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
COLORADO PROJECT NO. MTCE 0091-039

STATE HIGHWAY NO. 9
SUMMIT COUNTY
CONSTRUCTION PROJECT CODE NO. 18777
SH 9 FIBER NETWORK/SIGNAL INTERCONNECT

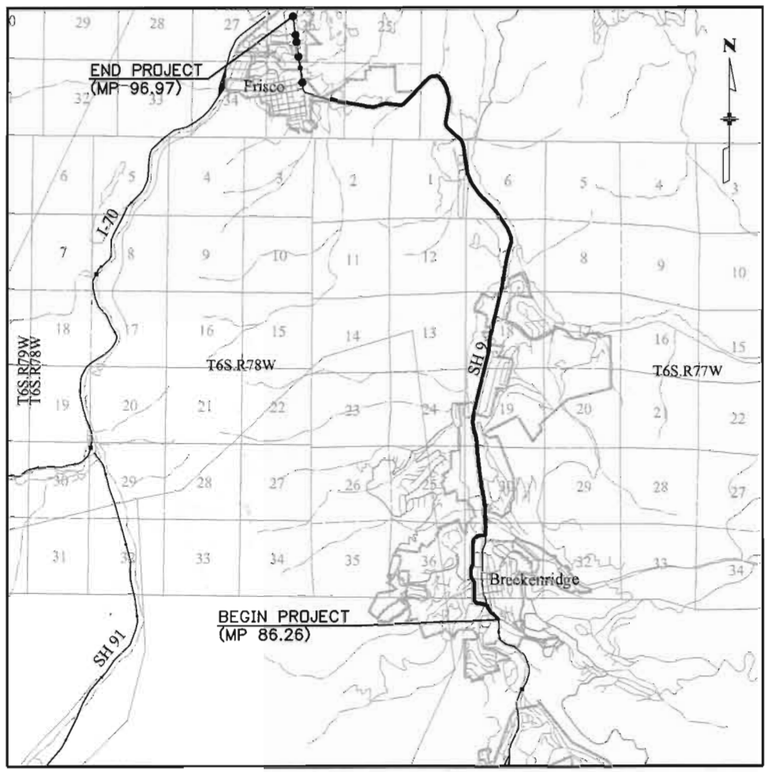
Related Projects:	
P. E. UNDER PROJECT:	
Project Number	-
Project Code:	-
R.O.W. Projects:	
R.O.W. Project Description	
-	

AD PLANS
JULY 19, 2012

TABULATION OF LENGTH & DESIGN DATA

STATION	FEET ROADWAY SH 9
APPROACH TO PROJECT SH 9: BEGIN MP = 86.26 END MP = 96.97	59549
TOTAL	59549
SUMMARY OF PROJECT LENGTH	FEET
PROJECT GROSS LENGTH	59549

DESIGN DATA	SH 9
MAXIMUM POSTED SPEED	50 MPH
2010 DESIGN TRAFFIC	DHV = 1890 ADT = 21000
DHV TRUCK %	2.70%



PROJECT LOCATION MAP

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5 - 8	SUMMARY OF APPROXIMATE QUANTITIES
9	CONSTRUCTION NOTES
10	INTERCONNECT PLANS INDEX SHEET
11 - 56	INTERCONNECT PLANS
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78 - 81	DETAILS
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86	TRAFFIC CONTROL NOTES AND TABULATIONS

811 Know what's **below.** **Call** before you dig.

Print Date: 7/12/2012	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18777TRAF_TitleSht.dgn	Date: Comments: Init.	18500 East Colfax Avenue	No Revisions:
Horiz. Scale: 1:1 Vert. Scale: As Noted	(R-X)	Aurora, CO 80011	Revised:
Unit Information Unit Leader Initials		Phone: 303-757-9648 FAX: 303-757-9746	Void:
MULLER Muller Engineering Co., Inc. Consulting Engineers apexdesign		Region 1 SS	
P:\10-028.03 - Parker Rd Interconnect\Traffic_ITS			

Contract Information	Project No./Code
Contractor:	MTCE 0091-039
Resident Engineer: SS	18777
Project Engineer: SH	Sheet Number 1
PROJECT STARTED: / / ACCEPTED: / /	
Comments:	

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S-630-5	☐	PORTABLE RUMBLE STRIPS (TEMPORARY) (NEW, MAY 05, 2011)	
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THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

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

COLORADO
DEPARTMENT OF TRANSPORTATION

STANDARD PLANS LIST
M&S STANDARDS
July 04, 2006
Revised on March 26, 2012

Computer File Information		Sheet Revisions	
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Drawing File Name: Standards Plans List.dwg	(R-X)		
CAD Ver.: MicroStation Scale: Not to Scale Units: English	(R-X)		

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9083
Fax: (303) 757-9820
Project Development Branch DD/LTA

STANDARDS PLANS LIST

Issued By: Project Development Branch July 04, 2006

STANDARD PLAN NO.
NA
Sheet No. 1 of 1 2

GENERAL NOTES

1. The Project consists of furnishing and installing pull boxes, conduit, fiber optic cable, and associated communications equipment for CDOT Region 1. For specific details of infrastructure installation, see the corresponding sections of these plan sheets and the Project Special Provisions. All work shall be in accordance with the Colorado Department of Transportation's (CDOT) Standard Specifications for Road and Bridge Construction, 2011 Edition, and CDOT's Standard Plans, M & S Standard Plans, 2009 Edition, the Manual of Uniform Traffic Control Devices, 2009 Edition, and the National Electric Code (NEC).

2. The Contractor shall not close or obstruct business or residential driveways unless approved in writing by the Engineer.

3. No construction vehicles shall be in the traveled way at any time without appropriate construction traffic control.

4. Any and all sidewalks and designated bike paths shall remain open at all times, unless approved in writing by the Project Engineer.

5. Upon completion of the work, the Contractor shall submit record drawings, "AS-CONSTRUCTED" Plans to CDOT, showing the actual location of conduit, fiber optic cable, pull boxes, and other significant work items at no additional cost to the project. Pull box locations shall be recorded on the as-constructed drawings with GPS verified longitude and latitude. "AS-CONSTRUCTED" Plans shall be the construction plan set with changes marked in red ink. This will not be paid for separately, but shall be included in the cost of the project. Documents in the form of prints shall be submitted at the time the system acceptance tests begin.

6. Right-of-way shown on the plans is based on GIS record information available at time of print. The information is provided to the Contractor to identify construction constraints. Prior to working in an area, the Contractor shall field verify the apparent available right-of-way (as identified by fences, monuments, buildings, maintained private property, etc) to verify construction constraints. All construction shall be within CDOT rights-of-way, or easements.

7. There are many different monuments that may be in the areas of the construction for this project. These monuments could range from CDOT Control Monuments, CDOT ROW Monuments, High Accuracy Reference Network (HARN) Monuments, first, second, or third order benchmarks, and public land survey monuments. All of which are very costly to replace, minimum of $5,000 to as high as $66,000+ per mark. The Contractor shall make adjustments in the field to avoid the monuments. CDOT in no way accepts the liability of finding all monumentation on all construction sites. The Contractor is ultimately responsible for the replacement of any monuments disturbed and/or destroyed by the construction of the improvements within the construction limits.

8. All staging areas shall be submitted to the Engineer for approval.

9. All excavations left unattended shall be fenced with orange safety fence and metal posts driven into the ground on a maximum of 10' centers.

10. The bid quantities of the project are the result of a careful quantity takeoff by the Engineer. The Contractor shall, however, satisfy himself as to the accuracy of all quantities and bring any discrepancies to the attention of the Engineer, in writing, at his earliest opportunity.

11. All item locations are approximate and are to be field located by the appropriate agencies.

12. The Contractor is required to submit a minimum of three (3) copies of the material data sheets to CDOT for review. CDOT shall review the required submittals and return comments within 14 days.

13. Multiple conduit installation crews may be required to complete the work within the contract completion time.

UTILITY NOTES

14. If potholing in a concrete sidewalk, the Contractor may be allowed to patch the sidewalk; however, this would be at the discretion of the project Engineer and the Town of Breckenridge and/or the Town of Frisco. It is estimated that approximately **139 SY** of concrete sidewalk replacement will be required for conduit installation.

15. The Contractor's attention is directed to Subsection 105.11 of the Standard Specifications concerning utilities and the Utility Specification for this project. The Contractor shall verify and be responsible for all utility features, including all underground and above ground utilities, prior to beginning any work. The Contractor shall be responsible for field locating and verifying all utility information. For utility construction coordination, the Contractor shall contact the Utility Notification Center for Colorado at 811.

16. Potholing will be required on this project and paid for separately as Item 203 - Potholing. It is estimated that **150** hours of potholing will be required for this project. The Contractor shall locate and pothole all potential conflicts with existing buried utility facilities within the proposed construction limits, as shown by field location markings. If a conflict exists, modify proposed construction plans to avoid all existing buried utility facilities. Potholing in concrete shall be at the direction of the project Engineer.

CONDUIT/SIGNAL NOTES

17. A locating wire (one #12 AWG insulated) and pull tape shall be placed in all conduit. This work shall be included in the unit price for fiber and will not be paid separately. Pavement and/or sidewalk shall be replaced in kind at bore pit locations. Pavement and sidewalk replacement shall not be paid for separately but shall be included in the cost of conduit.

18. All conduit shall be Schedule 80 HDPE. Directional bored conduit shall be installed at a minimum depth as shown in the "Conduit Installation Detail" sheet, unless otherwise directed by the Engineer.

19. Street cuts for conduits on existing pavements shall not be allowed, unless otherwise shown on the plans.

20. This project includes pulling fiber optic cables through a portion of existing conduit. Contractor shall not damage any existing cables in the existing conduit.

21. Contractor shall ream and clean all conduit prior to installing new fiber optic cable(s) to verify whether the conduit is useable. Contractor shall notify CDOT of any damaged, or unusable, segments of existing conduit.

22. Salvage all traffic signal equipment to CDOT Region 1 Frisco Maintenance Facility, 219 CR 1003, and Frisco, CO 80443. Contact Steve Smith 970-485-0136.

23. The Contractor should expect to encounter rocky soil conditions during conduit trenching and boring activities.

24. At the direction of the project engineer, a 24" shallow trench may be used where very rocky soil conditions are encountered (see Conduit Installation Detail Sheet). Conduit installed on a shallow trench shall be paid for as "Electrical Conduit (Plastic)(Multiduct)".

25. All new pull boxes shall be marked with a flat slat location marker. Placement of location maker in the Town of Breckenridge shall be 4' in height above ground surface.

FIBER OPTIC CABLE NOTES

26. Fiber acceptance test results shall be provided in paper and electronic formats upon completion. The Contractor shall provide any software necessary to view electronic tests results. This shall be included in the cost of Item 614 – Test Fiber Optic Cable.

27. Contact Jim Chase, CDOT Region 1 at 303-981-0922 at least 3 days prior to splicing to review splicing details.

28. The Contractor shall splice the fiber optic cable only at approved splice locations as shown on the plans. All backbone fiber optic cable shall run continuously and un-spliced from end to end with intermediate reel-to-reel splices at no less than 3 mile intervals. Mid-sheath splices shall be performed at lateral locations and only fibers being spliced shall be cut.

29. It is estimated that **412** fiber optic fusion splices will be required for this project.

30. Contractor shall contact the appropriate agency staff prior to installing fiber optic cable for direction as to which existing conduit to use and which fiber cable to remove and which fiber cable(s) to protect in place.

31. Fiber testing cannot commence until all fiber work is complete.

32. It is estimated that approximately **13,371** linear feet of existing fiber shall be removed.

Print Date: 5/22/2012	Sheet Revisions			Colorado Department of Transportation
Drawing File Name: 18777TRAF_GenlNote01.dgn	Date:	Comments	Init.	18500 East Colfax Avenue Aurora, CO 80011 Phone: 303-757-9648 FAX: 303-757-9746
Horiz. Scale: 1:1 Vert. Scale: As Noted				Region 1 SS
Unit Information Unit Leader Initials				
MULLER Muller Engineering Co., Inc. Consulting Engineers apexdesign P:\10-028.13 - SH 9 Interconnect\Traffic_ITS				

As Constructed	GENERAL NOTES			Project No./Code
No Revisions:				MTCE 0091-039
Revised:	Designer: KEB	Structure Numbers		18777
Void:	Detailer: PJS			
	Sheet Subset: NOTES	Subset Sheets: 1 of 2		Sheet Number 3

EROSION CONTROL NOTES

33. The Contractor shall replace any damaged landscape, including but not limited to, topsoil, grass, irrigation system components, trees, shrubs, ground covers and mulch, to its original condition. Sod shall match existing. In areas not sodded, seeding (native), mulching (weed free), and mulch tackifier shall be used. The Contractor shall coordinate with the Owner's landscape maintenance personnel at least five (**5**) working days in advance of starting work in the area. With proper and timely notification, the Owner's landscape maintenance personnel shall mark and identify the irrigation system components. This is in no way all inclusive of all utilities or all of the irrigation system. No landscape shall be without watering services during the growing season. If the irrigation service is interrupted for more than three days, the Contractor shall be liable to hand/truck water and possibly all plant replacement in the affected landscape. Landscape restoration shall be considered complete when the landscape and irrigation system is restored to its original condition and approved by the maintaining personnel. The Owner's landscape maintenance personnel, prior to burial, shall inspect all repair work to any irrigation components, and provide acceptance of said work. Work shall be paid for as bid Item 700 - Erosion Control Force Account.

34. All erosion/sediment control and stormwater responsibilities stated in the Stormwater Management Plan and Standard Specifications Subsections 101, 107, and 208 shall be followed or amended, as noted in the Special Provisions. It is estimated that **500** linear feet of Item 208 – Gravel Bag will be required for this project.

35. Erosion logs shall be placed around the boring operations to contain the slurry. Protection shall be mobile in nature. It is estimated that **4000** linear feet of Item 208 – Erosion Logs will be required for this project. One-time re-use of logs is permitted only if log cover is intact and no excelsior is able to discharge. Logs around a protected area; i.e., pull box, bore pit, etc, must have good overlap. Prior to moving logs for re-use, the area must be permanently stabilized by seeding and or mulching. Approved spray–on products are allowed.

ENVIRONMENTAL NOTES

36. The Contractor shall ensure that no materials, equipment, or vehicles are staged or parked near wetland, drainage areas, or open space. The Contractor shall remove, in a timely manner, all sediment, mud, debris or other potential pollutants which may be discharged to, or accumulate in, the flow lines and public rights-of-way as a result of construction activities associated with this project.

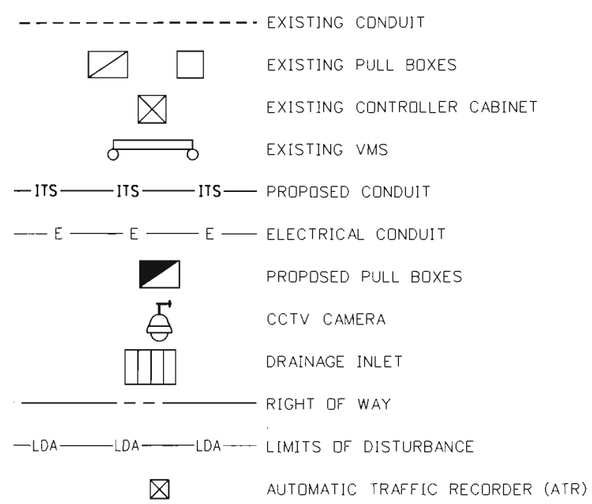
37. The Contractor shall keep all environmentally sensitive areas, such as waterways, ditches, prairie dog colonies, wetlands, and the like, free and clear of debris. No parking or staging shall be allowed in any such areas either.

38. A piping plover and burrowing owl nest survey will need to be completed by the CDOT Wildlife Biologist no more than 7 days prior to any ground disturbance activities. Contact Jim Eussen, R1 Biologist at 303-365-7041.

    Migratory Bird Treaty Act: No clearing, grubbing, removal of vegetation or any work on or under bridges may occur during the primary nesting season between April 1 and August 31 to avoid violation of the Migratory Bird Treaty Act. If the proposed construction occurs during the primary nesting season, or at any other time which may result in the take of migratory birds, a qualified biologist will need to conduct a field survey of the affected habitats and structures prior to ground disturbance. The survey should occur during the nesting season and not more than one week (7 days) prior to the proposed disturbance activity. Contact Jim Eussen, R1 Biologist at 303-365-7041.

39. Short grass prairie initiative: all off-pavement disturbances will be tracked and the final square feet of disturbance will be reported to the CDOT Environmental Project Manager at the conclusion of construction.

LEGEND:



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

MULLER Muller Engineering Co., Inc. Consulting Engineers **apex**design
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Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
18500 East Colfax Avenue
Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

As Constructed
No Revisions:
Revised:
Void:

GENERAL NOTES AND LEGEND

Designer: KEB
Detailer: PJS
Sheet Subset: NOTES
Structure Numbers:
Subset Sheets: 2 of 2

Project No./Code
MTCE 0091-039
18777
Sheet Number 4

ITEM	DESCRIPTION	UNIT	TRAFFIC SIGNAL INTERCONNECT SUBSET SHEET																													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
202-00827	REMOVAL OF PULL BOX	EA									1																						
203-00000	UNCLASSIFIED EXCAVATION	CY			3		8																										
203-01500	BLADING	HR																															
203-01597	POTHOLING	HR																															
208-00002	EROSION LOG (12 INCH)	LF																															
208-00034	GRAVEL BAG	LF																															
208-00045	CONCRETE WASHOUT STRUCTURE	EA																															
208-00103	REMOVAL AND DISPOSAL OF SEDIMENT (LABOR)	HR																															
208-00105	REMOVAL AND DISPOSAL OF SEDIMENT (EQUIPMENT)	HR																															
208-00106	SWEEPING (SEDIMENT REMOVAL)	HR																															
208-00107	REMOVAL OF TRASH	HR																															
208-00205	EROSION CONTROL SUPERVISOR	HR																															
210-00090	RESET DELINEATOR	EA																															
210-00810	RESET GROUND SIGN	EA						7	2																								
212-00006	SEEDING (NATIVE)	ACRE																															
212-00032	SOIL CONDITIONING	ACRE																															
213-00002	MULCHING (WEED FREE HAY)	ACRE																															
213-00012	SPRAY-ON MULCH BLANKET	ACRE																															
213-00061	MULCH TACKIFIER	LB																															
216-00201	SOIL RETENTION BLANKET (STRAW-COCONUT)(BIODEGRADABLE CLASS 1)	SY																															
608-00000	CONCRETE SIDEWALK	SY			83	24	32																										
612-00270	LOCATION MARKER (UTILITY) (FLAT SLAT)	EA																															
613-00300	3 INCH ELECTRICAL CONDUIT	LF																					110										
613-03491	ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT)	LF		10	10		10	1175	690												680	1385	1230	1385	1300	1210	1260	1305	1280	400	610	1230	1360
613-03492	ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (BORED)	LF	935	105	725	1350	1535	175	70										95				105		70	150	140	85	55			65	55
613-03500	ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (SPECIAL)	LF			75		200																										
613-04125	1 1/4 INCH ELECTRICAL CONDUIT (LIQUIDTIGHT FLEXIBLE METAL)	LF	40							15									30														
613-07023	PULL BOX (24"X36"X24")	EA	1	1	1		3	3	1		1										1		3	1	2	4	4	2	2	1	1	2	2
613-07040	PULL BOX (30"X48"X24")	EA				1																	1										
613-07060	PULL BOX (18"X30"X18") DEEP	EA			3	2	2		2										1														
613-07070	EMS BALL MARKER	EA																															
613-10000	WIRING	LS																	1														
614-72830	COMMUNICATIONS CABINET	EA	1							1									1														

* Included in the Cost of Fiber Optic Cable (Single Mode) (96 Strands) ** Included in the Cost of CCTV Camera (Traffic Surveillance)

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Unit Information Unit Leader Initials

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Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
18500 East Colfax Avenue
Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

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SUMMARY OF APPROXIMATE QUANTITIES

Designer: KEB/PJS
Detailer: PJS
Sheet Subset: QTY
Structure Numbers:
Subset Sheets: 1 of 4

Project No./Code
MTCE 0091-039
18777
Sheet Number 5

ITEM	DESCRIPTION	UNIT	TRAFFIC SIGNAL INTERCONNECT SUBSET SHEET																														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
614-86007	SERIAL TO IP CONVERTER	EA	1	1	1		1		1		1	1					1				1										1		
614-87006	FIBER OPTIC TERMINATION PANEL - 6 FIBER*	EA	1							1										1													
614-87010	FIBER OPTIC CABLE (SINGLE MODE) (12 FIBER)	LF	35	60	25		60		55	40	45	50					55			45	65										55		
614-87012	FIBER OPTIC TERMINATION PANEL - 12 FIBER*	EA		1	1		1					1					1				1										1		
614	FIBER OPTIC TERMINATION PANEL - 24 FIBER*	EA																															
614-87015	BUFFER TUBE FAN OUT KIT	EA	1	1	1		1		1	1	1	1					1			1	1										1		
614-87310	TRAFFIC MANAGEMENT SYSTEM BUILDING EQUIPMENT	LS																															
614-87320	CLOSED CIRCUIT TELEVISION	EA	1	1	1		1		1	1	1	1					1			1	1										1		
614-87325	CLOSED CIRCUIT TELEVISION POLE	EA	1							1										1													
614	CLOSED CIRCUIT TELEVISION CABLE**	LF	50	65	155		110		70	50	60	95					85			50	135										85		
614-87350	TEST FIBER OPTIC CABLE	LS																															
614-87496	FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS)	LF	1035	205	1140	1600	2035	1500	1240	1445	1425	1685	1560	1535	1460	1470	1580	1530	1515	1680	1890	1385	1860	1435	1470	1560	1600	1490	1435	1440	1600	1395	1515
614-87690	ETHERNET SWITCH	EA	1	1	1		1		1	1	1	1					1			1	1										1		
614	FIBER OPTIC SPLICE CLOSURE*	EA	1	1	1		1		1	1	1	1					1			1	1										1		
620-00020	SANITARY FACILITY	EA																															
626-00005	MOBILIZATION	LS																															
630-00000	FLAGGING	HR																															
630-00007	TRAFFIC CONTROL INSPECTION	DAY																															
630-00012	TRAFFIC CONTROL MANAGEMENT	DAY																															
630-80335	BARRICADE (TYPE 3 M-A) (TEMPORARY)	EA																															
630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EA																															
630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EA																															
630-80343	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE C)	EA																															
630-80355	PORTABLE MESSAGE SIGN PANEL	EA																															
630-80358	ADVANCED WARNING FLASHING OR SEQUENCING ARROW PANEL (C TYPE)	EA																															
630-80360	DRUM CHANNELIZING DEVICE	EA																															
630-80380	TRAFFIC CONE	EA																															
630-85040	IMPACT ATTENUATOR (TRUCK MOUNTED ATTENUATOR) (TEMPORARY)	EA																															
700-70010	F/A MINOR CONTRACT REVISIONS	FA																															
700-70011	F/A PARTNERING	FA																															
700-70016	F/A FUEL COST ADJUSTMENTS	FA																															
700-70380	F/A EROSION CONTROL	FA																															

* Included in the Cost of Fiber Optic Cable (Single Mode) (96 Strands) ** Included in the Cost of CCTV Camera (Traffic Surveillance)

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Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
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Region 1 SS

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SUMMARY OF APPROXIMATE QUANTITIES

Designer: KEB/PJS
Detailer: PJS
Sheet Subset: QTY
Structure Numbers:
Subset Sheets: 2 of 4

Project No./Code
MTCE 0091-039
18777
Sheet Number 6

ITEM	DESCRIPTION	UNIT	TRAFFIC SIGNAL INTERCONNECT SUBSET SHEET																										PROJECT TOTALS	
			32	33	34	35	36	37	38	39	40	41	42	43	44	45	46												OTHER	PLAN	AS CONST.
202-00827	REMOVAL OF PULL BOX	EA																												1	1
203-00000	UNCLASSIFIED EXCAVATION	CY	50																											61	61
203-01500	BLADING	HR																											20	20	53
203-01597	POTHOLING	HR																											150	150	211
208-00002	EROSION LOG (12 INCH)	LF																											4000	4000	2,482
208-00034	GRAVEL BAG	LF																											500	500	155
208-00045	CONCRETE WASHOUT STRUCTURE	EA																											4	4	1
208-00103	REMOVAL AND DISPOSAL OF SEDIMENT (LABOR)	HR																											50	50	83
208-00105	REMOVAL AND DISPOSAL OF SEDIMENT (EQUIPMENT)	HR																											20	20	104
208-00106	SWEEPING (SEDIMENT REMOVAL)	HR																											54	54	17
208-00107	REMOVAL OF TRASH	HR																											36	36	26
208-00205	EROSION CONTROL SUPERVISOR	HR																											300	300	10
210-00090	RESET DELINEATOR	EA																											50	50	0
210-00810	RESET GROUND SIGN	EA																												9	0
212-00006	SEEDING (NATIVE)	ACRE																											5	5	3.9
212-00032	SOIL CONDITIONING	ACRE																											5	5	3.9
213-00002	MULCHING (WEED FREE HAY)	ACRE																											5	5	5.3
213-00012	SPRAY-ON MULCH BLANKET	ACRE																											3	3	4.3
213-00061	MULCH TACKIFIER	LB																											1000	1000	400
216-00201	SOIL RETENTION BLANKET (STRAW-COCONUT)(BIODEGRADABLE CLASS 1)	SY																											500	500	0
608-00000	CONCRETE SIDEWALK	SY																												139	155
612-00270	LOCATION MARKER (UTILITY) (FLAT SLAT)	EA																											100	100	48
613-00300	3 INCH ELECTRICAL CONDUIT	LF																												110	110
613-03491	ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT)	LF		1255	1380	1300	1345	315																						22125	20,900
613-03492	ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (BORED)	LF																												5715	3,640
613-03500	ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (SPECIAL)	LF	1355																											1630	3,340
613-04125	1 1/4 INCH ELECTRICAL CONDUIT (LIQUIDTIGHT FLEXIBLE METAL)	LF																												85	15
613-07023	PULL BOX (24"X36"X24")	EA	1	1	1		1	1																						41	41
613-07040	PULL BOX (30"X48"X24")	EA																												2	2
613-07060	PULL BOX (18"X30"X18") DEEP	EA																												10	8
613-07070	EMS BALL MARKER	EA																											100	100	48
613-10000	WIRING	LS																												1	1
614-72830	COMMUNICATIONS CABINET	EA																												3	3

* Included in the Cost of Fiber Optic Cable (Single Mode) (96 Strands) ** Included in the Cost of CCTV Camera (Traffic Surveillance)

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Sheet Revisions

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18500 East Colfax Avenue
Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

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SUMMARY OF APPROXIMATE QUANTITIES

Designer: KEB/PJS
Detailer: PJS
Sheet Subset: QTY
Structure Numbers:
Subset Sheets: 3 of 4

Project No./Code
MTCE 0091-039
18777
Sheet Number 7

ITEM	DESCRIPTION	UNIT	TRAFFIC SIGNAL INTERCONNECT SUBSET SHEET																											PROJECT TOTALS	
			32	33	34	35	36	37	38	39	40	41	42	43	44	45	46												OTHER	PLAN	AS CONST.
614-86007	SERIAL TO IP CONVERTER	EA						1		1		1	1	1	1	1	1													18	18
614-87006	FIBER OPTIC TERMINATION PANEL - 6 FIBER*	EA																												3	3
614-87010	FIBER OPTIC CABLE (SINGLE MODE) (12 FIBER)	LF																												590	1,975
614-87012	FIBER OPTIC TERMINATION PANEL - 12 FIBER*	EA						1		1				1																10	10
614	FIBER OPTIC TERMINATION PANEL - 24 FIBER*	EA									1																			1	1
614-87015	BUFFER TUBE FAN OUT KIT	EA																												12	12
614-87310	TRAFFIC MANAGEMENT SYSTEM BUILDING EQUIPMENT	LS									1																			1	1
614-87320	CLOSED CIRCUIT TELEVISION	EA						1		1		1		1																16	16
614-87325	CLOSED CIRCUIT TELEVISION POLE	EA																												3	2
614	CLOSED CIRCUIT TELEVISION CABLE**	LF						165		100		85		135																1495	1,495
614-87350	TEST FIBER OPTIC CABLE	LS																											1	1	1
614-87496	FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS)	LF	1405	1305	1430	1300	1395	1400	1425	2335	880																			58590	61,300
614-87690	ETHERNET SWITCH	EA						1		1		1	1	1	1	1	1													20	20
614	FIBER OPTIC SPLICE CLOSURE*	EA						1		1																				14	14
620-00020	SANITARY FACILITY	EA																											1	1	1
626-00005	MOBILIZATION	LS																											1	1	1
630-00000	FLAGGING	HR																											350	350	134
630-00007	TRAFFIC CONTROL INSPECTION	DAY																											48	48	47
630-00012	TRAFFIC CONTROL MANAGEMENT	DAY																											120	120	87
630-80335	BARRICADE (TYPE 3 M-A) (TEMPORARY)	EA																											2	2	0
630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EA																											8	8	5
630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EA																											24	24	21
630-80343	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE C)	EA																											8	8	0
630-80355	PORTABLE MESSAGE SIGN PANEL	EA																											2	2	2
630-80358	ADVANCED WARNING FLASHING OR SEQUENCING ARROW PANEL (C TYPE)	EA																											2	2	1
630-80360	DRUM CHANNELIZING DEVICE	EA																											50	50	50
630-80380	TRAFFIC CONE	EA																											100	100	96
630-85040	IMPACT ATTENUATOR (TRUCK MOUNTED ATTENUATOR) (TEMPORARY)	EA																											1	1	1
700-70010	F/A MINOR CONTRACT REVISIONS	FA																											1	1	
700-70011	F/A PARTNERING	FA																											1	1	0
700-70016	F/A FUEL COST ADJUSTMENTS	FA																											1	1	0
700-70380	F/A EROSION CONTROL	FA																											1	1	0

* Included in the Cost of Fiber Optic Cable (Single Mode) (96 Strands) ** Included in the Cost of CCTV Camera (Traffic Surveillance)

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Sheet Revisions

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Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
18500 East Colfax Avenue
Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

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SUMMARY OF APPROXIMATE QUANTITIES

Designer: KEB/PJS Structure Numbers:
Detailer: PJS
Sheet Subset: QTY Subset Sheets: 4 of 4

Project No./Code
MTCE 0091-039
18777
Sheet Number 8

CONSTRUCTION NOTES

1 EXISTING VMS (GROUND MOUNTED)

2 EXISTING PULL BOX (12" X 18")

3 NOT USED

4 EXISTING PULL BOX (13" X 24")

5 EXISTING PULL BOX (17" X 30")

6 EXISTING PULL BOX (24" X 36")

7 EXISTING PULL BOX (30" X 48")

8 EXISTING PULL BOX

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

10 EXISTING POLE MOUNTED VMS CABINET

11 EXISTING 2" ELECTRICAL CONDUIT

12 EXISTING 3" ELECTRICAL CONDUIT

13 EXISTING ELECTRICAL CONDUIT

14 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (12 STRAND)

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

18 REMOVE EXISTING FIBER BACKBONE CABLE

19 REMOVE EXISTING PULL BOX

20 PULL BOX (18" X 30" X 18")

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

24 3 INCH ELECTRICAL CONDUIT - SEE CONDUIT ATTACHMENT TO BLUE RIVER STRUCTURE DETAIL

25 PULL BOX (30" X 48" X 24")

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

27 1-¼ INCH ELECTRICAL CONDUIT (LIQUIDTIGHT FLEXIBLE METAL)

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

31 NOT USED

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

35 COIL 25 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

39 FIBER OPTIC TERMINATION PANEL - 6 FIBER

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

41 FIBER OPTIC TERMINATION PANEL - 24 FIBER

42 NOT USED

43 NOT USED

44 TRAFFIC MANAGEMENT SYSTEM BUILDING EQUIPMENT - INCLUDING CABINET AND ETHERNET SWITCH (CORE)

45 NOT USED

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

48 NOT USED

49 STORM DRAIN INLET PROTECTION

50 INSTALL PULL BOX IN CONCRETE SIDEWALK AND REPLACE PANEL

51 EXISTING AUTOMATIC TRAFFIC RECORDER (ATR)

52 CLOSED CIRCUIT TELEVISION POLE AND COMMUNICATIONS CABINET

53 COIL 200 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

54 SERIAL CABLE

55 EXISTING FIBER OPTIC TERMINATION PANEL - 12 FIBER

56 CONDUIT TO BE INSTALLED PER THE SHALLOW TRENCH DETAIL IF SUBSURFACE CONDITIONS WARRANT

57 EXISTING FIBER OPTIC TERMINATION PANEL - 6 FIBER

58 REMOVE EXISTING FIBER OPTIC TERMINATION PANEL - 6 FIBER

59 WIRING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE MINIMUM AMPACITY AND SIZE OF THE CONDUCTORS FOR THIS RUN BASED ON A MAXIMUM VOLTAGE DROP OF 3% BASED ON ARTICLES 210-19, 215-2, OR 230-31 OF THE NEC, AS APPLICABLE. THE MAXIMUM TOTAL VOLTAGE DROP FOR A COMBINATION OF BOTH BRANCH CIRCUIT AND FEEDER SHALL NOT EXCEED 5%. GROUNDING CONDUCTORS SHALL CONFORM TO ARTICLE 250-122 OF THE NEC.

60 2 - 2 INCH ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (SPECIAL)

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Sheet Revisions

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Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
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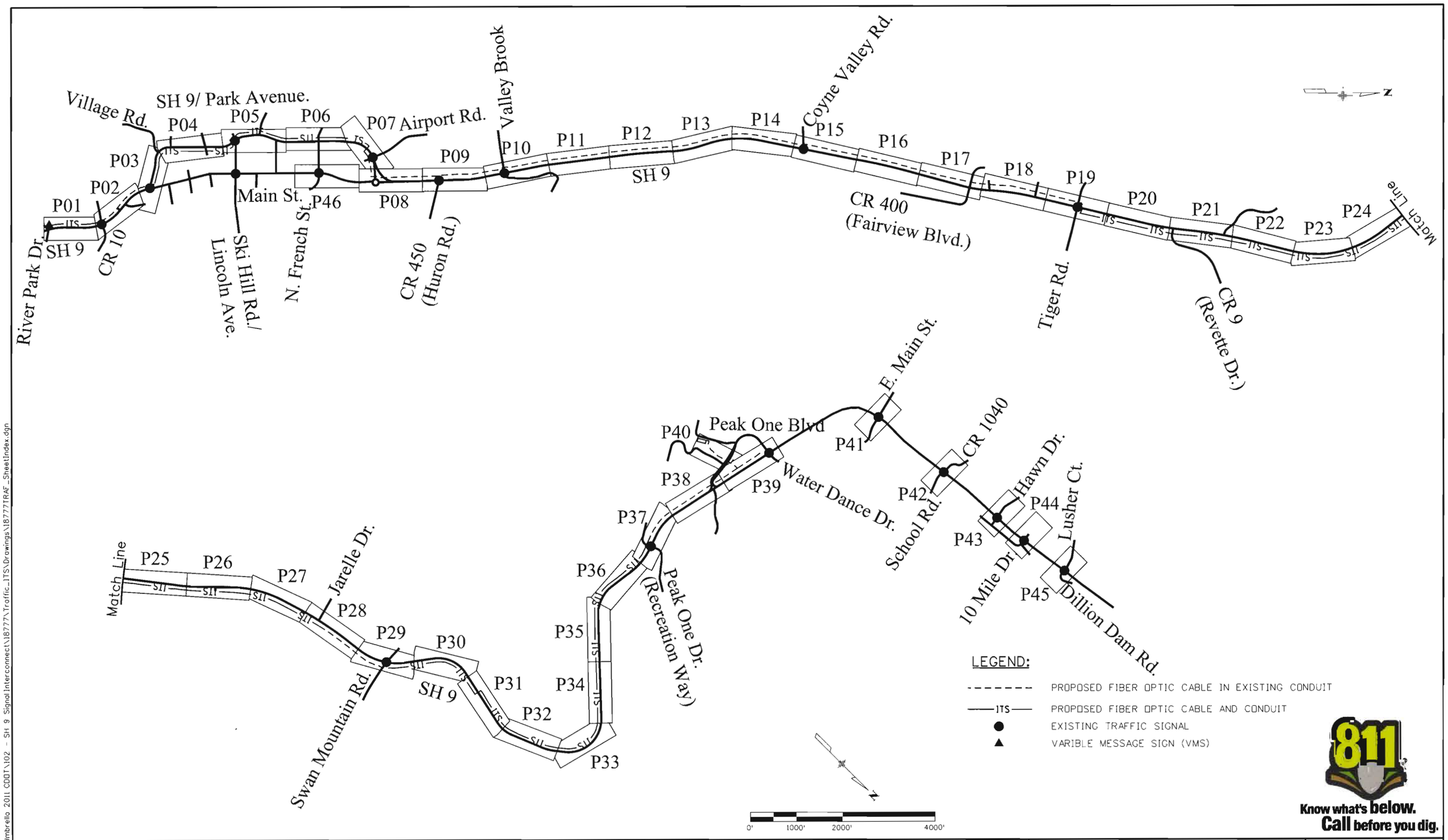
CONSTRUCTION NOTES

Designer: KEB
Detailer: PJS
Sheet Subset: C-NOTES
Structure Numbers:
Subset Sheets: 1 of 1

Project No./Code
MTCE 0091-039
18777
Sheet Number 9



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Print Date: 5/22/2012	Sheet Revisions	Colorado Department of Transportation	As Constructed
Drawing File Name: 18777TRAF_SheetIndex.dgn	Date: / Comments / Init.	18500 East Colfax Avenue Aurora, CO 80011 Phone: 303-757-9648 FAX: 303-757-9746	No Revisions:
Horiz. Scale: 1:2000 Vert. Scale: As Noted		Region 1 SS	Revised:
Unit Information Unit Leader Initials			Void:
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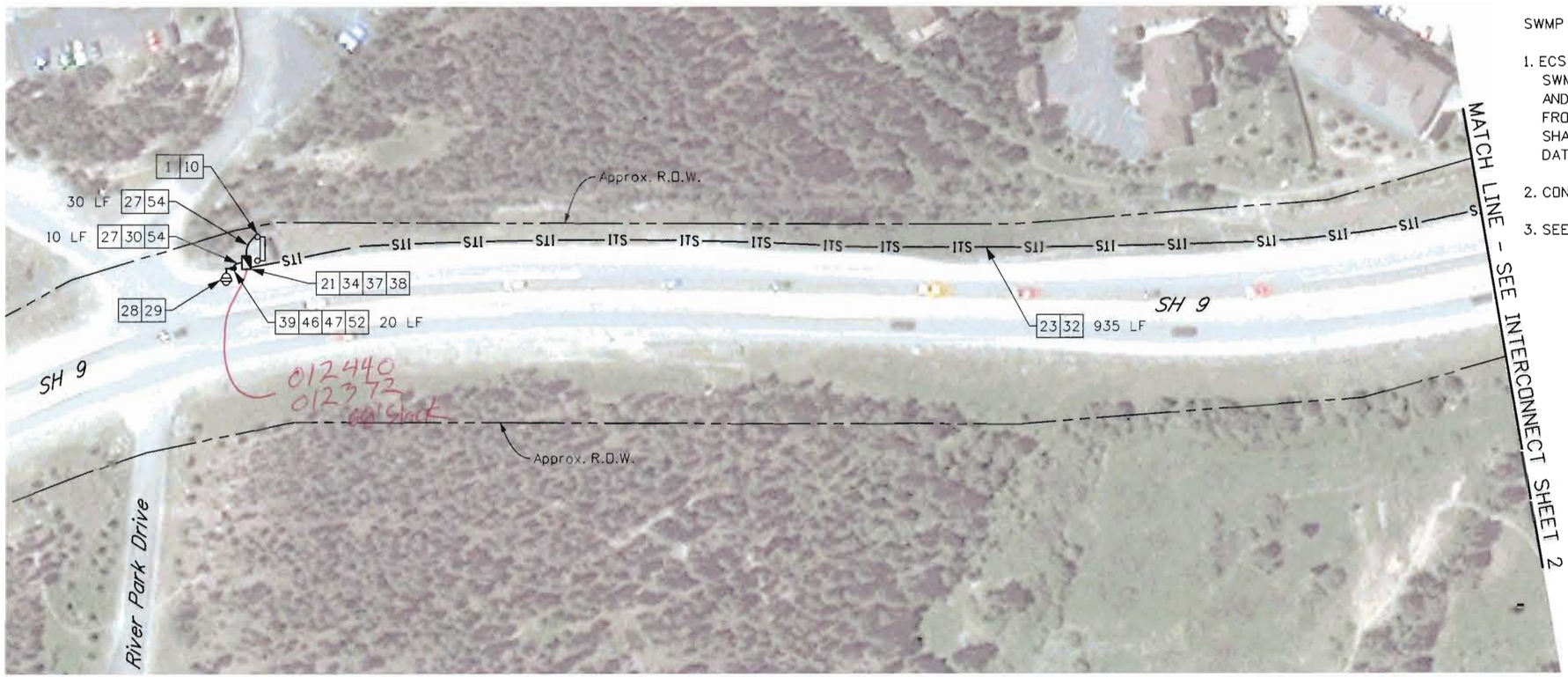
INTERCONNECT PLANS INDEX SHEET			Project No./Code
			MTCE 0091-039
Designer: KEB	Structure Numbers		18777
Detailer: PJS			
Sheet Subset: INDEX	Subset Sheets: 1 of 1		Sheet Number 10



SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

1 EXISTING VMS (GROUND MOUNTED)

10 EXISTING POLE MOUNTED VMS CABINET

21 PULL BOX (24" X 36" X 24")

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

27 1-¼ INCH ELECTRICAL CONDUIT (LIQUIDTIGHT FLEXIBLE METAL)

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

39 FIBER OPTIC TERMINATION PANEL - 6 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

52 CLOSED CIRCUIT TELEVISION POLE AND COMMUNICATIONS CABINET

54 SERIAL CABLE

811 Know what's below. Call before you dig.

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0' 50' 100' 200'

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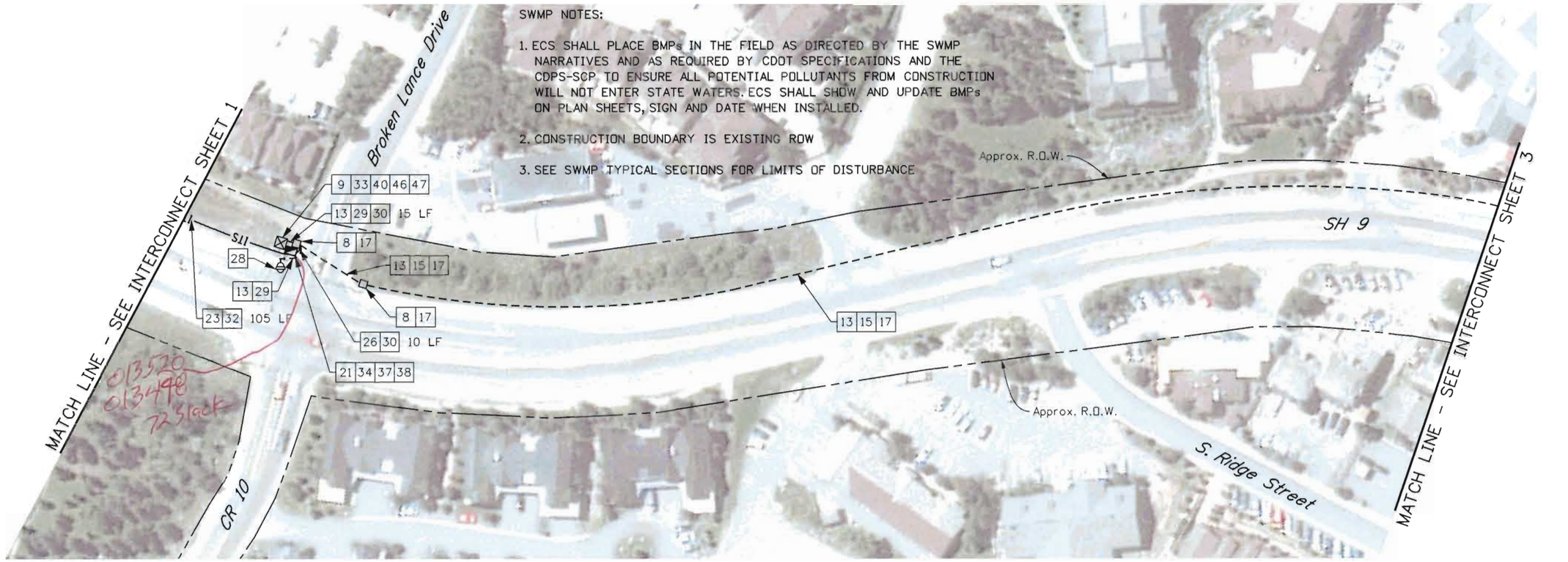
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	1 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 11

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE



8 EXISTING PULL BOX

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

17 PROTECT IN PLACE

21 PULL BOX (24" X 36" X 24")

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

811 Know what's below. Call before you dig.

0' 50' 100' 200'

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Drawing File Name: 18777TRAF_Plan02.dgn
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Unit Information Unit Leader Initials

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Sheet Revisions

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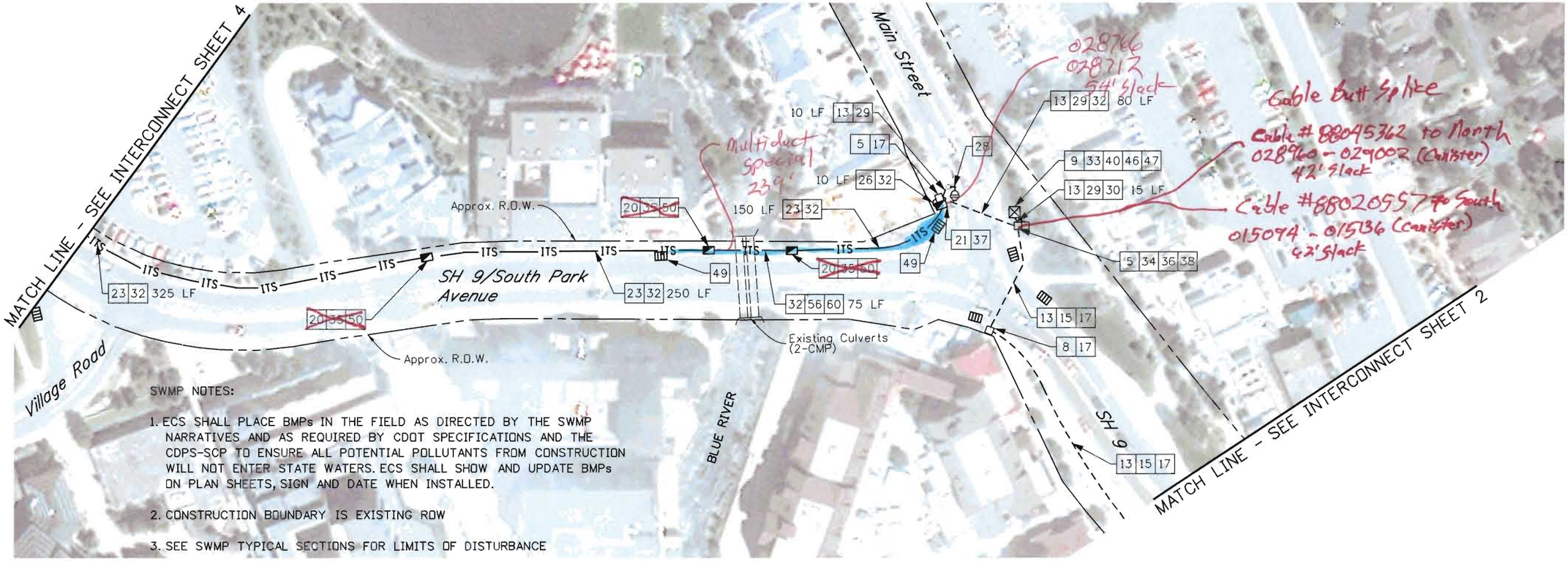
No Revisions:
Revised:
Void:

TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	2 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 12



SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

5 EXISTING PULL BOX (17" X 30")

8 EXISTING PULL BOX

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

17 PROTECT IN PLACE

20 PULL BOX (18" X 30" X 18")

21 PULL BOX (24" X 36" X 24")

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

35 COIL 25 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

49 STORM DRAIN INLET PROTECTION

50 INSTALL PULL BOX IN CONCRETE SIDEWALK AND REPLACE PANEL

56 CONDUIT TO BE INSTALLED PER THE SHALLOW TRENCH DETAIL

60 2 - 2 INCH ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (SPECIAL)

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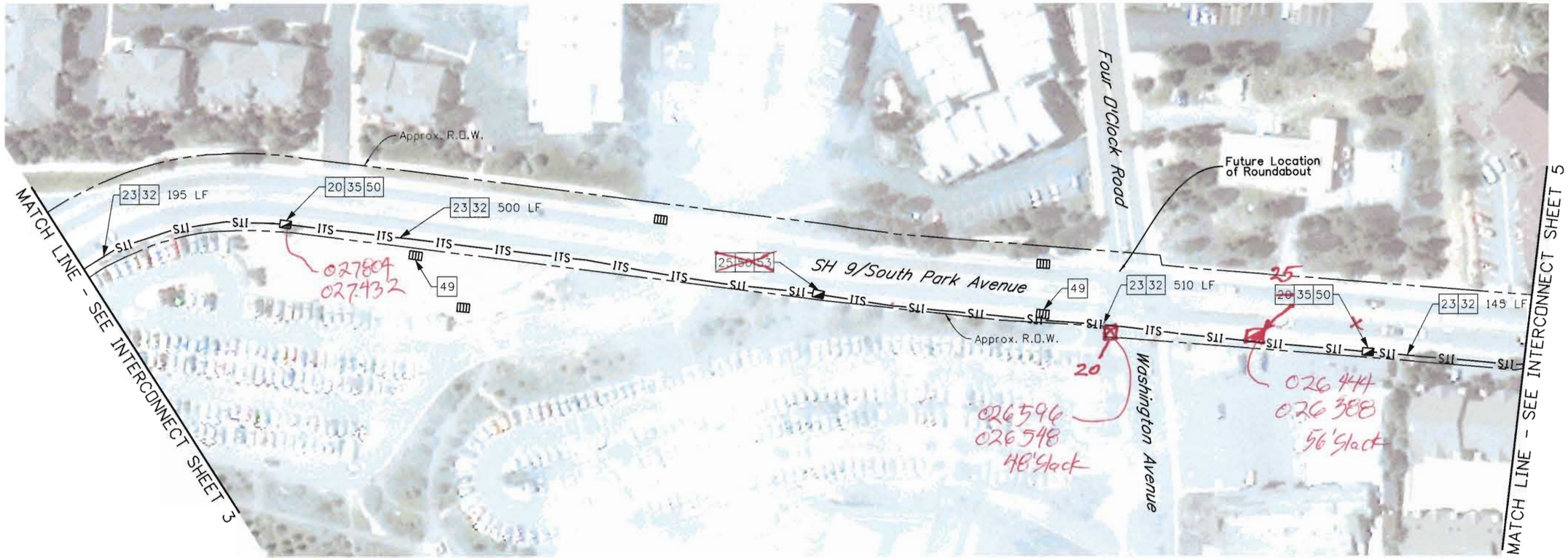
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	3 of 46

Project No./Code: MTCE 0091-039
18777
Sheet Number 13



20 PULL BOX (18" X 30" X 18")

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

25 PULL BOX (30" X 48" X 24")

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

35 COIL 25 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

49 STORM DRAIN INLET PROTECTION

50 INSTALL PULL BOX IN CONCRETE SIDEWALK AND REPLACE PANEL

53 COIL 200 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

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2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

N

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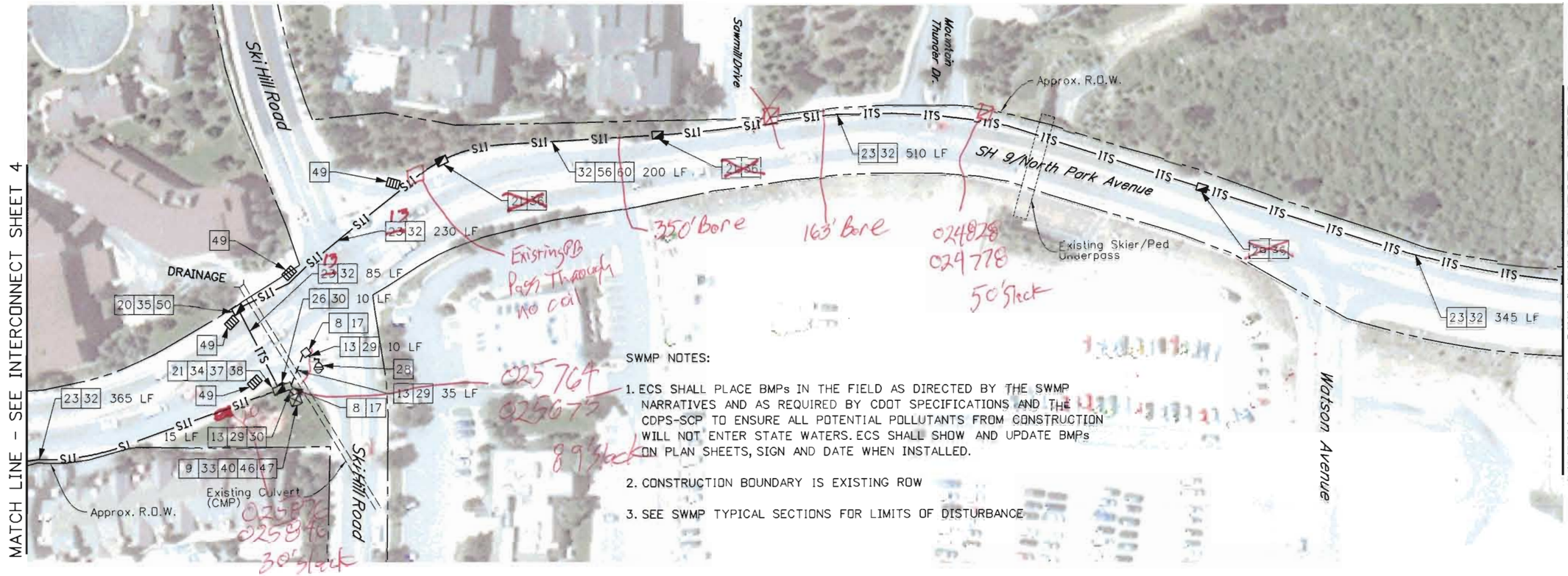
TRAFFIC SIGNAL INTERCONNECT

Designer: KEB
Detailer: PJS
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 4 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 14



8 EXISTING PULL BOX

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

17 PROTECT IN PLACE

20 PULL BOX (18" X 30" X 18")

21 PULL BOX (24" X 36" X 24")

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

35 COIL 25 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

49 STORM DRAIN INLET PROTECTION

50 INSTALL PULL BOX IN CONCRETE SIDEWALK AND REPLACE PANEL

56 CONDUIT TO BE INSTALLED PER THE SHALLOW TRENCH DETAIL IF SUBSURFACE CONDITIONS WARRANT

60 2 - 2 INCH ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (SPECIAL)

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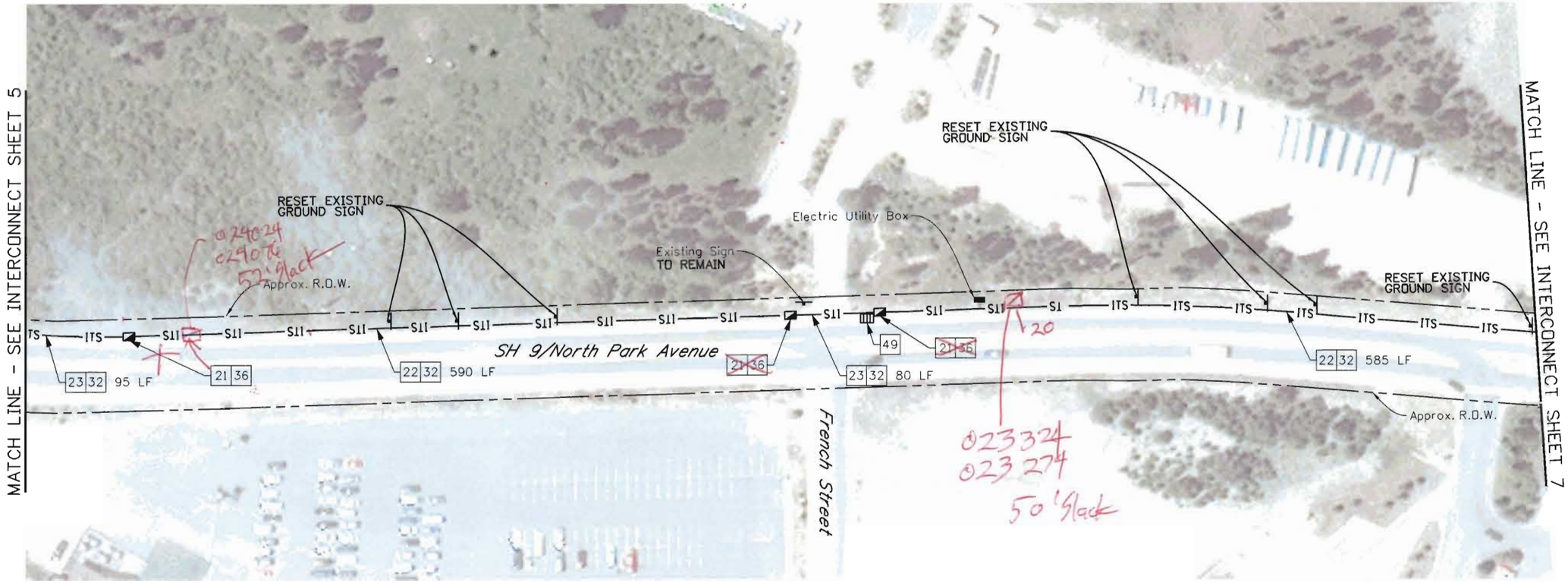
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	5 of 46

Project No./Code: MTCE 0091-039
18777
Sheet Number 15



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

49 STORM DRAIN INLET PROTECTION

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.

2. CONSTRUCTION BOUNDARY IS EXISTING ROW

3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	6 of 46

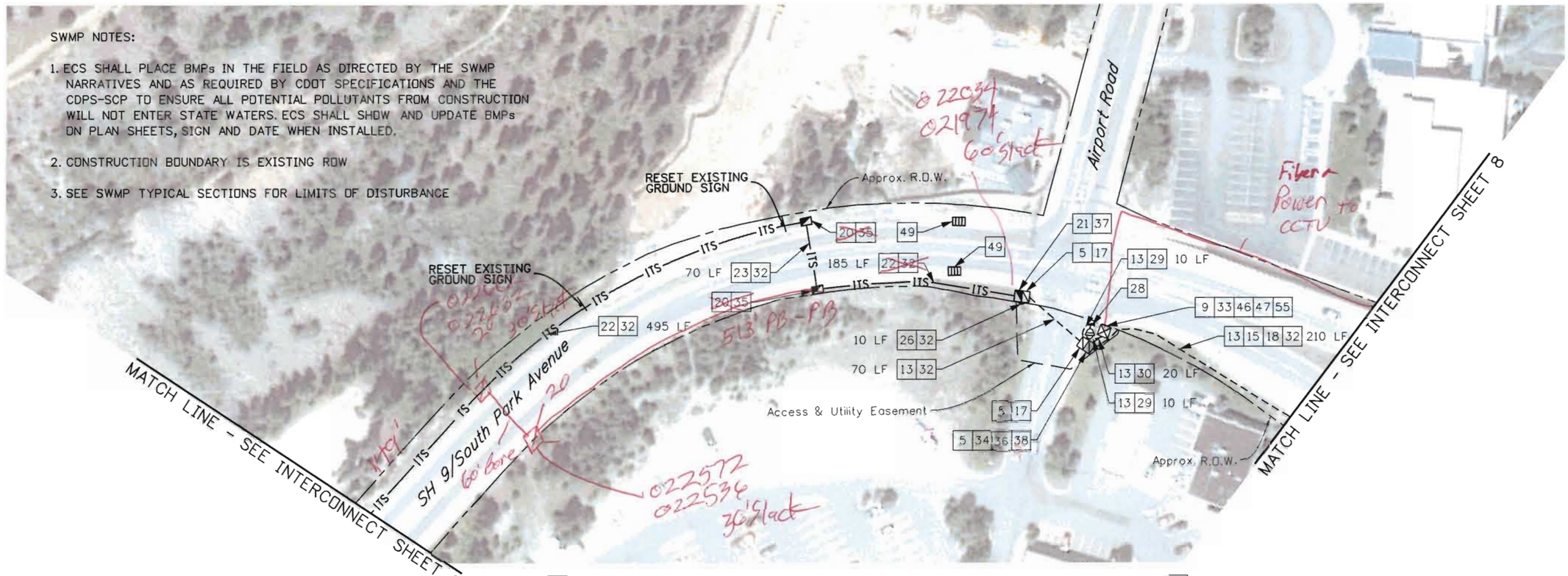
Project No./Code
MTCE 0091-039
18777
Sheet Number 16

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.

2. CONSTRUCTION BOUNDARY IS EXISTING ROW

3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE



5 EXISTING PULL BOX (17" X 30")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

17 PROTECT IN PLACE

18 REMOVE EXISTING FIBER BACKBONE CABLE

20 PULL BOX (18" X 30" X 18")

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

35 COIL 25 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

49 STORM DRAIN INLET PROTECTION

55 EXISTING FIBER OPTIC TERMINATION PANEL - 12 FIBER

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TRAFFIC SIGNAL INTERCONNECT

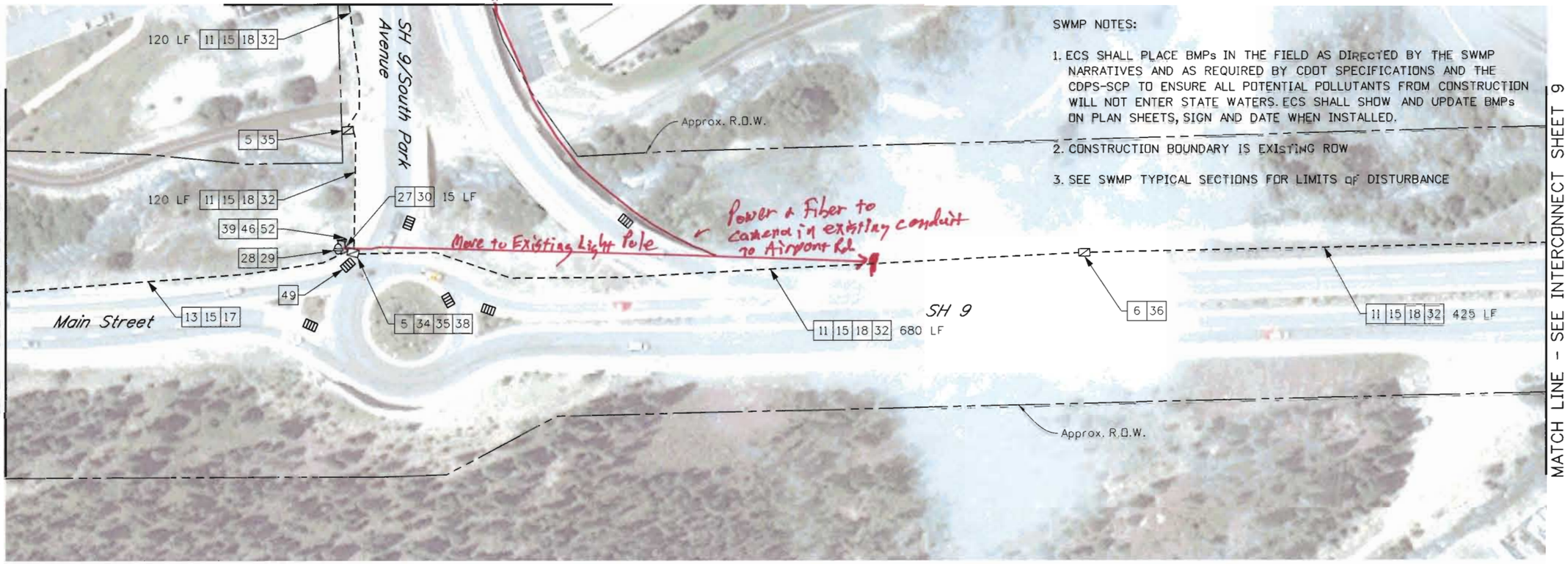
Designer: KEB
Detailer: PJS
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 7 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 17

MATCH LINE - SEE INTERCONNECT SHEET 7

MATCH LINE - SEE INTERCONNECT SHEET 46

MATCH LINE - SEE INTERCONNECT SHEET 9



SWMP NOTES:

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2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

5 EXISTING PULL BOX (17" X 30")

6 EXISTING PULL BOX (24" X 36")

11 EXISTING 2" ELECTRICAL CONDUIT

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

17 PROTECT IN PLACE

18 REMOVE EXISTING FIBER BACKBONE CABLE

27 1-1/4 INCH ELECTRICAL CONDUIT (LIQUIDTIGHT FLEXIBLE METAL)

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

35 COIL 25 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

39 FIBER OPTIC TERMINATION PANEL - 6 FIBER

46 ETHERNET SWITCH

49 STORM DRAIN INLET PROTECTION

52 CLOSED CIRCUIT TELEVISION POLE AND COMMUNICATIONS CABINET

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TRAFFIC SIGNAL INTERCONNECT

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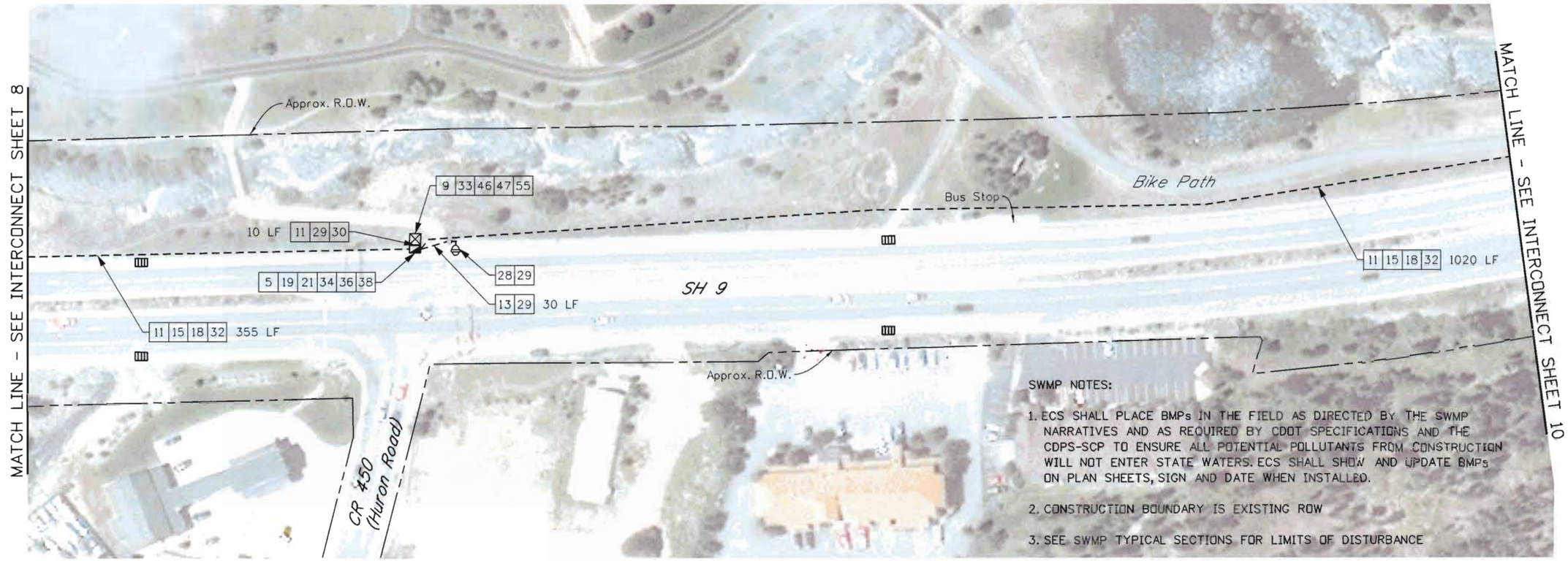
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	8 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 18



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5 EXISTING PULL BOX (17" X 30")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

11 EXISTING 2" ELECTRICAL CONDUIT

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

18 REMOVE EXISTING FIBER BACKBONE CABLE

19 REMOVE EXISTING PULL BOX

21 PULL BOX (24" X 36" X 24")

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

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46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

55 EXISTING FIBER OPTIC TERMINATION PANEL - 12 FIBER

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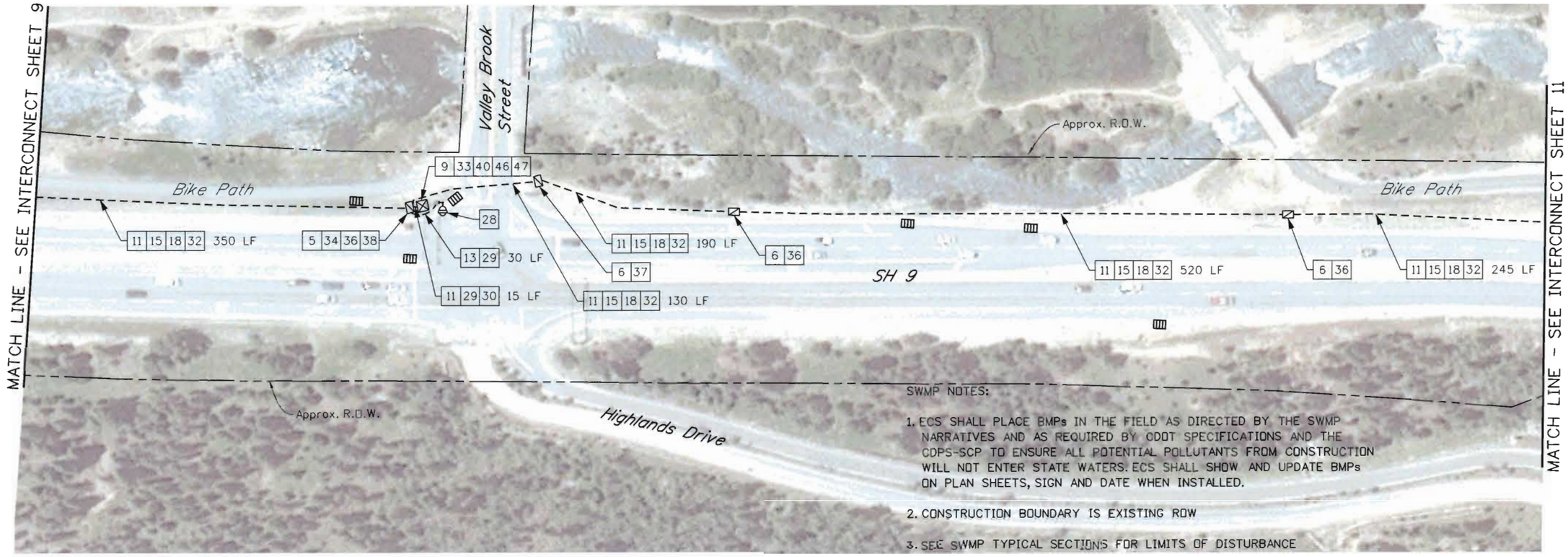
TRAFFIC SIGNAL INTERCONNECT

Designer: KEB
Detailer: PJS
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 9 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 19



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1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
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5 EXISTING PULL BOX (17" X 30")

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9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

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13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

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29 CLOSED CIRCUIT TELEVISION CABLE

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34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

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37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

Know what's below. Call before you dig.

0' 50' 100' 200'

5/22/2012 3:02:38 PM
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Print Date: 5/22/2012
Drawing File Name: 18777TRAF_Plan10.dgn
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Unit Information Unit Leader Initials

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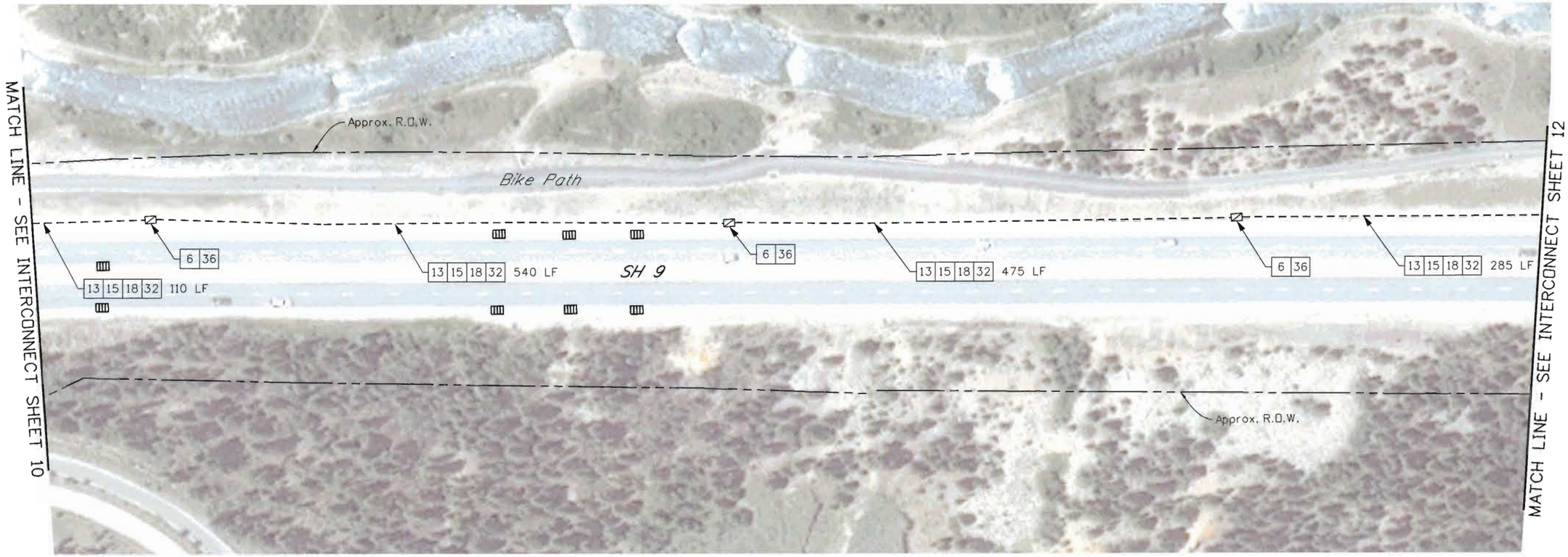
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	10 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 20



6 EXISTING PULL BOX (24" X 36")

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

18 REMOVE EXISTING FIBER BACKBONE CABLE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

0' 50' 100' 200'

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Unit Information	Unit Leader Initials		

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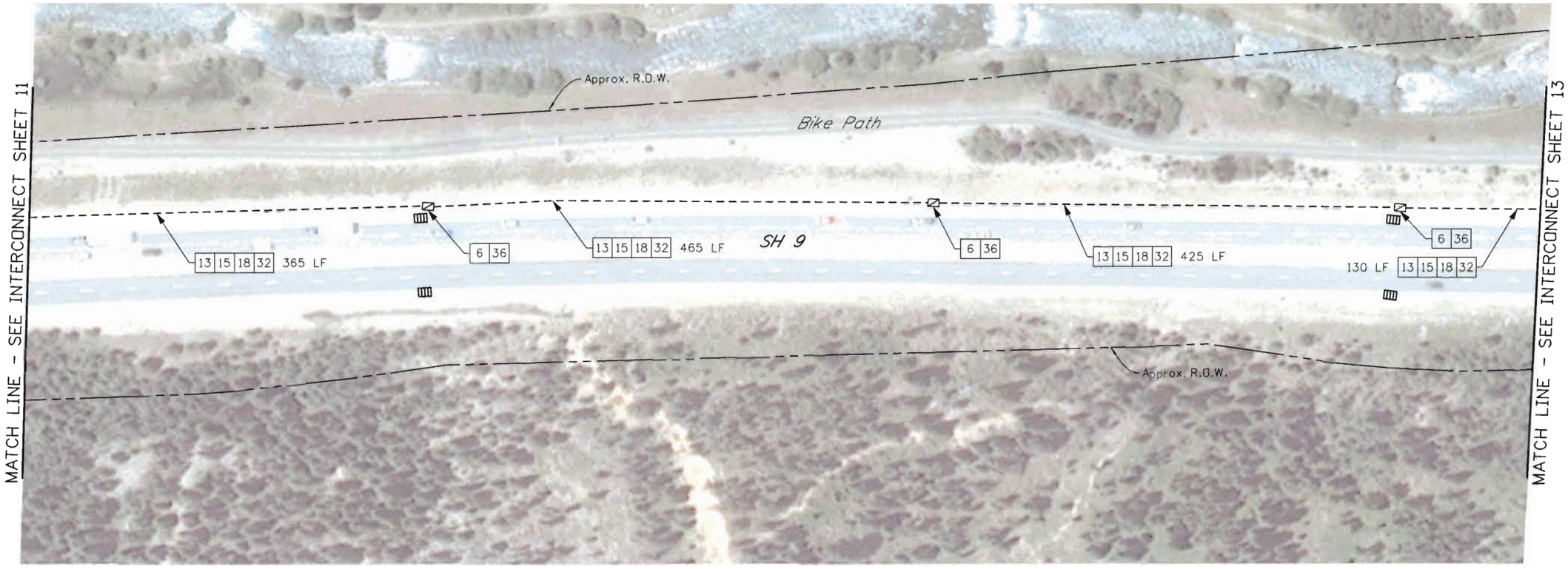
Void:

TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	11 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 21



6 EXISTING PULL BOX (24" X 36")

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

18 REMOVE EXISTING FIBER BACKBONE CABLE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

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2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

N

0' 50' 100' 200'

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Horiz. Scale: 1:100 Vert. Scale: As Noted
Unit Information Unit Leader Initials

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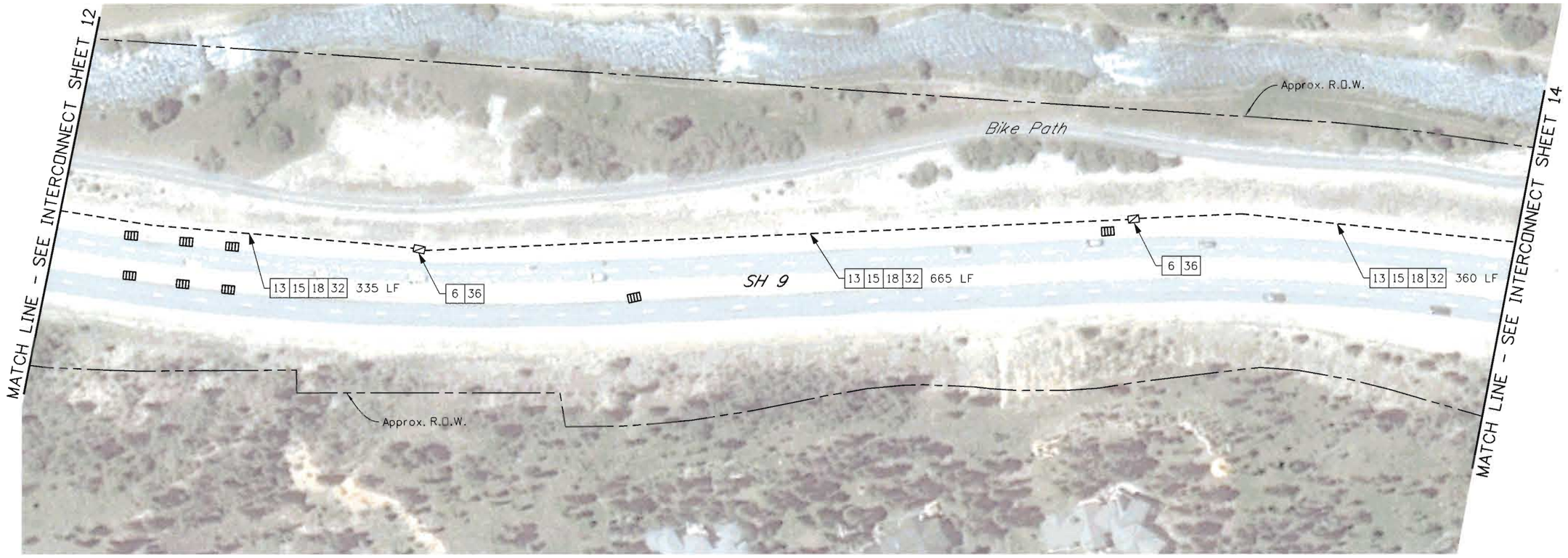
TRAFFIC SIGNAL INTERCONNECT

Designer: KEB
Detailer: PJS
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 12 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 22



6 EXISTING PULL BOX (24" X 36")

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

18 REMOVE EXISTING FIBER BACKBONE CABLE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

N

0' 50' 100' 200'

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Unit Information Unit Leader Initials

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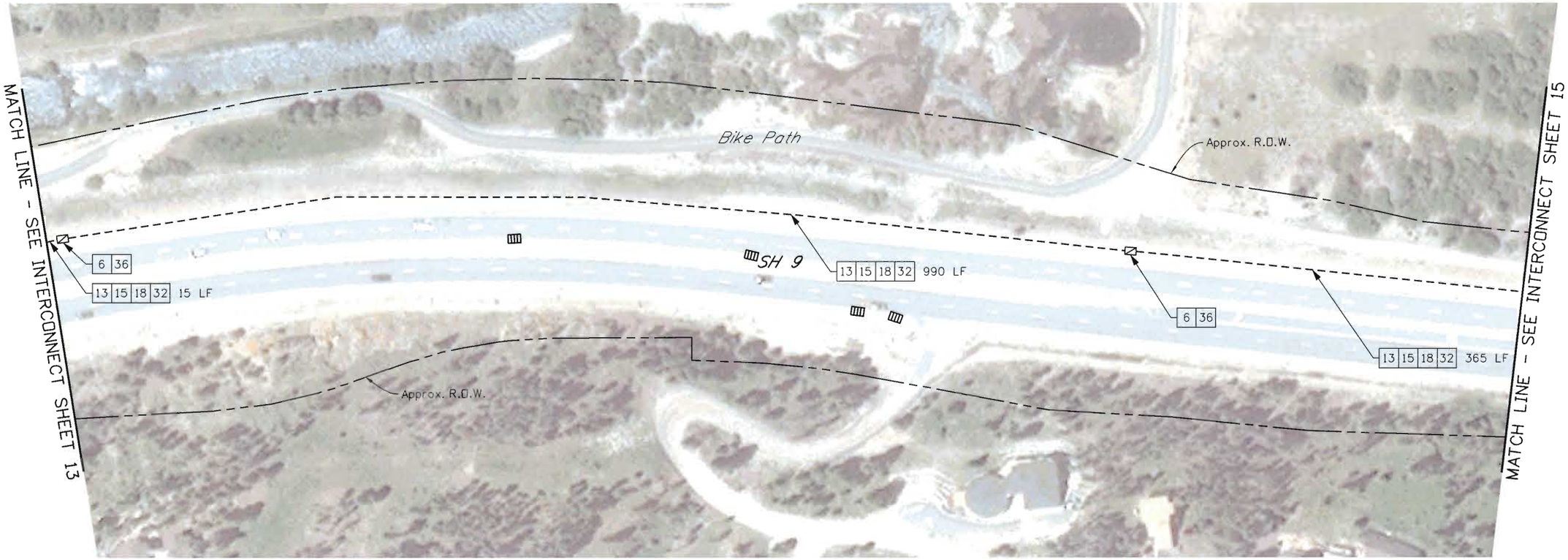
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	13 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 23



6 EXISTING PULL BOX (24" X 36")

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

18 REMOVE EXISTING FIBER BACKBONE CABLE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.

2. CONSTRUCTION BOUNDARY IS EXISTING ROW

3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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N

0' 50' 100' 200'

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Drawing File Name: 18777TRAF_Plan14.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
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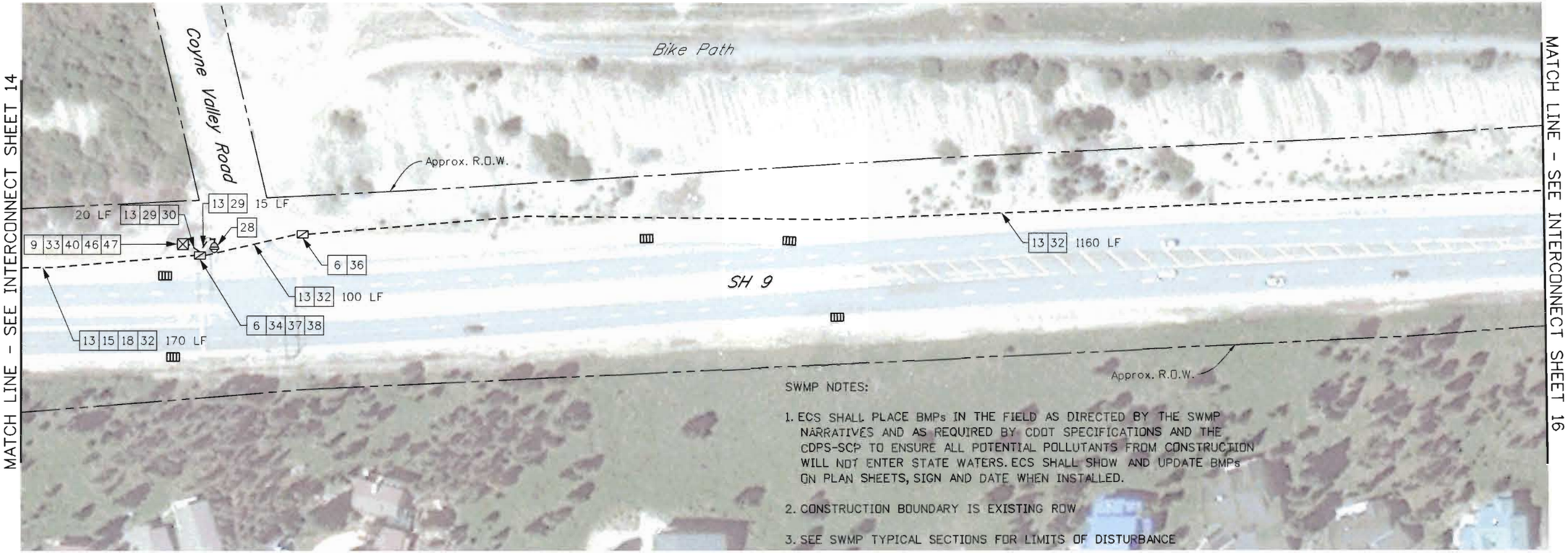
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	14 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 24

MATCH LINE - SEE INTERCONNECT SHEET 14



MATCH LINE - SEE INTERCONNECT SHEET 16

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

18 REMOVE EXISTING FIBER BACKBONE CABLE

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

811 Know what's below. Call before you dig.

N

0' 50' 100' 200'

5/22/2012 3:03:23 PM
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Unit Information	Unit Leader Initials

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Region 1 SS

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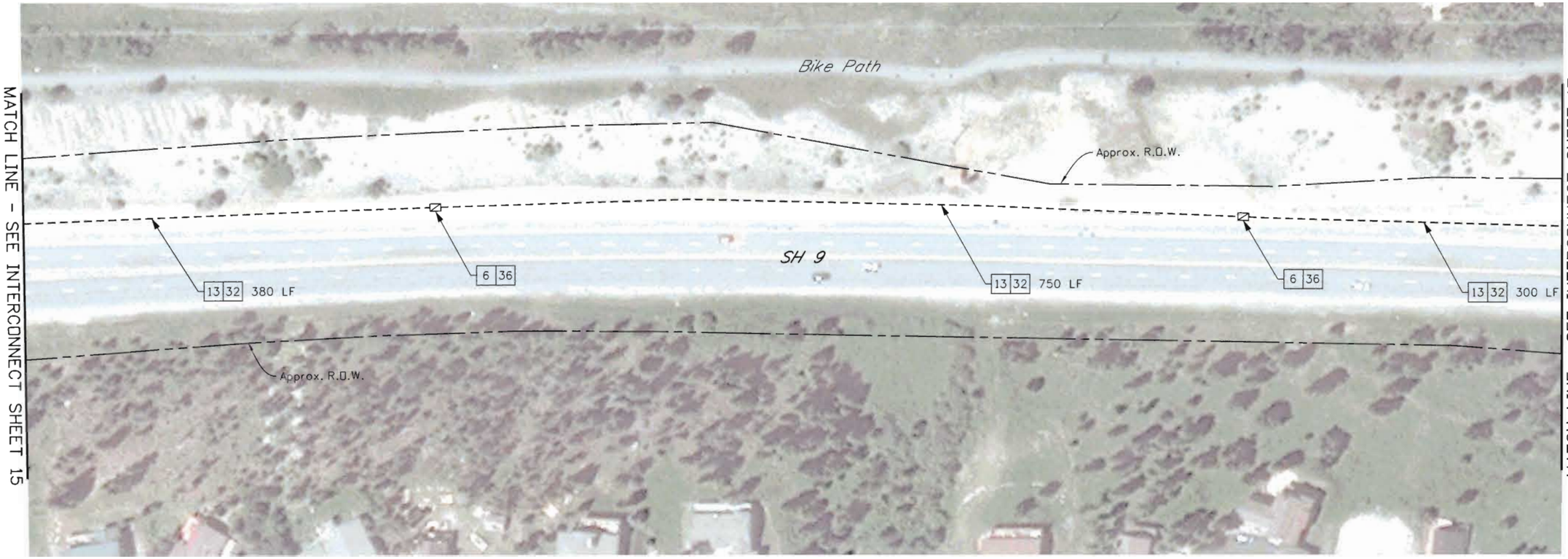
No Revisions:
Revised:
Void:

TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	15 of 46

Project No./Code	
MTCE 0091-039	
18777	
Sheet Number	25



6 EXISTING PULL BOX (24" X 36")

13 EXISTING ELECTRICAL CONDUIT

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

0' 50' 100' 200'

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Drawing File Name: 18777TRAF_Plan16.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
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Region 1 SS

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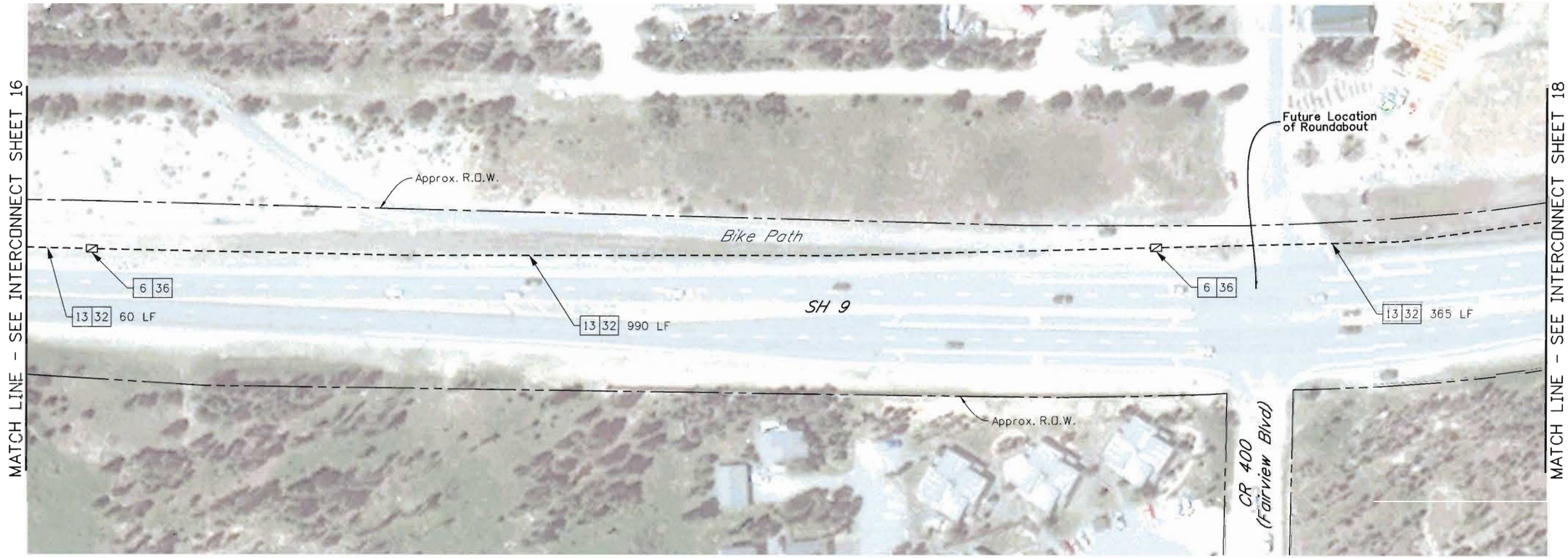
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	16 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 26



6 EXISTING PULL BOX (24" X 36")

13 EXISTING ELECTRICAL CONDUIT

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

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2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

N

0' 50' 100' 200'

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Print Date: 5/22/2012
Drawing File Name: 18777TRAF_Plan17.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
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Date:	Comments	Init.

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Region 1 SS

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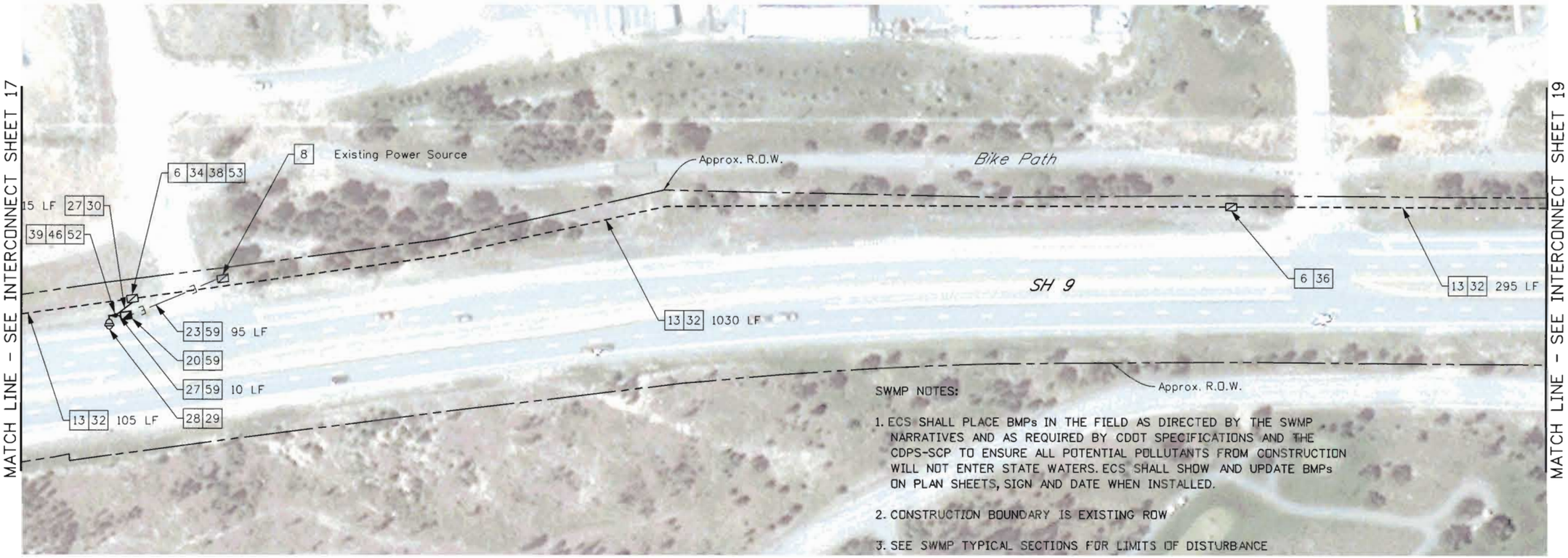
No Revisions:
Revised:
Void:

TRAFFIC SIGNAL INTERCONNECT

Designer: KEB
Detailer: PJS
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 17 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 27



SWMP NOTES:

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6 EXISTING PULL BOX (24" X 36")

8 EXISTING PULL BOX

13 EXISTING ELECTRICAL CONDUIT

20 PULL BOX (18" X 30" 18")

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

27 1-1/4 INCH ELECTRICAL CONDUIT (LIQUIDTIGHT FLEXIBLE METAL)

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

39 FIBER OPTIC TERMINATION PANEL - 6 FIBER

46 ETHERNET SWITCH

52 CLOSED CIRCUIT TELEVISION POLE AND COMMUNICATIONS CABINET

53 COIL 200 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

59 WIRING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE MINIMUM AMPACITY AND SIZE OF THE CONDUCTORS FOR THIS RUN BASED ON A MAXIMUM VOLTAGE DROP OF 3% BASED ON ARTICLES 210-19, 215-2, OR 230-31 OF THE NEC, AS APPLICABLE. THE MAXIMUM TOTAL VOLTAGE DROP FOR A COMBINATION OF BOTH BRANCH CIRCUIT AND FEEDER SHALL NOT EXCEED 5%. GROUNDING CONDUCTORS SHALL CONFORM TO ARTICLE 250-122 OF THE NEC.

811 Know what's below. Call before you dig.

0' 50' 100' 200'

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Print Date: 5/22/2012	Sheet Revisions	Colorado Department of Transportation	As Constructed
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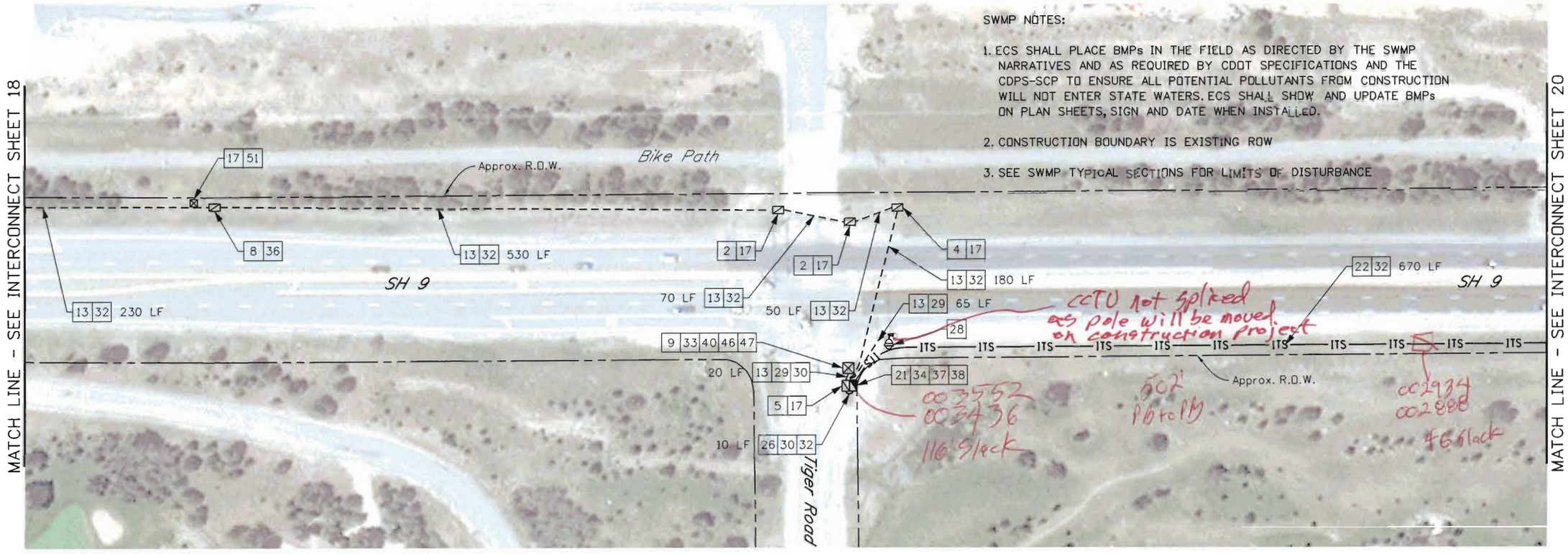
Unit Information Unit Leader Initials		Region 1 SS	Void:
MULLER Muller Engineering Co., Inc. Consulting Engineers apexdesign P:\10-028.13 - SH 9 Interconnect\Traffic_ITS			

TRAFFIC SIGNAL INTERCONNECT				Project No./Code
				MTCE 0091-039
Designer: KEB	Structure Numbers			18777
Detailer: PJS				
Sheet Subset: ITS	Subset Sheets: 18 of 46			Sheet Number 28



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2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

2 EXISTING PULL BOX (12" X 18")

4 EXISTING PULL BOX (13" X 24")

5 EXISTING PULL BOX (17" X 30")

8 EXISTING PULL BOX

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

17 PROTECT IN PLACE

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

51 EXISTING AUTOMATIC TRAFFIC RECORDER (ATR)

0' 50' 100' 200'

5/22/2012 3:04:02 PM
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Print Date: 5/22/2012
Drawing File Name: 18777TRAF_Plan19.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
Unit Information Unit Leader Initials

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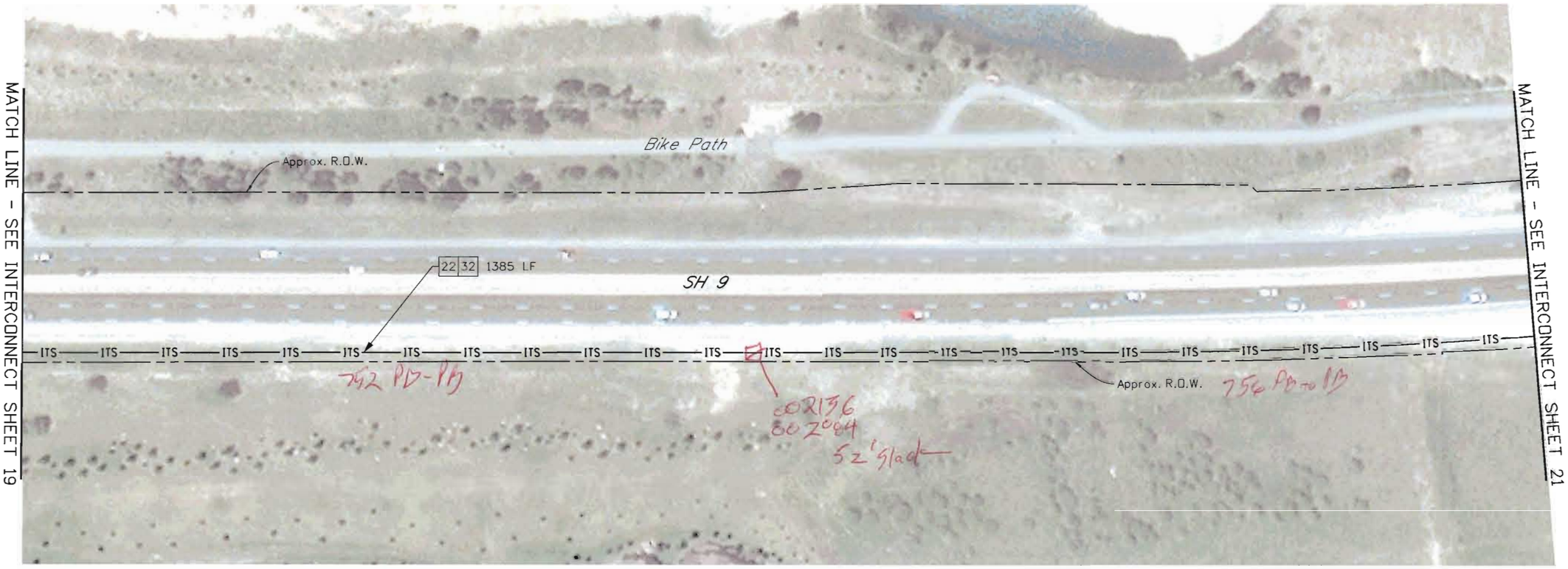
Region 1 SS

As Constructed
No Revisions:
Revised:
Void:

TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	19 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 29



22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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0' 50' 100' 200'

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TRAFFIC SIGNAL INTERCONNECT

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Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	20 of 46

Project No./Code
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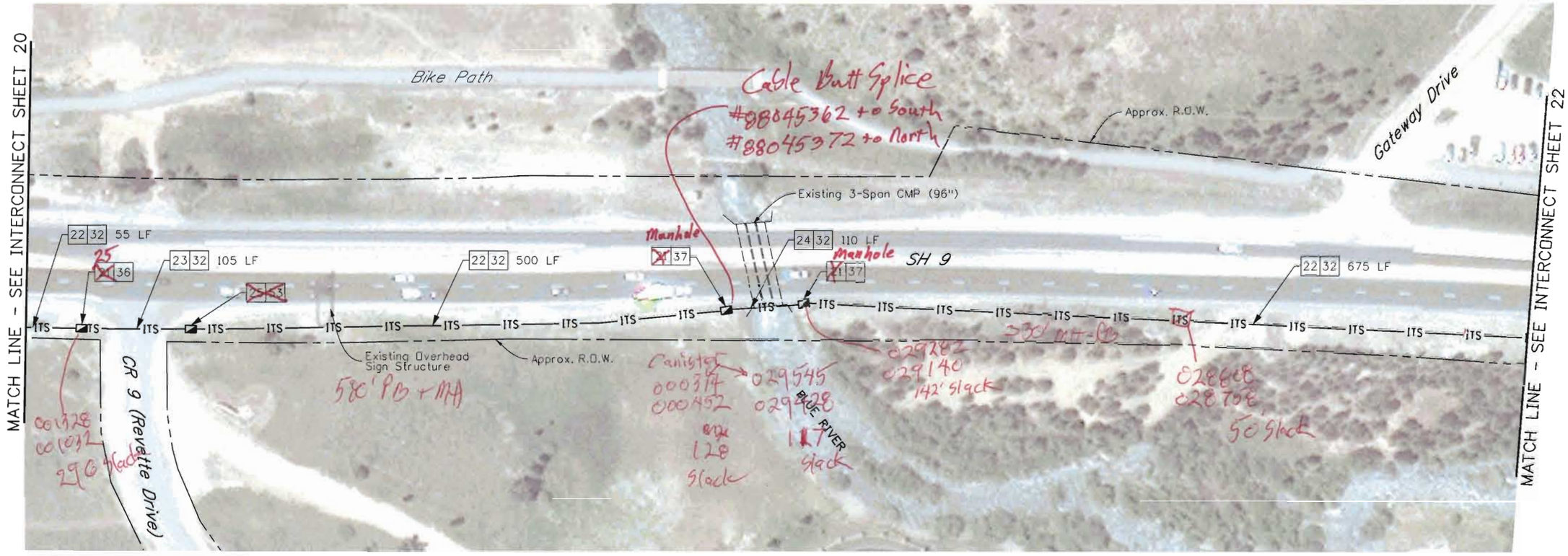
18777
Sheet Number 30



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

24 3 INCH ELECTRICAL CONDUIT - SEE CONDUIT ATTACHMENT TO BLUE RIVER STRUCTURE DETAIL

25 PULL BOX (30" X 48" X 24")

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

53 COIL 200 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
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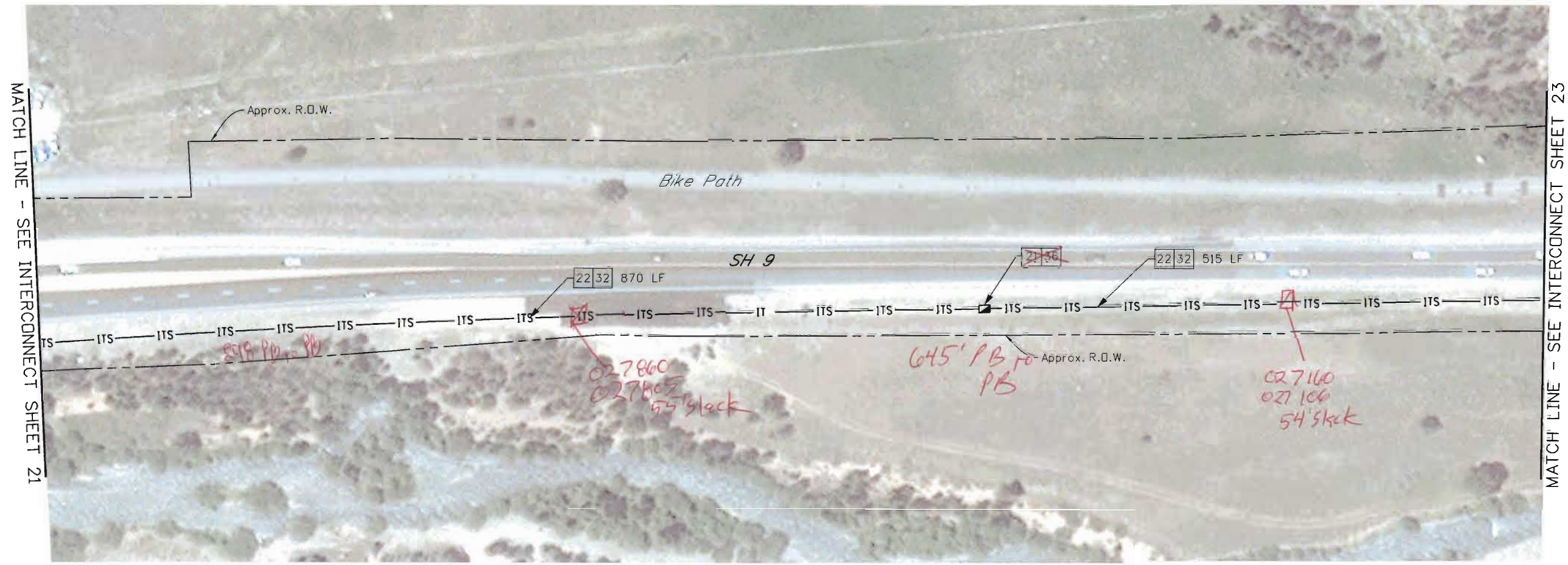
Sheet Subset: ITS	Subset Sheets: 21 of 46		Sheet Number 31



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
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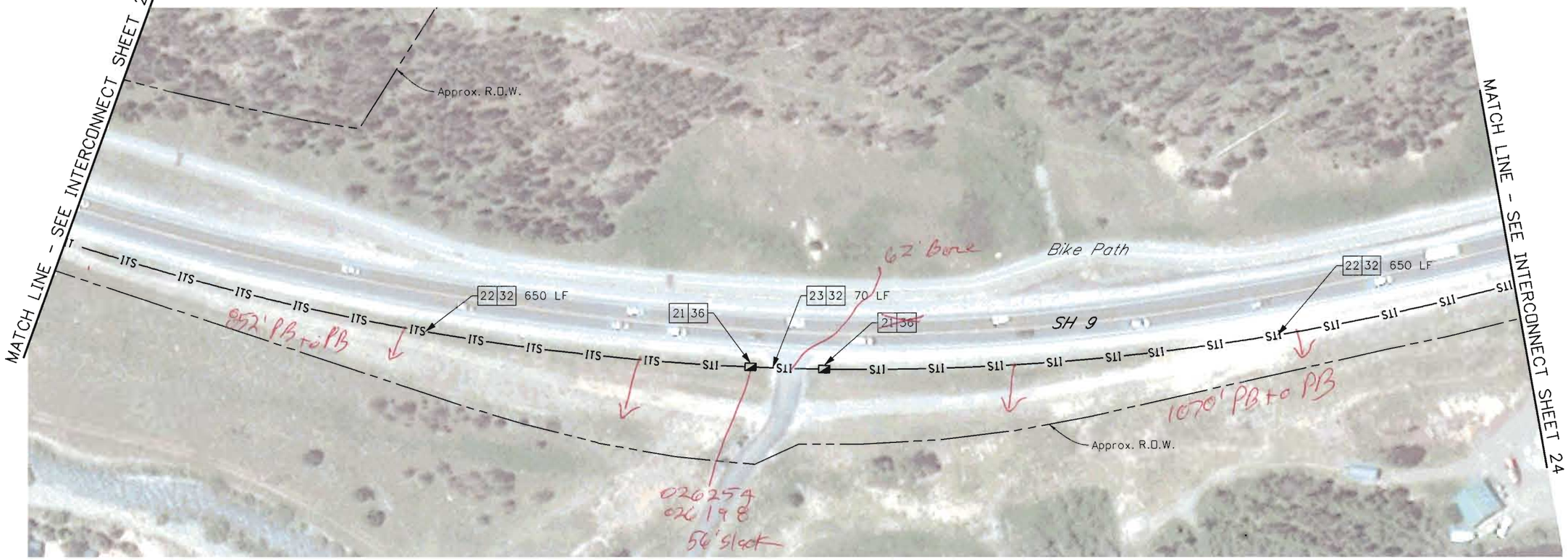
Sheet Number 32



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

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Sheet Subset:	ITS	Subset Sheets:	23 of 46

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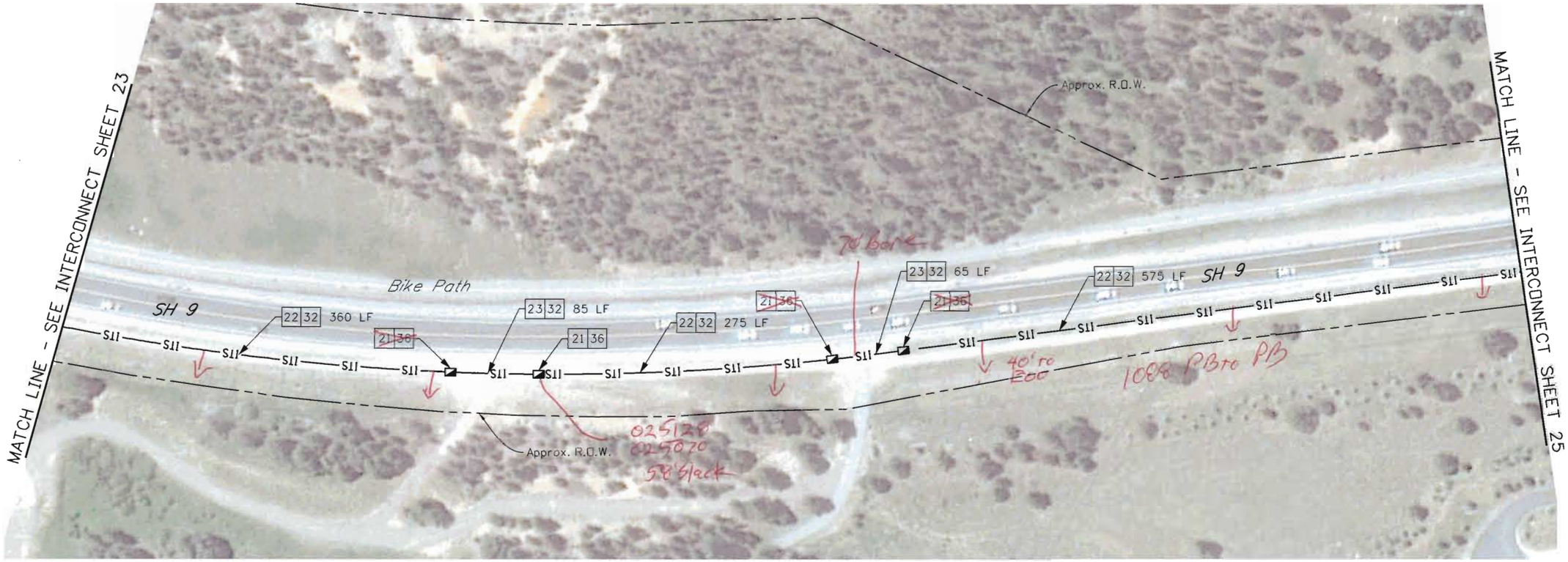
Sheet Number 33



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

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Sheet Number 34

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

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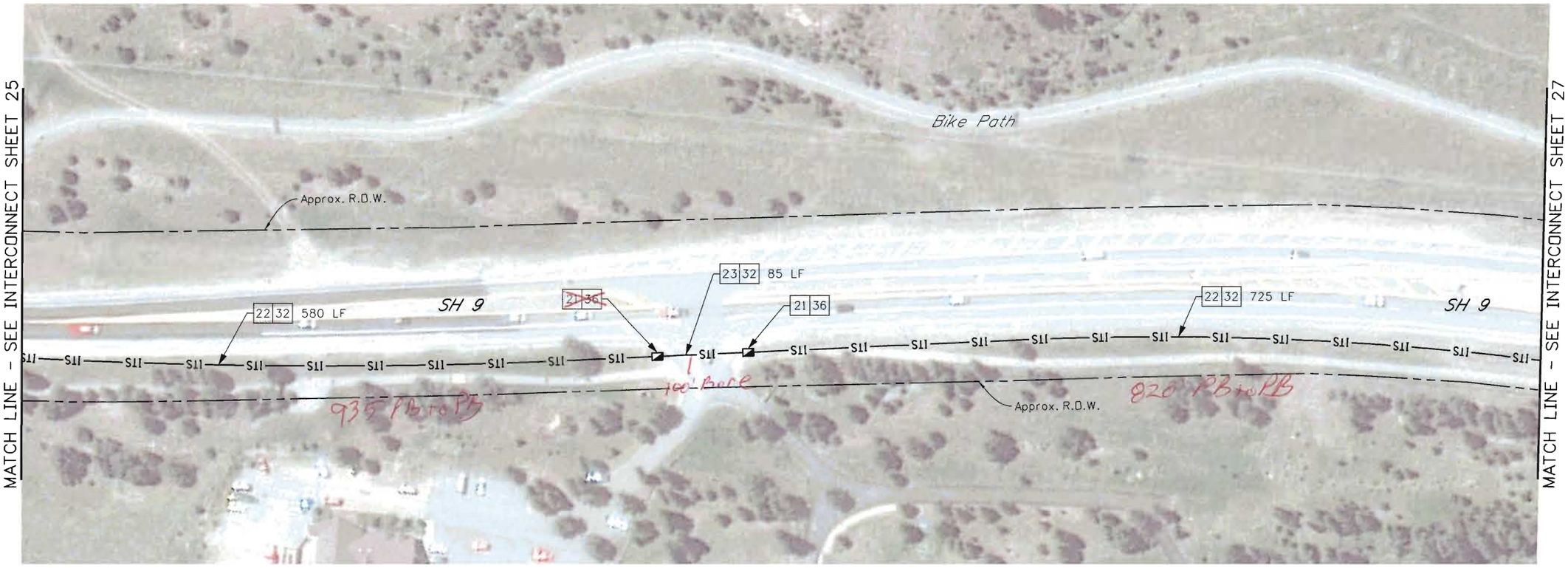
Sheet Subset:	ITS	Subset Sheets:	25 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 35



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

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Project No./Code
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18777
Sheet Number 36

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

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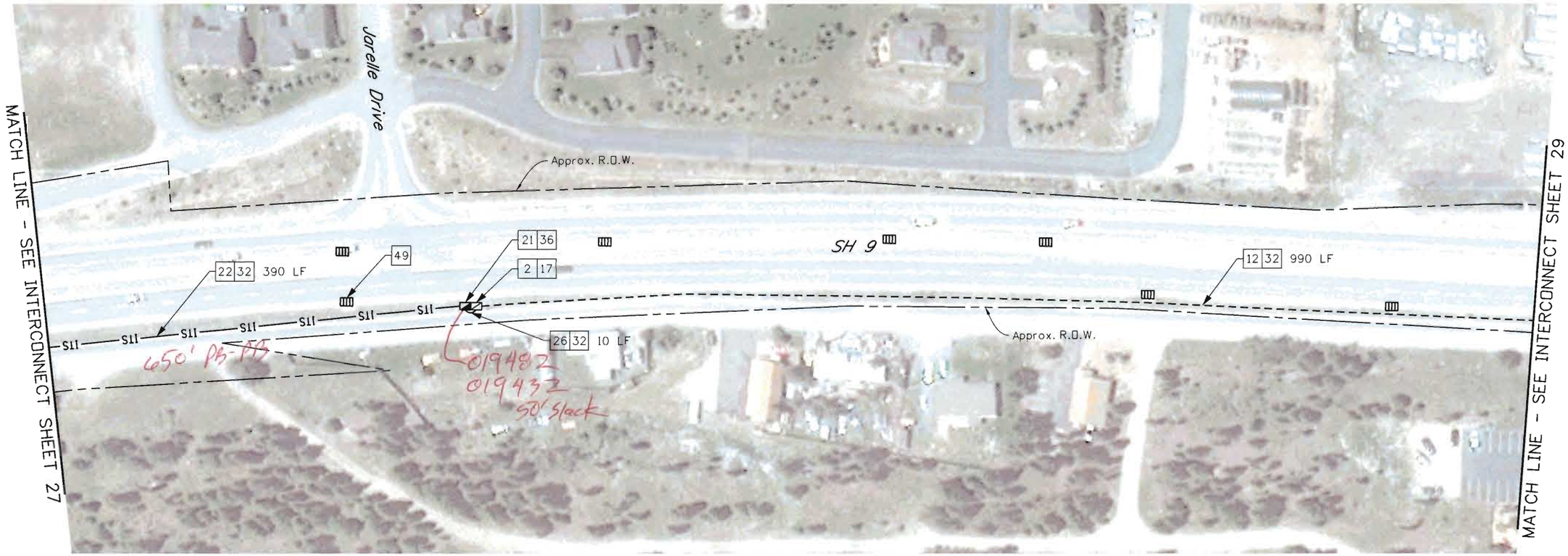
Detailer: PJS				
Sheet Subset: ITS	Subset Sheets:	27 of 46		Sheet Number 37



2 EXISTING PULL BOX (12" X 18")

12 EXISTING 3" ELECTRICAL CONDUIT

17 PROTECT IN PLACE

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

49 STORM DRAIN INLET PROTECTION

SWMP NOTES:

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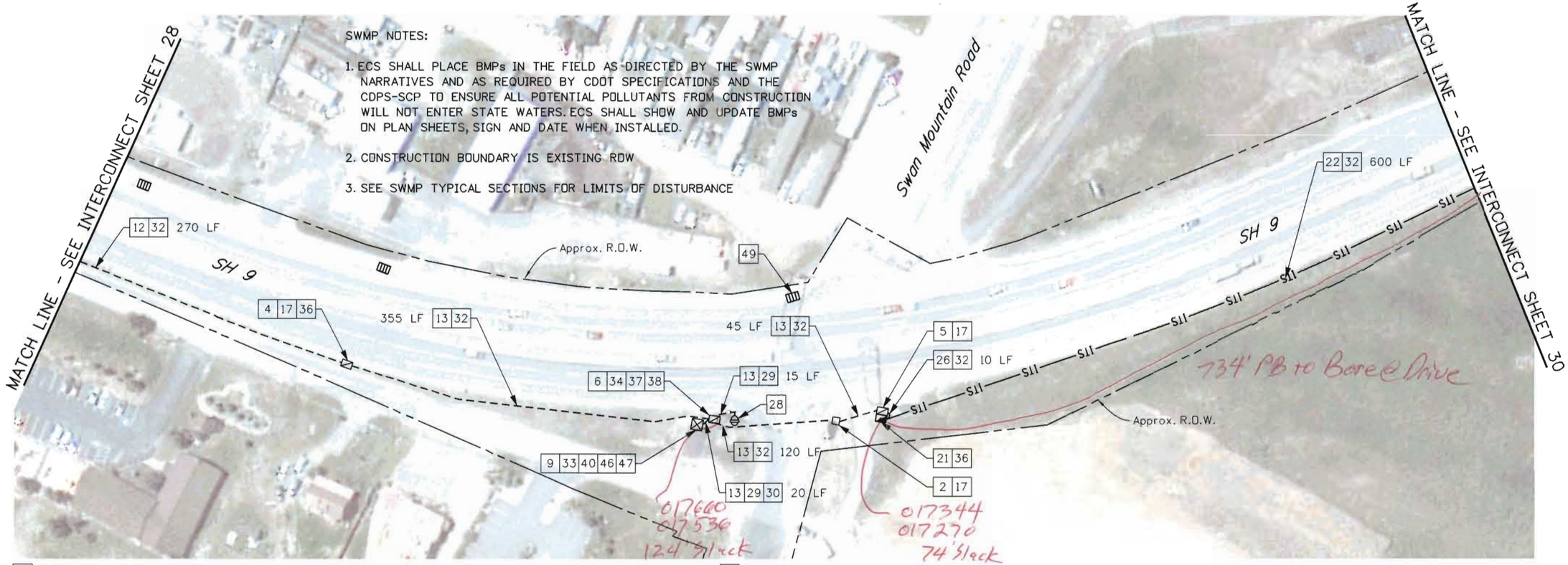
SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE



2 EXISTING PULL BOX (12" X 18")

4 EXISTING PULL BOX (13" X 24")

5 EXISTING PULL BOX (17" X 30")

6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

12 EXISTING 3" ELECTRICAL CONDUIT

13 EXISTING ELECTRICAL CONDUIT

17 PROTECT IN PLACE

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

30 FIBER OPTIC CABLE (SINGLE MODE) (12 STRANDS) (LATERAL)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

33 COIL 10 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN CABINET FOR SLACK

34 COIL 25 LINEAR FEET OF EACH FIBER OPTIC LATERAL CABLE IN PULL BOX FOR SLACK

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

49 STORM DRAIN INLET PROTECTION

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Project No./Code
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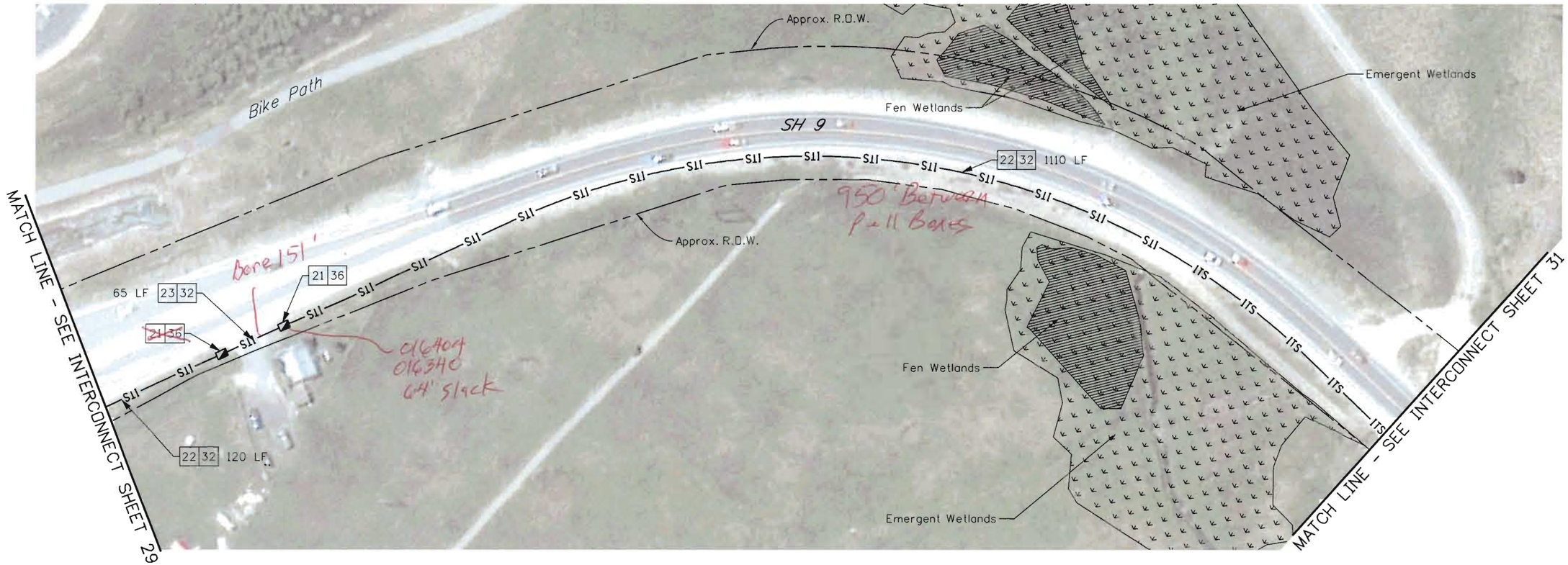
18777
Sheet Number 39



21 PULL BOX (24" X 36" X 24")

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23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

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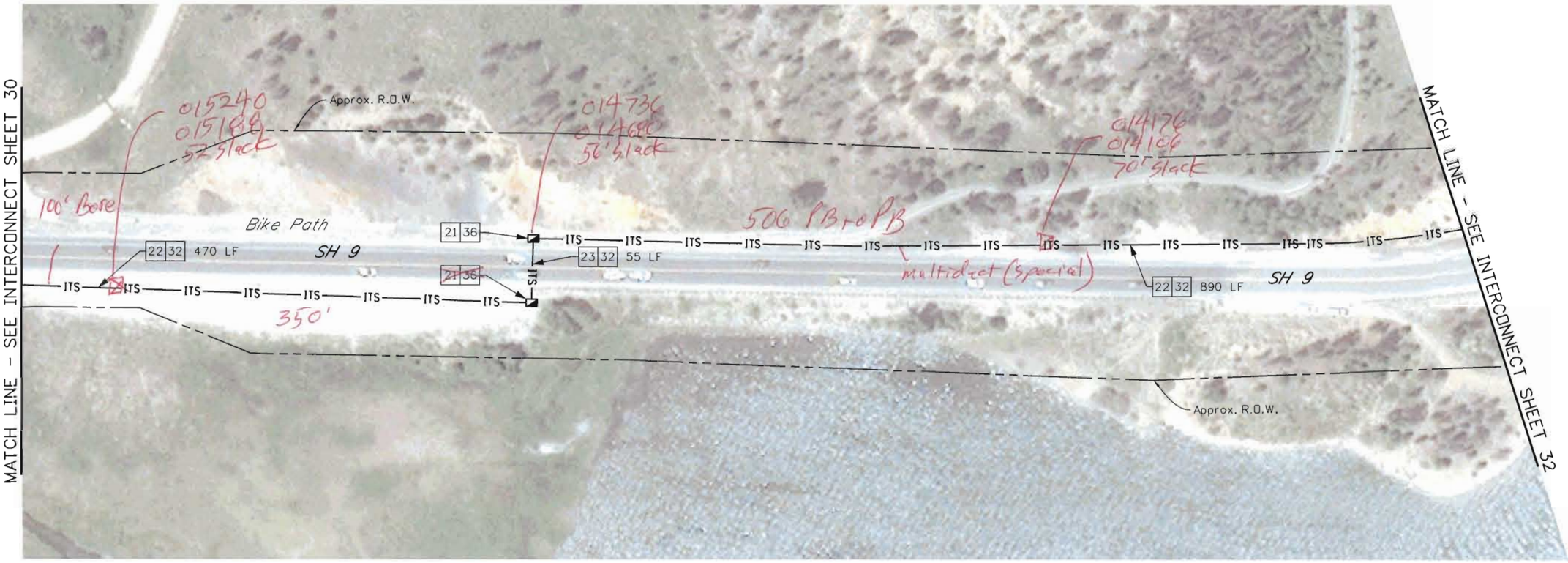
Sheet Number 40



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

23 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (BORED)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

N

0' 50' 100' 200'

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TRAFFIC SIGNAL INTERCONNECT

Designer: KEB
Detailer: PJS
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Structure Numbers:
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Sheet Number 41

21 PULL BOX (24" X 36" X 24")

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

56 CONDUIT TO BE INSTALLED PER THE SHALLOW TRENCH DETAIL IF SUBSURFACE CONDITIONS WARRANT

60 2 - 2 INCH ELECTRICAL CONDUIT (PLASTIC) (MULTIDUCT) (SPECIAL)

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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MTCE 0091-039	
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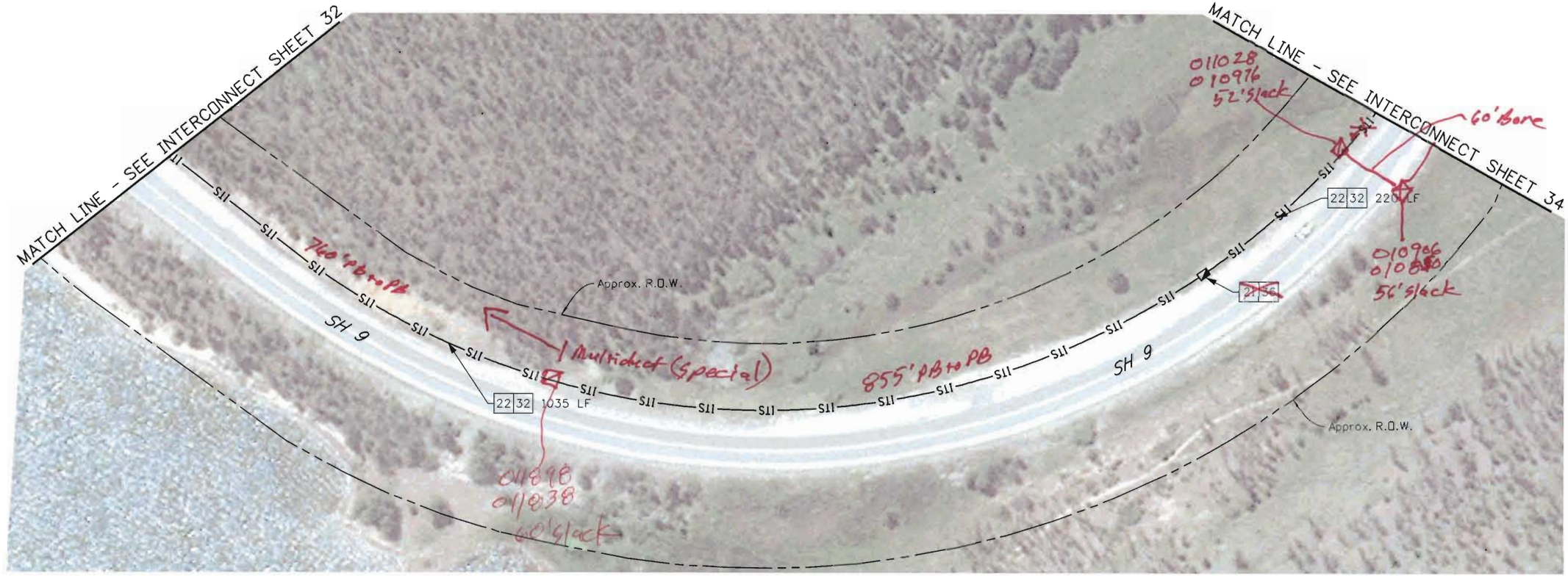
Sheet Number	42



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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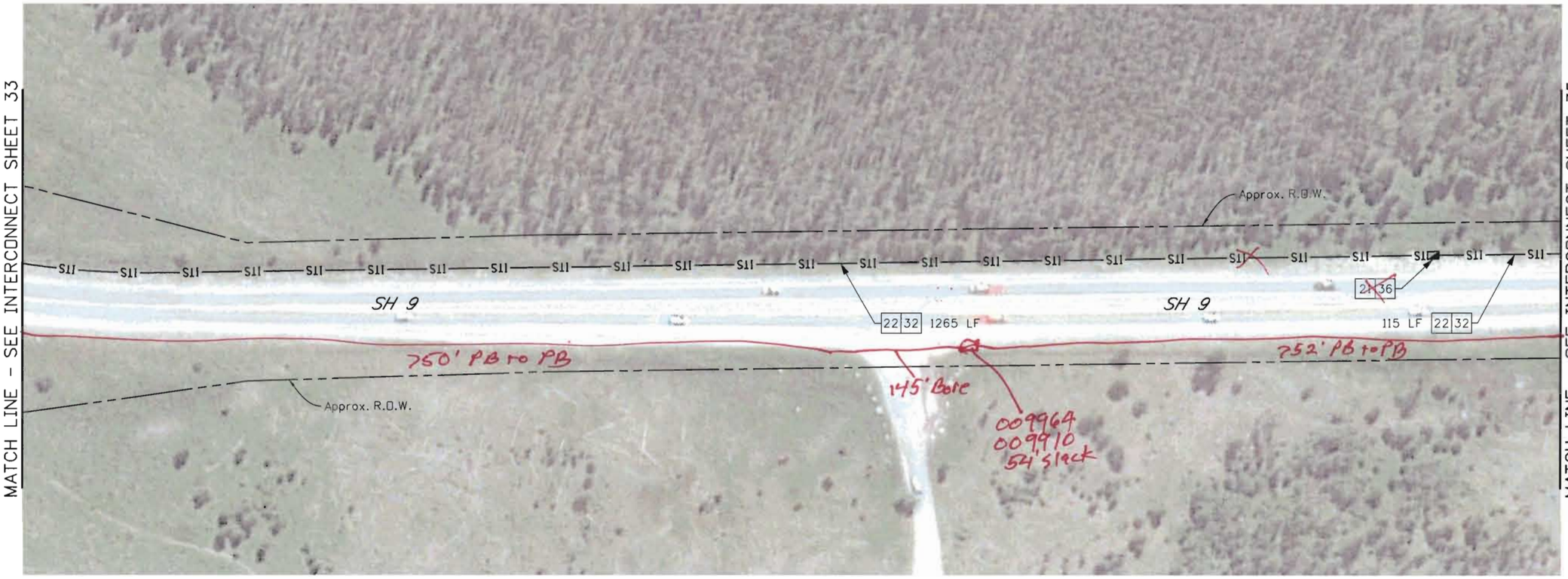
Sheet Number 43



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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Sheet Number 44

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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Designer:	KEB	Structure Numbers	
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Sheet Subset:	ITS	Subset Sheets:	35 of 46

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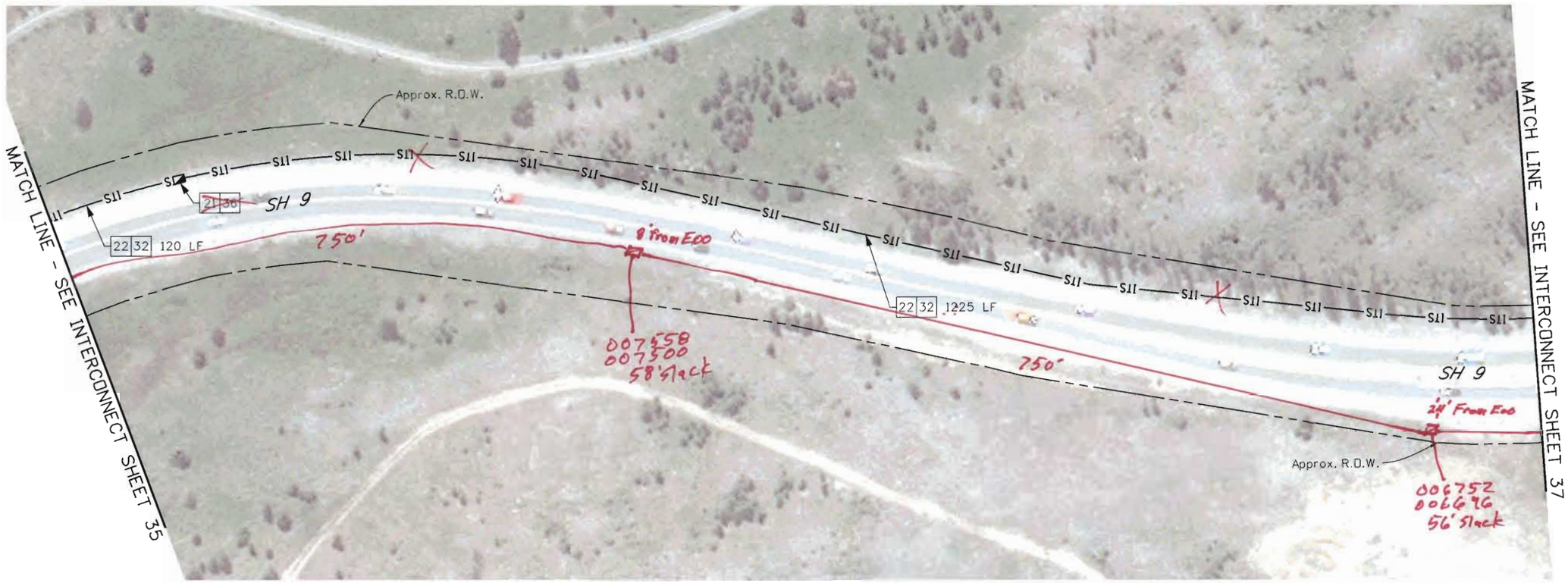
Sheet Number 45



21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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Sheet Subset:	ITS	Subset Sheets:	36 of 46

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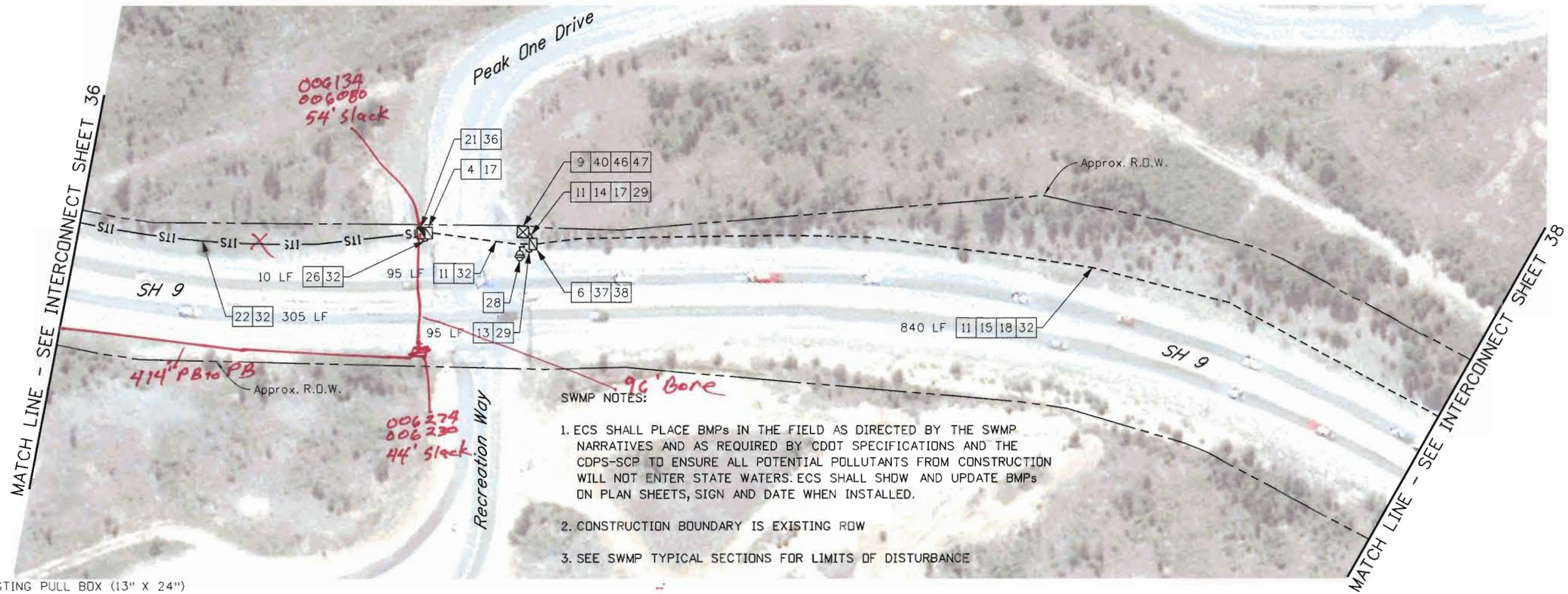
18777
Sheet Number 46



4 EXISTING PULL BOX (13" X 24")

6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

11 EXISTING 2" ELECTRICAL CONDUIT

13 EXISTING ELECTRICAL CONDUIT

14 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (12 STRAND)

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

17 PROTECT IN PLACE

18 REMOVE EXISTING FIBER BACKBONE CABLE

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

26 INSTALL 2-2 INCH ELECTRICAL CONDUITS BETWEEN ADJACENT PULL BOXES

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

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N

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Structure Numbers:
Subset Sheets: 37 of 46

Project No./Code
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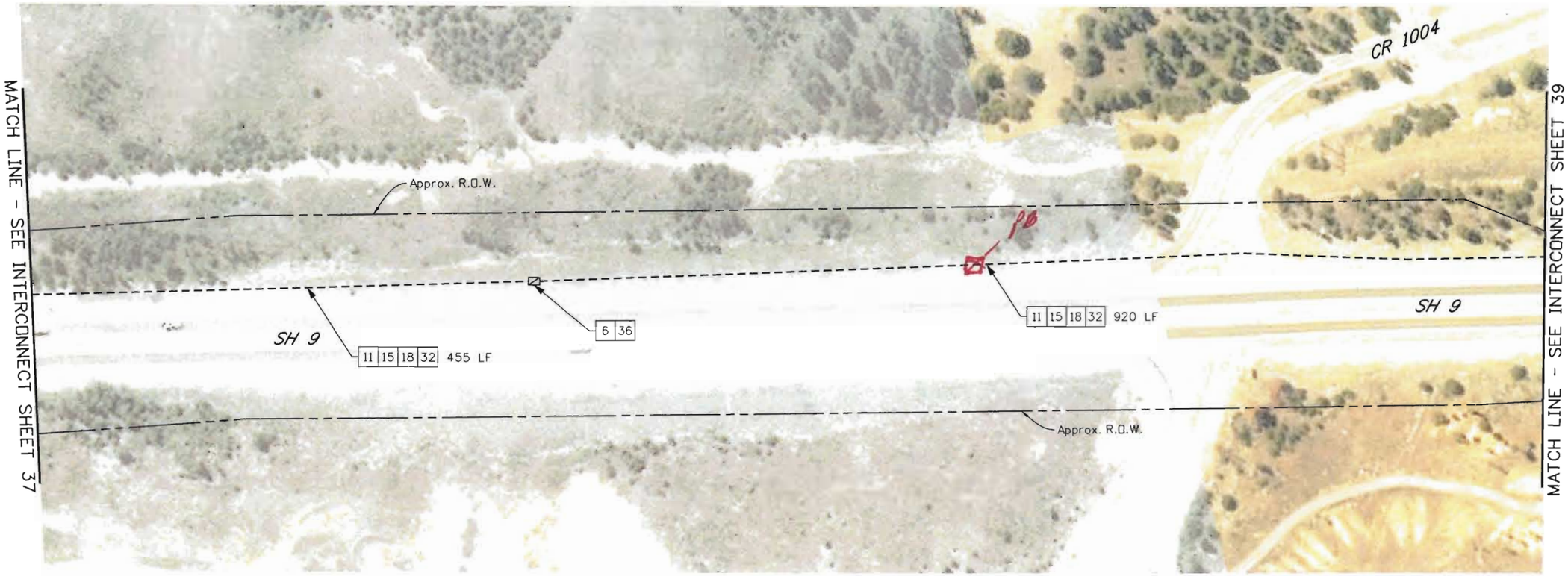

6 EXISTING PULL BOX (24" X 36")

11 EXISTING 2" ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

18 REMOVE EXISTING FIBER BACKBONE CABLE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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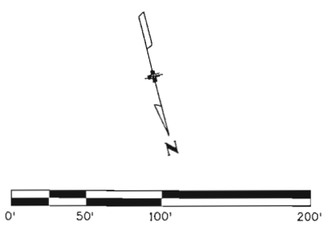

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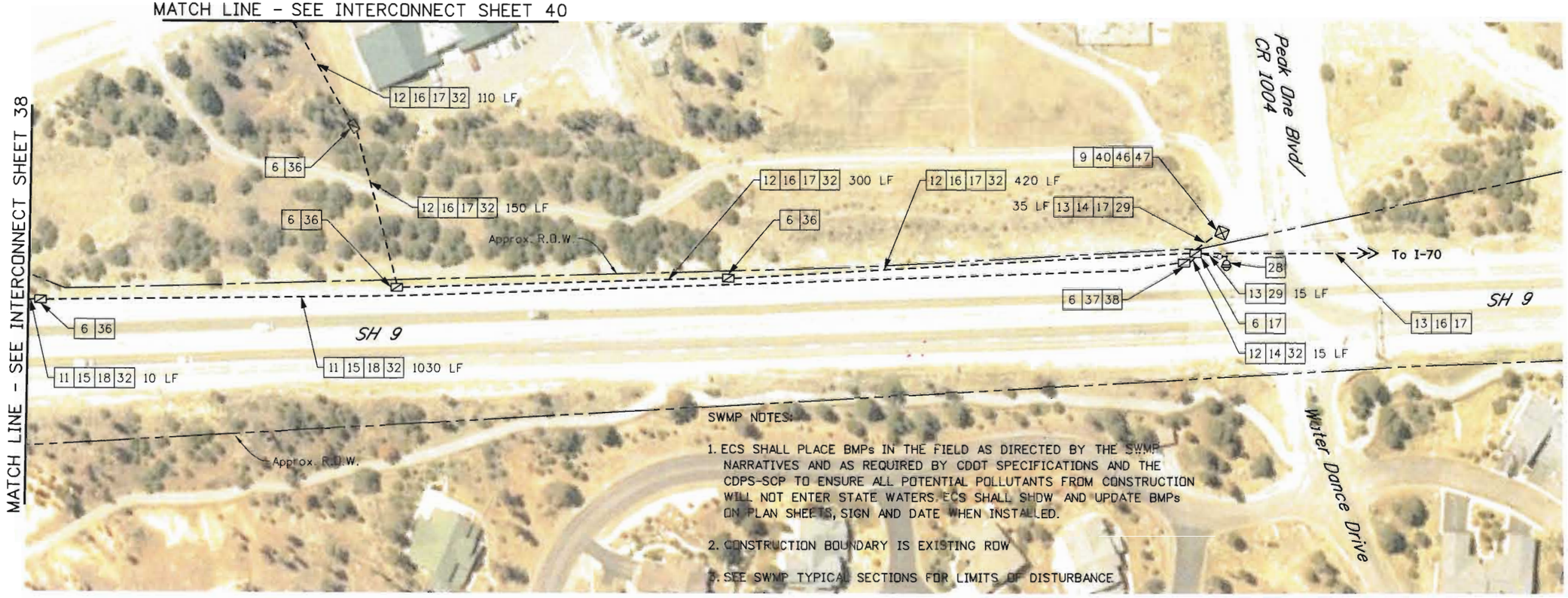

6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

11 EXISTING 2" ELECTRICAL CONDUIT

12 EXISTING 3" ELECTRICAL CONDUIT

13 EXISTING ELECTRICAL CONDUIT

14 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (12 STRAND)

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

18 REMOVE EXISTING FIBER BACKBONE CABLE

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE) (MOUNTED ON SIGNAL POLE)

29 CLOSED CIRCUIT TELEVISION CABLE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

38 FIBER OPTIC SPLICE CLOSURE. FUSION SPLICE FIBERS PER SPLICING DETAIL SHEETS.

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

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Sheet Subset:	ITS	Subset Sheets:	39 of 46

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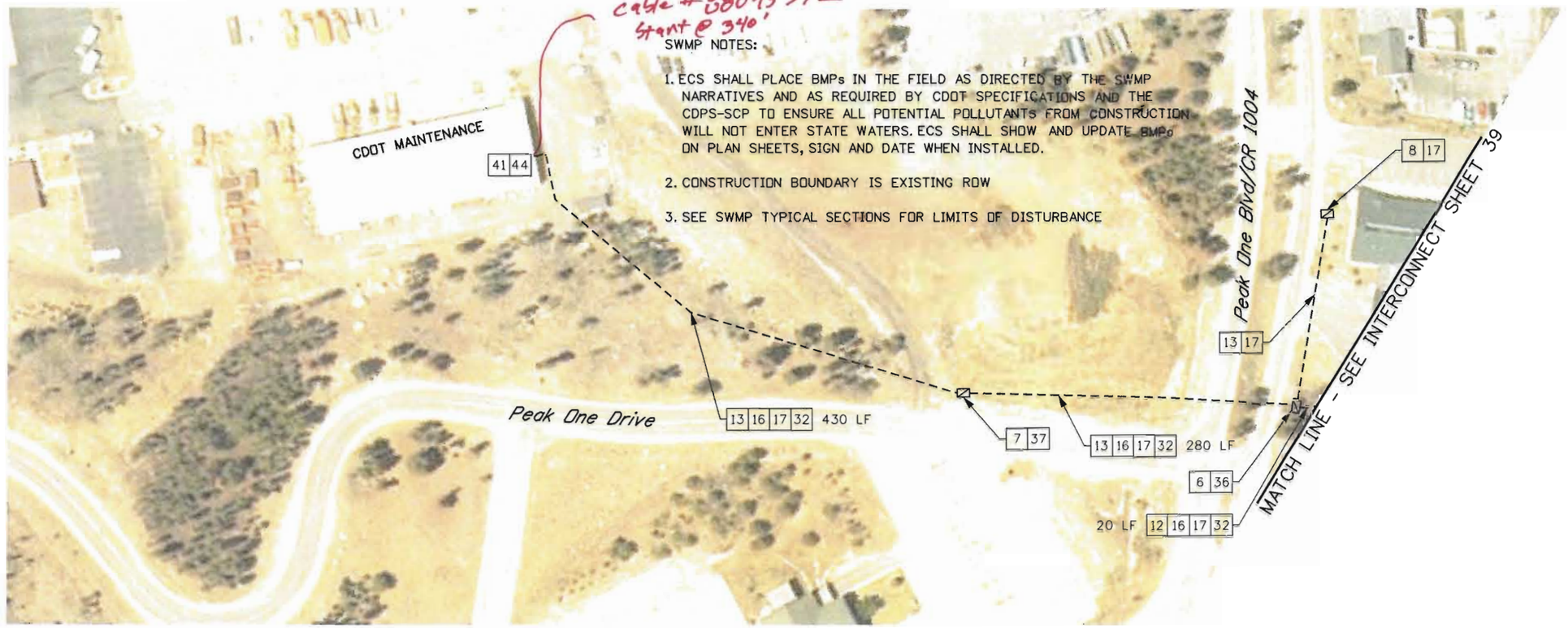

6 EXISTING PULL BOX (24" X 36")

7 EXISTING PULL BOX (30" X 48")

8 EXISTING PULL BOX

12 EXISTING 3" ELECTRICAL CONDUIT

13 EXISTING ELECTRICAL CONDUIT

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

36 COIL 50 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE FOR SLACK

41 FIBER OPTIC TERMINATION PANEL - 24 FIBER

44 TRAFFIC MANAGEMENT SYSTEM BUILDING EQUIPMENT - INCLUDING CABINET AND ETHERNET SWITCH (CORE)

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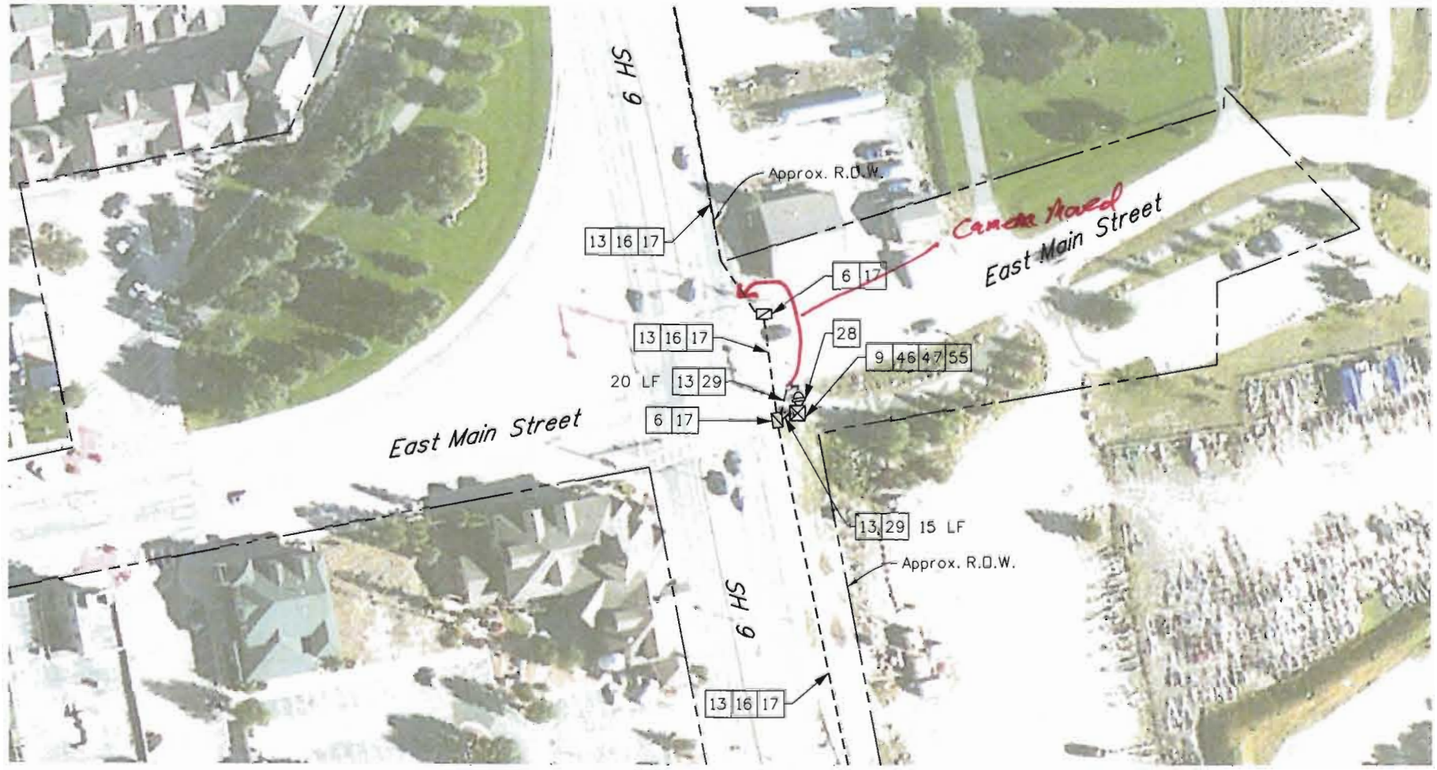

6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

55 EXISTING FIBER OPTIC TERMINATION PANEL - 12 FIBER

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.

2. CONSTRUCTION BOUNDARY IS EXISTING ROW

3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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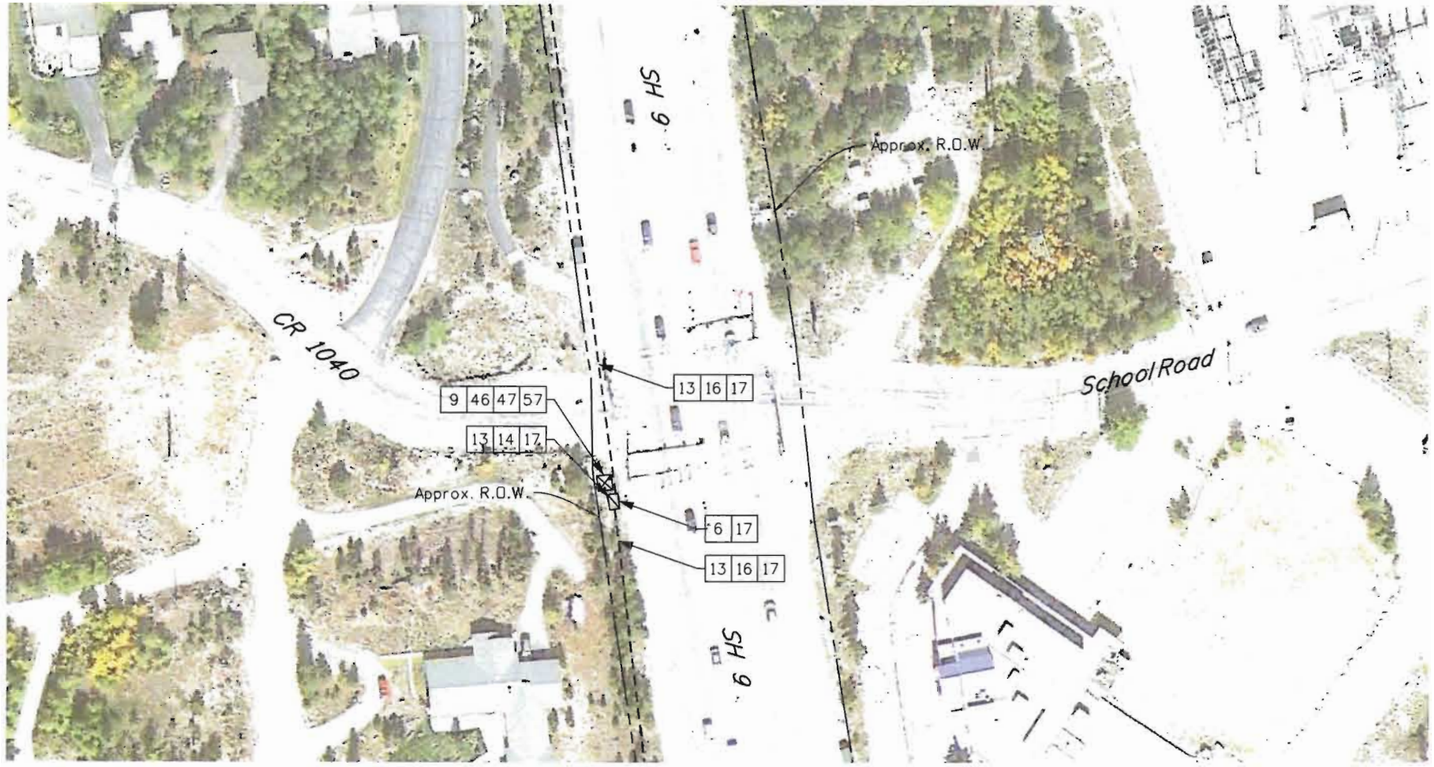
18777
Sheet Number 51



6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

14 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (12 STRAND)

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

57 EXISTING FIBER OPTIC TERMINATION PANEL - 6 FIBER

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

811 Know what's below. Call before you dig.

N

0' 50' 100' 200'

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Print Date: 5/22/2012
Drawing File Name: 18777TRAF_Plan42 CD Rd 1040.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
Unit Information Unit Leader Initials

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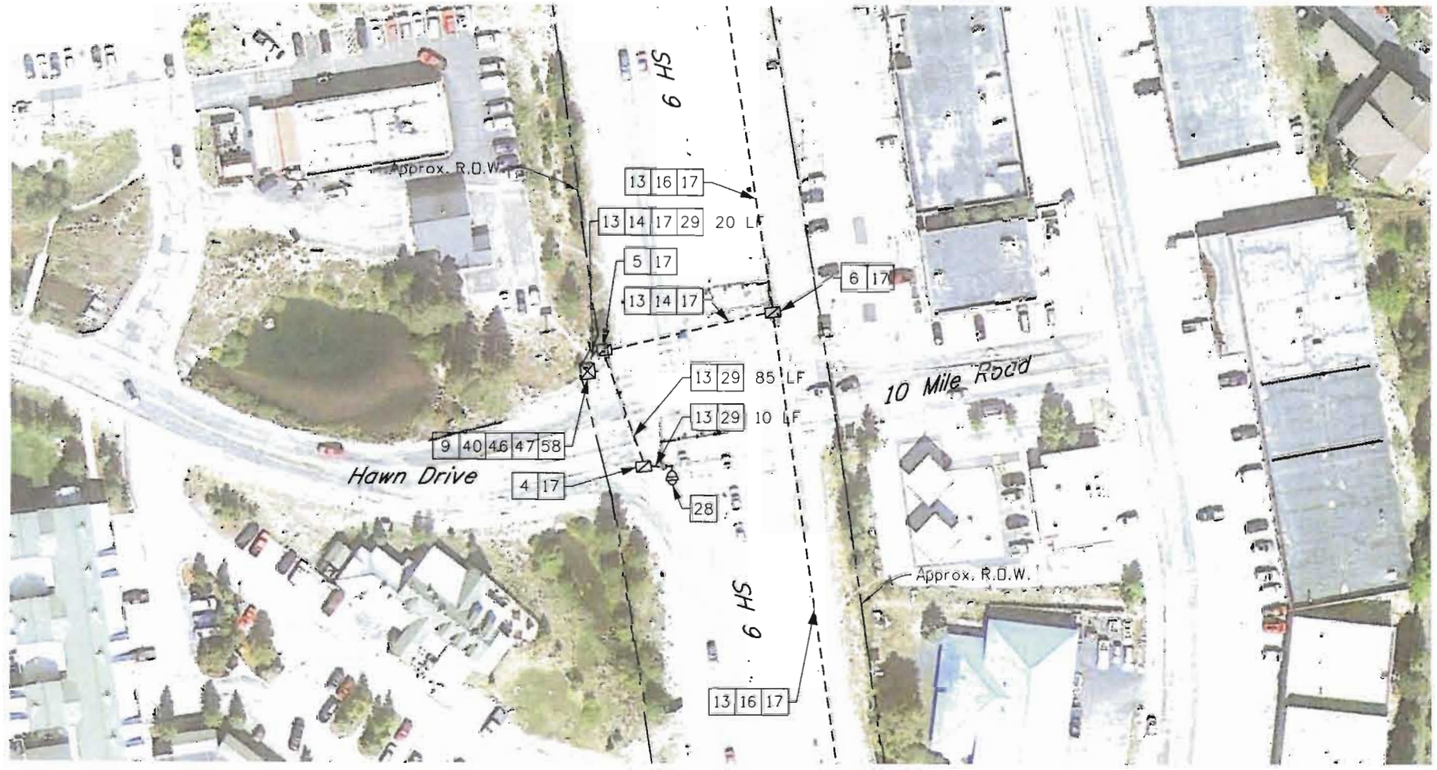
Void:

TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	42 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 52



4 EXISTING PULL BOX (13" X 24")

5 EXISTING PULL BOX (17" X 30")

6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

14 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (12 STRAND)

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

28 CLOSED CIRCUIT TELEVISION CAMERA (TRAFFIC SURVEILLANCE)

29 CLOSED CIRCUIT TELEVISION CABLE

40 FIBER OPTIC TERMINATION PANEL - 12 FIBER

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

58 REMOVE EXISTING FIBER OPTIC TERMINATION PANEL - 6 FIBER

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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Print Date: 5/22/2012
Drawing File Name: 18777TRAF_Plan43 Hawn Dr-10 Mile Rd.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
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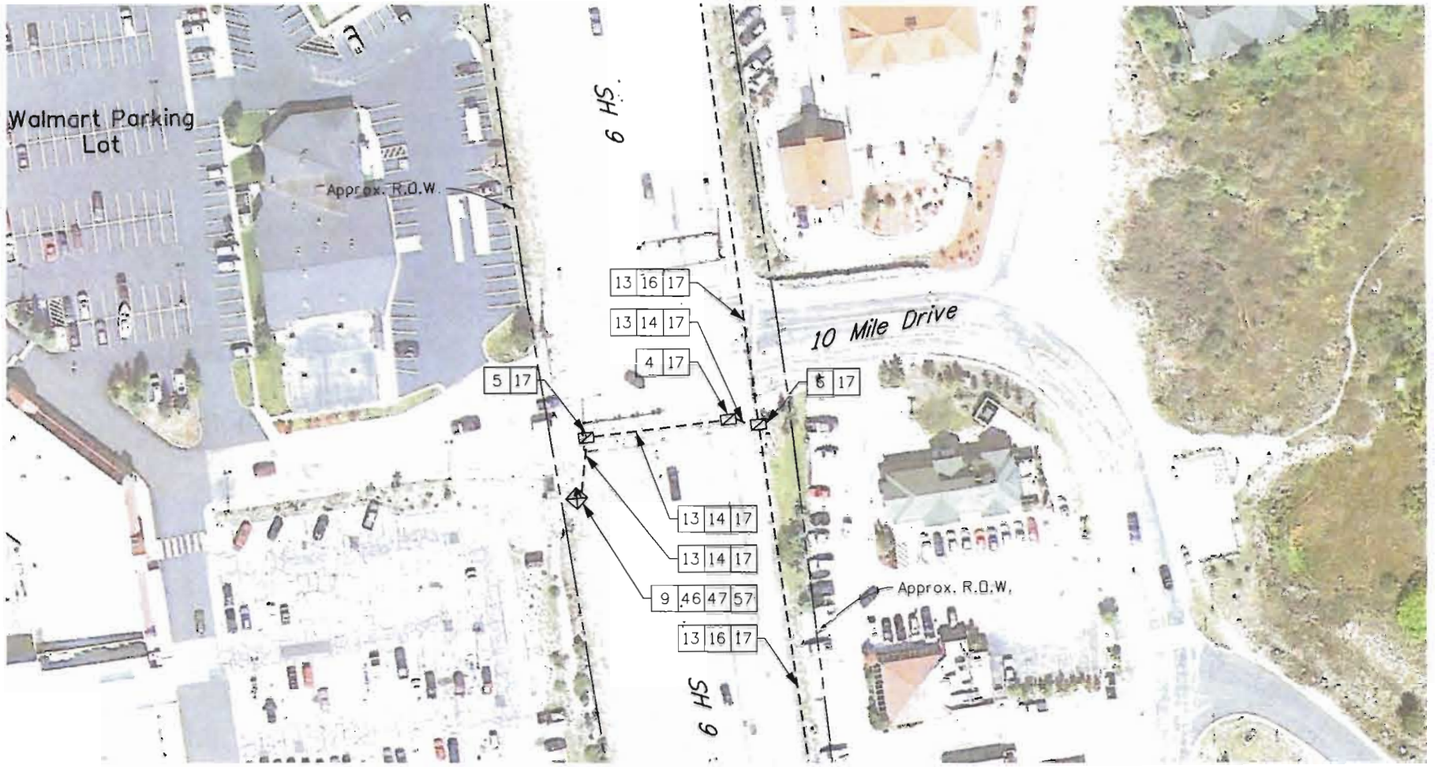
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	43 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 53



4 EXISTING PULL BOX (13" X 24")

5 EXISTING PULL BOX (17" X 30")

6 EXISTING PULL BOX (24" X 36")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

14 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (12 STRAND)

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

57 EXISTING FIBER OPTIC TERMINATION PANEL - 6 FIBER

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SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

N

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Print Date: 5/22/2012
Drawing File Name: 18777TRAF_Plan44 10 Mile Drive.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
Unit Information Unit Leader Initials

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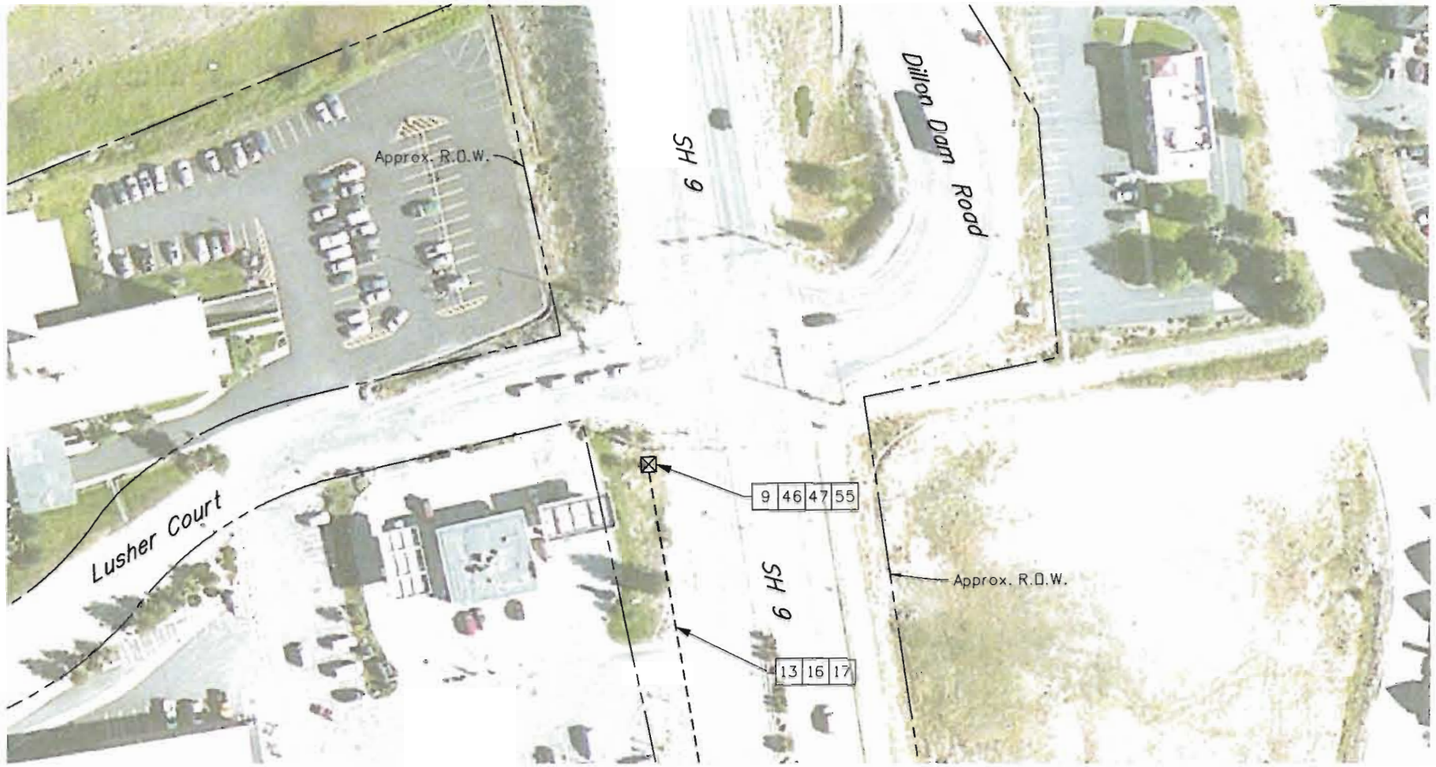
TRAFFIC SIGNAL INTERCONNECT

Designer: KEB
Detailer: PJS
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 44 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 54



9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

16 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (96 STRAND)

17 PROTECT IN PLACE

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

55 EXISTING FIBER OPTIC TERMINATION PANEL - 12 FIBER

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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N

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Drawing File Name: 18777TRAF_Plan45 Dillon Dam Rd.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
Unit Information Unit Leader Initials

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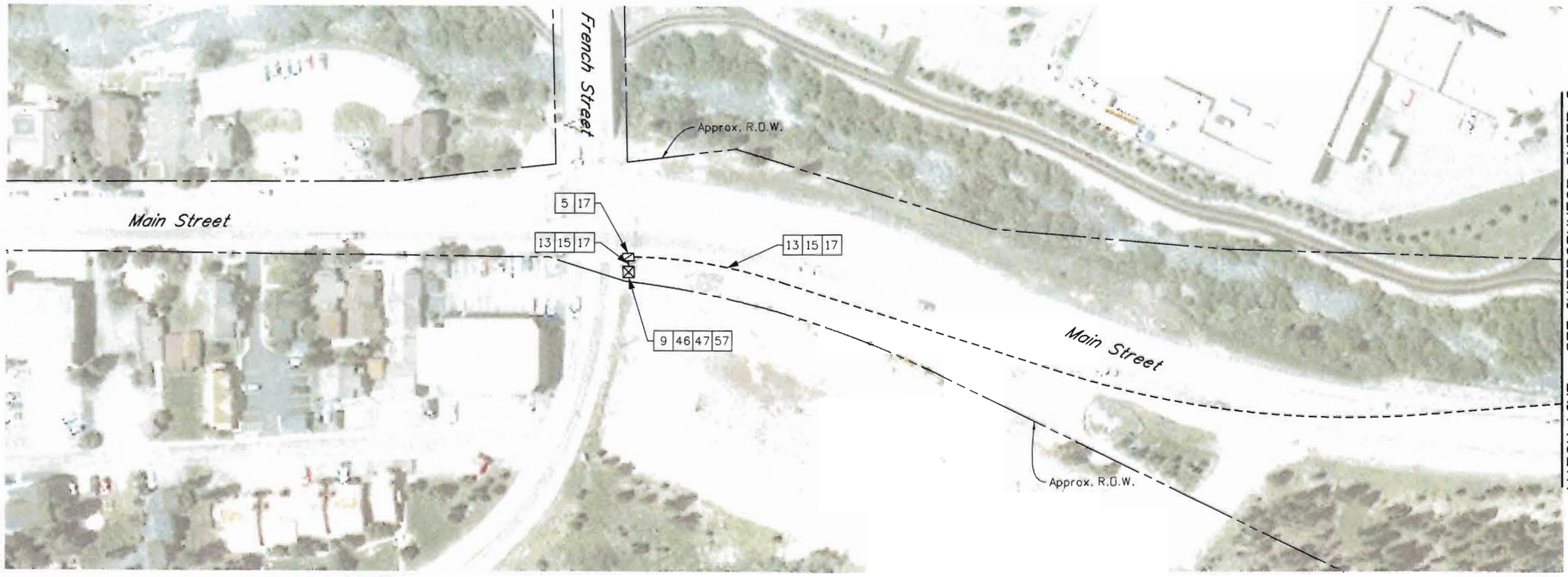
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	45 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 55



5 EXISTING PULL BOX (17" X 30")

9 EXISTING TRAFFIC SIGNAL CONTROLLER CABINET

13 EXISTING ELECTRICAL CONDUIT

15 EXISTING FIBER OPTIC CABLE (SINGLE MODE) (24 STRAND)

17 PROTECT IN PLACE

46 ETHERNET SWITCH

47 SERIAL TO IP CONVERTER

57 EXISTING FIBER OPTIC TERMINATION PANEL - 6 FIBER

SWMP NOTES:

1. ECS SHALL PLACE BMPs IN THE FIELD AS DIRECTED BY THE SWMP NARRATIVES AND AS REQUIRED BY CDOT SPECIFICATIONS AND THE CDPS-SCP TO ENSURE ALL POTENTIAL POLLUTANTS FROM CONSTRUCTION WILL NOT ENTER STATE WATERS. ECS SHALL SHOW AND UPDATE BMPs ON PLAN SHEETS, SIGN AND DATE WHEN INSTALLED.
2. CONSTRUCTION BOUNDARY IS EXISTING ROW
3. SEE SWMP TYPICAL SECTIONS FOR LIMITS OF DISTURBANCE

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Horiz. Scale: 1:100 Vert. Scale: As Noted
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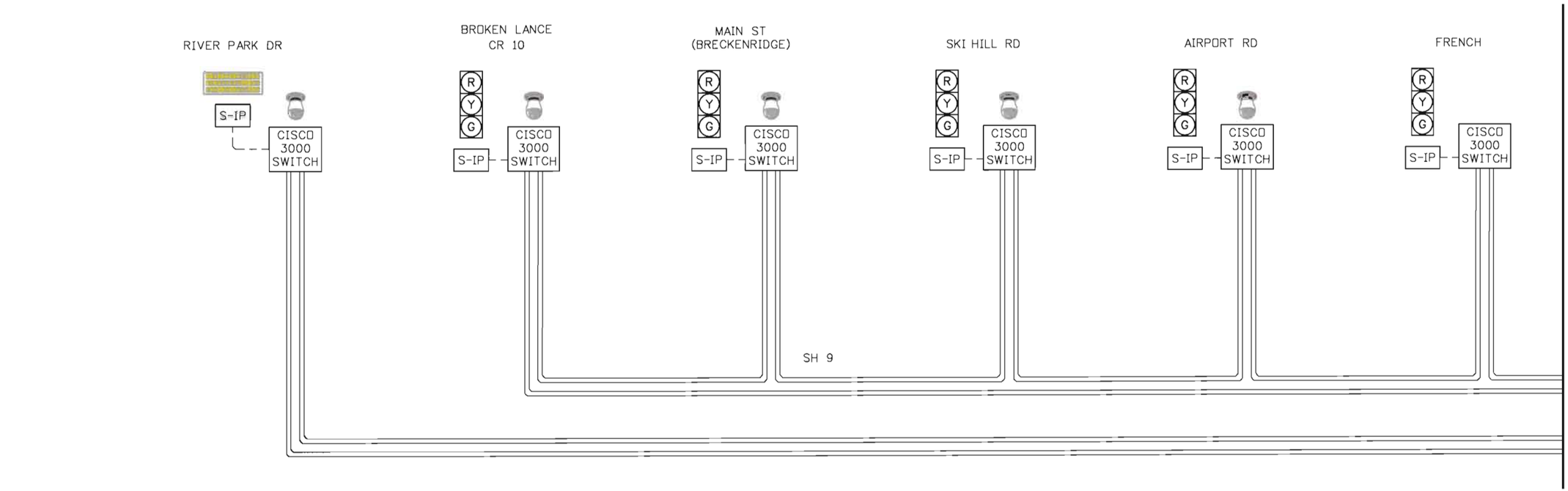
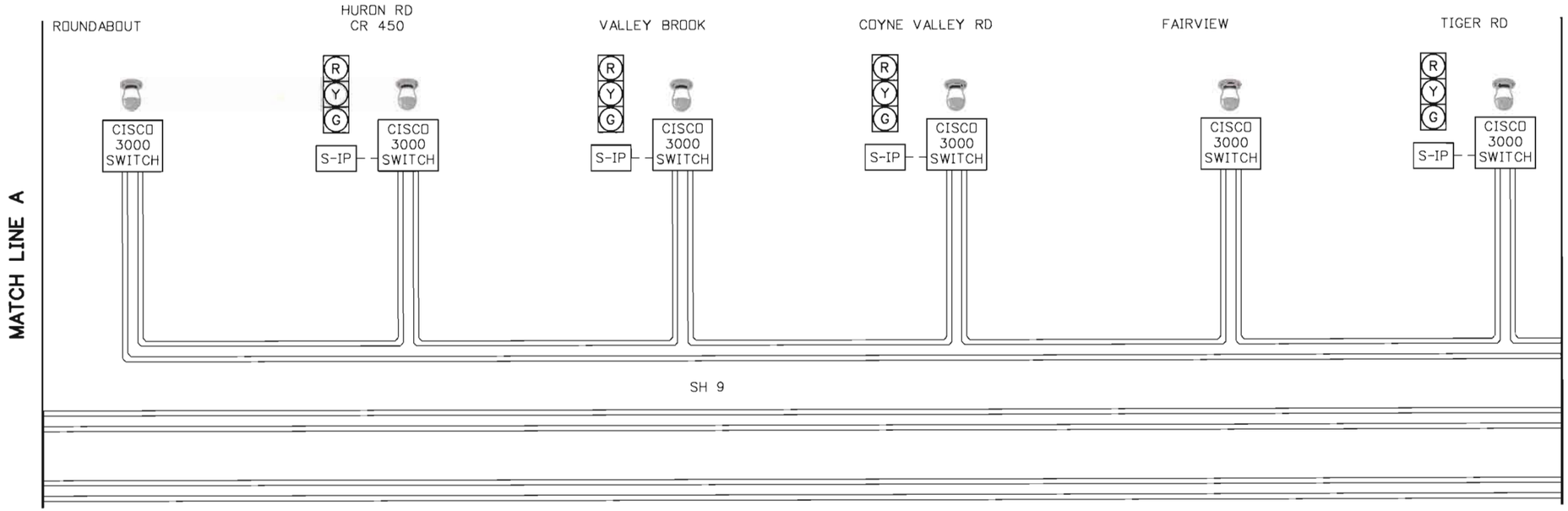
TRAFFIC SIGNAL INTERCONNECT

Designer:	KEB	Structure Numbers	
Detailer:	PJS		
Sheet Subset:	ITS	Subset Sheets:	46 of 46

Project No./Code
MTCE 0091-039
18777
Sheet Number 56





LEGEND

- FIBER STRAND
- DATA CABLE
- TRAFFIC SIGNAL LOCATION
- CLOSED CIRCUIT TELEVISION CAMERA
- GROUND MOUNTED VMS LOCATION
- S-IP — SERIAL TO IP CONVERTER

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Print Date: 5/1/2012	Sheet Revisions	Colorado Department of Transportation	As Constructed
Drawing File Name: 18777TRAF_Network01.dgn	Date: / Comments / Init.	18500 East Colfax Avenue Aurora, CO 80011 Phone: 303-757-9648 FAX: 303-757-9746	No Revisions:
Horiz. Scale: NOT TO SCALE — Vert. Scale: As Noted		Region 1 — SS	Revised:
Unit Information — Unit Leader Initials			Void:
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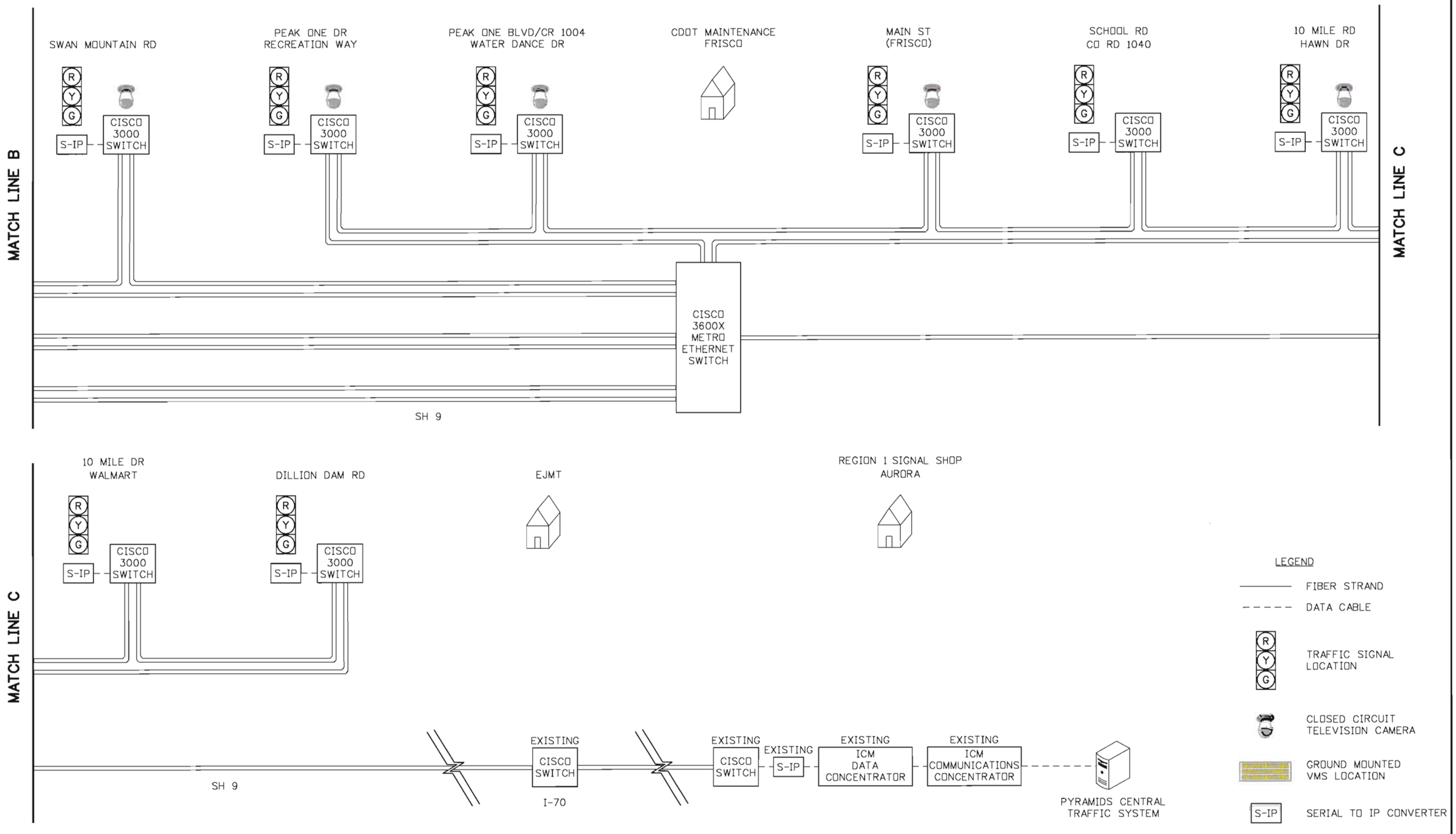
NETWORK DIAGRAM			Project No./Code
			MTCE 0091-039
Designer: C. SIGSBURY	Structure Numbers		18777
Detailer: C. SIGSBURY			
Sheet Subset: NETWORK	Subset Sheets:	1 of 2	Sheet Number 57



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Print Date: 5/1/2012
Drawing File Name: 18777TRAF_Network02.dgn
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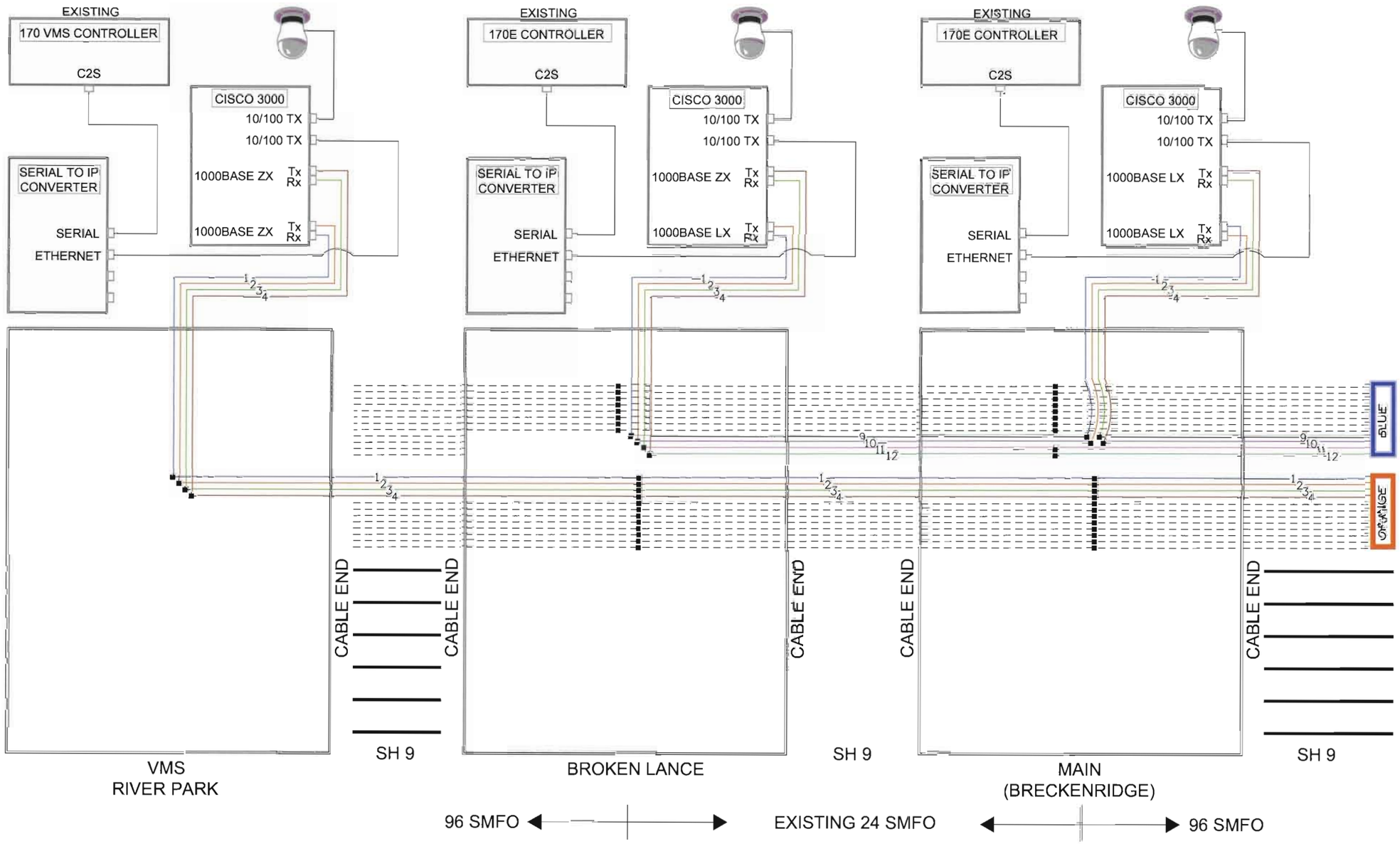
NETWORK DIAGRAM

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: NETWORK
Structure Numbers
Subset Sheets: 2 of 2

Project No./Code
MTCE 0091-039
18777
Sheet Number 58



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SPLICING DIAGRAM

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 1 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 59

FIBER CABLE SPLICE TABLE VMS ON SH 9/RIVER PARK							
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO NORTH	ORANGE	1	BLUE		12 LATERAL	BLUE	1	BLUE
96 BACKBONE TO NORTH	ORANGE	2	ORANGE		12 LATERAL	BLUE	2	ORANGE
96 BACKBONE TO NORTH	ORANGE	3	GREEN		12 LATERAL	BLUE	3	GREEN
96 BACKBONE TO NORTH	ORANGE	4	BROWN		12 LATERAL	BLUE	4	BROWN

PATCH PANEL TABLE VMS ON SH 9/RIVER PARK					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL	BLUE	1	BLUE	1	CISCO RECEIVE
12 LATERAL	BLUE	2	ORANGE	2	CISCO TRANSMIT
12 LATERAL	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/BROKEN LANCE							
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
24 BACKBONE TO NORTH	BLUE	9	YELLOW		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
24 BACKBONE TO NORTH	BLUE	10	VIOLET		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
24 BACKBONE TO NORTH	BLUE	11	ROSE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
24 BACKBONE TO NORTH	BLUE	12	AQUA		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN
24 BACKBONE TO NORTH	BLUE	1	BLUE		96 BACKBONE TO SOUTH	BLUE	1	BLUE
24 BACKBONE TO NORTH	BLUE	2	ORANGE		96 BACKBONE TO SOUTH	BLUE	2	ORANGE
24 BACKBONE TO NORTH	BLUE	3	GREEN		96 BACKBONE TO SOUTH	BLUE	3	GREEN
24 BACKBONE TO NORTH	BLUE	4	BROWN		96 BACKBONE TO SOUTH	BLUE	4	BROWN
24 BACKBONE TO NORTH	BLUE	5	SLATE		96 BACKBONE TO SOUTH	BLUE	5	SLATE
24 BACKBONE TO NORTH	BLUE	6	WHITE		96 BACKBONE TO SOUTH	BLUE	6	WHITE
24 BACKBONE TO NORTH	BLUE	7	RED		96 BACKBONE TO SOUTH	BLUE	7	RED
24 BACKBONE TO NORTH	BLUE	8	BLACK		96 BACKBONE TO SOUTH	BLUE	8	BLACK
24 BACKBONE TO NORTH	ORANGE	1	BLUE		96 BACKBONE TO SOUTH	ORANGE	1	BLUE
24 BACKBONE TO NORTH	ORANGE	2	ORANGE		96 BACKBONE TO SOUTH	ORANGE	2	ORANGE
24 BACKBONE TO NORTH	ORANGE	3	GREEN		96 BACKBONE TO SOUTH	ORANGE	3	GREEN
24 BACKBONE TO NORTH	ORANGE	4	BROWN		96 BACKBONE TO SOUTH	ORANGE	4	BROWN
24 BACKBONE TO NORTH	ORANGE	5	SLATE		96 BACKBONE TO SOUTH	ORANGE	5	SLATE
24 BACKBONE TO NORTH	ORANGE	6	WHITE		96 BACKBONE TO SOUTH	ORANGE	6	WHITE
24 BACKBONE TO NORTH	ORANGE	7	RED		96 BACKBONE TO SOUTH	ORANGE	7	RED
24 BACKBONE TO NORTH	ORANGE	8	BLACK		96 BACKBONE TO SOUTH	ORANGE	8	BLACK
24 BACKBONE TO NORTH	ORANGE	9	YELLOW		96 BACKBONE TO SOUTH	ORANGE	9	YELLOW
24 BACKBONE TO NORTH	ORANGE	10	VIOLET		96 BACKBONE TO SOUTH	ORANGE	10	VIOLET
24 BACKBONE TO NORTH	ORANGE	11	ROSE		96 BACKBONE TO SOUTH	ORANGE	11	ROSE
24 BACKBONE TO NORTH	ORANGE	12	AQUA		96 BACKBONE TO SOUTH	ORANGE	12	AQUA

PATCH PANEL TABLE SH 9/BROKEN LANCE					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

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Region 1 SS

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SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers:
Subset Sheets: 2 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 60

FIBER CABLE SPLICE TABLE
SH 9/MAIN STREET

CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR		CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	9	YELLOW	SPLICED TO	12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	10	VIOLET		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	9	YELLOW		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	10	VIOLET		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN
96 BACKBONE TO NORTH	BLUE	1	BLUE		24 BACKBONE TO SOUTH	BLUE	1	BLUE
96 BACKBONE TO NORTH	BLUE	2	ORANGE		24 BACKBONE TO SOUTH	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	3	GREEN		24 BACKBONE TO SOUTH	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	4	BROWN		24 BACKBONE TO SOUTH	BLUE	4	BROWN
96 BACKBONE TO NORTH	BLUE	5	SLATE		24 BACKBONE TO SOUTH	BLUE	5	SLATE
96 BACKBONE TO NORTH	BLUE	6	WHITE		24 BACKBONE TO SOUTH	BLUE	6	WHITE
96 BACKBONE TO NORTH	BLUE	7	RED		24 BACKBONE TO SOUTH	BLUE	7	RED
96 BACKBONE TO NORTH	BLUE	8	BLACK		24 BACKBONE TO SOUTH	BLUE	8	BLACK
96 BACKBONE TO NORTH	BLUE	11	ROSE		24 BACKBONE TO SOUTH	BLUE	11	ROSE
96 BACKBONE TO NORTH	BLUE	12	AQUA		24 BACKBONE TO SOUTH	BLUE	12	AQUA
96 BACKBONE TO NORTH	ORANGE	1	BLUE		24 BACKBONE TO SOUTH	ORANGE	1	BLUE
96 BACKBONE TO NORTH	ORANGE	2	ORANGE		24 BACKBONE TO SOUTH	ORANGE	2	ORANGE
96 BACKBONE TO NORTH	ORANGE	3	GREEN		24 BACKBONE TO SOUTH	ORANGE	3	GREEN
96 BACKBONE TO NORTH	ORANGE	4	BROWN		24 BACKBONE TO SOUTH	ORANGE	4	BROWN
96 BACKBONE TO NORTH	ORANGE	5	SLATE		24 BACKBONE TO SOUTH	ORANGE	5	SLATE
96 BACKBONE TO NORTH	ORANGE	6	WHITE		24 BACKBONE TO SOUTH	ORANGE	6	WHITE
96 BACKBONE TO NORTH	ORANGE	7	RED		24 BACKBONE TO SOUTH	ORANGE	7	RED
96 BACKBONE TO NORTH	ORANGE	8	BLACK		24 BACKBONE TO SOUTH	ORANGE	8	BLACK
96 BACKBONE TO NORTH	ORANGE	9	YELLOW		24 BACKBONE TO SOUTH	ORANGE	9	YELLOW
96 BACKBONE TO NORTH	ORANGE	10	VIOLET		24 BACKBONE TO SOUTH	ORANGE	10	VIOLET
96 BACKBONE TO NORTH	ORANGE	11	ROSE		24 BACKBONE TO SOUTH	ORANGE	11	ROSE
96 BACKBONE TO NORTH	ORANGE	12	AQUA		24 BACKBONE TO SOUTH	ORANGE	12	AQUA

PATCH PANEL TABLE
SH 9/MAIN STREET

CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

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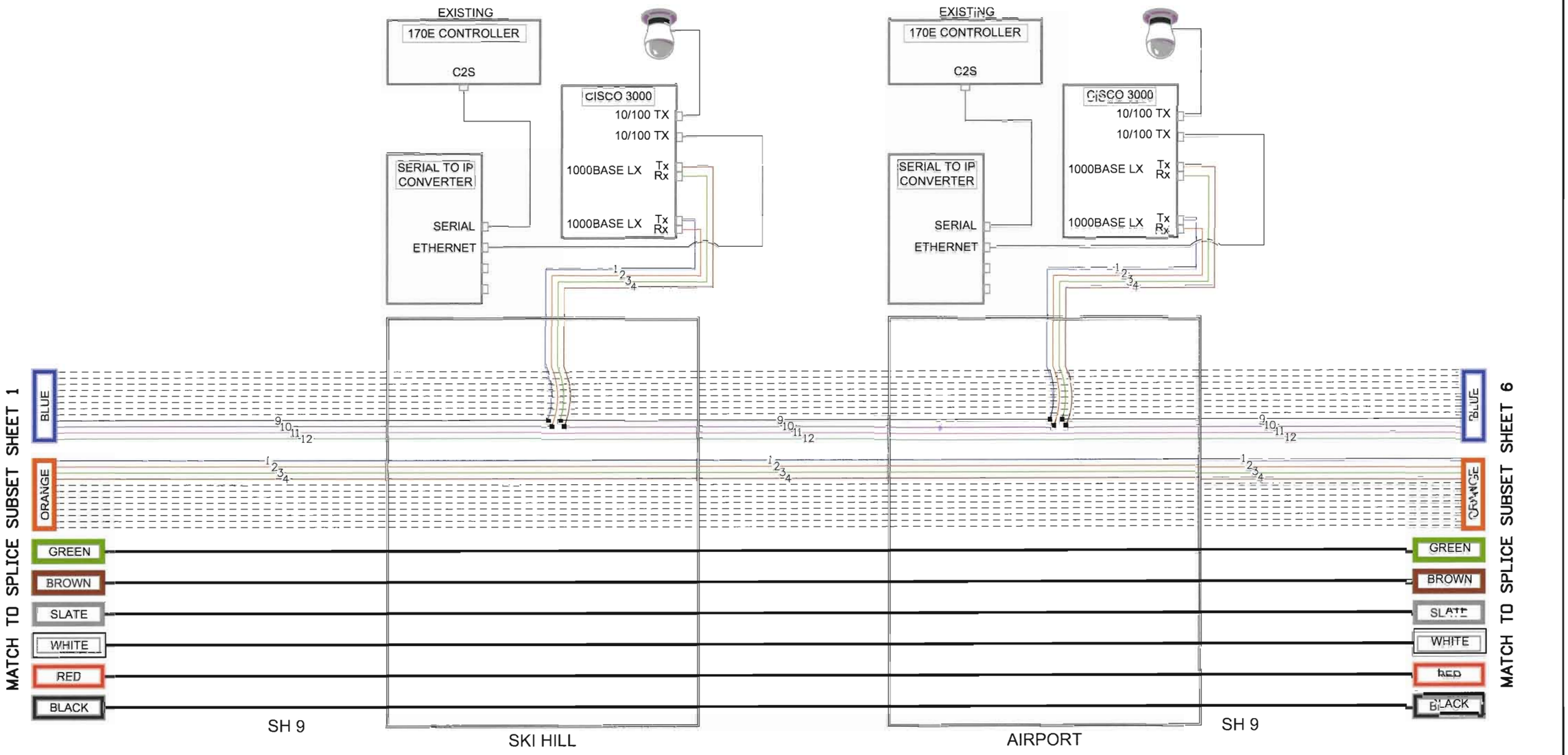
SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 3 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 61



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Drawing File Name: 18777TRAF_Splice04.dgn
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SPLICING DIAGRAM

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers:
Subset Sheets: 4 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 62

FIBER CABLE SPLICE TABLE SH 9/SKI HILL ROAD								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	9	YELLOW		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	10	VIOLET		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	9	YELLOW		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	10	VIOLET		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/SKI HILL ROAD					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/AIRPORT								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	9	YELLOW		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	10	VIOLET		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	9	YELLOW		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	10	VIOLET		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/AIRPORT					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

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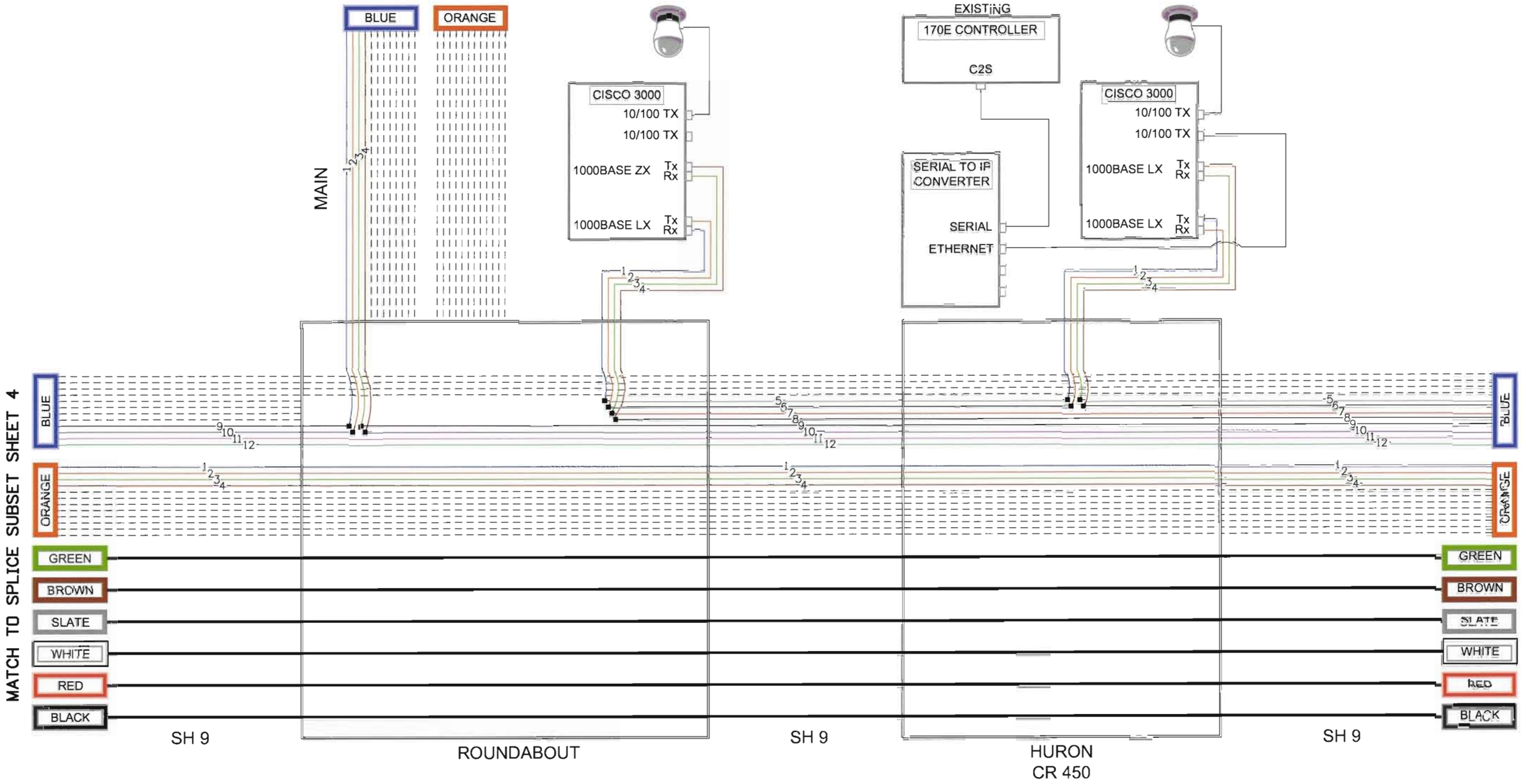
Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers:
Subset Sheets: 5 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 63

MATCH TO SPLICE SUBSET SHEET 8



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Horiz. Scale: NOT TO SCALE Vert. Scale: As Noted		Region 1 SS	Revised:
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SPLICING DIAGRAM			Project No./Code
Designer: C. SIGSBURY	Structure Numbers		MTCE 0091-039
Detailer: C. SIGSBURY			18777
Sheet Subset: SPLICE	Subset Sheets: 6 of 19		Sheet Number 64

FIBER CABLE SPLICE TABLE SH 9/ROUNDABOUT								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO NORTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO NORTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	7	RED		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	8	BLACK		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN
96 BACKBONE TO SOUTH	BLUE	9	YELLOW		24 LATERAL TO FRENCH	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	10	VIOLET		24 LATERAL TO FRENCH	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	9	YELLOW		24 LATERAL TO FRENCH	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	10	VIOLET		24 LATERAL TO FRENCH	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/ROUNDABOUT					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/HURON (CR 450)								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/HURON (CR 450)					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

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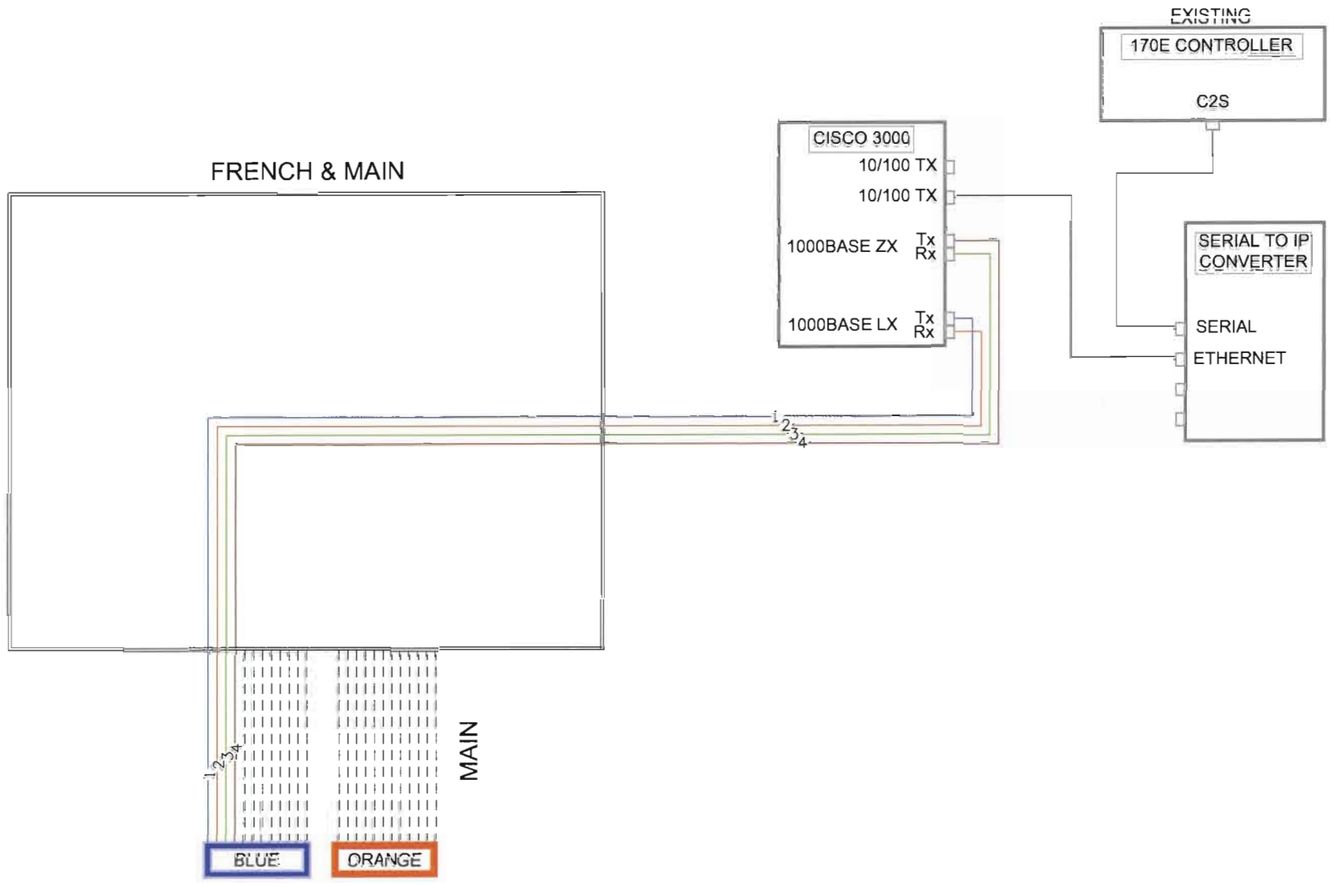
SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 7 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 65



MATCH TO SPLICE SUBSET SHEET 6

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Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 8 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 66

PATCH PANEL TABLE FRENCH/MAIN					
CABLE DESCRIPTION	BUFFER COLOR	FIBER		PATCH NO.	PATCHED TO
		NO.	COLOR		
24 LATERAL TO NORTH	BLUE	1	BLUE	1	CISCO TRANSMIT
24 LATERAL TO NORTH	BLUE	2	ORANGE	2	CISCO RECEIVE
24 LATERAL TO NORTH	BLUE	3	GREEN	3	CISCO RECEIVE
24 LATERAL TO NORTH	BLUE	4	BROWN	4	CISCO TRANSMIT

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Horiz. Scale: NOT TO SCALE Vert. Scale: As Noted
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Region 1 SS

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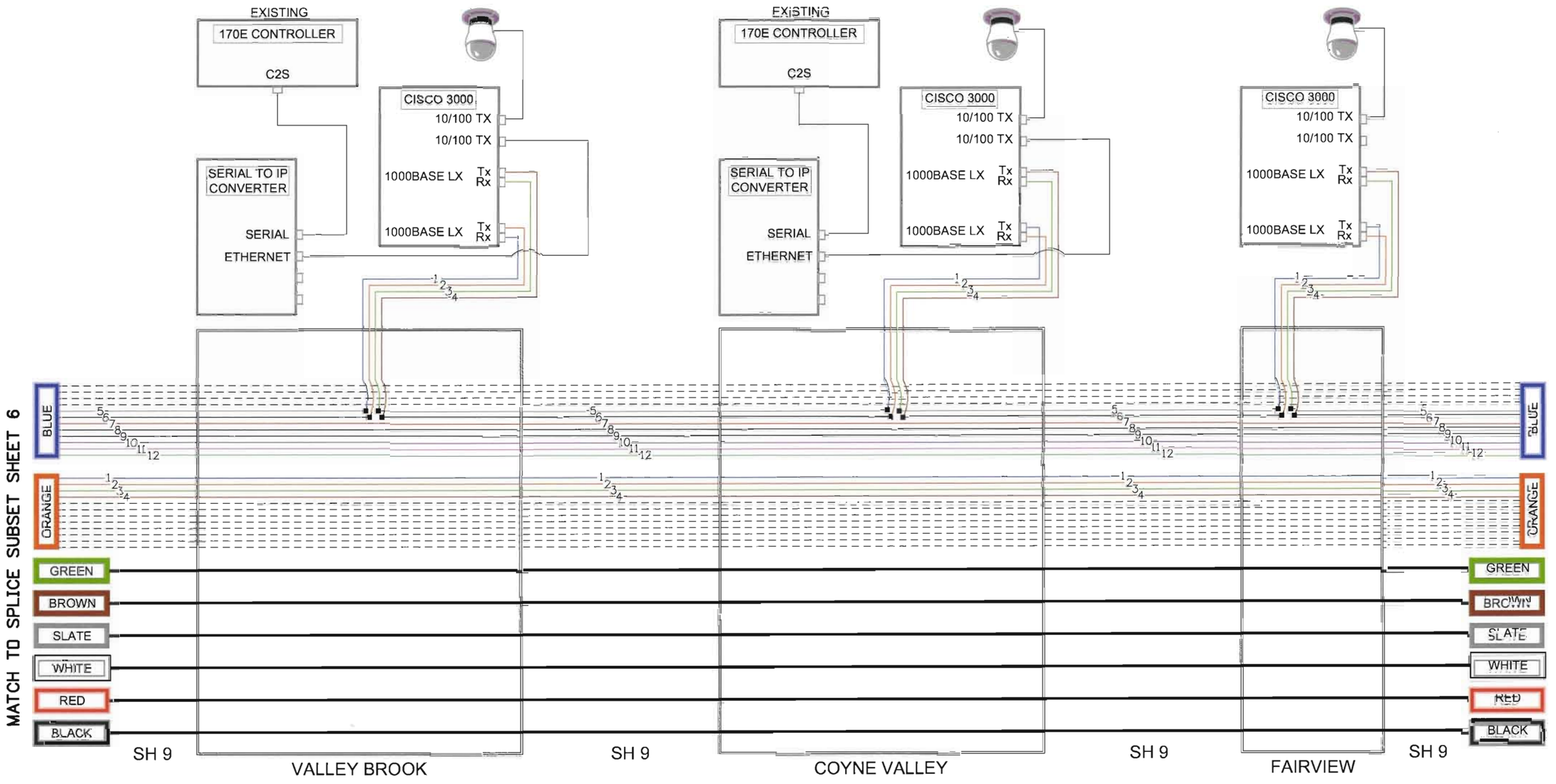
SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 9 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 67



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Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 10 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 68

FIBER CABLE SPLICE TABLE SH 9/VALLEY BROOK								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/VALLEY BROOK					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/COYNE VALLEY								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/COYNE VALLEY					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/FAIRVIEW								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/FAIRVIEW					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

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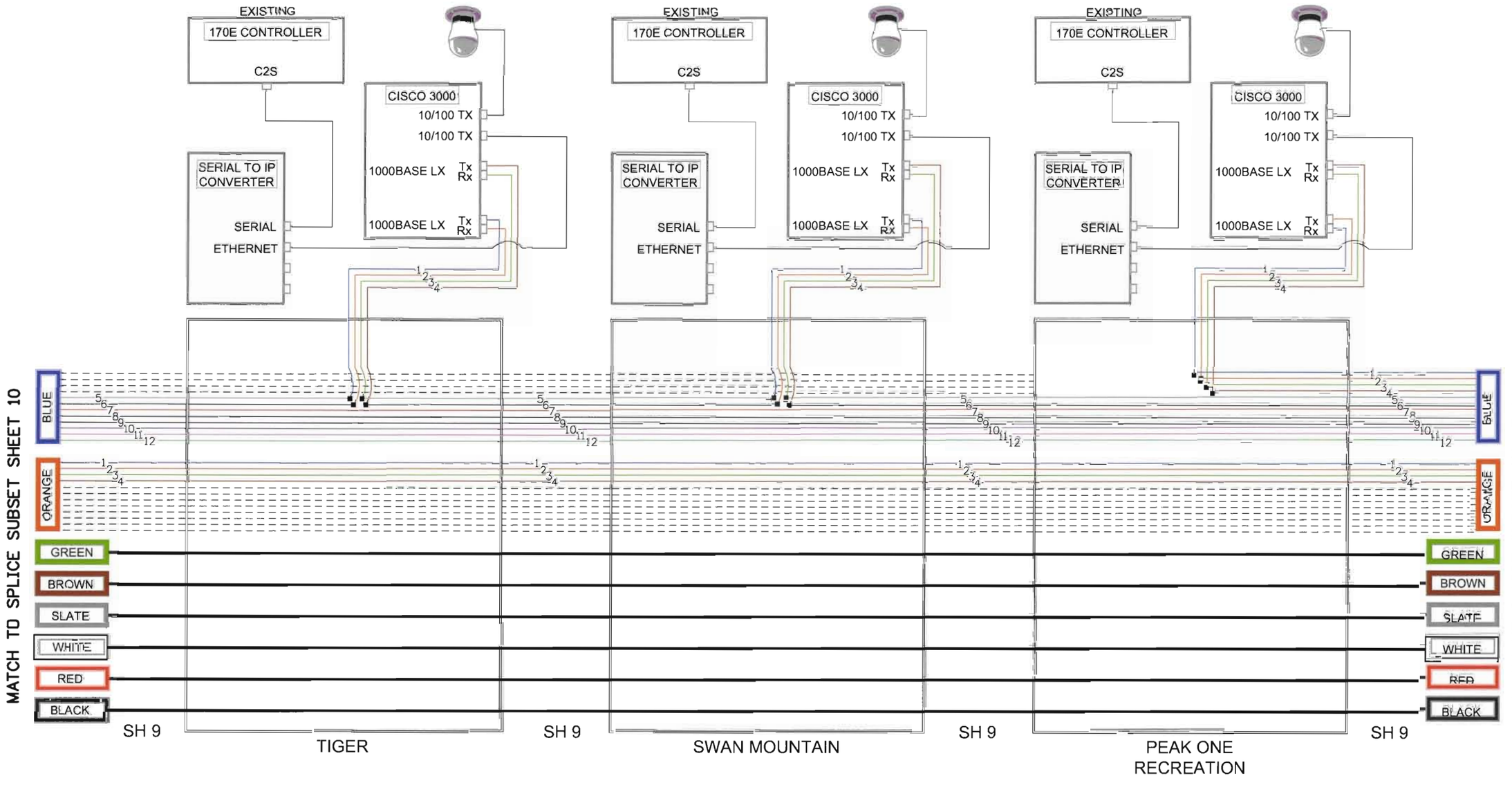
Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 11 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 69



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Drawing File Name: 18777TRAF_Splice12.dgn		Date:	Comments	Init.	18500 East Colfax Avenue Aurora, CO 80011 Phone: 303-757-9648 FAX: 303-757-9746
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No Revisions:				MTCE 0091-039
Revised:	Designer: C. SIGSBURY	Structure Numbers		18777
Void:	Detailer: C. SIGSBURY			Sheet Number 70
	Sheet Subset: SPLICE	Subset Sheets:	12 of 19	

FIBER CABLE SPLICE TABLE SH 9/TIGER								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/TIGER					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/SWAN MOUNTAIN								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	5	SLATE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	6	WHITE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/SWAN MOUNTAIN					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/PEAK ONE/RECREATION								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO NORTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO NORTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	3	GREEN		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	4	BROWN		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/PEAK ONE/RECREATION					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

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P:10-028.13 - SH 9 Interconnect\Traffic_ITS

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
18500 East Colfax Avenue
Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

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No Revisions:
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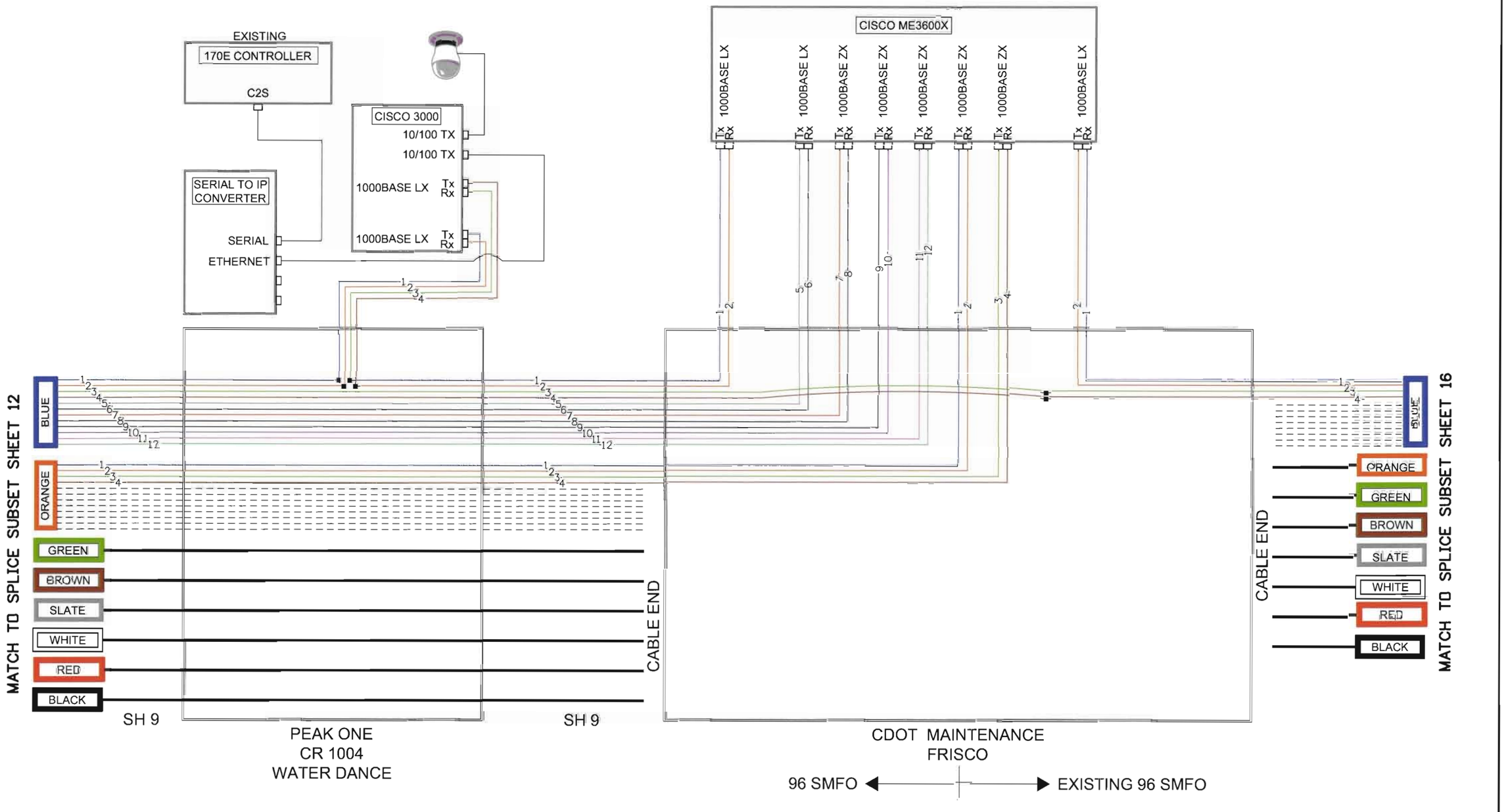
SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 13 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 71



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Print Date: 5/1/2012	Sheet Revisions	Colorado Department of Transportation	As Constructed
Drawing File Name: 18777TRAF_Splice14.dgn	Date: Comments Init.	18500 East Colfax Avenue Aurora, CO 80011 Phone: 303-757-9648 FAX: 303-757-9746	No Revisions:
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Unit Information Unit Leader Initials			Void:
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SPLICING DIAGRAM			Project No./Code
Designer: C. SIGSBURY	Structure Numbers		MTCE 0091-039
Detailer: C. SIGSBURY			18777
Sheet Subset: SPLICE	Subset Sheets:	14 of 19	Sheet Number 72

FIBER CABLE SPLICE TABLE SH 9/PEAK ONE/CR 1004/WATER DANCE								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

FIBER CABLE SPLICE TABLE CDOT MAINTENACE YARD IN FRISCO								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	3	GREEN		96 BACKBONE TO NORTH	BLUE	3	GREEN
96 BACKBONE TO SOUTH	BLUE	4	BROWN		96 BACKBONE TO NORTH	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/PEAK ONE/CR 1004/WATER DANCE					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

PATCH PANEL TABLE CDOT MAINTENACE YARD IN FRISCO					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
96 BACKBONE TO SOUTH	BLUE	1	BLUE	1	CISCO TRANSMIT
96 BACKBONE TO SOUTH	BLUE	2	ORANGE	2	CISCO RECEIVE
96 BACKBONE TO SOUTH	BLUE	5	SLATE	5	CISCO TRANSMIT
96 BACKBONE TO SOUTH	BLUE	6	WHITE	6	CISCO RECEIVE
96 BACKBONE TO SOUTH	BLUE	7	RED	7	CISCO TRANSMIT
96 BACKBONE TO SOUTH	BLUE	8	BLACK	8	CISCO RECEIVE
96 BACKBONE TO SOUTH	BLUE	9	YELLOW	9	CISCO TRANSMIT
96 BACKBONE TO SOUTH	BLUE	10	VIOLET	10	CISCO RECEIVE
96 BACKBONE TO SOUTH	BLUE	11	ROSE	11	CISCO TRANSMIT
96 BACKBONE TO SOUTH	BLUE	12	AQUA	12	CISCO RECEIVE
96 BACKBONE TO SOUTH	ORANGE	1	BLUE	13	CISCO TRANSMIT
96 BACKBONE TO SOUTH	ORANGE	2	ORANGE	14	CISCO RECEIVE
96 BACKBONE TO SOUTH	ORANGE	3	GREEN	15	CISCO TRANSMIT
96 BACKBONE TO SOUTH	ORANGE	4	BROWN	16	CISCO RECEIVE
96 BACKBONE TO NORTH	BLUE	1	BLUE	17	CISCO RECEIVE
96 BACKBONE TO NORTH	BLUE	2	ORANGE	18	CISCO TRANSMIT

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Date:	Comments	Init.

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
18500 East Colfax Avenue
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Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

As Constructed
No Revisions:
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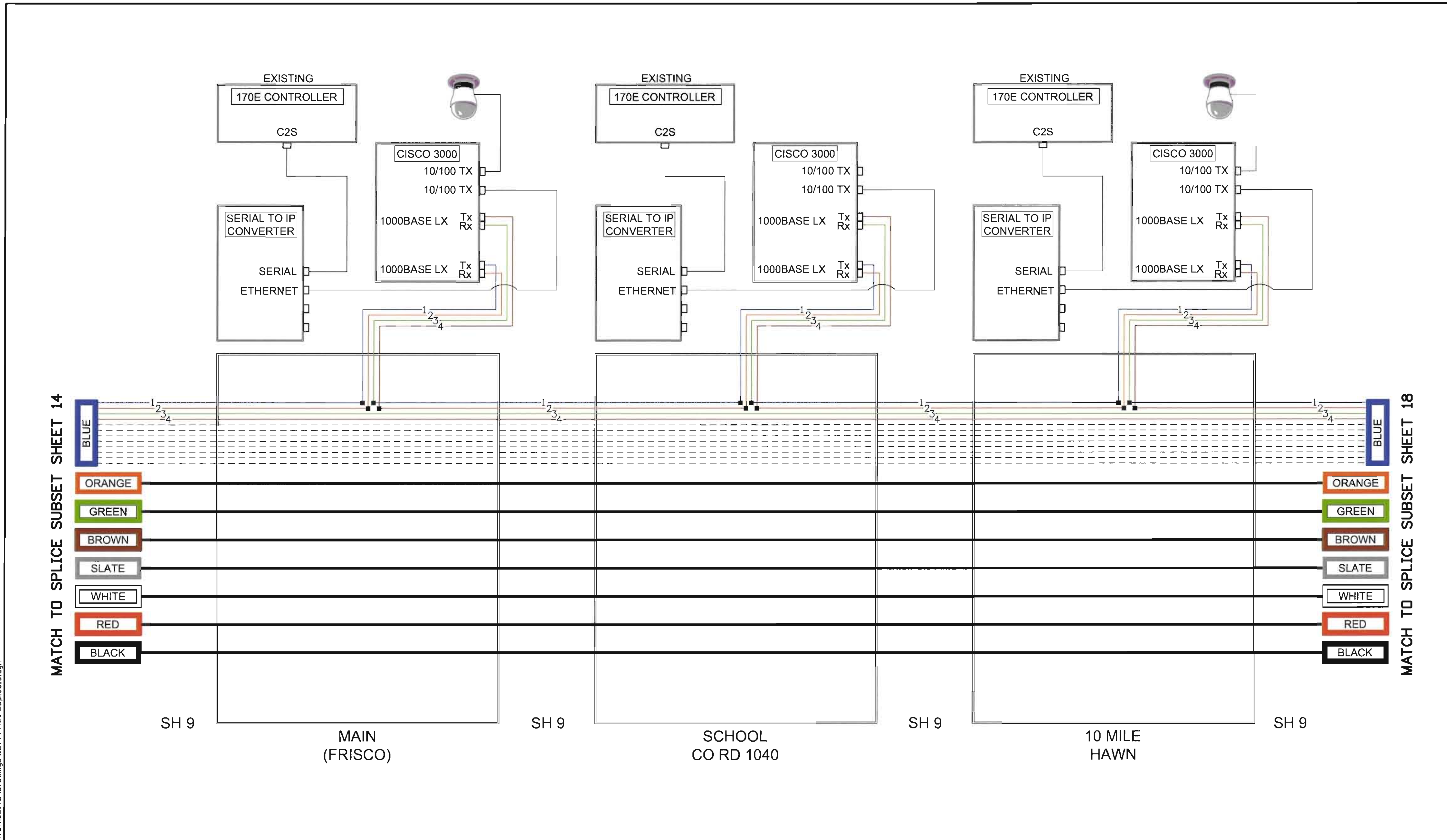
SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 15 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 73



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Unit Information	Unit Leader Initials	
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SPLICING DIAGRAM

Designer:	C. SIGSBURY	Structure Numbers	
Detailer:	C. SIGSBURY		
Sheet Subset:	SPLICE	Subset Sheets:	16 of 19

Project No./Code	
MTCE 0091-039	
18777	
Sheet Number	74

FIBER CABLE SPLICE TABLE SH 9/MAIN								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/MAIN					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/SCHOOL/CO RD 1040								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/SCHOOL/CO RD 1040					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/10 MILE/HAWN								
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR
96 BACKBONE TO SOUTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/10 MILE/HAWN					
CABLE DESCRIPTION	BUFFER COLOR	FIBER NO.	FIBER COLOR	PATCH NO.	PATCHED TO
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

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Sheet Revisions

Date:	Comments	Init.

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Region 1 SS

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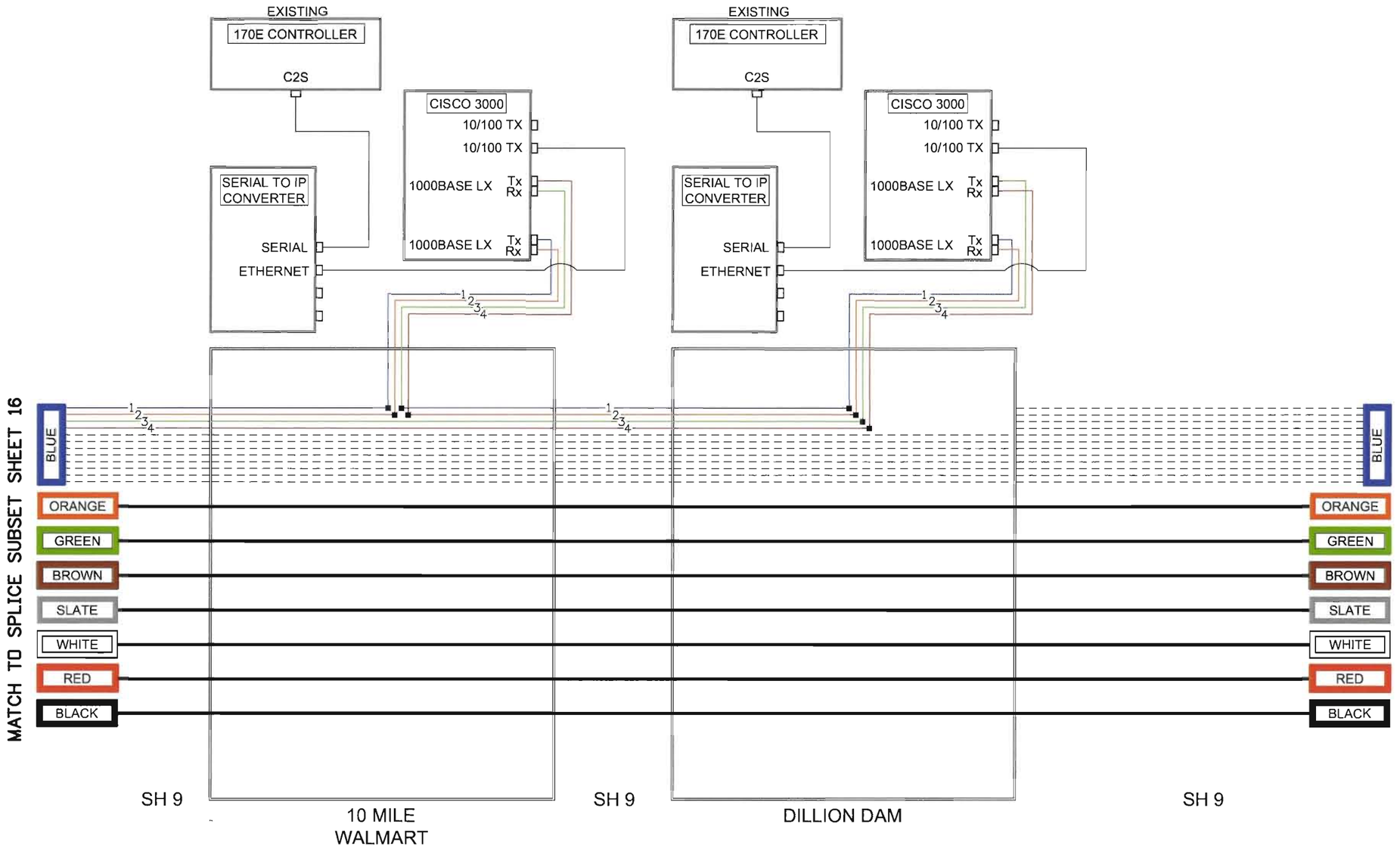
SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 17 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 75



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Drawing File Name: 18777TRAF_Splice18.dgn		Date:	Comments	Init.	18500 East Colfax Avenue Aurora, CO 80011 Phone: 303-757-9648 FAX: 303-757-9746
Horiz. Scale: NOT TO SCALE	Vert. Scale: As Noted				Region 1 SS
Unit Information	Unit Leader Initials				
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As Constructed	SPLICING DIAGRAM			Project No./Code
No Revisions:				MTCE 0091-039
Revised:	Designer: C. SIGSBURY	Structure Numbers		18777
Void:	Detailer: C. SIGSBURY			Sheet Number 76
	Sheet Subset: SPLICE	Subset Sheets:	18 of 19	

FIBER CABLE SPLICE TABLE SH 9/10 MILE/WALMART								
CABLE DESCRIPTION	BUFFER COLOR	FIBER		SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER	
		NO.	COLOR				NO.	COLOR
96 BACKBONE TO SOUTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO NORTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO NORTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/10 MILE/WALMART					
CABLE DESCRIPTION	BUFFER COLOR	FIBER		PATCH NO.	PATCHED TO
		NO.	COLOR		
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO TRANSMIT

FIBER CABLE SPLICE TABLE SH 9/DILLION DAM								
CABLE DESCRIPTION	BUFFER COLOR	FIBER		SPLICED TO	CABLE DESCRIPTION	BUFFER COLOR	FIBER	
		NO.	COLOR				NO.	COLOR
96 BACKBONE TO SOUTH	BLUE	1	BLUE		12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE
96 BACKBONE TO SOUTH	BLUE	2	ORANGE		12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE
96 BACKBONE TO SOUTH	BLUE	3	GREEN		12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN
96 BACKBONE TO SOUTH	BLUE	4	BROWN		12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN

PATCH PANEL TABLE SH 9/DILLION DAM					
CABLE DESCRIPTION	BUFFER COLOR	FIBER		PATCH NO.	PATCHED TO
		NO.	COLOR		
12 LATERAL TO TRAFFIC CABINET	BLUE	1	BLUE	1	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	2	ORANGE	2	CISCO RECEIVE
12 LATERAL TO TRAFFIC CABINET	BLUE	3	GREEN	3	CISCO TRANSMIT
12 LATERAL TO TRAFFIC CABINET	BLUE	4	BROWN	4	CISCO RECEIVE

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Unit Information Unit Leader Initials

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Sheet Revisions		
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Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
18500 East Colfax Avenue
Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

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No Revisions:
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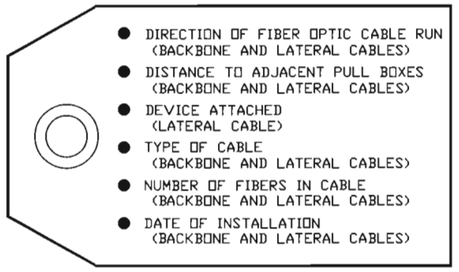
SPLICING TABLES

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: SPLICE
Structure Numbers
Subset Sheets: 19 of 19

Project No./Code
MTCE 0091-039
18777
Sheet Number 77

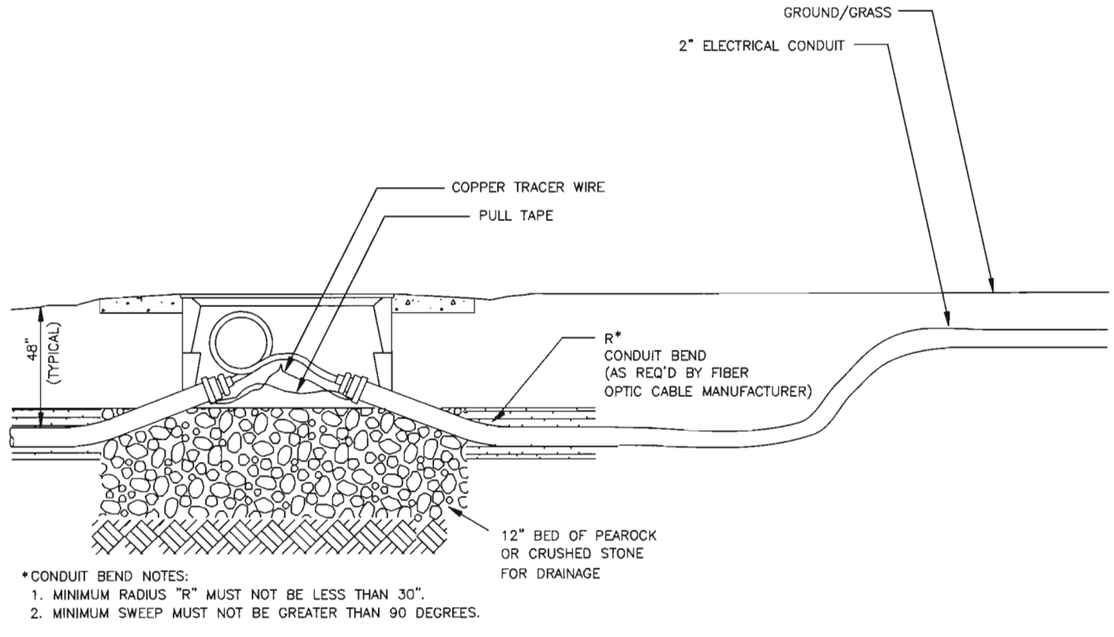


FIBER CABLE LABEL

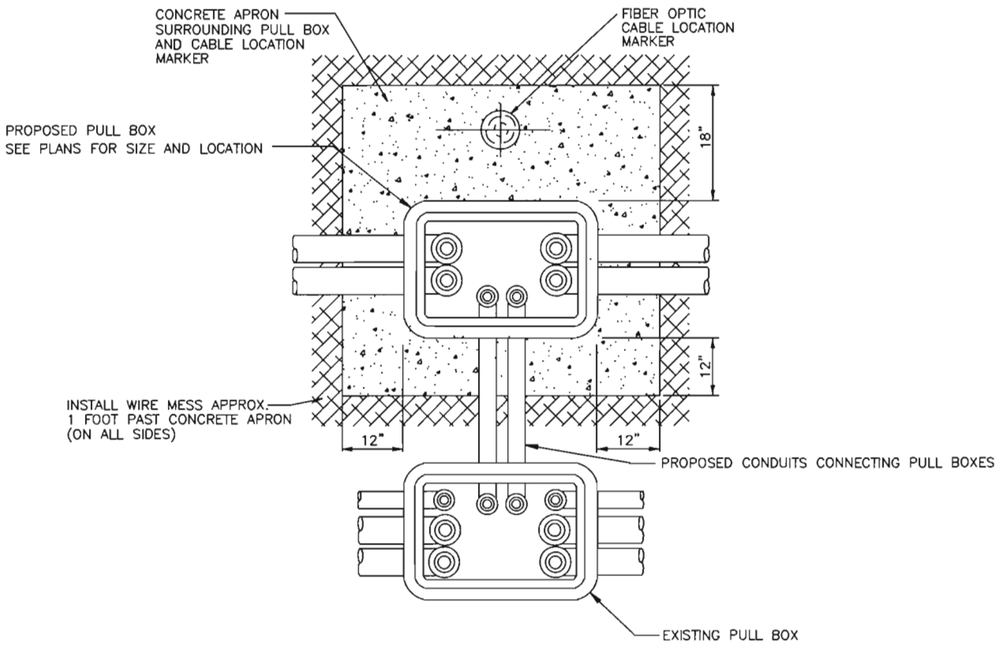
TO BE ATTACHED TO EACH FIBER OPTIC CABLE LOCATED IN ALL PULL BOXES AND MANHOLES

PULL BOX NOTES:

1. CONDUITS DEPICTED ON THIS SHEET ARE REPRESENTATIVE ONLY. EXACT NUMBER OF CONDUITS INSTALLED AND CONDUIT SIZE SHALL BE AS TABULATED AND SHOWN ON THE PLANS.
2. DESIGNATION FOR THE INSTALLATION OF ELECTRICAL WIRING AND FIBER OPTIC CABLE IN THE BACKBONE CONDUIT SYSTEM IS DESCRIBED IN THE PROJECT SPECIFICATIONS.
3. CONDUIT CENTERLINE SHALL BE ALIGNED WITHIN THE PULL BOX TO FACILITATE FIBER OPTIC CABLE PULLING.
4. CONDUIT PLUGS SHALL BE INSTALLED IN ALL CONDUITS, BOTH WITH AND WITHOUT WIRE OR CABLE AND SHALL BE INCLUDED IN THE COST OF ELECTRICAL CONDUIT ITEM.
5. WEATHERPROOF TAGS SHALL BE INSTALLED ON ALL FIBER CABLES AND SHALL BE INCLUDED IN THE COST OF ELECTRICAL CONDUIT ITEM.
6. TRACER WIRE AND PULL TAPE SHALL BE INCLUDED IN THE COST OF FIBER OPTIC CABLE ITEM.
   - IF INSTALLATION INCLUDES MULTIPLE RUNS OF CONDUIT, PULL TAPE SHALL BE INSTALLED IN EACH INDIVIDUAL CONDUIT. TRACER WIRE SHALL BE INSTALLED IN ONLY ONE CONDUIT.
   - IF INSTALLATION INCLUDES ONLY ONE RUN OF CONDUIT, PULL ROPE AND TRACER WIRE SHALL BE INSTALLED IN SAME CONDUIT AS FIBER CABLE.
7. SEE 612 – MARKER SPECIFICATION FOR TRACER BALL REQUIREMENTS
8. ALL PULL BOX TYPES SHALL BE PAID FOR UNDER THE CORRESPONDING PULL BOX ITEM, AND SHALL BE SIZED AS TABULATED AND SHOWN IN THE PLANS.
9. SEE PROJECT SPECIFICATIONS FOR THE QUANTITY OF BOTH FIBER OPTIC BACKBONE AND LATERAL CABLE TO BE COILED IN EACH PULL BOX.
10. FIBER OPTIC CABLE COILS WITHIN PULL BOXES SHALL BE TIED TO EACH CABLE RACK. PLASTIC WIRE TIES SHALL NOT BE ALLOWED. CAUTION SHALL BE TAKEN TO COIL THE FIBER CABLE PER MANUFACTURER'S RECOMMENDATIONS.
11. ALL LANDSCAPE RESTORATION SHALL BE PAID FOR AS PART OF PULL BOX.
12. PULL BOX TYPES AS DEPICTED ON THIS PROJECT DETAIL SHEET SHALL NOT BE INSTALLED IN THE ASPHALT OR CONCRETE SHOULDER OF THE ROADWAY.
13. PULL BOXES SHALL HAVE A CONCRETE APRON SLOPED AWAY FROM PULL BOX OPENING. THE COST OF THE CONCRETE APRON SHALL BE PAID FOR AS PART OF THE PULL BOX ITEM.



*CONDUIT BEND NOTES:
1. MINIMUM RADIUS "R" MUST NOT BE LESS THAN 30".
2. MINIMUM SWEEP MUST NOT BE GREATER THAN 90 DEGREES.



ITS PULL BOX INSTALLATION

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Print Date: 5/22/2012		Colorado Department of Transportation	As Constructed
Drawing File Name: 18777TRAF_DetailPullBox.dgn	Sheet Revisions		No Revisions:
Horiz. Scale: NOT TO SCALE Vert. Scale: As Noted	Date: Comments Init.	18500 East Colfax Avenue	Revised:
Unit Information Unit Leader Initials		Aurora, CO 80011	Void:
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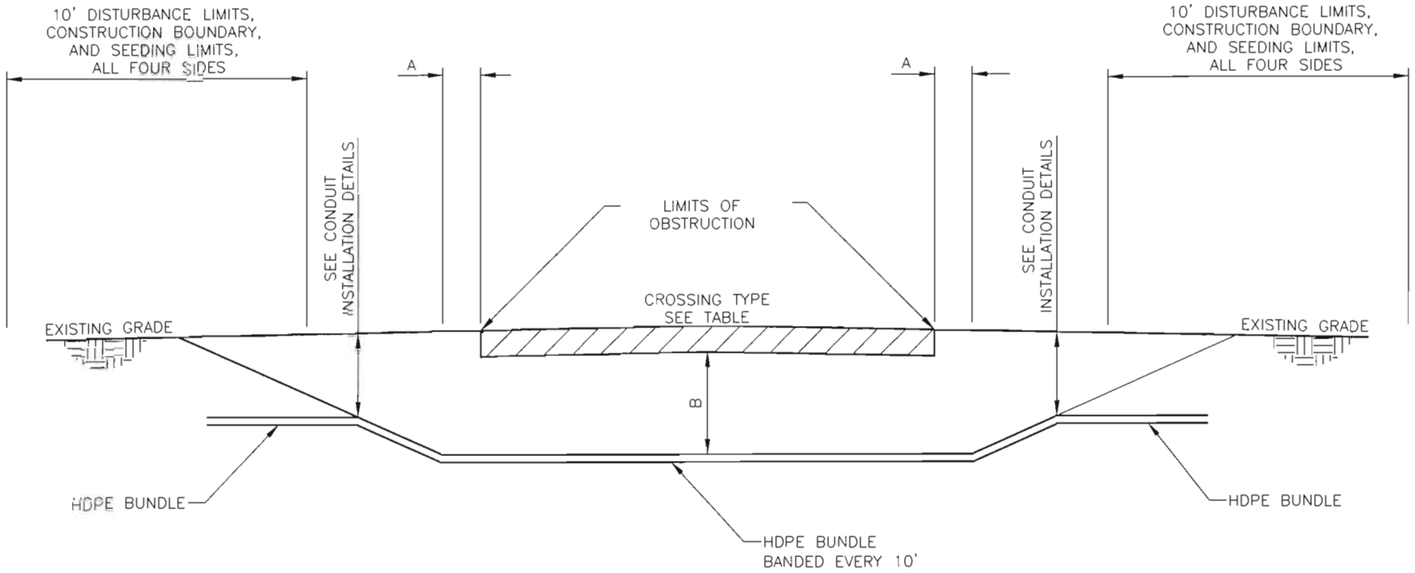
PULL BOX DETAIL			Project No./Code
Designer: C. SIGSBURY	Structure Numbers		MTCE 0091-039
Detailer: C. SIGSBURY			18777
Sheet Subset: DETAIL	Subset Sheets: 1 of 4		Sheet Number 78

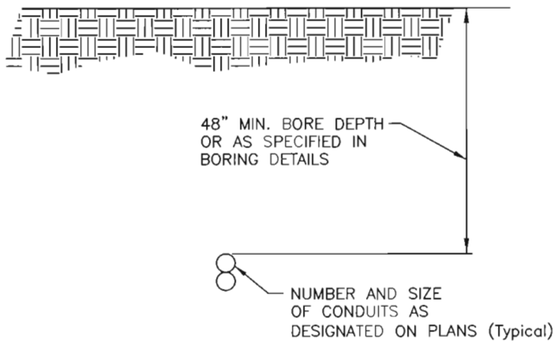
NOTES:

1. CONTRACTOR SHALL CONFORM TO THE APPLICABLE AGENCY REQUIREMENTS AND SPECIFICATION FOR BORE CROSSINGS.
2. EXCAVATIONS AND DISTURBANCE LIMITS REQUIRE SEEDING AND MULCHING.
3. REFER TO SPECIAL PROVISIONS FOR REQUIREMENTS ON HANDLING AND DISPOSING OF BORING SLUDGE.
4. CONDUIT SPLICE CONNECTION EXCAVATION AND CONDUIT SPLICE SHALL NOT BE PAID SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
5. CONTRACTOR SHALL BACKFILL AND REGRADE SITE TO MATCH EXISTING CONDITIONS.
6. CONTRACTOR MUST REPAIR ANY DAMAGE TO PAVEMENT CAUSED BY ERRANT BORING AT THEIR COST.
7. TRENCHES SHALL BE FILLED IN BY THE END OF THE WORK DAY. CONTRACTOR SHALL USE A BMP ON THE DOWNSTREAM SIDE OF ANY REMAINING SPOILS TO PREVENT THE TRANSPORT OF THE SEDIMENT DURING A RAIN EVENT.



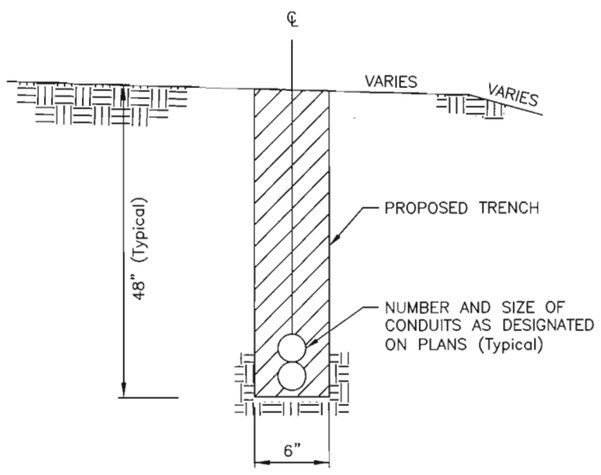
DIRECTIONAL BORE PROFILE

NTS



DIRECTIONAL BORE

NTS



TRENCHING IN FILL

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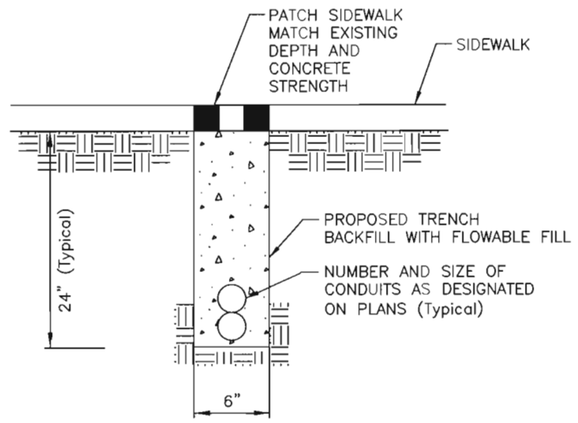

NOTE: SHALLOW TRENCH TO BE USED AS DIRECTED BY THE ENGINEER IN AREAS OF ROCKY SUBSURFACE CONDITIONS AND TO AVOID UTILITIES.

SHALLOW TRENCH

NTS

CROSSING TYPE	A	B
CULVERT	5' MIN	48" MIN
DRIVEWAY	5' MIN	48" MIN
DITCH	15' MIN	48" MIN
CROSS ROAD	15' MIN	48" MIN
FREEWAY	15' MIN	48" MIN
PRAIRIE DOGS	15' MIN	84" MIN
TREE	20' MIN	84" MIN
WATERWAY	50' MIN	48" MIN
WETLAND	50' MIN	48" MIN

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Horiz. Scale: NOT TO SCALE Vert. Scale: As Noted
Unit Information Unit Leader Initials

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Date:	Comments	Init.

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Region 1 SS

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Revised:
Void:

CONDUIT INSTALLATION DETAIL

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: DETAIL
Structure Numbers:
Subset Sheets: 2 of 4

Project No./Code
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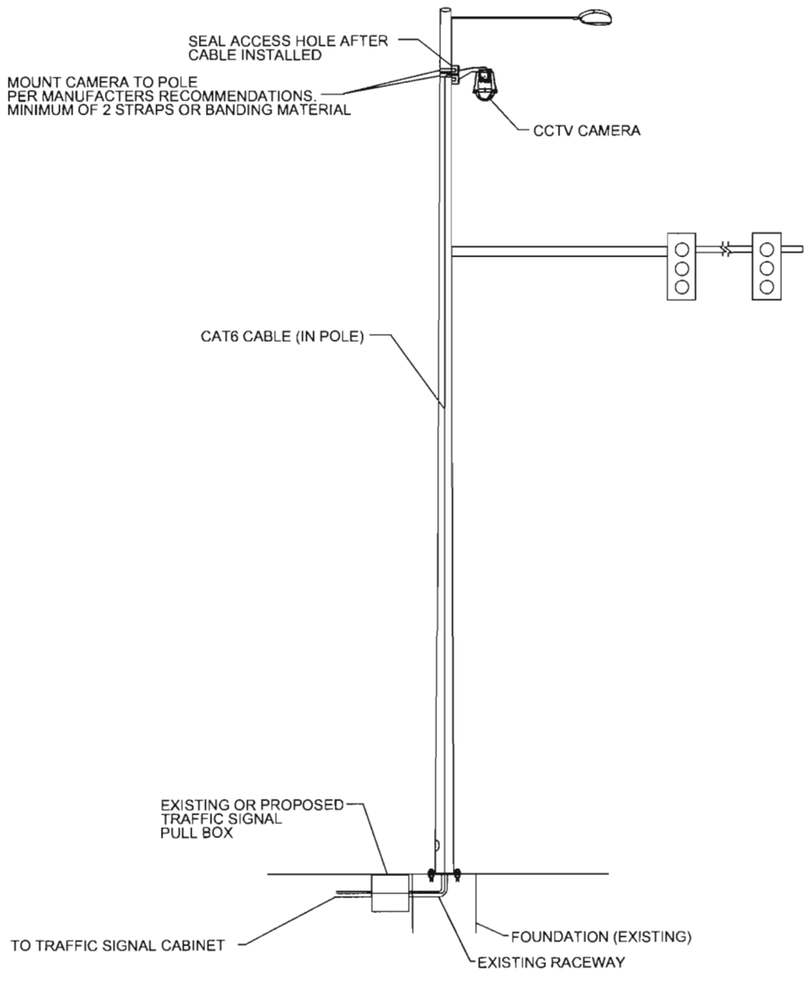
NOTES:

1. STEEL STRAPS USED FOR ATTACHING BOTH THE POLE MOUNT ADAPTER AND CCTV CABINET TO THE POLE SHALL HAVE A MINIMUM WIDTH OF 3/4", AND BE MANUFACTURED OUT OF TYPE 201 STAINLESS STEEL. THEY SHOULD BE USED IN CONJUNCTION WITH TYPE 201 STAINLESS STEEL BUCKLES.
2. ALL DRILLED HOLES SHALL BE A MAXIMUM OF ONE INCH AND SHALL BE FREE OF BURS AND SHARP EDGES PRIOR TO THE INSTALLATION OF THE ETHERNET CABLE. GALVANIZING DAMAGED BY DRILLING OR ERECTION SHALL BE PAINTED WITH ZINC-RICH PAINT IN ACCORDANCE WITH CDOT SPECIFICATION 509.29.



CCTV INSTALLATION DETAIL

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Unit Information Unit Leader Initials

MULLER Muller Engineering Co., Inc. Consulting Engineers **apex**design
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Sheet Revisions		
Date:	Comments	Init.

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Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

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Revised:
Void:

CAMERA INSTALLATION DETAIL

Designer: C. SIGSBURY
Detailer: C. SIGSBURY
Sheet Subset: DETAIL
Structure Numbers
Subset Sheets: 3 of 4

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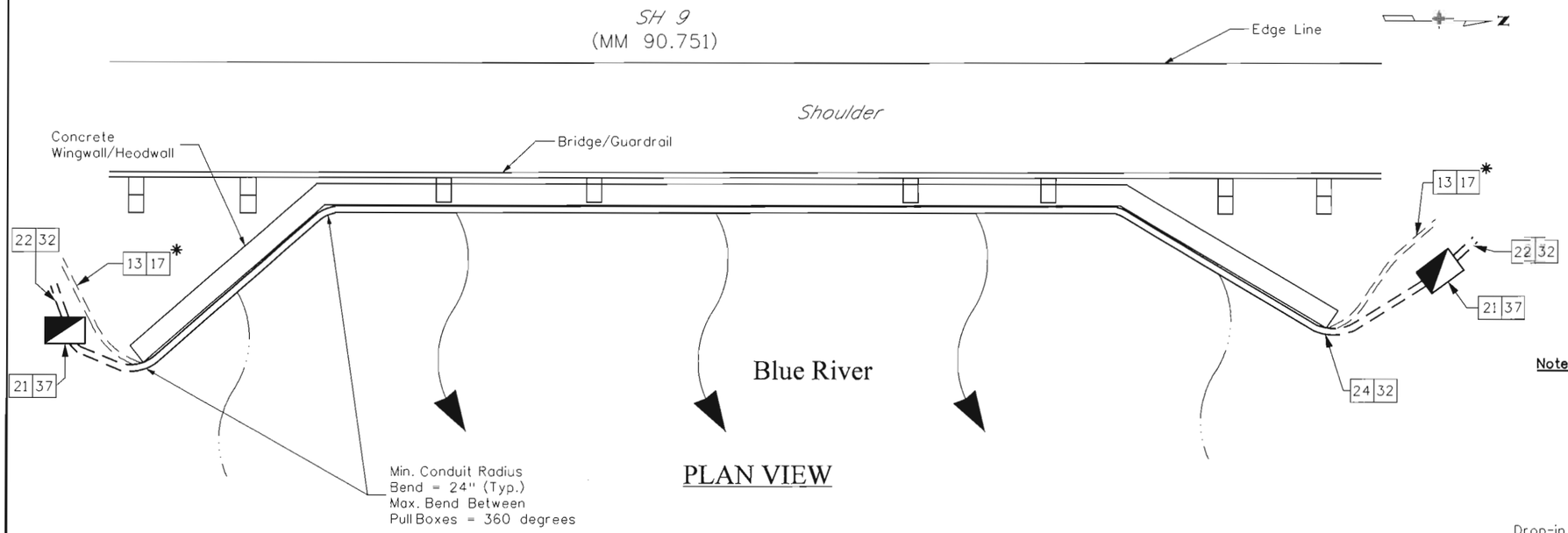


PLAN VIEW

13 EXISTING ELECTRICAL CONDUIT

17 PROTECT IN PLACE

21 PULL BOX (24" X 36" X 24")

22 2-2 INCH ELECTRICAL CONDUIT (MULTIDUCT) (PLASTIC)

24 3 INCH ELECTRICAL CONDUIT

32 FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS) (BACKBONE)

37 COIL 100 LINEAR FEET OF EACH FIBER OPTIC BACKBONE CABLE IN PULL BOX FOR SLACK

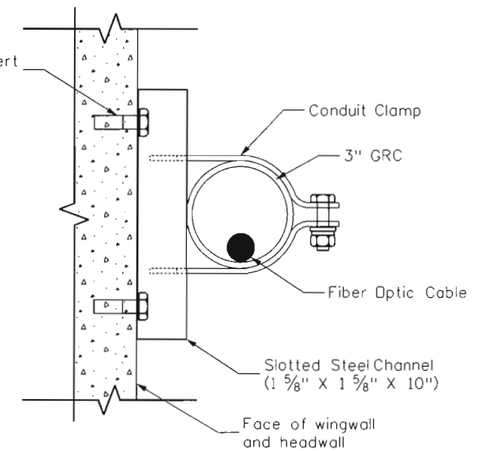
Note: All materials, equipment, and labor required to attach the 3" conduit to the wingwall and headwall shall be included in the cost of 3" INCH ELECTRICAL CONDUIT

* Location of exisiting conduit shall be potholed prior to installing new conduit and pull boxes

ELEVATION VIEW

EAST HEADWALL

(MM 90.751)



SURFACE MOUNT HANGER

(SPACED AT 5' INTERVALS)

811 Know what's **below.** **Call** before you dig.

0' 2.5' 5' 10'

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MULLER Muller Engineering Co., Inc. Consulting Engineers — apexdesign
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CONDUIT ATTACHMENT TO BLUE RIVER STRUCTURE (F-12-AX) - MM 90.751

Designer:	KEB	Structure Numbers	F-12-AX
Detailer:	PJS		
Sheet Subset:	DETAIL	Subset Sheets:	4 of 4

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1. SITE DESCRIPTION

For Information Only to fulfill the CDPS-SCP (Colorado Discharge Permit System - Stormwater Construction Permit) Update to reflect current project site conditions.

A. PROJECT SITE DESCRIPTION: Construction activities for this project will include boring and trenching of 2" plastic conduit along SH 9 from south of Breckenridge (MM 86.0) to east of Frisco (MM 95.4). In areas where there is existing conduit, new fiber optic cable will be installed in the existing conduit. Work also includes installing CCTV cameras on existing signal poles and minor work to install communications equipment in existing traffic signal cabinets.

B. PROPOSED SEQUENCING FOR MAJOR ACTIVITIES: The primary sequence will be to install the new conduit, then install pull boxes, pull fiber optic cable into the conduit and then install CCTV cameras and communications equipment at the signalized intersections.

C. ACRES OF DISTURBANCE:
1. Total area of construction site: 109 acres
2. Total area of disturbance: 5 acres
3. Acreage of seeding: 5 acres

D. EXISTING SOIL DATA: Existing soils in the project area consist of cobbley loams which are generally deep, nearly level to moderately steep, with sandy and gravelly soils on the uplands and loamy and sandy soils on floodplains and terraces.

E. EXISTING VEGETATION, INCLUDING PERCENT COVER: A survey of existing vegetation shall be conducted by CDOT Landscape Architect/Specialist prior to construction commencing. Project shall contact Jennifer Klaetsch (CDOT Landscape Specialist) at 303-757-9481 to arrange time and date.

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 Plan Sheets for locations
2. Names of receiving water(s) on site and the ultimate receiving water: The Blue River and a few unnamed tributaries to the Blue River are on site. The Blue River is the ultimate receiving water.
3. Distance ultimate receiving water is from project: The Blue River is approximately 200 feet from project.

H. ALLOWABLE NON-STORMWATER DISCHARGES: Concrete washout is anticipated on 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 anticipated on project.

2. SITE MAP COMPONENTS*:

Pre-construction:
A. PROJECT CONSTRUCTION POTENTIAL SITE BOUNDARIES: See Plan Sheets
B. ALL AREAS OF GROUND SURFACE DISTURBANCE: See SWMP Boring and Trenching Typical Section and Plan View sheet
C. AREAS OF CUT AND FILL: None anticipated on project.
D. LOCATION OF ALL STRUCTURAL BMPs IDENTIFIED IN THE SWMP: See Plan Sheets
E. LOCATION OF NON-STRUCTURAL BMPs AS APPLICABLE IN THE SWMP: See Plan Sheets
F. SPRINGS, STREAMS, WETLANDS AND OTHER SURFACE WATER: See Plan Sheets
G. PROTECTION OF TREES, SHRUBS, CULTURAL RESOURCES AND MATURE VEGETATION:
H. AREAS USED FOR STORING AND STOCKPILING OF MATERIALS, STAGING AREAS (field trailer,fueling,etc) and BATCH PLANTS: See Plan Sheets

*ECS to revise site maps in accordance to 208.03

3. SWMP ADMINSTRATOR FOR DESIGN: CDOT Landscape Specialist

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 which BMPs are currently in use on site. 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	sediment			x	x	
Permanent Sediment Basin (used as temporary BMP)	sediment				x	x
Embankment Protector	erosion				x	x
Inlet Protection	erosion	x		x	x	
Outlet Protection	erosion	x			x	
Concrete Washouts	construction	x			x	
Vehicle Tracking Pad	construction			x	x	
Dewatering	sediment				x	
Temporary Stream Crossing	erosion			x	x	
Clean water diversion					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
Turf Reinforcement Mat	erosion				x	x
Vegetative Buffer Strips	erosion	x		x	x	x
Protection of Trees	erosion			x	x	
Preservation of Mature Vegetation	erosion			x	x	x
Spray-on Mulch Blanket	erosion	x			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.

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File Name: 18777_SWMP_typsec_planview.dgn		Date:	Comments	Init.	DOT DEPARTMENT OF TRANSPORTATION 18500 East Colfax Avenue Aurora, CO 80011 Phone: 303-757-9648 FAX: 303-757-9746	No Revisions:	Designer: JMK Detailer: JMK Sheet Subset: SWMP
Horiz. Scale: NOT TO SCALE Vert. Scale: As Noted	R-X					Revised:	Structure Numbers: Sheet Subsets: 1 of 4
Unit Information Unit Leader Initials					Region 1 SS	Voided:	Project No./Code: WTCE 0091-039 / 18777
							Sheet Number: 82

NARRATIVES

Trenching Operations
1. When trenching operations go through or directly adjacent to shrubs or trees, vegetation shall be protected from unnecessary encroachment by installing fence (plastic) and erosion logs. When necessary, trees and shrubs within the 10' work zone may be trimmed to the ground at no additional cost to the project.

2. Trenching operations - trenching shall be kept to a maximum disturbance (includes trench, spoils, equipment) width of 10 feet centered on the trench. When trenching occurs adjacent to a ditch or wetlands, prior to construction commencing, orange plastic fence shall be placed in combination with erosion log to prevent encroachment of construction traffic and sediment into state waters (i.e. ditches, wetlands). Fence (plastic) shall be placed adjacent to the wetlands; erosion logs shall be placed between the plastic fence and disturbance area. Logs shall be placed to direct flows away from or filter water running into wetlands from disturbance areas.

3. The Contractor shall limit construction activities to those areas within the limits of disturbance. Disturbance is limited to a 10' wide swath that is centered on the trench. Any disturbance beyond these limits shall be restored to its original condition by the contractor at their expense.

4. The Contractor shall limit trenching activities to a maximum of 300 LF open trenching at any one time. All material removed during trenching shall be replaced in the order in which it was removed. Backfilling of trenches will be accomplished by the end of each work day.

Erosion Logs
Erosion logs are used to filter sediment laden run-off from disturbed areas during construction.

1. All trenching material shall be kept out of the roadway ditch line and existing wetlands. When trenching occurs adjacent to or on slope above a ditch or wetland, a determination where erosion logs shall be placed to prevent sediment from reaching the ditch shall be made. Erosion log locations and associated narrative shall be added to the site map by ECS.

2. If trench line crosses a ditch a log shall be placed as a check to reduce the potential of sediment from trenching operations going down the ditch line.

3. All inlets that are within the work area, where there is a potential for sediment from trenching operations reaching the inlet, shall be protected with erosion logs. Locations and associated narrative shall be added to the site map.

4. At boring locations, perimeter control (erosion logs) shall be used to prevent erosion from water used during boring operations. Locations shall be added to the site map. A detail and associated narratives shall be added to the SWMP notebook.

5. Pull box operations - place erosion logs on down hill side of pull box operations to prevent sediment from pull box operations from entering state waters (i.e. ditches, wetlands). Maximum allowable work area at pull box locations is 10' x 10'.

6. Boring operations - prior to boring operations commencing erosion logs shall be placed at the low points surrounding work area. Erosion logs shall be trenched into the ground a minimum of 2 inches to ensure water from boring operation and sediment laden stormwater cannot run directly underneath the log. J-hook ends of the logs up gradient to prevent water from flowing around the logs. Inspect logs throughout boring operations to ensure water is not running underneath, around logs or causing rilling.

Boring shall be not take place within 50 feet of states waters, including wetlands and other aquatic features.

7. Culvert inlet protection - prior to work commencing, erosion logs shall be placed at existing culverts where disturbance may be occurring adjacent to pipe and cause sediment laden water to enter pipe.

8. Type C/D inlets - prior to work commencing, erosion logs shall be placed at Type C/D inlets where disturbance may be occurring adjacent to inlet and cause sediment laden water to enter system.

Concrete
Concrete/debris and waste from placing new signs, pull boxes, etc. and any spoils from digging new holes shall be picked up and disposed of properly to an offsite location at the end of each day. Removal of spoils, concrete, debris and waste shall not be paid for separately but will be included in the cost of work.

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. Areas of preserved vegetation shall be marked on the site map; preserved vegetation are those areas outside of disturbance (shoulder operation limit) line to the right of way fence. The amount of sediment reaching buffer strips shall be kept to a minimum by placing temporary and permanent erosion control features on disturbed slopes. If sediment does enter buffer strips, within disturbance areas, and covers existing vegetation it shall be cleaned/re-seeded/mulched/mulch tackified as directed. Sediment outside of disturbance areas shall be cleaned/re-seeded/mulch/mulch tackified at the expense of the Contractor. Sediment in vegetative ditches shall be kept to a minimum to prevent sediment laden water from exiting the project site or state waters.

Landform
Landforms prevent sediment from entering/exiting 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. ECS shall mark landforms on the site map when they are being used as a BMP.

NARRATIVES (CONT.)

Permanent Seeding
Seeding is used to control runoff and erosion on disturbed areas. Completed areas shall be seeded within 48 hours. Seeded areas shall be inspected frequently for areas of failure. See Interim and Final Stabilization for application.

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.

Spray-on Mulch Blanket
Spray-on mulch blanket is used to stabilize erodible stockpiles that may be in place for an extended period of time or may be used in lieu of mulch/mulch tackifier or blanket in seeding operations. Spray-on mulch blanket shall not be used in areas of concentrated flows (i.e. ditch lines). Spray-on mulch blanket can be used in small disturbed areas requiring seeding when crimping of mulch will be difficult.

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.

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. VEHICLE TRACKING PAD/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. STOCKPILE MANAGEMENT - shall be done in accordance with subsection 101.95 and 208.07

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

C. SAW CUTTING - shall be done in accordance with subsection 101.95, 208.04, 208.05

D. STREET CLEANING - shall be done in accordance with subsection 208.04

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 (f).

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

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Horiz. Scale: NOT TO SCALE Vert. Scale: As Noted	(R-X)				Phone: 303-757-9848 FAX: 303-757-9746	Revised:	Designer: JMK Structure Numbers	18777
Unit Information Unit Leader Initials					Region 1 SS	Void:	Detailer: JMK	
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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 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	LBS. PLS PER ACRE
Blue grama	*Bouteloua gracilis* 'Hachita'	0.5
Arizona fescue	*Festuca arizonica* 'Redondo'	1.0
Idaho fescue	*Festuca Idahoensis*	2.0
Canada wildrye	*Elymus canadensis*	6.2
Sandberg bluegrass	*Poa sandbergii*	0.2
Western wheatgrass	*Pascopyrum smithii* 'Rosanna'	6.5
Mountain brome	*Bromus marginatus* 'Bromar'	4.0
Prairie junegrass	*Koeleria macrantha*	0.1
Slender wheatgrass	*Elymus trachycaulus ssp. trachycaulus* 'Pryor'	1.0
Oats	*Avena sativa*	3.0
Western yarrow	*Achillea millefolium var. occidentalis*	0.1
Rocky Mountain penstemon	*Penstemon strictus*	1.0
TOTAL		25.6

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 a minimum of 1 ½ tons of certified weed free native hay per acre and in accordance with Section 212, and mechanically crimp it 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: [Minimum requirements for all disturbances to receive seeding (native). Compost is optional within areas above 8000 ft in elevation]

Soil conditioner paid for as Item 212- Soil Conditioning (Acre)		
Biological nutrient organic based fertilizer (lbs/acre)*	Humate (lbs/acre)	Compost (cys/acre) (1/2 inch depth)
600	200	65

*Biological nutrient shall not exceed 8-8-8 (N-P-K). Humate based material shall be in accordance to Section 212 and compost shall be in accordance to Special Provision 212. Refer to Project Special- Topsoil for additional topsoil amendments.[Include Topsoil Project Special] Placing compost when required to amend embankment and as soil conditioner may be combined as a single application.

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.
2. Areas where seed has not germinated after one season shall be evaluated by the Engineer and CDOT Landscape Architect. Areas that have not germinated shall have seed, mulch and mulch tackifier (or blanket) reapplied. Work shall be paid for by the appropriate bid item.

10. PRIOR TO FINAL ACCEPTANCE

A. Final Acceptance shall be in accordance with subsection 208.10.

11. TABULATION OF STORMWATER QUANTITIES

Pay Item	Description	Pay Unit	*Quantity
203	Blading	Hour	20
208	Sweeping (Sediment Removal)	Hour	54
208	Removal of Trash	Hour	36
208	Erosion Log (12 Inch)	LF	4000
208	Concrete Washout Structure	Each	4
208	Removal and Disposal of Sediment (Equipment)	Hour	20
208	Removal and Disposal of Sediment (Labor)	Hour	50
208	Erosion Control Supervisor	Hour	300
208	Gravel Bag	LF	500
212	Seeding (Native)	Acre	5
212	Soil Conditioning	Acre	5
213	Mulching (Weed Free Hay)	Acre	5
213	Mulch Tackifier	LB	1000
213	Spray-on Mulch Blanket	Acre	3
216	Soil Retention Blanket (Straw/Coconut) (Biodegradable Class 1)	SY	500
700	Erosion Control	FA	1

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

A. BMP sediment removal and disposal shall be paid for as: 208 Removal and Disposal of Sediment (Equipment) and 208 Removal and Disposal of Sediment (Labor). All other BMP maintenance shall be included in the cost of the BMP Device.

B. It is estimated that 20 hours of blading may be required for miscellaneous erosion control work as directed by the Engineer. Work shall be paid for as: 203 Blading.

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Unit Information Unit Leader Initials					Region 1 SS	Void:	Detailer: JMK	Sheet Number 84 .
							Sheet Subset: SWMP Subset Sheets: 3 of 4	

TABULATION OF TRAFFIC CONTROL ITEMS

ITEM NO.	ITEM	UNIT	TOTALS
630	FLAGGING	HOUR	350
630	TRAFFIC CONTROL INSPECTION	DAY	48
630	TRAFFIC CONTROL MANAGEMENT	DAY	120
630	BARRICADE (TYPE 3 M-A) (TEMPORARY)	EA	2
630	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EA	8
630	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EA	24
630	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE C)	EA	8
630	PORTABLE MESSAGE SIGN PANEL	EA	2
630	ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL (C TYPE)	EA	2
630	DRUM CHANNELIZING DEVICE	EA	50
630	TRAFFIC CONE	EA	100
630	IMPACT ATTENUATOR (TRUCK MOUNTED ATTENUATOR) (TEMPORARY)	EA	1

NOTES:

QUANTITIES OF TRAFFIC CONTROL DEVICES ARE FOR ONE (1) LOCATION ONLY. SHOULD THE CONTRACTOR CHOOSE TO WORK ON MORE THAN ONE LOCATION AT THE SAME TIME, ALL ADDITIONAL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED BY THE CONTRACTOR AT HIS OWN EXPENSE.

THE CONTRACTOR WILL BE REQUIRED TO COVER ANY EXISTING SIGNS WHICH CONFLICT WITH CONSTRUCTION SIGNS AS REQUIRED IN SECTION 630.11 OF THE 2011 CDOT STANDARD SPECIFICATION FOR ROAD & BRIDGE CONSTRUCTION.

SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL SIGNS

SIGN CODE	LEGEND	DIMENSION	PANEL SIZE		
			A	B	C
			EA	EA	EA
W20-1	ROAD WORK AHEAD	48 x 48		4	
W20-4	ONE LANE ROAD XX FT	48 x 48		2	
W20-7a	FLAGGER	48 x 48		2	
W21-5	SHOULDER WORK	48 x 48		4	
W21-5b	SHOULDER CLOSED (DIST)	48 x 48		4	
R9-9	SIDEWALK CLOSED	24 x 12	2		
R52-6b	BEGIN FINES DOUBLE IN WORK ZONE	48 x 60			4
R52-6c	END FINES DOUBLE IN WORK ZONE	48 x 60			4
R52-6	FINES DOUBLE	48 x 48		4	
M4-9a	BIKE/PED DETOUR	30 x 24	2		
G20-5	WORK ZONE	48 x 12	4		
G20-10	XYZ CONSTRUCTION THANKS YOU	48 x 48		4	
TOTALS			8	24	8

811 Know what's below. Call before you dig.

5/22/2012 3:00:54 PM
P:\10-028.13 Region 1 Umbrella 2011 CDOT\102 - SH 9 Signal Interconnect\18777\Traffic_ITS\Drawings\18777TRAF_Control.dgn

Print Date: 5/22/2012
Drawing File Name: 18777TRAF_Control.dgn
Horiz. Scale: 1:100 Vert. Scale: As Noted
Unit Information Unit Leader Initials

MULLER Muller Engineering Co., Inc. Consulting Engineers
P:10-028.13 - SH 9 Interconnect\Traffic_ITS
apexdesign

Sheet Revisions		
Date:	Comments	Init.

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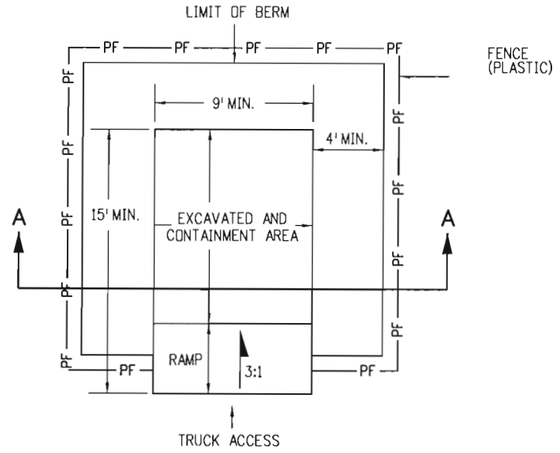
Aurora, CO 80011
Phone: 303-757-9648 FAX: 303-757-9746
Region 1 SS

As Constructed
No Revisions:
Revised:
Void:

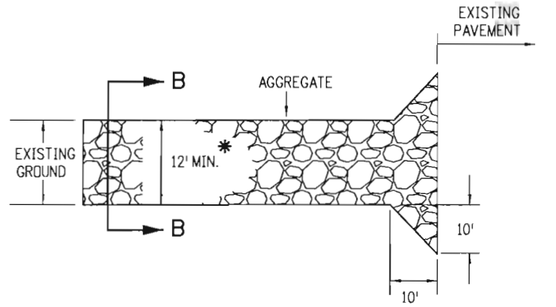
TRAFFIC CONTROL NOTES AND TABULATION

Designer: KEB
Detailer: PJS
Sheet Subset: CTC
Structure Numbers:
Subset Sheets: 1 of 1

Project No./Code
MTCE 0091-039
18777
Sheet Number 86

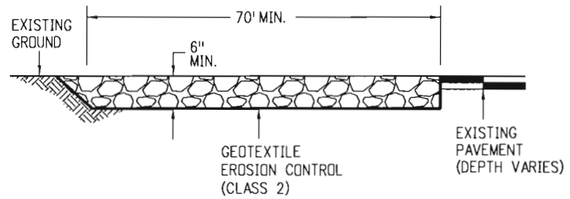


PLAN VIEW

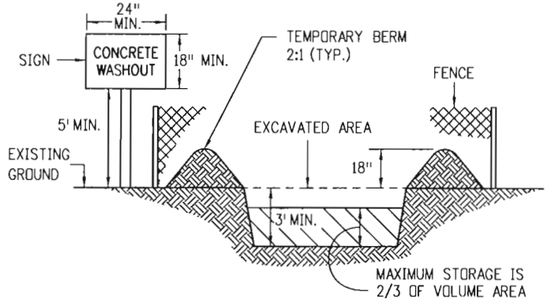


PLAN VIEW

* SHALL EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION.



ELEVATION SECTION

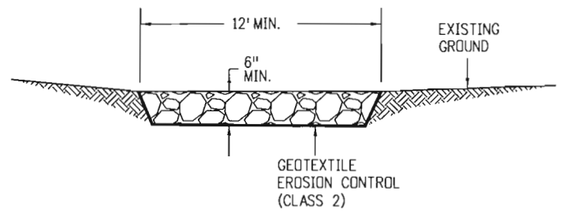


SECTION A-A

NOTES:

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

CONCRETE WASHOUT STRUCTURE



SECTION B-B

NOTES:

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

VEHICLE TRACKING PAD

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CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)	07/29/11	Revised sheet 5 of 12.

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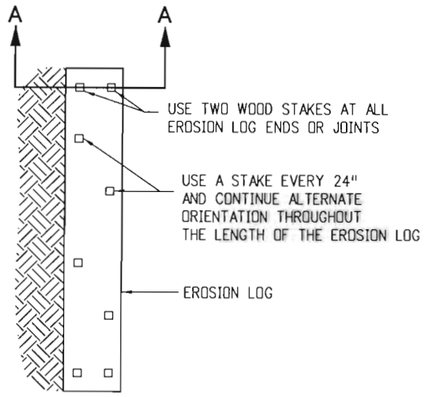
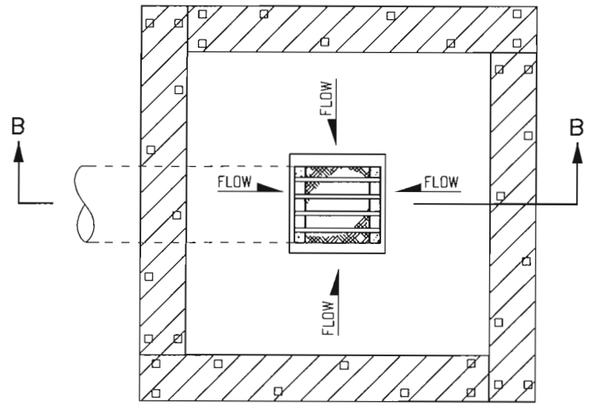


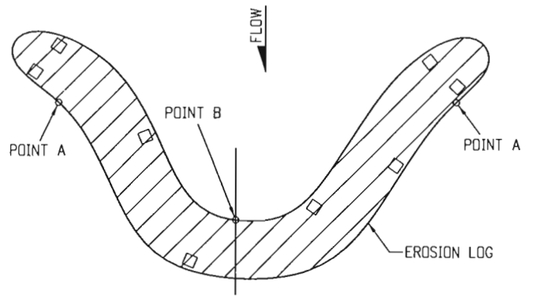
PLAN VIEW



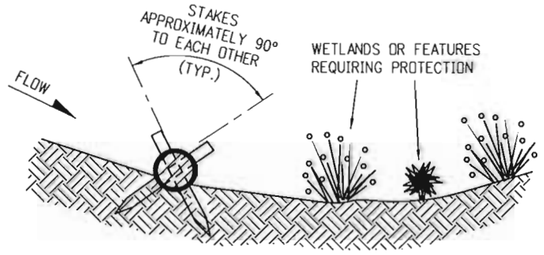
PLAN VIEW

NOTES

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

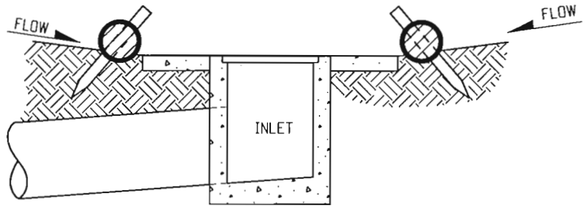


PLAN VIEW



SECTION A-A

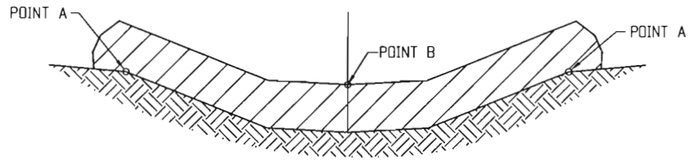
TYPICAL STAKE INSTALLATION



SECTION B-B

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

EROSION LOG FILTER AT DROP INLET



POINTS A SHALL BE HIGHER THAN POINT B.

ELEVATION

EROSION LOG DITCH INSTALLATION

EROSION LOG APPLICATIONS

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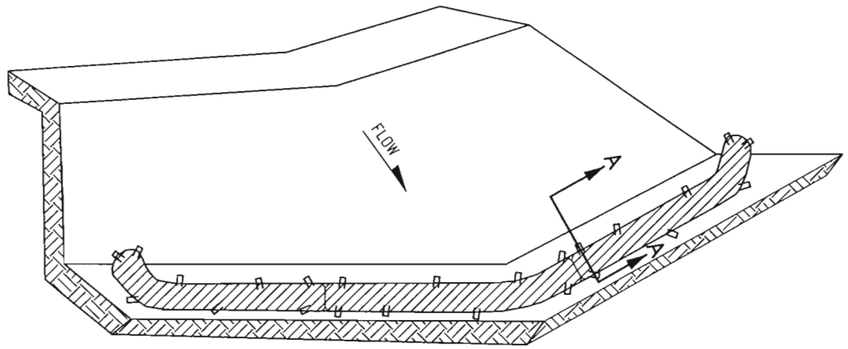
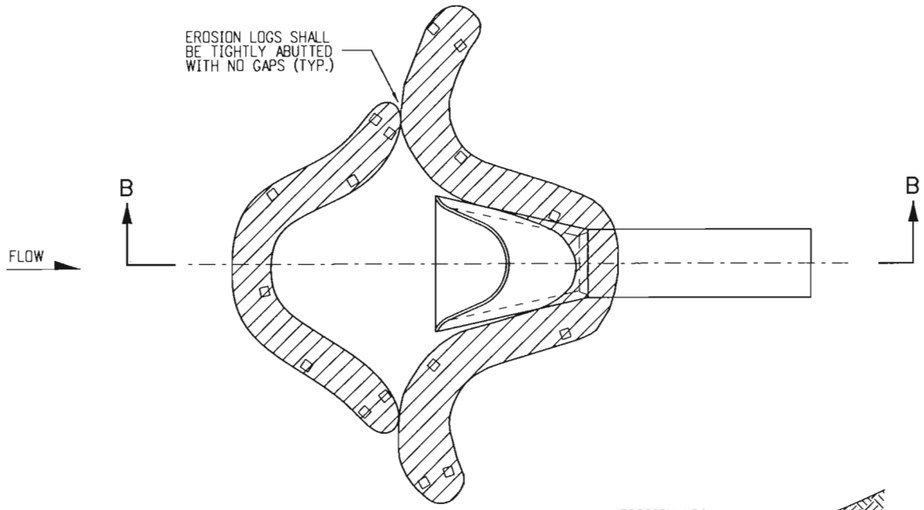
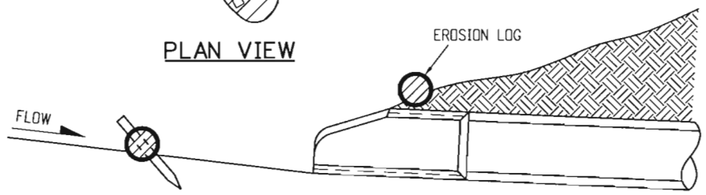
M-208-1
Sheet No. 2 of 12



ISOMETRIC VIEW

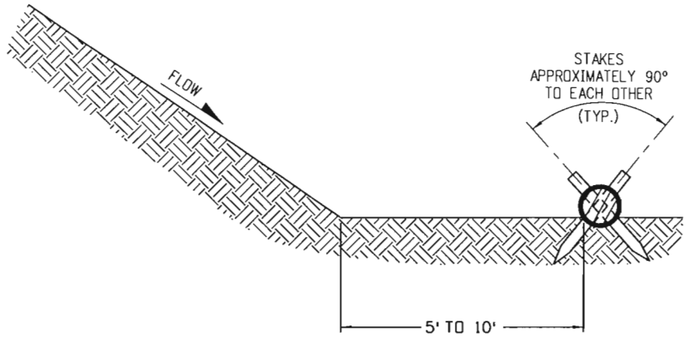


PLAN VIEW



SECTION B-B

EROSION LOG CULVERT INLET PROTECTION

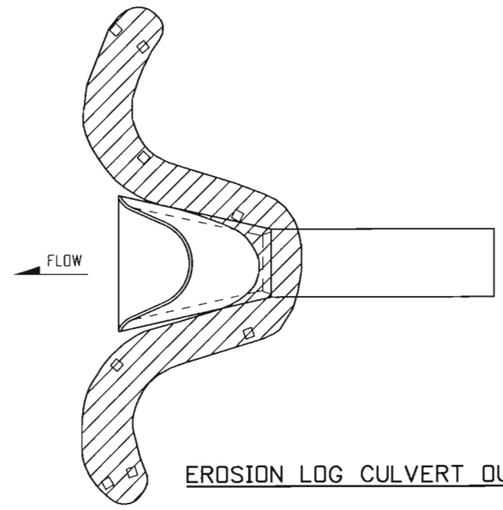


SECTION A-A

NOTES:

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

EROSION LOG TOE OF SLOPE PROTECTION



EROSION LOG CULVERT OUTLET PROTECTION

EROSION LOG APPLICATIONS

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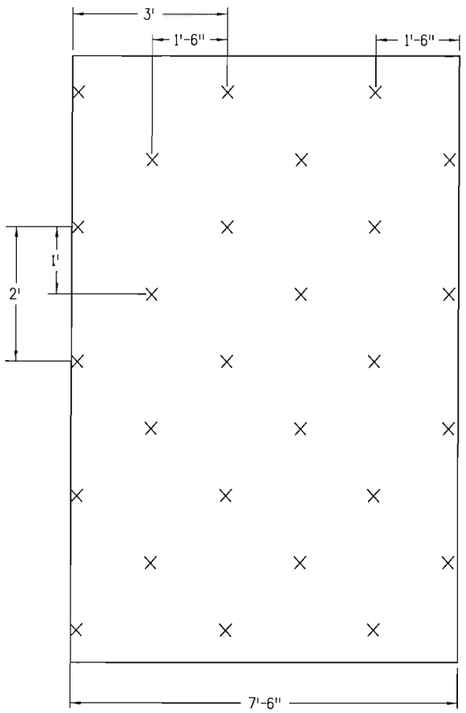
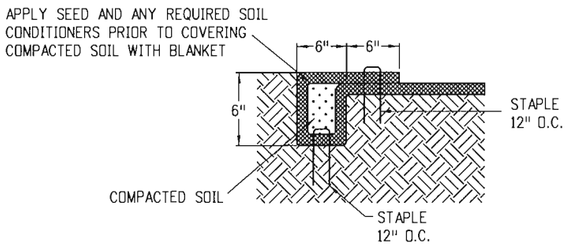


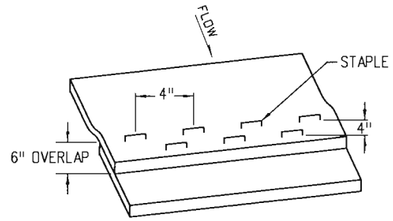
TYPICAL STAPLE PATTERN
FOR CHANNEL APPLICATION

SEE SUBSECTION 216.05.



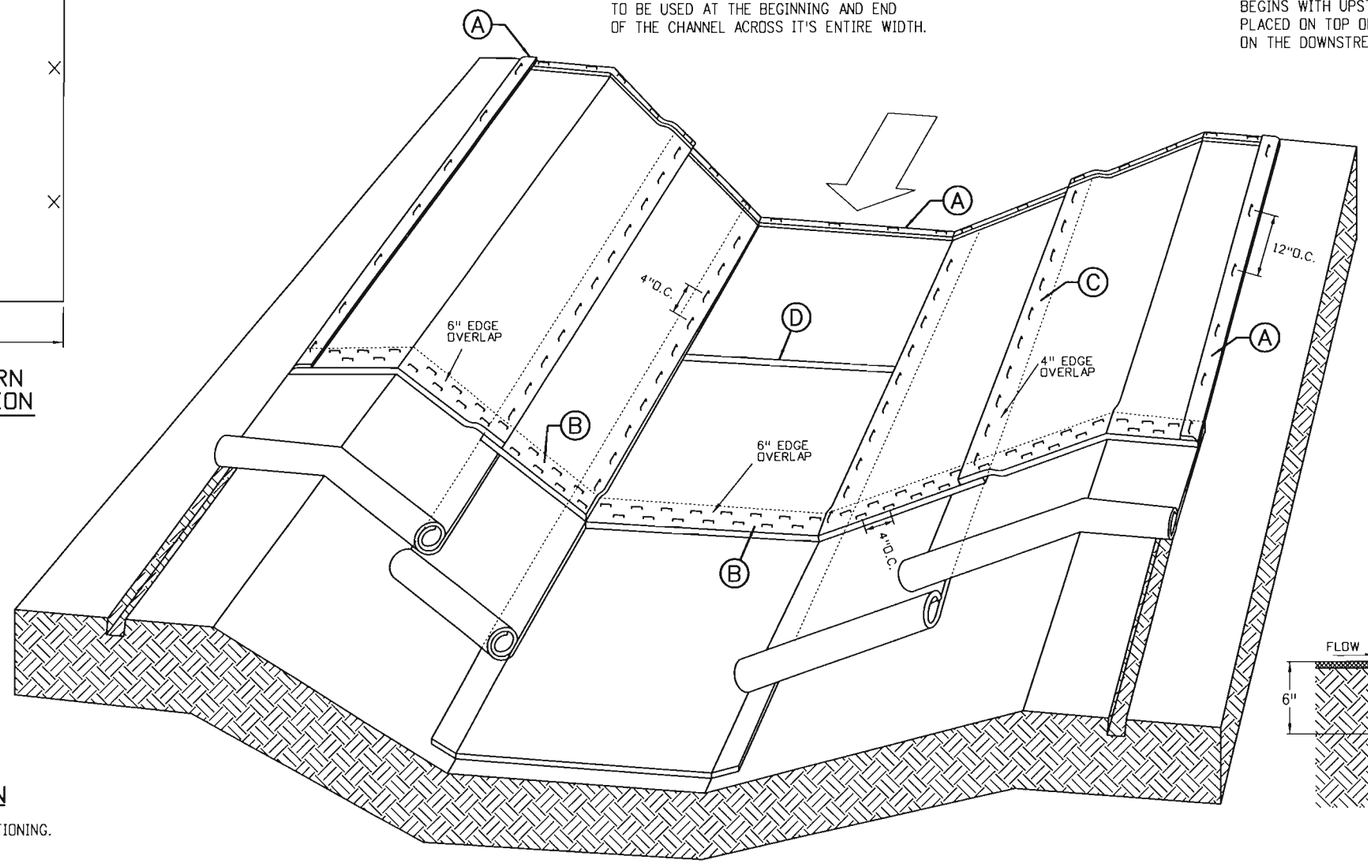
ANCHOR TRENCH
SECTION (A)

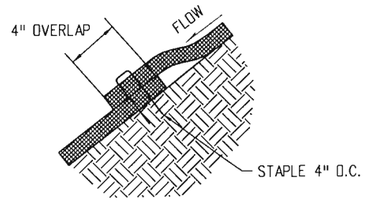
TO BE USED AT THE BEGINNING AND END
OF THE CHANNEL ACROSS IT'S ENTIRE WIDTH.



CONSECUTIVE ROLL OVERLAP
SECTION (B)

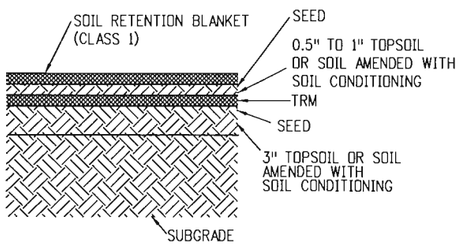
TO BE USED WHEREVER ONE ROLL
OF BLANKET ENDS AND ANOTHER
BEGINS WITH UPSTREAM BLANKET
PLACED ON TOP OF THE BLANKET
ON THE DOWNSTREAM SIDE.





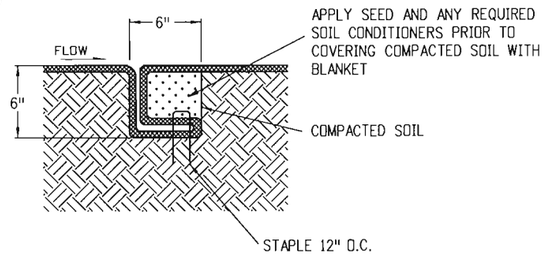
SIDE SEAM OVERLAP
SECTION (C)

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



SOIL FILLED TRM APPLICATION

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



CHANNEL CHECK SLOT
SECTION (D)

TO BE USED AT 30' INTERVALS IN CHANNEL FLOWLINE.

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

IN ACCORDANCE WITH SECTION 216.

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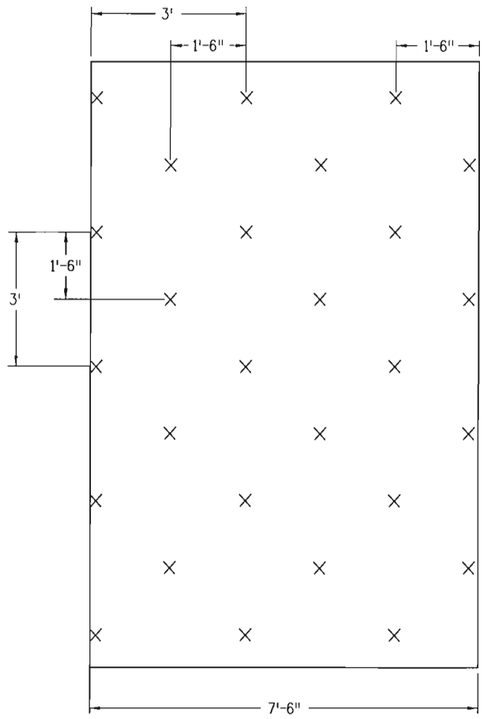
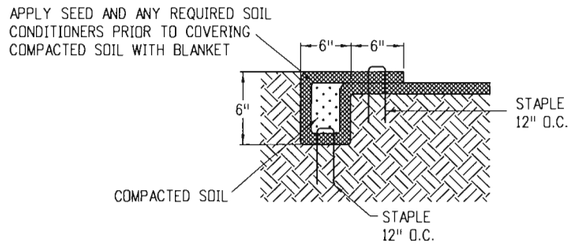
STANDARD PLAN NO.
M-208-1
Sheet No. 4 of 12



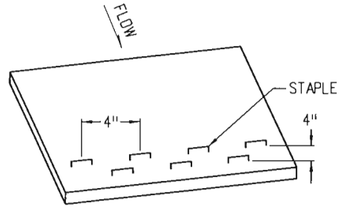
TYPICAL STAPLE PATTERN
FOR SLOPE APPLICATION

SEE SUBSECTION 216.04.



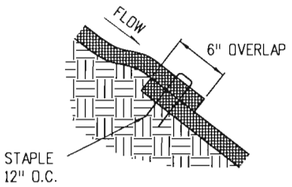
ANCHOR TRENCH
SECTION (A)

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



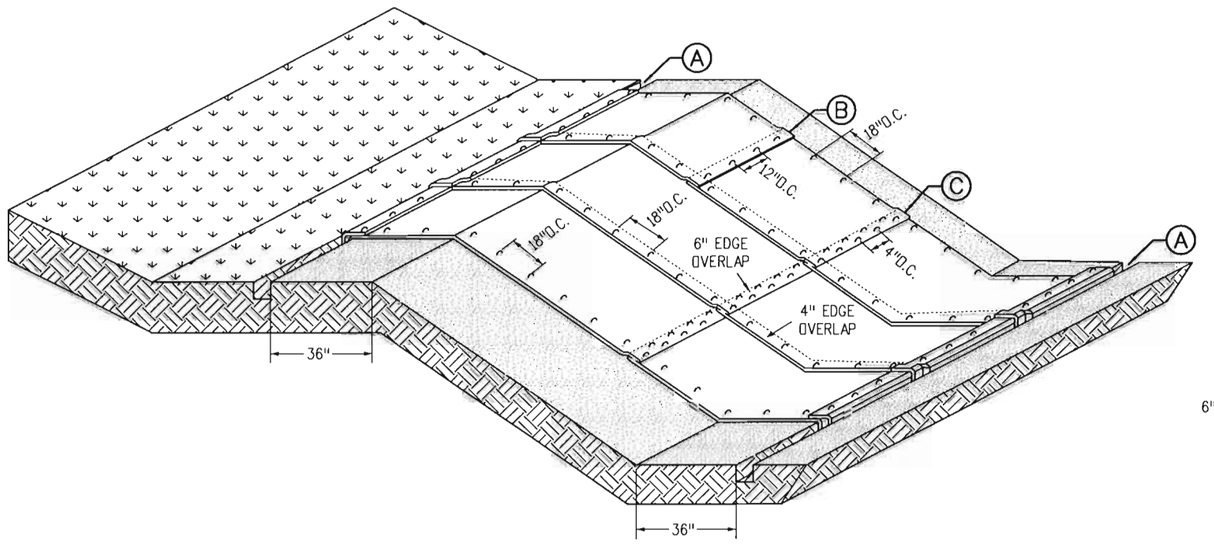
DOWNSLOPE END STAPLE CHECK

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



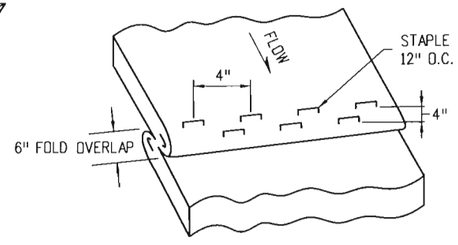
CONSECUTIVE ROLL OVERLAP
SECTION (B)

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



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

IN ACCORDANCE WITH SECTION 216.



STAPLE CHECK
SECTION (C)

NOTES:

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

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STANDARD PLAN NO.
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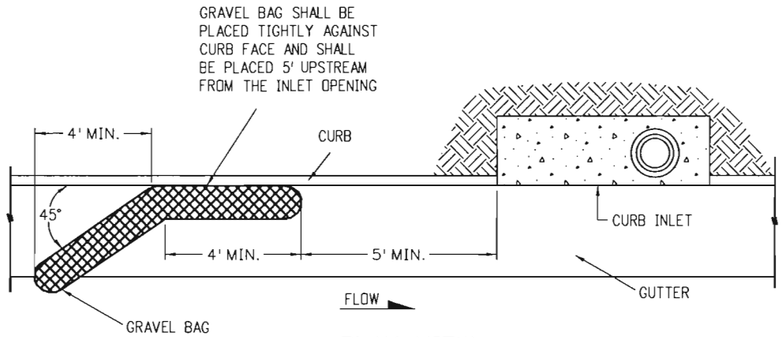
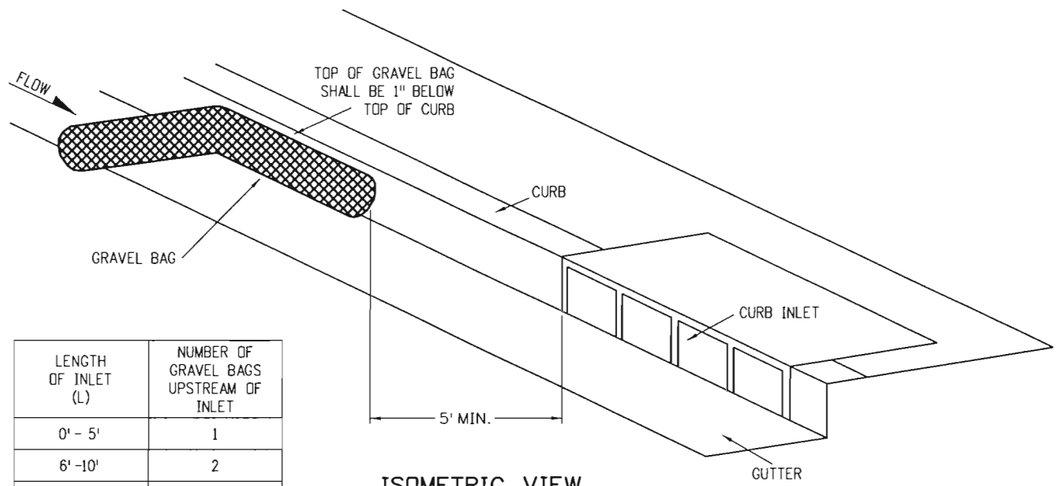
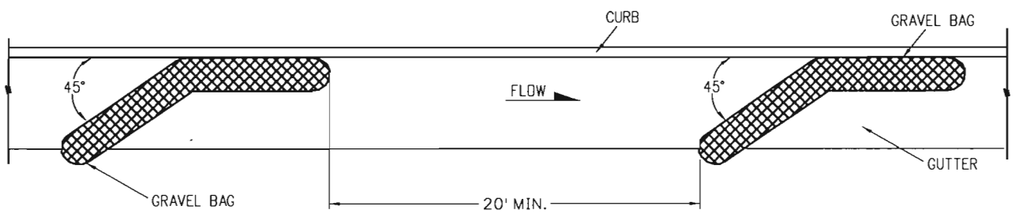


PLAN VIEW



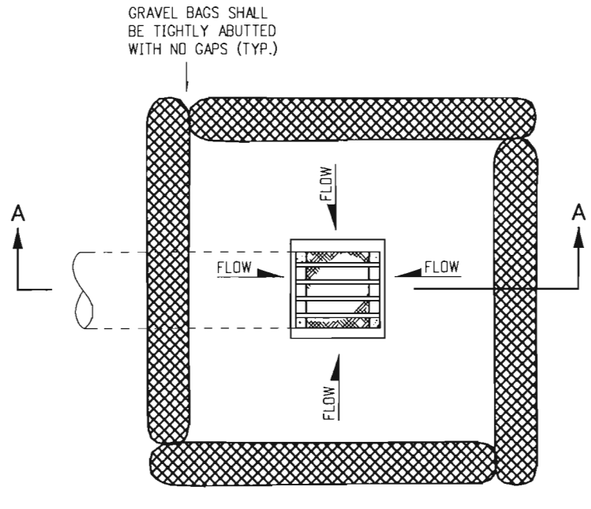
LENGTH OF INLET (L)	NUMBER OF GRAVEL BAGS UPSTREAM OF INLET
0' - 5'	1
6' -10'	2
L > 10'	3

ISOMETRIC VIEW



PLAN VIEW FOR MULTIPLE GRAVEL BAGS

GRAVEL BAG CURB CHECK



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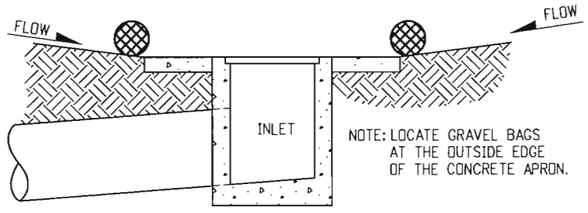

SECTION A-A

GRAVEL BAG FILTER AT DROP INLET

GRAVEL BAG APPLICATIONS

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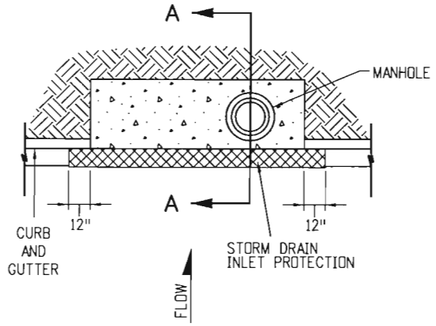
TEMPORARY EROSION CONTROL

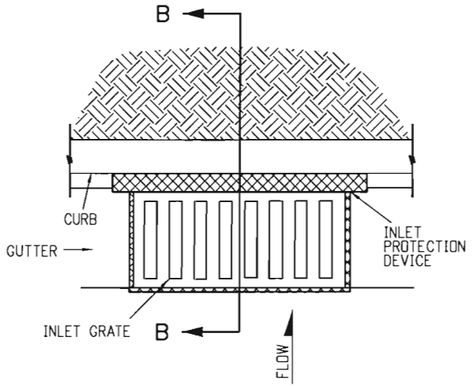
Issued By: Project Development Branch on July 04, 2006

STANDARD PLAN NO.

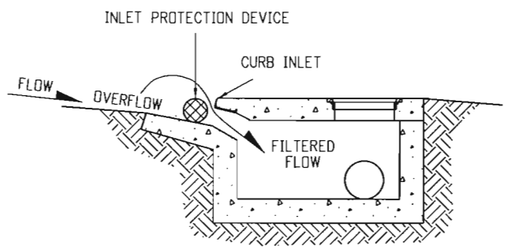
M-208-1



PLAN VIEW



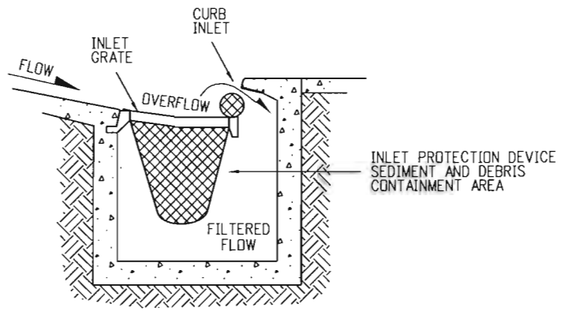
PLAN VIEW



SECTION A-A

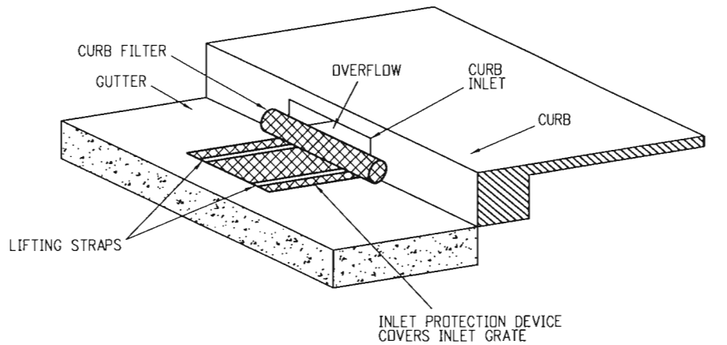
STORM DRAIN INLET PROTECTION (TYPE I)

INLET PROTECTION SHALL EXTEND 12 IN. PAST EACH END OF THE INLET.



SECTION B-B

STORM DRAIN INLET PROTECTION (TYPE II)
OPTION A



ISOMETRIC VIEW

STORM DRAIN INLET PROTECTION (TYPE II)
OPTION B

STORM DRAIN INLET PROTECTION

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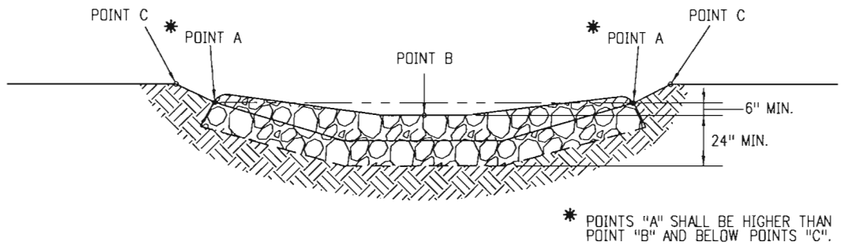
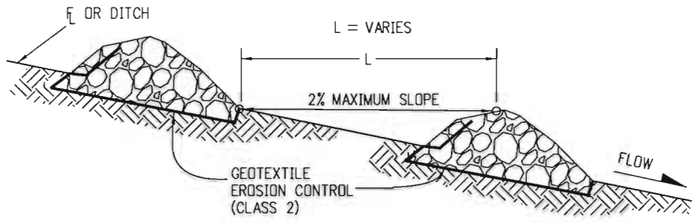
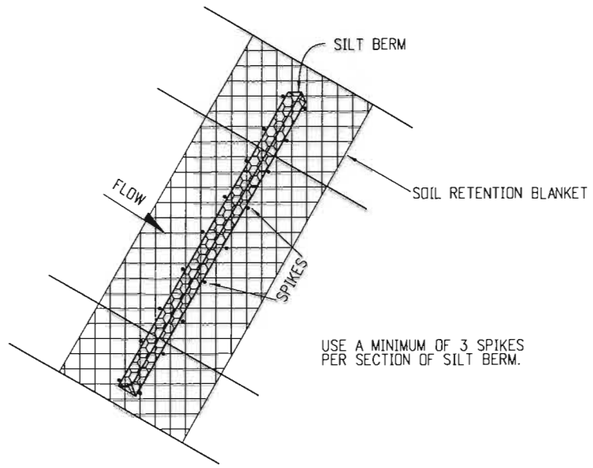


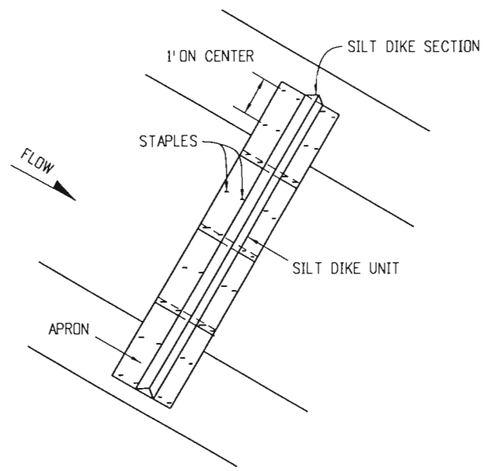
TYPICAL SECTION VIEW



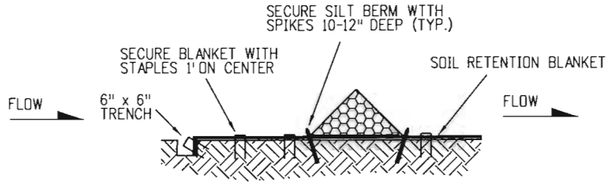
SECTION VIEW ALONG DITCH FLOWLINE



PLAN VIEW

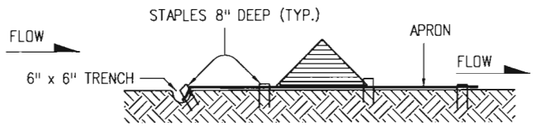


PLAN VIEW



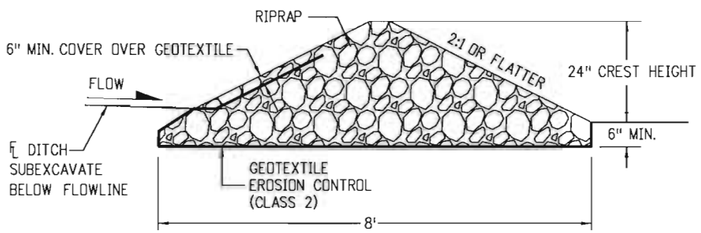
TYPICAL SECTION VIEW

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



TYPICAL SECTION

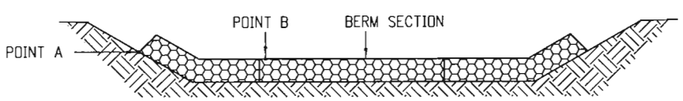
NOTES:
1. ANCHOR APRON INTO TRENCH WITH 8" MINIMUM STAPLES PLACED AT 1.5' INTERVALS ALONG EDGE.
2. FILL AND COMPACT TRENCH.
3. THE APRON SHALL EXTEND A MINIMUM OF 2 FEET BEYOND EACH SIDE OF THE TRIANGLE.



SECTION DETAIL

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

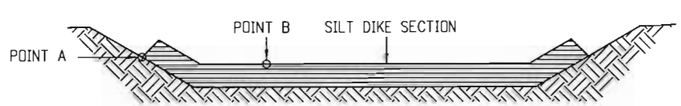
ROCK CHECK DAM



POINT "A" SHALL BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE BERM AND NOT AROUND THE ENDS.

FRONT VIEW

SILT BERM-VELOCITY CHECKS



POINT "A" SHALL BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

FRONT VIEW

SILT DIKE-INSTALLATION

DRAINAGE DITCH APPLICATIONS

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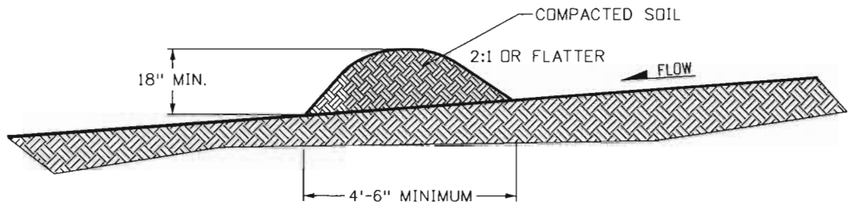
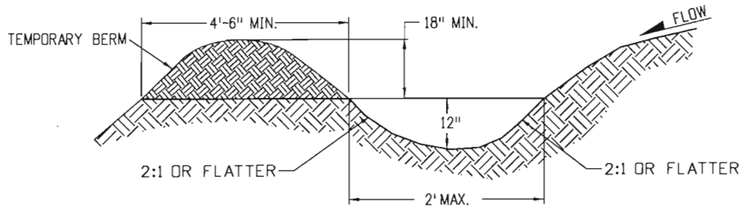


TEMPORARY BERM

NOTES:

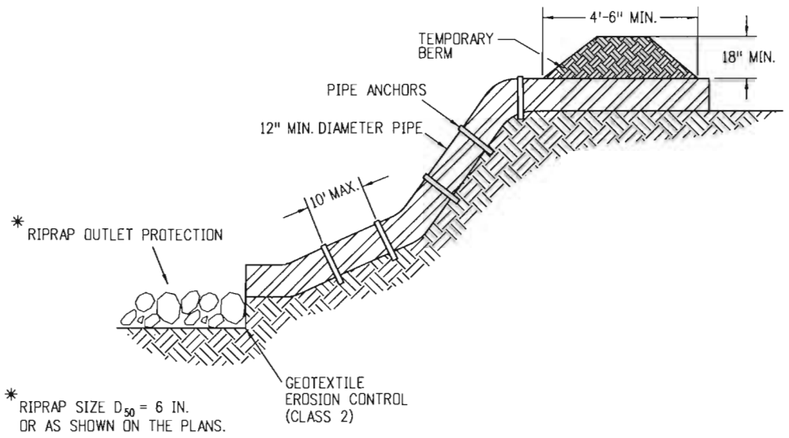
1. BERMS SHALL HAVE A HEIGHT OF 18 INCHES, SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM BASE WIDTH OF 4.5 FEET.
2. BERMS SHALL BE USED TO INTERCEPT AND DIVERT DRAINAGE TO A DESIGNATED OUTLET.
3. BERMS SHALL NOT BE USED WHERE DRAINAGE AREA EXCEEDS 10 ACRES.



TEMPORARY DIVERSION

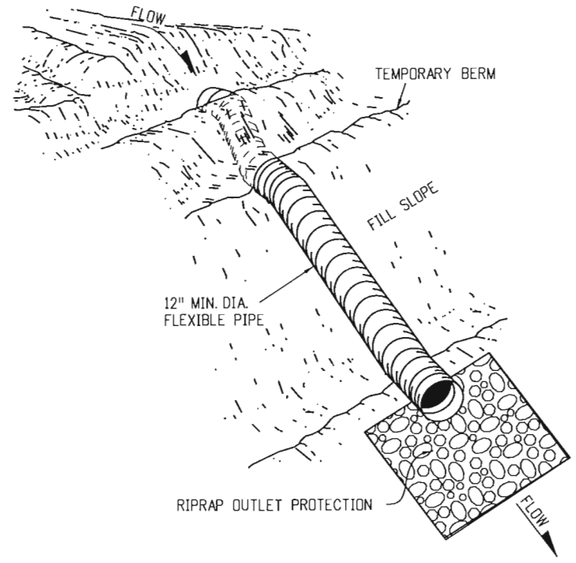
NOTES:

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



TEMPORARY SLOPE DRAIN

ANCHOR SIZE VARIES ACCORDING TO PIPE SIZE.



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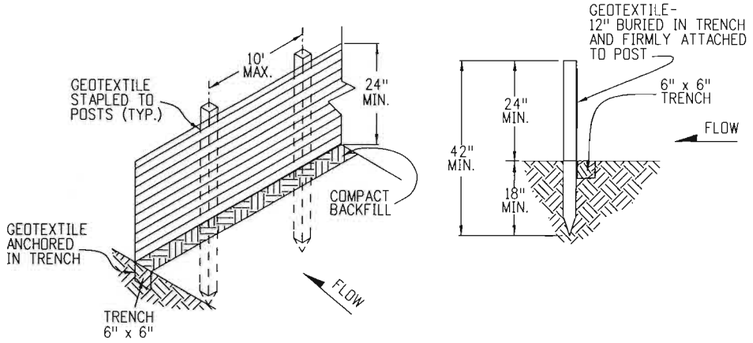


SILT FENCE

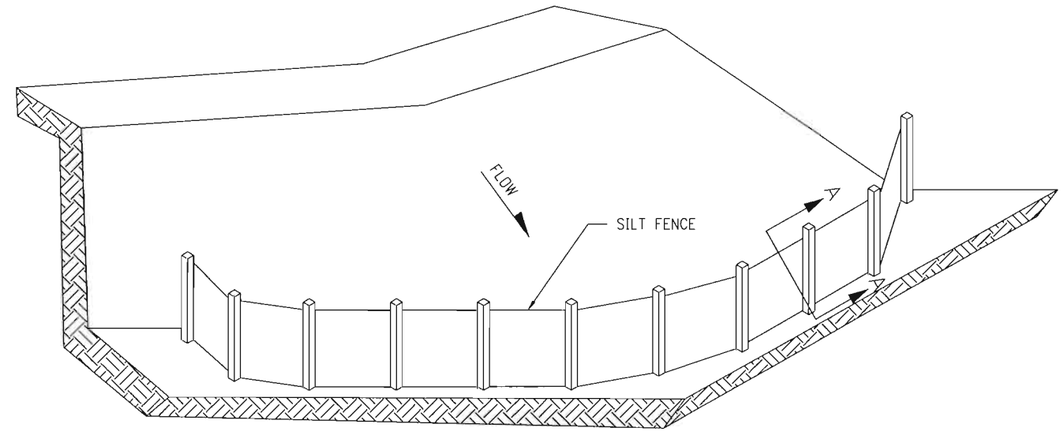
GEOTEXTILE SHALL BE ATTACHED TO WOOD POSTS WITH THREE OR MORE STAPLES PER POST.

STAPLES SHALL BE ½"

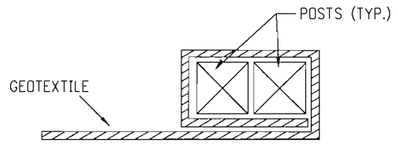
WOOD POST SHALL BE 1 ½" X 1 ½" NOMINAL.

NOTES

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

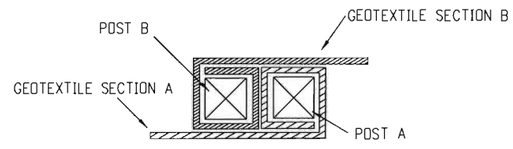


ISOMETRIC VIEW



END SECTION DETAIL (PLAN VIEW)

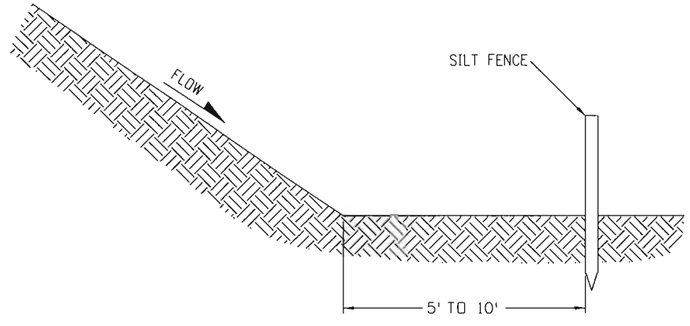
GEOTEXTILE SHALL BE FOLDED AROUND TWO POSTS ONE FULL TURN. SECURE GEOTEXTILE TO POST WITH THREE STAPLES MINIMUM.



JOINING SECTION DETAIL (PLAN VIEW)

FOLD GEOTEXTILE AROUND EACH POST ONE FULL TURN. SECURE GEOTEXTILE TO POST WITH THREE STAPLES MINIMUM.

POSTS SHALL BE TIGHTLY ABUTTED WITH NO GAPS TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT.



SECTION A-A

TOE OF SLOPE PROTECTION

SILT FENCE APPLICATION

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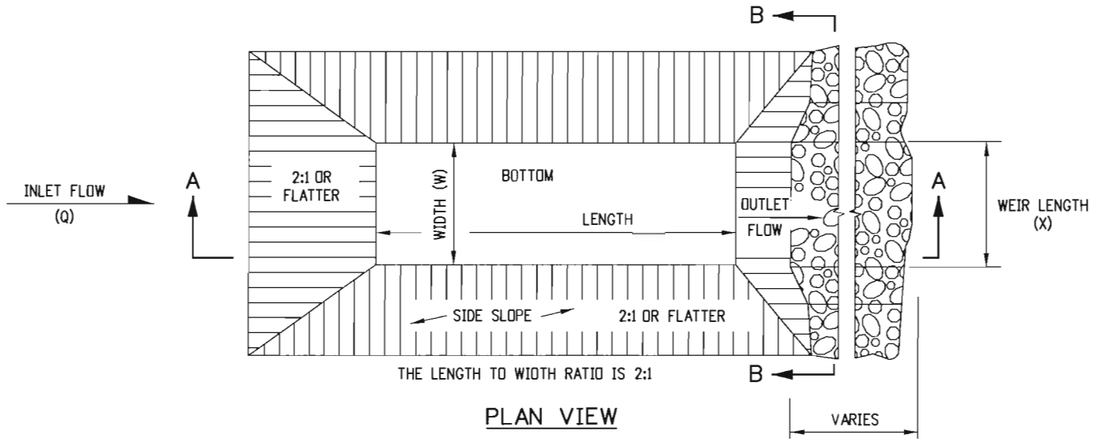
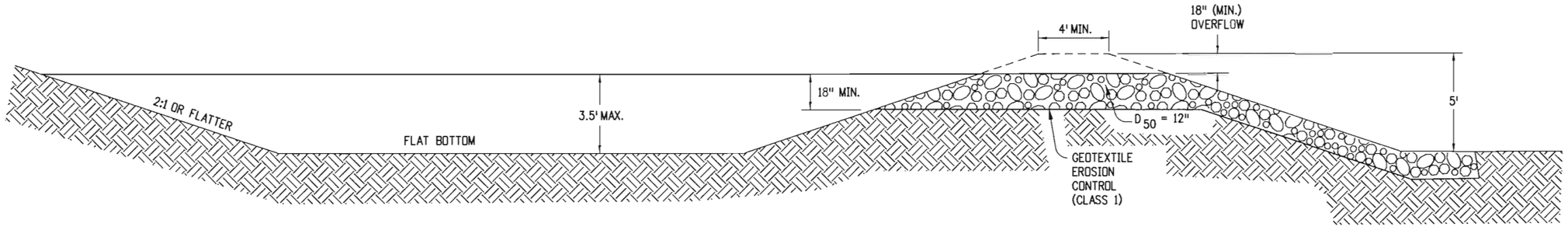


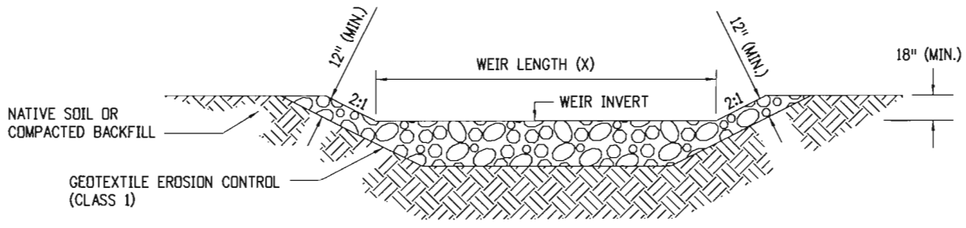
PLAN VIEW

NOTES

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



SECTION A-A



SECTION B-B

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

WEIR LENGTH TABLE

SEDIMENT TRAP

Computer File Information	
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Sheet Revisions	
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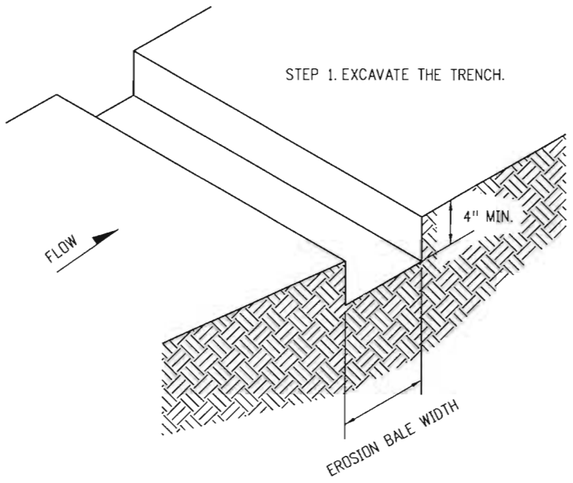
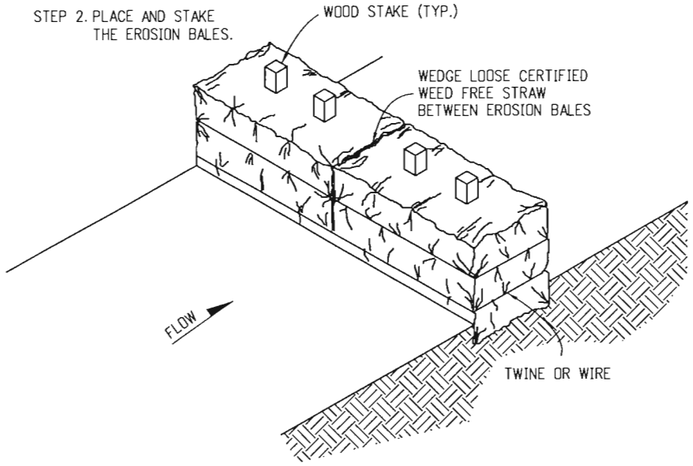
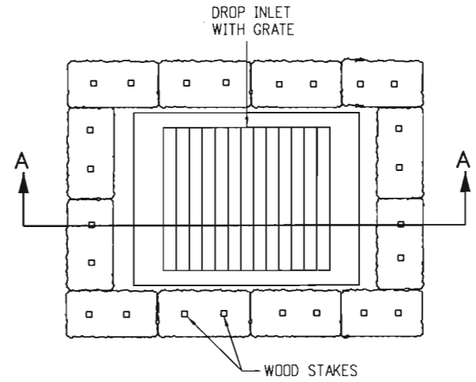


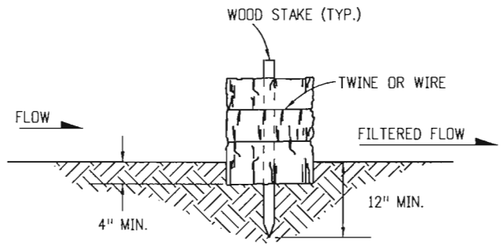


NOTES

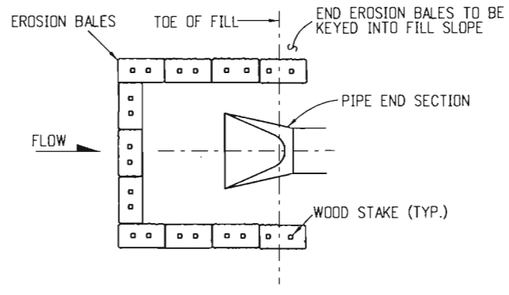
1. STAKES SHALL BE WOOD AND SHALL BE 2" X 2" NOMINAL.
2. EROSION BALES SHALL BE 18" X 18" X 36".
3. EROSION BALES SHALL BE ENTRENCHED 4 IN. MINIMUM INTO THE SOIL, THIGHTLY ABUTTED WITH NO GAPS, STAKED, AND BACKFILLED AROUND THE ENTIRE OUTSIDE PERIMETER.



PLAN VIEW

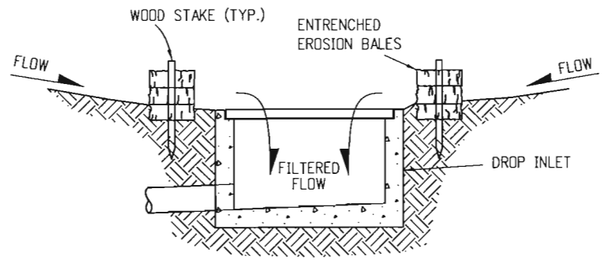


EROSION BALE TRENCHING AND STAKING



PLAN VIEW

EROSION BALE CULVERT INLET PROTECTION



SECTION A-A

EROSION BALE FILTER AT DROP INLET

EROSION BALE APPLICATIONS

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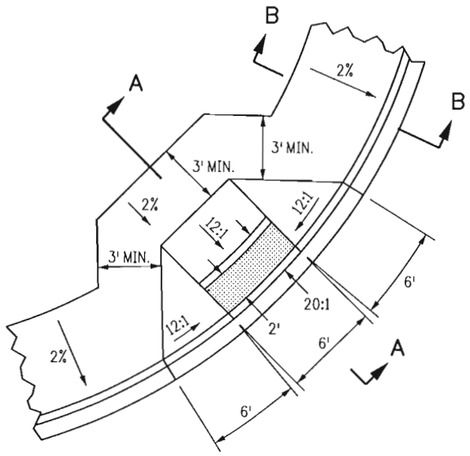
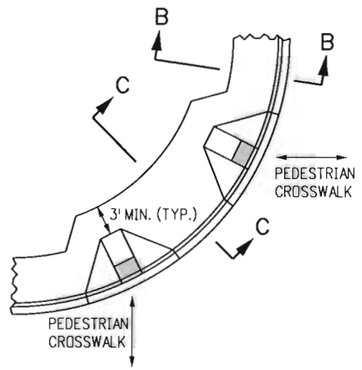
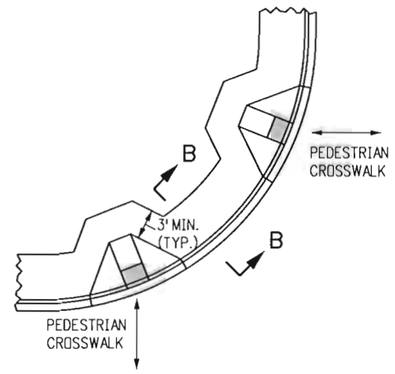


SIDEWALK RAMP TYPE 1A



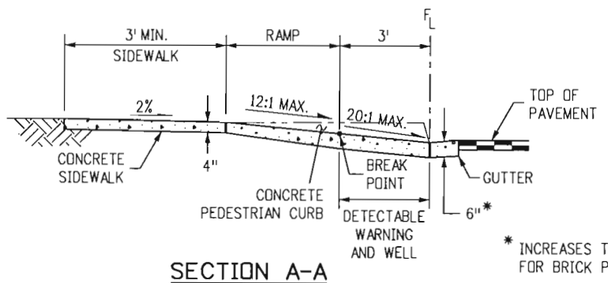
SIDEWALK RAMP TYPE 1B



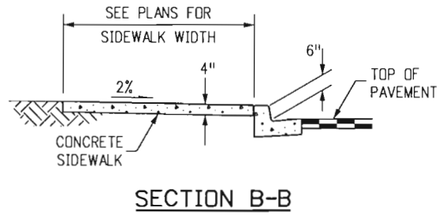
SIDEWALK RAMP TYPE 1C

GENERAL NOTES

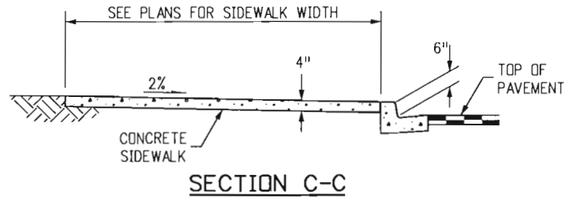
1. THE DETECTABLE WARNINGS SHALL BE INSTALLED AT SIDEWALK TO STREET TRANSITIONS. THEY SHALL HAVE A TRUNCATED DOME SURFACE. THE DOMES SHALL BE IN A SQUARE GRID PATTERN.
2. ALL DETECTABLE WARNING AREAS SHALL START A MINIMUM OF 6 IN. FROM THE FLOW LINE OF THE CURB AND NOT BE MORE THAN A MAXIMUM OF 8 IN. FROM ANY POINT ON THE FLOW LINE OF THE CURB. ALL DETECTABLE WARNING AREAS SHALL BE 2 FT. IN LENGTH AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.
3. RAMP SLOPES SHALL BE 12:1 OR FLATTER. THE DETECTABLE WARNING SLOPES SHALL BE 20:1 OR FLATTER.
4. MINIMUM SIDEWALK WIDTH IS 3 FT.
5. DO NOT INSTALL DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, JUNCTION BOXES, AND OTHER OBSTRUCTIONS IN FRONT OF THE RAMP ACCESS AREAS.
6. CONSTRUCTION OF THE CONCRETE PEDESTRIAN CURB ADJACENT TO THE RAMP AREAS SHALL BE INCLUDED IN THE BID PRICE OF THE CONCRETE CURB RAMP.
7. DETECTABLE WARNINGS SHALL MEET SECTION 705 OF THE USDOT ADA STANDARDS FOR TRANSPORTATION FACILITIES.



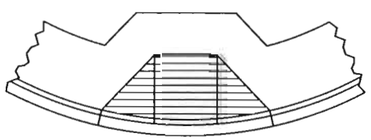
SECTION A-A



SECTION B-B

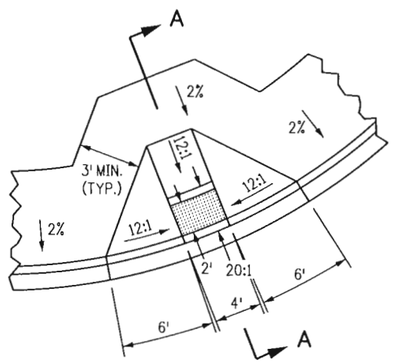


SECTION C-C



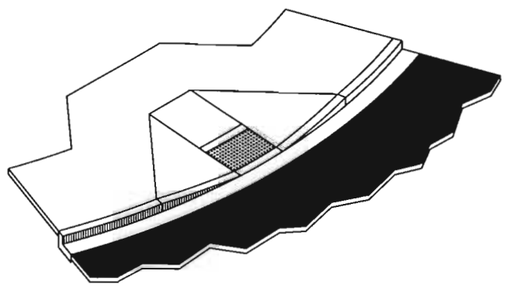
RAMP PAY AREA

FOR SIDEWALK RAMP
TYPES 1A, 1B, 1C, 1D.

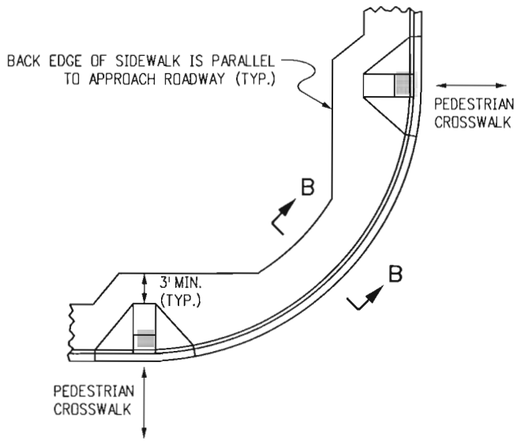


RAMP DETAIL

FOR SIDEWALK RAMP
TYPES 1B, 1C, 1D.



ISOMETRIC VIEW



SIDEWALK RAMP TYPE 1D

Computer File Information		Sheet Revisions	
Creation Date: 07/09/09 Initials: DD		Date:	Comments
Last Modification Date: 05/05/11 Initials: LTA	(R-1)	05/05/11	Changed gutter thickness to 6".
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)	05/05/11	Changed sheet numbers.
Drawing File Name: 608010106.dgn	(R-X)	05/05/11	Add General Notes 1 through 4.
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)	05/05/11	Added the Plate option.

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CURB RAMPS

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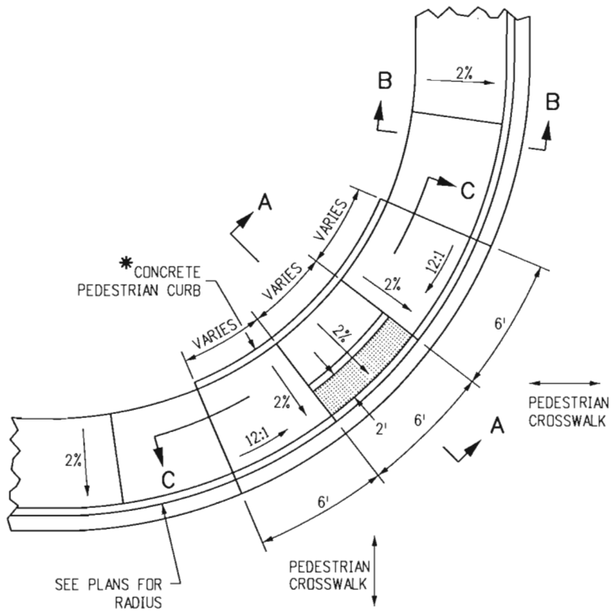
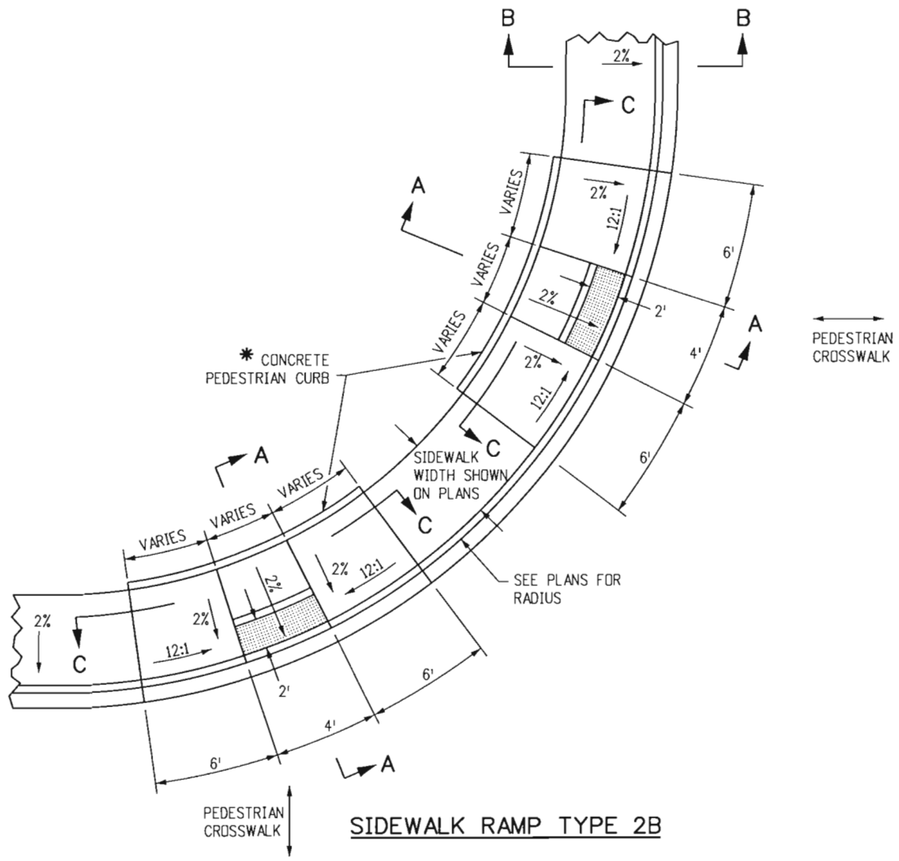


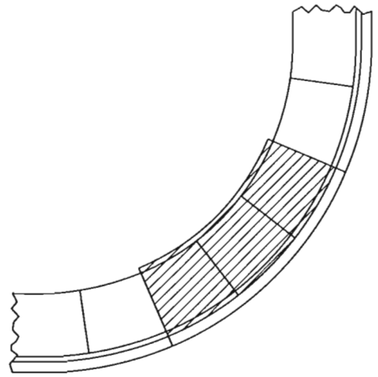
SIDEWALK RAMP TYPE 2A



SIDEWALK RAMP TYPE 2B

NOTES

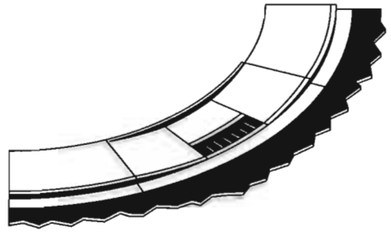
1. SIDEWALK RAMP TYPE 2A MAY BE USED IN MID-BLOCK.



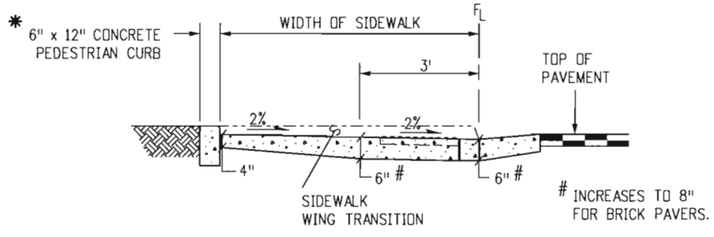
RAMP PAY AREA

FOR SIDEWALK RAMP TYPES 2A AND 2B.

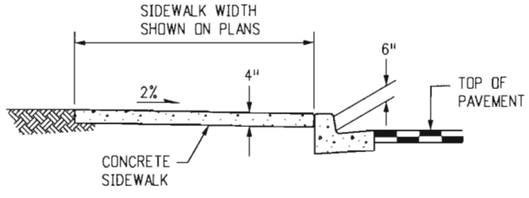
*INCLUDES CONCRETE PEDESTRIAN CURB AS SHOWN.



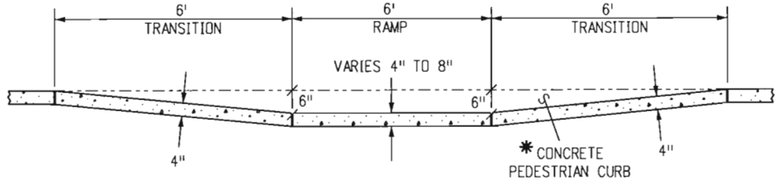
ISOMETRIC VIEW



SECTION A-A



SECTION B-B



SECTION C-C

Computer File Information		Sheet Revisions	
Creation Date: 07/09/09 Initials: DD		Date:	Comments
Last Modification Date: 05/05/11 Initials: LTA	(R-1)	05/05/11	Changed gutter thickness to 6".
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)	05/05/11	Added ramp pay area footnote.
Drawing File Name: 608010206.dgn	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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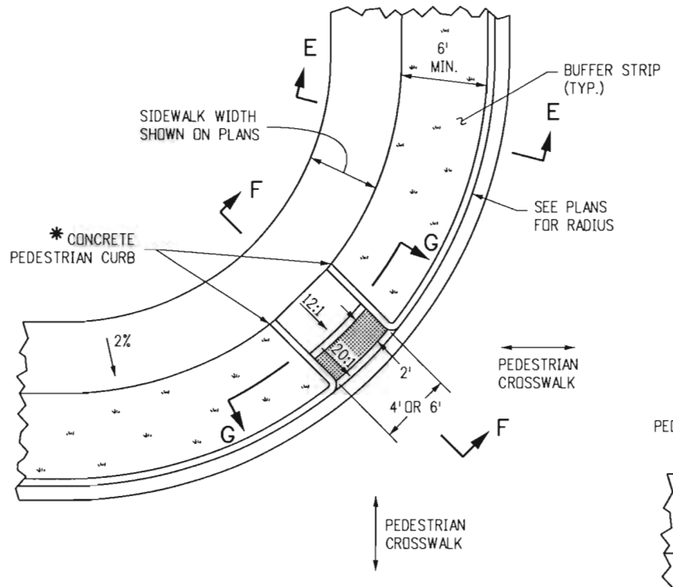
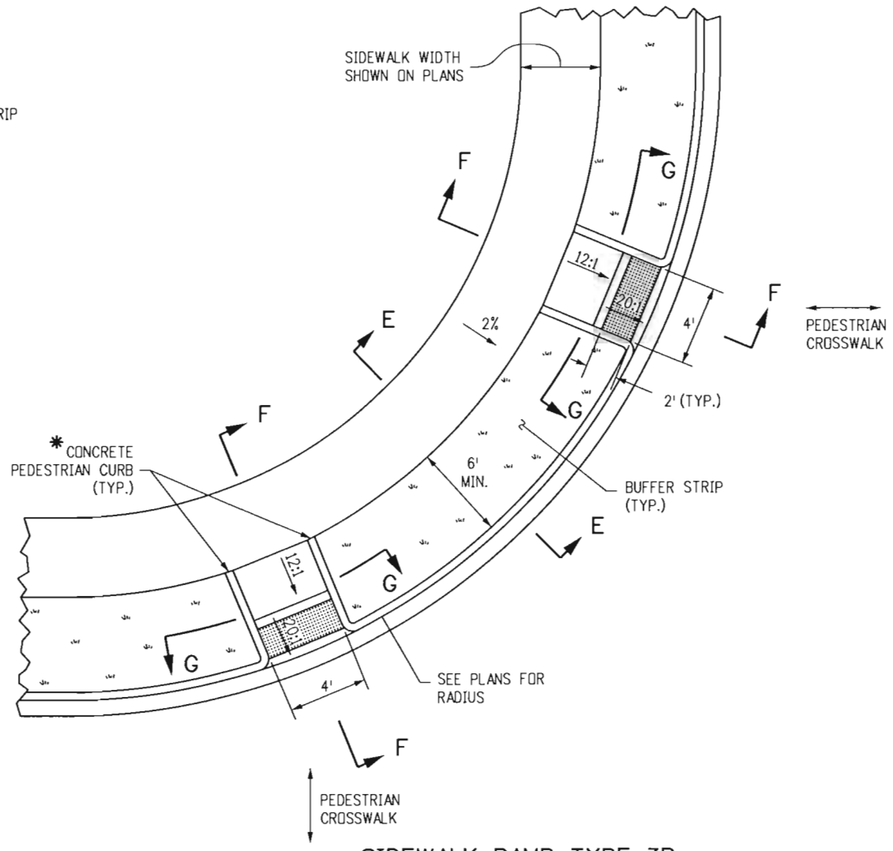


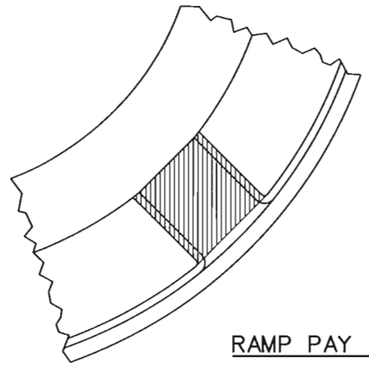
SIDEWALK RAMP TYPE 3A



SIDEWALK RAMP TYPE 3B

NOTES

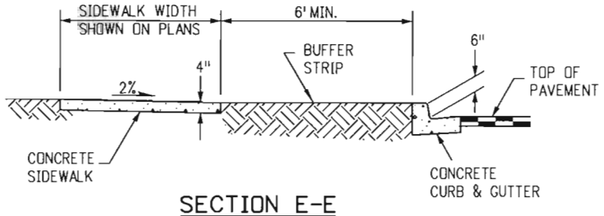
1. SIDEWALK RAMP TYPE 3A MAY BE USED IN MID-BLOCK.



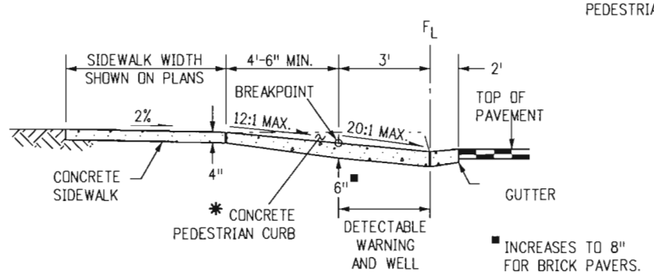
RAMP PAY AREA

FOR SIDEWALK RAMP TYPES 3A AMD 3B.

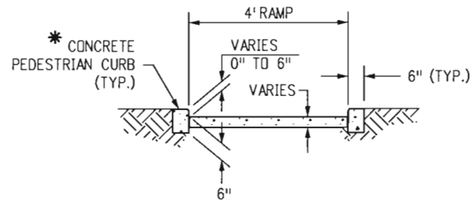
* INCLUDES CONCRETE PEDESTRIAN CURB AS SHOWN.



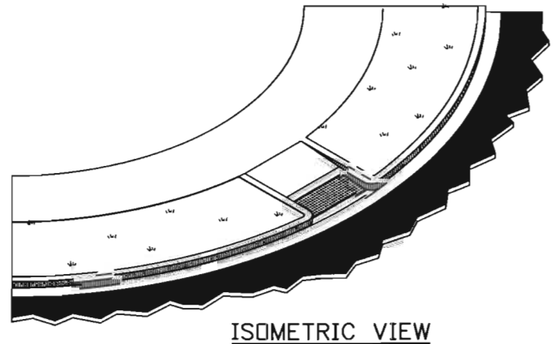
SECTION E-E



SECTION F-F



SECTION G-G



ISOMETRIC VIEW

Computer File Information		Sheet Revisions	
Creation Date: 07/09/09 Initials: DD		Date:	Comments
Last Modification Date: 05/05/11 Initials: LTA	(R-1)	05/05/11	Changed gutter thickness to 6".
Full Path: www.dot.state.ca.us/DesignSupport/	(R-X)	05/05/11	Added ramp pay area footnote.
Drawing File Name: 608010306.dgn	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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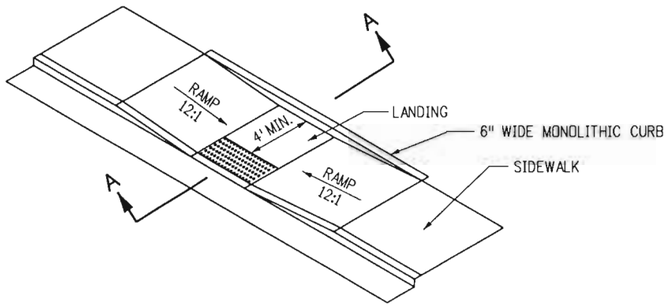
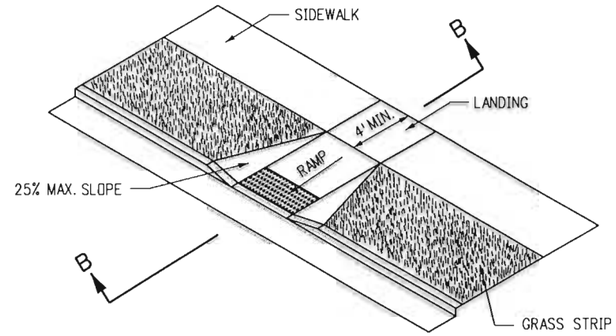


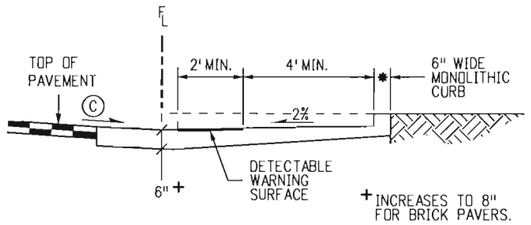
PARALLEL SIDEWALK RAMP



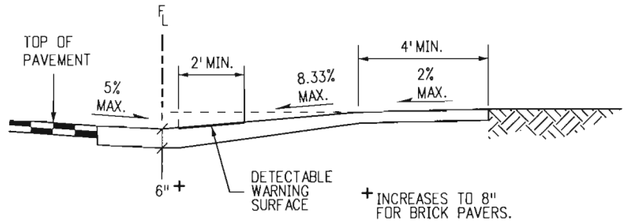
PERPENDICULAR PEDESTRIAN RAMP

NOTES

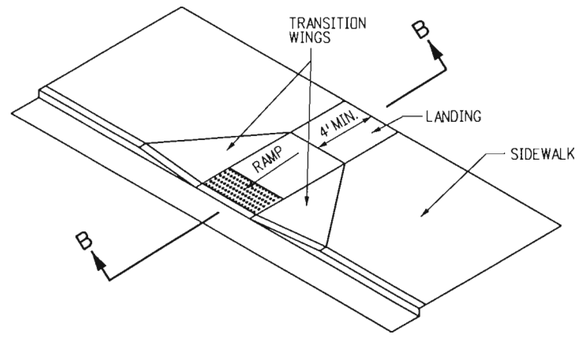
1. PERPENDICULAR AND PARALLEL PEDESTRIAN RAMPS SHOWN ON THIS DRAWING ARE ACCEPTABLE FOR USE AT MID-BLOCK INSTALLATIONS.
2. SITE CONDITIONS WILL VARY. CONFIGURATION OF RAMPS, LANDINGS, AND TRANSITIONS MAY BE CHANGED BUT THEY MUST MEET THE DIMENSIONS AND SLOPES SHOWN HERE. THE USE OF FLARES, CURBWALLS, ETC. ARE AT THE DISCRETION OF THE ENGINEER.
3. PROVIDE DETECTABLE WARNING SURFACE FOR FULL WIDTH OF CURB CUT. SEE "PLAN VIEW OF DETECTABLE WARNING" DETAIL ON SHEET 5 FOR DETECTABLE WARNING SURFACE DIMENSIONS.
4. LOCATE CURB CUT WITHIN CROSSWALK.
5. RAMP GRADE BREAK MUST BE PERPENDICULAR TO THE RUNNING SLOPE.



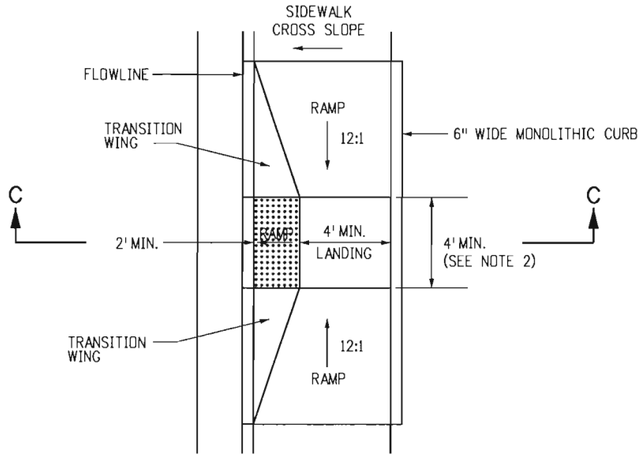
SECTION A-A



SECTION B-B

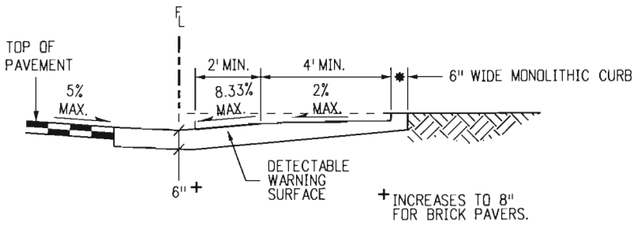


PERPENDICULAR PEDESTRIAN RAMP WITHIN SIDEWALK



PEDESTRIAN ACCESS RAMP WITHIN SIDEWALK

✱ INCLUDES CONCRETE PEDESTRIAN CURB AS SHOWN.



SECTION C-C

Computer File Information		Sheet Revisions	
Creation Date: 07/09/06 Initials: DD		Date:	Comments
Last Modification Date: 05/05/11 Initials: LTA	(R-1)	05/05/11	New Ramp Designs
Full Path: www.dot.state.co.us/DesignSupport/	(R-2)		
Drawing File Name: 608010406.dgn	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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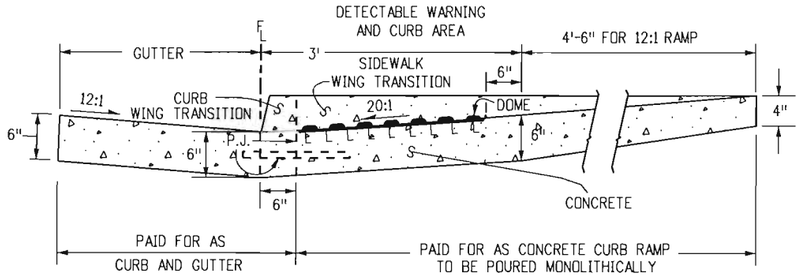
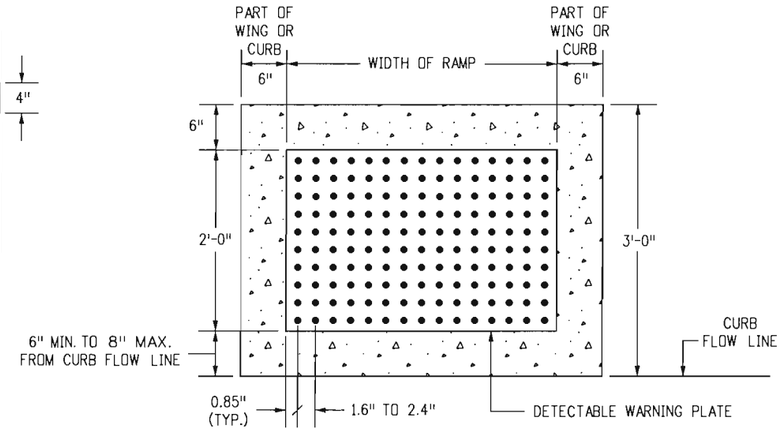


DETAIL FOR TYPES 1 AND 3 CURB RAMPS

P.J. = PERMISSIBLE JOINT WITH EPOXY-COATED DEFORMED NO. 4 BY 18 IN. BARS CONFORMING TO AASHTO M 284 AT 18 IN. SPACING.

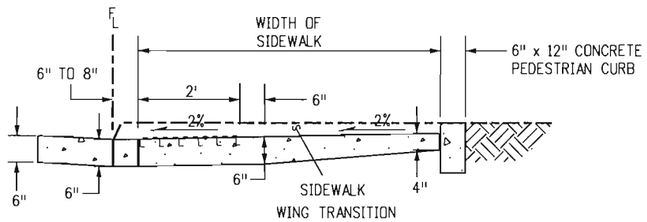
SIDE CROSS SECTION VIEW OF DETECTABLE WARNING, CURB, AND GUTTER



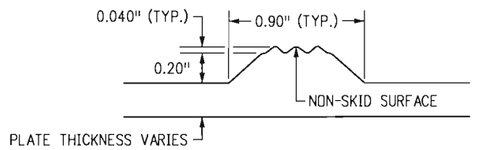
PLAN VIEW OF DETECTABLE WARNING

NOTES

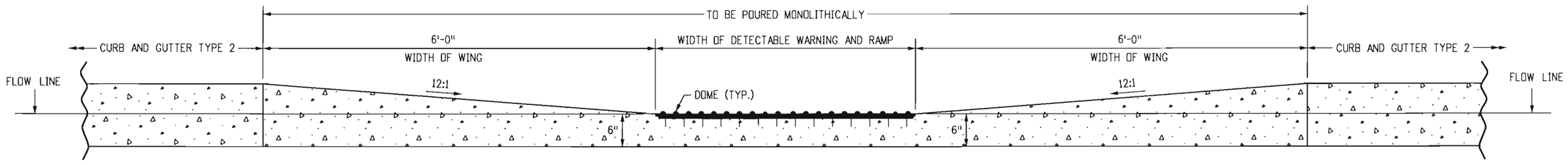
1. THE TRUNCATED DOME PLATE SHALL BE EMBEDDED IN THE CONCRETE CURB RAMP WHILE CONCRETE IS PLASTIC.
2. THE TRUNCATED DOME PLATE TO BE USED SHALL BE ON THE CDOT APPROVED PRODUCT LIST.
3. WHEN DETECTABLE WARNING SURFACE IS CUT, GRIND OFF REMAINING PORTION OF ANY CUT DOMES. SEAL ALL CUT PANEL EDGES TO PREVENT WATER DAMAGE.



DETAIL FOR TYPE 2 CURB RAMP



ELEVATION VIEW OF DETECTABLE WARNING PLATE



FRONT SECTION VIEW OF DETECTABLE WARNING, CURB, AND GUTTER

CURB RAMP WITH A TRUNCATED DOME SURFACE PLATE

Computer File Information		Sheet Revisions	
Creation Date: 07/09/09 Initials: DD		Date:	Comments
Last Modification Date: 05/05/11 Initials: LTA	(R-1)	05/05/11	Added the Plate option.
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)		
Drawing File Name: 608010506.dgn	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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CURB RAMPS

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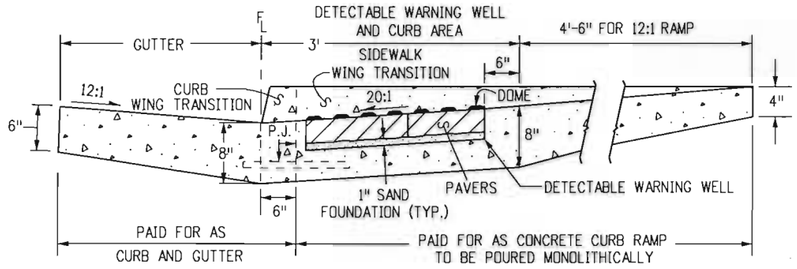
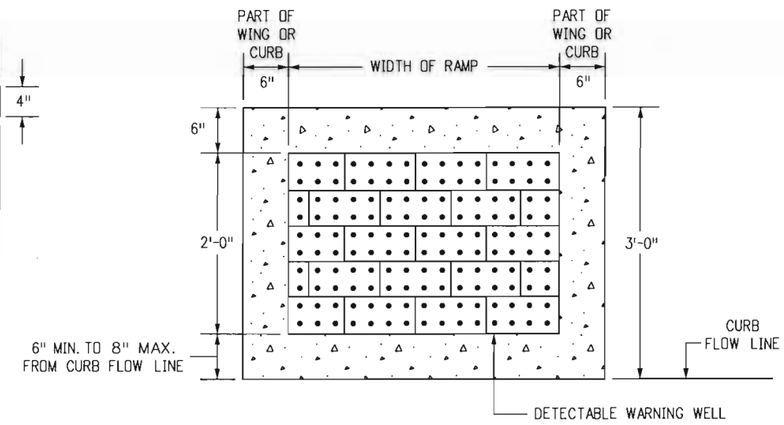


DETAIL FOR TYPES 1 AND 3 CURB RAMPS

P.J. = PERMISSIBLE JOINT WITH EPOXY-COATED DEFORMED NO. 4 BY 18 IN. BARS CONFORMING TO AASHTO M 284 AT 18 IN. SPACING.

SIDE CROSS SECTION VIEW OF DETECTABLE WARNING, WELL, CURB, AND GUTTER

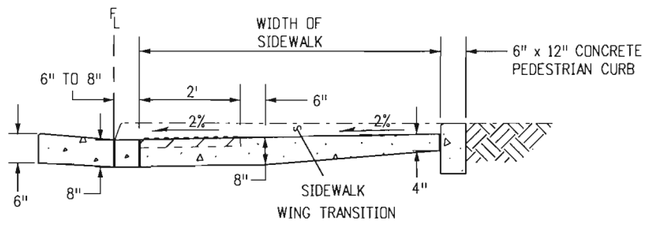


PLAN VIEW OF DETECTABLE WARNING AND WELL

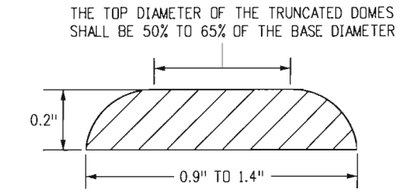
(PAVERS NOT DRAWN TO SCALE)

NOTES

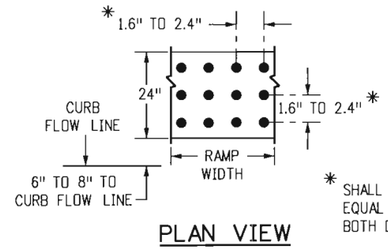
1. THE DETECTABLE WARNINGS SHALL BE BE MADE OF PAVERS WITH A TRUNCATED DOME SURFACE.
2. THE TOP OF THE DRAINAGE WEEP HOLE SHALL BE LOCATED AT THE LOWEST POINT OF THE DETECTABLE WARNING WELL.
3. RAMP SLOPES SHALL BE 12:1 OR FLATTER. THE DETECTABLE WARNING AND WELL AREA SLOPES SHALL BE 20:1 OR FLATTER.



DETAIL FOR TYPE 2 CURB RAMP

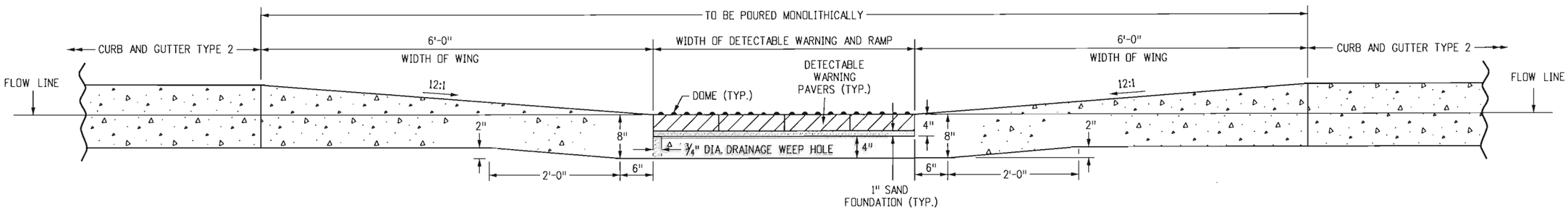


ELEVATION VIEW OF SINGLE DOME



PLAN VIEW

DOME AND DETECTABLE WARNING DETAILS



FRONT SECTION VIEW OF DETECTABLE WARNING, WELL, CURB, AND GUTTER

CURB RAMP WITH DOME PAVER OPTION

Computer File Information		Sheet Revisions	
Creation Date: 07/09/06 Initials: DD		Date:	Comments
Last Modification Date: 05/05/11 Initials: LTA	(R-1)	05/05/11	Added Paver option.
Full Path: www.dot.state.co.us/DesignSupport/	(R-2)		
Drawing File Name: 608010606.dgn	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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CURB RAMPS

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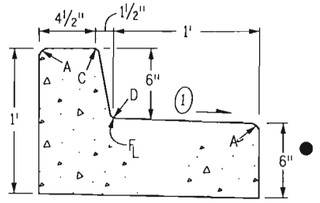
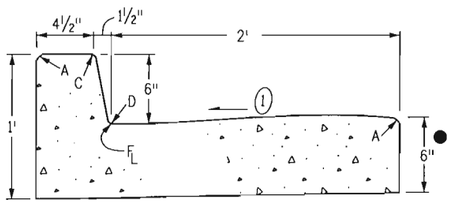
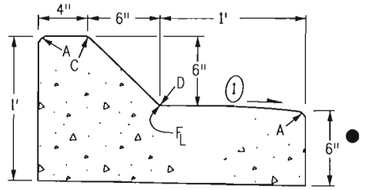


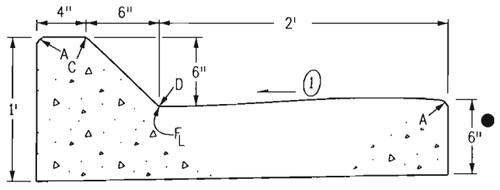
CURB AND GUTTER TYPE 2
(SECTION IB)
(6 IN. BARRIER - 1 FT. GUTTER)



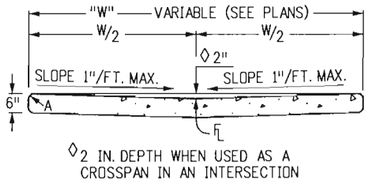
CURB AND GUTTER TYPE 2
(SECTION IIB)
(6 IN. BARRIER - 2 FT. GUTTER)



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

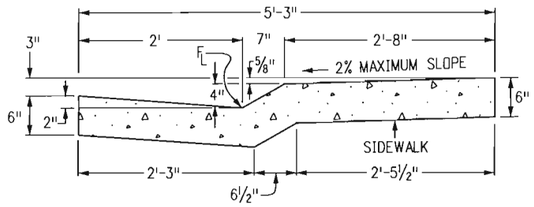


CURB AND GUTTER TYPE 2
(SECTION IIM)
(6 IN. MOUNTABLE - 2 FT. GUTTER)



◊ 2 IN. DEPTH WHEN USED AS A CROSSPAN IN AN INTERSECTION

GUTTER TYPE 2



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

GENERAL NOTES

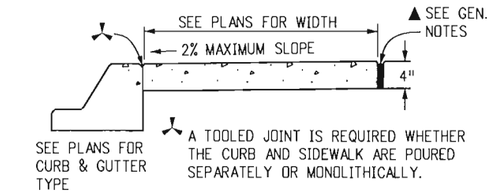
1. ON ROADWAY CURVES WITH A RADIUS OF 1,900 FT. OR LESS, CURBS AND GUTTERS ARE TO BE PLACED ON THE ARC OF THE CURVE, UNLESS OTHERWISE NOTED ON THE PLANS. A MAXIMUM CHORD LENGTH OF 10 FT. MAY BE USED WHEN THE CURVE RADIUS IS GREATER THAN 1,900 FT.
2. CONCRETE SHALL BE CLASS B.
3. PROFILE GRADE OF CURBS AND GUTTERS SHALL BE LOCATED AT THE FLOW LINE.
4. CURB TYPE 4 (KEY-WAY) MAY BE USED IN LIEU OF CURB AND GUTTER TYPE 2 (SECTIONS IB AND IM) UNLESS OTHERWISE SPECIFIED ON THE PLANS.
5. GUTTER CROSS SLOPES MAY BE ADJUSTED TO FACILITATE DRAINAGE FOR PROFILE GRADES AS SHOWN ON THE PLANS.
6. THICKNESS OF CURB AND GUTTER SECTION SHALL MATCH CONCRETE PAVEMENT THICKNESS IF SHOWN ON THE PLANS. CURB AND GUTTER SHALL BE CLASS P CONCRETE IF PLACED MONOLITHICALLY WITH CONCRETE PAVEMENT.
7. INCREASE SIDEWALK THICKNESS TO 6 IN. AT LOCATIONS SHOWN ON THE PLANS.

▲ EXPANSION JOINTS SHALL BE INSTALLED WHEN ABUTTING EXISTING CONCRETE OR FIXED STRUCTURE. EXPANSION JOINT MATERIAL SHALL BE ½ IN. THICK AND SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE.

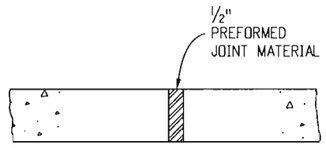
(1) GUTTER CROSS SLOPES SHALL BE ½ IN./FT. WHEN DRAINING AWAY FROM CURB AND 1IN./FT. WHEN DRAINING TOWARD CURB.

● WHEN TIE BARS ARE REQUIRED, THE GUTTER THICKNESS SHALL BE INCREASED TO THE PAVEMENT THICKNESS (T). BARS SHALL BE EPOXY-COATED #4 CONFORMING TO AASHTO M 284 AND SPACED AT 2 FT.-6 IN. INTERVALS. THEY SHALL BE INSERTED T/2 AND ½ LENGTH INTO THE GUTTER.

LEGEND FOR RADII
A = ⅛" TO ¼"
B = 1"
C = 1½"
D = 1½" TO 2"



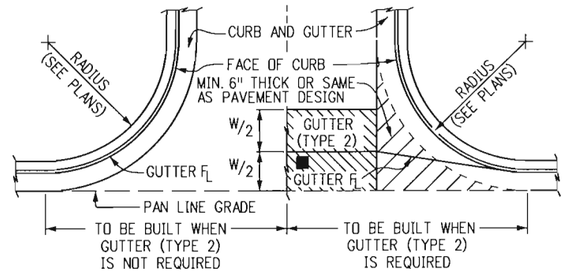
CONCRETE SIDEWALK



NOTES: 1. EXPANSION JOINTS SHALL BE PLACED IN THE SIDEWALK AT INTERVALS OF NOT MORE THAN 500 FT.

2. EXPANSION JOINTS MAY BE SEALED WHEN SPECIFIED ON THE PLANS.

SIDEWALK EXPANSION JOINT



▨ THIS AREA SHALL BE POURED MONOLITHICALLY WITH CURB AND GUTTER AND PAID FOR AS "CONCRETE PAVEMENT".

■ FLOW LINE LOCATION WILL BE ESTABLISHED BY W/2 SHOWN ON PLANS.

CONSTRUCTION OF CONCRETE GUTTERS AT INTERSECTION

Computer File Information	
Creation Date: 07/04/06	Initials: DD
Last Modification Date: 07/09/09	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 609010104.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale	Units: English

	Sheet Revisions	
	Date:	Comments
(R-X)	07/09/09	Added Note 2 to Sidewalk Expansion Joint detail.
(R-X)	07/09/09	Revised General Note 4.
(R-X)	07/09/09	Rev sheets 1 and 2. Add sheet 4.

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CURB, GUTTERS, AND SIDEWALKS

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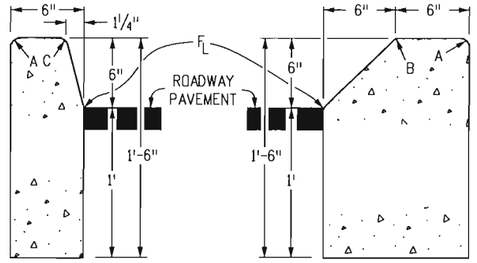
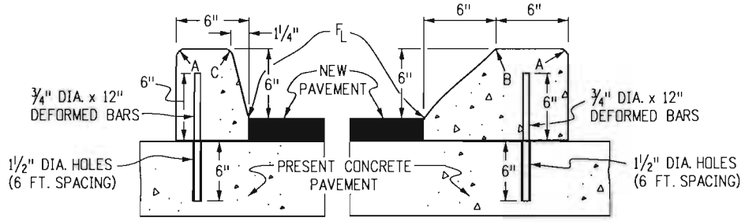
Sheet No. 1 of 4



CURB TYPE 2
(SECTION B)
6 IN. BARRIER

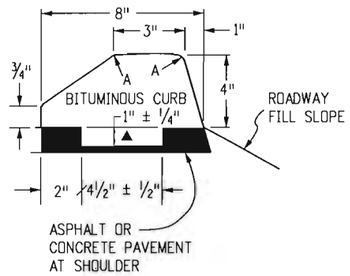
CURB TYPE 2
(SECTION M)
6 IN. MOUNTABLE

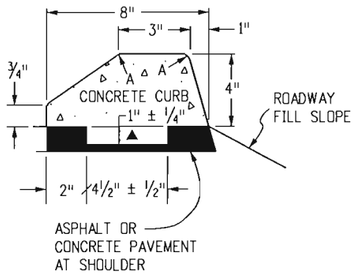


¾" DIA. x 12" DEFORMED REINFORCING BARS AT 6 FT. SPACING SHALL BE GROUTED IN 1¼" DIA. HOLES IN EXISTING CONCRETE. GROUT SHALL CONSIST OF 2 PARTS CLEAN SAND AND 1 PART CEMENT. COST OF INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR CURB.

CURB TYPE 4
(SECTION B)
6 IN. BARRIER

CURB TYPE 4
(SECTION M)
6 IN. MOUNTABLE

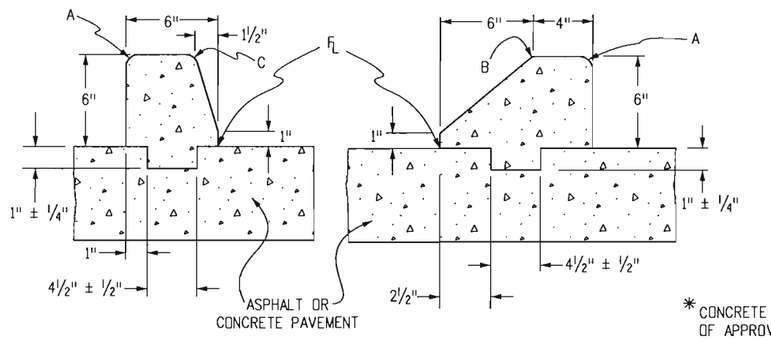




CURB TYPE 6
(SECTION M)
4 IN. MOUNTABLE

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

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



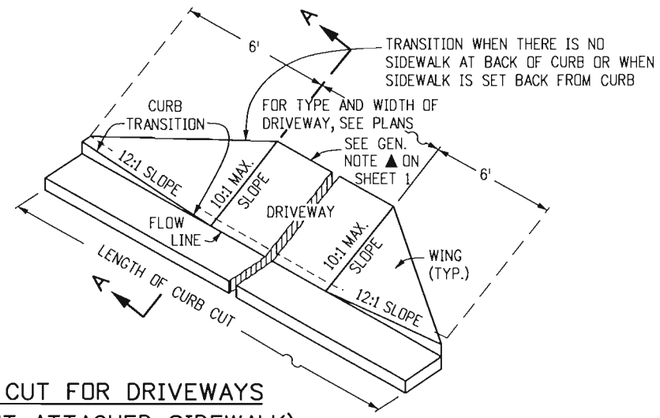
(SECTION B)

(SECTION M)

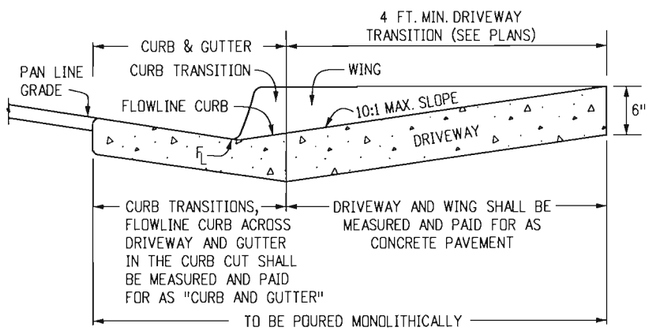
CURB TYPE 4 (KEY-WAY)*

LEGEND FOR RADII
A = ⅛ TO ¼"
B = 1"
C = 1½"
D = 1½" TO 2"

* CONCRETE SHALL CONTAIN 1.5 POUNDS PER CUBIC YARD OF APPROVED POLYPROPYLENE FIBERS AND MAY HAVE A NOMINAL AGGREGATE SIZE OF ⅜ IN. THE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

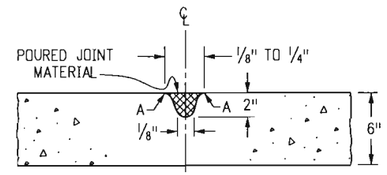


CURB CUT FOR DRIVEWAYS
(WITHOUT ATTACHED SIDEWALK)



SECTION A-A

CONCRETE PAVEMENT (DRIVEWAYS)



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

TRANSVERSE CONTRACTION JOINT
FOR CONCRETE PAVEMENT (DRIVEWAYS)

Computer File Information		Sheet Revisions		
Creation Date: 07/04/06 Initials: DD		Date:	Comments	
Last Modification Date: 7/09/09 Initials: LTA	(R-1)	07/09/09	Added Keyway to Bituminous Curb detail.	
Full Path: www.dot.state.co.us/DesignSupport/				
Drawing File Name: 609010204.dgn	(R-2)	07/09/09	Revised notes to Transverse Joint and Curb Type 6 details.	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English				

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CURB, GUTTERS, AND SIDEWALKS

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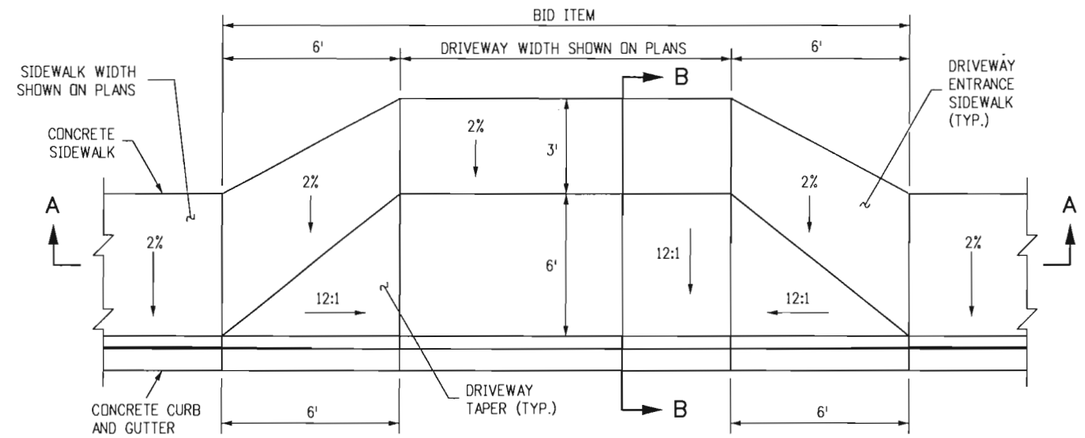
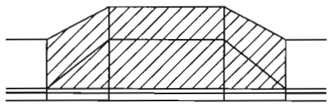
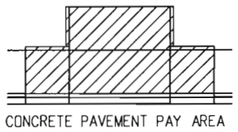
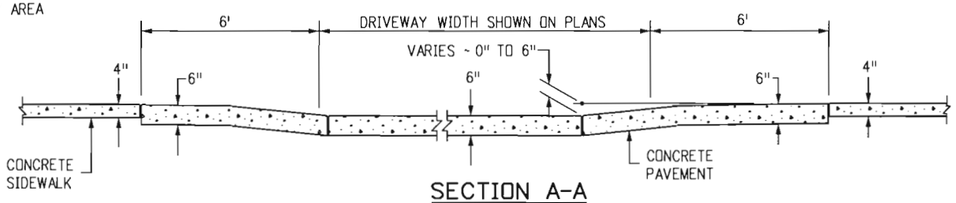


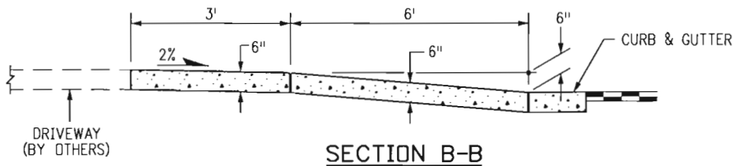
CONCRETE DRIVEWAY ENTRANCE TYPE 1



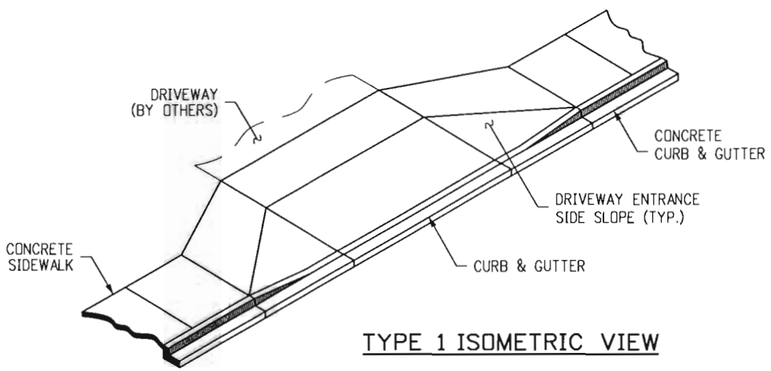




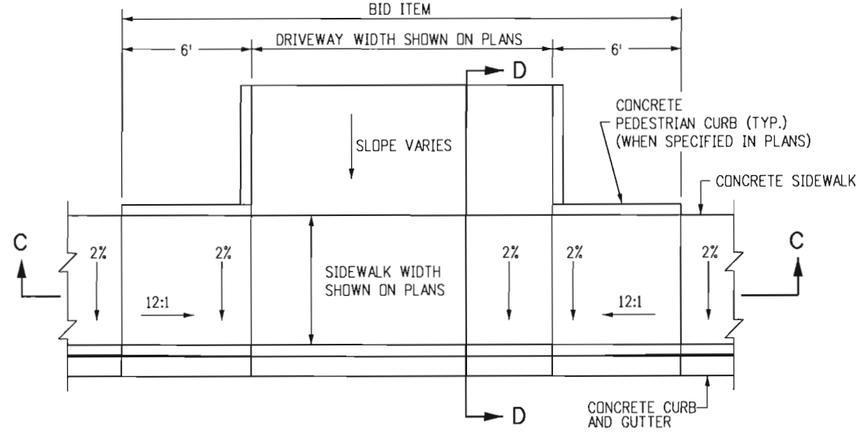
SECTION A-A



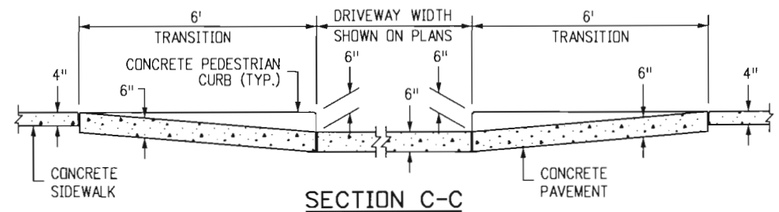
SECTION B-B



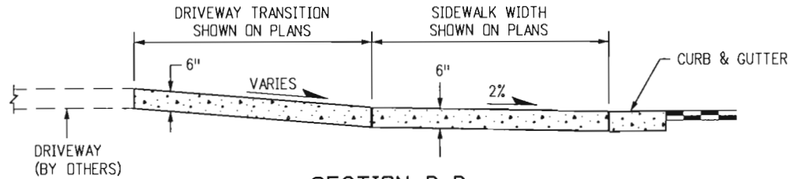
TYPE 1 ISOMETRIC VIEW



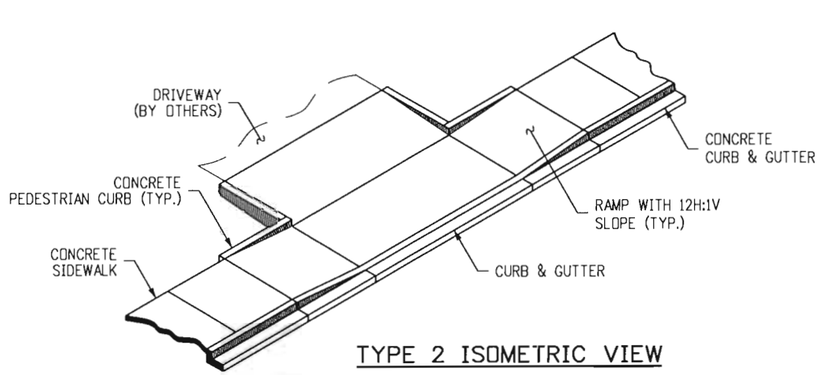
CONCRETE DRIVEWAY ENTRANCE TYPE 2



SECTION C-C



SECTION D-D



TYPE 2 ISOMETRIC VIEW

NOTES

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

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

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CURB, GUTTERS, AND SIDEWALKS

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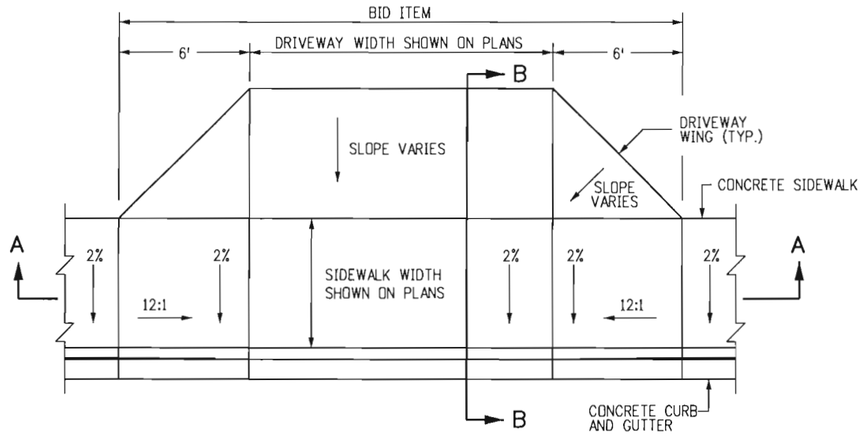
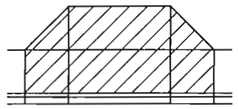


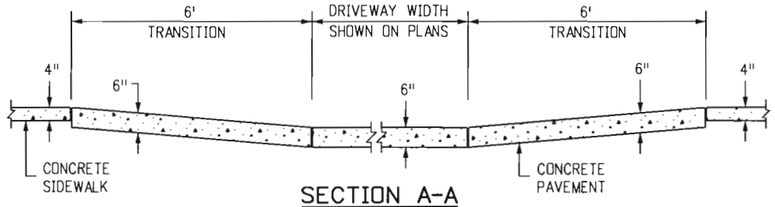
CONCRETE DRIVEWAY ENTRANCE TYPE 3



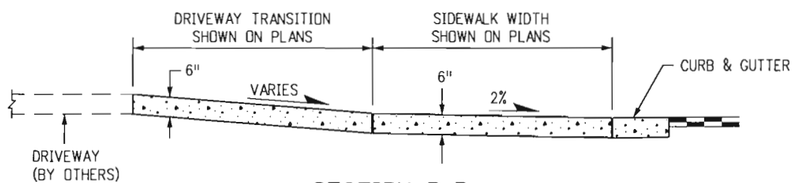
CONCRETE PAVEMENT PAY AREA

NOTES

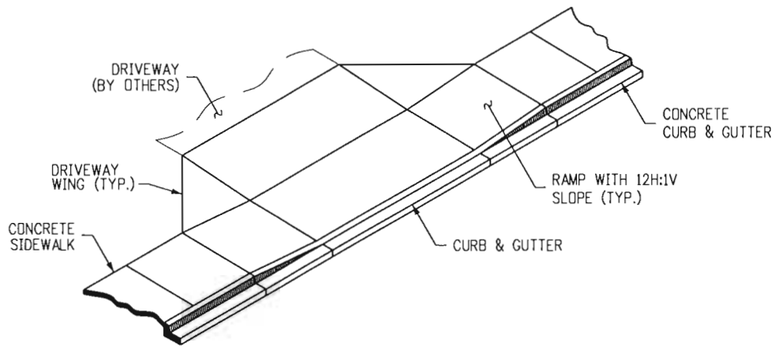
1. DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, JUNCTION BOXES, AND OTHER OBSTRUCTIONS SHOULD NOT BE PLACED IN FRONT OF THE DRIVEWAY RAMP ACCESS AREAS.
2. FOR THE CURB AND GUTTER SHOWN, SEE PLANS FOR CURB TYPE.
3. RAMP SLOPES SHALL BE 12:1 OR FLATTER.



SECTION A-A



SECTION B-B



TYPE 3 ISOMETRIC VIEW

Computer File Information		Sheet Revisions	
Creation Date: 07/09/09 Initials: DD		Date:	Comments
Last Modification Date: 07/09/09 Initials: LTA	(R-1)	07/09/09	Added Sheet 4 with Concrete Driveway Entrance Type 3.
Full Path: www.dot.state.co.us/DesignSupport/	(R-X)		
Drawing File Name: 609010404.dgn	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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CURB, GUTTERS, AND SIDEWALKS

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SPACING FOR DELINEATOR POSTS ON HORIZONTAL CURVES

'R' RADIUS (FEET)	'D' DEGREE OF CURVE	* - ● SPACING ON CURVE (FEET)	* SPACING IN ADVANCE OF AND BEYOND CURVE (FEET)		
			FIRST SPACE	SECOND SPACE	THIRD SPACE
20000	0° 17'	300	300	300	300
17000	0° 20'	300	300	300	300
14000	0° 25'	300	300	300	300
12000	0° 29'	300	300	300	300
10000	0° 34'	299	300	300	300
8000	0° 43'	267	300	300	300
6000	0° 57'	231	300	300	300
5000	1° 09'	211	300	300	300
4000	1° 26'	189	300	300	300
3500	1° 38'	176	300	300	300
3000	1° 55'	163	300	300	300
2500	2° 18'	148	297	300	300
2000	2° 52'	132	265	300	300
1800	3° 11'	125	251	300	300
1600	3° 35'	118	236	300	300
1400	4° 06'	110	220	300	300
1200	4° 47'	102	203	300	300
1000	5° 44'	92	185	277	300
900	6° 22'	87	175	262	300
800	7° 10'	82	164	246	300
700	8° 11'	76	153	229	300
600	9° 33'	70	141	211	300
500	11° 28'	64	127	191	300
450	12° 44'	60	120	180	300
400	14° 20'	56	112	168	300
350	16° 22'	52	104	156	300
300	19° 06'	47	95	142	285
250	22° 55'	42	85	127	255
200	28° 39'	37	73	110	220
150	38° 12'	30	60	90	180
100	57° 18'	21	42	64	127
75	76° 24'	20	30	45	90

* ON CONVENTIONAL ROADWAYS OMIT THE "THIRD SPACE" AND DOUBLE THE SPACING "ON THE CURVE" AND "IN ADVANCE OF AND BEYOND THE CURVE" (300' MAX.)

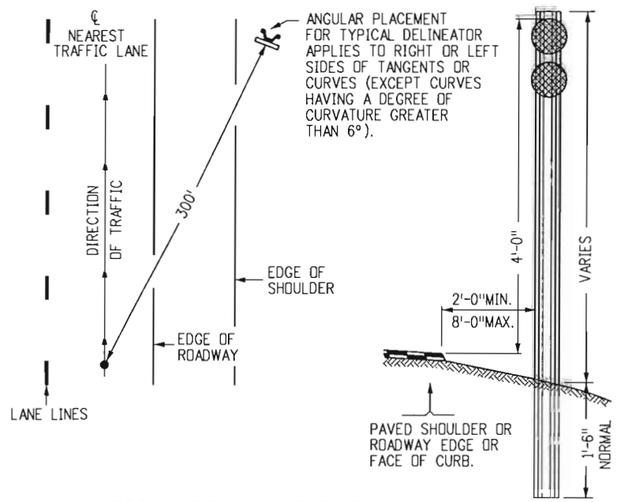
● SPACING FOR CURVES NOT SHOWN MAY BE COMPUTED FROM THE FORMULA: $S = 3\sqrt{R-50}$

SPACING IN ADVANCE OF AND BEYOND THE CURVE IS: FIRST SPACE = 2S, SECOND SPACE = 3S AND THIRD SPACE = 6S. SPACES SHOULD NOT BE LESS THAN 20 FT. OR GREATER THAN 300 FT.

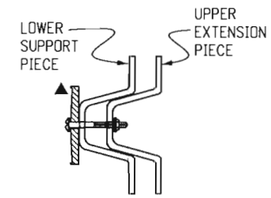
RESIDUAL SPACE AFTER "ON CURVE" SPACING IS APPLIED, SHALL BE DIVIDED EQUALLY AMONG ALL OF THE "ON CURVE" SPACES SO THAT THE LAST DELINEATOR FALLS AT THE P.T. OR C.S. OF THE CURVE.

GENERAL NOTES

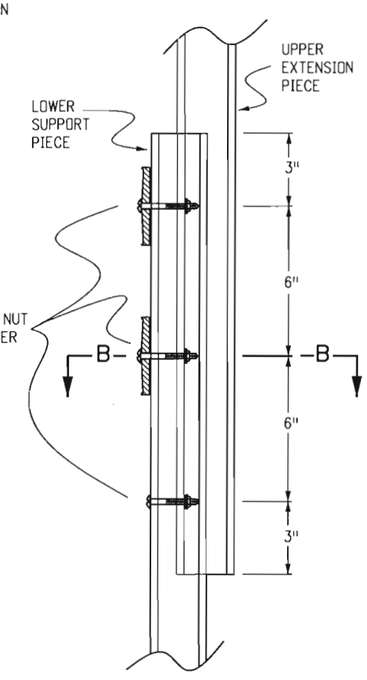
1. SEE THE TABULATION OF QUANTITIES INCLUDED IN THE PLANS FOR THE NUMBERS AND LOCATIONS OF DELINEATORS REQUIRED.
2. THE COLOR OF DELINEATORS SHALL, IN ALL CASES, CONFORM TO THE COLOR OF EDGE LINES, EXCEPT:
   A. RED, GREEN AND BLUE DELINEATORS
   B. TYPE III DELINEATORS (3 YELLOW).
3. THE COLOR OF DELINEATOR POSTS AND ALL SPECIAL MOUNTING BRACKETS SHALL BE INTERSTATE GREEN.
4. DELINEATORS ARE MANDATORY ON ALL ROADWAYS ON THE STATE HIGHWAY SYSTEM. THEY ARE OPTIONAL WHERE FIXED SOURCE LIGHTING IS IN OPERATION: HOWEVER, ALL CONCRETE BARRIER AND TYPE 3 GUARDRAIL SHALL HAVE REFLECTORS OR SUPPLEMENTAL TABS.
5. TYPE I (YELLOW) DELINEATORS ARE MANDATORY ON THE LEFT SIDE OF EXPRESSWAY ROADWAYS (MEDIAN).
6. RED DELINEATORS MAY BE INSTALLED ON THE REVERSE SIDE OF ANY DELINEATOR AND/OR A SEPARATE POST ON ONE-WAY ROADWAYS OR RAMPS WHERE INVESTIGATION SHOWS A NEED FOR WRONG-WAY MOVEMENT PROTECTION.
7. TYPE III (3-YELLOW) DELINEATORS ARE TO BE INSTALLED TO WARN OF THE EXISTENCE OF OBJECTS NOT ACTUALLY IN THE ROADWAY BUT THAT MAY BE SO CLOSE TO THE EDGE OF THE ROADWAY THAT THEY NEED A MARKER. THESE INCLUDE UNDERPASS PIERS, BRIDGE ABUTMENTS, HANDRAILS, AND CULVERTS HEADS. THE INSIDE EDGE OF THE MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION.
8. INTERCHANGE RAMPS SHALL BE DELINEATED ON THE RIGHT SIDE, THE LEFT SIDE, OR BOTH SIDES WITH TYPE I DELINEATORS OF THE APPROPRIATE COLOR (CRYSTAL OR YELLOW) AS ILLUSTRATED ON SHEET NUMBER 3.
9. FRONTAGE ROAD DELINEATORS ARE NOT TO BE INSTALLED WHERE THEY MIGHT BE MISLEADING TO MAINLINE TRAFFIC.
10. SPACING OF DELINEATORS FOR TUNNELS AND SNOW SHEDS SHALL BE AS SHOWN ON THE PLANS.
11. WHERE PRACTICABLE THE APPROACH ENDS OF ISLANDS AND MEDIANS SHOULD BE DELINEATED.
12. NORMAL SPACING WILL BE 528 FEET FOR TANGENT SECTIONS AND A 200 FOOT MINIMUM WILL APPLY TO A "LAST SPACE". (MAXIMUM SPACING IS ALSO 528 FEET.) AT ALL OTHER LOCATIONS, SUCH AS A & D LANES, RAMPS, WIDTH TRANSITIONS AND TURN LANES A "LAST SPACE" SHOULD NOT BE LESS THAN 50% OF THE SPACING SHOWN FOR THAT LOCATION.
13. TYPE II DELINEATORS SHALL BE INSTALLED AT 100 FOOT SPACING ON ALL ACCELERATION LANES AND TAPERS, DECELERATION LANES AND TAPERS, AND LANE TRANSITIONS INVOLVING PAVEMENT WIDTH REDUCTIONS IN THE DIRECTION OF TRAFFIC. TYPE II DELINEATORS ARE NOT REQUIRED FOR REDIRECT TAPERS, FOR TRAFFIC MOVING IN THE DIRECTION OF WIDER PAVEMENT OR ON THE SIDE OF THE ROADWAY WHERE THE ALIGNMENT IS NOT AFFECTED BY THE LANE REDUCTION. TYPE II (YELLOW) DELINEATORS SHALL ONLY BE USED WHEN A RAISED OR DEPRESSED MEDIAN IS PRESENT. FOR WIDTH TRANSITIONS WHERE TRAFFIC MOVES IN THE DIRECTION OF WIDER PAVEMENT, THE NORMAL SPACING SHALL BE ADJUSTED SO THERE IS A DELINEATOR AT EACH OF THE ANGLE POINTS OF THE WIDTH TRANSITION.
14. TYPE I DELINEATORS SHALL BE INSTALLED AT 100 FOOT SPACING ON INTERCHANGE RAMP TANGENT SECTION AND BY THE SPACING TABLE ON RAMP CURVES. SPACING "IN ADVANCE OF AND BEYOND CURVE" DOES NOT APPLY TO RAMP CURVES.
15. FOR SPACING ON A CURVE THAT FOLLOWS A TANGENT SECTION WITH SPACES SHORTER THAN THOSE SHOWN IN THE CURVE SPACING TABLE: MODIFY THE TABLE SO THAT THE CURVE SPACING IS NO GREATER THAN THE TANGENT SPACING,
16. WHERE GUARDRAIL INTRUDES INTO THE SPACE BETWEEN THE PAVEMENT EDGE AND THE LINE OF DELINEATORS, PLACE THE DELINEATORS IMMEDIATELY ABOVE OR BEHIND THE RAIL FACE, AND DELINEATOR SPACING SHALL BE THE SAME BEHIND THE RAIL FACE.
17. WHEN NORMAL SPACING FALLS ON AN INTERSECTING ROADWAY, DRIVEWAY, ETC. THE DELINEATOR MAY BE MOVED EITHER DIRECTION A DISTANCE NOT EXCEEDING ONE-QUARTER OF THE NORMAL SPACING.
18. THE ANGULAR PLACEMENT FOR ALL DELINEATORS SHOULD BE BY THE "TRAFFIC ORIENTING" METHOD: AIM THE FACE OF THE DELINEATOR AT THE CENTERLINE OF THE NEAREST LANE OF APPROACHING TRAFFIC AT A POINT 300 FEET AWAY (OR AS DIRECTED BY THE ENGINEER FOR SPECIAL OR LOCATIONS AND CURVES HAVING A DEGREE OF CURVATURE GREATER THAN 6 DEGREES).



TYPICAL DELINEATOR PLACEMENT

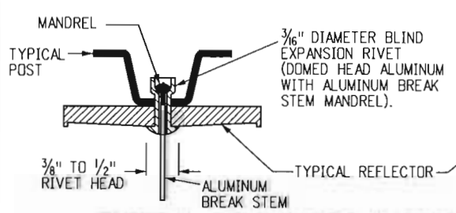


SECTION B-B

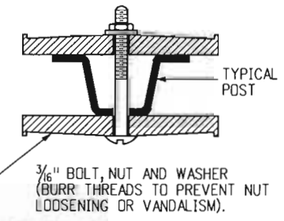


TYPICAL DOUBLE HEIGHT INSTALLATION

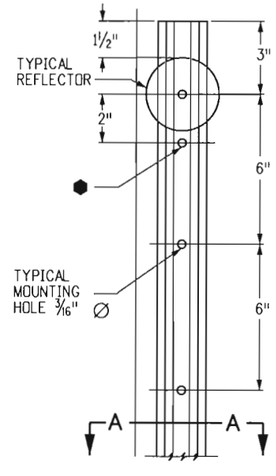
TYPICAL INSTALLATION SINGLE DIRECTION



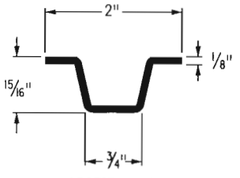
TYPICAL INSTALLATION BACK - TO - BACK



TYPICAL DELINEATOR FABRICATION DETAILS



TYPICAL 1,12# DELINEATOR POST



SECTION A-A

ALLOWABLE TOLERANCE DIMENSION:

1" AND UP	± 1/8"
1/2" TO 1"	± 1/16"
1/2" AND BELOW	± 1/32"

WEIGHT:

MINUS 3 1/2% OF THE WEIGHT OF ANY ONE POST.

POST NOTES

1. POSTS SHALL BE A UNIFORM FLANGED CHANNEL SECTION (U-SHAPE) MADE FROM HOT ROLLED STRUCTURAL STEEL, RE-ROLLED RAIL STEEL, OR NEW BILLET STEEL, HAVING A MINIMUM YIELD STRENGTH OF 30,000 PSI AND A MINIMUM TENSILE STRENGTH OF 50,000 PSI.
2. POSTS SHALL BE SET IN DRILLED OR EXCAVATED HOLES, PLACED PLUMB AND FIRMLY TAMPED IN PLACE; OR MAY BE DRIVEN PLUMB.
3. A MINIMUM OF 3 HOLES OF 3/16" DIAMETER, SPACED AS SHOWN, ARE REQUIRED FOR ALL DELINEATOR POSTS.

● AN ADDITIONAL HOLE IS REQUIRED WHEN THE ADJUSTABLE REFLECTOR BRACKET IS USED.

DOUBLE HEIGHT POSTS

4. THE LOWER SECTION OF THE 2-POST COMBINATION SHALL BE INSTALLED ACCORDING TO THE SAME PLACEMENT SPECIFICATIONS AS A TYPICAL SINGLE POST INSTALLATION.

▲ 5. REFLECTORS SHALL BE MOUNTED AT THE CONNECTION OF THE POSTS AND AT THE TOP OF THE UPPER POST IN ACCORDANCE WITH WITH THE APPROPRIATE CONFIGURATION FOR THE APPLICATION.

6. THE LENGTH OF THE UPPER EXTENSION PIECE SHALL NOT EXCEED 7 FEET.

Computer File Information		Sheet Revisions	
Creation Date: 07/04/06 Initials: KCM		Date:	Comments
Last Modification Date: 07/04/06 Initials: JSW	R-1	08/19/09	REVISED SHEET 2
Full Path: www.dot.state.co.us/DesignSupport/	R-2	07/01/10	ADDED NEW SHEET 5 AND CONVERTED OLD SHEET 5 TO SHEET 6
Drawing File Name: Sheet_S-612-01_1of5.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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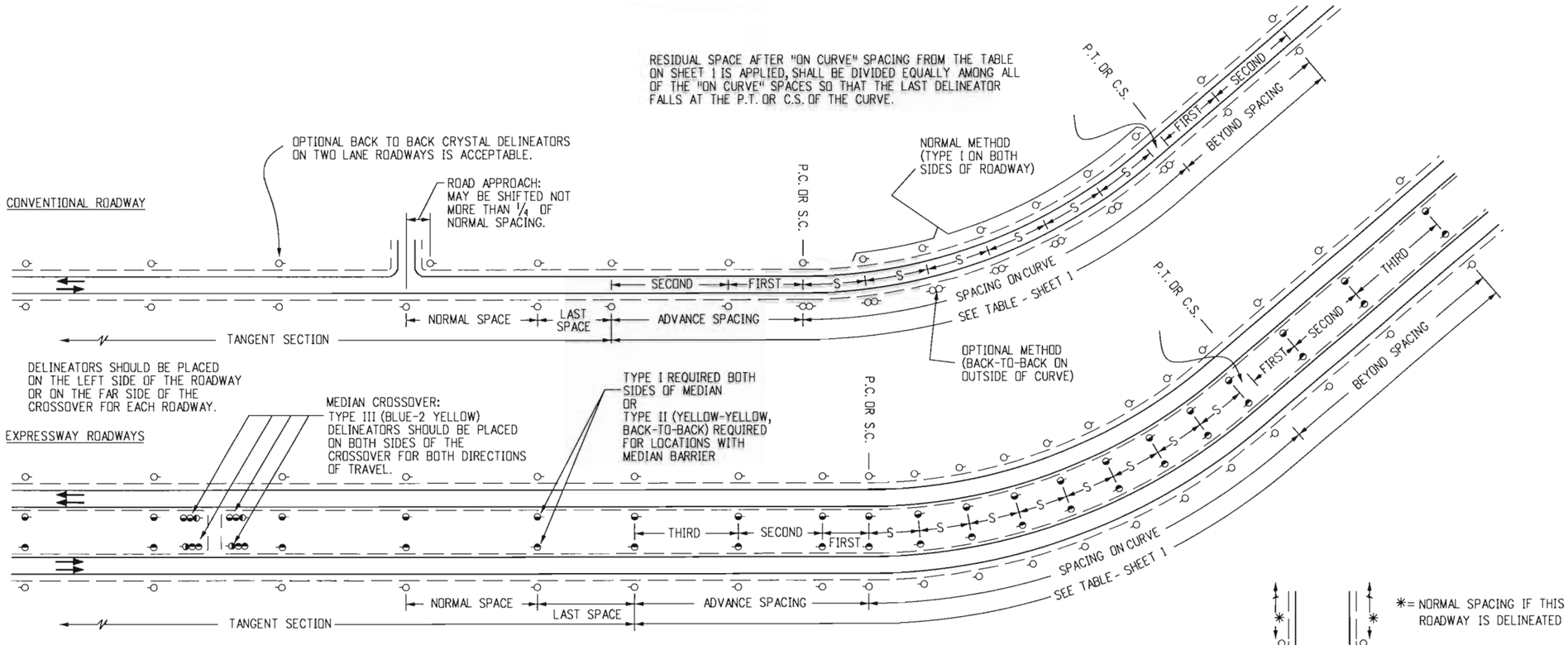
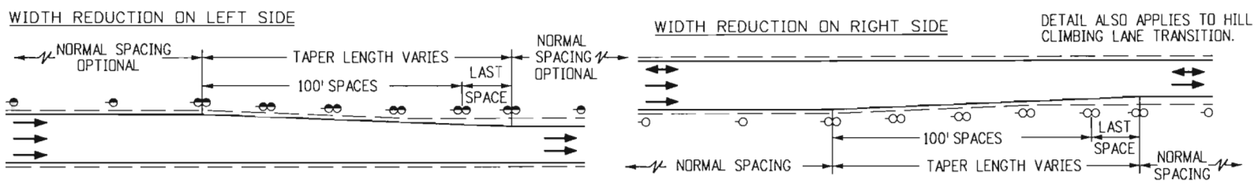
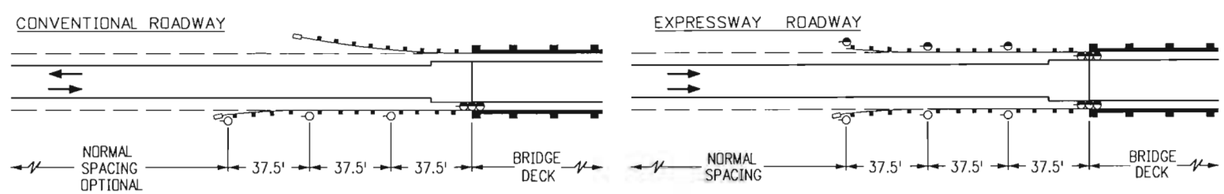


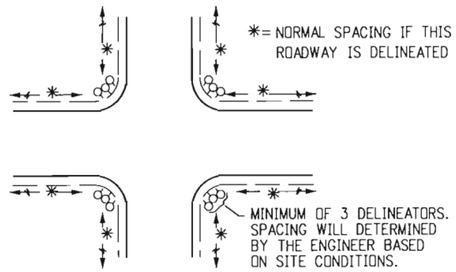
TYPICAL INSTALLATION FOR TANGENT SECTION AND CURVES



TYPICAL INSTALLATION FOR LANE TRANSITION



TYPICAL INSTALLATION FOR BRIDGE APPROACHES



TYPICAL INSTALLATION FOR MINOR INTERSECTION

DELINEATOR SYMBOLS AND TYPICAL CONFIGURATION

- TYPE I (CRYSTAL)
- TYPE I (YELLOW)
- TYPE I (RED)
- TYPE I (GREEN) (MAINTENANCE MARKER)
- TYPE I (BLUE) (MAINTENANCE MARKER)
- TYPE II (2 CRYSTAL)
- TYPE II (2 YELLOW)
- TYPE II (CRYSTAL-CRYSTAL BACK-TO-BACK)
- TYPE II (YELLOW-YELLOW, BACK-TO-BACK)
- TYPE II (CRYSTAL-RED, BACK-TO-BACK)
- TYPE II (YELLOW-RED, BACK-TO-BACK)
- TYPE III (3 YELLOW)
- TYPE III (2 CRYSTAL-RED, BACK-TO-BACK)
- TYPE III (2 YELLOW-RED, BACK-TO-BACK)
- TYPE III (GREEN)
- TYPE III (BLUE)
- TYPE III (BLUE-2 YELLOW)

BRIDGE NOTES

1. WHERE CURB TO CURB WIDTH OF BRIDGE IS EQUAL TO OR GREATER THAN ROADWAY WIDTH PLUS USABLE SHOULDER WIDTH, USE THE TYPE III DELINEATOR (3 YELLOW) ONLY AND OMIT ALL THE TYPE I DELINEATORS.
2. FOR GUARD RAIL INSTALLATIONS WHERE APPROACH END IS NOT FLARED, PLACE A TYPE III DELINEATOR (3 YELLOW) IMMEDIATELY IN ADVANCE OF APPROACH END.
3. ALL TYPE I DELINEATORS ARE TO BE MOUNTED ABOVE OR IMMEDIATELY BEHIND GUARD RAIL AND ARE NOT A CONSTANT DISTANCE FROM THE ROADWAY.

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Last Modification Date: 08/19/09	Initials: KEN	(R-1)
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CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English		(R-X)

Sheet Revisions	
Date:	Comments
08/19/09	CHANGED TYPE 1 DELINEATORS TO TYPE I (YELLOW) ALONG LEFT SHOULDER OF EACH DETAIL.

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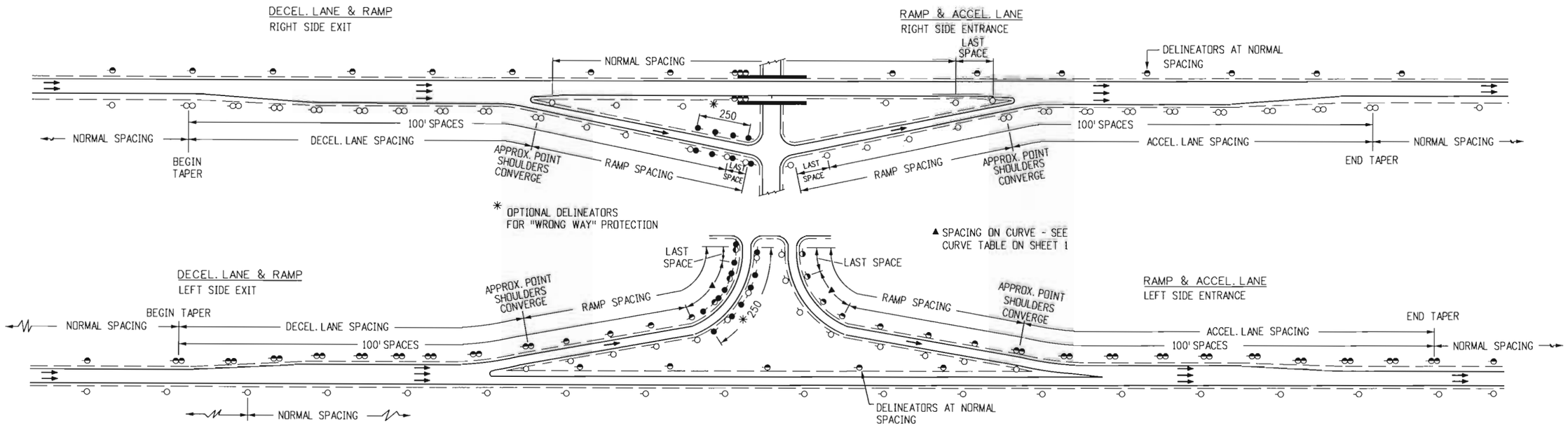
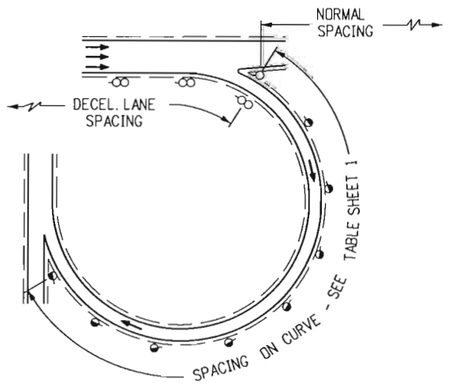


TYPICAL INSTALLATION FOR INTERCHANGES

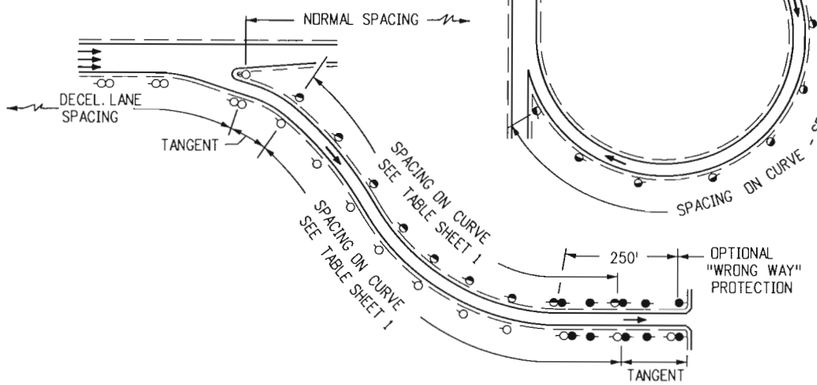
NOTE

"SPACING IN ADVANCE OF AND BEYOND CURVE" (1ST., 2ND. & 3RD. SPACES) AS SHOWN IN THE SPACING TABLE ON SHEET 1 SHALL NOT APPLY TO RAMP CURVES

CLOVERLEAF CURVE



CURVE & REVERSE CURVE



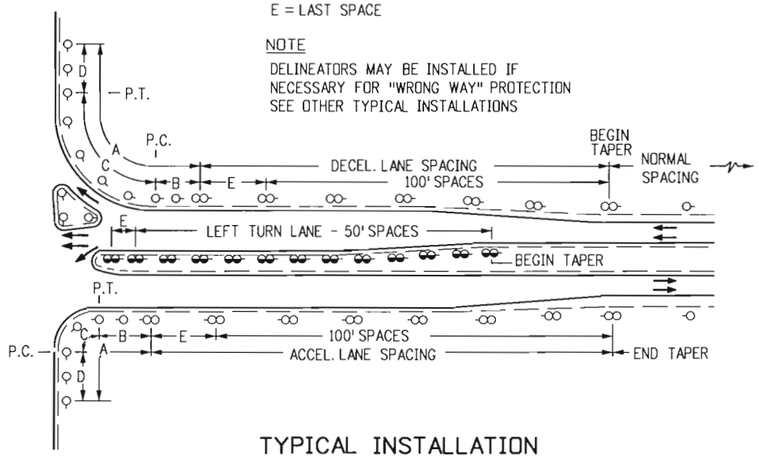
TYPICAL INSTALLATION FOR RAMP CURVES

LEGEND

A = SEE CURVE SPACING TABLE
B = ADVANCE SPACES (FIRST & SECOND)
C = SPACING ON CURVE
D = BEYOND SPACES (FIRST & SECOND)
E = LAST SPACE

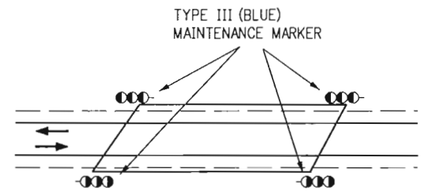
NOTE

DELINEATORS MAY BE INSTALLED IF NECESSARY FOR "WRONG WAY" PROTECTION SEE OTHER TYPICAL INSTALLATIONS

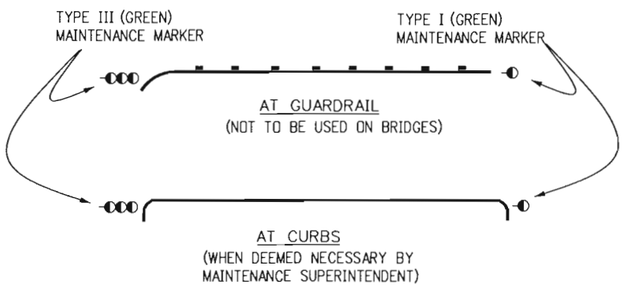


TYPICAL INSTALLATION FOR INTERSECTIONS WITH ACCEL. & DECEL. LANES

TYPE III (BLUE) MAINTENANCE MARKER



AT BRIDGE JOINTS



MAINTENANCE MARKER LOCATIONS FOR OBSTRUCTIONS

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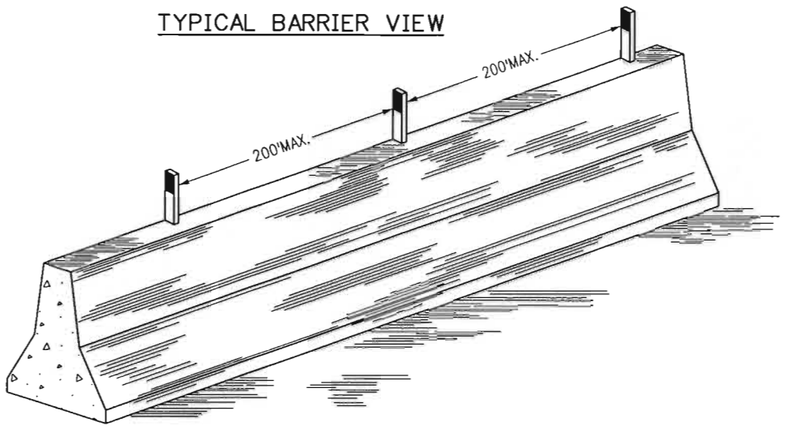
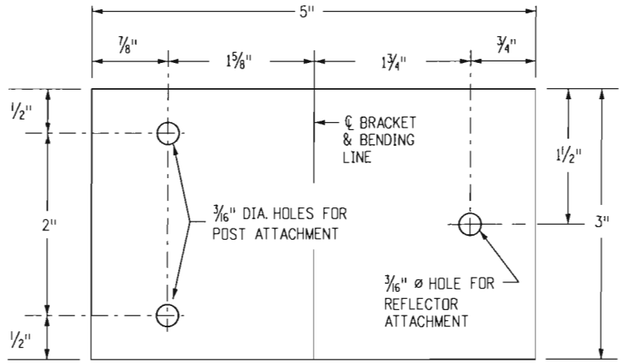
TYPICAL BARRIER VIEW

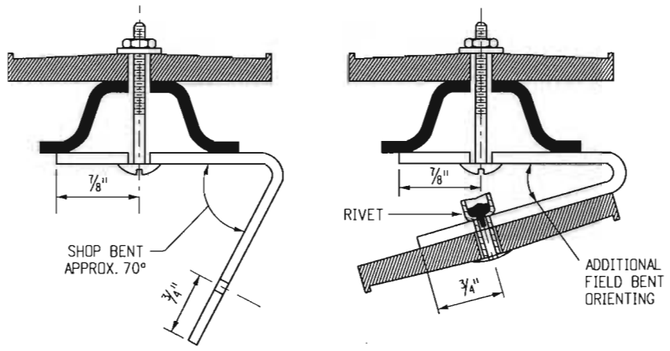


TYPICAL REFLECTOR DETAILS FOR CONCRETE BARRIER

PLAN VIEW



TYPICAL ADJUSTABLE REFLECTOR BRACKET

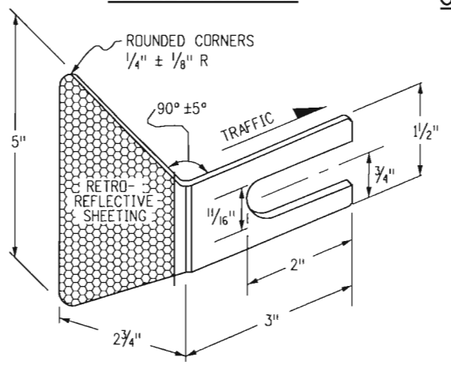


TYPICAL BRACKET FABRICATION DETAILS

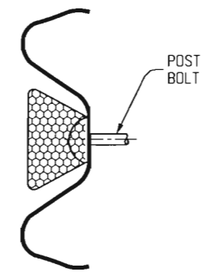
BRACKET NOTES

1. THE ADJUSTABLE REFLECTOR BRACKET IS TO BE USED TO "TRAFFIC ORIENT" BACK-TO-BACK DELINEATORS USED ON CURVES.
2. REFLECTOR BRACKETS SHALL BE FABRICATED FROM EITHER GALVANIZED STEEL NOT LESS THAN 16 GAGE, OR ALUMINUM NOT LESS THAN 0.100 INCH THICKNESS.
3. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED OR CADMIUM PLATED.
4. ALL BRACKET HOLES ARE 3/16 IN. DIAMETER AND DELINEATOR POSTS REQUIRE AN ADDITIONAL HOLE 2 IN. BELOW THE TOP HOLE PROVIDED IN THE POST.
5. SHOP BEND THE BRACKET APPROX. 70 DEGREES AS SHOWN, ATTACH TO THE DELINEATOR POST WITH 3/16 IN. BOLTS AND FIELD BEND AS NECESSARY TO TRAFFIC ORIENT. THEN THE BRACKET REFLECTOR CAN BE ATTACHED WITH A 3/16 IN. BLIND EXPANSION RIVET OR A BOLT.
6. BURR THE THREADS OF ALL BOLTS TO PREVENT NUT LOOSENING OR VANDALISM.

REFLECTOR TAB



MOUNTING POSITION ON GUARD RAIL TYPE 3

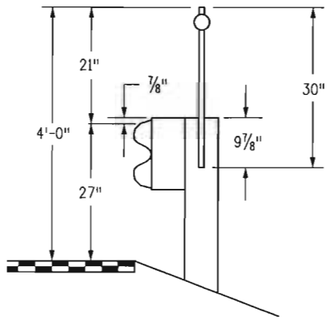


TYPICAL GUARDRAIL REFLECTOR TAB

SEE THE APPROPRIATE GUARDRAIL STANDARD PLANS FOR REFLECTOR TAB FABRICATION AND PLACEMENT DETAILS.

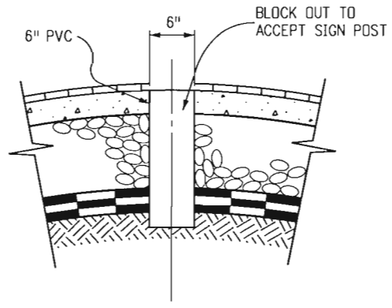
BARRIER REFLECTOR NOTES

1. BARRIER REFLECTORS, REGARDLESS OF TYPE, SHALL MEET THE RETROREFLECTIVE QUALTITIES SPECIFIED IN SECTION 713 OF THE STANDARD SPECIFICATIONS FOR DELINEATOR REFLECTORS, AND BE PAID FOR AS DELINEATOR (TYPE _) (BARRIER) (EACH). USE OF THESE REFLECTORS IS MANDATORY.
2. THE COLOR OF REFLECTIVE SURFACE SHALL MATCH THE COLOR OF THE ADJACENT EDGE LINE.
3. CONCRETE SURFACE PREPARATION, ADHESIVE, AND METHOD OF APPLICATION SHALL BE AS RECOMMENDED BY THE REFLECTOR MANUFACTURER.
4. UNLESS OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE ENGINEER, A 200 FOOT MAXIMUM TANGENT AND CURVE SPACING APPLIES TO BARRIER REFLECTORS.
5. TOP MOUNT REFLECTORS ARE STANDARD. SIDEMOUNT BARRIER REFLECTORS OR 6 INCH WIDE REFLECTOR STRIPS MAY BE REQUIRED IF SPECIFIED IN THE PLANS.
6. MEDIAN BARRIER REFLECTORS SHALL BE TYPE II (YELLOW-YELLOW, BACK-TO-BACK).
7. FOR A TWO-WAY ROADWAY BARRIER, REFLECTORS SHALL BE TYPE II (CRYSTAL-CRYSTAL, BACK-TO-BACK).
8. FOR TEMPORARY CONCRETE BARRIER, RELFECTORS SHALL BE INSTALLED THAT MEET THE MINIMUM REQUIREMENTS OF STANDARD TYPICAL DELINEATOR INSTALLATIONS, EXCEPT THE MAXIMUM SPACING SHALL BE 50 FT., AND THEY WILL NOT BE PAID FOR, BUT ARE INCLUDED IN THE WORK.



TYPICAL GUARDRAIL POST MOUNT DELINEATORS

POST MOUNT DELINEATORS SHALL BE ATTACHED BY A METHOD APPROVED BY THE ENGINEER OR A METHOD REQUIRED BY THE DEVICE MANUFACTURER.



TYPICAL SLEEVE INSTALLATION FOR MEDIAN DELINEATOR POSTS

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Full Path: www.dot.state.co.us/DesignSupport/	(R-X)		
Drawing File Name: Sheet_S-612-01_4of5.dgn	(R-X)		
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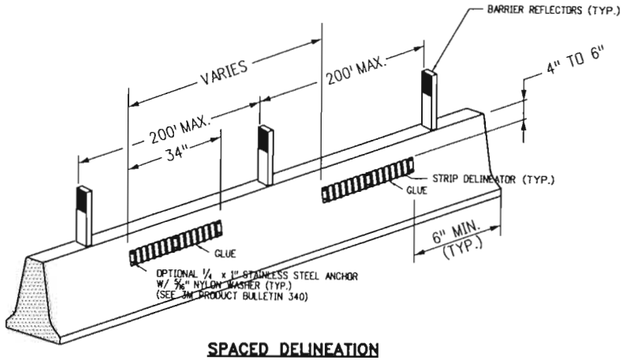
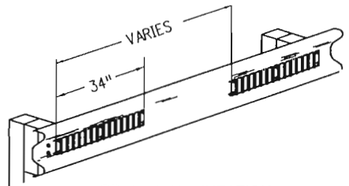
TYPICAL INSTALLATION DETAIL FOR CONCRETE BARRIERS

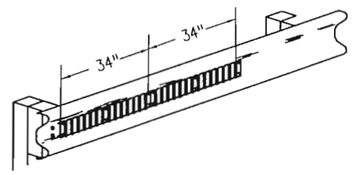


SPACED DELINEATION

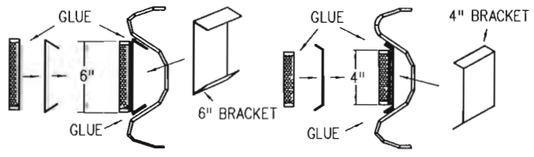
TYPICAL INSTALLATION DETAIL FOR GUARDRAIL TYPE 3



SPACED DELINEATION



CONTINUOUS DELINEATION



ATTACHMENT DETAILS

TYPICAL STRIP DELINEATOR INSTALLATION

1. THIS DEVICE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. IT IS THE RESPONSIBILITY OF THE INSTALLER TO CONTACT THE MANUFACTURER REPRESENTATIVE WHENEVER THERE IS A QUESTION REGARDING APPLICATION PROCEDURES OR SUBSTRATE CONDITIONS.
2. THE COLOR OF THE REFLECTIVE SURFACE SHALL MATCH THE COLOR OF THE ADJACENT ROADWAY EDGE LINE.
3. AT TIME OF INSTALLATION, CONTACTING SURFACE SHALL BE DRY AND MOISTURE-FREE.
4. AFTER DELINEATOR INSTALLATION, SURFACES SHOULD STAY DRY WITHOUT RAIN IN THE FORECAST FOR AT LEAST 8 HOURS.
5. SURFACE PREPARATION, BRACKETS AND GLUE (OR EQUIVALENT) SHALL BE INCLUDED IN THE COST OF EACH DELINEATOR STRIP.

CONCRETE BARRIER REFLECTOR NOTES

1. CONCRETE SURFACE PREPARATION, ADHESIVE, AND METHOD OF APPLICATION SHALL BE AS RECOMMENDED BY THE REFLECTOR MANUFACTURER.
2. TO ASSURE A STRAIGHT LEVEL APPLICATION, SNAP A CHALK LINE ACROSS THE BARRIER.
3. FOR MOUNTING THE STRIP DELINEATORS TO CONCRETE BARRIER, INCLUDING THE BRACKETS, USE 3M WINDO-WELD SUPER FAST URETHANE GLUE OR EQUIVALENT APPLIED AT 60 DEGREES FAHRENHEIT IN DRY WEATHER IS RECOMMENDED. THIS PRODUCT IS AVAILABLE IN STANDARD CAULKING TUBE AND SHOULD BE APPLIED TO THE BRACKETS AND PANELS WITH A CONSTRUCTION STYLE CAULKING GUN, AND/OR USE ¼" X 1" STAINLESS STEEL ANCHOR WITH 5/16" NYLON WASHER, AS SPECIFIED IN 3M PRODUCT BULLETIN 340.
4. UNLESS OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE ENGINEER, A 200-FOOT MAXIMUM TANGENT AND CURVE SPACING APPLIES TO BARRIER REFLECTORS ALONG THE TOP OF THE BARRIER.

W-BEAM GUARDRAIL NOTES

1. TWO DIFFERENT STYLES OF DELINEATOR MOUNTING BRACKETS ARE AVAILABLE. THERE IS ONE TYPE FOR THE 4" DELINEATOR AND ANOTHER FOR THE 6" DELINEATOR. THE BRACKETS MUST BE MATCHED TO FIT THE EXACT 4" OR 6" WIDE DELINEATOR PANELS. SIZE OF THE DELINEATOR PANELS SHALL BE SPECIFIED IN THE PLANS.
2. IN SNOWPLOW AREAS, USE THE 4" PANELS THAT WILL RECESS INTO THE W-BEAM GUARDRAIL, WHICH PROTECTS IT FROM THE SNOWPLOW DAMAGE.
3. METAL GUARDRAIL SHALL BE WIRE BRUSHED/SANDED, THEN CLEANED WITH ISOPROPYL ALCOHOL WHERE THE BRACKETS WILL ADHERE TO THE GUARDRAIL.
4. FOR MOUNTING THE STRIP DELINEATORS TO GUARDRAIL, INCLUDING THE BRACKETS, THE USE OF 3M WINDO-WELD SUPER FAST URETHANE GLUE OR EQUIVALENT APPLIED AT 60 DEGREES FAHRENHEIT IN DRY WEATHER IS RECOMMENDED. THIS PRODUCT IS AVAILABLE IN STANDARD CAULKING TUBE AND SHOULD BE APPLIED TO THE BRACKETS AND PANELS WITH A CONSTRUCTION STYLE CAULKING GUN, AS SPECIFIED IN BY 3M PRODUCT BULLETIN 340.
5. MUST USE MINIMUM THREE BRACKETS PER PANEL CORRESPONDING TO THE PRE-DRILLED DELINEATOR HOLES.

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Last Modification Date: Initials:	R-2	07/01/10	NEW SHEET 5, AND MOVED OLD SHEET 5 TO SHEET 6
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Drawing File Name: Sheet_S-612-01_5of6.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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DELINEATOR INSTALLATIONS

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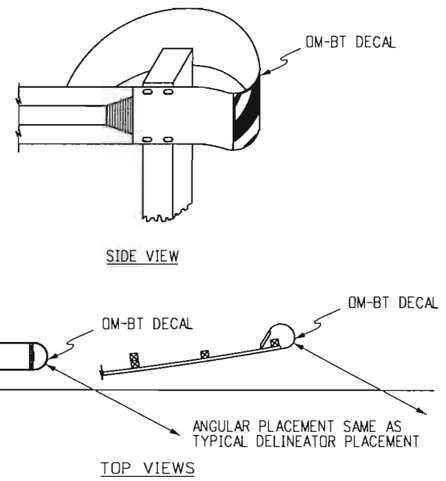

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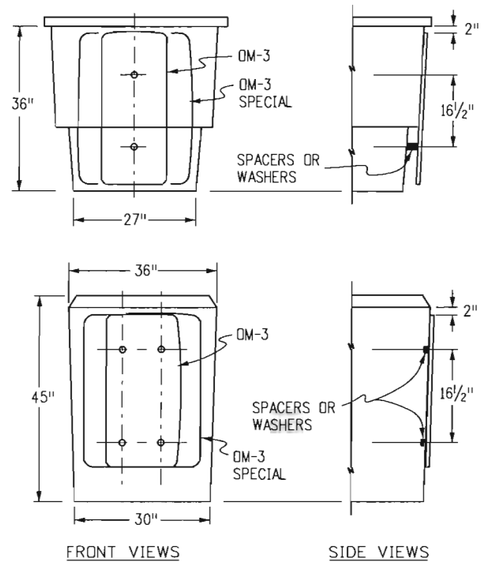

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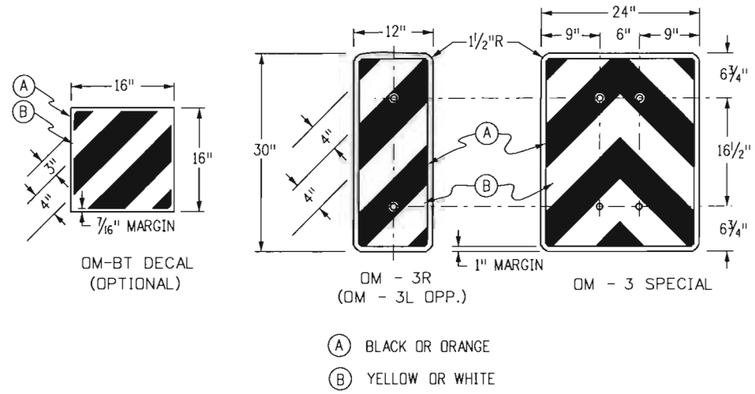
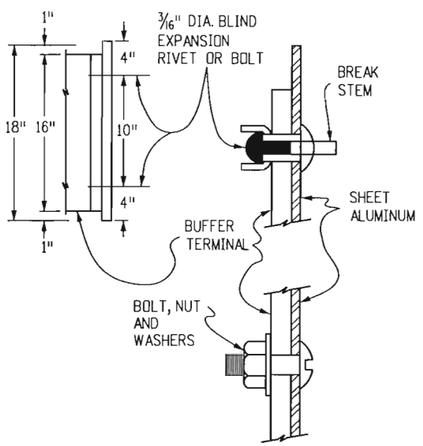
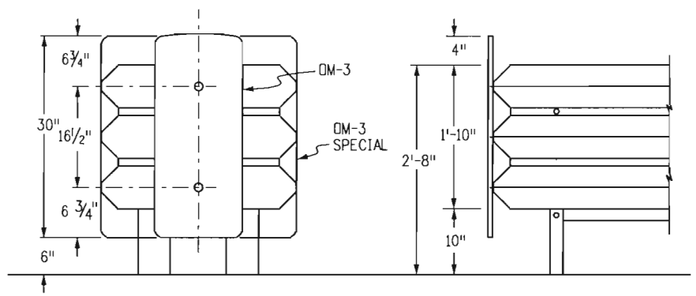


SUPPLEMENTAL DELINEATION DETAILS



BUFFER PANEL ATTACHMENT DETAILS



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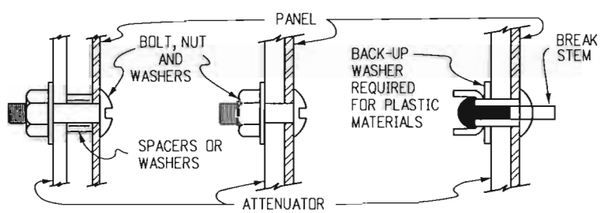

ATTENUATOR PANEL ATTACHMENT DETAILS

SUPPLEMENTAL PANEL NOTES

1. ALL SUPPLEMENTAL DELINEATION PANELS SHALL BE SINGLE SHEET ALUMINUM, 0.080" MINIMUM THICKNESS.
2. A) PANELS SHALL BE FASTENED DIRECTLY TO THE IMPACT ATTENUATOR WITH 2 OR 4-3/16 IN. DIA. BLIND EXPANSION RIVETS, OR 2 OR 4-3/16 IN. BOLTS, NUTS AND WASHERS.
   B) EXPANSION RIVETS SHALL BE DOMED HEAD ALUMINUM WITH ALUMINUM BREAK STEM MANDREL, AND SHALL HAVE A BACK-UP WASHER WHEN USED WITH PLASTIC MATERIALS.
   C) BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED OR CADMIUM PLATED.
   D) SPACERS, OR SPACING WASHERS SHALL BE USED AS NECESSARY FOR SAND FILLED ATTENUATORS.
3. OM-BT DECAL (BUFFER TERMINAL OBJECT MARKER) SHALL BE PRESSURE SENSITIVE REFLECTIVE SHEETING AND SHALL BE APPLIED DIRECTLY TO THE GUARDRAIL END TREATMENT (FLARED OR NON-FLARED).
4. RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956, TYPE III. THE SHEETING SHALL BE YELLOW FOR PERMANENT INSTALLATIONS.
   OM-BT DECAL AND OM-3 PANELS SHALL HAVE YELLOW SHEETING BACKGROUND WITH STENCIL BLACK STRIPES.
   THE SHEETING FOR TEMPORARY (CONSTRUCTION ZONE) INSTALLATIONS SHALL BE AS FOLLOWS:
   OM-BT DECAL AND OM-3 PANELS SHALL HAVE ALTERNATING ORANGE AND WHITE REFLECTORIZED STRIPES.
5. SUPPLEMENTAL DELINEATION PANELS OR PRESSURE SENSITIVE RETROREFLECTIVE SHEETING DECALS SHALL BE INCLUDED IN THE COST OF THE GUARDRAIL END ANCHOR OR THE IMPACT ATTENUATOR ITEM.

SUPPLEMENTAL DELINEATION FOR GUARD RAIL BUFFER TERMINALS AND IMPACT ATTENUATORS

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DELINEATOR INSTALLATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

23. WHEN ARROW BOARDS ARE USED TO CLOSE MULTIPLE LANES, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH CLOSED LANE.

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

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

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

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

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

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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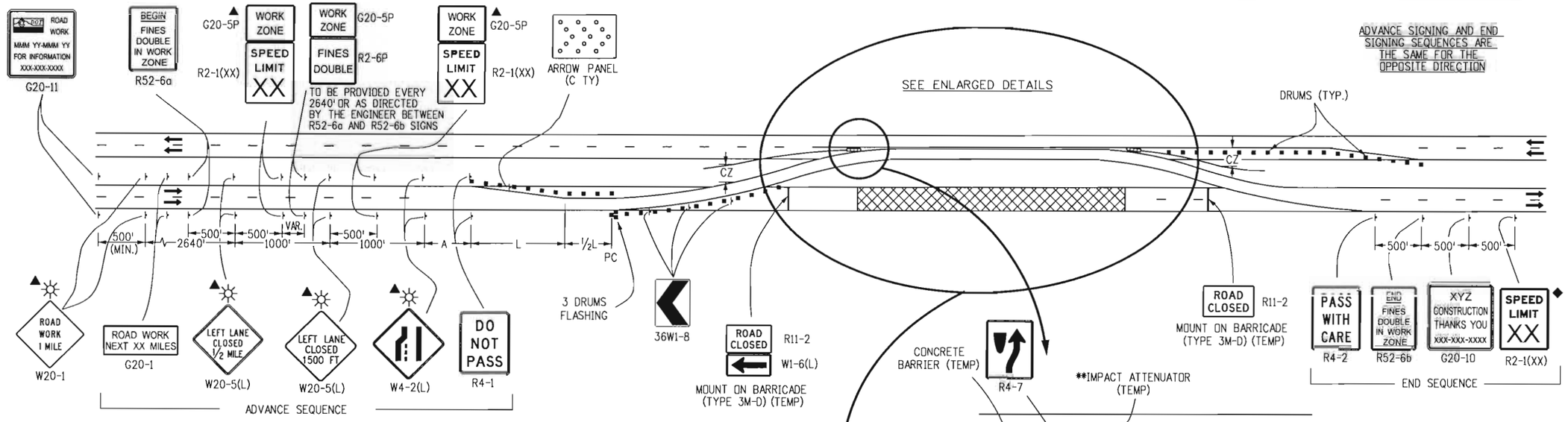
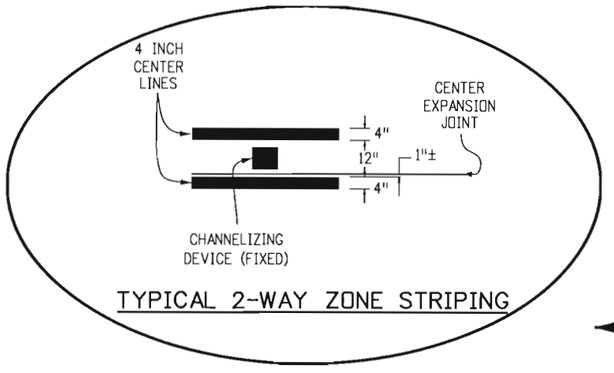


LEGEND

- ▪ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS.
- ▬ TYPE III BARRICADE
- ▬ CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- ← DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - 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



TYPICAL 2-WAY ZONE STRIPING

- ◆ 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

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	Date:	Comments
R-2	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 2 OF 19
R-2	06/24/09	ADDED * & ** NOTES. EXTENDED FLARED ENDS OF CONCRETE BARRIER.
R-2	06/24/09	ADDED OPTIONAL FLASHING BEACONS ON ADVANCED WARNING SIGNS.
R-3	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)) ADDED ◆ SYMBOL IN SPEED LIMIT SIGN (R2-1(XX)) AFTER R52-6b SIGN ADDED R2-6/G20-5 PLAQUES. ADDED G20-11 SIGN AND ⬟ SYMBOL/NOTE.

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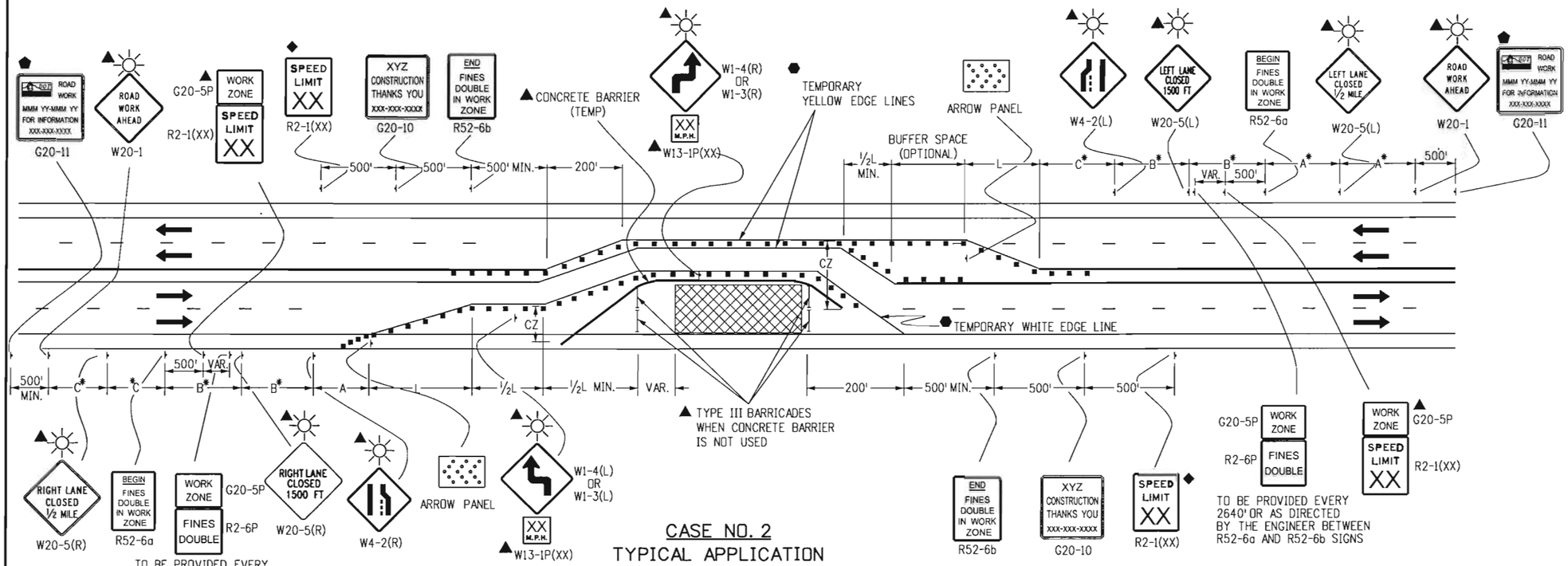
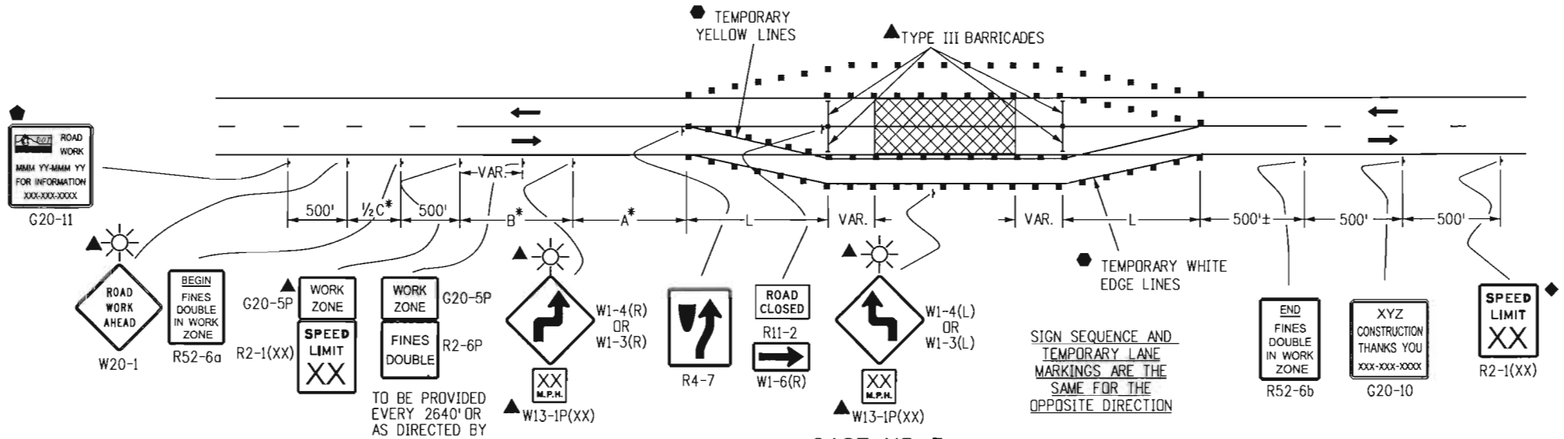


CASE NO. 2
TYPICAL APPLICATION
CLOSURE OF HALF OF 4-LANE HIGHWAY, NOT PHYSICALLY DIVIDED



SIGN SEQUENCE AND TEMPORARY LANE MARKINGS ARE THE SAME FOR THE OPPOSITE DIRECTION

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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Last Modification Date: 12/07/09	Initials: KEN
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Drawing File Name: S-630-01_3of19.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

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

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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

STANDARD PLAN NO.
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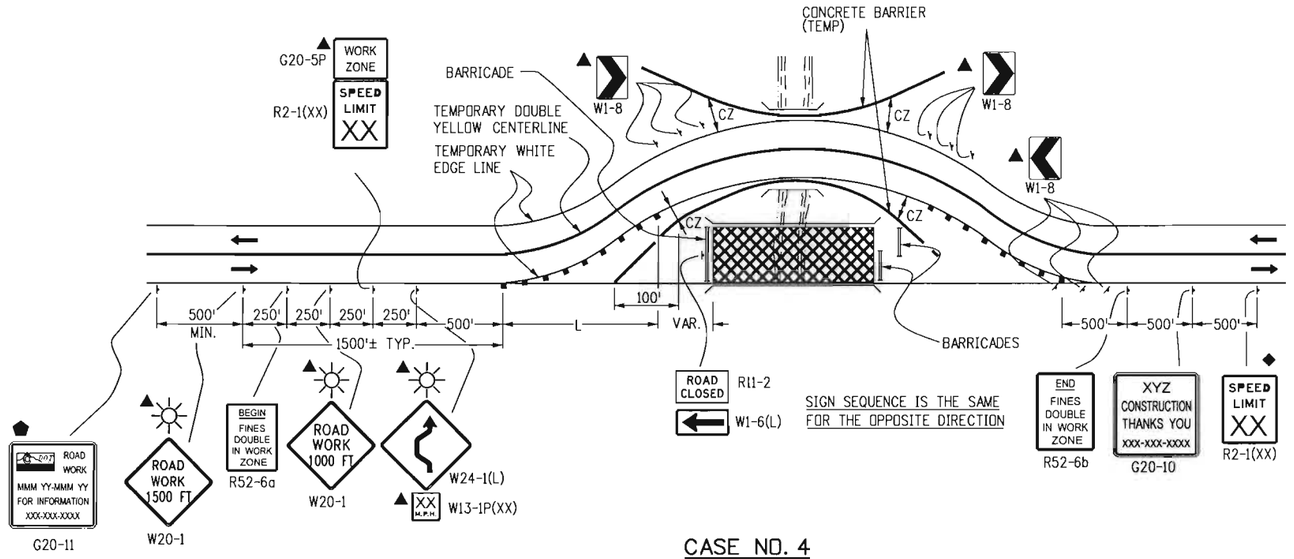
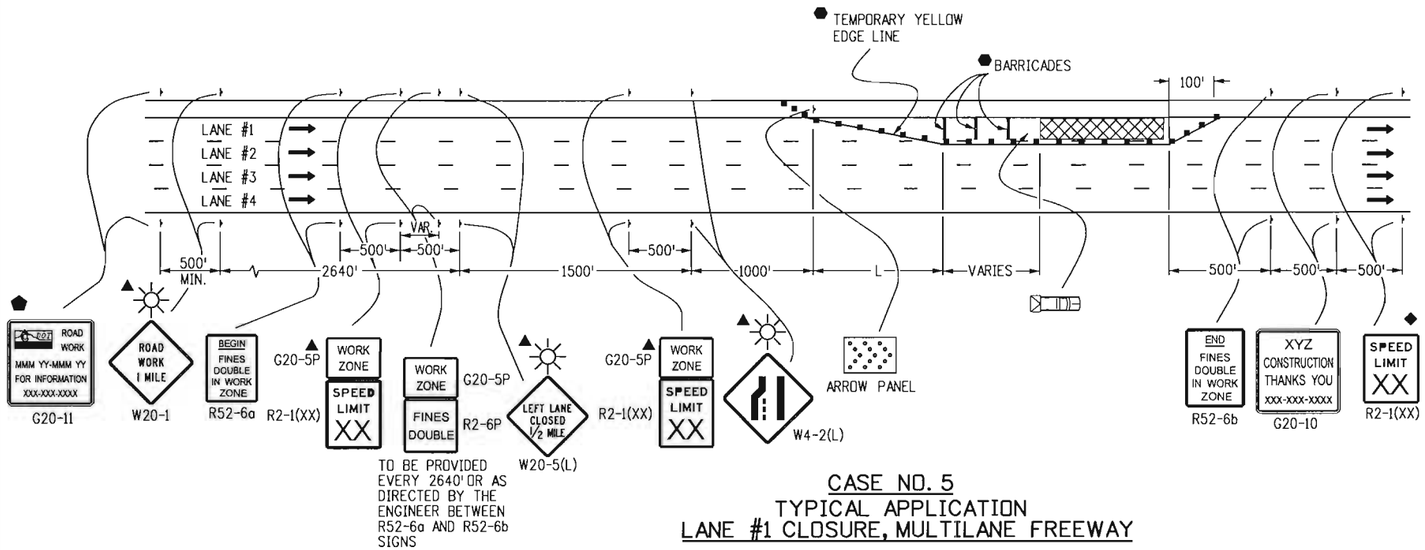
Sheet No. 3 of 19



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



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

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

LEGEND

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

Computer File Information	
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Drawing File Name: S-630-01 (4of19).dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale	Units: English

	Sheet Revisions	
	Date:	Comments
R-2	06/24/09	ADDED R-52a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 4 OF 18
R-2	06/24/09	EXTEND CONCRETE BARRIER IN CASE 4, ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
R-3	12/07/09	ADDED OPTIONAL STRIKE THROUGH WORK ZONE SPEED LIMIT SIGN (R2-1(XX)) ADDED G20-5 AND R2-6 PLAQUES BETWEEN R52-6a and R52-6b SIGNS. ADDED ◆ SYMBOL IN SPEED LIMIT SIGN (R-1(XX)) AFTER R52-6b SIGN. ADDED G20-11 SIGN AND ⬟ SYMBOL NOTE.

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STANDARD PLAN NO.
S-630-1
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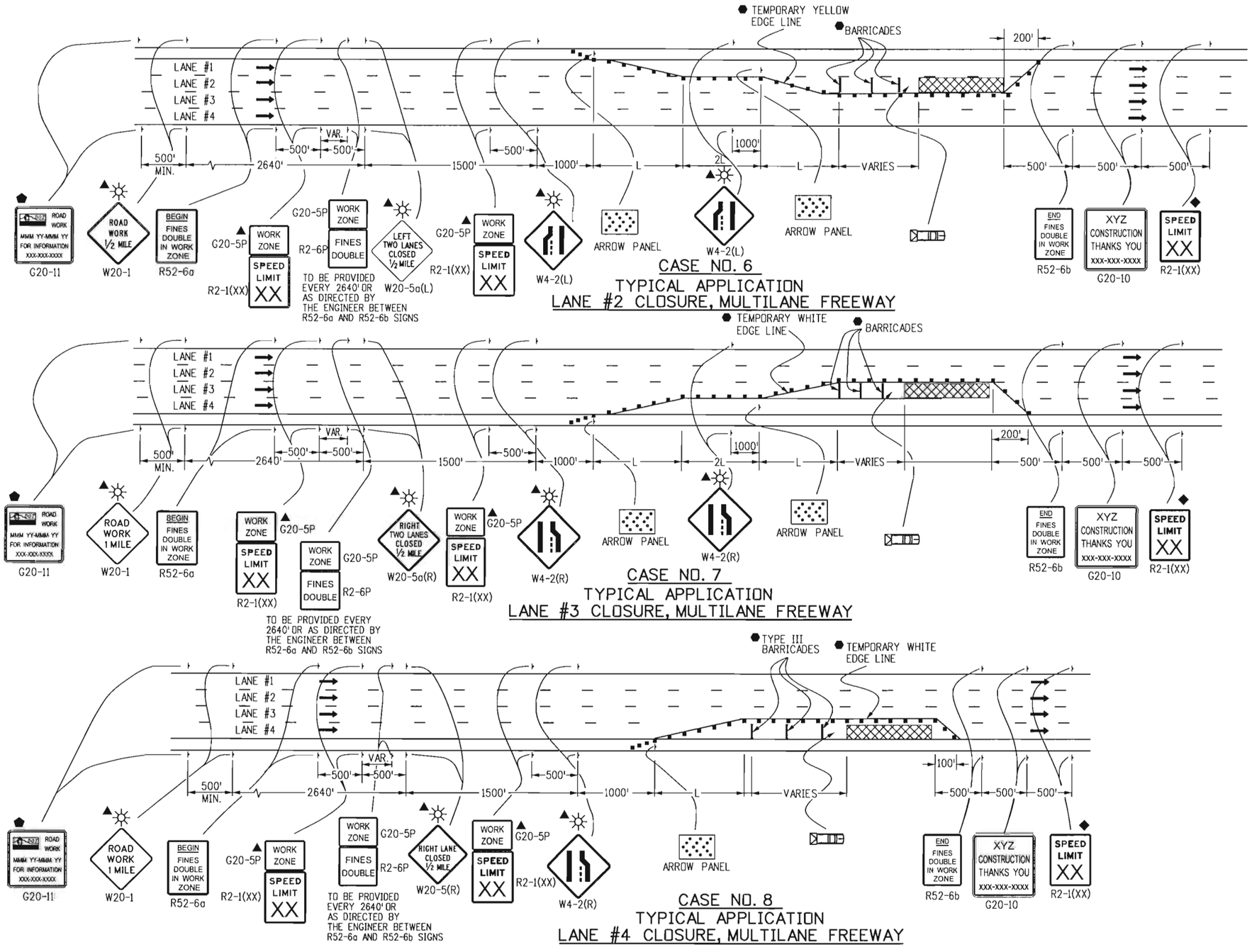

TD BE PROVIDED EVERY 2640' OR AS DIRECTED BY THE ENGINEER BETWEEN R52-6a AND R52-6b SIGNS

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

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

LEGEND

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

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

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

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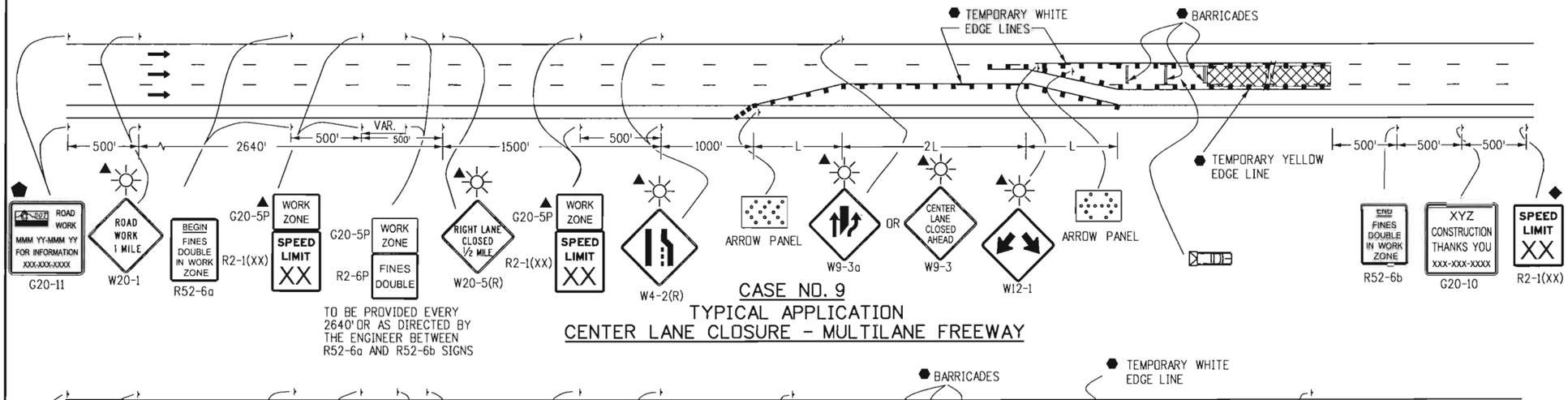
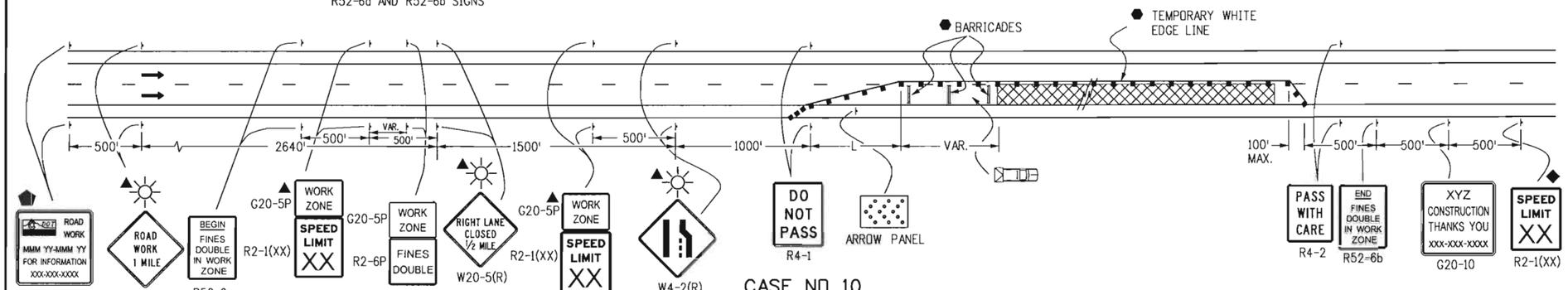
STANDARD PLAN NO.
S-630-1
Sheet No. 5 of 19



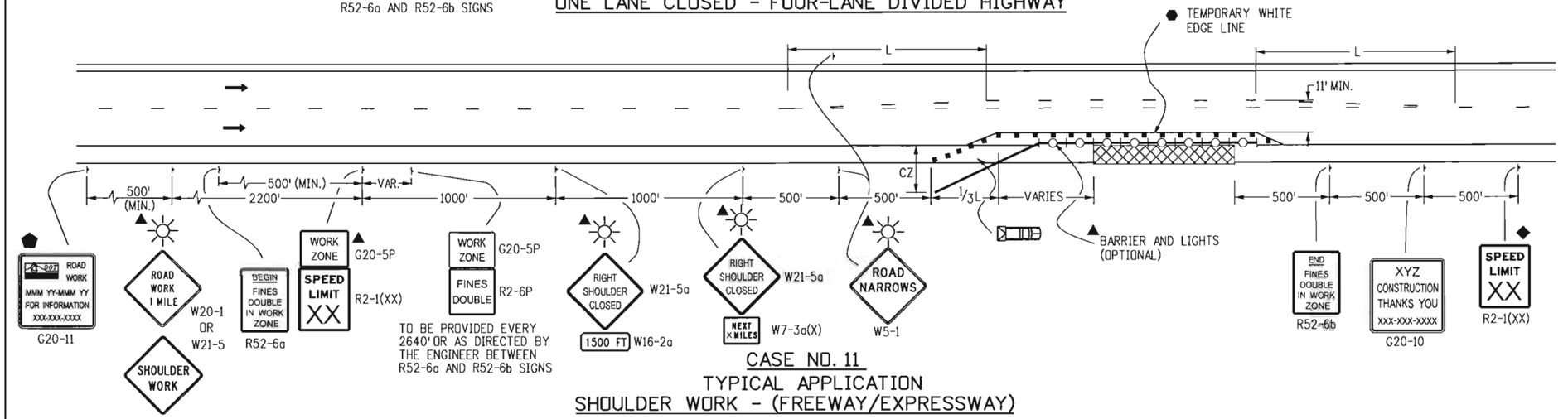
TO BE PROVIDED EVERY 2640' OR AS DIRECTED BY THE ENGINEER BETWEEN R52-6a AND R52-6b SIGNS

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



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

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



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

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

Computer File Information	
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	Sheet Revisions	
	Date:	Comments
R-2	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 6 OF 18
R-2	06/24/09	ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGNS.
R-2	06/24/09	MINIMUM LANE WIDTH TO 11' AT WORK ZONE.
R-3	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)), R52-6a SIGN PLACED 500' (MIN.) PRIOR TO R2-1 SIGN, ADDED ● SYMBOL IN SPEED LIMIT SIGN (R-10(XX)) AFTER R52-6b SIGN, ADDED R2-1 AND G20-5 PLAQUES, ADDED R20-5 SIGN AND ◆ SYMBOL/NOTE.

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STANDARD PLAN NO.
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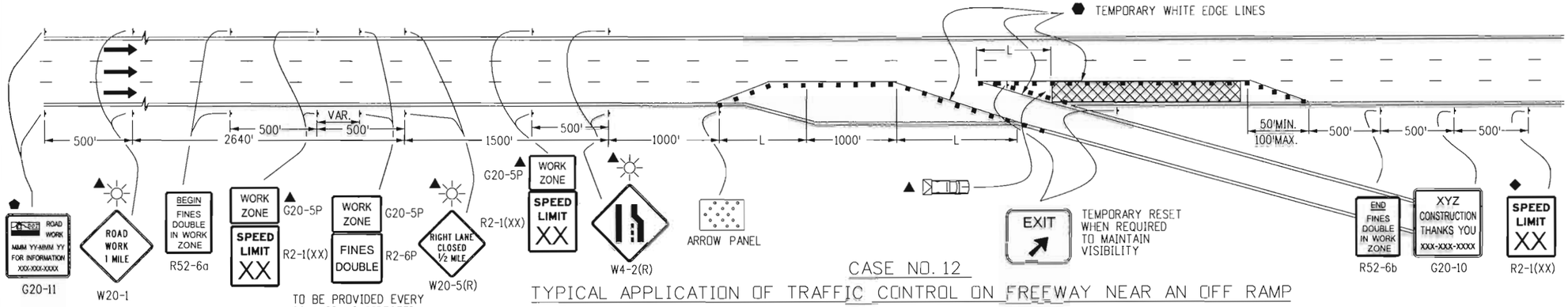
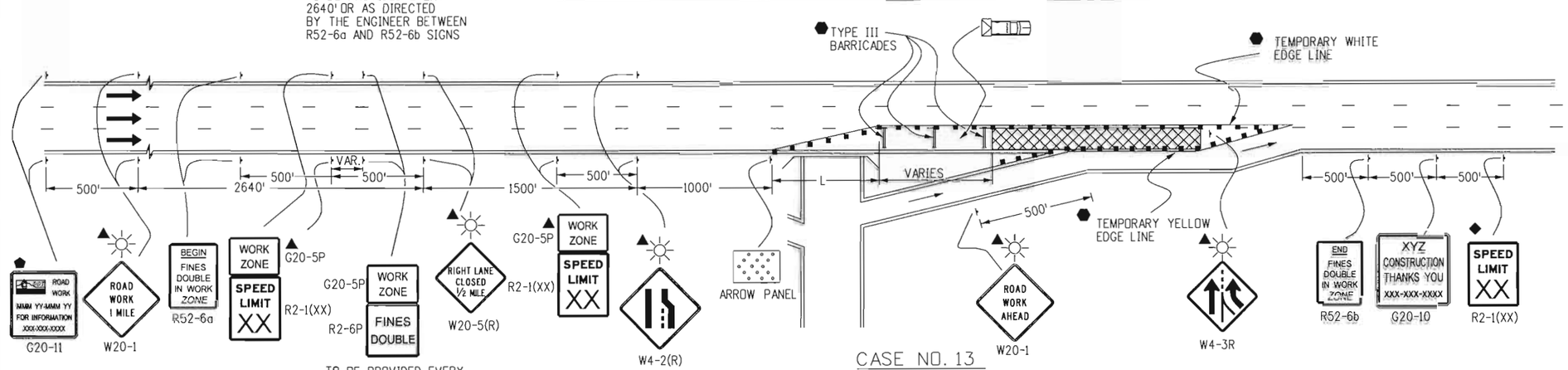


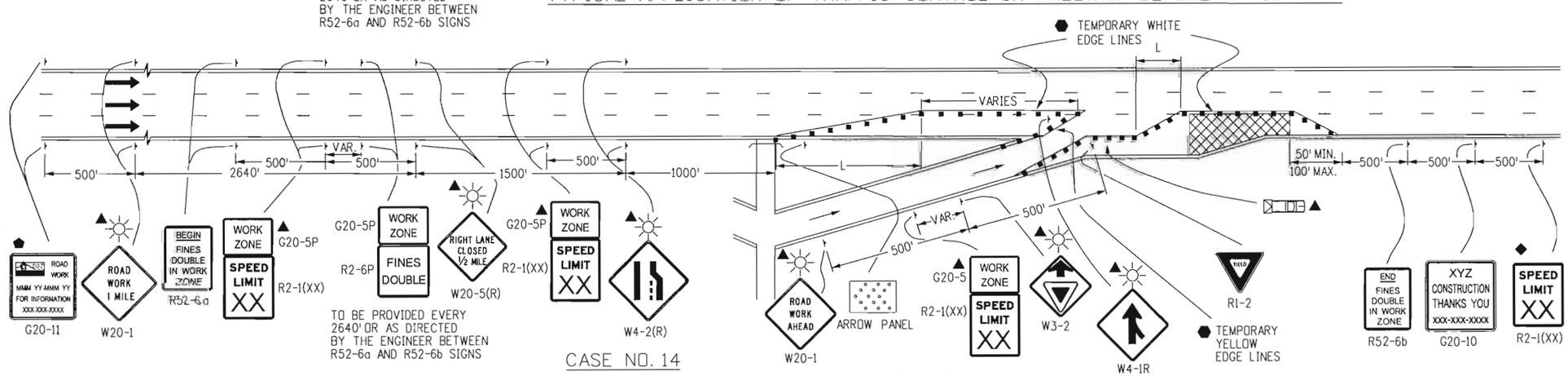
CASE NO. 12

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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Last Modification Date: 02/17/10	Initials: KEN		
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CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English	

	Sheet Revisions	
	Date:	Comments
(R-2)	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS REVISED SHEET NUMBER TO 7 OF 19
(R-2)	06/24/09	ADDED OPTIONAL FLASHING BEACONS TO ADVANCE WARNIGN SIGNS.
(R-3)	12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (R2-1(XX)), ADDED ◆ SYMBOL IN SPEED LIMIT SIGN (R2-1(XX)) AFTER R52-6b SIGN, ADDED R2-6 AND G20-5 PLAQUES BEYOND R52-6a AND R52-6b SIGNS, ADDED R52-6a & R2-6 SIGN COMBO IN CASE 14 AT DRIVEWAY, ADDED G20-5 SIGN AND ◆ SYMBOL/NOTE
(R-4)	02/17/10	CHANGED YIELD AHEAD SYMBOL SIGN CODE IN CASE 14

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STANDARD PLAN NO.

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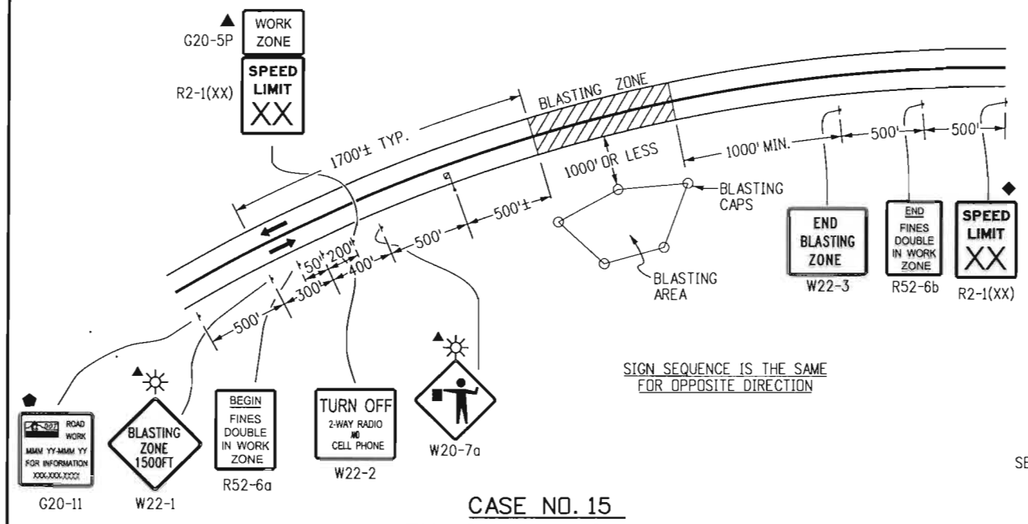
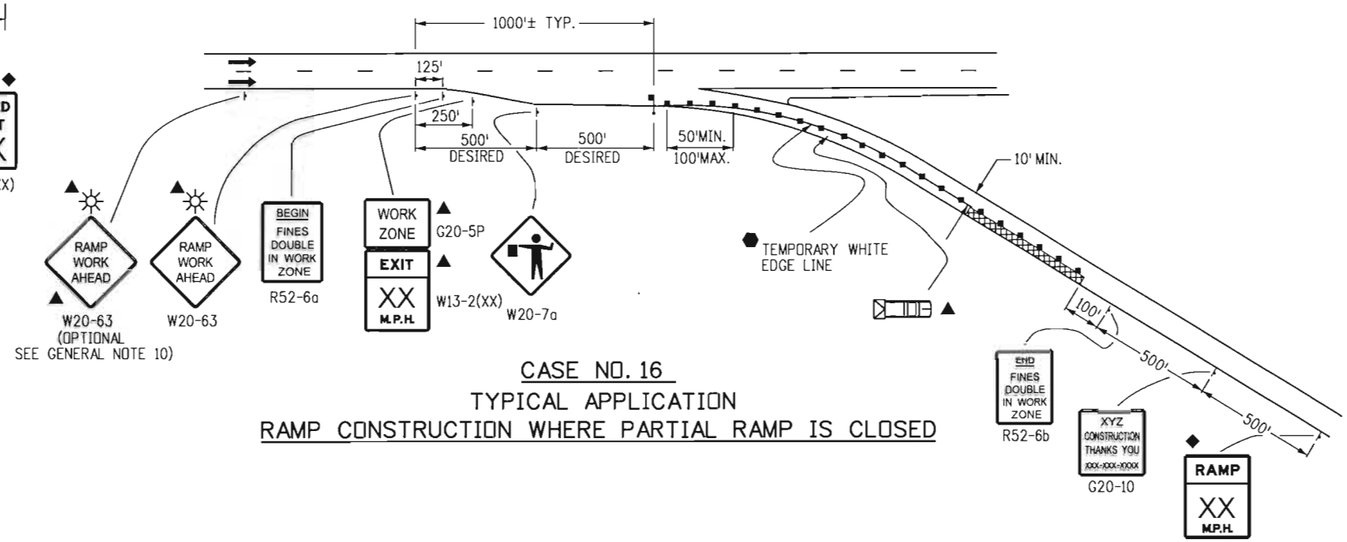
Sheet No. 7 of 19

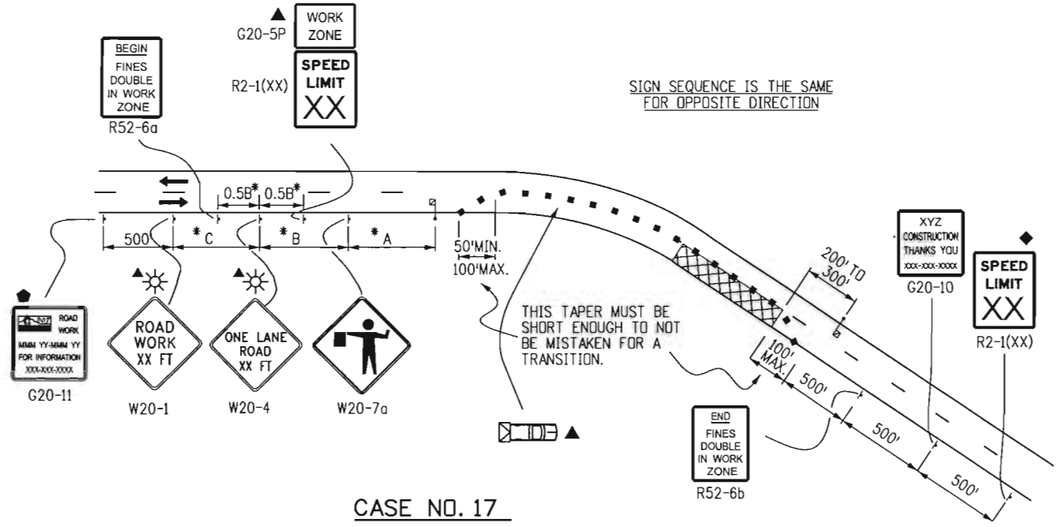


SIGN SEQUENCE IS THE SAME FOR OPPOSITE DIRECTION

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

Computer File Information		
Creation Date: 07/04/06	Initials: KCM	
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Sheet Revisions	
Date:	Comments
03/05/07	W20-1 & W20-4 SIGNS REVISED
06/24/09	ADDED R52-6a, R52-6b, G20-5, W13-2 & W13-3 SIGNS. REVISED SHEET NUMBER TO 8 OF 19
06/24/09	ADDED OPTIONAL FLASHING BEACON ON ADVANCED WARNING SIGNS.
12/07/09	DELETED OPTIONAL SYMBOL FOR WORK ZONE SPEED LIMIT SIGN (G20-5/W13-2) ON SIGN PLACED PRIOR TO R2-1 SIGN. ADDED A SYMBOL TO SPEED LIMIT SIGN (R2-1(XX)) AFTER R52-6b SIGN. ADDED R52-6 SIGN AND A SYMBOL/NOTE.

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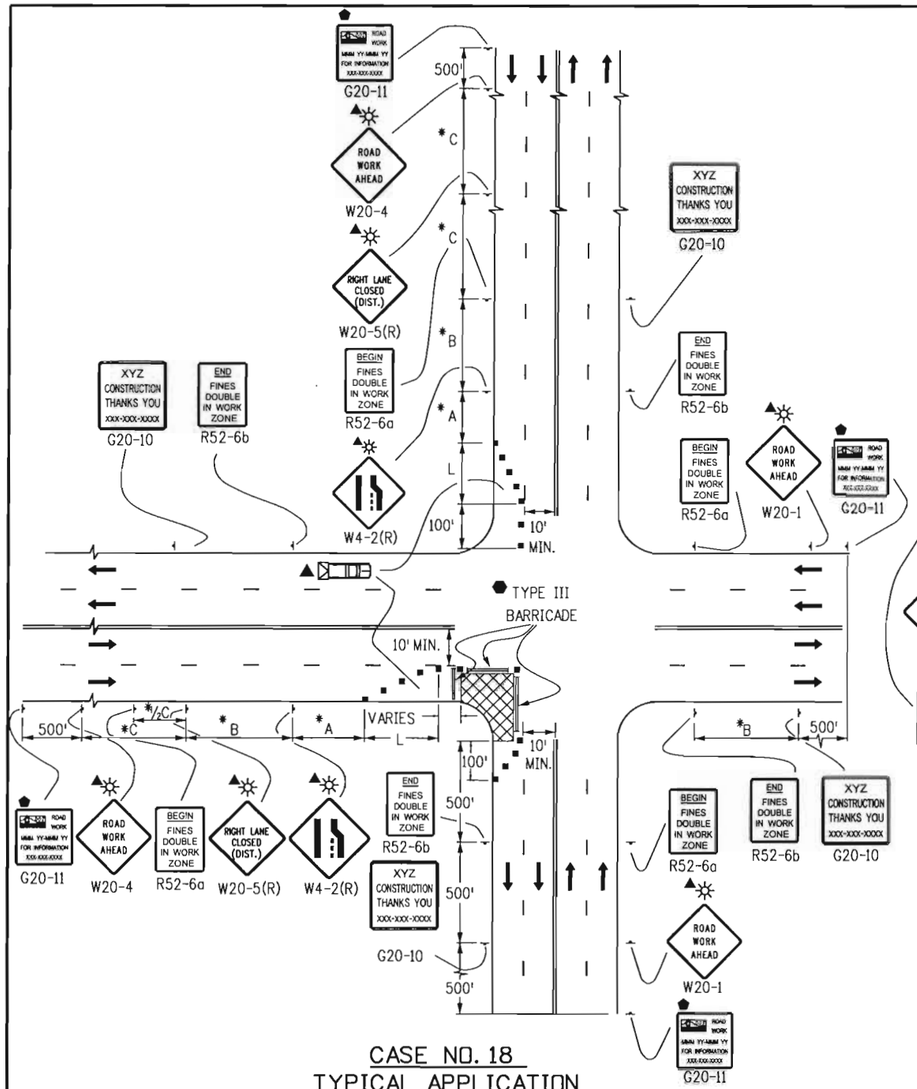
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

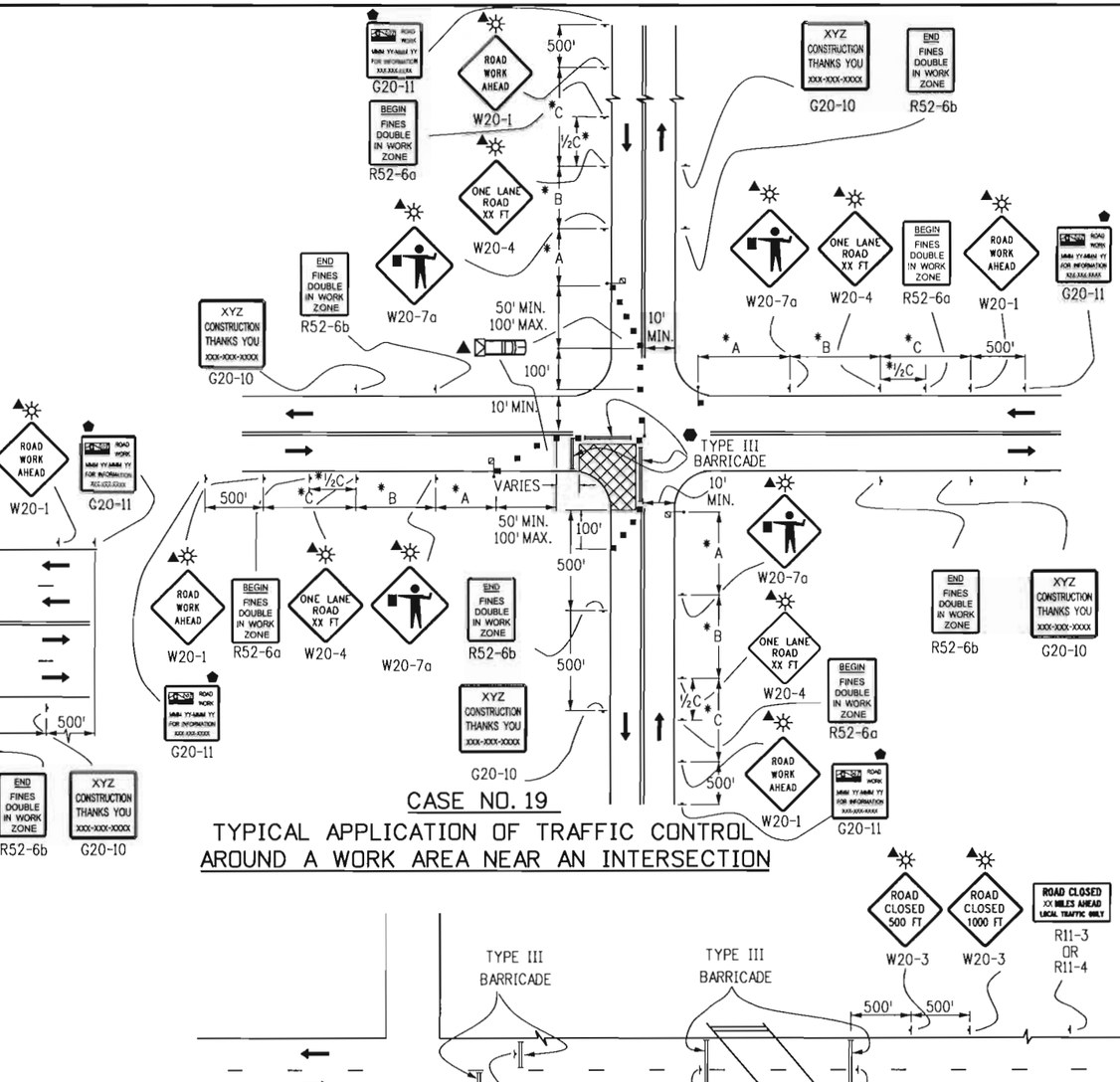
Issued By: Safety & Traffic Engineering Branch July 4, 2006

STANDARD PLAN NO.
S-630-1
Sheet No. 8 of 19



CASE NO. 18

TYPICAL APPLICATION
OF TRAFFIC CONTROL AROUND A WORK AREA
NEAR AN INTERSECTION, ONE LANE CLOSED



CASE NO. 19

TYPICAL APPLICATION OF TRAFFIC CONTROL
AROUND A WORK AREA NEAR AN INTERSECTION

CASE NO. 20

TYPICAL SIGNING
FOR ROAD CLOSURE

NOTES:

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.

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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	Sheet Revisions	
	Date:	Comments
(R-2)	06/24/09	ADDED R52-6a, R52-6b & G20-5 SIGNS. REVISED SHEET # TO 9 OF 19.
(R-3)	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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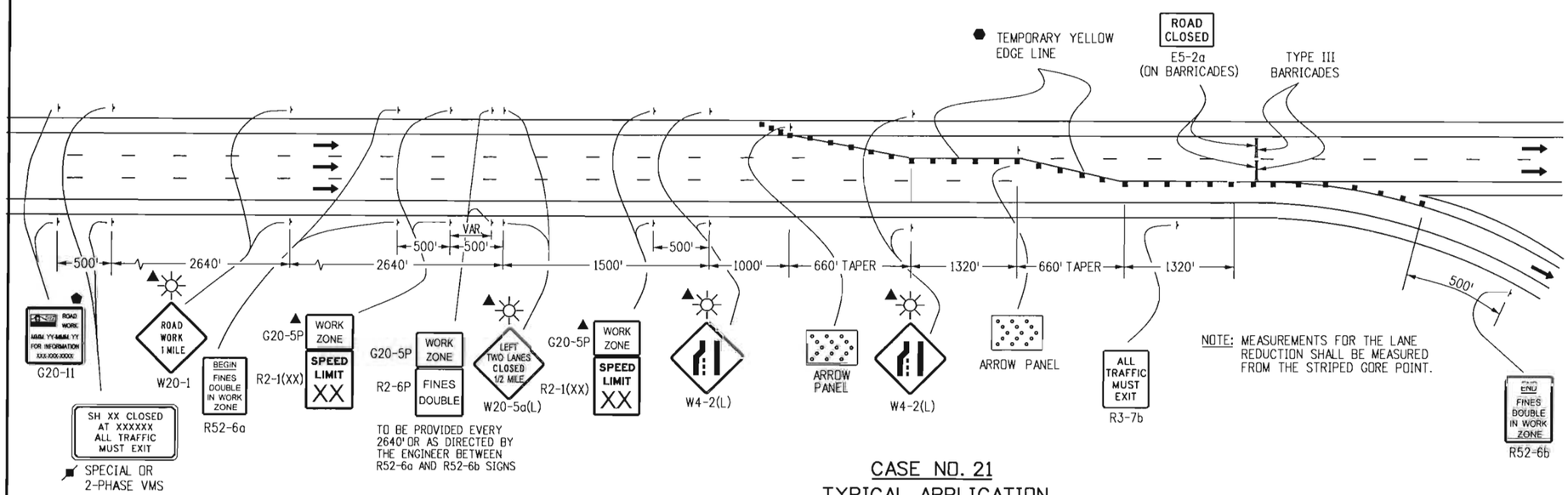
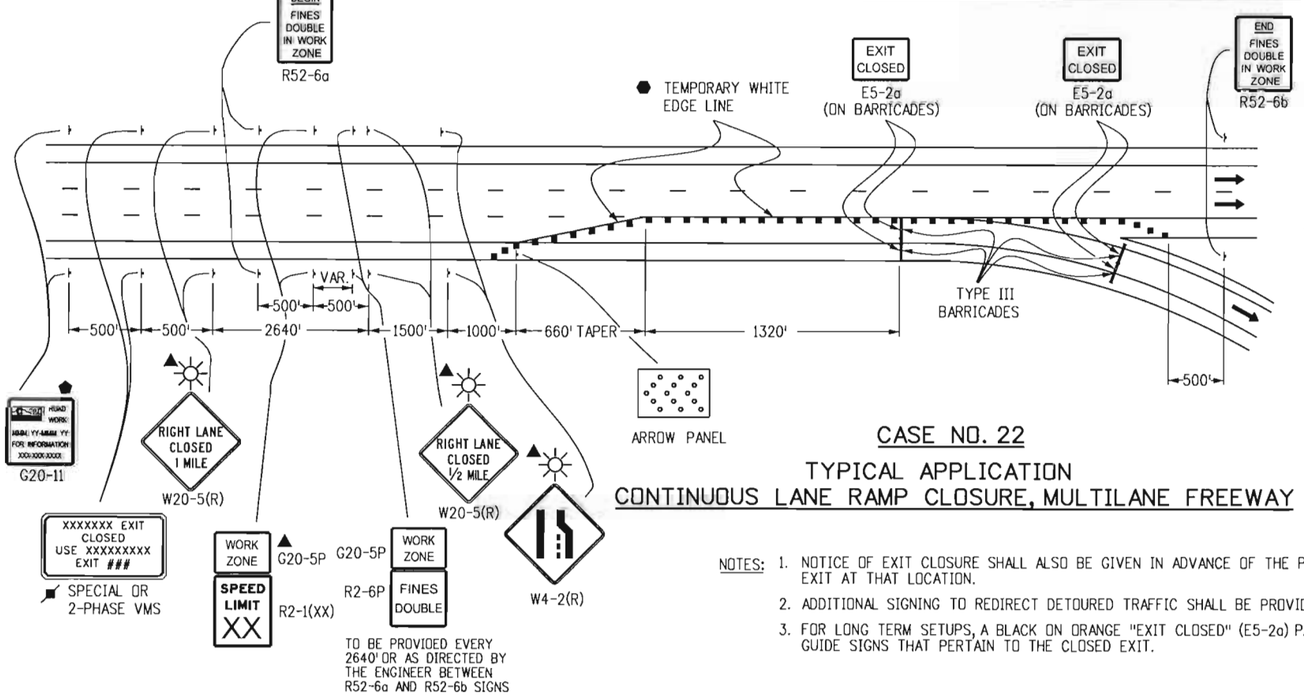
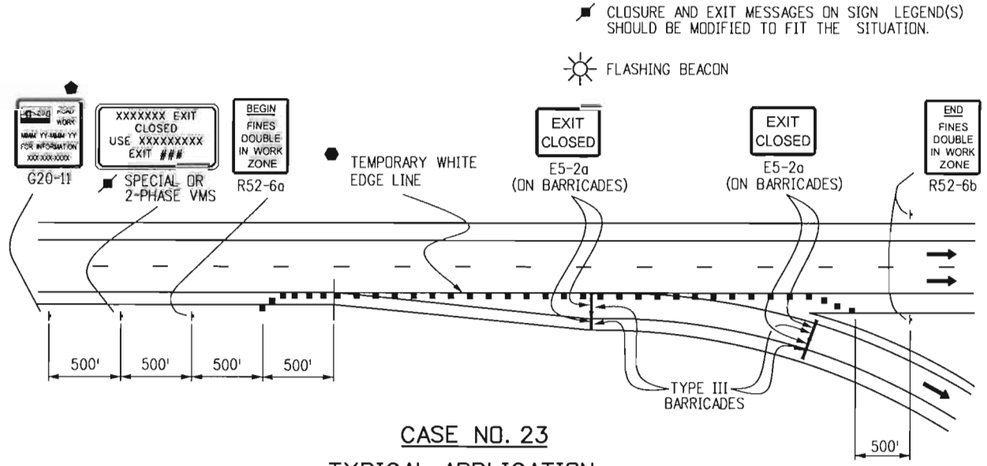


NOTE: MEASUREMENTS FOR THE LANE REDUCTION SHALL BE MEASURED FROM THE STRIPED GORE POINT.

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

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

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

Computer File Information		Sheet Revisions	
Creation Date: 07/04/06 Initials: KCM		Date:	Comments
Last Modification Date: 12/07/09 Initials: KEN	R-2	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.
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-2	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.
Drawing File Name: S-630-01 (10of19).dgn	R-3	12/07/09	
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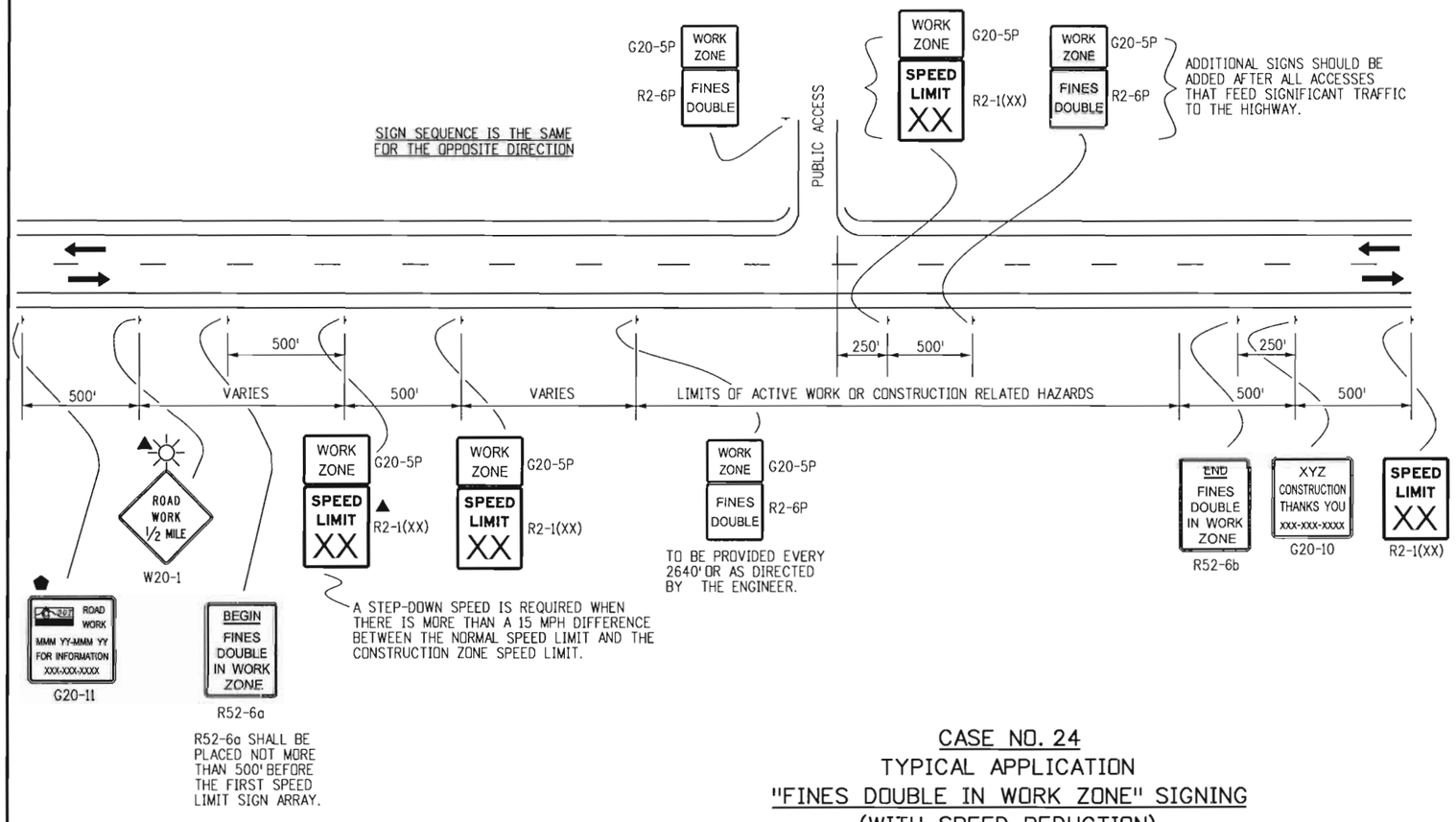

CASE NO. 24
TYPICAL APPLICATION
"FINES DOUBLE IN WORK ZONE" SIGNING
(WITH SPEED REDUCTION)

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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	Date:	Comments
(R-2)	06/24/09	DELETE CASE NO. 25 TYPICAL APPLICATION CHANGE SIZE OF G20-5 "WORK ZONE" PLAQUES
(R-2)	06/24/09	REVISED SHEET NUMBER TO 11 OF 19. ADDED OPTIONAL FLASHING BEACON TO ADVANCED WARNING SIGN.
(R-3)	12/07/09	CHANGED NOTES HEADING TO "DOUBLE FINES (SPEED REDUCTION) SIGNING NOTES. ADDED G20-11 SIGN AND ⬟ SYMBOL/NOTE.

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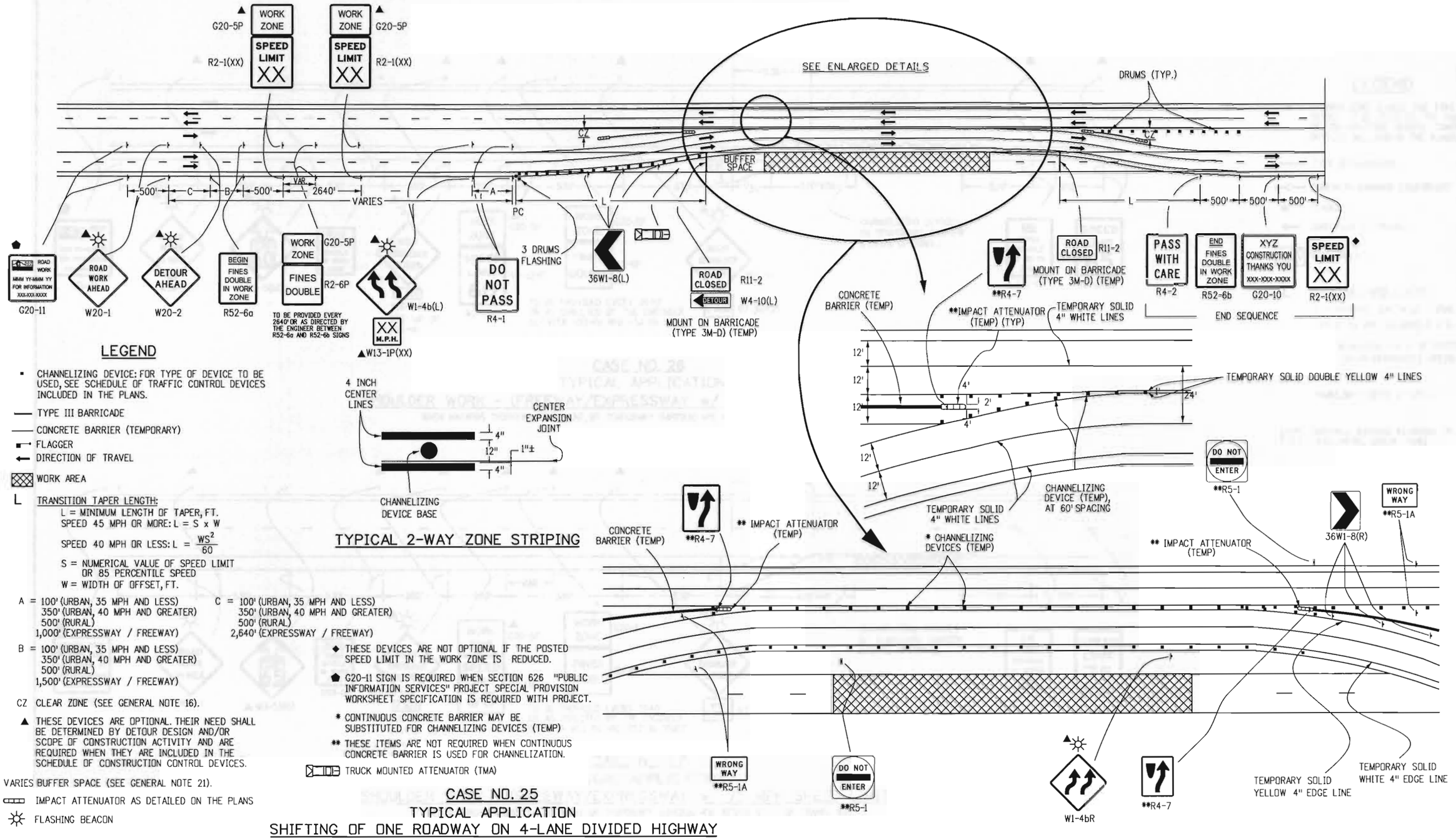

LEGEND

- ▪ 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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Creation Date: 06/24/09 Initials: KEN		Date:	Comments
Last Modification Date: 12/07/09 Initials: KEN	(R-3)	12/07/09	ADDED * SYMBOL IN SPEED LIMIT SIGN (R-1(XX)) AFTER R52-6b SIGN. ADDED R2-6 & G20-5 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.
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans			
Drawing File Name: S-630-01 (12of19).dgn			
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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.

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

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

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

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

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

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

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

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

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

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

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

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

R11-3 "RDAD CLOSED/X MILES AHEAD/L.T.D. - 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.✱

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ADVANCE PLACEMENT OF WARNING SIGNS

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

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

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

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

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

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

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R-2	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 & W22-1, W22-3 SIGNS.
R-3	12/07/09	ADDED NOTES FOR G20-11 SIGNS.

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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