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~~ Constructed
COLORADO PROJECT NO. C 131A-035
STATE HIGHWAY NO. 131
EAGLE & ROUTT COUNTY
CONSTRUCTION PROJECT CODE NO. 18861R
SH131 VARIOUS CULVERTS

Related Projects:
P. E. UNDER PROJECT: CR300-189
Project Number
Project Code: 19352

PROJECT DESCRIPTION:
THIS PROJECT IS LOCATED ALONG SH 131 BETWEEN WOLCOTT AND YAMPA.

IT IS A CULVERT REPAIR PROJECT, WHICH INCLUDES STRUCTURE EXCAVATION, REMOVAL OF ASPHALT MAT PLANING, CULVERT REPLACEMENTS, CULVERT LINING, EMBANKMENT, AGGREGATE BASE COURSE ASPHALT,AND STRIPING.

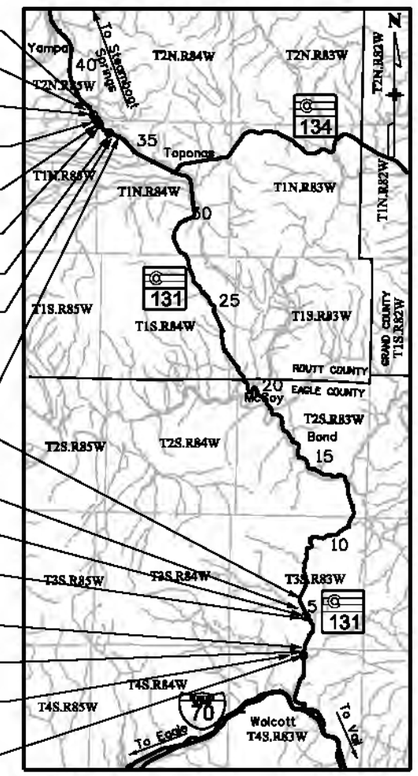
TABULATION OF LENGTH

STATION	ROADWAY SH 131 FEET	ROADWAY SH 131 MILES
BEGIN PROJECT C 131A-035 = STA 114+07 = MP 3.00		
	115.00	0.02
MP 3.09 CULVERT WORK AREA = BEGIN: STA 115+22 = MP 3 03 END: STA 121+51 = MP 3.15	629.00	0.12
	9,818.00	1.86
MP 5.13 CULVERT WORK AREA = BEGIN: STA 219+69 = MP 5 03 END: 233+49 = MP 5.29	1,380.00	0.26
NO WORK ZONE = BEGIN: STA 270+92 = MP 6 00 END: STA 291+31 = MP 35.50	154,704.00	29.30
	9,729.00	1.84
BEGIN NORTH CULVERTS WORK AREA = STA 338+60 = MP 36.40		
	6,640.00	1.31
END NORTH CULVERTS WORK AREA = STA 405+00 = MP 37.71		
	1,789.00	0.29
END PROJECT C 131A-035 = STA 422+89 = MP 38.00		
ROADWAY (NET LENGTH)	30,100.00	5.70
NO WORK ZONE	154,704.00	29.30
PROJECT GROSS LENGTH	184,804.00	35.00

DESIGN DATA FOR SH 131	
MP 3.09 DESIGN SPEED	- 50 MPH
MP 5.13 DESIGN SPEED	- 40 MPH
MP 36.42 DESIGN SPEED	- 65 MPH
MP 37.08 DESIGN SPEED	- 65 MPH
MP 37.11 DESIGN SPEED	- 65 MPH
MP 37.34 DESIGN SPEED	- 65 MPH
MP 37.70 DESIGN SPEED	- 65 MPH

TRAFFIC VOLUMES	2012	2032
ADT: MP 3 - MP 6	1,400	2,086
DHV: MP 3 - MP 6	196	292
% TRUCKS	11.2%	11.2%
ADT: MP 35.5 - MP 38	900	1,233
DHV: MP 35.5 - MP 38	126	173
% TRUCKS	8.4%	8.4%

END PROJECT C 131A-035
STA 422+89 = MP 38.00
END NORTH CULVERT WORK AREA
STA. 405+00 = MP 37.71
Culvert MP 37.70 (Chimney Creek)
Culvert MP 37.34 (Chimney Creek)
Culvert MP 37.11 (Chimney Creek)
Culvert MP 37.08 (Chimney Creek)
Culvert MP 36.42 (Chimney Creek)
BEGIN NORTH CULVERT WORK AREA
STA. 338+60 = MP 36.40
END NO WORK ZONE
STA 291+31 = MP 35.50
BEGIN NO WORK ZONE
STA 270+92 = MP 6.00
END MP 5.13 CULVERT WORK AREA
STA. 233+49 = MP 5.29
Culvert MP 5.13 (Alkali Creek)
BEGIN MP 5.13 CULVERT WORK AREA
STA. 219+69 = MP 5.03
END MP 3.09 CULVERT WORK AREA
STA. 121+51 = MP 3.15
Culvert MP 3.09 (unnamed creek)
BEGIN MP 3.09 CULVERT WORK AREA
STA. 115+22 = MP 3.03
BEGIN PROJECT C 131A-035
STA 114+07 = MP 3.00



PROJECT LOCATION MAP

0mi 3.5mi 7.0mi 14.0mi

SHEET NO.	TITLE
1	TITLE SHEET
2	STANDARD PLANS LIST
3 - 4	TYPICAL SECTIONS
5 - 6	GENERAL NOTES
7 - 9	SUMMARY OF APPROXIMATE QUANTITIES
10	SUMMARY OF EARTHWORK QUANTITIES
11	TABULATIONS OF SURFACING AND CULVERTS
12	TABULATION OF CONCRETE
13	TABULATIONS OF RIPRAP, EPOXY PAVEMENT MARKING, DELINEATORS, & FENCE
14	TABULATIONS OF WETLAND QUANTITIES & TEMPORARY WETLAND VEGETATION PROTECTION DETAIL
15	SURVEY TABULATION SHEET
16 - 21	PROJECT CONTROL DIAGRAM
22 - 24	GEOMETRY SHEETS
25 - 26	MP 3.09 PLAN, PROFILE, & DETAILS
27 - 29	MP 5.13 PLAN, PROFILE, & DETAILS
30 - 31	MP 36.42 PLAN, PROFILE, & DETAILS
32 - 34	MP 37.08 & MP 37.11 PLAN, PROFILE & DETAILS
35 - 36	MP 37.34 PLAN, PROFILE, & DETAILS
37 - 38	MP 37.70 PLAN, PROFILE, & DETAILS
39 - 44	PERMANENT & TEMPORARY WETLAND IMPACTS
45 - 46	STORMWATER MANAGEMENT PLAN NOTES & TABULATIONS
47 - 52	STORMWATER MANAGEMENT PLAN SITE MAP
53	TABULATION OF CONSTRUCTION TRAFFIC CONTROL DEVICES
54 - 75	CROSS SECTIONS

Print Date: 4/26/2013
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Horiz. Scale: As Noted Vert. Scale: N/A
Unit Information: GJ Design Unit Leader Initials: JSL

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
714 Grand Ave.
Eagle, CO, 81631
Phone: 970-328-9962 FAX: 970-328-2368
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

Contract Information
Contractor: Johnson Construction
Resident Engineer: Pete Lombardi
Project Engineer: Chad Phillips
PROJECT STARTED: 7/22/13 ACCEPTED: 12/23/13
Comments:

Project No./Code
C 131A-035
18861R
Sheet Number 1

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PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER
M-100-1		STANDARD SYMBOLS (3 SHEETS)	1-3
M-100-2		ACRONYMS AND ABBREVIATIONS (4 SHEETS)	4-7
M-203-1		APPROACH ROADS	8
M-203-2		DITCH TYPES	9
M-203-11		SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS (3 SHEETS)	10-12
M-203-12		SUPERELEVATION STREETS (2 SHEETS)	13-14
M-206-1		EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	15-16
M-206-2		EXCAVATION AND BACKFILL FOR BRIDGES (2 SHEETS)	17-18
M-208-1		TEMPORARY EROSION CONTROL (12 SHEETS)	19-30
M-210-1		MAILBOX SUPPORTS (2 SHEETS)	31-32
M-214-1		PLANTING DETAILS	33
M-412-1	☐	CONCRETE PAVEMENT JOINTS (5 SHEETS) (REVISED ON JULY 24, 2012)	~~34-38~~
M-510-1		STRUCTURAL PLATE PIPE H-20 LOADING	39
M-601-1		SINGLE CONCRETE BOX CULVERT (2 SHEETS)	40-41
M-601-2		DOUBLE CONCRETE BOX CULVERT (2 SHEETS)	42-43
M-601-3		TRIPLE CONCRETE BOX CULVERT (2 SHEETS)	44-45
M-601-10		HEADWALL FOR PIPES	46
M-601-11		TYPE "S" SADDLE HEADWALLS FOR PIPE	47
M-601-12		HEADWALLS AND PIPE OUTLET PAVING	48
M-601-20		WINGWALLS FOR PIPE OR BOX CULVERTS	49
M-603-1		METAL PIPE (4 SHEETS)	50-53
M-603-2		REINFORCED CONCRETE PIPE	54
M-603-3		PRECAST CONCRETE BOX CULVERT	55
M-603-4		CORRUGATED POLYETHYLENE PIPE (AASHTO M294)	56
M-603-5		POLYVINYL CHLORIDE (PVC) PIPE (AASHTO M304)	57
M-603-10		CONCRETE AND METAL END SECTIONS (2 SHEETS)	58-59
M-604-10		INLET, TYPE C	60
M-604-11		INLET, TYPE D	61
M-604-12		CURB INLET TYPE R (2 SHEETS)	62-63
M-604-13		CONCRETE INLET TYPE 13	64
M-604-20		MANHOLES (3 SHEETS)	65-67
M-604-25		VANE GRATE INLET (5 SHEETS)	68-72
M-605-1		SUBSURFACE DRAINS	73
M-606-1		GUARDRAIL TYPE 3 W-BEAM (19 SHEETS)	74-92
M-606-13		GUARDRAIL TYPE 7 F-SHAPE BARRIER (4 SHEETS)	93-96
M-606-14		PRECAST TYPE 7 CONCRETE BARRIER (3 SHEETS)	97-99

PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER
M-607-1		WIRE FENCES AND GATES (3 SHEETS)	100-102
M-607-2		CHAIN LINK FENCE (3 SHEETS)	103-105
M-607-3		BARRIER FENCE	106
M-607-4		DEER FENCE AND GATES (3 SHEETS)	107-109
M-607-10		PICKET SNOW FENCE	110
M-607-15		ROAD CLOSURE GATE (9 SHEETS)	111-119
M-608-1		CURB RAMPS (6 SHEETS)	120-125
M-609-1	☐	CURBS, GUTTERS, AND SIDEWALKS (4 SHEETS) (REVISED ON JULY 24, 2012).	~~126-129~~
M-611-1		CATTLE GUARD (2 SHEETS)	130-131
M-613-1		ROADWAY LIGHTING (4 SHEETS)	132-135
M-614-1		RUMBLE STRIPS (3 SHEETS)	136-138
M-614-2		SAND BARREL ARRAYS (2 SHEETS)	139-140
M-615-1		EMBANKMENT PROTECTOR TYPE 3	141
M-615-2		EMBANKMENT PROTECTOR TYPE 5	142
M-616-1		INVERTED SIPHON	143
M-620-1		FIELD LABORATORY CLASS 1	144
M-620-2		FIELD LABORATORY CLASS 2 (2 SHEETS)	145-146
M-620-11		FIELD OFFICE CLASS 1	147
M-620-12		FIELD OFFICE CLASS 2	148
M-629-1		SURVEY MONUMENTS (2 SHEETS)	149-150

PLAN NUMBER	NEW OR REVISED	S STANDARD TITLE	PAGE NUMBER
S-612-1		DELINEATOR INSTALLATIONS (7 SHEETS)	151-157
S-614-1	☐	GROUND SIGN PLACEMENT (2 SHEETS) (REVISED ON JULY 24, 2012)	~~158-159~~
S-614-2		CLASS I SIGNS	160
S-614-3		CLASS II SIGNS	161
S-614-4		CLASS III SIGNS (3 SHEETS)	162-164
S-614-5		BREAK-AWAY SIGN SUPPORT DETAILS FOR GROUND SIGNS (2 SHEETS)	165-166
S-614-6		CONCRETE FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS (2 SHEETS)	167-168
S-614-8	☐	TUBULAR STEEL SIGN SUPPORT DETAILS (5 SHEETS) (REVISED ON MARCH 5, 2013)	~~169-173~~
S-614-9		PEDESTRIAN PUSH BUTTON POST ASSEMBLY	174
S-614-10		MARKER ASSEMBLY INSTALLATIONS	175
S-614-11		MILEPOST SIGN DETAIL FOR HIGH SNOW AREAS	176
S-614-12		STRUCTURE NUMBER INSTALLATION	177
S-614-14		FLASHING BEACON AND SIGN INSTALLATIONS (3 SHEETS)	178-180
S-614-20		TYPICAL POLE MOUNT SIGN INSTALLATIONS	181
S-614-21		CONCRETE BARRIER SIGN POST INSTALLATIONS	182
S-614-22		TYPICAL MULTI-SIGN INSTALLATIONS	183
S-614-40		TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS (5 SHEETS)	184-188
S-614-40A	☐	ALTERNATIVE TRAFFIC SIGNAL INSTALLATION DETAILS (4 SHEETS) (REVISED ON SEPTEMBER 25, 2012)	~~189-192~~
S-614-41		PEDESTAL POLE AND TEMPORARY SPAN WIRE SIGNALS	193
S-614-42		CABINET FOUNDATION DETAIL (4 SHEETS)	194-197
S-614-43		TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS (10 SHEETS)	198-207
S-614-50	☐	STATIC SIGN MONOTUBE STRUCTURES (12 SHEETS) (REVISED ON NOVEMBER 28, 2012)	~~208-219~~
S-614-60	☐	DYNAMIC SIGN MONOTUBE STRUCTURES (14 SHEETS) (REVISED ON NOVEMBER 28, 2012)	~~220-233~~
S-627-1	■	PAVEMENT MARKINGS (5 SHEETS) (REVISED ON OCTOBER 18, 2012)	~~234-238~~
S-630-1	■	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (20 SHEETS) (REVISED ON FEBRUARY 27, 2013)	~~239-258~~
S-630-2		BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP) AND VERTICAL PANELS	259
S-630-3		FLASHING BEACON (PORTABLE) DETAILS	260
S-630-4		STEEL SIGN SUPPORT (TEMPORARY) INSTALLATION DETAILS (2 SHEETS)	261-262
S-630-5	☐	PORTABLE RUMBLE STRIPS (TEMPORARY) (2 SHEETS) (REVISED ON JANUARY 24, 2013)	~~263-264~~
S-630-6		EMERGENCY PULL-OFF AREA (TEMPORARY)	265
S-630-7		ROLLING ROADBLOCKS FOR TRAFFIC CONTROL (3 SHEETS)	266-268

COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 04, 2012

Revised on March 5, 2013

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

NEW OR REVISED STANDARD PLAN SHEETS APPLICABLE TO THIS PROJECT, INDICATED BY A MARKED BOX ■, WILL BE ATTACHED TO THE PLANS.

Print Date: 3/15/2013
File Name: 18861DES_StandardPlansList.dgn
Horiz. Scale: 1:1 Vert. Scale:
Unit Information: GJ Design JSL

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
714 Grand Ave
Eagle, CO 81631
Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

STANDARD PLANS LIST

Designer: J. Klish
Detailer: J. Klish
Subset: StdPlanList
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
C 131A-035
18861R
Sheet Number 2

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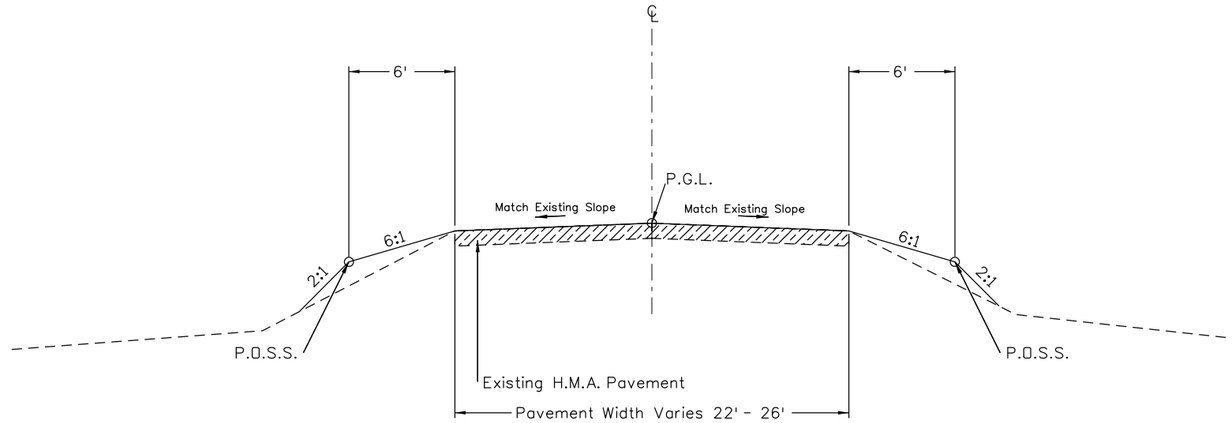
Sideslope Widening Typical Sections

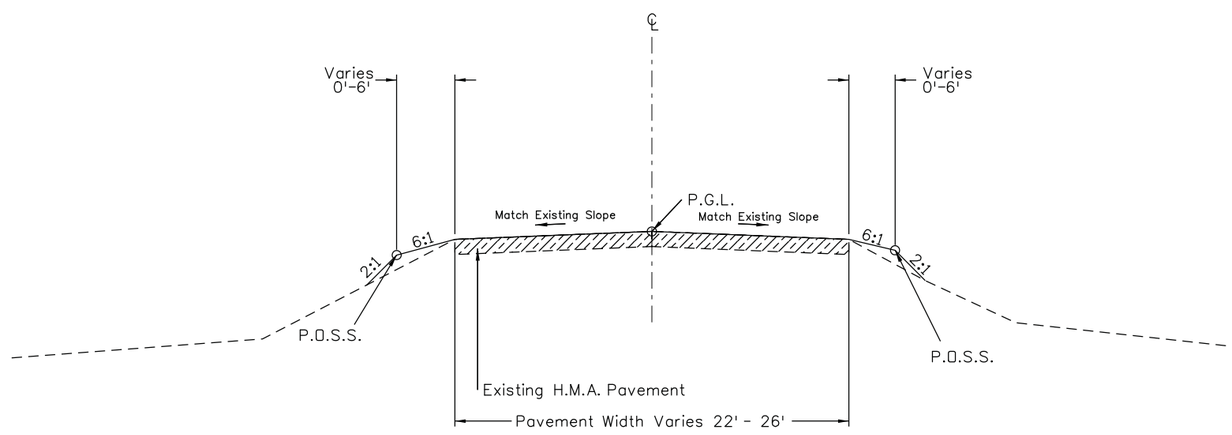
Sta. 342+75 to Sta. 343+75, Sta. 375+20 to Sta. 376+20
Sta. 387+70 to Sta. 388+70, Sta. 401+30 to Sta. 402+30



No Work Locations:
Sta. 344+25 to Sta. 374+70
Sta. 376+70 to Sta. 387+20
Sta. 389+20 to Sta. 400+80

Sideslope Widening Transition Typical Sections

Sta. 342+25 to Sta. 342+75, Sta. 343+75 to Sta. 344+25
Sta. 374+70 to Sta. 375+20, Sta. 376+20 to Sta. 376+70
Sta. 387+20 to Sta. 387+70, Sta. 388+70 to Sta. 389+20
Sta. 400+80 to Sta. 401+30, Sta. 402+30 to Sta. 402+80



P.G.L. ~ Profile Grade Line
H.M.A. ~ Hot Mix Asphalt
P.O.S.S. ~ Point of Slope Selection

Print Date: 3/1/2013			
File Name: 18861DES_TypISect02.dgn			
Horiz. Scale: NTS	Vert. Scale: NTS		
Unit Information: GJ Design	JSL		

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
DOT
DEPARTMENT OF TRANSPORTATION
714 Grand Ave.
Eagle, CO 81631
Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

TYPICAL SECTIONS

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset:	TS	Subset Sheets: 1 of 2	

Project No./Code
C 131A-035
18861R
Sheet Number 3

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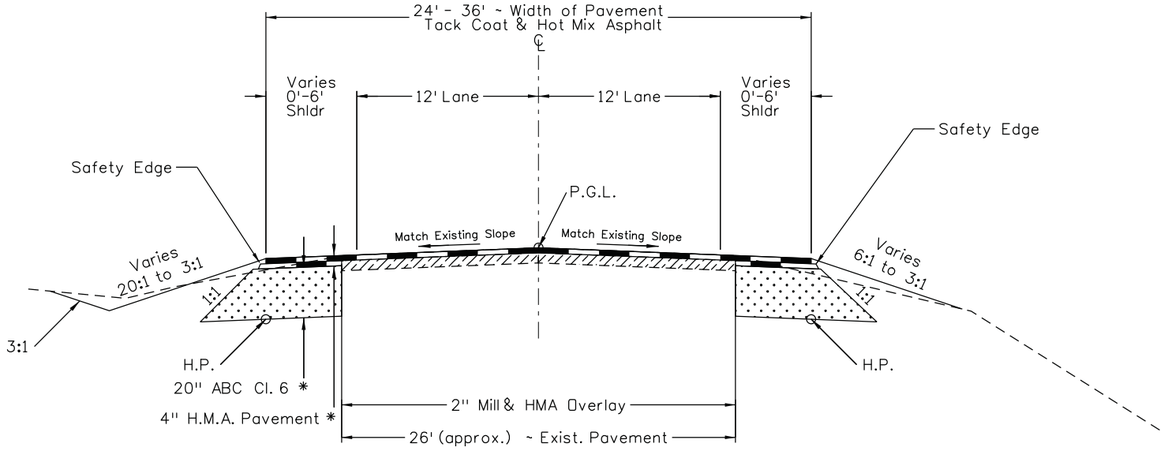
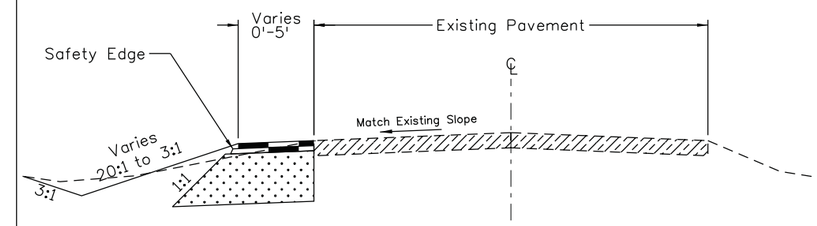
Milling & Widening Typical Section for MP 3.09

Sta. 116+25 to Sta. 118+00;
Sta. 118+40 to Sta. 120+50



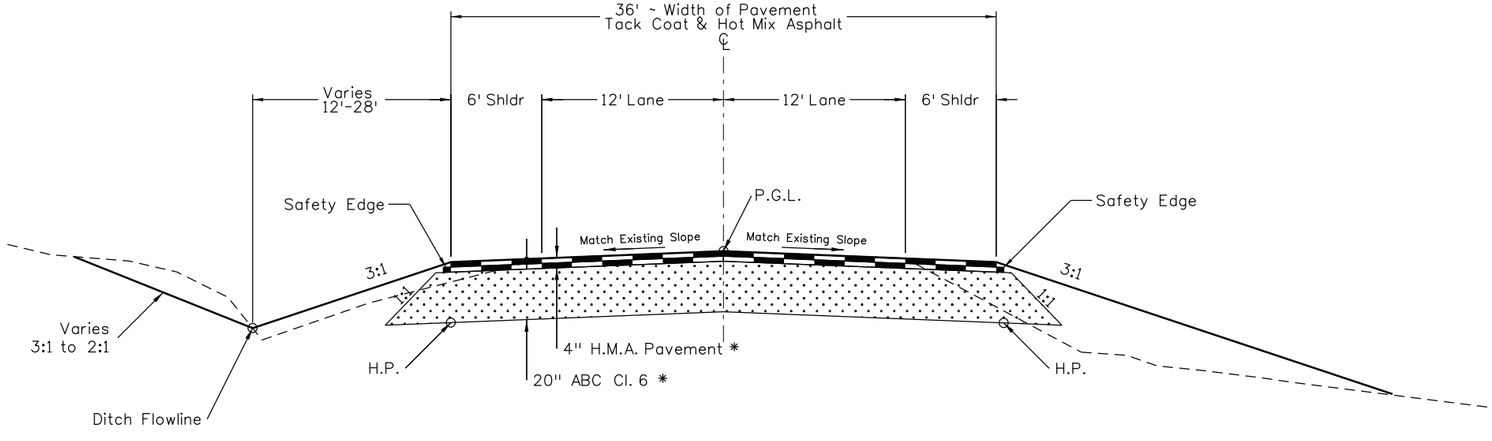
MILK CREEK ROAD SHOULDER DETAIL

Sta. 117+15 TO 117+40 LT
(Facing east toward SH 131)



Full Depth Typical Section for MP 3.09

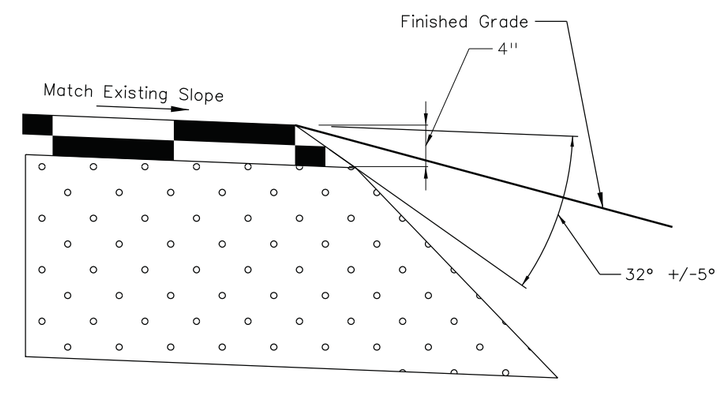
Sta. 118+00 to Sta. 118+40



*	~ Match or exceed existing structural depths of material
ABC Cl. 6	~ Aggregate Base Course (Class 6)
P.G.L.	~ Profile Grade Line
H.M.A.	~ Hot Mix Asphalt
H.P.	~ Hinge Point

SAFETY EDGE DETAIL

(NOT TO SCALE)



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Horiz. Scale: NTS	Vert. Scale: NTS		
Unit Information: GJ Design	JSL		

Colorado Department of Transportation
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Region 03 PJL

As Constructed	TYPICAL SECTIONS			Project No./Code
No Revisions: 12/23/13				C 131A-035
Revised:	Designer: J. Klish	Structure Numbers		18861R
	Detailer: J. Klish			
Void:	Subset: TS	Subset Sheets: 2 of 2		Sheet Number 4

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GENERAL NOTES

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

Tack Coat Diluted Emulsified Asphalt.....@ 0.1 Gals./Sq. Yd.(Diluted)
Hot Mix Asphalt .....@ 110 Lbs./Sq. Yd./Inch
Aggregate Base Course Class 6.....@ 133 Lbs./Cu. Ft.

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

Water shall be used as a dust palliative where required. Application shall be as directed by the Project Engineer. Water as a dust palliative and any other wetting shall be included in the work and will not be paid separately.

The following shall be furnished with each bituminous paver:

1. A ski type device at least 30 Feet in length.
2. Short ski or shoe.
3. 50 Feet of control line and stakes.

Water source required for moisture/density control shall be the Contractor's responsibility and shall be free of excessive sediments or other contaminates that may be detrimental to embankments, subbases, and base course materials.

Any layer of hot mix asphalt that is to have a succeeding layer placed thereon shall be completed full width before succeeding layer is placed. The top lift of Hot Mix Asphalt shall be treated as an overlay; it shall not be placed until all other work, including widening and reconstruction that require a lower layer of hot mix asphalt, has been completed.

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

All slopes shall be roughened as directed by the Engineer. Costs asscciated with this order shall be incidental to the work.

No vertical slopes shall be left overnight unprotected. All unprotected vertical slopes shall be flattened to a 4:1 side slope prior to the end of the work day, or as directed by the Engineer.

The Contractor shall not stockpile material, park vehicles, or place equipment within 30 Ft of the edge of the traveled way.

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

The Contractor shall coordinate the shouldering operation such that full compliance to the existing grades is obtained on a daily basis following the paving operation for the affected area unless otherwise approved by the Project Engineer.

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

Where it is required to cut the existing asphalt, the cutting shall be done to a neat work line with a saw or as approved by the Engineer. Cut faces shall not remain overnight. This work will not be paid for separately, but shall be considered subsidiary to the work.

Moisture-density control will be required for the full depth of all embankments and 6 inches in base of cuts and fills on this project.

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

Structure Backfill Class 1 shall be used in the backfilling of pipes to 1 foot above the pipe.

It is estimated that the following items will be required on this project for miscellaneous work as directed by the Project Engineer:

- (201-00000) Clearing and Grubbing - 1 LS
- (203-01500) Blading - 10 Hours with a motor grader in the 130 to 160 flywheel horsepower range
- (203-01510) Backhoe - 20 Hours
- (203-01550) Dozing - 10 Hours
- (203-01597) Potholing - 20 Hours
- (203-01620) Sweeping - 40 Hours
- (203-02330) Laborer - 20 Hours
- (206-01781) Shoring (Area 1) - 1 LS
- (206-01782) Shoring (Area 2) - 1 LS
- (206-01783) Shoring (Area 3) - 1 LS
- (625-00000) Construction Surveying - 1 LS
- (625-00001) Construction Surveying (Hourly) - 25 Hours
- (626-01000) Public Information Services - 1 LS

The Field Office (Class 2) and Field Laboratory (Class 2) shall be provided with a high speed internet connection compatible with the CDOT internet system. This will be considered subsidiary to the pay items for Field Office (Class 2) and Field Laboratory (Class 2) and will be paid for by the Contractor. Trailers will be parked at the Wolcott Maintenance Yard at 26773 HWY 6, Wolcott Colorado 81655.

Clearing and Grubbing shall include removal and disposal of all trees, logs, limbs, brush, and trash, etc. to an offsite location.

Final striping will begin at a point that matches the adjacent striping location and spacing.

The Contractor shall be required to log type, size, color and location of existing lane markings for duplication prior to paving operations. All lane markings shall be laid out by the contractor on the new surface for final striping. This work will not be measured and paid for separately but will be included in the cost of pavement marking.

The Contractor shall be required to field verify lengths, diameters, elevations, locations, and thickness before ordering materials.

The Contractor shall be responsible to obtain any additional boring logs and/or soil information. Contractor should anticipate cobble or boulders while digging.

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

Right-Of-Way lines shall be staked at each culvert location. Fence (Plastic) shall be placed to delineate right-of-way.

The following clear zone criteria shall be used during this project: 30'.

For extension of existing pipes and/or CBC's, the Contractor shall field verify all sizes and flow line elevations prior to ordering materials. The Contractor or his Subcontractor shall immediately notify the Engineer whenever field conditions or existing terrain would result in a less than optimal installation of said items.

Sulfate Resistant Concrete for this project shall be Class 2.

Contractor shall work with landowners prior to modifying accesses.

This project is designated as Non-Significant.

GENERAL NOTES

Livestock may be pastured in various fields adjacent to the project during the construction of this project. In order to protect and control livestock, the Contractor shall install and maintain temporary fence of a type and at locations approved by the Engineer as needed during construction. The Contractor shall maintain the temporary fence in such condition that it is capable of performing its intended function until such time as the permanent fence is completed. This will not be paid for separately, but shall be included in the cost of the fencing items.

The Contractor shall pay special attention to the protection of water quality and stormwater pollution prevention as shown in subsection 107.25 of the Standard Specifications and Special Provisions.

Stormwater Management will require multiple seeding operations. These multiple operations shall be included in the cost of Seeding and Mulching.

The Contractor must plan on at least three mobilizations for final stabilization of the sites as per the Stormwater Management Plan. This will not be paid for separately but included in the work.

Aquatic Invasive Species

Equipment and gear that were previously used in another stream, river, lake, pond, or wetland, and which are to be used in or near waters on the project, shall be treated to prevent the spread of aquatic invasive species. These species include, but are not limited to:

(1) New Zealand Mud Snails
(2) Zebra Mussels
(3) Quagga Mussels
(4) Whirling Disease
(5) All other aquatic invasive species

Equipment that shall be treated includes all parts of machinery and vehicles of all types and sizes that came into contact with the live water. Gear that must be treated include boots, waders, tools, and all other materials and attire used previously in live water.

The Contractor shall use one of the following two treatments:

(1) Remove all mud and debris from equipment and gear. Then spray or soak the equipment and gear with a 1:15 solution of Sparquat institutional cleaner and water. Equipment and gear shall be kept moistened with the solution for at least 10 minutes.
(2) Remove all mud and debris from equipment and gear. Then spray or soak equipment and gear with water heated to a temperature greater than 140°F for at least 10 minutes.

Prior to moving such equipment onto the project, the Contractor shall submit to the Engineer a written list of the equipment and a signed certification that it was treated using one of the two methods specified above.

After project completion, this equipment shall be treated prior to its use in another stream, river, lake, pond, or wetland.

Utility Notes

The contractor shall comply with article 1.5 of title 9, CRS ("Excavation Requirements") when excavating or grading is planned in the area of underground utility facilities. The Contractor shall notify all affected utilities at least two (2) business days, not including the actual day of notice, prior to commencing such operations. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at 811 or 1-800-922-1987, to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective owner. For CDOT owned utility facilities the contractor shall call the CDOT Region 3 Traffic section at 970-683-6271 to request locates. CDOT is not contacted when locates are requested through the UNCC. Utility service laterals shall also be located prior to beginning excavation or grading.

The Contractor shall be responsible for contacting and coordinating with the appropriate utility representatives to be onsite during potholing and shall likewise be responsible for determining the type and location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall refer to the utility specification for additional requirements.

Existing utility lines as shown on the plan sheets are plotted from the best available information (ACSE Standard Quality Level B). The Contractor shall be responsible for verifying the location and depth of all existing utilities as necessary to insure the utilities will not be impacted by the construction activities. It is also the responsibility of the Contractor to call for utility locates.

The Contractor's attention is directed to Subsection 105.11 of the Standard Specifications and the Utility Project Special Provisions concerning utilities. The Contractor shall coordinate and cooperate with the utility owners in their removal, adjustment, and/or relocation operations so that the utility work can be accomplished without impacting the construction schedule.

Location and notification of both UNCC member and non member utilities is the Contractor's responsibility.

Project Utility Contacts

CENTURYLINK Fiber and Tele MP 36-38	ANNA KENNER	970-879-3661 Cell: 970-819-0776
CENTURYLINK Fiber and Tele MP 3-5	BARB DAVIS	970-328-8288
VARIOUS MEMBER UTILITIES - (Utilities Notification Center of Colorado)		1-800-922-1987

INDEX REF # BOOK	PAGE	SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY PLAN	ROADWAY AS CONST.	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.
	00	05	201-00000	Clearing and Grubbing	L S	1	1	1	
	00	10	202-00001	Removal of Structure	EACH	1	1	1	
	00	15	202-00035	Removal of Pipe	LF	72	72	72	72
	00	20	202-00090	Removal of Delineator	EACH	10	10	10	10
	00	25	202-00220	Removal of Asphalt Mat	SY	107	119	107	119
	00	30	202-00240	Removal of Asphalt Mat (Planing)	SY	1,027	1196	1,027	1196
	00	35	202-00500	Removal of Portions of Present Structure	EACH	8	8	8	8
	00	40	202-01000	Removal of Fence	LF	550	52	550	52
	00	45	203-00060	Embankment Material (Complete In Place)	CY	1,982	1982	1,982	1982
	00	50	203-00100	Muck Excavation	CY	100	28	100	28
	00	55	203-01500	Blading	HOUR	10	2	10	2
	00	60	203-01510	Backhoe	HOUR	20	57	20	57
	00	65	203-01550	Dozing	HOUR	10	0	10	0
	00	70	203-01597	Potholing	HOUR	20	6	20	6
	00	75	203-01620	Sweeping	HOUR	40	22	40	22
	00	80	203-02330	Laborer	HOUR	20	79	20	79
	00	85	206-00000	Structure Excavation	CY	415	415	415	415
	00	90	206-00065	Structure Backfill (Flow-Fill)	CY	46	59	46	59
	00	95	206-00100	Structure Backfill (Class 1)	CY	116	299	116	299
	01	00	206-01781	Shoring (Area 1)	L S	1	1	1	1
	01	05	206-01782	Shoring (Area 2)	L S	1	1	1	1
	01	10	206-01783	Shoring (Area 3)	L S	1	1	1	1
	01	15	207-00305	Wetland Topsoil	CY	56	63	56	63
	01	20	207-00310	Stockpile Wetland Topsoil	CY	56	63	56	63
	01	25	208-00002	Erosion Log (12 Inch)	LF	2,360	2030	2,360	2030
	01	30	208-00045	Concrete Washout Structure	EACH	6	4	6	4
	01	35	208-00070	Vehicle Tracking Pad	EACH	6	1	6	1
	01	40	208-00103	Removal and Disposal of Sediment (Labor)	HOUR	30	0	30	0
	01	45	208-00105	Removal and Disposal of Sediment (Equipment)	HOUR	30	0	30	0
	01	50	209-00600	Dust Palliative (Magnesium Chloride)	GAL	500	0	500	0
	01	55	212-00006	Seeding (Native)	ACRE	2	2	2	2
	01	60	212-00032	Soil Conditioning	ACRE	2	2	2	2
	01	65	213-00003	Mulching (Weed Free)	ACRE	0.6	1.8	0.6	1.8

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Unit Information: GJ Design JSL

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
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As Constructed
No Revisions: 12/23/13
Revised:
Void:

SUMMARY OF APPROXIMATE QUANITITIES

Designer: J. Klish
Detailer: C. Morgan
Subset: SAQ
Structure Numbers
Subset Sheets: 1 of 3

Project No./Code
C 131A-035
18861R
Sheet Number 7

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INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY PLAN	ROADWAY AS CONST.	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.
	01	70	213-00061	Mulch Tackifier	LB	120	188	120	188
	01	75	216-00015	Soil Retention Blanket (Excelsior)	SY	6,776	1164	6,776	1164
	01	80	240-00000	Wildlife Biologist	HOUR	40	29	40	29
	01	85	304-03005	Aggregate Base Course (Class 3)	CY	85	37	85	37
	01	90	304-06007	Aggregate Base Course (Class 6)	CY	534	352	534	352
	01	95	403-34721	Hot Mix Asphalt (Grading SX) (75) (PG 58-28)	TON	283	280.32	283	280.32
	02	00	411-10255	Emulsified Asphalt (Slow-Setting)	GAL	86	50	86	50
	02	05	420-00133	Geotextile (Separator) (Class 2)	SY	356	130	356	130
	02	10	506-00212	Riprap (12 Inch)	CY	4	16	4	16
	02	15	601-01050	Concrete Class B (Wall)	CY	90	117.6	90	117.6
	02	20	601-06300	Cement Grout	CF	250	152.1	250	152.1
	02	25	602-00000	Reinforcing Steel	LB	6,354	7115	6,354	7115
	02	30	603-00001	Annular Space Grouting	CY	62	65.4	62	65.4
	02	35	603-00042	Culvert Lining (42 Inch)	LF	56	56	56	56
	02	40	603-00054	Culvert Lining (54 Inch)	LF	192	192	192	192
	02	45	603-00073	Culvert Lining (72 Inch)(Special)	LF	100	100	100	100
	02	50	607-01000	Fence Barbed Wire with Metal Posts	LF	450	57	450	57
	02	55	607-11525	Fence (Plastic)	LF	3,020	1986	3,020	1986
	02	60	612-00003	Delineator (Type III)	EACH	10	10	10	10
	04	05	620-00002	Field Office (Class 2)	EACH	1	1	1	1
	04	10	620-00012	Field Laboratory (Class 2)	EACH	1	0	1	0
	04	15	620-00020	Sanitary Facility	EACH	1	1	1	1
	02	65	624-24061	60 Inch Drainage Pipe (Class 4) (Complete In Place)	LF	25	25	25	25
	02	70	624-29061	60 Inch Drainage Pipe (Class 9) (Complete In Place)	LF	74	75	74	75
	02	75	625-00000	Construction Surveying	L S	1	1	1	1
	02	80	625-00001	Construction Surveying (Hourly)	HOUR	25	0	25	0
	02	85	626-00000	Mobilization	L S	1	1	1	1
	02	90	626-01000	Public Information Services	L S	1	1	1	1
	02	95	627-00005	Epoxy Pavement Marking	GAL	18	3	18	3
	03	00	630-00000	Flagging	HOUR	1,560	1527	1,560	1527
	03	05	630-00007	Traffic Control Inspection	DAY	40	33	40	33
	03	10	630-00012	Traffic Control Management	DAY	65	87	65	87

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As Constructed
No Revisions: 12/23/13
Revised:
Void:

SUMMARY OF APPROXIMATE QUANITITIES

Designer: J. Klish
Detailer: C. Morgan
Subset: SAQ
Structure Numbers
Subset Sheets: 2 of 3

Project No./Code
C 131A-035
18861R
Sheet Number 8

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INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY PLAN	ROADWAY AS CONST.	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.
	03	15	630-80336	Barricade (Type 3 M-B) (Temporary)	EACH	4	1	4	1
	03	20	630-80341	Construction Traffic Sign (Panel Size A)	EACH	26	3	26	3
	03	25	630-80342	Construction Traffic Sign (Panel Size B)	EACH	60	46	60	46
	03	30	630-80344	Construction Traffic Sign (Special)	SF	25	0	25	0
	03	35	630-80355	Portable Message Sign Panel	EACH	2	2	2	2
	03	40	630-80360	Drum Channelizing Device	EACH	50	28	50	28
	03	45	630-80363	Drum Channelizing Device (With Light) (Flashing)	EACH	20	4	20	4
	03	50	630-80364	Drum Channelizing Device (With Light) (Steady Burn)	EACH	20	2	20	2
	03	55	630-80367	Portable Traffic Speed Monitor	EACH	1	1	1	1
	03	60	630-80370	Concrete Barrier (Temporary)	LF	300	300	300	300
	03	65	630-80380	Traffic Cone	EACH	300	63	300	63
	03	70	630-85010	Impact Attenuator (Temporary)	EACH	2	2	2	2
	03	75	630-86800	Traffic Signal (Temporary)	L S	1	1	1	1
				FORCE ACCOUNT ==========					
	03	80	700-70010	F/A Minor Contract Revisions	F A	1	0	1	0
	03	85	700-70011	F/A Partnering	F A	1	2,000	1	2,000
	03	90	700-70016	F/A Fuel Cost Adjustment	F A	1	0	1	0
	30	95	700-70019	F/A Asphalt Cement Cost Adjustment	F A	1	1,638.26	1	1,638.26
	04	00	700-70130	F/A Repair	F A	1	0	1	0
				CMO					
	05	00	900-00006	Added Pumping Costs	006		26,634.57		26,634.57

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Unit Information: GJ Design JSL

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SUMMARY OF APPROXIMATE QUANITITIES

Designer: J. Klish
Detailer: C. Morgan
Subset: SAQ
Structure Numbers
Subset Sheets: 3 of 3

Project No./Code
C 131A-035
18861R
Sheet Number 9

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SUMMARY OF EARTHWORK QUANTITIES

INDEX Book	Page	Sheet			PROJECT TOTAL	
			STRUCTURE EXCAVATION (206-00000)		CU. YD.	*As Const*
			ROADWAY & STRUCTURE:	MP 3.09	252	252
			WINGWALLS & HEADWALLS:	MP 5.13	13	13
				MP 36.42	30	30
				MP 37.08	30	30
				MP 37.11	30	30
				MP 37.34	30	30
				MP 37.70	30	30
				TOTAL FOR PAY QUANTITIES	415	415
			MUCK EXCAVATION (203-00100)		CU. YD.	*As Const*
			QUANTITY APPROXIMATED:		100	28
				TOTAL	100	28
			WETTING (FOR INFORMATION ONLY)		M GAL.	*As Const*
			SURFACING (0.022 M GAL/TON)		38.1	
			EMBANKMENT (CIP) (0.04 M GAL / CY)		79.28	
				TOTAL	117.38	
			EMBANKMENT MATERIAL (CIP)(203-00060)		CU. YD.	*As Const*
			QUANTITY CALCULATED FROM INROADS:	MP 3.09	336	336
				MP 5.13	0	0
				MP 36.42	235	235
				MP 37.08	0	0
				MP 37.11	469	469
				MP 37.34	285	285
				MP 37.70	380	380
				CARRIED FROM WETLAND QUANTITIES	277	277
				TOTAL FOR PAY QUANTITIES	1982	1982

INDEX Book	Page	Sheet	ROADWAY QUANTITIES BALANCE (FOR INFORMATION ONLY)	PROJECT TOTAL CU. YD.	*As Const*
			Total Structure Excavation	415	415
			Total Embankment (net)	1982	1982
			EMBANKMENT TIMES FACTOR 1.15	2279	2279
					1864
			Import Embankment	1864	
			(Material to be Imported by Contractor)		

NOTES:
TOP 4 INCHES OF ALL EMBANKMENT SHALL BE FREE OF DEBRIS AND ROCKS OR CLODS GREATER THAN 3 INCHES IN DIAMETER, AND SHALL BE SUITABLE AS NATIVE TOPSOIL.
ALL IMPORTED EMBANKMENT MATERIAL SHALL MEET A MINIMUM OF R-VALUE = 40.
MUCK EXCAVATION SHALL BE AS DIRECTED BY THE PROJECT ENGINEER.

SURFACING TABULATION

STATION	LAYER	(304-06007) AGGREGATE BASE COURSE (CLASS 6) ◐		(403-34721) * HOT MIX ASPHALT (GRADING SX) (75) (PG 58-28) ◐		(411-10255) EMULSIFIED ASPHALT (SLOW-SETTING) ◐		(202-00220) REMOVAL OF ASPHALT MAT		(202-00240) REMOVAL OF ASPHALT MAT (PLANING)**		(209-00600) DUST PALLIATIVE (MAGNESIUM CHLORIDE)	
		CY		TON		GALLON		SY				GALLON	
		Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const
MP 3.09													
116+25.00 TO 118+00.00	TOP			77	77	35				467	549		
116+25.00 TO 118+00.00	BOTTOM	184	91.3	28	28								
118+00.00 TO 118+40.00	TOP			18	18	8		107	119			500	0
118+00.00 TO 118+40.00	BOTTOM	101	56.4	18	18								
118+40.00 TO 120+50.00	TOP			93	93	42				560	647		
118+40.00 TO 120+50.00	BOTTOM	221		34	34								
Milk Creek Road													
117+15.00 to 117+40.00	FULL	14	6.7	3	0	1							
5% IRREGULARITIES		14		12	12								
PROJECT TOTAL		534	352*	283	280.32	86	50	107	119	1027	1196	500	0

** REMOVAL OF ASPHALT MAT (PLANING) SHALL BE 2" DEEP.

*304-06007 - 24 CV Added at MP 37.08

◐ CONTRACTOR SOURCE

HMA DESIGN	
* ASPHALT CEMENT CONTENT:	6.0%
18 kESAL	600,000
DESIGN YEARS	20
PSI LOSS	2.0
RELIABILITY	80%
R VALUE DESIGN	5
STRUCTURAL NUMBER	4
HMA STRUCTURAL COEFFICIENT	0.44
PAVEMENT THICKNESS	4 INCHES
OVERLAY THICKNESS	2 INCHES
ABC (CL 6) STRUCTURAL COEFFICIENT	0.12
ABC (CL 6) THICKNESS	20 INCHES

TABULATION OF CULVERTS

Location	For Info Only	202-00001		202-00500		202-00035		206-00065		206-00100		304-03005		601-06300		603-00001		603-00042		603-00054		603-00073		624-24061		624-29061	
	Existing Pipe	Removal of Structure		Removal of Portions of Present Structure		Removal of Pipe		Structure Backfill (Flow-fill)		Structure Backfill (Class 1)		Aggregate Base Course (Class 3)		Cement Grout		Annular Space Grouting		Culvert Lining (42 Inch)		Culvert Lining (54 Inch)		Culvert Lining (72 Inch) (Special)		60 Inch Drainage Pipe (Class 4) (CIP)		60 Inch Drainage Pipe (Class 9) (CIP)	
	LF	EACH		EACH		LF		CY		CY		CY		CF		CY		LF		LF		LF		LF		LF	
	Plan	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const
MP 3.09 Culvert	72					72	72	46	46																	74	75
STA. 118+20										30	65																
MP 5.13 Culvert	100								13													100	100				
STA. 224+90										10				50	54												
MP 36.42 Culvert	41			2	2											10	11.20	56	56								
STA. 343+25										15	42			50	13												
MP 37.08 Side	25	1	1																					25	25		
STA. 372+42 LT										17	35																
MP 37.11 Culvert	53			2	2											18	18.18			69	69						
STA. 375+72										15	60.4			50	34												
MP 37.34 Culvert	49			2	2											17	18.92			61	61						
STA. 388+21										14	42.6			50	30												
MP 37.70 Culvert	48			2	2											17	18.14			62	62						
STA. 401+82										15	54.0			50	22												
To replace																											
muck excavation												85	37														
PROJECT TOTAL		1	1	8	8	72	72	46	59	116	299	85	37	250	1521	62	68.4	56	56	192	192	100	100	25	25	74	75

NOTES:

1. The Contractor shall be responsible for diverting water, dewatering, and cleaning culverts during construction. This work will not be paid for separately, but included in the cost of the work.
2. Concrete from both Removal of Structure and Removal of Portions of Present Structure may be disposed of per Specification 203 in areas approved by the Project Engineer.
3. Structure Backfill (Class 1) shall be placed around headwalls and wingwalls.

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Unit Information: GJ Design JSL

Sheet Revisions

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As Constructed
No Revisions:
Revised: 12/23/13
Void:

TABULATIONS OF SURFACING AND CULVERTS

Designer: J. Klish
Detailer: J. Klish
Subset: TAB
Structure Numbers
Subset Sheets: 1 of 4

Project No./Code
C 131A-035
18861R
Sheet Number 11

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TABULATION OF CONCRETE

Location	SIDE	601-01050 CONCRETE CLASS B (WALL) CY Plan	601-01050 CONCRETE CLASS B (WALL) CY As Const	602-00000 REINFORCING STEEL LB Plan	602-00000 REINFORCING STEEL LB As Const
MP 3.09					
MP 3.09 Headwalls	LT	2.5	2.53	248	253.6
	RT	2.8	2.82	269	282.8
MP 3.09 Wingwalls	LT	3.3	7.83	134	272.8
	RT	5.6	11.75	256	426.4
MP 3.09 Toewalls	LT	1.6	1.38	112	95.9
	RT	1.9	1.96	133	136.0
MP 3.09 Sub-Total =		*17.7*	28.28	*1152*	1467.5
MP 5.13					
MP 5.13 Headwall	RT	4.4	4.4	293	293
MP 5.13 Sub-Total =		*4.4*	4.4	*293*	293
MP 36.42					
MP 36.42 Headwalls	LT	2.3	2.34	232	234.1
	RT	2.2	2.24	231	223.5
MP 36.42 Wingwalls	LT	2.0	4.02	82	162.6
	RT	2.0	4.02	80	162.6
MP 36.42 Apron	LT	0.5	0.84	74	40.4
	RT	0.5	0.84	74	40.4
MP 36.42 Toewalls	LT	1.1	1.01	74	69.7
	RT	1.1	1.01	74	69.7
MP 36.42 Sub-Total =		*11.7*	16.32	*921*	1003
MP 37.08					
MP 37.08 Headwalls	SOUTH	2.4	2.28	236	227.5
	NORTH	2.4	2.28	236	227.5
MP 37.08 Wingwalls	SOUTH	2.3	4.66	94	190
	NORTH	2.3	4.66	94	190
MP 37.08 Apron	LT	0.8	1.14	94	55
	RT	0.8	1.14	94	55
MP 37.08 Toewalls	LT	1.1	1.14	77	79
	RT	1.1	1.14	77	79
MP 37.08 Sub-Total =		*13.2*	18.44	*1002*	1103.1
SET #1 SUBTOTAL =		***47.0***	67.44	***3368***	3866.6

Location	SIDE	601-01050 CONCRETE CLASS B (WALL) CY Plan	601-01050 CONCRETE CLASS B (WALL) CY As Const	602-00000 REINFORCING STEEL LB Plan	602-00000 REINFORCING STEEL LB As Const
MP 37.11					
MP 37.11 Headwalls	LT	2.5	2.45	220	245.4
	RT	2.5	2.55	227	254.6
MP 37.11 Wingwalls	LT	2.0	4.01	82	162.5
	RT	2.1	4.33	83	176.2
MP 37.11 Apron	LT	1.4	0.95	113	45.8
	RT	1.4	0.95	113	45.8
MP 37.11 Toewalls	LT	1.1	1.05	77	73.1
	RT	1.1	1.05	77	73.1
MP 37.11 Sub-Total =		*14.1*	17.34	*992*	1076.5
MP 37.34					
MP 37.34 Headwalls	LT	2.3	2.34	212	233.6
	RT	2.3	2.30	209	229.7
MP 37.34 Wingwalls	LT	2.0	4.01	80	162.5
	RT	2.0	4.01	79	162.5
MP 37.34 Apron	LT	1.4	0.95	113	45.8
	RT	1.4	0.95	113	45.8
MP 37.34 Toewalls	LT	1.1	1.05	77	73.1
	RT	1.1	1.05	77	73.1
MP 37.34 Sub-Total =		*13.6*	16.66	*960*	102.61
MP 37.70					
MP 37.70 Headwalls	LT	2.8	2.82	247	282.1
	RT	2.5	2.49	223	249.4
MP 37.70 Wingwalls	LT	2.5	5.00	102	203.3
	RT	2.0	4.01	82	162.5
MP 37.70 Apron	LT	1.4	1.12	113	53.7
	RT	1.4	0.95	113	45.8
MP 37.70 Toewalls	LT	1.1	1.12	77	77.9
	RT	1.1	1.05	77	73.1
MP 37.70 Sub-Total =		*14.8*	18.56	*1034*	1147.8
SET #2 SUBTOTAL =		***42.5***	52.56	***2986***	3250.4
SET #1 SUBTOTAL =		***47.0***	67.44	***3368***	3866.6
PROJECT TOTAL		**90**	117.6	**6354**	7115

TABULATION OF RIPRAP

Location	SIDE	506-00212 Riprap (12 Inch) CY	
		Plan	As Const
MP 3.09 Culvert @ STA. 118+20	RT	2	16
MP 5.13 Culvert @ STA. 224+90	RT	2	0
PROJECT TOTAL		4	16

TABULATION OF EPOXY PAVEMENT MARKING

STATION	SIDE	(627-00005) EPOXY PAVEMENT MARKING			
		CENTER YELLOW SINGLE BROKEN	CENTER YELLOW DOUBLE LEFT BROKEN	CENTER YELLOW DOUBLE RIGHT BROKEN	EDGE WHITE SINGLE SOLID
MP 3.09		4 INCH	4 INCH	4 INCH	4 INCH
115+25.00 TO 120+28.90	CENTER	503.90			
120+28.90 TO 121+50.00	CENTER		121.1		
115+25.00 TO 121+50.00	RT				625.00
117+15.50 TO 121+50.00	LT				434.50
MP 36.42					
341+79.00 TO 344+75.00	CENTER	296.00			
341+79.00 TO 344+75.00	RT				296.00
341+79.00 TO 344+75.00	LT				296.00
MP 37.11					
374+21.00 TO 377+51.00	CENTER		330.00		
374+21.00 TO 377+51.00	RT				330.00
374+21.00 TO 377+51.00	LT				330.00
MP 37.34					
386+72.00 TO 389+74.00	CENTER			302.00	
386+72.00 TO 389+74.00	RT				302.00
386+72.00 TO 389+74.00	LT				302.00
MP 37.70					
400+29.00 TO 403+32.00	CENTER	303.00			
400+29.00 TO 403+32.00	RT				303.00
400+29.00 TO 403+32.00	LT				303.00
TOTAL (LF)		1102.90	451.10	302.00	3521.50
TOTAL (SF)		92	188	126	1174
TOTAL (GAL)		1.2	2.2	1.6	13

PROJECT TOTAL (GAL)			
PLAN		AS CONSTRUCTED	
WHITE	YELLOW	WHITE	YELLOW
13	5	2.53	0.47
18.0		3.0	

TABULATION OF DELINEATORS

STATION	DETAIL	SIDE	(202-00090) REMOVAL OF DELINEATOR EACH		(612-00003) DELINEATOR (TYPE III) EACH	
			Plan	As Const	Plan	As Const
118+20	TRIPLE YELLOW	BOTH	2	2	2	2
343+25	TRIPLE YELLOW	BOTH	2	2	2	2
375+75	TRIPLE YELLOW	BOTH	2	2	2	2
388+21	TRIPLE YELLOW	BOTH	2	2	2	2
401+70	TRIPLE YELLOW	LEFT	1	1	1	1
401+95	TRIPLE YELLOW	RIGHT	1	1	1	1
PROJECT TOTAL			10	10	10	10

TABULATION OF FENCE

STATION	SIDE	202-01000 REMOVAL OF FENCE LF		607-01000 FENCE BARBED WIRE WITH METAL POSTS LF	
		Plan	As Const	Plan	As Const
MP 5.13 Culvert					
224+00 to 226+00	LT	225	0	225	0
224+25 to 225+50	LT*	100	0		
224+00 to 226+00	RT	225	52	225	57
PROJECT TOTAL		550	52	450	57

* REMOVAL OF FENCE POST IS PAID AS 10 LF EACH.

Print Date: 3/1/2013		Sheet Revisions	
File Name: 18861DES_Tab03.dgn		Date:	Comments	Init.
Horiz. Scale: N/A	Vert. Scale: N/A			
Unit Information: GJ Design	JSL			

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As Constructed
No Revisions: 12/23/13
Revised:
Void:

TABULATIONS OF RIPRAP, PAINT, DELINEATORS, & FENCE

Designer: J. Klish
Detailer: J. Klish
Subset: TAB
Structure Numbers
Subset Sheets: 3 of 4

Project No./Code
C 131A-035
18861R
Sheet Number 13

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TABULATIONS OF WETLAND QUANTITIES

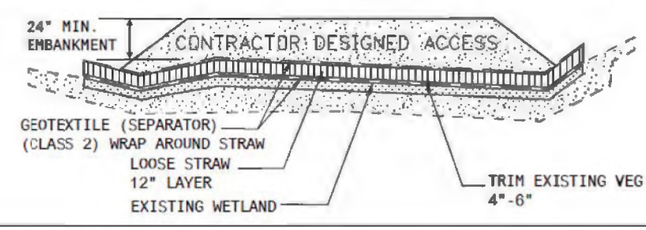
LOCATION:		(FOR INFO ONLY) Temporary Wetland Impacts	(FOR INFO ONLY) Permanent Wetland Impacts	203-00060 Embankment (CIP)		207-00305 Wetland Topsoil		207-00310 Stockpile Wetland Topsoil		420-00133 Geotextile (Separator) (Class 2)	
		SF		CY		CY		CY		SY	
				Plan	*As Const.*	Plan	*As Const.*	Plan	*As Const.*	Plan	*As Const.*
MP 3.09 @	LT	0	0	0		0	0	0	0	0	0
STA. 118+20	RT	0	0	0		0	0	0	0	0	0
MP 3.09 SUBTOTAL =		0	0	0		0	0	0	0	0	0
MP 5.13 @	LT	0	0	0		0	0	0	0	0	0
STA. 224+90	RT	21	0	2	2	0	0	0	0	5	0
MP 5.13 SUBTOTAL =		21	0	2	2	0	0	0	0	5	0
MP 36.42 @	LT	490	106	37	37	8	8	8	8	110	0
STA. 343+25	RT	534	75	40	40	6	6	6	6	119	0
MP 36.42 SUBTOTAL =		1024	181	77	77	14	14	14	14	119	0
MP 37.08 @	NORTH	466	40	35	35	3	3	3	3	104	0
STA. 372+42 LT	SOUTH	595	44	45	45	4	4	4	4	133	0
MP 37.08 SUBTOTAL =		1061	84	80	80	7	7	7	7	133	0
MP 37.11 @	LT	880	50	66	66	4	8	4	8	196	96
STA. 375+72	RT	83	131	7	7	10	10	10	10	19	0
MP 37.11 SUBTOTAL =		963	181	73	73	14	18	14	18	19	96
MP 37.34 @	LT	123	28	10	10	3	3	3	3	28	0
STA. 388+21	RT	255	96	19	19	8	11	8	11	57	17
MP 37.34 SUBTOTAL =		378	124	29	29	11	14	11	14	57	17
MP 37.70 @	LT	99	49	8	8	4	4	4	4	23	17
STA. 401+82	RT	100	74	8	8	6	6	6	6	23	0
MP 37.70 SUBTOTAL =		199	123	16	16	10	10	10	10	23	17
PROJECT TOTAL =		**3646**	**693**	*** 277**	277	**56**	63	**56**	63	**356**	130

* THIS EMBANKMENT (CIP) QUANTITY HAS BEEN CARRIED OVER TO THE SUMMARY OF EARTHWORK QUANTITIES SHEET.

NOTE FOR TEMPORARY WETLAND VEGETATION PROTECTION, PRIOR TO CONSTRUCTION:

All areas identified as "Temporary Wetland Impacts" shall be trimmed to 4"-6" from existing ground and be protected with a layer of Geotextile, followed by a 12-inch layer of loose, certified weed-free straw, another layer of Geotextile, and a minimum 24-inch layer of soil/embankment (See Temporary Wetland Vegetation Protection Detail). This installation work shall be paid for as Embankment (CIP) and Geotextile (Separator)(Class 2). The loose, certified weed-free straw and vegetation trimming shall not be paid for separately but be included in the cost of Geotextile (Separator)(Class 2). After construction all soil, straw, and geotextile shall be removed using a toothless backhoe. The removal of Temporary Wetland Vegetation Protection shall be included in the cost of the work.

TEMPORARY WETLAND VEGETATION PROTECTION



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Print Date: 3/1/2013			
File Name: 18861DES_Tab04.dgn			
Horiz. Scale: N/A	Vert. Scale: N/A		
Unit Information: GJ Design	JSL		

Sheet Revisions

Date:	Comments	Init.

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Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

TABULATIONS OF WETLAND QUANTITIES & TEMPORARY WETLAND VEGETATION PROTECTION DETAIL

Designer: J. Klish
Detailer: J. Klish
Subset: TAB
Structure Numbers
Subset Sheets: 4 of 4

Project No./Code
C 131A-035
18861R
Sheet Number 14

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

	Format *
■ Horizontal Control	Plan Sheets; Electronic Data
■ Vertical Control	Plan Sheets; Electronic Data
■ Roadway Alignment	Plan Sheets; Electronic Data
■ Original Terrain Data	Plan Sheets; Electronic Data
☐ Other:	

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

TYPE OF PROJECT

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

SURVEY WORK TO BE PERFORMED BY OTHERS: New Culvert Locations

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

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

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

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

	Grid (Y/N)	Grade (Y/N)	Special Interval	Special Offset
Roadway Bases	-	-	-	-
	-	-	-	-
	-	-	25'	-
	-	-	-	-
	-	-	-	-
	-	-	-	-

- ___ ■ Pavements
  - ___ ■ HMA - Hot Mix Asphalt (Section 403)
  - ___ ☐ Concrete (Section 412)
  - ___ ☐ Heating & Scarifying Treatment
  - ___ ☐ Prime Coat, Tack Coat & Rejuvenating Agent (Section 407)
  - ___ ☐ Seal Coat or Chip Seal (Section 409)
  - ___ ☐ Other: _____

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

- ___ ☐ Roadway Elements
  - ___ ☐ Curb and Gutter (Section 609)
  - ___ ☐ Drop inlets - alignment and grades (Section 604)
  - ___ ☐ Retaining Walls
  - ___ ☐ Guard Rail (Section 606)
  - ___ ☐ Sidewalk (Section 608)
  - ___ ☐ Overlay Stationing
  - ___ ☐ Other: _____

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

	Left Interval	Center Interval	Right Interval
Stationing	-	-	-

- ___ ☐ Riprap (Perm) (Section 506)
- ___ ☐ Slope and Ditch Paving (Section 507)
- ___ ■ Minor Structures
  - ___ ■ Structure Excavation limits (Section 206)
  - ___ ■ Culverts (Section 603)
  - ___ ■ Culverts w/ Headwalls and Wingwalls (Section 601)
  - ___ ☐ Concrete Box Culverts w/ Headwalls and Wingwalls
  - ___ ☐ Pipes (Section 603)
    - ___ ☐ Sanitary Sewer
    - ___ ☐ Storm Sewer
    - ___ ☐ Water
    - ___ ☐ Irrigation
    - ___ ☐ Miscellaneous
  - ___ ☐ Manholes (Section 604)
  - ___ ☐ Inlets (Section 604)
  - ___ ☐ Other: _____
- ___ ☐ Major Structures - Overhead Signs (Section 614), Concrete Box Culverts, Bridges - and all other structures assigned a structure number
  - ___ ☐ Structure Excavation limits (Section 206)
  - ___ ☐ Concrete Box Culverts (Section 603) w/ Headwalls and Wingwalls (Section 601)
  - ___ ☐ Piling locations and cut off elevations (Section 502)
  - ___ ☐ Caisson locations and elevations (Section 503)
  - ___ ☐ Footing locations, alignment, and elevations
  - ___ ☐ Abutment/Pier locations, alignment, and elevations
  - ___ ☐ Wingwall skew angles/offsets
  - ___ ☐ Structural concrete form locations
  - ___ ☐ Substructure As-constructed survey required for Bridges (Subsection 601 .12) and Overhead signs (S-614-50)
  - ___ ☐ Bridge expansion joint(s) alignment and grade (longitudinal and transverse)
  - ___ ☐ Deck grades at Girder 10th or "n" th point locations and elevations
  - ___ ☐ Slope and Ditch Paving (Section 507)
  - ___ ☐ Other: _____
- ___ ☐ Fencing (Section 607)
  - ___ ☐ Temporary
  - ___ ☐ Permanent
  - ___ ☐ Sound Barrier
  - ___ ☐ Other: _____
- ___ ☐ Delineators (Section 612)
  - ___ ☐ Temporary
  - ___ ☐ Permanent
- ___ ☐ Lighting (Section 613) and Traffic Control Devices (Permanent) (Section 614)
  - ___ ☐ Signal pole locations and elevations
  - ___ ☐ Light pole locations and elevations
  - ___ ☐ Sign locations
  - ___ ☐ Field verify sign post locations, elevations, and lengths before fabrication.
  - ___ ☐ Other: _____
- ___ ☐ Pavement Marking (Section 627)
  - ___ ☐ Striping (Temp)
  - ___ ☐ Striping (Perm)
  - ___ ☐ Symbols
  - ___ ☐ Other: _____
- ___ ☐ Temporary Lighting and Construction Traffic Control Devices (Section 630)
  - ___ ☐ Signal pole locations and elevations (Temp)
  - ___ ☐ Light pole locations and elevations (Temp)
  - ___ ☐ Sign Locations (Temp)
  - ___ ☐ Other: _____
- ___ ☐ Easements (Temp Staking by P.L.S. Only)
- ___ ■ Right of Way (Temp Staking by P.L.S. Only)

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

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

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

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

GENERAL NOTES:

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

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Print Date: 3/1/2013	
File Name: 18861SURV_Tab.dgn	
Horiz. Scale: N/A	Vert. Scale: N/A
Unit Information: GJ Design	JSL

Sheet Revisions

Date:	Comments	Init.

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As Constructed
No Revisions: 12/23/13
Revised:
Void:

SURVEY TABULATION SHEET

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset:	SURVTAB	Subset Sheets: 1 of 1	

Project No./Code
C 131A-035
18861R
Sheet Number 15

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Sheet Revisions			Sheet Revisions			Sheet Revisions		
Date	Description	Initials	Date	Description	Initials	Date	Description	Initials
mm/dd/yy	XXXXXXXX	XXX	mm/dd/yy	XXXXXXXX	XXX	mm/dd/yy	XXXXXXXX	XXX

Project Control Diagram				
Title Sheet				
Project Number: C131A-035				
Project Location: SH 131 Various Culverts MP 3 to MP 38				
Eagle County				
Project Code:	Last Mod. Date	Subset	Sheet No.	16
18861R	01-24-2013	3.01 of 3.06	3.01	

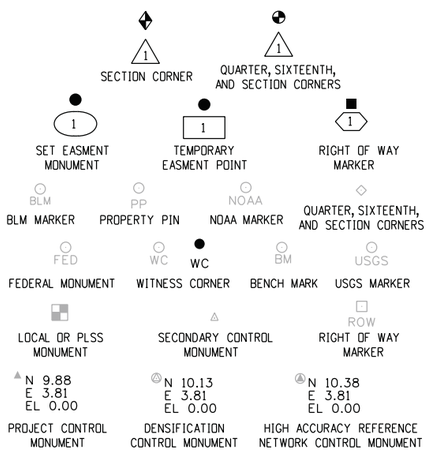
DEPARTMENT OF TRANSPORTATION
STATE OF COLORADO

PROJECT CONTROL DIAGRAM

State Highway 131 MP 3.09 to 5.13
Section 3
Township 4 South, Range 83 West
Section 27
Township 3 South, Range 83 West
of the 6th Principal Meridian
County of Eagle

SHEET NO. — INDEX OF SHEETS

SHEET NO.	INDEX OF SHEETS
3.01, 3.04	(2) Title Sheet
3.02, 3.05	(2) Coordinate Tables
3.03, 3.06	(2) Plan Sheet
	(6) Total Sheets



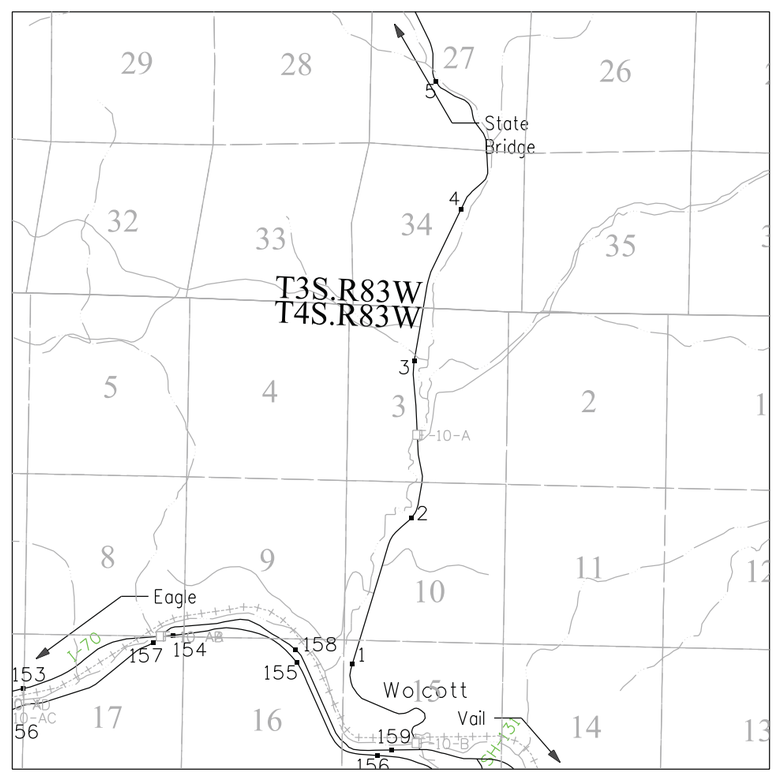
Note: For a complete listing of symbololgy used within this set of plans, please refer to the M-100-1 Standard Symbols of the Colorado Department of Transportation M&S Standards Publication dated July 2006. Existing features are shown as screened weight (gray scale). Proposed or new features are shown as full weight without screening.

Typical Control Monument Cap
Not to Scale

▲ CM-MP - Control Point Monuments set by CDOT. They are CDOT Type 2 monuments, a 3'/4" dia. aluminum control monument cap (as shown) on a 3' x 3/4" dia. aluminum security rod on a 3' x 3/4" dia. smooth aluminum rod.

General Notes:

1. This Project Control Diagram is not a boundary survey of the adjoining property and is prepared for the Colorado Department of Transportation purposes only.
2. This plan set is subject to change and may not be the most current set. It is the user's responsibility to verify with CDOT that this set is the most current. The information contained on the attached drawing is not valid unless this copy bears an original signature of the Professional Land Surveyor hereon named.
3. Refer to the M-629-1 Survey Monuments of the Standard Plans dated July, 2006 found in The Colorado Department of Transportation, M & S Standards for typical survey monument descriptions.



PROJECT LOCATION MAP

0' 2500' 5000' 10000'
Lineal Units = U.S. Survey Feet

N

Basis of Bearings: Bearings used in the calculations of coordinates are based on a grid bearing of N3° 38'47"E from CM-MP 2.98 to CM-MP 5.12. Both monuments are CDOT Type II, marked appropriately for their milepost location and control position. The survey data was obtained from a Global Positioning System (GPS) survey base on the Colorado High Accuracy Reference Network (CHARN).

Basis of Elevations: Project elevations are based on Bench Mark W 29 RESET, PID: KL0412, a standard bench mark disk set on top of a concrete monument, with a NAVD 88 elevation of 7442.4 ft. W 29 RESET is a Third order benchmark. Differential Levels for points MP 5.10 and MP 5.12 were run from this point. The elevation for MP 2.98 was established by GPS observation and differential levels were run from MP 2.98 to MP 3.05 and MP 3.10

COORDINATE DATUM: Project coordinates are modified Colorado State Plane Central Zone NAD '83/(2007) coordinates. The combined elevation/scale factor used to modify the coordinates from state plane to project coordinates is 1.0003434442. The resulting project coordinates are truncated by 500,000 m in the Northing and 800,000 m in the Easting after converting from state plane coordinates to project coordinates. The CHARN is based on the NAD '83(2007) datum.
Project Coordinates Northing US Survey Feet = (State Plane Coordinate Northing * 1.0003434442 - 500,000) * (3937/1200).
Project Coordinates Easting US Survey Feet = (State Plane Coordinate Easting * 1.0003434442 - 800,000) * (3937/1200).

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

SURVEYOR STATEMENT (PROJECT CONTROL DIAGRAM)

I, _____, a professional land surveyor licensed in the State of Colorado, do hereby state to the Colorado Department of Transportation this Project Control Diagram was prepared and the field survey it represents was performed under my responsible charge and, based upon my knowledge, information and belief is in accordance with applicable standards of practice defined by Colorado Department of Transportation publications. This statement is not a guaranty or warranty, either expressed or implied.

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Sheet Revisions			Sheet Revisions			Sheet Revisions		
Date	Description	Initials	Date	Description	Initials	Date	Description	Initials
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Project Control Diagram
Coordinate Tables SITE A
Project Number: C131A-035
Project Locotion: SH 131 Vorious Culverts
Eagle County, North of Walcott

Project Code:	Last Mod. Date	Subset	Sheet No.	17
18861R	01-24-2013	3.02 of 3.06	3.02	

SITE A

CHARN GEODETIC COORDINATE SUMMARY TABLE

Point No.	Geodetic Coordinates NAD-83(2007) (CHARN)		Elip Height (NAVD88)(m)	Ortho Height (m)	Mapping Angle	Grid Scale Factor	NAD 83(2007) Zone CO Central		Description
	Latitude(N)	Longitude(W)					SP Northing(m)	SP Easting(m)	
W 29 RESET	39°45'42.71912" N	106°40'39.88794" W	2255.216		-0°44'34"	1.0003434442	519543.697	813483.599	CGS Type 5 Monument
Y 29	39°42'25.22614" N	106°41'10.35654" W	2183.053		-0°44'53"	1.0003434442	513462.683	812678.894	CGS Type 5 Monument (Not Shown)

GEODETIC COORDINATE TABLE

Point No.	Geodetic Coordinates NAD-83(XX) (CHARN)		Elip Height (NAVD88)(m)	Ortho Height (m)	Mapping Angle	Grid Scale Factor	NAD 83(XX) Zone XXXX		Description
	Latitude(N)	Longitude(W)					SP Northing(m)	SP Easting(m)	
298	39°44'09.34506" N	106°40'46.19640" W	2176.091	2188.992	-0°44'38"	1.0003434442	516666.082	813296.064	CDOT Type II Monument
305	39°44'12.88408" N	106°40'44.42305" W	2176.151	2189.049	-0°44'37"	1.0003434442	516774.673	813339.703	CDOT Type II Monument
310	39°44'15.25794" N	106°40'45.12339" W	2178.306	2191.206	-0°44'37"	1.0003434442	516848.097	813323.979	CDOT Type II Monument
510	39°45'45.08234" N	106°40'40.93215" W	2257.392	2270.606	-0°44'35"	1.0003434442	519616.899	813459.691	CDOT Type II Monument
511	39°45'47.72996" N	106°40'39.73263" W	2259.598	2272.810	-0°44'34"	1.0003434442	519698.179	813489.299	CDOT Type II Monument

PROJECT COORDINATE TABLE

Point No.	Project Coordinates		Elev(ft) (NAVD88)	Description
	Northing(ft)	Easting(ft)		
298	55260.81	44538.58	7181.72	CDOT Type II Monument
305	55617.20	44681.80	7181.90	CDOT Type II Monument
310	55858.17	44630.19	7188.98	CDOT Type II Monument
510	64945.27	45075.60	7449.48	CDOT Type II Monument
511	65212.03	45172.77	7456.71	CDOT Type II Monument
W 29 RESET	64705.03	45154.06	7442.37	CGS Type 5 Monument
y 29	44747.38	42513.05	7205.78	CGS Type 5 Monument

Coordinate System	
Coordinate System	US State Plane 1983
ZONE	COLORADO CENTRAL
DATUM	NAD 1983(2007)
VERTICAL DATUM	NAVD 1988
ELLIPSOID NAME	Geodetic Reference System 7980
GEOID MODEL	GEOID09 (Conus)
AVERAGE COMBINED FACTOR	1.0003434442
NORTHING OFFSET	500000
EASTING OFFSET	800000
PROJECT ELEVATION	7300.00

Basis of Bearings: Bearings used in the calculations of coordinates are based on a grid bearing of N3° 38'47"E from CM-MP 2.98 to CM-MP 5.12. Both monuments are CDOT Type II, marked appropriately for their milepost location and control position. The survey data was obtained from a Global Positioning System (GPS) survey base on the Colorado High Accuracy Reference Network (CHARN).

Basis of Elevations: Project elevations are based on Bench Mark W 29 RESET, PID: KL0412, a standard bench mark disk set on top of a concrete monument, with a NAVD 88 elevation of 7442.4 ft. W 29 RESET is a Third order benchmark. Differential Levels for points MP 5.10 and MP 5.12 were run from this point. The elevation for MP 2.98 was established by GPS observation and differential levels were run from MP 2.98 to MP 3.05 and MP 3.10

COORDINATE DATUM: Project coordinates are modified Colorado State Plane Central Zone NAD '83/(2007) coordinates. The combined elevation/scale factor used to modify the coordinates from state plane to project coordinates is 1.0003434442. The resulting project coordinates are truncated by 500,000 m in the Northing and 800,000 m in the Easting after converting from state plane coordinates to project coordinates. The CHARN is based on the NAD '83(2007) datum.
Project Coordinates Northing US Survey Feet = (State Plane Coordinate Northing * 1.0003434442 - 500,000) * (3937/1200).
Project Coordinates Easting US Survey Feet = (State Plane Coordinate Easting * 1.0003434442 - 800,000) * (3937/1200).

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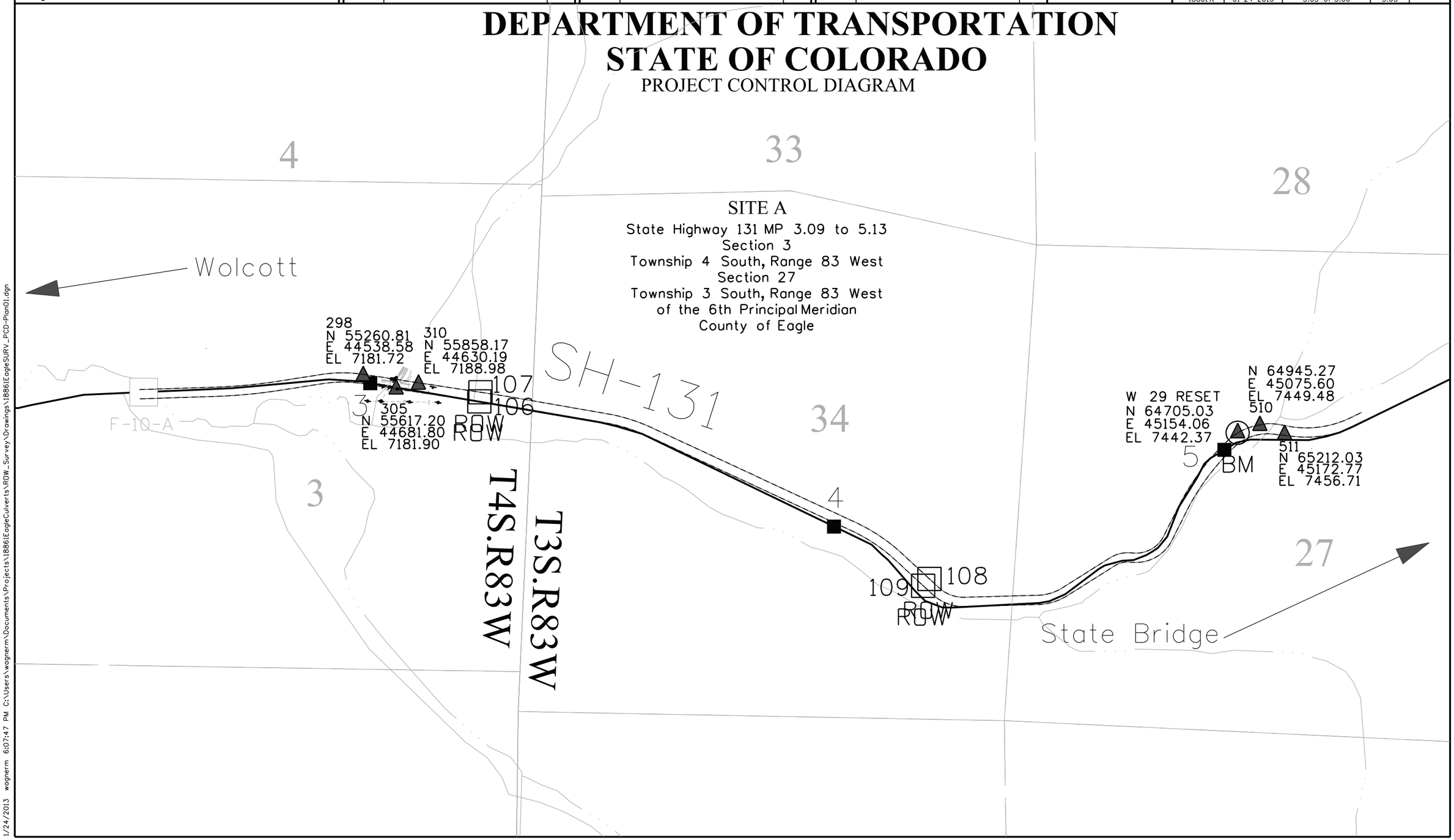
Date	Description	Initials
mm/dd/yy	XXXXXXXX	XXX

Sheet Revisions		
Date	Description	Initials
mm/dd/yy	XXXXXXXX	XXX

Project Control Diagram
Plan Sheet SITE A
Project Number: C131A-035
Project Location: SH 131 Various Culverts
Eagle County, North of Wocott

Project Code:	Last Mod. Date	Subset	Sheet No.	18
18861R	01-24-2013	3.03 of 3.06	3.03	

DEPARTMENT OF TRANSPORTATION
STATE OF COLORADO
PROJECT CONTROL DIAGRAM



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Project Control Diagram				
Title Sheet				
Project Number: C131A-035				
Project Location: SH 131 Various Culverts				
Routt County between Yampa and Toponas				
Project Code:	Last Mod. Date	Subset	Sheet No.	19
18861R	01-24-2013	3.04 of 3.06	3.04	

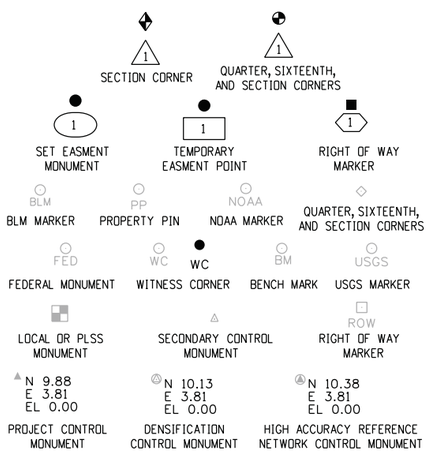
DEPARTMENT OF TRANSPORTATION
STATE OF COLORADO

PROJECT CONTROL DIAGRAM

State Highway 131 MP 36.3 to 37.8
Section 6
Township 1 North, Range 84 West
Section 1
Township 1 North, Range 85 West
Section 36
Township 2 North, Range 85 West
of the 6th Principal Meridian
County of Routt

SHEET NO. INDEX OF SHEETS

3.04	(3.01, 3.04) Title Sheet
3.05	(3.02, 3.05) Coordinate Tables
3.06	(3.03, 3.06) Plan Sheet
	(6) Total Sheets



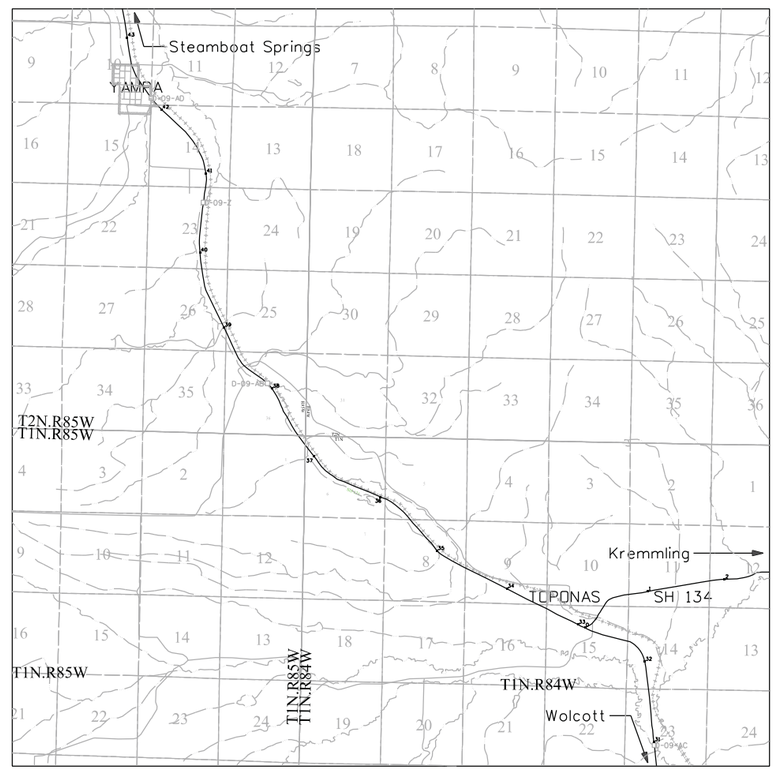
Note: For a complete listing of symbololgy used within this set of plans, please refer to the M-100-1 Standard Symbols of the Colorado Department of Transportation M&S Standards Publication dated July 2006. Existing features are shown as screened weight (gray scale). Proposed or new features are shown as full weight without screening.

Typical Control Monument Cap
Not to Scale

▲ CM-MP - Control Point Monuments set by CDOT. They are CDOT Type 2 monuments, a 3 1/4" dia. aluminum control monument cap (as shown) on a 3' x 3/4" dia. aluminum security rod on a 3' x 3/4" dia. smooth aluminum rod.

General Notes:

1. This Project Control Diagram is not a boundary survey of the adjoining property and is prepared for the Colorado Department of Transportation purposes only.
2. This plan set is subject to change and may not be the most current set. It is the user's responsibility to verify with CDOT that this set is the most current. The information contained on the attached drawing is not valid unless this copy bears an original signature of the Professional Land Surveyor hereon named.
3. Refer to the M-629-1 Survey Monuments of the Standard Plans dated July, 2006 found in The Colorado Department of Transportation, M & S Standards for typical survey monument descriptions.



PROJECT LOCATION MAP

0' 5000' 10000' 20000'
Lineal Units = U.S. Survey Feet

N

Basis of Bearings: Bearings used in the calculations of coordinates are based on a grid bearing of N42° 02'58"W from CM-MP 36.4 to CM-MP 37.8. Both monuments are CDOT Type II, marked appropriately for their milepost location and control position. The survey data was obtained from a Global Positioning System (GPS) survey base on the Colorado High Accuracy Reference Network (CHARN).

Basis of Elevations: Project elevations are based on a GPS observation of CDOT Type 2 Monument MP 364, with an elevation of 8089.60ft. Differential Levels were run from this point through the other control points to MP 378 and back.

COORDINATE DATUM: Project coordinates are modified Colorado State Plane North Zone NAD '83/(2007) coordinates. The combined elevation/scale factor used to modify the coordinates from state plane to project coordinates is 1.0003434442. The resulting project coordinates are truncated by 500,000 in the Northing and 800,000m in the Easting after converting from state plane coordinates to project coordinates. The CHARN is based on the NAD '83(2007) datum.
Project Coordinates Northing US Survey Feet = (State Plane Coordinate Northing * 1.0003434442 - 200,000) * (3937/1200).
Project Coordinates Easting US Survey Feet = (State Plane Coordinate Easting * 1.0003434442 - 400,000) * (3937/1200).

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

SURVEYOR STATEMENT (PROJECT CONTROL DIAGRAM)

I, _____, a professional land surveyor licensed in the State of Colorado, do hereby state to the Colorado Department of Transportation this Project Control Diagram was prepared and the field survey it represents was performed under my responsible charge and, based upon my knowledge, information and belief is in accordance with applicable standards of practice defined by Colorado Department of Transportation publications. This statement is not a guaranty or warranty, either expressed or implied.

PLS No. xxxxx

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Project Control Diagram				
Coordinate Tables SITE B				
Project Number: C131A-035				
Project Location: SH 131 Various Culverts				
ROUTT County Between Yampa and Toponas				
Project Code:	Last Mod. Date	Subset	Sheet No.	20
18861R	01-24-2013	3.05 of 3.06	3.05	

SITE B

CHARN GEODETIC COORDINATE SUMMARY TABLE

Point No.	Geodetic Coordinates NAD-83(07) (CHARN)		Elip Height (NAVD88) (m)	Ortho Height (m)	Mapping Angle	Grid Scale Factor	NAD 83(2007) Zone CO N.		Description
	Latitude(N)	Longitude(W)					SP Northing(m)	SP Easting(m)	
C131 MP37.9	40°05'53.50380" N	106°52'21.60061" W	2435.210	2447.870	-0°53'12.9"	1.0004218452	390629.157	797361.903	NGS GPS Control, CDOH Type 5 ROW Monument
F 29	40°03'53.99474" N	106°48'54.33621" W	2513.781	2526.444	-0°50'59.0"	1.0004218452	386869.245	802215.851	US CGS BM in Concrete Monument (not shown)

GEODETIC COORDINATE TABLE

Point No.	Geodetic Coordinates NAD-83(07) (CHARN)		Elip Height (NAVD88) (m)	Ortho Height (m)	Mapping Angle	Grid Scale Factor	NAD 83(2007) Zone CO N.		Description
	Latitude(N)	Longitude(W)					SP Northing(m)	SP Easting(m)	
359	40°04'47.33541" N	106°50'47.07152" W	2470.765	2483.429	-0°52'12"	1.0004218452	388554.28700	799569.62900	CDOH Type 5 ROW Monument in Concrete
364	40°04'57.71154" N	106°51'21.62961" W	2453.051	2465.715	-0°52'34"	1.0004218452	388886.74700	798755.86900	CDOT Type 2 Control Monument
371	40°05'16.22034" N	106°51'50.42118" W	2444.282	2456.943	-0°52'53"	1.0004218452	389467.99300	798082.63200	CDOT Type 2 Control Monument
372	40°05'27.13131" N	106°51'56.62102" W	2439.683	2452.344	-0°52'57"	1.0004218452	389806.73200	797940.96100	Type 4 Township Corner
373	40°05'27.03437" N	106°52'03.94923" W	2440.810	2453.470	-0°53'02"	1.0004218452	389806.41800	797767.34400	CDOH Type 5 ROW Monument in Concrete
378	40°05'42.57125" N	106°52'15.96176" W	2438.440	2451.101	-0°53'09"	1.0004218452	390289.94700	797490.23300	CDOT Type 2 Control Monument
C131 MP37.9	40°05'53.50380" N	106°52'21.60061" W	2435.210	2447.870	-0°53'13"	1.0004218452	390629.15700	797361.90300	NGS GPS Control, CDOH Type 5 ROW Monument
F 29	40°03'53.99474" N	106°48'54.33621" W	2513.781	2526.444	-0°50'59"	1.0004218452	386869.24500	802215.85100	US CGS BM in Concrete Monument (not shown)

PROJECT COORDINATE TABLE

Point No.	Project Coordinates		Elev(ft) (NAVD88)	Description
	Northing(ft)	Easting(ft)		
359	291069.62	327777.96	8147.72	CDOH Type 5 ROW Monument in Concrete
364	292160.82	325107.03	8089.60	CDOT Type 2 Control Monument
371	294068.60	322897.32	8060.82	CDOT Type 2 Control Monument
372	295180.41	322432.32	8045.73	Type 4 Township Corner
373	295179.38	321862.47	8049.43	CDOH Type 5 ROW Monument in Concrete
378	296766.43	320952.94	8041.65	CDOT Type 2 Control Monument
C131 MP37.9	297879.79	320531.73	8031.05	NGS GPS Control, CDOH Type 5 ROW Monument
F 29	285538.94	336463.44	8288.84	US CGS BM in Concrete Monument (not shown)

Coordinate System	
Coordinate System	US State Plane 1983
ZONE	COLORADO NORTH
DATUM	NAD 1983(2007)
VERTICAL DATUM	NAVD 1988
ELLIPSOID NAME	Geodetic Reference System 7980
GEOID MODEL	GEOID09 (Conus)
AVERAGE COMBINED FACTOR	1.0004218452
NORTHING OFFSET	300000 M
EASTING OFFSET	700000 N
PROJECT ELEVATION	8060 USSF

Basis of Bearings: Bearings used in the calculations of coordinates are based on a grid bearing of N42° 02'58"W from CM-MP 36.4 to CM-MP 37.8. Both monuments are CDOT Type II, marked appropriately for their milepost location and control position. The survey data was obtained from a Global Positioning System (GPS) survey base on the Colorado High Accuracy Reference Network (CHARN).

Basis of Elevations: Project elevations are based on a GPS observation of CDOT Type 2 Monument MP 364, with an elevation of 8089.60ft. Differential Levels were run from this point through the other control points to MP 378 and back.

COORDINATE DATUM: Project coordinates are modified Colorado State Plane North Zone NAD '83/(2007) coordinates. The combined elevation/scale factor used to modify the coordinates from state plane to project coordinates is 1.0003434442. The resulting project coordinates are truncated by 500,000 in the Northing and 800,000m in the Easting after converting from state plane coordinates to project coordinates. The CHARN is based on the NAD '83(2007) datum.
Project Coordinates Northing US Survey Feet = (State Plane Coordinate Northing * 1.0004218452 - 200,000) * (3937/1200).
Project Coordinates Easting US Survey Feet = (State Plane Coordinate Easting * 1.0004218452 - 400,000) * (3937/1200).

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Date	Description	Initials
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Sheet Revisions		
Date	Description	Initials
mm/dd/yy	XXXXXXXX	XXX

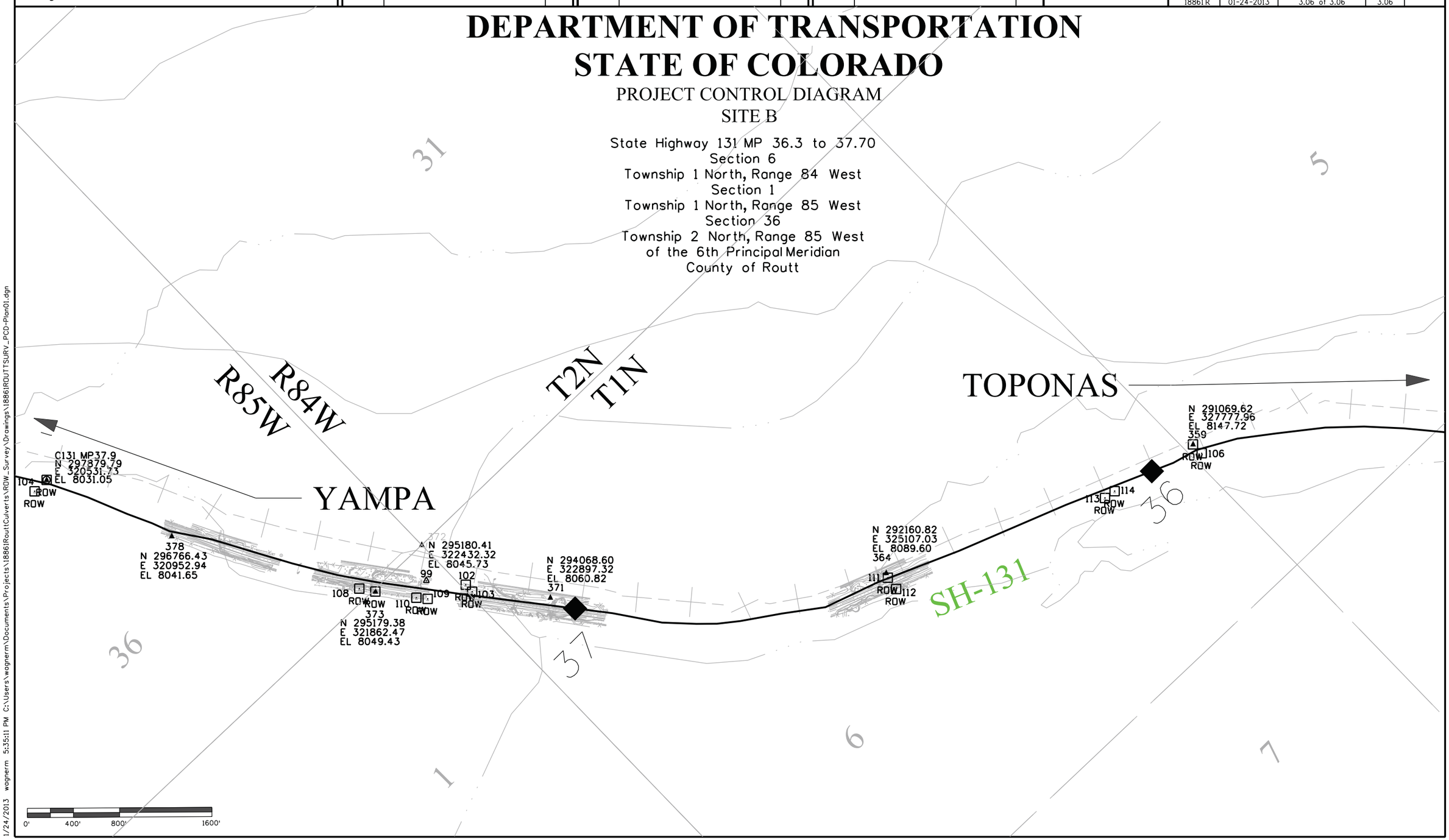
Project Control Diagram
Plan Sheet
Project Number: C131A-035
Project Location: SH 131 Various Culverts
SITE B, Routt County between Toponas and Yampa

Project Code:	Last Mod. Date	Subset	Sheet No.	21
18861R	01-24-2013	3.06 of 3.06	3.06	

DEPARTMENT OF TRANSPORTATION
STATE OF COLORADO

PROJECT CONTROL DIAGRAM
SITE B

State Highway 131 MP 36.3 to 37.70
Section 6
Township 1 North, Range 84 West
Section 1
Township 1 North, Range 85 West
Section 36
Township 2 North, Range 85 West
of the 6th Principal Meridian
County of Routt



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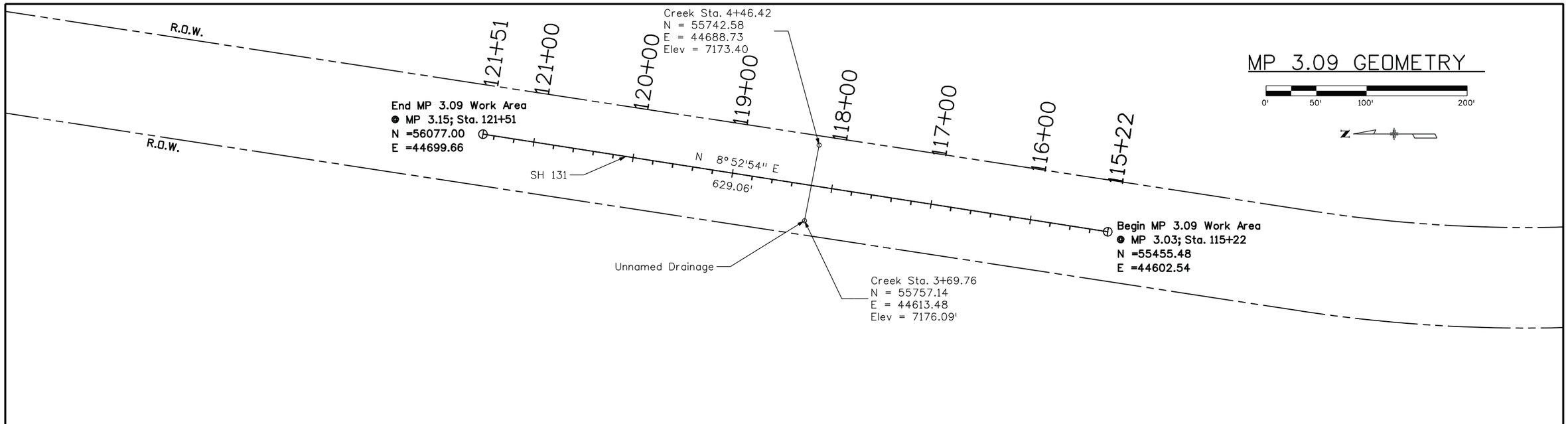

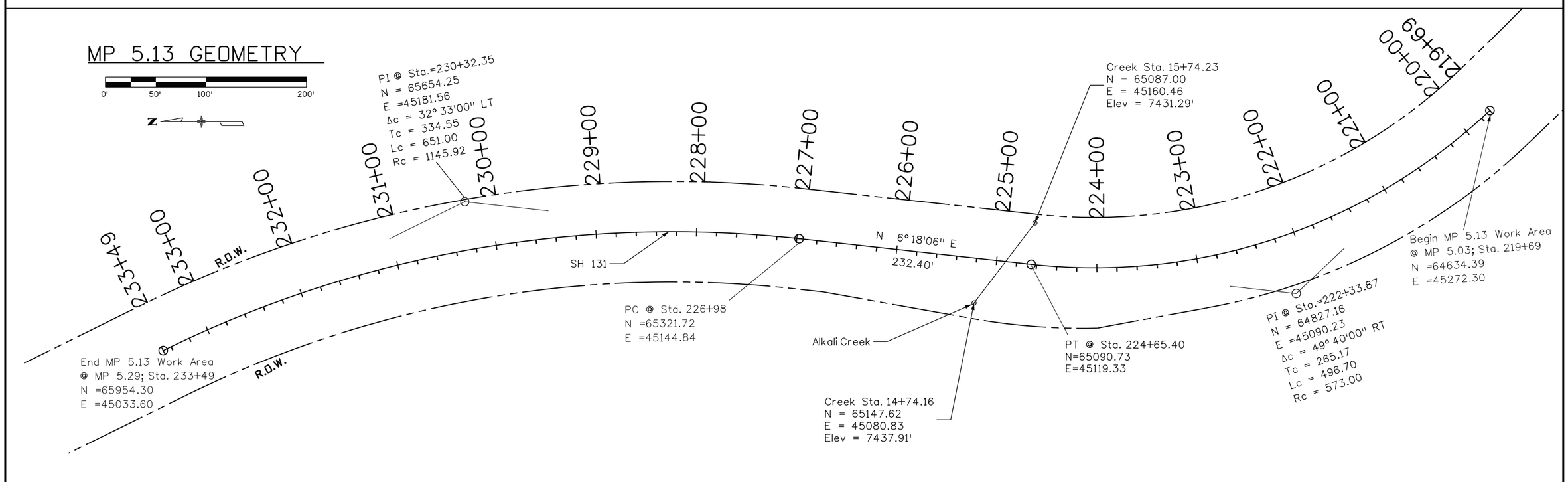

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Unit Information: GJ Design		JSL	

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No Revisions: 12/23/13	
Revised:	
Void:	

GEOMETRY SHEETS

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset:	GEOM	Subset Sheets: 1 of 3	

Project No./Code
C 131A-035
18861R
Sheet Number 22

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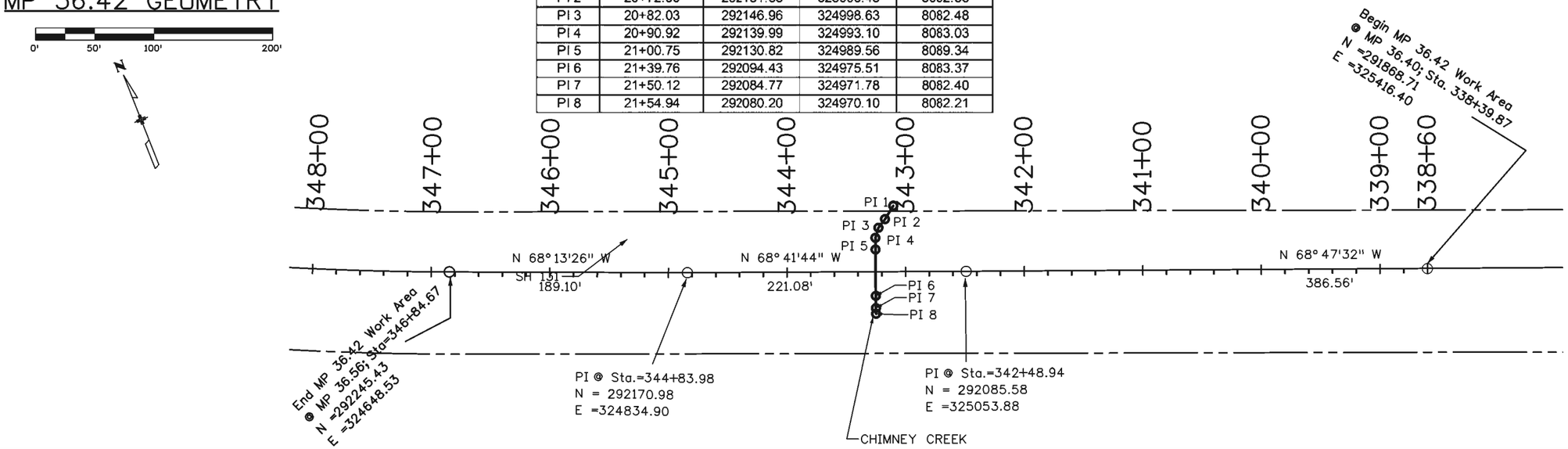
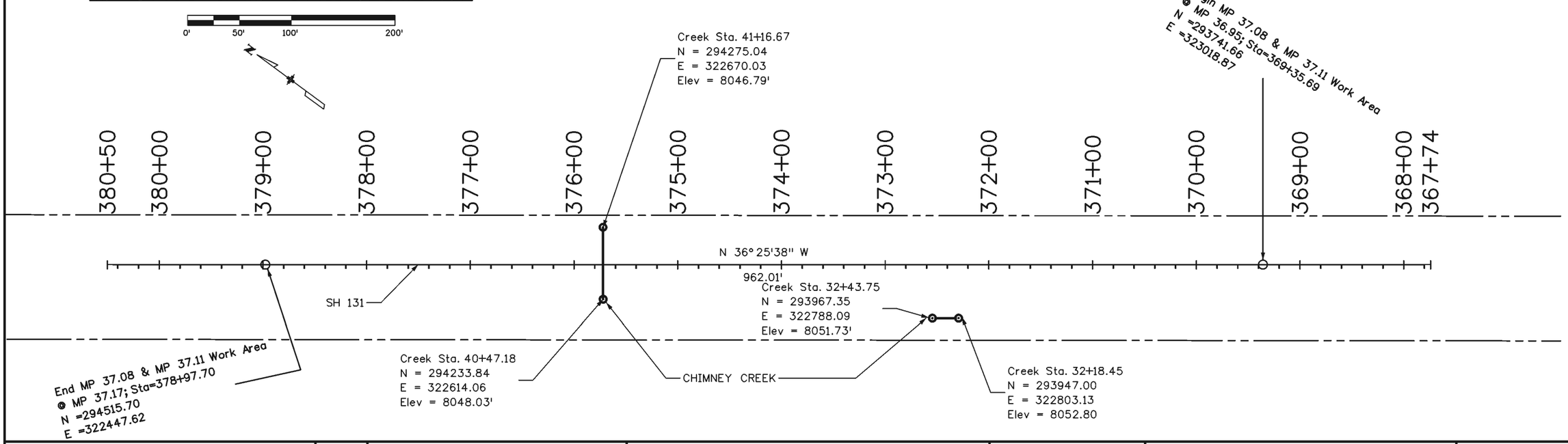
MP 36.42 GEOMETRY

M.P. 36.42 Creek				
Curve	Station	Northing	Easting	Elevation
PI 1	20+59.70	292159.53	325017.04	8082.80
PI 2	20+72.90	292151.68	325006.43	8082.86
PI 3	20+82.03	292146.96	324998.63	8082.48
PI 4	20+90.92	292139.99	324993.10	8083.03
PI 5	21+00.75	292130.82	324989.56	8089.34
PI 6	21+39.76	292094.43	324975.51	8083.37
PI 7	21+50.12	292084.77	324971.78	8082.40
PI 8	21+54.94	292080.20	324970.10	8082.21



MP 37.08 & MP 37.11 GEOMETRY



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Sheet Revisions

Date:	Comments	Init.

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Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

GEOMETRY SHEETS

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset:	ConstTrafTab	Subset Sheets: 2 of 3	

Project No./Code
C 131A-035
18861R
Sheet Number 23

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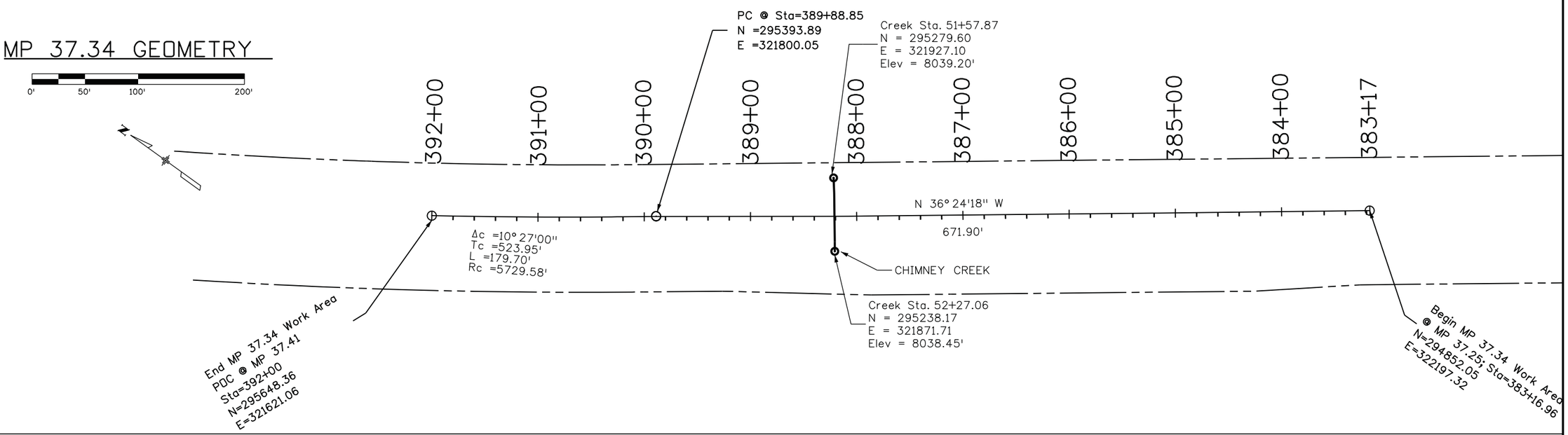
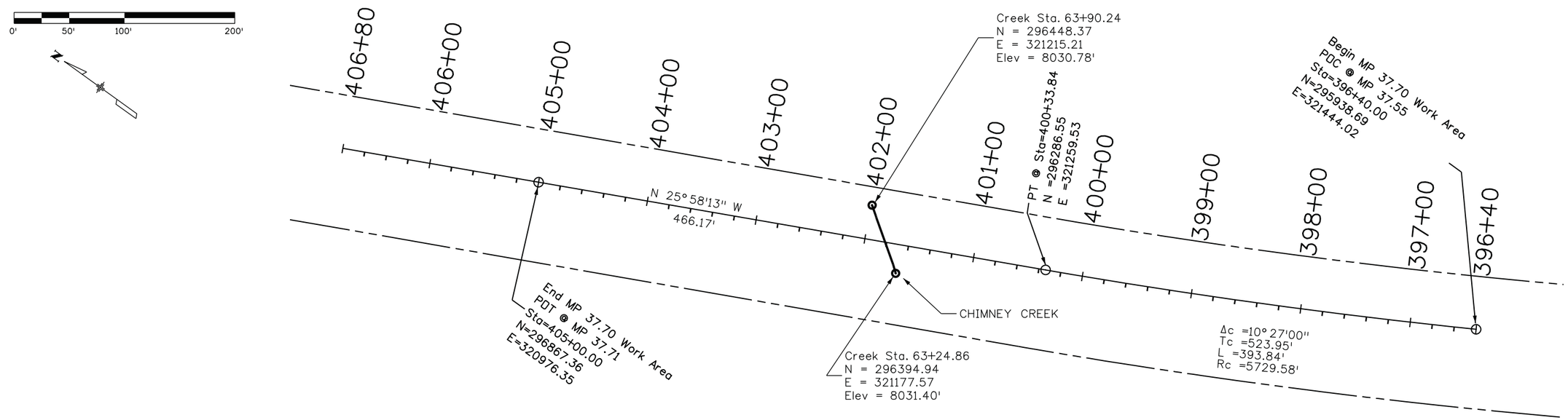
MP 37.34 GEOMETRY



MP 37.70 GEOMETRY



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Unit Information: GJ Design		JSL	

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
714 Grand Ave.
Eagle, CO 81631
Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

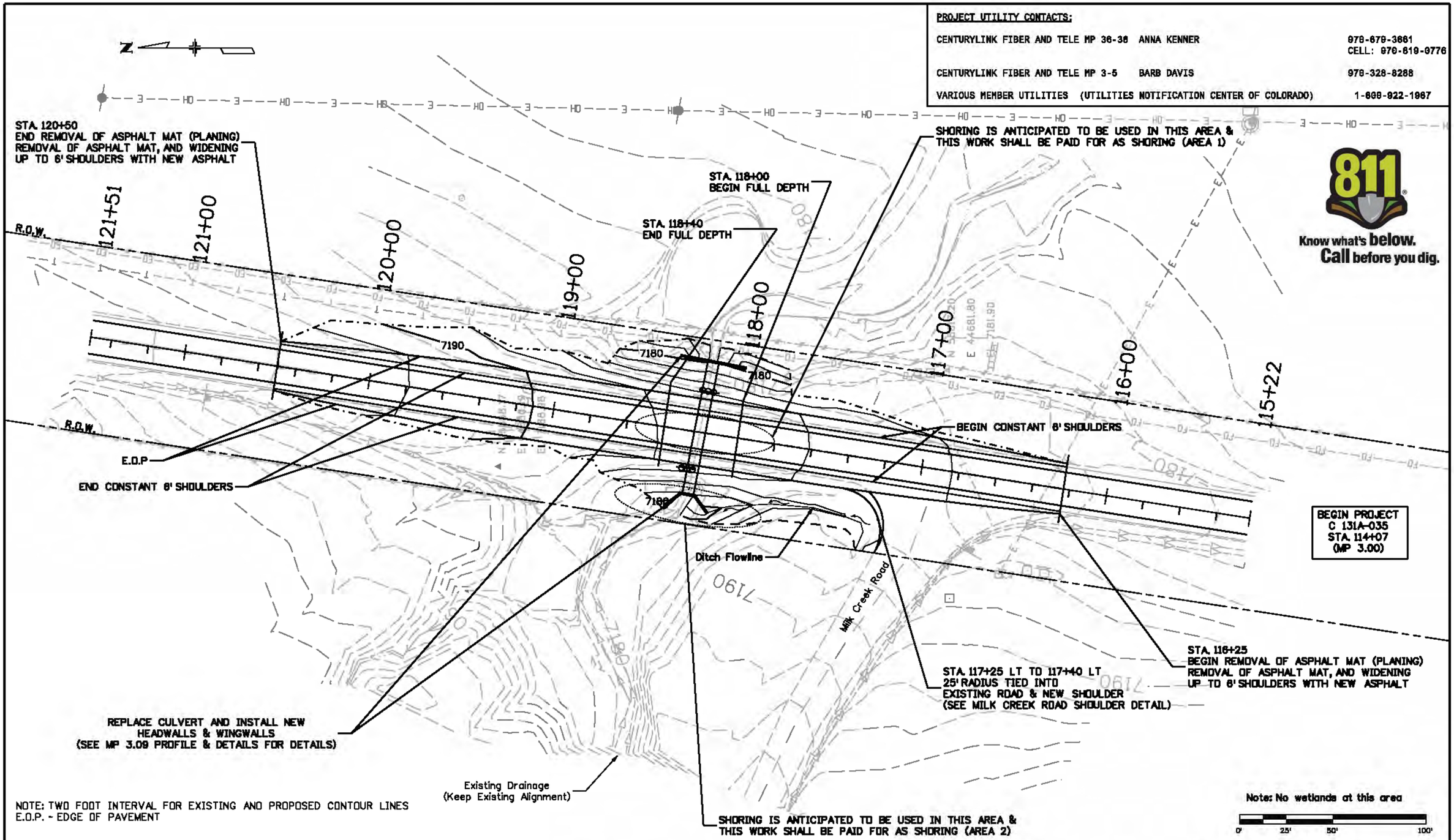
GEOMETRY SHEETS

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset:	GEOM	Subset Sheets: 3 of 3	

Project No./Code
C 131A-035
18861R
Sheet Number 24

PROJECT UTILITY CONTACTS:

CENTURYLINK FIBER AND TELE MP 36-38	ANNA KENNER	970-679-3661 CELL: 970-619-0776
CENTURYLINK FIBER AND TELE MP 3-5	BARB DAVIS	970-328-8288
VARIOUS MEMBER UTILITIES (UTILITIES NOTIFICATION CENTER OF COLORADO)		1-800-922-1987



NOTE: TWO FOOT INTERVAL FOR EXISTING AND PROPOSED CONTOUR LINES
E.O.P. - EDGE OF PAVEMENT

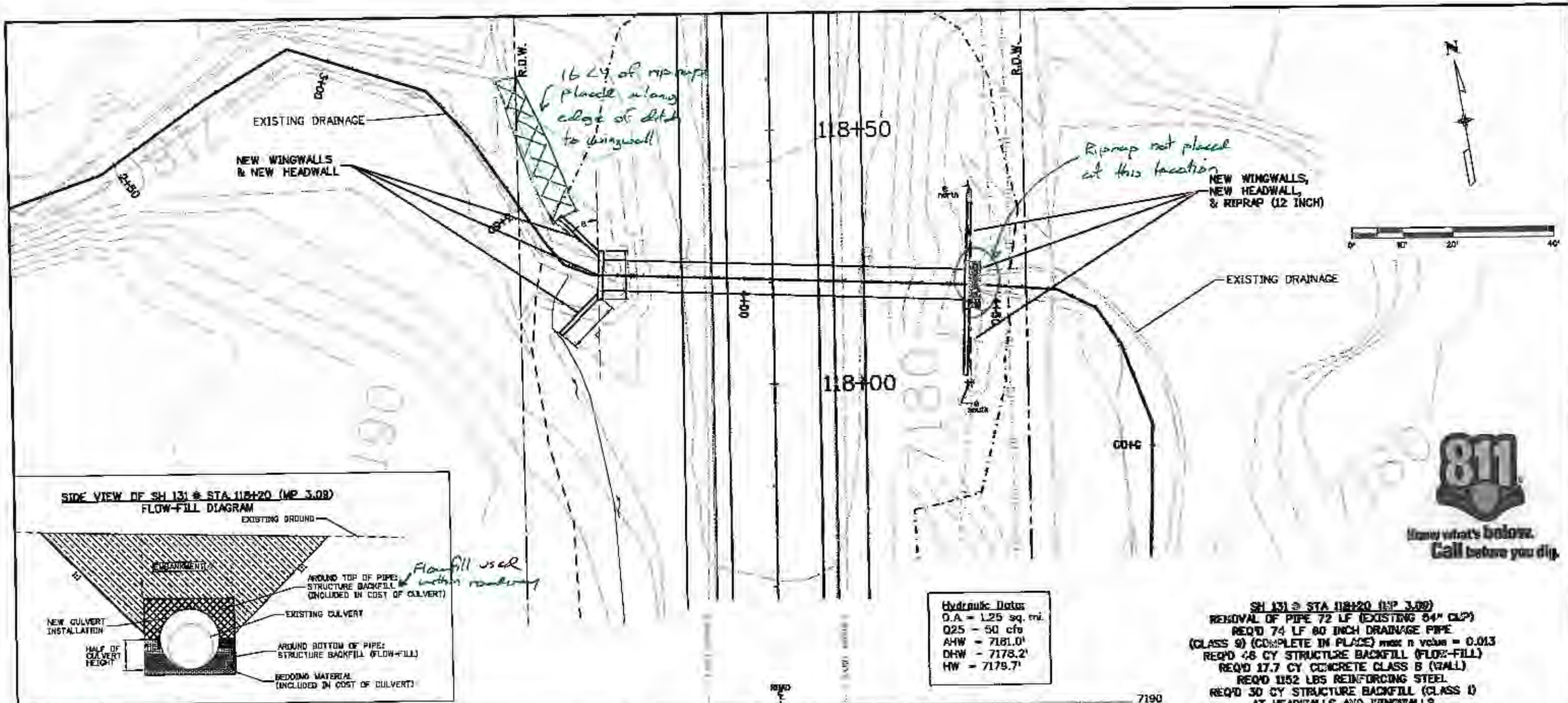
Print Date: 3/1/2013	Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: 18861DES_Plan001_NOGR.dgn	Date:	Comments	Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:50 Vert. Scale: N/A				Region 03 PJL	Revised:
Unit Information: GJ Design JSL					Void:

MP 3.09 PLAN

Designer:	J. Klish	Structure Numbers	MP 3.09
Detailer:	J. Klish		131B003090
Subset:	MP 3.09	Subset Sheets: 1 of 2	

Project No./Code
C 131A-D35
18861R
Sheet Number 25

klishj 3:30:11 PM c:\projectwise\pw2_working\d0233335\18861DES_Plan001_NOGR.dgn



Print Date: 4/24/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_StructureDETAIL001.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions:
Horiz. Scale: 1:20 Vert. Scale: As Noted		Region 03 PJL	Revised: 12/23/13
Unit Information: GJ Design JSL			Void:

MP 3.09 PROFILE & DETAILS

Designer:	J. Klish	Structure Numbers	MP 3.09
Detailer:	J. Klish		131B003090
Subset:	MP 3.09	Subset Sheets: 2 of 2	

Project No./Code: C 131A-035

18861R

Sheet Number 26

NOTE: TWO FOOT INTERVAL FOR EXISTING CONTOUR LINES

CULVERT LINING AND INSTALL NEW HEADWALL (SEE MP 5.13 PROFILE & DETAILS FOR DETAILS)

EXISTING WETLANDS

Fence left in place Except 52LF at pipe headwall

SHORING IS ANTICIPATED TO BE USED IN THIS AREA & THIS WORK WILL BE PAID FOR AS SHORING (AREA 3)

STA. 224+00 RT TO STA. 226+00 RT REMOVE FENCE & INSTALL FENCE BARBED WIRE WITH METAL POST AFTER COMPLETION

228+00

227+00

226+00

225+00

224+00

223+00

222+00

221+00

220+00

R.O.W.

R.O.W.

Fence will remain

Alkali Creek

STA. 224+00 LT TO STA. 226+00 LT REMOVE FENCE & INSTALL FENCE BARBED WIRE WITH METAL POST AFTER COMPLETION

STA. 224+25 LT TO STA. 225+50 LT REMOVAL OF FENCE POST (PAID FOR AS REMOVAL OF FENCE @ 10 LF EACH)

Alkali Creek Road

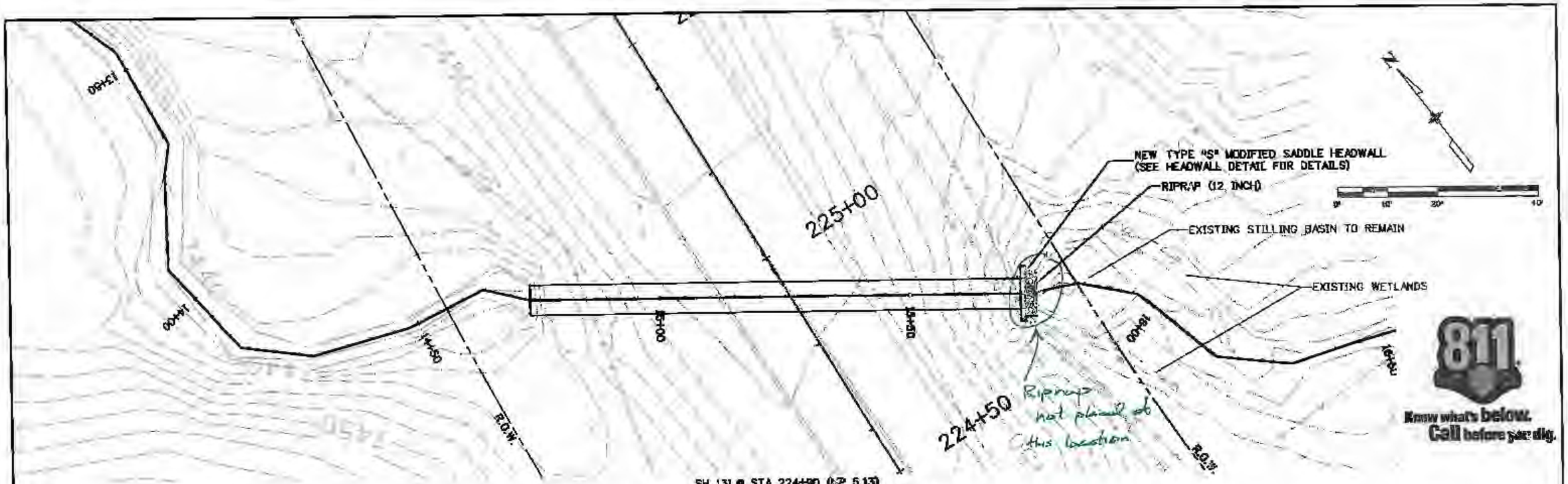
811 Know what's below. Call before you dig.

0 25' 50' 100'

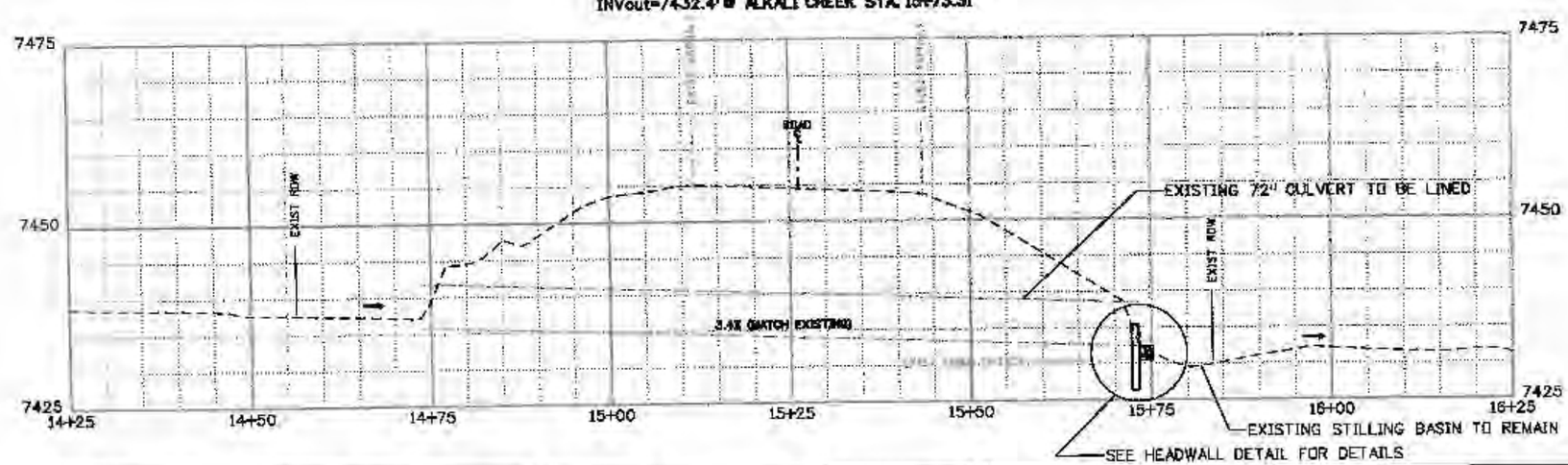
Print Date: 3/1/2013	Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: 18861DES_Plan002_NOGR.dgn	Date:	Comments	Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2388	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: N/A				Region 03 PJL	Revised: 2/25/13
Unit Information: GJ Design JSL					Void:

MP 5.13 PLAN				Project No./Code
Designer:	J. Klish	Structure Numbers	MP 5.13	C 131A-035
Detailer:	J. Klish		1318005130	18861R
Subset:	MP 5.13	Subset Sheets: 1 of 3		Sheet Number 27

klish 2/4/2013 PM scwfbs\pwz_working\d0233338\18861DES_Plan002_NOGR.dgn



SH 131 @ STA 224+50 (LT. 5.13)
REQ'D 50 CF CEMENT GROUT
REQ'D 100 LF CULVERT LINING (72 INCH) (SPECIAL)
REQ'D 4.4 CY CONCRETE CLASS B (W/21)
REQ'D 293 LBS REINFORCING STEEL
REQ'D 10 CY STRUCTURE BACKFILL (CLASS 1)
AT HEADWALLS AND WINGWALLS
REQ'D 2 CY RIPRAP (12 INCH)
INVin=7435.8' @ ALKALI CREEK STA. 14+74.01
INVout=7432.4' @ ALKALI CREEK STA. 15+73.31



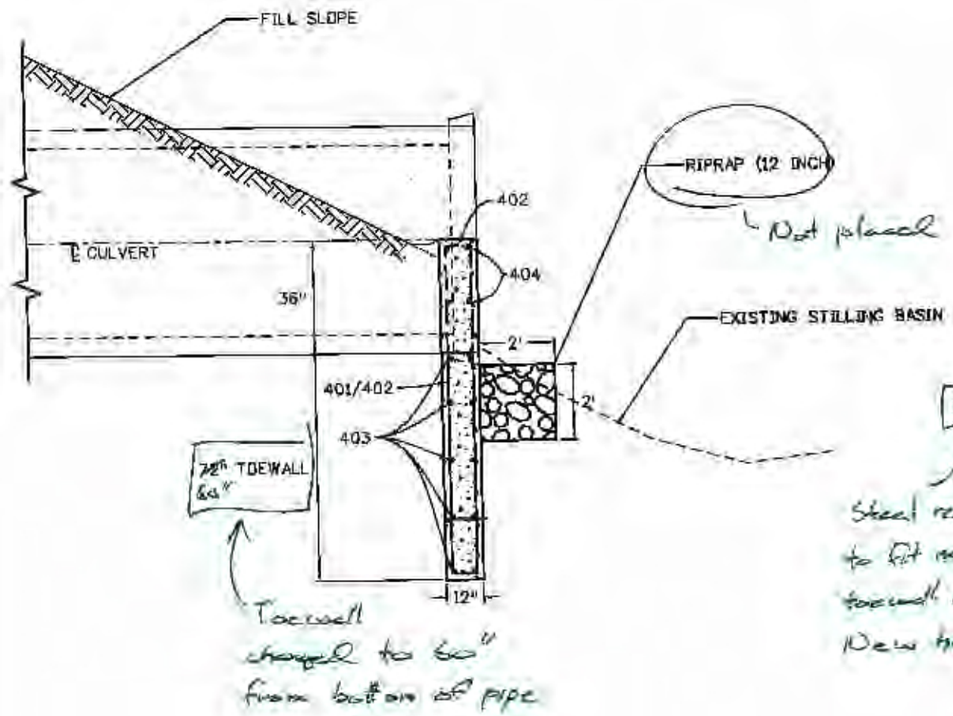
Hydraulic Data:
D.A. = 23.1 sq. mi.
Q25 = 540 cfs
AHW = 7442.0'
DHW = 7451.6'
HW = Overtopping

Print Date: 4/22/2013	Sheet Revisions			As Constructed	MP 5.13 PROFILE & DETAILS	Project No./Code
File Name: 18861DES_StructureDETAIL002.dgn	Date:	Comments	Init.	No Revisions:		C 131A-035
Horiz. Scale: 1:20 Vert. Scale: As Noted				Revised: 12/23/13	Designer: J. Klish / Structure Numbers: MP 5.13	18861R
Unit Information: GJ Design JSL				Void:	Detailer: J. Klish / 131B005130	
					Subset: MP 5.13 / Subset Sheets: 2 of 3	Sheet Number 28

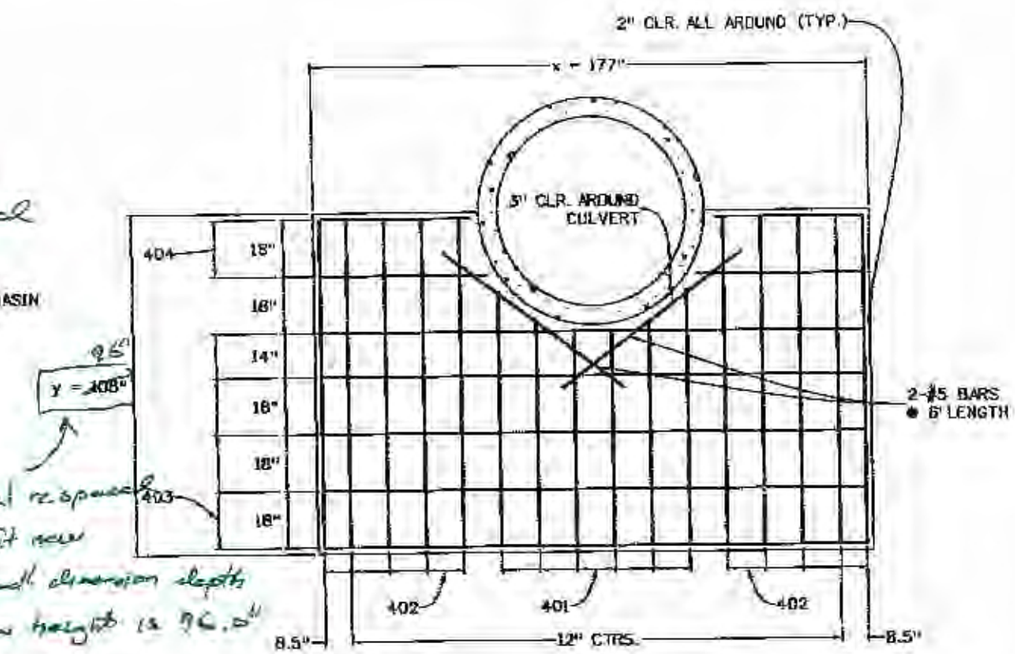
Colorado Department of Transportation
714 Grand Ave.
Eagle, CO 81631
Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03 PJL

HEADWALL DETAIL

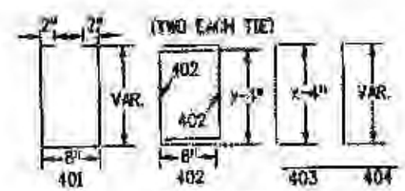
(TYPE "S" MODIFIED SADDLE HEADWALL)



SIDE VIEW

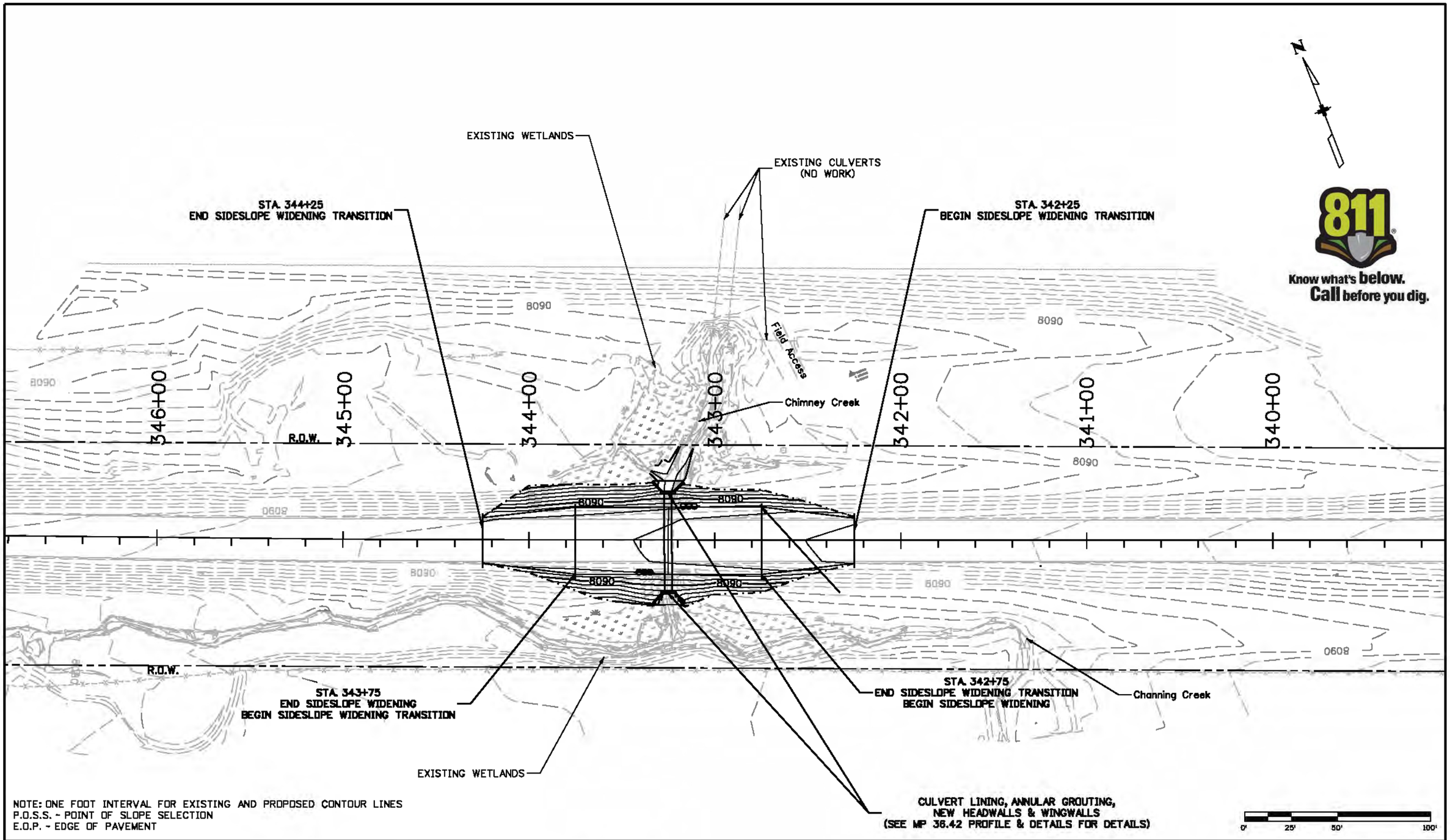


TYPICAL BAR LAYOUT



BAR BENDING

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	MP 5.13 DETAILS	Project No./Code
File Name: 18861DES_StructureDETAIL002_HeadwallDetail.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631	No Revisions:		C 131A-035
Horiz. Scale: NTS Vert. Scale:		Phone: (970) 328-9962 FAX: (970) 328-2368	Revised: 12/23/13	Designer: J. Klish / Structure Numbers: MP 5.13	18861R
Unit Information: GJ Design USL		Region 03 PJL	Void:	Detailer: J. Klish / 1318005130	
				Subset: MP 5.13 / Subset Sheets: 3 of 3	Sheet Number 29



NOTE: ONE FOOT INTERVAL FOR EXISTING AND PROPOSED CONTOUR LINES
P.O.S.S. - POINT OF SLOPE SELECTION
E.O.P. - EDGE OF PAVEMENT

Print Date: 3/1/2013		Sheet Revisions			
File Name: 18861DES_Plan003_NOGR.dgn		Date:	Comments	Init.	
Horiz. Scale: 1:50 Vert. Scale: N/A					
Unit Information: GJ Design JSL					

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714 Grand Ave.
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Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

MP 36.42 PLAN

Designer:	J. Klish	Structure Numbers	MP 36.42
Detailer:	J. Klish		131B036420
Subset:	MP 36.42	Subset Sheets: 1 of 2	

Project No./Code
C 131A-D35
18861R
Sheet Number 30

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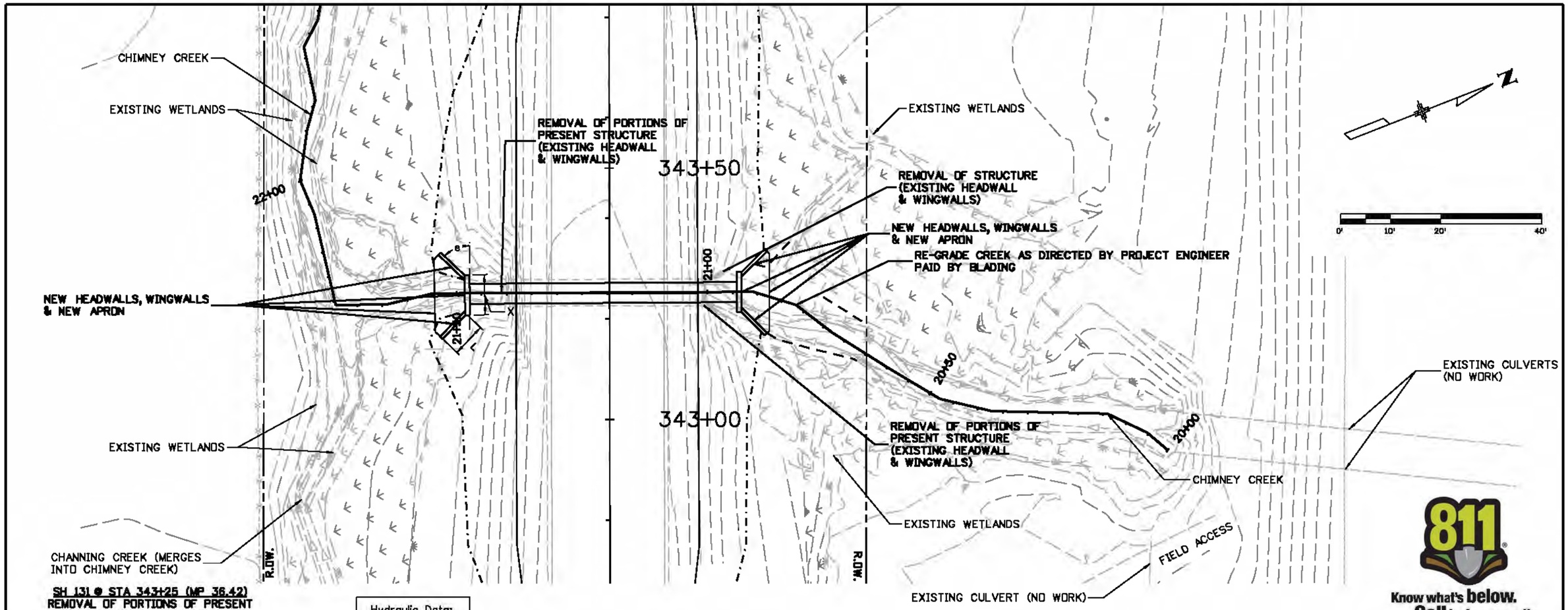
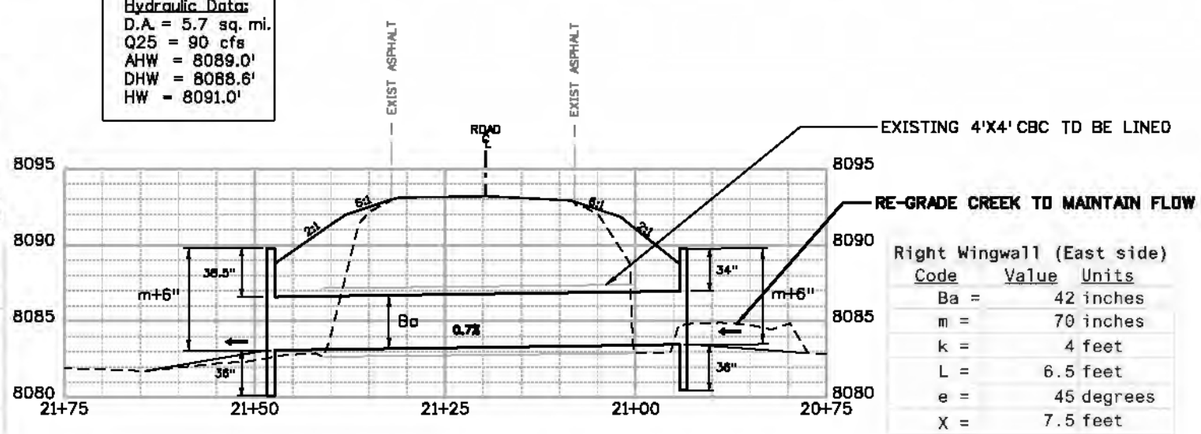


SH 131 @ STA 343+25 (MP 36.42)
REMOVAL OF PORTIONS OF PRESENT STRUCTURE - 2 EACH
REQ'D 50 CF CEMENT GROUT
REQ'D 56 LF CULVERT LINING (42 INCH)
NOMINAL OUTER DIAMETER = 42";
NOMINAL (MAXIMUM) WALL THICKNESS = 1.30"
REQ'D 10 CY ANNULAR SPACE GROUTING
REQ'D 11.7 CY CONCRETE CLASS B (WALL)
REQ'D 921 LBS REINFORCING STEEL
REQ'D 15 CY STRUCTURE BACKFILL (CLASS 1) AT HEADWALLS AND WINGWALLS
INVin=8083.5 @ CHIMNEY CREEK STA. 20+93.25
INVout=8083.1 @ CHIMNEY CREEK STA. 21+48.40

Hydraulic Data:
D.A. = 5.7 sq. mi.
Q25 = 90 cfs
AHW = 8089.0'
DHW = 8088.6'
HW = 8091.0'



Left Wingwall (West side)

Code	Value	Units
Ba =	42	inches
m =	74.5	inches
k =	4	feet
L =	6.5	feet
e =	45	degrees
X =	7.5	feet

Right Wingwall (East side)

Code	Value	Units
Ba =	42	inches
m =	70	inches
k =	4	feet
L =	6.5	feet
e =	45	degrees
X =	7.5	feet

NOTES:
1) ROW LIMITS ARE OUTSIDE THE PROFILE, REFER TO ABOVE DRAWING FOR ROW LIMIT LOCATIONS.
2) NO UTILITIES WERE FOUND ON THIS SHEET.
3) IMPACTS TO WATER FLOW HERE MAY AFFECT OTHER DOWNSTREAM WORK AREAS. PROCEED WITH CAUTION.
4) REFER TO M&S STANDARDS M-601-20 FOR THE CODING OF THE WINGWALL DIMENSIONS.
5) A PREFABRICATED CONCENTRIC HYDRAULIC REDUCER SHALL BE INSTALLED AT THE INLET END OF THE LINER, FROM THE SAME MANUFACTURER AS THE REMAINDER OF THE PIPE LINER MATERIAL. THE COST OF THE REDUCER WILL BE INCLUDED IN THE COST OF CULVERT LINING.

Know what's below. Call before you dig.

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File Name: 18861DES_StructureDETAIL003.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:20 Vert. Scale: As Noted		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

MP 36.42 PROFILE & DETAILS

Designer:	J. Klish	Structure Numbers	MP 36.42
Detailer:	J. Klish		131B036420
Subset:	MP 36.42	Subset Sheets: 2 of 2	

Project No./Code: C 131A-035
18861R
Sheet Number 31

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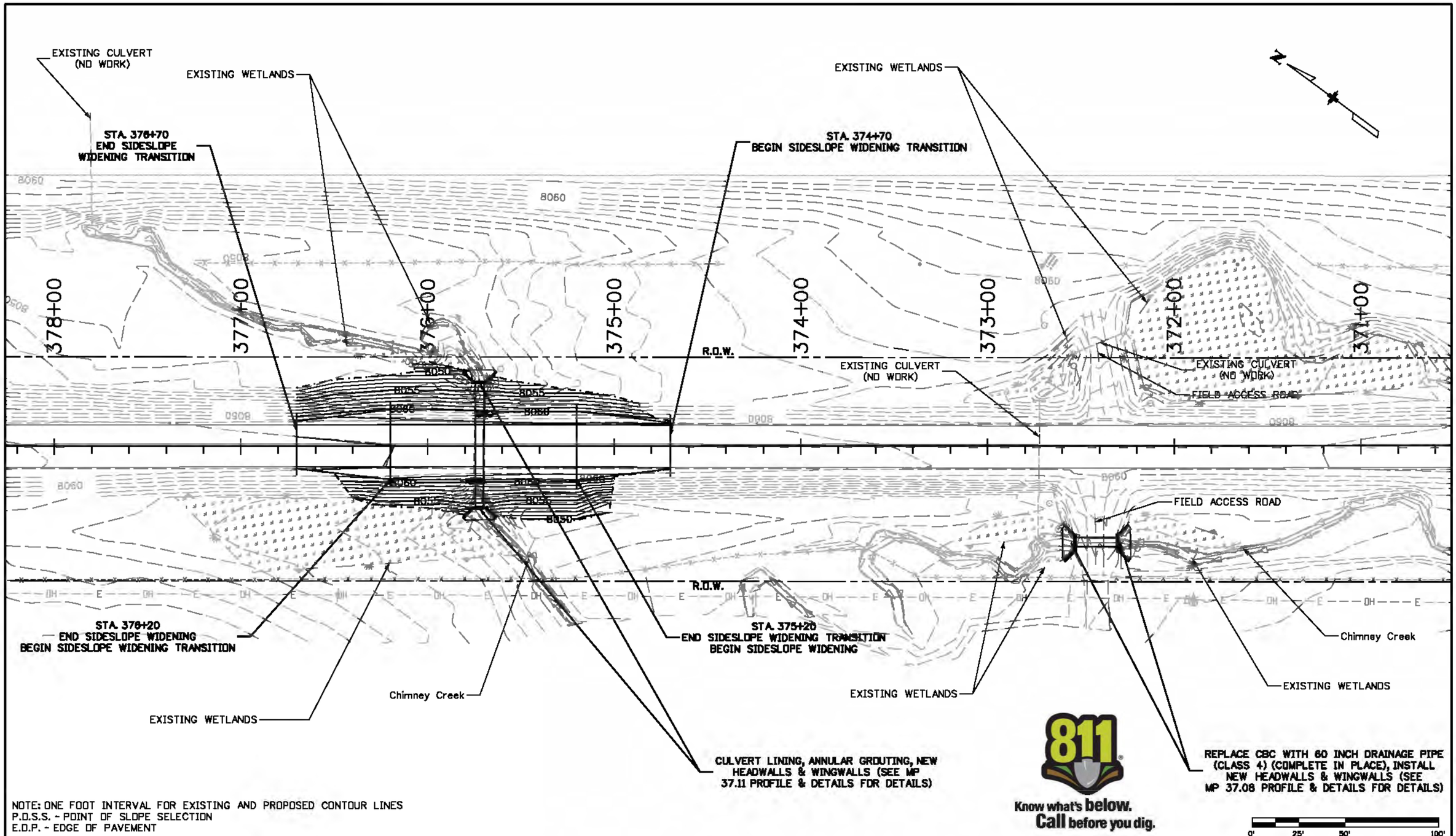

NOTE: ONE FOOT INTERVAL FOR EXISTING AND PROPOSED CONTOUR LINES
P.D.S.S. - POINT OF SLOPE SELECTION
E.O.P. - EDGE OF PAVEMENT

Print Date: 3/1/2013			
File Name: 18861DES_Plan004&5_NOGR.dgn			
Horiz. Scale: 1:50	Vert. Scale: N/A		
Unit Information: GJ Design		JSL	

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
714 Grand Ave.
Eagle, CO 81631
Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

MP 37.08 & MP 37.11 PLAN

Designer:	J. Klish	Structure Numbers	MP 37.11
Detailer:	J. Klish		131B037110
Subset:	37.08 & 37.11	Subset Sheets: 1 of 3	

Project No./Code
C 131A-035
18861R
Sheet Number 32

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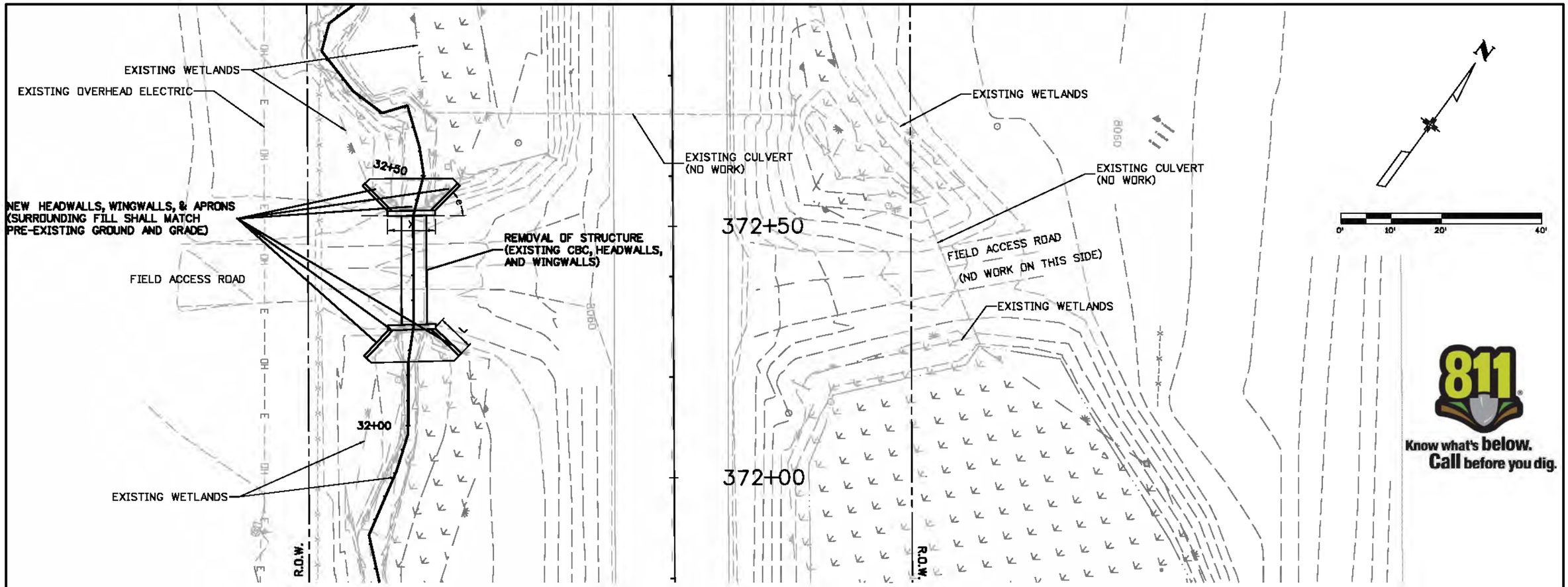
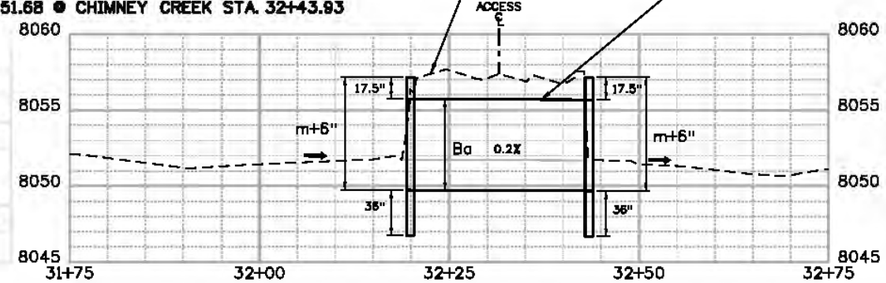


SH 131 @ STA 372+42 LT FIELD ACCESS ROAD (MP 37.08)
REMOVAL OF STRUCTURE - 1 EACH
REQ'D 25 LF 60 INCH DRAINAGE PIPE
(CLASS 4) (COMPLETE IN PLACE) max n value = 0.013
REQ'D 13.2 CY CONCRETE CLASS B (WALL)
REQ'D 1002 LBS REINFORCING STEEL
REQ'D 17 CY BACKFILL STRUCTURE (CLASS 1)
AT HEADWALLS AND WINGWALLS
INVin=8051.74 @ CHIMNEY CREEK STA. 32+19.35
INVout=8051.68 @ CHIMNEY CREEK STA. 32+43.93

12' MINIMUM FILL OVER NEW DRAINAGE PIPE

EXISTING 5'X4' CBC

FIELD ACCESS ℄



South Wingwall

Code	Value	Units
Ba =	60	inches
m =	83.5	inches
k =	4	feet
L =	7	feet
e =	45	degrees
X =	9.5	feet

North Wingwall

Code	Value	Units
Ba =	60	inches
m =	83.5	inches
k =	4	feet
L =	7	feet
e =	45	degrees
X =	9.5	feet

Hydraulic Data:
D.A. = 7.5 sq. mi.
Q25 = 110 cfs
AHW = 8056.0'
DHW = 8054.3'
HW = 8055.2'

NOTES:
1) ROW LIMITS DO NOT CROSS THE PROFILE, REFER TO ABOVE DRAWING FOR ROW LIMIT LOCATIONS.
2) NO UTILITIES CROSS THE PROFILE, REFER TO THE ABOVE DRAWING FOR LOCATES.
3) IMPACTS TO WATER FLOW HERE MAY AFFECT OTHER DOWNSTREAM WORK AREAS. PROCEED WITH CAUTION.
4) REFER TO M&S STANDARDS M-601-20 FOR THE CODING OF THE WINGWALL DIMENSIONS.
5) THE CONTRACTOR SHALL COORDINATE WITH THE LANDOWNER BEFORE MODIFYING THE ACCESS.

Print Date: 4/22/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_StructureDETAIL004.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:20 Vert. Scale: As Noted		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

MP 37.08 PROFILE & DETAILS

Designer:	J. Klish	Structure Numbers	MP 37.08
Detailer:	J. Klish		(none)
Subset:	37.08 & 37.11	Subset Sheets: 2 of 3	

Project No./Code: C 131A-035
18861R
Sheet Number 33

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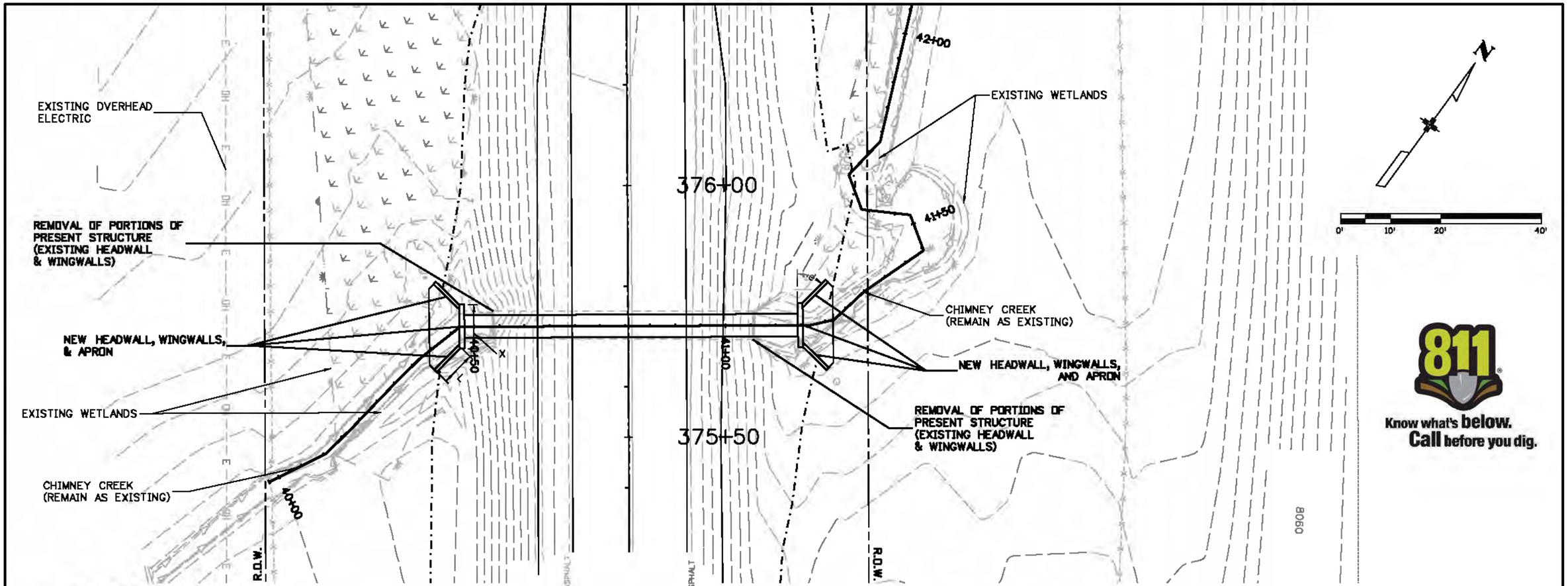
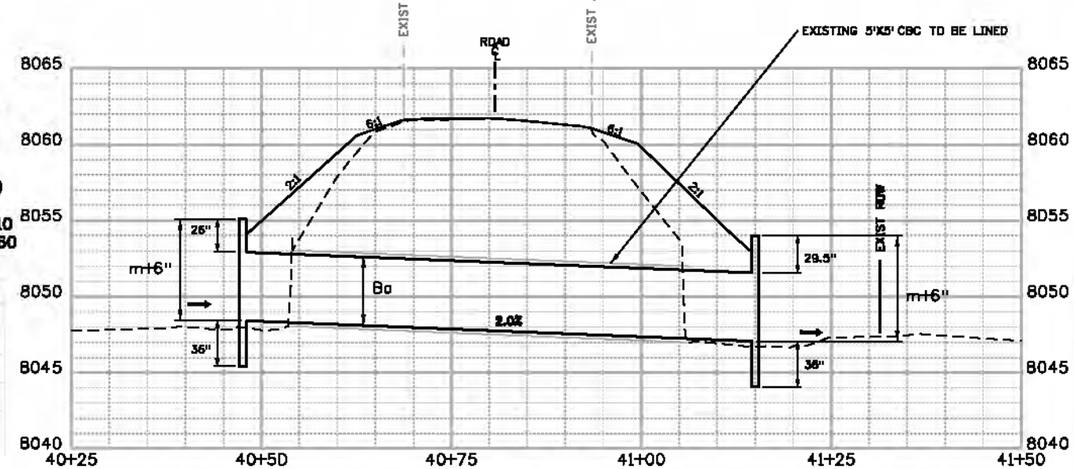


SH 131 @ STA 375+72 (MP 37.11)
REMOVAL OF PORTIONS OF PRESENT STRUCTURE - 2 EACH
REQ'D 50 CF CEMENT GROUT
REQ'D 69 LF CULVERT LINING (54 INCH)
NOMINAL OUTER DIAMETER = 54";
NOMINAL (MAXIMUM) WALL THICKNESS = 1.70"
REQ'D 18.0 CY ANNULAR SPACE GROUTING
REQ'D 14.1 CY CONCRETE CLASS B (WALL)
REQ'D 992 LBS REINFORCING STEEL
REQ'D 15 CY STRUCTURE BACKFILL (CLASS 1)
AT HEADWALLS AND WINGWALLS
INVin=8048.44'@ CHIMNEY CREEK STA. 40+47.10
INVout=8047.04'@ CHIMNEY CREEK STA. 41+15.60

Left Wingwall (West side)

Code	Value	Units
Ba =	54	inches
m =	74	inches
k =	4	feet
L =	6.5	feet
e =	45	degrees
X =	8.5	feet



Hydraulic Data:
D.A. = 8.5 sq. mi.
Q25 = 120 cfs
AHW = 8056.0'
DHW = 8053.5'
HW = 8056.3'

Right Wingwall (East side)

Code	Value	Units
Ba =	54	inches
m =	77.5	inches
k =	4	feet
L =	6.5	feet
e =	45	degrees
X =	8.5	feet

NOTES:
1) ROW LIMITS CROSS THE PROFILE AT CREEK LOCATIONS, REFER TO ABOVE DRAWING FOR ROW LOCATIONS.
2) NO UTILITIES CROSS THE PROFILE, REFER TO THE ABOVE DRAWING FOR LOCATES.
3) IMPACTS TO WATER FLOW HERE MAY AFFECT OTHER DOWNSTREAM WORK AREAS. PROCEED WITH CAUTION.
4) REFER TO M&S STANDARDS M-601-20 FOR THE CODING OF THE WINGWALL DIMENSIONS.
5) A PREFABRICATED CONCENTRIC HYDRAULIC REDUCER SHALL BE INSTALLED AT THE INLET END OF THE LINER, FROM THE SAME MANUFACTURER AS THE REMAINDER OF THE PIPE LINER MATERIAL. THE COST OF THE REDUCER WILL BE INCLUDED IN THE COST OF CULVERT LINING.

Print Date: 4/22/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_StructureDETAIL005.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631	No Revisions: 12/23/13
Horiz. Scale: 1:20 Vert. Scale: As Noted		Phone: (970) 328-9962 FAX: (970) 328-2368	Revised:
Unit Information: GJ Design JSL		Region 03 PJL	Void:

MP 37.11 PROFILE & DETAILS

Designer:	J. Klish	Structure Numbers	MP 37.11
Detailer:	J. Klish		131037110B
Subset:	37.08 & 37.11	Subset Sheets:	3 of 3

Project No./Code: C 131A-035
18861R
Sheet Number 34

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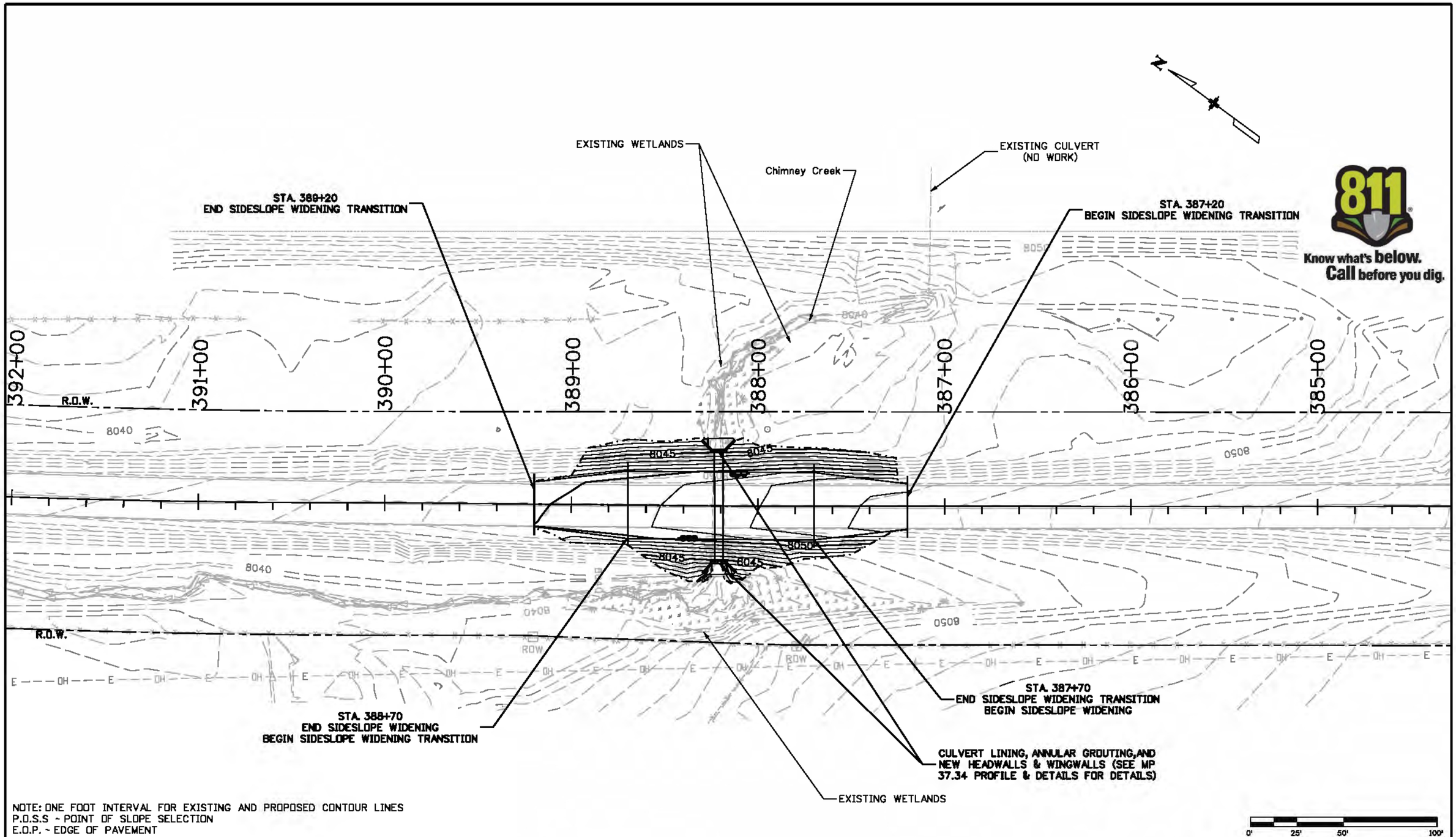


Know what's below. Call before you dig.

NOTE: ONE FOOT INTERVAL FOR EXISTING AND PROPOSED CONTOUR LINES
P.O.S.S - POINT OF SLOPE SELECTION
E.O.P. - EDGE OF PAVEMENT

Print Date: 3/1/2013			
File Name: 18861DES_Plan006_NOGR.dgn			
Horiz. Scale: 1:50	Vert. Scale:	N/A	
Unit Information: GJ Design		JSL	

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
714 Grand Ave.
Eagle, CO 81631
Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03
PJL

As Constructed

No Revisions: 12/23/13

Revised:

Void:

MP 37.34 PLAN

Designer:	J. Klish	Structure Numbers	MP37.34
Detailer:	J. Klish		131B037340
Subset:	MP 37.24	Subset Sheets: 1 of 2	

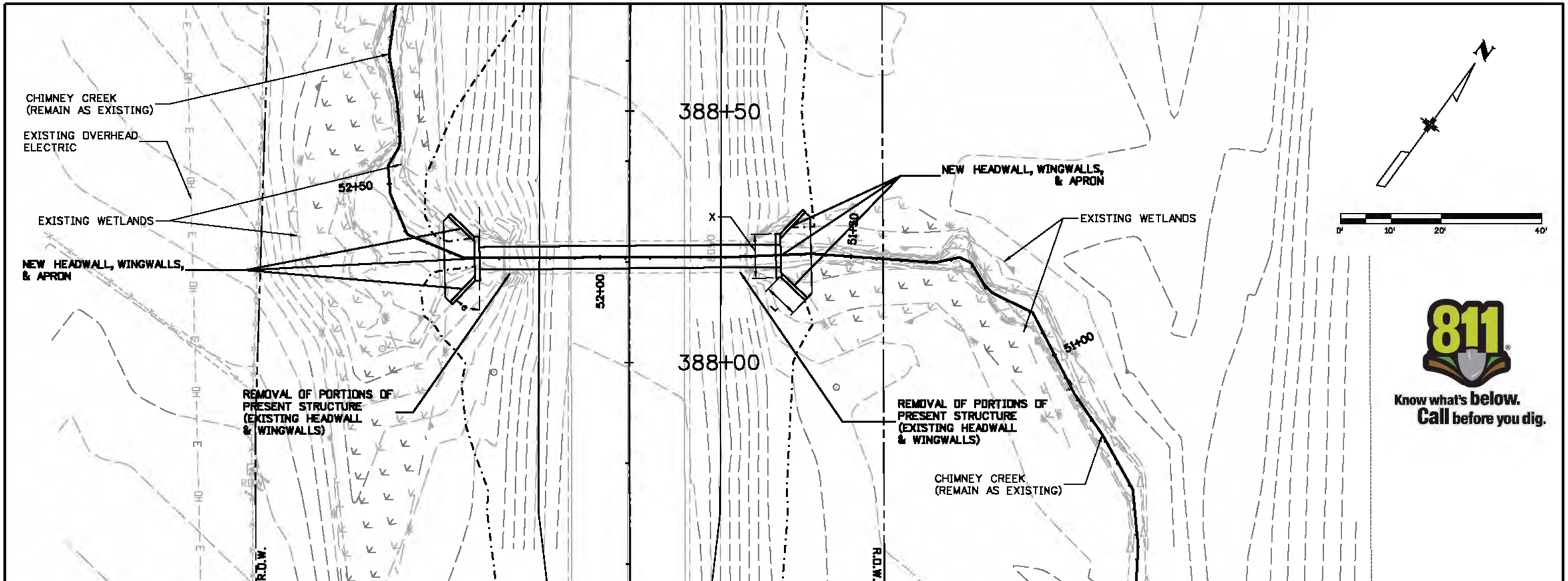
Project No./Code

C 131A-035

18861R

Sheet Number 35

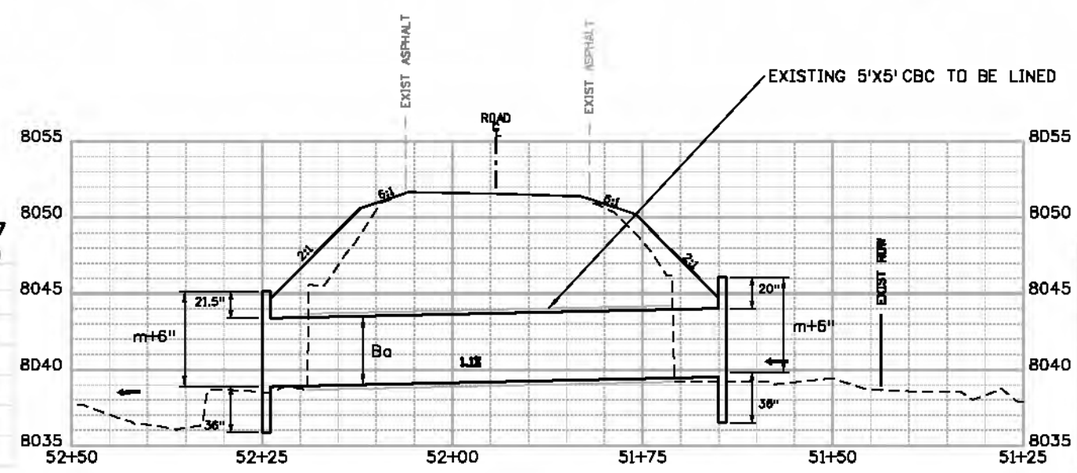
klishj 2:48:05 PM c:\projectwise\pwz_working\d0233335\18861DES_Plan006_NOGR.dgn



SH 131 @ STA 388+21 (MP 37.34)
REMOVAL OF PORTIONS OF PRESENT STRUCTURE - 2 EACH
REQ'D 50 CF CEMENT GROUT
REQ'D 61 LF CULVERT LINING (54 INCH)
NOMINAL OUTER DIAMETER = 54";
NOMINAL (MAXIMUM) WALL THICKNESS = 1.70"
REQ'D 17.0 CY ANNULAR SPACE GROUTING
REQ'D 13.6 CY CONCRETE CLASS B (WALL)
REQ'D 960 LBS REINFORCING STEEL
REQ'D 14 CY STRUCTURE BACKFILL (CLASS 1)
AT HEADWALLS AND WINGWALLS
INVin=8039.52' @ CHIMNEY CREEK STA. 51+64.00
INVout=8038.87' @ CHIMNEY CREEK STA. 52+24.97

Left Wingwall (West side)

Code	Value	Units
Ba =	54	inches
m =	69.5	inches
k =	4	feet
L =	6.5	feet
e =	45	degrees
X =	8.5	feet



Hydraulic Data:
D.A. = 9.1 sq. mi.
Q25 = 125 cfs
AHW = 8046.0'
DHW = 8045.2'
HW = 8048.1'

Right Wingwall (East side)

Code	Value	Units
Ba =	54	inches
m =	66.0	inches
k =	4	feet
L =	6.5	feet
e =	45	degrees
X =	8.5	feet

NOTES:
1) ROW LIMITS CROSS THE PROFILE AT CREEK LOCATIONS, REFER TO ABOVE DRAWING FOR ROW LOCATIONS.
2) NO UTILITIES CROSS THE PROFILE, REFER TO THE ABOVE DRAWING FOR LOCATES.
3) IMPACTS TO WATER FLOW HERE MAY AFFECT OTHER DOWNSTREAM WORK AREAS. PROCEED WITH CAUTION.
4) REFER TO M&S STANDARDS M-601-20 FOR THE CODING OF THE WINGWALL DIMENSIONS.
5) A PREFABRICATED CONCENTRIC HYDRAULIC REDUCER SHALL BE INSTALLED AT THE INLET END OF THE LINER, FROM THE SAME MANUFACTURER AS THE REMAINDER OF THE PIPE LINER MATERIAL. THE COST OF THE REDUCER WILL BE INCLUDED IN THE COST OF CULVERT LINING.

Print Date: 4/22/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_StructureDETAIL006.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:20 Vert. Scale: As Noted		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

MP 37.34 PROFILE & DETAILS

Designer:	J. Klish	Structure Numbers	MP 37.34
Detailer:	J. Klish		131B03740B
Subset:	MP 37.34	Subset Sheets: 2 of 2	

Project No./Code: C 131A-035
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Sheet Number 36

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END PROJECT
C 131A-035
STA. 422+89
(MP 38.00)

EXISTING CULVERTS
(NO WORK)

EXISTING WETLANDS

STA. 402+80
END SIDESLOPE WIDENING TRANSITION

STA. 400+80
BEGIN SIDESLOPE WIDENING TRANSITION

405+00 404+00 403+00 402+00 401+00 400+00 399+00 398+00

R.O.W.

R.O.W.

STA. 402+30
END SIDESLOPE WIDENING
BEGIN SIDESLOPE WIDENING TRANSITION

CULVERT LINING, ANNULAR GROUTING, AND
NEW HEADWALLS & WINGWALLS (SEE MP
37.70 PROFILE & DETAILS FOR DETAILS)

Headwall configuration changed. See sheet # 38.

EXISTING WETLANDS

STA. 401+30
END SIDESLOPE WIDENING TRANSITION
BEGIN SIDESLOPE WIDENING

Chimney Creek

Know what's below.
Call before you dig.

NOTE: ONE FOOT INTERVAL FOR EXISTING AND PROPOSED CONTOUR LINES
P.O.S.S - POINT OF SLOPE SELECTION
E.O.P. - EDGE OF PAVEMENT

0' 25' 50' 100'

Print Date: 3/1/2013		Sheet Revisions			
File Name: 18861DES_Plan007_NOGR.dgn		Date:	Comments	Init.	
Horiz. Scale: 1:50 Vert. Scale: N/A					
Unit Information: GJ Design JSL					

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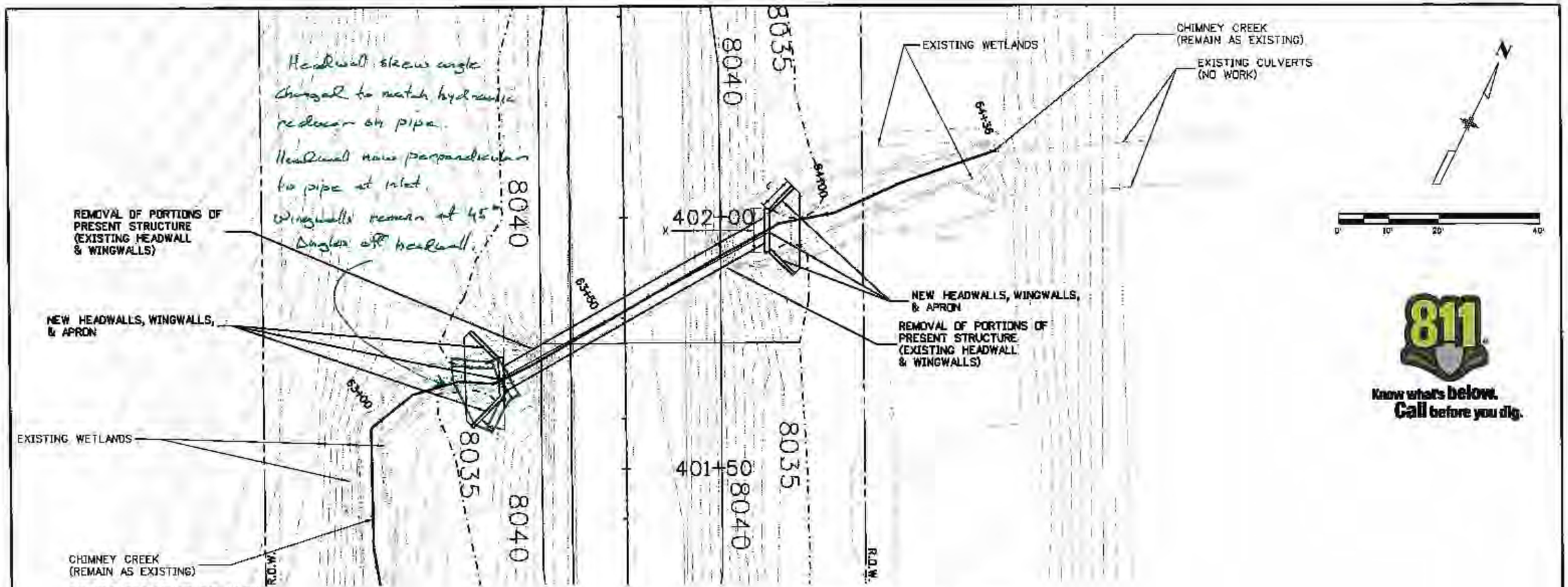
Region 03 PJL

As Constructed
No Revisions
Revised: 12/25/13
Void:

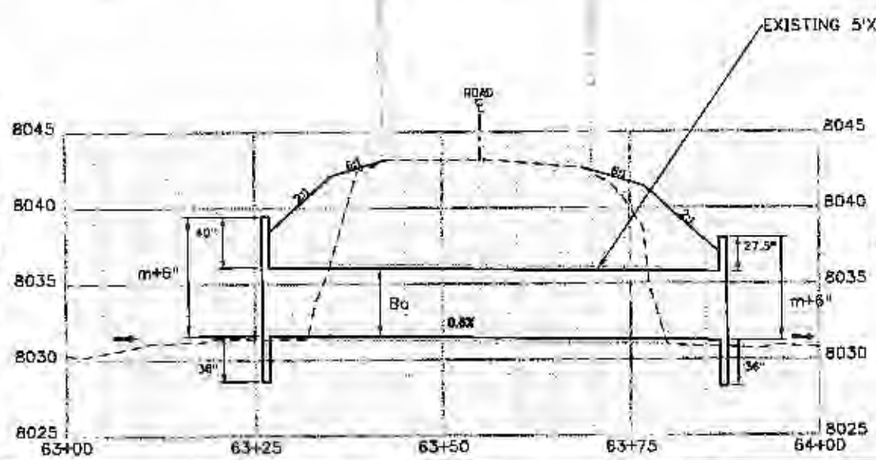
MP 37.70 PLAN

Designer:	J. Klish	Structure Numbers	MP 37.70
Detailer:	J. Klish		131B037700
Subset:	MP 37.70	Subset Sheets: 1 of 2	

Project No./Code
C 131A-035
18861R
Sheet Number 37



SH 131 @ STA 401+82 (MP 37.70)
REMOVAL OF PORTIONS OF PRESENT STRUCTURE - 2 EACH
REQ'D 50 CF CEMENT GROUT
REQ'D 62 LF CULVERT LINING (54 INCH)
NOMINAL OUTER DIAMETER = 54";
NOMINAL (MAXIMUM) WALL THICKNESS = 1.70"
REQ'D 17.0 CY ANNULAR SPACE GROUTING
REQ'D 14.8 CY CONCRETE CLASS B (WALL)
REQ'D 1034 LBS REINFORCING STEEL
REQ'D 15 CY STRUCTURE BACKFILL (CLASS 1) AT HEADWALLS AND WINGWALLS
INVin=8031.63 @ CHIMNEY CREEK STA 63+25.98
INVout=8031.27 @ CHIMNEY CREEK STA 63+87.81



Hydraulic Data:
D.A. = 9.6 sq. mi.
Q25 = 130 cfs
AHW = 8039.0'
DHW = 8038.0'
HW = 8040.9'

Left Wingwall (West side)

Code	Value	Units
Ba =	54	inches
m =	88	inches
k =	4	feet
L =	7.5	feet
e =	46	degrees
X =	8.5	feet

Right Wingwall (East side)

Code	Value	Units
Ba =	54	inches
m =	75.5	inches
k =	4	feet
L =	8.5	feet
e =	45	degrees
X =	8.5	feet

NOTES:
1) ROW LIMITS DO NOT CROSS THE PROFILE, REFER TO ABOVE DRAWING FOR ROW LOCATIONS.
2) NO UTILITIES WERE IDENTIFIED ON THIS DRAWING.
3) IMPACTS TO WATER FLOW HERE MAY AFFECT OTHER DOWNSTREAM WORK AREAS, PROCEED WITH CAUTION.
4) REFER TO M&S STANDARDS M-601-20 FOR THE CODING OF THE WINGWALL DIMENSIONS.
5) A PREFABRICATED CONCENTRIC HYDRAULIC REDUCER SHALL BE INSTALLED AT THE INLET END OF THE LINER, FROM THE SAME MANUFACTURER AS THE REMAINDER OF THE PIPE LINER MATERIAL. THE COST OF THE REDUCER WILL BE INCLUDED IN THE COST OF CULVERT LINING.

Print Date: 4/22/2013
File Name: 18861DES_StructureDETAIL007.dgn
Horiz. Scale: 1:20 Vert. Scale: As Noted
Unit Information: GJ Design JSL

Sheet Revisions

Date:	Comments	Init.

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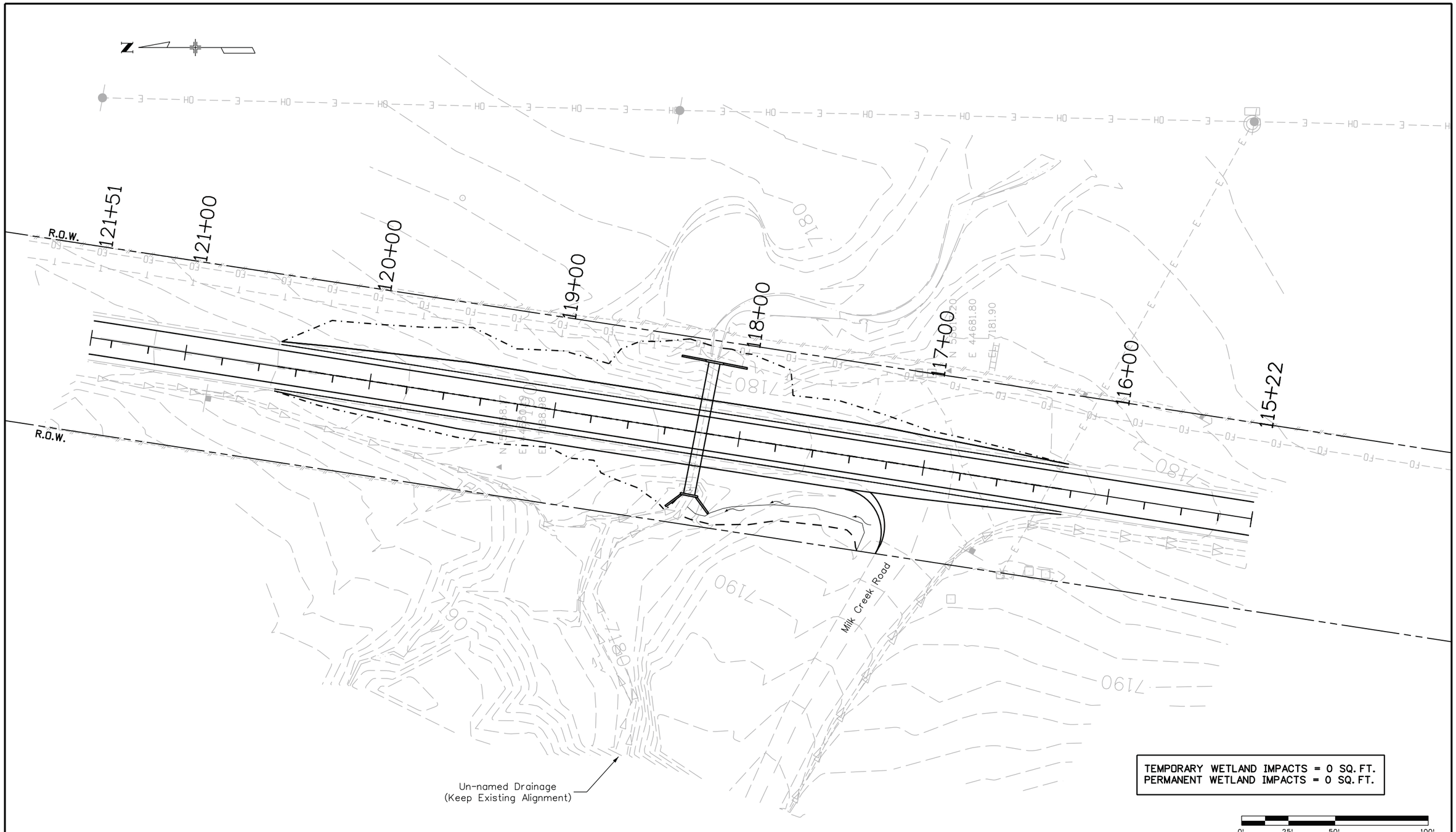
Region 03 PJL

As Constructed
No Revisions:
Revised: 12/23/13
Void:

MP 37.70 PROFILE & DETAILS

Designer:	J. Klish	Structure Numbers	MP 37.70
Detailer:	J. Klish		131B037700
Subset:	MP 37.70	Subset Sheets: 2 of 2	

Project No./Code
C 131A-035
18861R
Sheet Number 38



Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_Impacts001.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:50 Vert. Scale:		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

PERMANENT & TEMPORARY WETLAND IMPACTS @ MP 3.09				Project No./Code
Designer:	J. Klish	Structure Numbers	MP 3.09	C 131A-035
Detailer:	J. Klish		131B003090	18861R
Subset:	IMPACTS	Subset Sheets: 1 of 6		Sheet Number 39

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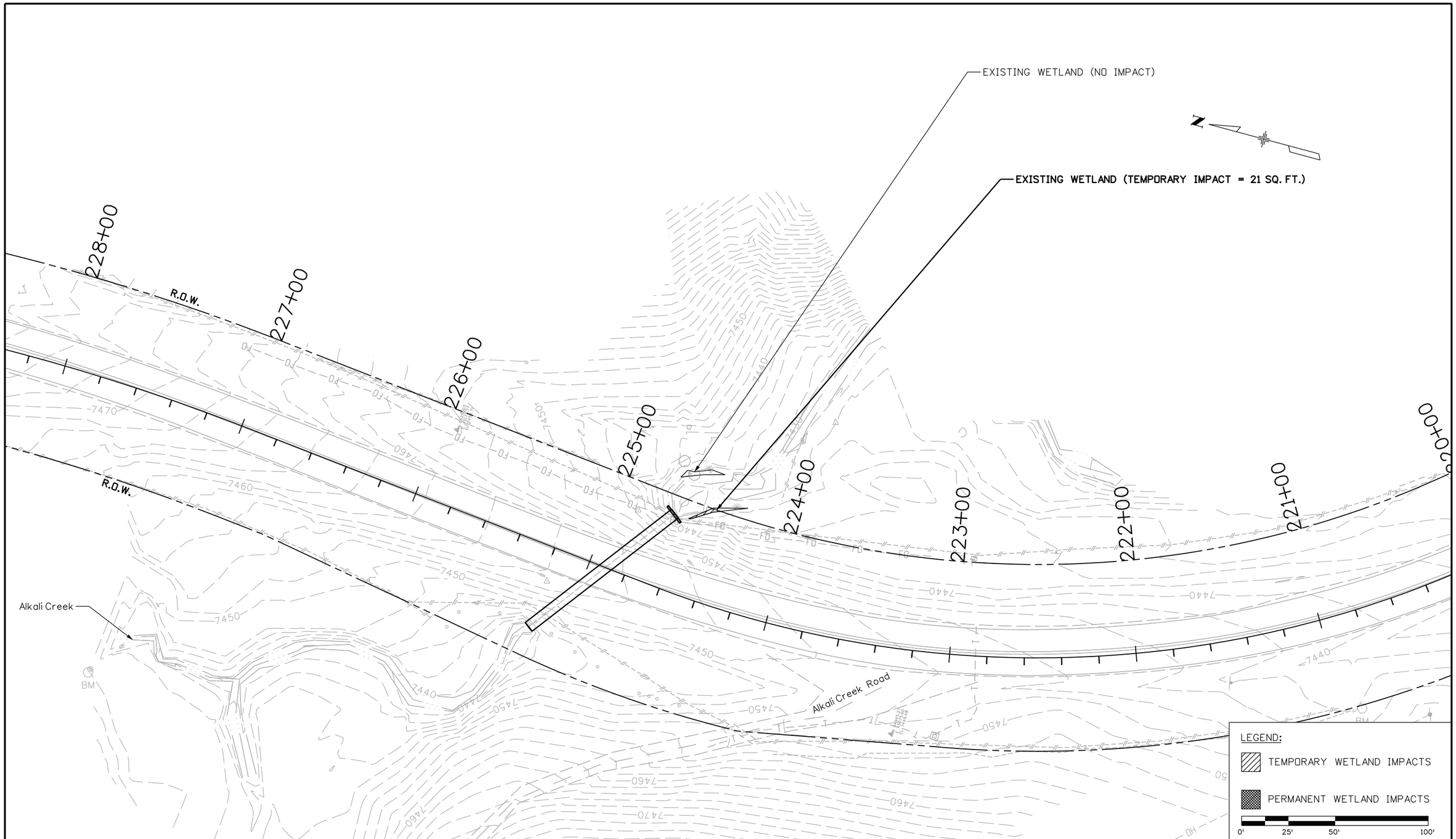

Print Date: 3/1/2013		Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: 18861DES_Impacts002.dgn		Date:	Comments	Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:50 Vert. Scale:					Region 03 PJL	Revised:
Unit Information: GJ Design JSL						Void:

PERMANENT & TEMPORARY WETLAND IMPACTS MP 5.13				Project No./Code
Designer: J. Klish	Structure Numbers	MP 5.13		C 131A-035
Detailer: J. Klish		131B005130		18861R
Subset: IMPACTS	Subset Sheets: 2 of 6			Sheet Number 40

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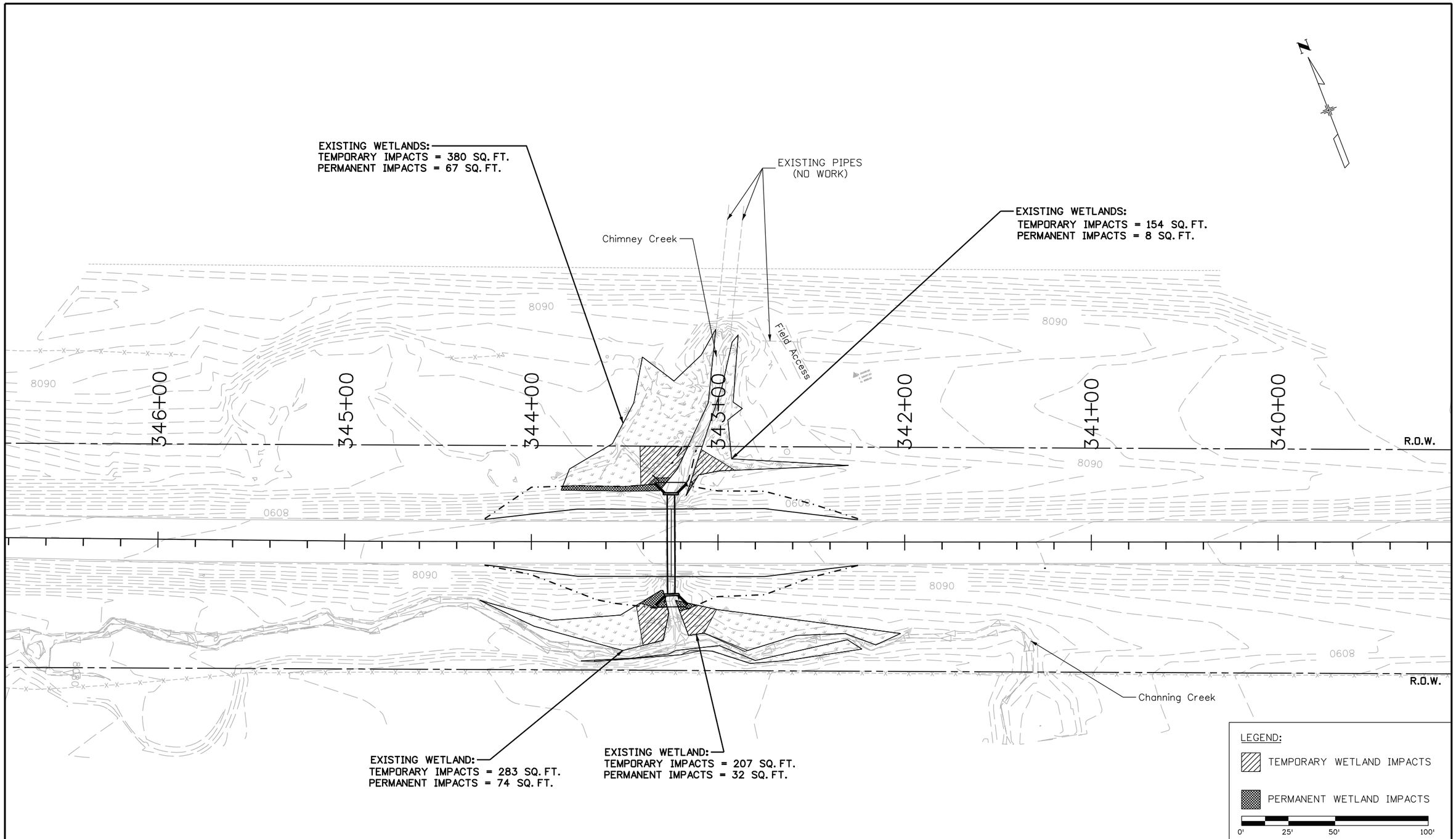

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_Impacts003.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:50 Vert. Scale: N/A		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

PERMANENT & TEMPORARY WETLAND IMPACTS
MP 36.42

Designer:	J. Klish	Structure Numbers	MP 36.42
Detailer:	J. Klish		131B036420
Subset:	DDT	Subset Sheets: 3 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 41

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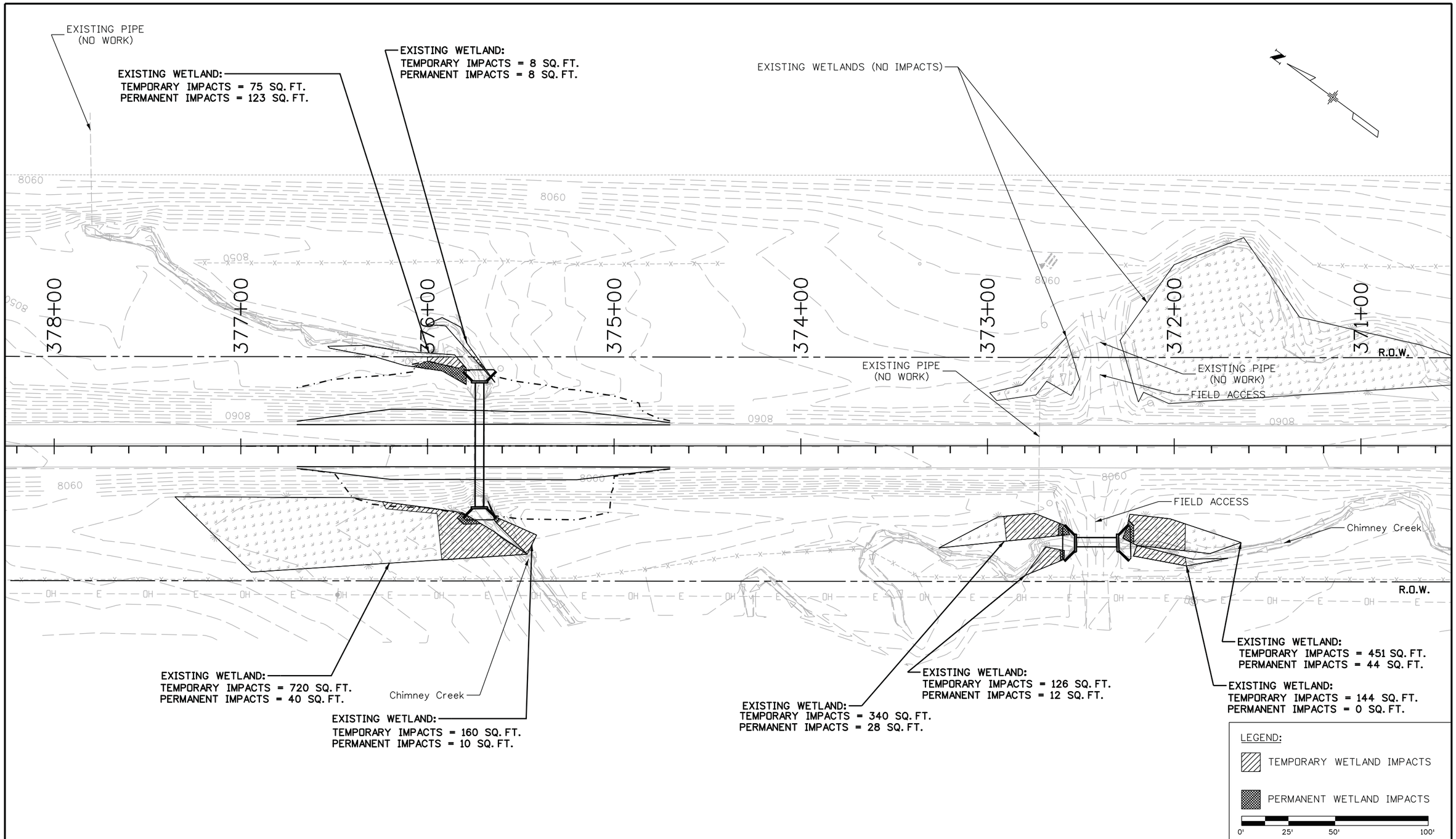

Print Date: 3/1/2013			
File Name: 18861DES_Impacts004&5.dgn			
Horiz. Scale: 1:50	Vert. Scale:	N/A	
Unit Information: GJ Design		JSL	

Sheet Revisions

Date:	Comments	Init.

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Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03
PJL

As Constructed

No Revisions: 12/23/13

Revised:

Void:

PERMANENT & TEMPORARY WETLAND IMPACTS @ MP 37.08 & MP 37.11

Designer:	J. Klish	Structure Numbers	MP 37.11
Detailer:	J. Klish		131B037110
Subset:	IMPACTS	Subset Sheets: 4 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 42

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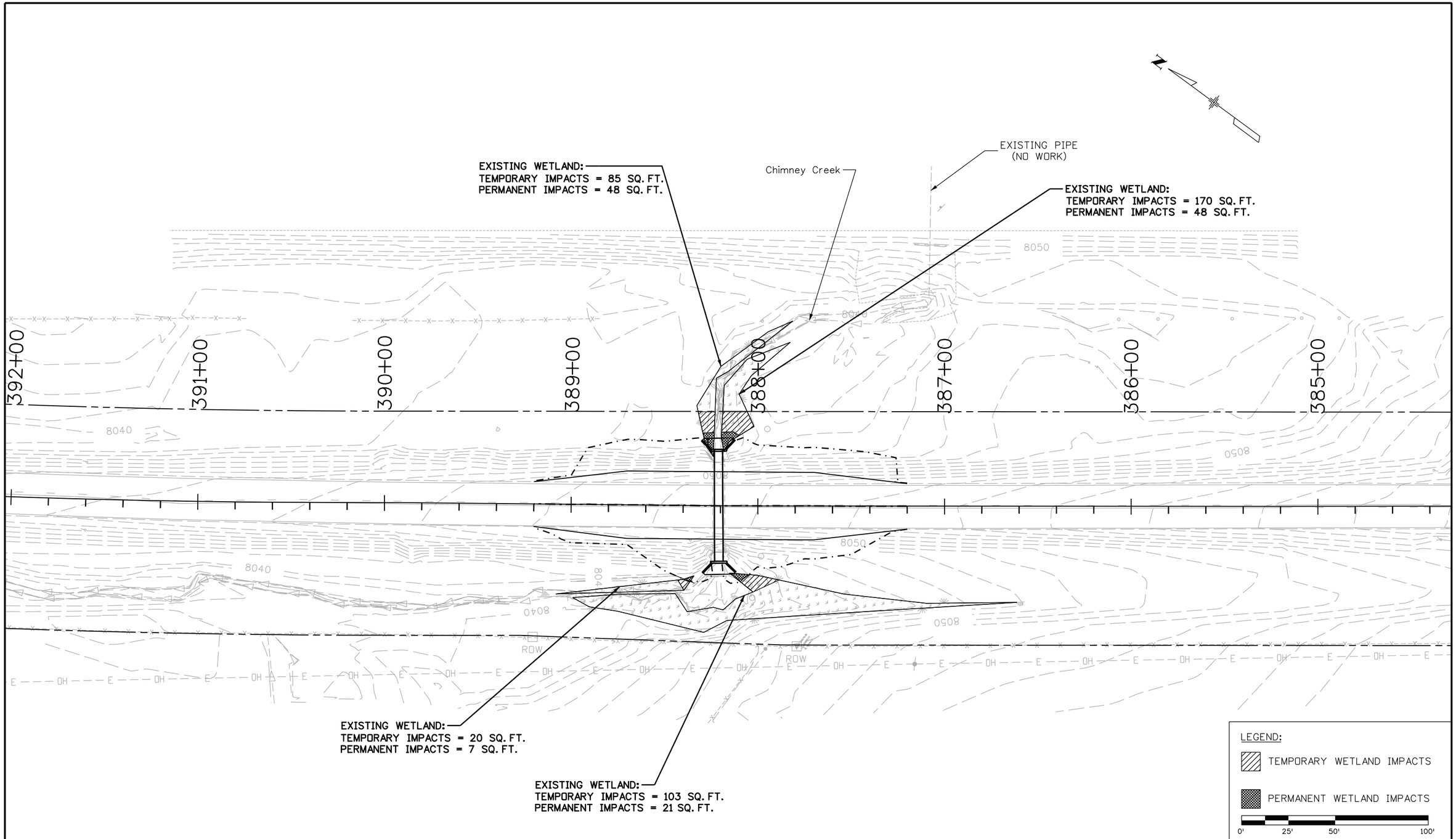

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Print Date: 3/1/2013			
File Name: 18861DES_Impacts006.dgn			
Horiz. Scale: 1:50	Vert. Scale: N/A		
Unit Information: GJ Design	JSL		

Sheet Revisions

Date:	Comments	Init.

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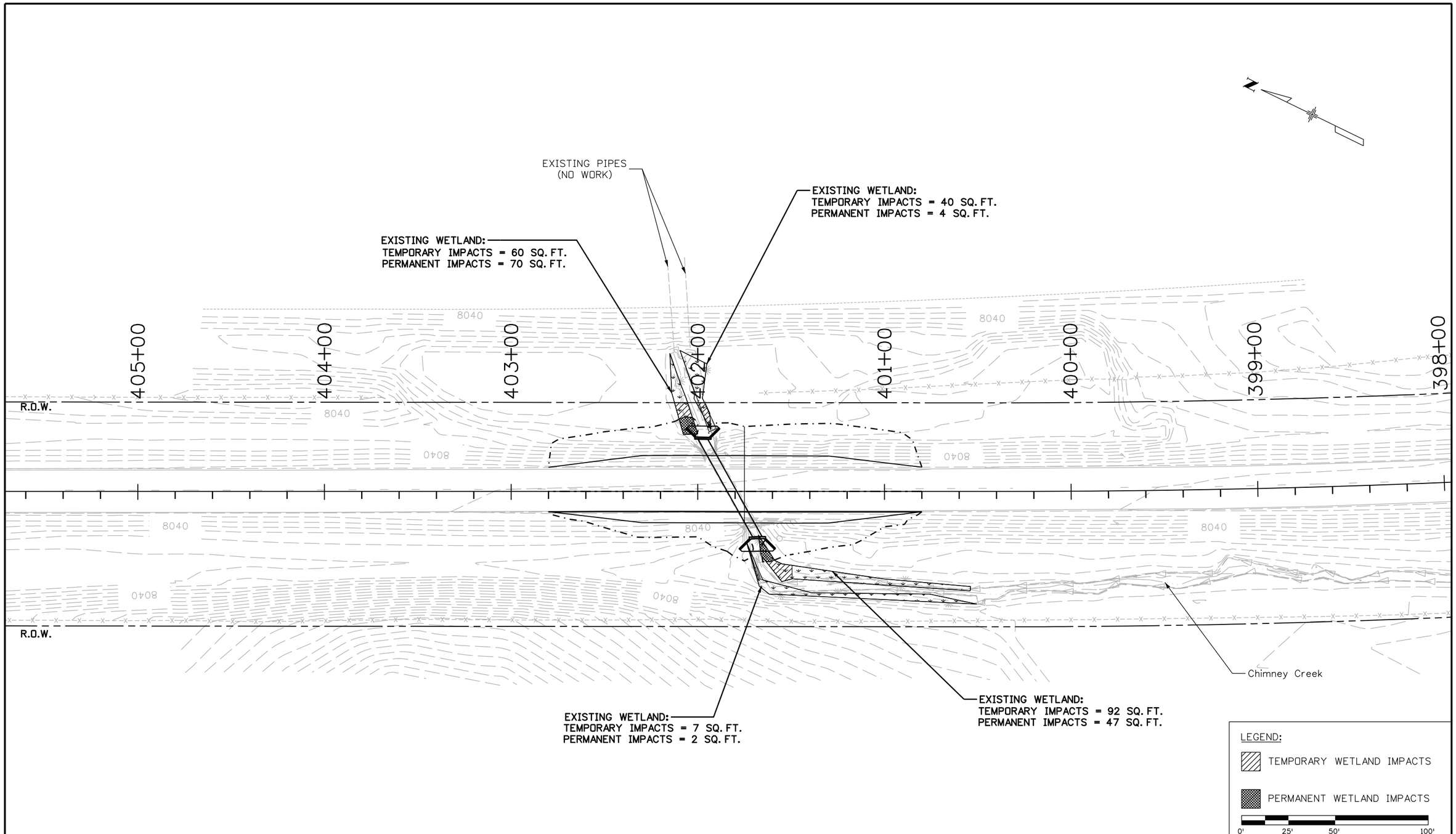
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

PERMANENT & TEMPORARY WETLAND IMPACTS
MP 37.34

Designer:	J. Klish	Structure Numbers	MP37.34
Detailer:	J. Klish		131B037340
Subset:	IMPACTS	Subset Sheets: 5 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 43



Print Date: 3/1/2013			
File Name: 18861DES_Impacts007.dgn			
Horiz. Scale: 1:50	Vert. Scale:	N/A	
Unit Information: GJ Design		JSL	

Sheet Revisions

Date:	Comments	Init.

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Phone: (970) 328-9962 FAX: (970) 328-2368
Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

PERMANENT & TEMPORARY WETLAND IMPACTS @ MP 37.70

Designer:	J. Klish	Structure Numbers	MP 37.70
Detailer:	J. Klish		131B037700
Subset:	IMPACTS	Subset Sheets: 6 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 44

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1. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

A. POTENTIAL POLLUTANT SOURCES

1. Evaluate, identify and describe all potential sources of pollutants at the site in accordance with subsection 107.25 and place any BMPs required to contain potential pollutants.

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

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

Structural BMPs and Application	Narrative	BMP as Designed	In use on site	FIRST CONSTRUCTION ACTIVITIES	DURING CONSTRUCTION	INTERIM/FINAL STABILIZATION
Earth Berm/Stockpile	Placed around toe to contain sediment around stockpile	X			x	
Earth Berm/Toe of fill	Placed prior to earthwork within specified distance of toe to capture sediment and protect undisturbed areas	X		X	X	
Earth Berm/Diversion	Placed to divert drainage and subdivide runoff volume from less than 10 acre sub basins. Temp feature to be removed upon final stabilization	X		X	X	
*Rock Check Dams/Ditch	Velocity checks in ditches placed immediately after ditch grading					
Silt Fence/Sediment Control	Placed on contour to contain construction runoff					
Silt Fence/Protection of Vegetation	Placed to protect undisturbed area and delineate boundary of protected area					
Erosion Logs, Silt Berms or Silt Dikes/Ditch Checks	Erosion Control checks in ditches placed immediately after ditch grading to reduce flow velocity of runoff in ditch	X		X	X	X
Erosion Logs/ Existing Inlet	Placed prior to disturbance at existing inlets where disturbance maybe occurring to cause sediment laden water to enter pipe					
Erosion Logs/culvert inlet or outlet	Placed on culvert to filter or prevent sediment from entering pipe. If disturbance occurs above pipe then erosion logs are placed above pipe	X		X	X	X
Erosion Logs/Sediment Control	Placed to protect undisturbed area and delineate boundary of protected area	X		X	X	
Storm Drain Inlet Protection/Sediment Control	Placed to protect storm drain inlets to filter or prevent sediment from entering drainage system.					
Temporary Sediment Trap/Basin	Contain and filter sediment laden water from < 5 acre sub basins within construction disturbance					
Permanent Sediment Trap/Basin	Utilized during construction to act as temporary sediment containment. Outlet structure shall be modified for construction runoff	X	X	X	X	X
Embankment Protection or Temp Slope Drain	Placed as a conduit or chute to drain runoff down slope and prevent erosion of slope					
Outlet Protection	Material placed as energy dissipation device to prevent erosion at outlet structure					
Concrete Washouts/Construction Control	Construction waste management of concrete washout material	X			X	
Vehicle tracking Pad/ Construction Control	Placed to prevent tracking of sediment from disturbance to offsite surface	X		X	X	
Sweeping/Construction or Source Control	Utilized to remove sediment on pavement surface and to prevent sediment from entering drainage system	X			X	X
Dewatering/ Construction Control	Sediment control to remove or filter sediment from construction dewatering	X			X	X
Temporary Stream Crossing/ Construction Control	Constructed over stream or drainage to prevent discharge of pollutants from construction equipment into stream.					
Clean water diversion	Placed to divert clean surface or ground water from mixing with construction runoff or activity	X			X	
Other						

Non Structural BMPs and Application	Narrative	BMP As Designed	In Use On Site	FIRST CONSTRUCTION ACTIVITIES	DURING CONSTRUCTION	INTERIM/FINAL STABILIZATION
Surface Roughening/Grading Techniques	Interim and temp stabilization of disturbance and to minimize wind and erosion	X			X	X
Seeding Permanent/Final Stabilization	Reduce runoff and control erosion on disturbed areas	X			X	X
Seeding Temporary	Over wintering of disturbance or used to control erosion for areas scheduled for future construction					
Mulch/Mulch Tackifier/ Temp or Final Stabilization	Placed as a surface cover for erosion control and or seeding establishment	X			X	X
Soil Retention Blanket /Temp or Final Stabilization	Placed as surface cover for erosion control and seeding establishment					
Turf Reinforcement Mat/ Final Stabilization	Placed in channels or on slopes for erosion control, channel liner and seeding establishment					
Soil Binder/Temp Stabilization	Placed as surface treatment to provide temp erosion control					
Spray on mulch blanket/ Temp or Final Stabilization	Placed cover on slopes to control erosion and seeding establishment	X			X	X
Vegetative Buffer Strips	Filter sediment laden runoff from disturbance area	X		X	X	X
Protection Of Trees/Protected Resources -Fence Plastic	Placed prior to construction to protect existing vegetation to remain and to protect areas behind ROW without existing fence.	X		X	X	
Preservation Of Mature Vegetation/Work access and grading plans	Used to protect existing stable cover and minimize impact to vegetation	X		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 for your information only.

C. OFFSITE DRAINAGE (RUN ON WATER)

1. Place BMPs to address run-on water in accordance with subsection 208.03.

D. CONSTRUCTION DEWATERING:

1. Obtain a dewatering permit from CDPHE if conditions of their low risk guidance for Discharges of Uncontaminated Groundwater to Land are not met; see subsection 107.25(b) 8.

E. VEHICLE TRACKING PAD

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.

2. DURING CONSTRUCTION

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

3. INTERIM AND FINAL STABILIZATION

A. SEEDING PLAN
Soil preparation, soil conditioning or topsoil, seeding (native), mulching (weed free) and mulch tackifier will be required for an estimated 2.0 acres of disturbed area within the right-of-way limits which are not surfaced. The following types and rates shall be used:

The following types and rates shall be used at MP 3.09 & MP 5.13 areas:

COMMON NAME	SCIENTIFIC NAME	RATE LBS PLS/AC
'Garnet' Mountain Brome	Bromus marginatus	3
'Joseph' Idaho Fescue	Festuca idahoensis	2
'VNS' Needle and Thread	Hesperostipa comata	3
'VNS' Prairie Junegrass	Koeleria macrantha	1
'Arriba' Western Wheatgrass	Pascopyrum smithii	4
'High Plains' Sandberg Bluegrass	Poa secunda ssp. sandbergii	2
'P-7' Bluebunch Wheatgrass	Pseudoroegneria spicata ssp. spicata	4
TOTAL		19

The following types and rates shall be used at MP 36.42 through MP 37.70 areas:

COMMON NAME	SCIENTIFIC NAME	RATE LBS PLS/AC
'Sourdough' Bluejoint reedgrass	Calamagrostis canadensis	2
'Nortran' Tufted Hairgrass	Deschampsia caespitosa	1
VNS, American mannagrass	Glyceria grandis	1
VNS, Nebraska sedge	Carex nebrascensis	2.5
'Sodar" Streambank wheatgrass	Elymus lanceolatus spp. psammophilus	6
'Arriba' Western wheatgrass	Pascopyrum smithii	8
TOTAL		20.5

NOTE: VNS=Variety not stated

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 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:

Soil conditioner paid for as Item 212- Soil Conditioning (Acre)		
Biological nutrient organic based fertilizer (lbs/acre)*	Humate (lbs/acre)	Compost (cy/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. Place compost when required to amend embankment and soil conditioner may be combined as a single application.

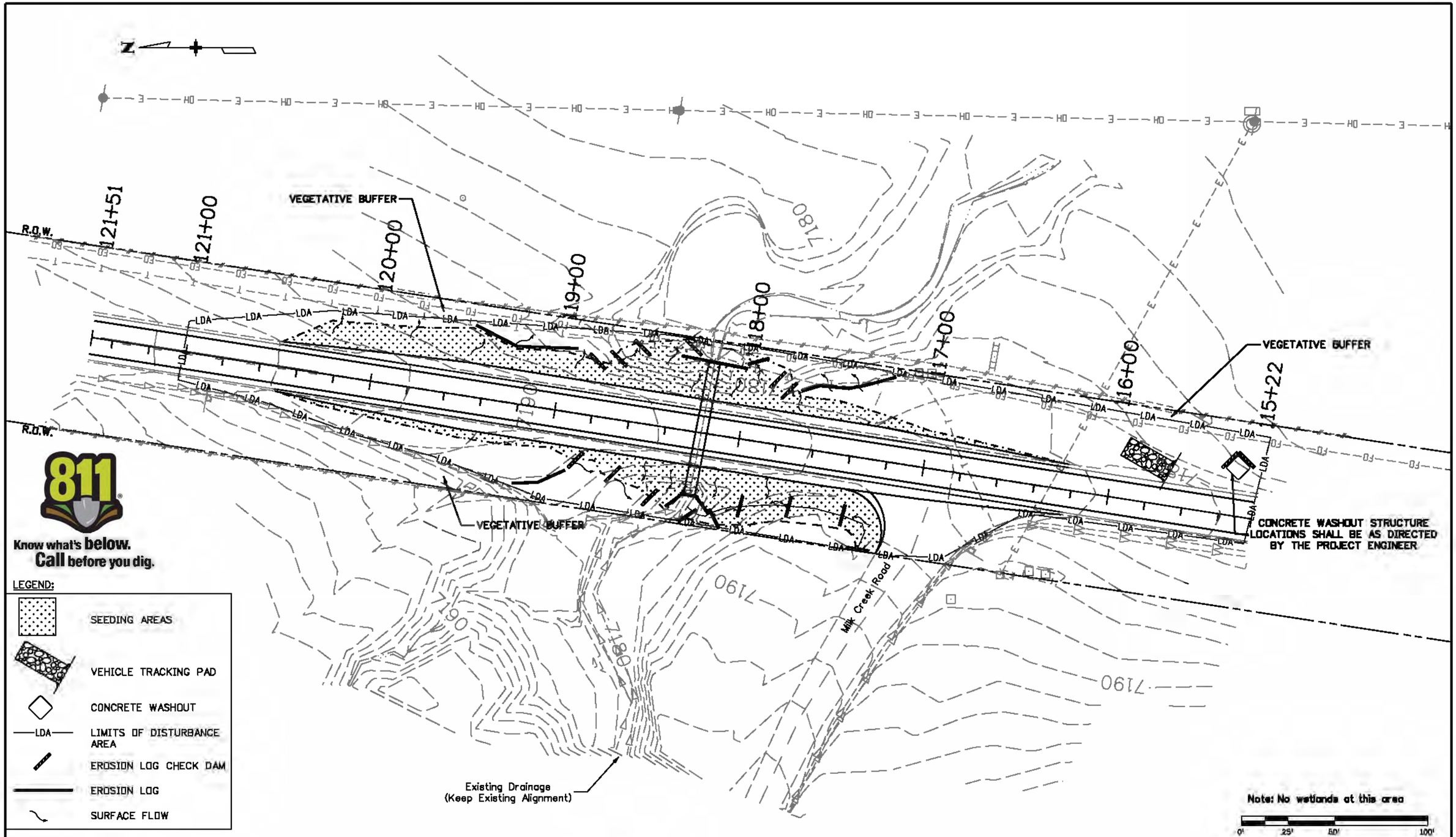
F. BLANKET APPLICATION: On slopes and ditches requiring a blanket, the blanket shall be placed in lieu of mulch and mulch tackifier.

4. TABULATION OF STORMWATER QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	AS CONST.
208-00002	EROSION LOG (12 INCH)	LF	2360	
208-00045	CONCRETE WASHOUT STRUCTURE	EACH	6	
208-00070	VEHICLE TRACKING PAD	EACH	6	
208-00103	REMOVAL AND DISPOSAL OF SEDIMENT (LABOR)	HOUR	30	
208-00105	REMOVAL AND DISPOSAL OF SEDIMENT (EQUIPMENT)	HOUR	30	
212-00006	SEEDING (NATIVE)	ACRE	2	
212-00032	SOIL CONDITIONING	ACRE	2	
213-00003	MULCHING (WEED FREE)	ACRE	0.6	
213-00061	MULCH TACKIFIER	LB	120	
216-00015	SOIL RETENTION BLANKET (EXCELSIOR)	SY	6776	
240-00000	WILDLIFE BIOLOGIST	HOUR	40	
607-11525	FENCE (PLASTIC)	LF	3020	

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. Maintenance of seeded areas shall be paid for as: Included in the price of the work.
C. Each Concrete Washout Structure will be paid for once.



Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_SWMP_Map001.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: 1:50 Vert. Scale: N/A		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

STORMWATER MANAGEMENT PLAN SITE MAP
MP 3.09

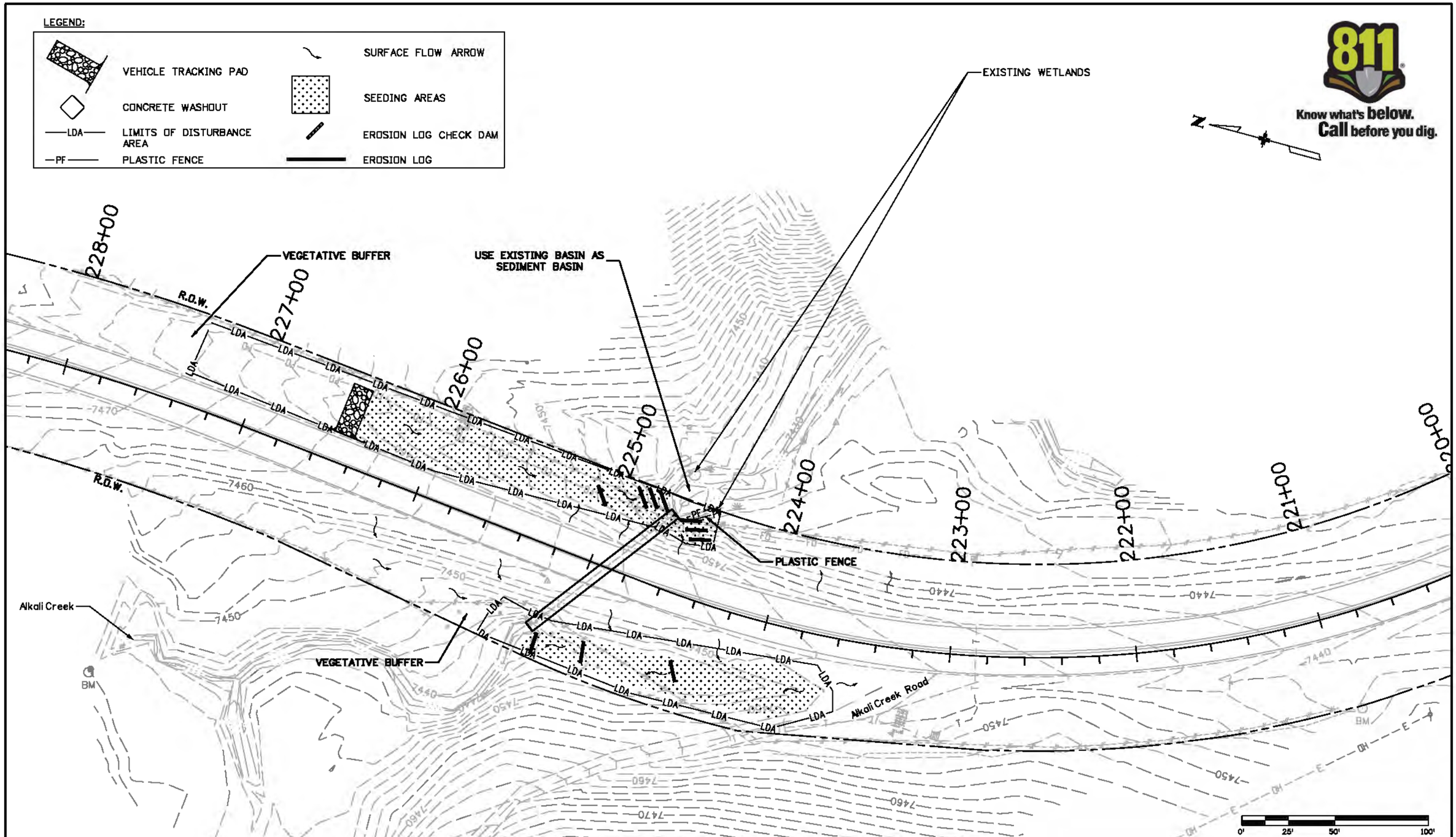
Designer:	J. Klish	Structure Numbers	MP 3.09
Detailer:	J. Klish		131B003090
Subset:	SWMP MAP	Subset Sheets: 1 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 47

klishj 2:49:38 PM c:\projectwise\pwz_working\d0233335\18861DES_SWMP_Map001.dgn

LEGEND:

- VEHICLE TRACKING PAD
- CONCRETE WASHOUT
- LDA — LIMITS OF DISTURBANCE AREA
- PF — PLASTIC FENCE
- SURFACE FLOW ARROW
- SEEDING AREAS
- EROSION LOG CHECK DAM
- EROSION LOG



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Horiz. Scale: 1:50 Vert. Scale: N/A		Phone: (970) 328-9962 FAX: (970) 328-2368	Revised:
Unit Information: GJ Design JSL		Region 03 PJL	Void:

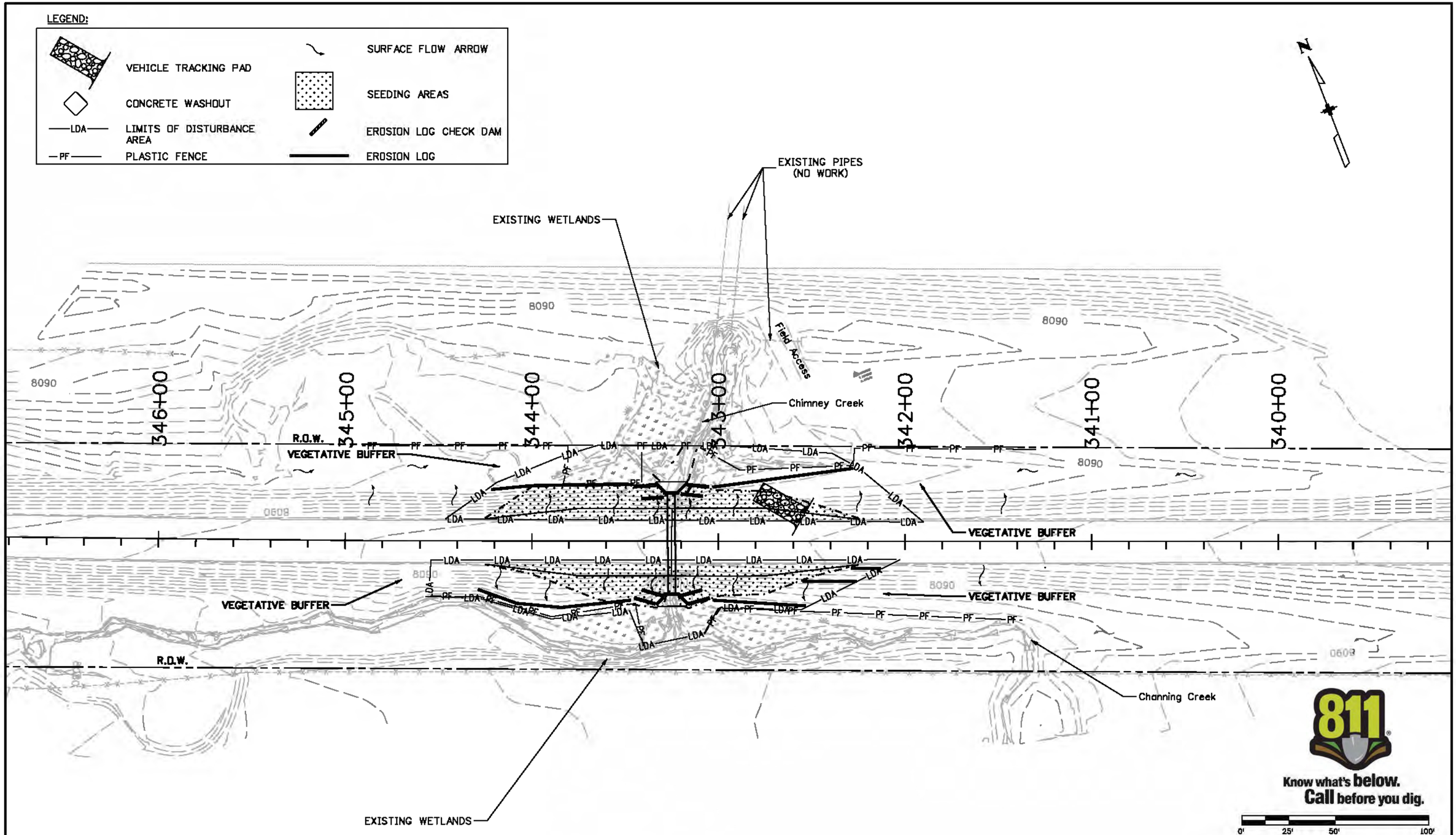
STORMWATER MANAGEMENT PLAN SITE MAP MP 5.13			
Designer: J. Klish	Structure Numbers	MP 5.13	
Detailer: J. Klish		131B005130	
Subset: SWMP MAP	Subset Sheets: 2 of 6		

Project No./Code
C 131A-D35
18861R
Sheet Number 48

klishj 12:48:44 PM c:\projectwise\pwz_working\d0233335\18861DES_SWMP_Map002.dgn

LEGEND:

- VEHICLE TRACKING PAD
- CONCRETE WASHOUT
- LDA — LIMITS OF DISTURBANCE AREA
- PF — PLASTIC FENCE
- SURFACE FLOW ARROW
- SEEDING AREAS
- EROSION LOG CHECK DAM
- EROSION LOG



Know what's below. Call before you dig.

Print Date: 3/1/2013			
File Name: 18861DES_SWMP_Map003.dgn			
Horiz. Scale: 1:50	Vert. Scale: N/A		
Unit Information: GJ Design	JSL		

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No Revisions:	12/23/13
Revised:	
Void:	

STORMWATER MANAGEMENT PLAN SITE MAP
MP 36.42

Designer:	J. Klish	Structure Numbers	MP 36.42
Detailer:	J. Klish		131B036420
Subset:	SWMP MAP	Subset Sheets: 3 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 49

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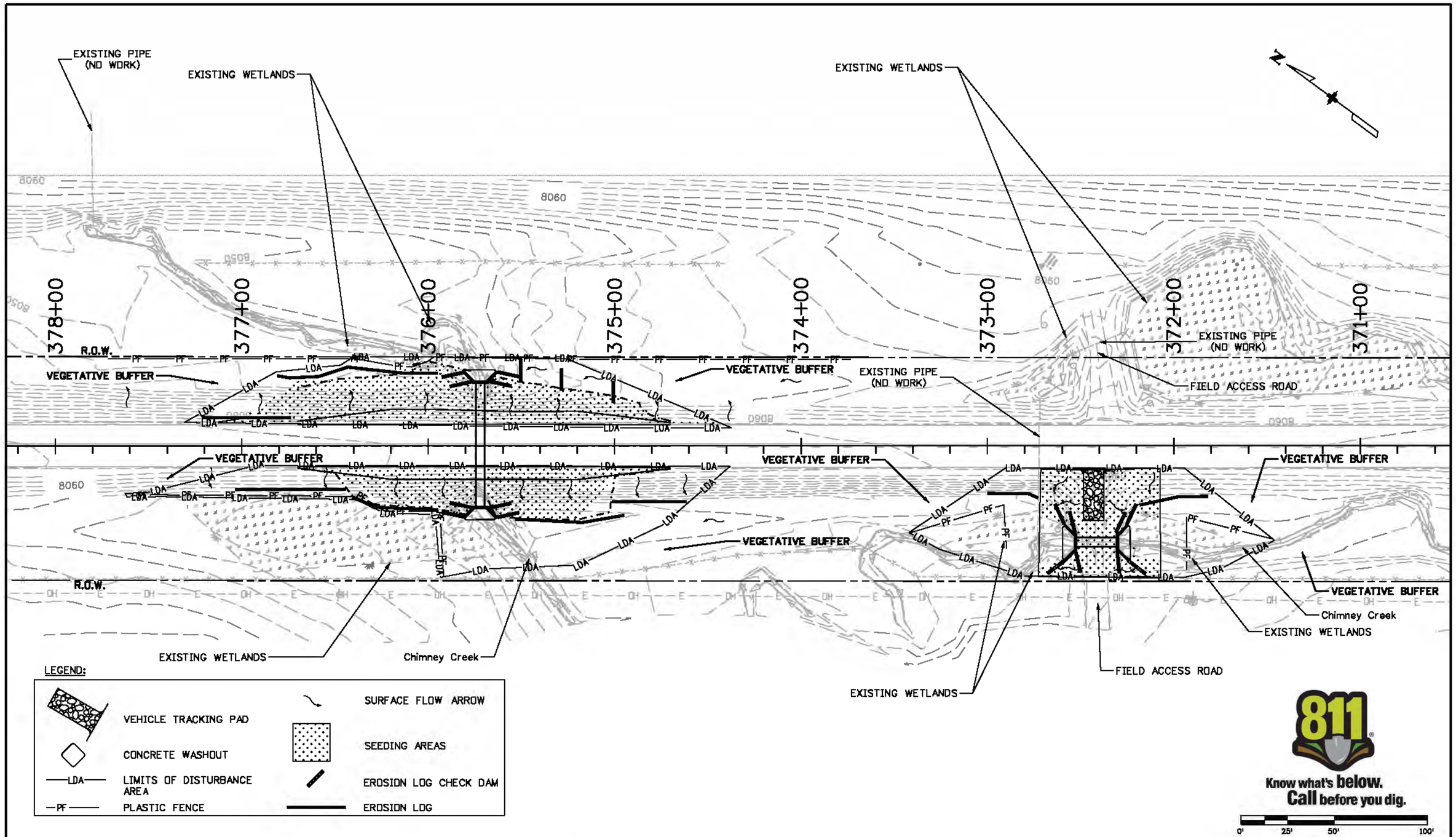

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Unit Information: GJ Design		JSL	

Sheet Revisions

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No Revisions: 12/23/13	
Revised:	
Void:	

STORMWATER MANAGEMENT PLAN SITE MAP
MP 37.08 & MP 37.11

Designer:	J. Klish	Structure Numbers	MP 37.11
Detailer:	J. Klish		131B037110
Subset:	SWMP MAP	Subset Sheets: 4 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 50

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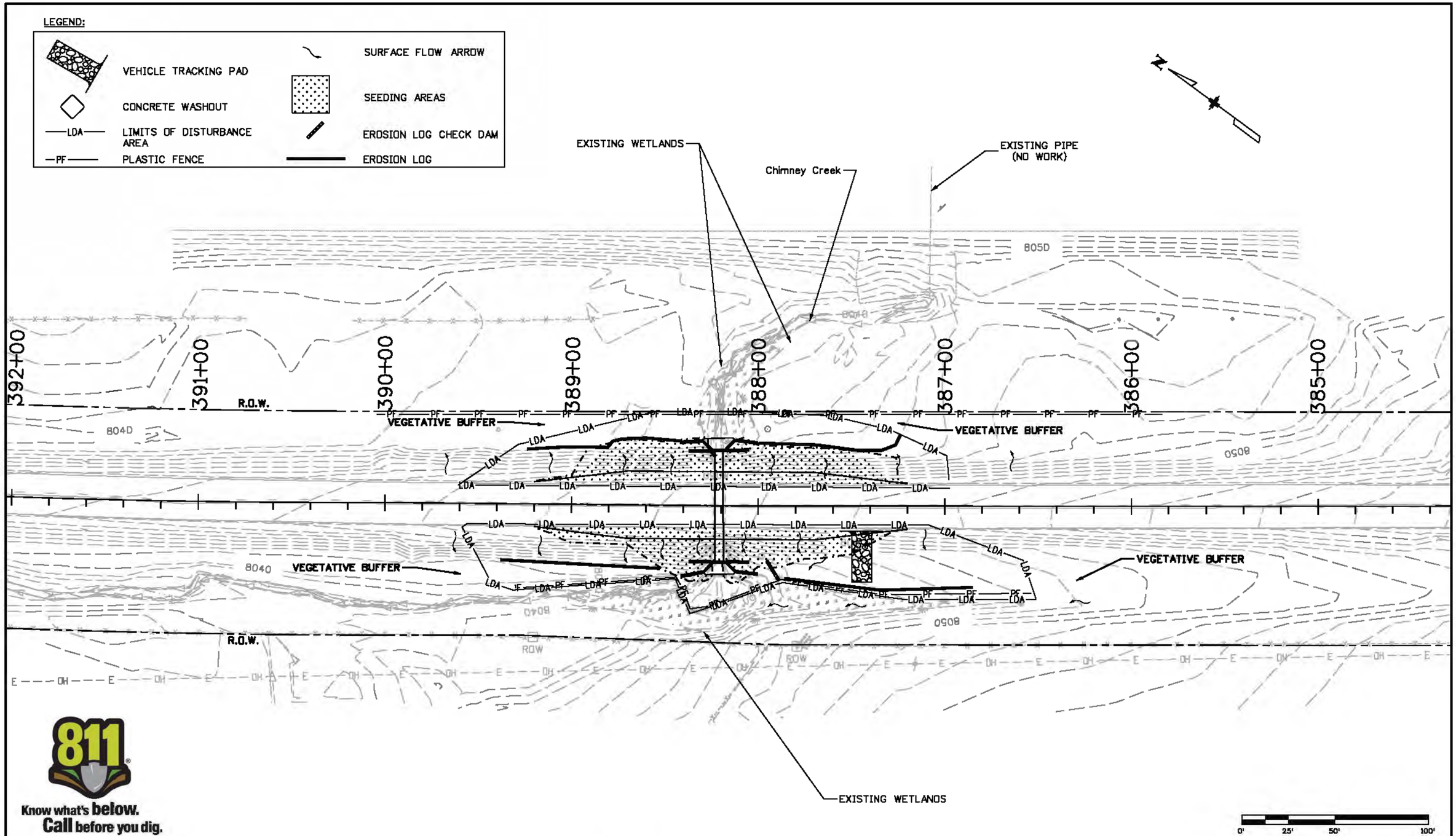

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Unit Information: GJ Design	JSL		

Sheet Revisions

Date:	Comments	Init.

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As Constructed

No Revisions: 12/23/13

Revised:

Void:

STORMWATER MANAGEMENT PLAN SITE MAP MP 37.34

Designer:	J. Klish	Structure Numbers	MP37.34
Detailer:	J. Klish		131B037340
Subset:	SWMP MAP	Subset Sheets: 5 of 6	

Project No./Code

C 131A-035

18861R

Sheet Number 51

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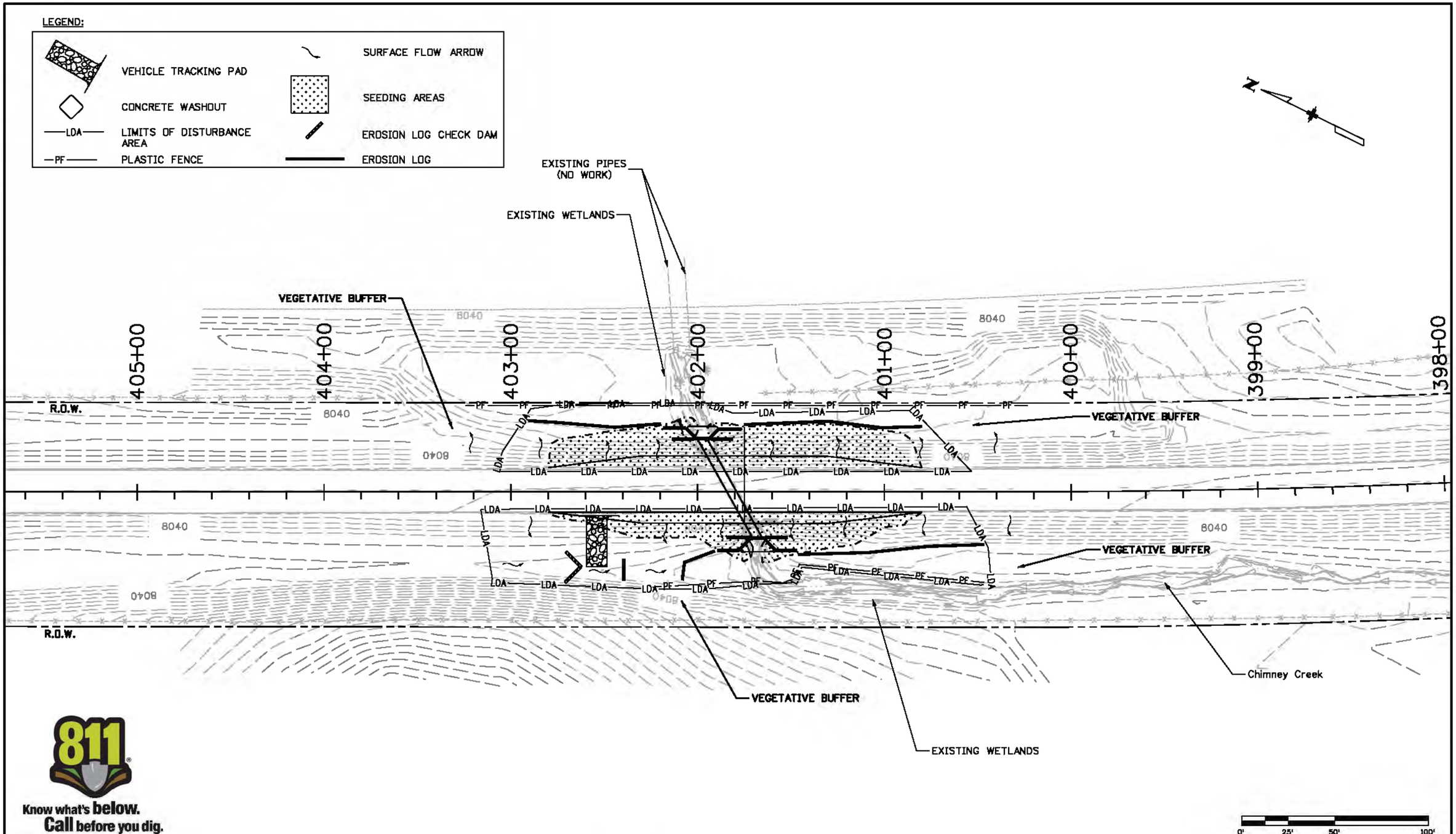

Know what's **below.**
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Print Date: 3/1/2013			
File Name: 18861DES_SWMP_Map007.dgn			
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Unit Information: GJ Design		JSL	

Sheet Revisions

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Region 03 PJL

As Constructed
No Revisions: 12/23/13
Revised:
Void:

STORMWATER MANAGEMENT PLAN SITE MAP MP 37.70

Designer:	J. Klish	Structure Numbers	MP 37.70
Detailer:	J. Klish		131B037700
Subset:	SWMP MAP	Subset Sheets: 6 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 52

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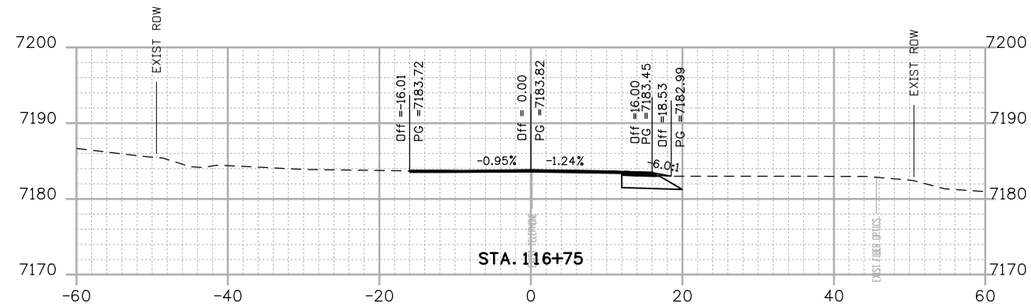
TABULATION OF CONSTRUCTION TRAFFIC CONTROL DEVICES

SIGN CODE	LEGEND	DIMENSION	PAY ITEMS					
			EACH				SF	
			(630-80341) CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)		(630-80342) CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)		(630-80344) CONSTRUCTION TRAFFIC SIGN (SPECIAL)	
			Plan	As Const	Plan	As Const	Plan	As Const
W20-1	ROAD / WORK / AHEAD	48 x 48			5			
W20-4	ONE LANE / ROAD / XX FT	48 x 48			3			
R52-6a	BEGIN / FINES / DOUBLED / IN WORK / ZONE	36 x 48			6			
R2-6aP	FINES / DOUBLE	36 x 24	4					
R2-6a	SPEED/LIMIT/35	36 x 48			6			
G20-5	WORK/ZONE	36 x 12	12					
W20-5	RIGHT/LEFT LANE/CLOSED/AHEAD	48 x 48			4			
R4-1	DO/NOT/PASS	24 x 30	4					
R11-2	ROAD/CLOSED	48 x 30			2			
W1-6L	LARGE ARROW (ONE DIRECTION)(LEFT)	48 x 24	2					
W1-6R	LARGE ARROW (ONE DIRECTION)(RIGHT)	48 x 24	2					
R52-6b	END/FINES/DOUBLE/IN WORK/ZONE	36 x 48			4			
G20-10	XYZ/CONSTRUCTION/THANKS YOU/555-555-5555	48 x 48			2			
R2-6b	SPEED/LIMIT/50	36 x 48			4			
W20-7	FLAGGER/AHEAD	48 x 48			5			
W20-7a	FLAGGER SYMBOL	48 x 48			5			
W3-4	BE/PREPARED/TO STOP	48 x 48			4			
W21-5	SHOULDER/WORK	48 x 48			4			
W21-5aR	RIGHT/SHOULDER/CLOSED	48 x 48			4			
W21-5bR	RIGHT/SHOULDER/CLOSED/AHEAD	48 x 48			2			
R10-6	STOP HERE ON RED	24 x 36	2					
SPECIAL	* TEMPORARY SIGNAL INSTRUCTIONS	60 x 60					25	
	SIGN TOTALS		26	3	60	46	25	0

* TEMPORARY SIGNAL INSTRUCTIONS SHOULD BE USED AT MILK CREEK ROAD INTERSECTION TO AID THE TEMPORARY TRAFFIC SIGNAL OPERATIONS.

CODE	ITEM	UNIT	PLAN	AS CONST
630-00000	FLAGGING	HOUR	1560	1527
630-00007	TRAFFIC CONTROL INSPECTION	DAYS	40	33
630-00012	TRAFFIC CONTROL MANAGEMENT	DAYS	65	87
630-80336	BARRICADE (TYPE 3 M-B)(TEMPORARY)	EACH	4	1
630-80355	PORTABLE MESSAGE SIGN PANEL	EACH	2	2
630-80360	DRUM CHANNELIZING DEVICE	EACH	50	28
630-80363	DRUM CHANNELIZING DEVICE (WITH LIGHT) (FLASHING)	EACH	20	4
630-80364	DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN)	EACH	20	2
630-80367	PORTABLE TRAFFIC SPEED MONITOR	EACH	1	1
630-80370	CONCRETE BARRIER (TEMPORARY)	LF	300	300
630-80380	TRAFFIC CONE	EACH	300	63
630-85010	IMPACT ATTENUATOR (TEMPORARY)	EACH	2	2
630-86800	**TRAFFIC SIGNAL (TEMPORARY)	LS	1	1

** TRAFFIC SIGNAL (TEMPORARY) SHALL BE USED AT MP 3.09 WORK AREA.



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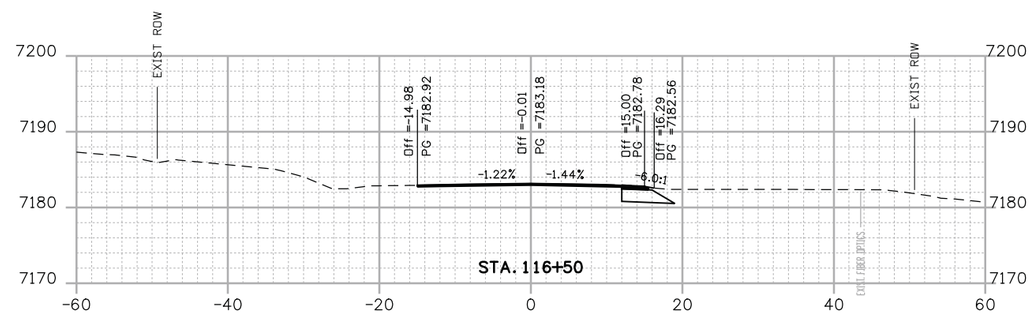
FILL AREA=1.26 S.F.
FILL VOLUME=0.96 C.Y.



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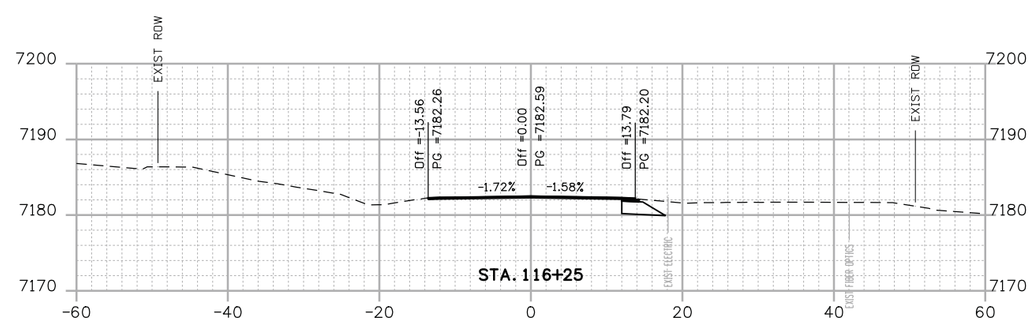

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CUT VOLUME=0.00 C.Y.

FILL AREA=0.64 S.F.
FILL VOLUME=0.00 C.Y.

Print Date: 3/1/2013	Sheet Revisions			Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 3.09	Project No./Code
File Name: 18861DES_MP0309_CrossSections.dgn	Date:	Comments	Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-6692 FAX: (970) 328-2368	No Revisions: 12/23/13		C 131A-035
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED					Revised:	Designer: J. Klish / Structure Numbers	18861R
Unit Information: GJ Design JSL				Region 03 PJL	Void:	Detailer: J. Klish	
						Subset: MP 3.09 X-SEC / Subset Sheets: 1 of 6	Sheet Number 54

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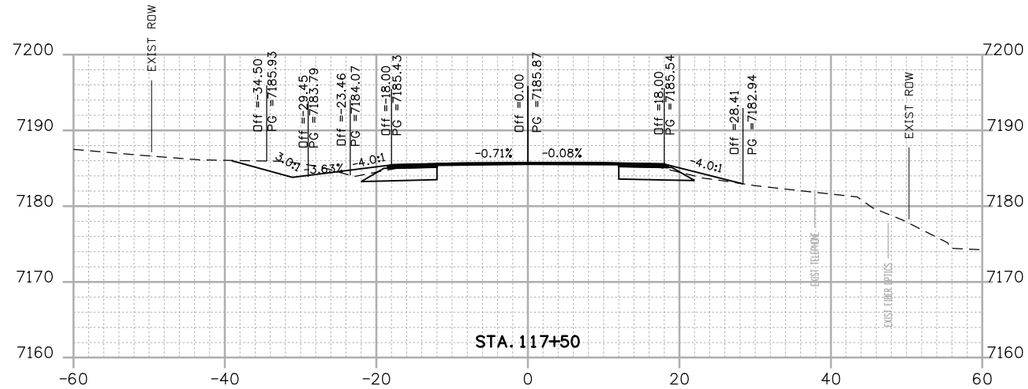

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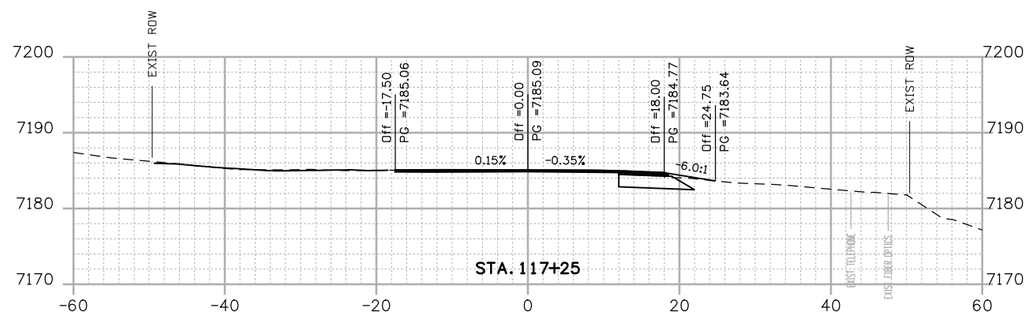
FILL AREA=9.99 S.F.
FILL VOLUME=6.35 C.Y.



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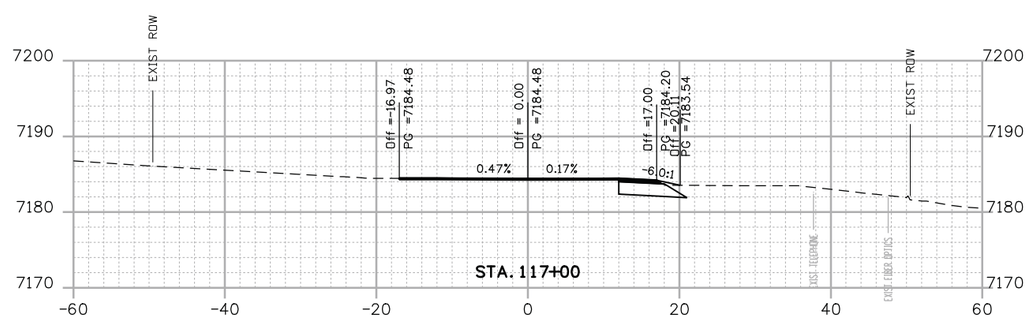
CUT VOLUME=0.64 C.Y.

FILL AREA=3.72 S.F.
FILL VOLUME=2.57 C.Y.



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CUT VOLUME=0.03 C.Y.

FILL AREA=1.82 S.F.
FILL VOLUME=1.43 C.Y.

Print Date: 3/1/2013	Sheet Revisions			Colorado Department of Transportation	As Constructed
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Horiz. Scale: AS NOTED Vert. Scale: AS NOTED				Region 03 PJL	Revised:
Unit Information: GJ Design JSL					Void:

CROSS SECTIONS
MP 3.09

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset: MP 3.09 X-SEC		Subset Sheets: 2 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 55

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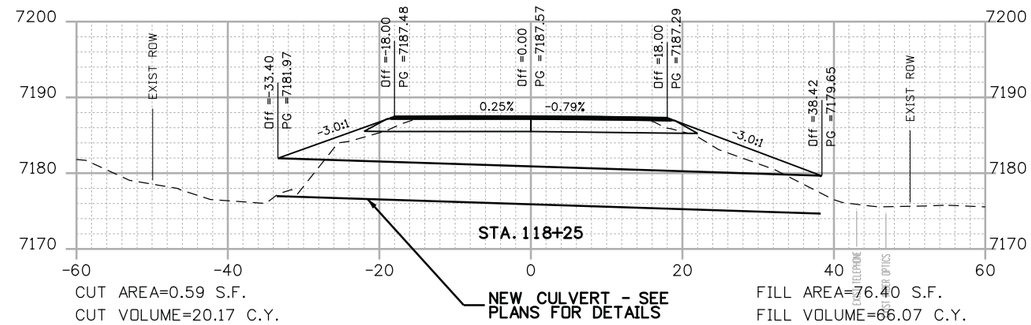

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FILL AREA=76.40 S.F.
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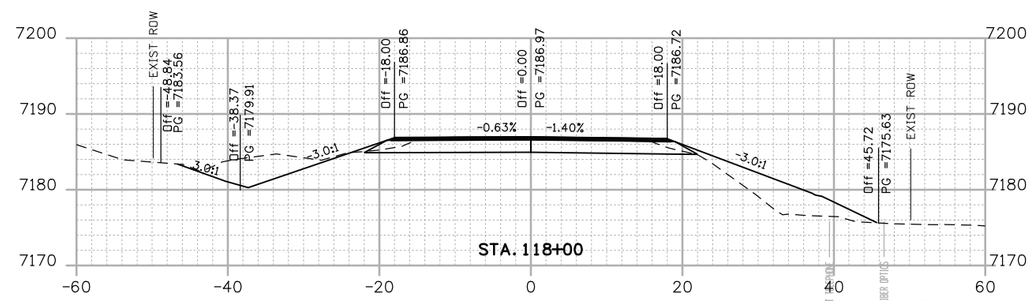

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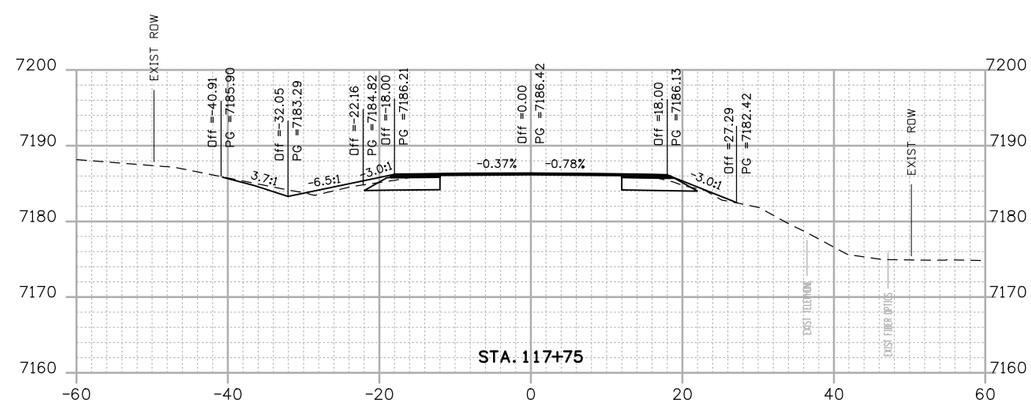
CUT VOLUME=21.85 C.Y.

FILL AREA=66.31 S.F.
FILL VOLUME=35.23 C.Y.



CUT AREA=4.21 S.F.
CUT VOLUME=7.76 C.Y.

FILL AREA=9.79 S.F.
FILL VOLUME=9.16 C.Y.

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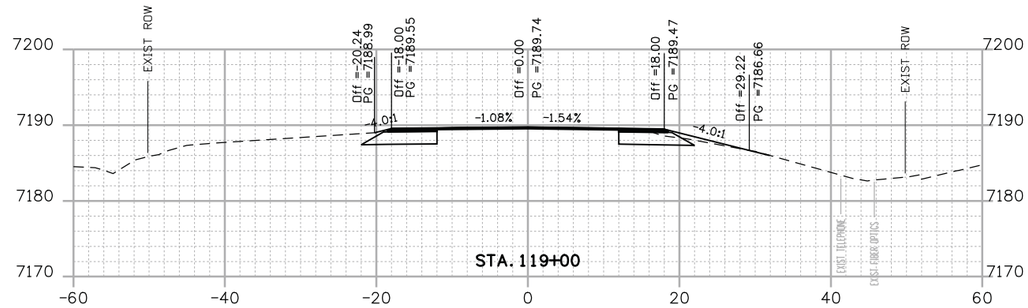
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 3.09

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset: MP 3.09 X-SEC		Subset Sheets: 3 of 6	

Project No./Code
C 131A-035
18861R
Sheet Number 56



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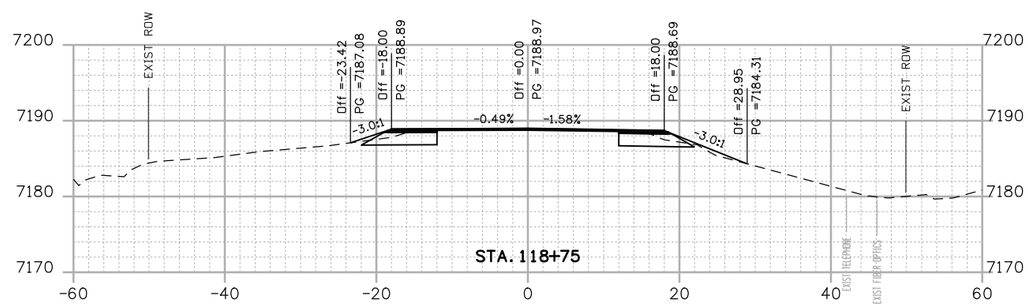
CUT VOLUME=0.04 C.Y.

FILL AREA=7.89 S.F.
FILL VOLUME=9.28 C.Y.



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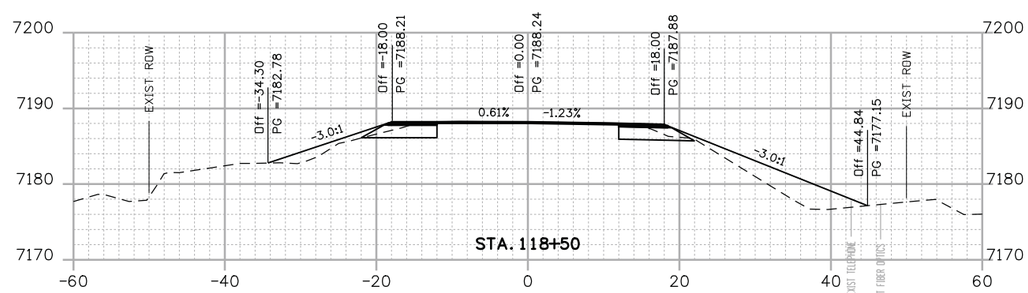
FILL AREA=12.16 S.F.
FILL VOLUME=36.93 C.Y.



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CUT VOLUME=0.28 C.Y.

FILL AREA=67.61 S.F.
FILL VOLUME=66.67 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 3.09	Project No./Code
File Name: 18861DES_MP0309_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-6692 FAX: (970) 328-2368	No Revisions: 12/23/13		C 131A-035
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED			Revised:	Designer: J. Klish / Structure Numbers	18861R
Unit Information: GJ Design JSL		Region 03 PJL	Void:	Detailer: J. Klish	
				Subset: MP 3.09 X-SEC / Subset Sheets: 4 of 6	Sheet Number 57

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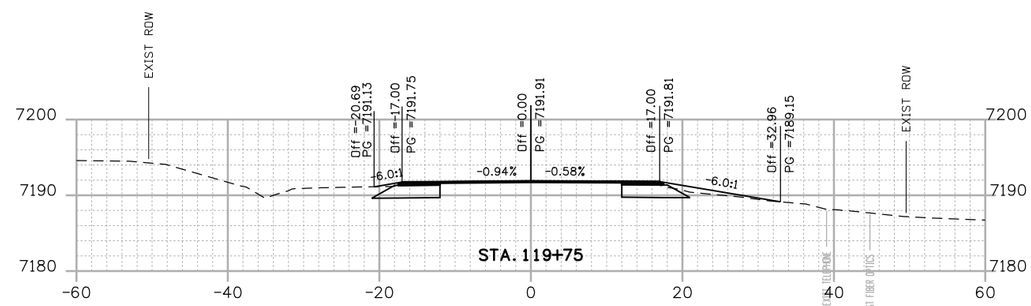

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FILL AREA=9.51 S.F.
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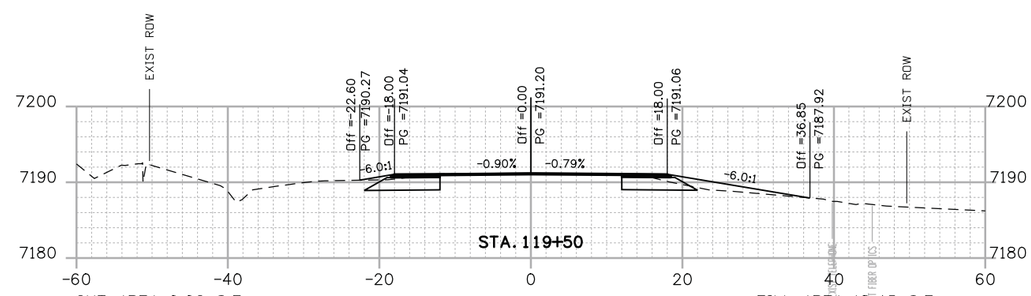

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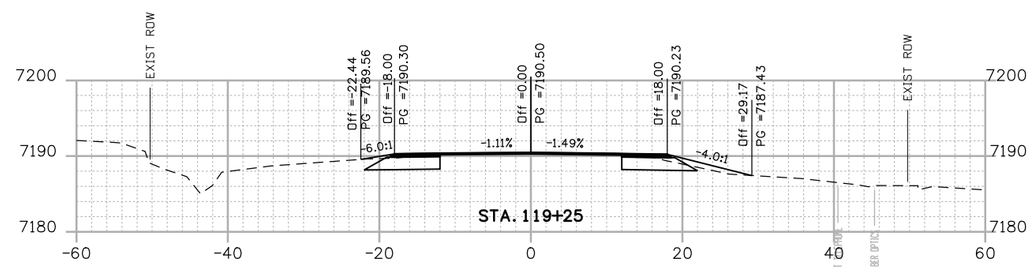
FILL AREA=18.45 S.F.
FILL VOLUME=13.81 C.Y.



CUT AREA=0.07 S.F.
CUT VOLUME=0.04 C.Y.

FILL AREA=11.39 S.F.
FILL VOLUME=8.92 C.Y.

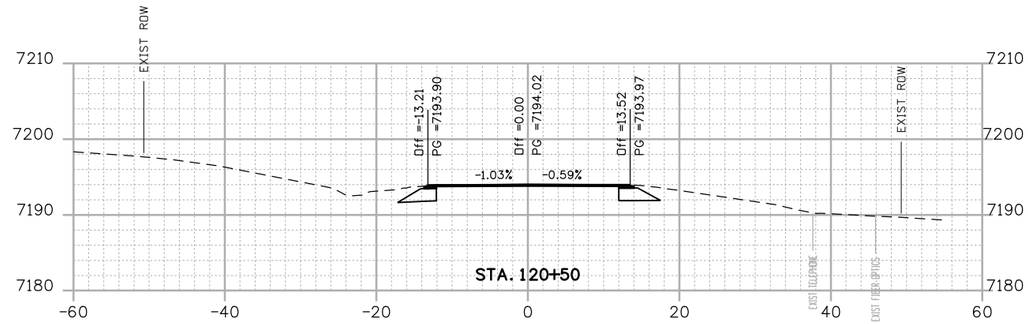
Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP0309_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone:(970) 328-6692 FAX:(970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 3.09

Designer: J. Klish
Detailer: J. Klish
Subset: MP 3.09 X-SEC
Structure Numbers
Subset Sheets: 5 of 6

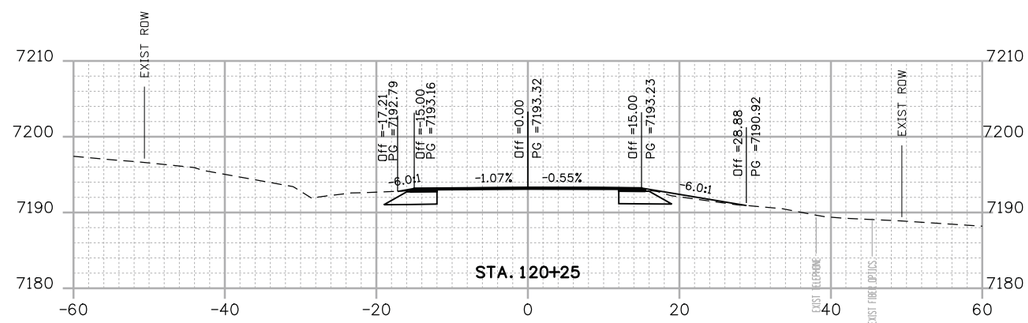
Project No./Code
C 131A-035
18861R
Sheet Number 58

klishj 2:50:39 PM c:\projectwise\pwz_working\d0233336\18861DES_MP0309_CrossSections.dgn



CUT AREA=0.00 S.F.
CUT VOLUME=0.02 C.Y.

FILL AREA=0.28 S.F.
FILL VOLUME=1.93 C.Y.



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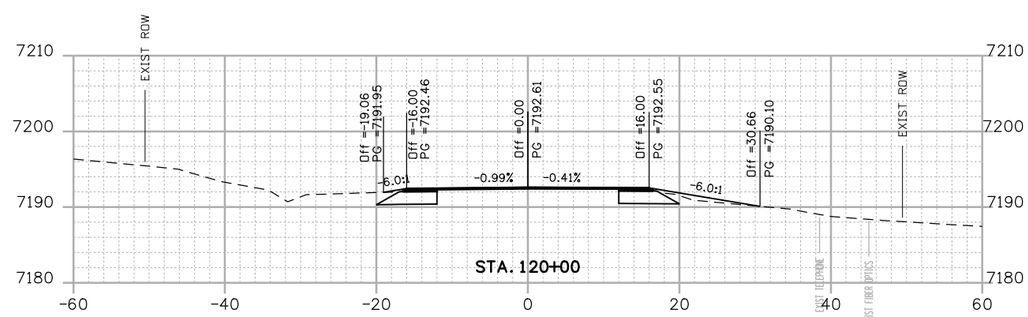

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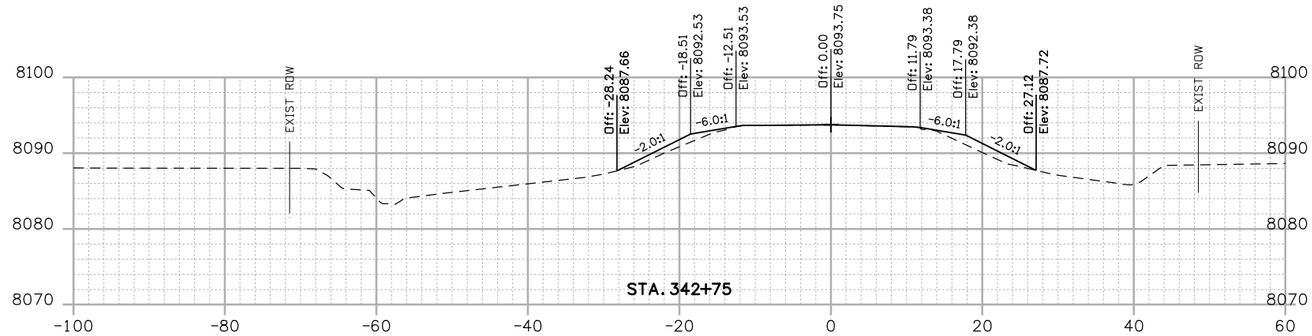
CUT VOLUME=0.02 C.Y.

FILL AREA=6.78 S.F.
FILL VOLUME=7.54 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 3.09	Project No./Code
File Name: 18861DES_MP0309_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone:(970) 328-6692 FAX:(970) 328-2368	No Revisions: 12/23/13		C 131A-035
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:	Designer: J. Klish / Structure Numbers	18861R
Unit Information: GJ Design JSL			Void:	Detailer: J. Klish	Sheet Number 59
				Subset: MP 3.09 X-SEC / Subset Sheets: 6 of 6	

klishj 2:50:42 PM c:\projectwise\pwz_working\d0233336\18861DES_MP0309_CrossSections.dgn



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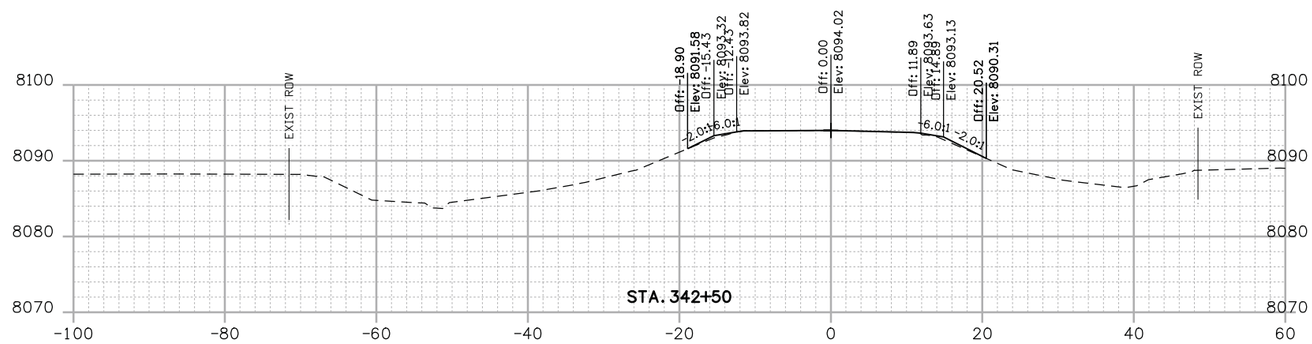
FILL AREA=20.77 S.F.
FILL VOLUME=10.75 C.Y.



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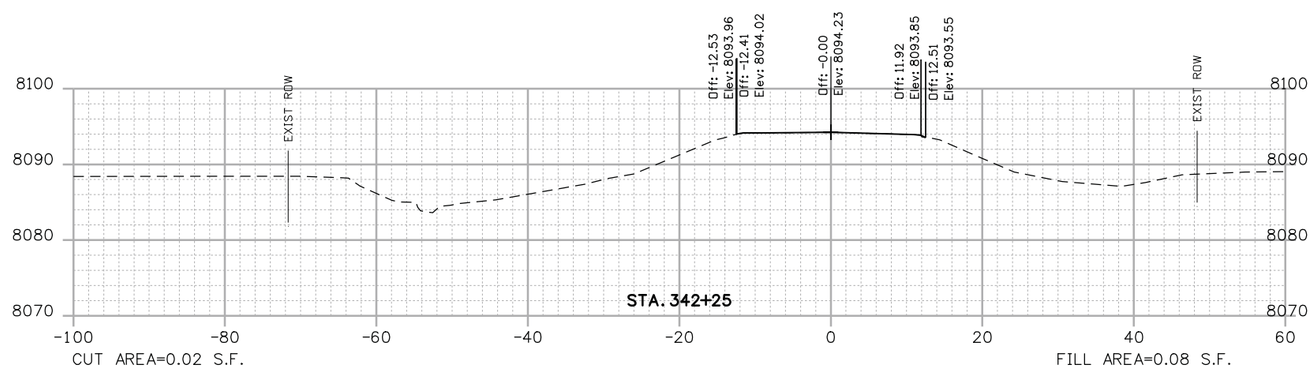
FILL AREA=2.45 S.F.
FILL VOLUME=1.17 C.Y.



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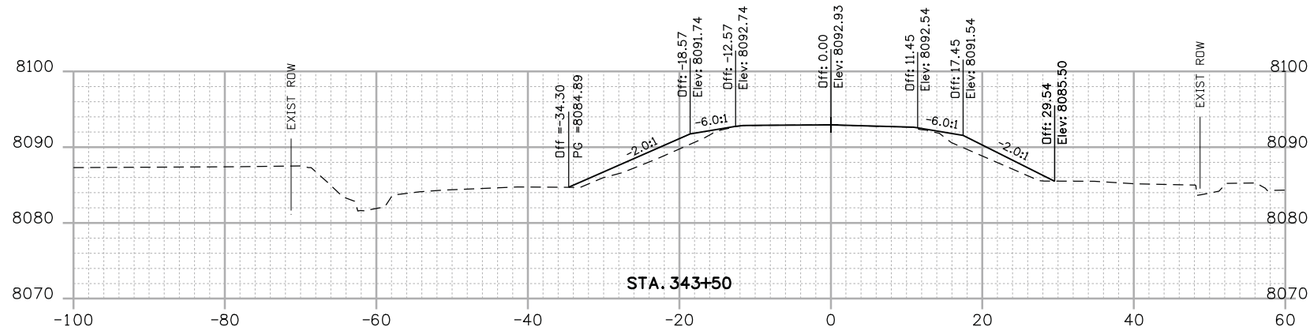
CUT VOLUME=0.00 C.Y.

FILL AREA=0.08 S.F.
FILL VOLUME=0.00 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP3642_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS MP 36.42			Project No./Code
Designer: J. Klish	Structure Numbers		C 131A-035
Detailer: J. Klish			18861R
Subset: MP 36.42 X-SEC	Subset Sheets: 1 of 3		Sheet Number 60

klishj 2:50:47 PM c:\projectwise\pwz_working\d0233336\18861DES_MP3642_CrossSections.dgn



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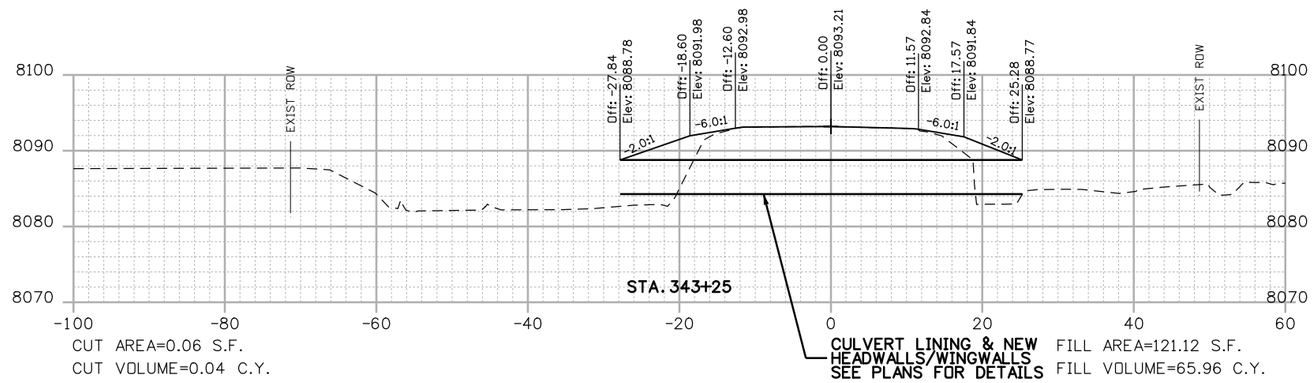
FILL AREA=31.13 S.F.
FILL VOLUME=70.49 C.Y.



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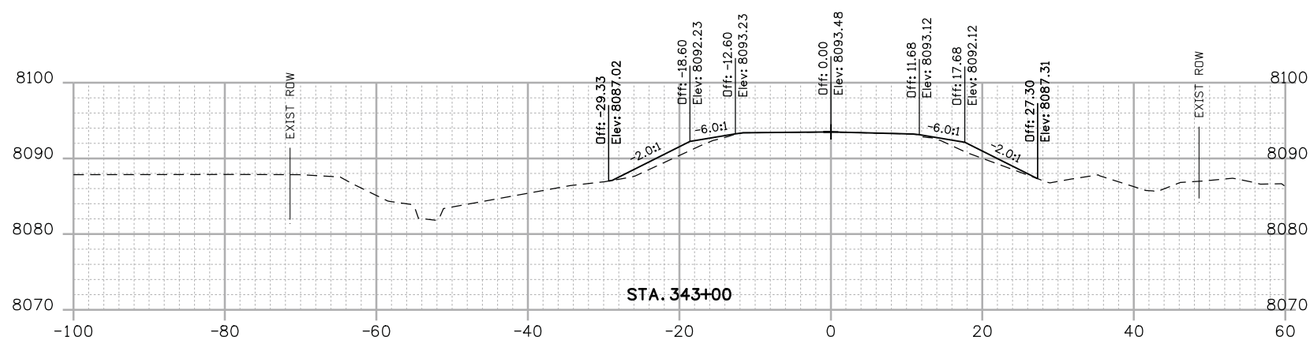
FILL AREA=121.12 S.F.
FILL VOLUME=65.96 C.Y.



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FILL AREA=21.35 S.F.
FILL VOLUME=19.50 C.Y.

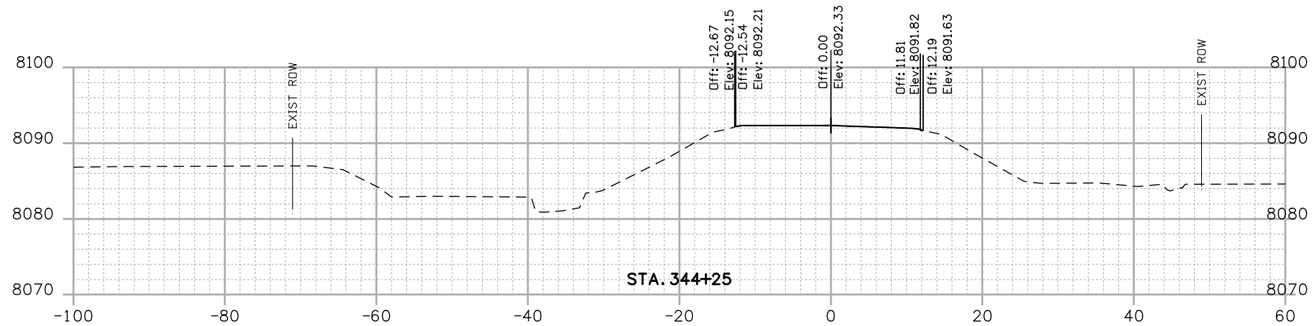
Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP3642_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 36.42

Designer: J. Klish
Detailer: J. Klish
Subset: MP 36.42 X-SEC
Structure Numbers
Subset Sheets: 2 of 3

Project No./Code
C 131A-035
18861R
Sheet Number 61

klishj 2:50:50 PM c:\projectwise\pwz_working\d0233336\18861DES_MP3642_CrossSections.dgn



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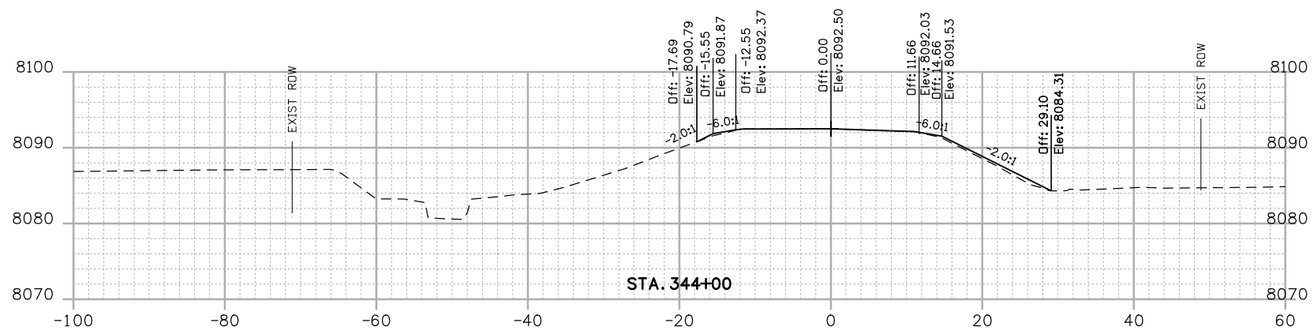
FILL AREA=0.05 S.F.
FILL VOLUME=2.82 C.Y.



CUT AREA=0.00 S.F.
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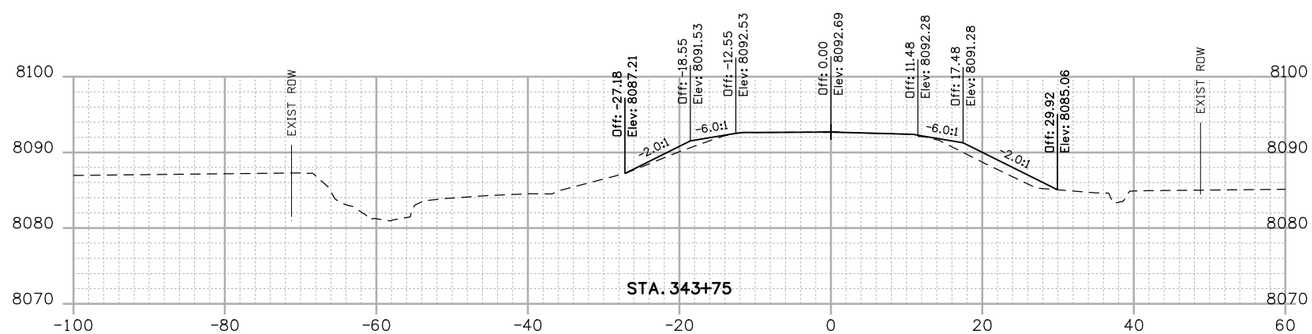
FILL AREA=6.05 S.F.
FILL VOLUME=13.31 C.Y.



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CUT VOLUME=0.03 C.Y.

FILL AREA=22.69 S.F.
FILL VOLUME=24.92 C.Y.

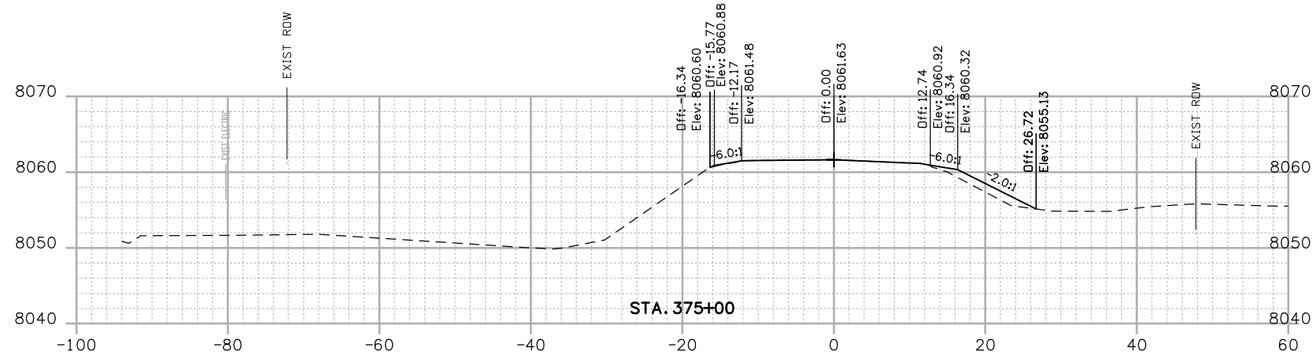
Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP3642_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 36.42

Designer: J. Klish
Detailer: J. Klish
Subset: MP 36.42 X-SEC
Structure Numbers
Subset Sheets: 3 of 3

Project No./Code
C 131A-035
18861R
Sheet Number 62

klishj 2:50:53 PM c:\projectwise\pwz_working\d0233336\18861DES_MP3642_CrossSections.dgn



CUT AREA=0.09 S.F.
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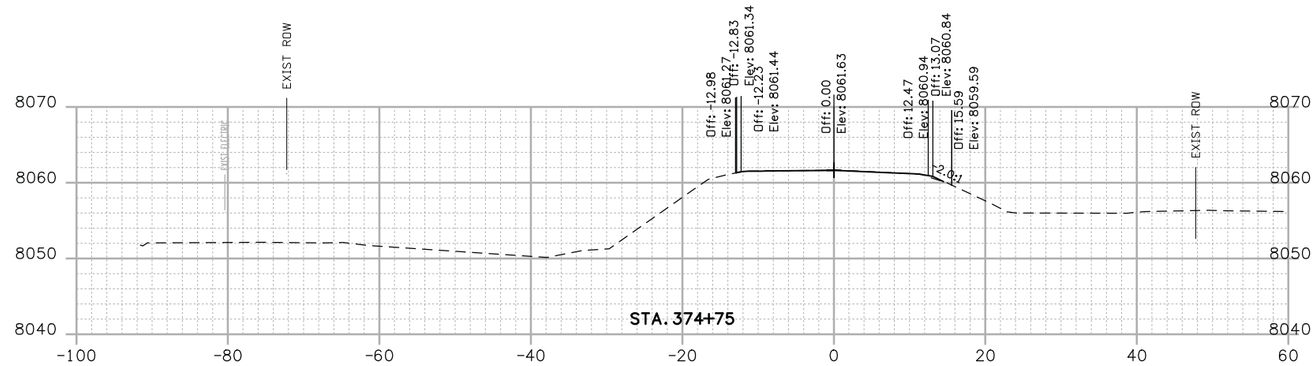
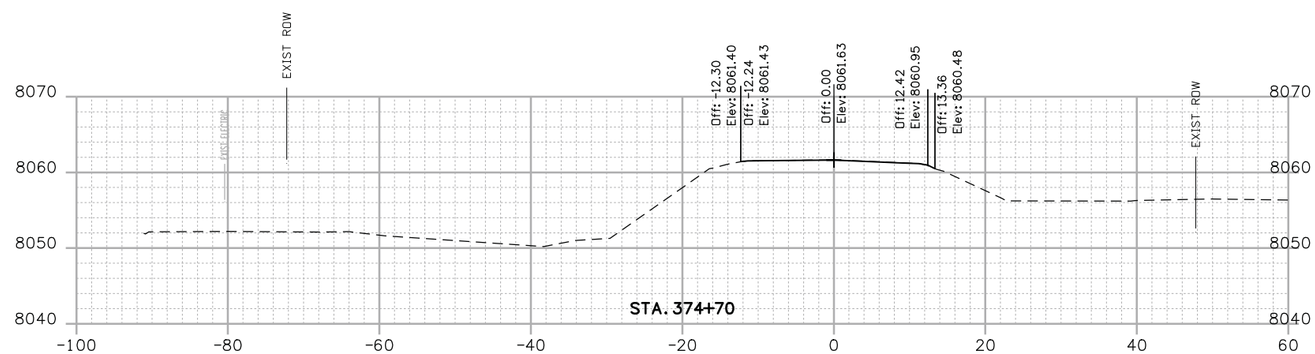
FILL AREA=12.12 S.F.
FILL VOLUME=5.64 C.Y.



CUT AREA=0.07 S.F.
CUT VOLUME=0.02 C.Y.

FILL AREA=0.06 S.F.
FILL VOLUME=0.01 C.Y.



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CUT VOLUME=0.00 C.Y.

FILL AREA=0.10 S.F.
FILL VOLUME=0.00 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 37.11	Project No./Code
File Name: 18861DES_MP3711_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13		C 131A-035
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED			Revised:	Designer: J. Klish / Structure Numbers	18861R
Unit Information: GJ Design JSL		Region 03 PJL	Void:	Detailer: J. Klish	
				Subset: MP 37.11 X-SEC / Subset Sheets: 1 of 4	Sheet Number 63

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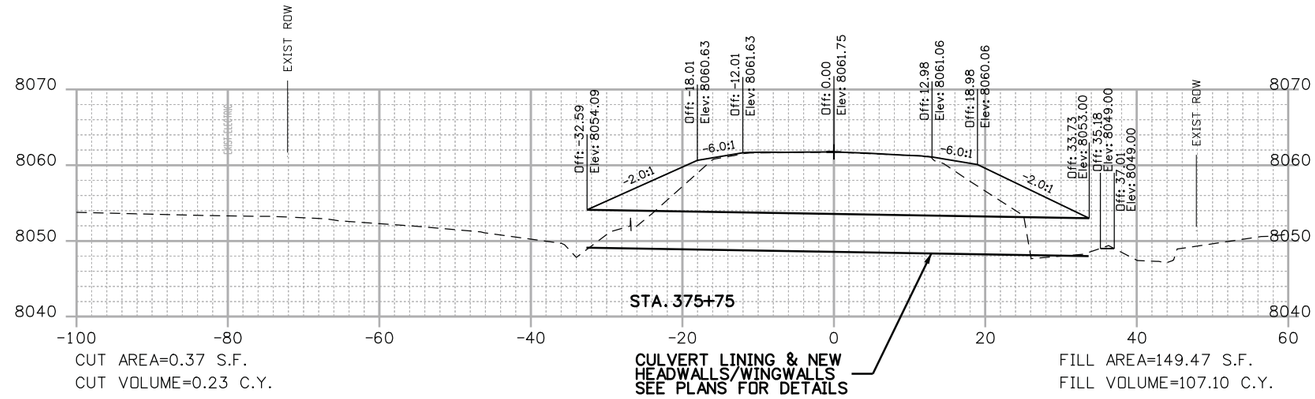

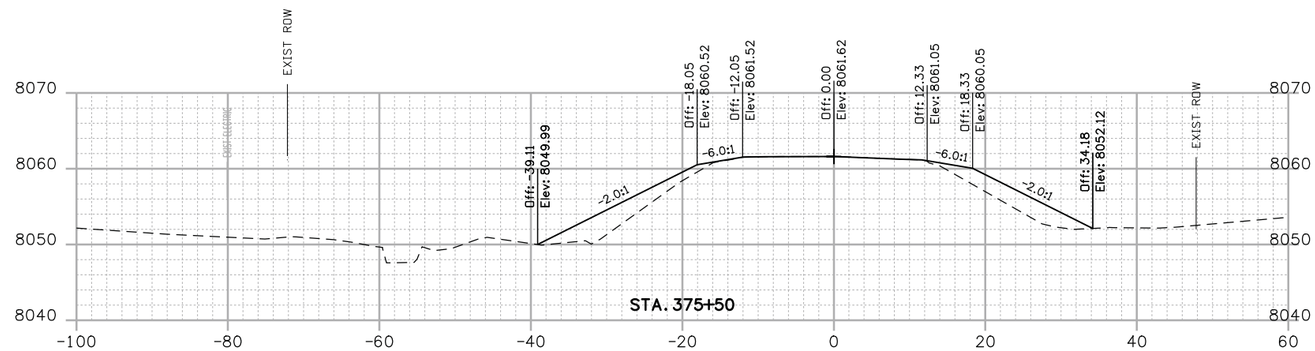

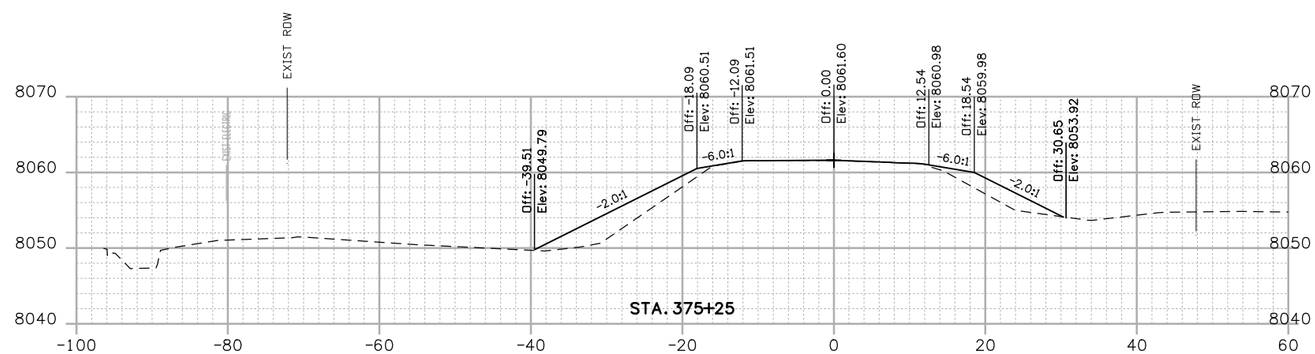

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP3711_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 37.11

Designer: J. Klish
Detailer: J. Klish
Subset: MP 37.11 X-SEC
Structure Numbers
Subset Sheets: 2 of 4

Project No./Code
C 131A-035
18861R
Sheet Number 64

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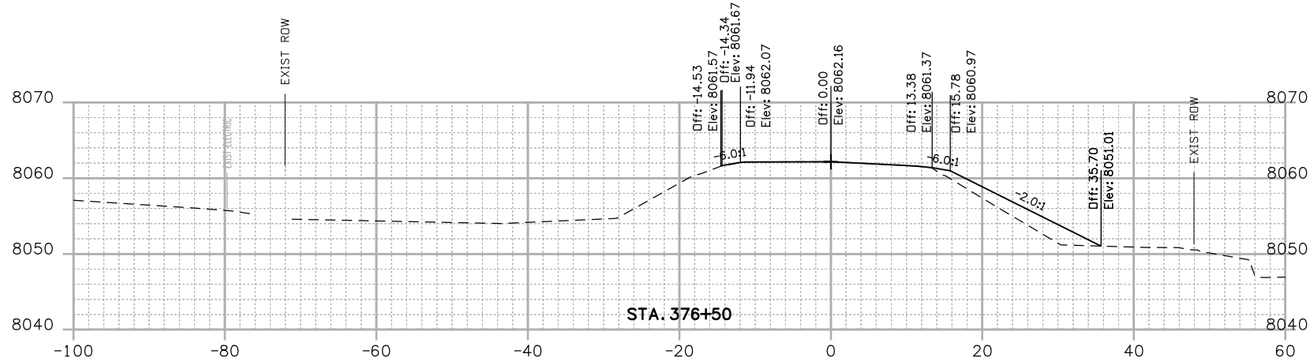
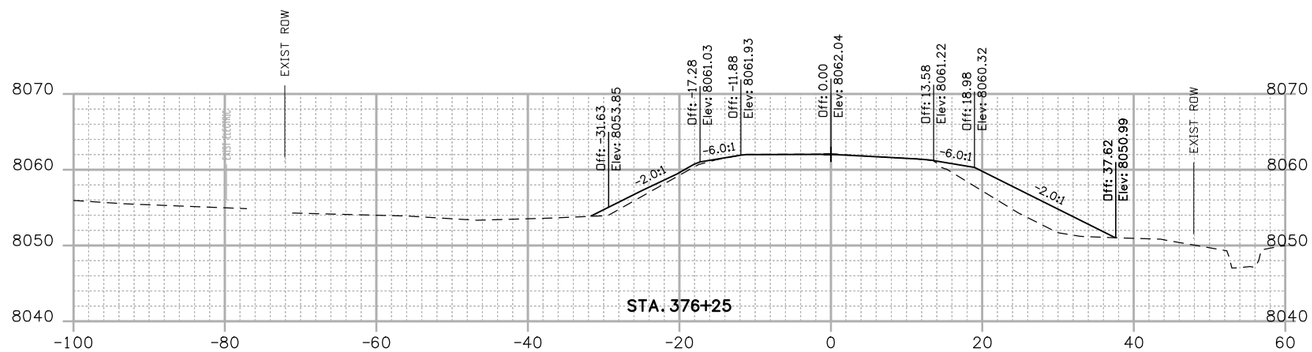


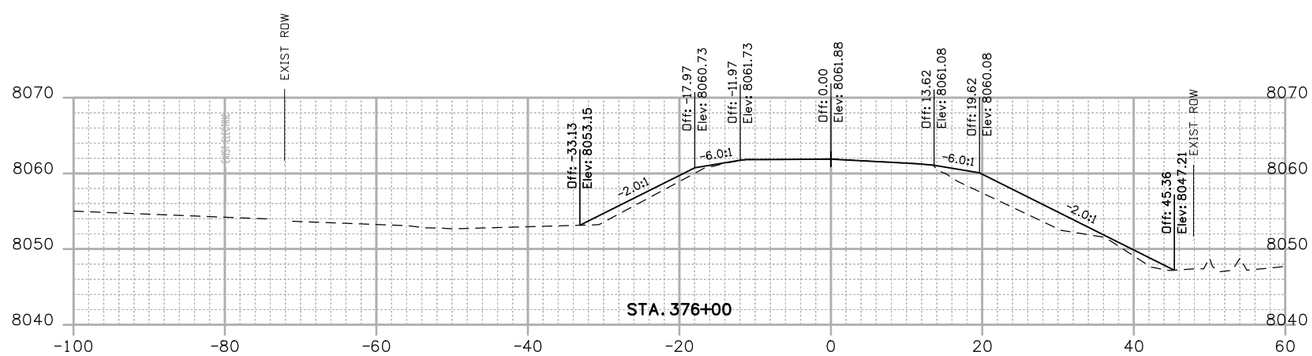
CUT AREA=0.14 S.F.
CUT VOLUME=0.24 C.Y.

FILL AREA=34.52 S.F.
FILL VOLUME=43.92 C.Y.



CUT AREA=0.38 S.F.
CUT VOLUME=0.24 C.Y.

FILL AREA=60.35 S.F.
FILL VOLUME=56.70 C.Y.



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CUT VOLUME=0.23 C.Y.

FILL AREA=62.13 S.F.
FILL VOLUME=97.96 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP3711_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 37.11

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset: MP 37.11 X-SEC		Subset Sheets: 3 of 4	

Project No./Code
C 131A-035
18861R
Sheet Number 65

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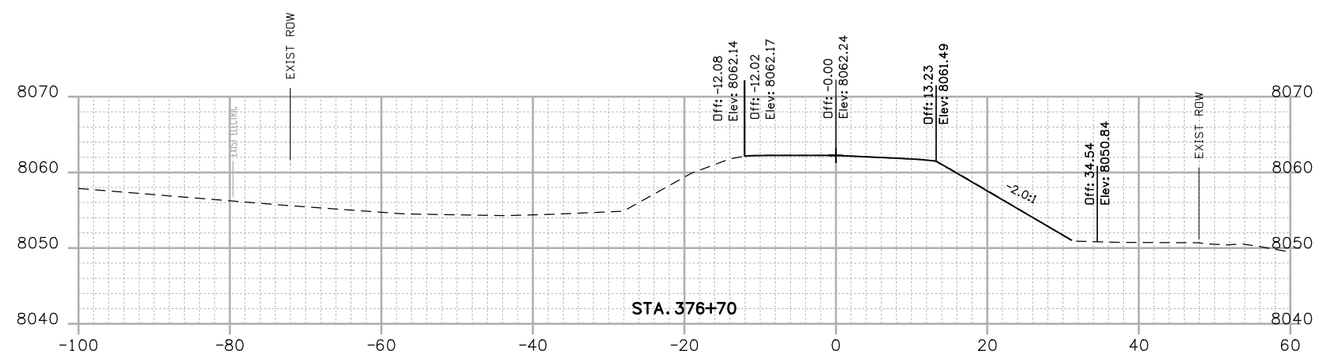


CUT AREA=0.09 S.F.
CUT VOLUME=0.09 C.Y.

FILL AREA=15.61 S.F.
FILL VOLUME=18.57 C.Y.

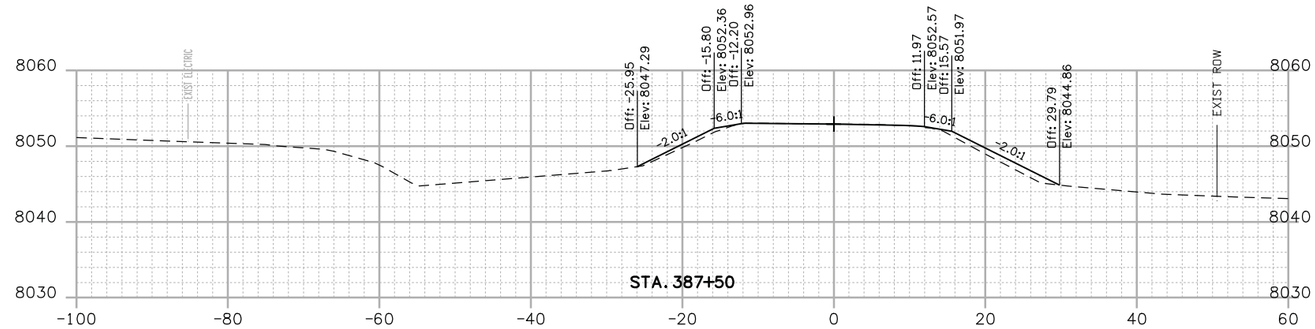
klishj 2:51:06 PM c:\projectwise\pwz_working\d0233336\18861DES_MP3711_CrossSections.dgn

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP3711_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 PJL	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 37.11

Designer:	J. Klish	Structure Numbers	
Detailer:	J. Klish		
Subset: MP 37.11 X-SEC		Subset Sheets: 4 of 4	

Project No./Code
C 131A-035
18861R
Sheet Number 66



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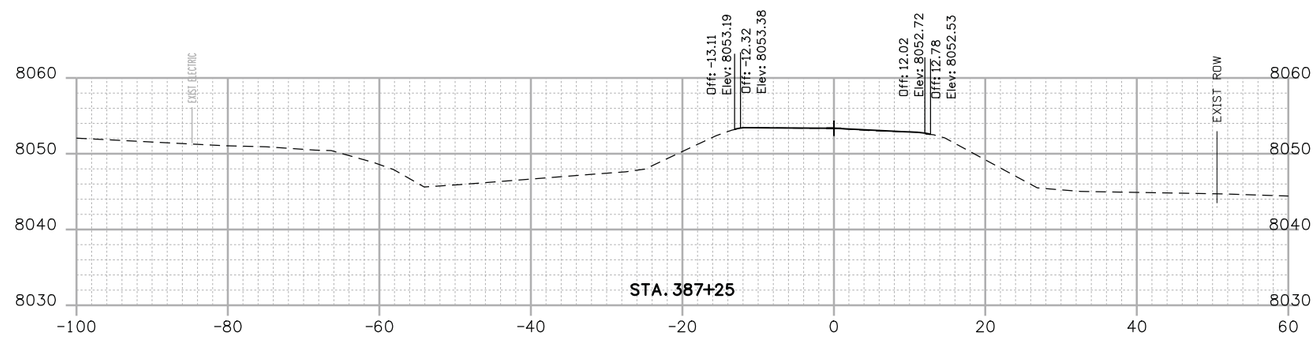
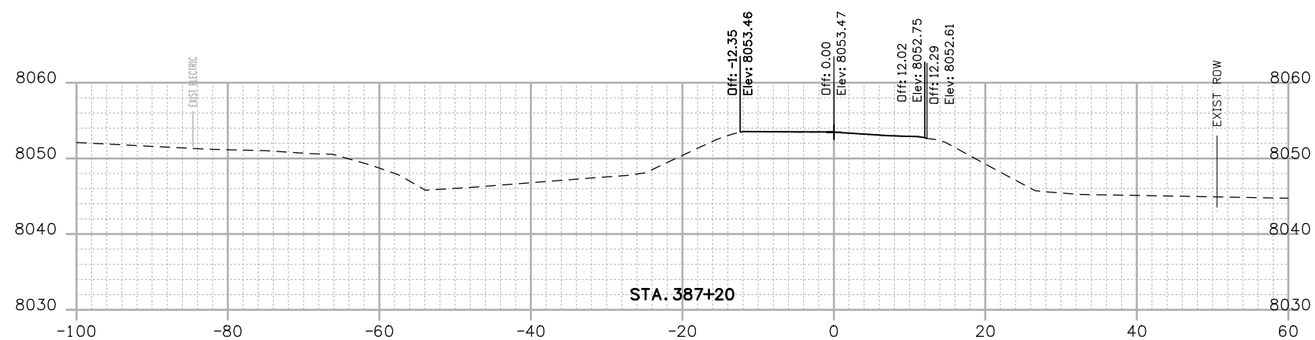
FILL AREA=16.12 S.F.
FILL VOLUME=7.67 C.Y.



CUT AREA=0.02 S.F.
CUT VOLUME=0.01 C.Y.

FILL AREA=0.44 S.F.
FILL VOLUME=0.06 C.Y.



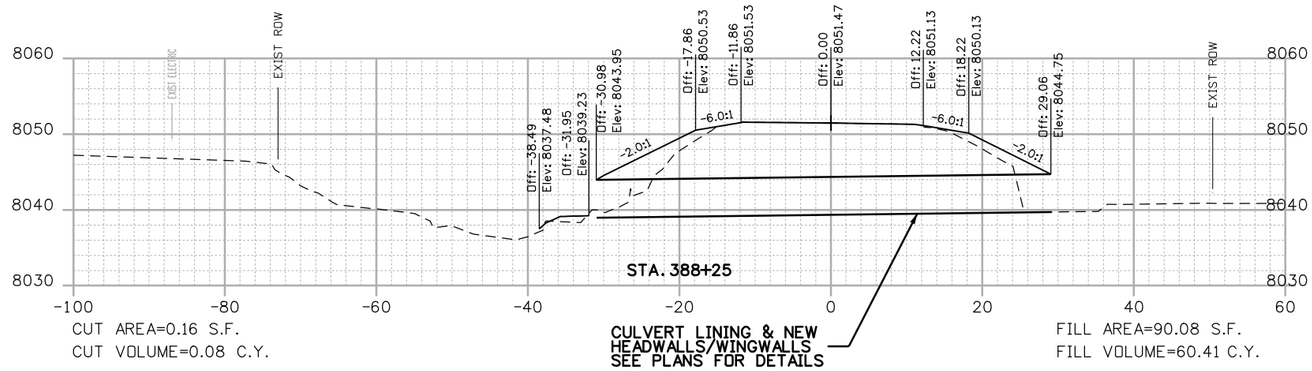
CUT AREA=0.10 S.F.
CUT VOLUME=0.00 C.Y.

FILL AREA=0.24 S.F.
FILL VOLUME=0.00 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: 18861DES_MP3734_CrossSections.dgn	Date: / Comments / Init.	606 S 9th St, Grand Jct, CO 81501, Phone: (970) 683-6351 FAX:	No Revisions: 12/23/13
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED		Region 03 JCS	Revised:
Unit Information: GJ Design JSL			Void:

CROSS SECTIONS MP 37.34			Project No./Code
Designer: J. Klish	Structure Numbers		C 131A-035
Detailer: J. Klish			18861R
Subset: ConstTrafTab	Subset Sheets: 1 of 4		Sheet Number 67

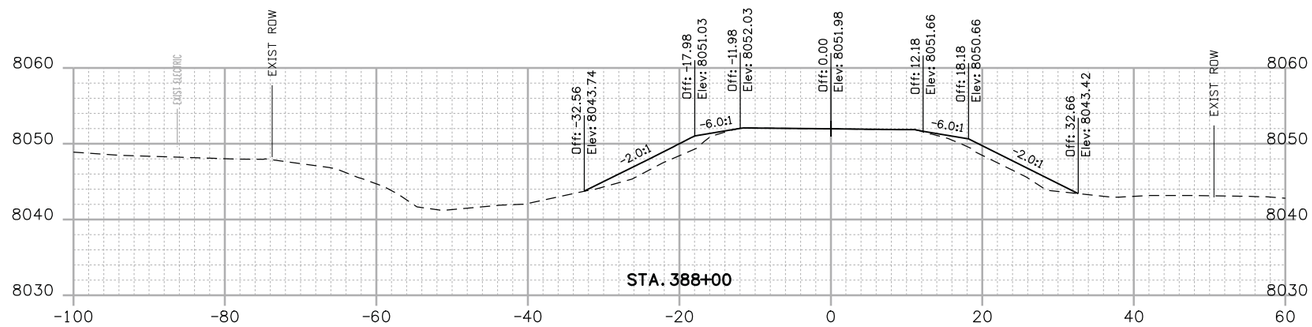
klishj 2:51:10 PM c:\projectwise\pwz_working\d0233336\18861DES_MP3734_CrossSections.dgn



CUT AREA=0.16 S.F.
CUT VOLUME=0.08 C.Y.

CULVERT LINING & NEW HEADWALLS/WINGWALLS SEE PLANS FOR DETAILS

FILL AREA=90.08 S.F.
FILL VOLUME=60.41 C.Y.



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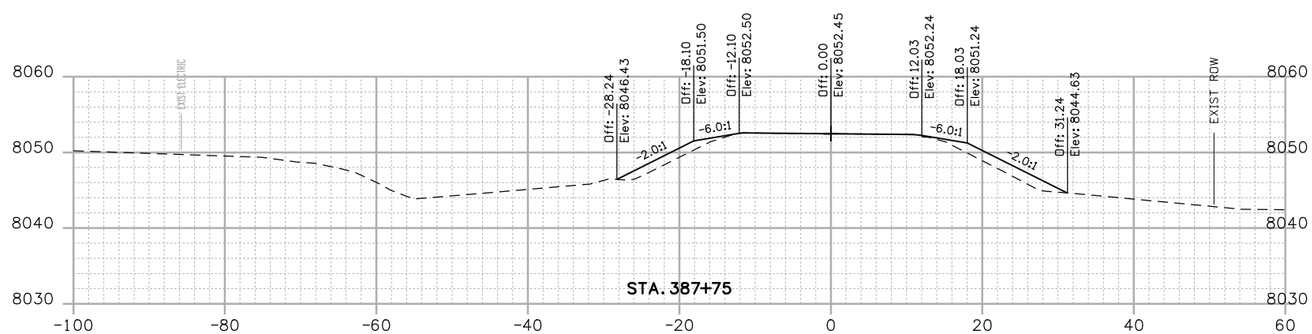
CUT VOLUME=0.02 C.Y.

FILL AREA=40.40 S.F.
FILL VOLUME=33.76 C.Y.



CUT AREA=0.04 S.F.
CUT VOLUME=0.15 C.Y.

FILL AREA=32.53 S.F.
FILL VOLUME=22.52 C.Y.

Print Date: 3/1/2013	Sheet Revisions				
File Name: 18861DES_MP3734_CrossSections.dgn	Date:	Comments	Init.		
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED					
Unit Information: GJ Design JSL					

Colorado Department of Transportation
606 S 9th St
Grand Jct, CO 81501
Phone: (970) 683-6351 FAX:
Region 03 JCS

As Constructed
No Revisions: 12/23/13
Revised:
Void:

CROSS SECTIONS
MP 37.34

Designer: J. Klish
Detailer: J. Klish
Subset: ConstTrafTab
Structure Numbers
Subset Sheets: 2 of 4

Project No./Code
C 131A-035
18861R
Sheet Number 68

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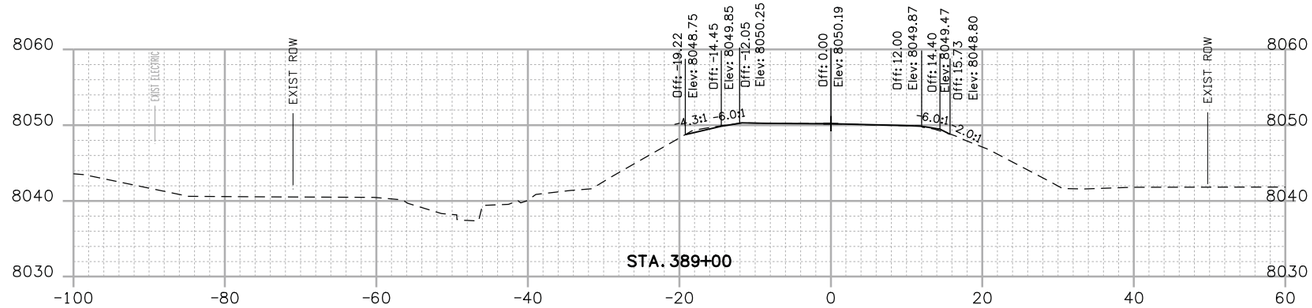

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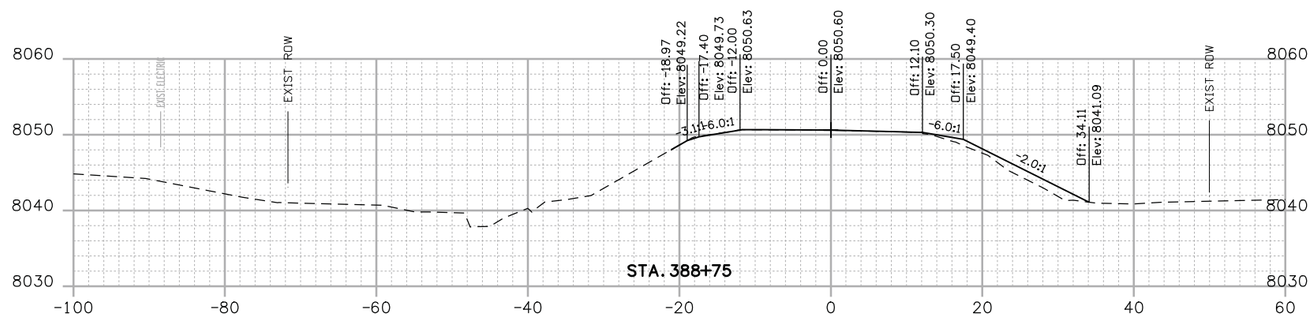

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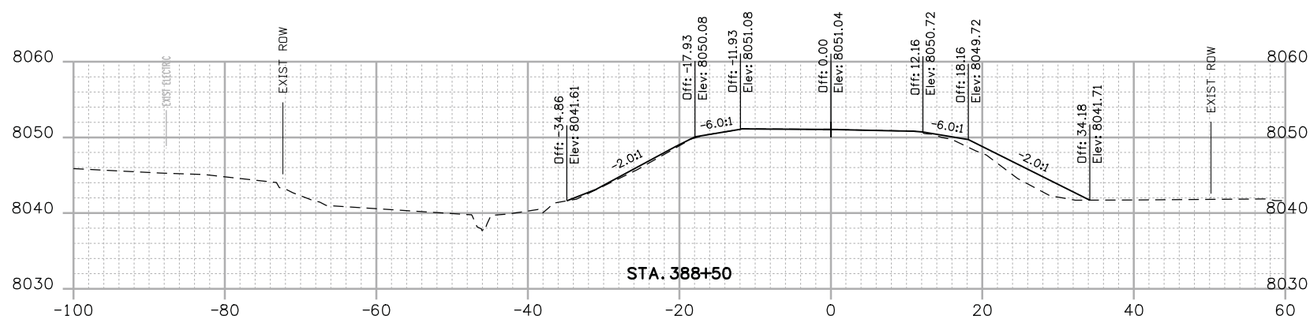

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Unit Information: GJ Design JSL			Void:

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Designer: J. Klish	Structure Numbers		C 131A-035
Detailer: J. Klish			18861R
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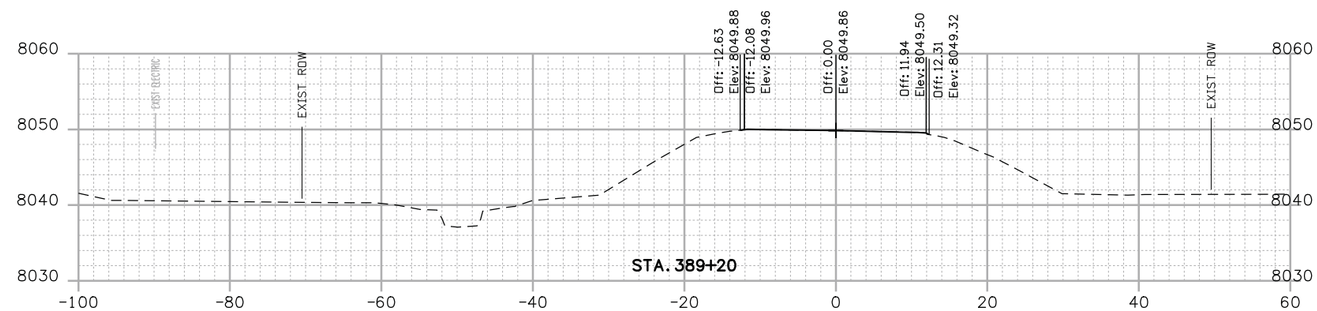

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Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 37.34	Project No./Code
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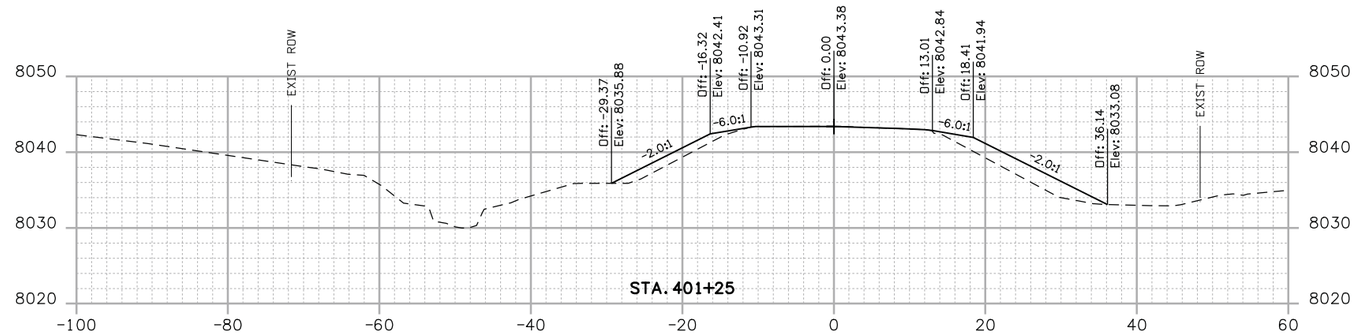

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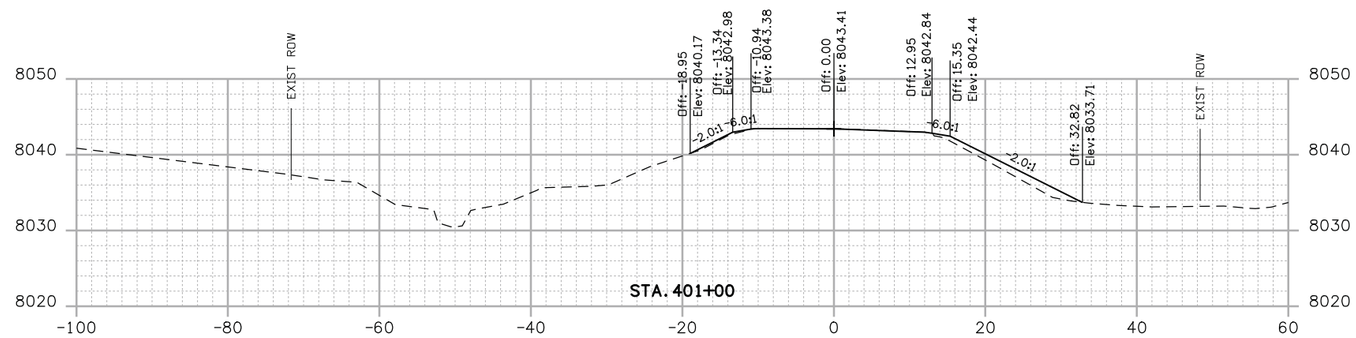

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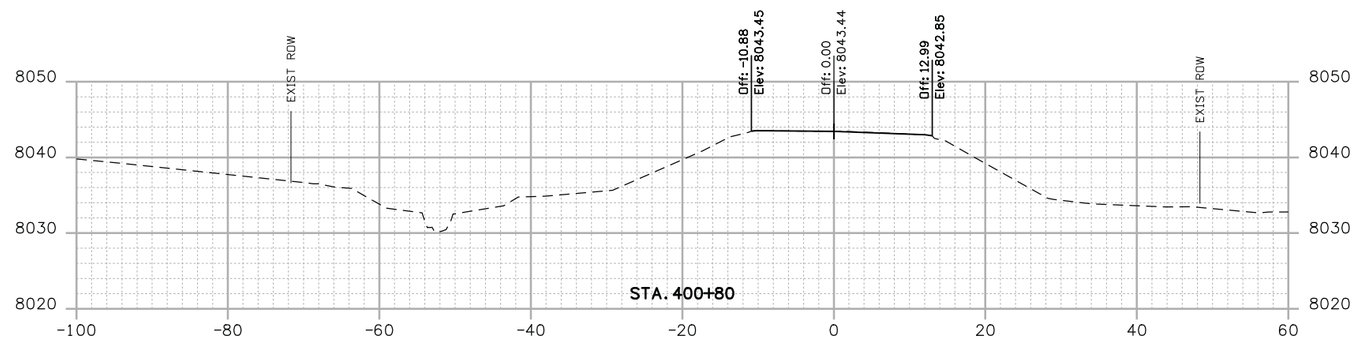

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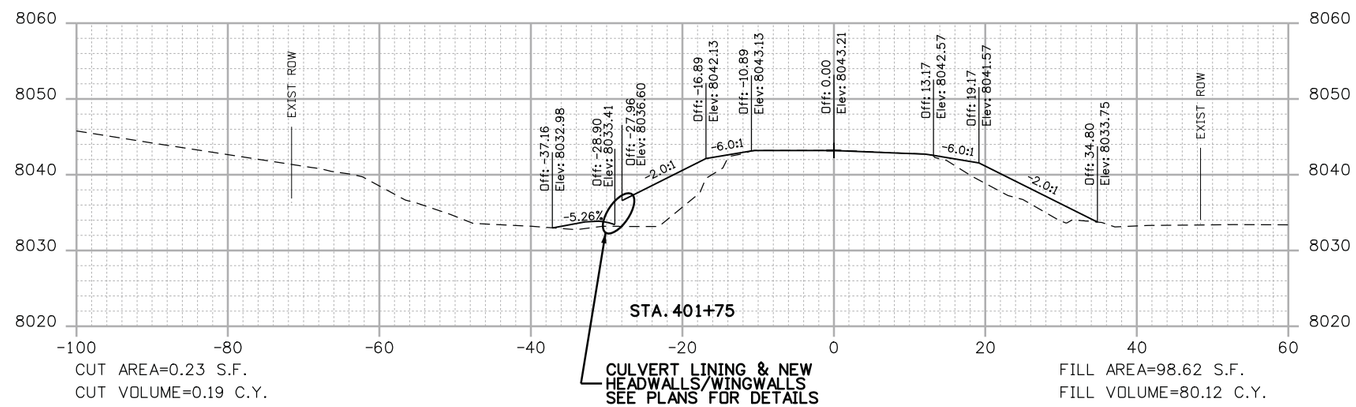

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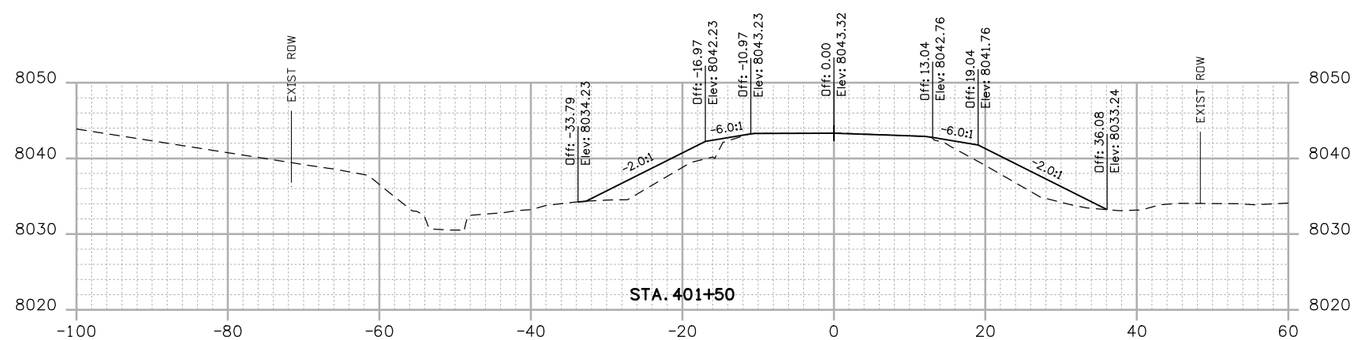

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Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed
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Unit Information: GJ Design JSL			Void:

CROSS SECTIONS
MP 37.70

Designer: J. Klish
Detailer: J. Klish
Subset: MP 37.70 X-SEC
Structure Numbers
Subset Sheets: 2 of 5

Project No./Code
C 131A-035
18861R
Sheet Number 72

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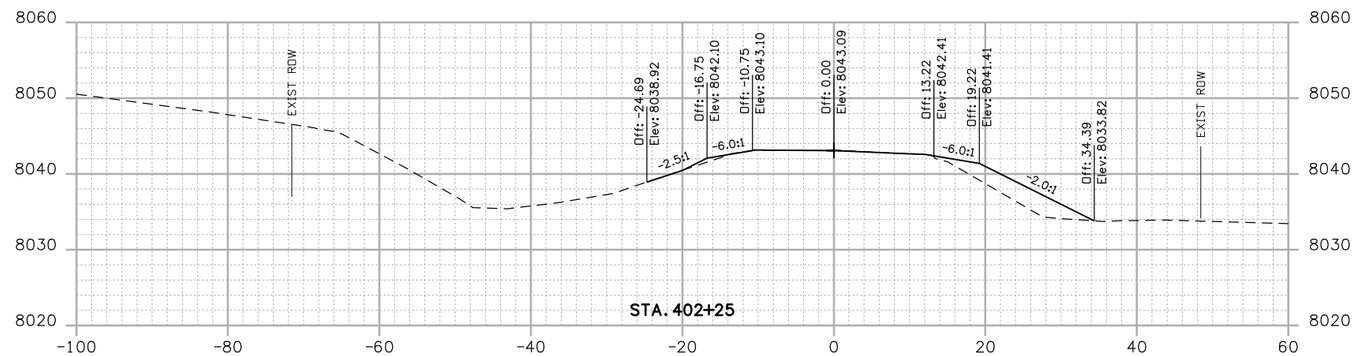

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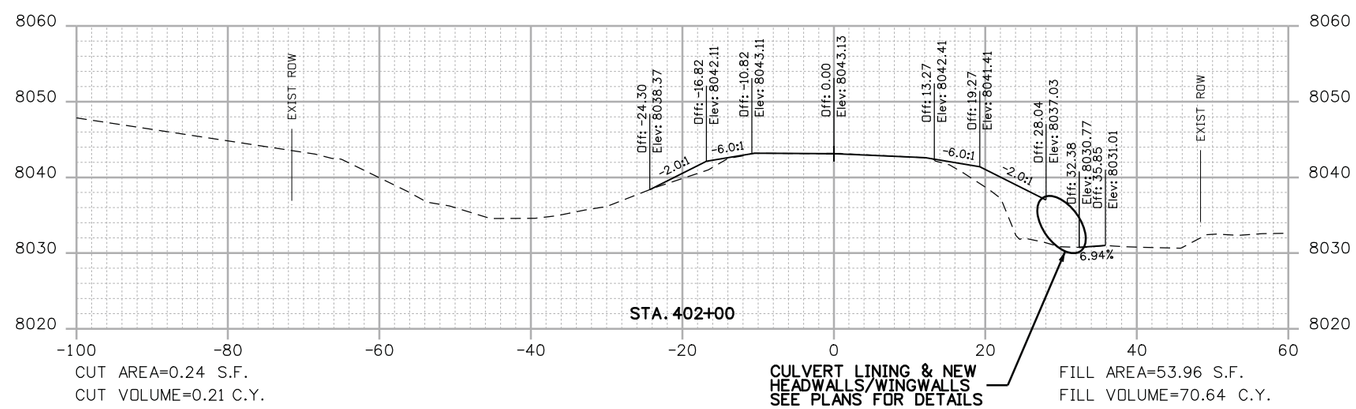
FILL VOLUME=43.35 C.Y.



CUT AREA=0.24 S.F.
CUT VOLUME=0.21 C.Y.

CULVERT LINING & NEW
HEADWALLS/WINGWALLS
SEE PLANS FOR DETAILS

FILL AREA=53.96 S.F.
FILL VOLUME=70.64 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 37.70	Project No./Code
File Name: 18861DES_MP3770_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13		C 131A-035
Horiz. Scale: AS NOTED Vert. Scale: AS NOTED			Revised:	Designer: J. Klish / Structure Numbers	18861R
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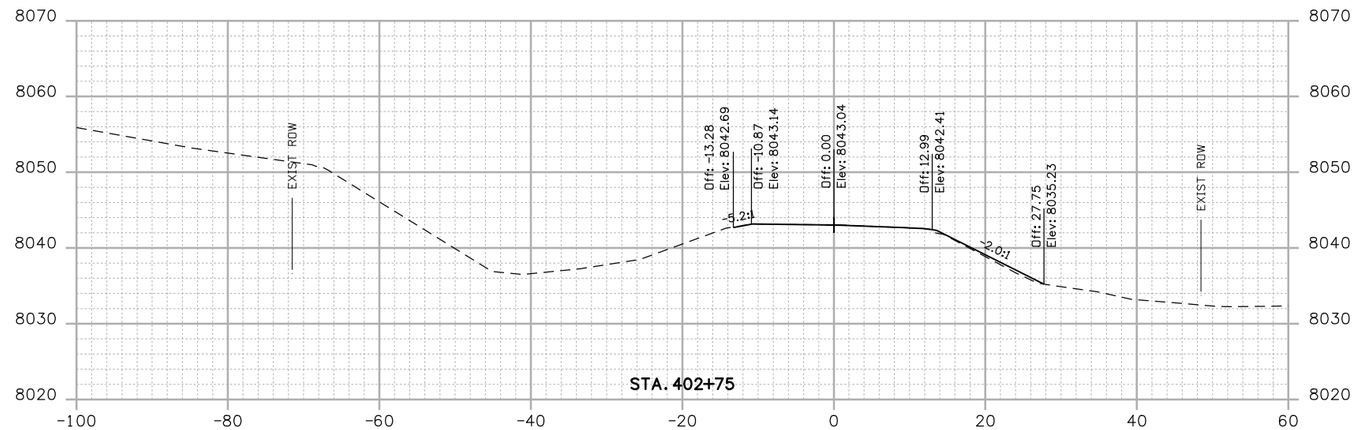

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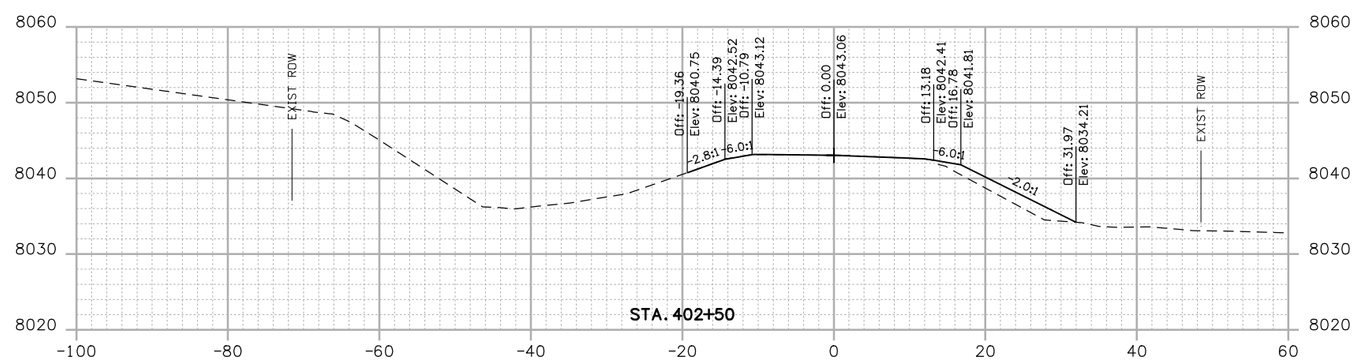

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Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 37.70	Project No./Code
File Name: 18861DES_MP3770_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13		C 131A-035
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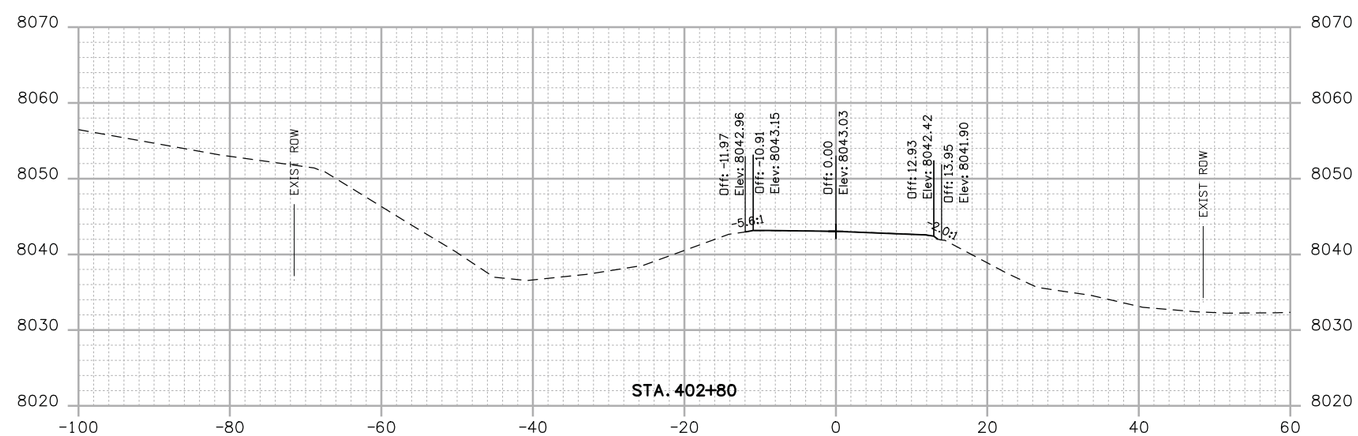

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FILL VOLUME=0.36 C.Y.

Print Date: 3/1/2013	Sheet Revisions	Colorado Department of Transportation	As Constructed	CROSS SECTIONS MP 37.70	Project No./Code
File Name: 18861DES_MP3770_CrossSections.dgn	Date: / Comments / Init.	714 Grand Ave. Eagle, CO 81631 Phone: (970) 328-9962 FAX: (970) 328-2368	No Revisions: 12/23/13		C 131A-035
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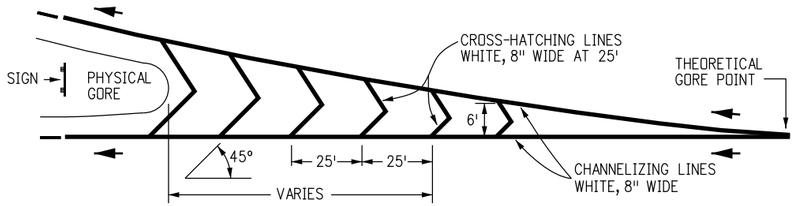
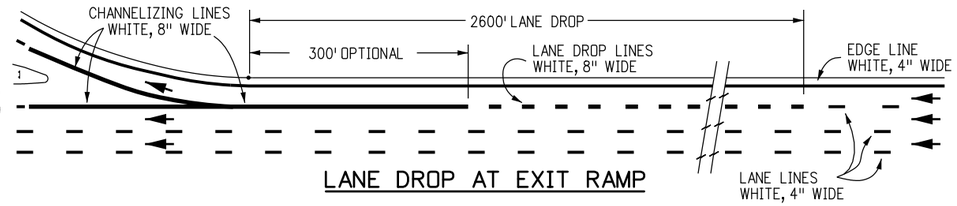
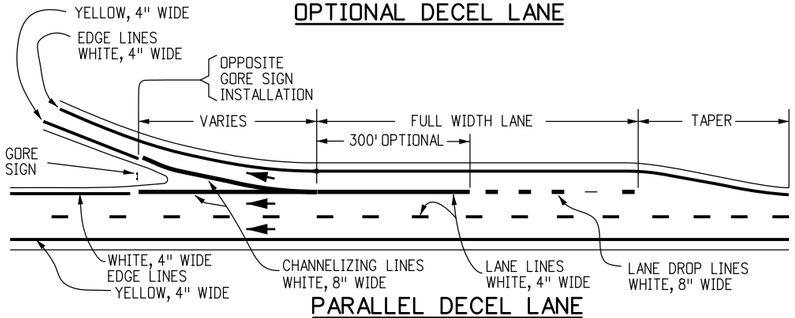


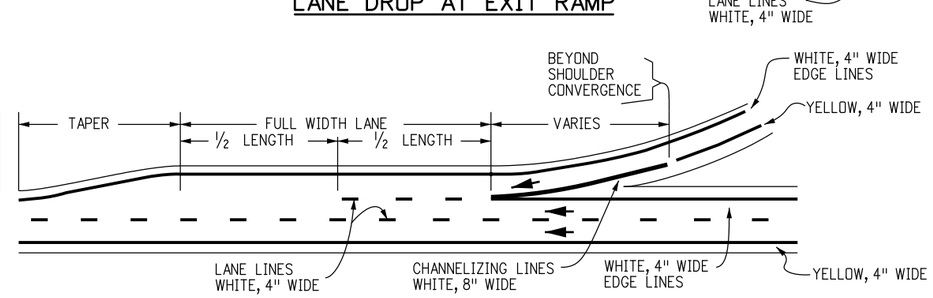
OPTIONAL DECEL LANE



LANE DROP AT EXIT RAMP



PARALLEL DECEL LANE



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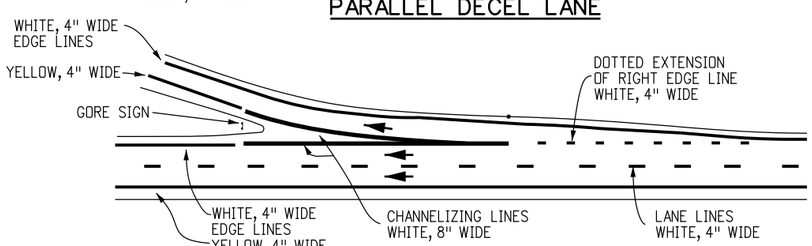
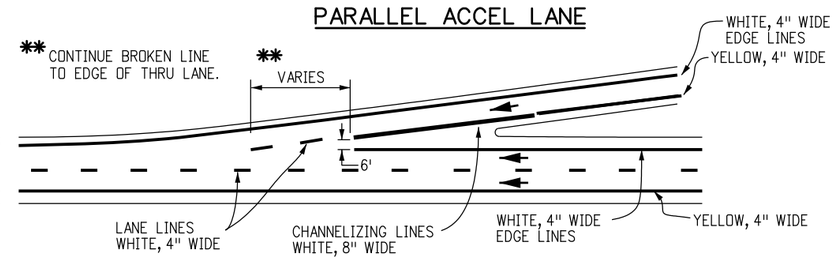
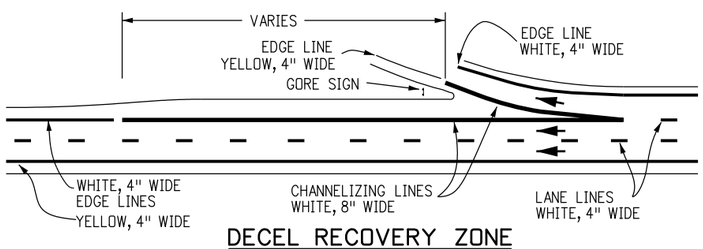


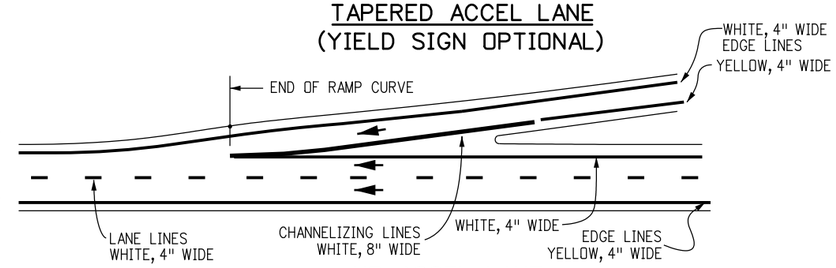
TAPERED DECEL LANE



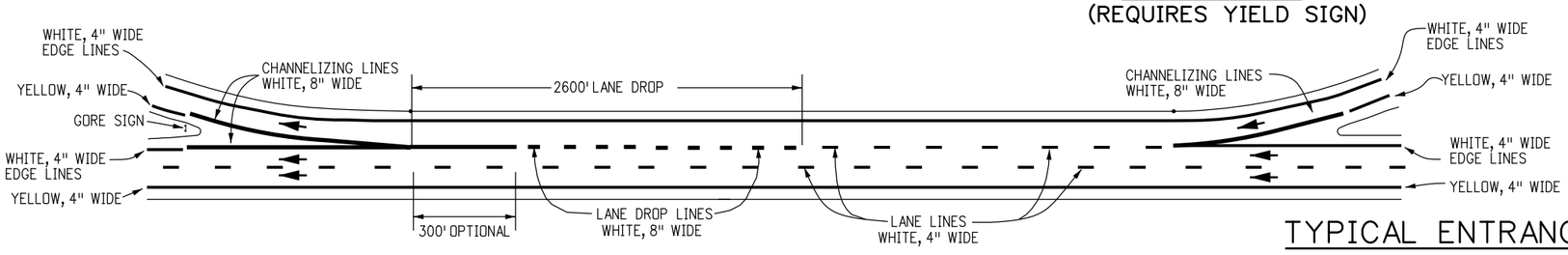
TAPERED ACCEL LANE
(YIELD SIGN OPTIONAL)



DECEL RECOVERY ZONE



NO ACCEL LANE
(REQUIRES YIELD SIGN)



COMBINATION ACCEL-DECEL LANE

TYPICAL ENTRANCE AND EXIT RAMP MARKINGS

GENERAL NOTES

1. CENTER LINES

   BROKEN YELLOW, 4 IN. WIDE - 10 FT. SEGMENTS WITH 30 FT. GAPS.

   SOLID YELLOW, 4 IN. WIDE.
   THESE LINES SEPARATE ADJACENT-OPPOSITE DIRECTION TRAFFIC LANES. DOUBLE LINES SHALL BE SPACED 4 IN. APART.

2. LANE LINES

   BROKEN WHITE, 4 IN. WIDE - 10 FT. SEGMENTS WITH 30' GAPS.

   SOLID WHITE, 4 IN. WIDE.
   THESE LINES SEPARATE ADJACENT-SAME DIRECTION TRAFFIC LANES. A SOLID LINE MAY BE USED TO DISCOURAGE LANE CHANGING, WHILE TWO PARALLEL SOLID WHITE LINES ARE REQUIRED TO PROHIBIT LANE CHANGING.

3. EDGE LINES

   SOLID WHITE OR YELLOW EDGE LINES SHALL BE 4 IN. WIDE. YELLOW EDGE LINES SHALL BE USED ONLY FOR LEFT EDGE, IN THE DIRECTION OF TRAVEL OF DIVIDED STREETS AND HIGHWAYS (SEPARATED BY OTHER THAN A PAINTED MEDIAN) AND ONE-WAY ROADWAYS (INCLUDING RAMPS).

   EDGE LINES ARE NOT CONTINUED THROUGH INTERSECTIONS AND ARE NOT BROKEN FOR DRIVEWAYS. CARE MUST BE TAKEN TO AVOID EDGE LINE APPEARING AS LANE LINE ALONG ROADWAYS WITH WIDE SHOULDERS AND/OR CLOSELY SPACED DRIVEWAYS.

4. DOTTED LINES

   BROKEN WHITE, WIDTH MATCHING THE LINE BEING EXTENDED-2 FT. SEGMENTS WITH 4 FT. GAPS. THESE LINES ARE USED TO DELINEATE THE EXTENSION OF A LINE THROUGH AN INTERSECTION OR INTERCHANGE AREA.

5. CHANNELIZING LINES

   SOLID WHITE, 8 IN. WIDE. THESE LINES ARE USED WITH ACCELERATION-DECELERATION LANES, PAVEMENT WIDTH TRANSITIONS, AND LEFT-RIGHT TURN SLOTS OR ISLANDS.

6. CROSS-HATCHING LINES

   SOLID WHITE OR YELLOW, 8 IN. WIDE-45 DEGREE DIAGONAL, SPACED AT 25 FT. INTERVALS. THESE LINES ARE OPTIONAL AND MAY BE PLACED AT LOCATIONS INDICATED ON THE PLANS OR DETERMINED BY THE ENGINEER. YELLOW SHALL BE USED FOR PAINTED MEDIANS OR PAVEMENT WIDTH TRANSITIONS ONLY.

   OPTIONAL DIAGONAL SHOULDER MARKINGS SHALL BE SOLID WHITE, 8 IN. WIDE, SPACED AT INTERVALS OF 20 FT. MINIMUM TO 100 FT. MAXIMUM.

7. PARKING LINES

   SOLID WHITE, 3 IN. WIDE-DIAGONAL OR PARALLEL AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.

8. STOP LINES

   SOLID WHITE, 24 IN. WIDE-EXTEND PARALLEL TO INTERSECTED ROADWAY ACROSS ALL APPROACH LANES OR AS INDICATED AT LOCATIONS ON THE PLANS. LOCATE AT THE DESIRED STOPPING POINT, NOT MORE THAN 30 FT, NOR LESS THAN 4 FT. FROM THE NEAREST EDGE OF THE INTERSECTED TRAFFIC LANE.

9. LANE DROP MARKINGS

   BROKEN WHITE, 8 IN. WIDE - 3 FT. SEGMENTS WITH 12 FT. GAPS. THESE LINES SHOULD BEGIN 2600 FT. IN ADVANCE OF THE THEORETICAL GORE POINT TO DISTINGUISH THE LANE DROP FROM A CONTINUOUS LANE. THE CHANNELIZING LINE MAY BE EXTENDED APPROXIMATELY 300 FT. UPSTREAM.

(CONTINUED ON SHEET NO. 2)

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Last Modification Date: 10/18/12	Initials: SCL
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	Sheet Revisions	
	Date:	Comments
R-1	10/18/12	SHEET 2 - ADDED "D" NOTE
R-X		
R-X		
R-X		

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
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Safety & Traffic Engineering Branch KCM/SCL

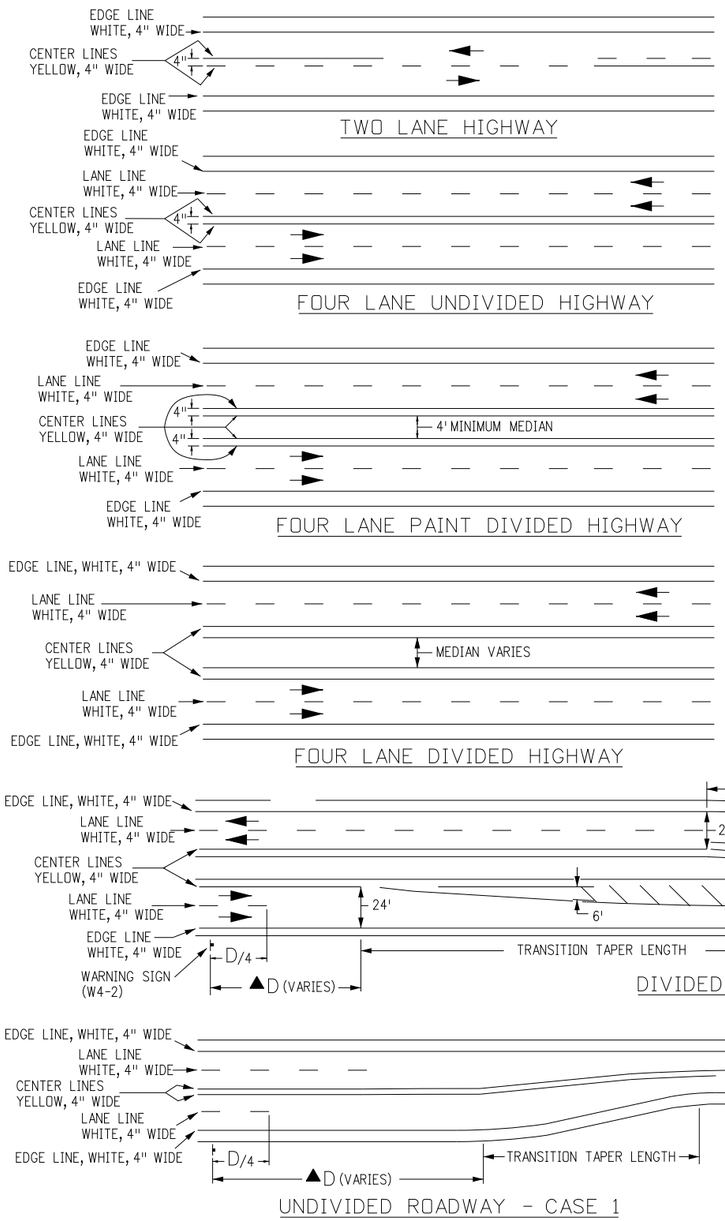
PAVEMENT MARKINGS

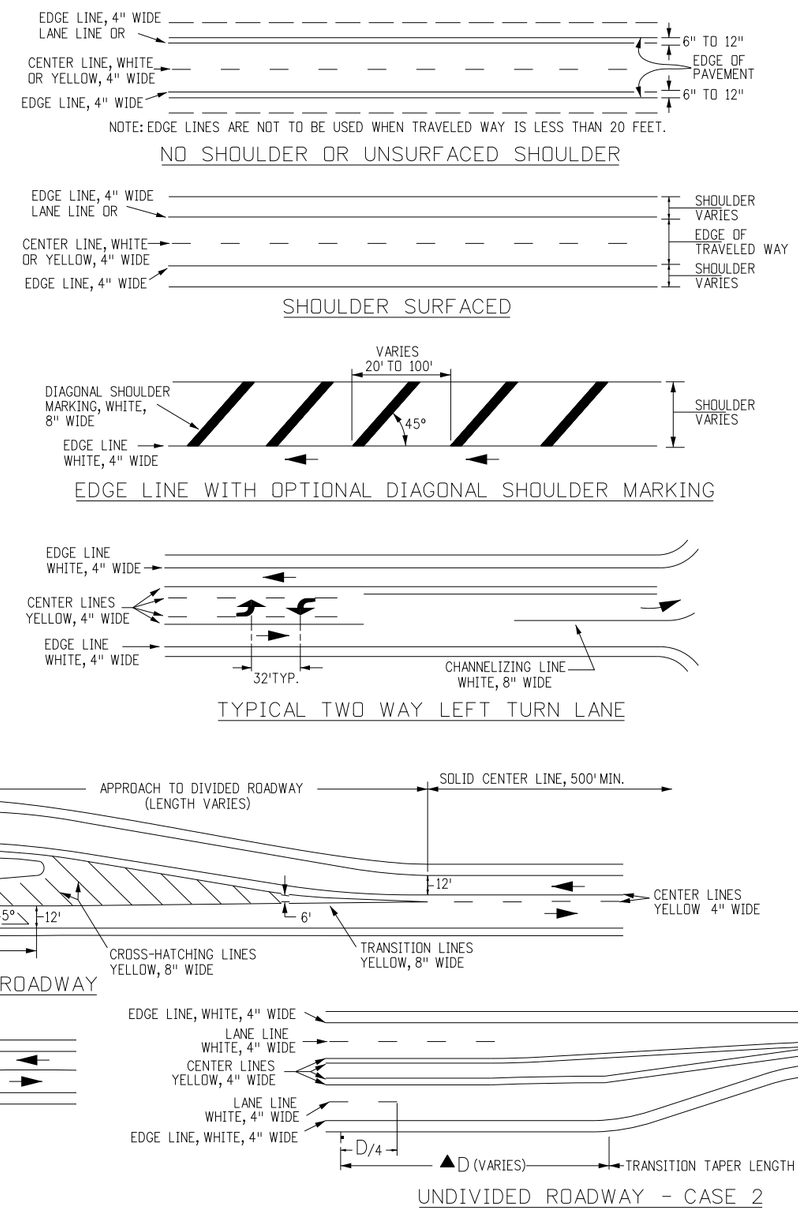
Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.

S-627-1

Sheet No. 1 of 5





GENERAL NOTES

(CONTINUED FROM SHEET NO. 1)

10. CROSSWALK LINES

SOLID WHITE, 12 IN. WIDE FOR TRANSVERSE LINE TYPE - EXTEND ACROSS ENTIRE WIDTH OF PAVEMENT. IF NO ADVANCE STOP LINE IS PROVIDED, INCREASE THE WIDTH OF THE CROSSWALK LINES TO 24 IN. THE DISTANCE BETWEEN THE LINES IS USUALLY DETERMINED BY THE WIDTH OF THE SIDEWALKS SO CONNECTED, HOWEVER, IN NO CASE SHALL THIS BE LESS THAN 6 FT.

COMPLICATED AND/OR CHANNELIZED INTERSECTIONS AND MID-BLOCK CROSSWALKS SHALL BE SOLID WHITE, 12 IN. TO 24 IN. WIDE AND 8 FT. TO 10 FT. LONG FOR LONGITUDINAL LINE TYPE AS DETAILED IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

11. WORD, ARROW AND SYMBOL MARKINGS

ALL LETTERS, ARROWS AND SYMBOLS SHALL BE IN CONFORMANCE WITH "THE STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" ADOPTED BY THE FEDERAL HIGHWAY ADMINISTRATION.

12. TRANSITION TAPER LENGTH

L = MINIMUM LENGTH OF TAPER.

S = DESIGN SPEED FOR NEW CONSTRUCTION OR NUMERICAL VALUE OF THE POSTED SPEED LIMIT OF THE 85TH PERCENTILE SPEED OF EXISTING TRAFFIC.

W = WIDTH TRANSITIONED

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

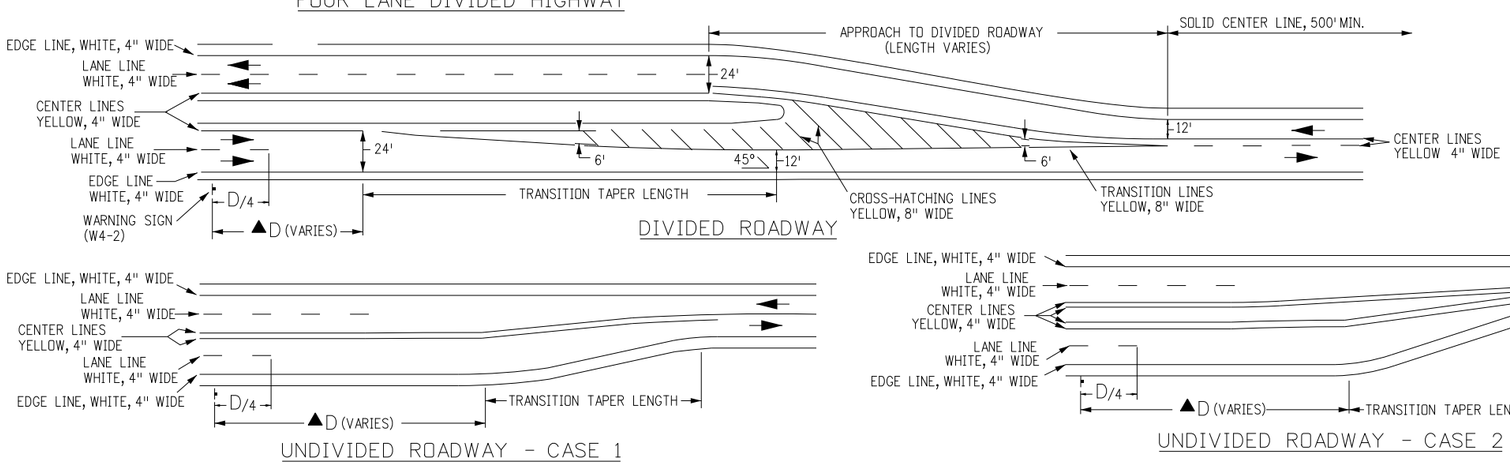
FOR SPEED 40 MPH OR LESS, $L = \frac{WS^2}{60}$

13. TRANSITION LINES

SOLID YELLOW, 8 IN. WIDE. THESE LINES ARE USED WHERE ADDITIONAL EMPHASIS OR VISIBILITY IS DESIRABLE AT PAVEMENT WIDTH TRANSITIONS. PLACE AT LOCATIONS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

14. SPEED MEASURING MARKING

SOLID WHITE, 24 IN. - EXTEND 4 FT. FROM OUTSIDE OF EDGE LINES ON SHOULDERS.



▲ NOTE:

D = THE DISTANCE FROM THE PAVEMENT WIDTH TRANSITION SIGN (W4-2) TO THE BEGINNING OF THE TRANSITION TAPER. FOR MORE INFORMATION ON THE "D" VALUE REGARDING SIGN AND PAVEMENT MARKING PLACEMENT, SEE THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", TABLE 2C-4, CONDITION A: SPEED REDUCTION AND LANE CHANGING IN HEAVY TRAFFIC AND FOOTNOTE 2 REGARDING TYPICAL CONDITIONS.

TYPICAL PAVEMENT WIDTH TRANSITION MARKINGS

Computer File Information			Sheet Revisions	
Creation Date: 07/04/12 Initials: KEN			Date:	Comments
Last Modification Date: 10/18/12 Initials: SCL	(R-1)		10/18/12	ADDED MORE NOTES ON "D" VALUE
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	(R-X)			
Drawing File Name: S-627-01_2of5.dgn	(R-X)			
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)			

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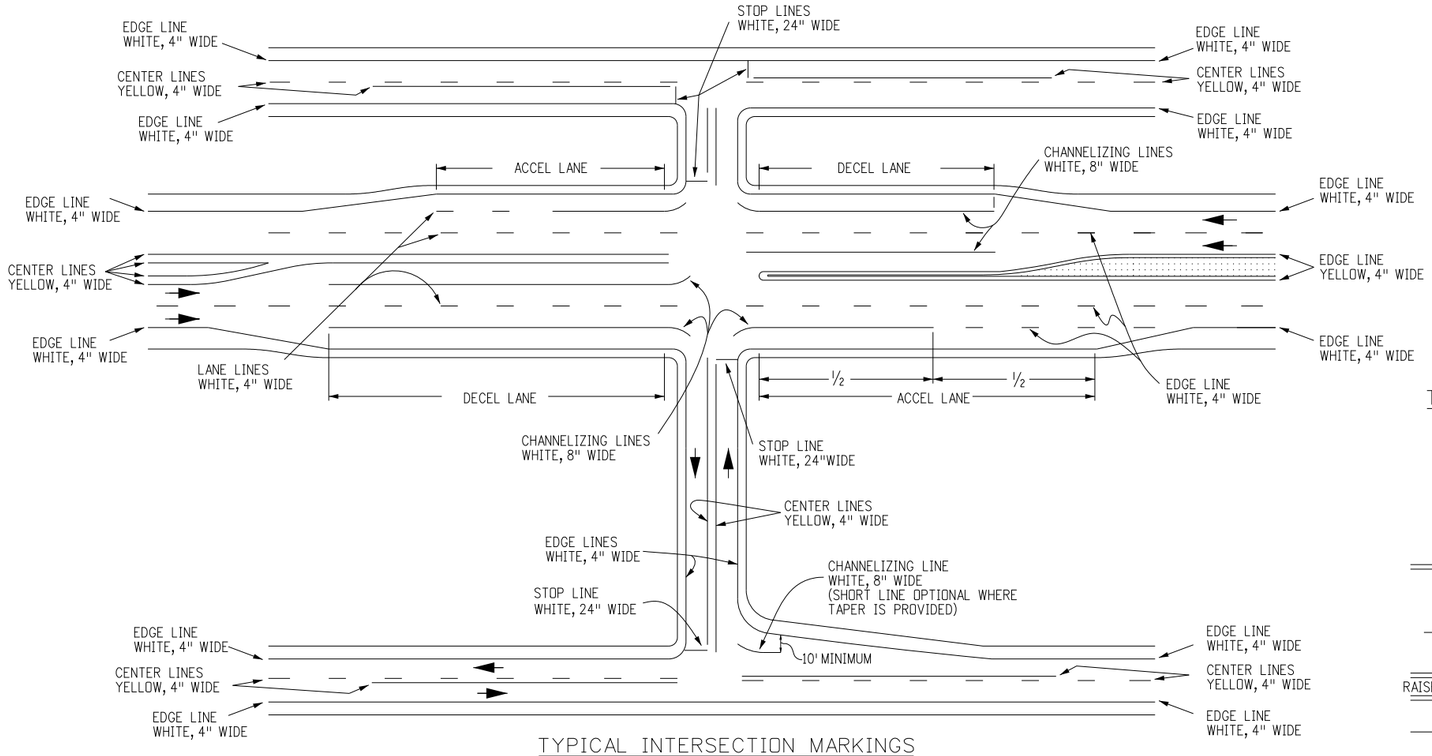
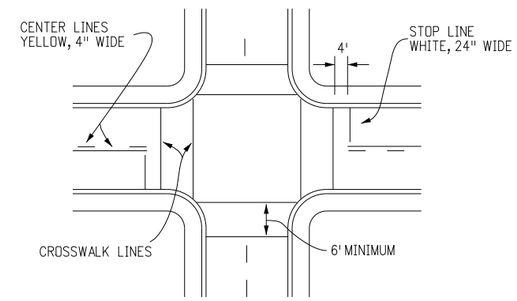
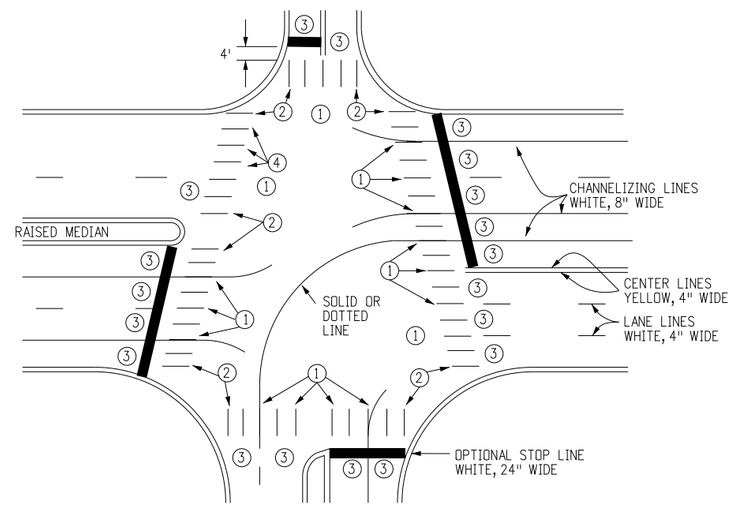


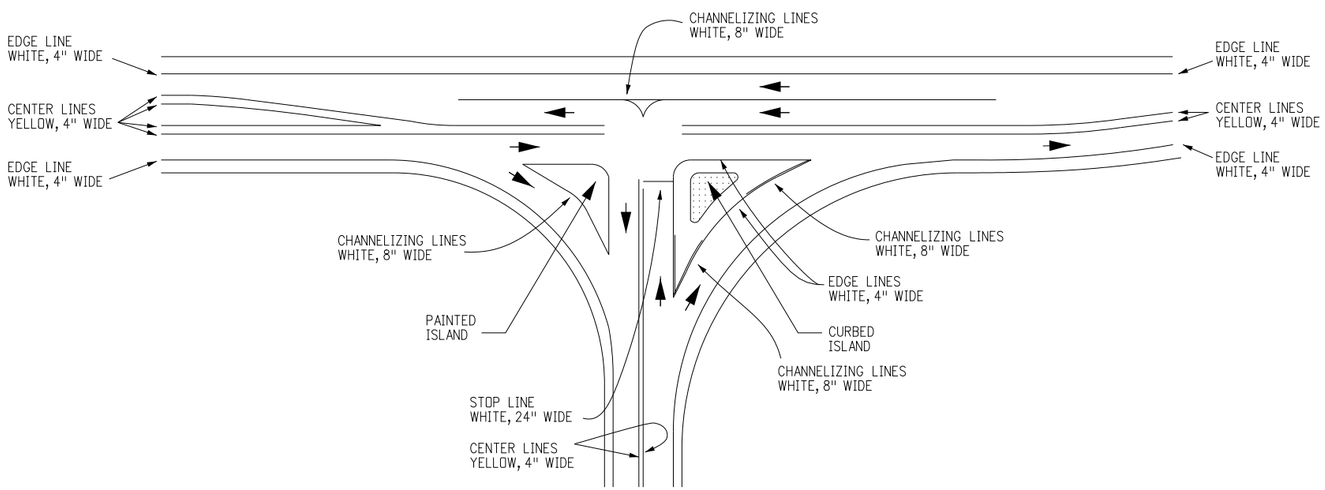
TYPICAL INTERSECTION MARKINGS



TYPICAL TRANSVERSE LINE CROSSWALK MARKINGS

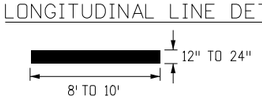


TYPICAL CONTINENTAL CROSSWALK MARKINGS



TYPICAL ISLAND MARKINGS

LONGITUDINAL LINE DETAIL



CROSSWALK NOTES

CENTER CROSSWALKS ON CURB RAMPS.
IF SUCH RAMPS ARE NOT PROVIDED CENTER
ON SIGNAL POLES WHEREVER PRACTICAL.

1. CENTER ON LANE, CENTER OR CHANNELIZING LINE.
2. CENTER OR EXTENDED FLOW LINE.
3. CENTER BETWEEN ADJACENT LINES.
4. LINES AND SPACES TO APPROXIMATE ADJACENT PATTERN.

INTERSECTIONS, ISLANDS AND CROSSWALKS

Computer File Information			Sheet Revisions	
Creation Date: 07/04/12	Initials: JSW		Date:	Comments
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Drawing File Name: S-627-01_3of5.dgn		R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale	Units: English	R-X		

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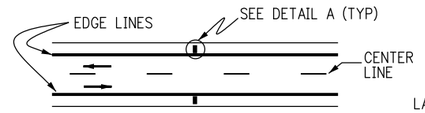
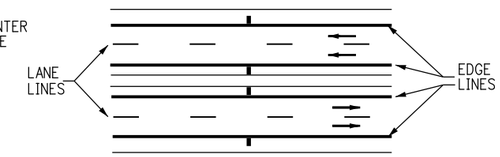
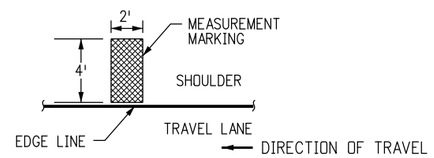


TWO - WAY ROADWAY

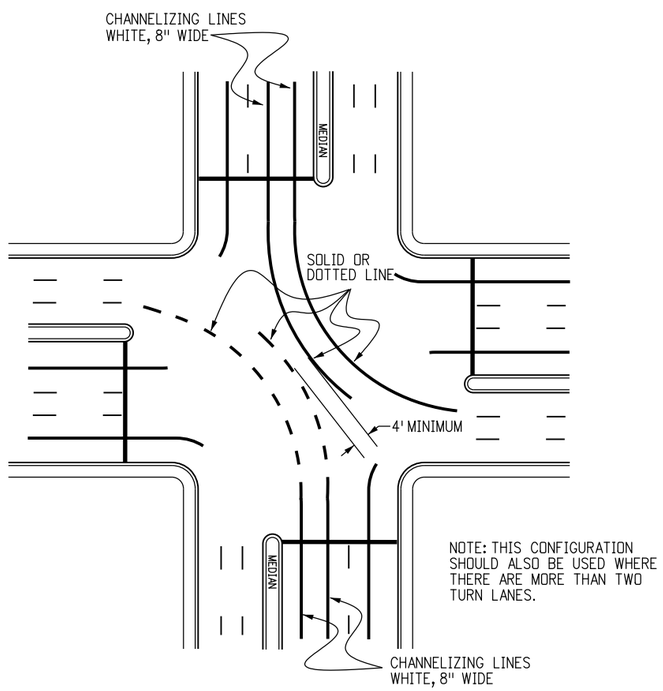


MULTI - LANE DIVIDED HIGHWAY

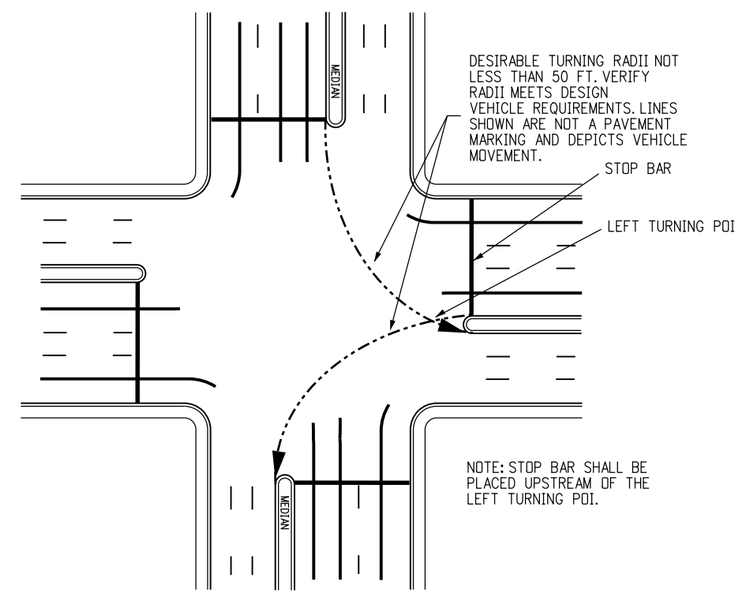


DETAIL A

TYPICAL SPEED MEASUREMENT MARKING



TYPICAL DOUBLE LEFT TURN MARKINGS



TYPICAL STOP BAR PLACEMENT

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: SCL		Date:	Comments
Last Modification Date: Initials:	R-X		
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-X		
Drawing File Name: S-627-01_4of5.dgn	R-X		
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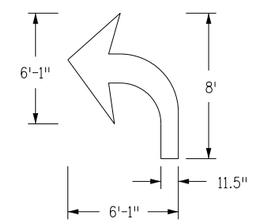
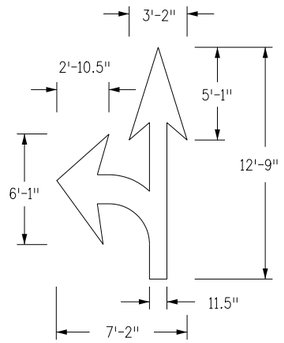


AREA = 15.5 SQ.FT.



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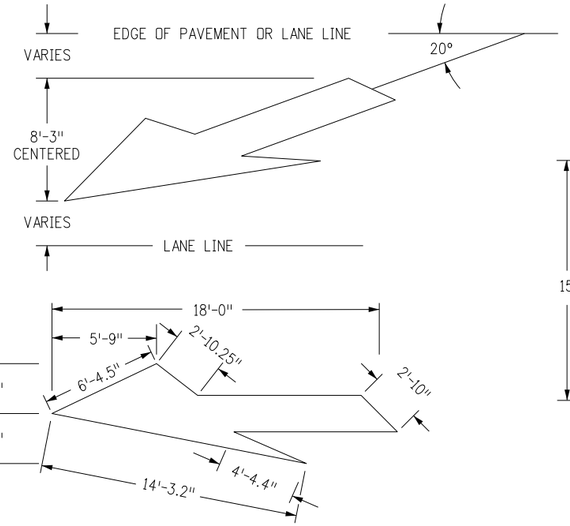

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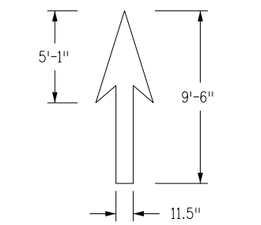
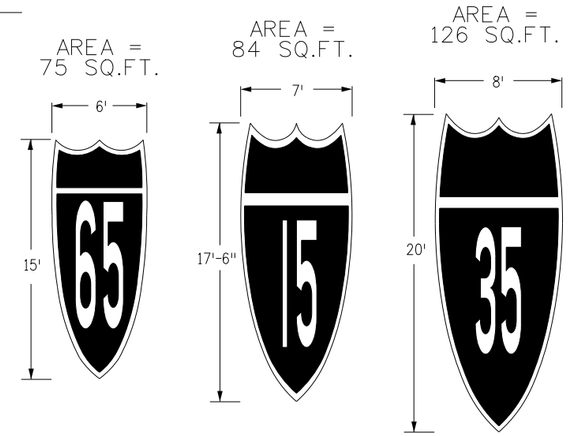


AREA = 12.5 SQ.FT.



ELONGATED ROUTE SHIELDS

ELONGATED ROUTE SHIELD NOTES

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

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

DESIGNATED PAYMENT AREAS

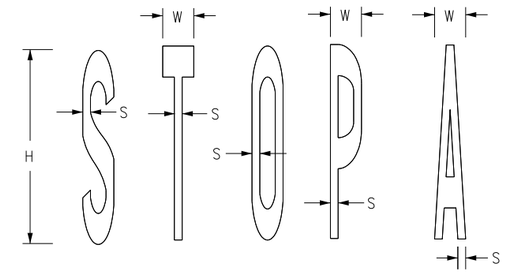
FOR THE FOLLOWING H, W, AND S DIMENSIONS PAY:

H = 4' WORDS

BIKE - 5.5 SQ.FT.	LANE - 6.0 SQ.FT.
ONLY - 6.0 SQ.FT.	XING - 5.0 SQ.FT.

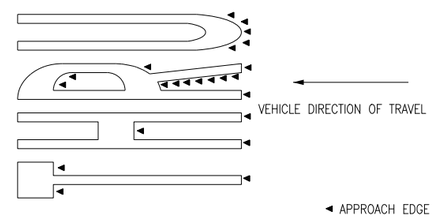
H = 8' WORDS

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



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

TYPICAL LETTER MEASUREMENTS

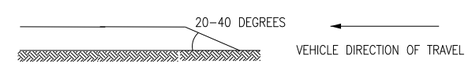


TYPICAL APPROACH EDGE TAPERING VIEW

WORD AND SYMBOL NOTES

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

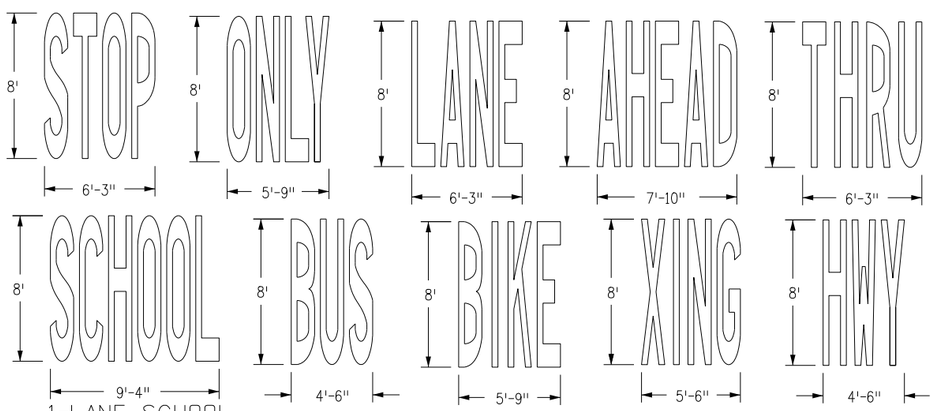
PAVEMENT WORD AND SYMBOL MARKINGS, TRANSVERSE AND LONGITUDINAL (CONTINENTAL) CROSSWALK LINES, AND STOP LINES WILL BE PAID FOR IN SQUARE FEET USING THEIR SPECIFIC BID ITEMS.



TYPICAL APPROACH EDGE TAPERING PROFILE VIEW

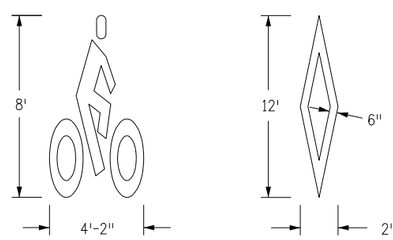
TAPERING NOTES

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

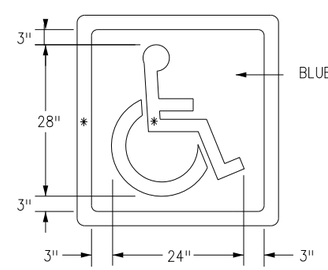


1-LANE SCHOOL

STROKE = 8"
2-LANE SCHOOL



AREA = 10.5 SQ.FT. AREA = 10 SQ.FT.



* WHITE 3" STROKE WIDTH (BORDER MAY BE 4" STROKE WIDTH)

PAVEMENT MARKING WORDS AND SYMBOLS

Computer File Information		
Creation Date: 07/04/12	Initials: SCL	
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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 GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES & FEATURES".

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

3. WHEN SPEED LIMIT REDUCTION IS REQUIRED, 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 7).

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 (55 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.

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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

STANDARD PLAN NO.

S-630-1

Sheet No. 1 of 20

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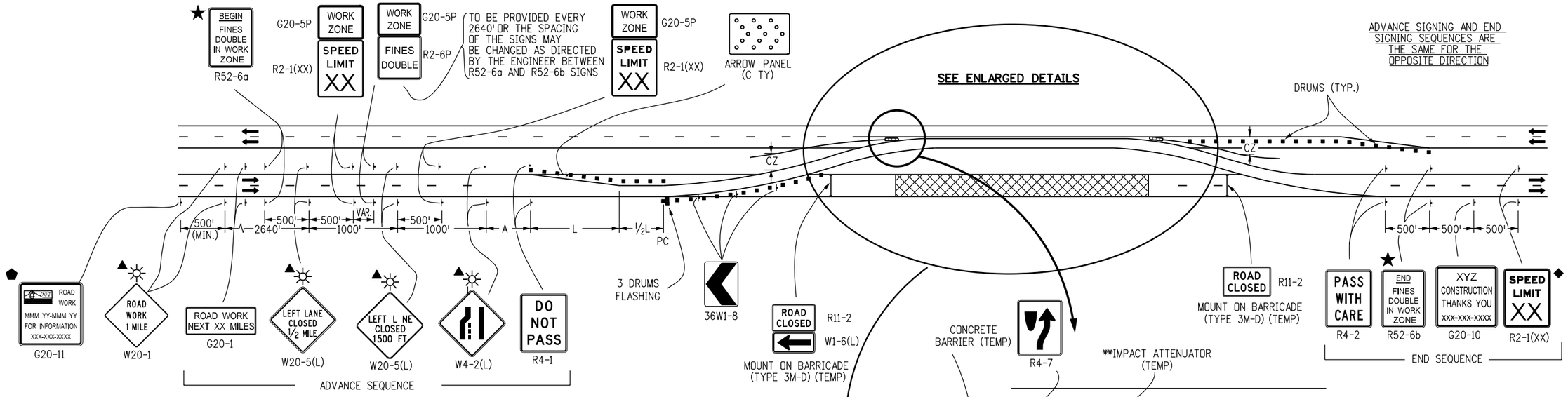
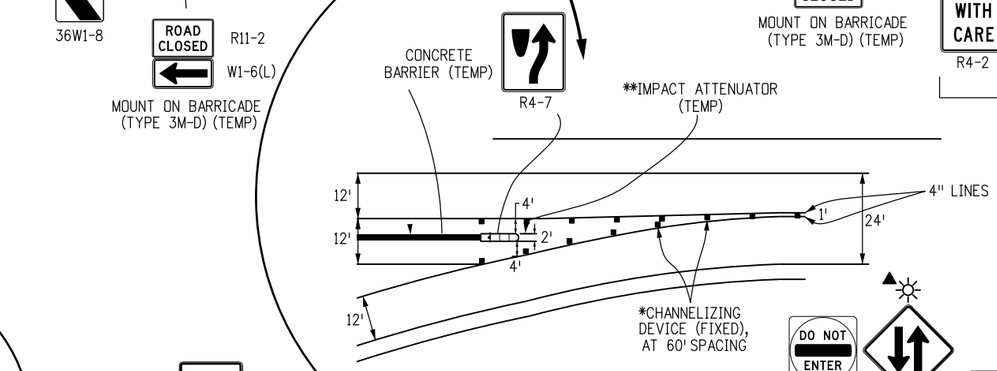
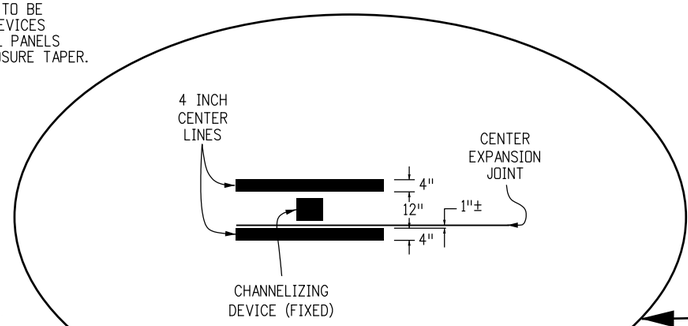
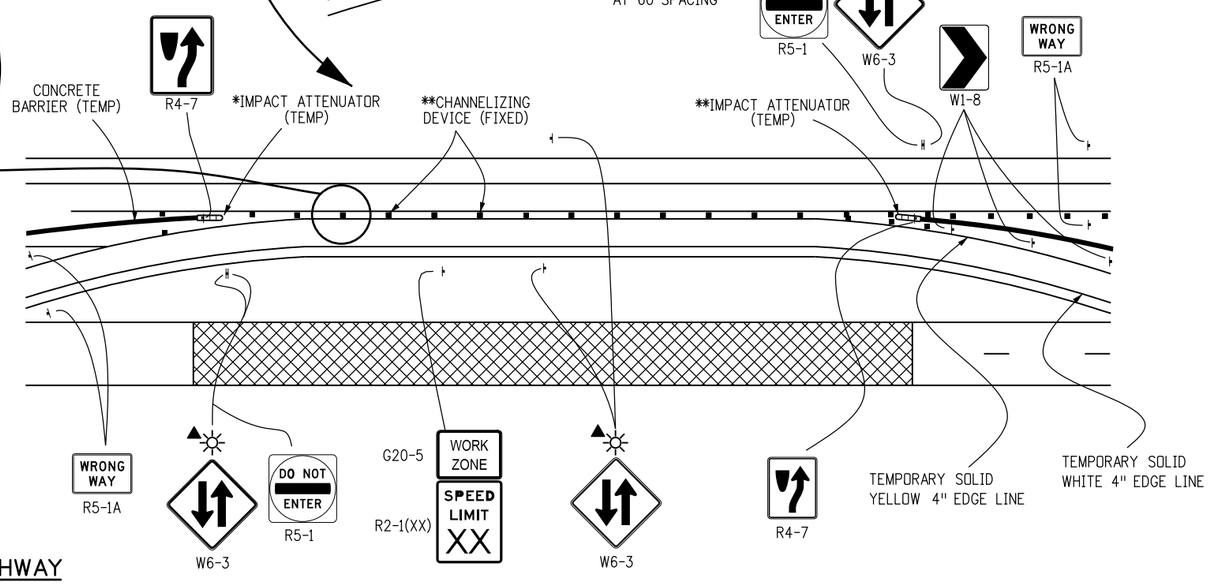


TYPICAL 2-WAY ZONE STRIPING





TYPICAL 2-WAY ZONE STRIPING



LEGEND

- ▪ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = 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 ON SHEET 1).
- ▲ 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.
- VAR. BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- IMPACT ATTENUATOR AS DETAILED ON THE PLANS
- FLASHING BEACON

- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- * THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION.
- ** SEE GENERAL NOTE 16 ON SHEET 1.
- ⬟ G20-11 SIGN IS REQUIRED IF SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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

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Last Modification Date:	Initials:
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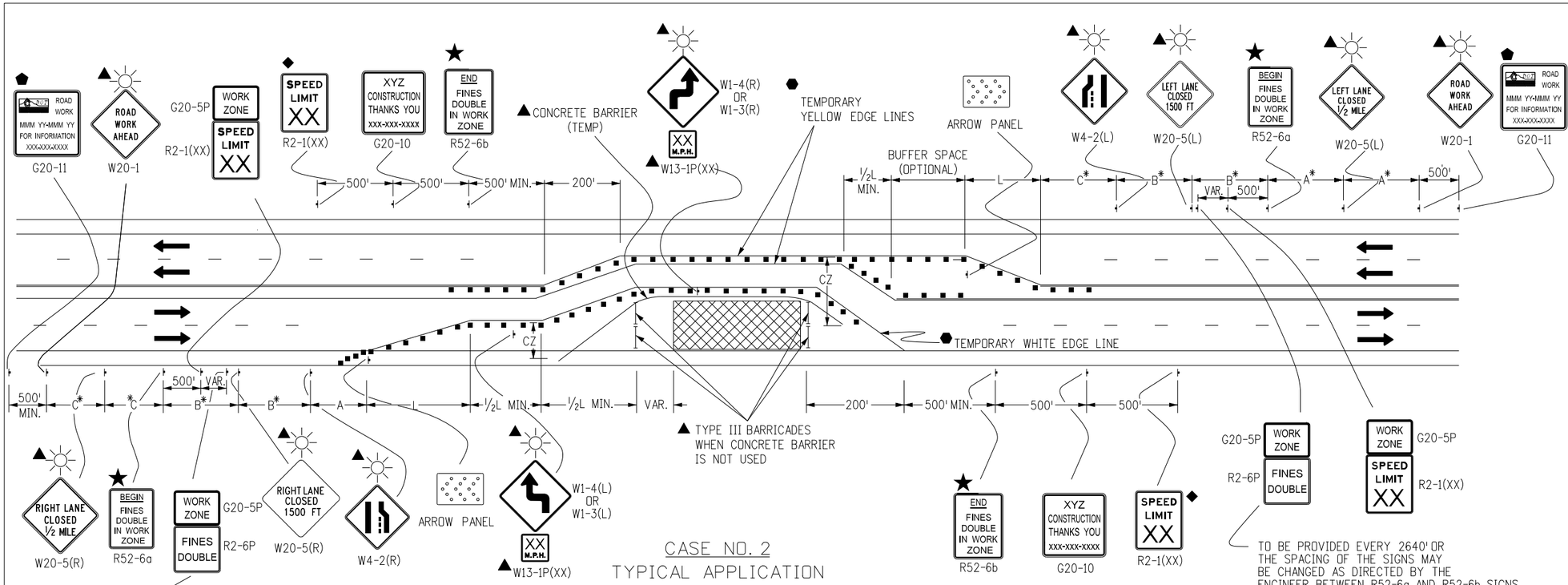
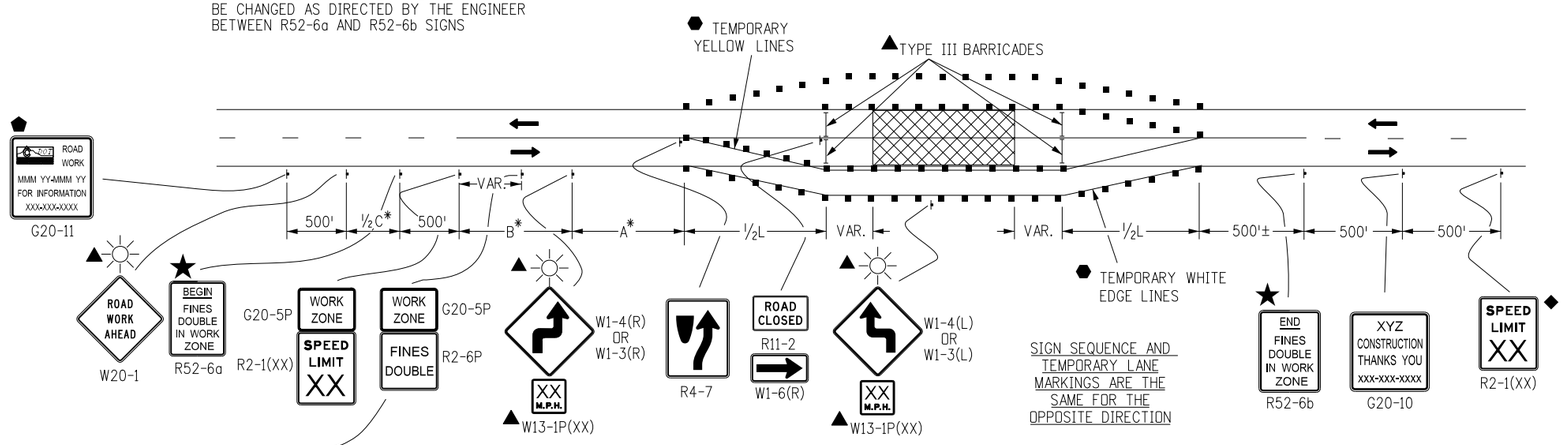
Sheet No. 3 of 20



CASE NO. 2
TYPICAL APPLICATION
CLOSURE OF HALF OF 4-LANE UNDIVIDED HIGHWAY



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 SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- 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 ON SHEET 1)
- ▲ 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.
- VAR. BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

* KEY TO ADVANCE SIGNING DISTANCES

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

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(R-X)		
(R-X)		

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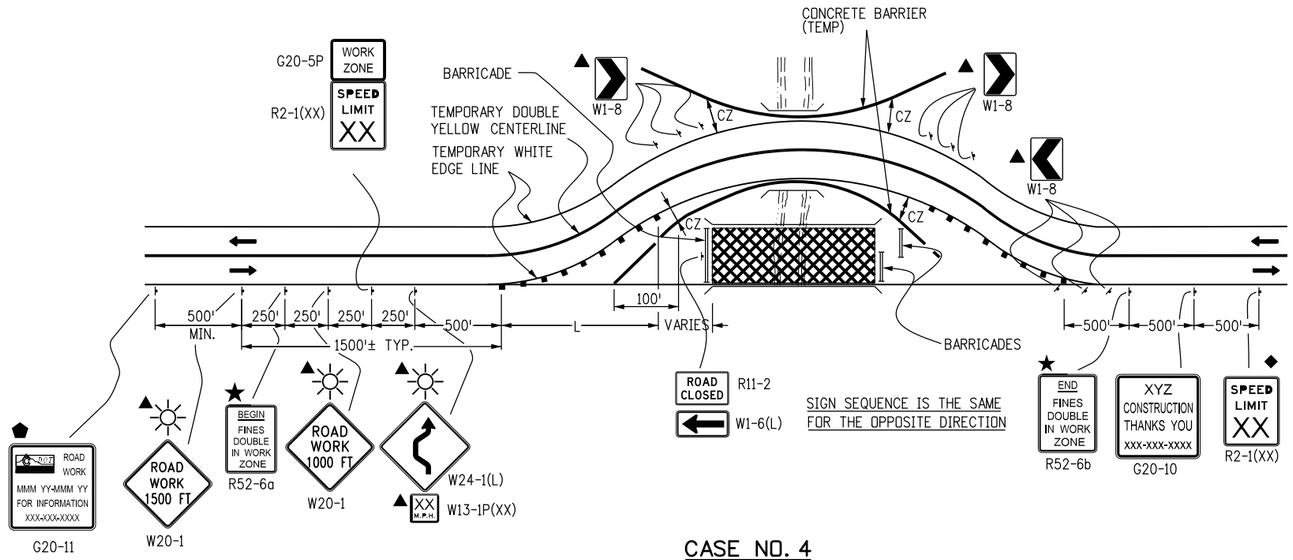
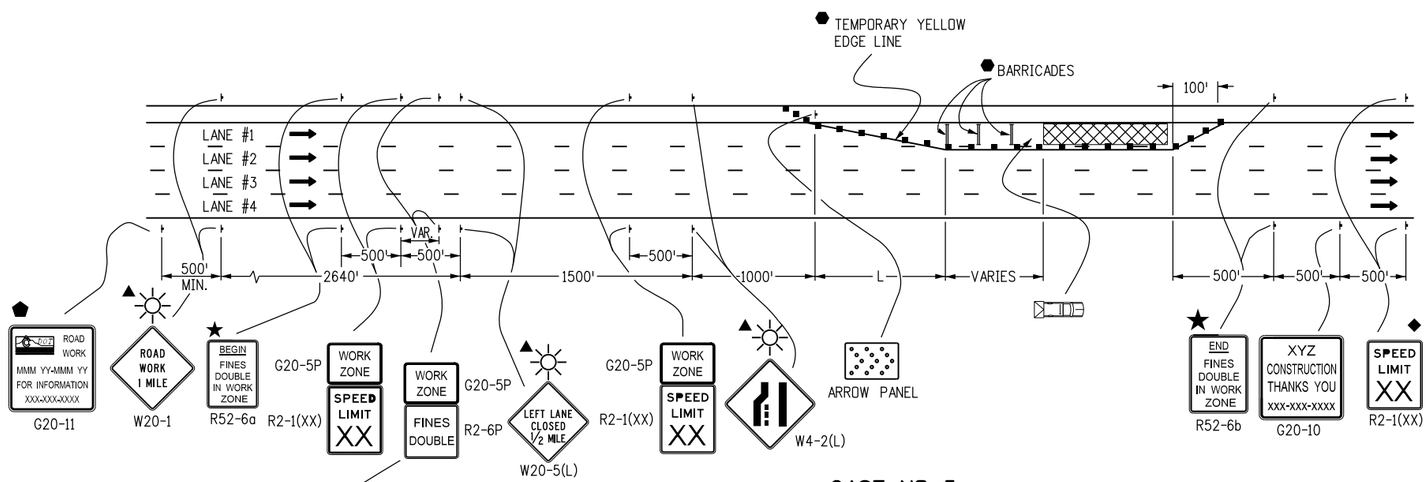


CASE NO. 4
TYPICAL APPLICATION
ROAD CLOSURE, BYPASS DETOUR PROVIDED



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

LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRICADE (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 ON SHEET 1).
- ▲ 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 ON SHEET 1).
- REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- TRUCK MOUNTED ATTENUATOR (TMA)
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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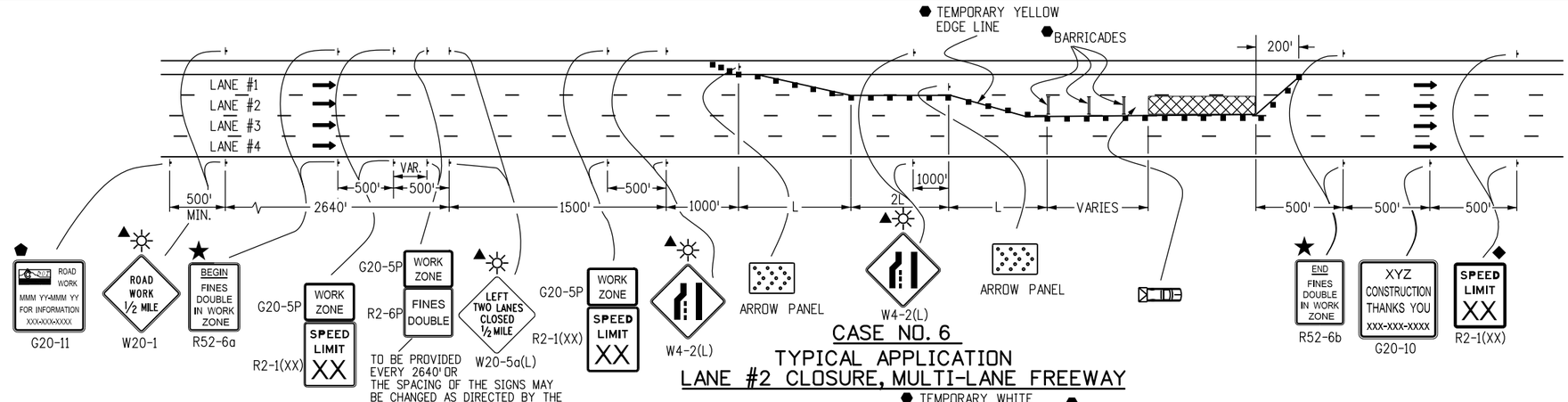
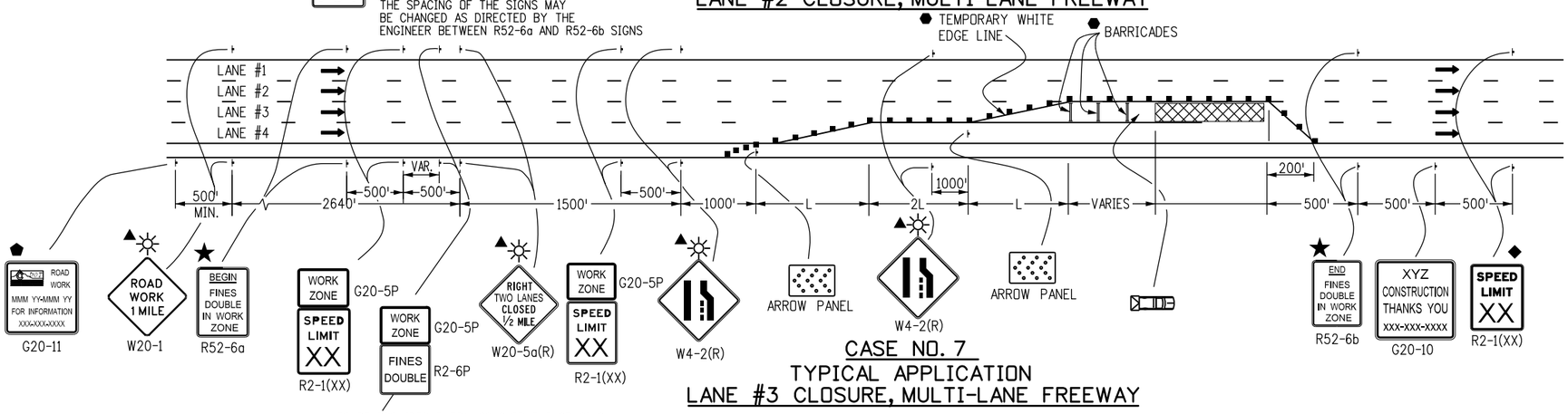
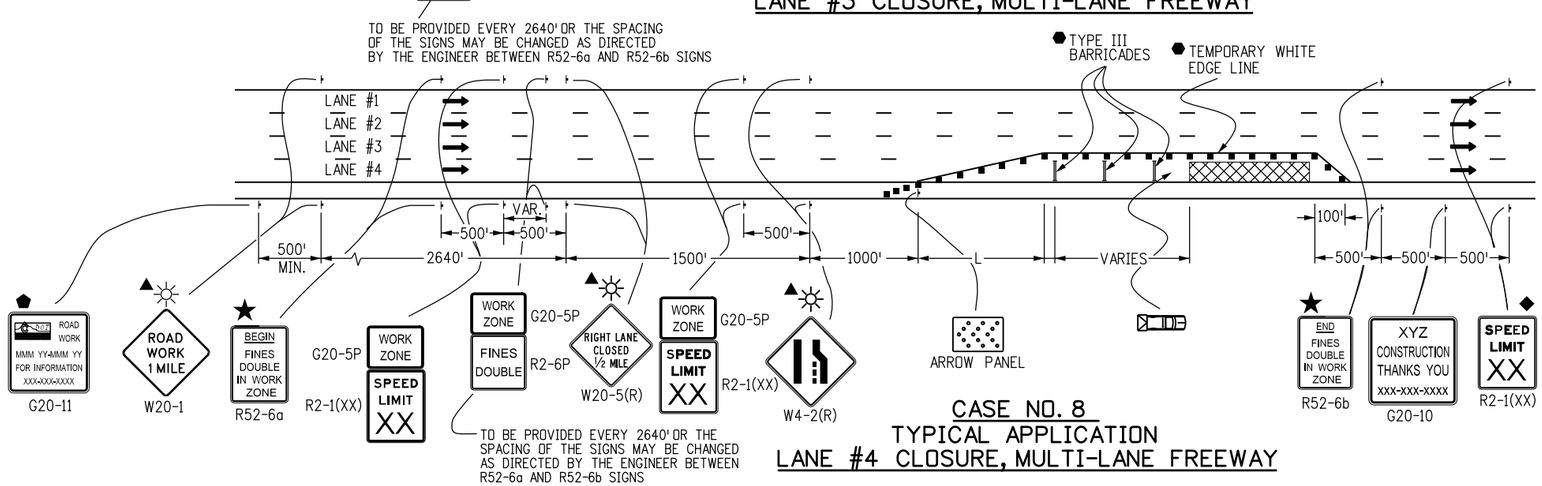


CASE NO. 6
TYPICAL APPLICATION
LANE #2 CLOSURE, MULTI-LANE FREEWAY



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



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

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L — TRANSITION TAPER LENGTH:
  - L = 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 ON SHEET 1).
- ▲ 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 ON SHEET 1).
- ● REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- TRUCK MOUNTED ATTENUATOR (TMA)
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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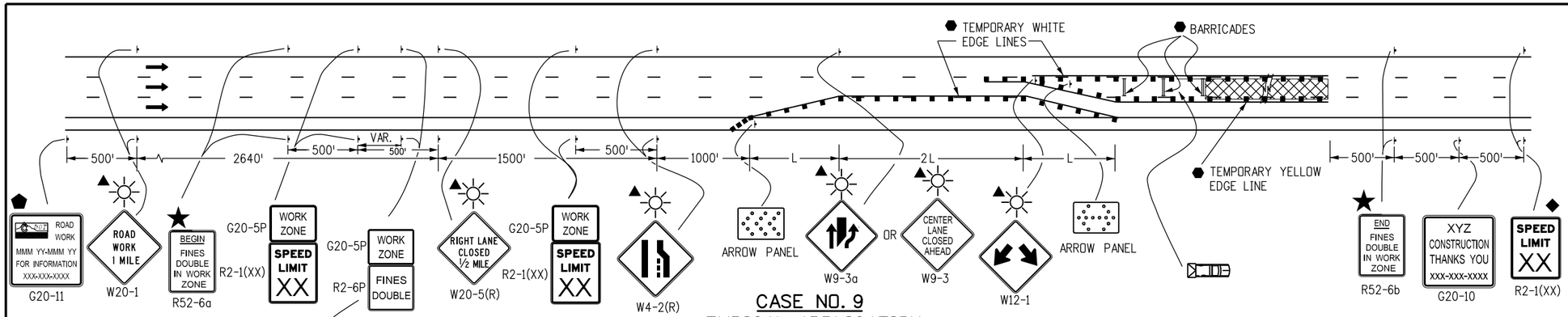
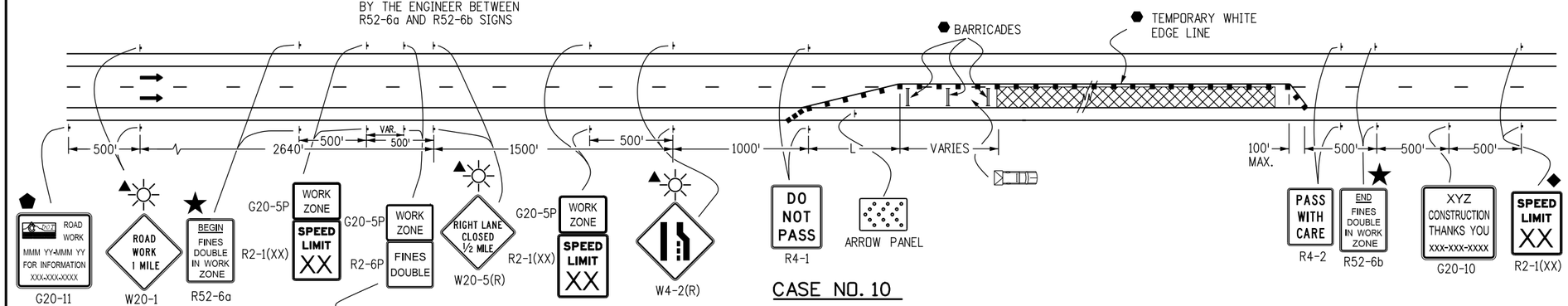
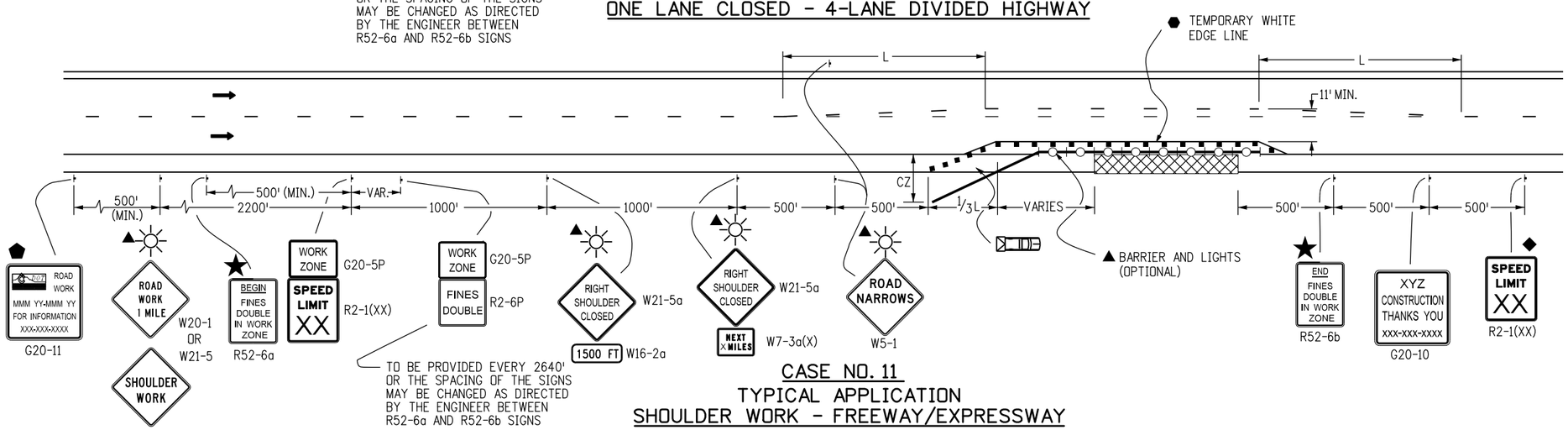


CASE NO. 9
TYPICAL APPLICATION
CENTER LANE CLOSURE - MULTI-LANE FREEWAY



CASE NO. 10
TYPICAL APPLICATION
ONE LANE CLOSED - 4-LANE DIVIDED HIGHWAY



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

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = 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 ON SHEET 1).
- ▲ 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 ON SHEET 1).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- TRUCK MOUNTED ATTENUATOR (TMA)
- CONCRETE BARRIER (TEMPORARY) WITH LIGHTS
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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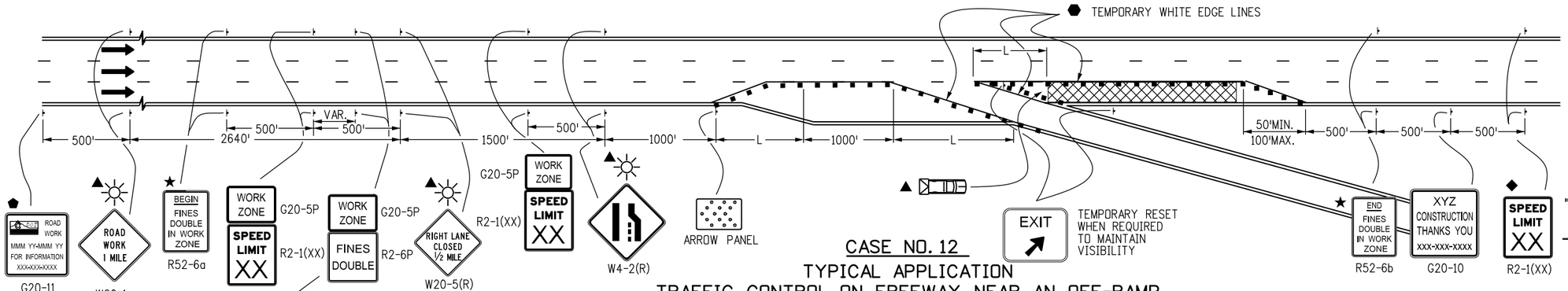
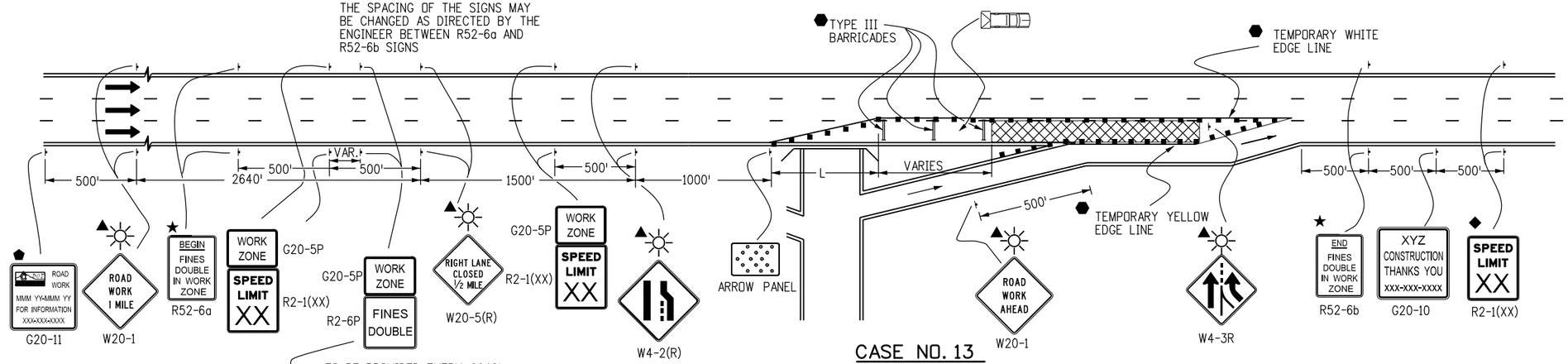
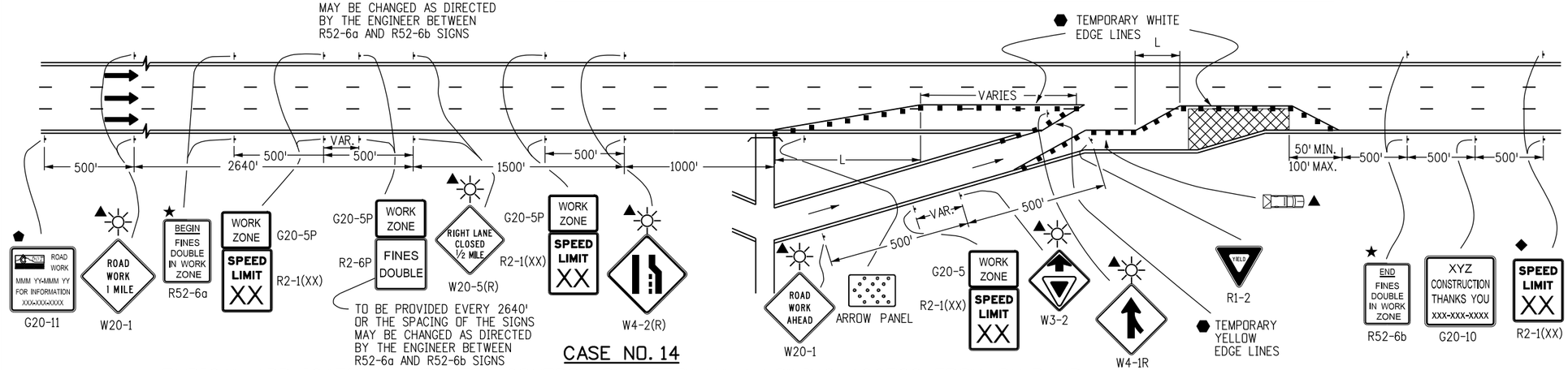


CASE NO. 12
TYPICAL APPLICATION
TRAFFIC CONTROL ON FREEWAY NEAR AN OFF-RAMP



CASE NO. 13
TYPICAL APPLICATION - TRAFFIC CONTROL ON FREEWAY BEFORE AN ON-RAMP



CASE NO. 14
TYPICAL APPLICATION - TRAFFIC CONTROL ON FREEWAY ALLOWING ACCESS FROM ON-RAMP

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L — TRANSITION TAPER LENGTH:
  - L = 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 ON SHEET 1).
- ▲ 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
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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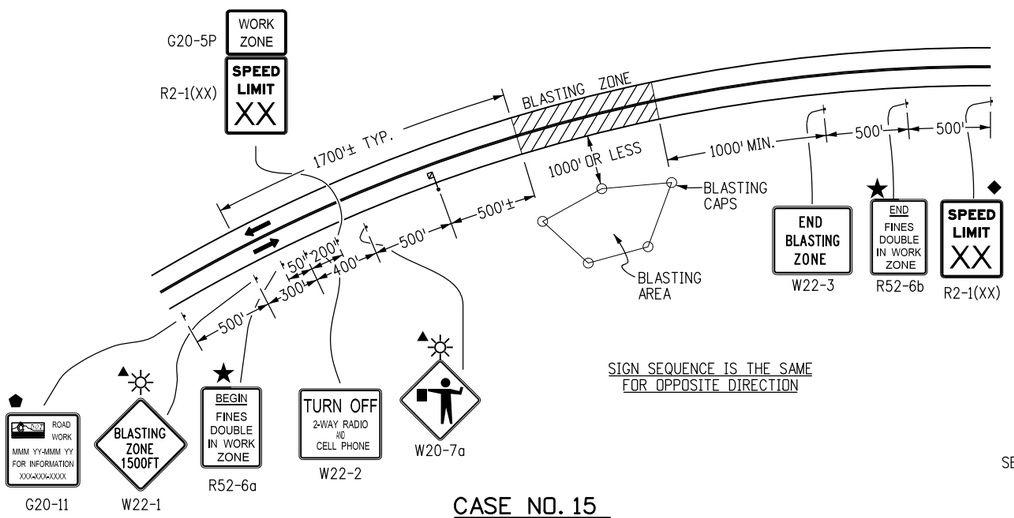
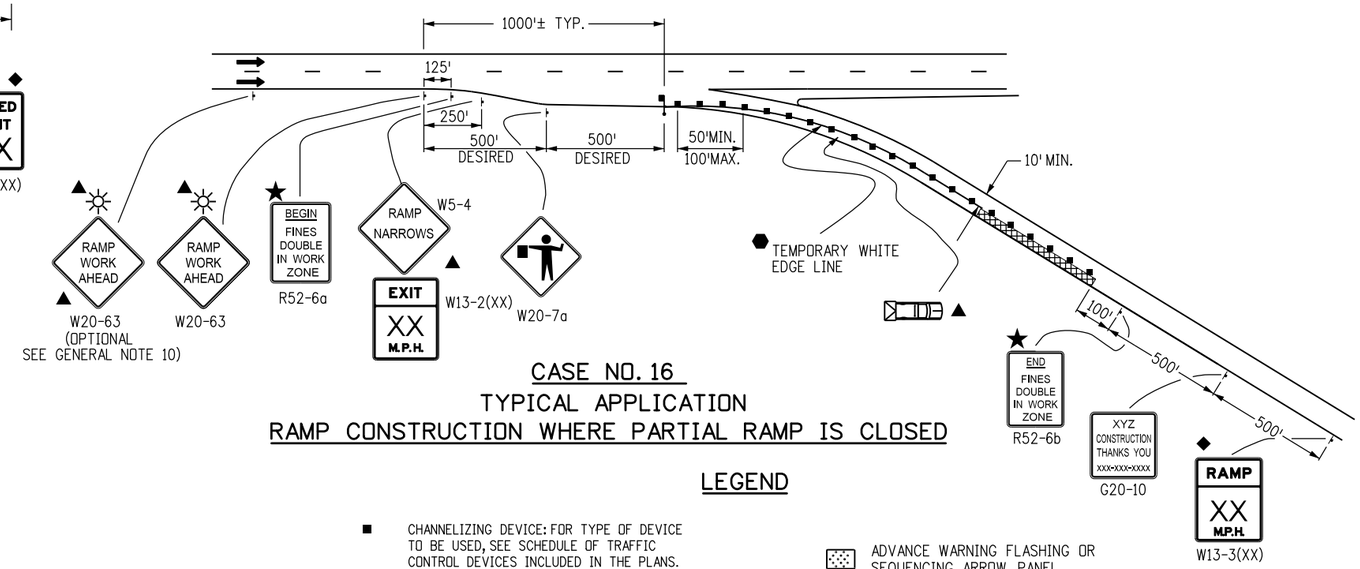
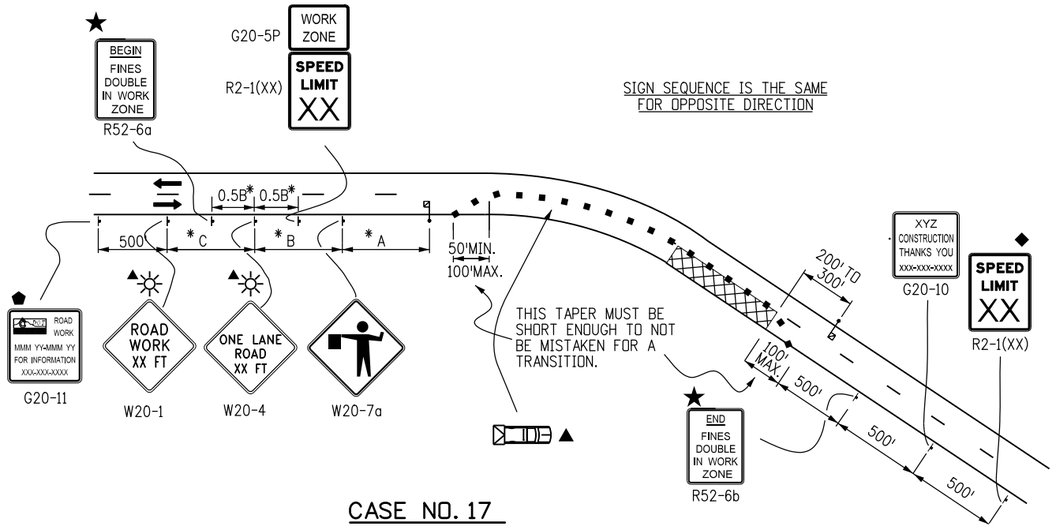


SIGN SEQUENCE IS THE SAME FOR OPPOSITE DIRECTION

CASE NO. 15
TYPICAL APPLICATION
BLASTING ZONE



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



SIGN SEQUENCE IS THE SAME FOR OPPOSITE DIRECTION

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

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = 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)
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ 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
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

*KEY TO ADVANCE SIGNING DISTANCES

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

Computer File Information		
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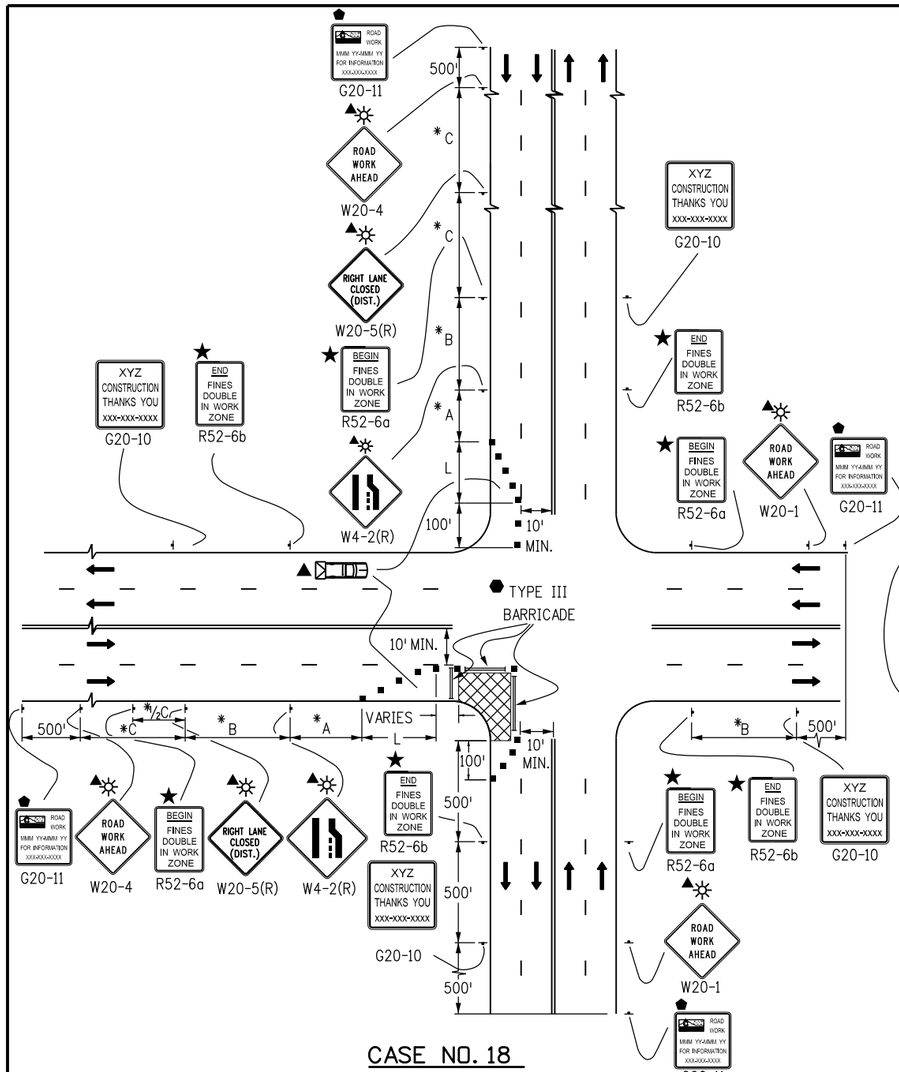
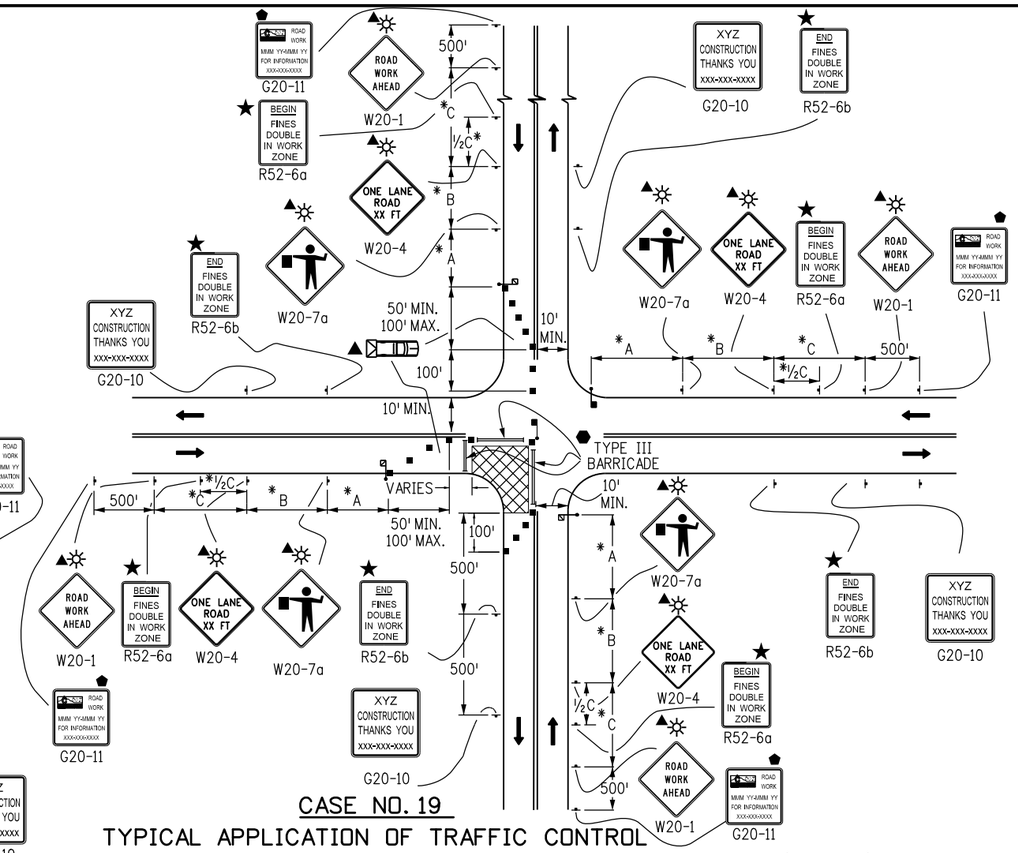
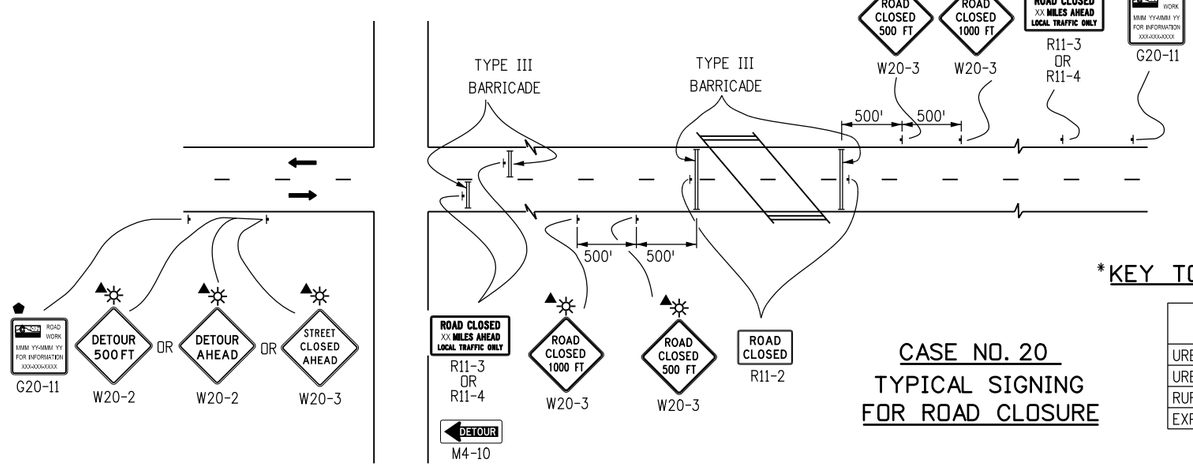


CASE NO. 18
TYPICAL APPLICATION TRAFFIC CONTROL AROUND A WORK AREA NEAR AN INTERSECTION, ONE LANE CLOSED



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 SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = 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 ON SHEET 1).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.
- ⬟ 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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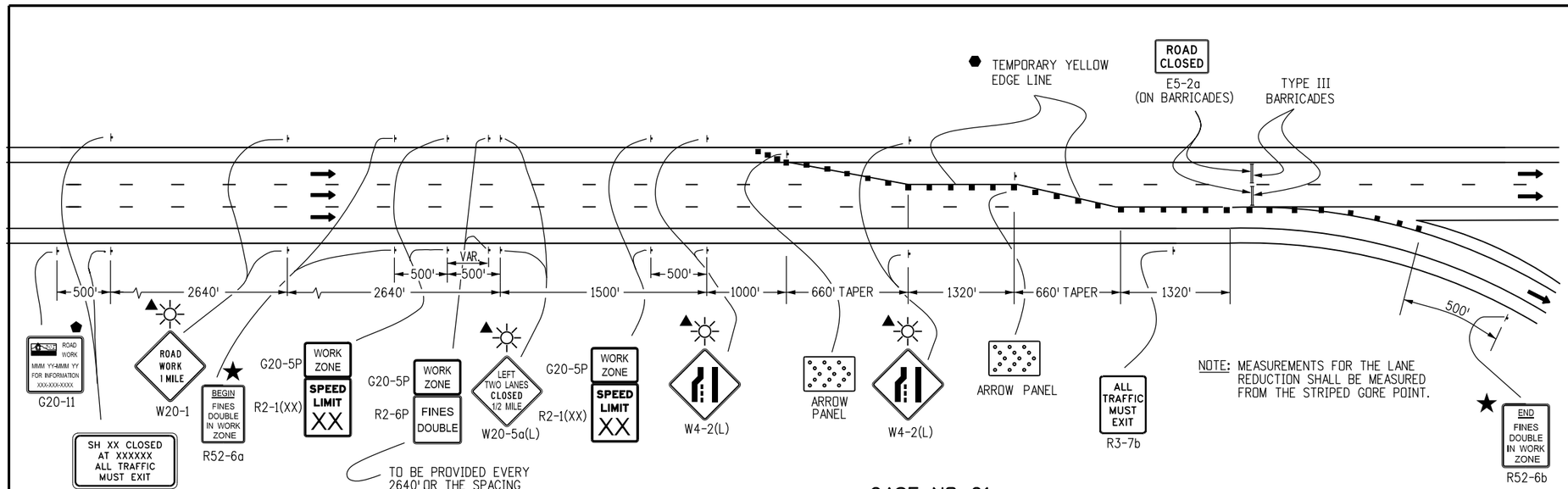
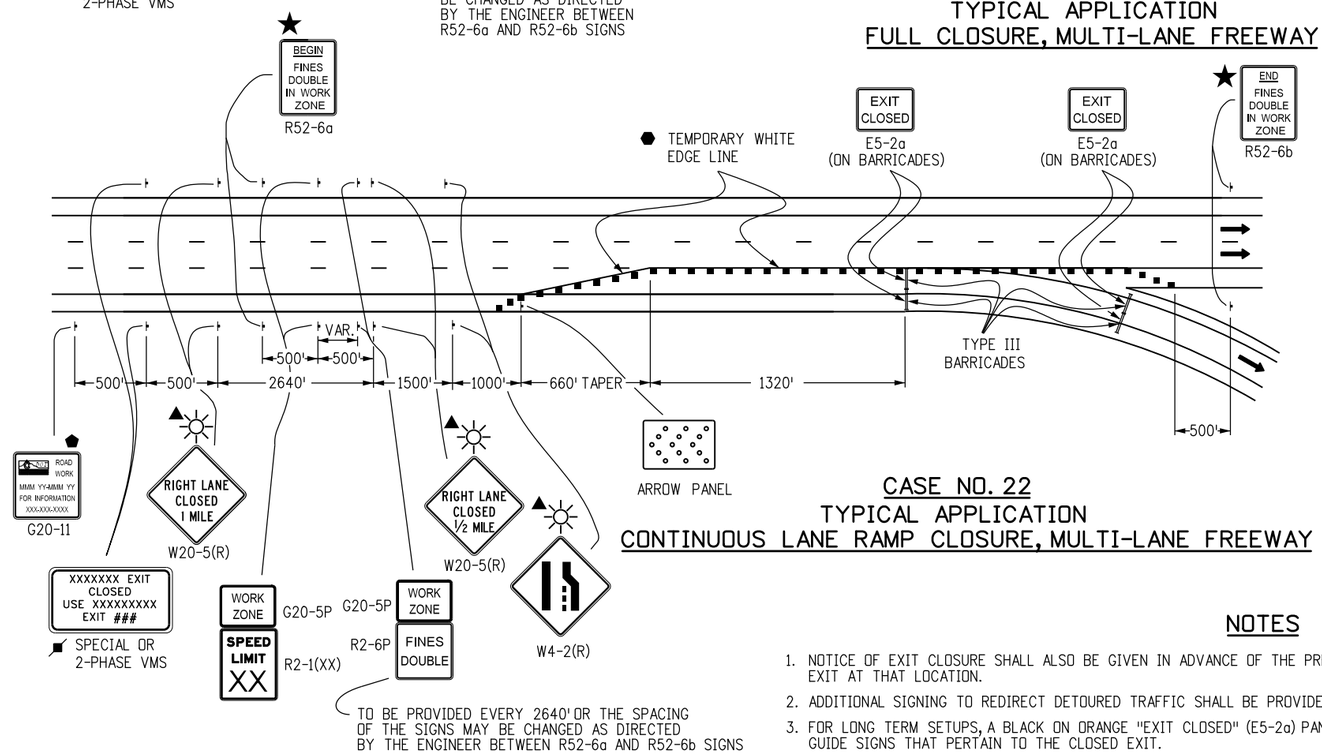


NOTE: MEASUREMENTS FOR THE LANE REDUCTION SHALL BE MEASURED FROM THE STRIPED GORE POINT.

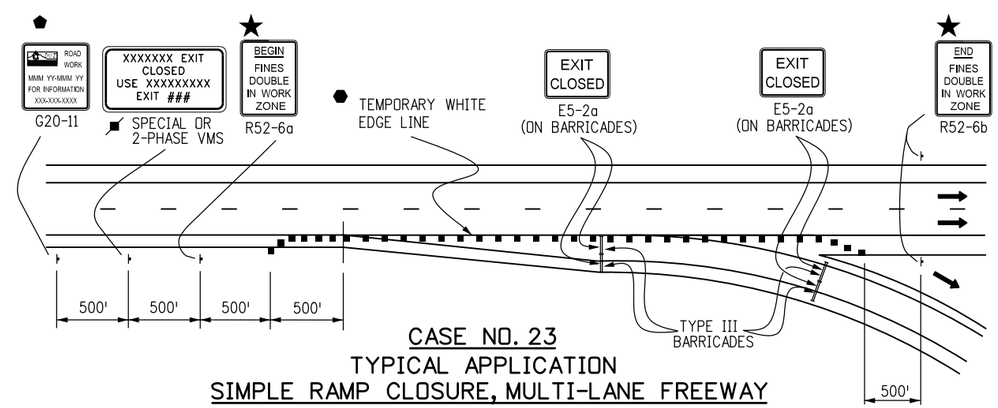
CASE NO. 21
TYPICAL APPLICATION
FULL CLOSURE, MULTI-LANE FREEWAY



CASE NO. 22
TYPICAL APPLICATION
CONTINUOUS LANE RAMP CLOSURE, MULTI-LANE 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 SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- 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
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.



CASE NO. 23
TYPICAL APPLICATION
SIMPLE RAMP CLOSURE, MULTI-LANE FREEWAY

NOTES

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

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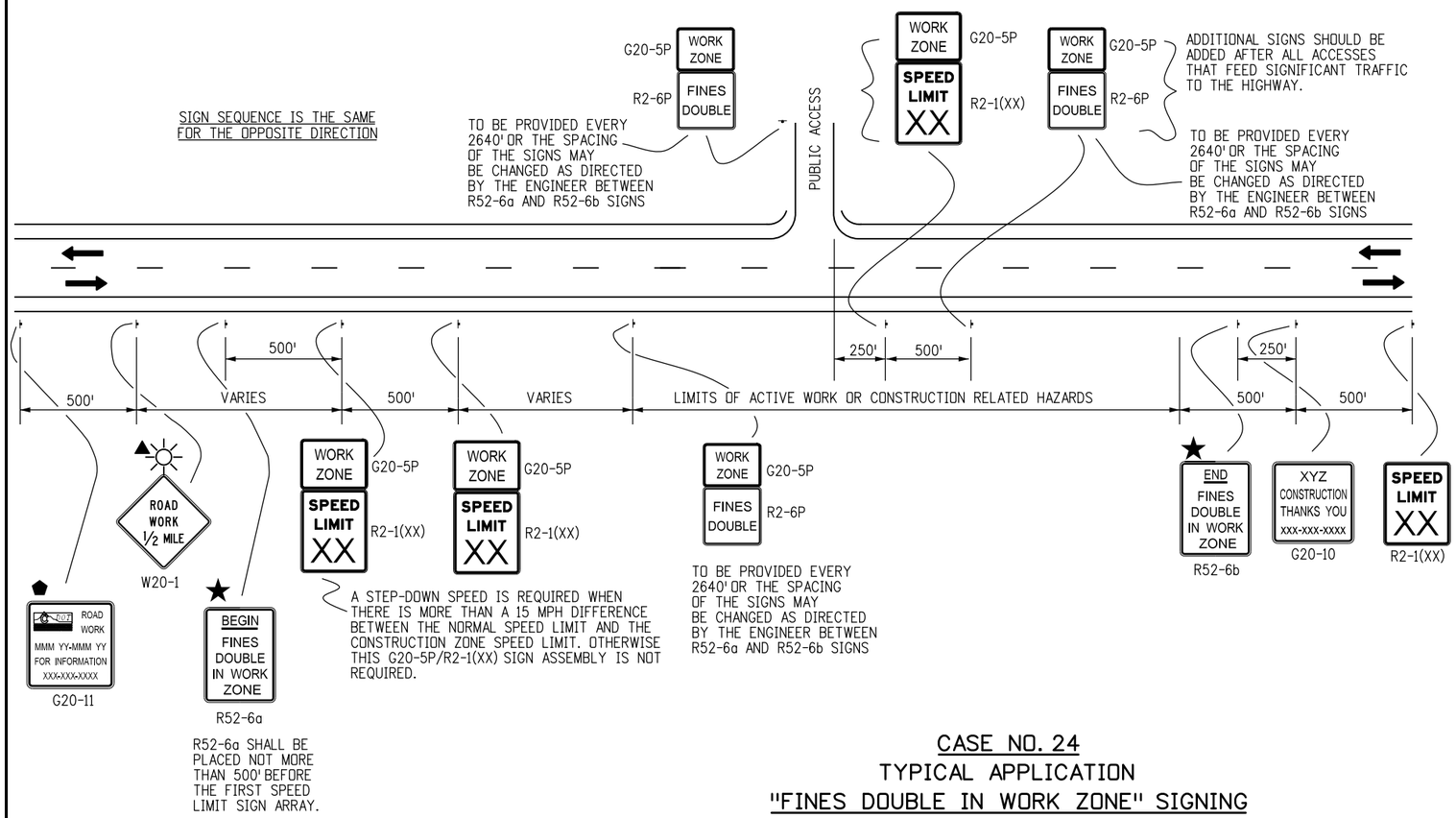

LEGEND

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

FINES DOUBLE 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.

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

Computer File Information		
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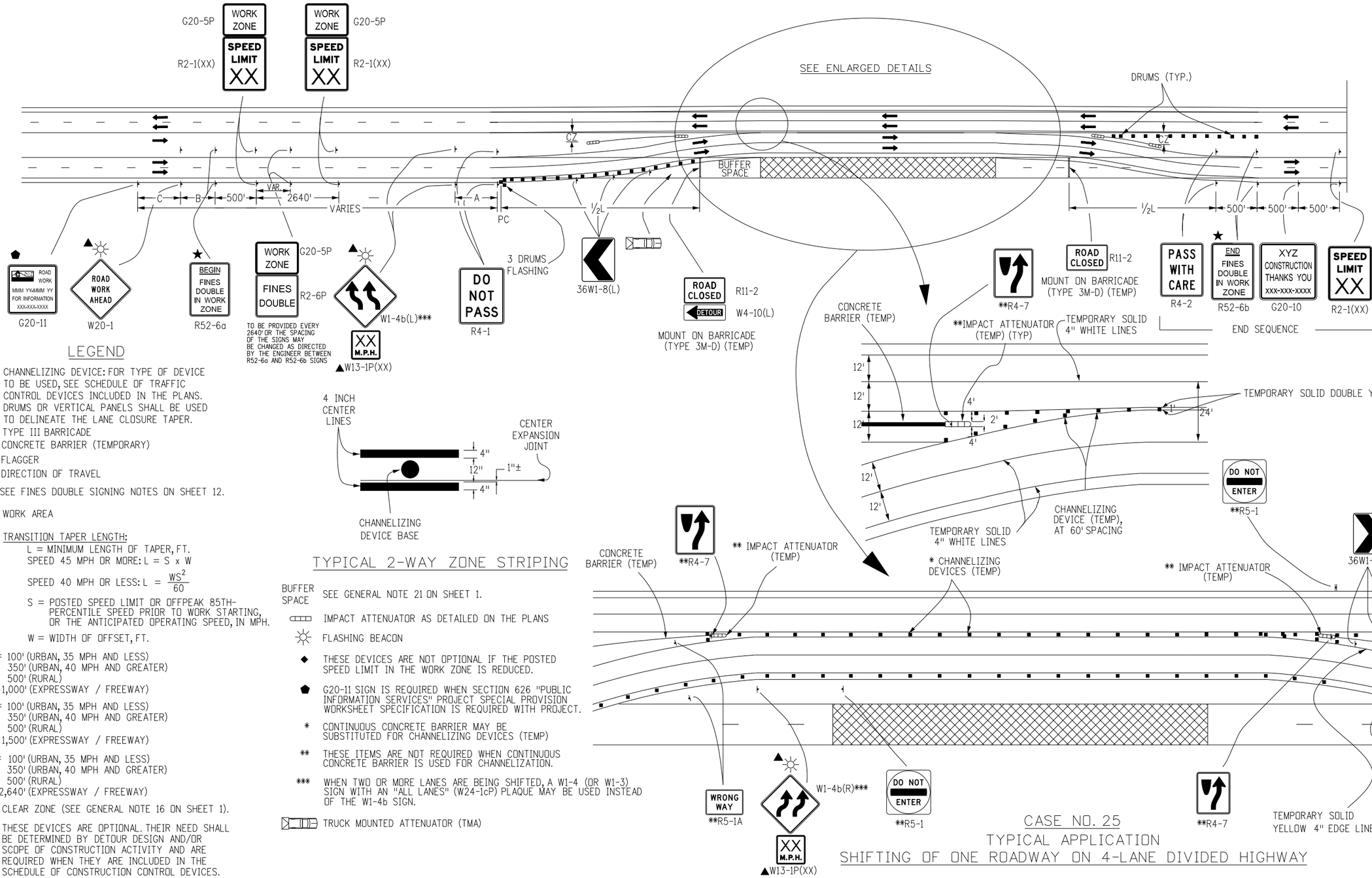

CASE NO. 25
TYPICAL APPLICATION
SHIFTING OF ONE ROADWAY ON 4-LANE DIVIDED HIGHWAY

TYPICAL 2-WAY ZONE STRIPING

LEGEND

- ▪ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.
- 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 = POSTED SPEED LIMIT OR OFFPEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED, IN MPH.
  - W = WIDTH OF OFFSET, FT.
- A = 100' (URBAN, 35 MPH AND LESS)
  350' (URBAN, 40 MPH AND GREATER)
  500' (RURAL)
  1,000' (EXPRESSWAY / FREEWAY)
- B = 100' (URBAN, 35 MPH AND LESS)
  350' (URBAN, 40 MPH AND GREATER)
  500' (RURAL)
  1,500' (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 ON SHEET 1).
- ▲ 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.

BUFFER SPACE — SEE GENERAL NOTE 21 ON SHEET 1.

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.

*** WHEN TWO OR MORE LANES ARE BEING SHIFTED, A W1-4 (OR W1-3) SIGN WITH AN "ALL LANES" (W24-1cP) PLAQUE MAY BE USED INSTEAD OF THE W1-4b SIGN.

TRUCK MOUNTED ATTENUATOR (TMA)

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(R-X)		
(R-X)		

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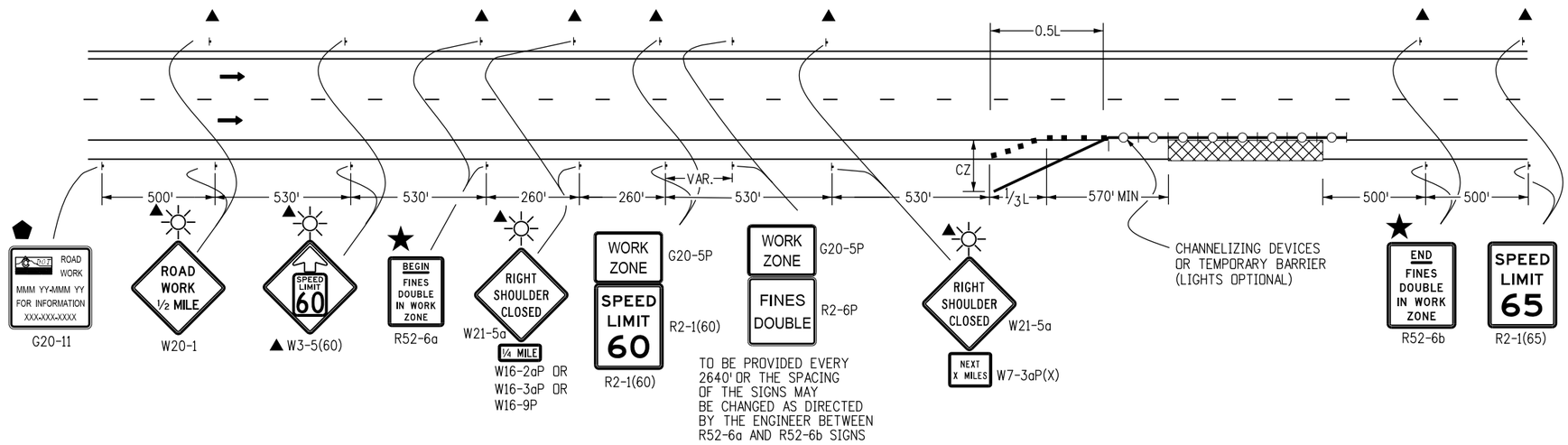
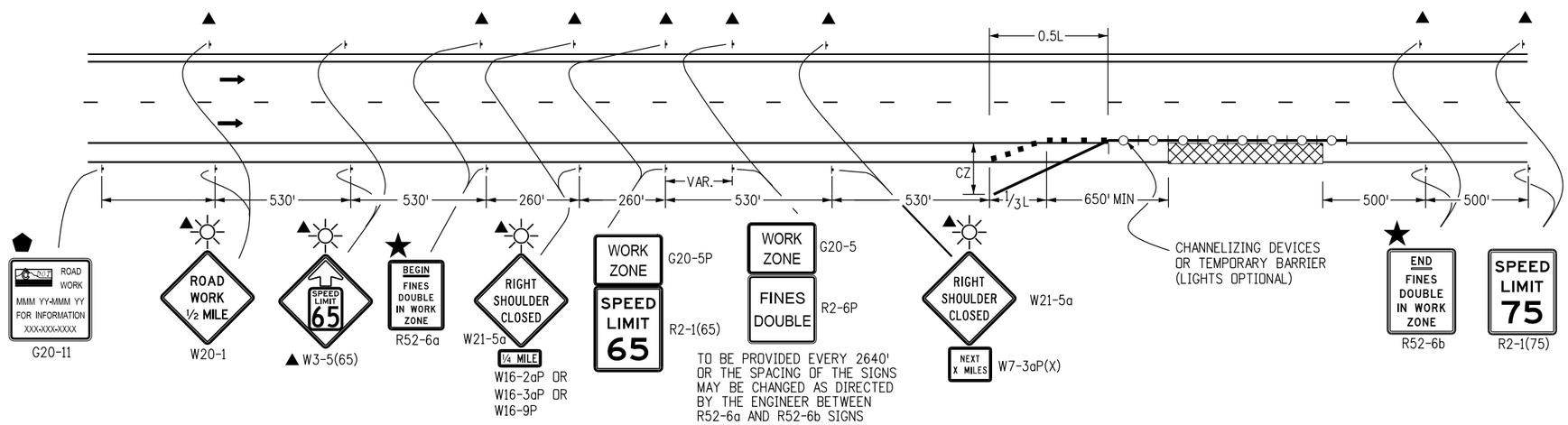


CASE NO. 26
TYPICAL APPLICATION
SHOULDER WORK - FREEWAY/EXPRESSWAY w/ 65 MPH SPEED LIMIT

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



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

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

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: L = S x W
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY TRAFFIC VOLUMES AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- TRUCK MOUNTED ATTENUATOR
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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

STANDARD PLAN NO.

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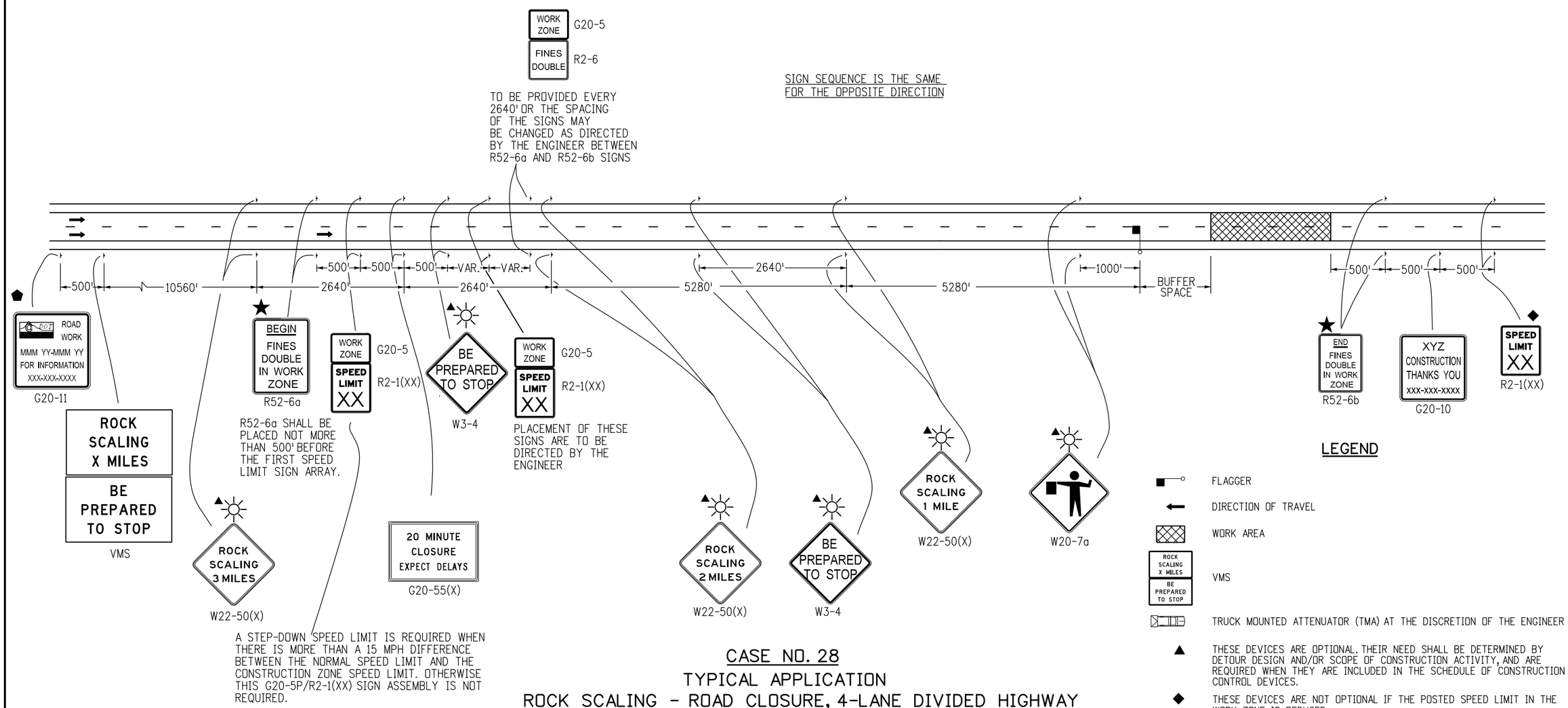

LEGEND

- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- VMS (ROCK SCALING X MILES / BE PREPARED TO STOP)
- TRUCK MOUNTED ATTENUATOR (TMA) AT THE DISCRETION OF THE ENGINEER
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- BUFFER SPACE — SEE GENERAL NOTE 21 ON SHEET 1.
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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

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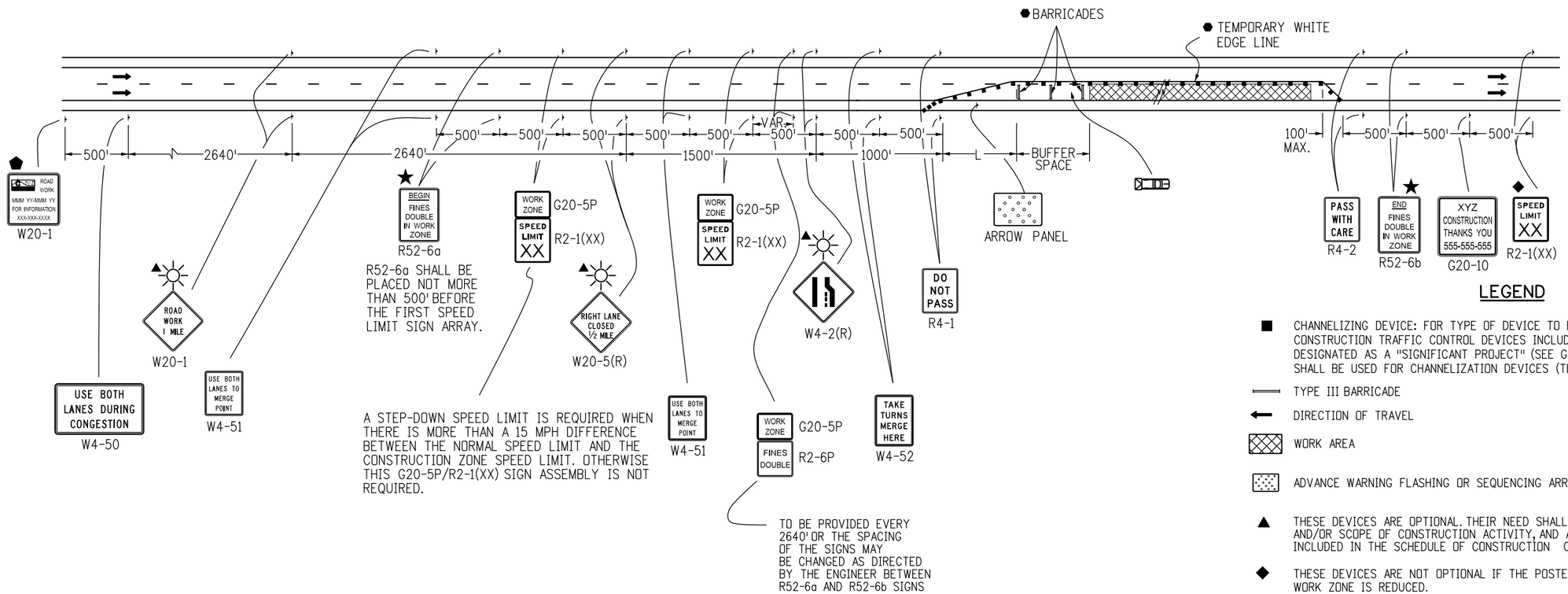

R52-6a SHALL BE PLACED NOT MORE THAN 500' BEFORE THE FIRST SPEED LIMIT SIGN ARRAY.

A STEP-DOWN SPEED LIMIT IS REQUIRED WHEN THERE IS MORE THAN A 15 MPH DIFFERENCE BETWEEN THE NORMAL SPEED LIMIT AND THE CONSTRUCTION ZONE SPEED LIMIT. OTHERWISE THIS G20-5P/R2-1(XX) SIGN ASSEMBLY IS NOT REQUIRED.

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

LEGEND

■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. IF PROJECT IS DESIGNATED AS A "SIGNIFICANT PROJECT" (SEE GENERAL NOTE 25), CONCRETE BARRIER SHALL BE USED FOR CHANNELIZATION DEVICES (TEMP) AS DETERMINED BY THE ENGINEER.

TYPE III BARRICADE

DIRECTION OF TRAVEL

WORK AREA

ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.

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

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

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

FLASHING BEACON

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

★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

TRUCK MOUNTED ATTENUATOR (TMA)

L TRANSITION TAPER LENGTH:

L = MINIMUM LENGTH OF TAPER

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

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

S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

W = WIDTH OF OFFSET

SHOULDER TAPER = 1/3 L

BUFFER SPACE — SEE GENERAL NOTE 21 ON SHEET 1.

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

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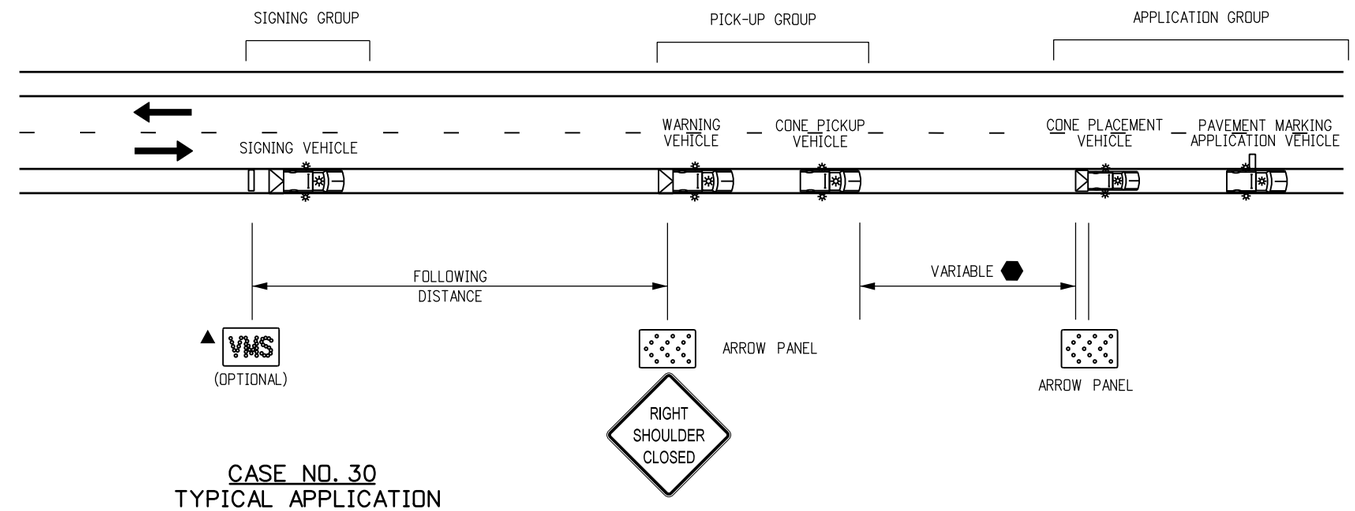
LEGEND

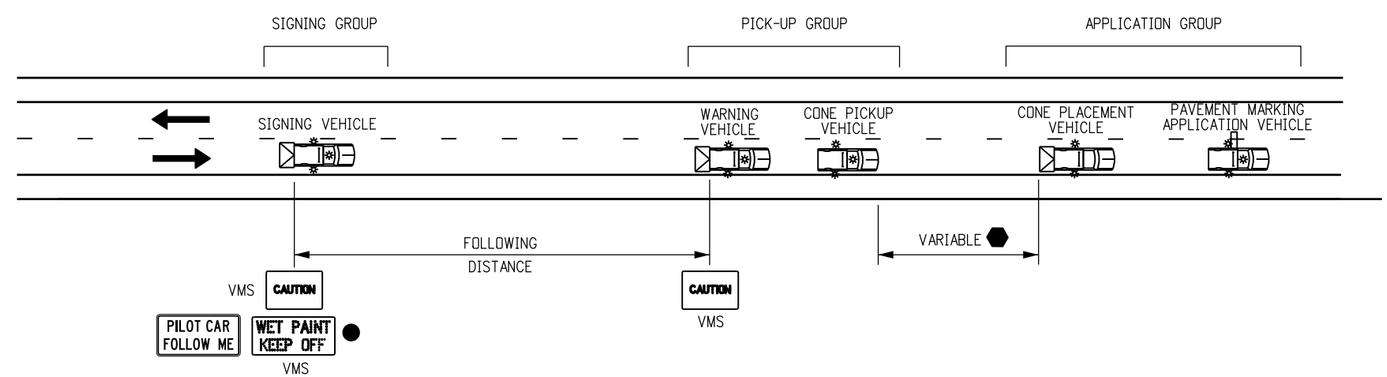
- VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- VMS — VARIABLE MESSAGE SIGN (VMS).
- ▲ WHEN VMS IS USED, THE "SHOULDER CLOSED" SIGN BECOMES OPTIONAL.
- ■ THE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

FOLLOWING DISTANCE CHART FOR WARNING AND SIGNING VEHICLES

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



CASE NO. 30
TYPICAL APPLICATION
MOBILE PAVEMENT MARKING ZONE
MOBILE SHOULDER CLOSURE ON 2-LANE UNDIVIDED HIGHWAY



CASE NO. 31
TYPICAL APPLICATION*
MOBILE PAVEMENT MARKING ZONE
CENTERLINE STRIPING ON 2-LANE UNDIVIDED HIGHWAY

* USE CASE 31 IF SHOULDER IN CASE 30 IS TOO NARROW FOR GROUP VEHICLE USE.

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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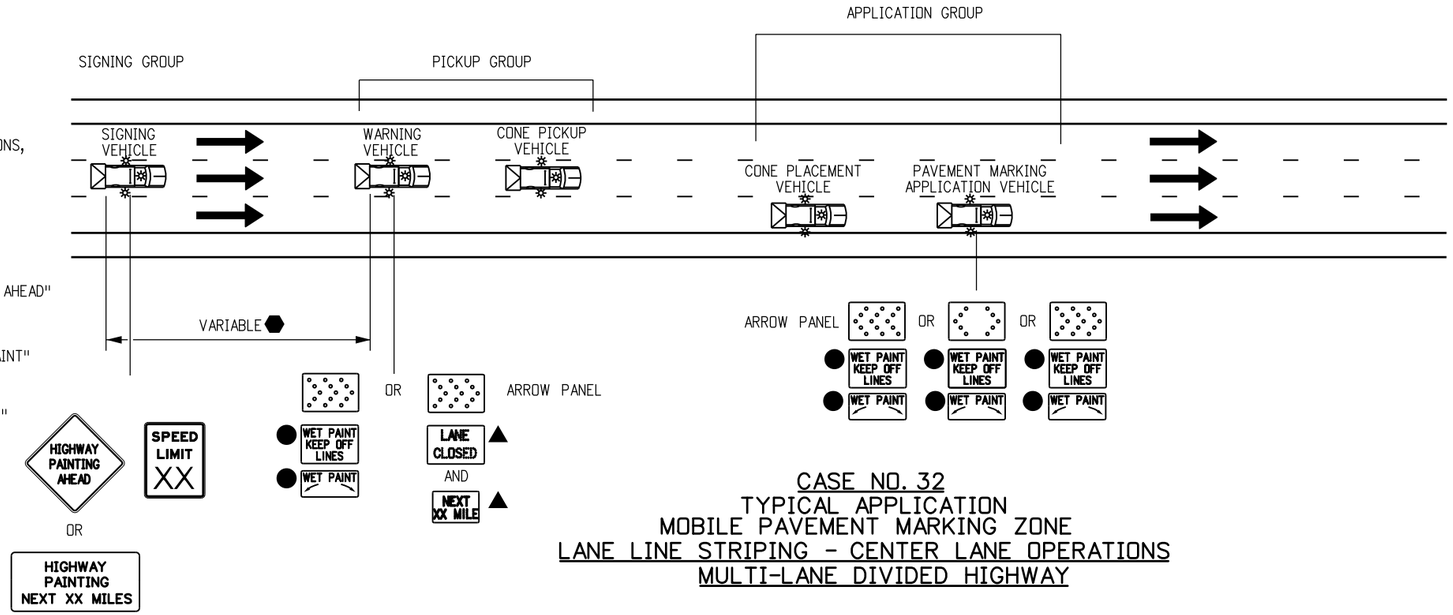
LEGEND

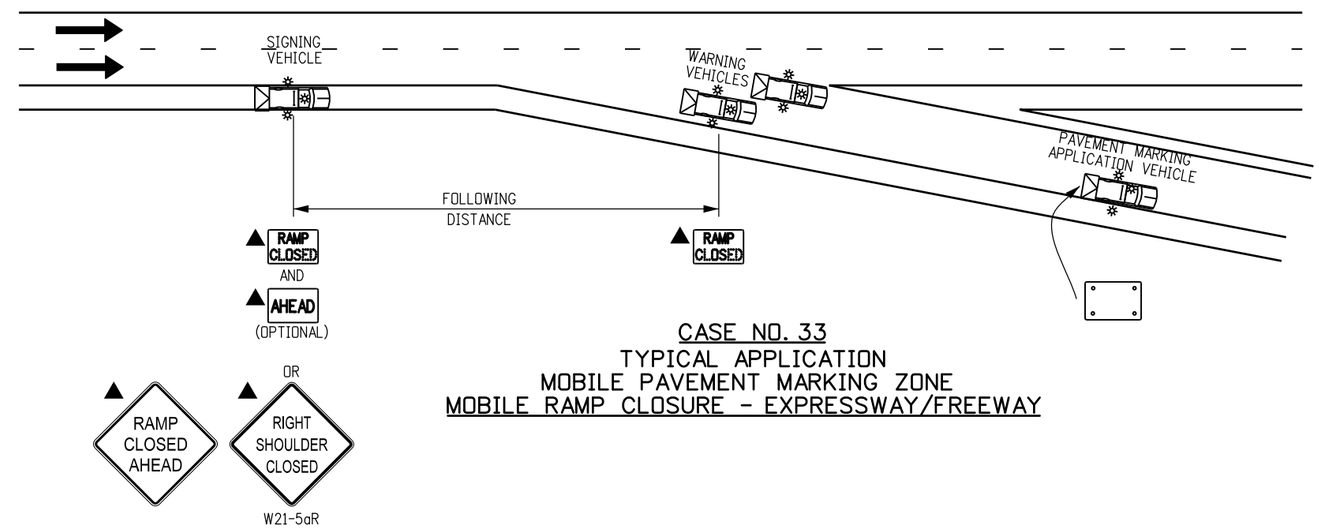
- VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- AHEAD / LANE CLOSED — PORTABLE VARIABLE MESSAGE SIGN (VMS).
- ▲ WHEN THE VMS IS USED, THE "SHOULDER CLOSED" (W21-5aX)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



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

FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

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



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

NOTES

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

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LEGEND

VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.

ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.

LANE CLOSED — PORTABLE VARIABLE MESSAGE SIGN (VMS).

▲ WHEN THE VMS IS USED, THE "RIGHT LANE CLSED AHEAD" (W9-3X) SIGN BECOMES OPTIONAL.

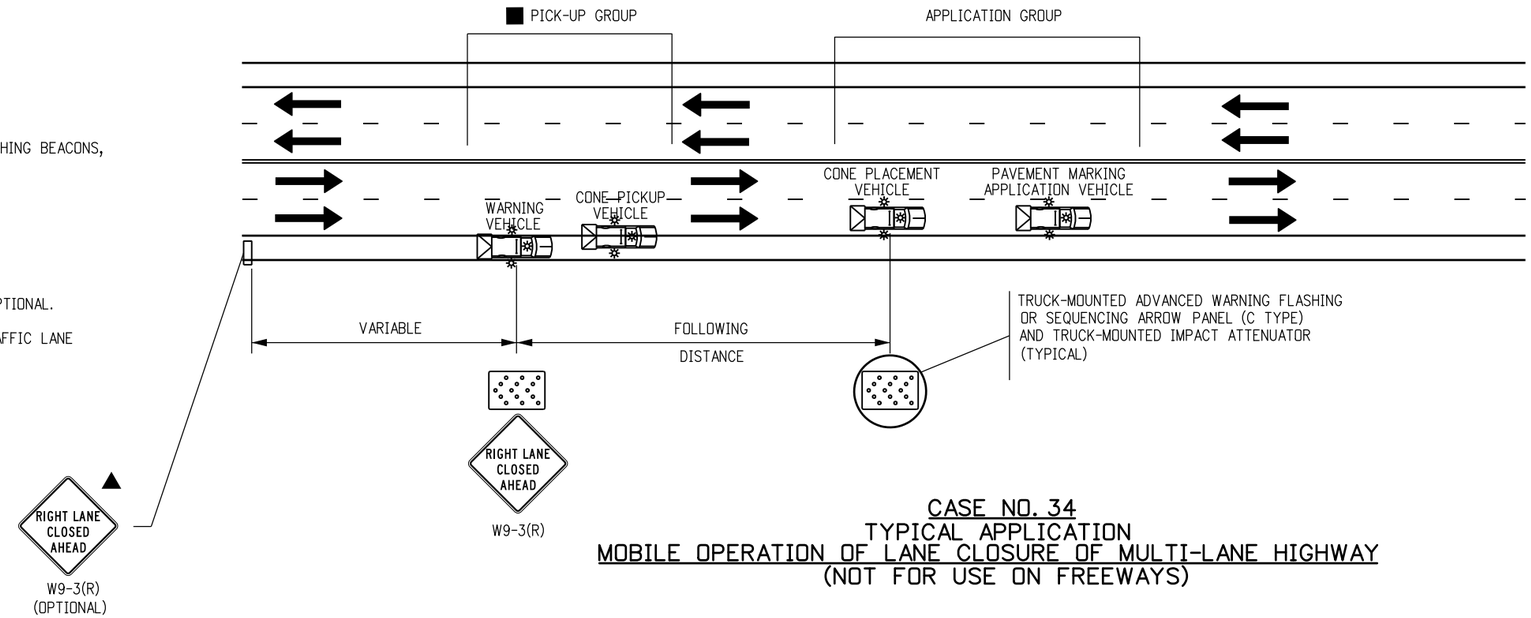
■ THE "CONE PICK-UP VEHICLE" OR "WARNING VEHICLE" MAY ENCROACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.

NOTES

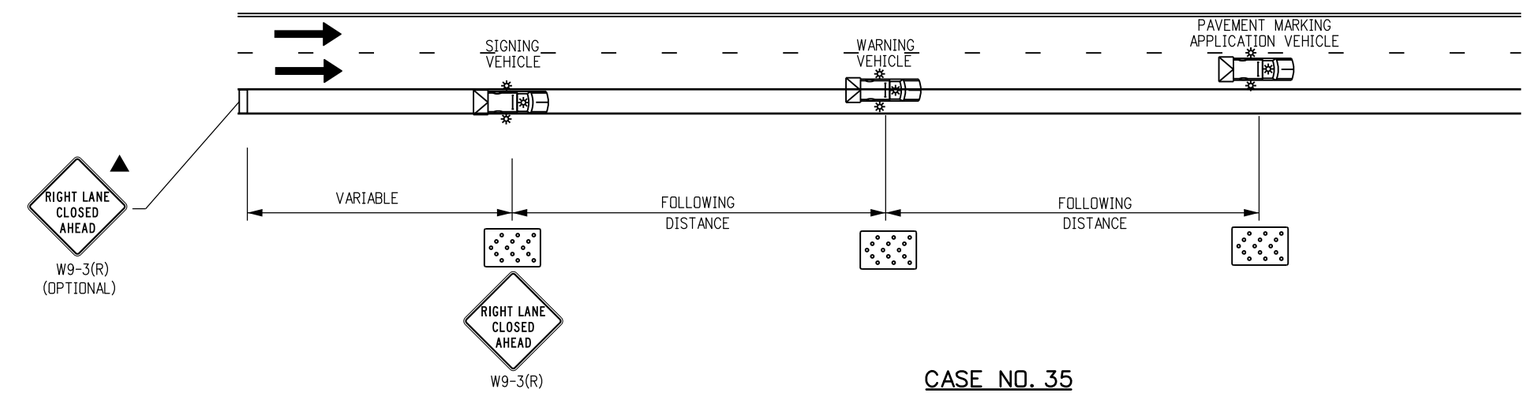
1. IN ROADWAY WHERE THE AADT IS 2,000 OR LESS, A SINGLE WORK VEHICLE WITH APPROPRIATE WARNING DEVICES ON THE VEHICLE MAY BE USED.
2. RADIO COMMUNICATIONS BETWEEN THE WORKCREW AND THE MOVING BLOCKADE ARE REQUIRED TO ADJUST THE BLOCKADE TO INCREASE OR DECREASE THE CLOSURE TIME. RELEASE TRAFFIC ONLY AFTER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

FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

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



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



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

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TYPICAL CONSTRUCTION ZONE SIGNS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ADVANCE PLACEMENT OF WARNING SIGNS

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

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

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

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

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

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

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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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