

SUP  
PROJECT ID:  
WITH: N/A

8510-00-71

COUNTY:  
BAYFIELD

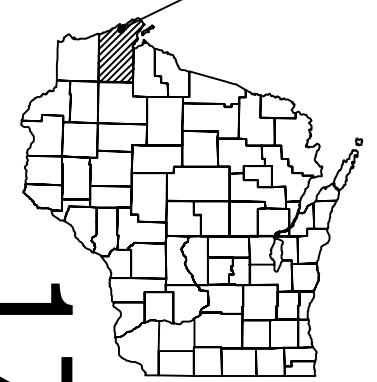
SEPTEMBER 2023

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details (Includes Erosion Control Details)
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	4	Right of Way Plat
Section No.	5	Plan and Profile
Section No.	6	Standard Detail Drawings
Section No.	7	Sign Plates
Section No.	8	Structure Plans
Section No.	9	Computer Earthwork Data
Section No.	9	Cross Sections

TOTAL SHEETS = 70

PROJECT LOCATION



STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CORNUCOPIA - PORT WING

LOST CREEK CULVERTS C-04-0070,71,72

STH 13

BAYFIELD COUNTY

STATE PROJECT NUMBER  
8510-00-71

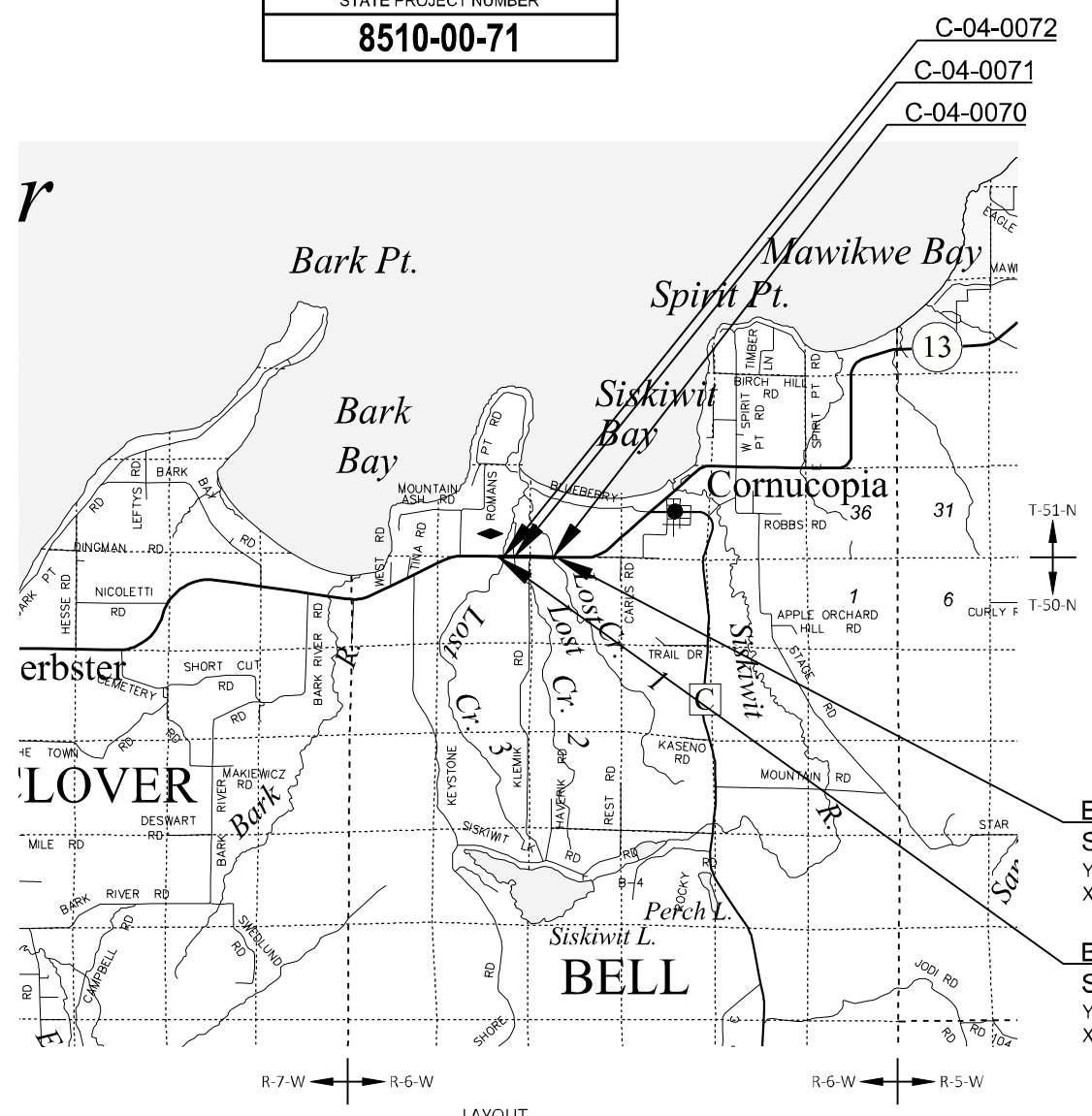
STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
8510-00-71		

DESIGN DESIGNATION

A.A.D.T.	2022	=	1,100
A.A.D.T.	2042	=	1,300
D.H.V.		=	215
D.D.		=	61/39
T.		=	14.0%
DESIGN SPEED		=	55 MPH
ESALS		=	416,100

CONVENTIONAL SYMBOLS

PLAN	PROFILE
CORPORATE LIMITS	GRADE LINE
PROPERTY LINE	ORIGINAL GROUND
LOT LINE	MARSH OR ROCK PROFILE (To be noted as such)
LIMITED HIGHWAY EASEMENT	SPECIAL DITCH
EXISTING RIGHT OF WAY	GRADE ELEVATION
PROPOSED OR NEW R/W LINE	CULVERT (Profile View)
SLOPE INTERCEPT	UTILITIES
REFERENCE LINE	ELECTRIC
EXISTING CULVERT	FIBER OPTIC
PROPOSED CULVERT (Box or Pipe)	GAS
COMBUSTIBLE FLUIDS	SANITARY SEWER
	STORM SEWER
MARSH AREA	TELEPHONE
	WATER
WOODED OR SHRUB AREA	UTILITY PEDESTAL
	POWER POLE
	TELEPHONE POLE



LAYOUT  
SCALE 0 2 MI  
TOTAL NET LENGTH OF CENTERLINE = 0.575 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, BAYFIELD COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES.  
ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12B.

ORIGINAL PLANS PREPARED BY  
**MSA**  
332 W Superior Street #600 Duluth, MN 55802  
(218) 722-3915 www.msa-ps.com  
© MSA Professional Services, Inc.



4/7/2023  
DATE: \_\_\_\_\_  
(Professional Engineer Signature)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY	Surveyor	MSA PROFESSIONAL SERVICES
Designer	MSA PROFESSIONAL SERVICES	
Project Manager	PHILIP KEPPERS	
Regional Examiner	TOU YANG	
Regional Supervisor	JEFFREY OLSON	

APPROVED FOR THE DEPARTMENT  
DATE: 4/10/2023  
Philip Keppers  
(Signature)

E

GENERAL NOTES

EXISTING UTILITIES ARE NOT SHOWN EXCEPT IN AREAS OF CULVERT REPLACEMENTS. THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE AREA THAT ARE NOT SHOWN.

R/W APPROXIMATED ON PLAN SHEETS BASED ON AS-BUILTS/GIS DATA.

SECTION 2 ORDER

- GENERAL NOTES
- PROJECT OVERVIEW
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- EROSION CONTROL
- TRAFFIC CONTROL AND STAGING

DNR CONTACT

DEPARTMENT OF NATURAL RESOURCES  
 SHAWN HASELEU  
 810 W. MAPLE STREET  
 SPOONER, WI, 54801  
 PHONE: (715) 635-4228  
 EMAIL: SHAWN.HASELEU@WISCONSIN.GOV

COMMUNICATIONS

NORVADO  
 GUY FOLSOM  
 43705 USH 63  
 P.O. BOX 67  
 CABLE, WI 54821-0067  
 PHONE: (715) 798-7123  
 EMAIL: GFOLSOM@NORVADO.COM

ELECTRICITY

BAYFIELD ELECTRIC COOP.  
 ROBERT LAHTI  
 P.O. BOX 68  
 IRON RIVER, WI 54847  
 PHONE: (715) 372-4287  
 EMAIL: BOB.LAHTI@BAYFIELDELECTRIC.COM

ELECTRICITY - TRANSMISSION

XCEL ENERGY  
 MITCHELL DIENGER  
 414 NICOLLET MALL 5TH FLOOR  
 MINNEAPOLIS, MN 55401  
 PHONE: (612) 321-3109  
 EMAIL: MITCHELL.A.DIENGER@XCELENERGY.COM

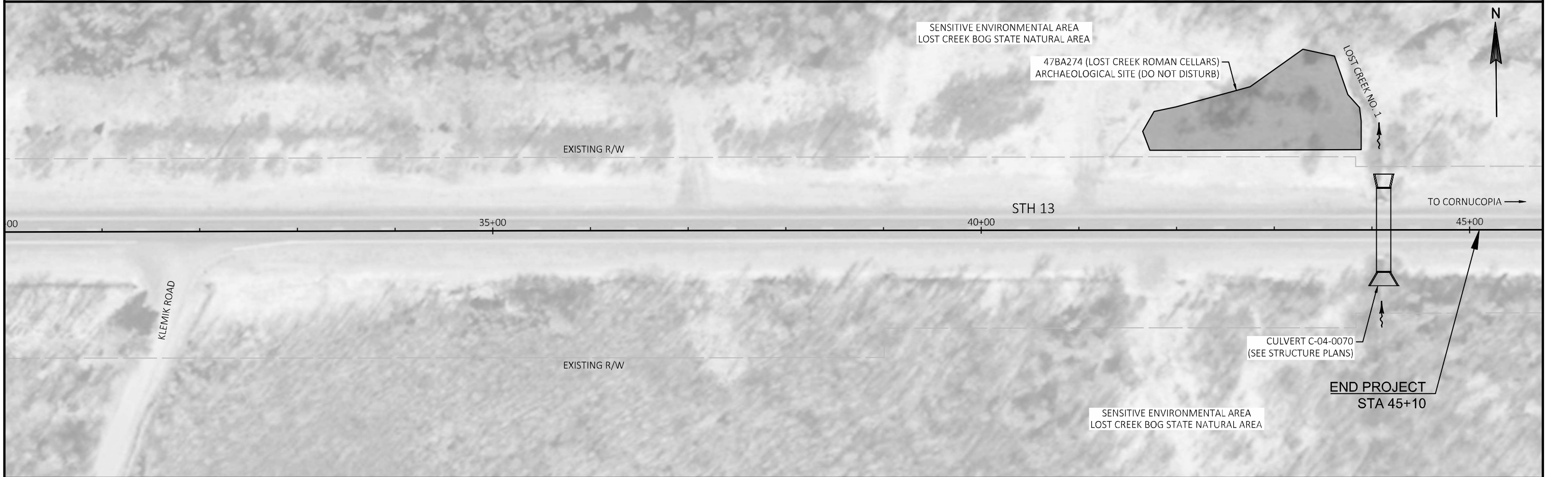
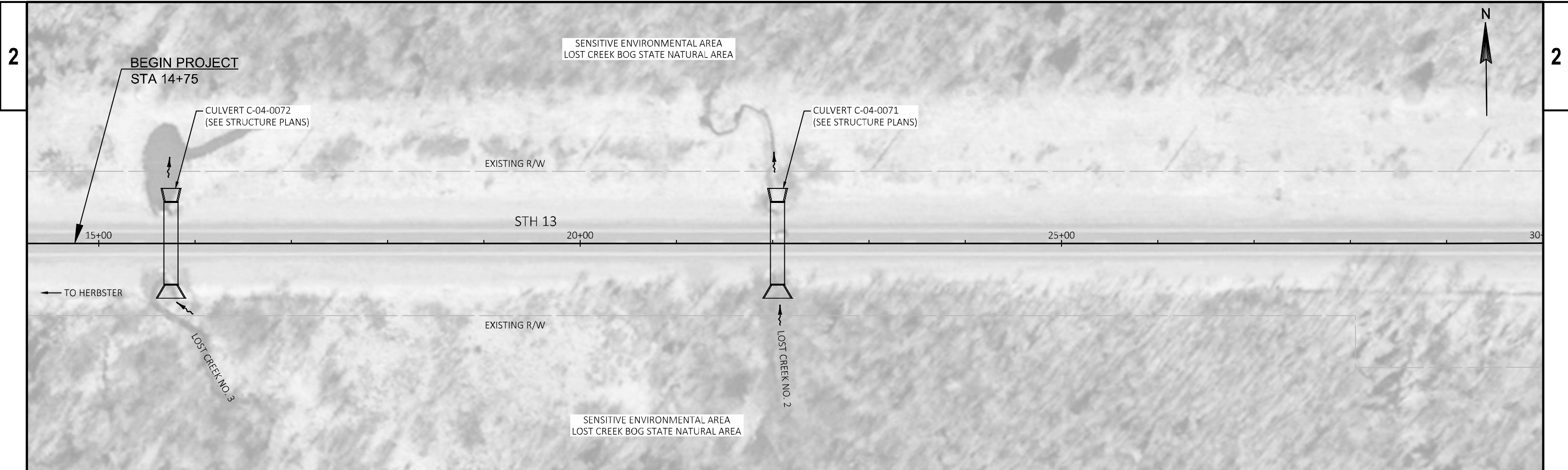
**RUNOFF COEFFICIENT TABLE**

LAND USE:	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE-TURF			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:						.40 - .60						
ASPHALT						.70 - .95						
CONCRETE						.80 - .95						
BRICK						.70 - .80						
DRIVES, WALKS						.75 - .85						
ROOFS						.75 - .95						
GRAVEL ROADS, SHOULDERS						.40 - .60						

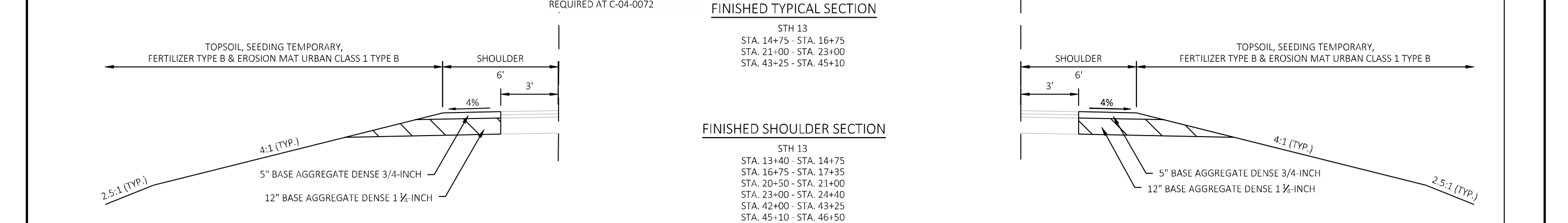
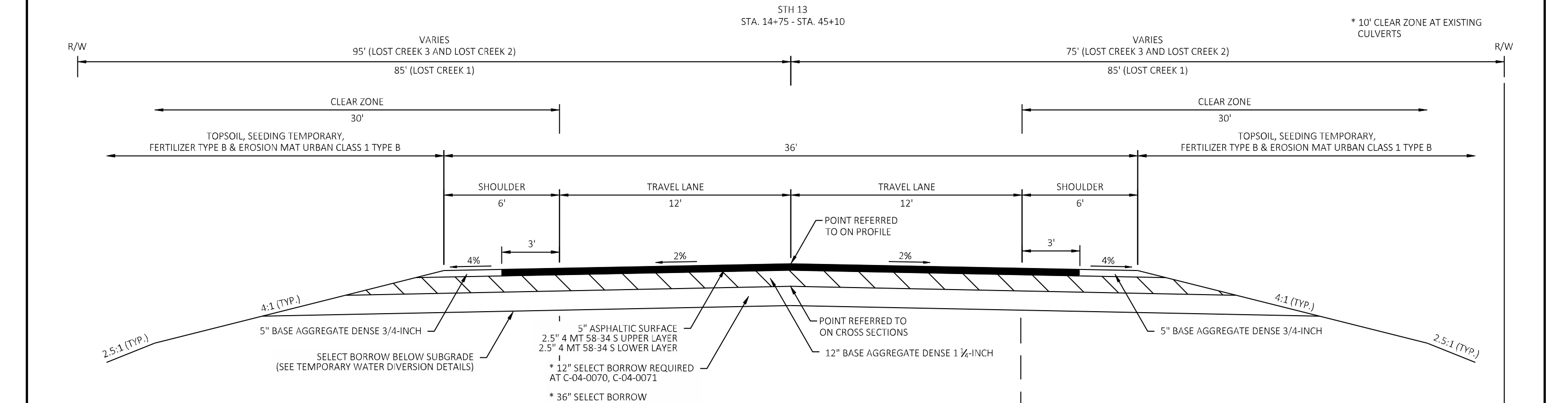
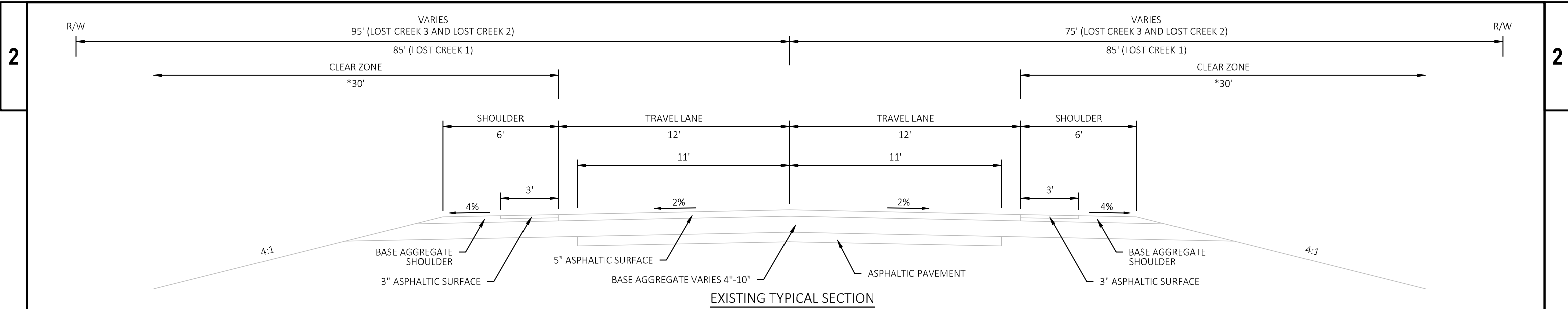
TOTAL PROJECT AREA = 13.25 ACRES  
 TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 2.21 ACRES

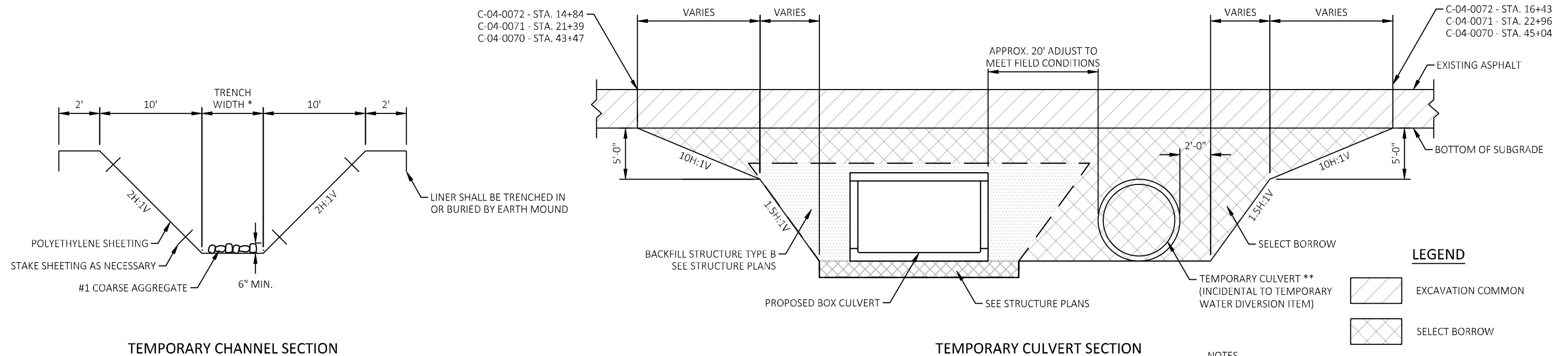
\* NOT A MEMBER OF DIGGERS HOTLINE





PROJECT NO: 8510-00-71	HWY: STH 13	COUNTY: BAYFIELD	PROJECT OVERVIEW	SHEET	<b>E</b>
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**NOTES**

\* TRENCH WIDTH = 3' FOR LOST CREEK NO. 3 & NO. 2

\* TRENCH WIDTH = 5' FOR LOST CREEK NO. 1

**TEMPORARY WATER DIVERSION DETAILS**



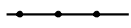
**NOTES**

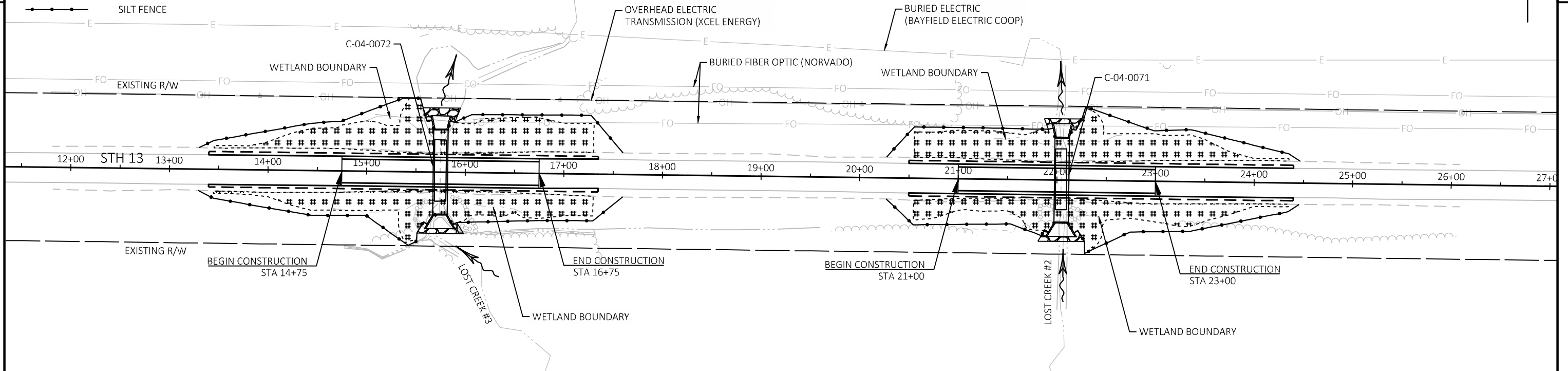
\*\* TEMPORARY CULVERT = 72" MINIMUM FOR LOST CREEK NO. 3 & NO. 2

TEMPORARY CULVERT = 84" MINIMUM FOR LOST CREEK NO. 1



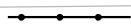
EXCAVATION COMMON AND SELECT BORROW SHOWN AFTER THE BOX CULVERT PLACEMENT AND REMOVAL OF THE TEMPORARY WATER DIVERSION.

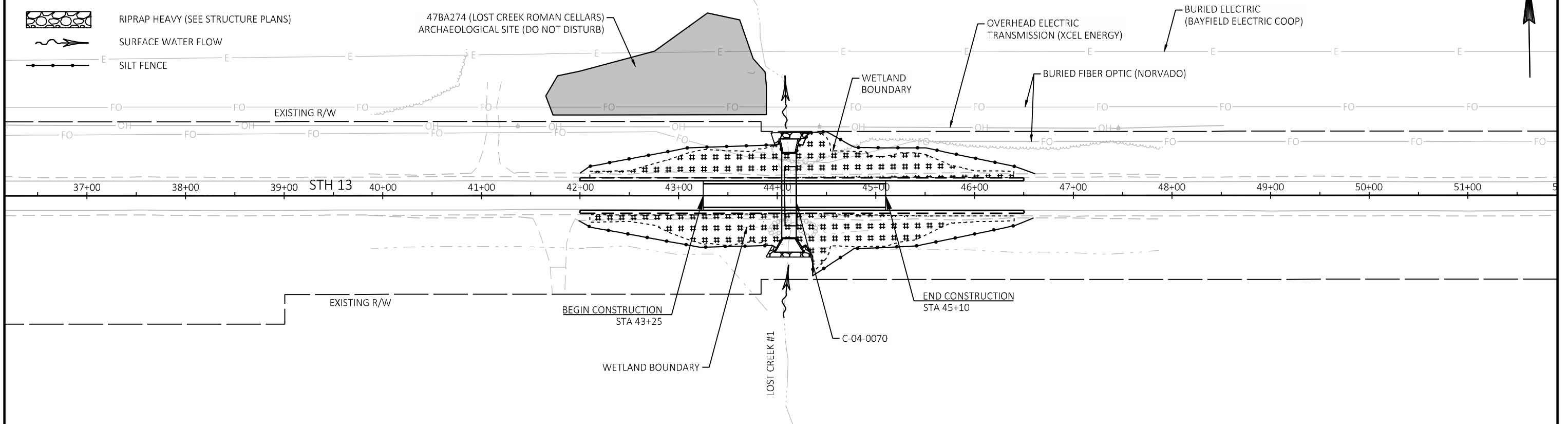
LEGEND

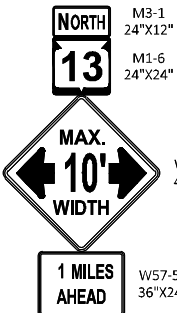
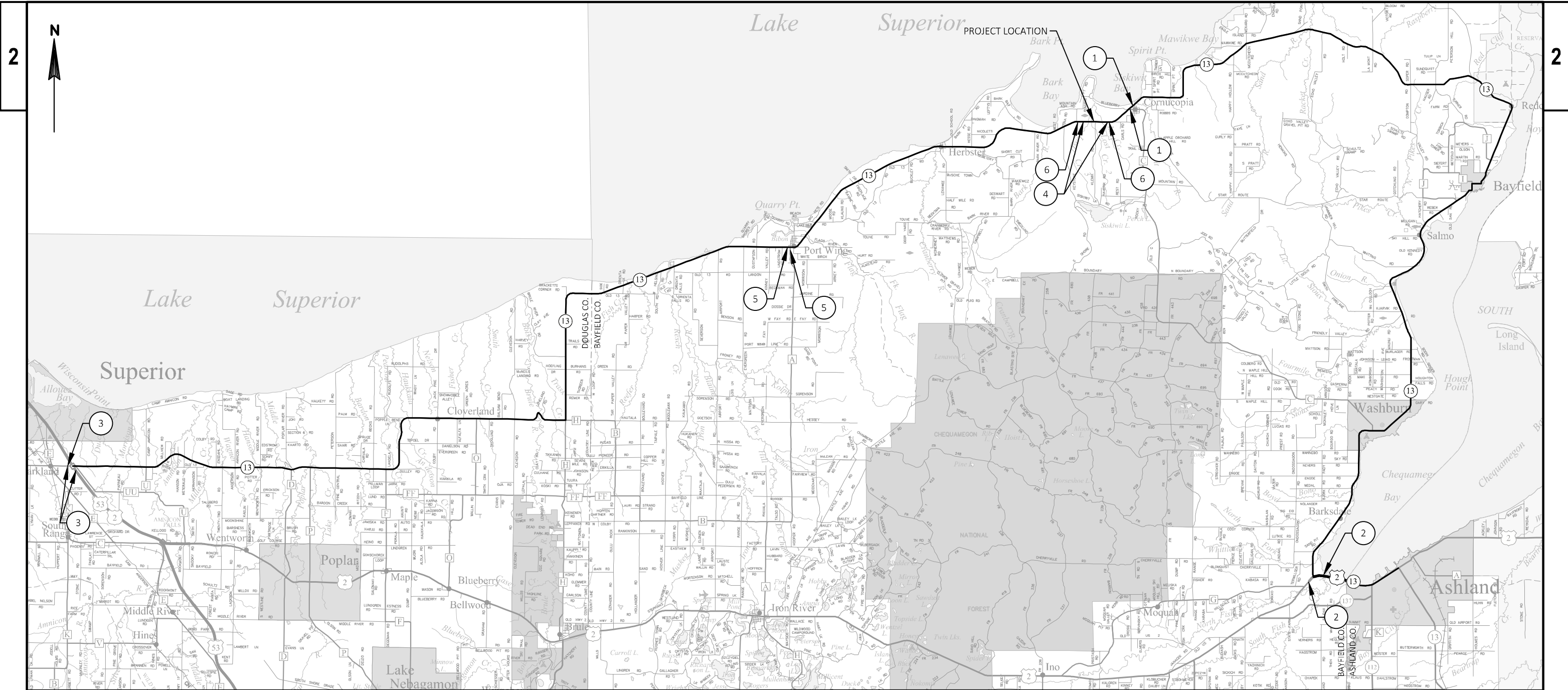
- #### EROSION MAT URBAN CLASS 1, TYPE B
-  RIPRAP HEAVY (SEE STRUCTURE PLANS)
-  SURFACE WATER FLOW
-  SILT FENCE



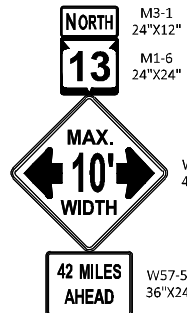
LEGEND

- #### EROSION MAT URBAN CLASS 1, TYPE B
-  RIPRAP HEAVY (SEE STRUCTURE PLANS)
-  SURFACE WATER FLOW
-  SILT FENCE

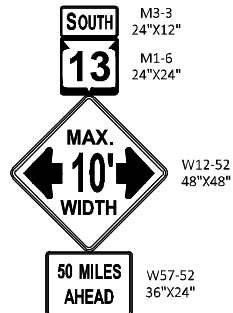




1



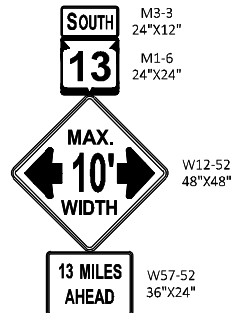
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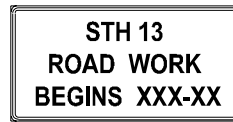
3



4



5



6

NOTE: G20-57 SIGNS TO BE PLACED 10 DAYS PRIOR TO CONSTRUCTION AND REMOVED WHEN CONSTRUCTION BEGINS.

PROJECT NO: 8510-00-71

HWY: STH 13

COUNTY: BAYFIELD

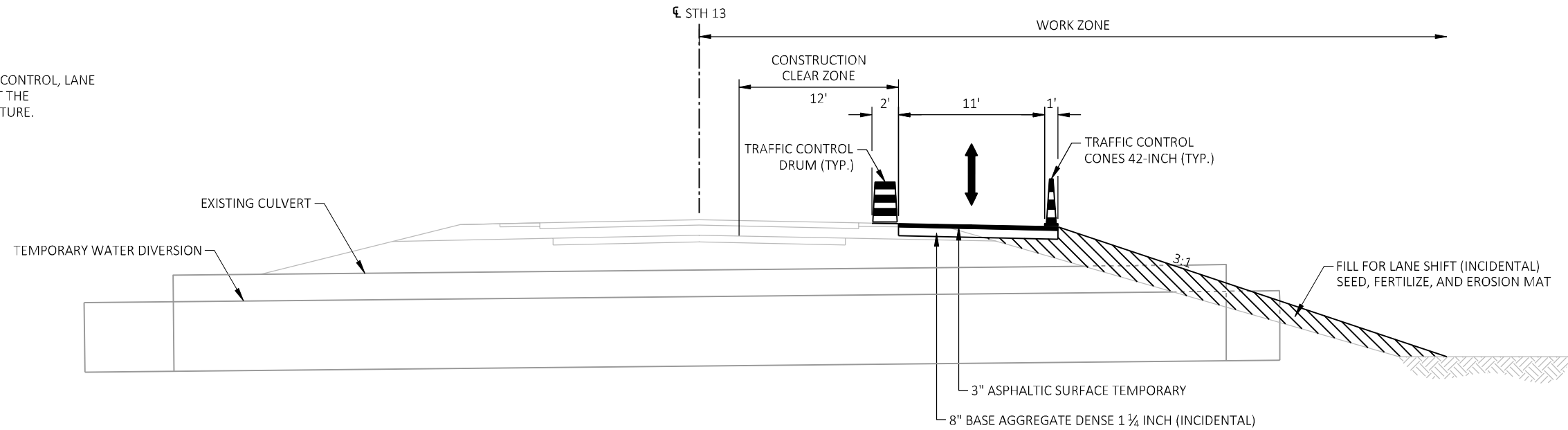
TRAFFIC CONTROL - MAX WIDTH SIGNING

SHEET

E

STAGE 1

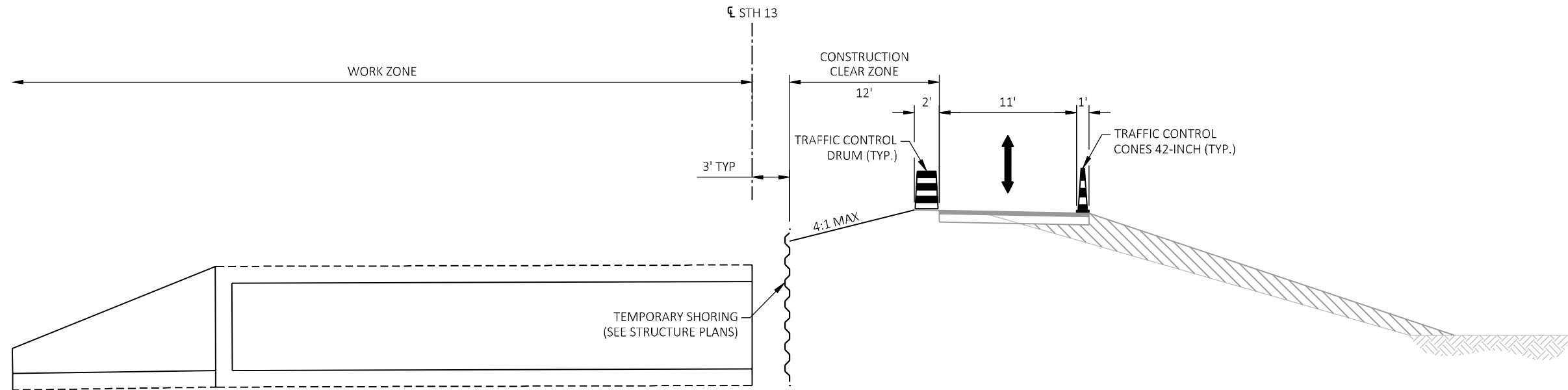
- 1. PLACE MAX WIDTH RESTRICTION DEVICES
- 2. FOLLOW STANDARD DETAIL DRAWING "TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATION" TO CONSTRUCT THE TEMPORARY WATER DIVERSION AT EACH STRUCTURE.



STAGE 2A SECTION

LOOKING EAST

- CONSTRUCT UPSTREAM TEMPORARY LANE SHIFT FOLLOWING STANDARD DETAIL DRAWINGS "TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATIONS" AND "TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS".

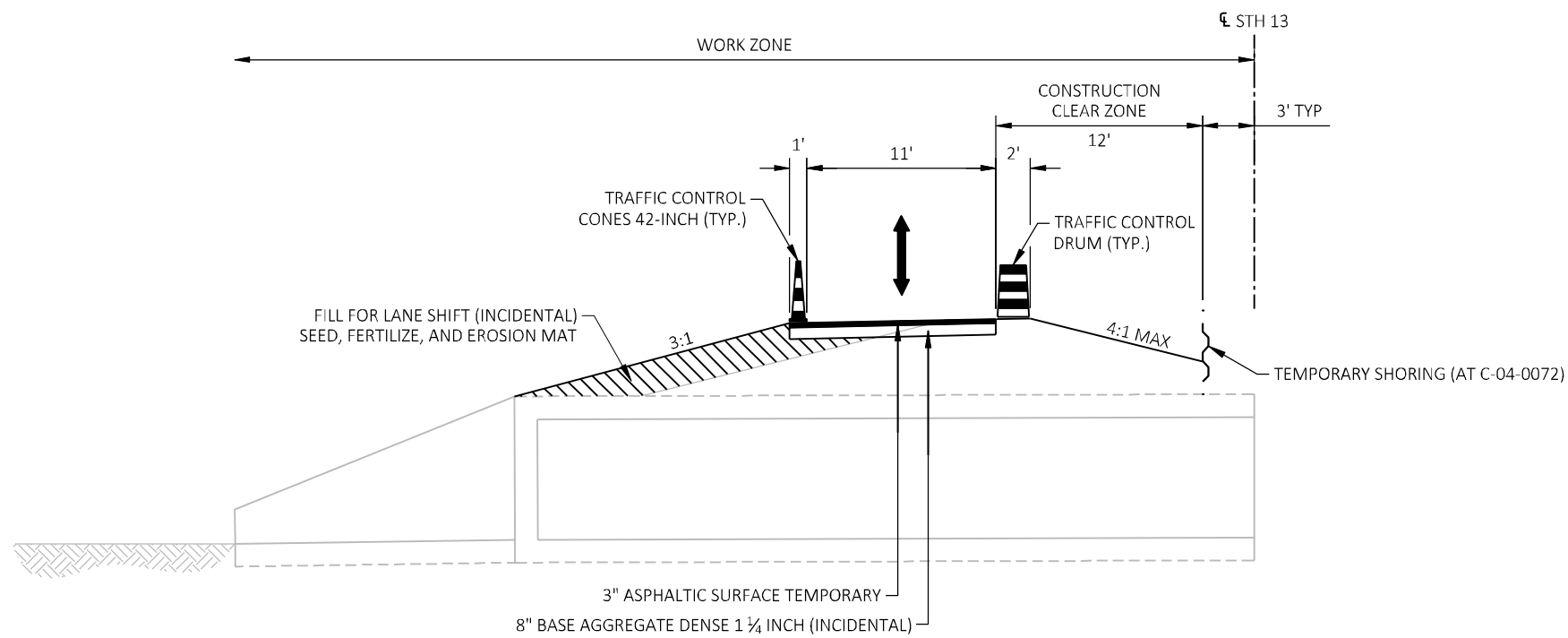


STAGE 2B SECTION

LOOKING EAST

- CONSTRUCT DOWNSTREAM HALF OF BOX CULVERTS.

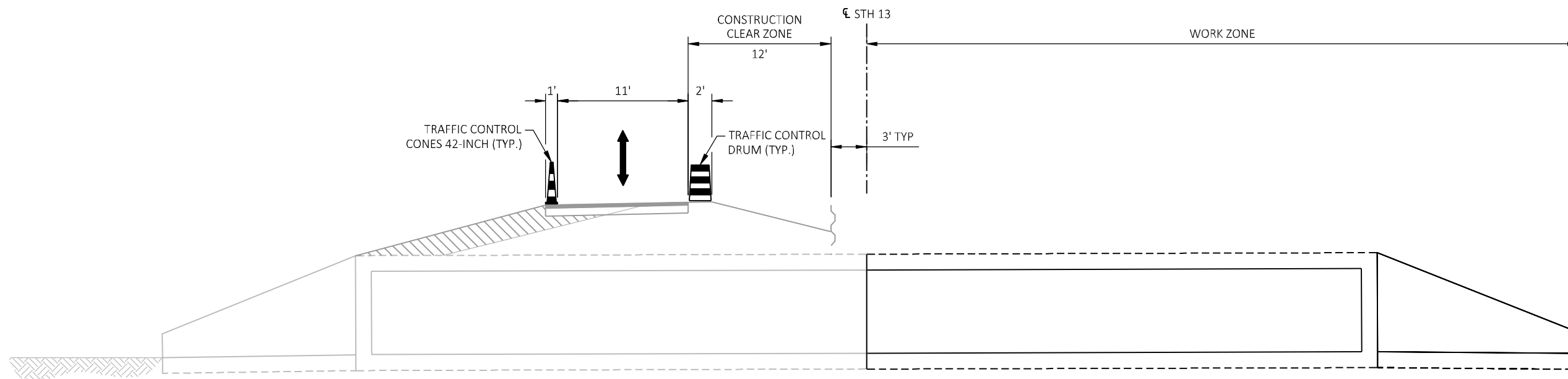




**STAGE 2C SECTION**

LOOKING EAST

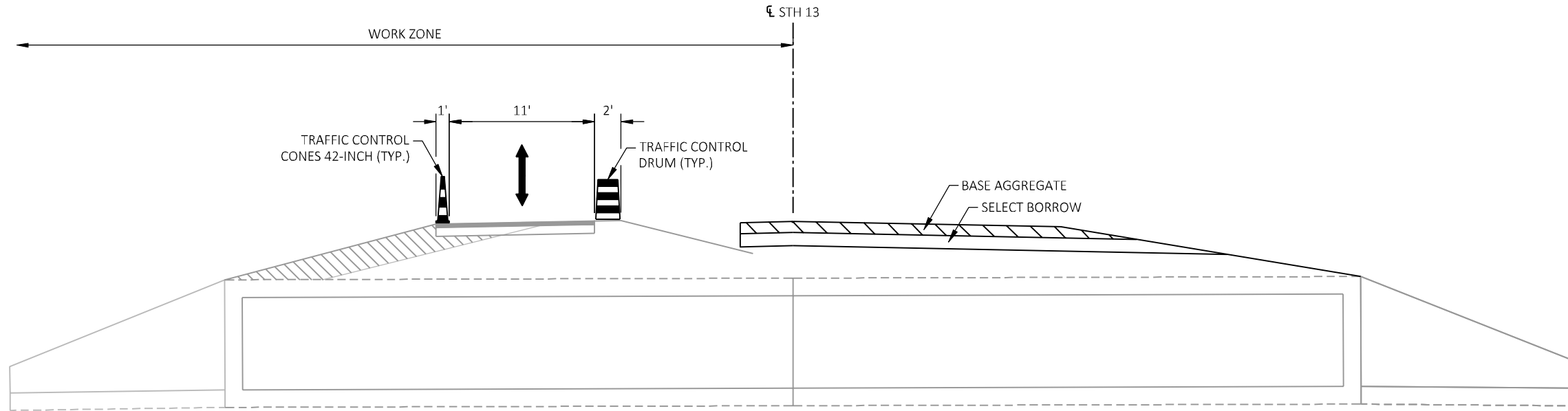
- CONSTRUCT DOWNSTREAM TEMPORARY LANE SHIFT FOR STAGE 3.



**STAGE 3A SECTION**

LOOKING EAST

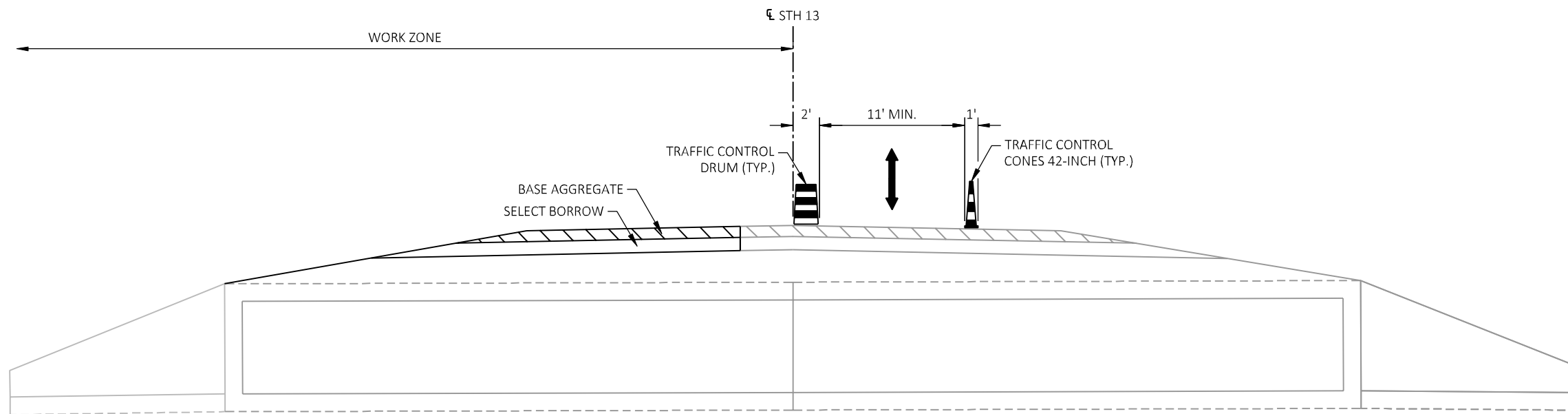
- CONSTRUCT UPSTREAM HALF OF BOX CULVERTS.
- REMOVE UPSTREAM HALF OF TEMPORARY WATER DIVERSION.



**STAGE 3B SECTION**

LOOKING EAST

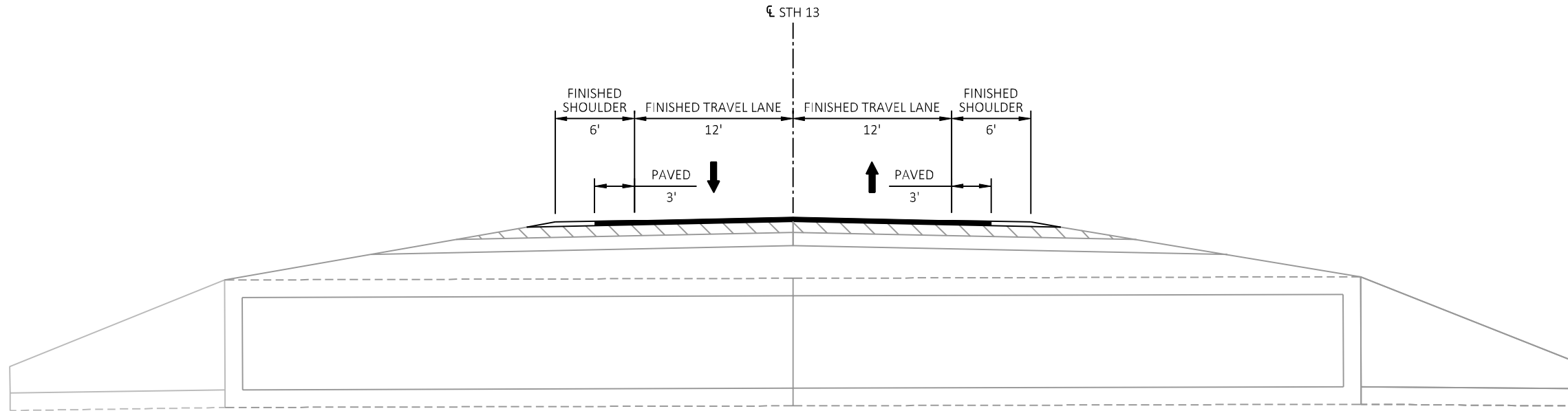
- CONSTRUCT UPSTREAM HALF OF ROADWAY.



**STAGE 3C SECTION**

LOOKING EAST

- SHIFT TRAFFIC TO UPSTREAM HALF OF ROADWAY
- REMOVE DOWNSTREAM HALF OF TEMPORARY WATER DIVERSION.
- CONSTRUCT DOWNSTREAM HALF OF ROADWAY.



STAGE 4 SECTION

LOOKING EAST

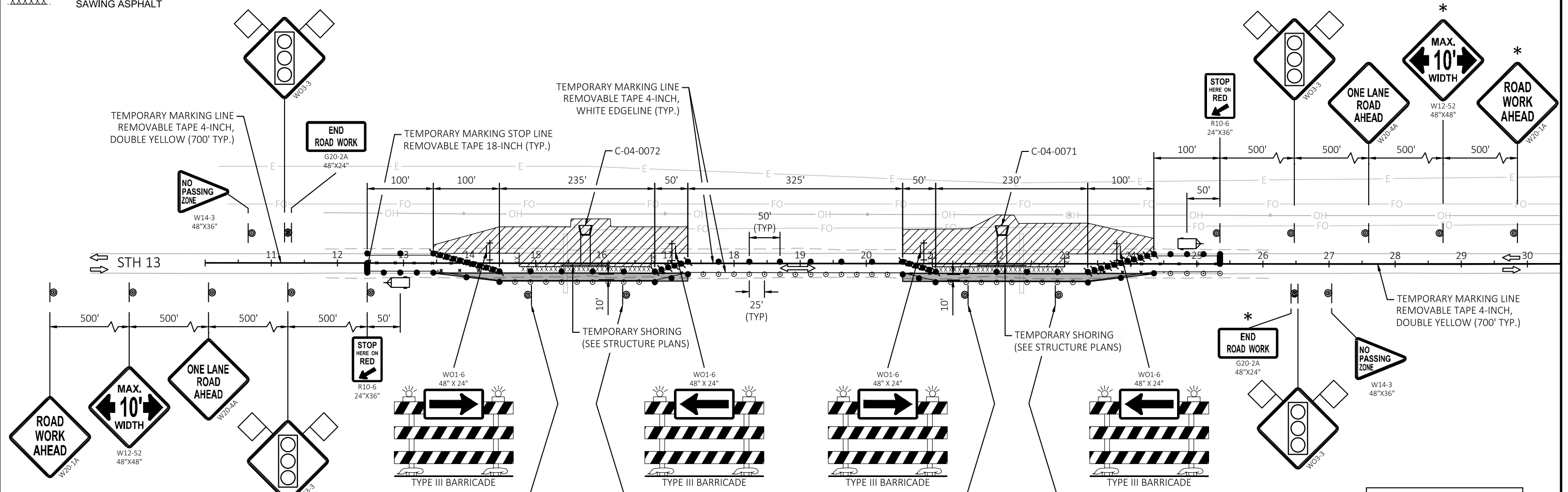
- PLACE ASPHALT USING STANDARD DETAIL DRAWING "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION".

LEGEND

- ↑ TYPE III BARRICADE
- ↑ TYPE III BARRICADE WITH ATTACHED SIGN
- TRAFFIC CONTROL CONES 42-INCH
- TRAFFIC CONTROL DRUM
- ⚡ TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- ⚡ SIGN ON PERMANENT SUPPORT
- ☛ TRAILER MOUNTED TRAFFIC SIGNAL
- MARKING REMOVAL LINE
- ▨ ASPHALTIC SURFACE TEMPORARY
- ▨ WORK AREA
- XXXXXX SAWING ASPHALT

LOST CREEK NO. 2 & 3 STAGING DETAIL  
STAGE 2B

SEE STANDARD DETAIL DRAWING "TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS" FOR ADDITIONAL DETAILS.



TEMPORARY SIGNAL TIMINGS (SEC.)  
2 CULVERT WORK ZONE SEQUENCE: ALL DAY  
TOTAL CYCLE TIME = 122

PHASE 1 STH 13 NB	PHASE 2 STH 13 SB	PROGRAM TYPE
15	15	MINIMUM GREEN TIME
5	5	MAXIMUM PASSAGE TIME DURING GREEN PHASE
3.5	3.5	MINIMUM PASSAGE TIME DURING GREEN PHASE
15	15	START OF REDUCTION OF PASSAGE FROM MAX. TO MIN. DURING GREEN PHASE
6	6	TIME TO REDUCE PASSAGE FROM MAX. TO MIN. DURING GREEN PHASE
30	30	MAXIMUM GREEN TIME
5	5	YELLOW
26	26	ALL-RED
NONE	NONE	RECALL MODE

NOTES:  
CONTRACTOR SHALL REVIEW SIGNALS AFTER PROGRAMMING TO ASSURE THERE ARE NOT CONFLICTING MOVEMENTS. IF CONFLICTING MOVEMENTS EXIST OR IF MORE ALL-RED TIME IS NEEDED, THE CONTRACTOR SHALL MAKE THE NECESSARY CHANGES.

TIMINGS BASED ON 45 MPH POSTED WORK ZONE SPEED, THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT WITH TIMING ADJUSTMENTS IF SLOWER THAN AVERAGE SPEEDS ARE OBSERVED WITHIN THE SINGLE LANE WORK ZONE.

TEMPORARY PAVEMENT LIMITS

STATION	OFFSET
13+45.00	15.30' RT
14+45.00	27.00' RT
17+30.00	27.00' RT
17+30.00	14.54' RT
20+55.00	15.02' RT
20+55.00	27.00' RT
23+35.00	27.00' RT
24+35.00	14.91' RT

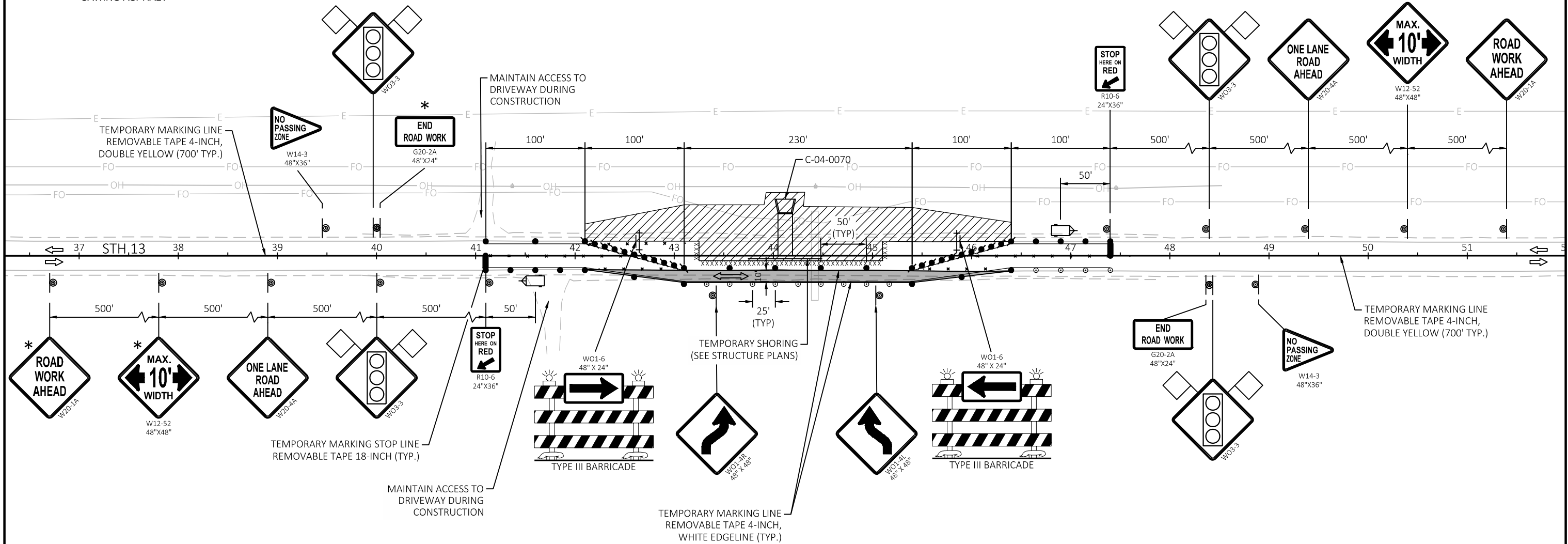
\* IF C-4-70 IS CONSTRUCTED AT SAME TIME, DO NOT PLACE SIGNS.

LEGEND

- ↑ TYPE III BARRICADE
- ↑ TYPE III BARRICADE WITH ATTACHED SIGN
- TRAFFIC CONTROL CONES 42-INCH
- TRAFFIC CONTROL DRUM
- ⚡ TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- ▬ SIGN ON PERMANENT SUPPORT
- ☛ TRAILER MOUNTED TRAFFIC SIGNAL
- MARKING REMOVAL LINE
- ▬ ASPHALTIC SURFACE TEMPORARY
- ▨ WORK AREA
- XXXXXX SAWING ASPHALT

LOST CREEK NO. 1 STAGING DETAIL  
STAGE 2B

SEE STANDARD DETAIL DRAWING "TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS" FOR ADDITIONAL DETAILS.



TEMPORARY SIGNAL TIMINGS (SEC.)  
1 CULVERT WORK ZONE SEQUENCE: ALL DAY  
TOTAL CYCLE TIME = 104 MAX.

PHASE 1 STH 13 NB	PHASE 2 STH 13 SB	PROGRAM TYPE
15	15	MINIMUM GREEN TIME
5	5	MAXIMUM PASSAGE TIME DURING GREEN PHASE
3.5	3.5	MINIMUM PASSAGE TIME DURING GREEN PHASE
15	15	START OF REDUCTION OF PASSAGE FROM MAX. TO MIN. DURING GREEN PHASE
6	6	TIME TO REDUCE PASSAGE FROM MAX. TO MIN. DURING GREEN PHASE
30	30	MAXIMUM GREEN TIME
5	5	YELLOW
17	17	ALL-RED
NONE	NONE	RECALL MODE

NOTES:  
CONTRACTOR SHALL REVIEW SIGNALS AFTER PROGRAMMING TO ASSURE THERE ARE NOT CONFLICTING MOVEMENTS. IF CONFLICTING MOVEMENTS EXIST OR IF MORE ALL-RED TIME IS NEEDED, THE CONTRACTOR SHALL MAKE THE NECESSARY CHANGES.

TIMINGS BASED ON 45 MPH POSTED WORK ZONE SPEED, THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT WITH TIMING ADJUSTMENTS IF SLOWER THAN AVERAGE SPEEDS ARE OBSERVED WITHIN THE SINGLE LANE WORK ZONE.

TEMPORARY PAVEMENT LIMITS	
STATION	OFFSET
42+10.00	13.95' RT
43+10.00	27.00' RT
45+40.00	27.00' RT
46+40.00	15.28' RT

\* IF C-4-70 IS CONSTRUCTED AT SAME TIME, DO NOT PLACE SIGNS.

PROJECT NO: 8510-00-71

HWY: STH 13

COUNTY: BAYFIELD

STAGING DETAILS

SHEET

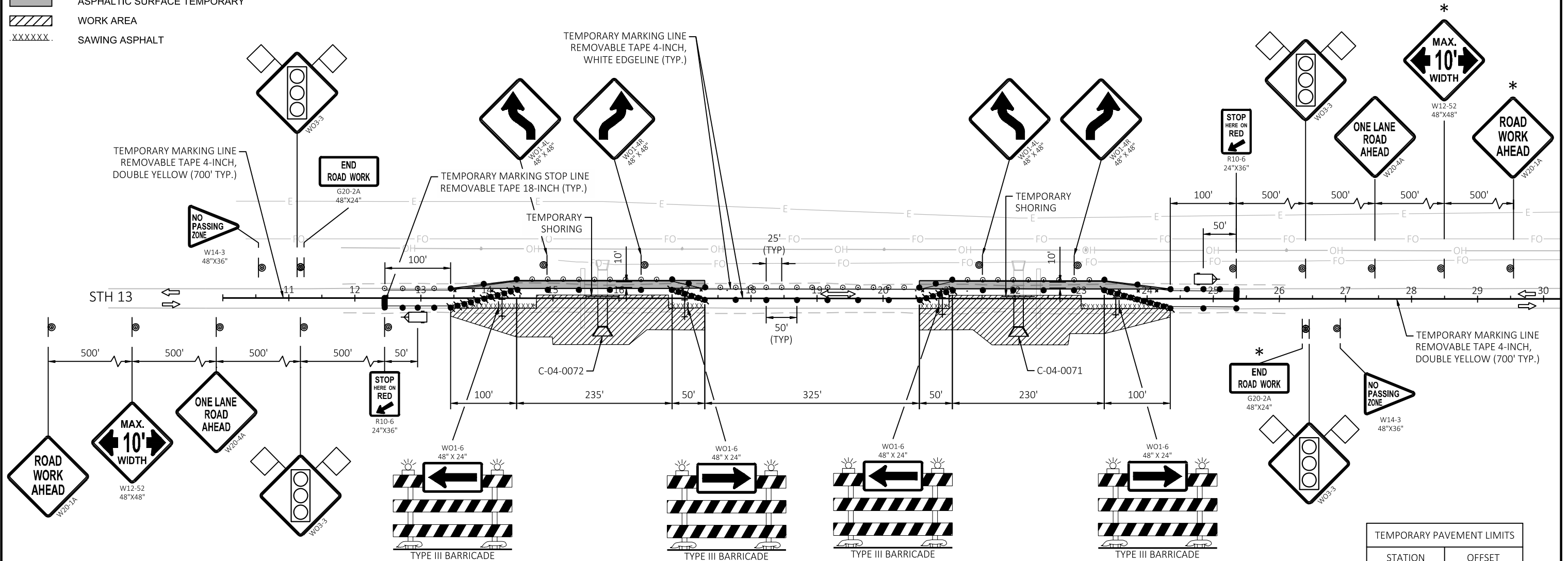
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LEGEND

- ↑ TYPE III BARRICADE
- ↑ TYPE III BARRICADE WITH ATTACHED SIGN
- TRAFFIC CONTROL CONES 42-INCH
- TRAFFIC CONTROL DRUM
- ⚡ TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- ♣ SIGN ON PERMANENT SUPPORT
- ☐ TRAILER MOUNTED TRAFFIC SIGNAL
- MARKING REMOVAL LINE
- ▨ ASPHALTIC SURFACE TEMPORARY
- ▨ WORK AREA
- XXXXXX SAWING ASPHALT

LOST CREEK NO. 2 & 3 STAGING DETAIL  
STAGE 3A

SEE STANDARD DETAIL DRAWING "TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS" FOR ADDITIONAL DETAILS.



TEMPORARY SIGNAL TIMINGS (SEC.)  
2 CULVERT WORK ZONE SEQUENCE: ALL DAY  
TOTAL CYCLE TIME = 122

PHASE 1 STH 13 NB	PHASE 2 STH 13 SB	PROGRAM TYPE
15	15	MINIMUM GREEN TIME
5	5	MAXIMUM PASSAGE TIME DURING GREEN PHASE
3.5	3.5	MINIMUM PASSAGE TIME DURING GREEN PHASE
15	15	START OF REDUCTION OF PASSAGE FROM MAX. TO MIN. DURING GREEN PHASE
6	6	TIME TO REDUCE PASSAGE FROM MAX. TO MIN. DURING GREEN PHASE
30	30	MAXIMUM GREEN TIME
5	5	YELLOW
26	26	ALL-RED
NONE	NONE	RECALL MODE

NOTES:  
CONTRACTOR SHALL REVIEW SIGNALS AFTER PROGRAMMING TO ASSURE THERE ARE NOT CONFLICTING MOVEMENTS. IF CONFLICTING MOVEMENTS EXIST OR IF MORE ALL-RED TIME IS NEEDED, THE CONTRACTOR SHALL MAKE THE NECESSARY CHANGES.

TIMINGS BASED ON 45 MPH POSTED WORK ZONE SPEED, THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT WITH TIMING ADJUSTMENTS IF SLOWER THAN AVERAGE SPEEDS ARE OBSERVED WITHIN THE SINGLE LANE WORK ZONE.

SIGNAL TIMING IS THE SAME AS STAGE 2.

TEMPORARY PAVEMENT LIMITS

STATION	OFFSET
13+45.00	14.52' LT
14+45.00	27.00' LT
17+30.00	27.00' LT
17+30.00	15.30' LT
20+55.00	14.88' LT
20+55.00	27.00' LT
23+35.00	27.00' LT
24+35.00	14.86' RT

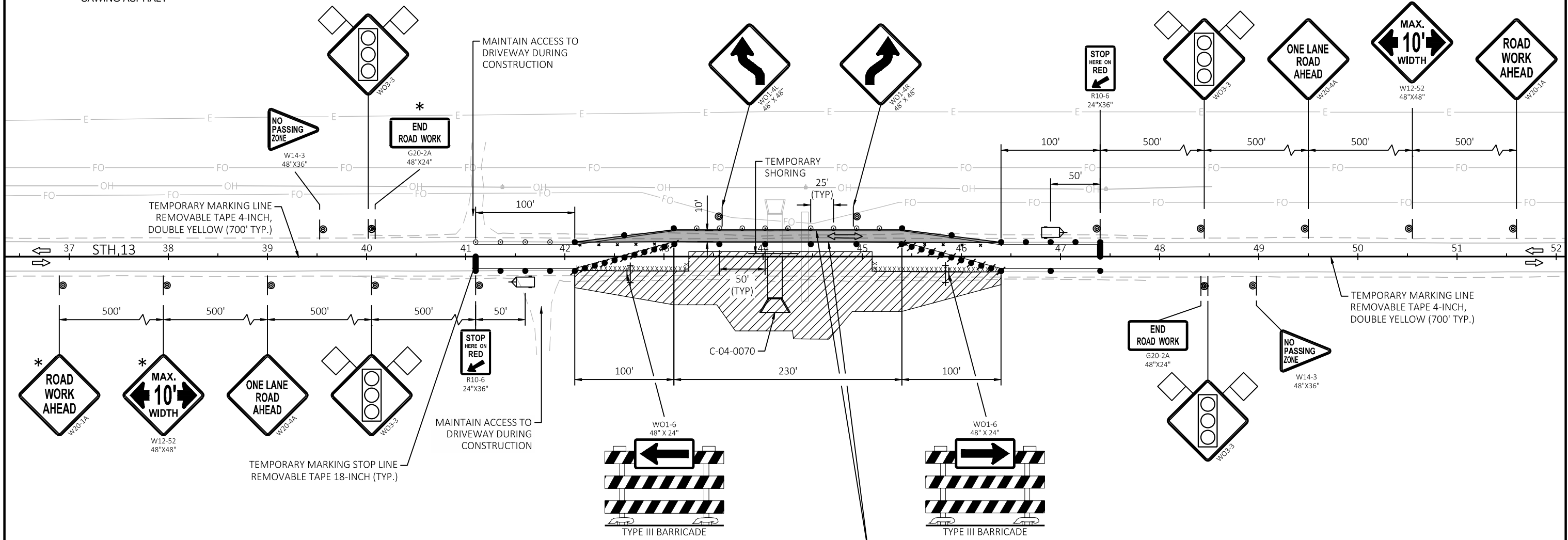
\* IF C-4-70 IS CONSTRUCTED AT SAME TIME, DO NOT PLACE SIGNS.

LEGEND

- ↑ TYPE III BARRICADE
- ↑ TYPE III BARRICADE WITH ATTACHED SIGN
- TRAFFIC CONTROL CONES 42-INCH
- TRAFFIC CONTROL DRUM
- ⚡ TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- ⚡ SIGN ON PERMANENT SUPPORT
- ☐ TRAILER MOUNTED TRAFFIC SIGNAL
- MARKING REMOVAL LINE
- ▒ ASPHALTIC SURFACE TEMPORARY
- ▨ WORK AREA
- XXXXXX SAWING ASPHALT

LOST CREEK NO. 1 STAGING DETAIL  
STAGE 3A

SEE STANDARD DETAIL DRAWING "TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS" FOR ADDITIONAL DETAILS.



TEMPORARY SIGNAL TIMINGS (SEC.)  
1 CULVERT WORK ZONE SEQUENCE: ALL DAY  
TOTAL CYCLE TIME = 104 MAX.

PHASE 1 STH 13 NB	PHASE 2 STH 13 SB	PROGRAM TYPE
15	15	MINIMUM GREEN TIME
5	5	MAXIMUM PASSAGE TIME DURING GREEN PHASE
3.5	3.5	MINIMUM PASSAGE TIME DURING GREEN PHASE
15	15	START OF REDUCTION OF PASSAGE FROM MAX. TO MIN. DURING GREEN PHASE
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TIMINGS BASED ON 45 MPH POSTED WORK ZONE SPEED, THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT WITH TIMING ADJUSTMENTS IF SLOWER THAN AVERAGE SPEEDS ARE OBSERVED WITHIN THE SINGLE LANE WORK ZONE.

SIGNAL TIMING IS THE SAME AS STAGE 2.

TEMPORARY PAVEMENT LIMITS	
STATION	OFFSET
42+10.00	14.75' LT
43+10.00	27.00' LT
45+40.00	27.00' LT
46+40.00	14.34' LT

\* IF C-4-70 IS CONSTRUCTED AT SAME TIME, DO NOT PLACE SIGNS.

Estimate Of Quantities

8510-00-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	6.000	6.000
0004	201.0205	Grubbing	STA	6.000	6.000
0006	203.0220	Removing Structure (structure) 01. C-04-0033	EACH	1.000	1.000
0008	203.0220	Removing Structure (structure) 02. C-04-0032	EACH	1.000	1.000
0010	203.0220	Removing Structure (structure) 03. C-04-0031	EACH	1.000	1.000
0012	205.0100	Excavation Common	CY	6,783.000	6,783.000
0014	206.2001	Excavation for Structures Culverts (structure) 01. C-04-0070	EACH	1.000	1.000
0016	206.2001	Excavation for Structures Culverts (structure) 02. C-04-0072	EACH	1.000	1.000
0018	206.2001	Excavation for Structures Culverts (structure) 03. C-04-0071	EACH	1.000	1.000
0020	208.1100	Select Borrow	CY	4,795.000	4,795.000
0022	208.1500.S	Temporary Lane Shift During Culvert Work	EACH	12.000	12.000
0024	210.2500	Backfill Structure Type B	TON	4,020.000	4,020.000
0026	213.0100	Finishing Roadway (project) 01. 8510-00-71	EACH	1.000	1.000
0028	305.0110	Base Aggregate Dense 3/4-Inch	TON	200.000	200.000
0030	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	2,585.000	2,585.000
0032	311.0115	Breaker Run	CY	273.000	273.000
0034	455.0605	Tack Coat	GAL	117.000	117.000
0036	465.0105	Asphaltic Surface	TON	553.000	553.000
0038	465.0125	Asphaltic Surface Temporary	TON	458.000	458.000
0040	504.0100	Concrete Masonry Culverts	CY	417.000	417.000
0042	505.0400	Bar Steel Reinforcement HS Structures	LB	66,240.000	66,240.000
0044	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	4,950.000	4,950.000
0046	511.1100	Temporary Shoring	SF	500.000	500.000
0048	511.1200	Temporary Shoring (structure) 01. C-04-0070	SF	361.000	361.000
0050	511.1200	Temporary Shoring (structure) 02. C-04-0072	SF	361.000	361.000
0052	511.1200	Temporary Shoring (structure) 03. C-04-0071	SF	361.000	361.000
0054	516.0500	Rubberized Membrane Waterproofing	SY	93.000	93.000
0056	606.0300	Riprap Heavy	CY	90.000	90.000
0058	618.0100	Maintenance And Repair of Haul Roads (project) 01. 8510-00-71	EACH	1.000	1.000
0060	619.1000	Mobilization	EACH	1.000	1.000
0062	624.0100	Water	MGAL	74.000	74.000
0064	625.0100	Topsoil	SY	6,100.000	6,100.000
0066	628.1104	Erosion Bales	EACH	50.000	50.000
0068	628.1504	Silt Fence	LF	3,440.000	3,440.000
0070	628.1520	Silt Fence Maintenance	LF	3,440.000	3,440.000
0072	628.1905	Mobilizations Erosion Control	EACH	10.000	10.000
0074	628.1910	Mobilizations Emergency Erosion Control	EACH	5.000	5.000
0076	628.2008	Erosion Mat Urban Class I Type B	SY	11,460.000	11,460.000
0078	628.7560	Tracking Pads	EACH	2.000	2.000
0080	628.7570	Rock Bags	EACH	150.000	150.000
0082	629.0210	Fertilizer Type B	CWT	6.900	6.900
0084	630.0200	Seeding Temporary	LB	480.000	480.000
0086	630.0500	Seed Water	MGAL	128.400	128.400
0088	642.5001	Field Office Type B	EACH	1.000	1.000
0090	643.0300	Traffic Control Drums	DAY	11,760.000	11,760.000
0092	643.0420	Traffic Control Barricades Type III	DAY	630.000	630.000
0094	643.0705	Traffic Control Warning Lights Type A	DAY	1,260.000	1,260.000
0096	643.0715	Traffic Control Warning Lights Type C	DAY	5,880.000	5,880.000
0098	643.0900	Traffic Control Signs	DAY	9,240.000	9,240.000



Estimate Of Quantities

8510-00-71

Line	Item	Item Description	Unit	Total	Qty
0100	643.1000	Traffic Control Signs Fixed Message	SF	36.000	36.000
0102	643.1070	Traffic Control Cones 42-Inch	DAY	5,040.000	5,040.000
0104	643.3150	Temporary Marking Line Removable Tape 4-Inch	LF	13,690.000	13,690.000
0106	643.3850	Temporary Marking Stop Line Removable Tape 18-Inch	LF	50.000	50.000
0108	643.5000	Traffic Control	EACH	1.000	1.000
0110	645.0105	Geotextile Type C	SY	885.000	885.000
0112	645.0120	Geotextile Type HR	SY	210.000	210.000
0114	646.1020	Marking Line Epoxy 4-Inch	LF	4,321.000	4,321.000
0116	646.9000	Marking Removal Line 4-Inch	LF	5,200.000	5,200.000
0118	650.4500	Construction Staking Subgrade	LF	585.000	585.000
0120	650.5000	Construction Staking Base	LF	585.000	585.000
0122	650.6501	Construction Staking Structure Layout (structure) 01. C-04-0070	EACH	1.000	1.000
0124	650.6501	Construction Staking Structure Layout (structure) 02. C-04-0072	EACH	1.000	1.000
0126	650.6501	Construction Staking Structure Layout (structure) 03. C-04-0071	EACH	1.000	1.000
0128	650.9911	Construction Staking Supplemental Control (project) 01. 8510-00-71	EACH	1.000	1.000
0130	650.9920	Construction Staking Slope Stakes	LF	1,620.000	1,620.000
0132	661.0101	Temporary Traffic Signals for Bridges (structure) 01. C-04-0070	EACH	1.000	1.000
0134	661.0101	Temporary Traffic Signals for Bridges (structure) 02. C-04-0071 & 72	EACH	1.000	1.000
0136	690.0150	Sawing Asphalt	LF	1,555.000	1,555.000
0138	715.0502	Incentive Strength Concrete Structures	DOL	2,502.000	2,502.000
0140	SPV.0060	Special 01. Temporary Water Diversion C-04-0070	EACH	1.000	1.000
0142	SPV.0060	Special 02. Temporary Water Diversion C-04-0072	EACH	1.000	1.000
0144	SPV.0060	Special 03. Temporary Water Diversion C-04-0071	EACH	1.000	1.000

3

3

STATION	TO	STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
15+00	-	16+00	RT	1	1
21+50	-	22+30	RT	1	1
22+75	-	24+25	RT	2	2
43+75	-	44+75	LT	1	1
46+00	-	46+30	LT	1	1
TOTAL 0010				6	6

CATEGORY	STATION	STATION	LOCATION	205.0100 EXCAVATION COMMON CUT (1) CY	SALVAGED UNUSABLE MATERIAL (2) CY	AVAILABLE MATERIAL (3) CY	UNEXPANDED FILL CY	EXPANDED FILL (4) CY	MASS ORDINATE +/- (5) CY	* BORROW CY
0010	14+75	- 16+75	STRUCTURE C-04-0072	2,716	93	2,623	72	90	2,533	-2,533
0010	21+00	- 23+00	STRUCTURE C-04-0071	2,037	92	1,945	135	169	1,776	-1,776
0010	43+25	- 45+10	STRUCTURE C-04-0070	2,030	81	1,949	92	116	1,833	-1,833
TOTAL 0010				6,783					6,142	-6,142

- (1) SALVAGED/UNUSEABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
- (2) SALVAGED/UNUSEABLE PAVEMENT MATERIAL
- (3) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSEABLE PAVEMENT MATERIAL
- (4) EXPANDED FILL FACTOR = 1.25
- (5) THE MASS ORDINATE + OR - QUANTITY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS QUANTITY INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.
- \* NOT A BID ITEM

208.1500.S  
TEMPORARY LANE  
SHIFT DURING  
CULVERT WORK

LOCATION	EACH	REMARKS
C-04-0070	2	STAGE 1, TEMPORARY WATER DIVERSION UPSTREAM AND DOWNSTREAM
C-04-0070	1	STAGE 2A
C-04-0070	1	STAGE 2C
C-04-0071	2	STAGE 1, TEMPORARY WATER DIVERSION UPSTREAM AND DOWNSTREAM
C-04-0071	1	STAGE 2A
C-04-0071	1	STAGE 2C
C-04-0072	2	STAGE 1, TEMPORARY WATER DIVERSION UPSTREAM AND DOWNSTREAM
C-04-0072	1	STAGE 2A
C-04-0072	1	STAGE 2C
TOTAL 0010	12	

CATEGORY	STATION	TO	STATION	LOCATION	208.1100 SELECT BORROW CY	REMARKS
0010	14+75	-	16+75	SEE TEMPORARY WATER DIVERSION DETAIL AND TYPICAL SECTIONS	2,095	COMPUTED TO SLOPE OF ROAD WHERE PLACED
0010	21+00	-	23+00	SEE TEMPORARY WATER DIVERSION DETAIL AND TYPICAL SECTIONS	1,345	COMPUTED TO SLOPE OF ROAD WHERE PLACED
0010	43+25	-	45+10	SEE TEMPORARY WATER DIVERSION DETAIL AND TYPICAL SECTIONS	1,355	COMPUTED TO SLOPE OF ROAD WHERE PLACED
TOTAL 0010					4,795	

STATION	TO	STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	624.0100 WATER MGAL
14+75	-	16+75	STRUCTURE C-04-72	50	710	22
21+00	-	23+00	STRUCTURE C-04-71	50	710	22
43+25	-	45+10	STRUCTURE C-04-71	45	655	20
			UNDISTRIBUTED	55	510	10
TOTAL 0010				200	2,585	74

STATION	TO	STATION	LOCATION	455.0605 TACK COAT GAL	465.0105 ASPHALTIC SURFACE TON	465.0125 ASPHALTIC SURFACE TEMPORARY TON	REMARKS
13+45	-	17+30	RT	--	--	76	STAGE 2A
20+55	-	24+35	RT	--	--	75	STAGE 2A
42+10	-	46+40	RT	--	--	76	STAGE 2A
13+45	-	17+30	LT	--	--	77	STAGE 2C
20+55	-	24+35	LT	--	--	77	STAGE 2C
42+10	-	46+40	LT	--	--	77	STAGE 2C
14+75	-	16+75	--	40	189	--	STAGE 4
21+00	-	23+00	--	40	189	--	STAGE 4
43+25	-	45+10	--	37	175	--	STAGE 4
TOTAL 0010				117	553	458	

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CATEGORY	STATION	TO	STATION	LOCATION	511.1100 TEMPORARY SHORING SF	REMARKS	STATION	TO	STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH (WHITE) LF	646.1020 MARKING LINE EPOXY 4-INCH (YELLOW) LF	643.3150 TEMPORARY MARKING LINE REMOVABLE TAPE 4-INCH LF	643.3850 TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH LF	646.9000 MARKING REMOVAL LINE 4-INCH LF
0010	15+50	-	16+00	LT	500	STAGE 2C FOR ROADWAY STAGING AVERAGE 10' DEPTH	41+10	-	47+40	C-04-0070	1,260	158	5,515	25	1,600
							12+45	-	25+35	C-04-0071 & 72	2,580	323	8,175	25	3,600
				TOTAL 0010	500					TOTAL 0010	3,840	481	13,690	50	5,200

STATION	TO	STATION	LOCATION	625.0100 TOPSOIL SY	628.2008 EROSION MAT URBAN CLASS I TYPE B SY	629.0210 FERTILIZER TYPE B CWT	630.0200 SEEDING TEMPORARY LB	630.0500 SEED WATER MGAL	REMARKS
13+45	-	17+30	RT	--	695	0.41	20	7.8	STAGE 2A
20+55	-	24+35	RT	--	1,080	0.65	30	12.1	STAGE 2A
42+10	-	46+40	RT	--	585	0.35	15	6.5	STAGE 2A
13+45	-	17+30	LT	--	1,085	0.65	30	12.2	STAGE 2C
20+55	-	24+35	LT	--	870	0.52	25	9.8	STAGE 2C
42+10	-	46+40	LT	--	1,045	0.63	30	11.7	STAGE 2C
13+45	-	17+30	RT	905	905	0.54	50	10.1	STAGE 4 PLACE SEED AT TWICE STANDARD APPLICATION RATE
13+45	-	17+30	LT	1,145	1,145	0.68	60	12.8	STAGE 4 PLACE SEED AT TWICE STANDARD APPLICATION RATE
20+55	-	24+35	RT	830	830	0.50	45	9.3	STAGE 4 PLACE SEED AT TWICE STANDARD APPLICATION RATE
20+55	-	24+35	LT	1,075	1,075	0.64	60	12.1	STAGE 4 PLACE SEED AT TWICE STANDARD APPLICATION RATE
42+10	-	46+40	RT	1,095	1,095	0.65	60	12.3	STAGE 4 PLACE SEED AT TWICE STANDARD APPLICATION RATE
42+10	-	46+40	LT	1,050	1,050	0.63	55	11.8	STAGE 4 PLACE SEED AT TWICE STANDARD APPLICATION RATE
			TOTAL 0010	6,100	11,460	6.9	480	128.4	

STRUCTURE	STATION	TO	STATION	LOCATION	690.0150 SAWING ASPHALT LF	REMARKS
C-04-0072	14+75	-	16+75	LT/RT	240	STAGE 2B
C-04-0072	13+45	-	17+30	RT	205	STAGE 3A
C-04-0072	--		14+75	LT/RT	30	STAGE 4
C-04-0072	--		16+75	LT/RT	30	STAGE 4
C-04-0071	21+00	-	23+00	LT/RT	240	STAGE 2B
C-04-0071	20+55	-	24+35	RT	200	STAGE 3A
C-04-0071	--		21+00	LT/RT	30	STAGE 4
C-04-0071	--		23+00	LT/RT	30	STAGE 4
C-04-0070	43+25	-	45+10	LT/RT	225	STAGE 2B
C-04-0070	42+10	-	46+40	RT	265	STAGE 3A
C-04-0070	--		43+25	LT/RT	30	STAGE 4
C-04-0070	--		45+10	LT/RT	30	STAGE 4
			TOTAL 0010		1,555	

STATION	TO	STATION	LOCATION	628.1104 EROSION BALES EACH	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	628.7560 TRACKING PADS EACH	628.7570 ROCK BAGS EACH
13+45	-	17+30	RT	--	485	485	--	--	--	--
13+45	-	17+30	LT	--	490	490	--	--	--	--
20+55	-	24+35	RT	--	475	475	--	--	--	--
20+55	-	24+35	LT	--	485	485	--	--	--	--
42+10	-	46+40	RT	--	520	520	--	--	--	--
42+10	-	46+40	LT	--	495	495	--	--	--	--
			PROJECT 8510-00-71 UNDISTRIBUTED	50	490	490	10	5	2	150
			TOTAL 0010	50	3,440	3,440	10	5	2	150

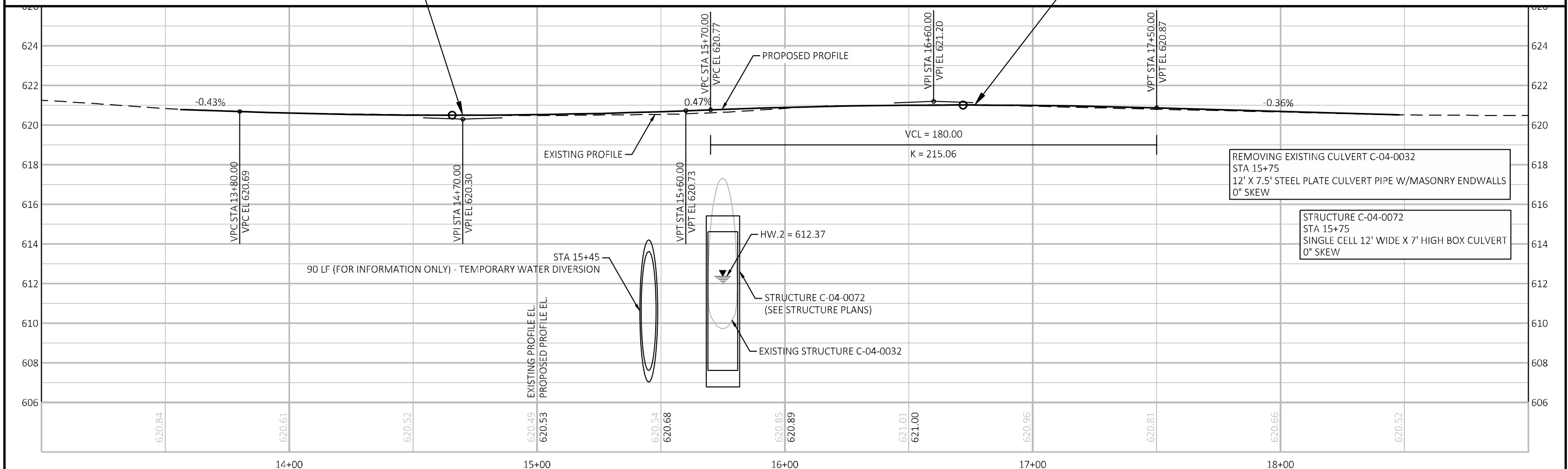
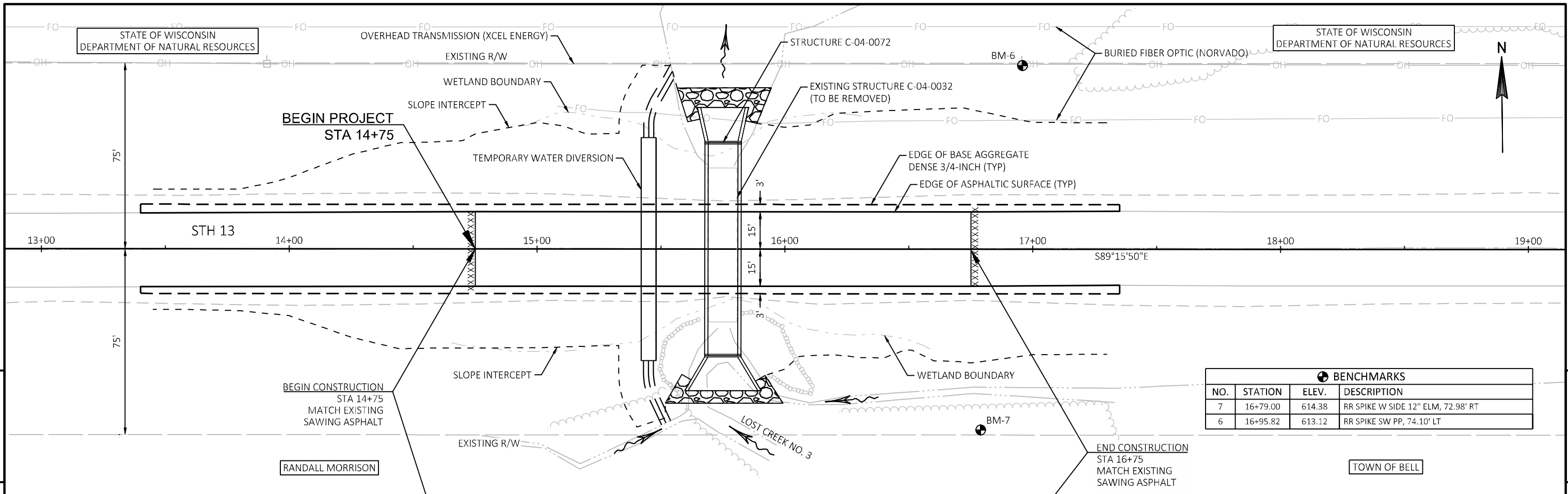
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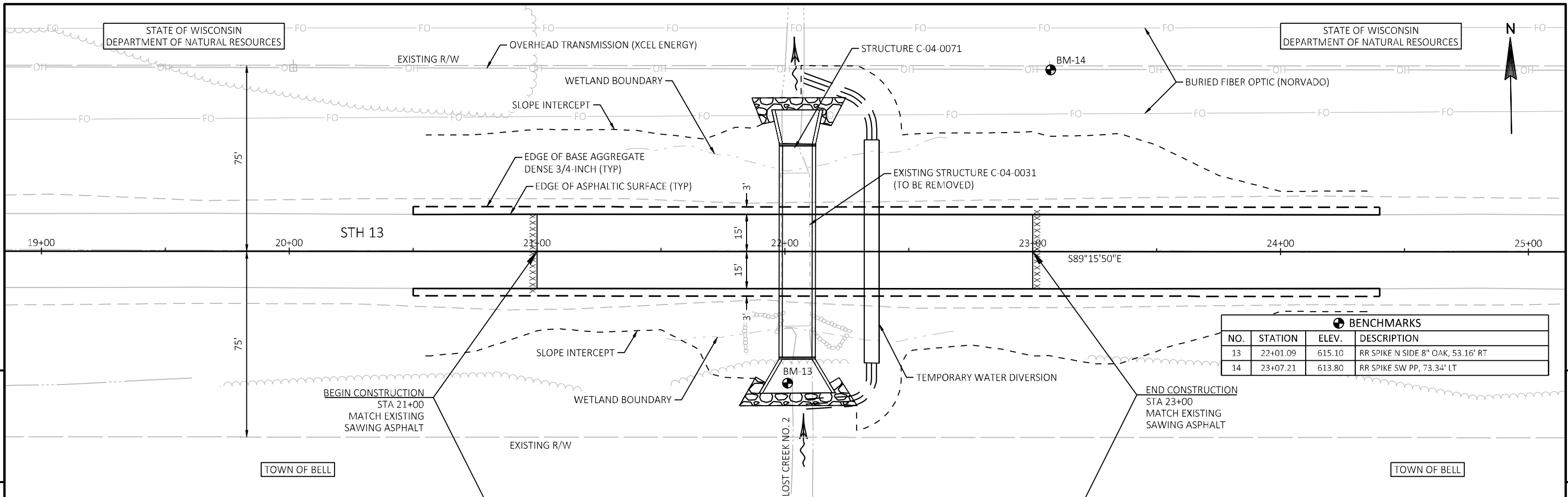
LOCATION	DURATION	643.0300		643.0420		643.0705		643.0715		643.0900		643.1000		643.1070		643.5000		661.0101.01		661.0101.02		REMARKS
		TRAFFIC CONTROL DRUMS		TRAFFIC CONTROL BARRICADES TYPE III		TRAFFIC CONTROL WARNING LIGHTS TYPE A		TRAFFIC CONTROL WARNING LIGHTS TYPE C		TRAFFIC CONTROL SIGNS		TRAFFIC CONTROL SIGNS FIXED MESSAGE		TRAFFIC CONTROL CONES 42-INCH		TRAFFIC CONTROL		TEMPORARY TRAFFIC SIGNALS FOR BRIDGES (STRUCTURE) (01. C-04-0070)		TEMPORARY TRAFFIC SIGNALS FOR BRIDGES (STRUCTURE) (02. C-04-0071 & 72)		
		EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	EACH	EACH	EACH	EACH		
PROJECT 8510-00-71	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	1	--	--	--	--		
MAX WIDTH	110	--	--	--	--	--	--	--	--	40	4,400	--	--	--	--	--	--	--	--	--		
C-04-0070	50	42	2,100	2	100	4	200	22	1,100	20	1,000	--	13	650	--	1	--	--	--	--	STAGE 2B	
C-04-0070	50	42	2,100	2	100	4	200	22	1,100	20	1,000	--	13	650	--	--	--	--	--	--	STAGE 3A	
C-04-0071 & 72	50	70	3,500	4	200	8	400	34	1,700	24	1,200	--	35	1,750	--	--	--	--	1	--	STAGE 2B	
C-04-0071 & 72	50	70	3,500	4	200	8	400	34	1,700	24	1,200	--	35	1,750	--	--	--	--	--	--	STAGE 3A	
UNDISTRIBUTED	--	--	560	--	30	--	60	--	280	--	440	--	--	240	--	--	--	--	--	--		
TOTAL 0010		224	11,760	12	630	24	1,260		5,880		9,240	36	96	5,040	1	1		1				

CATEGORY	STATION	LOCATION	650.4500		650.5000		650.9920		650.6501		650.9911	
			CONSTRUCTION STAKING SUBGRADE LF	CONSTRUCTION STAKING BASE LF	CONSTRUCTION STAKING SLOPE STAKES LF	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) EACH	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) EACH					
0010		PROJECT 8510-00-71										1
0010	13+45-17+30	C-04-0072	--	--	770	--	--	--	--	--	--	--
0010	14+75-16+75	C-04-0072	200	200	--	--	--	--	--	--	--	--
0010	20+55-24+35	C-04-0071	--	--	760	--	--	--	--	--	--	--
0010	21+00-23+00	C-04-0071	200	200	--	--	--	--	--	--	--	--
0010	42+10-46+40	C-04-0070	--	--	860	--	--	--	--	--	--	--
0010	43+25-45+10	C-04-0070	185	185	--	--	--	--	--	--	--	--
0010	44+12	C-04-0070	--	--	--	1	--	--	--	--	--	--
0010	22+05	C-04-0071	--	--	--	1	--	--	--	--	--	--
0010	15+75	C-04-0072	--	--	--	1	--	--	--	--	--	--
TOTAL 0010			585	585	1,620	3		1				

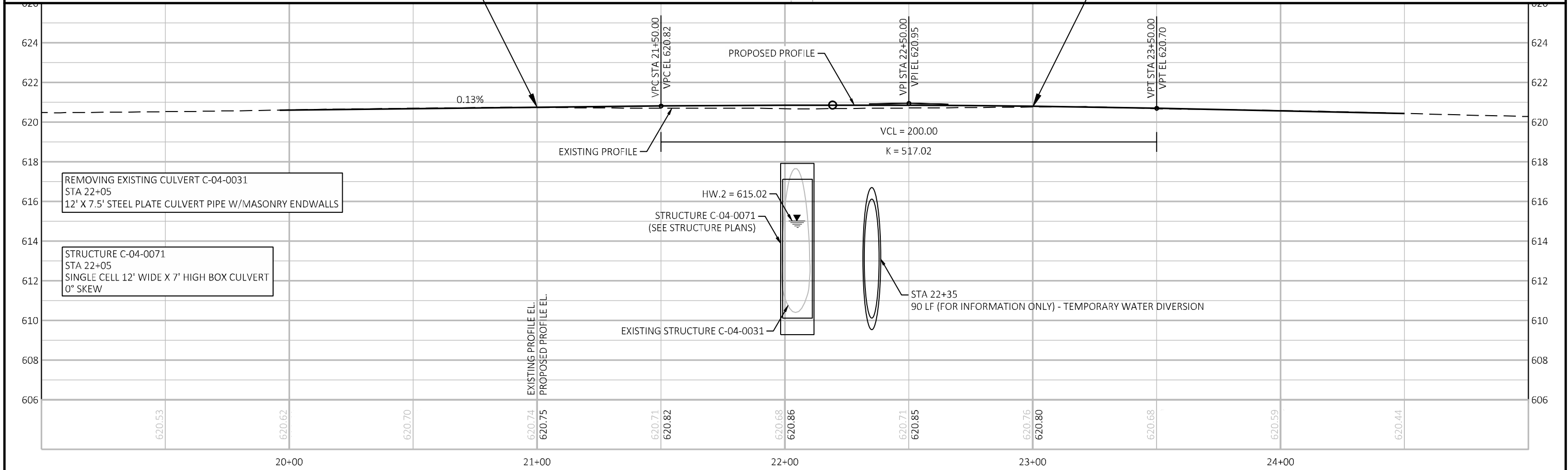
CATEGORY	LOCATION	SPV.0060.01		SPV.0060.02		SPV.0060.03	
		TEMPORARY WATER DIVERSION C-04-0070 EA	TEMPORARY WATER DIVERSION C-04-0072 EA	TEMPORARY WATER DIVERSION C-04-0071 EA	TEMPORARY WATER DIVERSION C-04-0071 EA		
0010	C-04-0070	1	--	--	--	--	--
0010	C-04-0071	--	--	1	--	--	--
0010	C-04-0072	--	1	--	--	--	--
TOTAL		1	1	1			



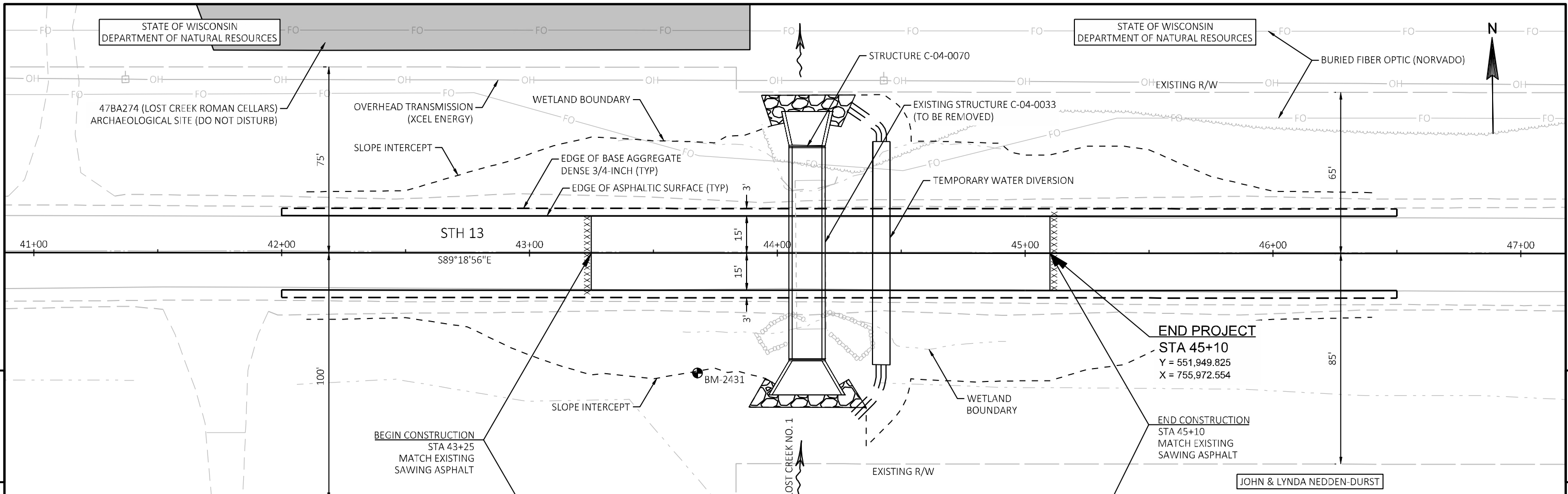
PROJECT NO: 8510-00-71      HWY: STH 13      COUNTY: BAYFIELD      PLAN AND PROFILE: C-04-0072      SHEET: E



BENCHMARKS			
NO.	STATION	ELEV.	DESCRIPTION
13	22+01.09	615.10	RR SPIKE N SIDE 8" OAK, 53.16' RT
14	23+07.21	613.80	RR SPIKE SW PP, 73.34' LT



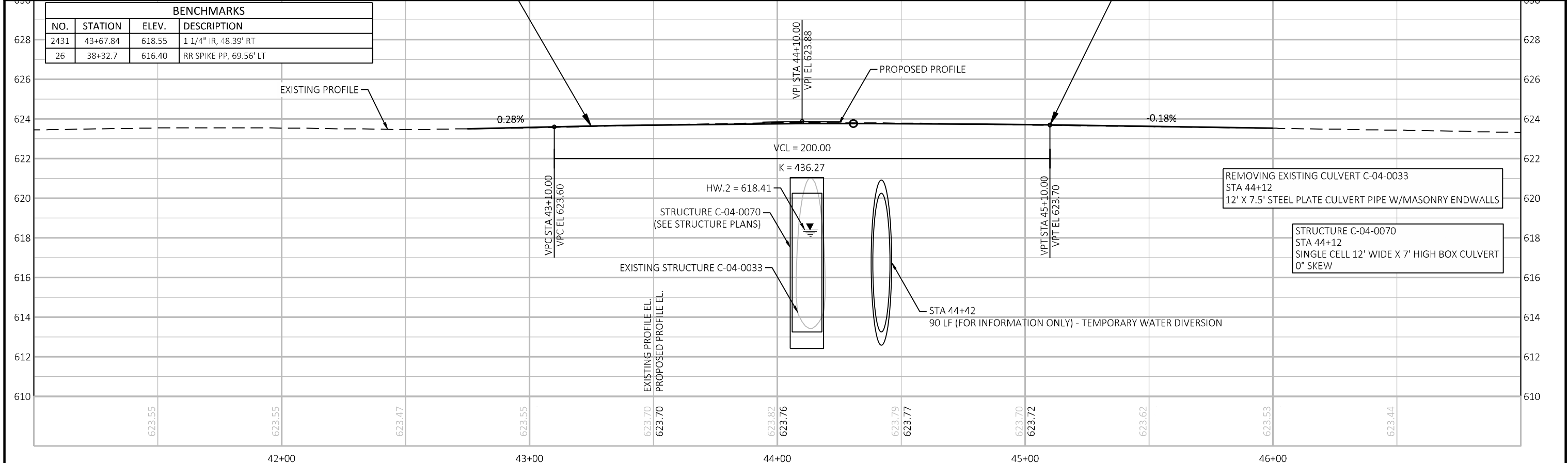
PROJECT NO: 8510-00-71 HWY: STH 13 COUNTY: BAYFIELD PLAN AND PROFILE: C-04-0071 SHEET 5



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BENCHMARKS			
NO.	STATION	ELEV.	DESCRIPTION
2431	43+67.84	618.55	1 1/4" IR, 48.39' RT
26	38+32.7	616.40	RR SPIKE PP, 69.56' LT

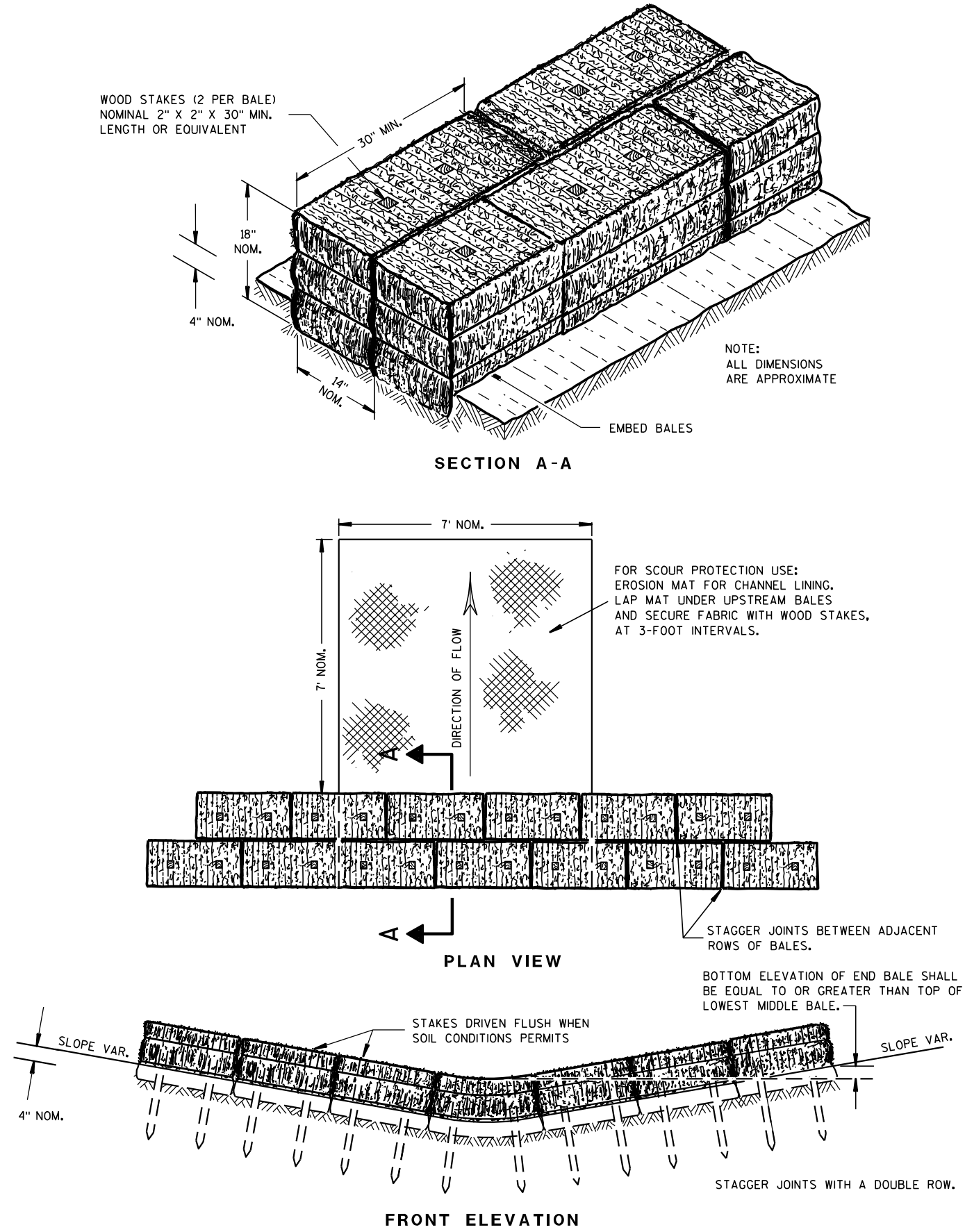


PROJECT NO: 8510-00-71      HWY: STH 13      COUNTY: BAYFIELD      PLAN AND PROFILE: C-04-0070      SHEET: E

## Standard Detail Drawing List

08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E14-01	TRACKING PAD
09G02-05A	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-05B	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-05C	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
12A03-10	NAME PLATE (STRUCTURES)
13C19-03	HMA LONGITUDINAL JOINTS
14B29-01	SAFETY EDGE
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-08F	ADVANCED WIDTH RESTRICTION SIGNING
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-22A	LONGITUDINAL MARKING (MAINLINE)
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-09A	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C12-09B	TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE
15C19-08A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15D28-04	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D33-08	TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
15D45-03	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL
15D48-01	TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATION
15D51-01	TRAFFIC CONTROL, MOBILE OPERATIONS ON AN UNDIVIDED ROADWAY



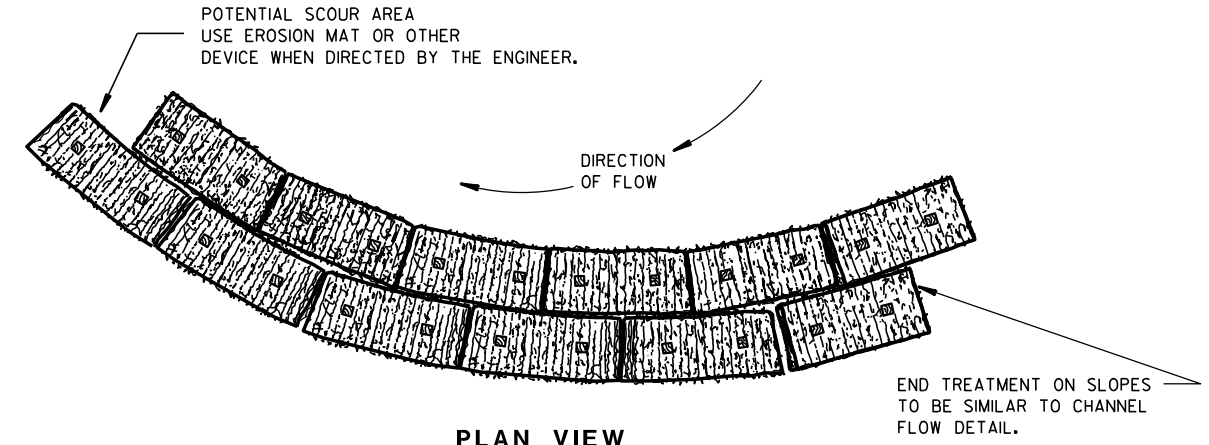


TEMPORARY DITCH CHECK USING EROSION BALES ①

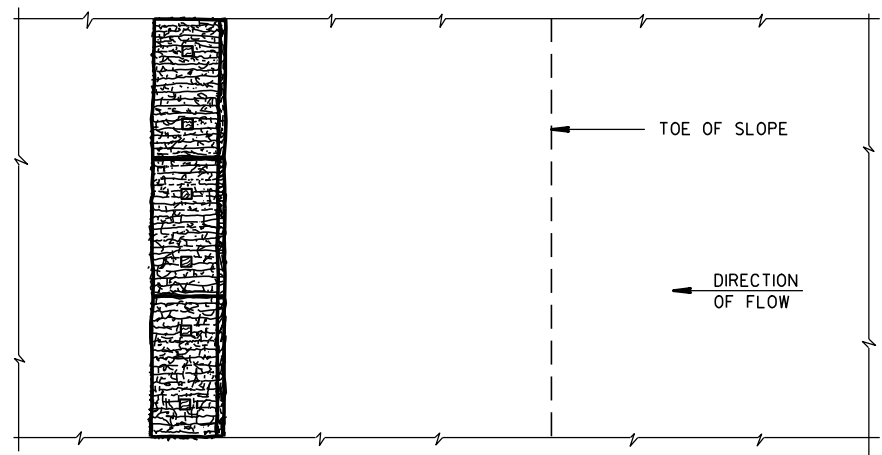
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

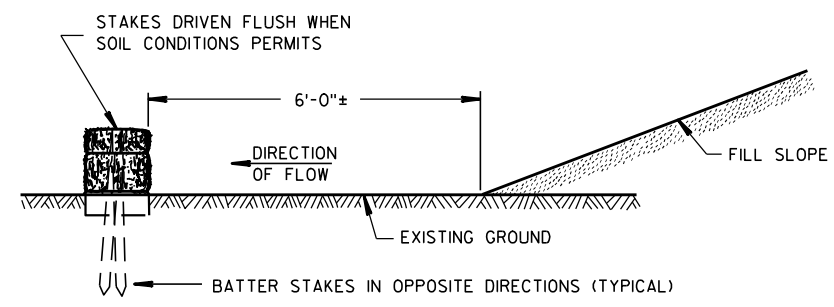
- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.



PLAN VIEW WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



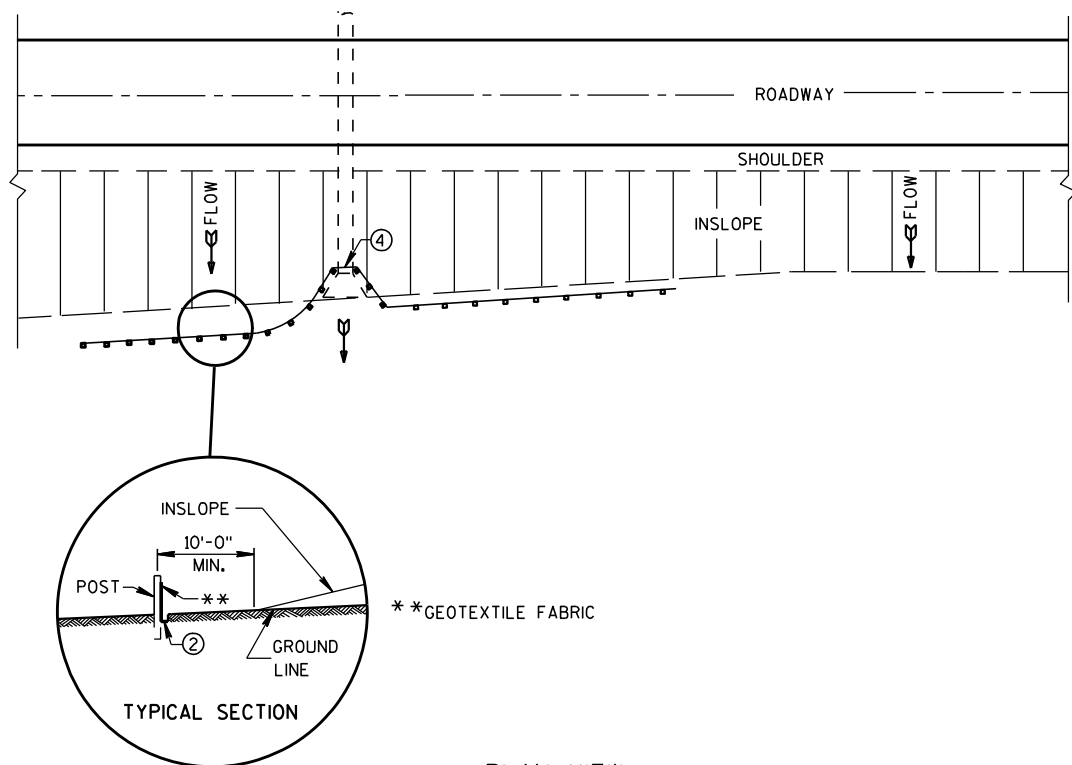
FRONT ELEVATION WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

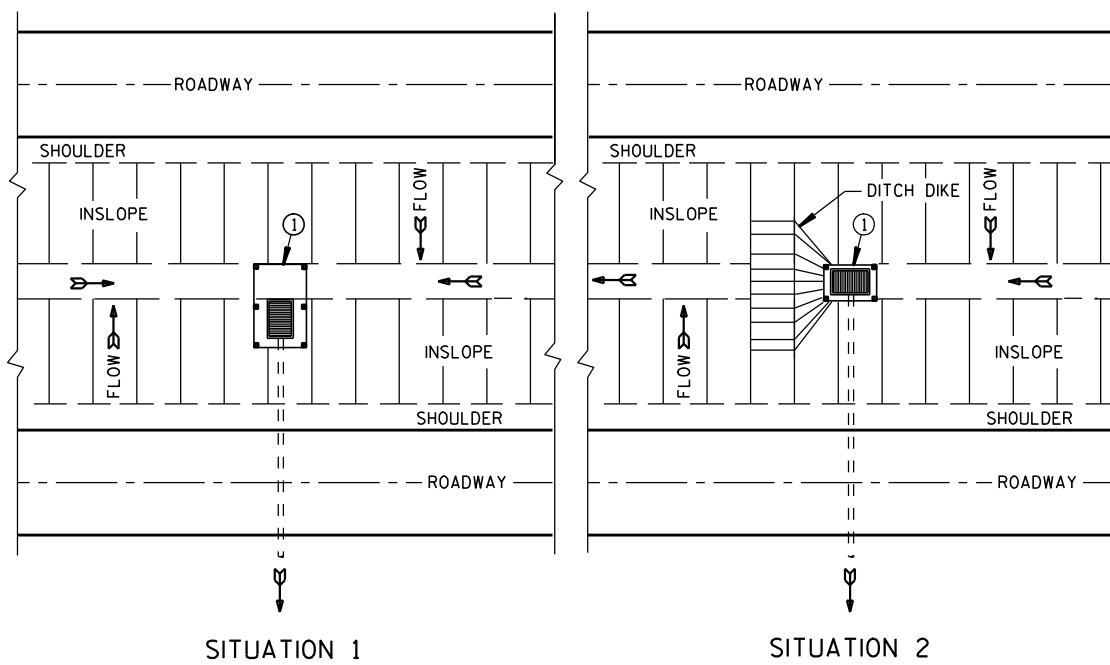
TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVED  
 6/04/02 /S/ Beth Canestra  
 DATE CHIEF ROADWAY DEVELOPMENT ENGINEER  
 FHWA



PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE

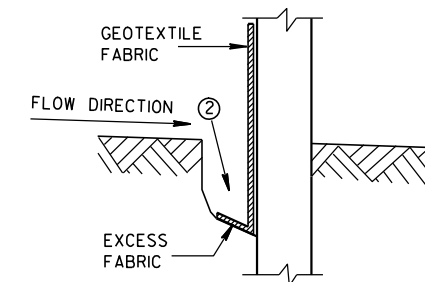


SITUATION 1      SITUATION 2  
PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

**GENERAL NOTES**

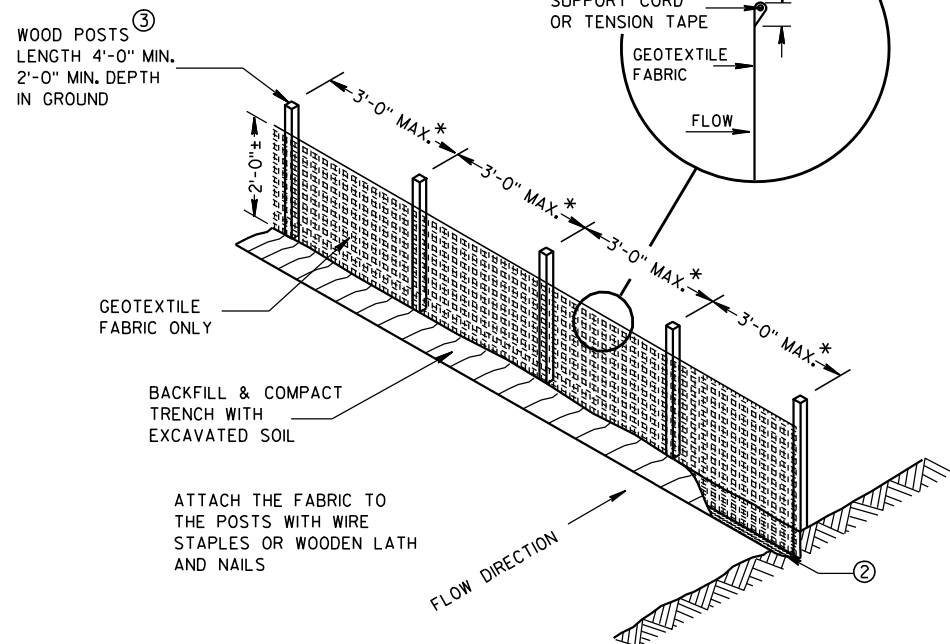
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



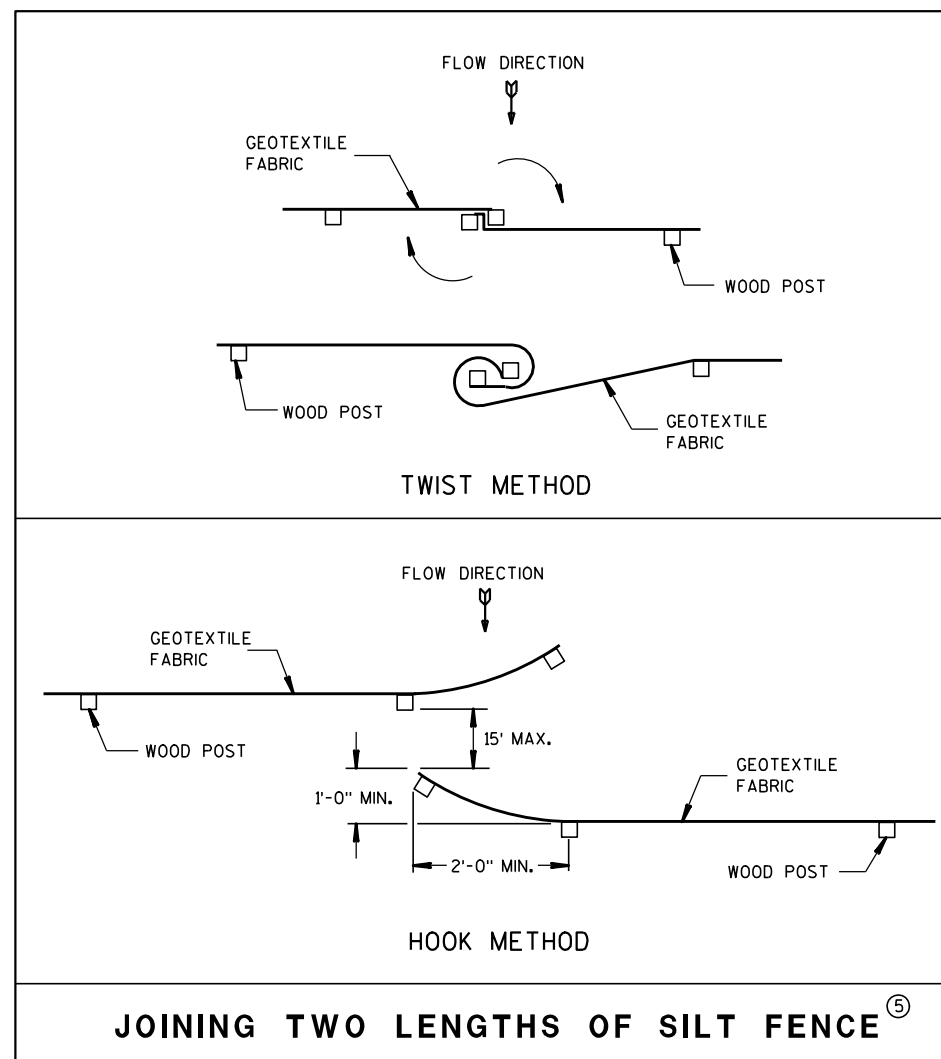
TRENCH DETAIL

NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

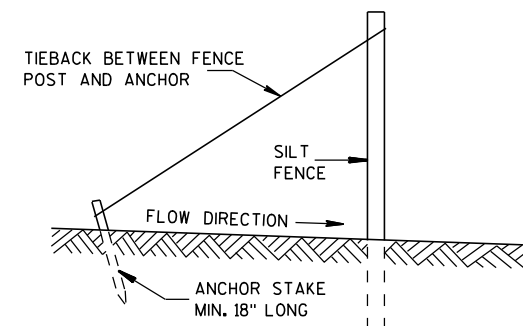


SILT FENCE

\* NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.



JOINING TWO LENGTHS OF SILT FENCE ⑤



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

**SILT FENCE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
4-29-05 /S/ Beth Canestra  
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER  
FHWA

**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

TRACKING PAD SHALL BE INSPECTED DAILY. DEFICIENT AREAS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

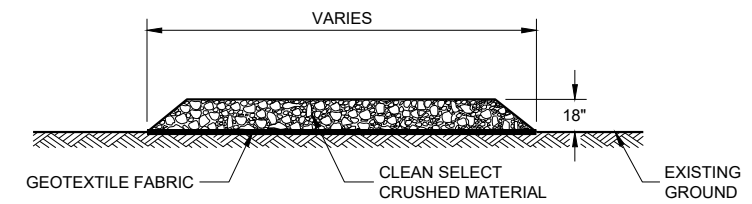
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT.

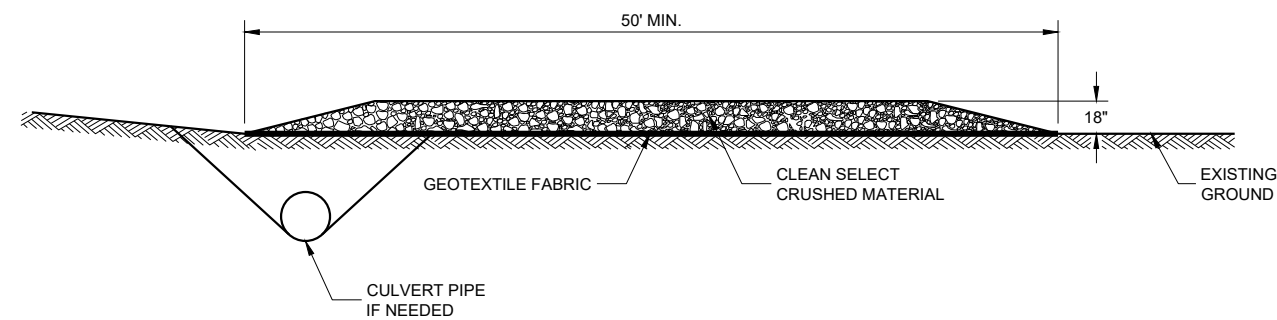
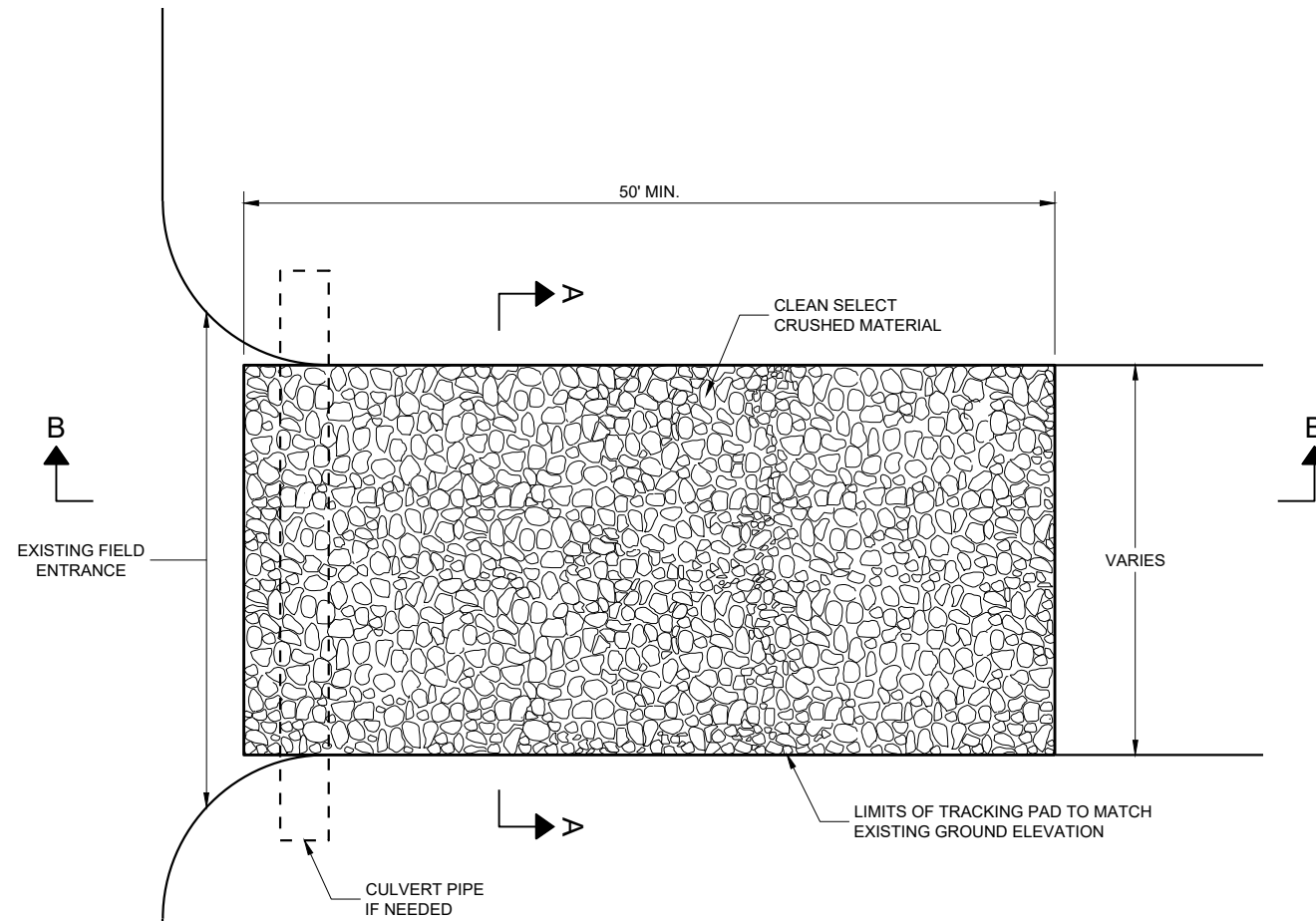
SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FLOWS SHALL BE DIVERTED AWAY, AROUND OR CONVEYED UNDER THE TRACKING PAD.

CULVERT PIPE OR OTHER BMP USED TO DIVERT WATER AWAY, AROUND OR UNDER THE TRACKING PAD SHALL BE DESIGNED TO CONVEY THE 2 YEAR - 24 HOUR EVENT.

THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.



**SECTION A - A**



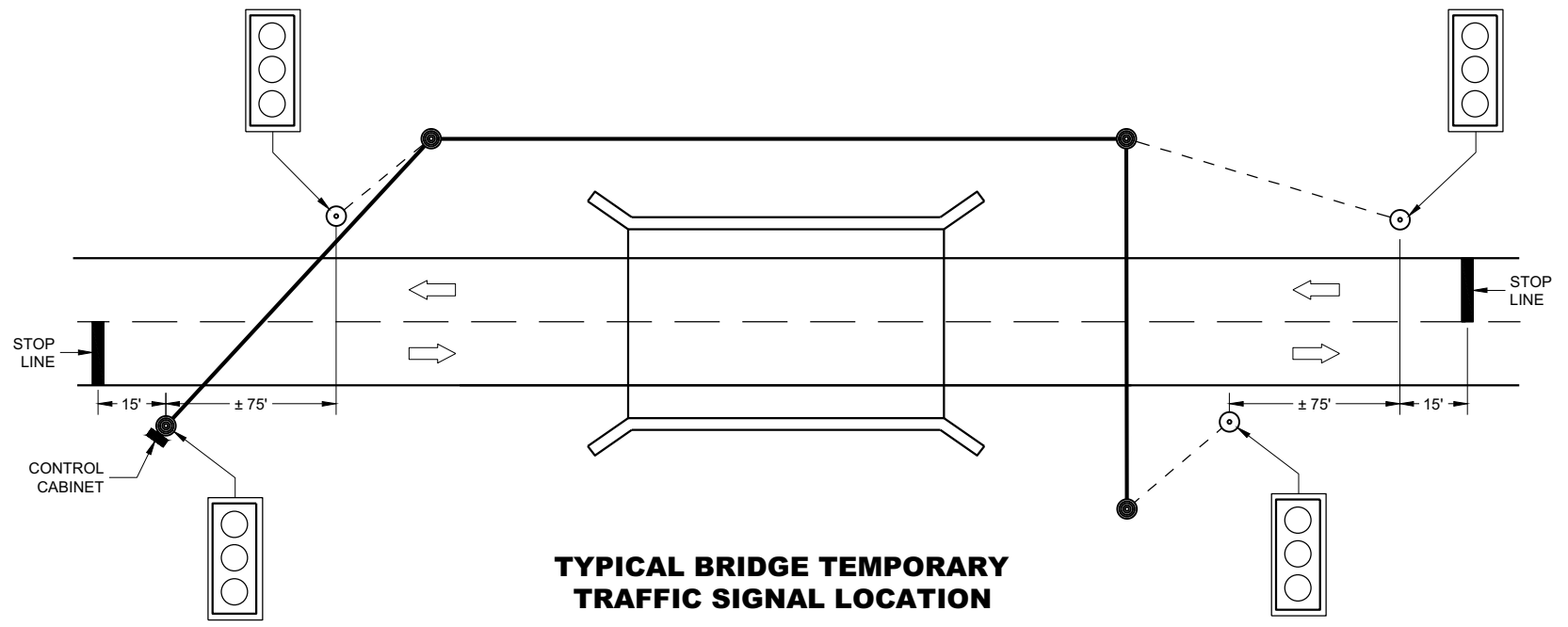
**SECTION B - B**

**TRACKING PAD**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
3/24/2011 DATE /S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA



**TYPICAL BRIDGE TEMPORARY TRAFFIC SIGNAL LOCATION**

**LEGEND**

- WOOD POLE (NON-BREAKAWAY)
- WOOD POST (BREAKAWAY)
- - - SIGNAL CABLE
- SIGNAL CABLE W/MESSENGER
- DIRECTION OF TRAFFIC
- LED TRAFFIC SIGNAL WITH BACKPLATE  
3-12"

**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

POLE MOUNTED TRAFFIC SIGNAL CONTROL CABINET MAY BE MOUNTED ON THE SERVICE POLE IF THE ELECTRICAL UTILITY ALLOWS THE INSTALLATION.

WHEN UTILITY POLES ARE USED TO SPAN THE TEMPORARY OVERHEAD CABLE, WRITTEN PERMISSION MUST BE OBTAINED FROM THE OWNER OF THE POLES AND GIVEN TO THE PROJECT MANAGER. ALL PERTINENT UTILITY AND CODE CLEARANCES SHALL BE MAINTAINED.

WOOD POLES (NON-BREAKAWAY) SHALL BE NO CLOSER TO EDGE OF PAVEMENT THAN OFFSET DISTANCE CHART ALLOWS OR 4 FEET BEHIND PROTECTIVE BARRIER (BEAM GUARD, ETC.).

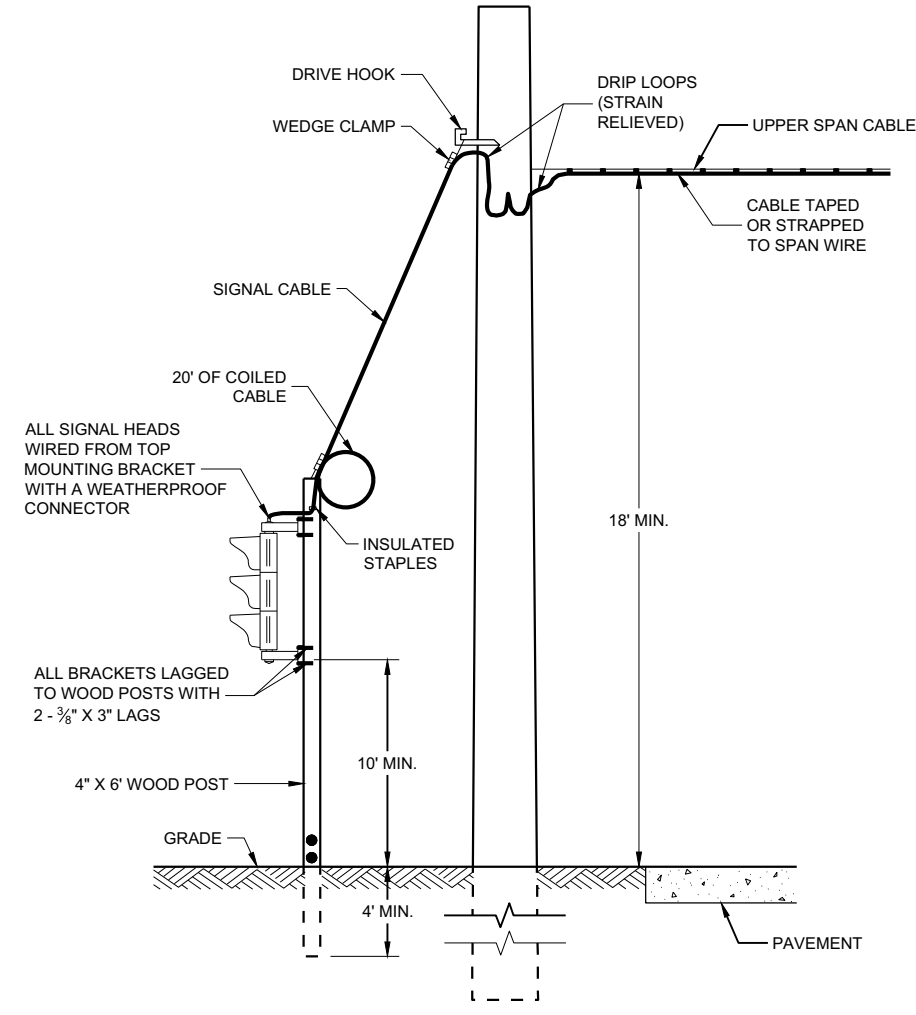
WOOD POSTS (BREAKAWAY) SHALL BE NO CLOSER THAN 2 FEET OUTSIDE OF SHOULDER.

VERTICAL CLEARANCE ETC. PER NEC.

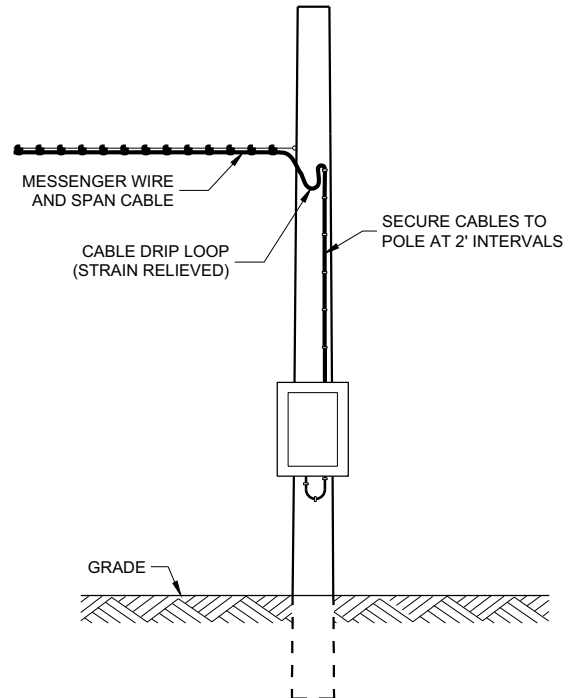
TRAFFIC SIGNAL FACES SHALL BE TYPICALLY PLACED 12 FEET FROM EDGE OF PAVEMENT.

EACH TRAFFIC SIGNAL SHALL HAVE A BACKPLATE.

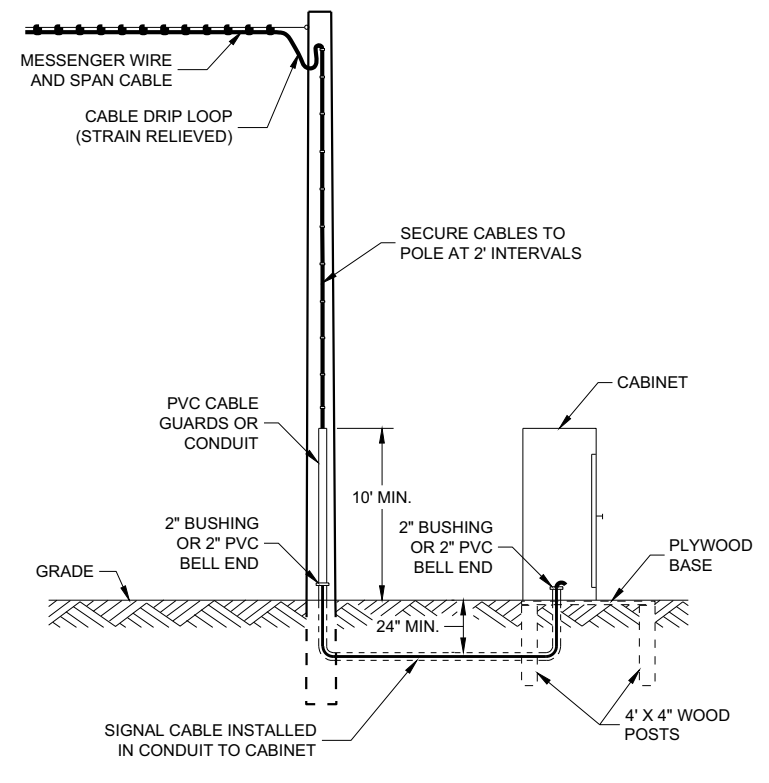
SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15D33.



**TYPICAL DROP TO TRAFFIC SIGNAL FACE**



**POLE MOUNT CABINET INSTALLATION**



**GROUND MOUNT CABINET INSTALLATION**

MINIMUM POLE LENGTHS	CLASS	POLE BURIAL DEPTHS
25'	V	5'
30'	V	6'
35'	IV	7'
40'	IV	8'
45'	IV	9'

OFFSET DISTANCES FOR TEMPORARY NON-BREAKAWAY POLES	
SPEED LIMIT	OFFSET DISTANCE*
GREATER THAN 45 MPH	18 FT
45 MPH OR LESS	12 FT
45 MPH OR LESS W/CURBS	2 FT

\* NOTE: OFFSET MEASURED FROM OUTER EDGE OF OUTSIDE THRU LANE.

**BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
March 2018 /S/ Ahmet Demirelek  
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

6

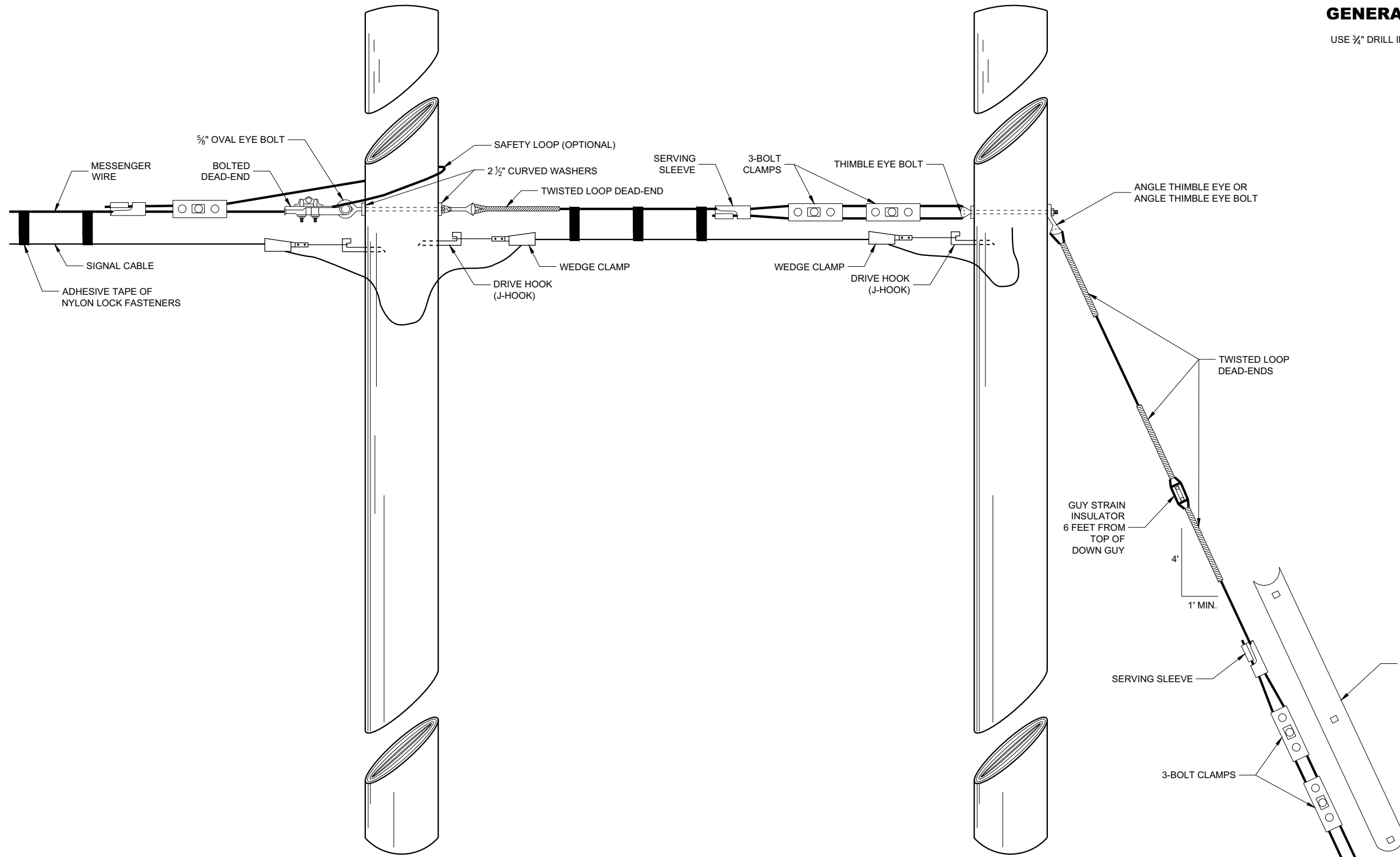
6

SDD09G02 - 05a

SDD09G02 - 05a

**GENERAL NOTES**

USE 3/4" DRILL IN WOOD POLE TO PROVIDE FOR 5/8" BOLTS.



**SPAN WIRE POLE**

**GUY POLE**

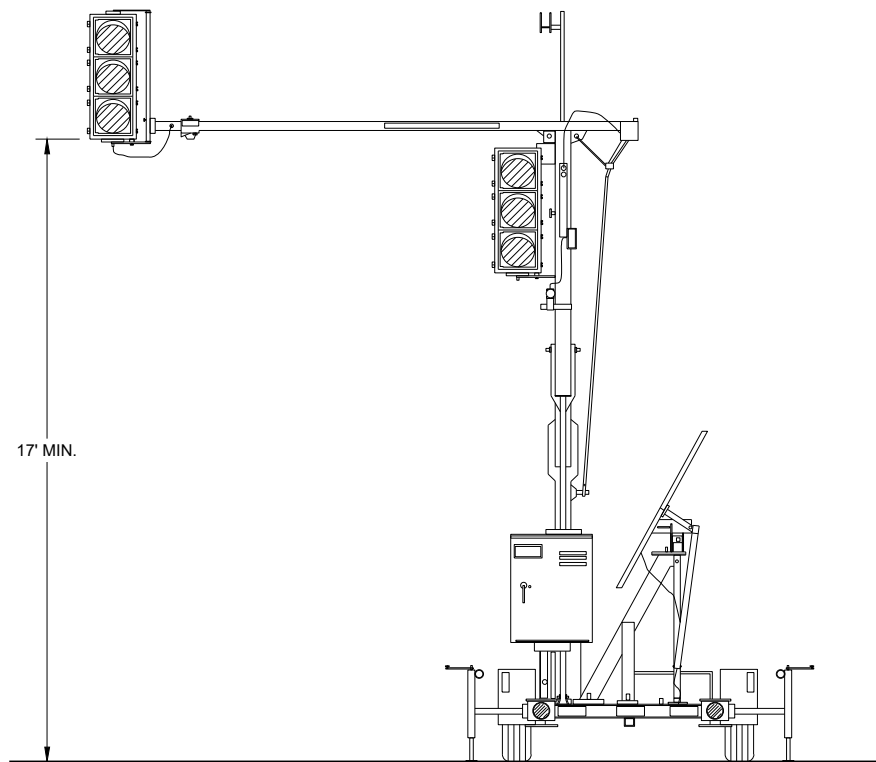
**TYPICAL DEAD-ENDINGS OR GUYING**

**BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
June 2015 DATE /S/ Ahmet Demerbilek  
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

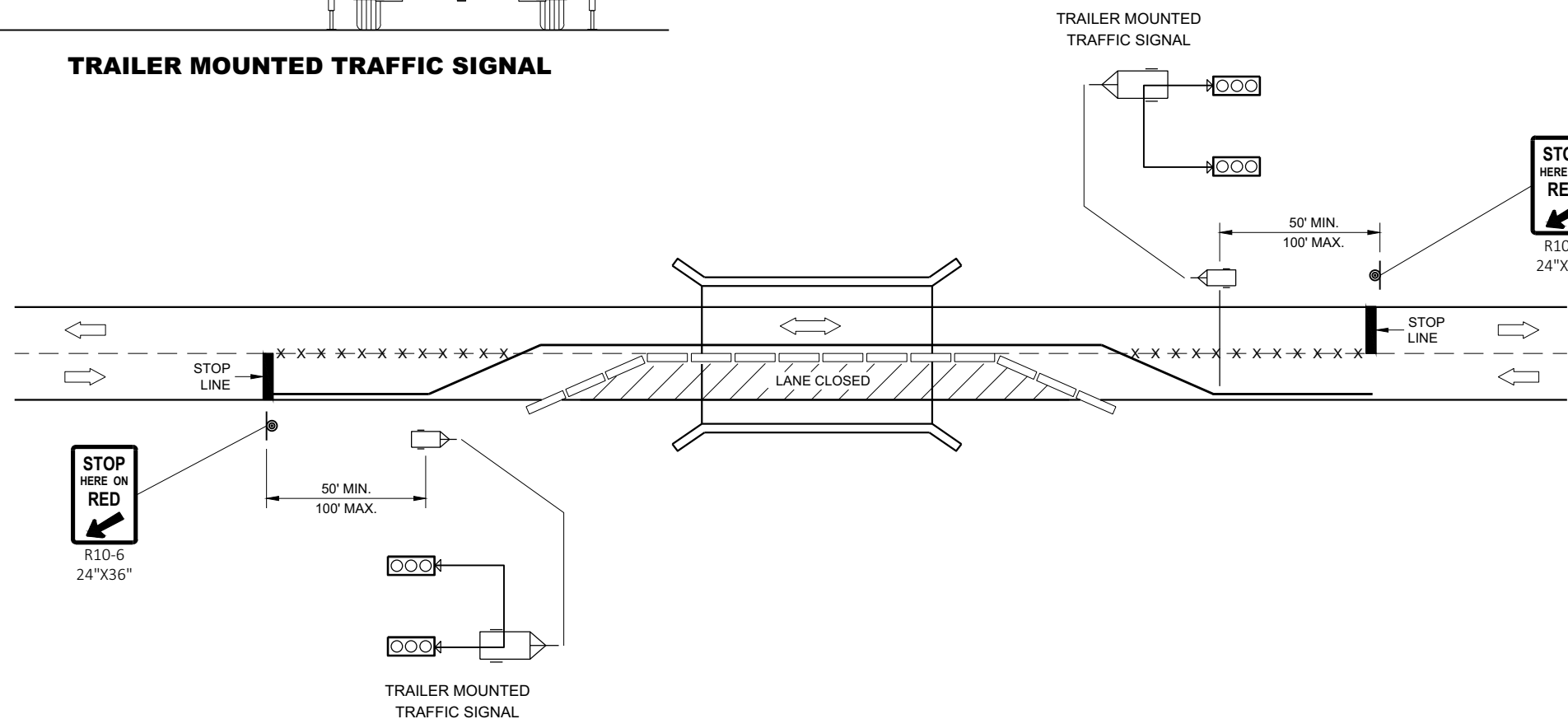


**TRAILER MOUNTED TRAFFIC SIGNAL**

**GENERAL NOTES**






DETAIL OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15D33.



**TYPICAL TRAILER MOUNTED TRAFFIC SIGNAL LOCATION**

**LEGEND**

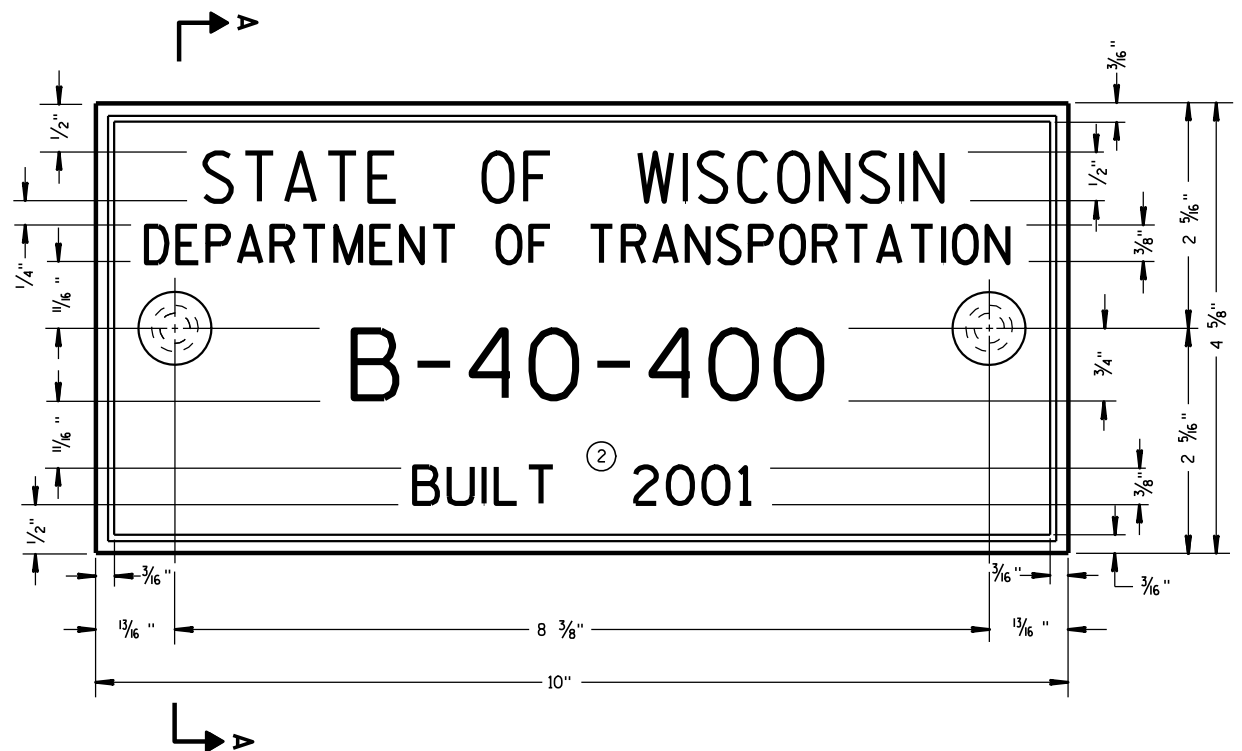
-  POST MOUNTED SIGN
-  TEMPORARY PRECAST CONCRETE BARRIER
-  TRAILER MOUNTED TRAFFIC SIGNAL
-  REMOVE PAVEMENT MARKINGS
-  DIRECTION OF TRAFFIC

**BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
June 2015 /S/ Ahmet Demerbilek  
DATE ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

FHWA



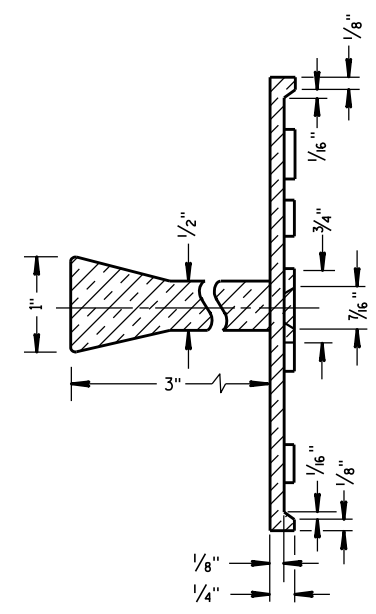
**TYPICAL NAME PLATE**  
(BRIDGES, CULVERTS, AND RETAINING WALLS)

**GENERAL NOTES**

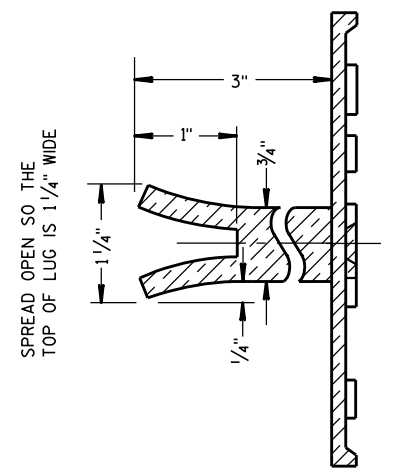
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

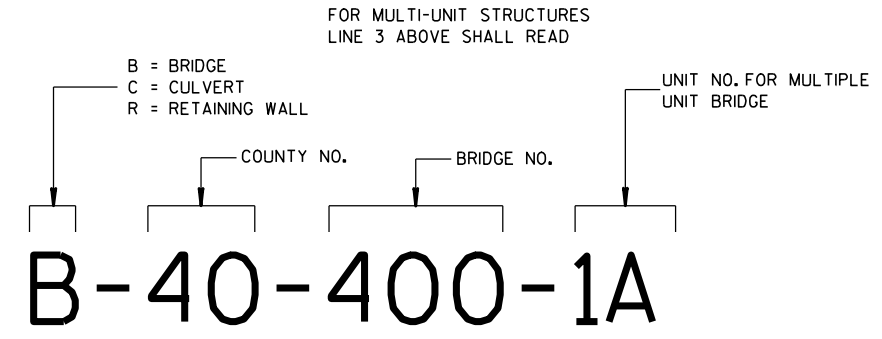
- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



**SECTION A-A**

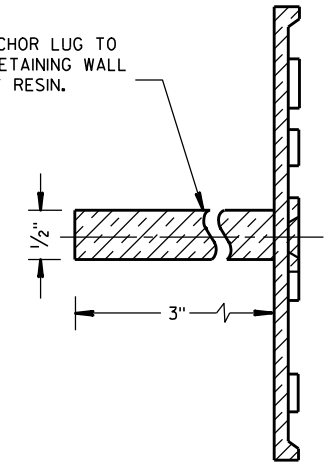


**ALTERNATE LUG**



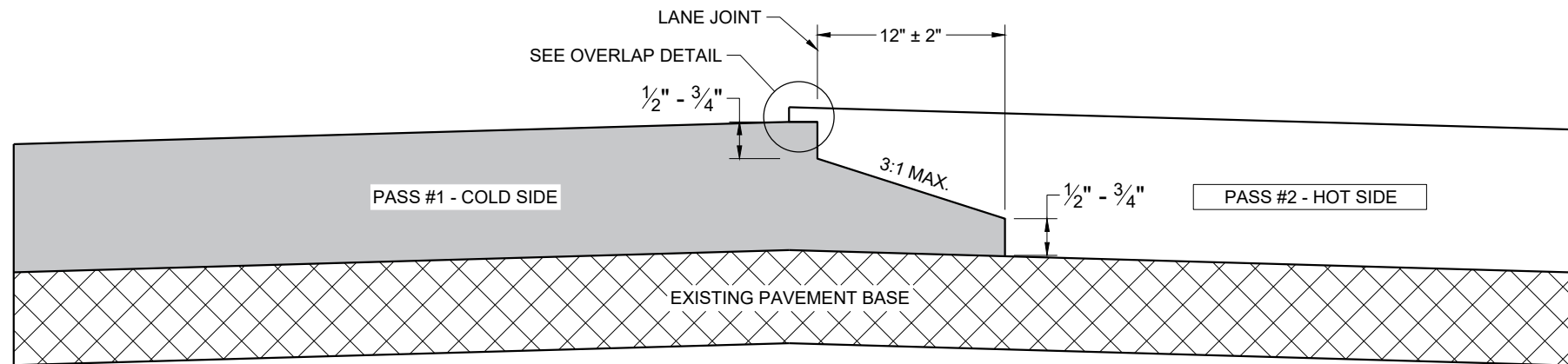
**NUMBERING DESIGNATION  
MULTI-UNIT STRUCTURES**

- ① ADHERE ANCHOR LUG TO PRECAST RETAINING WALL WITH EPOXY RESIN.

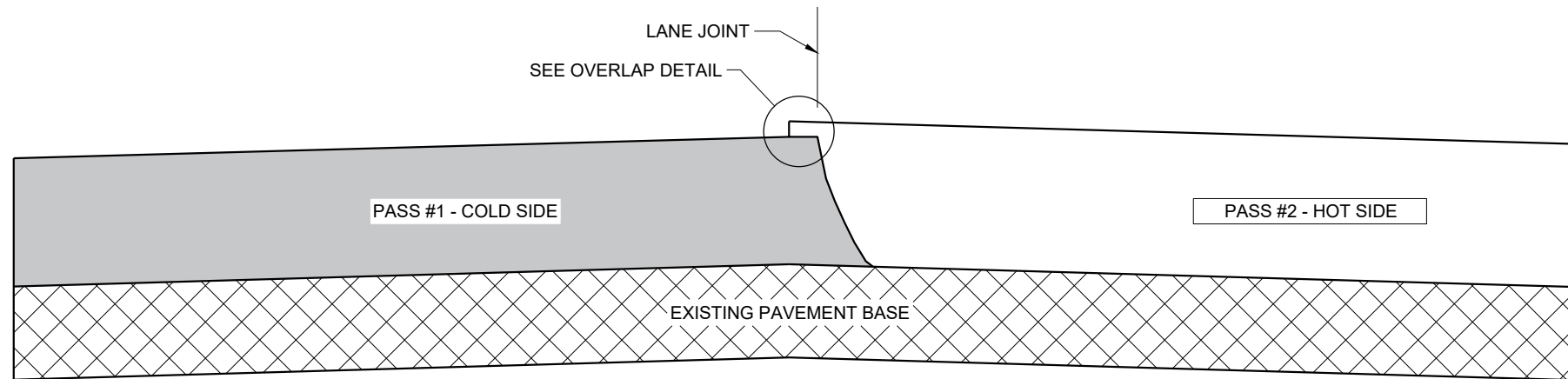


**ALTERNATE LUG**  
(FOR ATTACHMENT TO PRECAST STRUCTURES)

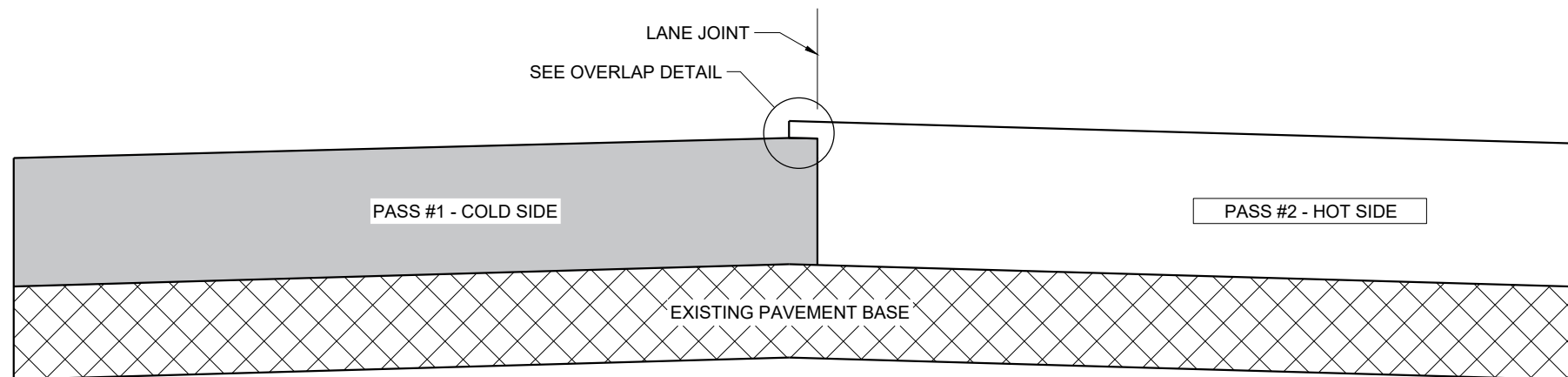
<b>NAME PLATE (STRUCTURES)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE 3/26/10	/S/ Scot Becker CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA	



**TYPICAL PAVEMENT CROSS SECTION  
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT**



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT (MILLED)**

**GENERAL NOTES**

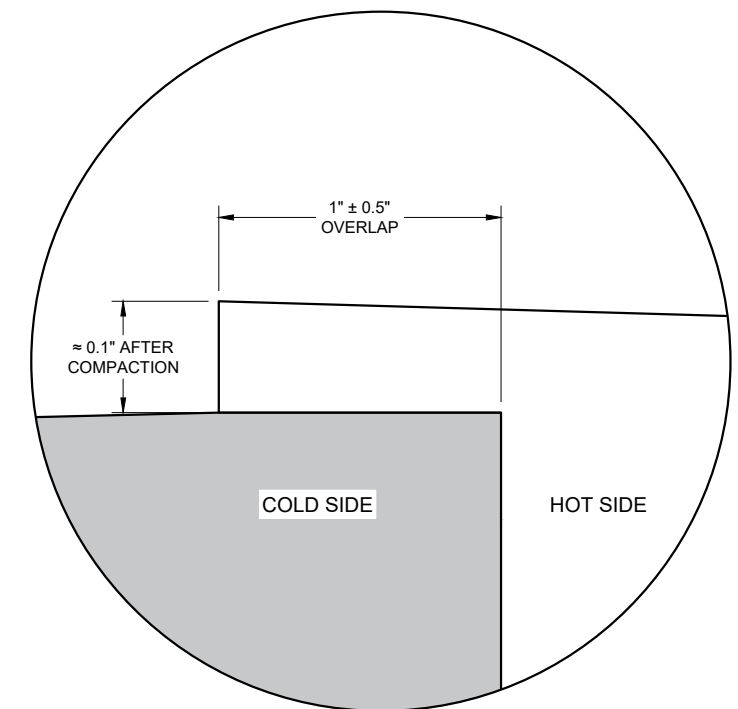
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY  $1" \pm 0.5"$  AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY 0.1" AFTER FINAL COMPACTION. (IT WILL BE FLUSH WHEN PAVING IN ECHELON.)

ONLY REMOVE THE LONGITUDINAL NOTCHED WEDGE JOINT FOR SMA PAVEMENT OR AS DIRECTED BY THE ENGINEER TO ADDRESS SPECIFIC LENGTHS OF JOINT DAMAGED BY TRAFFIC.

WHEN MILLING BACK OR REMOVING ANY LONGITUDINAL JOINT, LIMIT THE MATERIAL REMOVED TO 2" FROM THE TOP NOTCH OR FROM THE VERTICAL JOINT EDGE ON THE COLD SIDE OF THE JOINT.

USE LONGITUDINAL MILLED JOINT AS PLANS SHOW OR THE AS THE ENGINEER DIRECTS.



**OVERLAP DETAIL (TYPICAL)**

6

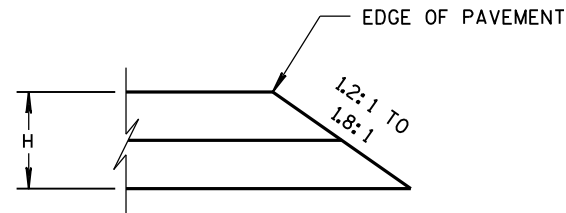
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SDD 13C19 - 03

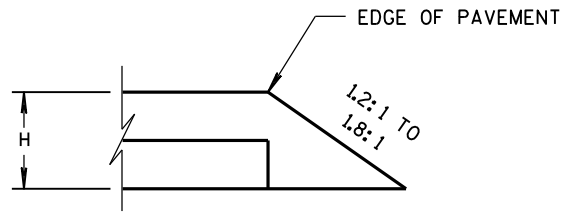
SDD 13C19 - 03

<b>HMA LONGITUDINAL JOINTS</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2020 DATE	/S/ Steven Hefel HMA PAVEMENT ENGINEER
FHWA	

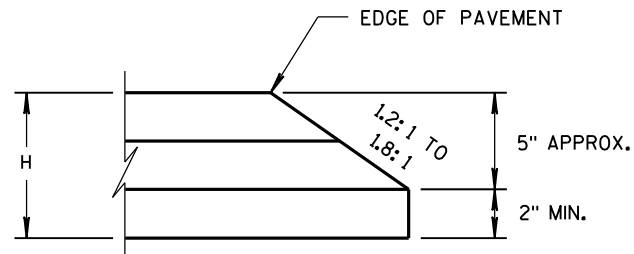




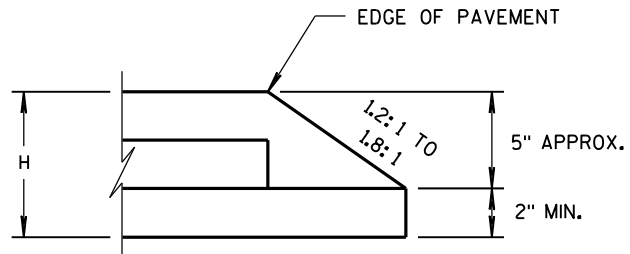
CONSTRUCTED WITH FINAL TWO LAYERS  
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER  
FOR H 5" OR LESS

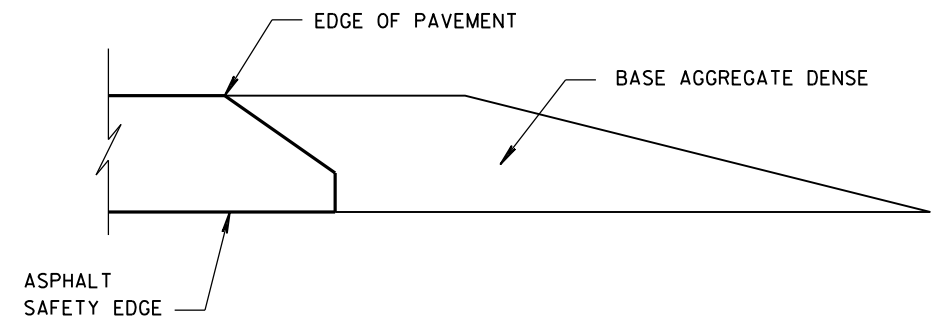


CONSTRUCTED WITH FINAL TWO LAYERS  
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER  
FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

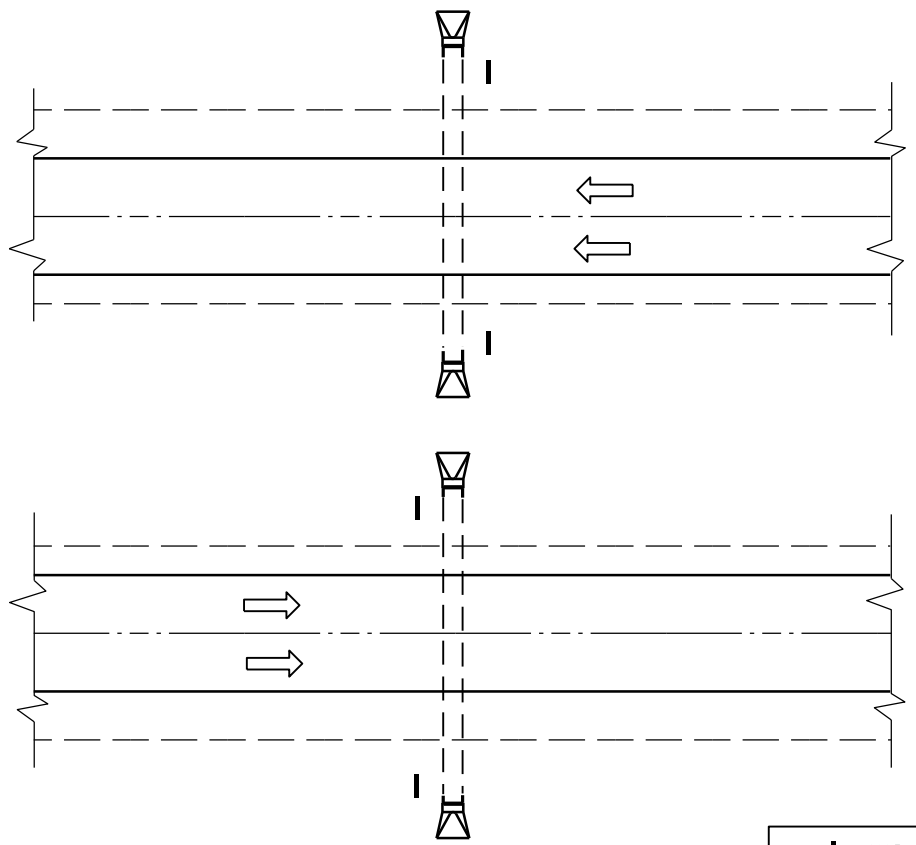
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6

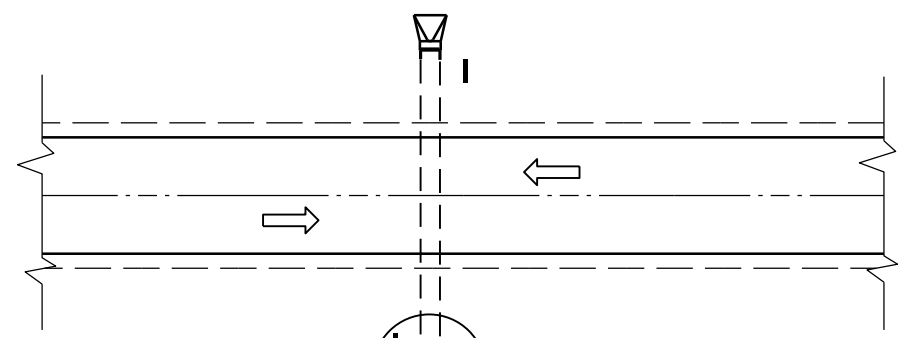
S.D.D. 14 B 29-1

S.D.D. 14 B 29-1

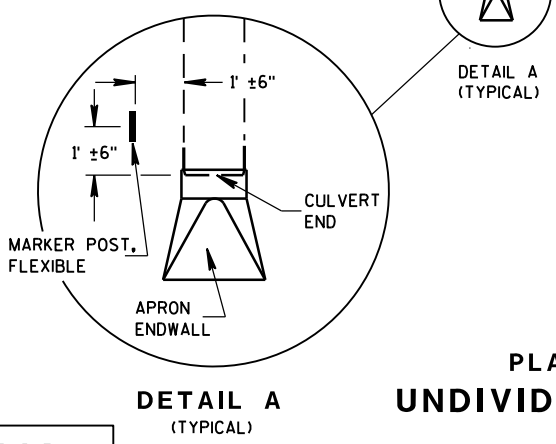
SAFETY EDGE <sub>SM</sub>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE	/s/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



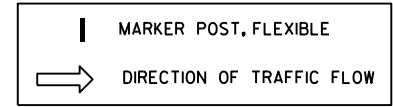
PLAN VIEW  
DIVIDED HIGHWAY



PLAN VIEW  
UNDIVIDED HIGHWAY

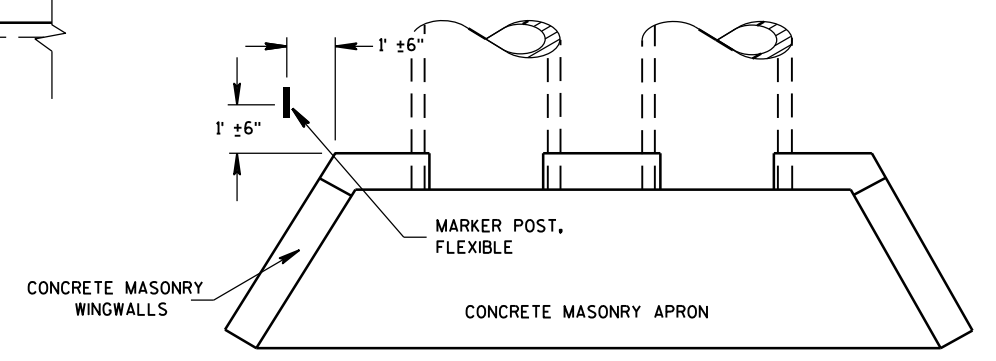


DETAIL A  
(TYPICAL)



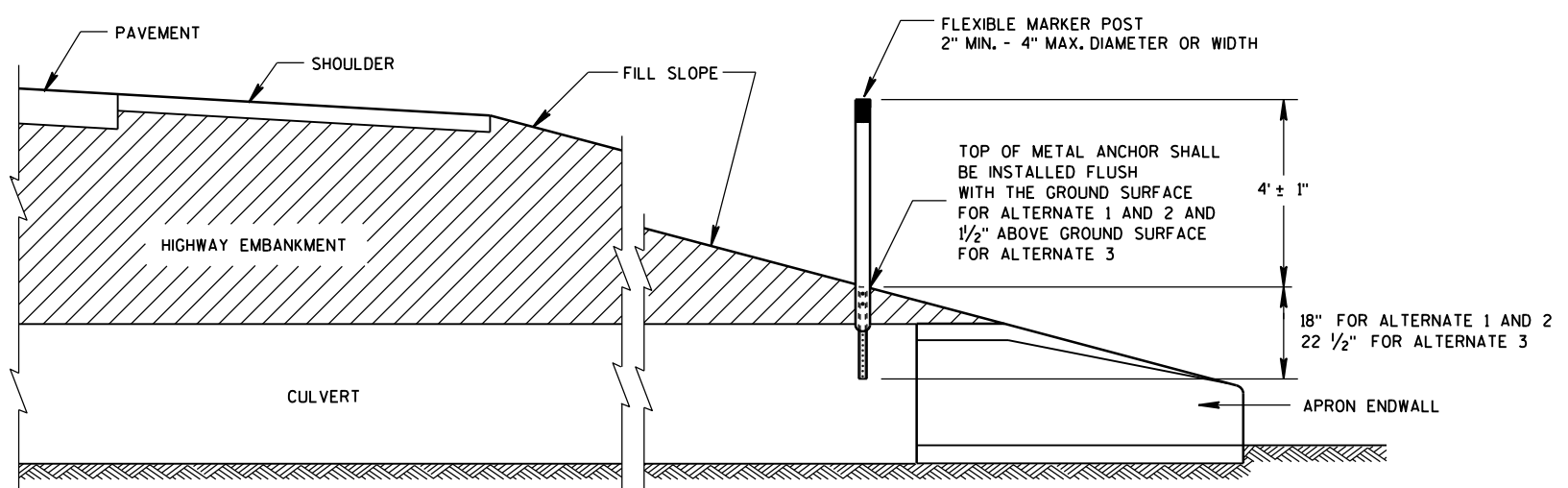
**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW  
CONCRETE MASONRY ENDWALLS FOR  
CULVERT PIPE AND PIPE ARCH

**FLEXIBLE MARKER POST LOCATION**



CROSS SECTION  
FLEXIBLE MARKER POST

**FLEXIBLE MARKER POST  
FOR CULVERT END**

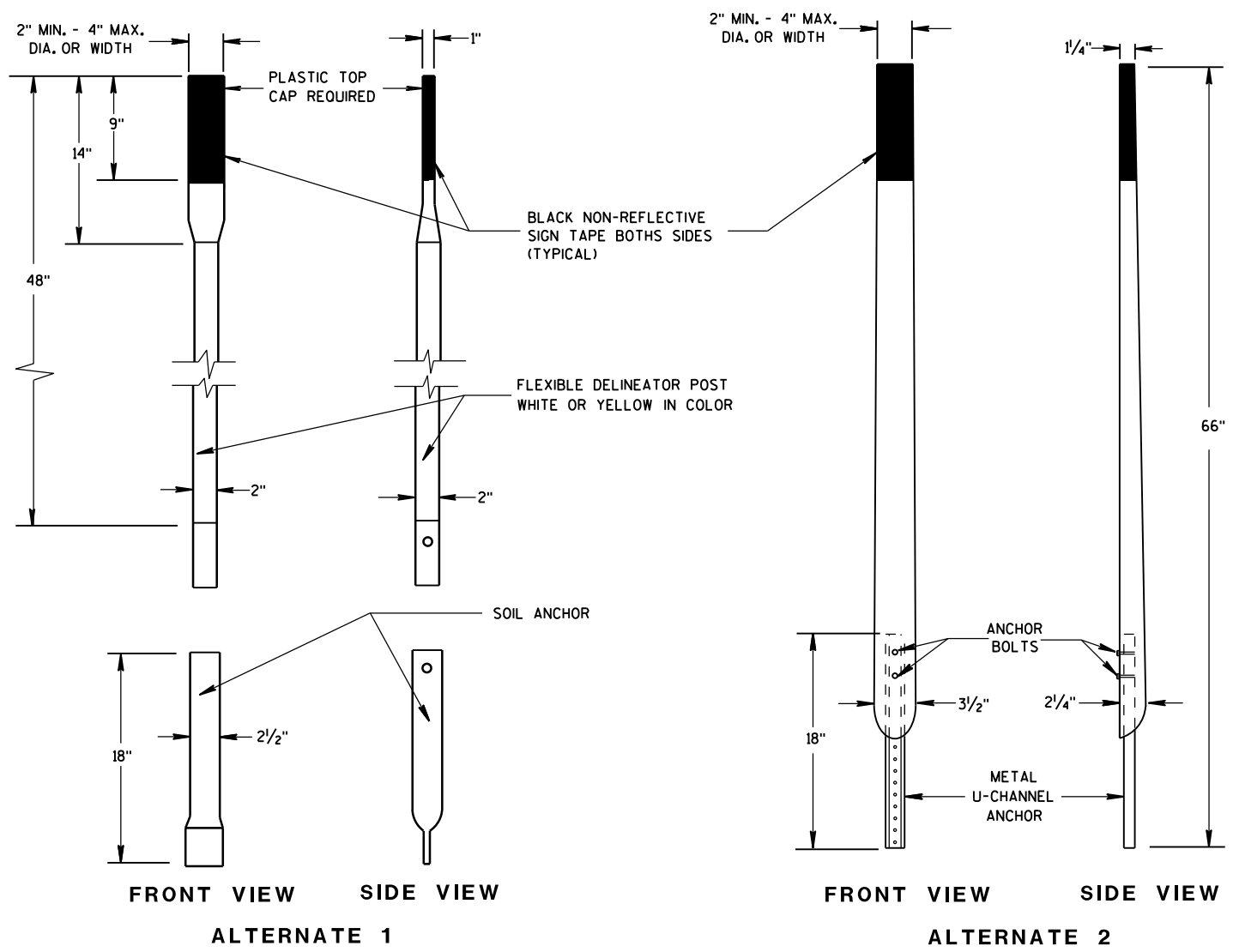
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

6

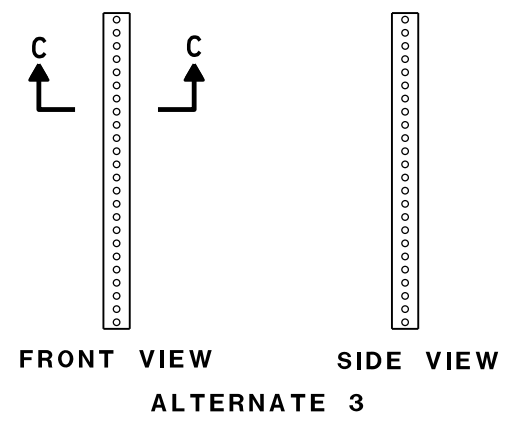
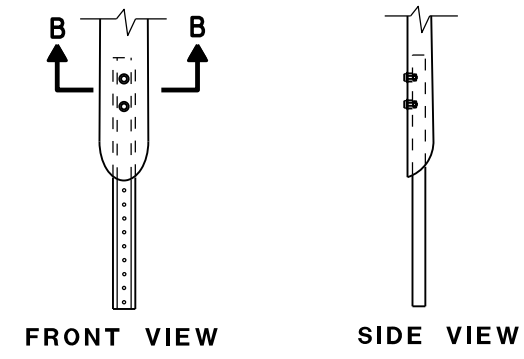
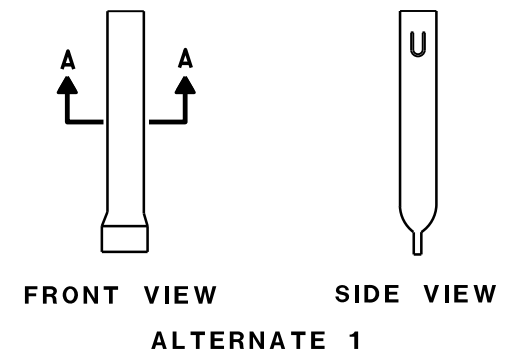
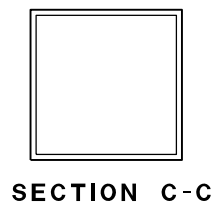
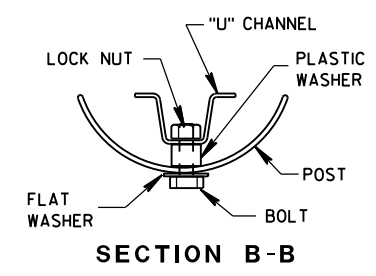
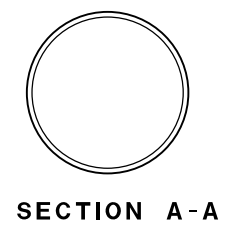
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S.D.D. 15 A 3-2a

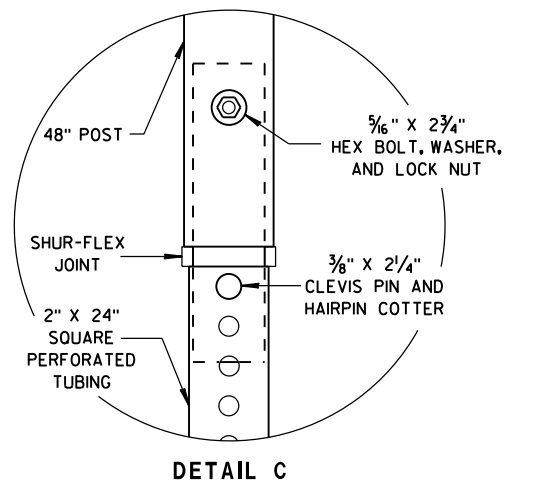
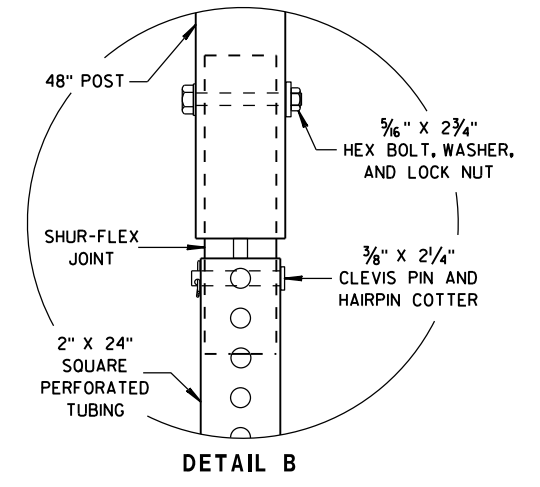
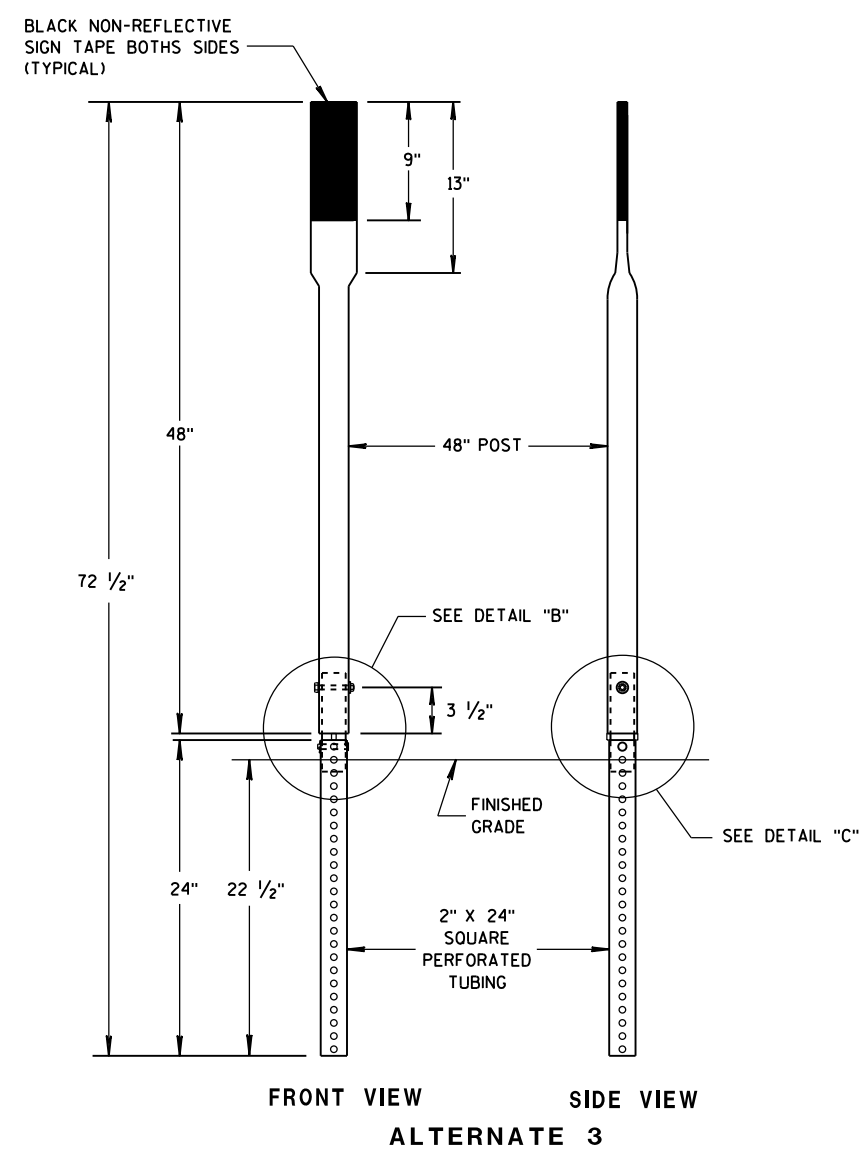
S.D.D. 15 A 3-2a



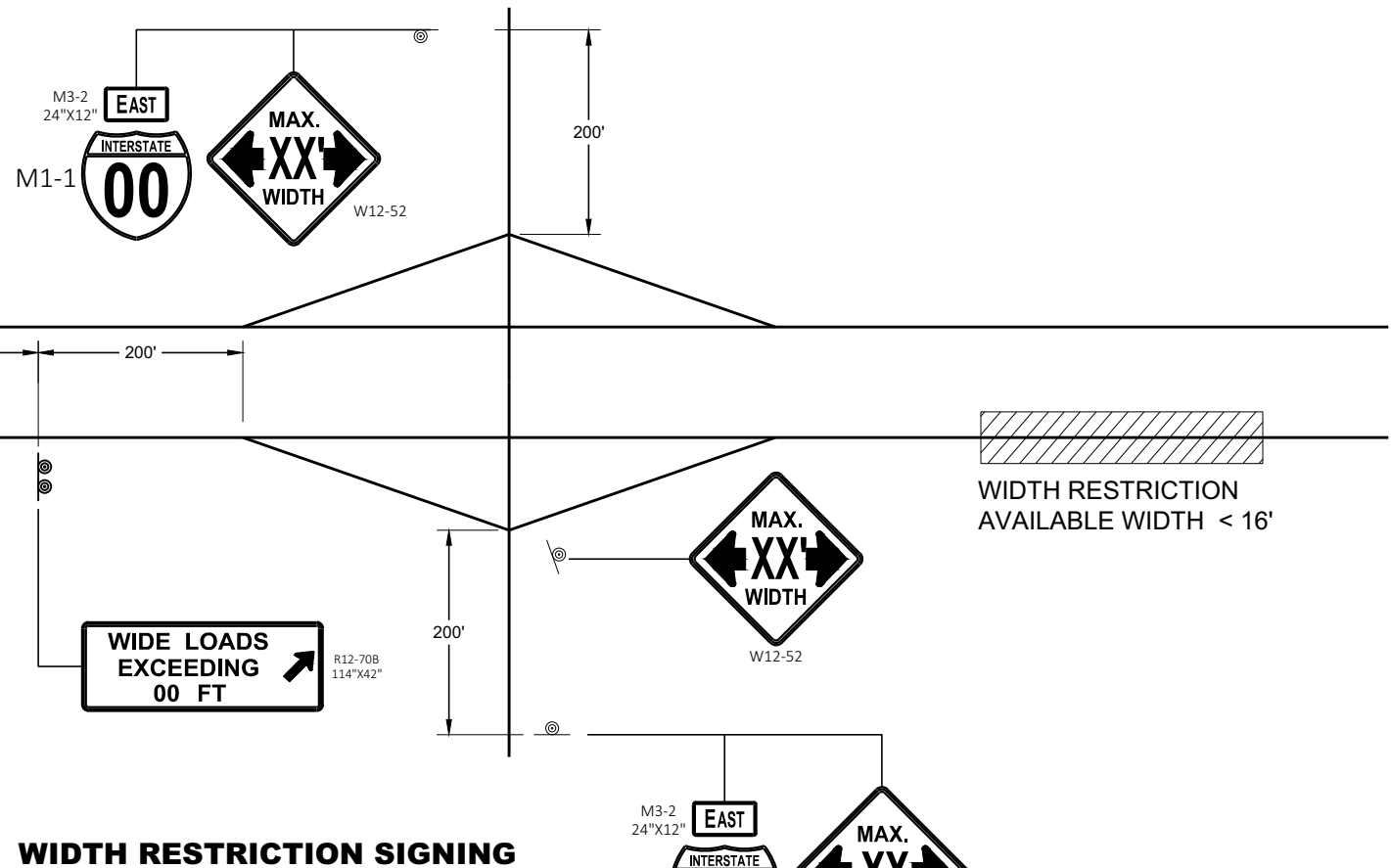
**FLEXIBLE MARKER POSTS**



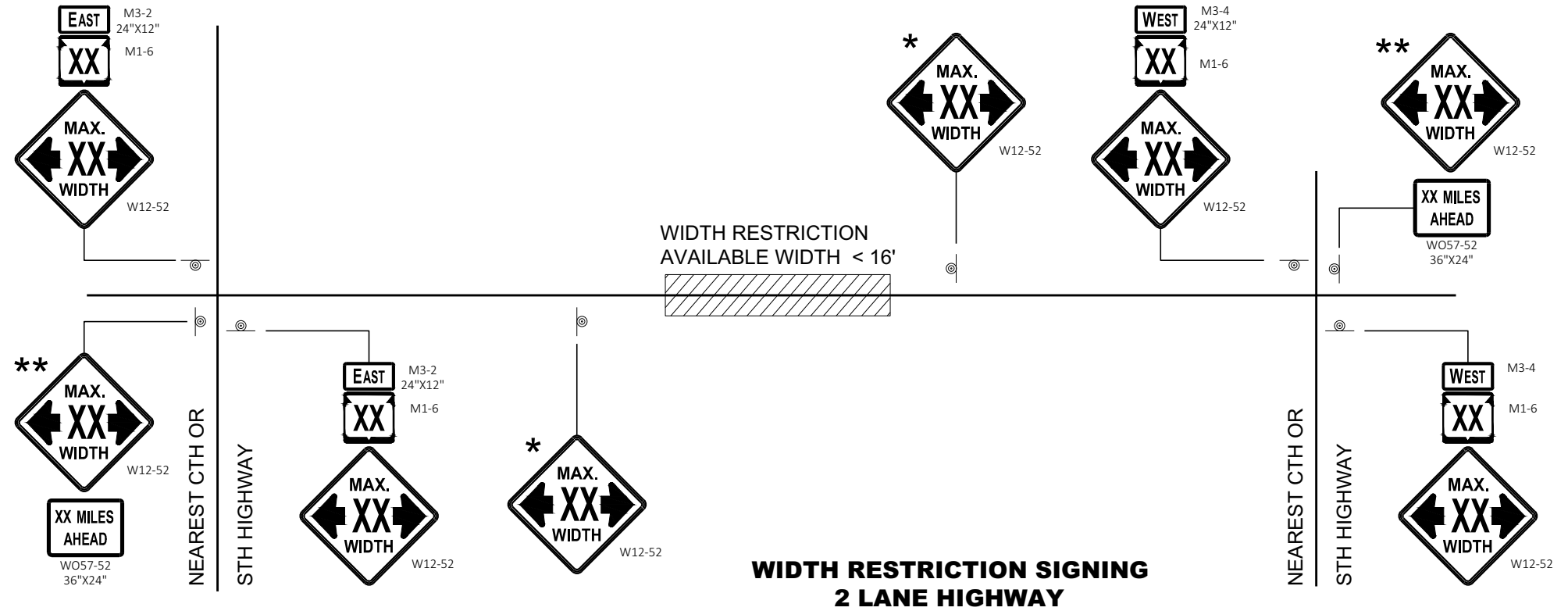
**FLEXIBLE MARKER POST ANCHORS**



<b>FLEXIBLE MARKER POST FOR CULVERT END</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/1/2012 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	



**WIDTH RESTRICTION SIGNING**



**WIDTH RESTRICTION SIGNING  
2 LANE HIGHWAY**

**LEGEND**

⊙ SIGN ON PERMANENT SUPPORT

**GENERAL NOTES**

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

WIDTH ON SIGN TO BE APPROXIMATELY ONE FOOT LESS THAN AVAILABLE WIDTH.

\* PLACE 500 FEET AFTER THE W20 - 1A AND 500 FEET BEFORE ADDITIONAL SIGNS FOR ROADWAYS WITH A PRE - CONSTRUCTION SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200 FOOT TYPICAL SPACING.

\*\* SIGN SHALL BE VISIBLE FROM ROADWAY.

\*\*\* ADDITIONAL SIGNS NEEDED IF THERE IS AN ON RAMP BETWEEN SIGNS.



WIDTH ON SIGN TO BE APPROX. 1 - FOOT LESS THAN AVAILABLE WIDTH

**ADVANCED WIDTH RESTRICTION SIGNING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER  
FHWA

**GENERAL NOTES**

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.




ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

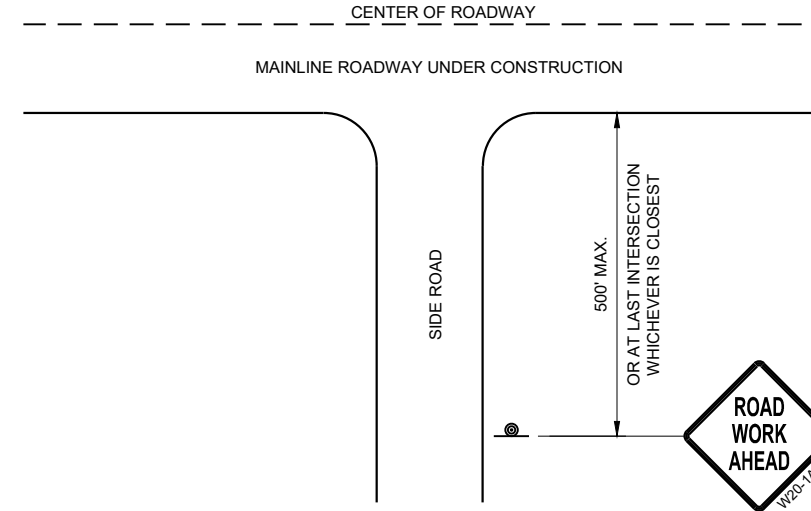
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS REESTABLISHED.

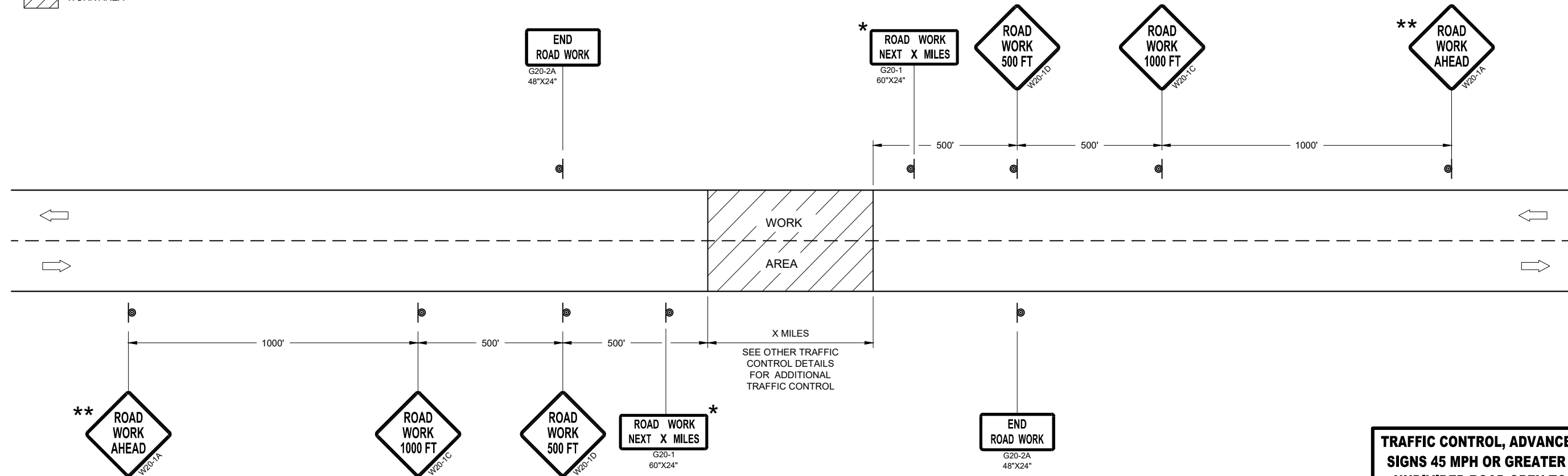
- \* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- \*\* PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

**LEGEND**

-  SIGN ON PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC
-  WORK AREA



**TYPICAL SIDE ROAD APPROACH  
WARNING SIGN DETAIL**



**TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER**

**TRAFFIC CONTROL, ADVANCE WARNING  
SIGNS 45 MPH OR GREATER TWO-WAY  
UNDIVIDED ROAD OPEN TO TRAFFIC**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED \_\_\_\_\_ /S/ Andrew Heidtke  
DATE July 2018 WORK ZONE ENGINEER




FHWA

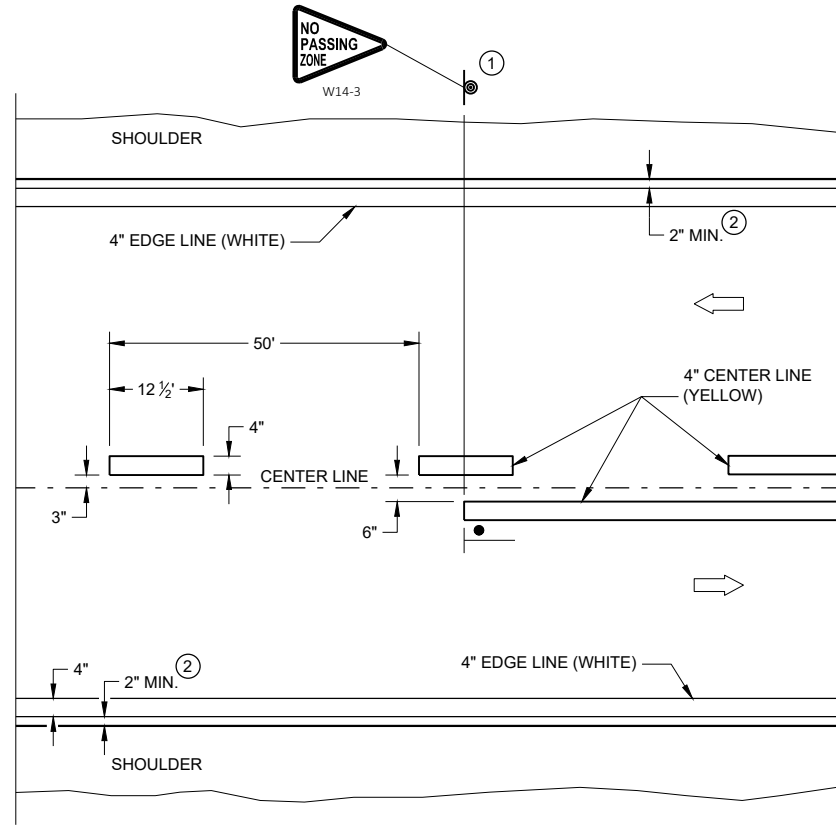
**GENERAL NOTES**

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

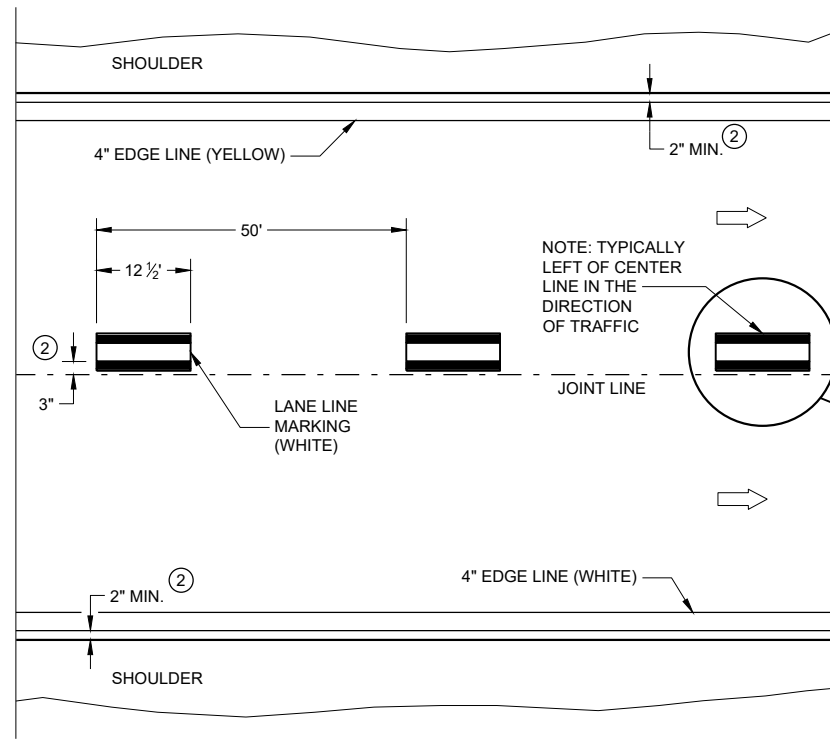
- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

**LEGEND**

-  "T" MARKING
-  SIGN ON PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC

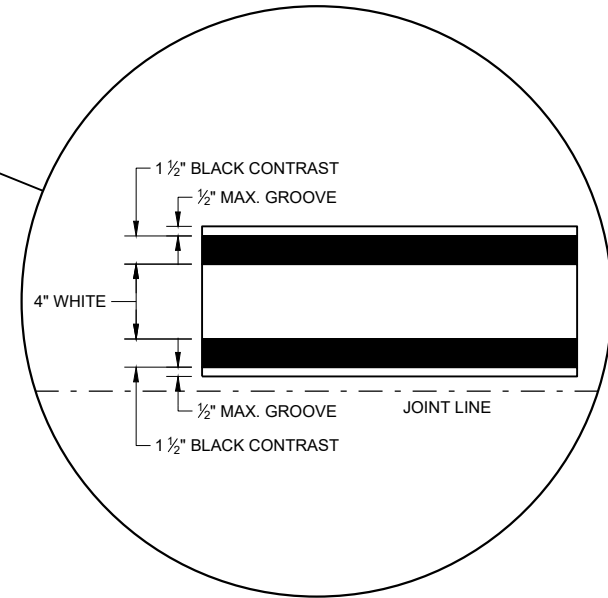


**TWO WAY TRAFFIC**



**ONE WAY TRAFFIC**

**PERMANENT PAVEMENT MARKING**



6

6

SDD 15C08 - 22a

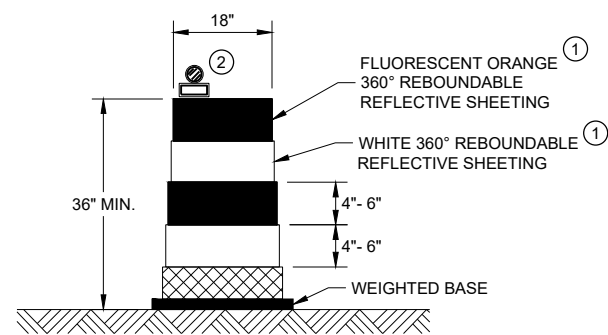
SDD 15C08 - 22a

**PERMANENT LONGITUDINAL PAVEMENT MARKINGS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

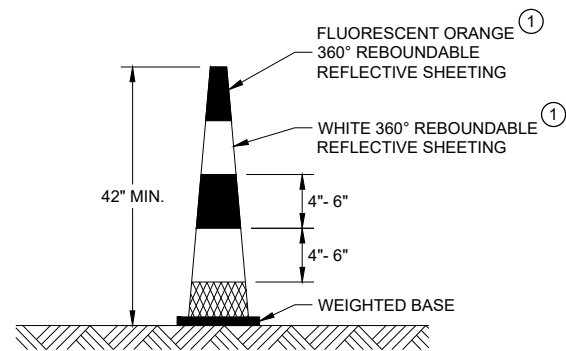
APPROVED  
DATE: May 2022 /S/ Jeannie Silver  
STATEWIDE SIGNING AND MARKING ENGINEER

FHWA



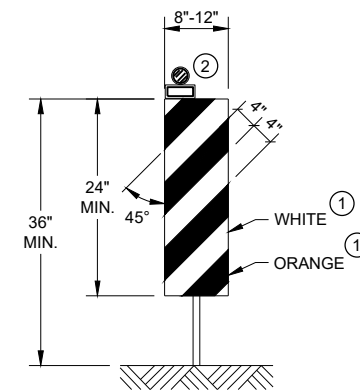
**DRUM**

BALLAST WIDTHS  
RANGE FROM 24"-36"



**42" CONE**

DO NOT USE IN TAPERS  
½ SPACING OF DRUMS  
BALLAST WIDTHS  
RANGE FROM 14"-20"

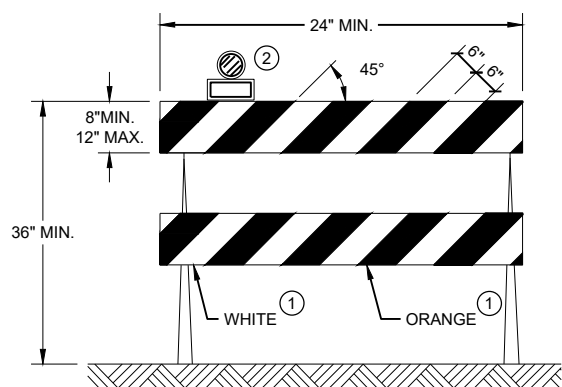


**VERTICAL PANEL**

THE STRIPES SHALL SLOPE DOWNWARD TO  
THE TRAFFIC SIDE FOR CHANNELIZATION.

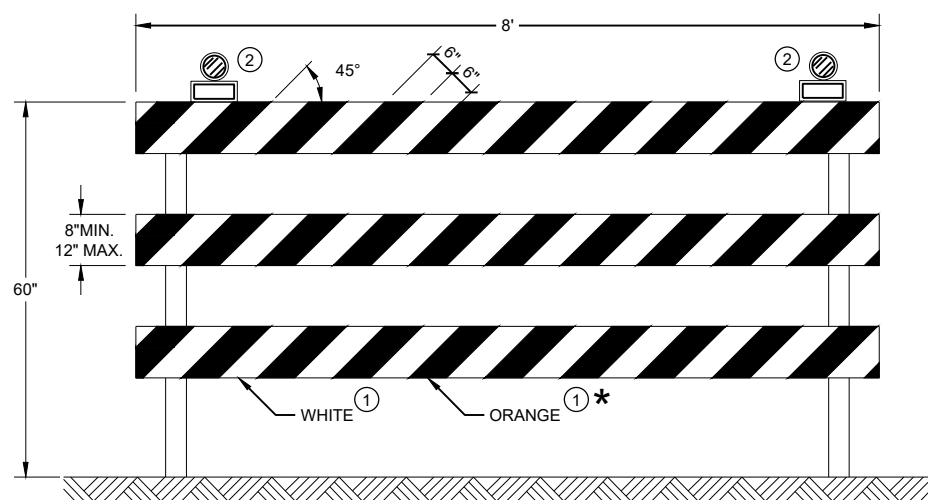
**GENERAL NOTES**

- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.



**TYPE II BARRICADE**

FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES  
MAY BE USED. ALL STRIPES SHALL SLOPE DOWNWARD  
TO THE TRAFFIC SIDE FOR CHANNELIZATION.








**TYPE III BARRICADE**

IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP  
TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

\* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

<b>CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2022 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

**LEGEND**

-  SIGN ON PORTABLE OR PERMANENT SUPPORT
-  TEMPORARY PORTABLE RUMBLE STRIP ARRAY
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

**GENERAL NOTES**

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS, DEVICES, AND LOCATION OF ALL FLAGGERS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

**FLAGGING**

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

**TEMPORARY PORTABLE RUMBLE STRIPS**

UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

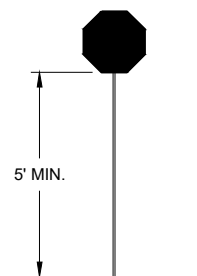
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSE ACROSS THE LANE AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.



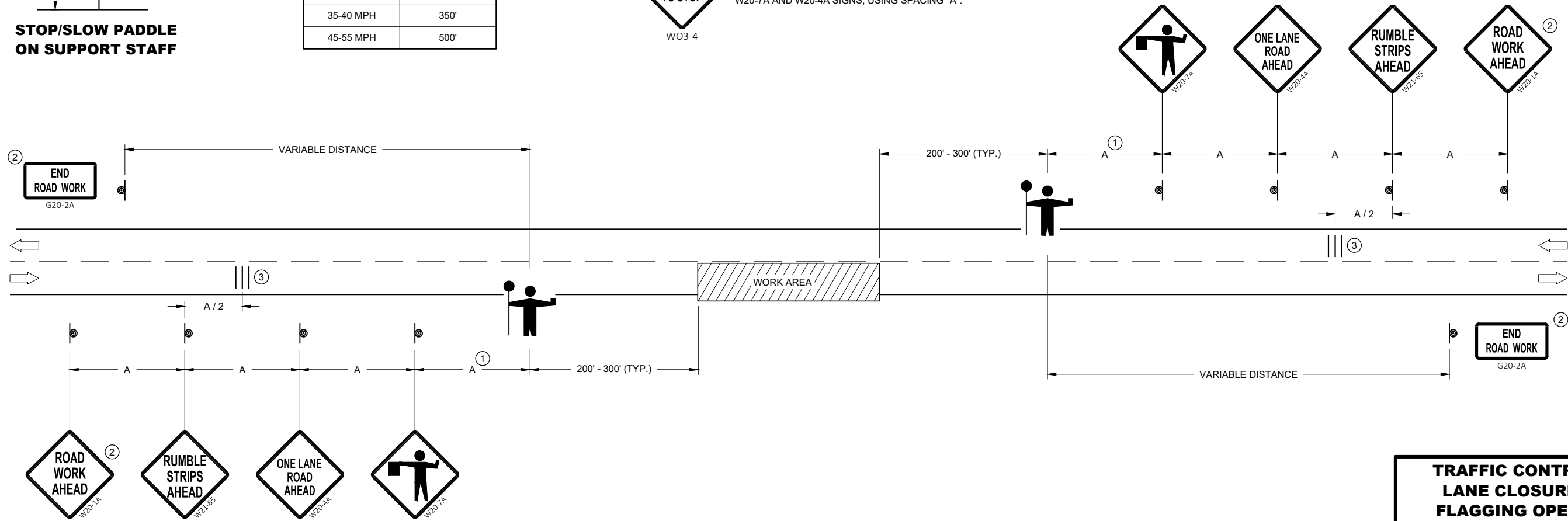
**STOP/SLOW PADDLE ON SUPPORT STAFF**

**SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE**

SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



USE OF WO3-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".









**TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE: May 2022 /S/ Andrew Heidtke  
WORK ZONE ENGINEER



**GENERAL NOTES**

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL CONE 42-INCH
-  TRAFFIC CONTROL DRUM
-  TEMPORARY PORTABLE RUMBLE STRIP ARRAY
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  **AFAD** AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

**GENERAL NOTES**

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS, DEVICES, AND LOCATION OF ALL FLAGGERS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

**FLAGGING**

IF THE AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) STOPS WORKING, FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

- ① SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- ② IF FLAGGERS ARE PHYSICALLY NEEDED TO FLAG, REPLACE WO3-4 SIGNS WITH W20-7A SIGNS.

**TEMPORARY PORTABLE RUMBLE STRIPS**

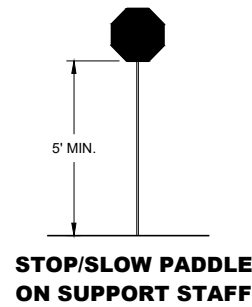
UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

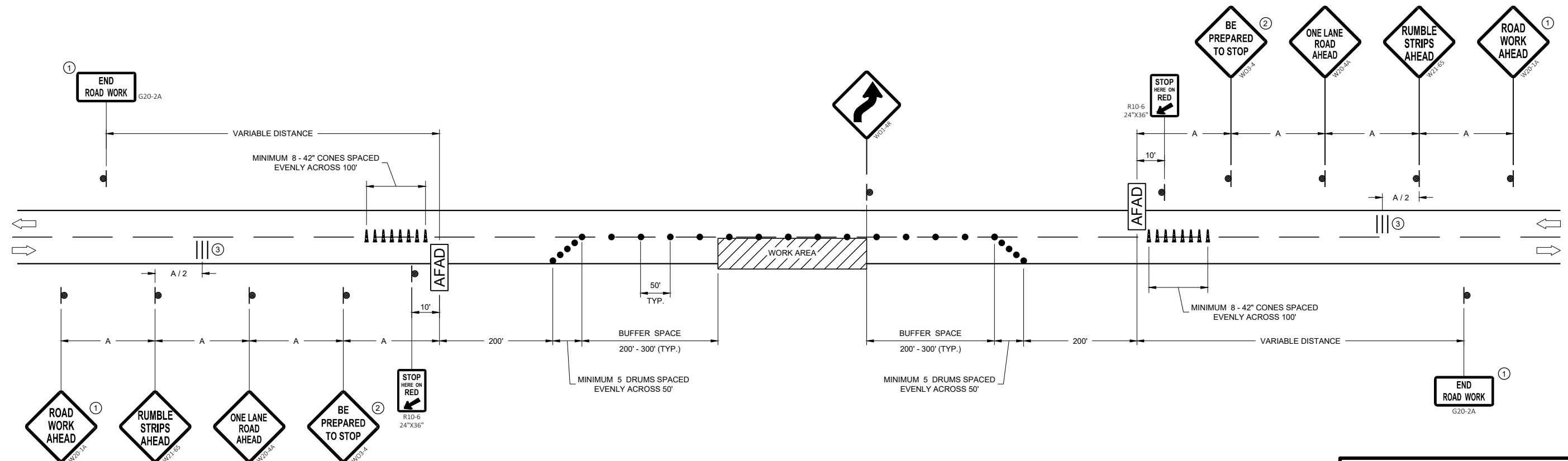
DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.

③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSELY AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER.



**SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE**

SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



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SDD 15C12 - 09b

SDD 15C12 - 09b





**TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2022 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

FHWA

**LEGEND**

- V1 LEAD VEHICLE
- V2 MARKING VEHICLE
- V3 SHADOW VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC
-  FLASHING ARROW PANEL (CAUTION)

**GENERAL NOTES**

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

ALL VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE SPECIFIED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL AND HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

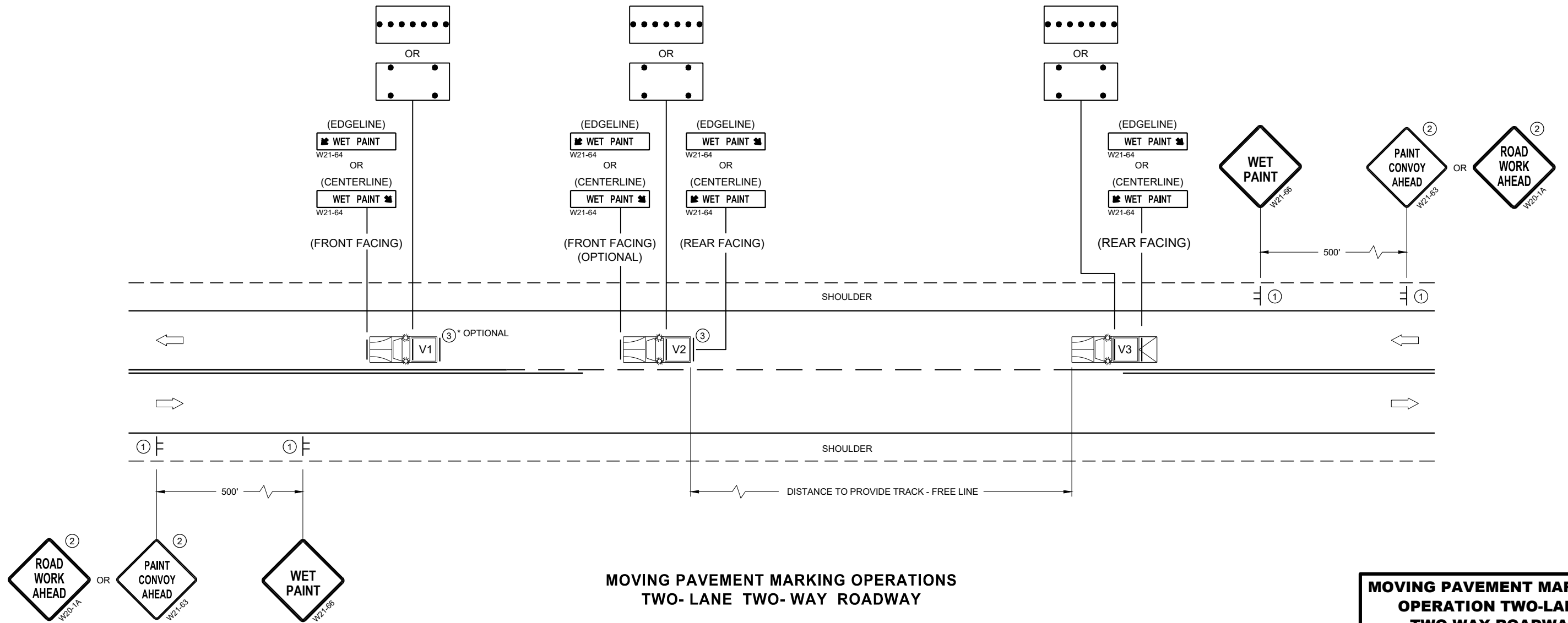
CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLE AT 100 FOOT SPACING. CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

CONES SHALL BE A MINIMUM OF 28" FOR WET PAVEMENT MARKING.

- ① SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.
- ② IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1A OR W21-63 ARE NOT REQUIRED.
- ③ V1 AND V2 CAN BE SWITCHED SO THAT THE MARKER IS THE LEAD VEHICLE.

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**MOVING PAVEMENT MARKING OPERATIONS  
TWO-LANE TWO-WAY ROADWAY**

SDD 15C19-08a

SDD 15C19-08a

<b>MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2023 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

**LEGEND**

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM
-  DIRECTION OF TRAFFIC
-  WORK ZONE

**GENERAL NOTES**

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY THE REGIONAL TRAFFIC UNIT.

"WO" SIGN IS THE SAME AS "W" SIGN EXCEPT THE BACKGROUND IS ORANGE.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

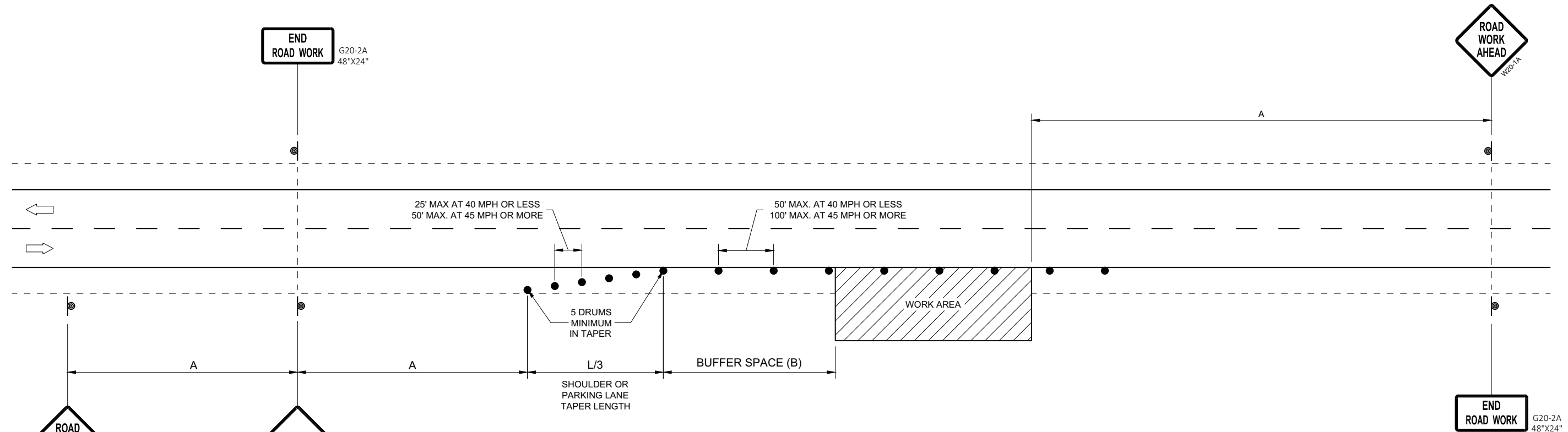
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.


6

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POSTED SPEED LIMIT PRIOR TO WORK STARTING (MPH)	ADVANCE WARNING SIGN SPACING (A) FEET	SHOULDER TAPER L / 3 W, LATERAL OFFSET (FT)						BUFFER SPACE (B) FEET
		3	4	5	6	7	8	
25	200'	10	14	17	21	24	28	55
30	200'	15	20	25	30	35	40	85
35	350'	20	27	34	40	47	54	120
40	350'	26	35	44	53	62	70	170
45	500'	45	59	74	89	104	119	220
50	500'	50	66	83	99	116	132	280
55	500'	54	73	91	109	127	145	335'

OR  
IF TRAFFIC CONTROL DEVICES ENCROACH ONTO TRAVELED WAY, USE



**TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2020 DATE /S/ Andrew Heidtke  
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER

FHWA

SDD 15D28 - 04

SDD 15D28 - 04

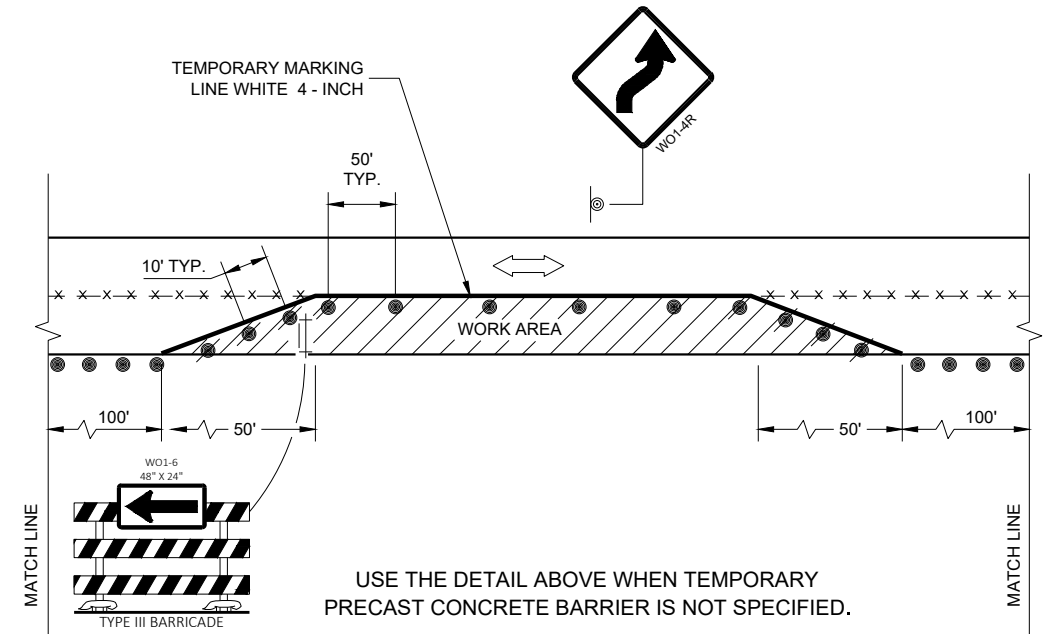
**LEGEND**

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLAGS, 16" X 16" MIN. (ORANGE)
- REMOVING PAVEMENT MARKING
- DIRECTION OF TRAFFIC
- ASPHALTIC PAVEMENT WIDENING
- CONCRETE BARRIER TEMPORARY PRECAST
- TEMPORARY SIGNAL. SEE SDD 09G02 FOR EXACT PLACEMENT

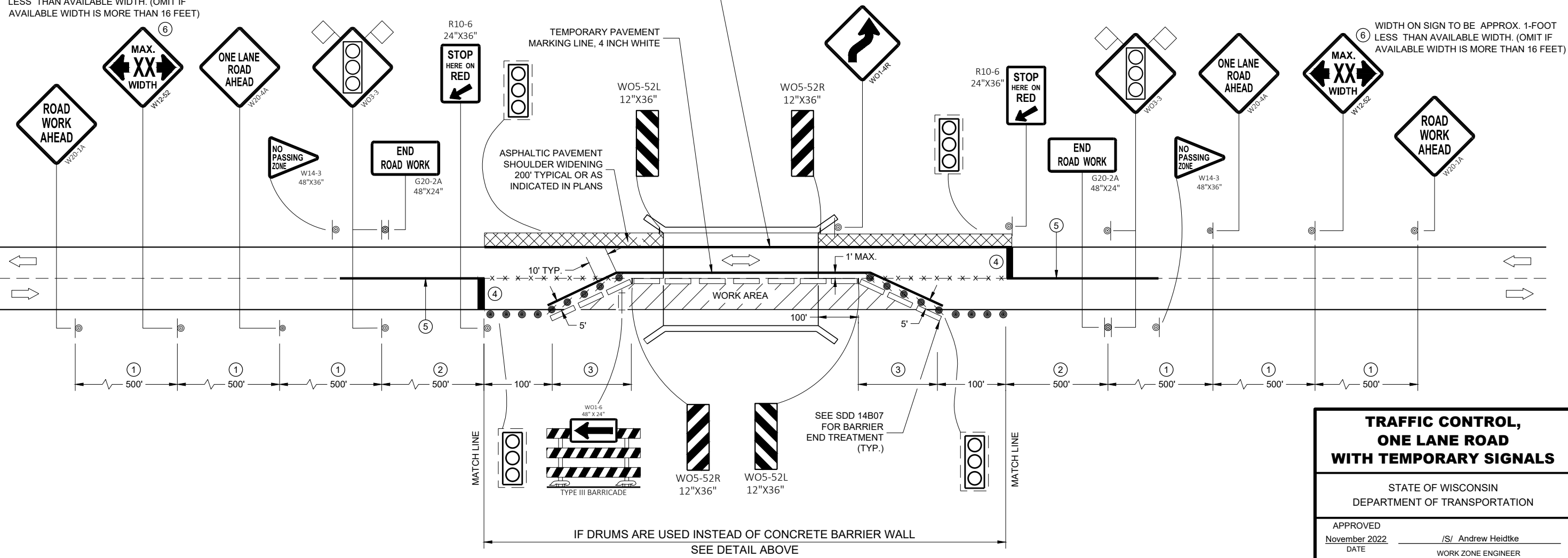
WIDTH ON SIGN TO BE APPROX. 1-FOOT LESS THAN AVAILABLE WIDTH. (OMIT IF AVAILABLE WIDTH IS MORE THAN 16 FEET)

**GENERAL NOTES**

- THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE..
- THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.
- ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED OR AS APPROVED BY THE ENGINEER.
- REMOVE PAVEMENT MARKING AND PLACE TEMPORARY PAVEMENT MARKING LINES IF THE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.
- INSTALL OVERHEAD TEMPORARY SIGNAL HEADS ABOVE THE MIDDLE OF THE TRAVEL LANE THEY ARE CONTROLLING.
- ① 500 FOOT SPACING SHOWN IS FOR ROADWAYS WITH A PRE-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE. FOR 35 - 40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25 - 30 MPH, USE 200 FOOT TYPICAL SPACING.
  - ② USE 300 FOOT SPACING IF THE PRE - CONSTRUCTION REGULATORY SPEED IS 35 MPH OR LESS.
  - ③ DIMENSION DETERMINED BY CBTP TAPER FROM EDGE LINE TO TANGENT SECTION OF THE ROAD.
  - ④ TEMPORARY PAVEMENT MARKING LINE, 18 INCH WHITE STOP LINE.
  - ⑤ 700 FOOT TEMPORARY PAVEMENT MARKING LINE, 4 INCH DOUBLE YELLOW . WHEN THE DISTANCE FOR THE PRECEDING NO - PASSING ZONE IS LESS THAN THE MINIMUM DISTANCE BETWEEN ZONES AS INDICATED IN THE SPECIFICATIONS, THE TWO ZONES SHALL BE CONNECTED.
  - ⑥ SEE SDD 15C02 - SHEET "F" FOR ADVANCED WIDTH RESTRICTION SIGNING.



TEMPORARY PAVEMENT MARKING LINE, 4 INCH WHITE (STOPLINE TO STOPLINE). REMOVE EXISTING EDGELINE AND OFFSET THE TEMPORARY EDGELINE IF THE DISTANCE FROM THE EDGELINE TO CONCRETE BARRIER WALL IS LESS THAN 9 FEET.

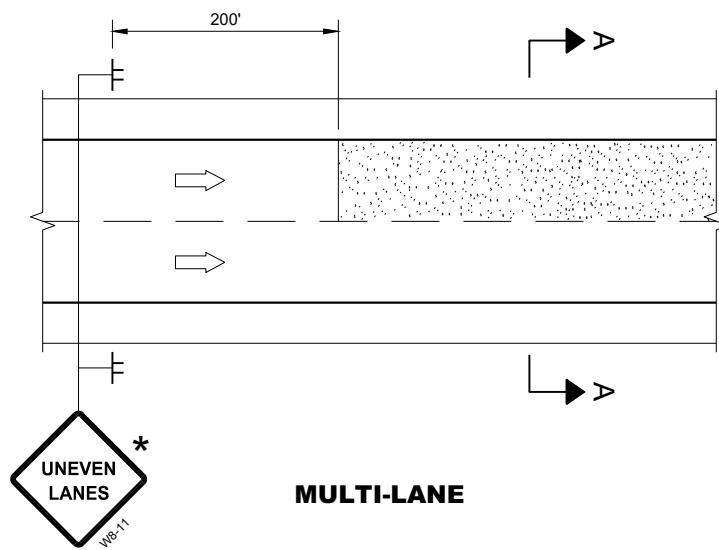


**TRAFFIC CONTROL,  
ONE LANE ROAD  
WITH TEMPORARY SIGNALS**

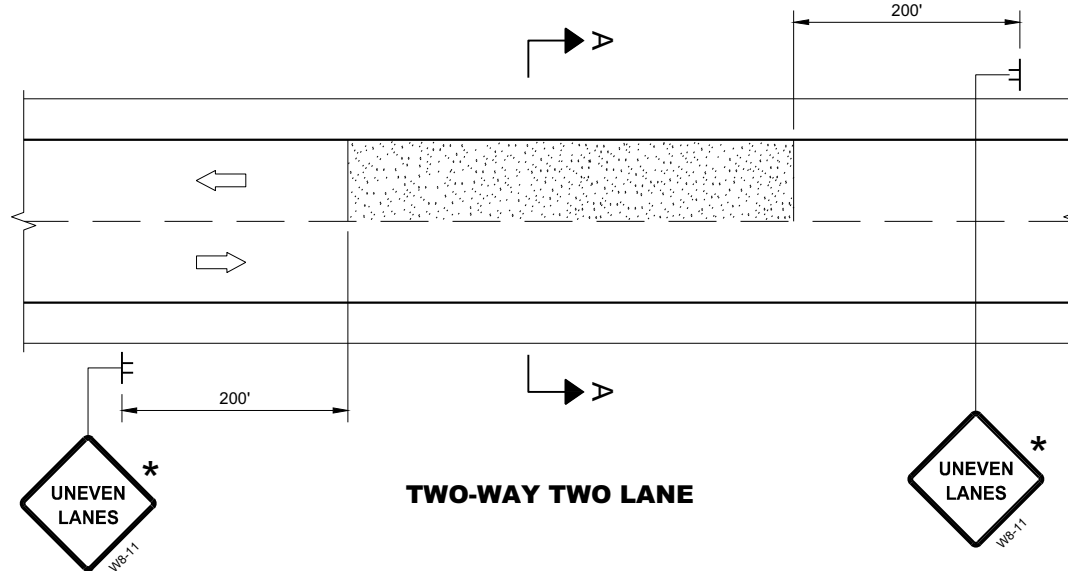
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2022 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

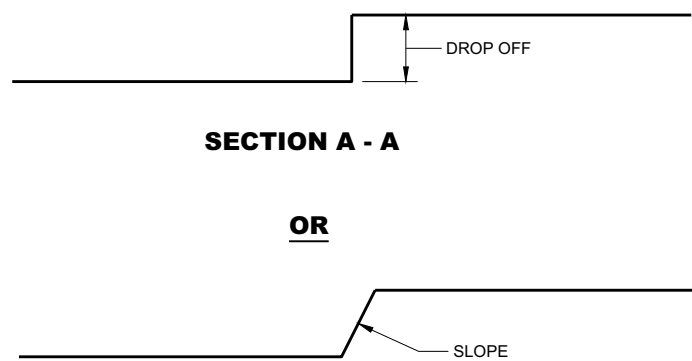
FHWA



**MULTI-LANE**



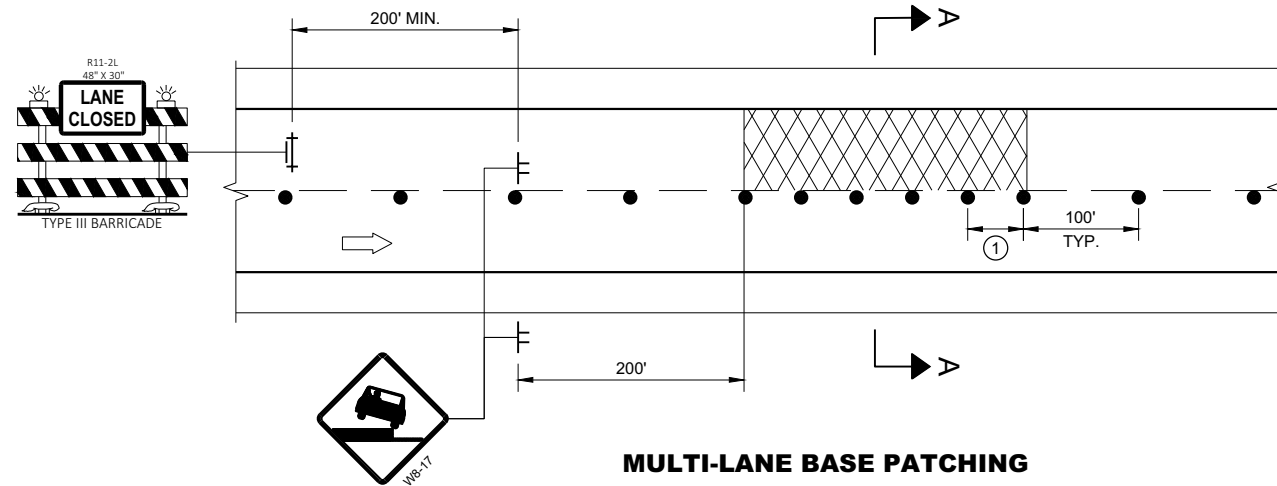
**TWO-WAY TWO LANE**



**SECTION A - A**

**OR**

**SECTION A - A**



**MULTI-LANE BASE PATCHING**

**ADJACENT LANE DROP-OFFS**

**GENERAL NOTES**

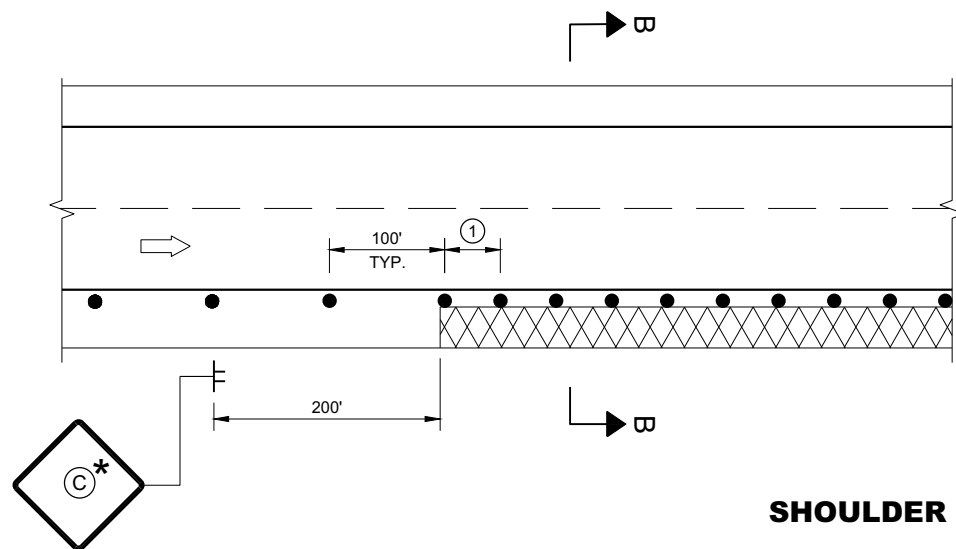
- FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.
- \* IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.
- ① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

**LEGEND**

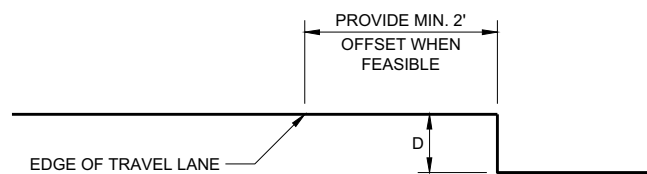
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE

6

6



**SHOULDER DROP-OFFS**



**SECTION B - B**

D	SIGN (C)
< 2" WITH A SLOPE STEEPER THAN 3:1	 W08-9
2" < 6" WITH A SLOPE STEEPER THAN 3:1	 W8-9A PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT

SDD 15D39 - 02

SDD 15D39 - 02

**TRAFFIC CONTROL,  
DROP-OFF SIGNING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
March 2018 /S/ Andrew Heidtke  
DATE DATE WORK ZONE ENGINEER

FHWA

**GENERAL NOTES**

DRAWING NOT TO SCALE. ALL SIGNS AND POSTS ON THIS SHEET SHALL BE PAID FOR WITH 'TRAFFIC CONTROL SIGNS' BID ITEM. ALL SIDE ROADS WHICH ARE UNDER CONSTRUCTION OF CURB AND GUTTER AND/OR GRADING SHALL BE ADEQUATELY SIGNED.

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD). SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE WISDOT STANDARD SIGN PLATES.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THAT THE BACKGROUND IS ORANGE.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

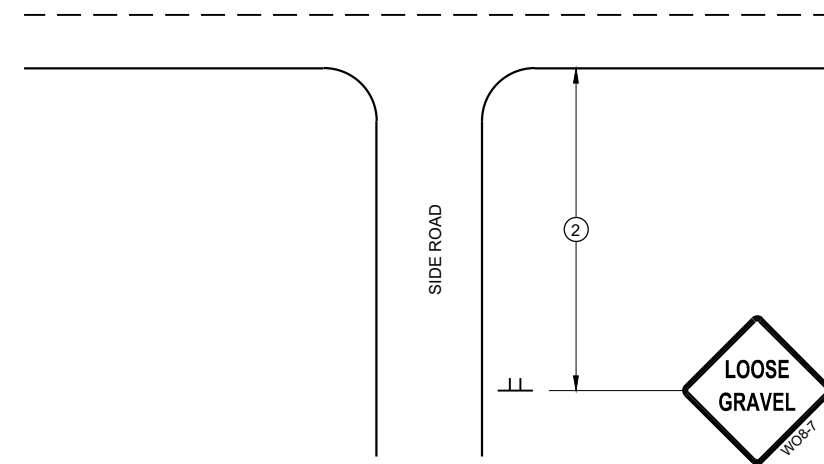
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

SEE 15C34 FOR ADDITIONAL TRAFFIC CONTROL SIGNING WHEN CENTERLINE PAVEMENT MAKINGS ARE MISSING. 'DO NOT PASS' SIGNS MUST BE INSTALLED ON THE SAME DAY AS MILLING OPERATIONS.

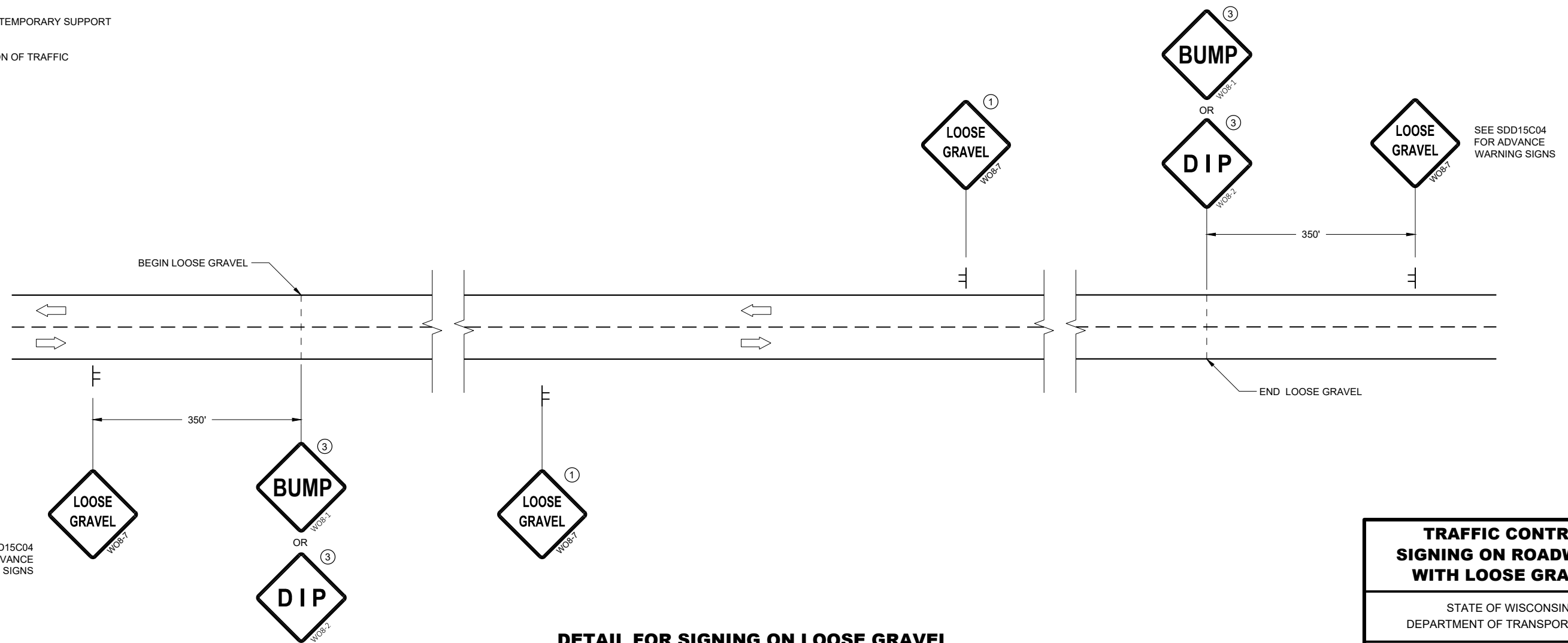
- ① PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED OR LOOSE GRAVEL SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.
- ③ ADD WO8-1 OR WO8-2 SIGN WHEN THE CONDITION IS PRESENT.

**LEGEND**

- ⊥ SIGN ON TEMPORARY SUPPORT
- ➡ DIRECTION OF TRAFFIC

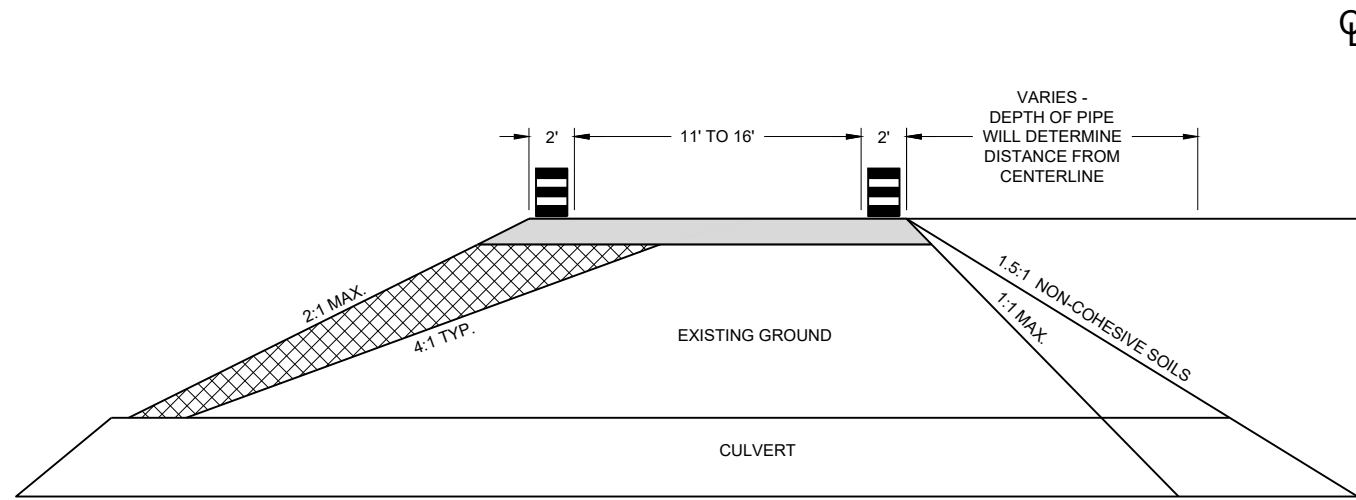


**TYPICAL SIDE ROAD APPROACH SIGN DETAIL**



**DETAIL FOR SIGNING ON LOOSE GRAVEL OR CHIP SEALED SURFACES**

<b>TRAFFIC CONTROL SIGNING ON ROADWAYS WITH LOOSE GRAVEL</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2021 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



**CROSS SECTION**

**GENERAL NOTES**

USE 1:1 FOR COHESIVE CLAYS AND SILTS, LOAMS, SANDY CLAYS AND ANGULAR GRAVEL SOILS.  
 USE 1.5:1 FOR NON-COHESIVE SOILS.

THE TAPER SHOULD EXTEND ACROSS THE SHOULDER UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION.






ALL LANE CLOSURE SIGNS SHALL BE REMOVED OR COVERED AND ALL DEVICES REMOVED BEYOND THE SHOULDER WHEN WORK IS NOT IN PROGRESS AND THE LANE IS RESTORED TO A SAFE OPERATING CONDITION.

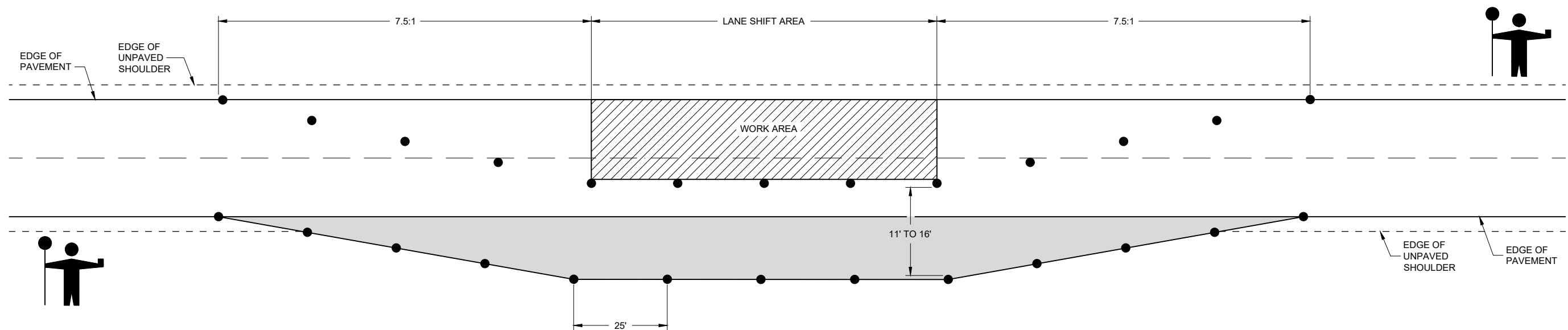
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

USE WITH SDD 15C12 "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATIONS"

USE WITH SDD 15D45 "SIGNING ON ROADWAYS WITH LOOSE GRAVEL"

**LEGEND**

-  DRUM WITHOUT WARNING LIGHT
-  6" BASE AGGREGATE DENSE 1 1/2" - INCIDENTAL TO LANE SHIFT ITEM
-  FILL - INCIDENTAL TO LANE SHIFT ITEM
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF



**LANE SHIFT IN FLAGGING OPERATION**

**TRAFFIC CONTROL,  
 TEMPORARY LANE SHIFT  
 DURING CULVERT WORK**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

APPROVED  
 February 2021 /S/ Andrew Heidtke  
 DATE WORK ZONE ENGINEER

FHWA





6

6

SDD 15D48 - 01

SDD 15D48 - 01

**LEGEND**

- V1 WORK VEHICLE
- V2 SHADOW VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  FLASHING ARROW PANEL (CAUTION)
-  WORK AREA
-  DIRECTION OF TRAFFIC

POSTED SPEED PRIOR TO WORK STARTING (MPH)	DECISION SIGHT DISTANCE (D)
0 - 25	550'
30	550'
35	700'
40	700'
45	900'
50	900'
55	1200'

**GENERAL NOTES**

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.

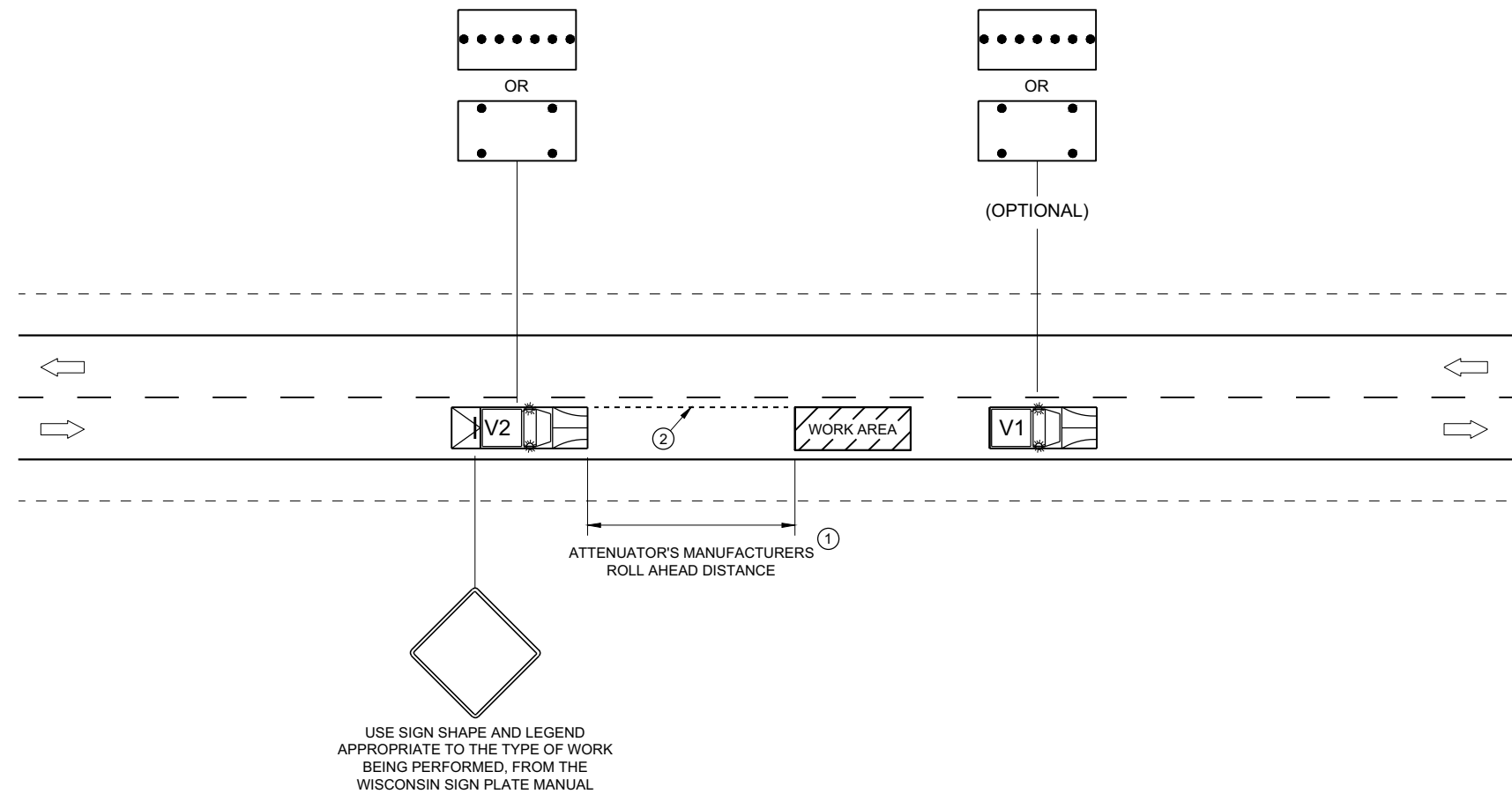
MOBILE IS WORK THAT MOVES CONTINUOUSLY OR MOVES AT LEAST THE DECISION SIGHT DISTANCE EVERY 15 MINUTES.

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

ALL ARROW PANELS SHALL BE REAR FACING, TYPE "B" OR "C", AND DISPLAYING THE FLASHING CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

- ① DISTANCE BETWEEN VEHICLES MAY INCREASE FROM THE ATTENUATOR'S ROLL AHEAD BASED ON TERRAIN, SIGHT DISTANCE, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.
- ② ALIGN LEFT SIDE OF SHADOW VEHICLE WITH EDGE OF WORK AREA.



6

6

SDD 15D51 - 01

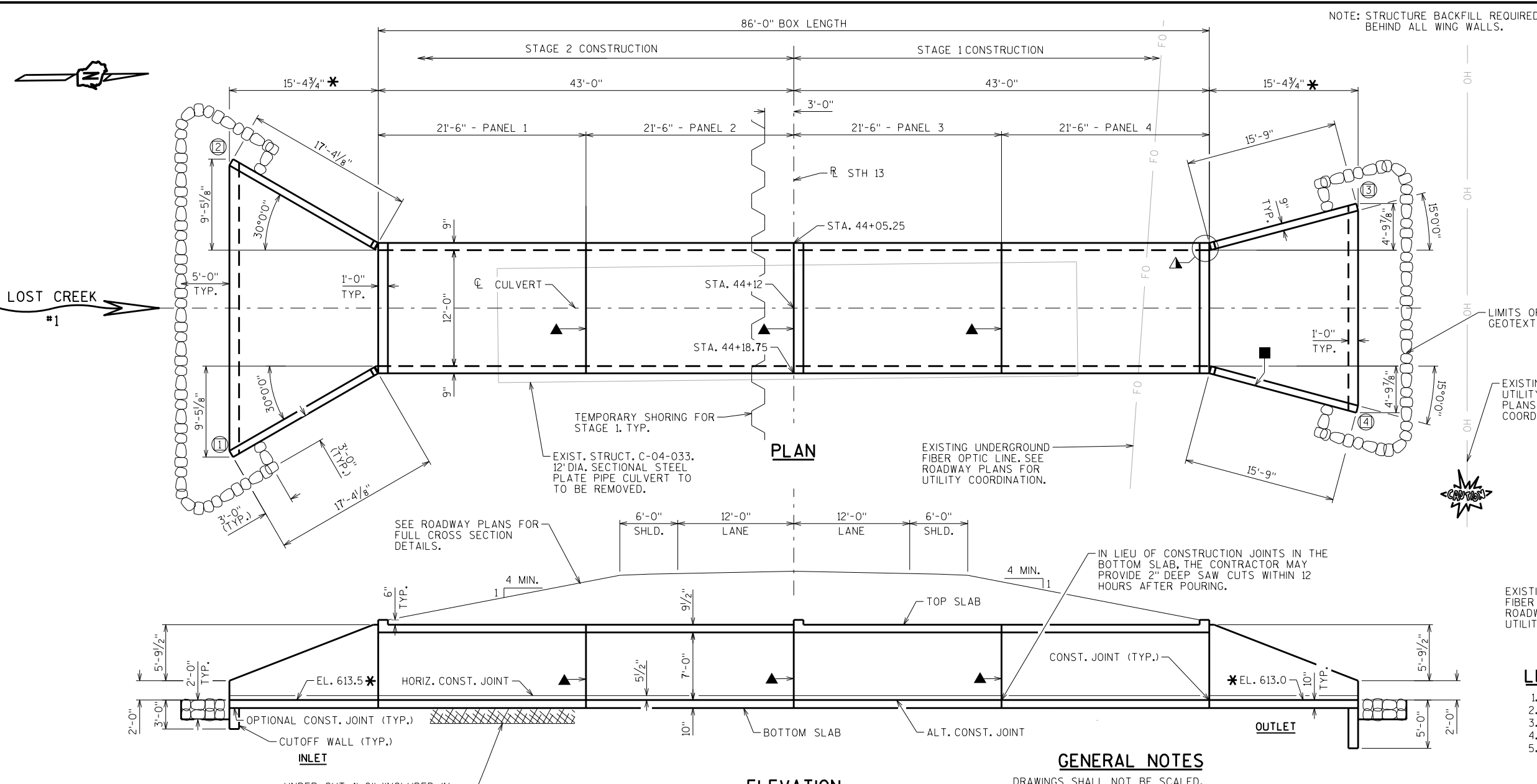
SDD 15D51 - 01

**TRAFFIC CONTROL,  
MOBILE OPERATIONS ON  
AN UNDIVIDED ROADWAY**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2021 DATE /S/ Andrew Heidtke  
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER  
FHWA





STATE PROJECT NUMBER  
**8510-00-71**

- ▲ SEE CORNER DETAILS ON "DETAILS" SHEET
- NAME PLATE LOCATION (SEE "DETAILS" SHEET)
- \* BUILD APRON AND END OF BOX LEVEL
- INDICATES WING NUMBER
- ▲ VERT. CONST. JOINT (TYP.)

NOTE: STRUCTURE BACKFILL REQUIRED BEHIND ALL WING WALLS.

OH ——— OH ——— OH ——— OH ———

LIMITS OF HEAVY RIPRAP AND GEOTEXTILE TYPE HR (TYP.)

EXISTING OVERHEAD UTILITY. SEE ROADWAY PLANS FOR UTILITY COORDINATION.

EXISTING UNDERGROUND FIBER OPTIC LINE. SEE ROADWAY PLANS FOR UTILITY COORDINATION.

**LIST OF DRAWINGS**

1. LAYOUT
2. BOX DETAILS
3. APRON DETAILS
4. DETAILS
5. SUBSURFACE EXPLORATION

**STRUCTURE DESIGN CONTACTS:**  
 ISATOU CEESAY (608) 266-9557  
 LAURA SHADEWALD (608) 267-9592

NO.	DATE	REVISION	BY
ACCEPTED <i>[Signature]</i> 8/11/22 CHIEF STRUCTURES DESIGN ENGINEER DATE			
<b>STRUCTURE C-04-70</b>			
STH 13 OVER LOST CREEK #1			
COUNTY	BAYFIELD	TOWN	BELL
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	DESIGNED CK'D.	DRAWN BY	PLANS CK'D.
IFC	MWB	IFC	MWB
<b>LAYOUT</b>			SHEET 1 OF 5

**DESIGN DATA**

**LIVE LOAD:**  
 DESIGN LOADING: HL-93  
 INVENTORY RATING FACTOR: RF = 1.05  
 OPERATING RATING FACTOR: RF = 1.35  
 WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 255(KIPS)

**EARTHLOAD:**  
 DESIGNED FOR 2 TO 6 FT. OF FILL.

**MATERIAL PROPERTIES:**  
 CONCRETE MASONRY: f<sub>c</sub> = 3,500 P.S.I.  
 BAR STEEL REINFORCEMENT: f<sub>y</sub> = 60,000 P.S.I.

**HYDRAULIC DATA**  
**100 YEAR FREQUENCY**  
 Q<sub>100</sub> = 515 C.F.S.  
 VEL.<sub>100</sub> = 7.98 F.P.S.  
 HW.<sub>100</sub> = EL. 621.60  
 WATERWAY AREA = 64.54 SQ. FT.  
 DRAINAGE AREA = 2.95 SQ. MI.  
 ROADWAY OVERTOPPING = N/A  
 SCOUR CRITICAL CODE = 8

**2 YEAR FREQUENCY**  
 Q<sub>2</sub> = 115 C.F.S.  
 VEL.<sub>2</sub> = 2.80 F.P.S.  
 HW.<sub>2</sub> = EL. 618.41

**TRAFFIC VOLUME**  
**STH 13**  
 ADT = 1300 (2042)  
 R.D.S. = 55 M.P.H.

**TOTAL ESTIMATED QUANTITIES**

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
203.0220	REMOVING STRUCTURE (C-04-033)	EACH	1
206.2001	EXCAVATION FOR STRUCTURES CULVERTS C-04-70	EACH	1
210.2500	BACKFILL STRUCTURE TYPE B	TON	1,340
311.0115	BREAKER RUN	CY	91
504.0100	CONCRETE MASONRY CULVERTS	CY	139
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	22,080
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,650
511.1200	TEMPORARY SHORING C-04-70	SF	361
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	31
606.0300	RIPRAP HEAVY	CY	30
645.0105	GEOTEXTILE TYPE C	SY	295
645.0120	GEOTEXTILE TYPE HR	SY	70
NON-BID ITEMS			
	FILLER	SIZE	3/4"

**GENERAL NOTES**

DRAWINGS SHALL NOT BE SCALED.

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS C-04-70" SHALL BE THE EXISTING GROUNDLINE.

ALL VOLUME WHICH CANNOT BE PLACED BEFORE CULVERT CONSTRUCTION AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL WITHIN THE LENGTH OF THE CULVERT INCLUDING THE APRON WING WALLS.

THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.

THE CONCRETE IN THE CUTOFF WALLS MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.

PLACE 18" (MIN.) WIDE SHEET OF "RUBBERIZED MEMBRANE WATERPROOFING" ON TOP SLAB OVER ALL CONSTRUCTION JOINTS AND EXTEND DOWN TO BOTTOM OF OUTSIDE WALLS.

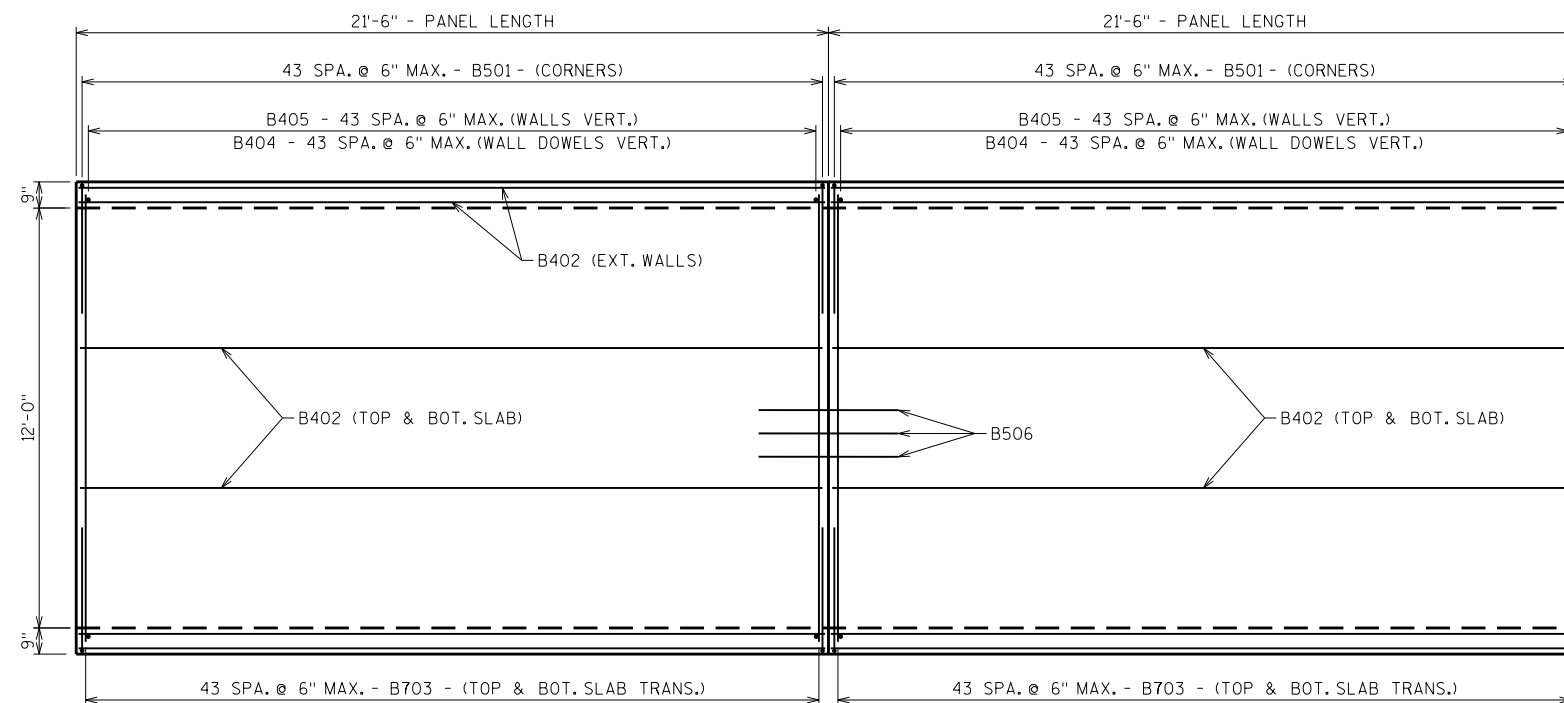
THE CONTRACTOR MAY FURNISH A PRECAST CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE BOX CULVERT WITH THE ACCEPTANCE OF THE SHOP DRAWINGS BY THE STRUCTURES DESIGN SECTION. THE PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO PRECAST DETAILS ON CHAPTER 36 STANDARDS OF THE CURRENT WISCONSIN DOT BRIDGE MANUAL. PAYMENT FOR THE PRECAST CULVERT SHALL BE BASED ON THE QUANTITIES AND PRICES BID FOR THE ITEMS LISTED IN THE "TOTAL ESTIMATED QUANTITIES".

THE CONTRACTOR MAY ELECT TO SUBSTITUTE #1 OR #2 CONCRETE COARSE AGGREGATE, SELECT CRUSHED MATERIAL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE FIELD ENGINEER, IN LIEU OF THE BREAKER RUN, TO BE UTILIZED AS A CONSTRUCTION PLATFORM FOR THE BOX. THE CONTRACTOR IS RESPONSIBLE FOR BASE STABILITY WITH ANY SUBSTITUTED MATERIAL.

8

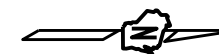
8

SCALE = 6:00



**PLAN VIEW OF PANELS 1 AND 2**

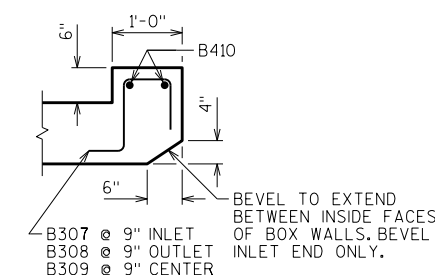
APRON AND HEADERS NOT SHOWN  
PANELS 3 & 4 SIMILAR



**BILL OF BARS**

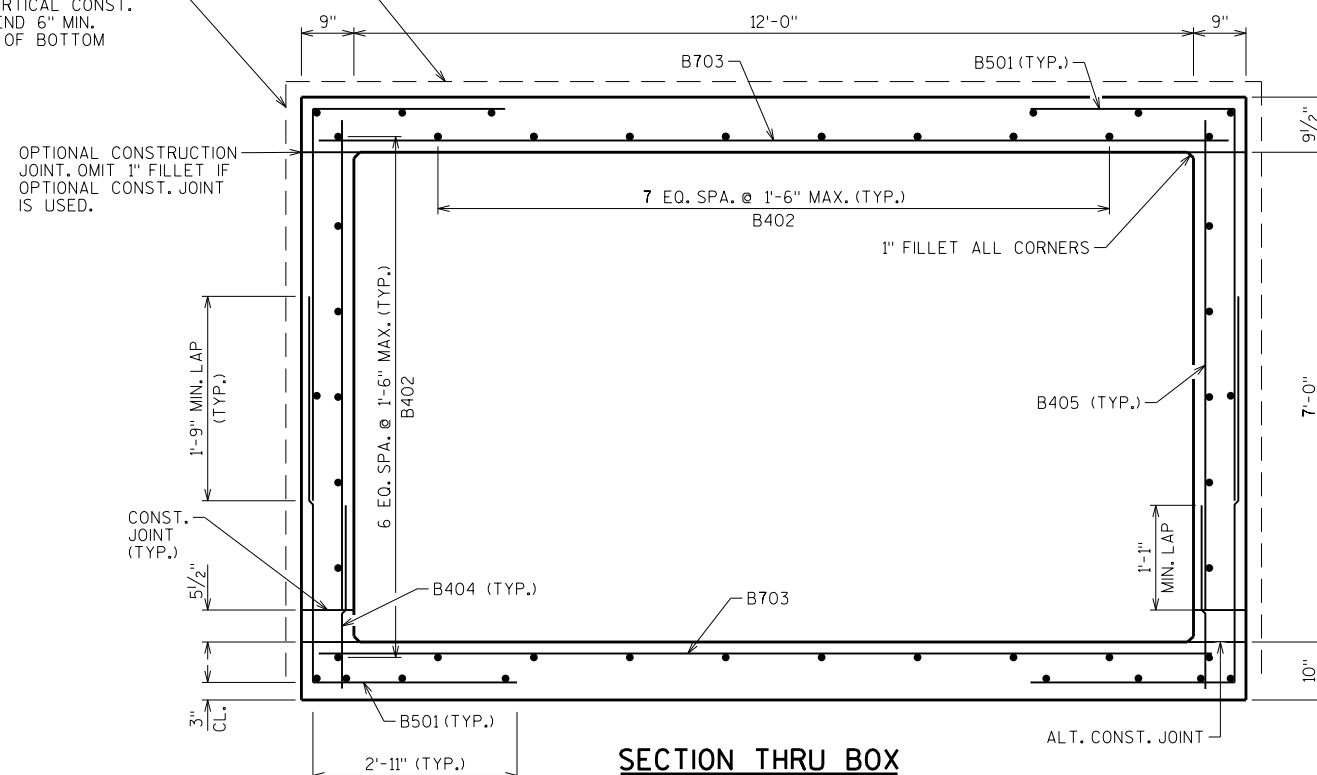
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B501		704	7'-10"	X		CORNERS
B402		184	21'-2"			TOP & BOT. SLAB & WALLS - LONGIT.
B703		352	13'-2"			TOP & BOTTOM SLAB - TRANSVERSE
B404		352	2'-2"			WALL - DOWELS
B405		352	7'-2"			WALL - VERTICAL
B506		132	4'-0"			VERT. CONST. JOINT
B307		18	2'-8"	X		INLET HEADER - STIRRUP
B308		18	3'-0"	X		OUTLET HEADER - STIRRUP
B309		18	3'-0"	X		CENTER HEADER - STIRRUP
B410		18	13'-2"			HEADERS - TRANSVERSE



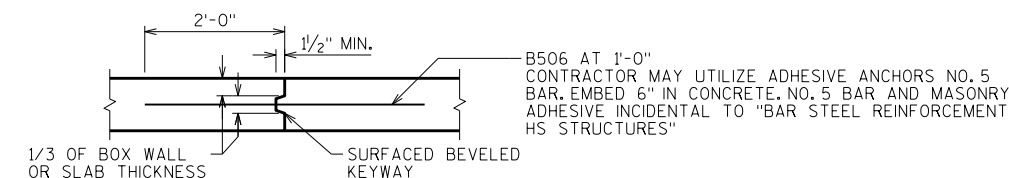
**SECTION THRU HEADER**

18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING UP WALLS & ACROSS TOP SLAB AT VERTICAL CONST. JOINTS, EXTEND 6" MIN. BELOW TOP OF BOTTOM SLAB.



**SECTION THRU BOX**

ALL LONGITUDINAL BARS NOT LABELED ARE B402 AS SHOWN

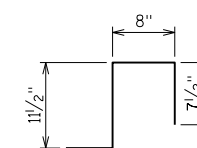


**VERTICAL CONSTRUCTION JOINT**

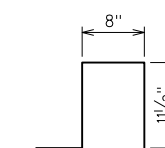
2" DEEP SAW CUT WITHIN 12 HOURS AFTER POURING MAY BE USED IN LIEU OF CONST. JT. IN BOTTOM SLAB.



**B501**



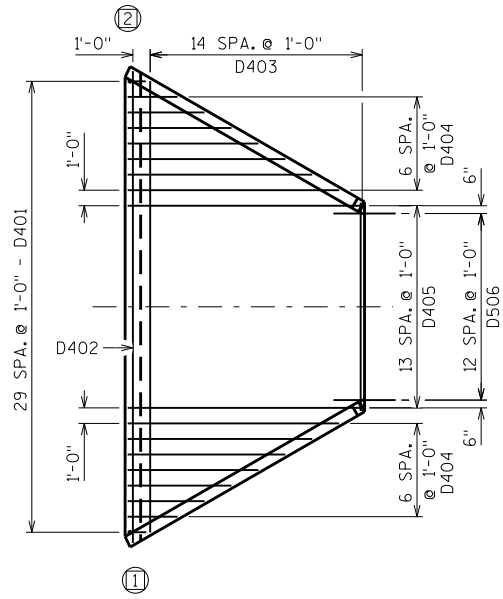
**B307**



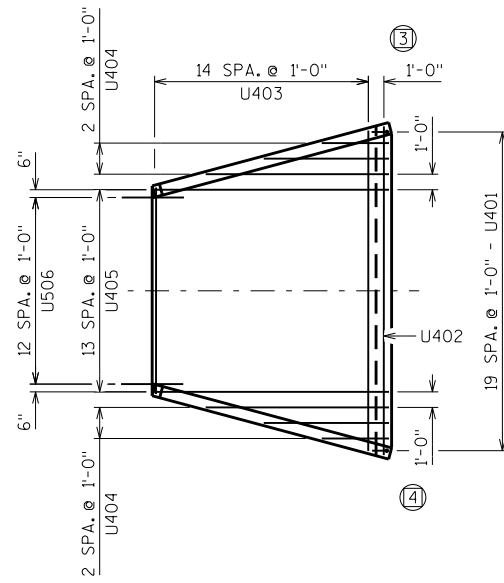
**B308, B309**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-70</b>			
DRAWN BY		IFC	PLANS CK'D. <b>MWB</b>
<b>BOX DETAILS</b>			SHEET 2

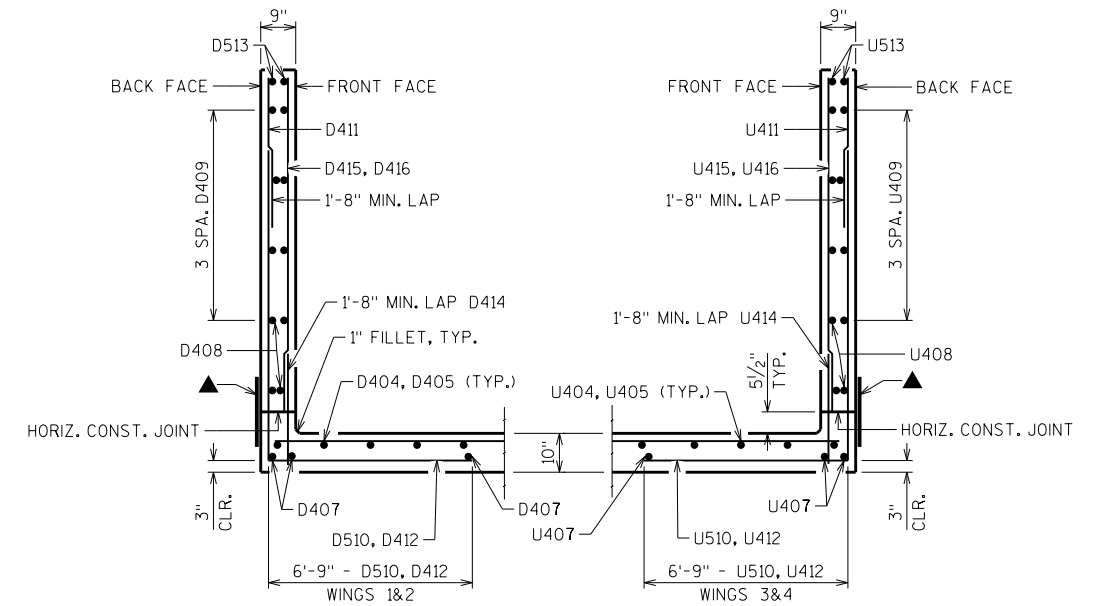
▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. PLACE ALONG HORIZ. CONST. JOINT FOR ENTIRE LENGTH OF WING.



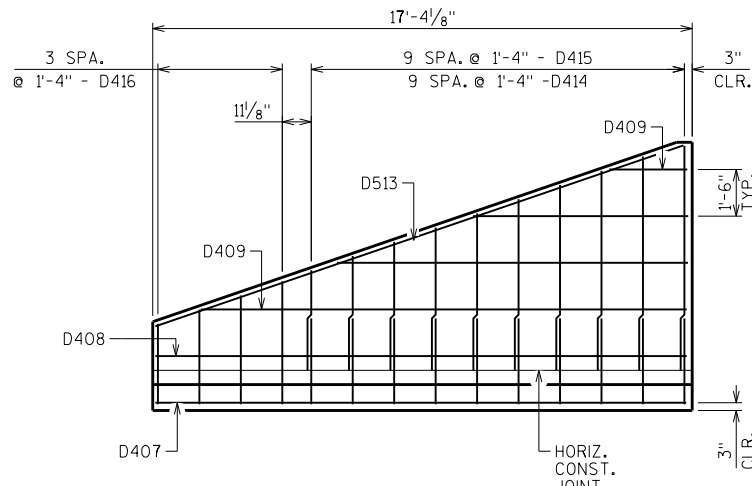
**INLET APRON PLAN**



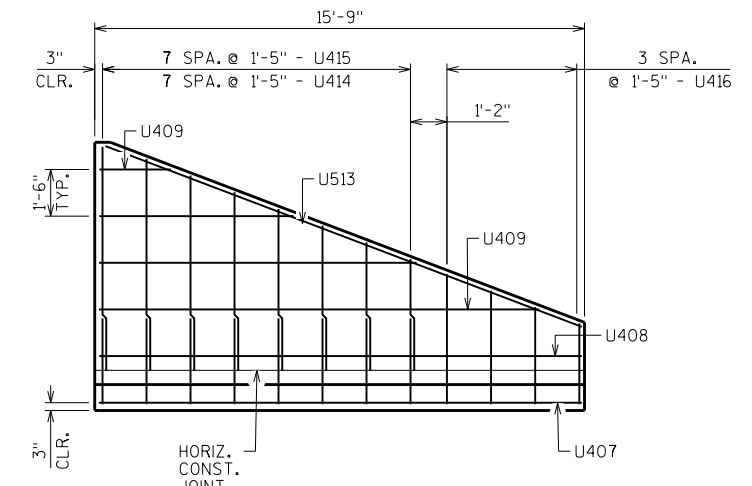
**OUTLET APRON PLAN**



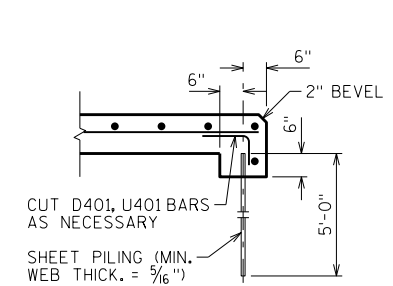
**SECTION THRU WINGS**  
AT RIGHT ANGLE TO WING WALLS



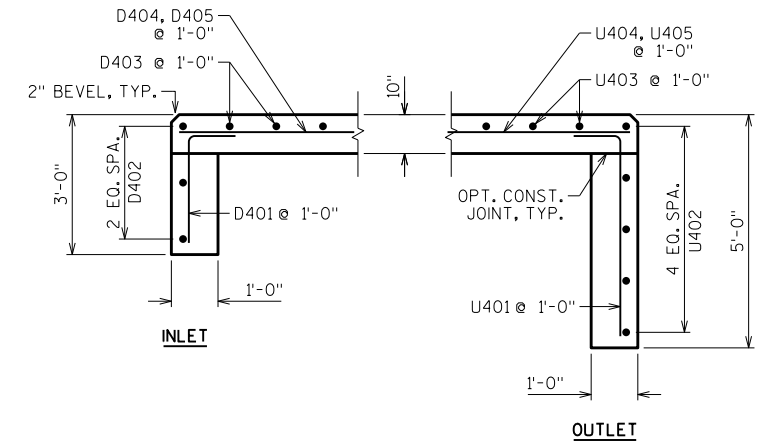
**WING 1**  
SHOWING F.F REINFORCEMENT, WING 2 SIMILAR



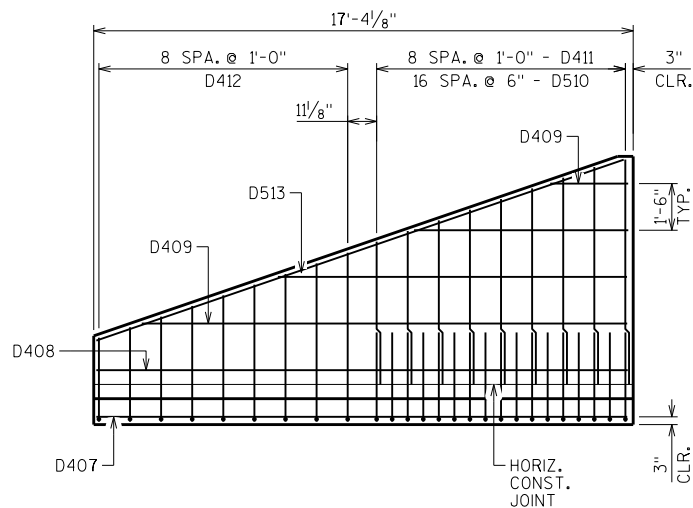
**WING 3**  
SHOWING F.F REINFORCEMENT, WING 4 SIMILAR



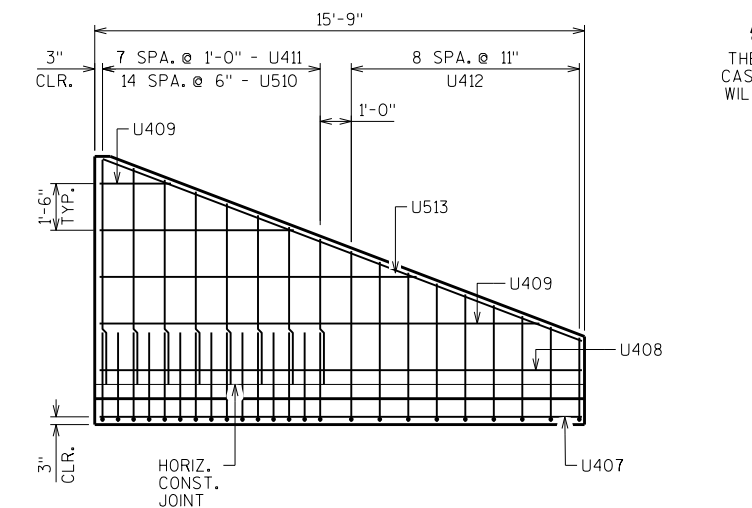
**ALTERNATE CUT-OFF WALLS**  
THE ABOVE ALTERNATIVE MAY BE USED IN LIEU OF CAST-IN-PLACE CONCRETE CUT-OFF WALLS. PAYMENT WILL BE BASED ON THE CONCRETE CUT-OFF WALLS.



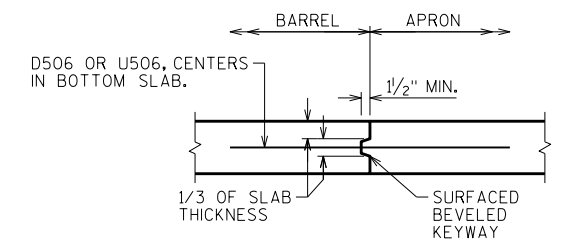
**CUT-OFF WALLS**



**WING 2**  
SHOWING B.F REINFORCEMENT, WING 1 SIMILAR



**WING 4**  
SHOWING B.F REINFORCEMENT, WING 3 SIMILAR



**APRON CONNECTION DETAIL**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-70</b>			
DRAWN BY		IFC	PLANS CHECKED <b>MWB</b>
<b>APRON DETAILS</b>			SHEET 3

8

8

**BILL OF BARS**

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

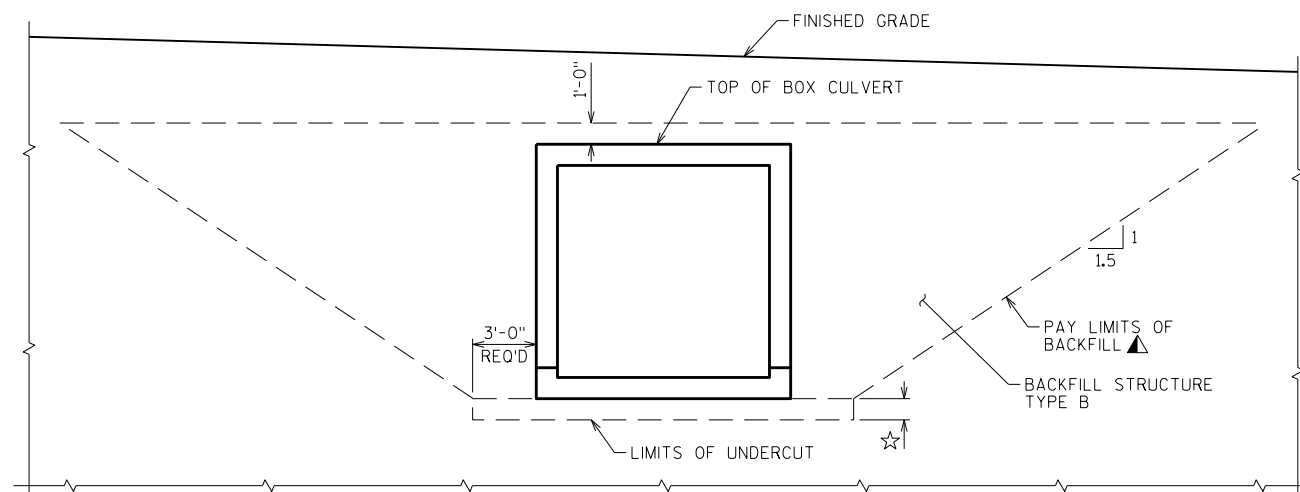
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
D401		30	3'-6"	X		INLET APRON AND CUTOFF WALL VERT.
D402		3	29'-6"			INLET APRON AND CUTOFF WALL HORIZ.
D403		15	21'-4"		▲	INLET APRON - TRANSVERSE
D404		14	8'-5"		▲	INLET APRON - LONGIT.
D405		14	15'-0"			INLET APRON - LONGIT.
D506		13	4'-0"			INLET APRON - APRON & BARREL - BOTTOM SLAB
D407		6	16'-10"			WINGS 1&2 - HORIZ. - APRON BOT. SLAB
D408	X	4	16'-10"			WINGS 1&2 - HORIZ. - BOTH FACES
D409	X	16	8'-9"		▲	WINGS 1&2 - HORIZ. - BOTH FACES
D510	X	34	9'-6"	X		WINGS 1&2 - VERT. - BACK FACE
D411	X	18	5'-10"		▲	WINGS 1&2 - VERT. - BACK FACE
D412	X	18	10'-6"	X	▲	WINGS 1&2 - VERT. - BACK FACE
D513	X	4	17'-10"			WINGS 1&2 - HORIZ. - BOTH FACE
D414	X	20	2'-9"			WINGS 1&2 - DOWELS - FRONT FACE
D415	X	20	5'-2"		▲	WINGS 1&2 - VERT. - FRONT FACE
D416	X	8	3'-2"		▲	WINGS 1&2 - VERT. - FRONT FACE
U401		20	5'-6"	X		OUTLET APRON AND CUTOFF WALL VERT.
U402		5	20'-7"			OUTLET APRON AND CUTOFF WALL HORIZ.
U403		15	17'-0"		▲	OUTLET APRON - TRANSVERSE
U404		6	8'-1"		▲	OUTLET APRON - LONGIT.
U405		14	15'-0"			OUTLET APRON - LONGIT.
U506		13	4'-0"			OUTLET APRON - APRON & BARREL - BOTTOM SLAB
U407		6	15'-3"			WINGS 3&4 - HORIZ. - APRON BOT. SLAB
U408	X	4	15'-3"			WINGS 3&4 - HORIZ. - BOTH FACES
U409	X	16	8'-0"		▲	WINGS 3&4 - HORIZ. - BOTH FACES
U510	X	30	9'-5"	X		WINGS 3&4 - VERT. - BACK FACE
U411	X	16	5'-10"		▲	WINGS 3&4 - VERT. - BACK FACE
U412	X	18	10'-4"	X	▲	WINGS 3&4 - VERT. - BACK FACE
U513	X	4	16'-3"			WINGS 3&4 - HORIZ. - BOTH FACE
U414	X	16	2'-9"			WINGS 3&4 - DOWELS - FRONT FACE
U415	X	16	5'-4"		▲	WINGS 3&4 - VERT. - FRONT FACE
U416	X	8	3'-3"		▲	WINGS 3&4 - VERT. - FRONT FACE

**BAR SERIES TABLE**

BAR MARK	NO. REQ'D.	LENGTH
D403	1 SERIES OF 15	13'-3" TO 29'-5"
D404	2 SERIES OF 7	3'-2" TO 13'-7"
D409	4 SERIES OF 4	2'-3" TO 15'-4"
D411	2 SERIES OF 9	4'-6" TO 7'-2"
D412	2 SERIES OF 9	9'-1" TO 11'-11"
D415	2 SERIES OF 10	3'-1" TO 7'-3"
D416	2 SERIES OF 4	2'-6" TO 3'-10"
U403	1 SERIES OF 15	13'-3" TO 20'-9"
U404	2 SERIES OF 3	4'-4" TO 11'-9"
U409	4 SERIES OF 4	2'-1" TO 13'-11"
U411	2 SERIES OF 8	4'-7" TO 7'-2"
U412	2 SERIES OF 9	8'-11" TO 11'-9"
U415	2 SERIES OF 8	3'-6" TO 7'-2"
U416	2 SERIES OF 4	2'-5" TO 4'-0"

BUNDLE AND TAG EACH SERIES SEPARATELY.

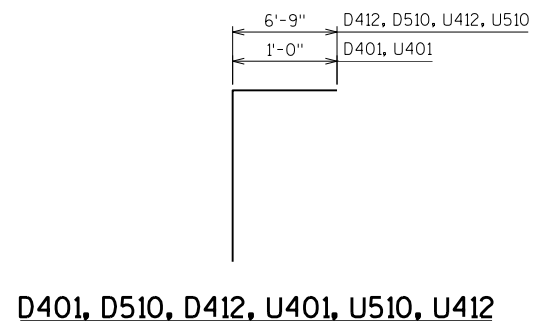
▲ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



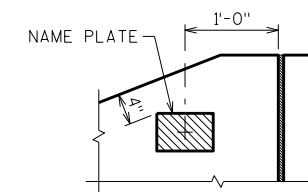
**TYPICAL SECTION THRU BOX CULVERT**

▲ BACKFILL PAY LIMITS, BACKFILL BEYOND BACKFILL PAY LIMITS INCLUDING BACKFILL BEHIND WING WALLS, SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

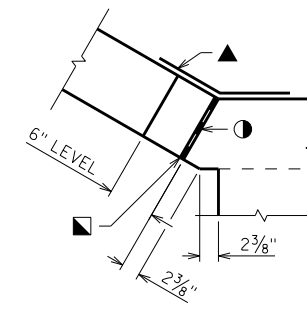
☆ UNDER CUT 1'-0". EXCAVATION FOR UNDER CUT TO BE INCLUDED WITH BID ITEM "EXCAVATION FOR STRUCTURES CULVERTS". PLACE GEOTEXTILE TYPE 'C' AND BACKFILL WITH BREAKER RUN.



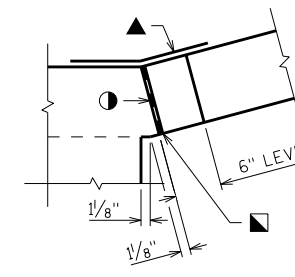
**D401, D510, D412, U401, U510, U412**



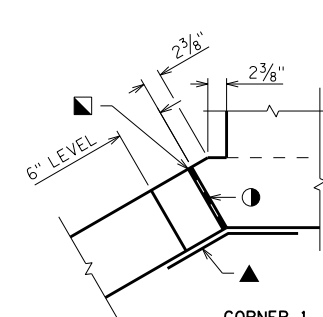
**NAME PLATE LOCATION WING 4**



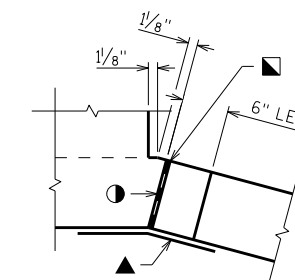
**CORNER 2**



**CORNER 3**



**CORNER 1**



**CORNER 4**

**CORNER DETAILS**

● 3/4" FILLER TYPICAL. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING.

■ 1" BEVEL TYPICAL

▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WALL.

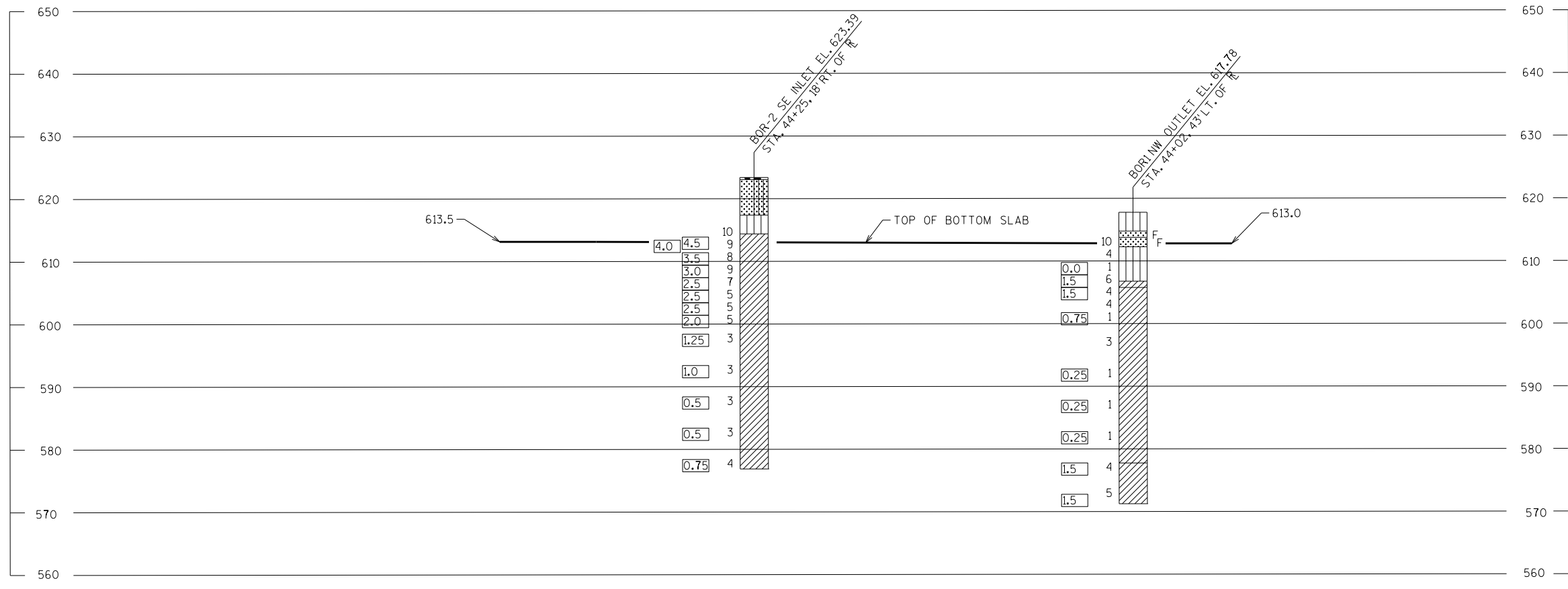
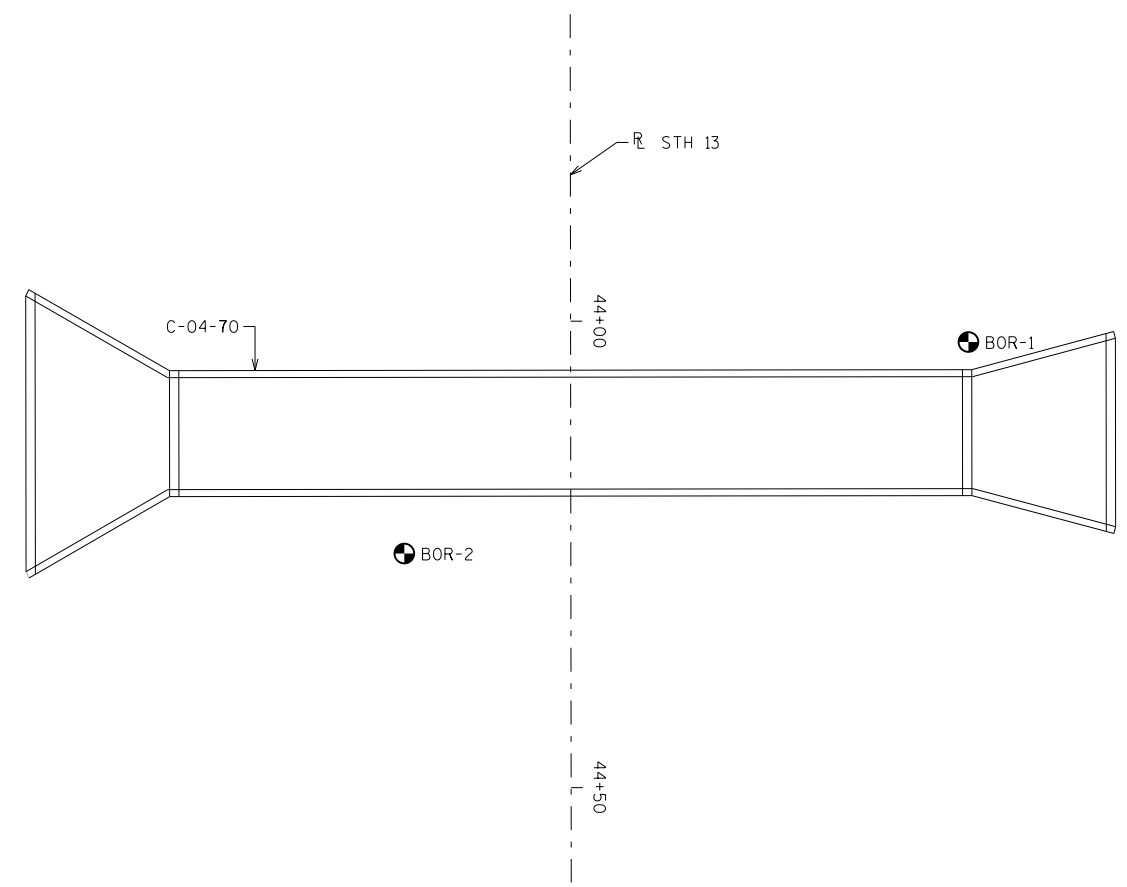
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-70</b>			
DRAWN BY		IFC	PLANS CK'D. <b>MWB</b>
<b>DETAILS</b>		SHEET 4	

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	11/10/2020	551994	755865
2	11/18/2020	551933	755887

BORINGS COMPLETED BY: WISDOT  
 REPORT COMPLETED BY: WISDOT  
 ALL COORDINATES REFERENCED TO WCCS NAD 83(91) BAYFIELD COUNTY  
 COORDINATES COLLECTED USING NON-SURVEY GRADE EQUIPMENT



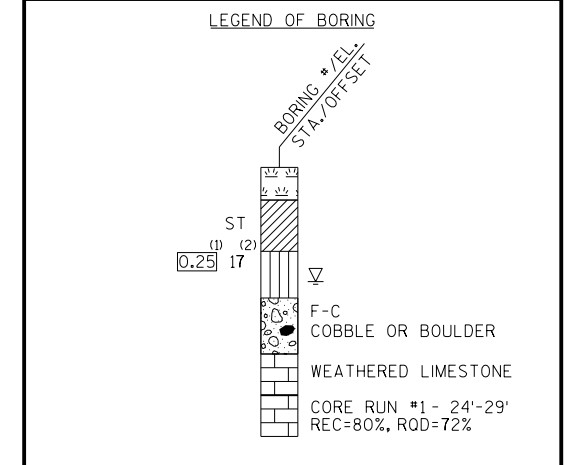
LOST CREEK  
# 1



STATE PROJECT NUMBER  
**8510-00-71**

MATERIAL SYMBOLS

ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/META



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)  
 (2) UNLESS OTHERWISE SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATION  
 ▽ AT TIME OF DRILLING  
 ▽ END OF DRILLING  
 ▽ AFTER DRILLING

ABBREVIATIONS  
 F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

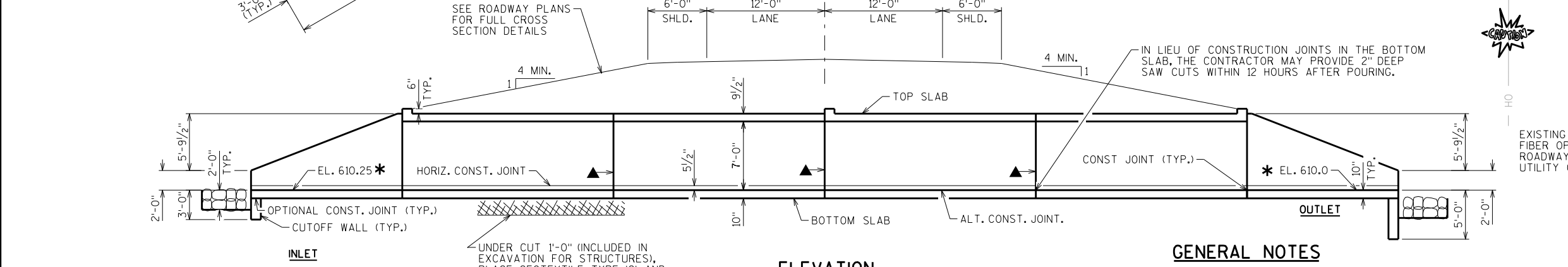
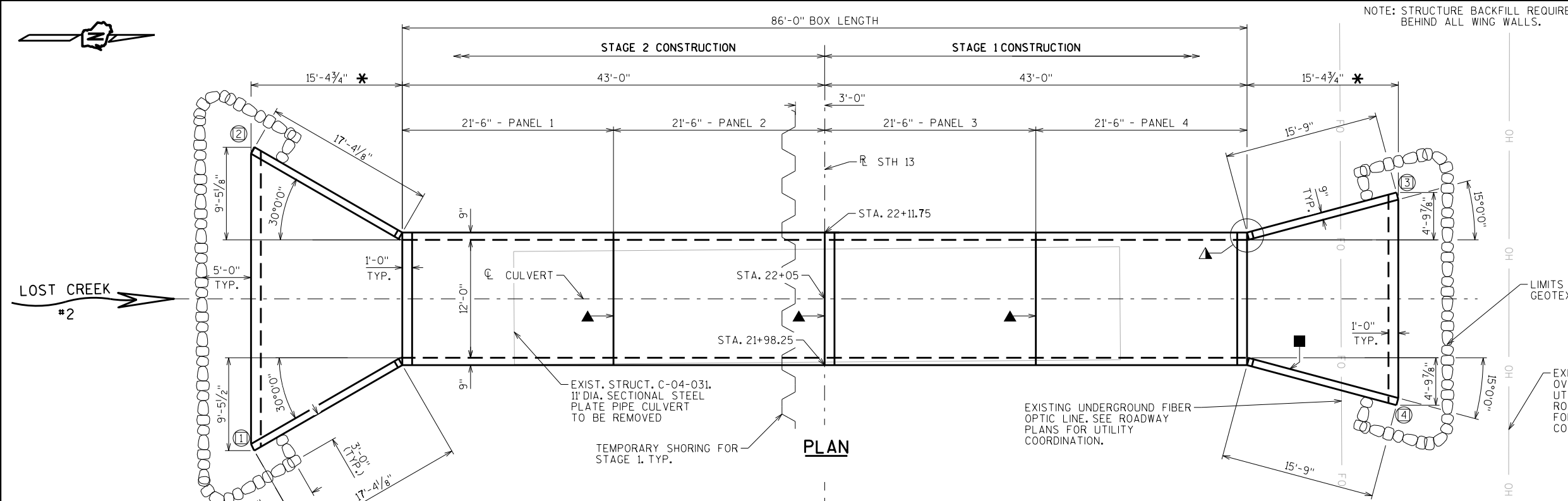
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE C-04-70			
DRAWN BY TLP/IFC		PLANS CKD. MWB	
SUBSURFACE EXPLORATION			SHEET 5

8

8

SCALE = 10.00

- ▲ SEE CORNER DETAILS ON "DETAILS" SHEET
- NAME PLATE LOCATION (SEE "DETAILS" SHEET)
- \* BUILD APRON AND END OF BOX LEVEL
- INDICATES WING NUMBER
- ▲ VERT. CONST. JOINT (TYP.)



NOTE: STRUCTURE BACKFILL REQUIRED BEHIND ALL WING WALLS.

LIMITS OF HEAVY RIPRAP AND GEOTEXTILE TYPE HR (TYP.)

EXISTING OVERHEAD UTILITY. SEE ROADWAY PLANS FOR UTILITY COORDINATION.

EXISTING UNDERGROUND FIBER OPTIC LINE. SEE ROADWAY PLANS FOR UTILITY COORDINATION.

- LIST OF DRAWINGS**
1. LAYOUT
  2. BOX DETAILS
  3. APRON DETAILS
  4. DETAILS
  5. SUBSURFACE EXPLORATION

**STRUCTURE DESIGN CONTACTS:**

ISATOU CEESAY (608) 266-9557  
LAURA SHADEWALD (608) 267-9592

**DESIGN DATA**

**LIVE LOAD:**  
DESIGN LOADING: HL-93  
INVENTORY RATING FACTOR: RF = 1.05  
OPERATING RATING FACTOR: RF = 1.35  
WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 255(KIPS)

**EARTHLOAD:**  
DESIGNED FOR 2 TO 6 FT. OF FILL.

**MATERIAL PROPERTIES:**  
CONCRETE MASONRY:  $f'_c = 3,500$  P.S.I.  
BAR STEEL REINFORCEMENT:  $f_y = 60,000$  P.S.I.

**HYDRAULIC DATA**

100 YEAR FREQUENCY  
 $Q_{100} = 350$  C.F.S.  
 $VEL_{100} = 5.76$  F.P.S.  
 $HW_{100} = EL. 617.32$   
WATERWAY AREA = 60.76 SQ. FT.  
DRAINAGE AREA = 2.3 SQ. MI.  
ROADWAY OVERTOPPING = N/A  
SCOUR CRITICAL CODE = 8

**TRAFFIC VOLUME**

STH 13  
ADT = 1300 (2042)  
R.D.S. = 55 M.P.H.

**TOTAL ESTIMATED QUANTITIES**

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
203.0220	REMOVING STRUCTURE (C-04-031)	EACH	1
206.2001	EXCAVATION FOR STRUCTURES CULVERTS C-04-071	EACH	1
210.2500	BACKFILL STRUCTURE TYPE B	TON	1,340
311.0115	BREAKER RUN	CY	91
504.0100	CONCRETE MASONRY CULVERTS	CY	139
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	22,080
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,650
511.1200	TEMPORARY SHORING C-04-71	SF	361
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	31
606.0300	RIPRAP HEAVY	CY	30
645.0105	GEOTEXTILE TYPE C	SY	295
645.0120	GEOTEXTILE TYPE HR	SY	70
NON-BID ITEMS			
	FILLER	SIZE	3/4"

**GENERAL NOTES**

DRAWINGS SHALL NOT BE SCALED.

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE. BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS C-04-71" SHALL BE THE EXISTING GROUNDLINE.

ALL VOLUME WHICH CANNOT BE PLACED BEFORE CULVERT CONSTRUCTION AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL WITHIN THE LENGTH OF THE CULVERT INCLUDING THE APRON WING WALLS.

THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.

THE CONCRETE IN THE CUTOFF WALLS MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.

PLACE 18" (MIN.) WIDE SHEET OF "RUBBERIZED MEMBRANE WATERPROOFING" ON TOP SLAB OVER ALL CONSTRUCTION JOINTS AND EXTEND DOWN TO BOTTOM OF OUTSIDE WALLS.

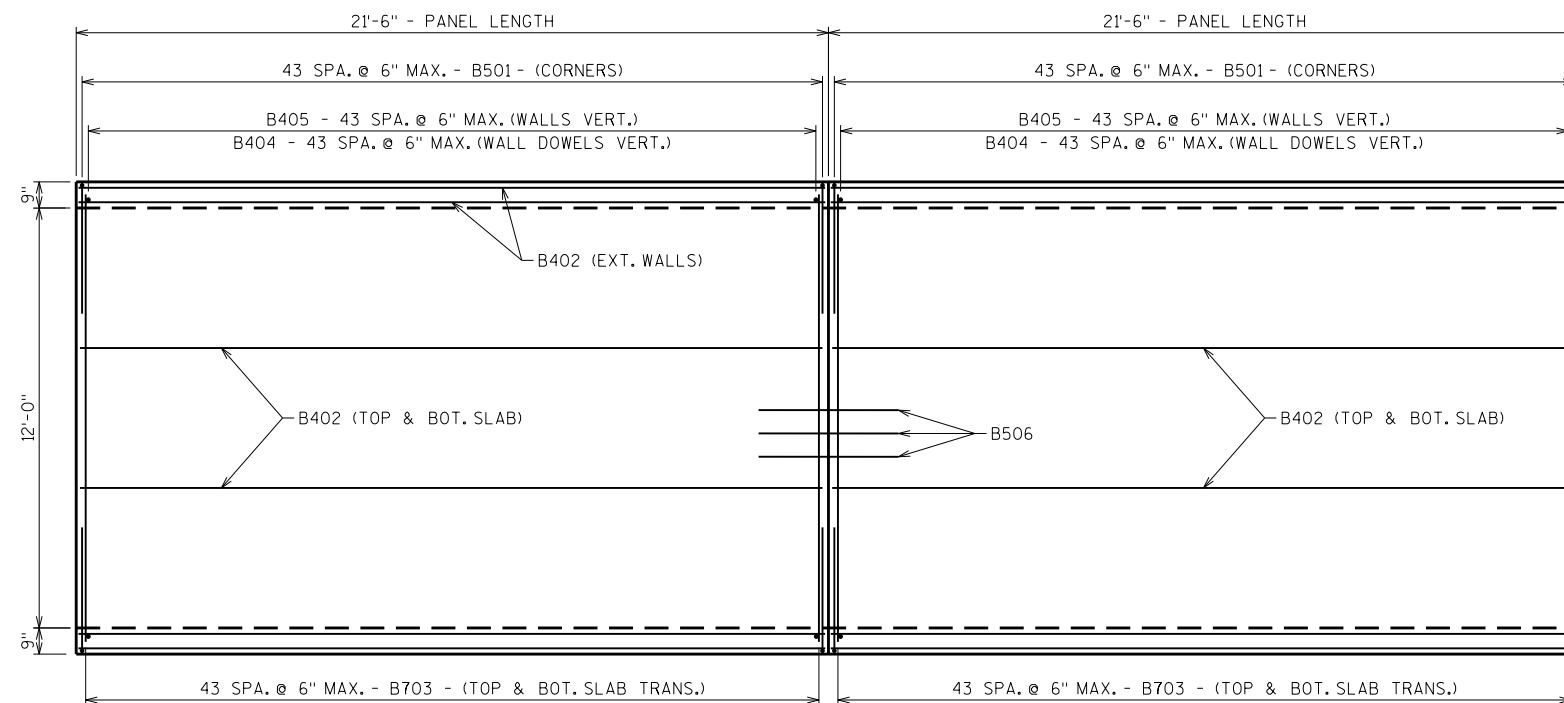
THE CONTRACTOR MAY FURNISH A PRECAST CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE BOX CULVERT WITH THE ACCEPTANCE OF THE SHOP DRAWINGS BY THE STRUCTURES DESIGN SECTION. THE PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO PRECAST DETAILS ON CHAPTER 36 STANDARDS OF THE CURRENT WISC. DOT BRIDGE MANUAL. PAYMENT FOR THE PRECAST CULVERT SHALL BE BASED ON THE QUANTITIES AND PRICES BID FOR THE ITEMS LISTED IN THE "TOTAL ESTIMATED QUANTITIES".

THE CONTRACTOR MAY ELECT TO SUBSTITUTE #1OR #2 CONCRETE COARSE AGGREGATE, SELECT CRUSHED MATERIAL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE FIELD ENGINEER, IN LIEU OF THE BREAKER RUN, TO BE UTILIZED AS A CONSTRUCTION PLATFORM FOR THE BOX. THE CONTRACTOR IS RESPONSIBLE FOR BASE STABILITY WITH ANY SUBSTITUTED MATERIAL.

8

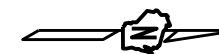
NO.	DATE	REVISION	BY
 <b>BUREAU OF STRUCTURES</b> ACCEPTED: <i>[Signature]</i> 8/11/22 CHIEF STRUCTURES DESIGN ENGINEER DATE			
<b>STRUCTURE C-04-71</b>			
STH 13 OVER LOST CREEK #2			
COUNTY	BAYFIELD	TOWN	BELL
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	DESIGNED CK'D.	DRAWN BY	PLANS CK'D.
	IFC	MWB	IFC
<b>LAYOUT</b>			SHEET 1 OF 5

SCALE = 6:00



**PLAN VIEW OF PANELS 1 AND 2**

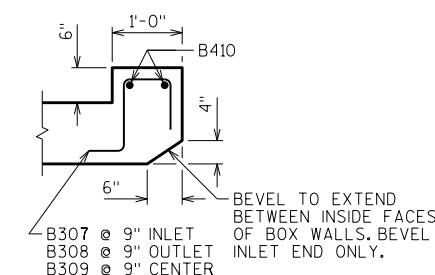
APRON AND HEADERS NOT SHOWN  
PANELS 3 & 4 SIMILAR



**BILL OF BARS**

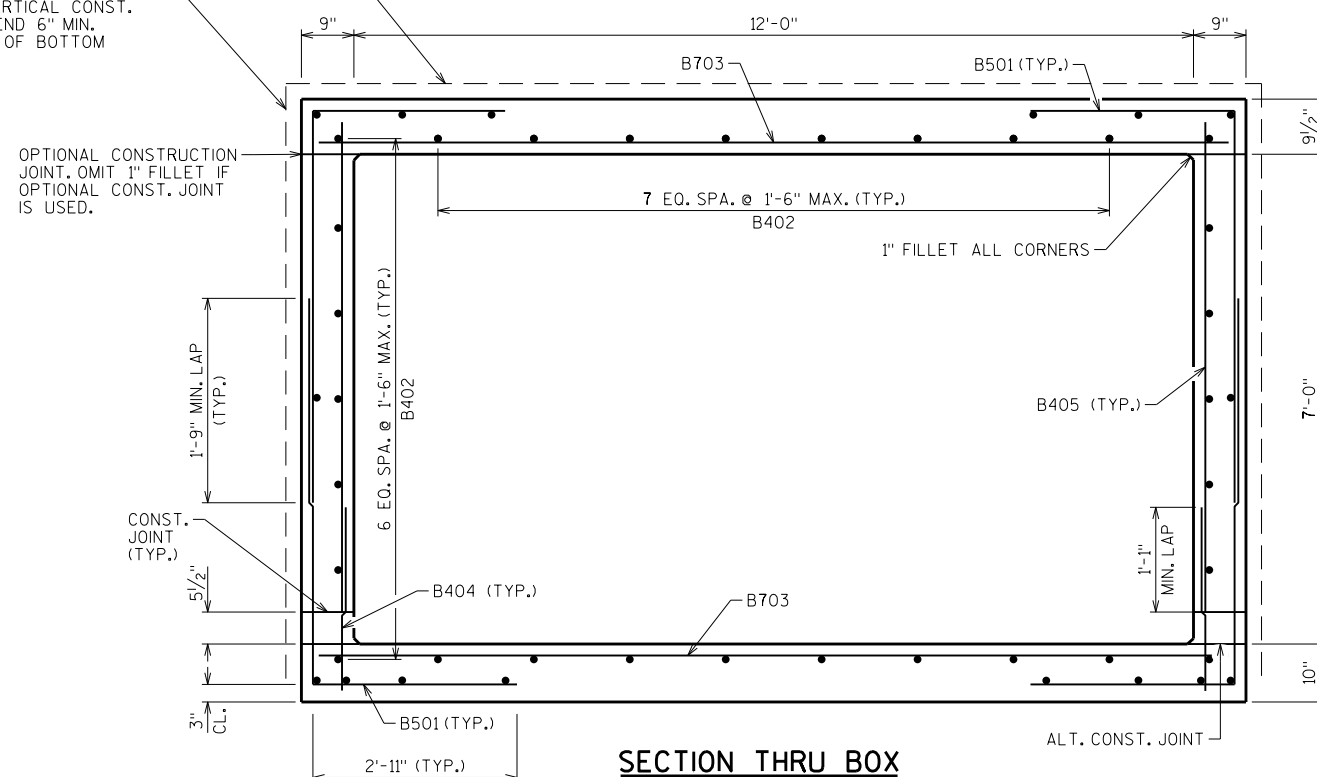
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B501		704	7'-10"	X		CORNERS
B402		184	21'-2"			TOP & BOT. SLAB & WALLS - LONGIT.
B703		352	13'-2"			TOP & BOTTOM SLAB - TRANSVERSE
B404		352	2'-2"			WALL - DOWELS
B405		352	7'-2"			WALL - VERTICAL
B506		132	4'-0"			VERT. CONST. JOINT
B307		18	2'-8"	X		INLET HEADER - STIRRUP
B308		18	3'-0"	X		OUTLET HEADER - STIRRUP
B309		18	3'-0"	X		CENTER HEADER - STIRRUP
B410		18	13'-2"			HEADERS - TRANSVERSE



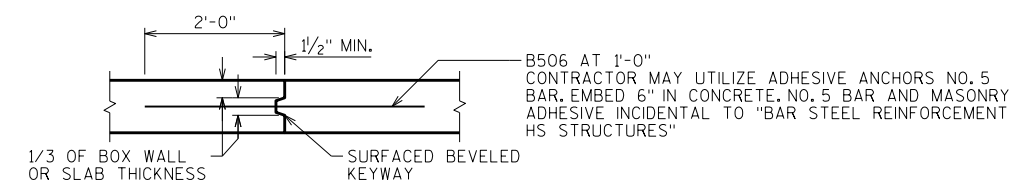
**SECTION THRU HEADER**

18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING UP WALLS & ACROSS TOP SLAB AT VERTICAL CONST. JOINTS, EXTEND 6" MIN. BELOW TOP OF BOTTOM SLAB.



**SECTION THRU BOX**

ALL LONGITUDINAL BARS NOT LABELED ARE B402 AS SHOWN

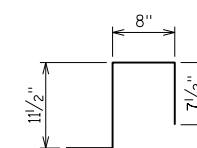


**VERTICAL CONSTRUCTION JOINT**

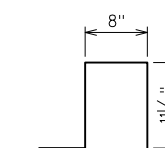
2" DEEP SAW CUT WITHIN 12 HOURS AFTER POURING MAY BE USED IN LIEU OF CONST. JT. IN BOTTOM SLAB.



**B501**



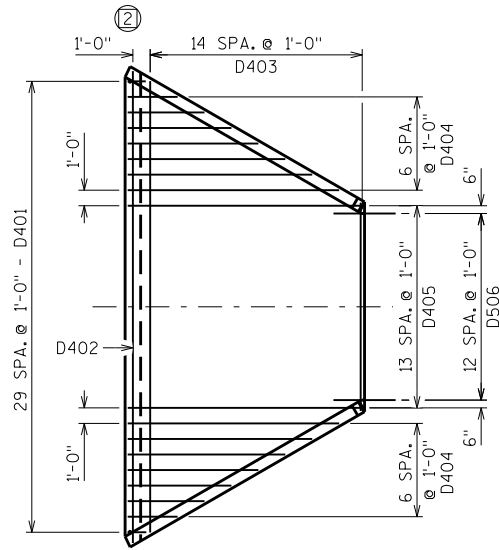
**B307**



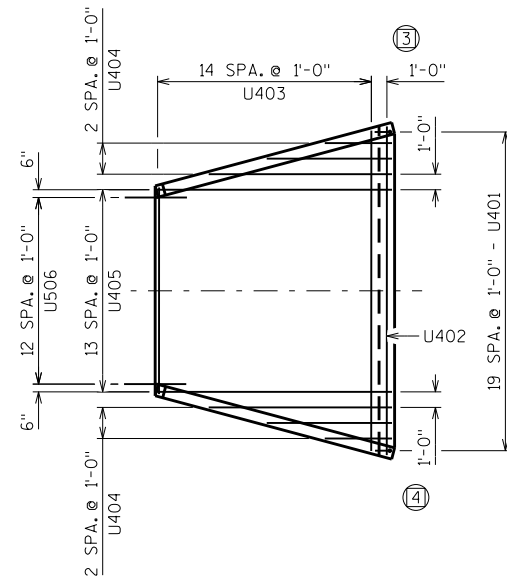
**B308, B309**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-71</b>			
DRAWN BY		IFC	PLANS CK'D. <b>MWB</b>
<b>BOX DETAILS</b>			SHEET 2

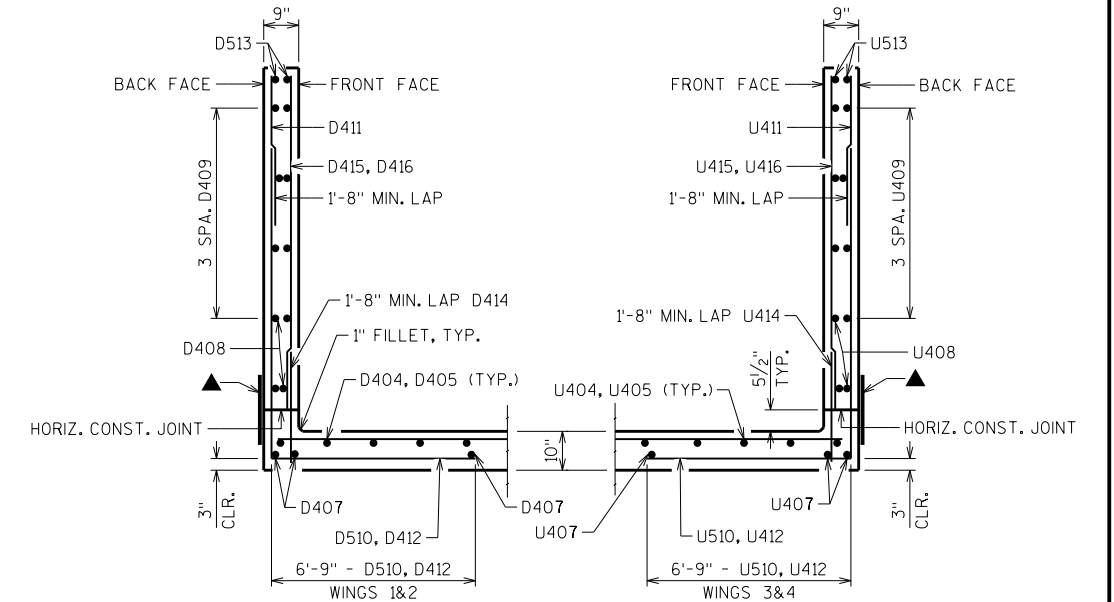
▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. PLACE ALONG HORIZ. CONST. JOINT FOR ENTIRE LENGTH OF WING.



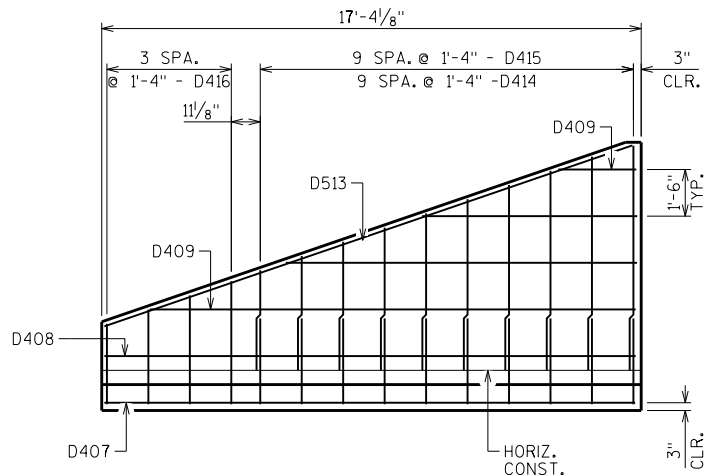
**INLET APRON PLAN**



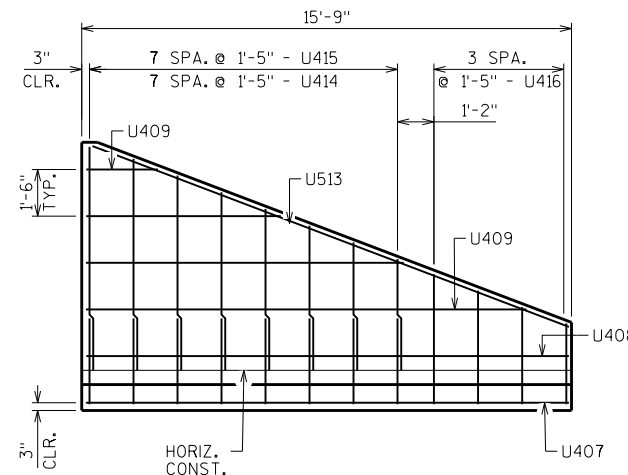
**OUTLET APRON PLAN**



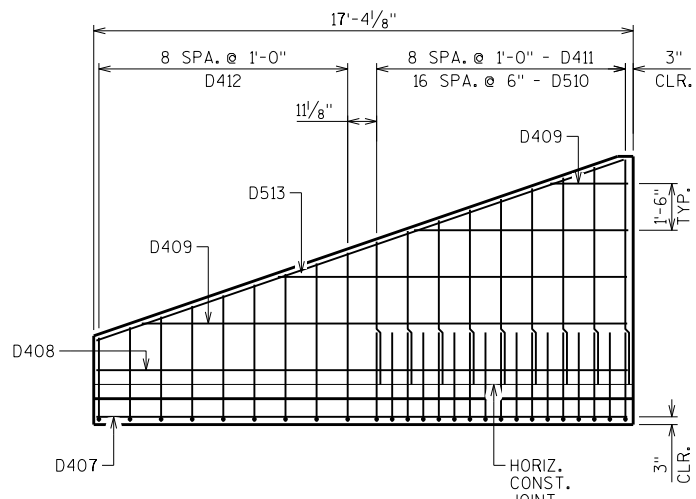
**SECTION THRU WINGS**  
AT RIGHT ANGLE TO WING WALLS



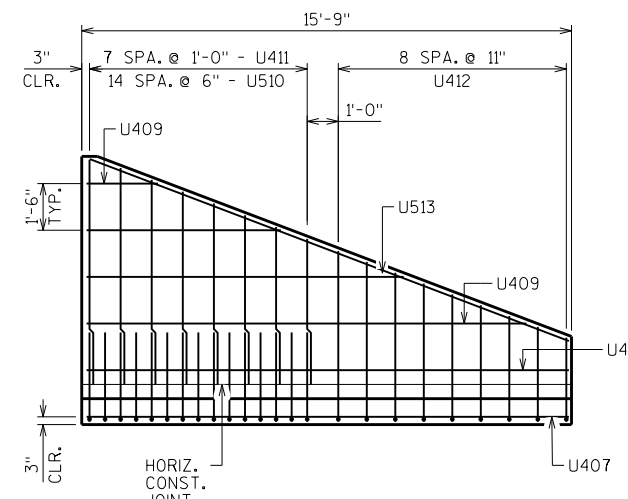
**WING 1**  
SHOWING F.F REINFORCEMENT, WING 2 SIMILAR



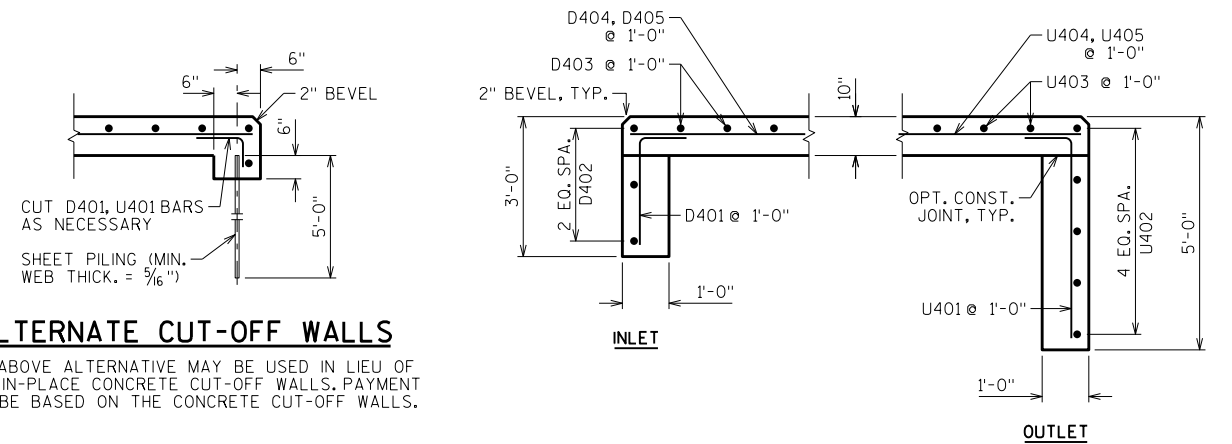
**WING 3**  
SHOWING F.F REINFORCEMENT, WING 4 SIMILAR



**WING 2**  
SHOWING B.F REINFORCEMENT, WING 1 SIMILAR



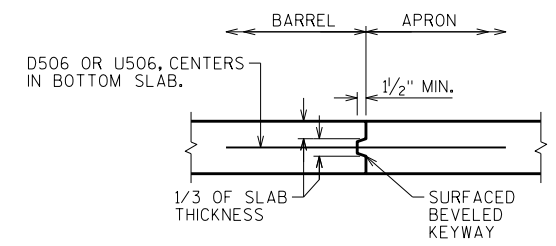
**WING 4**  
SHOWING B.F REINFORCEMENT, WING 3 SIMILAR



**ALTERNATE CUT-OFF WALLS**

THE ABOVE ALTERNATIVE MAY BE USED IN LIEU OF CAST-IN-PLACE CONCRETE CUT-OFF WALLS. PAYMENT WILL BE BASED ON THE CONCRETE CUT-OFF WALLS.

**CUT-OFF WALLS**



**APRON CONNECTION DETAIL**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-71</b>			
DRAWN BY		IFC	PLANS MWB CK'D.
<b>APRON DETAILS</b>			SHEET 3



**BILL OF BARS**

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

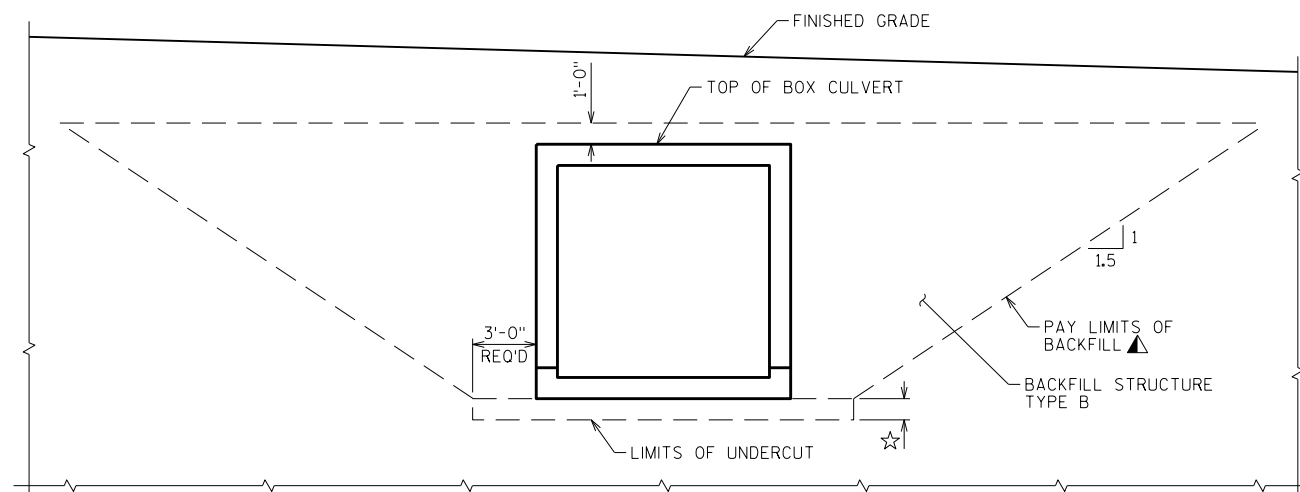
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
D401		30	3'-6"	X		INLET APRON AND CUTOFF WALL VERT.
D402		3	29'-6"			INLET APRON AND CUTOFF WALL HORIZ.
D403		15	21'-4"		▲	INLET APRON - TRANSVERSE
D404		14	8'-5"		▲	INLET APRON - LONGIT.
D405		14	15'-0"			INLET APRON - LONGIT.
D506		13	4'-0"			INLET APRON - APRON & BARREL - BOTTOM SLAB
D407		6	16'-10"			WINGS 1&2 - HORIZ. - APRON BOT. SLAB
D408	X	4	16'-10"			WINGS 1&2 - HORIZ. - BOTH FACES
D409	X	16	8'-9"		▲	WINGS 1&2 - HORIZ. - BOTH FACES
D510	X	34	9'-6"	X		WINGS 1&2 - VERT. - BACK FACE
D411	X	18	5'-10"		▲	WINGS 1&2 - VERT. - BACK FACE
D412	X	18	10'-6"	X	▲	WINGS 1&2 - VERT. - BACK FACE
D513	X	4	17'-10"			WINGS 1&2 - HORIZ. - BOTH FACE
D414	X	20	2'-9"			WINGS 1&2 - DOWELS - FRONT FACE
D415	X	20	5'-2"		▲	WINGS 1&2 - VERT. - FRONT FACE
D416	X	8	3'-2"		▲	WINGS 1&2 - VERT. - FRONT FACE
U401		20	5'-6"	X		OUTLET APRON AND CUTOFF WALL VERT.
U402		5	20'-7"			OUTLET APRON AND CUTOFF WALL HORIZ.
U403		15	17'-0"		▲	OUTLET APRON - TRANSVERSE
U404		6	8'-1"		▲	OUTLET APRON - LONGIT.
U405		14	15'-0"			OUTLET APRON - LONGIT.
U506		13	4'-0"			OUTLET APRON - APRON & BARREL - BOTTOM SLAB
U407		6	15'-3"			WINGS 3&4 - HORIZ. - APRON BOT. SLAB
U408	X	4	15'-3"			WINGS 3&4 - HORIZ. - BOTH FACES
U409	X	16	8'-0"		▲	WINGS 3&4 - HORIZ. - BOTH FACES
U510	X	30	9'-5"	X		WINGS 3&4 - VERT. - BACK FACE
U411	X	16	5'-10"		▲	WINGS 3&4 - VERT. - BACK FACE
U412	X	18	10'-4"	X	▲	WINGS 3&4 - VERT. - BACK FACE
U513	X	4	16'-3"			WINGS 3&4 - HORIZ. - BOTH FACE
U414	X	16	2'-9"			WINGS 3&4 - DOWELS - FRONT FACE
U415	X	16	5'-4"		▲	WINGS 3&4 - VERT. - FRONT FACE
U416	X	8	3'-3"		▲	WINGS 3&4 - VERT. - FRONT FACE

**BAR SERIES TABLE**

BAR MARK	NO. REQ'D.	LENGTH
D403	1 SERIES OF 15	13'-3" TO 29'-5"
D404	2 SERIES OF 7	3'-2" TO 13'-7"
D409	4 SERIES OF 4	2'-3" TO 15'-4"
D411	2 SERIES OF 9	4'-6" TO 7'-2"
D412	2 SERIES OF 9	9'-1" TO 11'-11"
D415	2 SERIES OF 10	3'-1" TO 7'-3"
D416	2 SERIES OF 4	2'-6" TO 3'-10"
U403	1 SERIES OF 15	13'-3" TO 20'-9"
U404	2 SERIES OF 3	4'-4" TO 11'-9"
U409	4 SERIES OF 4	2'-1" TO 13'-11"
U411	2 SERIES OF 8	4'-7" TO 7'-2"
U412	2 SERIES OF 9	8'-11" TO 11'-9"
U415	2 SERIES OF 8	3'-6" TO 7'-2"
U416	2 SERIES OF 4	2'-5" TO 4'-0"

BUNDLE AND TAG EACH SERIES SEPARATELY.

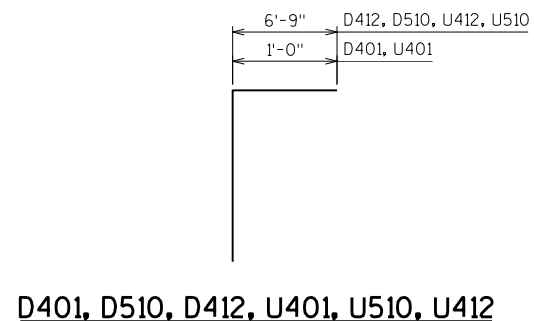
▲ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



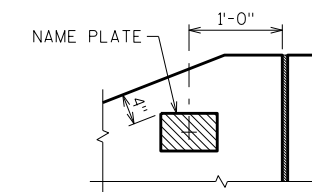
**TYPICAL SECTION THRU BOX CULVERT**

▲ BACKFILL PAY LIMITS, BACKFILL BEYOND BACKFILL PAY LIMITS INCLUDING BACKFILL BEHIND WING WALLS, SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

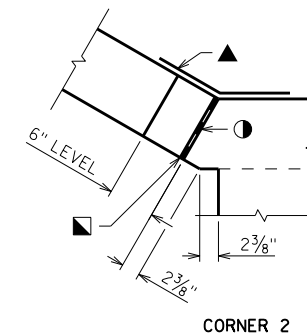
☆ UNDER CUT 1'-0". EXCAVATION FOR UNDER CUT TO BE INCLUDED WITH BID ITEM "EXCAVATION FOR STRUCTURES CULVERTS". PLACE GEOTEXTILE TYPE 'C' AND BACKFILL WITH BREAKER RUN.



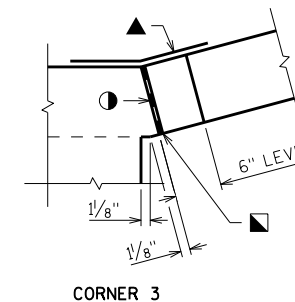
**D401, D510, D412, U401, U510, U412**



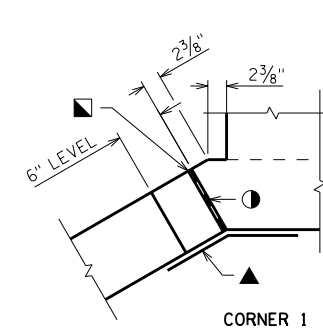
**NAME PLATE LOCATION WING 4**



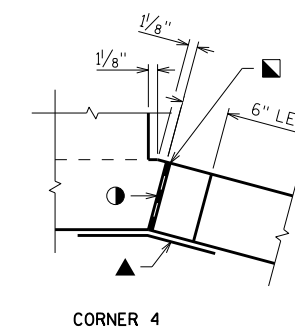
**CORNER 2**



**CORNER 3**



**CORNER 1**



**CORNER 4**

**CORNER DETAILS**

● 3/4" FILLER TYPICAL. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING.

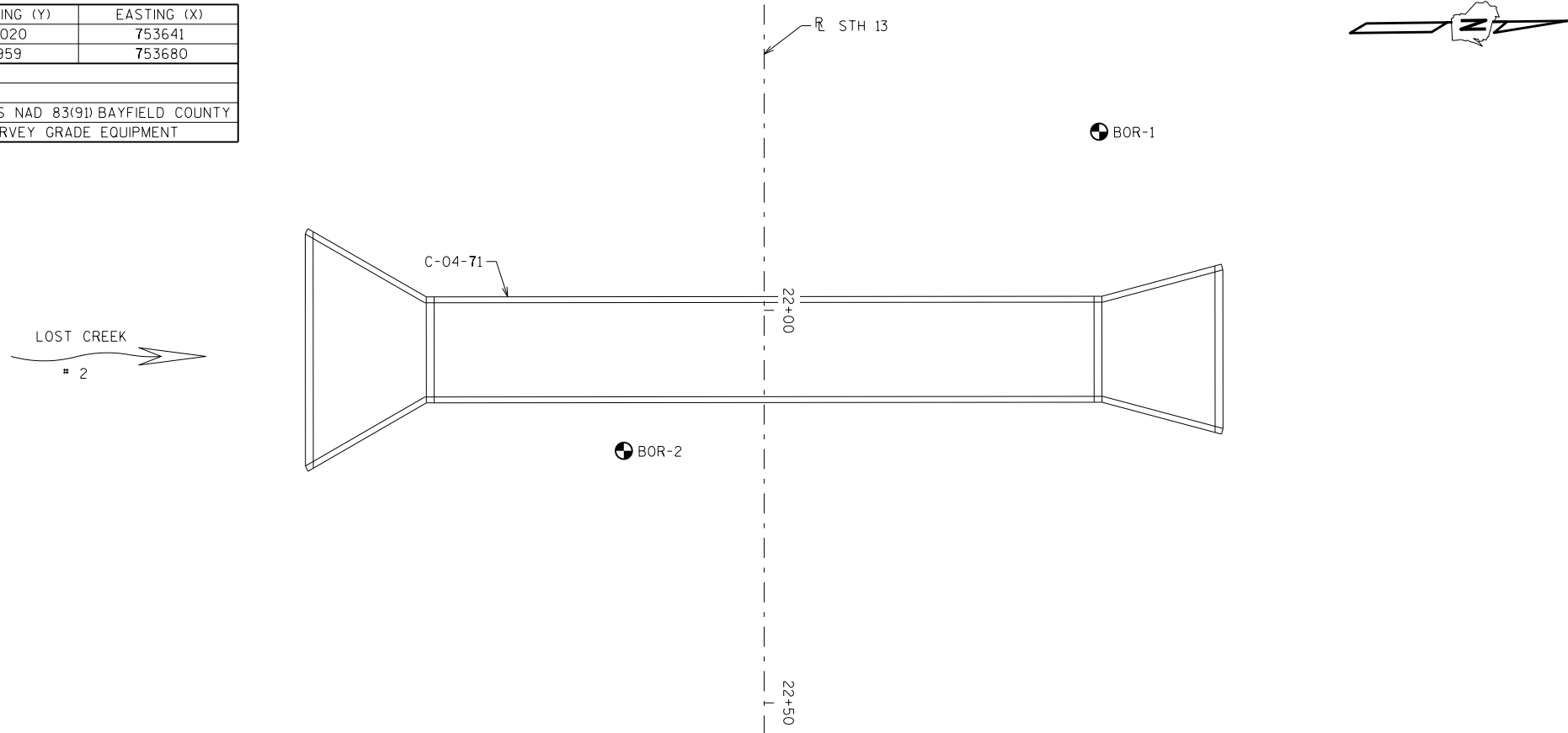
■ 1" BEVEL TYPICAL

▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WALL.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-71</b>			
DRAWN BY		IFC	PLANS CK'D. <b>MWB</b>
<b>DETAILS</b>		SHEET 4	

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	11/11/2020	552020	753641
2	11/17/2020	551959	753680

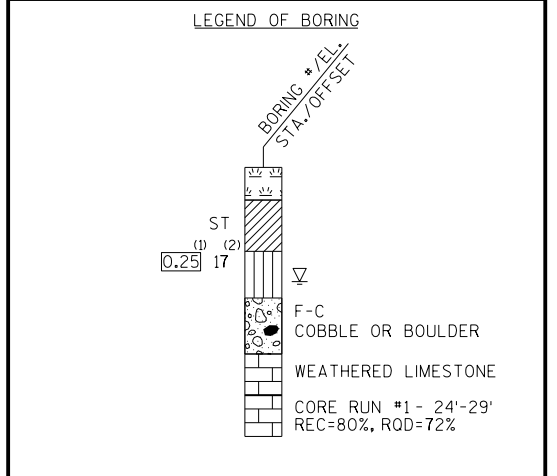
BORINGS COMPLETED BY: WISDOT  
 REPORT COMPLETED BY: WISDOT  
 ALL COORDINATES REFERENCED TO WCCS NAD 83(9D) BAYFIELD COUNTY  
 COORDINATES COLLECTED USING NON-SURVEY GRADE EQUIPMENT



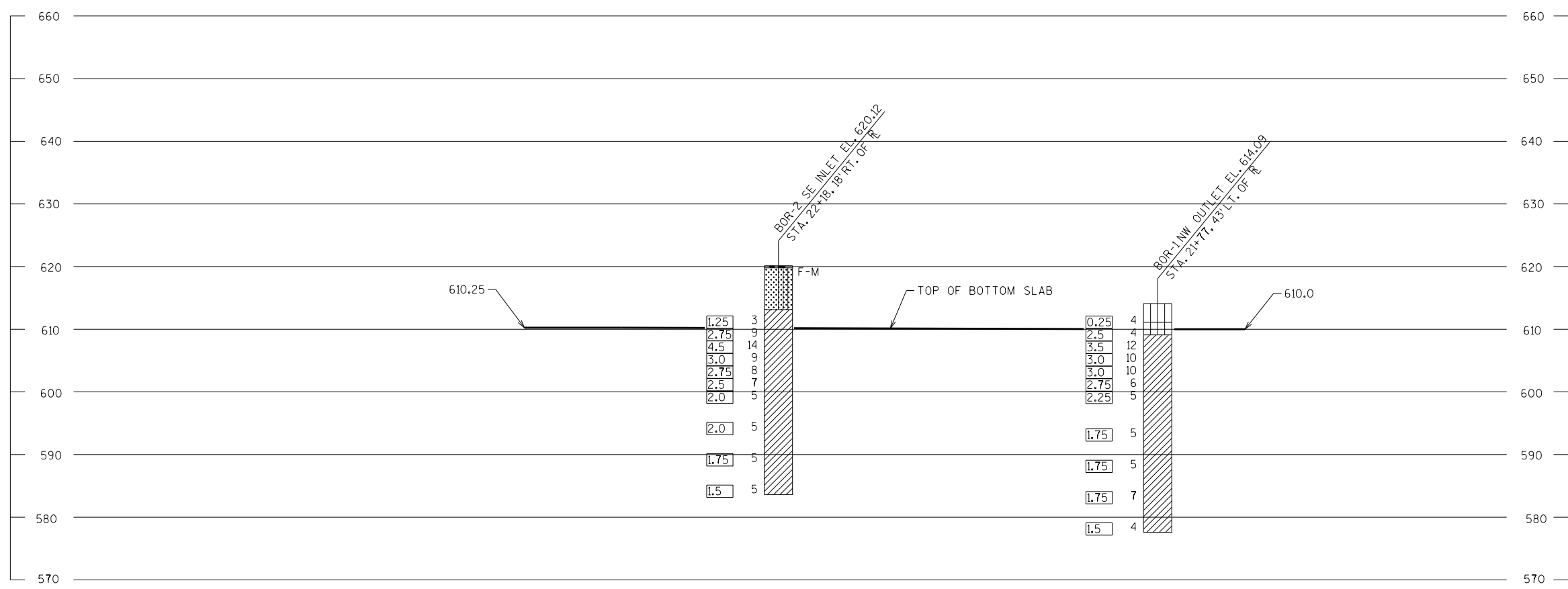
STATE PROJECT NUMBER  
**8510-00-71**

MATERIAL SYMBOLS

ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/META



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)  
 (2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.



SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

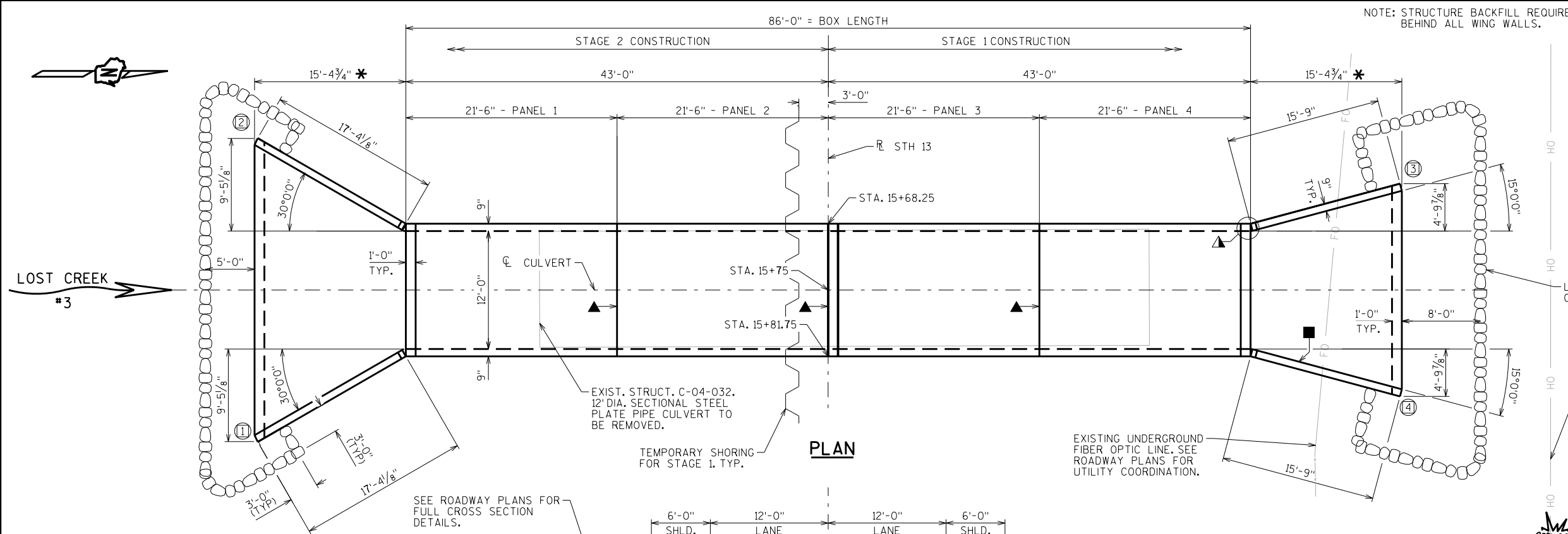
BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-71</b>			
DRAWN BY TLP/IFC		PLANS CKD. MWB	
<b>SUBSURFACE EXPLORATION</b>			SHEET 5

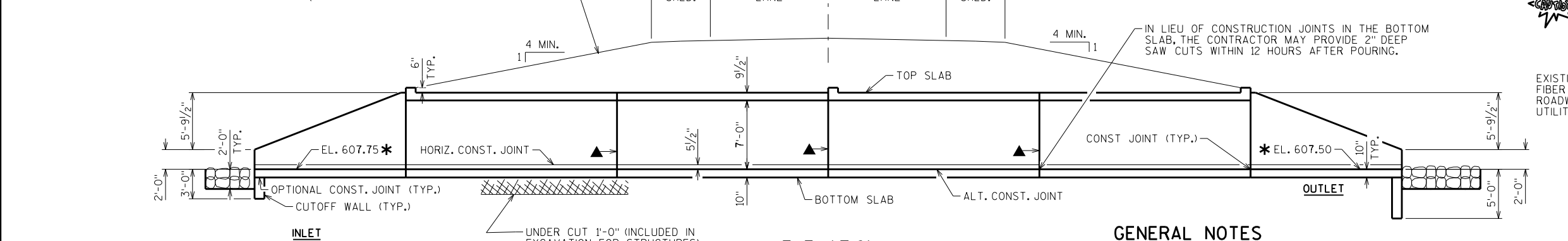
8

8

SCALE = 10.00



- ▲ SEE CORNER DETAILS ON "DETAILS" SHEET
- NAME PLATE LOCATION (SEE "DETAILS" SHEET)
- \* BUILD APRON AND END OF BOX LEVEL
- ⊙ INDICATES WING NUMBER
- ▲ VERT. CONST. JOINT (TYP.)



- HO — LIMITS OF HEAVY RIPRAP AND GEOTEXTILE TYPE HR (TYP.)
- FO — EXISTING OVERHEAD UTILITY. SEE ROADWAY PLANS FOR UTILITY COORDINATION.
- FO — EXISTING UNDERGROUND FIBER OPTIC LINE. SEE ROADWAY PLANS FOR UTILITY COORDINATION.

**LIST OF DRAWINGS**

1. LAYOUT
2. BOX DETAILS
3. APRON DETAILS
4. DETAILS
5. SUBSURFACE EXPLORATION

**STRUCTURE DESIGN CONTACTS:**

ISATOU CEESAY (608) 266-9557  
LAURA SHADEWALD (608) 267-9592

**DESIGN DATA**

**LIVE LOAD:**  
DESIGN LOADING: HL-93  
INVENTORY RATING FACTOR: RF = 1.05  
OPERATING RATING FACTOR: RF = 1.35  
WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 255(KIPS)

**EARTHLOAD:**  
DESIGNED FOR 2 TO 6 FT. OF FILL.

**MATERIAL PROPERTIES:**  
CONCRETE MASONRY:  $f'_c = 3,500$  P.S.I.  
BAR STEEL REINFORCEMENT:  $f_y = 60,000$  P.S.I.

**HYDRAULIC DATA**

**100 YEAR FREQUENCY**  
 $Q_{100} = 450$  C.F.S.  
 $VEL_{100} = 7.63$  F.P.S.  
 $HW_{100} = EL. 615.07$   
WATERWAY AREA = 58.97 SQ. FT.  
DRAINAGE AREA = 3.57 SQ. MI.  
ROADWAY OVERTOPPING = N/A  
SCOUR CRITICAL CODE = 8

**TRAFFIC VOLUME**

**STH 13**  
ADT = 1300 (2042)  
R.D.S. = 55 M.P.H.

**TOTAL ESTIMATED QUANTITIES**

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
203.0220	REMOVING STRUCTURE (C-04-032)	EACH	1
206.2001	EXCAVATION FOR STRUCTURES CULVERTS C-04-72	EACH	1
210.2500	BACKFILL STRUCTURE TYPE B	TON	1,340
311.0115	BREAKER RUN	CY	91
504.0100	CONCRETE MASONRY CULVERTS	CY	139
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	22,080
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,650
511.1200	TEMPORARY SHORING C-04-72	SF	361
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	31
606.0300	RIPRAP HEAVY	CY	30
645.0105	GEOTEXTILE TYPE C	SY	295
645.0120	GEOTEXTILE TYPE HR	SY	70
NON-BID ITEMS			
	FILLER	SIZE	3/4"

**GENERAL NOTES**

- DRAWINGS SHALL NOT BE SCALED.
- BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
- THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.
- BEVEL EXPOSED EDGES OF CONCRETE  $\frac{3}{4}$ " UNLESS OTHERWISE NOTED.
- THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS C-04-72" SHALL BE THE EXISTING GROUNDLINE.
- ALL VOLUME WHICH CANNOT BE PLACED BEFORE CULVERT CONSTRUCTION AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL WITHIN THE LENGTH OF THE CULVERT INCLUDING THE APRON WING WALLS.
- THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.
- THE CONCRETE IN THE CUTOFF WALLS MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.
- PLACE 18" (MIN.) WIDE SHEET OF "RUBBERIZED MEMBRANE WATERPROOFING" ON TOP SLAB OVER ALL CONSTRUCTION JOINTS AND EXTEND DOWN TO BOTTOM OF OUTSIDE WALLS.
- THE CONTRACTOR MAY FURNISH A PRECAST CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE BOX CULVERT WITH THE ACCEPTANCE OF THE SHOP DRAWINGS BY THE STRUCTURES DESIGN SECTION. THE PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO PRECAST DETAILS ON CHAPTER 36 STANDARDS OF THE CURRENT WISC. DOT BRIDGE MANUAL. PAYMENT FOR THE PRECAST CULVERT SHALL BE BASED ON THE QUANTITIES AND PRICES BID FOR THE ITEMS LISTED IN THE "TOTAL ESTIMATED QUANTITIES".
- THE CONTRACTOR MAY ELECT TO SUBSTITUTE #1 OR #2 CONCRETE COARSE AGGREGATE, SELECT CRUSHED MATERIAL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE FIELD ENGINEER, IN LIEU OF THE BREAKER RUN, TO BE UTILIZED AS A CONSTRUCTION PLATFORM FOR THE BOX. THE CONTRACTOR IS RESPONSIBLE FOR BASE STABILITY WITH ANY SUBSTITUTED MATERIAL.

8

**BUREAU OF STRUCTURES**

ACCEPTED: *[Signature]* 8/11/22  
CHIEF STRUCTURES DESIGN ENGINEER DATE

**STRUCTURE C-04-72**

STH 13 OVER LOST CREEK #3

COUNTY: BAYFIELD TOWN: BELL

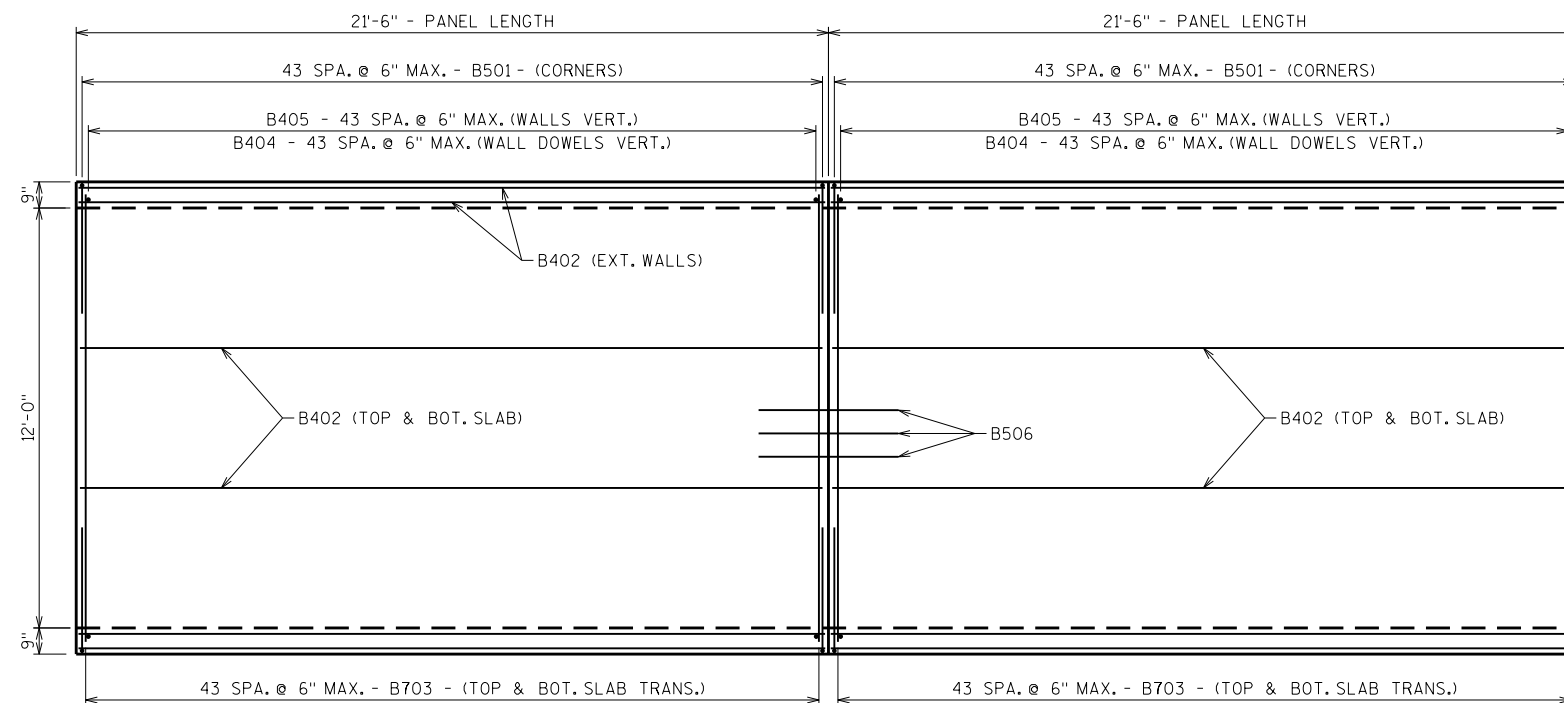
DESIGN SPEC: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY: IFC DESIGNED CK'D: MWB DRAWN BY: IFC PLANS CK'D: MWB

**LAYOUT**

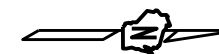
SHEET 1 OF 5

SCALE = 6.00



**PLAN VIEW OF PANELS 1 AND 2**

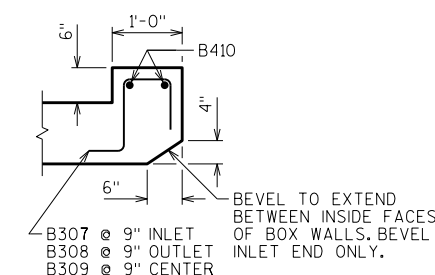
APRON AND HEADERS NOT SHOWN  
PANELS 3 & 4 SIMILAR



**BILL OF BARS**

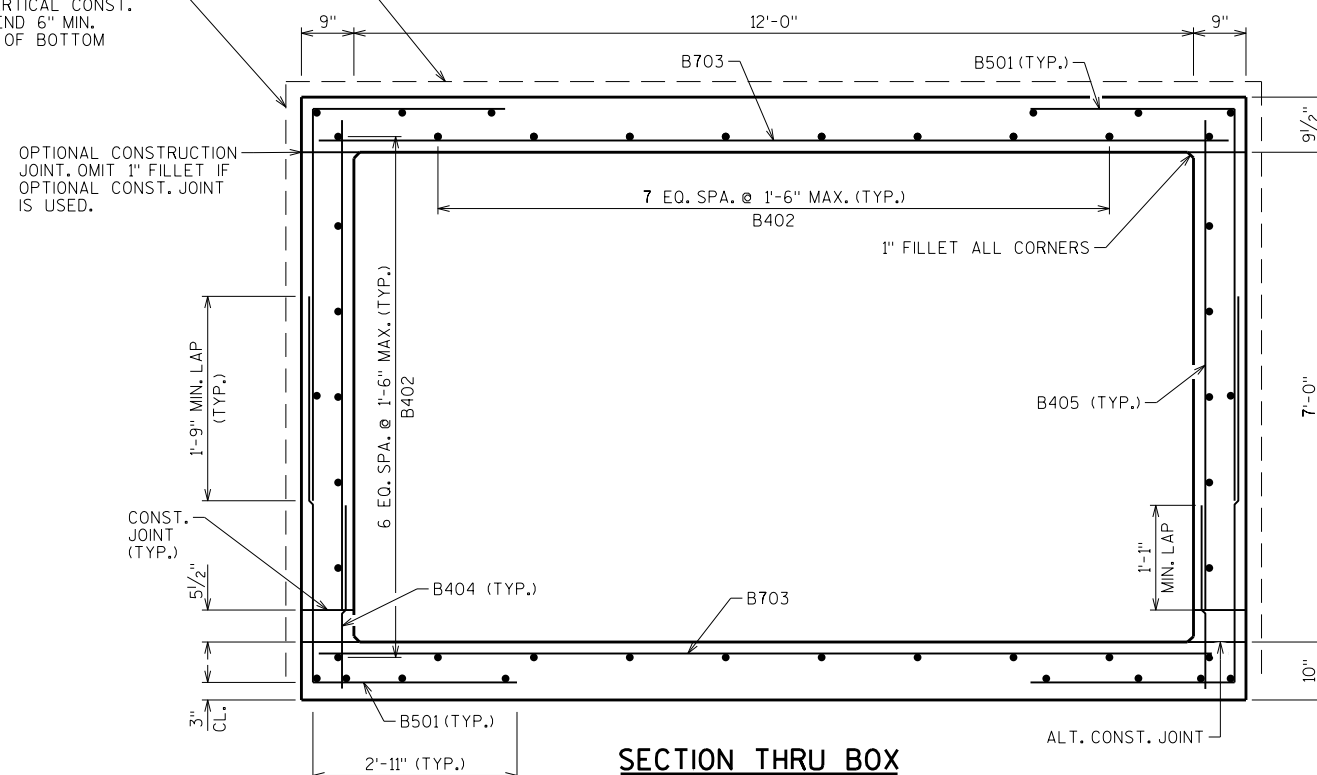
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B501		704	7'-10"	X		CORNERS
B402		184	21'-2"			TOP & BOT. SLAB & WALLS - LONGIT.
B703		352	13'-2"			TOP & BOTTOM SLAB - TRANSVERSE
B404		352	2'-2"			WALL - DOWELS
B405		352	7'-2"			WALL - VERTICAL
B506		132	4'-0"			VERT. CONST. JOINT
B307		18	2'-8"	X		INLET HEADER - STIRRUP
B308		18	3'-0"	X		OUTLET HEADER - STIRRUP
B309		18	3'-0"	X		CENTER HEADER - STIRRUP
B410		18	13'-2"			HEADERS - TRANSVERSE



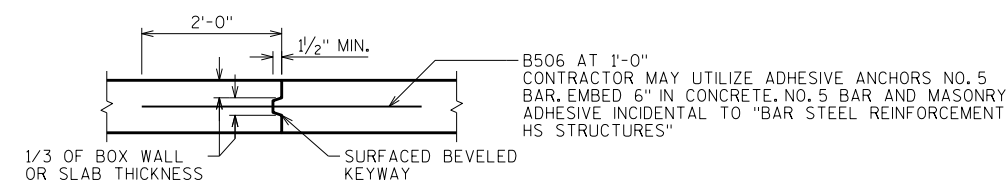
**SECTION THRU HEADER**

18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING UP WALLS & ACROSS TOP SLAB AT VERTICAL CONST. JOINTS, EXTEND 6" MIN. BELOW TOP OF BOTTOM SLAB.



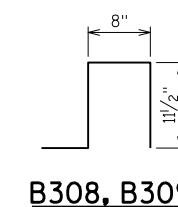
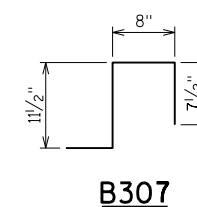
**SECTION THRU BOX**

ALL LONGITUDINAL BARS NOT LABELED ARE B402 AS SHOWN

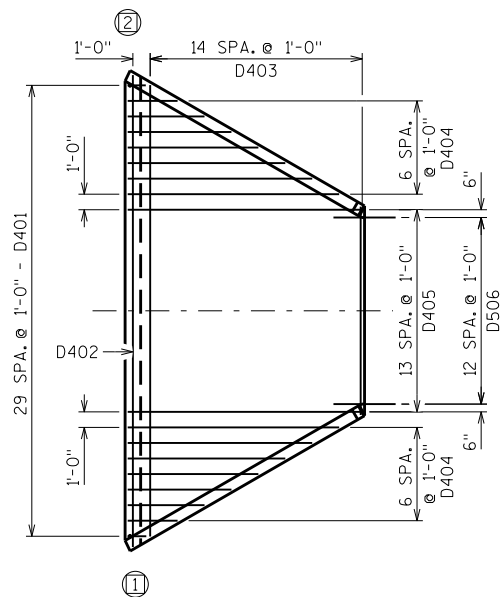


**VERTICAL CONSTRUCTION JOINT**

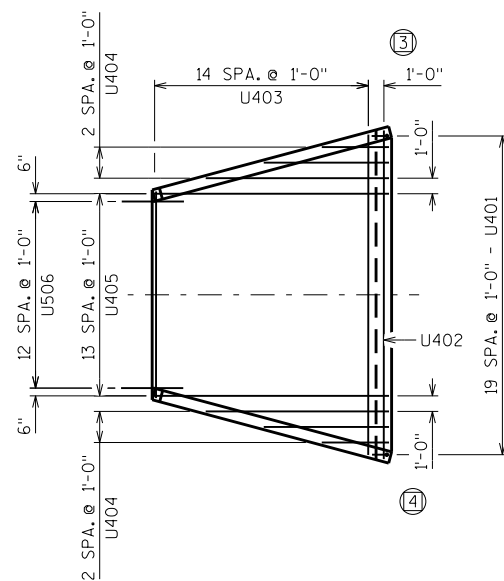
2" DEEP SAW CUT WITHIN 12 HOURS AFTER POURING MAY BE USED IN LIEU OF CONST. JT. IN BOTTOM SLAB.



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<b>STRUCTURE C-04-72</b>			
DRAWN BY		IFC	PLANS CK'D. <b>MWB</b>
<b>BOX DETAILS</b>			SHEET 2

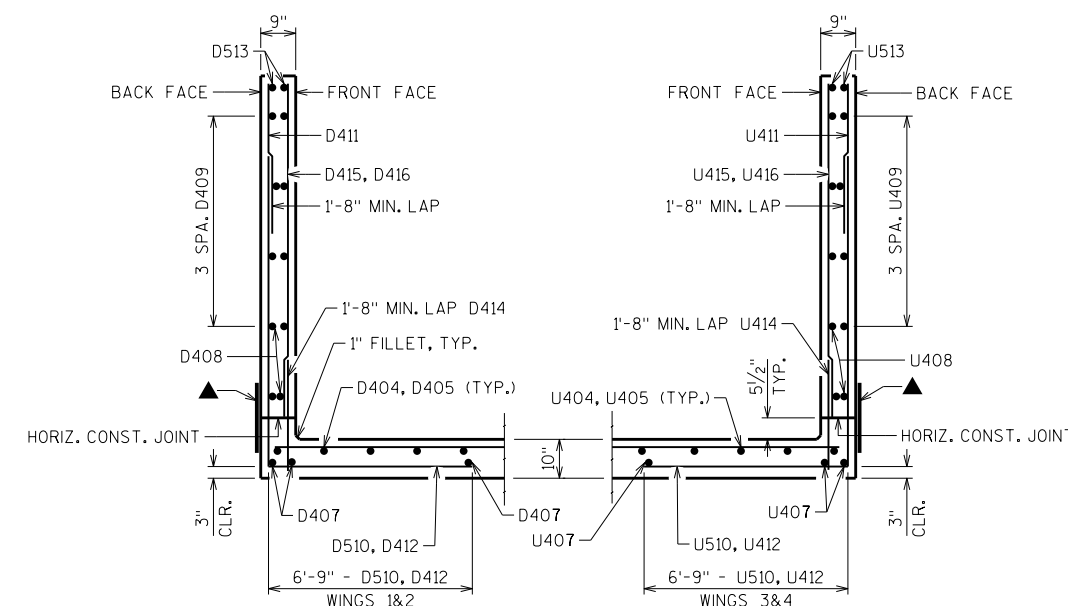


**INLET APRON PLAN**

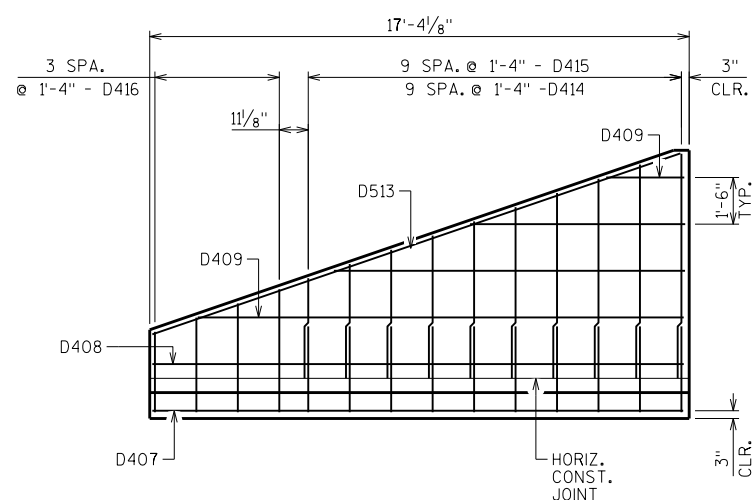


**OUTLET APRON PLAN**

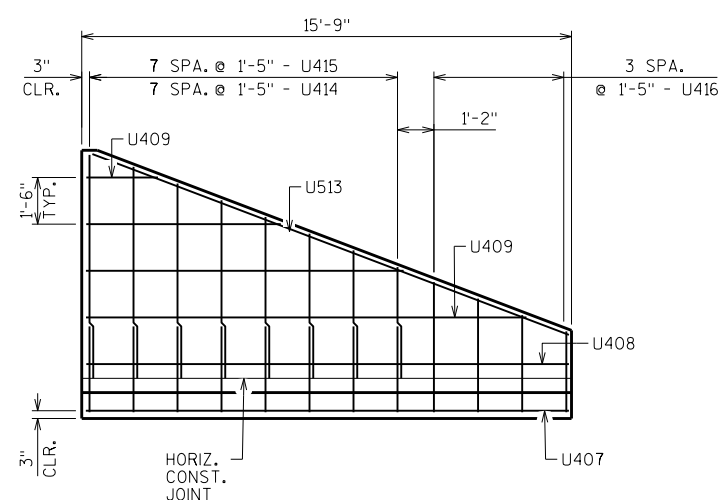
▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. PLACE ALONG HORIZ. CONST. JOINT FOR ENTIRE LENGTH OF WING.



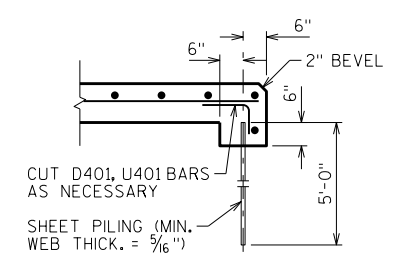
**SECTION THRU WINGS**  
AT RIGHT ANGLE TO WING WALLS



**WING 1**  
SHOWING F.F REINFORCEMENT, WING 2 SIMILAR

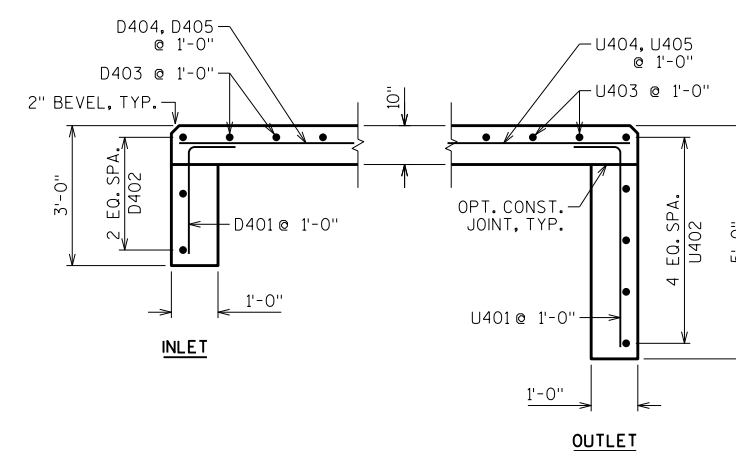


**WING 3**  
SHOWING F.F REINFORCEMENT, WING 4 SIMILAR

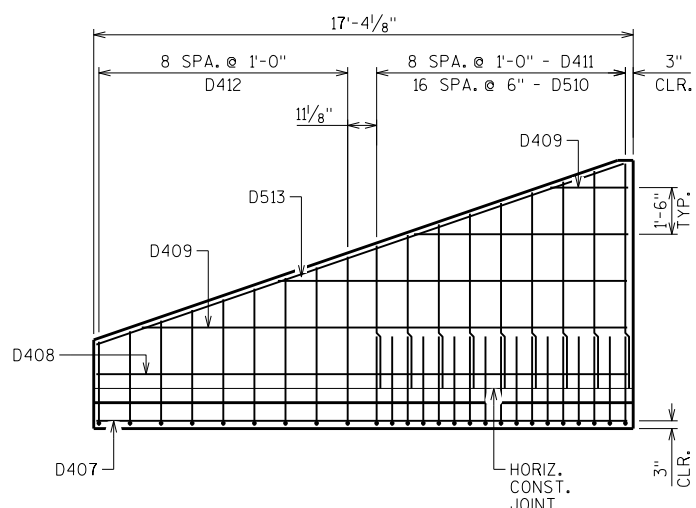


**ALTERNATE CUT-OFF WALLS**

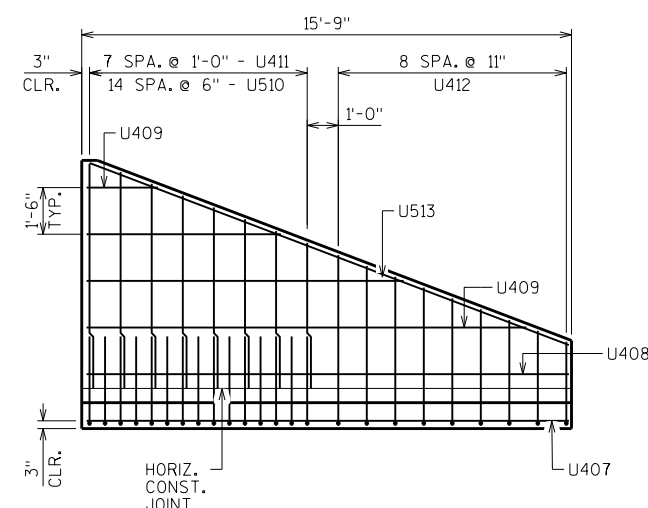
THE ABOVE ALTERNATIVE MAY BE USED IN LIEU OF CAST-IN-PLACE CONCRETE CUT-OFF WALLS. PAYMENT WILL BE BASED ON THE CONCRETE CUT-OFF WALLS.



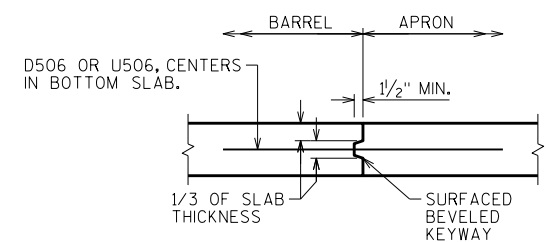
**CUT-OFF WALLS**



**WING 2**  
SHOWING B.F REINFORCEMENT, WING 1 SIMILAR



**WING 4**  
SHOWING B.F REINFORCEMENT, WING 3 SIMILAR



**APRON CONNECTION DETAIL**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-72</b>			
DRAWN BY		IFC	PLANS MWB CK'D.
<b>APRON DETAILS</b>			SHEET 3

**BILL OF BARS**

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE

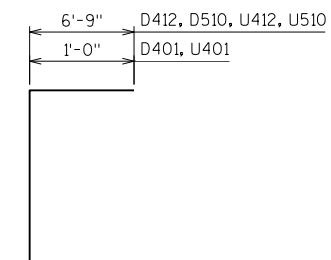
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
D401		30	3'-6"	X		INLET APRON AND CUTOFF WALL VERT.
D402		3	29'-6"			INLET APRON AND CUTOFF WALL HORIZ.
D403		15	21'-4"		▲	INLET APRON - TRANSVERSE
D404		14	8'-5"		▲	INLET APRON - LONGIT.
D405		14	15'-0"			INLET APRON - LONGIT.
D506		13	4'-0"			INLET APRON - APRON & BARREL - BOTTOM SLAB
D407		6	16'-10"			WINGS 1&2 - HORIZ. - APRON BOT. SLAB
D408	X	4	16'-10"			WINGS 1&2 - HORIZ. - BOTH FACES
D409	X	16	8'-9"		▲	WINGS 1&2 - HORIZ. - BOTH FACES
D510	X	34	9'-6"	X		WINGS 1&2 - VERT. - BACK FACE
D411	X	18	5'-10"		▲	WINGS 1&2 - VERT. - BACK FACE
D412	X	18	10'-6"	X	▲	WINGS 1&2 - VERT. - BACK FACE
D513	X	4	17'-10"			WINGS 1&2 - HORIZ. - BOTH FACE
D414	X	20	2'-9"			WINGS 1&2 - DOWELS - FRONT FACE
D415	X	20	5'-2"		▲	WINGS 1&2 - VERT. - FRONT FACE
D416	X	8	3'-2"		▲	WINGS 1&2 - VERT. - FRONT FACE
U401		20	5'-6"	X		OUTLET APRON AND CUTOFF WALL VERT.
U402		5	20'-7"			OUTLET APRON AND CUTOFF WALL HORIZ.
U403		15	17'-0"		▲	OUTLET APRON - TRANSVERSE
U404		6	8'-1"		▲	OUTLET APRON - LONGIT.
U405		14	15'-0"			OUTLET APRON - LONGIT.
U506		13	4'-0"			OUTLET APRON - APRON & BARREL - BOTTOM SLAB
U407		6	15'-3"			WINGS 3&4 - HORIZ. - APRON BOT. SLAB
U408	X	4	15'-3"			WINGS 3&4 - HORIZ. - BOTH FACES
U409	X	16	8'-0"		▲	WINGS 3&4 - HORIZ. - BOTH FACES
U510	X	30	9'-5"	X		WINGS 3&4 - VERT. - BACK FACE
U411	X	16	5'-10"		▲	WINGS 3&4 - VERT. - BACK FACE
U412	X	18	10'-4"	X	▲	WINGS 3&4 - VERT. - BACK FACE
U513	X	4	16'-3"			WINGS 3&4 - HORIZ. - BOTH FACE
U414	X	16	2'-9"			WINGS 3&4 - DOWELS - FRONT FACE
U415	X	16	5'-4"		▲	WINGS 3&4 - VERT. - FRONT FACE
U416	X	8	3'-3"		▲	WINGS 3&4 - VERT. - FRONT FACE

▲ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

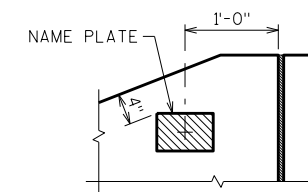
**BAR SERIES TABLE**

BAR MARK	NO. REQ'D.	LENGTH
D403	1 SERIES OF 15	13'-3" TO 29'-5"
D404	2 SERIES OF 7	3'-2" TO 13'-7"
D409	4 SERIES OF 4	2'-3" TO 15'-4"
D411	2 SERIES OF 9	4'-6" TO 7'-2"
D412	2 SERIES OF 9	9'-1" TO 11'-11"
D415	2 SERIES OF 10	3'-1" TO 7'-3"
D416	2 SERIES OF 4	2'-6" TO 3'-10"
U403	1 SERIES OF 15	13'-3" TO 20'-9"
U404	2 SERIES OF 3	4'-4" TO 11'-9"
U409	4 SERIES OF 4	2'-1" TO 13'-11"
U411	2 SERIES OF 8	4'-7" TO 7'-2"
U412	2 SERIES OF 9	8'-11" TO 11'-9"
U415	2 SERIES OF 8	3'-6" TO 7'-2"
U416	2 SERIES OF 4	2'-5" TO 4'-0"

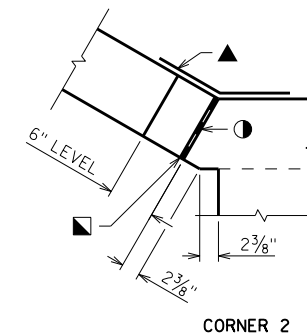
BUNDLE AND TAG EACH SERIES SEPARATELY.



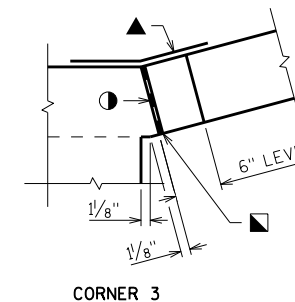
**D401, D510, D412, U401, U510, U412**



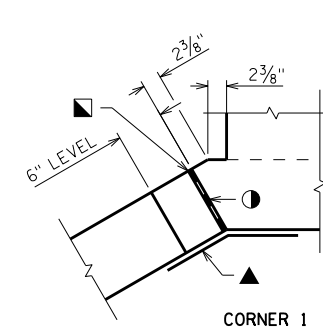
**NAME PLATE LOCATION WING 4**



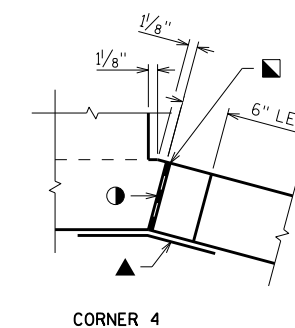
**CORNER 2**



**CORNER 3**

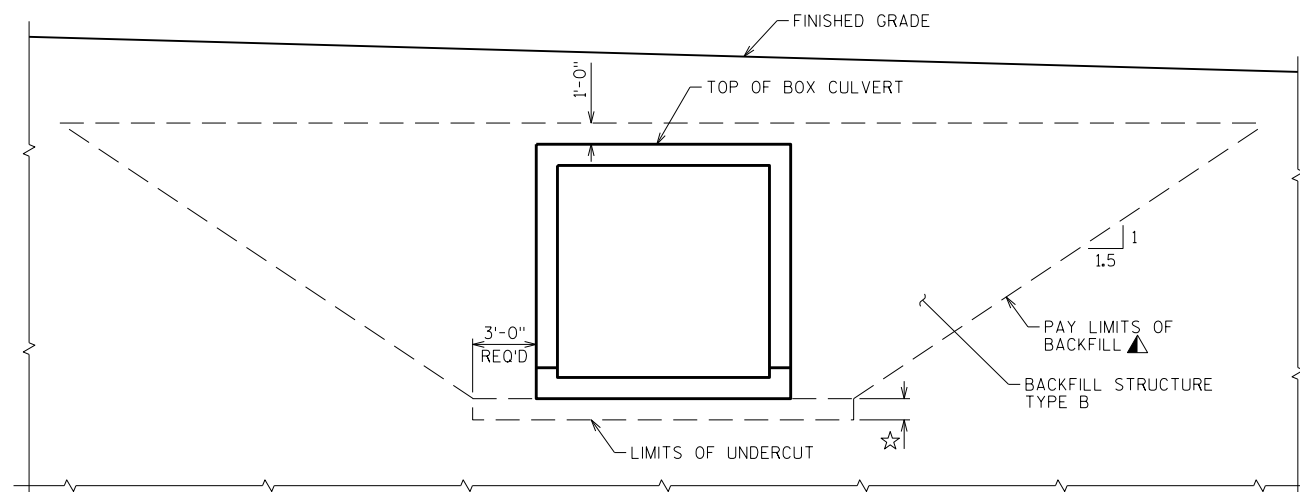


**CORNER 1**



**CORNER 4**

**CORNER DETAILS**



**TYPICAL SECTION THRU BOX CULVERT**

▲ BACKFILL PAY LIMITS, BACKFILL BEYOND BACKFILL PAY LIMITS INCLUDING BACKFILL BEHIND WING WALLS, SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

☆ UNDER CUT 1'-0". EXCAVATION FOR UNDER CUT TO BE INCLUDED WITH BID ITEM "EXCAVATION FOR STRUCTURES CULVERTS". PLACE GEOTEXTILE TYPE 'C' AND BACKFILL WITH BREAKER RUN.

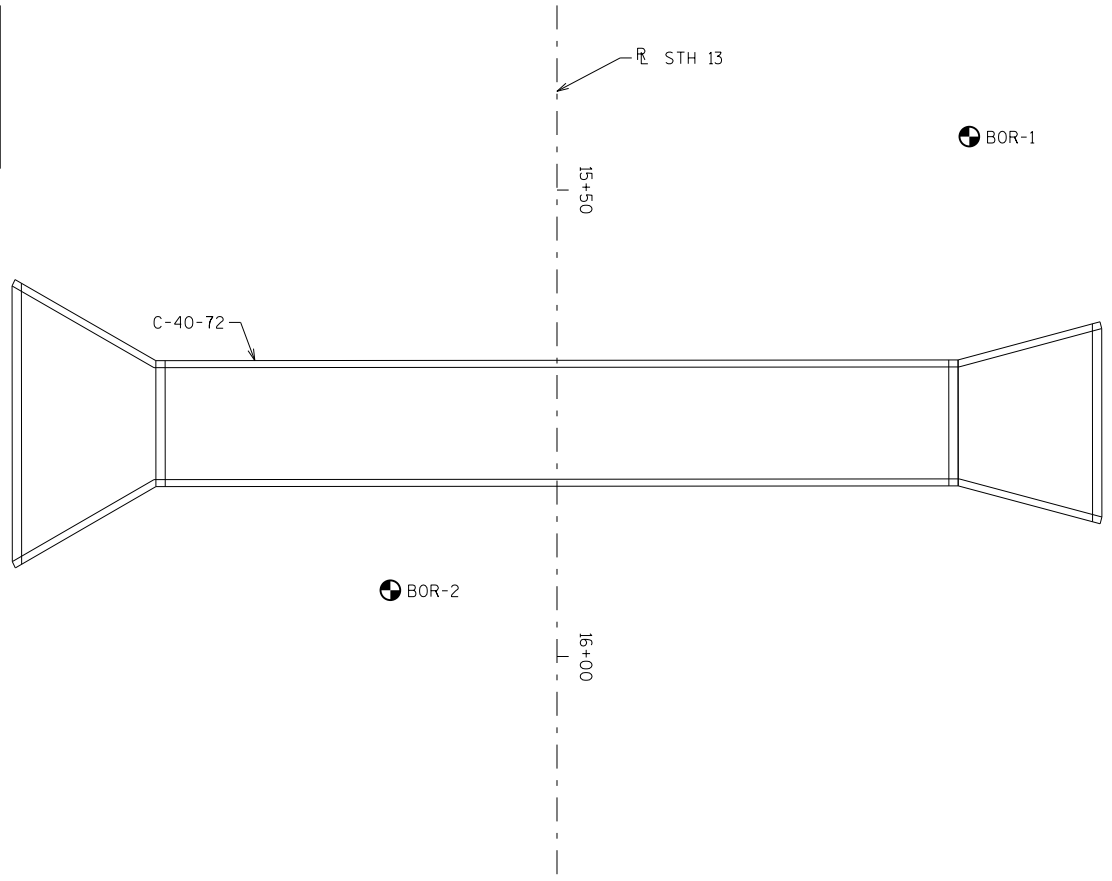
- 3/4" FILLER TYPICAL. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING.
- 1" BEVEL TYPICAL
- ▲ 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WALL.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-72</b>			
DRAWN BY		IFC	PLANS CK'D. <b>MWB</b>
<b>DETAILS</b>		SHEET 4	

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	11/11/2020	552029	753008
2	11/17/2020	551967	753055

BORINGS COMPLETED BY: WISDOT  
 REPORT COMPLETED BY: WISDOT  
 ALL COORDINATES REFERENCED TO WCCS NAD 83(9D) BAYFIELD COUNTY  
 COORDINATES COLLECTED USING NON-SURVEY GRADE EQUIPMENT

LOST CREEK  
# 3



STATE PROJECT NUMBER  
**8510-00-71**

MATERIAL SYMBOLS

ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/META

LEGEND OF BORING

ST  
(1) 0.25  
(2) 17

F-C  
COBBLE OR BOULDER

WEATHERED LIMESTONE

CORE RUN #1 - 24'-29'  
REC=80%, ROD=72%

(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

(2) UNLESS OTHERWISE SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

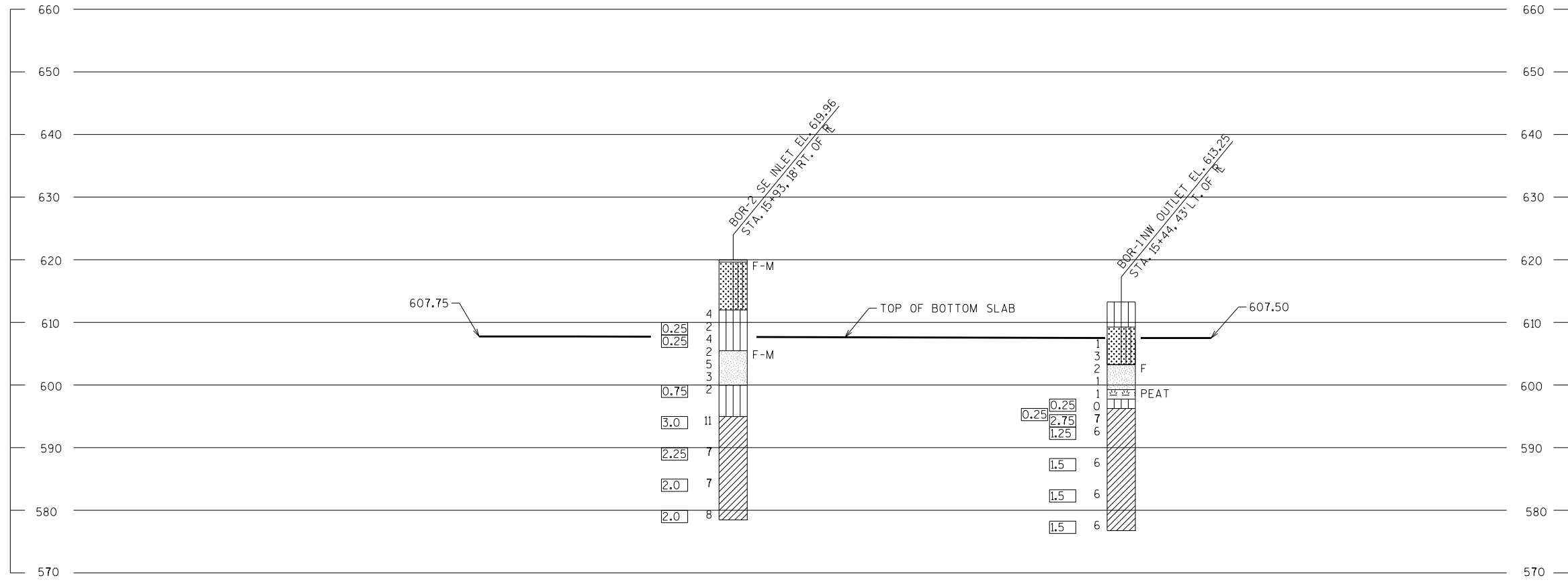
GROUND WATER ELEVATION

▽ AT TIME OF DRILLING  
 ▼ END OF DRILLING  
 ▽ AFTER DRILLING

ABBREVIATIONS  
 F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
<b>STRUCTURE C-04-72</b>			
DRAWN BY TLP/IFC		PLANS CKD. MWB	
<b>SUBSURFACE EXPLORATION</b>			SHEET 5

8

8

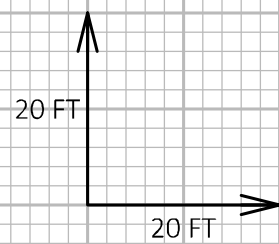
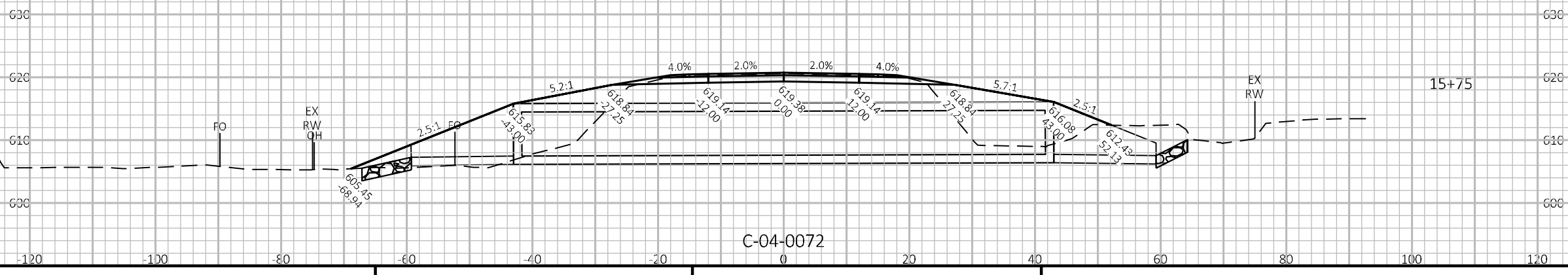
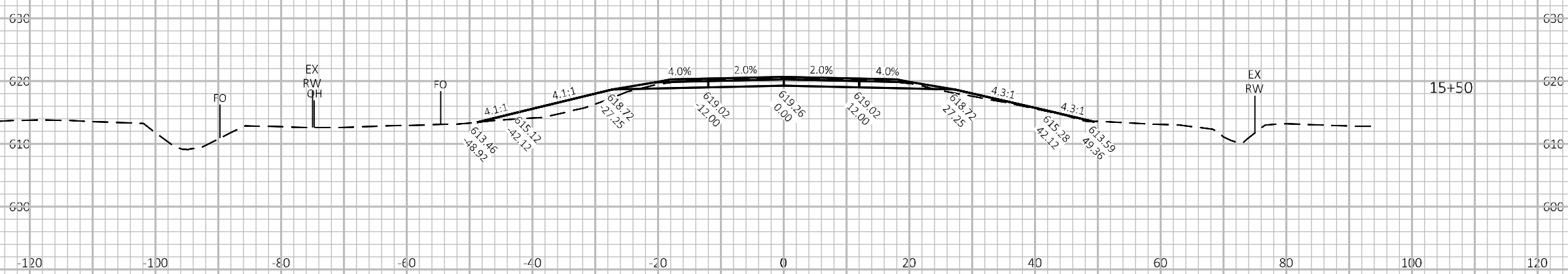
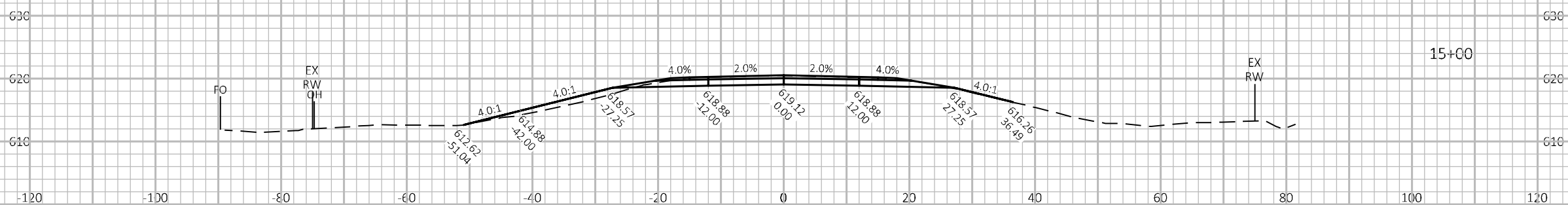
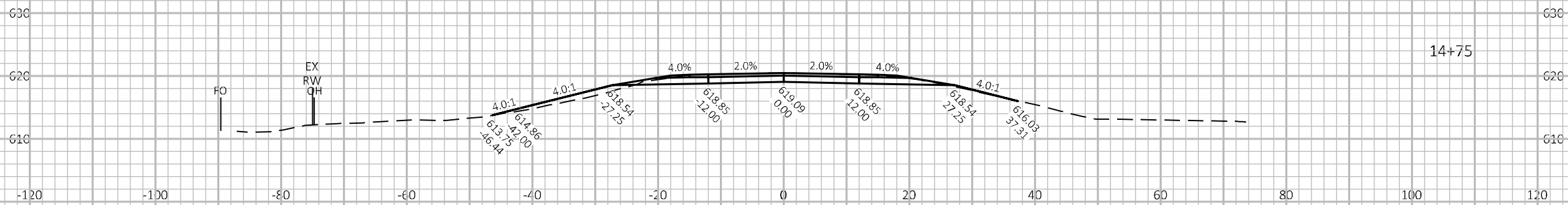
SCALE = 10.00

STA	EXCAVATION COMMON CY	EXCAVATION ROCK CY	FILL (1) CY	EXPANDED FILL (2) CY	WASTE CY	BORROW CY
<b>14+75.00</b>						
	53	0	16	20	33	-33
<b>15+00.00</b>						
	26	0	9	11	15	-15
<b>15+50.00</b>						
<b>STRUCTURE C-04-0072</b>						
<b>16+00.00</b>						
	54	0	29	36	18	-18
<b>16+25.00</b>						
	56	0	12	15	41	-41
<b>16+50.00</b>						
	27	0	6	8	19	-19
<b>16+75.00</b>						
<b>TEMPORARY DIVERSION</b>	2,500	0	0	0	2,500	-2,500
<b>SUBTOTALS</b>	2,716	0	72	90	2,626	-2,626
(3)						93
<b>TOTALS</b>	<b>2,716</b>	<b>0</b>	<b>72</b>	<b>90</b>	<b>2,626</b>	<b>-2,533</b>
(1) - NOT A BID ITEM - FOR INFORMATIONAL PURPOSES ONLY.						
(2) - FILL EXPANSION 25%						
(3) - PAVEMENT BASED ON AVE THK OF 5" OF ASPHALT						

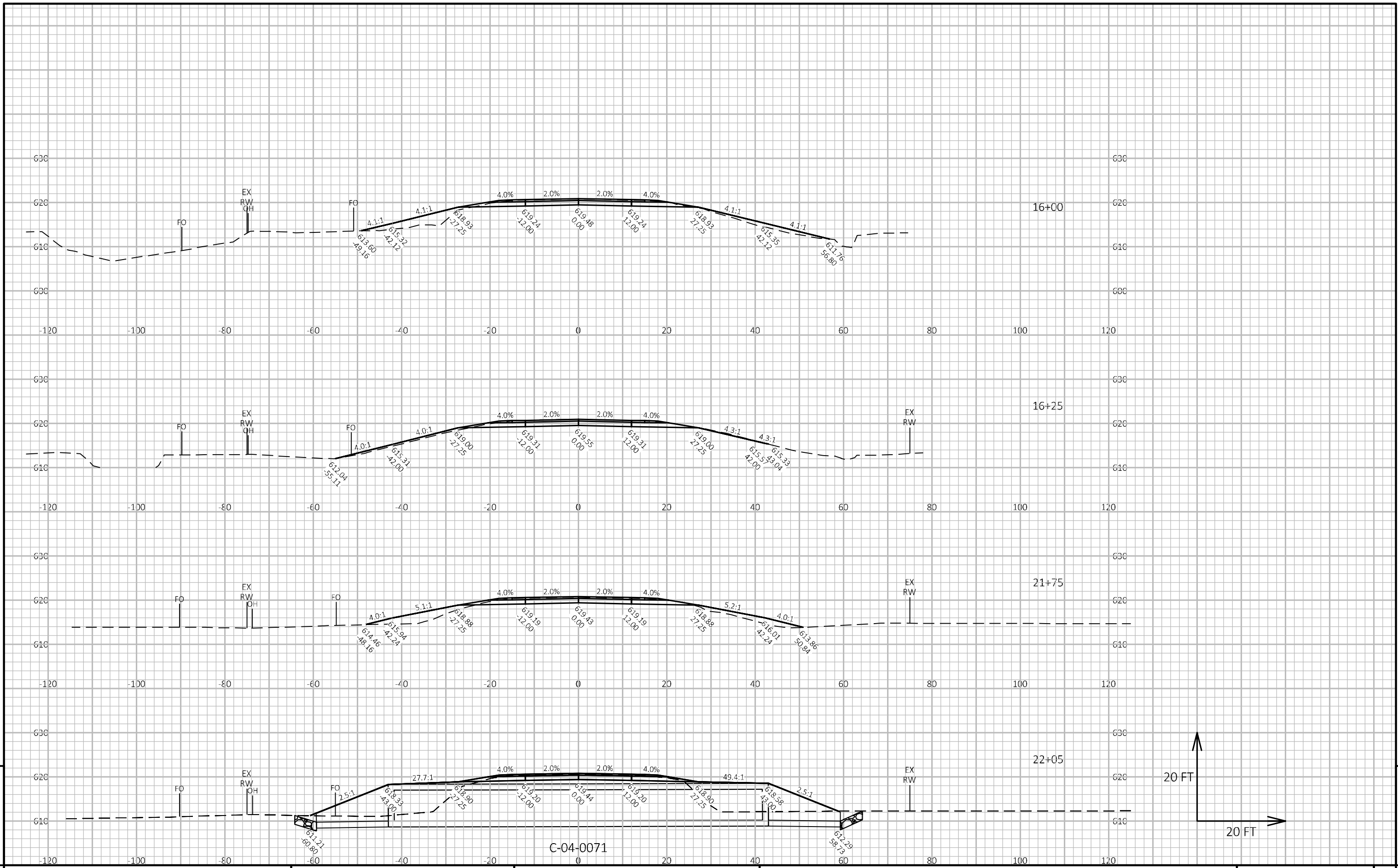
STA	EXCAVATION COMMON CY	EXCAVATION ROCK CY	FILL (1) CY	EXPANDED FILL (2) CY	WASTE CY	BORROW CY
<b>21+00.00</b>						
	111	0	27	34	77	-77
<b>21+50.00</b>						
	52	0	33	41	11	-11
<b>21+75.00</b>						
<b>STRUCTURE C-04-0071</b>						
<b>22+25.00</b>						
	47	0	46	58	-11	11
<b>22+50.00</b>						
	97	0	29	36	61	-61
<b>23+00.00</b>						
<b>TEMPORARY DIVERSION</b>	1,730	0	0	0	1,730	-1,730
<b>SUBTOTALS</b>	2,037	0	135	169	1,868	-1,868
(3)						92
<b>TOTALS</b>	<b>2,037</b>	<b>0</b>	<b>135</b>	<b>169</b>	<b>1,868</b>	<b>-1,776</b>
(1) - NOT A BID ITEM - FOR INFORMATIONAL PURPOSES ONLY.						
(2) - FILL EXPANSION 25%						
(3) - PAVEMENT BASED ON AVE THK OF 5" OF ASPHALT						



STA	EXCAVATION COMMON CY	EXCAVATION ROCK CY	FILL (1) CY	EXPANDED FILL (2) CY	WASTE CY	BORROW CY
<b>43+25.00</b>	104	0	25	31	73	-73
<b>43+75.00</b>	27	0	15	19	8	-8
<b>43+87.00</b>						
<b>STRUCTURE C-04-0070</b>						
<b>44+37.00</b>	30	0	18	23	7	-7
<b>44+50.00</b>	129	0	34	43	86	-86
<b>45+10.00</b>						
<b>TEMPORARY DIVERSION</b>	1,740	0	0	0	1,740	-1,740
<b>SUBTOTALS</b>	2,030	0	92	116	1,914	-1,914
(3)						81
<b>TOTALS</b>	<b>2,030</b>	<b>0</b>	<b>92</b>	<b>116</b>	<b>1,914</b>	<b>-1,833</b>
(1) - NOT A BID ITEM - FOR INFORMATIONAL PURPOSES ONLY. (2) - FILL EXPANSION 25% (3) - PAVEMENT BASED ON AVE THK OF 5" OF ASPHALT						



C-04-0072



C-04-0071

PROJECT NO: 8510-00-71

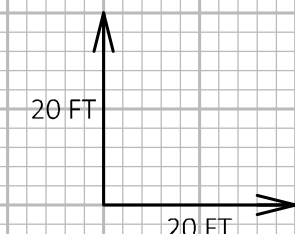
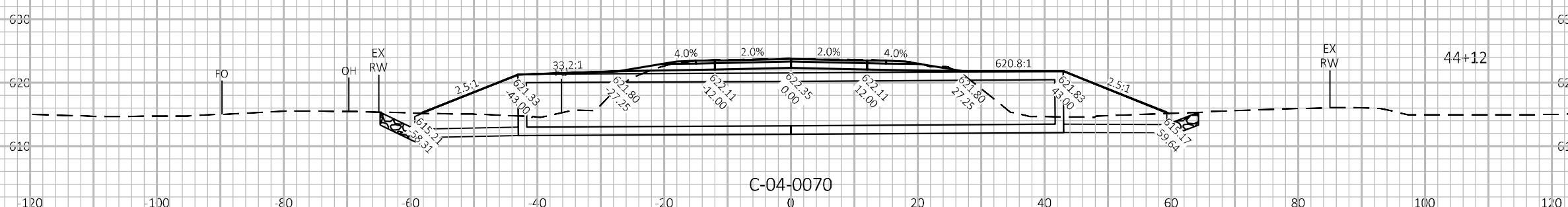
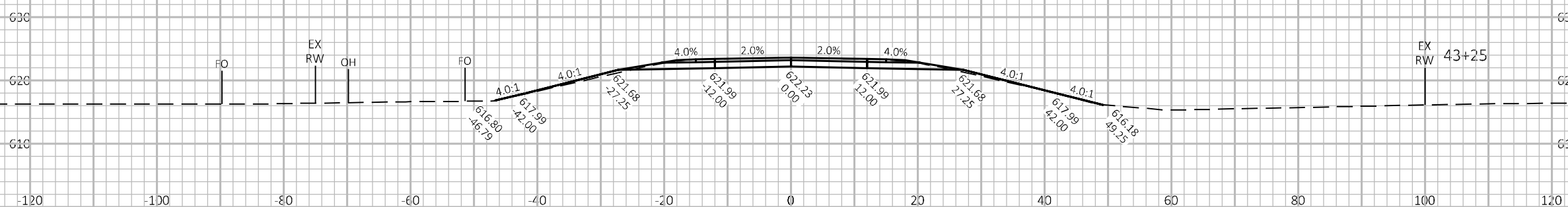
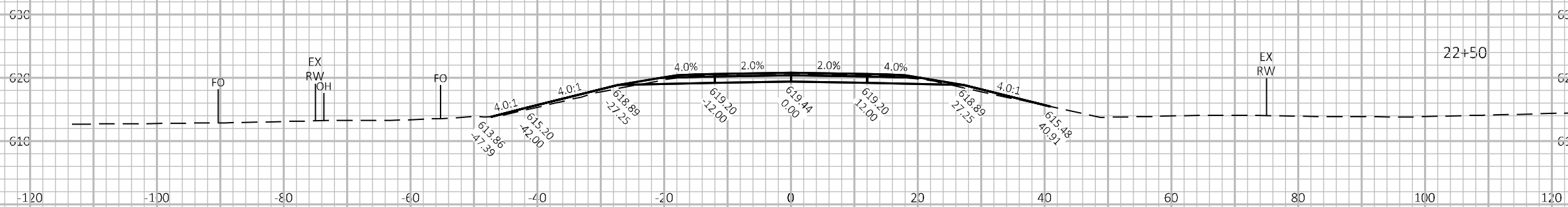
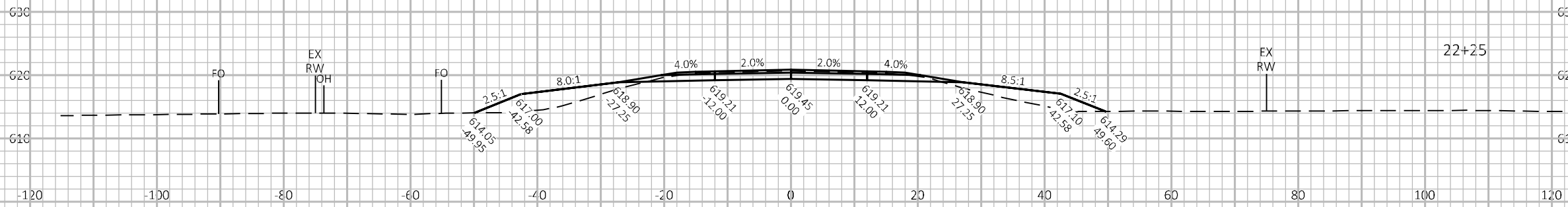
HWY: STH 13

COUNTY: BAYFIELD

CROSS SECTIONS:

SHEET

E



C-04-0070

PROJECT NO: 8510-00-71

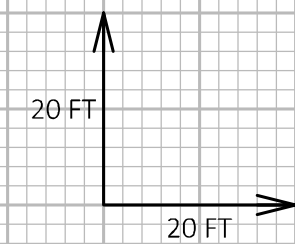
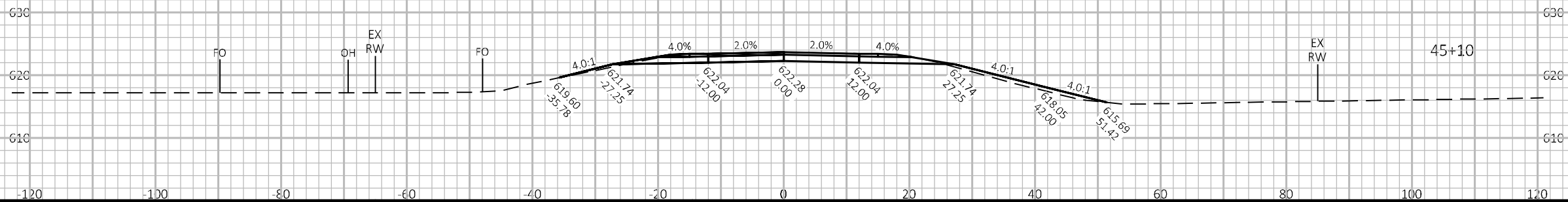
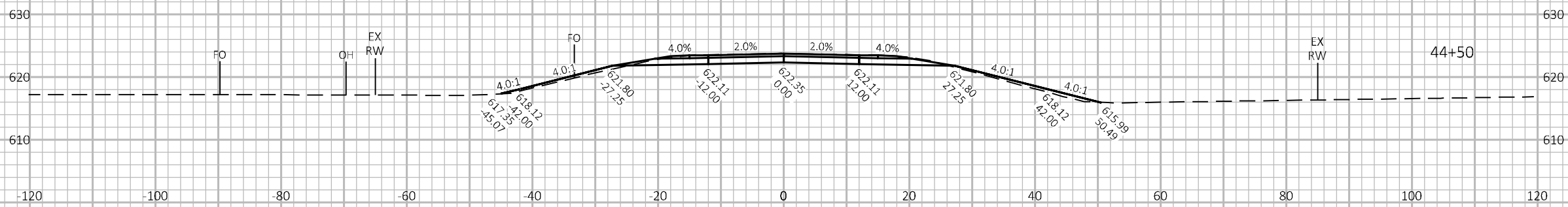
HWY: STH 13

COUNTY: BAYFIELD

CROSS SECTIONS:

SHEET

E



PROJECT NO: 8510-00-71

HWY: STH 13

COUNTY: BAYFIELD

CROSS SECTIONS:

SHEET

E



## ***Wisconsin Department of Transportation***

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