

WKE APR 14, 2020

PROJECT ID: 3833-03-73

COUNTY: RACINE

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 = 204



DESIGN DESIGNATION

A.A.D.T.	2020	=	9,600
A.A.D.T.	2040	=	11,600
D.H.V.		=	1150
D.D.		=	60/40
T.		=	13.1%
DESIGN SPEED		=	60 mph
ESALS		=	

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	

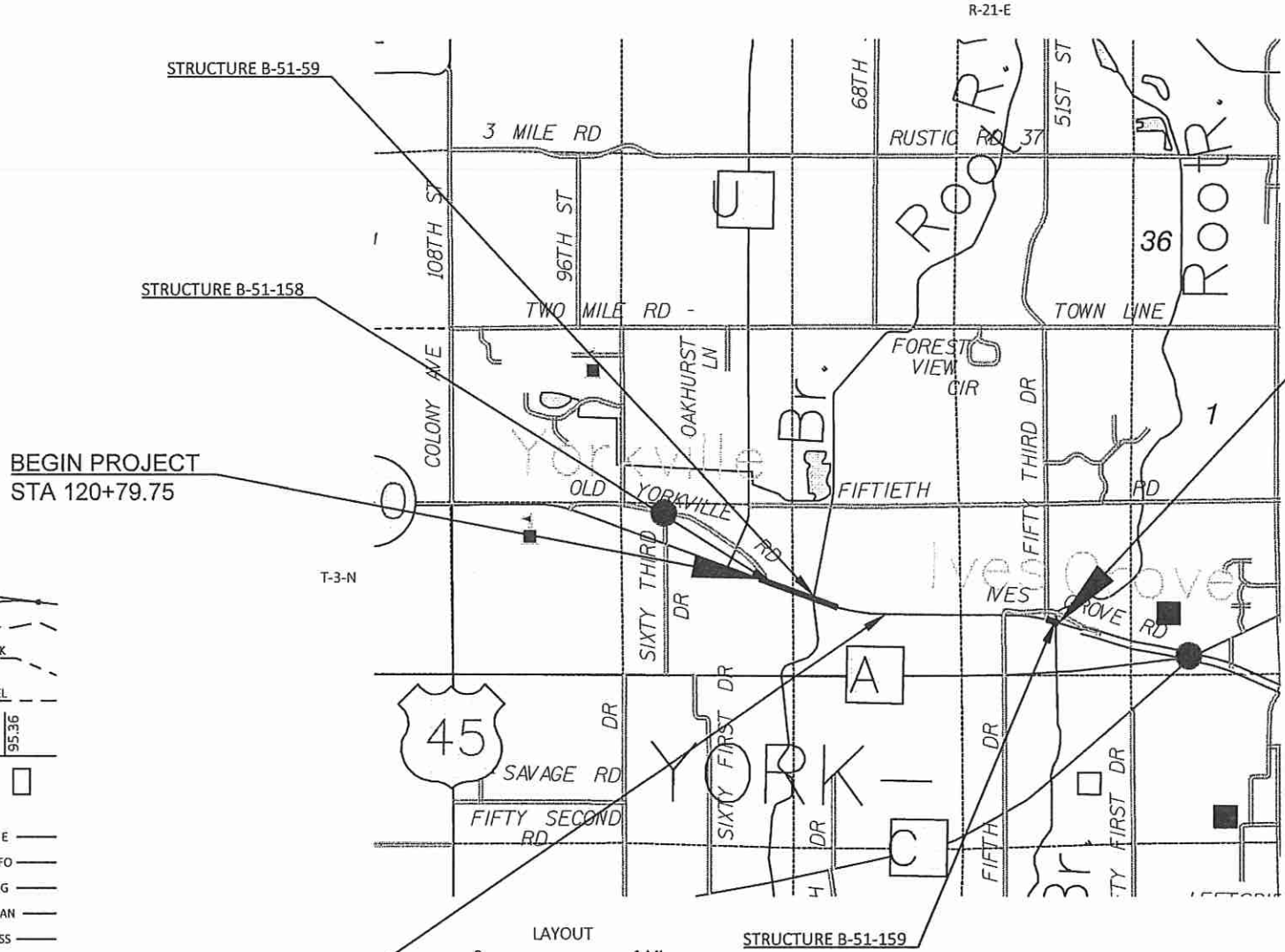
PROFILE	
GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

STH 20
USH 45 TO IH 94
STH 20
RACINE

STATE PROJECT NUMBER
3833-03-73



NET EXCEPTION TO CL LENGTH
STA 140+53.49 - STA 210+63.61

LAYOUT

SCALE 0 1 MI

TOTAL NET LENGTH OF CENTERLINE = 0.489 MILES

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, RACINE 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.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM NAVD88 (2012)

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
3833-03-73	WISC 2020144	1

ORIGINAL PLANS PREPARED BY
KAPUR & ASSOCIATES

DATE: 11-1-19

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	KAPUR & ASSOCIATES
Designer	KAPUR & ASSOCIATES
Project Manager	MARK WILFERT
Regional Examiner	
Regional Supervisor	REEM SHAHIN

APPROVED FOR THE DEPARTMENT

DATE: 11-1-19

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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.

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.

TEMPORARY STORAGE OF ANY EXCAVATED MATERIAL WILL NOT BE PERMITTED IN WETLAND AREAS.

FERTILIZER SHALL NOT BE USED WITHIN 20 FEET OF NAVIGABLE WATERWAYS OR WETLANDS.

CROSS SECTIONS SHOWN INCLUDE THE THICKNESS OF TOPSOIL WHERE REQUIRED. TOPSOIL SHALL BE PLACED A MINIMUM OF 6 INCHES IN DEPTH.

TOPSOIL SHALL NOT BE PLACED UNTIL APPROVED BY ENGINEER.

RE-TOPSOIL OF GRADED AREAS, AS DESIGNATED BY THE ENGINEER, IMMEDIATELY AFTER GRADING IS COMPLETED WITHIN THOSE AREAS. SEED, FERTILIZE, AND MULCH/EROSION MAT TOP-SOILED AREAS, AS DESIGNATED BY THE ENGINEER, WITHIN FIVE (5) CALENDAR DAYS AFTER PLACEMENT OF TOPSOIL. IF GRADED AREAS ARE LEFT EXPOSED FOR MORE THAN (14) CALENDAR DAYS, SEED THOSE AREAS WITH TEMPORARY SEED AND MULCH.

STOCKPILE EXCESS MATERIAL OR SPOILS ON UPLAND AREAS AWAY FROM WETLANDS, FLOODPLAINS AND WATERWAYS. STOCKPILED SOIL SHALL BE PROTECTED AGAINST EROSION. IF STOCKPILED MATERIAL IS LEFT FOR MORE THAN FOURTEEN (14) CALENDAR DAYS, SEED THE STOCKPILE WITH TEMPORARY SEED AND MULCH.

NO TREES OR SHRUBS SHALL BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.

ALL HOLES OR OPENINGS BELOW SUBGRADE RESULTING FROM ABANDONMENT OR REMOVAL OF EXISTING STRUCTURES WILL BE FILLED WITH COMPACTED BACKFILL GRANULAR GRADE 1 UNLESS REGULATIONS REQUIRED OTHERWISE. BACKFILL GRANULAR GRADE 1 IS INCIDENTAL TO THE REMOVAL ITEM.

PRIOR TO ORDERING DRAINAGE PIPES AND STRUCTURES, THE CONTRACTOR SHALL VERIFY INVERT AND RIM ELEVATIONS IN THE PLAN WITH THE ENGINEER.

INLET AND DISCHARGE ELEVATIONS FOR DRAINAGE STRUCTURES SHOWN ON THE PLAN MAY BE ADJUSTED BY THE ENGINEER TO FIT FIELD CONDITIONS.

EXISTING DRIVEWAYS AND FIELD ENTRANCES SHALL BE RESTORED IN KIND AS DIRECTED BY THE ENGINEER IN THE FIELD AND AT THE LOCATION DETERMINED BY THE ENGINEER.

BROKEN CONCRETE CONTAINING RE-BAR SHALL NOT BE USED AS RIPRAP.

A SAWED JOINT IS REQUIRED WHERE NEW HMA PAVEMENT MEETS EXISTING ASPHALTIC PAVEMENT SURFACE.

TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

SEE SPECIAL PROVISIONS FOR EROSION CONTROL REQUIREMENTS.

ALL RIGHT OF WAY SHOWN ON THIS PLAN IS APPROXIMATE.

EROSION CONTROL BMP'S ARE AT SUGGESTED LOCATIONS. ACTUAL LOCATIONS WILL BE DETERMINED BY THE CONTRACTORS ECIP AND BY THE ENGINEER. EROSION CONTROL BMP'S SHALL BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED OR UNTIL THE ENGINEER DETERMINES THAT THE BMP IS NO LONGER REQUIRED.

CONSTRUCT HMA PAVEMENT WITH THE FOLLOWING LAYERS AND GRADATIONS:

4-INCH HMA PAVEMENT
1 3/4" UPPER LAYER 4 MT 58-28 S
2 1/4" LOWER LAYER 3 MT 58-28 S

7 1/4- INCH HMA PAVEMENT
1 3/4" UPPER LAYER 4 MT 58-28 S
2 1/4" MIDDLE LAYER 3 MT 58-28 S
3 1/4" LOWER LAYER 3 MT 58-28 S

DESIGN INDEX
GENERAL NOTES AND UTILITY CONTACTS
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
REMOVAL PLANS
PLAN DETAILS
EROSION CONTROL
PERMANENT SIGNING
PAVEMENT MARKING
TRAFFIC CONTROL
DETOUR PLAN
ALIGNMENT PLAN

UTILITY CONTACTS

MICHAEL VANBOVEN
AT&T WISCONSIN - COMMUNICATION LINE
411 7TH AVENUE
RACINE, WI 53403
(262) 636-0514
(262) 676-3958 CELL
MV3658@ATT.COM

ERIK BORGEN
TDS TELECOM - COMMUNICATION LINE
525 JUNCTION ROAD
MADISON, WI 53717
(608) 664-4438
(608) 556-7110 CELL
ERIK.BORGEN@TDSTELECOM.COM

JAMES NELSON
WE ENERGIES - ELECTRICITY
7815 NORTHWESTERN AVENUE
RACINE, WI 53406
(262) 884-6734
(414) 315-1189 CELL

LUKE KOSTERMAN
WE ENERGIES - GAS/PETROLEUM
7815 NORTHWESTERN AVENUE
RACINE, WI 53406
(262) 886-7033
(414) 840-1031 CELL
LUCAS.KOSTERMAN@WE-ENERGIES.COM

CHRIS DAILEY
ATC MANAGEMENT, INC. - ELECTRICITY-TRANSMISSION
PO BOX 47
WAUKESHA, WI 53187
(262) 506-6884
CDAILEY@ATCLLC.COM

OTHER CONTACTS

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
KRISTINA BETZOLD
DNR SERVICE CENTER
2300 N. MARTIN LUTHER KING JR.
MILWAUKEE WI 53212
PHONE: (414) 507-4946
KRISTINA.BETZOLD@WISCONSIN.GOV

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND
FACILITIES BEFORE YOU DIG IN WISCONSIN

WIS. STATUTE 182.0175 (1974) REQUIRES MIN. OF 3 WORK
DAYS NOTICE BEFORE YOU EXCAVATE.



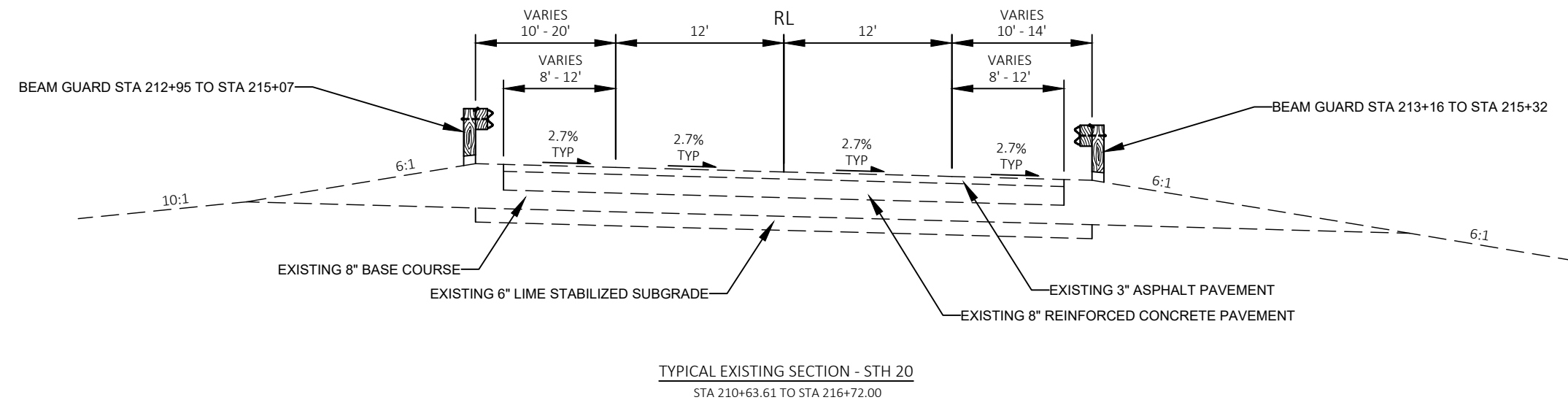
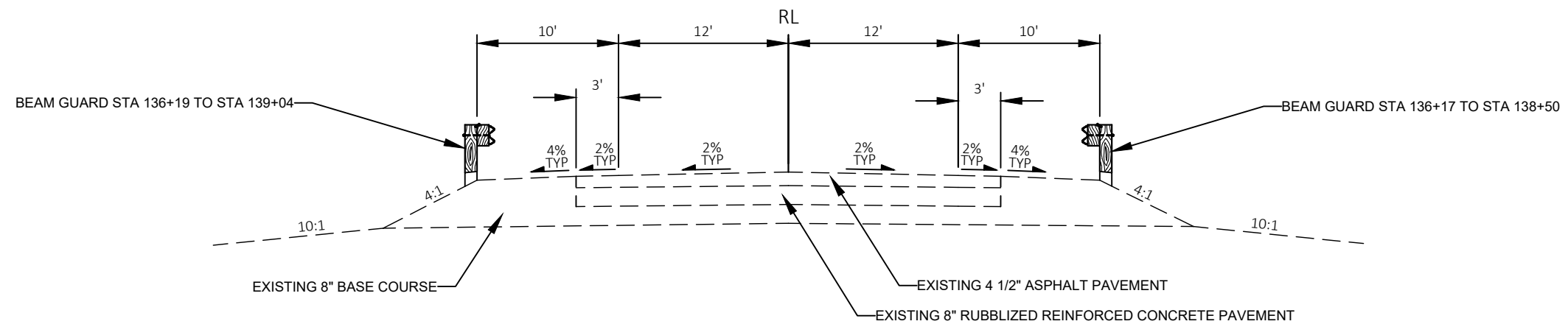
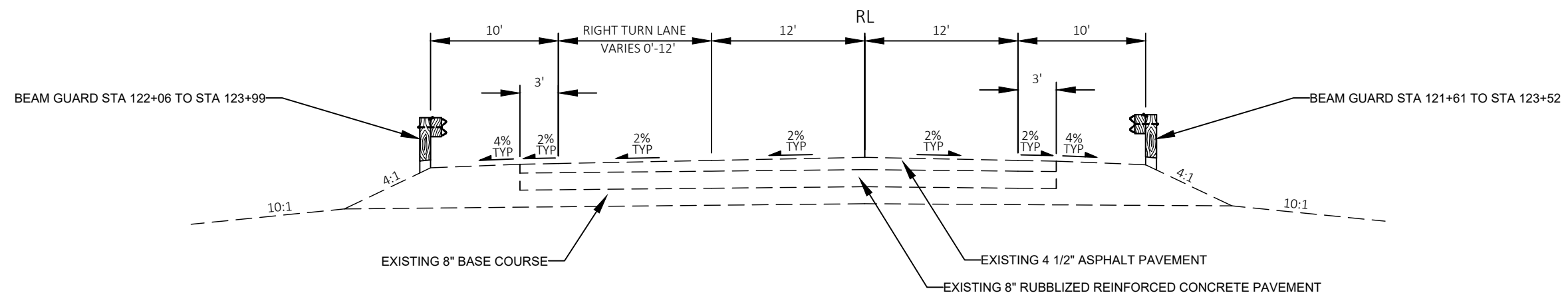
STANDARD ABBREVIATIONS

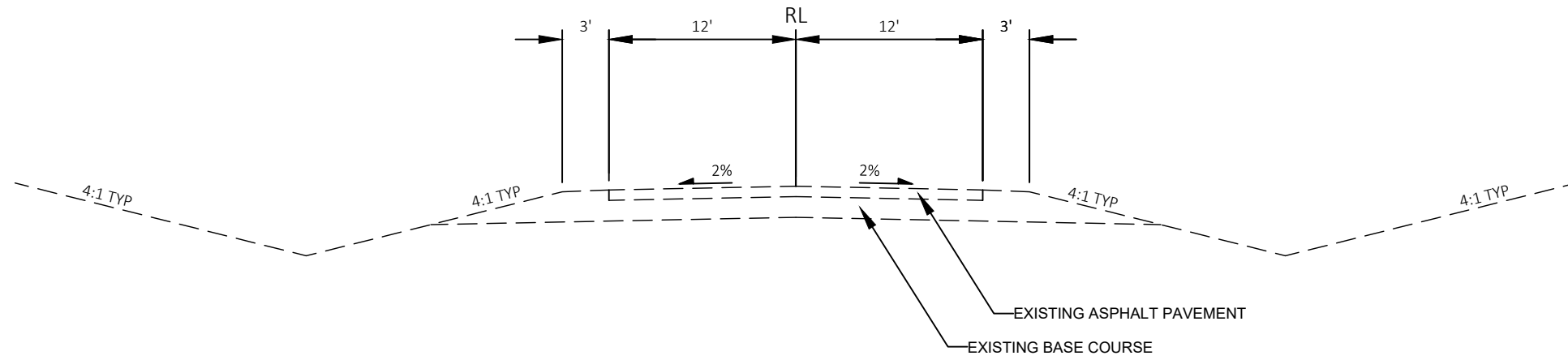
< ANGLE
ADT AVERAGE DAILY TRAFFIC
AC ACRE
AE, AEW APRON ENDWALL
AGG AGGREGATE
AH AHEAD
ASPH ASPHALTIC
BC BACK OF CURB
BF BACK FACE
BIT EXISTING BITUMINOUS
BM BENCH MARK
BEG BEGIN
BK BACK
C & G CURB AND GUTTER
CABC CRUSHED AGGREGATE BASE COURSE
CB CATCH BASIN
CMCP CORRUGATED METAL CULVERT PIPE
CMP CORRUGATED METAL PIPE
CP CULVERT PIPE
CY CUBIC YARD
CL OR C/L CENTER LINE
CO COUNTY
CONC CONCRETE
CONST CONSTRUCTION
CR CREEK
CTH COUNTY TRUNK HIGHWAY
CWT HUNDRED WEIGHT
D DEGREE OF CURVE
Δ DELTA
DHV DESIGN HOUR VOLUME
DIA DIAMETER
DISCH DISCHARGE
E EAST
EA EACH
EB EASTBOUND
EBS EXCAVATION BELOW SUBGRADE
EL, ELEV ELEVATION
ELEC ELECTRIC(AL), ELEC CABLE
EMB EMBANKMENT
ESALS EQUIVALENT SINGLE AXEL LOADS
ESMT EASEMENT
EW ENDWALL
EXC EXCAVATION
EXIST EXISTING BITUMINOUS
EXP EXPANSION
FC FACE OF CURB
FE FIELD ENTRANCE
FF FACE TO FACE
F/L, FL FLOW LINE
FERT FERTILIZER
FHWA FEDERAL HIGHWAY
FT FOOT (FEET)
G GAS
GN GRID NORTH
H HOUSE
HMA HOT MIX ASPHALT
HORZ HORIZONTAL
HP HIGH POINT
HR HANDICAP RAMP
HYD HYDRANT
I INTERSECTION ANGLE
ID INSIDE DIAMETER
INL INLET
INTER INTERSECTION
INV INVERT
IP IRON PIPE
JT JOINT
K RATE OF VERTICAL CURVATURE
L LENGTH OF CURVE
LB POUND
LC LONG CHORD OF CURVE
LP LOW POINT
LF LINEAR FOOT(FEET)
LHF LEFT HAND FORWARD
LS LUMP SUM
LT LEFT
M MARSH
MATL MATERIAL
MP MARKER POST
MAX MAXIMUM
MGAL 1000 GALLONS
MH MANHOLE
MIN MINIMUM
ML OR M/L MATCH LINE
N NORTH
NB NORTHBOUND

NC NORMAL CROWN OR NO CHANGE
NO NUMBER
NW OR N/W NORMAL WATER
OBLIT OBLITERATE
OD OUTSIDE DIAMETER
PAVT PAVEMENT
PC POINT OF CURVATURE
PCC POINT OF COMPOUND CURVE
PE PRIVATE ENTRANCE
PGL PROFILE GRADE LINE
PI POINT OF INTERSECTION
PL PROPERTY LINE
PLE PERMANENT LIMITED EASEMENT
PRC POINT OF REVERSE CURVE
PROJ PROJECT
PSI POUNDS PER SQUARE INCH
PT POINT OF TANGENCY
PVC POLYVINYL CHLORIDE
PAV'T PAVEMENT
PCC PORTLAND CEMENT CONCRETE
R RADIUS OR RANGE
RC REVERSE CURVE
RCCP REINFORCED CONCRETE CULVERT PIPE
RCHECP REINFORCED CONCRETE HORIZONTAL ELLIPTICAL CULVERT PIPE
RCPSS REINFORCED CONCRETE PIPE STORM SEWER
RHF RIGHT HAND FORWARD
R/L REFERENCE LINE
R/W RIGHT OF WAY
RD ROAD
RDWY ROADWAY
REL RELOCATE
REM REMAINING
REOD REQUIRED
RO RUN OFF LENGTH
RT RIGHT
RW RETAINING WALL
S SOUTH
SALV SALVAGED
SAN SANITARY
SB SOUTHBOUND
SDD STANDARD DETAIL DRAWINGS
SE SUPERELEVATION
SEC SECTION
SF SQUARE FOOT (FEET)
S/L SURVEY LINE
SHLDR SHOULDER(S)
SHR SHRINKAGE
SPECS SPECIFICATIONS
SS STORM SEWER
STA STATION
STH STATE TRUNK HIGHWAY
STR STRUCTURE
SW SIDEWALK
SY SQUARE YARD
TAN TANGENT
TEL TELEPHONE
T (TRUCKS) PERCENT OF
TC TOP OF CURB
TAN TANGENT
TEMP TEMPORARY
TL OR T/L TRANSIT LINE
TLE TEMPORARY LIMITED EASEMENT
TYP TYPICAL
UG UNDERGROUND (CABLE)
UNCL UNCLASSIFIED
VAR VARIABLE
VCL VERTICAL CURVE LENGTH
VPC VERTICAL POINT OF CURVATURE
VPCC VERTICAL POINT OF COMPOUND CURVE
VPI VERTICAL POINT OF INTERSECTION
VPRC VERTICAL POINT OF REVERSE CURVE
VPT VERTICAL POINT OF TANGENCY
VLV VALVE
VOL VOLUME
W WEST
WB WESTBOUND
WV WATER VALVE
X EASTING OR EAST GRID COORDINATE
Y NORTHING OR NORTH GRID COORDINATE
YD YARD



PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	PROJECT OVERVIEW	SHEET	E
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TYPICAL EXISTING SECTION - OLD YORKVILLE RD

PROJECT NO: 3833-03-73

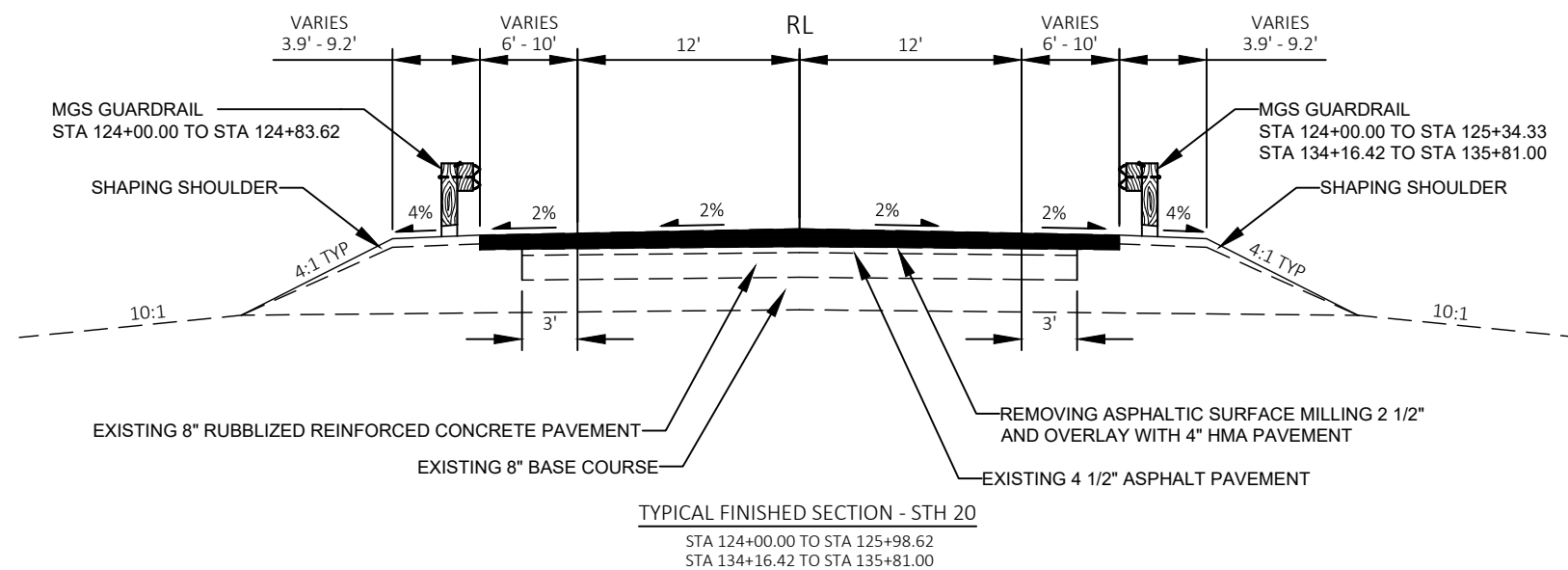
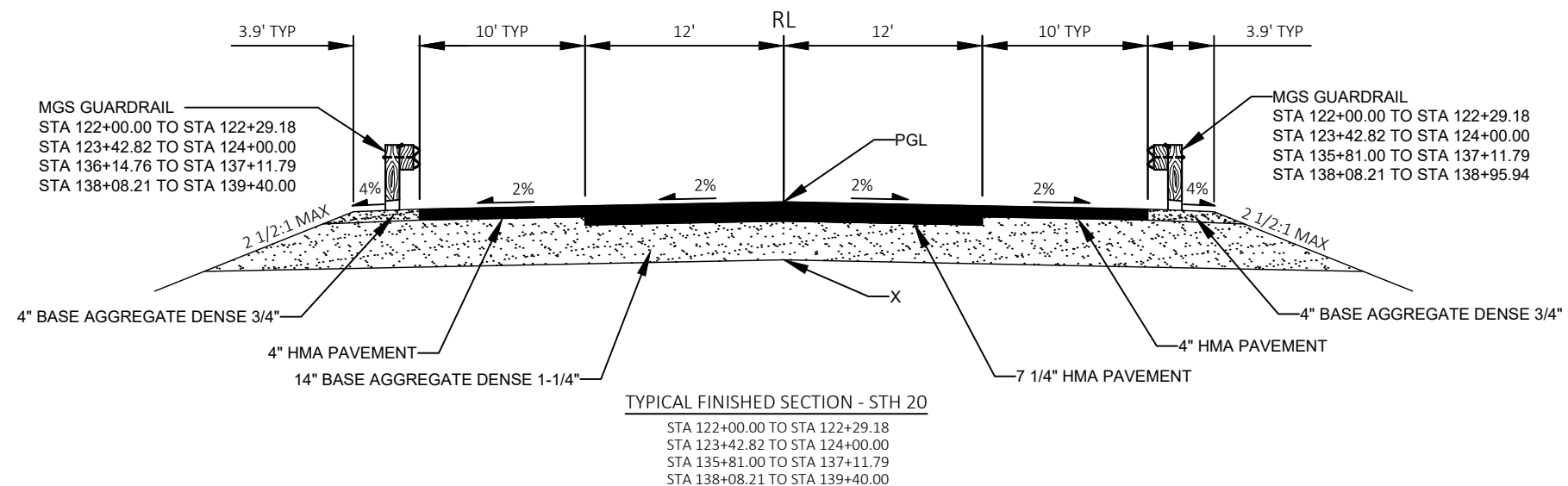
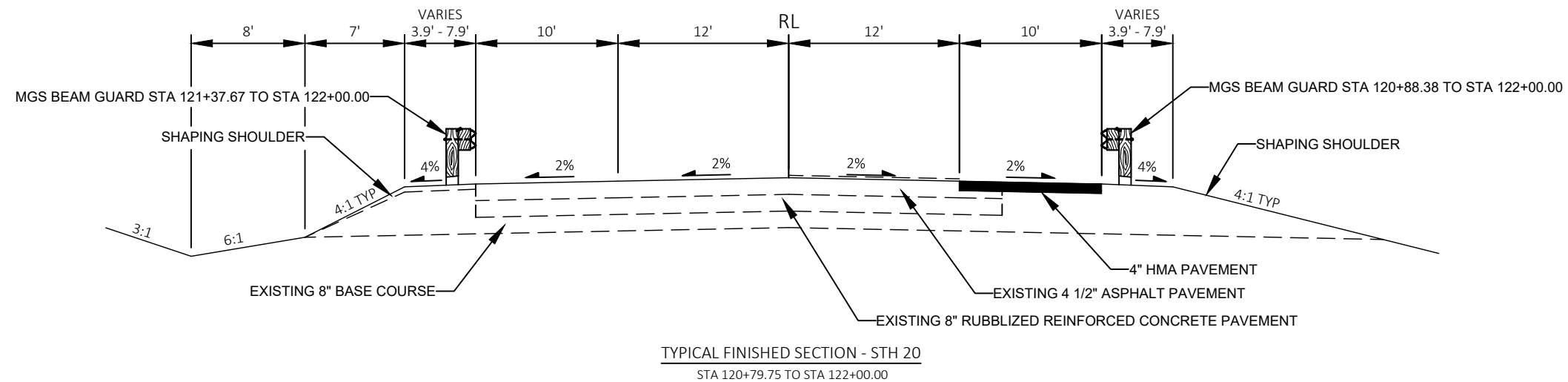
HWY: STH 20

COUNTY: RACINE

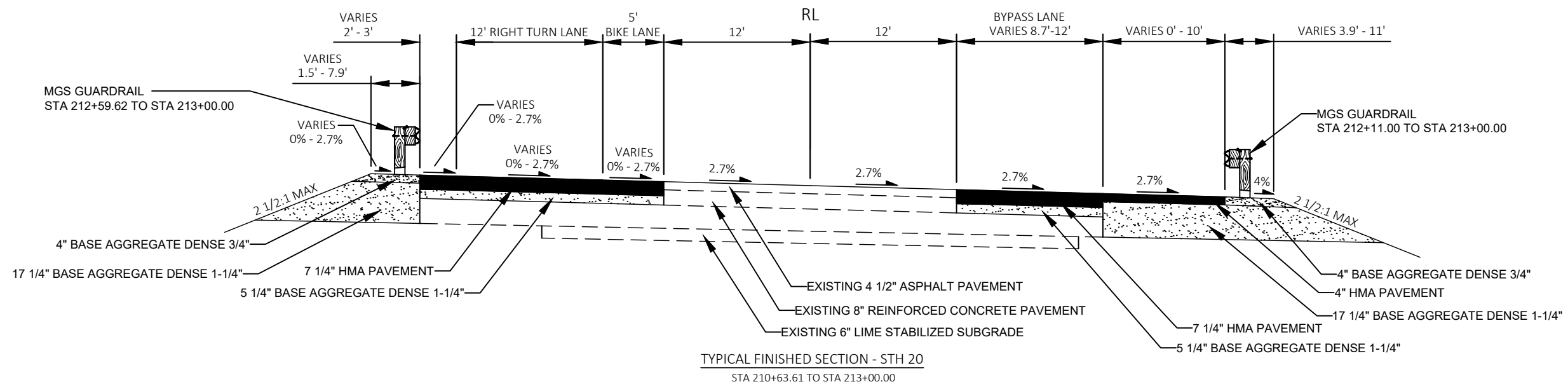
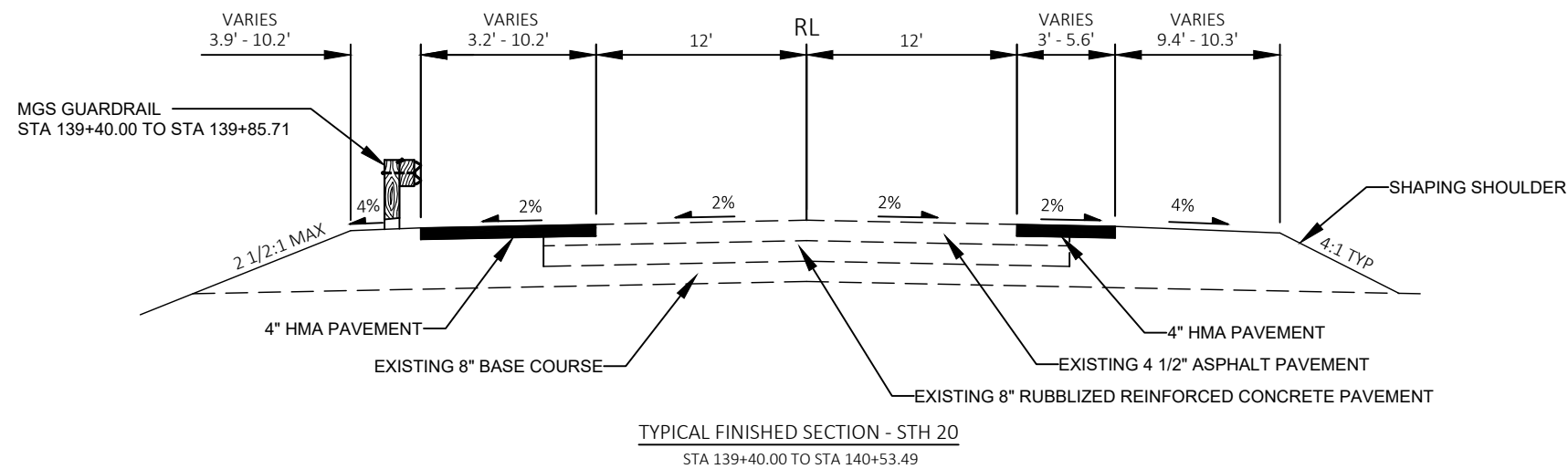
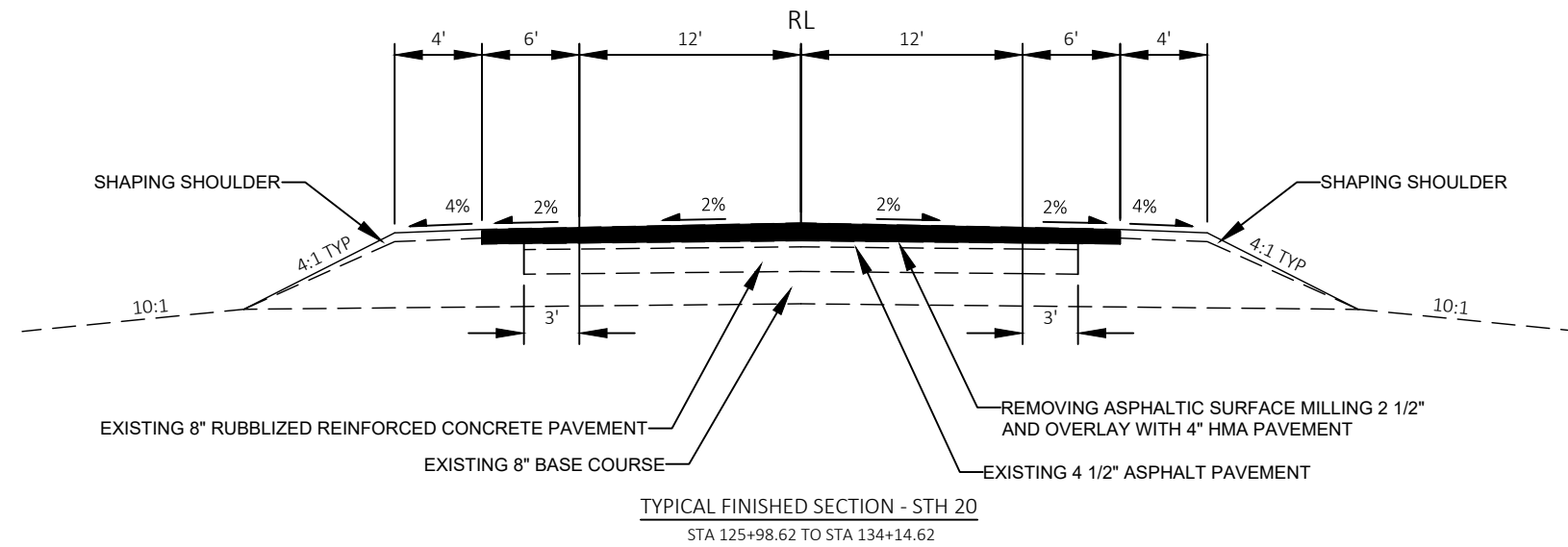
PLAN: TYPICAL EXISTING SECTIONS

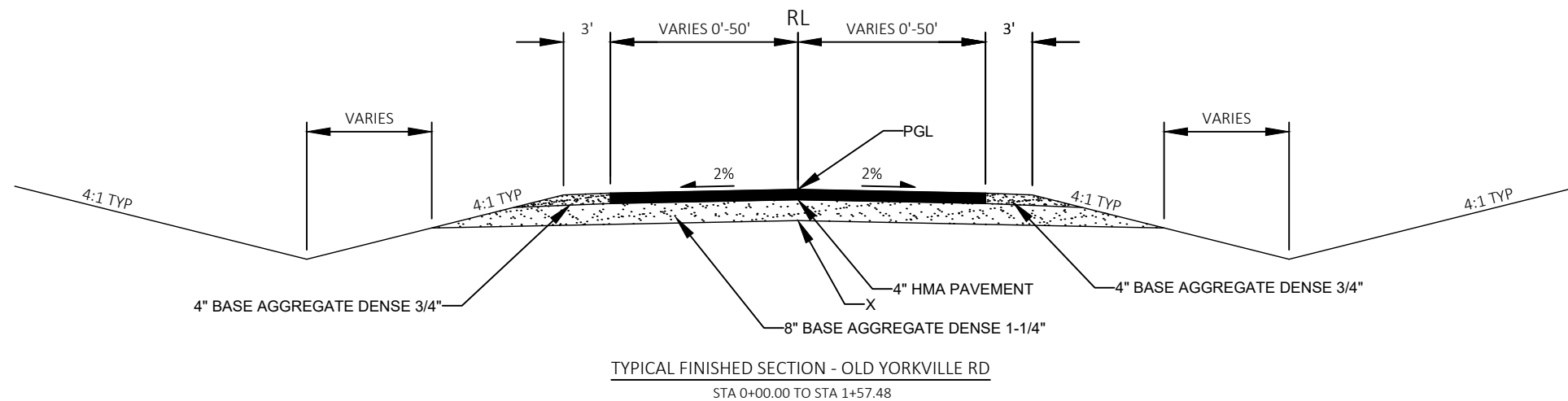
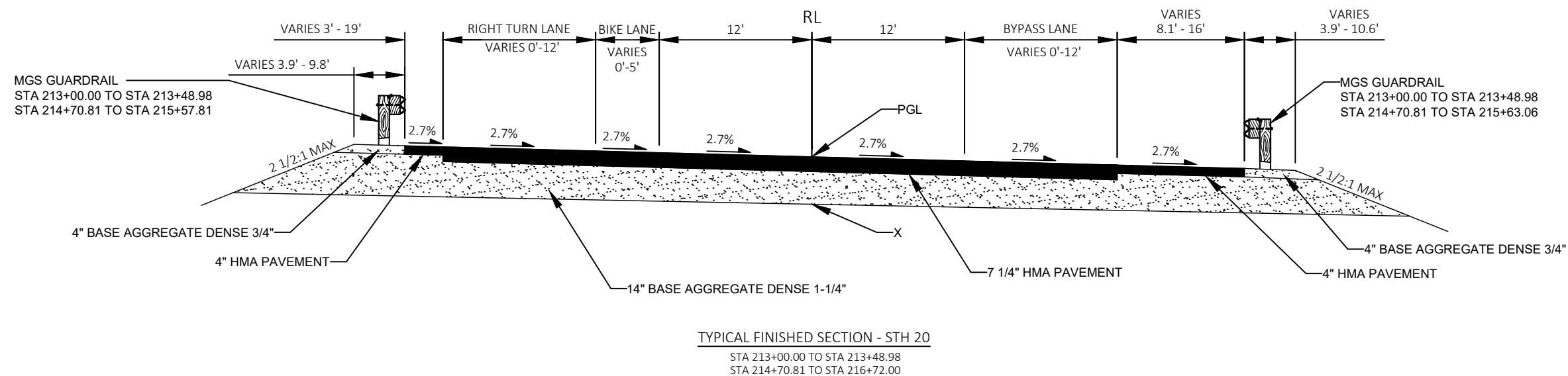
SHEET

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PGL = POINT REFERENCED TO ON PROFILE
X = POINT REFERENCED TO ON CROSS SECTIONS





PGL = POINT REFERENCED TO ON PROFILE
 X = POINT REFERENCED TO ON CROSS SECTIONS

PROJECT NO: 3833-03-73

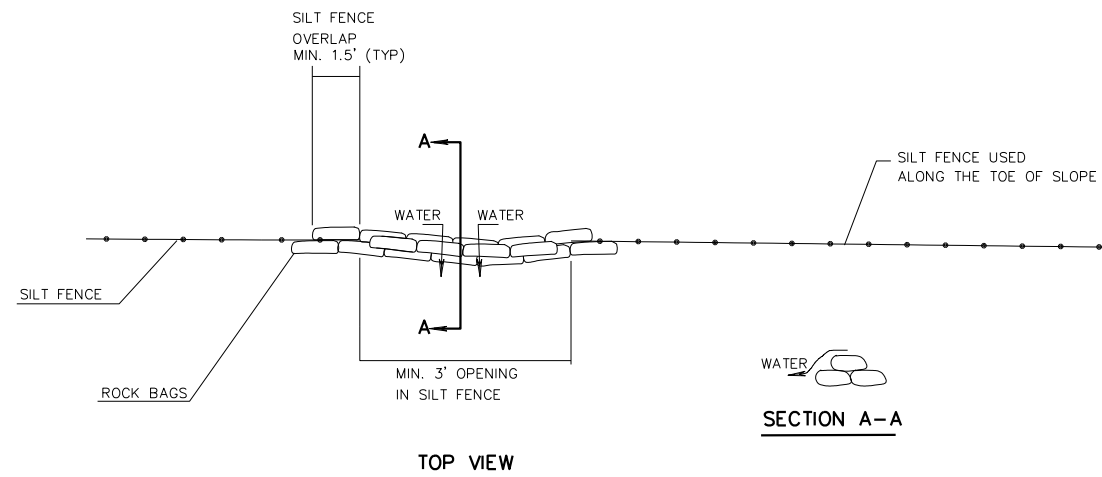
HWY: STH 20

COUNTY: RACINE

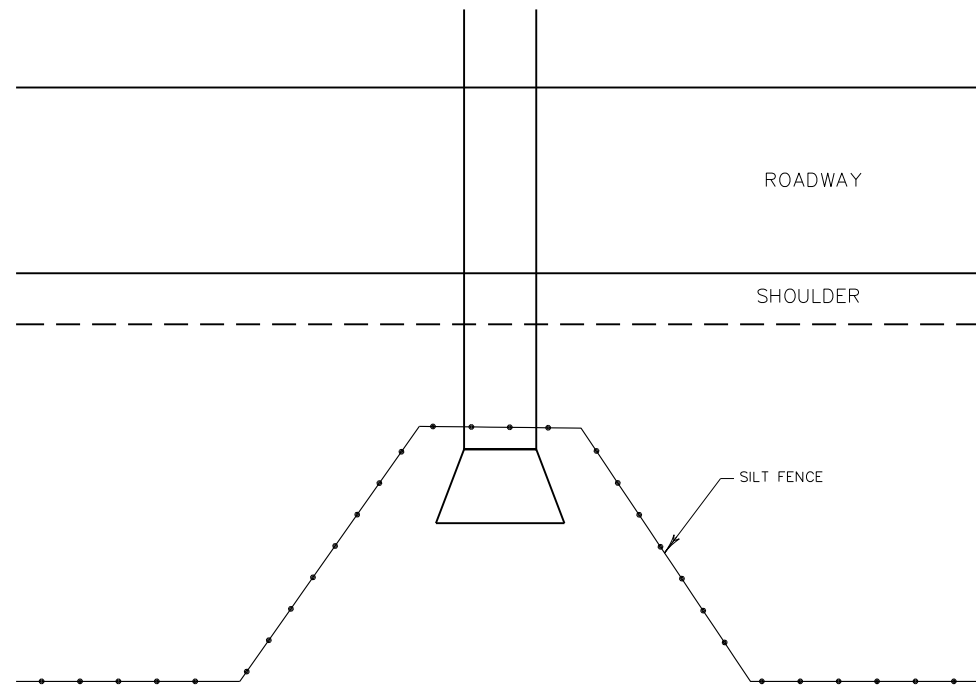
PLAN: TYPICAL FINISHED SECTIONS

SHEET

E



ROCK BAGS USED FOR SILT FENCE RELIEF DETAIL



NOTE
SEE SILT FENCE SDD FOR ADDITIONAL INFORMATION.

TYPICAL SILT FENCE DETAIL AT PIPE INLET

PROJECT NO: 3833-03-73

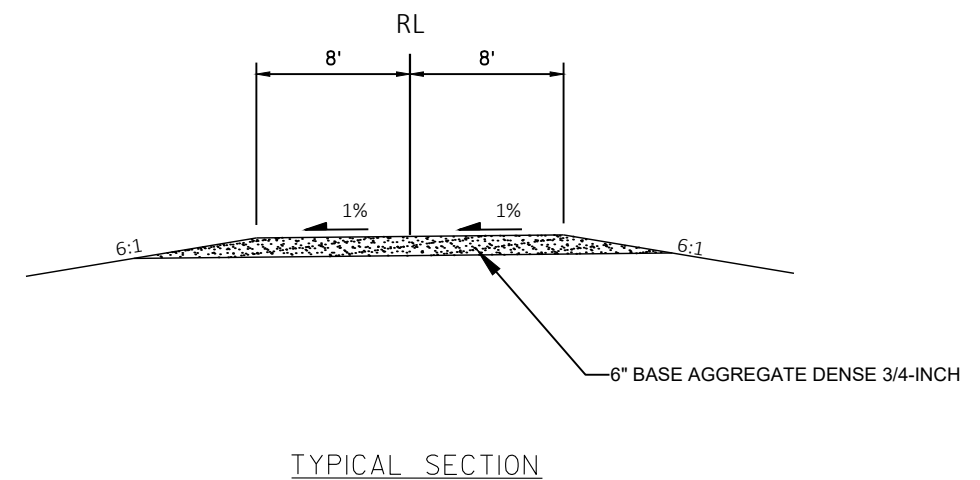
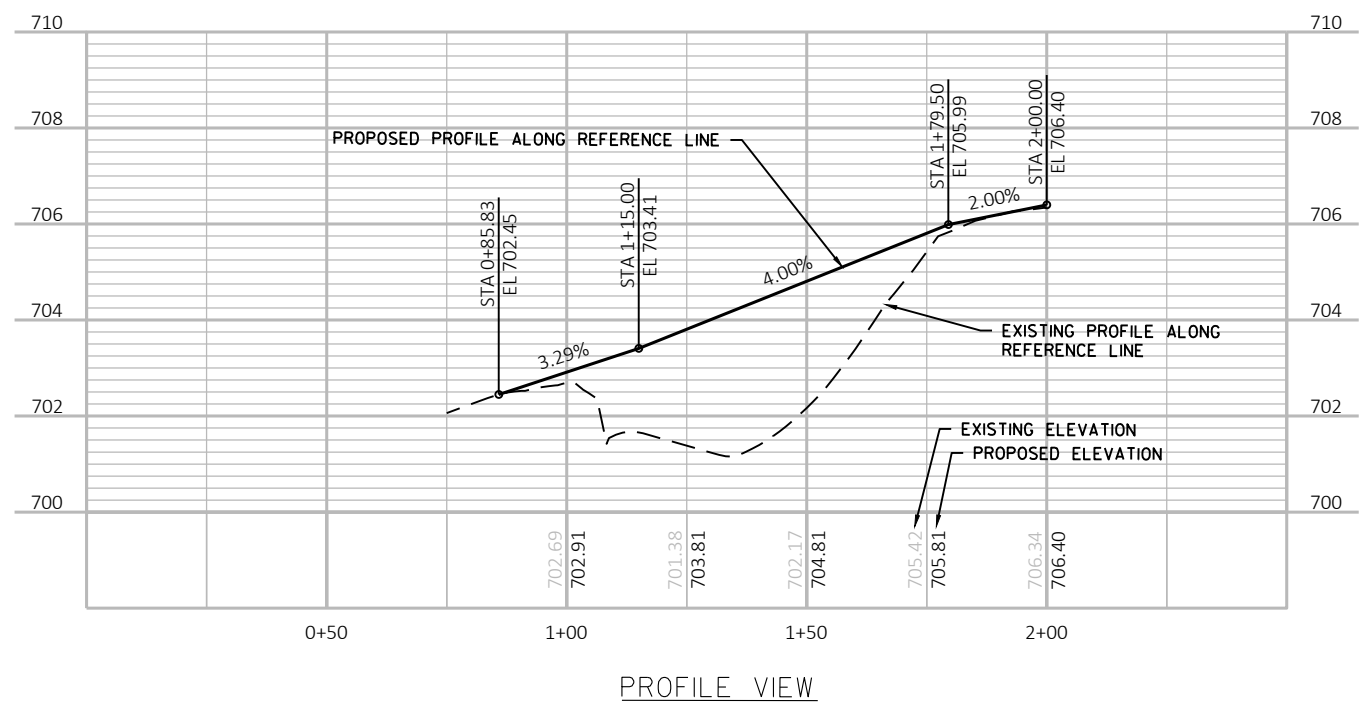
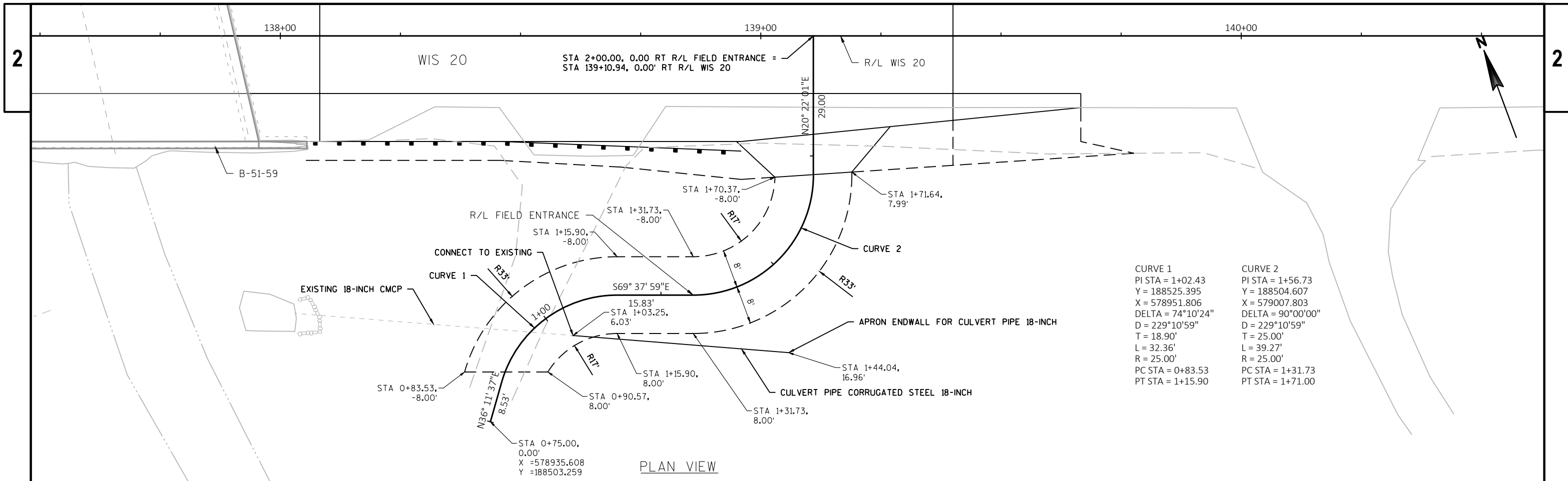
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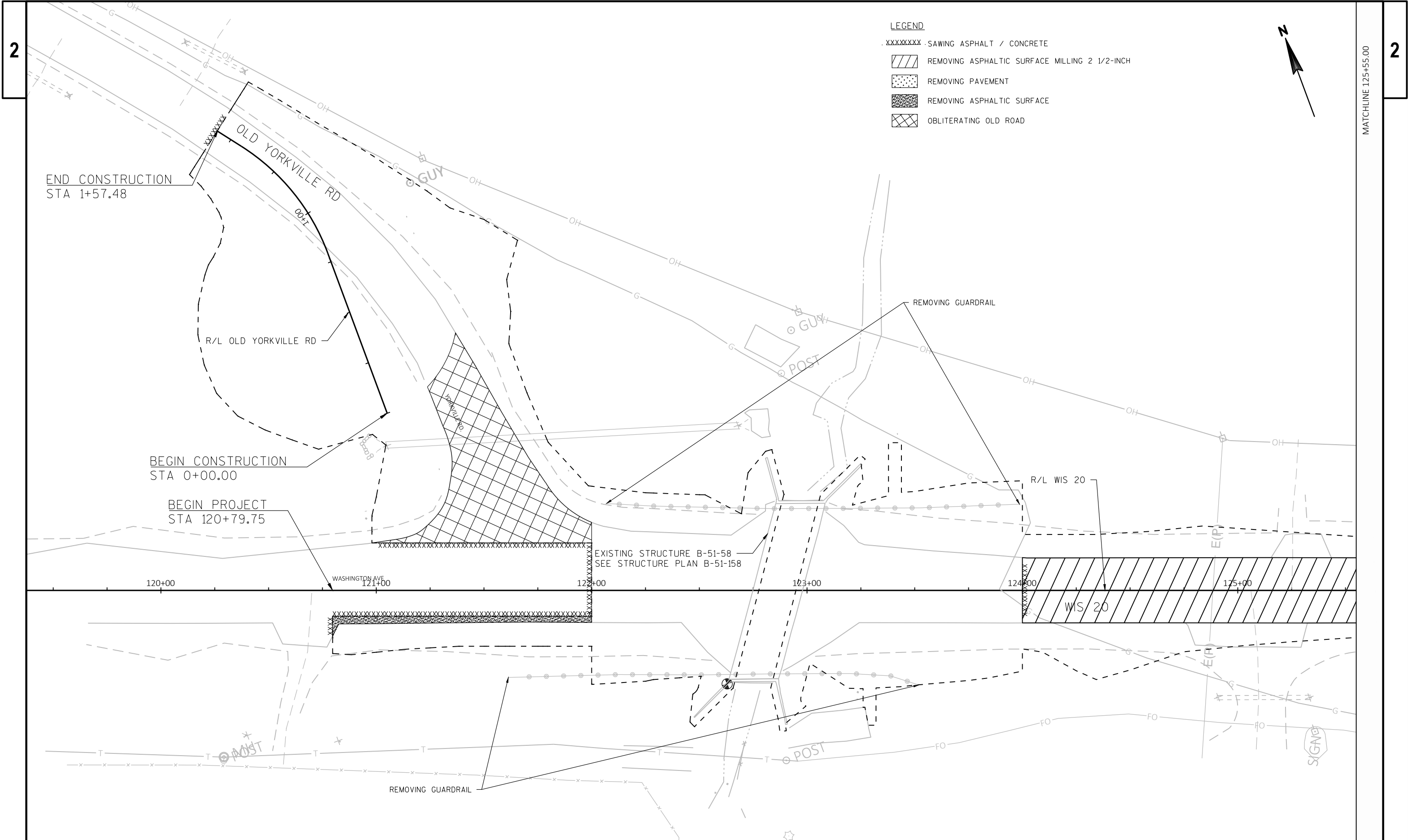
COUNTY: RACINE

CONSTRUCTION DETAILS

SHEET

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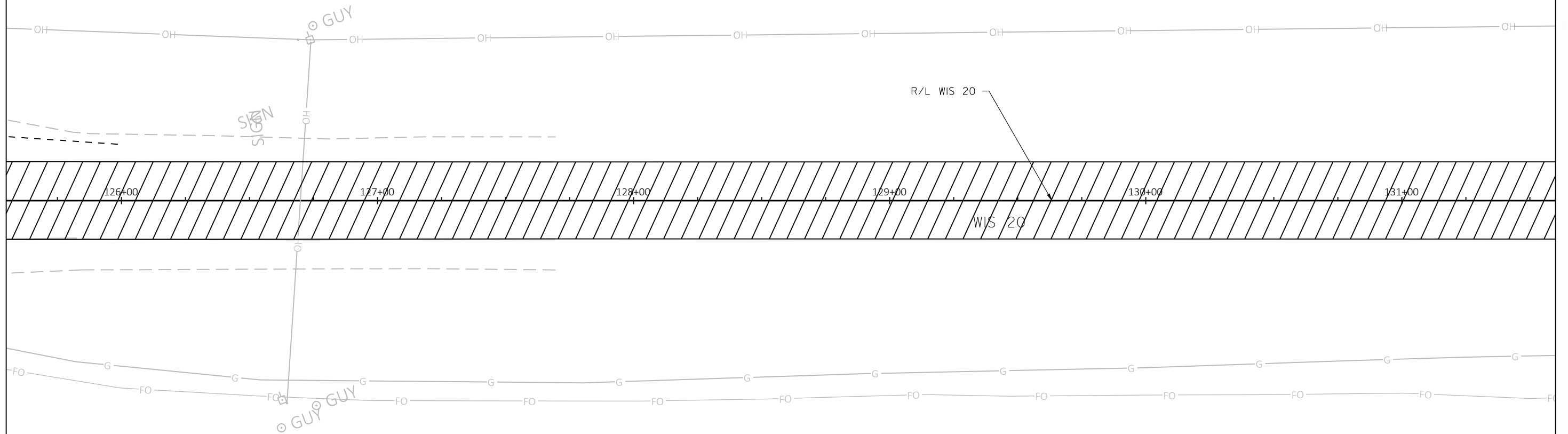
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LEGEND

XXXXXXX - SAWING ASPHALT / CONCRETE

 REMOVING ASPHALTIC SURFACE MILLING 2 1/2-INCH REMOVING PAVEMENT REMOVING ASPHALTIC SURFACE OBLITERATING OLD ROAD

MATCHLINE 131+60.00



MATCHLINE 125+55.00

PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

REMOVAL PLAN

SHEET

E

FILE NAME : S:\DOT\DOT_SE\170289_STH 20 RACINE\38330303\SHEETSPLAN\021200_RM.DWG
LAYOUT NAME - REMOVE\156

PLOT DATE : 10/29/2019 9:36 AM

PLOT BY : WALTER A. WOLAK I

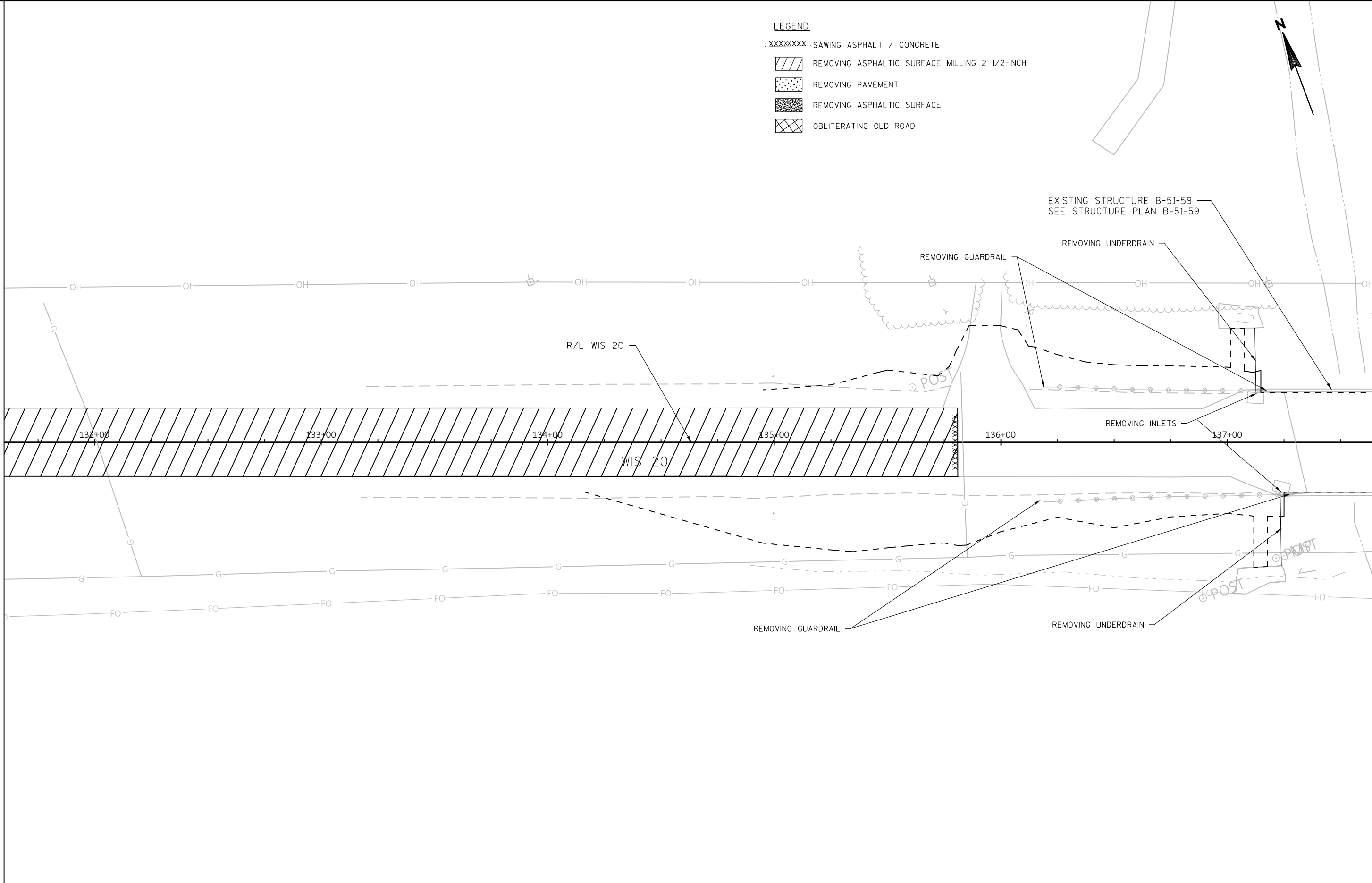
PLOT NAME

PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42

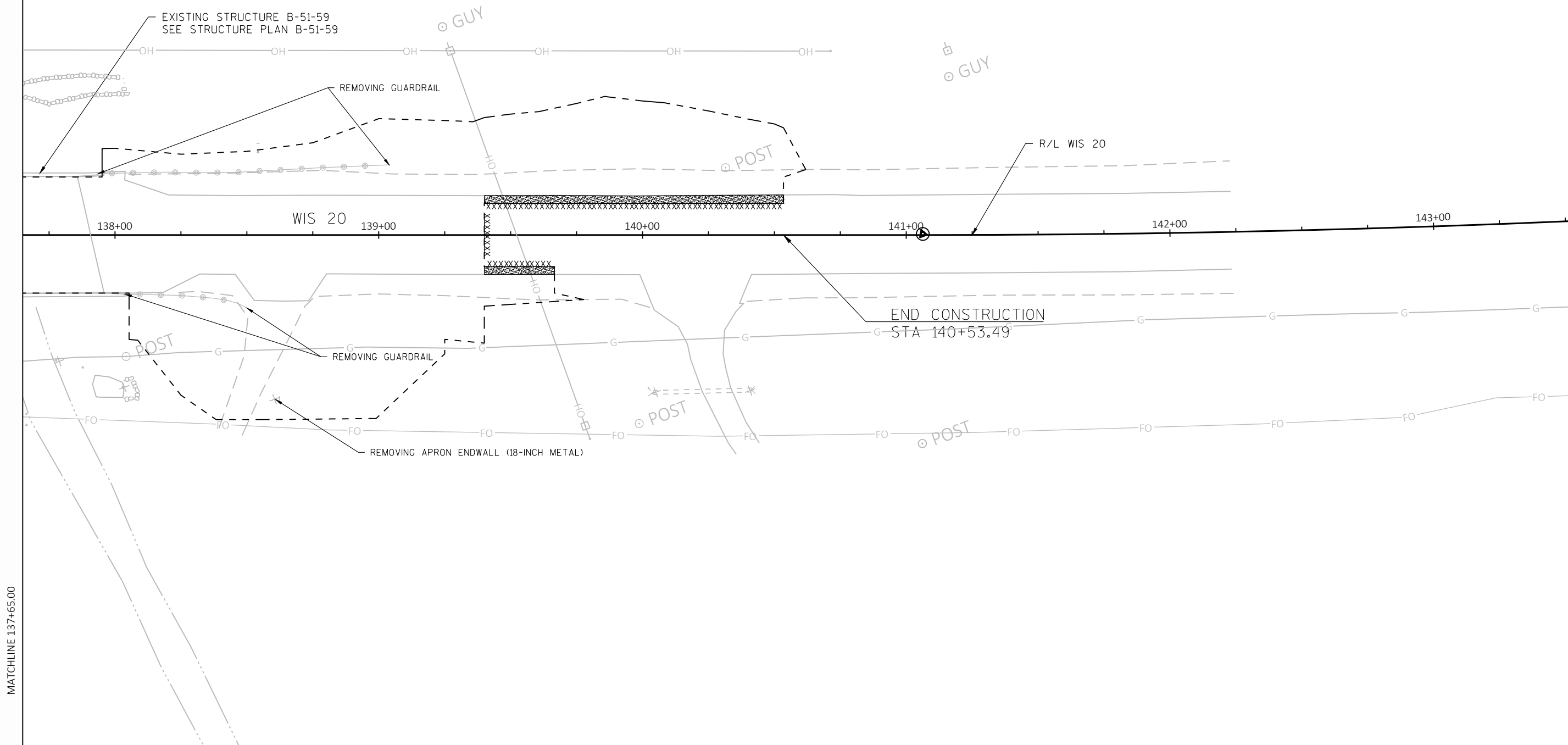
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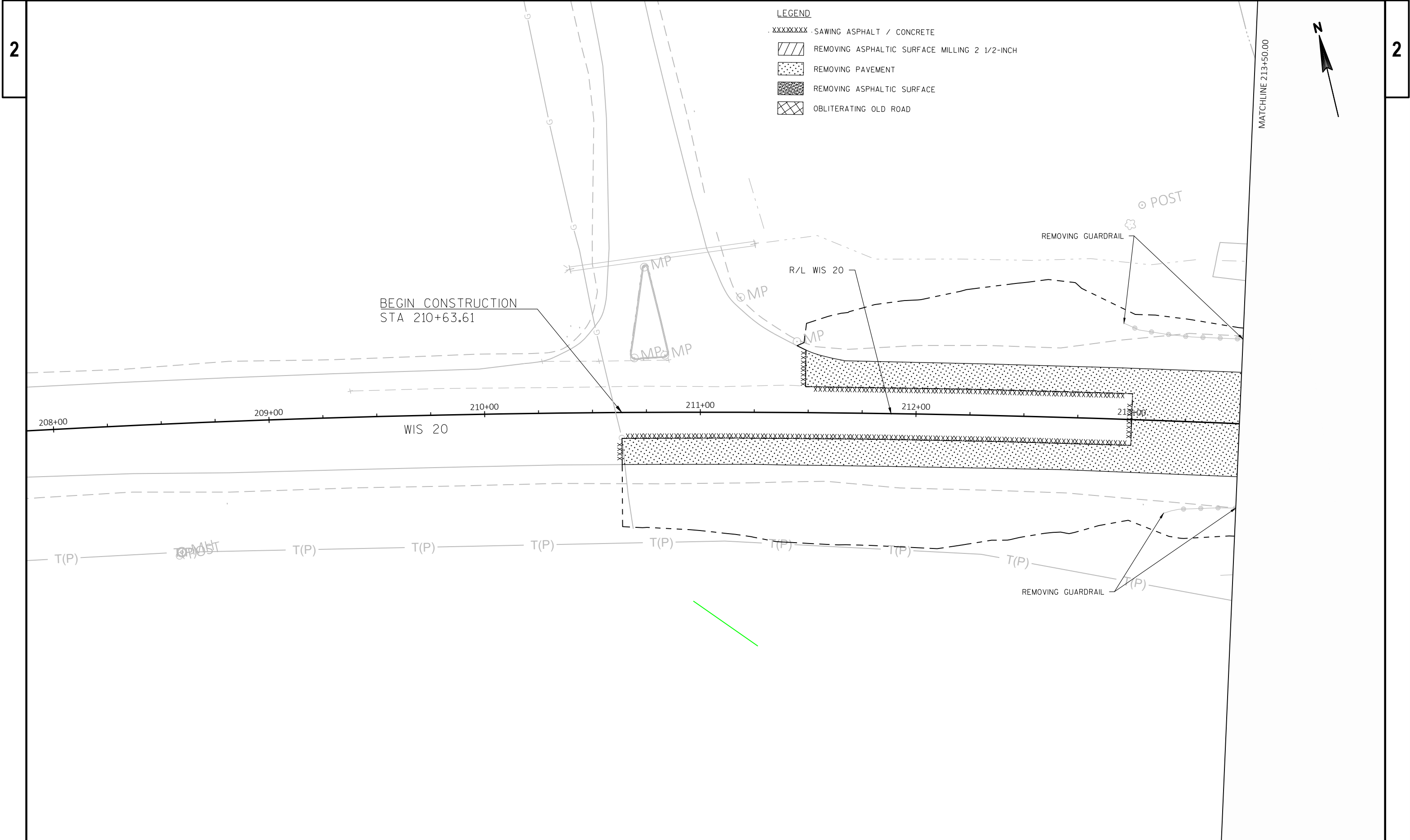
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LEGEND

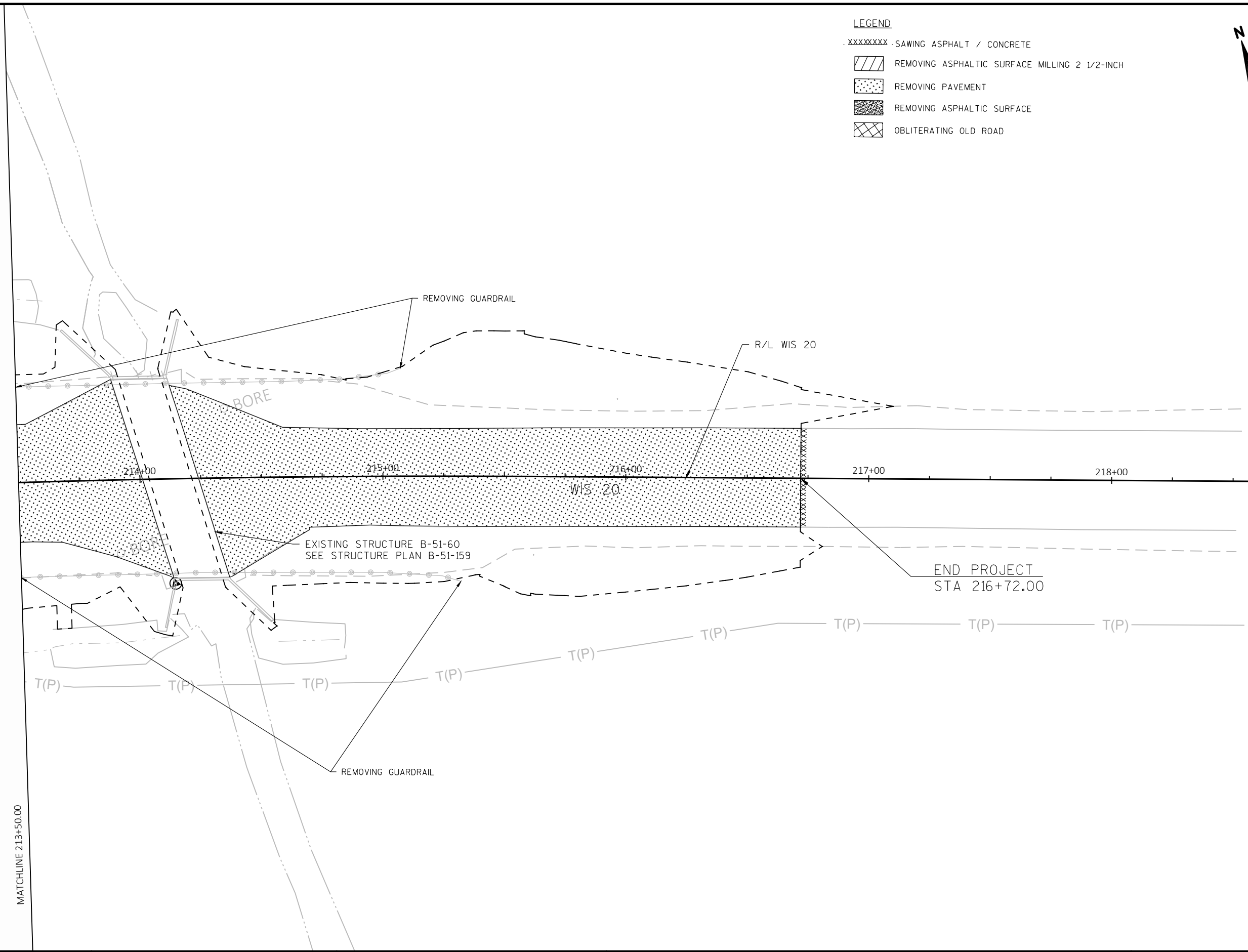
- XXXXXXX SAWING ASPHALT / CONCRETE
- REMOVING ASPHALTIC SURFACE MILLING 2 1/2-INCH
- REMOVING PAVEMENT
- REMOVING ASPHALTIC SURFACE
- OBLITERATING OLD ROAD





LEGEND

- XXXXXXX SAWING ASPHALT / CONCRETE
- REMOVING ASPHALTIC SURFACE MILLING 2 1/2-INCH
- REMOVING PAVEMENT
- REMOVING ASPHALTIC SURFACE
- OBLITERATING OLD ROAD

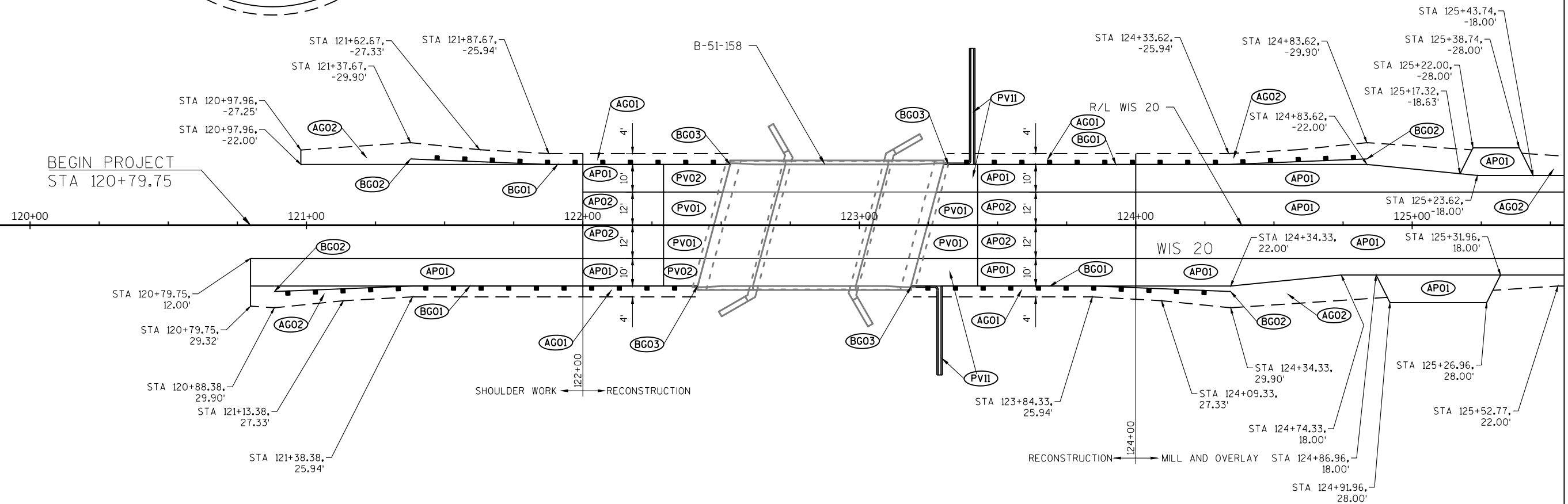
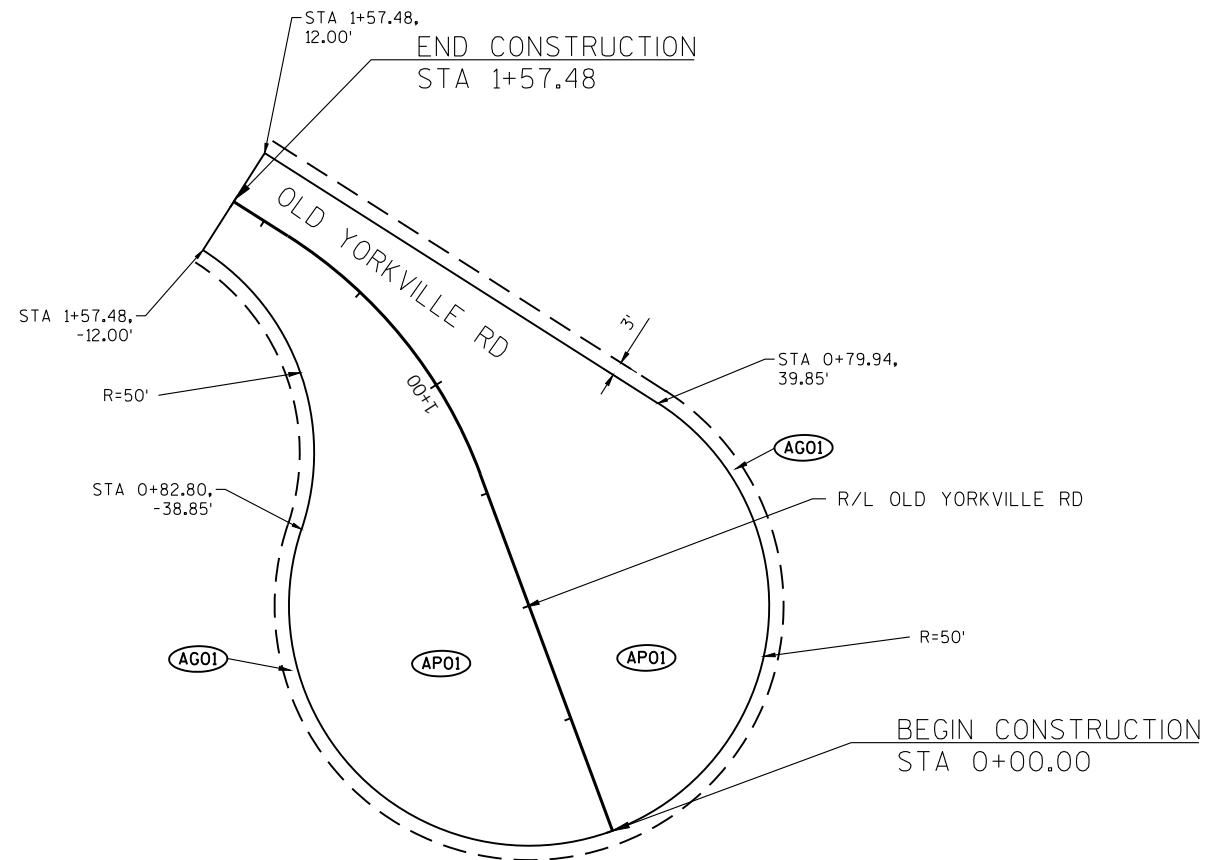


PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	REMOVAL PLAN	SHEET	E
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LEGEND

- (AG01) BASE AGGREGATE DENSE 3/4-INCH
- (AG02) SHAPING SHOULDERS
- (AP01) 4" HMA PAVEMENT
- (AP02) 7 1/4" HMA PAVEMENT
- (BG01) MGS GUARDRAIL 3
- (BG02) MGS GUARDRAIL TERMINAL EAT
- (BG03) MGS THRIE BEAM TRANSITION
- (BG04) MGS GUARDRAIL SHORT RADIUS
- (BG05) MGS GUARDRAIL SHORT RADIUS TERMINAL
- (PV01) CONCRETE PAVEMENT APPROACH SLAB
- (PV02) CONCRETE PAVEMENT 7-INCH
- (PVII) CONCRETE SURFACE DRAINS
- (PVI5) ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES, 4-INCH



PROJECT NO: 3833-03-73

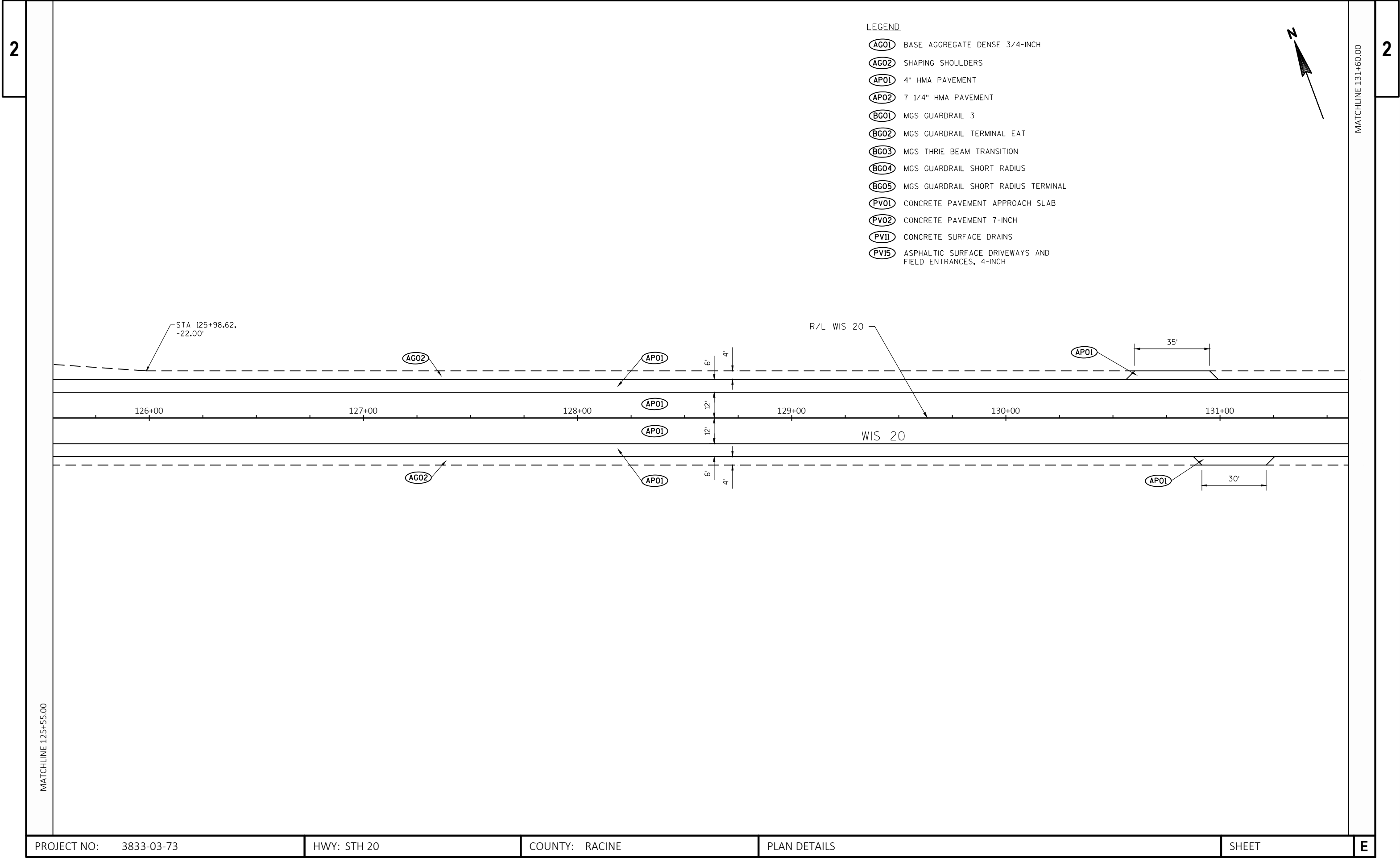
HWY: STH 20

COUNTY: RACINE

PLAN DETAILS

SHEET

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AG01	BASE AGGREGATE DENSE 3/4-INCH
AG02	SHAPING SHOULDERS
AP01	4" HMA PAVEMENT
AP02	7 1/4" HMA PAVEMENT
BG01	MGS GUARDRAIL 3
BG02	MGS GUARDRAIL TERMINAL EAT
BG03	MGS THRIE BEAM TRANSITION
BG04	MGS GUARDRAIL SHORT RADIUS
BG05	MGS GUARDRAIL SHORT RADIUS TERMINAL
PV01	CONCRETE PAVEMENT APPROACH SLAB
PV02	CONCRETE PAVEMENT 7-INCH
PV11	CONCRETE SURFACE DRAINS
PV15	ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES, 4-INCH



PROJECT NO: 3833-03-73

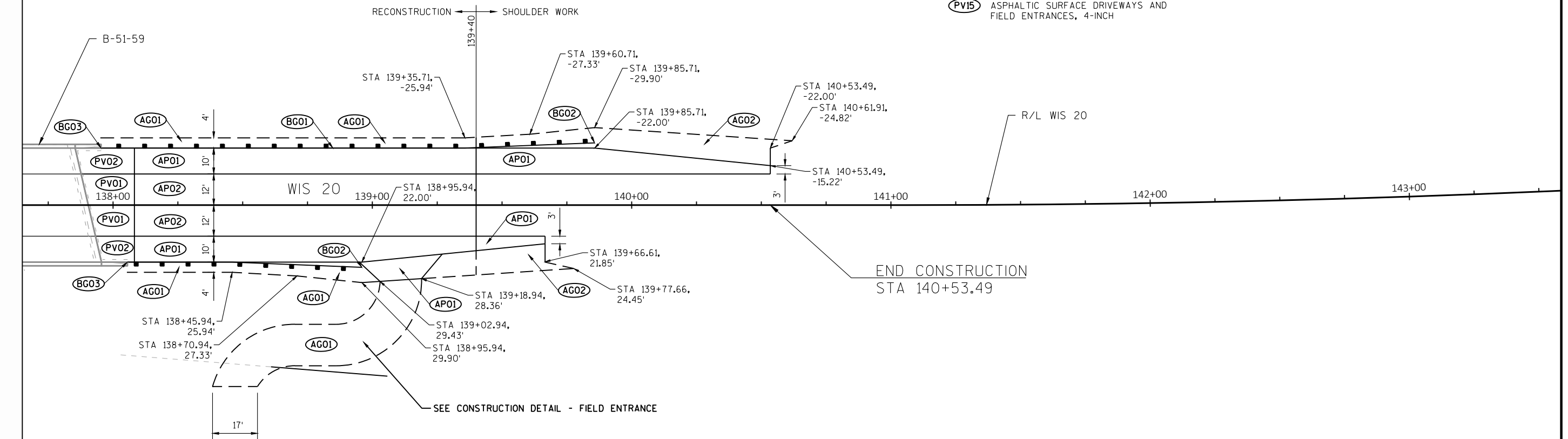
COUNTY: RACINE

SHEET

MATCHLINE 137+65.00

LEGEND

- (AG01) BASE AGGREGATE DENSE 3/4-INCH
- (AG02) SHAPING SHOULDERS
- (AP01) 4" HMA PAVEMENT
- (AP02) 7 1/4" HMA PAVEMENT
- (BG01) MGS GUARDRAIL 3
- (BG02) MGS GUARDRAIL TERMINAL EAT
- (BG03) MGS THRIE BEAM TRANSITION
- (BG04) MGS GUARDRAIL SHORT RADIUS
- (BG05) MGS GUARDRAIL SHORT RADIUS TERMINAL
- (PV01) CONCRETE PAVEMENT APPROACH SLAB
- (PV02) CONCRETE PAVEMENT 7-INCH
- (PV11) CONCRETE SURFACE DRAINS
- (PV15) ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES, 4-INCH



PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

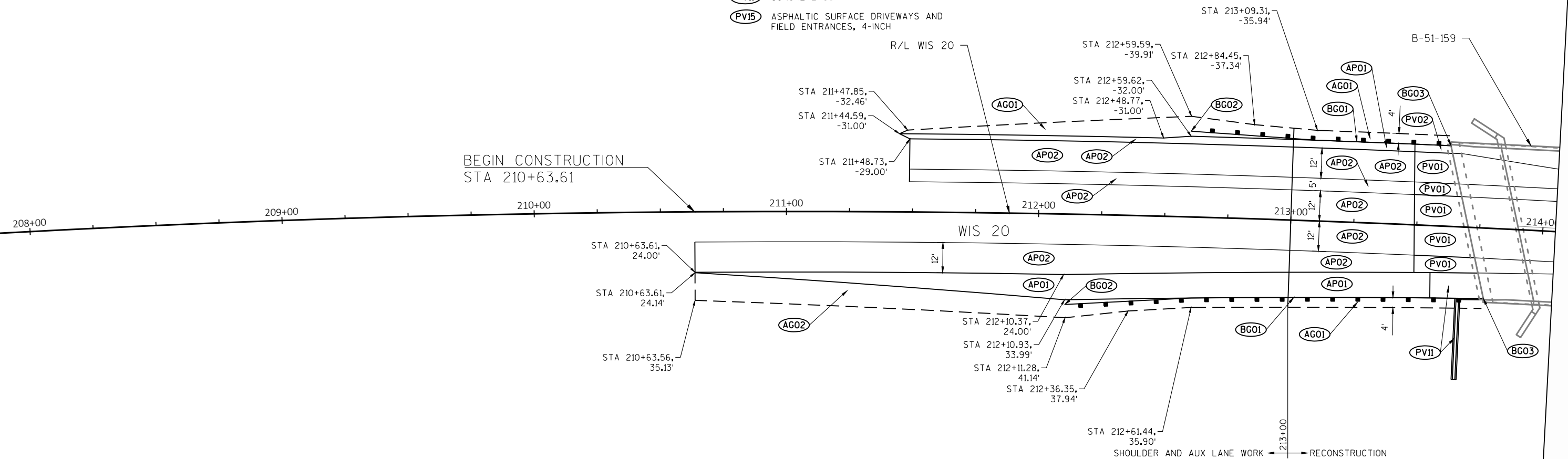
PLAN DETAILS

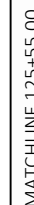
SHEET

E

LEGEND

- (AG01) BASE AGGREGATE DENSE 3/4-INCH
- (AG02) SHAPING SHOULDERS
- (AP01) 4" HMA PAVEMENT
- (AP02) 7 1/4" HMA PAVEMENT
- (BG01) MGS GUARDRAIL 3
- (BG02) MGS GUARDRAIL TERMINAL EAT
- (BG03) MGS THRIE BEAM TRANSITION
- (BG04) MGS GUARDRAIL SHORT RADIUS
- (BG05) MGS GUARDRAIL SHORT RADIUS TERMINAL
- (PV01) CONCRETE PAVEMENT APPROACH SLAB
- (PV02) CONCRETE PAVEMENT 7-INCH
- (PV11) CONCRETE SURFACE DRAINS
- (PV15) ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES, 4-INCH





- LEGEND
- SLOPE INTERCEPT

—●—●—

SILT FENCE

—▲—▲—

TURBIDITY BARRIER

○○○

CULVERT PIPE CHECK

△△△

TEMPORARY DITCH CHECK

B

INLET PROTECTION TYPE B

·- - - - -·

RIPRAP MEDIUM

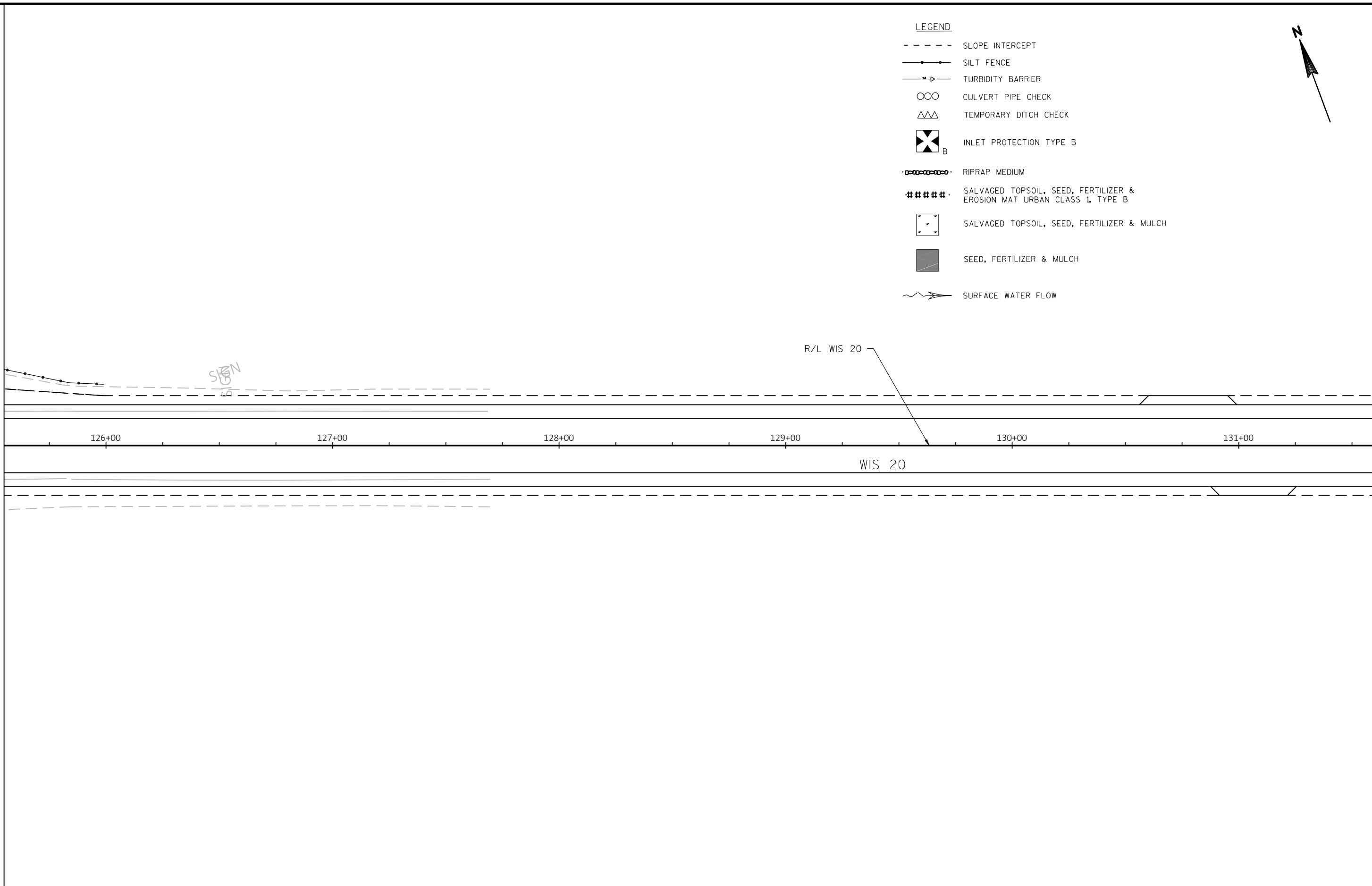
#####

SALVAGED TOPSOIL, SEED, FERTILIZER &
EROSION MAT URBAN CLASS 1, TYPE B

SALVAGED TOPSOIL, SEED, FERTILIZER & MULCH

SEED, FERTILIZER & MULCH

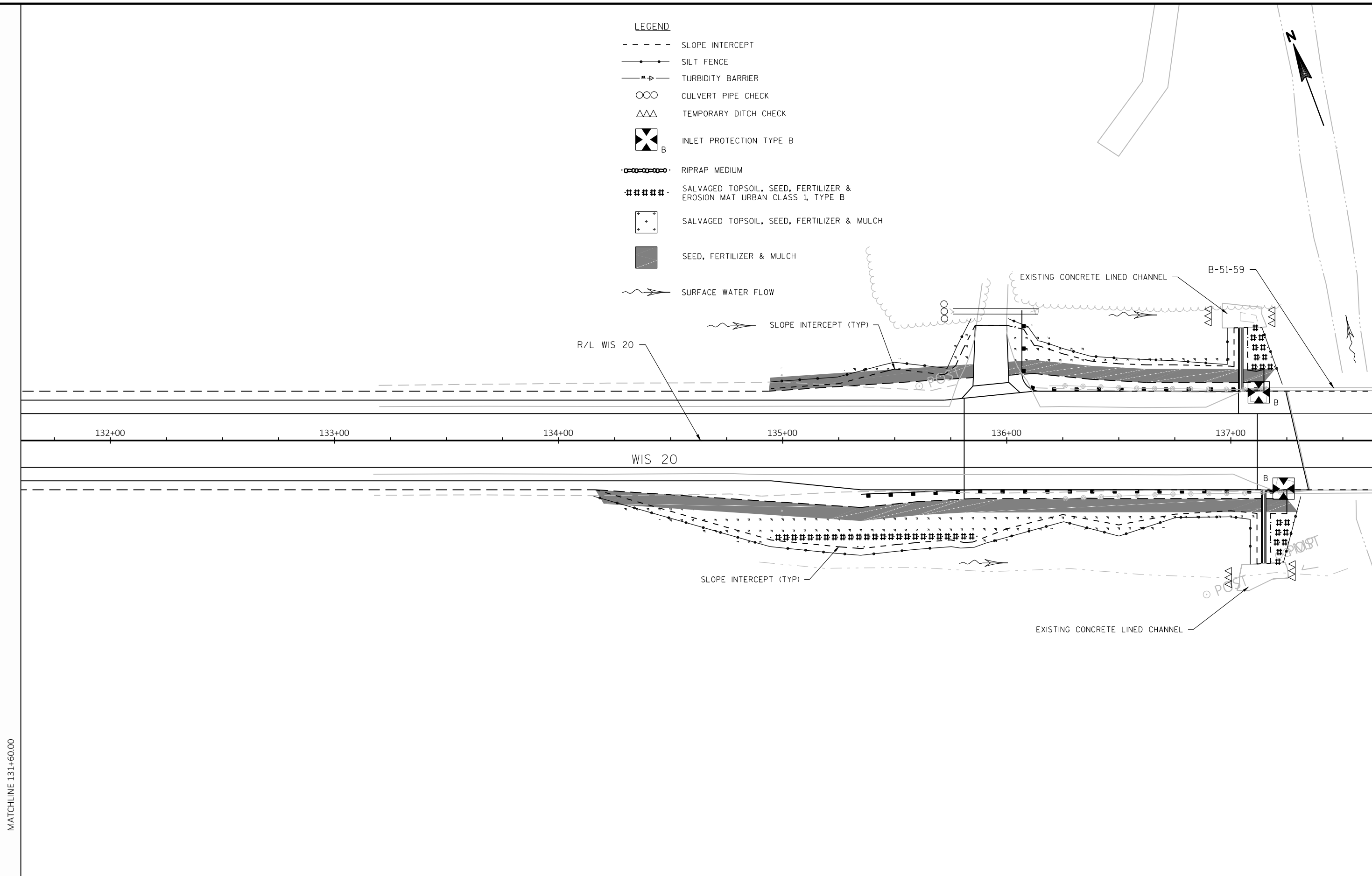
SURFACE WATER FLOW



2

2

MATCHLINE 137+65.00



PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

EROSION CONTROL PLAN

SHEET

E

FILE NAME : S:\DOT\DOT_SE\170289_STH 20 RACINE\38330303\SHEETSPLAN\022001_EC.DWG
LAYOUT NAME - EROSION CONTROL13

PLOT DATE : 11/7/2019 9:25 AM

PLOT BY : WALTER A. WOLAK II

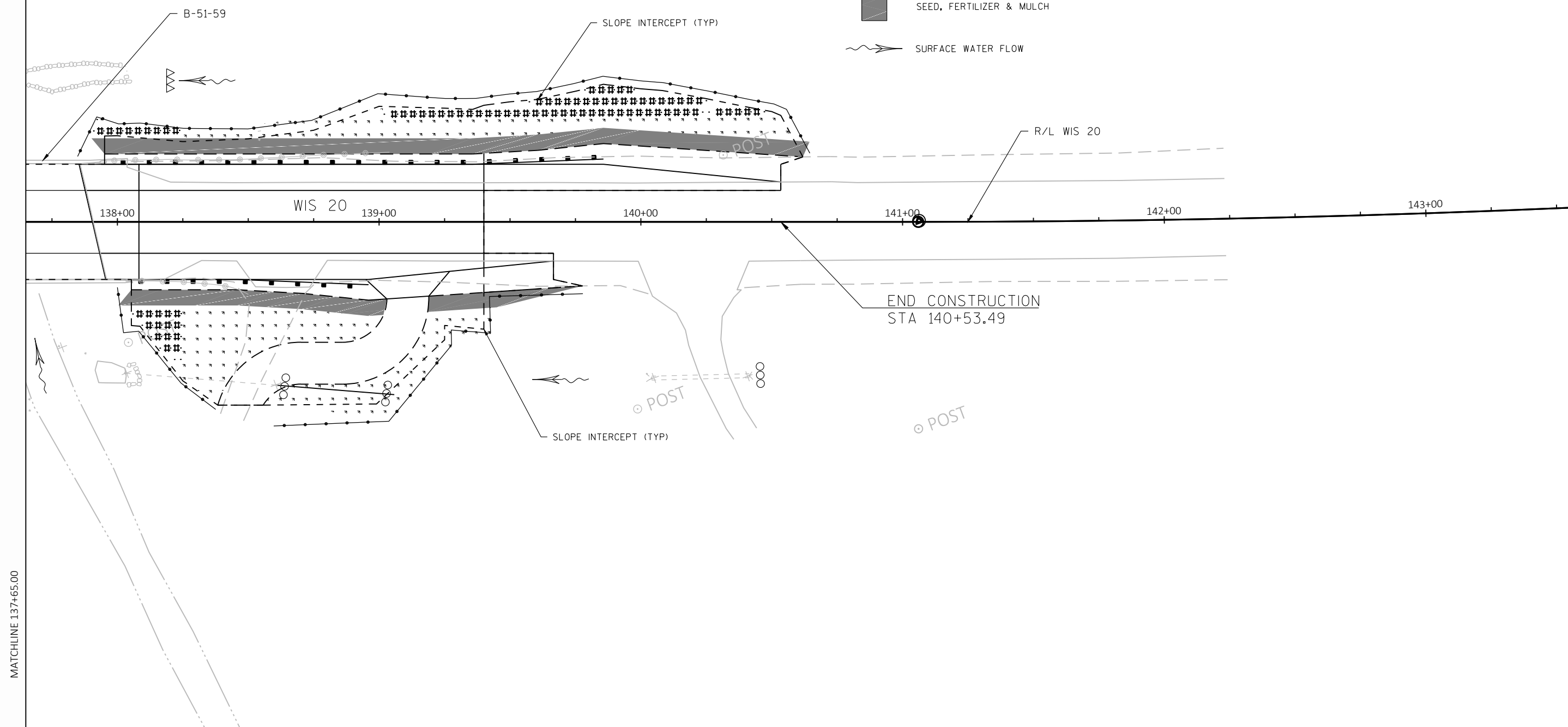
PLOT NAME :

PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42

LEGEND

- SLOPE INTERCEPT
--- SILT FENCE
--- TURBIDITY BARRIER
OOO CULVERT PIPE CHECK
△△△ TEMPORARY DITCH CHECK
X_B INLET PROTECTION TYPE B
RIPRAP MEDIUM
SALVAGED TOPSOIL, SEED, FERTILIZER & EROSION MAT URBAN CLASS 1, TYPE B
SALVAGED TOPSOIL, SEED, FERTILIZER & MULCH
SEED, FERTILIZER & MULCH
SURFACE WATER FLOW



PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

EROSION CONTROL PLAN

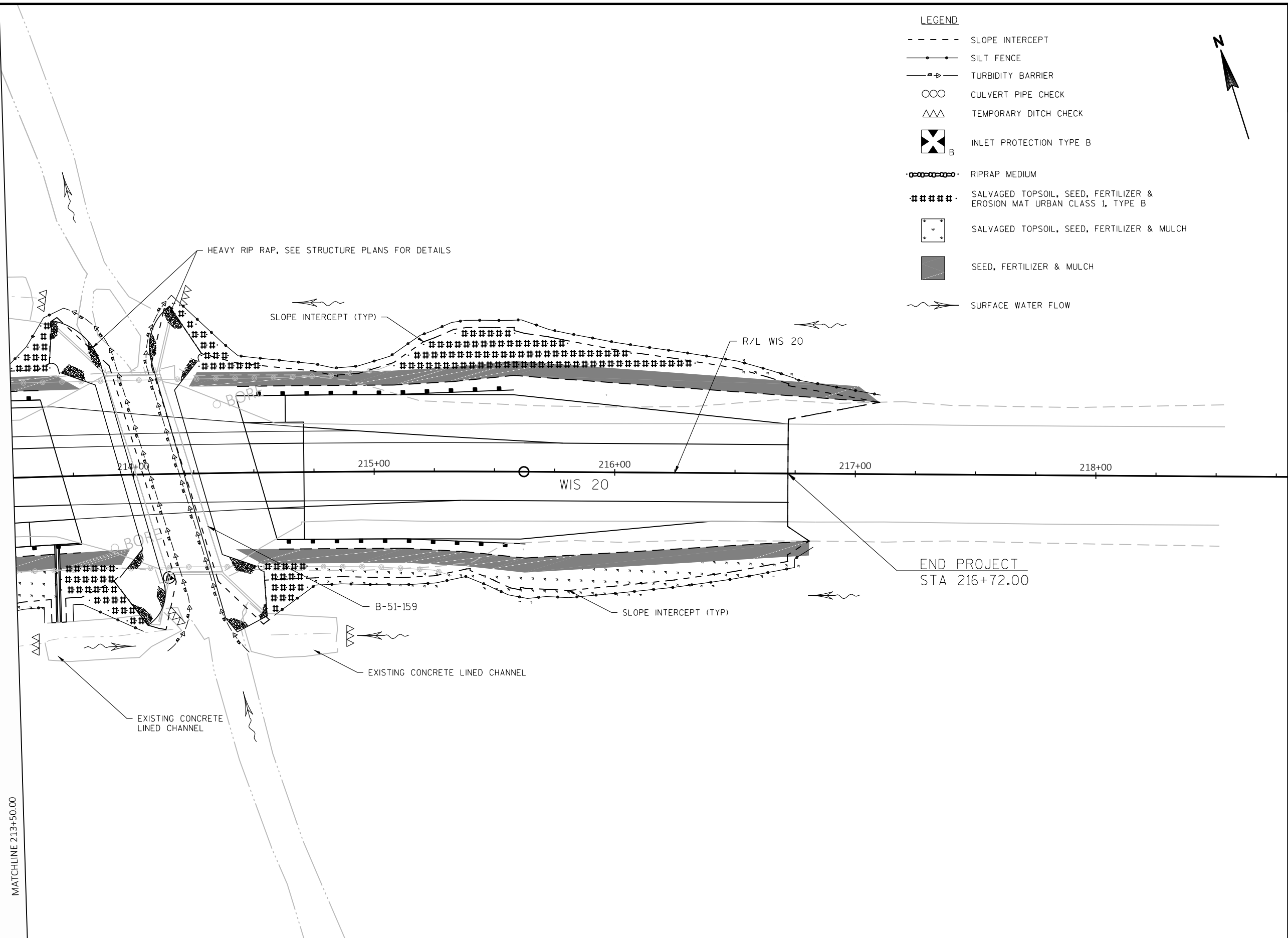
SHEET

E



LEGEND

- SLOPE INTERCEPT
- SILT FENCE
- TURBIDITY BARRIER
- ooo CULVERT PIPE CHECK
- △△△ TEMPORARY DITCH CHECK
- ⊗_B INLET PROTECTION TYPE B
- RIPRAP MEDIUM
- ##### SALVAGED TOPSOIL, SEED, FERTILIZER & EROSION MAT URBAN CLASS 1, TYPE B
- SALVAGED TOPSOIL, SEED, FERTILIZER & MULCH
- SEED, FERTILIZER & MULCH
- SURFACE WATER FLOW



LEGEND

- EXISTING SIGN MOUNTED ON POST(S)
 EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 PROPOSED SIGN MOUNTED ON POST(S)
 PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 EXISTING LIGHT OR SIGNAL POLE
 CANTILEVER SIGN BRIDGE
 DENOTES SIGN NUMBER
 INDICATES SIGN SIZE
ESTR EXISTING SIGN TO REMAIN

SIGNING NOTES:

TYPE II ALUMINUM SIGNS REMOVED UNDER THE CONTRACT SHALL BE DELIVERED TO THE COUNTY SIGN SHOP. CONTACT THE FOLLOWING INDIVIDUAL AT THE SIGN SHOP FOR DISTRIBUTION COUNTY LOCATION.

SIGNING COORDINATOR	COUNTY(S)	PHONE NUMBER
DENNIS NEWTON	MILWAUKEE, RACINE	(414) 750-0257
JENNIFER BUCKETT	KENOSHA, WASHINGTON, OZAUKEE	(414) 750-2427
CHUCK SALDIVAR	WALWORTH, WAUKESHA	(414) 750-1682

SIGNS SHALL BE CAREFULLY REMOVED FROM SIGN SUPPORTS. THE SIGNS SHALL BE PALLETIZED FOR HANDLING WITH A FORKLIFT (SEE STANDARD SPEC 638.3.4). THE REGIONAL SIGN SHOP ((414) 266-1165) SHALL BE NOTIFIED THREE WORKING DAYS PRIOR TO DELIVERY OF THE SIGNS.

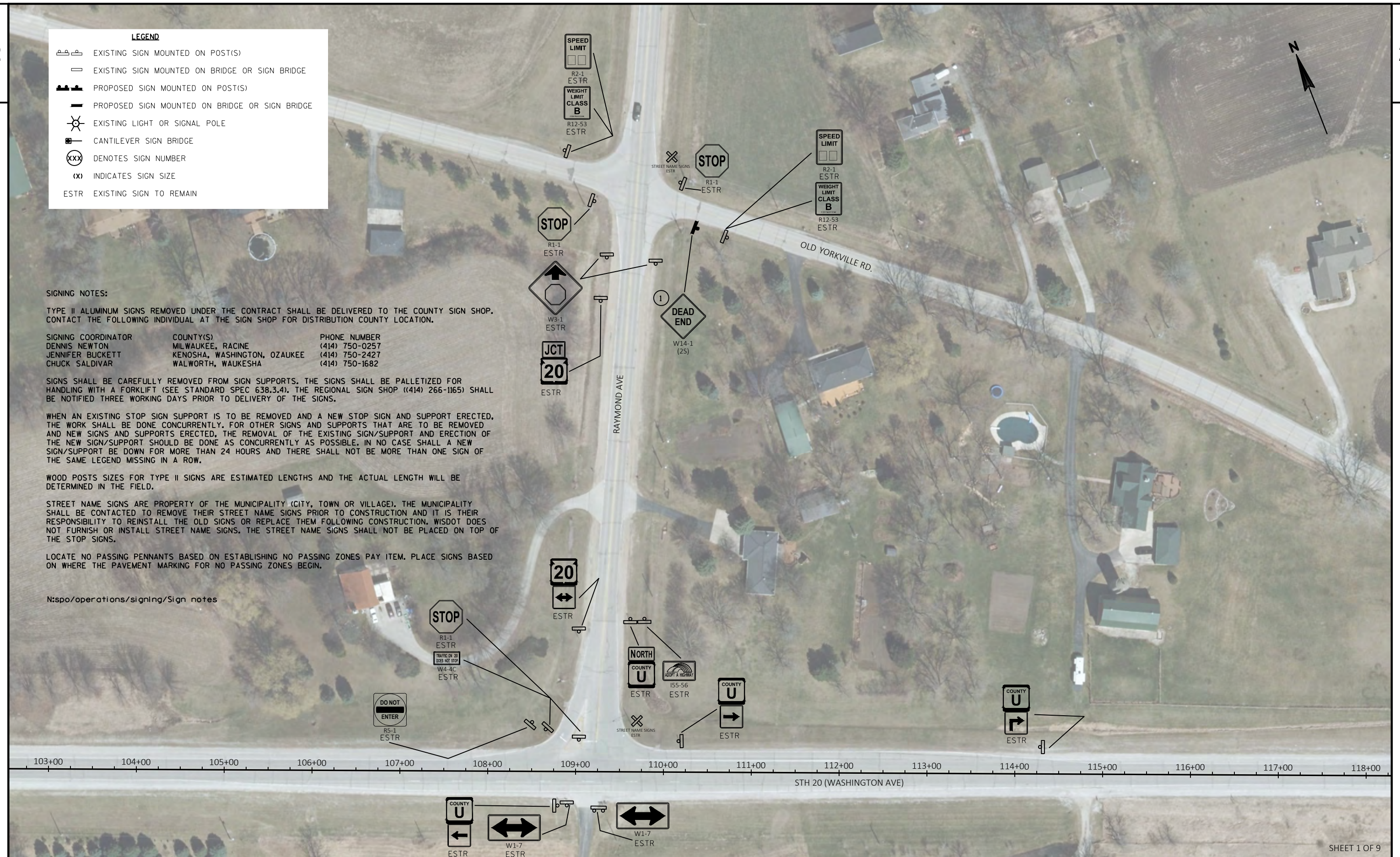
WHEN AN EXISTING STOP SIGN SUPPORT IS TO BE REMOVED AND A NEW STOP SIGN AND SUPPORT ERECTED, THE WORK SHALL BE DONE CONCURRENTLY. FOR OTHER SIGNS AND SUPPORTS THAT ARE TO BE REMOVED AND NEW SIGNS AND SUPPORTS ERECTED, THE REMOVAL OF THE EXISTING SIGN/SUPPORT AND ERECTION OF THE NEW SIGN/SUPPORT SHOULD BE DONE AS CONCURRENTLY AS POSSIBLE. IN NO CASE SHALL A NEW SIGN/SUPPORT BE DOWN FOR MORE THAN 24 HOURS AND THERE SHALL NOT BE MORE THAN ONE SIGN OF THE SAME LEGEND MISSING IN A ROW.

WOOD POSTS SIZES FOR TYPE II SIGNS ARE ESTIMATED LENGTHS AND THE ACTUAL LENGTH WILL BE DETERMINED IN THE FIELD.

STREET NAME SIGNS ARE PROPERTY OF THE MUNICIPALITY (CITY, TOWN OR VILLAGE). THE MUNICIPALITY SHALL BE CONTACTED TO REMOVE THEIR STREET NAME SIGNS PRIOR TO CONSTRUCTION AND IT IS THEIR RESPONSIBILITY TO REINSTALL THE OLD SIGNS OR REPLACE THEM FOLLOWING CONSTRUCTION. WISDOT DOES NOT FURNISH OR INSTALL STREET NAME SIGNS. THE STREET NAME SIGNS SHALL NOT BE PLACED ON TOP OF THE STOP SIGNS.

LOCATE NO PASSING PENNANTS BASED ON ESTABLISHING NO PASSING ZONES PAY ITEM. PLACE SIGNS BASED ON WHERE THE PAVEMENT MARKING FOR NO PASSING ZONES BEGIN.

N:\spo\operations\signing\Sign notes



PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

PERMANENT SIGNING

SHEET

E

FILE NAME : N:\PDS\C3D\CAD\38330003\SIGN\023201_PS_16.DWG
LAYOUT NAME - 023201_PS

PLOT DATE : 10/24/2019 10:46 AM

PLOT BY : WAGNER, SCOTT H

PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

LEGEND

-  EXISTING SIGN MOUNTED ON POST(S)
-  EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
-  PROPOSED SIGN MOUNTED ON POST(S)
-  PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
-  EXISTING LIGHT OR SIGNAL POLE
-  CANTILEVER SIGN BRIDGE
-  DENOTES SIGN NUMBER
-  INDICATES SIGN SIZE
- ESTR EXISTING SIGN TO REMAIN



SHEET 2 OF 9

PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

PERMANENT SIGNING

SHEET

E

FILE NAME : N:\PDS\C3D\CAD\38330003\SIGN\023201_PS_16.DWG
LAYOUT NAME - 023202_PS

PLOT DATE : 10/24/2019 10:47 AM

PLOT BY : WAGNER, SCOTT H

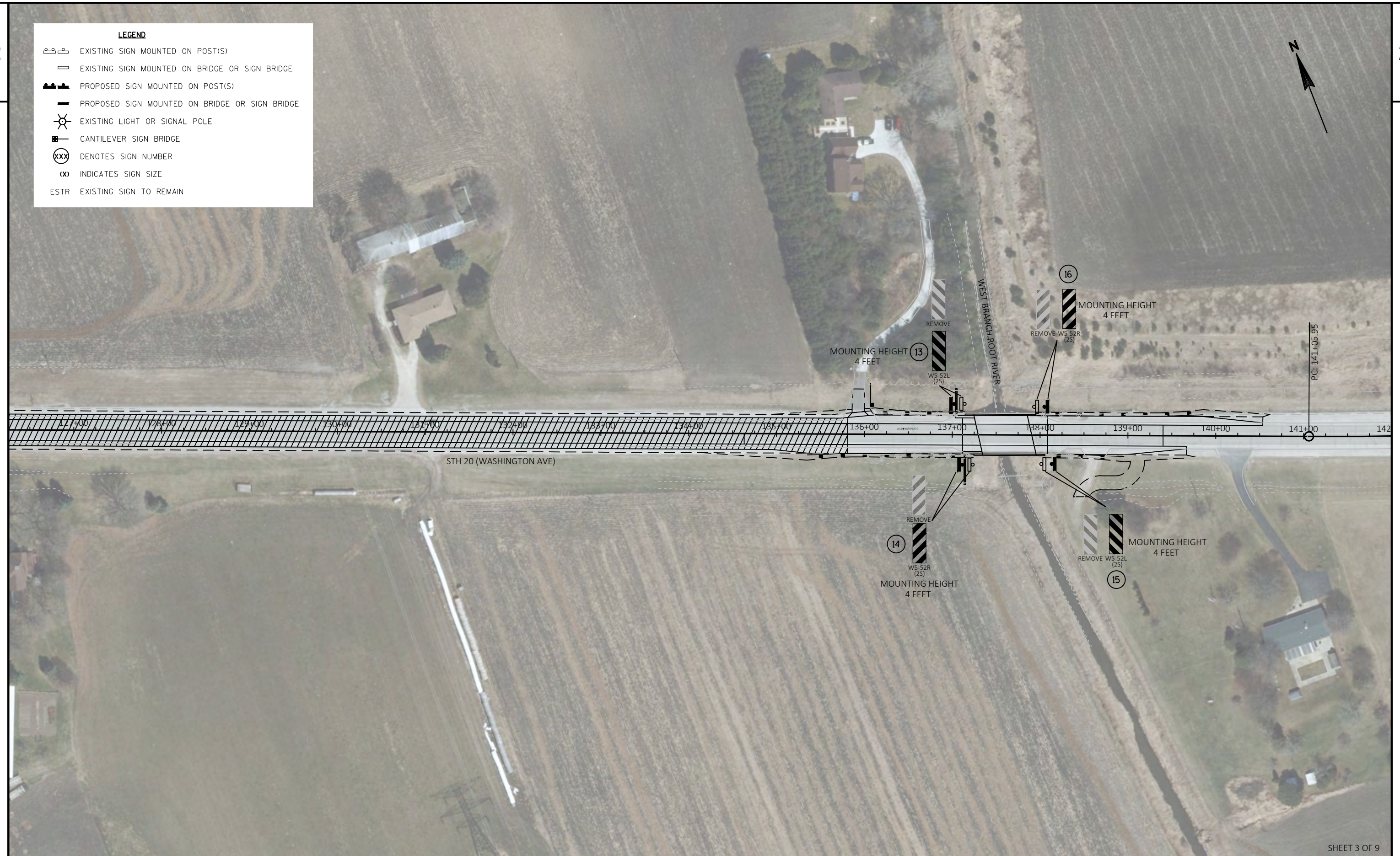
PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

LEGEND

-  EXISTING SIGN MOUNTED ON POST(S)
 EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 PROPOSED SIGN MOUNTED ON POST(S)
 PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 EXISTING LIGHT OR SIGNAL POLE
 CANTILEVER SIGN BRIDGE
 DENOTES SIGN NUMBER
 INDICATES SIGN SIZE
ESTR EXISTING SIGN TO REMAIN



SHEET 3 OF 9

PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

PERMANENT SIGNING

SHEET

E

FILE NAME : N:\PDS\C3D\CAD\38330003\SIGN\023201_PS_16.DWG
LAYOUT NAME - 023203_PS

PLOT DATE : 10/24/2019 10:47 AM

PLOT BY : WAGNER, SCOTT H

PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

LEGEND

-  EXISTING SIGN MOUNTED ON POST(S)
 EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 PROPOSED SIGN MOUNTED ON POST(S)
 PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 EXISTING LIGHT OR SIGNAL POLE
 CANTILEVER SIGN BRIDGE
 DENOTES SIGN NUMBER
 INDICATES SIGN SIZE
ESTR EXISTING SIGN TO REMAIN

NO SIGNS ON THIS SHEET



SHEET 4 OF 9

PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

PERMANENT SIGNING

SHEET

E

FILE NAME : N:\PDS\C3D\CAD\38330003\SIGN\023201_PS_16.DWG
LAYOUT NAME - 023204_PS

PLOT DATE : 10/24/2019 10:47 AM

PLOT BY : WAGNER, SCOTT H

PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

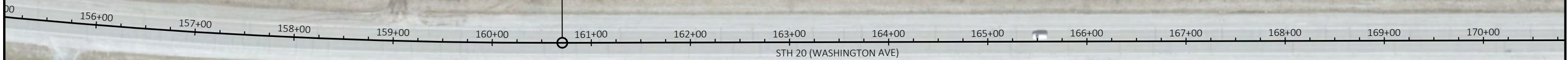
LEGEND

-  EXISTING SIGN MOUNTED ON POST(S)
-  EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
-  PROPOSED SIGN MOUNTED ON POST(S)
-  PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
-  EXISTING LIGHT OR SIGNAL POLE
-  CANTILEVER SIGN BRIDGE
-  DENOTES SIGN NUMBER
-  INDICATES SIGN SIZE
- ESTR EXISTING SIGN TO REMAIN

NO SIGNS ON THIS SHEET



PT: 160+70.65



SHEET 5 OF 9

PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	PERMANENT SIGNING	SHEET	E
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LEGEND

-  EXISTING SIGN MOUNTED ON POST(S)
 EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 PROPOSED SIGN MOUNTED ON POST(S)
 PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 EXISTING LIGHT OR SIGNAL POLE
 CANTILEVER SIGN BRIDGE
 DENOTES SIGN NUMBER
 INDICATES SIGN SIZE
ESTR EXISTING SIGN TO REMAIN



SHEET 6 OF 9

PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

PERMANENT SIGNING

SHEET

E

FILE NAME : N:\PDS\C3D\CAD\38330003\SIGN\023201_PS_16.DWG
LAYOUT NAME - 023206_PS

PLOT DATE : 10/24/2019 10:47 AM

PLOT BY : WAGNER, SCOTT H

PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

LEGEND

-  EXISTING SIGN MOUNTED ON POST(S)
 EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 PROPOSED SIGN MOUNTED ON POST(S)
 PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
 EXISTING LIGHT OR SIGNAL POLE
 CANTILEVER SIGN BRIDGE
 DENOTES SIGN NUMBER
 INDICATES SIGN SIZE
ESTR EXISTING SIGN TO REMAIN



SHEET 7 OF 9

PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

PERMANENT SIGNING

SHEET

E

FILE NAME : N:\PDS\C3D\CAD\38330003\SIGN\023201_PS_16.DWG
LAYOUT NAME - 023207_PS

PLOT DATE : 10/24/2019 10:47 AM

PLOT BY : WAGNER, SCOTT H

PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

LEGEND

EXISTING SIGN MOUNTED ON POST(S)

EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE

PROPOSED SIGN MOUNTED ON POST(S)

PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE

EXISTING LIGHT OR SIGNAL POLE

CANTILEVER SIGN BRIDGE

DENOTES SIGN NUMBER

INDICATES SIGN SIZE

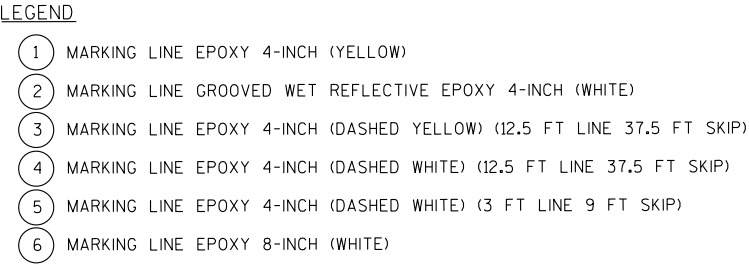
EXISTING SIGN TO REMAIN





2

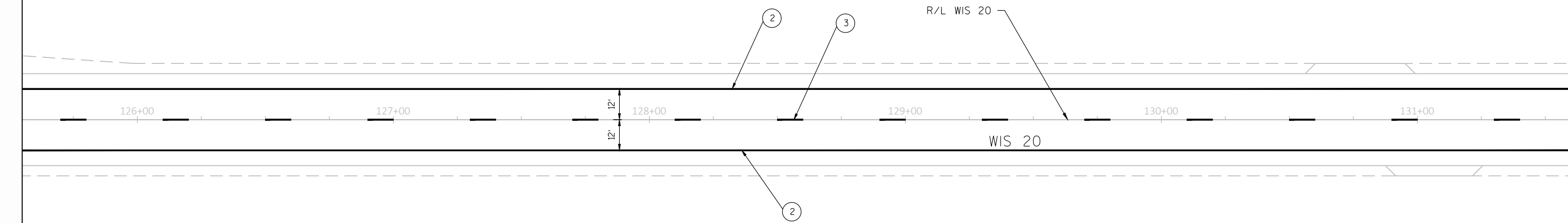
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FILE NAME : S:\DOT\DOT_SE\170289_STH 20 RACINE\38330303\SHEETSPLAN\024501_PM.DWG						PLOT DATE :	10/29/2019 9:42 AM	PLOT BY :	WALTER A. WOLAK II	PLOT NAME :		PLOT SCALE :	1 IN=40 FT		
LAYOUT NAME - PAVEMENT MARKING 1															
WISDOT/CADD'S SHEET															

LEGEND

- 1 MARKING LINE EPOXY 4-INCH (YELLOW)
- 2 MARKING LINE GROOVED WET REFLECTIVE EPOXY 4-INCH (WHITE)
- 3 MARKING LINE EPOXY 4-INCH (DASHED YELLOW) (12.5 FT LINE 37.5 FT SKIP)
- 4 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (12.5 FT LINE 37.5 FT SKIP)
- 5 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (3 FT LINE 9 FT SKIP)
- 6 MARKING LINE EPOXY 8-INCH (WHITE)

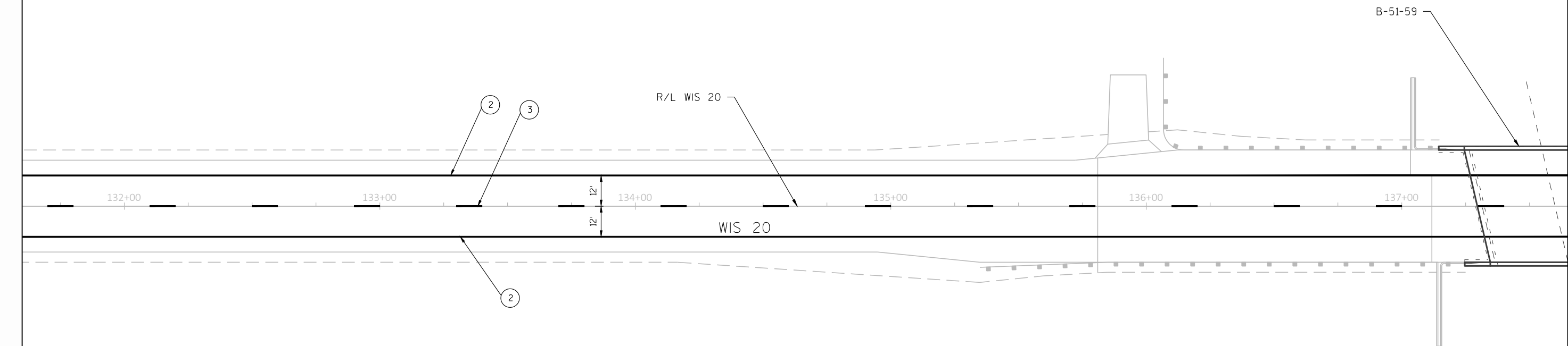


MATCHLINE 125+55.00

MATCHLINE 131+60.00

LEGEND

- 1 MARKING LINE EPOXY 4-INCH (YELLOW)
- 2 MARKING LINE GROOVED WET REFLECTIVE EPOXY 4-INCH (WHITE)
- 3 MARKING LINE EPOXY 4-INCH (DASHED YELLOW) (12.5 FT LINE 37.5 FT SKIP)
- 4 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (12.5 FT LINE 37.5 FT SKIP)
- 5 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (3 FT LINE 9 FT SKIP)
- 6 MARKING LINE EPOXY 8-INCH (WHITE)

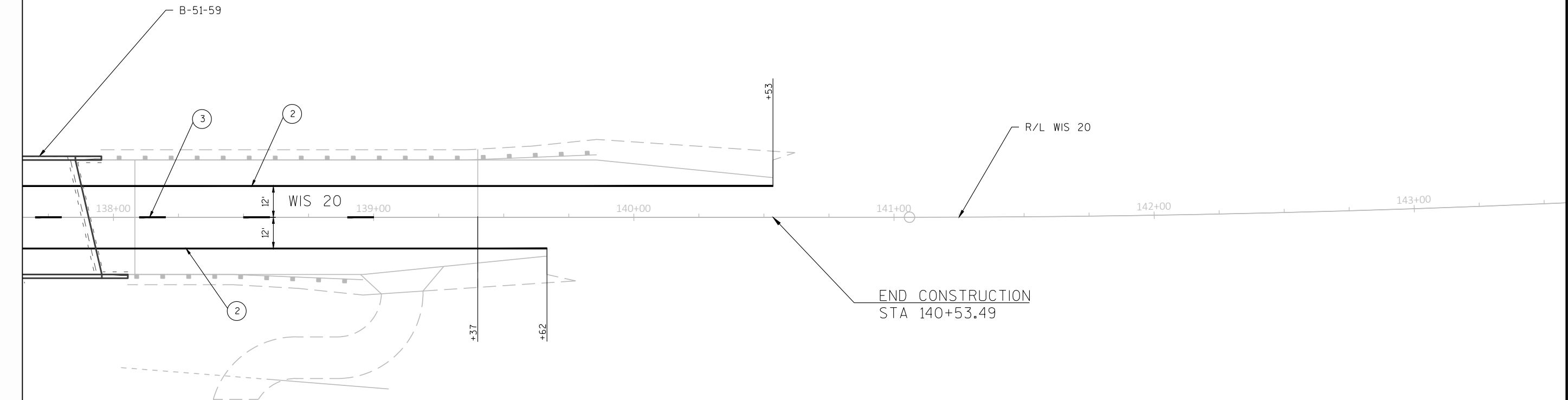


MATCHLINE 131+60.00

MATCHLINE 137+65.00

LEGEND

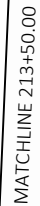
- 1 MARKING LINE EPOXY 4-INCH (YELLOW)
- 2 MARKING LINE GROOVED WET REFLECTIVE EPOXY 4-INCH (WHITE)
- 3 MARKING LINE EPOXY 4-INCH (DASHED YELLOW) (12.5 FT LINE 37.5 FT SKIP)
- 4 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (12.5 FT LINE 37.5 FT SKIP)
- 5 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (3 FT LINE 9 FT SKIP)
- 6 MARKING LINE EPOXY 8-INCH (WHITE)



2

2

- 1 MARKING LINE EPOXY 4-INCH (YELLOW)
- 2 MARKING LINE GROOVED WET REFLECTIVE EPOXY 4-INCH (WHITE)
- 3 MARKING LINE EPOXY 4-INCH (DASHED YELLOW) (12.5 FT LINE 37.5 FT SKIP)
- 4 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (12.5 FT LINE 37.5 FT SKIP)
- 5 MARKING LINE EPOXY 4-INCH (DASHED WHITE) (3 FT LINE 9 FT SKIP)
- 6 MARKING LINE EPOXY 8-INCH (WHITE)

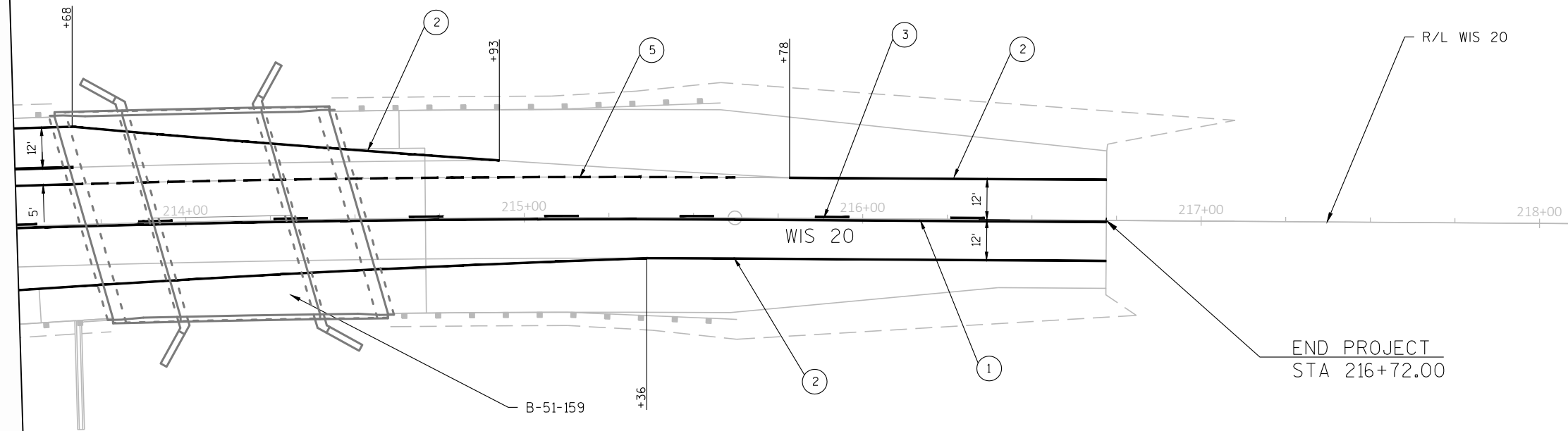


E

WISDOT/CADDS SHEET 42

LEGEND

- ① MARKING LINE EPOXY 4-INCH (YELLOW)
- ② MARKING LINE GROOVED WET REFLECTIVE EPOXY 4-INCH (WHITE)
- ③ MARKING LINE EPOXY 4-INCH (DASHED YELLOW) (12.5 FT LINE 37.5 FT SKIP)
- ④ MARKING LINE EPOXY 4-INCH (DASHED WHITE) (12.5 FT LINE 37.5 FT SKIP)
- ⑤ MARKING LINE EPOXY 4-INCH (DASHED WHITE) (3 FT LINE 9 FT SKIP)
- ⑥ MARKING LINE EPOXY 8-INCH (WHITE)



PROJECT NO: 3833-03-73

HWY: STH 20

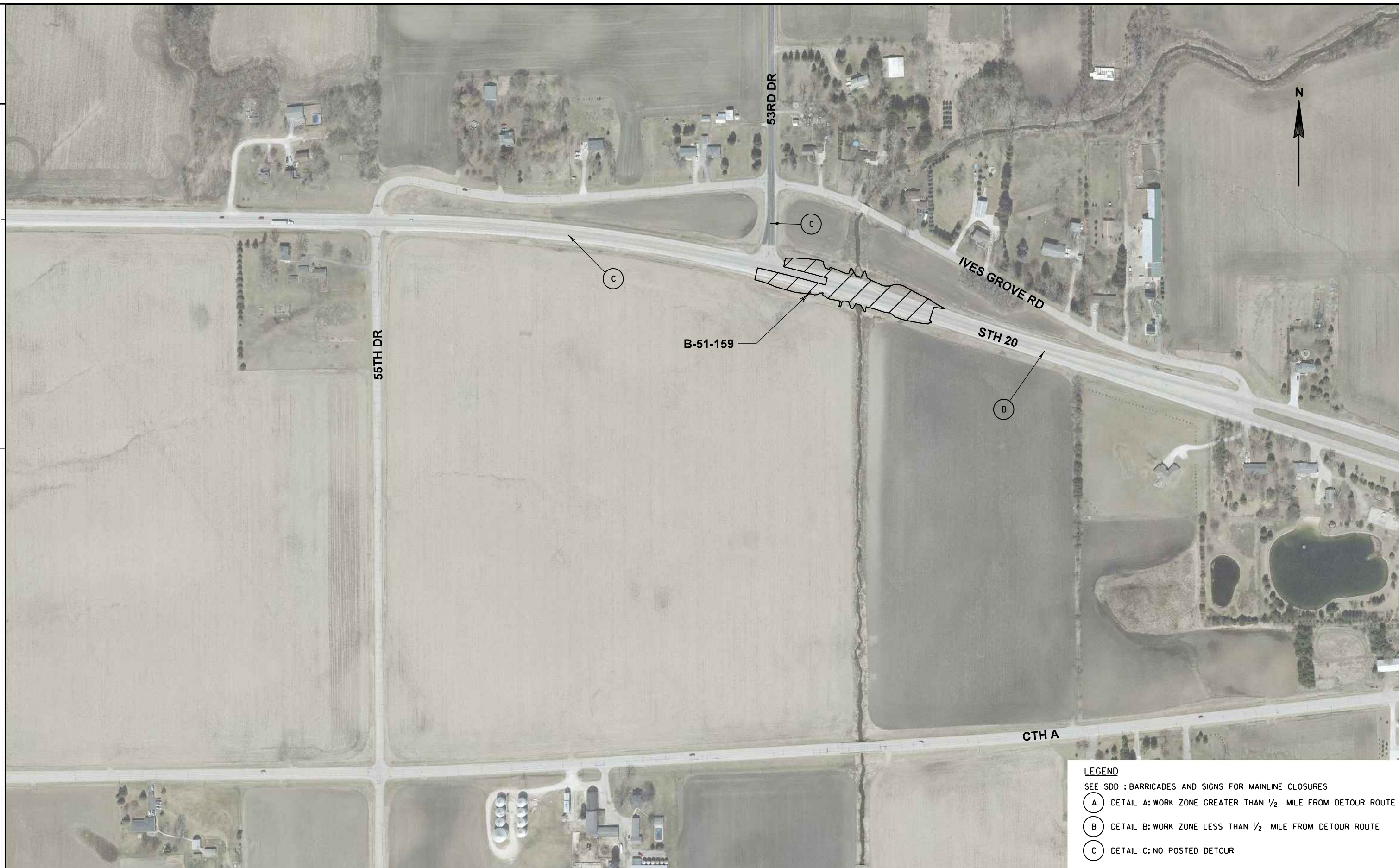
COUNTY: RACINE

PAVEMENT MARKING PLAN

SHEET

E



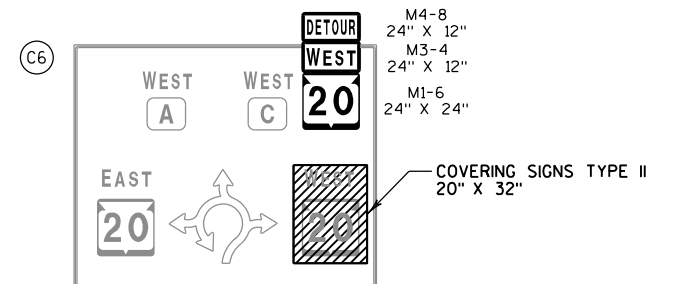
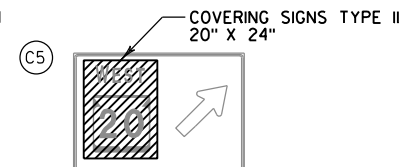
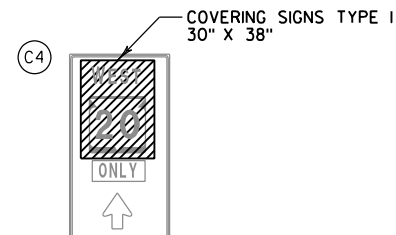
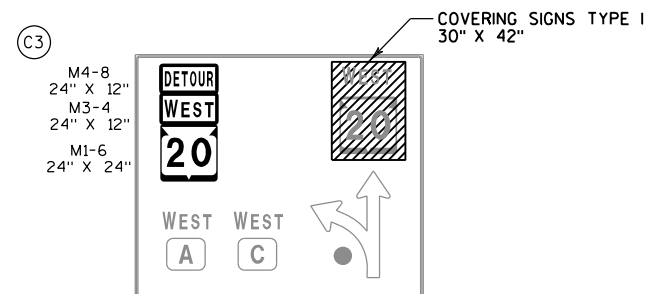
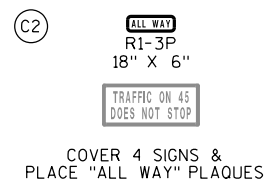
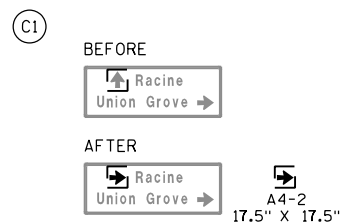
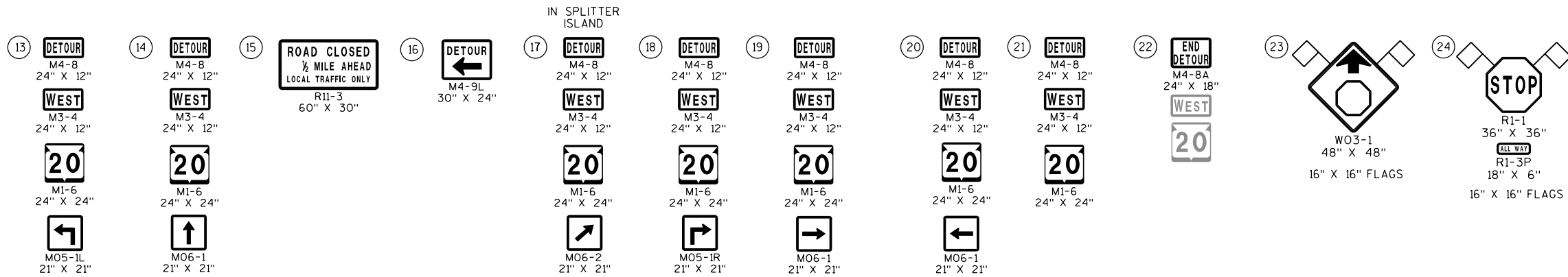
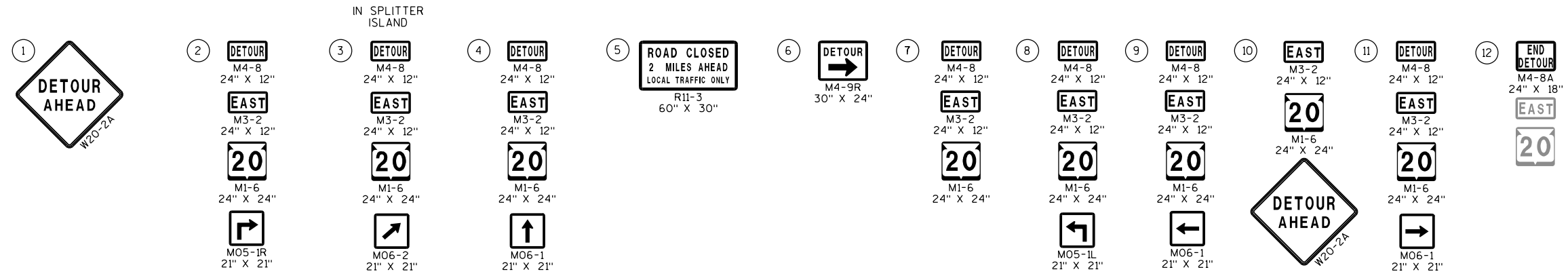




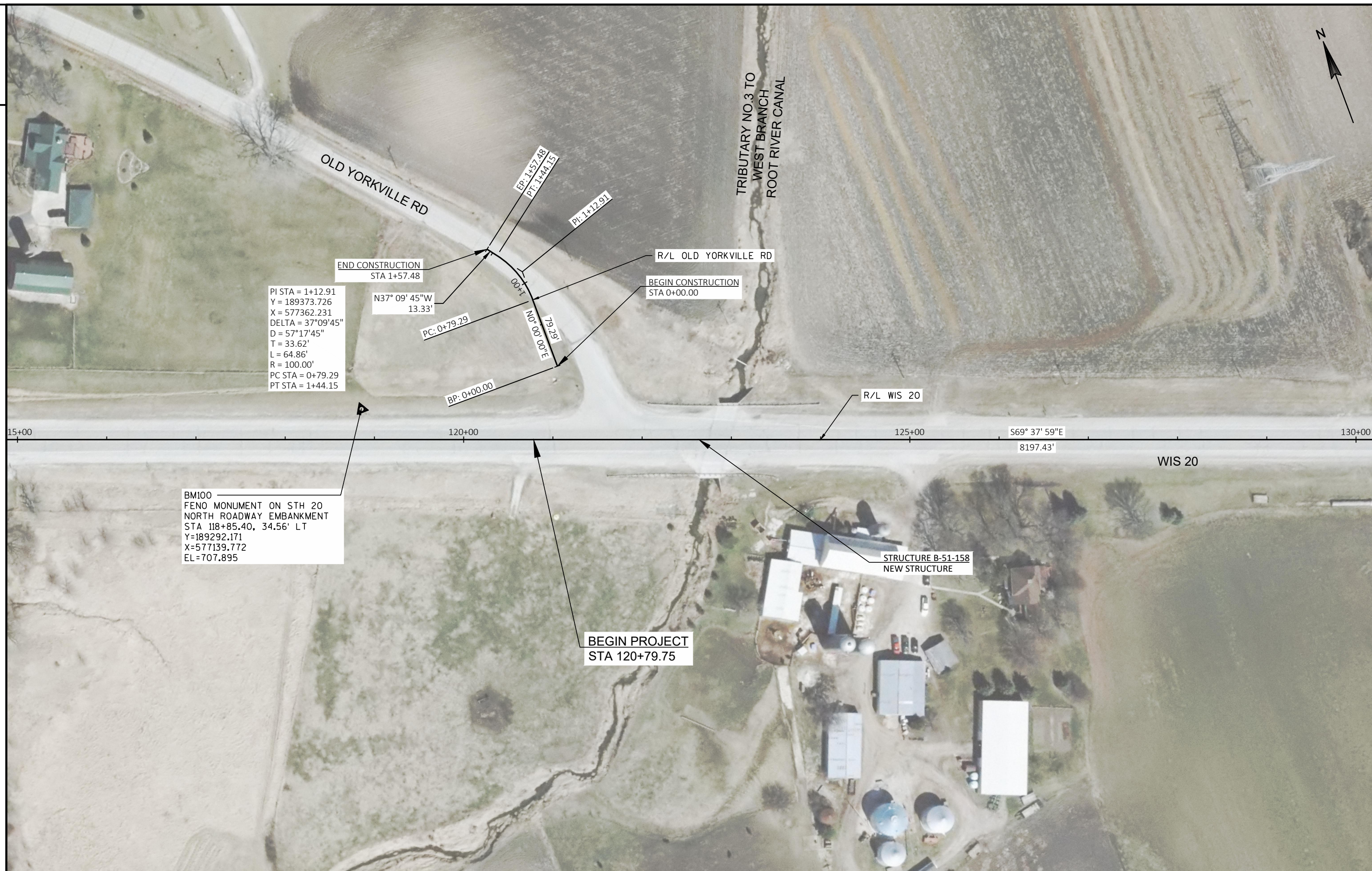
LEGEND

— PROPOSED DETOUR

▨ WORK ZONE



PCMS MESSAGE AT USH 45 & CTH A:
STOP AHEAD
NEW TRAFFIC PATTERN



PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

ALIGNMENT PLAN

SHEET

E



PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

ALIGNMENT PLAN

SHEET

E

FILE NAME : S:\DOT\DOT_SE\170289_STH 20 RACINE\38330303\SHEETSPLAN\027201_AD.DWG
LAYOUT NAME - 0202013

PLOT DATE : 10/29/2019 9:43 AM

PLOT BY : WALTER A. WOLAK II

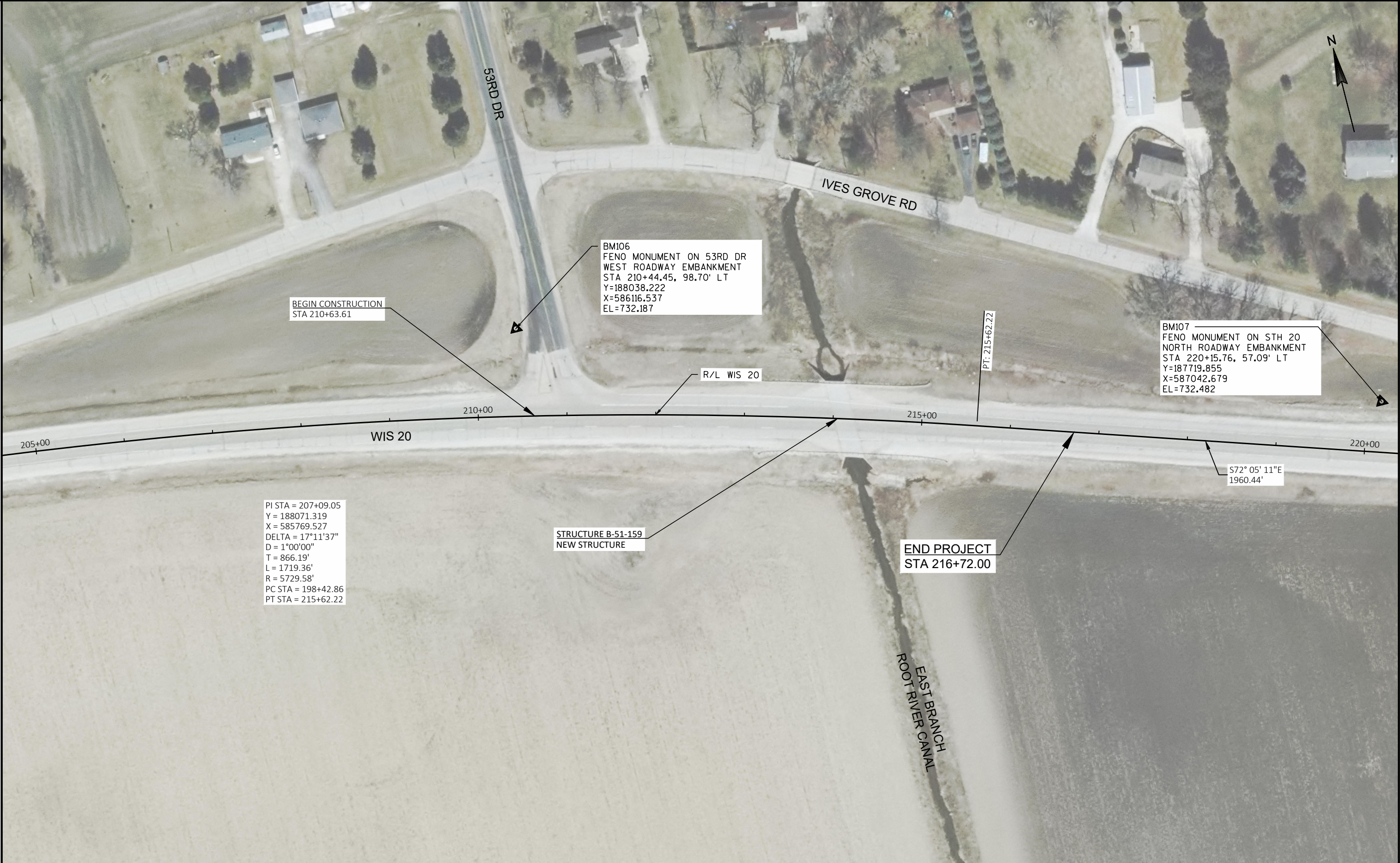
PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

2

2



PROJECT NO:	3833-03-73
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HWY: STH 20

COUNTY: RACINE

ALIGNMENT PLAN

SHEET

E

FILE NAME : S:\DOT\DOT_SE\170289_STH 20 RACINE\38330303\SHEETSPLAN\027201_AD.DWG
LAYOUT NAME - 0202014

PLOT DATE : 10/29/2019 9:43 AM

PLOT BY : WALTER A. WOLAK II

PLOT NAME :

PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42

Estimate Of Quantities

3833-03-73					
Line	Item	Item Description	Unit	Total	Qty
0002	108.4400	CPM Progress Schedule	EACH	1.000	1.000
0004	203.0210.S	Abatement of Asbestos Containing Material (structure) 01. B-51-59	LS	1.000	1.000
0006	203.0500.S	Removing Old Structure Over Waterway (station) 01. 137+60	LS	1.000	1.000
0008	203.0500.S	Removing Old Structure Over Waterway (station) 02. 122+86	LS	1.000	1.000
0010	203.0500.S	Removing Old Structure Over Waterway (station) 03. 214+11	LS	1.000	1.000
0012	204.0100	Removing Pavement	SY	2,355.000	2,355.000
0014	204.0110	Removing Asphaltic Surface	SY	88.000	88.000
0016	204.0120	Removing Asphaltic Surface Milling	SY	4,068.000	4,068.000
0018	204.0165	Removing Guardrail	LF	1,178.000	1,178.000
0020	204.0220	Removing Inlets	EACH	2.000	2.000
0022	204.9060.S	Removing (item description) 01. Apron Endwall	EACH	3.000	3.000
0024	204.9090.S	Removing (item description) 01. Underdrain	LF	60.000	60.000
0026	205.0100	Excavation Common	CY	4,189.000	4,189.000
0028	206.1000	Excavation for Structures Bridges (structure) 01. B-51-59	LS	1.000	1.000
0030	206.1000	Excavation for Structures Bridges (structure) 02. B-51-158	LS	1.000	1.000
0032	206.1000	Excavation for Structures Bridges (structure) 03. B-51-159	LS	1.000	1.000
0034	210.1500	Backfill Structure Type A	TON	2,024.000	2,024.000
0036	213.0100	Finishing Roadway (project) 01. 3833-03-73	EACH	1.000	1.000
0038	214.0100	Obliterating Old Road	STA	1.000	1.000
0040	305.0110	Base Aggregate Dense 3/4-Inch	TON	484.000	484.000
0042	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	7,139.000	7,139.000
0044	305.0500	Shaping Shoulders	STA	30.000	30.000
0046	415.0070	Concrete Pavement 7-Inch	SY	128.000	128.000
0048	415.0410	Concrete Pavement Approach Slab	SY	378.000	378.000
0050	416.0610	Drilled Tie Bars	EACH	20.000	20.000
0052	416.1010	Concrete Surface Drains	CY	35.800	35.800
0054	455.0605	Tack Coat	GAL	928.000	928.000
0056	460.2000	Incentive Density HMA Pavement	DOL	1,830.000	1,830.000
0058	460.6223	HMA Pavement 3 MT 58-28 S	TON	1,797.000	1,797.000
0060	460.6224	HMA Pavement 4 MT 58-28 S	TON	1,048.000	1,048.000
0062	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	10.000	10.000
0064	502.0100	Concrete Masonry Bridges	CY	1,075.000	1,075.000
0066	502.3200	Protective Surface Treatment	SY	1,273.000	1,273.000
0068	502.3210	Pigmented Surface Sealer	SY	238.000	238.000

Estimate Of Quantities

3833-03-73					
Line	Item	Item Description	Unit	Total	Qty
0070	502.4205	Adhesive Anchors No. 5 Bar	EACH	352.000	352.000
0072	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	165,270.000	165,270.000
0074	505.0800.S	Bar Steel Reinforcement HS Stainless Structures	LB	1,020.000	1,020.000
0076	506.4000	Steel Diaphragms (structure) 01. B-51-59	EACH	6.000	6.000
0078	509.1500	Concrete Surface Repair	SF	10.000	10.000
0080	516.0500	Rubberized Membrane Waterproofing	SY	60.000	60.000
0082	521.1018	Apron Endwalls for Culvert Pipe Steel 18-Inch	EACH	1.000	1.000
0084	521.3118	Culvert Pipe Corrugated Steel 18-Inch	LF	45.000	45.000
0086	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	3,260.000	3,260.000
0088	606.0200	Riprap Medium	CY	2.600	2.600
0090	606.0300	Riprap Heavy	CY	597.000	597.000
0092	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	490.000	490.000
0094	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	12.000	12.000
0096	614.2300	MGS Guardrail 3	LF	590.600	590.600
0098	614.2350	MGS Guardrail Short Radius	LF	12.500	12.500
0100	614.2500	MGS Thrie Beam Transition	LF	472.800	472.800
0102	614.2610	MGS Guardrail Terminal EAT	EACH	11.000	11.000
0104	614.2630	MGS Guardrail Short Radius Terminal	EACH	1.000	1.000
0106	616.0700.S	Fence Safety	LF	500.000	500.000
0108	618.0100	Maintenance And Repair of Haul Roads (project) 01. 3833-03-73	EACH	1.000	1.000
0110	619.1000	Mobilization	EACH	1.000	1.000
0112	624.0100	Water	MGAL	23.000	23.000
0114	625.0500	Salvaged Topsoil	SY	5,154.000	5,154.000
0116	627.0200	Mulching	SY	5,723.000	5,723.000
0118	628.1104	Erosion Bales	EACH	30.000	30.000
0120	628.1504	Silt Fence	LF	4,183.000	4,183.000
0122	628.1520	Silt Fence Maintenance	LF	4,183.000	4,183.000
0124	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0126	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0128	628.2004	Erosion Mat Class I Type B	SY	1,523.000	1,523.000
0130	628.6005	Turbidity Barriers	SY	650.000	650.000
0132	628.6505	Soil Stabilizer Type A	ACRE	0.200	0.200
0134	628.6510	Soil Stabilizer Type B	ACRE	0.200	0.200
0136	628.7010	Inlet Protection Type B	EACH	2.000	2.000
0138	628.7504	Temporary Ditch Checks	LF	115.000	115.000
0140	628.7555	Culvert Pipe Checks	EACH	24.000	24.000
0142	628.7560	Tracking Pads	EACH	4.000	4.000
0144	628.7570	Rock Bags	EACH	340.000	340.000
0146	629.0210	Fertilizer Type B	CWT	4.800	4.800

Estimate Of Quantities

3833-03-73					
Line	Item	Item Description	Unit	Total	Qty
0148	630.0140	Seeding Mixture No. 40	LB	135.000	135.000
0150	630.0200	Seeding Temporary	LB	205.000	205.000
0152	630.0500	Seed Water	MGAL	45.000	45.000
0154	634.0618	Posts Wood 4x6-Inch X 18-FT	EACH	20.000	20.000
0156	637.2210	Signs Type II Reflective H	SF	10.000	10.000
0158	637.2230	Signs Type II Reflective F	SF	49.000	49.000
0160	638.2102	Moving Signs Type II	EACH	3.000	3.000
0162	638.2602	Removing Signs Type II	EACH	10.000	10.000
0164	638.3000	Removing Small Sign Supports	EACH	15.000	15.000
0166	642.5201	Field Office Type C	EACH	1.000	1.000
0168	643.0420	Traffic Control Barricades Type III	DAY	6,344.000	6,344.000
0170	643.0715	Traffic Control Warning Lights Type C	DAY	12,688.000	12,688.000
0172	643.0900	Traffic Control Signs	DAY	27,938.000	27,938.000
0174	643.0910	Traffic Control Covering Signs Type I	EACH	2.000	2.000
0176	643.0920	Traffic Control Covering Signs Type II	EACH	16.000	16.000
0178	643.1050	Traffic Control Signs PCMS	DAY	272.000	272.000
0180	643.5000	Traffic Control	EACH	1.000	1.000
0182	645.0111	Geotextile Type DF Schedule A	SY	324.000	324.000
0184	645.0120	Geotextile Type HR	SY	1,231.200	1,231.200
0186	646.1020	Marking Line Epoxy 4-Inch	LF	985.000	985.000
0188	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	5,181.000	5,181.000
0190	646.3020	Marking Line Epoxy 8-Inch	LF	219.000	219.000
0192	690.0150	Sawing Asphalt	LF	519.000	519.000
0194	690.0250	Sawing Concrete	LF	481.000	481.000
0196	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0198	715.0502	Incentive Strength Concrete Structures	DOL	6,450.000	6,450.000
0200	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	1,200.000	1,200.000
0202	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	1,000.000	1,000.000
0204	SPV.0075	Special 01. Pavement Cleanup Project 3833-03-73	HRS	25.000	25.000
0206	SPV.0105	Special 01. Survey Project 3833-03-73	LS	1.000	1.000

CPM PROGRESS SCHEDULE

108.4400	
CPM PROGRESS SCHEDULE	
LOCATION	EACH
PROJECT 3833-03-73	1
PROJECT 3833-03-73 TOTAL	1

REMOVING ASPHALTIC SURFACE MILLING

204.0120			
REMOVING ASPHALTIC SURFACE MILLING			
LOCATION	SY	COMMENTS	
STA 124+00 TO STA 135+81 STH 20	4,068	MILL 2-1/2"	
PROJECT 3833-03-73 TOTAL	4,068		

FINISHING ROADWAY

213.0100.01	
FINISHING ROADWAY PROJECT 3833-03-73	
LOCATION	EACH
PROJECT 3833-03-73	1
PROJECT 3833-03-73 TOTAL	1

REMOVING PAVEMENT

204.0100		
REMOVING PAVEMENT		
LOCATION	SY	
STA 210+63 TO STA 214+01 STH 20	1,147	
STA 214+24 TO STA 216+72 STH 20	1,208	
PROJECT 3833-03-73 TOTAL	2,355	

REMOVING GUARDRAIL

204.0165					
REMOVING GUARDRAIL					
STA	TO	STA	LF		
121+61	-	123+52 RT STH 20	191		
122+07	-	123+99 LT STH 20	192		
136+17	-	137+27 RT STH 20	110		
136+19	-	137+17 LT STH 20	98		
137+94	-	139+04 LT STH 20	110		
138+04	-	138+50 RT STH 20	47		
212+95	-	215+07 LT STH 20	215		
213+16	-	215+32 RT STH 20	215		
PROJECT 3833-03-73 TOTAL			1,178		

OBLITERATING OLD ROAD

214.0100	
OBLITERATING OLD ROAD	
LOCATION	STA
OLD YORKVILLE ROAD	1
PROJECT 3833-03-73 TOTAL	1

REMOVING ASPHALTIC SURFACE

204.0110		
REMOVING ASPHALTIC SURFACE		
LOCATION	SY	
STA 120+80 TO STA 122+00 STH 20	42	
STA 139+40 TO STA 140+53 STH 20	46	
PROJECT 3833-03-73 TOTAL	88	

REMOVING DRAINAGE ITEMS

				204.0220	204.9060.S.01	204.9090.S.01	
				REMOVING	REMOVING	REMOVING	
				INLETS	APRON ENDWALL	UNDERDRAIN	
STA	OFFSET	LOCATION		EACH	EACH	LF	COMMENTS
1+03	6'	RT	DRIVEWAY	--	1	--	18-INCH METAL ENDWALL
137+12	21'	LT	STH 20	1	1	30	12-INCH UNDERDRAIN & METAL ENDWALL
137+23	21'	RT	STH 20	1	1	30	12-INCH UNDERDRAIN & METAL ENDWALL
PROJECT 3833-03-73 TOTAL				2	3	60	

ALL ITEMS CATEGORY 1000 UNLESS OTHERWISE NOTED

EARTHWORK SUMMARY

From/To Station	Location	205.0100 Excavation Common (CY) (1)		Available Material (2)	Unexpanded Fill	Expanded Fill (3)	Mass Ordinate +/- (4)	Waste	208.0100 Borrow (CY)
		Cut	EBS Excavation			Factor 1.25			
122+00 to 124+00	STH 20 AT B-51-158	448	0	448	0	0	448	448	0
135+81 to 139+40	STH 20 AT B-51-59	1,604	0	1,604	18	22	1,582	1,582	0
210+64 to 216+72	STH 20 AT B-51-159	1,303	0	1,303	361	451	853	853	0
0+00 to 1+57	OLD YORKVILLE ROAD	758	0	758	108	135	623	623	0
	UNDISTRIBUTED	0	75	0	0	0	0	0	0
Grand Total		4,114	75	4,114	486	608	3,506	3,506	0
Total Excavation Common		4,189							

- NOTES:
- 1) Common Excavation is the sum of the Cut and EBS Excavation columns.
 - 2) Available Material = Cut
 - 3) Expanded Fill expansion factor = 1.25. Expanded Fill = Unexpanded Fill * Expansion Factor
 - 4) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

ALL ITEMS CATEGORY 1000 UNLESS OTHERWISE NOTED

SHAPING SHOULDERS

305.0500 SHAPING SHOULDERS					
STA	TO	STA	OFFSET	LOCATION	STA
120+79	-	122+00	RT	STH 20	2
121+00	-	122+00	LT	STH 20	1
124+00	-	135+81	LT	STH 20	12
124+00	-	135+81	RT	STH 20	12
139+40	-	139+78	RT	STH 20	1
139+40	-	140+53	LT	STH 20	2
PROJECT 3833-03-73 TOTAL					30

PAVEMENT AND CONCRETE ITEMS

	416.1010 CONCRETE SURFACE DRAINS	415.0070 CONCRETE PAVEMENT 7-INCH	415.0410 CONCRETE PAVEMENT APPROACH SLAB	455.0605 TACK COAT	460.6223 HMA PAVEMENT 3 MT 58-28 S	460.6224 HMA PAVEMENT 4 MT 58-28 S	465.0120 ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES	
LOCATION	CY	SY	SY	GAL	TON	TON	TON	REMARKS
OLD YORKVILLE ROAD	--	--	--	58	144	111	--	
B-51-158 WEST APPROACH	--	40	49	19	51	28	--	
B-51-158 EAST APPROACH	13.0	--	49	23	65	28	--	
STA 124+00 TO STA 135+81	--	--	--	517	639	498	--	
B-51-59 WEST APPROACH	16.1	--	47	50	149	65	10	
B-51-59 EAST APPROACH	--	40	47	60	166	78	--	
B-51-159 WEST APPROACH	6.7	5	107	106	316	117	--	
B-51-159 EAST APPROACH	--	43	79	95	267	123	--	
PROJECT 3833-03-73 TOTAL	35.8	128	378	928	1,797	1,048	10	

AGGREGATE ITEMS

	305.0110 BASE AGGREGATE DENSE 3/4-INCH	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH	
LOCATION	TON	TON	REMARKS
OLD YORKVILLE ROAD	44	660	
B-51-158 WEST APPROACH	23	294	
B-51-158 EAST APPROACH	18	474	
STA 124+00 TO STA 135+81	74	--	
B-51-59 WEST APPROACH	51	934	INCLUDES PRIVATE ENTRANCE
B-51-59 EAST APPROACH	106	952	INCLUDES FIELD ENTRANCE
B-51-159 WEST APPROACH	62	1,231	
B-51-159 EAST APPROACH	106	1,886	
PROJECT 3833-03-73 TOTAL	484	6,431	

CULVERT PIPE ITEMS

						521.3118	521.1018	
						CULVERT PIPE	APRON ENDWALL	
						CORRUGATED STEEL	FOR CULVERT PIPE STEEL	
						18-INCH	18-INCH	
STA	OFFSET	TO	STA	OFFSET	LOCATION	LF	EACH	
1+03	8'	RT	-	1+44	17' RT	DRIVEWAY	45	1
PROJECT 3833-03-73 TOTAL						45	1	

RIPRAP

				606.0200 RIPRAP MEDIUM	645.0120 GEOTEXTILE TYPE HR
STA	OFFSET	LOCATION		CY	SY
123+30	60'	RT	STH 20	1.3	11.1
123+40	65'	LT	STH 20	1.3	11.1
PROJECT 3833-03-73 TOTAL				2.6	22.2

FENCE SAFETY

	616.0700.S FENCE SAFETY LF
LOCATION	
UNDISTRIBUTED	500
PROJECT 3833-03-73 TOTAL	500

DRILLED TIE BARS

		416.0610	
		DRILLED TIE BARS	
LOCATION	OFFSET	EACH	REMARKS
B-51-59 WEST APPROACH	LT	10	SURFACE DRAIN / WINGWALL
B-51-59 WEST APPROACH	RT	10	SURFACE DRAIN / WINGWALL
PROJECT 3833-03-73 TOTAL		20	

ALL ITEMS CATEGORY 1000 UNLESS OTHERWISE NOTED

MGS GUARDRAIL

			614.2300 MGS GUARDRAIL 3	614.2350 MGS GUARDRAIL SHORT RADIUS	614.2500 MGS THRIE BEAM TRANSITION	614.2610 MGS GUARDRAIL TERMINAL EAT	614.2630 MGS GUARDRAIL SHORT RADIUS TERMINAL
STA	OFFSET	LOCATION	LF	LF	LF	EACH	EACH
B-51-158 WEST APPROACH	LT	STH 20	25.0	--	39.4	1	--
B-51-158 WEST APPROACH	RT	STH 20	62.5	--	39.4	1	--
B-51-158 EAST APPROACH	LT	STH 20	62.5	--	39.4	1	--
B-51-158 EAST APPROACH	RT	STH 20	25.0	--	39.4	1	--
B-51-59 WEST APPROACH	LT	STH 20	90.6	12.5	39.4	--	1
B-51-59 WEST APPROACH	RT	STH 20	100.0	--	39.4	1	--
B-51-59 EAST APPROACH	LT	STH 20	100.0	--	39.4	1	--
B-51-59 EAST APPROACH	RT	STH 20	--	--	39.4	1	--
B-51-159 WEST APPROACH	LT	STH 20	12.5	--	39.4	1	--
B-51-159 WEST APPROACH	RT	STH 20	75.0	--	39.4	1	--
B-51-159 EAST APPROACH	LT	STH 20	25.0	--	39.4	1	--
B-51-159 EAST APPROACH	RT	STH 20	12.5	--	39.4	1	--
PROJECT 3833-03-73 TOTAL			590.6	12.5	472.8	11	1

RESTORATION

	625.0500 SALVAGED TOPSOIL	627.0200 MULCHING	629.0210 FERTILIZER TYPE B	630.0140 SEEDING MIXTURE NO. 40	630.0200 SEEDING TEMPORARY
STA	SY	SY	CWT	LB	LB
OLD YORKVILLE ROAD	814	996	0.7	19	29
B-51-158	1,222	1,163	1.0	29	44
B-51-59	1,144	1,480	1.2	33	50
B-51-159	1,505	1,564	1.5	42	63
UNDISTRIBUTED	469	520	0.4	12	19
PROJECT 3833-03-73 TOTAL	5,154	5,723	4.8	135	205

MAINTENANCE AND REPAIR OF HAUL ROADS

		618.0100 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT 3833-03-73)
LOCATION	EACH	
PROJECT 3833-03-73	1	
PROJECT 3833-03-73 TOTAL	1	

MOBILIZATION

	619.1000 MOBILIZATION
LOCATION	EACH
PROJECT 3833-03-73	1
PROJECT 3833-03-73 TOTAL	1

WATER

	624.0100 WATER MGAL	630.0500 SEED WATER MGAL
LOCATION		
AGGREGATE COMPACTION	14	--
EARTHWORK COMPACTION	1	--
DUST CONTROL	8	--
SEEDED AREAS	--	45
PROJECT 3833-03-73 TOTAL	23	45

EROSION CONTROL

	628.1104 EROSION BALES	628.1504 SILT FENCE	628.1520 SILT FENCE MAINTENANCE	628.1905 MOBILIZATIONS EROSION CONTROL	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL	628.2004 EROSION MAT CLASS I TYPE B	628.6005 TURBIDITY BARRIERS	628.6505 SOIL STABILIZER TYPE A	628.6510 SOIL STABILIZER TYPE B	628.7010 INLET PROTECTION TYPE B	628.7504 TEMPORARY DITCH CHECKS	628.7555 CULVERT PIPE CHECKS	628.7560 TRACKING PADS	628.7570 ROCK BAGS
STA	EACH	LF	LF	EACH	EACH	SY	SY	ACRE	ACRE	EACH	LF	EACH	EACH	EACH
OLD YORKVILLE ROAD	--	428	428	--	--	--	--	--	--	--	5	--	--	--
B-51-158	--	921	921	--	--	379	325	--	--	--	40	10	--	160
B-51-59	--	1,124	1,124	--	--	283	--	--	--	2	25	8	--	--
B-51-159	--	1,164	1,164	--	--	662	325	--	--	--	25	3	--	160
UNDISTRIBUTED	30	546	546	5	3	199	--	0.2	0.2	--	20	3	4	20
PROJECT 3833-03-73 TOTAL	30	4,183	4,183	5	3	1523	650	0.2	0.2	2	115	24	4	340

ALL ITEMS CATEGORY 1000 UNLESS OTHERWISE NOTED

TYPE II PERMANENT SIGNING -

3833-03-73 WIS 20

SIGN NO.	SIGN CODE & SIZE	SIGN MESSAGE	TYPE II SIGN SIZE			637.2210	637.2230	638.2602	638.3000	634.0618	638.2102	MOUNT ON SAME POST AS SIGN #	REMARKS / NEW SIGN LOCATION
			W [IN.]	X x	H [IN.]	SIGNS	SIGNS	REM	REM	WOOD	MOVE		
						TYPE II	TYPE II	SIGNS	SMALL	POSTS	SIGNS		
						REFLC H [SF]	REFLC F [SF]	TYPE II [EA]	SIGN SUPPORTS [EA]	4" X 6" X 18' [EA]	TYPE II [EA]		
1	W14-1 (2S)	Old Yorkville Rd Old Yorkville Rd	30	X	30		6.250			1			PLACE ON OLD YORKVILLE RD AS SHOWN SHEET 2 OF 9
2	D1-1							1	2				
3	D1-1							1	2				
4	W3-1							1	1				
5	R1-1							1	1				
5A	W1-6R	SPEED LIMIT 40						1	1				PLACE AT CUL-DE-SAC ON OLD YORKVILLE PLACE AT CUL-DE-SAC ON OLD YORKVILLE PLACE AT CUL-DE-SAC ON OLD YORKVILLE REMOVES WEIGHT CLASS B SIGN MOUNTING HEIGHT 4 FEET MOUNTING HEIGHT 4 FEET
6	W5-56 (2S)		18	X	18		2.250			1			
7	W5-56 (2S)		18	X	18		2.250			1			
8	W5-56 (2S)		18	X	18		2.250			1			
8A	R2-1							1	1				
9	W5-52R (2S)		12	X	36		3.000			1			
10	W5-52L (2S)	12	X	36		3.000			1				
11	W5-52R (2S)		12	X	36		3.000			1			MOUNTING HEIGHT 4 FEET
12	W5-52L (2S)		12	X	36		3.000			1			MOUNTING HEIGHT 4 FEET
13	W5-52L (2S)		12	X	36		3.000	1	1	1			SHEET 3 OF 9; MOUNTING HEIGHT 4 FEET
14	W5-52R (2S)		12	X	36		3.000	1	1	1			MOUNTING HEIGHT 4 FEET
15	W5-52L (2S)		12	X	36		3.000	1	1	1			MOUNTING HEIGHT 4 FEET
16	W5-52R (2S)		12	X	36		3.000	1	1	1			MOUNTING HEIGHT 4 FEET
17	W5-52R (2S)		12	X	36		3.000			1			SHEET 9 OF 9; MOUNTING HEIGHT 4 FEET
18	W5-52L (2S)		12	X	36		3.000			1			MOUNTING HEIGHT 4 FEET
19	W5-52R (2S)		12	X	36		3.000			1			MOUNTING HEIGHT 4 FEET
20	W5-52L (2S)	SPEED LIMIT 45 WEST WIS 20	12	X	36		3.000			1			MOUNTING HEIGHT 4 FEET
21	W6-1								1	1	1		SHEET 8 OF 9
22	W3-5								1	1	1		SHEET 9 OF 9
23	J4-1								1	1	1		
		UNDISTRIBUTED				10.000				1			
TOTALS						10.000	49.000	10	15	20	3		

FIELD OFFICE TYPE C

642.5201 FIELD OFFICE TYPE C	
LOCATION	EACH
PROJECT 3833-03-73	1
PROJECT 3833-03-73 TOTAL	1

SAWCUTS

		690.0150 SAWING ASPHALT	690.0250 SAWING CONCRETE
STA	LOCATION	LF	LF
1+57	OLD YORKVILLE ROAD	24	--
120+79 TO 122+00	STH 20	265	--
124+00	STH 20	30	--
135+81	STH 20	30	--
139+40 TO 140+53	STH 20	170	--
210+63 TO 213+00	STH 20	--	440
216+72	STH 20	--	41
PROJECT 3833-03-73 TOTAL		519	481

SURVEY PROJECT

SPV.0105.01 SURVEY PROJECT	
LOCATION	LS
PROJECT 3833-03-73	1
PROJECT 3833-03-73 TOTAL	1

TRAFFIC CONTROL ITEMS

		643.0420 TRAFFIC CONTROL BARRICADES		643.0715 TRAFFIC CONTROL WARNING LIGHTS		643.0900 TRAFFIC CONTROL SIGNS		643.0910 TRAFFIC CONTROL COVERING SIGNS		643.0920 TRAFFIC CONTROL COVERING SIGNS		643.1050 TRAFFIC CONTROL SIGNS PCMS		643.5000 TRAFFIC CONTROL	
		TYPE III		TYPE C				TYPE I		TYPE II					
DURATION		EACH**	DAY	EACH**	DAY	EACH**	DAY	EACH^	EACH^	EACH**	DAY	EACH**	DAY	EACH	
DETOUR ROUTE		122	4	488	8	976	199	24,278	2	6	2	244	--		
TRAFFIC CONTROL		122	48	5,856	96	11,712	30	3,660	--	--	--	--	--		
UNDISTRIBUTED		--	--	--	--	--	--	--	--	10	4	28	1		
PROJECT 3833-03-73 TOTAL				6,344		12,688		27,938	2	16		272	1		

** FOR INFORMATION ONLY
^ ONE CYCLE

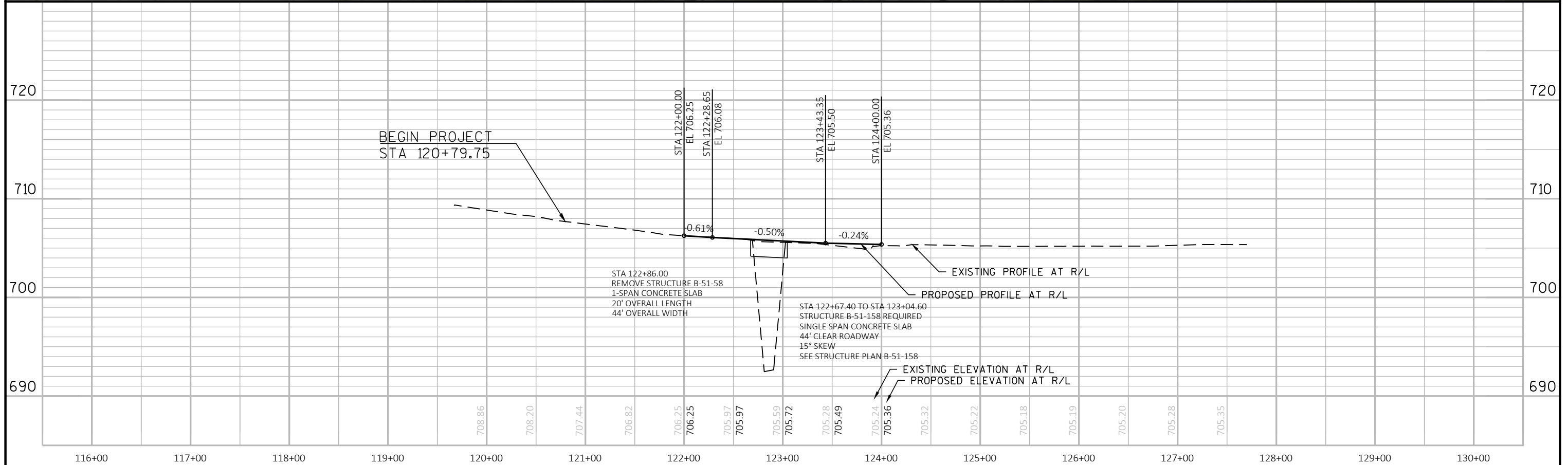
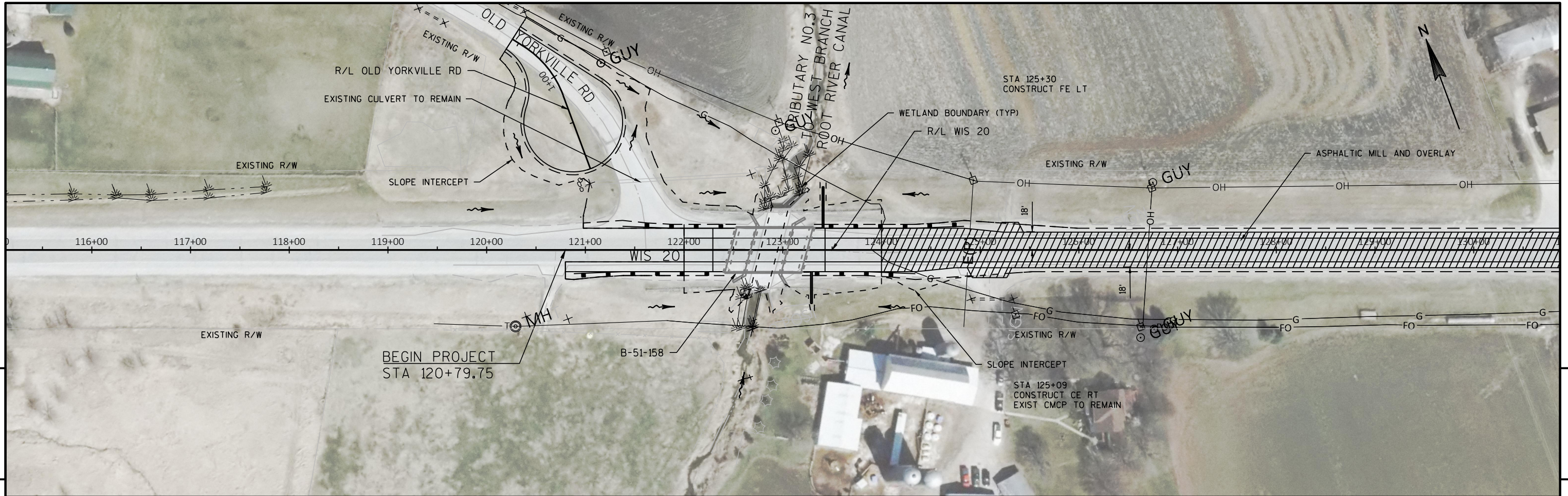
PAVEMENT CLEANUP

SPV.0075.01 PAVEMENT CLEANUP PROJECT 3833-03-73	
LOCATION	HR
PROJECT 3833-03-73	25
PROJECT 3833-03-73 TOTAL	25

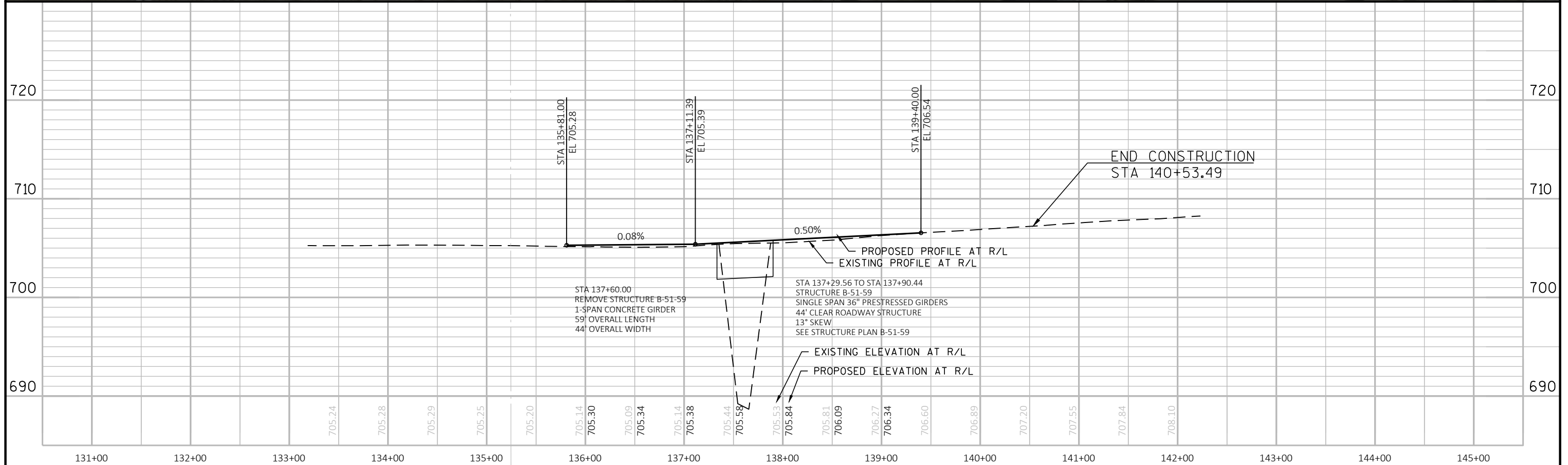
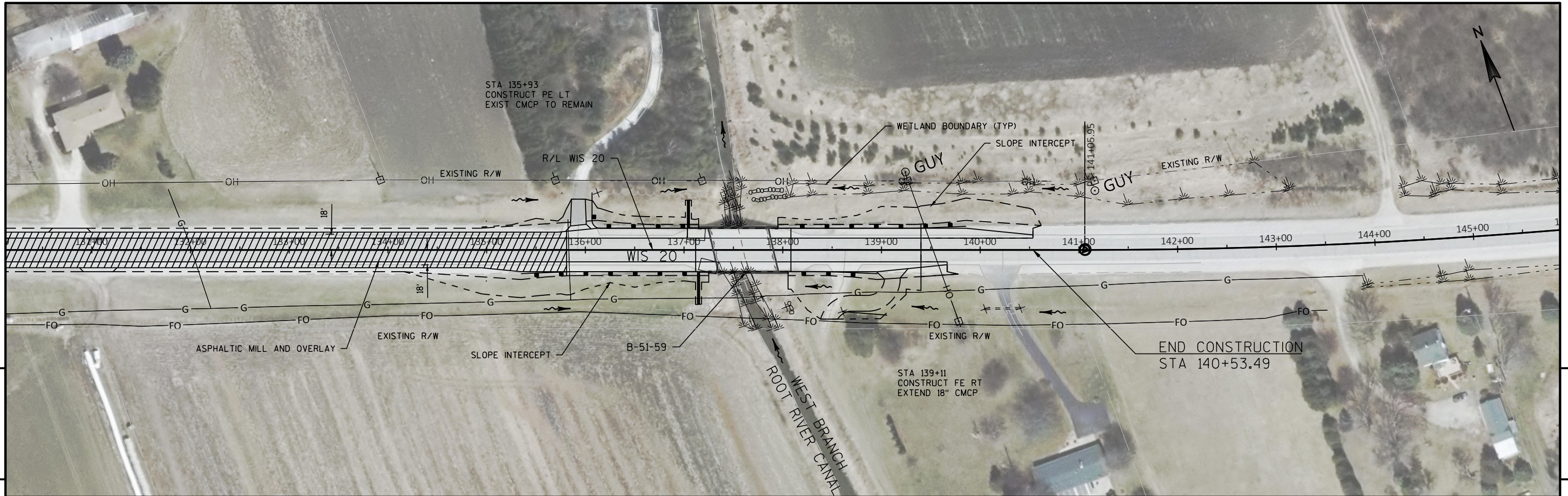
MARKING LINES

		646.1020 MARKING LINE EPOXY 4-INCH			646.1040 MARKING LINE GROOVED WET REF EPOXY 4-INCH		646.3020 MARKING LINE EPOXY 8-INCH	
		WHITE DASHED	YELLOW SOLID	YELLOW DASHED	WHITE SOLID	WHITE SOLID	WHITE SOLID	
STA	OFFSET LOCATION	LF	LF	LF	LF	LF	LF	
120+25 TO 140+54	STH 20	--	--	435	3,915	--		
210+64 TO 216+72	STH 20	85	372	93	1,266	219		
SUBTOTAL		85	372	528	5,181	219		
PROJECT 3833-03-73 TOTAL			985		5,181	219		

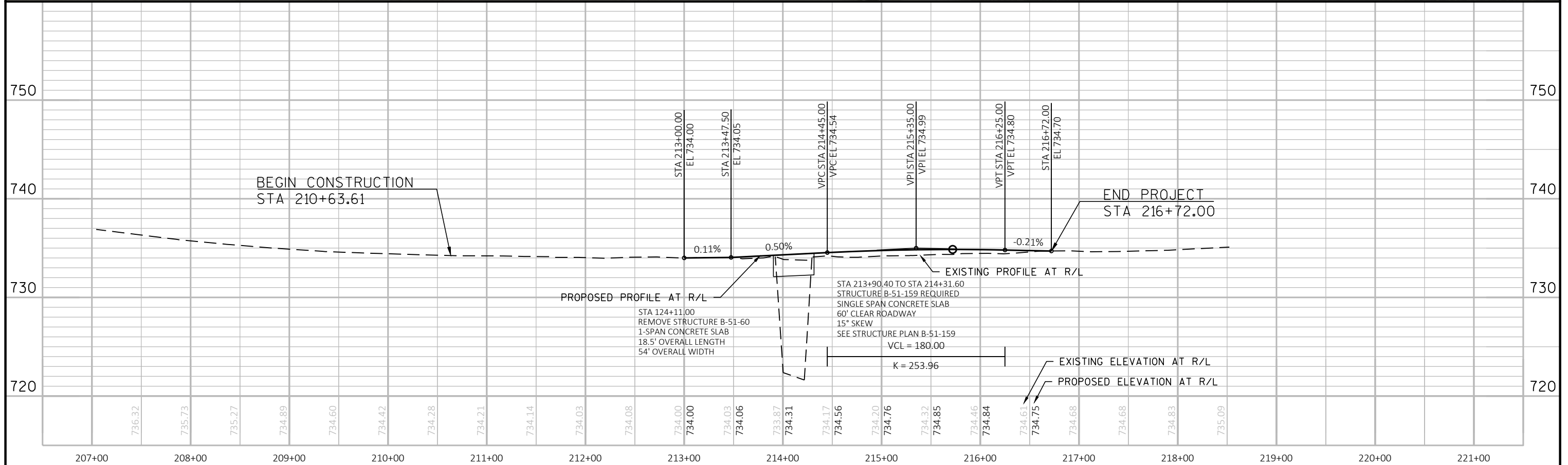
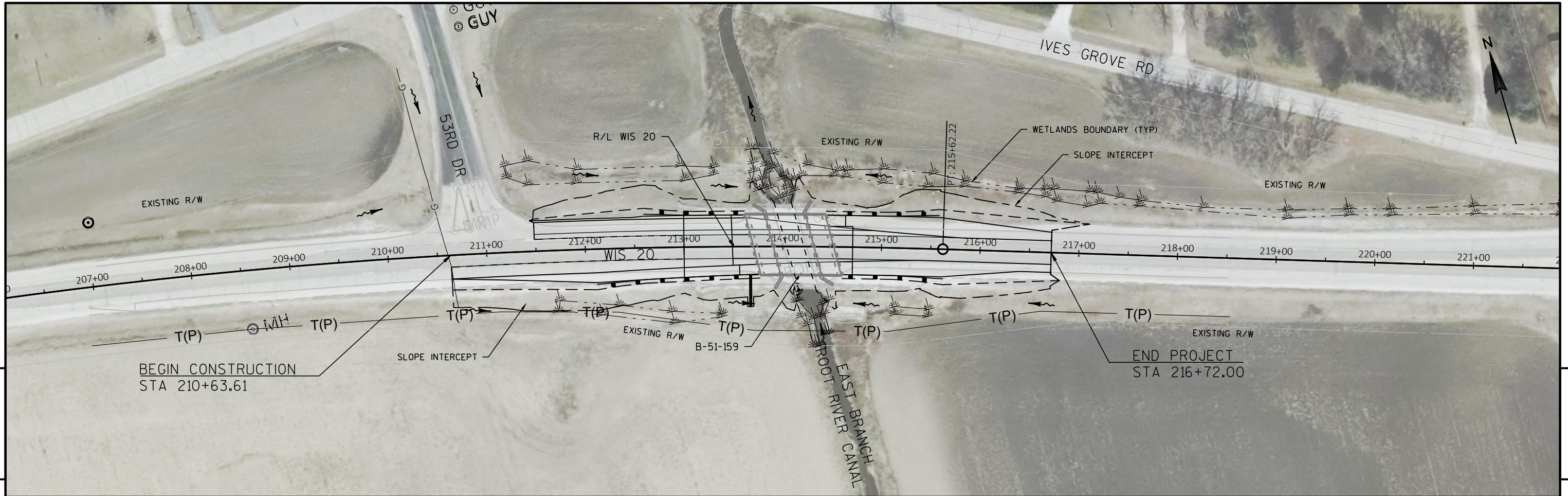
ALL ITEMS CATEGORY 1000 UNLESS OTHERWISE NOTED



PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	PLAN AND PROFILE: B-51-158 APPROACHES	SHEET	E
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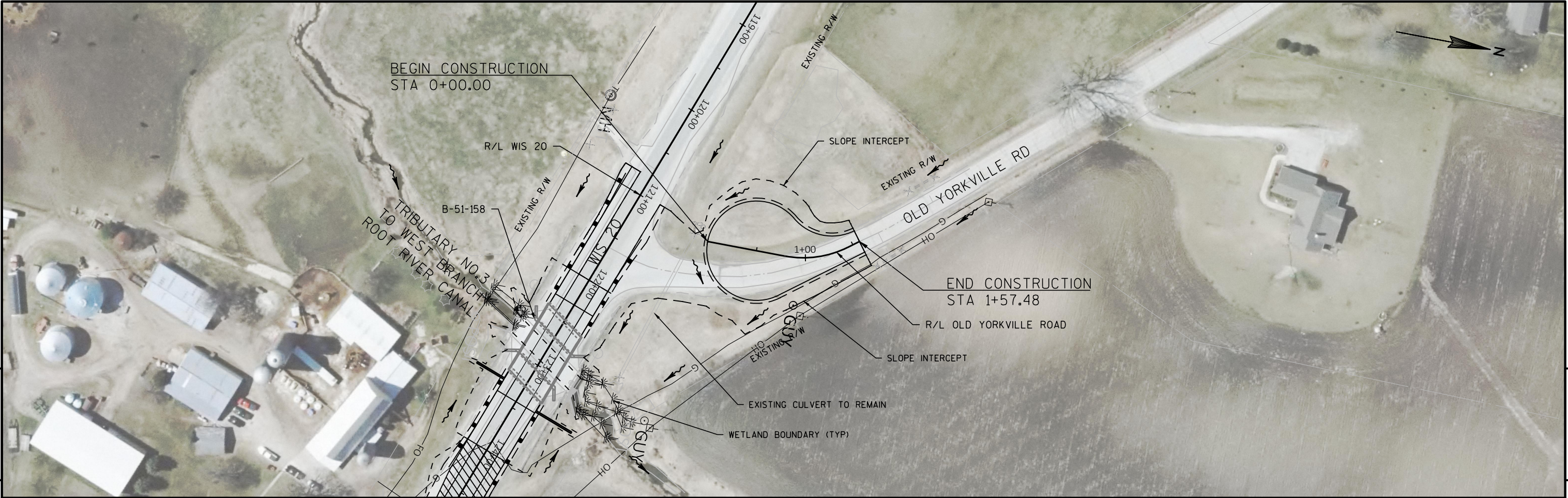


PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	PLAN AND PROFILE: B-51-59 APPROACHES	SHEET	E
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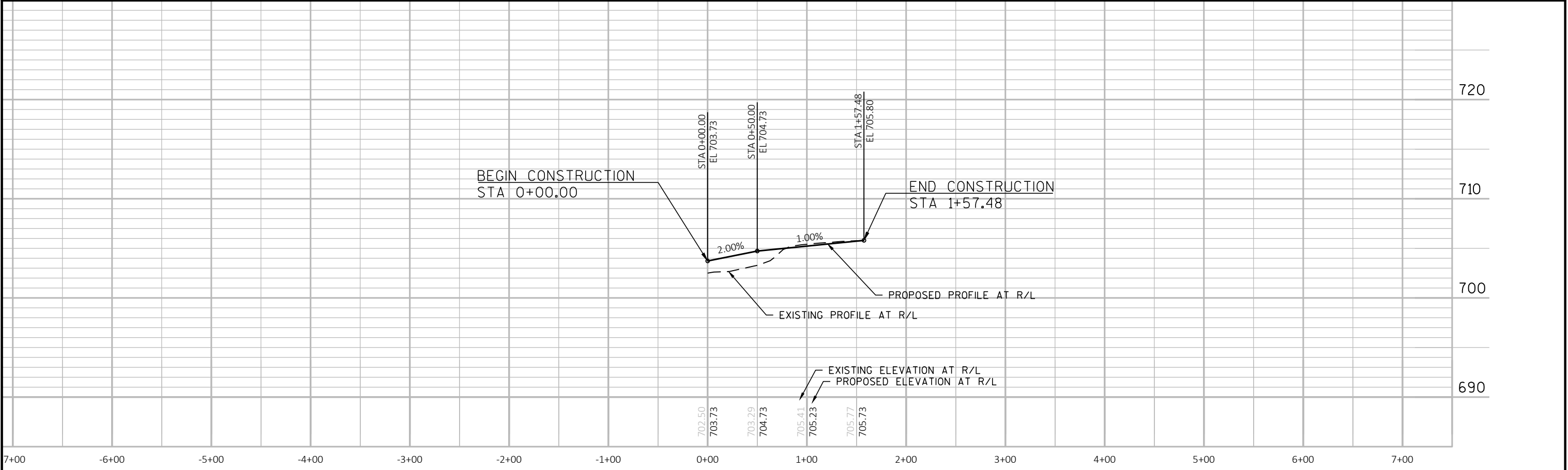


PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	PLAN AND PROFILE: B-51-159 APPROACHES	SHEET	E
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5



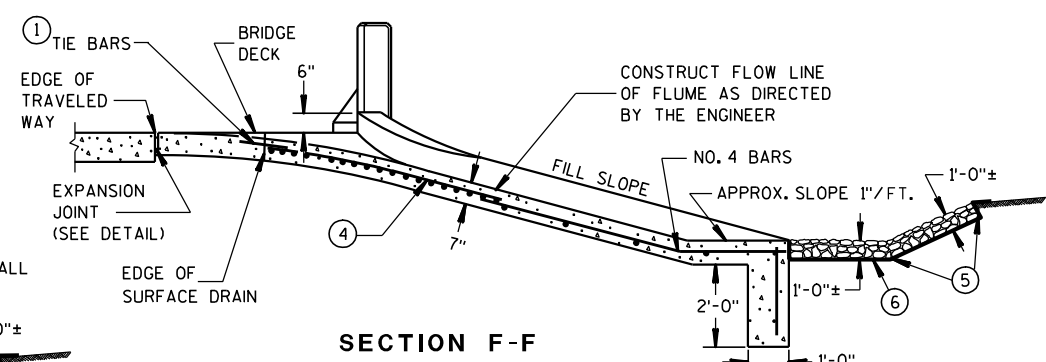
5



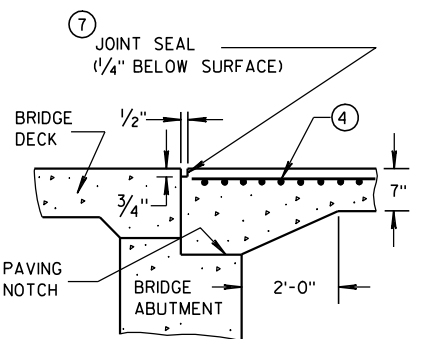
PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	PLAN AND PROFILE: OLD YORKVILLE ROAD	SHEET	E
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Standard Detail Drawing List

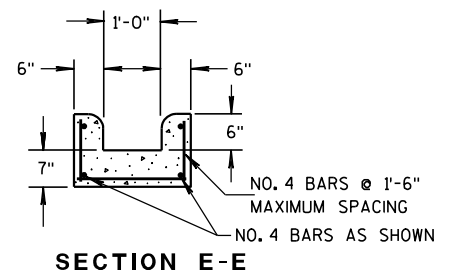
08D02-06	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D21-01	DRIVEWAYS WITHOUT CURB & GUTTER
08D22-01	DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E11-02	TURBIDITY BARRIER
08E14-01	TRACKING PAD
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
12A03-10	NAME PLATE (STRUCTURES)
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13B02-09B	STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C19-01	HMA LONGITUDINAL JOINTS
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B53-01A	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01B	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01C	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01D	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01E	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01F	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01G	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01H	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01I	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
15C02-07A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-07B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-07C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C03-05	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C08-19A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C26-04	END-OF-ROADWAY SIGNING
15C35-03A	PAVEMENT MARKING (INTERSECTIONS)
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



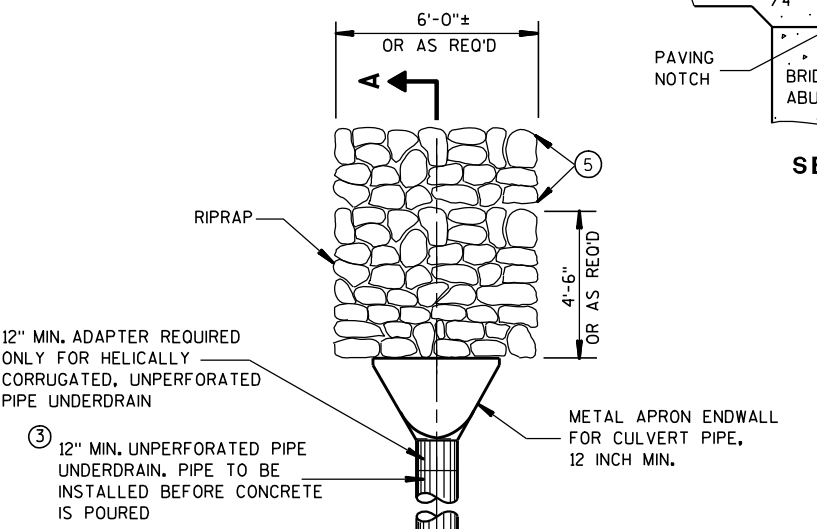
SECTION F-F



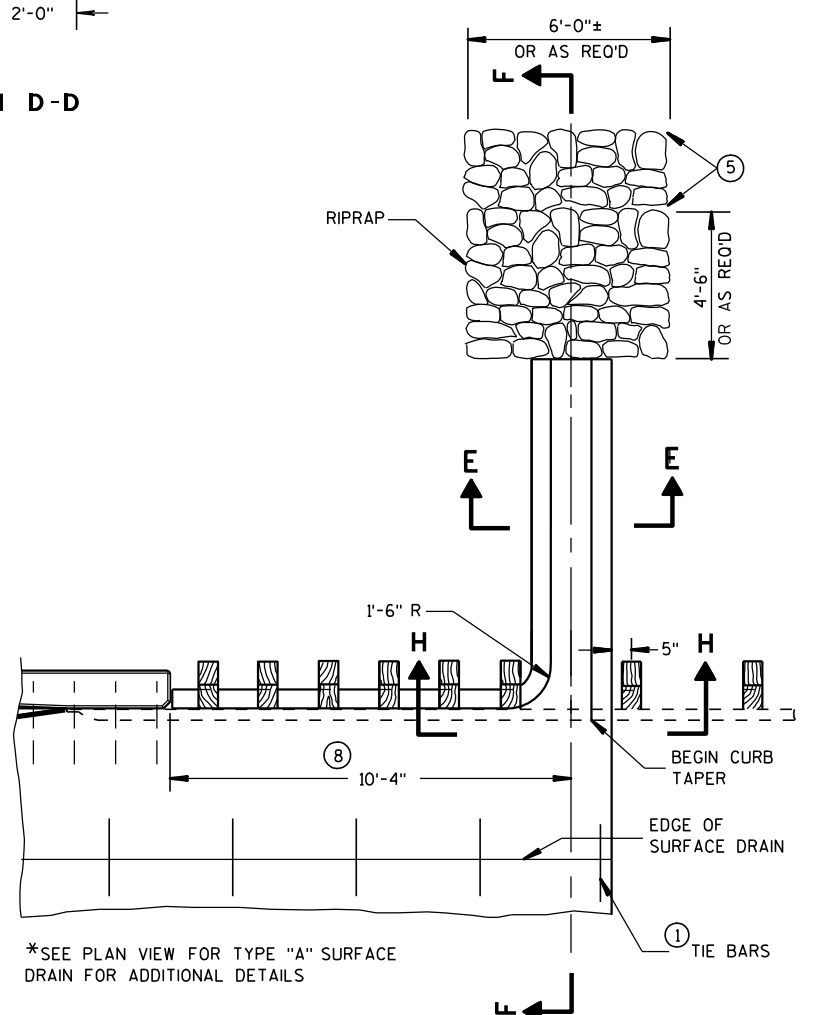
SECTION D-D



SECTION E-E

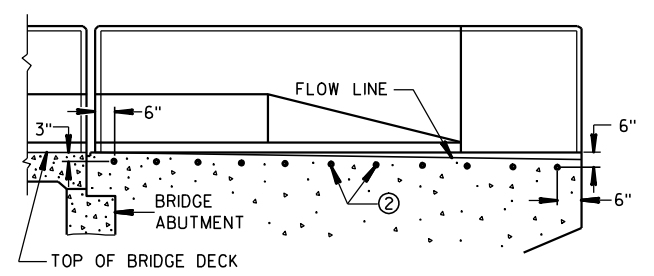


SECTION D-D

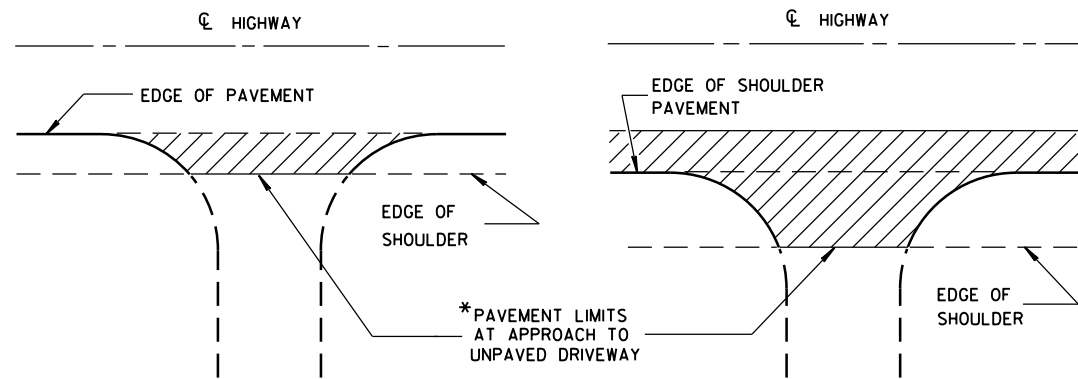


* PARTIAL PLAN VIEW
SURFACE DRAIN WITHOUT PIPE
TYPE "B"

⑧ THIS DIMENSION MAY VARY DEPENDING ON THE SPACING OF POSTS FOR THE STEEL PLATE BEAM GUARD. THE TYPICAL LOCATION FOR THE SURFACE DRAIN IS WHERE THE POST SPACING WIDENS TO 3'-1½".



ROADWAY STANDARDS DEVELOPMENT
ENGINEER

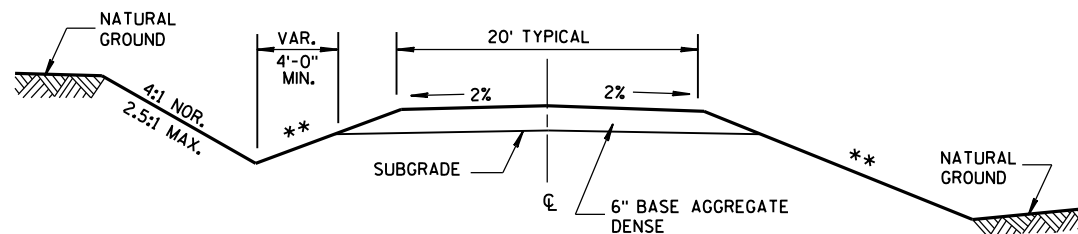


*WHERE DRIVEWAY IS PAVED, APPROACH PAVEMENT SHOULD BE EXTENDED TO MATCH DRIVEWAY PAVEMENT.

PLAN VIEW
(UNPAVED SHOULDER ON HIGHWAY)

PLAN VIEW
(PAVED SHOULDER ON HIGHWAY)

RURAL DRIVEWAY INTERSECTION DETAIL
(NO CURB & GUTTER OR SIDEWALK)



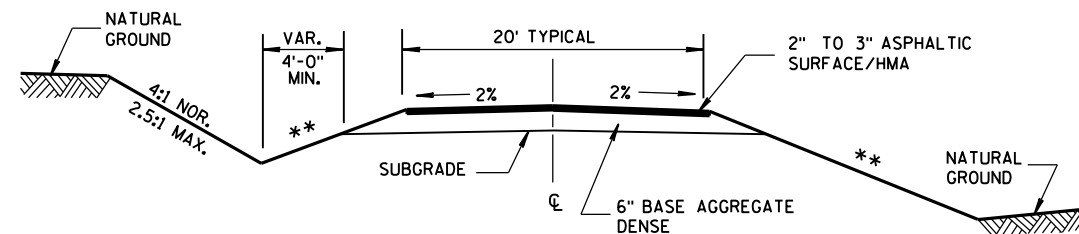
IN CUT

IN FILL

**TYPICAL CROSS SECTION FOR
PRIVATE DRIVE OR FIELD ENTRANCE
AGGREGATE SURFACE**

** SLOPE CAN VARY WITH SPEED. SEE 11-45-2.6.2.

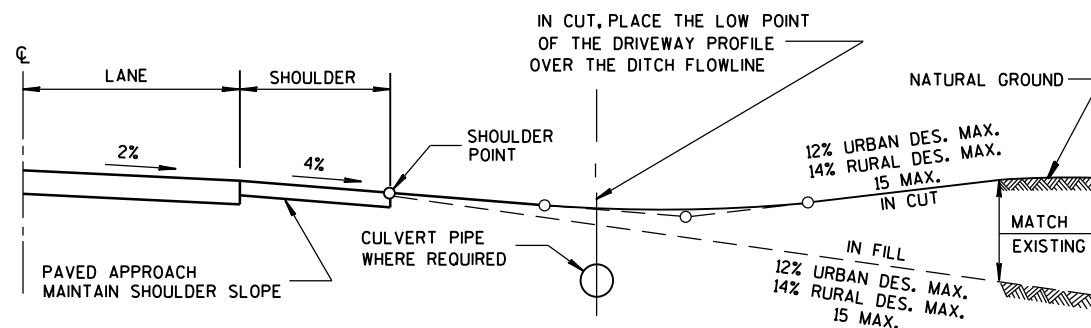
POSTED SPEED MPH	MAX. SLOPE
<35	4:1
≥35 TO <60	6:1
≥60	10:1



IN CUT

IN FILL

**TYPICAL CROSS SECTION FOR
PRIVATE DRIVE OR FIELD ENTRANCE
ASPHALTIC SURFACE**

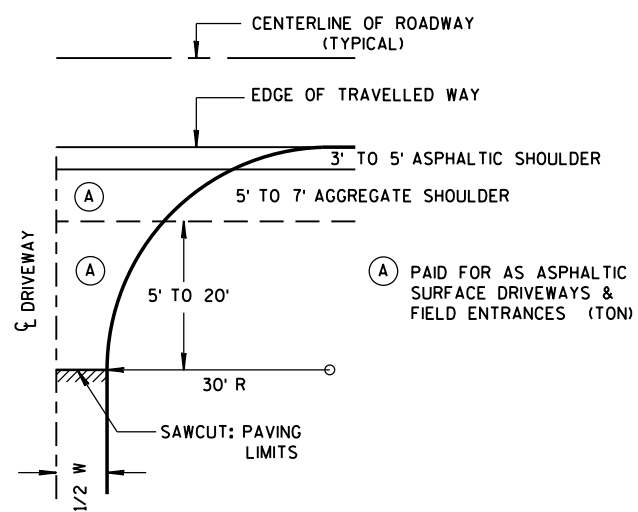


TYPICAL DRIVEWAY PROFILES

**DRIVEWAYS
WITHOUT CURB & GUTTER**

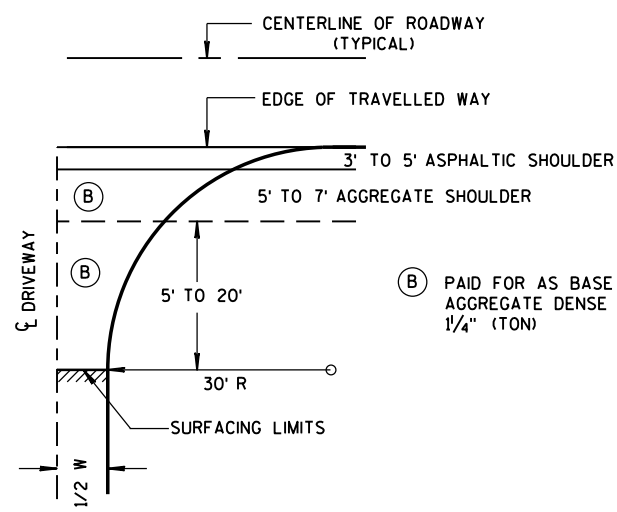
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December, 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR

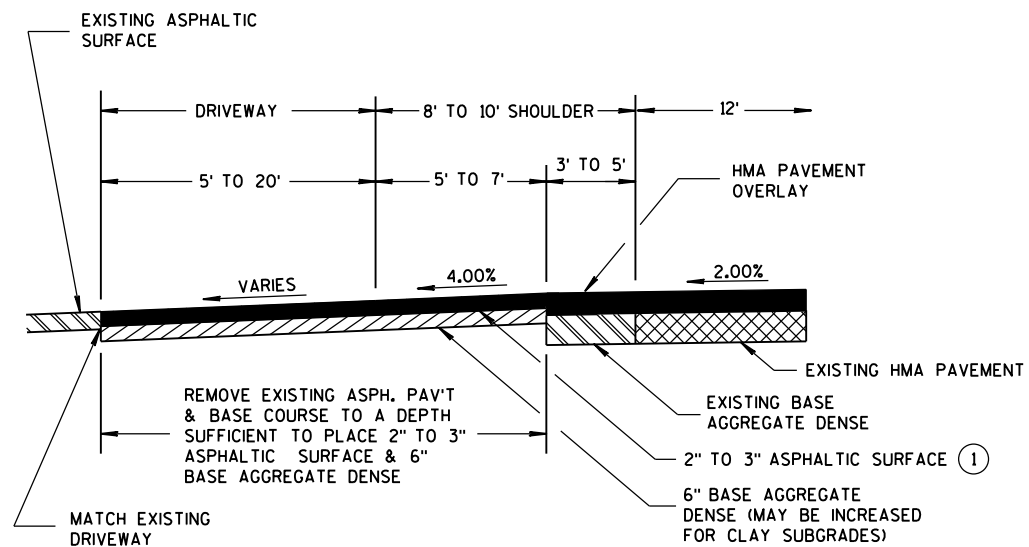


PLAN VIEW
HALF SECTION

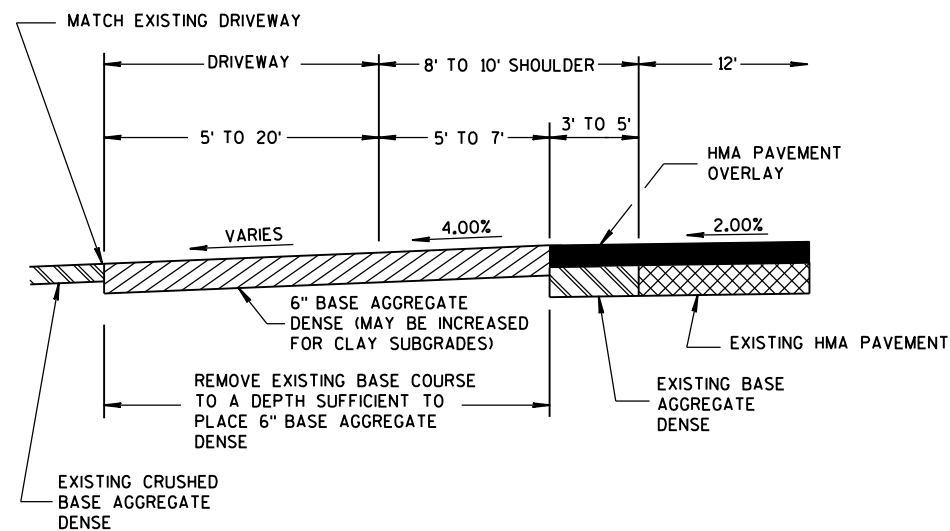
W MIN. = 16'
W MAX. = 24'



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

GENERAL NOTES

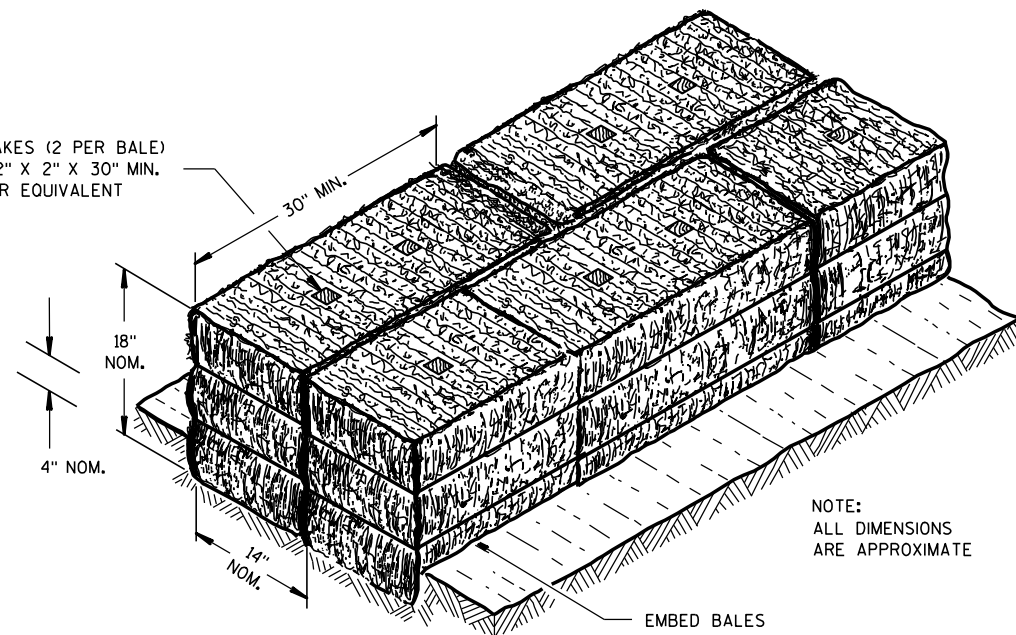
- ① DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.

DRIVEWAYS WITHOUT
CURB & GUTTER
RESURFACING PROJECTS RURAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

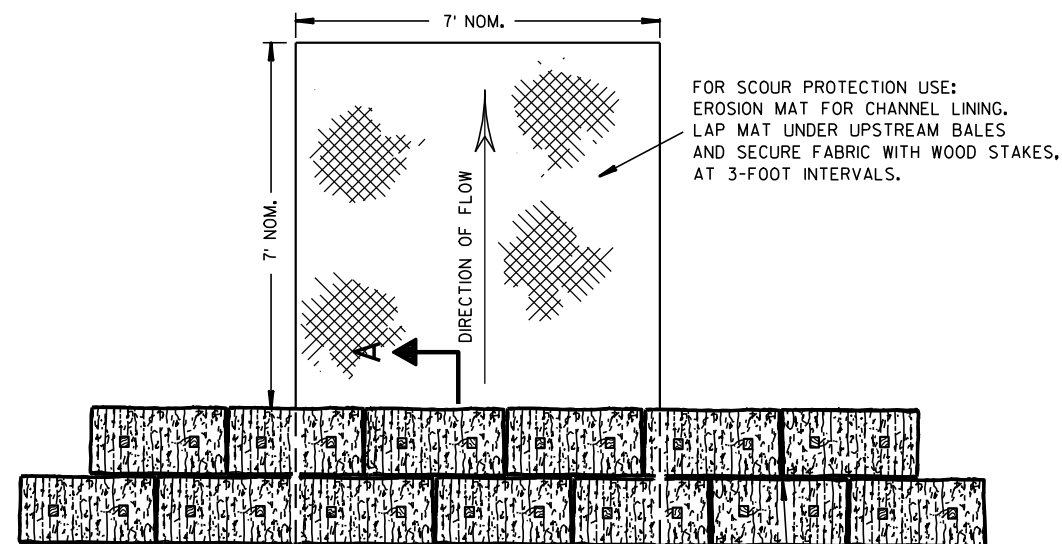
APPROVED
December, 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR

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



SECTION A-A

NOTE:
ALL DIMENSIONS
ARE APPROXIMATE

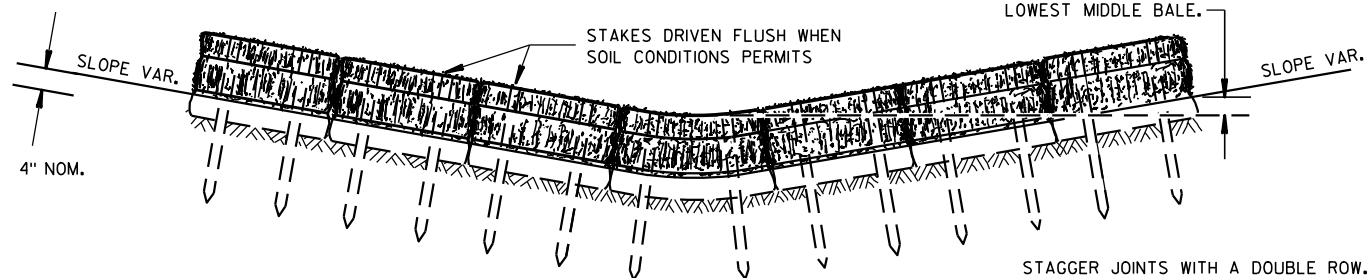


PLAN VIEW

FOR SCOUR PROTECTION USE:
EROSION MAT FOR CHANNEL LINING.
LAP MAT UNDER UPSTREAM BALES
AND SECURE FABRIC WITH WOOD STAKES,
AT 3-FOOT INTERVALS.

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

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



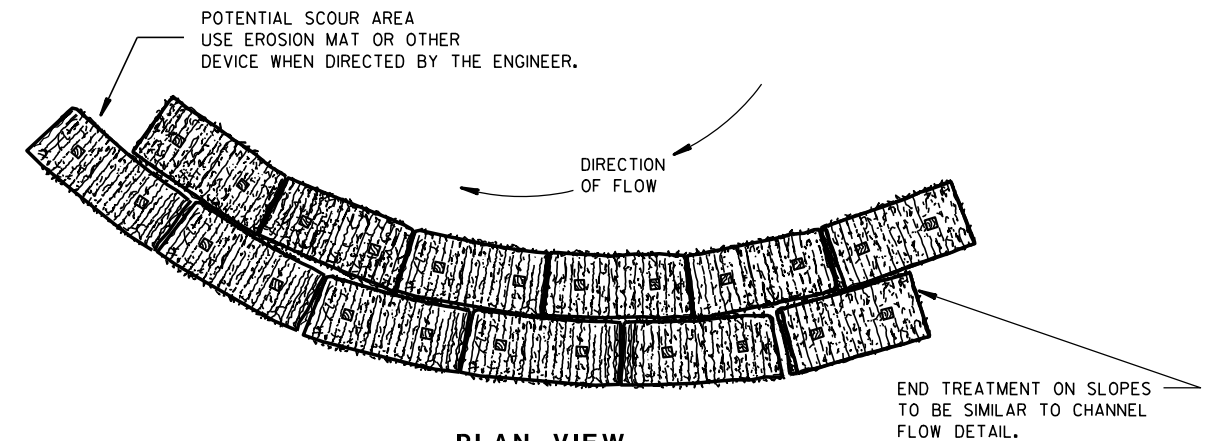
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

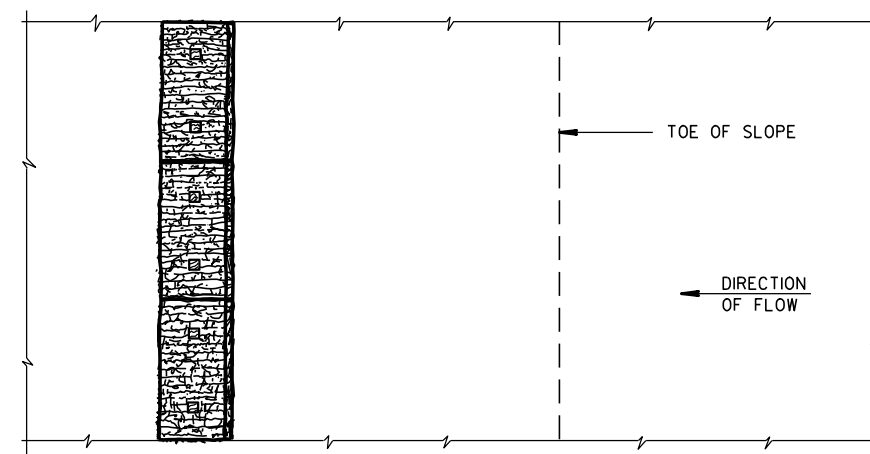
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- 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.

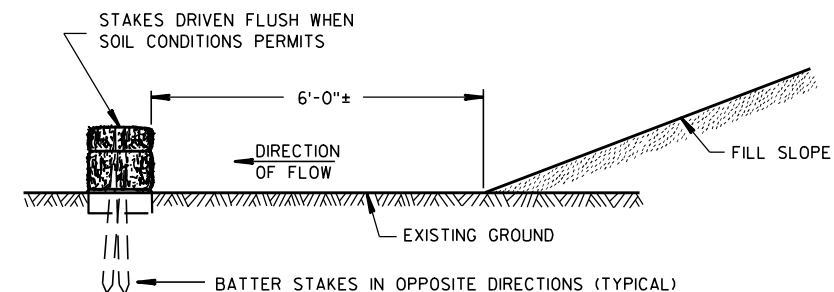


PLAN VIEW

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

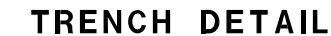
6/04/02
DATE

FHWA

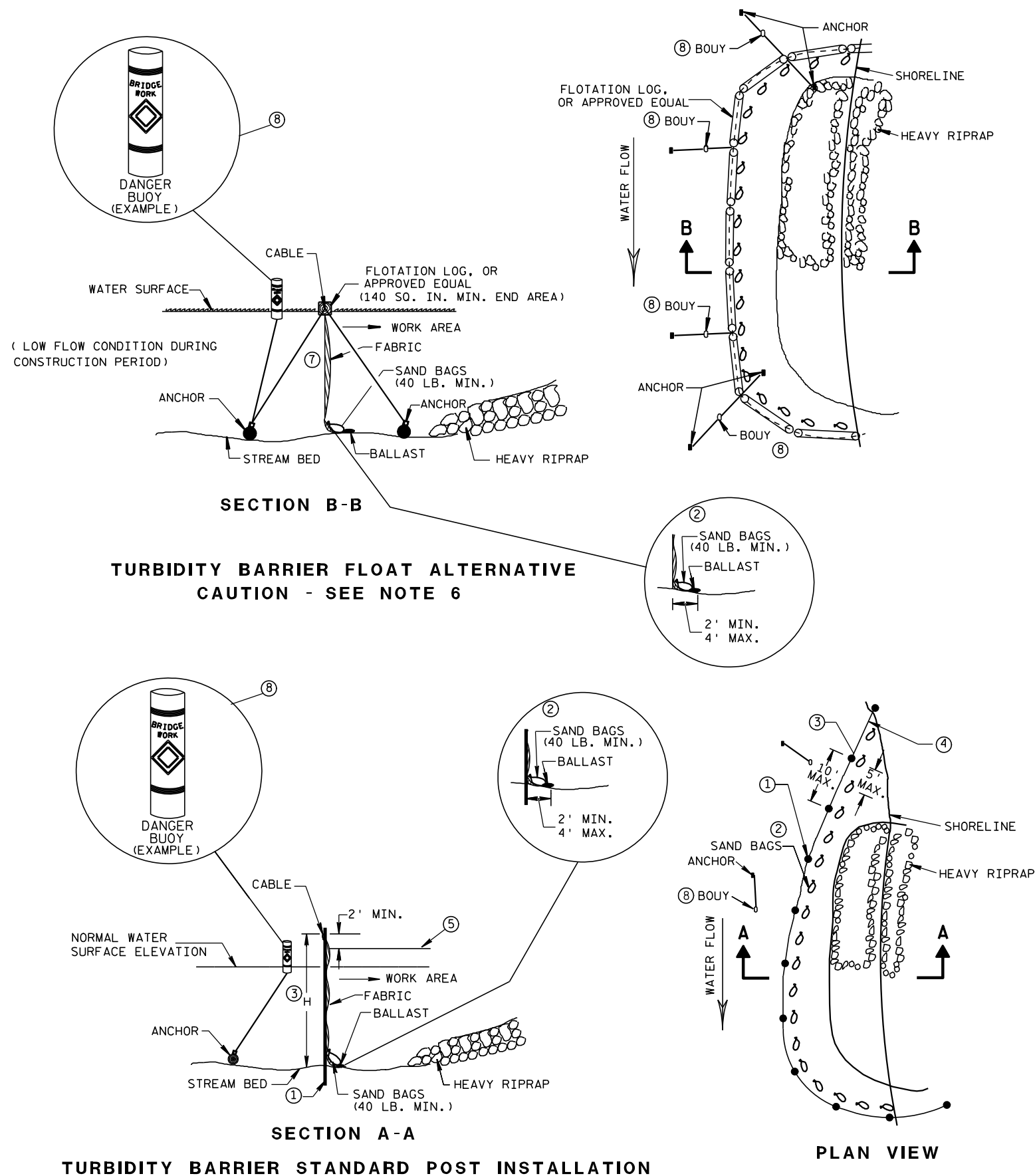
/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



- 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 1½" X 1½" 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.



SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED <u>4-29-05</u> DATE	<u>/S/ Beth Cannestra</u> CHIEF ROADWAY DEVELOPMENT ENGINEER

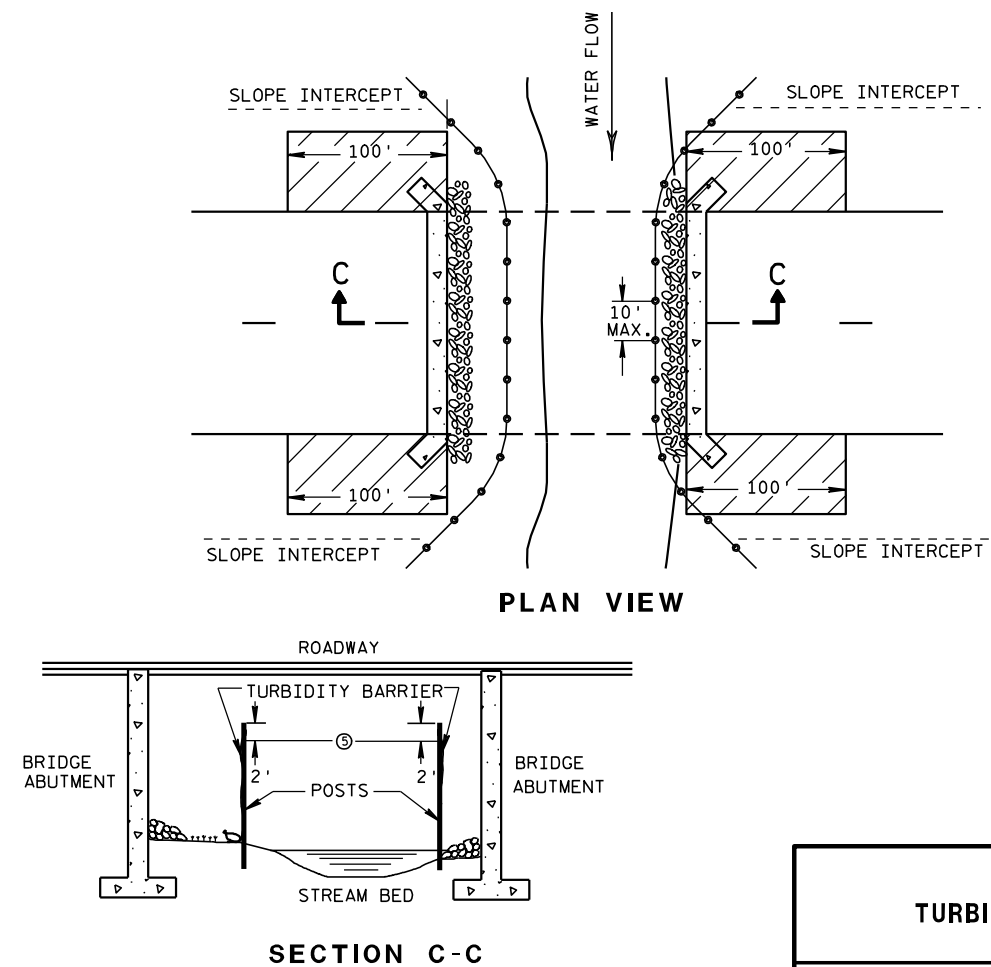


GENERAL NOTES

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.

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

- ① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- ② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
- ③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.
- ④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
- ⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER IS GREATER.
- ⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.
- ⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- ⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

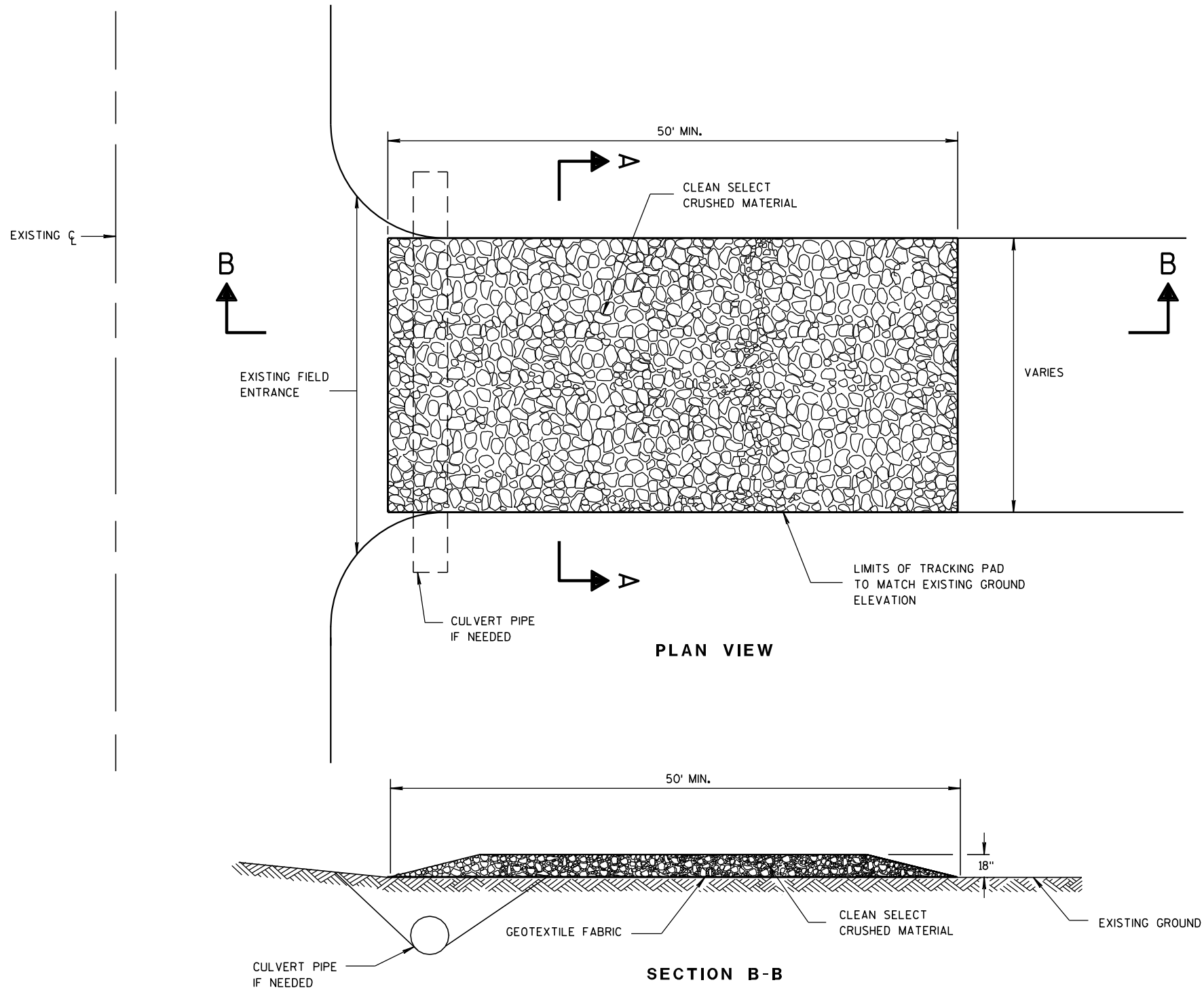
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02
DATE

FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



TRACKING PAD

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.

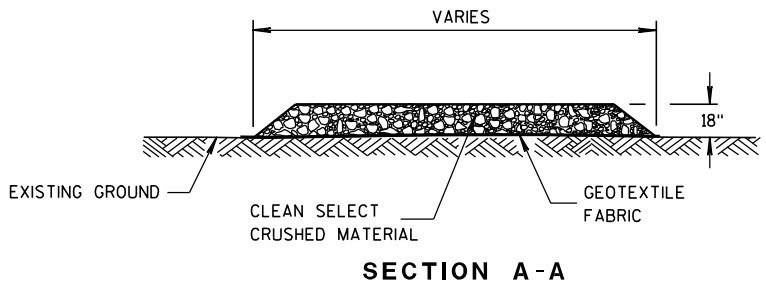
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

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.

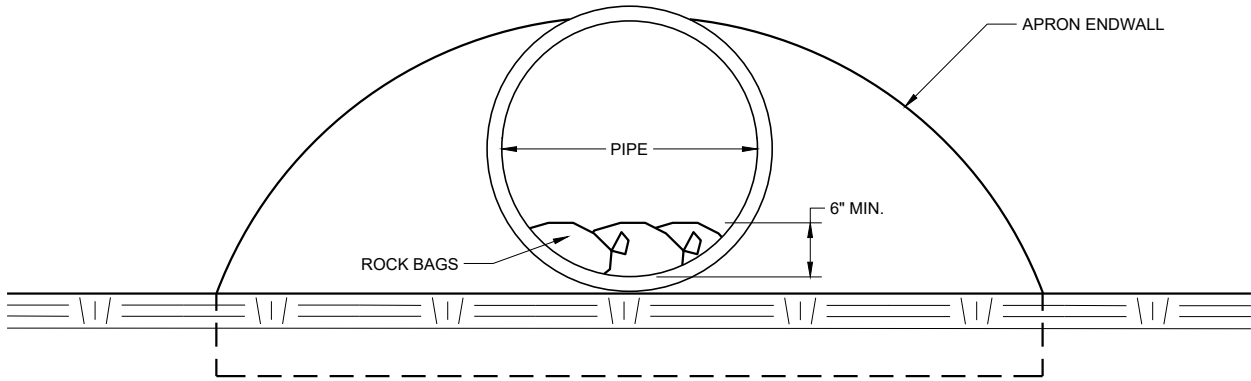
THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.



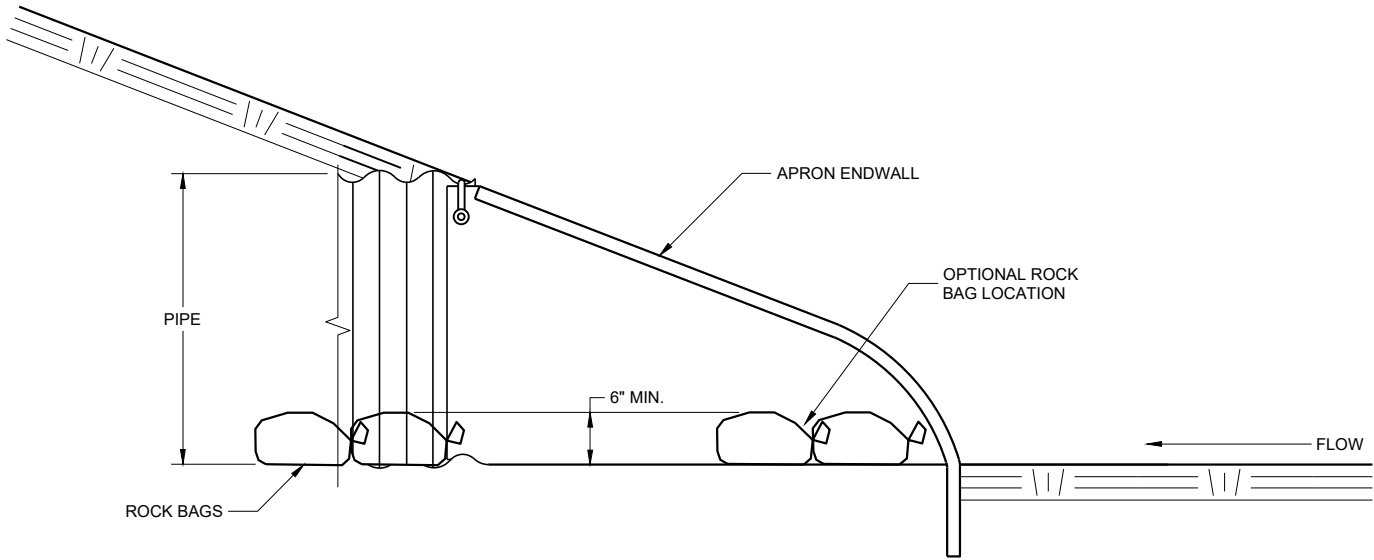
TRACKING PAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



END VIEW



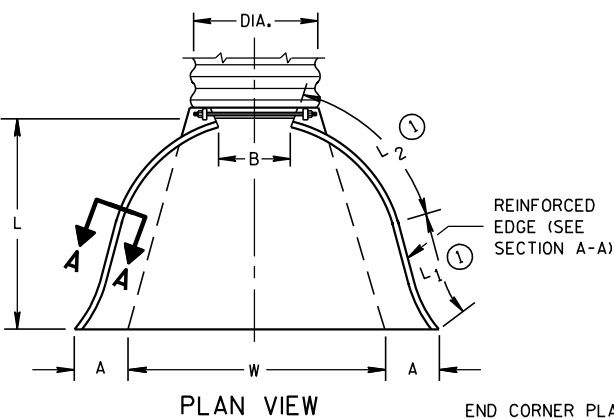
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Daniel Schave EROSION CONTROL ENGINEER
FHWA	

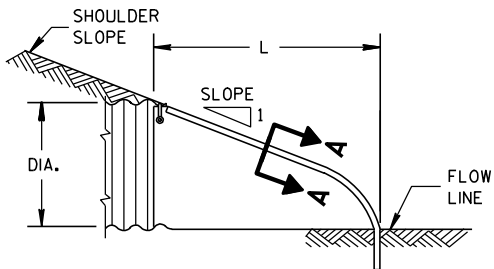
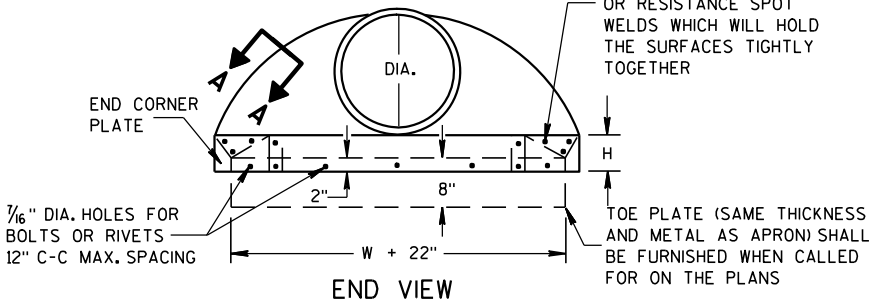
METAL APRON ENDWALLS											
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	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



END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER

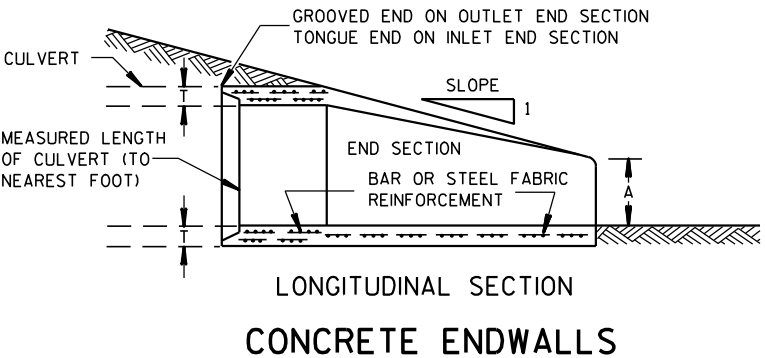
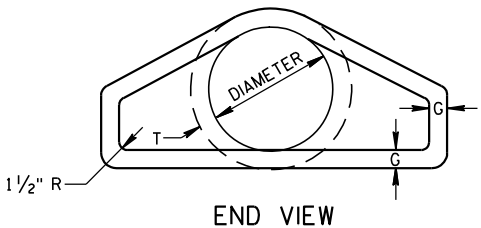
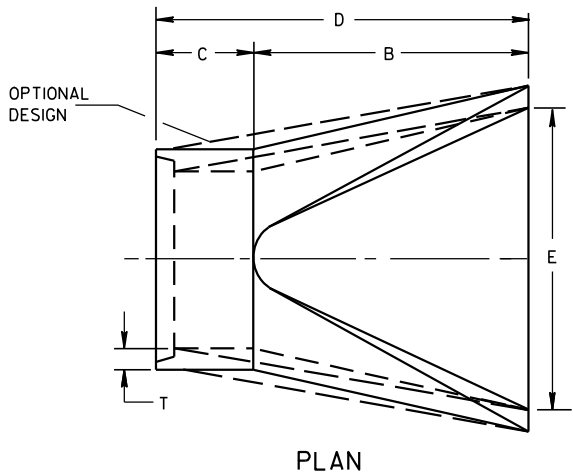
TOE PLATE (SAME THICKNESS AND METAL AS APRON) SHALL BE FURNISHED WHEN CALLED FOR ON THE PLANS



SIDE ELEVATION
METAL ENDWALLS

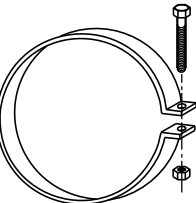
REINFORCED CONCRETE APRON ENDWALLS											
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE			
	T	A	B	C	D	E	G				
12	2	4	24	48 7/8	72 7/8	24	2	3 to 1			
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1			
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1			
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1			
24	3	9 1/2	43 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

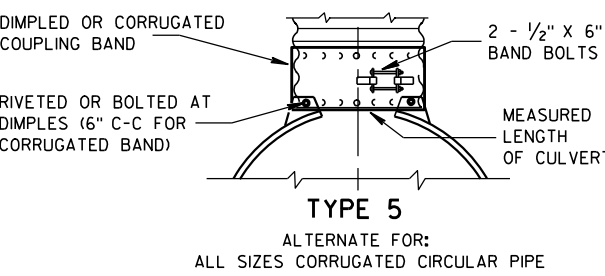
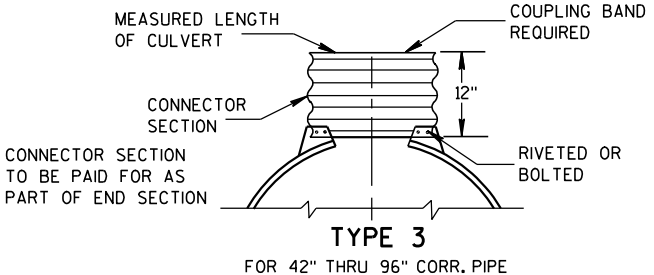
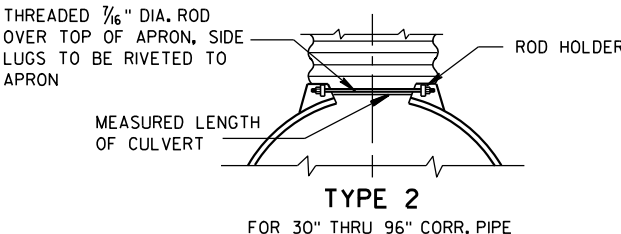
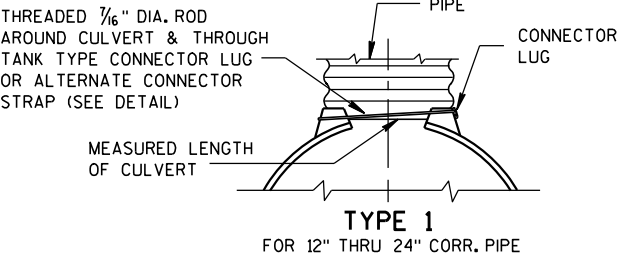


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



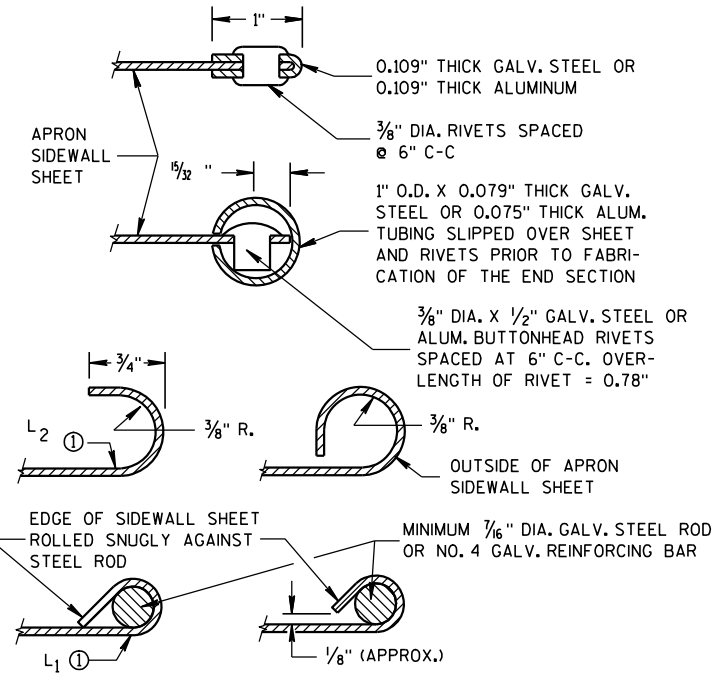
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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.

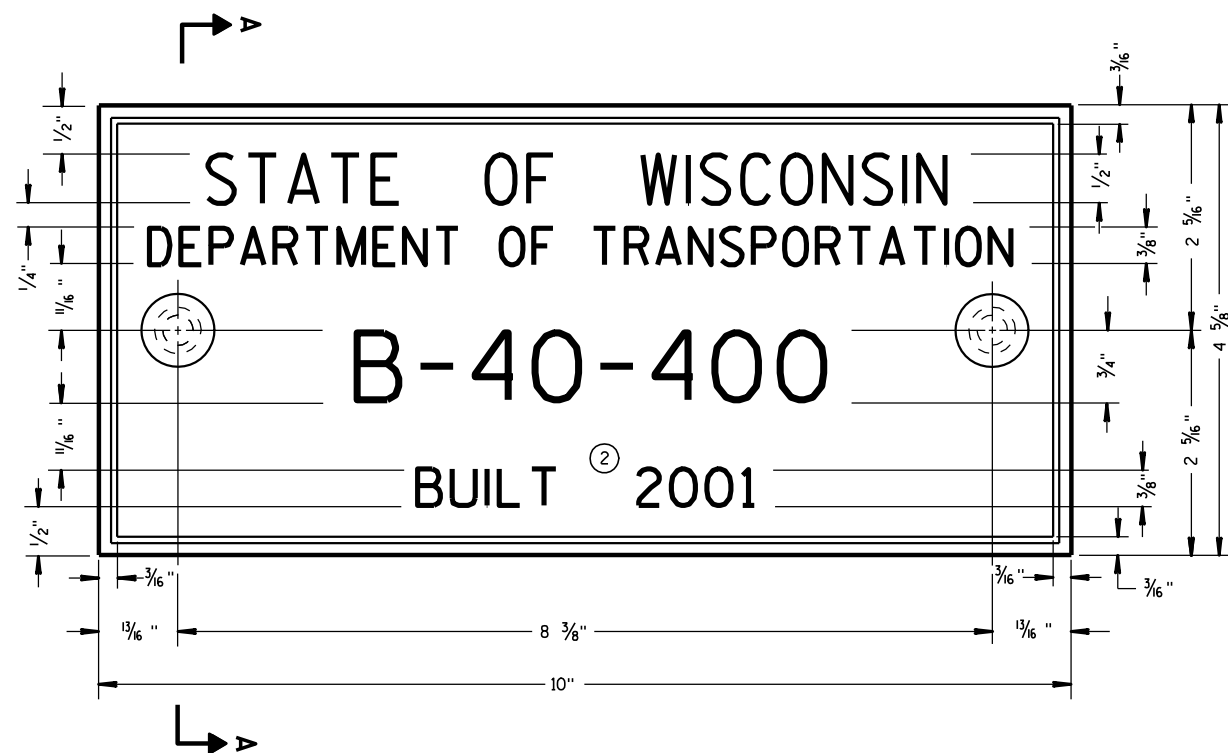
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

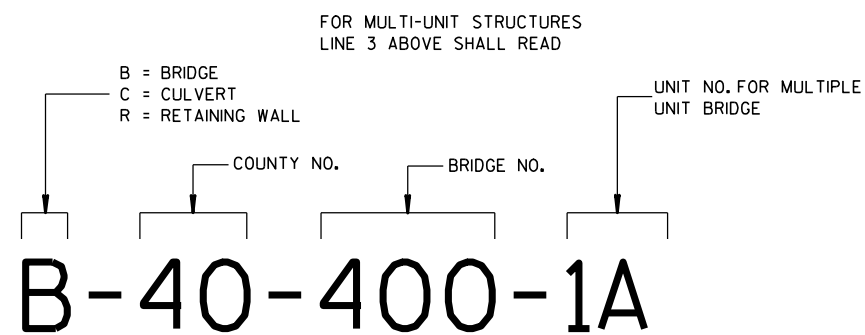
APRON ENDWALLS FOR
CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94
DATE
/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



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



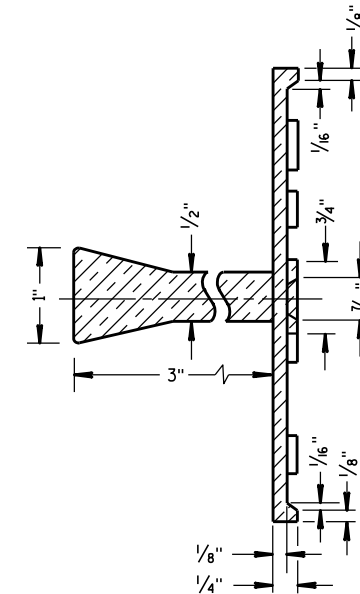
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

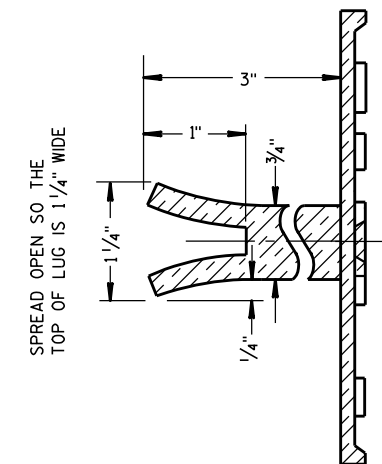
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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.

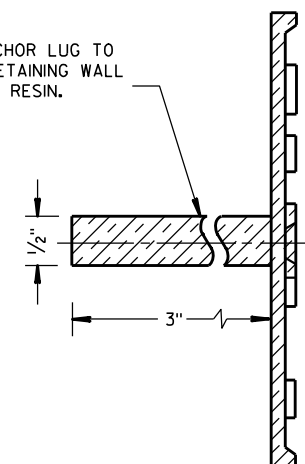


SECTION A-A



ALTERNATE LUG

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



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

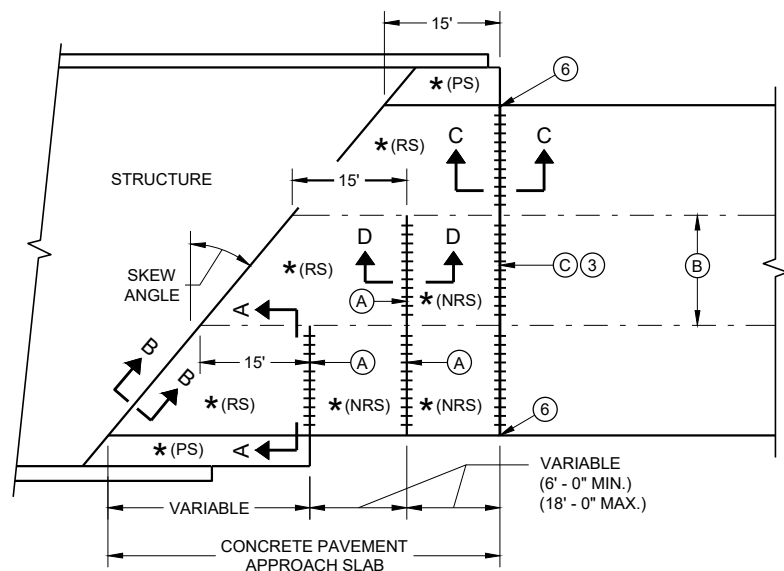
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

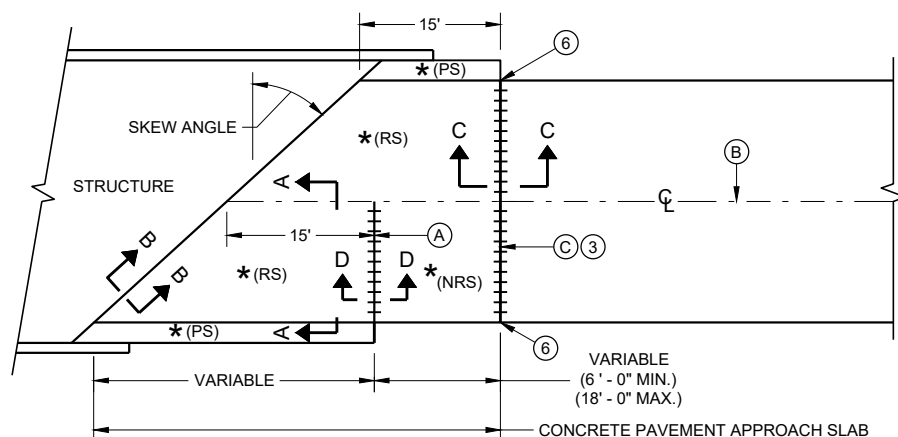
3/26/10
DATE

FHWA

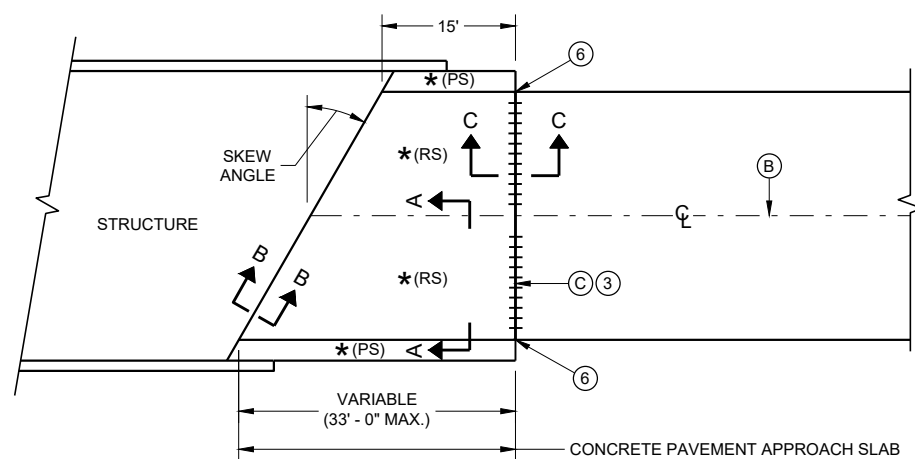
/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER



**SKewed APPROACH
(PAVEMENT MORE THAN TWO LANES)**



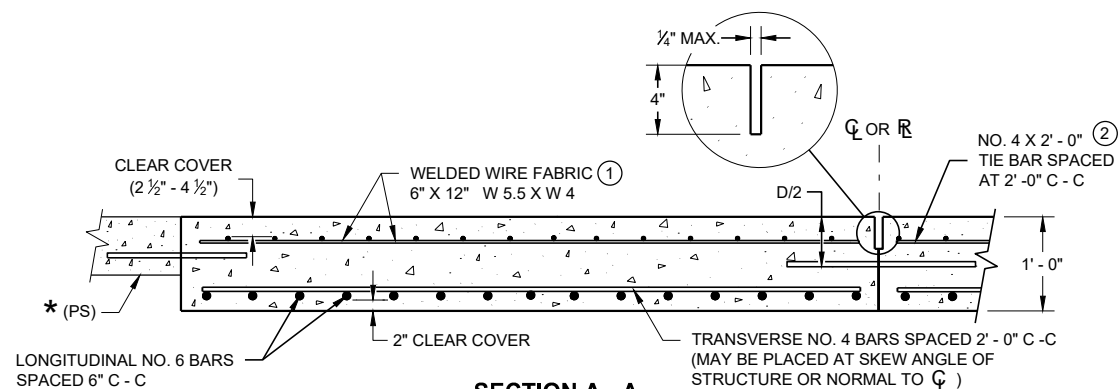
**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**



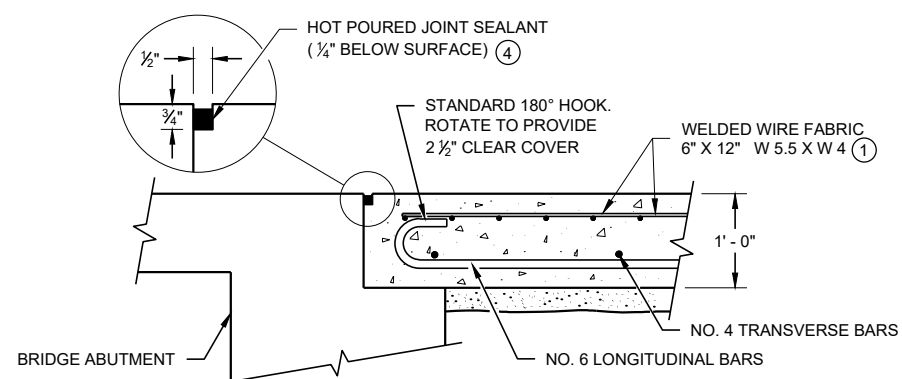
**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**

APPROACH SLAB AND ADJACENT PAVEMENT

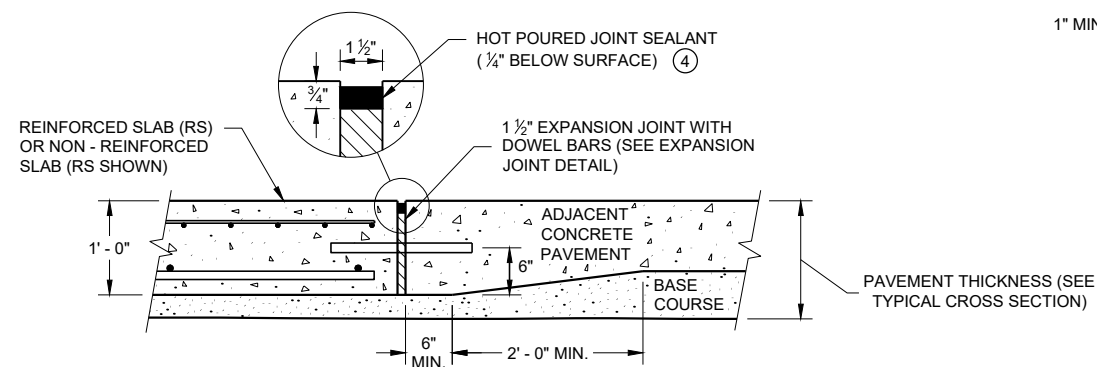
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



**SECTION B - B
BEND DETAIL
BOTTOM REINFORCEMENT**



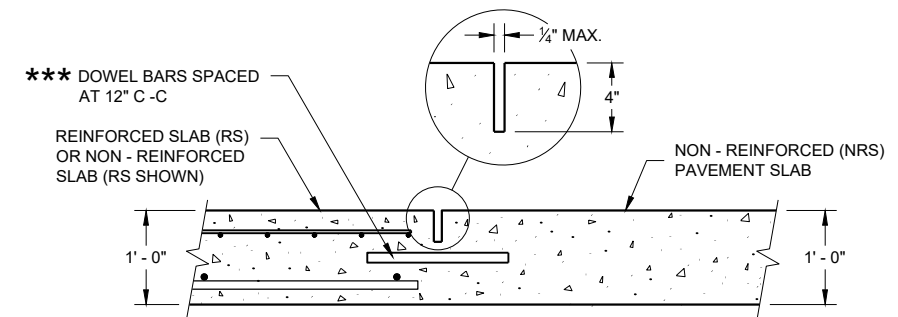
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

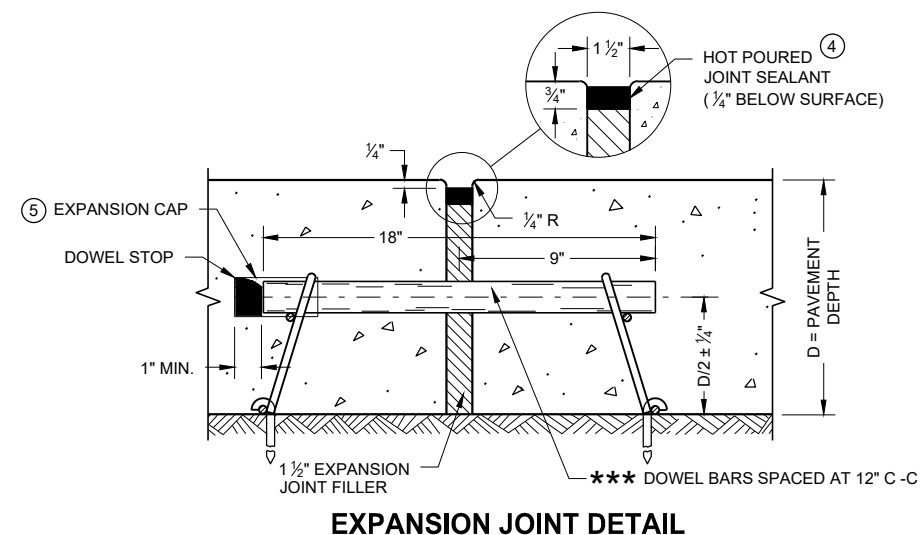
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

- ① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2' - 0" C - C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
- ② THE CONTRACTOR MAY OMIT THE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- ④ USE A JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM D6690.
- ⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.
- ⑥ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- (A) STANDARD CONTRACTION JOINT NORMAL TO $\overline{C}$ OR $\overline{R}$.
- (B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
- (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO $\overline{C}$ OR $\overline{R}$.



**SECTION D - D
CONTRACTION JOINT**



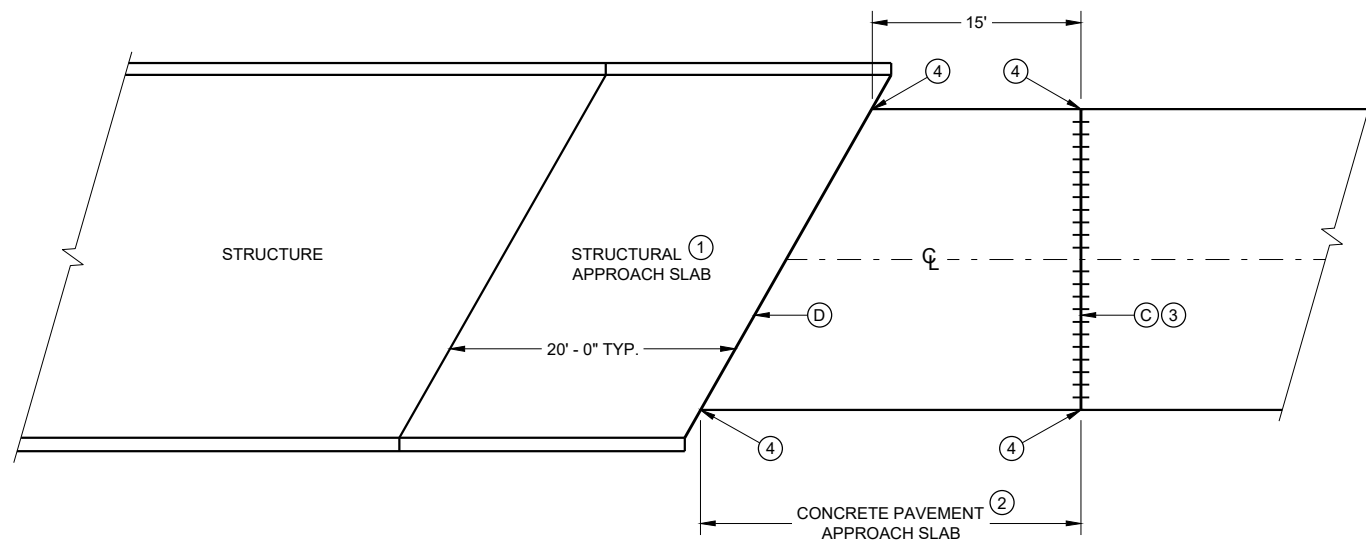
EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp P.E.
DATE PAVEMENT SUPERVISOR

FHWA

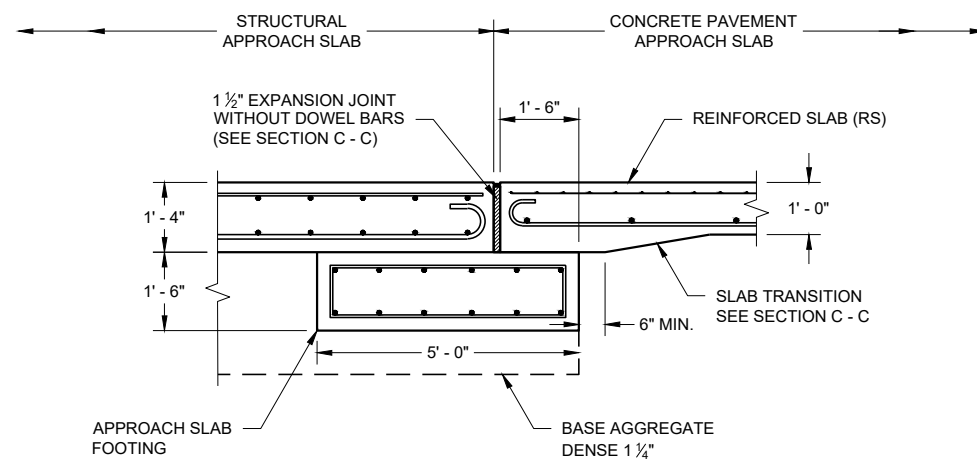


GENERAL NOTES

ALL PROJECTS THAT INVOLVE A STRUCTURAL APPROACH SLAB WILL ALSO HAVE A CONCRETE PAVEMENT APPROACH SLAB.

- ① SEE BRIDGE PLAN.
- ② CONFORM TO SDD 13B02 SHEET A FOR CONCRETE PAVEMENT APPROACH SLAB DETAILS
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- ④ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- Ⓒ 1 ½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO CL OR RL.
- Ⓓ 1 ½" EXPANSION JOINT (NO DOWELS)

BRIDGE APPROACHES



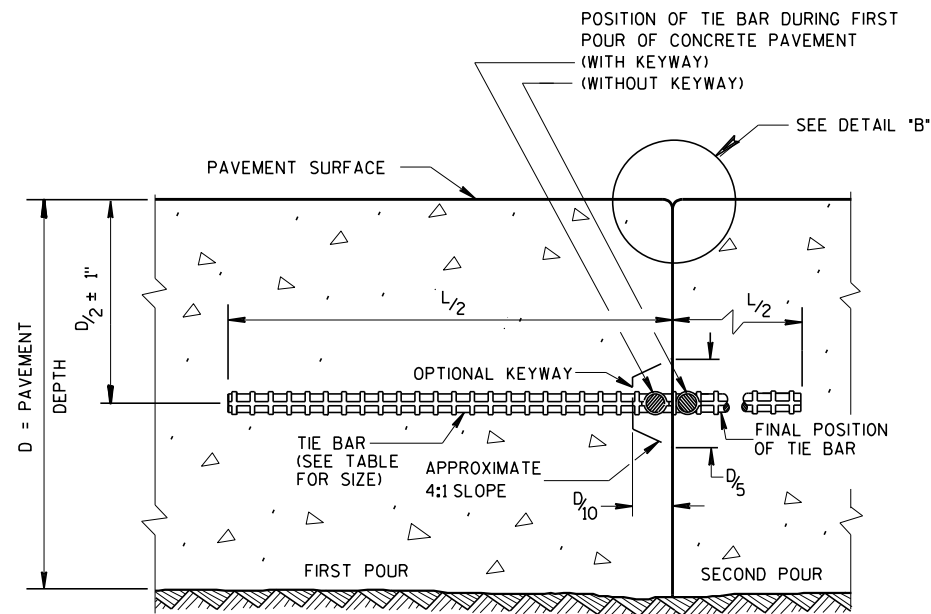
SECTION E - E
FOOTING DETAIL
STRUCTURAL APPROACH SLAB TO CONCRETE BRIDGE APPROACH

STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB

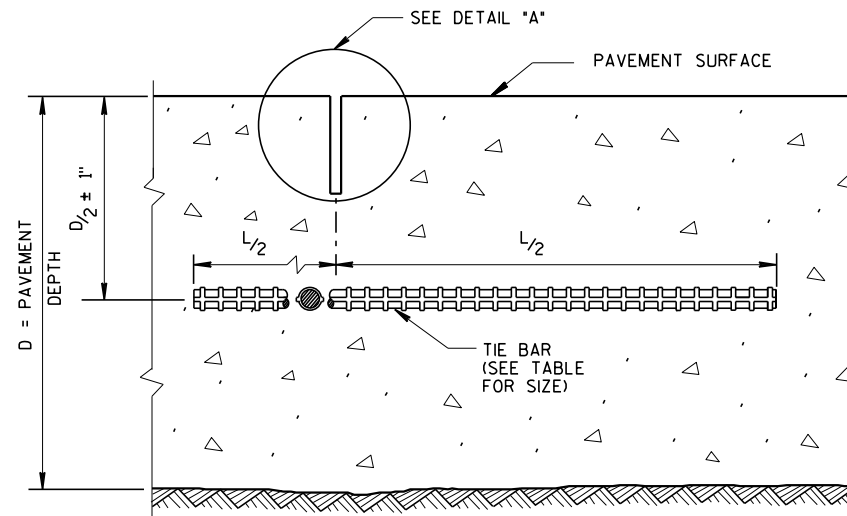
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp P.E.
DATE PAVEMENT SUPERVISOR

FHWA



CONSTRUCTION JOINT



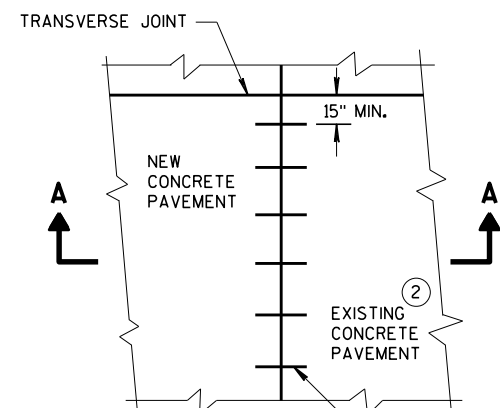
SAWED JOINT

GENERAL NOTES

CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

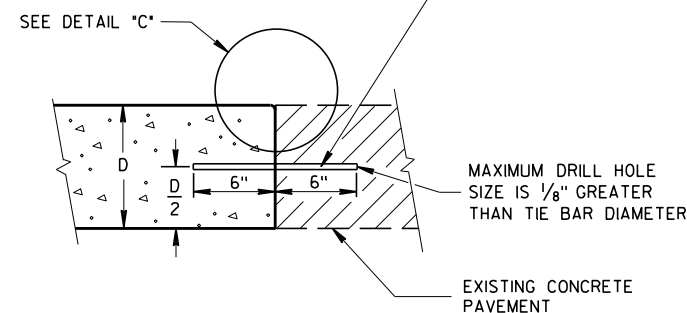
CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

- ① ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.
- ② PAVEMENT THAT WAS IN PLACE PRIOR TO THE CONTRACT.

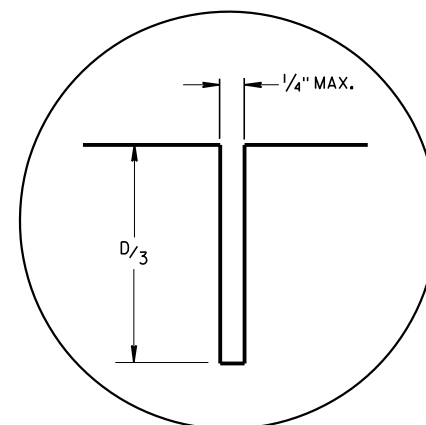


PLAN VIEW

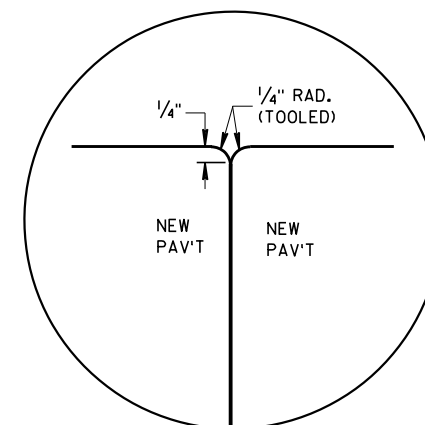
NO. 6 TIE BARS SPACED 30" C-C, INSTALLED PERPENDICULAR TO THE LONGITUDINAL JOINT. ①



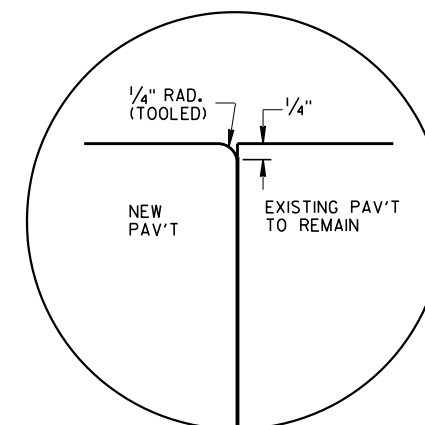
SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT
TIE BARS ANCHORED
INTO EXISTING PAVEMENT



DETAIL "A"



DETAIL "B"



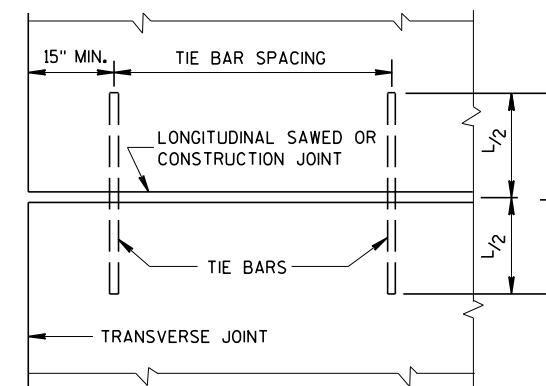
DETAIL "C"

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.



PLAN VIEW
SHOWING LOCATION OF TIE BARS

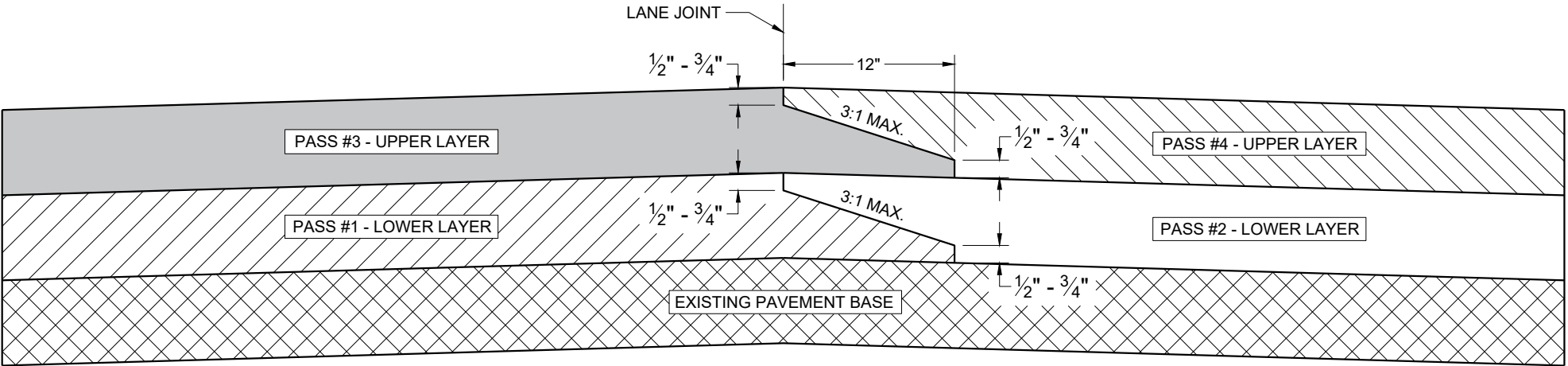
CONCRETE PAVEMENT
LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR
FHWA

GENERAL NOTES

CONFORM TO STANDARD SPECIFICATION 450.3.2.8



TYPICAL PAVEMENT CROSS SECTION
OF NOTCHED WEDGE LONGITUDINAL JOINTS

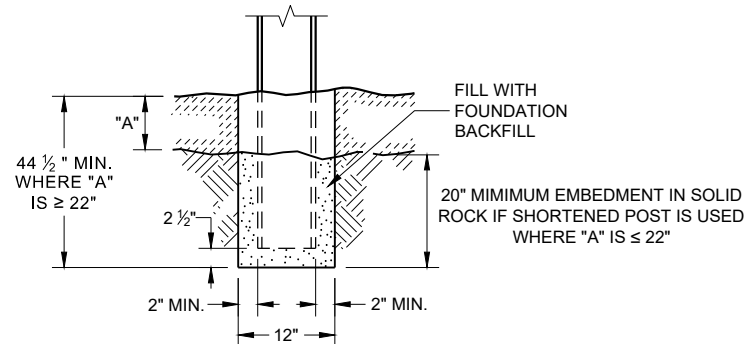
HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019 /S/ Steven Hefel
DATE HMA PAVEMENT ENGINEER

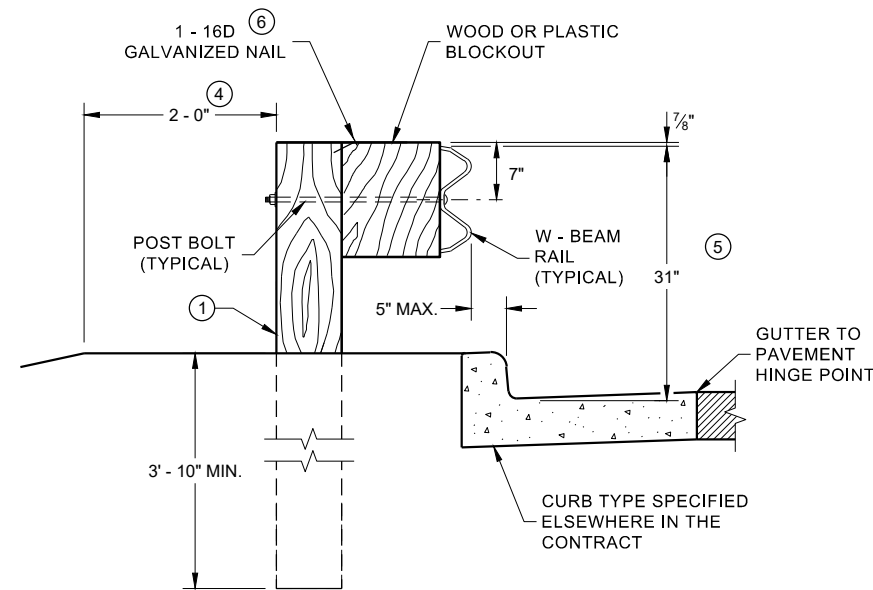
FHWA

- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 30 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

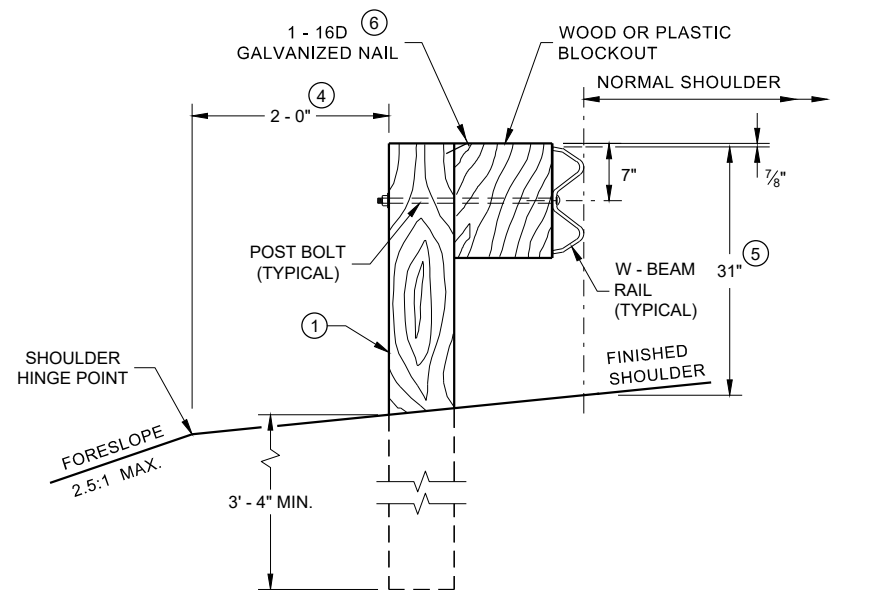


END VIEW

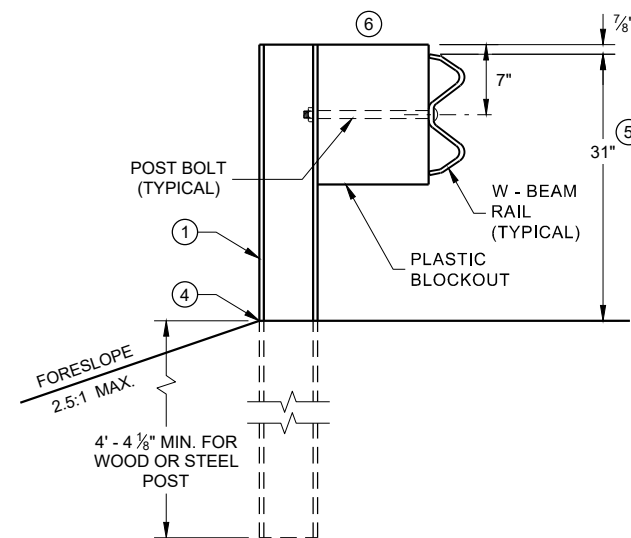
SETTING STEEL OR WOOD POST IN ROCK ³



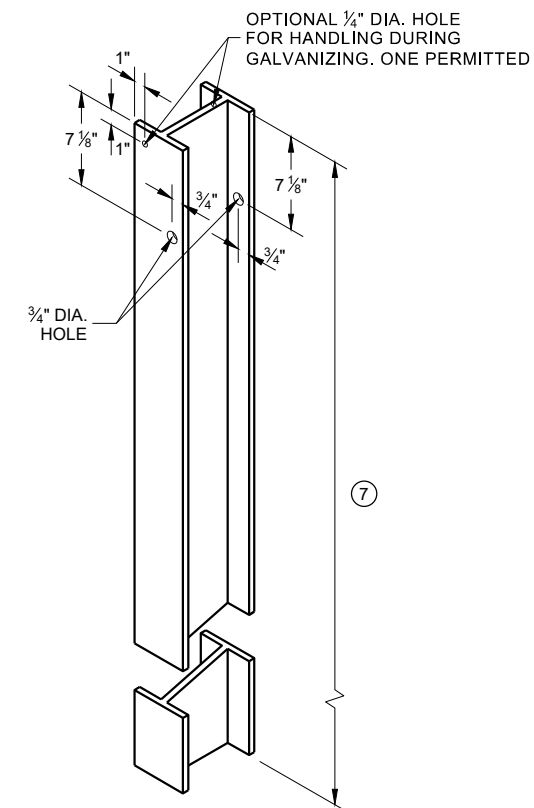
END VIEW
LOCATED ALONG A CURBED ROADWAY



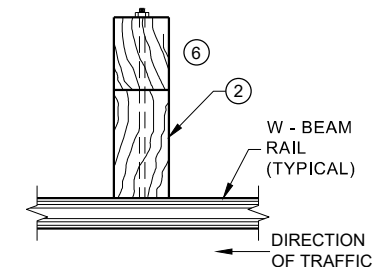
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



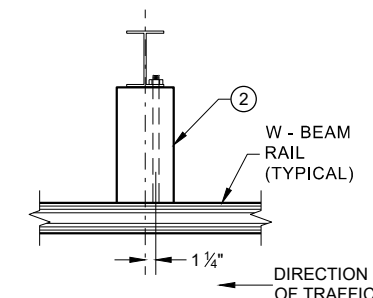
END VIEW
MGS LONGER POST AT HALFPOST
SPACING W BEAM (K)



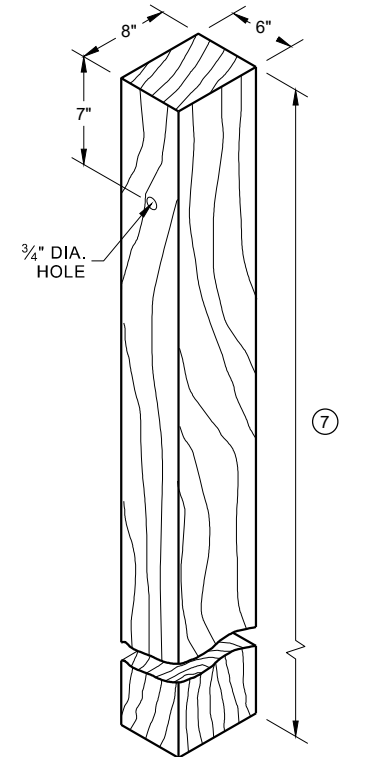
**STEEL POST & HOLE
PUNCHING DETAIL
(W 6 X 9) ①**



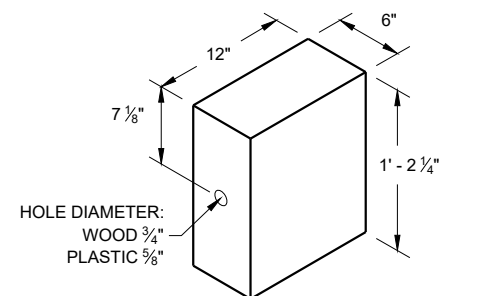
PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



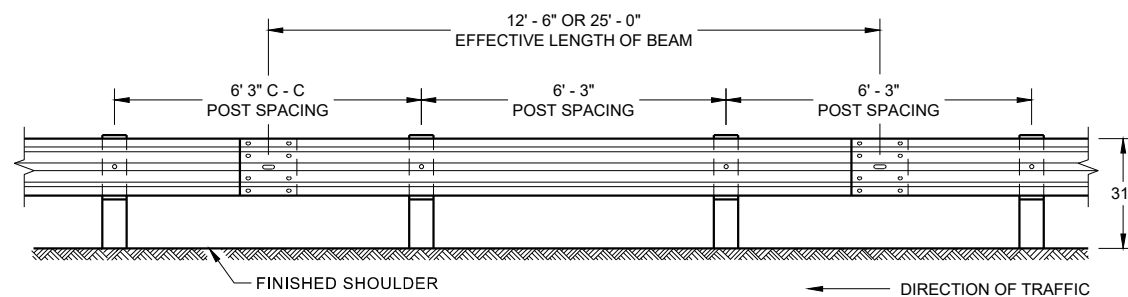
**PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM**



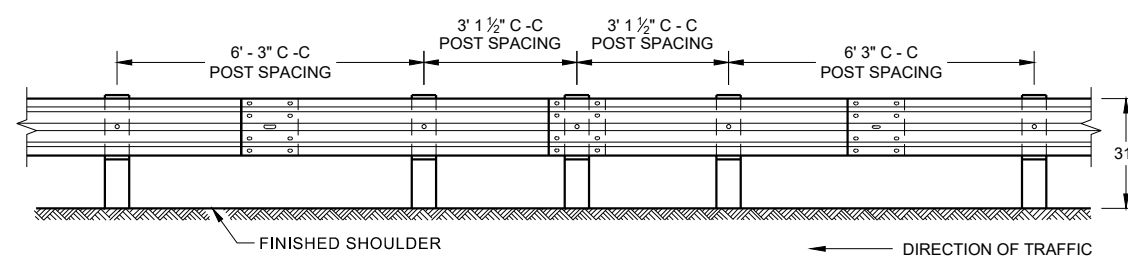
WOOD POST (6" X 8") NOMINAL ⁽¹⁾



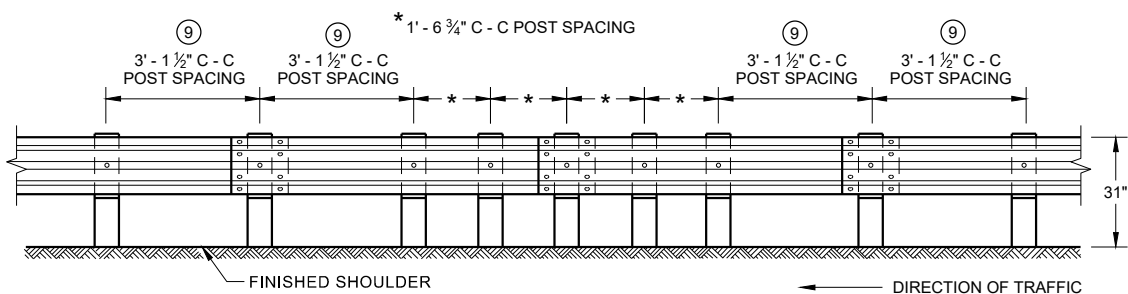
WOOD OR PLASTIC BLOCKOUT ⁽²⁾



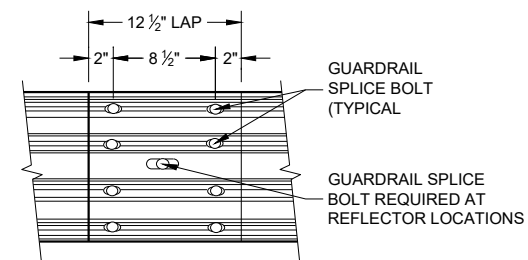
FRONT VIEW
POST SPACING STANDARD INSTALLATION



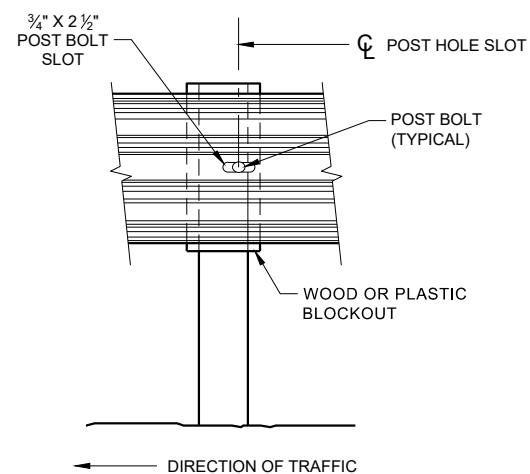
FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)



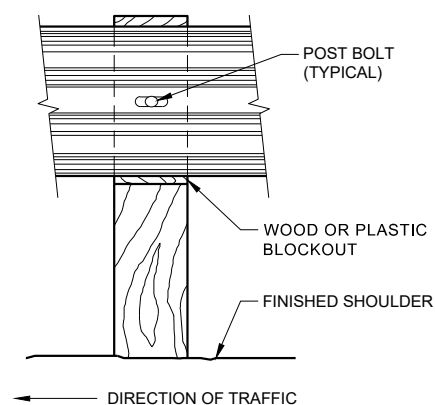
FRONT VIEW
QUARTER POST SPACING (QS)



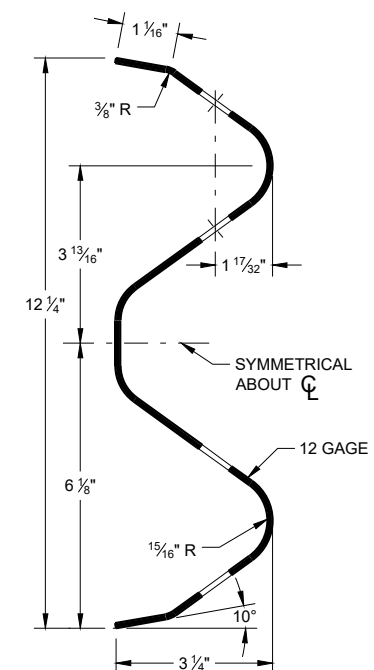
FRONT VIEW
MID-SPAN BEAM SPLICE



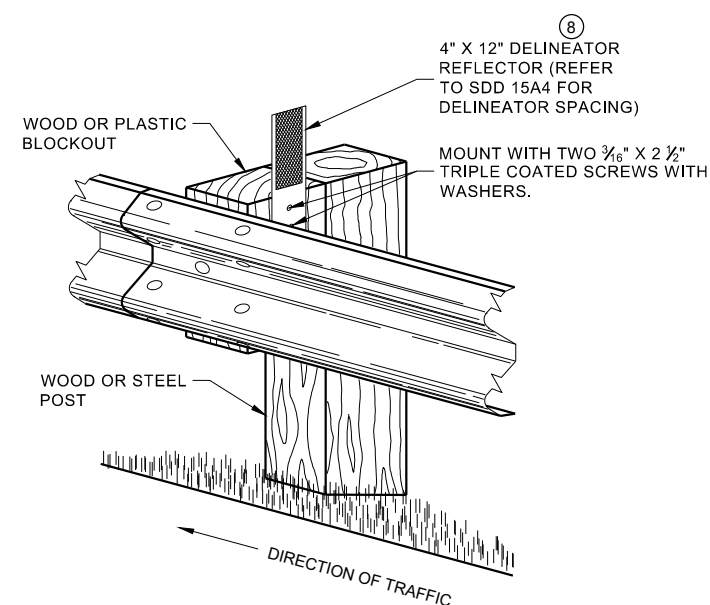
FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



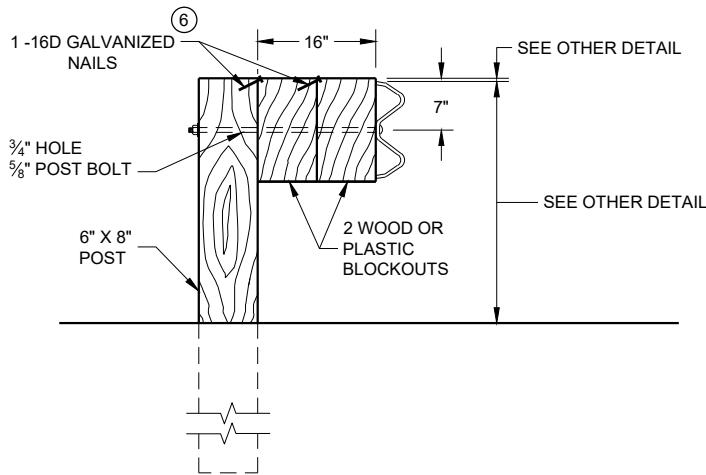
ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

GENERAL NOTES

- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
- ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

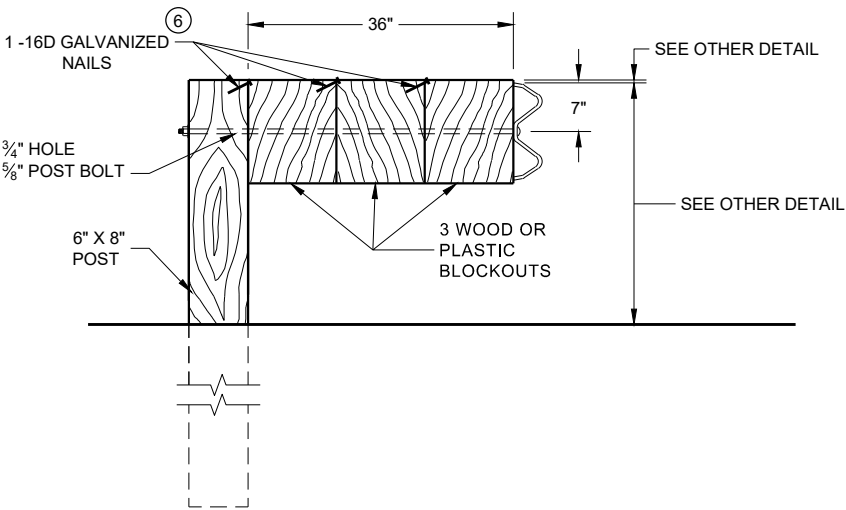
POST BOLTS ARE A ¾" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES ¾" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND ¾" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



DETAIL FOR 16" BLOCKOUT DEPTH

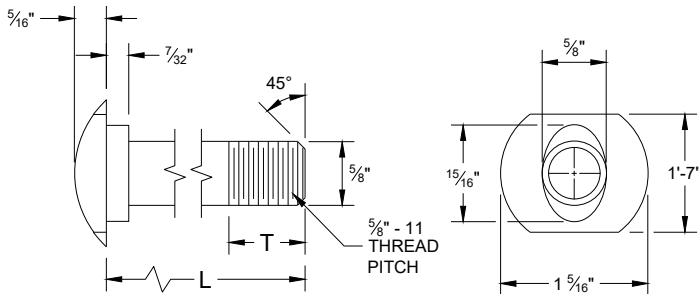
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

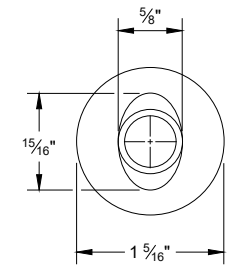
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

- NOTE:
- 1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
 - 2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

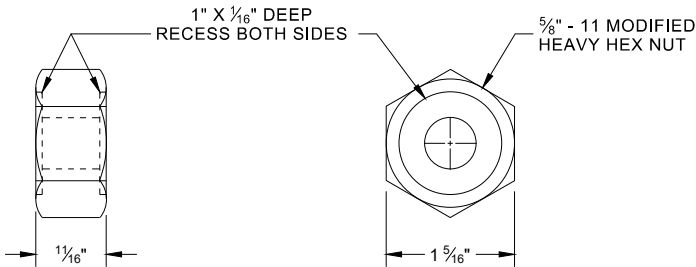


POST BOLT TABLE

L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"

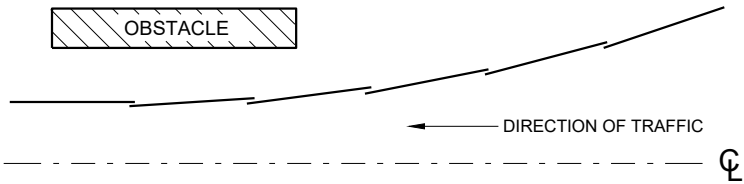


ALTERNATE BOLT HEAD

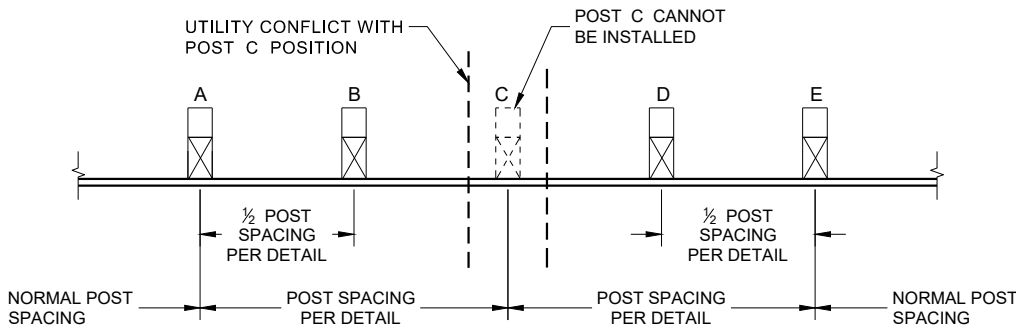


POST BOLT, SPLICE BOLT
AND RECESS NUT

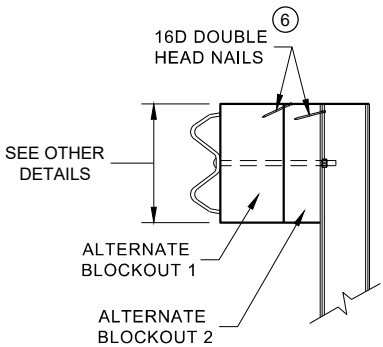
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



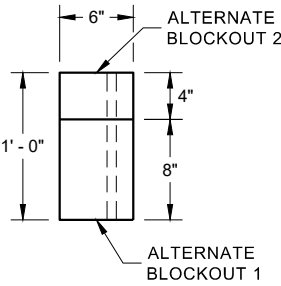
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

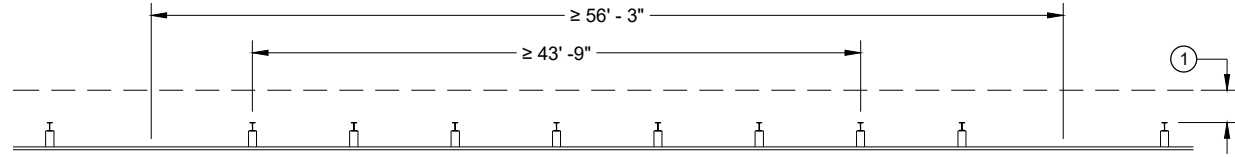


PLAN VIEW

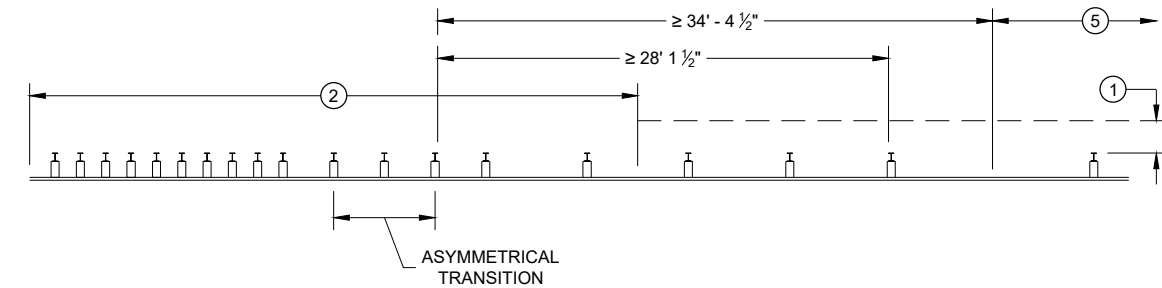
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

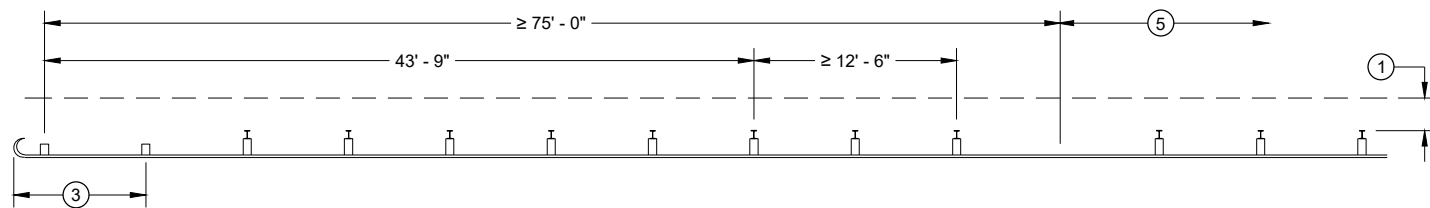
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



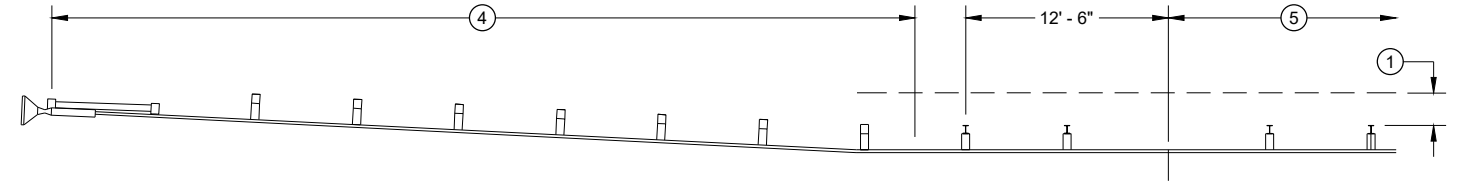
MISSING POST IN NORMAL BEAM GUARD RUN



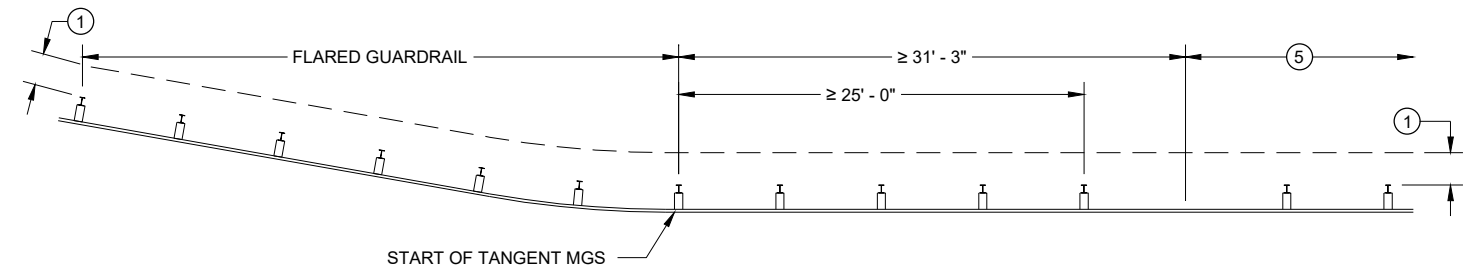
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



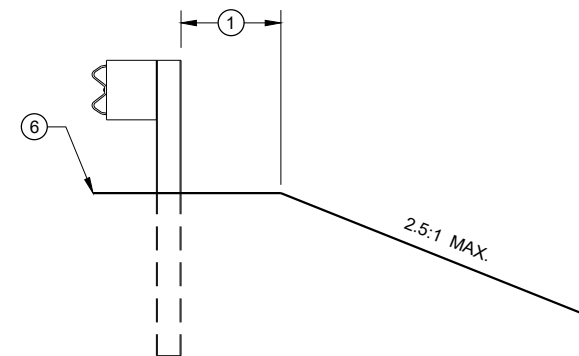
MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



CROSS SECTION VIEW

- ① MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- ② SEE SDD 14B45 FOR MORE DETAILS.
- ③ SEE SDD 14B47 FOR MORE DETAILS.
- ④ SEE SDD 14B44 FOR MORE DETAILS.
- ⑤ SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- ⑥ SEE PLAN FOR SHOULDER DESIGN.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

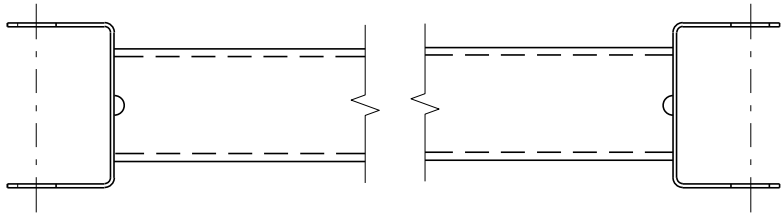
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.
- (D) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF - TAPPING SCREWS. ONE SCREW PER CORNER.
- (E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

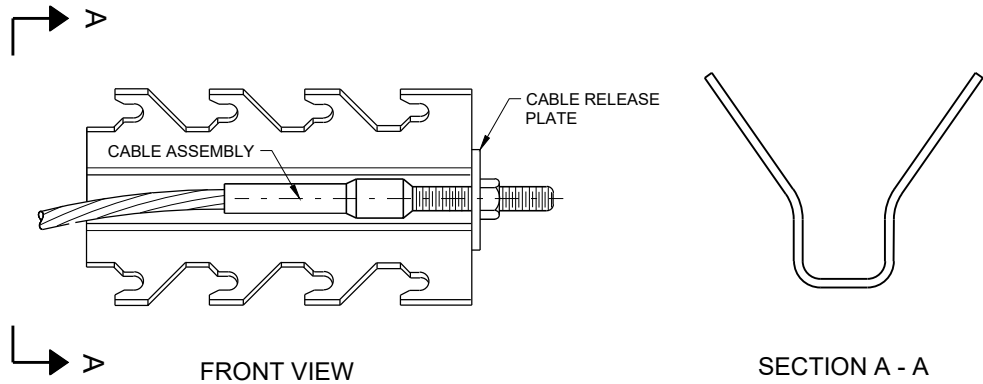


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

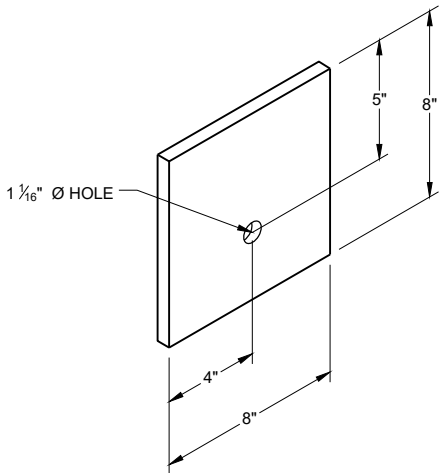


GENERIC GROUND STRUT^⑨ [Ⓔ]

BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	IMPACT HEAD
⑬	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)
⑭	SOIL PLATE
⑮	UPPER POST NO. 2
⑯	LOWER POST NO. 2



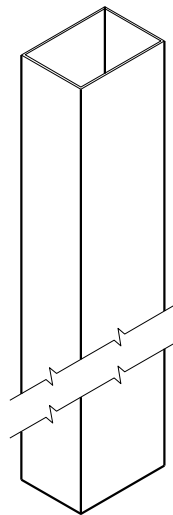
GENERIC ANCHOR CABLE BOX^⑨ [Ⓔ]



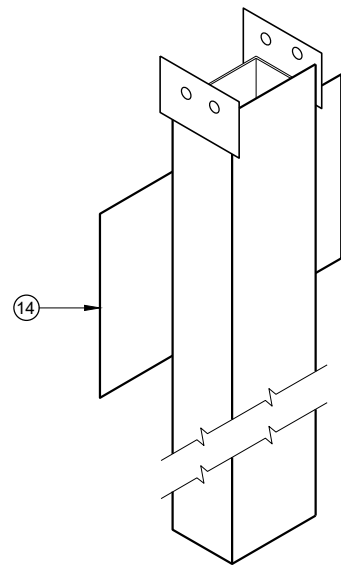
BEARING PLATE^⑥ [Ⓔ]

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

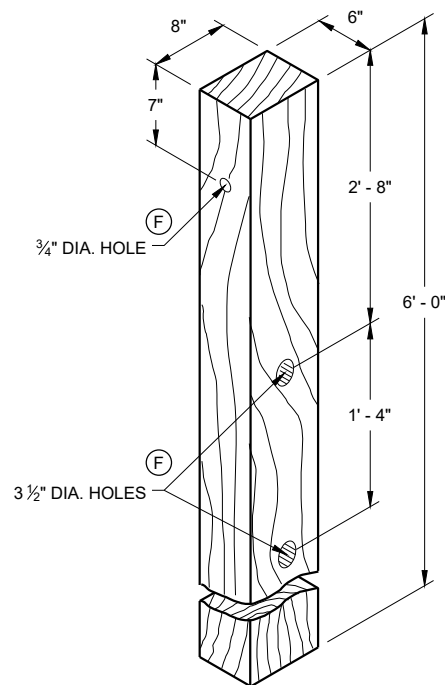
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



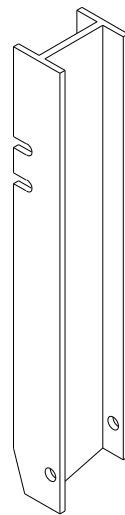
UPPER POST NO. 1 ⁽¹⁾ (E)



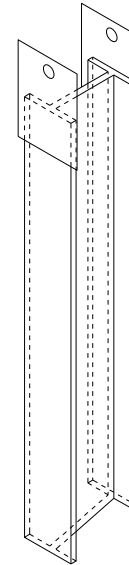
LOWER POST NO. 1 ⁽²⁾ (E)



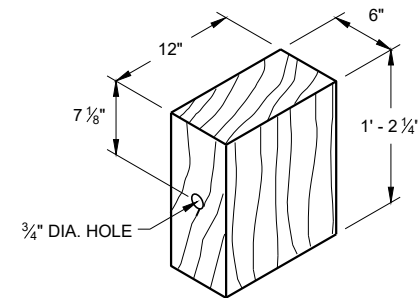
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



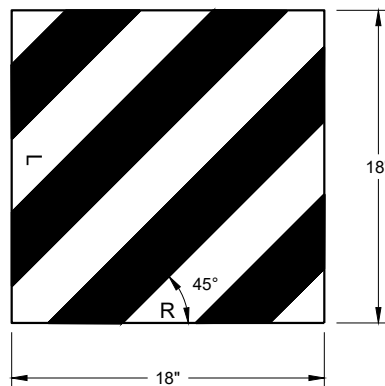
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



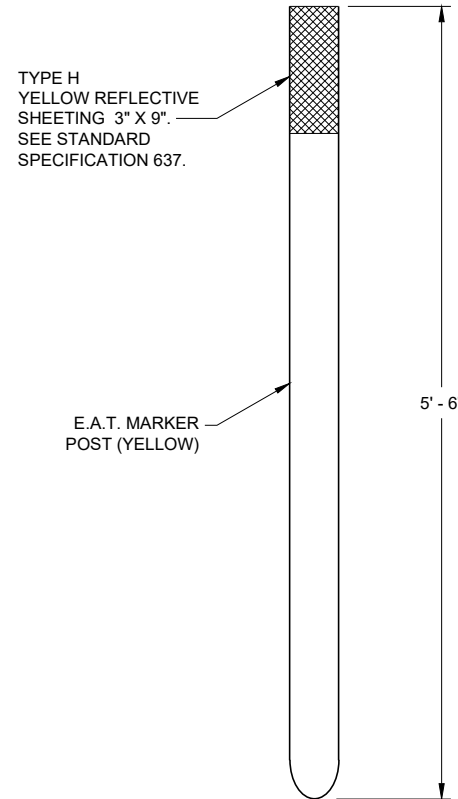
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



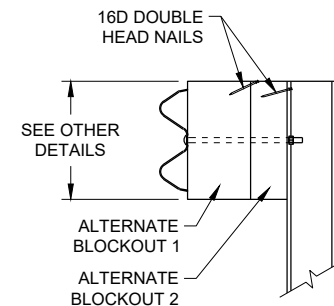
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL ^(E)

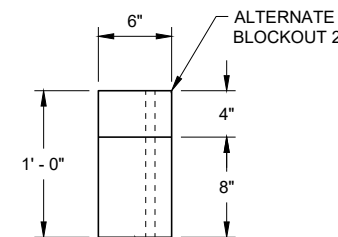


E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

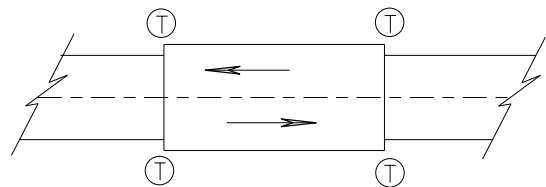


TOP VIEW

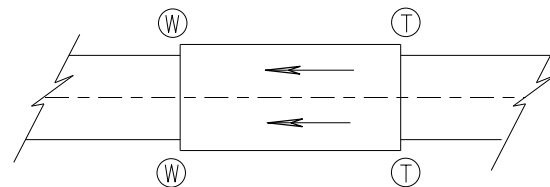
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

GENERAL NOTES

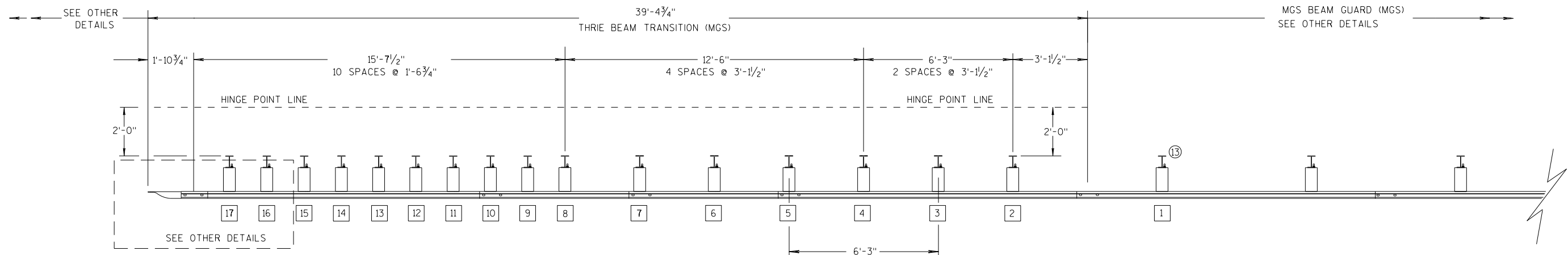
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

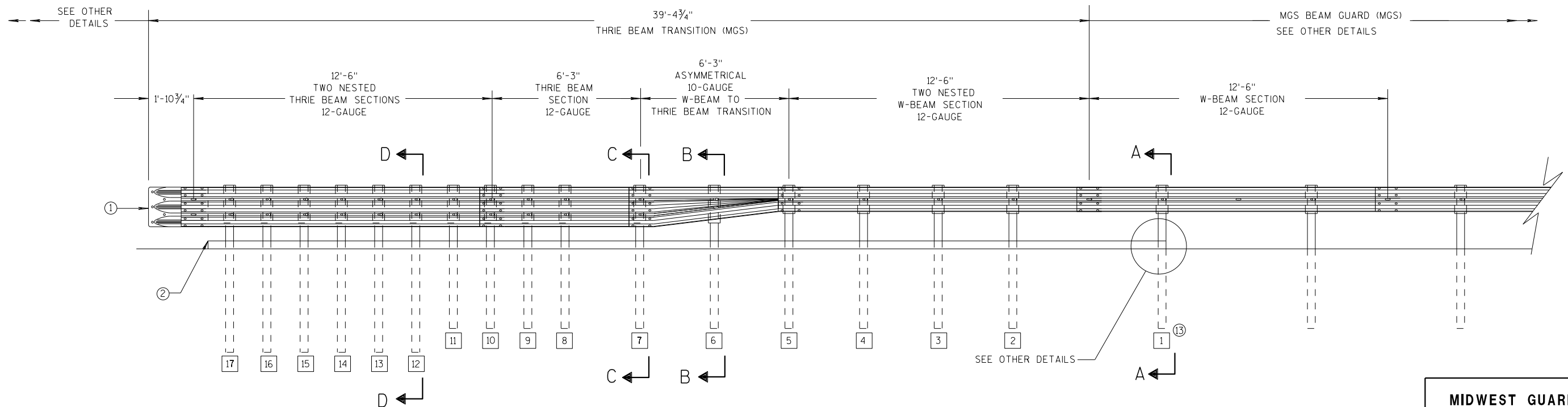
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

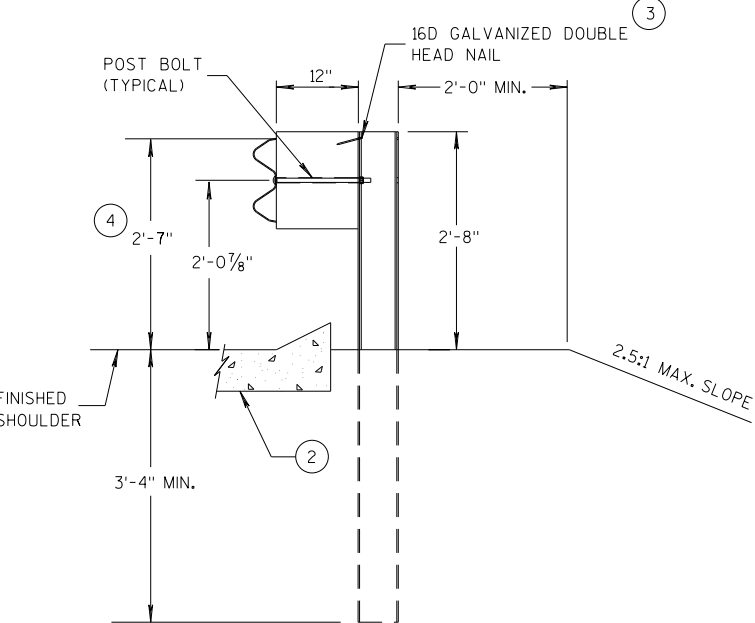
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

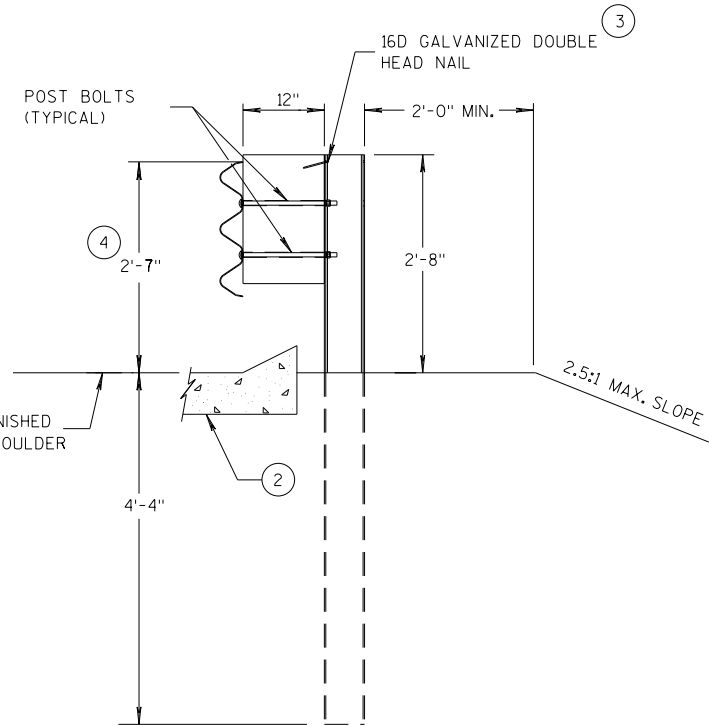
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

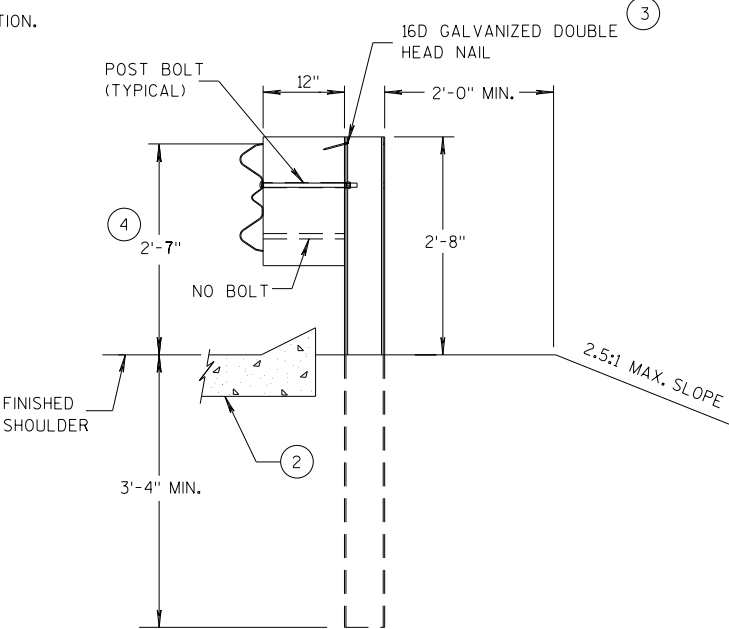
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.
- 13 STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42



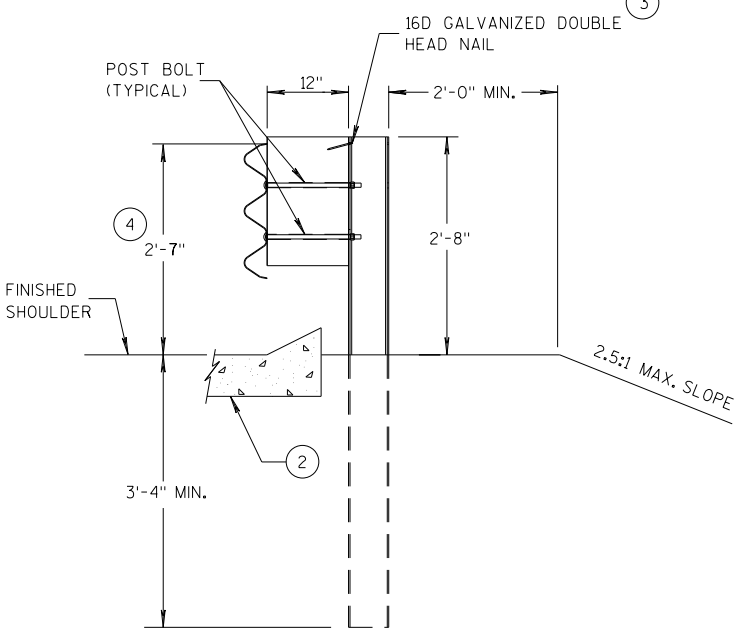
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

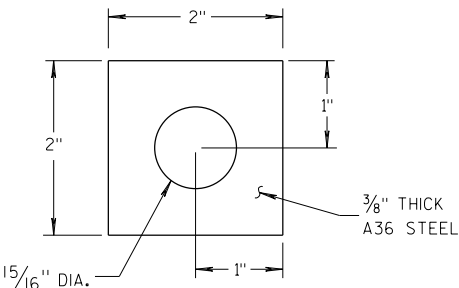
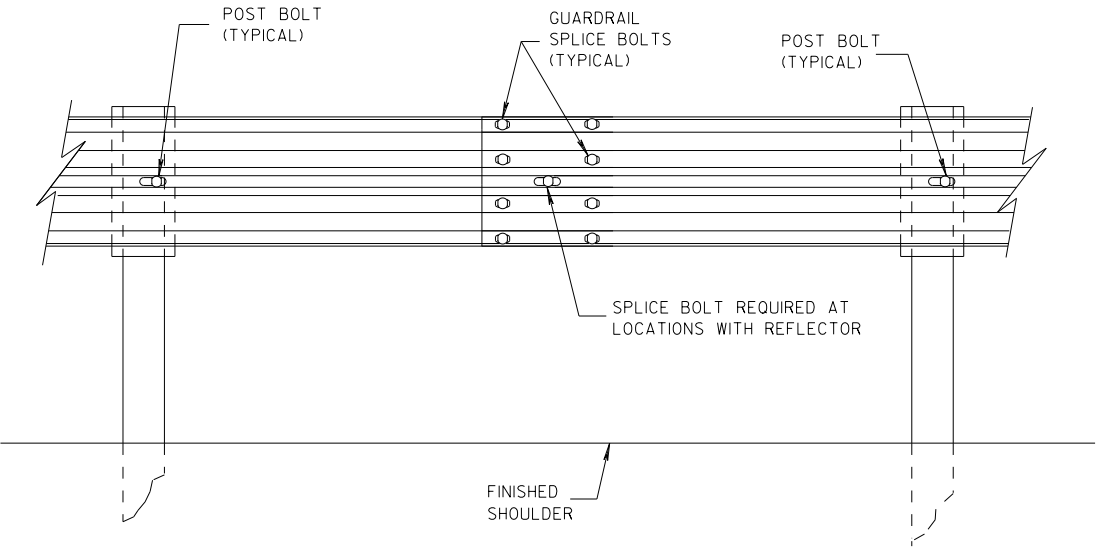
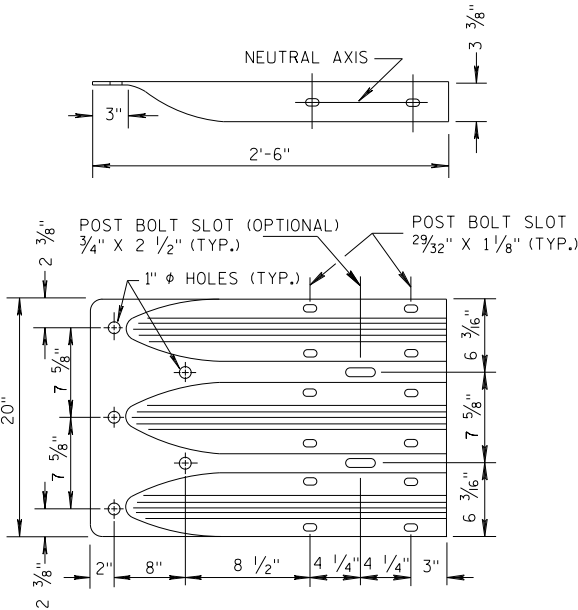


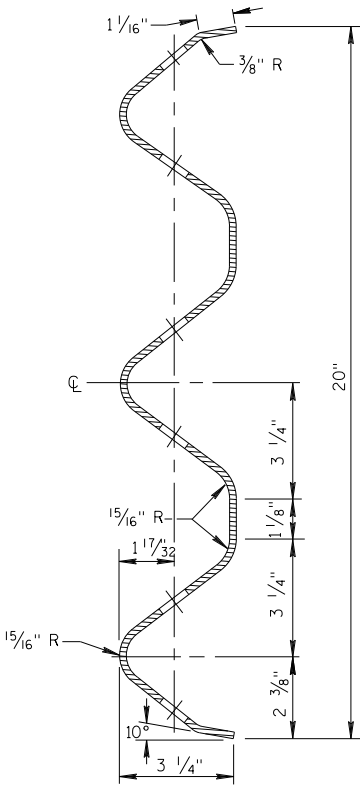
PLATE WASHER DETAIL



SPlice DETAIL



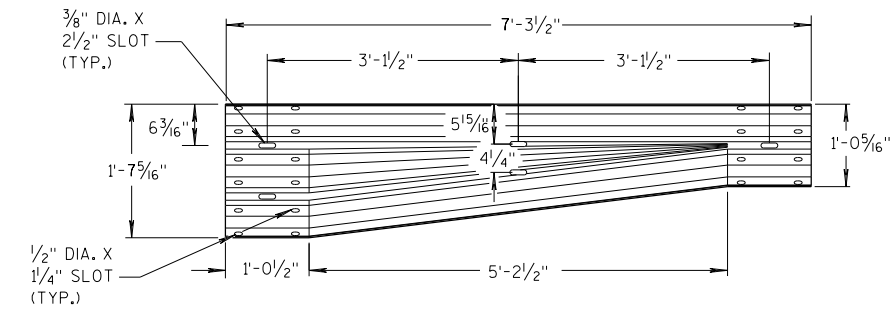
THRIE BEAM
TERMINAL CONNECTOR



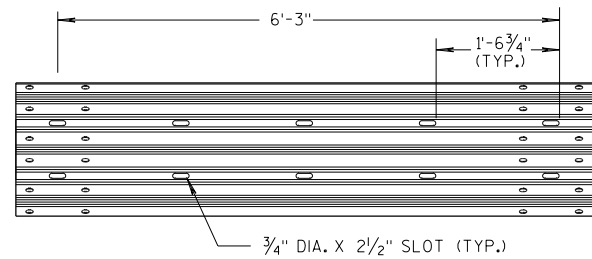
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

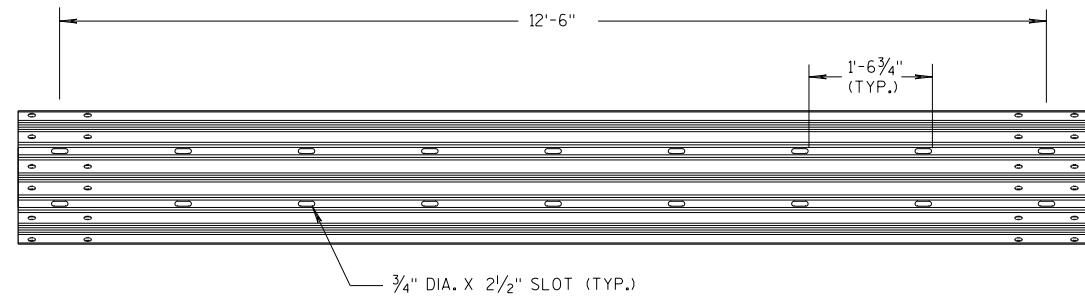
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



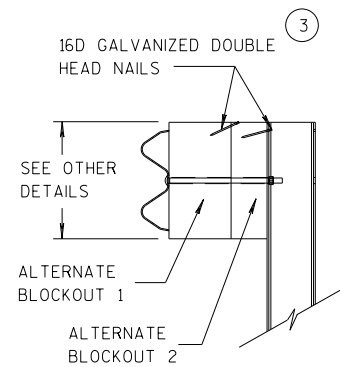
W-BEAM TO THRIE BEAM TRANSITION SECTION



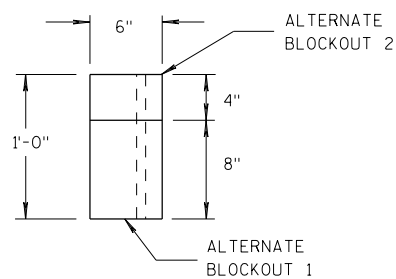
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

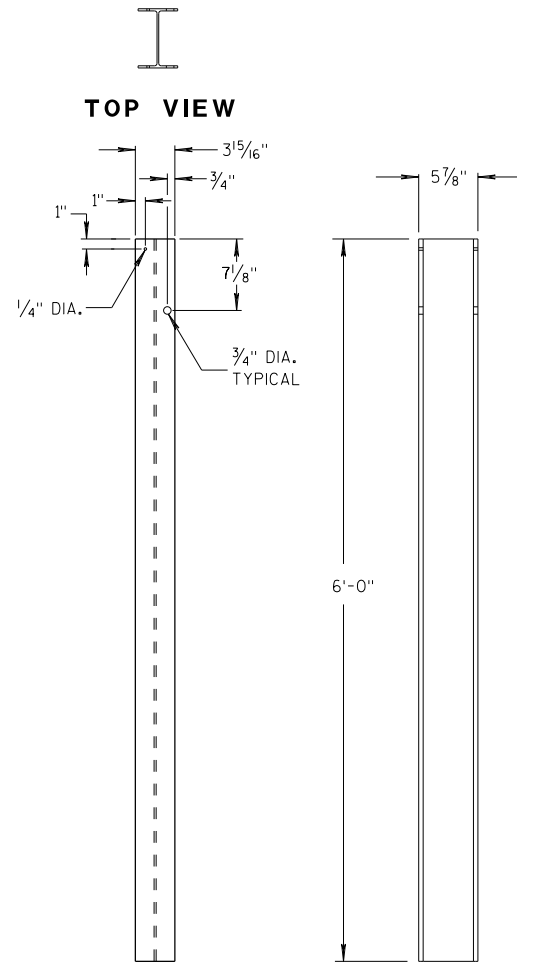


SIDE VIEW



TOP VIEW

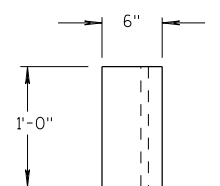
ALTERNATE WOOD BLOCKOUT DETAIL



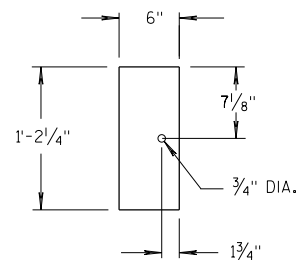
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

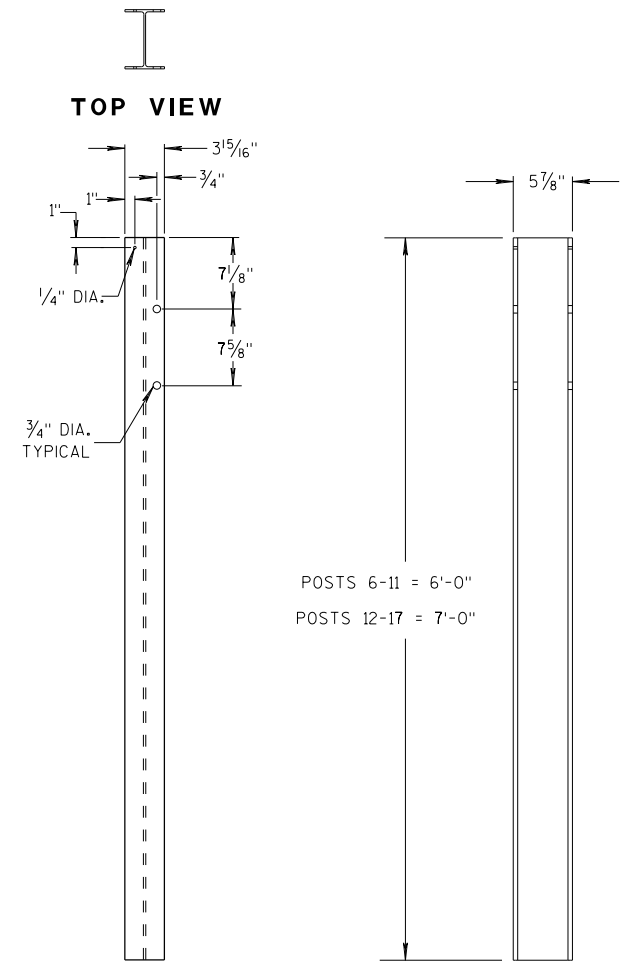


TOP VIEW



FRONT VIEW

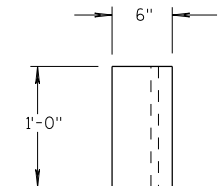
**BLOCKOUT
POSTS 1-5**



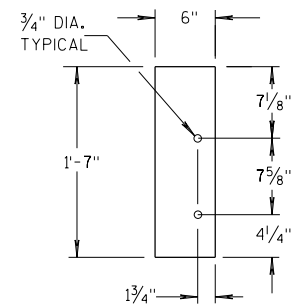
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

**BLOCKOUT
POSTS 6-17**

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

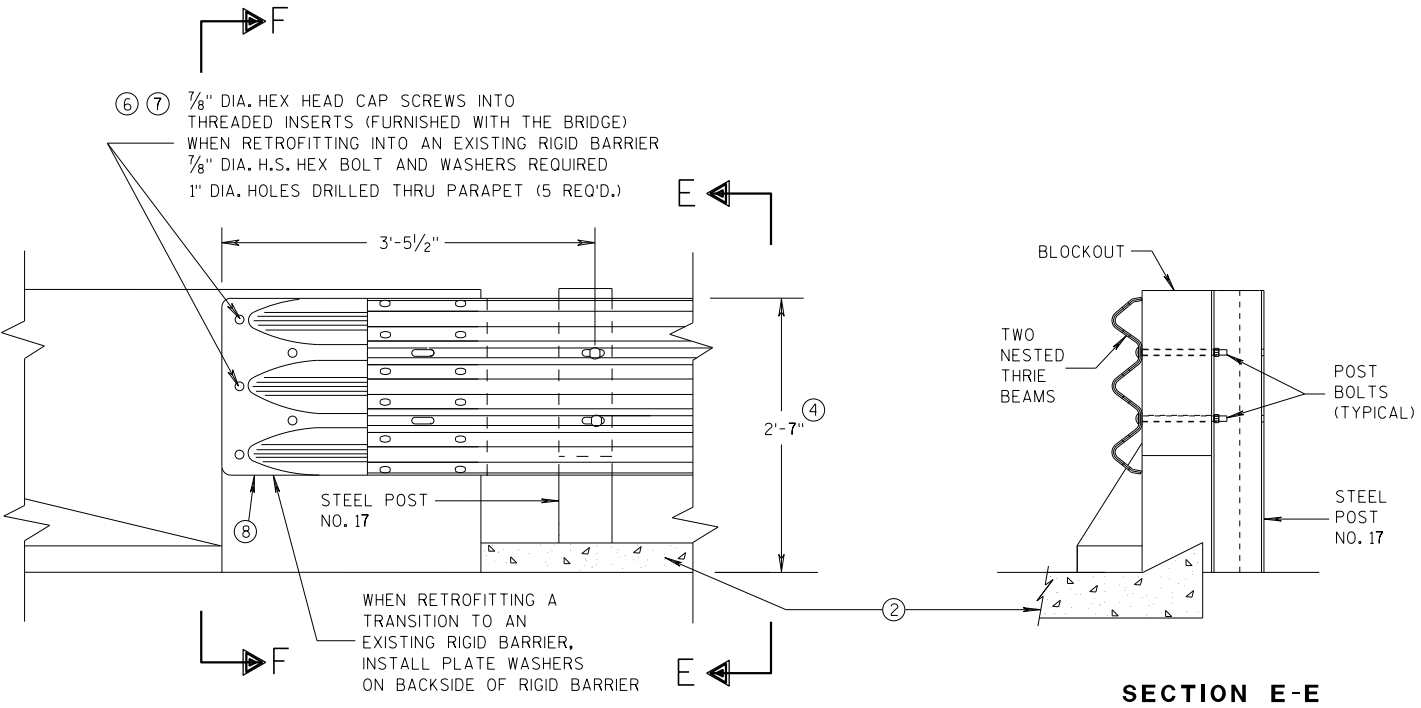
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

⑤ WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

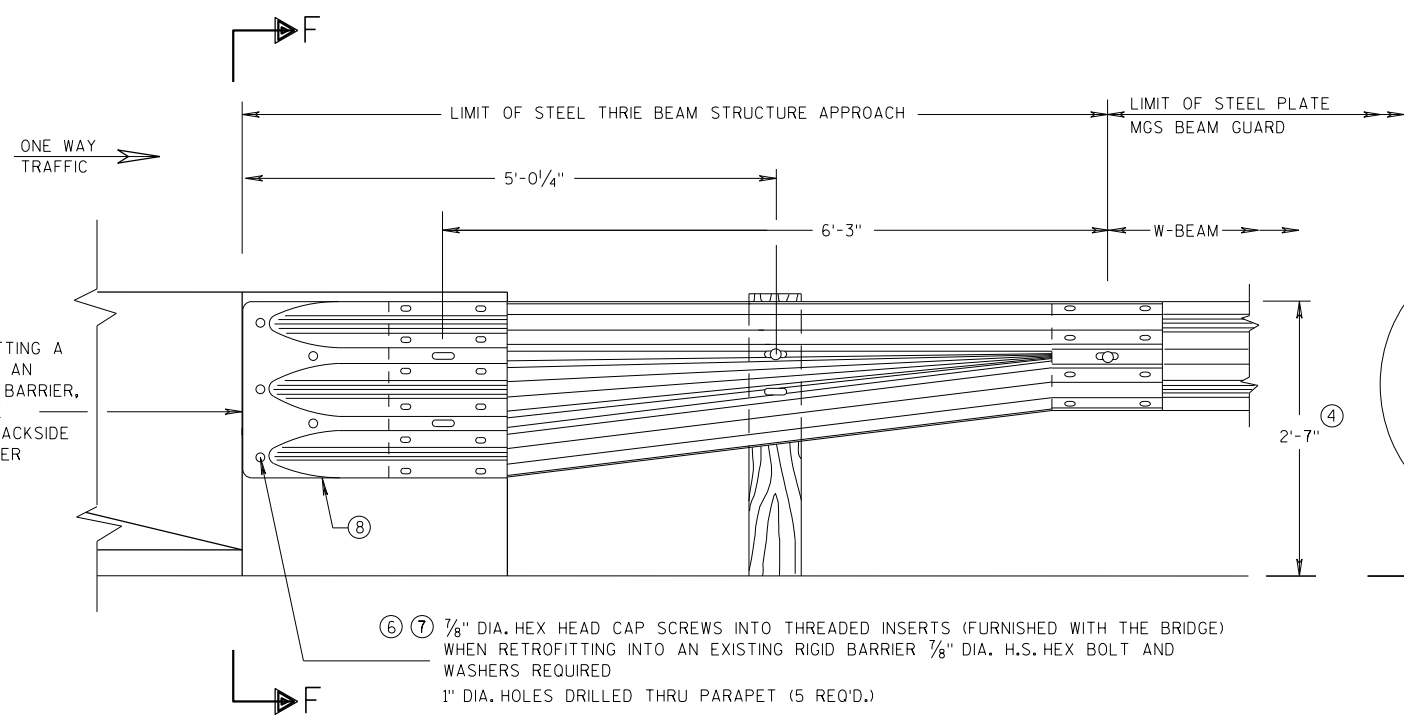
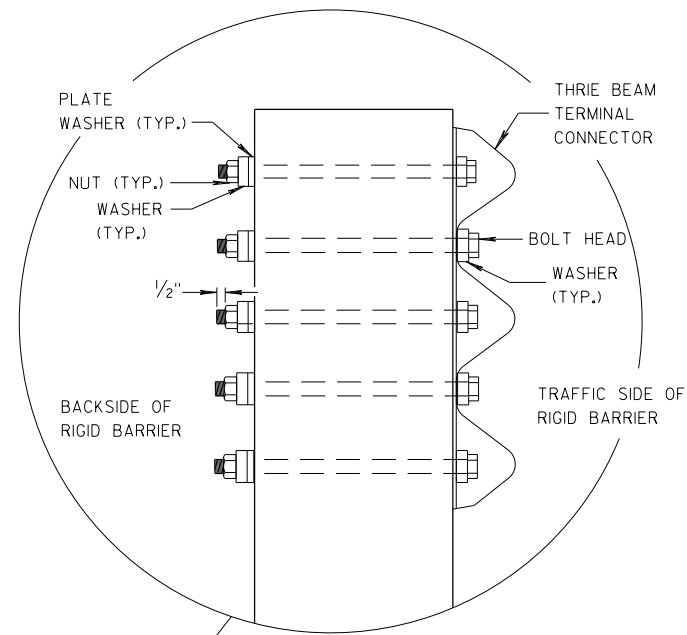
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

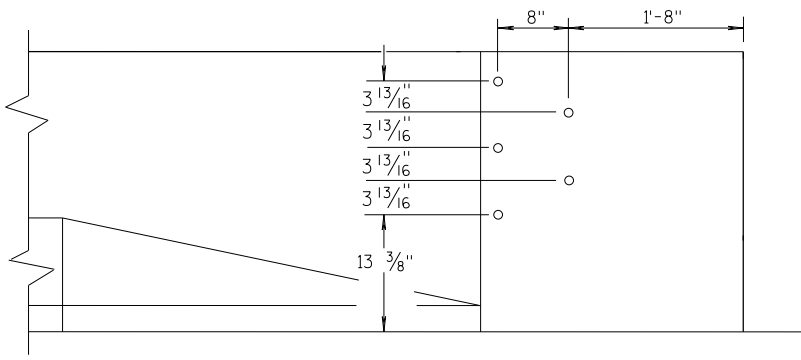


GENERAL NOTES

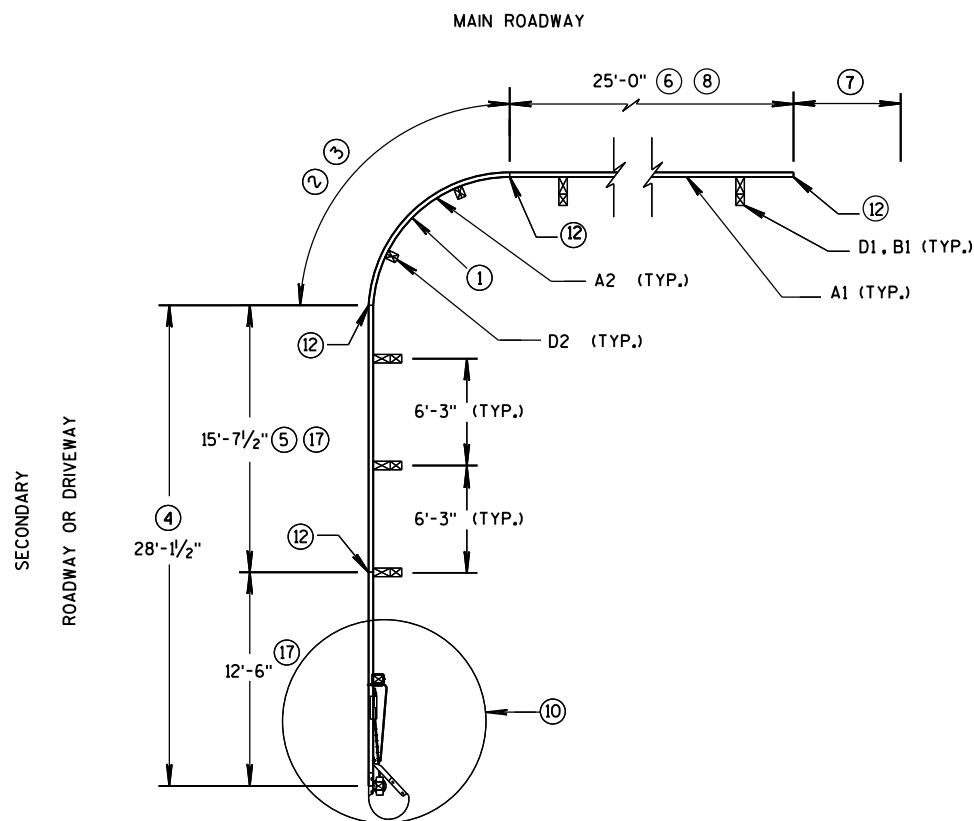
- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".



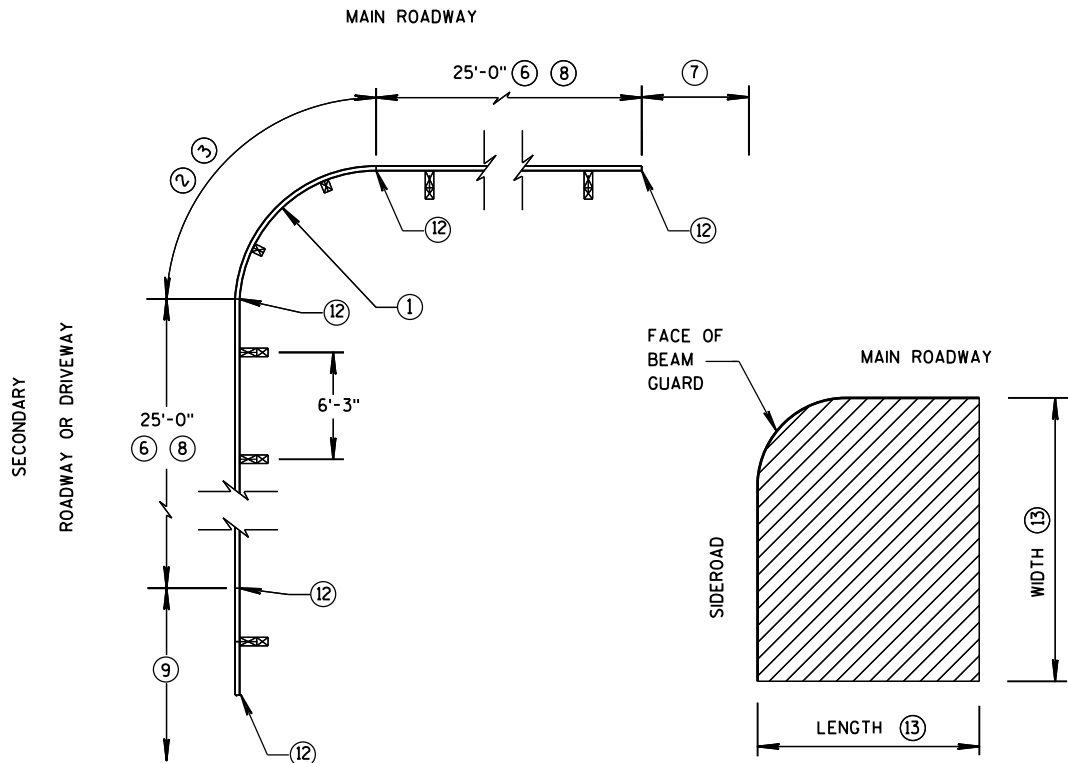
SECTION F-F



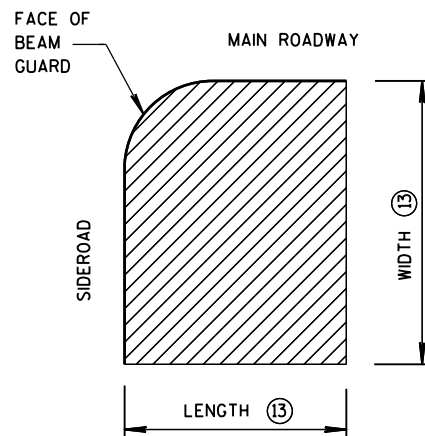
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	



SHORT RADIUS BEAM GUARD WITH
SHORT RADIUS TERMINAL ON
SECONDARY ROAD OR DRIVEWAY
PLAN VIEW



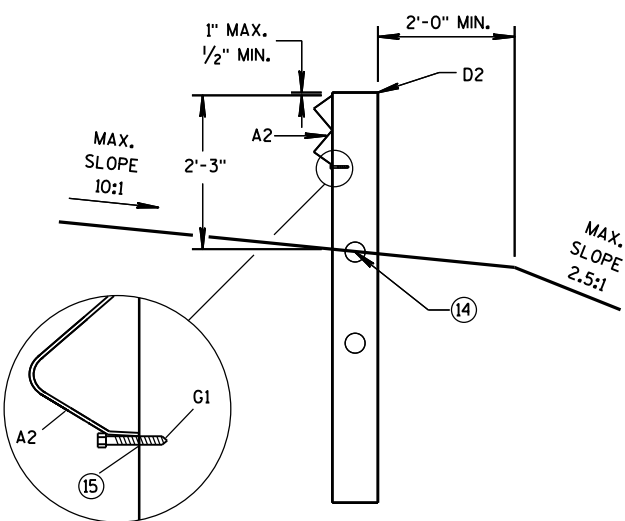
SHORT RADIUS BEAM GUARD WITH
EAT, ADDITIONAL BEAM GUARD
OR
TRANSITION TO RIGID BARRIER
ON SECONDARY ROAD OR
DRIVEWAY
PLAN VIEW



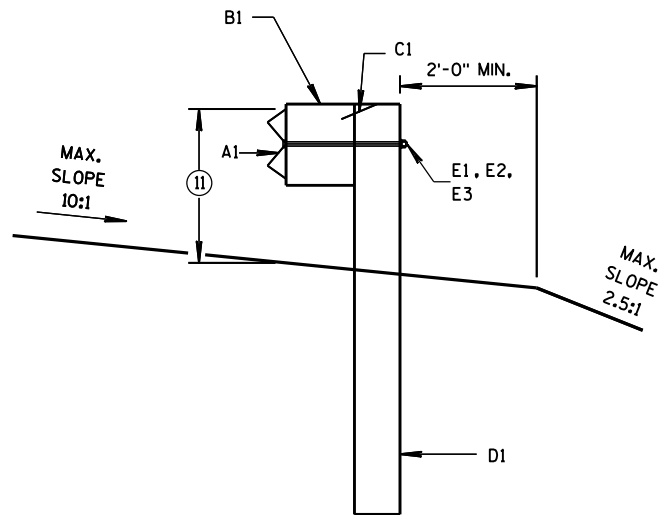
AREA FREE OF
FIXED OBJECTS FOR
RADIUS 32' AND LESS (16)

TABLE FOR RADIUS OF 32' AND LESS

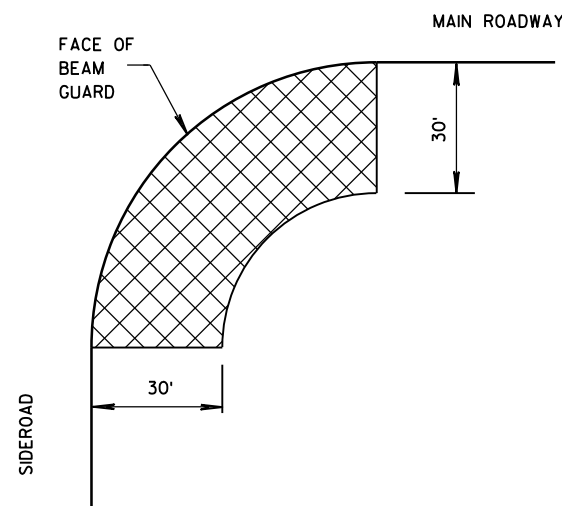
RADIUS FT	LENGTH FT	WIDTH FT
8	25	15
16	30	15
24	40	20
32	50	30



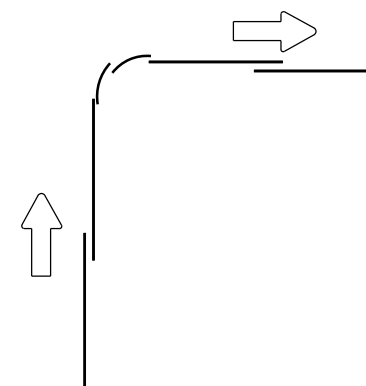
CONTROLLED RELEASE
TERMINAL POST (CRT) IN RADIUS



BEAM GUARD POSTS
IN HEIGHT TRANSITION



AREA FREE OF FIXED OBJECTS (16)
RADIUS GREATER THAN 32'



LAP SPLICE DETAIL

GENERAL NOTES

SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.

SEE 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.

GALVANIZE PARTS AFTER FABRICATION.

WELDING IS TO FOLLOW CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1

UNLESS NOTED OTHERWISE, ALL PLATES ARE FLAT AND FREE OF WARP.

UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERITCAL.

ALL CUTS AND HOLES, EXCEPT IN BEAM GUARD RAIL ARE TO BE MACHINED OR MACHINE FLAME CUTS.

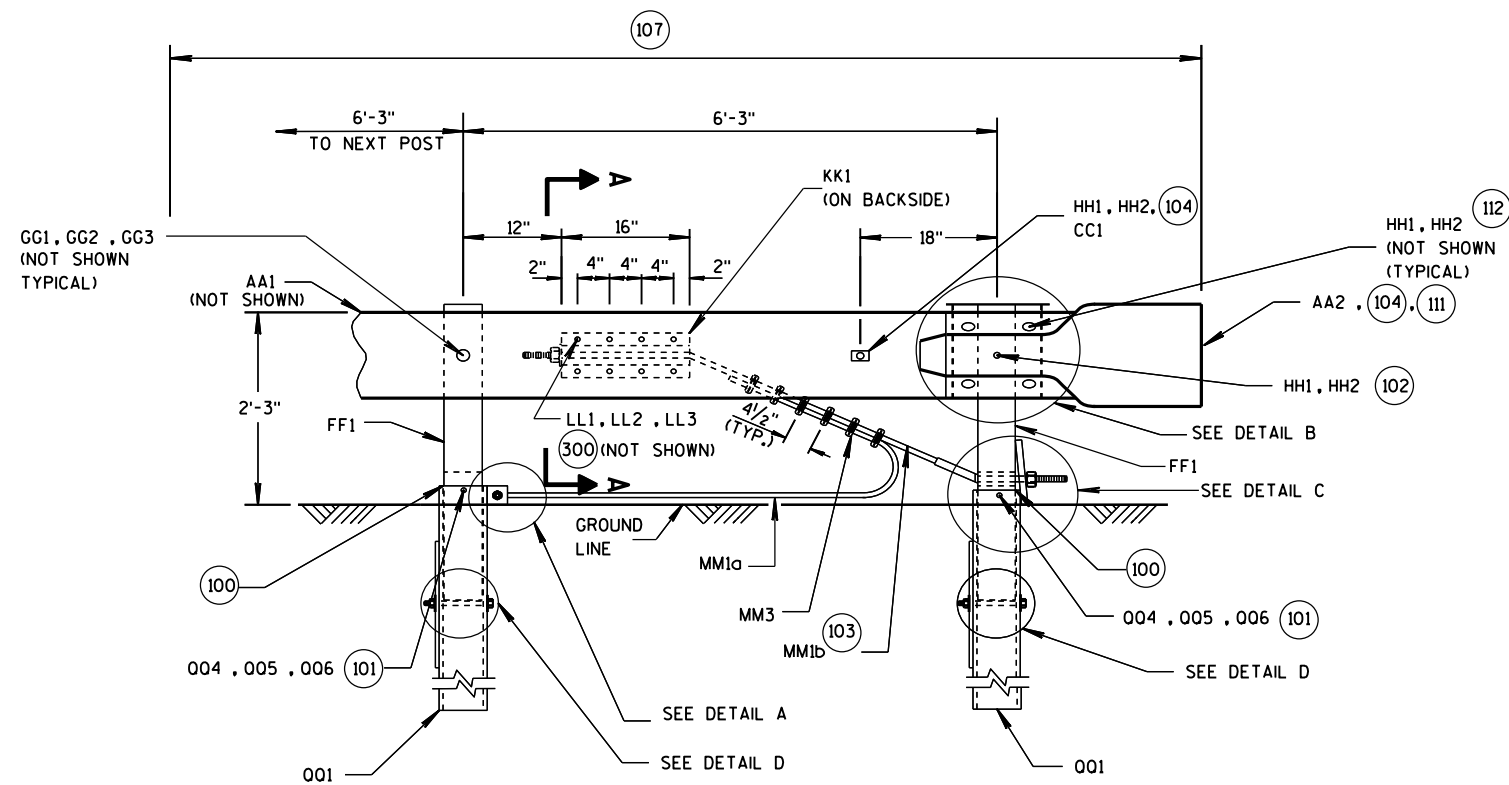
UNLESS NOTED OTHERWISE CUT OR PROVIDE BOLTS THAT ARE 1/4" TO 1/2" BEYOND THE NUT

DRAWINGS ARE NOT TO SCALE.

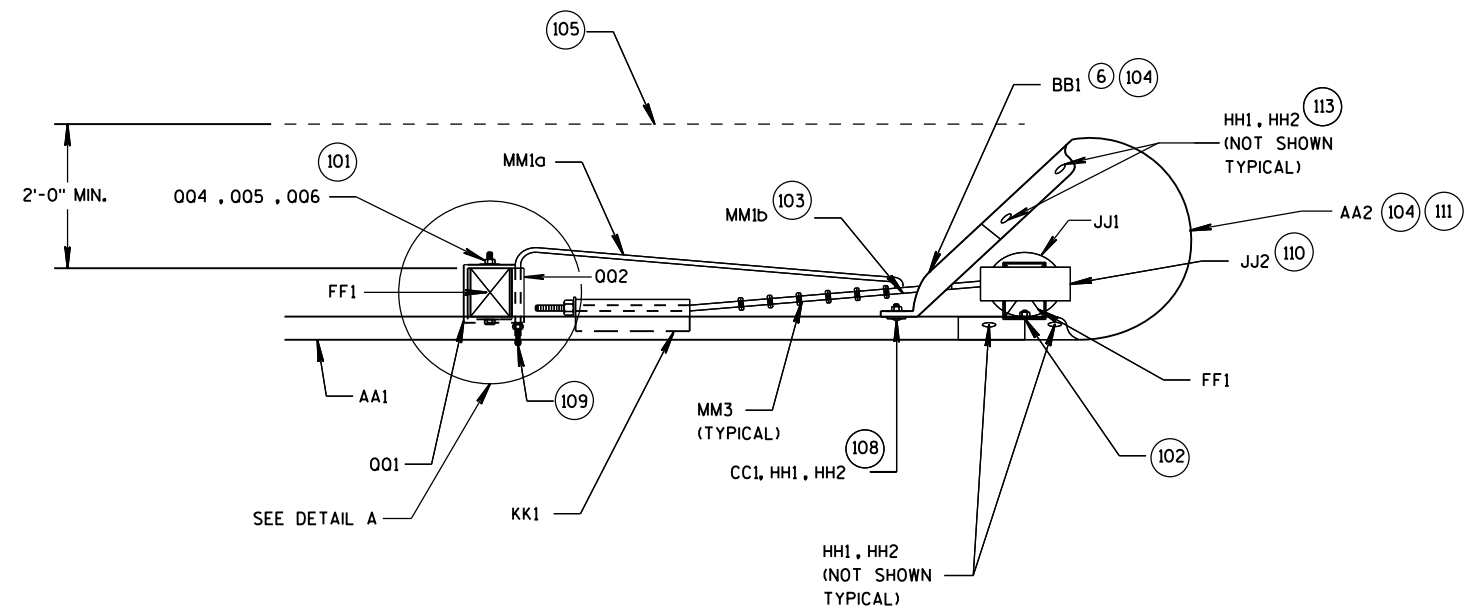
- (1) RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- (2) CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE USED IN THE RADIUS. CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE SPACED 6'-3". SEE PLAN FOR NUMBER OF CONTROLLED RELEASE TERMINAL (CRT) POSTS.
- (3) WITHIN RADIUS BEAM GUARD RAILS ARE NOT BOLTED TO POSTS. BEAM GUARD RAILS RESTED ON TOP OF LAG SCREW.
- (4) MINIMUM LENGTH OF BEAM GUARD ALONG SIDE ROAD OR DRIVEWAY TO INSTALL SHORT RADIUS TERMINAL. BEAM GUARD IS PAID FOR WITH BEAM GUARD ITEM.
- (5) ODD LENGTH OF BEAM GUARD REQUIRED TO INSTALL SHORT RADIUS TERMINAL.
- (6) MINIMUM AMOUNT OF BEAM GUARD TO BE INSTALLED PRIOR TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD, OR EAT. BEAM GUARD PAID FOR WITH BEAM GUARD ITEM. SEE PLANS FOR MORE DETAIL.
- (7) BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. SEE PLAN.
- (8) TOP OF BEAM GUARD BY THE RADIUS IS 27". HEIGHT OF BEAM GUARD IS 31" BY TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD OR EAT.
- (9) ADDITIONAL BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. BEAM GUARD SHOWN. SEE PLAN FOR DETAILS.
- (10) SHORT RADIUS TERMINAL (SEE OTHER DETAILS)
- (11) HEIGHT VARIES. SEE NOTE (8) AND (17).
- (12) BEAM GUARD RAIL SPLICE LOCATION. SPLICE LOCATION REQUIRE PART F1 AND F2. SEE SDD 14B42 FOR DETAILS.
- (13) SEE TABLE FOR VALUES.
- (14) MAXIMUM HEIGHT FOR CENTER OF HOLE IS 3/4" ABOVE FINISHED GROUND ±1".
- (15) DRILL 15/64" DIA. PILOT HOLE. DO NOT HAMMER LAG SCREW INTO POST.
- (16) SMALL SIGNS ON BREAKAWAY HARDWARE ARE ACCEPTABLE.
- (17) TOP OF RAIL HEIGHT IS 27" WHEN USING A SHORT RADIUS TERMINAL.

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

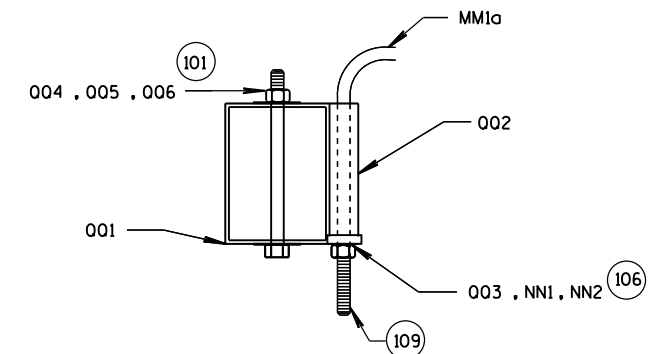


**SHORT RADIUS TERMINAL
PROFILE VIEW**

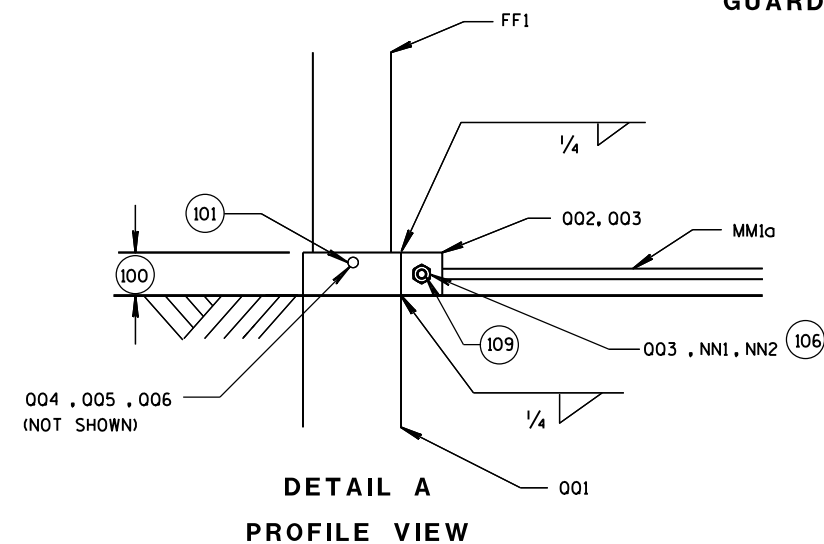


**SHORT RADIUS TERMINAL
TOP VIEW**

- (100) TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- (101) WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- (102) SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM END SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL B.
- (103) CABLE IS TAUT.
- (104) ADJUST AA2 AND BB1 TO FIT.
- (105) BREAK POINT OF SHOULDER.
- (106) TACK WELD CABLE CONNECTOR TUBE PLATE TO CABLE CONNECTION TUBE. SEE DETAIL A PROFILE VIEW.
- (107) PAY LIMIT FOR BEAM GUARD.
- (108) SQUARE WASHER BETWEEN HEAD OF BOLT AND TRAFFIC FACE OF BEAM GUARD. ROUND WASHER REQUIRED BETWEEN NUT AND BB1.
- (109) CUT OR PROVIDE THREADED STUD THAT IS FLUSH WITH FACE OF BEAM GUARD RAIL KK1 (PLUS OR MINUS 1/2" TOLERANCE). DEBURR AFTER CUTTING.
- (110) SEE STEEL PIPE ASSEMBLY DETAILS.
- (111) ATTACH UU2 WITH UU3. SHOP APPLY UU1 TO UU2.
- (112) FOUR HH1 AND HH2 REQUIRED TO ATTACH AA1 TO AA2.
- (113) FOUR HH1 AND HH2 REQUIRED TO ATTACH AA2 TO BB1.



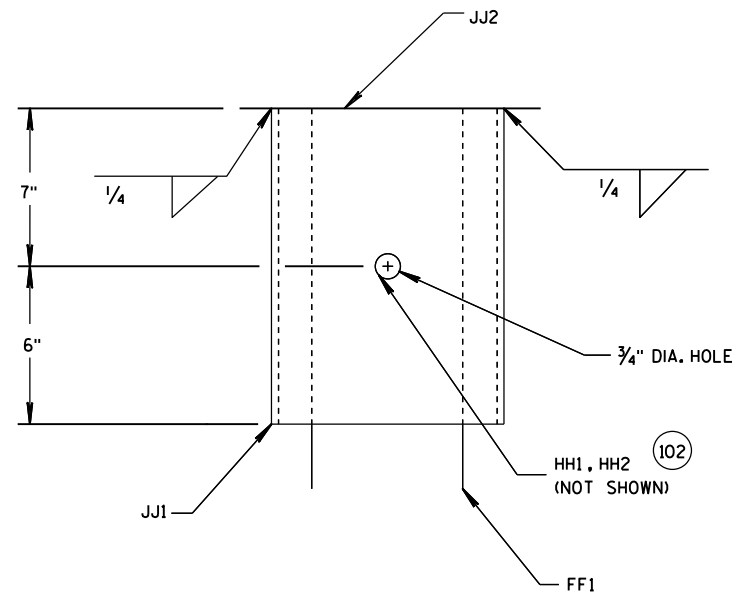
**DETAIL A
TOP VIEW
(WOOD BREAKAWAY AND BEAM
GUARD RAIL POSTS NOT SHOWN)**



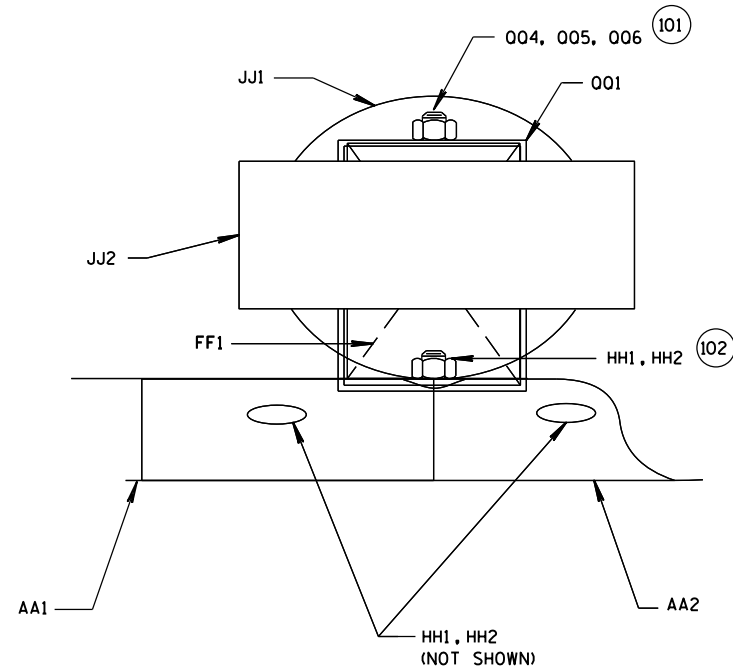
**DETAIL A
PROFILE VIEW**

**STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL
MGS**

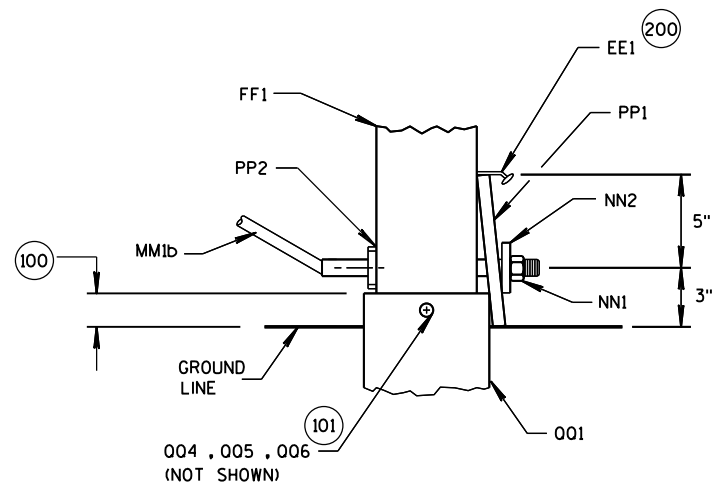
**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**



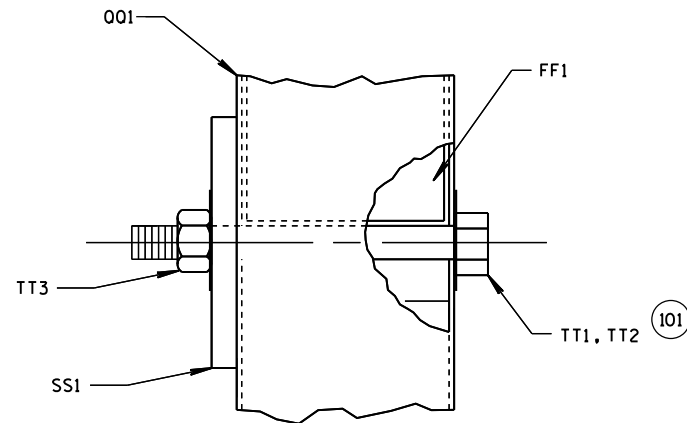
DETAIL B
PROFILE VIEW OF STEEL PIPE ASSEMBLY
(BEAM GUARD AND W-BEAM
END SECTION NOT SHOWN)



DETAIL B
PLAN VIEW OF STEEL PIPE ASSEMBLY



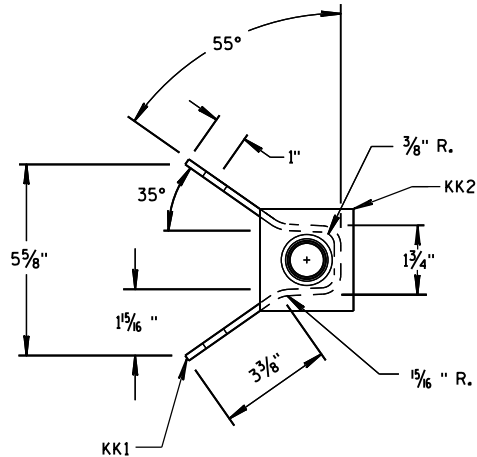
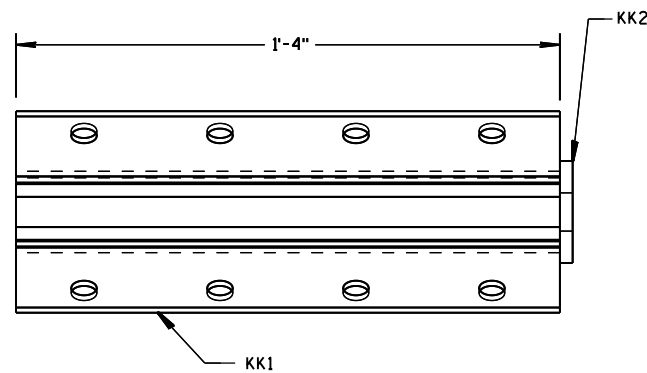
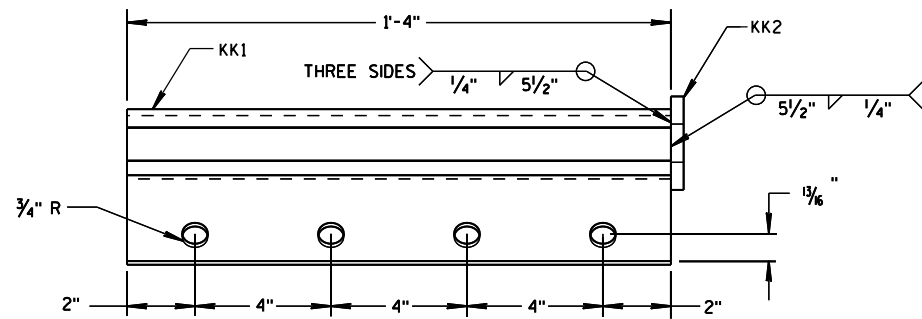
DETAIL C
PROFILE VIEW



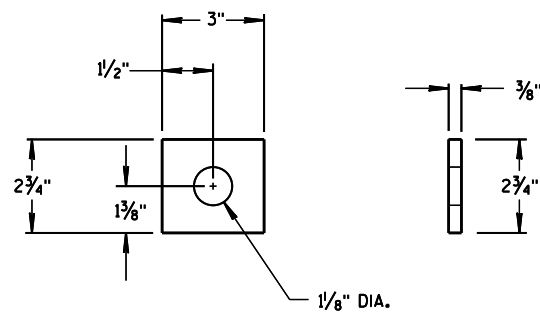
DETAIL D
PROFILE VIEW

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

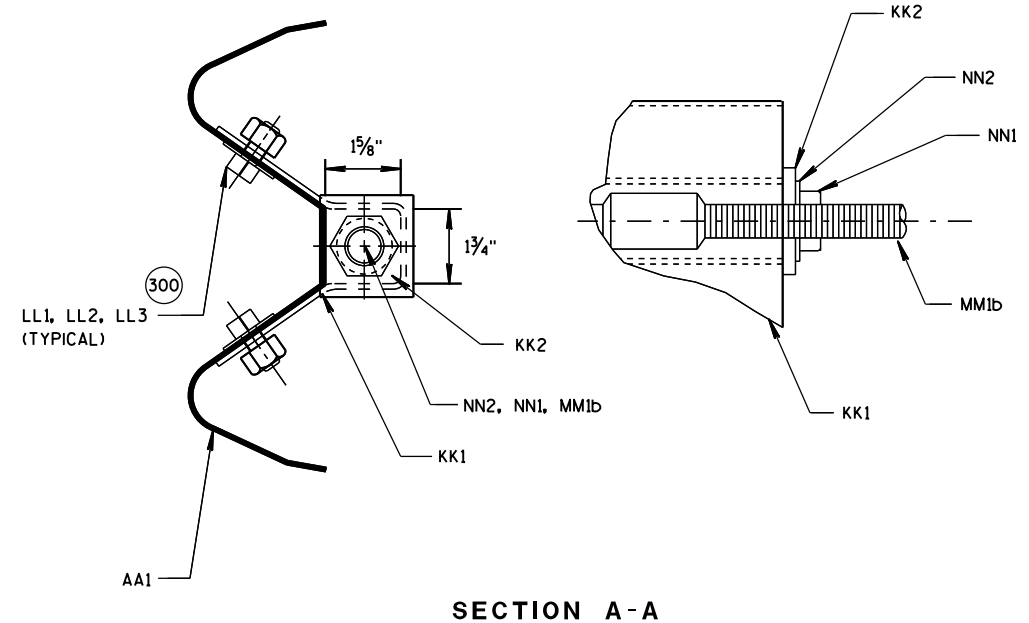


ANCHOR BRACKET (KK1, KK2)



ANCHOR BRACKET BEARING PLATE (KK2)

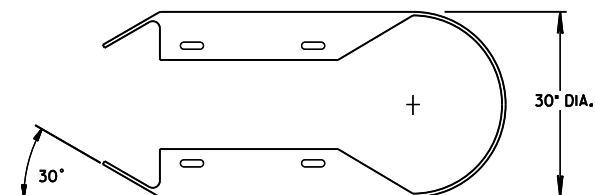
300 WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT LL1 AND LL3 REQUIRED. SIXTEEN LL2 REQUIRED.



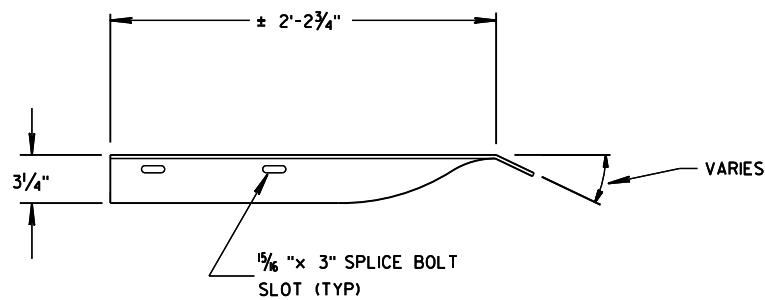
SECTION A-A

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



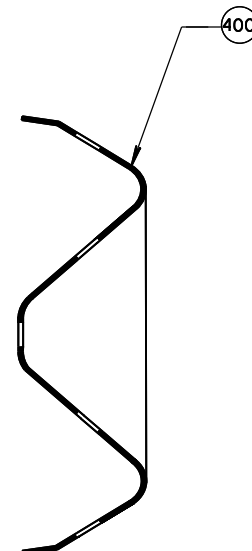
TOP VIEW



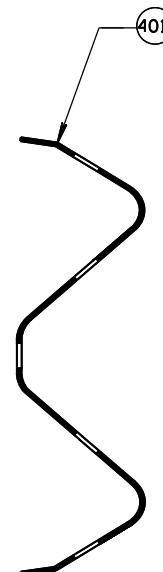
TOP VIEW

400 CROSS SECTION OF PART IS TO FIT OVER AA1.

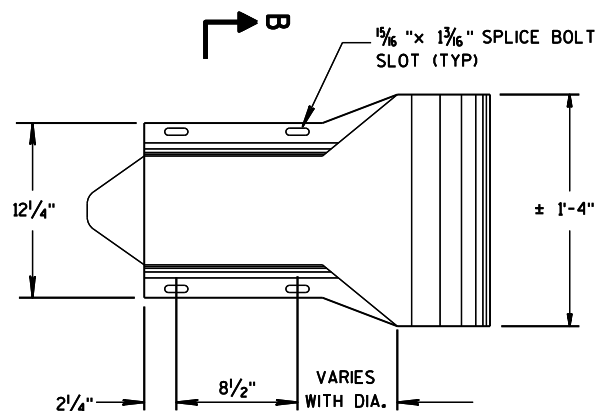
401 CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1.



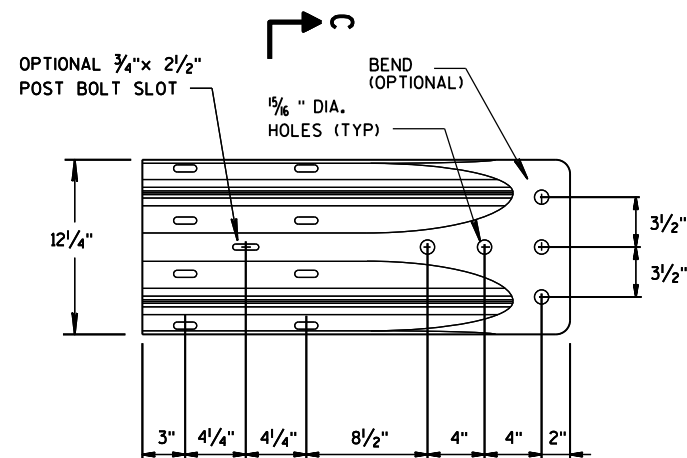
SECTION B-B



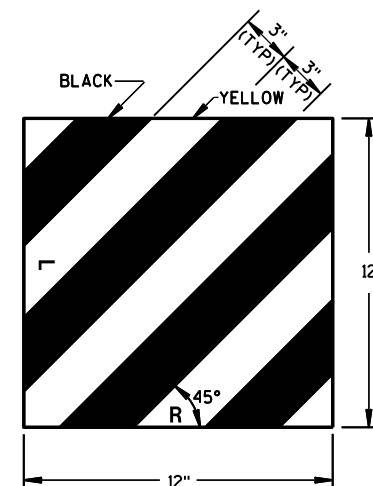
SECTION C-C



W-BEAM
END SECTION BUFFER (AA2)
PROFILE VIEW



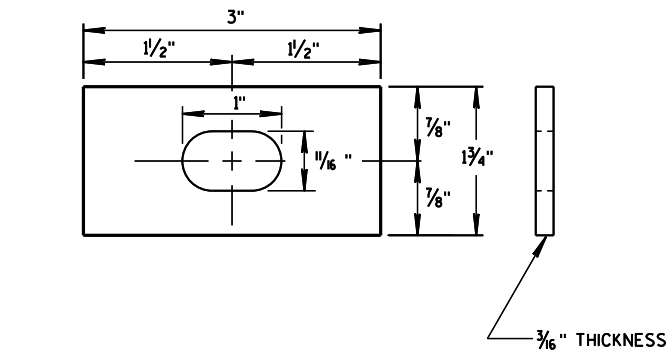
W-BEAM
TERMINAL CONNECTOR (BB1)
PROFILE VIEW



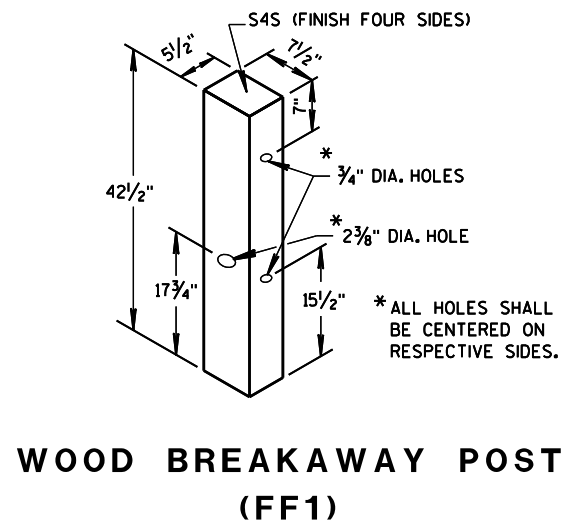
REFLECTIVE SHEETING
(UU1, UU2)

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

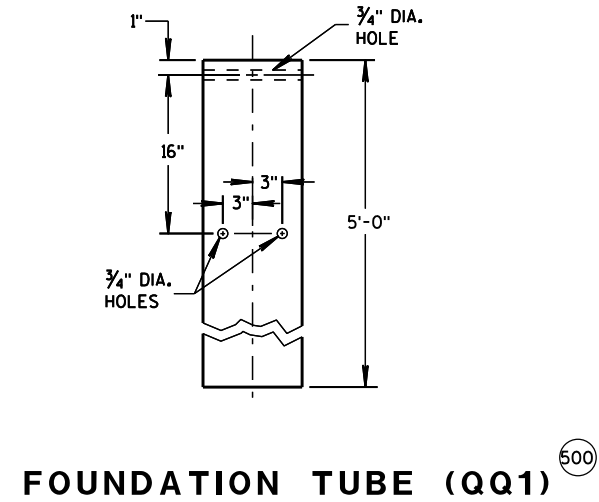
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



**RECTANGULAR
PLATE WASHER (CC1)**

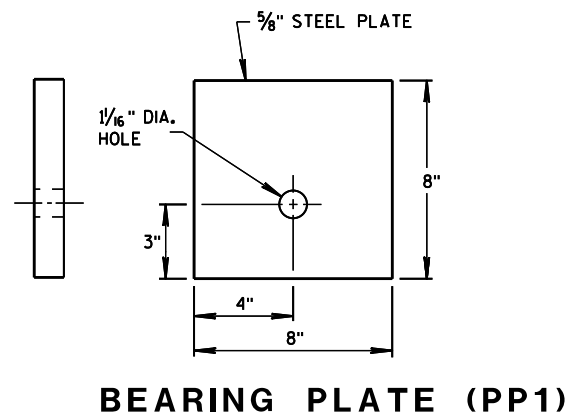


**WOOD BREAKAWAY POST
(FF1)**

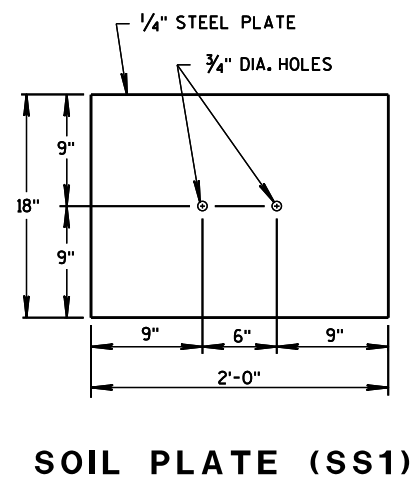


FOUNDATION TUBE (QQ1) 500

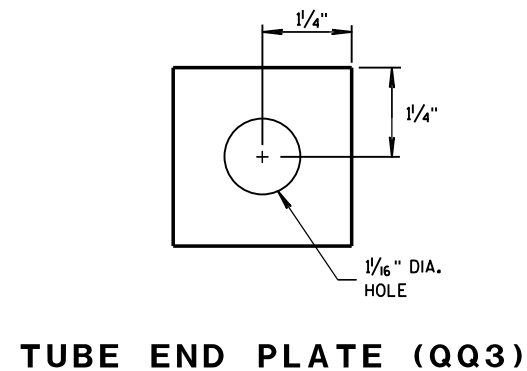
- 500 SEE DETAIL "D" FOR LOCATION AND ATTACHING SSL.
- 501 FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.
- 502 LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.
- 503 MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE 109.



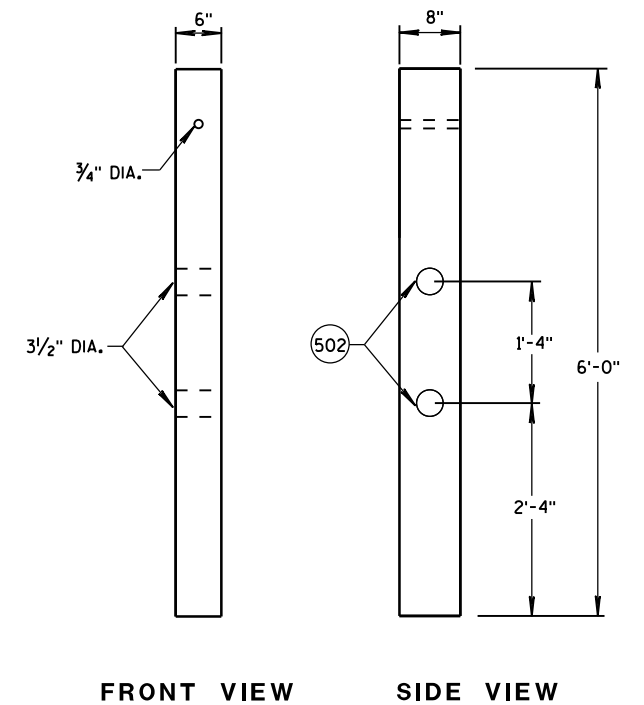
BEARING PLATE (PP1)



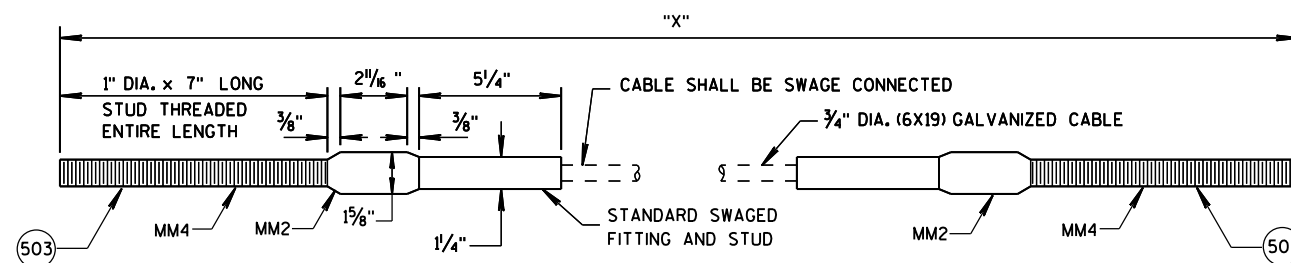
SOIL PLATE (SS1)



TUBE END PLATE (QQ3)



**CONTROLLED RELEASE
TERMINAL POST (CRT) (D2)**



CABLE ASSEMBLY (MM1a, MM1b)

"X" LENGTH	
MM1a	9'-0"
MM1b	6'-8"

**SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	BEAM GUARD RAIL	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
A2	BEAM GUARD RAIL - SHOP BENT	INDICATE ON BACK OF RAIL RADIUS THAT RAIL WAS BENT TO. SHOP BEND RADIUS IS TO THE NEAREST FOOT. FOLLOW AASHTO M180 ON HOW TO MARK RADIUS INFORMATION.	
		AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
B1	BLOCK - WOOD	WISDOT SPEC. 614	SEE SDD 14B42
C1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEAD)	
D1	POST-STRONG POST-WOOD	WISDOT SPEC. 614	SEE SDD 14B42
D2	POST-CRT-WOOD	WISDOT SPEC. 614	
E1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
E2	POST BOLT-WASHER	ASTM F436 TYPE 1(HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	5/8" DIA.
		GALV. AASHTO M111/ASTM A 123 OR GALV. HOT DIP, TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329	
E3	POST BOLT - NUT		5/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
F1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	5/8" DIA. SEE SDD 14B42 FOR GEOMETRY AND OTHER INFORMATION
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
F2	SPLICE BOLT - NUT	ASTM A563 GRADE A	5/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
G1	LAG SCREW	ASTM A308 GRADE A ASTM A153 CLASS D	3/8" DIA. 3" LONG
		UNC	
H1	DELINEATOR - BEAM GUARD		SEE SDD 14B42 FOR MORE INFORMATION
H2	DELINEATION - SHEETING	YELLOW OR WHITE	
		WISDOT SPEC 637 TYPE SH	
J1	FOUNDATION BACKFILL	APPROVED PRODUCT LIST STANDARD SPEC. 614	
AA1	BEAM GUARD RAIL - PUNCHED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
AA2	BEAM GUARD RAIL - END SECTION BUFFER	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
BB1	BEAM GUARD RAIL - TERMINAL CONNECTOR MODIFIED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
CC1	SHORT RADIUS - SQUARE WASHER	AASHTO M180	
		GALV. AASHTO M111 / ASTM A123	
EE1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEADED)	
FF1	POST - BCT - WOOD	S4S FINISH ON 4 SIDES	
		WISDOT SPEC. 614	
GG1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	3/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
GG2	POST BOLT - WASHER	UNC	3/8" DIA.
		ASTM F436 TYPE 1(HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
GG3	POST BOLT - NUT	ASTM A563 GRADE A	3/8" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	SEE 14B42 FOR GEOMETRY
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
HH1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	3/8" DIA. SEE 14B42 FOR GEOMETRY
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180 HEAD GEOMETRY	
HH2	SPLICE BOLT - NUT	ASTM A563 GRADE A	3/8" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	SEE 14B42 FOR GEOMETRY
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
JJ1	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	10" O.D.
JJ2	TOP PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 3/8" X 4" X 1'-0"
		GALV. AASHTO M111 / ASTM A123	
KK1	ANCHOR BRACKET	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
KK2	ANCHOR BRACKET - BEARING PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
LL1	ANCHOR BRACKET - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	
LL2	ANCHOR BRACKET - WASHER	GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	5/8" DIA.
LL3	ANCHOR BRACKET - NUT	ASTM A563 GRADE A	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A563	
		UNC	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
MM1a	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIC CLASS C ZINC COATED	
MM1b	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIC CLASS C ZINC COATED	
MM2	ANCHOR CABLE - SWAGE FITTING	ASTM A576 GRADE 1035	
		SWAGE FITTINGS ARE TO BE FACTORY SWAGED. WITH A BREAKING STRENGTH 40,000 LBS.	
		GALV. AASHTO M111 / ASTM A123	
		ASME B30.26 FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING INTO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE.	
MM3	WIRE ROPE CABLE CLAMPS	FF-C-450D TYPE 1 CLASS 1	3/4"
		ASTM A153 HOT DIP CLASS D	
MM4	ANCHOR CABLE - SWAGE FITTING - STUD	ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
NN1	ANCHOR CABLE - NUT	ASTM A563 GRADE A	1" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A563	
NN2	ANCHOR CABLE - NUT - WASHER	UNC	1" DIA.
		ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
PP1	BEARING PLATE AT POST	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
PP2	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	2" DIA. x 6" LONG
QQ1	FOUNDATION TUBE	ASTM A500 GRADE B	8" X 6" X 3/16"
		GALV. AASHTO M111 / ASTM A123	
QQ2	SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE	ASTM A500 GRADE B	DIMENSIONS 2 1/2" X 2 1/4" X 1/4" X 8"
		GALV. AASHTO M111 / ASTM A123	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
003	SHORT RADIUS - SOIL TUBE - ANCHOR CABLE - TUBE - END PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 2 1/2" X 2 1/2" X 1/4"
		GALV. AASHTO M111 / ASTM A123	
004	GROUND STRUT AND YOKE - BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8" DIA.
		ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	
		UNC	
005	GROUND PLATE AND YOKE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
006	GROUND STRUT AND YOKE - NUT	HEAVY HEX	5/8" DIA.
		UNC	
		ASTM A563 GRADE A	
		OVER TAPPED NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
SS1	SOIL PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
TT1	SOIL PLATE - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
TT2	SOIL PLATE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
		GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
TT3	SOIL PLATE - NUT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8" DIA.
UU1	OBJECT MARKER - SHEETING	MUTCD / WISDOT OBJECT MARKER TYPE 3	PATTERN AND COLOR FOR SHEETING SHEETING TYPE FOR MARKER
		WISDOT SPEC 637 TYPE F	
		APPROVED PRODUCT LIST	
UU2	OBJECT MARKER - ALUMINUM PLATE	WISDOT SPEC 637 ALUMINUM PLATE	MATERIAL AND THICKNESS OF MATERIALS
UU3	OBJECT MARKER - SCREWS	STAINLESS SELF-TAPPING SCREWS	
VV1	FOUNDATION BACKFILL	WISDOT SPEC 614	

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

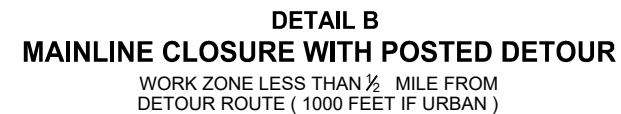
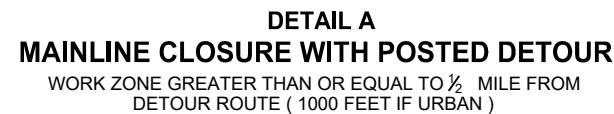
June 2017

DATE

FHWA

/S/ Rodney Taylor

ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

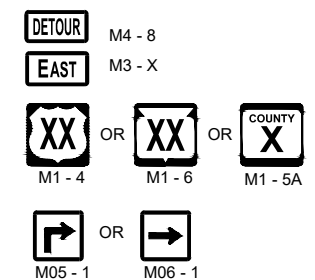


SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (FT)
25	200
30	200
35	350
40	350
45	500
50	550
55	750

SEE SDD 15C2-SHEET "b"
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦



	SIGN ON PERMANENT SUPPORT
	TYPE III BARRICADE
	TYPE III BARRICADE WITH ATTACHED SIGN
	TYPE "A" WARNING LIGHT (FLASHING)
	WORK AREA
	FLAGS, 16" X 16" MIN. (ORANGE)



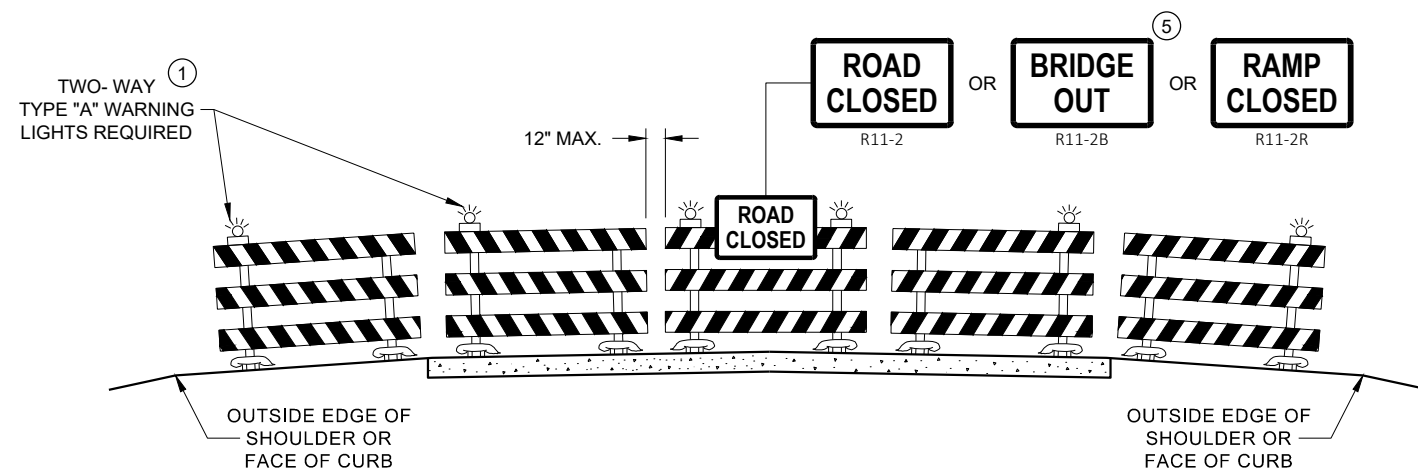
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

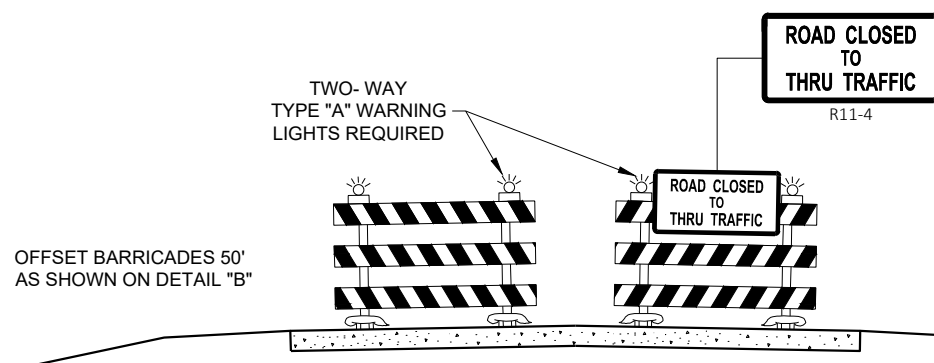
APPROVED
November 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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.

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

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION, OR FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

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

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL "D" FOR FULL ROAD CLOSURES.

TYPE "A" LOW - INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11 - 2, R11 - 3, M4 - 9, R11 - 4, AND R10 - 61 SIGNS PLACED ON THE BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE RAIL OR BOTTOM RAILS.

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60" X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- MO5 - 1 AND MO6 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- D1 - X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1 - 1 SHALL BE 36" X 36"

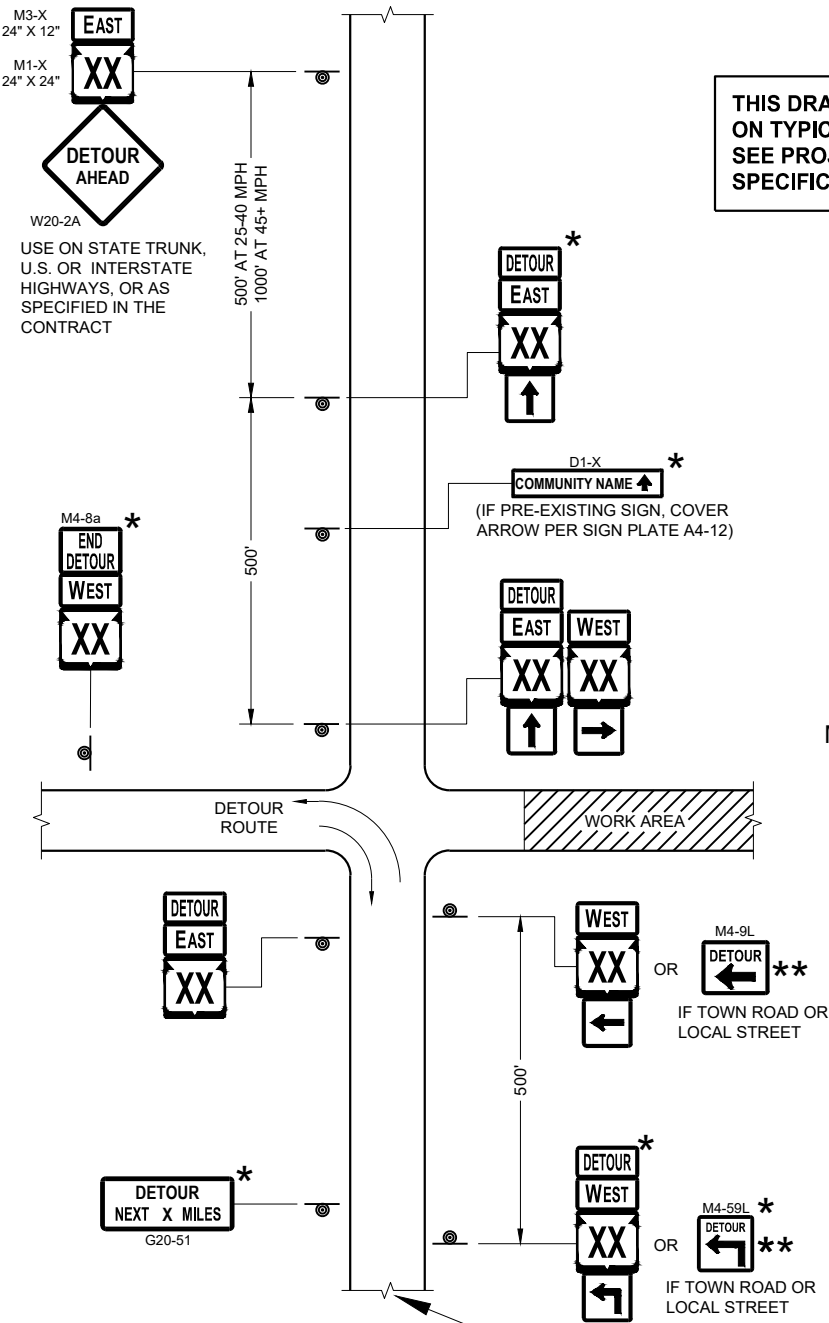
- ① TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- ② THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT AN INTERSECTION.
- ③ FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "D".
- ④ FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "E".
- ⑤ FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11 - 2 AND R11 - 3 SIGNS.
- ⑥ INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- ⑦ "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR VARIOUS CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

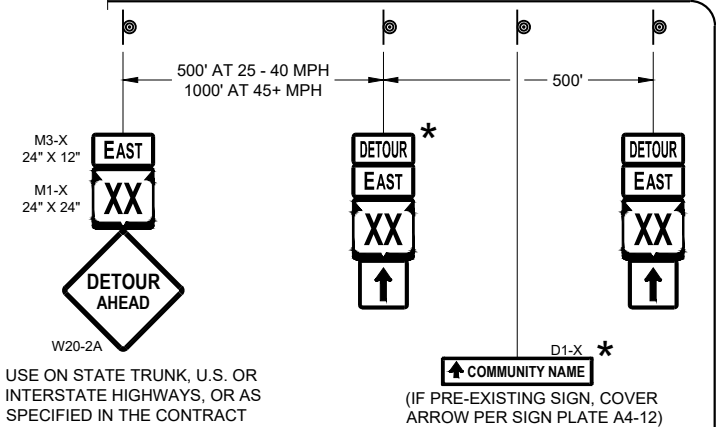
FHWA



SEE SPECIFIC PROJECT DETOUR
SIGNING DETAIL SHEETS AND
DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

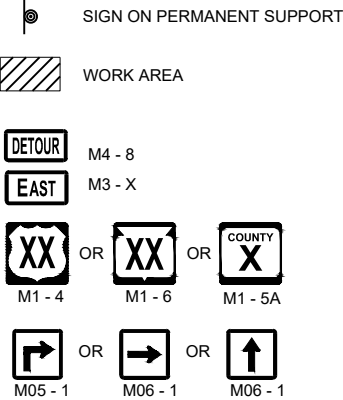
THIS DRAWING PROVIDES GENERAL GUIDANCE
ON TYPICAL DETOUR SIGN LAYOUT AND SPACING.
SEE PROJECT DETOUR SIGNING SHEETS FOR
SPECIFIC DETAILS FOR EACH PROJECT.

MATCH POINT



DETAIL F
DETOUR SIGNING

LEGEND



GENERAL NOTES

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

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

THE SPACING BETWEEN TRAFFIC CONTROL AND DETOUR 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.

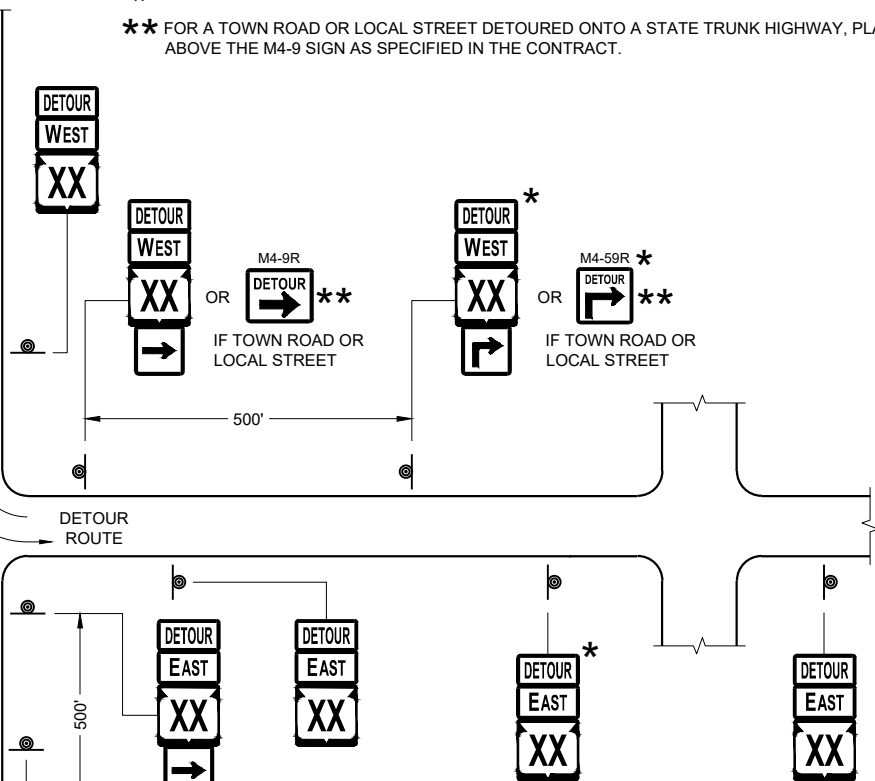
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-9 AND M4-59 SHALL BE 30" X 24"
- M4-8a SHALL BE 24" X 18"
- G20-51 SHALL BE 60" X 24"
- W20-2A SHALL BE 48" X 48"
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

- * OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.
- ** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.

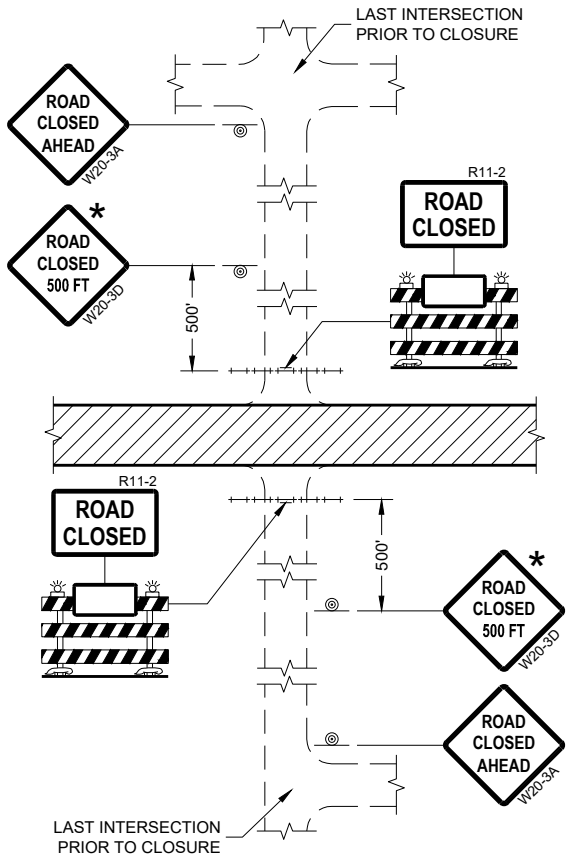


PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

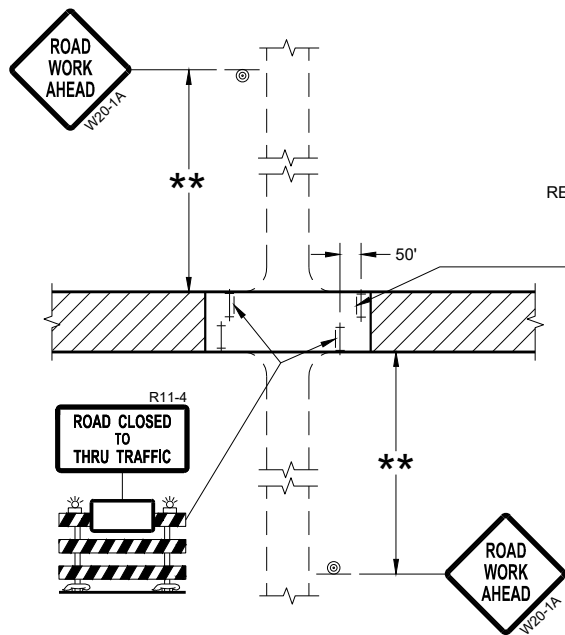
DETOUR SIGNING
FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

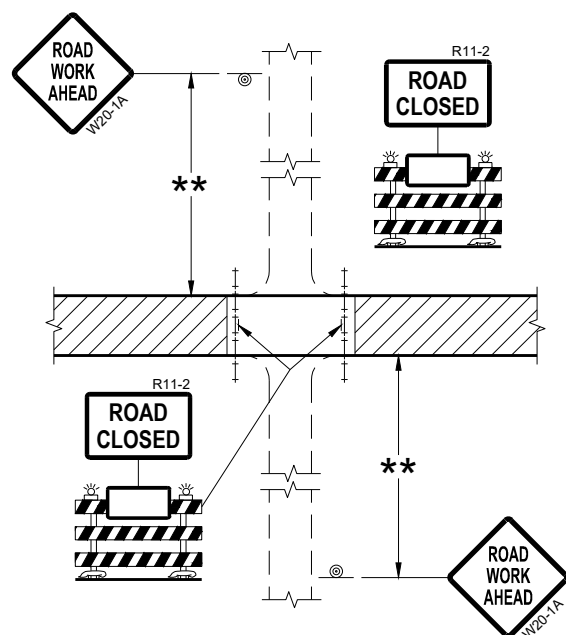
APPROVED
November 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
FHWA



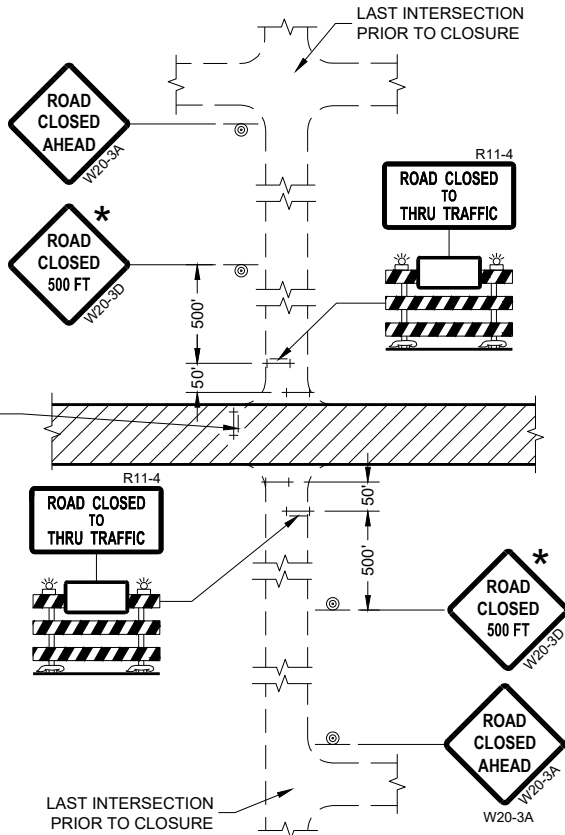
DETAIL 1
(NO ACCESS TO PROJECT)



DETAIL 3
(PUBLIC CROSS-TRAFFIC MAINTAINED.
CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)



DETAIL 2
(PUBLIC CROSS-TRAFFIC MAINTAINED.
NO ACCESS TO PROJECT)



DETAIL 4
(CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)

GENERAL NOTES

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

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.

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

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.

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY REESTABLISHED UPON COMPLETION OF THE OPERATION OR FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

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

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL "D" FOR FULL ROAD CLOSURES.

TYPE "A" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11-2, R11-3, AND R11-4 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
R11-2 SHALL BE 48" X 30".
R11-4 AND R11-3 SHALL BE 60" X 30".

- * OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FEET OR LESS FROM THE WORK ZONE.
- ** 500' MAX. OR AT LAST INTERSECTION, WHICHEVER IS CLOSEST.

LEGEND

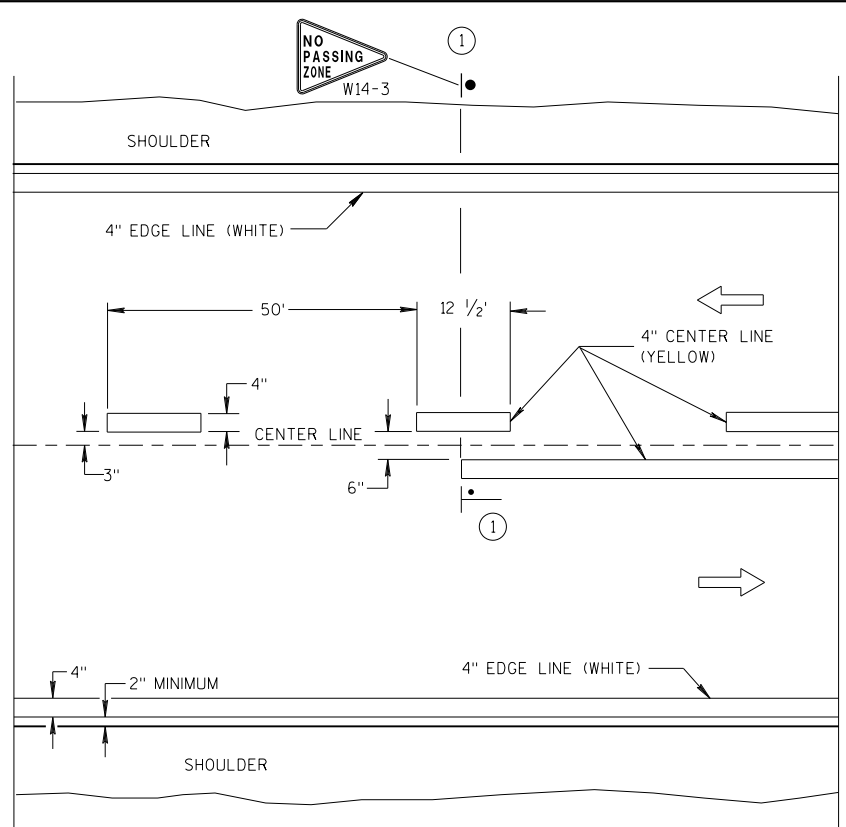
- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA

**BARRICADES AND SIGNS
FOR
SIDEROAD CLOSURES**

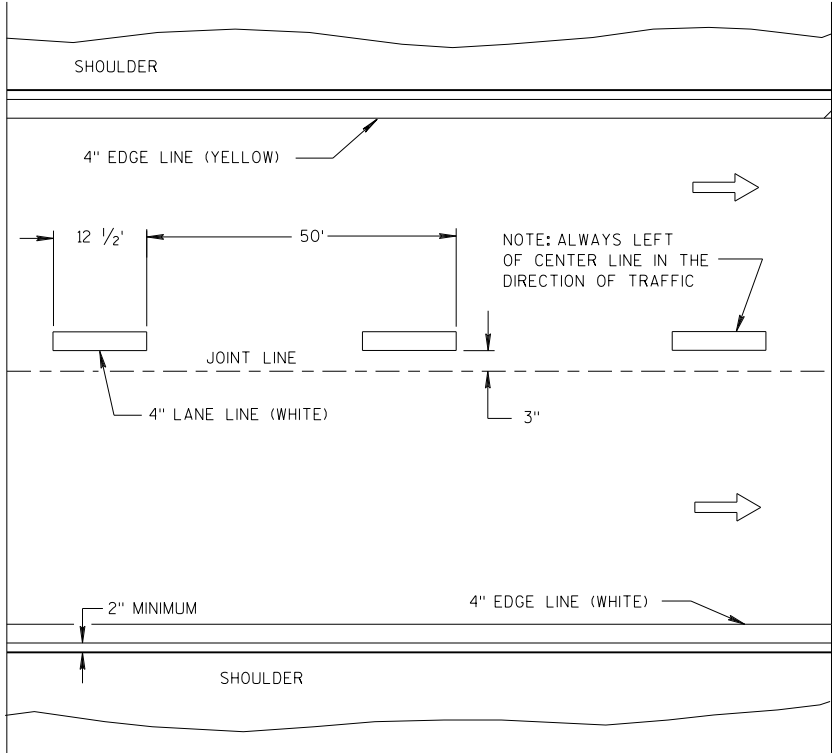
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

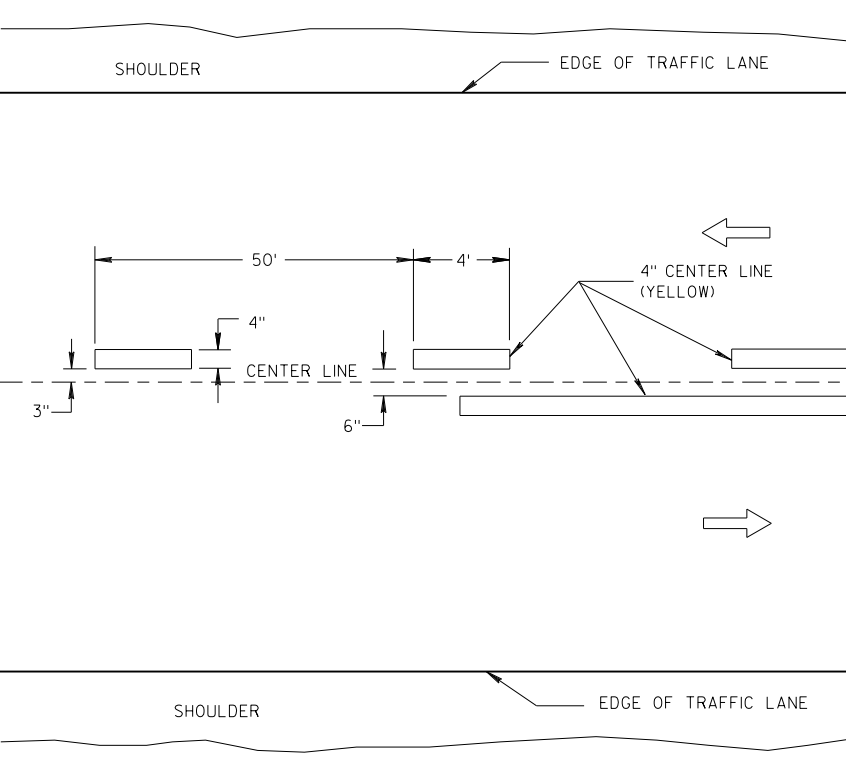


TWO WAY TRAFFIC

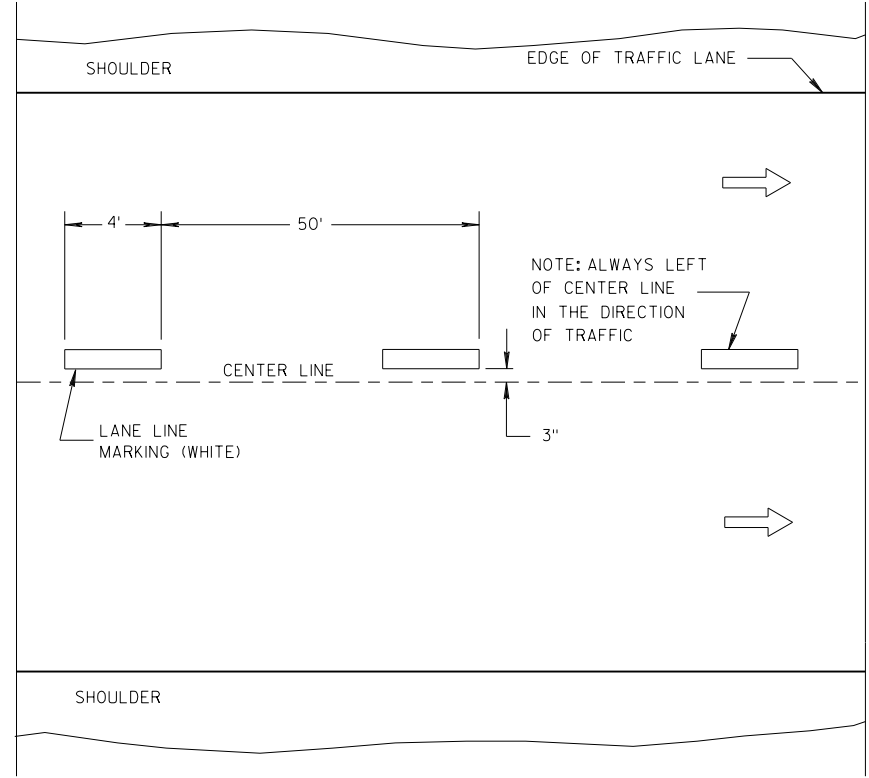


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

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.

NOTE

ARROW SYMBOL (➡) SHOWS DIRECTION OF TRAVEL

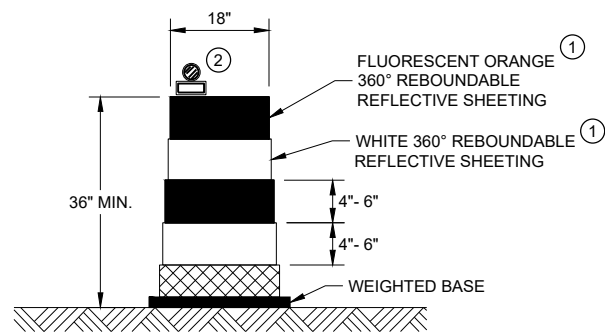
LEGEND

- "T" MARKING
- POST MOUNTED SIGN

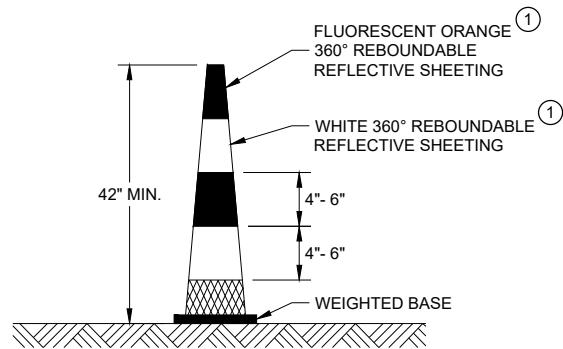
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA

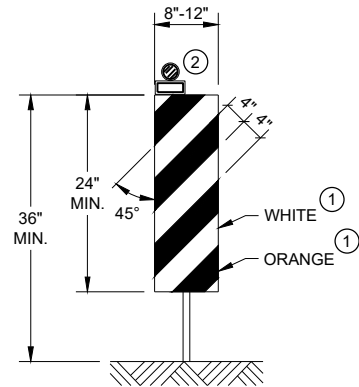


DRUM



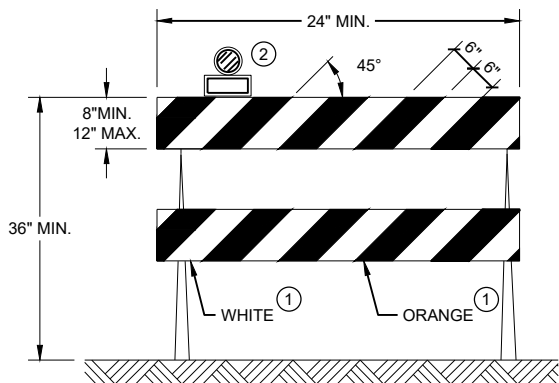
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



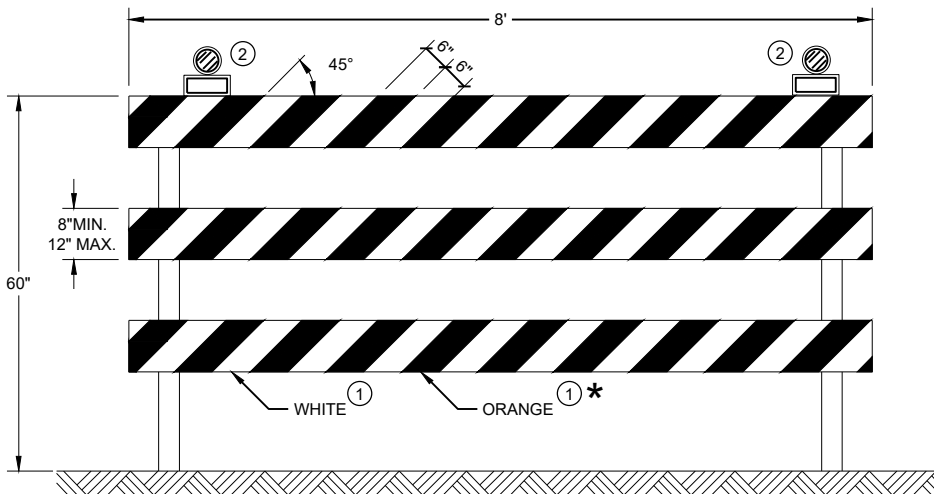
VERTICAL PANEL

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



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.

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.

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

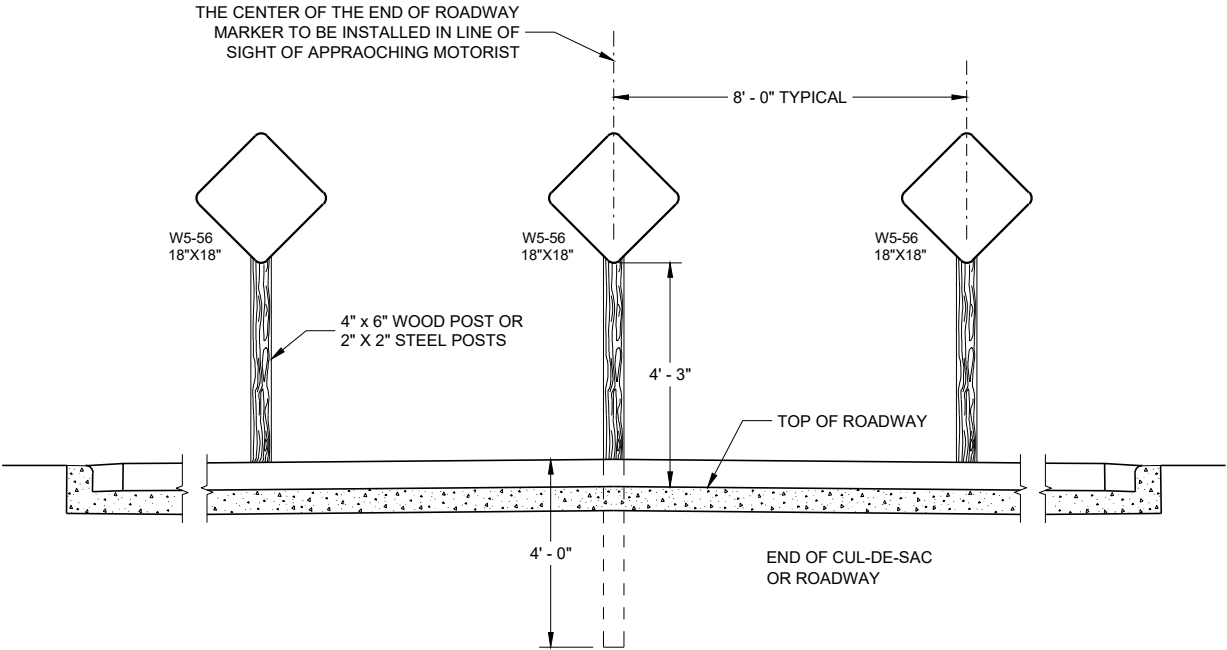
FHWA

GENERAL NOTES

SIGN LOCATIONS SHOWN ARE TYPICAL PLACEMENT AND MAY BE ADJUSTED BY THE ENGINEER AS FIELD CONDITIONS DICTATE.

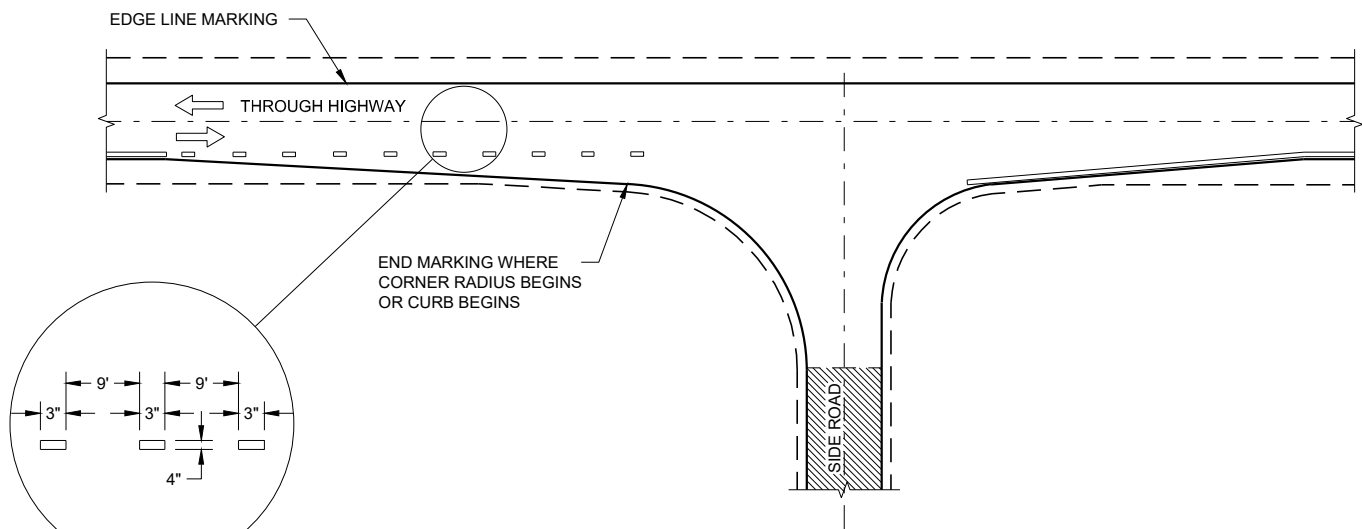
THE MINIMUM NUMBER OF END-OF-ROADWAY SIGNS ARE THREE (AS SHOWN). ADDITIONAL END-OF-ROADWAY SIGNS MAY BE INSTALLED AS FIELD CONDITIONS DICTATE. (SEE SIGNING PLAN).

WHEN BEAMGUARD IS REQUIRED, PLACE END-OF-ROADWAY SIGNING BEHIND BEAMGUARD.

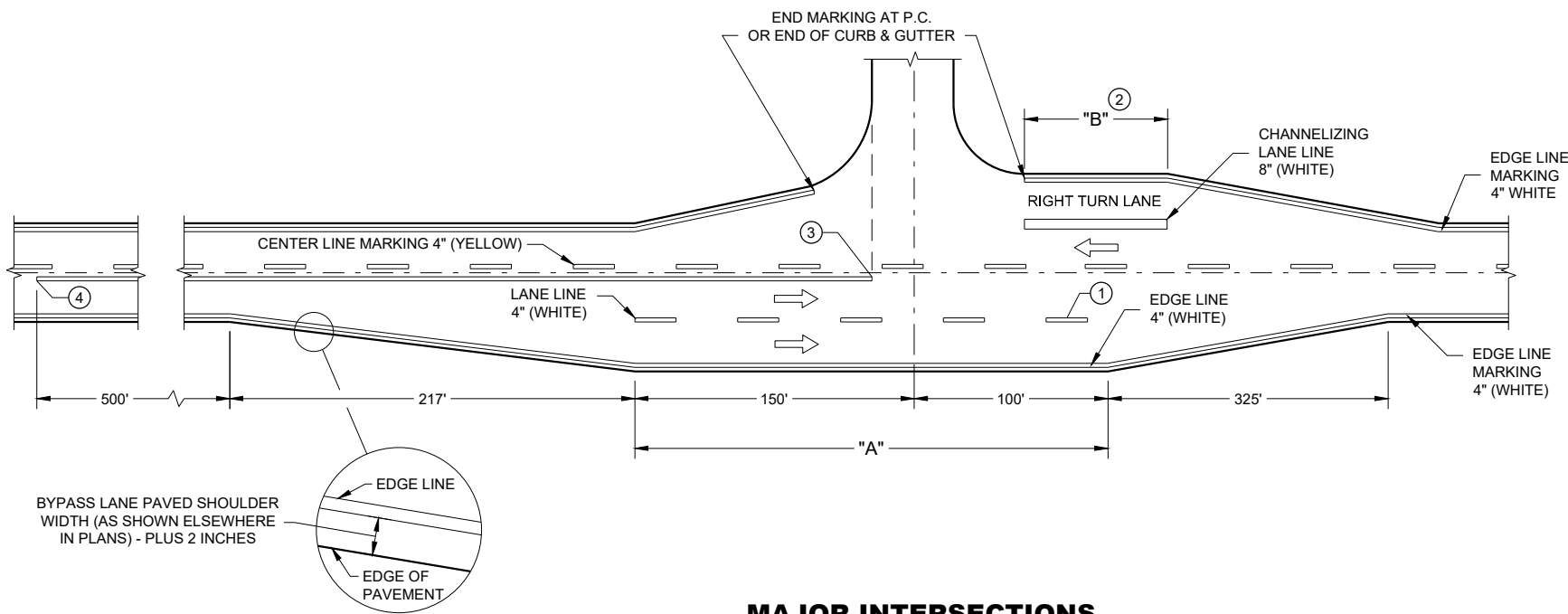


TYPICAL SIGN INSTALLATION

END-OF-ROADWAY SIGNING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Matthew Rauch STATE SIGNING AND MARKING ENGINEER
FHWA	



MINOR INTERSECTION



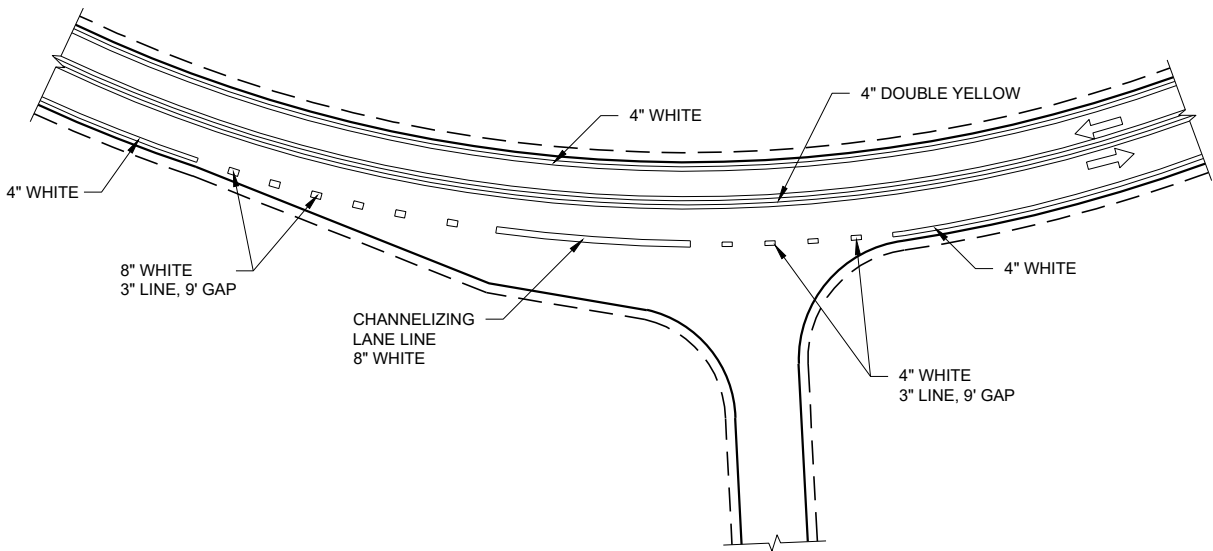
MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

GENERAL NOTES

OMIT EDGE LINES THROUGH INTERSECTIONS. CONTINUE EDGE LINES THROUGH DRIVEWAYS.

- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT / SURFACE EDGE EXTENSION.
- ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER

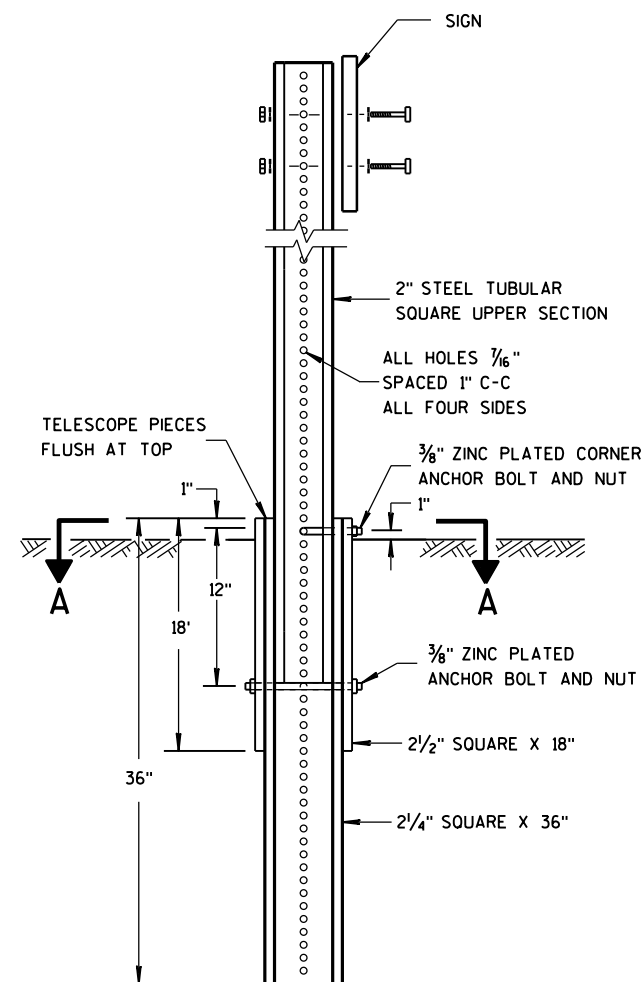
ARROW SYMBOL (➞) SHOWS DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

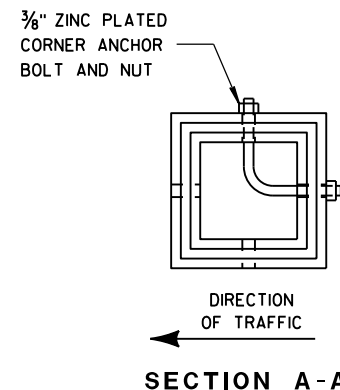


DETAIL OF TUBULAR
STEEL SIGN POST

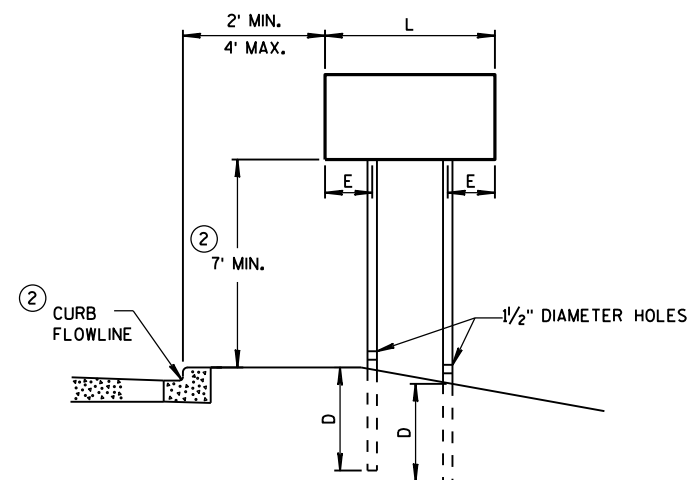
TUBULAR STEEL POSTS

AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL
BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED
ON TUBULAR STEEL POSTS.



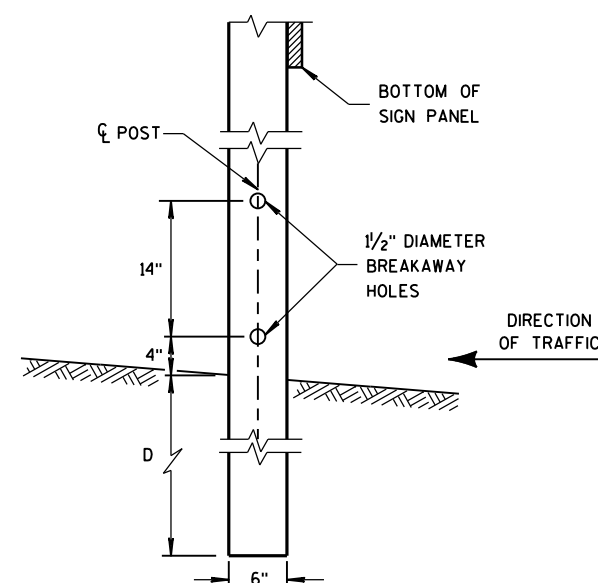
SECTION A-A



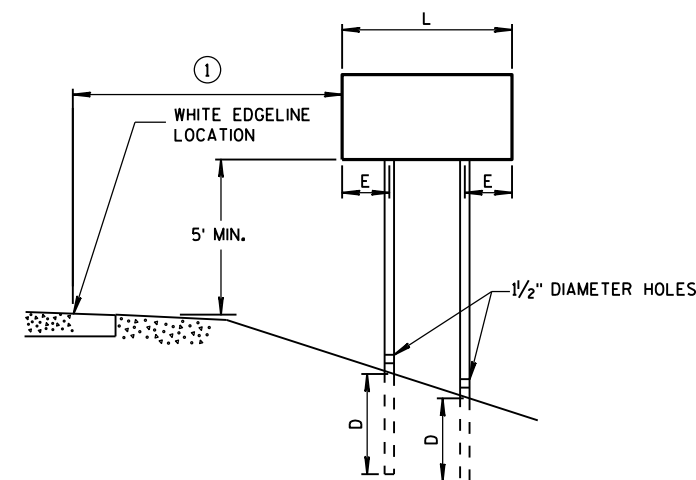
URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH	
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



4 "x6 " WOOD POST
MODIFICATION



RURAL AREA

POST SPACING REQUIREMENTS		NUMBER OF WOOD POSTS REQUIRED
L	E	
48" OR LESS AND LESS THAN 20 SQ. FT.	-	1
LESS THAN 60"	12"	2
60" TO 120"	L/5	2
GREATER THAN 120" LESS THAN 168"	12"	3
168" AND GREATER	12"	4

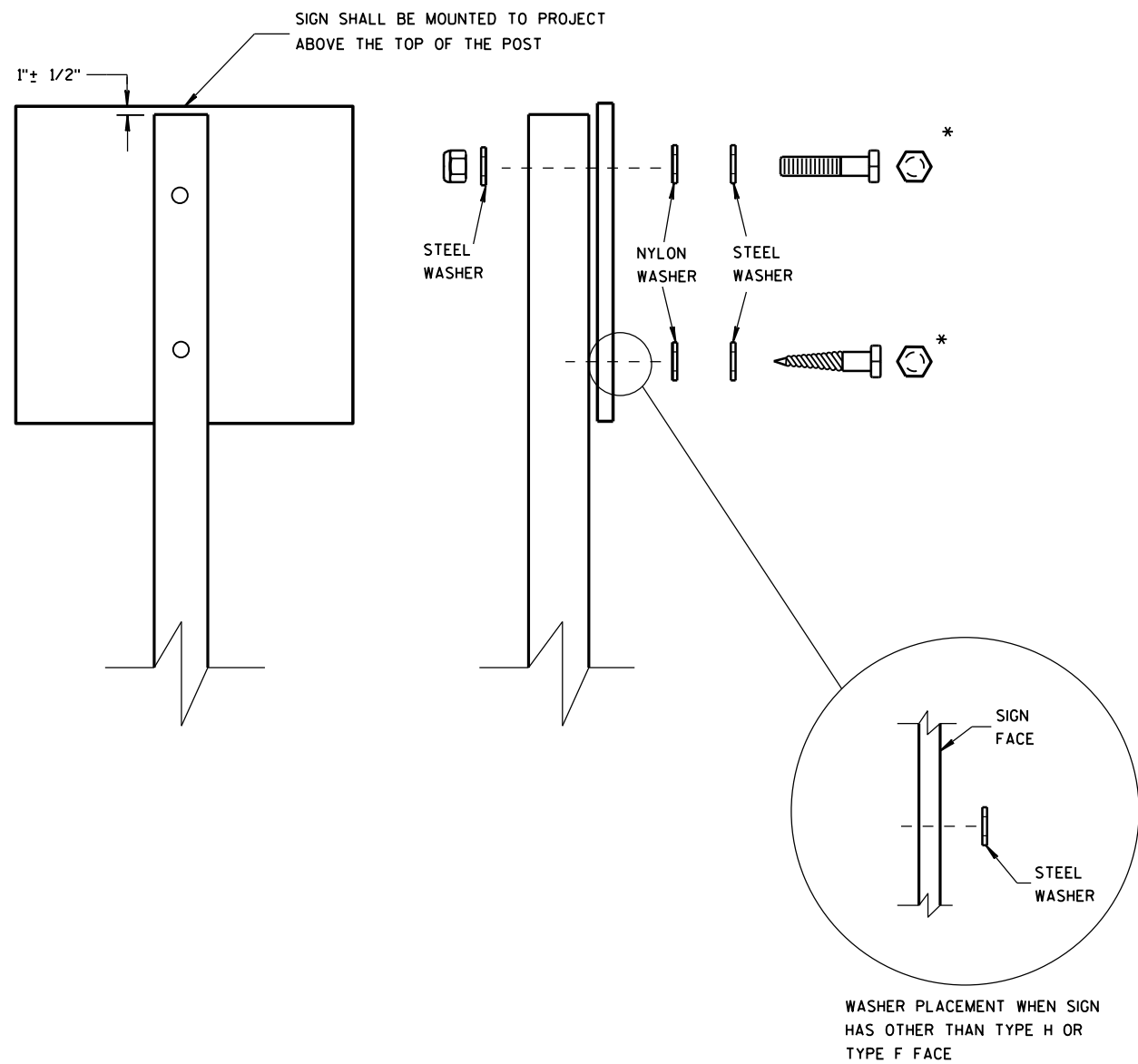
SEE NOTE ③

GENERAL NOTES

- ① 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.
- ② THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.
- ③ FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.

TEMPORARY TRAFFIC CONTROL
SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



NUTS, BOLTS AND LAGS USED FOR MOUNTING SIGNS SHALL HAVE HEXAGONAL HEADS AND SHALL BE EITHER:

- A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3
- B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

THREADS ON BOLTS AND NUTS SHALL BE MANUFACTURED WITH SUFFICIENT ALLOWANCE FOR THE CADMIUM PLATE OR GALVANIZED COATING TO PERMIT THE NUTS TO RUN FREELY ON THE BOLTS.

- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" x 3"
 - MACHINE BOLTS - 5/16" x 6-1/2" OR 7" LENGTH W/ NUTS

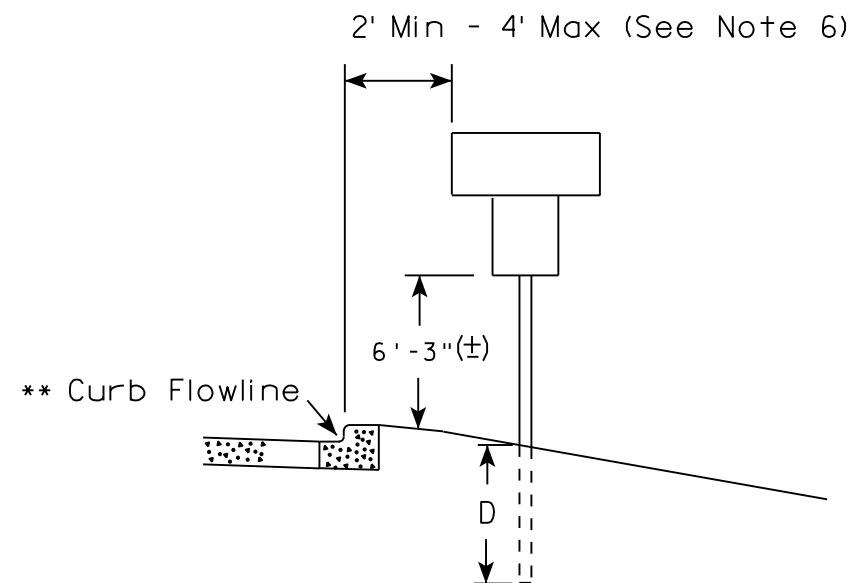
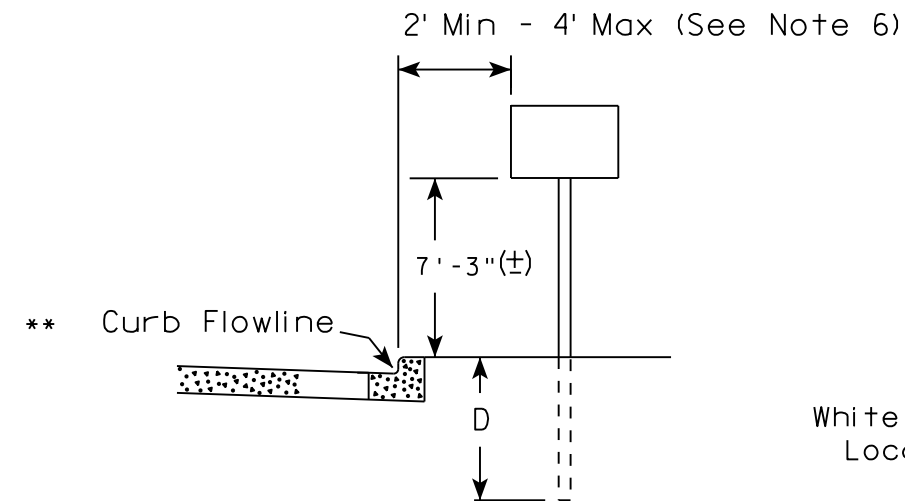
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS
 - RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

- WASHERS (ALL POSTS) -
- 1-1/4" O.D. x 3/8" I.D. x 1/16" STEEL
 - 1-1/4" O.D. x 3/8" I.D. x .080 NYLON FOR ALL TYPE H SIGNS

* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

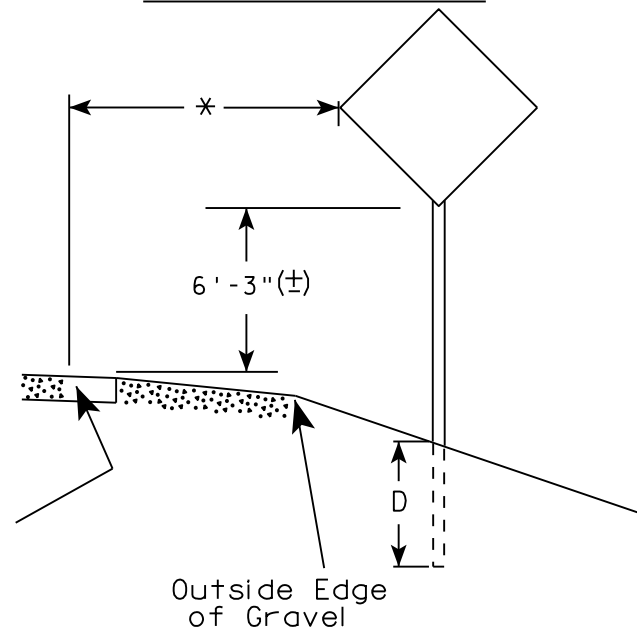
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

URBAN AREA

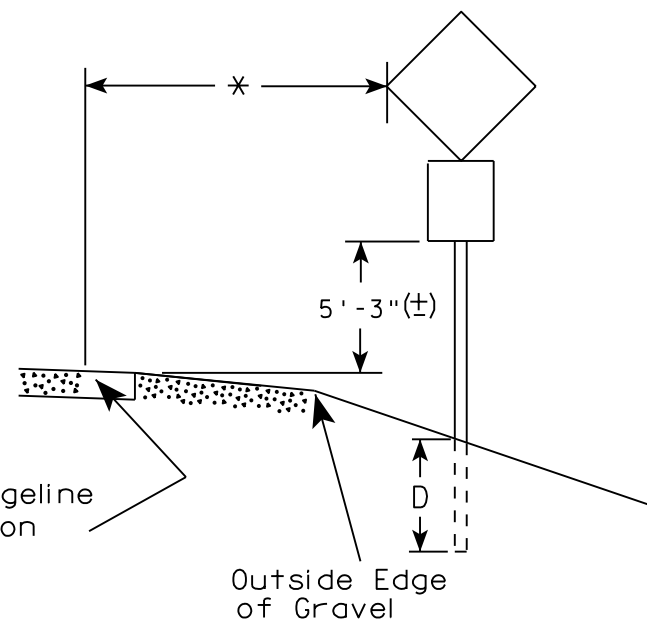


White Edgeline
Location

RURAL AREA (See Note 2)



White Edgeline
Location



Outside Edge
of Gravel

POST EMBEDMENT DEPTH

Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. J-Assemblies are considered to be one sign for mounting height.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).

✱✱ The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.

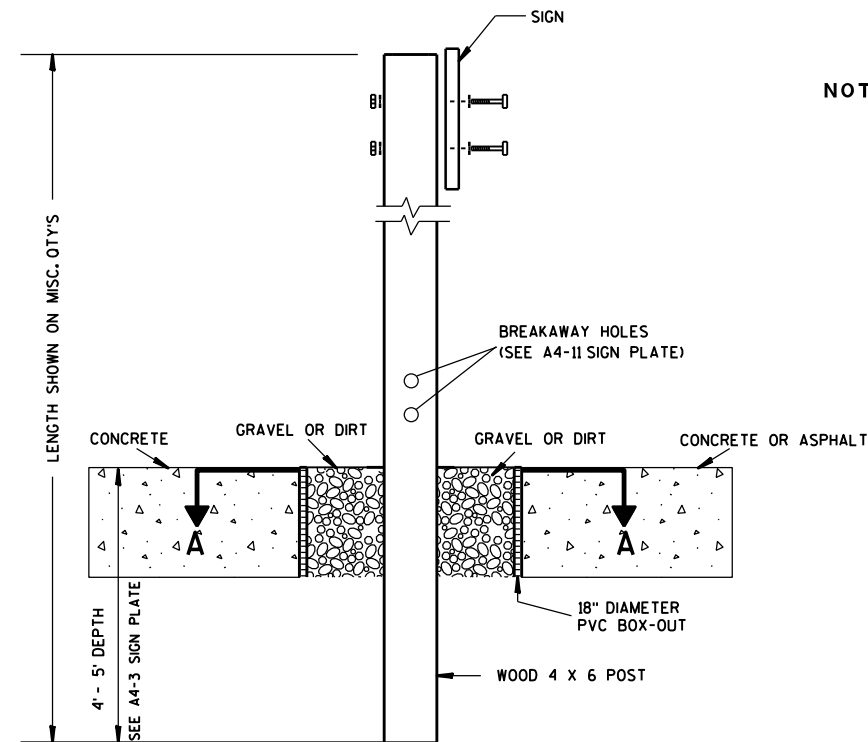
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

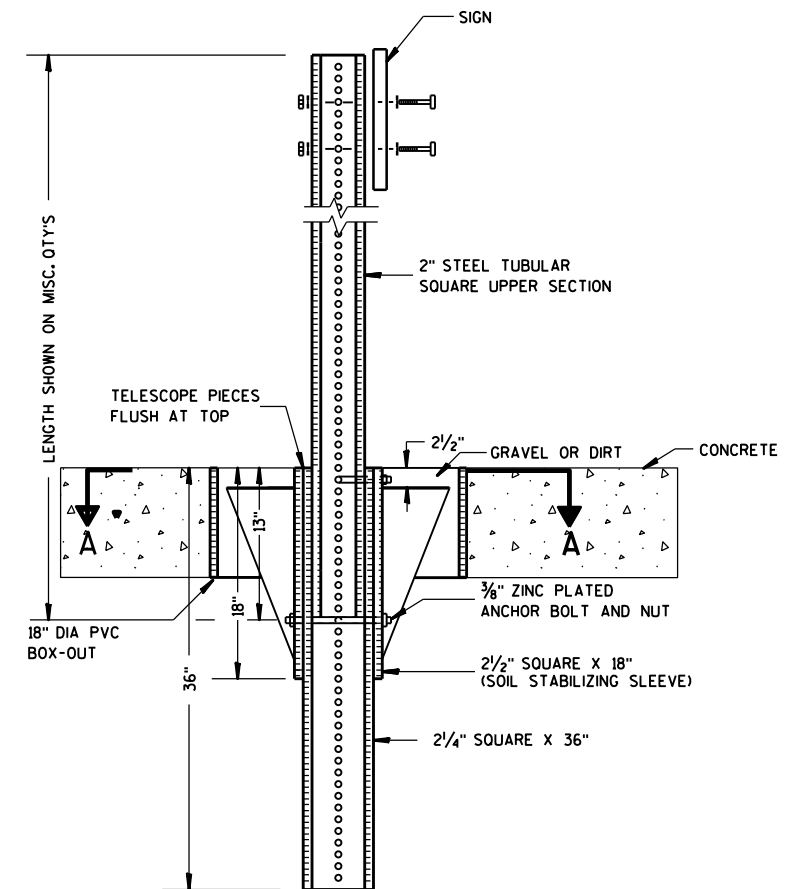
DATE 8/21/17 PLATE NO. A4-3.21



ELEVATION VIEW

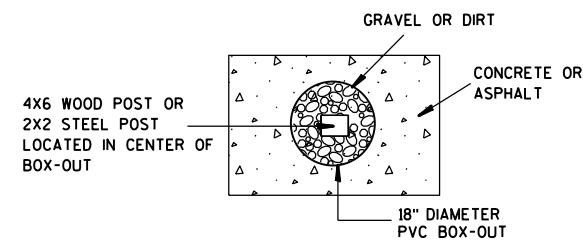
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- NOTES: 1. ALL MATERIAL TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION
2. SEE SIGN PLATE A4-8 FOR SIGN HARDWARE REQUIREMENTS
3. 18 INCH X 18 INCH SQUARE BOX-OUTS MAY BE USED FOR INSTALLATIONS IN EXISTING CONCRETE OR ASPHALT LOCATIONS.



ELEVATION VIEW

DETAIL OF STEEL 2 X 2 SIGN POST IN BOX-OUT



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLATE NO. A4-3B.1

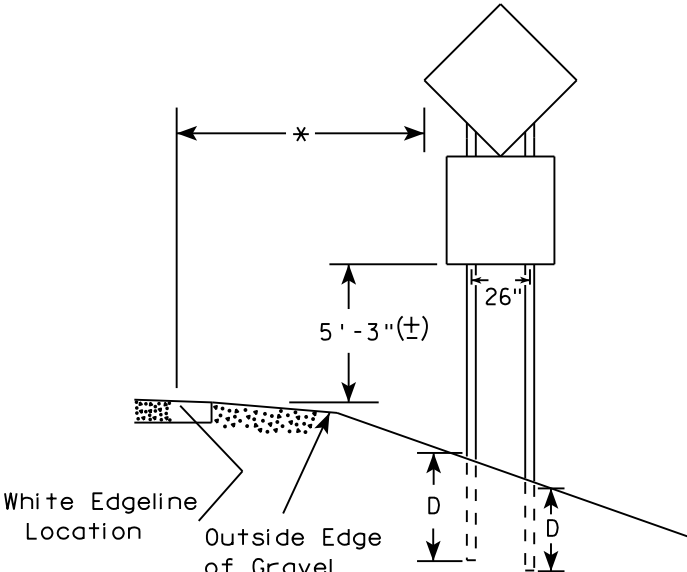
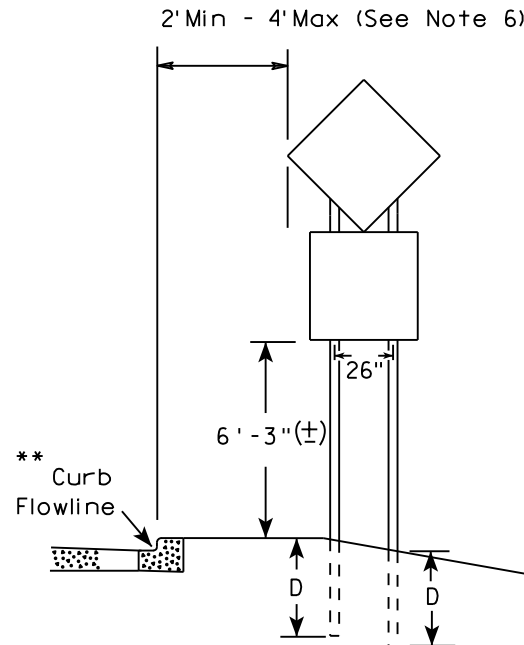
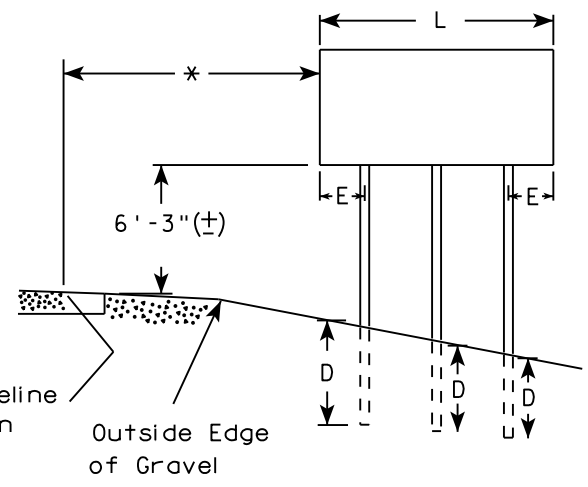
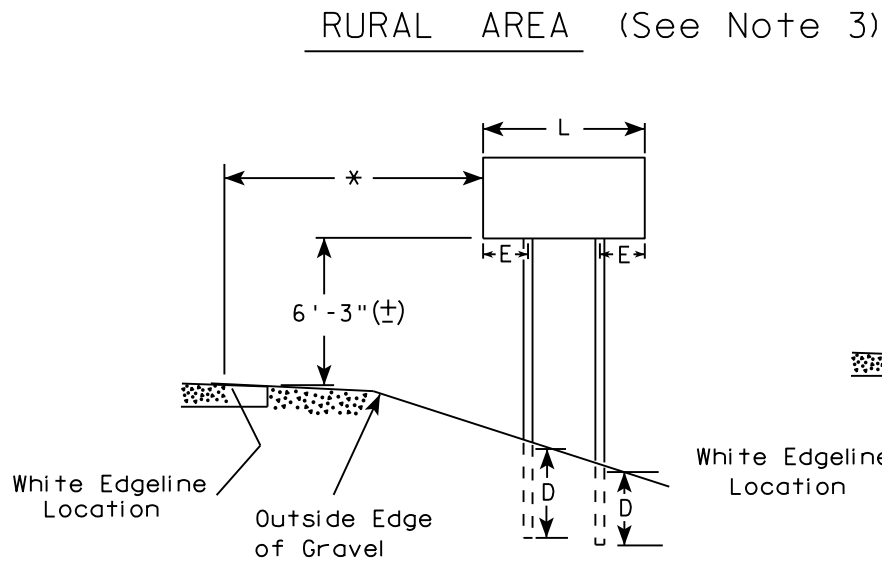
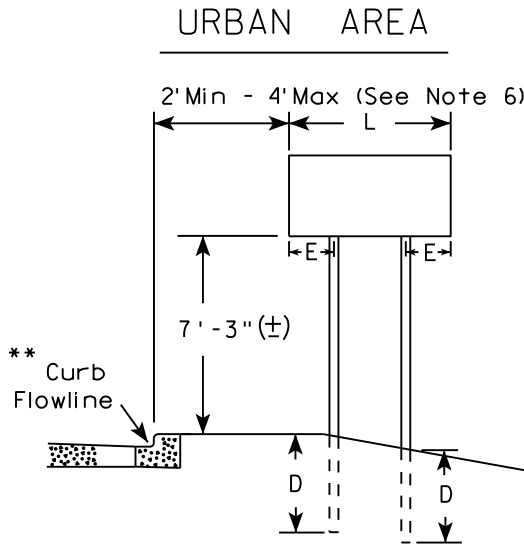
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 108"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 108" to 144"	12"

POST EMBEDMENT DEPTH

Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

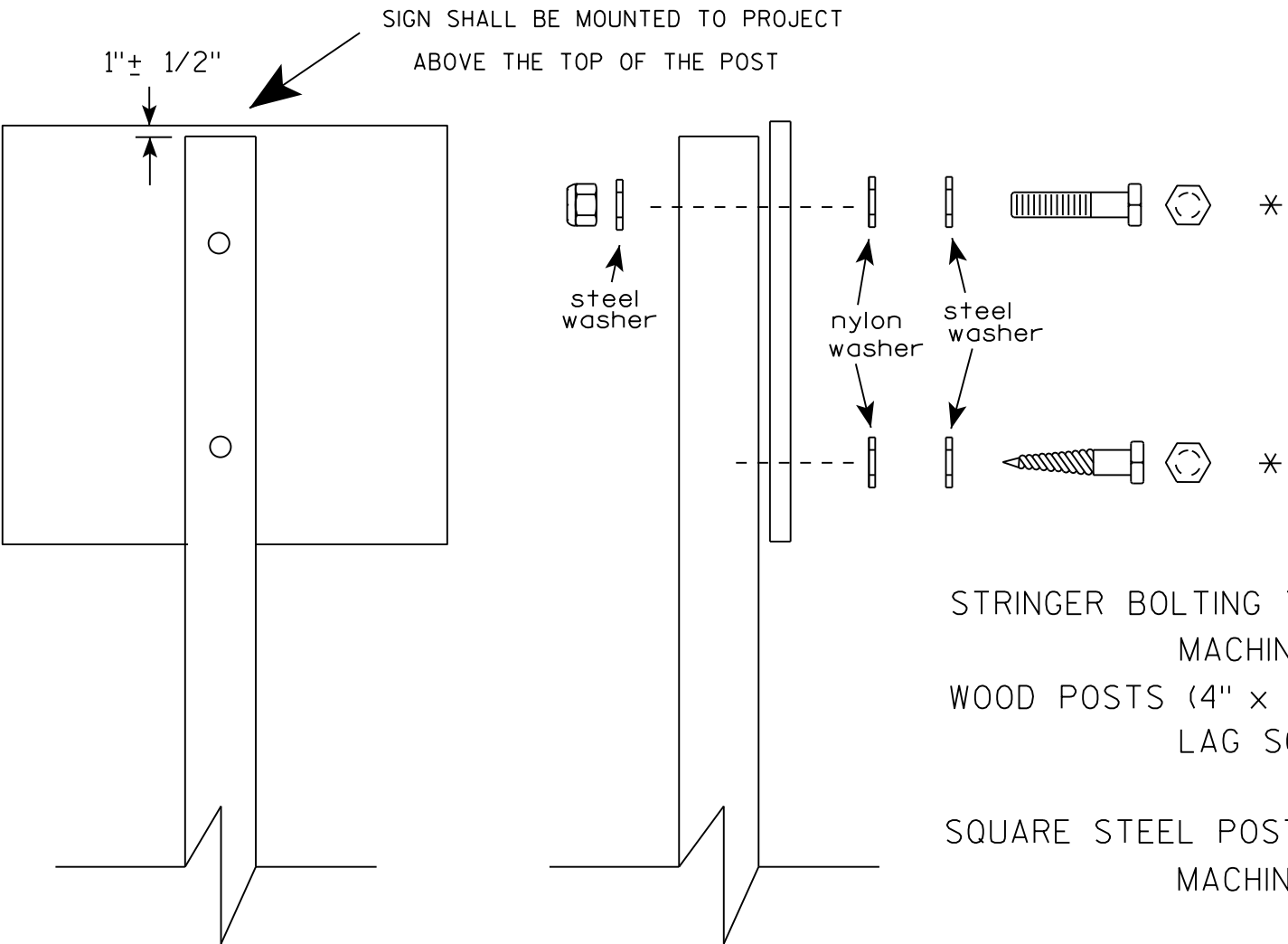
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-4.15

- GENERAL NOTES
1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
 2. See tables below for required number of posts.
 3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
 4. The (±) tolerance for mounting height is 3 inches.
 5. J-Assemblies are considered to be one sign for mounting height.
 6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
 7. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
 8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4"-3" (±).

- * 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.
- ** The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.
- *** See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.



Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

- a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
- b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
 - 3/8" X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - 3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
- O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -
- 1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
 - 1-1/4" O.D. X 3/8" I.D. X .080 NYLON

* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require the use of 3 fasteners.

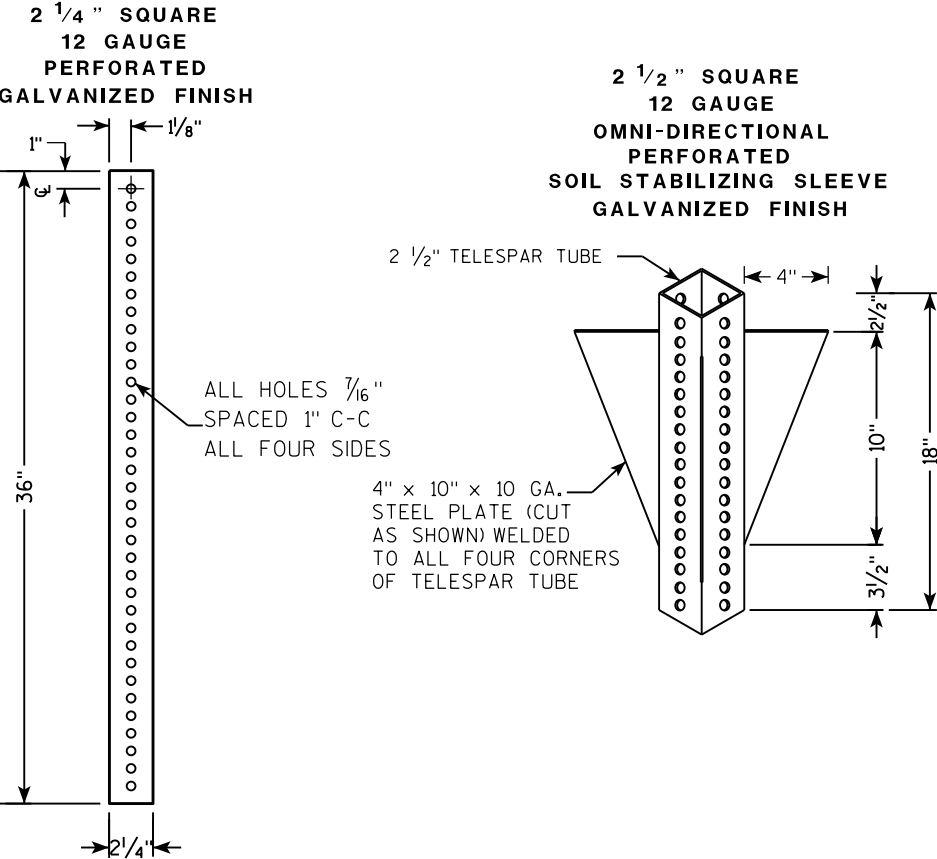
ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

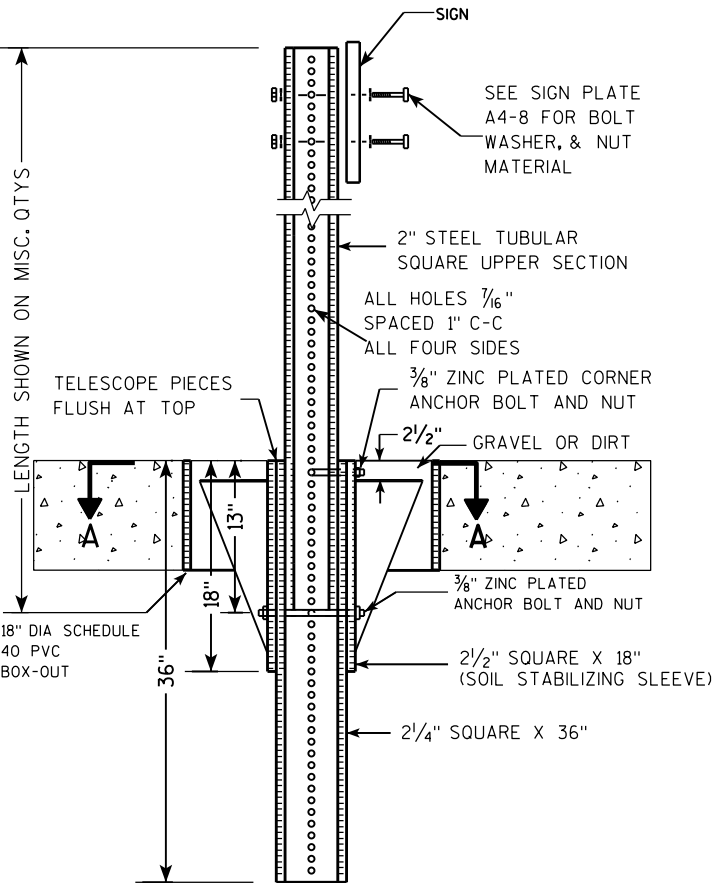
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8

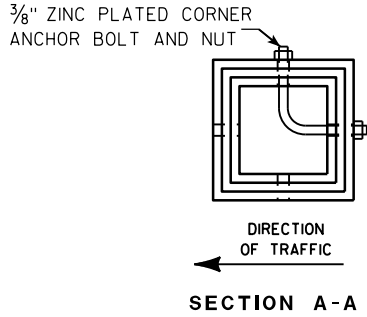
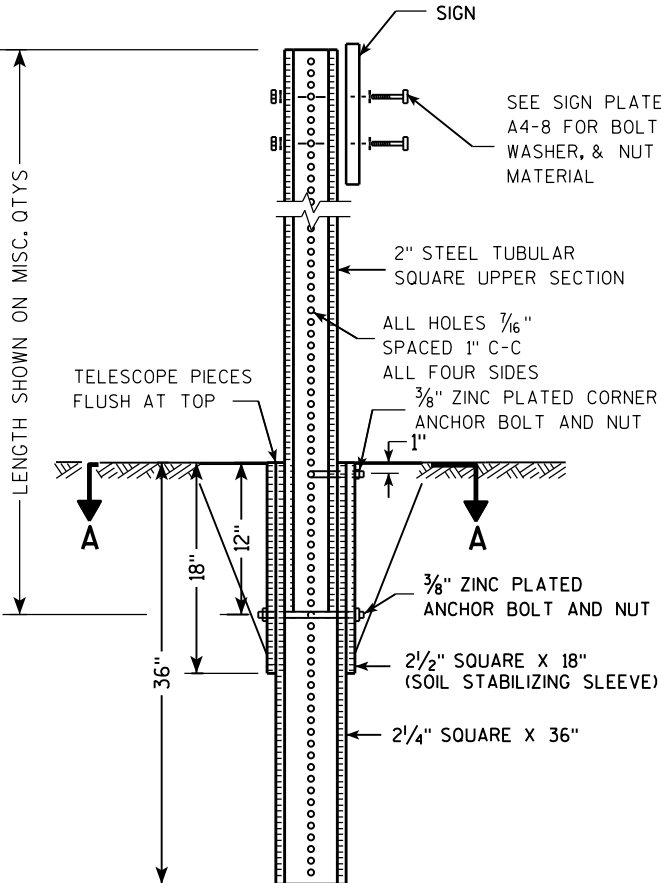
TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM



DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



DETAIL OF TUBULAR STEEL SIGN POST
(IN LOCATIONS OTHER THAN POURED CONCRETE OR ASPHALT)



Area of Sign Installation (Sq. Ft.)	Number of Required Posts
9 or less	1
Greater than 9 less than or equal to 18	2
Greater than 18 less than or equal to 27	3

Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

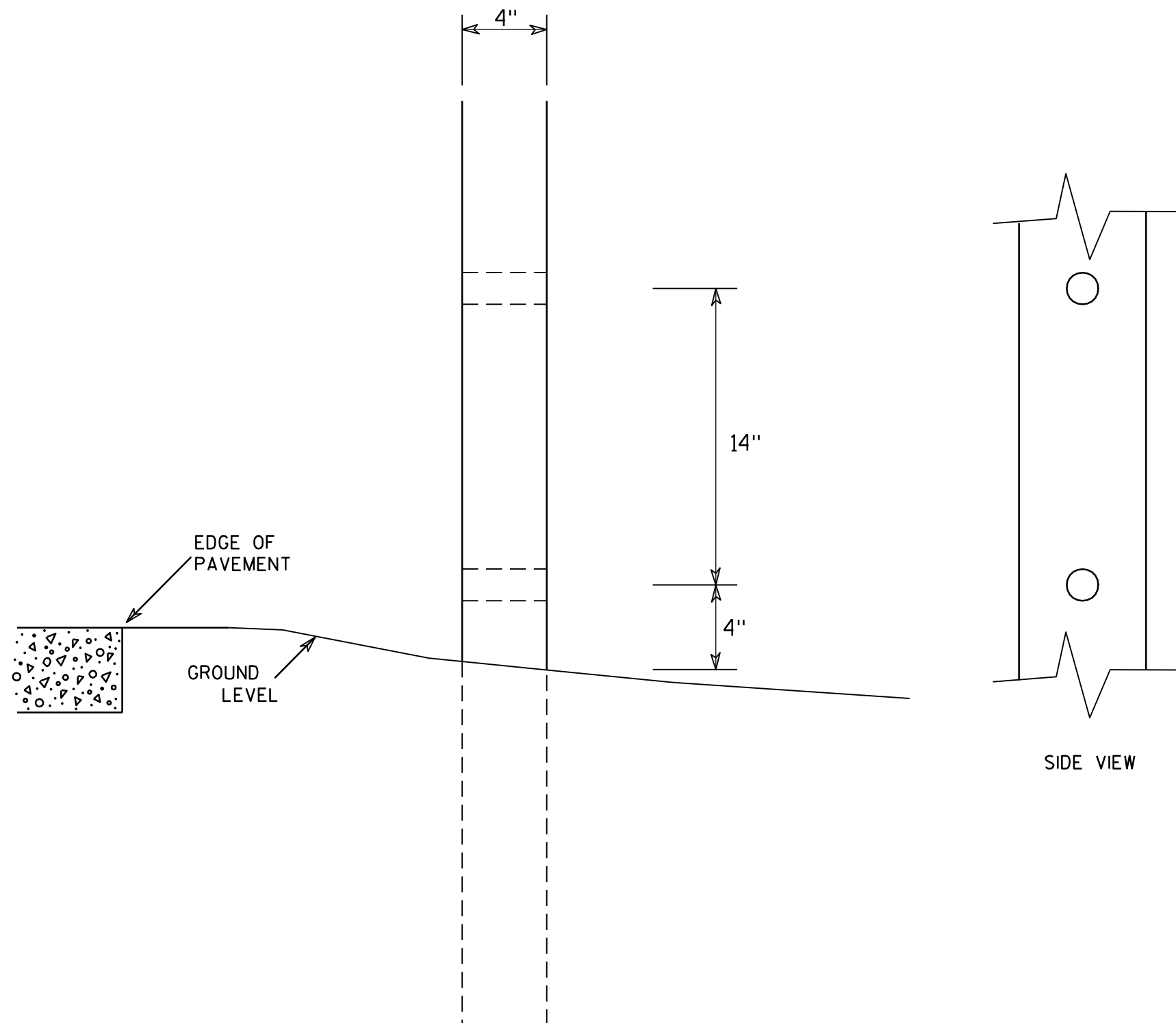
TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/05/15 PLATE NO. A4-9.9

7



GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

SIGN LAYOUT WITH VARIOUS SIZED MESSAGES

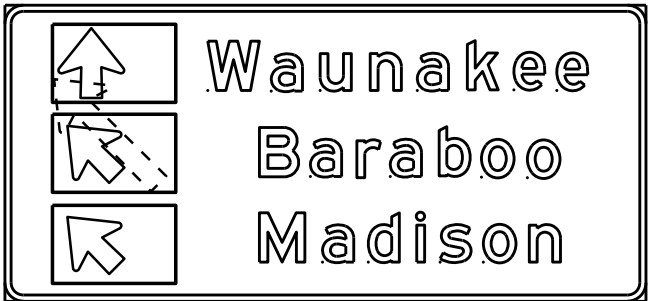
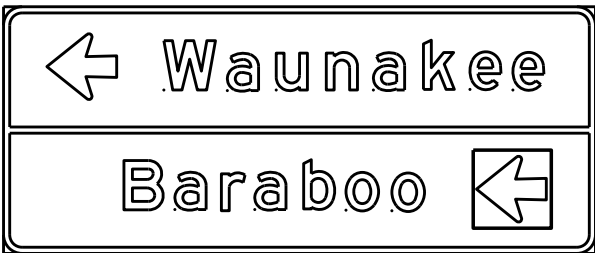
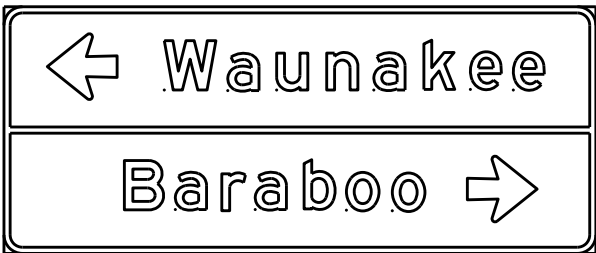
GENERAL NOTES

- 1. Materials shall conform to Standard Specification Section 637.
Base - Sheet Aluminum 0.040" Thickness
Sheeting - Orange Type F Reflective
Arrow - Black Non-Reflective
- 2. Arrow signs shall be fastened to permanent sign by either aluminum rivets or aluminum self-tapping sheet metal screws.
There shall be a minmum of 2 fasteners used per arrow sign.
- 3. There shall be a spacer consisting of a 0.08" nylon washer between the back of the arrow sign and the face of the permanent sign.
- 4. Arrows are per standard plate A1-2
- 5. Use separate arrow sign for each destination
- 6. Tilt arrow is always at 45 degrees
- 7. Arrow is centered on arrow sign

Lower Case Copy Size	Standard Width (Single Arrow)	2 Line Tilt Arrow Cover Width	3 Line Tilt Arrow Cover Width	Height
3¾" Series C	8	9 ½	14 ½	8
4½" Series D & E	9 ½	10	15	9 ½
6" Series D & E	14	16	20 ½	14
8" Series E	17 ½	20 ½	25	17 ½

BEFORE

AFTER



DESTINATION DIRECTIONAL ARROW FOR DETOUR SIGNS

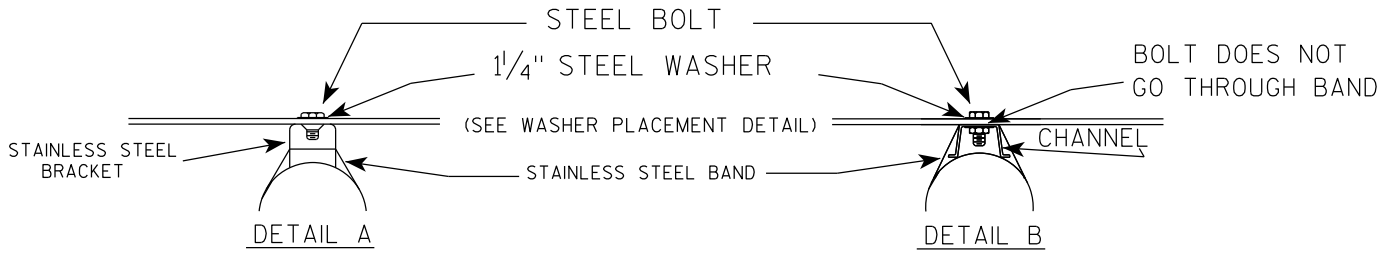
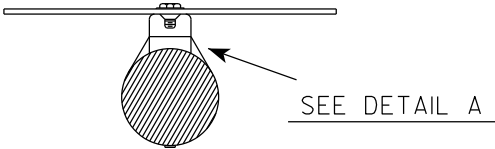
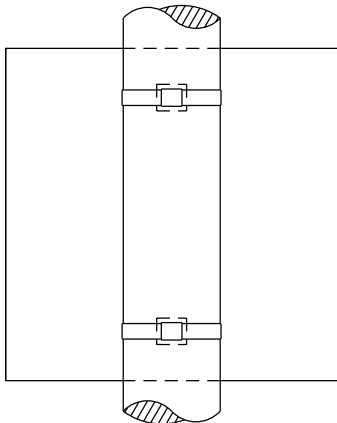
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

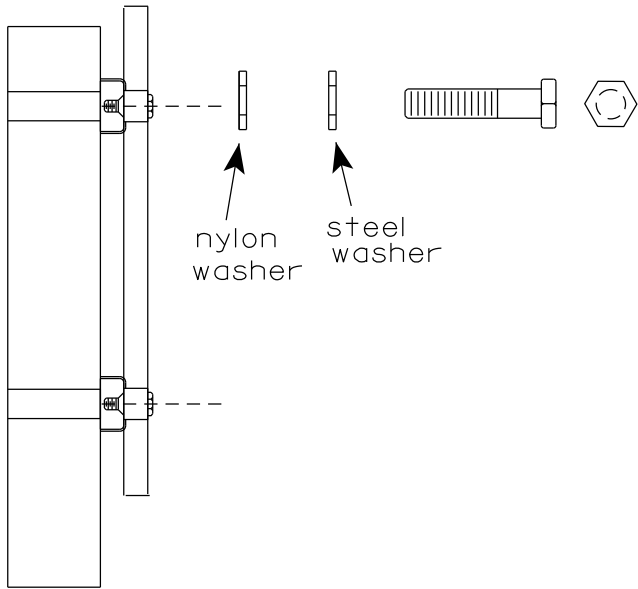
DATE 10/08/14 PLATE NO. A4-12.2

BANDING

SINGLE SIGN



WASHER PLACEMENT



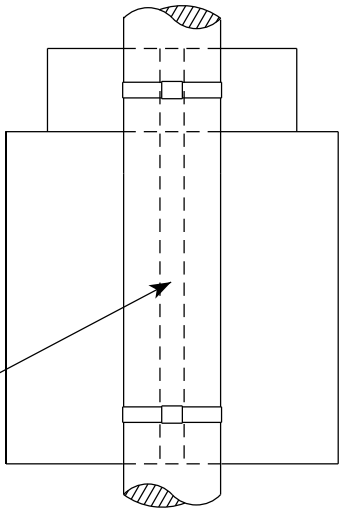
WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

GENERAL NOTES

1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be 3/4" in width and 0.025" thickness.
4. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D
 - b. Electro-galvanized in accordance with ASTM designation: B 633, Type III, SC 3

"J" ASSEMBLY

CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



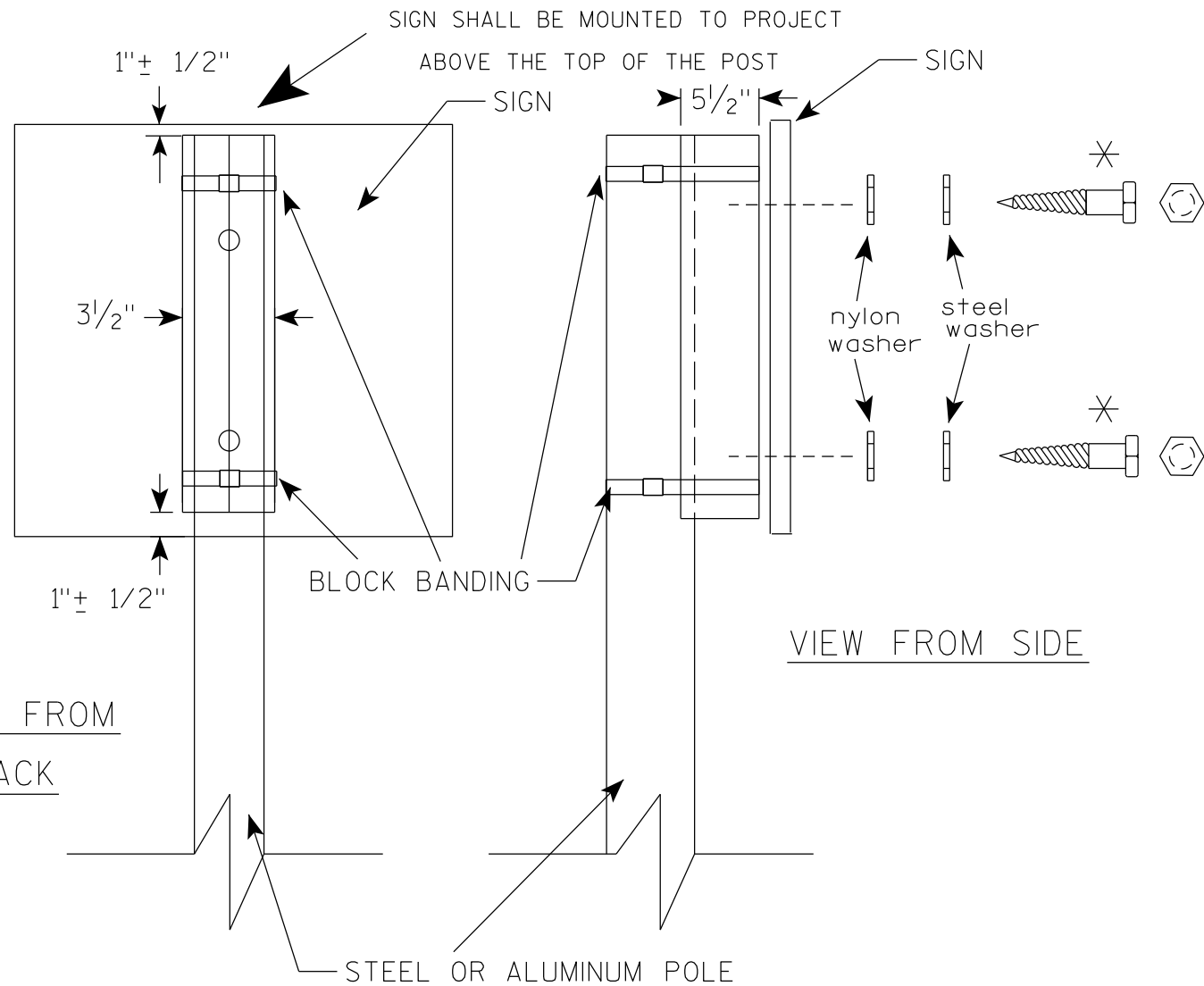
SEE DETAIL B

STANDARD SIGN
SIGN BANDING DETAILS

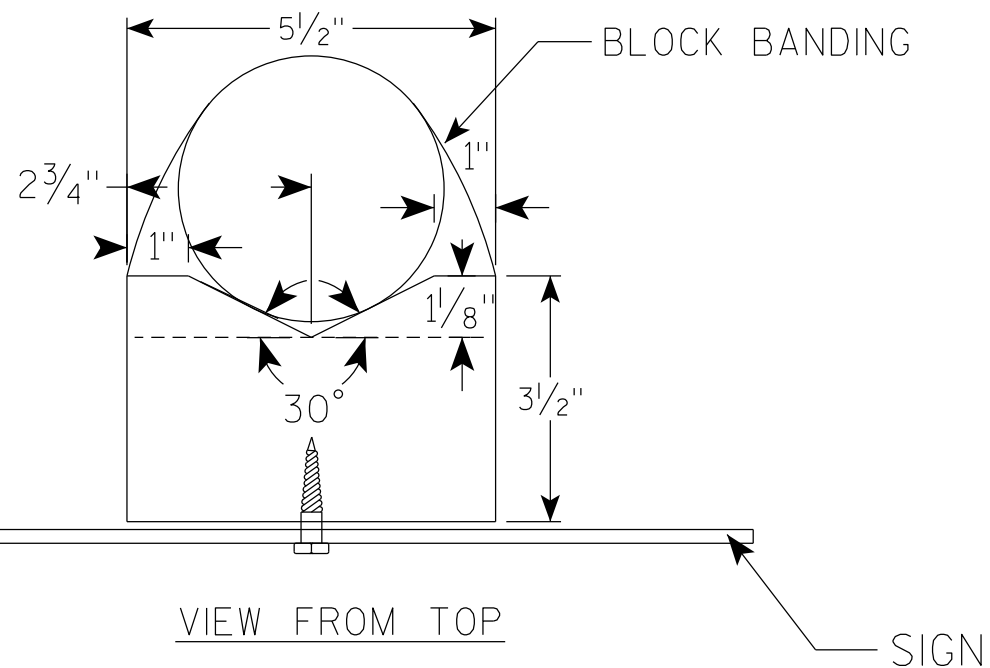
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 6/10/19 PLATE NO. A5-9.4

VIEW FROM
BACK



VIEW FROM SIDE



GENERAL NOTES

1. WOOD 4"X6" POST MATERIAL SHALL CONFORM TO 507.2.2 OF THE WisDOT STANDARD SPECIFICATIONS
2. BLOCK BANDING AND CLIPS SHALL BE STAINLESS STEEL, $\frac{3}{4}$ " WIDTH AND 0.025" THICKNESS
3. SIGNS 3' OR GREATER IN HEIGHT SHALL UTILIZE 3 BLOCK BANDS. SIGNS UNDER 3' IN HEIGHT SHALL UTILIZE 2 BLOCK BANDS
4. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA, BUT NORMALLY THERE ARE TWO. FOR SIGNS GREATER THAN 9 S.F. 3 FASTENERS SHALL BE USED.
5. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D
 - b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3
6. ALL BOLTS SHALL HAVE HEXAGONAL HEADS.
7. STEEL WASHERS SHALL BE $1\frac{1}{4}$ " O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ "
8. NYLON WASHERS SHALL BE $1\frac{1}{4}$ " O.D. X $\frac{3}{8}$ " I.D. X .080 FOR TYPE H OR TYPE F FACE SIGN

✱ LAG BOLTS SHALL BE $\frac{3}{8}$ " X $2\frac{1}{2}$ "

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch
for State Traffic Engineer

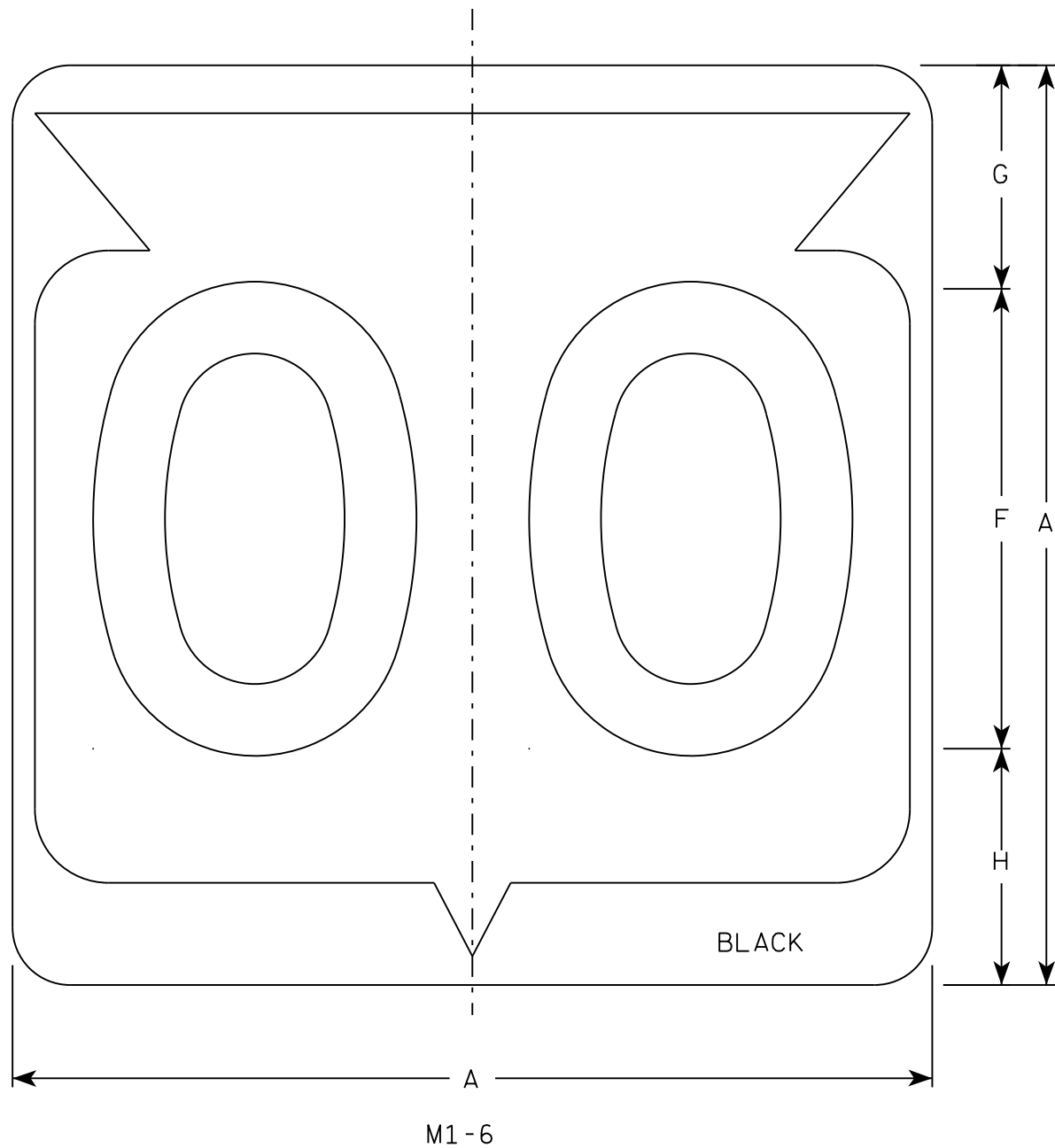
DATE 6/10/19 PLATE NO. A5-10.2

PROJECT NO:

SHEET NO:

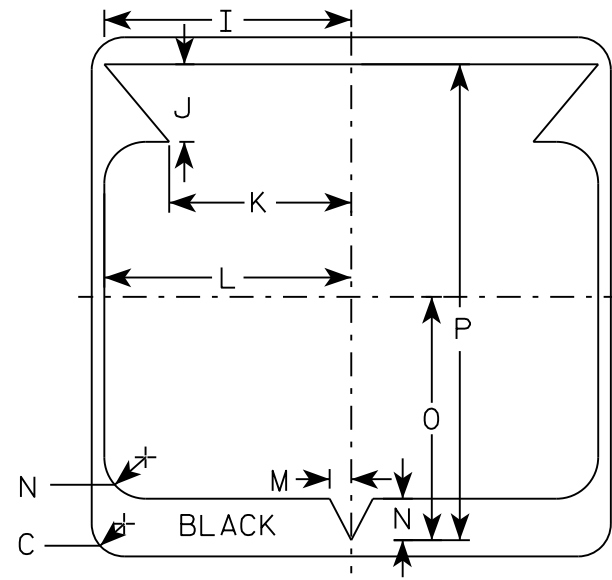
E

7



NOTES

1. Sign is Type II - Type H Reflective
2. Color:
Background - White
Message - Black
3. Message Series - D except 3 number signs Series C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0

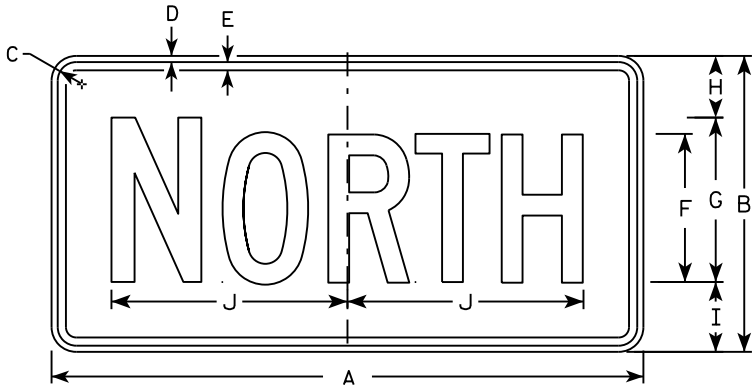
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

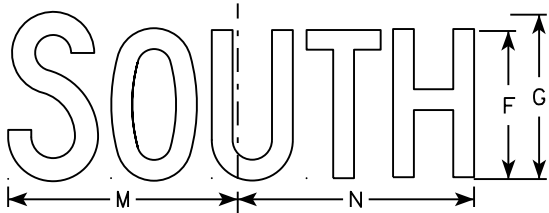
DATE 3/16/18 PLATE NO. M1-6.10



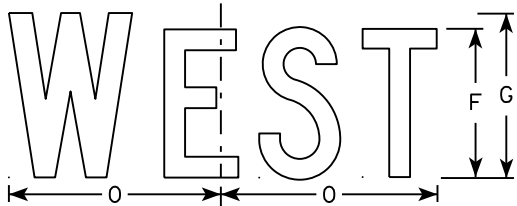
M3-1
MM3-1
MP3-1



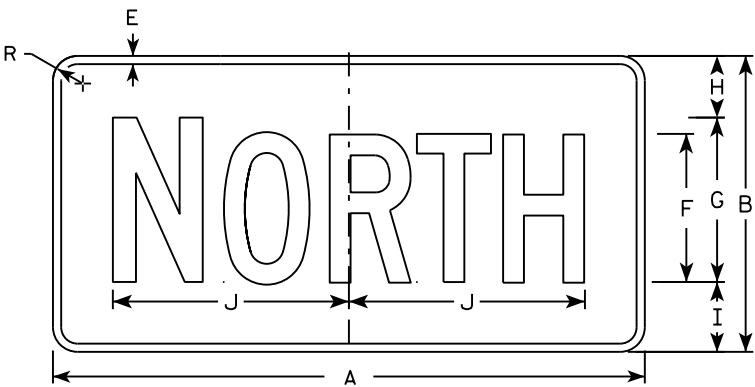
M3-2
MM3-2
MP3-2



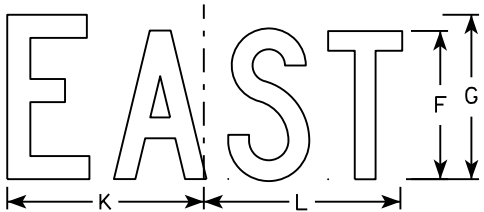
M3-3
MM3-3
MP3-3



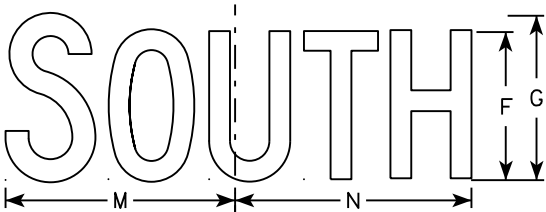
M3-4
MM3-4
MP3-4



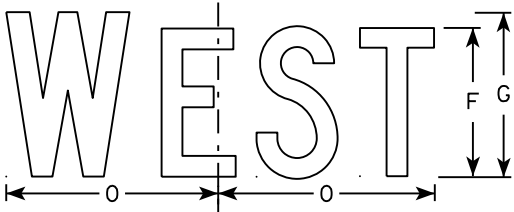
MB3-1
MK3-1
MN3-1



MB3-2
MK3-2
MN3-2



MB3-3
MK3-3
MN3-3



MB3-4
MK3-4
MN3-4

NOTES

1. All Signs Type II - Type H
2. Color:
Background - See note 5
Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M3-1 thru M3-4 Background - White
Message - Black
MB3-1 thru MB3-4 Background - Blue
Message - White
MK3-1 thru MK3-4 Background - Green
Message - White
MM3-1 thru MM3-4 Background - White
Message - Green
MN3-1 thru MN3-4 Background - Brown
Message - White
MP3-1 thru MP3-4 Background - White
Message - Blue
6. Note the first letter of each direction is larger than the remainder of the message.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
5	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5

STANDARD SIGNS
M3-1 thru M3-4
SERIES

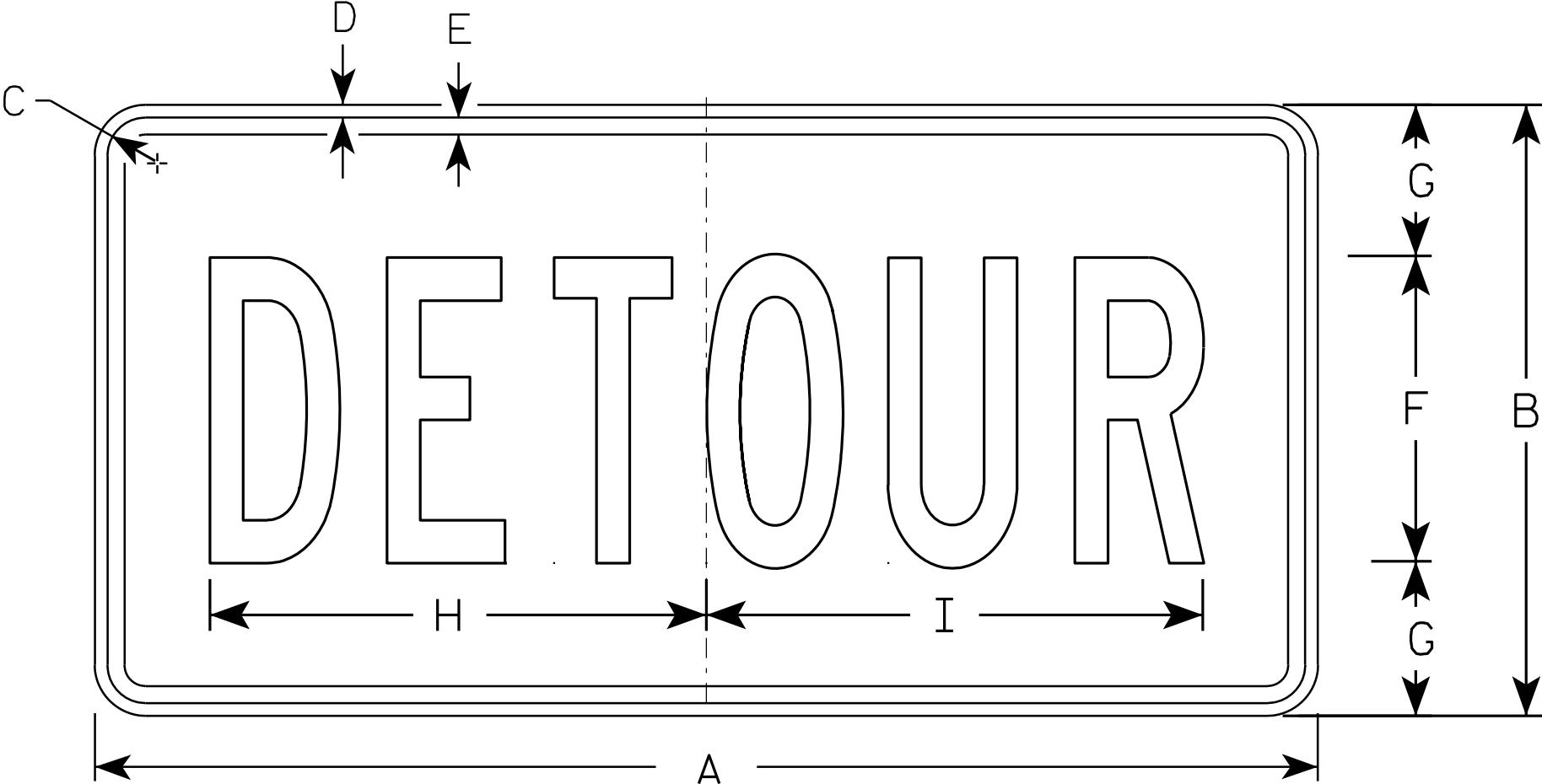
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M3-1.14

NOTES

- 1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
 - Background - Orange
 - Message - Black
- 3. Message Series - B
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



M4 - 8

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	3	10	10 1/4																		2.0
3	36	18	1 1/8	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
4																											
5																											

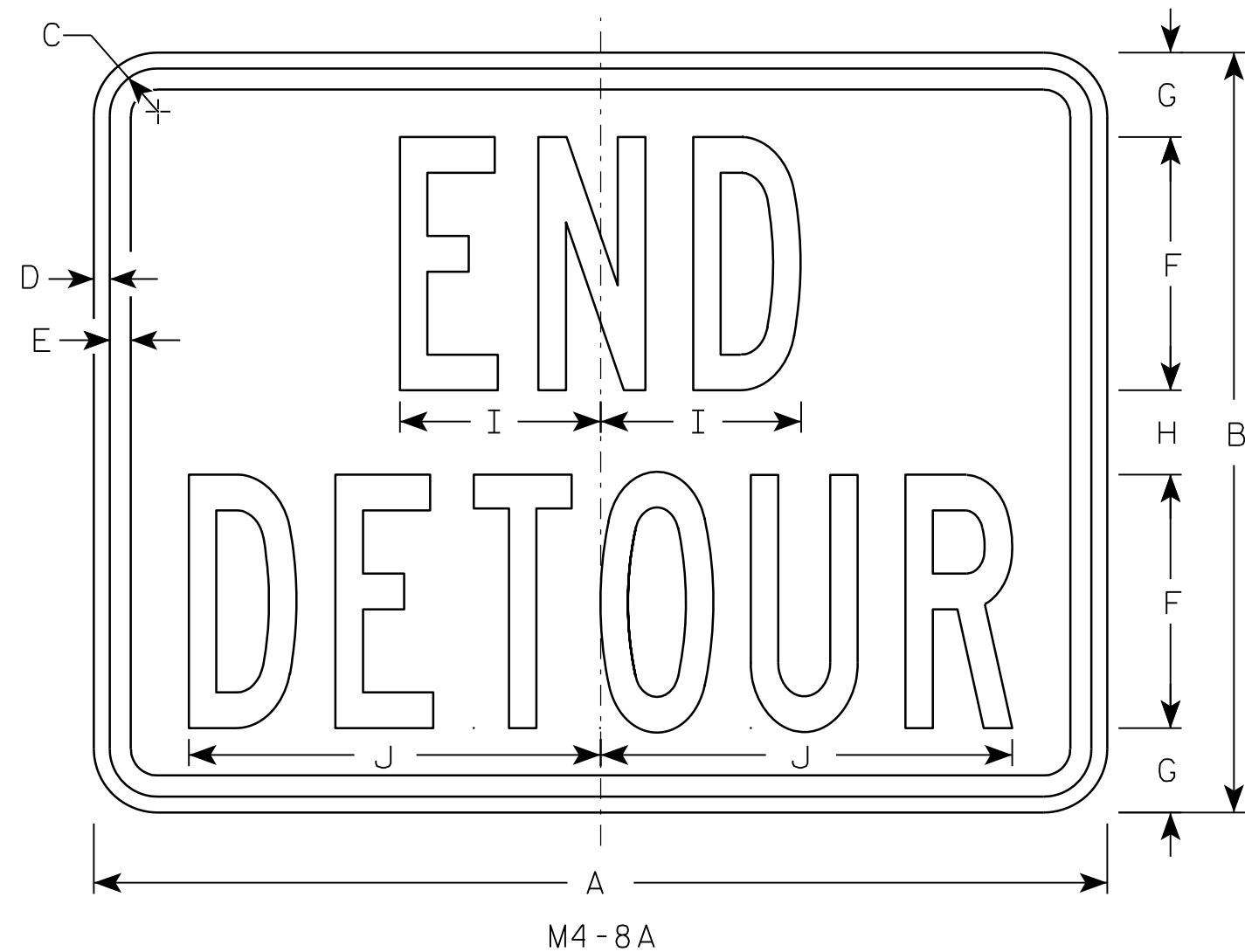
STANDARD SIGN
M4 - 8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 11/10/10 PLATE NO. M4-8.2

7



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Message Series - B
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	18	1 1/8	3/8	1/2	6	2	2	4 3/4	9 3/4																	3.0
3	30	24	1 1/8	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0
4																											
5																											

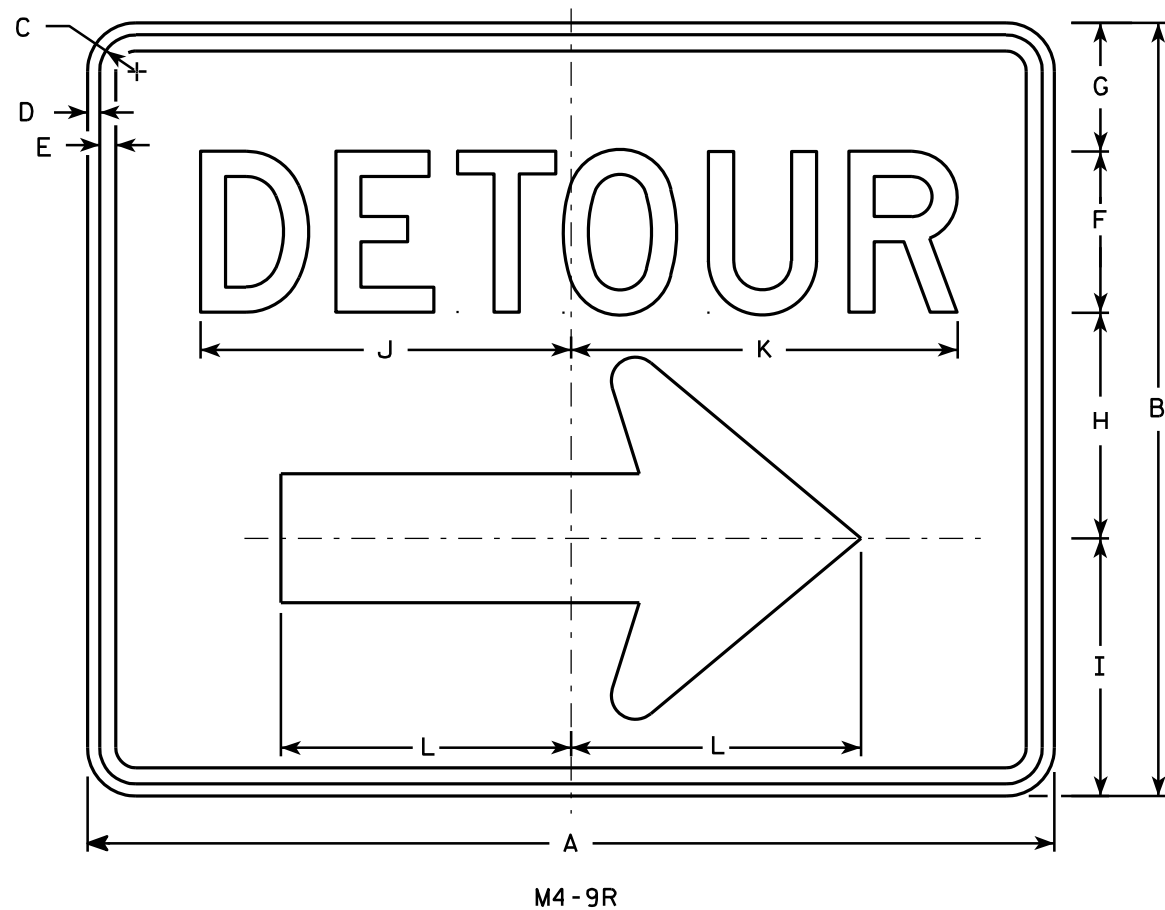
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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STANDARD SIGN
M4-8A

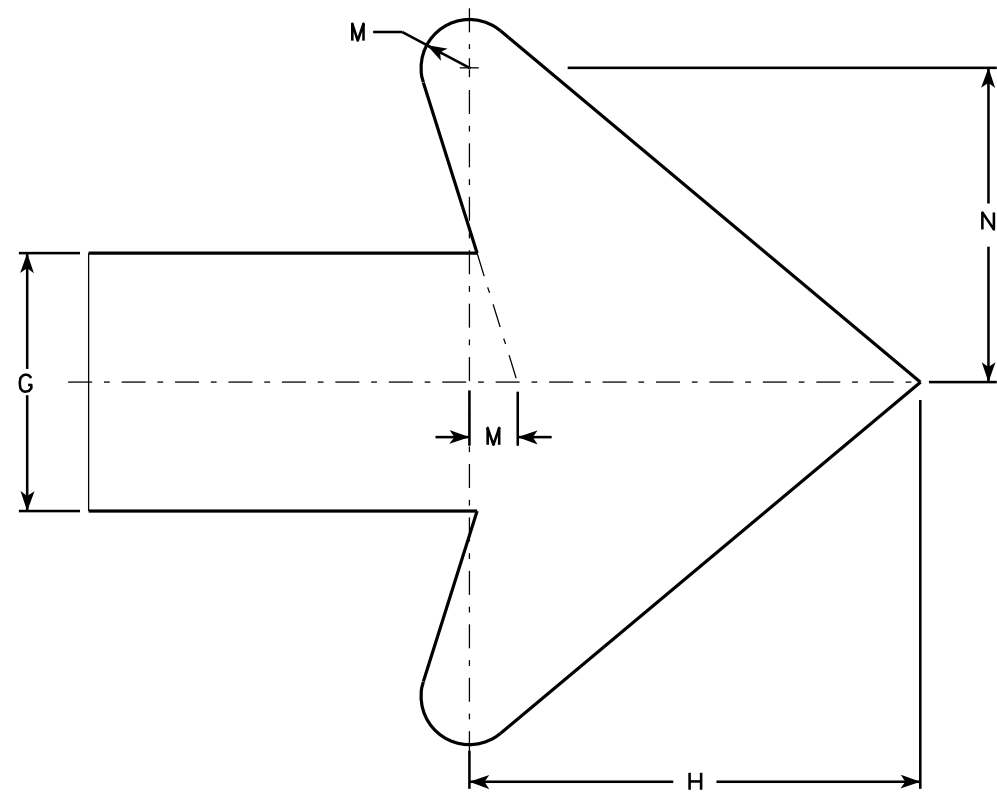
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-8A.2



- NOTES**
1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
 2. Color:
Background - Orange
Message - Black
 3. Message Series - D
 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
 5. M4-9L is the same as M4-9R except the arrow is reversed.



Arrow Detail

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
3	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
4	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0
5	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0

STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-9R.4

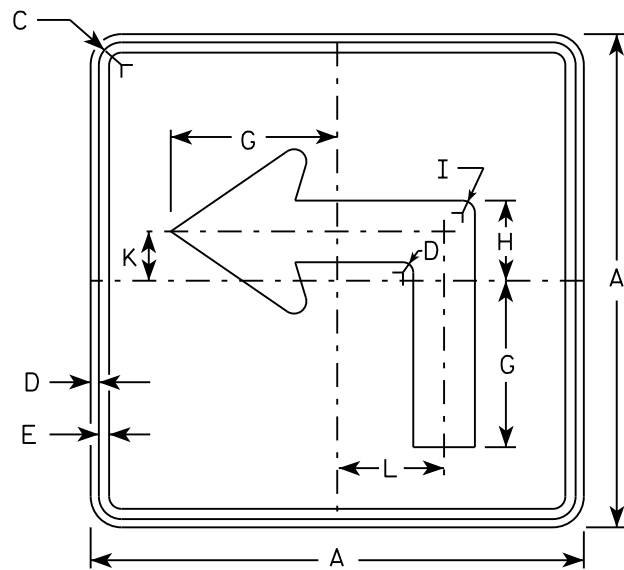
PROJECT NO:

HWY:

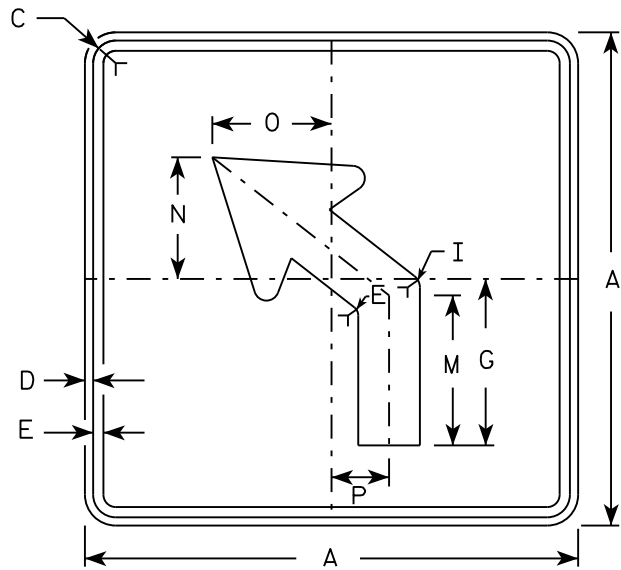
COUNTY:

SHEET NO:

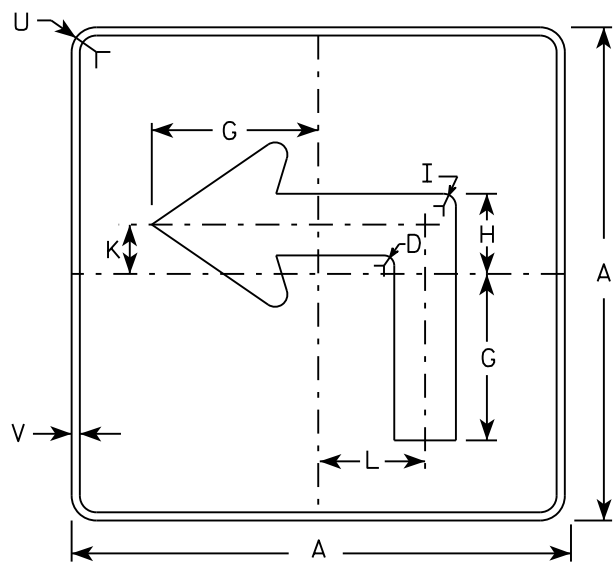
E



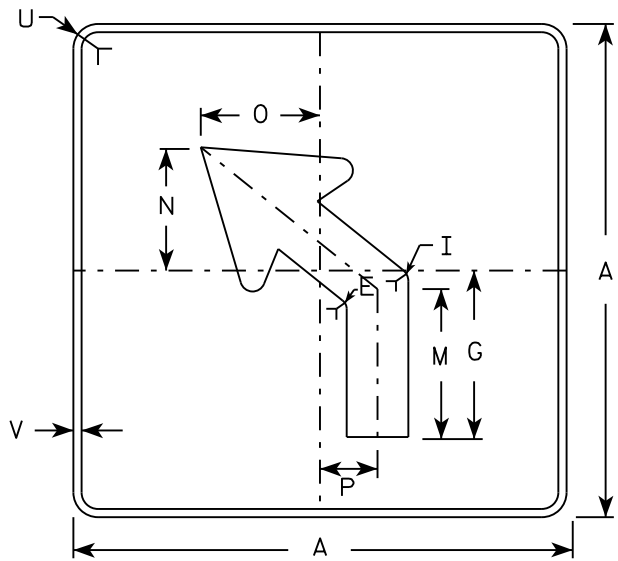
M5-1L
MM5-1L
M05-1L
MP5-1L



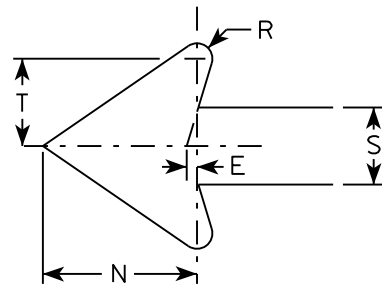
M5-2L
MM5-2L
M05-2L
MP5-2L



MB5-1L
MK5-1L
MN5-1L
MR5-1L



MB5-2L
MK5-2L
MN5-2L
MR5-2L



NOTES

- Signs are Type II - Type H reflective except as shown
- Color:
Background - See note 4
Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- | | |
|-----------------|---|
| M5-1 and M5-2 | Background - White |
| | Message - Black |
| MB5-1 and MB5-2 | Background - Blue |
| | Message - White |
| MK5-1 and MK5-2 | Background - Green |
| | Message - White |
| MM5-1 and MM5-2 | Background - White |
| | Message - Green |
| MN5-1 and MN5-2 | Background - Brown |
| | Message - White |
| M05-1 and M05-2 | Background - Orange - Type F Reflective |
| | Message - Black |
| MP5-1 and MP5-2 | Background - White - Type H Reflective |
| | Message - Blue |
| MR5-1 and MR5-2 | Background - Brown |
| | Message - Yellow |
- M5-1R same as M5-1L except arrow points right.
- M5-2R same as M5-2L except arrow tilts right.

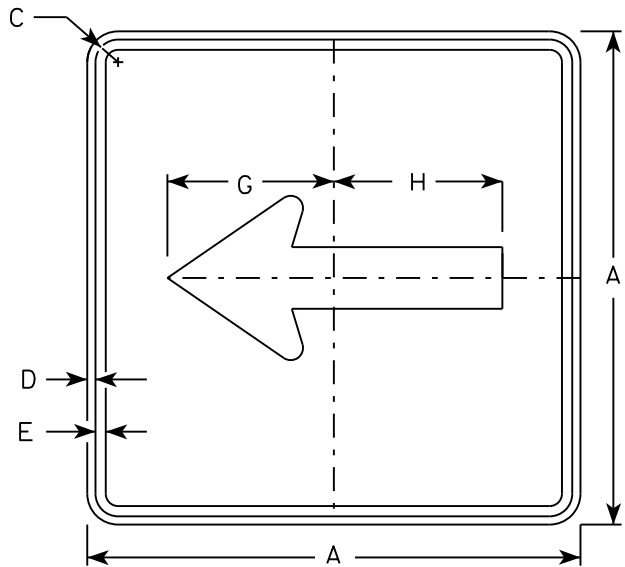
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25

STANDARD SIGN
M5-1 & M5-2

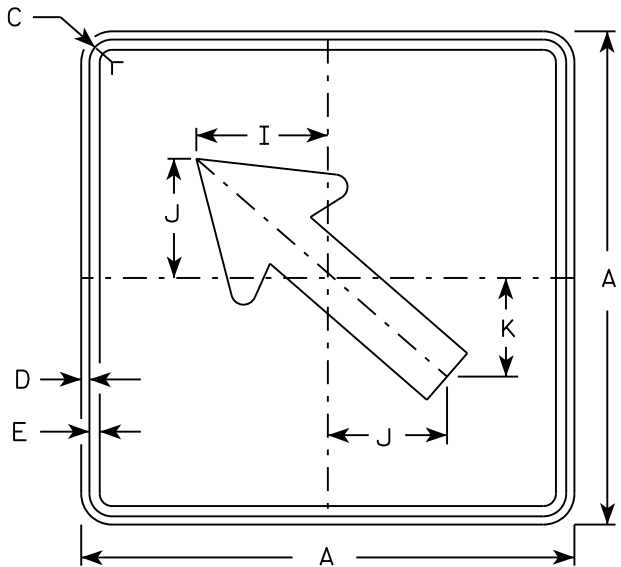
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

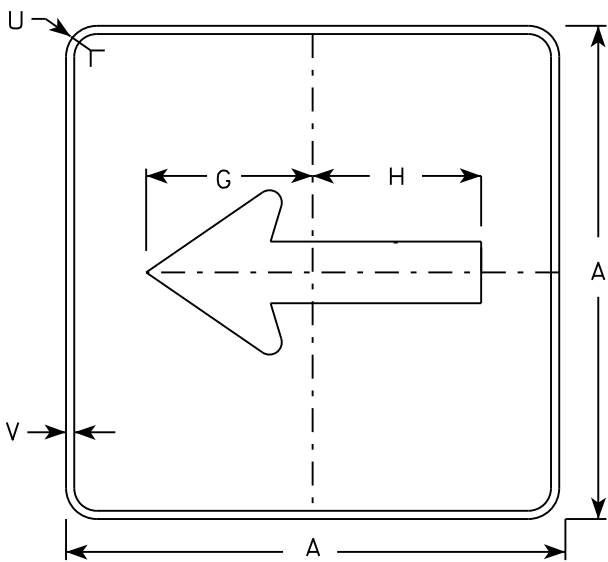
DATE 10/15/15 PLATE NO. M5-1.13



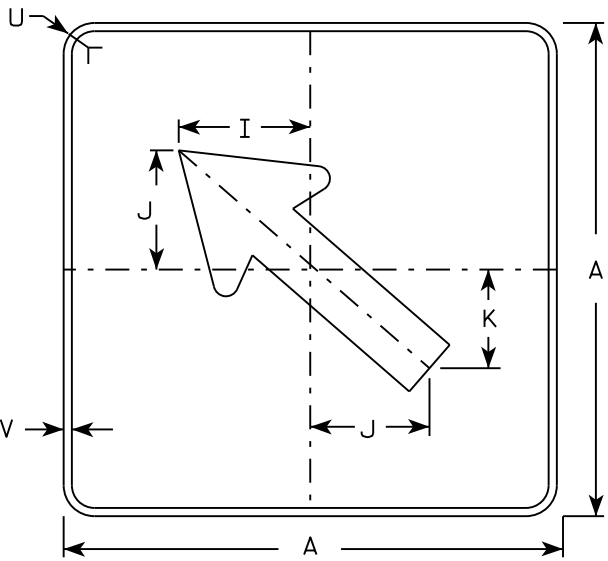
M6 - 1
MM6 - 1
M06 - 1
MP6 - 1



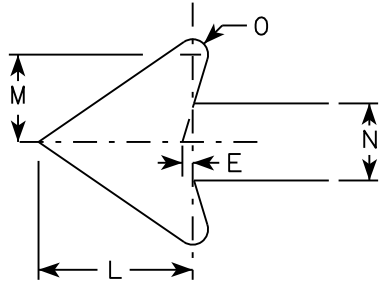
M6 - 2
MM6 - 2
M06 - 2
MP6 - 2



MB6 - 1
MK6 - 1
MN6 - 1
MR6 - 1



MB6 - 2
MK6 - 2
MN6 - 2
MR6 - 2



NOTES

- Signs are Type II - Type H except as Shown
- Color:
Background - See note 4
Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

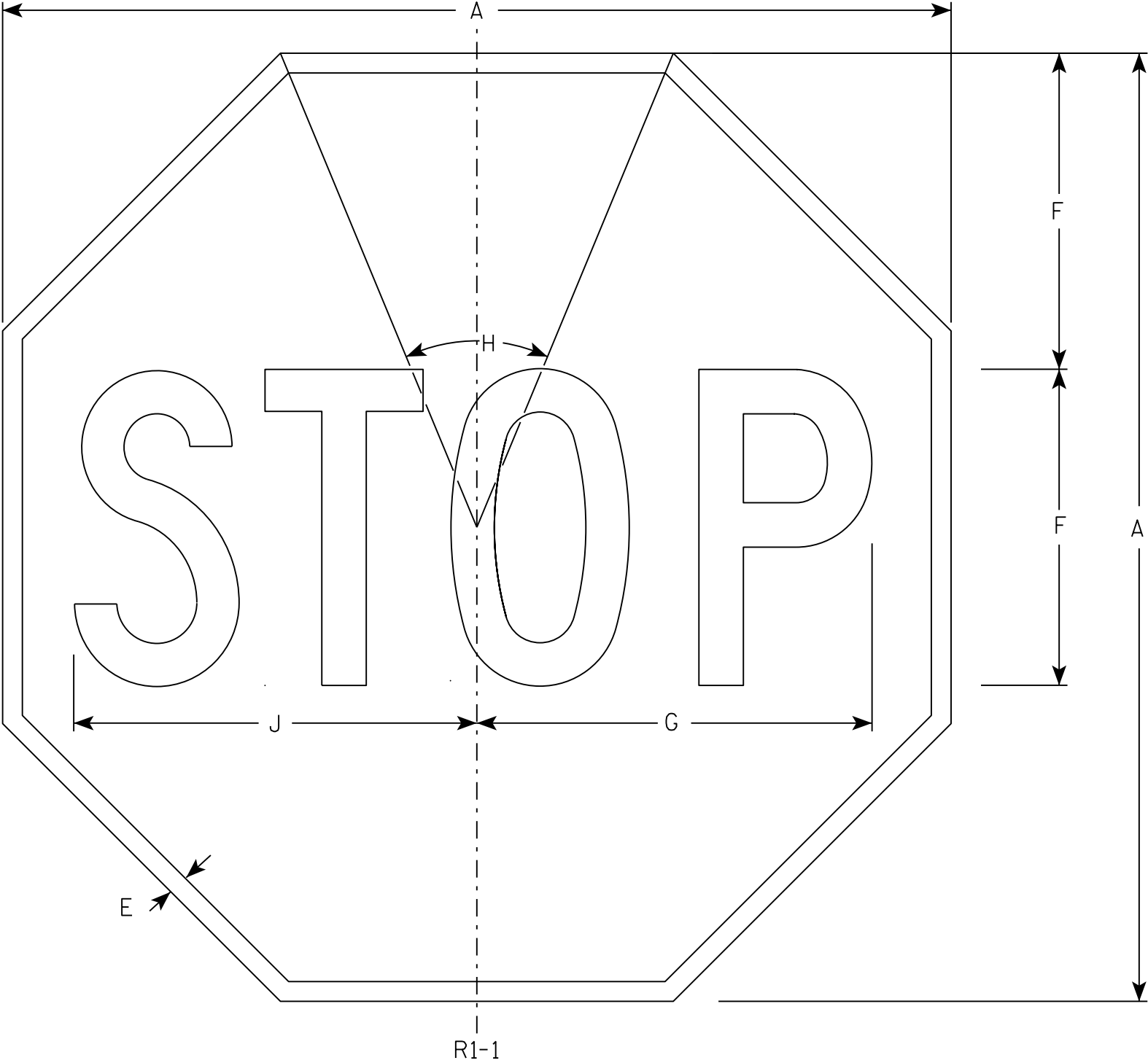
STANDARD SIGN
M6 - 1 & M6 - 2
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M6-1.15

7



NOTES

- 1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
Background - Red
Message - White
- 3. Message Series - C

7

R1-1

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2S	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2M	36				3/4	12	15	45°		15 3/8																	7.46
3	36				3/4	12	15	45°		15 3/8																	7.46
4	48				1	16	20	45°		20 1/2																	13.25
5	48				1	16	20	45°		20 1/2																	13.25
6	18				3/8	6	7 3/4	45°		7 3/4																	1.86
7	12				1/4	4	5	45°		5 1/8																	0.78

STANDARD SIGN

R1 - 1

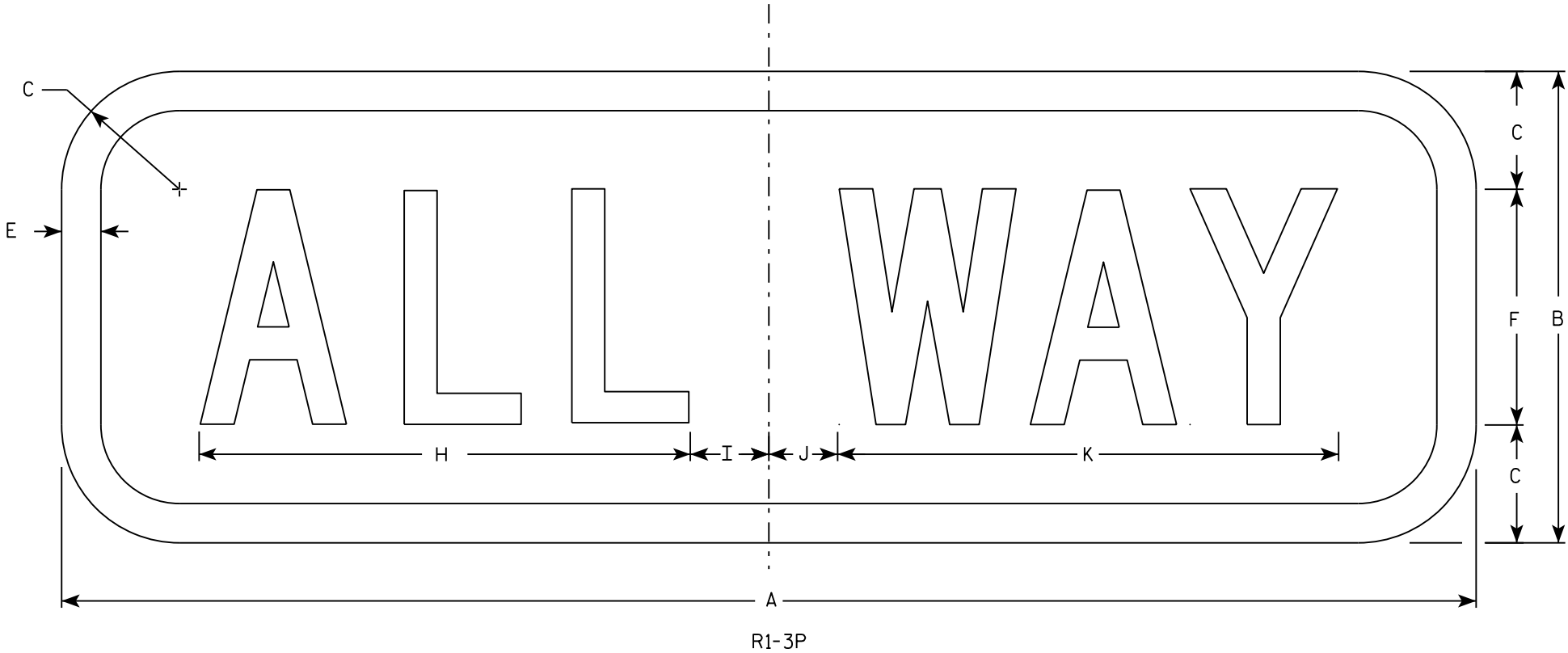
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 11/12/15 PLATE NO. R1-1.13

NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - Red
Message - White
- 3. Message Series - C
- 4. For 30"x30" R1-1 use 18"x6" R1-3P sign
For 36"x36" R1-1 use 24"x9" R1-3P sign
For 48"x48" R1-1 use 30"x12" R1-3P sign



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	18	6	1 1/2		1/2	3		6 1/4	1 1/4	7/8	6 3/8																0.75
2S	18	6	1 1/2		1/2	3		6 1/4	1 1/4	7/8	6 3/8																1.5
2M	24	9	1 1/2		1/2	5		9 1/4	1 1/4	3/4	9 3/4																1.5
3	24	9	1 1/2		1/2	5		9 1/4	1 1/4	3/4	9 3/4																1.5
4	30	12	2 1/4		5/8	6		11	2 1/4	1 1/2	11 3/4																2.5
5	30	12	2 1/4		5/8	6		11	2 1/4	1 1/2	11 3/4																2.5

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

STANDARD SIGN

R1 - 3P

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*

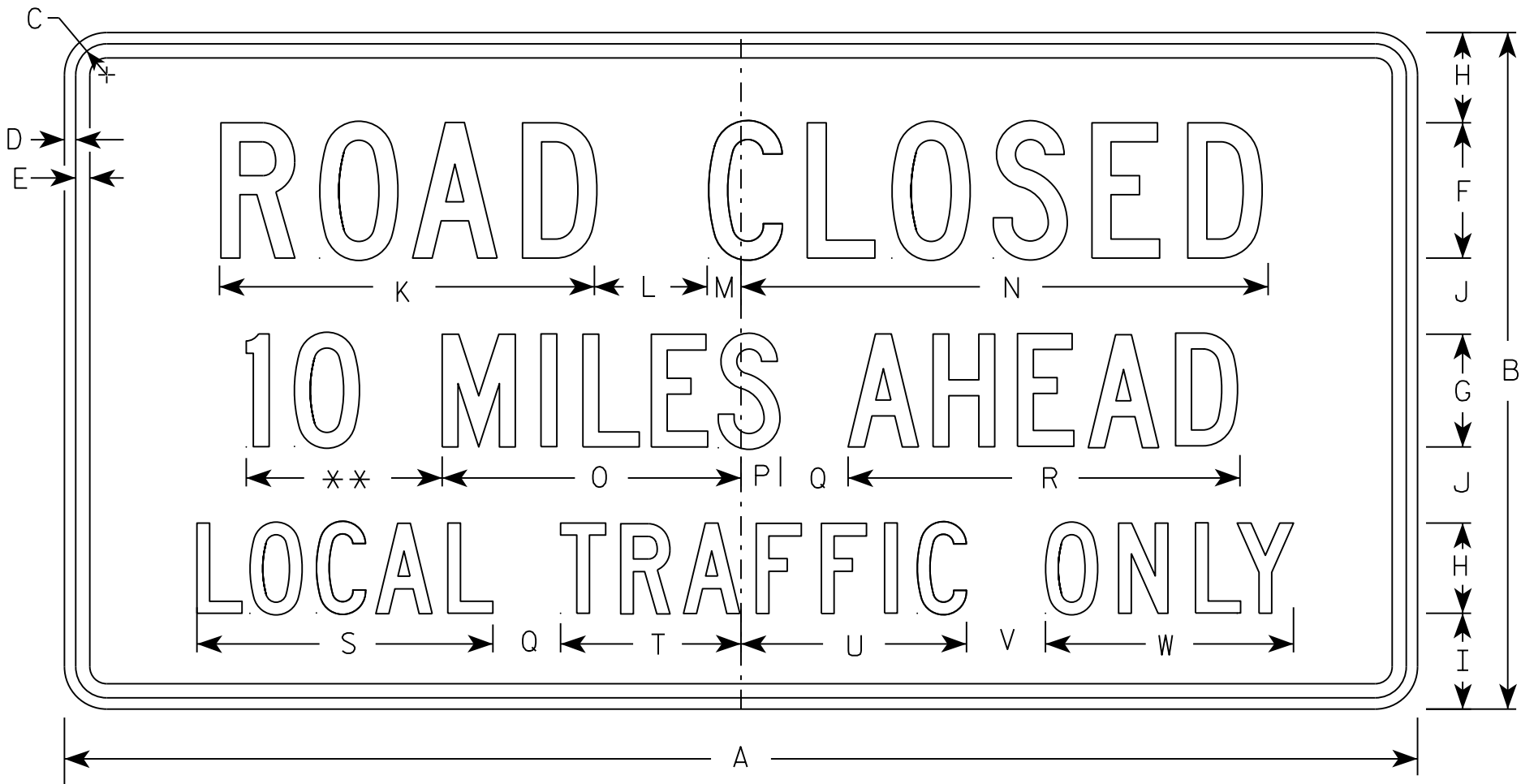
for State Traffic Engineer

DATE 11/29/16

PLATE NO. R1-3P.3

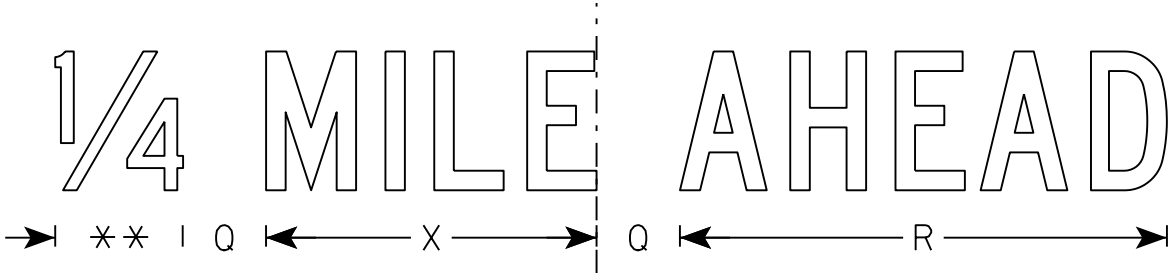
NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
 - Background - White
 - Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Substitute appropriate numerals to nearest quarter mile and optically adjust spacing to achieve proper balance.



R11-3

** See Note 5



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 3⁄8	1⁄2	5⁄8	4	3	2 1⁄2	2	2	11 1⁄8	3	1 1⁄8	15 1⁄4	8	1 1⁄2	2	10 3⁄4	8 3⁄8	4 3⁄4	6 1⁄2	2	6 3⁄4	7 1⁄8			4.5
2S	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	16 5⁄8	5	1 1⁄2	23	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
2M	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	16 5⁄8	5	1 1⁄2	23	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
3																											
4																											
5																											

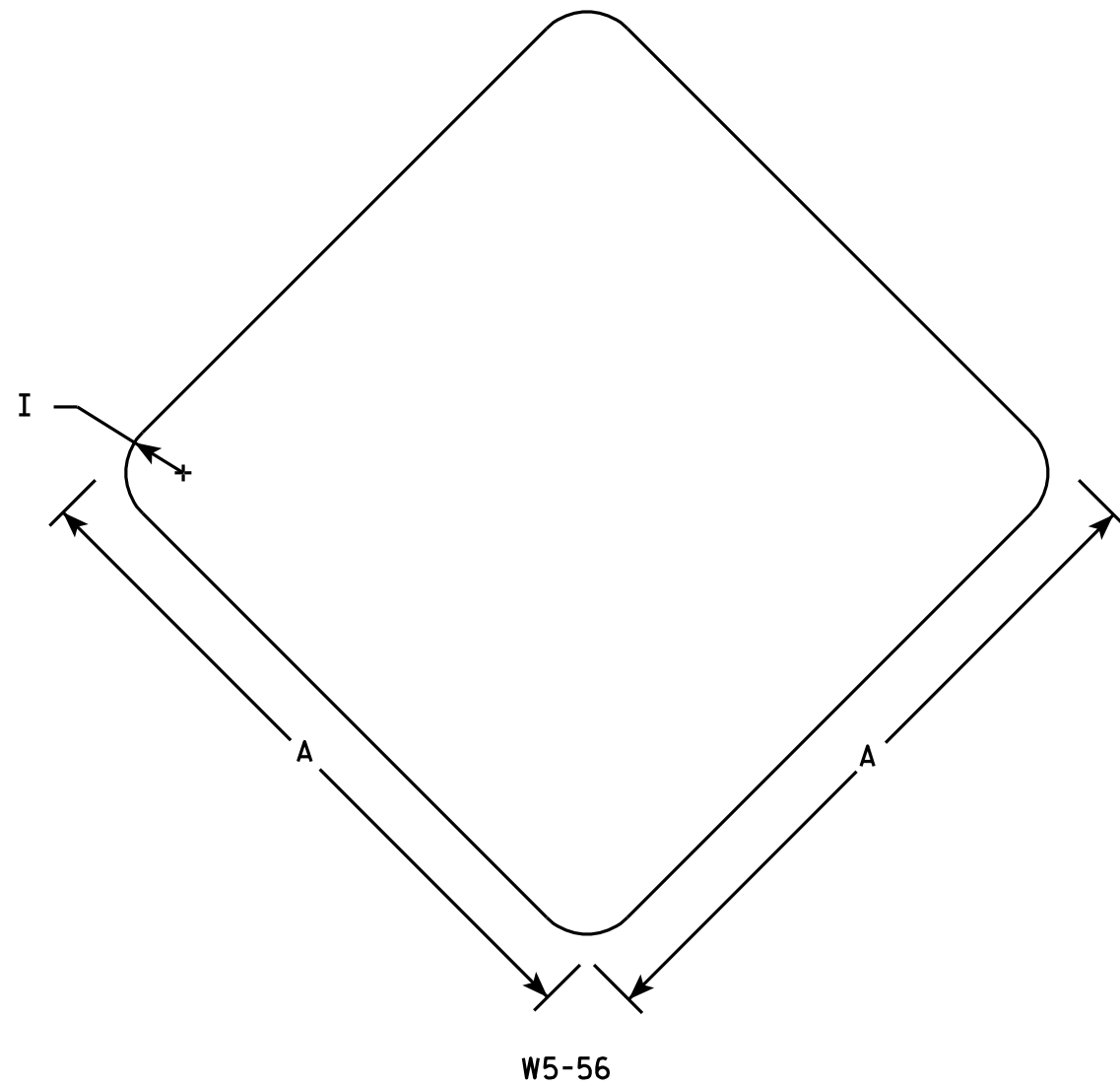
STANDARD SIGN
R11-3

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 3/15/17 PLATE NO. R11-3.8

NOTES

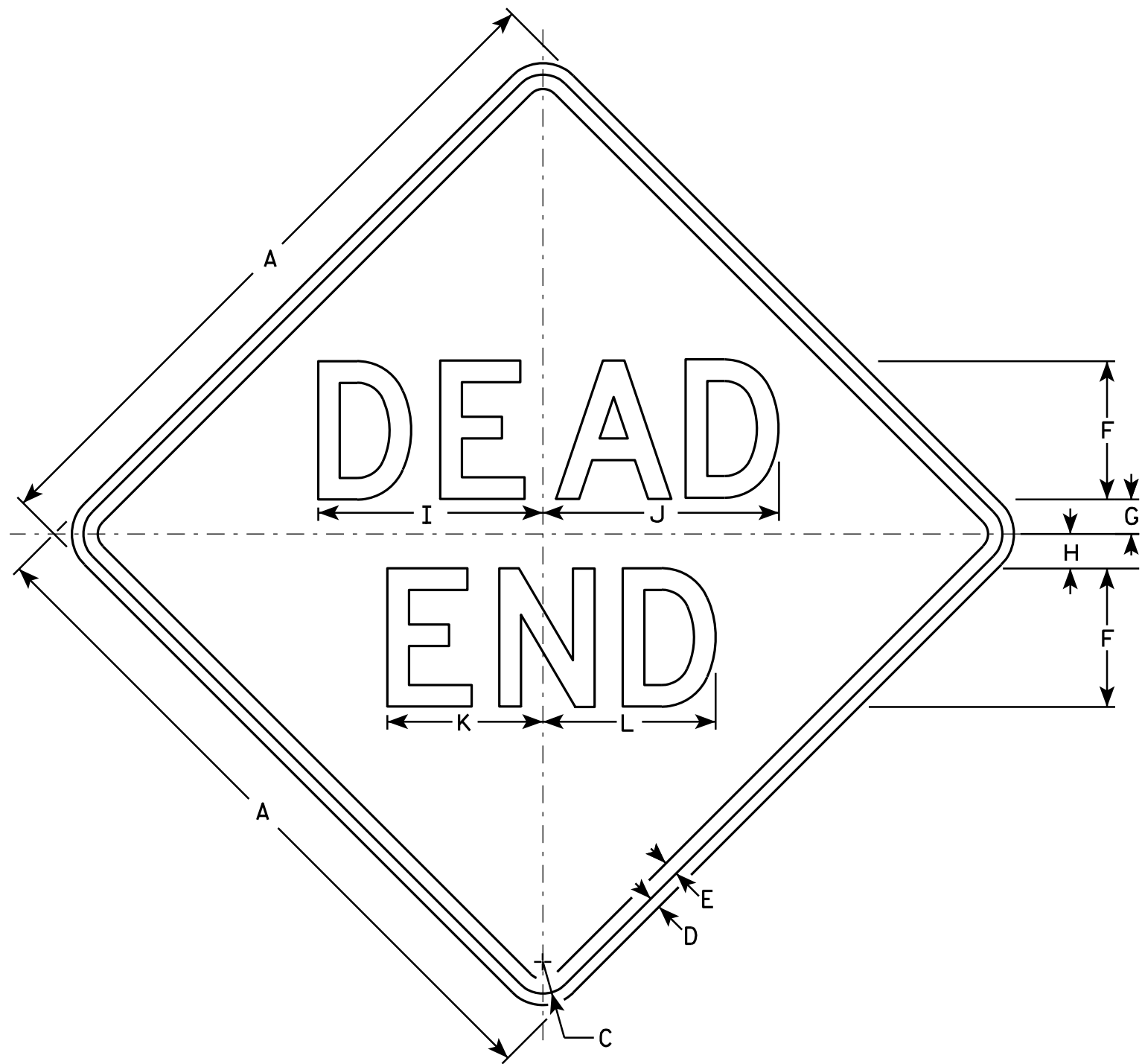
1. Sign is Type II - Type SH Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Red
3. Corners may be square or rounded when base material is plywood. When base material is metal the corners shall be rounded.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	12								1																		1.0
2S	18								1 1/2																		2.25
2M	18								1 1/2																		2.25
3																											
4																											
5																											

STANDARD SIGN	
W5 - 56	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R Rauch</i> for State Traffic Engineer
DATE 11/2/10	PLATE NO. W5-56.6

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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W14-1

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area, sq. ft.
1	24		1 1/8	3/8	1/2	5	1	2	8 1/4	8 5/8	5 5/8	6 1/4															4.0
2S	30		1 3/8	1/2	5/8	6	1 1/2	2 1/2	9 3/4	10 1/4	6 3/4	7 1/2															6.25
2M	30		1 3/8	1/2	5/8	6	1 1/2	2 1/2	9 3/4	10 1/4	6 3/4	7 1/2															6.25
3	36		1 5/8	5/8	3/4	7	2	3	11 3/8	12	7 7/8	8 3/4															9.0
4																											
5																											

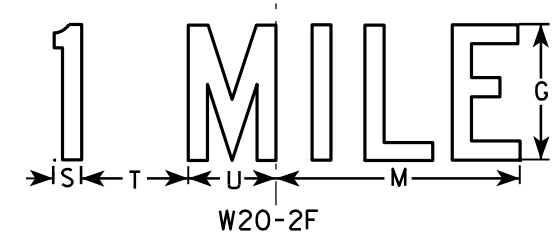
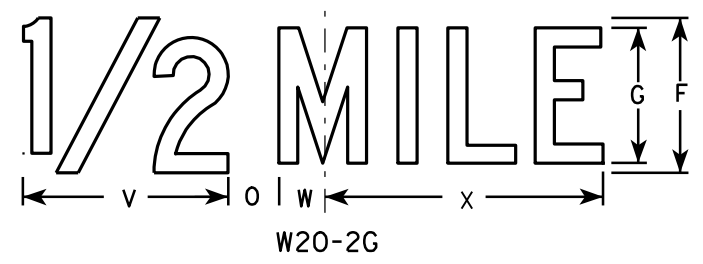
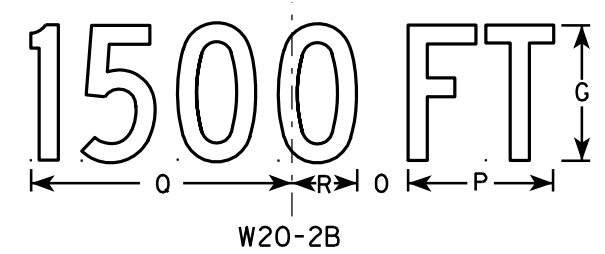
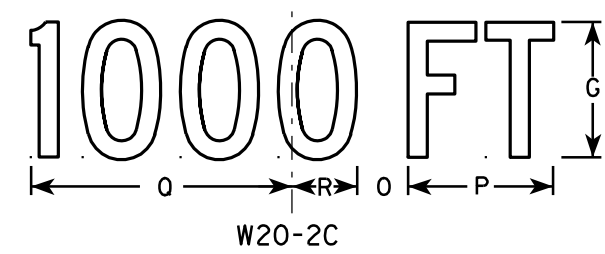
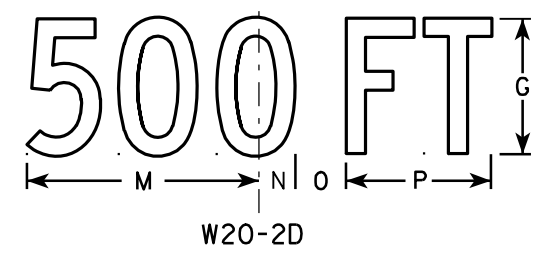
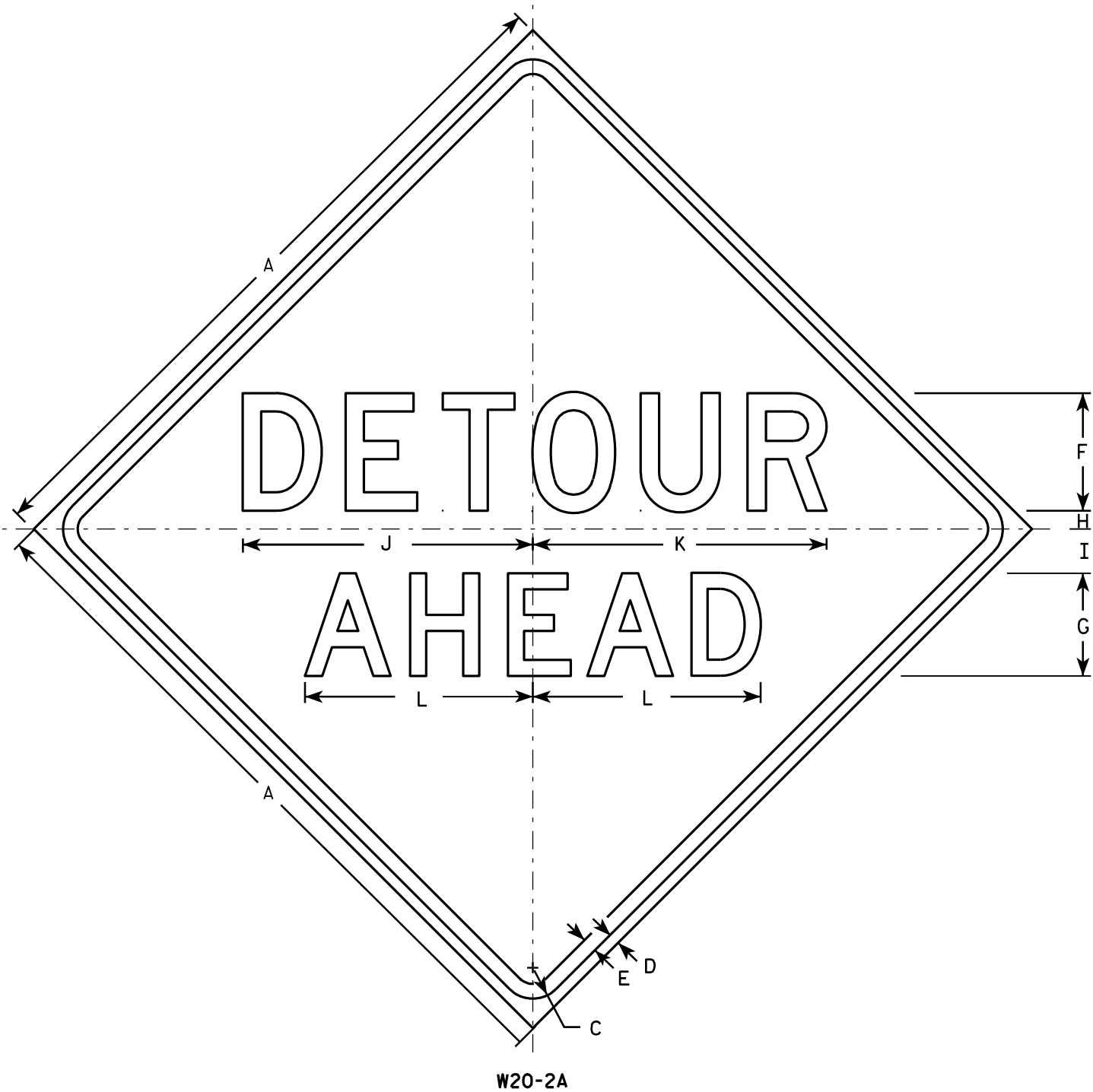
STANDARD SIGN
W14-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch
for State Traffic Engineer

DATE 3/13/13 PLATE NO. W14-1.7

PROJECT NO: HWY: COUNTY: SHEET NO: E



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Line 1 is Series D.
Line 2 is Series D for AHEAD and Series C for all other distances.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
2M	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
3	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
4	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
5	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0

STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-2.6

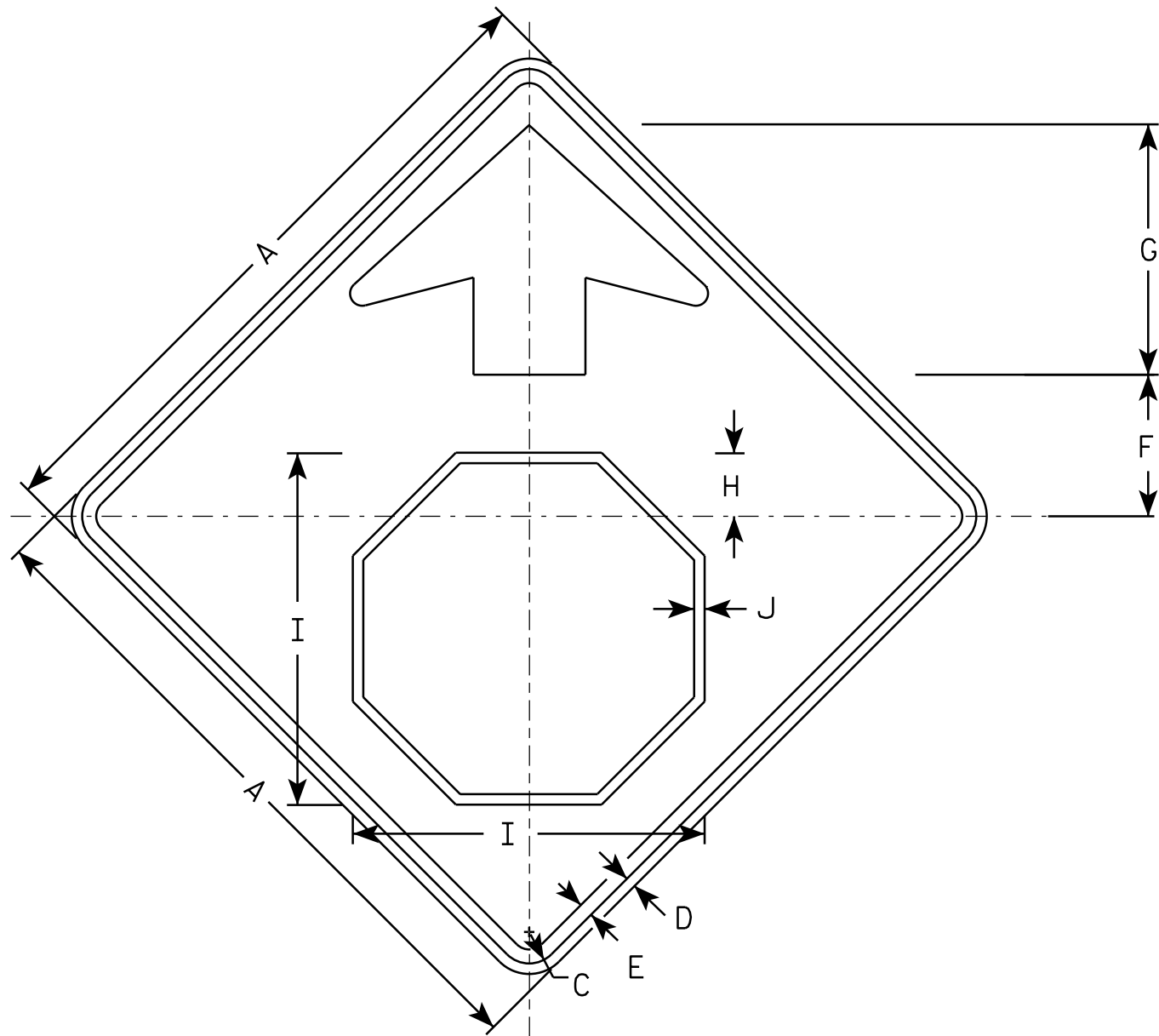
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

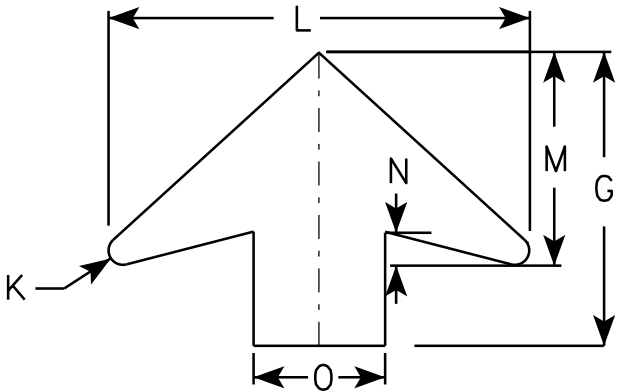
E



W03-1

NOTES

- 1. All Signs Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
 - Background - ORANGE
 - Arrow & Border - BLACK
 - Stop Symbol - WHITE BORDER ON RED BACKGROUND



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
2S	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0
2M	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0
3	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0
4	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0
5	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0

PROJECT NO:

SHEET NO:

E

STANDARD SIGN

W03-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch

for State Traffic Engineer

DATE 11/20/13

PLATE NO. W03-1.1

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HS-20
 INVENTORY RATING: HS-16
 OPERATING RATING: HS-27
 WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 220 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 PSF.

MATERIAL PROPERTIES:

CONCRETE MASONRY, SUPERSTRUCTUREf'_c = 4,000 PSI
 CONCRETE MASONRY, ALL OTHERf'_c = 3,500 PSI
 HIGH STRENGTH BAR STEEL
 REINFORCEMENT GRADE 60f_y = 60,000 PSI

LIST OF DRAWINGS

1. GENERAL PLAN & ELEVATION
2. TYPICAL SECTION & PROFILE GRADE LINE
3. GENERAL NOTES & QUANTITIES
4. REMOVAL DETAILS
5. WEST ABUTMENT
6. EAST ABUTMENT
7. FRAMING PLAN
8. STEEL DIAPHRAGM
9. DECK REINFORCEMENT
10. DECK CROSS SECTION
11. SUPERSTRUCTURE DETAILS
12. GIRDER & HAUNCH DETAILS
13. SINGLE SLOPE PARAPET 42SS (1 OF 2)
14. SINGLE SLOPE PARAPET 42SS (2 OF 2)

TRAFFIC DATA

STH 20

2020 AADT = 9,600
 2040 AADT = 11,600
 RDS = 60 MPH

HYDRAULIC DATA:☆

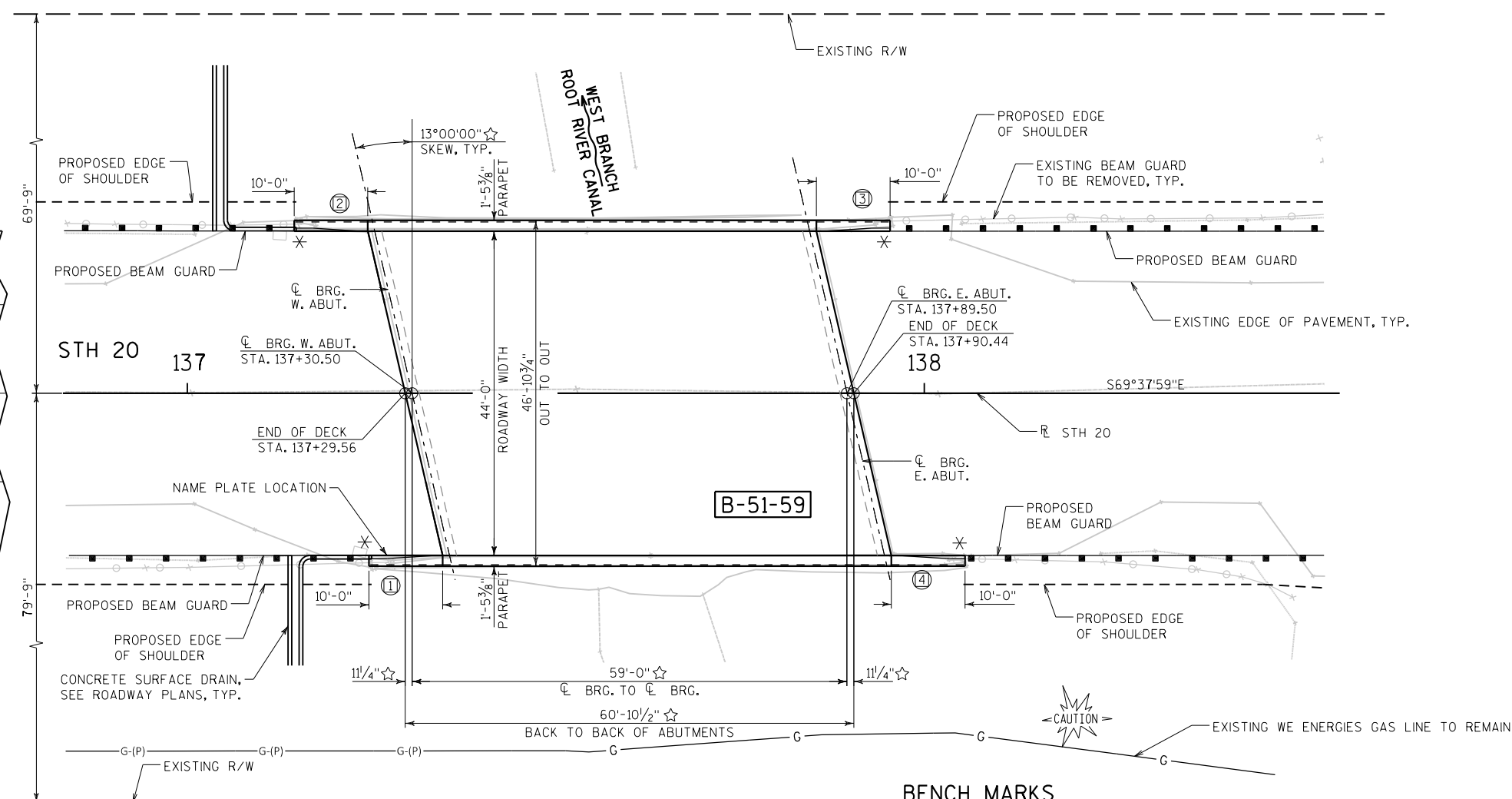
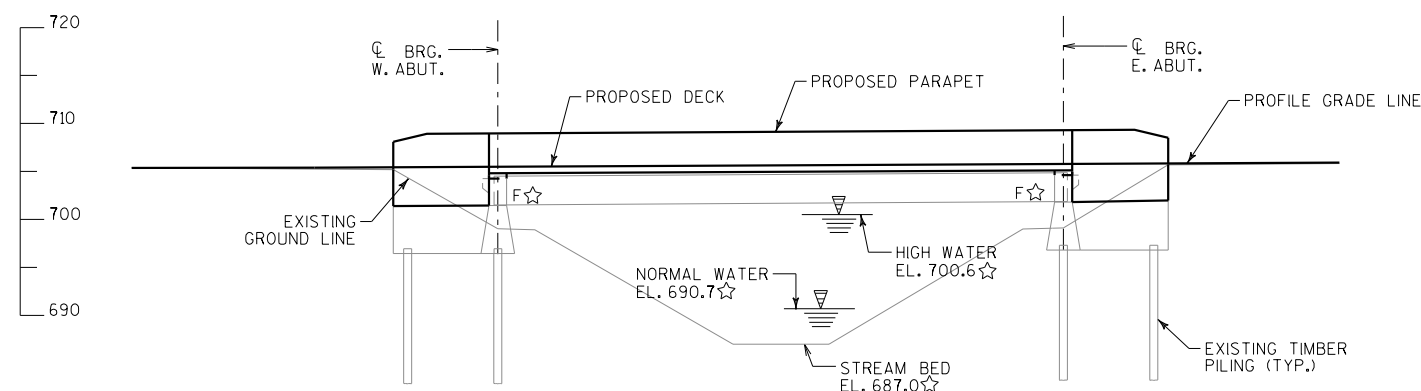
WATER AREA.....441 SF
 HIGH WATER.....700.6

BENCH MARKS

NO.	LOCATION		ELEVATION	DESCRIPTION
100	N=189292.171	E=577139.773	707.895	FENO MONUMENT ON STH 20 NORTH ROADWAY EMBANKMENT
101	N=188789.301	E=578293.177	703.370	FENO MONUMENT ON STH 20 SOUTH ROADWAY EMBANKMENT
102	N=188470.841	E=579358.999	705.596	FENO MONUMENT ON STH 20 NORTH ROADWAY EMBANKMENT

PLAN

SINGLE SPAN 36" PRESTRESSED GIRDER STRUCTURE
 DECK REPLACEMENT

ELEVATION
(LOOKING NORTH)

LEGEND

→ DIRECTION OF TRAFFIC

⊗ WINGWALL NUMBER

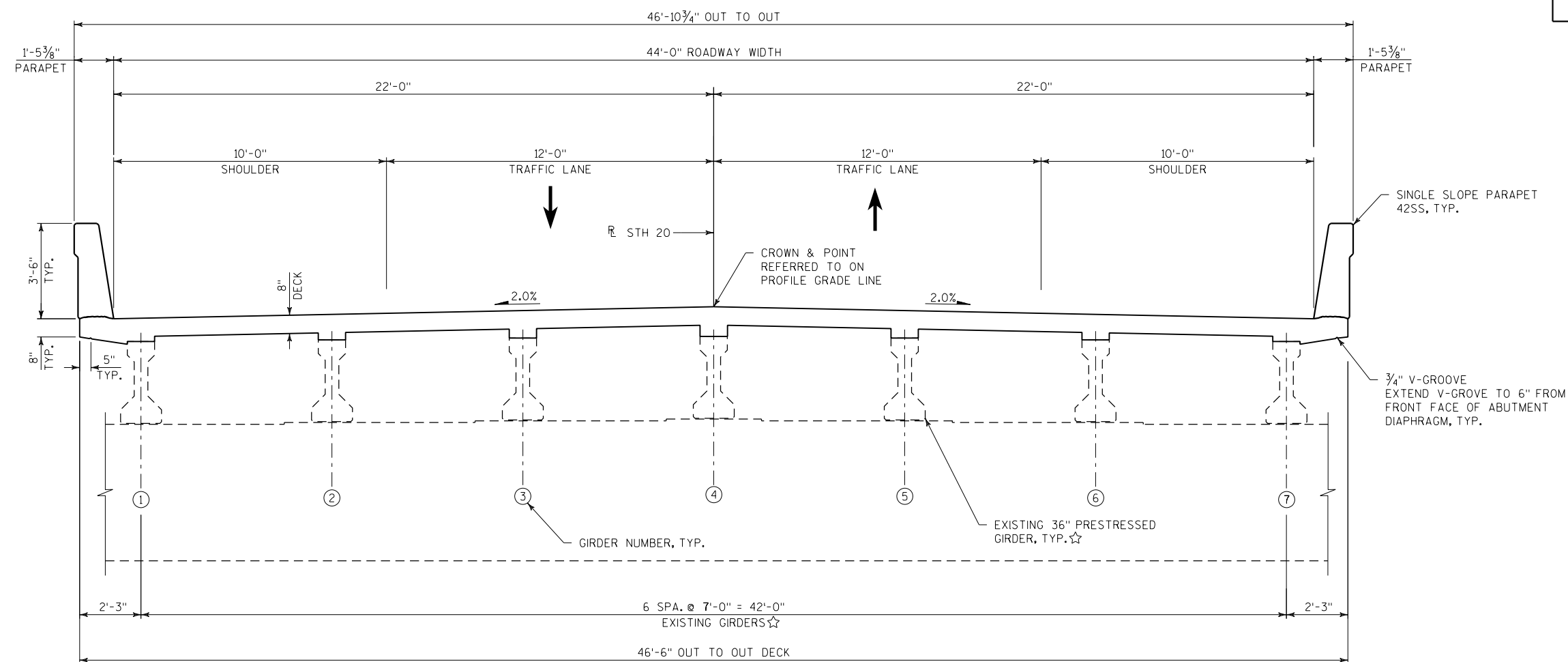
☆ TAKEN FROM AS-BUILT STRUCTURE PLANS, DATED JULY 9, 1968.
 AS-BUILT PLAN ELEVATIONS ARE REFERENCED TO THE NATIONAL
 GEODETIC VERTICAL DATUM OF 1929 (NGVD29)

✱ ATTACH GUARD RAIL TO WING PARAPET

STRUCTURES DESIGN CONTACTS

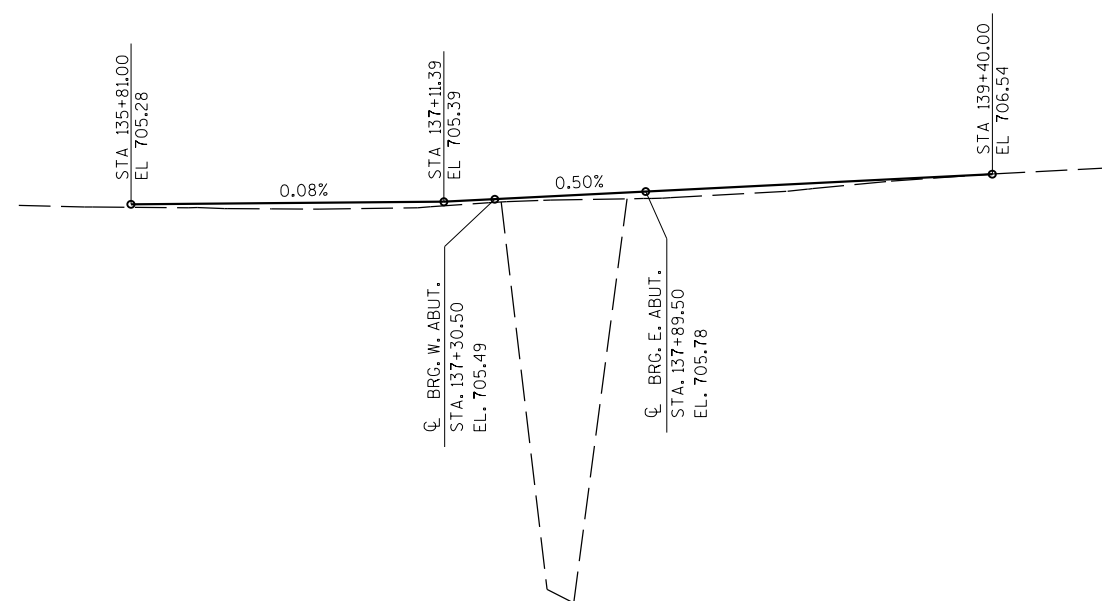
BRIDGE OFFICE:
 WILLIAM DREHER (608) 266-8489
 CONSULTANT:
 MOHAMMED ZAGLOUL (414) 751-7200

NO.	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY			
kapur		7711 N. Port Washington Road Milwaukee, Wisconsin 53217 kapurinc.com	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	<i>William C. Dreher</i> SDR		02/05/20
CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-51-59			
STH 20 OVER W. BRANCH ROOT RIVER CANAL			
COUNTY	RACINE	TOWN	YORKVILLE
DESIGN SPEC.	REHABILITATION N/A		
DESIGNED BY	SMC	DESIGN CK'D.	MHZ
DRAWN BY	MM	PLANS CK'D.	MHZ
GENERAL PLAN & ELEVATION			SHEET 1 OF 14



TYPICAL SECTION B-51-59

(LOOKING EAST)



STH 20 PROFILE GRADE LINE

LEGEND

☆ TAKEN FROM AS-BUILT STRUCTURE PLANS,
DATED JULY 9, 1968.

→ DIRECTION OF TRAFFIC

(X) GIRDER NUMBER

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
TYPICAL SECTION & PROFILE GRADE LINE			SHEET 2 OF 14

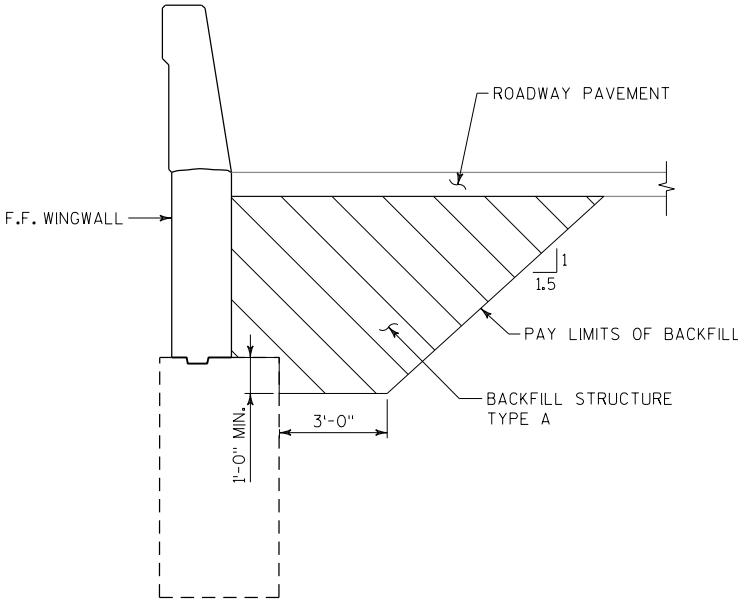
TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEMS	UNIT	WEST ABUTMENT	EAST ABUTMENT	SUPER.	TOTAL
203.0210.S.01	ABATEMENT OF ASBESTOS CONTAINING MATERIAL B-51-59	LS	-	-	-	1
203.0500.S.01	REMOVING OLD STRUCTURE OVER WATERWAY STA. 137+60.00	LS	-	-	-	1
206.1000.01	EXCAVATION FOR STRUCTURES BRIDGES B-51-59	LS	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	52	52	-	104
502.0100	CONCRETE MASONRY BRIDGES	CY	7	7	95	109
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-	-	298	298
502.3210	PIGMENTED SURFACE SEALER	SY	10	10	60	80
502.4205	ADHESIVE ANCHORS NO. 5 BAR	EACH	56	56	240	352
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	820	820	23,330	24,970
506.4000.01	STEEL DIAPHRAGMS B-51-59	EACH	-	-	6	6
509.1500	CONCRETE SURFACE REPAIR	SF	5	5	-	10
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	4	4	-	8
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	2	2	-	4
	NON BID ITEMS					
	PREFORMED JOINT FILLER	SIZE				1/2"
	NAME PLATE	EACH				1

ALL ITEMS ARE CATEGORY 2000

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.
- ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.
- COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), RACINE COUNTY ZONE, NAD 1983 (2011). ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF NAVD 88 (2012).
- REMOVE ANY/ALL LOOSE CONCRETE UNDER BID ITEM "CONCRETE SURFACE REPAIR". SURFACES SHALL BE BLAST CLEANED AND ANY EXPOSED STEEL SHALL BE BRUSHED CLEANED PRIOR TO THE CONCRETE SURFACE REPAIRS BEING COMPLETED. REPAIR AREAS SHALL BE VERIFIED AND APPROVED BY THE FIELD ENGINEER.
- AT THE BACKFACE OF ABUTMENT ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.
- UTILIZE EXISTING BAR STEEL REINFORCEMENT WHERE SHOWN AND EXTEND 24 BAR DIAMETERS INTO NEW WORK, UNLESS SPECIFIED OTHERWISE.
- VARIATIONS TO THE NEW GRADE LINE OVER 1/4" MUST BE SUBMITTED BY THE FIELD ENGINEER TO THE STRUCTURES DESIGN SECTION FOR REVIEW.
- EXISTING ASBESTOS AT RAIL POSTS AND AT ALL OTHER AREAS DESIGNATED BY THE ENGINEER SHALL BE REMOVED UNDER THE BID ITEM "ABATEMENT OF ASBESTOS CONTAINING MATERIALS B-51-59".
- APPLY PIGMENTED SURFACE SEALER TO THE TOP AND INSIDE FACE OF PARAPETS.
- APPLY PROTECTIVE SURFACE TREATMENT TO THE TOP OF THE BRIDGE DECK.
- DIMENSIONS SHOWN ARE BASED ON THE AS-BUILT STRUCTURE PLANS.
- THE CONTRACTOR SHALL SUPPLY A NEW NAME PLATE IN ACCORDANCE WITH SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS AND THE STANDARD DETAIL DRAWINGS. NAME PLATE TO SHOW ORIGINAL CONSTRUCTION YEAR, 1968.
- THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE.
- THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE GIRDER & HAUNCH DETAILS SHEET.
- THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-51-59" SHALL BE THE EXISTING GROUNDLINE.
- THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS AS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED DIRECTLY BEHIND ABUTMENTS AND ABUTMENT WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.
- ALL CONCRETE REMOVAL SHALL BE DEFINED BY A 1 INCH DEEP SAWCUT.
- LOCATIONS OF THE FOLLOWING ITEMS SHALL BE DETERMINED IN THE FIELD BY THE PROJECT ENGINEER.
- CONCRETE SURFACE REPAIR



BACKFILL LIMITS AT WINGWALLS

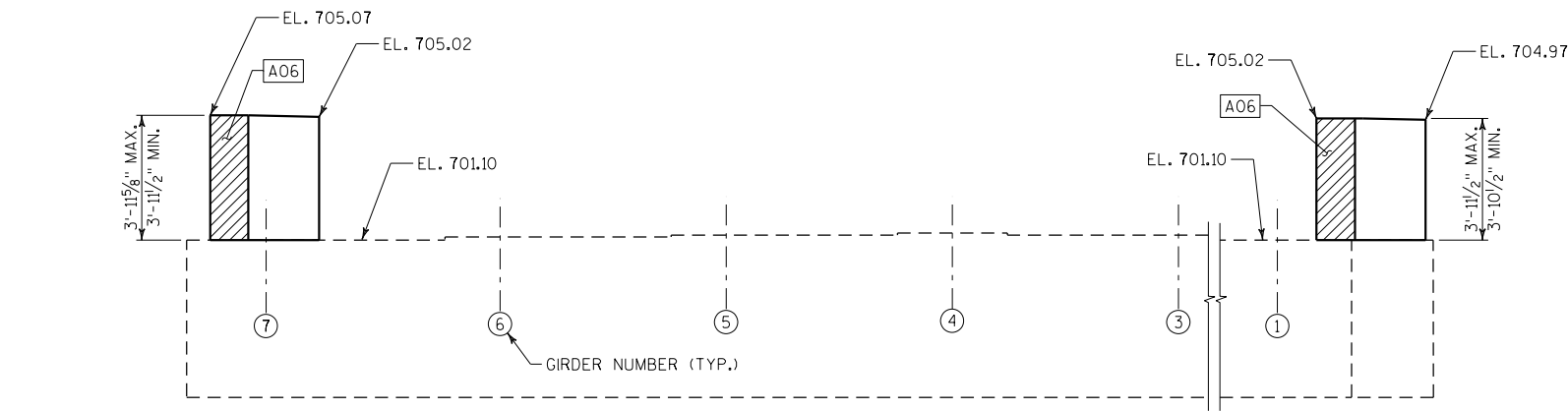
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
		DRAWN BY MM	PLANS CK'D. MHZ
GENERAL NOTES & QUANTITIES		SHEET 3 OF 14	



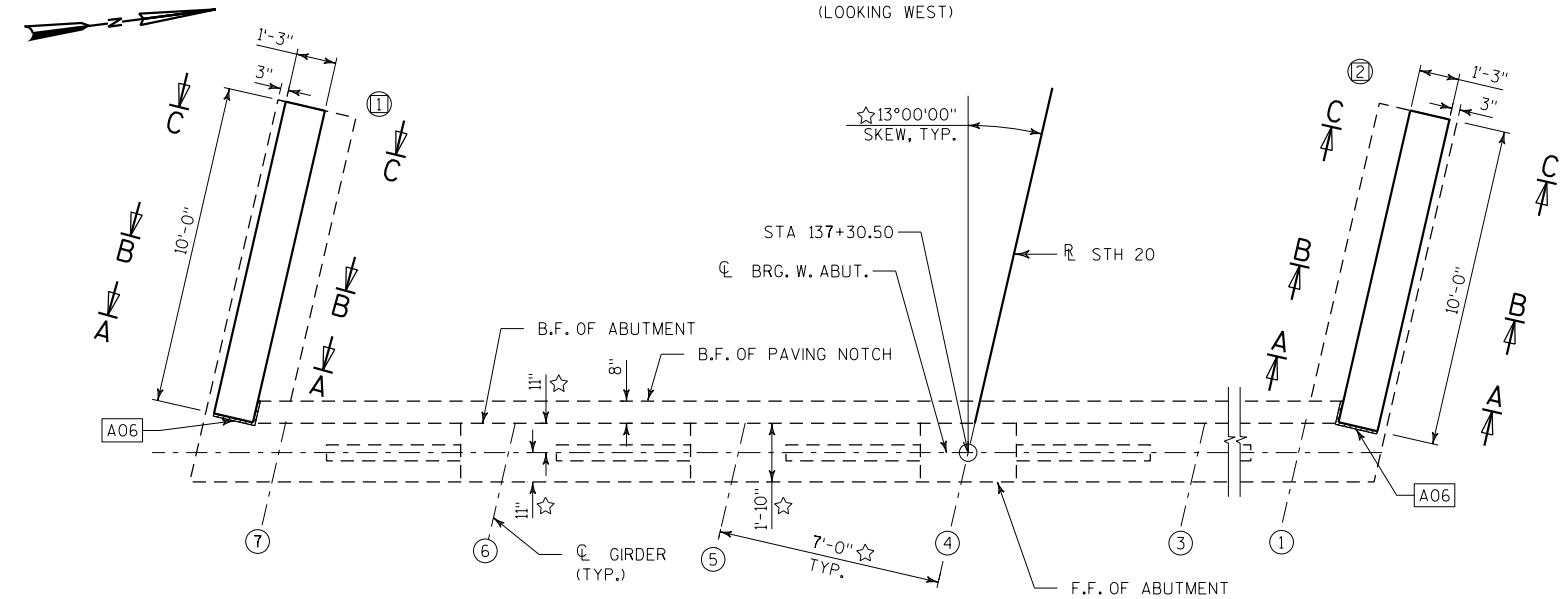
R01	REMOVE EXISTING CONCRETE WING WALL TO EXISTING HORIZONTAL CONSTRUCTION JOINT
R02	REMOVE EXISTING CONCRETE INTERMEDIATE DIAPHRAGM
(X)	WINGWALL NUMBER
(X)	GIRDER NUMBER

ALL DIMENSIONS TAKEN FROM AS-BUILT
STRUCTURE PLANS, DATED JULY 9, 1968.

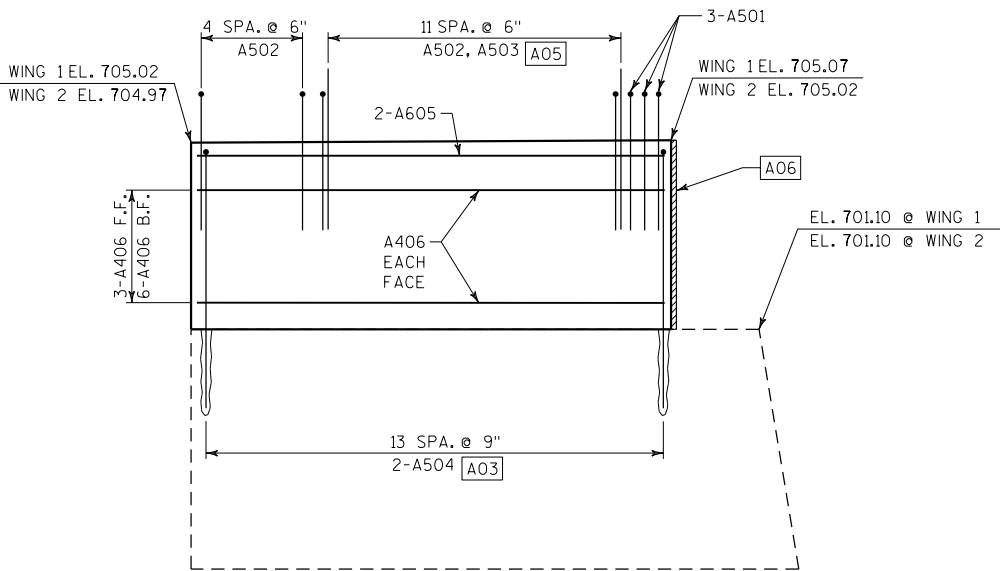




ELEVATION
(LOOKING WEST)



PLAN



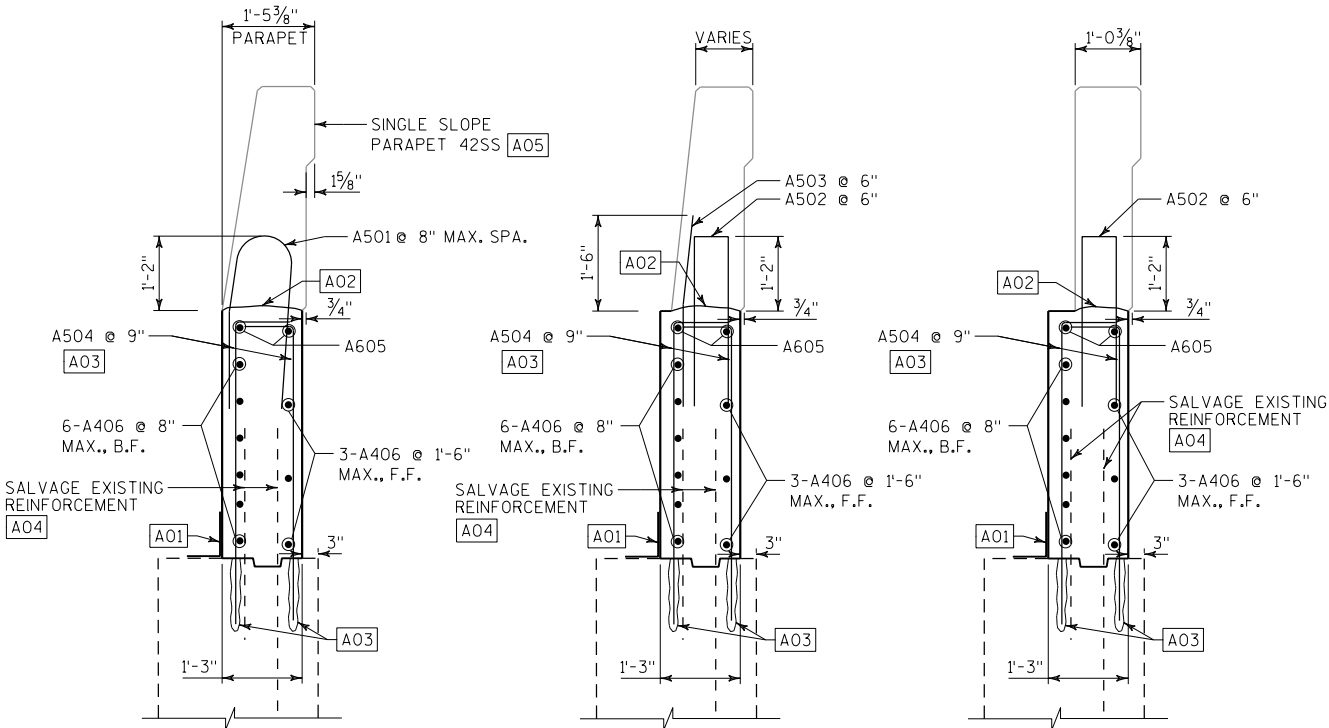
WING ELEVATION

LEGEND

- A01 18" RUBBERIZED MEMBRANE WATERPROOFING.
 - A02 CONST. JOINT - STRIKE OFF AND LEAVE ROUGH.
 - A03 ADHESIVE ANCHORS NO.5 BAR, EMBED 1'-1" IN CONCRETE. MINIMUM EDGE DISTANCE 4".
 - A04 EXTEND EXISTING REINFORCEMENT A MINIMUM OF 24 BAR DIAMETERS INTO NEW WORK.
 - A05 SEE SHEETS 13 & 14 FOR PARAPET REINFORCEMENT DETAILS.
 - A06 1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET. FILLER INCLUDED IN WING LENGTH.
- ☆ PER EXISTING AS-BUILT STRUCTURE PLAN.

NOTE

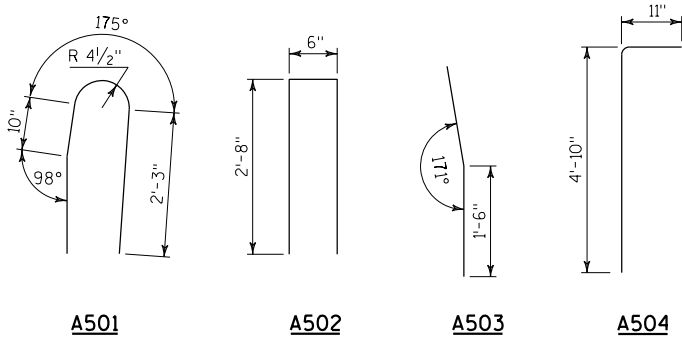
FOR ANCHOR BOLT ASSEMBLY SEE SHEET 13



BILL OF BARS

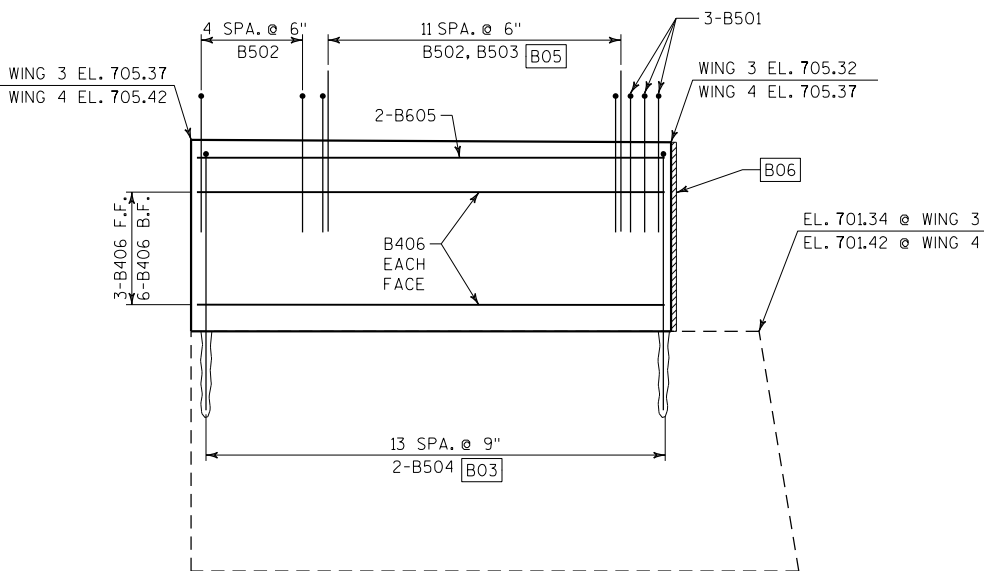
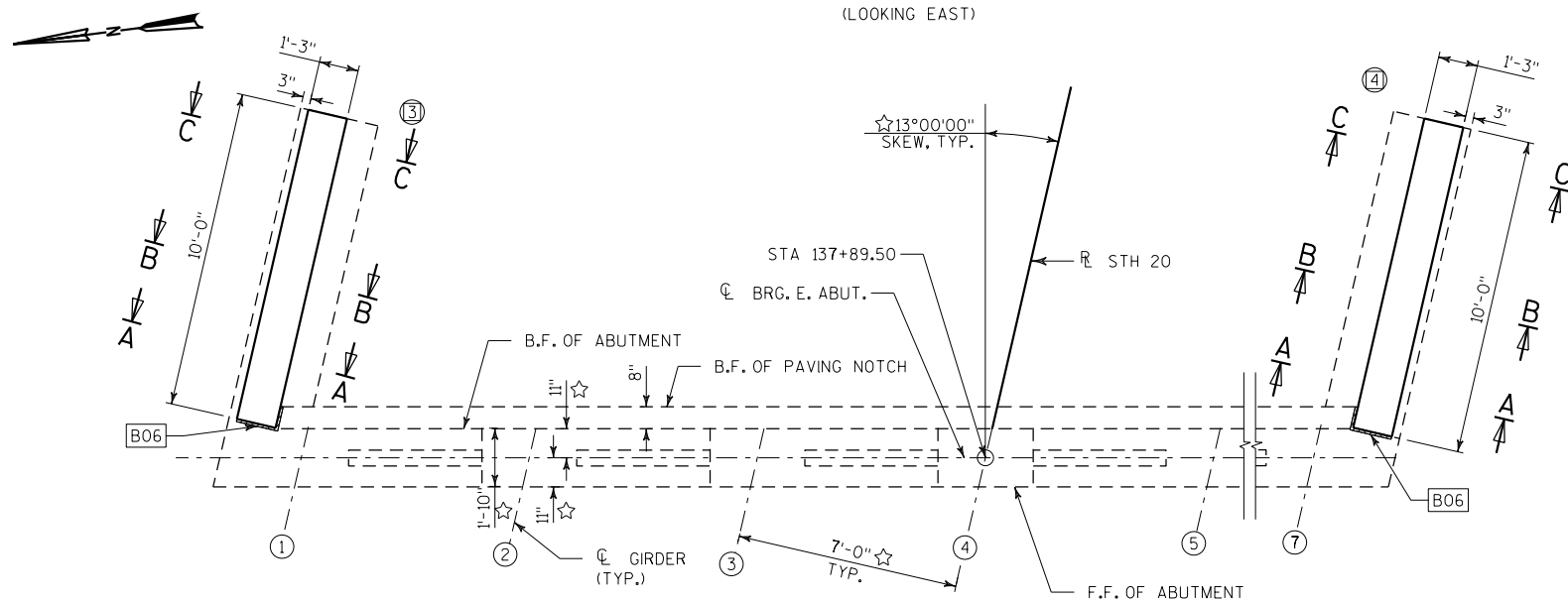
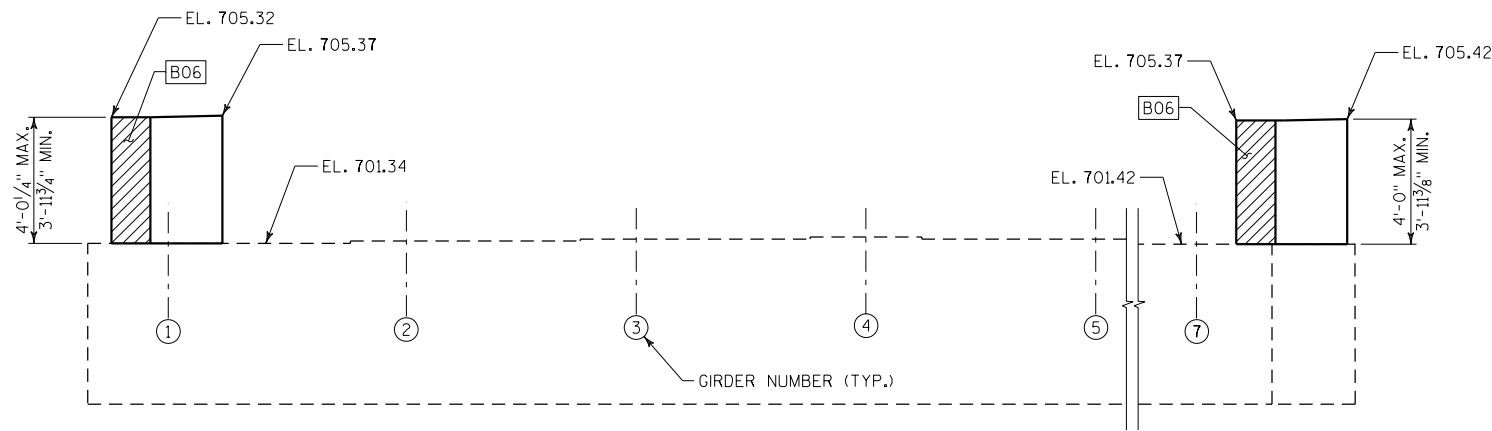
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	6	5'-10"	X	-	WINGS PARAPET - VERT.
A502	X	34	5'-7"	X	-	WINGS PARAPET - VERT.
A503	X	24	3'-0"	X	-	WINGS PARAPET - VERT.
A504	X	56	5'-8"	X	-	WING 1 & 2 - VERT.
A605	X	4	9'-8"	-	-	WING 1 & 2 - LONG. TOP
A406	X	18	9'-8"	-	-	WING 1 & 2 - LONG.

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



BENDING DIAGRAMS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
WEST ABUTMENT			SHEET 5 OF 14

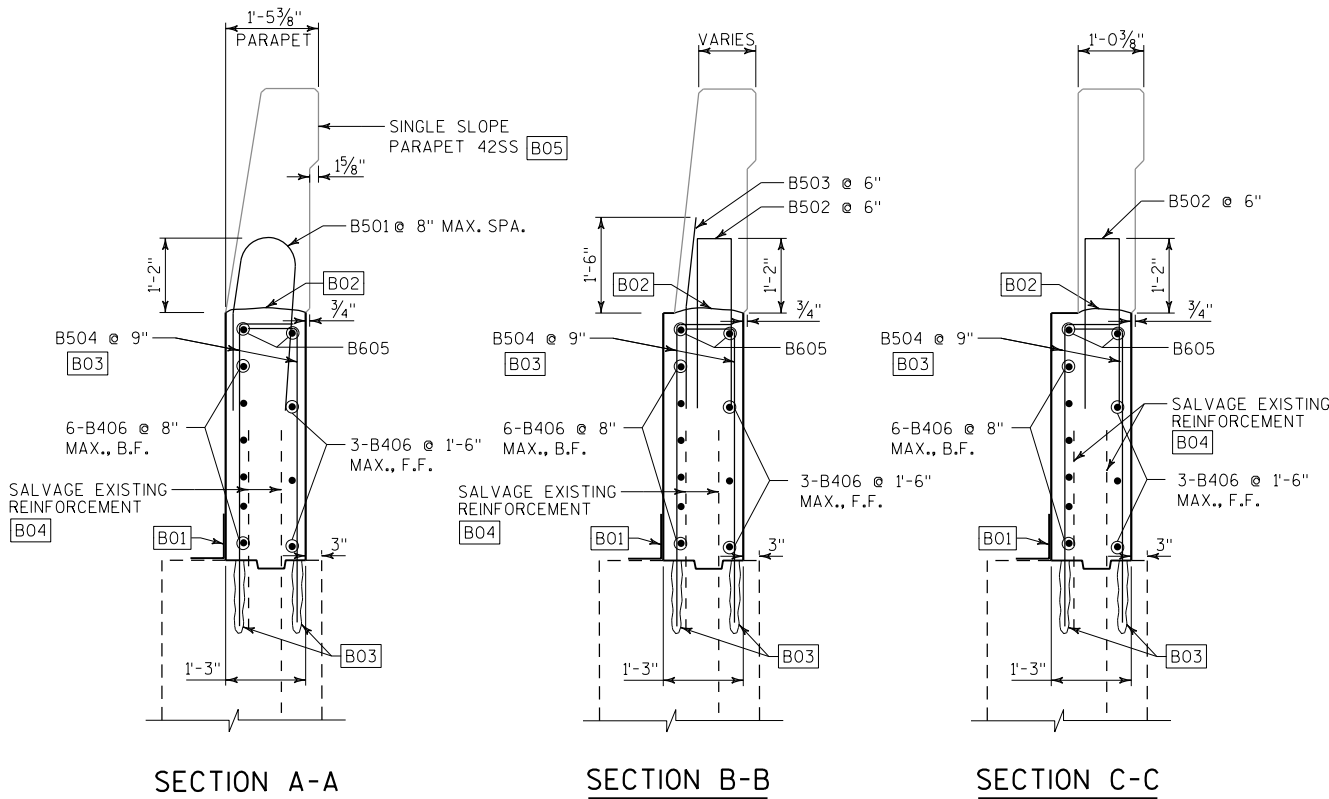


LEGEND

- [B01] 18" RUBBERIZED MEMBRANE WATERPROOFING.
 - [B02] CONST. JOINT - STRIKE OFF AND LEAVE ROUGH.
 - [B03] ADHESIVE ANCHORS NO. 5 BAR, EMBED 1'-1" IN CONCRETE. MINIMUM EDGE DISTANCE 4".
 - [B04] EXTEND EXISTING REINFORCEMENT A MINIMUM OF 24 BAR DIAMETERS INTO NEW WORK.
 - [B05] SEE SHEETS 13 & 14 FOR PARAPET REINFORCEMENT DETAILS.
 - [B06] 1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET. FILLER INCLUDED IN WING LENGTH.
- ☆ PER EXISTING AS-BUILT STRUCTURE PLAN.

NOTE

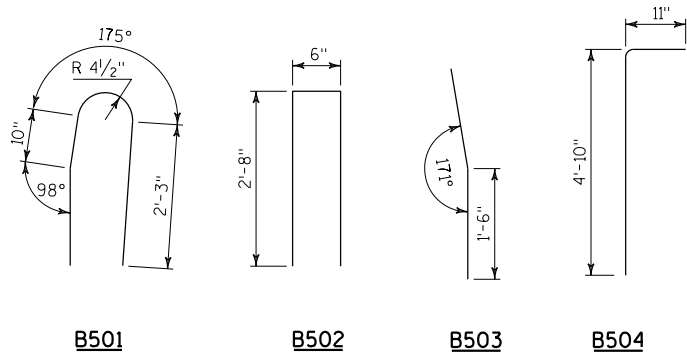
FOR ANCHOR BOLT ASSEMBLY SEE SHEET 13



BILL OF BARS

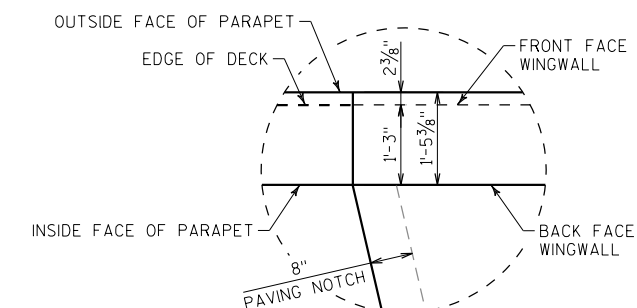
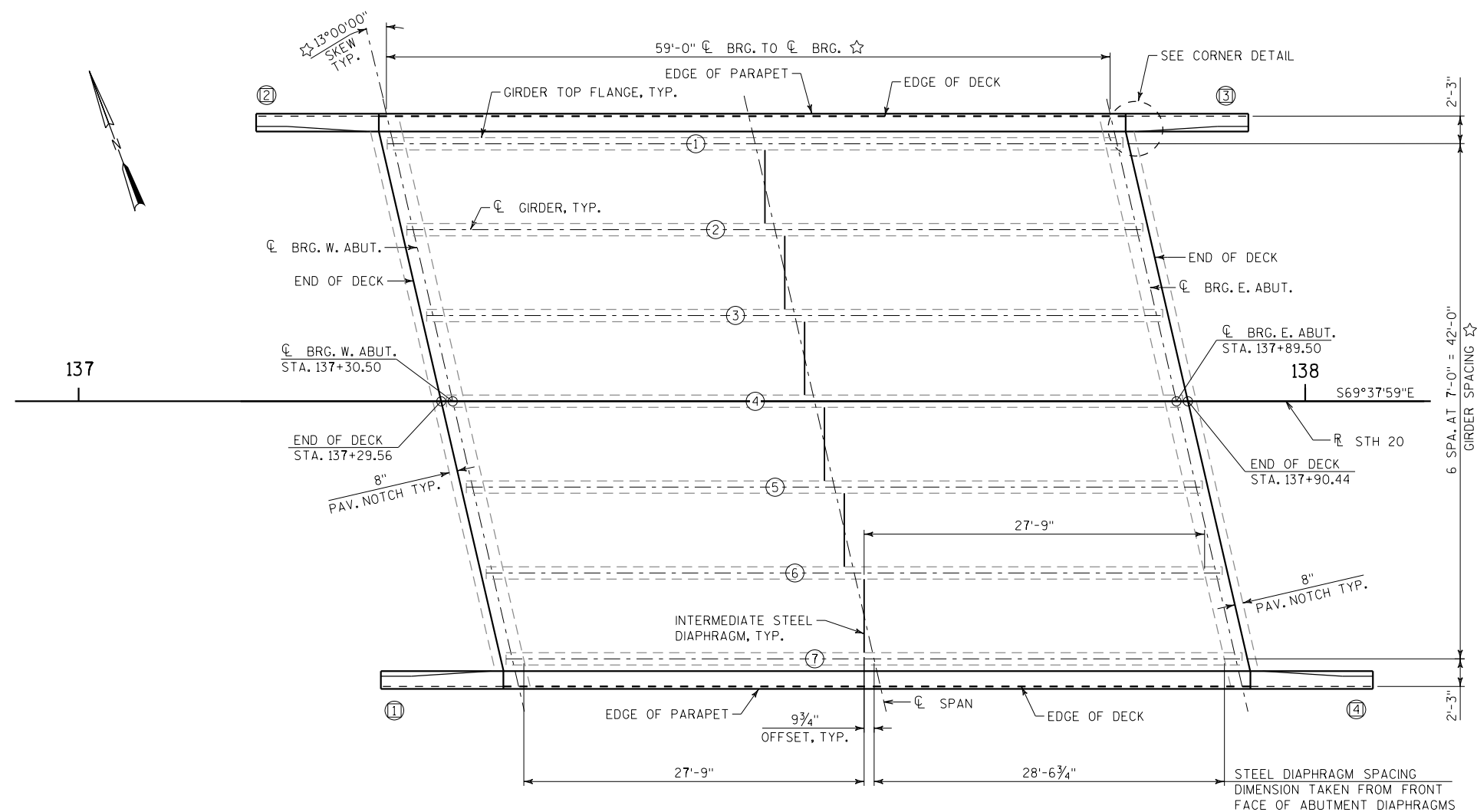
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B501	X	6	5'-10"	X	-	WINGS PARAPET - VERT.
B502	X	34	5'-7"	X	-	WINGS PARAPET - VERT.
B503	X	24	3'-0"	X	-	WINGS PARAPET - VERT.
B504	X	56	5'-8"	X	-	WING 3 & 4 - VERT.
B605	X	4	9'-8"	-	-	WING 3 & 4 - LONG. TOP
B406	X	18	9'-8"	-	-	WING 3 & 4 - LONG.

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



BENDING DIAGRAMS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
EAST ABUTMENT			SHEET 6 OF 14

**LEGEND**

- ☆ PER EXISTING AS-BUILT STRUCTURE PLAN
(X) WINGWALL NUMBER
(X) GIRDER NUMBER

NOTE

EXISTING INTERMEDIATE CONCRETE DIAPHRAGMS ARE TO BE REMOVED. PLACE INTERMEDIATE STEEL DIAPHRAGMS AS SHOWN. FOR STEEL DIAPHRAGM DETAILS, SEE SHEET 8.

TOP OF DECK ELEVATIONS

LOCATION	W. ABUT. BRG.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	E. ABUT. BRG.
NORTH EDGE OF DECK	705.02	705.05	705.08	705.11	705.14	705.17	705.20	705.23	705.26	705.29	705.32
CL GIRDER 1	705.04	705.07	705.10	705.13	705.16	705.19	705.22	705.25	705.28	705.31	705.34
CL GIRDER 2	705.19	705.22	705.25	705.28	705.31	705.34	705.37	705.40	705.43	705.46	705.49
CL GIRDER 3	705.34	705.37	705.40	705.43	705.46	705.49	705.52	705.55	705.58	705.61	705.63
CL GIRDER 4/PGL/CROWN	705.49	705.52	705.55	705.58	705.60	705.63	705.66	705.69	705.72	705.75	705.78
CL GIRDER 5	705.35	705.38	705.41	705.44	705.47	705.50	705.53	705.56	705.59	705.62	705.65
CL GIRDER 6	705.22	705.25	705.28	705.31	705.34	705.37	705.40	705.43	705.46	705.49	705.52
CL GIRDER 7	705.09	705.12	705.15	705.18	705.21	705.24	705.27	705.30	705.33	705.36	705.39
SOUTH EDGE OF DECK	705.07	705.10	705.13	705.16	705.19	705.22	705.25	705.28	705.31	705.34	705.37

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
FRAMING PLAN		SHEET 7 OF 14	

NOTES

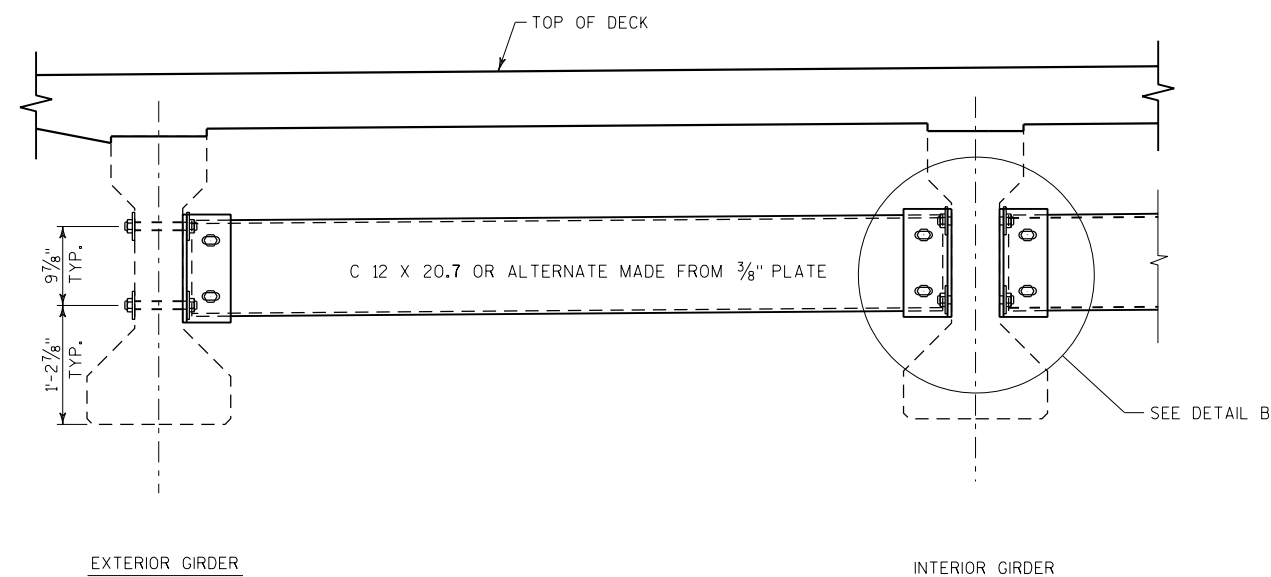
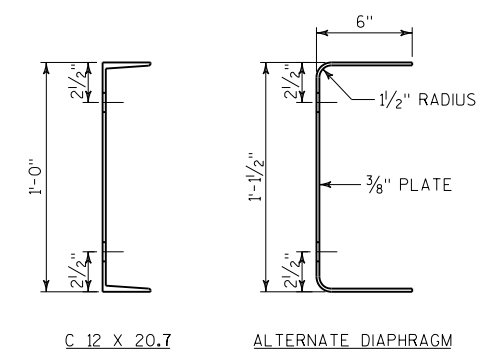
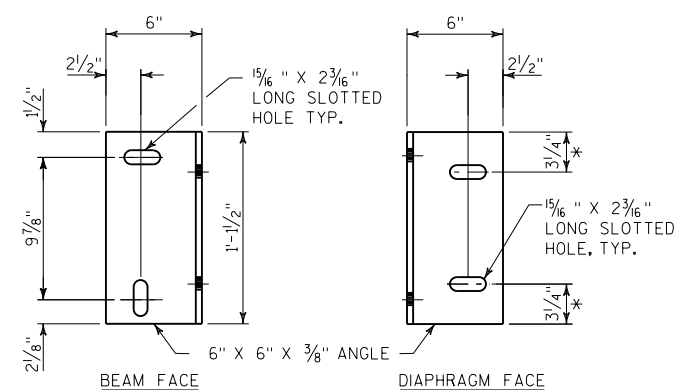
ALL DIAPHRAGM MATERIAL AND CORED HOLES SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-51-59", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

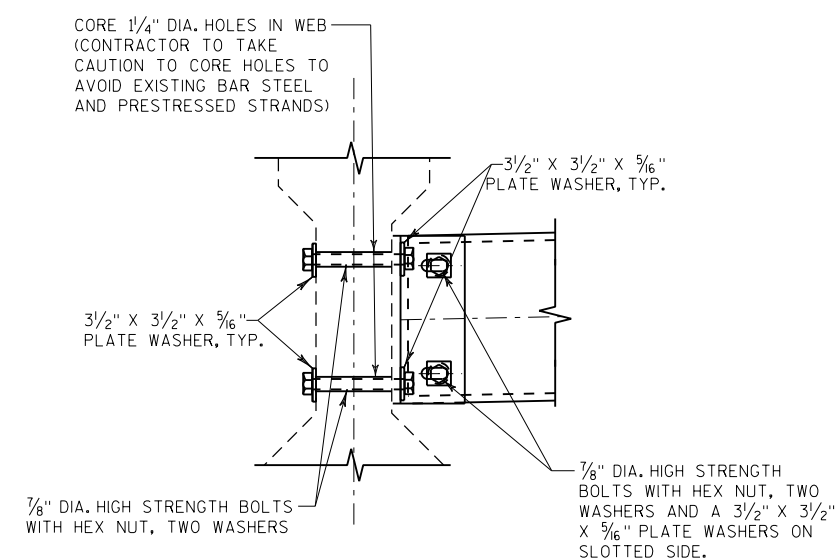
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

ALL DIAPHRAGM MATERIALS INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

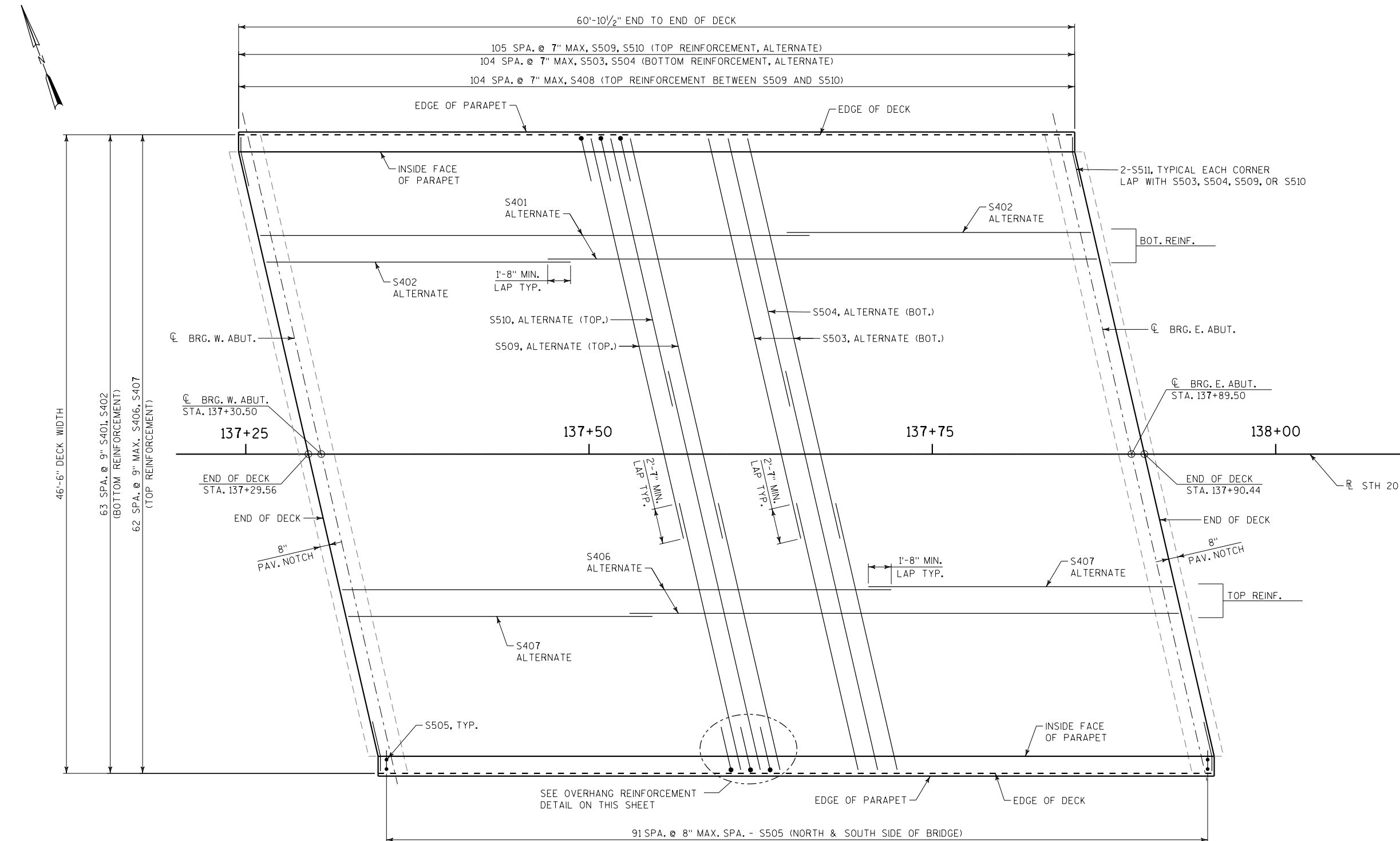
STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS $\frac{1}{4}$ TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

**PART TRANSVERSE SECTION AT DIAPHRAGM****SECTION THRU DIAPHRAGM****DIAPHRAGM SUPPORT**

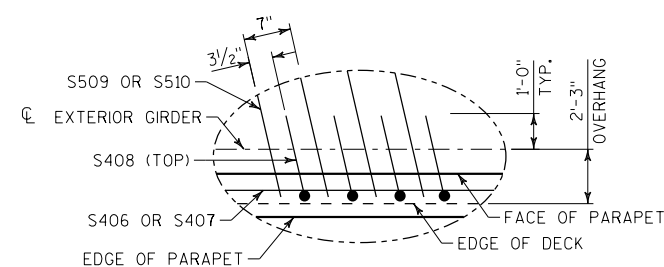
* $2\frac{1}{2}$ " FOR ALTERNATE PLATE DIAPHRAGM

**DETAIL B**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
STEEL DIAPHRAGM			SHEET 8 OF 14



DECK REINFORCEMENT PLAN



OVERHANG REINFORCEMENT DETAIL

NOTES

FOR DECK CROSS SECTION, SEE SHEET 10.

FOR SUPERSTRUCTURE DETAILS & BILL OF BARS, SEE SHEET 11.

FOR HAUNCH REINFORCEMENT, SEE SHEET 12.

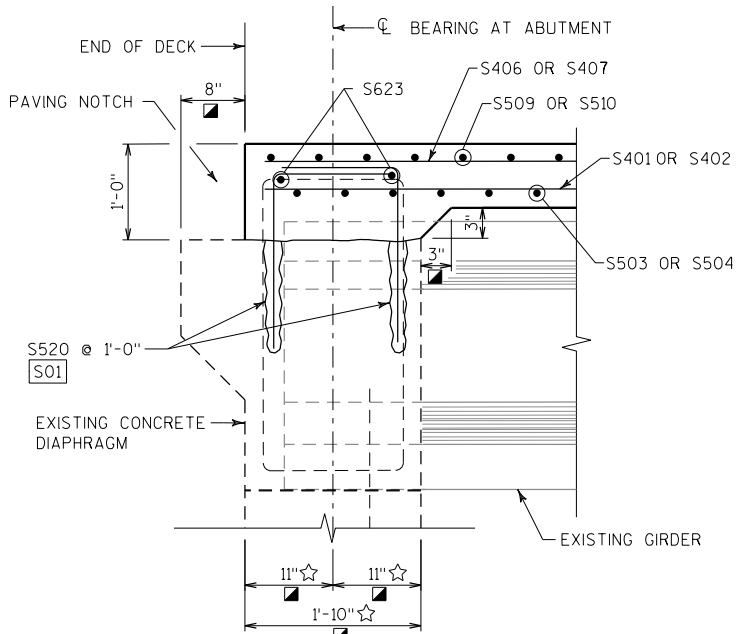
FOR PARAPET REINFORCEMENT, SEE SHEETS 13 & 14.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
DECK REINFORCEMENT			SHEET 9 OF 14



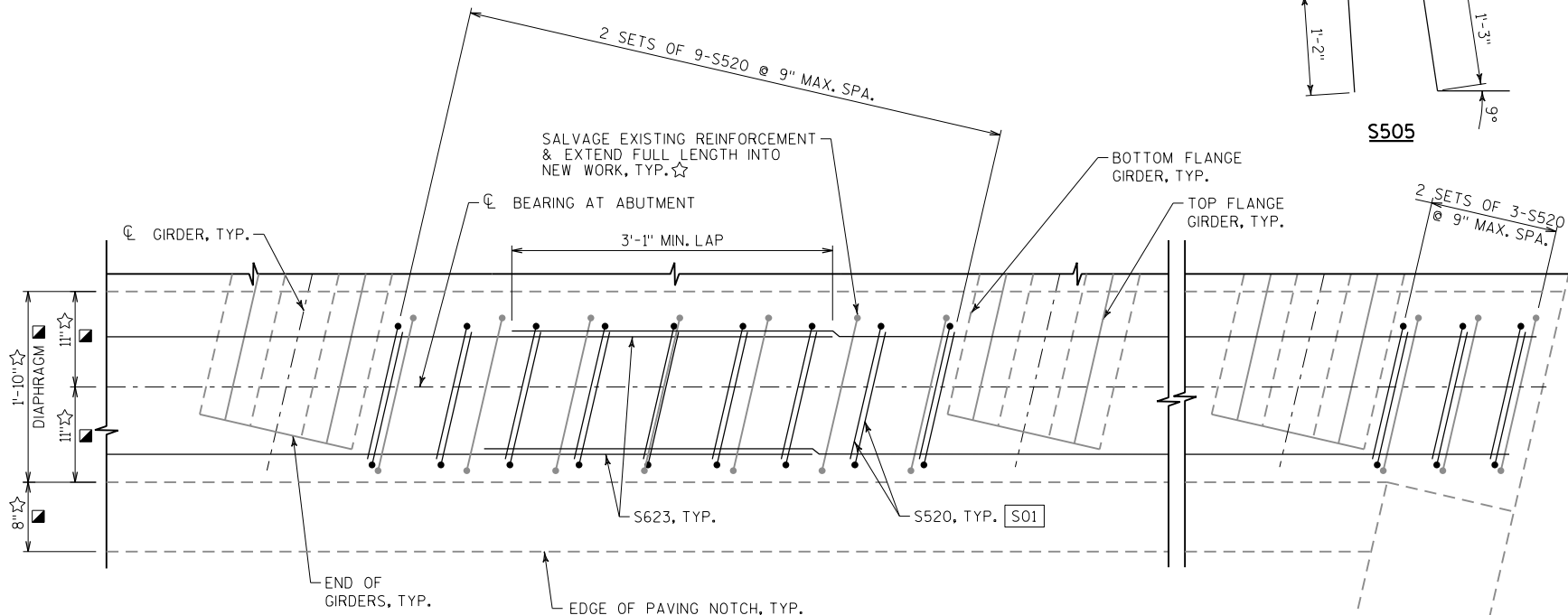
FOR PARAPET REINFORCEMENT, SEE SHEETS 13 & 14.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
		DRAWN BY	MM
		PLANS CK'D.	MHZ
DECK CROSS SECTION			SHEET 10 OF 1



PART LONGITUDINAL SECTION AT ABUTMENT

(EXISTING LONGITUDINAL DIAPHRAGM REINFORCEMENT NOT SHOWN FOR CLARITY)



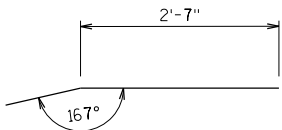
PARTIAL PLAN ABUTMENT DIAPHRAGM

(EXISTING LONGITUDINAL DIAPHRAGM REINFORCEMENT NOT SHOWN FOR CLARITY)

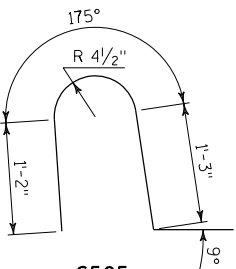
BILL OF BARS

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	LOCATION
S401	X	64	40'-0"	-	DECK BOTTOM - LONG.
S402	X	64	22'-3"	-	DECK BOTTOM - LONG.
S503	X	105	30'-0"	-	DECK BOTTOM - TRANS.
S504	X	105	20'-0"	-	DECK BOTTOM - TRANS.
S505	X	184	4'-5"	X	PARAPET DOWELS
S406	X	63	40'-0"	-	DECK TOP - LONG.
S407	X	63	22'-3"	-	DECK TOP - LONG.
S408	X	210	3'-9"	X	DECK TOP OVERHANG - TRANS.
S509	X	106	30'-0"	-	DECK TOP - TRANS.
S510	X	106	20'-0"	-	DECK TOP - TRANS.
S511	X	8	3'-7"	X	DECK TOP AND BOT. AT CORNERS
S520	X	240	3'-1"	X	ABUT. DIAPHRAGM DOWEL
S421	X	427	2'-11"	X	GIRDER HAUNCH - VERT.
S422	X	28	30'-10"	-	HAUNCH - LONG.
S623	X	8	25'-3"	-	ABUT. DIAPHRAGM - TRANS.

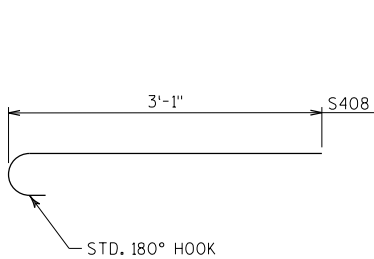
NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



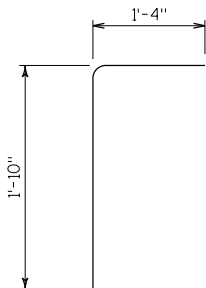
S511



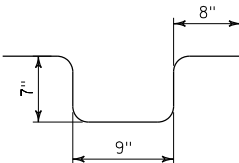
S505



S408



S520



S421

BENDING DIAGRAMS

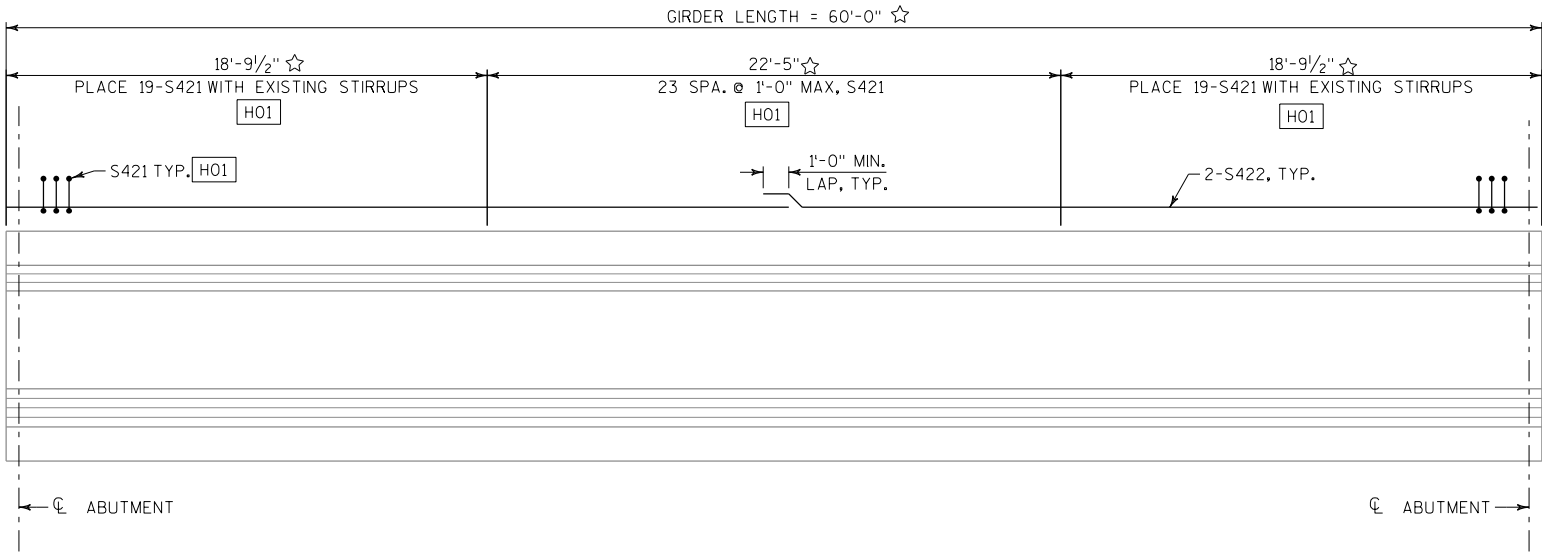
LEGEND

- [S01] ADHESIVE ANCHORS NO. 5 BAR, EMBED 1'-1" IN CONCRETE. MINIMUM EDGE DISTANCE 4". BARS PLACED PARALLEL TO GIRDERS. SPACING PERPENDICULAR TO GIRDERS.
- ☆ PER EXISTING AS-BUILT STRUCTURE PLAN.
- DIMENSIONS ARE TAKEN NORMAL TO SUBSTRUCTURE UNITS.

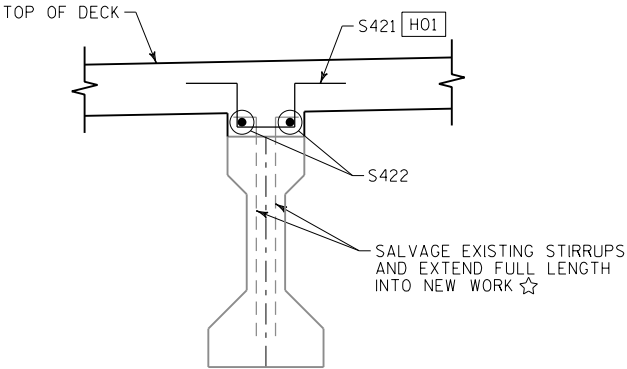
NOTES

- FOR DECK REINFORCEMENT PLAN, SEE SHEET 9.
- FOR DECK CROSS SECTION, SEE SHEET 10.
- FOR HAUNCH REINFORCEMENT, SEE SHEET 12.
- FOR PARAPET REINFORCEMENT, SEE SHEETS 13 & 14.

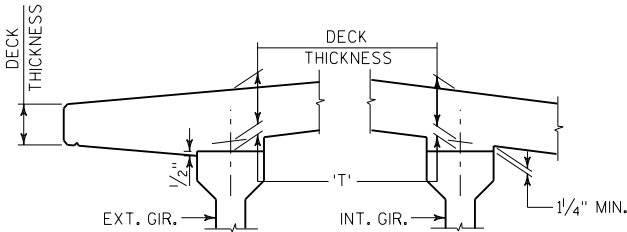
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
SUPERSTRUCTURE DETAILS		SHEET 11 OF 14	



HAUNCH REINFORCEMENT ELEVATION



HAUNCH REINFORCEMENT DETAIL



DECK HAUNCH DETAIL

IF 1/4" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR. THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN 1/2".

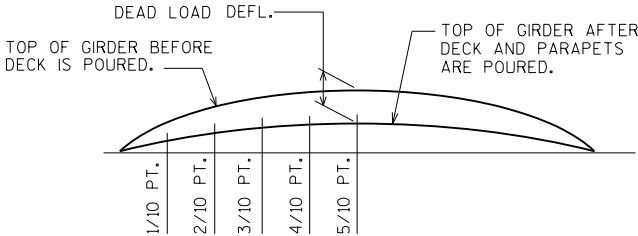
TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT CL OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

- TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
- + DEAD LOAD DEFLECTION
- DECK THICKNESS
-
- = HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF 4" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

GIRDER DATA						
SPANS	GIRDER LOCATION	DEAD LOAD DEFL. (IN.) ***				
		1/10	2/10	3/10	4/10	5/10
1	EXT. GIRDERS	1/8"	3/8"	1/2"	5/8"	5/8"
1	INT. GIRDERS	1/4"	3/8"	5/8"	3/4"	3/4"

*** SEE DEAD LOAD DEFLECTION DIAGRAM. DEAD LOAD DEFLECTIONS ARE SYMMETRICAL ON GIRDERS.



DEAD LOAD DEFLECTION DIAGRAM

LEGEND

☆ PER EXISTING AS-BUILT STRUCTURE PLAN

[H01] FIELD ORIENTATE REINFORCEMENT IN CONFLICT WITH DECK SLAB TOP REINFORCEMENT MAT AS NEEDED

NOTES

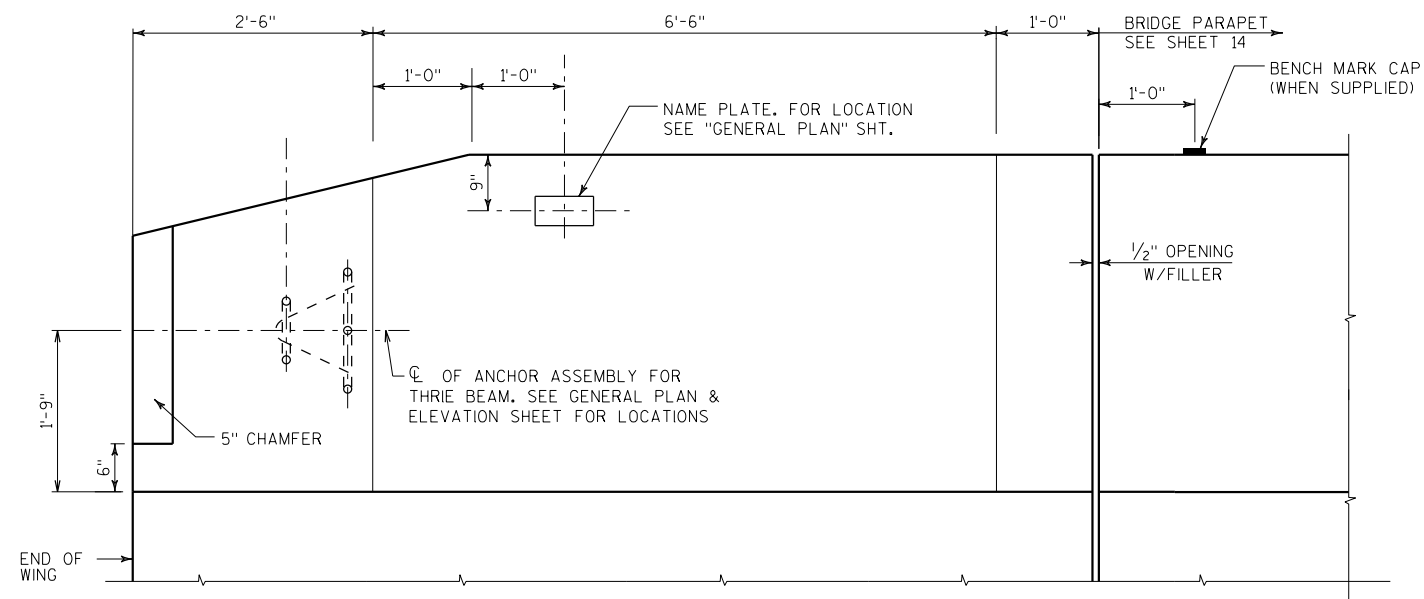
FOR DECK REINFORCEMENT PLAN, SEE SHEET 9.

FOR DECK CROSS SECTION, SEE SHEET 10.

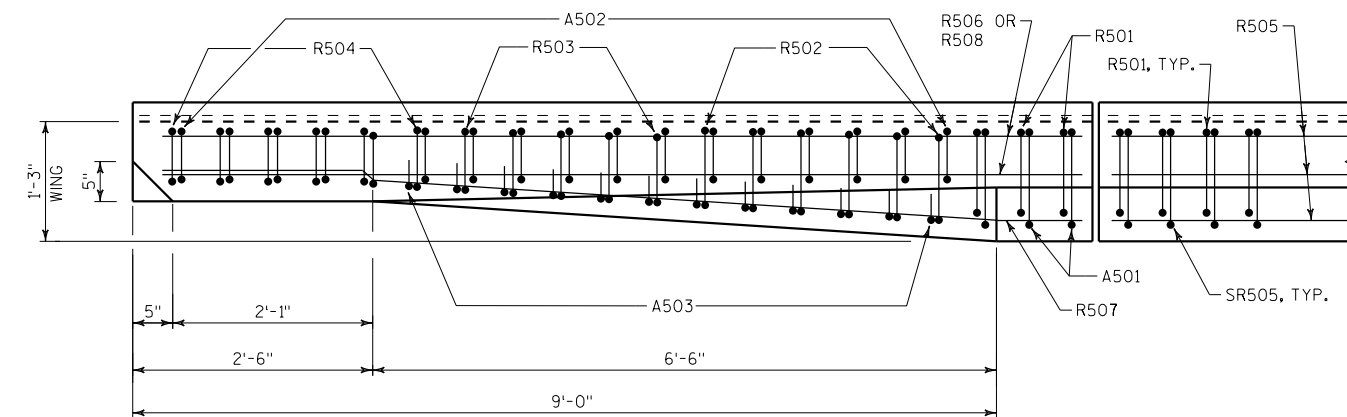
FOR ABUTMENT DIAPHRAGM REINFORCEMENT, SEE SHEET 11.

FOR PARAPET REINFORCEMENT, SEE SHEETS 13 & 14.

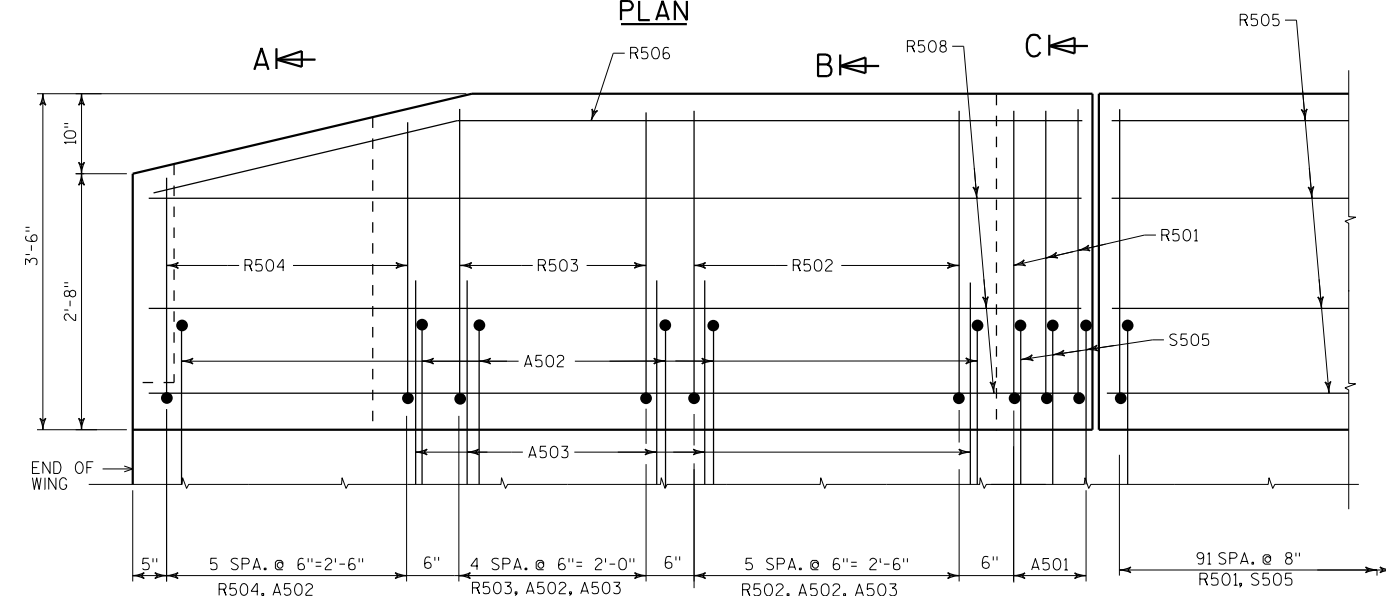
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY SMC		PLANS CK'D. MHZ	
GIRDER & HAUNCH DETAILS		SHEET 12 OF 14	



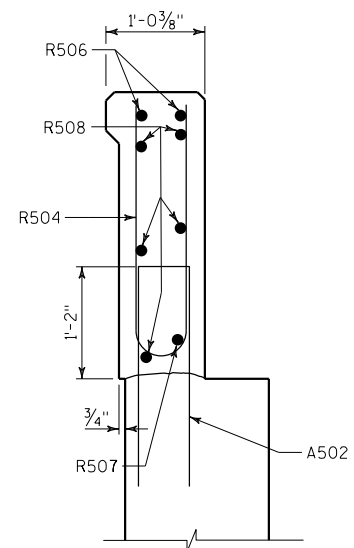
INSIDE ELEVATION



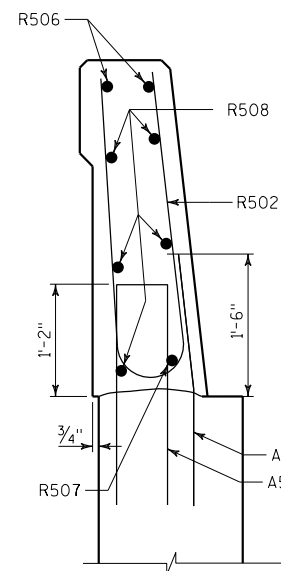
PLAN



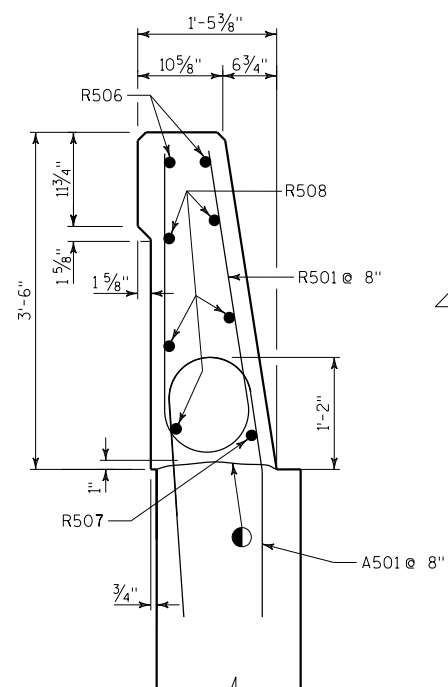
OUTSIDE ELEVATION



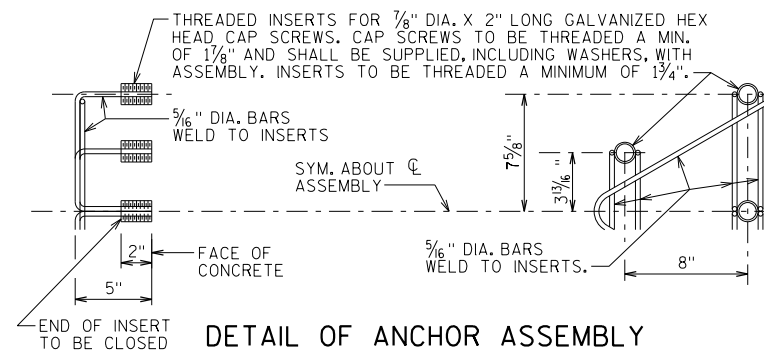
SECTION A-A



SECTION B-B



SECTION C-C



DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.

ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

LEGEND

● CONST. JOINT - STRIKE OFF AS SHOWN.

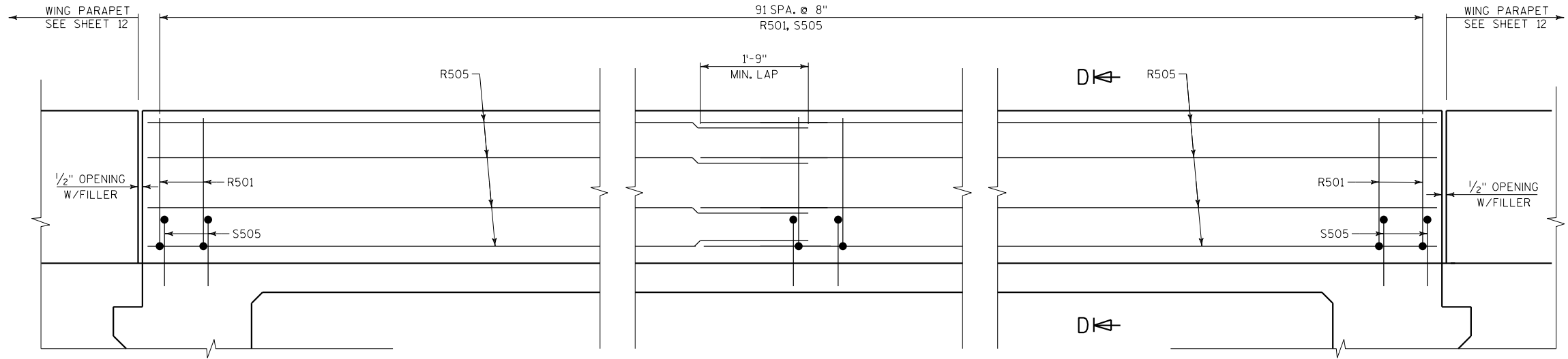
NOTES

PARAPET ON WING 1 SHOWN.
PARAPETS ON WINGS 2, 3 & 4 ARE SIMILAR.

FOR PARAPET BENDING DIAGRAMS & BILL OF BARS,
SEE SHEET 14.

FOR BRIDGE PARAPET REINFORCEMENT, SEE SHEET 14.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
SINGLE SLOPE PARAPET 42SS (1 OF 2)			SHEET 13 OF 14



OUTSIDE ELEVATION

BILL OF BARS

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	196	6'-8"	X		BRIDGE PARAPET VERT.
R502	X	24	6'-6"	X		WING PARAPET VERT.
R503	X	20	6'-5"	X		WING PARAPET VERT.
R504	X	24	5'-5"	X	▲	WING PARAPET VERT.
R505	X	32	31'-2"	-		BRIDGE PARAPET HORIZ.
R506	X	8	9'-8"	X		WING PARAPET HORIZ.
R507	X	4	9'-7"	X		WING PARAPET HORIZ.
R508	X	20	9'-8"	-		WING PARAPET HORIZ.

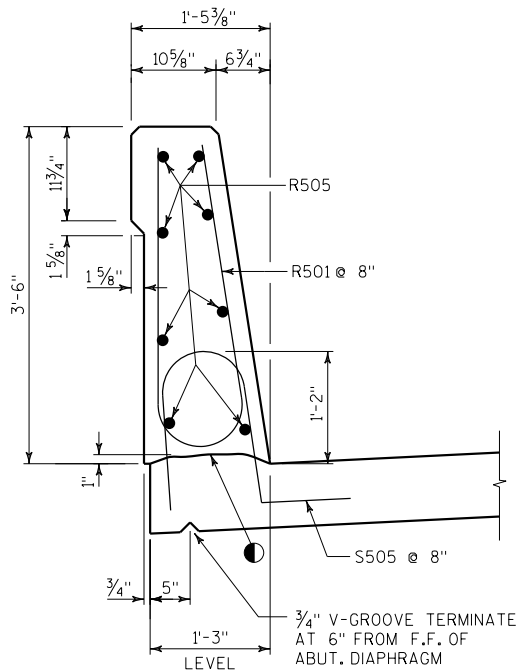
NOTES:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE

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

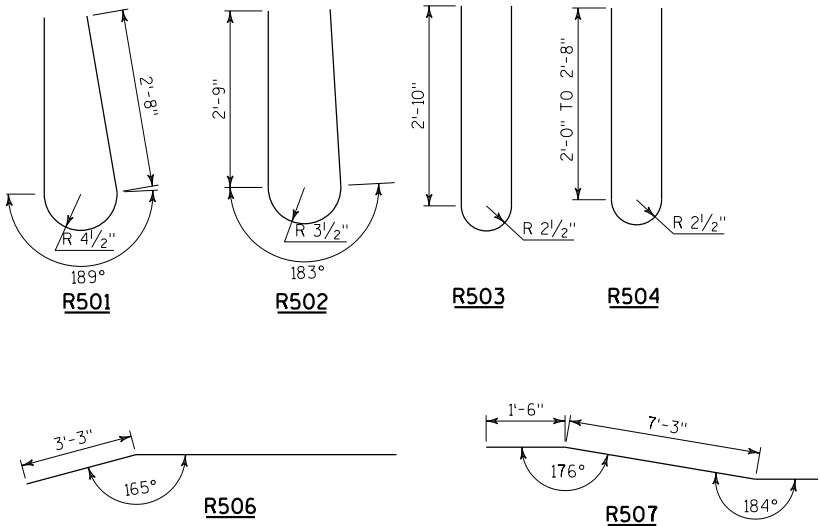
BAR SERIES TABLE

BAR MARK	NO. REQ'D.	LENGTH
R504	4 SERIES OF 6	4'-9" TO 6'-1"

BUNDLE AND TAG EACH SERIES SEPARATELY.



SECTION D-D



BENDING DIAGRAMS

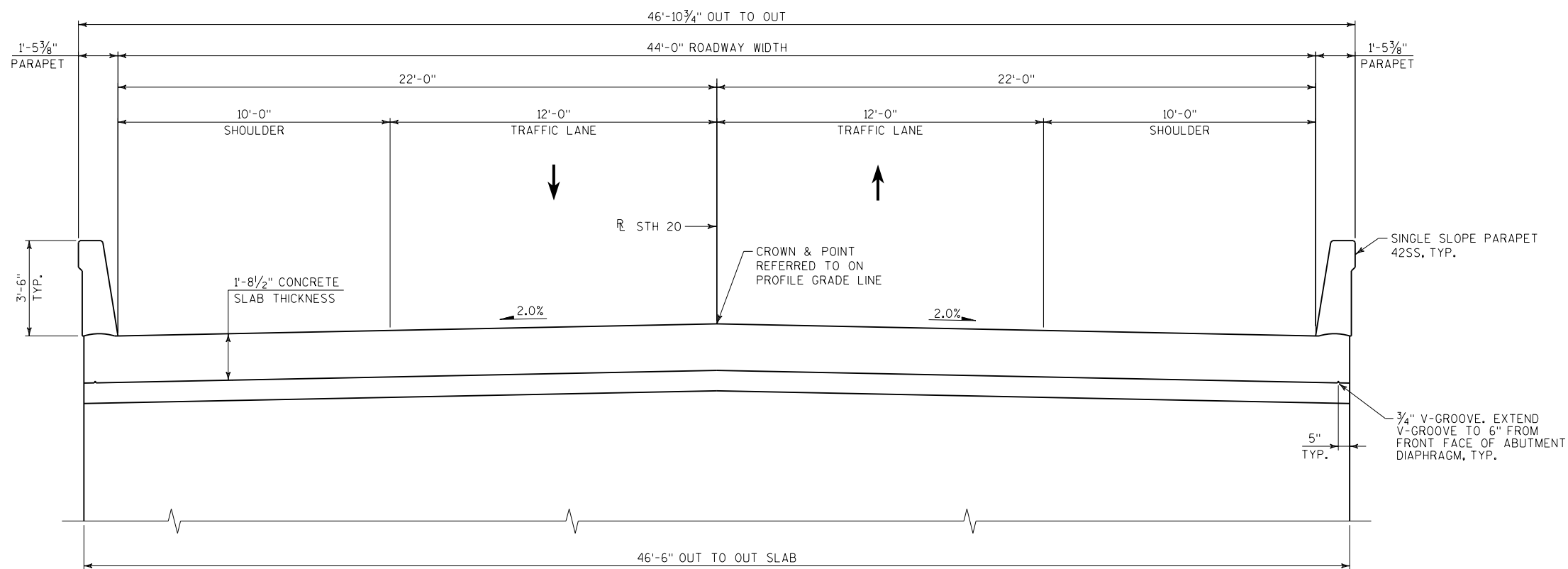
NOTES

FOR PARAPET ON WINGWALLS, SEE SHEET 13.

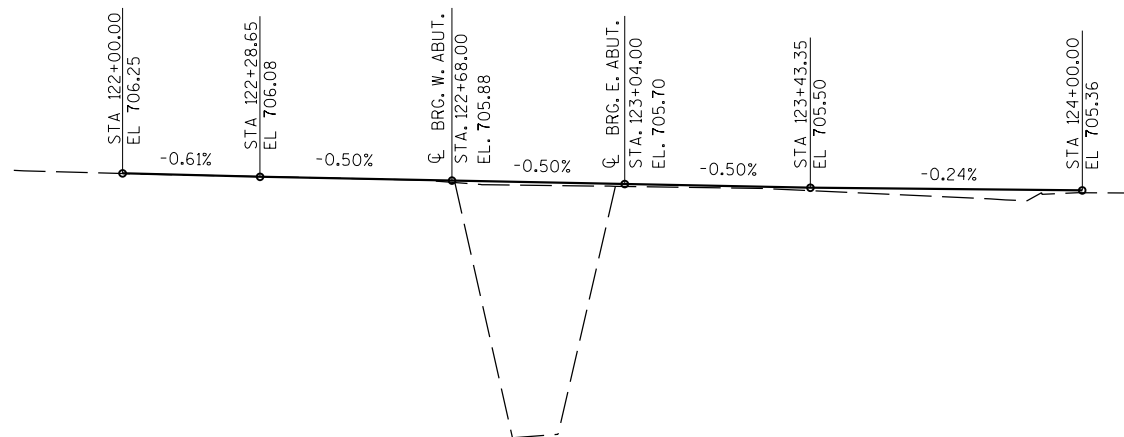
LEGEND

● CONST. JOINT - STRIKE OFF AS SHOWN.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-59			
DRAWN BY		MM	PLANS CK'D. MHZ
SINGLE SLOPE PARAPET 42SS (2 OF 2)			SHEET 14 OF 14



TYPICAL SECTION B-51-158
(LOOKING EAST)



STH 20 PROFILE GRADE LINE

LEGEND
→ DIRECTION OF TRAFFIC

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
		DRAWN BY	MM
		PLANS CK'D.	MHZ
TYPICAL SECTION & PROFILE GRADE LINE		SHEET 2 OF 18	

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.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATE METHOD IS APPROVED BY THE ENGINEER.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), RACINE COUNTY ZONE, NAD 1983 (2011). ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF NAVD 88 (2012).

THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. UTILITIES LABELED AS PROPOSED MAY BE INSTALLED BY OTHERS PRIOR TO THIS CONTRACT.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-51-158" SHALL BE THE EXISTING GROUND LINE & THE EXISTING STREAM BED.

AT THE BACK FACE OF ABUTMENT, ALL SPACES EXCAVATED AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.

BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION TO BE DETERMINED BY THE CONTRACTOR.

THE STREAM BED IN FRONT OF THE ABUTMENT SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE FABRIC 'HR' TO THE EXTENT SHOWN ON GENERAL PLAN & ELEVATION SHEET AND THE HEAVY RIPRAP DETAILS SHEET.

PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED TO THE TOP OF THE SLAB & TO THE TOP OF THE STRUCTURAL APPROACH SLABS.

PIGMENTED SURFACE SEALER IS TO BE APPLIED TO THE TOP AND INSIDE FACE OF THE PARAPETS.

THE EXISTING BRIDGE, B-51-58, IS A SINGLE SPAN REINFORCED CONCRETE SLAB STRUCTURE ON FULL RETAINING TYPE ABUTMENTS. THE ENTIRE STRUCTURE SHALL BE REMOVED IN ACCORDANCE WITH PROJECT CONSTRUCTION PLANS.

PIGMENTED SURFACE SEALER IS TO BE APPLIED TO THE TOP AND INSIDE FACE OF THE PARAPETS.

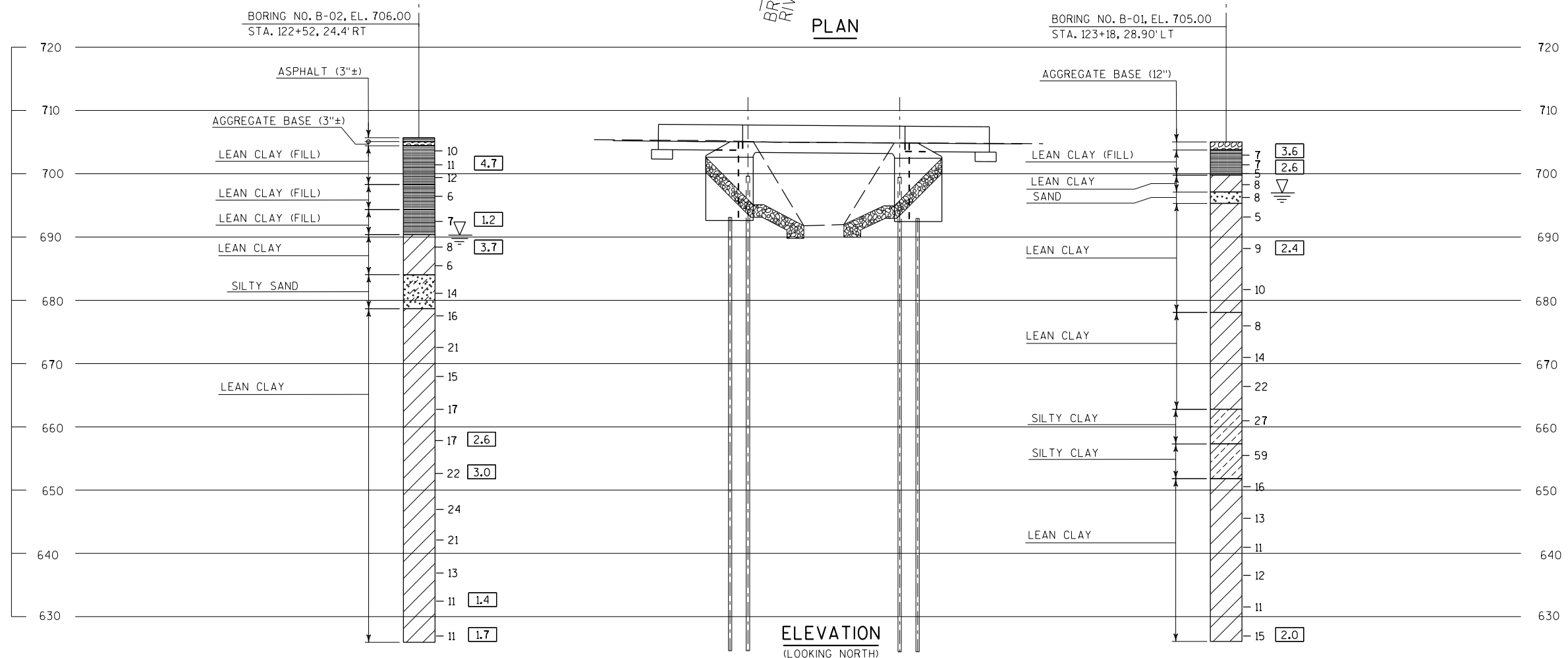


(DIMENSIONS ARE MEASURED NORMAL TO ABUTMENT)

BORINGS COMPLETED BY: PROFESSIONAL SERVICE INDUSTRIES, INC.
REPORT COMPLETED BY: PROFESSIONAL SERVICE INDUSTRIES, INC.
ALL COORDINATES REFERENCED TO WCCS NAD 83(91) RACINE COUNTY

THING (Y)	EASTING (X)
136.67	577543.47
109.73	577462.87
SERVICE INDUSTRIES, INC.	
SERVICE INDUSTRIES, INC.	
CS NAD 83(91) RACINE COUNTY	

PLAN



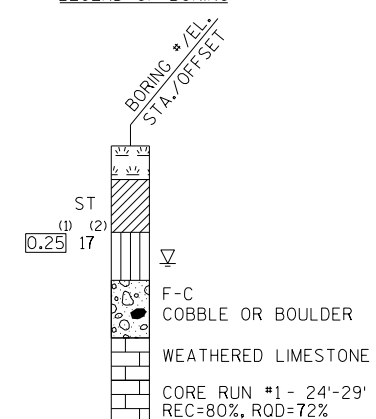
PLOT SCALE : 1:30

MATERIAL SYMBOLS

MATERIAL SYMBOLS

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

LEGEND OF BORING



(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

END OF DRILLING
AFTER DRILLING

ABBREVIATIONS

F-FINE	M-MEDIUM	<u>C-COARSE</u>	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			
STRUCTURE B-51-158			
		DRAWN BY	AJA
		PLANS CK'D.	MHZ
SUBSURFACE EXPLORATION		SHEET 4 OF 18	

AO1 1/2" FILLER, SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

A02 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.

A03 PIPE UNDERDRAIN WRAPPED (6-INCH) SLOPE 0.5% MIN.
ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.

A04 ABUTMENTS SHALL BE SUPPORTED ON HP 10 X 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 151 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES ACCEPTANCE METHOD.
ESTIMATED PILE LENGTH = 75 FEET.

A05 KEYED CONSTRUCTION JOINT FORMED BY A BEVELED 2" X 8". REINFORCEMENT EXTENDS THROUGH JOINT.

A06 4" X 3/4" PREFORMED JOINT FILLER, RUN FULL LENGTH OF ABUTMENT.

A07 THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED,
BUT BEFORE INITIAL SET HAS TAKEN PLACE.

T HP 10 X 42 STEEL PILING

(X) WINGWALL NUMBER

ELEVATIONS ARE GIVEN AT TOP OF CONCRETE AT THE C_L BEARING.

CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 STANDARD SPECIFICATIONS.

FOR TYPICAL SECTION THRU ABUTMENT BODY AND REINFORCEMENT
BILL OF BARS SEE SHEET 6.

FOR WINGWALL REINFORCEMENT SEE SHEET 7.

DO NOT PLACE FILL ABOVE 3'-0" FROM BOTTOM OF ABUTMENT UNTIL
SUPERSTRUCTURE IS IN PLACE.

FOR ALTERNATE CONSTRUCTION JOINT DETAIL SEE SHEET 6.



(DIMENSIONS GIVEN ALONG $\odot$ BEARING)



(DIMENSIONS GIVEN ALONG $\odot$ BEARING)

LEGEND

- A02
- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.
- A03
- PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.
- A06
- 4" X 3/4" FILLER, TYP. RUN FULL LENGTH OF ABUTMENT.
- A07
- THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED, BUT BEFORE INITIAL SET HAS TAKEN PLACE.
- A08
- KEYED CONST. JOINT FORMED BY BEVELED 2" X 6".

NOTES

PARTIAL ZINC OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

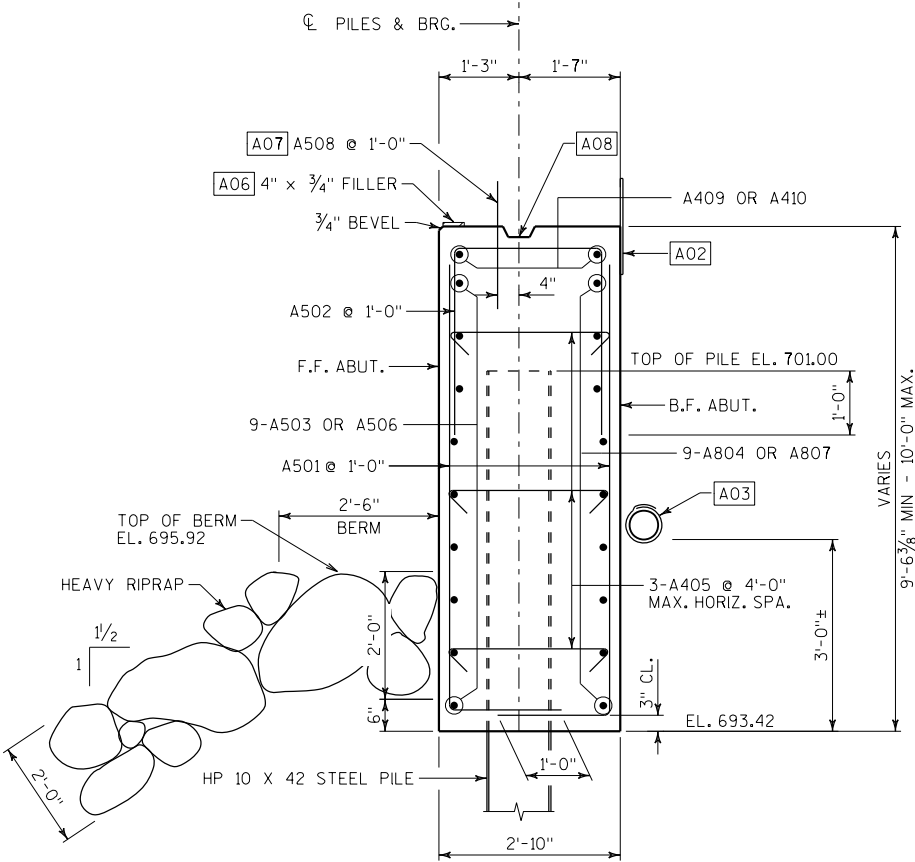
VERTICAL CONSTRUCTION JOINT KEYWAY IS NOT REQUIRED WHEN USING ALTERNATE CONSTRUCTION JOINT.

CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

SAW CUTTING JOINT IS NOT ALLOWED.

FOR ABUTMENT PLAN & ELEVATION SEE SHEET 5.

FOR WINGWALL DETAILS, REINFORCEMENT & BILL OF BARS SEE SHEET 7.

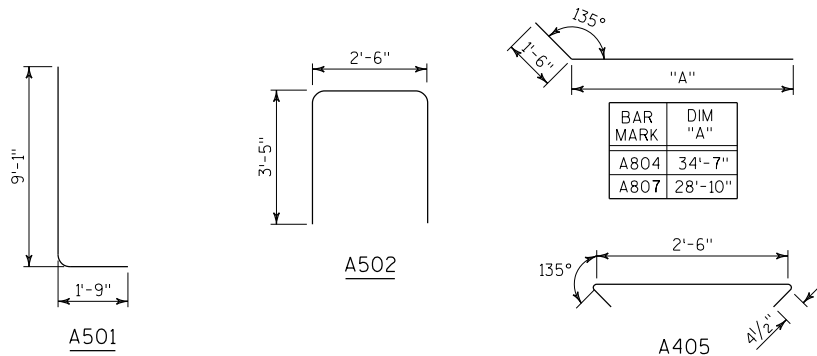


SECTION THRU ABUTMENT BODY
(LOOKING SOUTH)

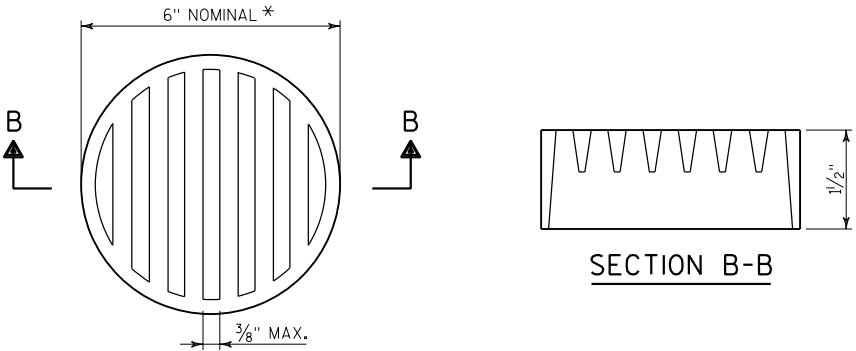
BILL OF BARS

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	110	10'-9"	X	-	ABUTMENT BODY - VERT.
A502	X	55	9'-1"	X	-	ABUTMENT BODY - VERT.
A503	X	9	28'-10"	-	-	ABUTMENT BODY - LONG. F.F.
A804	X	9	36'-1"	X	-	ABUTMENT BODY - LONG. B.F.
A405	X	45	3'-1"	X	-	ABUTMENT BODY - TRANS.
A506	X	9	26'-5"	-	-	ABUTMENT BODY - LONG. F.F.
A807	X	9	30'-4"	X	-	ABUTMENT BODY - LONG. B.F.
A508	X	49	2'-0"	-	-	ABUTMENT DOWEL - VERT.
A409	X	2	9'-3"	-	-	ABUTMENT BODY - LONG. TOP
A410	X	2	10'-10"	-	-	ABUTMENT BODY - LONG. TOP

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



BENDING DIAGRAMS



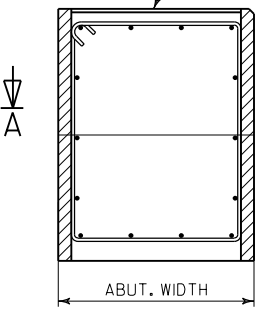
RODENT SHIELD DETAIL

*DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

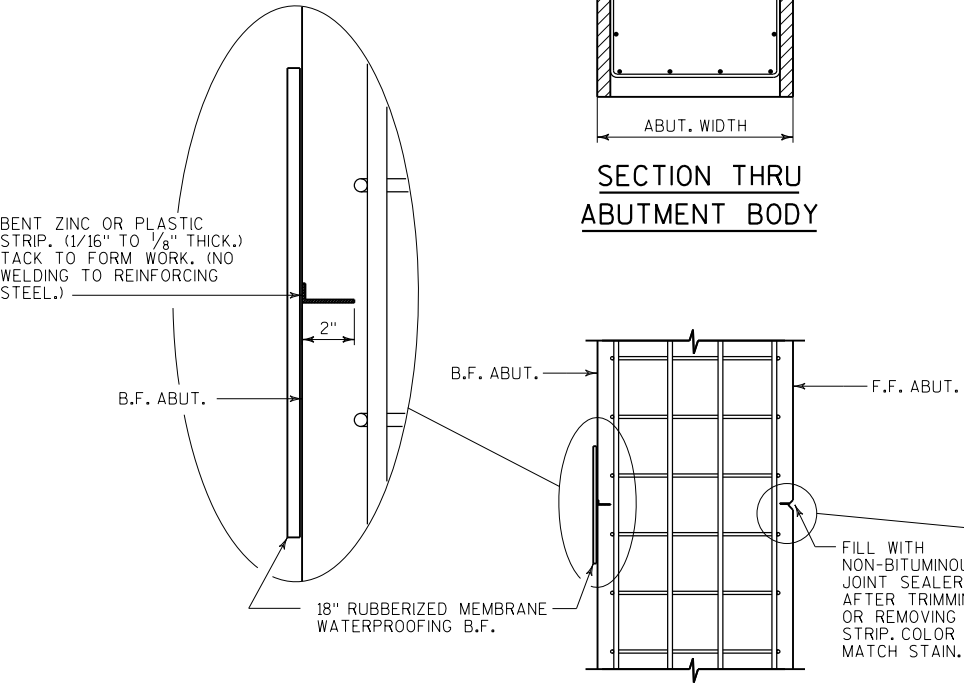
THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

USE A JOINT TOOL TO CONSTRUCT A CONTRACTION JOINT APPROXIMATELY 1/2" DEEP.



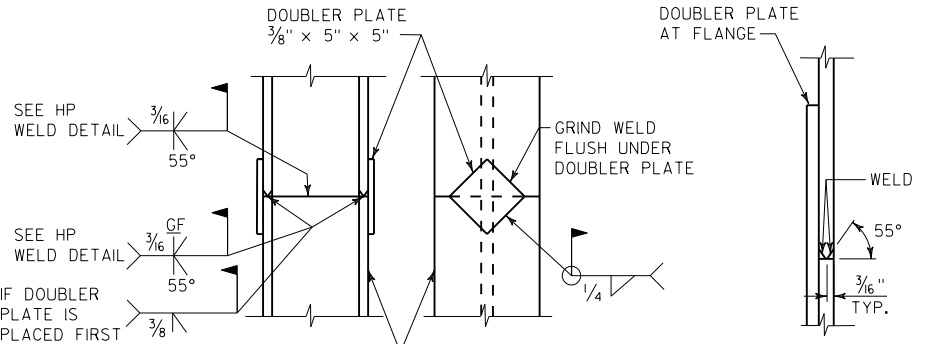
SECTION THRU ABUTMENT BODY

BENT ZINC OR PLASTIC STRIP. (1/16" TO 1/8" THICK.) TACK TO FORM WORK. (NO WELDING TO REINFORCING STEEL.)



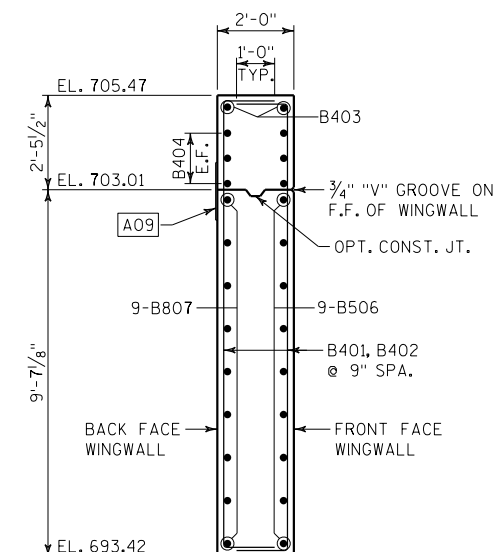
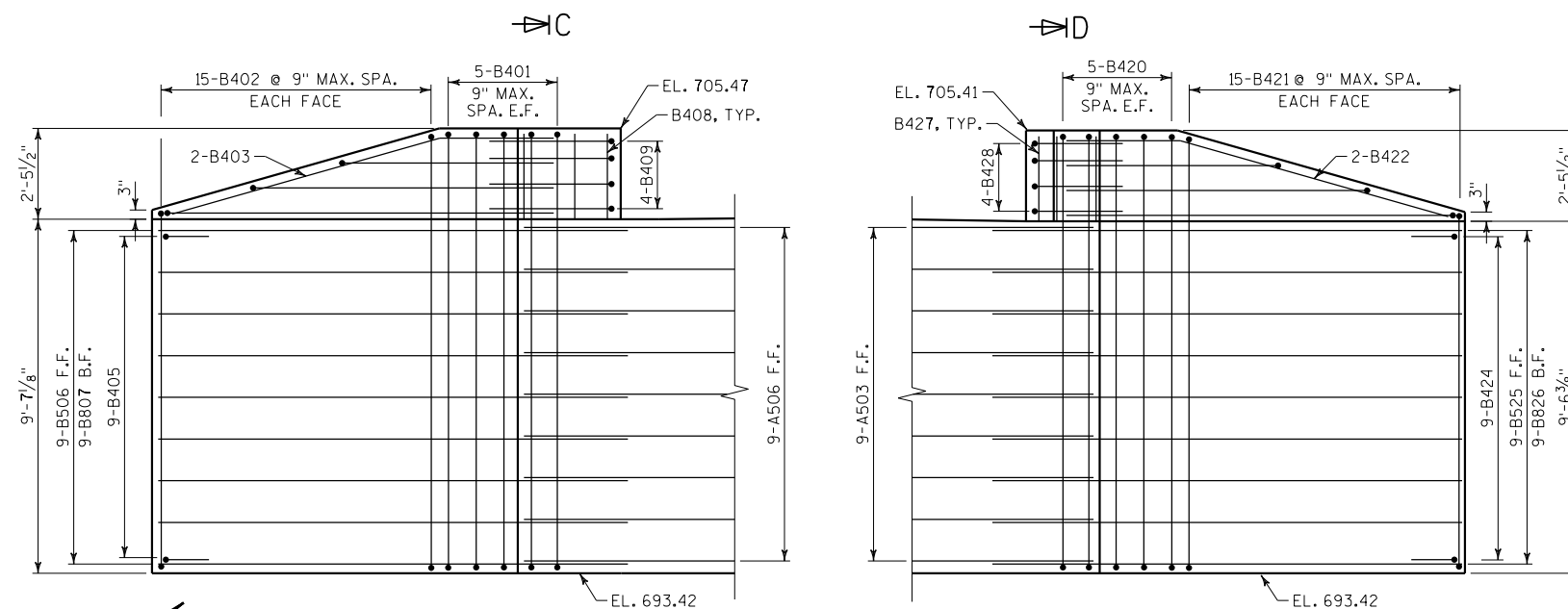
SECTION A-A

ALTERNATE CONSTRUCTION JOINT AT ABUTMENT

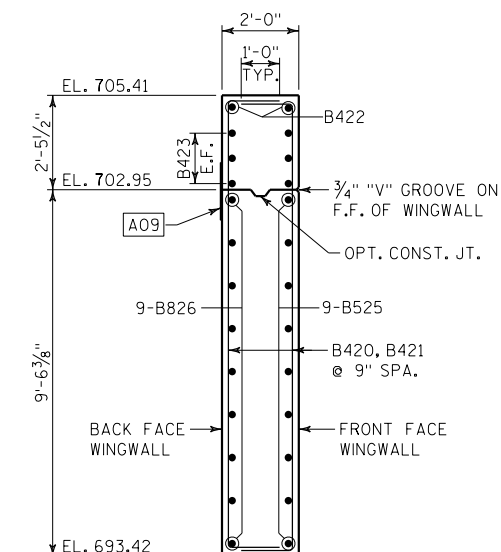


PILE SPLICE DETAIL

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY		AJA	PLANS CK'D. MHZ
WEST ABUTMENT DETAILS			SHEET 6 OF 18

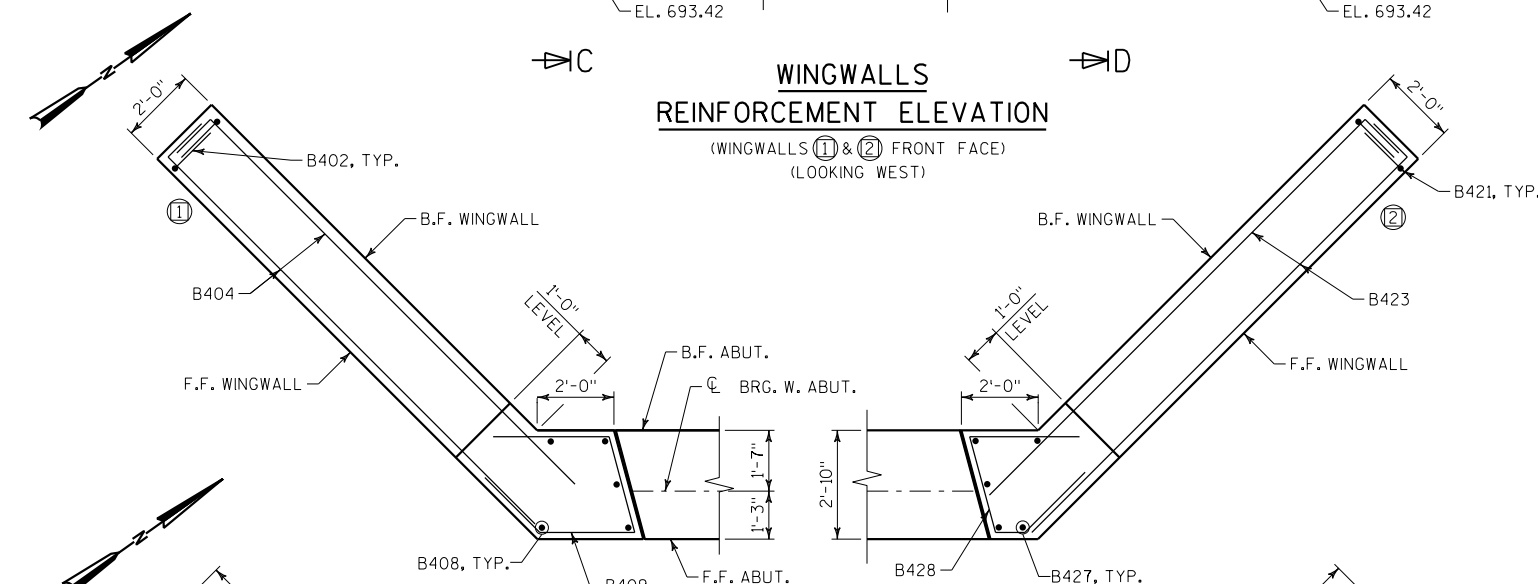


SECTION C-C



SECTION D-D

WINGWALLS REINFORCEMENT ELEVATION

(WINGWALLS ① & ② FRONT FACE)
(LOOKING WEST)

SECTION A-A

SECTION B-B

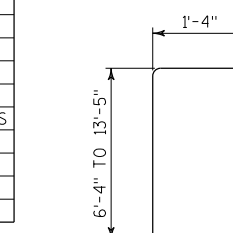
BILL OF BARS

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
B401	X	10	14'-2"	X	-	WINGWALL 1 - VERT.
B402	X	30	13'-0"	X	▲	WINGWALL 1 - VERT.
B403	X	2	13'-11"	X	-	WINGWALL 1 - HORIZ. TOP
B404	X	6	11'-2"	X	▲	WINGWALL 1 - HORIZ.
B405	X	9	4'-6"	X	-	WINGWALL 1 - HORIZ. ENDS
B506	X	9	15'-3"	X	-	WINGWALL 1 - HORIZ. F.F.
B807	X	9	16'-11"	X	-	WINGWALL 1 - HORIZ. B.F.
B408	X	5	2'-1"	-	-	WINGWALL 1 - VERT.
B409	X	4	10'-9"	X	-	WINGWALL 1 - HORIZ.
B420	X	10	14'-1"	X	-	WINGWALL 2 - VERT.
B421	X	30	12'-11"	X	▲	WINGWALL 2 - VERT.
B422	X	2	13'-11"	X	-	WINGWALL 2 - HORIZ. TOP
B423	X	6	11'-2"	X	▲	WINGWALL 2 - HORIZ.
B424	X	9	4'-6"	X	-	WINGWALL 2 - HORIZ. ENDS
B525	X	9	15'-3"	X	-	WINGWALL 2 - HORIZ. F.F.
B826	X	9	16'-11"	X	-	WINGWALL 2 - HORIZ. B.F.
B427	X	5	2'-1"	-	-	WINGWALL 2 - VERT.
B428	X	4	9'-3"	X	-	WINGWALL 2 - HORIZ.

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE

BAR MARK	DIM 'A'	DIM 'B'
B401	11'-8"	1'-4"
B402	9'-5" TO 11'-6"	1'-4"
B420	11'-7"	1'-4"
B421	9'-4" TO 11'-5"	1'-4"

B403, B422



B404, B423

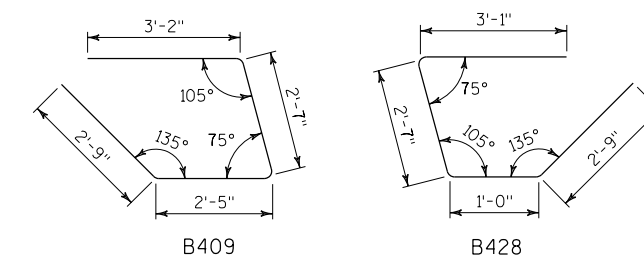
BAR MARK	DIM 'A'	DIM 'B'
B506	13'-9"	1'-6"
B807	15'-5"	1'-6"
B525	13'-9"	1'-6"
B826	15'-5"	1'-6"

BAR SERIES TABLE

BAR MARK	NO. REQ'D	LENGTH
B402	2 SERIES OF 15	11'-11" TO 14'-0"
B404	2 SERIES OF 3	7'-7" TO 14'-8"
B421	2 SERIES OF 15	11'-10" TO 13'-11"
B423	2 SERIES OF 3	7'-7" TO 14'-8"

▲ BUNDLE AND TAG EACH SERIES SEPARATELY

BENDING DIAGRAMS



LEGEND

E.F. - EACH FACE
F.F. - FRONT FACE
B.F. - BACK FACE
① - WINGWALL NUMBER

NOTE

A09 18" RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES")

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY		AJA	PLANS CK'D. MHZ
WEST ABUTMENT WINGWALLS		SHEET 7 OF 18	

[B01] 1/2" FILLER, SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

[B02] 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.

B03 PIPE UNDERDRAIN WRAPPED (6-INCH) SLOPE 0.5% MIN.
ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.

B04 ABUTMENTS SHALL BE SUPPORTED ON HP 10 X 42 STEEL
PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 151
TONS PER PILE AS DETERMINED BY THE MODIFIED GATES
ACCEPTANCE METHOD.
ESTIMATED PILE LENGTH = 75 FEET.

[B05] KEYED CONSTRUCTION JOINT FORMED BY A BEVELED 2" X 8".
REINFORCEMENT EXTENDS THROUGH JOINT.

B06 4" X 3/4" PREFORMED JOINT FILLER, RUN FULL LENGTH OF ABUTMENT.

B07 THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED,
BUT BEFORE INITIAL SET HAS TAKEN PLACE.

T HP 10 X 42 STEEL PILING

 WINGWALL NUMBER

ELEVATIONS ARE GIVEN AT TOP OF CONCRETE AT THE C_L BEARING.

CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 STANDARD SPECIFICATIONS.

FOR TYPICAL SECTION THRU ABUTMENT BODY AND REINFORCEMENT
BILL OF BARS SEE SHEET 9.

FOR WINGWALL REINFORCEMENT SEE SHEET 10.

DO NOT PLACE FILL ABOVE 3'-0" FROM BOTTOM OF ABUTMENT UNTIL
SUPERSTRUCTURE IS IN PLACE.

FOR ALTERNATE CONSTRUCTION JOINT DETAIL SEE SHEET 9.



(DIMENSIONS GIVEN ALONG $\odot$ BEARING)



(DIMENSIONS GIVEN ALONG $\angle$ BEARING)

LEGEND

- [B02] 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.
- [B03] PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.
- [B06] 4" X 3/4" FILLER, TYP. RUN FULL LENGTH OF ABUTMENT.
- [B07] THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED, BUT BEFORE INITIAL SET HAS TAKEN PLACE.
- [B08] KEYED CONST. JOINT FORMED BY BEVELED 2" X 6".

NOTES

PARTIAL ZINC OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

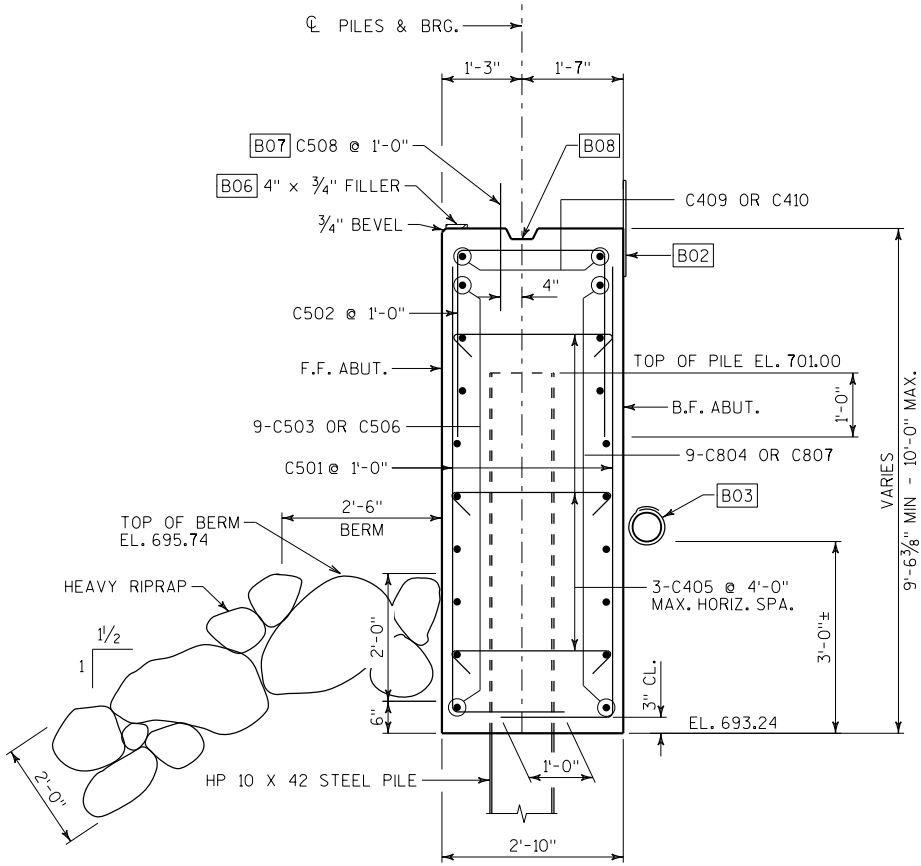
VERTICAL CONSTRUCTION JOINT KEYWAY IS NOT REQUIRED WHEN USING ALTERNATE CONSTRUCTION JOINT.

CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

SAW CUTTING JOINT IS NOT ALLOWED.

FOR ABUTMENT PLAN & ELEVATION SEE SHEET 8.

FOR WINGWALL DETAILS, REINFORCEMENT & BILL OF BARS SEE SHEET 10.

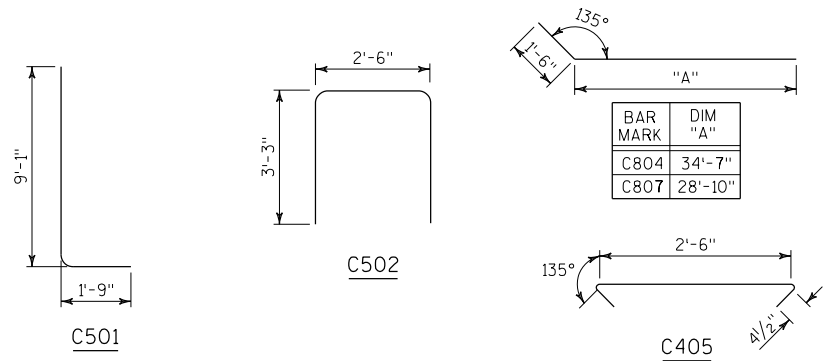


SECTION THRU ABUTMENT BODY
(LOOKING NORTH)

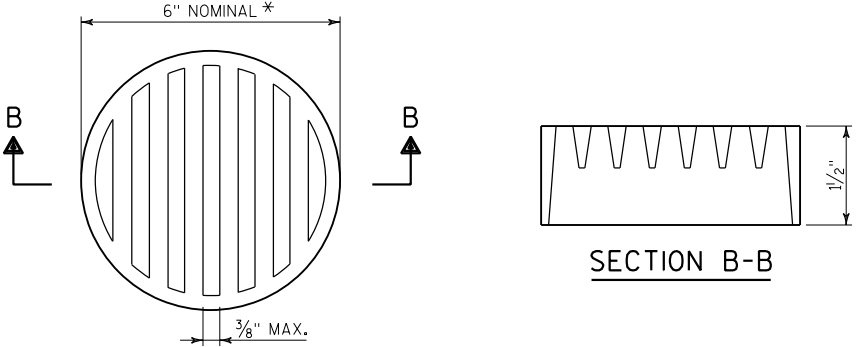
BILL OF BARS

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
C501	X	110	10'-9"	X	-	ABUTMENT BODY - VERT.
C502	X	55	8'-9"	X	-	ABUTMENT BODY - VERT.
C503	X	9	28'-10"	-	-	ABUTMENT BODY - LONG. F.F.
C804	X	9	36'-1"	X	-	ABUTMENT BODY - LONG. B.F.
C405	X	45	3'-1"	X	-	ABUTMENT BODY - TRANS.
C506	X	9	26'-5"	-	-	ABUTMENT BODY - LONG. F.F.
C807	X	9	30'-4"	X	-	ABUTMENT BODY - LONG. B.F.
C508	X	49	2'-0"	-	-	ABUTMENT DOWEL - VERT.
C409	X	2	9'-3"	-	-	ABUTMENT BODY - LONG. TOP
C410	X	2	10'-10"	-	-	ABUTMENT BODY - LONG. TOP

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



BENDING DIAGRAMS

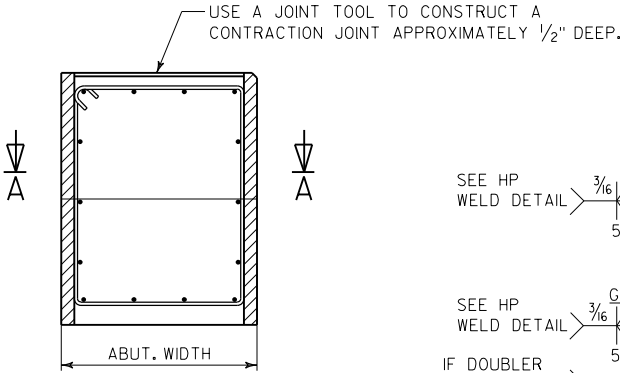


RODENT SHIELD DETAIL

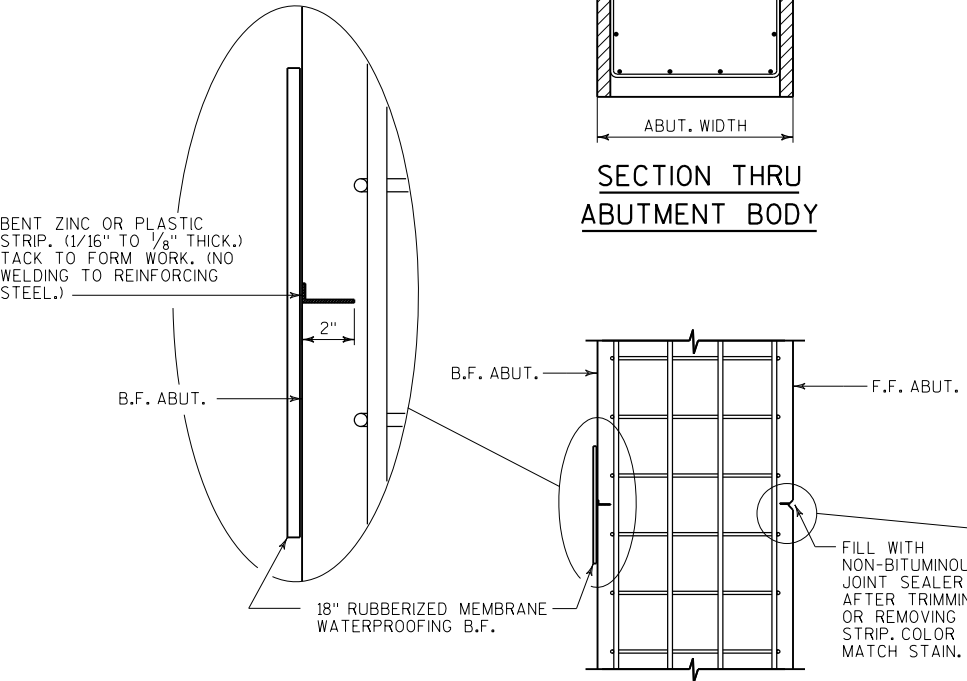
*DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

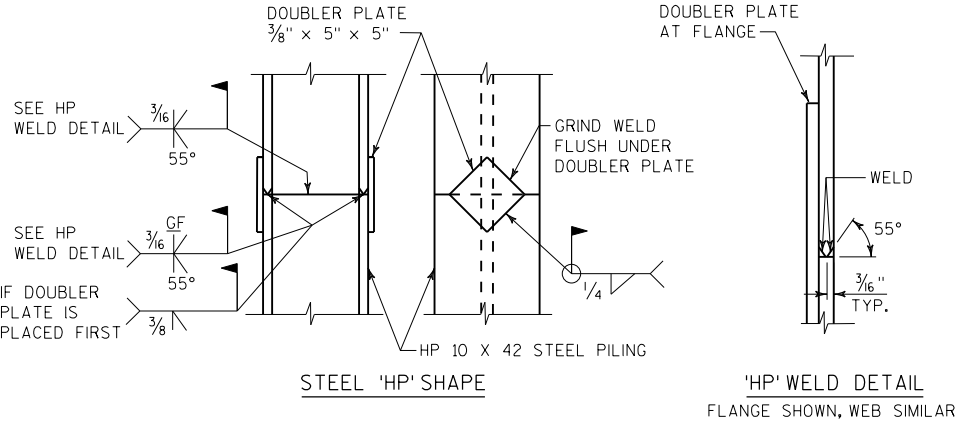


SECTION THRU ABUTMENT BODY



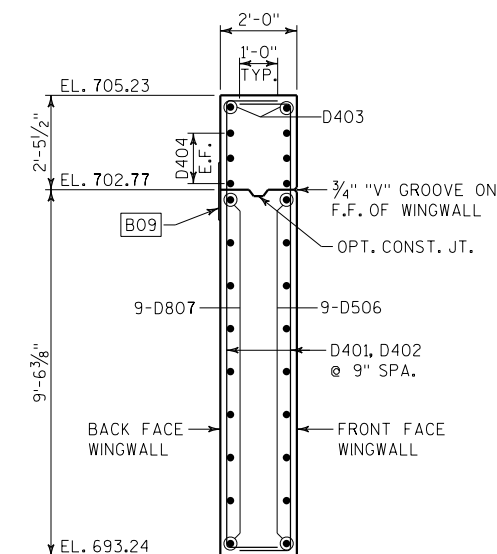
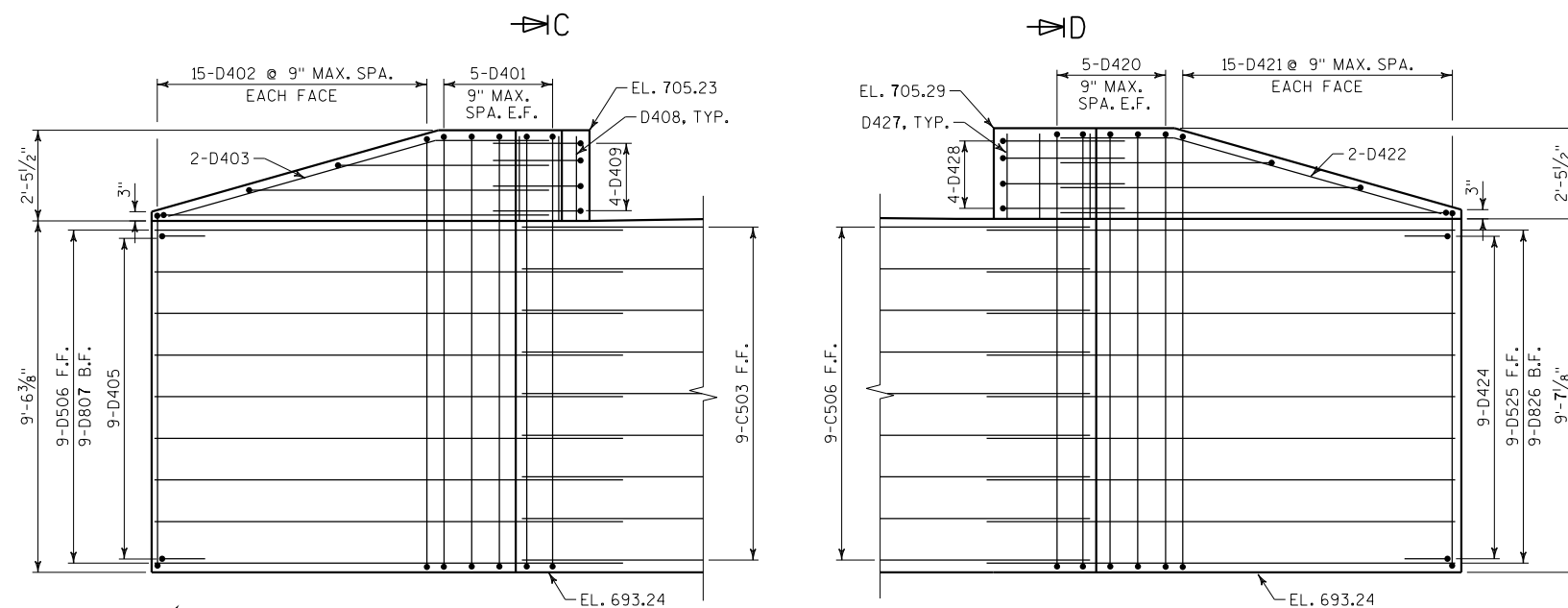
SECTION A-A

ALTERNATE CONSTRUCTION JOINT AT ABUTMENT

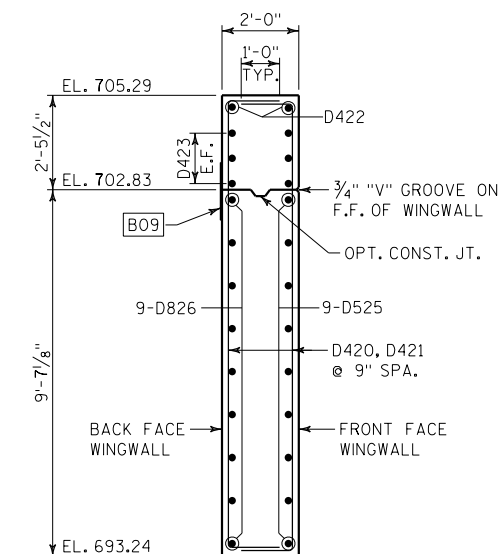


PILE SPLICE DETAIL

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY		AJA	PLANS CK'D. MHZ
EAST ABUTMENT DETAILS			SHEET 9 OF 18



SECTION C-C



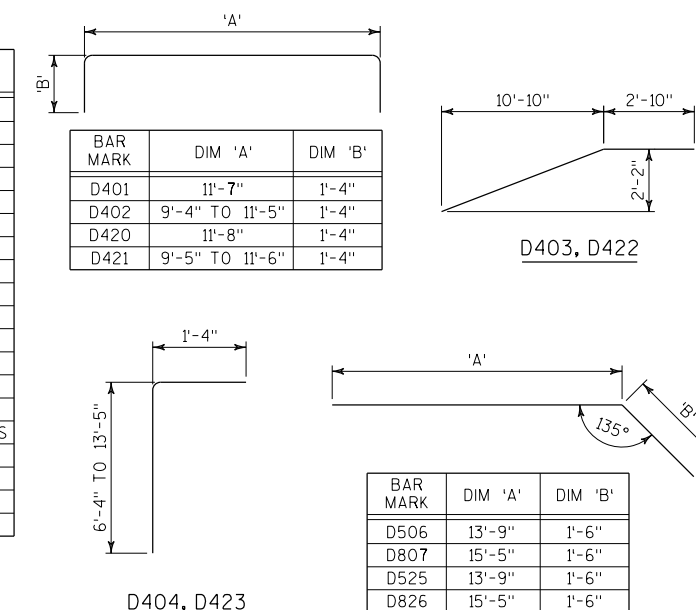
SECTION D-D

**WINGWALLS
REINFORCEMENT ELEVATION**
(WINGWALLS ③ & ④ FRONT FACE)
(LOOKING WEST)

BILL OF BARS

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
D401	X	10	14'-1"	X	-	WINGWALL 1 - VERT.
D402	X	30	12'-11"	X	▲	WINGWALL 1 - VERT.
D403	X	2	13'-11"	X	-	WINGWALL 1 - HORIZ. TOP
D404	X	6	11'-2"	X	▲	WINGWALL 1 - HORIZ.
D405	X	9	4'-6"	X	-	WINGWALL 1 - HORIZ. ENDS
D506	X	9	15'-3"	X	-	WINGWALL 1 - HORIZ. F.F.
D807	X	9	16'-11"	X	-	WINGWALL 1 - HORIZ. B.F.
D408	X	5	2'-1"	-	-	WINGWALL 1 - VERT.
D409	X	4	10'-9"	X	-	WINGWALL 1 - HORIZ.
D420	X	10	14'-2"	X	-	WINGWALL 2 - VERT.
D421	X	30	13'-0"	X	▲	WINGWALL 2 - VERT.
D422	X	2	13'-11"	X	-	WINGWALL 2 - HORIZ. TOP
D423	X	6	11'-2"	X	▲	WINGWALL 2 - HORIZ.
D424	X	9	4'-6"	X	-	WINGWALL 2 - HORIZ. ENDS
D525	X	9	15'-3"	X	-	WINGWALL 2 - HORIZ. F.F.
D826	X	9	16'-11"	X	-	WINGWALL 2 - HORIZ. B.F.
D427	X	5	2'-1"	-	-	WINGWALL 2 - VERT.
D428	X	4	9'-3"	X	-	WINGWALL 2 - HORIZ.

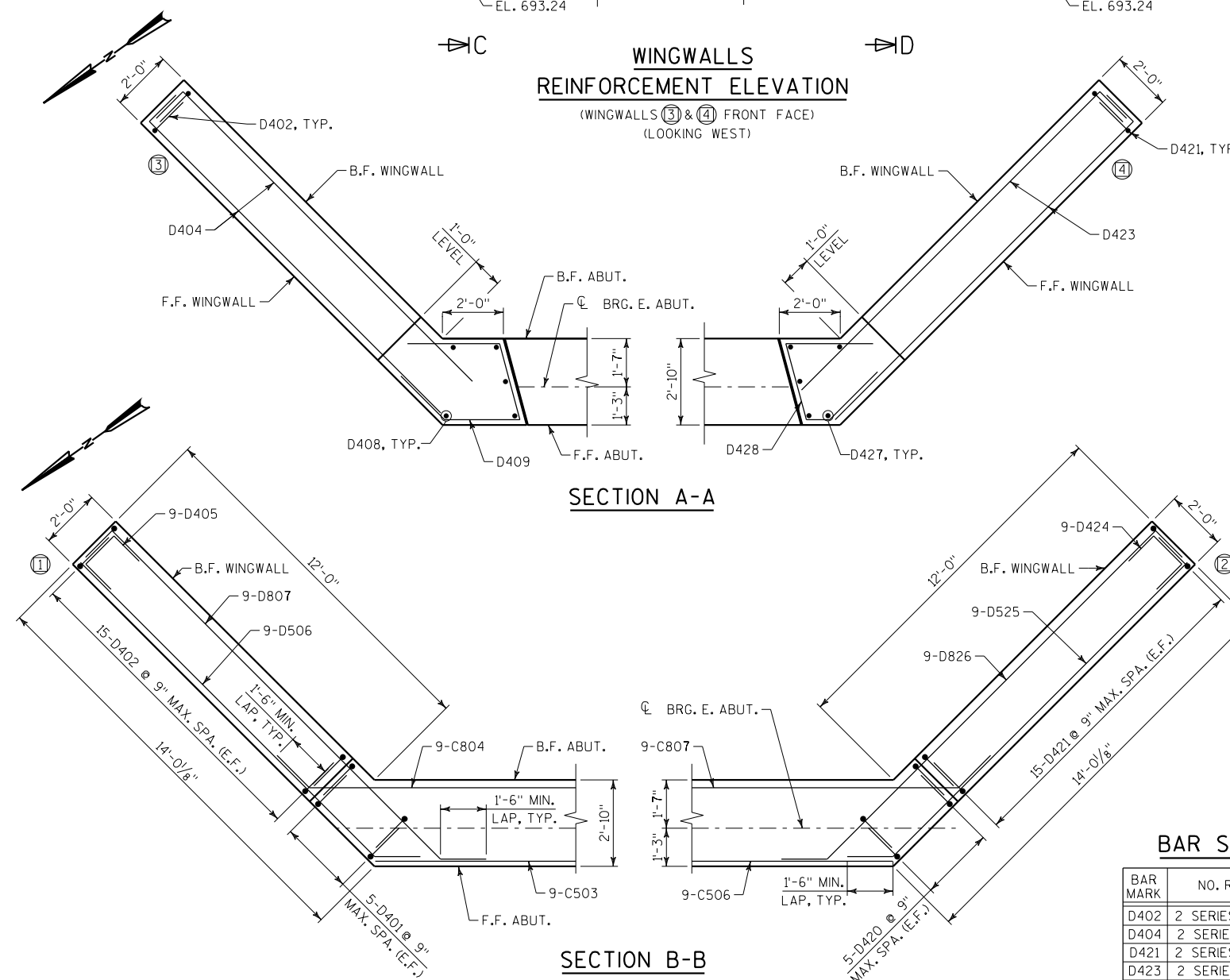
NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



D404, D423

BAR MARK	DIM 'A'	DIM 'B'
D506	13'-9"	1'-6"
D807	15'-5"	1'-6"
D525	13'-9"	1'-6"
D826	15'-5"	1'-6"

SECTION A-A



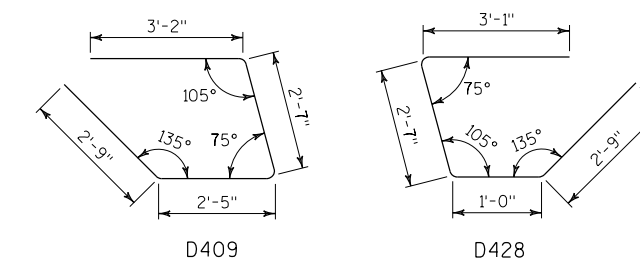
SECTION B-B

BAR SERIES TABLE

BAR MARK	NO. REQ'D	LENGTH
D402	2 SERIES OF 15	11'-10" TO 13'-11"
D404	2 SERIES OF 3	7'-7" TO 14'-8"
D421	2 SERIES OF 15	11'-11" TO 14'-0"
D423	2 SERIES OF 3	7'-7" TO 14'-8"

▲ BUNDLE AND TAG EACH SERIES SEPARATELY

BENDING DIAGRAMS



D405, D424

D409

D428

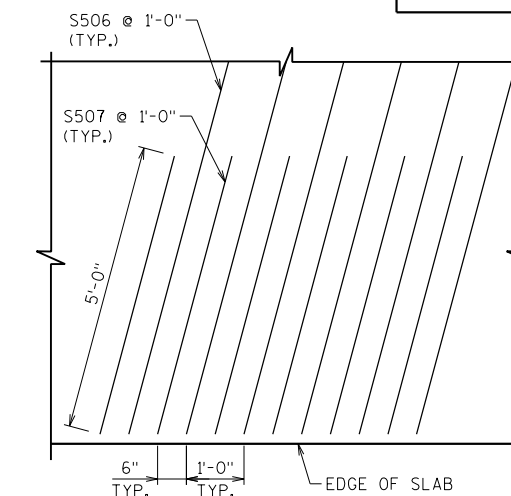
LEGEND

E.F. - EACH FACE
F.F. - FRONT FACE
B.F. - BACK FACE
③ - WINGWALL NUMBER

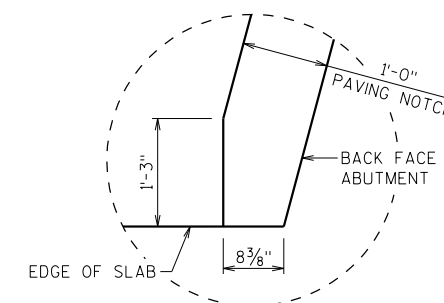
NOTE

③ 18" RUBBERIZED MEMBRANE WATERPROOFING
IF CONST. JOINT IS USED (COST INCIDENTAL
TO BID ITEM "CONCRETE MASONRY BRIDGES")

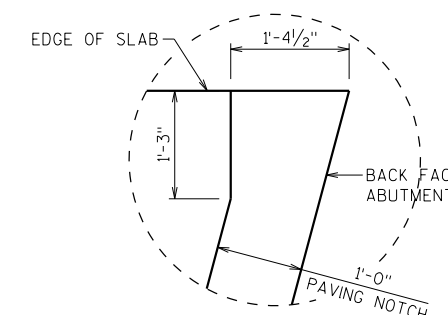
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY		AJA	PLANS CK'D. MHZ
EAST ABUTMENT WINGWALLS			SHEET 10 OF 18



(PARAPET NOT SHOWN FOR CLARITY)
(LONGITUDINAL REINFORCEMENT NOT SHOWN FOR CLARITY)



(SE CORNER SHOWN, NW CORNER SIMILAR)



(NE CORNER SHOWN, SW CORNER SIMILAR)

TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPENCIES ARE TO BE PLUS (+).

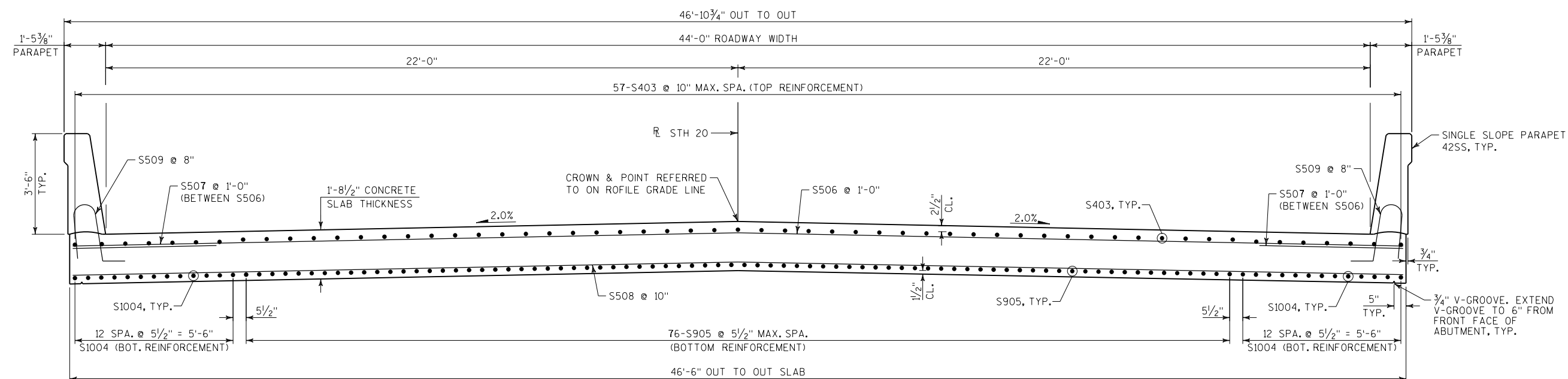
PARAPETS PLACED ON TOP OF THE SLAB SHALL BE
POURED AFTER FALSEWORK HAS BEEN RELEASED.

FOR SLAB REINFORCEMENT DETAILS, SEE SHEET 12.

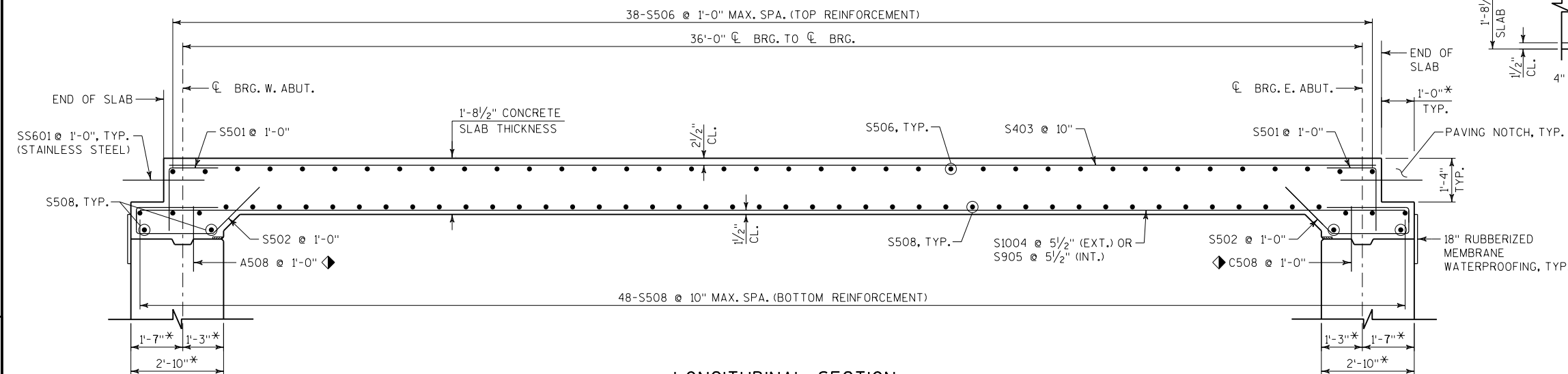
FOR BILL OF BARS & BENDING DIAGRAMS, SEE SHEET 13.

FOR PARAPET REINFORCEMENT DETAILS, SEE SHEETS
14 & 15.

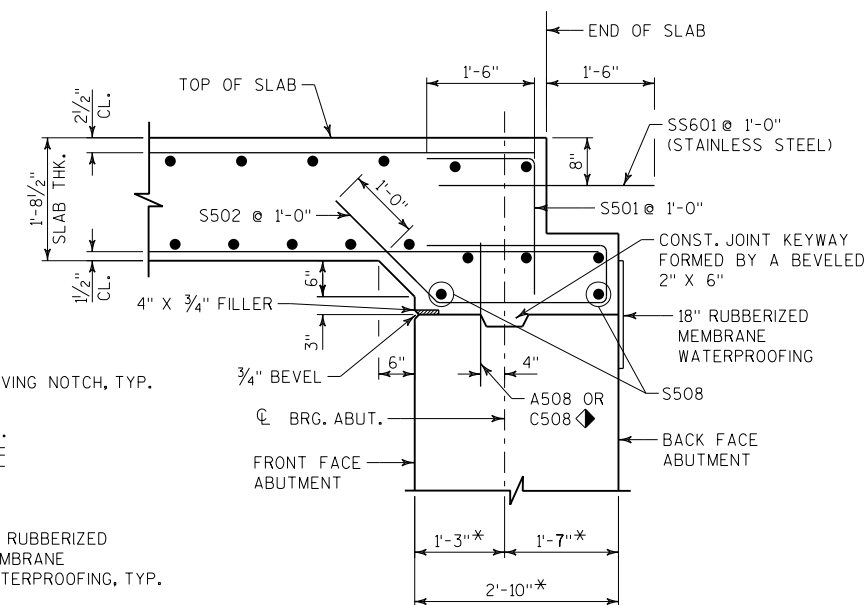
FOR STRUCTURAL APPROACH SLAB REINFORCEMENT,
SEE SHEETS 16 & 17.



CROSS SECTION
(LOOKING EAST)



LONGITUDINAL SECTION
(LOOKING NORTH)



PART LONGITUDINAL SECTION AT ABUTMENT
(LOOKING NORTH AT EAST ABUTMENT)
(LOOKING SOUTH AT WEST ABUTMENT)

NOTES

FOR SLAB REINFORCEMENT PLAN & NOTES,
SEE SHEET 11.

FOR BILL OF BARS & BENDING DIAGRAM,
SEE SHEET 13.

FOR PARAPET REINFORCEMENT DETAILS, SEE
SHEETS 14 & 15.

FOR STRUCTURAL APPROACH SLAB
REINFORCEMENT, SEE SHEETS 16 & 17.

LEGEND

* DIMENSION IS TAKEN NORMAL TO ϕ BEARING

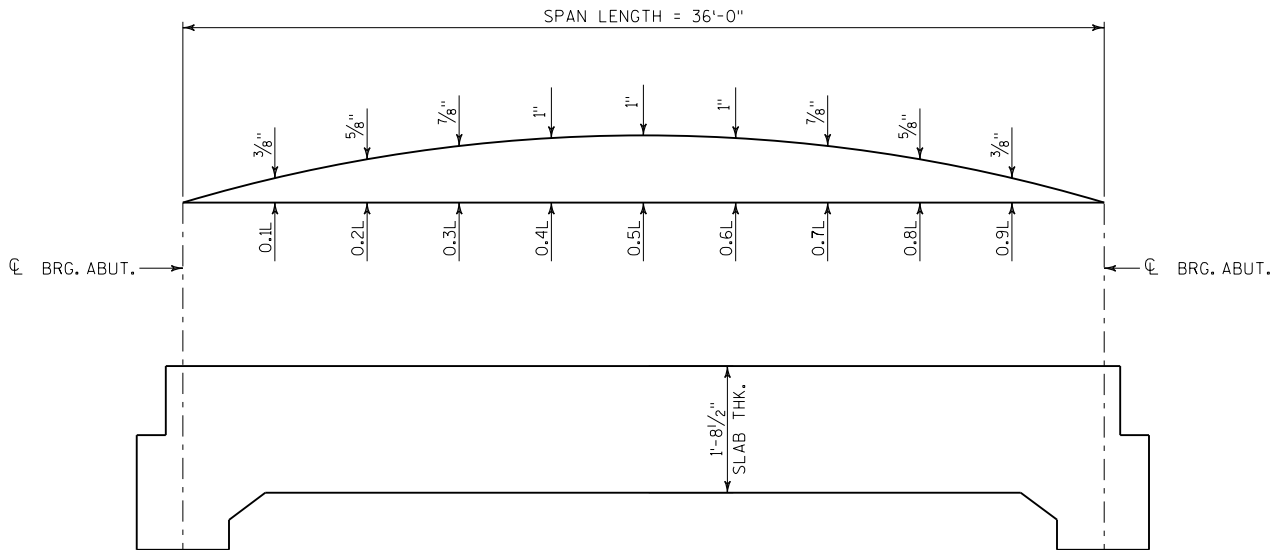
◆ BARS MAY BE PLACED AFTER CONCRETE IS POURED
BUT BEFORE INITIAL SET HAS TAKEN PLACE

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY		MM	PLANS CK'D. MHZ
SLAB REINFORCEMENT DETAILS			SHEET 12 OF 18

TOP OF SLAB ELEVATIONS

LOCATION	℄ BRG. W. ABUT.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	℄ BRG. E. ABUT.
NORTH EDGE OF SLAB	705.41	705.39	705.37	705.35	705.34	705.32	705.30	705.28	705.26	705.25	705.23
PGL/CROWN	705.88	705.86	705.84	705.83	705.81	705.79	705.77	705.75	705.74	705.72	705.70
SOUTH EDGE OF SLAB	705.47	705.45	705.44	705.42	705.40	705.38	705.36	705.35	705.33	705.31	705.29

NOTE: ELEVATIONS SHOWN ARE TOP OF SLAB AND DO NOT INCLUDE ALLOWANCES OF DEAD LOAD DEFLECTION, FUTURE CREEP AND FORM SETTLEMENT.



CAMBER & SLAB THICKNESS DIAGRAM

CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

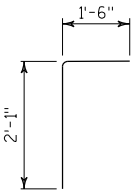
PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE ℄ OF ABUTMENTS AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN/PGL.

ALL SLAB THICKNESS DIMENSIONS ARE A MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPENCIES ARE TO BE PLUS (+).

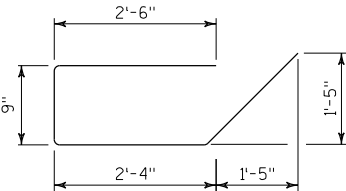
BILL OF BARS

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
S501	X	96	3'-6"	X	-	SLAB ENDS AT ABUTMENTS - VERT.
S502	X	96	7'-4"	X	-	SLAB ENDS AT ABUTMENTS - VERT.
S403	X	57	36'-10"	-	-	SLAB TOP - LONG.
S1004	X	26	38'-11"	-	-	SLAB BOTTOM - LONG.
S905	X	76	38'-11"	-	-	SLAB BOTTOM - LONG.
S506	X	38	47'-10"	-	-	SLAB TOP - TRANS.
S507	X	76	5'-0"	-	-	SLAB TOP OVERHANG - TRANS.
S508	X	52	47'-10"	-	-	SLAB BOTTOM - TRANS.
S509	X	114	4'-5"	X		PARAPET DOWEL - VERT.
					-	
SS601	-	96	3'-0"	-		STRUCTURE SLAB TO APPROACH SLAB (STAINLESS STEEL)

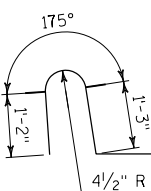
NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



S501



S502



S509

BENDING DIAGRAM

NOTES

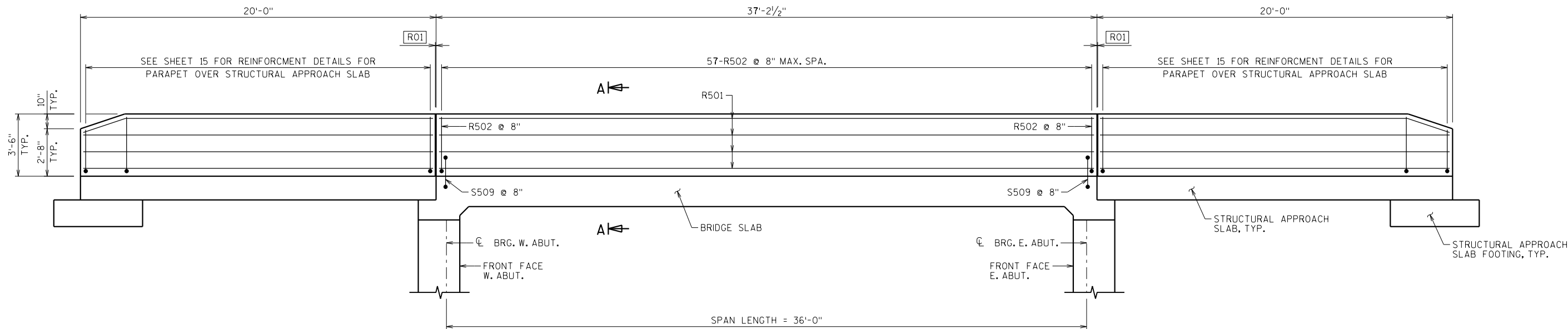
FOR SLAB REINFORCEMENT PLAN, SEE SHEET 11.

FOR SLAB REINFORCEMENT DETAILS, SEE SHEET 12.

FOR PARAPET REINFORCEMENT DETAILS, SEE SHEETS 14 & 15.

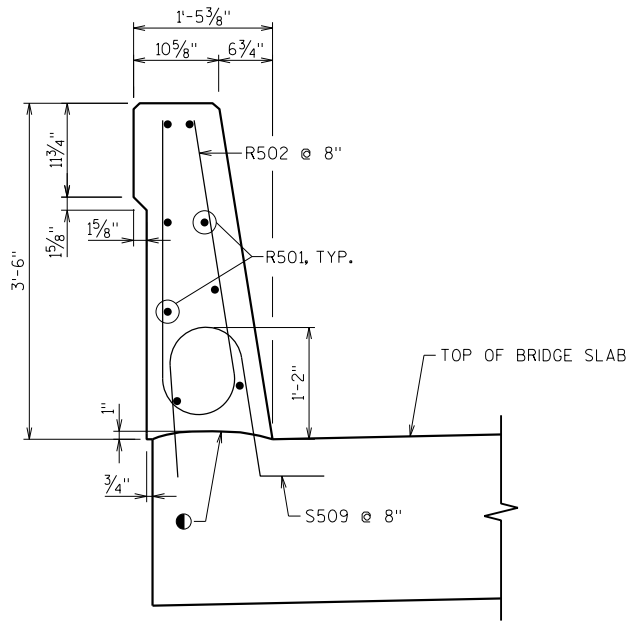
FOR STRUCTURAL APPROACH SLAB REINFORCEMENT, SEE SHEETS 16 & 17.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY		AJA	PLANS CK'D. MHZ
SLAB ELEVATIONS & BILL OF BARS			SHEET 13 OF 18



OUTSIDE ELEVATION

(LOOKING NORTH)
(SOUTH PARAPET SHOWN, NORTH PARAPET SIMILAR)



SECTION A-A

BILL OF BARS

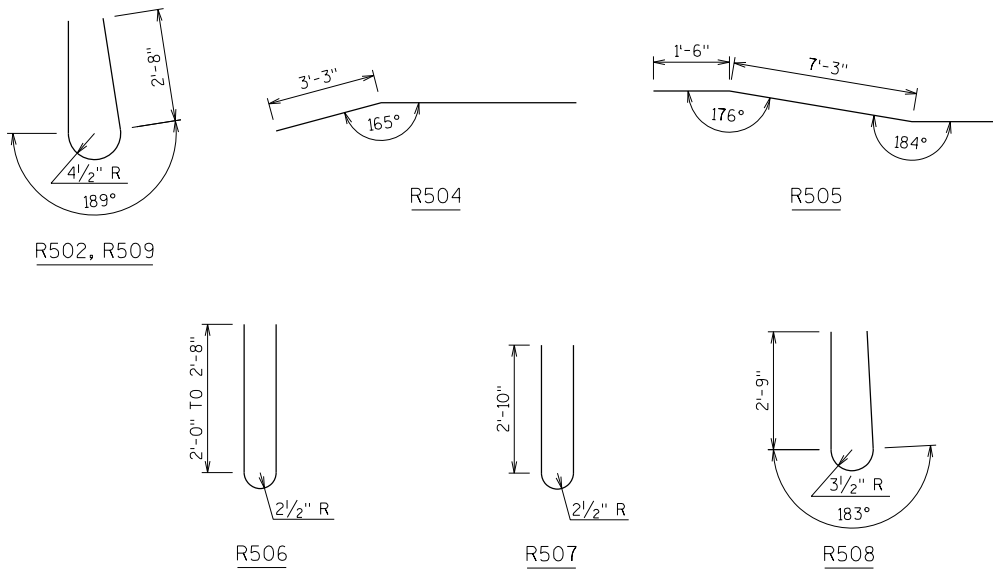
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	16	36'-10"	-	-	PARAPET ON BRIDGE - LONG.
R502	X	114	6'-8"	X	-	PARAPET ON BRIDGE - VERT.
R503	X	20	19'-8"	-	-	PARAPET ON APPROACH SLAB - LONG.
R504	X	8	19'-7"	X	-	PARAPET ON APPROACH SLAB - LONG.
R505	X	4	19'-6"	X	-	PARAPET ON APPROACH SLAB - LONG.
R506	X	24	5'-5"	X	▲	PARAPET ON APPROACH SLAB - VERT.
R507	X	20	6'-5"	X	-	PARAPET ON APPROACH SLAB - VERT.
R508	X	24	6'-6"	X	-	PARAPET ON APPROACH SLAB - VERT.
R509	X	72	6'-8"	X	-	PARAPET ON APPROACH SLAB - VERT.

NOTE: THE FIRST DIGIT OR FIRST TWO DIGITS OF A BAR MARK INDICATES THE BAR SIZE.
ALL DIMENSIONS IN THE BAR BENDS ARE OUT TO OUT.

▲ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR LENGTH CALCULATIONS. SEE BAR SERIES FOR ACTUAL LENGTHS. BUNDLE AND TAG EACH SERIES SEPARATELY.

BAR SERIES TABLE

BAR MARK	NO. REQ'D	LENGTH
R506	4 SERIES OF 6	4'-9" TO 6'-1"



BENDING DIAGRAMS

NOTES

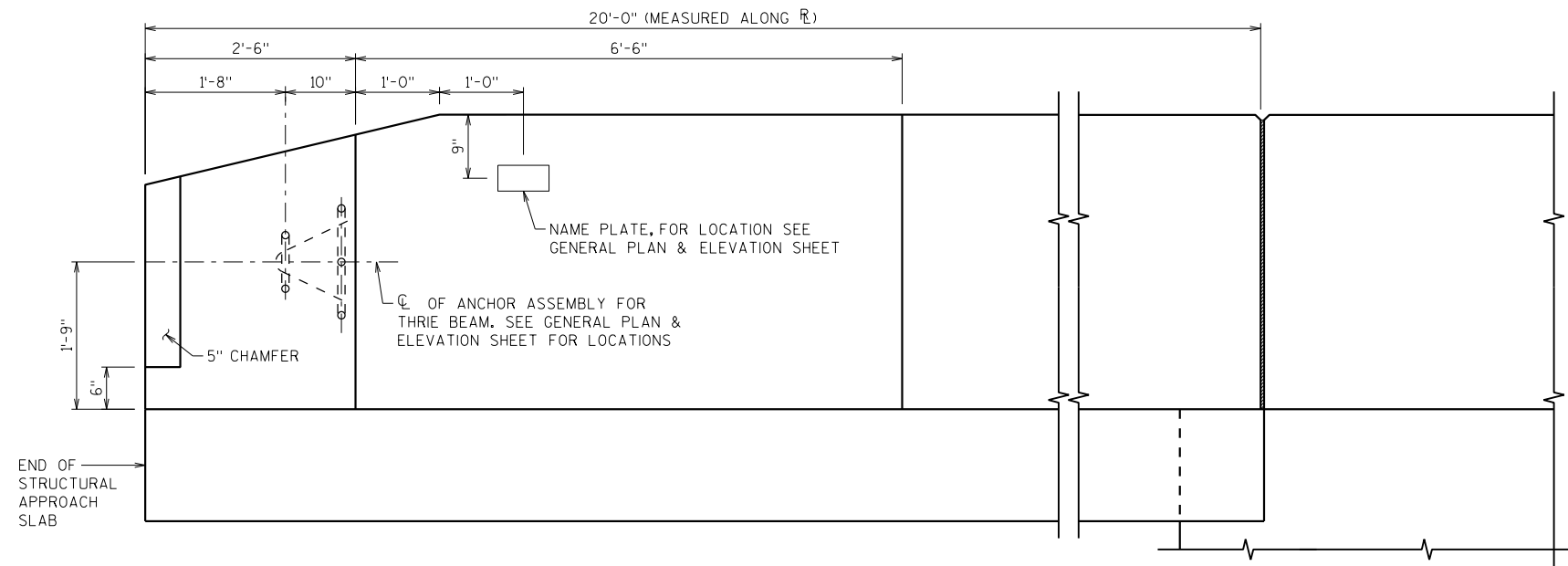
FOR PARAPET ON STRUCTURAL APPROACH SLAB, SEE SHEET 15.

LEGEND

R01 SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

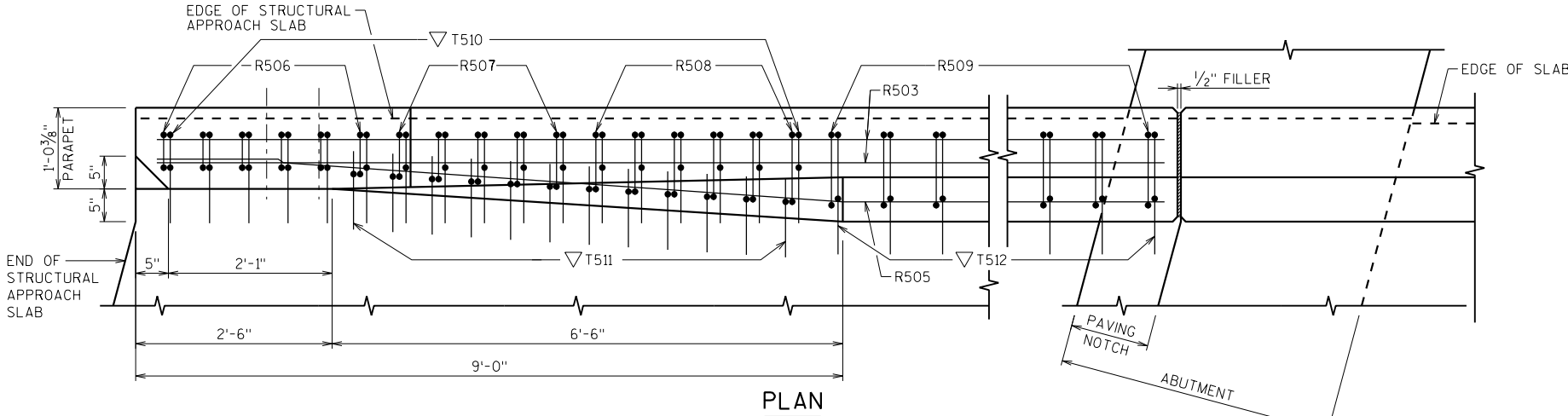
● CONSTR. JT. STRIKE OFF AS SHOWN

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY		AJA	PLANS CK'D. MHZ
42SS PARAPET ON BRIDGE		SHEET 14 OF 18	

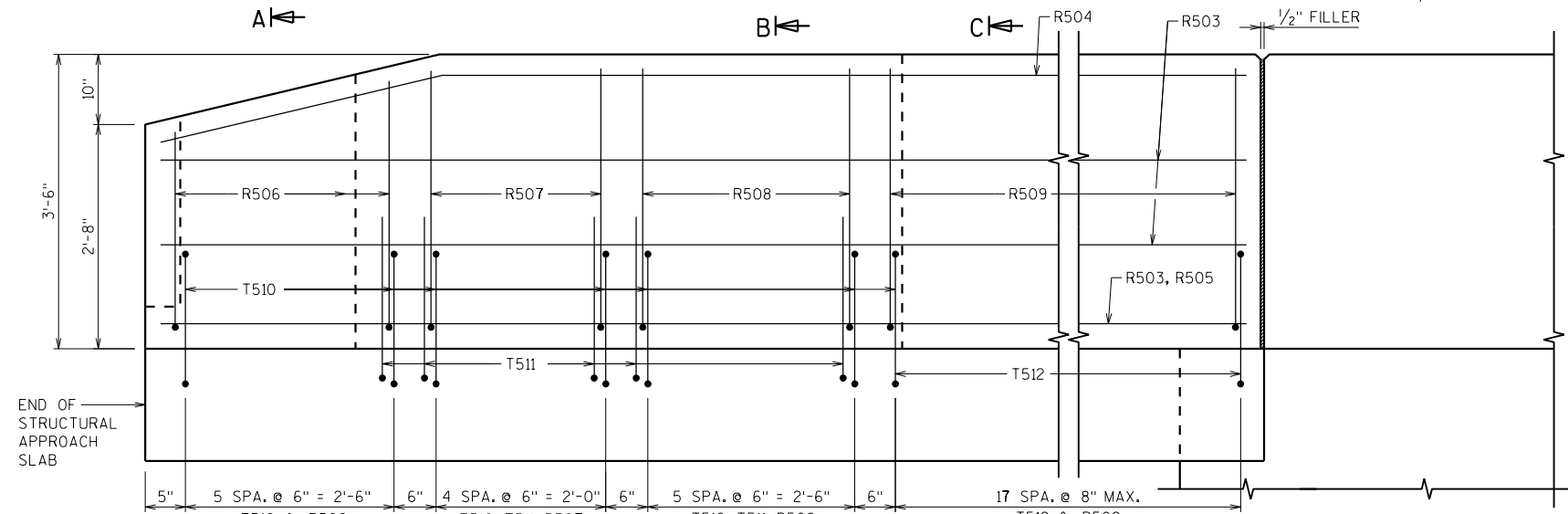


INSIDE ELEVATION

STRUCTURAL APPROACH SLAB FOOTING NOT SHOWN FOR CLARITY

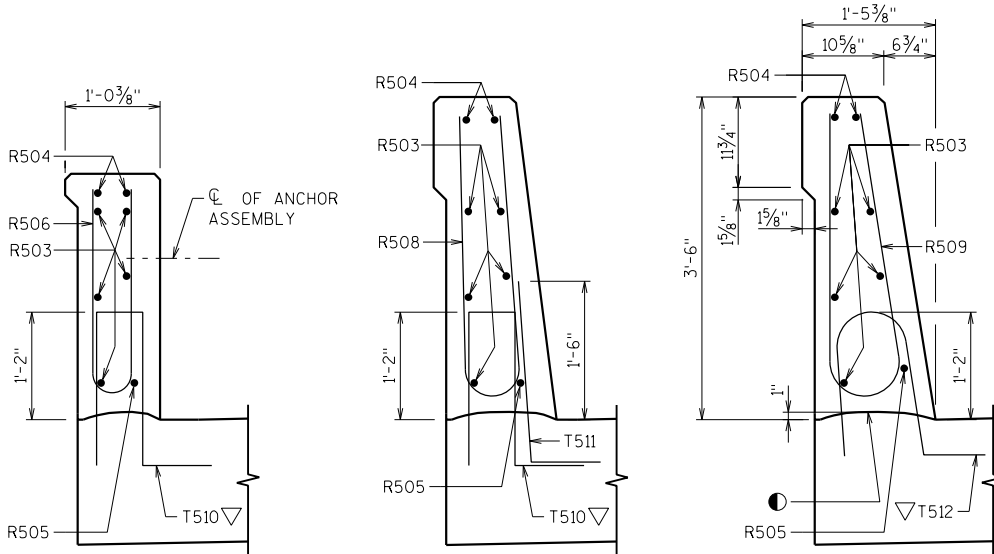


PLAN



OUTSIDE ELEVATION

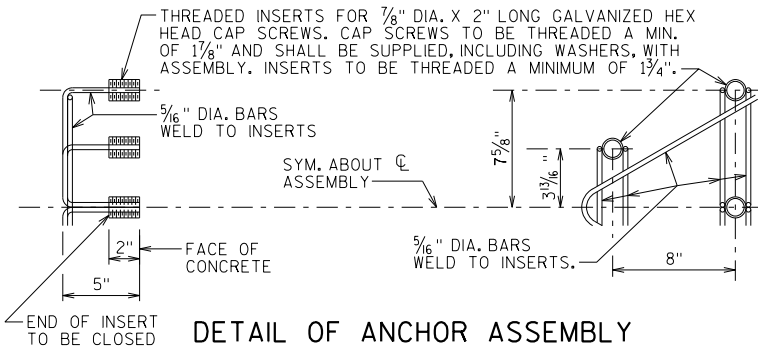
STRUCTURAL APPROACH SLAB FOOTING NOT SHOWN FOR CLARITY



SECTION A-A

SECTION B-B

SECTION C-C



DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.

ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

LEGEND

● CONST. JOINT - STRIKE OFF AS SHOWN.

▽ T510 AND T512 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.

NOTES

FOR PARAPET DETAILS ON BRIDGE AND PARAPET BILL OF BARS, SEE SHEET 14.

FOR STRUCTURAL APPROACH SLAB REINFORCEMENT DETAILS, SEE SHEETS 16 & 17.

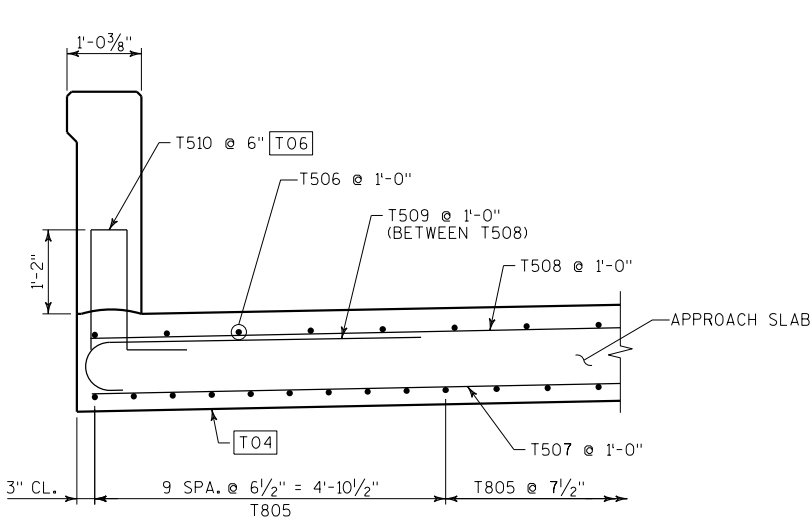
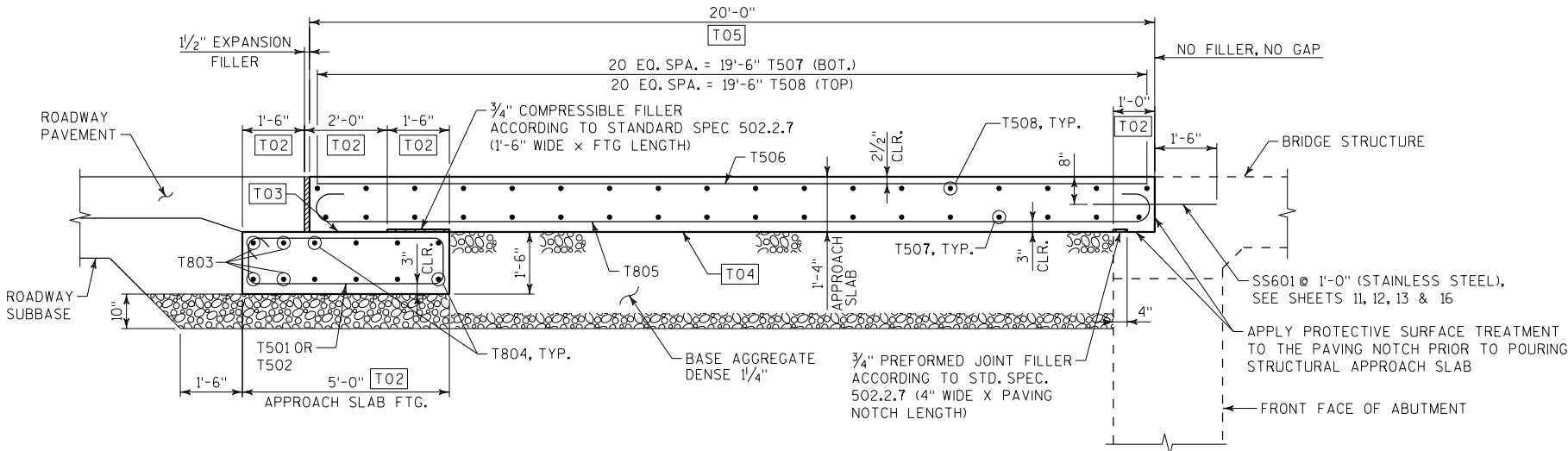
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY AJA		PLANS CK'D. MHZ	
42SS PARAPET ON STRUCTURAL APPROACH SLAB		SHEET 15 OF 18	

BILL OF BARS

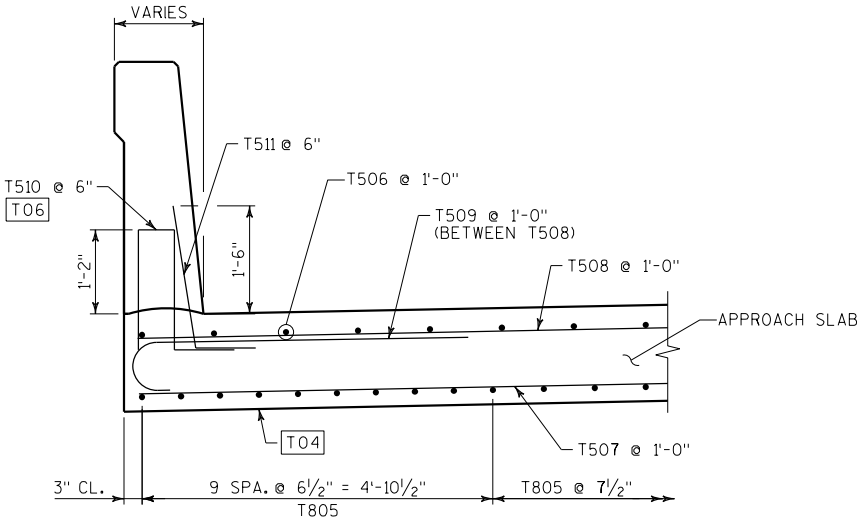
BAR MARK	COAT	NO.	LENGTH	BENT	SERIES	LOCATION
T501	X	4	9'-2"	X	-	APPROACH SLAB FTG. AT NOTCH ENDS - STIRRUP
T502	X	92	12'-6"	X	-	APPROACH SLAB FTG. - STIRRUP
T803	X	8	46'-1"	-	-	APPROACH SLAB FTG. - TRANS.
T804	X	16	47'-11"	-	-	APPROACH SLAB FTG. - TRANS.
T805	X	156	21'-6"	X	-	APPROACH SLAB - LONG. - BOT.
T506	X	96	19'-8"	-	-	APPROACH SLAB - LONG. - TOP
T507	X	42	47'-8"	-	-	APPROACH SLAB - TRANS. - BOT.
T508	X	42	47'-8"	-	-	APPROACH SLAB - TRANS. - TOP
T509	X	80	4'-1"	X	-	APPROACH SLAB - TRANS. - TOP - ENDS
T510	X	68	4'-4"	X	-	APPROACH SLAB PARAPET DOWEL - VERT.
T511	X	44	2'-9"	X	-	APPROACH SLAB PARAPET DOWEL - VERT.
T512	X	72	4'-5"	X	-	APPROACH SLAB PARAPET DOWEL - VERT.

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE

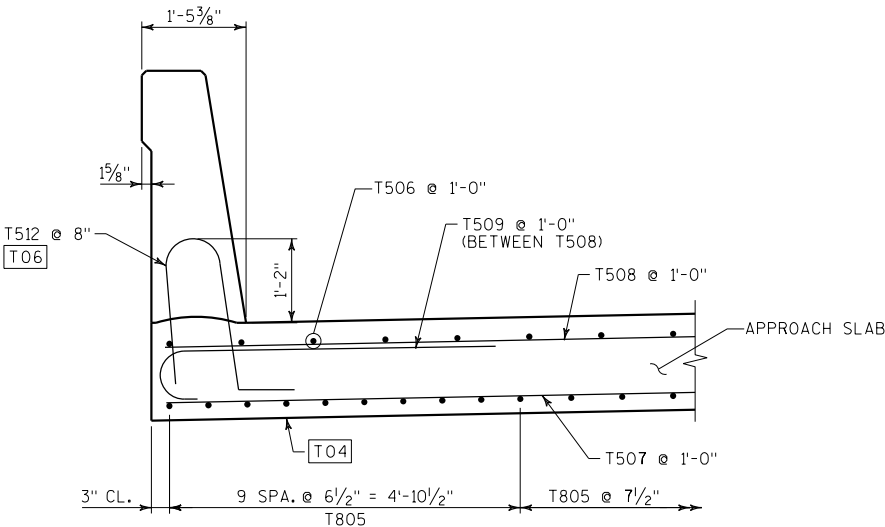
SECTION THRU STRUCTURAL APPROACH SLAB



SECTION A-A



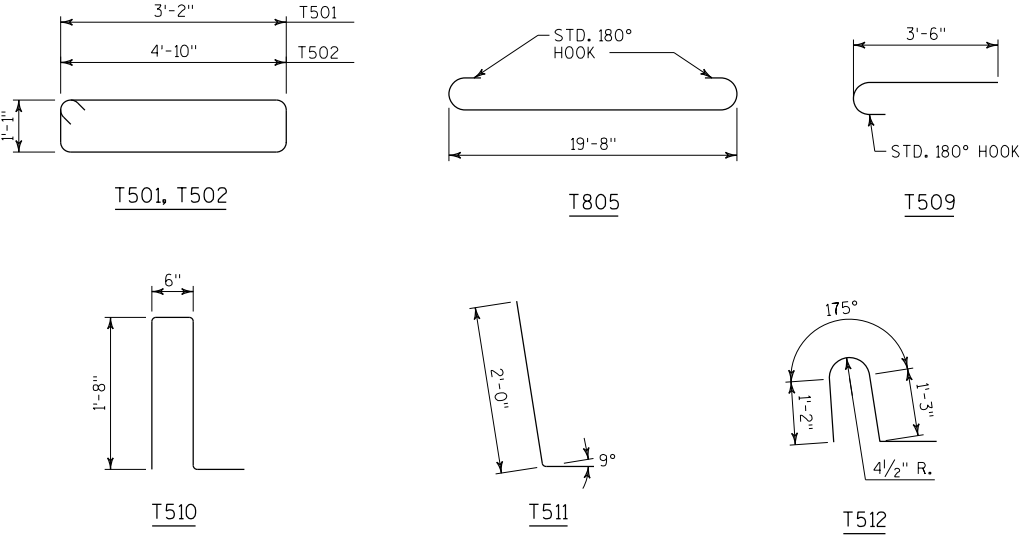
SECTION B-B



SECTION C-C

NOTES

- SEE PARAPET SHEETS FOR PARAPET REINFORCING AND TIE PLACEMENT REQUIRED IN APPROACH SLABS.
- IN ADDITION TO THE AREAS OUTLINED IN THE STANDARD SPECIFICATIONS, APPLY PROTECTIVE SURFACE TREATMENT TO THE TOP OF APPROACH SLAB.
- APPLY PIGMENTED SURFACE SEALER TO THE TOP & INSIDE FACES OF THE PARAPETS.

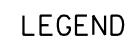


BENDING DIAGRAMS

LEGEND

- T02 MEASURED NORMAL TO ABUTMENT
- T03 STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF FOOTING.
- T04 PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF SUBGRADE BENEATH SLAB.
- T05 MEASURED ALONG R STH 20
- T06 T510 & T512 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
DRAWN BY AJA		PLANS CK'D. MHZ	
STRUCTURAL APPROACH SLAB DETAILS		SHEET 17 OF 18	



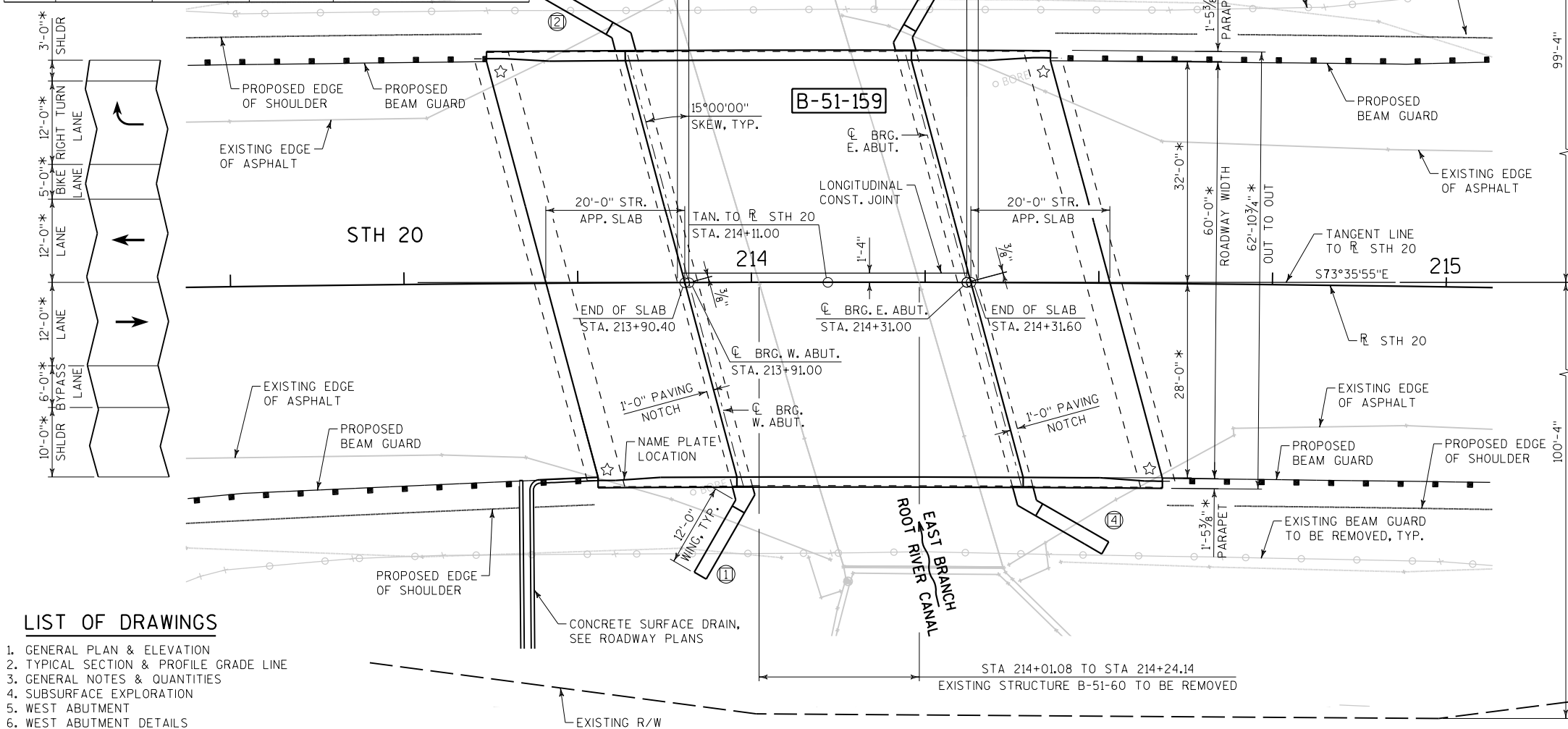
(X) WINGWALL NUMBER

PLAN

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-158			
		DRAWN BY	AJA
		PLANS CK'D.	MHZ
HEAVY RIPRAP DETAILS		SHEET 18 OF 1	

BENCH MARKS

NO.	LOCATION	ELEVATION	DESCRIPTION
100	N=189292.171 E=577139.773	707.895	FENO MONUMENT ON STH 20 NORTH ROADWAY EMBANKMENT
101	N=188789.301 E=578293.177	703.370	FENO MONUMENT ON STH 20 SOUTH ROADWAY EMBANKMENT
102	N=188470.841 E=579358.999	705.596	FENO MONUMENT ON STH 20 NORTH ROADWAY EMBANKMENT
106	N=188038.222 E=586116.537	732.187	FENO MONUMENT ON 53RD DR. WEST ROADWAY EMBANKMENT
107	N=187719.855 E=587042.679	732.482	FENO MONUMENT ON STH 20 NORTH ROADWAY EMBANKMENT



LIST OF DRAWINGS

1. GENERAL PLAN & ELEVATION
2. TYPICAL SECTION & PROFILE GRADE LINE
3. GENERAL NOTES & QUANTITIES
4. SUBSURFACE EXPLORATION
5. WEST ABUTMENT
6. WEST ABUTMENT DETAILS
7. WEST ABUTMENT WINGWALLS
8. EAST ABUTMENT
9. EAST ABUTMENT DETAILS
10. EAST ABUTMENT WINGWALLS
11. SLAB REINFORCEMENT PLAN
12. SLAB REINFORCEMENT DETAILS
13. SLAB ELEVATIONS & BILL OF BARS
14. 42SS PARAPET ON BRIDGE
15. 42SS PARAPET ON STRUCTURAL APPROACH SLAB
16. STRUCTURAL APPROACH SLAB
17. STRUCTURAL APPROACH SLAB DETAILS
18. HEAVY RIPRAP DETAILS

LEGEND

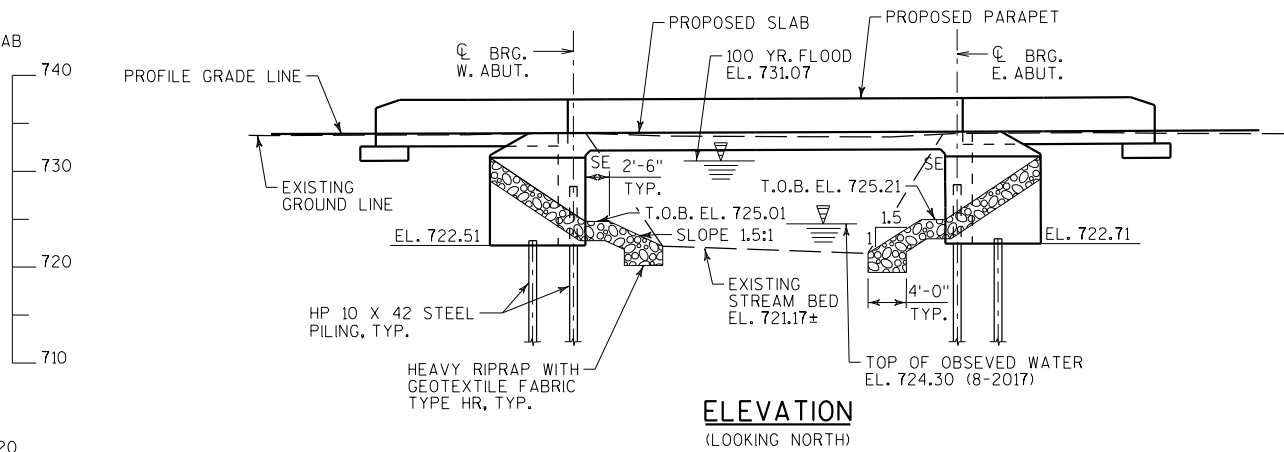
- DIRECTION OF TRAFFIC
- (X) WINGWALL NUMBER
- ☆ ATTACH GUARD RAIL TO STRUCTURAL APPROACH SLAB PARAPET

T.O.B. TOP OF BERM

* DIMENSION MEASURED NORMAL TO R STH 20

PLAN

SINGLE SPAN CONCRETE SLAB STRUCTURE
(ALL DIMENSIONS ARE MEASURED ALONG OR NORMAL TO TANGENT LINE UNLESS NOTED)
(HEAVY RIPRAP NOT SHOWN FOR CLARITY. SEE SHEET 18 FOR HEAVY RIPRAP LIMITS)



ELEVATION
(LOOKING NORTH)

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: RF = 1.14
OPERATING RATING FACTOR: RF = 1.47
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV): 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.

MATERIAL PROPERTIES:

CONCRETE MASONRY:
SUPERSTRUCTURE.....f'_c = 4,000 P.S.I.
SUBSTRUCTURE.....f'_c = 3,500 P.S.I.
STRUCTURAL APPROACH SLAB AND FOOTING.....f'_c = 4,000 P.S.I.
BAR STEEL REINFORCEMENT.....f_y = 60,000 P.S.I.
STAINLESS STEEL BAR REINFORCEMENT.....f_y = 60,000 P.S.I.
STEEL PILING.....f_y = 50,000 P.S.I.
STRUCTURAL APPROACH SLAB ALLOWABLE SOIL BEARING PRESSURE = 2,000 P.S.F.

FOUNDATION DATA

USING THE MODIFIED GATES ACCEPTANCE METHOD:

ABUTMENTS SHALL BE SUPPORTED ON HP 10 X 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 164 TONS* PER PILE AS DETERMINED BY THE MODIFIED GATES ACCEPTANCE METHOD.

*THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.50 USING MODIFIED GATES ACCEPTANCE METHOD TO DETERMINE DRIVEN PILE CAPACITY.

ESTIMATED PILE LENGTHS:
WEST ABUTMENT 75 FEET
EAST ABUTMENT 75 FEET

HYDRAULIC DATA:

100 YEAR FREQUENCY

DRAINAGE AREA..... 7.3 SQ. MI.
Q100..... 675 C.F.S.
VELOCITY..... 2.49 F.P.S.
BRIDGE WATERWAY AREA..... 271 SQ. FT.
HIGHWAY ELEVATION 731.07
ROAD OVERTOPPING NOT APPLICABLE
SCOUR CODE 5

2 YEAR FREQUENCY

Q2..... 215 C.F.S.
VELOCITY..... 1.54 F.P.S.
WATER ELEVATION..... 727.29

TRAFFIC DATA

STH 20

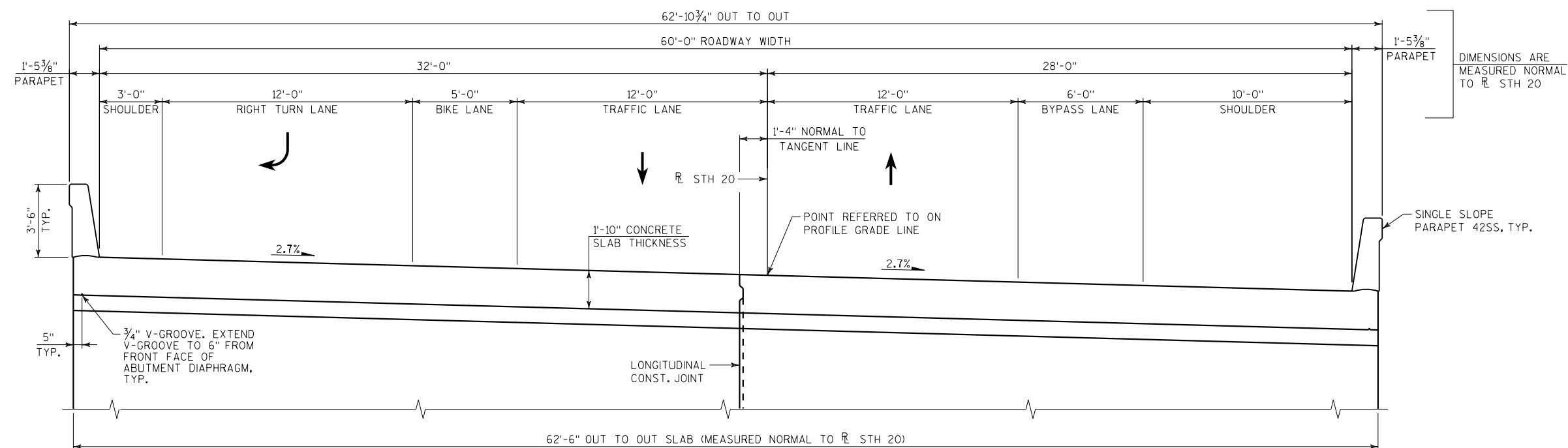
2020 ADT = 9,600
2040 ADT = 11,600
RDS = 60 MPH

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
WILLIAM DREHER (608) 266-8489
CONSULTANT:
MOHAMMED ZAGLOUL (414) 751-7200

NO.	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY			
kapur 7711 N. Port Washington Road Milwaukee, Wisconsin 53217 kapurinc.com			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	William C. Duchen SDR		02/05/20
CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-51-159			
STH 20 OVER EAST BRANCH ROOT RIVER CANAL			
COUNTY	RACINE	TOWN	YORKVILLE
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	AJA	DESIGN CK'D.	MHZ
DRAWN BY	MM	PLANS CK'D.	MHZ
GENERAL PLAN & ELEVATION			SHEET 1 OF 18



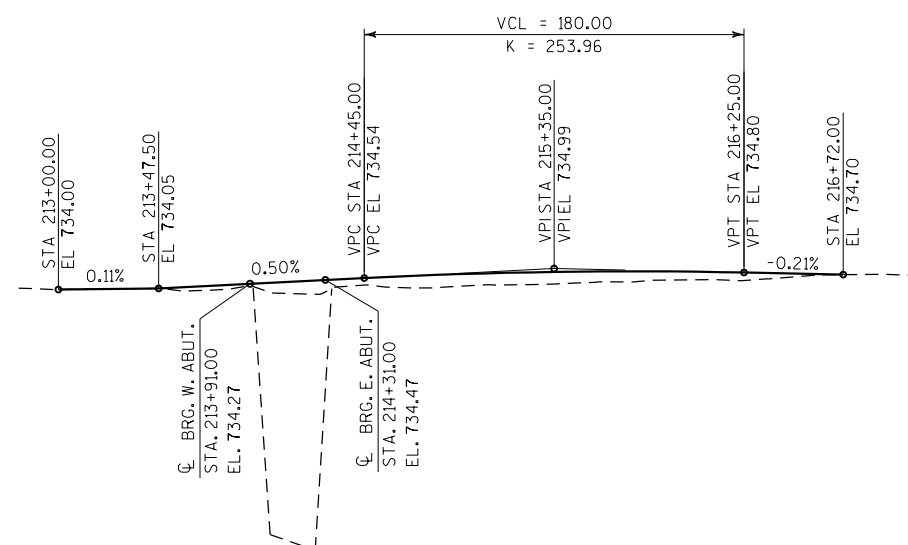


TYPICAL SECTION B-51-159

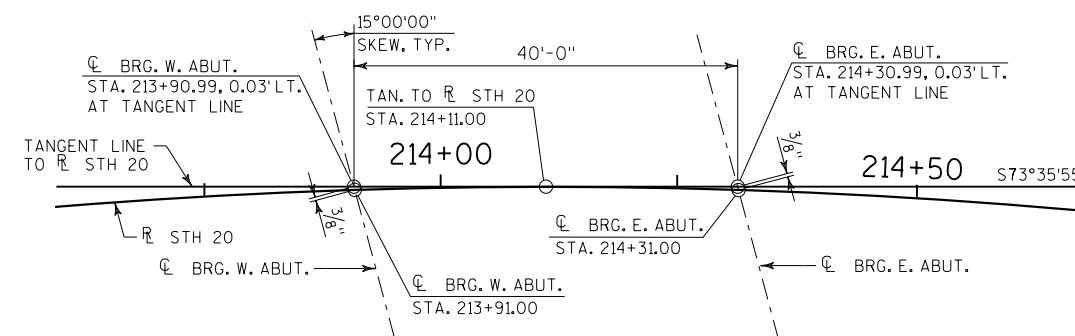
(LOOKING EAST)

HORIZONTAL CURVE DATA

PISTA. = 207+09.05
 Y = 188071.319
 X = 585769.527
 DELTA = 17°11'37"
 D = 1°00'00"
 T = 866.19'
 L = 1719.36'
 R = 5729.58'
 PC STA. = 198+42.86
 Y = 188082.2054
 X = 584903.4050
 PT STA. = 215+62.22
 Y = 187804.8929
 X = 586593.7259



STH 20 PROFILE GRADE LINE



TANGENT LINE LAYOUT

NOT TO SCALE
CURVATURE EXAGGERATED FOR CLARITY

LEGEND

→ DIRECTION OF TRAFFIC

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		MM	PLANS CK'D. MHZ
TYPICAL SECTION & PROFILE GRADE LINE		SHEET 2 OF 18	

TOTAL ESTIMATED QUANTITIES

ITEM NO.	BID ITEMS	UNIT	WEST APPROACH SLAB	WEST ABUTMENT	EAST ABUTMENT	EAST APPROACH SLAB	SUPER.	TOTAL
203.0500.S.03	REMOVING OLD STRUCTURE OVER WATERWAY STA. 214+11.00	LS	-	-	-	-	-	1
206.1000.03	EXCAVATION FOR STRUCTURES BRIDGES B-51-159	LS	-	-	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	-	510	510	-	-	1,020
305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	202	-	-	202	-	404
502.0100	CONCRETE MASONRY BRIDGES	CY	88	87	87	88	205	555
502.3200	PROTECTIVE SURFACE TREATMENT	SY	133	-	-	133	307	573
502.3210	PIGMENTED SURFACE SEALER	SY	20	-	-	20	41	81
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	13,890	7,340	7,370	13,890	39,750	82,240
505.0800.S	BAR STEEL REINFORCEMENT HS STAINLESS STRUCTURES	LB	-	-	-	-	590	590
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	-	14	14	-	-	28
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	-	890	890	-	-	1,780
606.0300	RIPRAP HEAVY	CY	-	146	170	-	-	316
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	-	135	135	-	-	270
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	2	-	-	2	-	4
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	-	89	89	-	-	178
645.0120	GEOTEXTILE TYPE HR	SY	-	290	355	-	-	645
	NON BID ITEMS							
	PREFORMED JOINT FILLER	SIZE						3/4"
	NON-BITUMINOUS JOINT FILLER	SIZE						1/2"
	NAME PLATE	EACH						1

ALL ITEMS ARE CATEGORY 4000

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.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATE METHOD IS APPROVED BY THE ENGINEER.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), RACINE COUNTY ZONE, NAD 1983 (2011). ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF NAVD 88 (2012).

THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. UTILITIES LABELED AS PROPOSED MAY BE INSTALLED BY OTHERS PRIOR TO THIS CONTRACT.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-51-159" SHALL BE THE EXISTING GROUND LINE & THE EXISTING STREAM BED.

AT THE BACK FACE OF ABUTMENT, ALL SPACES EXCAVATED AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.

BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

THE STREAM BED IN FRONT OF THE ABUTMENT SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE FABRIC 'HR' TO THE EXTENT SHOWN ON THE GENERAL PLAN & ELEVATION SHEET AND THE HEAVY RIPRAP DETAILS SHEET.

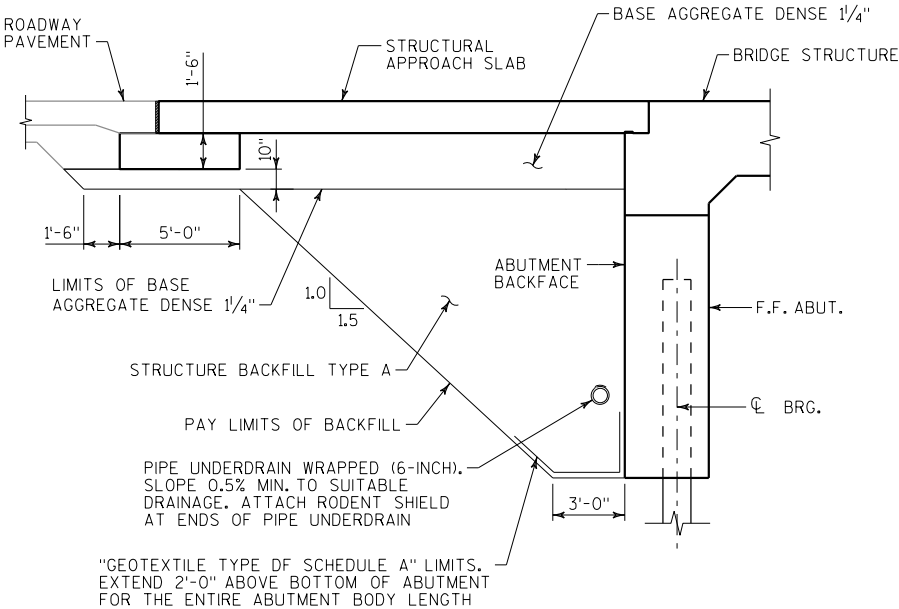
PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED TO THE TOP OF THE SLAB & TO THE TOP OF THE STRUCTURAL APPROACH SLABS.

PIGMENTED SURFACE SEALER IS TO BE APPLIED TO THE TOP AND INSIDE FACE OF THE PARAPETS.

THE EXISTING BRIDGE, B-51-60, IS A SINGLE SPAN REINFORCED CONCRETE SLAB STRUCTURE ON FULL RETAINING TYPE ABUTMENTS. THE ENTIRE STRUCTURE SHALL BE REMOVED IN ACCORDANCE WITH PROJECT CONSTRUCTION PLANS.

DUE TO EXISTING SOIL CONDITION VARIATIONS, ABUTMENT PILE LENGTHS MAY DIFFER THAN SHOWN IN THE PLANS TO ACHIEVE PILE DRIVING RESISTANCE.

CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 STANDARD SPECIFICATIONS.



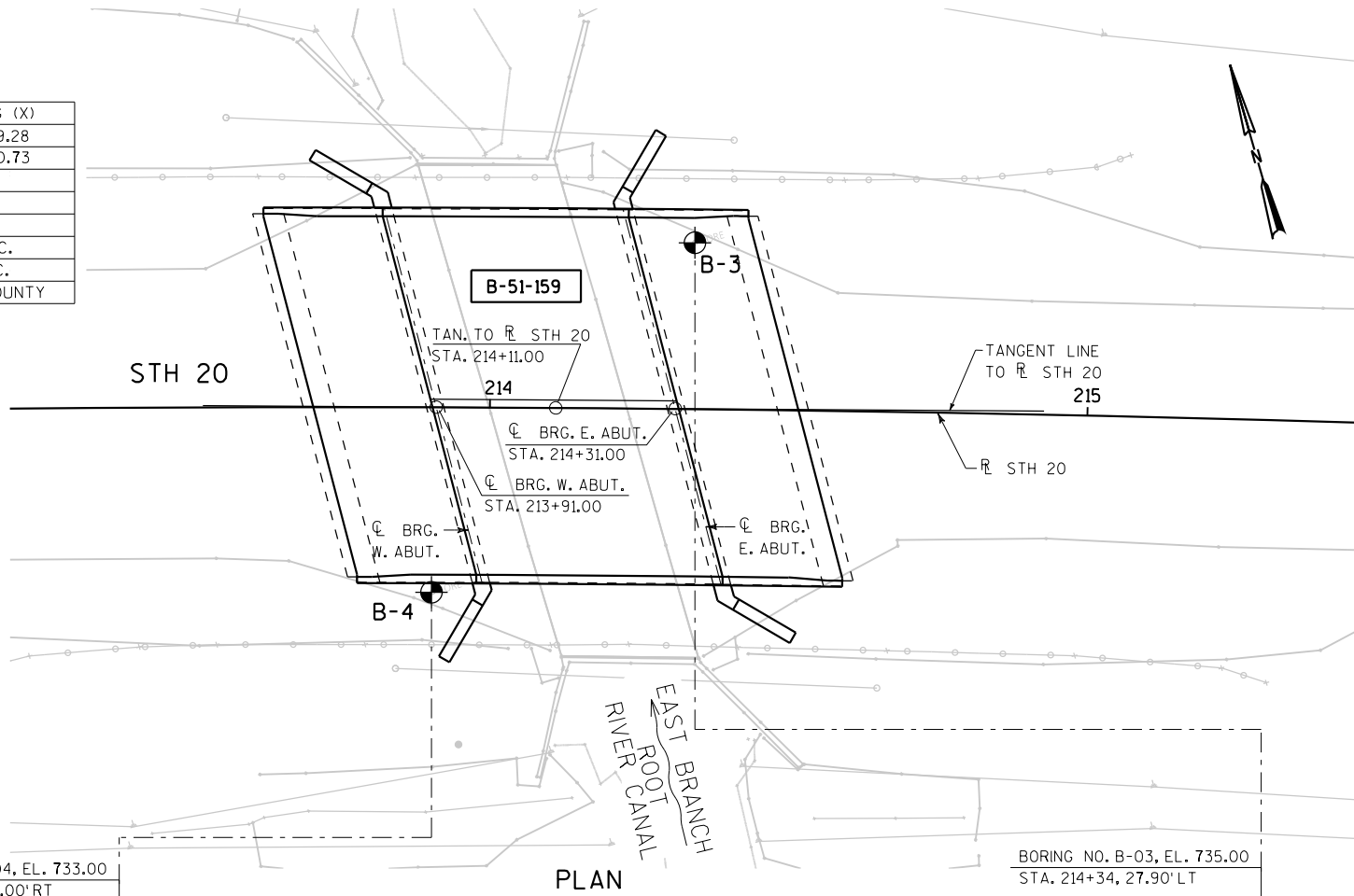
BACKFILL LIMITS

(DIMENSIONS ARE MEASURED NORMAL TO ABUTMENT)

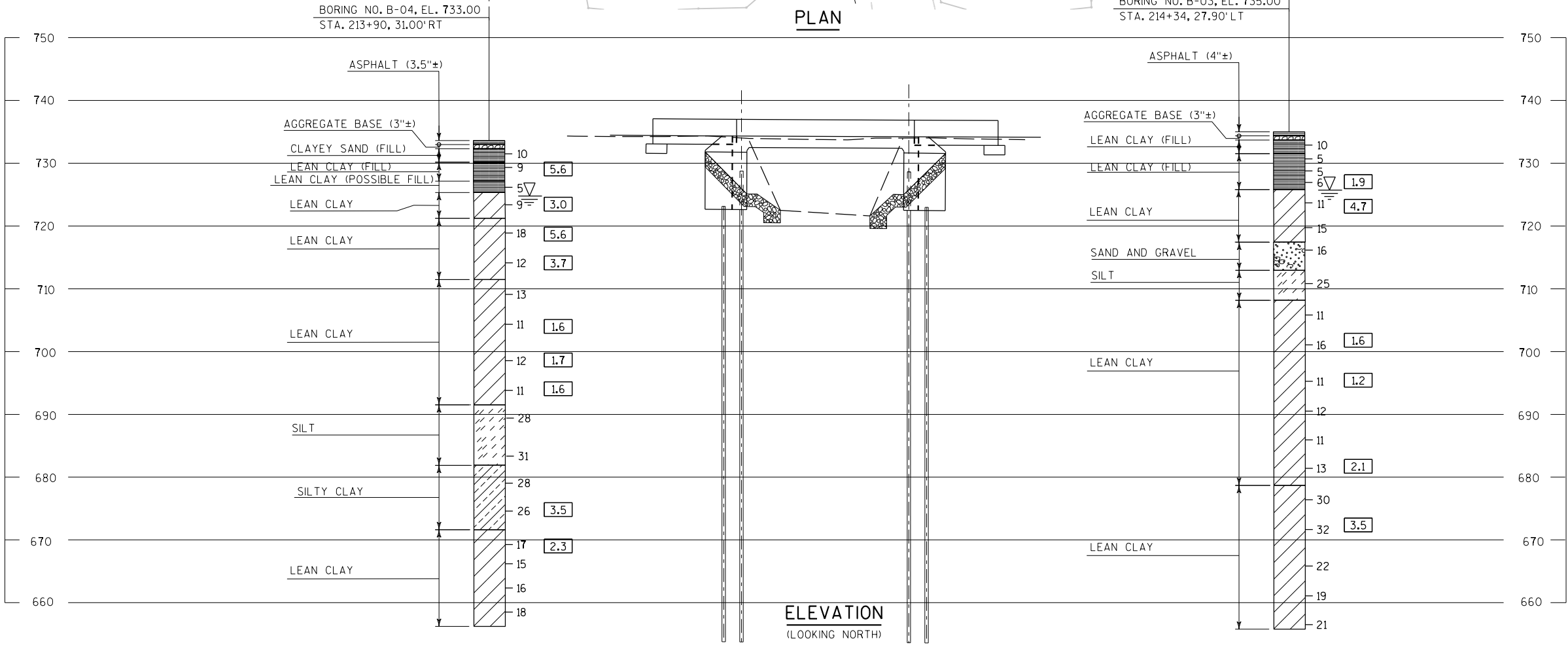
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		MM	PLANS CK'D. MHZ
GENERAL NOTES & QUANTITIES			SHEET 3 OF 18

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
03	JULY 7, 2017	187869.66	586479.28
04	JULY 11, 2017	187825.58	586420.73
BORINGS COMPLETED BY: PROFESSIONAL SERVICE INDUSTRIES, INC.			
REPORT COMPLETED BY: PROFESSIONAL SERVICE INDUSTRIES, INC.			
ALL COORDINATES REFERENCED TO WCCS NAD 83(91) RACINE COUNTY			

⊙ DENOTES SOIL BORING LOCATION



PLAN



ELEVATION
(LOOKING NORTH)

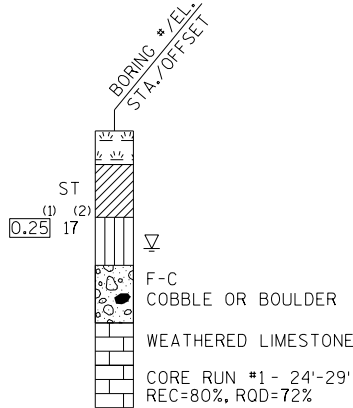
STATE PROJECT NUMBER

3833-03-73

MATERIAL SYMBOLS

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

LEGEND OF BORING



(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			
STRUCTURE B-51-159			
DRAWN BY		AJA	PLANS CK'D. MHZ
SUBSURFACE EXPLORATION			SHEET 4 OF 18

A01 1/2" FILLER, SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

A02 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.

A03 PIPE UNDERDRAIN WRAPPED (6-INCH) SLOPE 0.5% MIN.
ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN

A04 ABUTMENTS SHALL BE SUPPORTED ON HP 10 X 42 STEEL
PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 164
TONS PER PILE AS DETERMINED BY THE MODIFIED GATES
ACCEPTANCE METHOD.
ESTIMATED PILE LENGTH = 75 FEET.

A05 VERTICAL CONSTRUCTION JOINT KEYWAY FORMED BY BEVELED 2" X 8".

A06 4" X 3/4" PREFORMED JOINT FILLER, RUN FULL LENGTH OF ABUTMENT

T HP 10 X 42 STEEL PILING

(X) WINGWALL NUMBER

ELEVATIONS ARE GIVEN AT TOP OF CONCRETE AT THE $\odot$ BEARING.

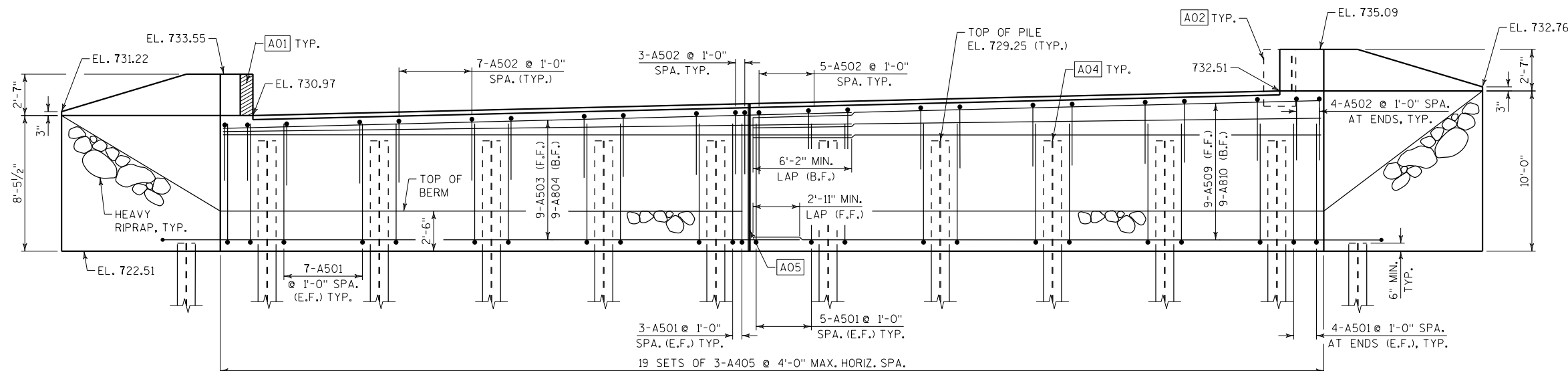
CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 STANDARD SPECIFICATIONS.

FOR TYPICAL SECTION THRU ABUTMENT BODY
AND REINFORCEMENT BILL OF BARS SEE SHEET 6.

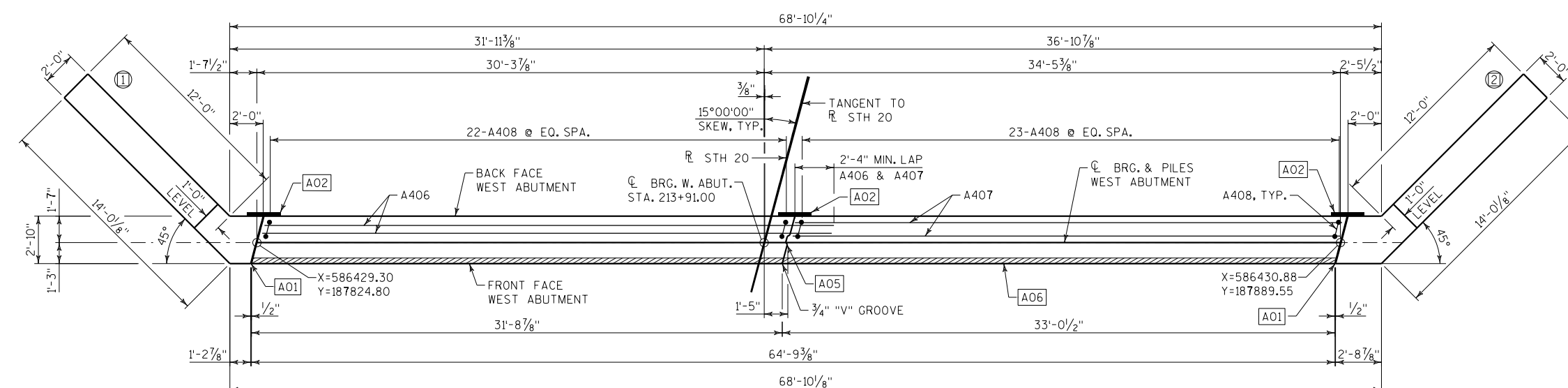
FOR WINGWALL REINFORCEMENT SEE SHEET 7.

DO NOT PLACE FILL ABOVE 3'-0" FROM BOTTOM
OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN
PLACE.

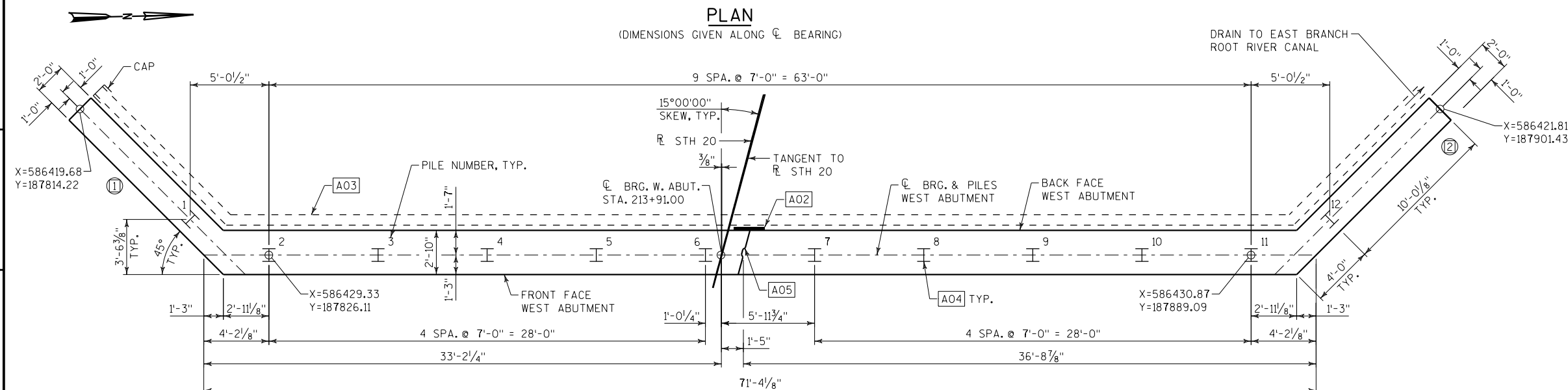
FOR ALTERNATE CONSTRUCTION JOINT DETAIL,
SEE SHEET 6.



ELEVATION
(LOOKING WEST)



PLAN
(DIMENSIONS GIVEN ALONG $\angle$ BEARING)



PILE PLAN
(DIMENSIONS GIVEN ALONG ϕ BEARING)

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		AJA	PLANS CK'D. MHZ
WEST ABUTMENT			SHEET 5 OF 1

LEGEND

- A02 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.
- A03 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.
- A06 4" X 3/4" PREFORMED JOINT FILLER, TYP. RUN FULL LENGTH OF ABUTMENT.
- A07 STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03"

NOTES

PARTIAL ZINCE OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

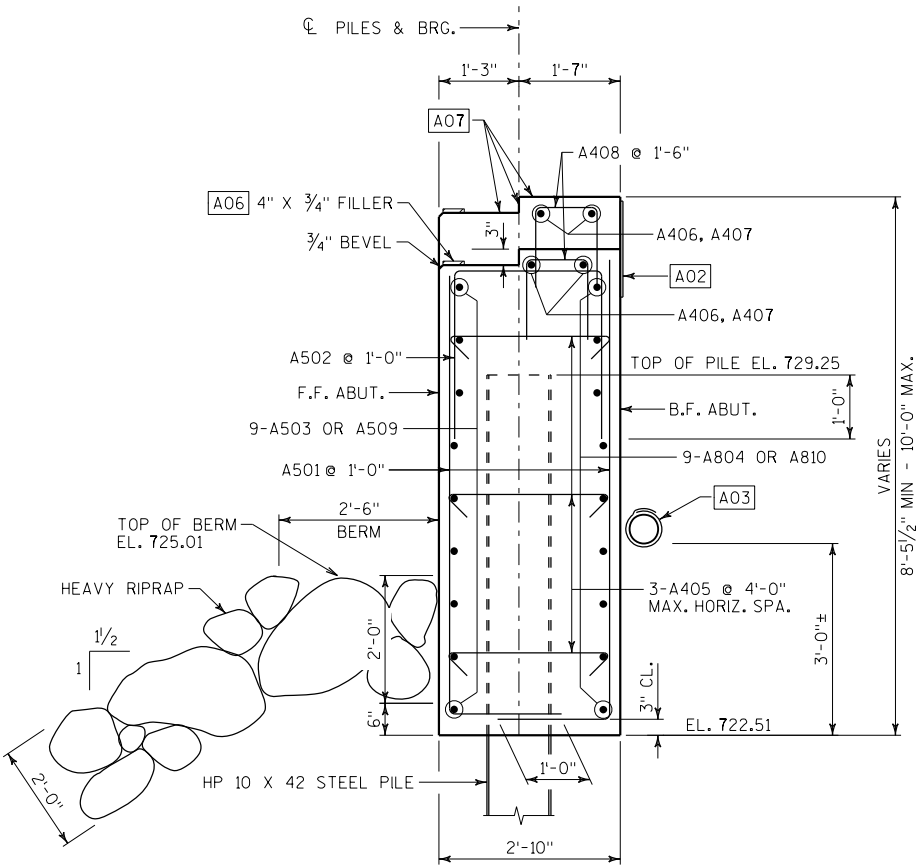
VERTICAL CONSTRUCTION JOINT KEYWAY IS NOT REQUIRED WHEN USING ALTERNATE CONSTRUCTION JOINT.

CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

SAW CUTTING JOINT IS NOT ALLOWED.

FOR ABUTMENT PLAN & ELEVATION SEE SHEET 5.

FOR WINGWALL DETAILS, REINFORCEMENT & BILL OF BARS SEE SHEET 7.

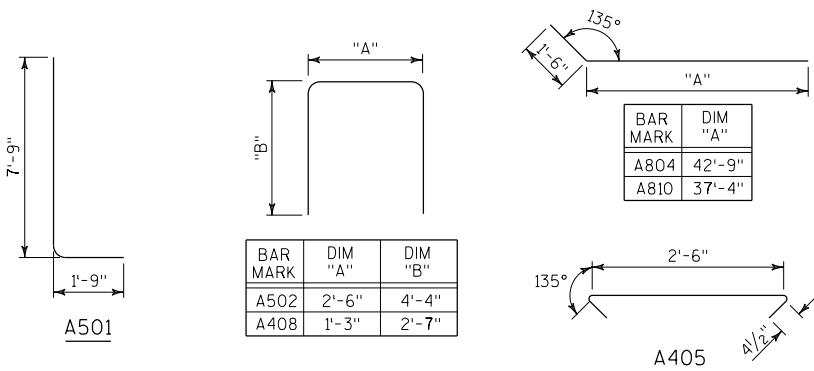


SECTION THRU ABUTMENT BODY
(LOOKING SOUTH)

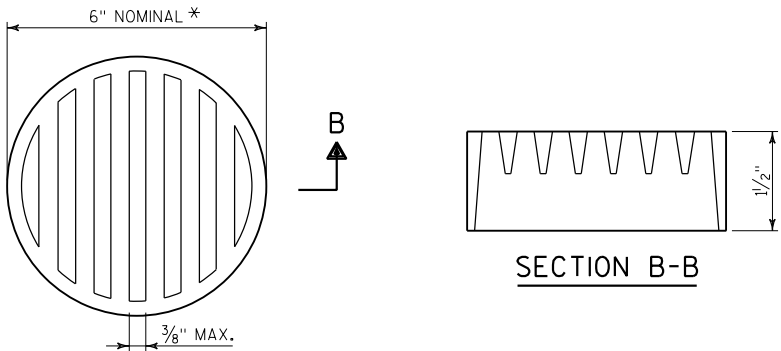
BILL OF BARS

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A501	X	144	9'-5"	X	-	ABUTMENT BODY - VERT.
A502	X	72	10'-11"	X	-	ABUTMENT BODY - VERT.
A503	X	9	36'-2"	-	-	ABUTMENT BODY - LONG. F.F.
A804	X	9	44'-3"	X	-	ABUTMENT BODY - LONG. B.F.
A405	X	57	3'-1"	X	-	ABUTMENT BODY - TRANS.
A406	X	2	34'-7"	-	-	ABUTMENT SEAT - LONG.
A407	X	2	33'-1"	-	-	ABUTMENT SEAT - LONG.
A408	X	45	6'-3"	X	-	ABUTMENT SEAT - VERT.
A509	X	9	35'-7"	-	-	ABUTMENT BODY - LONG. F.F.
A810	X	9	38'-10"	X	-	ABUTMENT BODY - LONG. B.F.

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



BENDING DIAGRAMS

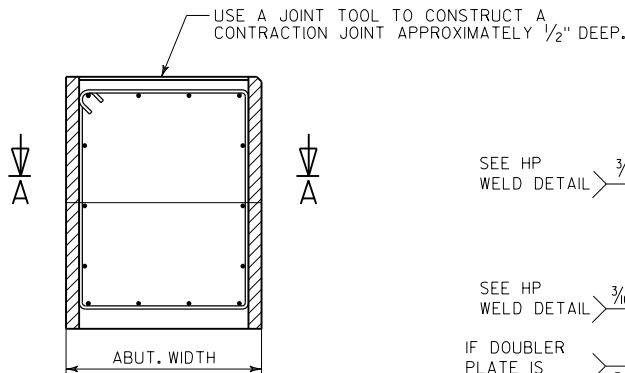


RODENT SHIELD DETAIL

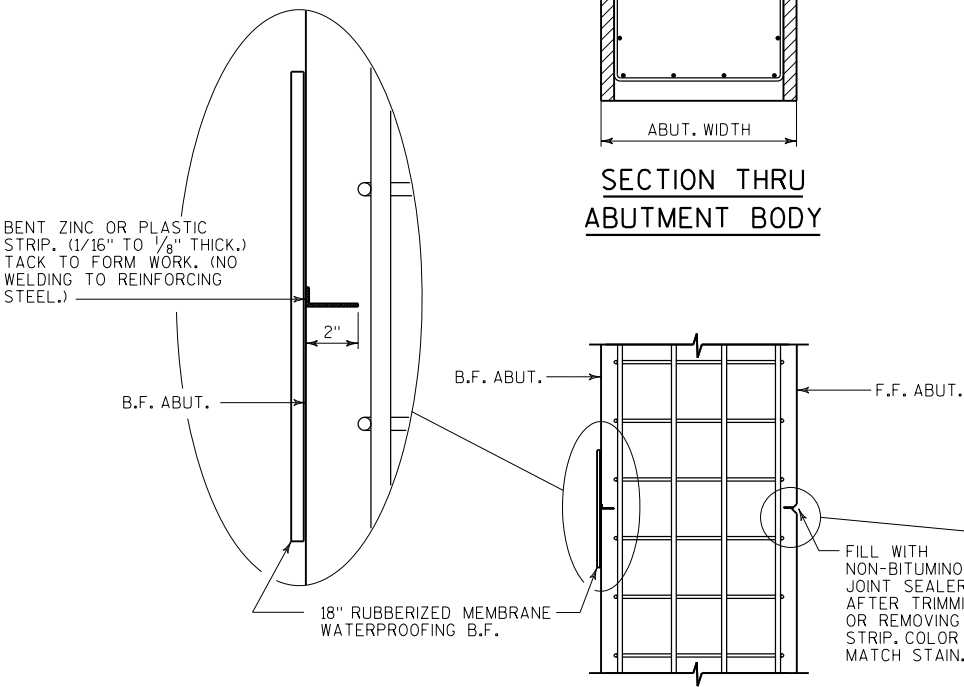
*DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

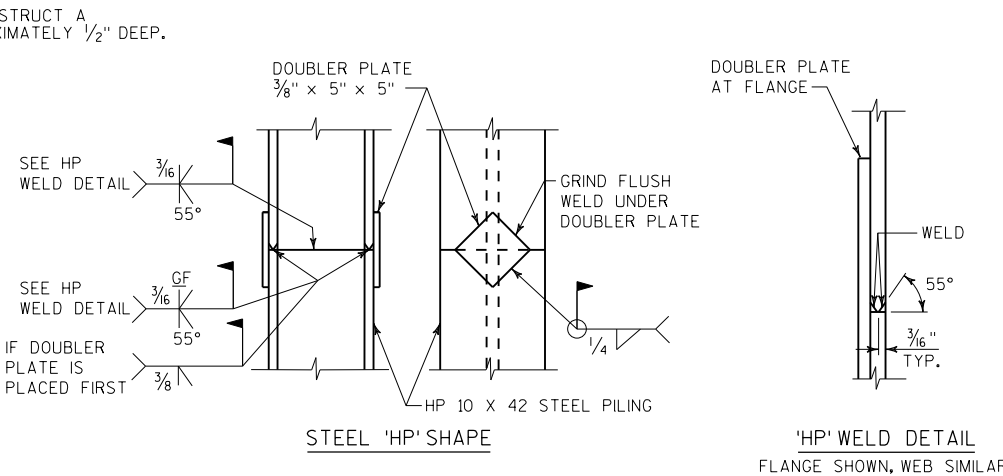


SECTION THRU ABUTMENT BODY



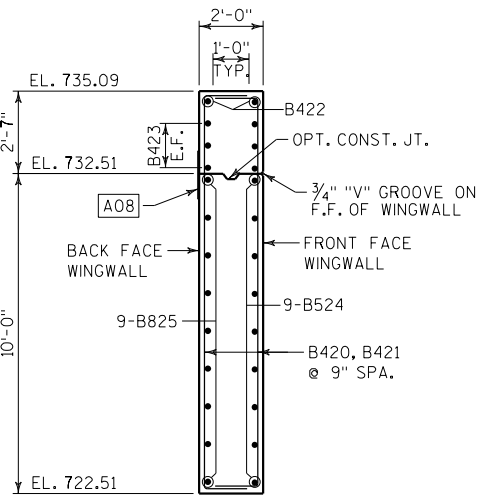
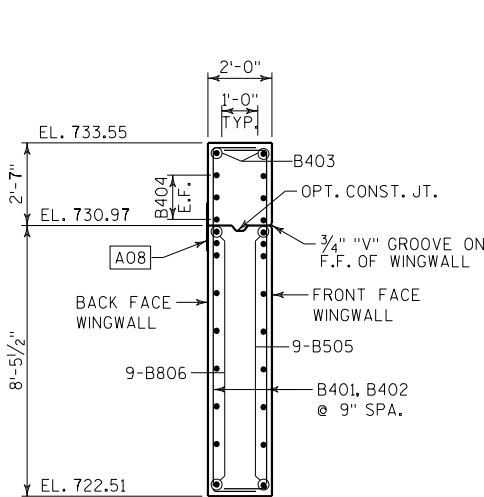
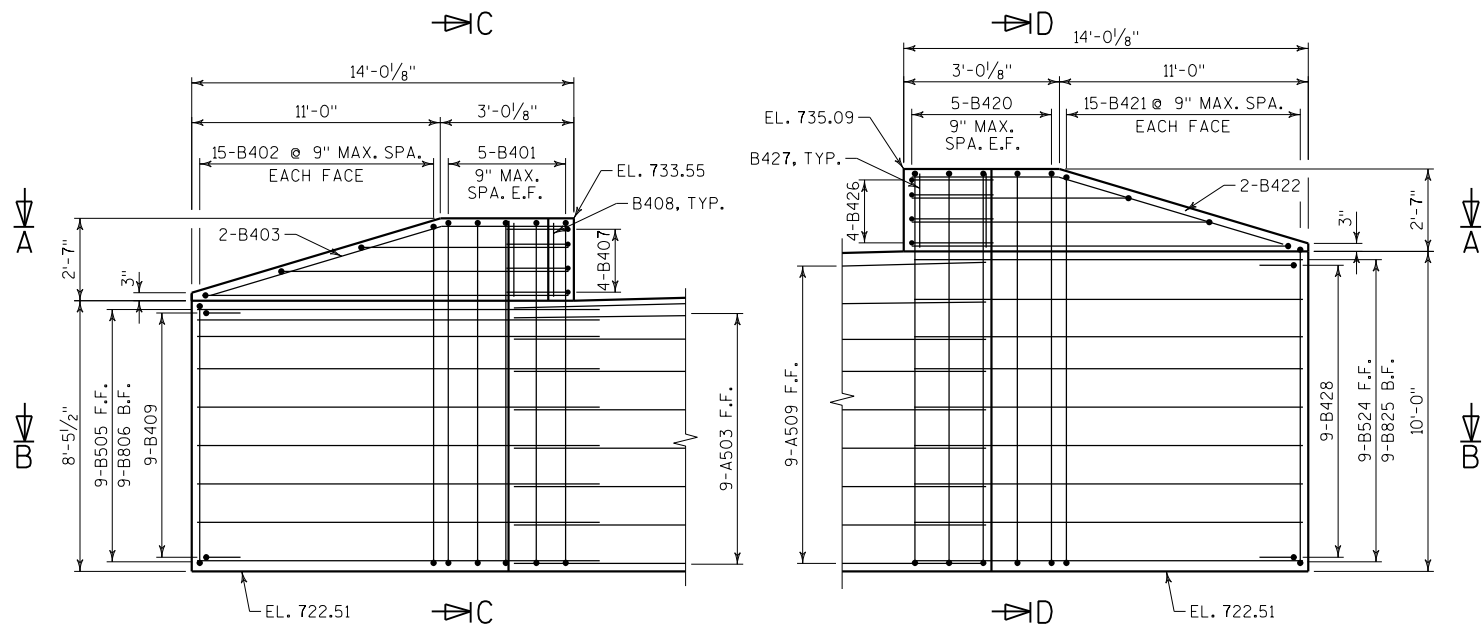
SECTION A-A

ALTERNATE CONSTRUCTION JOINT AT ABUTMENT



PILE SPLICE DETAIL

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		AJA	PLANS CK'D. MHZ
WEST ABUTMENT DETAILS		SHEET 6 OF 18	



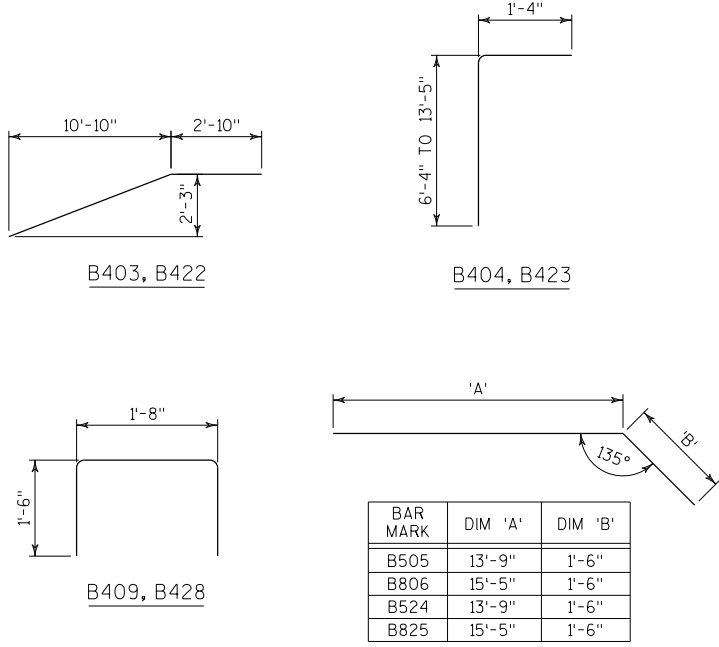
BAR MARK	DIM 'A'	DIM 'B'
B401	10'-7"	1'-4"
B402	8'-4" TO 10'-6"	1'-4"
B420	12'-2"	1'-4"
B421	9'-10" TO 12'-0"	1'-4"

WINGWALLS
REINFORCEMENT ELEVATION

BILL OF BARS

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
B401	X	10	13'-1"	X	-	WINGWALL 1 - VERT.
B402	X	30	11'-11"	X	▲	WINGWALL 1 - VERT.
B403	X	2	13'-11"	X	-	WINGWALL 1 - HORIZ. TOP
B404	X	6	11'-2"	X	▲	WINGWALL 1 - HORIZ. E.F.
B505	X	9	15'-3"	X	-	WINGWALL 1 - HORIZ. F.F.
B806	X	9	16'-11"	X	-	WINGWALL 1 - HORIZ. B.F.
B407	X	4	9'-3"	X	-	WINGWALL 1 - HORIZ.
B408	X	5	2'-3"	-	-	WINGWALL 1 - VERT.
B409	X	9	4'-6"	X	-	WINGWALL 1 - HORIZ. ENDS
B420	X	10	14'-8"	X	-	WINGWALL 2 - VERT.
B421	X	30	13'-5"	X	▲	WINGWALL 2 - VERT.
B422	X	2	13'-11"	X	-	WINGWALL 2 - HORIZ. TOP
B423	X	6	11'-2"	X	▲	WINGWALL 2 - HORIZ. E.F.
B524	X	9	15'-3"	X	-	WINGWALL 2 - HORIZ. F.F.
B825	X	9	16'-11"	X	-	WINGWALL 2 - HORIZ. B.F.
B426	X	4	10'-9"	X	-	WINGWALL 2 - HORIZ.
B427	X	5	2'-3"	-	-	WINGWALL 2 - VERT.
B428	X	9	4'-6"	X	-	WINGWALL 2 - HORIZ. ENDS

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



SECTION A-A

BENDING DIAGRAMS

BAR SERIES TABLE

BAR MARK	NO. REQ'D	LENGTH
B402	2 SERIES OF 15	10'-10" TO 13'-0"
B404	2 SERIES OF 3	7'-7" TO 14'-8"
B421	2 SERIES OF 15	12'-4" TO 14'-6"
B423	2 SERIES OF 3	7'-7" TO 14'-8"

NOTE

A08 18" RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES")

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		SMC	PLANS CK'D. MHZ
WEST ABUTMENT WINGWALLS		SHEET 7 OF 18	

LEGEND

E.F. - EACH FACE
F.F. - FRONT FACE
B.F. - BACK FACE
ⓧ - WINGWALL NUMBER

[B01] 1/2" FILLER, SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

[B02] 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.

B03 PIPE UNDERDRAIN WRAPPED (6-INCH) SLOPE 0.5% MIN.
ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.

B04 ABUTMENTS SHALL BE SUPPORTED ON HP 10 X 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 164 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES ACCEPTANCE METHOD.
ESTIMATED PILE LENGTH = 75 FEET.

[B05] VERTICAL CONSTRUCTION JOINT KEYWAY FORMED BY BEVELED 2" X 8".

B06 4" X 3/4" PREFORMED JOINT FILLER, RUN FULL LENGTH OF ABUTMENT.

T HP 10 X 42 STEEL PILING

(X) WINGWALL NUMBER

ELEVATIONS ARE GIVEN AT TOP OF CONCRETE AT THE C
BEARING.

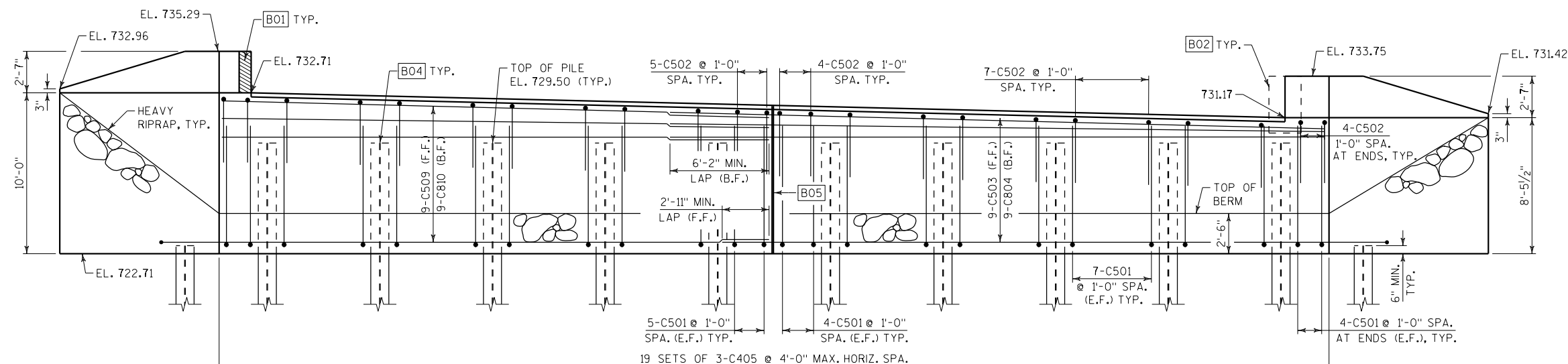
CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 STANDARD SPECIFICATIONS.

FOR TYPICAL SECTION THRU ABUTMENT BODY AND
REINFORCEMENT BILL OF BARS SEE SHEET 9.

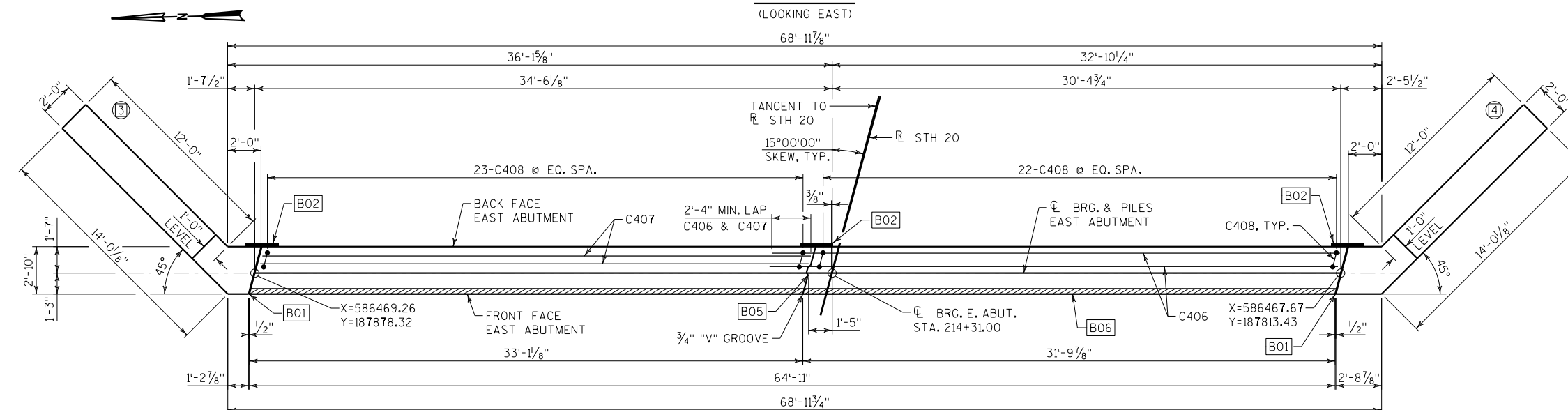
FOR WINGWALL REINFORCEMENT SEE SHEET 10.

DO NOT PLACE FILL ABOVE 3'-0" FROM BOTTOM OF
ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

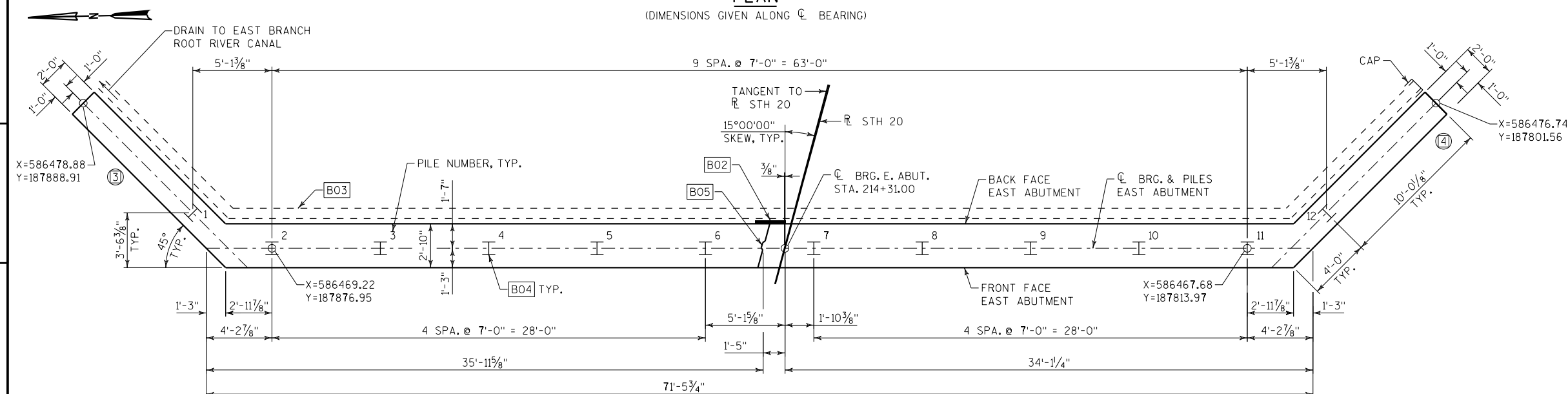
FOR ALTERNATE CONSTRUCTION JOINT DETAIL, SEE SHEET 9.



ELEVATION
(LOOKING EAST)



PLAN

(DIMENSIONS GIVEN ALONG $\odot$ BEARING)

PILE PLAN

(DIMENSIONS GIVEN ALONG $\odot$ BEARING)

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		AJA	PLANS CK'D. MHZ
EAST ABUTMENT			SHEET 8 OF 1

B02	18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE OF ABUTMENTS.
B03	PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. ATTACHED RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.
B06	4" X ¾" PREFORMED JOINT FILLER, TYP. RUN FULL LENGTH OF ABUTMENT.
B07	STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03"

PARTIAL ZINC OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

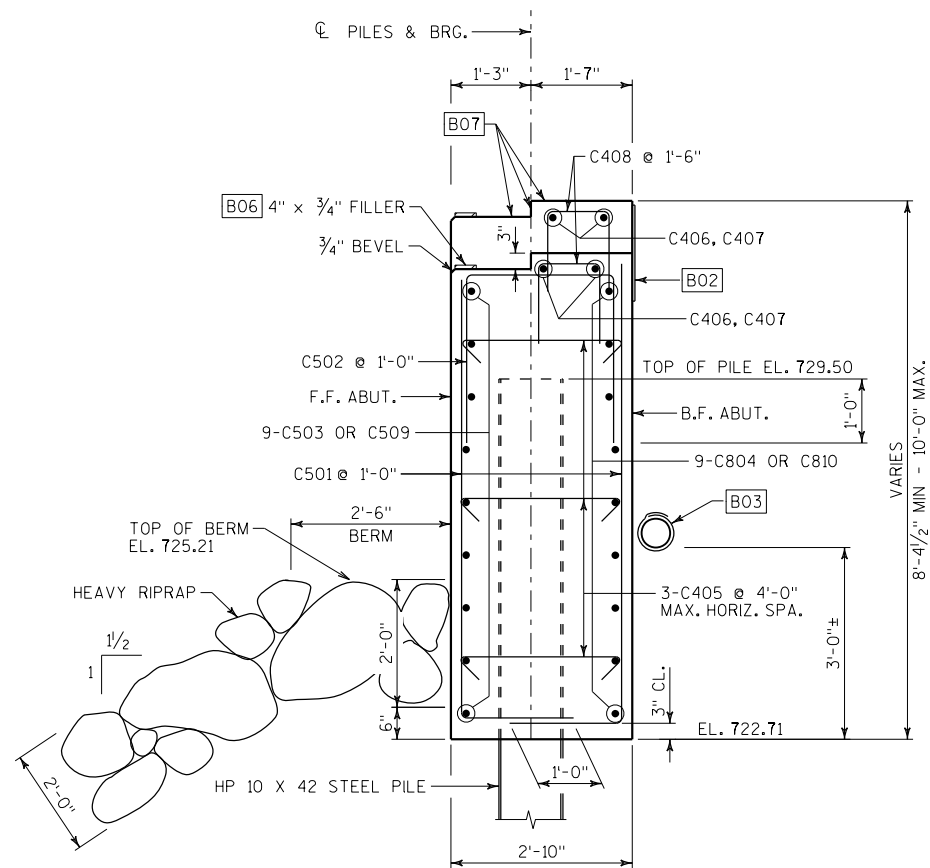
VERTICAL CONSTRUCTION JOINT KEYWAY IS NOT REQUIRED WHEN USING ALTERNATE CONSTRUCTION JOINT.

CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

SAW CUTTING JOINT IS NOT ALLOWED.

FOR ABUTMENT PLAN & ELEVATION SEE SHEET 8.

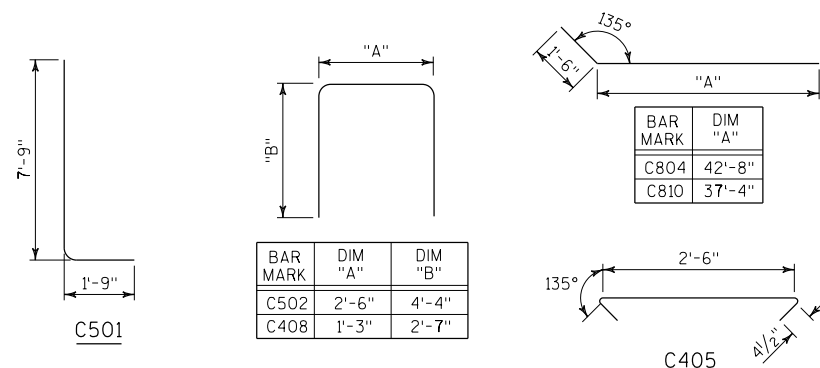
FOR WINGWALL DETAILS, REINFORCEMENT & BILL OF BARS SEE SHEET 10.



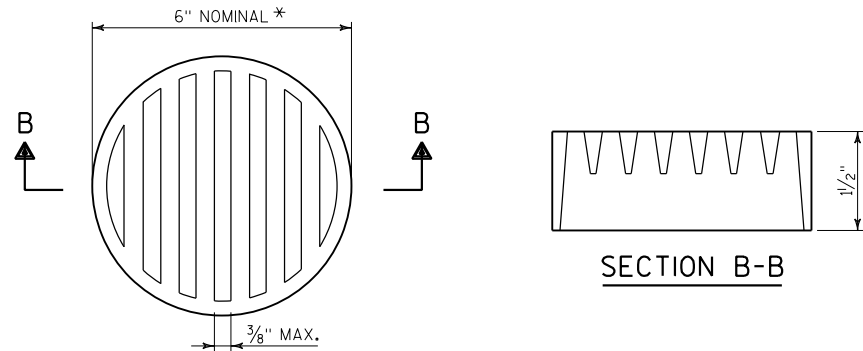
SECTION THRU ABUTMENT BODY
(LOOKING NORTH)

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
C501	X	146	9'-5"	X	-	ABUTMENT BODY - VERT.
C502	X	73	10'-11"	X	-	ABUTMENT BODY - VERT.
C503	X	9	37'-8"	-	-	ABUTMENT BODY - LONG. F.F.
C804	X	9	44'-2"	X	-	ABUTMENT BODY - LONG. B.F.
C405	X	57	3'-1"	X	-	ABUTMENT BODY - TRANS.
C406	X	2	34'-8"	-	-	ABUTMENT SEAT - LONG.
C407	X	2	33'-1"	-	-	ABUTMENT SEAT - LONG.
C408	X	45	6'-3"	X	-	ABUTMENT SEAT - VERT.
C509	X	9	34'-4"	-	-	ABUTMENT BODY - LONG. F.F.
C810	X	9	38'-10"	X	-	ABUTMENT BODY - LONG. B.F.

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR
FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



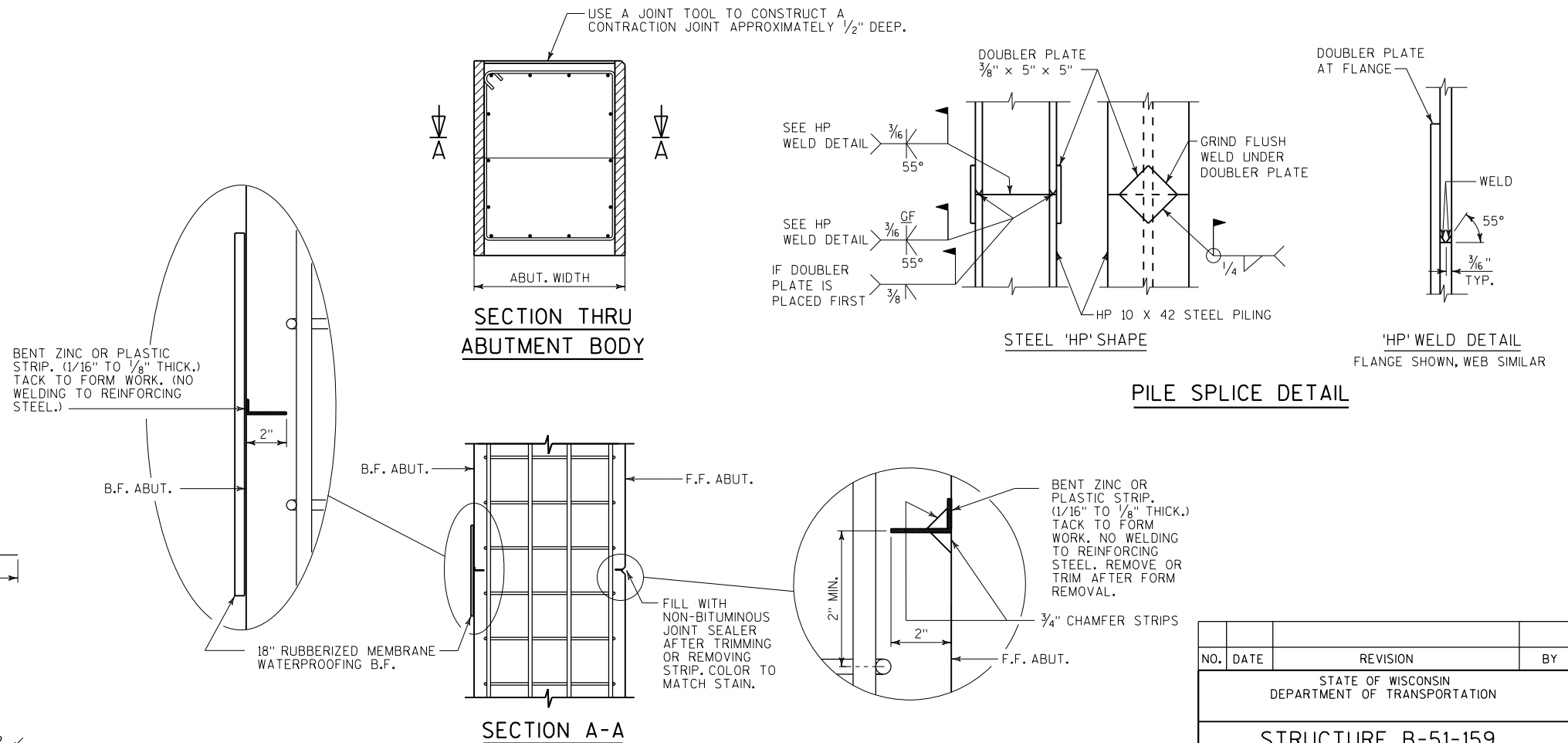
BENDING DIAGRAMS



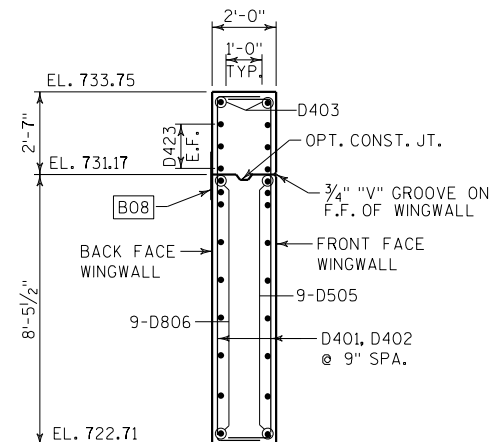
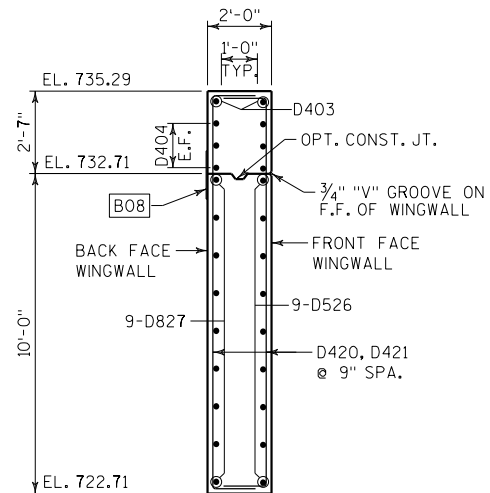
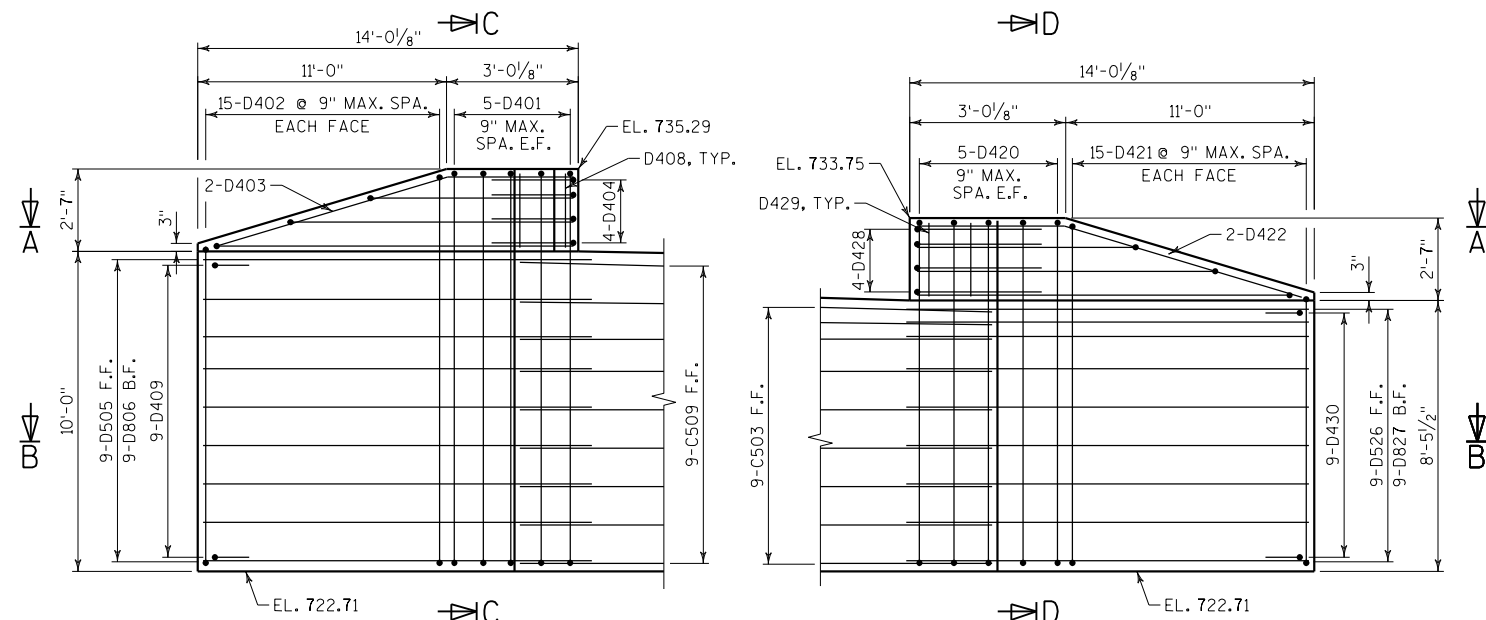
*DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.



ALTERNATE CONSTRUCTION JOINT AT ABUTMENT

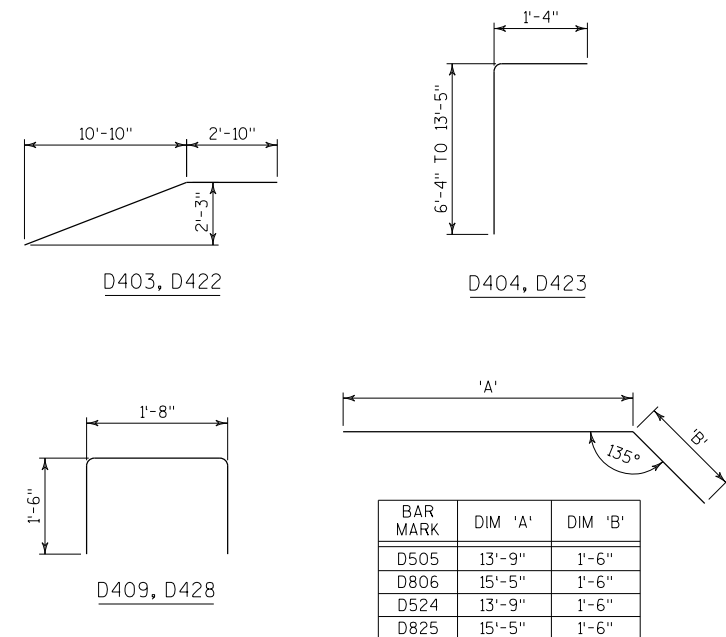


BAR MARK	DIM 'A'	DIM 'B'
D401	12'-2"	1'-4"
D402	9'-10" TO 12'-0"	1'-4"
D420	10'-7"	1'-4"
D421	8'-4" TO 10'-6"	1'-4"

BILL OF BARS

BAR MARK	COAT	NO REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
D401	X	10	14'-8"	X	-	WINGWALL 3 - VERT.
D402	X	30	13'-5"	X	▲	WINGWALL 3 - VERT.
D403	X	2	13'-11"	X	-	WINGWALL 3 - HORIZ. TOP
D404	X	6	11'-2"	X	▲	WINGWALL 3 - HORIZ. E.F.
D505	X	9	15'-3"	X	-	WINGWALL 3 - HORIZ. F.F.
D806	X	9	16'-11"	X	-	WINGWALL 3 - HORIZ. B.F.
D407	X	4	9'-3"	X	-	WINGWALL 3 - HORIZ.
D408	X	5	2'-3"	-	-	WINGWALL 3 - VERT.
D409	X	9	4'-6"	X	-	WINGWALL 3 - HORIZ. ENDS
D420	X	10	13'-1"	X	-	WINGWALL 4 - VERT.
D421	X	30	11'-11"	X	▲	WINGWALL 4 - VERT.
D422	X	2	13'-11"	X	-	WINGWALL 4 - HORIZ. TOP
D423	X	6	11'-2"	X	▲	WINGWALL 4 - HORIZ. E.F.
D524	X	9	15'-3"	X	-	WINGWALL 4 - HORIZ. F.F.
D825	X	9	16'-11"	X	-	WINGWALL 4 - HORIZ. B.F.
D426	X	4	10'-9"	X	-	WINGWALL 4 - HORIZ.
D427	X	5	2'-3"	-	-	WINGWALL 4 - VERT.
D428	X	9	4'-6"	X	-	WINGWALL 4 - HORIZ. ENDS

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



BAR SERIES TABLE

BAR MARK	NO. REQ'D	LENGTH
D402	2 SERIES OF 15	12'-4" TO 14'-6"
D404	2 SERIES OF 3	7'-7" TO 14'-8"
D421	2 SERIES OF 15	10'-10" TO 13'-0"
D423	2 SERIES OF 3	7'-7" TO 14'-8"

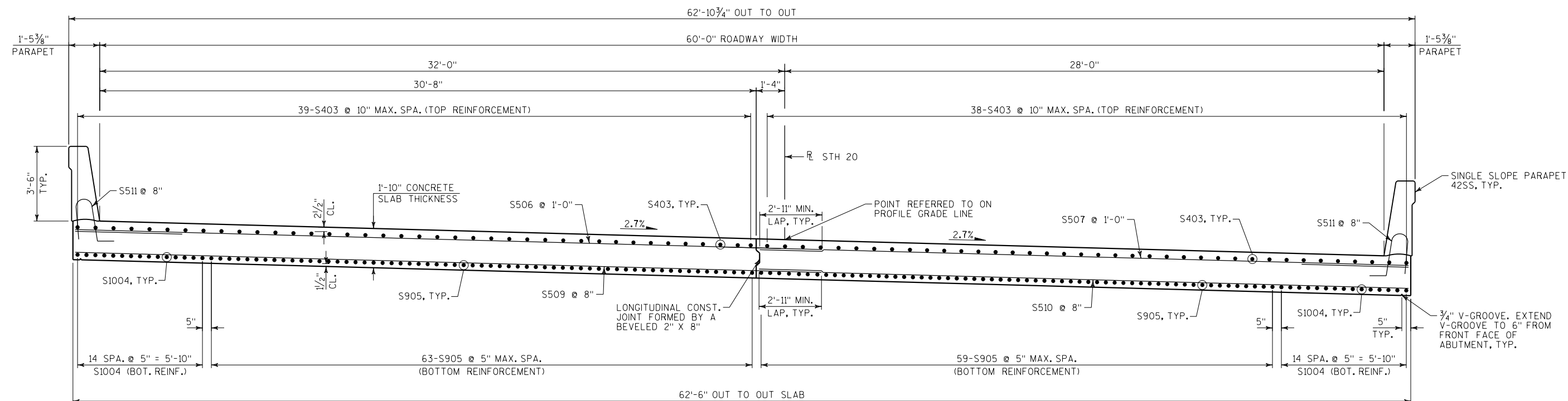
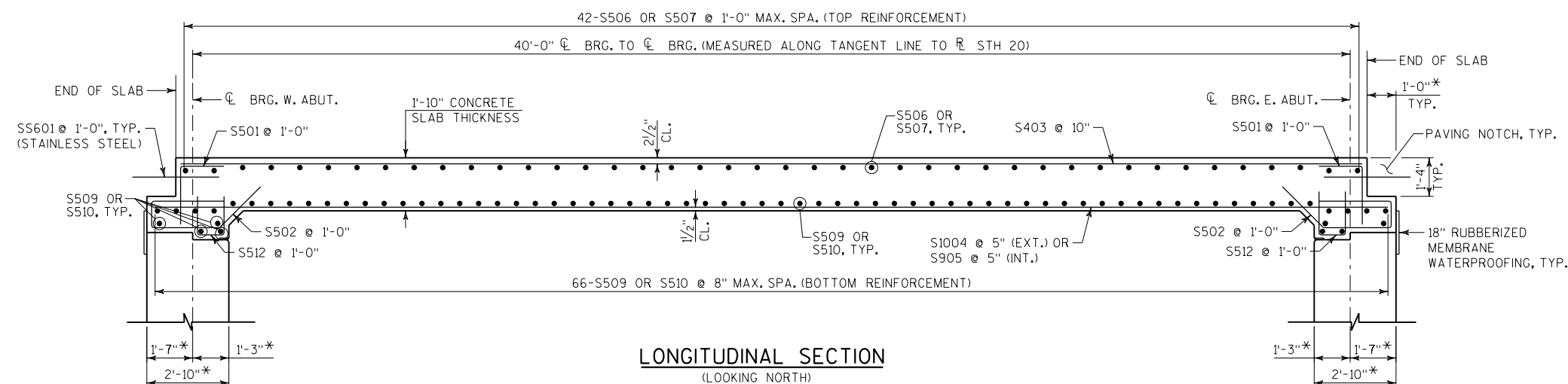
▲ BUNDLE AND TAG EACH SERIES SEPARATELY

NOTE

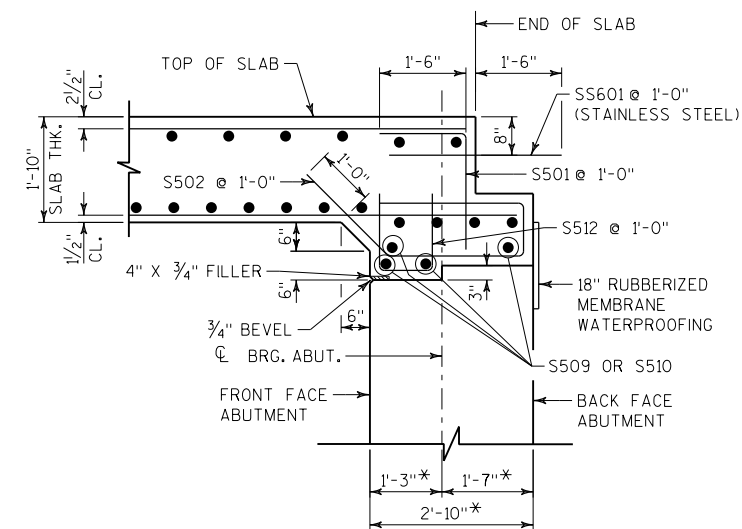
① 18" RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES")

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		SMC	PLANS CK'D. MHZ
EAST ABUTMENT WINGWALLS			SHEET 10 OF 18



**CROSS SECTION**(LOOKING EAST)
(DIMENSIONS ARE MEASURED NORMAL TO $\mathbb{R}$ STH 20)**LONGITUDINAL SECTION**

(LOOKING NORTH)

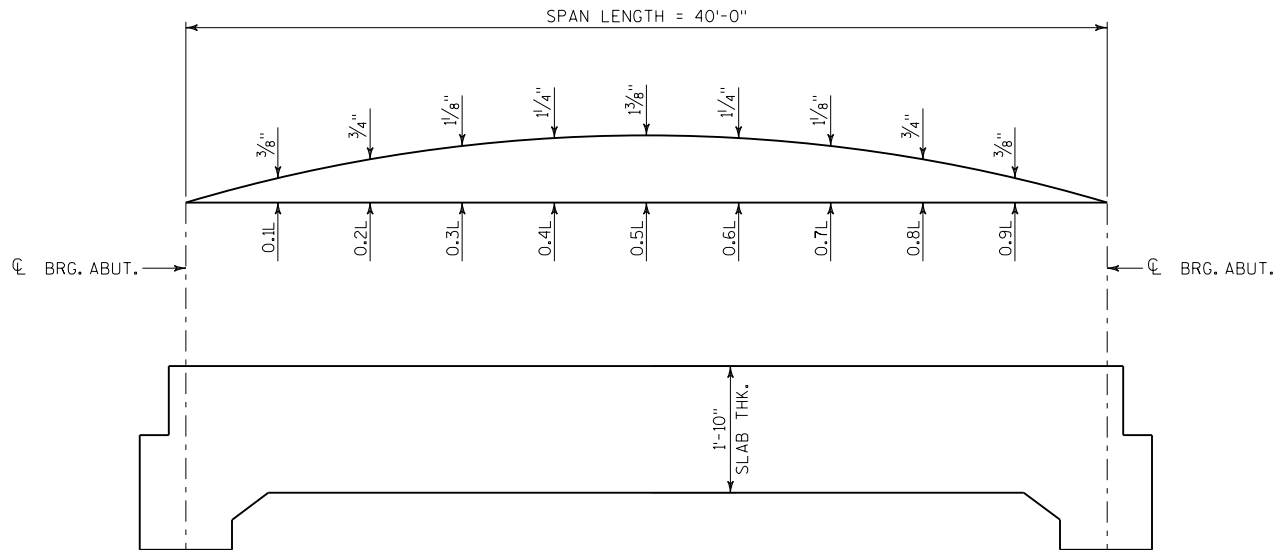
**PART LONGITUDINAL SECTION AT ABUTMENT**(LOOKING NORTH AT EAST ABUTMENT)
(LOOKING SOUTH AT WEST ABUTMENT)**NOTES**FOR SLAB REINFORCEMENT PLAN & NOTES,
SEE SHEET 11.FOR BILL OF BARS & BENDING DIAGRAM,
SEE SHEET 13.FOR PARAPET REINFORCEMENT DETAILS,
SEE SHEETS 14 & 15.FOR STRUCTURAL APPROACH SLAB
REINFORCEMENT, SEE SHEETS 16 & 17.**LEGEND*** DIMENSION IS TAKEN NORMAL TO $\mathbb{C}$ BEARING

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		MM	PLANS CK'D. MHZ
SLAB REINFORCEMENT DETAILS			SHEET 12 OF 18

TOP OF SLAB ELEVATIONS

LOCATION	CL BRG. W. ABUT.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	CL BRG. E. ABUT.
NORTH EDGE OF SLAB	735.09	735.11	735.13	735.15	735.17	735.19	735.21	735.23	735.25	735.27	735.29
PGL (R STH 20)	734.27	734.29	734.31	734.33	734.35	734.37	734.39	734.41	734.43	734.45	734.47
SOUTH EDGE OF SLAB	733.55	733.57	733.59	733.61	733.63	733.65	733.67	733.69	733.71	733.73	733.75

NOTE: ELEVATIONS SHOWN ARE TOP OF SLAB AND DO NOT INCLUDE ALLOWANCES OF DEAD LOAD DEFLECTION, FUTURE CREEP AND FORM SETTLEMENT.



CAMBER & SLAB THICKNESS DIAGRAM

CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

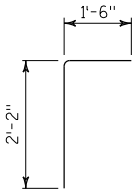
PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE CL OF ABUTMENTS AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN/PGL.

ALL SLAB THICKNESS DIMENSIONS ARE A MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPENCIES ARE TO BE PLUS (+).

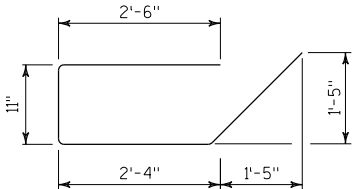
BILL OF BARS

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
S501	X	130	3'-7"	X	-	SLAB ENDS AT ABUTMENTS - VERT.
S502	X	130	7'-6"	X	-	SLAB ENDS AT ABUTMENTS - VERT.
S403	X	77	40'-10"	-	-	SLAB TOP - LONG.
S1004	X	30	42'-11"	-	-	SLAB BOTTOM EXTERIOR - LONG.
S905	X	122	42'-11"	-	-	SLAB BOTTOM INTERIOR - LONG.
S506	X	42	36'-0"	-	-	SLAB TOP - TRANS.
S507	X	42	31'-4"	-	-	SLAB TOP - TRANS.
S508	X	84	5'-0"	-	-	SLAB TOP OVERHANG - TRANS.
S509	X	74	36'-0"	-	-	SLAB BOTTOM - TRANS.
S510	X	74	31'-4"	-	-	SLAB BOTTOM - TRANS.
S511	X	126	4'-5"	X	-	PARAPET DOWEL - VERT.
S512	X	130	3'-8"	X	-	SLAB ENDS AT ABUTMENTS - VERT.
SS601	-	130	3'-0"	-	-	STRUCTURE SLAB TO APPROACH SLAB (STAINLESS STEEL)

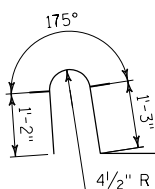
NOTE: BAR DIMENSIONS ARE OUT TO OUT OF BAR, THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE



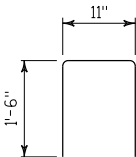
S501



S502



S511



S512

BENDING DIAGRAMS

NOTES

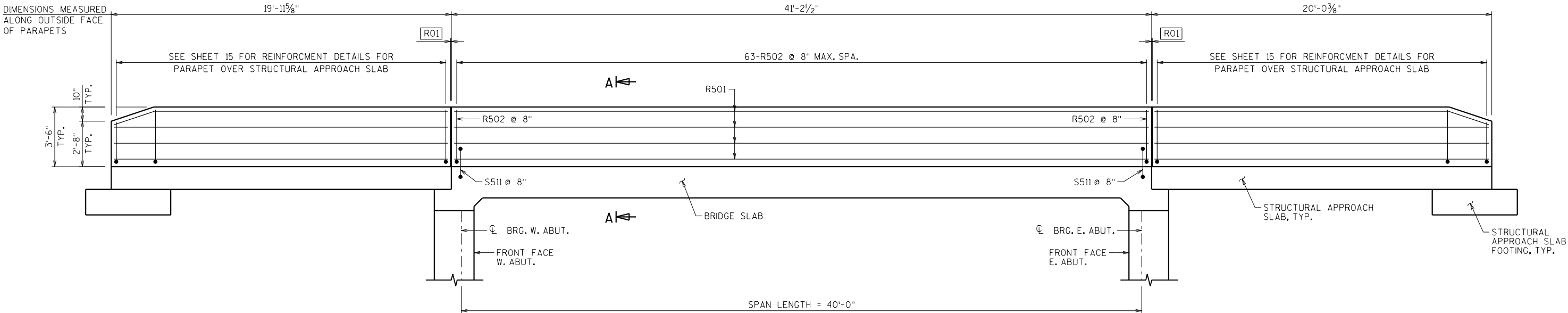
FOR SLAB REINFORCEMENT PLAN, SEE SHEET 11.

FOR SLAB REINFORCEMENT DETAILS, SEE SHEET 12.

FOR PARAPET REINFORCEMENT DETAILS, SEE SHEETS 14 & 15.

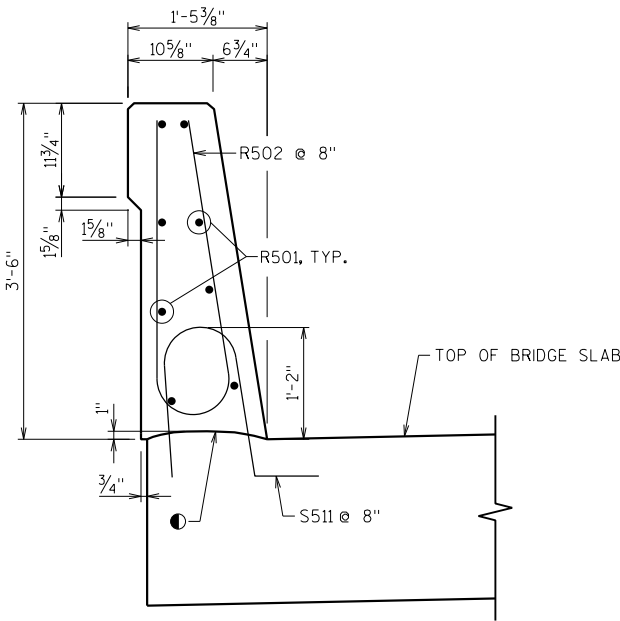
FOR STRUCTURAL APPROACH SLAB REINFORCEMENT, SEE SHEETS 16 & 17.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		AJA	PLANS CK'D. MHZ
SLAB ELEVATIONS & BILL OF BARS			SHEET 13 OF 18



OUTSIDE ELEVATION

(LOOKING NORTH)
(SOUTH PARAPET SHOWN, NORTH PARAPET SIMILAR)



SECTION A-A

BILL OF BARS

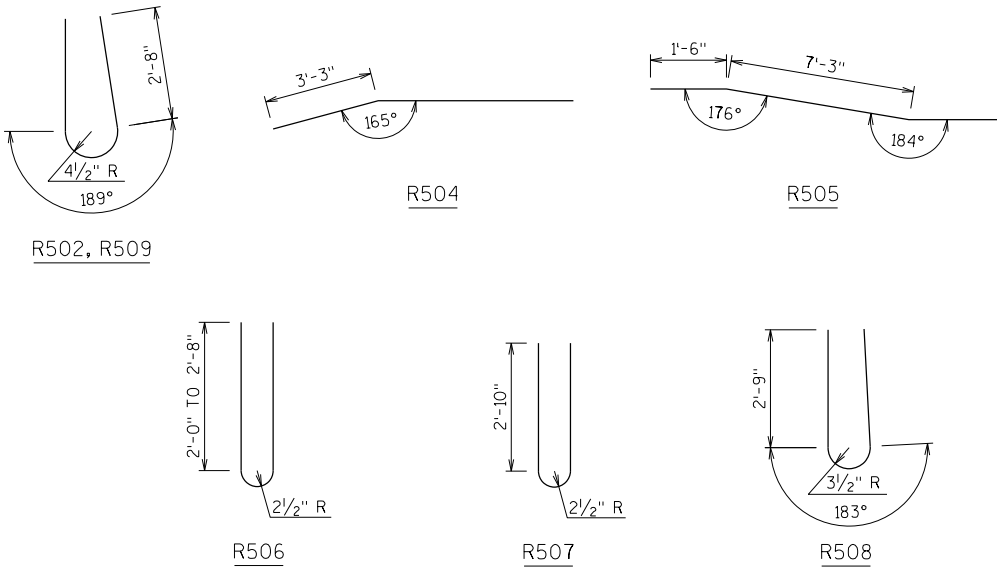
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	16	40'-10"	-	-	PARAPET ON BRIDGE - LONG.
R502	X	126	6'-8"	X	-	PARAPET ON BRIDGE - VERT.
R503	X	20	19'-8"	-	-	PARAPET ON APPROACH SLAB - LONG.
R504	X	8	19'-7"	X	-	PARAPET ON APPROACH SLAB - LONG.
R505	X	4	19'-7"	X	-	PARAPET ON APPROACH SLAB - LONG.
R506	X	24	5'-5"	X	▲	PARAPET ON APPROACH SLAB - VERT.
R507	X	20	6'-5"	X	-	PARAPET ON APPROACH SLAB - VERT.
R508	X	24	6'-6"	X	-	PARAPET ON APPROACH SLAB - VERT.
R509	X	72	6'-8"	X	-	PARAPET ON APPROACH SLAB - VERT.

NOTE: THE FIRST DIGIT OR FIRST TWO DIGITS OF A BAR MARK INDICATES THE BAR SIZE.
ALL DIMENSIONS IN THE BAR BENDS ARE OUT TO OUT.

▲ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR LENGTH CALCULATIONS. SEE BAR SERIES FOR ACTUAL LENGTHS. BUNDLE AND TAG EACH SERIES SEPARATELY.

BAR SERIES TABLE

BAR MARK	NO. REQ'D	LENGTH
R506	4 SERIES OF 6	4'-9" TO 6'-1"



BENDING DIAGRAMS

NOTES

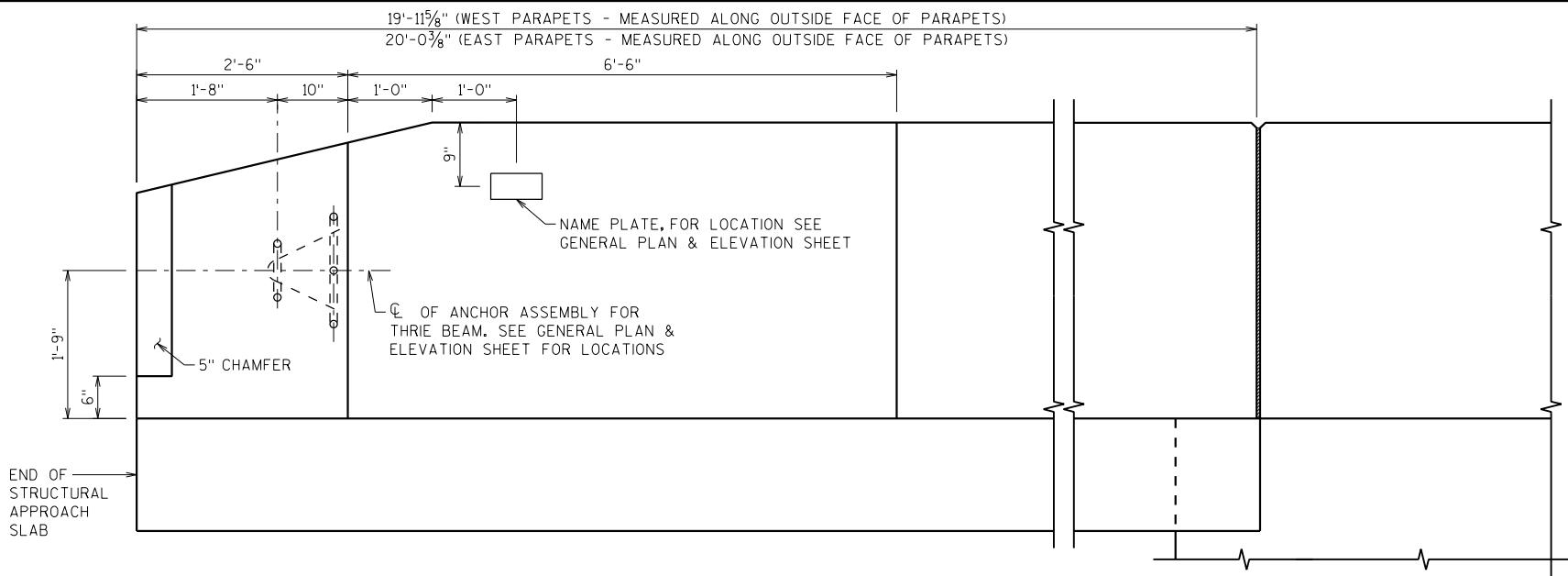
FOR PARAPET ON STRUCTURAL APPROACH SLAB DETAILS, SEE SHEET 15.

LEGEND

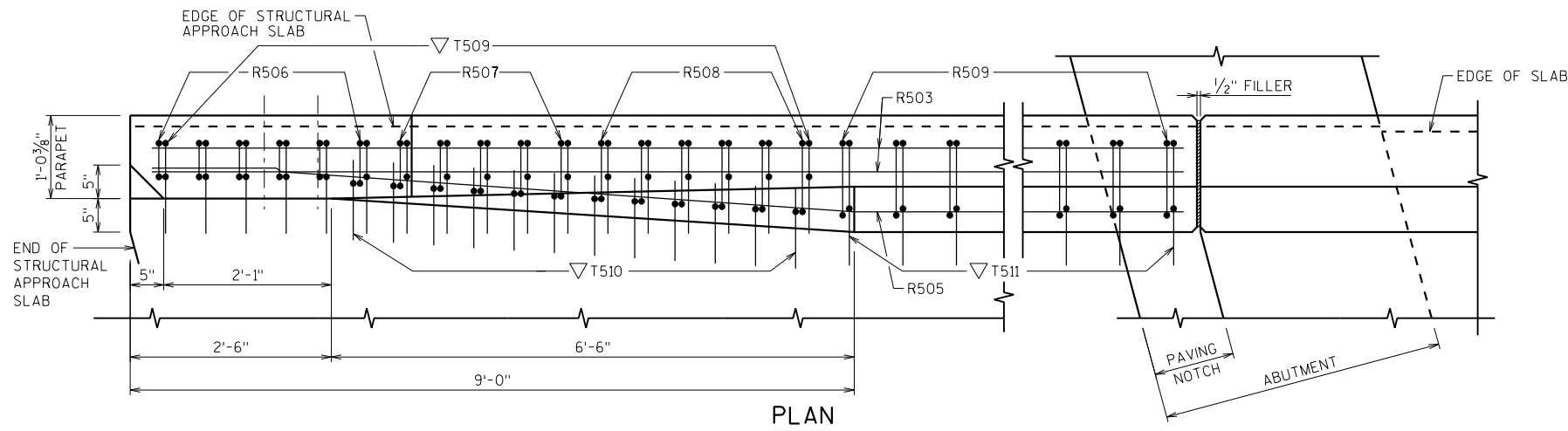
R01 SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

● CONSTR. JT. STRIKE OFF AS SHOWN

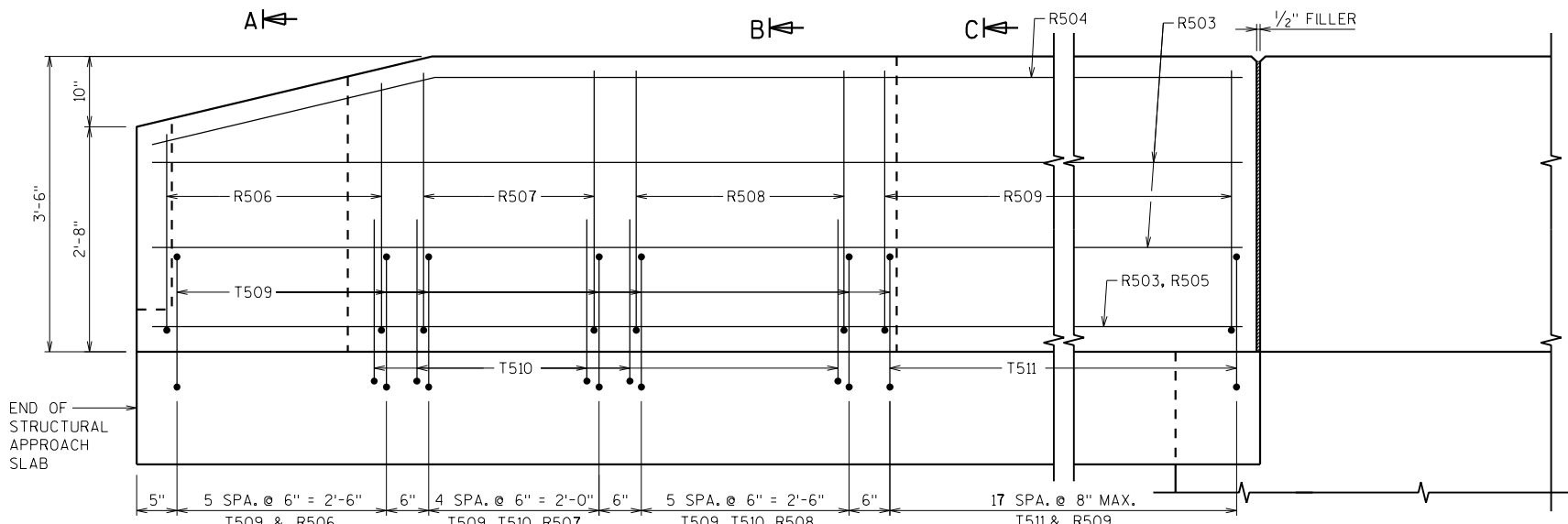
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY AJA		PLANS CK'D. MHZ	
42SS PARAPET ON BRIDGE		SHEET 14 OF 18	



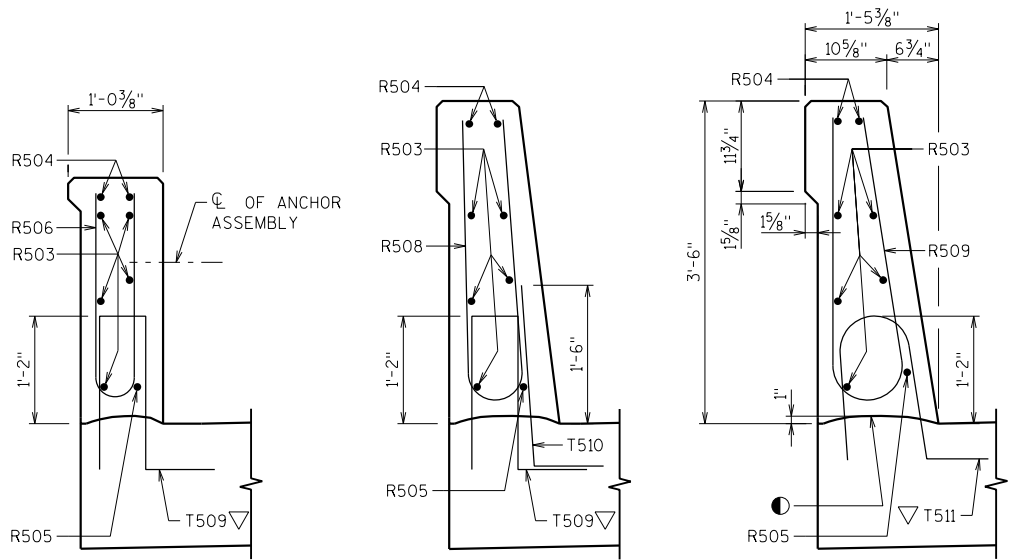
INSIDE ELEVATION
STRUCTURAL APPROACH SLAB FOOTING NOT SHOWN FOR CLARITY



PLAN



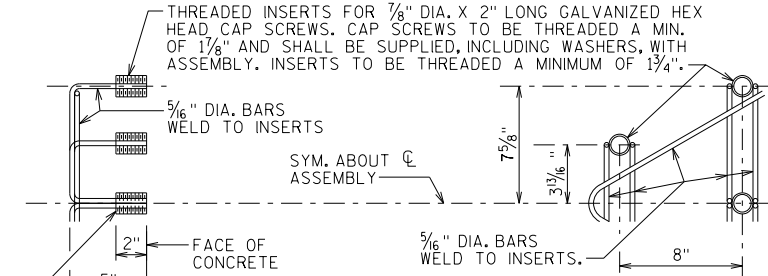
OUTSIDE ELEVATION
STRUCTURAL APPROACH SLAB FOOTING NOT SHOWN FOR CLARITY



SECTION A-A

SECTION B-B

SECTION C-C



DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.
ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

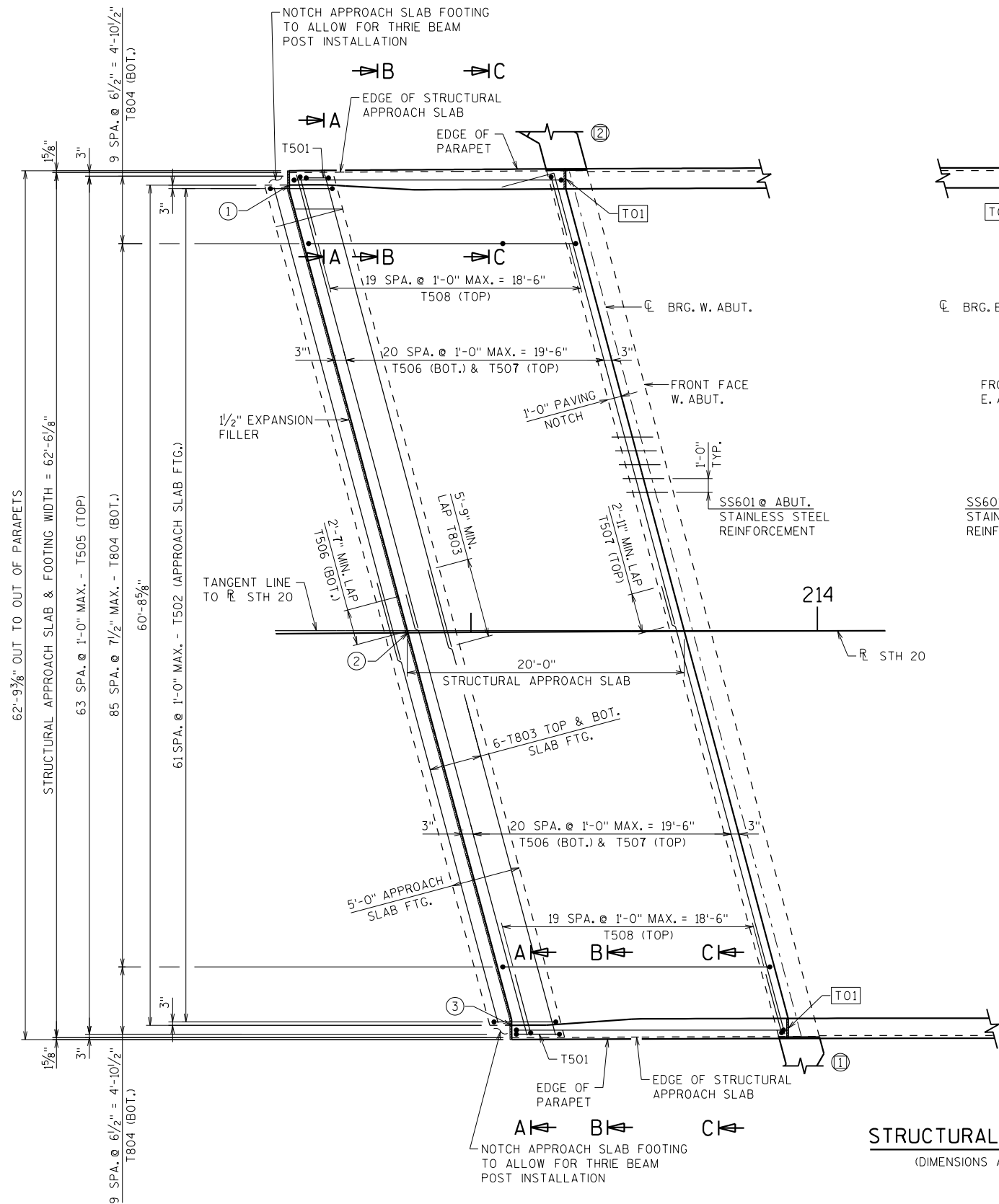
LEGEND

- CONST. JOINT - STRIKE OFF AS SHOWN.
- ▽ T509 AND T511 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.

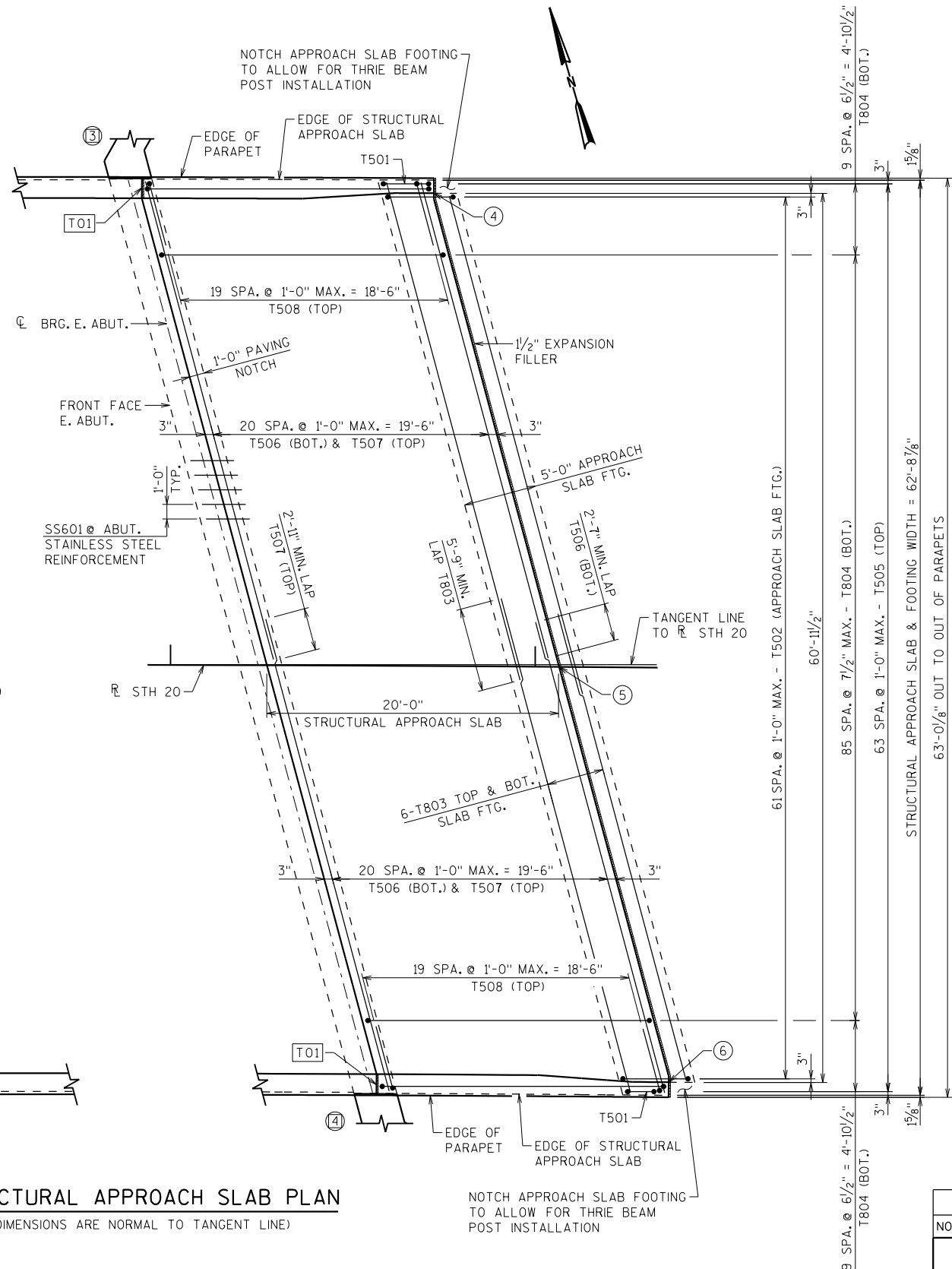
NOTES

FOR PARAPET DETAILS ON BRIDGE AND PARAPET BILL OF BARS SEE SHEET 14.
FOR STRUCTURAL APPROACH SLAB REINFORCEMENT DETAILS, SEE SHEETS 16 & 17.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY AJA		PLANS CK'D. MHZ	
42SS PARAPET ON STRUCTURAL APPROACH SLAB		SHEET 15 OF 18	



STRUCTURAL APPROACH SLAB PLAN
(DIMENSIONS ARE NORMAL TO TANGENT LINE)



STATE PROJECT NUMBER

3833-03-73

LEGEND

- ① STA. 213+62.14, 32.42' LT., EL. 735.00
- ② STA. 213+70.42, EL. 734.17
- ③ STA. 213+77.75, 28.42' RT., EL. 733.43
- ④ STA. 214+42.86, 32.42' LT., EL. 735.40
- ⑤ STA. 214+51.63, EL. 734.57
- ⑥ STA. 214+59.39, 28.42' RT., EL. 733.85

ⓧ WINGWALL NUMBER

T01 SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

NOTES

FOR PARAPET REINFORCEMENT & DOWEL SPACING IN APPROACH SLAB SEE SHEET 15.

FOR SECTIONS A-A, B-B, C-C, SEE SHEET 17.

FOR REINFORCEMENT BILL OF BARS, SEE SHEET 17.

FOR STAINLESS STEEL REINFORCEMENT, SEE SHEETS 11, 12 & 13.

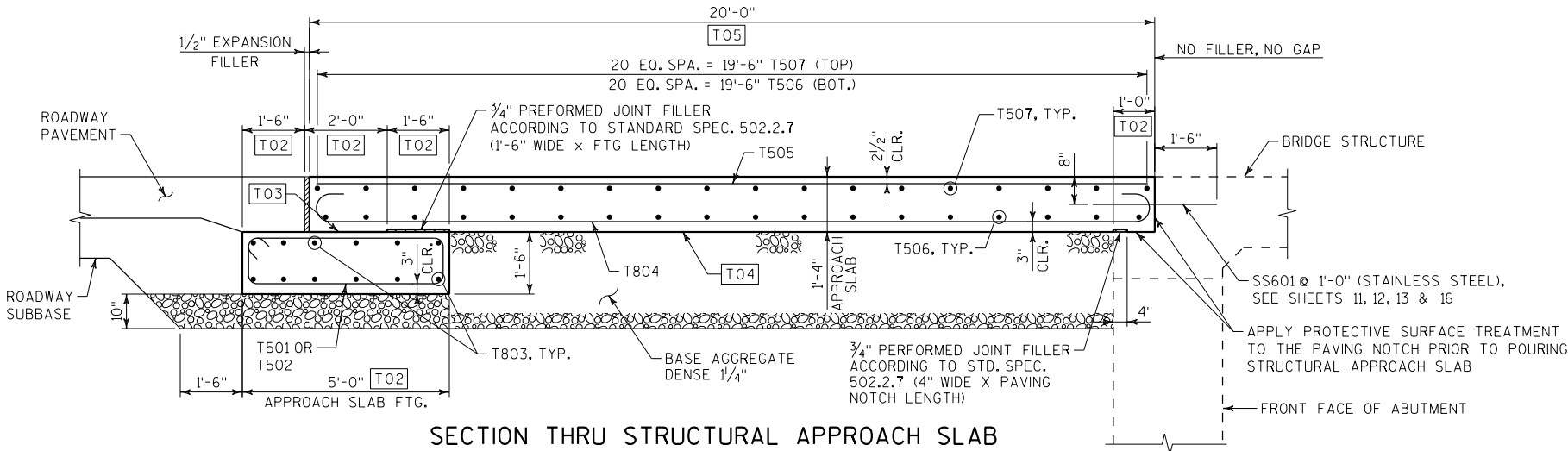
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		AJA	PLANS CK'D. MHZ
STRUCTURAL APPROACH SLAB			SHEET 16 OF 18

BILL OF BARS

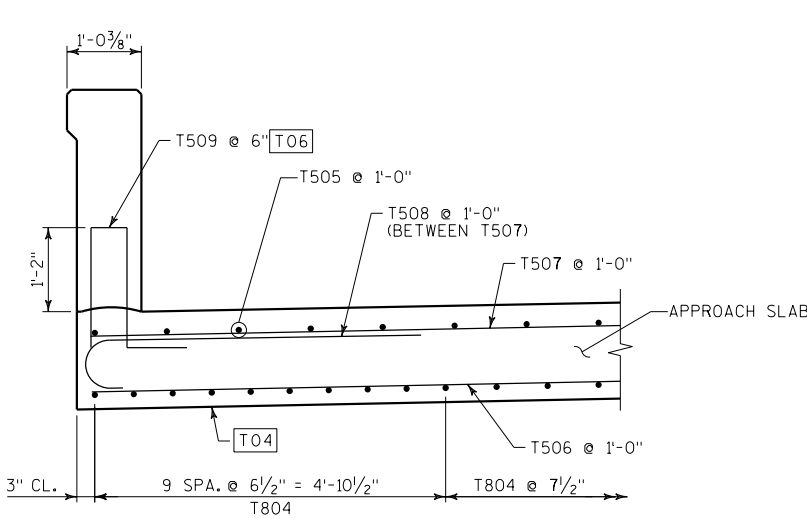
BAR MARK	COAT	NO.	LENGTH	BENT	SERIES	LOCATION
T501	X	4	9'-2"	X	-	APPROACH SLAB FTG. AT NOTCH ENDS - STIRRUP
T502	X	124	12'-6"	X	-	APPROACH SLAB FTG. - STIRRUP
T803	X	48	35'-4"	-	-	APPROACH SLAB FTG. - TRANS.
T804	X	208	21'-6"	X	-	APPROACH SLAB - LONG. - BOT.
T505	X	128	19'-8"	-	-	APPROACH SLAB - LONG. - TOP
T506	X	84	33'-9"	-	-	APPROACH SLAB - TRANS. - BOT.
T507	X	84	33'-11"	-	-	APPROACH SLAB - TRANS. - TOP
T508	X	80	4'-1"	X	-	APPROACH SLAB - TRANS. - TOP - ENDS
T509	X	68	4'-4"	X	-	APPROACH SLAB PARAPET DOWEL - VERT.
T510	X	44	2'-9"	X	-	APPROACH SLAB PARAPET DOWEL - VERT.
T511	X	72	4'-5"	X	-	APPROACH SLAB PARAPET DOWEL - VERT.

NOTE:
BAR DIMENSIONS ARE OUT TO OUT OF BAR. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE

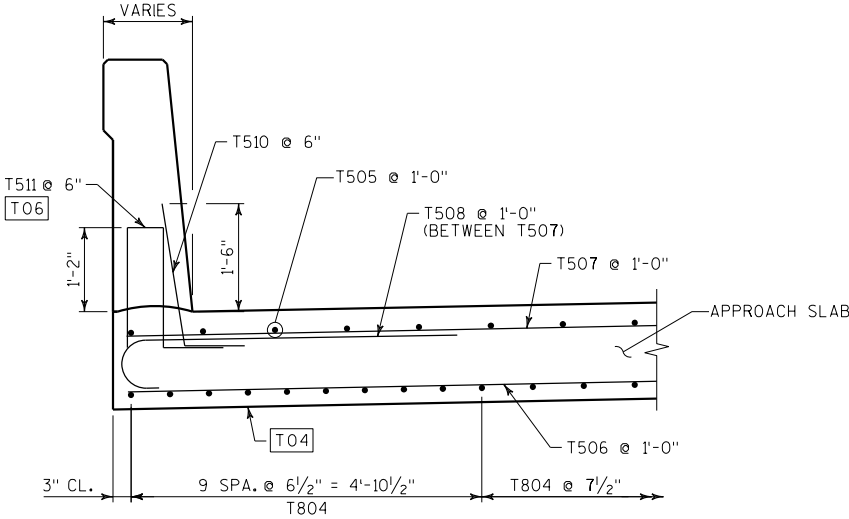
SECTION THRU STRUCTURAL APPROACH SLAB



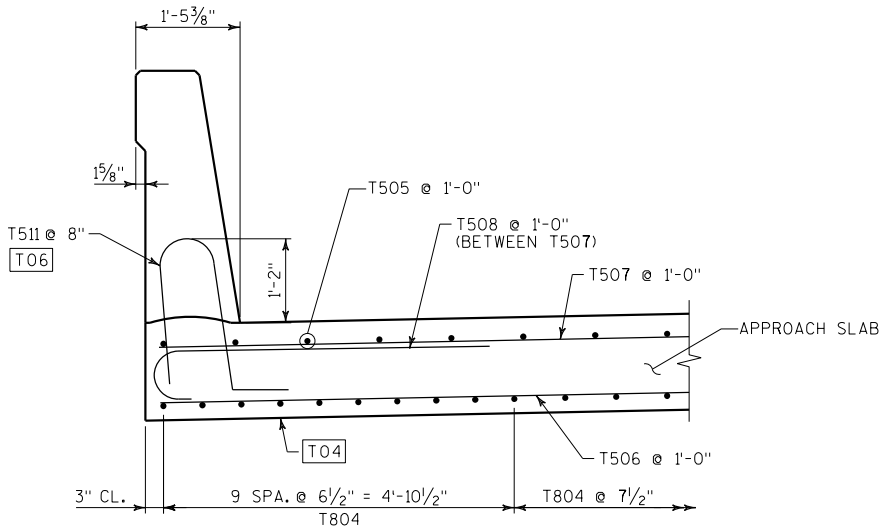
SECTION A-A



SECTION B-B

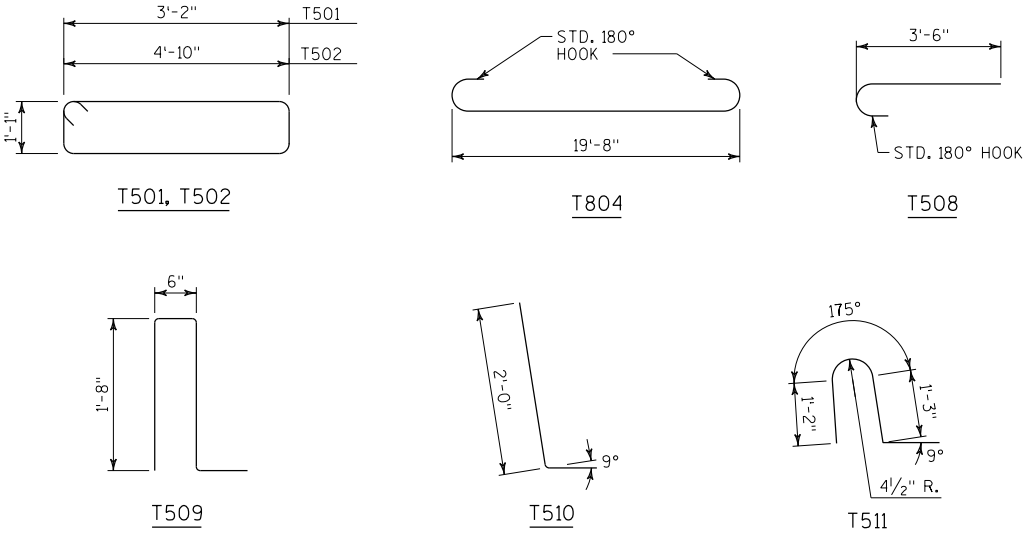


SECTION C-C



NOTES

- SEE PARAPET SHEETS FOR PARAPET REINFORCING AND TIE PLACEMENT REQUIRED IN APPROACH SLABS.
- IN ADDITION TO THE AREAS OUTLINED IN THE STANDARD SPECIFICATIONS, APPLY PROTECTIVE SURFACE TREATMENT TO THE TOP OF APPROACH SLAB.
- APPLY PIGMENTED SURFACE SEALER TO THE TOP & INSIDE FACES OF THE PARAPETS.

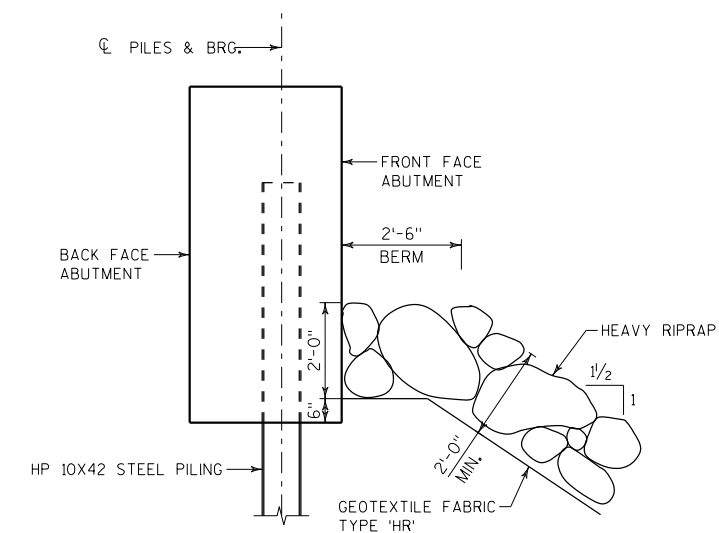


BENDING DIAGRAMS

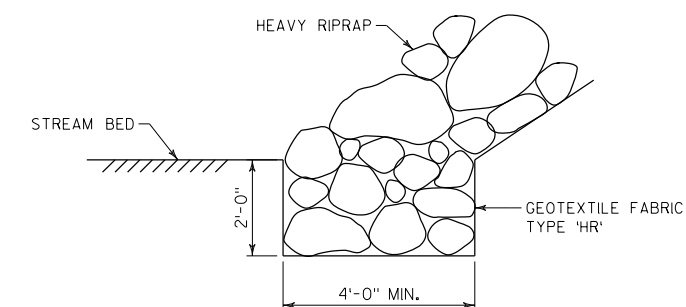
LEGEND

- T02 MEASURED NORMAL TO ABUTMENT
- T03 STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF FOOTING.
- T04 PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF SUBGRADE BENEATH SLAB.
- T05 MEASURED ALONG TANGENT LINE TO R STH 20
- T06 T509 & T511 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY AJA		PLANS CK'D. MHZ	
STRUCTURAL APPROACH SLAB DETAILS		SHEET 17 OF 18	



SECTION A-A



TOE DETAIL

LEGEND

(X) WINGWALL NUMBER

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-51-159			
DRAWN BY		AJA	PLANS CK'D. MHZ
HEAVY RIPRAP DETAILS			SHEET 18 OF 18

STH 20 AT B-51-158

STATION	Distance (FT)	Area (SF)		Incremental Vol (CY)		Cumulative Vol (CY)		Mass Ordinate
		Cut	Fill	Cut	Fill	Cut 1.00	Expanded Fill 1.25	
122+00	29.00	160	0	0	0	0	0	0
122+29		158	0	171	0	171	0	171
123+43	7.00	143	0	0	0	171	0	171
123+50		142	0	37	0	208	0	208
124+00	50.00	116	0	240	0	448	0	448
				448	0			

STH 20 AT B-51-159

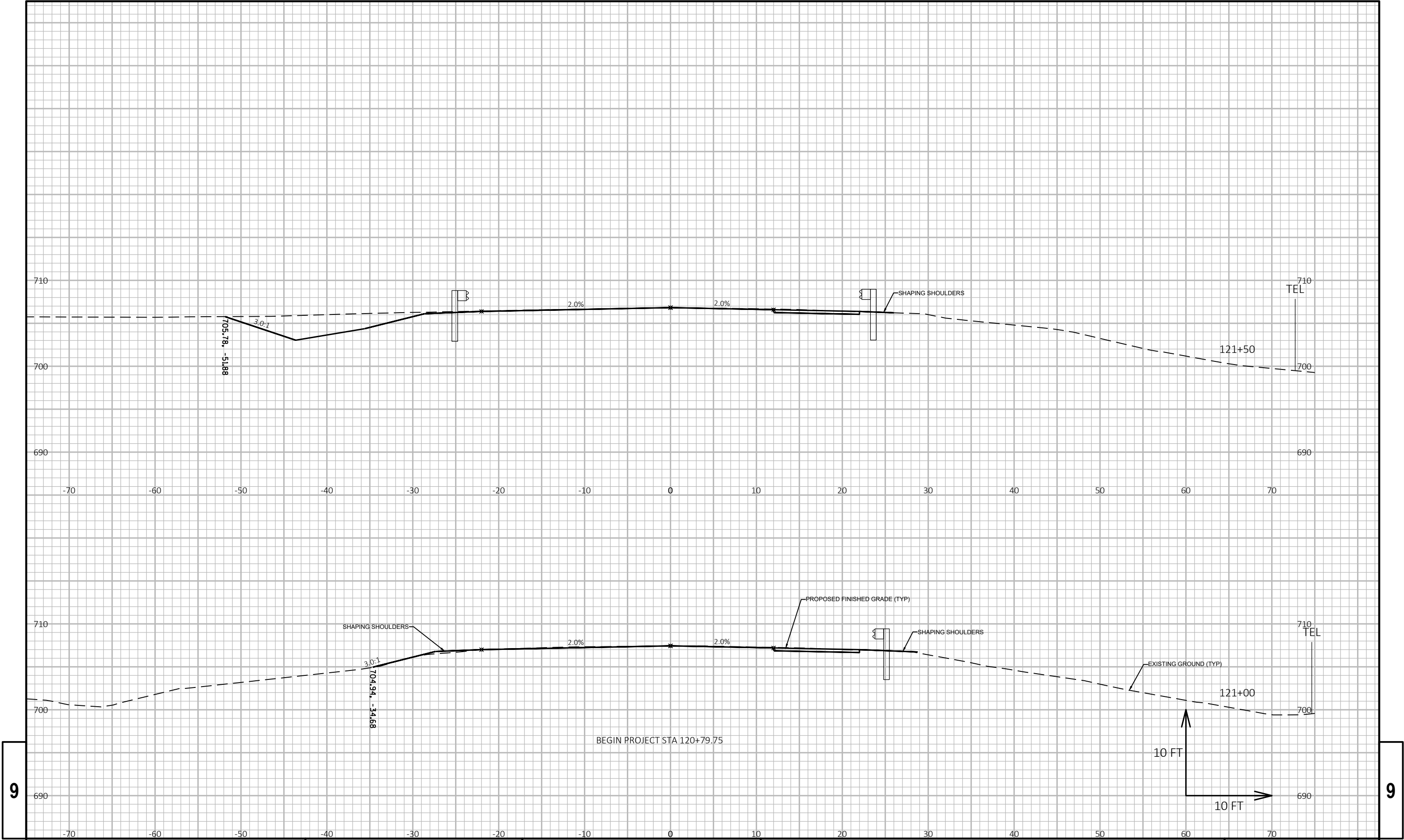
STATION	Distance (FT)	Area (SF)		Incremental Vol (CY)		Cumulative Vol (CY)		Mass Ordinate
		Cut	Fill	Cut	Fill	Cut 1.00	Expanded Fill 1.25	
210+64	36.00	17	4	0	0	0	0	0
211+00		30	9	31	9	31	12	20
211+50		72	24	94	31	126	51	75
212+00		64	42	126	62	252	128	124
212+50		63	46	117	81	369	229	140
213+00		101	0	152	42	521	282	239
213+48		133	0	208	0	729	282	447
214+71	0.00	82	0	0	0	0	0	0
215+00	29.00	73	1	83	1	83	1	83
215+50	50.00	65	39	128	37	211	47	163
216+00	50.00	76	30	130	64	341	127	213
216+50	50.00	92	4	155	31	496	166	329
216+72	22.00	101	0	79	2	575	168	406
				1303	361			

STH 20 AT B-51-59

STATION	Distance (FT)	Area (SF)		Incremental Vol (CY)		Cumulative Vol (CY)		Mass Ordinate
		Cut	Fill	Cut	Fill	Cut 1.00	Expanded Fill 1.25	
135+81	19.00	108	2	0	0	0	0	0
136+00		99	0	73	1	73	1	72
136+50		88	0	173	0	246	1	245
137+00		89	0	164	0	410	2	408
137+11		85	0	35	0	445	2	444
			0					
138+08	42.00	90	1	0	0	445	2	444
138+50		99	0	146	1	592	3	589
139+00		0	0	91	0	683	3	680
139+40		95	1	70	1	753	4	748
139+40		229.00	106	2	851	14	1604	22
				1604	18			

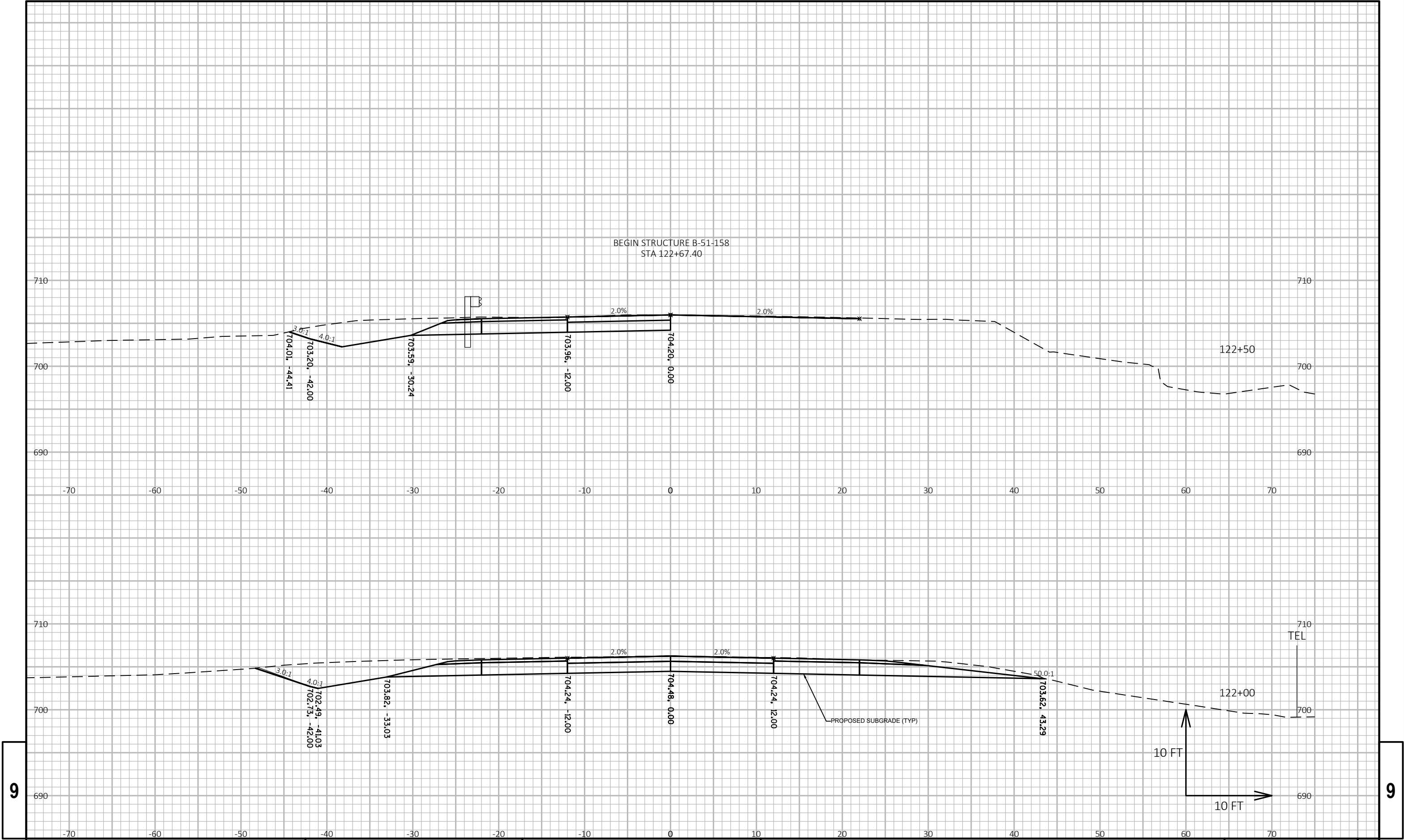
OLD YORKVILLE ROAD

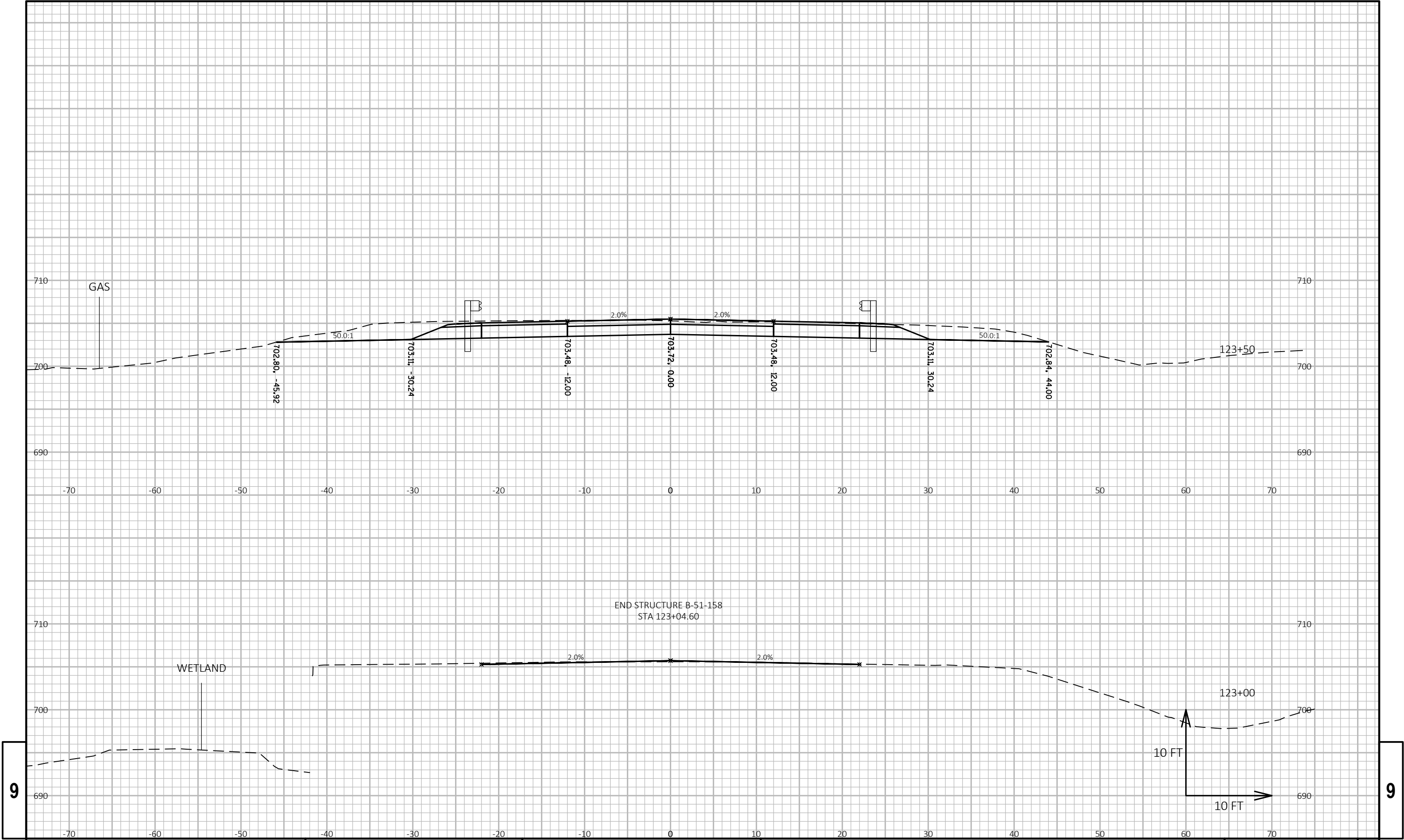
STATION	Distance (FT)	Area (SF)		Incremental Vol (CY)		Cumulative Vol (CY)		Mass Ordinate
		Cut	Fill	Cut	Fill	Cut 1.00	Expanded Fill 1.25	
0+00	50.00 50.00 50.00 50.00 7.00	122	26	0	0	0	0	0
0+50		218	29	315	51	315	64	250
1+00		98	15	292	41	607	116	491
1+50		52	2	138	15	745	135	611
1+57		49	0	13	0	758	135	623
				758	108			

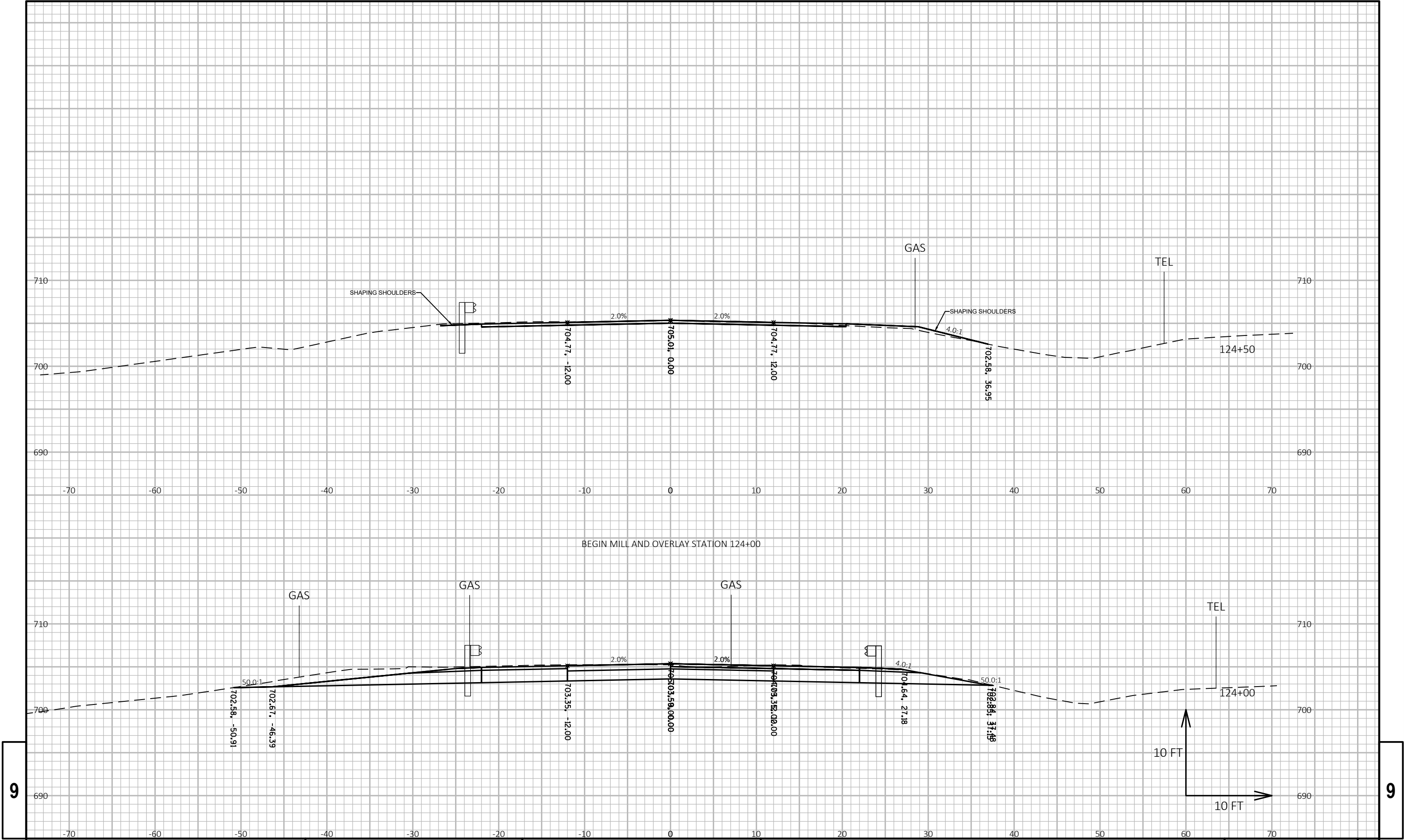


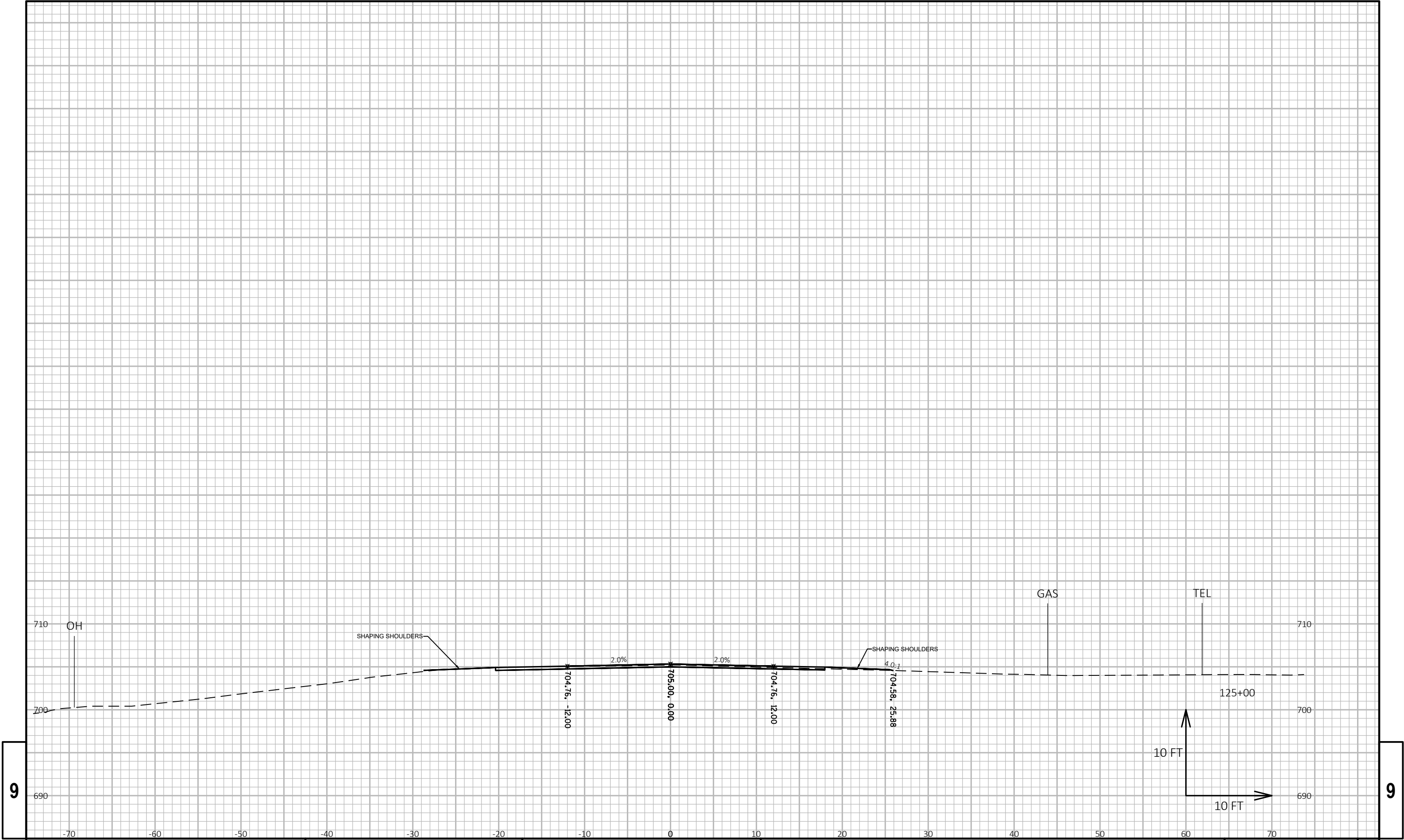
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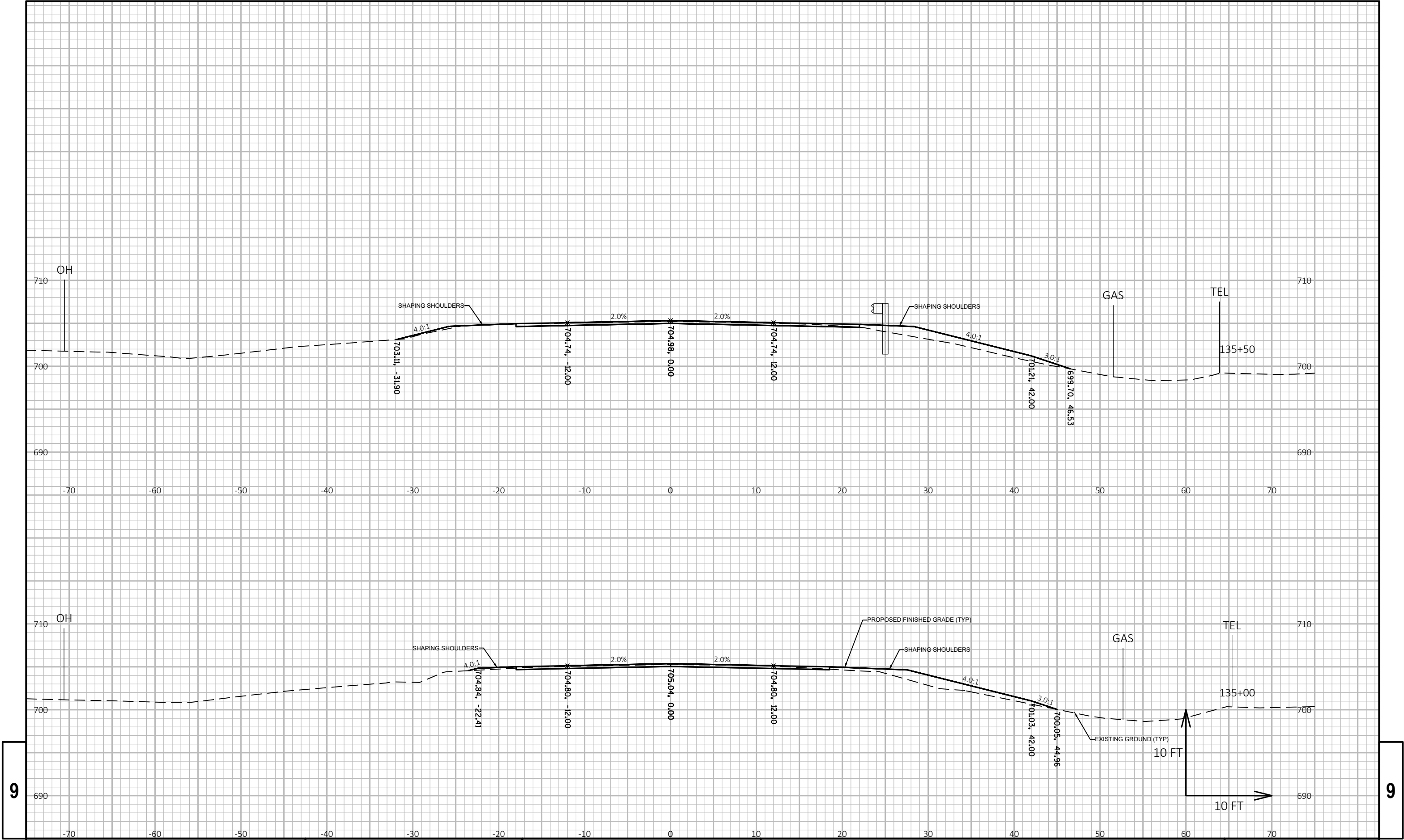








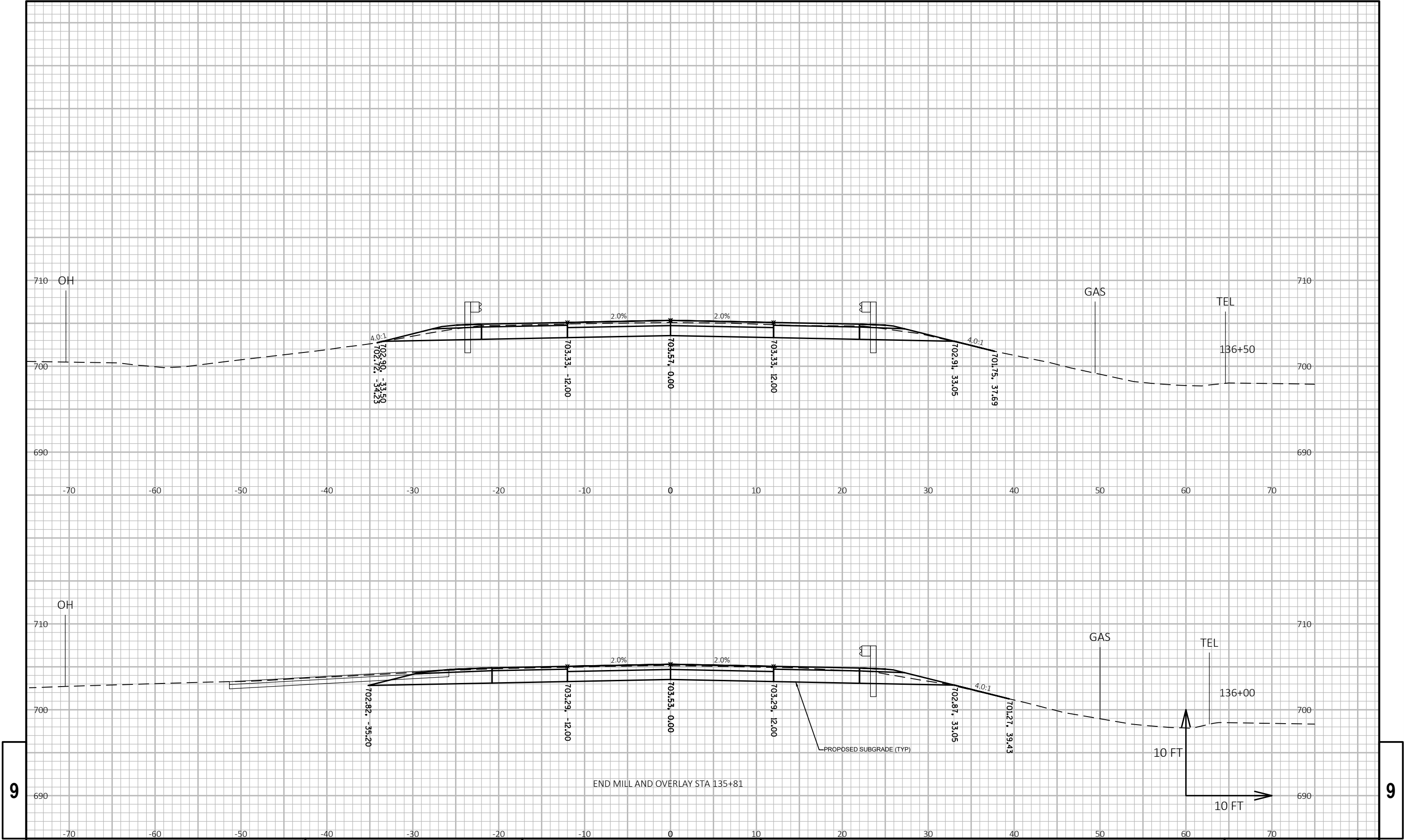
PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	CROSS SECTIONS: STH 20 @ B-51-158	SHEET	E
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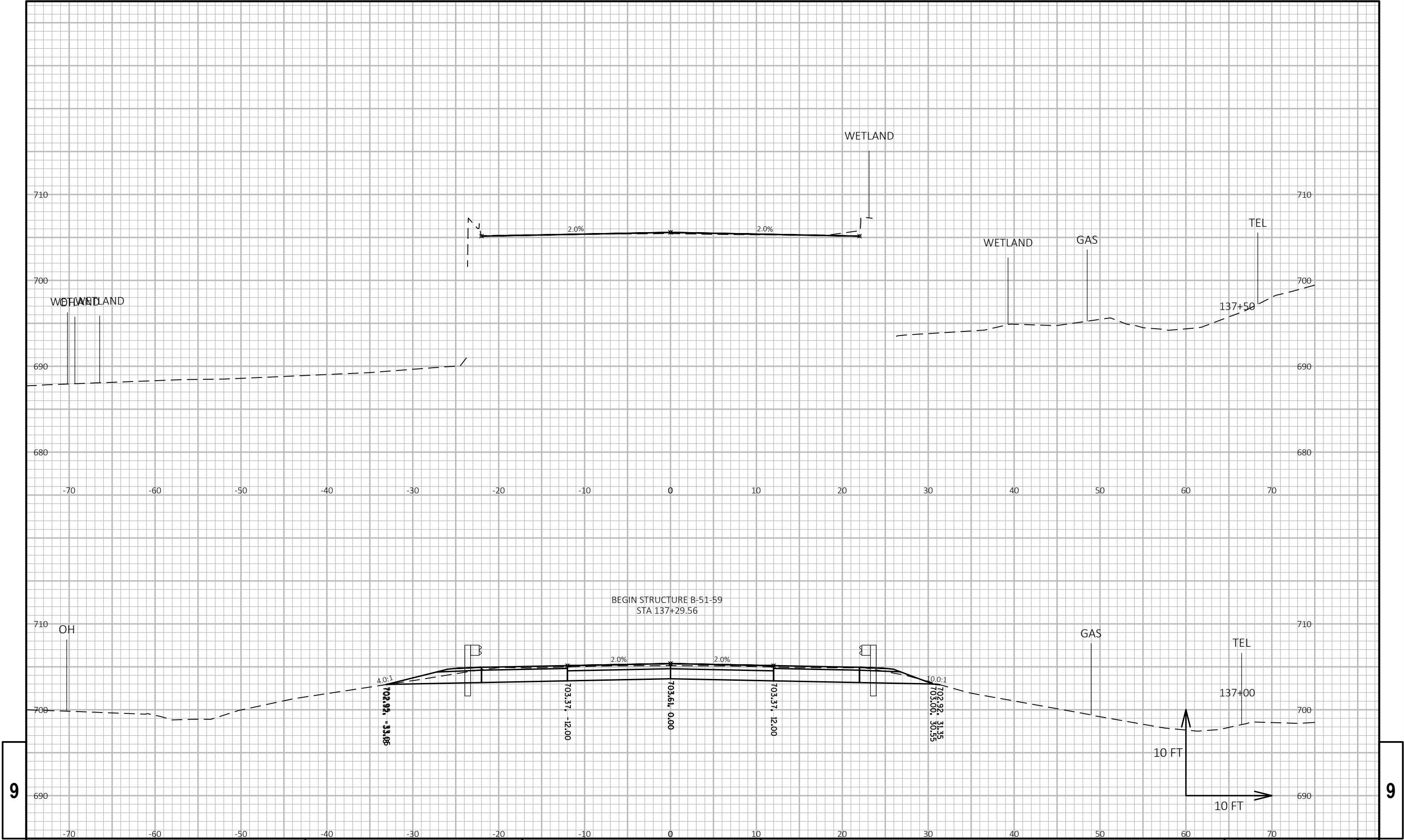
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PROJECT NO: 3833-03-73	HWY: STH 20	COUNTY: RACINE	CROSS SECTIONS: STH 20 @ B-51-59	SHEET	E
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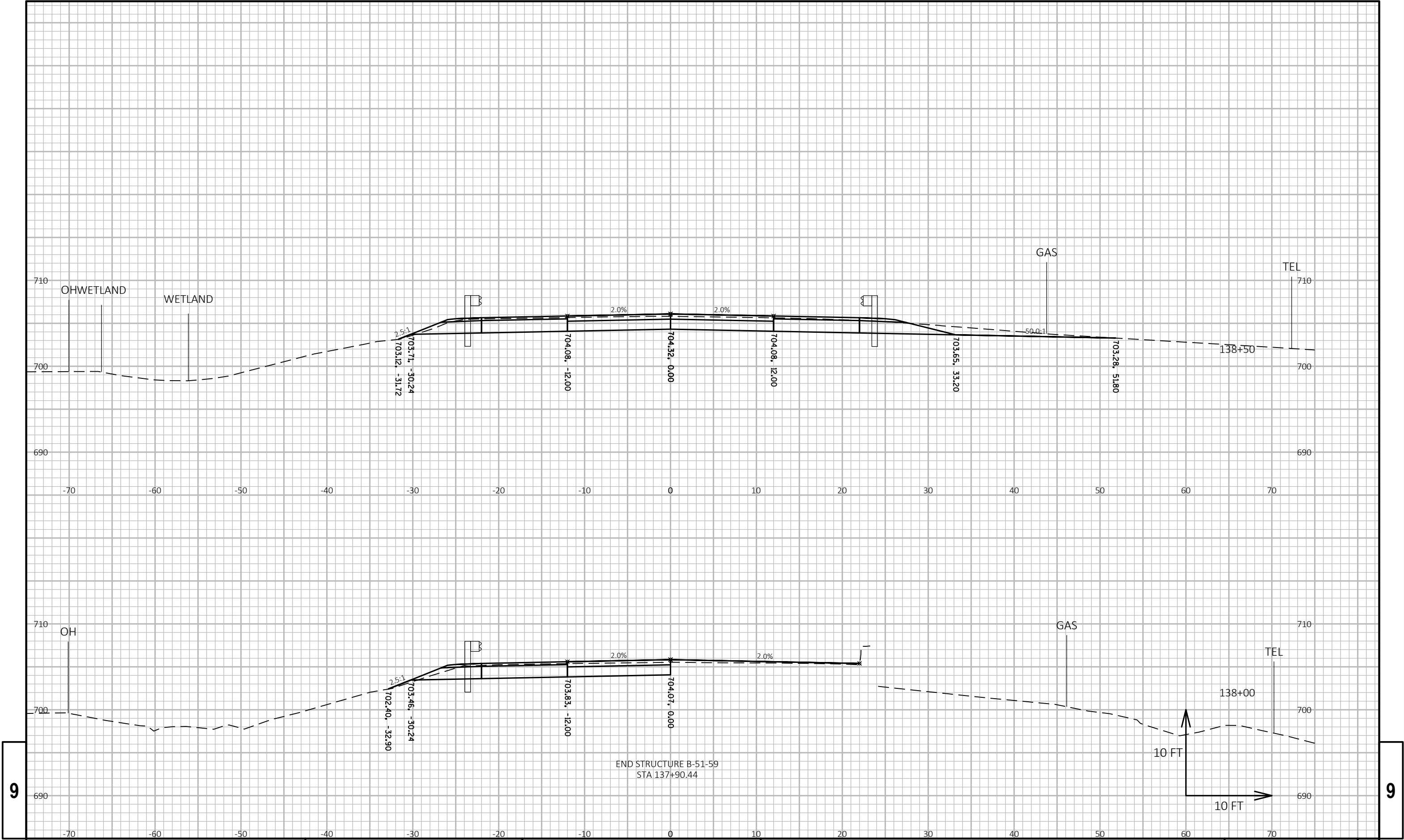
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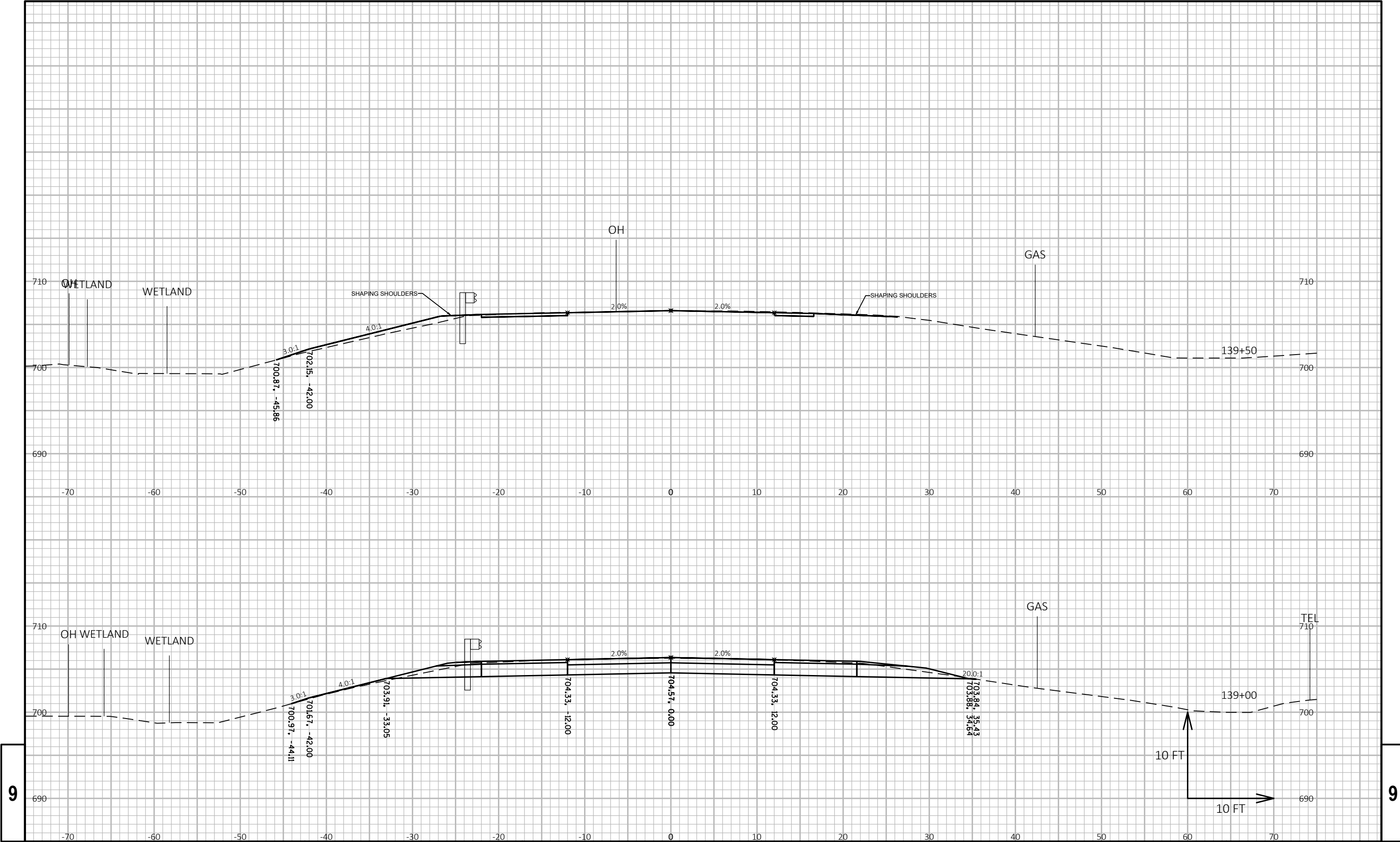
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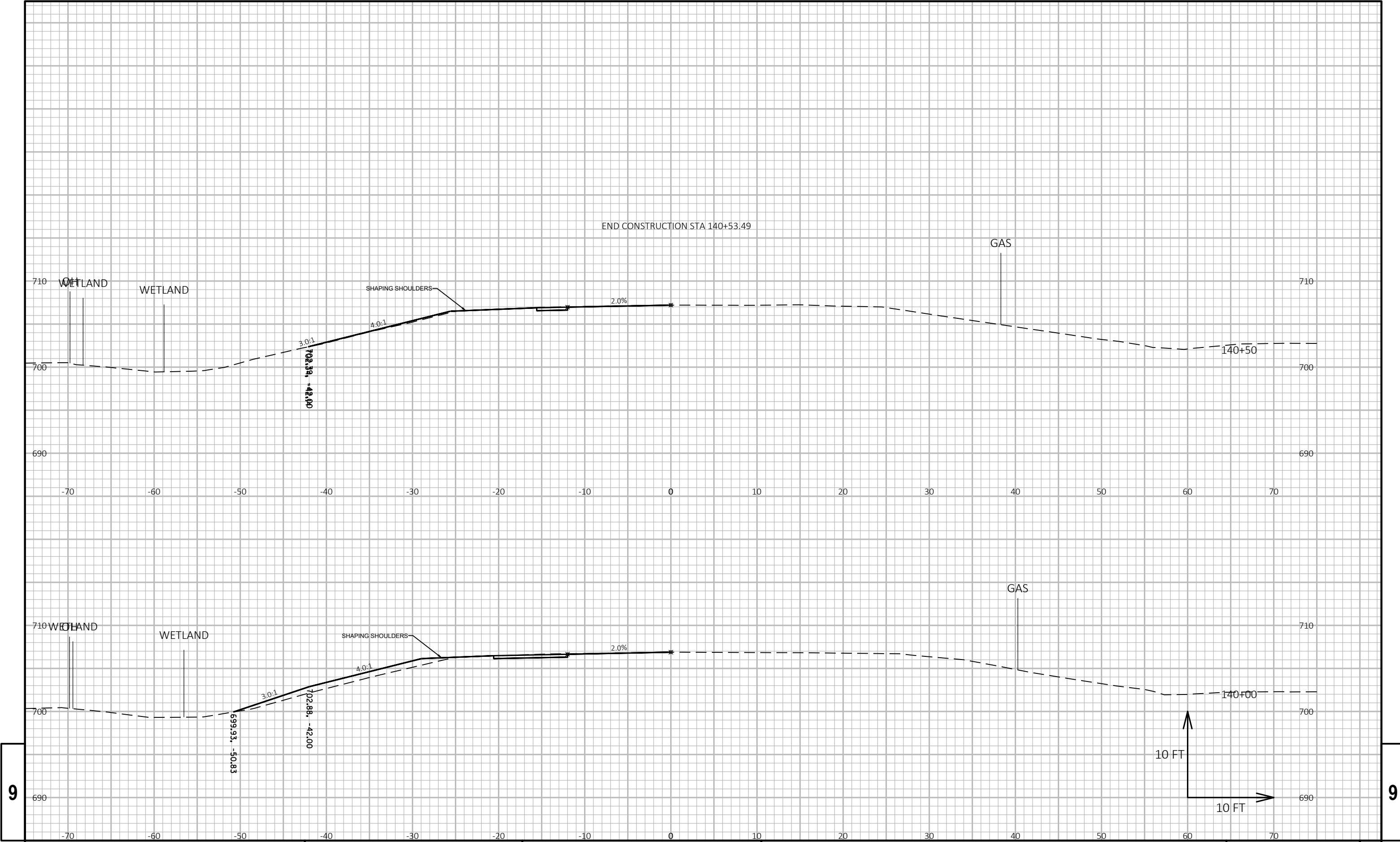




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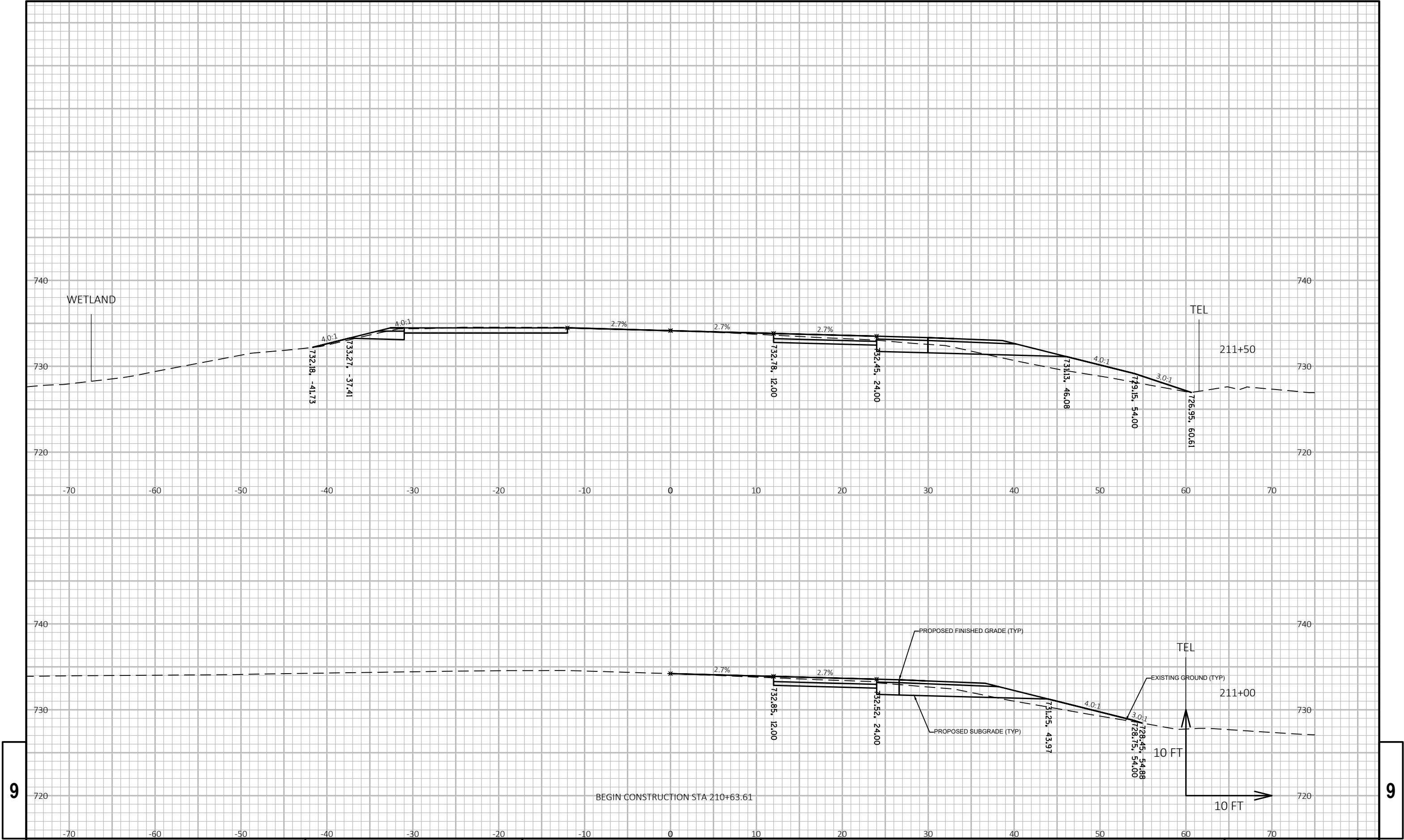
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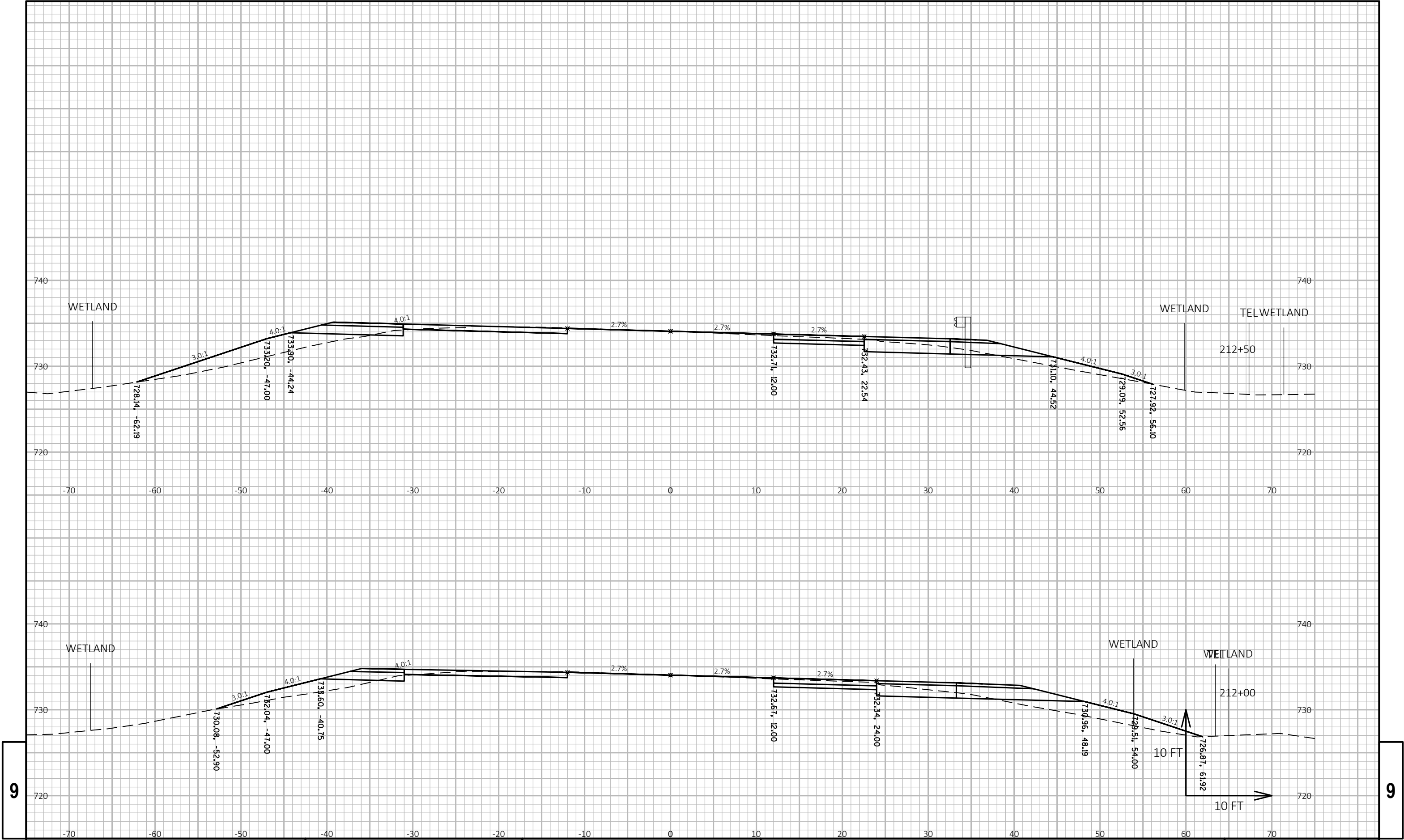


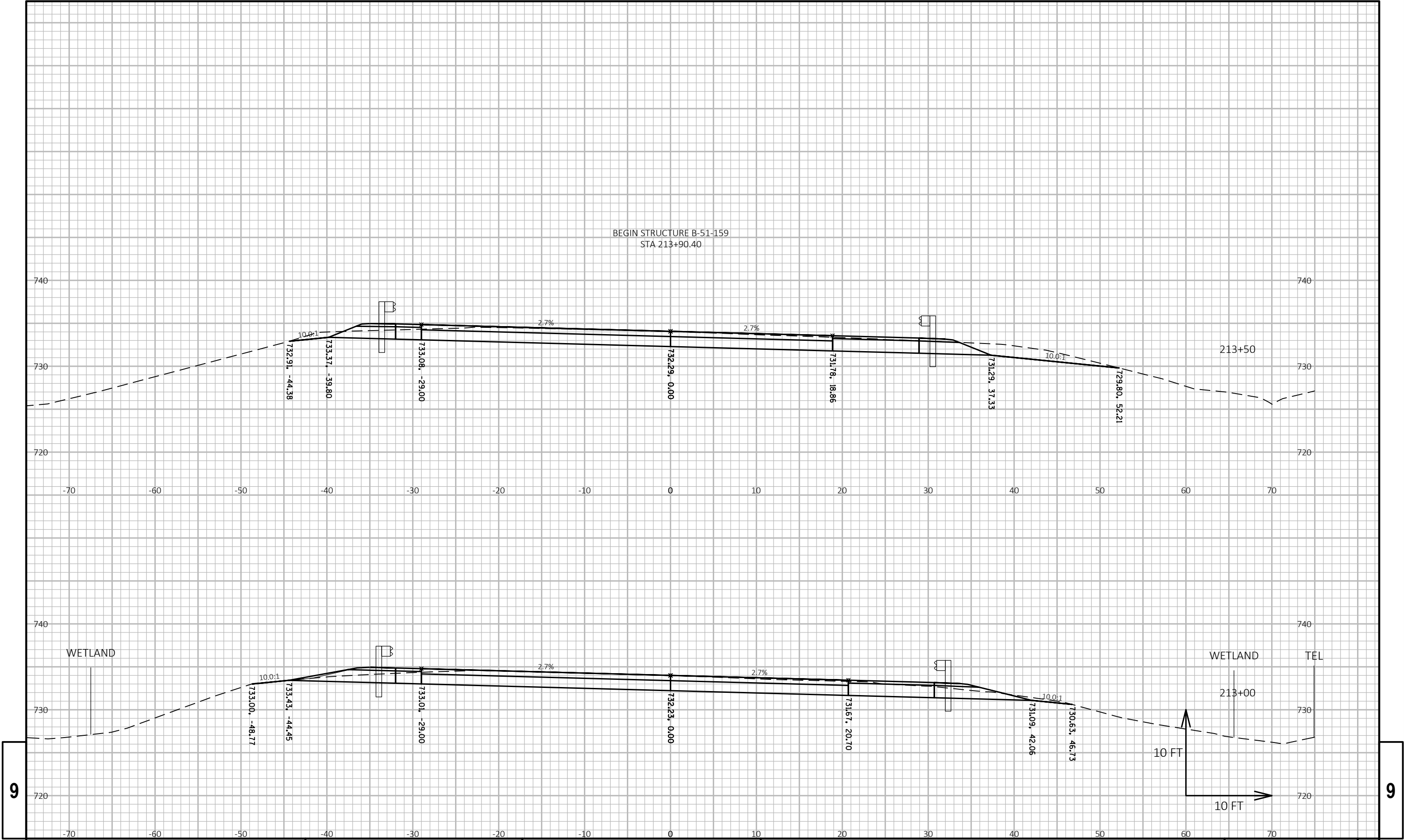
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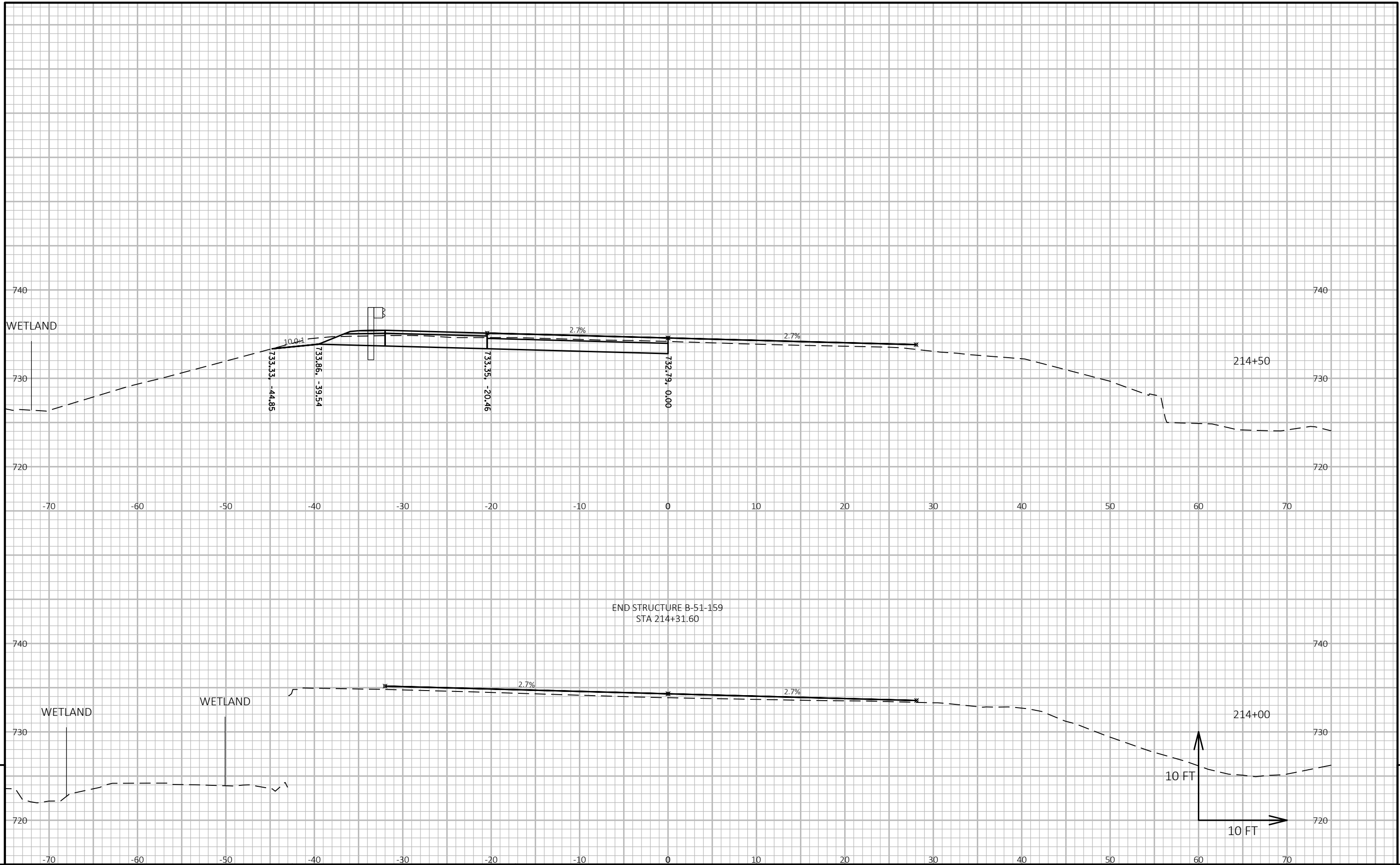
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PROJECT NO:	3833-03-73	HWY: STH 20	COUNTY: RACINE	CROSS SECTIONS:	STH 20 @ B-51-59	SHEET	E
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PROJECT NO: 3833-03-73

HWY: STH 20

COUNTY: RACINE

CROSS SECTIONS: STH 20 @ B-51-159

SHEET

E

FILE NAME : S:\DOT\DOT_SE\170289_STH 20 RACINE\38330303\SHEETPLAN\090203_XS.DWG
LAYOUT NAME - 09020- (4)

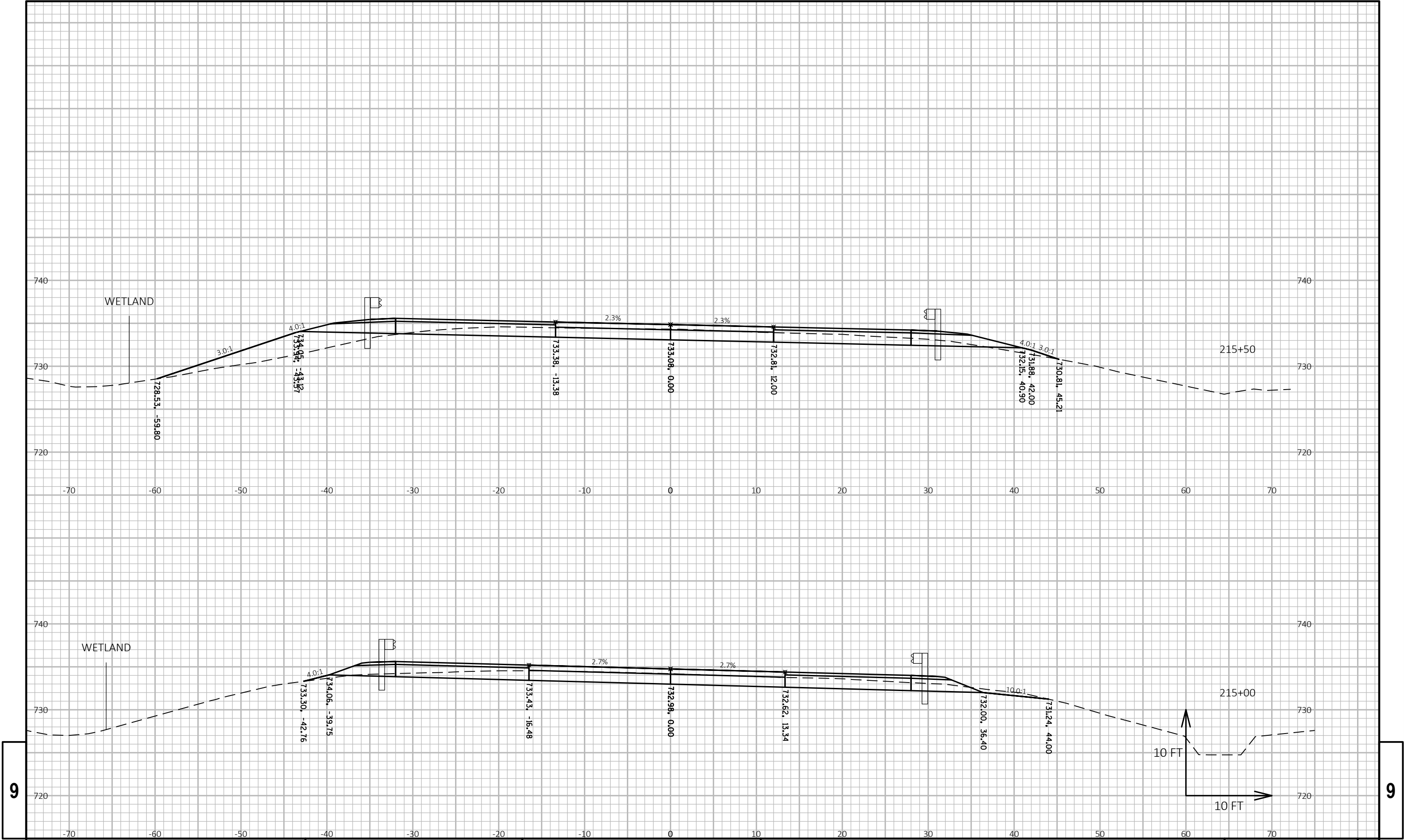
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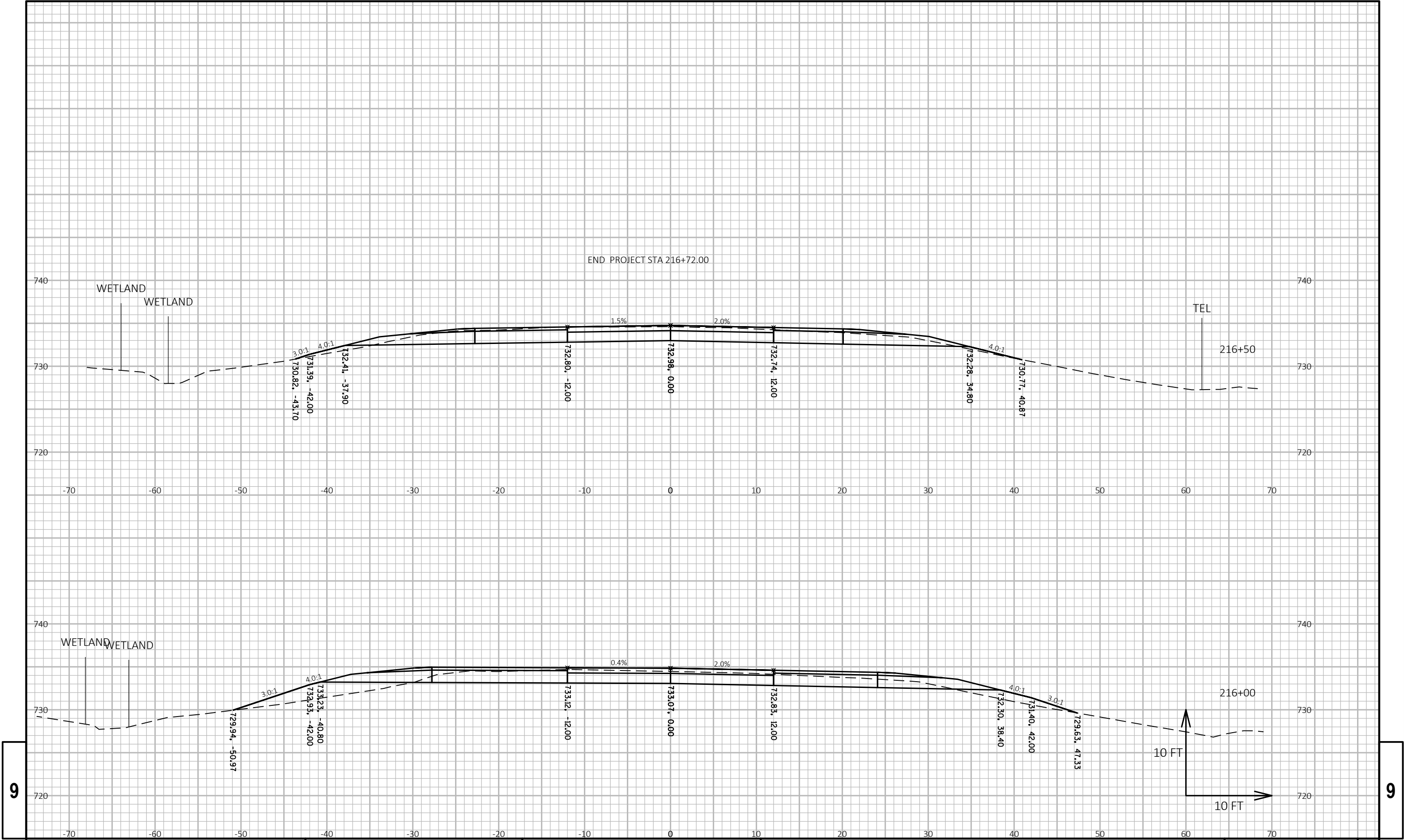
PLOT BY : WALTER A. WOLAK II

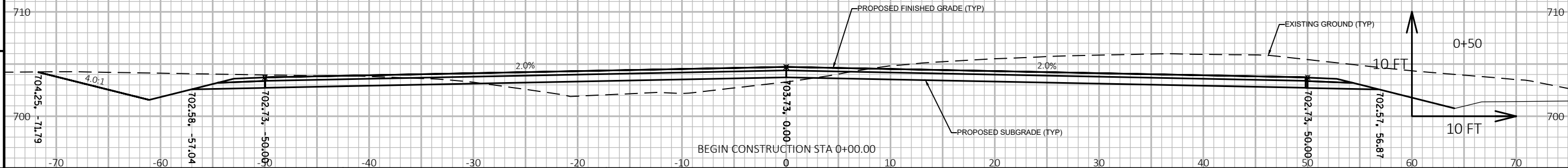
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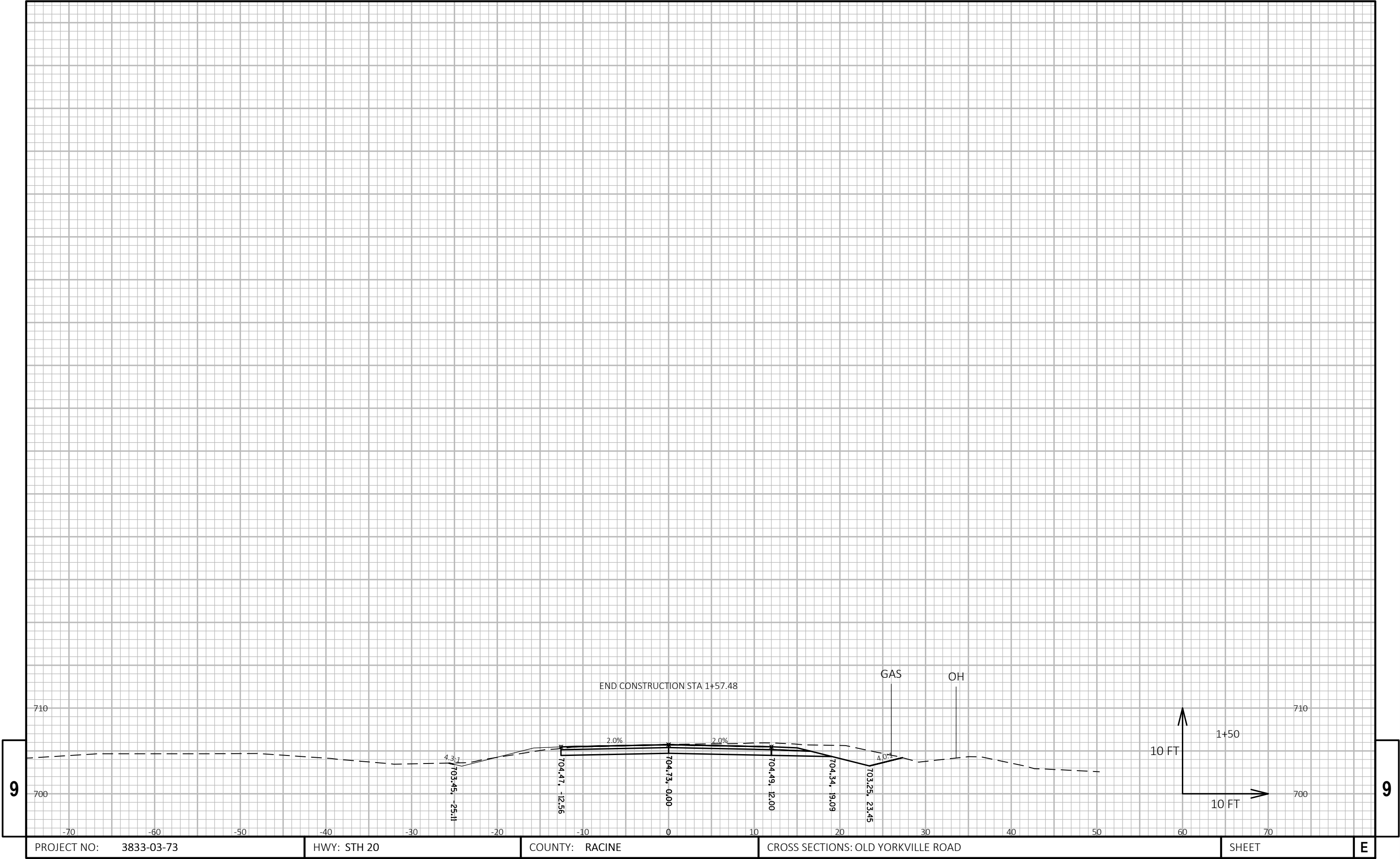
PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

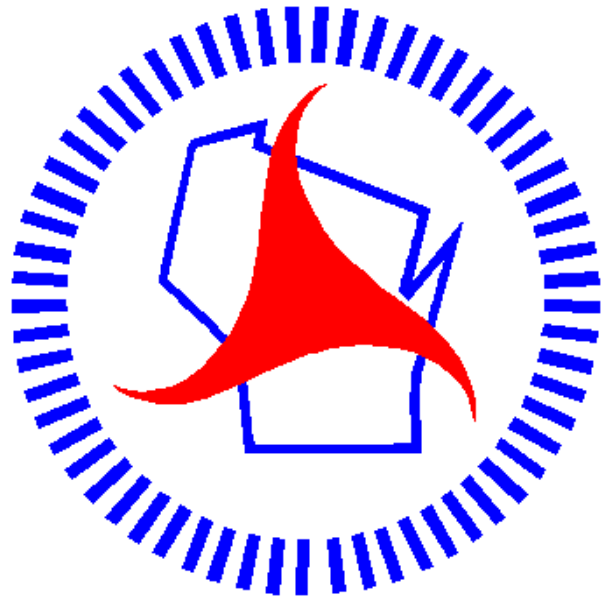
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