

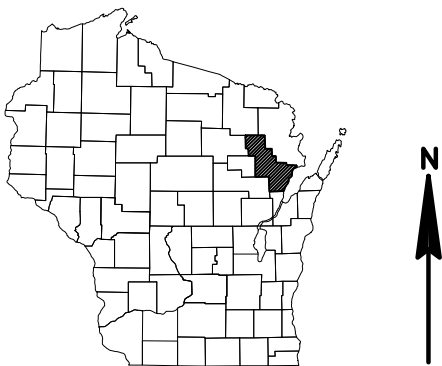
PROJECT ID: 9190-27-71
WITH: N/A

COUNTY: OCONTO

ORDER OF SHEETS

Section No. 1	Title
Section No. 2	Typical Sections and 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 =



DESIGN DESIGNATION

A.A.D.T. (2021)	=	2,600
A.A.D.T. (2041)	=	3,700
D.H.V.	=	410
D.D.	=	60/40
T.	=	9.1
DESIGN SPEED	=	55 MPH
ESALS	=	1,600,000

CONVENTIONAL SYMBOLS

PLAN	
CORPORATE LIMITS	
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
PROPOSED OR NEW R/W LINE	
SLOPE INTERCEPT	
REFERENCE LINE	
EXISTING CULVERT	
PROPOSED CULVERT (Box or Pipe)	
COMBUSTIBLE FLUIDS	
MARSH AREA	
WOODED OR SHRUB AREA	

PROFILE	
GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
OVERHEAD UTILITY	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

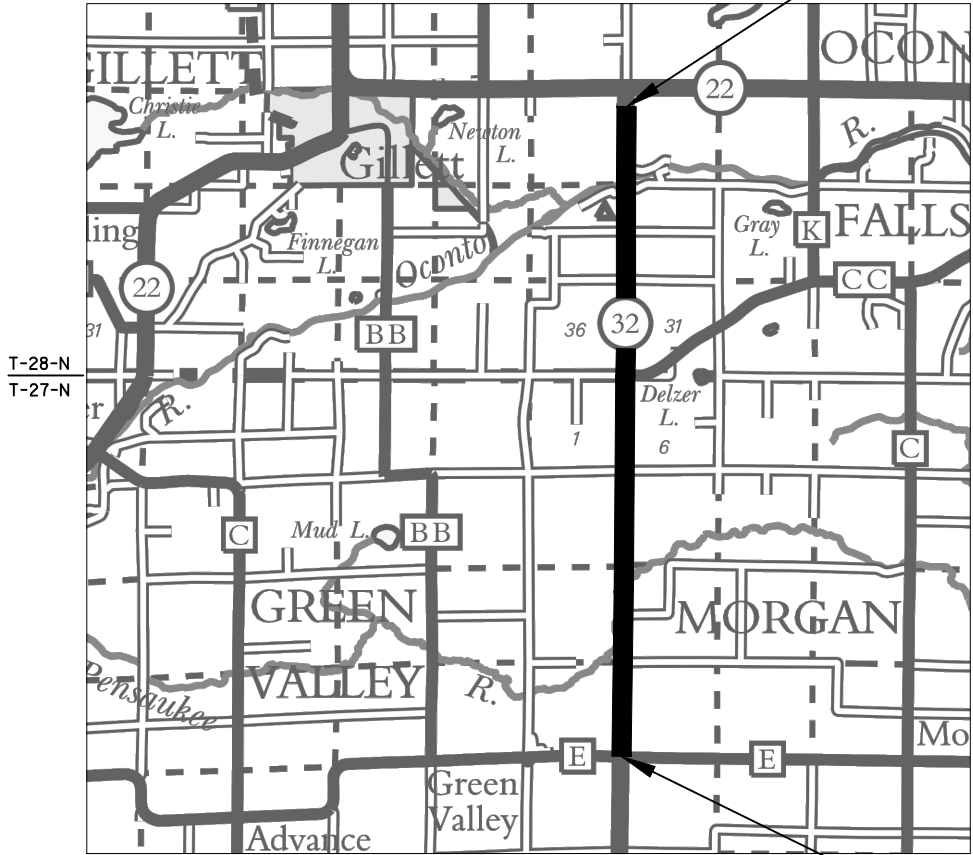
PULASKI - STH 22

CTH E - STH 22

STH 32

OCONTO COUNTY

STATE PROJECT NUMBER
9190-27-71



T-28-N
T-27-N

R-18-E
R-19-E

LAYOUT
SCALE 0 2 MILES

TOTAL NET LENGTH OF CENTERLINE = 6.734 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, OCONTO COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

END PROJECT
STA. 794+31

BEGIN PROJECT
STA. 438+77
Y=145,487.92
X=511,060.66

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
9190-27-71		

**TRANS 220
PROJECT PLAN
FOR
DESIGN OF UTILITY FACILITY
ALTERATIONS OR RELOCATIONS
JULY 6, 2018**

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
PREPARED BY	
Surveyor	JSD
Designer	J. SPIELMACHER
Project Manager	P. ZOELLNER
Regional Examiner	
Regional Supervisor	D. SEGERSTROM
APPROVED FOR THE DEPARTMENT	
DATE:	(Signature)

E

GENERAL NOTES

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

NEW PAVEMENT, BEAM GUARD, AND OTHER FACILITY LOCATIONS GIVEN IN THESE PLANS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD PRIOR TO PLACEMENT OR INSTALLATION.

THE EXACT LOCATIONS AND DIMENSIONS OF ALL EROSION CONTROL ITEMS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

THE EXACT LOCATION FOR BUTT JOINTS AND SAW CUTS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

DNR LIAISON

JIM DOPERALSKI
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
2984 SHAWANO AVENUE
GREEN BAY, WI 54313-6727
(920) 412-0165
JAMES.DOPERALSK@WISCONSIN.GOV

NE REGION SURVEY CONTACT

CORMAC MCINNIS
DEPARTMENT OF TRANSPORTATION
NORTHEAST REGION
944 VANDERPERREN WAY
GREEN BAY, WI 54304
(920) 492-5638
CORMAC.MCINNIS@DOT.WI.GOV

UTILITIES

ANR PIPELINE COMPANY
(GAS/PETROLEUM)
PRIMARY CONTACT: LAWRENCE HUBER
18000 W SARAH LN, STE 200
BROOKFIELD, WI 53045
(920) 477-2235
LAWRENCE_HUBER@TRANSCANADA.COM

ATC MGMT INC.
(ELECTRICITY -TRANSMISSION)
PRIMARY CONTACT: MIKE OLSEN
P.O. BOX 47
WAUKESHA, WI 53187-0047
(920) 338-6582
MOLSEN@ATCLLC.COM

CENTURYLINK
(COMMUNICATION LINE)
PRIMARY CONTACT: KEVIN ZICKERT
224 INDUSTRIAL DR
NORTH PRAIRIE, WI 53153
(262) 392-5200
KEVIN.ZICKERT@CENTURYLINK.COM

NORTHEAST TEL CO LLC
(COMMUNICATION LINE)
PRIMARY CONTACT: CHRIS HINES
5475 GLENDALE AVE
GREEN BAY, WI 54313
(920) 865-3166
CHRIS.HINES@NSIGHT.COM

OCONTO ELEC COOP
(ELECTRICITY)
PRIMARY CONTACT: BYRON NOLDE
7479 REA RD
P.O. BOX 168
OCONTO FALLS, WI 54154-9573
(920) 846-2816
BNOLDE@OCONTOELECTRIC.COM

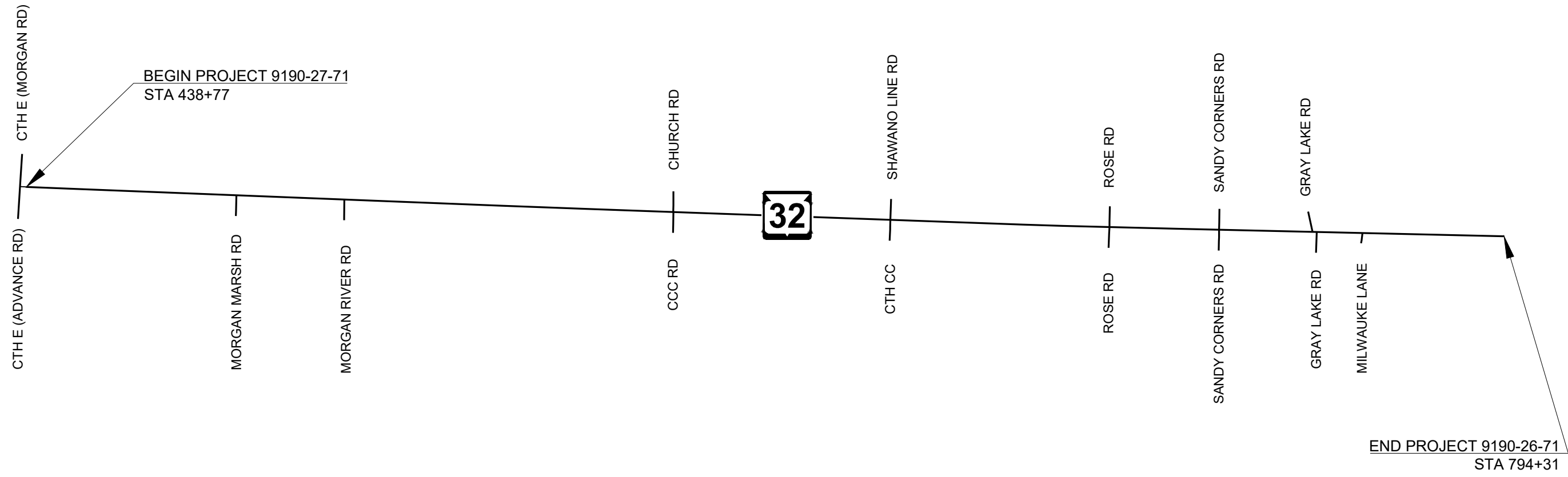
PACKERLAND BROADBAND
(COMMUNICATION LINE)
PRIMARY CONTACT: WAYNE CRETTON
105 KENT ST
P.O. BOX 190
IRON MOUNTAIN, MI 49801
(906) 282-3768
WAYNE.CRETTON@PACKERLANDBROADBAND.COM

WE ENERGIES
(ELECTRICITY)
PRIMARY CONTACT: DAN SANDE
333 W EVERETT ST
MILWAUKEE, WI 53203
(414) 221-4578
DAN.SANDE@WE-ENERGIES.COM

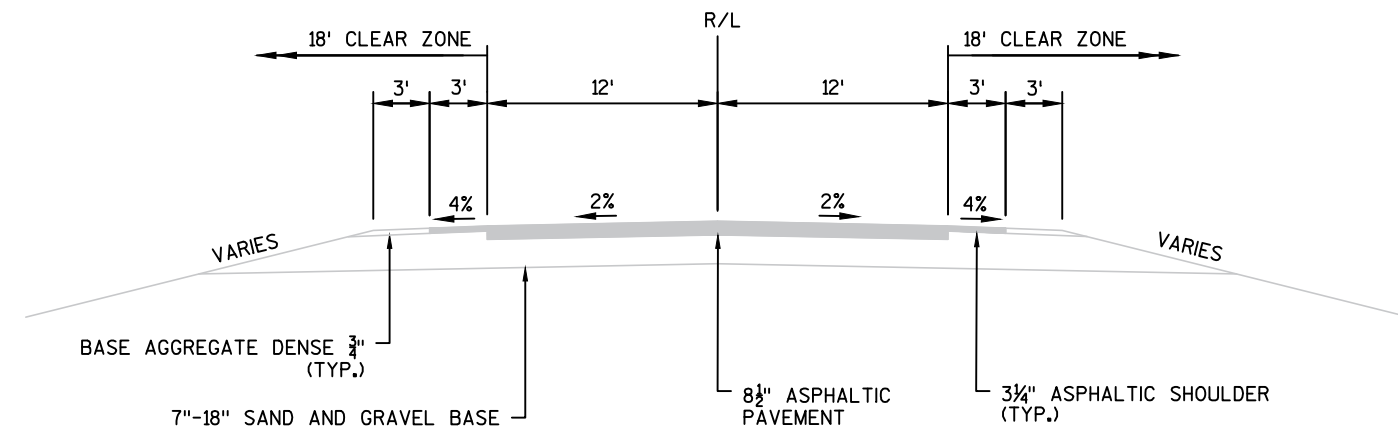
WE ENERGIES
(GAS/PETROLEUM)
PRIMARY CONTACT: DAN SANDE
333 W EVERETT ST
MILWAUKEE, WI 53203
(414) 221-4578
DAN.SANDE@WE-ENERGIES.COM



Dial 811 or (800)242-8511
www.DiggersHotline.com

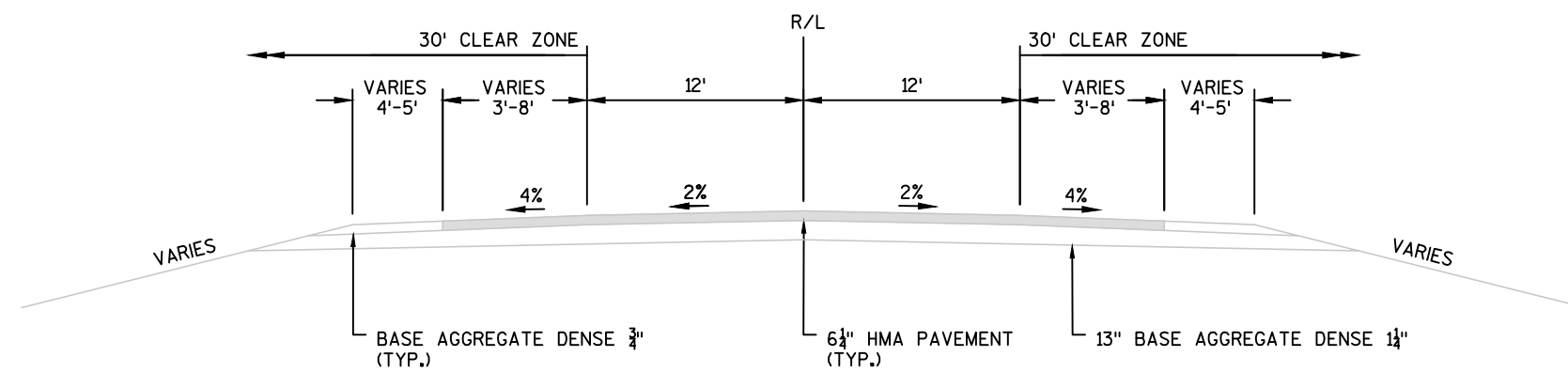


PROJECT NO: 9190-27-71	HWY: STH 32	COUNTY: OCONTO	PROJECT OVERVIEW	SHEET	E
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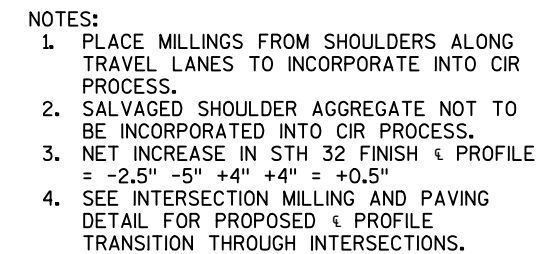
EXISTING TYPICAL CROSS SECTION STH 32

STA 438+77 - STA 749+73
STA 754+95 - STA 794+31

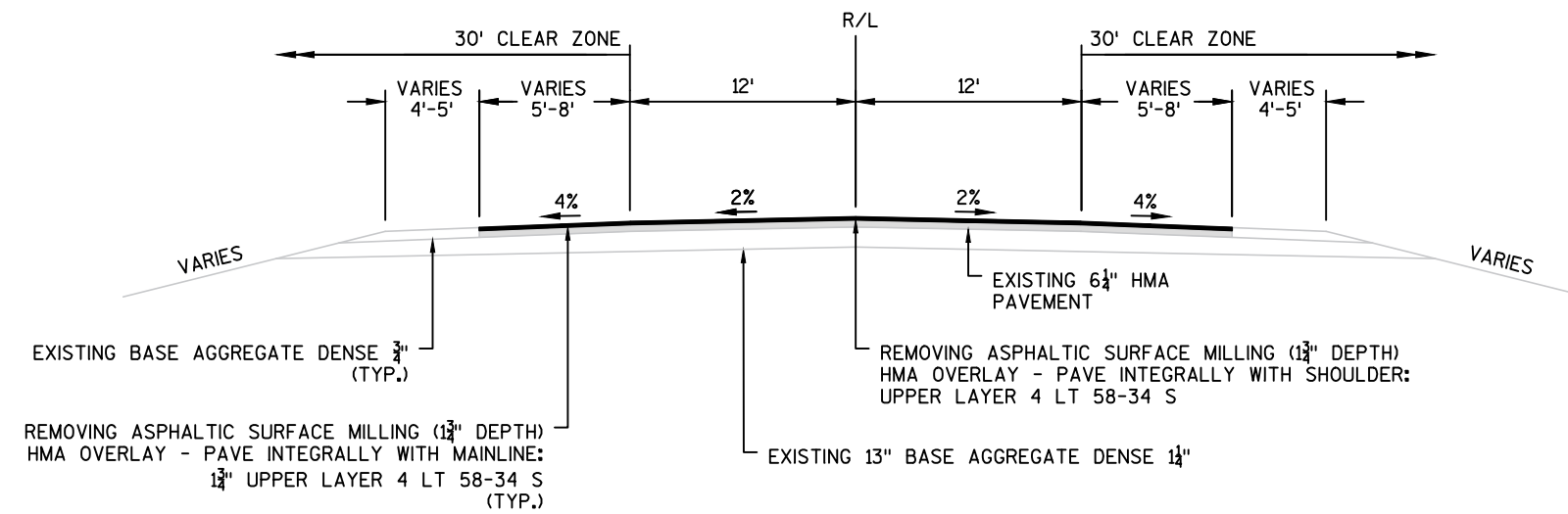


EXISTING TYPICAL CROSS SECTION STH 32

(B-42-126 APPROACHES)
STA 749+73 - STA 752+42
STA 754+95 - STA 758+14



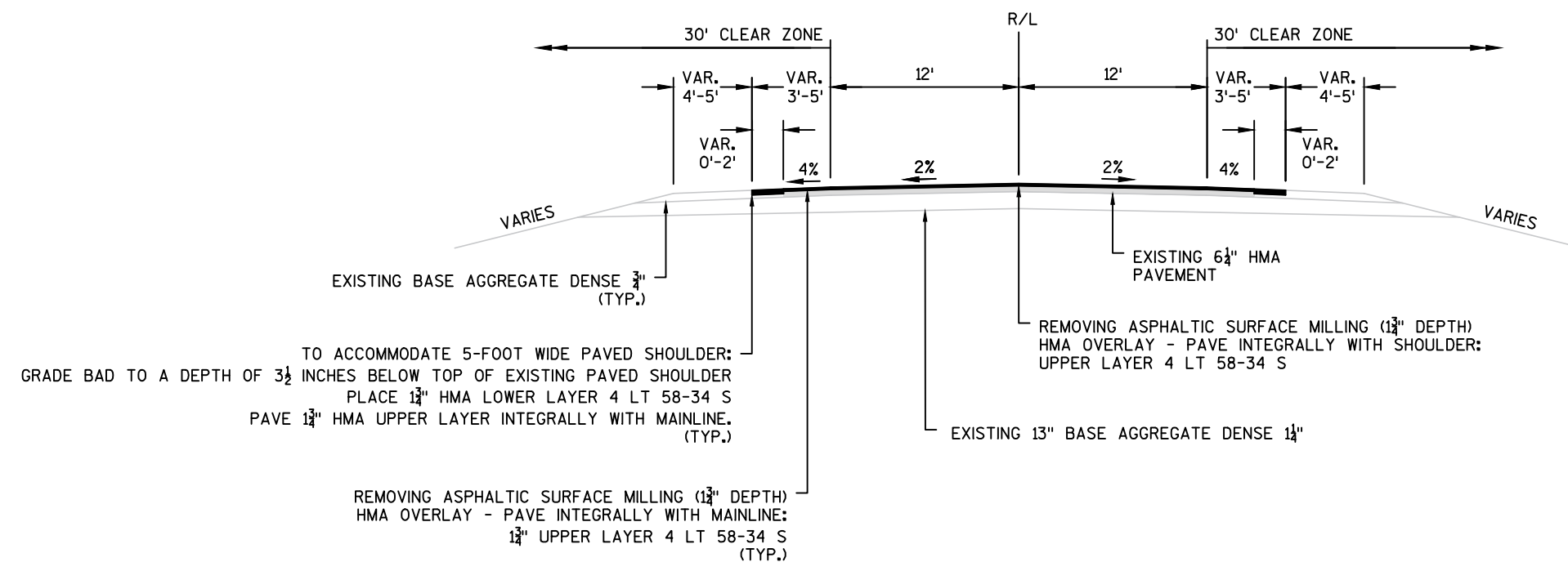
PROPOSED TYPICAL CROSS SECTION STH 32
STA 438+77 - STA 749+73
STA 754+95 - STA 794+31



PROPOSED TYPICAL CROSS SECTION STH 32

(B-42-126 APPROACHES)

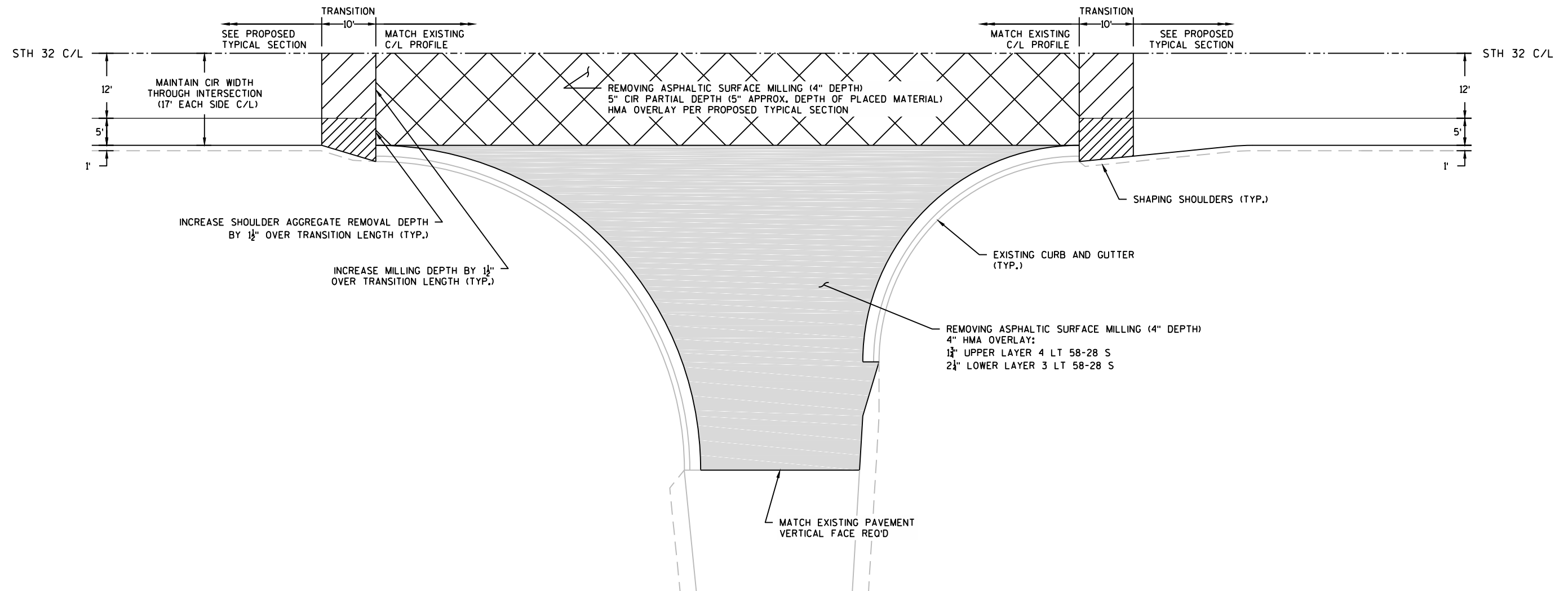
STA 751+34 - STA 752+42 LT
STA 754+95 - STA 757+03 LT
STA 751+15 - STA 752+42 RT
STA 754+95 - STA 755+96 RT



PROPOSED TYPICAL CROSS SECTION STH 32

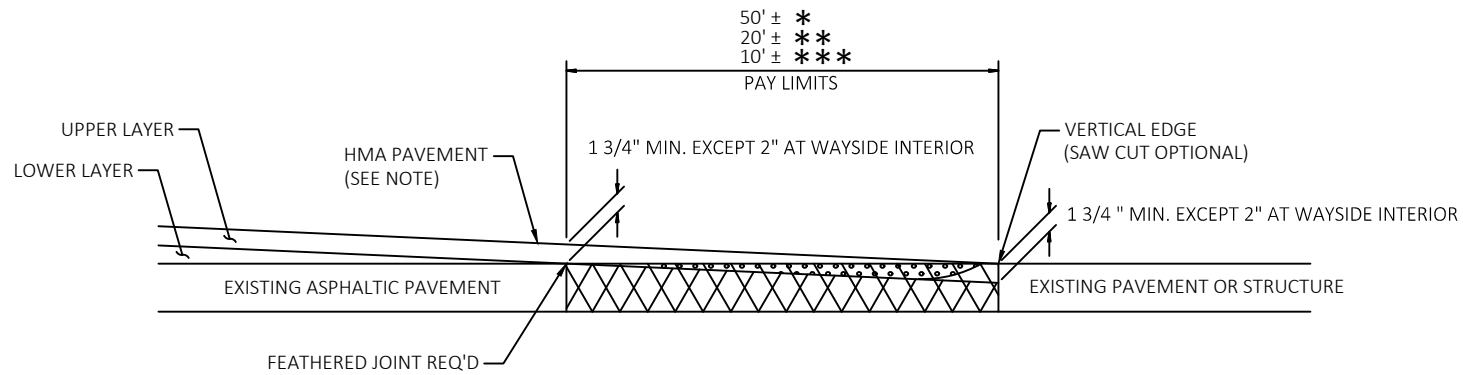
(B-42-126 APPROACHES)

STA 749+73 - STA 751+34 LT
STA 757+03 - STA 758+14 LT
STA 749+73 - STA 751+15 RT
STA 755+96 - STA 758+14 RT



INTERSECTION MILLING & PAVING DETAIL
(ALL TYPE 'D')

MORGAN MARSH ROAD
MORGAN RIVER ROAD
CHURCH ROAD/CCC ROAD
SHAWANO LINE ROAD/CTH CC
ROSE ROAD
SANDY CORNERS ROAD
GRAY LAKE ROAD (WEST AND EAST)
MILWAUKEE LANE
DEER DRIVE/SOUTH CHASE ROAD

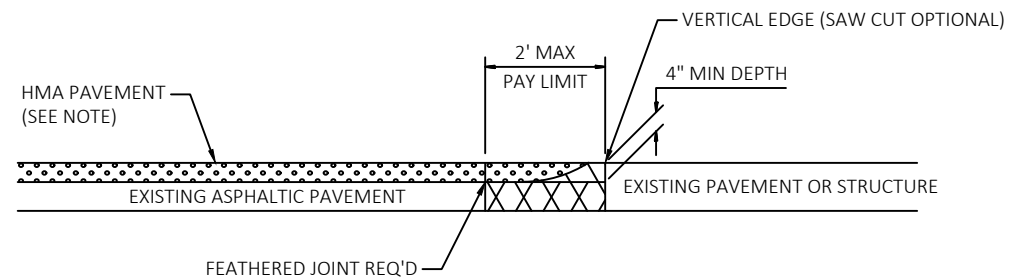


NOTE: SEE TYPICAL CROSS SECTION FOR PAVEMENT TYPE AND THICKNESS OF INDIVIDUAL LAYERS

- REMOVING ASPHALTIC SURFACE, BUTT JOINTS (FULL DEPTH REMOVAL OPTIONAL)
- ASPHALTIC WEDGING (FULL DEPTH REMOVAL OPTION)
- REMOVING ASPHALTIC SURFACE, BUTT JOINTS (MILLING OPTION)

BUTT JOINT DETAIL FOR NON MILLED ASPHALTIC PAVEMENTS (PROFILE CHANGE)

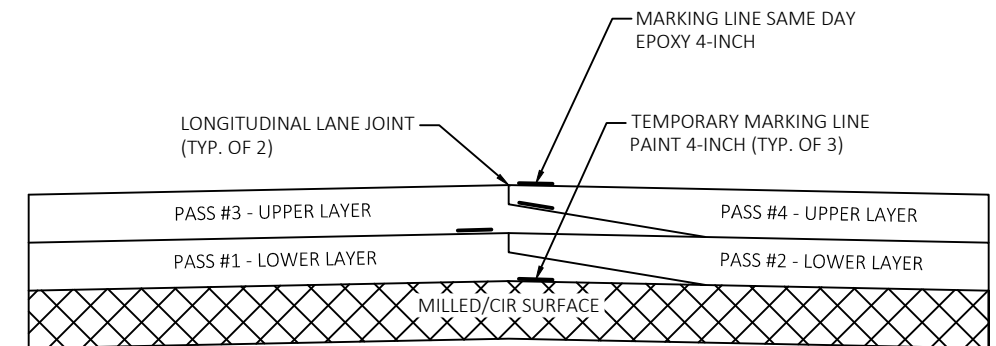
- * MAINLINE
- ** SIDEROADS
- *** PRIVATE ENTRANCES AND WAYSIDE INTERIOR



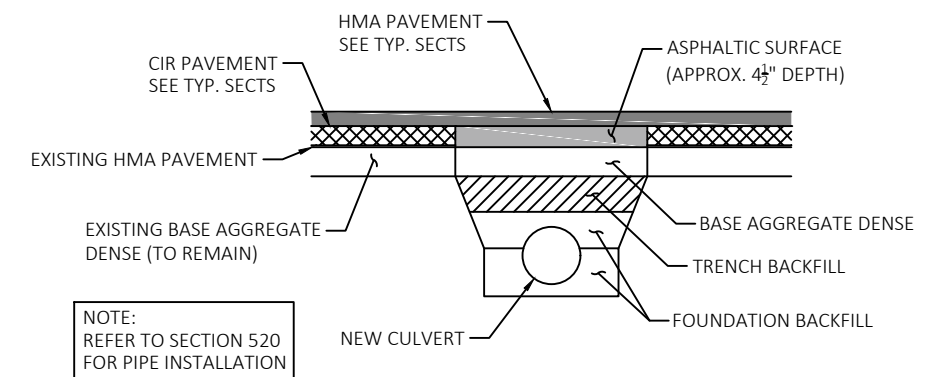
NOTE: SEE TYPICAL CROSS SECTION FOR PAVEMENT TYPE AND THICKNESS OF INDIVIDUAL LAYERS

- REMOVING ASPHALTIC SURFACE, BUTT JOINTS (FULL DEPTH REMOVAL OPTIONAL)
- ASPHALTIC WEDGING (FULL DEPTH REMOVAL OPTION)
- REMOVING ASPHALTIC SURFACE, BUTT JOINTS (MILLING OPTION)

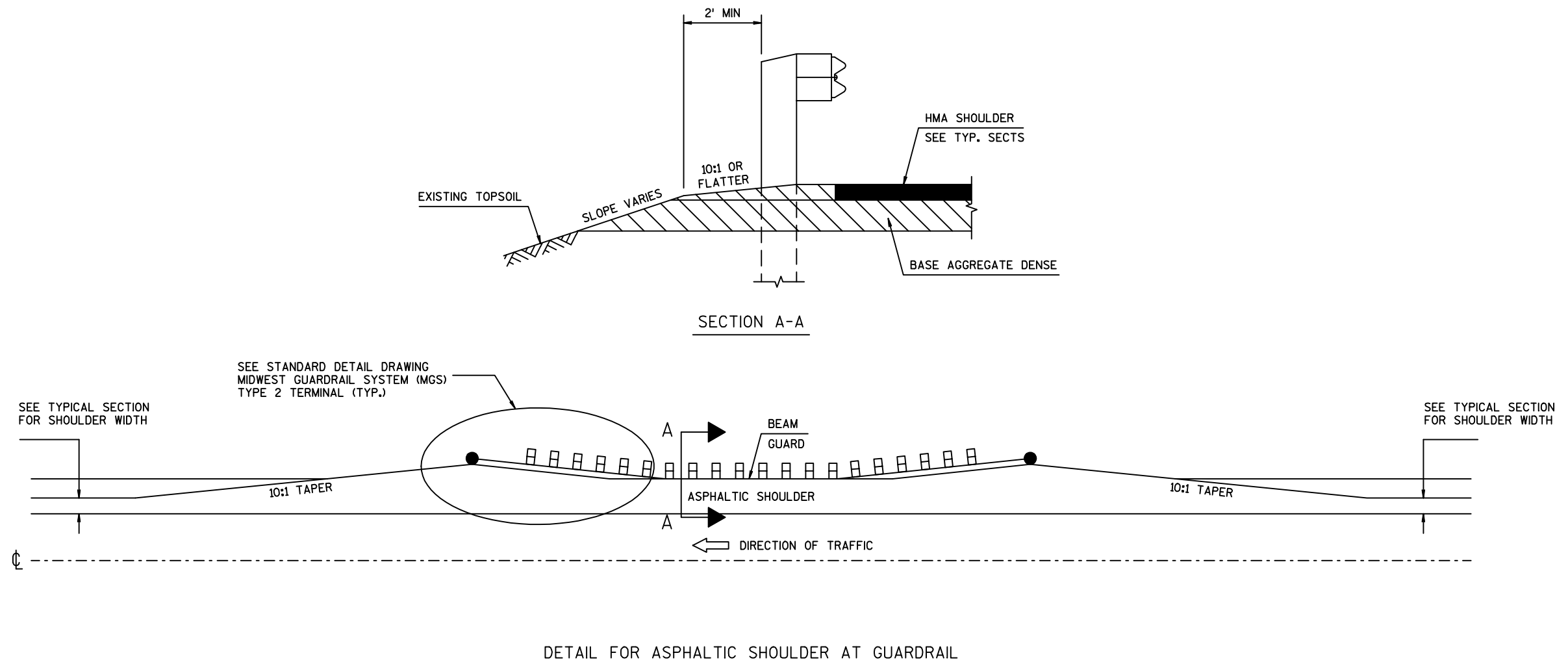
BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)

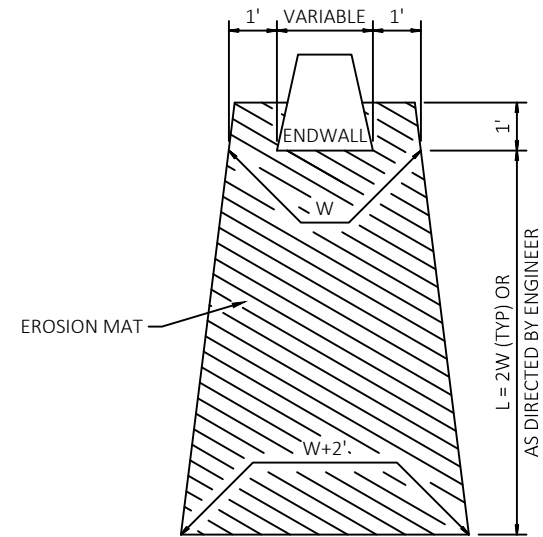


PAVEMENT MARKING DETAIL FOR TAPERED OVERLAPPING JOINTS IN HMA PAVEMENTS

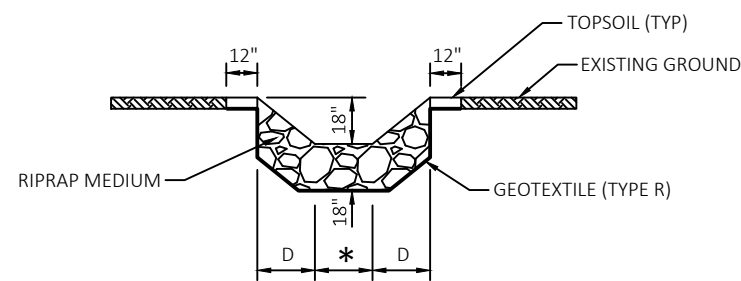


PAVEMENT AT CULVERT REPLACEMENTS



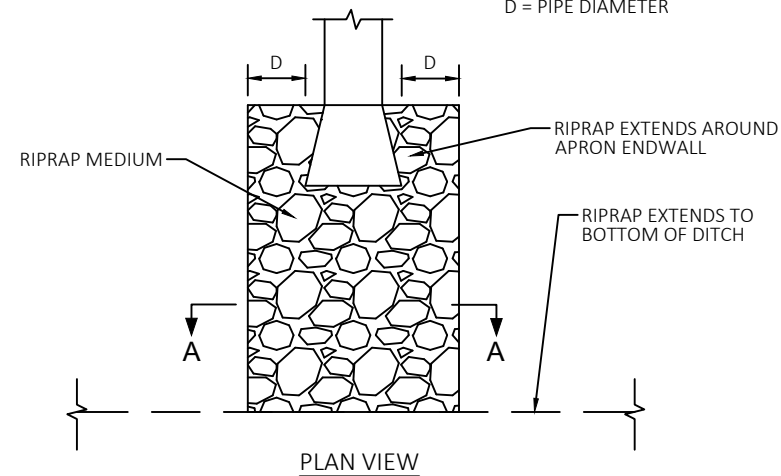


EROSION MAT TREATMENT AT CULVERTS



SECTION A-A

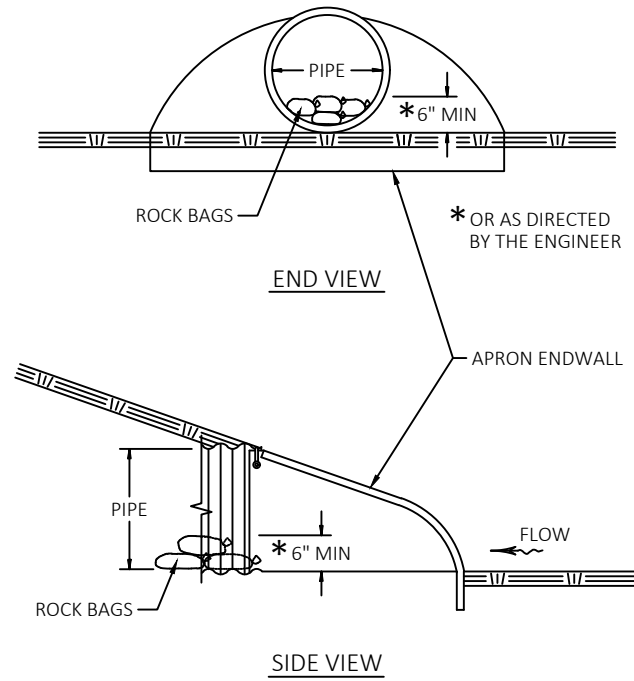
* APRON ENDWALL WIDTH
D = PIPE DIAMETER



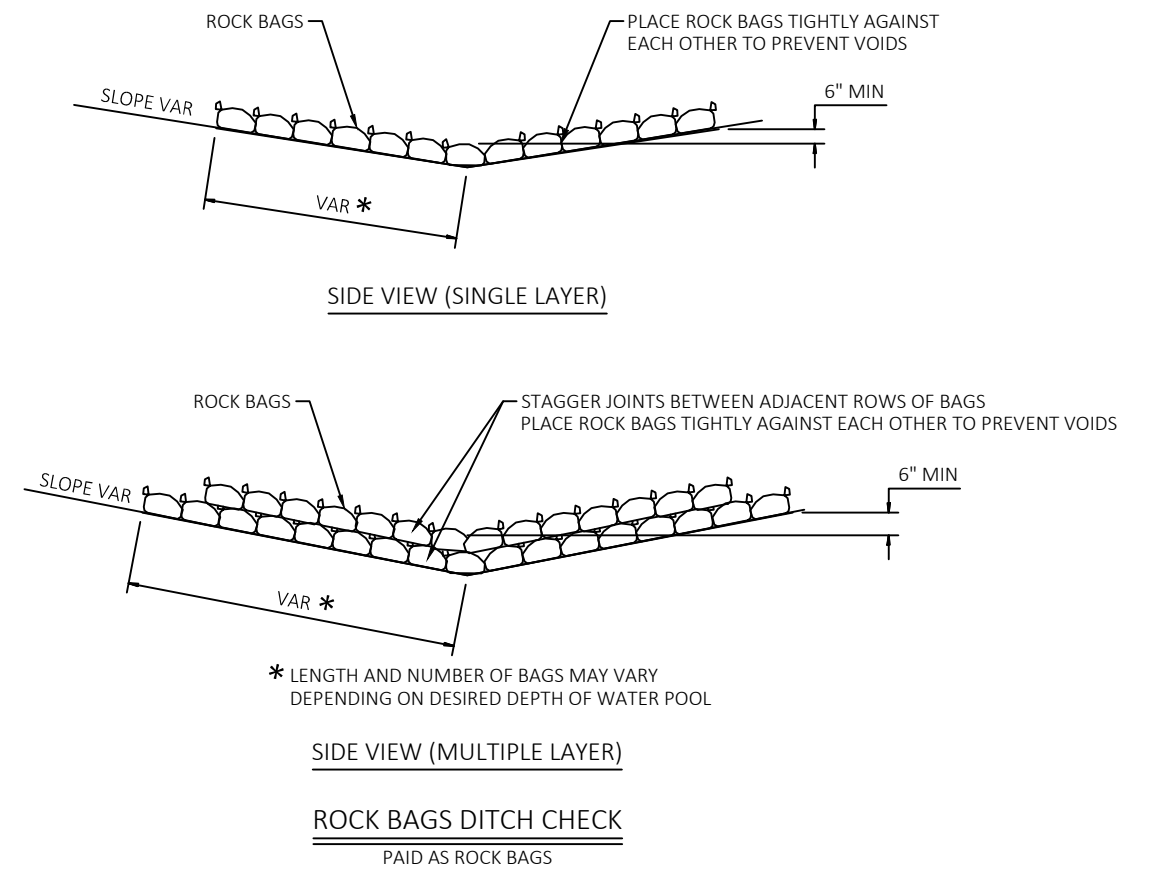
PLAN VIEW

RIPRAP TREATMENT AT CULVERT OUTFALLS

STA 580+10, STA 585+30



CULVERT PIPE CHECKS





R7-8A
12"X18"



R7-8V
12"X6"

NOTE: SALVAGE BUT DO NOT REPLACE
PARKING BLOCK AT VAN ACCESSIBLE STALL
(STRIPED AS "NO PARKING") ADJACENT TO
HANDICAP STALL.

SIGNS REQ'D
R7-8A & R7-8V

MARKING LINE 4-INCH WHITE
(TYP.)

MARKING SYMBOL EPOXY
HANDICAP WHITE

5' WALKWAY

PARKING BLOCK, SALVAGED
OR PARKING BLOCK, NEW
(SEE MISC. QUANTITIES)

BUTT JOINT REQ'D
FULL LENGTH NORTH EDGE

SIGN

60° (TYP.)

24' (TYP.)

10' (TYP. OF 16)

BUTT JOINT REQ'D

MARKING LINE 4-INCH WHITE

12'

BASE AGGREGATE DENSE 1 1/4-INCH
LIMITS TO BE DETERMINED BY ENGINEER

TOPSOIL, FERTILIZER,
SEED, AND MULCH (TYP.)
APPROX. 4' WIDTH

217+00

218+00

219+00

220+00

GRAY LAKE ROAD

BUTT JOINT REQ'D

BUTT JOINT REQ'D

10' BUTT JOINT
(SEE CONSTR.
DETAILS)

5'
WALKWAY

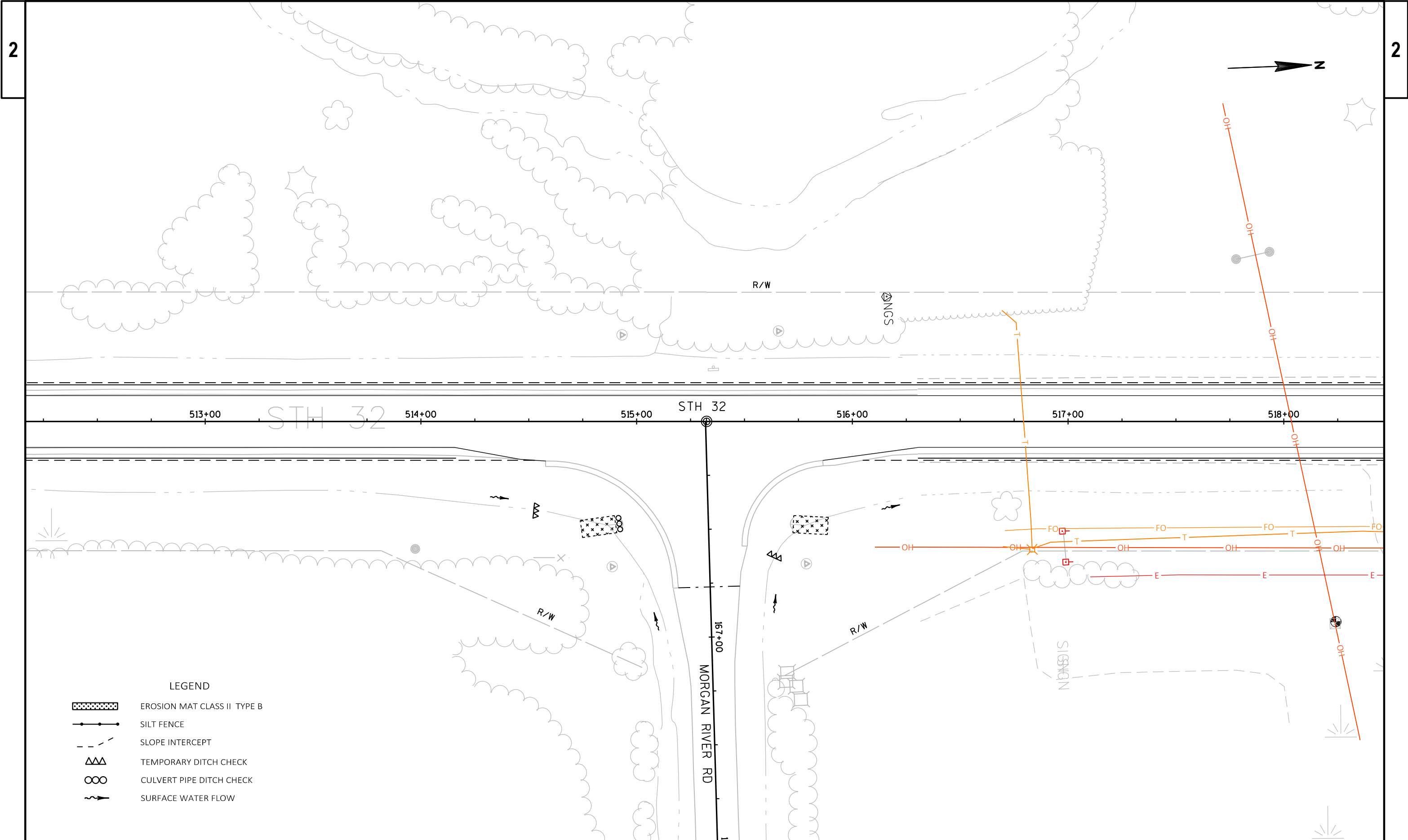
PROP.
0.33%

EXIST./PROP.
2%

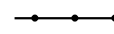
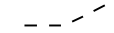
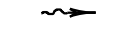
PARKING BLOCK
EXISTING 8" CRUSHED AGGREGATE
BASE COURSE

EXISTING 2 1/2" HMA
PAVEMENT
2" HMA OVERLAY:
4 LT 58-28 S

PROPOSED PARTIAL SECTION AT WAYSIDE WALKWAY

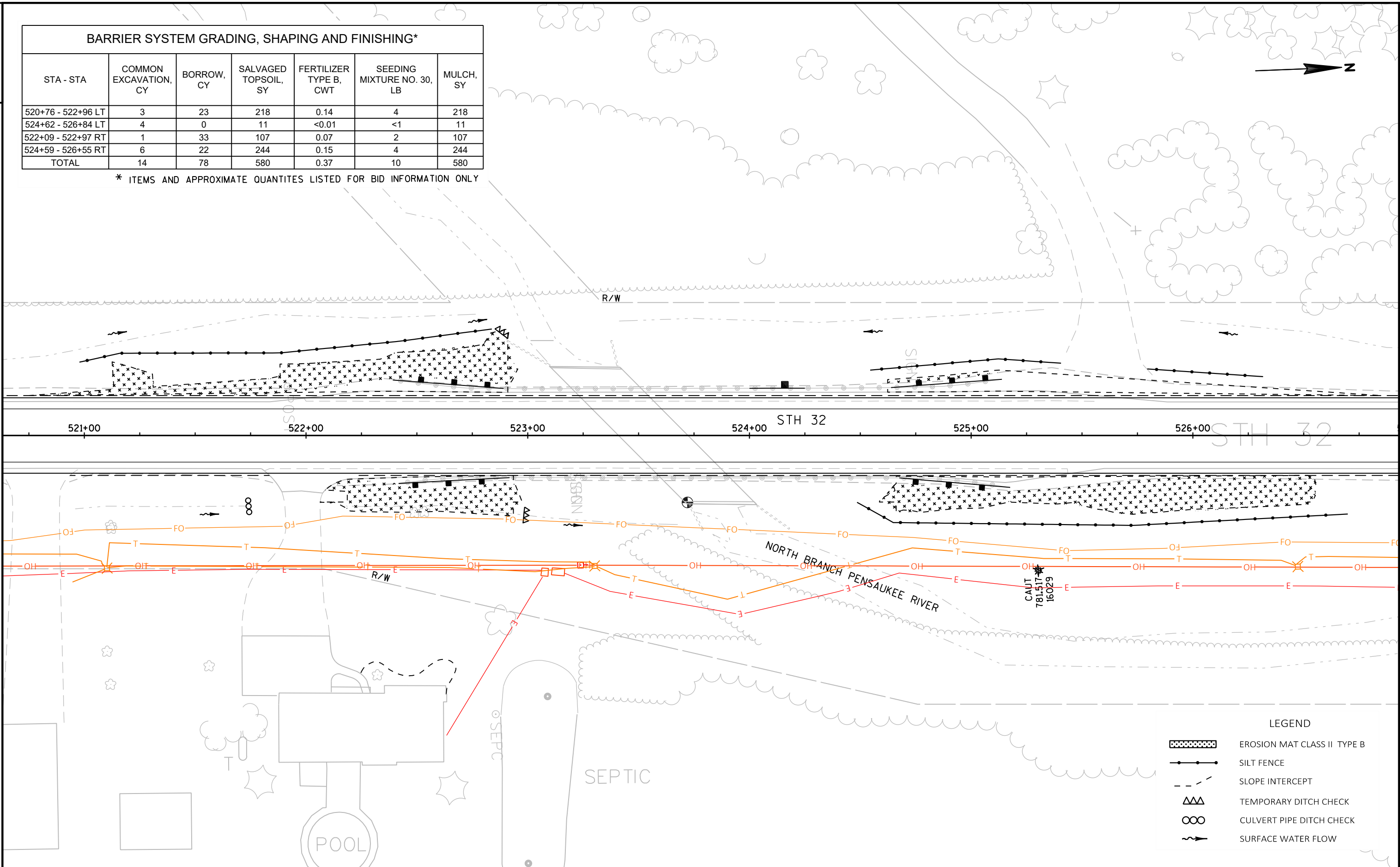


LEGEND

-  EROSION MAT CLASS II TYPE B
-  SILT FENCE
-  SLOPE INTERCEPT
-  TEMPORARY DITCH CHECK
-  CULVERT PIPE DITCH CHECK
-  SURFACE WATER FLOW

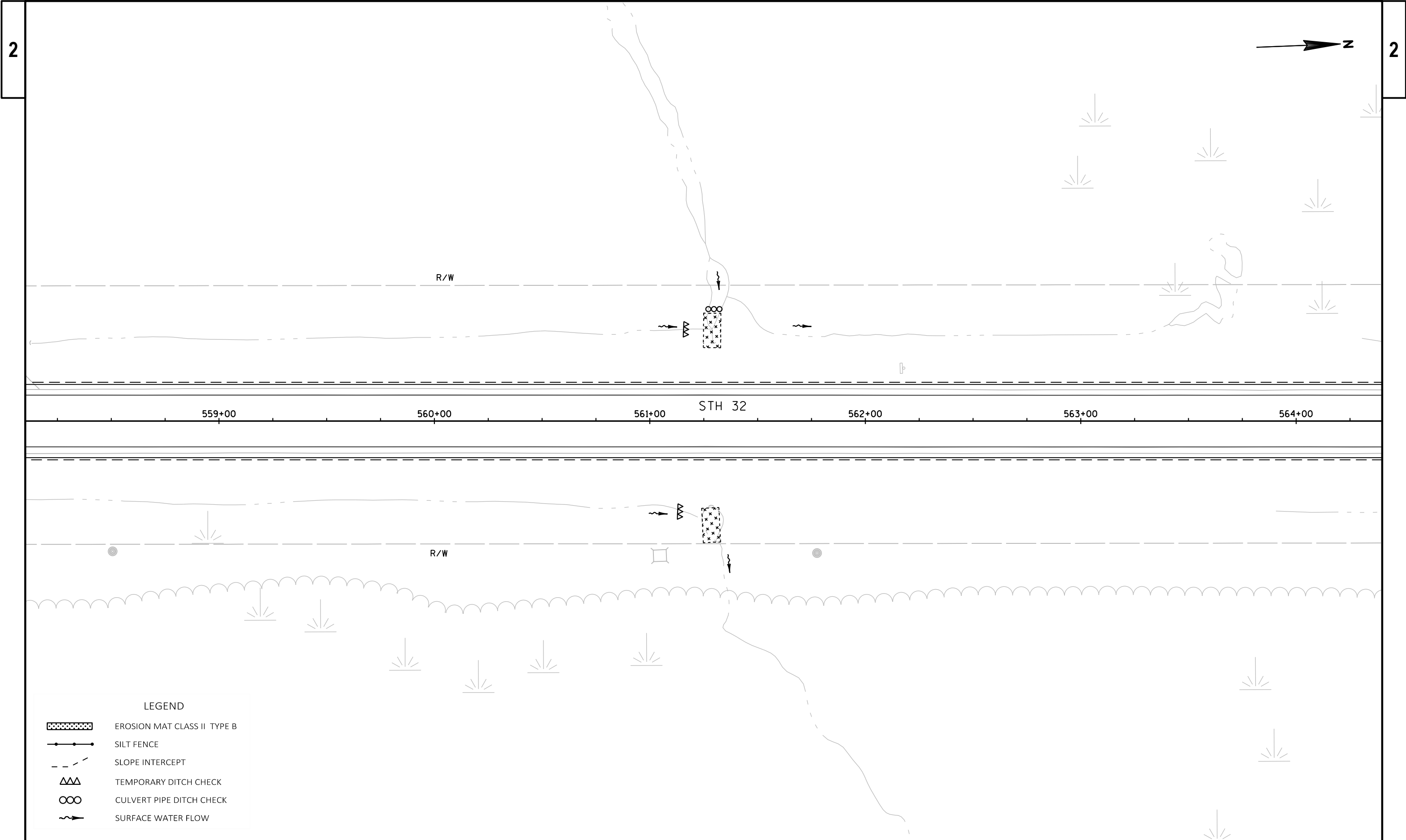
BARRIER SYSTEM GRADING, SHAPING AND FINISHING*						
STA - STA	COMMON EXCAVATION, CY	BORROW, CY	SALVAGED TOPSOIL, SY	FERTILIZER TYPE B, CWT	SEEDING MIXTURE NO. 30, LB	MULCH, SY
520+76 - 522+96 LT	3	23	218	0.14	4	218
524+62 - 526+84 LT	4	0	11	<0.01	<1	11
522+09 - 522+97 RT	1	33	107	0.07	2	107
524+59 - 526+55 RT	6	22	244	0.15	4	244
TOTAL	14	78	580	0.37	10	580

* ITEMS AND APPROXIMATE QUANTITES LISTED FOR BID INFORMATION ONLY

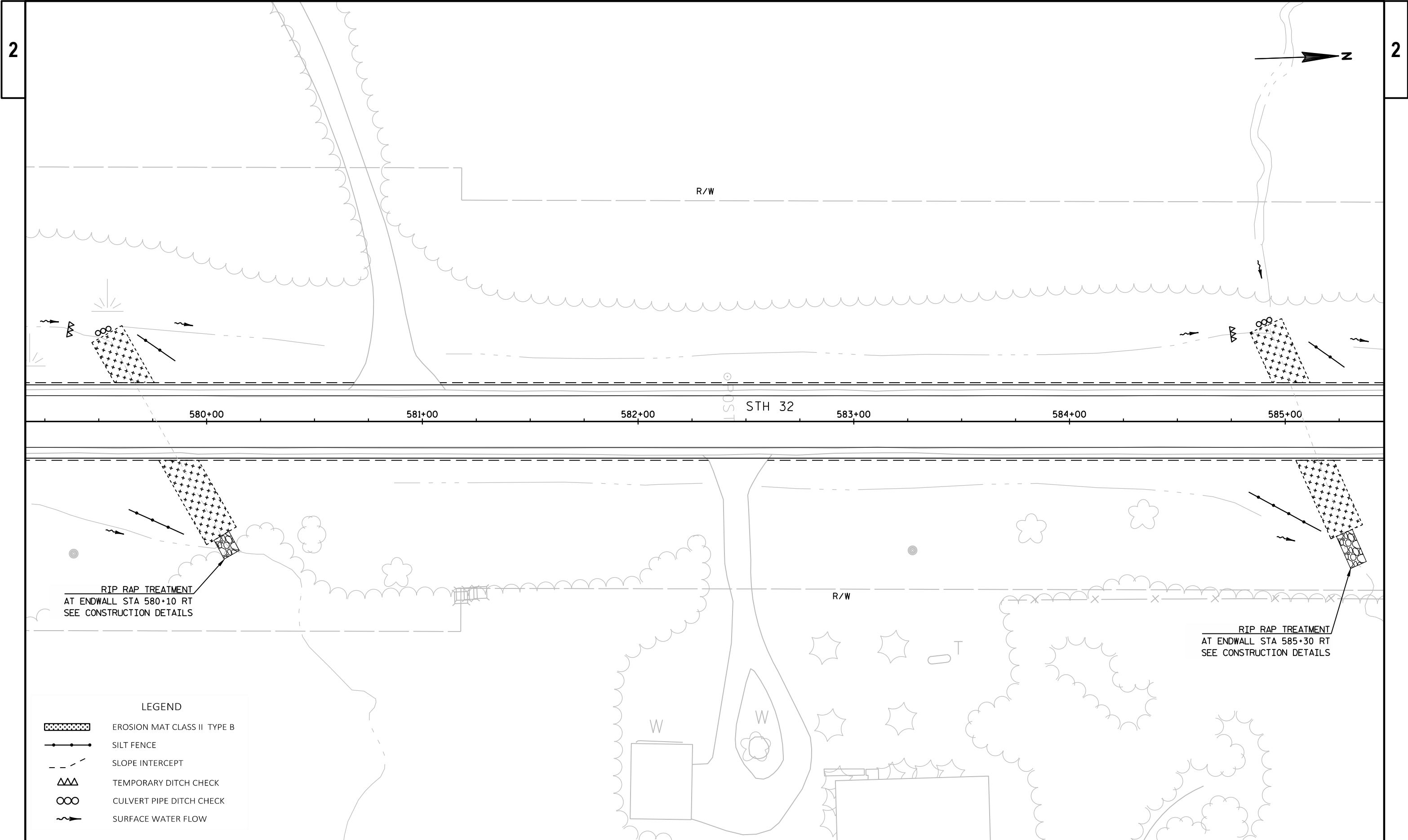


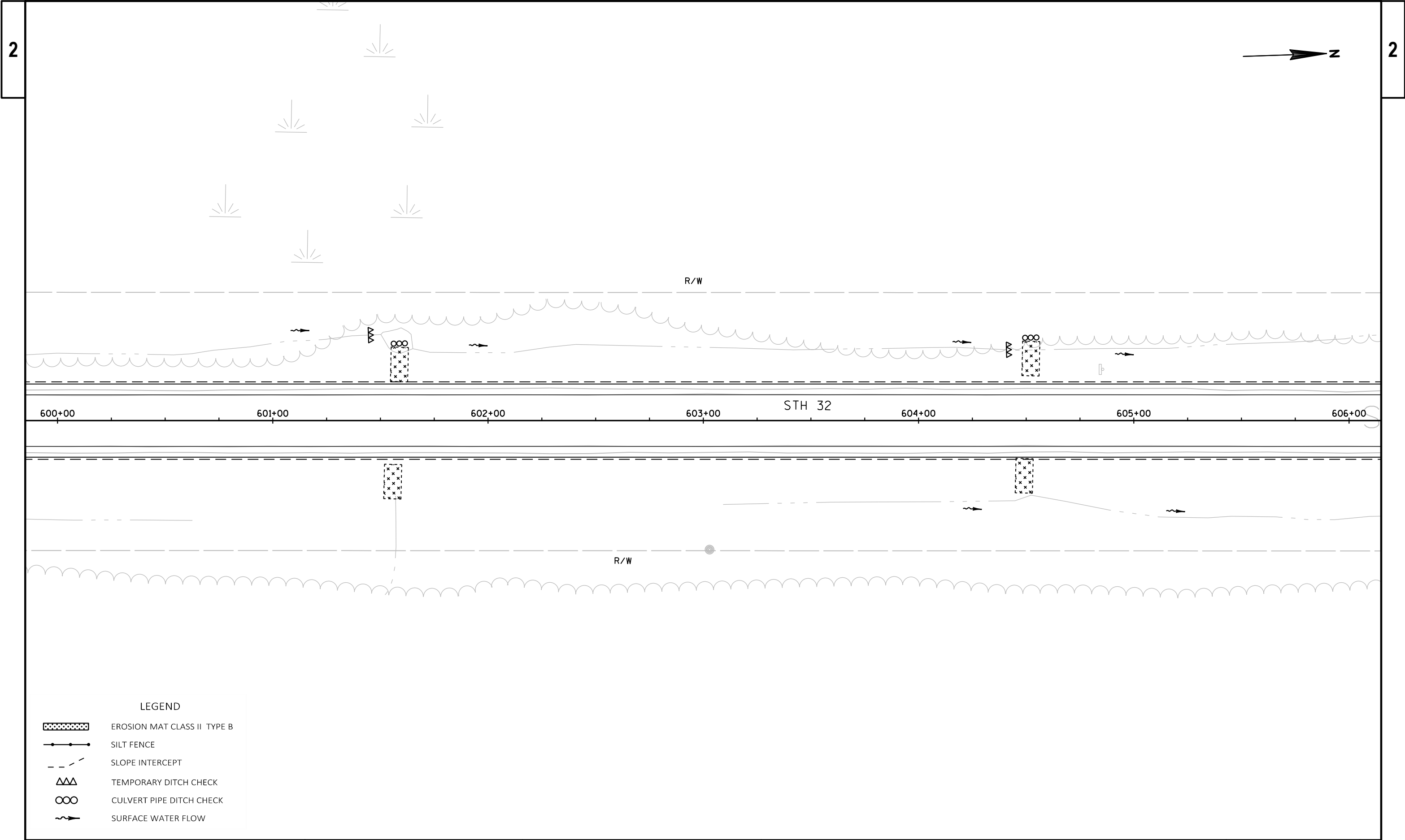
LEGEND	
	EROSION MAT CLASS II TYPE B
	SILT FENCE
	SLOPE INTERCEPT
	TEMPORARY DITCH CHECK
	CULVERT PIPE DITCH CHECK
	SURFACE WATER FLOW

PROJECT NO: 9190-27-71	HWY: STH 32	COUNTY: OCONTO	EROSION CONTROL	SHEET	E
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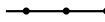


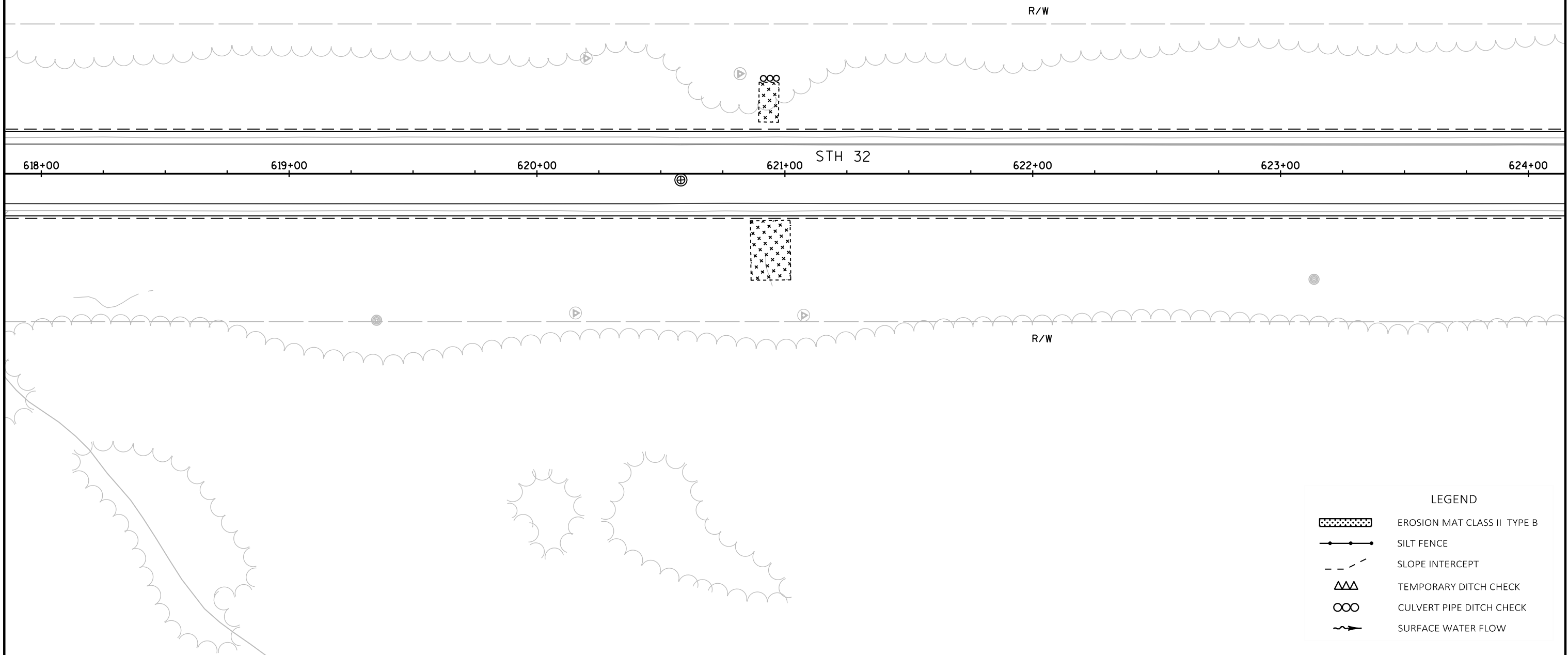
PROJECT NO: 9190-27-71	HWY: STH 32	COUNTY: OCONTO	EROSION CONTROL	SHEET	E
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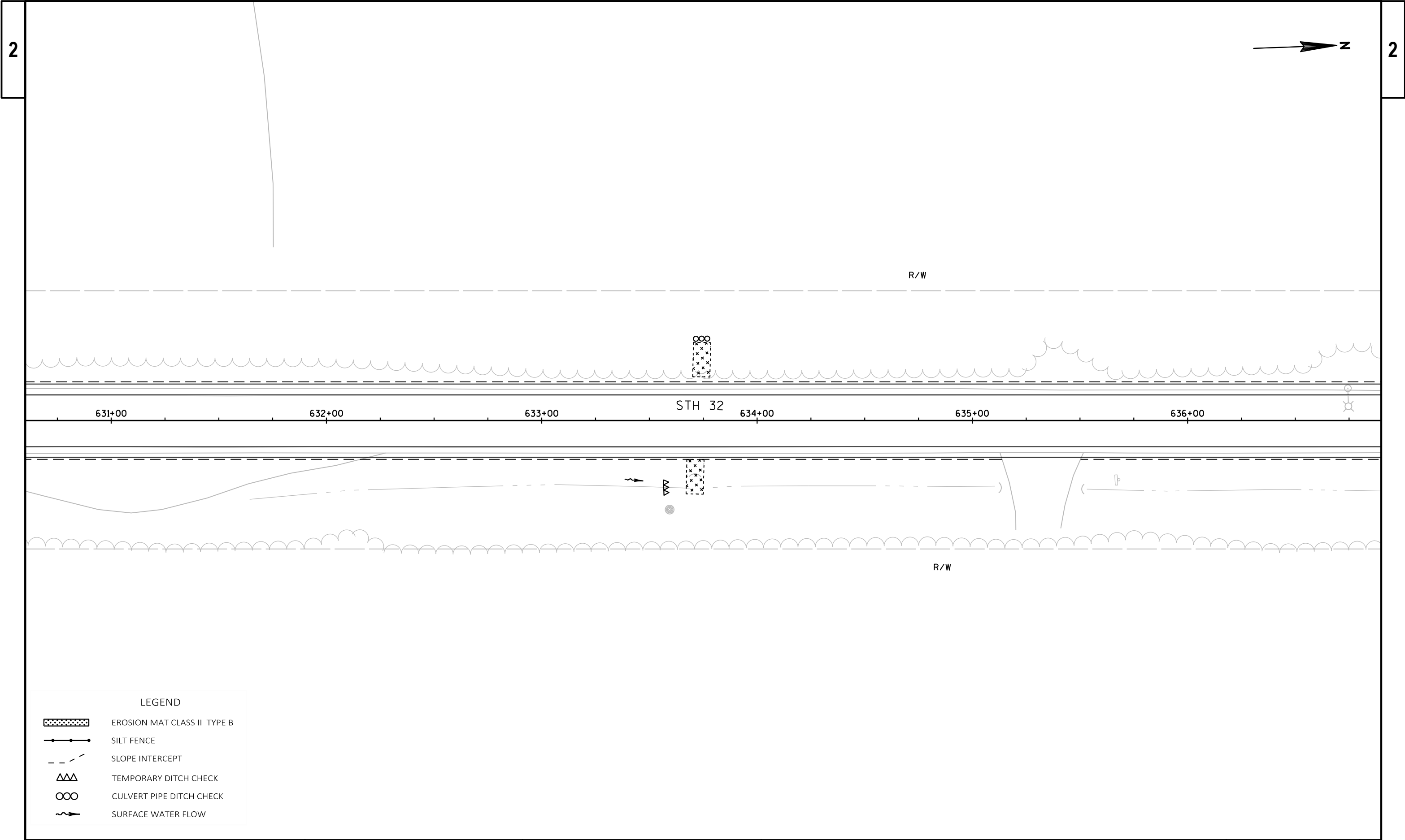
LEGEND

-  EROSION MAT CLASS II TYPE B
-  SILT FENCE
-  SLOPE INTERCEPT
-  TEMPORARY DITCH CHECK
-  CULVERT PIPE DITCH CHECK
-  SURFACE WATER FLOW

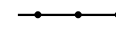
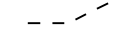
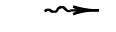


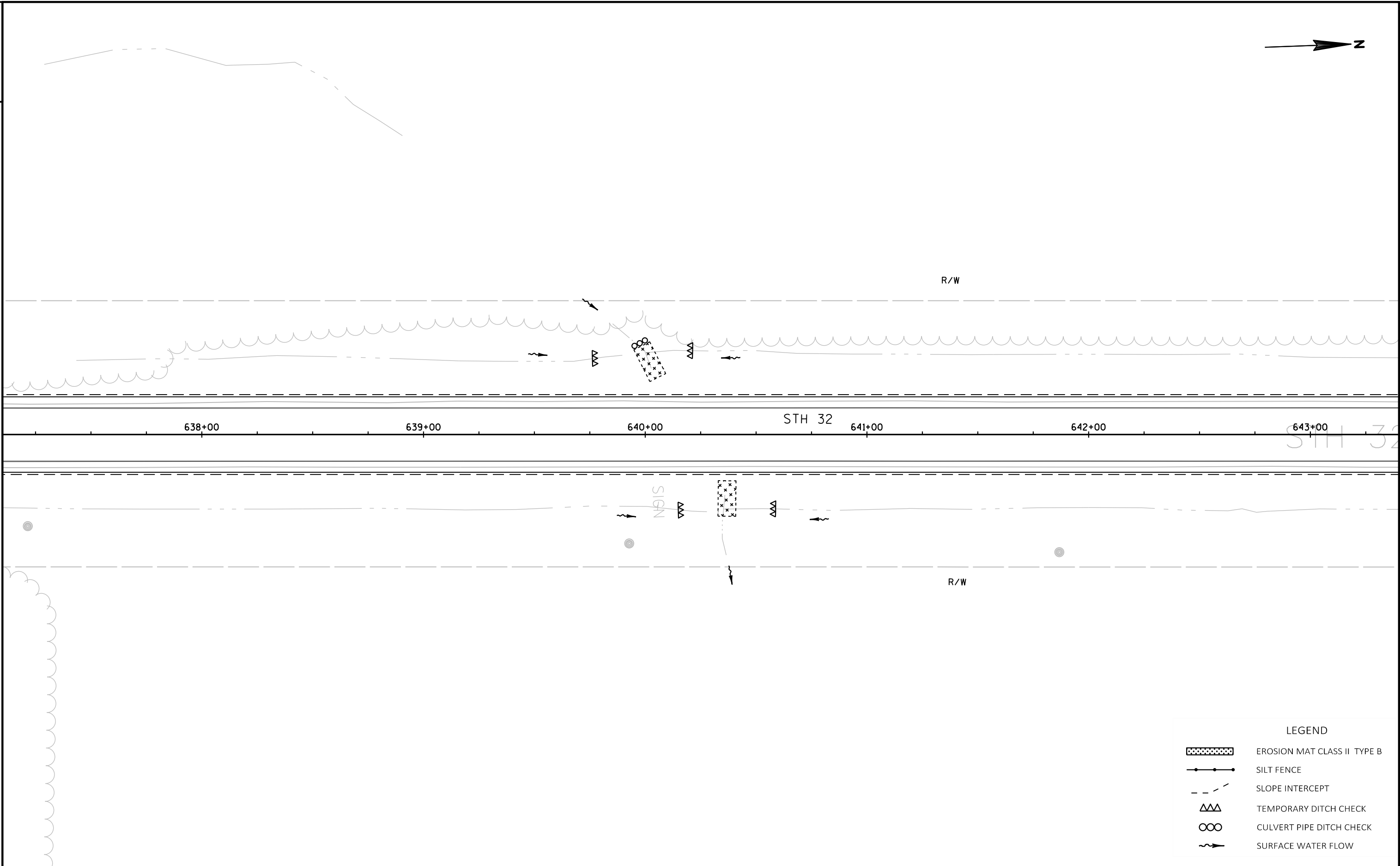
LEGEND	
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	SILT FENCE
	SLOPE INTERCEPT
	TEMPORARY DITCH CHECK
	CULVERT PIPE DITCH CHECK
	SURFACE WATER FLOW

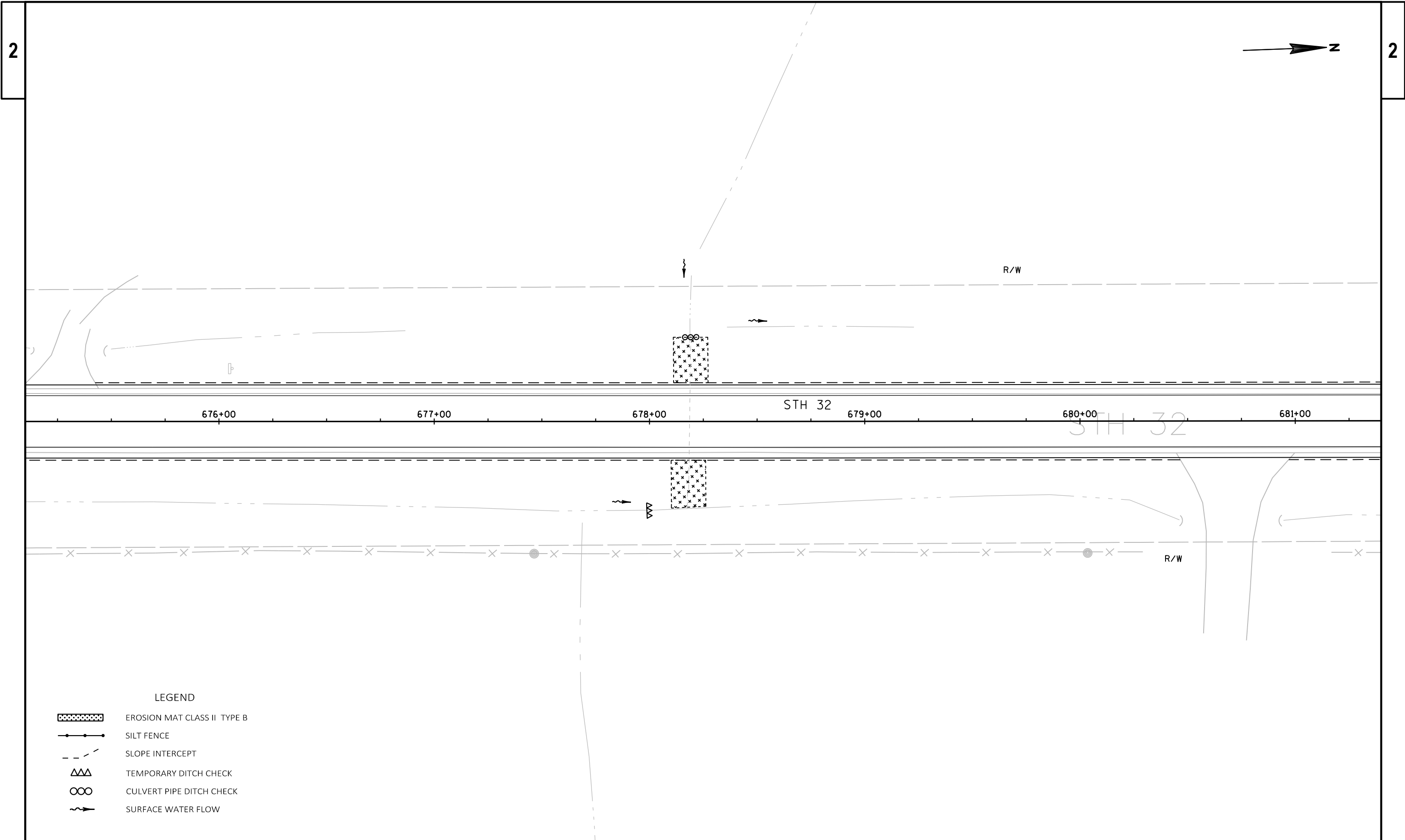
PROJECT NO: 9190-27-71	HWY: STH 32	COUNTY: OCONTO	EROSION CONTROL	SHEET	E
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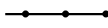
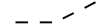
LEGEND

-  EROSION MAT CLASS II TYPE B
-  SILT FENCE
-  SLOPE INTERCEPT
-  TEMPORARY DITCH CHECK
-  CULVERT PIPE DITCH CHECK
-  SURFACE WATER FLOW



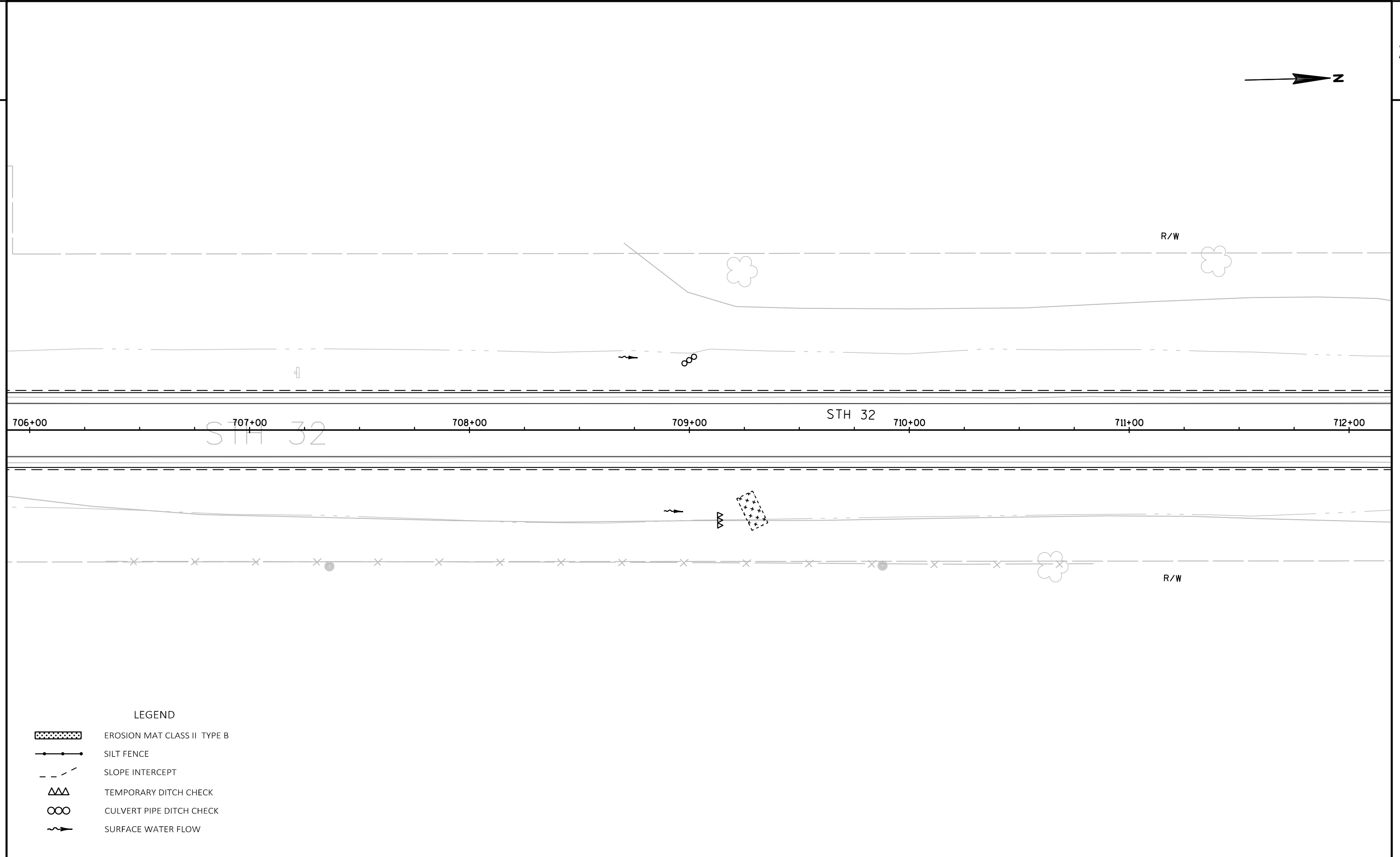


LEGEND

-  EROSION MAT CLASS II TYPE B
-  SILT FENCE
-  SLOPE INTERCEPT
-  TEMPORARY DITCH CHECK
-  CULVERT PIPE DITCH CHECK
-  SURFACE WATER FLOW

2

2



LEGEND

- | | |
|---|-----------------------------|
|  | EROSION MAT CLASS II TYPE B |
|  | SILT FENCE |
|  | SLOPE INTERCEPT |
|  | TEMPORARY DITCH CHECK |
|  | CULVERT PIPE DITCH CHECK |
|  | SURFACE WATER FLOW |

PROJECT NO:	9190-27-71
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HWY: STH 32

COUNTY: OCONTO

EROSION CONTROL

SHEET

E

FILE NAME : N:\PDS\C3D\91902700\SHEETSPLAN\022001_EC.DWG
LAYOUT NAME - 0220010-ec

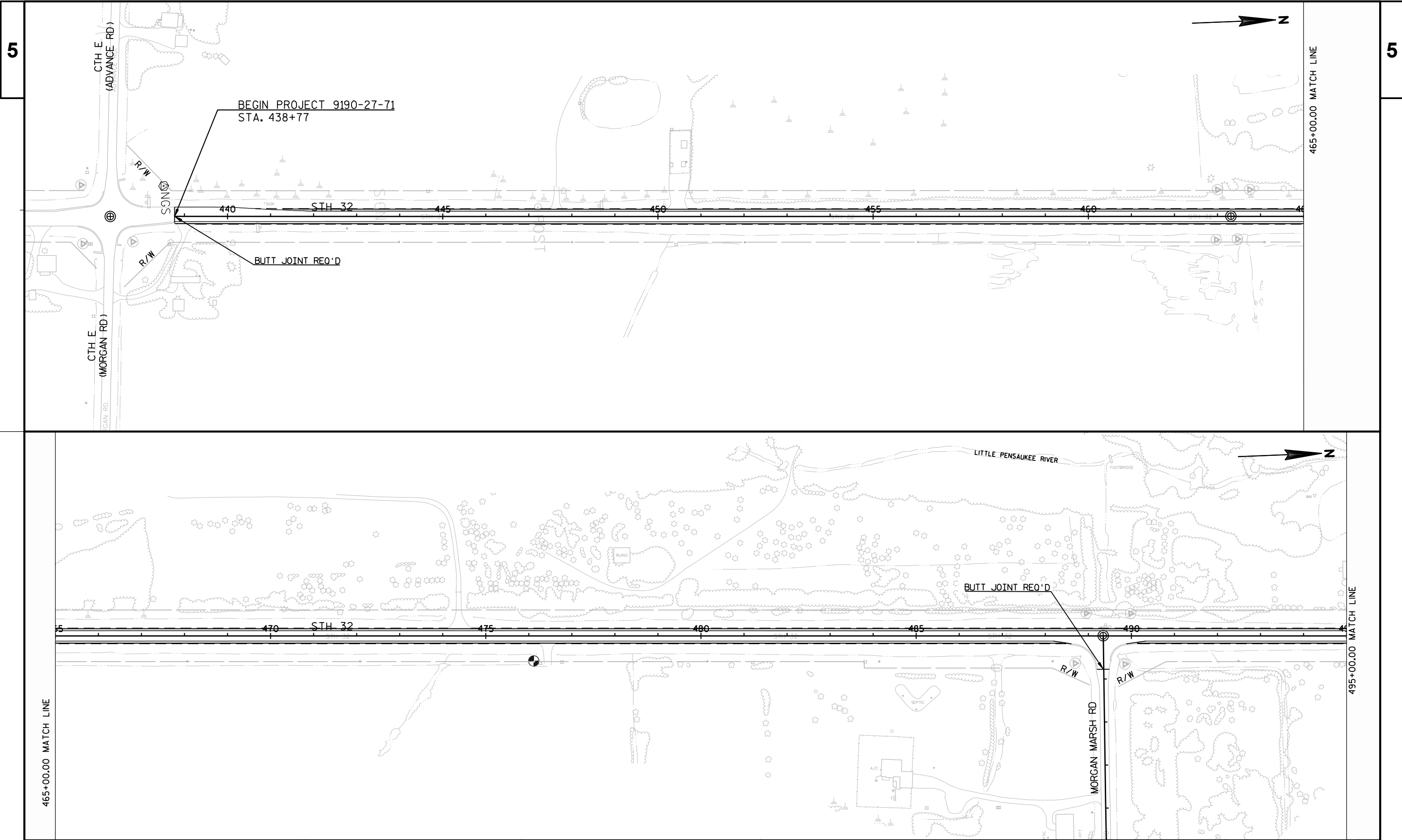
PLOT DATE : 7/5/2018 3:27 PM

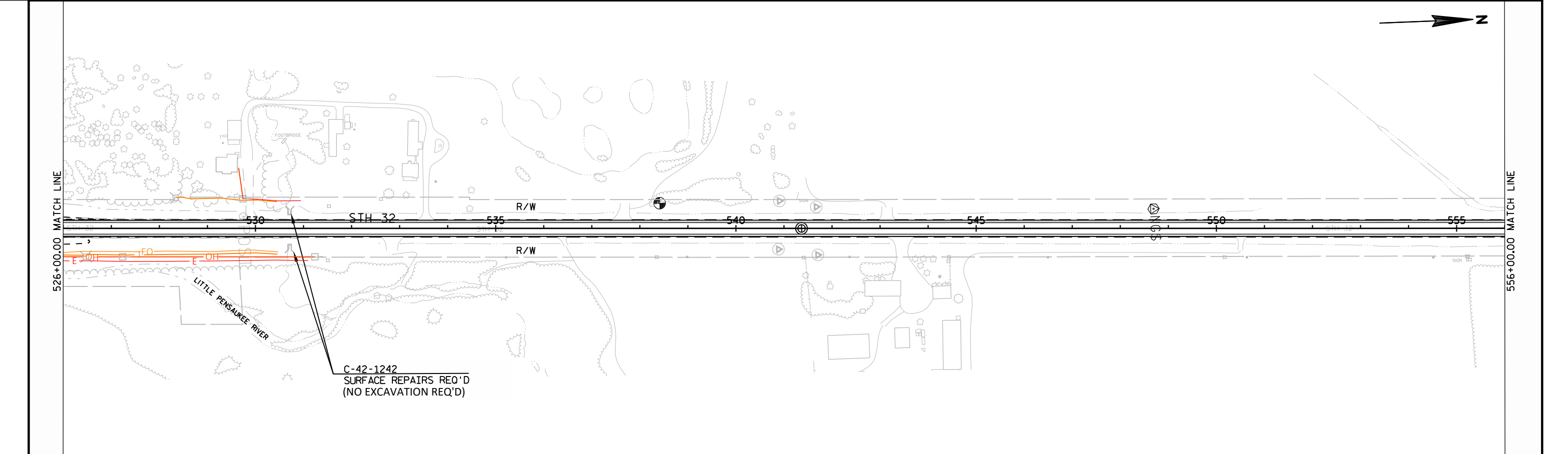
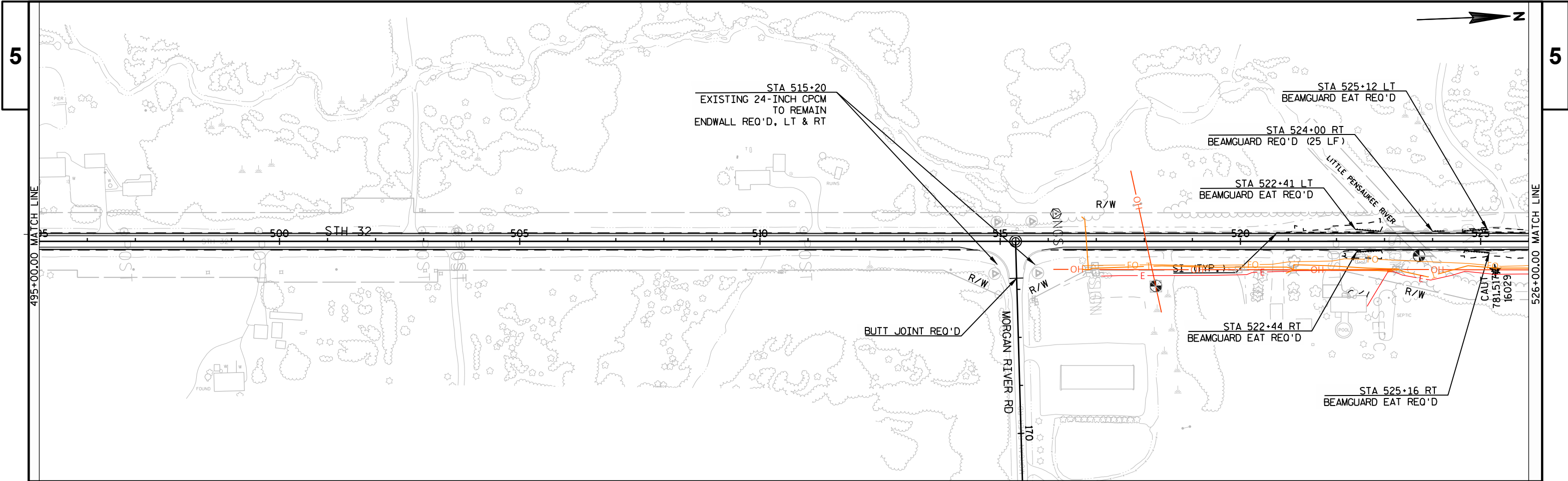
PLOT BY : SPIELMACHER, JOHN P

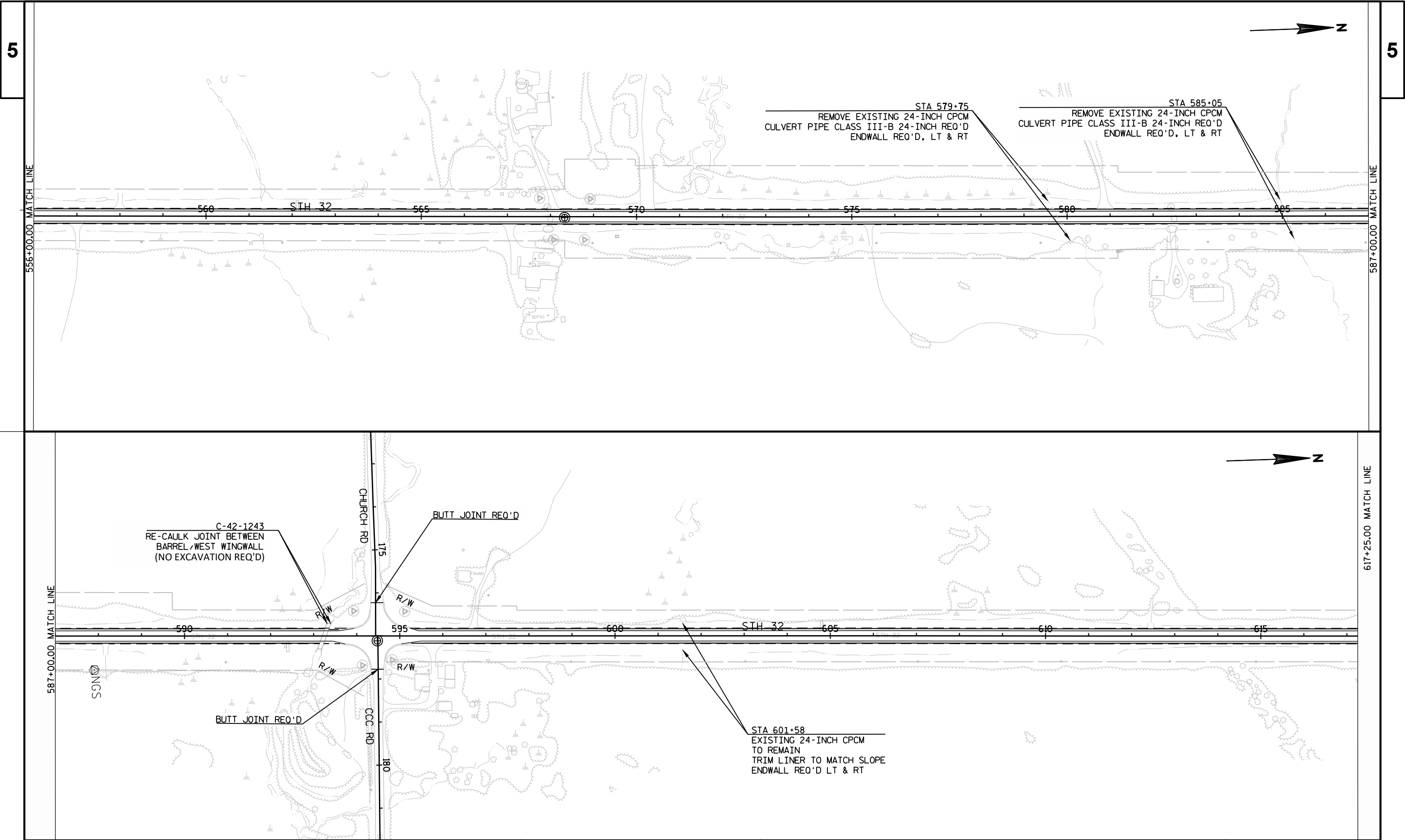
PLOT NAME :

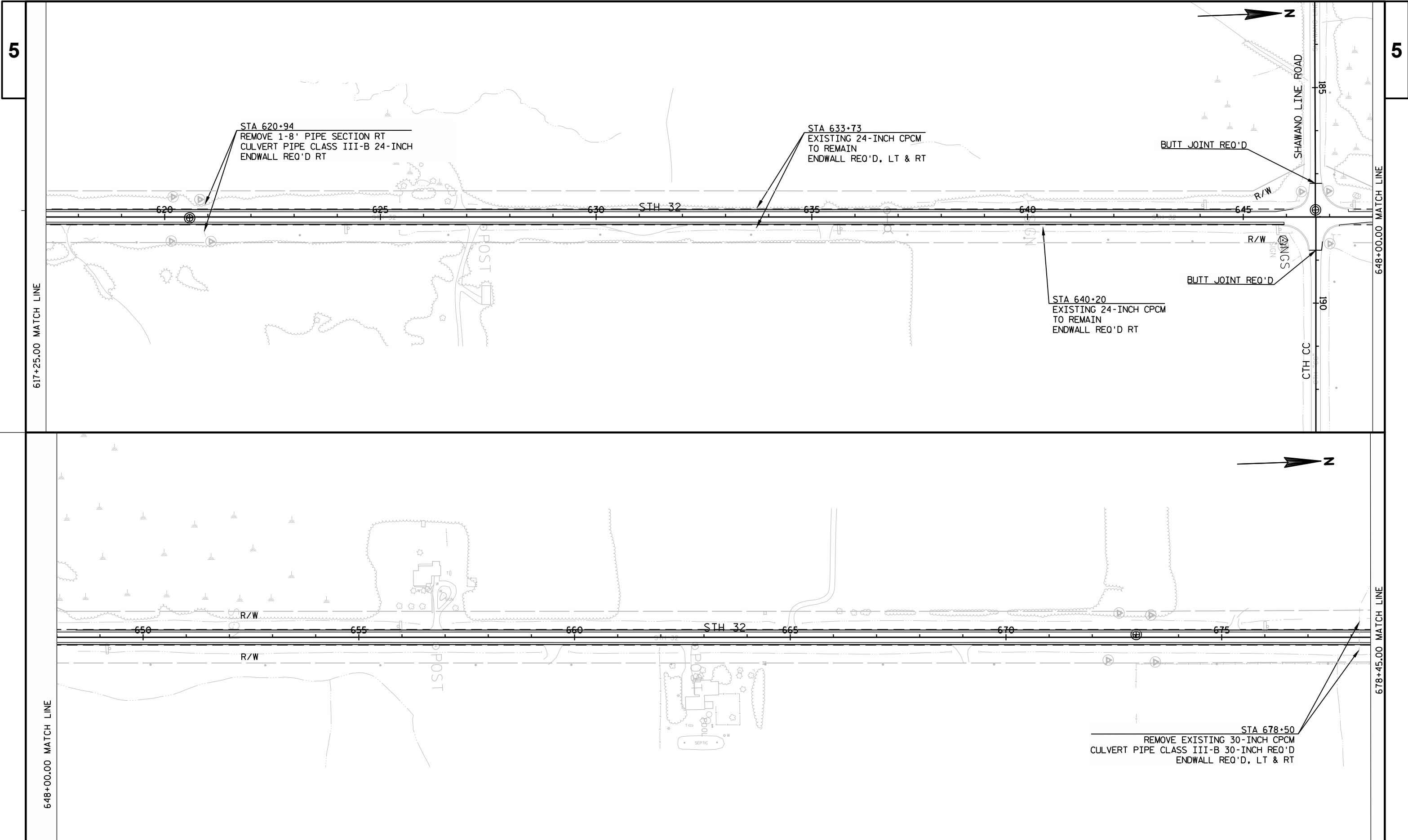
PLOT SCALE : 1 IN:40 FT

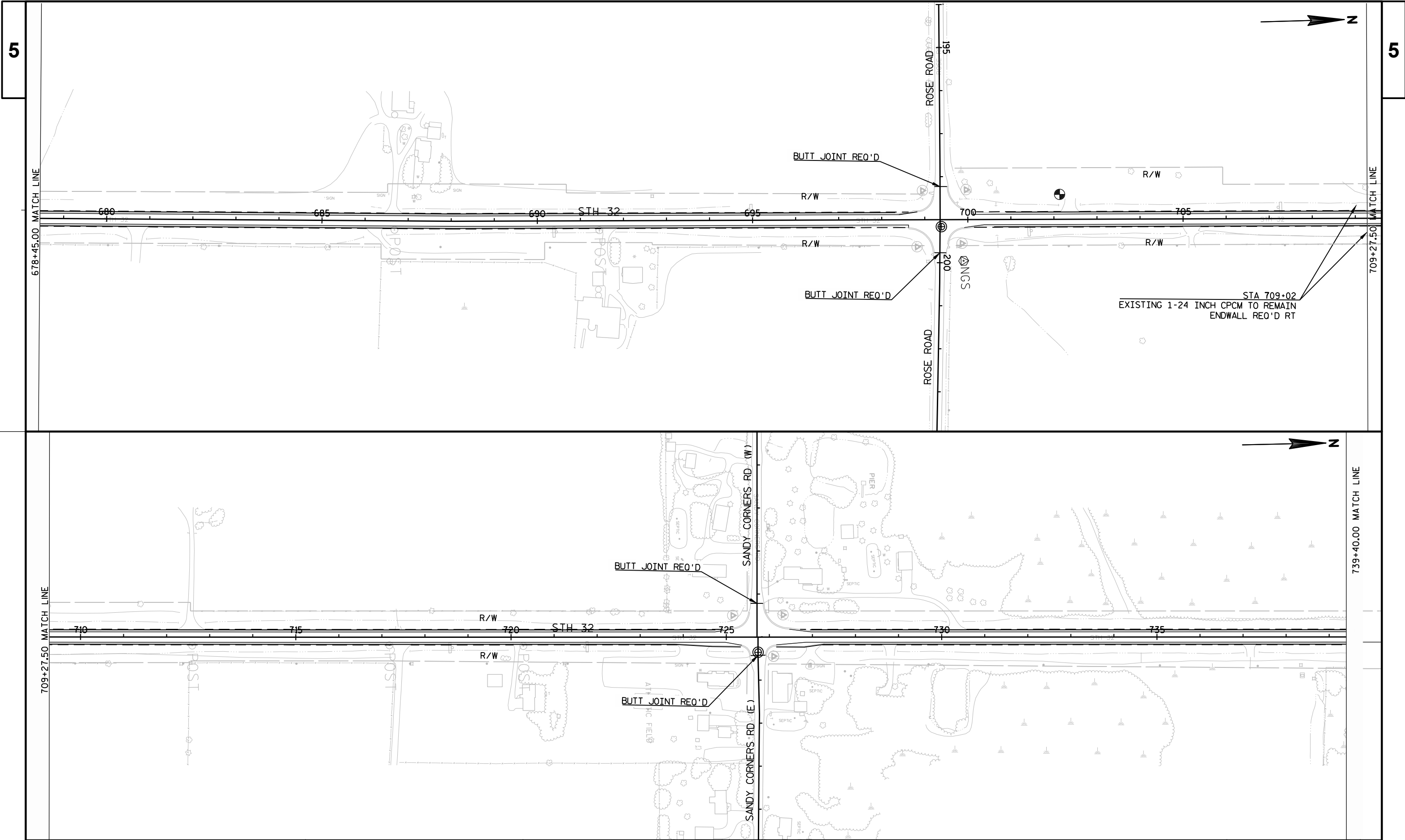
WISDOT/CADDS SHEET 42











PROJECT NO: 9190-27-71

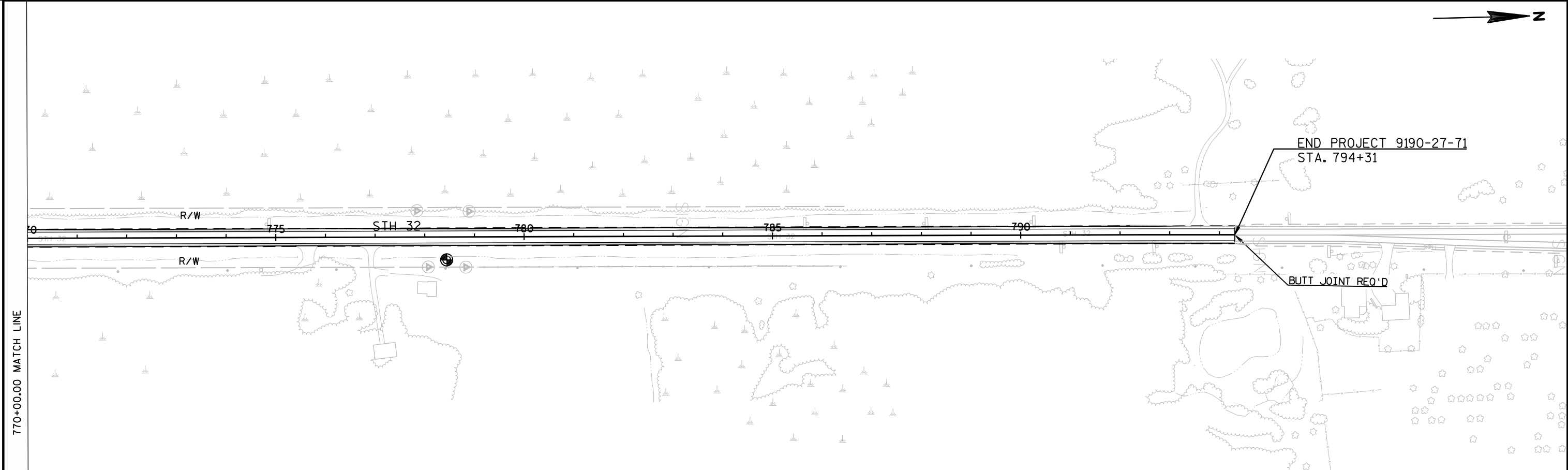
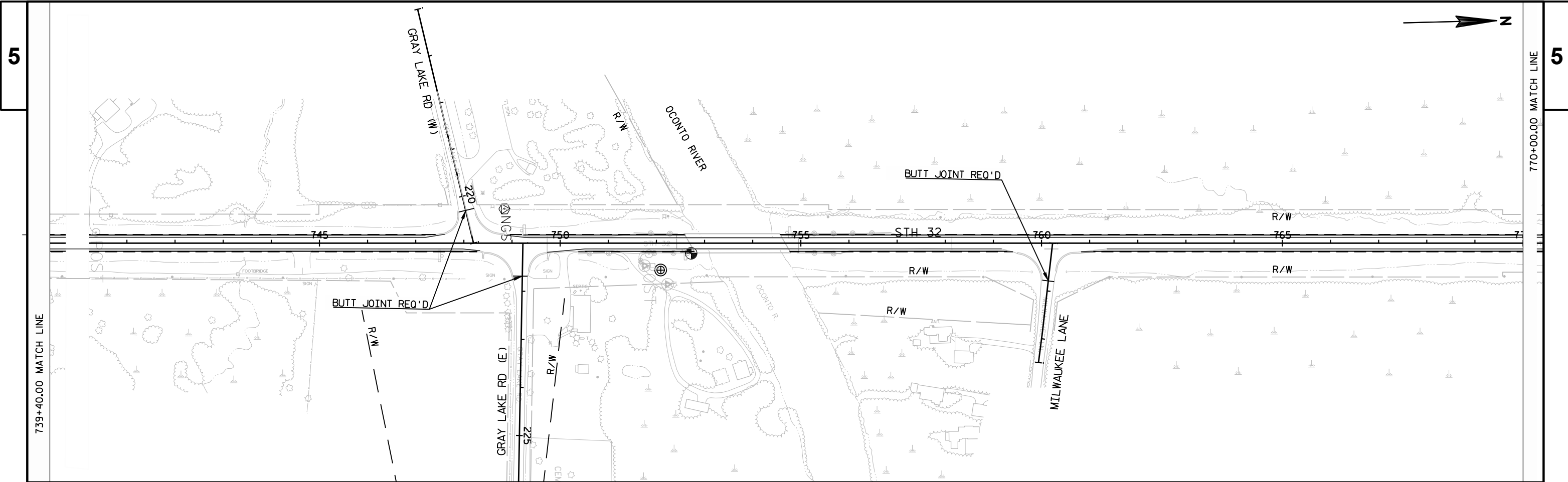
HWY: STH 32

COUNTY: OCONTO

PLAN

SHEET

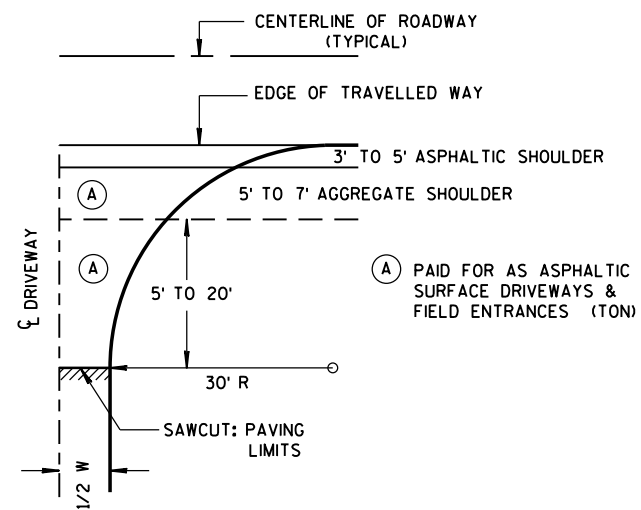
E



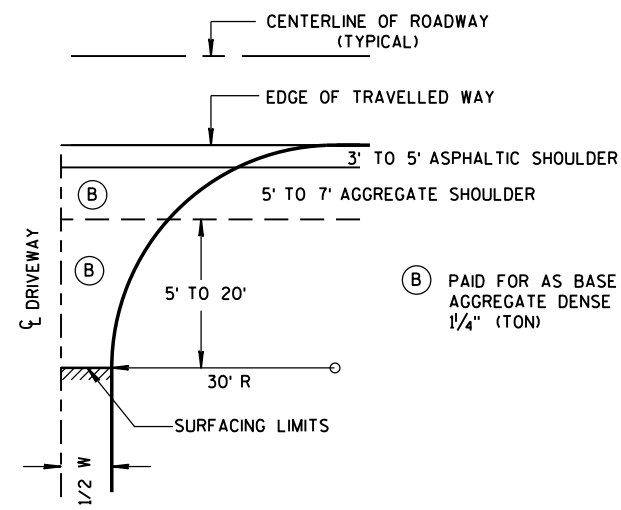
PROJECT NO: 9190-27-71	HWY: STH 32	COUNTY: OCONTO	PLAN	SHEET	E
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GENERAL NOTES

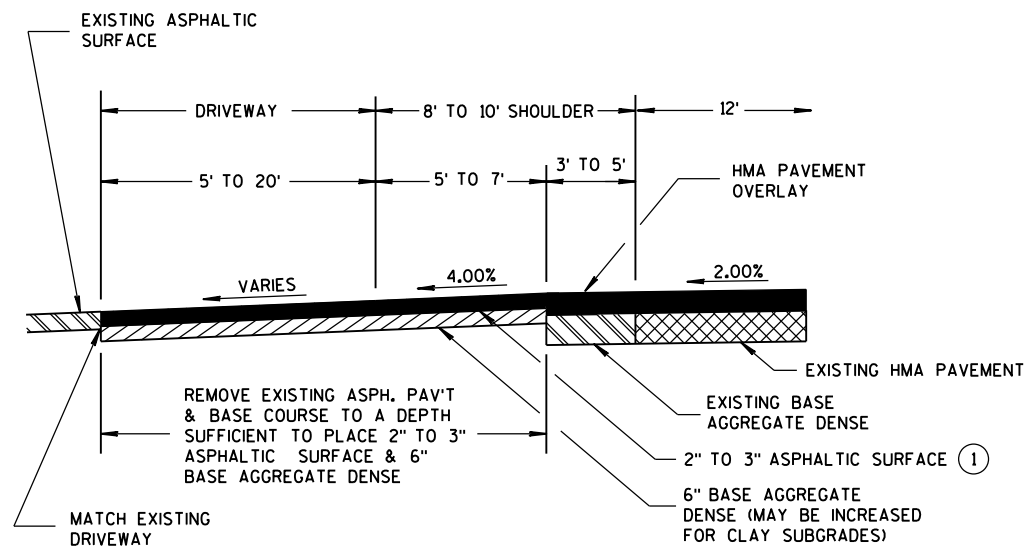
- ① DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.



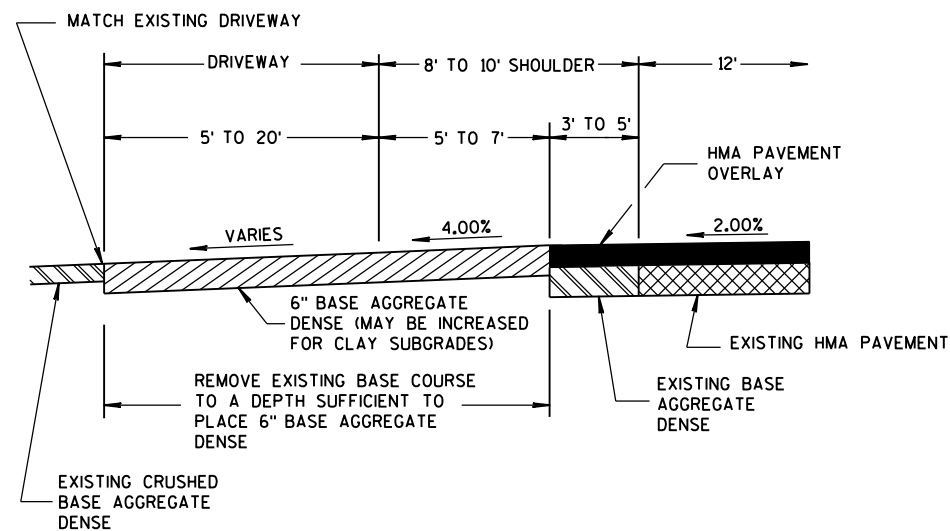
PLAN VIEW
HALF SECTION



PLAN VIEW
HALF SECTION



PROFILE VIEW
RURAL ENTRANCE
WITH ASPHALTIC SURFACE
RESURFACING PROJECTS



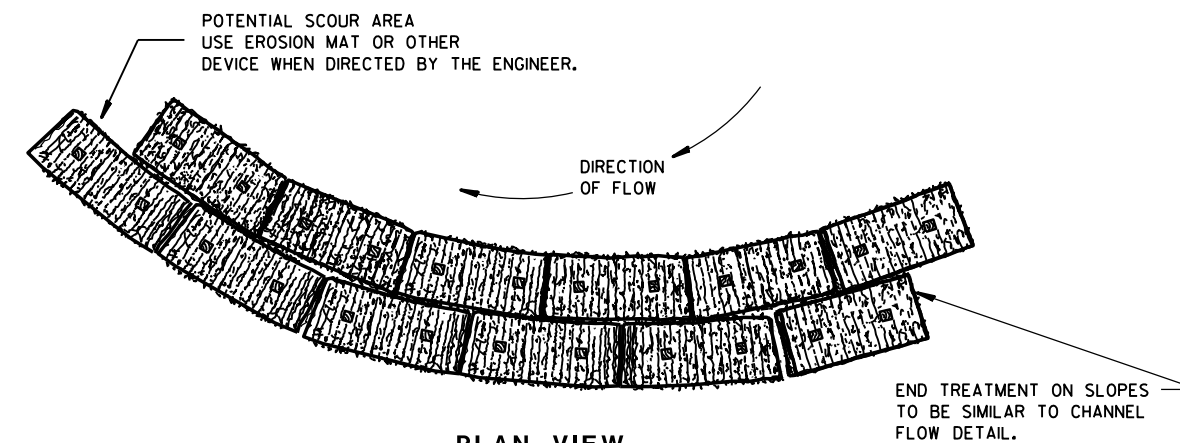
PROFILE VIEW
RURAL ENTRANCE
WITH AGGREGATE SURFACE
6" BASE AGGREGATE DENSE
RESURFACING PROJECTS

DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED December, 2016	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
DATE	FHWA

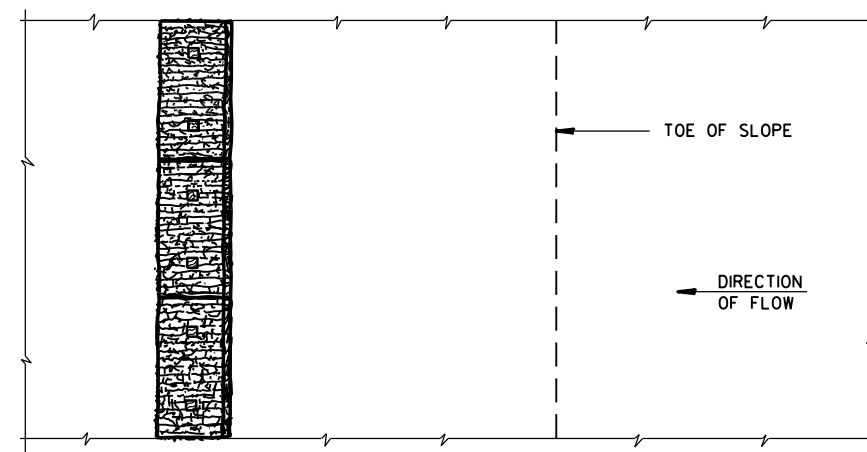
GENERAL NOTES

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.

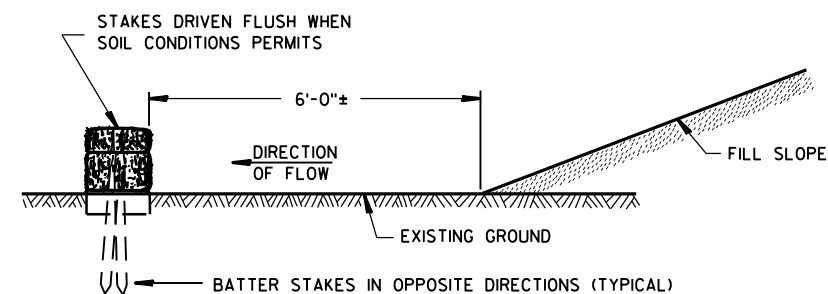
- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.



PLAN VIEW
WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



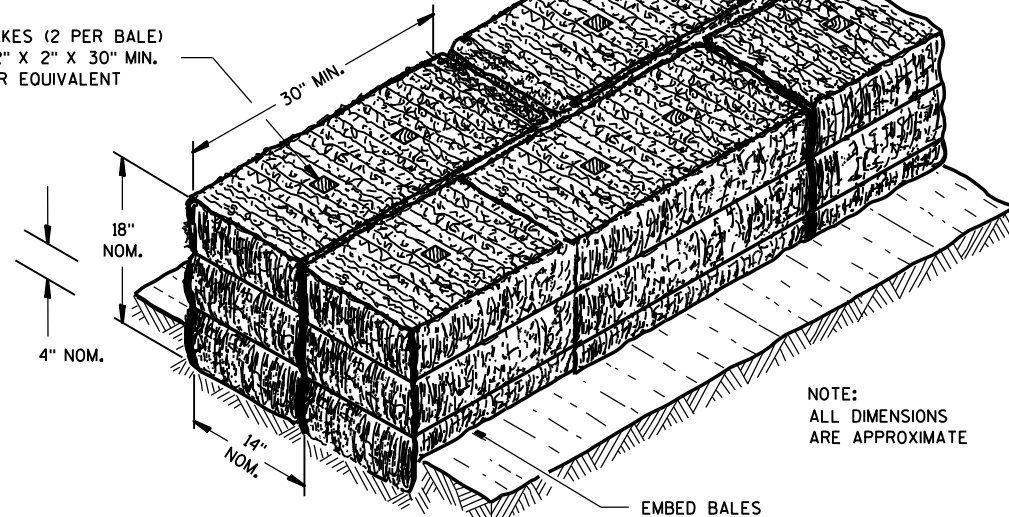
FRONT ELEVATION
WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE
EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

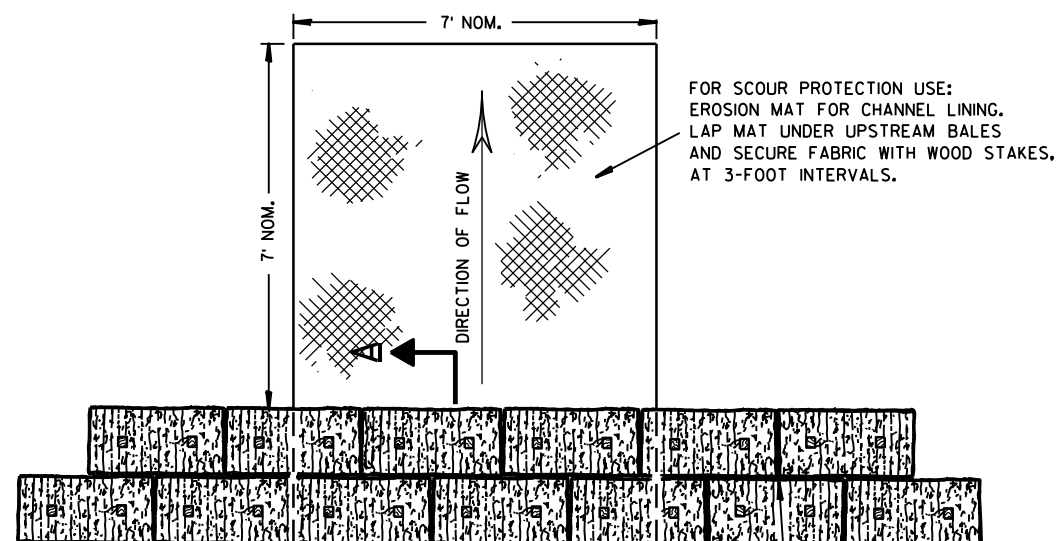
APPROVED
6/04/02 /S/ Beth Cannestra
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

WOOD STAKES (2 PER BALE)
NOMINAL 2" X 2" X 30" MIN.
LENGTH OR EQUIVALENT



NOTE:
ALL DIMENSIONS
ARE APPROXIMATE

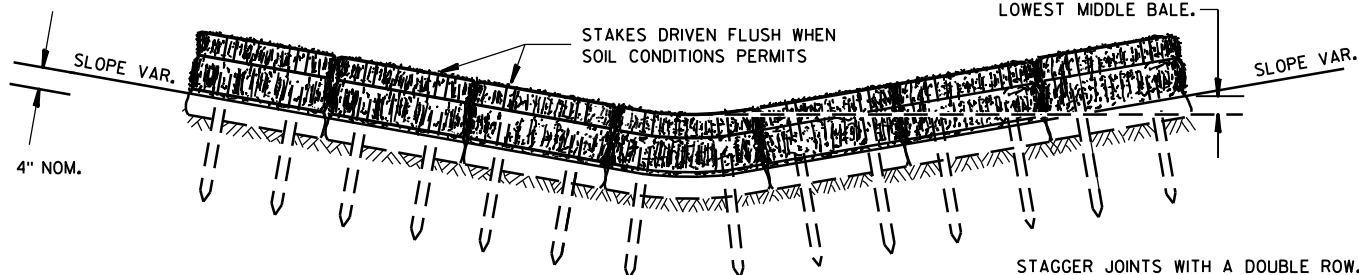
SECTION A-A



PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

BOTTOM ELEVATION OF END BALE SHALL
BE EQUAL TO OR GREATER THAN TOP OF
LOWEST MIDDLE BALE.



FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①



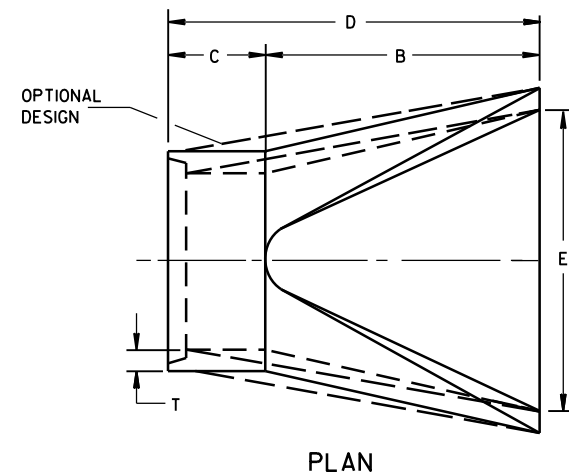
8F1: Apron Endwalls for Culvert Pipe

METAL APRON ENDWALLS												
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY	
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1/2")	L (±1 1/2")	L1 ①	L2 ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.	
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.	
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.	
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.	
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.	
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.	
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.	
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.	
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.	
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.	
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.	
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.	
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.	
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.	
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.	
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.	
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.	

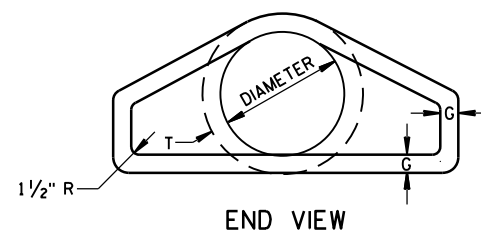
* EXCEPT CENTER PANEL
SEE GENERAL NOTES

REINFORCED CONCRETE APRON ENDWALLS								
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX SLOPE
	T	A	B	C	D	E	G	
12	2	4	24	48 ⁷ / ₈	72 ¹ / ₈	24	2	3 to 1
15	2 ¹ / ₄	6	27	46	73	30	2 ¹ / ₄	3 to 1
18	2 ¹ / ₂	9	27	46	73	36	2 ¹ / ₂	3 to 1
21	2 ³ / ₄	9	36	37 ¹ / ₂	73 ¹ / ₂	42	2 ³ / ₄	3 to 1
24	3	9 ¹ / ₂	43 ¹ / ₂	30	73 ¹ / ₂	48	3	3 to 1
27	3 ¹ / ₄	10 ¹ / ₂	49 ¹ / ₂	24	73 ¹ / ₂	54	3 ¹ / ₄	3 to 1
30	3 ¹ / ₂	12	54	19 ³ / ₄	73 ¹ / ₂	60	3 ¹ / ₂	3 to 1
36	4	15	63	34 ³ / ₄	97 ³ / ₄	72	4	3 to 1
42	4 ¹ / ₂	21	63	35	98	78	4 ¹ / ₂	3 to 1
48	5	24	72	26	98	84	5	3 to 1
54	5 ¹ / ₂	27	65	33 ¹ / ₄ -35	98 ¹ / ₄ -100	90	5 ¹ / ₂	2 ¹ / ₂ to 1
60	6	30-35	60	39	99	96	5	2 to 1
66	6 ¹ / ₂	24-30	72-78	21-27	99	102	5 ¹ / ₂	2 to 1
72	7	24-36	78	21	99	108	6	2 to 1
78	7 ¹ / ₂	24-36	78	21	99	114	6 ¹ / ₂	2 to 1
84	8	36	90 ¹ / ₂	21	111 ¹ / ₂	120	6 ¹ / ₂	1 ¹ / ₂ to 1
90	8 ¹ / ₂	41	87 ¹ / ₂	24	111 ¹ / ₂	132	6 ¹ / ₂	1 ¹ / ₂ to 1

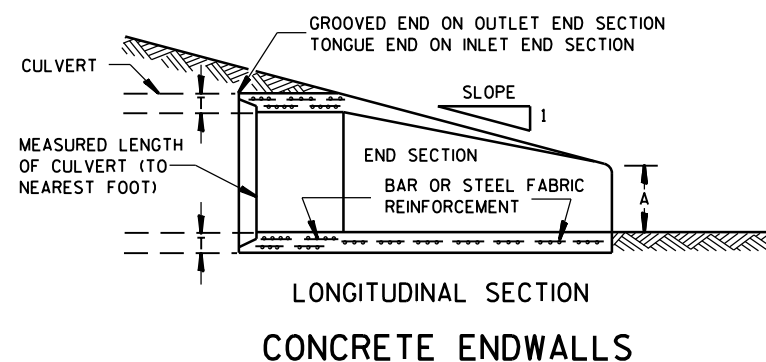
* MINIMUM
** MAXIMUM



PLAN



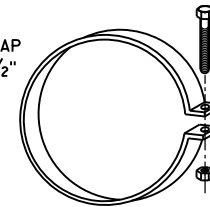
END VIEW



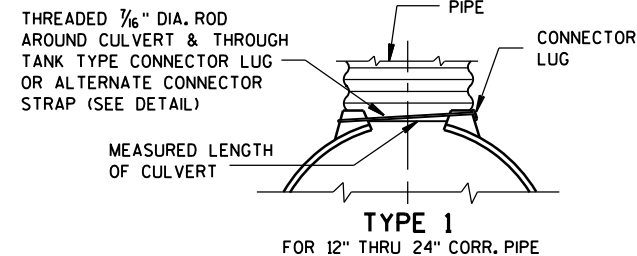
LONGITUDINAL SECTION

CONCRETE ENDWALLS

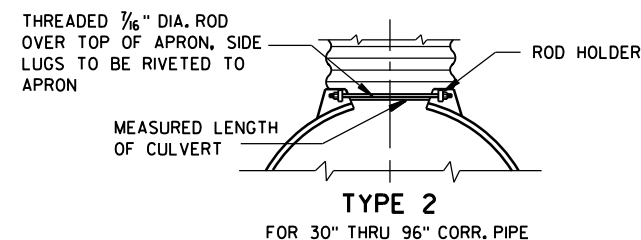
1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



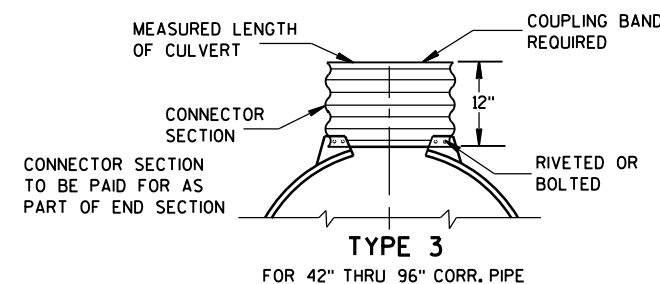
ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



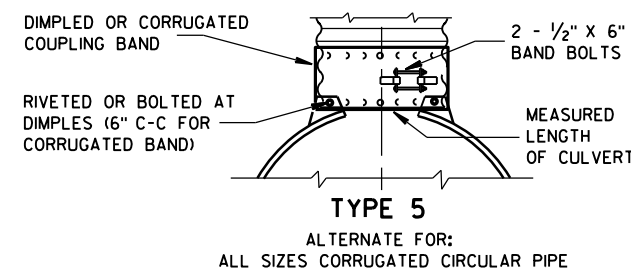
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

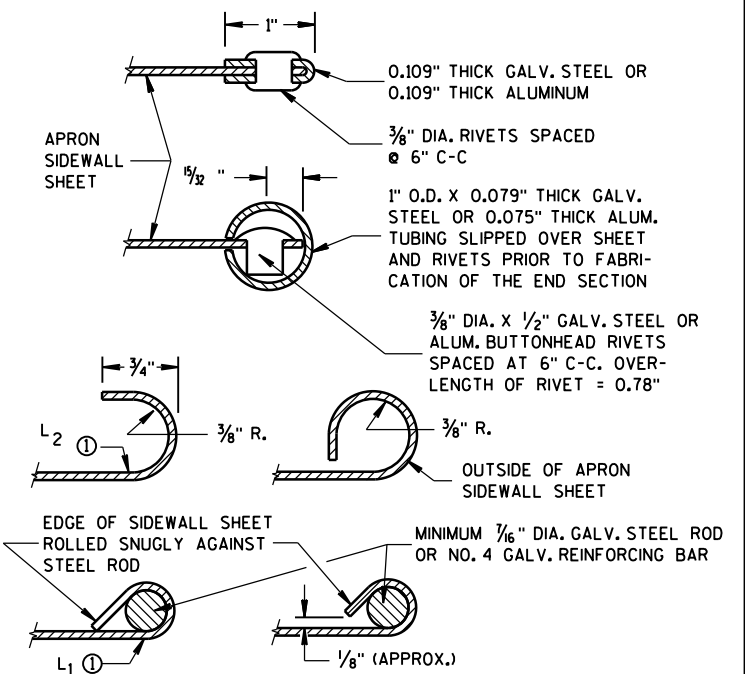
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

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.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-30-94
DATE
/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

BILL OF MATERIALS

NOTE NO.	DESCRIPTION
①	WOOD BREAKAWAY TERMINAL POST: 5½" x 7½" x 3'-9"
②	STEEL TUBE TS 8" x 6" x 0.188", 6'-0"
④	WOOD BREAKAWAY CRT POST: 6" x 8" x 6'-0"
⑤	WOOD OFFSET BLOCKS: 6' x 8" x 1'-2"
⑥	PIPE SLEEVE: 2" x 5 ½" STANDARD PIPE
⑦	BEARING PLATE
⑧	BCT CABLE ASSEMBLY
⑨	CABLE ANCHOR BOX
⑩	STRUT & YOKE
⑪	STEEL PLATE BEAM, END PANEL 12 GA.
⑫	STEEL PLATE BEAM: 12 GA. 13'-6½"
⑬	IMPACT HEAD
⑭	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS

GENERAL NOTES

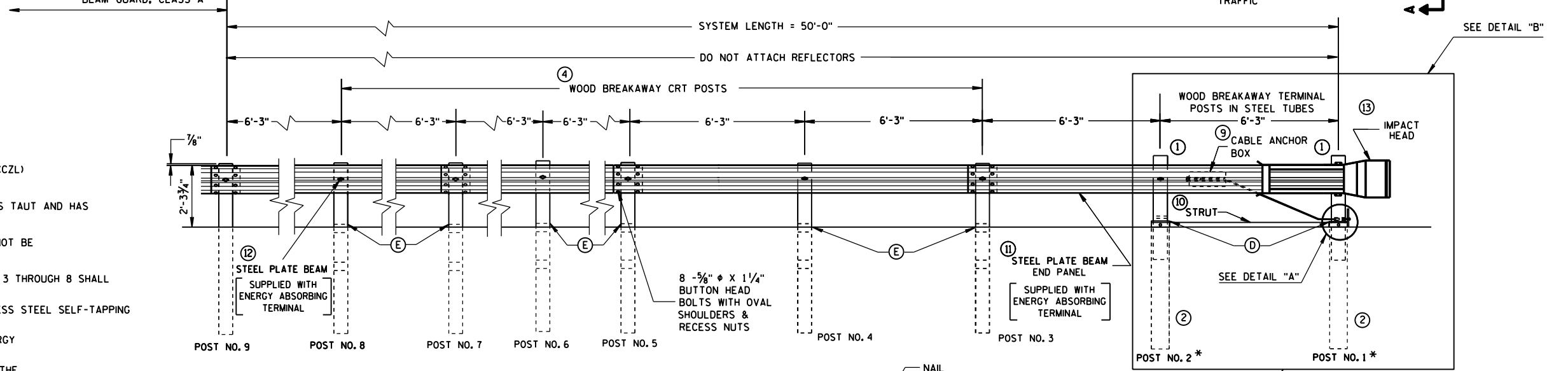
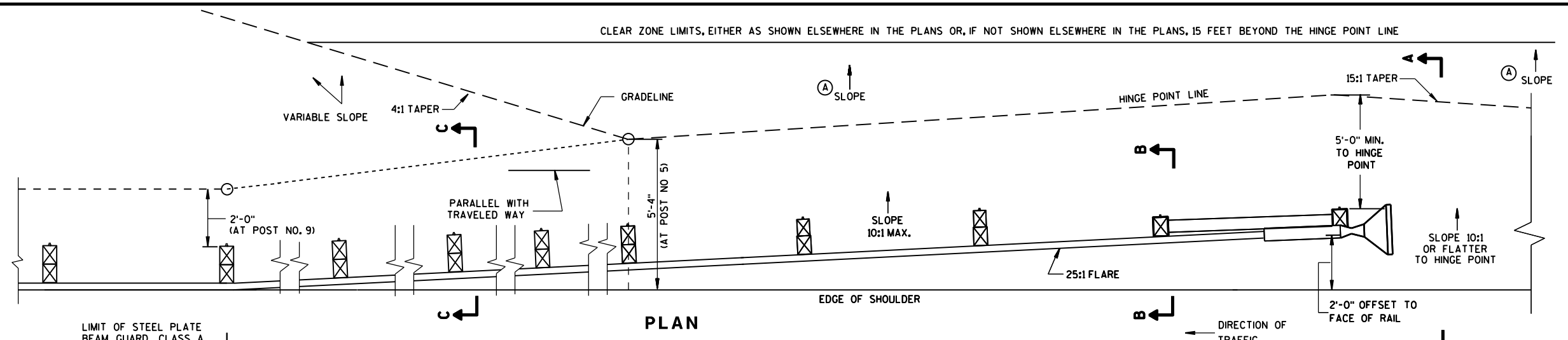
FOLLOW MANUFACTURE'S BOLTING RECOMMENDATIONS.

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.
- (D) THE TOP OF THE STEEL TUBE ON POSTS 1 AND 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) THE CENTER OF THE UPPER ¾" DIAMETER HOLE ON POST 3 THROUGH 8 SHALL BE ¾" ABOVE THE FINISHED GROUND LINE.
- (F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.

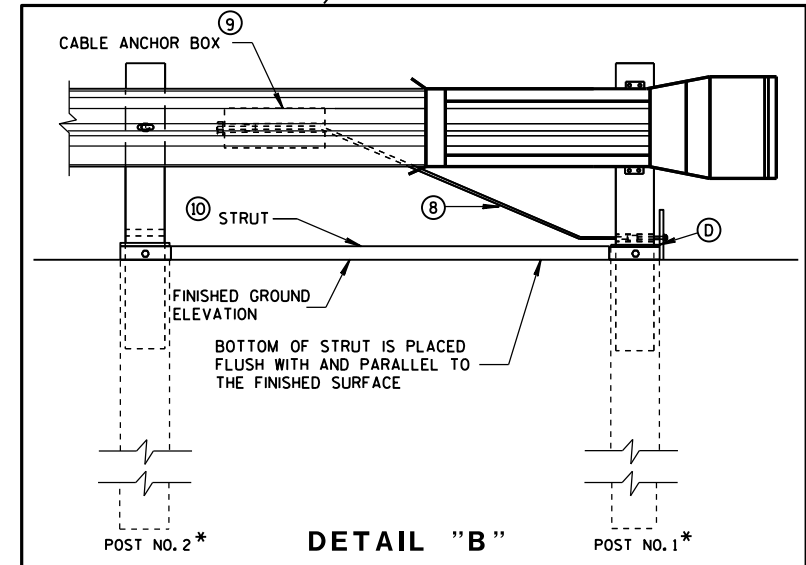
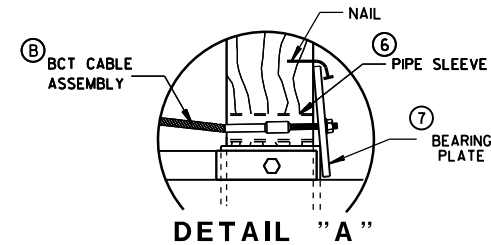
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

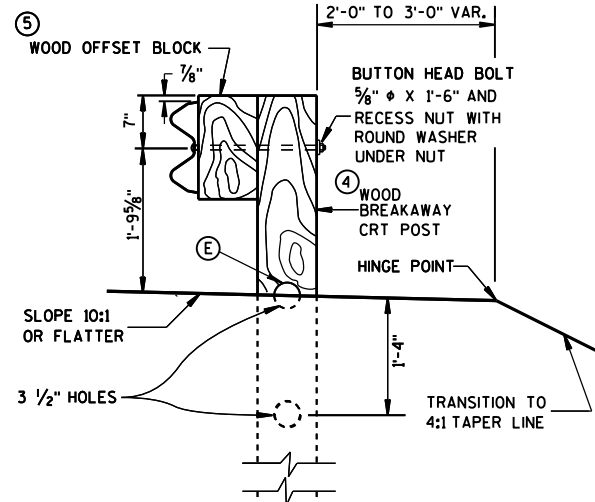
*DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.



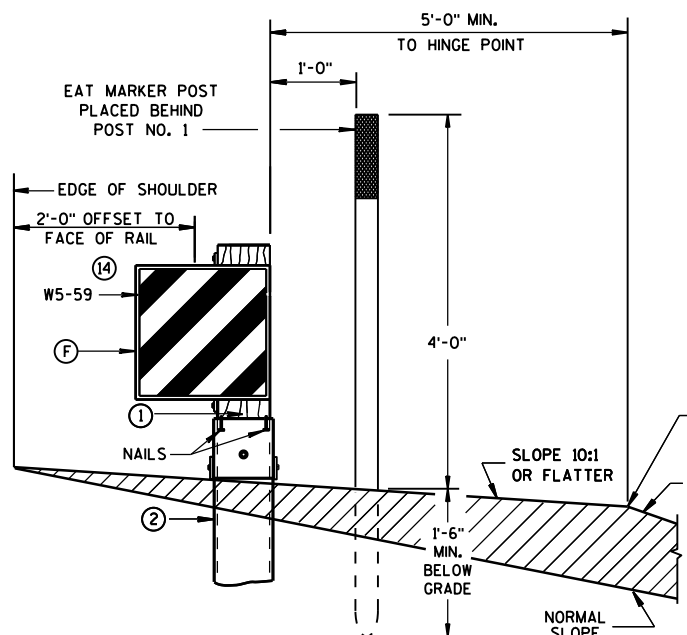
ELEVATION



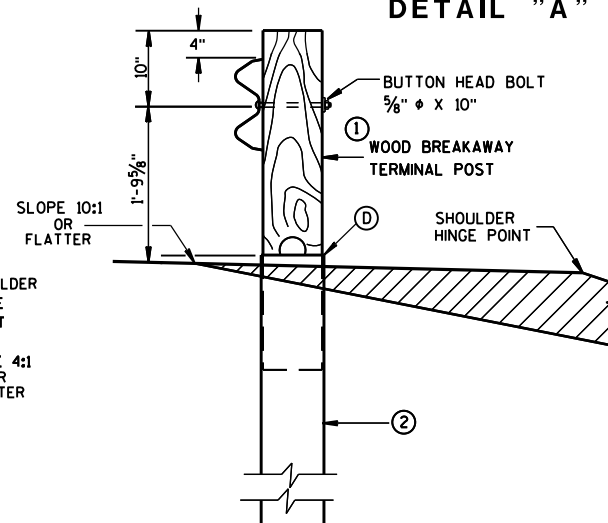
DETAIL "B"



**SECTION C-C
TYPICAL AT POST NOS. 6, 8**



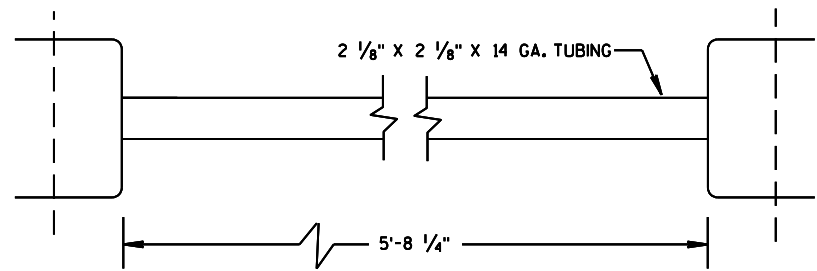
**SECTION A-A
TYPICAL AT POST NO. 1***



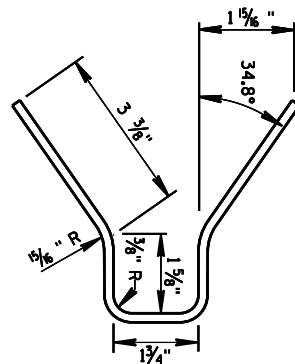
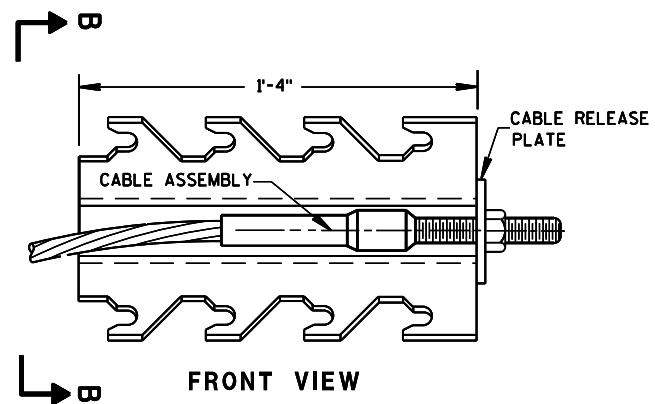
**SECTION B-B
TYPICAL AT POST NO. 2***

**STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL**

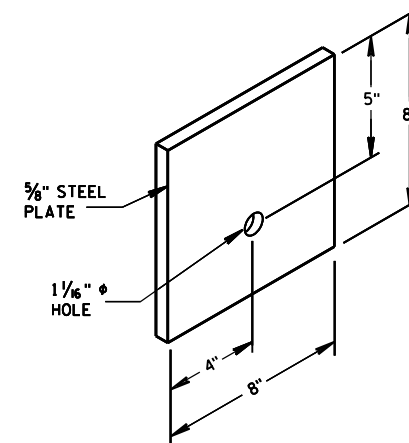
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



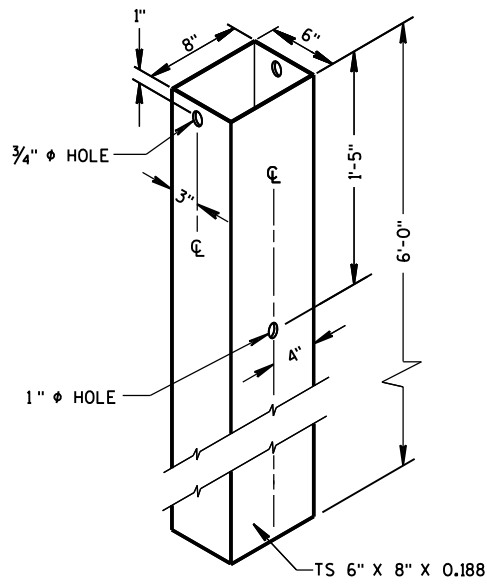
⑩ STRUT DETAIL



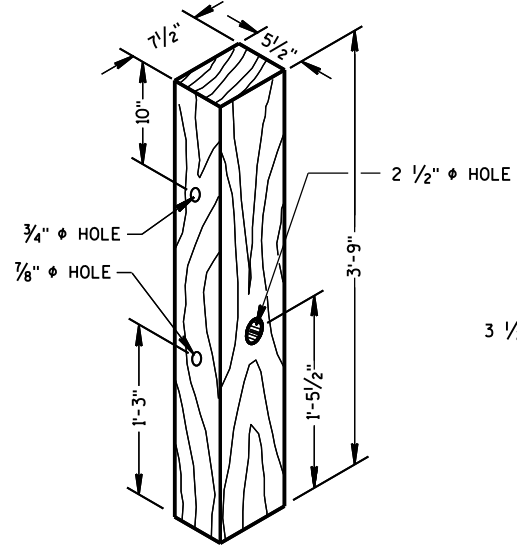
⑨ CABLE ANCHOR BOX



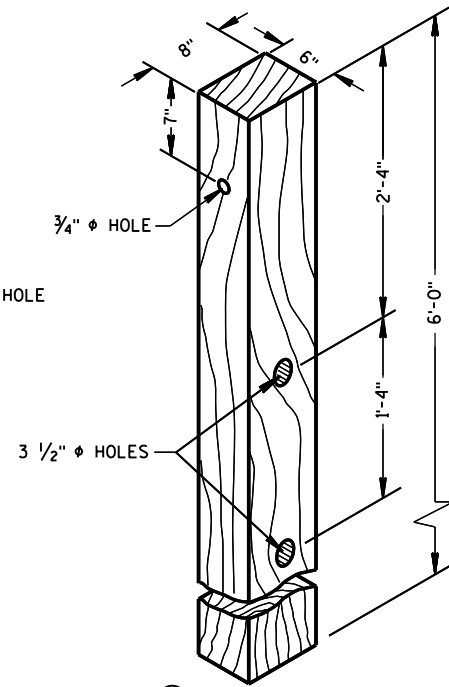
⑦ STEEL BEARING PLATE



② 72" STEEL TUBE
(POSTS NO. 1-4)

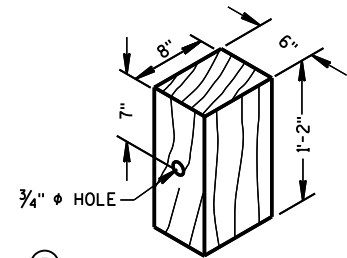


① TERMINAL POST



④ CRT POST
(POSTS NO'S 5-8)

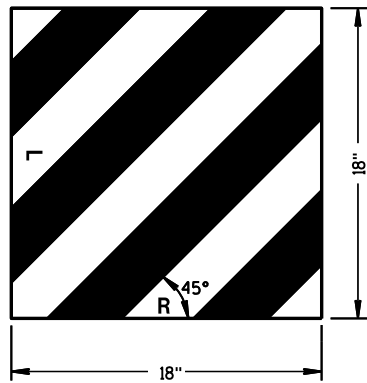
WOOD BREAKAWAY POSTS



⑤ WOOD OFFSET BLOCK
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

GENERAL NOTES

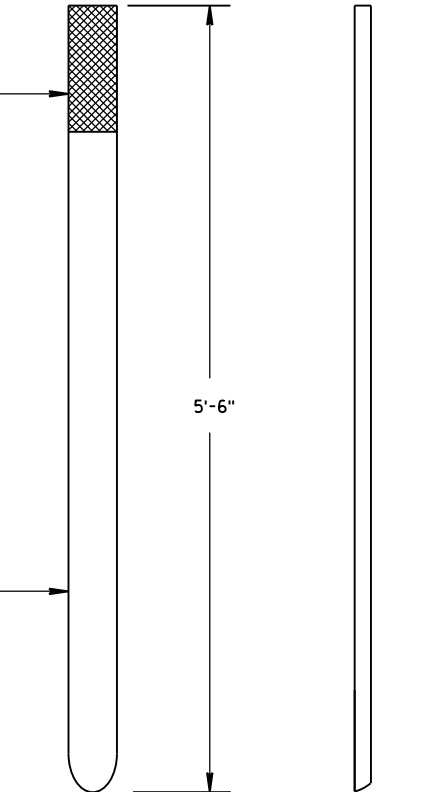
WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2" INCHES DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.



⑭ REFLECTIVE SHEETING DETAILS

TYPE H
YELLOW REFLECTIVE
SHEETING 3" X 9".
SEE STANDARD
SPECIFICATION 637.

E.A.T. MARKER
POST (YELLOW)
SEE APPROVED
PRODUCTS LIST



FRONT VIEW SIDE VIEW

E.A.T. MARKER POST

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

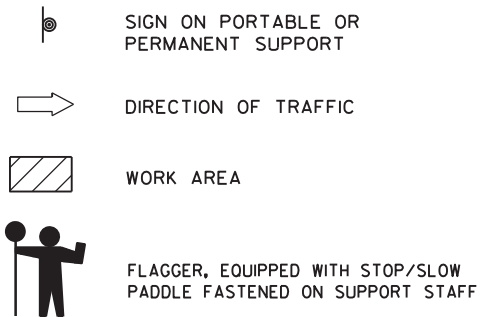
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

15C12: Traffic Control for Lane Closure with Flagging Operation

LEGEND

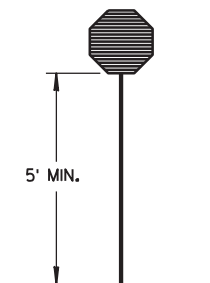
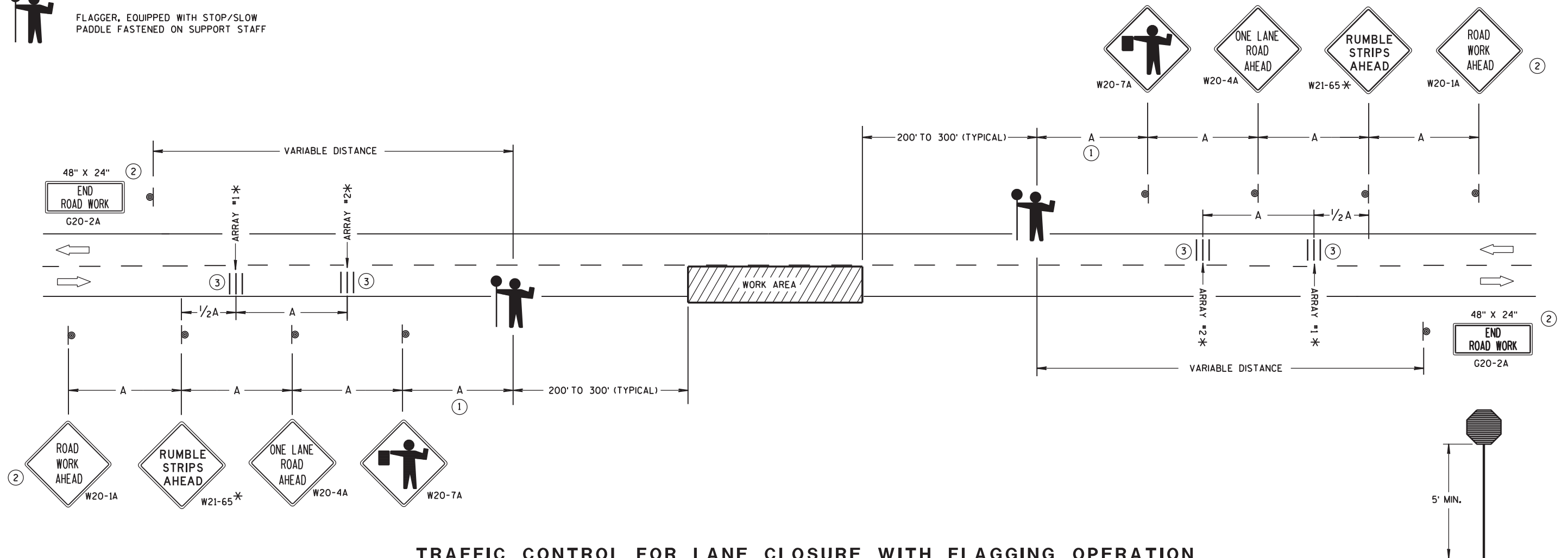


SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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



STOP/SLOW PADDLE ON SUPPORT STAFF

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

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.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES (AND THE 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.

"W0" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS. PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

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

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 RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

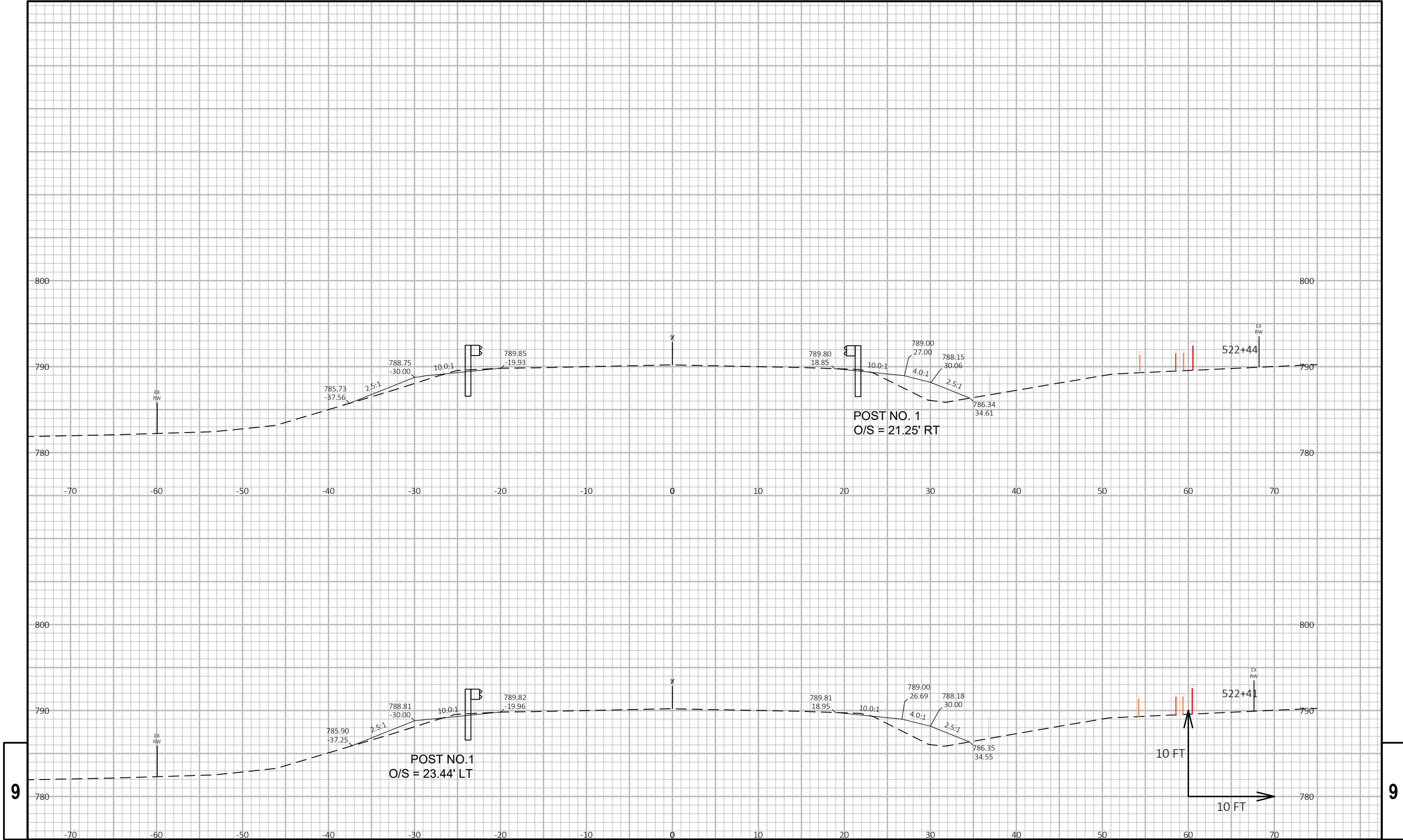
* UTILIZE TEMPORARY RUMBLE STRIPS WHEN FLAGGING OPERATION IS ANTICIPATED TO BE STATIONARY IN EXCESS OF TWO HOURS.

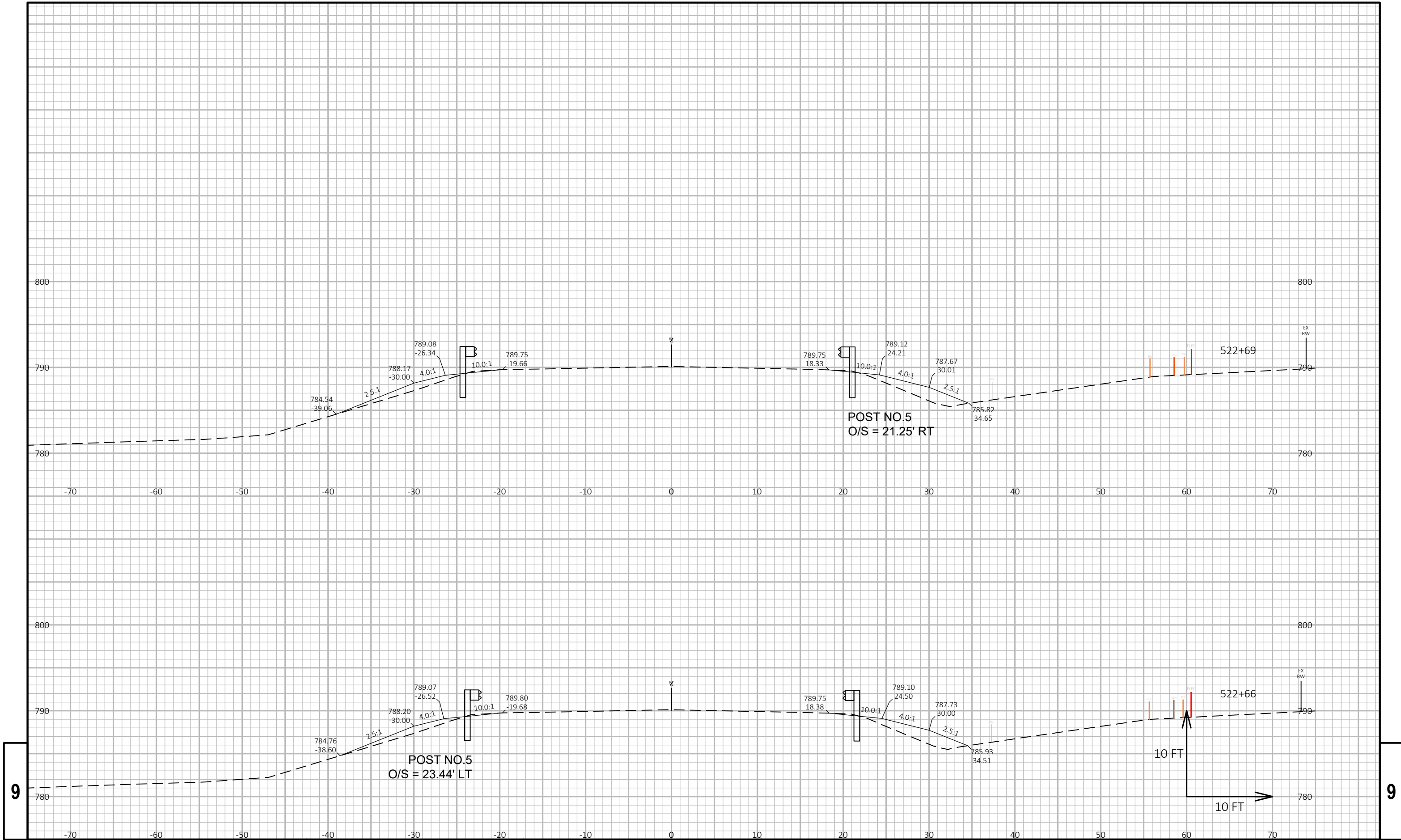
- FOR A MOVING WORK OPERATION, SIGNING AND TEMPORARY RUMBLE STRIPS (IF USED) SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3,500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- EACH TEMPORARY RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

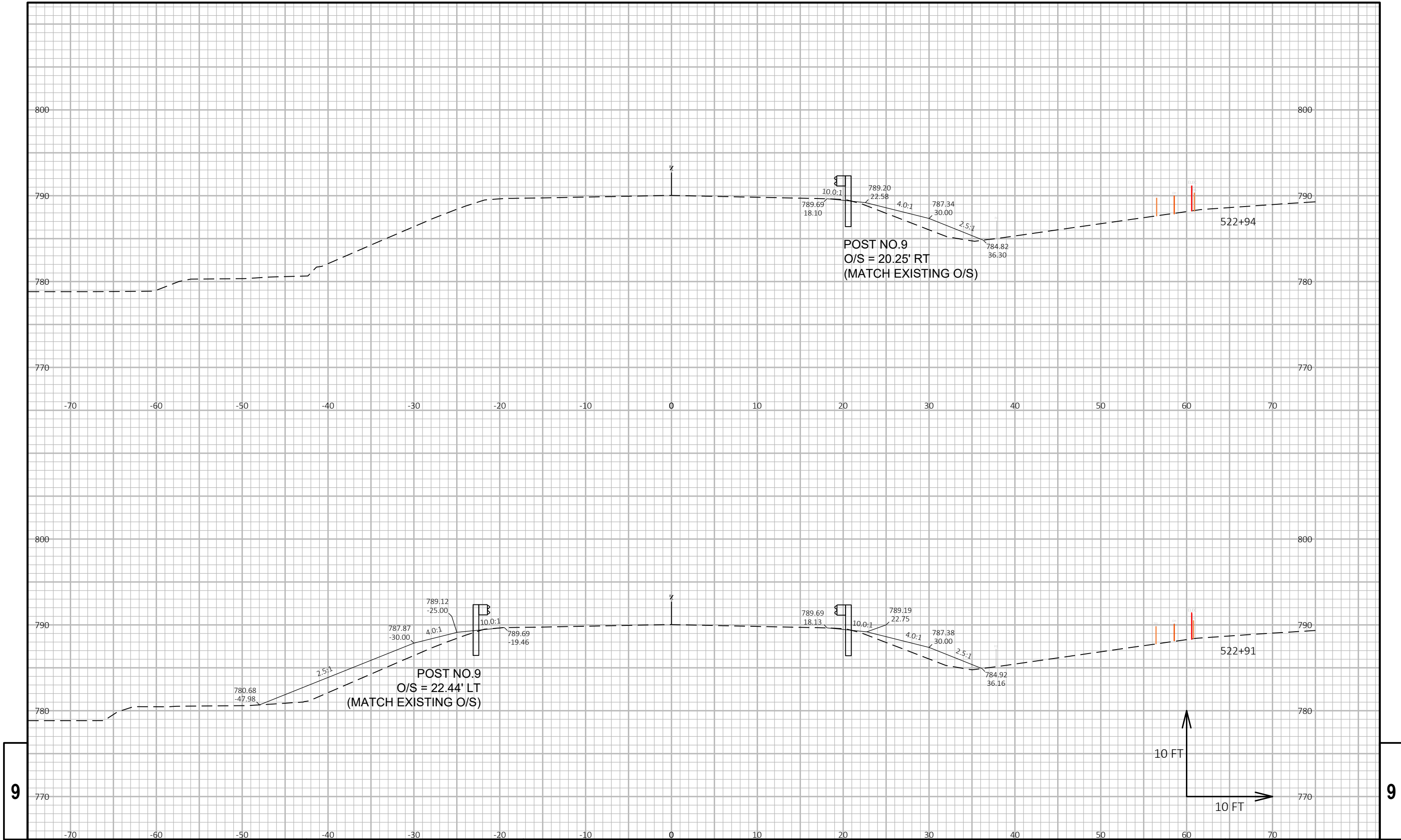
TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Andrew Heldtke
DATE WORK ZONE ENGINEER
FHWA

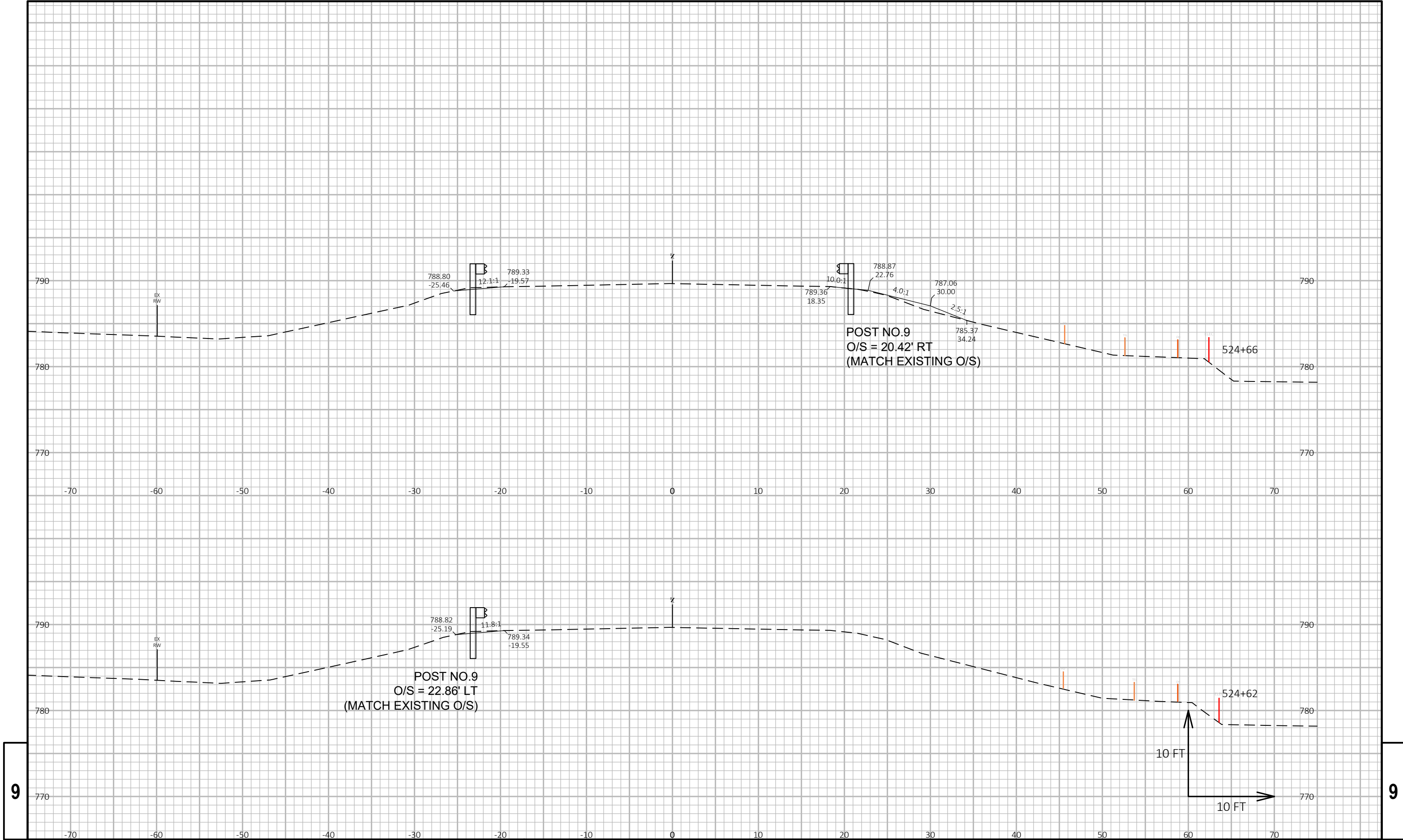


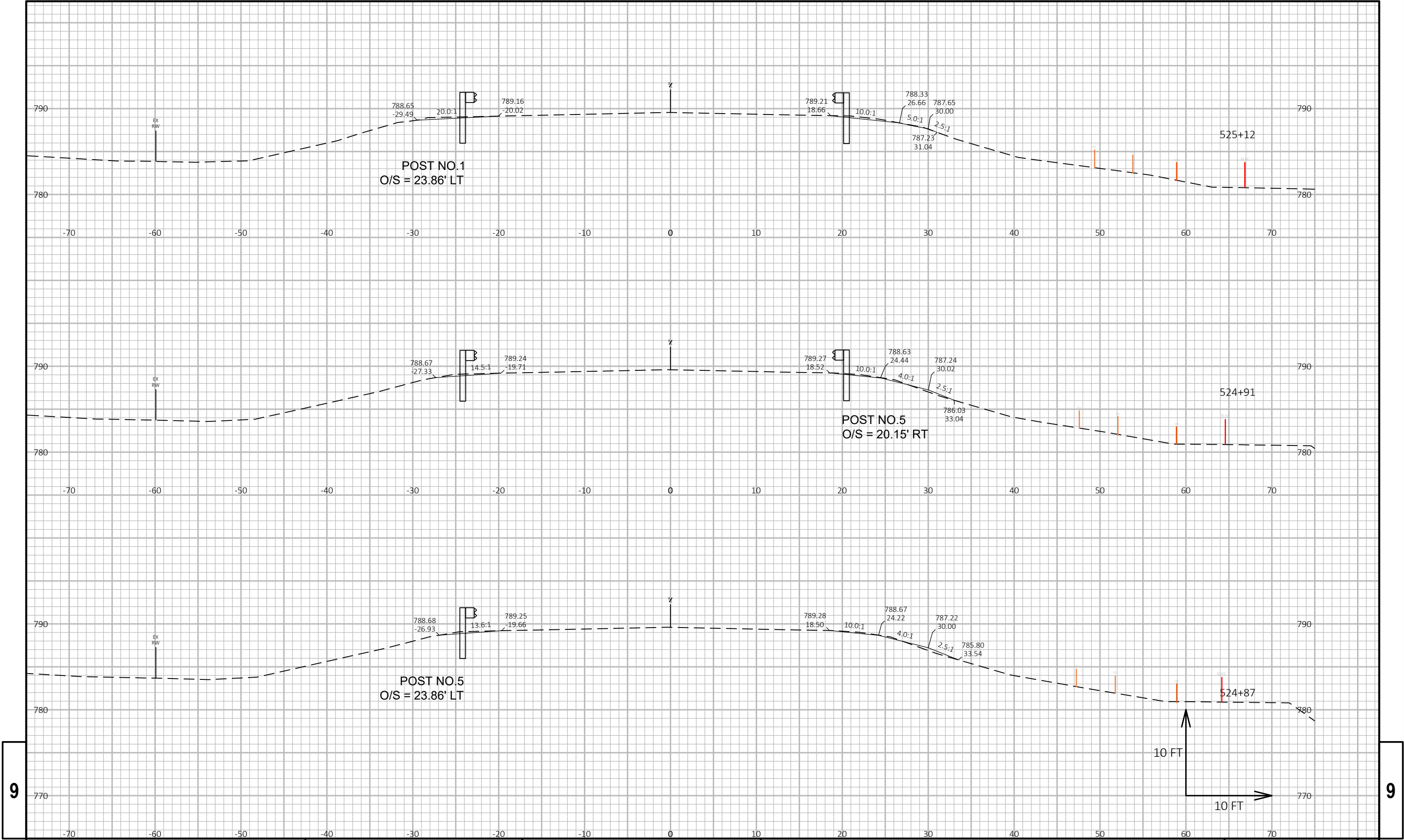




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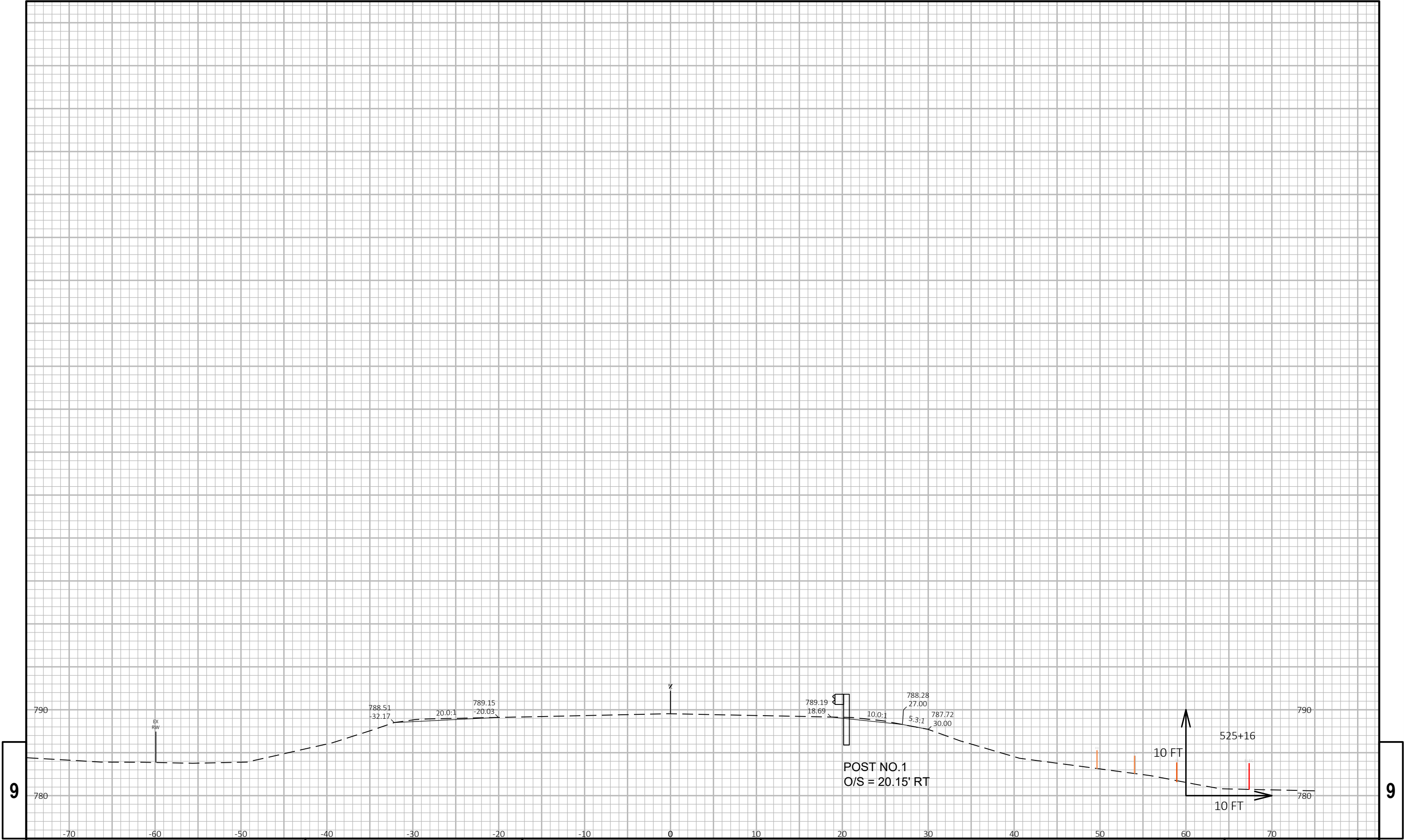




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PROJECT NO: 9190-27-00	HWY: STH 32	COUNTY: OCONTO	CROSS SECTIONS: ENERGY ABSORBING TERMINALS	SHEET	E
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PROJECT NO: 9190-27-71	HWY: STH 32	COUNTY: OCONTO	CROSS SECTIONS: ENERGY ABSORBING TERMINALS	SHEET E
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EPlans Preliminary Sheet Numbering Tool

This sheet: ftp://ftp.dot.state.wi.us/transp/roads/eplans/prelim_sheet_numbers.pdf

Notes

- Acrobat 5 or higher is required to use this tool.
- The Bureau of Highway Construction places sheet numbers in the final plan.
- This sheet is for placing preliminary sheet numbers with a "PRE_" prefix.
- If a plan contains multiple projects, number each plan individually.
- Leave this sheet in the plan.

TO ADD PRELIMINARY SHEET NUMBERS

1. Insert this sheet at the end of the plan

- a. With the plan open in Acrobat, select Document > Insert Pages.
- b. In the Select File to Insert dialog box, select this file (prelim_sheet_numbers.pdf)
- c. In the Insert dialog box, choose After for Location and Last page for Page.
- d. Click OK.

2. Click the Place Preliminary Sheet Numbers button

- a. Go to the last sheet of the plan.
- b. Click the Place Preliminary Sheet Numbers button once.
(The preliminary sheet number appears in the bottom right corner of the sheets.
The number should match the page number in the Acrobat Status bar).

3. Re-Save the PDF

- a. Select File > Save As and save the PDF.

TO REMOVE PRELIMINARY SHEET NUMBERS