Oversight / NHS	
FHWA REGION VIII OVERSIGHT?	■ NO □ YES
NATIONAL HIGHWAY SYSTEM?	■ NO □ YES

DEPARTMENT OF TRANSPORTATION
STATE OF COLORADO

HIGHWAY CONSTRUCTION BID PLANS OF ~~PROPOSED~~ As Constructed

FEDERAL AID PROJECT NO. ES4 0061-080

STATE HIGHWAY NO. 6

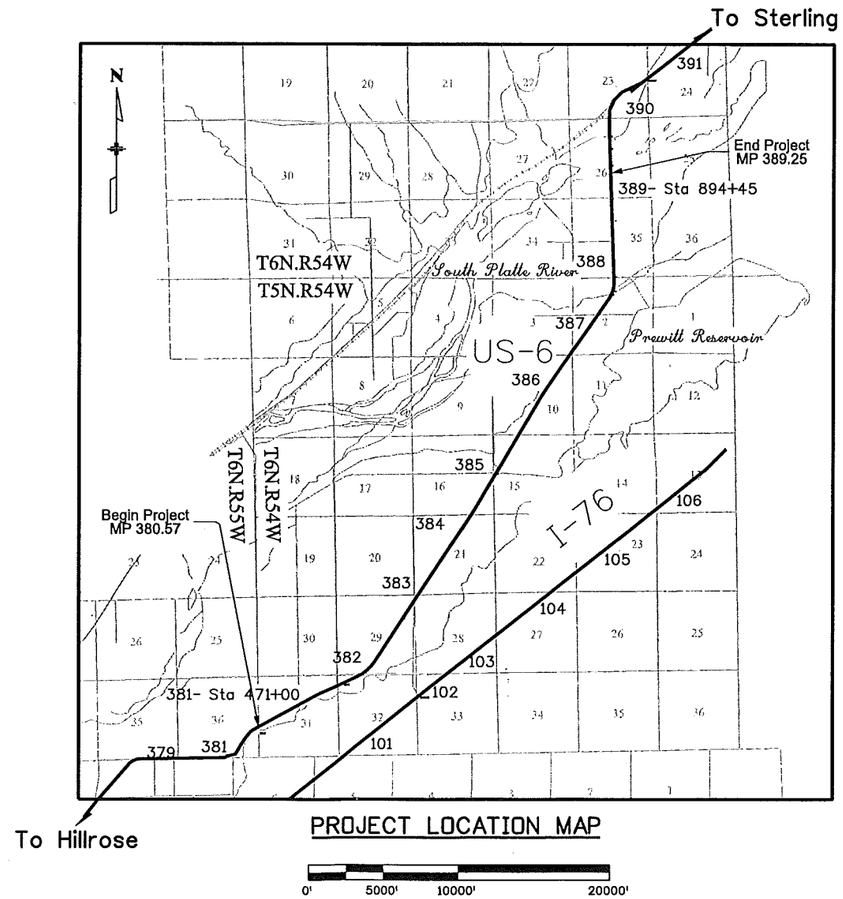
WASHINGTON / LOGAN COUNTIES

CONSTRUCTION PROJECT CODE NO. 17033

TABULATION OF LENGTH & DESIGN DATA

STATION	FEET ROADWAY SH 6	FEET MAJOR STR.
APPROACH TO PROJECT STA. 443+30	500	
BEGIN STA 0061-080 STA. 448+30 ON US 6, R.P. 380.57	23800	
STA. 686+30 BEGIN STRUCTURE NO. C-23-D - Prewitt Inlet Structure	14285	65.00
STA. 829+80 BEGIN STRUCTURE NO. C-23-K - South Platte Ditch	809	25.00
STA. 838+50 BEGIN STRUCTURE NO. C-23-L - Prewitt Outlet Structure	6824	61.00
END STA 0061-080 STA. 907+35 ON US 6, R.P. 389.25	500	
APPROACH TO PROJECT STA. 912+35		
TOTAL	46718	151.00
SUMMARY OF PROJECT LENGTH	FEET	MILES
MAJOR STRUCTURE	151.00	0.029
PROJECT GROSS LENGTH	46869.00	8.88

DESIGN DATA	S.H. 6
MAXIMUM RADIUS OF CURVE	2865 FT.
MAXIMUM GRADE	3.50%
MINIMUM S.S.D. HORIZONTAL	725 FT.
MINIMUM S.S.D. VERTICAL (PASSING)	2300 FT.
MAXIMUM DESIGN SPEED	65 MPH
2007 DESIGN TRAFFIC	DHV = 10 ADT = 840
DHV TRUCK %	12%
CLEAR ZONE DISTANCE (TANGENT)	28 FT.
CONSTRUCTION CLEAR ZONE (MIN 18')	18 FT.



PROJECT LOCATION MAP

SHEET NO.	INDEX OF SHEETS
1	TITLE SHEET
2	STANDARD PLANS LIST SHEET
3	TYPICAL SECTIONS SHEET
4-5	GENERAL NOTES SHEET
6-8	SUMMARY OF APPROXIMATE QUANTITIES
9-14	TABULATION SHEETS
15-20	GUARDRAIL DETAIL SHEETS & TAB.
21-24	STORM WATER MANAGEMENT PLAN
25	SURVEY TABULATION SHEET
26-60	PLAN SHEETS
61	TRAFFIC CONTROL DEVICES
62	SAQ Cmo7
63-65	Cmo7 Plan Sheets

Print Date: 1/8/2010	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 17033DES_TitleShtA1.dgn	Date: / Comments / Init.	120 North Riverview Road, Sterling, CO 80751, Phone: 970-522-0481 FAX: 970-521-9729	No Revisions:
Horiz. Scale: 1:1 Vert. Scale: As Noted	R-X	Region 4 LBL	Revised: 4/25/11
Unit Information Unit Leader BAP			Void:

Contract Information		Project No./Code
Contractor: Lafarge N. America Inc		ES4 0061-080
Resident Engineer: D. LOCKE		17033
Project Engineer: B. PIERCE		Sheet Number 1
PROJECT STARTED: 7/06/10	ACCEPTED: 4/25/11	
Comments:		

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☐ M-100-1	☐	STANDARD SYMBOLS (3 SHEETS)	1-3
■ M-203-1	☐	APPROACH ROADS	4
☐ M-203-2	☐	DITCH TYPES	5
■ M-203-11	☐	SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS (3 SHEETS)	6-8
☐ M-203-12	☐	SUPERELEVATION STREETS (2 SHEETS)	9-10
☐ M-206-1	☐	EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	11-12
☐ M-206-2	☐	EXCAVATION AND BACKFILL FOR BRIDGES (2 SHEETS)	13-14
☐ M-208-1	☐	TEMPORARY EROSION CONTROL (7 SHEETS)	15-21
■ M-210-1	☐	MAILBOX SUPPORTS (2 SHEETS)	22-23
☐ M-214-1	☐	PLANTING DETAILS	24
☐ M-412-1	☐	CONCRETE PAVEMENT JOINTS (5 SHEETS)	25-29
☐ M-510-1	☐	STRUCTURAL PLATE PIPE H-20 LOADING	30
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☐ M-601-3	☐	TRIPLE CONCRETE BOX CULVERT (2 SHEETS)	35-36
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☐ M-601-12	☐	HEADWALLS AND PIPE OUTLET PAVING	39
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☐ M-603-2	☐	REINFORCED CONCRETE PIPE	43
☐ M-603-3	☐	PRECAST CONCRETE BOX CULVERT	44
☐ M-603-10	☐	CONCRETE AND METAL END SECTIONS (2 SHEETS)	45-46
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■ M-606-1	☐	GUARDRAIL TYPE 3 W-BEAM (16 SHEETS)	61-76
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☐ M-606-14	☐	PRECAST TYPE 7 CONCRETE BARRIER (3 SHEETS)	81-83

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☐ M-607-4	☐	DEER FENCE AND GATES (2 SHEETS)	91-92
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☐ M-611-1	☐	CATTLE GUARD (2 SHEETS)	110-111
☐ M-613-1	☐	ROADWAY LIGHTING (4 SHEETS)	112-115
☐ M-614-1	☐	RUMBLE STRIPS (3 SHEETS)	116-118
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■ S-612-1	☐	DELINEATOR INSTALLATIONS (5 SHEETS)	131-135
■ S-614-1	☐	GROUND SIGN PLACEMENT (2 SHEETS)	136-137
☐ S-614-2	☐	CLASS I SIGNS	138
■ S-614-3	☐	CLASS II SIGNS	139
☐ S-614-4	☐	CLASS III SIGNS (3 SHEETS)	140-142
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■ S-614-8	☐	TUBULAR STEEL SIGN SUPPORT DETAILS (5 SHEETS)	147-151
☐ S-614-10	☐	MARKER ASSEMBLY INSTALLATIONS	152
☐ S-614-12	☐	STRUCTURE NUMBER INSTALLATION	153
☐ S-614-14	☐	FLASHING BEACON AND SIGN INSTALLATIONS (3 SHEETS)	154-156
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☐ S-614-21	☐	CONCRETE BARRIER SIGN POST INSTALLATIONS	158
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☐ S-614-40	☐	TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS (7 SHEETS)	160-166
☐ S-614-40A	☐	ALTERNATIVE TRAFFIC SIGNAL INSTALLATION DETAILS (5 SHEETS)	167-171
☐ S-614-50	☐	MONOTUBE OVERHEAD SIGNS (14 SHEETS)	172-185
■ S-627-1	☐	PAVEMENT MARKINGS (5 SHEETS)	186-190
■ S-630-1	■	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (12 SHEETS) **(REVISED SHEET 8 ON 03/05/07)**	191-202
☐ S-630-2	☐	BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP) AND VERTICAL PANELS	203
☐ S-630-3	☐	FLASHING BEACON (PORTABLE) DETAILS	204

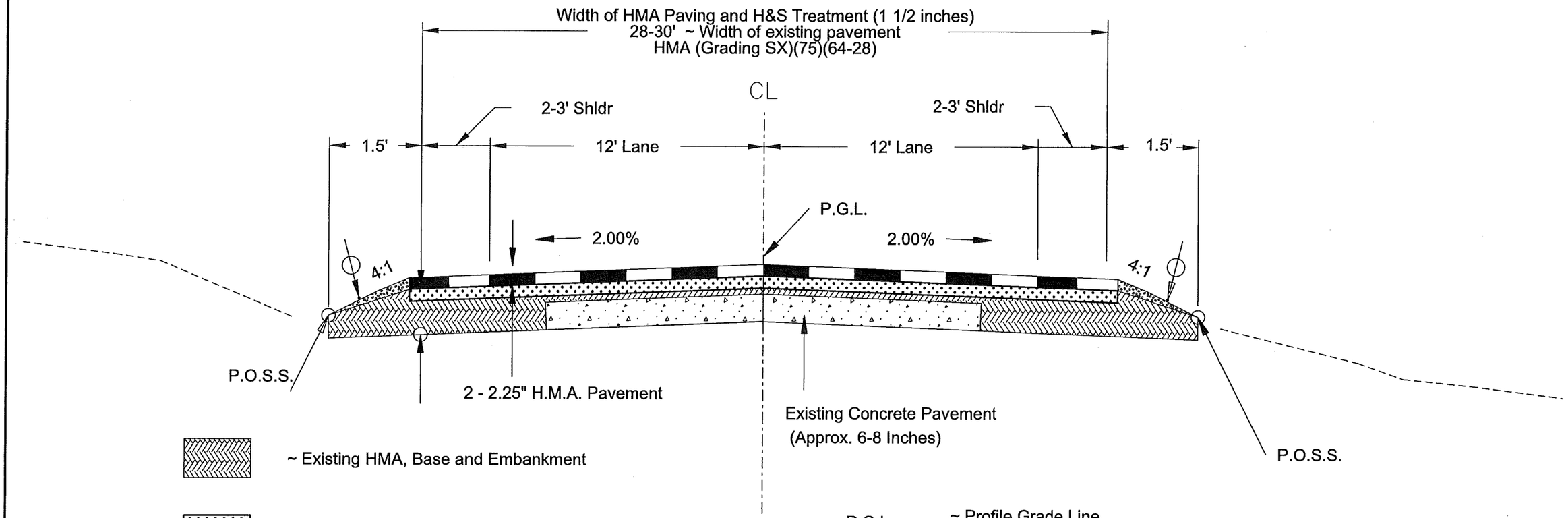
THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

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

THE NEW OR REVISED M&S STANDARD PLANS SHEETS ARE ATTACHED AFTER THE LAST SHEET LISTED ON THE INDEX OF SHEETS.

COLORADO
DEPARTMENT OF TRANSPORTATION

STANDARD PLANS LIST
M&S STANDARDS
July 04, 2006



~ Existing HMA, Base and Embankment

~ Heating and Scarifying Treatment (1 1/2 inches)

~ Aggregate Base Course (Class 7 Special)

P.G.L. ~ Profile Grade Line

H.M.A. ~ Hot Mix Asphalt

P.O.S.S. ~ Point of Slope Selection

Station	Width (Ft)	Thichness (Inches)	Top (TPS) HMA (Grading SX)(75)(64-28)	Shouldering (TPS) ABC (Class 7)(Special)
443+30 - 590+00	30	2.25	41.3	5
590+00 - 595+00	29	2.25	39.9	5
595+00 - 907+35	28	2.25	38.5	5
595+00 - 907+35	28	2.5	42.8	5

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Unit Information Unit Leader Initials

R-X

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
120 North Riverview Road
Sterling, CO 80751
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

TYPICAL SECTION

Designer: BAP
Detailer: BAP
Sheet Subset: XXXXXXX
Structure Numbers X-XX-XX X-XX-XX
Subset Sheets: XXX of XXX

Project No./Code
ES4 0061-080
17033
Sheet Number 3

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GENERAL NOTES

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

Tack Coat Diluted Emulsified Asphalt.....@ 0.1 Gals./Sq. Yd.(Diluted)
Bituminous Pavement HMA (Grading SX)(PG64-28)(75) @ 110 Lbs./Sq. Yd./Inch
Aggregate Base Course (Class 7).....@ 133 Lbs./Cu. Ft.

Water shall be used as a dust palliative where required. Locations shall be as directed by the Engineer. The cost will be included in the work.

It is estimated that ~~14,770~~ 3547 gallons of emulsified asphalt will be required for tack coat and ~~14,769~~ 11348 gallons of asphalt rejuvenating agent for the heating and scarifying treatment. Quantities are based on 0.1 gal/SY undiluted.

The following shall be furnished with each bituminous paver:

1. A ski type device at least 30 Feet in length.
2. Short ski or shoe.
3. 300 Feet of control line and stakes.

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

Asphalt joints shall fall on lines, shoulders lines or median lines, except where stated in the plans.

Road approaches which require bituminous pavement shall be primed and have three inches of HMA pavement placed as directed.

Public approaches and entrances to building or residences shall be paved 50 Feet out from the edge of shoulder or to the Right-Of-Way line, whichever is less. Field entrances shall be paved 4 Feet out from the edge of shoulder.

The Contractor shall not park any vehicles or equipment in, or disturb any areas not approved by the Engineer.

Prior to placing bituminous pavement, the paved surface shall be swept and cleaned. This will not be paid for separately, but shall be included in the cost of the Hot Mix Asphalt Pavement item.

Overlay of planed areas shall commence within 5 working days following the planing unless otherwise approved by the Engineer.

Where required the pavement shall be cut to a neat line as directed by the Engineer. This will not be paid for separately, but shall be included in the Hot Mix Asphalt Pavement item.

All travel lanes are subject to smoothness incentive/disincentive payments. Pavement smoothness incentive/disincentive shall be based on Inches/Mile.

Pavement smoothness will be HRI Category I (Percent Improvement).

Depth of moisture-density control for this project shall be as follows:
Full depth of all embankments:
Bases of cuts and fills .5 Feet.

Excavation required for compaction of bases of cuts and fills will be considered as subsidiary to that operation and will not be paid for separately.

Type of compaction for this project will be AASHTO T-99

It is estimated that ~~803~~ 1001 gallons of pavement marking paint will be required on this project as follows:
White.....~~587~~ 576 gallons
Yellow.....~~216~~ 425 gallons

It is estimated that ~~402~~ 393 gallons of Epoxy Pavement Marking will be required on this project as follows:
White.....~~294~~ 288 gallons
Yellow.....~~108~~ 105 gallons

It is estimated that ~~200~~ 14 hours of blading with a motor grader in the 100 to 125 flywheel horsepower range will be required as directed by the Engineer.

It is estimated that ~~16~~ 0 hours of Dozing with a machine in the 100 to 125 flywheel horsepower range will be required as directed by the Engineer.

It is estimated that ~~80~~ 107 days of Traffic Control Management will be required on this project.

It is estimated that 35 days of Traffic Control Inspection will be required on this project.

It is estimated that ~~5500~~ 4192 hours of Flagging will be required on this project.

It is estimated that ~~1~~ 2 Sanitary Facility will be required on this project.

It is estimated that ~~500~~ 213 tons of Hot Mix Asphalt Pavement (patching) will be required on this project.

The following clear zone criteria shall be used during this project: 18 feet during construction .

Delineators (flexible) will be flat Carsonite or an approved equal. They will be placed 2 feet from the new HMA edge. Estimated quantities are ~~200~~ 205 TYI and ~~80~~ 60 TY III

Severity of potential exposure shall be Class 2 for this project. The contractor may at his own expense have a certified laboratory test the sub-grade as per the field materials manual. Testing shall be at the same schedule and frequency as required for a preliminary soil survey. The contractor may propose a different class of expose for the project based on those results.

The Contractor shall protect all existing survey monumentation designated to remain from damage during construction operations. Any monuments disturbed by the Contractor that are not designated for relocation, shall be reset at the Contractor's expense. The Contractor and Engineer shall note those monuments in the field prior to construction. See Tabulation of Survey.

GENERAL NOTES - 2

Culvert replacement and HMA patching work will be completed prior the Heating and Scarifying treatment.

For new culvert installations, match the flow line grades from the culvert being replaced.

The cost of structure excavation will be included in the work.

Cleaning CBC at STA 758+92 may require a small skid-steer loader or similar equipment.

At STA 699+40 an estimated ~~1.92~~ 5.05 CY of Class B Concrete and ~~146~~ 225 lbs. of reinforcing steel will be required for headwalls as per standard M-616-1. Trash guards will be required for the new siphon.

Rem. Portions of Present Structure (2 Ea.) for existing siphon headwalls.

Prior to construction commencing an environmental field conference shall occur to discuss wetlands and water quality. At this meeting, areas to be protected shall be reviewed. The Contractor shall place orange plastic fence and BMPs per the Stormwater Management Plan prior to any disturbance occurring on site.

Contractor shall be responsible for obtaining a dewatering permit from the Colorado Department of Health and Environment. Dewatering shall be done in such a matter that erosion does not occur during the dewatering process. Dewatering shall not occur into state waters including wetland or pond locations on site. Dewatering of wetlands or ponds is not allowed.

No equipment of any type shall be allowed in the drainage to avoid spilling of pollutants. Foot traffic will be allowed for necessary or needed activity as approved by the Engineer.

Work shall be completed from above to avoid disturbance to waters of the US, as practicable.

Work shall be limited to a 100' length work area. Placement of fill shall not extend more than 6' beyond existing toe. See the Stormwater Management Plan for BMPs and limits of disturbance area.

Sheet piling and dewatering will be required to do the work at STA 764 + and STA 788+. Sheet piling shall be placed on the LT and RT sides of the road at the CDOT right of way to reduce the potential of pollutants entering waters of the U.S. during construction. Installation of the sheet piling will be from US 6. Equipment will not be allowed within the drainage way for sheet pile installation. Once sheet piling is in place dewatering is anticipated.

If during flow fill operations, flow fill, or any other pollutant are deposited onto the ground surface, it shall be cleaned up immediately and removed from the project site.
Once work is completed in the area any accumulated sediment shall be removed from the drainage area prior sheet piling removal. Removal of sheet piling will take place from US 6.

It is estimated that 320 LF of sheet piling will be required. The cost of installation, maintenance and removal of sheet piling will be paid included in the work. The Contractor will be required to have one lane of traffic open to the traveling public at all times during construction.

Care will be required to limit the disturbance of soil during the sheet pile removal.

Alternative Construction Requirements

Alternatively, the Contractor may choose to submit a design plan of their own that will protect the drainages and wetlands. The plan will be subject to approval by the CDOT Engineer in consultation with Region Environmental. If the contractor elects to use an alternative plan it will be written and submitted for approval two weeks before planned construction begins.

It is estimated that there will be 2400 SF of permanent impacts to wetlands

MBTA

The Migratory Bird Treaty Act (MBTA) protects migratory birds and their nests and eggs. For projects that could potentially have an impact, the following conditions apply:

1) Tree Trimming/Removal

Tree trimming and/or removal activities shall be completed before birds begin to nest or after the young have fledged. In Colorado, most nesting and rearing activities occur between April 1 and August 31. However, since some birds nest as early as February, a nesting bird survey shall be conducted by a biologist before any tree trimming or removal activities begin.

2) Bridge/Box culvert Work

Bridge or box culvert work that may disturb nesting birds shall be completed before birds begin to nest or after the young have fledged. No bridge or box culvert work may take place between April 1 and August 31. If work activities are planned between these dates, nests shall be removed (before nesting begins) and appropriate measures taken to assure no new nests are constructed. Failure to remove and keep nests from becoming established may postpone project construction.

3) Clearing/Grubbing Activities

Clearing and grubbing of vegetation that may disturb ground nesting birds shall be completed before birds begin to nest or after the young have fledged. If work activities are planned between April 1 and August 31, vegetation shall be removed and/or trimmed to a height of six (6) inches or less prior to April 1. Once vegetation has been removed and/or trimmed, appropriate measures, i.e. repeated mowing/trimming, shall be implemented to assure vegetation does not grow more than six (6) inches. Failure to maintain vegetation height of six (6) inches or less may postpone project construction.

INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY PLAN	ROADWAY AS CONST.	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.
			202-00210	Removal of Concrete Pavement	SY	167	202.75	167	202.75
			202-00010	Rem of Tree CM07	Each	0	3	0	3
			202-00220	Removal of Asphalt Mat	SY	284	461.24	284	461.24
			202-00210	Rem of Conc Pav. CM07	SY	0	20	0	20
			202-00240	Removal of Asphalt Mat (Planing)	SY	3,500	3057.56	3,500	3557.56
			202-00270	Rem of Asph mat CM07	SY	0	33	0	33
			202-00500	Removal of Portions of Present Structure	EACH	2	2	2	2
			202-01000	Removal of Fence MCR	LF	776	314.28	776	314.28
			202-04001	Plug Culvert	EACH	6	5	6	5
			202-04002	Clean Culvert	EACH	5	5	5	5
			203-00010	Uncl. Exc CIP CM07	CY	0	1915	0	1915
			203-00060	Embankment Material (Complete In Place)	CY	1,277	1277	1,277	1,277
			203-01597	Potholing CM07	HR.	0	20	0	20
			203-01500	Blading CM07	HOUR	200	14	200	14
			203-01550	Dozing Deleted Fm105	HOUR	16	0	16	0
			206-00065	Structure Backfill (Flow-Fill)	CY	264	416	264	416
			206-00100	Str. Backfill Cl. 1 CM07	CY	0	49	0	49
			208-00002	Erosion Log (12 Inch)	LF	1,400	850	1,400	850
			208-00034	Gravel Bag Deleted Fm105	LF	300	0	300	0
			208-00045	Concrete Washout Structure	EACH	2	2	2	2
			208-00070	Stabilized Construction Entrance	EACH	4	2	4	2
			208-00103	Removal and Disposal of Sediment (Labor)	HOUR	200	16	200	16
			208-00105	Removal and Disposal of Sediment (Equipment)	HOUR	40	15	40	15
			208-00205	Erosion Control Supervisor	HOUR	300	44	300	44
			210-00010	Reset Mailbox Structure	EACH	11	4	11	4
			212-00006	Seeding (Native) CM07	ACRE	0.5	1.015	0.5	1.015
			212-00032	Soil Conditioning CM07	ACRE	0.5	.89	0.5	.89
			213-00002	Mulching (Weed Free Hay) CM07	ACRE	0.5	.92	0.5	.92
			213-00061	Mulch Tackifier	LB	100	195	100	195
			216-00042	Soil Retention Blanket (Biodegradable Straw/Coconut)	SY	450	802.22	450	802.22
			304-06000	ABC Cl. 6 CM07	Ton	0	34.35	0	34.35
			304-07009	Aggregate Base Course (Class 7) (Special) MCR	TON	2,814	0	2,814	0
			304-09000	ABC SP MCR	CY	0	1803	0	1803
			403-00720	Hot Mix Asphalt (Patching) (Asphalt)	TON	500	212.67	500	212.67
			403-00720	HMA Patching Asph CM07	Ton	0	11.99	0	11.99
			403-34751	Hot Mix Asphalt (Grading SX) (75) (PG 64-28)	TON	23,717	22888.54	23,717	22,888.54
			405-00000	Heating and Scarifying Treatment	SY	147,687	133799.4	147,687	133,799.4
			411-10255	Emulsified Asphalt (Slow-Setting)	GAL	14,770	3547.05	14,770	3,547.05
			411-90010	Asphalt Rejuvenating Agent	GAL	14,769	11348	14,769	11,348
			507-00000	Conc Sl. & Ditch Paving CM07	CY	0	2.26	0	2.26
			601-01025	Concrete Class B (Miscellaneous)	CY	1.92	5.05	1.92	5.05
			602-00020	Reinforcing Steel (Epoxy Coated)	LB	146	225.46	146	225.46
			603-01180	18" RCP CM07	LF	0	360	0	360

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Unit Information Unit Leader Initials

R-X

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
DOT
120 North Riverview Road
Sterling, CO 80751
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions:
Revised: 1/25/11
Void:

Final SUMMARY OF ~~APPROXIMATE~~ QUANTITIES

Designer: BAP
Detailer: BAP
Sheet Subset: XXXXXXX
Structure Numbers X-XX-XX X-XX-XX
Subset Sheets: XXX of XXX

Project No./Code
ES4 0061-080
17033
Sheet Number 6

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INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY PLAN	ROADWAY AS CONST.	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.
			603-01300	30 Inch Reinforced Concrete Pipe	LF	66	80	66	80
			603-05018	18" RCP ES Cmo7	Ea	0	2	0	2
			603-01420	42 Inch Reinforced Concrete Pipe	LF	42	40	42	40
			603-07180	18" RCP Jacked Cmo7	LF	0	90	0	90
			603-05030	30 Inch Reinforced Concrete End Section	EACH	2	2	2	2
			603-15018	18" Equiv. CSP Arch Cmo7	LF	0	85	0	85
			603-05042	42 Inch Reinforced Concrete End Section	EACH	2	2	2	2
			603-31318	18" Equiv. Arch Steel End Section Cmo7	Ea	0	6	0	6
			603-10180	18 Inch Corrugated Steel Pipe	LF	96	88	96	88
			603-10240	24 Inch Corrugated Steel Pipe	LF	48	48	48	48
			603-30018	18 Inch Steel End Section	EACH	4	4	4	4
			603-30024	24 Inch Steel End Section	EACH	2	2	2	2
			604-00305	Inlet Type C 5' Cmo7	Ea	0	1	0	1
			606-00301	Guardrail Type 3 (6-3 Post Spacing)	LF	706	756	706	756
			604-30005	manholeSlabBase 5' Cmo7	Ea	0	1	0	1
			606-01370	Transition Type 3G	EACH	6	5	6	5
			606-01390	End Anchorage Type 3K	EACH	2	2	2	2
			606-02000	End Anchorage (Special)	EACH	3	3	3	3
			606-02003	End Anchorage (Nonflared)	EACH	2	3	2	3
			606-02005	End Anchorage (Flared)	EACH	14	14	14	14
			606-10200	Bridge Rail (Special)	LF	252	260	252	260
			607-00005	End Post MCR	EACH	6	59	6	59
			607-00010	Corner and Line Brace Post MCR	EACH	2	29	2	29
			607-01000	Fence Barbed Wire with Metal Posts MCR	LF	776	30058	776	30,058
			607-11525	Fence (Plastic)	LF	520	145	520	145
			612-00041	Delineator (Flexible) (Type I)	EACH	200	205	200	205
			612-00043	Delineator (Flexible) (Type III)	EACH	80	60	80	60
			614-00012	Sign Panel (Class II)	SF	18	18	18	18
			614-01582	Steel Sign Support (2-1/2 Inch Round)(Post and Slipbase)	LF	24	24	24	24
			616-00240	24 Inch Concrete Siphon Pipe	LF	60	61	60	61
			616-30024	24 Inch Trash Guard	EACH	2	2	2	2
			620-00002	Field Office (Class 2)	EACH	1	1	1	1
			620-00012	Field Laboratory (Class 2)	EACH	1	1	1	1
			620-00020	Sanitary Facility	EACH	1	2	1	2
			625-00000	Construction Surveying	LS	1	1	1	1
			625-00001	Construction Surveying hr Cmo7	HR	0		0	10
			626-00000	Mobilization	LS	1	1	1	1
			626-00100	mobilization without Auto Pay Cmo7	LS	0	1	0	1
			627-00001	Pavement Marking Paint	GAL	803	1001	803	1,007
			627-00005	Epoxy Pavement Marking	GAL	402	393	402	393

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Colorado Department of Transportation
CDOT DEPARTMENT OF TRANSPORTATION
120 North Riverview Road
Sterling, CO 80751
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
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Final ~~APPROXIMATE~~ SUMMARY OF QUANTITIES

Designer: BAP
Detailer: BAP
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ES4 0061-080
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INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY PLAN	ROADWAY AS CONST.	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.
			629-01210	Adjust Monument Box	EACH	3	2	3	2
			629-01110	Locate monuments CMO7	~~HR~~	0	8	0	8
			630-00000	Flagging CMO7	HOUR	5,500	4192	5,500	4,192
			630-00001	Pilot Car Operation	HOUR	500	186	500	166
			630-00007	Traffic Control Inspection CMO7	DAY	35	35	35	35
			630-00012	Traffic Control Management CMO7	DAY	65	107	65	107
			630-80002	Flashing Beacon (Solar)	EACH	4	4	4	4
			630-80341	Construction Traffic Sign (Panel Size A) CMO7	EACH	33	51	33	51
			630-80342	Construction Traffic Sign (Panel Size B) CMO7	EACH	87	152	87	152
			630-80343	Construction Traffic Sign (Panel Size C) CMO7	EACH	8	8	8	8
			630-80344	Construction Traffic Sign (Special)	SF	99	99	99	99
			630-80360	Drum Channelizing Device CMO7	EACH	50	18	50	18
			630-80380	Traffic Cone CMO7	EACH	250	300	250	300
				FORCE ACCOUNT ==========					
			700-70010	F/A Minor Contract Revisions	F A	1	1	1	1
			700-70012	F/A Asphalt Pavement Incentive	F A	1	1	1	1
			700-70016	F/A Fuel Cost Adjustment	F A	1	1	1	1
			700-70019	F/A Asphalt Cement Cost Adjustment	F A	1	1	1	1
			700-70020	F/A On-The-Job Trainee	EACH	1	0	1	0
			700-70022	F/A OJT Colorado Training Program	F A	1	1	1	1
			700-70028	F/A ESB Program	F A	1	0	1	0
			700-70220	F/A Phone Service	F A	1	1	1	1
			700-70380	F/A Erosion Control	F A	1	0	1	0
			900-00014	Flow Fill Special MCR	LS	0	1	1	1
			900-00014	Adjust Culvert Outlet MCR	LS	0	1	1	1
			626-00100	Mobilization W/O Autopay MCR	LS	0	1	1	1
			626-00100	Mobilization W/O Autopay MCR	LS	0	1	1	1
			506-00209	Rip Rap (9 inch) MCR	CY	0	100	100	100
			900-00006	H&S Density Price Reduction	DOL	0	-10674.98	-$10,674.98	-$10,674.98
			900-00010	Laborer Hours MCR	HR	0	18	18	18

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					Heating and Scarifying 1.5 inches		(Grading SX)(PG 64-28)(75) HMA Top Layer		ABC (Class 7)(Special)	
Thichkness Inches	Station to	Station	Length	Average Width	Square Yardage		Tons		~~Tons~~ CY	
2.25	443+30	590+00	14670	30	~~48900~~		~~6051~~		~~732~~	
2.25	590+00	595+00	500	29	~~1611~~		~~199~~		~~25~~	
2.25	595+00	840+80	24580	28	~~76471~~		~~9463~~		~~1226~~	
2.5	840+80	907+35	6655	28	~~20704~~		~~2847~~		~~332~~	
	Irregularities						~~3929~~		~~250~~	
	Approaches						~~1228~~		250	
						As Const.		As Const.		As Const.
					~~147687~~	133,799.4	~~23717~~	23,880.54	~~2814~~	1803

CMO7 341.35

Tabulation of Removal of Asphalt Mat (Planing)

Station	to	Station	Length	Width	Square Yards	As Const.
448+36	to	449+86	150	30	~~500~~	
505+00	to	507+00	200	30	~~667~~	
685+00	to	688+00	300	28	~~933~~	
837+50	to	840+50	300	28	~~933~~	
905+85	to	907+35	150	28	~~467~~	
				Project total	~~3500~~	3558

Removal thickness will be two inches

An esitated 200 ton of milled HMA will be stockpiled and used to improve access at the canal structures.

The cost of stockpiling and haul will be included in the Rem.of Asph. Mat (Planing).

Excess milled material will become the property of the contractor and removed from the project.

W11-3 (Wildlife X-ing)
Sign Tabulation

Station	Sign Panel (Class II) Square feet	AS Const.	Steel Sign Support (2 1/2 Inch Round) (Post and Slipbase) Lin. Feet	AS Const.
618+00	9	9	12	12
878+00	9	9	12	12
	~~18~~	18	~~24~~	24

Riprap mar Sta 764+58 (42" RCP) Rt = 30, Lt = 20 Total 50 CY
789+10 (30" RCP) Rt = 31, Lt = 19 50 CY

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Surfacing Plan

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Residence Approaches

448+70	RT	35
450+52	LT	22
464+07	RT	22
477+25	RT	22
478+50	RT	22
478+50	LT	22
492+91	RT	22
594+44	LT	22
614+40	RT	22
702+98	RT	22
754+00	LT	22
828+60	RT	22
858+14	RT	22
879+33	LT	22
898+30	LT	22

343

Canal Access 150

County Road Approaches

448+40	CR N	LT	35
506+93	CR P	LT	35
525+88	CR 55	LT	35
525+88	CR 55	RT	35
585+63	CR Q	RT	35
586+05	CR Q	LT	35
590+33	CR 56	LT	35
654+57	CR 57	LT	35
654+57	CR 57	RT	35
690+29	CR R	LT	35
778+15	Prewitt Res.	RT	44
811+83	CR 59.5	RT	35
811+83	CR 59.5	LT	35
830+62	CR 25	RT	35
865+22	CR 2.5	LT	35
870+00	Historical Marker	LT	10
891+77	CR 4	RT	35

579

Field Approaches

459+20	RT	3	578+44	RT	3
459+50	RT	3	590+46	RT	3
464+20	LT	3	591+10	RT	3
464+70	RT	3	605+75	LT	3
477+66	RT	3	606+00	RT	3
478+08	RT	3	606+75	RT	3
485+80	RT	3	622+10	LT	3
492+44	RT	3	622+53	RT	3
492+44	LT	3	637+00	LT	3
493+05	LT	3	659+25	RT	3
506+60	RT	3	659+25	LT	3
507+82	LT	3	669+88	LT	3
507+93	LT	3	680+75	RT	3
507+93	RT	3	707+65	RT	3
529+00	LT	3	707+65	LT	3
539+14	LT	3	733+15	LT	3
540+30	RT	3	754+00	RT	3
542+84	LT	3	756+53	RT	3
543+15	RT	3	756+53	LT	3
558+47	LT	3	786+90	RT	3
558+71	RT	3	835+85	LT	3
562+93	RT	3	851+85	RT	3
563+23	LT	3	865+00	RT	3
563+43	RT	3	890+88	LT	3
569+96	RT	3	897+63	LT	3
			905+56	LT	3
			905+56	RT	3

156

753.22
~~1228~~ total tons

For Information Only - Additional approaches may be required as directed by the engineer

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Approach Paving
Designer: bap
Detailer: bap
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STA 0061-080

Estimated Pavement Marking Quantities

Centerline Yellow

Stationing			Skip	No Pass Eastbound	No Pass Westbound	Double Yellow	Squre feet	As Constructed
444+95	to	454+34	0.25		1		391	
454+34	to	476+99	0.25				189	
476+99	to	487+77	0.25	1			449	
487+77	to	498+90	0.25		1		464	
498+90	to	511+58	0.25				106	
511+58	to	522+42	0.25	1			452	
522+42	to	531+05				2	575	
531+05	to	541+38	0.25	1			430	
541+38	to	671+63	0.25				1085	
671+63	to	682+87	0.25	1			468	
682+87	to	686+24				2	225	
686+24	to	697+31	0.25		1		461	
697+31	to	749+06	0.25				431	
749+06	to	760+00	0.25	1			456	
760+00	to	768+97				2	598	
768+97	to	779+87	0.25		1		454	
779+87	to	791+45	0.25	1			482	
791+45	to	830+12				2	2578	
830+12	to	842+02	0.25		1		496	
842+02	to	907+35	0.25				544	
						Yellow total	~~11335~~ 11197.6	

Yellow Gal ~~108~~ 105

Edgeline White

Stationing			Edge line Left	Edge Line Right		As Constructed
444+95	to	907+35	1	1	30603 ~~30824~~	
					White total 30824	

White Gal ~~294~~ 288

Reflective Glass Beads will be required for each application of pavement marking.

Tabulation of Item 210 - Mailbox Reset

Station		Left or Right	Quantity
464+13		Rt	~~1~~ 0
478+29		~~Rt~~ & Lt	~~2~~ 2
492+~~76~~ 96		Rt	1
594+15		Lt	~~1~~ 0
614+38	*	Lt	~~1~~ 0
703+48		RT	~~1~~ 0
754+07		Rt	~~1~~ 0
858+47		Lt	~~1~~ 0
879+20		~~Lt~~ Rt	1
898+20		Lt	~~1~~ 0
			Total: ~~11~~
			As Constructed: 4

* Paper Tube - Cost to reset included in the reset work

Pavement Marking Paint - 2 Applications

White	~~587~~ 576.4
Yellow	~~216~~ 424.7
Total	**~~803~~ Gallons**
As Constructed	1001

Epoxy Pavement Marking

White	~~294~~ 288
Yellow	~~108~~ 105
Total	**~~402~~ Gallons**
As Constructed	393

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Tabulation of Resets and Pavement Marking

Designer:	bap	Structure Numbers	X-XX-XX
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Fence Tabulation

Station	Feet Right	As Const	Feet Left	As Const	Each End Post	As Const	Each Corner and Line Brace Post	As Const.
Begin 756+43					2			
End 756+78	35		35		2			
							1	
Begin 830+94								
835+75					1			
836+10					1			
End 838+00	706						1	
	741		35		~~6~~	59	~~2~~	29
	Total Fence BWMP Feet		~~776~~	39058				

The cost of removal of the existing fence will be included in the bid items for the new fence.

Survey Monument Table
SH 6- Washington & Logan Counties
STA 0061-080, 17033

	Monument Marking	Towns hip	Range	County	Index		Adj. Box	As Con.
1	C 1/4 cor. Sec. 35	6 N	54 W	Logan	19-C		~~1~~	
2	N 1/4 cor. Sec. 35	6 N	54 W	Logan	19-E		~~1~~	1
3	C 1/4 cor. Sec. 26	6 N	54 W	Logan	19-G		~~1~~	1
					Adjust Monument Box		~~3~~	2

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Tabulation of Fence
Adjust Survey Monument

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		Left Cubic Yards	As Const.	Right Cubic Yards	As Const.	Estimated Seeding Area Square Feet	As Const.
685+00	Guardrail flare			75		2000	
685+80	Access Imp.	100				2000	
686+00	Access Imp.			112		1000	
688+25	Guardrail flare	75				1000	
699+40	Siphon Rep.	25		25		3000	
712+38	Culvert Rep.	50		50		1500	
721+50	Culvert Rep.	50		50		1500	
756+60	Field Access	30		30			
758+17	Guardrail flare	25		25		1000	
759+67	Guardrail flare	25		25		1000	
764+28	Culvert Rep.	75		75		2000	
788+90	Culvert Rep.	75		75		2000	
829+00	Guardrail flare	25				750	
829+20	Guardrail flare			25		750	
830+50	Guardrail flare	25				750	
835+85	Field Access	30					
894+50	Culvert Rep.	50		50		1500	
		660		617		21750	

1277 CY ~~0.50~~ Acres
1.015

SUMMARY OF EARTHWORK QUANTITIES

EMBANKMENT MATERIAL (COMPLETE IN PLACE) (NET)	CUBIC YARDS
FOR ROADWAY: Culvert Replacement (Minor Widening)	600
FOR GUARDRAIL WIDENING	325
EMBANKMENT FROM STRUCTURE (Siphon)	50
ACCESS POINTS	302
TOTAL	1,277

Unclassified Excavation (MO7 Ditch A-1 1915
STR Backfill Cl. 1 11+50 Drainage Alignment 49

FOR INFORMATION ONLY

UNCLASSIFIED EXCAVATION	CUBIC YARDS
FOR ROADWAY	0
FOR STRUCTURE (Siphon)	50
TOTAL	50

COMPACTION (AASHTO T 99)	CUBIC YARDS
TOTAL EMBANKMENT (NET)	1,277
BASES OF CUTS AND FILLS	400
TOTAL	1,677

EARTHWORK QUATITIES BALANCE

UNCLASSIFIED EXCAVATION	CUBIC YARDS
TOTAL UNCLASSIFIED EXCAVATION	
TOTAL FROM CONTRACTOR'S SOURCE	1,177
TOTAL	1,177
EMBANKMENT (NET)	
TOTAL	1,277
EMBANKMENT (NET) TIMES COMPACTION FACTOR (1.3)	
TOTAL	1,530

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EARTHWORK QUANTITES

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Station	US 6 Mainline Drainage Culverts (Existing and New)	Clean Culvert	As Const.	Plug Culvert	As Const.	Structure Backfill (Flowfill)	As Const.	18 inch Culvert	As Const.	24 inch Culvert	As Const.	42 inch Culvert (RCP)	As Const.	30 inch Culvert (RCP)	As Const.	42 Inch RCES	As Const.	30 Inch RCES	As Const.	24 Inch Concrete Siphon	As Const.	Removal of Asphalt Mat	As Const.	Removal of Conc. Pavement	As Const.	HMA Patching	As Const.
473+05	24" X 46' CMP	1	1																								
482+43	24" x 40" CMP	1	1																			5		3		5	
500+00	Relief Joint																										
550+00	Relief Joint																					5		3		5	
584+80	36" X 33' CMP	1	1																								
600+00	Relief Joint																					5		3		5	
650+00	Relief Joint																					5		3		5	
631+38	18" X 18" X 54-CBC	1	1																								
699+40	24" X 60' Siphon *#			1	0	4														60	61						
712+38	15" X 32'-CMP			1	1	1																45		24		15	
712+48	18" X 48' CMP					18		48	44																		
721+50	15" X 32-CMP			1	1	1																					
721+60	18" X 48' CMP					18		48	44													45		24		15	
758+92	10' X 7' X 30' CBC *	1	1																								
764+38	3 X 3 X 30-CBC **			1	1	10																					
764+58	42" X 42' RCP **					76						42	40			2						62		40		20	
788+90	2X3X56-CBC **			1	1	14																					
789+10	30" X 66' RCP **					85								66	80			2				62		40		20	
860+00	Relief Joint																					5		3		5	
894+50	24" X 34' CMP			1	1	6																					
894+40	24" X 48 ' CMP					31				48	48											45		24		15	
		5	5	6	5	~~264~~	416	~~96~~	88	~~48~~	48	~~42~~	40	~~66~~	80	2	2	2	2	~~60~~	61	~~284~~	461	~~467~~	202.75	~~110~~	213

Culvert replacement and HMA patching work will be completed prior the Heating and Scarifying treatment. **For new culvert installations, match the flow line grades from the culvert being replaced.**
For the culverts to be plugged, the contractor will be required to completely fill the existing void with flow fill. A concrete pump will be required. Cost included in the flow fill bid item.
The cost of structure excavation will be included in the work.
*** Cleaning CBC may require a small skid-steer loader or similar equipment.**
**** See the project General Notes for special instructions concerning these culvert replacements.**
***# An estimated 1.92 CY of Class B Concrete and 146 lbs. of reinforcing steel will be required for headwalls as per standard M-616-1. Trash guards will be required for the new siphon. Rem. Portions of Present Structure (2 Ea.) for existing siphon headwalls.**

CMO7 18" Equiv CSP Arch
1+84 Rt 35 LF
5+31 Rt 30 LF
6+75 20 LF

End Section
1+84 1
5+31 1
6+75 1

CMO7 HMA Patching 11.99 Tons
CMO7 Conc. Slope Ditch Paving
Sta 11+15 Rt = 2.26

CMO7 18" RCP Jacked 11+70 = 90 LF
Inlet 11+15 CMO7 1 each
MH 12+74 CMO7 1 each
CMO7 18" RCP Sta 9+10 ~ 11+15 = 205 LF
11+15 ~ 11+70 = 55 LF
12+60 ~ 13+60 = 100 LF
360 LF
1 end section 9+10
1 end section 13+60

Print Date: 1/8/2010	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 17033DES_TabMiscCulverts.dgn	Date: / Comments / Init.	120 North Riverview Road, Sterling, CO 80751, Phone: 970-522-0481 FAX: 970-521-9729	No Revisions:
Horiz. Scale: 1:1 Vert. Scale: As Noted	R-X	Region 4 LBL	Revised: 4/25/11
Unit Information Unit Leader Initials			Void:

TABULATION of CULVERT REPLACEMENT

Designer:	XXXXXXXX	Structure Numbers	X-XX-XX
Detailer:	XXXXXXXX		X-XX-XX
Sheet Subset:	XXXXXXX	Subset Sheets:	XXX of XXX

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17033
Sheet Number 14

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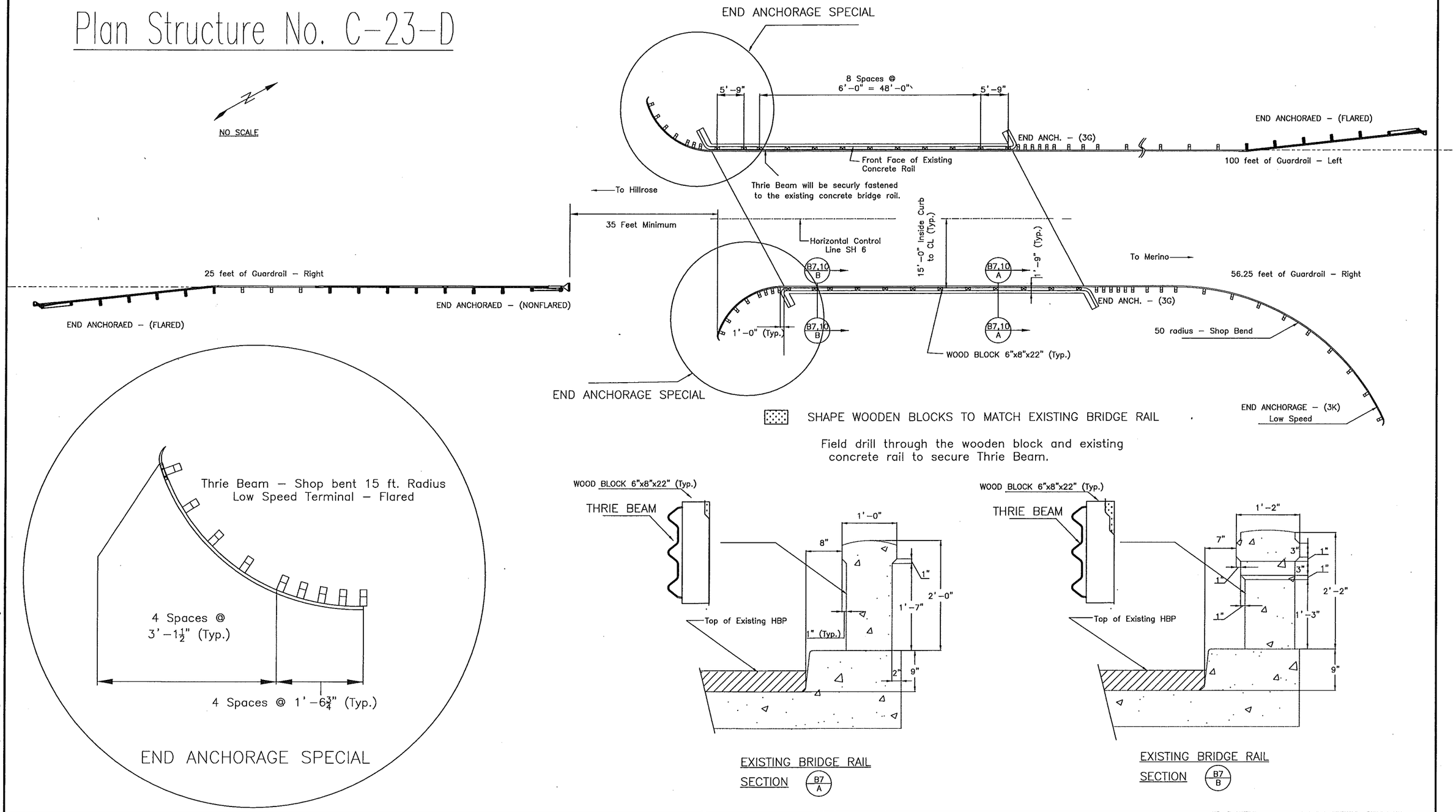
Plan Structure No. C-23-D



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Horiz. Scale: 1:1 Vert. Scale: As Noted	R-X	Region 4 LBL	Revised:
Unit Information Unit Leader Initials			Void:

BRIDGE RAIL - GUARD RAIL				Project No./Code
Designer: BAP	Structure Numbers	X-XX-XX		ES4 0061-080
Detailer: bap		X-XX-XX		17033
Sheet Subset: XXXXXXX	Subset Sheets: XXX of XXX			Sheet Number 15

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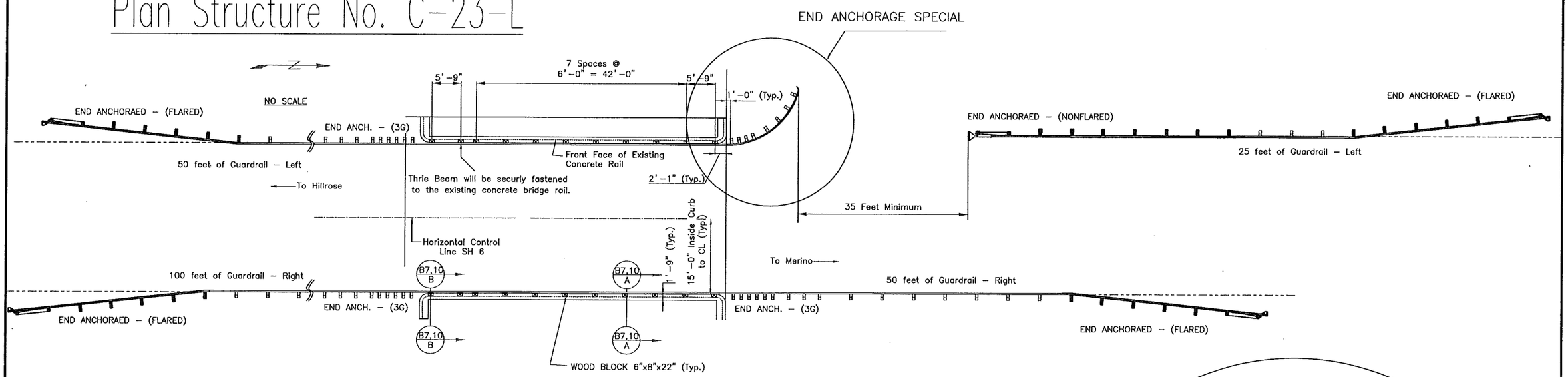
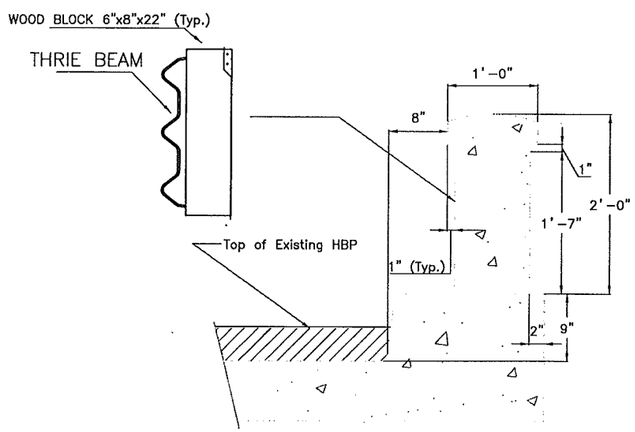
Plan Structure No. C-23-L

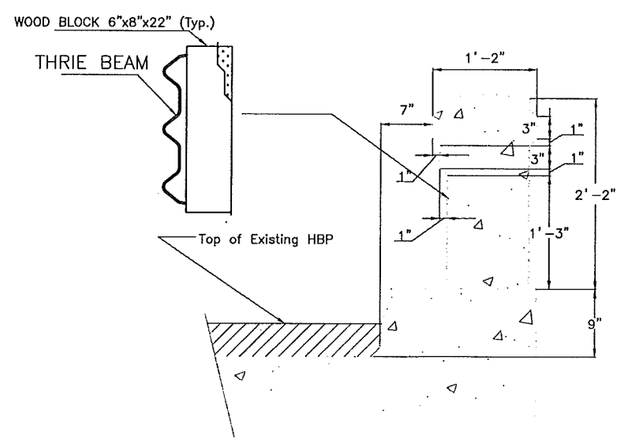


SHAPE WOODEN BLOCKS TO MATCH EXISTING BRIDGE RAIL

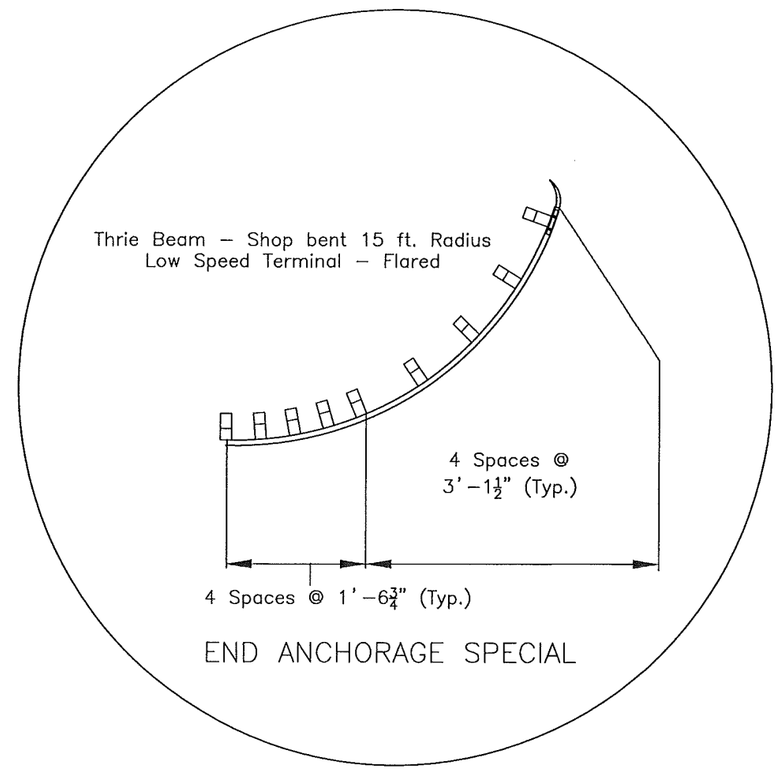
Field drill through the wooden block and existing concrete rail to secure Thrie Beam.



EXISTING BRIDGE RAIL
SECTION B7/A



EXISTING BRIDGE RAIL
SECTION B7/B



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Horiz. Scale: 1:1 Vert. Scale: As Noted	R-X				120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	Revised:	Designer: BAP / Structure Numbers: X-XX-XX	17033
Unit Information Unit Leader Initials							Detailer: bap / X-XX-XX	
					Region 4 LBL	Void:	Sheet Subset: XXXXXXX / Subset Sheets: XXX of XXX	Sheet Number 16

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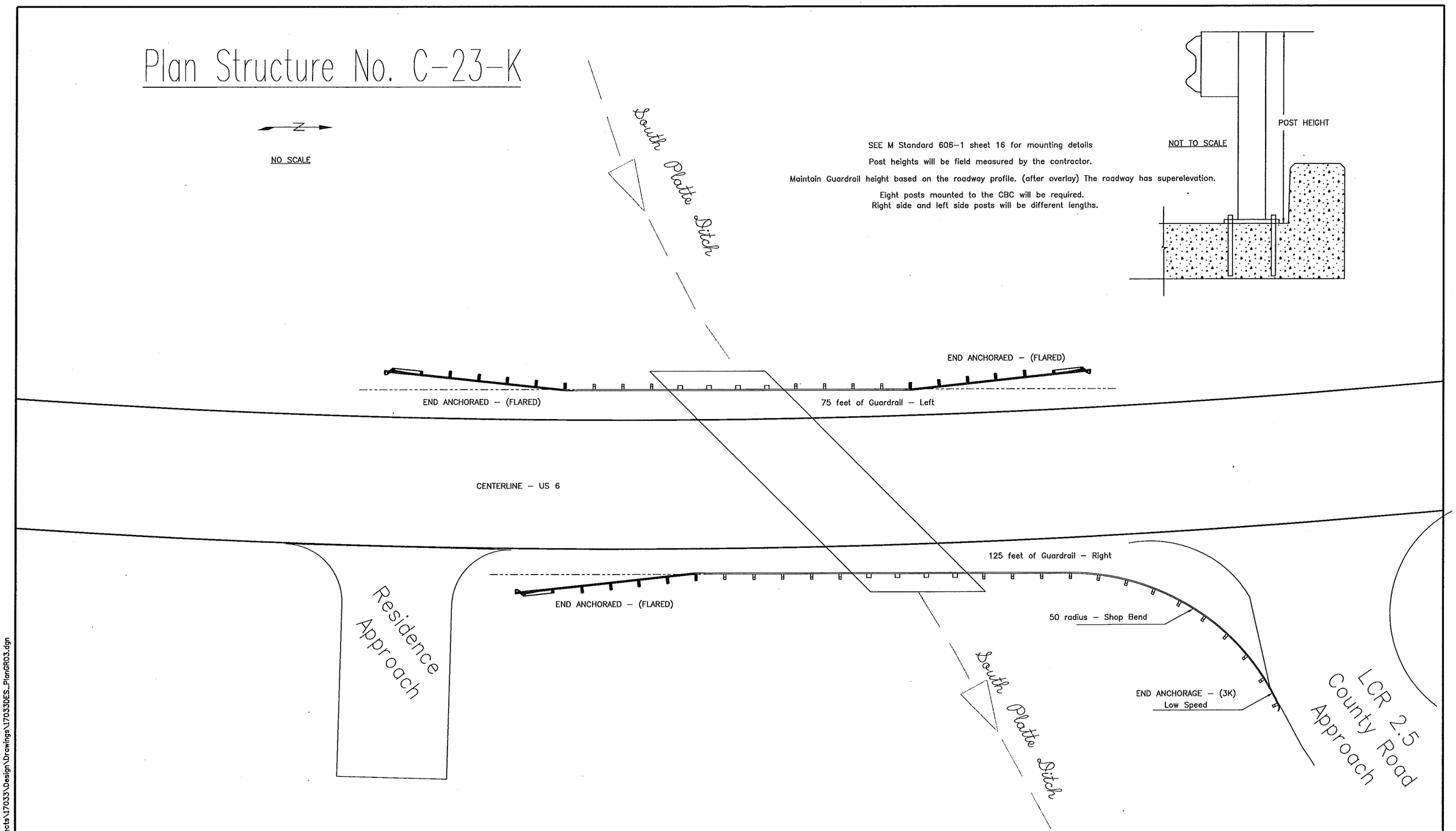
Plan Structure No. C-23-K



Print Date: 1/8/2010			
File Name: 17033DES_PlanGR03.dgn			
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Unit Information	Unit Leader Initials		

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Sheet Revisions

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No Revisions: 4/25/11

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Void:

BRIDGE RAIL - GUARD RAIL

Designer:	BAP	Structure Numbers	X-XX-XX
Detailer:	bap		X-XX-XX
Sheet Subset:	XXXXXXX	Subset Sheets:	XXX of XXX

Project No./Code

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Sheet Number 17

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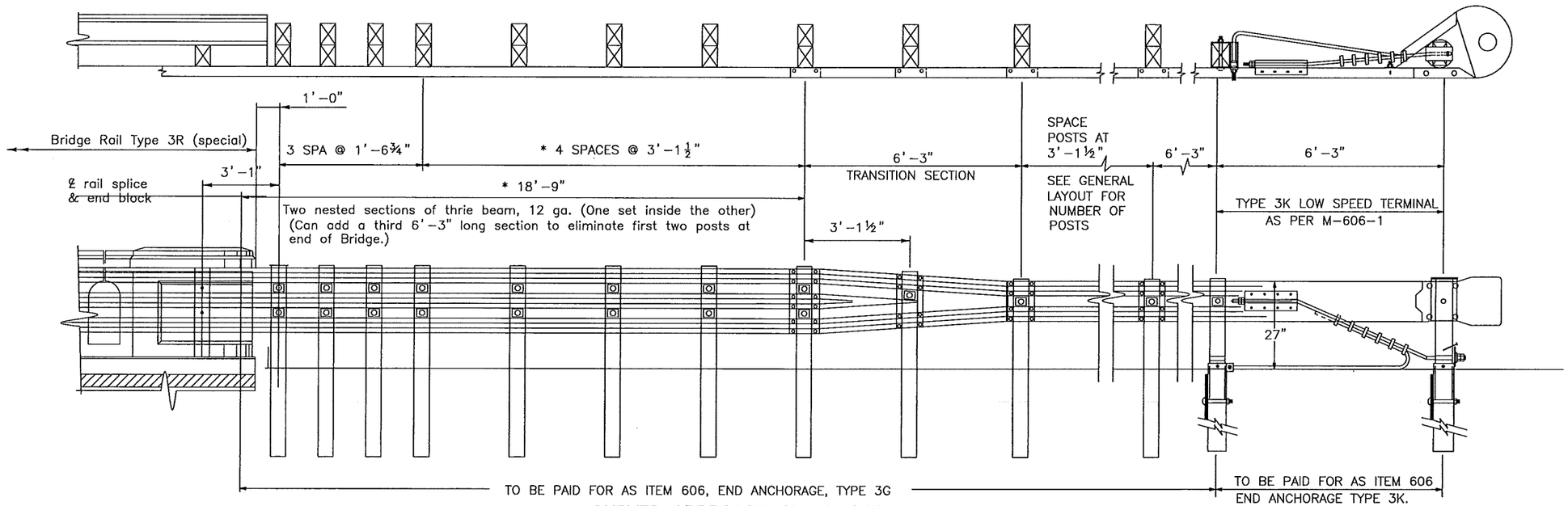

CURVED APPROACH GUARD RAIL

NOTES

FOR USE WITH BENDING RADII 10' AND GREATER. SEE GENERAL LAYOUTS FOR REQUIRED THRIE BEAM SHOP BENDING RADII.

▣ THIS SHOWS RECTANGULAR WASHER IS REQUIRED UNDER POST BOLT HEAD.

FOR POST DETAILS, SEE STD. M-606-1

* SOUTHWEST CORNER OF STRUCTURE A-24-H WILL HAVE 6 SPACES @ 3'-1 1/2"

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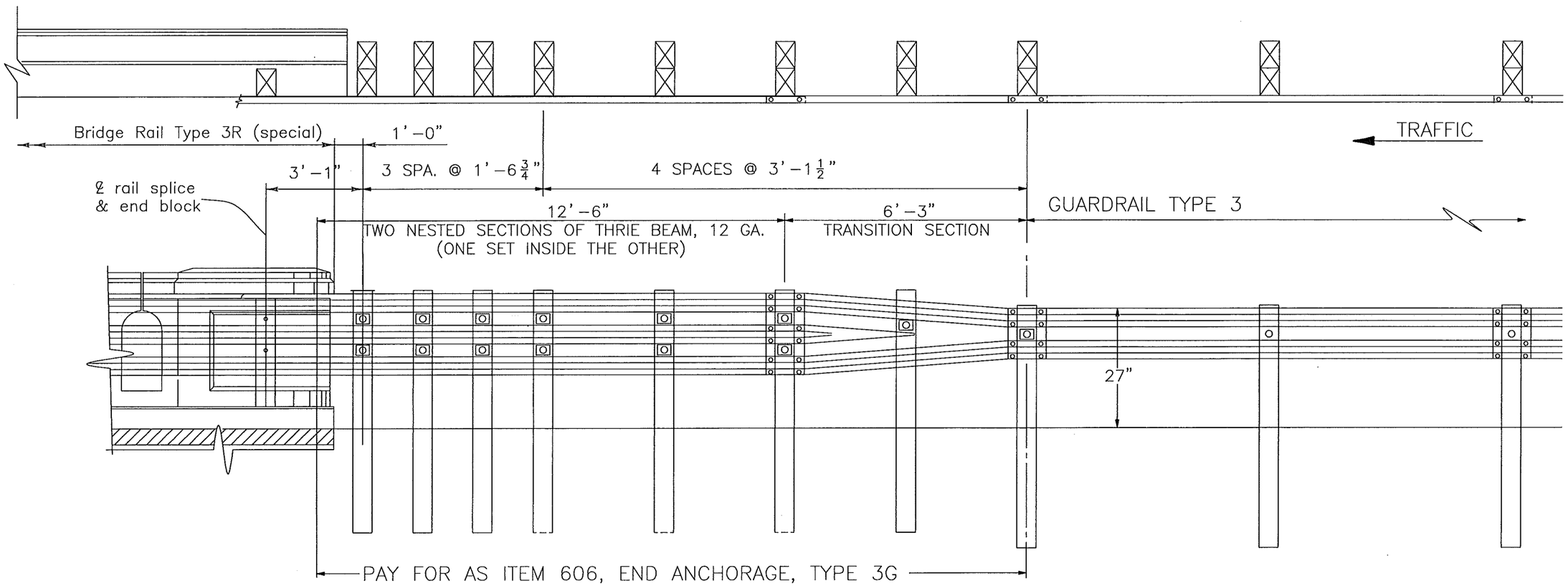
Print Date: 1/8/2010		Sheet Revisions			Colorado Department of Transportation	As Constructed	PLAN SHEET		Project No./Code
File Name: 17033DES_PlanBR 03.dgn		Date:	Comments	Init.		No Revisions: 4/25/11			ES4 0061-080
Horiz. Scale: 1:1 Vert. Scale: As Noted	R-X				120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	Revised:	Designer: bap / Structure Numbers X-XX-XX		17033
Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: bap / X-XX-XX		
							Sheet Subset: 03	Subset Sheets: 03 of 04	Sheet Number 18



STRAIGHT APPROACH GUARD RAIL

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File Name: 17033DES_PlanBR 04.dgn			
Horiz. Scale: 1:1	Vert. Scale: As Noted		
Unit Information	Unit Leader Initials		

R-X

Sheet Revisions

Date:	Comments	Init.

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Region 4 LBL

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PLAN SHEET

Designer:	bap	Structure Numbers	X-XX-XX
Detailer:	bap		X-XX-XX
Sheet Subset:	04	Subset Sheets:	04 of 04

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	Bride Rail (Special)		As Const.	Guardrail		As Const.	End Anch. 3G		As Const.	End Anch. Flared		As Const.	End Anch. Non-flared		As Const.	End Anchor (Special)		As Const.	End Anchor (3-K)		As Const.
	Left	Right		Left	Right		Left	Right		Left	Right		Left	Right		Left	Right		Left	Right	
Structure Irrigation 540+23 *						50				1		1			1						
Structure C-23-D Prewitt Res. Inlet 686+50	~~65~~ 72	~~65~~ 66	138	100	81.25	181.25	1	1	2	1	1	2		1	1	1	1	2		1	1
Structure Cattle Pass 758+92 *#				50	50	100				2	2	4									
Structure C-23-K South Platte Ditch 829+90 **				75	125	200				2	1	3								1	1
Structure C-23-L Prewitt Res. Outlet 838+75	61	61	122	75	150	225	~~2~~ 1	2	3	2	2	4	1		1	1		1			
	126	126		300	406.25		3	3		8	6		1	1		2	1		0	2	
Project Totals	~~252~~		260	706		756	~~6~~		5	14		14	~~2~~		3	~~3~~		3	~~2~~		2

* Guardrail and end treatment removal is included in the cost of the work

*# Use nested rail and omit one post as per standard M-606-1 (Sheet 15 of 16)

** Inside mount guardrail post on CBC as per M-606-, page 16 of 16

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File Name: 17033DES_PlanGR04.dgn	
Horiz. Scale: 1:1	Vert. Scale: As Noted
Unit Information	Unit Leader Initials

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Sheet Revisions		
Date:	Comments	Init.

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BRIDGE RAIL - GUARD RAIL
Tabulation

Designer:	BAP	Structure Numbers	X-XX-XX
Detailer:	bap		X-XX-XX
Sheet Subset:	XXXXXXX	Subset Sheets:	XXX of XXX

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Sheet Number 20

1. SITE DESCRIPTION

For Information Only to fulfill the CDPS-SCP (Colorado Discharge Permit System - Stormwater Construction Permit)

A. PROJECT SITE DESCRIPTION: Project will consist of Heating and Scarifying treatment and an HMA overlay. ABC will be placed for shouldering of the new overlay. Drainage culverts will be cleaned or replaced depending on their age. Existing box culverts will be plugged with flow fill at STA 764+28 and STA 788+90 and new culvert pipe will be installed adjacent to the box. Sheet piling and dewatering well be required to do the work at STA 764 + and STA 788+. Sheet piling shall be placed on the LT and RT sides of the road.

B. PROPOSED SEQUENCING FOR MAJOR ACTIVITIES: The project will begin with the culvert replacement and cleaning. Once this work is completed the surface treatment will commence along with the ABC shouldering.

C. ACRES OF DISTURBANCE:
1. Total area of construction site: 65 acres
2. Total area of disturbance: 3.3 acres
3. Acreage of seeding: 0.5 acres

D. EXISTING SOIL DATA: Soils vary on site from Satanta loam (well drained) loam on the south end of the project, sandy loam/sand in the center of the project to clay loam (poorly drained) at the north end of project.

E. EXISTING VEGETATION, INCLUDING PERCENT COVER: To be determined by the CDOT Landscape Architect prior to construction commencing.

F. POTENTIAL POLLUTANTS SOURCES: See First Construction Activities under Potential Pollutant Sources. The ECS shall prepare a list of all potential pollutants and their locations in accordance with subsection 107.25.

G. RECEIVING WATER:
1. Outfall locations: See SWMP plans for pipe locations and sizes.
2. Names of receiving water(s) on site and the ultimate receiving water: Lower Platte and beaver Ditch, Prewitt Inlet Canal, South Platte Ditch, and South Platte River. There are numerous other unnamed irrigation ditches that run across the project.
3. Distance ultimate receiving water is from project: South Platte River which runs across the project.
4. Does the receiving water have an approved TMDL: no

H. ALLOWABLE NON-STORMWATER DISCHARGES: Dewatering is anticipated on the project.
1. Groundwater and stormwater dewatering: Discharges to the ground of water from construction dewatering activities may be authorized provided that:
   a. the source is groundwater and/or groundwater combined with stormwater that does not contain pollutants
   b. the source and BMPs are identified in the SWMP
   c. discharges do not leave the site as surface runoff or to surface waters.

2. If discharges do not meet the above criteria a separate permit from the Department of Health will be required. Contaminated groundwater requiring coverage under a separate permit may include groundwater contaminated with pollutants from a landfill, mining activities, industrial pollutant plumes, underground storage tank, etc.

I. ENVIRONMENTAL IMPACTS:
1. Wetland Impacts: YES NO
2. Stream Impacts: YES NO
3. Threatened and Endangered Species: none

2. SITE MAP COMPONENTS:

Pre-construction

A. CONSTRUCTION SITE BOUNDARIES Shown on SWMP typical section and SWMP sheets
B. ALL AREAS OF GROUND SURFACE DISTURBANCE Shown on SWMP typical section and SWMP sheets
C. AREAS OF CUT AND FILL None anticipated
D. LOCATION OF ALL STRUCTURAL BMPs IDENTIFIED IN THE SWMP Shown on SWMPS. Will be updated by the ECS.
E. LOCATION OF NON-STRUCTURAL BMPs AS APPLICABLE IN THE SWMP Shown on SWMPS. Will be updated by the ECS.
F. SPRINGS, STREAMS, WETLANDS AND OTHER SURFACE WATER Shown on SWMP
G. PROTECTION OF TREES, SHRUBS, CULTURAL RESOURCES AND MATURE VEGETATION

3. SWMP ADMINSTRATOR FOR DESIGN: CDOT Landscape Architect

4. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

A. DESIGNATE A SWMP ADMINISTRATOR/EROSION CONTROL SUPERVISOR (To be filled out at time of construction; designate the individual(s) responsible for implementing, maintaining and revising SWMP, including the title and contact information. The activities and responsibilities of the administrator shall address all aspects of the projects SWMP.)

Name/Title: Contact information:

B. POTENTIAL POLLUTANT SOURCES
Evaluate, identify and describe all potential sources of pollutants at the site in accordance with subsection 107.25 and place in the SWMP notebook. All BMPs related to potential pollutants shall be shown on the SWMP site map by the contractor's ECS.

C. BEST MANAGEMENT PRACTICES (BMPs) FOR STORMWATER POLLUTION PREVENTION

PHASED BMP IMPLEMENTATION

During Design: "BMP as Designed" boxes are marked when used in the SWMP. During construction: the ECS shall update the "In use on site" boxes to match site conditions. Clearly describe the relationship between the phases of construction and the implementation of BMP controls.

STRUCTURAL BMPs that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

BMP	TYPE OF CONTROL	BMP as Designed	In use on site	FIRST CONSTRUCTION ACTIVITIES	DURING CONSTRUCTION	INTERIM/FINAL STABILIZATION
Earth Berm/Diversion	erosion			x	x	
*Check Dams	sediment	x		x	x	
Silt Fence	sediment			x	x	
Erosion Logs	sediment	x		x	x	
Temporary Sediment Trap/Basin	sediment			x	x	
Permanent Sediment Trap/Basin	sediment				x	x
Embankment Protector	erosion				x	x
Inlet Protection	erosion	x		x	x	
Outlet Protection	erosion	x			x	
Concrete Washouts	construction				x	
Stabilized Construction Entrance	construction	x		x	x	
Dewatering	sediment	x			x	
Temporary Stream Crossing	erosion			x	x	
Clean water diversion		x			x	
Other						

NON-STRUCTURAL BMPs that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

BMP	TYPE OF CONTROL	BMP as Designed	In use on site	FIRST CONSTRUCTION ACTIVITIES	DURING CONSTRUCTION	INTERIM/FINAL STABILIZATION
Surface Roughening/Grading Techniques	erosion	x			x	
Seeding Permanent	erosion	x				x
Seeding Temporary	erosion				x	
Mulch/Mulch Tackifier	erosion	x			x	x
Soil Binder	erosion				x	
Soil Retention Blanket	erosion	x			x	x
Vegetative Buffer Strips	erosion	x		x	x	x
Protection of Trees	erosion			x	x	
Preservation of Mature Vegetation	erosion	x		x	x	x
Flexible Growth Medium	erosion				x	x

*Check dams may be rock, erosion logs, silt dike, silt berm, etc. as indicated in the narratives and SWMP site map.
Erosion control devices are used to limit the amount of soil loss on site.
Sediment control devices are designed to capture sediment on the project site.
Construction control are BMPs related to construction access and staging.
BMP locations are indicated on the SWMP site map.
BMP details and narratives not covered by the SWMP or Standard Plan M-208-1 shall be added to the SWMP notebook by the ECS.

NARRATIVES

WATERS OF THE US STA 764+ AND 788+

Prior to construction commencing an environmental field conference shall occur to discuss wetlands and water quality. At this meeting, areas to be protected shall be reviewed. The Contractor shall place orange plastic fence and BMPs per the Stormwater Management Plan prior to any disturbance occurring on site.

Contractor shall be responsible for obtaining a dewatering permit from the Colorado Department of Public Health and Environment. Dewatering shall be done in such a matter that erosion does not occur during the dewatering process. Dewatering shall not occur into state waters including wetland or pond locations on site. Dewatering of wetlands or ponds is not allowed.

No equipment of any type shall be allowed in the drainage to avoid spilling of pollutants. Foot traffic will be allowed for necessary or needed activity as approved by the Engineer.

Work shall be completed from above to avoid disturbance to waters of the US, as practicable.

Work shall be limited to a 100' length work area. Placement of fill shall not extend more than 6' beyond existing toe. Erosion logs shall be placed at the toes of slope. Upon completion of work Soil Retention Blanket shall be placed. See the Stormwater Management Plan for BMPs and limits of disturbance area.

Sheet piling and dewatering well be required to do the work at STA 764 + and STA 788+. Sheet piling shall be placed on the LT and RT sides of the road at the CDOT right of way to reduce the potential of pollutants entering waters of the U.S. during construction. Installation of the sheet piling will be from US 6. Equipment will not be allowed within the drainage way for sheet pile installation. Once sheet piling is in place dewatering is anticipated.

If during flow fill operations, flow fill, or any other pollutant are deposited onto the ground surface, it shall be cleaned up immediately and removed from the project site.

Once work is completed in the area any accumulated sediment shall be removed from the drainage area prior sheet piling removal. Removal of sheet piling will take place from US 6.

It is estimated that 320 LF of sheet piling will be required. The cost of installation, maintenance and removal of sheet piling will be paid included in the work. The Contractor will be required to have one lane of traffic open to the traveling public at all times during construction.

Care will be required to limit the disturbance of soil during the sheet pile removal.

It is estimated that there will be 2400 SF of permanent impacts to wetlands.

Alternative Construction Requirements

Alternatively, the Contractor may choose to submit a design plan of their own that will protect the drainages and wetlands. The plan will be subject to approval by the CDOT Engineer in consultation with Region Environmental to ensure all permit and wetland finding requirements are met.

INLET/OUTLET PROTECTION

Erosion logs shall be placed so they conform to the soil surface; there should be no gaps between the log and soil surface. When placed at top of headwalls, ends of logs shall be "j-hooked" to reduce the potential of water running around ends of logs.

Prior to work commencing existing culvert inlets/outlets shall be protected with erosion logs to prevent sediment laden water from shouldering operations from entering the inlets, see plan sheets for locations.

Pipes that are to be cleaned shall have a log placed at the project outfall point to reduce the potential of sediment leaving the site. Disturbance areas at pipe cleaning locations are limited to 15' on either side of the pipe, see SWMP typical section.

VEGETATIVE BUFFER STRIPS

Existing vegetation shall be used as a BMP on the project. Existing vegetation aids with erosion and sediment control, and protects water quality. Preserved vegetation are those areas outside of the disturbance (shoulder operation limit)line to the right of fence. The amount of sediment reaching buffer strips shall be kept to a minimum by shouldering up with ABC (Class 7 Special). If sediment does enter buffer strips and covers existing vegetation it shall be cleaned/re-seeded as directed.

LANDFORM

Where indicated in the plans, existing landforms are used as a BMP. Landforms prevent sediment from entering onto a site. When a landform is present other BMPs may not be necessary. If a landform directs flow of water to a concentrated outfall point, the outfall point shall be protected to prevent erosion. If BMPs are needed at outfall point the ECS shall add location, type and appropriate narrative to the plans or SWMP notebook.

PERMANENT SEEDING

Disturbed areas shall be seeded within 48 hours during seeding seasons, after final disturbance had occurred. Areas that may need seeding are stockpile locations. Seeding is used to control runoff and erosion on disturbed areas. Seeded areas shall be inspected frequently for areas of failure.

MULCH AND MULCH TACKIFIER

Mulch and mulch tackifier shall be in accordance with subsection 213.03 (a). Crimping in ditch lines shall follow the contour, crimp rows running down a ditch line shall not be allowed.

D. OFFSITE DRAINAGE (RUN ON WATER)

1. Describe and record BMPs on the SWMP site map that has been implemented to address off site run-on water in accordance with subsection 208.03.

E. STABILIZED CONSTRUCTION ENTRANCE/VEHICLE TRACKING CONTROL

1. BMPs shall be implemented in accordance with subsection 208.04.

F. PERIMETER CONTROL

1. Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters.
2. Perimeter control may consist of vegetation buffers, berms, silt fence, erosion logs, existing landforms, or other BMPs as approved.
3. Perimeter control shall be in accordance with subsection 208.04.

5. DURING CONSTRUCTION

RESPONSIBILITIES OF THE SWMP ADMINISTRATOR/EROSION CONTROL SUPERVISOR DURING CONSTRUCTION
The SWMP should be considered a "living document" that is continuously reviewed and modified. During construction, the following items shall be added, updated, or amended as needed by the SWMP Administrator/Erosion Control Supervisor (ECS) in accordance with Section 208.

During construction, indicate how items that have not been addressed during design are being handled in construction. If items are covered in the template or other sections of the SWMP notebook indicate below what section the discussion takes place.

A. MATERIALS HANDLING AND SPILL PREVENTION

B. STOCKPILE MANAGEMENT if stockpiling of erodible materials occurs on the project, stockpiles shall be protected immediately with erosion logs.

C. GRADING AND SLOPE STABILIZATION

D. SURFACE ROUGHENING

E. TEMPORARY STABILIZATION

F. CONCRETE WASHOUT Concrete wash out water or waste from field laboratories and paving equipment shall be contained in accordance with subsection 208.05.

G. SAW CUTTING

H. STREET CLEANING

6. INSPECTIONS

A. Inspections shall be in accordance with subsection 208.03 (c).

7. BMP MAINTENANCE

A. Maintenance shall be in accordance with subsection 208.04 (e).

8. RECORD KEEPING

A. Records shall be kept in accordance with subsection 208.03 (c).

9. INTERIM AND FINAL STABILIZATON

A. SEEDING PLAN

Soil preparation, soil conditioning or topsoil, seeding (native), mulching (weed free) and mulch tackifier will be required for an estimated 0.5 acres of disturbed area within the right-of-way limits which are not surfaced. The following types and rates shall be used:

COMMON NAME	BOTANICAL NAME	APPLICATION RATE Pounds pls/Acre
Western wheatgrass	*Pascopyrum smithii* "Arriba"	4.0
Prairie sandreed	*Calamovilfa longifolia* "Goshen"	4.0
Blue grama	*Bouteloua gracilis* "Hachita"	0.5
Needle and thread	*Hesperostipa comata ssp. comata*	3.0
Junegrass	*Koeleria macrantha*	0.2
Switchgrass	*Panicum virgatum* "Nebr.28"	1.0
Sand bluestem	*Andropogon hallii* "Elida"	4.0
Oats	*Avena sativa*	3.0
Saltgrass	*Distichlis stricta*	1.0
Prairie coneflower	*Ratibida columnifera*	0.2
Purple prairie clover	*Dalea purpurea var. purpurea* "Kaneb"	0.5
Gaillardia	*Gaillardia aristata*	1.0
	TOTAL:	22.4

B. SEEDING APPLICATION: Drill seed 0.25 inch to 0.5 inch into the soil. In small areas not accessible to a drill, hand broadcast at double the rate and rake 0.25 inch to 0.5 inch into the soil.

C. MULCHING APPLICATION: Apply 1 ½ tons of certified weed free hay per acre mechanically crimped into the soil in combination with an organic mulch tackifier.

D. SPECIAL REQUIREMENTS: Due to high failure rates, hydromulching and/or hydroseeding will not be allowed

E. SOIL CONDITIONING AND FERTILIZER REQUIREMENTS:
1. Fertilizer will not be required on the project.
2. Soil conditioner, organic amendment shall be applied to all seeded areas at 3 CY/1000 SF.

F. BLANKET APPLICATION: On slopes and ditches requiring a blanket, the blanket shall be placed in lieu of mulch and mulch tackifier. See SWMP for blanket locations.

G. RESEEDING OPERATIONS/CORRECTIVE STABILIZATION
Prior to final acceptance.
1. Seeded areas shall be reviewed during the 14 day inspections by the Erosion Control Supervisor for bare soils caused by surface or wind erosion. Bare areas caused by surface or gully erosion, blown away mulch, etc. shall be regraded, seeded, mulched and have mulch tackifier (or blanket) applied as necessary, at no additional cost to the project.

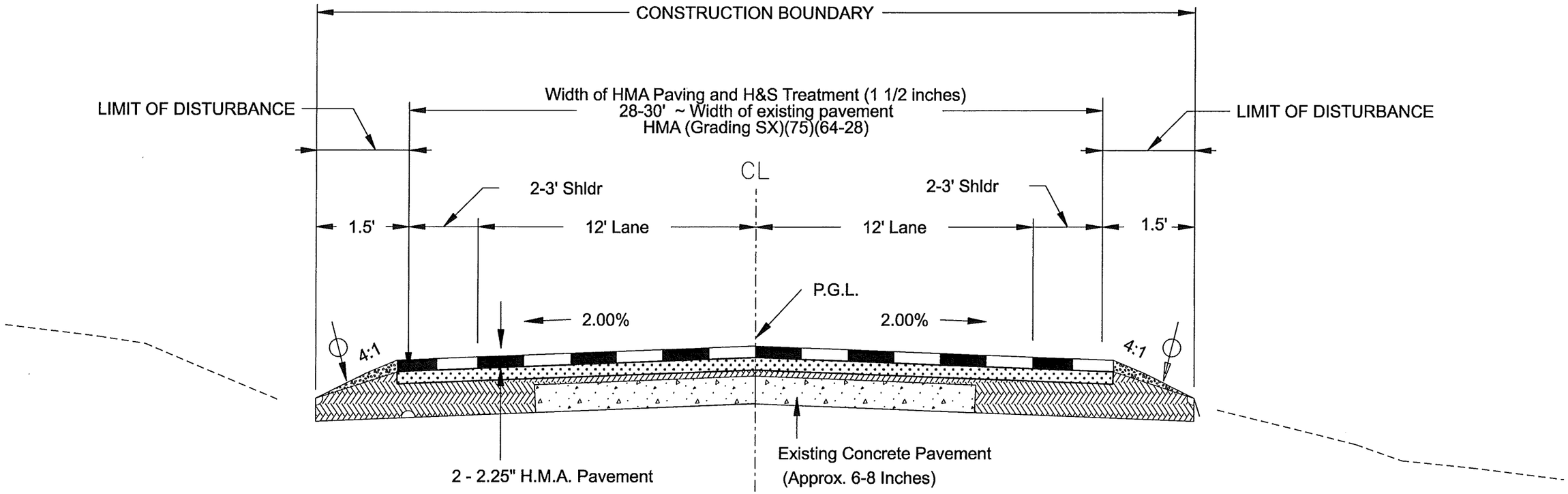
10. PRIOR TO FINAL ACCEPTANCE

A. Final Acceptance shall be in accordance with subsection 208.061.

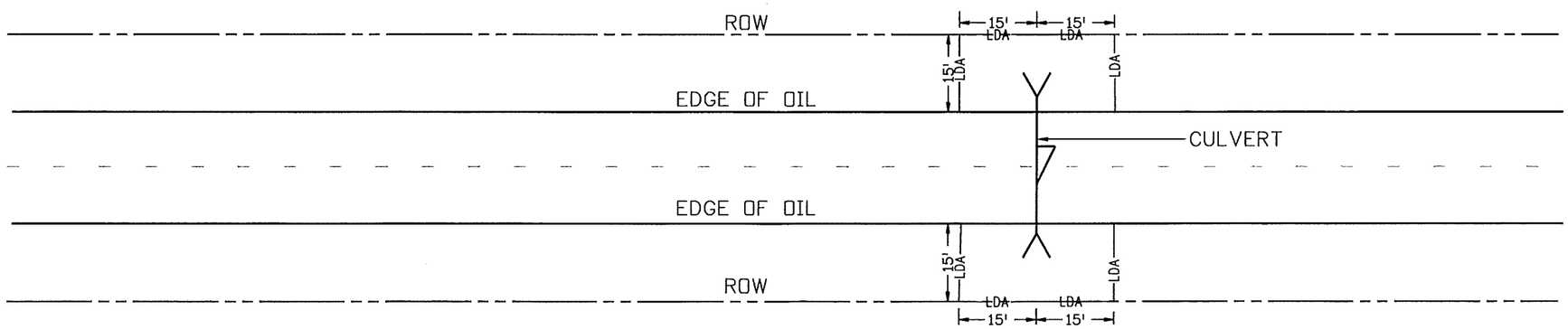
11. TABULATION OF STORMWATER QUANTITIES

Pay Item	Description	Pay Unit	Quantity	Final
203	Dozing	Hour	16	0
208	Erosion Log (12 Inch)	LF	1400	850
208	Concrete Washout Structure	Each	2	2
208	Stabilized Construction Entrance	Each	4	2
208	Sediment Removal and Disposal (Equipment)	Hour	40	15
208	Sediment Removal and Disposal (Labor)	Hour	200	16
208	Erosion Control Supervisor	Hour	300	44
208	Gravel Bag	LF	300	0
212	Seeding (Native)	Acre	0.5	1.015
212	Soil Conditioning	Acre	0.5	0.89
213	Mulching (Weed Free Hay)	Acre	0.5	0.92
213	Mulch Tackifier	LB	100	195
216	Soil Retention Blanket (Biodegradable Straw/Coconut)	SY	450	802.22
607	Fence (Plastic)	LF	520	145
700	Erosion Control	FA	1	0

1. BMP sediment removal and disposal shall be paid for as: 208 Sediment Removal and Disposal (Equipment) and 208 Sediment Removal and Disposal (Labor).
2. It is estimated that 2 concrete washout structures will be required on the project. One concrete wash structure shall be used for the field laboratories.
3. It is estimated that 16 hours of dozing may be required for miscellaneous erosion control work as directed by the Engineer. Work shall be paid for as: 203 Dozing
4. It is estimated that 4 stabilized construction entrance(s) will be required as directed to minimize vehicle tracking control. Locate BMP on the SWMP site map.



ROADWAY LIMITS OF DISTURBANCE
NOT TO SCALE



TYPICAL LIMITS OF DISTURBANCE AROUND CULVERTS TO BE CLEANED
NOT TO SCALE

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File Name: 17033SWMP_TYPSEC.dgn	Date:	Comments	Init.	120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	No Revisions: 4/25/11		ES4 0061-080
Horiz. Scale: 1:10 Vert. Scale: As Noted	R-X				Revised:	Designer: CVC / Structure Numbers	17033
Unit Information Unit Leader Initials				Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 1 OF 1	Sheet Number 24

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TO ESTABLISH GEOMETRIC CONTROL FOR THE CONSTRUCTION OF THIS PROJECT, THE DEPARTMENT HAS PROVIDED THE FOLLOWING INFORMATION:

Format *

- ☐ Horizontal Control _____
- ☐ Vertical Control _____
- ☐ Roadway Alignment _____
- ☐ Original Terrain Data _____
- ☐ Other: _____

* Specify the information format, ie., plan sheet, computer disk, computer printout, or other. The information marked is either contained on the plans or is available from the Engineer.

TYPE OF PROJECT

- ☐ Landscaping
- ☐ Signalization
- ☐ Safety Improvement
- ■ Asphalt Overlay
- ☐ Concrete Overlay
- ■ Minor Widening
- ☐ Major Reconstruction
- ☐ New Roadway Construction
- ☐ Bridge Replacement
- ☐ Bridge Widening
- ☐ New Bridge
- ☐ Other: _____

SURVEY WORK TO BE PERFORMED BY OTHERS: _____

WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER SECTION 625:

- ___ ■ Establish and Maintain Project Centerline or Engineer Approved Offset Line(s)
- ___ ☐ Verification and Maintenance of Horizontal and Vertical Control
- ___ ■ Verify or Determine existing grades and alignments
- ___ ☐ Verify or Determine existing topography
- ___ ☐ Clearing and Grubbing Limits (Section 201)
- ___ ☐ Removal Limits (Section 202)
- ___ ☐ Reset Items (Section 210)
- ___ ■ Excavation and Embankment (Section 203)
  - ___ ☐ Excavation
    - ___ ☐ Unclassified
    - ___ ☐ Stripping
    - ___ ☐ Muck
    - ___ ☐ Rock
    - ___ ■ Borrow
    - ___ ☐ Other: _____
    - ___ ☐ Potholing
  - ___ ■ Embankment
  - ___ ☐ Site Grading
  - ___ ■ Erosion Control (Perm)
  - ___ ☐ Other: _____
  - ___ ■ As Staked Earthwork Quantities (See General Notes)

	Slope Staking (Y/N)	Grid (Y/N)	Grade Stakes	Special Interval
Excavation	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
Embankment	Y	-	Y	25
	-	-	-	-
	-	-	-	-
	-	-	-	-

- ___ ☐ Landscaping
  - ___ ☐ Top Soil (Section 207)
  - ___ ☐ Seeding (Section 212)
  - ___ ☐ Mulching (Section 213)
  - ___ ☐ Planting (Section 214)
  - ___ ☐ Herbicide (Section 217)
  - ___ ☐ Other: _____
- ___ ☐ Erosion Control (Section 208)
  - ___ ☐ Seeding (Temp)
  - ___ ☐ Silt Fence
  - ___ ☐ Erosion Bales
  - ___ ☐ Erosion Logs
  - ___ ☐ Riprap (Temp)
  - ___ ☐ Other: _____
- ___ ☐ Roadway Bases
  - ___ ☐ Untreated Subgrade
  - ___ ☐ Treated Subgrade
  - ___ ☐ Aggregate Base Course (Section 304)
  - ___ ☐ Reconditioning
  - ___ ☐ PMBB - Plant Mix Bituminous Base
  - ___ ☐ Other: _____

	Grid (Y/N)	Grade (Y/N)	Special Interval	Special Offset
Roadway Bases	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-

- ___ ■ Pavements
  - ___ ■ HMA - Hot Mix Asphalt (Section 403)
  - ___ ☐ Concrete (Section 412)
  - ___ ■ Heating & Scarifying Treatment
  - ___ ☐ Prime Coat, Tack Coat & Rejuvenating Agent (Section 407)
  - ___ ☐ Seal Coat or Chip Seal (Section 409)
  - ___ ☐ Other: _____
- ___ ■ Roadway Elements
  - ___ ☐ Curb and Gutter (Section 609)
  - ___ ☐ Drop inlets - alignment and grades (Section 604)
  - ___ ☐ Retaining Walls
  - ___ ■ Guard Rail (Section 606)
  - ___ ☐ Sidewalk (Section 608)
  - ___ ■ Overlay Stationing
  - ___ ☐ Other: _____
- ___ ☐ Riprap (Perm) (Section 506)
- ___ ☐ Slope and Ditch Paving (Section 507)
- ___ ■ Minor Structures
  - ___ ■ Structure Excavation limits (Section 206)
  - ___ ■ Culverts (Section 603)
  - ___ ☐ Culverts w/ Headwalls and Wingwalls (Section 601)
  - ___ ☐ Concrete Box Culverts w/ Headwalls and Wingwalls
  - ___ ■ Pipes (Section 603)
    - ___ ☐ Sanitary Sewer
    - ___ ■ Storm Sewer
    - ___ ☐ Water
    - ___ ☐ Irrigation
    - ___ ■ Miscellaneous
  - ___ ☐ Manholes (Section 604)
  - ___ ☐ Inlets (Section 604)
  - ___ ☐ Other: _____
- ___ ☐ Major Structures - Overhead Signs (Section 614), Concrete Box Culverts, Bridges - and all other structures assigned a structure number
  - ___ ☐ Structure Excavation limits (Section 206)
  - ___ ☐ Concrete Box Culverts (Section 603) w/ Headwalls and Wingwalls (Section 601)
  - ___ ☐ Piling locations and cut off elevations (Section 502)
  - ___ ☐ Caisson locations and elevations (Section 503)
  - ___ ☐ Footing locations, alignment, and elevations
  - ___ ☐ Abutment/Pier locations, alignment, and elevations
  - ___ ☐ Wingwall skew angles/offsets
  - ___ ☐ Structural concrete form locations
  - ___ ☐ Substructure As-constructed survey required for Bridges (Subsection 601 .12) and Overhead signs (S-614-50)
  - ___ ☐ Bridge expansion joint(s) alignment and grade (longitudinal and transverse)
  - ___ ☐ Deck grades at Girder 10th or "n" th point locations and elevations
  - ___ ☐ Slope and Ditch Paving (Section 507)
  - ___ ☐ Other: _____
- ___ ■ Fencing (Section 607)
  - ___ ☐ Temporary
  - ___ ■ Permanent
  - ___ ☐ Sound Barrier
  - ___ ☐ Other: _____
- ___ ■ Delineators (Section 612)
  - ___ ☐ Temporary
  - ___ ■ Permanent
- ___ ☐ Lighting (Section 613) and Traffic Control Devices (Permanent) (Section 614)
  - ___ ☐ Signal pole locations and elevations
  - ___ ☐ Light pole locations and elevations
  - ___ ☐ Sign locations
  - ___ ☐ Field verify sign post locations, elevations, and lengths before fabrication.
  - ___ ☐ Other: _____

	Grid (Y/N)	Special Interval	Special Offset
Pavements	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

	Tangent Interval	Curve Interval	Special Offset
Curb & Gutter	-	-	-

	Left Interval	Center Interval	Right Interval
Stationing	-	-	-

- ___ ■ Pavement Marking (Section 627)
  - ___ ☐ Striping (Temp)
  - ___ ■ Striping (Perm)
  - ___ ☐ Symbols
  - ___ ☐ Other: _____
- ___ ☐ Temporary Lighting and Construction Traffic Control Devices (Section 630)
  - ___ ☐ Signal pole locations and elevations (Temp)
  - ___ ☐ Light pole locations and elevations (Temp)
  - ___ ☐ Sign Locations (Temp)
  - ___ ☐ Other: _____
- ___ ☐ Easements (Temp Staking by P.L.S. Only)
- ___ ☐ Right of Way (Temp Staking by P.L.S. Only)

WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER SECTION 629:

- ___ ■ Monumentation (Section 629)
  - ___ ☐ Control
  - ___ ☐ Right of Way
  - ___ ☐ Land corners, Aliquot corners
  - ___ ☐ Easements
  - ___ ■ Reference the specified existing monuments:** _____
  - ___ ☐ Replace the specified existing monuments: ** _____
  - ___ ☐ Locate monuments. It is estimated __ hours are required.

NOTE: All 629 items shall include adequate research, calculations, and evaluations of evidence for monuments to be set.

** A Tabulation of Survey Monuments may be provided on the plans.

GENERAL NOTES:

1. Unless indicated otherwise on this Survey Tabulation Sheet, all survey work and staking intervals shall be done in accordance with the latest edition of the CDOT Survey Manual.
2. Adequate information for establishing lines, grades, and locations for all work items have been specified on the plans. Any additional information required to stake the item or element shall be generated by the Contractor's surveyor.
3. The Contractor's surveyor shall provide an estimate of the man-hours necessary to complete the work items indicated on this sheet. A copy of this sheet, with the estimated man-hours written on the blank line to the left of the specified items, shall be submitted with the Survey Schedule to the Engineer _____ days prior to the Presurvey Conference - Construction Survey.
4. Stakes and Monuments which are damaged or destroyed by the progress of construction shall be replaced by the Contractor at no additional cost to the Department.
5. The Contractor shall furnish an As Staked earthwork quantity to the Engineer prior to completion of twenty percent (20%) of the planned earthwork in any phase as per the CDOT Survey Manual. A printed copy of the As Staked earthwork data and a computer disk in the specified format shall be submitted to the Engineer. The Contractor shall field verify original ground cross sections at a maximum 500 feet intervals.
6. Prior to beginning work on any subsequent operation, such as placing base course or paving, the Contractor shall certify in writing to the Engineer that the final grade is within specified tolerance.
7. The Contractor's surveyor shall perform all field surveying and calculations necessary to tie plan grades into field grades.
8. The Contractor shall coordinate construction staking on the project with any utility work.
9. Fieldbooks shall contain daily records of points set and or measurements observed. The information recorded shall contain: date, crew members' names, point no., description, staking information, and sketches. If the survey information is collected electronically, information recorded shall be provided to the Project Engineer in a hard copy format that is intuitive, clear and related to the supplemental information recorded in the field books. All linear surveys, such as slope stakes and blue tops, shall have the station and offset information related to the measured information. Non-linear surveys such as structures staking shall have sketches relating electronic information, such as point numbers, to the sketch.
10. The Contractor's surveyor shall submit the following fieldbooks to the Engineer:
    - ☐ Horizontal Control (Primary & Secondary)
    - ☐ Vertical Control (i.e. Benchmarks)
    - ☐ Property Pin Ties
    - ☐ Horizontal Alignment
    - ☐ Grading
    - ☐ Slope Staking
    - ■ Minor Structures
    - ☐ Major Structures
    - ☐ One fieldbook for each work category shown on this sheet
    - ☐ Other Fieldbook(s): _____

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SURVEY TABULATION SHEET

Designer:	XXXXXXXX	Structure Numbers	X-XX-XX
Detailer:	XXXXXXXX		X-XX-XX
Sheet Subset:	XXXXXXX	Subset Sheets:	XXX of XXX

Project No./Code
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17033
Sheet Number 25

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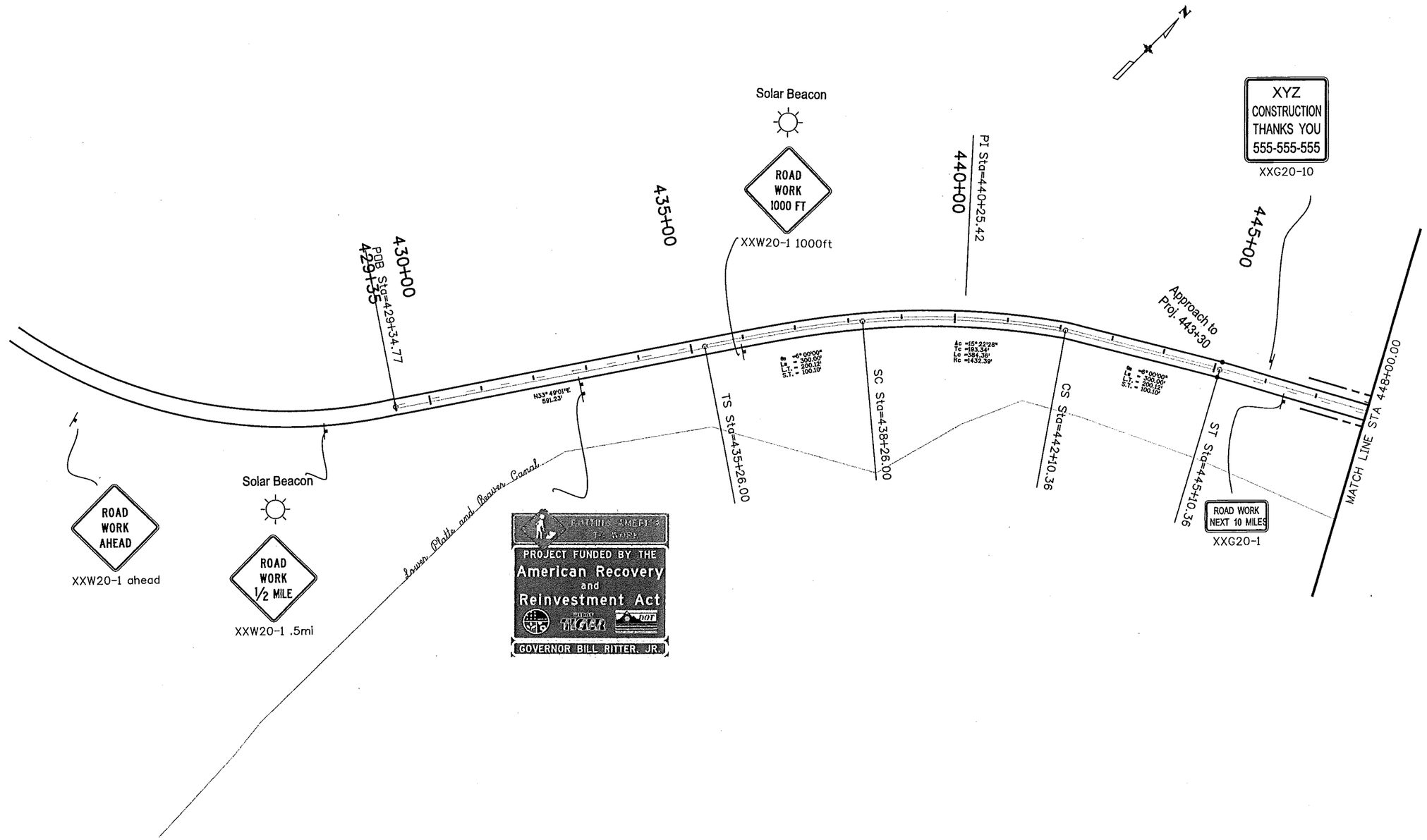

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PLAN SHEET

Designer:	BAP	Structure Numbers	X-XX-XX
Detailer:	BAP		X-XX-XX
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Project No./Code
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17033
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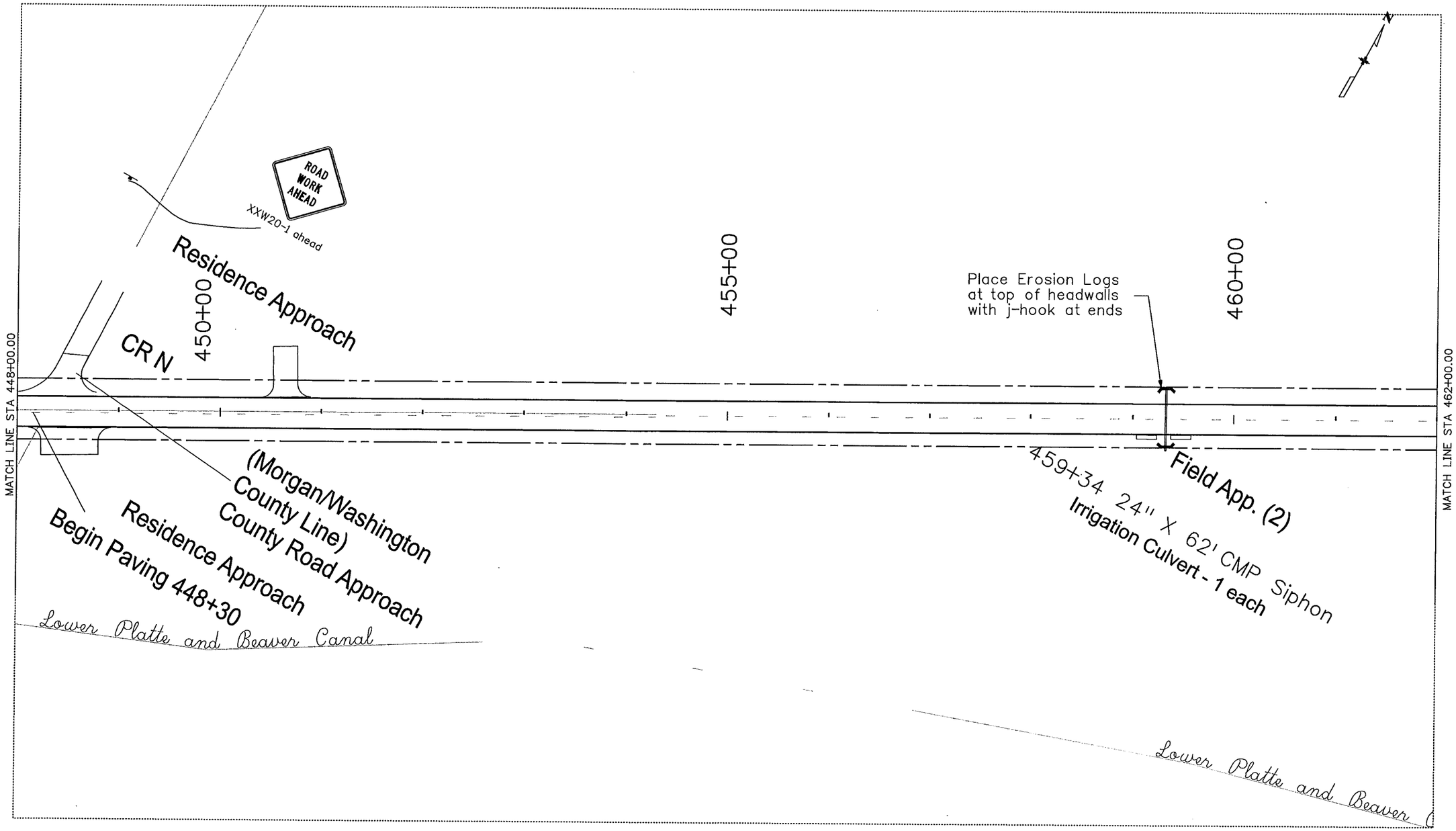

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STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	1 of 33

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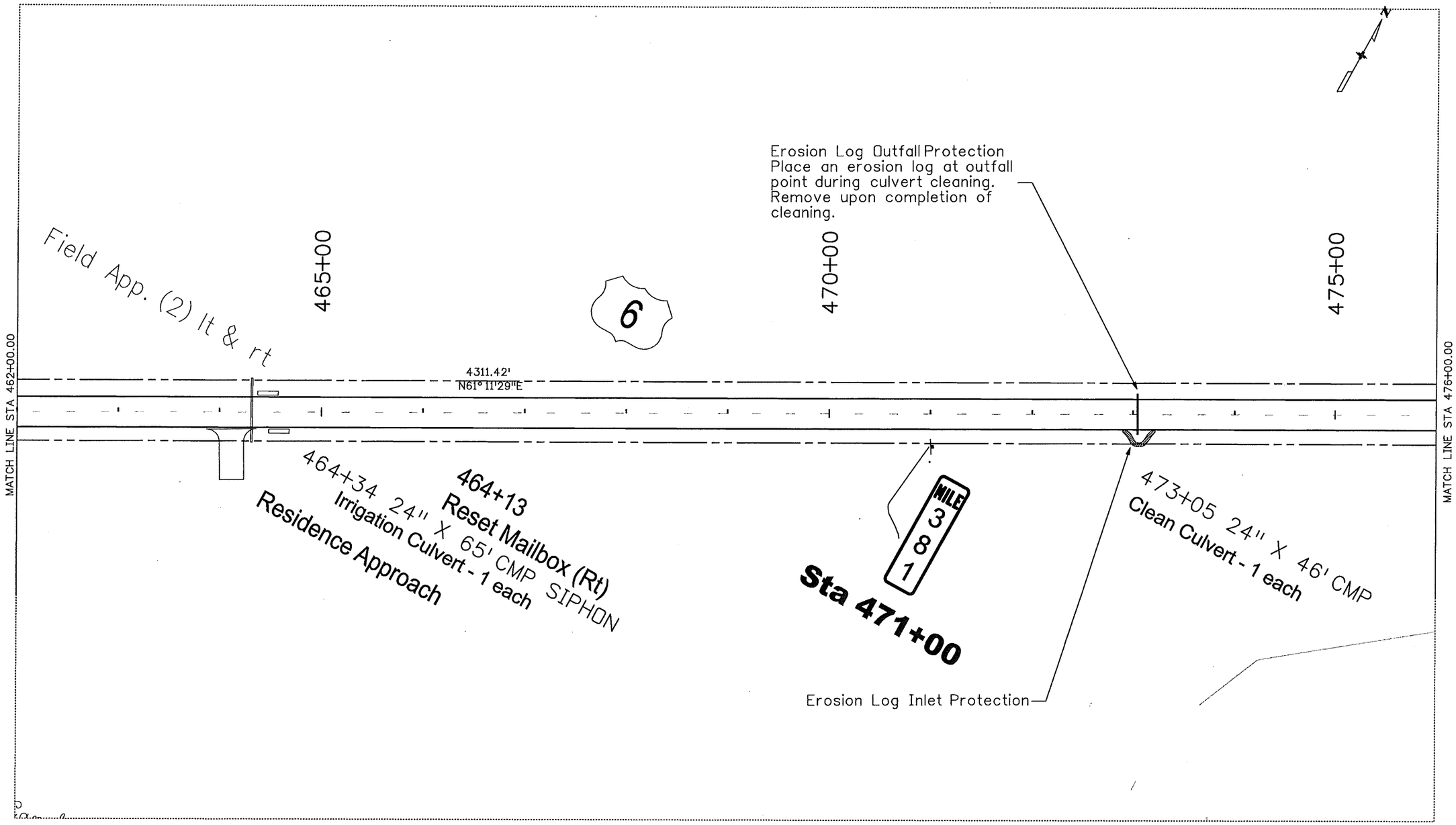

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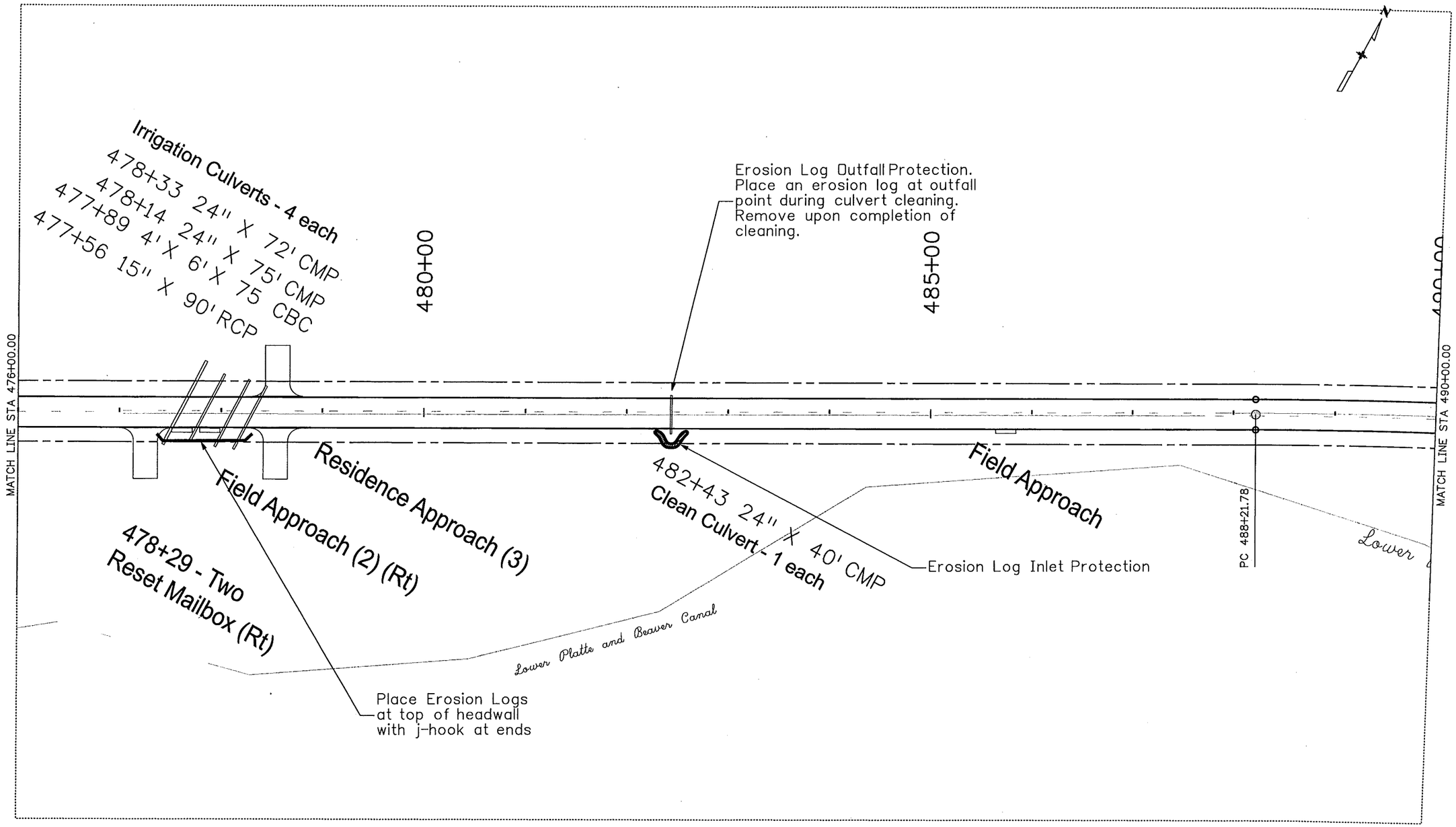

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Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 3 of 33	Sheet Number 29

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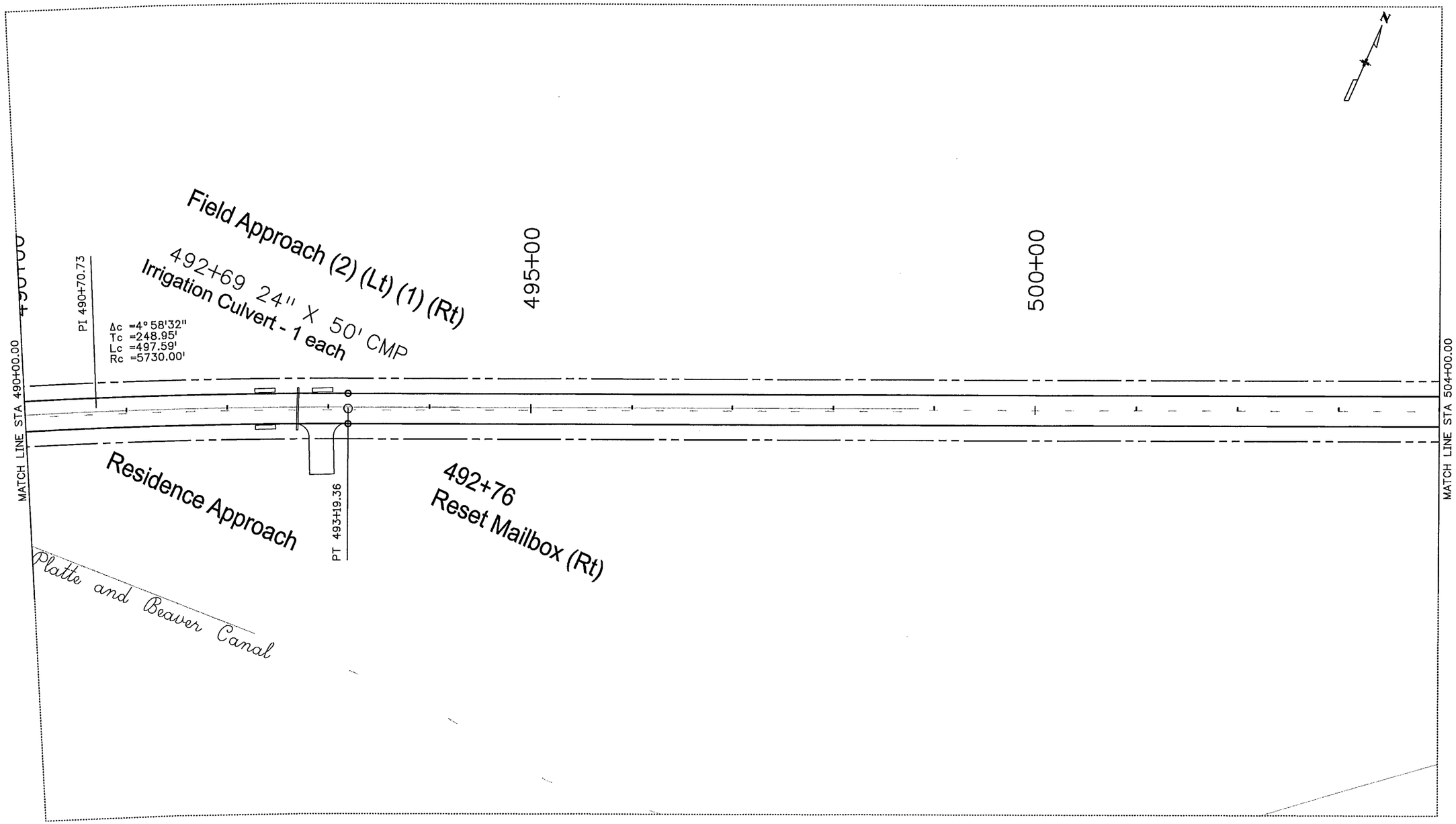

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STORMWATER MANAGEMENT PLAN
SITE MAP

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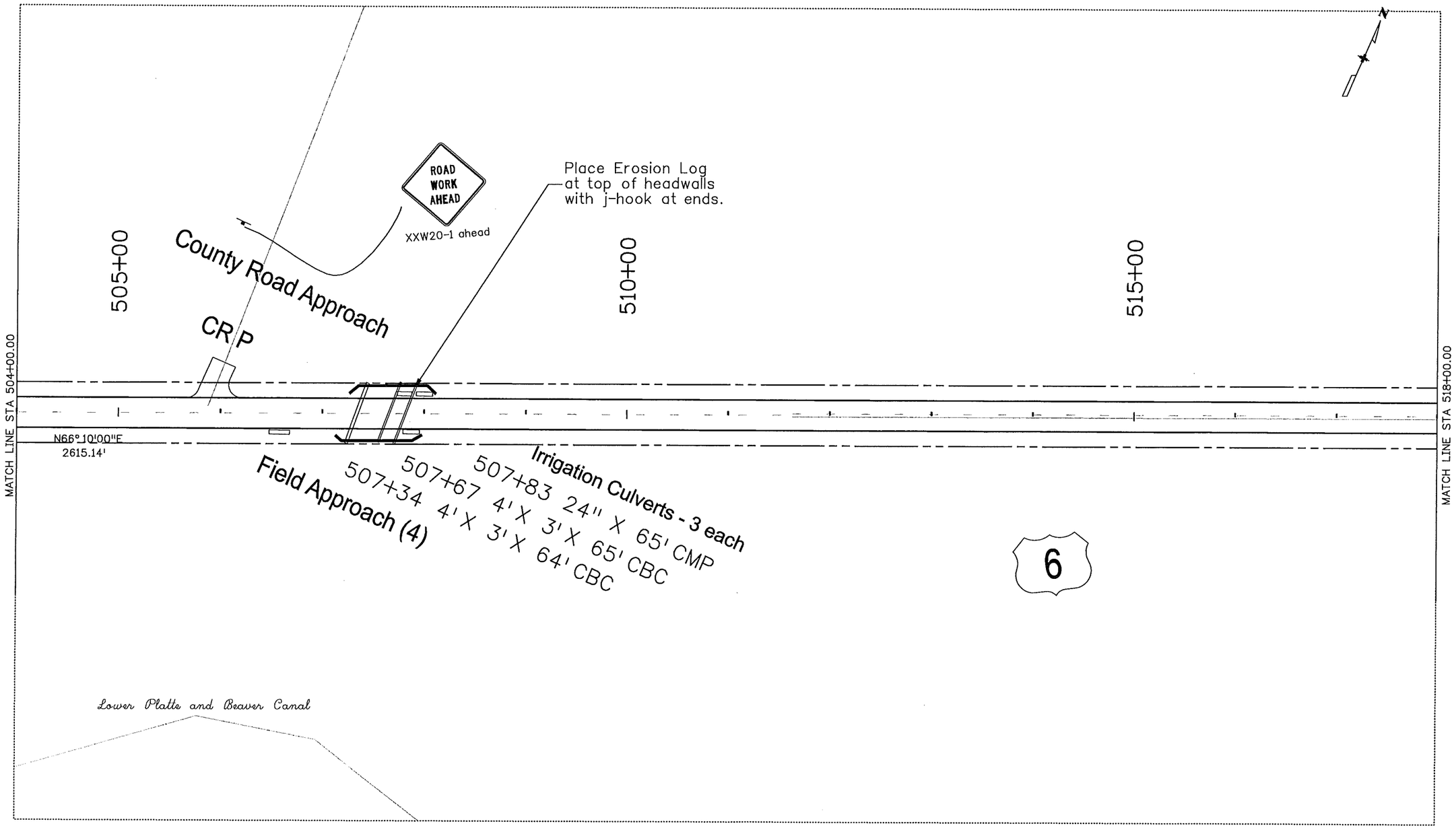

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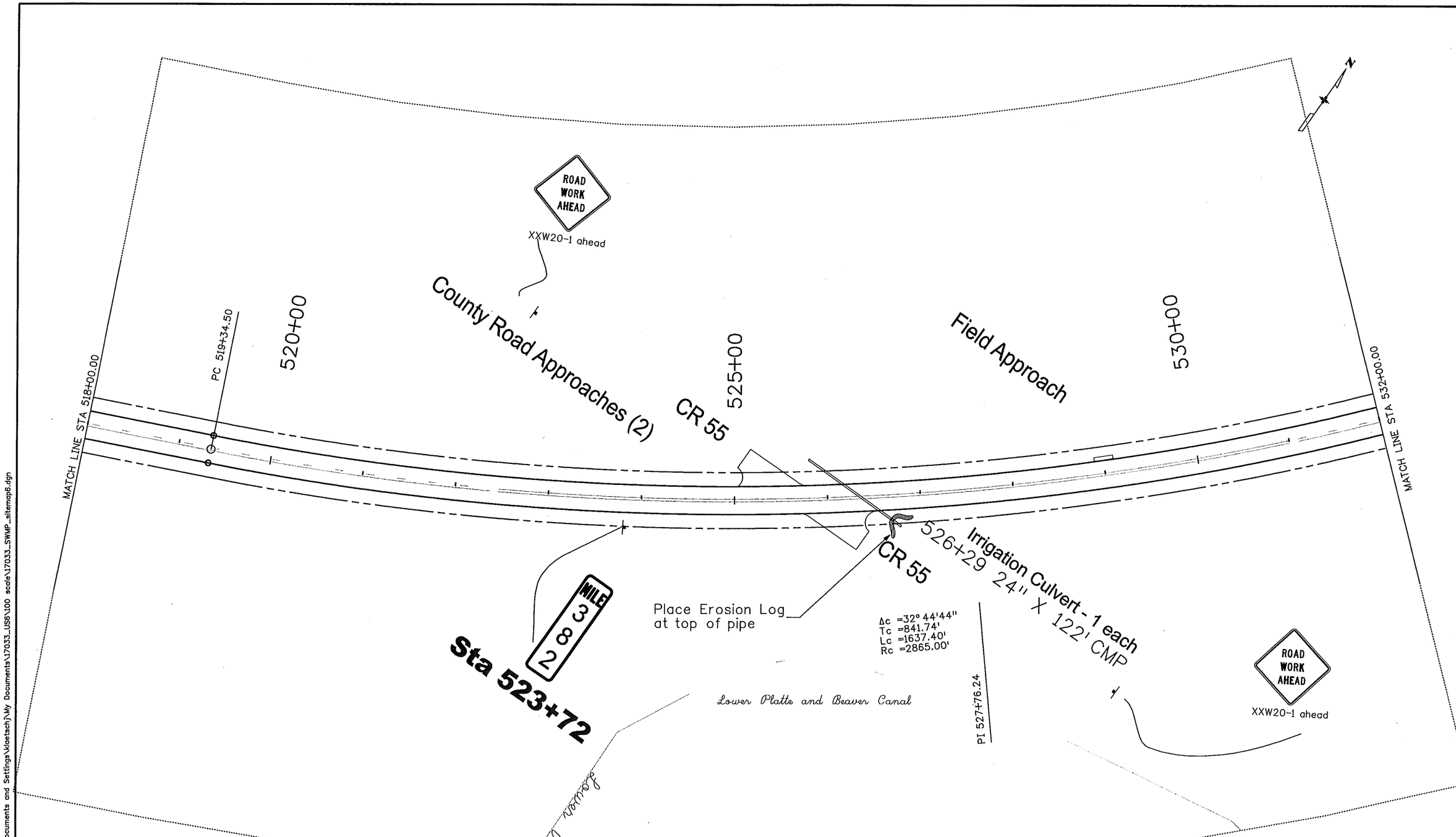

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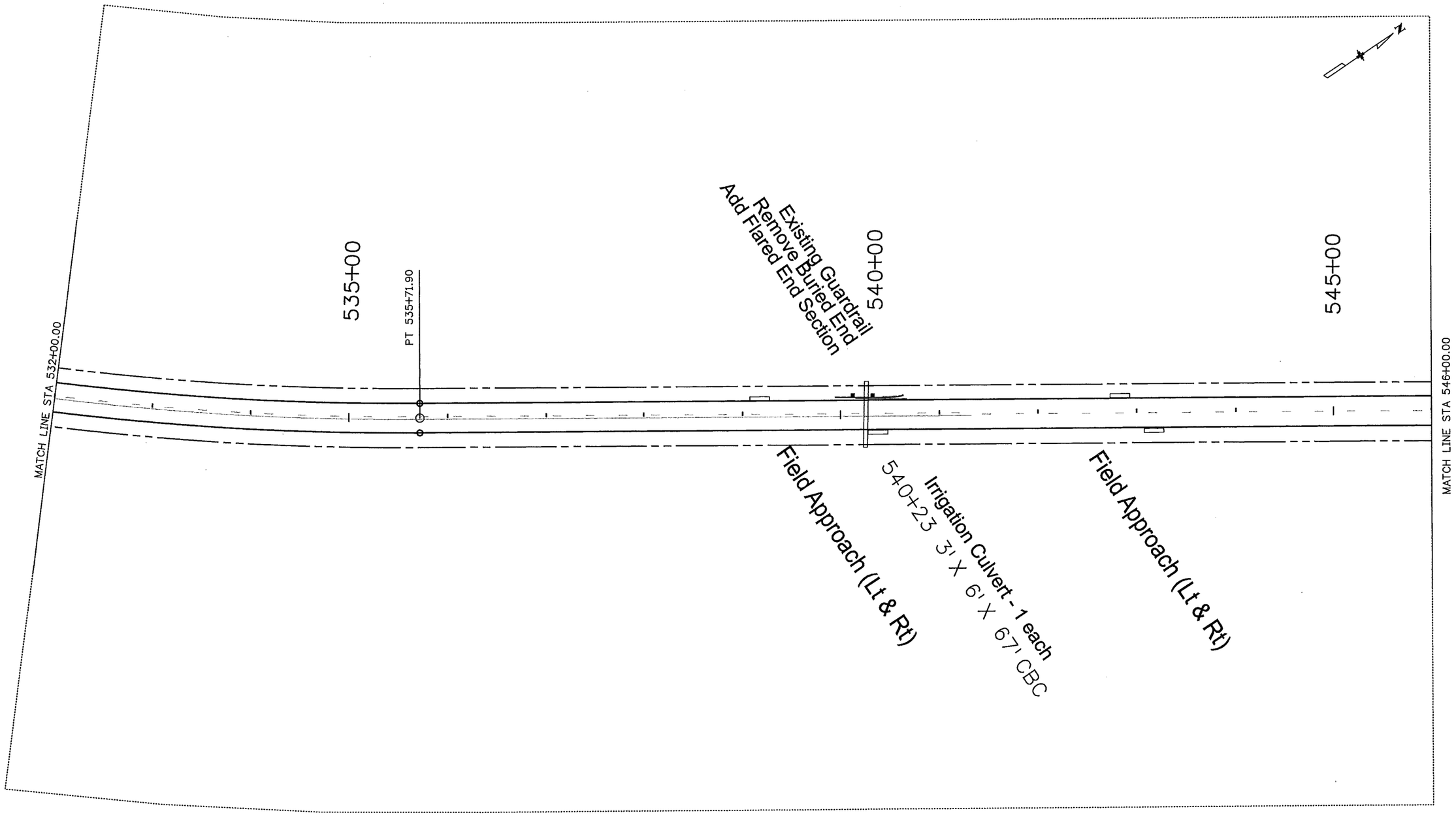

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17033
Sheet Number 33

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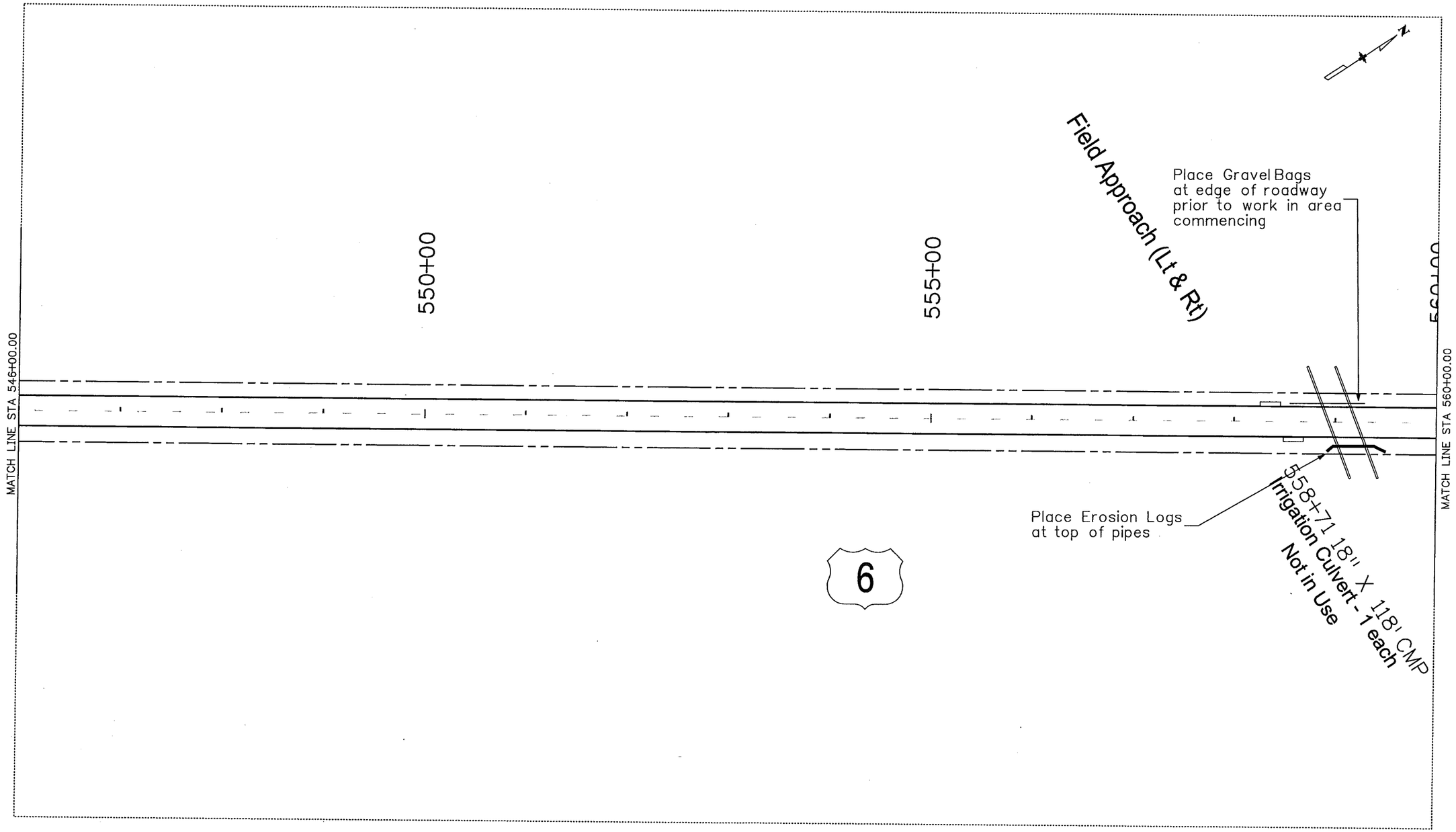

Print Date: 1/8/2010		Sheet Revisions			Colorado Department of Transportation	As Constructed
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Horiz. Scale: 1:100.131 Vert. Scale: As Noted	R-X				120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	Revised:
Unit Information Unit Leader Initials					Region 4 LBL	Void:

STORMWATER MANAGEMENT PLAN SITE MAP				Project No./Code
Designer:	CVC	Structure Numbers		ES4 0061-080
Detailer:	JMK			17033
Sheet Subset:	SWMP	Subset Sheets:	8 of 33	Sheet Number 34

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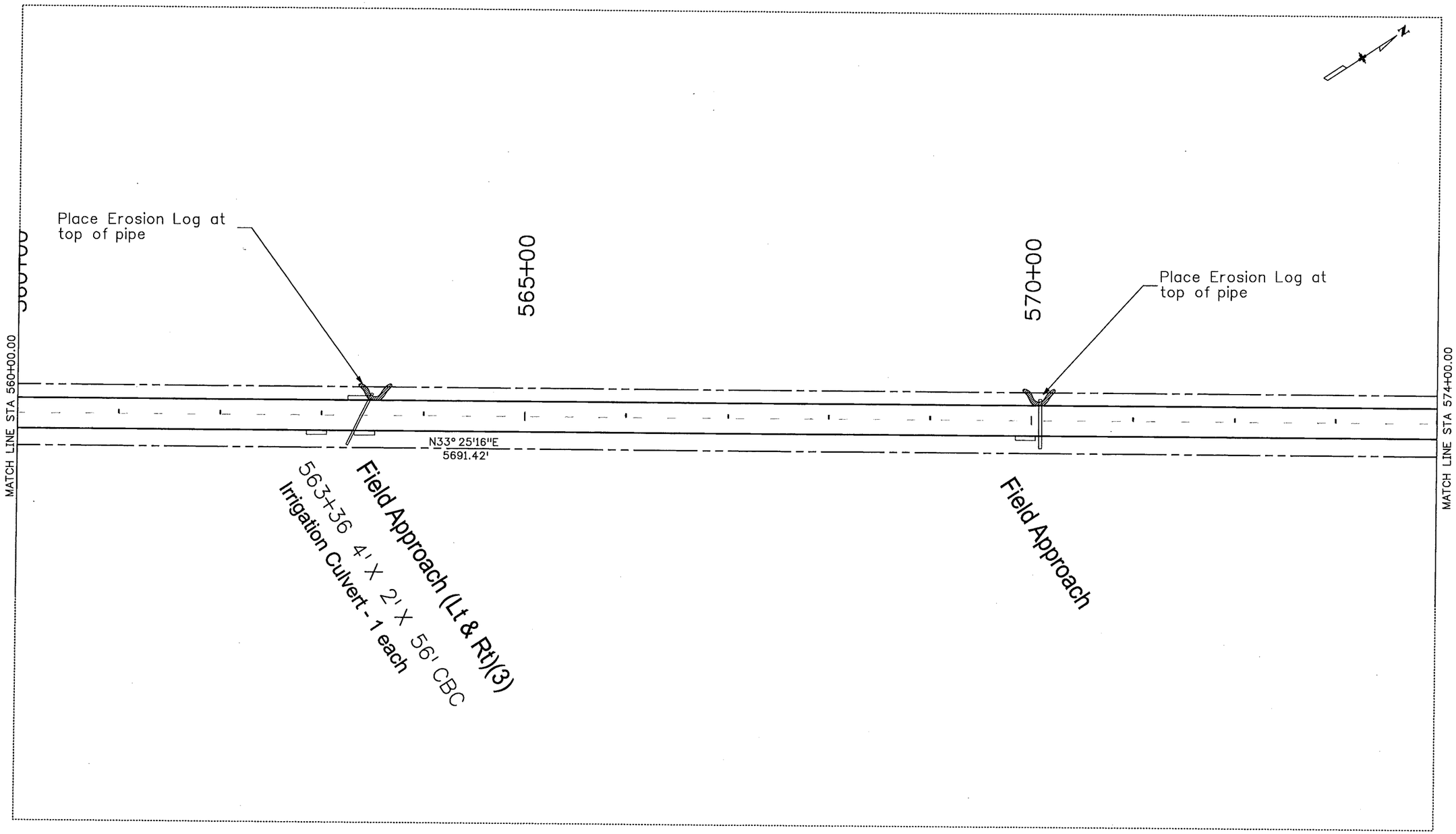

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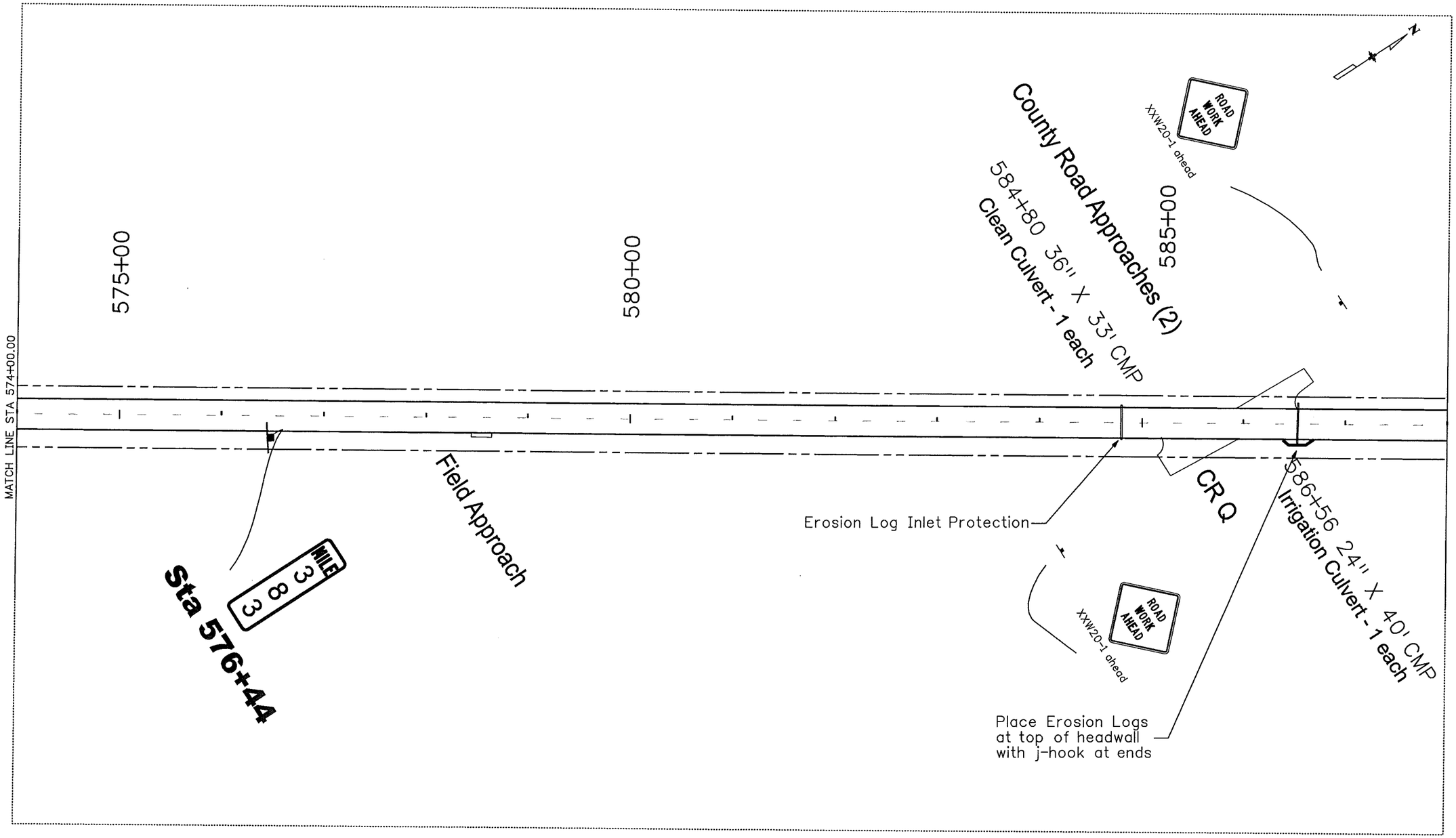
Horiz. Scale: 1:100.333 Vert. Scale: As Noted	R-X				120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	Revised:
Unit Information Unit Leader Initials					Region 4 LBL	Void:

STORMWATER MANAGEMENT PLAN SITE MAP				Project No./Code
				ES4 0061-080
Designer: CVC	Structure Numbers			17033
Detailer: JMK				
Sheet Subset: SWMP	Subset Sheets: 9 of 33			Sheet Number 35



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Horiz. Scale: 1:100.032	Vert. Scale: As Noted	R-X	
Unit Information	Unit Leader Initials		

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
DOT
120 North Riverview Road
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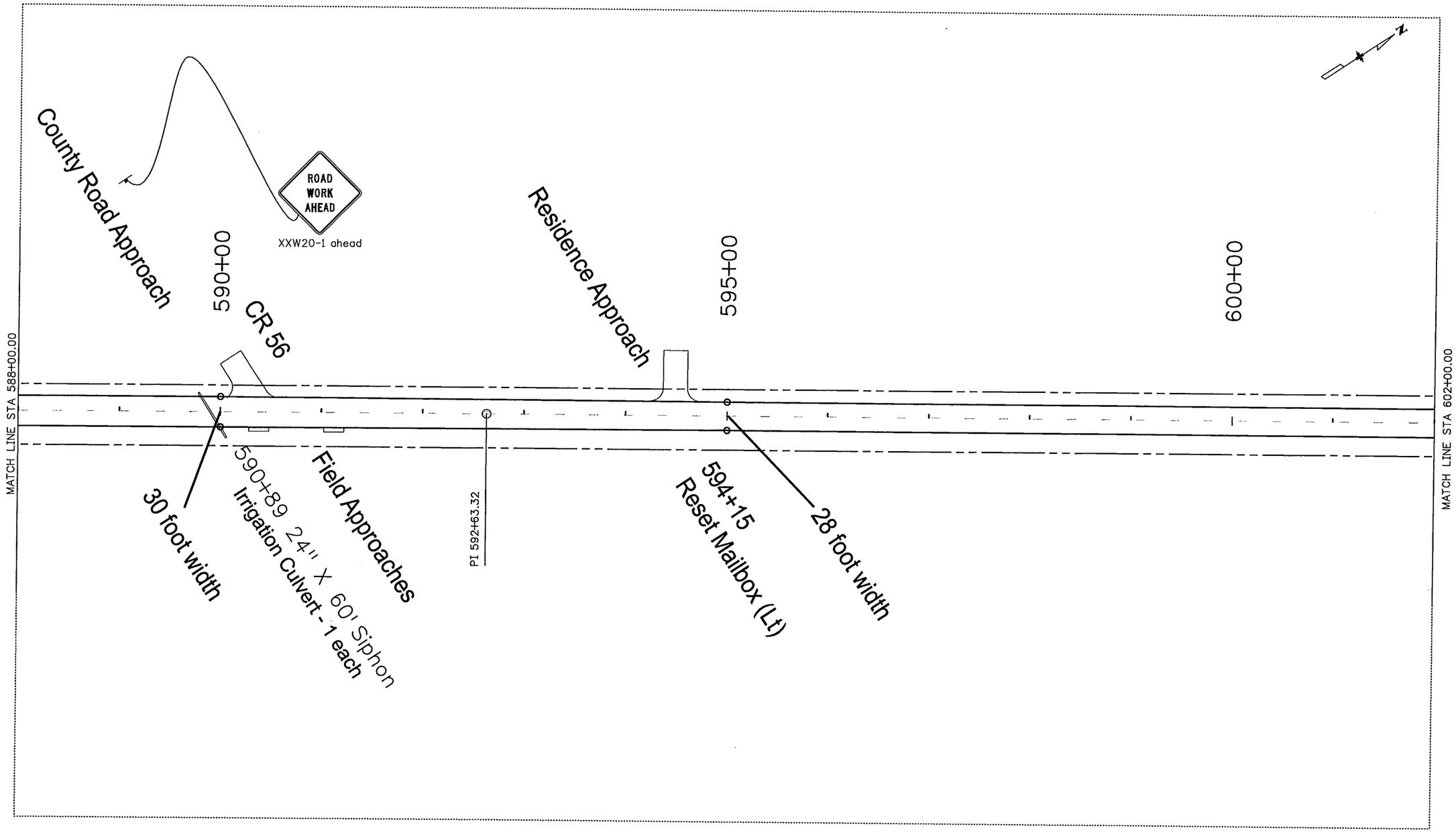
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed	
No Revisions: 9/25/11	
Revised:	
Void:	

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	10 of 33

Project No./Code	
ES4 0061-080	
17033	
Sheet Number	36



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Unit Information Unit Leader Initials					

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120 North Riverview Road
Sterling, CO 80751
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

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No Revisions: 9/23/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	11 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 37

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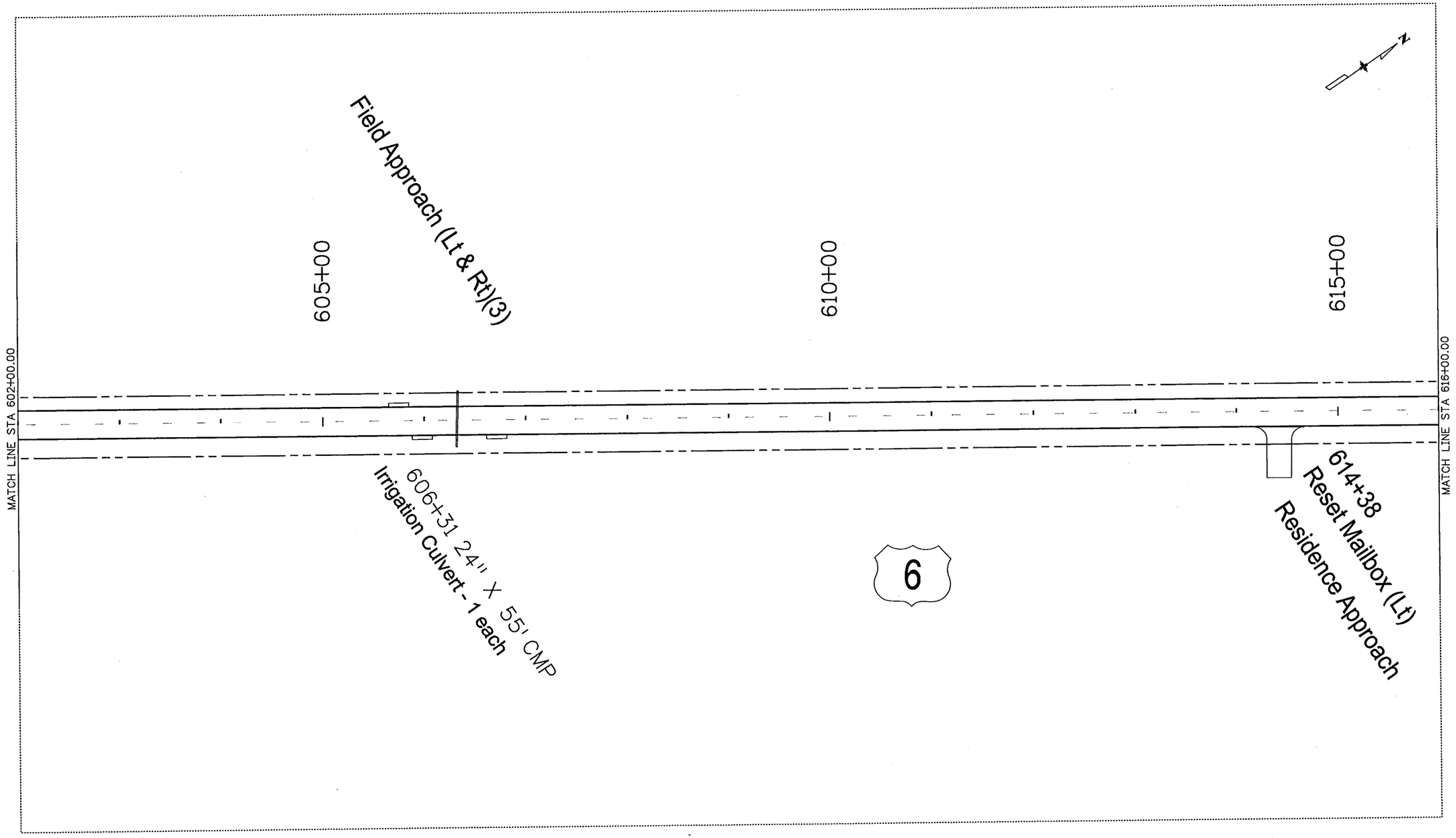

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Unit Information	Unit Leader Initials			

Colorado Department of Transportation
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Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	12 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 38

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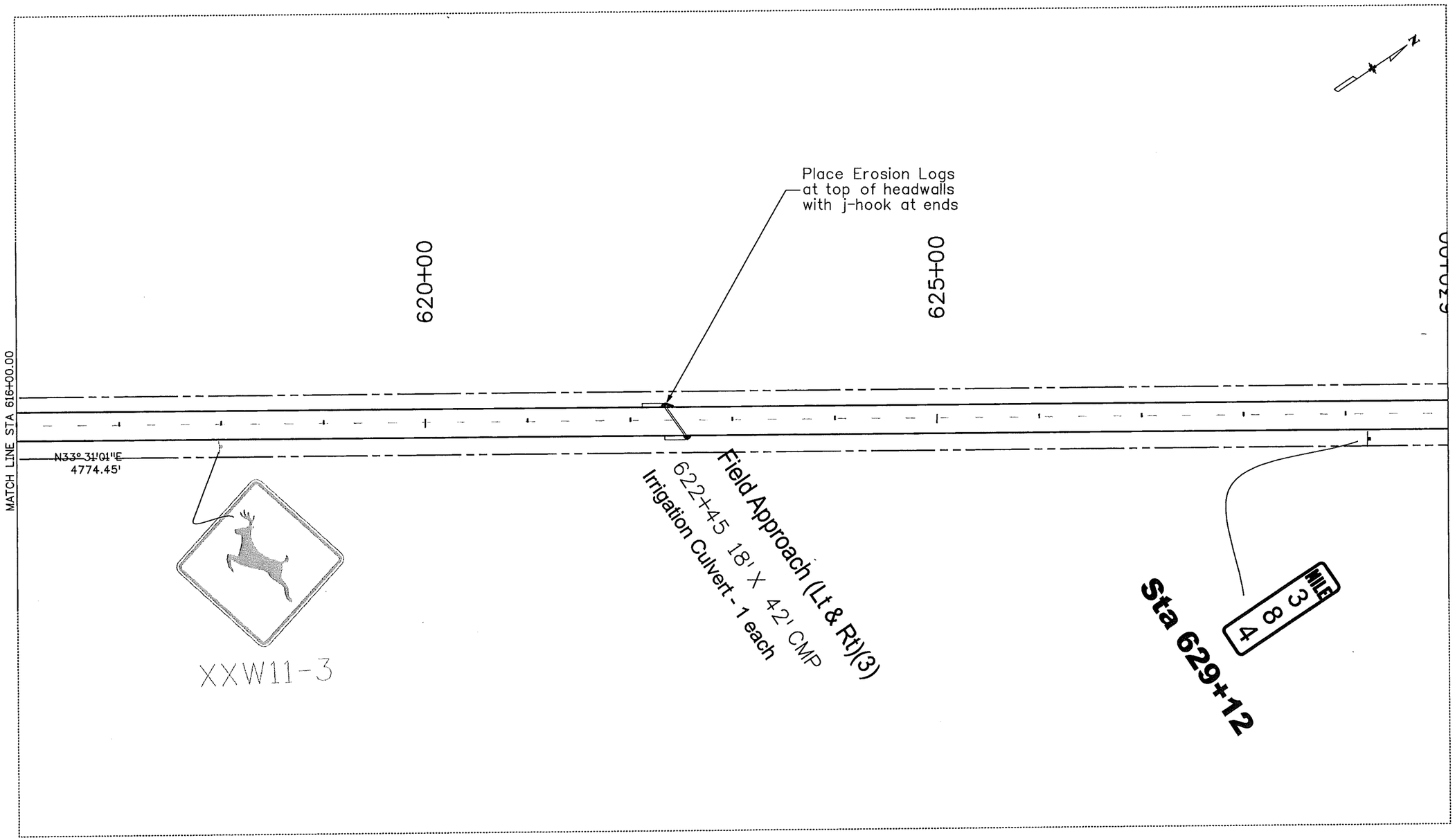

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Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 13 of 33	Sheet Number 39

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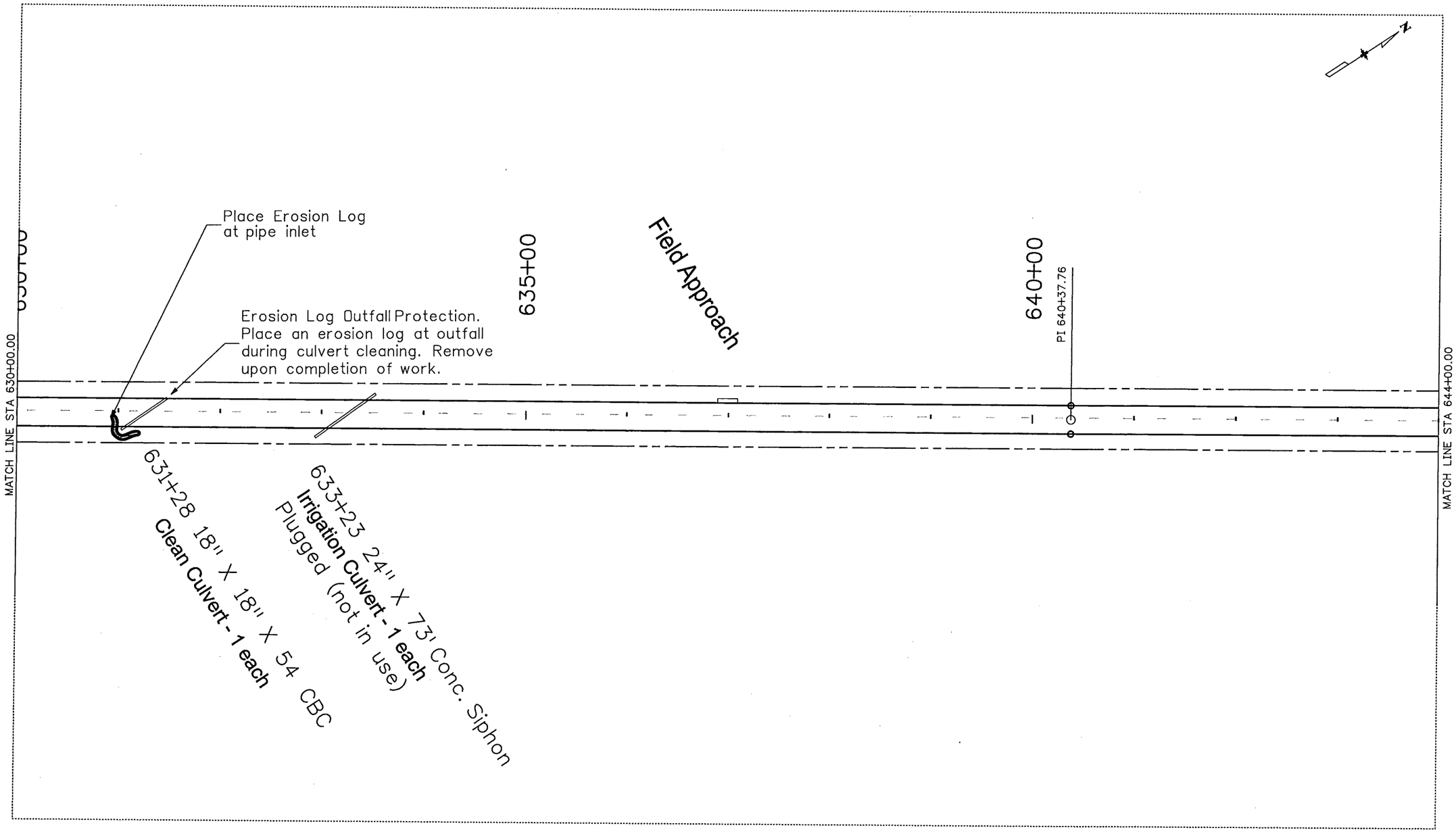

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Unit Information Unit Leader Initials					

Colorado Department of Transportation
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Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	14 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 40

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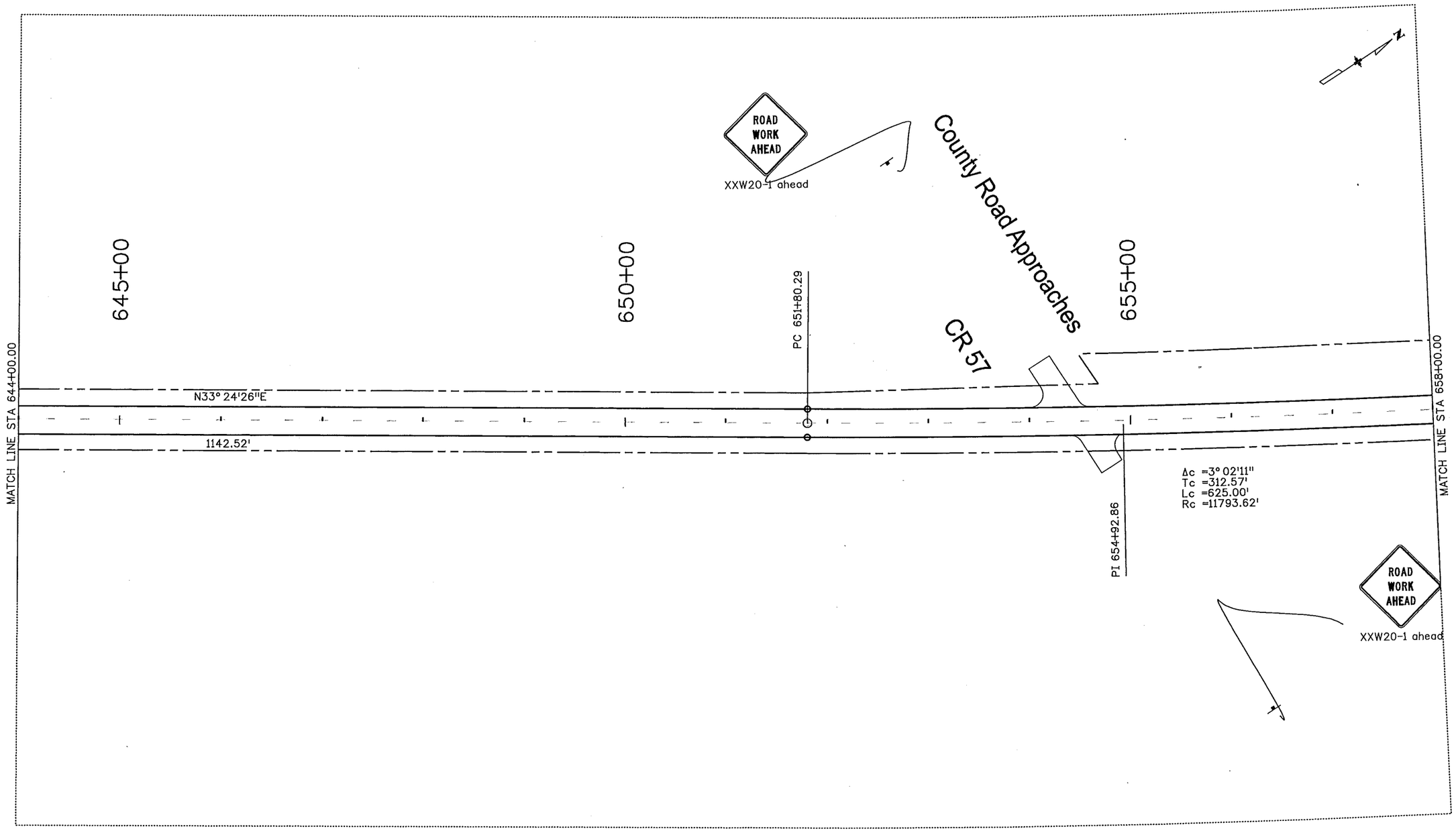

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Unit Information	Unit Leader Initials		

Sheet Revisions

Date:	Comments	Init.

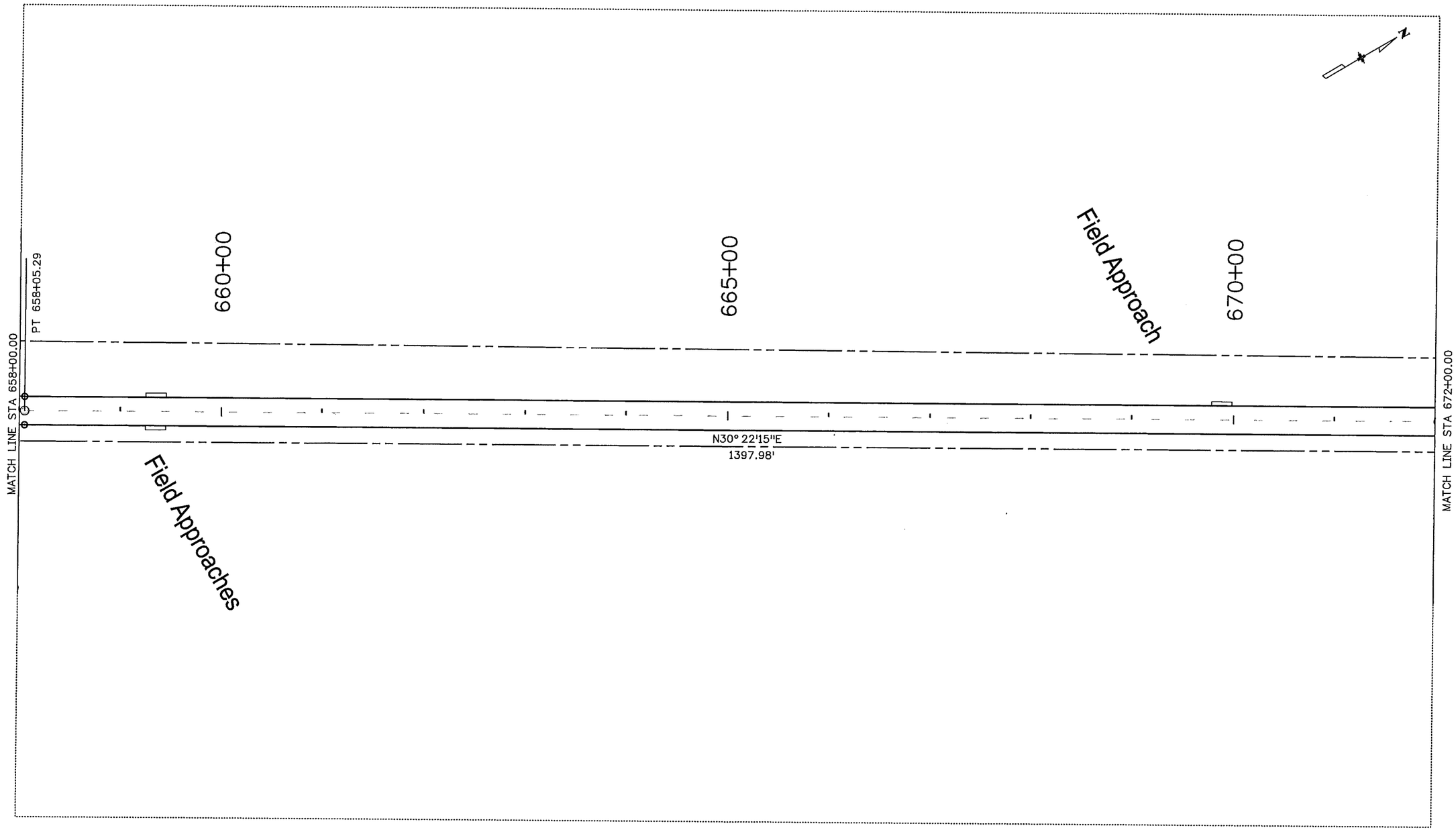
Colorado Department of Transportation
DOT
DEPARTMENT OF TRANSPORTATION
120 North Riverview Road
Sterling, CO 80751
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	15 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 41



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Unit Information	Unit Leader Initials		

R-X

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
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DEPARTMENT OF TRANSPORTATION
120 North Riverview Road
Sterling, CO 80751
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Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	16 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 42

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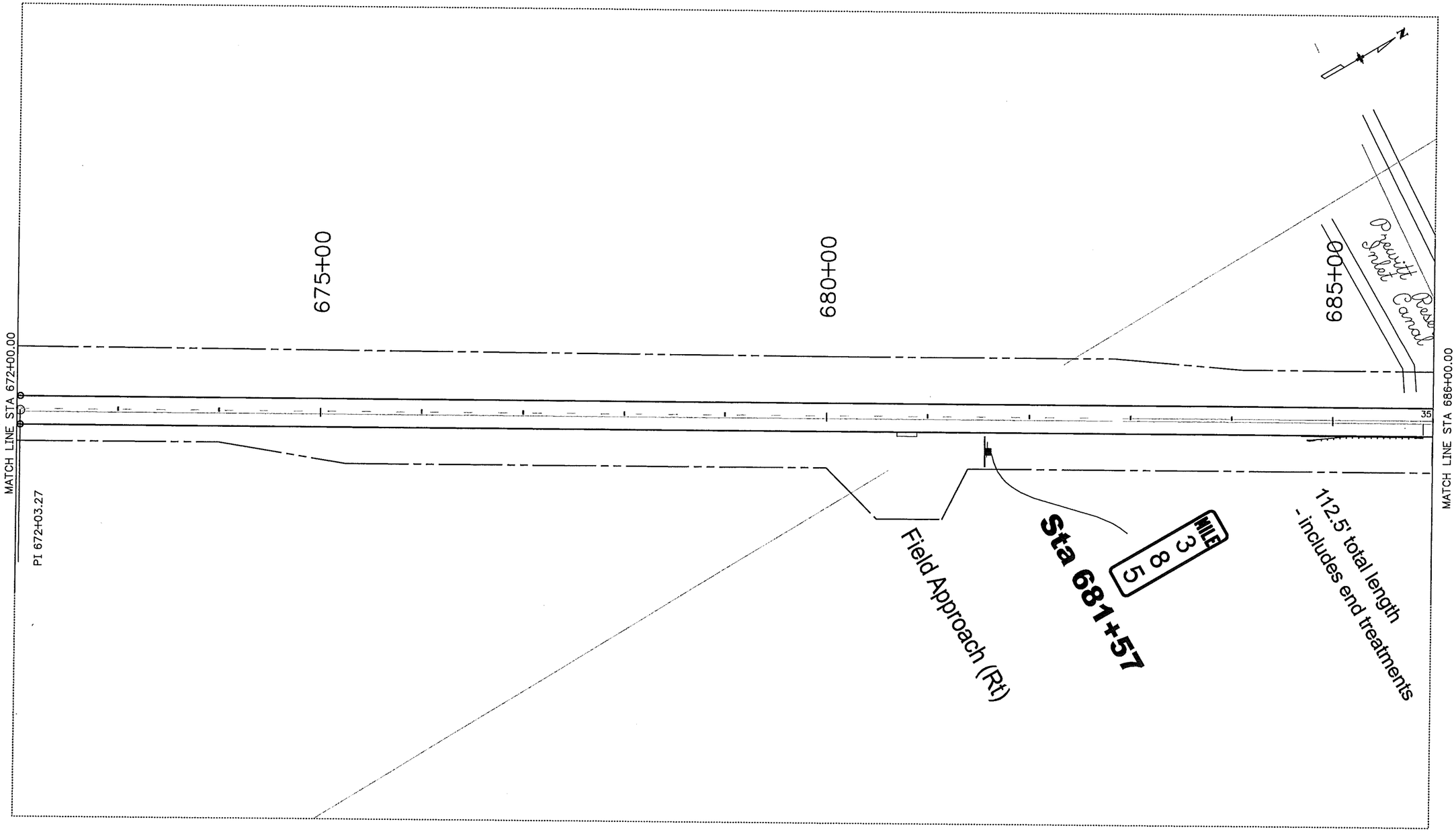

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Unit Information Unit Leader Initials				

Colorado Department of Transportation
120 North Riverview Road
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Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	17 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 43

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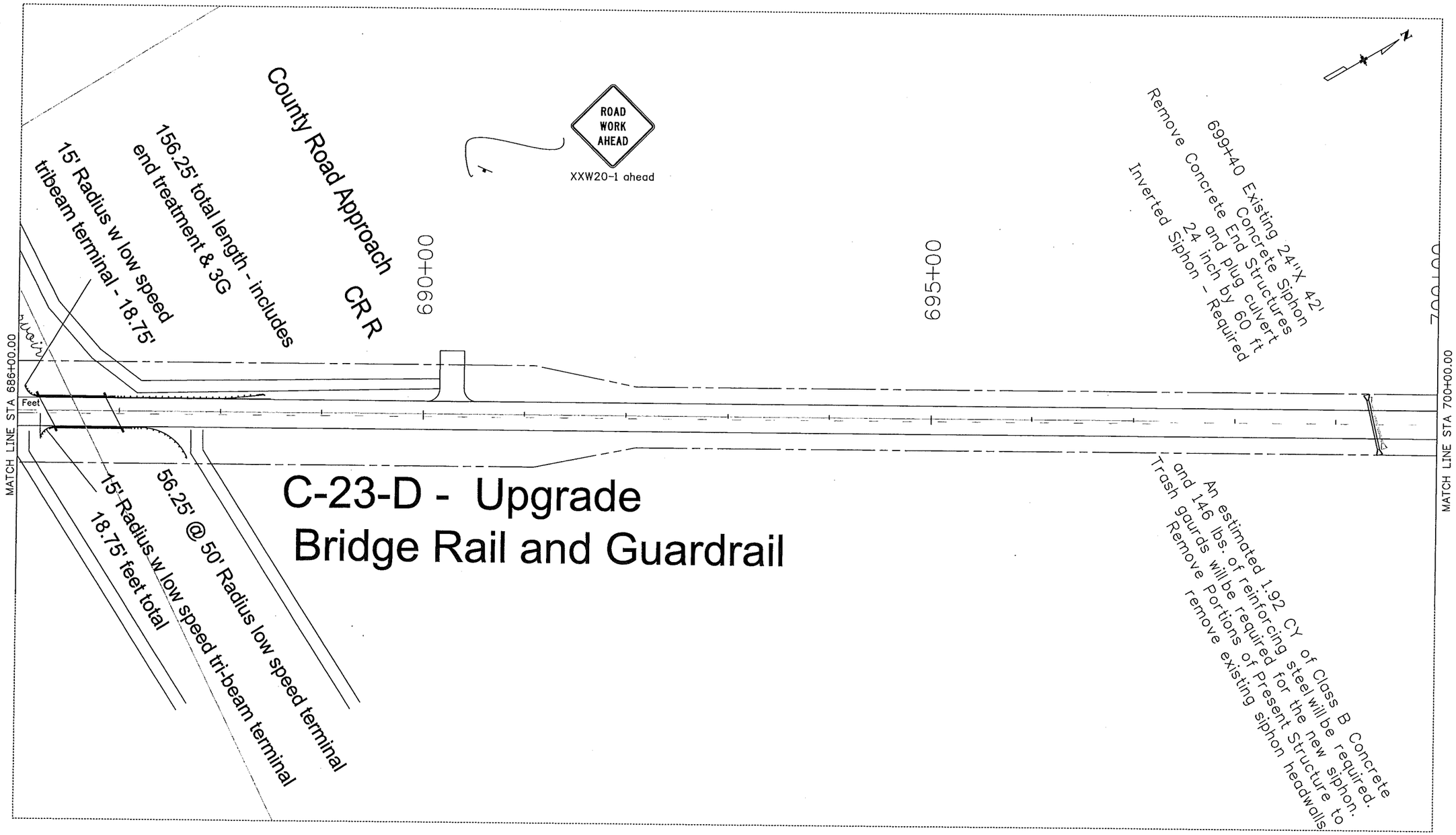

C-23-D - Upgrade Bridge Rail and Guardrail

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Unit Information	Unit Leader Initials			

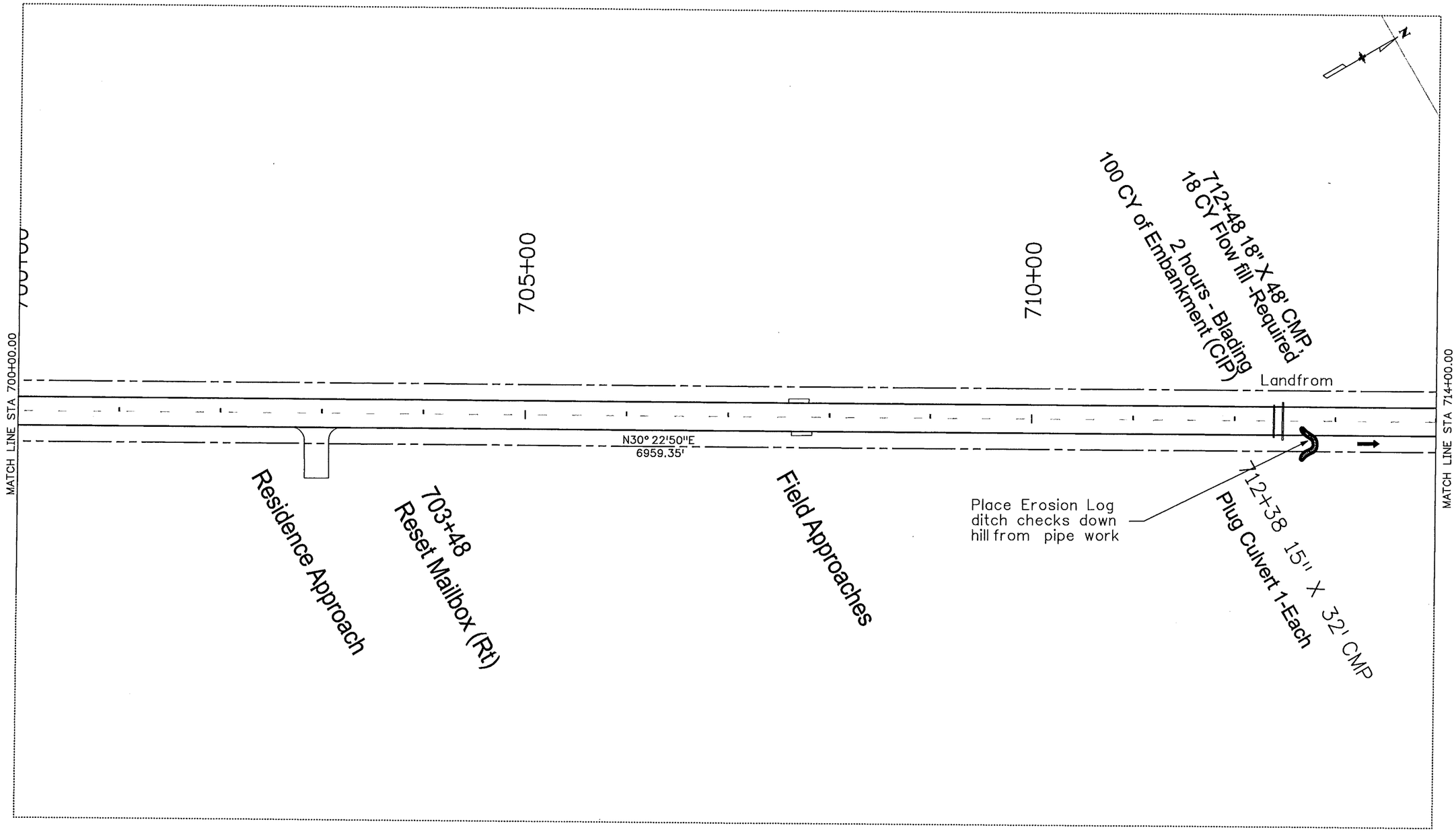
Colorado Department of Transportation
120 North Riverview Road
Sterling, CO 80751
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

PLAN SHEET

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	18 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 44



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Unit Information Unit Leader Initials					Region 4 LBL	Void:

STORMWATER MANAGEMENT PLAN SITE MAP				Project No./Code
				ES4 0061-080
Designer: CVC	Structure Numbers			17033
Detailer: JMK				
Sheet Subset: SWMP	Subset Sheets: 19 of 33			Sheet Number 45

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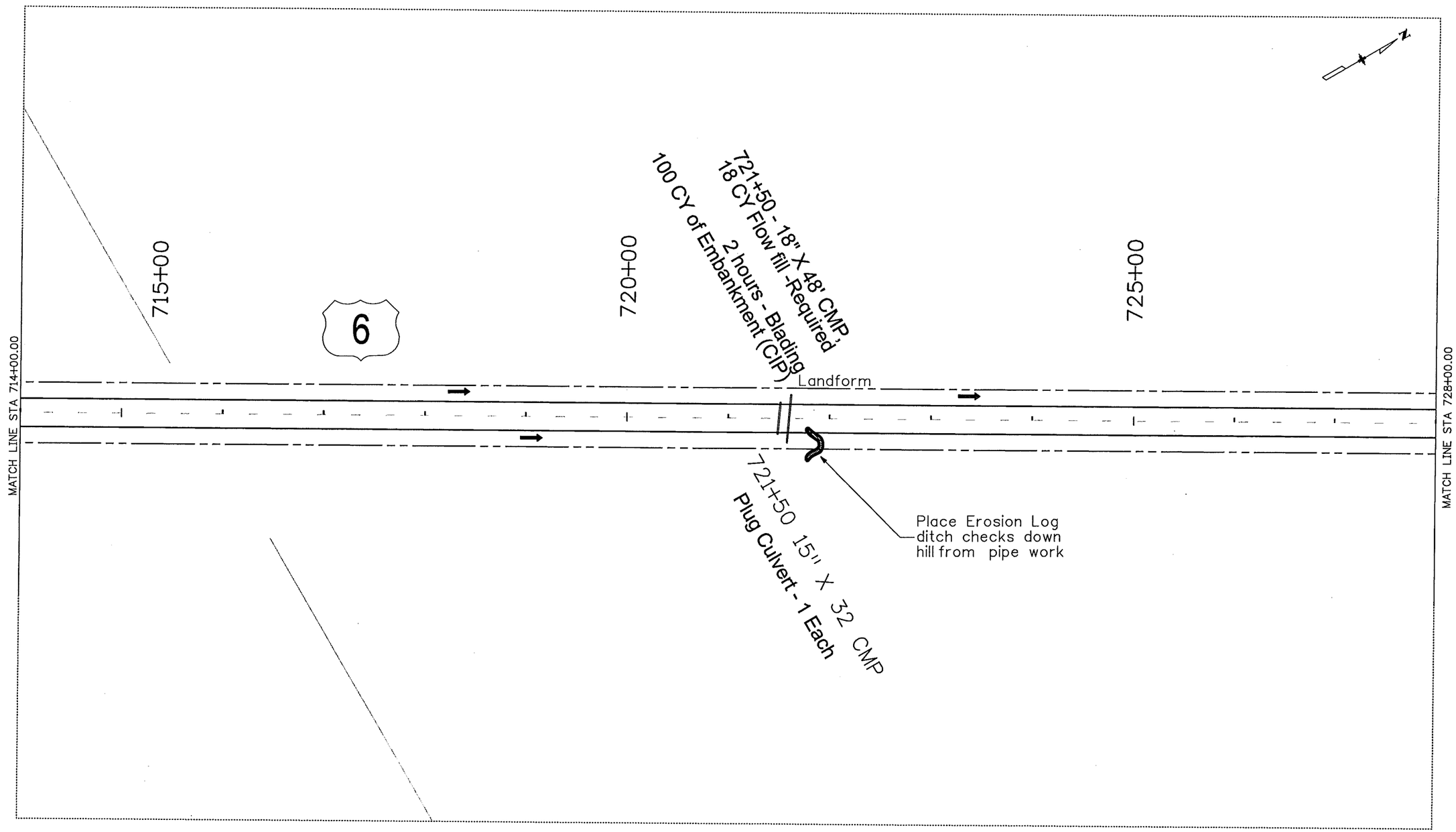

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Unit Information	Unit Leader Initials			

Colorado Department of Transportation
120 North Riverview Road
Sterling, CO 80751
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions: 4/25/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	20 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 46

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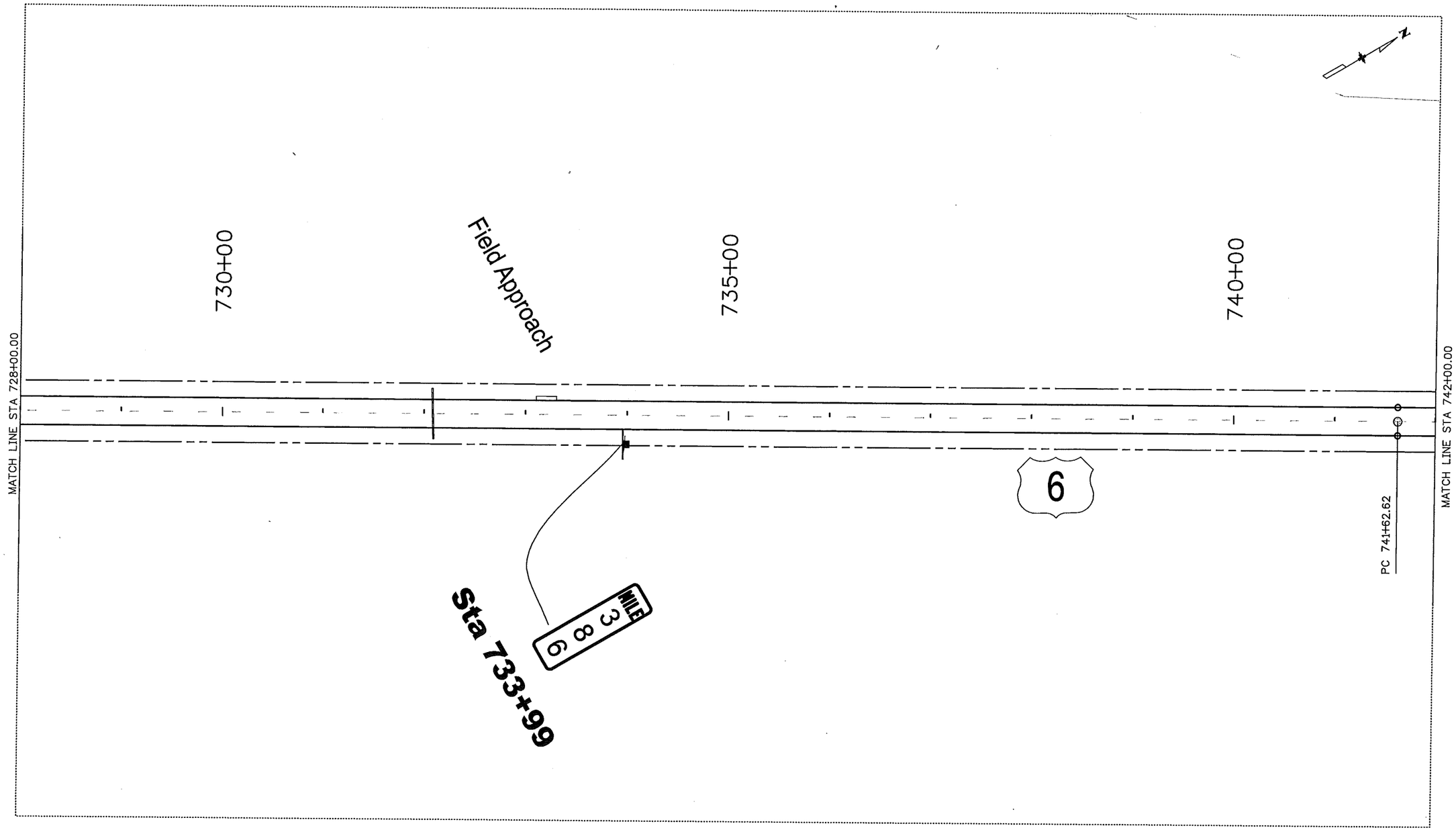

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Horiz. Scale: 1:100.143 Vert. Scale: As Noted	R-X					Revised:	Designer: CVC / Structure Numbers	17033
Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK	
							Sheet Subset: SWMP / Subset Sheets: 21 of 33	Sheet Number 47

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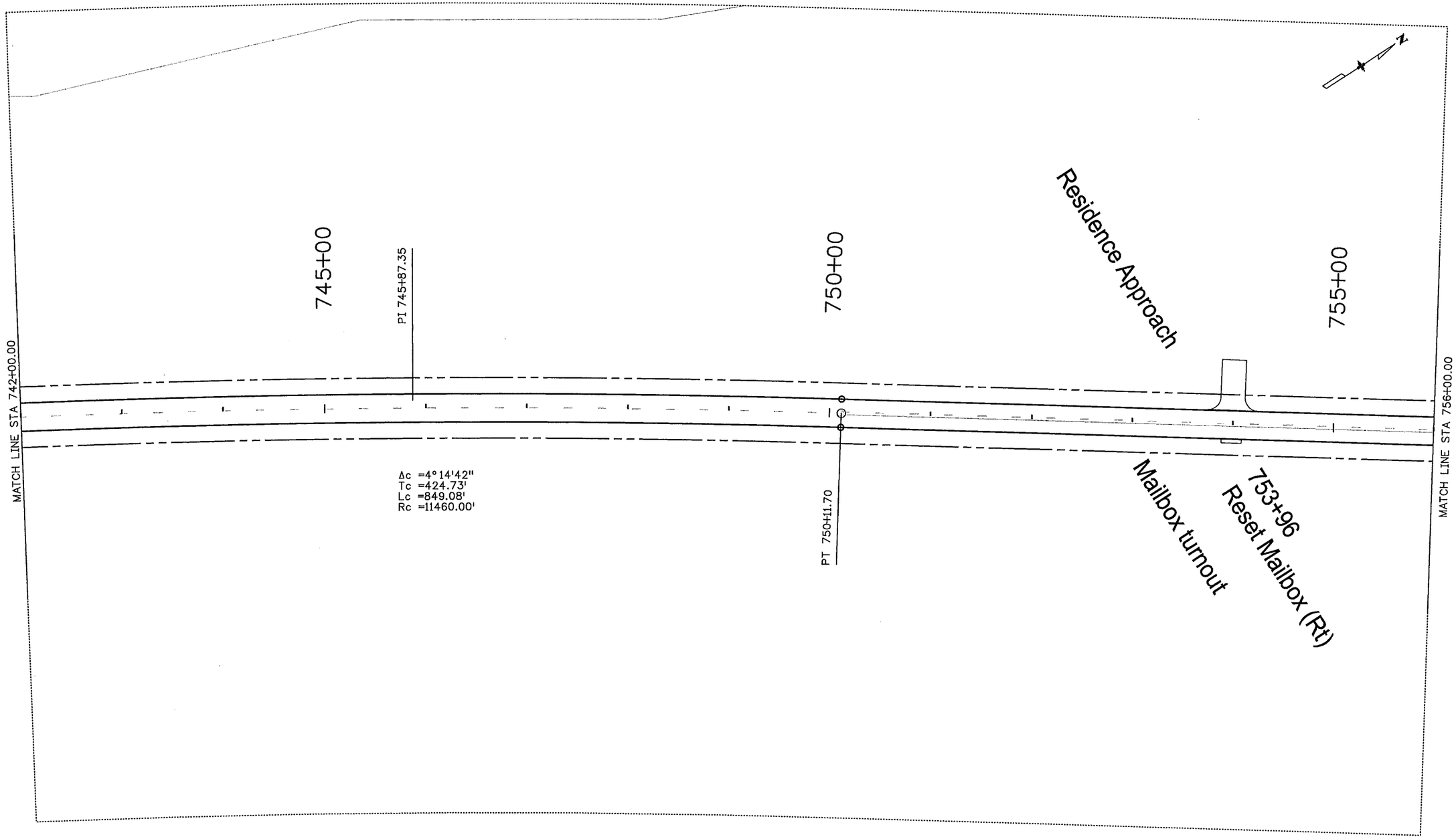

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Horiz. Scale: 1:100.006 Vert. Scale: As Noted	R-X				120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	Revised:	Designer: CVC / Structure Numbers	17033
Unit Information Unit Leader Initials						Void:	Detailer: JMK	
					Region 4 LBL		Sheet Subset: SWMP / Subset Sheets: 22 of 33	Sheet Number 48

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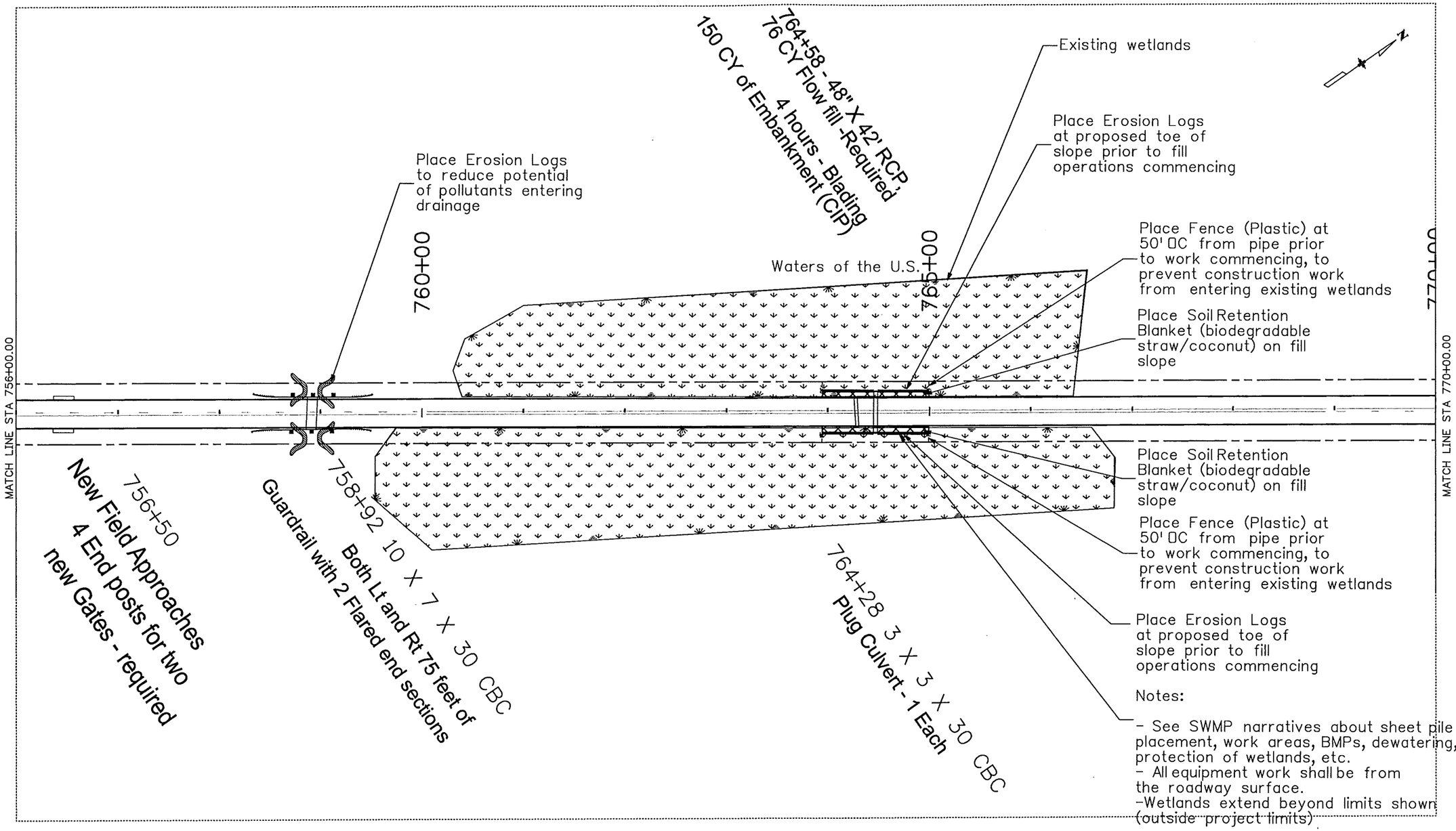

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Horiz. Scale: 1:100.821 Vert. Scale: As Noted					
Unit Information Unit Leader Initials					

Colorado Department of Transportation
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120 North Riverview Road
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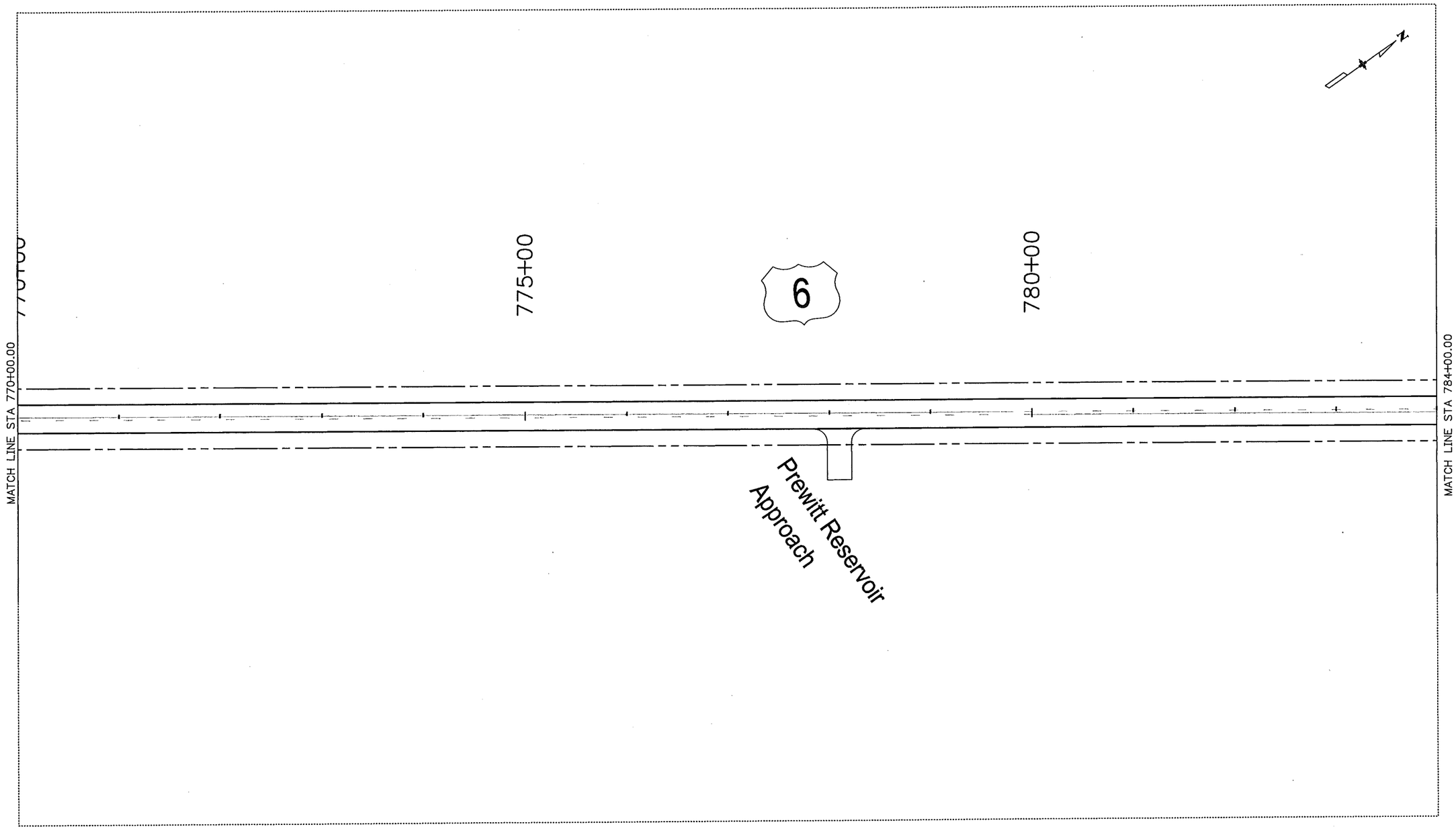
Phone: 970-522-0481 FAX: 970-521-9729
Region 4 LBL

As Constructed
No Revisions: 8/29/11
Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	23 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 49



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Horiz. Scale: 1:100.033 Vert. Scale: As Noted	R-X				120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	Revised:	Designer: CVC / Structure Numbers	17033
Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 24 of 33	Sheet Number 50

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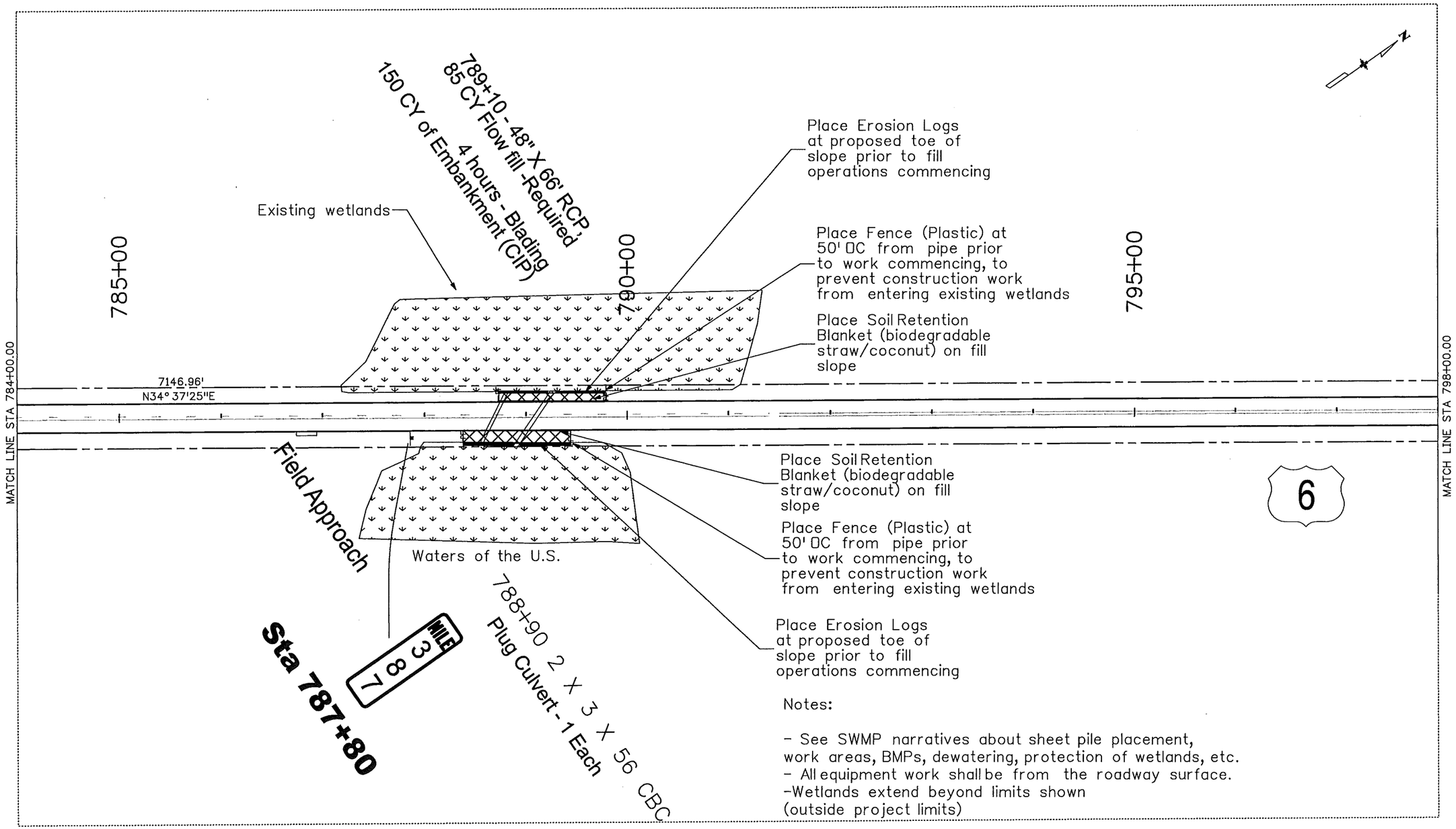

Notes:

- See SWMP narratives about sheet pile placement, work areas, BMPs, dewatering, protection of wetlands, etc.
- All equipment work shall be from the roadway surface.
-Wetlands extend beyond limits shown (outside project limits)

Print Date: 1/8/2010		Sheet Revisions			Colorado Department of Transportation	As Constructed	STORMWATER MANAGEMENT PLAN SITE MAP	Project No./Code
File Name: 17033_SWMP_sitemap25.dgn		Date:	Comments	Init.		No Revisions: 9/23/11		ES4 0061-080
Horiz. Scale: 1:100.067 Vert. Scale: As Noted	R-X				DOT 120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	Revised:	Designer: CVC / Structure Numbers	17033
Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 25 of 33	Sheet Number 51

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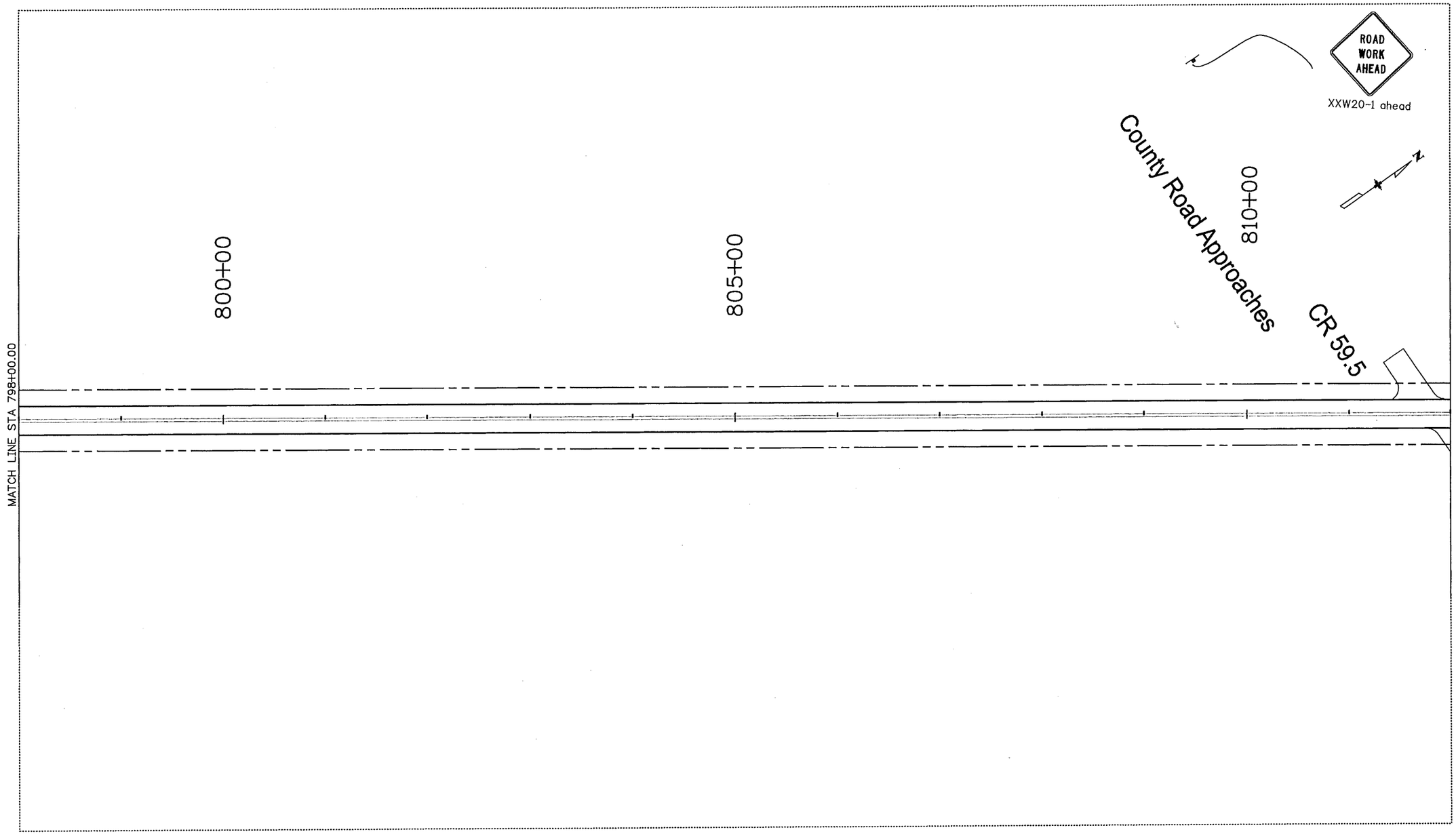

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File Name: 17033_SWMP_sitemap26.dgn		Date:	Comments	Init.	120 North Riverview Road Sterling, CO 80751 Phone: 970-522-0481 FAX: 970-521-9729	No Revisions: 4/28/11		ES4 0061-080
Horiz. Scale: 1:100.033 Vert. Scale: As Noted	R-X					Revised:	Designer: CVC / Structure Numbers	17033
Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 26 of 33	Sheet Number 52

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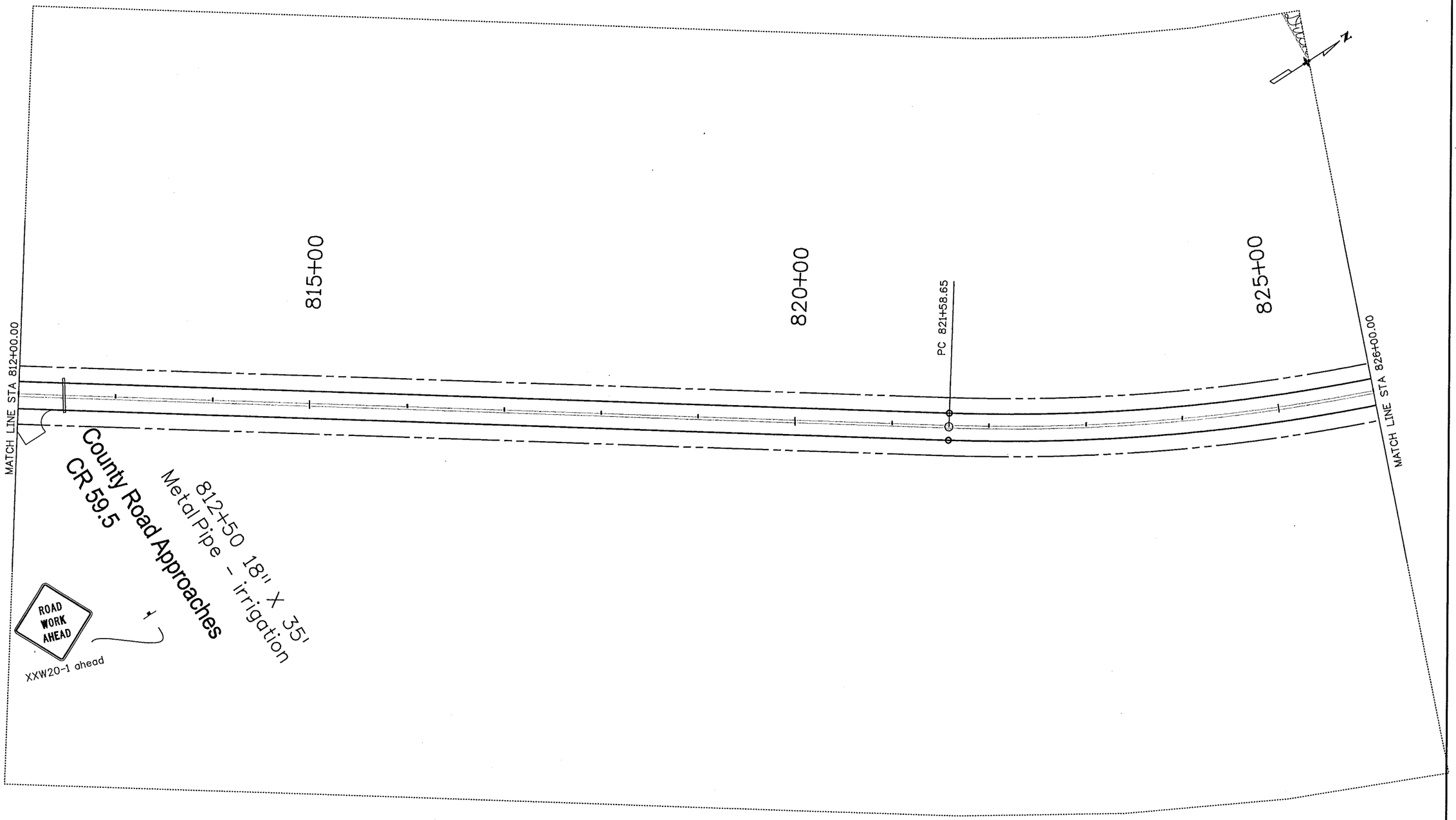

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Unit Information Unit Leader Initials					

Colorado Department of Transportation
120 North Riverview Road
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No Revisions: 4/25/11
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STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	27 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 53

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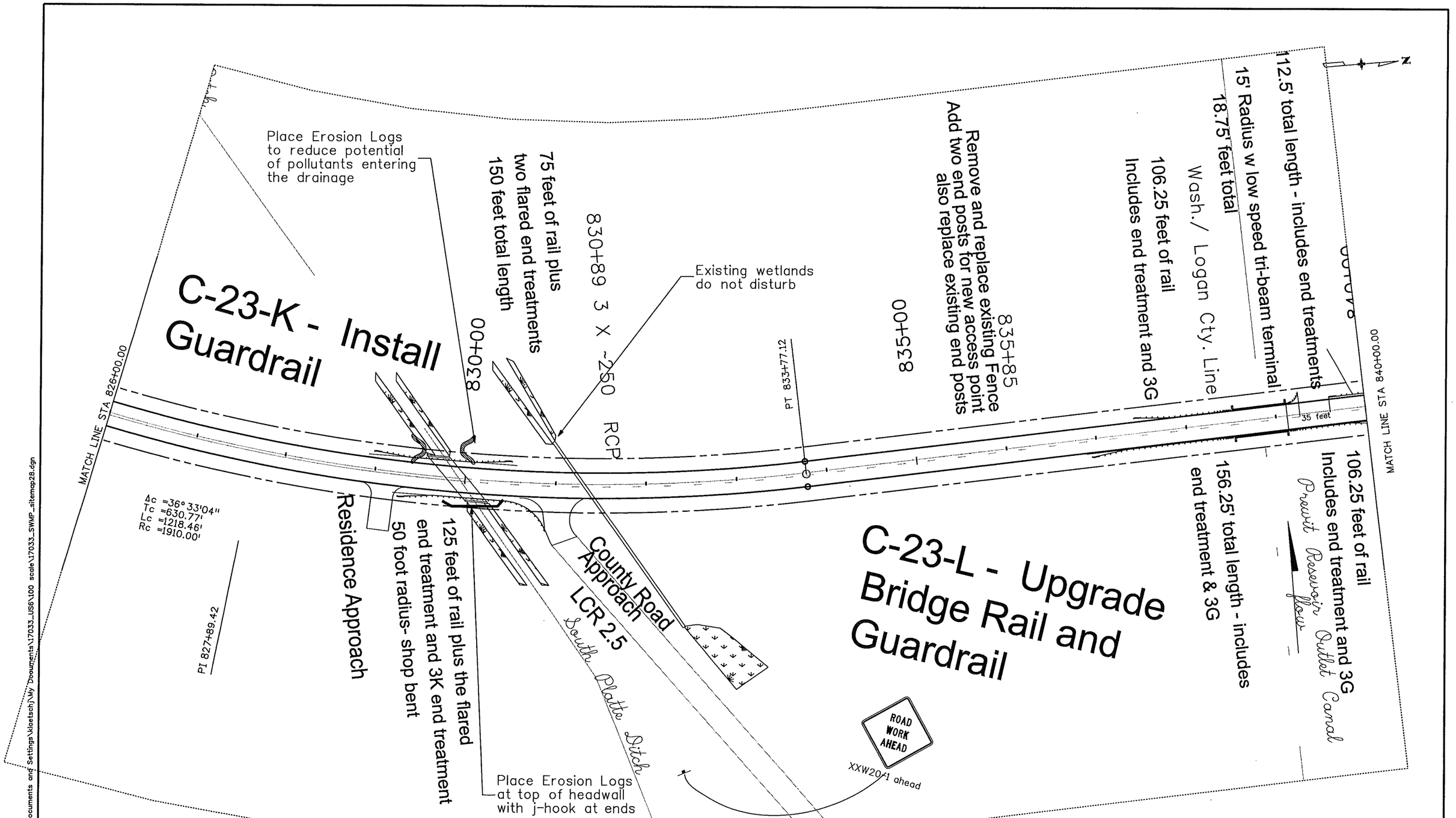

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Unit Information	Unit Leader Initials			

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STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
Sheet Subset:	SWMP	Subset Sheets:	28 of 33

Project No./Code
ES4 0061-080
17033
Sheet Number 54

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Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 29 of 33	Sheet Number 55

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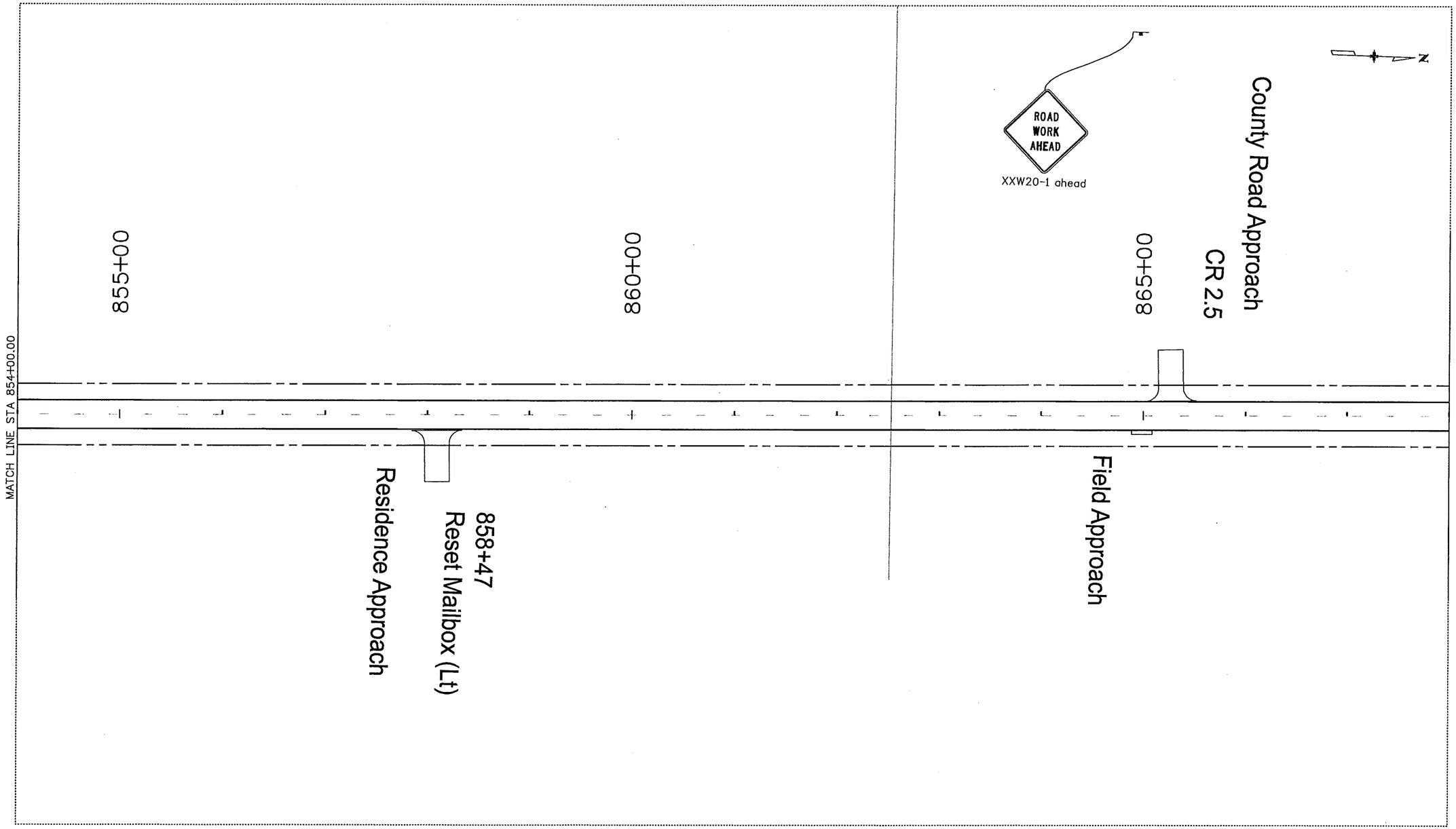

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Unit Information	Unit Leader Initials		

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Revised:
Void:

STORMWATER MANAGEMENT PLAN
SITE MAP

Designer:	CVC	Structure Numbers	
Detailer:	JMK		
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Project No./Code
ES4 0061-080
17033
Sheet Number 56

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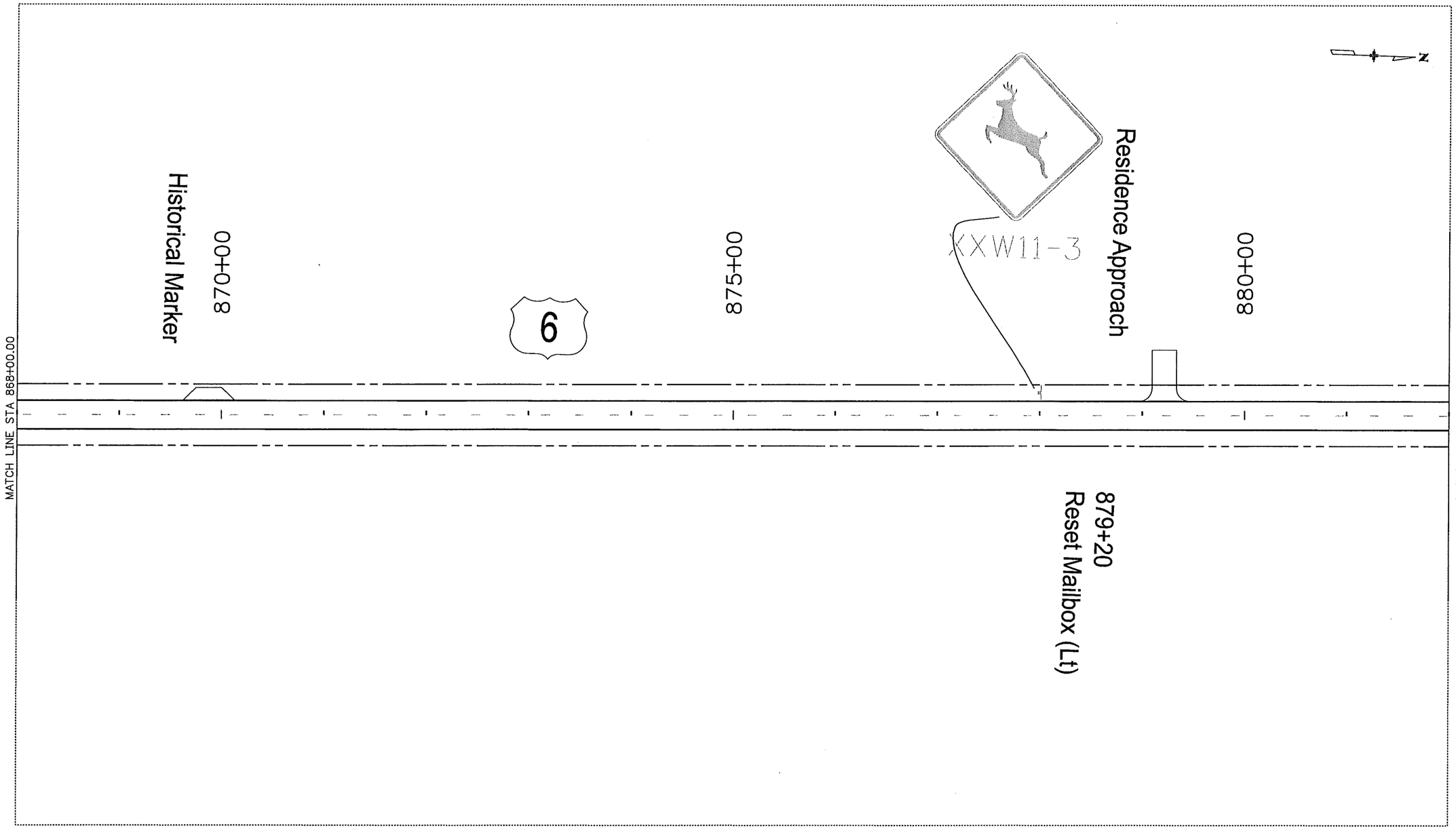

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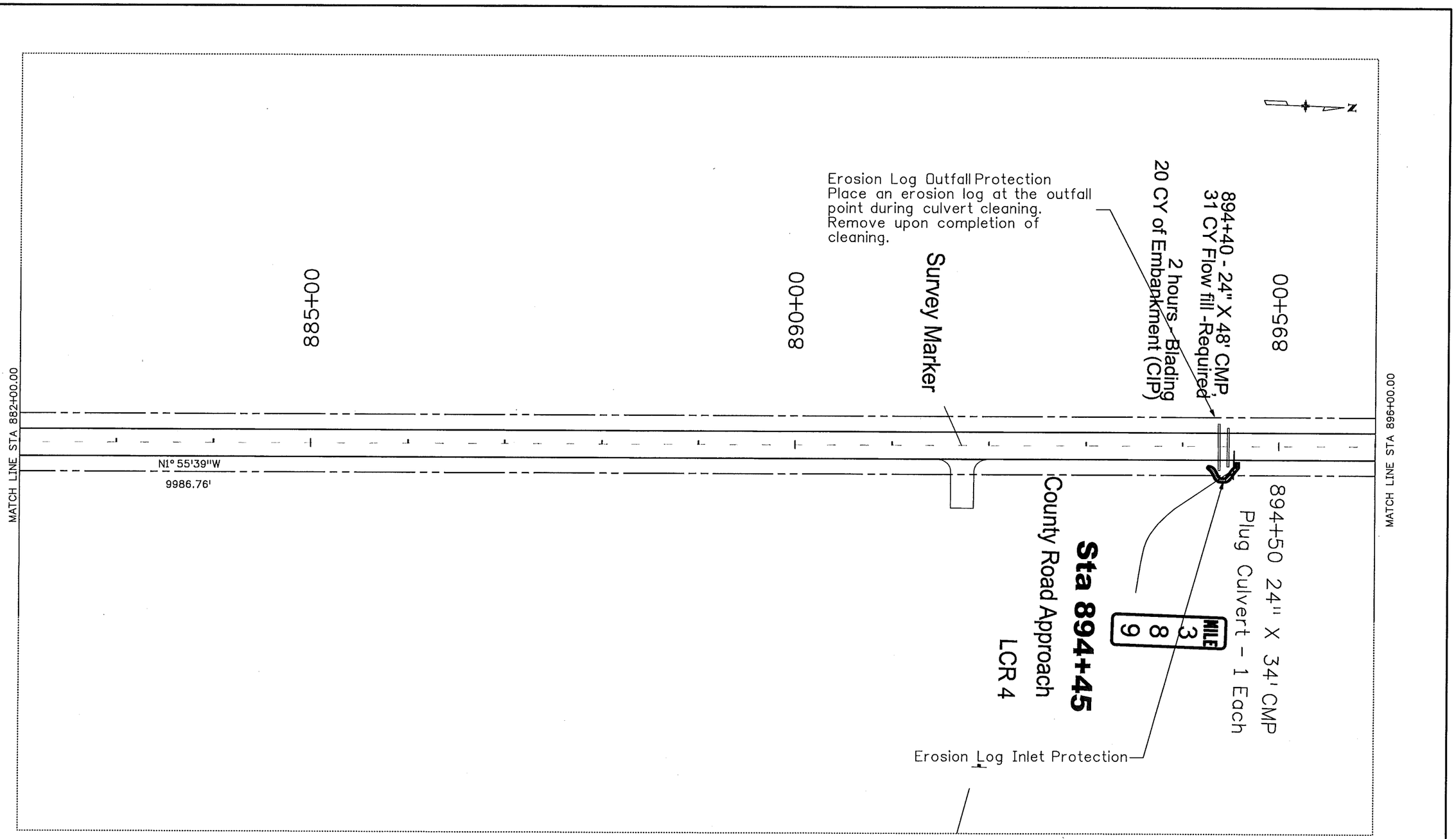

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Horiz. Scale: 1:100.043 Vert. Scale: As Noted	R-X					Revised:
Unit Information Unit Leader Initials					Region 4 LBL	Void:

STORMWATER MANAGEMENT PLAN SITE MAP				Project No./Code
Designer:	CVC	Structure Numbers		ES4 0061-080
Detailer:	JMK			17033
Sheet Subset:	SWMP	Subset Sheets:	32 of 33	Sheet Number 59

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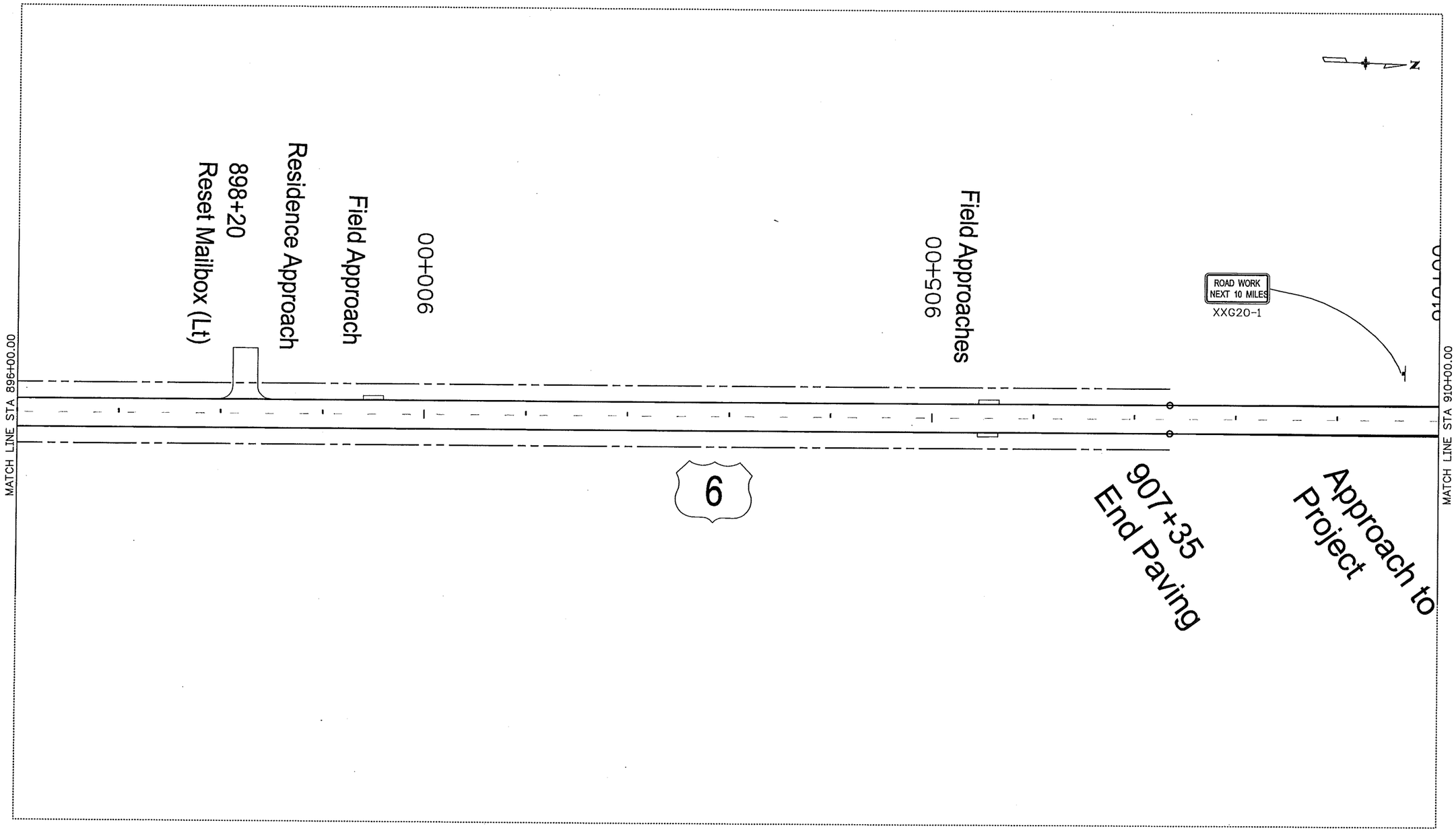

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Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: JMK / Sheet Subset: SWMP / Subset Sheets: 33 of 33	Sheet Number 59

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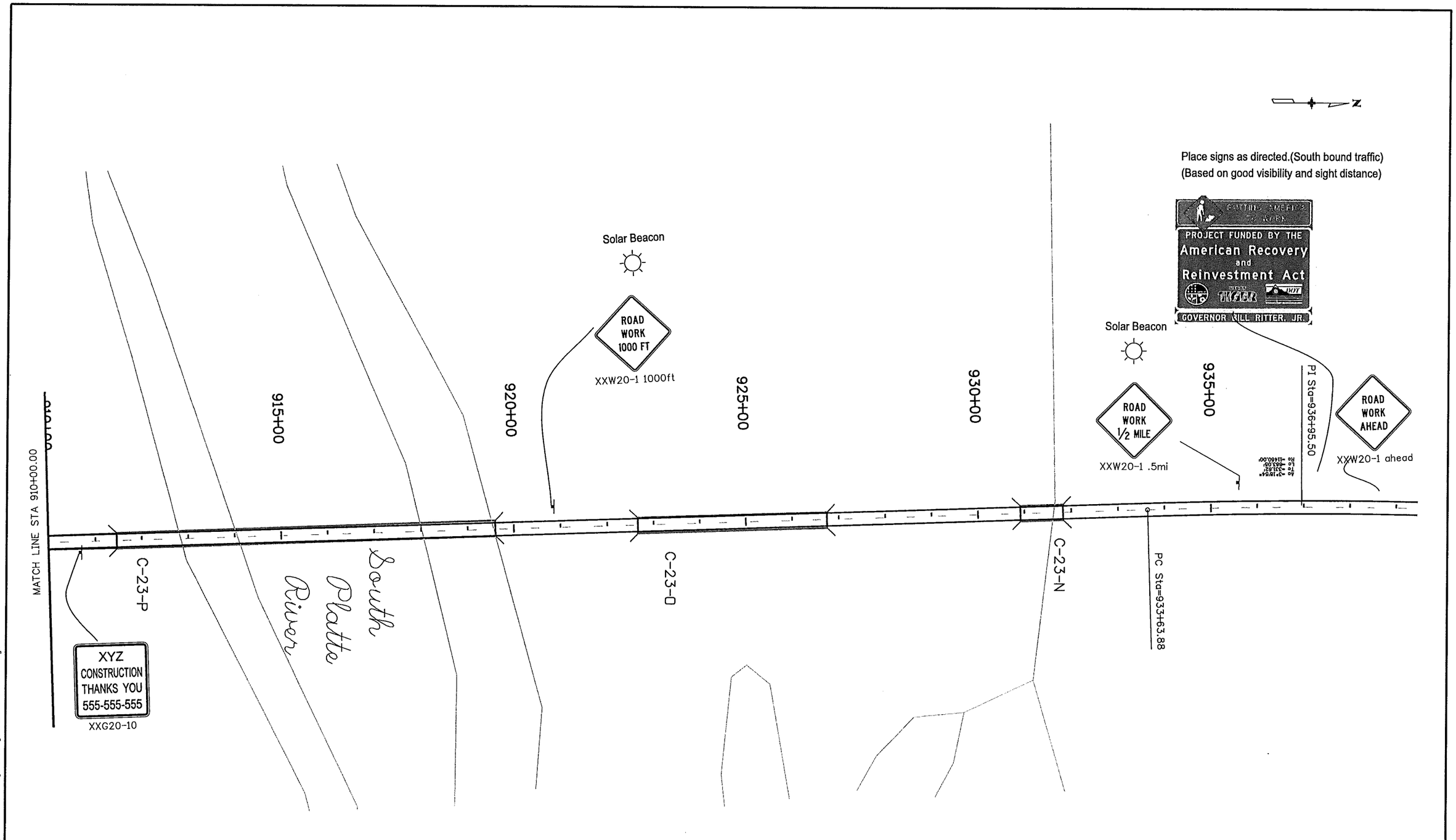

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Unit Information	Unit Leader Initials		

Sheet Revisions

Date:	Comments	Init.

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PLAN SHEET

Designer:	BAP	Structure Numbers	X-XX-XX
Detailer:	BAP		X-XX-XX
Sheet Subset:	XXXXXXX	Subset Sheets:	XXX of XXX

Project No./Code	
ES4 0061-080	
17033	
Sheet Number	60

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SIGN CODE	LEGEND	DIMENSIONS (in.)	PANEL SIZE ~ QUANTITY EACH A	B	C
W20-1	ROAD/WORK/AHEAD	48 X 48		~~17~~ 23	
W20-1	ROAD/WORK/(DIST)	48 X 48		4	
G20-1	ROAD/WORK/NEXT X MILES	36 X 18	2	~~2~~ 0	
W20-4	ONE/LANE/ROAD/AHEAD	48 X 48		8 ~~4~~	
W8-11	UNEVEN/LANES	48 X 48		3 ~~4~~	
W8-9a	SHOULDER/DROP-OFF	48 X 48		6 ~~8~~	
W20-7a	FLAGGER SYMBOL	48 X 48		36 ~~8~~	
R52-6a	BEGIN/FINES/DOUBLED/IN WORK/ZONE	48 X 60/36x48		6	4
R52-6b	END/FINES/DOUBLED/IN WORK/ZONE	48 X 60/36x48		6	4
R2-1(30)	SPEED/LIMIT/30	36 X ~~36~~ 48		6 ~~8~~	
R2-1(40)	SPEED/LIMIT/40	36 X 36/36x48	4	6 ~~8~~	
R2-1(55)	SPEED/LIMIT/55	36 X ~~36~~ 48		7 ~~8~~	
R2-1(65)	SPEED/LIMIT/65	36 X ~~36~~ 48		5 ~~8~~	
R4-1	DO/NOT/PASS	36 X 48		6 ~~4~~	
R4-2	PASS/WITH/CARE	36 X 48		4	
G20-10	CONTRACTOR/THANK YOU/(555-55-5555)	48 X 48		2	
G20-5	WORK ZONE	12 X 36	28 ~~16~~		
R2-6	FINES DOUBLE	24 X 36	15 ~~16~~		
G20-4	PILOT CAR/ FOLLOW ME	36 X 18	1		
		TOTALS	~~33~~ 51	~~87~~ 152	8

Panel B

W3-4	Be Prepared to Stop	48x48	4
W8-1	Bump	48x48	7
W21-5	Shoulder Work	48x48	4
W12-56	Trucks Turning	48x48	2
W3-4	Be Prepared to Stop	48 x 48	2
W1-4	Right Reverse Curve	48 x 48	2
W1-4	Lt Reverse Curve	48 x 48	2
R2-1(45)	Speed Limit 45	36 x 48	1

OTHER DEVICES		
ITEM	UNIT	QUANTITY
FLAGGING	HOUR	41 ~~5500~~
PILOT CAR OPERATION	HOUR	166 ~~500~~
TRAFFIC CONTROL MANAGEMENT	DAY	107 ~~65~~
TRAFFIC CONTROL INSPECTION	DAY	35 ~~35~~
TRAFFIC CONE (36 INCH)	EACH	300 ~~250~~
DRUM CHANNELIZING DEVICE	EACH	18 ~~50~~
Const. Traffic Sign (Special)	Sq Ft	99 ~~99~~

NOTES:

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ROAD APPROACHES DURING ALL PHASES OF CONSTRUCTION AT NO ADDITIONAL COST.

TRAFFIC CONTROL ITEMS LISTED ABOVE ARE ONLY FOR 3 SITES. IF MORE THAN 3 ARE USED, THE CONTRACTOR SHALL PAY FOR THE ADDITIONAL DEVICES AT HIS OWN EXPENSE.

CONTRACTOR SHALL MASK ALL SIGNS CONFLICTING WITH CONSTRUCITON SIGNING.

PILOT CAR SHALL BE USED ONLY DURING PAVING OPERATIONS OR AS DIRECTED BY THE ENGINEER.

FINES DOUBLED SHALL ONLY BE IN PLACE DURING TIMES OF ACTIVE CONSTRUCTION.

INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY PLAN	ROADWAY AS CONST.	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.
			202-00010	Removal of Tree	EACH	0	3	2	3
			202-00210	Removal of Concrete Pavement	SY	0	20	28	20
			202-00220	Removal of Asphalt Mat	SY	0	33	39	33
			203-00010	Unclassified Excavation (Complete In Place)	CY	0	1915	1,915	1,915
			203-01597	Potholing	HOUR	0	20	5	20
			206-00100	Structure Backfill (Class 1)	CY	0	49	155	49
			304-06000	Aggregate Base Course (Class 6)	TON	0	34.35	100	34.35
			403-00720	Hot Mix Asphalt (Patching) (Asphalt)	TON	0	11.99	25	11.99
			507-00000	Concrete Slope and Ditch Paving	CY	0	2.26	1	2.26
			603-01180	18 Inch Reinforced Concrete Pipe	LF	0	360	282	360
			603-05018	18 Inch Reinforced Concrete End Section	EACH	0	2	2	2
			603-07180	18 Inch Reinforced Concrete Pipe (Jacked)	LF	0	90	90	90
			603-15018	18 Inch Equivalent Corrugated Steel Pipe Arch	LF	0	85	85	85
			603-31318	18 Inch Equivalent Arch Steel End Section	EACH	0	6	6	6
			604-00305	Inlet Type C (5 Foot)	EACH	0	1	1	1
			604-30005	Manhole Slab Base (5 Foot)	EACH	0	1	1	1
			620-00020	Sanitary Facility	EACH	0	1	1	1
			625-00001	Construction Surveying (Hourly)	HR	0	10	10	10
			626-00000	Mobilization W/O Autopay	L S	0	1	1	1
			629-01110	Locate Monuments	HR	0	8	8	8

Print Date: 8/4/2011
File Name: 17430DES_SAQ05.dgn
Horiz. Scale: 1:200 Vert. Scale: As Noted
Unit Information Unit Leader Initials

R-X

Sheet Revisions		
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Colorado Department of Transportation
120 North Riverview Road
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Final SUMMARY OF ~~APPROXIMATE~~ QUANTITIES

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Detailer: XXXXXXXX
Sheet Subset: XXXXXXX
Structure Numbers X-XX-XX X-XX-XX
Subset Sheets: XXX of XXX

Project No./Code
STA 0061-080
17033 - CM07
Sheet Number 62

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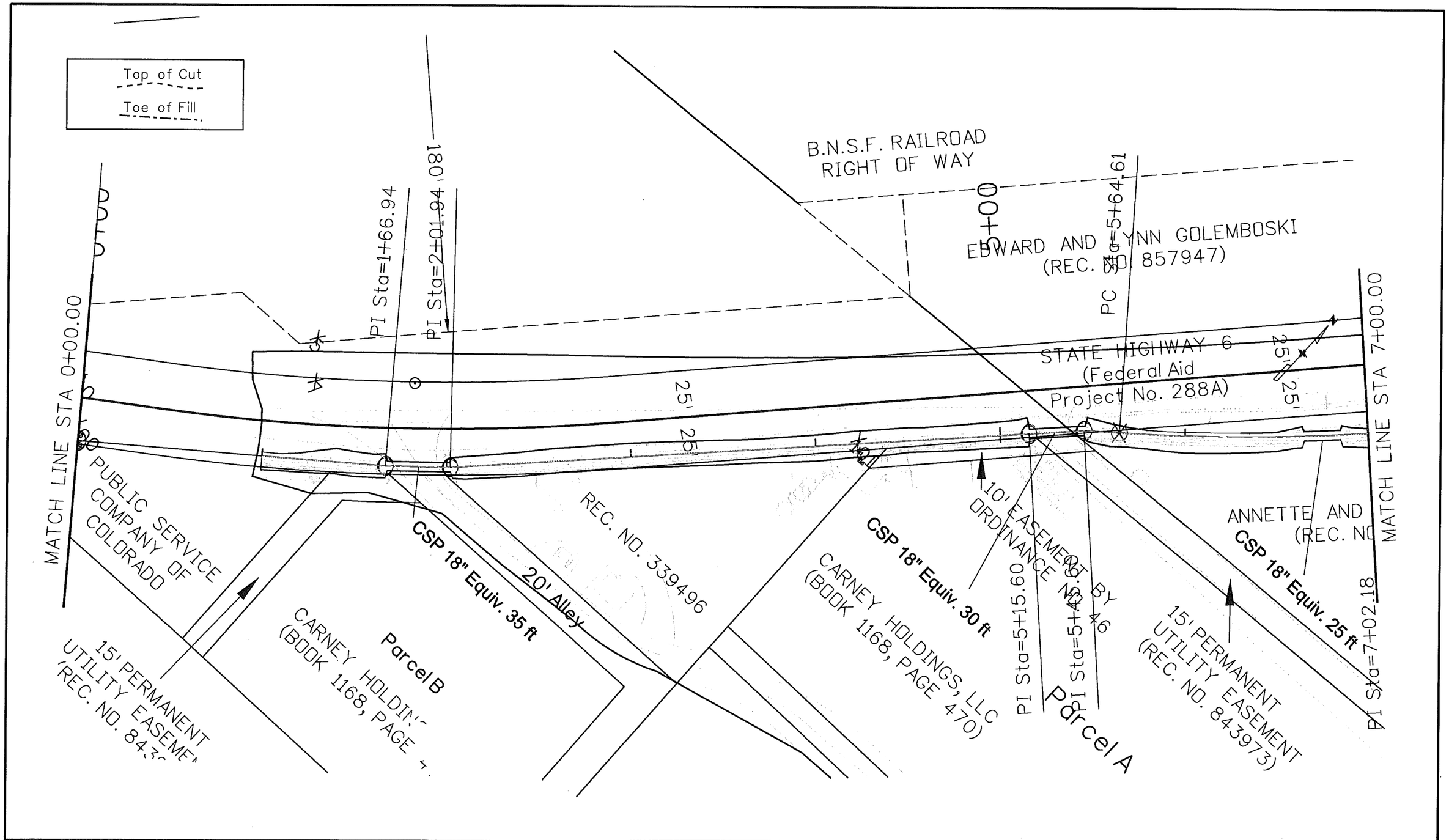

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Horiz. Scale: 1:50 Vert. Scale: As Noted	R-X					Revised: 4/25/11	Designer: XXXXXXXX / Structure Numbers: X-XX-XX	17033 - CM07
Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: XXXXXXXX / X-XX-XX	
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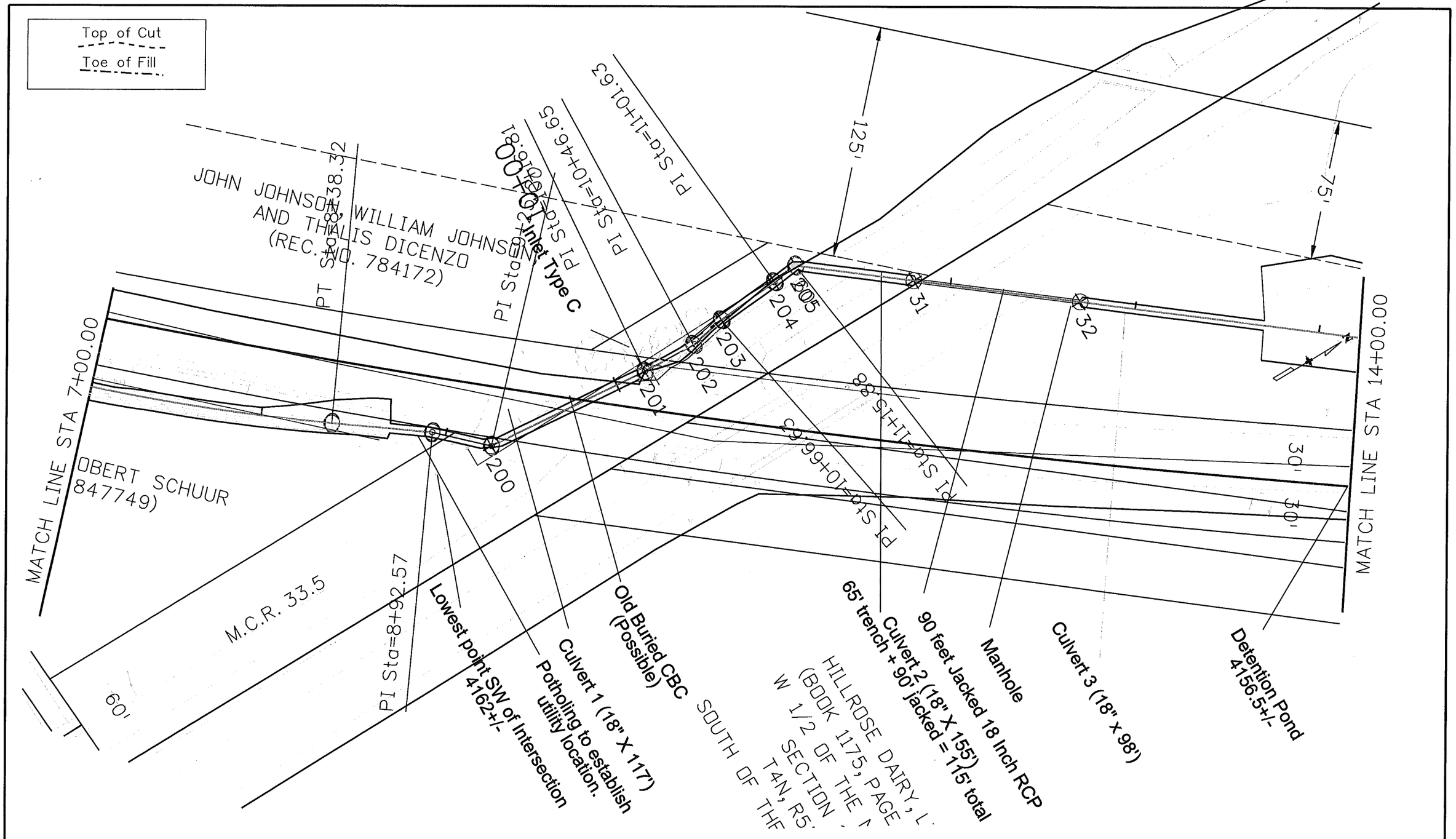

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Revised: 4/25/11	Designer: XXXXXXXX	Structure Numbers	X-XX-XX		STA 0061-080
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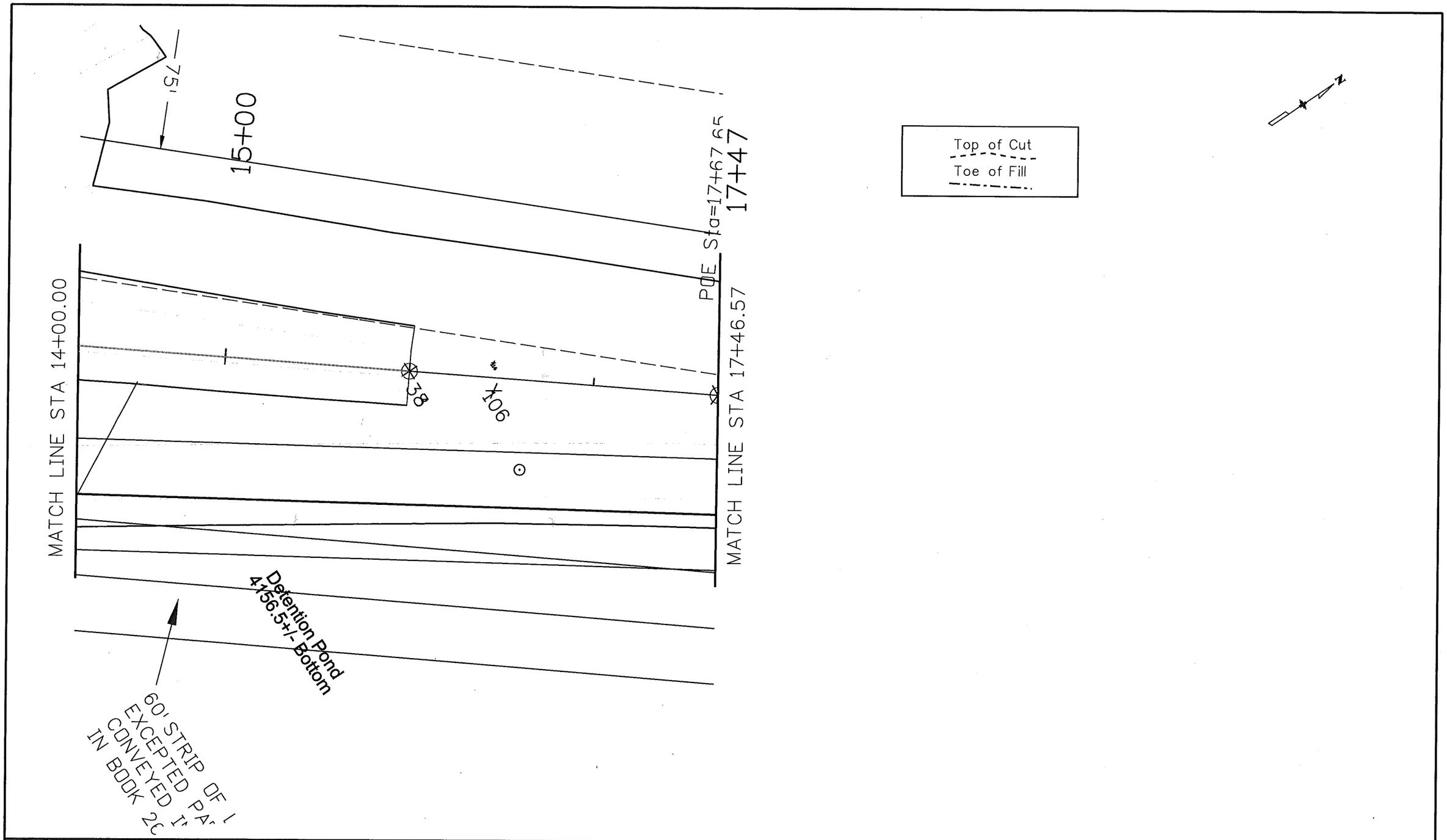

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Horiz. Scale: 1:50 Vert. Scale: As Noted						Revised: 4/25/11	Designer: XXXXXXXX Structure Numbers X-XX-XX	17033 - CM07
Unit Information Unit Leader Initials					Region 4 LBL	Void:	Detailer: XXXXXXXX X-XX-XX	
							Sheet Subset: XXXXXXX Subset Sheets: XXX of XXX	Sheet Number 65

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GENERAL NOTES

1. ALL CONSTRUCTION ZONE TRAFFIC CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO BARRICADES, SIGNS, ARROW PANELS, FLASHING BEACON (PORTABLE), AND CHANNELIZING DEVICES, SHALL BE FURNISHED, INSTALLED, MAINTAINED (INCLUDING WASHING), REPLACED IF DAMAGED, REMOVED WHEN TEMPORARILY NOT IN USE AND RETURNED WHEN REQUIRED, RESET AS NECESSARY DURING THE PROGRESS OF CONSTRUCTION, AND REMOVED ENTIRELY WHEN THE PROJECT IS COMPLETED. ALL DEVICES SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE ATSSA "QUALITY STANDARDS FOR WORK ZONE TRAFFIC CONTROL.

2. WORK ON THE PROJECT SHALL NOT BE STARTED UNTIL ALL REQUIRED TRAFFIC CONTROL DEVICES ARE IN PLACE, AND APPROVED BY THE ENGINEER.

3. WHEN SPEED LIMIT REDUCTION IS REQUIRED, SUCH REDUCTION SHALL BE IN ACCORDANCE WITH CDOT FORM 568, "AUTHORIZATION AND DECLARATION OF TEMPORARY SPEED LIMITS."

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

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

   THE REGULATORY OR ADVISORY SPEED REDUCTION DISPLAYED SHALL NOT EXCEED 15 MPH PER SIGN INSTALLATION.

4. ANY TRAFFIC CONTROL DEVICE THAT IS DAMAGED, WEATHERED, WORN, OR OTHERWISE DEEMED UNACCEPTABLE BY THE ENGINEER, SHALL BE REPLACED.

5. CONTRACTOR AND PERSONAL VEHICLE PARKING IS PROHIBITED WITHIN THE RIGHT-OF-WAY UNLESS DESIGNATED ON THE PLANS, OR APPROVED BY THE ENGINEER.

6. CONSTRUCTION TRAFFIC SIGNS SHALL BE MEASURED BY THE FOLLOWING SIZES AND DESCRIPTIONS:

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

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

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

   W20-5 WARNING SIGNS SHALL BE FURNISHED WITH EXCHANGEABLE PLAQUES READING "RIGHT", "LEFT", "CENTER", "RIGHT 2", ETC. AT NO ADDITIONAL COST.

7. ALL WARNING AND REGULATORY SIGNS SHALL BE POSTED ON BOTH SIDES OF THE ROADWAY ON DIVIDED HIGHWAYS, MULTI-LANE RAMPS, ONE-WAY STREETS, AND AS DIRECTED BY THE ENGINEER, EXCEPT WHERE ONLY ONE SHOULDER IS CLOSED (EX: CASE 11 ON SHEET 6).

8. ADDITIONAL TRAFFIC CONTROL DEVICES ADDRESSING FLAGGING, SPEED REDUCTION, ETC. WILL BE NECESSARY FOR SET-UP AND TAKE-DOWN OF MOST CASE APPLICATIONS; DAILY WORK SITE ACCESS; AND PAVEMENT MARKING REMOVAL AND INSTALLATION OPERATIONS.

9. BASED ON SIGHT DISTANCE AND OTHER CONSIDERATIONS, THE FINAL LOCATIONS OF SIGNS ARE SUBJECT TO APPROVAL OF THE ENGINEER.

10. IF CONSTRUCTION RELATED TRAFFIC CONGESTION BACKS UP BEYOND THE INSTALLED ADVANCE SIGN SEQUENCE, ADDITIONAL ADVANCE SIGNING SHALL BE PLACED BEYOND THE CONGESTION.

11. ALL SIGN MATERIAL SHALL BE SOUND AND DURABLE TO THE DEGREE NECESSARY FOR MAINTAINING EFFECTIVE AND NEAT APPEARING TRAFFIC CONTROLS, AND:

    a. SIGN PANELS MAY BE FABRICATED FROM PLYWOOD, STEEL, ALUMINUM, OR OTHER SUITABLE MATERIAL.
    b. REFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956. THE TYPE SHALL BE AS DESCRIBED IN THE STANDARD SPECIFICATIONS AND/OR AS SHOWN ON THE PLANS.
    c. SYMBOLS AND LEGEND SHALL BE OF GOOD WORKMANSHIP (UNEVEN OR HAND LETTERING WILL NOT BE ACCEPTED).
    d. PORTABLE OR TEMPORARY MOUNTING SHALL NOT BE CONSTRUCTED OR WEIGHTED BY ANY METHOD OR MATERIAL THAT MAKES THEM HAZARDOUS TO TRAFFIC.
    e. CERTAIN POST SIZES AND SHAPES REQUIRE A "BREAK-AWAY" DEVICE. SEE THE APPLICABLE STANDARD PLAN. OTHER POST DESIGNS OR SYSTEMS REQUIRE THE SUBMITTAL OF AN FHWA LETTER OF ACCEPTANCE TO THE ENGINEER, AND MUST BE APPROVED BY THE ENGINEER PRIOR TO THEIR USE.

12. ALL CONSTRUCTION SIGN PLACEMENT SHALL BE IN ACCORDANCE WITH STANDARD PLAN "TYPICAL GROUND SIGN PLACEMENT" UNLESS OTHERWISE APPROVED.

    SIGNS APPROVED TO BE MOUNTED ON PORTABLE SUPPORTS, OR APPROPRIATE SIGNS MOUNTED ON BARRICADES, MAY BE AT LOWER HEIGHTS, BUT THE BOTTOM OF THE SIGNS SHALL NOT BE LESS THAN ONE FOOT ABOVE THE PAVEMENT ELEVATION.

13. SIGNS MOUNTED ON THE MEDIAN OF DIVIDED HIGHWAYS WHERE MEDIAN BARRIER IS IN PLACE MAY BE MOUNTED ON THE BARRIER WITH A SADDLE TYPE BRACKET. IF THE BRACKET ALLOWS THE SIGN PANEL TO BE TURNED PARALLEL TO THE ROADWAY, THE SIGN MAY REMAIN IN PLACE WHEN NOT APPLICABLE, BUT LAYING THE SIGN PANEL DOWN IN A HORIZONTAL POSITION IS NOT PERMITTED.

14. TRAFFIC CONES SHALL BE AT LEAST 28 INCHES IN HEIGHT. HOWEVER, THE MINIMUM SIZE SHALL BE 36 INCHES WHEN THEY ARE USED ON FREEWAYS AND EXPRESSWAYS, OR DURING NIGHT TIME WORKING HOURS. THEY SHOULD ALSO BE 36 INCHES WHEN USED ON OTHER HIGH SPEED ROADWAYS (45 MPH OR MORE) WITH AN ADT OF 6,000 OR MORE.

15. TYPE 1 BARRICADES SHALL NOT BE USED ON FREEWAYS, EXPRESSWAYS, OR OTHER HIGH SPEED ROADWAYS (45 MPH OR MORE).

16. WHEN TWO-WAY TRAFFIC IS PLACED ON ONE ROADWAY OF A NORMALLY DIVIDED HIGHWAY, OPPOSING TRAFFIC SHALL BE SEPARATED EITHER WITH CONCRETE BARRIER (TEMPORARY), OR WITH CHANNELIZING DEVICES APPROVED FOR THIS APPLICATION, THROUGHOUT THE LENGTH OF TWO-WAY OPERATION. THE TRANSITION ZONES SHALL HAVE CONCRETE BARRIER (TEMPORARY). THE BARRIER SHALL BE TIED TO AN EXISTING STRUCTURE OR GUARD RAIL, FLARED OR EXTENDED, TO MEET CLEAR ZONE REQUIREMENTS, OR FITTED WITH AN IMPACT ATTENUATION DEVICE.

17. CHANNELIZING DEVICE SPACING, IN FEET, SHALL BE AS FOLLOWS:
    a. FOR TAPERS AND TRANSITIONS, SPACING EQUALS THE NUMERICAL VALUE OF THE SPEED LIMIT. (e.g. 45 MPH = 45 FEET)
    b. FOR TANGENTS ALONG THE BUFFER SPACE OR WORK AREA, SPACING MAY NOT BE GREATER THAN TWO TIMES THE SPEED LIMIT. (e.g. 50 MPH = 50 FEET TO 100 FEET MAXIMUM)

18. FOR DETAILS ON BARRICADES, CONCRETE BARRIER (TEMPORARY), VERTICAL PANELS, AND FLASHING BEACON (PORTABLE), SEE THE APPLICABLE STANDARD PLANS.

19. FLOOD LIGHTS SHALL BE USED TO ILLUMINATE FLAGGER STATIONS DURING THE HOURS OF DARKNESS UNLESS OTHERWISE APPROVED. A TYPICAL LIGHT SHOULD PROVIDE THE FOLLOWING: A FULLY DIRECTIONAL SWIVEL MOUNT QUARTZ LIGHT SOURCE (500 WATT MINIMUM), SELF-SUPPORTING STAND WITH VARIABLE LIGHT HEIGHT FROM A MINIMUM OF EIGHT FEET ABOVE THE ROADWAY, AND A POWER SOURCE. IT SHALL ILLUMINATE THE STATION AREA AND A FLAGGER ESCAPE PATH, BUT SHALL NOT PRESENT ANY GLARE TO TRAFFIC.

20. IF WORK ON THE ROADWAY IS FOR A LONG-TERM STATIONARY PERIOD, AS DEFINED IN SECTION 6G.02 OF THE MUTCD, INAPPLICABLE PAVEMENT MARKINGS ARE TO BE REMOVED, AND FULL COMPLIANCE PAVEMENT MARKINGS ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS, (PAVEMENT MARKING - GENERAL), AND/OR AS DETAILED ON THE PLANS.

    FOR ADDITIONAL PAVEMENT MARKING DETAILS, SEE STANDARD PLAN "TYPICAL PAVEMENT MARKINGS".

21. BUFFER SPACE IS OPTIONAL. NEED MUST BE DETERMINED ON A PROJECT OR SITE SPECIFIC BASIS AS DIRECTED BY THE ENGINEER. WHEN A BUFFER SPACE IS USED, DIMENSIONS AND/OR DEVICES USED ARE TO BE INCORPORATED IN THE TRAFFIC CONTROL PLAN (TCP) OR THE CONTRACTOR'S METHOD OF HANDLING TRAFFIC (MHT).

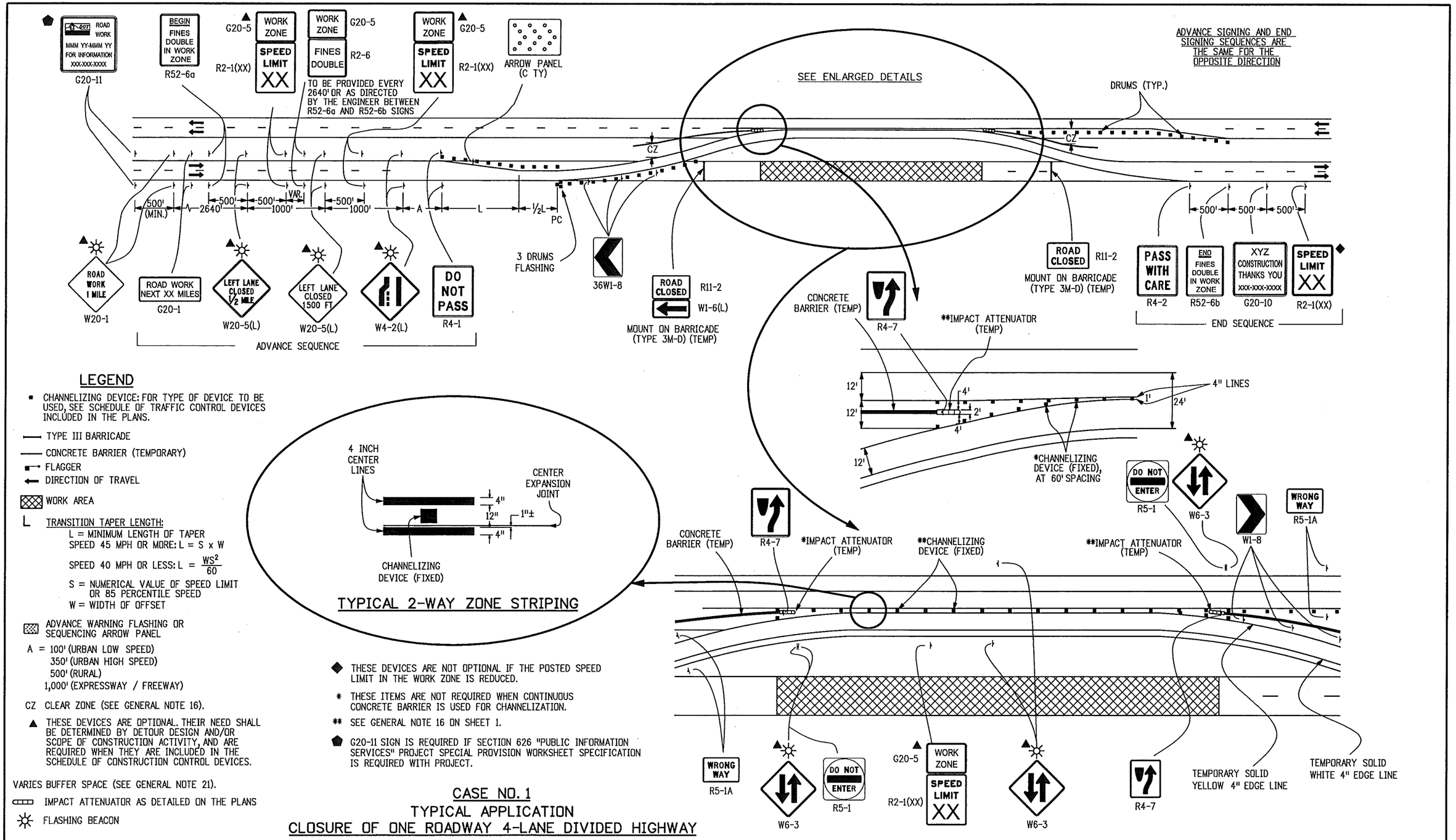
22. ADDITIONAL VMS SIGNAGE SHOULD BE CONSIDERED AT LEAST A MILE IN ADVANCE OF THE SIGNING SHOWN IN THE DETAIL FOR ANY LANE CLOSURES ON INTERSTATE AND OTHER HIGH SPEED FACILITIES ESPECIALLY WHEN THE LEVEL OF SERVICE IS SIGNIFICANTLY REDUCED AS A RESULT OF CONSTRUCTION. THE LEGENDS SHOULD BE CHANGED TO ADVISE MOTORISTS OF UPCOMING TRAFFIC CONDITIONS AND TO ALERT THEM OF UPCOMING LANE USAGE.

    ADDITIONAL ADVANCE WARNING SIGNAGE IS ENCOURAGED IN ALL CASES WHERE TRAFFIC VOLUMES AND SPEEDS ARE HIGH AND/OR WHERE THERE ARE INFREQUENT EXITS. ADDITIONAL SIGNAGE IS ALSO ENCOURAGED IN LOCATIONS WHERE DRIVERS' LINE OF SIGHT TO ADVANCE WARNING SIGNS IS OBSTRUCTED.

23. RAISED PAVEMENT MARKERS MAY BE USED TO SUPPLEMENT TEMPORARY STRIPING DURING NON-SNOW PERIODS. THEIR USE IS ENCOURAGED ON HIGHER SPEED FACILITIES WHEN TRAFFIC IS BEING DIVERTED FROM ITS USUAL COURSE.

24. THE TYPICAL CASES DEPICTED IN THIS STANDARD REFLECT THE MINIMUM REQUIREMENTS, UNLESS AS OTHERWISE DIRECTED BY THE PROJECT PLANS AND SPECIFICATIONS, AND/OR THE PROJECT ENGINEER.

25. A SIGNIFICANT PROJECT IS DEFINED AS ONE THAT, ALONE OR IN COMBINATION WITH OTHER CONCURRENT PROJECTS NEARBY, IS ANTICIPATED TO CAUSE SUSTAINED WORK ZONE IMPACTS AT A LOCATION FOR THREE OR MORE CONSECUTIVE DAYS WITH EITHER INTERMITTENT OR CONTINUOUS LANE CLOSURES.



LEGEND

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

◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.

* THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION.

** SEE GENERAL NOTE 16 ON SHEET 1.

⬟ G20-11 SIGN IS REQUIRED IF SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

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

Computer File Information	
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Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: Sheet_S-630-01_2of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale	Units: English

	Date:	Comments
R-1	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 2 OF 19
R-1	06/24/09	ADDED * & ** NOTES. EXTENDED FLARED ENDS OF CONCRETE BARRIER.
R-1	06/24/09	ADDED OPTIONAL FLASHING BEACONS ON ADVANCED WARNING SIGNS.
R-2	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)) ADDED ◆ SYMBOL ON SPEED LIMIT SIGNS (R-1(XX)) AFTER R52-4b SIGN,ADDED R2-6/G20-5 FLAGGER, ADDED G20-11 SIGN AND ⬟ SYMBOL/NOTE.

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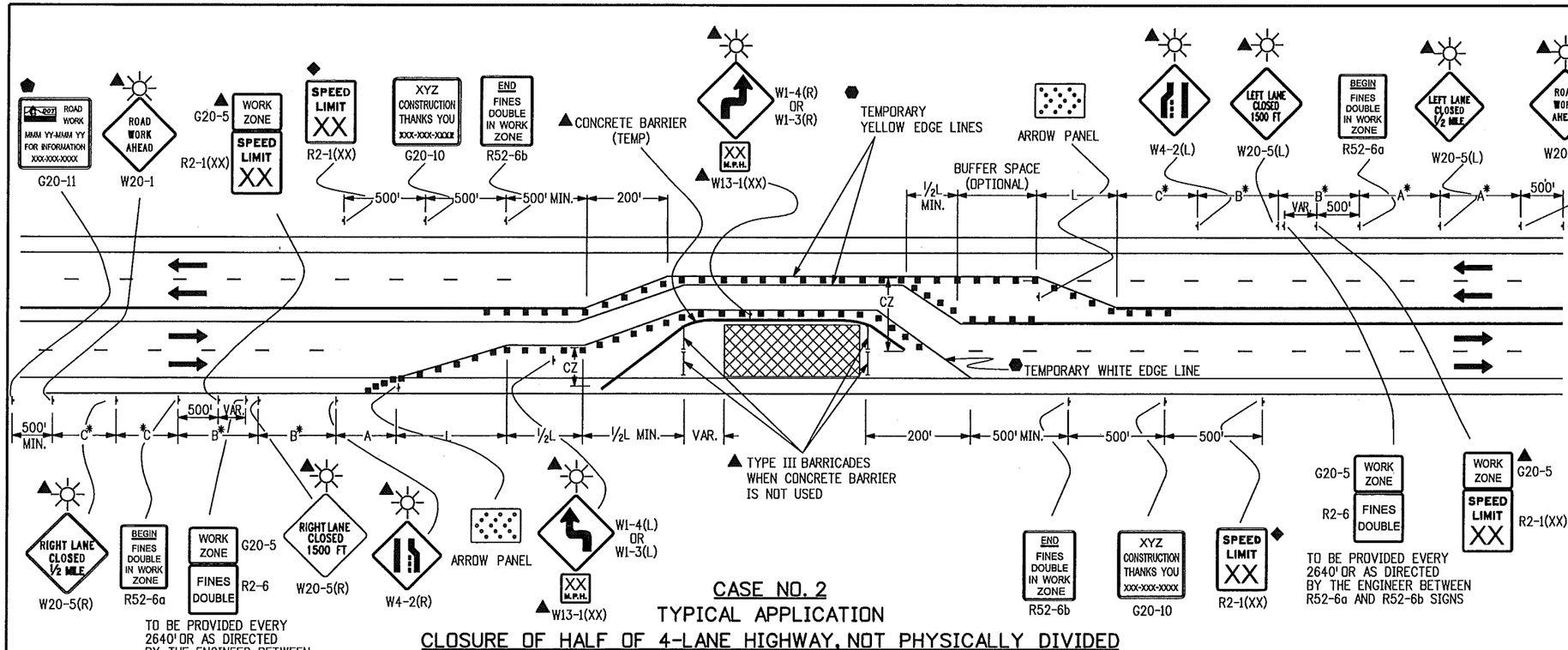
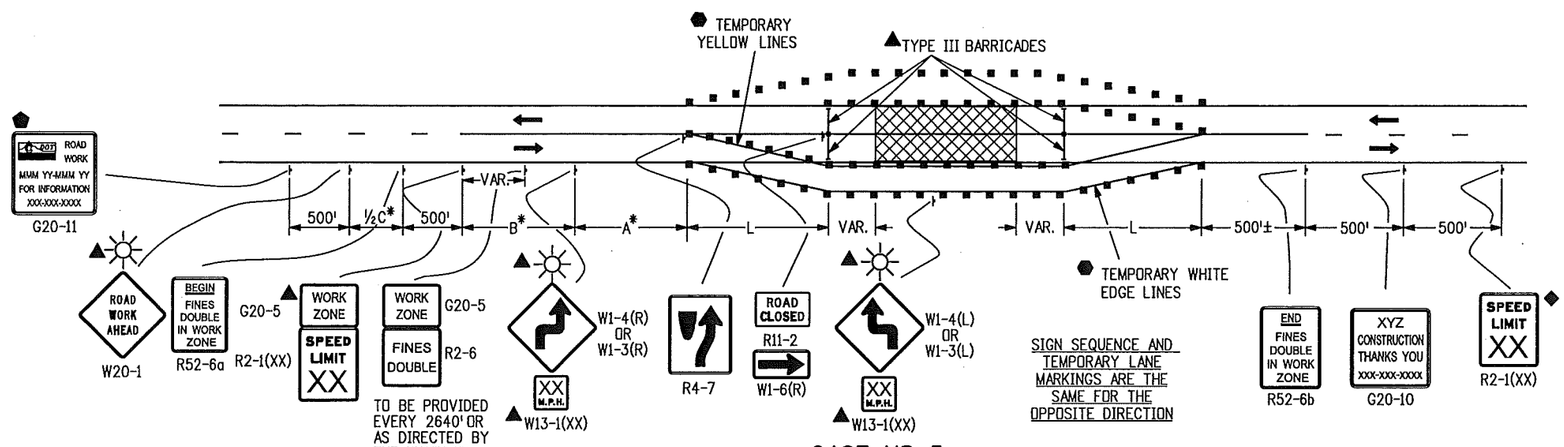
Sheet No. 2 of 19



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



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

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA

L TRANSITION TAPER LENGTH:

L = MINIMUM LENGTH OF TAPER

SPEED 45 MPH OR MORE: $L = S \times W$

SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$

S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

W = WIDTH OF OFFSET

SHOULDER TAPER = 1/3 L

- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.

A = 100' (URBAN LOW SPEED)
350' (URBAN HIGH SPEED)
500' (RURAL)
1,000' (EXPRESSWAY / FREEWAY)

CZ CLEAR ZONE (SEE GENERAL NOTE 16).

▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.

◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.

VARIES BUFFER SPACE (SEE GENERAL NOTE 21).

⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.

⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

FLASHING BEACON

* KEY TO ADVANCE SIGNING DISTANCES

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

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

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

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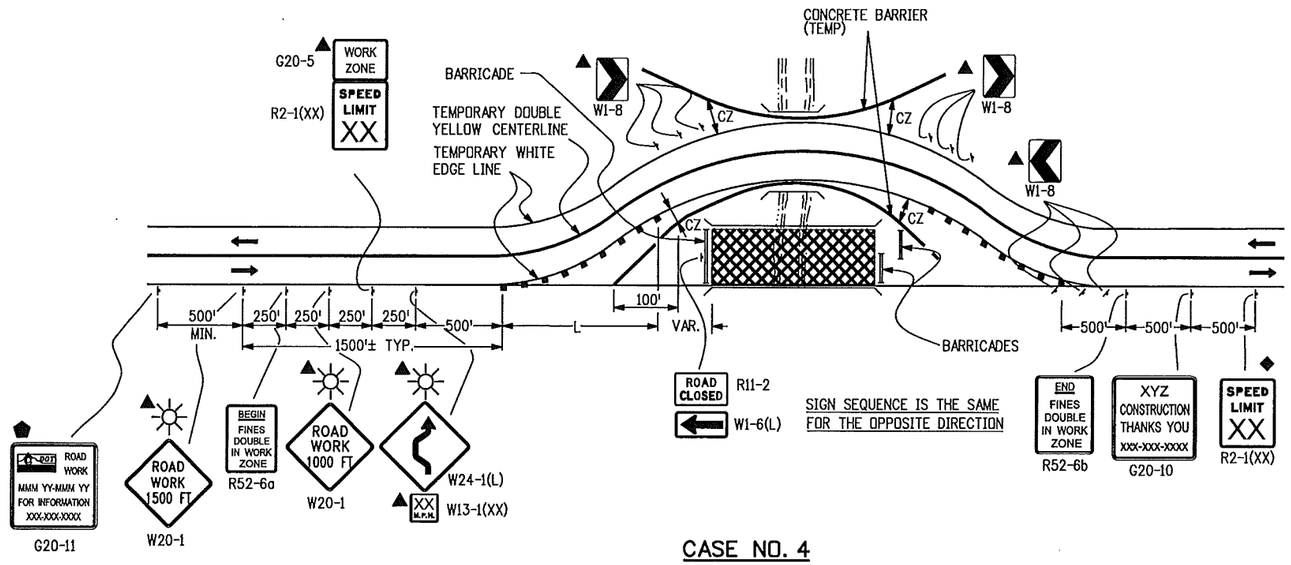
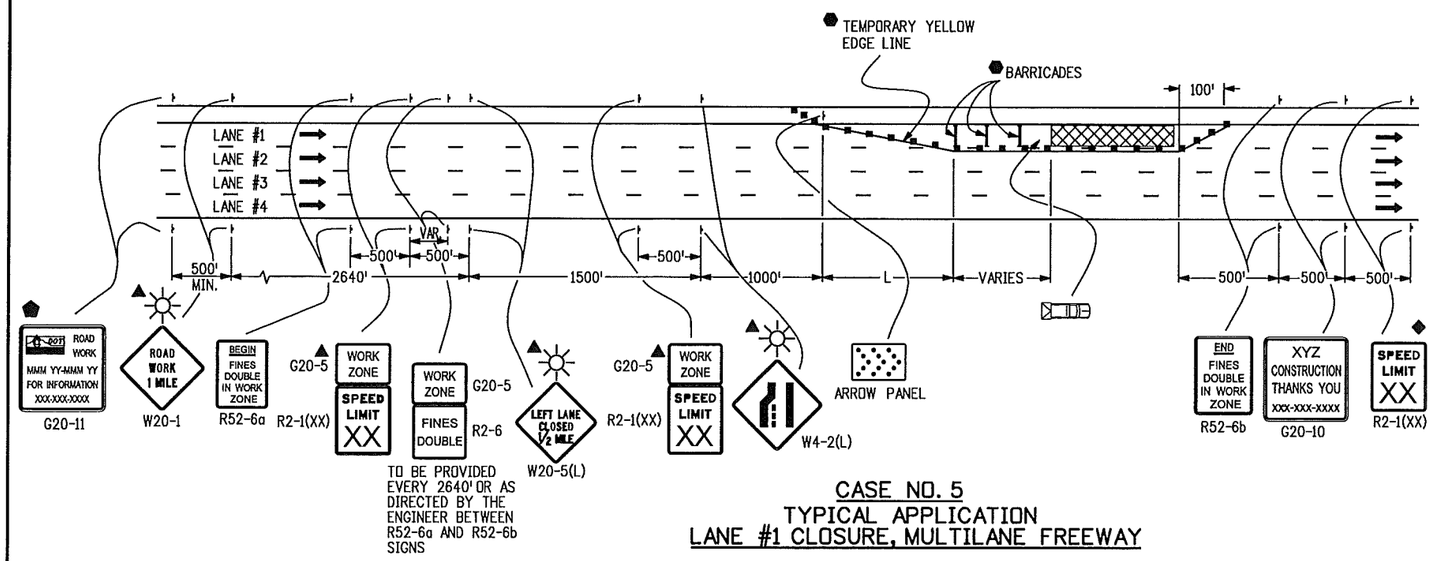


CASE NO. 4
TYPICAL APPLICATION
ROAD CLOSURE, BYPASS DETOUR PROVIDED



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

LEGEND

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

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R-1	06/24/09	ADDED R-52a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 4 OF 19
R-1	06/24/09	EXTEND CONCRETE BARRIER IN CASE 4. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
R-2	12/07/09	REVISED OPTIONAL STAGE FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)) ADDED G20-5 AND R2-6 PLACES BETWEEN R52-6a and R52-6b SIGNS, ADDED @ SYMBOL IN SPEED LIMIT SIGN (R-1(XX)) AFTER R52-6b SIGN, ADDED G20-5 SIGN, AND @ SYMBOL NOTE.

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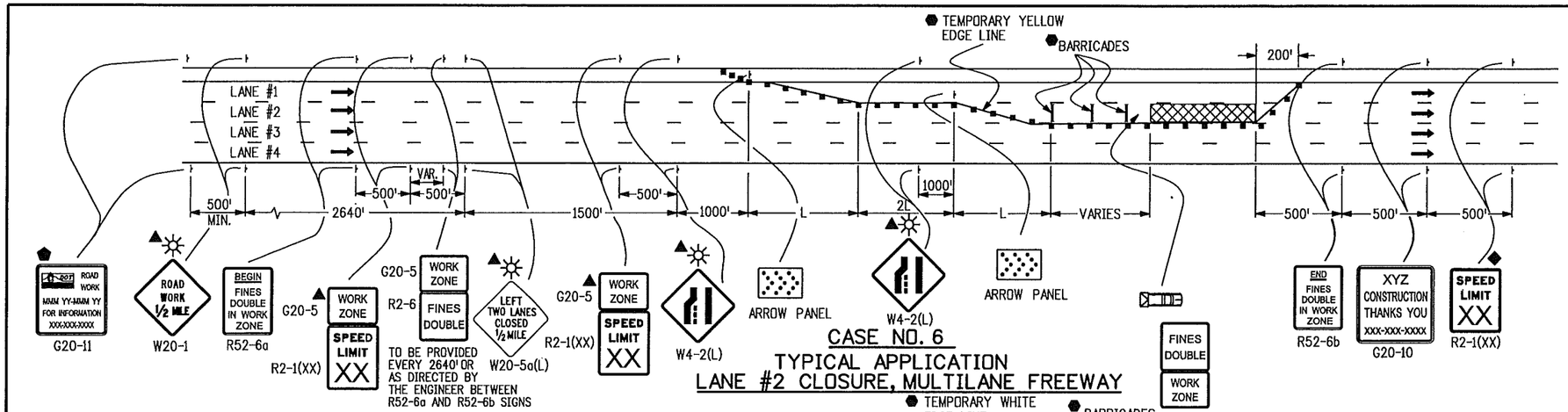
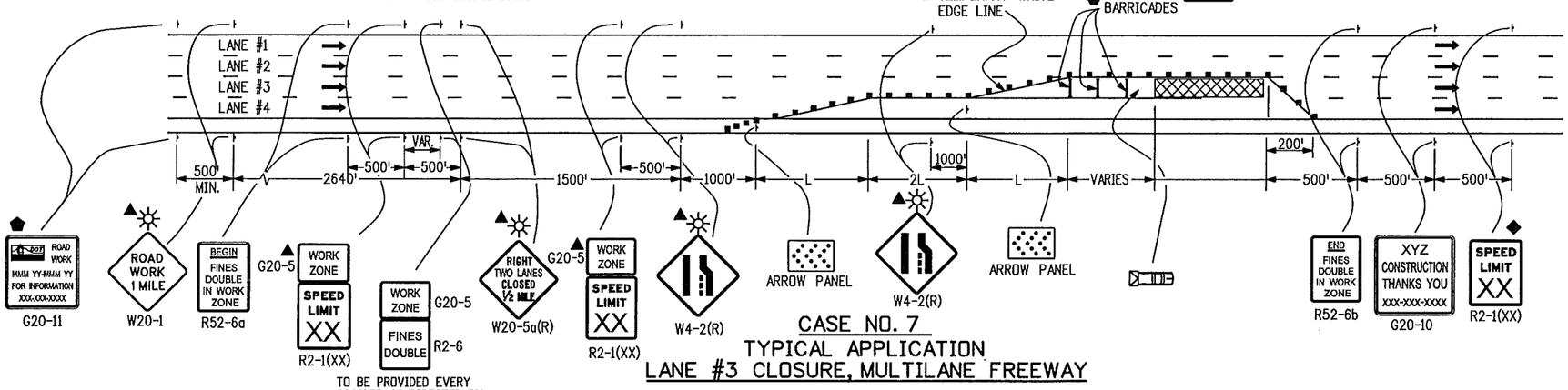
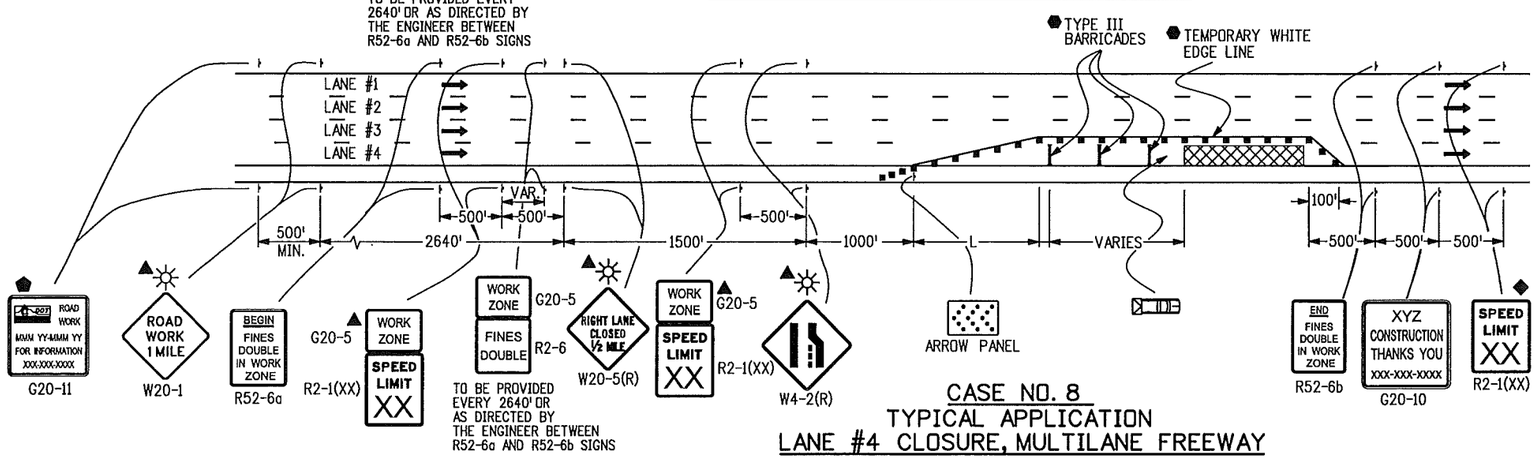


CASE NO. 6
TYPICAL APPLICATION
LANE #2 CLOSURE, MULTILANE FREEWAY



CASE NO. 7
TYPICAL APPLICATION
LANE #3 CLOSURE, MULTILANE FREEWAY



CASE NO. 8
TYPICAL APPLICATION
LANE #4 CLOSURE, MULTILANE FREEWAY

LEGEND

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

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	Date:	Comments
R-1	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 5 OF 19.
R-1	06/24/09	ADDED OPTIONAL FLASHING BEACONS TO ADVANCED WARNING SIGNS.
R-2	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (XX-1000). ADDED ◆ SYMBOL IN SPEED LIMIT SIGN (X-1000) AFTER R52-6b SIGN. ADDED R2-6/G20-5 PLAQUES. ADDED G20-11 SIGN AND ⬟ SYMBOL NOTE.

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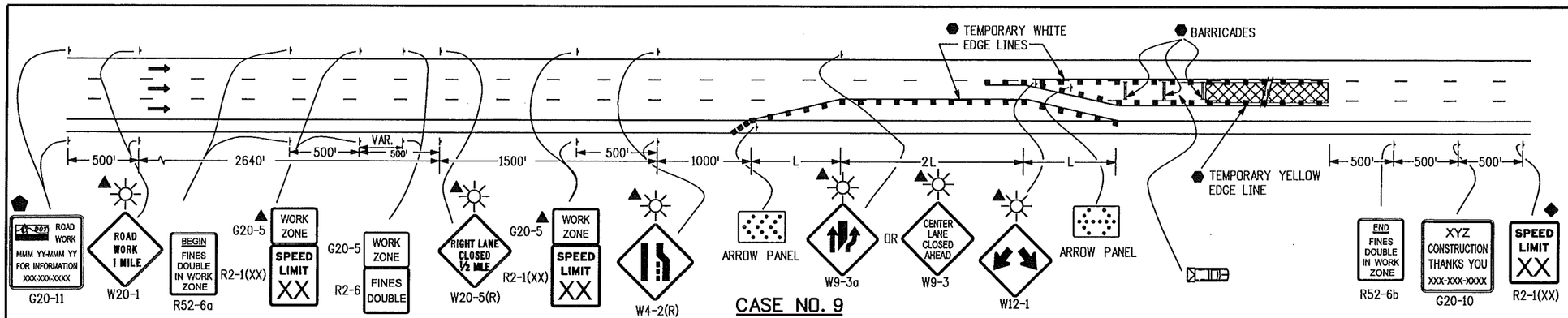
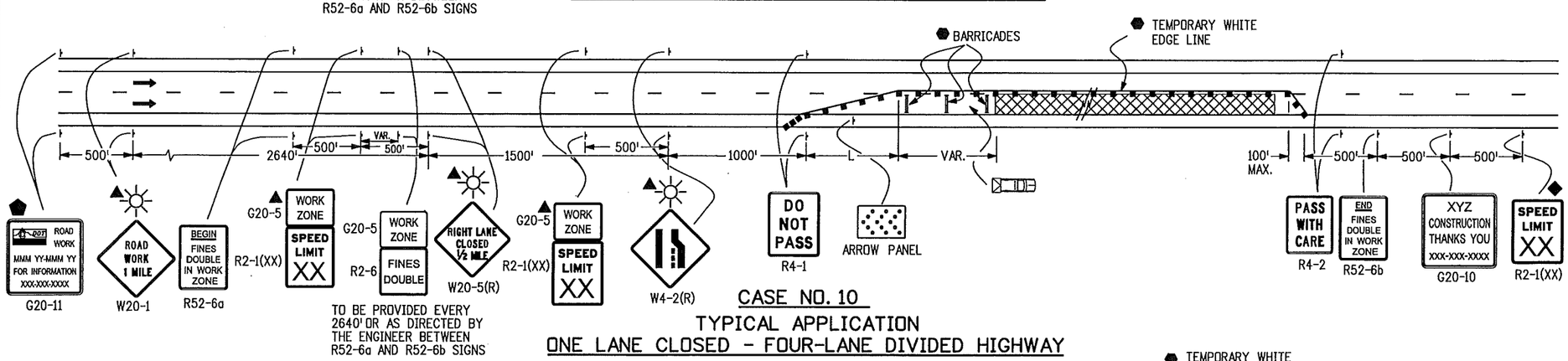
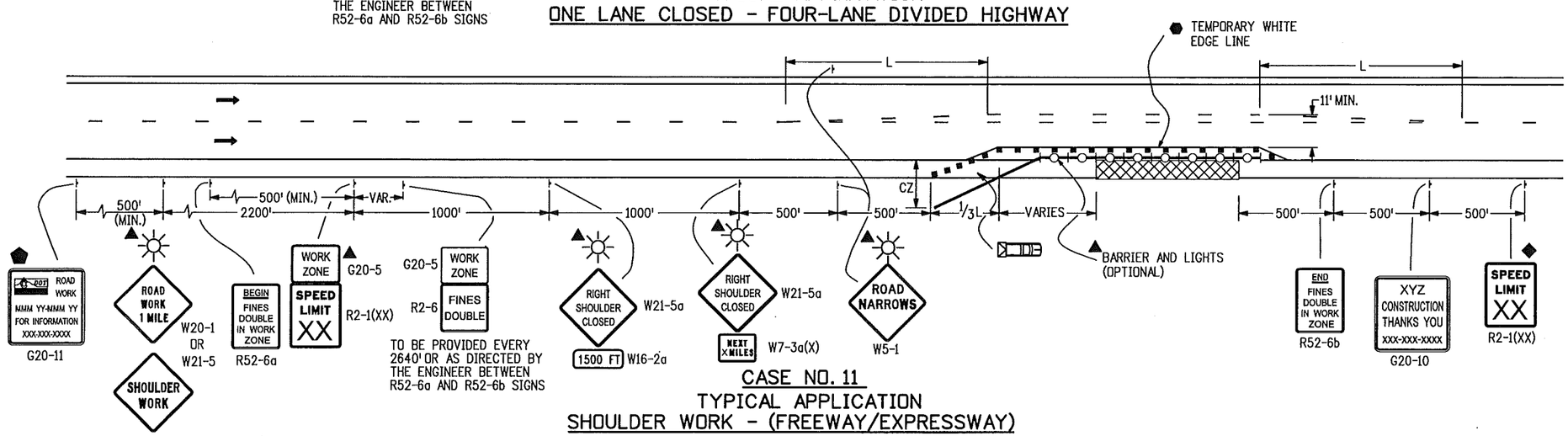


CASE NO. 9
TYPICAL APPLICATION
CENTER LANE CLOSURE - MULTILANE FREEWAY



CASE NO. 10
TYPICAL APPLICATION
ONE LANE CLOSED - FOUR-LANE DIVIDED HIGHWAY



CASE NO. 11
TYPICAL APPLICATION
SHOULDER WORK - (FREEWAY/EXPRESSWAY)

LEGEND

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

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

	Date:	Comments
R-1	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 6 OF 18
R-1	06/24/09	ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
R-1	06/24/09	MINIMUM LANE WIDTH TO 11' AT WORK ZONE.
R-2	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)), R53-4a SIGN PLACED NOT MORE THICK TO R3-1 SIGN, ADDED @ SYMBOL, RE SPEED LIMIT SIGN (R-1(XX)) AFTER R52-6b SIGN, ADDED R3-4 AND G20-6 FLAGGER, ADDED R20-5 SIGN AND @ SYMBOL/NOTE.

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STANDARD PLAN NO.

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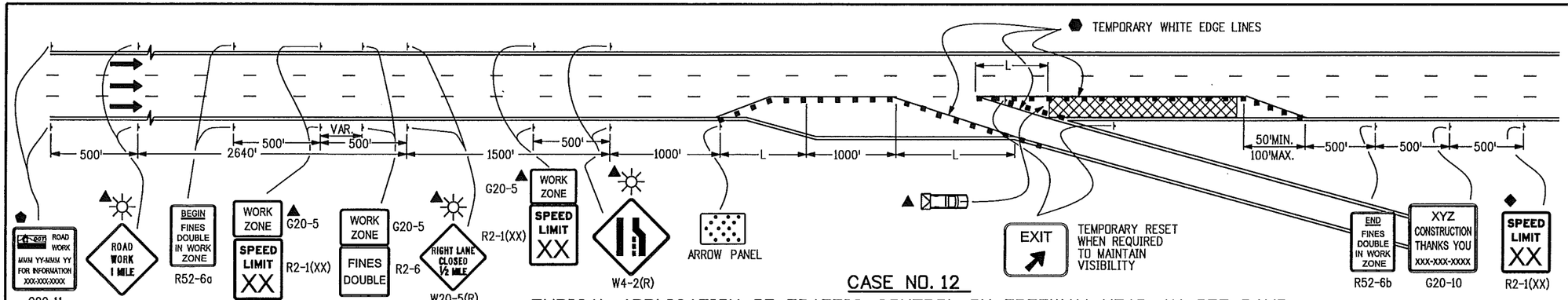
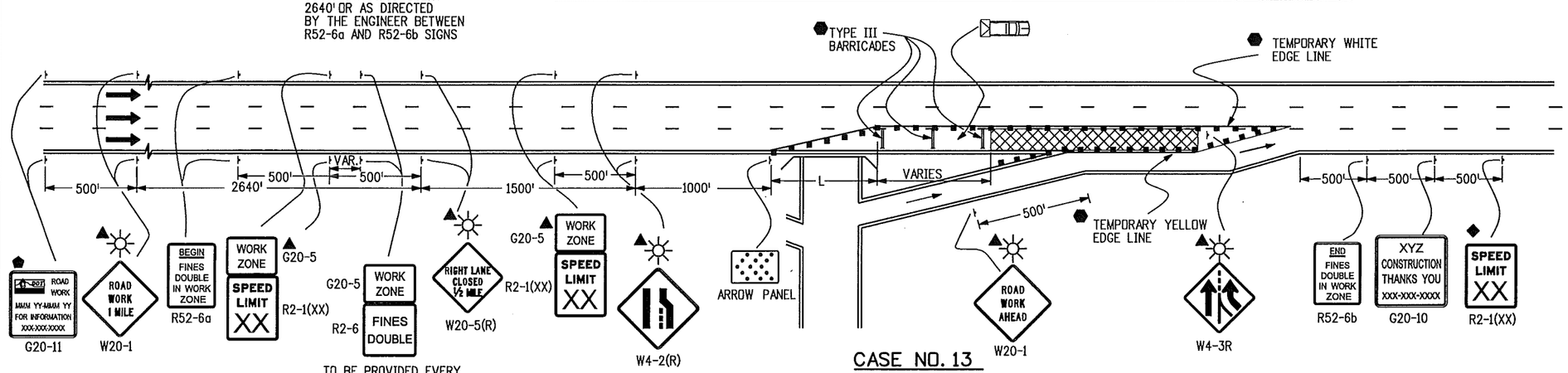


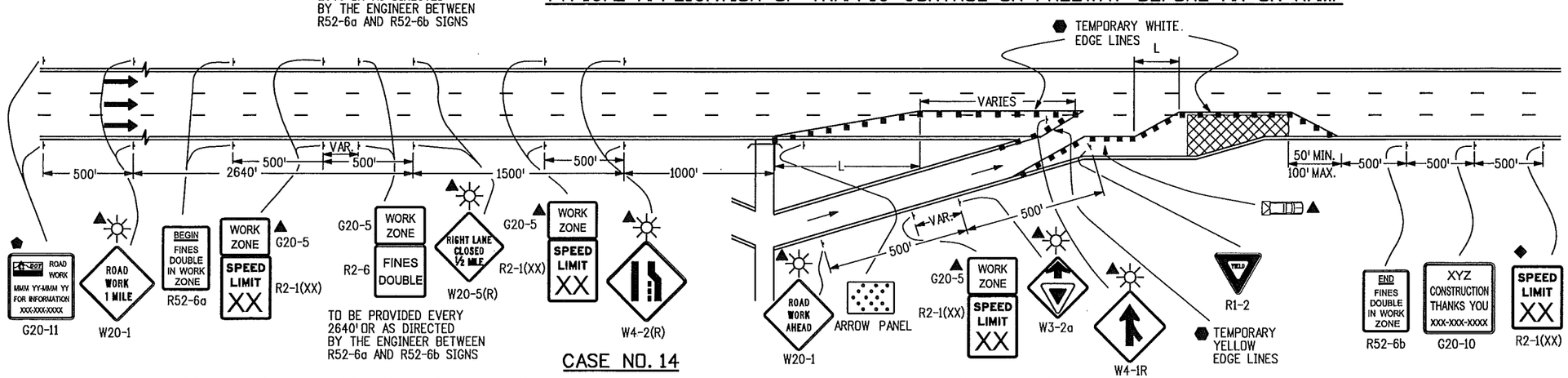
CASE NO. 12

TYPICAL APPLICATION OF TRAFFIC CONTROL ON FREEWAY NEAR AN OFF RAMP



CASE NO. 13

TYPICAL APPLICATION OF TRAFFIC CONTROL ON FREEWAY BEFORE AN ON RAMP



CASE NO. 14

TYPICAL APPLICATION OF TRAFFIC CONTROL ON FREEWAY ALLOWING ACCESS FROM ON RAMP

LEGEND

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

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	Sheet Revisions	
	Date:	Comments
R-1	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 7 OF 19
R-1	06/24/09	ADDED OPTIONAL FLASHING BEACONS TO ADVANCE WARNIGN SIGNS.
R-2	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN R2-1(XX), ADDED ◆ SYMBOL IN SPEED LIMIT SIGN R2-1(XX) AT THE R52-6b, R52-6(XX) & W4-2(R) AND ADDED A PLACEHOLDER W13-1(R) FOR R52-6a AND R52-6b SIGNS. ADDED G20-4 & G20-10(XX) SIGNS COMMO IN CASE IT IS ENGAGED. ADDED G20-5 SIGN AND ◆ SYMBOL(S).

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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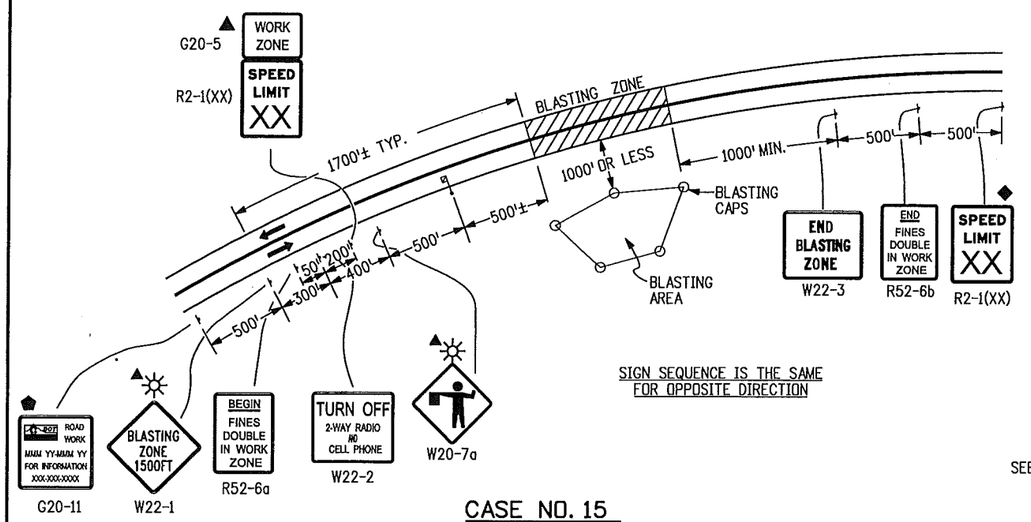
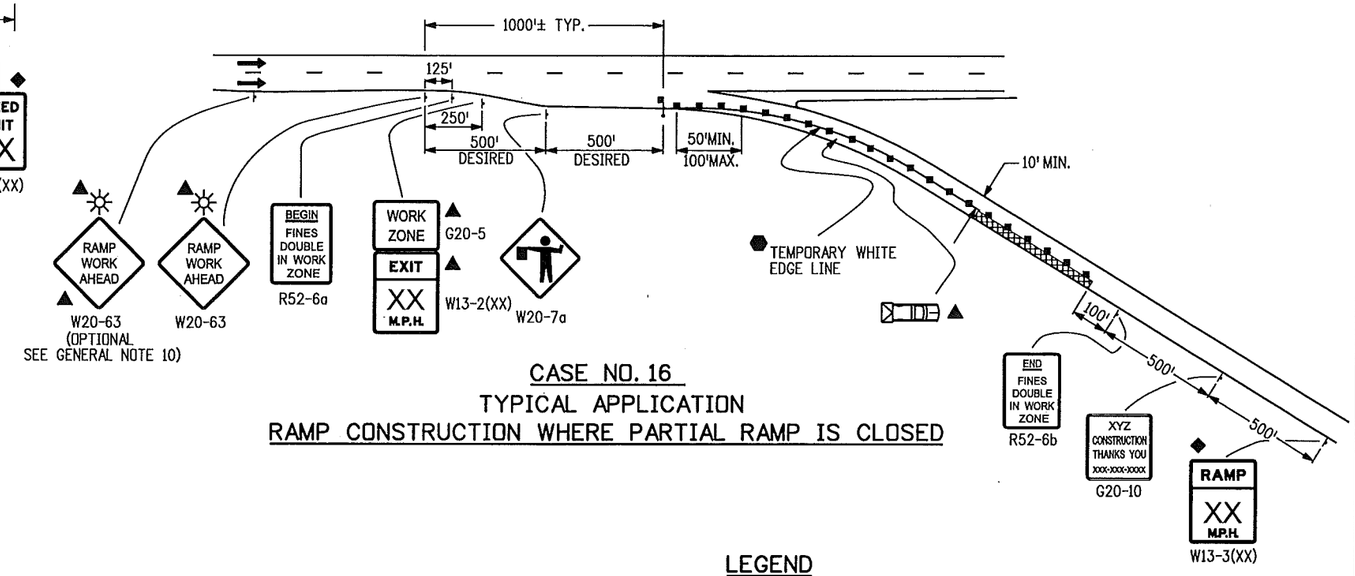
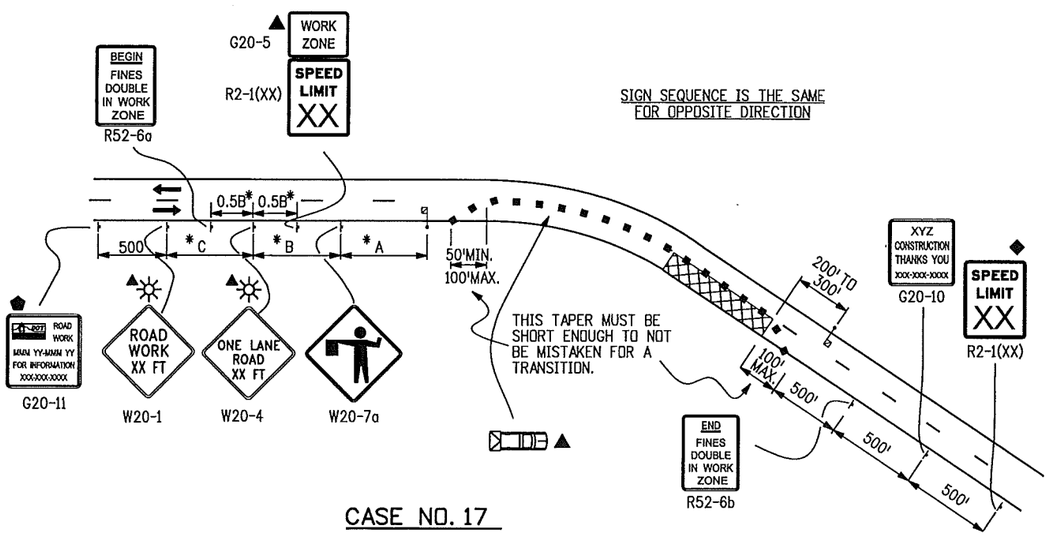


SIGN SEQUENCE IS THE SAME FOR OPPOSITE DIRECTION

CASE NO. 15
TYPICAL APPLICATION
BLASTING ZONE



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



SIGN SEQUENCE IS THE SAME FOR OPPOSITE DIRECTION

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

LEGEND

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

*KEY TO ADVANCE SIGNING DISTANCES

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

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	Date:	Comments
R-1	03/05/07	W20-1 & W20-4 SIGNS REVISED
R-2	06/24/09	ADDED R52-6a, R52-6b, G20-5, W13-2 & W13-3 SIGNS. REVISED SHEET NUMBER TO 8 OF 19
R-2	06/24/09	ADDED OPTIONAL FLASHING BEACON ON ADVANCED WARNING SIGNS.
R-3	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGNS R2-1(XX), R52-6a SIGNS PLACED PRIOR TO R2-1 SIGNS, ADDED ◆ SYMBOL TO SPEED LIMIT SIGNS R2-1(XX) AFTER R52-6a SIGN, ADDED R52-6b SIGN AND ◆ SYMBOL/NOTE.

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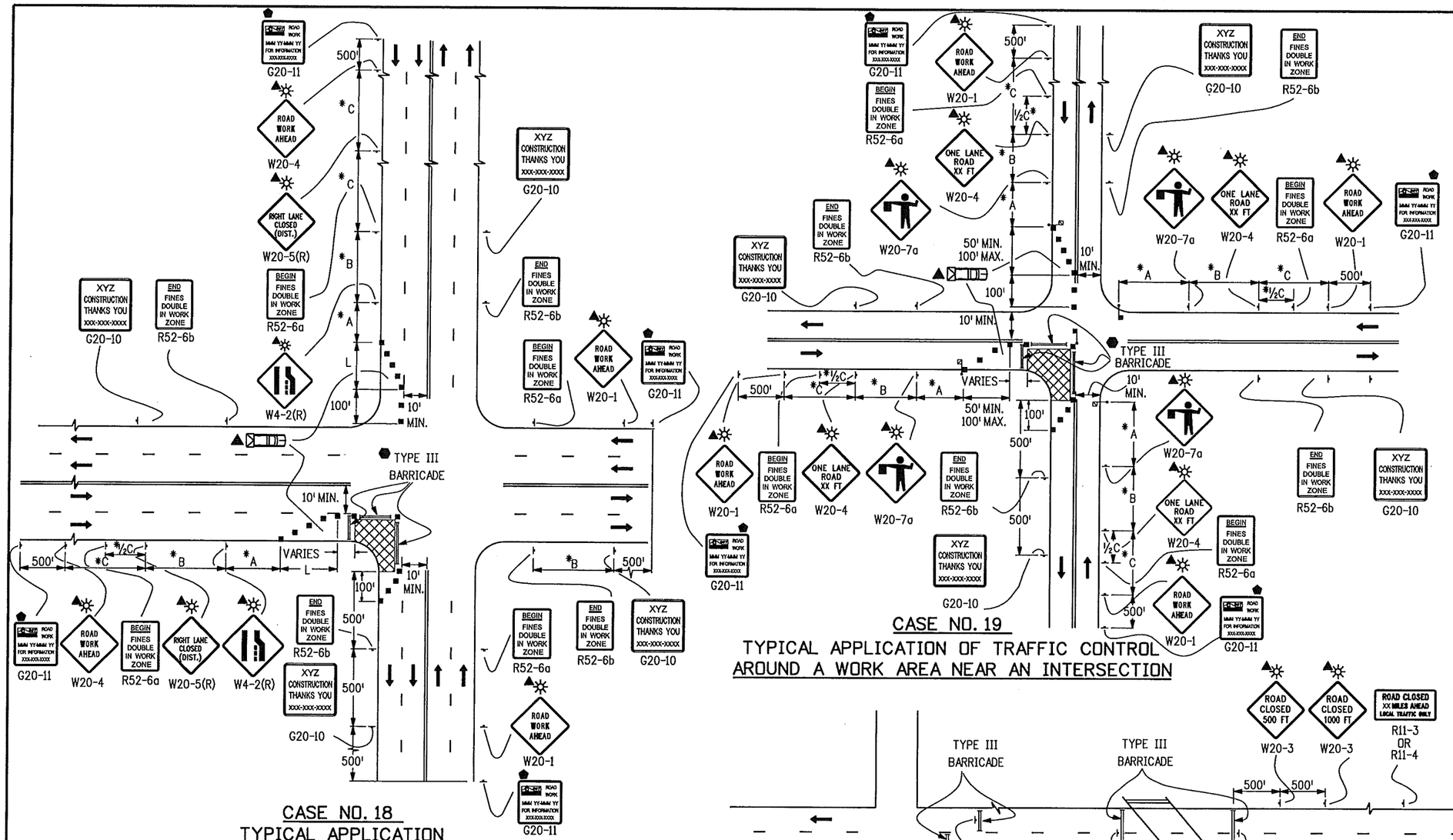
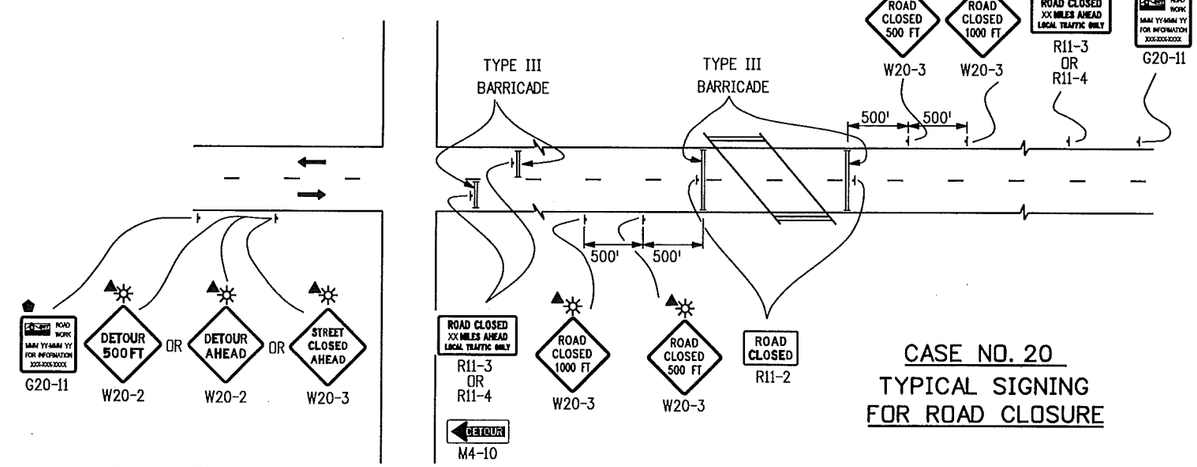


CASE NO. 18
TYPICAL APPLICATION
OF TRAFFIC CONTROL AROUND A WORK AREA
NEAR AN INTERSECTION, ONE LANE CLOSED

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

NOTES:

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



CASE NO. 20
TYPICAL SIGNING
FOR ROAD CLOSURE

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- TRUCK MOUNTED ATTENUATOR (TMA)
- CZ CLEAR ZONE (SEE GENERAL NOTE 16).
- FLASHING BEACON
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

* KEY TO ADVANCE SIGNING DISTANCES

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

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R-1	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS. REVISED SHEET 7 TO 9 OF 19.
R-2	12/07/09	ADDED NOTE 2 IN LEGEND. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS. ADDED G20-11 SIGN AND ⬟ SYMBOL/NOTE.

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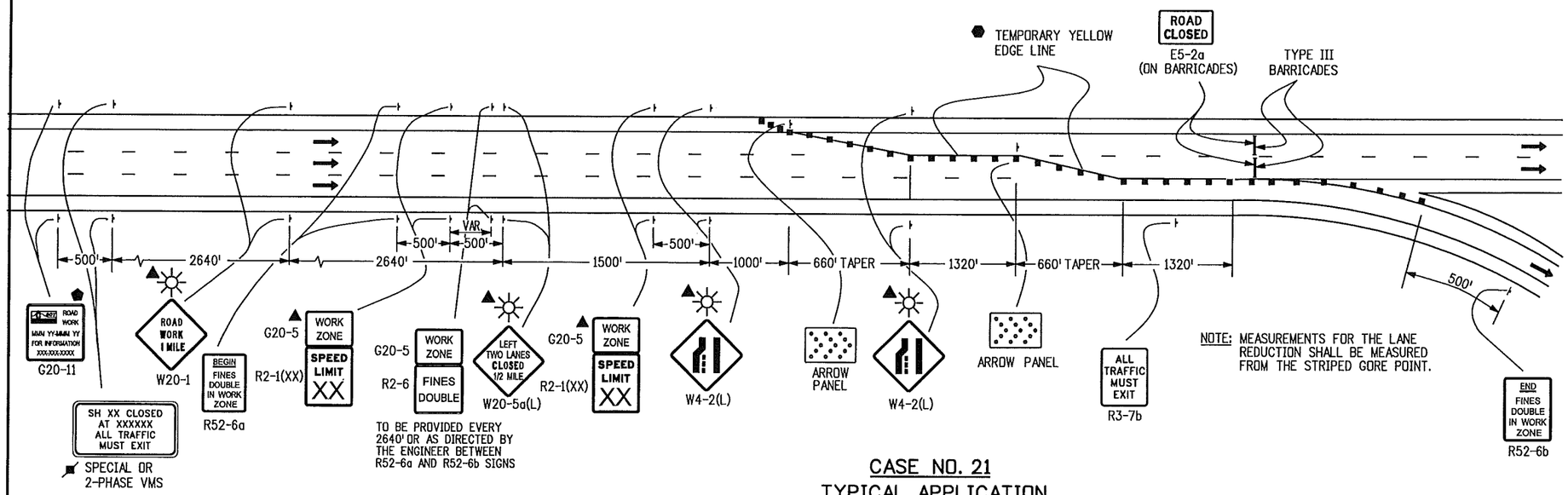
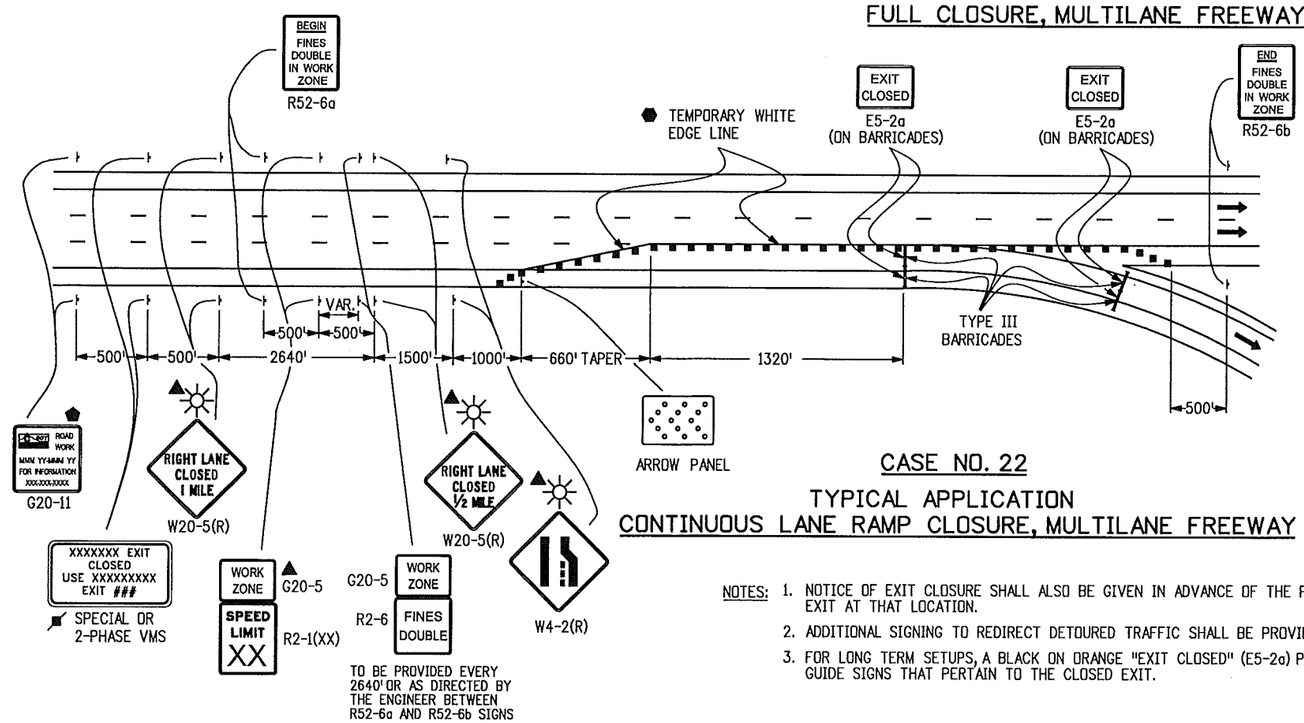
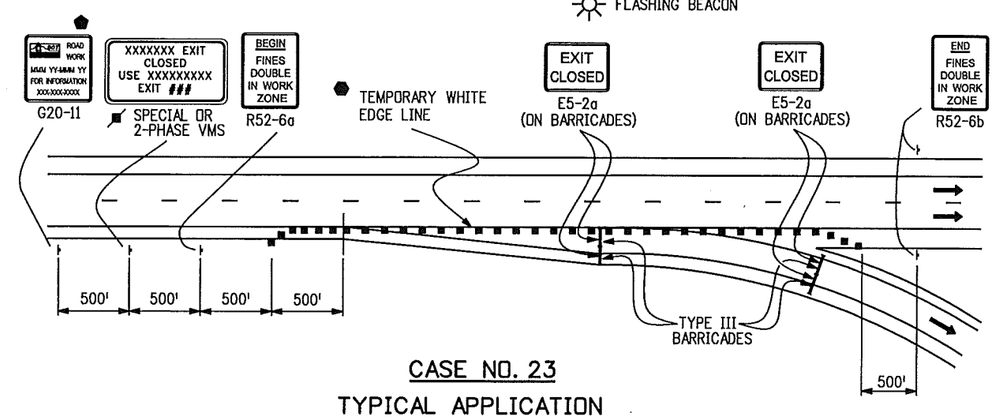


CASE NO. 21
TYPICAL APPLICATION
FULL CLOSURE, MULTILANE FREEWAY



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



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

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

LEGEND

- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED WILL BE DETERMINED BY THE DESIGNER BASED ON DETOUR DESIGN AND/OR SCOPE OF THE CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE PLANS.
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- ← DIRECTION OF TRAVEL
- L TRANSITION TAPER LENGTH:

L = MINIMUM LENGTH OF TAPER

SPEED 45 MPH OR MORE: $L = S \times W$

SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$

S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

W = WIDTH OF OFFSET

SHOULDER TAPER = 1/3 L

- CLOSURE AND EXIT MESSAGES ON SIGN LEGEND(S) SHOULD BE MODIFIED TO FIT THE SITUATION.
- FLASHING BEACON

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R-1	06/24/09	ADD R52-6a, R52-6b & G20-5 SIGNS. REVISED SHEET NUMBER TO 10 OF 19. EXTENDED CHANNELIZATION DEVICES TO GORE PT. IN CASE 21. ADDED OPTIONAL FLASHING BEACON ON ADVANCED WARNING SIGNS.
R-1	06/24/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)). ADDED R2-6 & G20-5 PLAQUES BETWEEN R52-6a and R-52-6b SIGNS. ADDED G20-11 SIGN AND ⬟ SYMBOL NOTE.
R-2	12/07/09	

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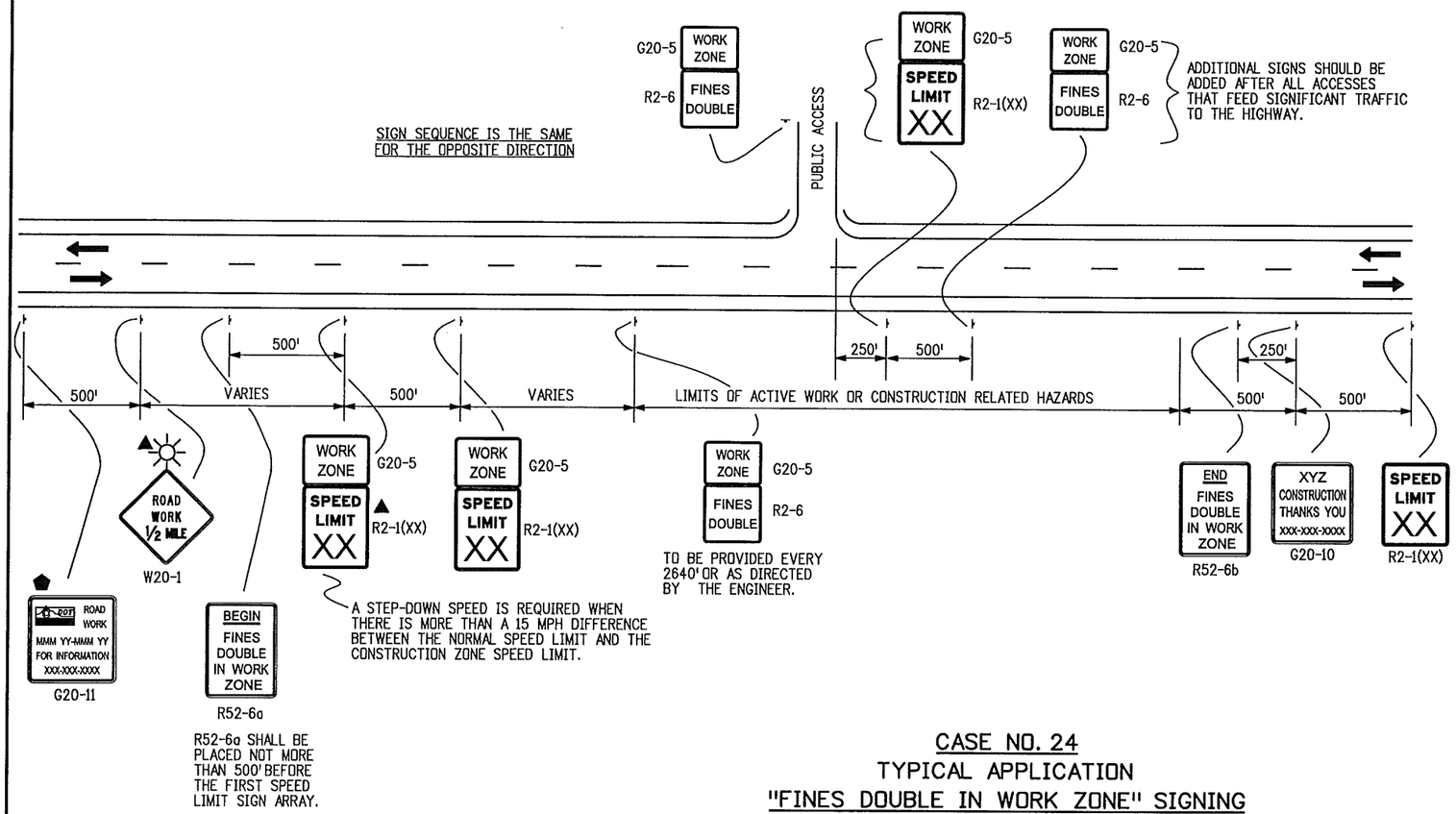

CASE NO. 24
TYPICAL APPLICATION
"FINES DOUBLE IN WORK ZONE" SIGNING
(WITH SPEED REDUCTION)

LEGEND

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

DOUBLE FINES (SPEED REDUCTION) SIGNING NOTES:

1. SIGNS SHALL NOT BE PLACED SOONER THAN FOUR HOURS BEFORE WORK IS TO BEGIN AND SHALL BE REMOVED AS SOON AS WORK ACTIVITIES ARE CONCLUDED, UNLESS POTENTIAL HAZARDS INTRODUCED AS A RESULT OF THE WORK ARE STILL PRESENT AT THE END OF THE WORK DAY. IF SIGNS ARE LEFT IN PLACE AFTER WORK ACTIVITIES, THE TRAFFIC CONTROL SUPERVISOR SHALL MAKE AN ENTRY IN THEIR DAILY DIARY THAT JUSTIFIES THEIR USE.

   "HAZARDS" INCLUDE BUT ARE NOT LIMITED TO:
   - EDGE DROP OFFS
   - EQUIPMENT, WORKERS OR NON-SHIELDED OBJECTS IN THE CLEAR ZONE
   - ROUGH PAVEMENT
   - MAJOR CHANGE IN ALIGNMENT
   - REDUCED SHOULDER WIDTH
   - TEMPORARY GUARD RAIL OR BARRIER
   - LANE CLOSURE
2. SIGNS SHALL ONLY BE PLACED WHERE WORKERS ARE PRESENT IN THE ROADWAY OR CLEAR ZONE OR ARE AT RISK, OR WHERE THERE ARE HAZARDS IN THE TRAVELWAY, SHOULDERS OR CLEAR ZONE.
3. SIGNS SHOULD BE PLACED SO THAT MOTORISTS IMMEDIATELY ASSOCIATE THE SIGNS WITH PRESENT WORK ACTIVITIES. IF THE ZONE OF WORK ACTIVITY MOVES, THE SIGNS SHOULD BE MOVED ACCORDINGLY.
4. SIGNING SHOWN IS REQUIRED TO ENFORCE DOUBLE FINES IN A WORK ZONE. ADDITIONAL SIGNING SHALL BE IN ACCORDANCE WITH THAT NORMALLY REQUIRED FOR THE PARTICULAR WORK ZONE. PLACEMENT OF "FINES DOUBLE" SIGNING MAY BE ADJUSTED AS NEEDED TO PROVIDE A MINIMUM 250' SPACING BETWEEN OTHER SIGNING REQUIRED FOR THE SPECIFIC WORK ZONE SETUP.

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R-1	06/24/09	DELETE CASE NO. 25 TYPICAL APPLICATION CHANGE SIZE OF G20-5 "WORK ZONE" PLAQUES
R-1	06/24/09	REVISED SHEET NUMBER TO 11 OF 19. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGN.
R-2	12/07/09	CHANGED NOTES HEADING TO "DOUBLE FINES (SPEED REDUCTION) SIGNING NOTES. ADDED G20-11 SIGN AND ⬟ SYMBOL/NOTE.

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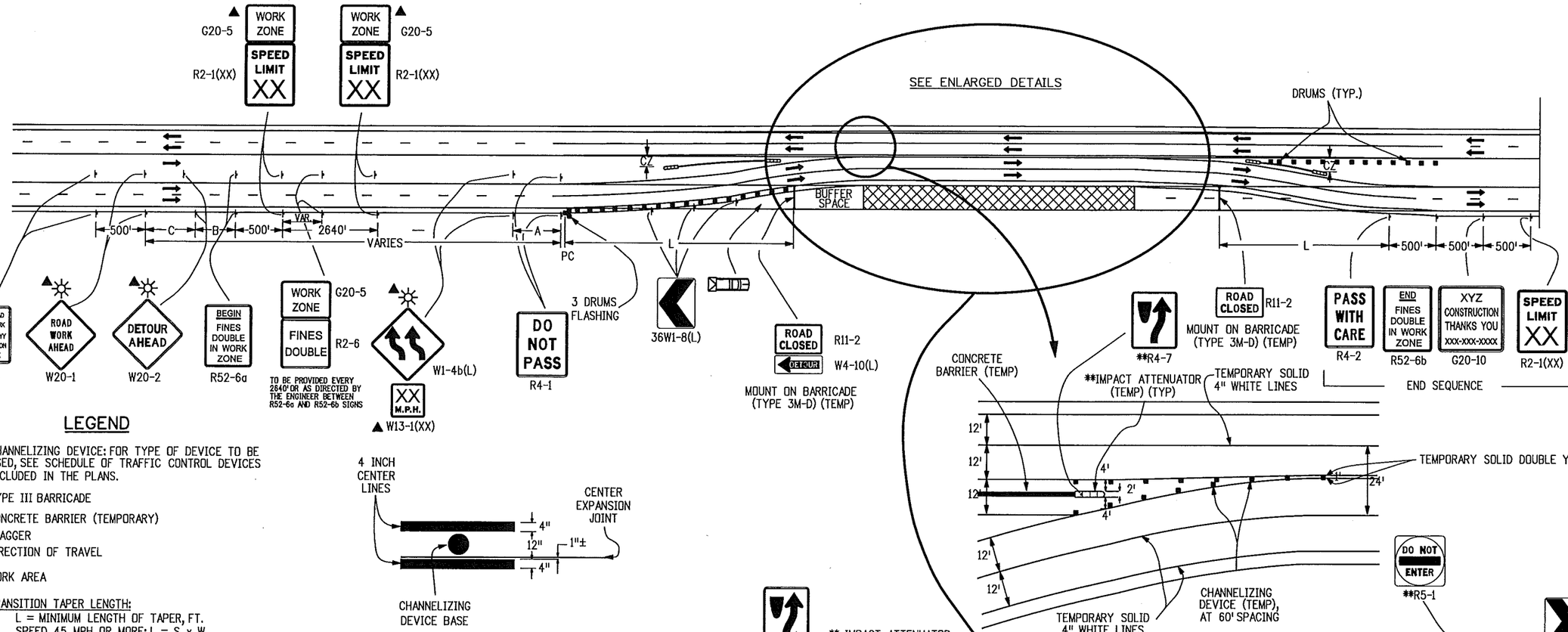

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER, FT.
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET, FT.
- A = 100' (URBAN, 35 MPH AND LESS)
  350' (URBAN, 40 MPH AND GREATER)
  500' (RURAL)
  1,000' (EXPRESSWAY / FREEWAY)
- B = 100' (URBAN, 35 MPH AND LESS)
  350' (URBAN, 40 MPH AND GREATER)
  500' (RURAL)
  1,500' (EXPRESSWAY / FREEWAY)
- C = 100' (URBAN, 35 MPH AND LESS)
  350' (URBAN, 40 MPH AND GREATER)
  500' (RURAL)
  2,640' (EXPRESSWAY / FREEWAY)
- CZ CLEAR ZONE (SEE GENERAL NOTE 16).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
- IMPACT ATTENUATOR AS DETAILED ON THE PLANS
- FLASHING BEACON
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- * CONTINUOUS CONCRETE BARRIER MAY BE SUBSTITUTED FOR CHANNELIZING DEVICES (TEMP)
- ** THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION.
- TRUCK MOUNTED ATTENUATOR (TMA)

TYPICAL 2-WAY ZONE STRIPING

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

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Date:	Comments
12/07/09	ADDED ◆ SYMBOL IN SPEED LIMIT SIGN (R-1000) AFTER R52-6b SIGN; ADDED R2-6 & G20-6 PLAQUES BETWEEN R52-6a & R52-6b SIGNS; ADDED G20-11 SIGN AND ⬟ SYMBOL/NOTE; DELETED OPTIONAL ▲ SYMBOL ON R2-1(XX) SIGNS INSIDE WORK ZONE.

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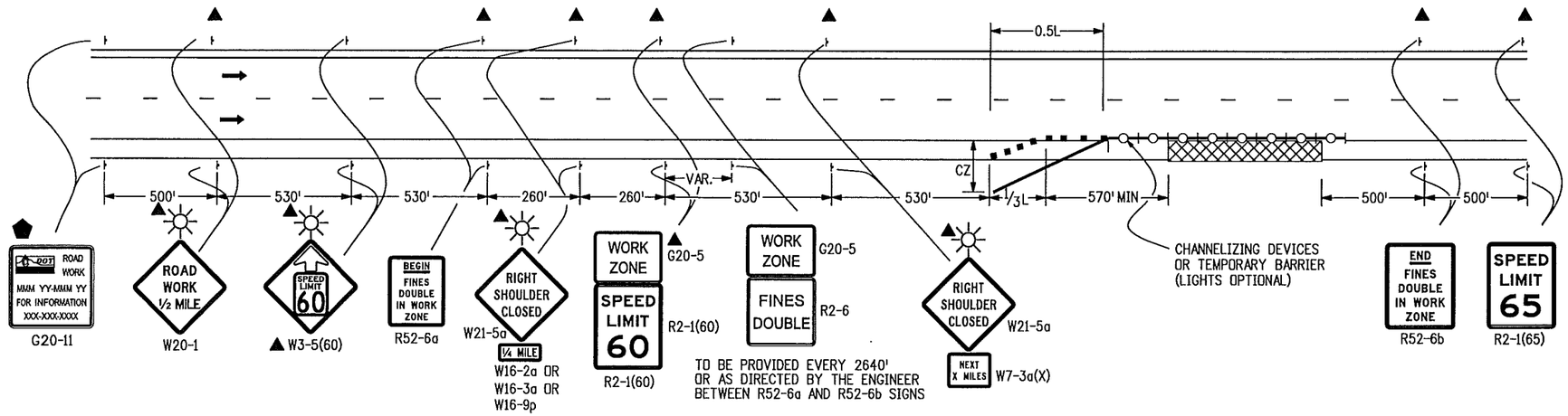
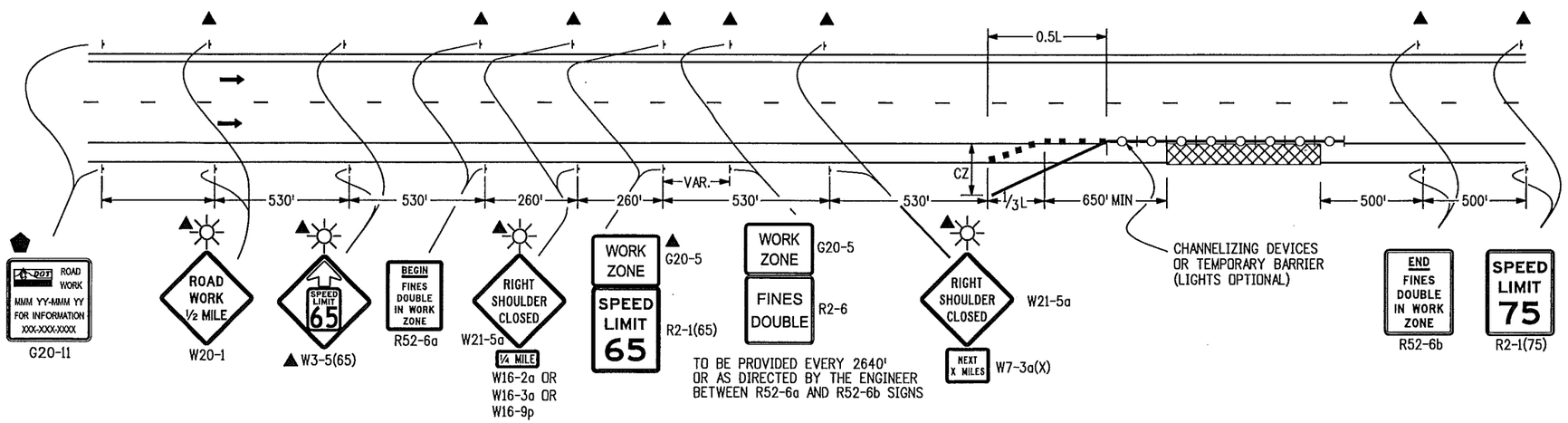


CASE NO. 26
TYPICAL APPLICATION
SHOULDER WORK - (FREEWAY/EXPRESSWAY w/ 65 MPH SPEED LIMIT)

WHEN HAZARDS (WORKERS, EQUIPMENT, OR TEMPORARY BARRIER) ARE WITHIN 8 FT OF TRAVEL WAY



CASE NO. 27
TYPICAL APPLICATION
SHOULDER WORK - (FREEWAY/EXPRESSWAY w/ 75 MPH SPEED LIMIT)

WHEN HAZARDS (WORKERS, EQUIPMENT, OR TEMPORARY BARRIER) ARE WITHIN 10 FT OF TRAVEL WAY

LEGEND

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

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Last Modification Date: 12/07/09 Initials: KEN	R-1	12/07/09	ADDED G20-6 PLAQUES TO R2-1(65) SIGNS. ADDED R2-6 & G20-5 PLAQUES BETWEEN R52-6a AND R52-6b SIGNS. ADDED G20-11 SIGNS AND ⬢ SYMBOL/NOTE.
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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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

STANDARD PLAN NO.

S-630-1

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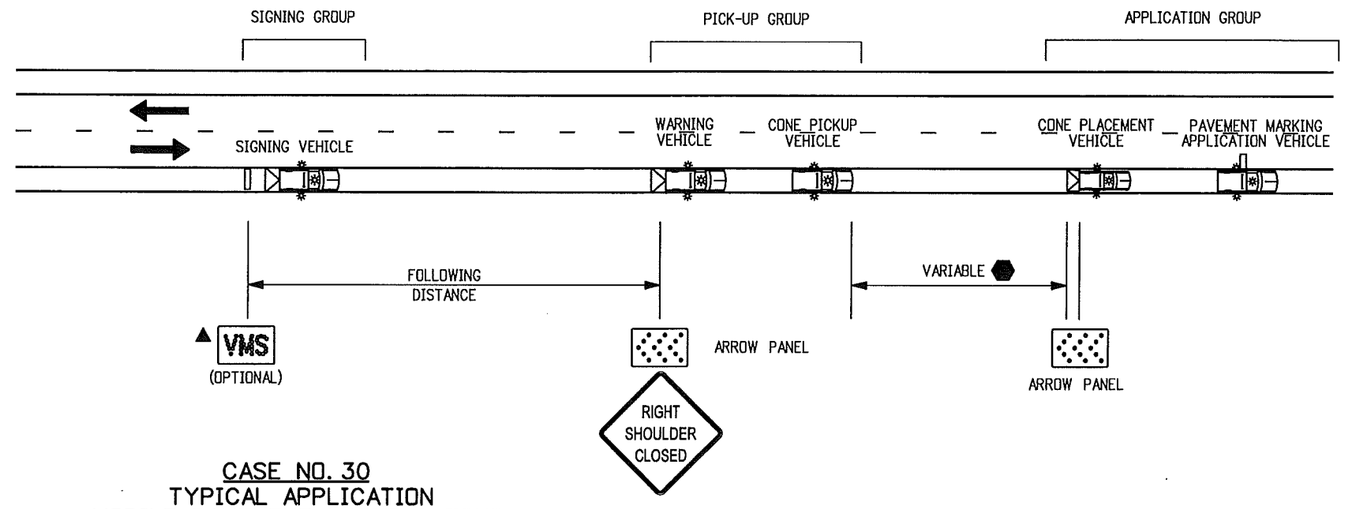
LEGEND

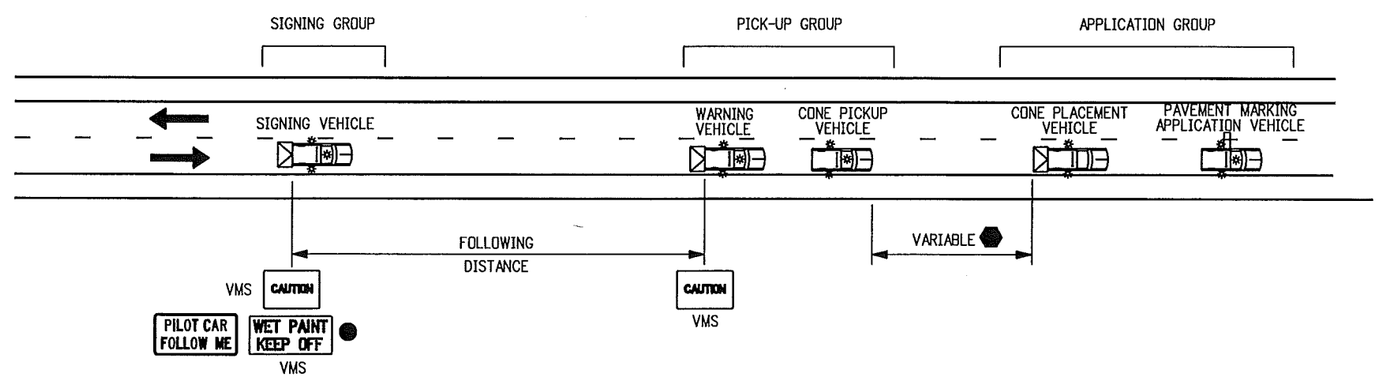
- VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- VMS — VARIABLE MESSAGE SIGN (VMS).
- ▲ WHEN VMS IS USED, THE "SHOULDER CLOSED" SIGN BECOMES OPTIONAL.
- ■ THE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

FOLLOWING DISTANCE CHART FOR WARNING AND SIGNING VEHICLES

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



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



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

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

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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STANDARD PLAN NO.
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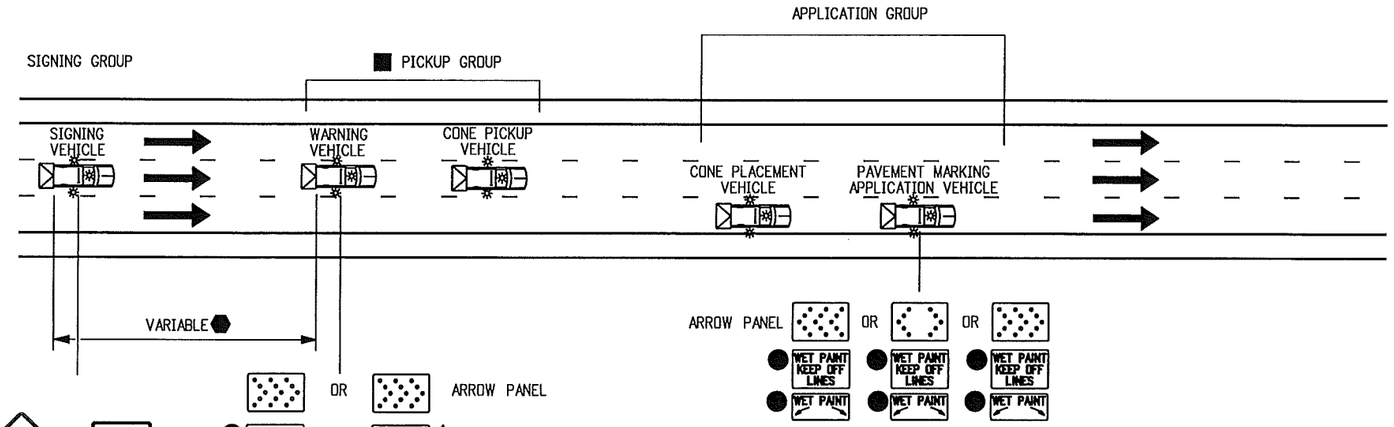
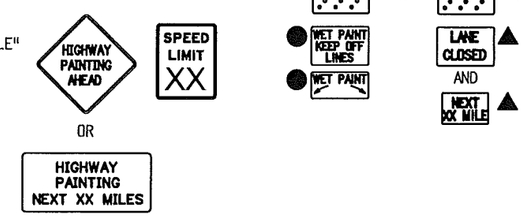
LEGEND

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

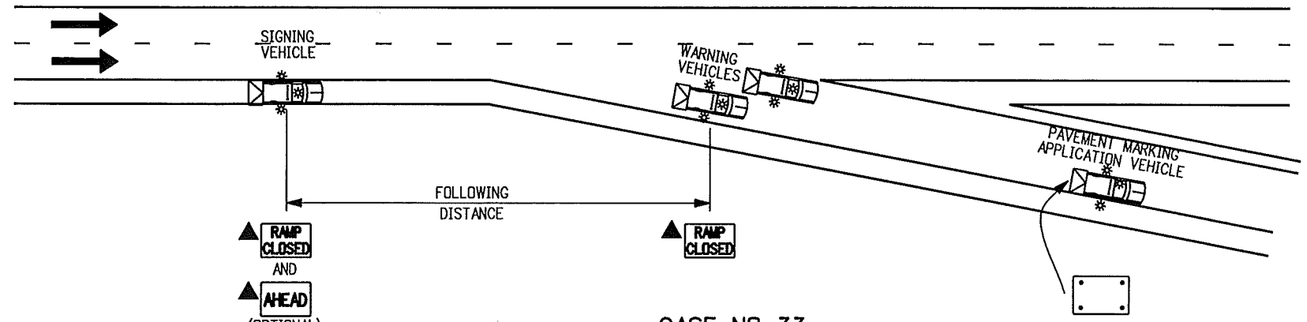


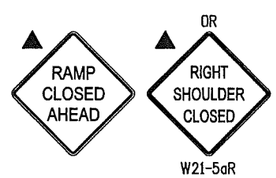


CASE NO. 32
TYPICAL APPLICATION
MOBILE PAVEMENT MARKING ZONE
LANE LINE STRIPING - CENTER LANE OPERATIONS
MULTI-LANE DIVIDED ROAD

FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

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





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

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

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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STANDARD PLAN NO.
S-630-1
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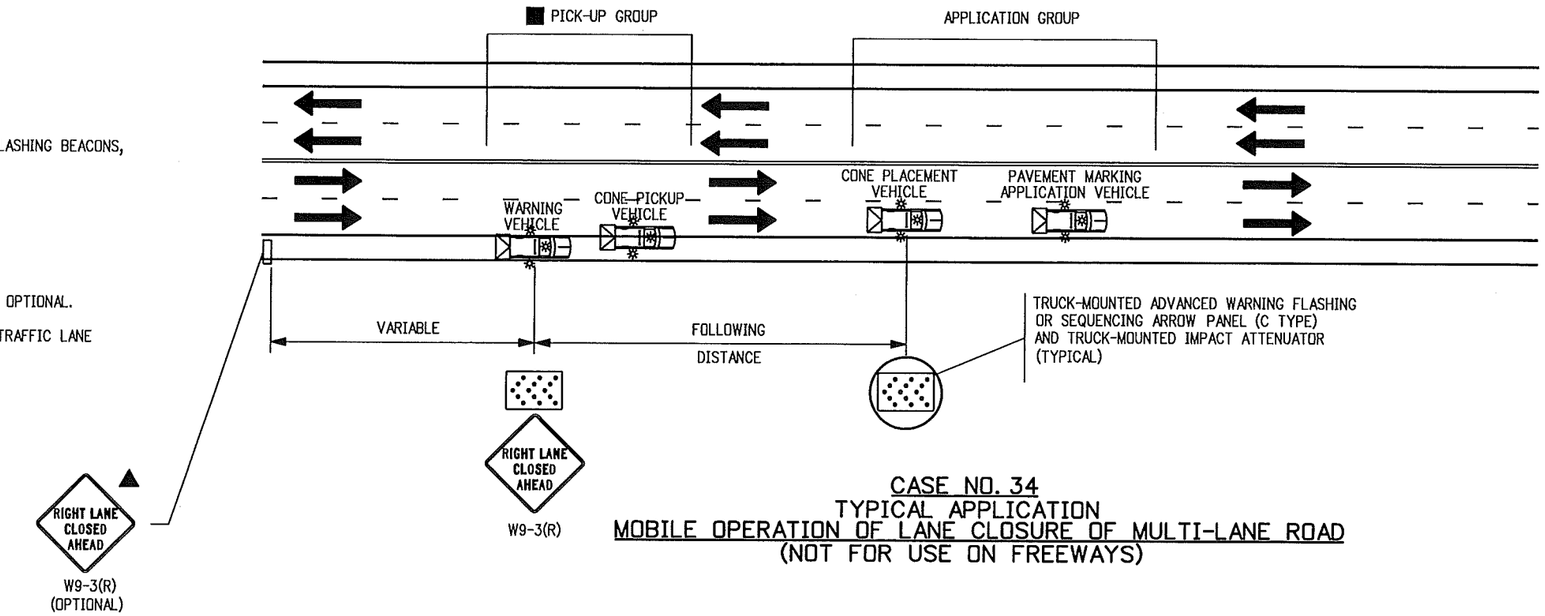
LEGEND

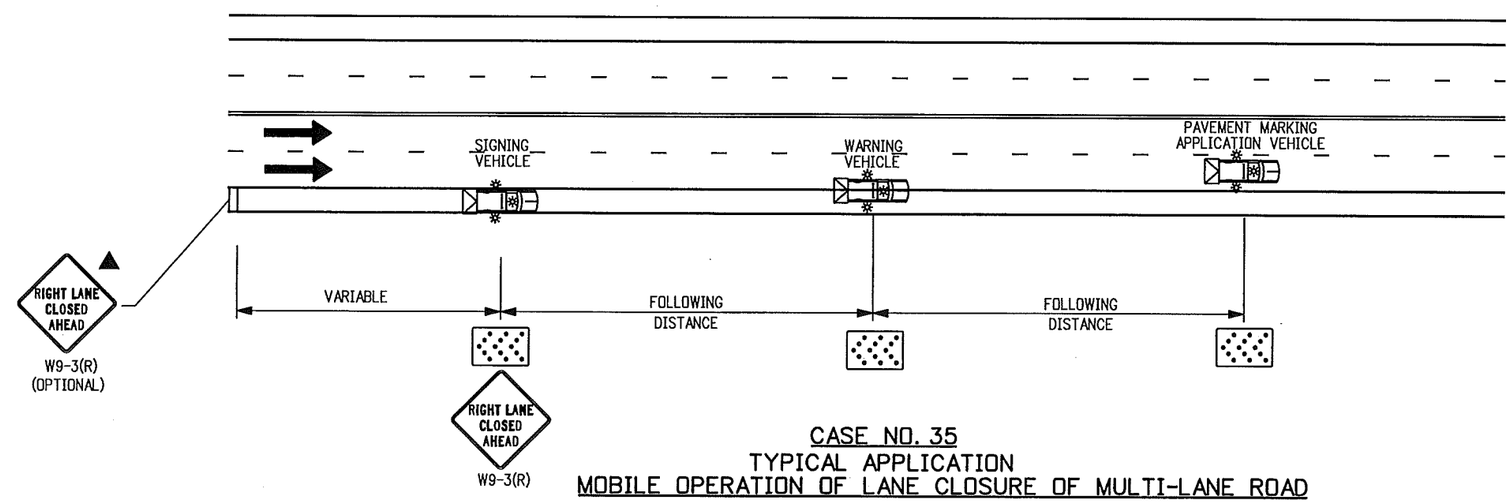
- VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- LANE CLOSED — PORTABLE VARIABLE MESSAGE SIGN (VMS).
- ▲ WHEN THE VMS IS USED, THE "RIGHT LANE CLSED AHEAD" (W9-3X)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



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

FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

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



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

NOTES:

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

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

G20-1 "ROAD/WORK/NEXT XX MILES" - THIS SIGN SHALL BE ERECTED AT THE LIMITS OF ANY ROAD CONSTRUCTION OR MAINTENANCE PROJECT OF MORE THAN TWO (2) MILES IN LENGTH WHERE TRAFFIC IS MAINTAINED THROUGH THE PROJECT.

G20-4 "PILOT CAR/FOLLOW ME" - THIS SIGN SHALL BE MOUNTED IN A CONSPICUOUS POSITION ON THE REAR OF A VEHICLE USED FOR GUIDING ONE-WAY TRAFFIC THROUGH OR AROUND THE PROJECT.

G20-5 "WORK ZONE" - THIS SIGN SHALL BE MOUNTED JUST ABOVE THE WORK ZONE SPEED LIMIT SIGNS PRIOR TO THE WORK ZONE AREA.

G20-10 THANK YOU SIGN - THIS SIGN SHOULD BE ERECTED APPROXIMATELY 500 FEET BEYOND THE END OF THE PROJECT.

G20-11 CONSTRUCTION PROJECT INFORMATION SIGN - THIS SIGN SHOULD BE ERECTED AS DESCRIBED IN THE SECTION 626 STANDARD SPECIFICATION.

G20-55(X) "X MINUTE CLOSURE. EXPECT DELAYS" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE "WORK ZONE"/SPEED LIMIT SIGN.

M4-9( ) "DETOUR/<<<<" - THIS SIGN IS USED FOR UNNUMBERED ROUTES; FOR USE IN EMERGENCY SITUATIONS; FOR PERIODS OF SHORT DURATION; OR WHERE, OVER RELATIVELY SHORT DISTANCES, IT IS NOT NECESSARY TO SHOW ROUTE MARKERS TO GUIDE TRAFFIC ALONG THE DETOUR AND BACK TO ITS AUTHORIZED ROUTE.

M4-10( ) "DETOUR ARROW" - THIS SIGN SHOULD BE MOUNTED JUST BELOW THE ROAD CLOSED SIGN AT THE POINT WHERE THE DETOUR ROADWAY OR ROUTE HAS BEEN ESTABLISHED DUE TO THE CLOSURE OF THE STREET OR HIGHWAY TO THROUGH TRAFFIC.

R2-1( ) "SPEED/LIMIT/XX" - THESE SIGNS ARE INTENDED TO REDUCE TRAFFIC SPEED IN ADVANCE OF THE DAILY WORK AREA WITHIN THE OVERALL PROJECT LIMITS.

R2-1(XX) "SPEED/LIMIT/XX" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE "THANK YOU" SIGN TO BRING TRAFFIC BACK TO ORIGINAL POSTED SPEED.

R4-1 "DO NOT PASS" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.

R4-2 "PASS WITH CARE" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.

R11-2 "ROAD/CLOSED" - THIS SIGN IS TO BE MOUNTED ON THE BARRICADE THAT IS PLACED BEFORE THE WORK ZONE ENTRANCE TO PROHIBIT TRAFFIC FROM ENTERING THE WORK ZONE.

R11-3 "ROAD CLOSED/X MILES AHEAD/L.T.O. - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND, BUT WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.

R11-4 "ROAD CLOSED/TO/THRU TRAFFIC" FOR URBAN USE - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND, BUT WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.

R52-6a "BEGIN FINES DOUBLE IN WORK ZONE" SIGN IS PLACED AT THE BEGINNING OF THE ADVANCED WARNING AREA OF THE TRAFFIC CONTROL ZONE.

R52-6b "END FINES DOUBLE IN WORK ZONE" SIGN IS PLACED AFTER WORK ZONE AREA, PAST DOWNSTREAM TAPER SECTION.

W1-1( ) "TURN ARROW" - THIS SIGN IS INTENDED FOR USE WHERE ENGINEERING INVESTIGATIONS OF ROADWAY CONDITIONS SHOW THE RECOMMENDED SPEED ON THE TURN TO BE 30 MPH OR LESS. *

W1-2( ) "CURVE ARROW" - THIS SIGN IS INTENDED FOR USE WHERE ENGINEERING INVESTIGATIONS OF ROADWAY CONDITIONS SHOW THE RECOMMENDED SPEED ON THE CURVE TO BE IN THE RANGE BETWEEN 30 AND 60 MILES PER HOUR. *

W1-3( ) "REVERSE TURN ARROW" - THIS SIGN IS INTENDED FOR USE WHERE TWO TURNS OR THE CURVE AND A TURN IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 600 FEET. *

W1-4( ) "REVERSE CURVE ARROW" - THIS SIGN IS INTENDED FOR USE WHERE TWO CURVES IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 600 FEET. *

W1-6( ) "ARROW" - THIS SIGN SHOULD BE MOUNTED JUST BELOW THE ROAD CLOSED SIGN AT THE POINT WHERE THE DIVERSION HAS BEEN ESTABLISHED DUE TO THE LANE CLOSURE.

W3-2 "YIELD AHEAD" - THIS SIGN IS INTENDED FOR USE AT THE APPROACH TO THE YIELD SIGN THAT IS NOT VISIBLE FOR A SUFFICIENT DISTANCE TO PERMIT THE DRIVER TO BRING HIS VEHICLE TO A STOP AT THE YIELD SIGN. *

W3-4 "BE PREPARED TO STOP" - THIS SIGN TO BE PLACED 1.5 MILES IN ADVANCED OF A FLAGGER.

W4-2(X) "LEFT (RIGHT) LANE TRANSITION SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE REDUCTION IN THE NUMBER OF TRAFFIC LANES IN THE DIRECTION OF TRAVEL ON THE MULTILANE HIGHWAY. *

W4-50 "USE BOTH LANES DURING CONGESTION" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE "ROAD WORK X MILE" ADVANCED WARNING SIGN.

W4-51 "USE BOTH LANES TO MERGE POINT" - THIS SIGN IS INTENDED TO DIRECT MOTORISTS TO USE BOTH TRAVEL LANES UNTIL THE LANES ARE REDUCED TO ONE LANE.

W4-52 "TAKE TURNS MERGE HERE" - THIS SIGN IS INTENDED TO WARN MOTORISTS IN ADVANCED TO MOVE FROM THE CLOSED TRAVEL LANE TO THE OPEN TRAVEL LANE, USUALLY 500 FEET IN ADVANCED OF THE START OF THE TRANSITION TAPER .

W5-1 "ROAD NARROWS" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE TRANSITION ON THE ROAD WHERE THE PAVEMENT WIDTH IS REDUCED ABRUPTLY TO A WIDTH SUCH THAT TWO CARS CANNOT PASS WITHOUT REDUCING SPEED. *

W5-2a "NARROW BRIDGE SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A BRIDGE OR CULVERT HAVING A CLEAR TWO-WAY ROADWAY WIDTH OF 16 TO 18 FEET OR ANY BRIDGE OR CULVERT HAVING A ROADWAY CLEARANCE LESS THAN THE WIDTH OF THE APPROACH PAVEMENT. *

TYPICAL CONSTRUCTION ZONE SIGNS

W5-3 "ONE LANE/BRIDGE" - THIS SIGN SHOULD BE PLACED ON TWO-WAY ROADWAYS IN ADVANCE OF THE BRIDGES OR CULVERTS WHERE THE ROADWAY WIDTH IS LESS THAN 16 FEET (18 FEET FOR COMMERCIAL VEHICLES) OR WHEN THE ALIGNMENT IS POOR ON THE APPROACH TO THE STRUCTURE HAVING A CLEAR ROADWAY WIDTH OF 18 FEET OR LESS. *

W6-1 "DIVIDED HIGHWAY SYMBOL" - THIS SIGN SHOULD BE PLACED ON THE APPROACHES TO THE SECTION OF HIGHWAY WHERE OPPOSING FLOWS OF TRAFFIC ARE SEPARATED BY A PHYSICAL MEDIAN.

W6-2 "DIVIDED HIGHWAY ENDS SYMBOL" - THIS SIGN SHOULD BE PLACED AT THE END OF THE SECTION OF PHYSICALLY DIVIDED HIGHWAY AS A WARNING OF TWO-WAY TRAFFIC AHEAD.

W6-3 "TWO-WAY TRAFFIC SYMBOL" - THIS SIGN IS INTENDED FOR USE TO GIVE WARNING OF TRANSITION FROM A SEPARATED ONE-WAY ROADWAY TO A TWO-WAY ROADWAY. *

W7-1 "HILL SYMBOL" - THIS SIGN SHOULD BE PLACED AT A POINT IN ADVANCE OF THE DOWNGRADE WHERE THE LENGTH, PERCENT OF GRADE, HORIZONTAL CURVATURE, OR OTHER PHYSICAL FEATURES REQUIRE SPECIAL CONSIDERATION ON THE PART OF DRIVERS. *

W8-1, W8-2 "BUMP"/"DIP" - THESE SIGNS ARE INTENDED FOR USE TO GIVE WARNING OF A SHARP RISE OR DEPRESSION IN THE PROFILE OF THE ROAD THAT IS SUFFICIENTLY ABRUPT TO AFFECT VEHICLE OPERATION OR CAUSE CONSIDERABLE DISCOMFORT TO PASSENGERS. *

W8-3a "PAVEMENT ENDS SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE THE PAVEMENT SURFACE CHANGES FROM A HARD-SURFACED PAVEMENT TO THE LOW-TYPE SURFACE OR EARTH ROAD. *

W8-4 "SOFT SHOULDER" - THIS SIGN IS INTENDED FOR USE TO WARN OF A SOFT SHOULDER CONDITION THAT COULD PRESENT A PROBLEM TO VEHICLES THAT MAY GET OFF THE PAVEMENT. *

W8-5 "SLIPPERY WHEN WET SYMBOL" - THIS SIGN SHOULD BE PLACED IN ADVANCE OF THE CONDITION WHERE THE HIGHWAY SURFACE IS SLIPPERY BEYOND WHAT IS ORDINARY WHEN WET. *

W8-9a "SHOULDER DROP-OFF" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A SHOULDER DROP-OFF THAT EXCEEDS THREE INCHES IN HEIGHT. *

W8-11 "UNEVEN LANES" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN UNEVEN ADJACENT LANE SITUATION THAT EXCEEDS ONE INCH IN HEIGHT. *

W9-1( ) "LEFT (RIGHT) LANE ENDS" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE PAVEMENT WIDTH TRANSITION SIGN (W4-2).

W9-2( ) "LANE ENDS/MERGE LEFT (RIGHT)" - THIS SIGN IS INTENDED FOR USE AS A SUPPLEMENT TO THE PAVEMENT WIDTH TRANSITION SIGN (W4-2).

W9-3 OR W9-3a( ) "CENTER LANE CLOSED AHEAD" - THIS SIGN SHOULD BE USED IN ADVANCE OF THE POINT WHERE WORK OCCUPIES THE CENTER LANE AND TRAFFIC IS DIRECTED TO THE RIGHT OR LEFT OF THE WORK ZONE. *

W12-1 "DOUBLE ARROW SYMBOL" - THIS SIGN SHOULD BE PLACED AT THE POINT OF THE OBSTRUCTION IN THE ROADWAY, WHERE TRAFFIC IS PERMITTED TO PASS ON EITHER SIDE OF THE OBSTRUCTION.

W12-2 "LOW CLEARANCE SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN OBSTRUCTION TO WARN VEHICLE OPERATORS OF CLEARANCES LESS THAN THE MAXIMUM VEHICLE HEIGHT PERMITTED PLUS 12 INCHES. *

W13-1( ) "ADVISORY SPEED PLAQUE" - THIS SIGN IS INTENDED TO SUPPLEMENT WARNING SIGNS ONLY AND SHALL NOT BE MOUNTED ALONE. IT IS USED TO INDICATE THE MAXIMUM RECOMMENDED SPEED FOR THE INDICATED CONDITION.

W13-3 "ADVISORY RAMP SPEED" - THIS SIGN IS TO BE POSTED TO INFORM MOTORISTS WHAT THE SUGGESTED SPEED LIMIT IS ON A RAMP.

W20-1 "ROAD/WORK/AHEAD" - THIS SIGN IS TO BE LOCATED IN ADVANCE ur THE INITIAL ACTIVITY OR DETOUR A DRIVER MAY ENCOUNTER, AND IS INTENDED TO BE USED AS A WARNING OF OBSTRUCTIONS OR RESTRICTIONS.

W20-2 "DETOUR/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE POINT AT WHICH TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OR ROUTE.

W20-3 "ROAD/CLOSED/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT AT WHICH A ROADWAY IS CLOSED TO ALL TRAFFIC OR TO ALL BUT LOCAL TRAFFIC.

W20-4 "ONE LANE/ROAD/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IN BOTH DIRECTIONS MUST USE A SINGLE LANE.

W20-5( ) "XXX LANE/CLOSED/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE ONE LANE OF A MULTIPLE-LANE ROADWAY IS CLOSED. IT SHOULD BE PROVIDED WITH INTERCHANGEABLE PLAQUES READING "RIGHT", "LEFT", AND "CENTER" AT NO ADDITIONAL COST TO THE PROJECT.

W20-7a "FLAGGER SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF ANY POINT AT WHICH A FLAGGER HAS BEEN STATIONED TO CONTROL TRAFFIC THROUGH OR AROUND THE PROJECT. *

W20-52 "GROOVED/PAVEMENT/AHEAD" - THIS SIGN IS INTENDED TO BE USED IN ADVANCE OF A ROADWAY THAT HAS BEEN GROOVED AND/OR ROTO MILLED.

W21-1a "WORKER SYMBOL" - THIS SIGN IS INTENDED FOR USE IN CONJUNCTION WITH MINOR MAINTENANCE AND PUBLIC UTILITY OPERATIONS FOR THE PROTECTION OF MEN WORKING IN OR NEAR THE ROADWAY.

W21-2 "FRESH/OIL" - THIS SIGN IS INTENDED FOR USE WHERE RE-SURFACING OPERATIONS HAVE RENDERED THE SURFACE OF THE PAVEMENT TEMPORARILY WET, AND OBJECTIONABLE SPLASHING ON VEHICLES MAY OCCUR. *

W21-3 "ROAD/MACHINERY/AHEAD" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE AREAS WHERE HEAVY EQUIPMENT IS OPERATING IN OR ADJACENT TO THE ROADWAY. *

W21-4 "ROAD/WORK/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF MAINTENANCE FOR MINOR RECONSTRUCTION OPERATIONS IN THE ROADWAY.

W21-5 "SHOULDER/WORK" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE PROJECT INVOLVING THE SHOULDER, WHERE THE TRAVELED WAY REMAINS UNOBSTRUCTED.

W21-6 "SURVEY/CREW" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE A SURVEYING CREW IS WORKING IN OR ADJACENT TO THE ROADWAY. *

W22-1 "BLASTING/ZONE/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF ANY POINT OR WORK SITE WHERE THERE ARE EXPLOSIVES BEING USED. THE W22-2 AND W22-3 SIGNS MUST BE USED IN SEQUENCE WITH THIS SIGN.

W22-2 "TURN OFF/2-WAY RADIOS/AND/CELLULAR/PHONES" - THIS SIGN IS TO BE USED IN SEQUENCE WITH THE W22-1 AND W22-3 SIGNS AND PLACED AT LEAST 1000 FEET FROM THE BEGINNING OF THE BLASTING ZONE.

W22-3 "END/BLASTING/ZONE" - THIS SIGN IS TO BE USED TO DENOTE THE END OF THE RADIO INFLUENCE AREA AND SHALL BE PLACED A MINIMUM OF 1000 FEET FROM THE BLASTING ZONE, EITHER WITH OR PRECEDING THE END CONSTRUCTION SIGN.

W22-50(X) "ROCK SCALING X MILE(S)" - THIS SIGN IS INTENDED TO BE USED IN ADVANCE OF A FLAGGER IN ADVANCED OF THE WORK ZONE AREA.

ADVANCE PLACEMENT OF WARNING SIGNS

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

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

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

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

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

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

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R-1	06/24/09	SHEET NO. CHANGED FROM 12 TO 19, ADDED NOTES FOR R52-6a, R52-6b, G20-5, R4-1, R4-2, W3-4, W4-50, W4-51, W4-52, W13-3 & W22-50(X) SIGNS
R-2	12/07/09	ADDED NOTES FOR G20-11 SIGNS.

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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