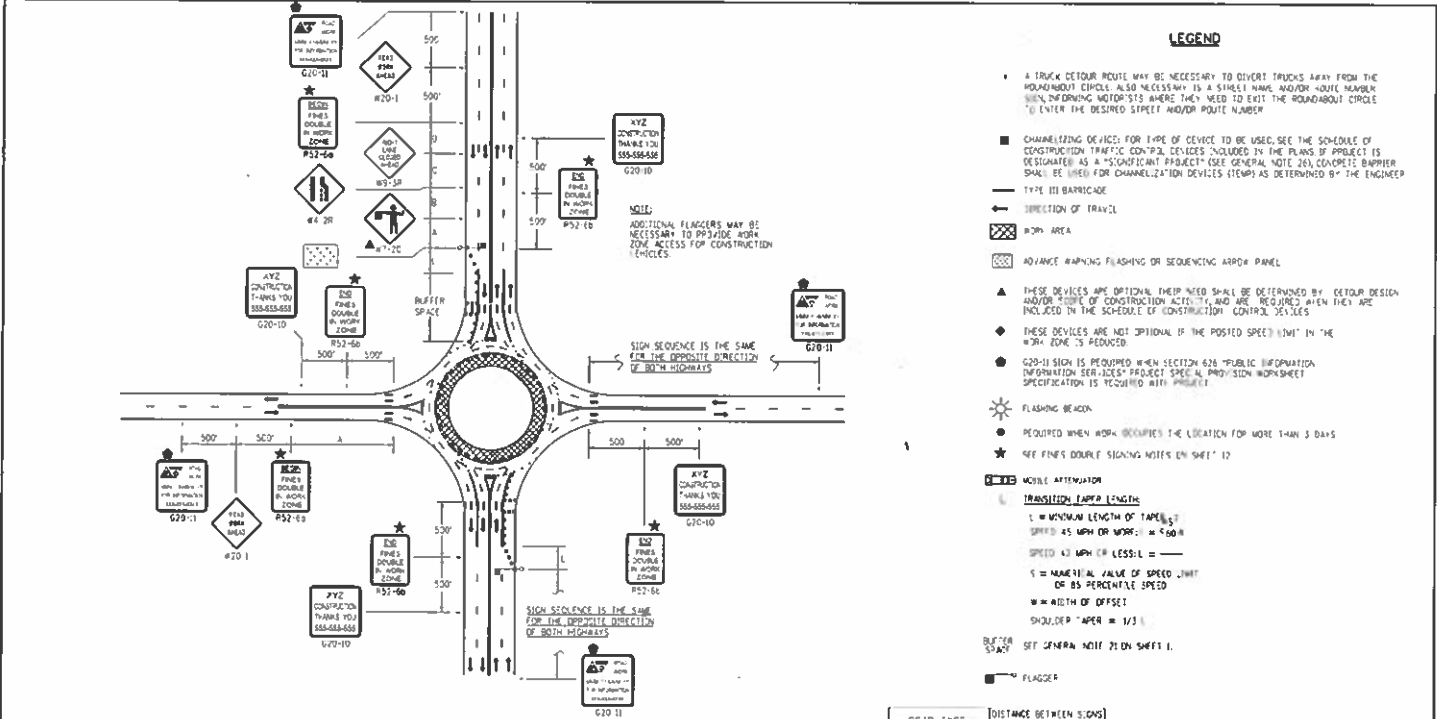
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

Issued By: Safety & Traffic Engineering Branch July 4, 2002

STANDARD PLAN NO.
 S-630-1
Sheet No. 15 of 24



Computer File Information Creation Date: 07/03/12 Invtls: RRR Last Modification Date: 06/23/18 Invtls: MBM01 Full Path: \\ca06k01\info\lib\proj\traffic\traffic\standard\plans Drawing File Name: S-630-01_16of24.dwg CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English		Sheet Revisions <table border="1"> <thead> <tr> <th>Date:</th> <th>Comments:</th> </tr> </thead> <tbody> <tr> <td>08/23/18</td> <td>REVISIONS TO PLAN</td> </tr> </tbody> </table>		Date:	Comments:	08/23/18	REVISIONS TO PLAN	Colorado Department of Transportation  4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-733-0543 Fax: 303-757-9200 Safety & Traffic Engineering KCM		TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION Standard By Safety & Traffic Engineering Bureau July 6, 2012		STANDARD PLAN NO S-630-1 Sheet No. 16 of 24	
Date:	Comments:												
08/23/18	REVISIONS TO PLAN												



CASE NO. 31
TYPICAL APPLICATION *
ROUNDABOUT - INSIDE LANE CLOSURE FOR TWO-LANE ROUNDABOUT

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (≤ 40 MPH)	100	100	100
URBAN (41-45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1500	2000

Computer File Information	
Creation Date: 07/08/12	Initials: mcy
Last Modification Date: 08/23/16	Initials: MBW
Full Path: \\c:\work\ad\16\16-02-01\traffic\standard\plan	
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CAD Version: 2012	

Sheet Revisions	
Date:	Comments:
12/02/14	NEW SHEET IS OLD SHEET IS NOW SHEET IS
08/23/16	REVISION

Colorado Department of Transportation

4201 East Alameda Avenue
 Denver, Colorado 80222
 Phone: 303-757-9543 Fax: 303-757-9219

Safety & Traffic Engineering KCM

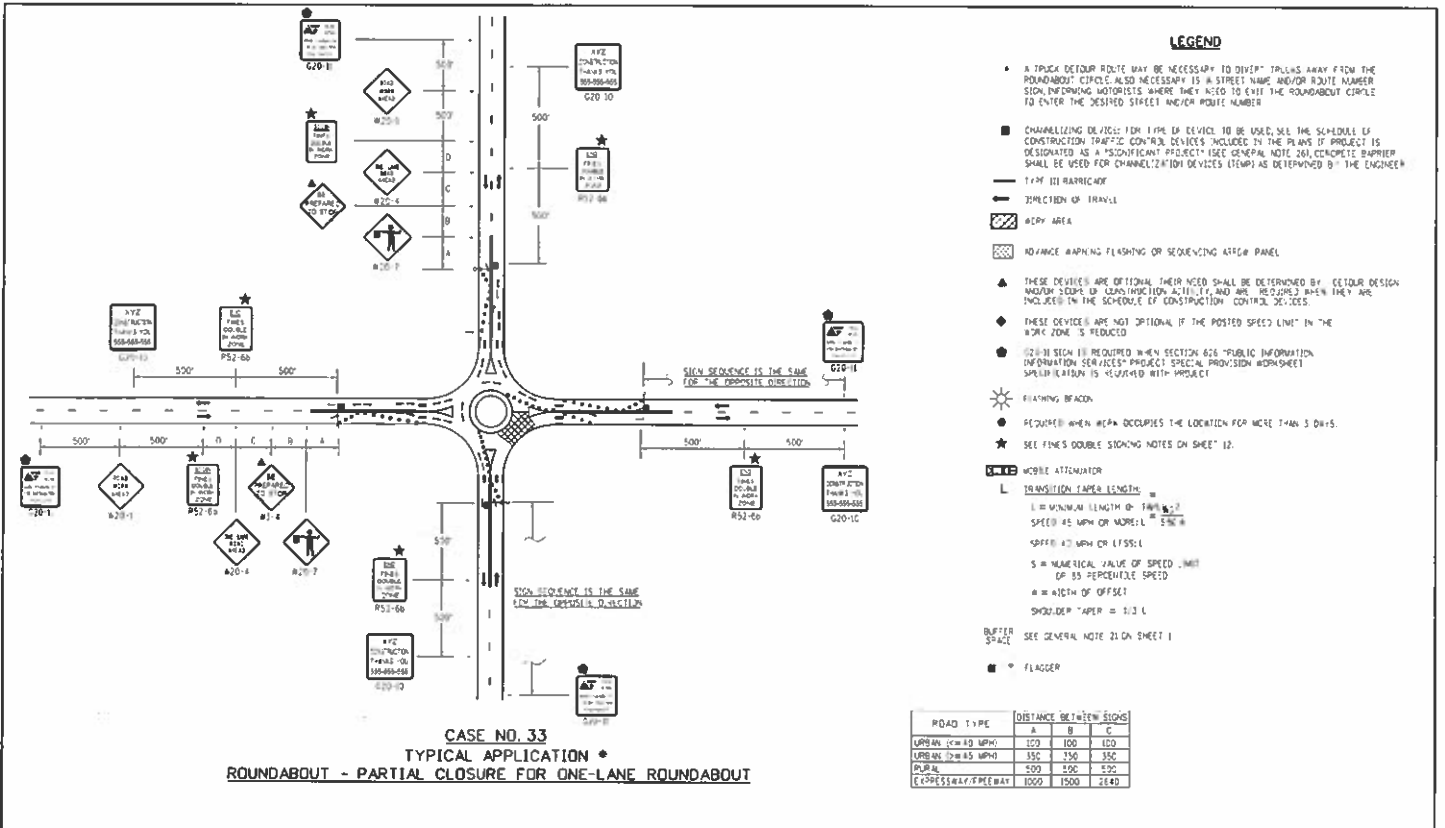
**TRAFFIC CONTROLS
 FOR HIGHWAY
 CONSTRUCTION**

Revised By: Larry N. Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.








S-630-1

Sheet No. 18 of 24



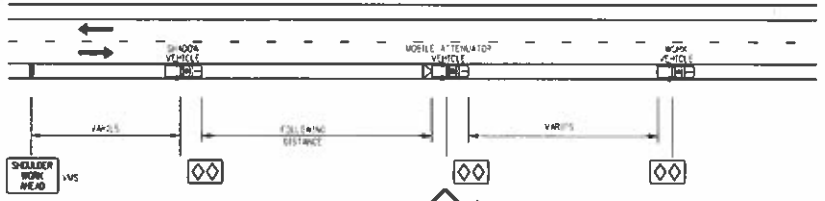
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Date	Comments														
12/18/14	NEW SHEET TO OLD SHEET TO NEW SHEET 14														
06/23/16	REVISIONS TO SHEET 14														

LEGEND

-  MOBILE ATTENUATOR VEHICLE AND 360-DEGREE YELLOW FLASHING BEACONS AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES
-  VARIABLE MESSAGE SIGN (VMS)
-  WHEN VMS IS USED, THE "SHOULDER CLOSED" SIGN BECOMES OPTIONAL
-  THE "PICKUP VEHICLE" OR "WARNING VEHICLE" MAY ENCRDACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON
-  IF THERE IS NO HOT PASTE IS ANTICIPATED, THE "WET PAINT" SIGN OR STATIONARY "WET PAINT" SIGNS SHALL BE POSTED
-  THE MINIMUM SEPARATION DISTANCE BETWEEN THE "CONE PLACEMENT VEHICLE" AND "CONE PICKUP VEHICLE" SHALL BE DETERMINED BY THE TRACK WIDTH OF THE PAVEMENT MARKING MATERIAL
-  OPTIONAL

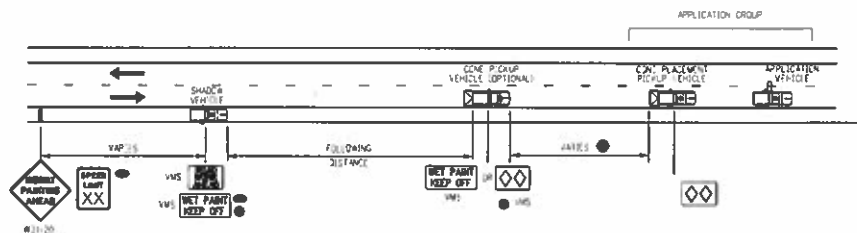
FOLLOWING DISTANCE CHART FOR WARNING AND MOBILE ATTENUATOR (OR CONE PICKUP) VEHICLE

POSTED OR SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 39	250 - 350
35 - 49	325 - 500
45 - 60	300 - 500
55	350 - 700
60 - 65	1000 - 1400
70 - 75	1200 - 1600



CASE NO. 34
TYPICAL APPLICATION
MOBILE WORK ZONE
MOBILE SHOULDER CLOSURE ON 2-LANE UNDIVIDED HIGHWAY

NOTE
THE MINIMUM SEPARATION DISTANCE BETWEEN THE CONE PLACEMENT VEHICLE AND CONE PICKUP VEHICLE SHALL BE DETERMINED BY THE TRACK WIDTH OF THE PAVEMENT MARKING MATERIAL



CASE NO. 35
TYPICAL APPLICATION*
MOBILE PAVEMENT MARKING ZONE
CENTERLINE STRIPING ON 2-LANE UNDIVIDED HIGHWAY

* USE CASE 35 IF SHOULDER IN CASE 34 IS TOO NARROW FOR GROUP VEHICLE USE

Computer File Information	
Creation Date: 07/24/12	In Use: #EN
Last Modification Date: 03/16/2016	In Use: #NC
File Path: \\s:\data\files\projects\12\12-0000\12-0000.dwg	
Creation File Name: S-630-1.dwg	
EQ Var: Modifiable vdr	Scale: Not to Scale
	Units: English

Sheet Revisions	
Date:	Comments:
3/27/14	ISSUE TO FIELD FOR CONSTRUCTION
12/21/14	ISSUE TO FIELD FOR CONSTRUCTION
5/20/16	ISSUE TO FIELD FOR CONSTRUCTION
6/27/16	ISSUE TO FIELD FOR CONSTRUCTION

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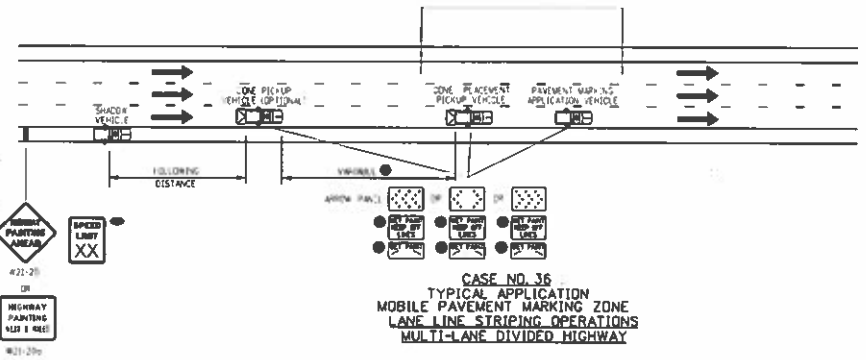
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
Issued by Safety & Traffic Engineering Branch July 4, 2012

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FOR CASE #36, VEHICLE/SIGN SEQUENCE IS THE SAME FOR THE LEFT SIDE OF HIGHWAY WHILE TRAFFIC IS REDIRECTED ABOUT THE CENTER LANE, WHEN MOBILE WORK ZONE IS LOCATED ON THE LEFT SIDE OF HIGHWAY.

LEGEND

- MOBILE ATTENUATOR VEHICLE, 360 DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES
- ADVANCE WARNING FLASHING BY SIGNING AHEAD PANEL
- PORTABLE VARIABLE MESSAGE SIGN (PMS)
- WHEN THE PMS IS USED, THE "SHOULDER CLOSED" (#21-561) OR "RAMP CLOSED AHEAD" SIGNS BECOME OPTIONAL.
- IF TRACKING OF THE PMS IS ANTICIPATED, THE USE OF CONES OR STATIONARY "NET PAINT" SIGNS IS ALLOWED IF POSSIBLE.
- THE VEHICLE SEPARATION DISTANCE BETWEEN THE "CONE PICKUP VEHICLE" AND "CONE PLACEMENT VEHICLE" SHALL BE DETERMINED BY THE TRACK DRYING TIME OF THE PAVEMENT MARKING MATERIAL.
- OPTIONAL

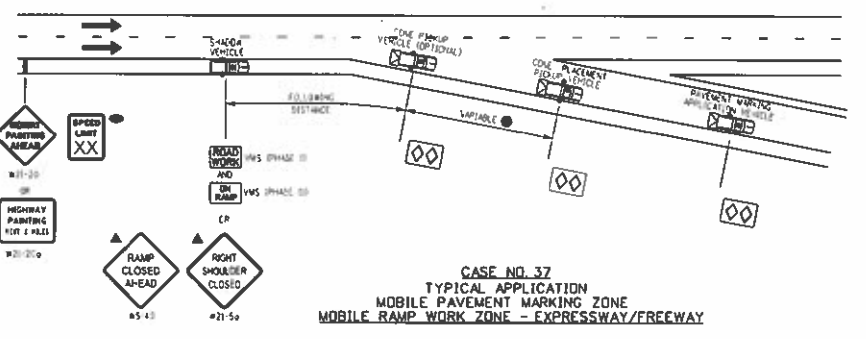


FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND CONE PICKUP VEHICLES

POSTED MC SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 45	325 - 700
45 - 55	600 - 950
55	750 - 1100
60 - 65	1000 - 1400
70 - 75	1200 - 1600

NOTES

1. THE SIGNING VEHICLES MAY ENCRUSH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS 100 NARROWER TO DRIVE ON.
2. IF THE RAMP CANNOT BE REOPENED WITHIN 15 MINUTES, USE CASE NO. 22 OF THE S-630-1 STANDARD PLAN.



<p>Computer File Information</p> <p>Creation Date: 07/24/12 Inits: KEN Last Modification Date: 7/16/16 Inits: MJC Full Path: \\sdc\asistants\bray\traffic\traffic-standard\ps Drawing File Name: S-630-1.dwg CAD Version: AutoCAD 2012 Size: Not to Scale Units: English</p>	<p>Sheet Revisions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Date</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>8/27/14</td> <td>MOBILE WORK ZONE - MOBILE RAMP</td> </tr> <tr> <td>12/8/14</td> <td>150 MPH SPEED 43-43 & 21-59</td> </tr> <tr> <td>5/20/16</td> <td>CONSTRUCTION</td> </tr> <tr> <td>8/23/16</td> <td>CONSTRUCTION</td> </tr> </tbody> </table>	Date	Comments	8/27/14	MOBILE WORK ZONE - MOBILE RAMP	12/8/14	150 MPH SPEED 43-43 & 21-59	5/20/16	CONSTRUCTION	8/23/16	CONSTRUCTION	<p>Colorado Department of Transportation</p> <p>4201 East Arkansas Avenue Denver, Colorado 80222 Phone: 303-767-0543 FAX: 303-787-9489</p> <p>Safety & Traffic Engineering KCM</p>	<p>TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION</p> <p>Issued By: Safety & Traffic Engineering Branch July 4, 2012</p>	<p>STANDARD PLAN NO.</p> <p>S-630-1</p> <p>Sheet No. 22 of 24</p>
Date	Comments													
8/27/14	MOBILE WORK ZONE - MOBILE RAMP													
12/8/14	150 MPH SPEED 43-43 & 21-59													
5/20/16	CONSTRUCTION													
8/23/16	CONSTRUCTION													

AD SUBMITTAL - JANUARY 2, 2018

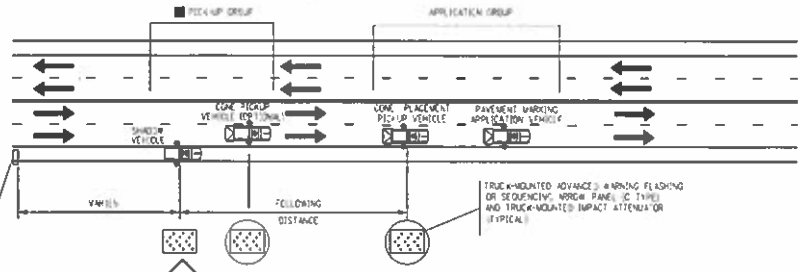
- LEGEND**
- MOBILE ATTENUATOR TRUCK, 360 DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES
 - ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
 - PORTABLE VARIABLE MESSAGE SIGN (PMS)
 - WHEN THE PMS IS USED, THE "RIGHT LANE CLOSED AHEAD" (R12-2) SIGN IS AN ALTERNATE OPTION
 - THE "WEDGE PICK-UP VEHICLE" OR "WARNING VEHICLE" MAY ENDOUR INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON

NOTES

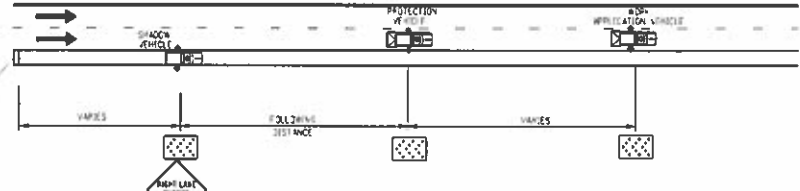
1. IN ROADWAY WHERE THE AADT IS 2,000 OR LESS, A SINGLE WORK VEHICLE WITH APPROPRIATE WARNING DEVICES ON THE VEHICLE MAY BE USED
2. RADIO COMMUNICATIONS BETWEEN THE WORKER AND THE MOVING BLOCKADE ARE REQUIRED TO ADJUST THE BLOCKADE TO INCREASE OR DECREASE THE CLOSURE TIME. RELEASE TRAFFIC ONLY AFTER 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).

FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

POSTED OR SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 350
35 - 40	325 - 400
45 - 50	400 - 500
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1225 - 1600



CASE NO. 38
TYPICAL APPLICATION
MOBILE STRIPING OPERATION OF LANE CLOSURE OF MULTI-LANE HIGHWAY
(NOT FOR USE ON FREEWAYS)



CASE NO. 39
TYPICAL APPLICATION
MOBILE OPERATION OF LANE CLOSURE OF MULTI-LANE HIGHWAY

Computer File Information

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CAD Ver: Interplator v8	Side: Not to Scale
Units: English	

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Date:	Comments
12/8/14	FORMER SHEET 19
05/20/16	CHANGED VEHICLE TYPES, CHANGED SIGN HEIGHT, MOVED SIGN & ATTENUATOR
06/23/16	ADDED LEAD TRUCK, MOVED SIGNING VEHICLE TO MOBILE ATTENUATOR VEHICLE

Colorado Department of Transportation

4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: 303-757-9543 Fax: 303-757-9219

Safety & Traffic Engineering KCM

TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.

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TYPICAL CONSTRUCTION ZONE SIGNS

THESE SIGNING NOTES ARE INTENDED AS A QUICK REFERENCE FOR TYPICAL SIGN USE AND PLACEMENT IN CONSTRUCTION ZONES.

- 020-1 "NO WORKING AHEAD" - THIS SIGN SHALL BE ERRECTED AT THE LIMITS OF ANY REAL CONSTRUCTION OR MAINTENANCE PROJECT OF MORE THAN TWO (2) MILES IN LENGTH WHERE TRAFFIC IS MAINTAINED THROUGH THE PROJECT.
- 020-2 "PROJECT AHEAD" - THIS SIGN SHALL BE ERRECTED AT A CONSPICUOUS POSITION ON THE REAR OF A VEHICLE USED FOR GUIDING ONE-WAY TRAFFIC THROUGH OR AROUND THE PROJECT.
- 020-3 "WORK ZONE" - THIS PLACARD SHALL BE MOUNTED JUST ABOVE THE WORK ZONE SPEED LIMIT SIGN PRIOR TO THE WORK ZONE AREA.
- 020-4 "AHEAD" - THIS SIGN SHOULD BE ERRECTED APPROXIMATELY 500 FEET BEYOND THE END OF THE PROJECT.
- 020-11 CONSTRUCTION PROJECT INFORMATION SIGN - THIS SIGN SHOULD BE ERRECTED AS DESCRIBED IN THE SECTION 626 STANDARD SPECIFICATION.
- 020-15A1 "15 MINUTE CLOSURE EXPECT DELAY" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE WORK ZONE/SPEED LIMIT SIGN.
- 020-15A2 "15 MINUTE CLOSURE" - THIS SIGN IS USED FOR UNMANNED PORTALS FOR USE IN EMERGENCY SITUATIONS FOR PERIODS OF SHORT DURATION OR WHEN EVER RELATIVELY SHORT DISTANCES TO BE TRAVELLED TO "NO" ROUTE MARKERS TO GUIDE TRAFFIC ALONG THE DETOUR AND BACK TO ITS AUTHORIZED ROUTE.
- 020-16 "ROAD AHEAD" - THIS SIGN SHOULD BE MOUNTED JUST BEFORE THE ROAD CLOSED SIGN AT THE POINT WHERE THE DETOUR BEGINS OR WHERE HAS BEEN ESTABLISHED DUE TO THE CLOSURE OF THE STREET OR HIGHWAY TO THROUGH TRAFFIC.
- 020-17 "SPEED LIMIT AHEAD" - THESE SIGNS ARE INTENDED TO INDICATE TRAFFIC SPEED IN ADVANCE OF THE WORK ZONE AREA WITHIN THE WORK ZONE PROJECT LIMITS.
- 020-18 "SPEED LIMIT" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE "AHEAD" SIGN TO BRING TRAFFIC BACK TO ORIGINAL POSTED SPEED.
- 020-19 "WORK ZONE" - THIS SIGN IS INTENDED FOR USE WITHIN WORK ZONES TO PROVIDE NOTICE OF POTENTIAL FINES FOR TRAFFIC VIOLATIONS WITHIN WORK ZONES.
- 020-20 "NO LEFT TURN" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.
- 020-21 "PASS WITH CARE" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.
- 020-22 "ROAD CLOSED" - THIS SIGN IS TO BE MOUNTED ON THE BRIDGEHEAD THAT IS PLACED BEFORE THE WORK ZONE ENTRANCE TO PREVENT TRAFFIC FROM ENTERING THE WORK ZONE.
- 020-23 "ROAD CLOSED AHEAD" - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.
- 020-24 "ROAD CLOSED/TO THROUGH TRAFFIC FOR WORK" - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.
- 020-25 "BEFORE FINES DOUBLE IN WORK ZONE" - THIS SIGN IS PLACED AT THE BEGINNING OF THE ADVANCED WARNING AREA OF THE TRAFFIC CONTROL ZONE.
- 020-26 "TWO FINES DOUBLE IN WORK ZONE" - THIS SIGN IS PLACED AFTER A WORK ZONE AREA PAST DOWNSTREAM TAPER SECTION.
- 020-27 "TURN AHEAD" - THIS SIGN IS INTENDED FOR USE WHERE ENGINEERING INVESTIGATIONS OF ROADWAY CONDITIONS SHOW THE RECOMMENDED SPEED ON THE TURN TO BE 50 MPH OR LESS.
- 020-28 "CURVE AHEAD" - 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 50 AND 50 MPH PER HOUR.
- 020-29 "REVERSE TURN AHEAD" - THIS SIGN IS INTENDED FOR USE WHERE THE TURN ON THE CURVE AND A TURN IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 600 FEET.
- 020-30 "REVERSE CURVE AHEAD" - THIS SIGN IS INTENDED FOR USE WHERE TWO CURVES IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 500 FEET.
- 020-31 "ROAD" - THIS SIGN SHOULD BE MOUNTED JUST BEFORE THE ROAD CLOSED SIGN AT THE POINT WHERE THE DETOUR HAS BEEN ESTABLISHED DUE TO THE ROAD CLOSURE.
- 020-32 "FIELD WORK" - THIS SIGN IS INTENDED FOR USE AT THE APPROACH TO THE FIELD SIGN THAT IS NOT POSSIBLE TO BE PLACED AT THE POINT OF CLOSURE TO BRING THE VEHICLE TO A STOP AT THE FIELD SIGN.
- 020-33 "BE PREPARED TO STOP" - THIS SIGN IS TO BE PLACED 150 FEET IN ADVANCE OF A FLAGGER AT THE START OF THE TRANSITION AREA.
- 020-34 "LEFT SHOULDER LANE TRANSITION SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE REDUCTION IN THE NUMBER OF TRAVEL LANES IN THE DIRECTION OF TRAVEL IN THE MULTILANE HIGHWAY.
- 020-35 "USE BOTH LANES DURING CONSTRUCTION" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE "ROAD WORK" AND "AHEAD" WARNING SIGN.
- 020-36 "USE BOTH LANES TO WORK POINT" - THIS SIGN IS INTENDED TO DIRECT MOTORISTS TO USE BOTH TRAVEL LANES UNTIL THE WORK AREA BEGINS TO END.
- 020-37 "LANE BOUNDS WORK HERE" - THIS SIGN IS INTENDED TO WARN MOTORISTS IN ADVANCE TO MOVE FROM THE CLOSED TRAVEL LANE TO THE OPEN TRAVEL LANE, USUALLY 500 FEET IN ADVANCE OF THE START OF THE TRANSITION AREA.
- 020-38 "ROAD AHEAD" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE TRANSITION ON THE ROAD WHERE THE PAVEMENT WIDTH IS REDUCED SUFFICIENTLY TO A WIDTH SUCH THAT TWO CARS CANNOT PASS WITHOUT REDUCING SPEED.
- 020-39 "NARROW BRIDGE AHEAD" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A BRIDGE OR OVERPASS HAVING A CLEAR TWO-WAY ROADWAY WIDTH OF 18 TO 19 FEET OR MAX BRIDGE OR OVERPASS HAVING A CLEARWAY CLEARANCE LESS THAN THE WIDTH OF THE ROADWAY PAVEMENT.
- 020-40 "ONE WAY AHEAD" - THIS SIGN SHOULD BE PLACED ON TWO-WAY ROADWAYS IN ADVANCE OF THE BRIDGES OR OVERPASS WHERE THE ROADWAY WIDTH IS LESS THAN 18 FEET. USE FEET FOR "CONCRETE" BRIDGES OR WHEN THE ALIGNMENT IS SUCH ON THE APPROACH TO THE STRUCTURE HAVING A CLEAR ROADWAY WIDTH OF 18 FEET OR LESS.
- 020-41 "SEPARATE HIGHWAY SYMBOL" - THIS SIGN SHOULD BE PLACED ON THE APPROACHES TO THE SECTION OF HIGHWAY WHERE OPPOSITE DIRECTIONS OF TRAFFIC ARE SEPARATED BY A PHYSICAL MEDIUM OR PHYSICALLY DIVIDED HIGHWAY AS A WARNING OF TWO-WAY TRAFFIC AHEAD.
- 020-42 "TWO-WAY TRAFFIC SYMBOL" - THIS SIGN IS INTENDED FOR USE TO GIVE WARNING OF TRANSITION FROM A SEPARATED ONE-WAY HIGHWAY TO A TWO-WAY HIGHWAY.
- 020-43 "MILE SYMBOL" - THIS SIGN SHOULD BE PLACED AT A POINT IN ADVANCE OF THE BEGINNING OF THE TRAVEL PORTION OF OTHER HORIZONTAL CURVES OR OTHER PHYSICAL FEATURES REQUIRE SPECIAL CONSIDERATION ON THE PART OF DRIVERS.
- 020-44 "RAMP" - THIS SIGN IS INTENDED FOR USE TO ADVISE DRIVERS OF A RAMP USED FOR DEPRESSION IN THE PROFILE OF THE ROAD THAT IS SUFFICIENTLY SHARP TO AFFECT VEHICLE OPERATION ON LARGE CONSIDERABLE DISCOMFORT TO PASSENGERS.
- 020-45 "WEIGHT LIMIT SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE THE PAVEMENT SURFACE CHANGES FROM A HARD SURFACE PAVEMENT TO THE LOOSE TYPE GRAVEL OR EARTH ROAD.
- 020-46 "SOFT SHOULDER" - THIS SIGN IS INTENDED FOR USE TO WARN OF A SOFT SHOULDER CONDITION THAT COULD PRESENT A HAZARD TO VEHICLES THAT MAY GET OFF THE PAVEMENT.
- 020-47 "SHOULDER WHEN MET SYMBOL" - THIS SIGN SHOULD BE PLACED IN ADVANCE OF THE CONDITION WHERE THE HIGHWAY SURFACE IS SUFFICIENTLY BEYOND WHAT IS DISPLAYED WHEN MET.
- 020-48 "SHOULDER DROP-OFF" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A SHOULDER DROP-OFF THAT EXCEEDS THREE INCHES IN HEIGHT.
- 020-49 "LANE LINES" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN LANE LINE ADJACENT LANE SITUATION THAT EXCEEDS ONE INCH IN HEIGHT.
- 020-50 "PAVEMENT WIDTH TRANSITION SIGN (R-22)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE PAVEMENT WIDTH TRANSITION SIGN (R-22).
- 020-51 "CENTER LINE CLOSED AHEAD" - THIS SIGN SHOULD BE USED IN ADVANCE OF THE POINT WHERE AHEAD OCCUPIES THE CENTER LINE AND TRAFFIC IS DIRECTED TO THE RIGHT OR LEFT OF THE WORK ZONE.
- 020-52 "DOUBLE WIDTH 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.
- 020-53 "TRAFFIC CLEARANCE SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN OBSTRUCTION TO WARN VEHICLE OPERATORS OF CLEARANCES LESS THAN THE VEHICLE HEIGHT PERMITTED PLUS 12 INCHES.
- 020-54 "ADVISORY SPEED PLACARD" - THIS PLACARD IS INTENDED TO SUPPLEMENT WARNING SIGNS ONLY AND SHALL NOT BE ADAPTED ALONE. IT IS USED TO INDICATE THE MAXIMUM RECOMMENDED SPEED FOR THE INDICATED CONDITION.
- 020-55 "ADVISORY RAMP SPEED" - THIS SIGN IS TO BE POSTED TO INFORM MOTORISTS WHAT THE SUGGESTED RAMP SPEED IS ON A RAMP.
- 020-56 "ROADWORK AHEAD" - THIS SIGN IS TO BE LOCATED IN ADVANCE OF THE INITIAL ACTIVITY OF DETOUR OR OTHER WORK ENCOUNTER, AND IS INTENDED TO BE USED AS A WARNING OF OBSTRUCTIONS OR RESTRICTIONS.
- 020-57 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT AT WHICH A HIGHWAY IS CLOSED TO ALL TRAFFIC OR TO ALL THROUGH TRAFFIC.
- 020-58 "ONE WAY/PRODUCTION" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-59 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT AT WHICH A HIGHWAY IS CLOSED TO ALL TRAFFIC OR TO ALL THROUGH TRAFFIC.
- 020-60 "ONE WAY/PRODUCTION" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-61 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-62 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-63 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-64 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-65 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-66 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-67 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-68 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-69 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-70 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.
- 020-71 "ROAD CLOSED/TO THROUGH TRAFFIC" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OF ROUTE.

ADVANCE PLACEMENT OF WARNING SIGNS

ADVANCE PLACEMENT DISTANCE (FEET)

ROADWAY WIDTH (FEET)	CONSTRUCTION	MPH							
		0	10	20	30	40	50	60	70
10	225	●	●	●	●	●	●	●	●
25	375	●	●	●	●	●	●	●	●
30	450	●	●	●	●	●	●	●	●
35	550	●	●	●	●	●	●	●	●
40	650	●	●	●	●	●	●	●	●
45	750	●	●	●	●	●	●	●	●
50	850	●	●	●	●	●	●	●	●
55	950	●	●	●	●	●	●	●	●
60	1000	●	●	●	●	●	●	●	●
65	1100	●	●	●	●	●	●	●	●
70	1250	●	●	●	●	●	●	●	●
75	1350	●	●	●	●	●	●	●	●

● CONDITION A - SUFFICIENT REDUCTION IN LANE CHANGING IN REVERSE TRAFFIC TYPICAL SIGNS ARE "NO STOP" AND "NO LEFT TURN" SIGNS.

● CONDITION B - TYPICAL CONDITIONS ARE THE WARNING OF A RESTRICTION, STOP SITUATION AND LOCATIONS WHERE THE ROAD USER MUST DECREASE SPEED TO MANUEVER THROUGH THE IMPROVED CONDITION. TYPICAL SIGNS ARE "ROAD AHEAD", "SLOW AHEAD", "FIELD WORK", "CURVE", "REVERSE CURVE", "TURN".

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

A SUPPLEMENTAL PLACARD MAY BE USED WITH WARNING SIGNS SPECIFYING THE DISTANCE TO THE CONDITION IF THERE IS AN ON-BEFORE INTERSECTION THAT WOULD COMPROMISE THE MOTORIST.

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

Computer File Information

Creation Date: 07/04/12 Initials: MEV
 Last Modification Date: 05/19/16 Initials: MFC
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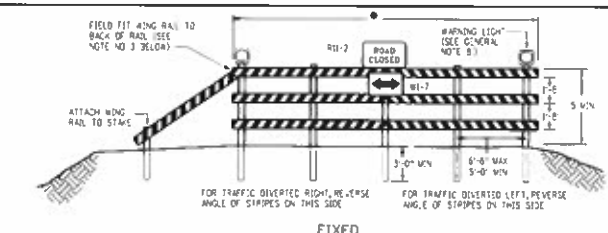
Sheet Revisions

Date	Comments
07/26/13	CHANGE R20 TO SIGN CODE 10 R20 P
12/8/14	TORQUE SHEET 20
3/5/2016	CODE SIGN #21-20 & #21-23

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Safety & Traffic Engineering **KCM**

TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
 Issues By: Safety & Traffic Engineering Branch July 4, 2012

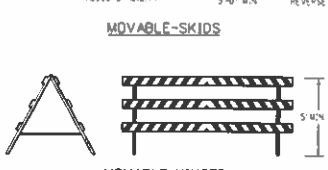
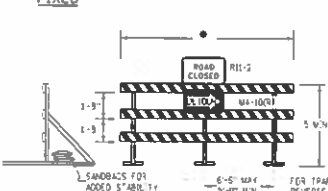
STANDARD PLAN NO. S-630-1
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*** RAIL LENGTH TABLE**

TYPE 3 BARRICADE		LENGTH
FIXED	MOVABLE	
F-A	M-A	8'-14"
F-R	M-R	15'-24"
F-C	M-C	25'-35"
F-D	M-D	> 25'

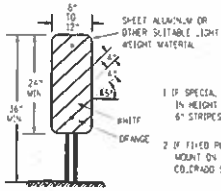
- NOTES**
- TYPE 3 BARRICADES HAVE 3 REFLECTORIZED RAIL FACES IF FACING TRAFFIC IN ONE DIRECTION AND 6 IF FACING TRAFFIC IN TWO DIRECTIONS.
 - THE PORTION OF THE POST ABOVE THE GROUND LINE SHALL BE PAINTED IN ACCORDANCE WITH THE APPROPRIATE GENERAL NOTE.
 - DETACHABLE EXTENSION WING RAILS FOR BYPASSING OF CONSTRUCTION EQUIPMENT ARE PERMITTED, WHEN NECESSARY, ON FIXED OR MOVABLE TYPE 3 BARRICADES. THE LENGTH SHALL BE ADEQUATE TO CLOSE THE BARRICADE PIT AND/OR SHOULDER AS REQUIRED.



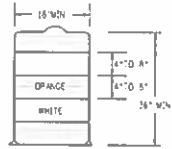
TYPICAL TYPE 3 BARRICADES

TYPICAL BARRICADE CHARACTERISTICS

BARRICADE DESIGNATIONS	
TYPE 3	
RAIL WIDTH	6" MIN-12" MAX
RAIL LENGTH	AS REQUIRED, SEE RAIL LENGTH TABLE
HEIGHT	5' MIN
USE	TEMPORARY OR PERMANENT
STRIPES	SEE DETAIL OF BARRICADE STRIPING AND APPROPRIATE GENERAL NOTES



- IF SPECIAL PANELS 3' OR GREATER IN HEIGHT ARE REQUIRED, THEN 6" STRIPES SHALL BE USED.
- IF FIELD PLACEMENT IS REQUIRED, MOUNT ON DELINEATOR POST. SEE COLORADO STANDARD PLAN S-612-1.



- THE 5" MINIMUM DIMENSION SHALL APPLY TO THE SMALLEST MEASUREMENT OF OBLONG, RECTANGULAR OR FLATTENED SIDE STRIPES.
- THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE HORIZONTAL, CIRCUMFERENTIAL, RETROREFLECTIVE STRIPES ON EACH DRUM.

GENERAL NOTES

- THE VARIOUS TYPES, COMBINATIONS AND APPLICATIONS OF SIGNS AND WARNING LIGHTS FOR BARRICADES REQUIRED FOR EACH PROJECT SHALL BE:
 - AS SPECIFIED OR DETAILED IN THE PLANS
 - AS SHOWN IN APPLICABLE TYPICAL ILLUSTRATIONS
 - AS CALLED FOR AND SUBJECT TO APPROVAL BY THE ENGINEER
- TEMPORARY AND PERMANENT BARRICADES TYPE 3 SHALL BE FABRICATED FROM APPROVED CRASH TESTED MATERIALS. SEE SECTION 614 AND 630 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION FOR ADDITIONAL REQUIREMENTS.
- ALL PAINTING SHALL CONFORM WITH THE FOLLOWING:
 - THE APPLICABLE SECTION 504 OF THE STANDARD SPECIFICATIONS
 - ALL SIGNS, BRACES AND POSTS SHALL BE PAINTED WITH 7 COATS OF EXTERIOR WHITE PAINT
 - THE BACKSIDES OF RAILS AND VERTICAL PANEL CHANNELIZING DEVICES FACING THE DIRECTION OF TRAFFIC ONLY SHALL BE PAINTED WITH "EXTERIOR WHITE PAINT"
 - ALUMINUM OR GALVANIZED STEEL SIGNS, BRACES AND POSTS SHALL NOT BE PAINTED
- ALL STRIPED SURFACES SHALL CONFORM WITH THE FOLLOWING:
 - THE ENTIRE AREA OF ORANGE AND WHITE STRIPES SHALL BE FABRICATED AS ONE PIECE
 - HORIZONTAL RAILS, WING RAILS AND VERTICAL PANEL CHANNELIZING DEVICES SHALL HAVE ORANGE AND WHITE STRIPES ON THE FACE SIDES SLANTING DOWNWARD AT A 45° ANGLE TOWARD THE SIDES; TO WHOLEM (TRAFFIC IS TO PASS OR TURN)
 - PERMANENT BARRICADES SHALL HAVE RETROREFLECTIVE RED AND WHITE STRIPES. THEY MAY BE USED AT LOCATIONS TO MARK THE END OF A ROAD, "STREET" OR HIGHWAY THAT ENDS AT A "T" INTERSECTION, OR WHERE THERE IS NO OVERSHOULDER OR OUTLET
 - ALL RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956:
 - ORANGE AND WHITE SHALL BE TYPE III, III ON IV
 - RED AND WHITE SHALL BE TYPE III, III ON IV
- FOR ALL WOODEN BARRICADE COMPONENTS NOMINAL LAMBER DIMENSIONS ARE SATISFACTORY.
- ALL SCREWS, BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED OR TITANIUM PLATED.
- "STABILITY" OF BARRICADES AND CHANNELIZING DEVICES SHALL CONFORM WITH THE FOLLOWING:
 - SIGNS (BASES) OF MOVABLE BARRICADES SHALL BE WEIGHTED WITH SANDBAGS ONLY WHERE NECESSARY TO PROVIDE STABILITY
 - NO MOVABLE OR PORTABLE DEVICES SHALL BE WEIGHTED BY ANY METHOD OR WITH ANY MATERIAL THAT WOULD MAKE THEM HAZARDOUS TO MOTORISTS
- WARNING LIGHTS USED WITH BARRICADES, DRUMS AND VERTICAL PANELS SHALL CONFORM WITH THE FOLLOWING:
 - USE FLASHING WARNING LIGHTS WHEN DEVICES ARE USED singly, AND STEADY BURN LIGHTS WHEN THEY ARE USED IN A SERIES FOR CHANNELIZATION
 - THEY SHALL BE POSITIONED ABOVE THE TOP RAIL OF BARRICADES OR ON TOP OF DRUMS AND VERTICAL PANELS
- CONCRETE BARRIER (TEMPORARY) SHALL CONFORM WITH:
 - PRECAST CONCRETE BARRIER AS SHOWN ON COLORADO STANDARD PLAN M-605-14
 - BARRIER REFLECTORS SHALL BE INSTALLED THAT MEET "THE REQUIREMENTS OF STANDARD TYPICAL DELINEATOR INSTALLATIONS, EXCEPT THE VERTICAL SPACING SHALL BE 50', AND "REFLECTOR SHALL BE PAID WITH 90° AND 180° END IN THE DUST OF THE BARRIER"
 - CONCRETE BARRIER END TREATMENT SHALL BE IN ACCORDANCE WITH CLEAR ZONE CRITERIA AND PLACED AS SHOWN ON THE PLANS
- SIGN PANELS MOUNTED ON BARRICADES WILL BE PAID FOR SEPARATELY.

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Revision Date: 07/04/12	Issue: JSN
Last Modification Date:	Issue:
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CAD User: Mccartney, V.B.	Scale: Not to Scale
Unit: EGN	

Sheet Revisions

Date	Comments
08/03/16	ISSUED GENERAL NOTE # 1

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BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP) & VERTICAL PANELS

Issued for Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.

S-630-2

Sheet No. 1 of 1

