

WKE  
PROJECT ID:  
WITH: N/A

2721-00-76

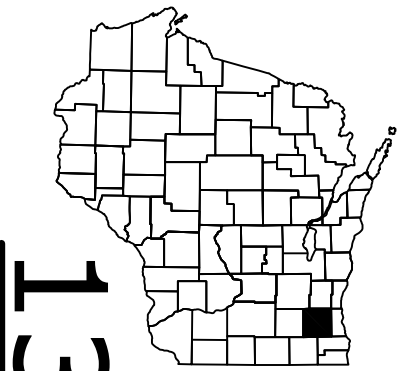
COUNTY:  
WAUKESHA

MARCH 2024

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
<del>Section No.</del>	<del>4</del>	<del>Right of Way Plat</del>
Section No.	5	Plan and Profile
Section No.	6	Standard Detail Drawings
<del>Section No.</del>	<del>7</del>	<del>Sign Plates</del>
Section No.	8	Structure Plans
Section No.	9	Computer Earthwork Data
Section No.	9	Cross Sections

TOTAL SHEETS = 78



13

DESIGN DESIGNATION

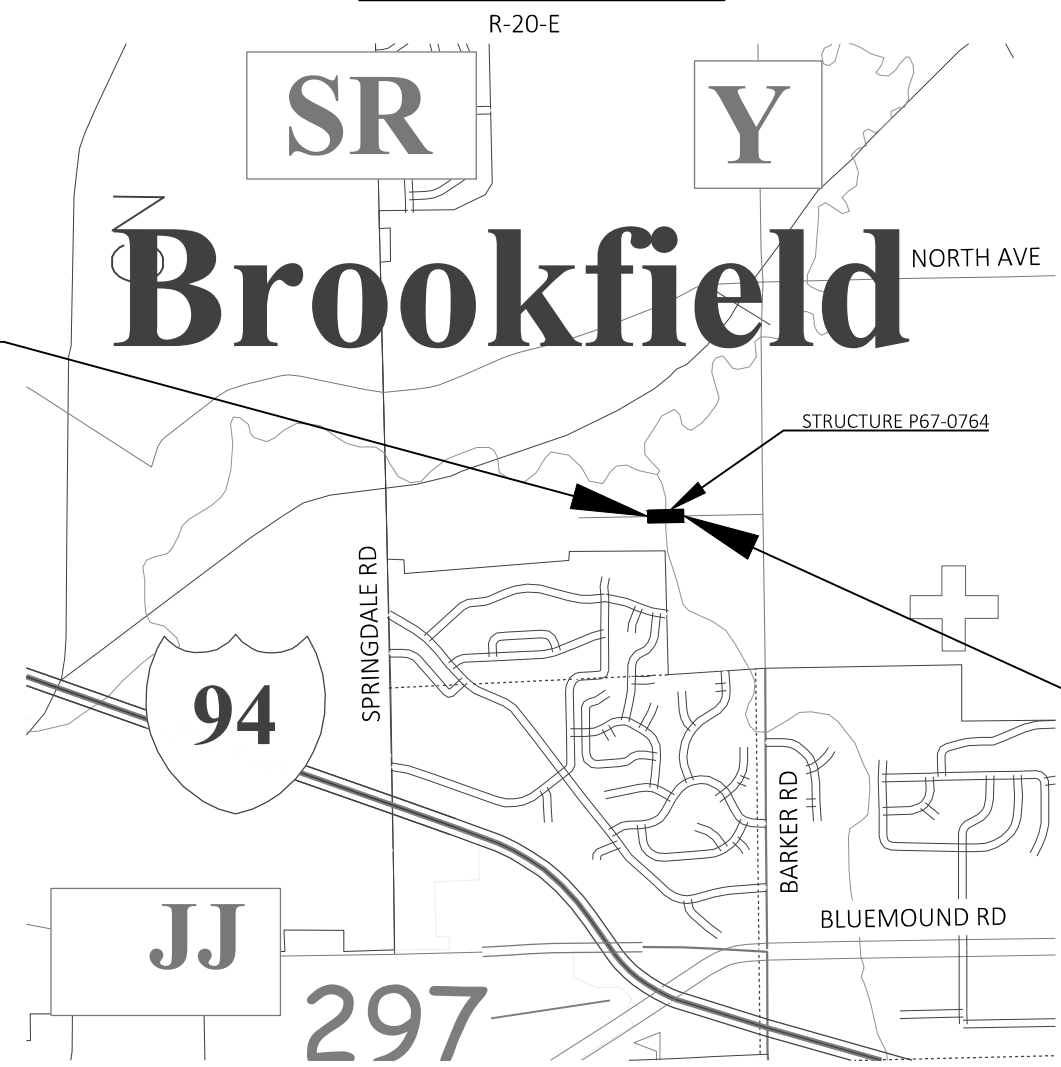
A.A.D.T.	2024	=	520
A.A.D.T.	2044	=	580
D.H.V.		=	N/A
D.D.		=	N/A
T.		=	19.7%
DESIGN SPEED		=	30
ESALS		=	N/A

CONVENTIONAL SYMBOLS

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
PLAN OF PROPOSED IMPROVEMENT  
**C BROOKFIELD - ENTERPRISE AVE**  
BRIDGE OVER POPLAR CREEK P67-0764  
LOCAL STREET  
WAUKESHA COUNTY

STATE PROJECT NUMBER  
**2721-00-76**



BEGIN PROJECT 2721-00-76  
STA. 104+02.32  
Y = 176,114.31  
X = 699,221.36

END PROJECT 2721-00-76  
STA. 105+97.99  
Y = 176,123.44  
X = 699,416.82

LAYOUT  
SCALE 0 0.5 MI

TOTAL NET LENGTH OF CENTERLINE = 0.037 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), WAUKESHA COUNTY, NAD83 ( 2011 ), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES.

ELEVATIONS ARE REFERENCED TO NAVD 88 ( 2012 ). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 18.

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
2721-00-76	WISC 2024297	1

ACCEPTED FOR  
CITY \_\_\_\_\_ of \_\_\_\_\_ BROOKFIELD  
  
10/17/23 *Theresa J. Caven*  
SW Project Engineer  
(Date) (Signature & Title of Official)

ORIGINAL PLANS PREPARED BY  
**GRAEF** 275 W. Wisconsin Avenue, Suite 300  
Milwaukee, WI 53203



STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY	GRAEF
Surveyor	GRAEF
Designer	GRAEF
Project Manager	JOSEPH JELACIC, P.E.
Regional Examiner	SE REGION LOCAL PROGRAM
Regional Supervisor	BRIAN BOOTHBY

APPROVED FOR THE DEPARTMENT  
DATE: 10/19/23 *Joseph Jelacic*  
(Signature)

E

**GENERAL NOTES**

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

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

CONTRACTOR WILL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY OPERATIONS, OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS.

RIGHT OF WAY INFORMATION SHOWN ON THE PLANS IS APPROXIMATE.

PROPERTY LINES SHOWN ARE APPROXIMATE.

HMA PAVEMENT WHERE INDICATED ON THE PLANS SHALL CONSIST OF LAYERS AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER:

- 6" DEPTH      2 1/4" OF HMA PAVEMENT 4 MT 58-28 S AS THE UPPER LAYER
- 3 3/4" OF HMA PAVEMENT 3 MT 58-28 S AS THE LOWER LAYER

STATIONING, DISTANCES, AND OFFSETS FOR SIGNS AND TRAFFIC CONTROL DEVICES SHOWN IN THE PLANS ARE APPROXIMATE. TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIELD CONDITIONS AS DIRECTED BY THE ENGINEER. NO WORK MAY BEGIN UNTIL PROPER TRAFFIC CONTROL DEVICES ARE PLACED AND APPROVED BY THE ENGINEER.

SAWCUT LOCATIONS SHOWN ON THE PLAN ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER IN THE FIELD. THE LINE OF SUCH SAWCUTS SHALL BE NEATLY DELINEATED THROUGH THE ASPHALT WITHOUT ANY DAMAGE TO THE REMAINING PORTION OF THE EXISTING PAVEMENT.

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

EXCAVATION BELOW SUBGRADE (EBS) SHALL BE MEASURED AND PAID FOR AS EXCAVATION COMMON. THE EXACT LOCATION OF EBS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.

EROSION CONTROL ITEMS SHOWN ON THE PLAN ARE AT SUGGESTED LOCATIONS. EXACT LOCATIONS AND DIMENSIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.

RE-TOPSOIL 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 CALENDAR DAYS AFTER PLACEMENT OF TOPSOIL. IF GRADED AREAS ARE LEFT EXPOSED FOR MORE THAN SEVEN CALENDAR DAYS, SEED THOSE AREAS WITH TEMPORARY SEED AND MULCH/EROSION MAT WITHIN 24 HOURS.

DO NOT USE FERTILIZER WITHIN 20 FEET OF WATERWAYS OR WETLAND AREAS

STOCKPILE EXCESS MATERIAL OR SPOILS ON UPLAND AREAS AWAY FROM WETLANDS, FLOOD PLAINS AND WATERWAYS. STOCKPILED SOIL SHALL BE IMMEDIATELY PROTECTED AGAINST EROSION WITH SILT FENCE, TEMPORARY SEED, MULCH/EROSION MAT, OR AS DIRECTED BY THE ENGINEER.

DO NOT PUMP WATER FROM THE CONSTRUCTION SITE TO A STORM WATER CONVEYANCE WITHOUT THE WATER FIRST PASSING THROUGH A SEDIMENT TRAP OR FILTER BAG IN ACCORDANCE WITH CONSTRUCTION DETAIL "TEMPORARY SETTLING BASIN WITH SEDIMENT BAG."

MAINTAIN ACCESS TO ALL BUSINESSES AND OTHER PROPERTIES ADJACENT TO THE PROJECT AT ALL TIMES.

**ORDER OF SECTION 2 DETAIL SHEETS**

- GENERAL NOTES
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- PLAN DETAILS
- EROSION CONTROL
- TRAFFIC CONTROL
- ALIGNMENT PLAN

**STANDARD ABBREVIATIONS**

AEW	APRON END WALL
AGG	AGGREGATE
BAD	BASE AGGREGATE DENSE
BM	BENCH MARK
C&G	CURB AND GUTTER
C/L	CENTER OR CONSTRUCTION LINE
CONC	CONCRETE
CP	CULVERT PIPE
CPCM	CULVERT PIPE CORRUGATED METAL
CPRC	CULVERT PIPE REINFORCED CONCRETE
CPRCHE	CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL
CSCP	CORRUGATED STEEL CULVERT PIPE
CSPA	CORRUGATED STEEL PIPE ARCH
CSD	CONCRETE SURFACE DRAIN
CY	CUBIC-YARD
D	DEGREE OF CURVE
DISCH	DELTA
FE	DISCHARGE
HERCP	FIELD ENTRANCE
HMA	HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
INV	HOT MIX ASPHALT
L	INVERT
LHF	LENGTH OF CURVE
LT	LEFT HAND FORWARD
MIN	LEFT
M/L	MINIMUM
NB	MATCHLINE
NC	NORTHBOUND
NTS	NORMAL CROWN
PAVT	NOT TO SCALE
PB	PAVEMENT
PC	PULL BOX
PCC	POINT-OF-CURVE
PE	POINT OF COMPOUND CURVE
PI	PRIVATE ENTRANCE
PLE	POINT OF INTERSECTION
PT	PERMANENT LIMITED EASEMENT
PVC	POINT OF TANGENT
PVI	POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL INTERSECTION
R	POINT OF VERTICAL TANGENT
R/L	RADIUS OF CURVE
R/W	REFERENCE LINE
RAD	RIGHT OF WAY
RC	RADIUS
RCAEW	REVERSE CROWN
RCHES	APRON ENDWALL FOR CULVERT PIPE REINFORCED CONCRETE
RCPSS	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL STORM SEWER
REQD	REINFORCED CONCRETE PIPE - STORM SEWER
RHF	REQUIRED
RO	RIGHT HAND FORWARD
RT	RUN OFF LENGTH
SALV	RIGHT
SB	SALVAGED
SDD	SIGNAL BASE
SE	STANDARD DETAIL DRAWING
SF	SUPER ELEVATION
STA	SQUARE FOOT
SY	STATION
T	SQUARE YARD
TC	TANGENT LENGTH
TLE	TOP OF CURB
	TEMPORARY LIMITED EASEMENT

**UTILITIES CONTACTS**

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MWFN UTILITY COORDINATOR  
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GLENDALE, WI 53209  
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EMAIL: RELOCATIONREQUESTS@MIDWESTFIBERNETWORKS.COM

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COMMUNICATION  
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EMAIL: DAVE.YOPPS@CHARTER.COM

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WEST ALLIS, WI 53214  
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EMAIL: WE-UTILITY-RELOCATIONS@WE-ENERGIES.COM

WE ENERGIES  
GAS/PETROLEUM  
WE ENERGIES UTILITY COORDINATOR  
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**DESIGN PROJECT MANAGER**

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**CITY OF BROOKFIELD CONTACT**

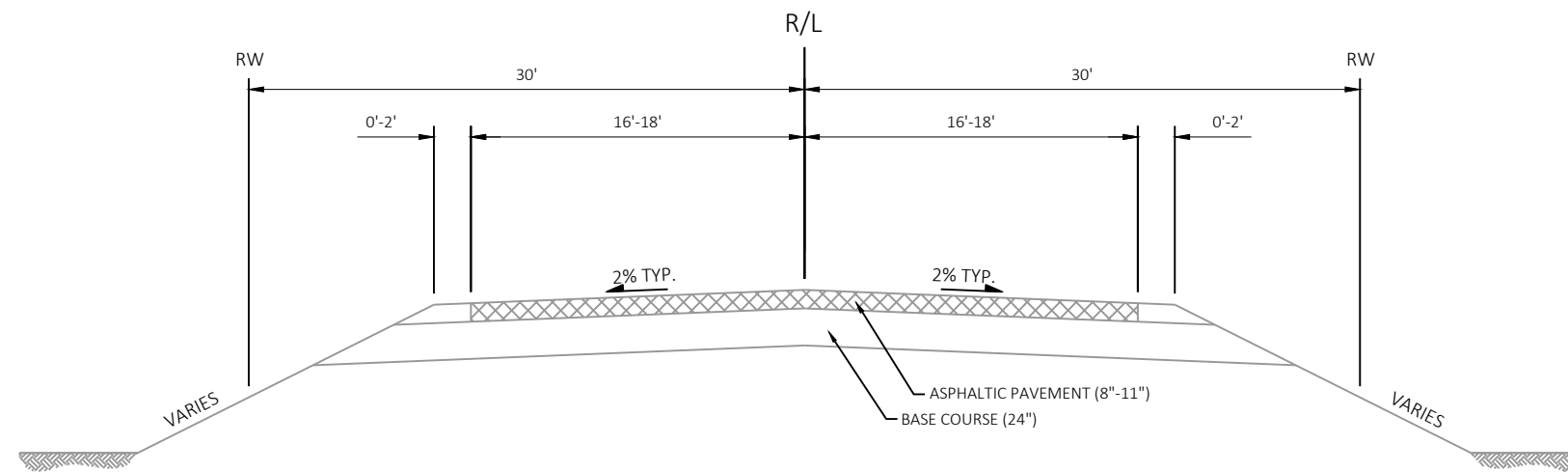
THERESA CAVEN  
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2000 N.CALHOUN ROAD  
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EMAIL: CAVEN@CI.BROOKFIELD.WI.US

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WAUKESHA, WI 53188  
PHONE: 262-574-2141  
EMAIL: CRAIG.WEBSTER@WISCONSIN.GOV

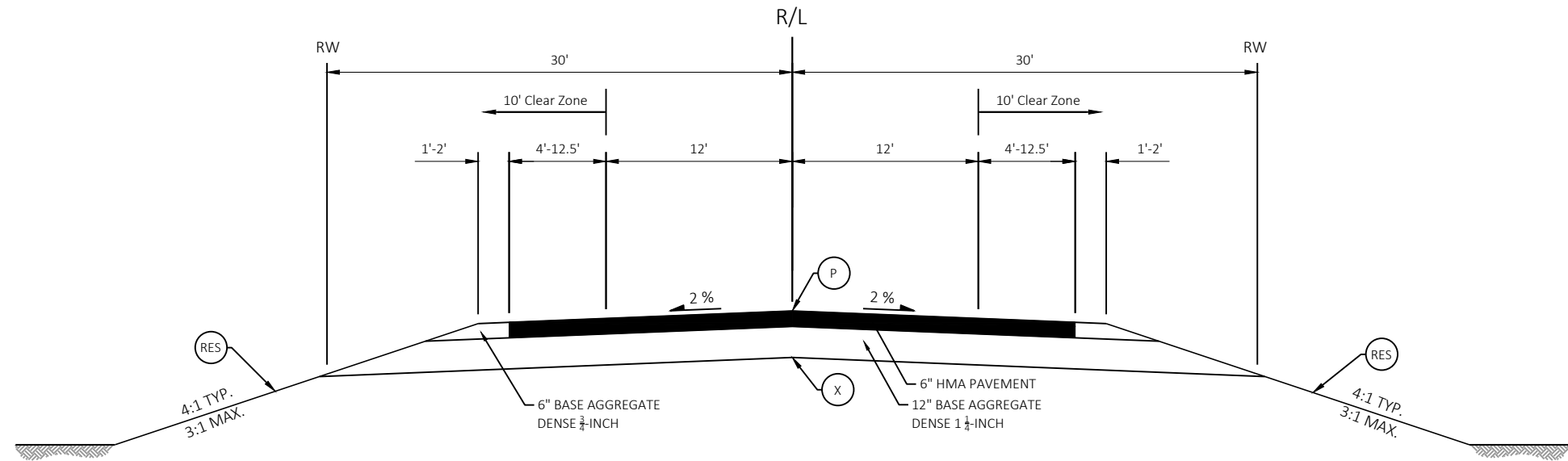


Dial **811** or (800)242-8511  
www.DiggersHotline.com



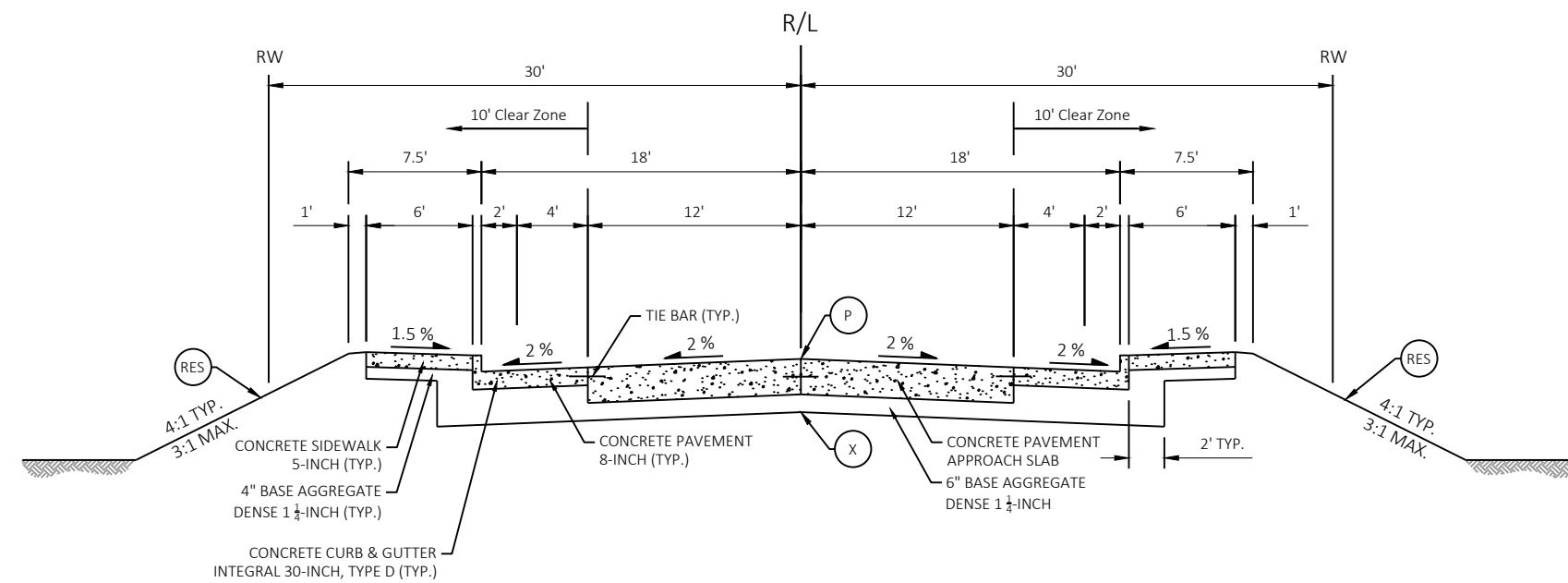
**EXISTING TYPICAL SECTION**

STA. 104+02 TO STA. 104+84  
STA. 105+16 TO STA. 105+98



**FINISHED TYPICAL SECTION**

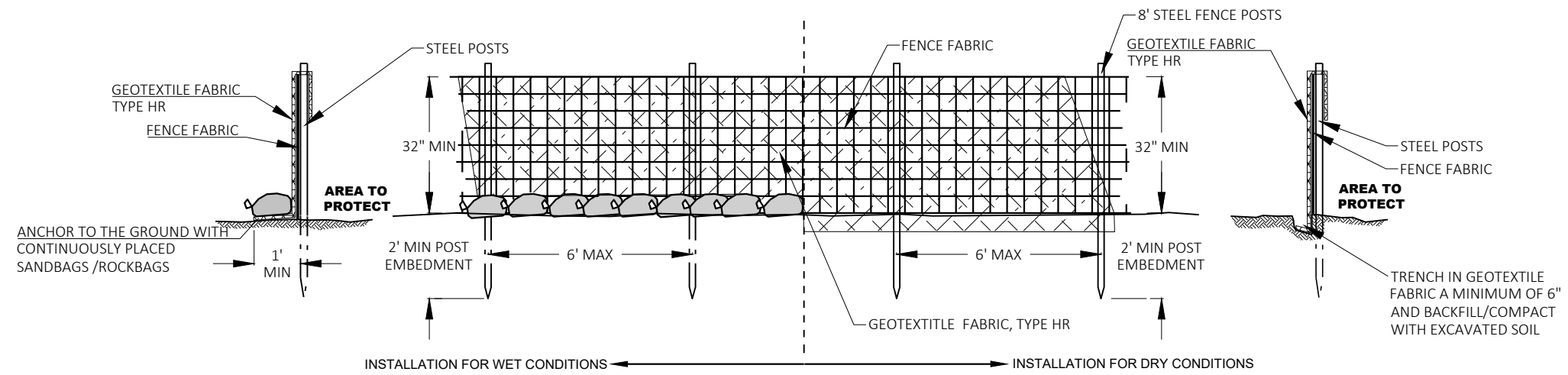
STA. 104+02 TO STA. 104+60  
STA. 105+41 TO STA. 105+98



**FINISHED TYPICAL SECTION**

STA. 104+60 TO STA. 104+75  
STA. 105+26 TO STA. 105+41

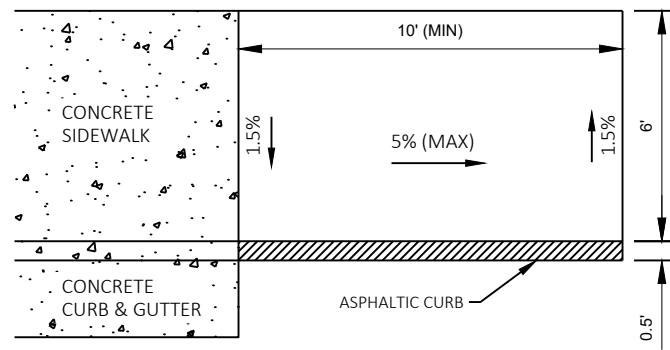
LEGEND	
(P)	POINT REFERRED TO ON PROFILE
(X)	POINT REFERRED TO ON CROSS SECTION
(RES)	RESTORATION (SEE EROSION CONTROL SHEET FOR DETAILS)



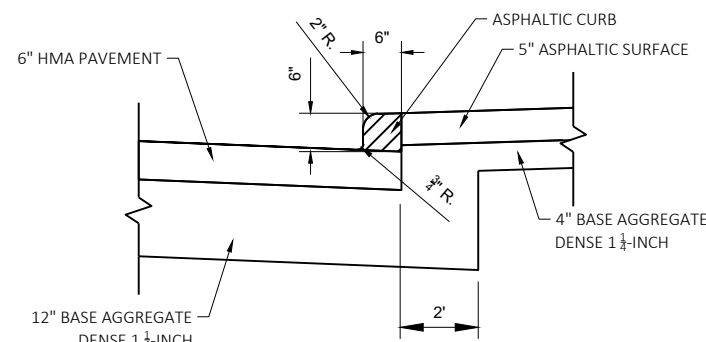
**SILT FENCE HEAVY DUTY**

**GENERAL NOTES:**

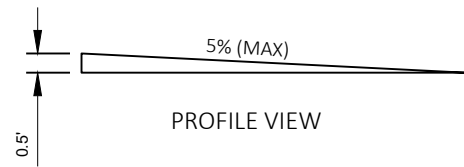
1. ATTACH FENCE FABRIC TO POSTS A MINIMUM OF 3 TIES PER POST (TOP, MIDDLE, BOTTOM)
2. ATTACH GEOTEXTILE FABRIC TO FENCE FABRIC AND/OR POSTS AT A MAXIMUM SPACING OF EVERY 2 FEET ALONG THE TOP AND ADDITIONALLY AS NECESSARY TO PREVENT DISPLACEMENT BY WIND AND WAVE ACTIONS.



PLAN VIEW



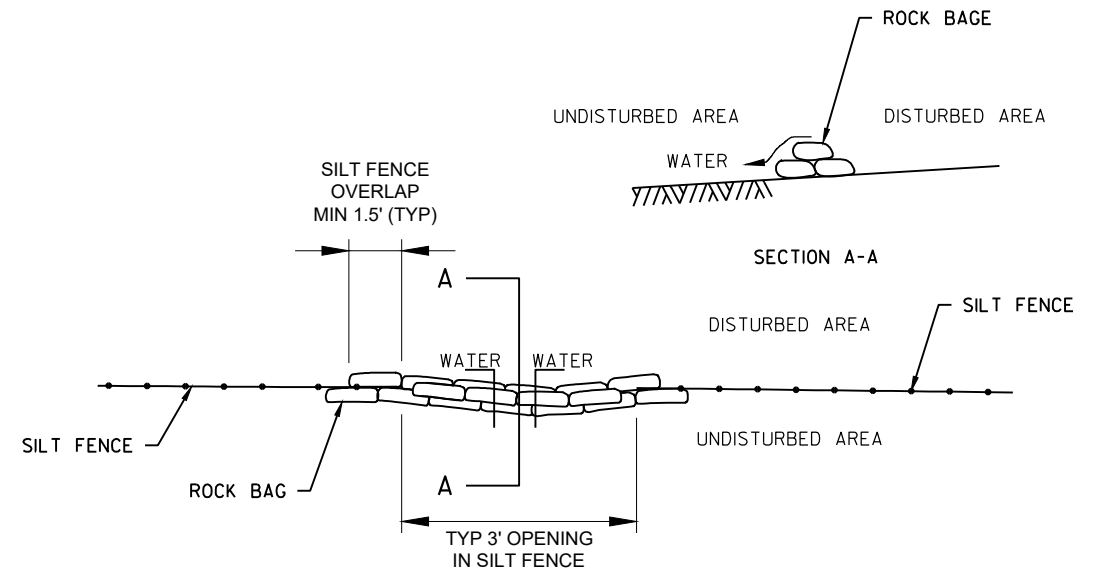
CROSS SECTION VIEW



PROFILE VIEW

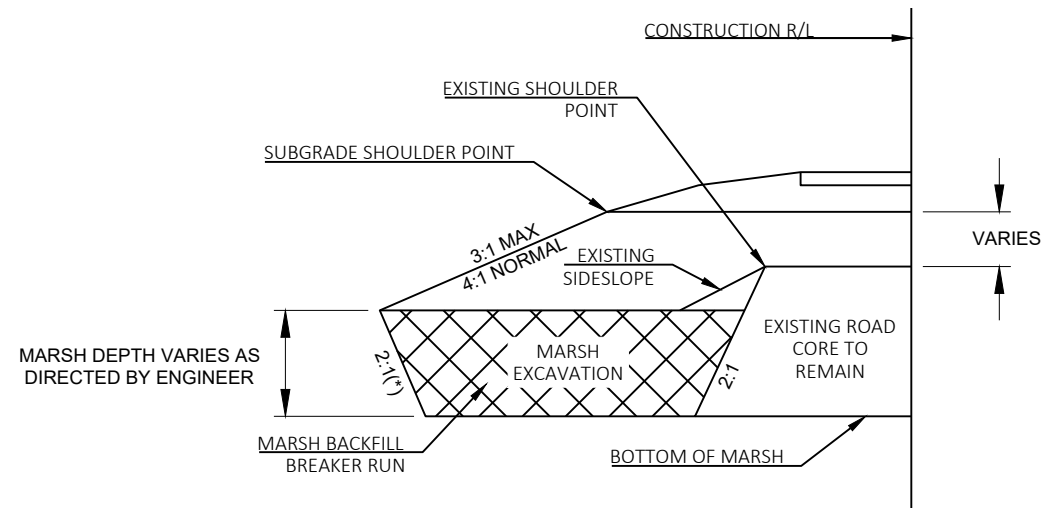
**ASPHALT RAMP DETAIL**

- NOTES:
- 1) RAMP PAID BY THE TON UNDER ASPHALTIC SURFACE.
  - 2) ASPHALTIC CURB PAID FOR BY THE LINEAR FOOT.
  - 3) 5" ASPHALTIC SURFACE OVER 4" BASE AGGREGATE DENSE 1 1/2-INCH



PLAN VIEW

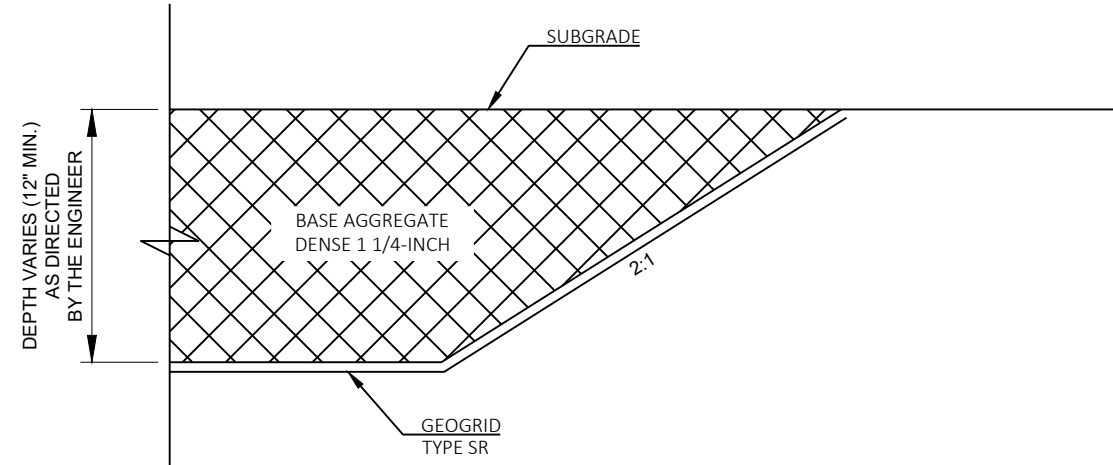
**ROCK BAGS USED FOR SILT FENCE RELIEF POINT**



(\*) A FLATTER SLOPE MAY BE NECESSARY FOR STABILITY IN WET MARSHES AS DIRECTED BY THE ENGINEER.

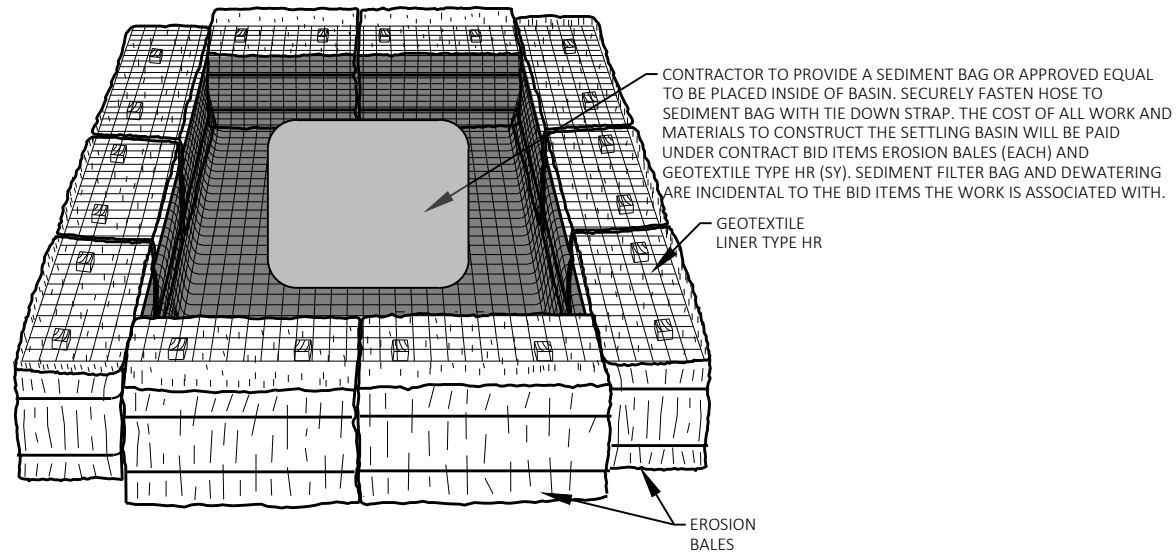
**TYPICAL SECTION-MARSH EXCAVATION**

LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER



**DETAIL FOR BACKFILL IN EBS AREAS**

LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER



(SIZE TO BE DETERMINED IN FIELD AS INDICATED BELOW:)

STORAGE VOLUME ( C.F. ) = 16 X GPM (PUMP RATE)

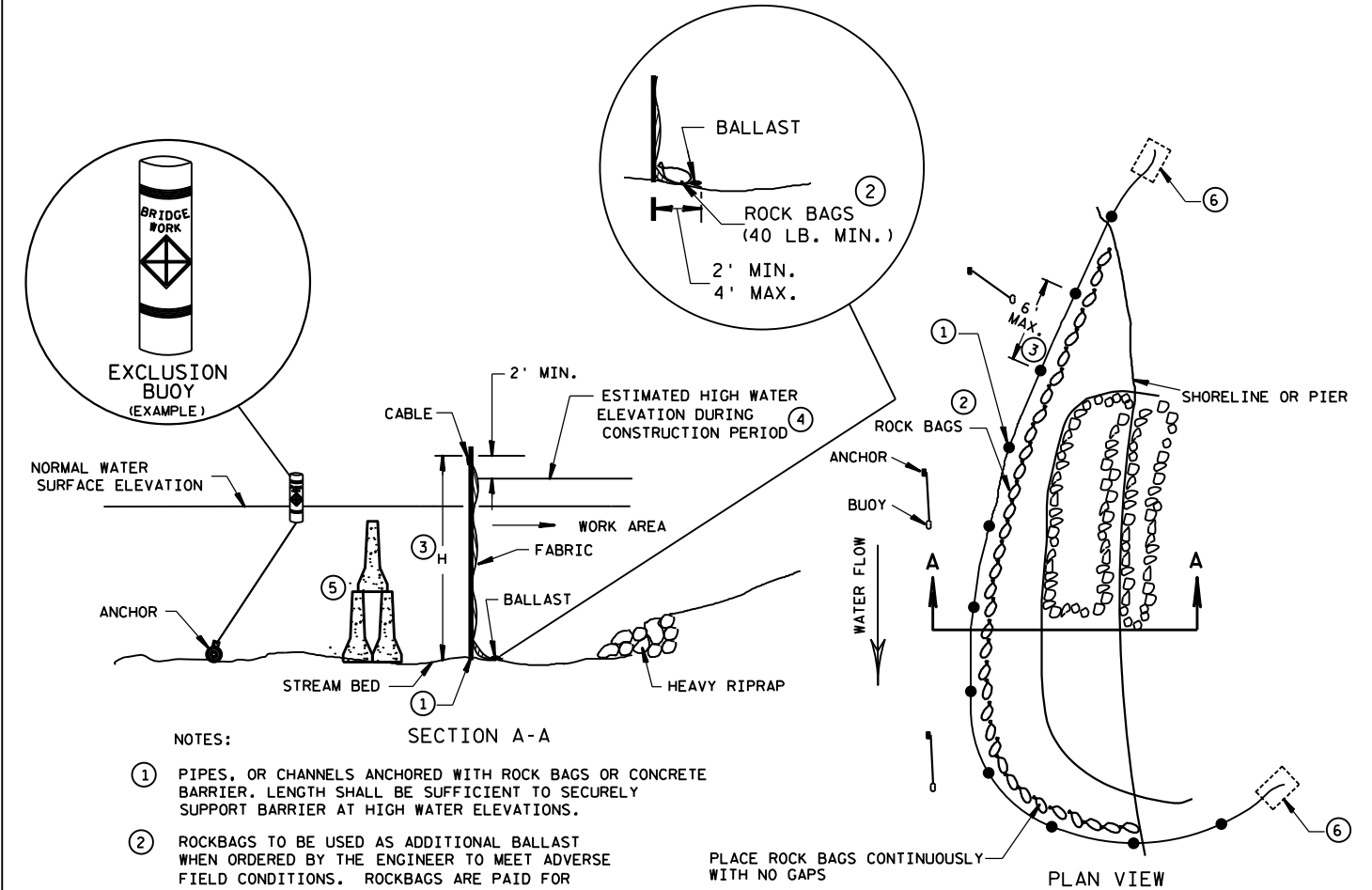
EXAMPLE:  
CONTRACTOR INDICATES PUMP CAPABLE OF 50 GPM  
HEIGHT OF BALES = 1.5 FT.

SOLUTION:  
SV ( C.F. ) = 16 X 50  
SV = 800 C.F.  
800 C.F. = 533 S.F.  
1.5 FT.  
USE A 20 FT. X 27 FT. BASIN

**TEMPORARY SETTLING BASIN**

**NOTES**

1. CONTRACTOR SHALL PUMP TURBID WATER FROM EXCAVATION TO SEDIMENT BAG PLACED INSIDE FABRIC LINED STAKED BALE ENCLOSURE PRIOR TO DISCHARGING TO DITCHES/INLETS/WETLANDS OR WATERWAYS.
2. SEDIMENT BAG TO BE PLACED IN AN UPLAND VEGETATED AREA OR EQUIVALENT LOCATION APPROVED BY THE ENGINEER.
3. BASIN TO BE KEPT LESS THAN 10% FULL OF SEDIMENT. GEOTEXTILE FABRIC AND SEDIMENTS TO BE DISPOSED BY THE CONTRACTOR OFF OF THE PROJECT SITE.
4. TEMPORARY SETTLING BASIN AND SEDIMENT BAG TO BE INCIDENTAL TO CONTRACT.
5. SEDIMENT BAG, BALES AND FABRIC TO BE REPLACED AS NECESSARY AND IS INCIDENTAL TO CONTRACT.
6. SIZE TO BE DETERMINED BY THE CONTRACTOR AS PART OF THE ECIP SUBMITTAL.
7. BASIN SHALL MEET REQUIREMENTS OF WI DNR T.S.1061.



**NOTES:**



- ① PIPES, OR CHANNELS ANCHORED WITH ROCK BAGS OR CONCRETE BARRIER. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- ② ROCKBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. ROCKBAGS ARE PAID FOR SEPARATELY.
- ③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.
- ④ ELEVATION VALUE TO BE ESTABLISHED BY THE CONTRACTOR BASED ON THE TIME OF YEAR AND DURATION OF THE ACTIVITY.
- ⑤ CONCRETE BARRIER MAY BE USED AS A FLOW DEFLECTOR DURING ADVERSE FIELD CONDITIONS.
- ⑥ EXTEND BARRIER 5 FT. MINIMUM BEYOND SHORELINE. TRENCH OR CUT BARRIER INTO SHORELINE TO SECURELY ANCHOR. EXTENDING BARRIER AND TRENCHING/CUTTING IS INCIDENTAL TO THE TURBIDITY BARRIER ITEM.

PLACE ROCK BAGS CONTINUOUSLY WITH NO GAPS

**TURBIDITY BARRIER DETAIL**

LOCATIONS SHOWN ON EROSION CONTROL PLANS OR AS DIRECTED BY THE ENGINEER.

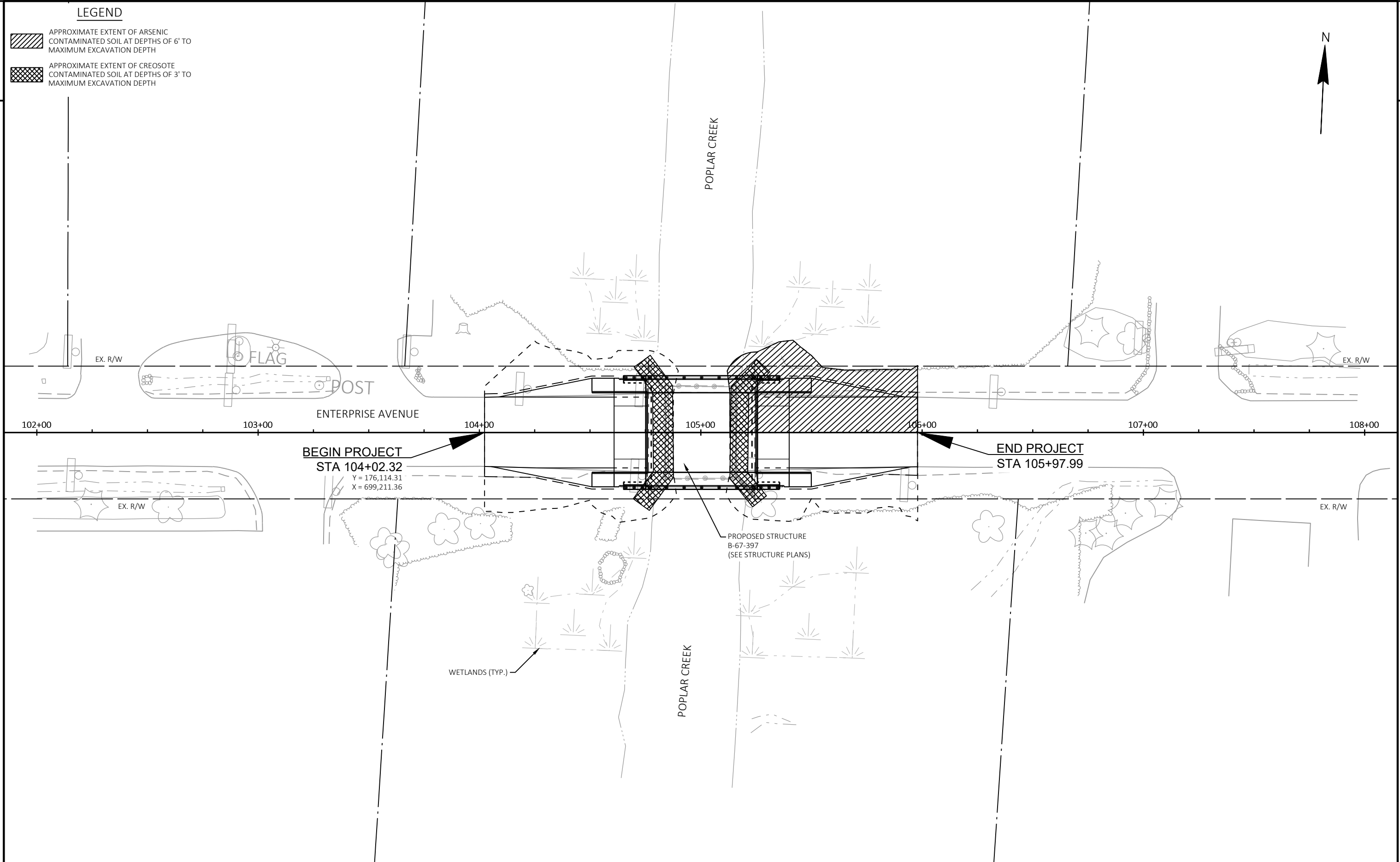
LEGEND

-  APPROXIMATE EXTENT OF ARSENIC CONTAMINATED SOIL AT DEPTHS OF 6' TO MAXIMUM EXCAVATION DEPTH
-  APPROXIMATE EXTENT OF CREOSOTE CONTAMINATED SOIL AT DEPTHS OF 3' TO MAXIMUM EXCAVATION DEPTH



2

2



PROJECT NO: 2721-00-76

HWY: ENTERPRISE AVENUE

COUNTY: WAUKESHA







CONSTRUCTION DETAIL - CONTAMINATED SOIL

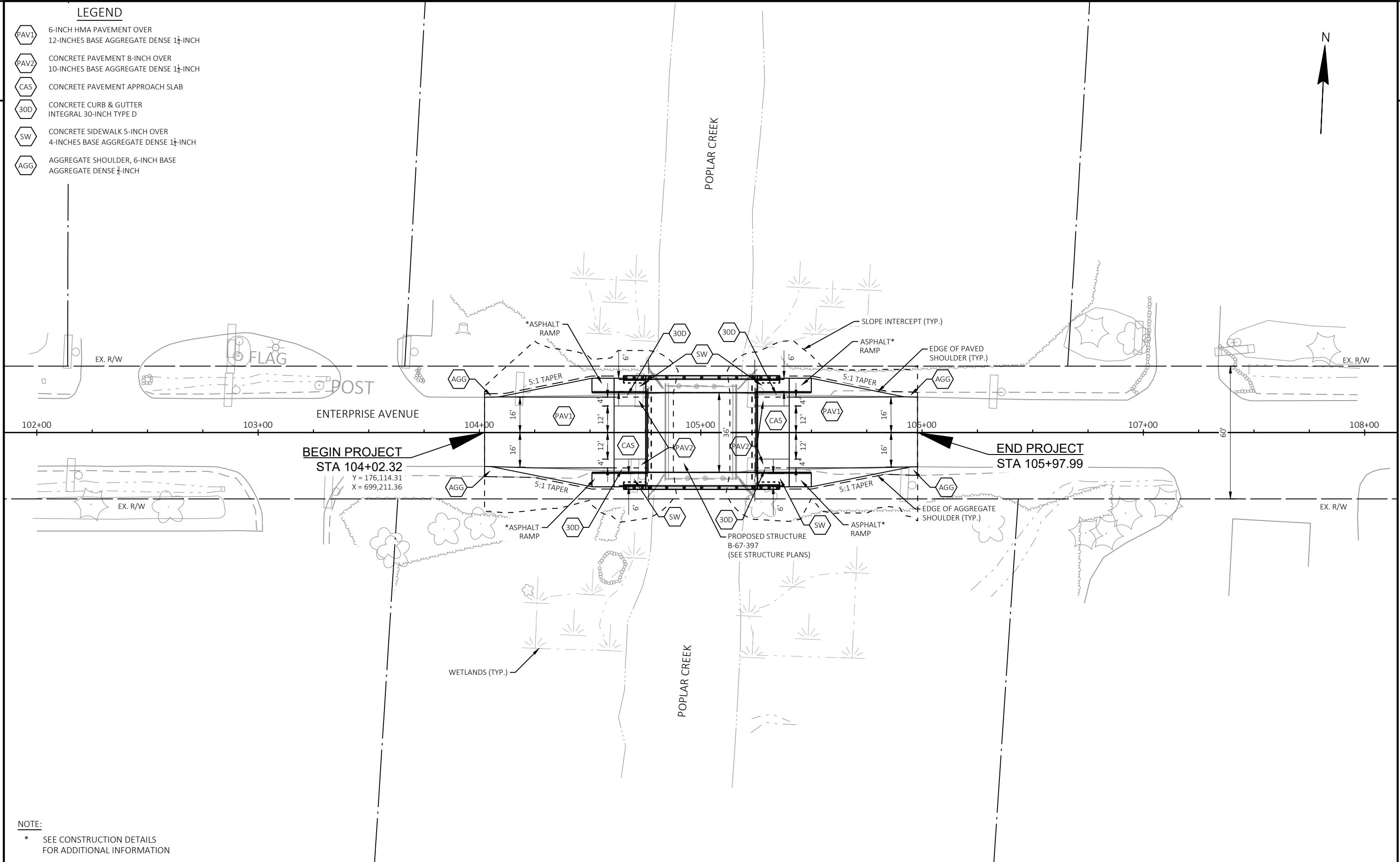
SHEET

E



LEGEND



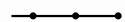




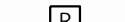
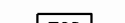

-  6-INCH HMA PAVEMENT OVER  
12-INCHES BASE AGGREGATE DENSE 1 1/2-INCH
-  CONCRETE PAVEMENT 8-INCH OVER  
10-INCHES BASE AGGREGATE DENSE 1 1/2-INCH
-  CONCRETE PAVEMENT APPROACH SLAB
-  CONCRETE CURB & GUTTER  
INTEGRAL 30-INCH TYPE D
-  CONCRETE SIDEWALK 5-INCH OVER  
4-INCHES BASE AGGREGATE DENSE 1 1/2-INCH
-  AGGREGATE SHOULDER, 6-INCH BASE  
AGGREGATE DENSE 1 1/2-INCH

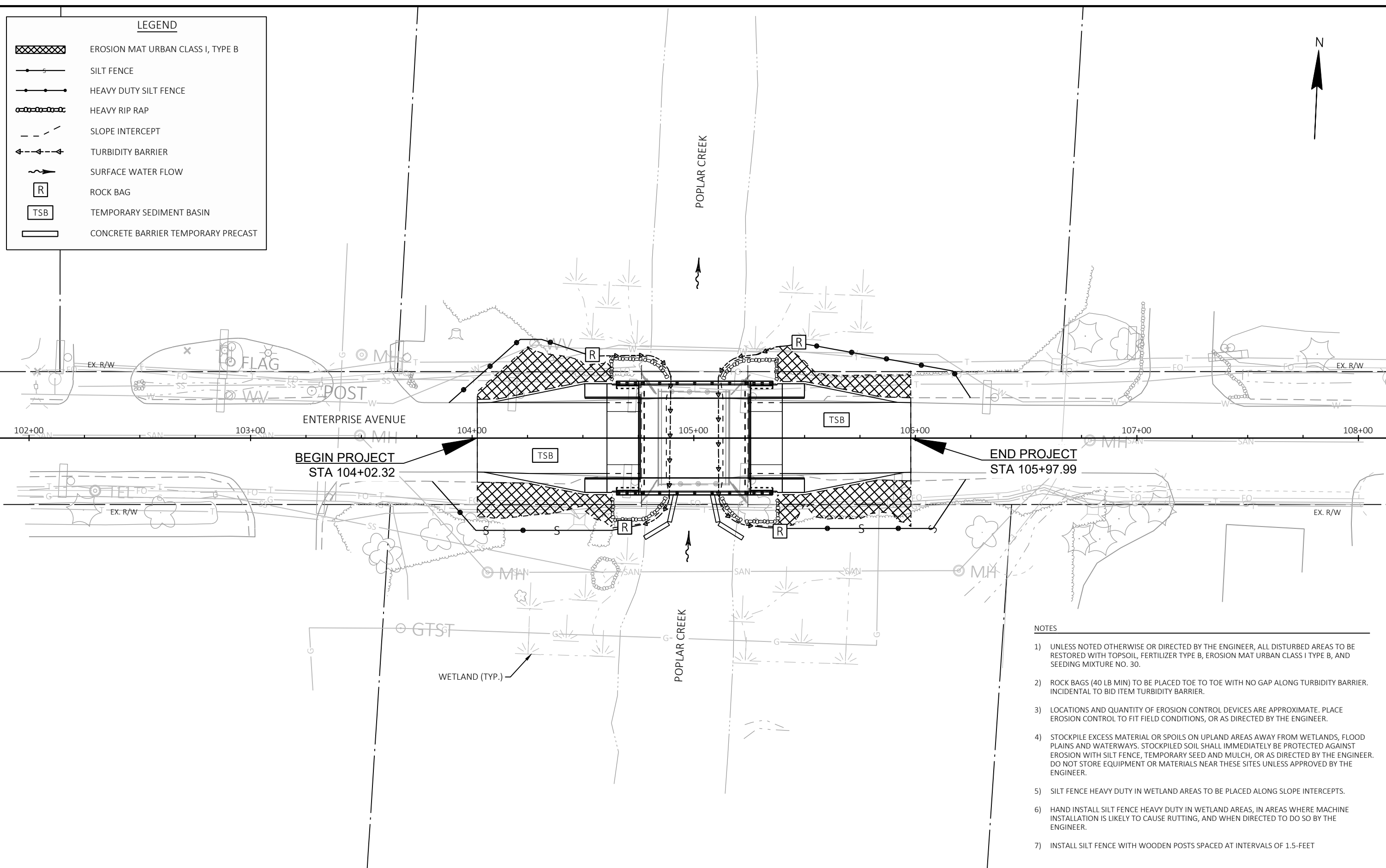


NOTE:  
\* SEE CONSTRUCTION DETAILS  
FOR ADDITIONAL INFORMATION

PROJECT NO: 2721-00-76	HWY: ENTERPRISE AVENUE	COUNTY: WAUKESHA	PLAN DETAILS	SHEET	<b>E</b>
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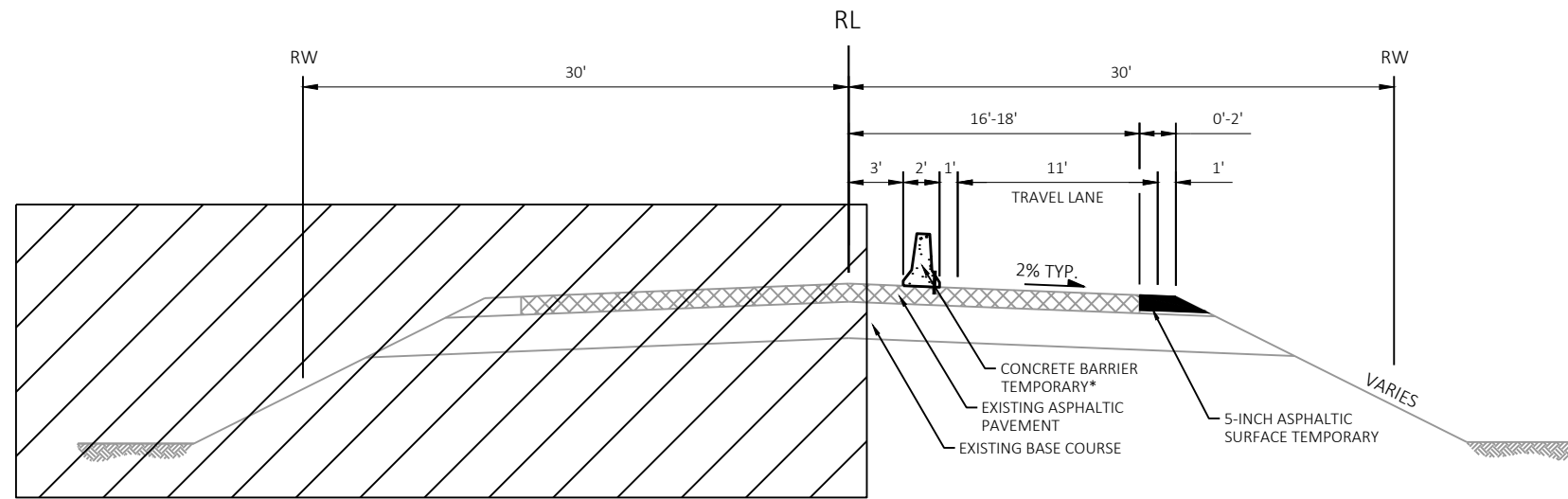
LEGEND

-  EROSION MAT URBAN CLASS I, TYPE B
-  SILT FENCE
-  HEAVY DUTY SILT FENCE
-  HEAVY RIP RAP
-  SLOPE INTERCEPT
-  TURBIDITY BARRIER
-  SURFACE WATER FLOW
-  ROCK BAG
-  TEMPORARY SEDIMENT BASIN
-  CONCRETE BARRIER TEMPORARY PRECAST



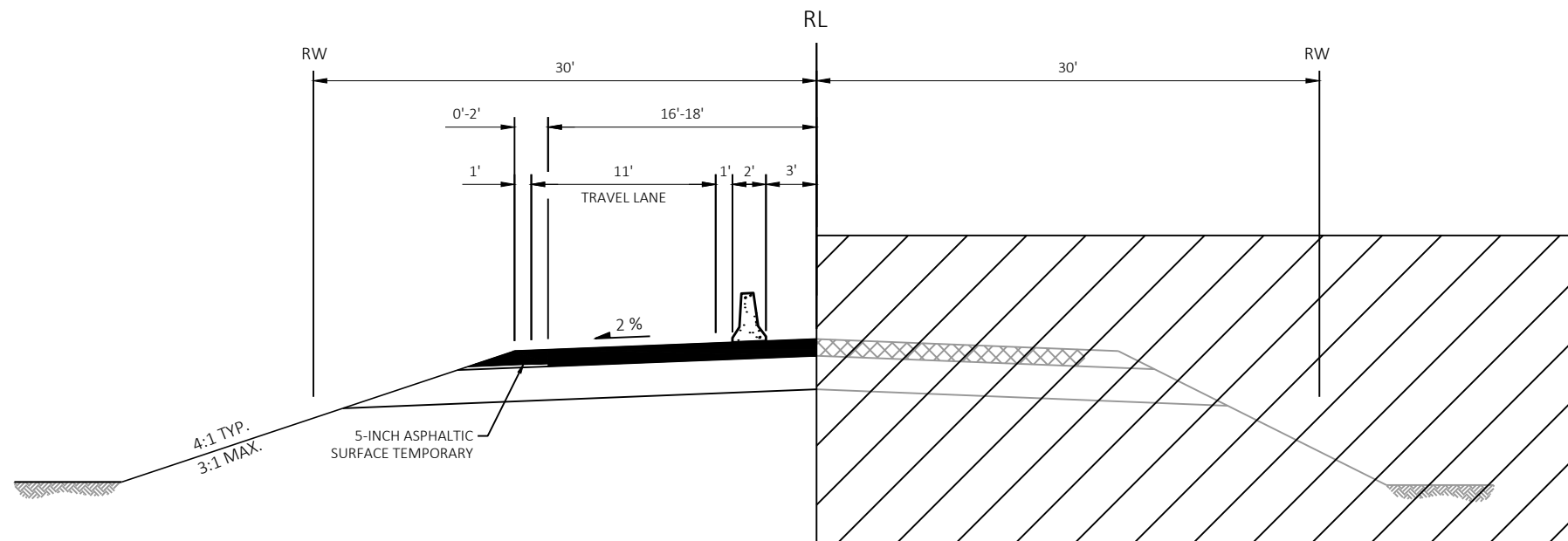
NOTES

- 1) UNLESS NOTED OTHERWISE OR DIRECTED BY THE ENGINEER, ALL DISTURBED AREAS TO BE RESTORED WITH TOPSOIL, FERTILIZER TYPE B, EROSION MAT URBAN CLASS I TYPE B, AND SEEDING MIXTURE NO. 30.
- 2) ROCK BAGS (40 LB MIN) TO BE PLACED TOE TO TOE WITH NO GAP ALONG TURBIDITY BARRIER. INCIDENTAL TO BID ITEM TURBIDITY BARRIER.
- 3) LOCATIONS AND QUANTITY OF EROSION CONTROL DEVICES ARE APPROXIMATE. PLACE EROSION CONTROL TO FIT FIELD CONDITIONS, OR AS DIRECTED BY THE ENGINEER.
- 4) STOCKPILE EXCESS MATERIAL OR SPOILS ON UPLAND AREAS AWAY FROM WETLANDS, FLOOD PLAINS AND WATERWAYS. STOCKPILED SOIL SHALL IMMEDIATELY BE PROTECTED AGAINST EROSION WITH SILT FENCE, TEMPORARY SEED AND MULCH, OR AS DIRECTED BY THE ENGINEER. DO NOT STORE EQUIPMENT OR MATERIALS NEAR THESE SITES UNLESS APPROVED BY THE ENGINEER.
- 5) SILT FENCE HEAVY DUTY IN WETLAND AREAS TO BE PLACED ALONG SLOPE INTERCEPTS.
- 6) HAND INSTALL SILT FENCE HEAVY DUTY IN WETLAND AREAS, IN AREAS WHERE MACHINE INSTALLATION IS LIKELY TO CAUSE RUTTING, AND WHEN DIRECTED TO DO SO BY THE ENGINEER.
- 7) INSTALL SILT FENCE WITH WOODEN POSTS SPACED AT INTERVALS OF 1.5- FEET









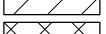


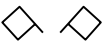
**TRAFFIC CONTROL TYPICAL SECTION**  
STAGE 1

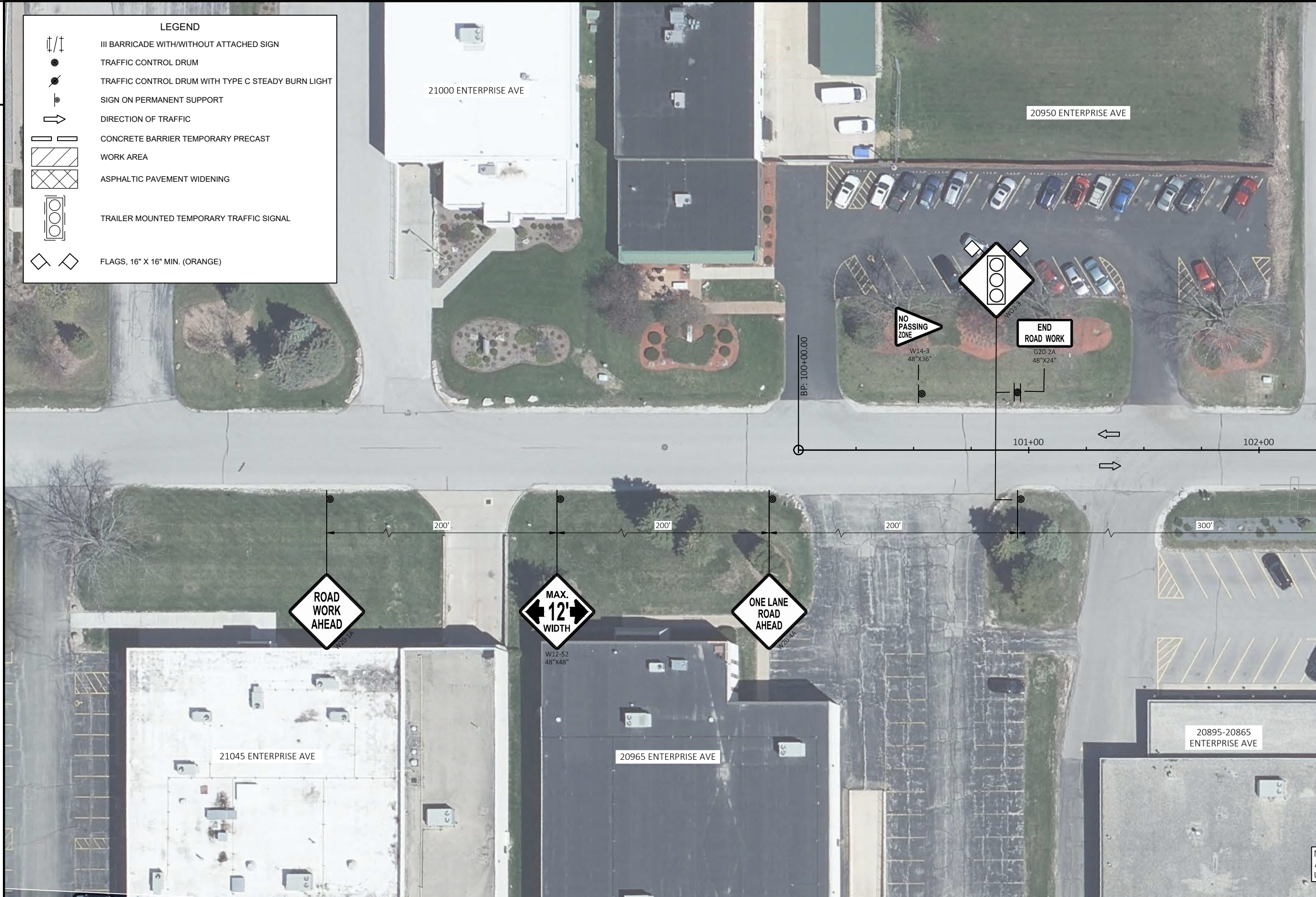
NOTE:  
ANCHOR CONCRETE BARRIER TEMPORARY  
FROM STA. 104+50 TO STA. 105+50



**TRAFFIC CONTROL TYPICAL SECTION**  
STAGE 2

**LEGEND**

-  III BARRICADE WITH/WITHOUT ATTACHED SIGN
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
-  SIGN ON PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC
-  CONCRETE BARRIER TEMPORARY PRECAST
-  WORK AREA
-  ASPHALTIC PAVEMENT WIDENING
-  TRAILER MOUNTED TEMPORARY TRAFFIC SIGNAL
-  FLAGS, 16" X 16" MIN. (ORANGE)



MATCHLINE STA. 102+25

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

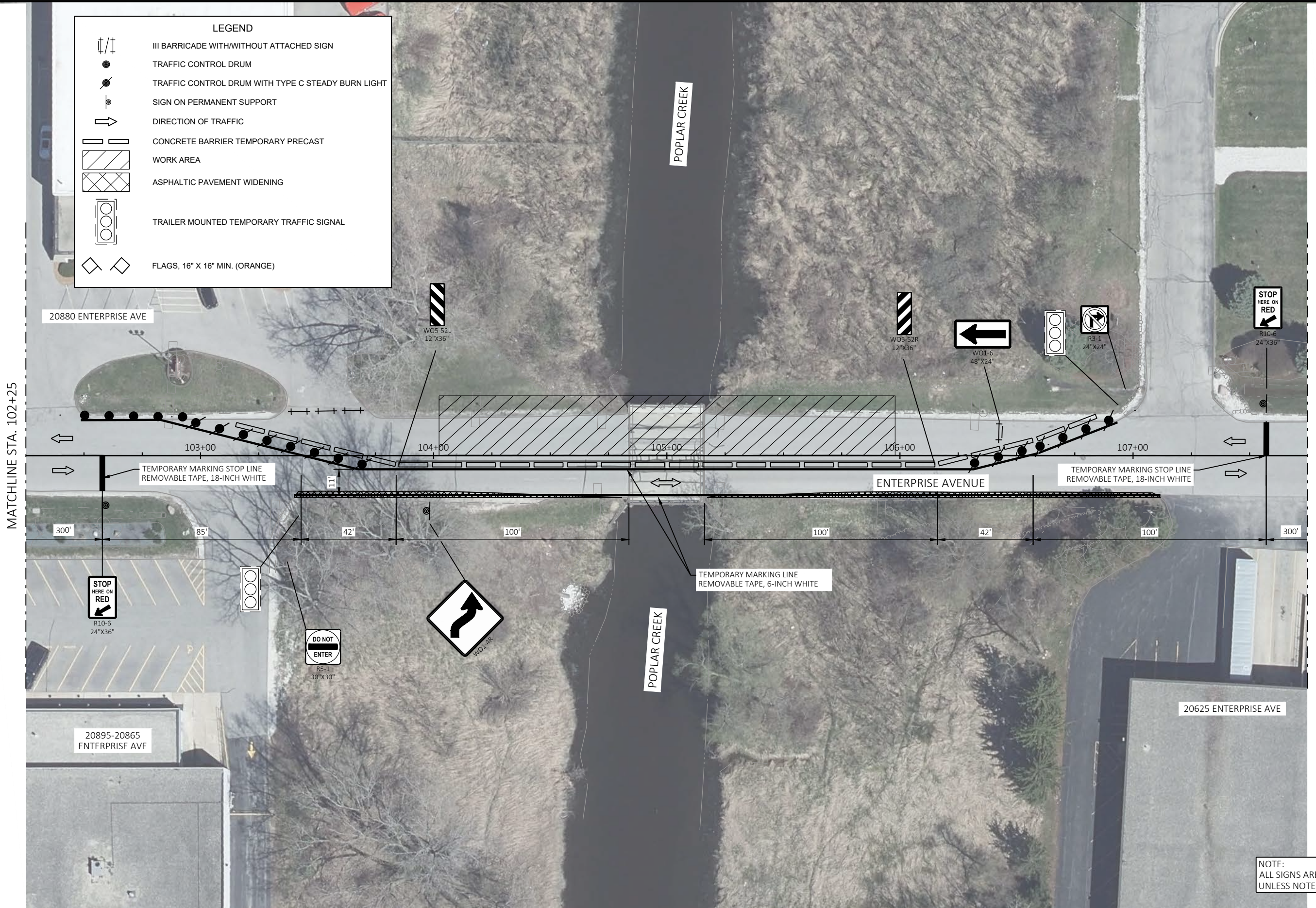
**LEGEND**

- III BARRICADE WITH/WITHOUT ATTACHED SIGN
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON PERMANENT SUPPORT
- ➔ DIRECTION OF TRAFFIC
- ▬ CONCRETE BARRIER TEMPORARY PRECAST
- ▨ WORK AREA
- ▩ ASPHALTIC PAVEMENT WIDENING
- Ⓜ TRAILER MOUNTED TEMPORARY TRAFFIC SIGNAL
- ◇ FLAGS, 16" X 16" MIN. (ORANGE)



MATCHLINE STA. 102+25

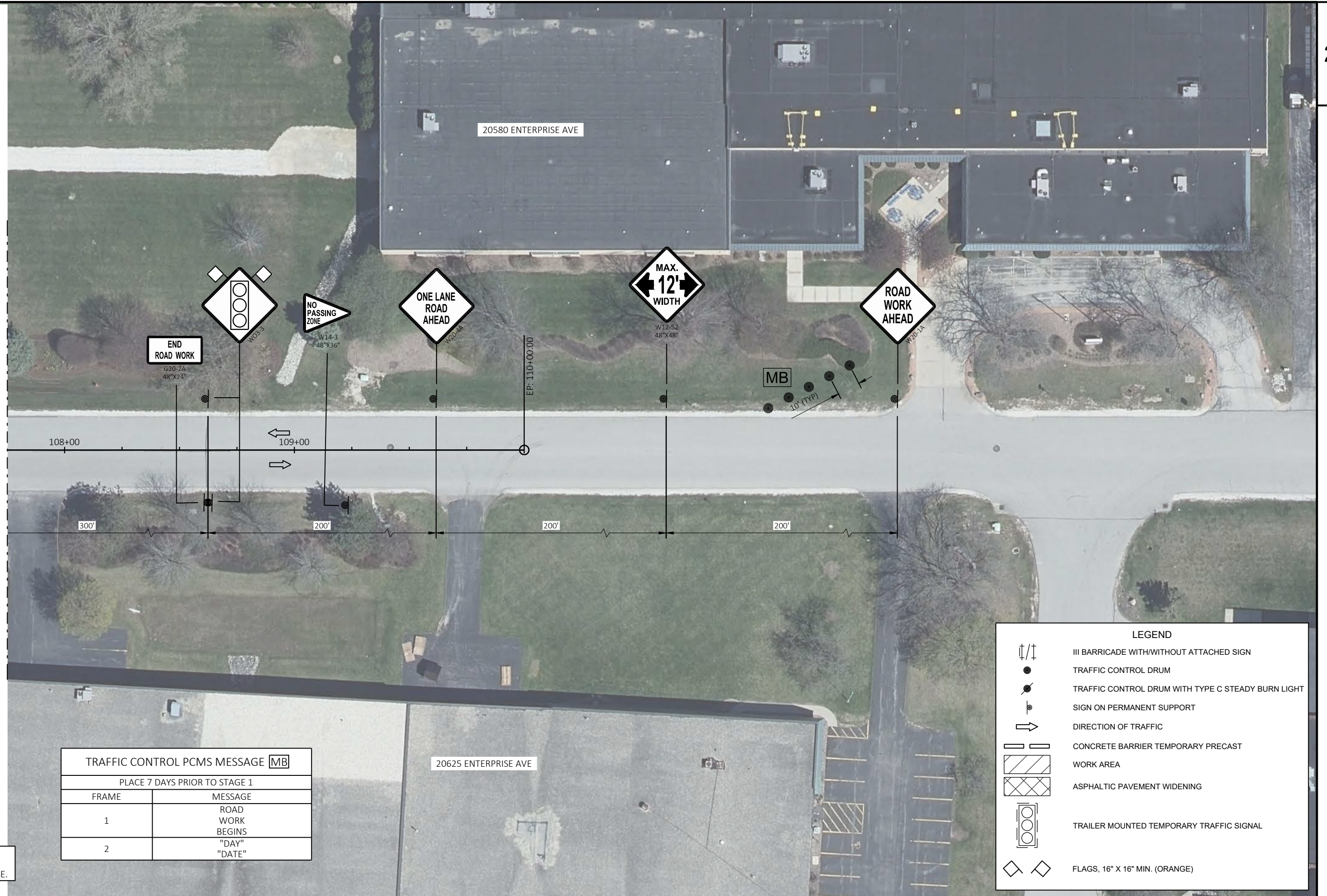
MATCHLINE STA. 107+75



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



MATCHLINE STA. 107+75



END ROAD WORK  
G20-2A  
48" X 24"



NO PASSING ZONE  
W14-3  
48" X 36"

ONE LANE ROAD AHEAD  
W20-4A

MAX. 12' WIDTH  
W12-52  
48" X 48"

ROAD WORK AHEAD  
W20-1A

MB

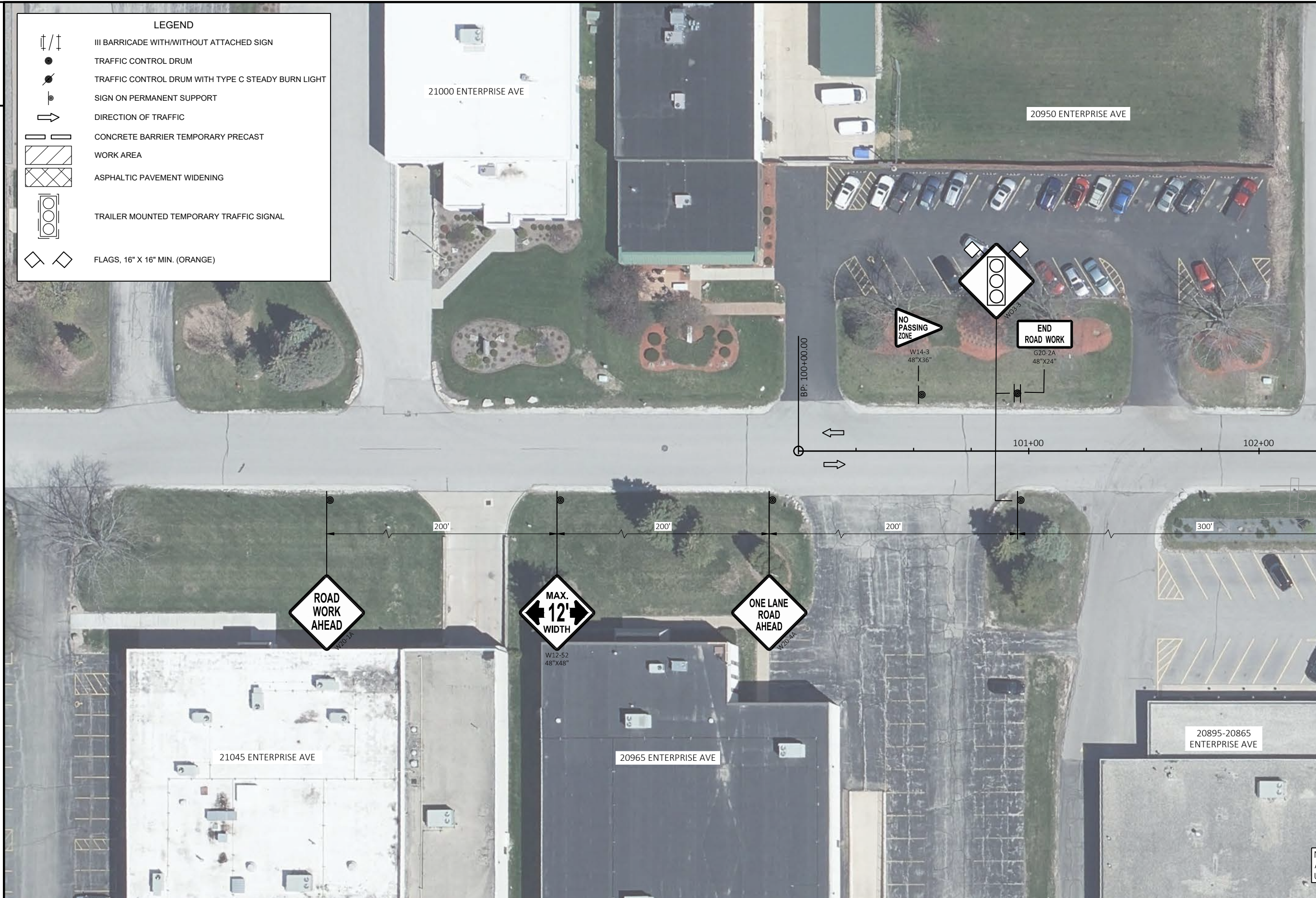
TRAFFIC CONTROL PCMS MESSAGE MB	
PLACE 7 DAYS PRIOR TO STAGE 1	
FRAME	MESSAGE
1	ROAD WORK BEGINS
2	"DAY" "DATE"

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

**LEGEND**

- III BARRICADE WITH/WITHOUT ATTACHED SIGN
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- CONCRETE BARRIER TEMPORARY PRECAST
- WORK AREA
- ASPHALTIC PAVEMENT WIDENING
- TRAILER MOUNTED TEMPORARY TRAFFIC SIGNAL
- FLAGS, 16" X 16" MIN. (ORANGE)

LEGEND	
	III BARRICADE WITH/WITHOUT ATTACHED SIGN
	TRAFFIC CONTROL DRUM
	TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
	SIGN ON PERMANENT SUPPORT
	DIRECTION OF TRAFFIC
	CONCRETE BARRIER TEMPORARY PRECAST
	WORK AREA
	ASPHALTIC PAVEMENT WIDENING
	TRAILER MOUNTED TEMPORARY TRAFFIC SIGNAL
	FLAGS, 16" X 16" MIN. (ORANGE)













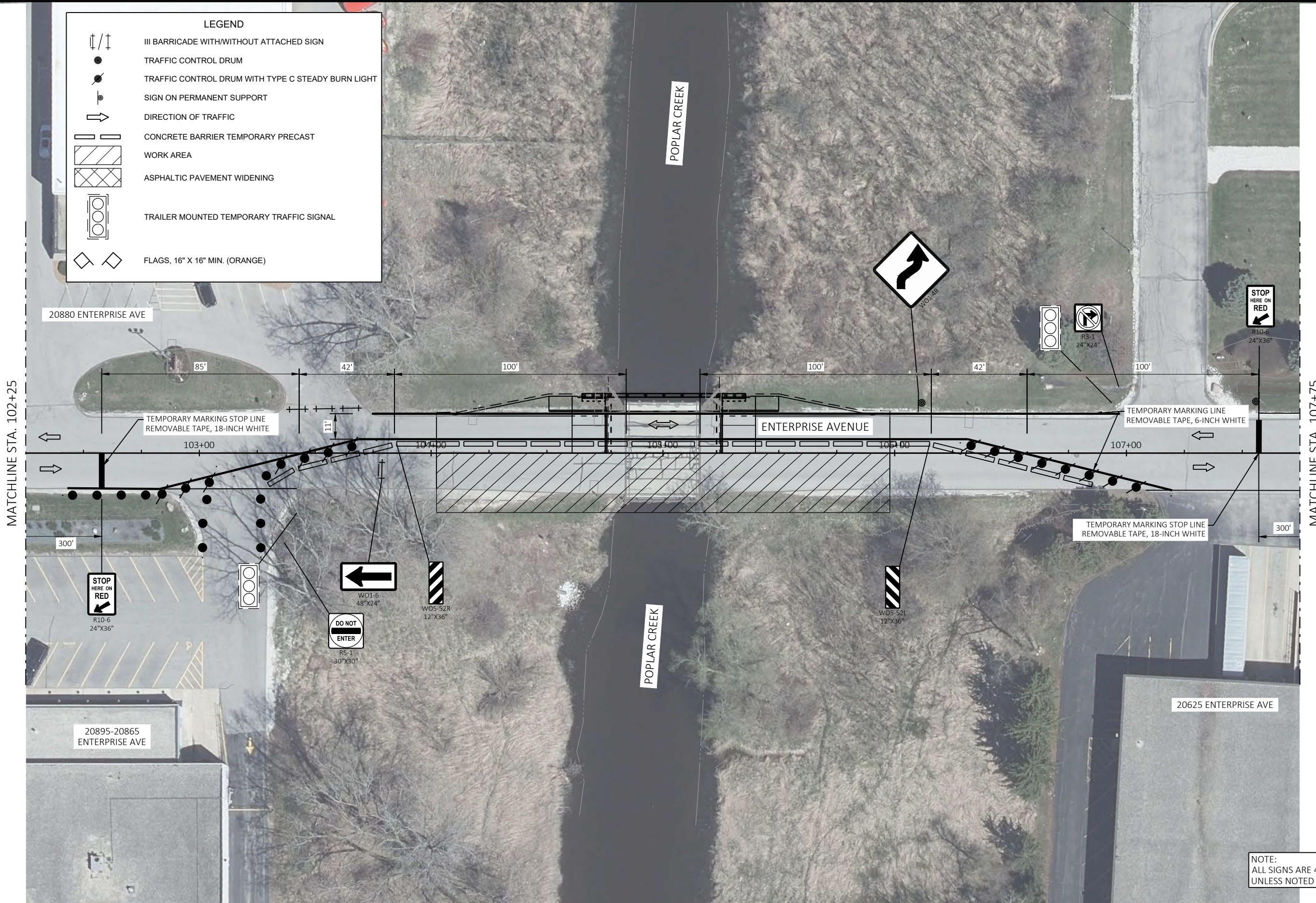
MATCHLINE STA. 102+25

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

PROJECT NO: 2721-00-76	HWY: ENTERPRISE AVENUE	COUNTY: WAUKESHA	TRAFFIC CONTROL - STAGE 2	SHEET	<b>E</b>
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**LEGEND**

-  III BARRICADE WITH/WITHOUT ATTACHED SIGN
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
-  SIGN ON PERMANENT SUPPORT
-  DIRECTION OF TRAFFIC
-  CONCRETE BARRIER TEMPORARY PRECAST
-  WORK AREA
-  ASPHALTIC PAVEMENT WIDENING
-  TRAILER MOUNTED TEMPORARY TRAFFIC SIGNAL
-  FLAGS, 16" X 16" MIN. (ORANGE)

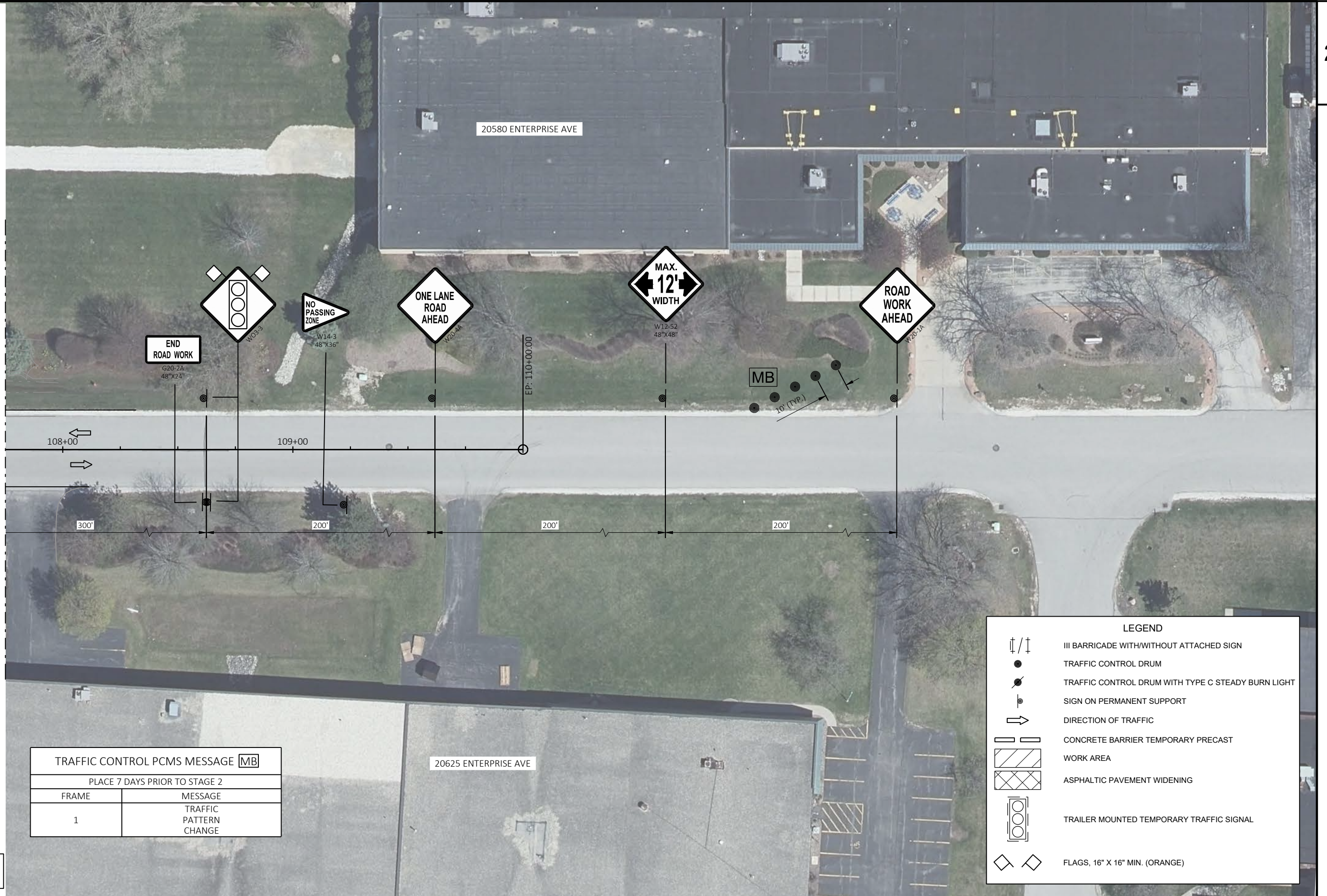


NOTE:  
ALL SIGNS ARE 48" X 48"  
UNLESS NOTED OTHERWISE.





MATCHLINE STA. 102+25



END ROAD WORK  
G20-2A  
48" X 24"

NO PASSING ZONE  
W14-3  
48" X 36"

ONE LANE ROAD AHEAD  
W20-4A

MAX. 12' WIDTH  
W12-52  
48" X 48"

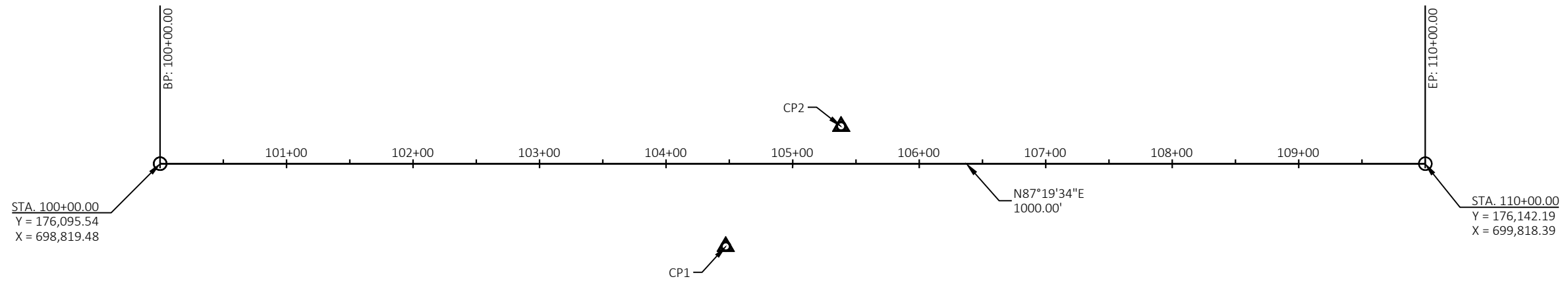
ROAD WORK AHEAD  
W20-1A

TRAFFIC CONTROL PCMS MESSAGE <span style="border: 1px solid black; padding: 2px;">MB</span>	
PLACE 7 DAYS PRIOR TO STAGE 2	
FRAME	MESSAGE
1	TRAFFIC PATTERN CHANGE

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

LEGEND	
	III BARRICADE WITH/WITHOUT ATTACHED SIGN
	TRAFFIC CONTROL DRUM
	TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
	SIGN ON PERMANENT SUPPORT
	DIRECTION OF TRAFFIC
	CONCRETE BARRIER TEMPORARY PRECAST
	WORK AREA
	ASPHALTIC PAVEMENT WIDENING
	TRAILER MOUNTED TEMPORARY TRAFFIC SIGNAL
	FLAGS, 16" X 16" MIN. (ORANGE)

CONTROL POINTS						
NUMBER	DESCRIPTION	STATION	OFFSET	ELEVATION	NORTHING	EASTING
CP1	CP REBAR WITH PINK GRAEF CAP	104+47.08	65.33' RT	820.452	176,051.134	699,269.119
CP2	CP REBAR WITH PINK GRAEF CAP	105+38.29	29.53' LT	822.046	176,150.145	699,355.803



Estimate Of Quantities

2721-00-76

Line	Item	Item Description	Unit	Total	Qty
0002	201.0220	Grubbing	ID	15.000	15.000
0004	203.0260	Removing Structure Over Waterway Minimal Debris (structure) 01. P-67-764	EACH	1.000	1.000
0006	204.0245	Removing Storm Sewer (size) 01. 12-Inch	LF	4.000	4.000
0008	205.0100	Excavation Common	CY	381.000	381.000
0010	205.0400	Excavation Marsh	CY	10.000	10.000
0012	205.0505.S	Excavation, Hauling, and Disposal of Creosote Contaminated Soil and Management of Contaminated Groundwater	TON	490.000	490.000
0014	206.1001	Excavation for Structures Bridges (structure) 01. B-67-397	EACH	1.000	1.000
0016	208.0100	Borrow	CY	26.000	26.000
0018	210.1500	Backfill Structure Type A	TON	478.000	478.000
0020	213.0100	Finishing Roadway (project) 01. 2721-00-76	EACH	1.000	1.000
0022	305.0110	Base Aggregate Dense 3/4-Inch	TON	9.000	9.000
0024	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	456.000	456.000
0026	311.0110	Breaker Run	TON	141.000	141.000
0028	415.0080	Concrete Pavement 8-Inch	SY	27.000	27.000
0030	415.0410	Concrete Pavement Approach Slab	SY	80.000	80.000
0032	450.4000	HMA Cold Weather Paving	TON	43.000	43.000
0034	455.0605	Tack Coat	GAL	30.000	30.000
0036	460.2000	Incentive Density HMA Pavement	DOL	120.000	120.000
0038	460.6223	HMA Pavement 3 MT 58-28 S	TON	108.000	108.000
0040	460.6224	HMA Pavement 4 MT 58-28 S	TON	65.000	65.000
0042	465.0105	Asphaltic Surface	TON	8.000	8.000
0044	465.0125	Asphaltic Surface Temporary	TON	20.000	20.000
0046	465.0310	Asphaltic Curb	LF	40.000	40.000
0048	502.0100	Concrete Masonry Bridges	CY	320.000	320.000
0050	502.3200	Protective Surface Treatment	SY	365.000	365.000
0052	505.0400	Bar Steel Reinforcement HS Structures	LB	6,080.000	6,080.000
0054	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	46,350.000	46,350.000
0056	505.0904	Bar Couplers No. 4	EACH	18.000	18.000
0058	505.0905	Bar Couplers No. 5	EACH	126.000	126.000
0060	505.0906	Bar Couplers No. 6	EACH	36.000	36.000
0062	511.1200	Temporary Shoring (structure) 01. B-67-397	SF	302.000	302.000
0064	513.7084	Railing Steel Type NY4	LF	147.000	147.000
0066	516.0500	Rubberized Membrane Waterproofing	SY	28.000	28.000
0068	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	800.000	800.000
0070	601.0452	Concrete Curb & Gutter Integral 30-Inch Type D	LF	60.000	60.000
0072	602.0410	Concrete Sidewalk 5-Inch	SF	333.000	333.000
0074	603.8000	Concrete Barrier Temporary Precast Delivered	LF	374.000	374.000
0076	603.8125	Concrete Barrier Temporary Precast Installed	LF	735.000	735.000
0078	603.8500	Anchoring Concrete Barrier Temporary Precast	LF	63.000	63.000
0080	603.8505	Anchoring Concrete Barrier Temporary Precast on Bridge Decks	LF	38.000	38.000
0082	606.0300	Riprap Heavy	CY	175.000	175.000
0084	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	166.000	166.000
0086	619.1000	Mobilization	EACH	1.000	1.000
0088	624.0100	Water	MGAL	4.000	4.000
0090	625.0100	Topsoil	SY	403.000	403.000
0092	627.0200	Mulching	SY	403.000	403.000
0094	628.1104	Erosion Bales	EACH	50.000	50.000
0096	628.1504	Silt Fence	LF	233.000	233.000
0098	628.1520	Silt Fence Maintenance	LF	233.000	233.000

Estimate Of Quantities

2721-00-76

Line	Item	Item Description	Unit	Total	Qty
0100	628.1530.S	Silt Fence Heavy Duty	LF	194.000	194.000
0102	628.1535.S	Silt Fence Heavy Duty Maintenance	LF	194.000	194.000
0104	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0106	628.1910	Mobilizations Emergency Erosion Control	EACH	5.000	5.000
0108	628.2008	Erosion Mat Urban Class I Type B	SY	403.000	403.000
0110	628.6005	Turbidity Barriers	SY	231.000	231.000
0112	628.7570	Rock Bags	EACH	187.000	187.000
0114	629.0210	Fertilizer Type B	CWT	0.200	0.200
0116	630.0130	Seeding Mixture No. 30	LB	7.000	7.000
0118	630.0200	Seeding Temporary	LB	11.000	11.000
0120	630.0500	Seed Water	MGAL	9.000	9.000
0122	638.2102	Moving Signs Type II	EACH	3.000	3.000
0124	638.2602	Removing Signs Type II	EACH	4.000	4.000
0126	638.3000	Removing Small Sign Supports	EACH	3.000	3.000
0128	638.4000	Moving Small Sign Supports	EACH	3.000	3.000
0130	642.5001	Field Office Type B	EACH	1.000	1.000
0132	643.0300	Traffic Control Drums	DAY	3,484.000	3,484.000
0134	643.0420	Traffic Control Barricades Type III	DAY	496.000	496.000
0136	643.0705	Traffic Control Warning Lights Type A	DAY	620.000	620.000
0138	643.0715	Traffic Control Warning Lights Type C	DAY	1,860.000	1,860.000
0140	643.0900	Traffic Control Signs	DAY	2,728.000	2,728.000
0142	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0144	643.3180	Temporary Marking Line Removable Tape 6-Inch	LF	1,627.000	1,627.000
0146	643.3850	Temporary Marking Stop Line Removable Tape 18-Inch	LF	60.000	60.000
0148	643.5000	Traffic Control	EACH	1.000	1.000
0150	645.0111	Geotextile Type DF Schedule A	SY	136.000	136.000
0152	645.0120	Geotextile Type HR	SY	418.000	418.000
0154	645.0220	Geogrid Type SR	SY	10.000	10.000
0156	650.4500	Construction Staking Subgrade	LF	147.000	147.000
0158	650.5000	Construction Staking Base	LF	116.000	116.000
0160	650.6501	Construction Staking Structure Layout (structure) 01. B-67-397	EACH	1.000	1.000
0162	650.7000	Construction Staking Concrete Pavement	LF	30.000	30.000
0164	650.9500	Construction Staking Sidewalk (project) 01. 2721-00-76	EACH	1.000	1.000
0166	650.9911	Construction Staking Supplemental Control (project) 01. 2721-00-76	EACH	1.000	1.000
0168	650.9920	Construction Staking Slope Stakes	LF	196.000	196.000
0170	661.0101	Temporary Traffic Signals for Bridges (structure) 01. B-67-397	EACH	1.000	1.000
0172	690.0150	Sawing Asphalt	LF	63.000	63.000
0174	715.0502	Incentive Strength Concrete Structures	DOL	1,920.000	1,920.000
0176	715.0720	Incentive Compressive Strength Concrete Pavement	DOL	500.000	500.000
0178	999.2005.S	Maintaining Bird Deterrent System (station) 01. 105+00	EACH	1.000	1.000
0180	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	500.000	500.000
0182	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	1,200.000	1,200.000
0184	SPV.0060	Special 01. Utility Line Opening (ULO)	EACH	5.000	5.000
0186	SPV.0195	Special 01. Excavation, Hauling, and Disposal of Arsenic and SVOC Contaminated Soil	TON	156.000	156.000

3

**GRUBBING**

201.0220  
GRUBBING

STATION TO STATION	ID
ENTERPRISE AVENUE	
104+02 - 105+98	15
TOTALS	15

**REMOVING STORM SEWER**

204.0245.01  
12-INCH

STATION TO STATION	LF
ENTERPRISE AVENUE	
104+02 - 105+98	4
TOTALS	4

205.0505.S

EXCAVATION, HAULING, AND DISPOSAL OF CREOSOTE  
CONTAMINATED SOIL AND MANAGEMENT OF  
CONTAMINATED GROUNDWATER

STATION TO STATION	TON
ENTERPRISE AVENUE	
104+02 - 105+98	490
TOTALS	490

3

DIVISION	FROM/TO STATION	LOCATION	205.0100 EXCAVATION COMMON (1)		SALVAGED/UNUSABLE PAVEMENT MATERIAL (4)	AVAILABLE MATERIAL (5)	205.0400 MARSH EXCAVATION (6)	EXPANDED MARSH BACKFILL (10)	EXPANDED EBS BACKFILL (11)	UNEXPANDED FILL	EXPANDED FILL (13)	MASS ORDINATE +/- (14)	WASTE	208.0100 BORROW	COMMENT
			CUT (2)	EBS EXCAVATION (3)				FACTOR	FACTOR		FACTOR				
			CY	CY	CY	CY	CY	CY	CY	CY	CY	CY	CY	CY	
<b>DIVISION 1</b>															
WEST	104+02.32/104+75		197	0	197	0	0	0	0	4	5	-5	5	5	
EAST	105+25/105+97.988		174	0	174	0	0	0	0	18	22	-22	22	22	
UNDISTRIBUTED			0	10	0	0	10	15	13	0	0	0	0	0	TO BE DETERMINED BY ENGINEER IN FIELD.
DIVISION 1 SUBTOTAL			371	10	371	0	10	15	13	22	26	-26	26	26	
GRAND TOTAL			371	10	371	0	10	15	13	22	26	-26	26	26	
TOTAL COMMON EXC			381												

**NOTES:**

- (1) COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS.
- (2) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
- (3) EBS EXCAVATION TO BE BACKFILLED WITH BASE AGGREGATE DENSE 1 1/4-INCH. QUANTITY SHOWN ELSEWHERE.
- (4) SALVAGED/UNUSABLE PAVEMENT MATERIAL
- (5) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
- (6) MARSH EXCAVATION - TO BE BACKFILLED WITH BREAKER RUN. QUANTITY SHOWN ELSEWHERE.
- (10) EXPANDED MARSH BACKFILL - THIS IS TO BE FILLED WITH BREAKER RUN. QUANTITY SHOWN ELSEWHERE.
- (11) EXPANDED EBS BACKFILL - THIS IS TO BE FILLED WITH BASE AGGREGATE DENSE 1 1/4-INCH. QUANTITY SHOWN ELSEWHERE.
- (13) EXPANDED FILL = UNEXPANDED FILL \* FILL FACTOR
- (14) 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.
- (15) FACTORS USED TO COMPUTE ANTICIPATED WASTE AND THE COMPUTED WASTE VOLUME IDENTIFIED ARE FOR GENERAL INFORMATION ONLY.

ALL ITEMS CATEGORY 0010

PROJECT NO: 2721-00-76

HWY: ENTERPRISE AVENUE

COUNTY: WAUKESHA

MISCELLANEOUS QUANTITIES

SHEET:

E

FILE NAME :

PLOT DATE :

PLOT BY :

PLOT NAME :

PLOT SCALE : 1:1

3

FINISHING ROADWAY

213.0100  
FINISHING ROADWAY

PROJECT	EACH
ID 2721-00-76	1
TOTALS	1

BASE AGGREGATE DENSE 3/4-INCH

305.0110  
BASE AGGREGATE  
DENSE 3/4-INCH

STATION TO STATION	TON
ENTERPRISE AVENUE	
104+02 - 105+98	9
TOTALS	9

BASE AGGREGATE DENSE 1 1/4-INCH

305.0120  
BASE AGGREGATE  
DENSE 1 1/4-INCH

STATION TO STATION	TON
ENTERPRISE AVENUE	
104+02 - 105+98	430
UNDISTRIBUTED	26
TOTALS	456

3

BREAKER RUN

311.0110  
BREAKER RUN

STATION TO STATION	TON
ENTERPRISE AVENUE	
UNDISTRIBUTED	27
TOTALS	27

CONCRETE PAVEMENT

415.0080  
8-INCH

STATION TO STATION	SY
ENTERPRISE AVENUE	
104+02 - 105+98	27
TOTALS	27

CONCRETE PAVEMENT APPROACH SLAB

415.0410  
CONCRETE  
PAVEMENT  
APPROACH SLAB

STATION TO STATION	SY
ENTERPRISE AVENUE	
104+02 - 105+98	80
TOTALS	80

HMA COLD WEATHER PAVING

450.4000  
HMA COLD WEATHER PAVING

STATION TO STATION	TON
ENTERPRISE AVENUE	
104+02 - 105+98	43
TOTALS	43

ALL ITEMS CATEGORY 0010

PROJECT NO: 2721-00-76

HWY: ENTERPRISE AVENUE

COUNTY: WAUKESHA

MISCELLANEOUS QUANTITIES

SHEET:

E

FILE NAME :

PLOT DATE :

PLOT BY :

PLOT NAME :

PLOT SCALE : 1:1

<u>HMA PAVEMENT</u>						
	460.6223 3 MT 58-28 S	460.6224 4 MT 58-28 S	465.0310 ASPHALTIC CURB	465.0105 ASPHALTIC SURFACE	465.0125 ASPHALTIC SURFACE TEMPORARY	455.0605 TACK COAT
STATION TO STATION	TON	TON	LF	TON	TON	GAL
<u>ENTERPRISE AVENUE</u>						
104+02 - 105+98	108	65	40	8	20	30
TOTALS	108	65	40	8	20	30

<u>CONCRETE CURB &amp; GUTTER</u>	
	601.0452 INTEGRAL 30-INCH TYPE D
STATION TO STATION	LF
<u>ENTERPRISE AVENUE</u>	
104+02 - 105+98	60
TOTALS	60

<u>CONCRETE SIDEWALK</u>	
	602.0410 5-INCH
STATION TO STATION	SF
<u>ENTERPRISE AVENUE</u>	
104+02 - 105+98	333
TOTALS	333

<u>CONCRETE BARRIER TEMPORARY PRECAST</u>				
	603.8000 CONCRETE BARRIER TEMPORARY PRECAST DELIVERED	603.8125 CONCRETE BARRIER TEMPORARY PRECAST INSTALLED	603.8500 ANCHORING CONCRETE BARRIER TEMPORARY PRECAST	603.8505 ANCHORING CONCRETE BARRIER TEMPORARY PRECAST ON BRIDGE DECKS
STATION TO STATION	LF	LF	LF	LF
<u>ENTERPRISE AVENUE</u>				
STAGE 1	374	374	63	38
STAGE 2	-	361	-	-
TOTALS	374	735	63	38

ALL ITEMS CATEGORY 0010

**MOBILIZATION**

	619.1000
<u>PROJECT</u>	<u>EACH</u>
ID 2721-00-76	1
	1

**TOPSOIL**

	625.0100
<u>TOPSOIL</u>	
<u>STATION TO STATION</u>	<u>SY</u>
ENTERPRISE AVENUE	
104+02 - 105+98	322
UNDISTRIBUTED	81
TOTALS	403

**EROSION MATTING**

	628.2008
<u>EROSION MAT URBAN CLASS I TYPE B</u>	
<u>STATION TO STATION</u>	<u>SY</u>
ENTERPRISE AVENUE	
104+02 - 105+98	322
UNDISTRIBUTED	81
TOTALS	403

**WATER**

	624.0100
<u>WATER</u>	
<u>STATION TO STATION</u>	<u>MGAL</u>
ENTERPRISE AVENUE	
104+02 - 105+98	4
TOTALS	4

**MULCHING & SEEDING**

	627.0200	630.0130	630.0200	630.0500
	<u>MULCHING</u>	<u>SEEDING MIXTURE NO. 30</u>	<u>SEEDING TEMPORARY</u>	<u>SEED WATER</u>
<u>STATION TO STATION</u>	<u>SY</u>	<u>LB</u>	<u>LB</u>	<u>MGAL</u>
ENTERPRISE AVENUE				
104+02 - 105+98	322	6	9	7
UNDISTRIBUTED	81	1	2	2
TOTALS	403	7	11	9

**TEMPORARY SETTLING BASINS**

	628.1104	645.0120
	<u>EROSION BALES</u>	<u>GEOTEXTILE TYPE HR</u>
<u>STATION TO STATION</u>	<u>EACH</u>	<u>SY</u>
ENTERPRISE AVENUE		
104+02 - 105+98	50	100
UNDISTRIBUTED	-	-
TOTALS	50	100

**SILT FENCE**

	628.1504	628.1520	628.1530.S	628.1535.S
	<u>SILT FENCE</u>	<u>SILT FENCE MAINTENANCE</u>	<u>SILT FENCE HEAVY DUTY</u>	<u>SILT FENCE HEAVY DUTY MAINTENANCE</u>
<u>STATION TO STATION</u>	<u>LF</u>	<u>LF</u>	<u>LF</u>	<u>LF</u>
ENTERPRISE AVENUE				
104+02 - 105+98	186	186	155	155
UNDISTRIBUTED	47	47	39	39
TOTALS	233	233	194	194

**EROSION CONTROL MOBILIZATIONS**

	628.1905	628.1910
	<u>MOBILIZATIONS EROSION CONTROL</u>	<u>MOBILIZATIONS EMERGENCY EROSION CONTROL</u>
<u>STATION TO STATION</u>	<u>EACH</u>	<u>EACH</u>
ENTERPRISE AVENUE		
104+02 - 105+98	5	5
TOTALS	5	5

ALL ITEMS CATEGORY 0010



**TURBIDITY BARRIERS**

628.6005

**TURBIDITY BARRIERS**

STATION TO STATION	SY
ENTERPRISE AVENUE	
104+02 - 105+98	231
TOTALS	231

**ROCK BAGS**

628.7570

**ROCK BAGS**

STATION TO STATION	EACH
ENTERPRISE AVENUE	
104+02 - 105+98	187
TOTALS	187

**FERTILIZER**

629.0210

**FERTILIZER TYPE B**

STATION TO STATION	CWT
ENTERPRISE AVENUE	
104+02 - 105+98	0.2
UNDISTRIBUTED	0.0
TOTALS	0.2

**TYPE II SIGNS**

SIGN NO.	STATION	SIGN CODE	MESSAGE	SIZE		638.2102	638.2602	638.3000	638.4000	REMARKS
				EACH	EACH	MOVING SIGNS TYPE II	REMOVING SIGNS TYPE II	REMOVING SMALL SIGN SUPPORTS	MOVING SMALL SIGN SUPPORTS	
1-1	104+08 RT	R7-1D		18	24	1.00	-	-	1.00	-
1-2	104+23 LT	R7-1D		18	24	1.00	-	-	1.00	-
1-3	104+68 RT	W5-52R		12	36	-	1.00	-	-	-
1-4	104+74 LT	W5-52L		12	36	-	1.00	1.00	-	-
1-5	105+24 RT	W5-52L		12	36	-	1.00	1.00	-	-
1-6	105+25 LT	W5-52R		12	36	-	1.00	1.00	-	-
1-7	105+88 RT	R7-1D		18	24	1.00	-	-	1.00	-
TOTAL						3.00	4.00	3.00	3.00	

**FIELD OFFICE TYPE B**

642.5001

PROJECT	EACH
ID 2721-00-76	1
TOTALS	1

**TRAFFIC CONTROL**

STAGE	DURATION DAYS	643.0300 TRAFFIC CONTROL DRUMS		643.0420 TRAFFIC CONTROL BARRICADES TYPE III		643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A		643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C		643.0900 TRAFFIC CONTROL SIGNS		643.1050 TRAFFIC CONTROL SIGNS PCMS	
		EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY
ENTERPRISE AVENUE													
STAGE 1	60	25	1,500	4	240	5	300	15	900	22	1,320	1	7
STAGE 2	64	31	1,984	4	256	5	320	15	960	22	1,408	1	7
TOTALS	124	56	3,484	8	496	10	620	30	1,860	44	2,728	2	14

ALL ITEMS CATEGORY 0010

PROJECT NO: 2721-00-76

HWY: ENTERPRISE AVENUE

COUNTY: WAUKESHA

MISCELLANEOUS QUANTITIES

SHEET:

E

FILE NAME :

PLOT DATE :

PLOT BY :

PLOT NAME :

PLOT SCALE : 1:1

3

TEMPORARY MARKING LINE

643.3180  
REMOVABLE TAPE 6-  
INCH

STAGE	LF
ENTERPRISE AVENUE	
STAGE 1	822
STAGE 2	805
TOTALS	1,627

TEMPORARY MARKING OTHER

643.3850  
TEMPORARY MARKING STOP LINE  
REMOVABLE TAPE 18-INCH

STAGE	LF
ENTERPRISE AVENUE	
STAGE 1	30
STAGE 2	30
TOTALS	60

TRAFFIC CONTROL

643.5000

PROJECT	EACH
ID 2721-00-76	1
TOTALS	1

3

GEOGRID TYPE SR

645.0220  
GEOGRID TYPE SR

STATION TO STATION	SY
ENTERPRISE AVENUE	
UNDISTRIBUTED	10
TOTALS	10

CONSTRUCTION STAKING

ITEM	QUANTITY	UNIT	DESCRIPTION
650.4500	147	LF	CONSTRUCTION STAKING SUBGRADE
650.5000	116	LF	CONSTRUCTION STAKING BASE
650.6501	1	EACH	CONSTRUCTION STAKING STRUCTURE LAYOUT (01. B-67-397)
650.7000	30	LF	CONSTRUCTION STAKING CONCRETE PAVEMENT
650.9500	1	EACH	CONSTRUCTION STAKING SIDEWALK (01. ID 2721-00-76)
650.9911	1	EACH	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (01. ID 2721-00-76)
650.9920	196	LF	CONSTRUCTION STAKING SLOPE STAKES

TEMPORARY TRAFFIC SIGNALS FOR BRIDGES

661.0101

TEMPORARY TRAFFIC SIGNALS  
FOR BRIDGES (01. B-67-397)

STATION TO STATION	EACH
ENTERPRISE AVENUE	
104+02 - 105+98	1
TOTALS	1

MAINTAINING BIRD DETERRENT SYSTEM

999.2005.S

MAINTAINING BIRD DETERRENT  
SYSTEM (01. STATION 105+00)

STATION TO STATION	EACH
ENTERPRISE AVENUE	
104+02 - 105+98	1
TOTALS	1

SPV.0195.01

01. EXCAVATION, HAULING, AND DISPOSAL OF ARSENIC  
AND SEMI-VOLATILE ORGANIC COMPOUND (SVOC)  
CONTAMINATED SOIL

STATION TO STATION	TON
ENTERPRISE AVENUE	
104+02 - 105+98	156
TOTALS	156

SAWING

690.0150  
ASPHALT

STATION TO STATION	LF
ENTERPRISE AVENUE	
104+02 - 105+98	63
TOTALS	63

UTILITY LINE OPENING

SPV.0060.01

SPECIAL 01. UTILITY LINE  
OPENING (ULO)

STATION TO STATION	EACH
ENTERPRISE AVENUE	
104+02 - 105+98	5
TOTALS	5

ALL ITEMS CATEGORY 0010

PROJECT NO: 2721-00-76

HWY: ENTERPRISE AVENUE

COUNTY: WAUKESHA

MISCELLANEOUS QUANTITIES

SHEET:

E

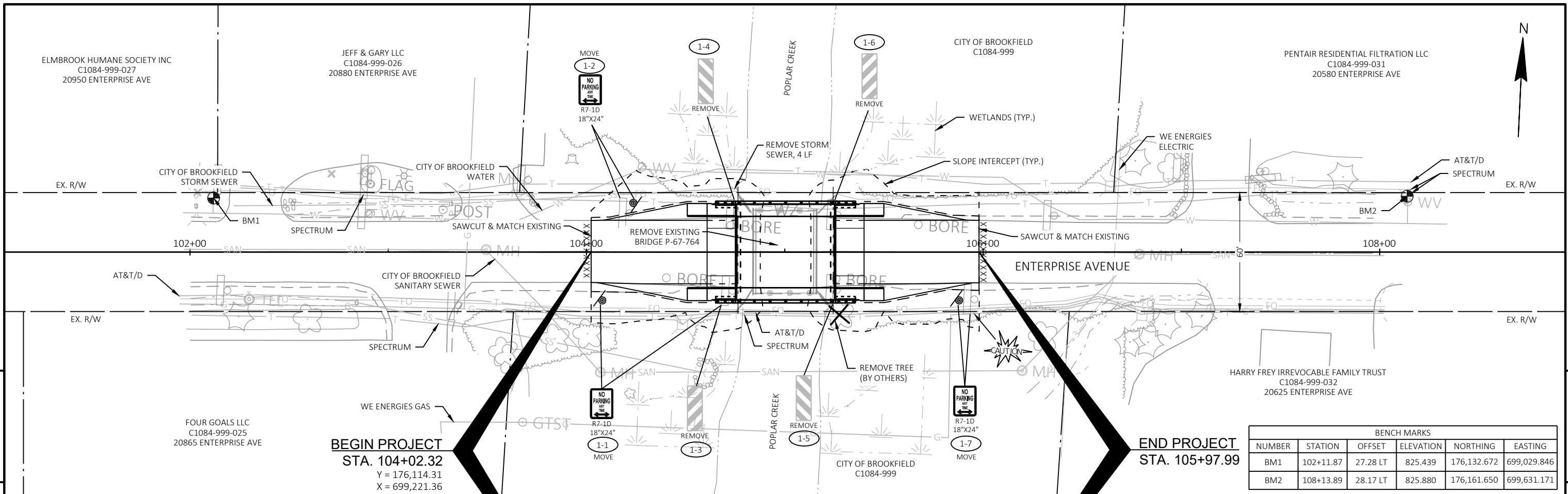
FILE NAME :

PLOT DATE :

PLOT BY :

PLOT NAME :

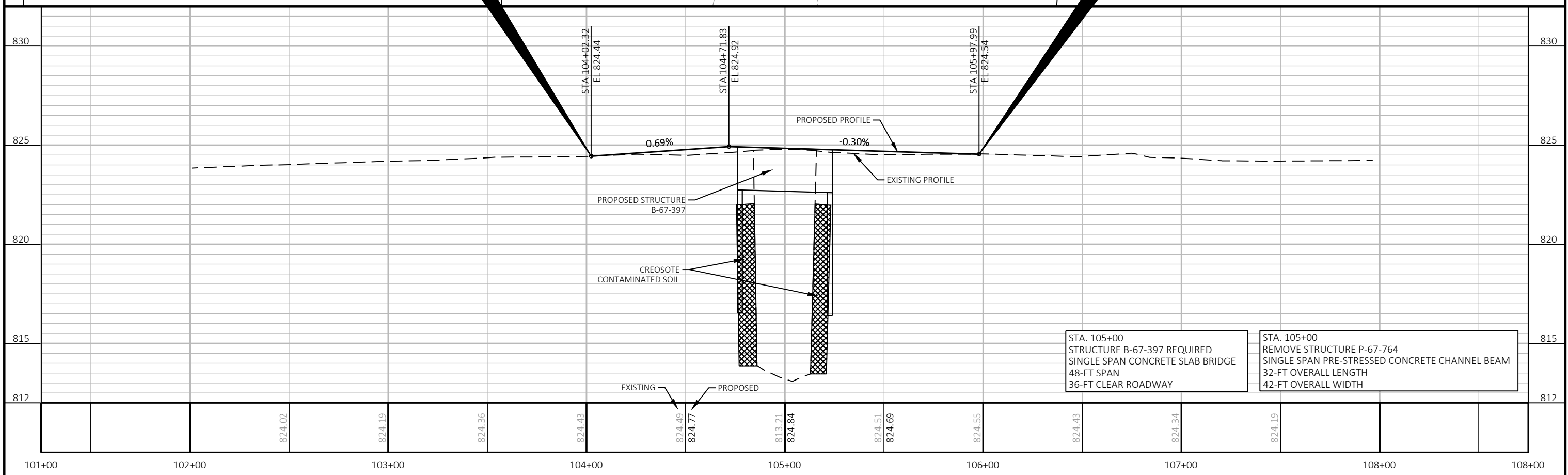
PLOT SCALE : 1:1



**BEGIN PROJECT**  
**STA. 104+02.32**  
 Y = 176,114.31  
 X = 699,221.36

**END PROJECT**  
**STA. 105+97.99**

BENCH MARKS					
NUMBER	STATION	OFFSET	ELEVATION	NORTHING	EASTING
BM1	102+11.87	27.28 LT	825.439	176,132.672	699,029.846
BM2	108+13.89	28.17 LT	825.880	176,161.650	699,631.171

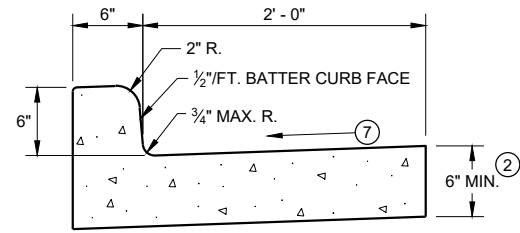


STA. 105+00  
 STRUCTURE B-67-397 REQUIRED  
 SINGLE SPAN CONCRETE SLAB BRIDGE  
 48-FT SPAN  
 36-FT CLEAR ROADWAY

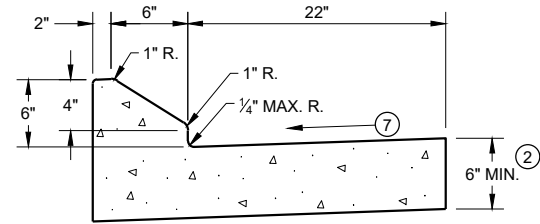
STA. 105+00  
 REMOVE STRUCTURE P-67-764  
 SINGLE SPAN PRE-STRESSED CONCRETE CHANNEL BEAM  
 32-FT OVERALL LENGTH  
 42-FT OVERALL WIDTH

## Standard Detail Drawing List

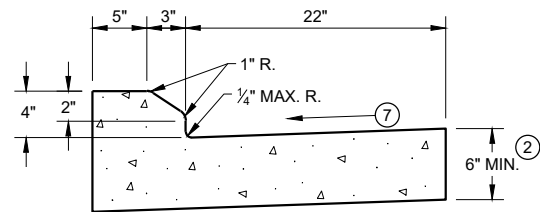
08D01-23A	CONCRETE CURB & GUTTER
08D01-23B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
09G02-05A	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-05B	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-05C	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
12A03-10	NAME PLATE (STRUCTURES)
13A03-07	CONCRETE PAVEMENT SHOULDERS
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C13-11	URBAN DOWELED CONCRETE PAVEMENT
13C19-03	HMA LONGITUDINAL JOINTS
14B07-16A	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16B	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16C	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16D	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16E	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16F	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16G	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16H	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16I	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16J	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16K	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16L	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16M	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-16N	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
15C05-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M. P. H. OR LESS
15C08-23B	TEMPORARY LONGITUDINAL PAVEMENT MARKING
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D33-09	TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS



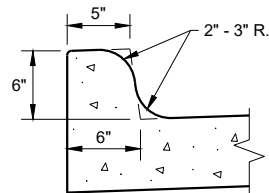
**TYPES A<sup>①</sup> & D**



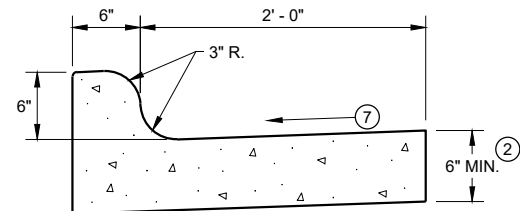
**6" SLOPED CURB TYPES G<sup>①</sup> & J**



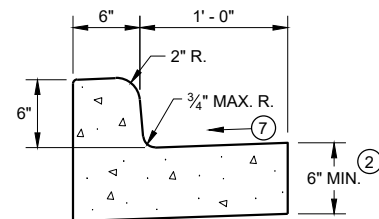
**4" SLOPED CURB TYPES G<sup>①</sup> & J**



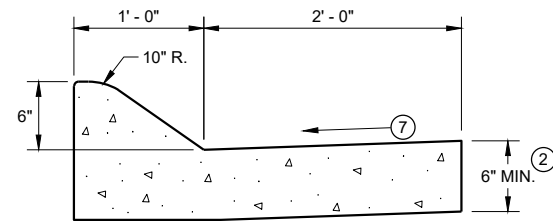
**TYPES K<sup>①</sup> & L**  
(OPTIONAL CURB SHAPE)



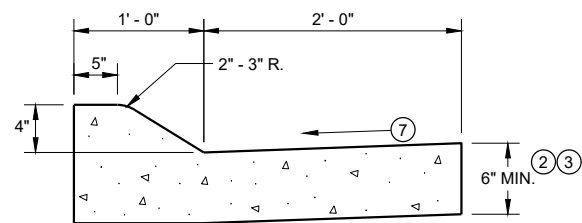
**TYPES K<sup>①</sup> & L**  
**CONCRETE CURB AND GUTTER 30"**



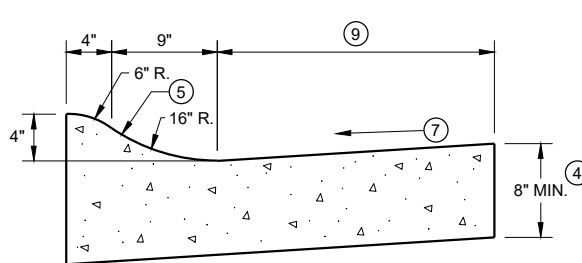
**TYPES A<sup>①</sup> & D**  
**CONCRETE CURB AND GUTTER 18"**



**6" SLOPED CURB TYPES A<sup>①</sup> & D**

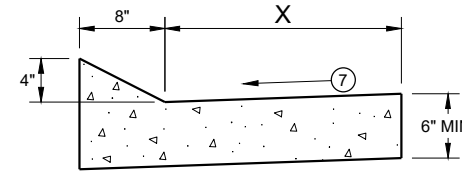


**4" SLOPED CURB TYPES A<sup>①</sup> & D**  
**CONCRETE CURB AND GUTTER 36"**



**4" SLOPED CURB TYPES R<sup>①</sup> & T**

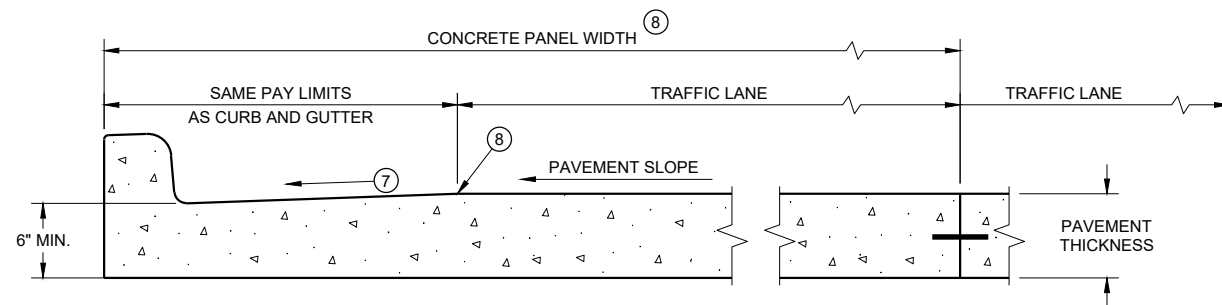
TBT & TBTT	X
30"	22"
36"	28"



**TYPES TBT & TBTT<sup>①</sup>**  
**CONCRETE CURB AND GUTTER**

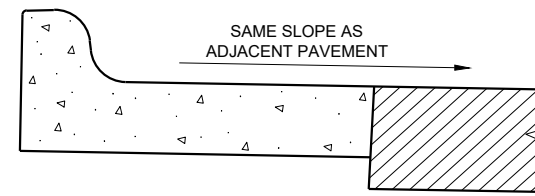
**PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE**

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



**PARTIAL SECTION OF PAVEMENT\* WITH INTEGRAL CURB AND GUTTER**

\* BIKE LANE IS NOT SHOWN



**REVERSE SLOPE GUTTER<sup>⑥</sup>**  
(TYPICAL FOR ALL CURB & GUTTER TYPES)

**GENERAL NOTES**

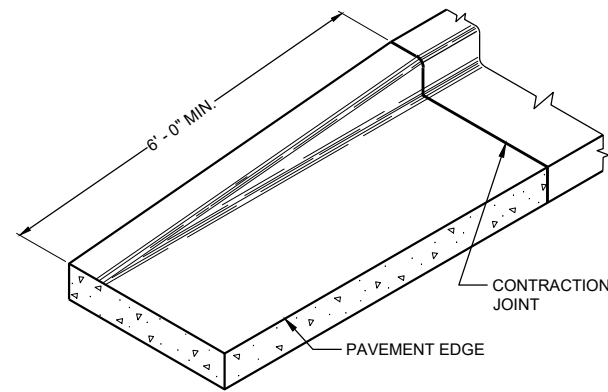
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

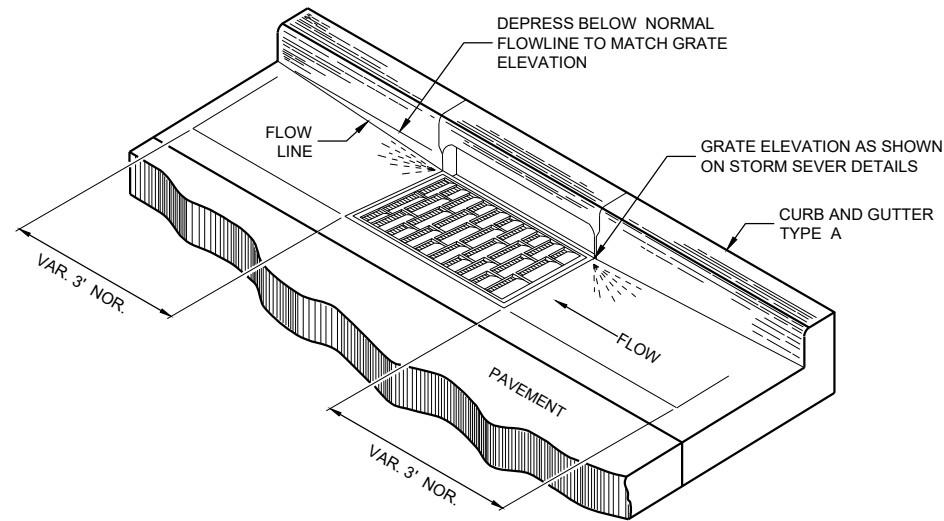
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ UNLESS OTHERWISE NOTED, FOR STAKING PURPOSES THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.
- ⑨ CONCRETE CURB AND GUTTER 4-INCH SLOPED 30-INCH TYPE "R" AND "T" = 17 INCHES  
CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE "R" AND "T" = 23 INCHES



**END SECTION CURB AND GUTTER**



**DETAIL OF CURB AND GUTTER AT INLETS**

(TYPICAL H INLET COVER SHOWN)

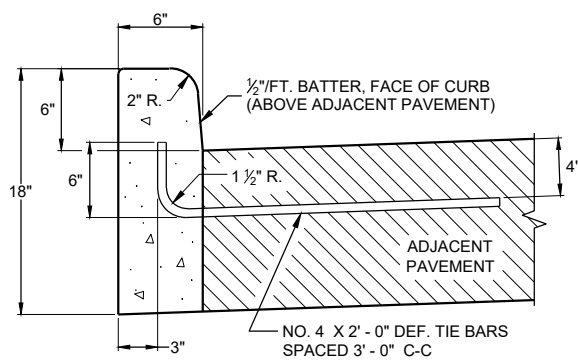
**GENERAL NOTES**

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

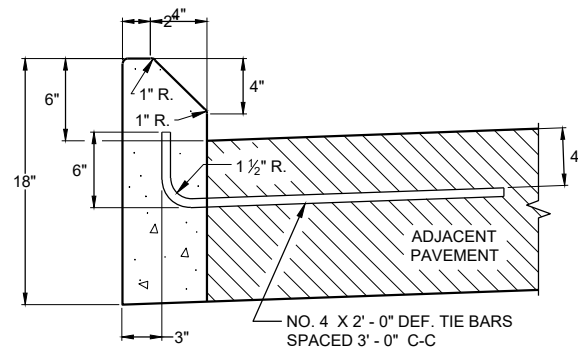
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

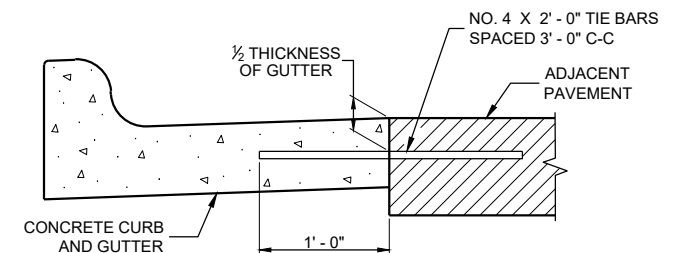
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑩ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.
- ⑪ PLACE 1" THICK EXPANSION JOINT MATERIAL BETWEEN VERTICAL FACE CURB TYPES EXTENDING FROM THE TOP OF CURB TO 1 INCH BELOW THE ADJOINING CONCRETE SURFACE. RIGID CONCRETE STRUCTURES INCLUDE RAISED CONCRETE MEDIANS, CONCRETE SAFETY ISLANDS, SPLITTER ISLANDS, OR LOCATIONS IDENTIFIED ON THE PLANS.



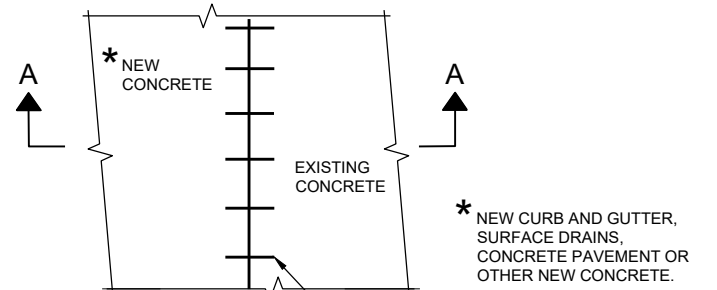
**TYPES A<sup>①</sup> & D**



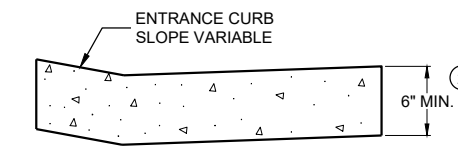
**TYPES G<sup>①</sup> & J  
CONCRETE CURB**



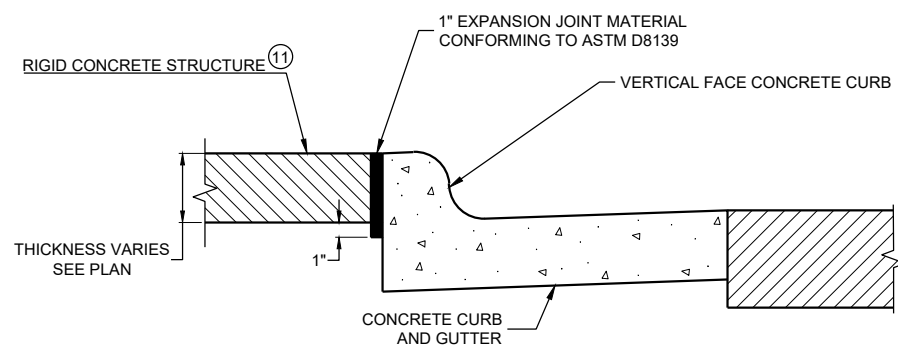
**TYPICAL TIE BAR LOCATION<sup>①</sup>**



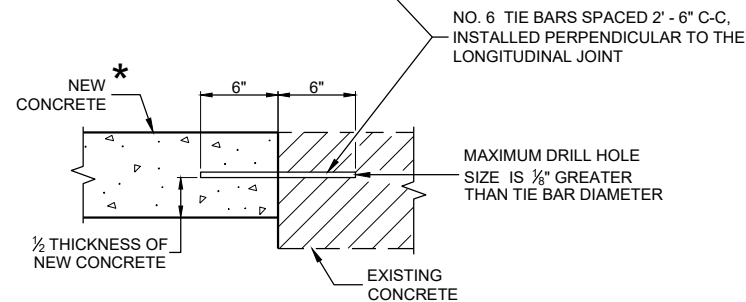
**PLAN VIEW**



**DRIVEWAY ENTRANCE CURB<sup>⑩</sup>  
(WHEN DIRECTED BY THE ENGINEER)**



**EXPANSION JOINT DETAIL FOR VERTICAL CURB ABUTTING A RIGID STRUCTURE<sup>⑪</sup>**



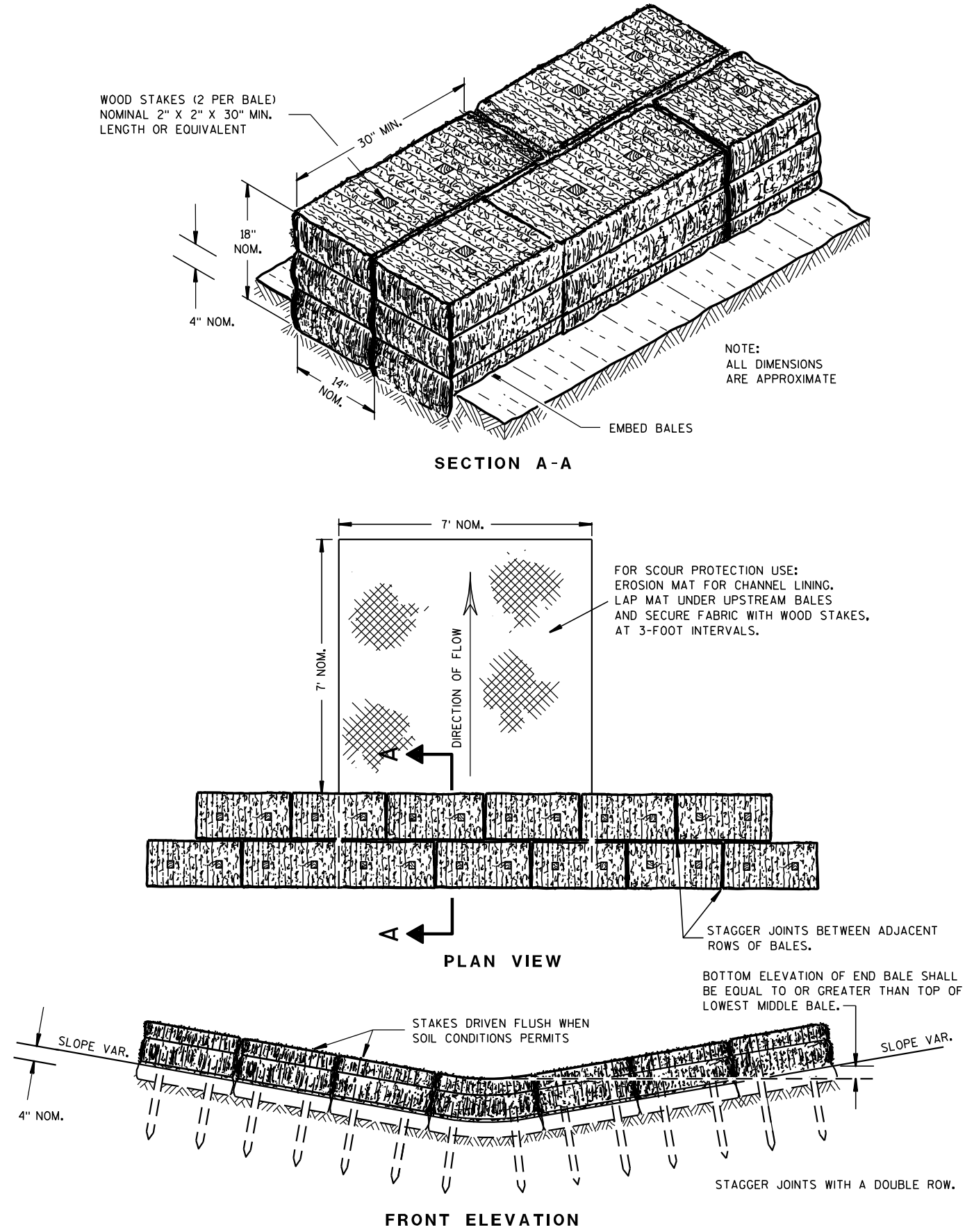
**SECTION A - A  
TIE BARS DRILLED INTO EXISTING PAVEMENT**

**CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE May 2023 /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

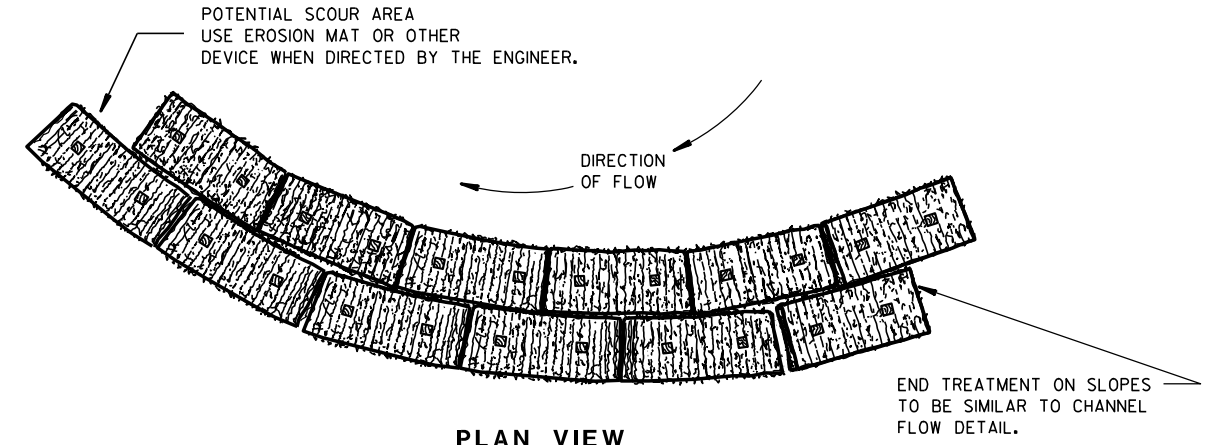


TEMPORARY DITCH CHECK USING EROSION BALES ①

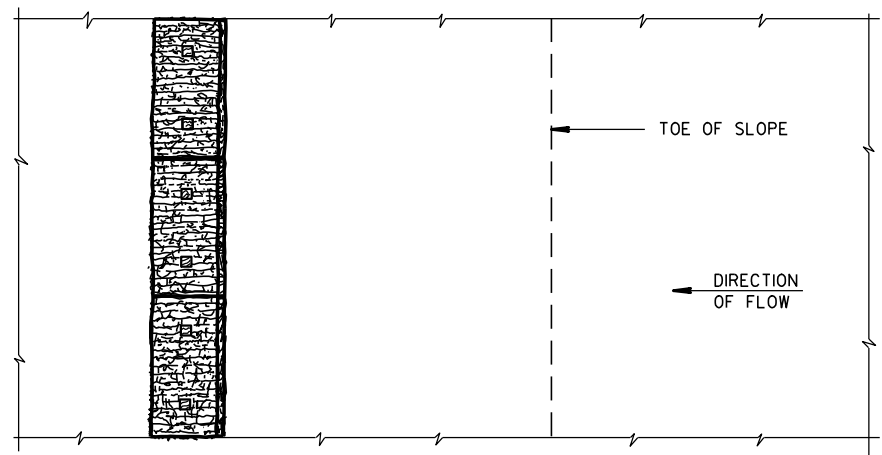
GENERAL NOTES

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

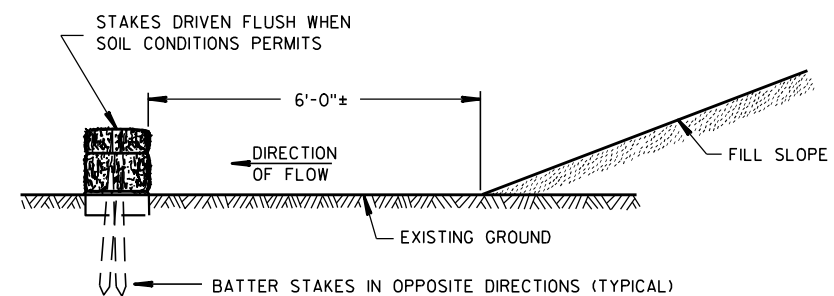
- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.



PLAN VIEW WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



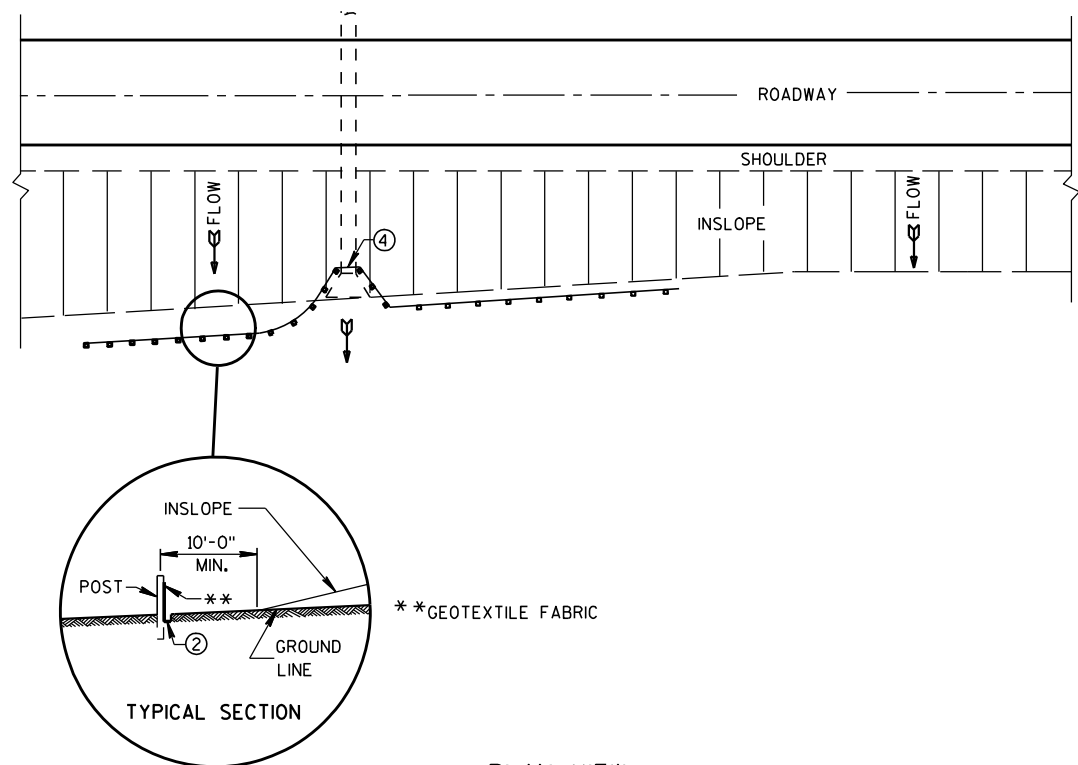
FRONT ELEVATION WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

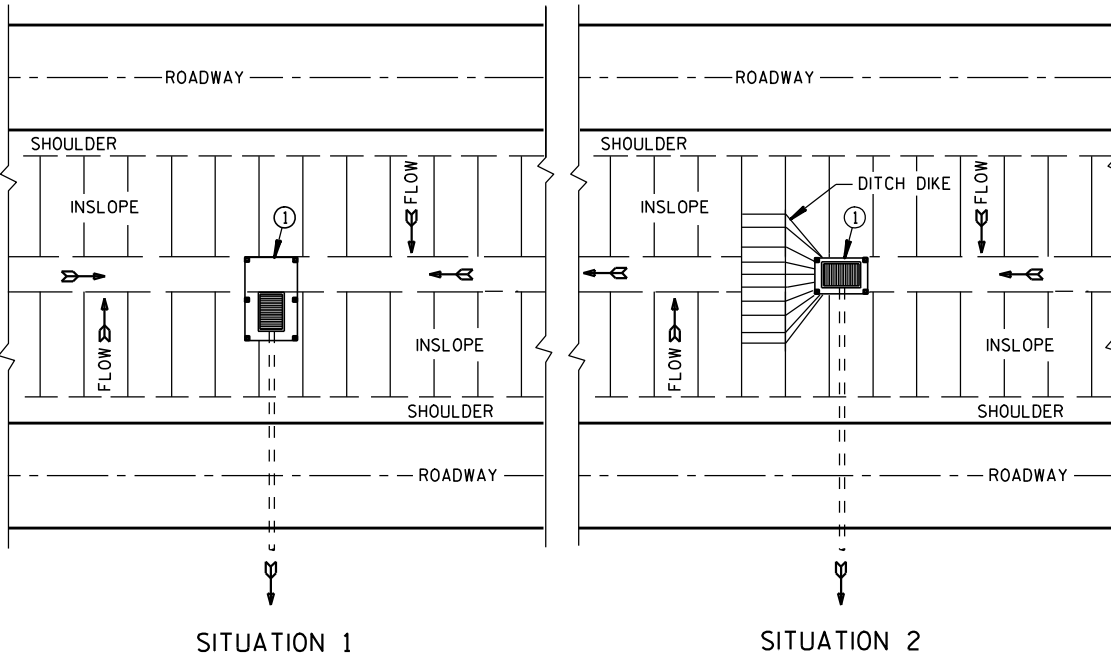
TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE

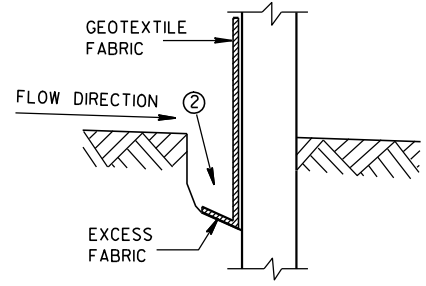


SITUATION 1      SITUATION 2  
PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

**GENERAL NOTES**

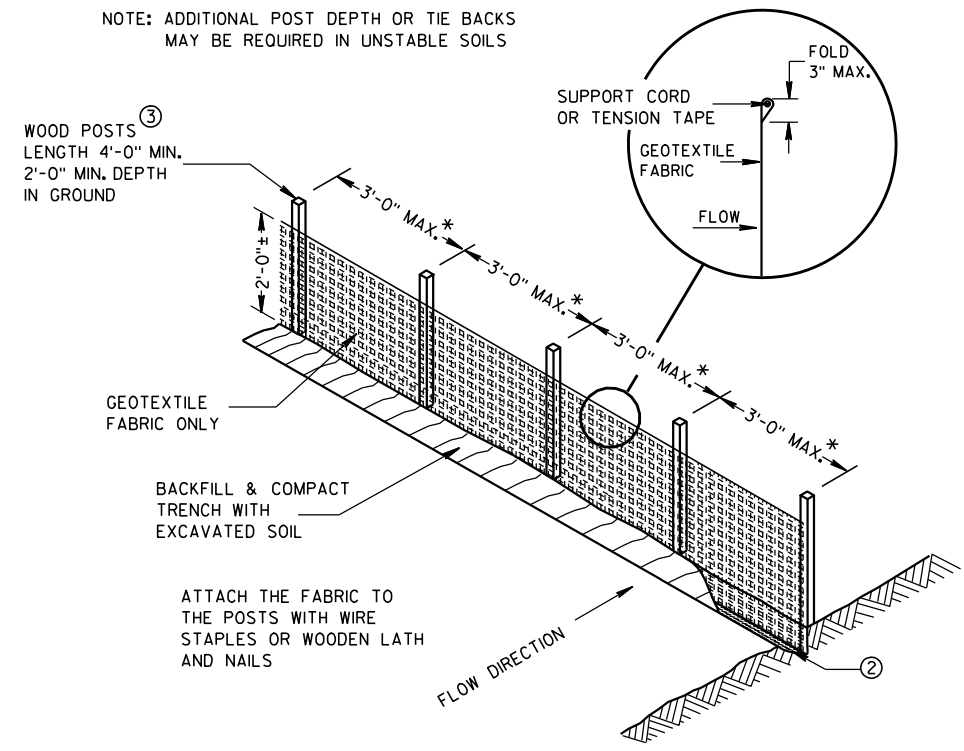
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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



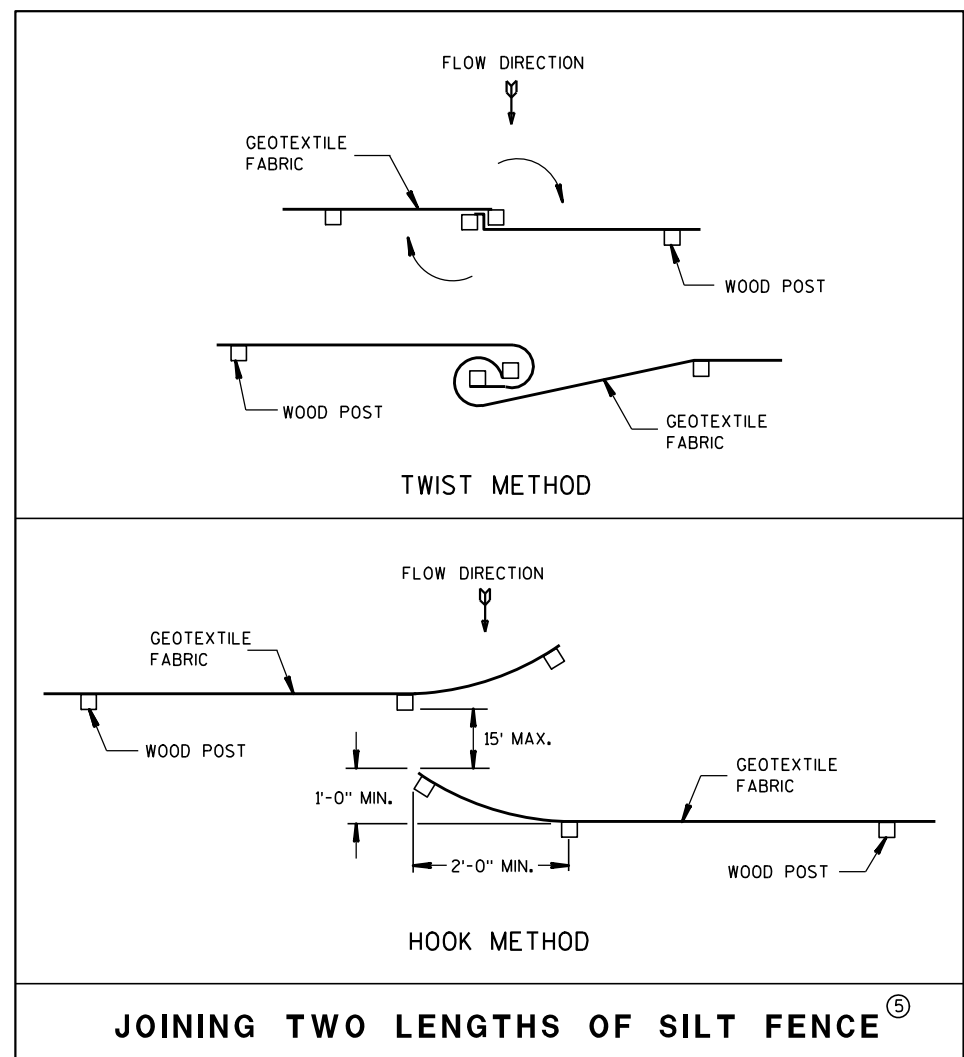
TRENCH DETAIL

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

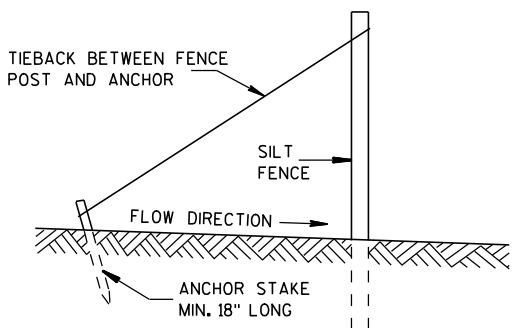


SILT FENCE

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



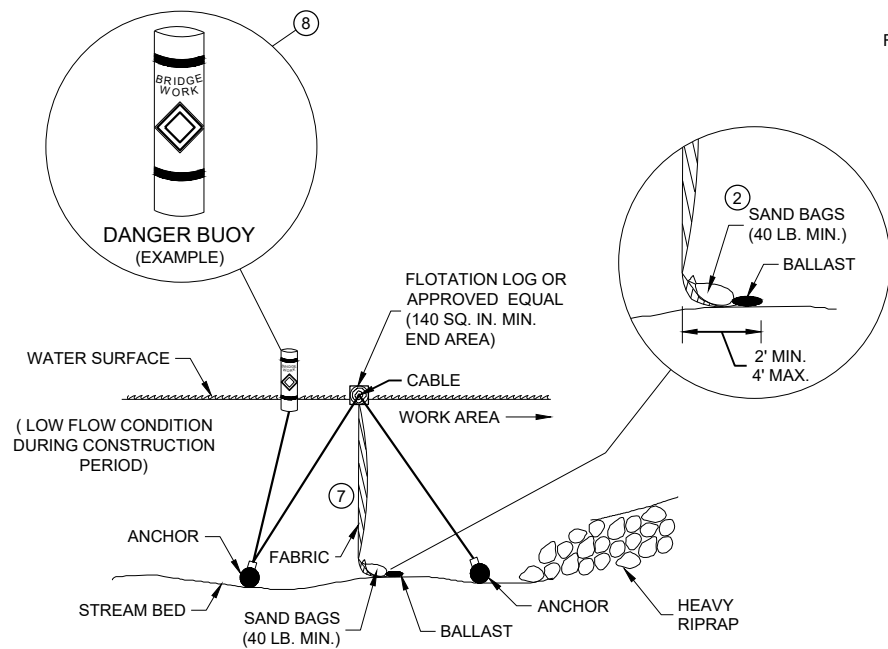
JOINING TWO LENGTHS OF SILT FENCE



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

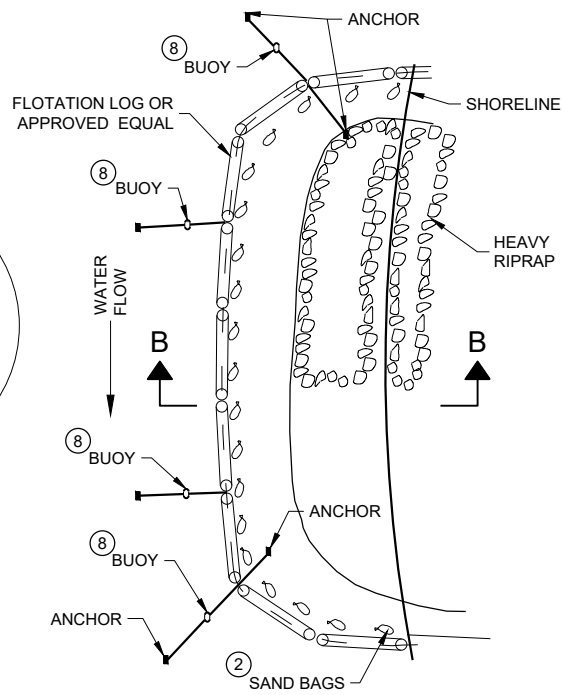
<b>SILT FENCE</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 DATE	/S/ Beth Canestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	



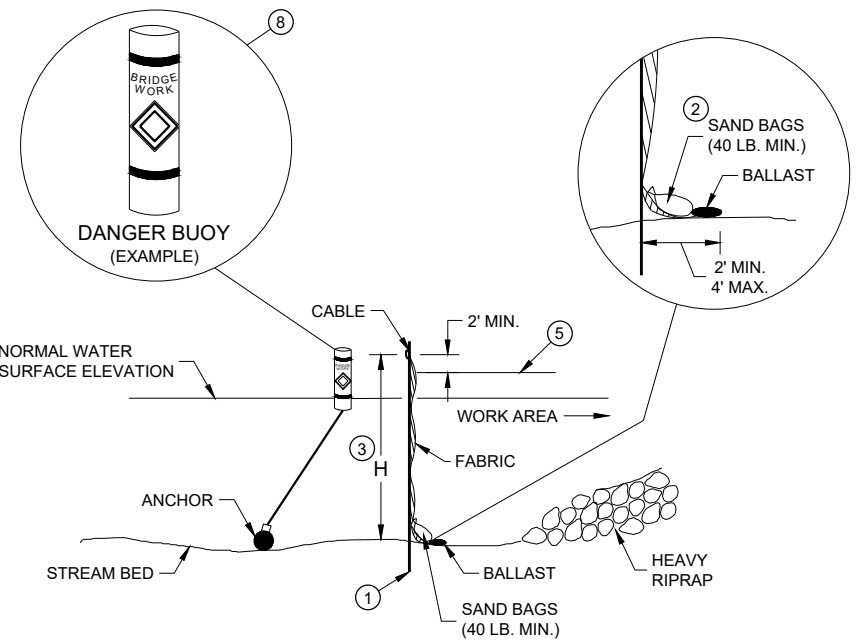


**SECTION B - B**

**TURBIDITY BARRIER - FLOAT ALTERNATIVE  
CAUTION - SEE NOTE 6**

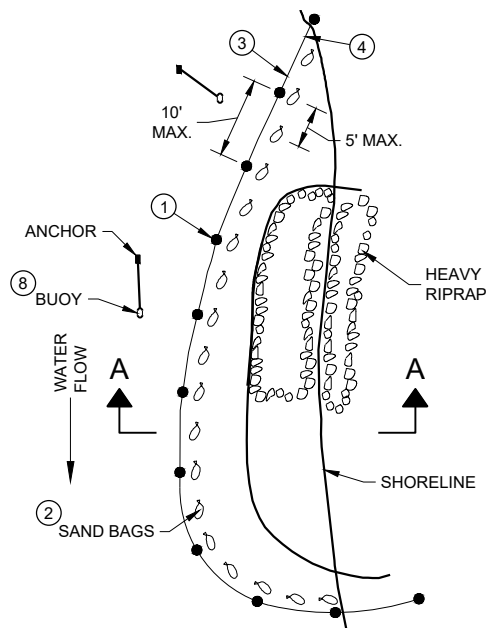


**PLAN VIEW**



**SECTION A - A**

**TURBIDITY BARRIER - STANDARD POST INSTALLATION**



**PLAN VIEW**

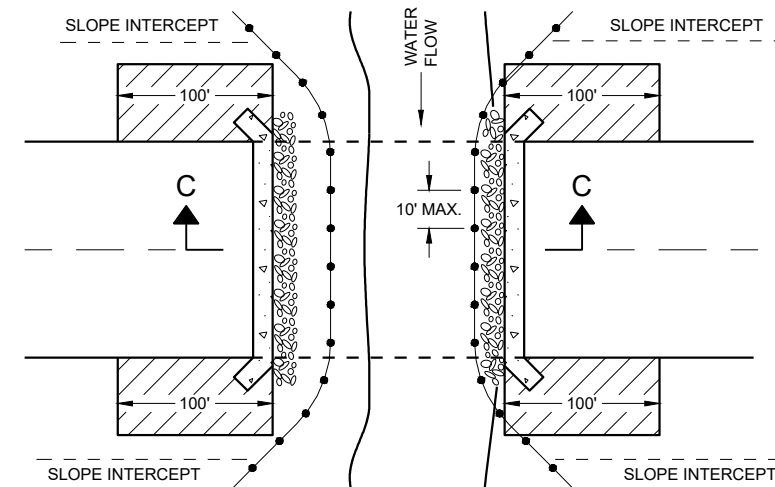
**TURBIDITY BARRIER PLACEMENT DETAILS**

**GENERAL NOTES**

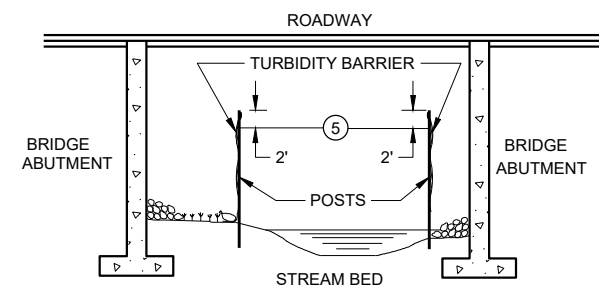
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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 SAND BAGS 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 FEET, 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 Q2 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 BEDROCK 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.



**PLAN VIEW**



**SECTION C - C**

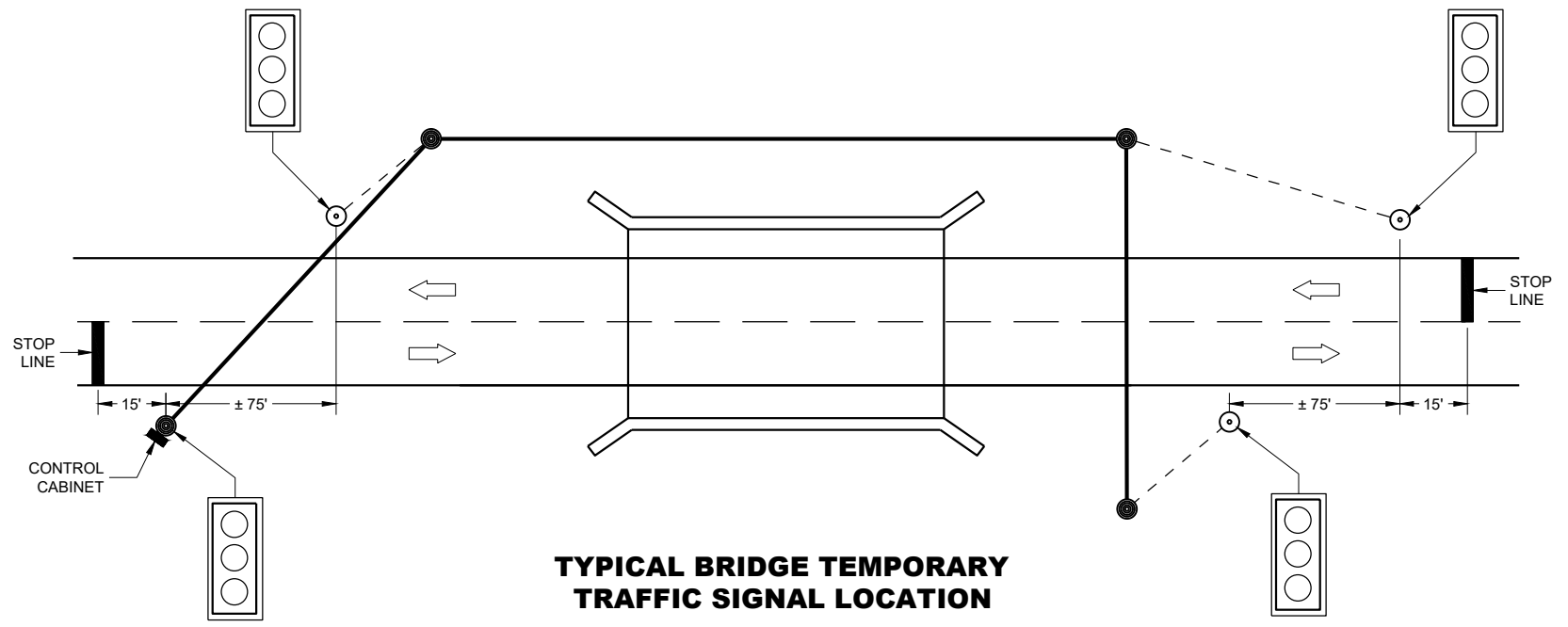
**TURBIDITY BARRIER DETAIL SHOWING  
TYPICAL PLACEMENT AT STRUCTURES**

**TURBIDITY BARRIER**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
6/4/02 DATE /S/ Beth Cannestra  
DATE CHIEF ROADWAY DEVELOPMENT  
ENGINEER

FHWA



**TYPICAL BRIDGE TEMPORARY TRAFFIC SIGNAL LOCATION**

**LEGEND**

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

**GENERAL NOTES**

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

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

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

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

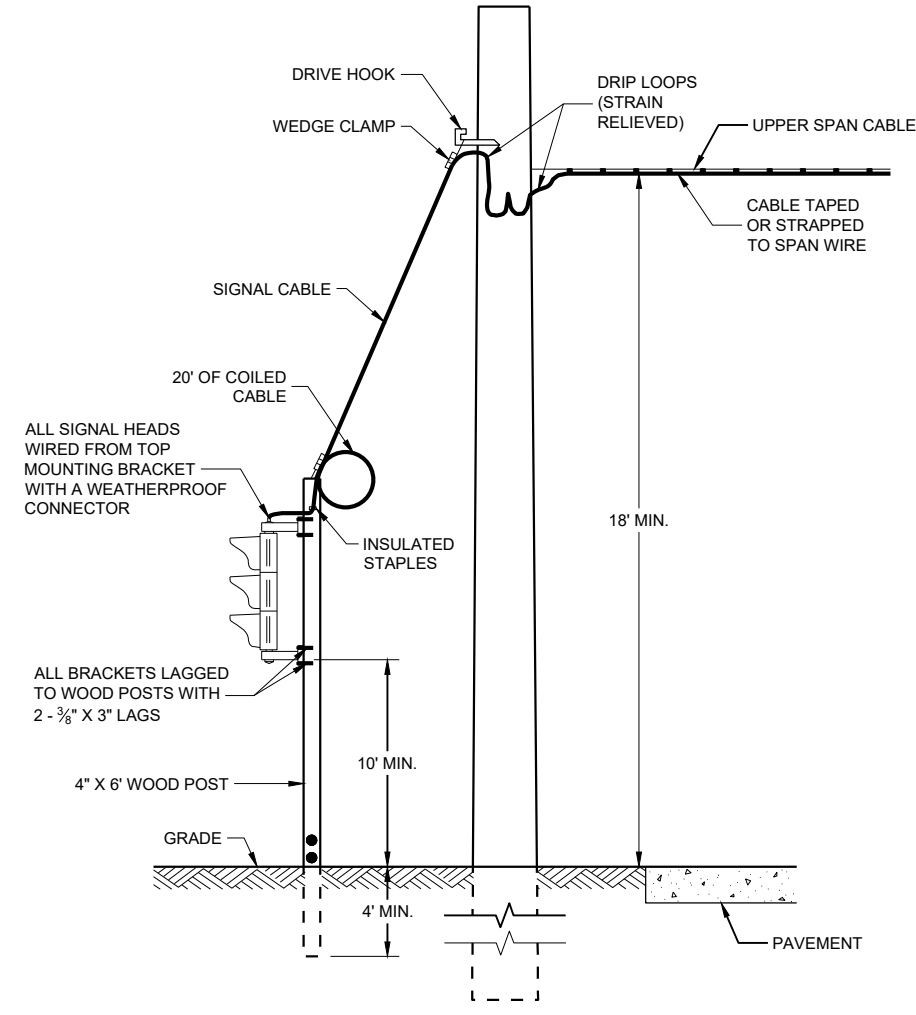
WOOD POSTS (BREAKAWAY) SHALL BE NO CLOSER THAN 2 FEET OUTSIDE OF SHOULDER.

VERTICAL CLEARANCE ETC. PER NEC.

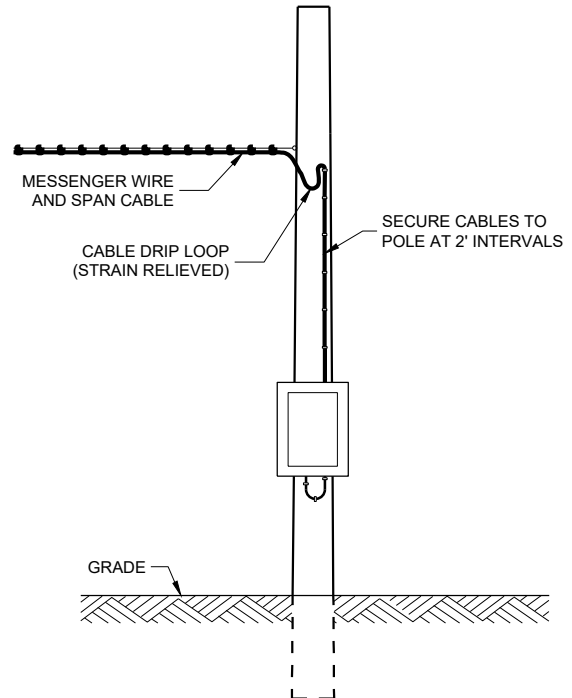
TRAFFIC SIGNAL FACES SHALL BE TYPICALLY PLACED 12 FEET FROM EDGE OF PAVEMENT.

EACH TRAFFIC SIGNAL SHALL HAVE A BACKPLATE.

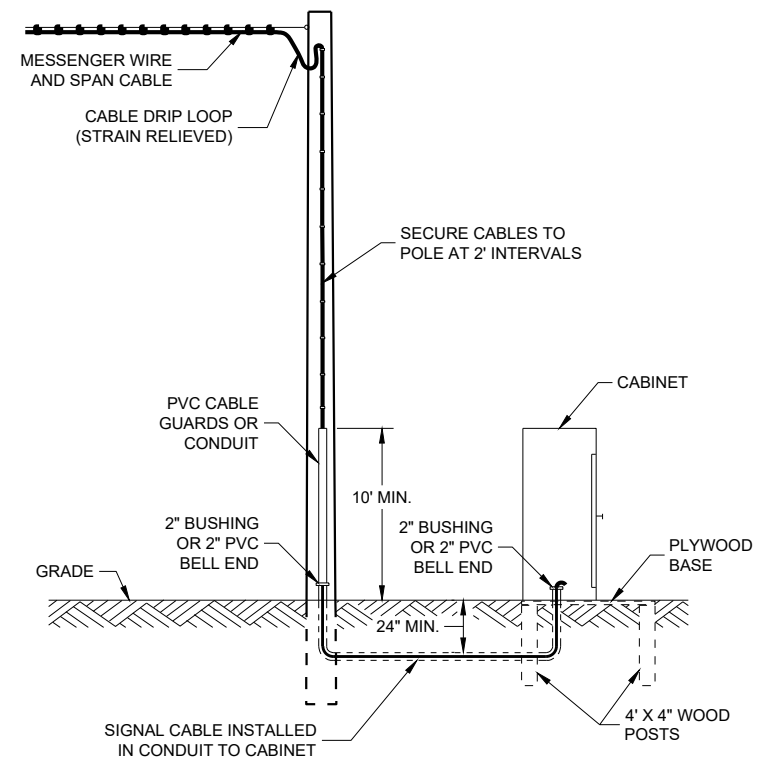
SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15D33.



**TYPICAL DROP TO TRAFFIC SIGNAL FACE**



**POLE MOUNT CABINET INSTALLATION**



**GROUND MOUNT CABINET INSTALLATION**

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

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

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

**BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA

6

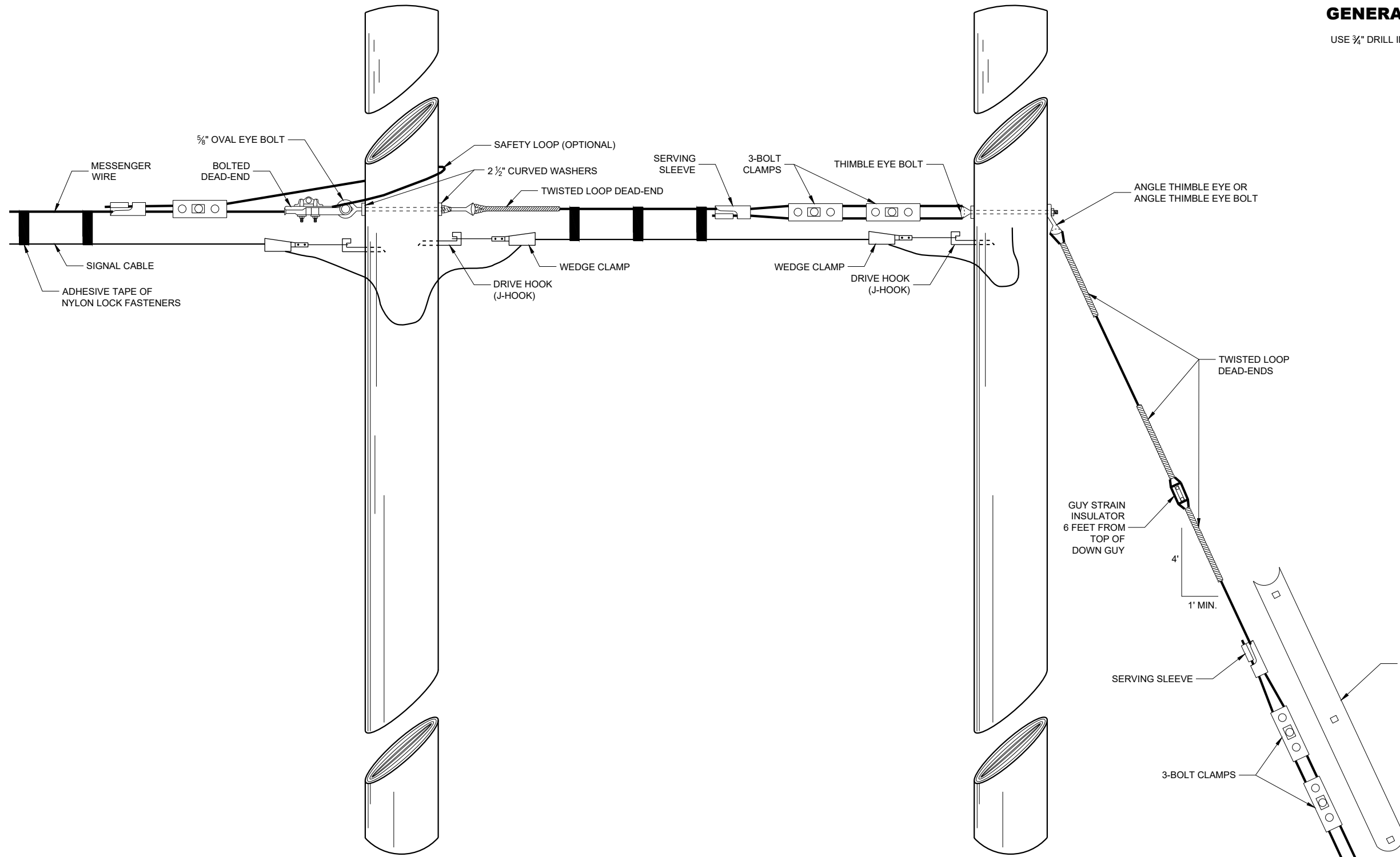
6

SDD09G02 - 05a

SDD09G02 - 05a

**GENERAL NOTES**

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



**SPAN WIRE POLE**

**GUY POLE**

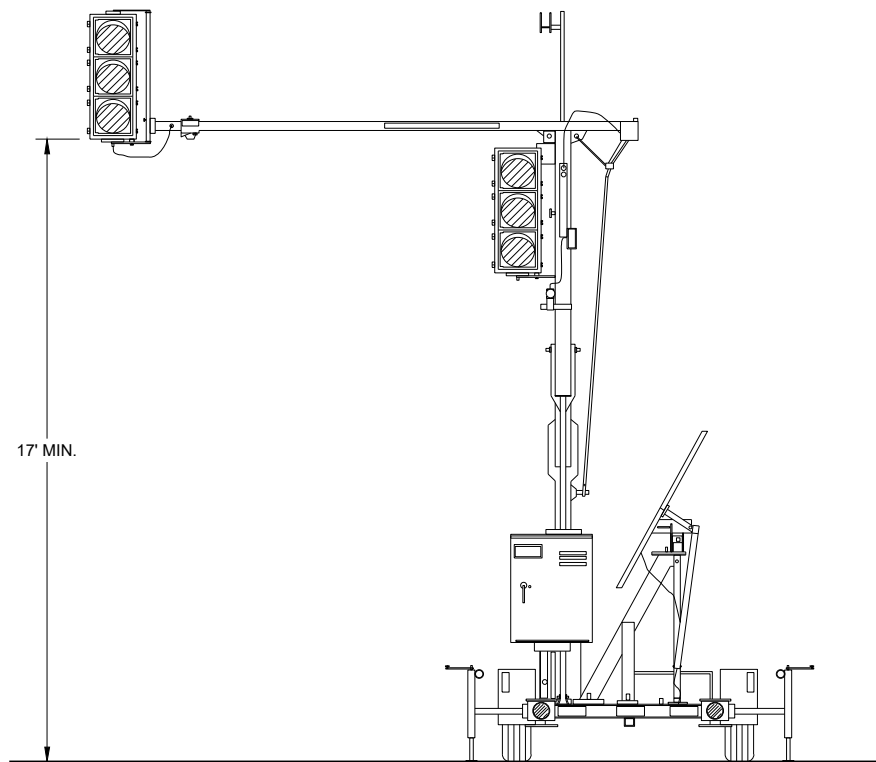
**TYPICAL DEAD-ENDINGS OR GUYING**

**BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA

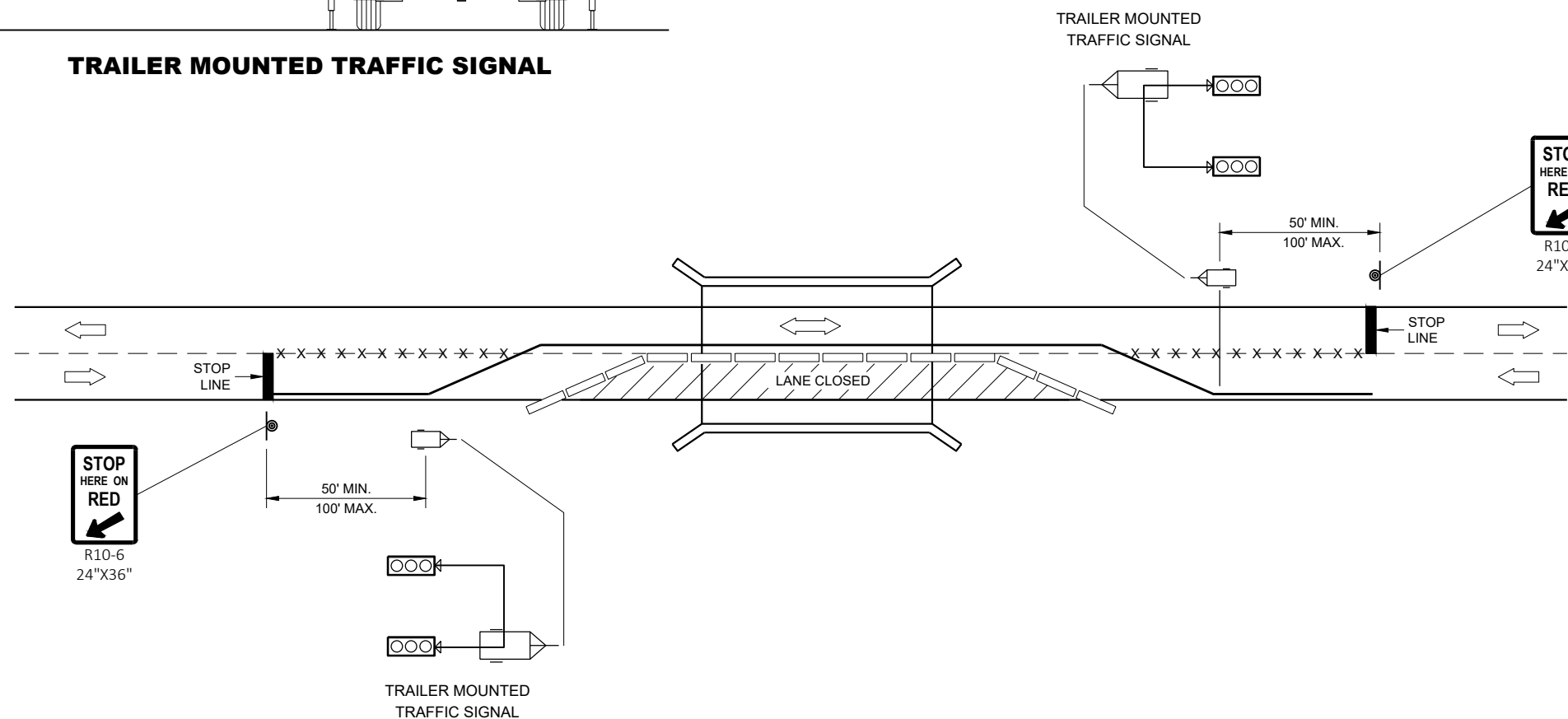


**TRAILER MOUNTED TRAFFIC SIGNAL**

**GENERAL NOTES**






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

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



**TYPICAL TRAILER MOUNTED TRAFFIC SIGNAL LOCATION**

**LEGEND**

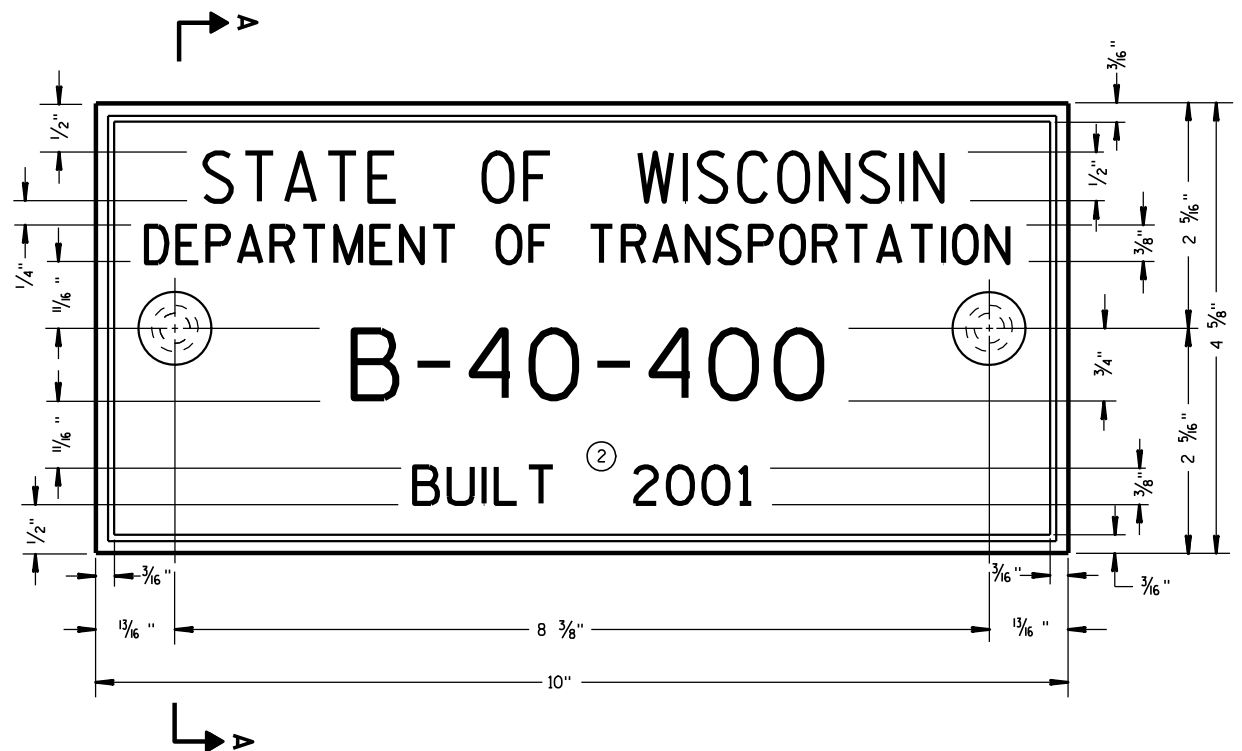
-  POST MOUNTED SIGN
-  TEMPORARY PRECAST CONCRETE BARRIER
-  TRAILER MOUNTED TRAFFIC SIGNAL
-  REMOVE PAVEMENT MARKINGS
-  DIRECTION OF TRAFFIC

**BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA



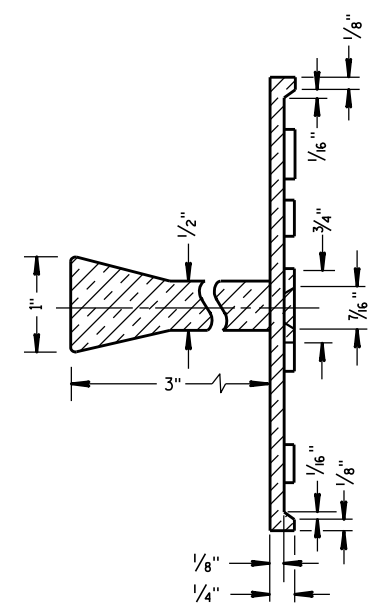
**TYPICAL NAME PLATE**  
(BRIDGES, CULVERTS, AND RETAINING WALLS)

**GENERAL NOTES**

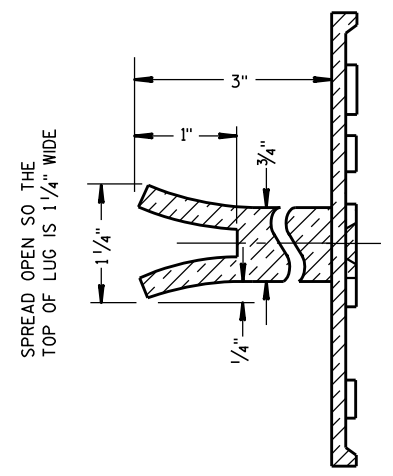
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

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

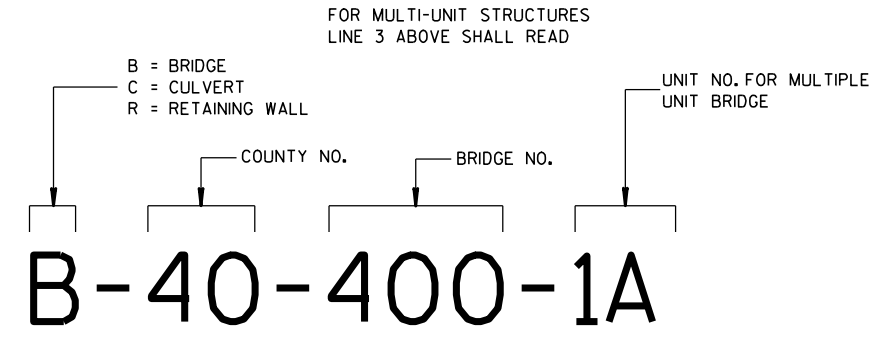


**SECTION A-A**



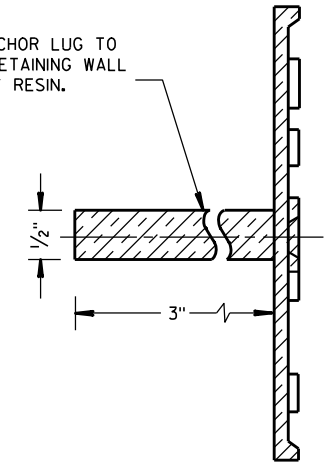
SPREAD OPEN SO THE TOP OF LUG IS 1 1/4" WIDE

**ALTERNATE LUG**



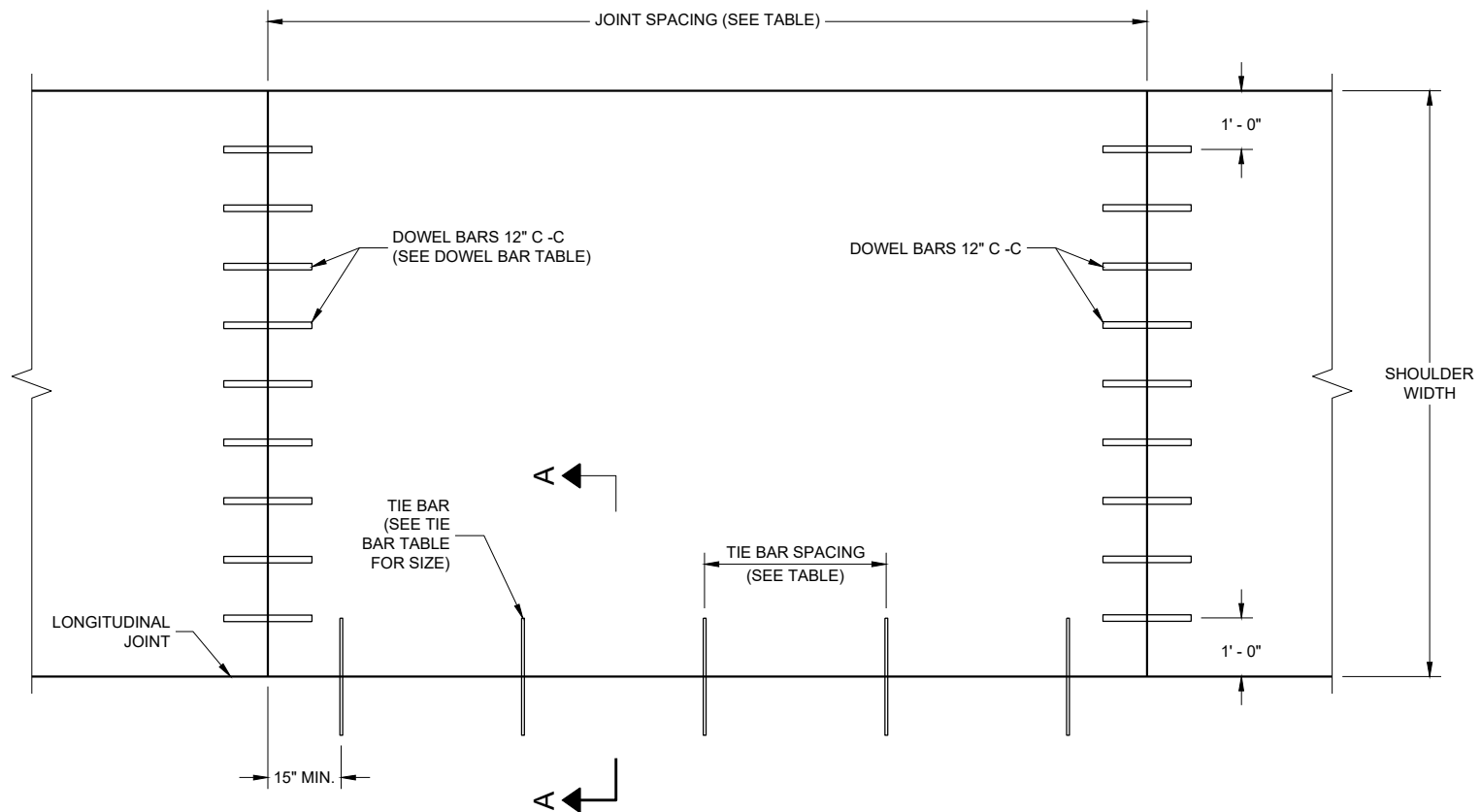
**NUMBERING DESIGNATION  
MULTI-UNIT STRUCTURES**

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



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

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



**PLAN VIEW  
CONCRETE PAVEMENT SHOULDER**

**PAVEMENT DEPTH, DOWEL BAR SIZE  
AND JOINT SPACING TABLE**

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER ***	CONTRACTION JOINT SPACING
6", 6 1/2"	NONE	12"
7", 7 1/2"	1"	14"
8" & ABOVE	1 1/4"	15"

\*\*\* FOR DOWELED CONCRETE SHOULDERS WITH TRAPEZOIDAL CROSS SECTIONS, CHOSE THE APPROPRIATE DOWEL BAR DIAMETER BASED ON THE SMALLER PAVEMENT DEPTH (LIKELY THE OUTSIDE EDGE OF THE SHOULDER). IF USING BASKETS, USE BASKETS FRO THE AVERAGE THICKNESS OF THE CROSS SECTION.

**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 BATS 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.

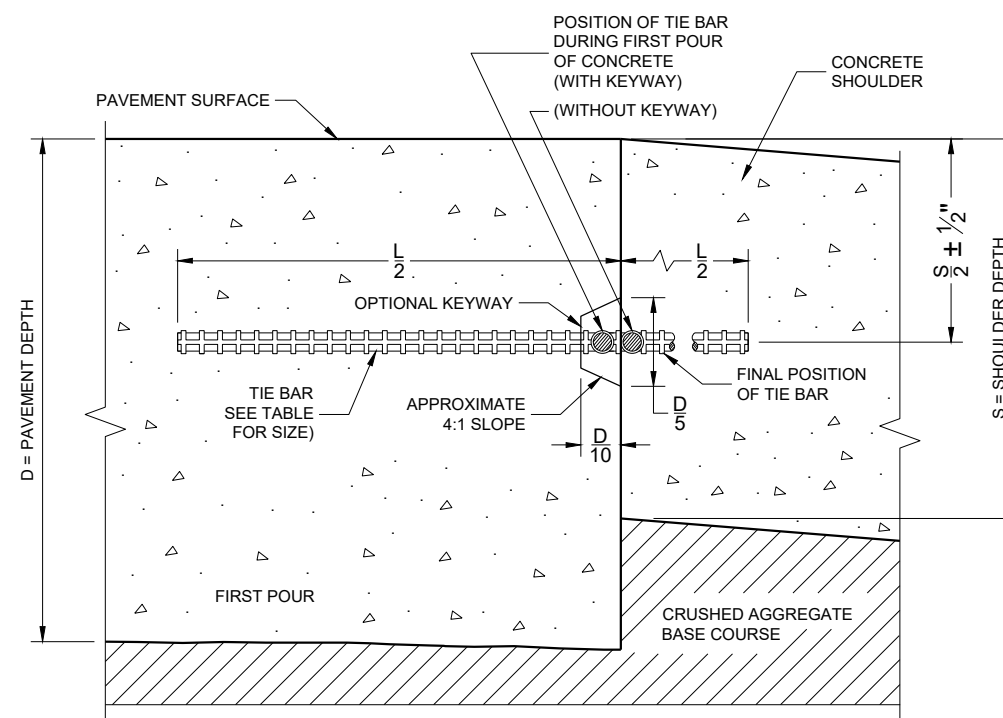
**GENERAL NOTES**

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

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

FINISH THE SHOULDER PAVEMENT CONFORMING TO SUBSECTION 415.3.8 OF THE STANDARD SPECIFICATIONS.

TIE BARS SHALL CONFORM TO SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.

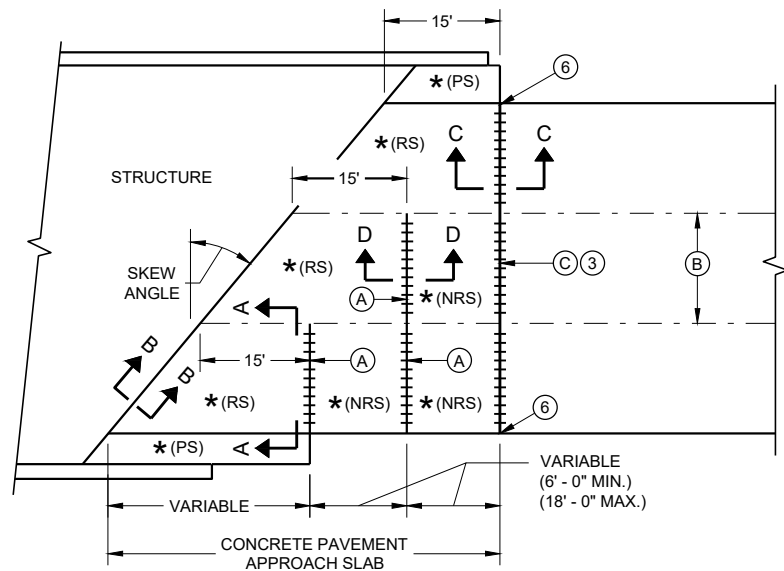


**SECTION A - A  
LONGITUDINAL CONSTRUCTION JOINT**

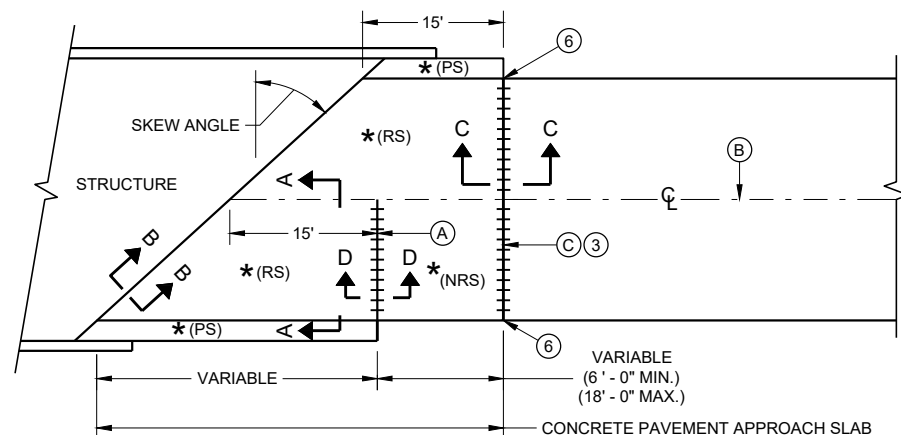
**CONCRETE PAVEMENT  
SHOULDERS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

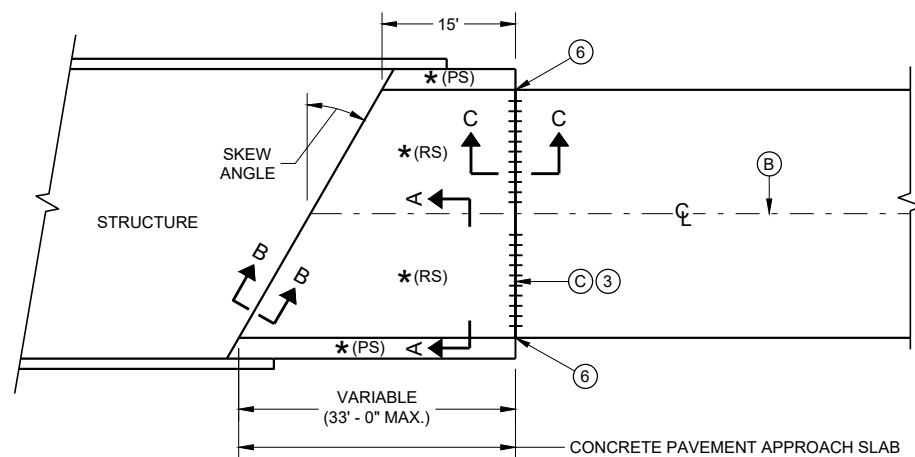
APPROVED  
November 2022 /S/ Peter Kemp  
DATE PAVEMENT SUPERVISOR



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

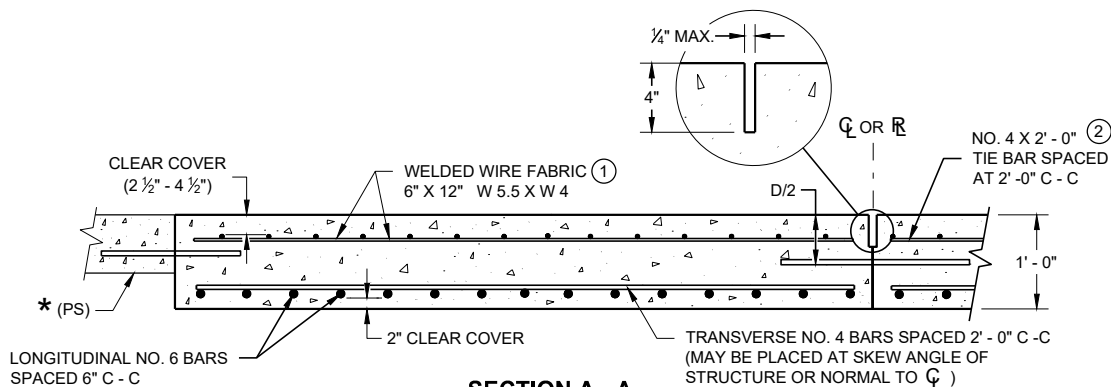


**SKews > 20°  
(PAVEMENT WIDTH ≤ 30')**

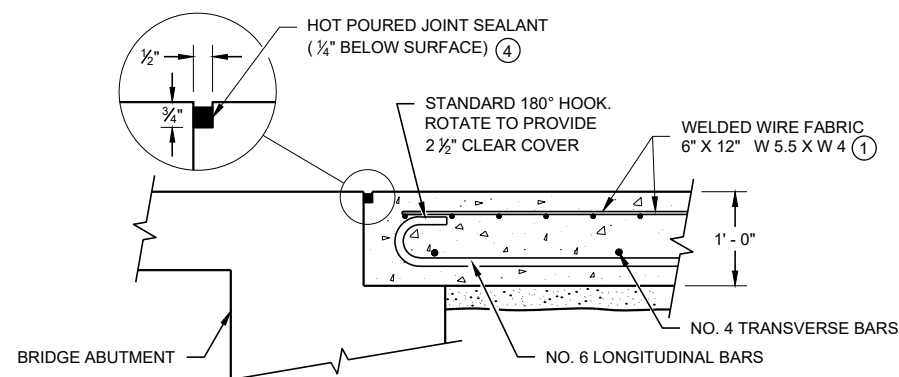


**SKews ≤ 20°  
(PAVEMENT WIDTH ≤ 30')**  
**APPROACH SLAB AND ADJACENT PAVEMENT**

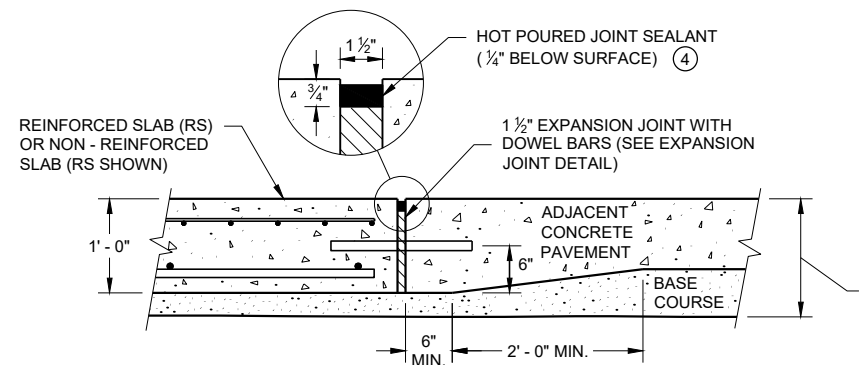
- \* (RS) = REINFORCED CONCRETE SLAB
- \* (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- \* (NRS) = NON - REINFORCED CONCRETE SLAB
- \*\*\* STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A  
REINFORCEMENT POSITIONING DETAIL**



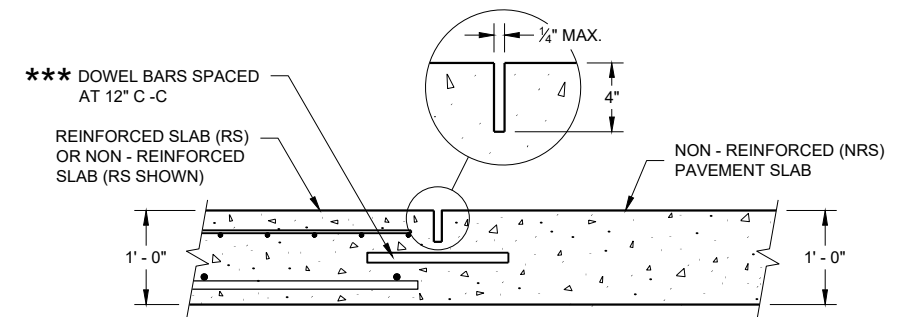
**SECTION B - B  
BEND DETAIL  
BOTTOM REINFORCEMENT**



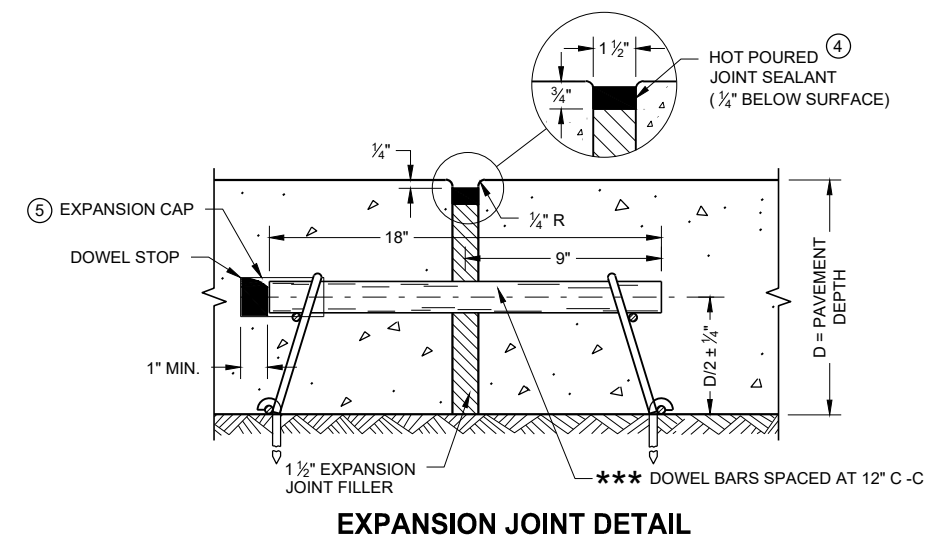
**SECTION C - C  
TRANSITION DETAIL  
APPROACH SLAB TO ADJACENT PAVEMENT**

**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 CONFORMING TO STANDARD SPECIFICATION 415.2.6.
  - 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  $\bar{C}$  OR  $\bar{R}$ .
  - (B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
  - (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO  $\bar{C}$  OR  $\bar{R}$ .



**SECTION D - D  
CONTRACTION JOINT**



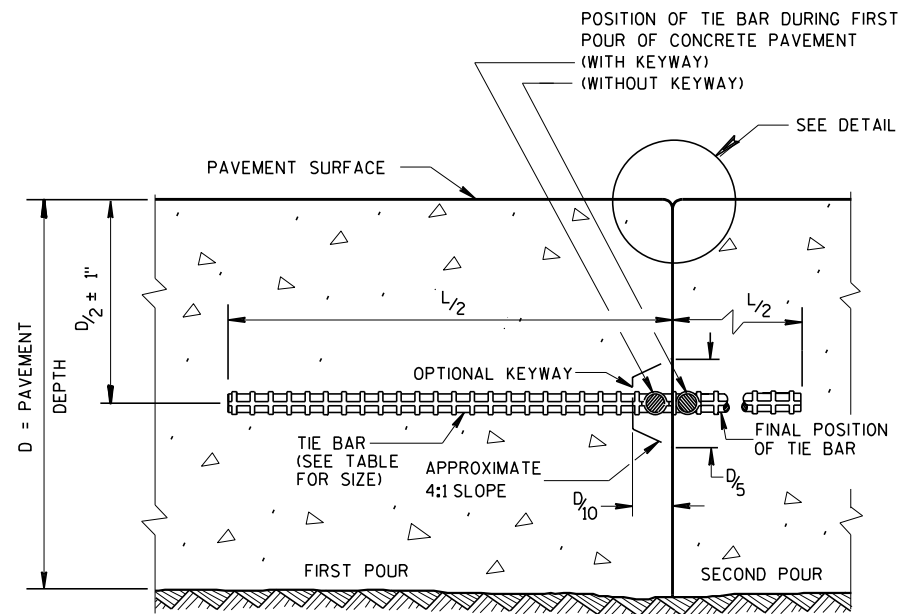
**EXPANSION JOINT DETAIL**

**CONCRETE PAVEMENT  
APPROACH SLAB**

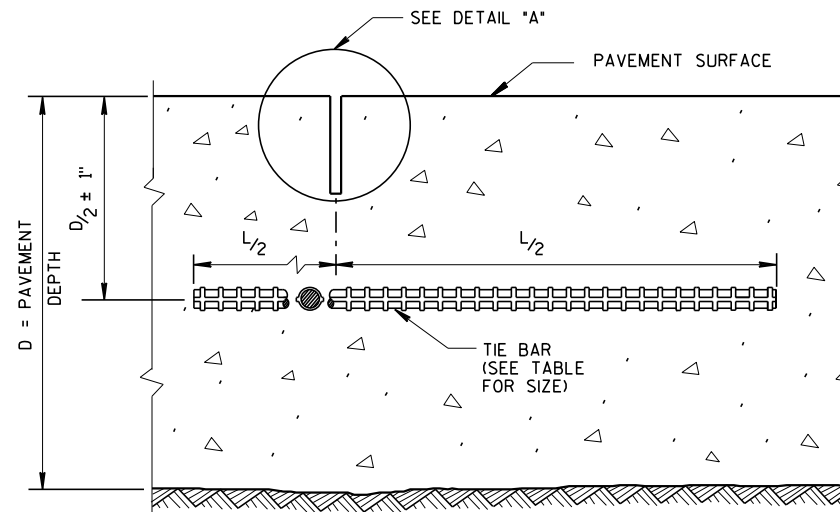
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA



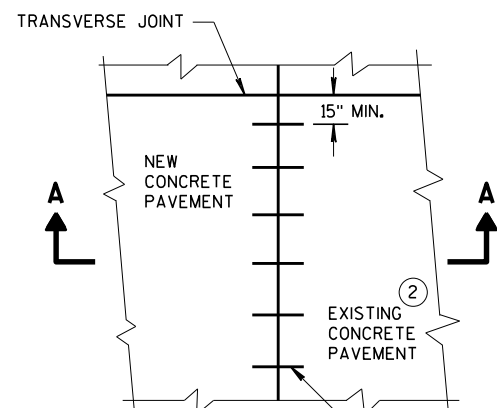
**CONSTRUCTION JOINT**



**SAWED JOINT**

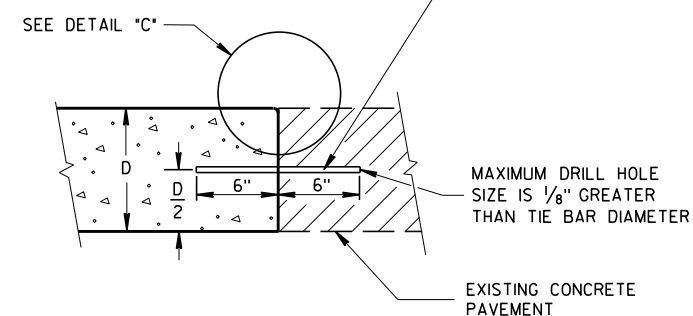
**GENERAL NOTES**

- 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.

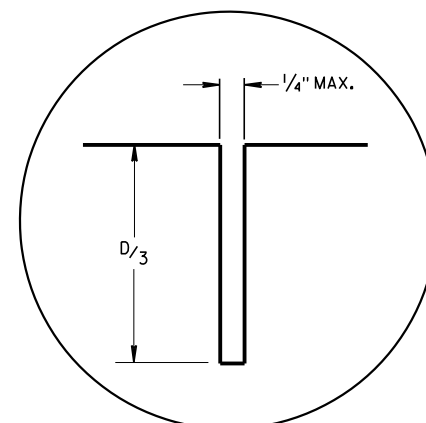


**PLAN VIEW**

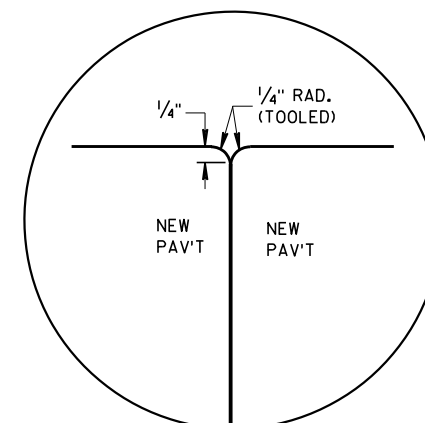
NO. 6 TIE BARS SPACED 30" C-C, INSTALLED PERPENDICULAR TO THE LONGITUDINAL JOINT. ①



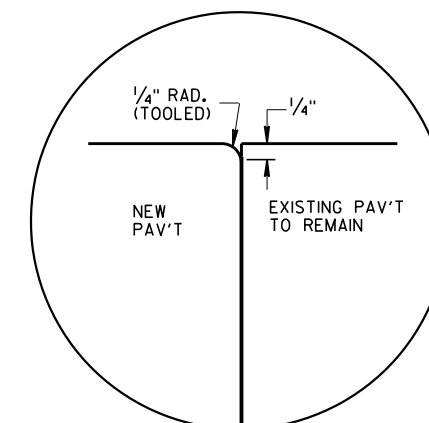
**SECTION A-A  
LONGITUDINAL CONSTRUCTION JOINT  
TIE BARS ANCHORED  
INTO EXISTING PAVEMENT**



**DETAIL "A"**



**DETAIL "B"**



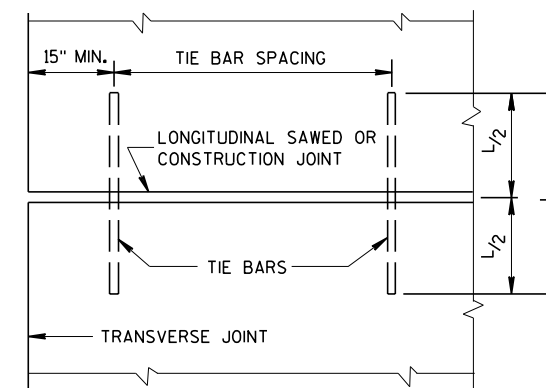
**DETAIL "C"**

**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**

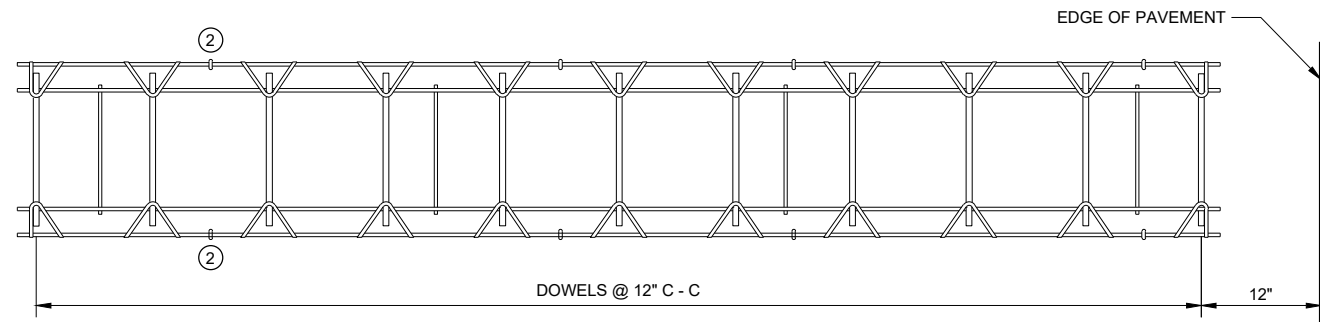
**CONCRETE PAVEMENT  
LONGITUDINAL JOINTS AND TIES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

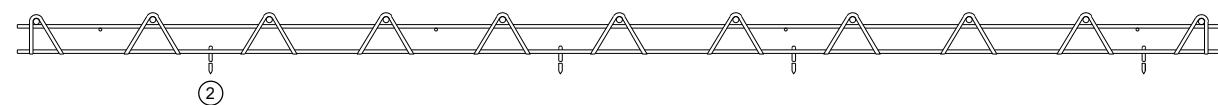
APPROVED  
March 2018 /S/ Peter Kemp, P.E.  
DATE PAVEMENT SUPERVISOR

FHWA



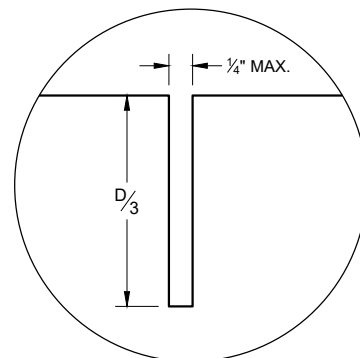


**PLAN VIEW**



**SIDE VIEW**

**CONTRACTION JOINT DOWEL ASSEMBLY** ①



**JOINT DETAIL**

**GENERAL NOTES**

**CONTRACTION JOINTS**

CONSTRUCT TRANSVERSE CONTRACTION JOINTS NORMAL TO THE CENTERLINE. SHOW THE LOCATION OF CONTRACTION JOINTS THROUGH INTERSECTIONS ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

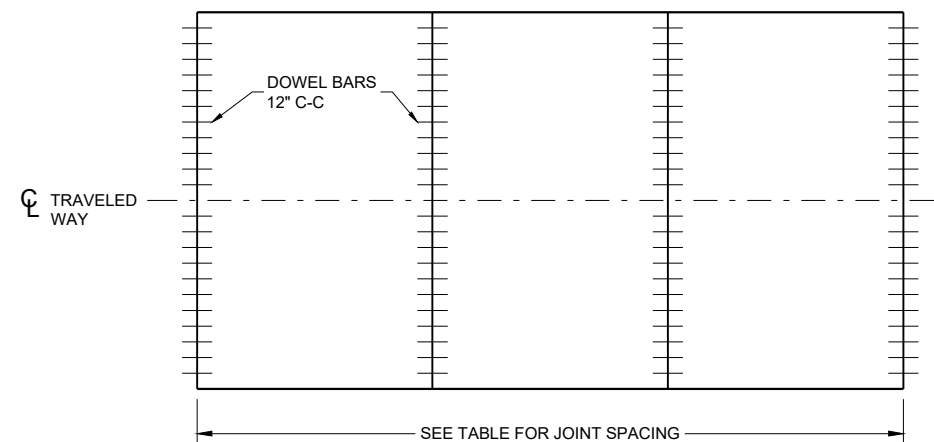
INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

FOR PAVEMENT SLABS OF VARYING WIDTHS, LOCATE THE OUTER MOST DOWEL BAR SO THAT THE CENTER OF THE BAR IS A MINIMUM OF 6 INCHES FROM AND A MAXIMUM OF 18 INCHES FROM THE FREE EDGE OF PAVEMENT.

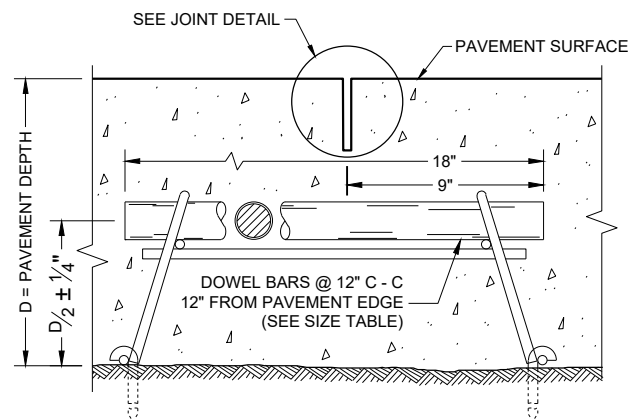
**CONSTRUCTION JOINTS**

LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO THE CONTRACTION JOINTS.

- ① OBTAIN THE ENGINEER'S APPROVAL FOR THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTION CONTRACTION JOINTS.
- ② SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.
- ③ FORM OR SAW CONSTRUCTION JOINTS. PROVIDE A 1/4" RADIUS AT FORMED JOINTS.
- ④ PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS.
- ⑤ INSTALL DOWEL BARS AT CONSTRUCTION JOINTS BY FORMING OR DRILLING. INSTALL FORMED DOWEL BARS 12 INCHES C - C AND 12 INCHES FROM PAVEMENT EDGE. REMOVE EXCESS CONCRETE FROM THE FREE END OF THE DOWEL BAR IF DOWEL BARS ARE FORMED THROUGH A HEADER BOARD. INSTALL DRILLED DOWEL BARS ACCORDING TO THE "DRILLED DOWEL BAR CONSTRUCTION JOINT" DETAIL.
- ⑥ APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.
- ⑦ ANCHOR DOWEL BARS AND TIE BARS INTO DRILLED HOLES WITH AN EPOXY. MAXIMUM DRILLED HOLE SIZE IS 1/8" GREATER THAN DOWEL BAR DIAMETER, 9 INCHES IN LENGTH.



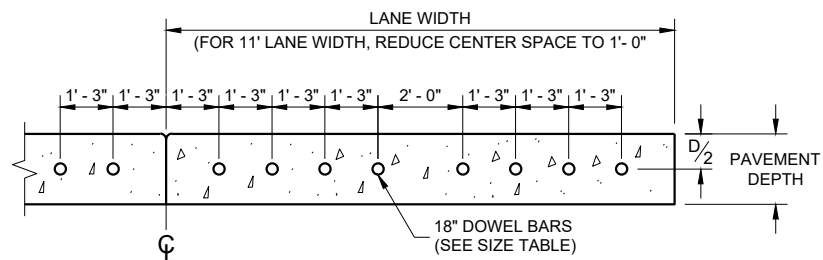
**CONTRACTION JOINT LOCATIONS**



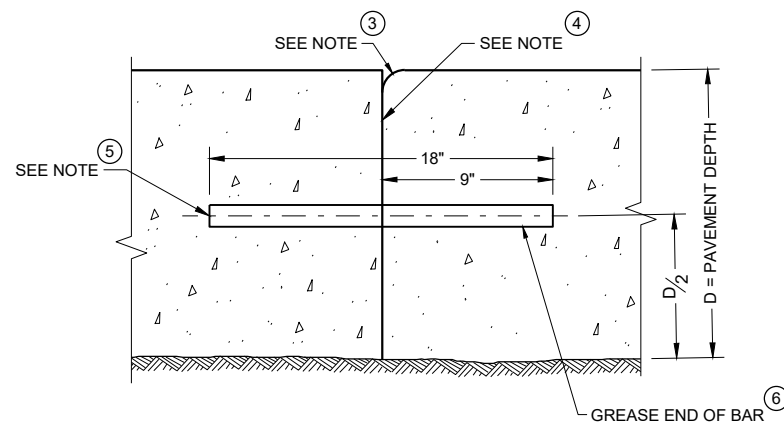
**DOWELED CONTRACTION JOINT**

**PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE**

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
6", 6 1/2"	NONE	12'
7", 7 1/2"	1"	14'
8" & ABOVE	1 1/4"	15'



**DRILLED DOWEL BAR CONSTRUCTION JOINT** ⑦



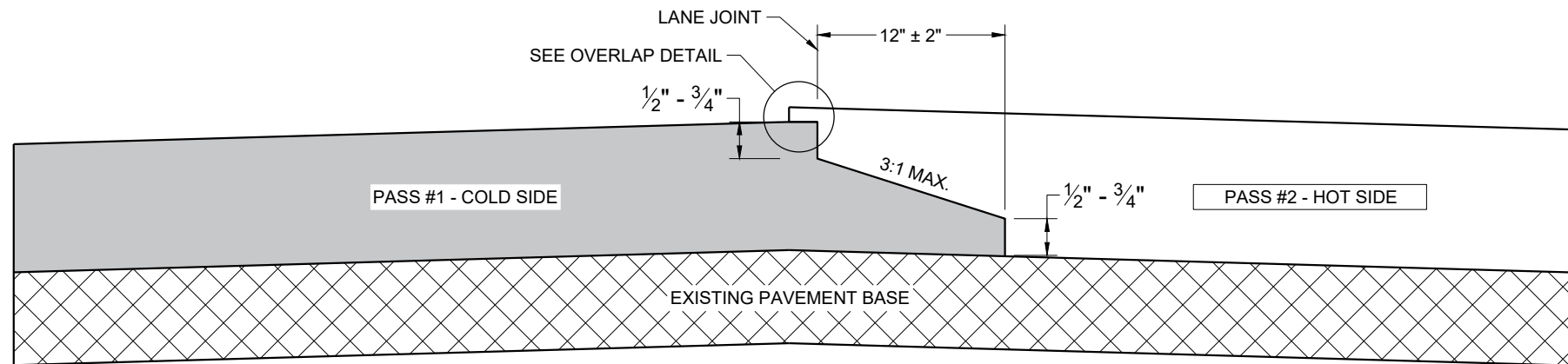
**TRANSVERSE CONSTRUCTION JOINT**

**URBAN DOWELED CONCRETE PAVEMENT**

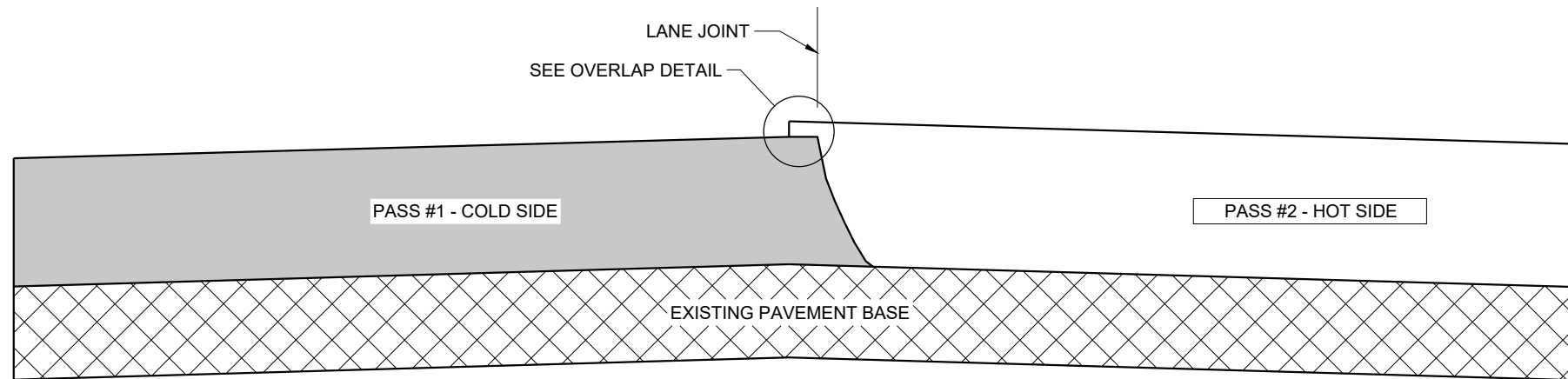
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2022 /S/ Peter Kemp P.E.  
DATE PAVEMENT SUPERVISOR

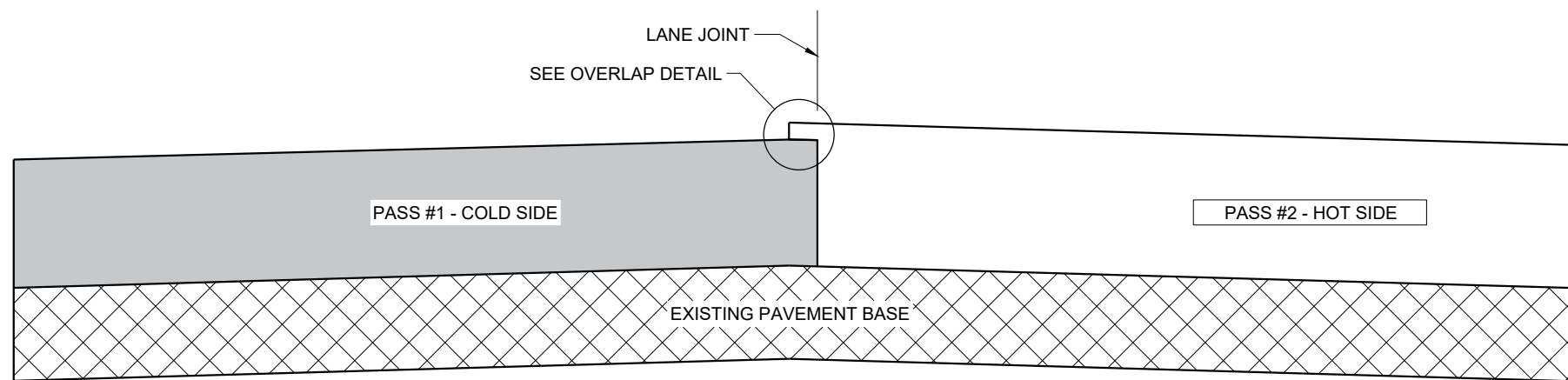
FHWA



**TYPICAL PAVEMENT CROSS SECTION NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION VERTICAL JOINT**



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

**GENERAL NOTES**

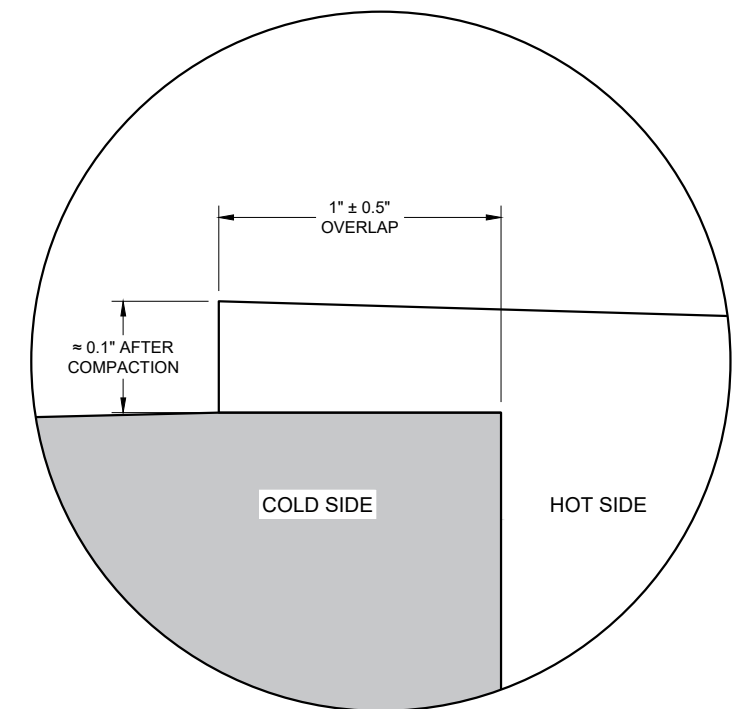
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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



**OVERLAP DETAIL (TYPICAL)**

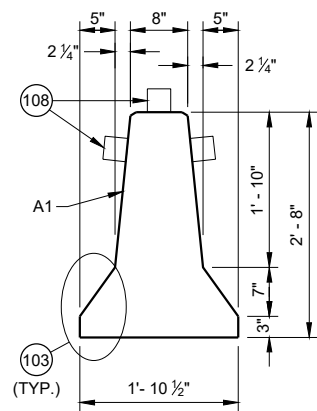
6

6

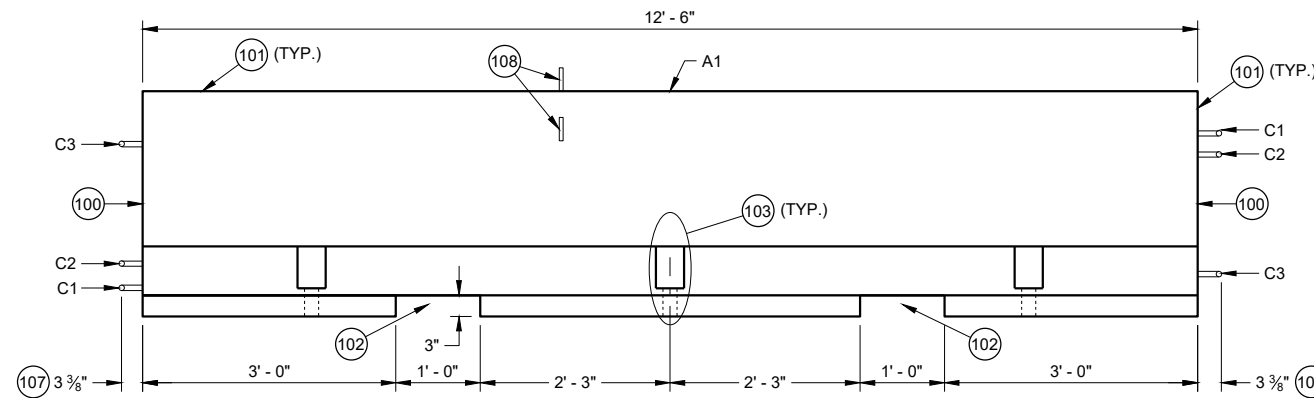
SDD 13C19 - 03

SDD 13C19 - 03

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



**CROSS SECTION**



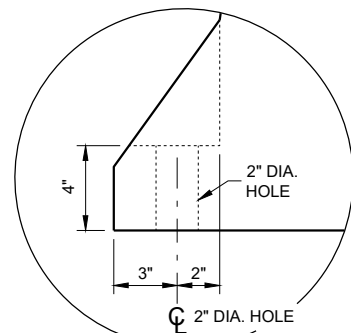
**PROFILE VIEW**

**GENERAL NOTES**

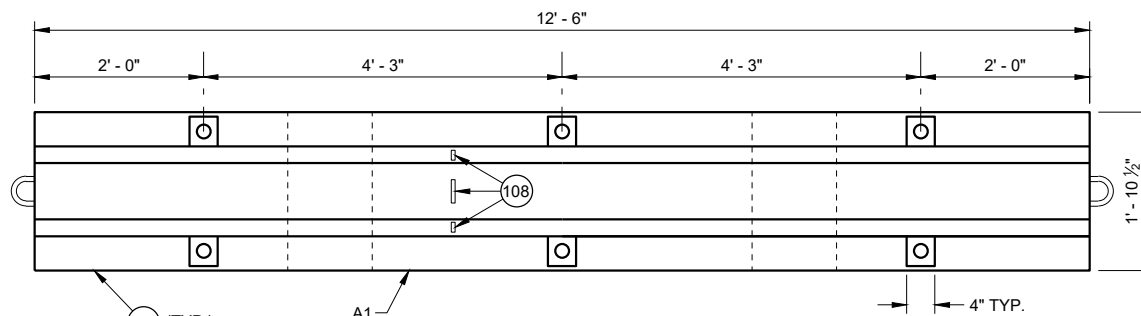
PLACE BARRIER ON PAVED SURFACE. BEFORE PLACEMENT OF TEMPORARY BARRIER, REMOVE ALL LOOSE MATERIAL FROM PAVED SURFACE.

LOOP BARS C1, C2 AND C3 ARE NOT FOR PLACEMENT OR MOVEMENT OF BARRIER.

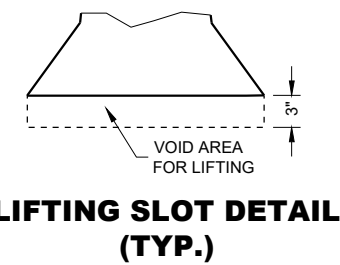
- (100) PERMANENTLY FORM INTO ONE END OF BARRIER THE FOLLOWING INFORMATION:  
A. TYPE OF BARRIER: WI-CBTP  
B. MANUFACTURER  
C. DATE OF MANUFACTURE (MONTH AND YEAR)
- (101) 1" OPTIONAL CHAMFER
- (102) SEE LIFTING SLOT DETAIL
- (103) SEE ANCHOR BLOCK DETAIL
- (104) 1 3/4" MIN. CLEAR COVER
- (105) 2" MIN. CLEAR COVER
- (106) 1" MIN. CLEAR COVER
- (107) ± 3/8" MEASURED FROM FACE OF CONCRETE BARRIER TO OUTSIDE OF LOOP BAR (TYP.)
- (108) USE DELINEATORS CONFORMING TO SECTION 633 OF THE STANDARD SPECIFICATIONS. CONTRACTOR MY USE ALTERNATE SHAPES AND HOUSING. INSTALL DELINEATORS ACCORDING TO MANUFACTURERS INSTRUCTION. INSTALL YELLOW REFLECTORS WHEN BARRIER IS LOCATED LEFT OF TRAFFIC AND WHITE WHEN BARRIER IS LOCATED RIGHT OF TRAFFIC. SPACE DELINEATORS A MAXIMUM OF 25 FEET APART, PROVIDE TO MOUNTED DELINEATORS IN ADDITION TO SIDE MOUNTED DELINEATORS ON BARRIER INSTALLATIONS LOCATED ON A CURVED ALIGNMENT LONGER THAT 200 FEET AND ON BARRIERS USED TO SEPARATE OPPOSING TRAFFIC.



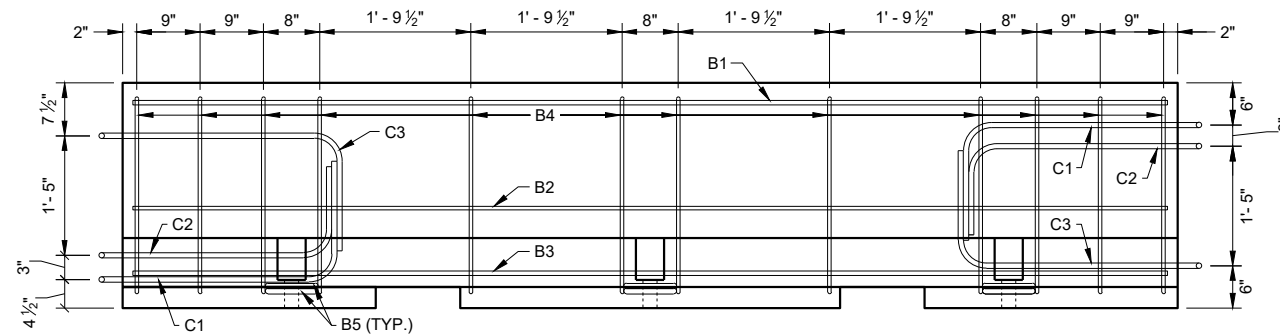
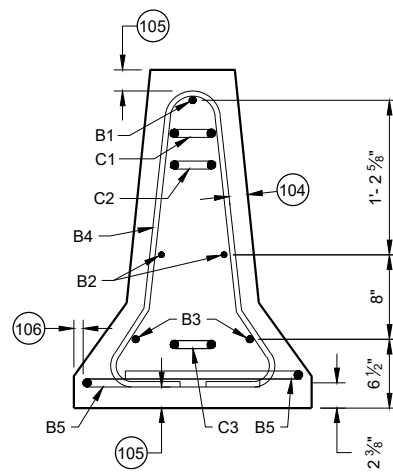
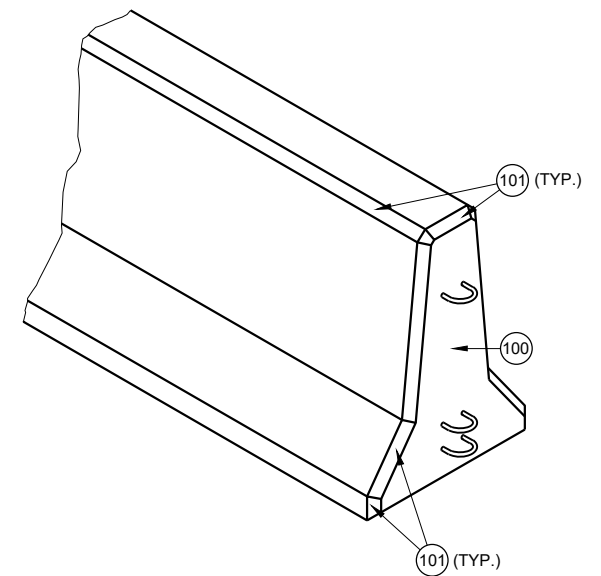
**ANCHOR BLOCK DETAIL**



**PLAN VIEW  
TEMPORARY BARRIER**



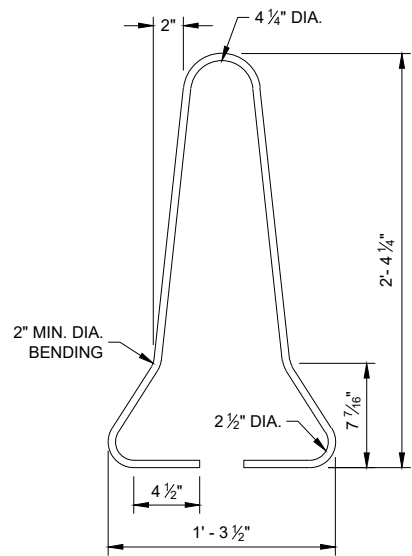
**LIFTING SLOT DETAIL  
(TYP.)**



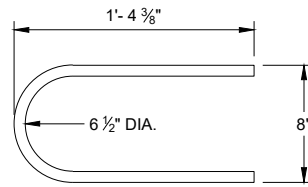
**PROFILE VIEW  
TEMPORARY BARRIER REINFORCEMENT**

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

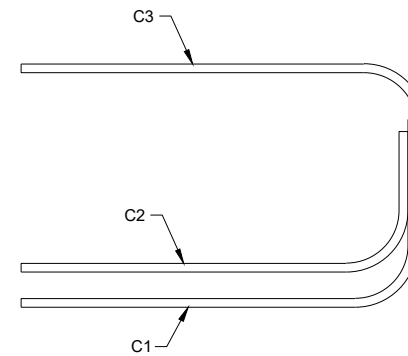
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



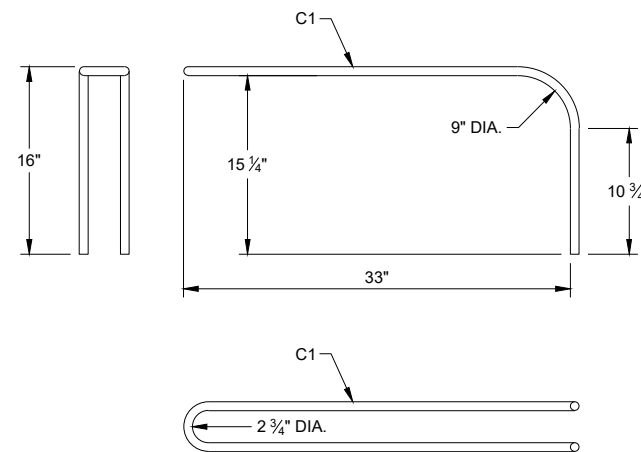
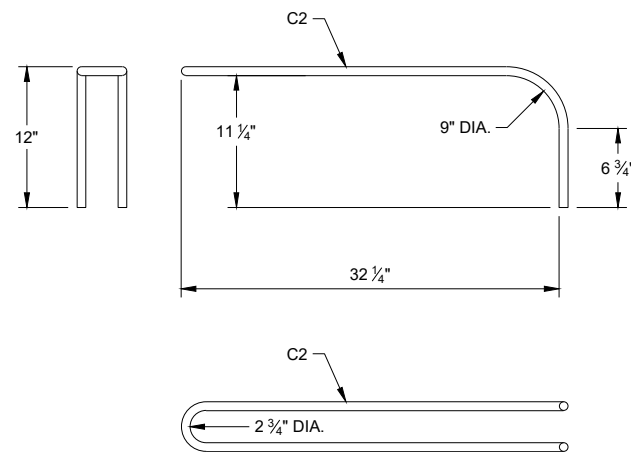
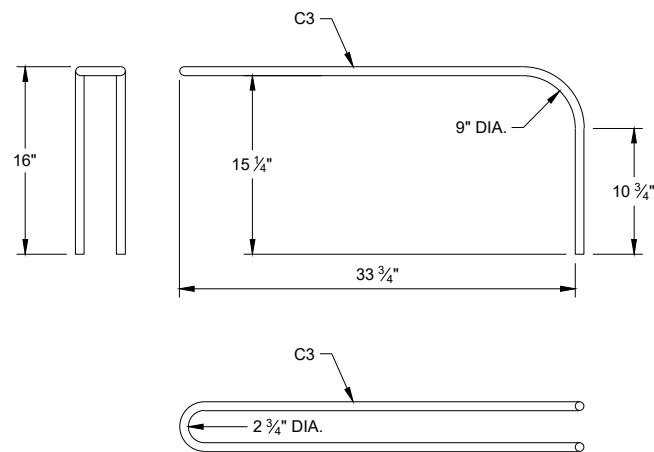
**B4 BAR DETAIL**



**B5 BAR DETAIL**



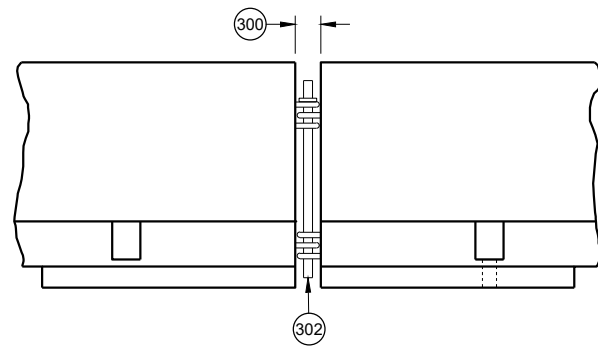
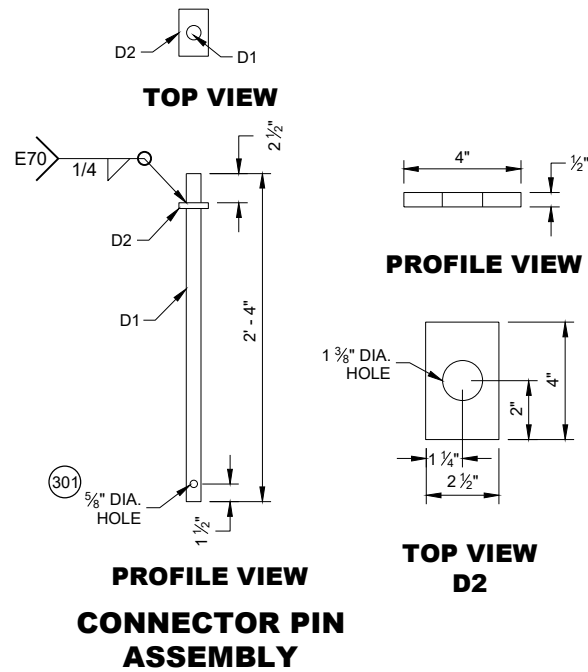
**PROFILE VIEW  
LOOP BAR ASSEMBLY**



**C BAR DETAILS**

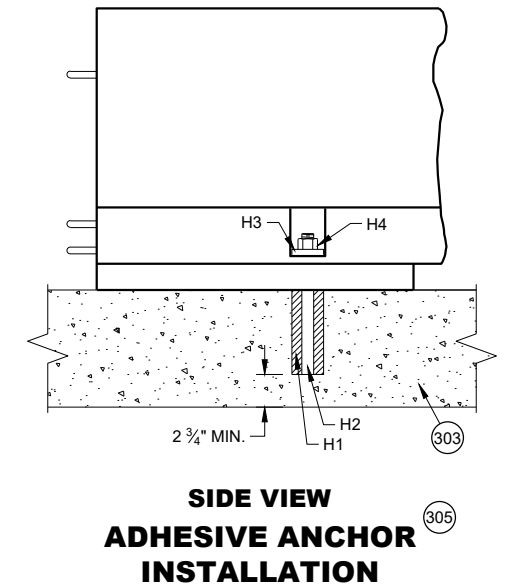
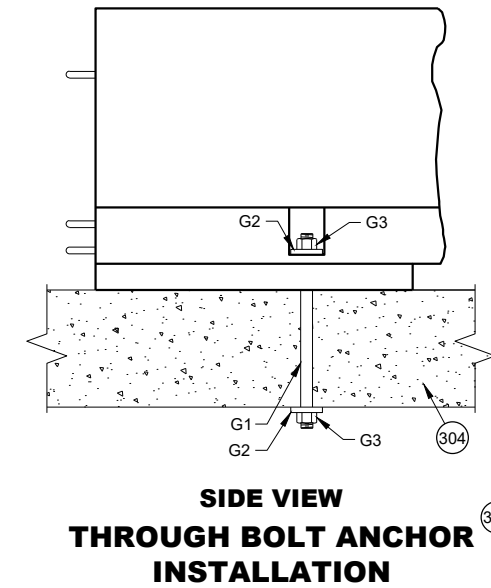
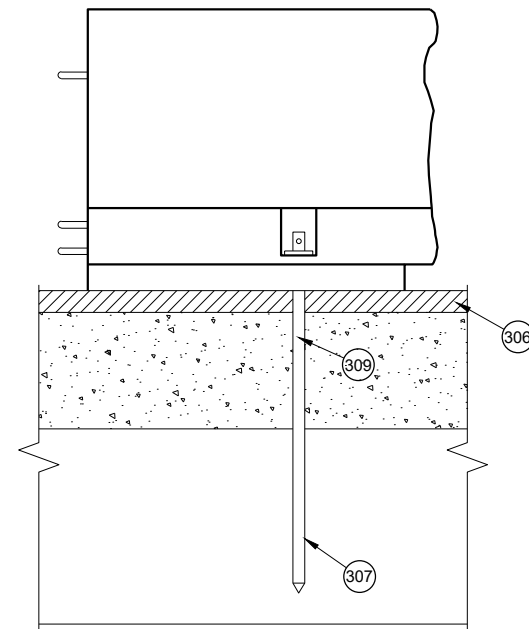
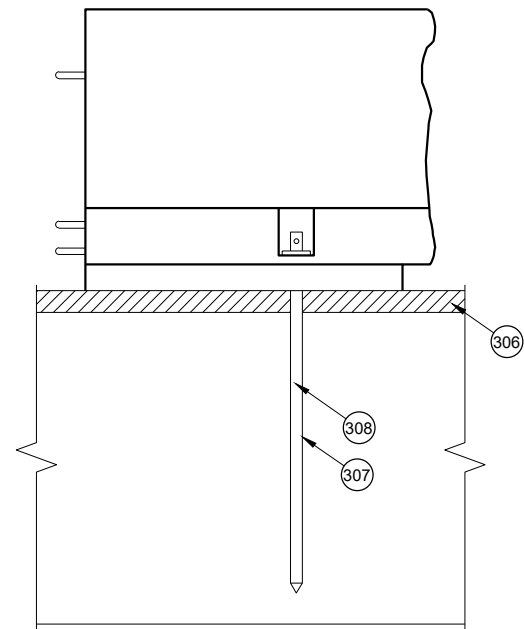
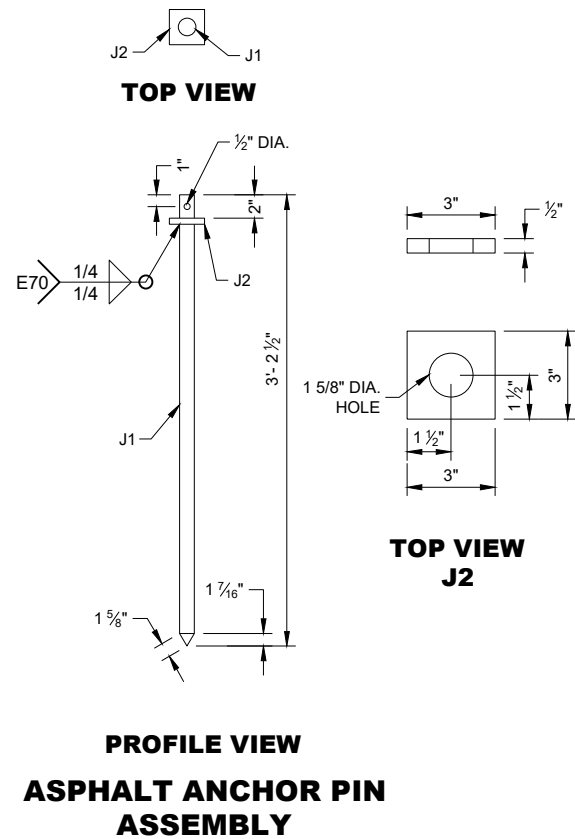
**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



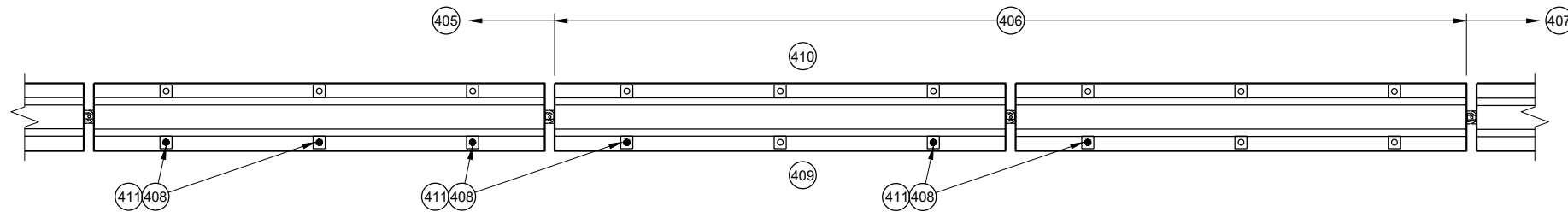
**GENERAL NOTES**

- (300) SET WITH 3 5/8" WOOD BLOCK.
- (301) HOLE IS OPTIONAL.
- (302) CONNECTOR PIN ASSEMBLY.
- (303) CONCRETE PAVEMENT, APPROACH SLAB, OR DECK.
- (304) CONCRETE DECK.
- (305) DO NOT USE ON CONCRETE BRIDGE DECK WITH ASPHALT OVERLAY OR CONCRETE PAVEMENT WITH ASPHALT OVERLAY.
- (306) MINIMUM OF 2" OF ASPHALT.
- (307) ASPHALT ANCHOR PIN ASSEMBLY
- (308) IF DRILLING A PILOT HOLE, THE MAX. DIA. OF THE HOLE IS 3/4"
- (309) WHEN THERE IS ASPHALT OVERLAYING CONCRETE PAVEMENT, A 1 5/8" DIA. PILOT HOLE CAN BE DRILLED INTO THE OVERLAY AND CONCRETE. IF NEEDED DRILL A 3/4" PILOT HOLE IN BASE COURSE.

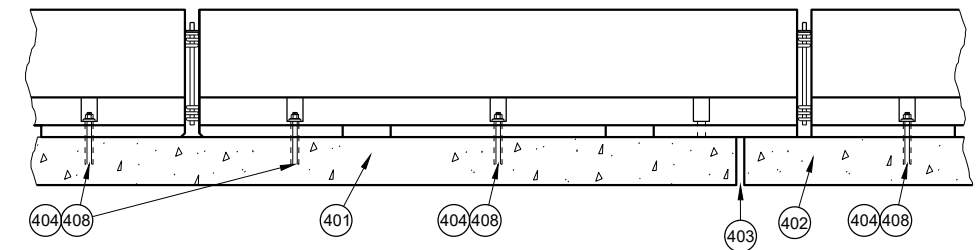


**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

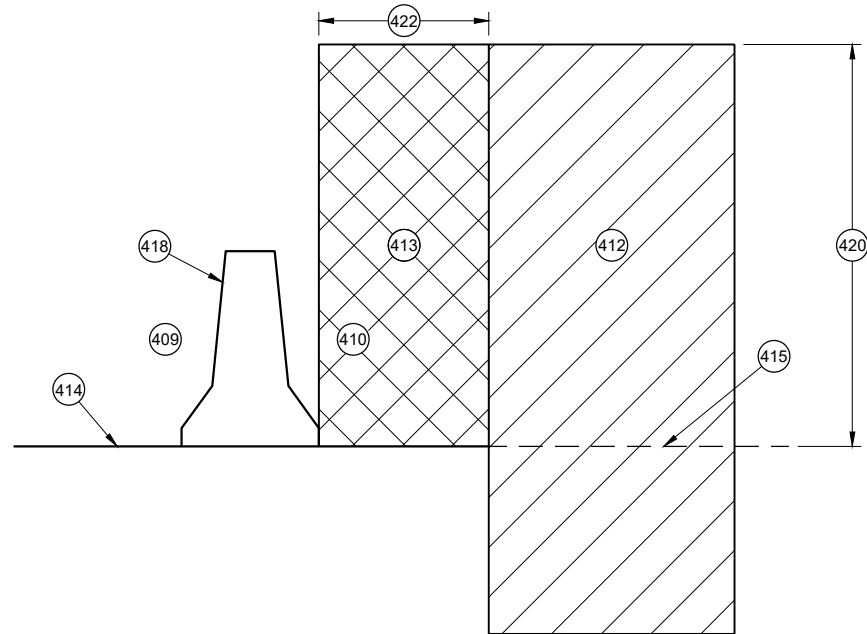
STATE OF WISCONSIN  
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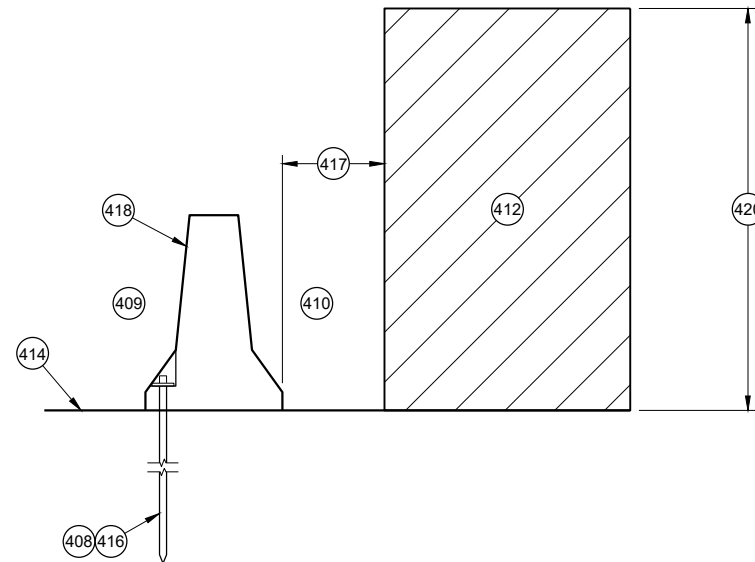
**PLAN VIEW**  
**TRANSITION FROM FREE STANDING TO ANCHORED BARRIER**



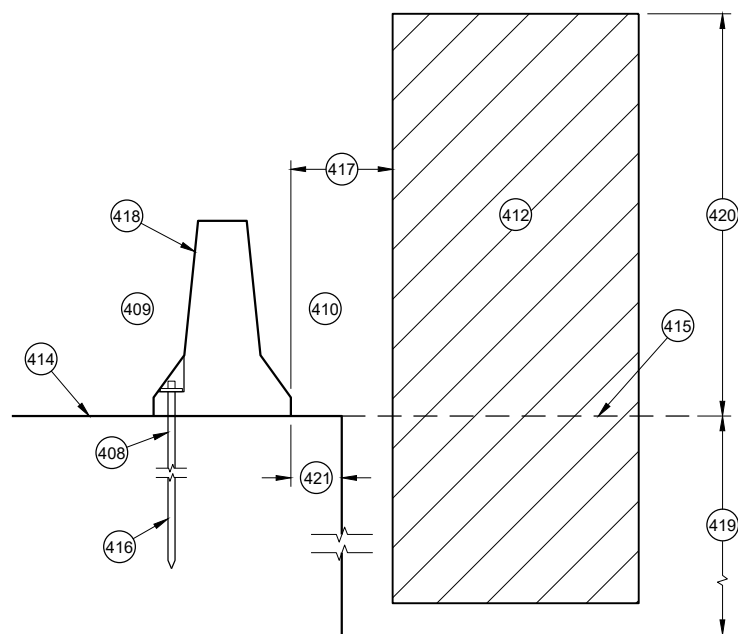
**PROFILE VIEW**  
**ANCHORED BARRIER NEAR EXPANSION JOINT**



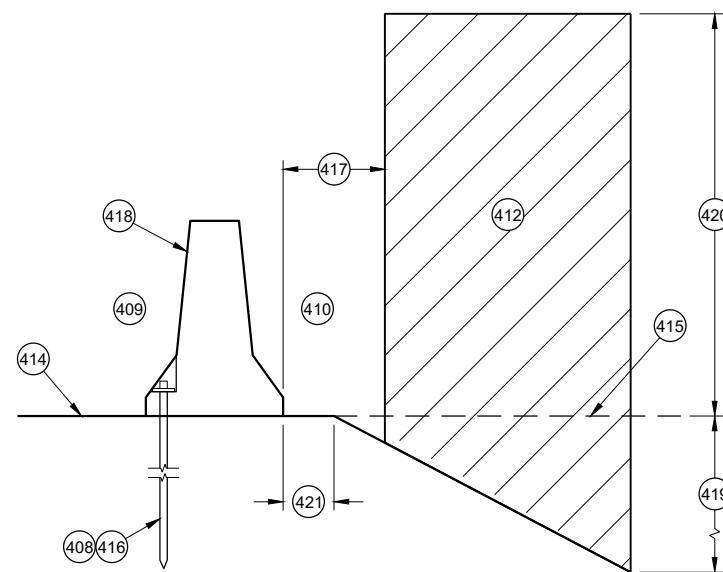
**CROSS SECTION**  
**FREE STANDING BARRIER**



**CROSS SECTION**  
**ANCHORED BARRIER FOR OBJECTS ABOVE THE GRADE LINE AND NEAR THE BARRIER**



**CROSS SECTION**  
**ANCHORED BARRIER NEAR VERTICAL DROP OFF**



**CROSS SECTION**  
**ANCHORED BARRIER NEAR A SLOPE**

**GENERAL NOTES**

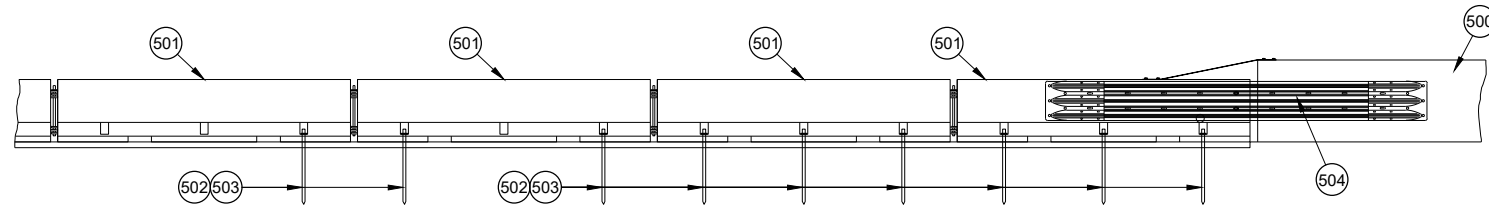
- 400 NO SINGLE CONCRETE BARRIER SECTION SHALL BE ANCHORED TO BOTH THE BRIDGE DECK AND THE APPROACH SLAB. ALL ANCHOR BOLT LOCATIONS SHALL BE ANCHORED TO THE DECK IN ACCORDANCE WITH THE DETAIL. NO MORE THAN ONE ANCHOR BOLT SHALL BE ELIMINATED FROM A BARRIER SECTION WHEN SPANNING AN EXPANSION JOINT.
- 401 CONCRETE DECK
- 402 CONCRETE DECK OR APPROACH SLAB.
- 403 EXPANSION JOINT
- 404 ADHESIVE ANCHOR SHOWN. SEE ANCHOR DETAILS.
- 405 ANCHORED TEMPORARY BARRIER
- 406 TRANSITION FROM ANCHORED TEMPORARY BARRIER TO FREE STANDING
- 407 FREE STANDING BARRIER
- 408 REMOVE ALL ANCHORS WHEN NO LONGER NEEDED. FILL CONCRETE PAVEMENTS, DECKS AND APPROACH SLABS WITH NON-SHRINK COMMERCIAL GROUT FROM THE APPROVED PRODUCT LIST. FILL ASPHALT PAVEMENTS WITH ASTM D6690 TYPE II RUBBERIZED CRACK FILLER.
- 409 TRAFFIC SIDE
- 410 NON-TRAFFIC SIDE
- 411 ANCHOR LOCATION. SEE ANCHORING DETAILS.
- 412 WORK AREA
- 413 AREA FREE OF OBJECTS AND WORKERS
- 414 GRADE LINE
- 415 EXTENDED GRADE LINE
- 416 ANCHORED TEMPORARY BARRIER. SEE BOLT THROUGH DECK, REMOVABLE ADHESIVE ANCHOR, OR AN ASPHALT ANCHOR ROD DETAILS FOR MORE INFORMATION. ASPHALT ANCHOR ROD SHOWN.
- 417 WHEN OBJECTS EXTEND ABOVE THE GRADE. A MINIMUM OF 1 FOOT IS REQUIRED FROM BACK OF BARRIER TO OBJECT.
- 418 OBJECTS ARE NOT TO BE PLACED ON, MOUNTED TO, OR ALLOWED TO LEAN AGAINST THE BARRIER WITHOUT WRITTEN PERMISSION OF THE PROJECT ENGINEER.
- 419 DEPTHS OF 3 FEET OR MORE.
- 420 Y = 6.5'
- 421 OFFSET FROM BACK OF BARRIER EDGE:  
 CONCRETE PAVEMENT 0.5'  
 ASPHALT 0.5'
- 422 POSTED SPEED (MPH):  
 45 OR GREATER 4.0'  
 40 OR LOWER 2.0'

**CONCRETE BARRIER**  
**TEMPORARY PRECAST,**  
**12' - 6"**

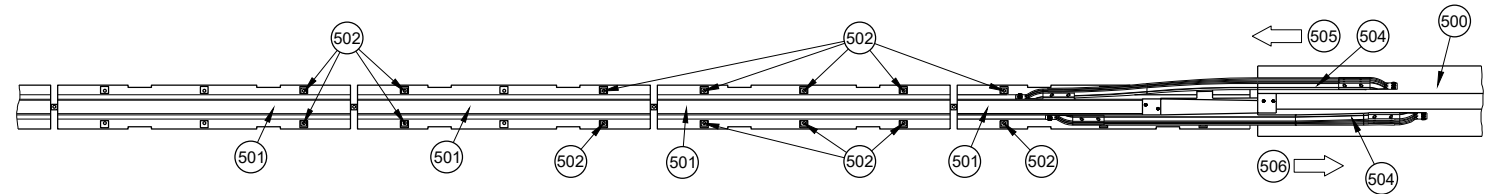
STATE OF WISCONSIN  
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**GENERAL NOTES**

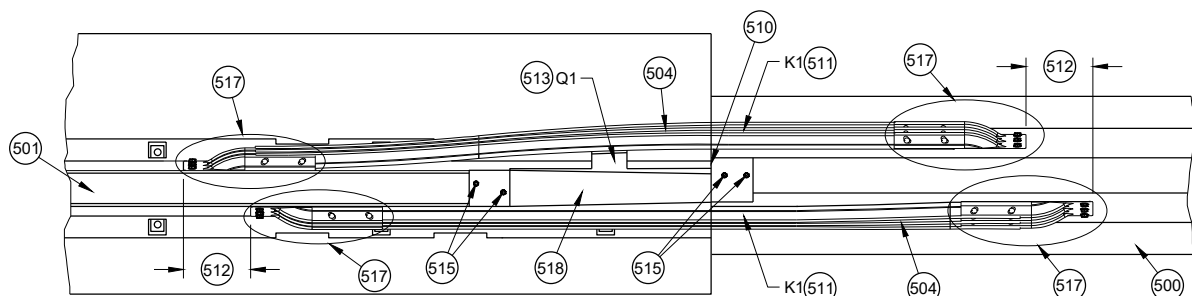
- (500) EXISTING RIGID BARRIERS (VARIES)
- (501) TEMPORARY BARRIER
- (502) SEE OTHER DETAIL ON HOW TO ANCHOR TEMPORARY BARRIER (BARRIER ASPHALT ANCHOR SHOWN).
- (503) ANCHORS ARE REQUIRED ON BOTH SIDE OF THE TEMPORARY BARRIER.
- (504) NESTED RAILS ARE REQUIRED ON BOTH SIDES OF THE TEMPORARY BARRIER FOR ALL INSTALLATIONS.
- (505) TRAFFIC TRAVELS FROM PERMANENT BARRIER TO TEMPORARY BARRIER.
- (506) TRAFFIC TRAVELS FROM TEMPORARY BARRIER TO PERMANENT BARRIER.
- (507) VERTICAL BARRIER
- (508) SAFETY SHAPE BARRIER
- (509) SINGLE SLOPE BARRIER
- (510) CAP END PLATE PLACED FLUSH WITH UPSTREAM END OF RIGID BARRIER.
- (511) BENT THRIE BEAM TO FIT.
- (512) THRIE BEAM PIECES ARE OFFSET 15 1/4" TO PREVENT INTERFERENCE FROM THE ANCHORS ON OPPOSING SIDES.
- (513) TWO (2) P1, P2 AND P3 ARE REQUIRED
- (514) FIVE (5) N1, N2 AND N3 ARE REQUIRED
- (515) TWO (2) R1, R2 AND R3 ARE REQUIRED
- (516) CUT WOOD BLOCK TO FIT.
- (517) SEE THRIE BEAM RAIL TERMINAL CONNECTOR DETAIL ASSEMBLY.
- (518) CAP ASSEMBLY
- (519) 4" MAX. GAP BETWEEN TEMPORARY BARRIER AND RIGID BARRIER.
- (520) ALL TWELVE SPLICE HOLES REQUIRE M1 AND M2



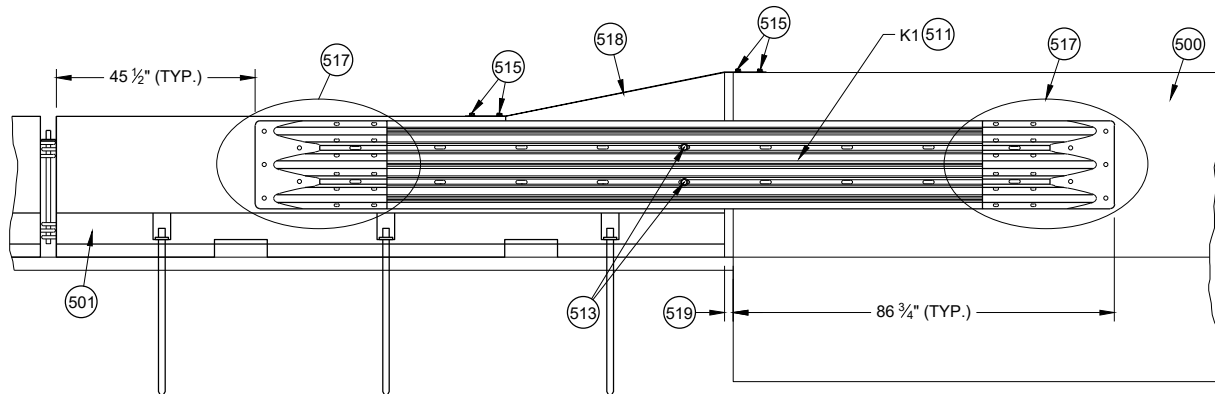
**PROFILE VIEW**



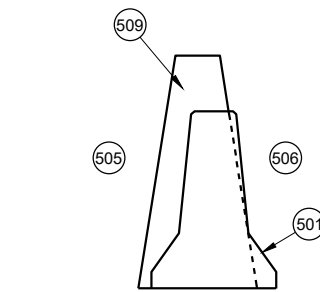
**PLAN VIEW  
TRANSITION TO RIGID BARRIER**



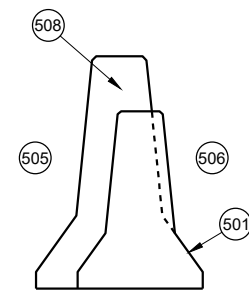
**PLAN DETAIL VIEW  
TRANSITION TO RIGID BARRIER**



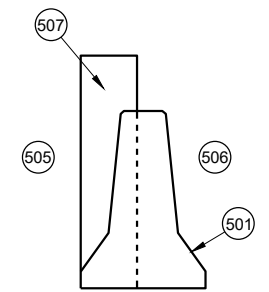
**FRONT DETAIL VIEW  
TRANSITION TO RIGID BARRIER**



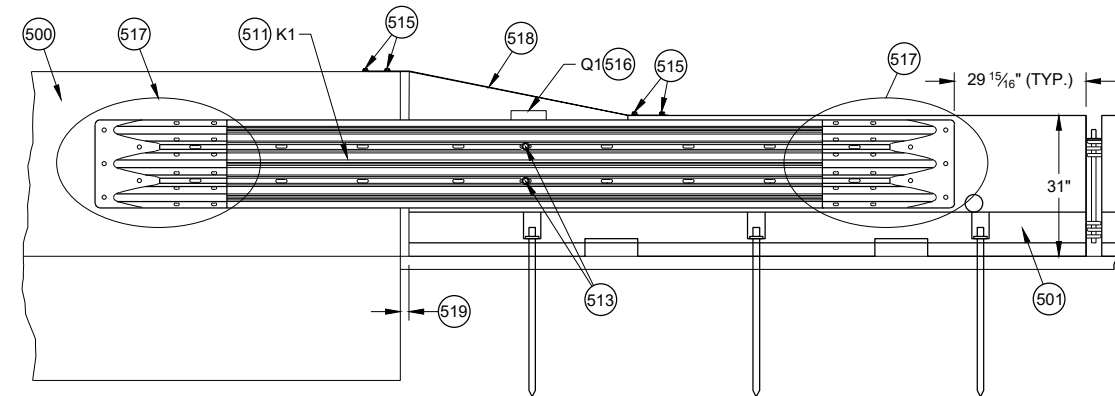
**CROSS SECTION  
TEMPORARY BARRIER  
PLACEMENT SINGLE SLOPE**



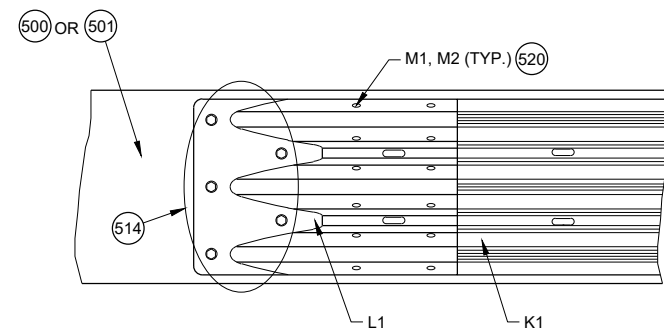
**CROSS SECTION  
TEMPORARY BARRIER  
PLACEMENT SAFETY SHAPE**



**CROSS SECTION  
TEMPORARY BARRIER  
PLACEMENT VERTICAL**



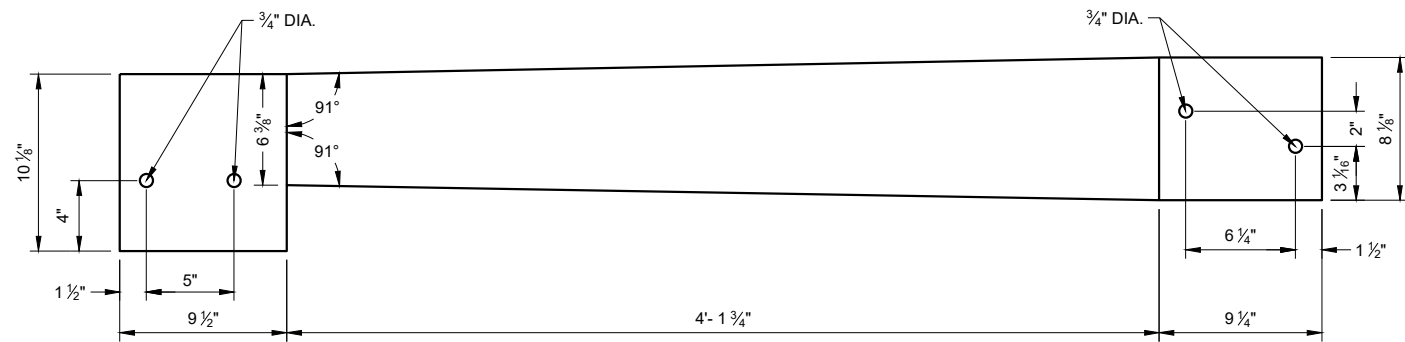
**BACK DETAIL VIEW  
TRANSITION TO RIGID BARRIER**



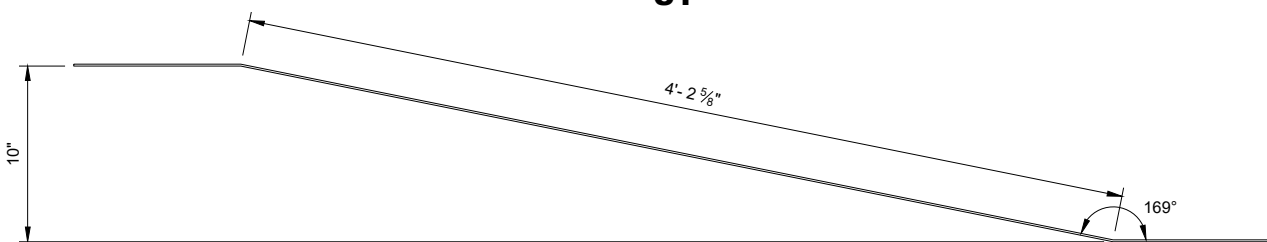
**(517) DETAIL PLAN VIEW  
THRIE BEAM RAIL TERMINAL CONNECTOR ASSEMBLY**

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

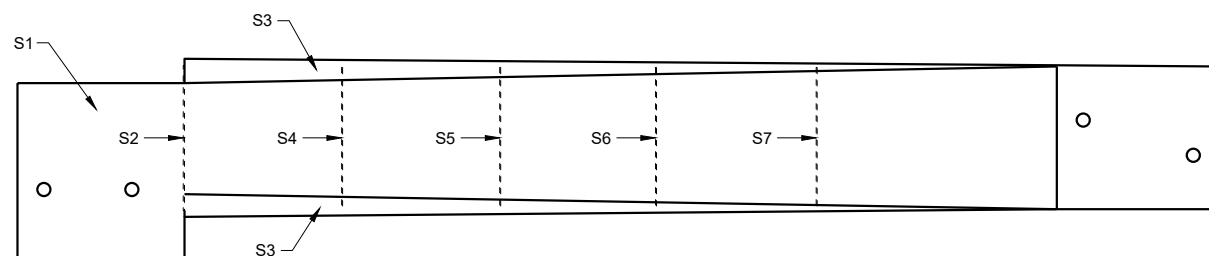
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



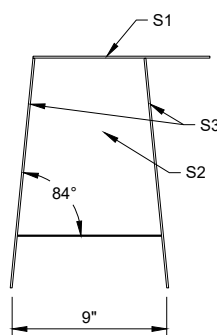
**TOP VIEW  
S1**



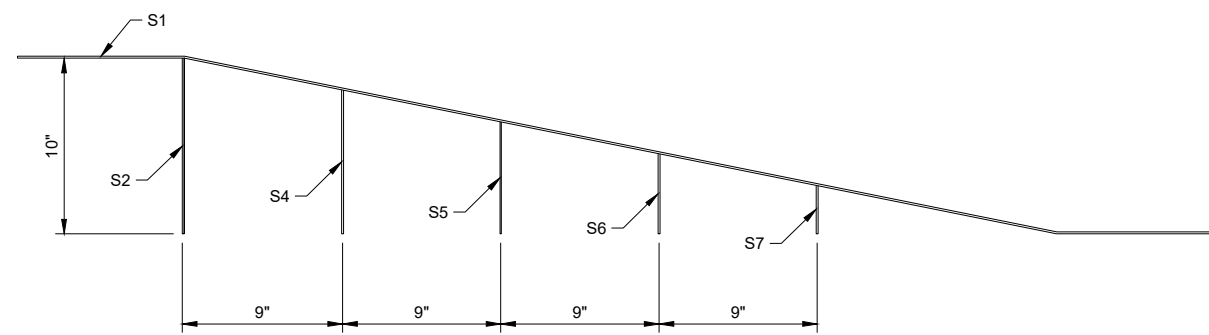
**ELEVATION VIEW  
S1**



**PLAN VIEW**

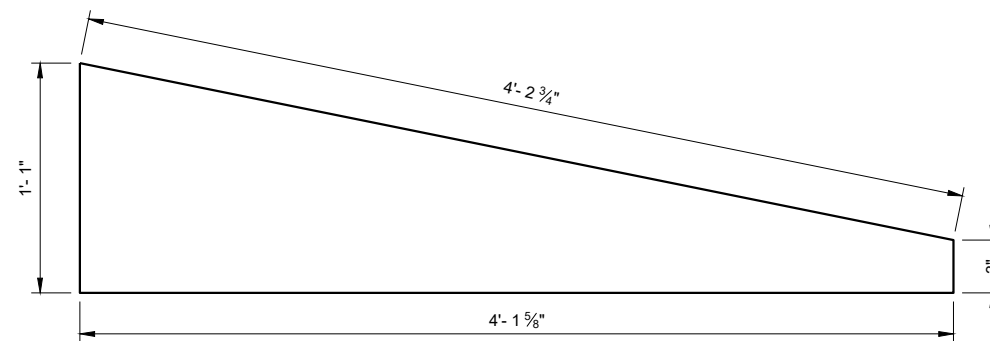


**BACK VIEW**

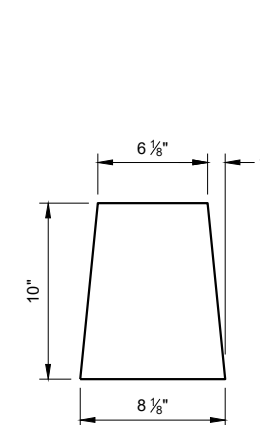


**SIDE VIEW (600)**

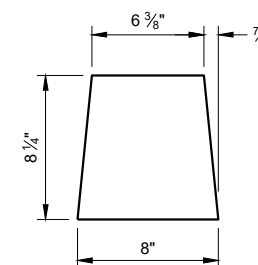
**42" TOP CAP ASSEMBLY**



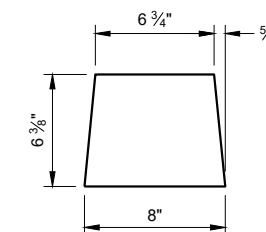
**SIDE VIEW  
S3**



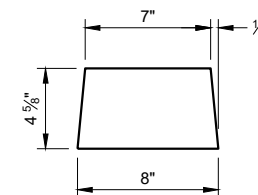
**S2**



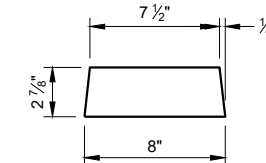
**S4**



**S5**



**S6**



**S7**

**GENERAL NOTES**

STITCH WELD GUSSET PLATES AND END PLATES ON THREE SIDES

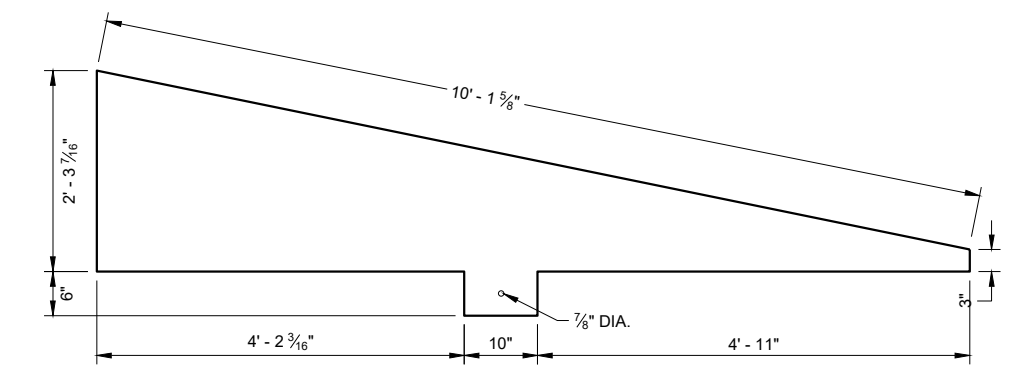
STITCH WELD TWO SIDE PLATES TO TOP PLATE, END PLATE AND GUSSETS.

(600) SIDE PLATES (S3) NOT SHOWN FOR CLARITY.

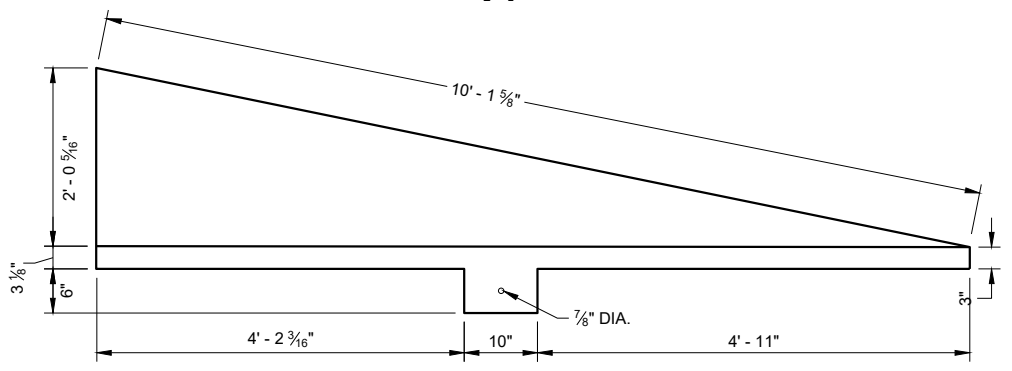
**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

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**SIDE VIEW T4**



**SIDE VIEW T3**

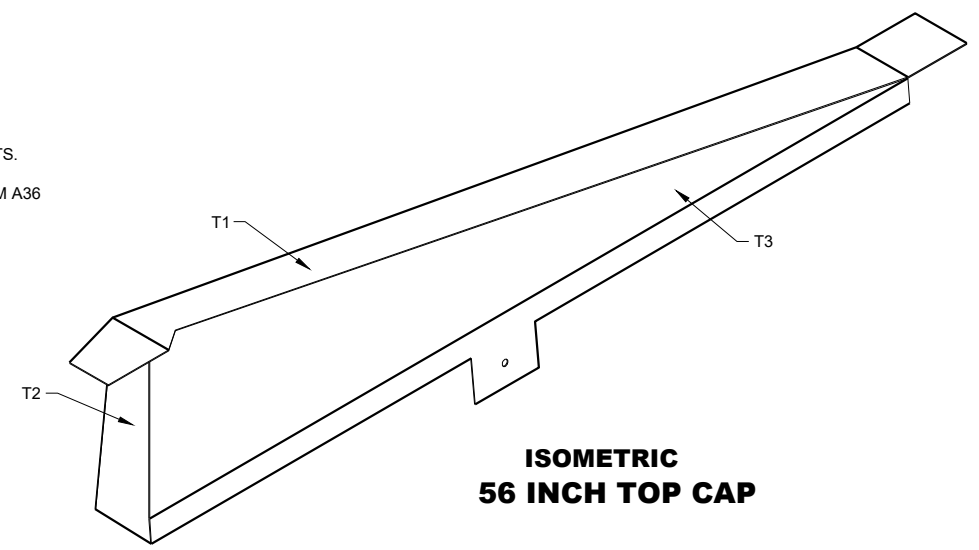
**END VIEW**

**END VIEW**

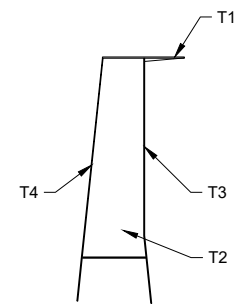
**END VIEW**

**GENERAL NOTES**

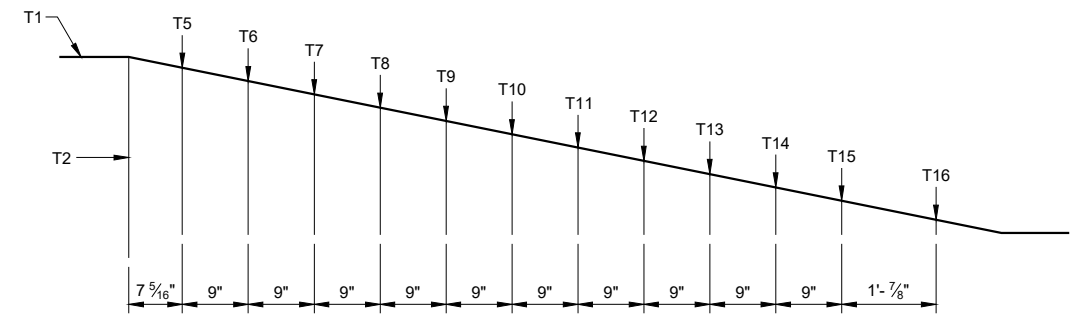
- STITCH WELD GUSSET PLATES AND END PLATES ON THRIE SIDES
- STITCH WELD TWO SIDE PLATES TO TOP PLATE, END PLATE AND GUSSETS.
- SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 GALVANIZED STEEL.
- (700) SIDE PLATES (T3 AND T4) NOT SHOWN FOR CLARITY.



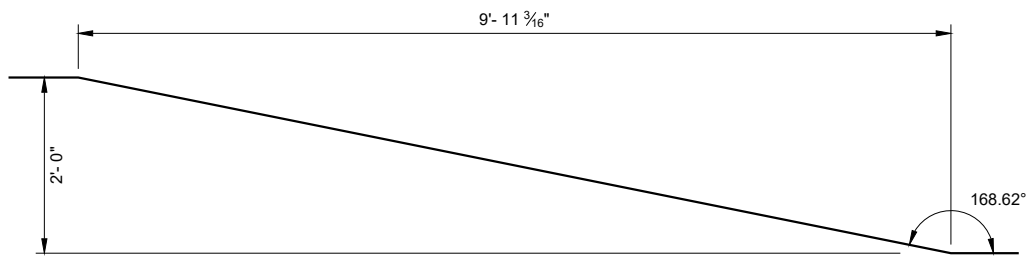
**ISOMETRIC 56 INCH TOP CAP**



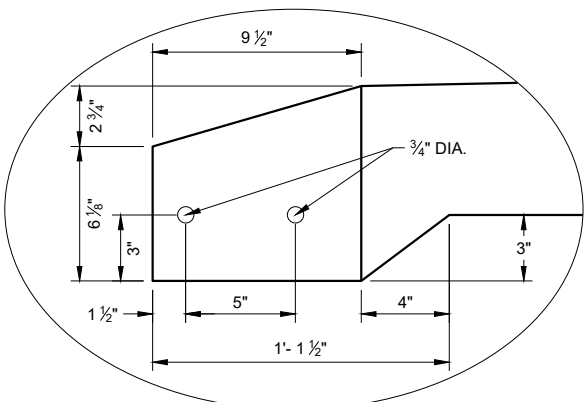
**END VIEW 56 INCH TOP CAP**



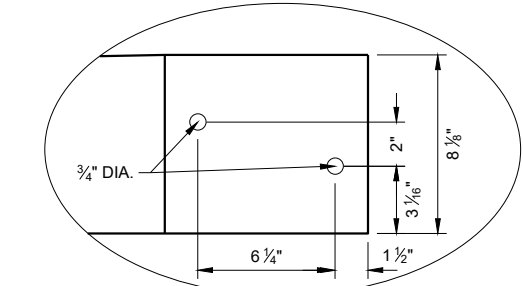
**SIDE VIEW 56 INCH TOP CAP (700)**



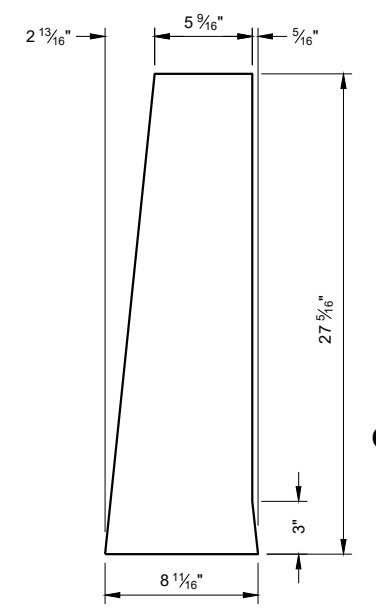
**SIDE VIEW TOP PLATE T1**



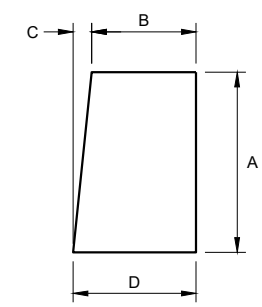
**DETAIL "A"**



**DETAIL "B"**

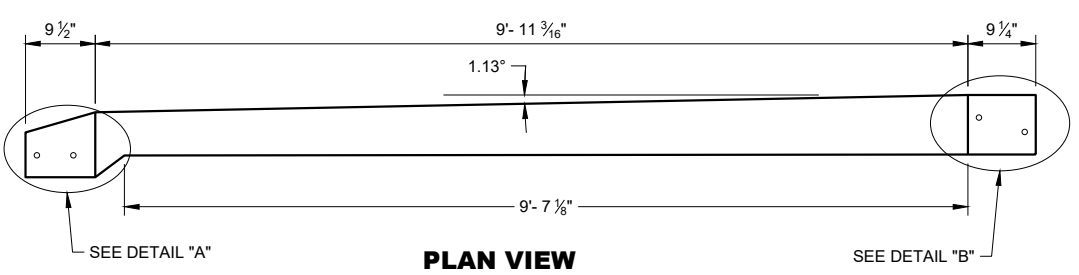


**END PLATE T2**



**GUSSET PLATES T5 - T16**

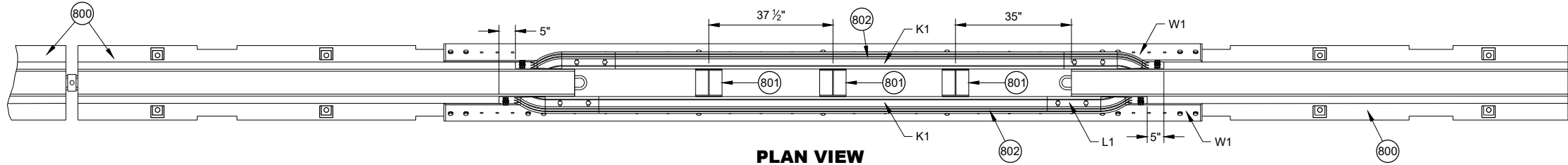
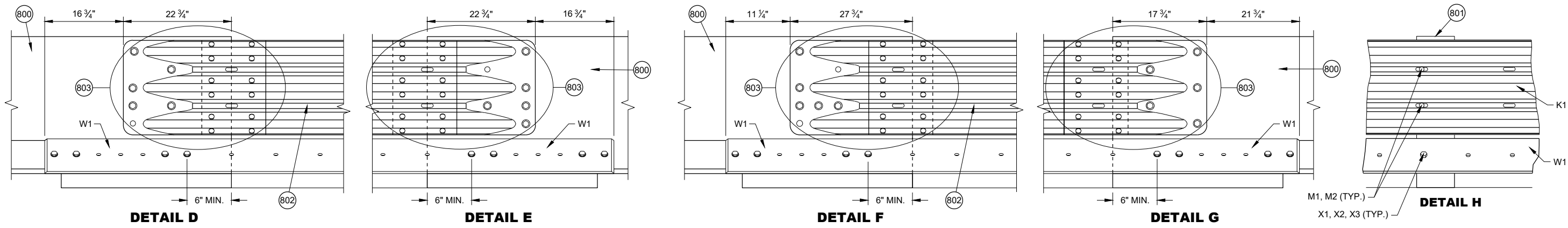
GUSSET DIMENSIONS				
GUSSET NO.	A	B	C	D
T5	22 13/16"	5 1/16"	2 5/16"	8 1/16"
T6	21"	5 7/8"	2 3/16"	8 1/16"
T7	19 3/16"	6 1/16"	1 13/16"	8 1/16"
T8	17 3/8"	6 1/4"	1 13/16"	8 1/16"
T9	15 9/16"	6 7/16"	1 1/16"	8 1/16"
T10	13 3/4"	6 5/8"	1 7/16"	8 1/16"
T11	11 15/16"	6 13/16"	1 1/4"	8 1/16"
T12	10 1/8"	7"	1 1/16"	8 1/16"
T13	8 5/16"	7 3/16"	7/8"	8 1/16"
T14	6 1/2"	7 3/8"	1 1/16"	8 1/16"
T15	4 1/16"	7 1/16"	1/2"	8"
T16	2 7/8"	7 3/4"	1/4"	8"



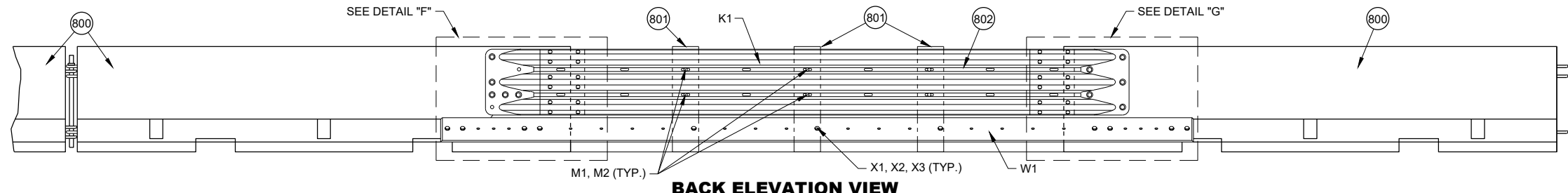
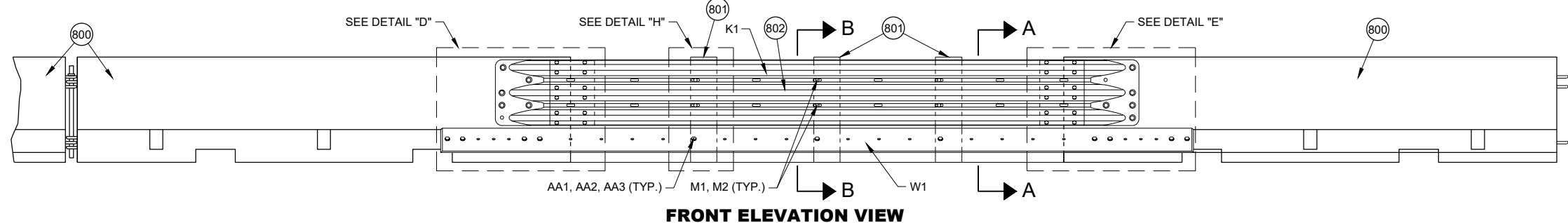
**PLAN VIEW TOP PLATE T1**

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



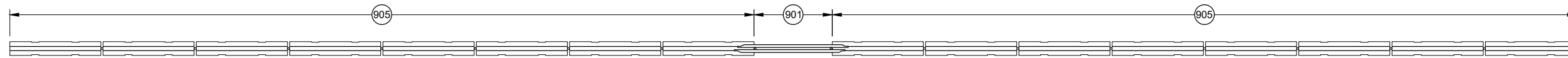
- GENERAL NOTES**
- 800 FREE STANDING TEMPORARY BARRIER
  - 801 GAP STIFFENER ASSEMBLY
  - 802 THRIE BEAMS ARE NESTED ON BOTH SIDES OF THE TEMPORARY BARRIER.
  - 803 SEE THRIE BEAM RAIL TERMINAL CONNECTOR DETAIL



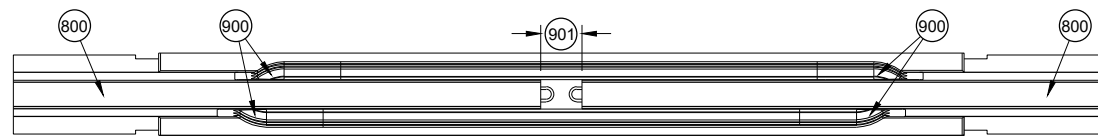
**PORTABLE CONCRETE BARRIER GAP THRIE BEAM COVER**

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

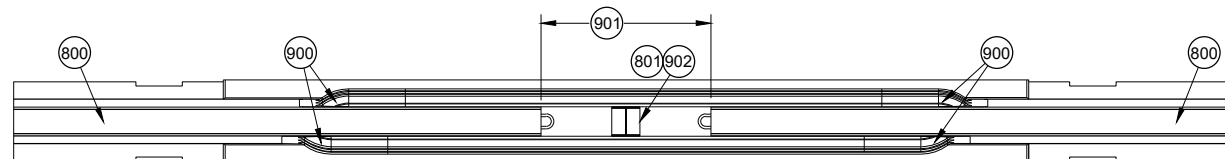
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



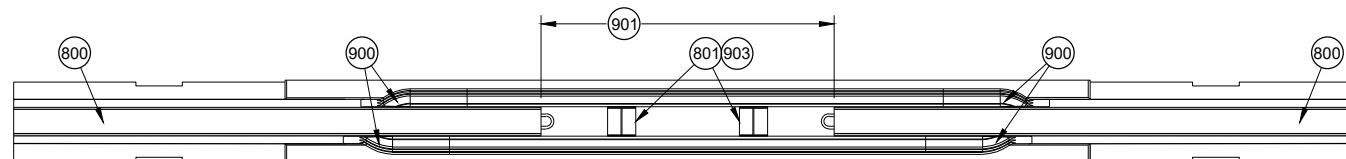
**PLAN VIEW  
GAP WITHIN SPACING**



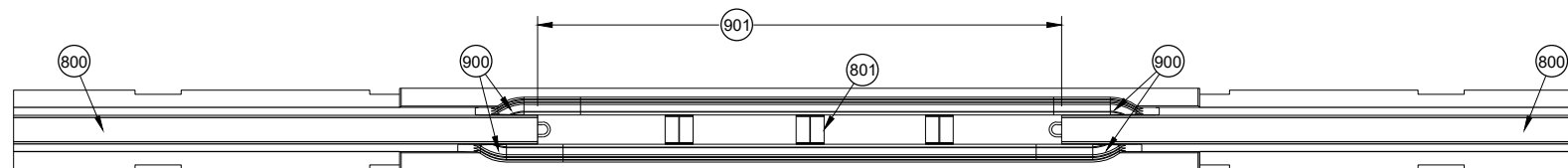
**PLAN VIEW  
TEMPORARY BARRIER GAP OVER 4" TO 1' MAX. 904**



**PLAN VIEW  
TEMPORARY BARRIER GAP OVER 1' TO 4' MAX. 904**



**PLAN VIEW  
TEMPORARY BARRIER GAP OVER 4' TO 7' MAX. 904**



**PLAN VIEW  
TEMPORARY BARRIER GAP OVER 7' TO 12.5' MAX. 904**

**GENERAL NOTES**

- 900 SEE OTHER DETAILS FOR TEMPORARY GAP HARDWARE (TYP.)
- 901 TEMPORARY BARRIER GAP
- 902 GAP STIFFENER ASSEMBLY CENTERED IN THE GAP.
- 903 GAP STIFFENER ASSEMBLY IS OFFSET 18 3/4" FROM CENTER
- 904 MINIMUM NUMBER OF GAP STIFFENERS SHOWN FOR THE GAP RANGE SHOWN.
- 905 MINIMUM OF 8 CONTINUOUS FREE STANDING TEMPORARY BARRIERS

6

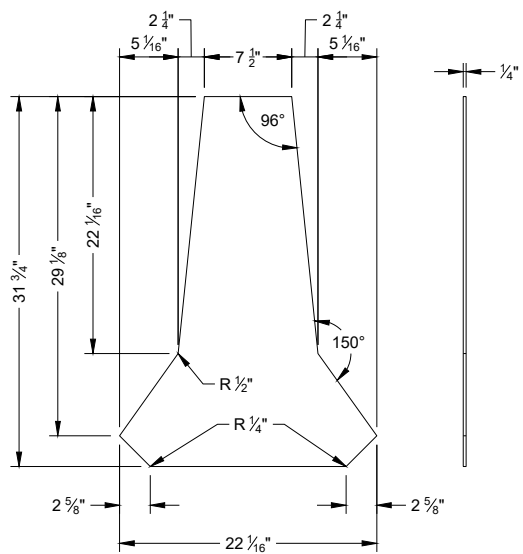
6

SDD 14B07-16i

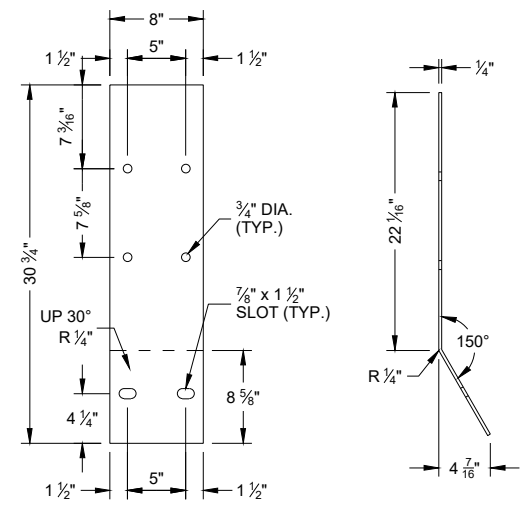
SDD 14B07-16i

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

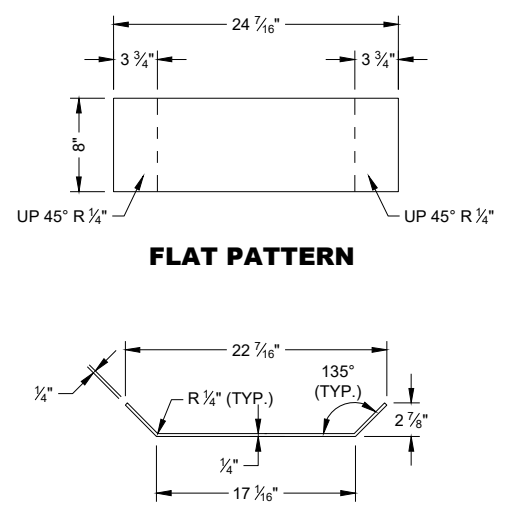
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



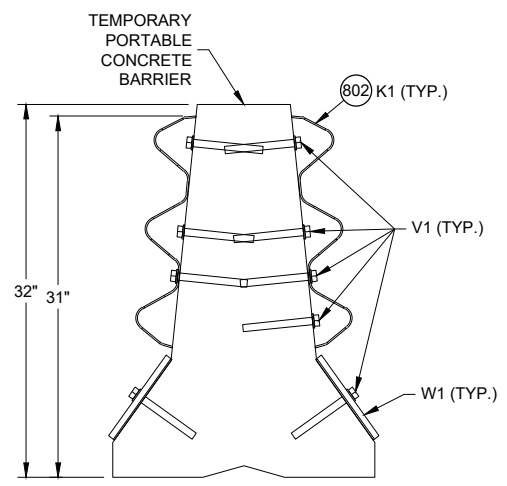
**PROFILE VIEW** **SIDE VIEW**  
**STIFFENER ASSEMBLY**  
**CENTER PANEL U1**



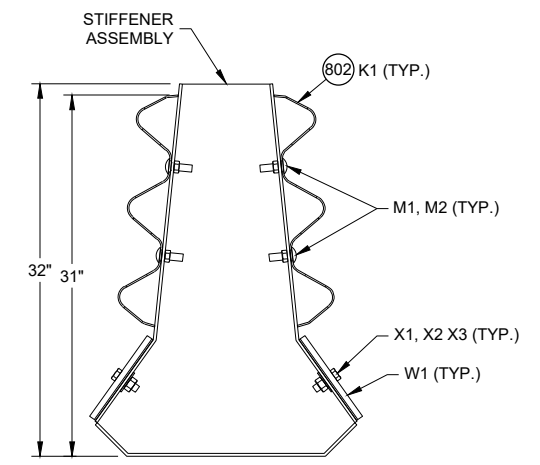
**FLAT PATTERN** **SIDE VIEW**  
**STIFFENER ASSEMBLY**  
**SIDE PANEL U2**



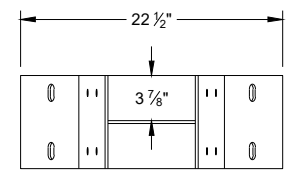
**PROFILE VIEW**  
**STIFFENER ASSEMBLY**  
**BOTTOM PANEL U3**



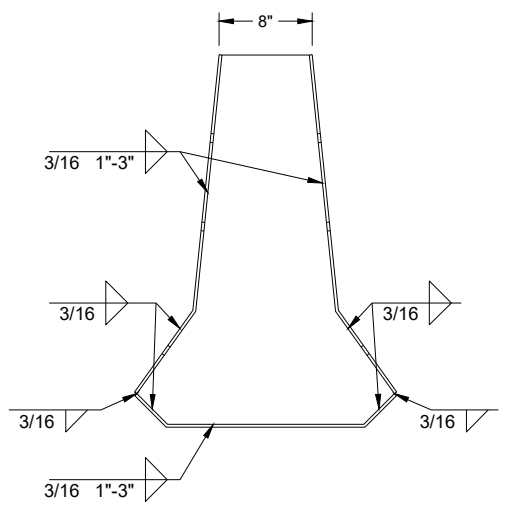
**SECTION A - A**



**SECTION B - B**

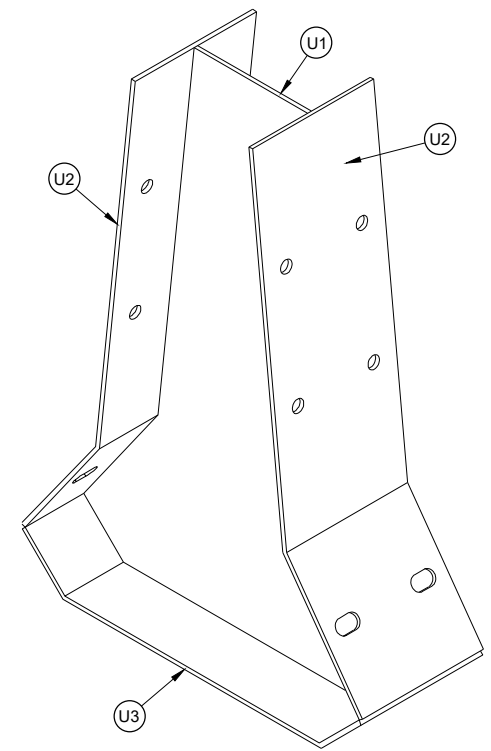


**PLAN VIEW**

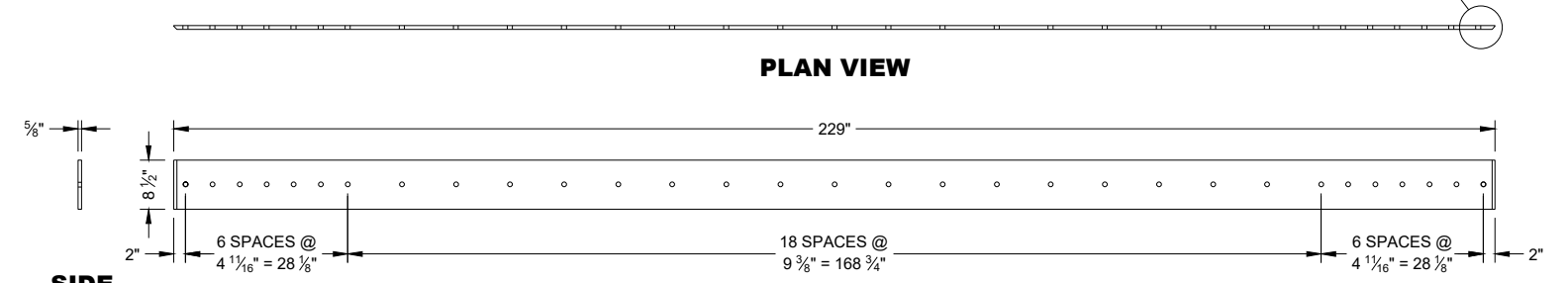
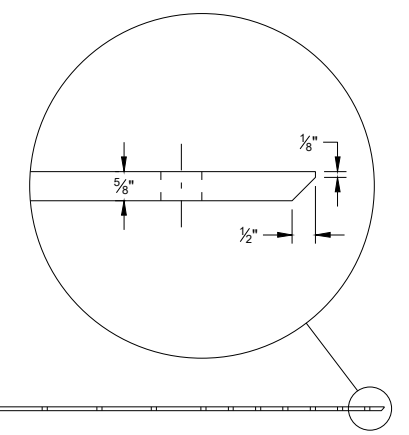


**PROFILE VIEW** **SIDE VIEW**

**GAP STIFFENER ASSEMBLY**

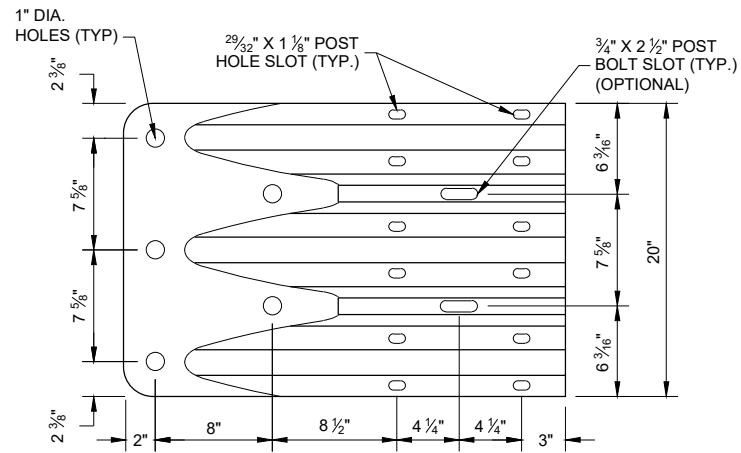


**ISOMETRIC**



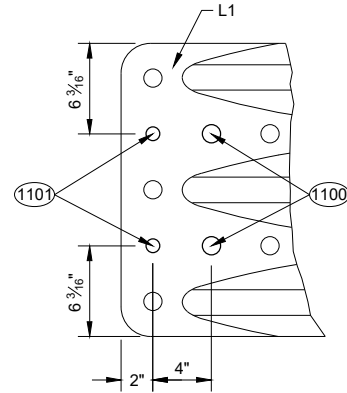
**SIDE VIEW** **PLAN VIEW** **ELEVATION VIEW**  
**W1 TOE PLATE**

**CONCRETE BARRIER**  
**TEMPORARY PRECAST,**  
**12' - 6"**  
 STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION



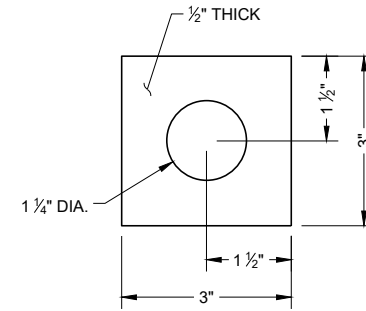
**ELEVATION VIEW**

**THRIE BEAM  
TERMINAL CONNECTOR**



**ELEVATION VIEW**

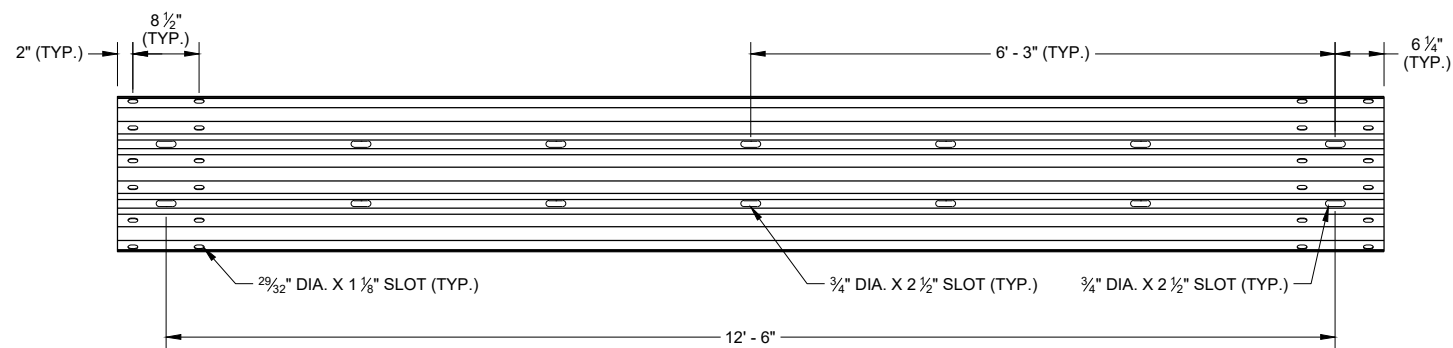
**ADDITIONAL THRIE BEAM  
TERMINAL CONNECTOR HOLE DETAIL**



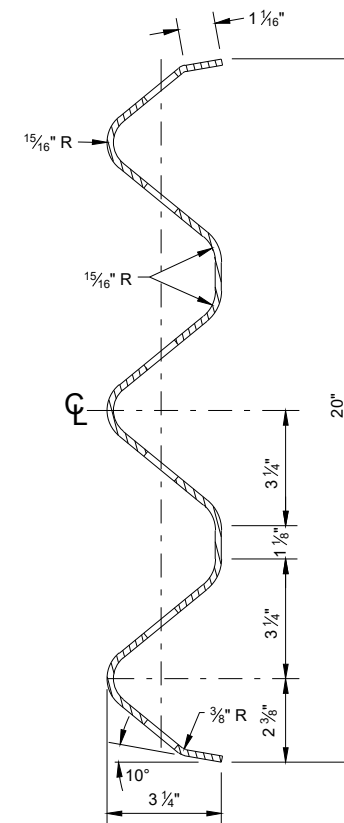
**PLATE WASHER DETAIL  
G2, H3**

**GENERAL NOTES**

- (1100) 1" DIA. HOLE
- (1101) 3/4" DIA. HOLE
- (1102) PROVIDE HOLES IN THRIE BEAM TERMINAL CONNECTOR TO LIMIT STEEL REINFORCEMENT OR LOOP BAR CONFLICT. CONTRACTOR MAY FIELD DRILL ADDITIONAL HOLE OR PROVIDE THRIE BEAM TERMINAL CONNECTOR WITH ADDITIONAL HOLES FROM SUPPLIER.



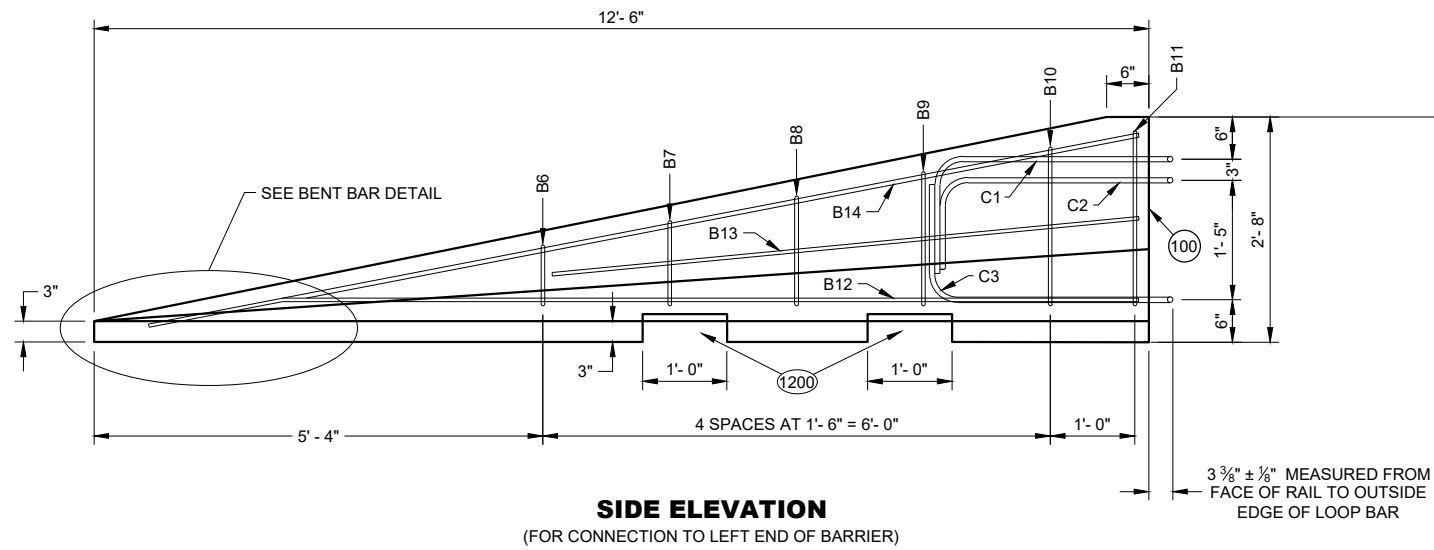
**SLOTTED THRIE BEAM RAIL K1**



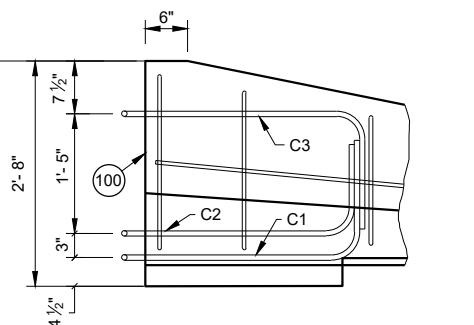
**SECTION THROUGH  
BEAM K1**

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



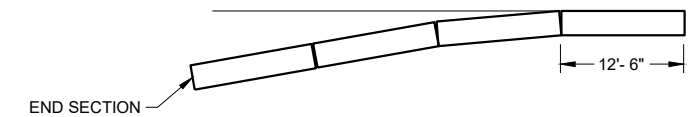
**SIDE ELEVATION**  
(FOR CONNECTION TO LEFT END OF BARRIER)



**SIDE ELEVATION**  
LOOP BAR ASSEMBLY INVERTED FOR OPPOSITE END  
(FOR CONNECTION TO RIGHT END OF BARRIER)

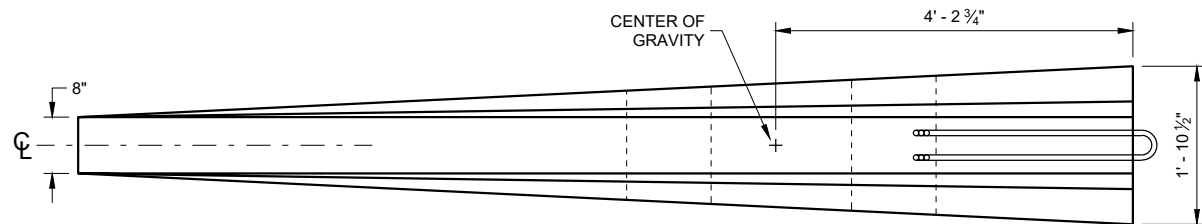
**GENERAL NOTES**

(1200) SEE LIFTING SLOT DETAIL. LOCATION OF LIFTING SLOTS DETERMINED BY CONTRACTOR.

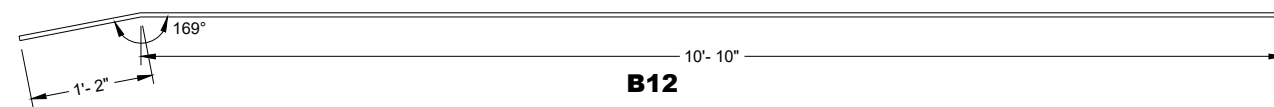


**FLARE AT BARRIER END**

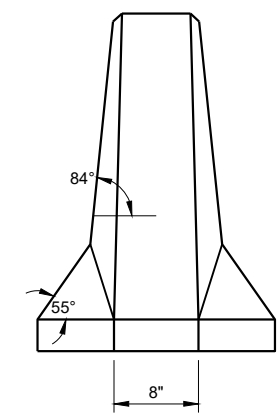
POSTED SPEED, (MPH)	FLARE RATE
40 OR LESS	6:1
45 OR GREATER	8:1



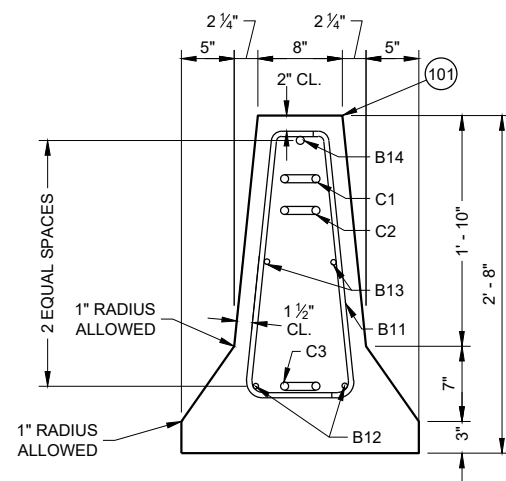
**PLAN VIEW**



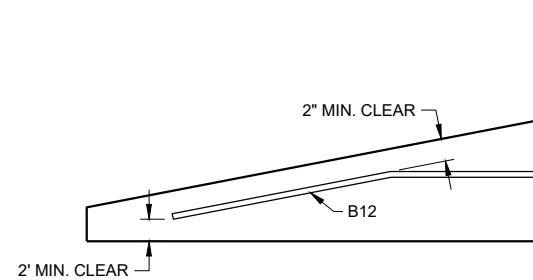
**B12**



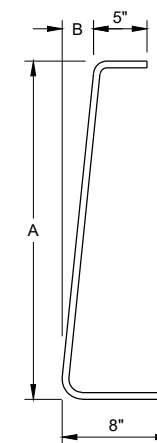
**FRONT ELEVATION**



**END SECTION**



**BENT BAR DETAIL**



BAR	A	B
B6	10"	1"
B7	1'- 1"	1 1/4"
B8	1'- 5"	1 5/8"
B9	1'- 8"	1 7/8"
B10	2'- 0 1/2"	2 3/8"
B11	2'- 3"	2 3/4"

**B BARS**

2 OF EACH SIZE REQUIRED FOR STIRRUP ASSEMBLY

**DETAILS OF BARRIER TAPER SECTION**

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIALS - CONCRETE BARRIER PRECAST**

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	PRECAST TEMPORARY BARRIER - CONCRETE	MIN. = f <sub>c</sub> 5000 PSI	
B1	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#5 REBAR, LENGTH 12'-2"
B2	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 12'-2"
B3	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#5 REBAR, LENGTH 12'-2"
B4	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 6'-0"
B5	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#6 REBAR, LENGTH 2'-11"
B6	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 1'-11"
B7	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 2'-2"
B8	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 2'-6"
B9	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 2'-9"
B10	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 3'-2"
B11	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 3'-4"
B12	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 12'-0"
B13	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#4 REBAR, LENGTH 7'-9"
B14	REBAR	STANDARD SPEC. 505.2 GRADE 60 UNCOATED REBAR	#5 REBAR, LENGTH 11'-9"
C1	LOOP BAR	ASTM A709 GRADE 70 SMOOTH BAR OR ASTM A706 GRADE 60 REBAR UNCOATED	¾" DIA.
C2	LOOP BAR	ASTM A709 GRADE 70 SMOOTH BAR OR ASTM A706 GRADE 60 REBAR UNCOATED	¾" DIA.
C3	LOOP BAR	ASTM A709 GRADE 70 SMOOTH BAR OR ASTM A706 GRADE 60 REBAR UNCOATED	¾" DIA.
D1	CONNECTION PIN - ROD	ASTM A36 MIN. STRENGTH 36 KSI / ASTM A529 MAX. STRENGTH 50 KSI / ASTM A572 MAX STRENGTH 50 KSI / ASTM A709 MAX STRENGTH 50 KSI / ASTM A992 MAX STRENGTH 50 KSI	1 ½" DIA.
D2	CONNECTION PIN - TOP PLATE	ASTM A36 MIN. STRENGTH 36 KSI / ASTM A529 MAX. STRENGTH 50 KSI / ASTM A572 MAX STRENGTH 50 KSI / ASTM A709 MAX STRENGTH 50 KSI / ASTM A992 MAX STRENGTH 50 KSI	
G1	BOLT THROUGH ANCHOR - THREADED ROD	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 A307 GRADE A OR SAE J429 GRADE 2 UNC	1 ½" DIA.
G2	BOLT THROUGH ANCHOR - WASHER, SQUARE	ASTM A36 MIN. STRENGTH 36 KSI / ASTM A529 MAX. STRENGTH 50 KSI / ASTM A572 MAX STRENGTH 50 KSI / ASTM A709 MAX STRENGTH 50 KSI / ASTM A992 MAX STRENGTH 50 KSI	
G3	BOLT THROUGH ANCHOR - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
H1	ADHESIVE ANCHOR - ADHESIVE	ICC-ES-AC308 5 ¼" EMBEDMENT WITH A MIN. BOND STRENGTH OF 1,650 PSI. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.	
H2	ADHESIVE ANCHOR - THREADED ROD	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 A307 GRADE A / SAE J429 GRADE 2 UNC	1 ½" DIA.
H3	ADHESIVE ANCHOR - WASHER, SQUARE	ASTM A36 MIN. STRENGTH 36 KSI / ASTM A529 MAX. STRENGTH 50 KSI / ASTM A572 MAX STRENGTH 50 KSI / ASTM A709 MAX STRENGTH 50 KSI / ASTM A992 MAX STRENGTH 50 KSI	
H4	ADHESIVE ANCHOR - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
J1	ASPHALT ANCHOR PIN - ROD	ASTM A36 MIN. STRENGTH 36 KSI / ASTM A529 MAX. STRENGTH 50 KSI / ASTM A572 MAX STRENGTH 50 KSI / ASTM A709 MAX STRENGTH 50 KSI / ASTM A992 MAX STRENGTH 50 KSI	1 ½" DIA.
J2	ASPHALT ANCHOR PIN - STOP PLATE	ASTM A36 MIN. STRENGTH 36 KSI / ASTM A529 MAX. STRENGTH 50 KSI / ASTM A572 MAX STRENGTH 50 KSI / ASTM A709 MAX STRENGTH 50 KSI / ASTM A992 MAX STRENGTH 50 KSI	
K1	THRIE BEAM RAIL	AASHTO M180 CLASS A TYPE 2 APPROVED PRODUCER	12 GAUGE
L1	THRIE BEAM RAIL - TERMINAL	AASHTO M180 CLASS A TYPE 2 APPROVED PRODUCER	12 GAUGE

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
M1	SPLICE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	¾" DIA.
M2	SPLICE BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
N1	THRIE BEAM RAIL TERMINAL - MECHANICAL ANCHOR	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	¾" DIA. LENGTH 6"
N2	THRIE BEAM RAIL TERMINAL - WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 F436 TYPE 1	
N3	THRIE BEAM RAIL TERMINAL MECHANICAL OR ADHESIVE ANCHOR	MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 17.9 KIPS AND ULTIMATE SHEAR LOAD 21.96 KIPS. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.	
P1	THRIE BEAM RAIL CONNECTION 1-BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	¾" DIA.
P2	THRIE BEAM RAIL CONNECTION 1-WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 F436 TYPE 1	
P3	THRIE BEAM RAIL CONNETION 1- MECHANICAL OR ADHESIVE ANCHOR	MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 9.48 KIPS AND ULTIMATE SHEAR LOAD 10.48 KIPS. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.	
Q1	BLOCK WOOD	SEE STANDARD SPEC. 614	
R1	CAP - BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	¾" DIA.
R2	CAP - BOLT - WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 F436 TYPE 1	
R3	CAP - BOLT - MECHANICAL ANCHOR	MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS ULTIMATE TENSILE LOAD 12.14 KIPS AND ULTIMATE SHEAR LOAD 17.5 KIPS. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.	12 GAUGE
S1	CAP 42-INCH TOP PLATE	AASHTO M111 / ASTM A123 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	12 GAUGE
S2	CAP 42-INCH END PLATE	AASHTO M111 / ASTM A123 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	12 GAUGE
S3	CAP 42-INCH SIDE PLATE	AASHTO M111 / ASTM A123 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	12 GAUGE
S4	CAP 42-INCH GUSSET 1	AASHTO M111 / ASTM A123 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	12 GAUGE
S5	CAP 42-INCH GUSSET 2	AASHTO M111 / ASTM A123 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	12 GAUGE
S6	CAP 42-INCH GUSSET 3	AASHTO M111 / ASTM A123 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	12 GAUGE
S7	CAP 42-INCH GUSSET 4	AASHTO M111 / ASTM A123 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	12 GAUGE

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SDD 14B07-16m

SDD 14B07-16m

**CONCRETE BARRIER  
TEMPORARY PRECAST,  
12' - 6"**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIALS - CONCRETE BARRIER PRECAST**

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
T1	CAP 56-INCH TOP PLATE	AASHTO M111 / ASTM A123 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	12 GAUGE
T2	CAP 56-INCH END PLATE	AASHTO M111 / ASTM A123 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	12 GAUGE
T3	CAP 56-INCH SIDE PLATE 1	AASHTO M111 / ASTM A123 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	12 GAUGE
T4	CAP 56-INCH SIDE PLATE 2	AASHTO M111 / ASTM A123 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	12 GAUGE
T5	CAP 56-INCH GUSSET 1	AASHTO M111 / ASTM A123 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	12 GAUGE
T6	CAP 56-INCH GUSSET 2	AASHTO M111 / ASTM A123 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	12 GAUGE
T7	CAP 56-INCH GUSSET 3	AASHTO M111 / ASTM A123 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	12 GAUGE
T8	CAP 42-INCH GUSSET 4	AASHTO M111 / ASTM A123 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	12 GAUGE
T9	CAP 42-INCH GUSSET 5	AASHTO M111 / ASTM A123 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	12 GAUGE
T10	CAP 42-INCH GUSSET 6	AASHTO M111 / ASTM A123 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	12 GAUGE
T11	CAP 42-INCH GUSSET 7	AASHTO M111 / ASTM A123 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	12 GAUGE
T12	CAP 42-INCH GUSSET 8	AASHTO M111 / ASTM A123 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	12 GAUGE
T13	CAP 42-INCH GUSSET 9	AASHTO M111 / ASTM A123 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	12 GAUGE
T14	CAP 42-INCH GUSSET 10	AASHTO M111 / ASTM A123 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	12 GAUGE
T15	CAP 42-INCH GUSSET 11	AASHTO M111 / ASTM A123 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	12 GAUGE
T16	CAP 42-INCH GUSSET 12	AASHTO M111 / ASTM A123 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	12 GAUGE
U1	GAP STIFFENER	AASHTO M111 / ASTM A123 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	
U2	GAP STIFFENER - CONNECTOR PLATE 1	AASHTO M111 / ASTM A123 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	
U3	GAP STIFFENER - CONNECTOR PLATE 2	AASHTO M111 / ASTM A123 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	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
V1	THRIE BEAM RAIL TERMINAL MECHANICAL OR ADHESIVE ANCHOR	MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS ULTIMATE TENSILE LOAD 24.0 KIPS AND ULTIMATE SHEAR LOAD 21.5 KIPS. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.	¾" DIA.
V2	GAP STIFFENER - BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C O R MECHANICAL GALVANIZE TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	
W1	TOE PLATE	AASHTO M111/ASTM A123 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	
X1	TOE PLATE - CONNECTION BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 UNC HEAVY HEX HEAD OR AASTHO M180 HEAD, ASTM F3125 GRADE A325 TYPE 1 HEAVY HEX HEAD OR SAE J429 GRADE 5 HEAVY HEX HEAD / ASTM A449 TYPE 1 HEAVY HEX HEAD. BOLTS MAY BE FULLY THREADED. PROVIDE ENOUGH THREADING FOR PROPER TIGHTENING OF BOLT.	¾" DIA.
X2	TOE PLATE - CONNECTION BOLT - WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 TYPE 2 F436 TYPE 1 (HARDEN WASHER ONLY)	
X3	TOE PLATE - CONNECTION BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GALVANIZE TO AASHTO M298 CLASS 55 TYPE 2 / ASTM B695 CLASS 55 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	

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SDD 14B07-16n

SDD 14B07-16n

<b>CONCRETE BARRIER TEMPORARY PRECAST, 12' - 6"</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2023 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



**GENERAL NOTES**

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

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




ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"X36" SIGNS MAY BE USED INSTEAD OF 48" X 48" SIGNS.

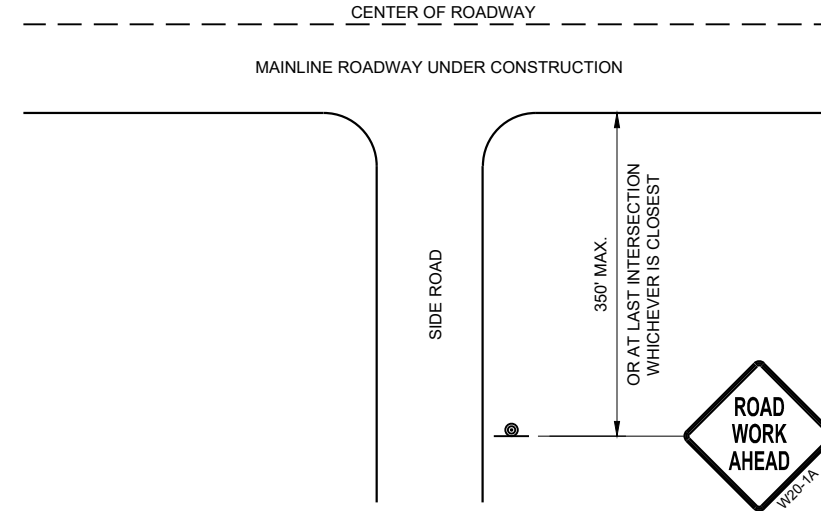
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

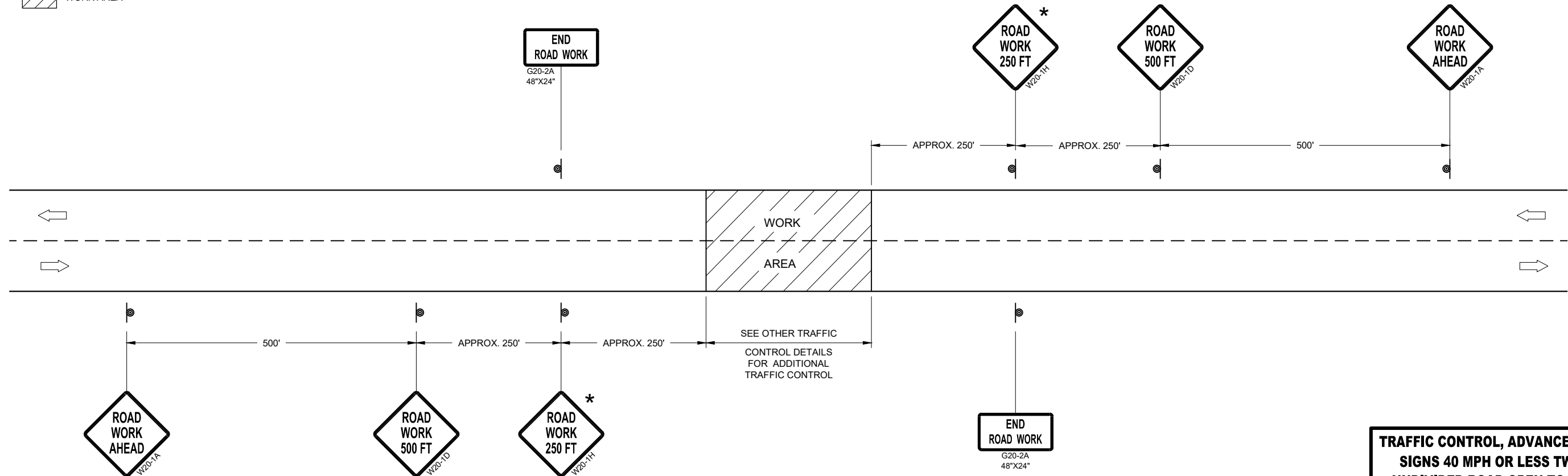
\* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FEET" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.

**LEGEND**

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



**TYPICAL SIDE ROAD APPROACH  
WARNING SIGN DETAIL**



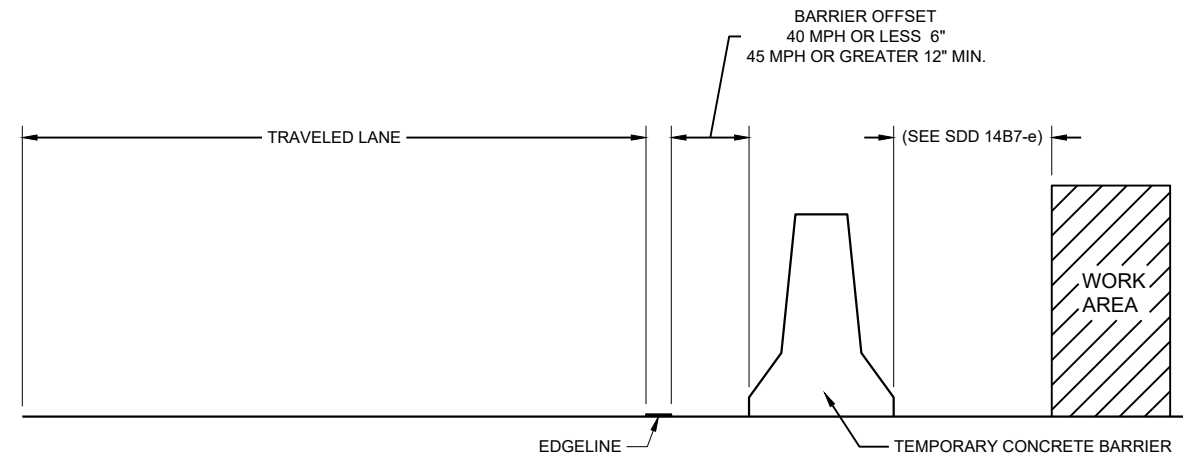
**TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40MPH OR LESS**

**TRAFFIC CONTROL, ADVANCE WARNING  
SIGNS 40 MPH OR LESS TWO-WAY  
UNDIVIDED ROAD OPEN TO TRAFFIC**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA



**TEMPORARY BARRIER OFFSET FROM EDGE LINE**

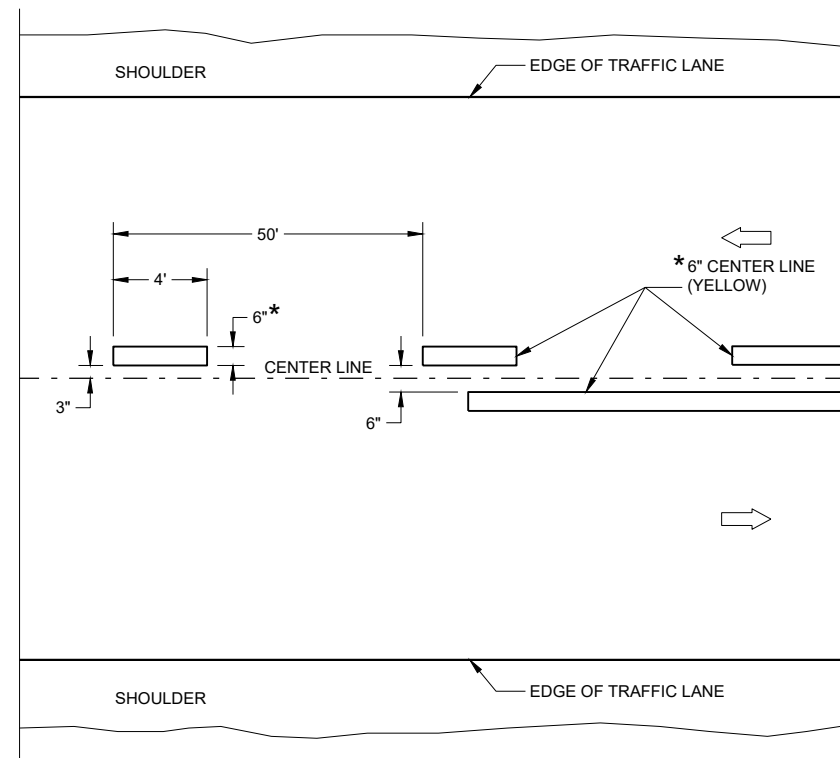
**GENERAL NOTES**

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

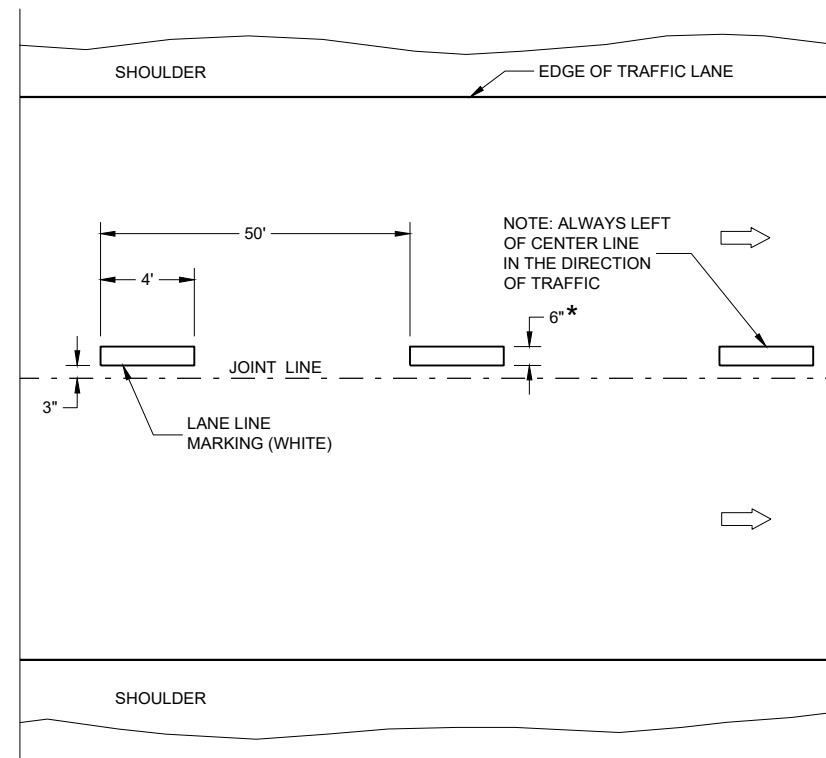
**LEGEND**

➔ DIRECTION OF TRAFFIC

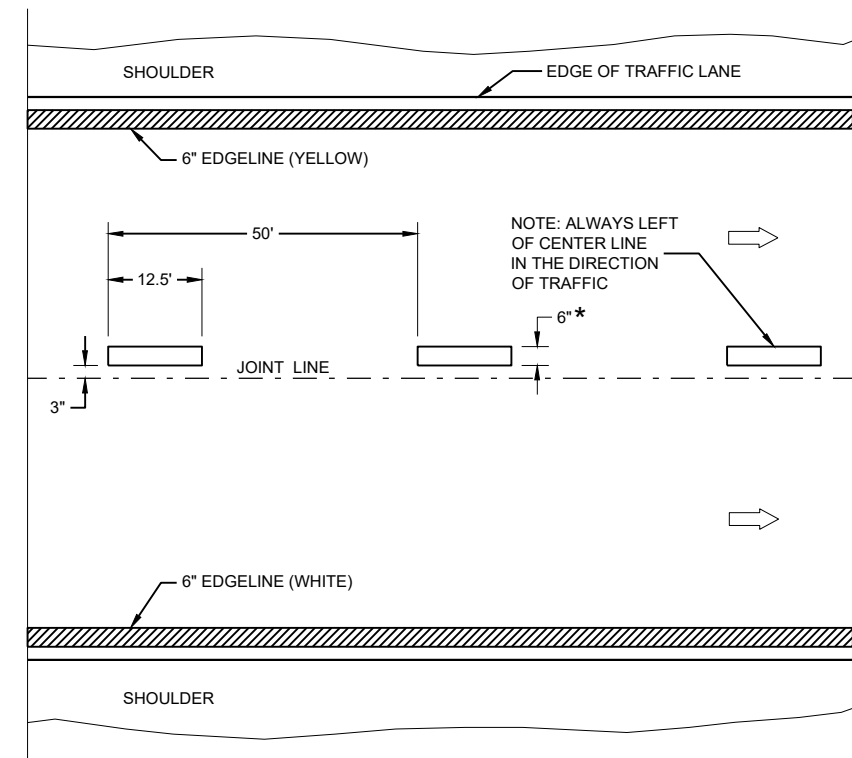
\* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES



**TWO WAY TRAFFIC**



**ONE WAY TRAFFIC**



**FREEWAYS AND EXPRESSWAYS**

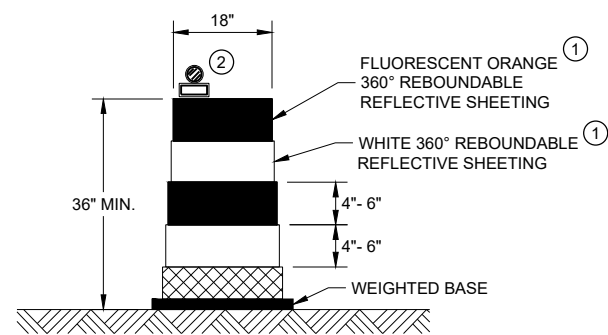
**TEMPORARY PAVEMENT MARKING**

**TEMPORARY LONGITUDINAL PAVEMENT MARKING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

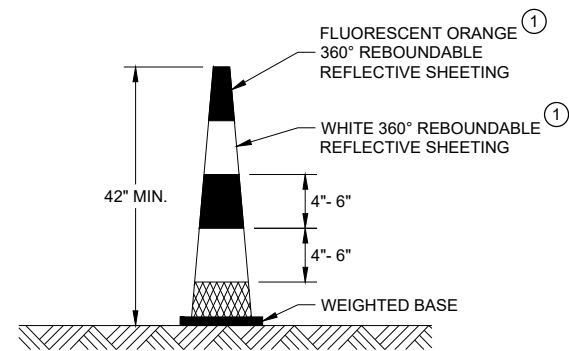
APPROVED  
May 2023 /S/ Jeannie Silver  
DATE STATEWIDE SIGNING AND MARKING ENGINEER

FHWA



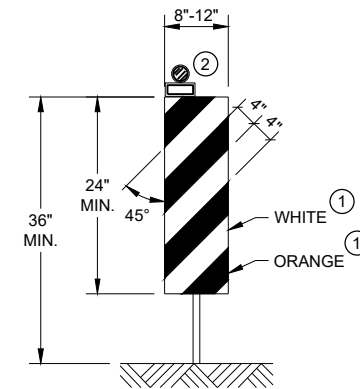
**DRUM**

BALLAST WIDTHS  
RANGE FROM 24"-36"



**42" CONE**

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

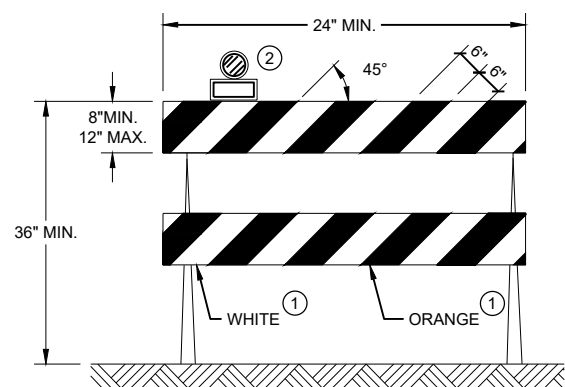


**VERTICAL PANEL**

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

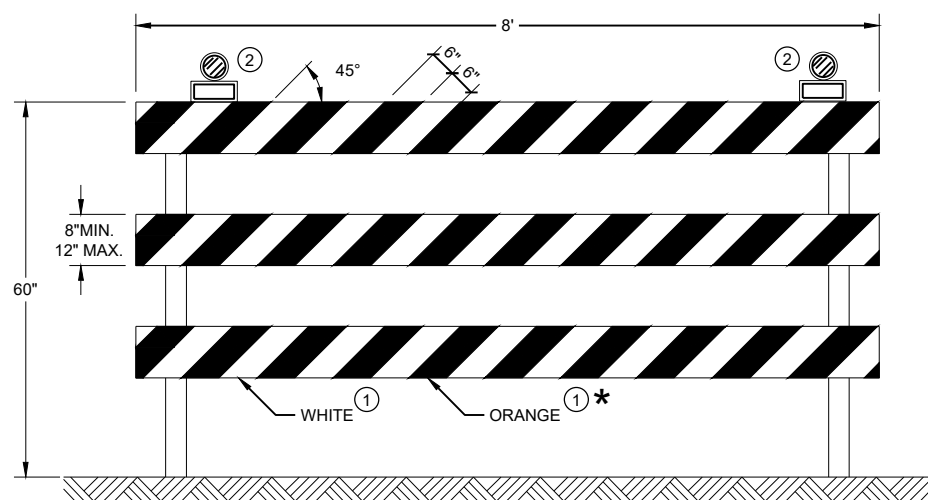
**GENERAL NOTES**

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



**TYPE II BARRICADE**

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













**TYPE III BARRICADE**

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

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

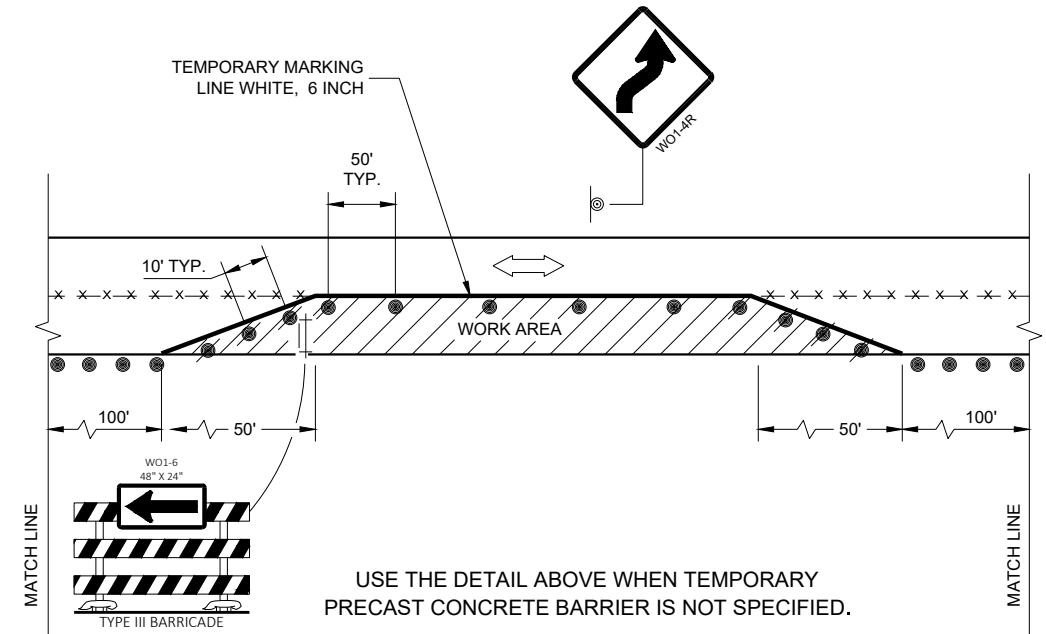
<b>CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED November 2022 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

**LEGEND**

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

**GENERAL NOTES**

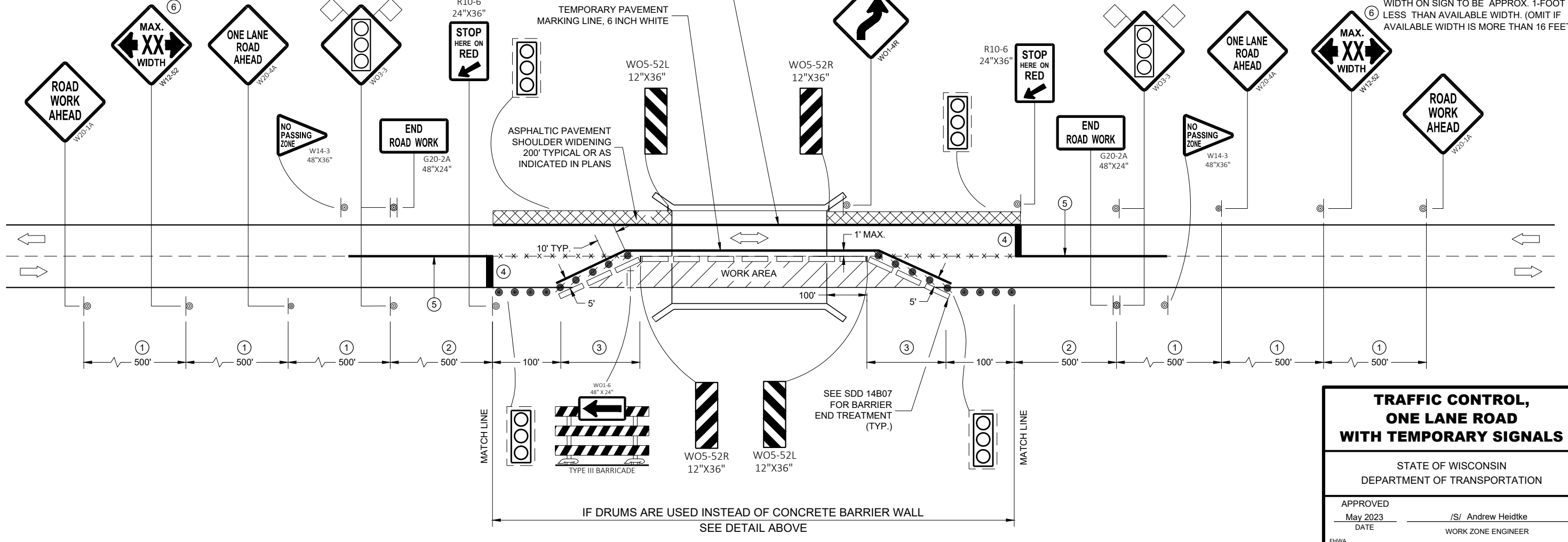
- THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING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



TEMPORARY PAVEMENT MARKING LINE, 6 INCH WHITE (STOPLINE TO STOPLINE). REMOVE EXISTING EDGELINE AND OFFSET THE TEMPORARY EDGELINE IF THE DISTANCE FROM THE EDGELINE TO CONCRETE BARRIER WALL IS LESS THAN 9 FEET.

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

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



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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED \_\_\_\_\_ /S/ Andrew Heidtke  
DATE May 2023 WORK ZONE ENGINEER

FHWA

# INDICATES WING NUMBER

STATE PROJECT NUMBER

2721-00-76

**DESIGN DATA**

**LIVE LOAD:**

DESIGN LOADING: HL-93  
 INVENTORY RATING: RF = 1.28  
 OPERATING RATING: RF = 1.65  
 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  $f_c = 4,000$  PSI  
 ALL OTHER  $f_c = 3,500$  PSI  
 BAR STEEL REINFORCEMENT  
 GRADE 60  $f_y = 60,000$  PSI

**FOUNDATION DATA**

ABUTMENTS TO BE SUPPORTED ON HP 10X42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 170 TONS \*\* PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA.  
 ESTIMATED 50'-0" LONG AT WEST ABUT.  
 ESTIMATED 50'-0" LONG AT EAST ABUT.

\*\*THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE PILE CAPACITY.

**HYDRAULIC DATA**

**100-YEAR FREQUENCY:**

$Q_{100} = 1,400$  C.F.S.  
 $V_{100} = 4.53$  F.P.S.  
 $HW_{100} = EL. 823.31$   
 WATERWAY AREA = 309.06 SQ. FT.  
 DRAINAGE AREA = 25.6 SQ. MI.  
 ROADWAY OVERTOPPING FREQUENCY = NA  
 SCOUR CRITICAL CODE = 5

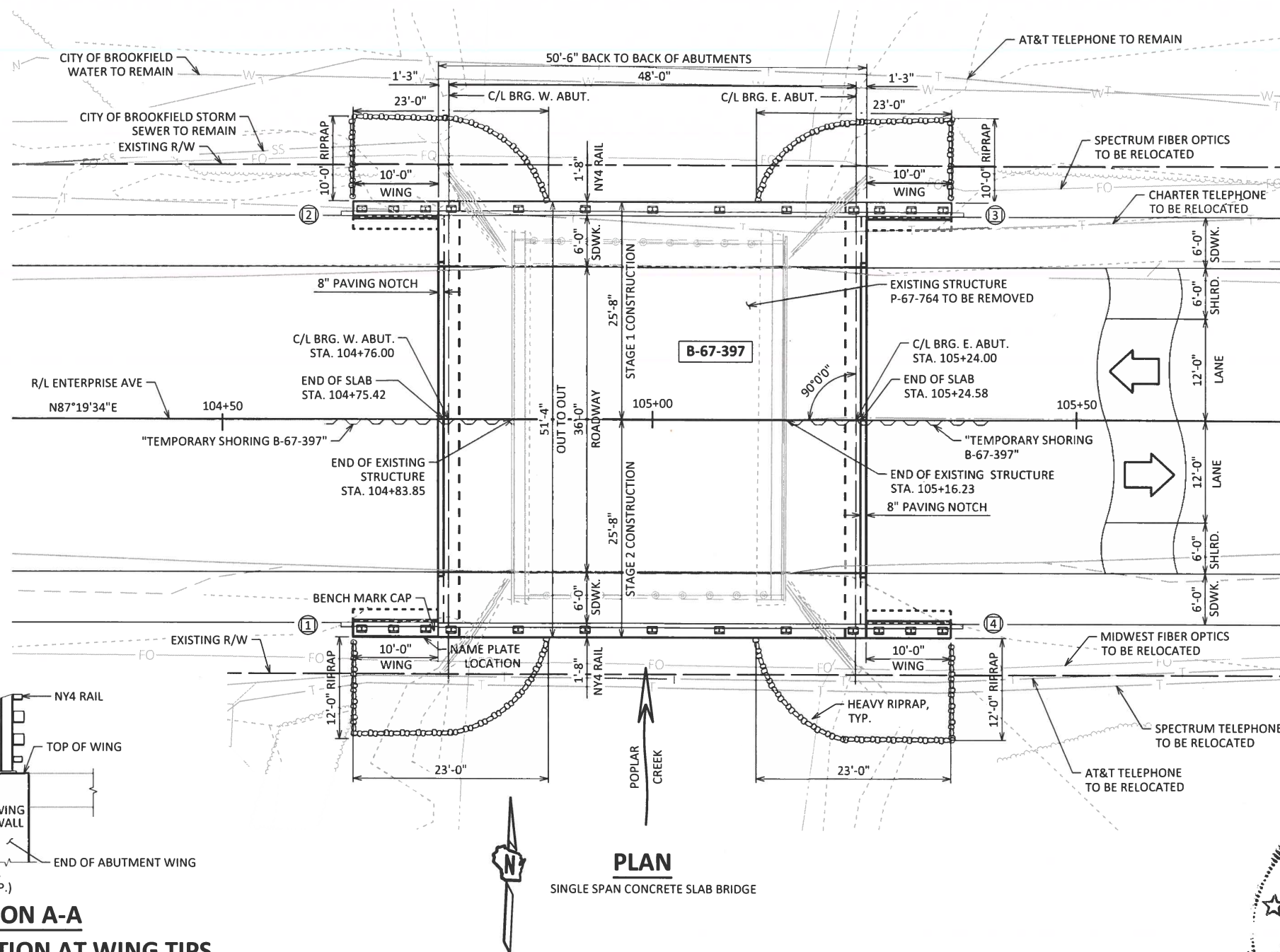
**2-YEAR FREQUENCY:**

$Q_2 = 480$  C.F.S.  
 $V_2 = 2.3$  F.P.S.  
 $HW_2 = EL. 820.11$

**TRAFFIC DATA**

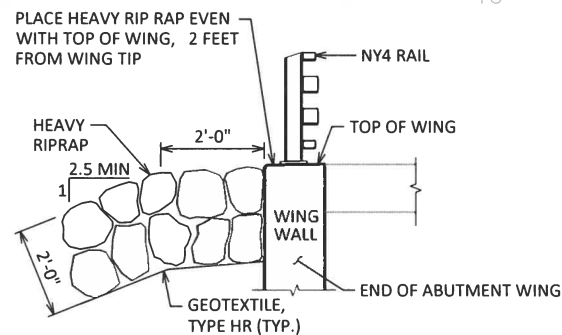
**FEATURE ON: ENTERPRISE AVE**

ADT = 520 (2024)  
 ADT = 580 (2044)  
 R.D.S. = 30 MPH



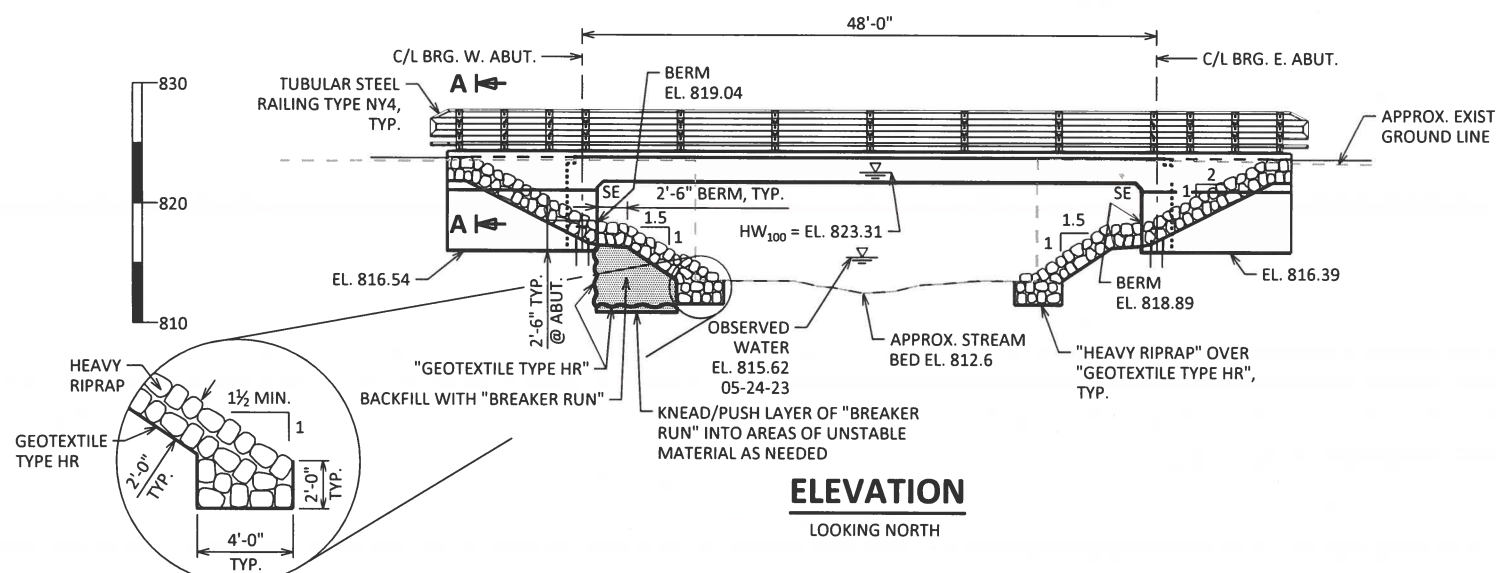
**PLAN**

SINGLE SPAN CONCRETE SLAB BRIDGE



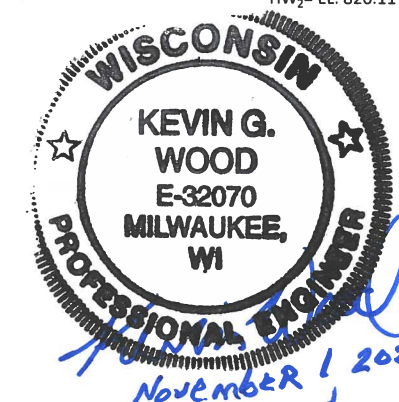
**SECTION A-A**

TYPICAL FILL SECTION AT WING TIPS



**ELEVATION**

LOOKING NORTH



**LIST OF DRAWINGS:**

- GENERAL PLAN & ELEVATION
- CROSS SECTION & GENERAL NOTES
- CONSTRUCTION STAGING
- SUBSURFACE EXPLORATION
- WEST ABUTMENT
- WEST ABUTMENT DETAILS
- EAST ABUTMENT
- EAST ABUTMENT DETAILS
- ABUTMENT DETAILS
- SUPERSTRUCTURE
- SUPERSTRUCTURE DETAILS
- TUBULAR STEEL RAILING TYPE NY4
- END POST FOR RAILING TYPE NY4

**STRUCTURE DESIGN CONTACTS:**

KEVIN WOOD (414) 266-9144  
 AARON BONK (262) 261-0261

NO.	DATE	REVISION	BY

**GRAEF** 275 W. Wisconsin Avenue, Suite 300, Milwaukee, WI 53203, 414/258-1500, 414/258-0037 fax, www.graef-usa.com

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION  
 ACCEPTED *[Signature]* SDR 11/21/23  
 CHIEF STRUCTURES DESIGN ENGINEER DATE

**STRUCTURE B-67-397**

ENTERPRISE AVENUE OVER POPLAR CREEK

COUNTY WAUKESHA CITY BROOKFIELD

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATION  
 DESIGNED BY CK'D DRAWN BY CWG PLANS CK'D KGW

**GENERAL PLAN & ELEVATION** SHEET 1 OF 13

8

8

SCALE = 1" = 16'

**GENERAL NOTES**

DRAWINGS SHALL NOT BE SCALED.

ALL STATIONS AND ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCE TO THE NAVD (88) 2012 DATUM.

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

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

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

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-67-397" SHALL BE THE EXISTING GROUNDLINE.

THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED DIRECTLY BEHIND ABUTMENTS AND ABUTMENTS WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.

AT THE BACK FACE 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 TYPE A.

EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.

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

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE TYPE "HR" TO THE EXTENT SHOWN ON SHEET 1 AND THE ABUTMENT DETAILS.

AT ABUTMENTS, HP 12X53 STEEL PILING MAY BE USED IN LIEU OF HP 10X42 STEEL PILING. PAYMENT SHALL BE BASED ON BID PRICE FOR HP 10X42 STEEL PILING.

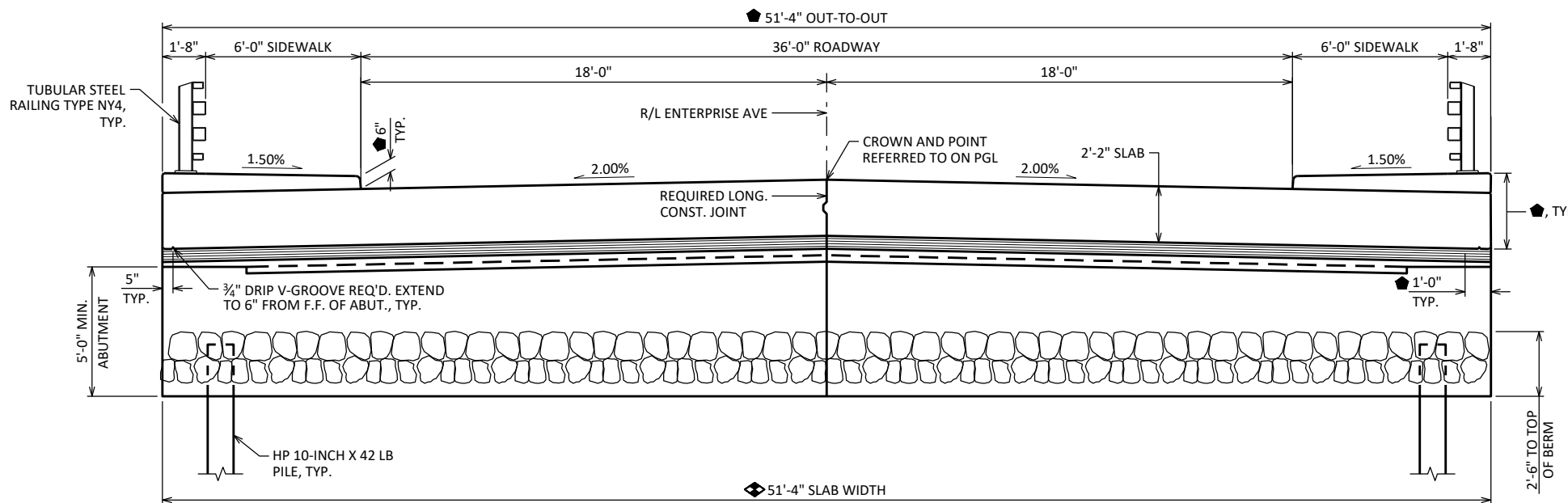
SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE, UNLESS AN ALTERNATE METHOD IS APPROVED BY THE ENGINEER.

AT ABUTMENTS, CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 OF THE STANDARD SPECIFICATIONS.

EXISTING STRUCTURE P-67-764 IS A SINGLE SPAN PRESTRESSED CHANNEL BEAM BRIDGE WITH A WIDTH A 42'-0" AN OVERALL LENGTH OF 32'-2". THE ENTIRE STRUCTURE IS TO BE REMOVED.

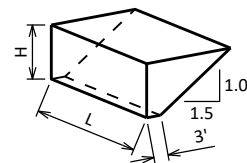
**LEGEND**

- ▲ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.
- PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.
- ◆ SLAB-SUPPORTING FALSEWORK SHALL REMAIN IN-PLACE UNTIL ALL STAGES OF THE SUPERSTRUCTURE HAVE CURED, FOR DEFLECTION CONTROL BETWEEN STAGES. DO NOT RELEASE ANY FALSEWORK UNTIL SIDEWALKS HAVE CURED. (FOR STAGED CONSTRUCTION).
- ◆ PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO:
  - ENTIRE EXPOSED TOP OF SLAB
  - EDGES OF SLAB & 1'-0" WIDTH ALONG UNDERSIDE OF SLAB
  - TOP AND EDGES OF SIDEWALK
  - VERTICAL & HORIZ. FACES OF PAVING NOTCH
  - TOP OF EXPOSED FACES OF WINGS
  - THE END 1'-0" OF THE FRONT FACE OF ABUTMENT



**TYPICAL SECTION THRU ROADWAY**

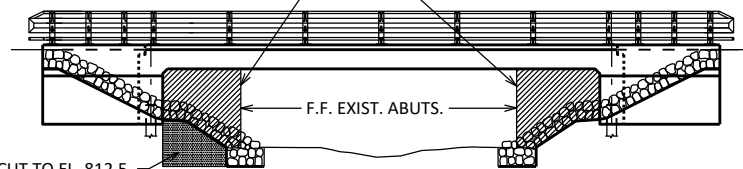
LOOKING EAST



**ABUTMENT BACKFILL DIAGRAM**

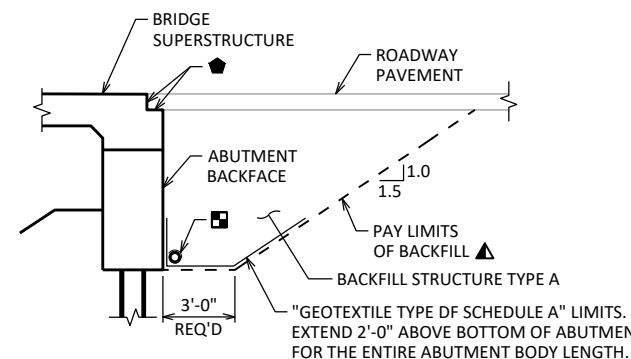
L = OUT TO OUT OF ABUTMENT BODY INCLUDING WINGS (FT)  
 H = AVERAGE ABUTMENT FILL HEIGHT (FT)  
 EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)  
 $V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H)$   
 $V_{CY} = V_{CF}(EF)/27$   
 $V_{TON} = V_{CY}(2.0)$

COST OF EXCAVATION IN THE HATCHED AREAS SHALL BE INCLUDED IN THE BID PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-67-397"



UNDERCUT TO EL. 812.5. EXCAVATION FOR UNDERCUT TO BE INCLUDED IN "EXCAVATION FOR STRUCTURES BRIDGES B-67-397"

**EXCAVATION DETAIL**



**TYPICAL SECTION THRU ABUTMENT**

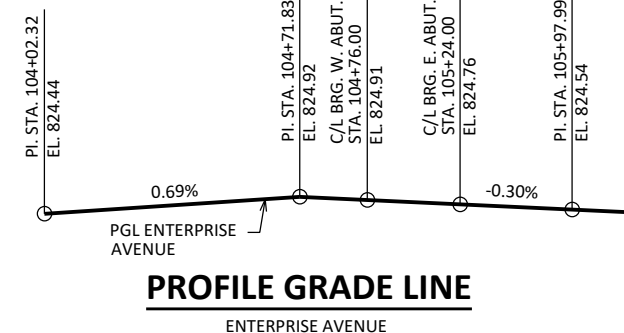
**BENCH MARKS**

NO.	STATION	DESCRIPTION	ELEV.
#1	102+11.87	FOUND CHISELED "+" IN CENTER BOLT TOP OF FIRE HYDRANT ON THE NORTH SIDE OF ENTERPRISE AVE. AT THE SOUTHWEST CENTER OF PROPERTY FOR BUILDING #20880.	825.44
#2	108+13.89	FOUND CHISELED "+" IN CENTER BOLT TOP OF FIRE HYDRANT OF THE NORTH SIDE OF ENTERPRISE AVE. AT THE SOUTHWEST CORNER OF PROPERTY FOR BUILDING #20580.	825.88

**TOTAL ESTIMATED QUANTITIES**

BID ITEM NUMBER	BID ITEMS	UNIT	SUPER	WEST ABUT.	EAST ABUT.	TOTALS
203.0260	REMOVING STRUCTURE OVER WATERWAY MINIMAL DEBRIS P-67-764	EACH	---	---	---	1
206.1001	EXCAVATION FOR STRUCTURES BRIDGES B-67-397	EACH	---	---	---	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	---	239	239	478
311.0110	BREAKER RUN	TON	---	114	---	114
502.0100	CONCRETE MASONRY BRIDGES	CY	236.0	41.8	41.8	320
502.3200	PROTECTIVE SURFACE TREATMENT	SY	343	11	11	365
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	---	3,040	3,040	6,080
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	43,170	1,590	1,590	46,350
505.0904	BAR COUPLERS NO. 4	EACH	4	7	7	18
505.0905	BAR COUPLERS NO. 5	EACH	126	---	---	126
505.0906	BAR COUPLERS NO. 6	EACH	---	18	18	36
511.1200	TEMPORARY SHORING B-67-397	SF	---	151	151	302
513.7084	RAILING STEEL TYPE NY4	LF	101	23	23	147
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	---	14	14	28
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	---	400	400	800
606.0300	RIPRAP HEAVY	CY	---	87	87	175
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	---	83	83	166
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	---	68	68	136
645.0120	GEOTEXTILE TYPE HR	SY	---	203	115	318
<b>NON-BID ITEMS</b>						
	FILLER	SIZE				1/2", 3/4"
	NAME PLATE	EACH				1
	BENCH MARK CAP	EACH				1

ALL ITEMS ARE CATEGORY 0020



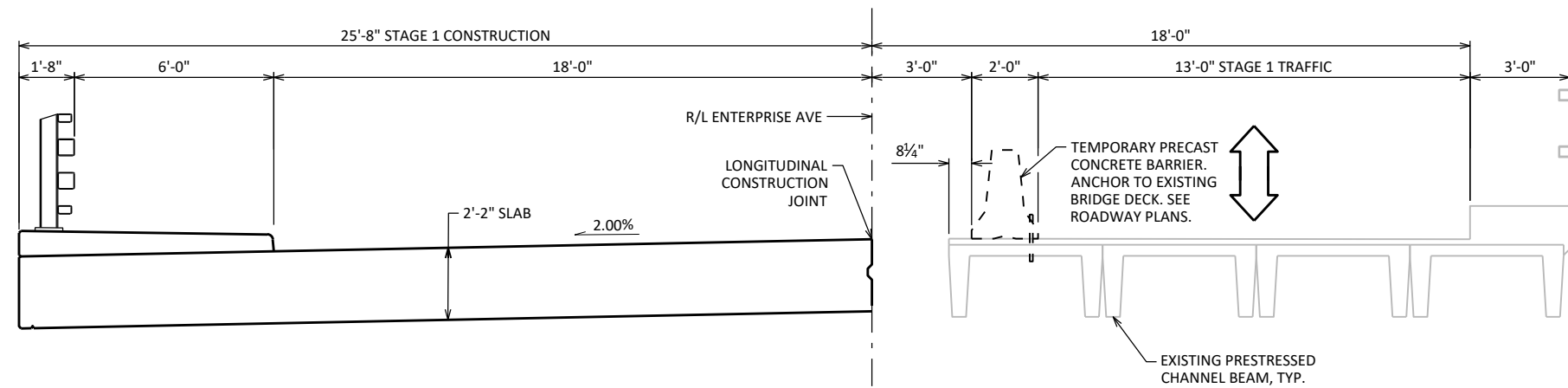
**PROFILE GRADE LINE**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-67-397</b>			
DRAWN BY CWG		PLANS CK'D KGW	
<b>CROSS SECTION &amp; GENERAL NOTES</b>			SHEET 2 OF 13

SCALE =

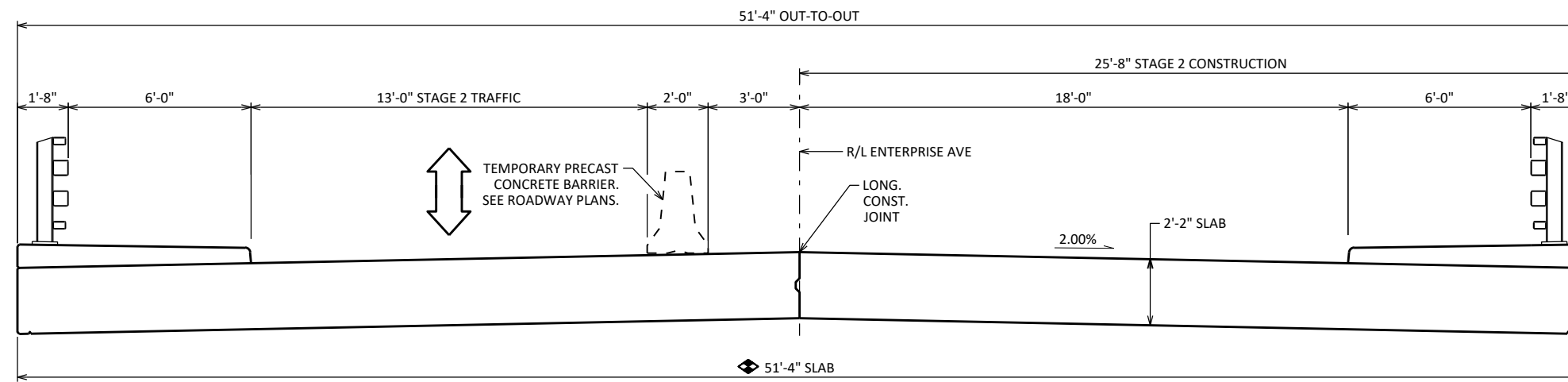
**NOTES**

- ◆ SEE SHEET 2 FOR FALSEWORK REQUIREMENTS DURING STAGED CONSTRUCTION.



**STAGE 1 CONSTRUCTION**

LOOKING EAST



**STAGE 2 CONSTRUCTION**

LOOKING EAST

8

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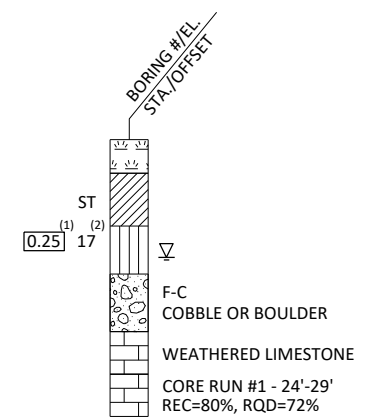
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-67-397</b>			
DRAWN BY		PLANS CK'D	KGW
CWG			
<b>CONSTRUCTION STAGING</b>		SHEET 3 OF 13	

SCALE =

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
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STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

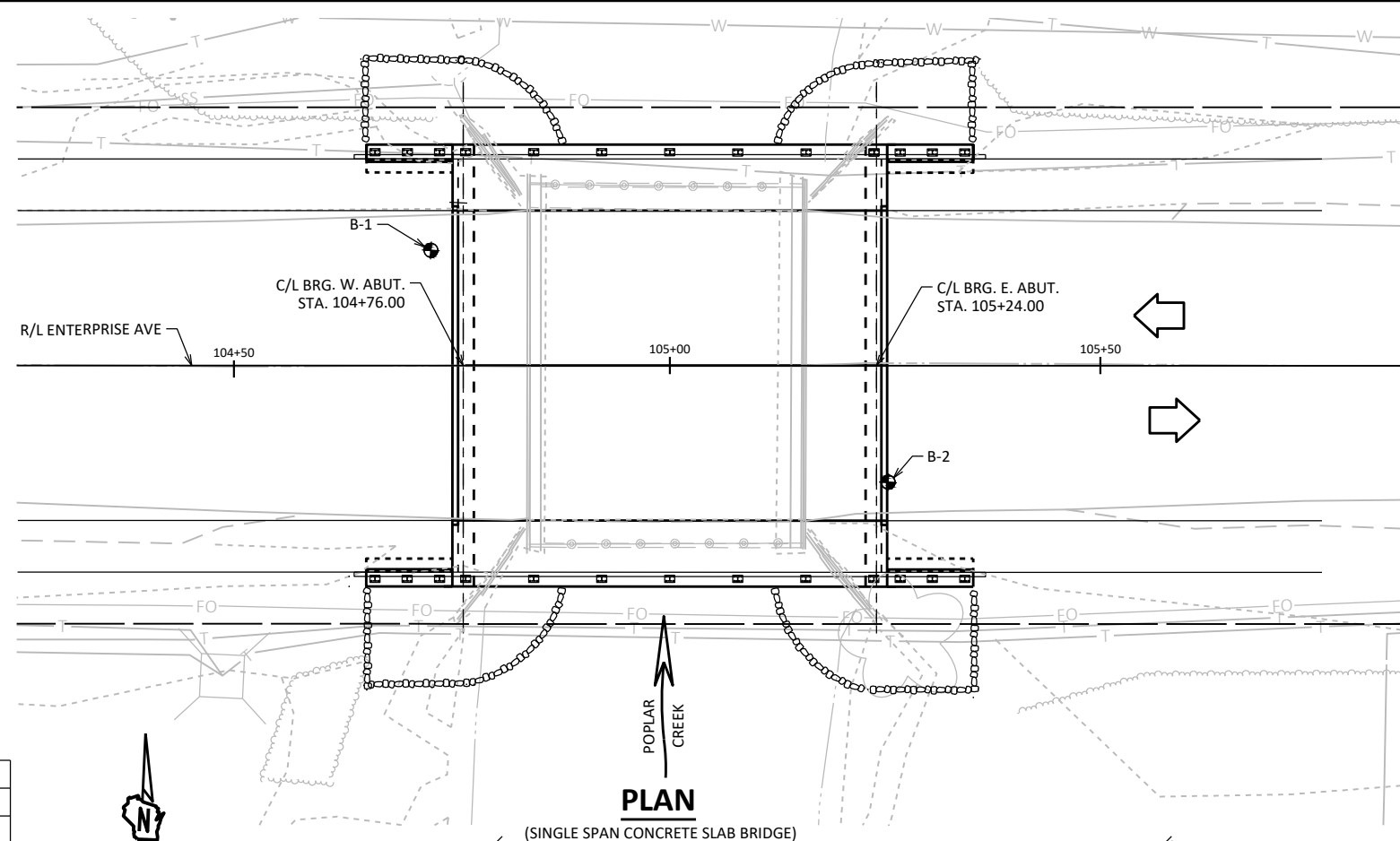
STRUCTURE B-67-397

DRAWN BY	CWG	PLANS CK'D	KGW
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SUBSURFACE EXPLORATION

SHEET 4 OF 13

SCALE =



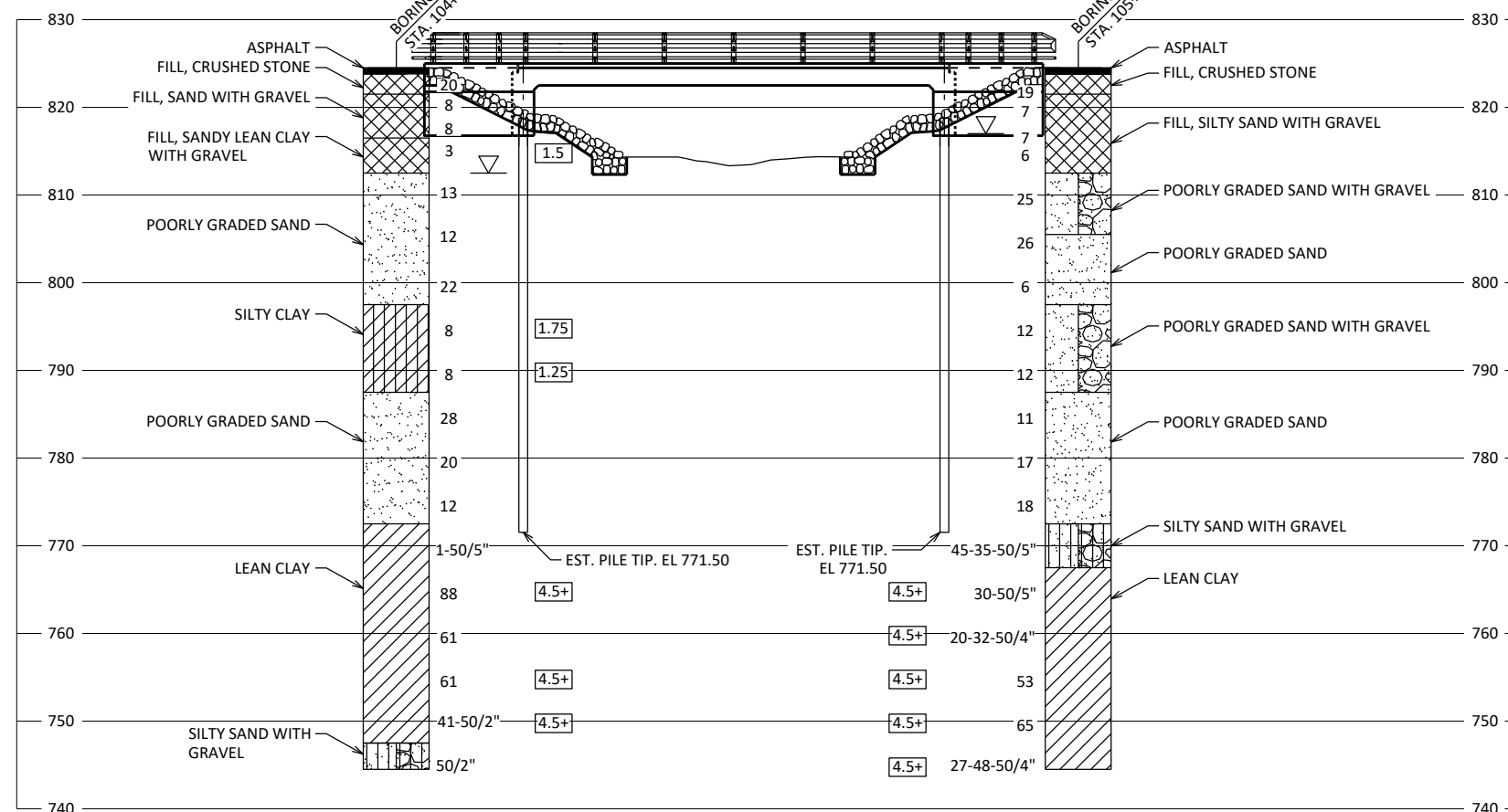
PLAN

(SINGLE SPAN CONCRETE SLAB BRIDGE)



BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	4-11-2023	176130.95	699290.99
B-2	4-12-2023	176106.52	699345.30

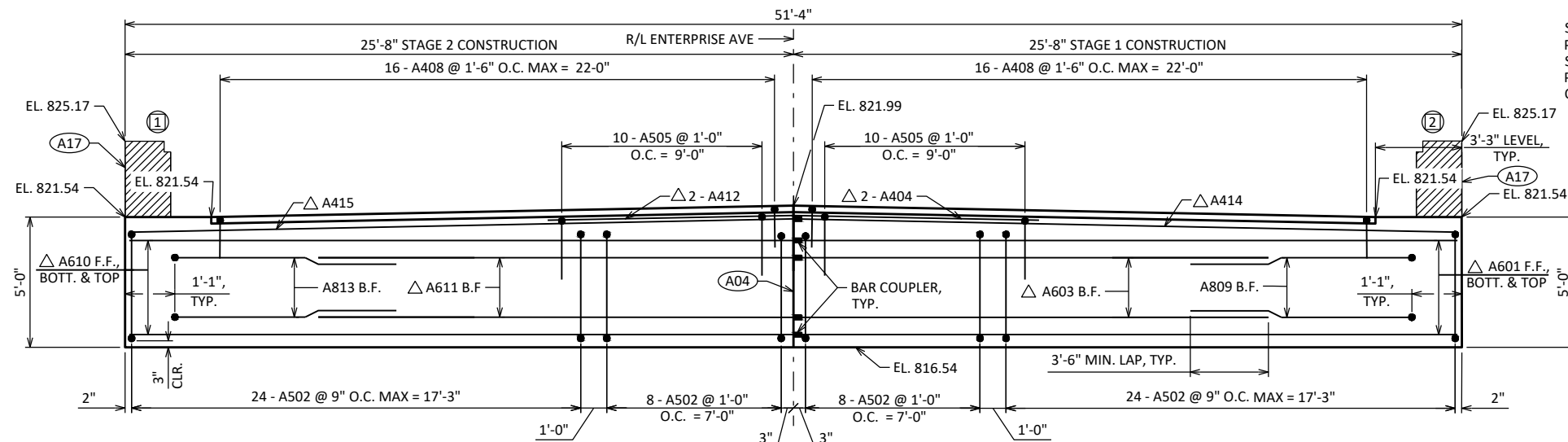
BORINGS COMPLETED BY: TERRACON  
REPORT COMPLETED BY: TERRACON  
ALL COORDINATES REFERENCED TO NAD 83 (2011) AND NAVD (88) 2012 COUNTY WAUKESHA



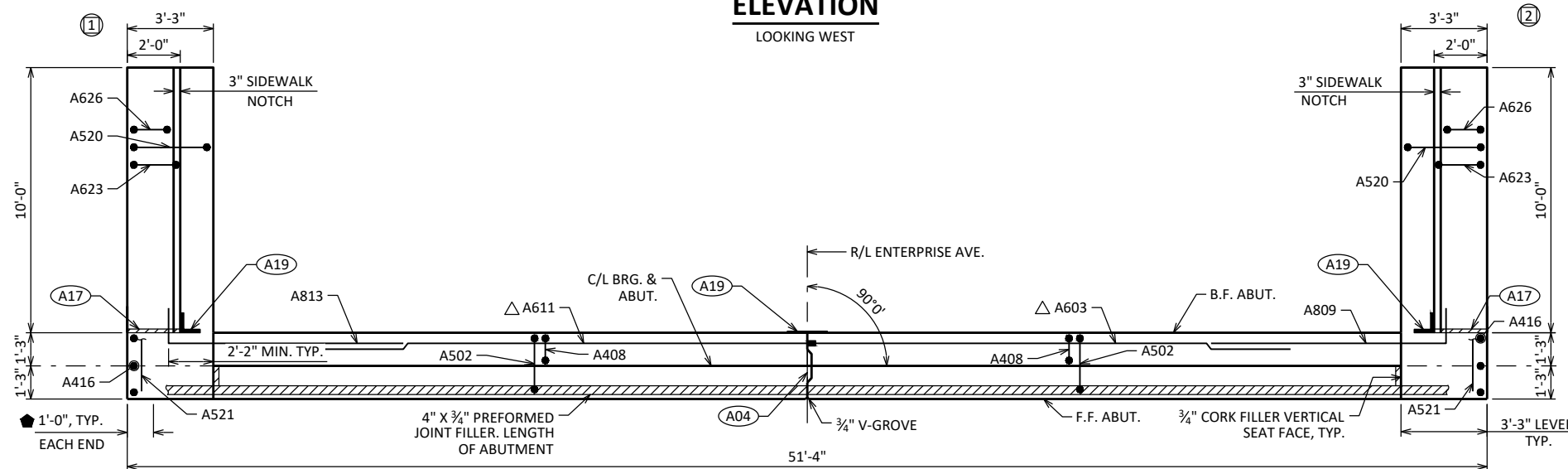
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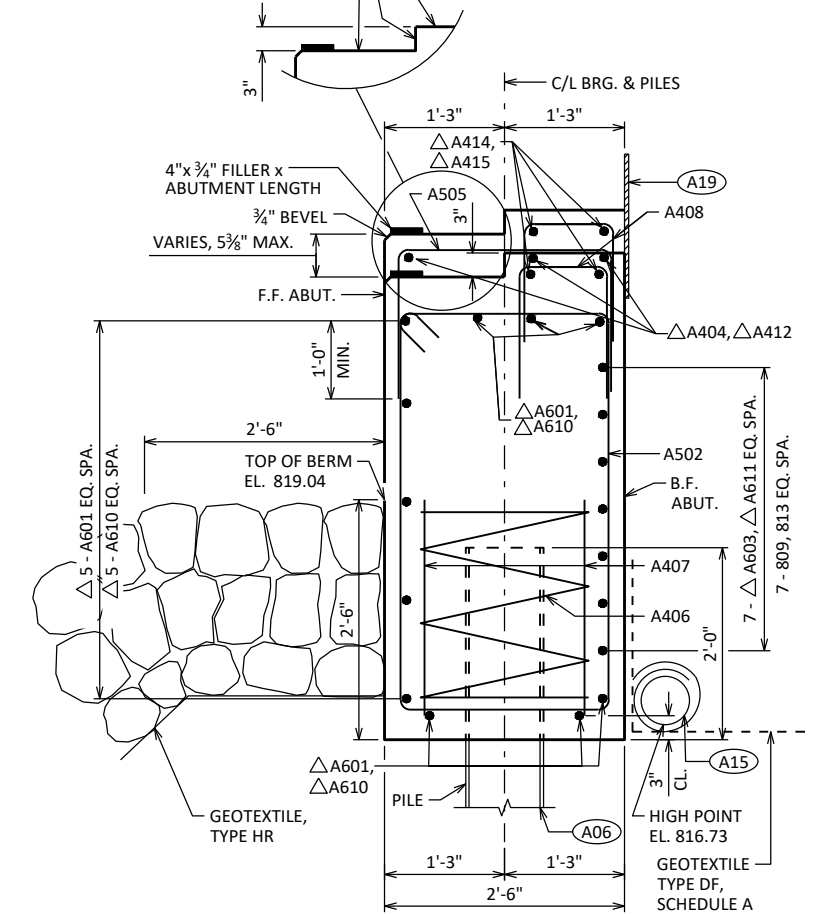


**ELEVATION**  
LOOKING WEST



**PLAN**

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".



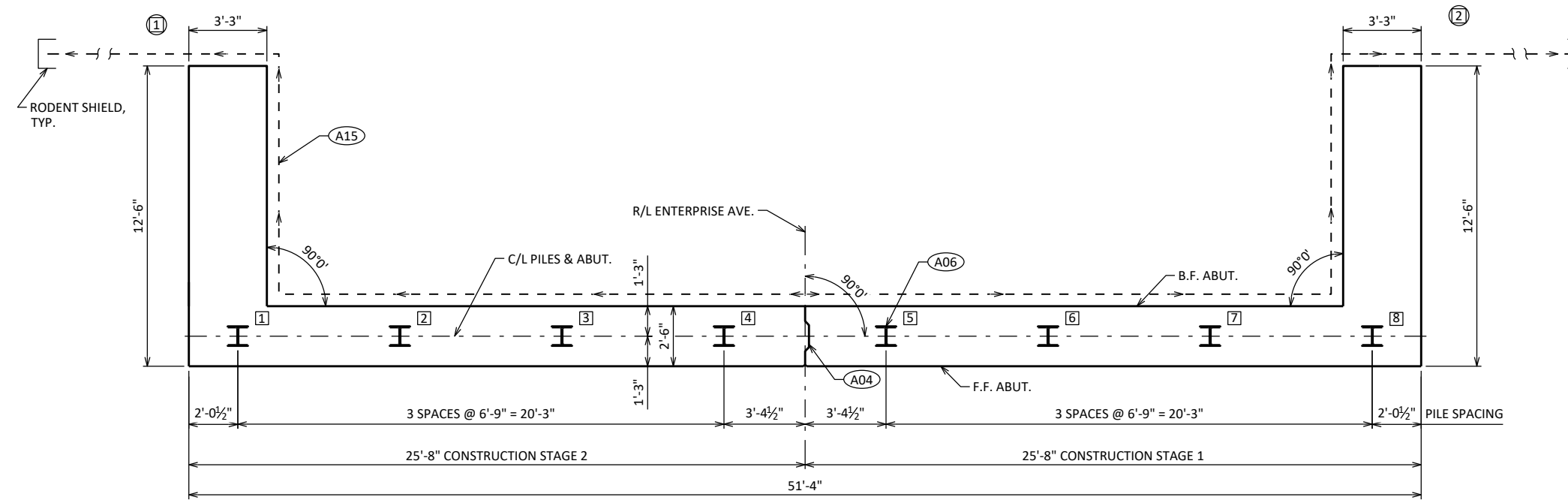
**SECTION THRU BODY**

**NOTE**

SEE SHEET 9 FOR PILE SPLICE DETAILS

**LEGEND**

- (A04) VERT. CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 x 8. 3/4" "V" GROOVE @ THE FRONT FACE AND 18" RMW @ BACKFACE. FOR OPTIONAL DETAILS SEE SHEET 9.
- (A06) SUPPORT ABUTMENT ON HP 10 x 42 STEEL PILING, ESTIMATED 50'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. SEE SHEET 9 FOR SPLICE DETAILS.
- (A15) PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- (A17) 1/2" FILLER TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. FILLER INCLUDED IN WING LENGTH. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/2" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- (A19) 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE END 1'-0" OF THE FRONT FACE OF ABUTMENT



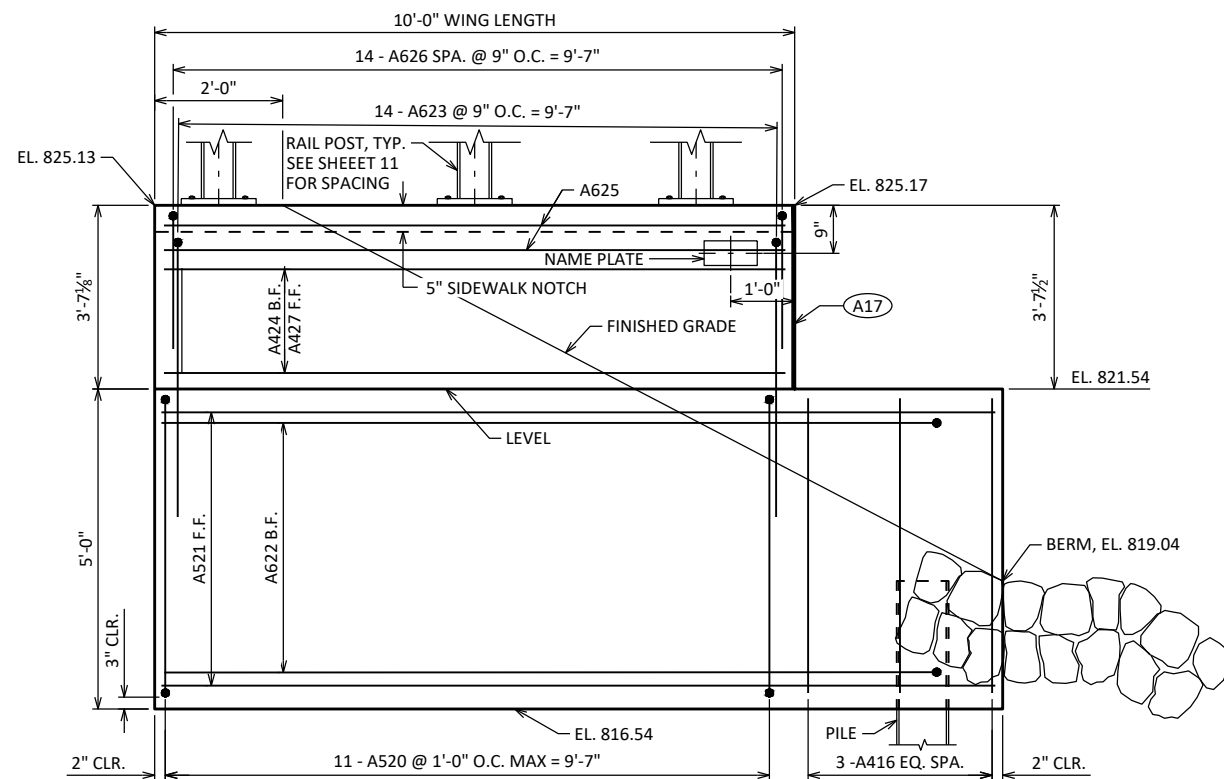
**PILE PLAN**

NO. DATE REVISION BY			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-67-397</b>			
DRAWN BY CWG		PLANS CK'D KGW	
<b>WEST ABUTMENT</b>		SHEET 5 OF 13	

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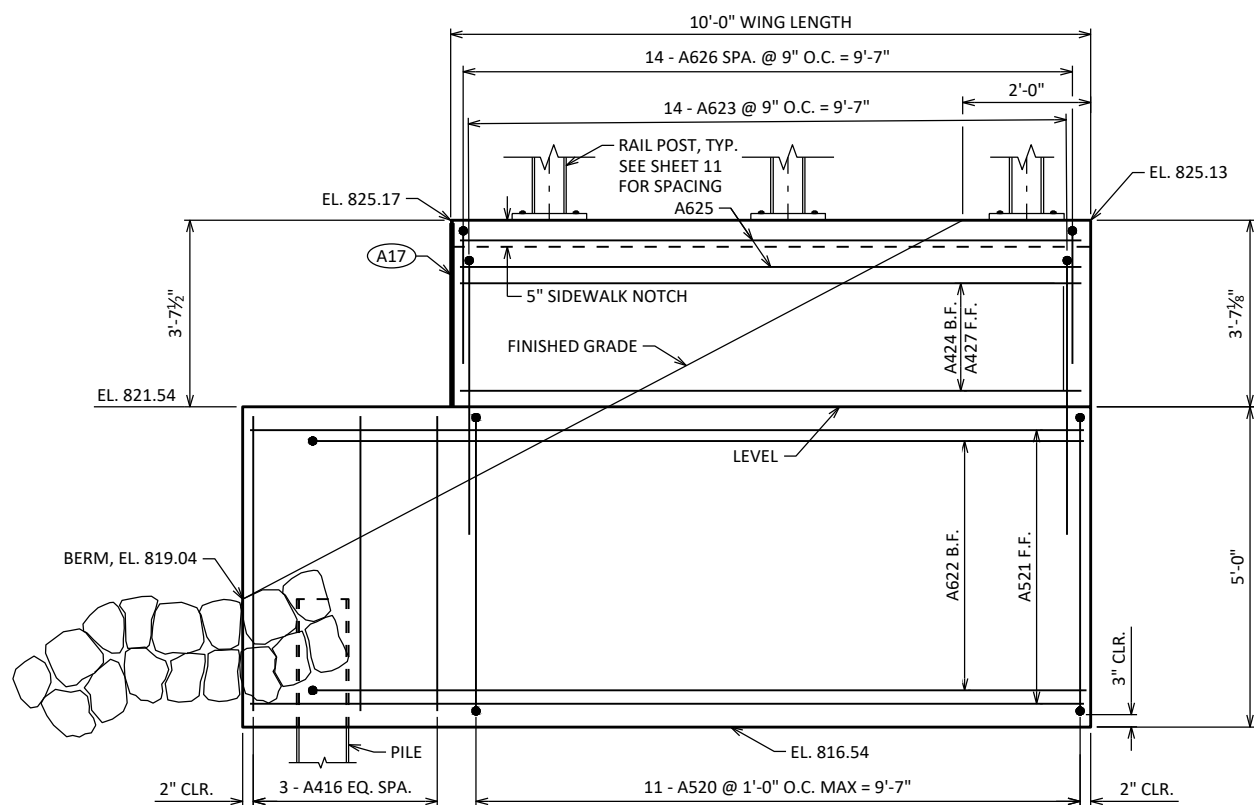
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SCALE =



**WINGWALL 1 ELEVATION**

LOOKING AT F.F. WING



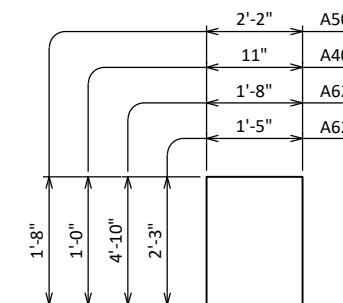
**WINGWALL 2 ELEVATION**

LOOKING AT F.F. WING

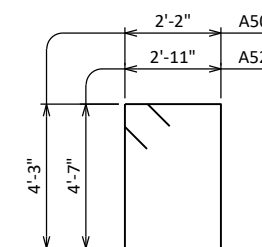
**BILL OF BARS**

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

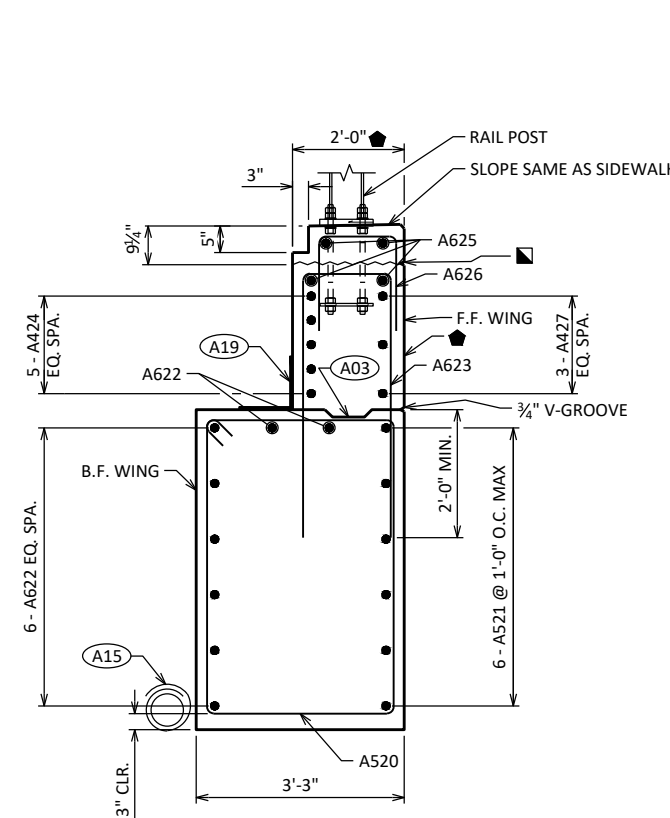
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
△ A601		11	25'-6"			TOP, BOTTOM, & F.F. HORIZ. BARS STAGE 1
A502		64	13'-6"	X		VERTICAL STIRRUPS
△ A603		7	17'-9"			B.F. HORIZ. BARS STAGE 1
△ A404		3	9'-6"			TOP HORIZ., CROWN STAGE 1
A505		20	5'-3"	X		VERTICAL STIRRUP @ CROWN
A406		8	28'-0"	X		PILE SPIRAL
A407		16	2'-3"			PILE VERTICAL
A408		32	2'-9"	X		ABUTMENT SEAT TRANSVERSE
A809		7	11'-7"	X		B.F. HORIZ. AT WINGWALL STAGE 1
△ A610		11	25'-6"			TOP, BOTTOM, & F.F. HORIZ. BARS STAGE 2
△ A611		7	17'-9"			B.F. HORIZ. BARS STAGE 2
△ A412		3	9'-6"			TOP HORIZ. CROWN STAGE 2
A813		7	11'-7"	X		B.F. HORIZ. AT WINGWALL STAGE 2
△ A414		2	25'-4"			HORIZ. TOP STAGE 1
△ A415		2	25'-4"			HORIZ. TOP STAGE 2
A416		6	4'-7"			ABUT. END VERTICAL
A520	X	22	15'-8"	X		WINGWALL STIRRUP
A521	X	12	12'-2"			WINGWALL F.F. HORIZ.
A622	X	16	12'-1"	X		WINGWALL B.F. HORIZ.
A623	X	28	11'-0"	X		UPPER WING VERTICAL
A424	X	10	9'-7"			UPPER WING B.F. HORIZ.
A625	X	8	9'-7"			UPPER WING TOP HORIZ.
A626	X	28	5'-7"	X		UPPER WING VERTICAL
A427	X	6	9'-7"			UPPER WING F.F. HORIZ.



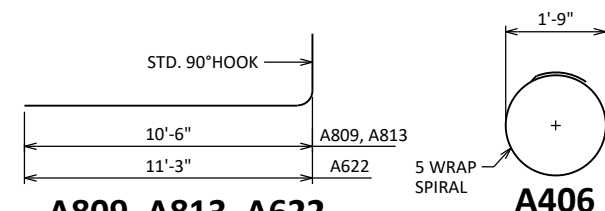
**A505, A408, A623, A626**



**A502, A520**



**WINGWALL SECTION**



**A809, A813, A622**

**LEGEND**

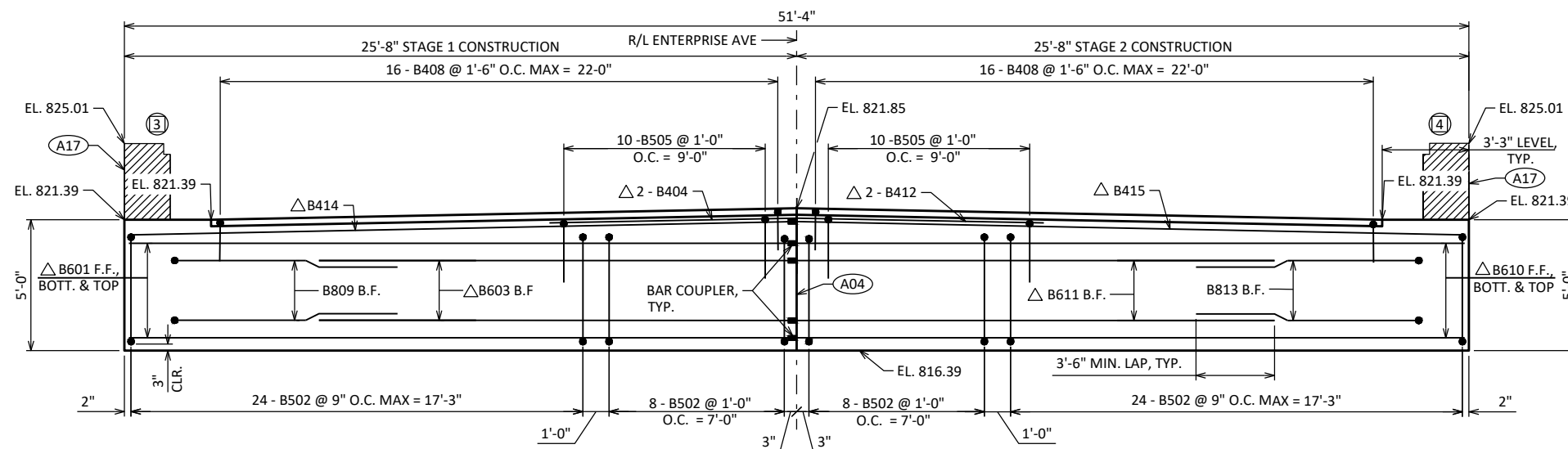
- A03 OPTIONAL CONST. JOINT: KEYWAY FORMED BY BEVELED 2" x 6". (18" RMW @ B.F. & 3/4" V-GROOVE @ F.F. IF JOINT IS USED).
- A15 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- A17 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD " BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- A19 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- ▣ OPTIONAL CONSTRUCTION JOINT, LEAVE ROUGH. POUR CONCRETE ABOVE THE JOINT AFTER SUPERSTRUCTURE SIDEWALK IS IN PLACE. IF JOINT IS USED, UTILIZE RUBBERED MEMBRANE WATERPROOFING (COST INCIDENTAL TO BID ITEM " CONCRETE MASONRY BRIDGE" ) AND PROVIDE 3/4" V-GROOVE AT JOINT ON B.F. OF WALL.
- ◆ PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE EXPOSED TOP AND F.F. SURFACES OF THE WINGWALLS
- △ BAR COUPLER, SEE SHEET 9 FOR DETAILS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-67-397</b>			
DRAWN BY		PLANS CK'D	KGW
CWG			
<b>WEST ABUTMENT DETAILS</b>		SHEET 6 OF 13	

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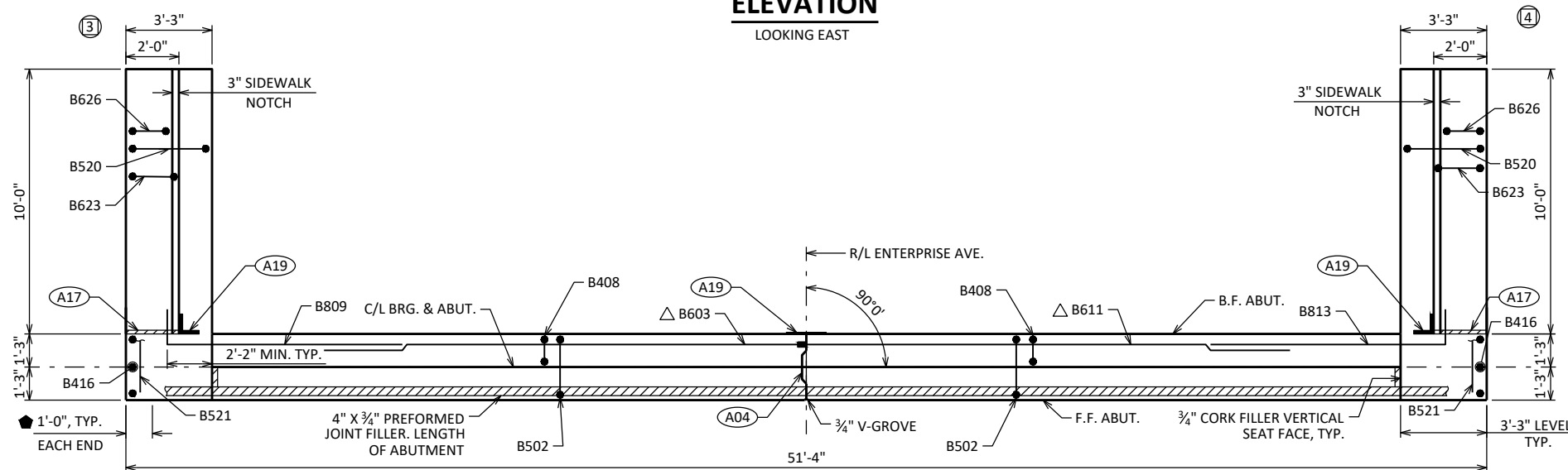
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SCALE =



**ELEVATION**

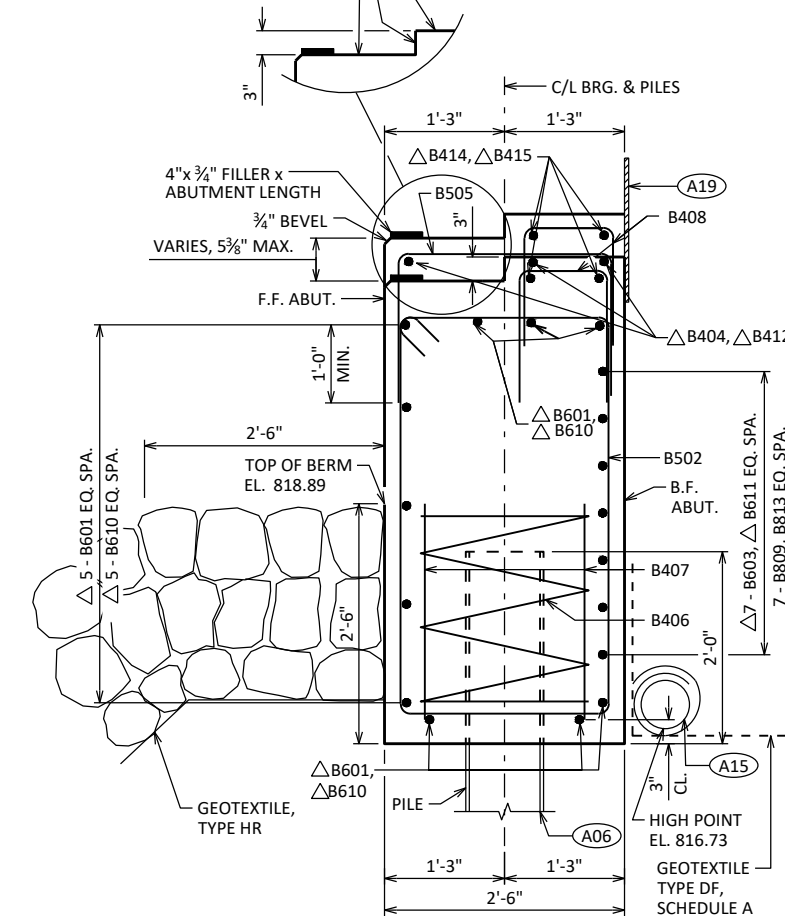
LOOKING EAST



**PLAN**



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".



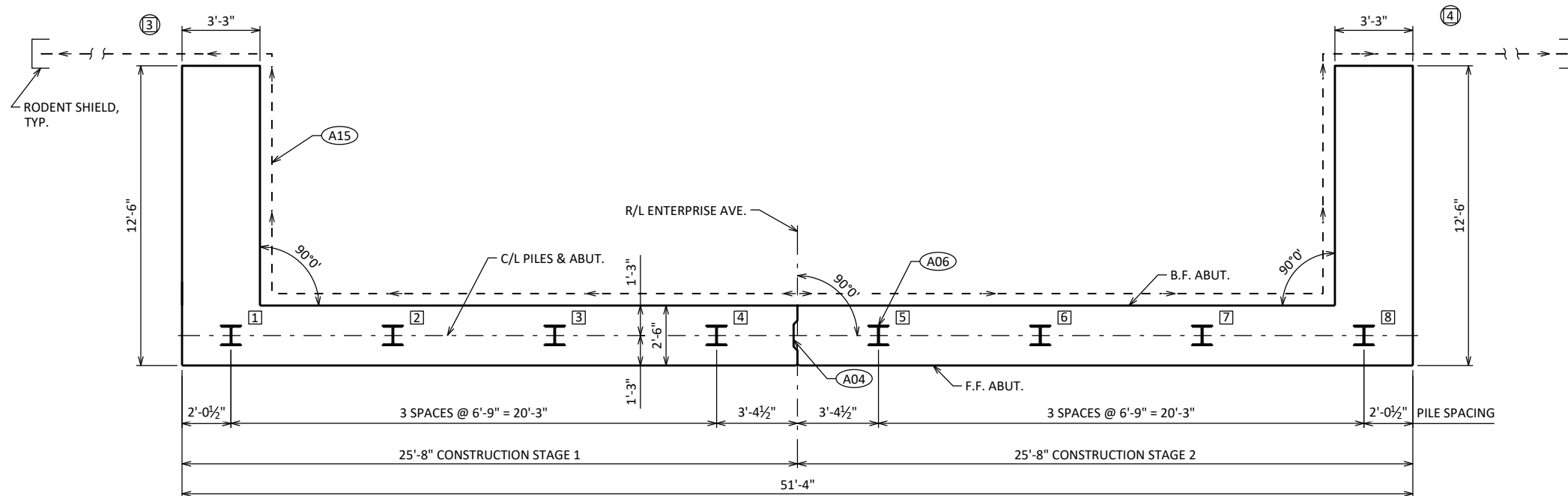
**SECTION THRU BODY**

**NOTES**

SEE SHEET 9 FOR PILE SPLICE DETAILS

**LEGEND**

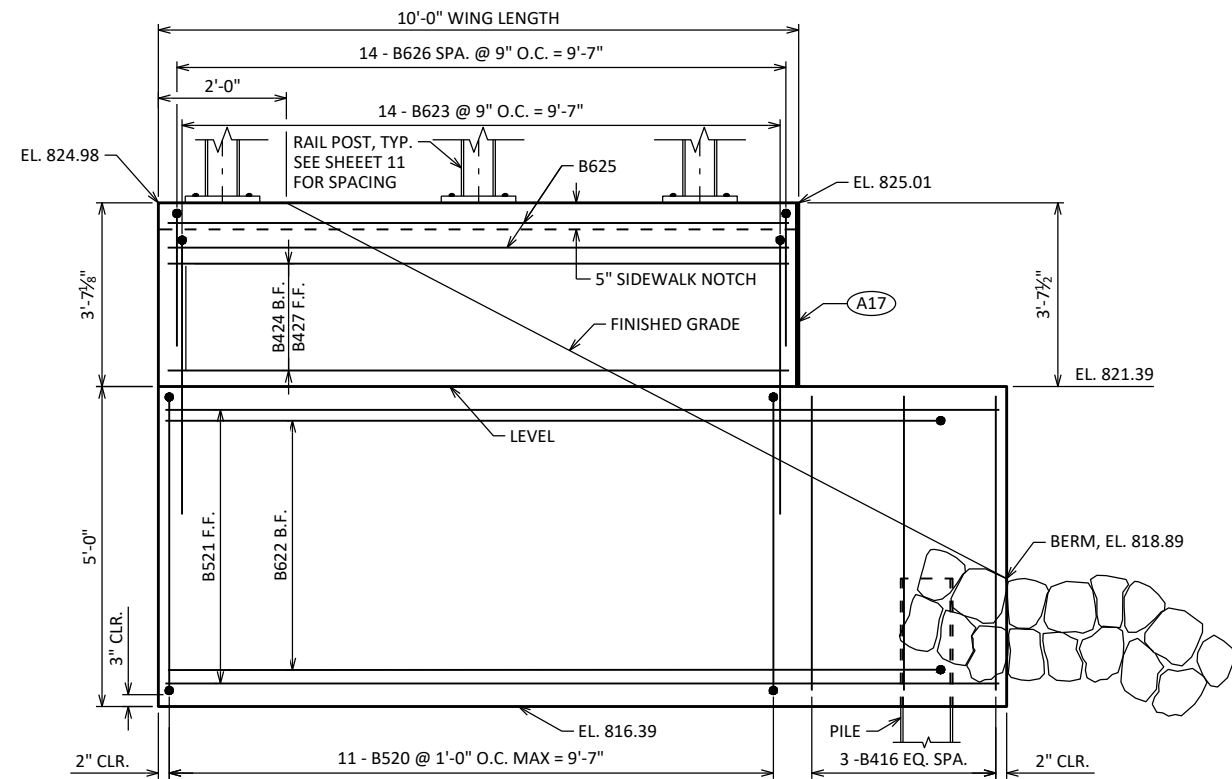
- (A04) VERT. CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 x 8. 3/4" "V" GROOVE @ THE FRONT FACE AND 18" RMW @ BACKFACE. FOR OPTIONAL DETAILS SEE SHEET 9.
- (A06) SUPPORT ABUTMENT ON HP 10 x 42 STEEL PILING, ESTIMATED 50'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. SEE SHEET 9 FOR PILE SPLICE DETAILS.
- (A15) PIPE UNDERDRAIN WRAPPED (6-INCH), SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- (A17) 1/2" FILLER TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. FILLER INCLUDED IN WING LENGTH. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BEYOND GUTTER LINE AT INSIDE FACE.
- (A19) 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- ◆ PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE END 1'-0" OF THE FRONT FACE OF ABUTMENT
- (#) WINGWALL NUMBER
- # PILE NUMBER
- △ BAR COUPLER, SEE SHEET 9 FOR DETAILS.



**PILE PLAN**

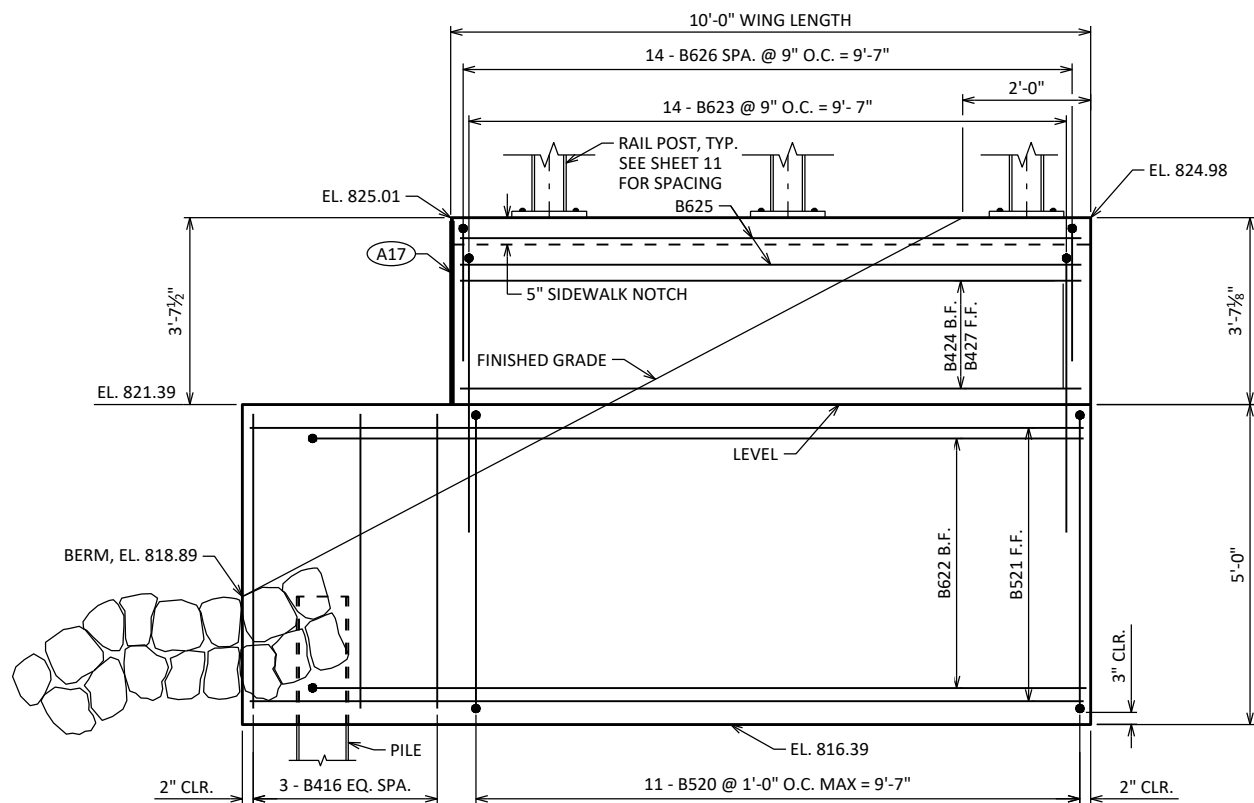


STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
NO.	DATE	REVISION	BY
<b>STRUCTURE B-67-397</b>			
DRAWN BY CWG		PLANS CK'D KGW	
<b>EAST ABUTMENT</b>			SHEET 7 OF 13



**WINGWALL 3 ELEVATION**

LOOKING AT F.F. WING



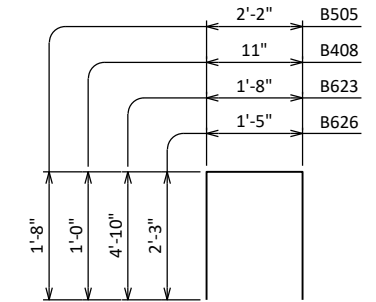
**WINGWALL 4 ELEVATION**

LOOKING AT F.F. WING

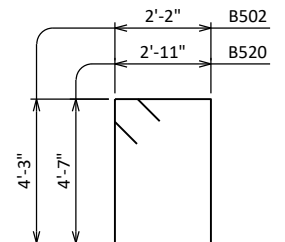
**BILL OF BARS**

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

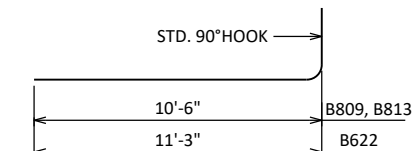
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
△ B601		11	25'-6"			TOP, BOTTOM, & F.F. HORIZ. BARS STAGE 1
B502		64	13'-6"	X		VERTICAL STIRRUPS
△ B603		7	17'-9"			B.F. HORIZ. BARS STAGE 1
△ B404		3	9'-6"			TOP HORIZ., CROWN STAGE 1
B505		20	5'-3"	X		VERTICAL STIRRUP @ CROWN
B406		8	28'-0"	X		PILE SPIRAL
B407		16	2'-3"			PILE VERTICAL
B408		32	2'-9"	X		ABUTMENT SEAT TRANSVERSE
B809		7	11'-7"	X		B.F. HORIZ. AT WINGWALL STAGE 1
△ B610		11	25'-6"			TOP, BOTTOM, & F.F. HORIZ. BARS STAGE 2
△ B611		7	17'-9"			B.F. HORIZ. BARS STAGE 2
△ B412		3	9'-6"			TOP HORIZ. CROWN STAGE 2
△ B813		7	11'-7"	X		B.F. HORIZ. AT WINGWALL STAGE 2
△ B414		2	25'-4"			HORIZ. TOP STAGE 1
△ B415		2	25'-4"			HORIZ. TOP STAGE 2
B416		6	4'-7"			ABUT. END VERTICAL
B520	X	22	15'-8"	X		WINGWALL STIRRUP
B521	X	12	12'-2"			WINGWALL F.F. HORIZ.
B622	X	16	12'-1"	X		WINGWALL B.F. HORIZ.
B623	X	28	11'-0"	X		UPPER WING VERTICAL
B424	X	10	9'-7"			UPPER WING B.F. HORIZ.
B625	X	8	9'-7"			UPPER WING TOP HORIZ.
B626	X	28	5'-7"	X		UPPER WING VERTICAL
B427	X	6	9'-7"			UPPER WING F.F. HORIZ.



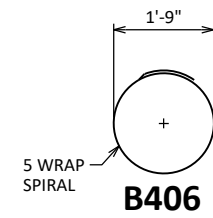
**B505, B408, B623, B626**



**B502, B520**



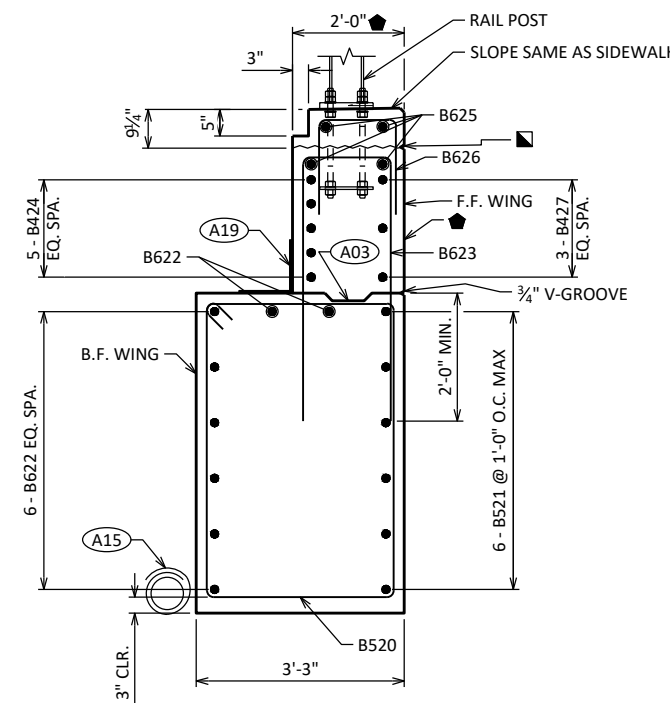
**B809, B813, B622**



**B406**

**LEGEND**

- A03 OPTIONAL CONST. JOINT: KEYWAY FORMED BY BEVELED 2" x 6". (18" RMW @ B.F. & 3/4" V-GROOVE @ F.F. IF JOINT IS USED).
- A15 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- A17 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD " BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- A19 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- OPTIONAL CONSTRUCTION JOINT, LEAVE ROUGH. POUR CONCRETE ABOVE THE JOINT AFTER SUPERSTRUCTURE SIDEWALK IS IN PLACE. IF JOINT IS USED, UTILIZE RUBBERED MEMBRANE WATERPROOFING (COST INCIDENTAL TO BID ITEM " CONCRETE MASONRY BRIDGE" ) AND PROVIDE 3/4" V-GROOVE AT JOINT ON B.F. OF WALL.
- ◆ PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE EXPOSED TOP AND F.F. SURFACES OF THE WINGWALLS
- △ BAR COUPLER, SEE SHEET 9 FOR DETAILS.



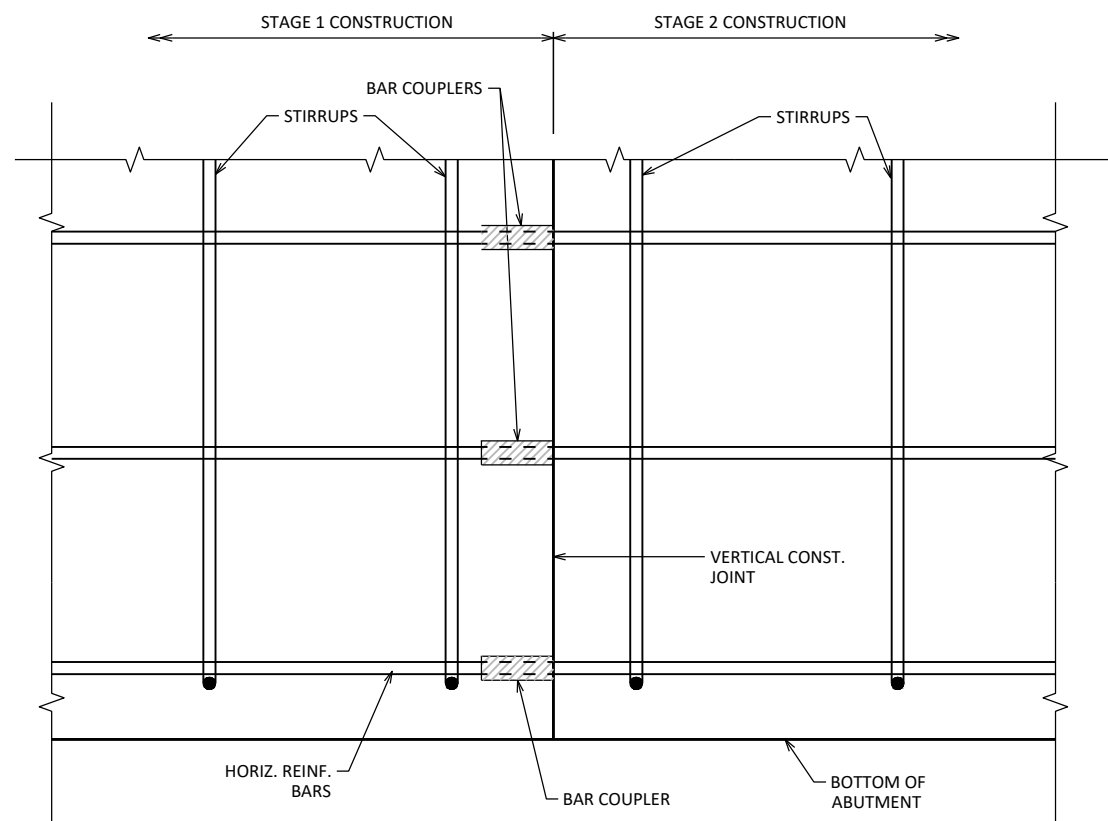
**WINGWALL SECTION**

NO.	DATE	REVISION	BY
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<b>STRUCTURE B-67-397</b>			
DRAWN BY		PLANS CK'D	KGW
BY		CWG	
<b>EAST ABUTMENT DETAILS</b>		SHEET 8 OF 13	

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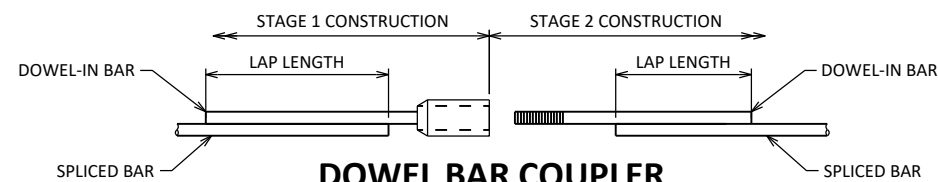
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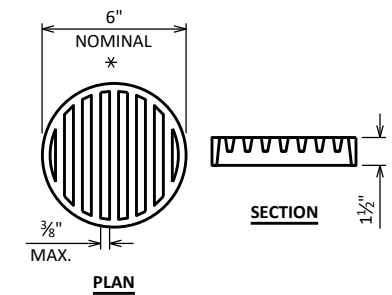
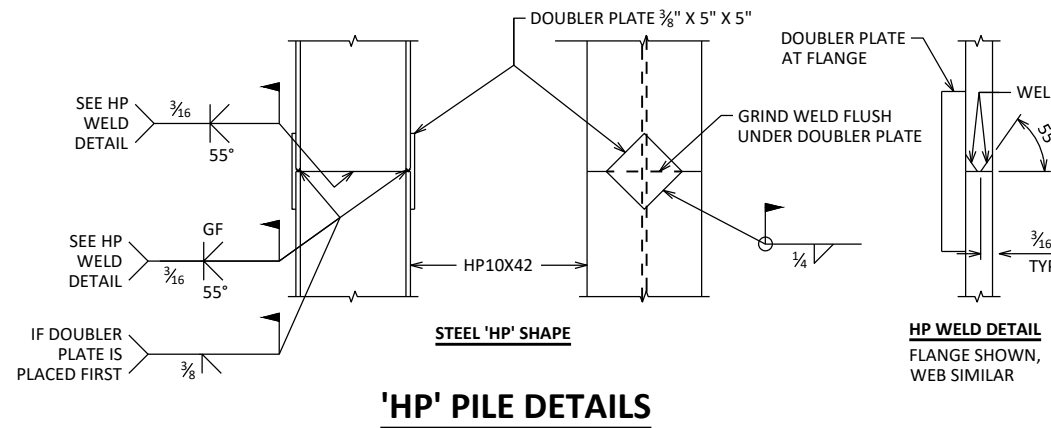
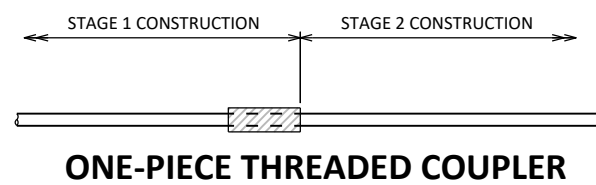
**ABUTMENT CONSTRUCTION JOINT**

ONE-PIECE THREADED COUPLER SHOWN  
LOOKING EAST



STAGE 2 DOWEL SCREWS INTO  
COUPLER PLACED IN STAGE 1

REBAR SIZE	LAP LENGTH
#4	2'-4"
#5	2'-11"
#6	3'-6"



\* 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 UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

**NOTES**

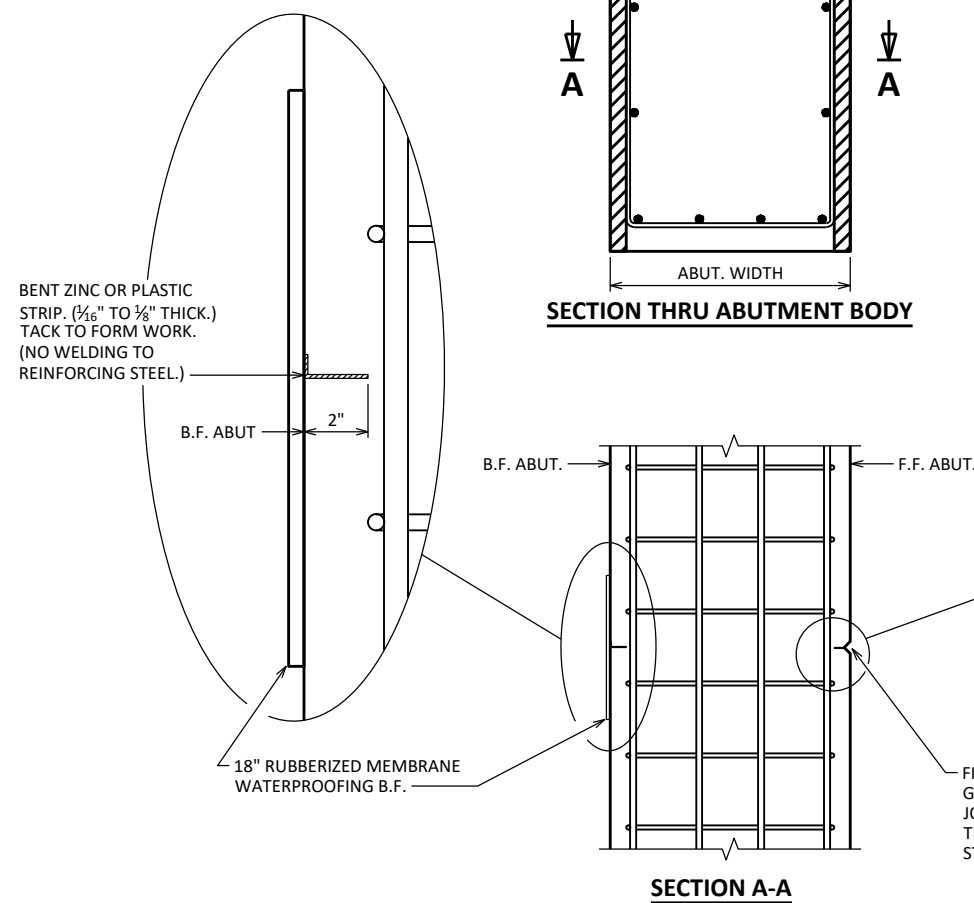
PARTIAL ZINC OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATIVE CONSTRUCTION JOINT, WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

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.

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



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DRAWN BY		PLANS CK'D	
CWG		KGW	
<b>ABUTMENT DETAILS</b>		SHEET 9 OF 13	

**NOTES**

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

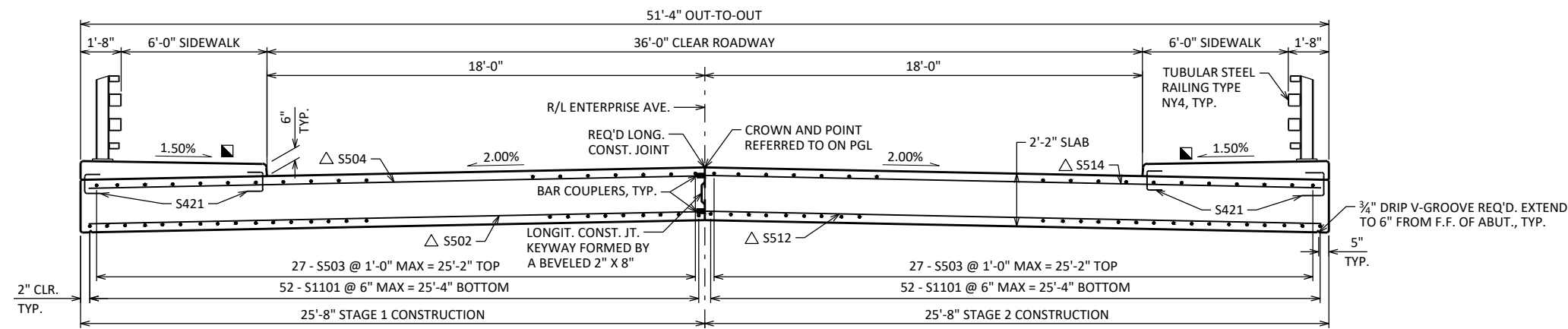
ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

SLAB-SUPPORTED FALSEWORK SHALL REMAIN IN-PLACE UNTIL ALL STAGES OF THE SUPERSTRUCTURE HAS CURED, FOR DEFLECTION CONTROL BETWEEN STAGES. DO NOT RELEASE ANY FALSEWORK UNTIL SIDEWALKS HAVE CURED. (FOR STAGE CONSTRUCTION).

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

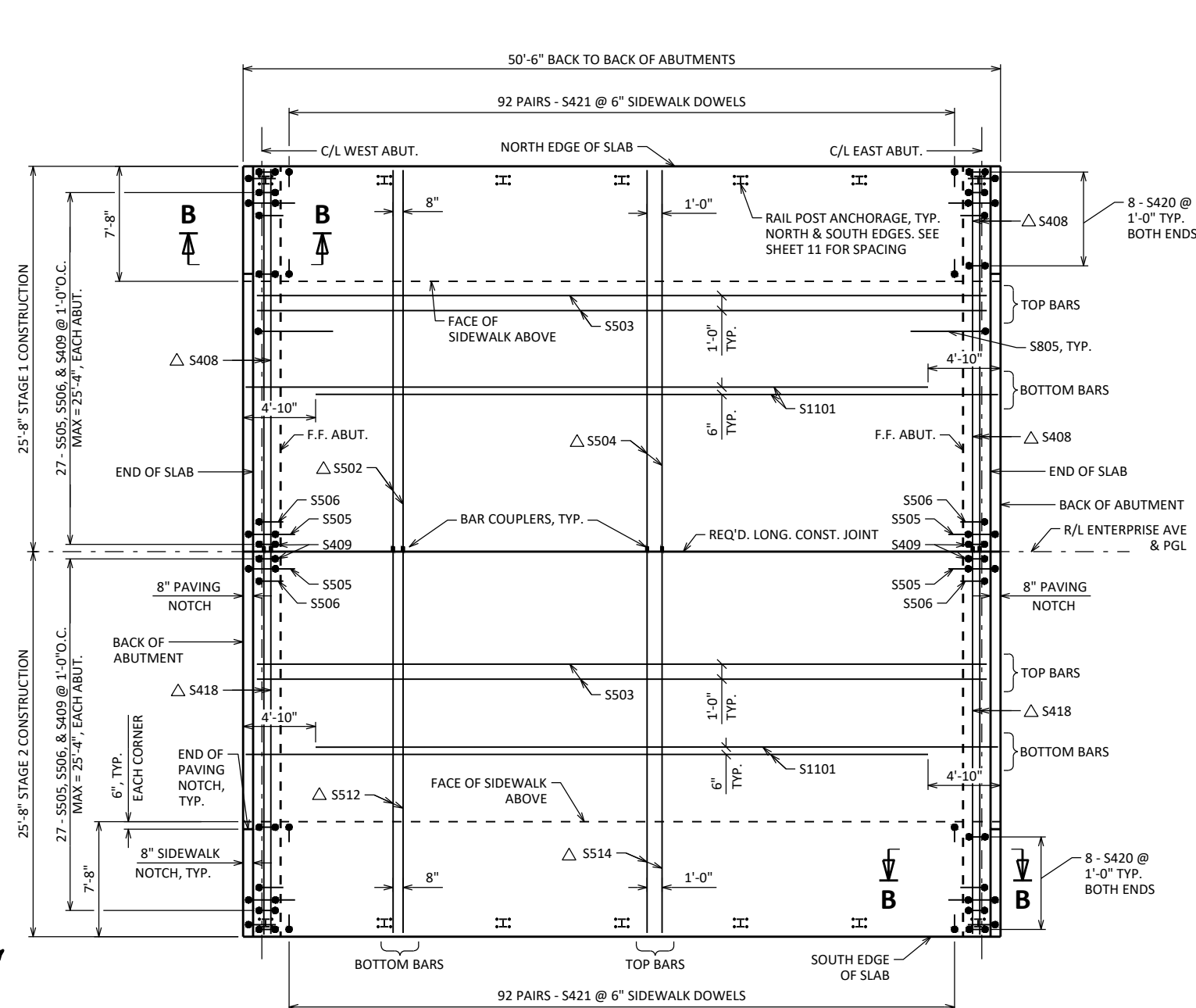
PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE C/L OF ABUTMENTS AND AT 3/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN OR R/L. RECORD ELEVATIONS ON AS BUILT PLANS.

SEE SHEET 11 FOR SECTION B-B

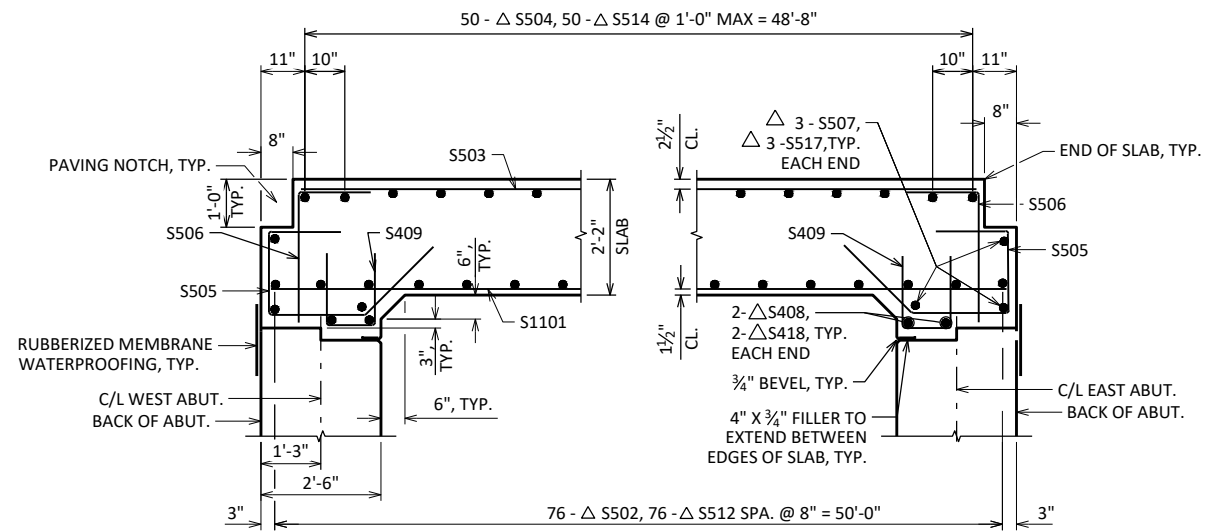


**CROSS SECTION**

LOOKING EAST  
SIDEWALK REINFORCEMENT NOT SHOWN FOR CLARITY

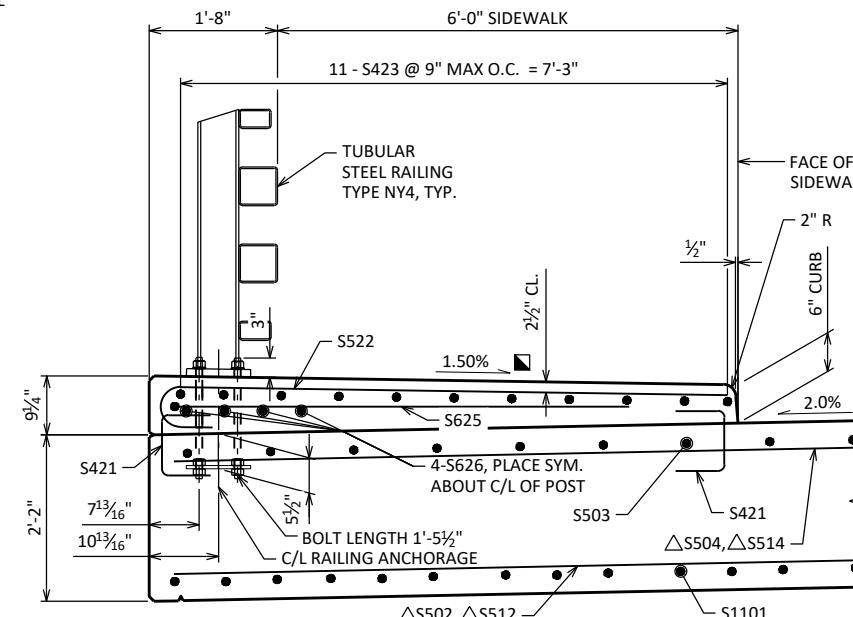


**PLAN**



**LONGITUDINAL SECTION BETWEEN CURBS**

DIMENSIONS ARE GIVEN PARALLEL TO C/L ROADWAY UNLESS OTHERWISE NOTED.



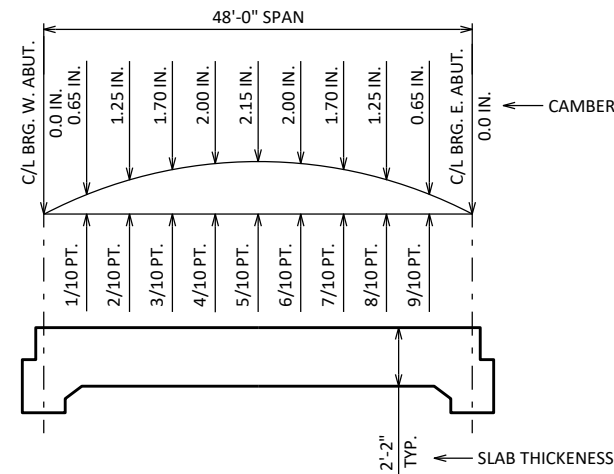
**SECTION THROUGH SIDEWALK**

**LEGEND**

- △ BAR COUPLER, SEE SHEET 9 FOR DETAILS.
- ± 0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

NO.	DATE	REVISION	BY
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<b>STRUCTURE B-67-397</b>			
DRAWN BY		PLANS CK'D	KGW
BY CWG			
SUPERSTRUCTURE			SHEET 10 OF 13

SCALE =



**CAMBER AND SLAB THICKNESS DIAGRAM**

CAMBER SHOWN IS BASED ON 3 TIMES DEAD LOAD DEFLECTIONS. CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

SLAB-SUPPORTING FALSEWORK SHALL REMAIN IN-PLACE UNTIL ALL STAGES OF THE SUPERSTRUCTURE HAS CURED, FOR DEFLECTION CONTROL BETWEEN STAGES. DO NOT RELEASE ANY FALSEWORK UNTIL SIDEWALKS HAVE CURED.

**SURVEY TOP OF SLAB ELEVATIONS**

LOCATION	C/L BRG. W. ABUTMENT	5/10 PT.	C/L BRG. E. ABUTMENT
N. EDGE OF SLAB			
N. GUTTER LINE			
ENTERPRISE AVE CROWN AND R/L			
S. GUTTER LINE			
S. EDGE OF SLAB			

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE C/L OF ABUTMENTS AND AT 5/10 PTS. TO VERIFY CAMBER. ELEVATIONS ALONG EDGE LINES, CROWN AND R/L. RECORD ELEVATIONS ON AS BUILT PLANS.

**TOP OF SLAB ELEVATIONS**

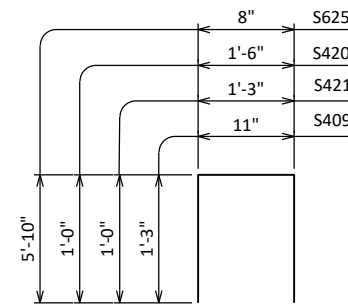
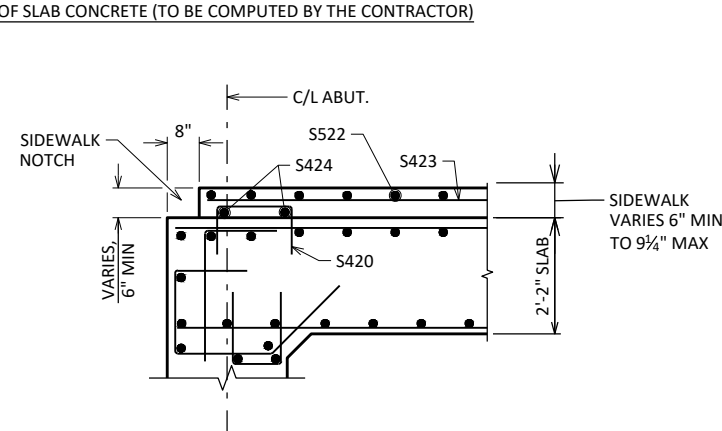
LOCATION	C/L BRG. W. ABUT.	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	C/L BRG. E. ABUT.
STATION	104+76.00	104+80.80	104+85.60	104+90.40	104+95.20	105+00.00	105+04.80	105+09.60	105+14.40	105+19.20	105+24.00
N. EDGE OF DECK	824.40	824.38	824.37	824.35	824.34	824.33	824.31	824.30	824.28	824.27	824.25
ENTERPRISE AVE CROWN AND R/L	824.91	824.89	824.88	824.86	824.85	824.84	824.82	824.81	824.79	824.78	824.76
S. EDGE OF DECK	824.40	824.39	824.37	824.35	824.34	824.33	824.31	824.30	824.28	824.27	824.25

**BILL OF BARS**

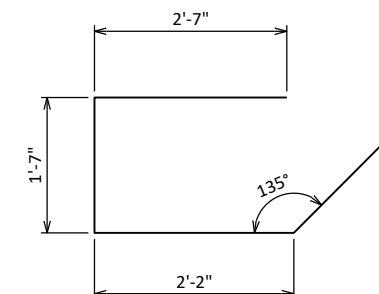
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
S1101	X	104	45'-6"			LONGITUDINAL BOTTOM
S502	X	76	25'-6"			TRANSVERSE BOTTOM STAGE 1
S503	X	54	48'-10"			LONGITUDINAL TOP
S504	X	50	25'-6"			TRANSVERSE TOP STAGE 1
S505	X	108	7'-11"	X		END OF SLAB
S506	X	108	4'-0"	X		END OF SLAB, TOP
S507	X	6	25'-6"			TRANSVERSE END OF SLAB STAGE 1
S408	X	4	25'-6"			TRANSVERSE END OF SLAB STAGE 1
S409	X	108	3'-3"	X		END OF SLAB
S512	X	76	25'-6"			TRANSVERSE BOTTOM STAGE 2
S514	X	50	25'-6"			TRANSVERSE TOP STAGE 2
S517	X	6	25'-6"			TRANSVERSE END OF SLAB STAGE 2
S418	X	4	25'-6"			TRANSVERSE END OF SLAB STAGE 2
S420	X	32	3'-4"	X		SIDEWALK DOWELS AT ABUTMENTS
S421	X	368	3'-1"	X		SIDEWALK DOWELS IN-SPAN
S522	X	304	7'-11"	X		SIDEWALK TRANSVERSE
S423	X	44	26'-1"			SIDEWALK LONG.
S424	X	8	7'-4"			SIDEWALK TRANSVERSE AT ABUTMENT
S625	X	28	12'-0"	X		TRANSVERSE RAILING POST
S626	X	56	6'-0"			LONGITUDINAL RAILING POST

TO DETERMINE FALSEWORK ELEVATION AT EDGE OF SLAB, CROWN OR REFERENCE LINE FOLLOW THIS PROCEDURE:

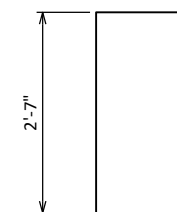
- LESS TOP OF SLAB ELEVATION AT FINAL GRADE
- PLUS SLAB THICKNESS
- PLUS CAMBER
- PLUS FORM SETTLEMENT/DEFLECTION DUE TO PLACEMENT OF SLAB CONCRETE (TO BE COMPUTED BY THE CONTRACTOR)
- EQUALS TOP OF SLAB FALSEWORK ELEVATION



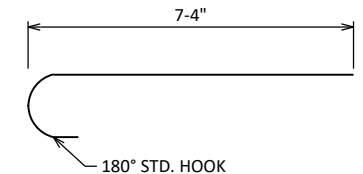
**S409, S420, S421, S625**



**S505**



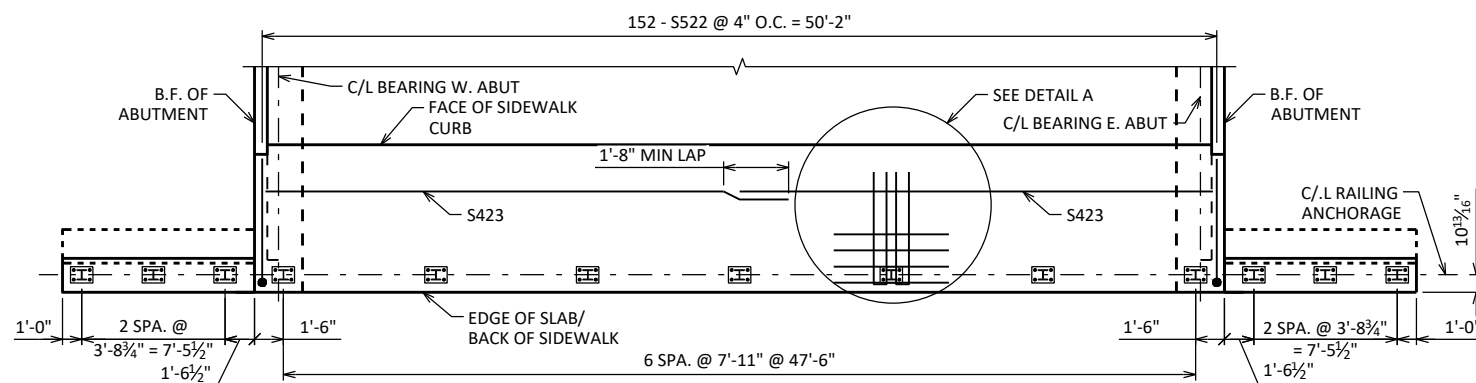
**S506**



**S522**

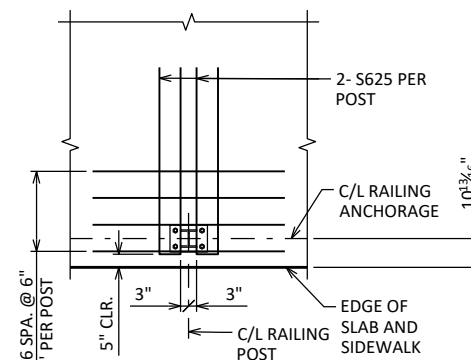
**LEGEND**

△ BAR COUPLER, SEE SHEET 9 FOR DETAILS.



**RAILING POST LAYOUT & SIDEWALK REINFORCING PLAN**

SOUTH RAILING SHOWN, NORTH SIMILAR



**DETAIL A**

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-67-397</b>			
DRAWN BY CWG		PLANS CK'D KGW	
<b>SUPERSTRUCTURE DETAILS</b>		SHEET 11 OF 13	

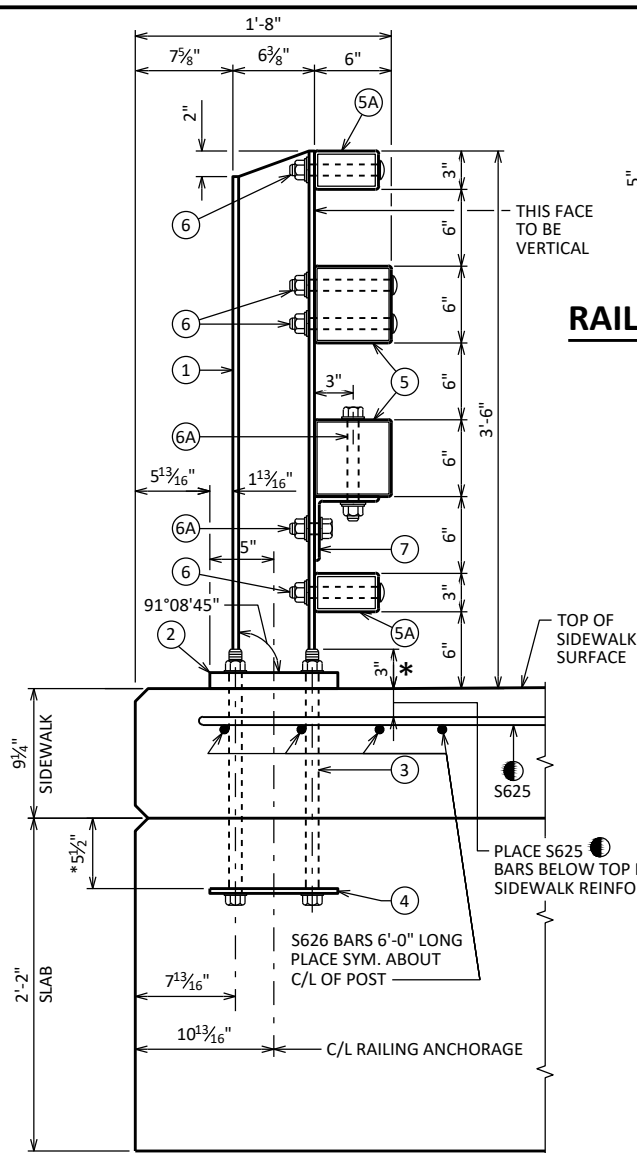
SCALE =

**LEGEND**

- ① W6 X 25 WITH 1 1/2" X 1 3/8" HORIZONTAL SLOTTED HOLES ON EACH SIDE OF POST FOR BOLT NO. 6 AT TOP TWO RAILS. USE 1" DIA. HOLES FOR BOLTS NO. 6 AT BOTTOM NO. 5A AND FOR BOLT NO. 6A AT NO. 7. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
  - ② PLATE 1 1/4" X 10" X 1'-2" WITH 1 1/8" X 1 1/16" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
  - ③ ASTM A449 - 1" DIA. ANCHOR BOLTS WITH HEAVY HEX NUT AND 2" O.D. HARDENED WASHER (ALL GALVANIZED). 4 REQUIRED PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-5 1/2" LONG BOLT FOR SLAB/SIDEWALK. USE 1'-9" LONG IN ABUTMENT WINGS. (AN EQUIVALENT THREADED ROD WITH HEAVY HEX NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQUIRED FOR CONSTRUCTABILITY.)
  - ④ 3/8" X 10" X 1'-2" ANCHOR PLATE (GALVANIZED) WITH 1 1/16" DIA. HOLES FOR ANCHOR BOLTS NO. 3.
  - ⑤ TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 (FRONT & BACK) & 7/8" DIA. HOLES FOR BOLT NO. 6A (TOP & BOTTOM).
  - ⑤A TS 5 X 3 X 3/4" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR BOLT NO. 6 IN TOP RAIL (FRONT & BACK). USE 1 1/8" X 1 3/8" HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.
  - ⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, 3/16" X 1 3/4" X 1 3/4" WASHER, AND SPRING LOCK WASHER (2 REQUIRED AT RAIL TO POST LOCATIONS SHOWN).
  - ⑥A 3/4" DIA. A325 BOLT WITH HEX NUT & SPRING LOCK WASHER (1 REQUIRED AT RAIL TO ANGLE & 2 REQUIRED AT ANGLE TO POST LOCATIONS SHOWN WITH 3/16" X 1 3/4" X 1 3/4" WASHER).
  - ⑦ L 5 X 5 X 5/8" STRUCTURAL ANGLE. ATTACH TO NO. 1 AND NO. 5 AS SHOWN.
  - ⑧ TS 5 X 5 X 3/16" X 2'-4" LONG SPLICE TUBE. 1 PER RAIL. USED IN NO. 5.
  - ⑧A 4 1/4" X 2 3/8" X 2'-4" LONG SPLICE BAR. 1 PER RAIL. USED IN NO. 5A.
  - ⑨ 3/4" DIA. A325 FULLY THREADED BOLTS, 7 1/2" LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5.
  - ⑨A 3/4" DIA. A325 FULLY THREADED BOLTS, 4 1/2" LONG, WITH 2 WASHERS AND HEAVY HEX NUT ON EACH BOLT. NUT TO BE FINGER TIGHT. (4 REQUIRED PER SPLICE). USE 1" X 4" SLOTTED HOLES IN TOP AND BOTTOM OF NO. 5A.
  - ⑩ SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".
- 1/2" OPENING. SPLICES ARE REQUIRED AT BACK OF ABUTMENT.
  - ▲ PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE RAILS, SPLICE TUBES AND FILL PLATES.
  - S625, TIE TO TOP MAT OF STEEL.

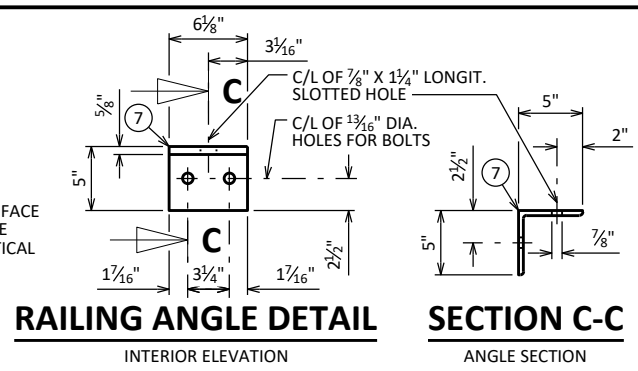
**NOTES**

- BID ITEM SHALL BE "RAILING STEEL TYPE NY4" WHICH INCLUDES ALL ITEMS SHOWN.
- RAILING SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT, AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS, ANGLES, SPLICE TUBES, SPLICE BARS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS.
- RAIL POST, BASE PLATES, SPLICE BAR, ANGLES AND SPLICE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED  $f_y = 50$  KSI. ANCHOR PLATES & SHIMS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
- THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. CAULK AROUND PERIMETER OF NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.
- STEEL SHIMS SHALL BE PROVIDED & USED UNDER PLATE NO. 2 WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.
- WORK THIS SHEET WITH "END POST FOR RAILING TYPE NY4" SHEET 13.
- WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & NO. 4) SHALL BE PAINTED OVER GALVANIZING WITH AN APPROVED TIE COAT AND TOP COAT AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE RAILING SHALL BE PAINTED AMS STD. COLOR NO. 27038, BLACK.



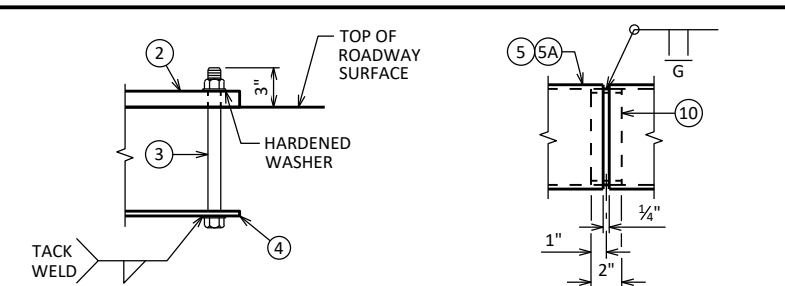
**SECTION THRU RAILING ON SLAB**

\* NORMAL TO BASE PLATE



**RAILING ANGLE DETAIL**

**SECTION C-C**

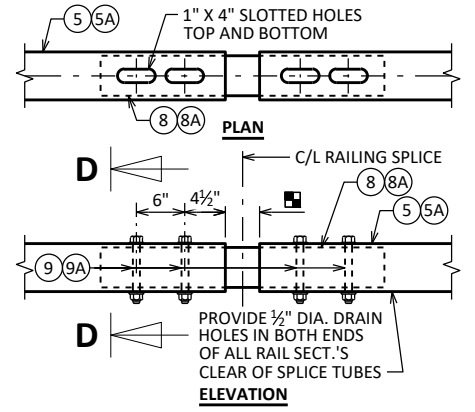


**ANCHOR BOLTS**

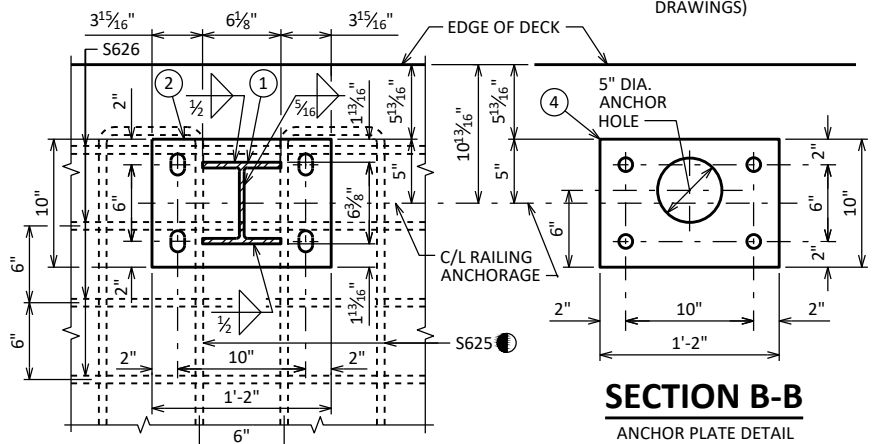
FOR ANCHOR BOLTS IN WINGS, TACK WELD MAY BE USED IN FIELD AFTER ANCHOR PLATE IS IN POSITION IF REQ'D FOR CONSTRUCTABILITY.

**SHOP RAIL SPLICE DETAIL**

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)



**FIELD ERECTION JOINT DETAIL**

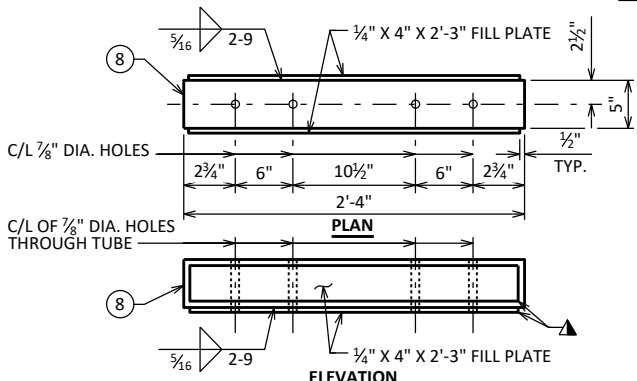


**SECTION A-A**

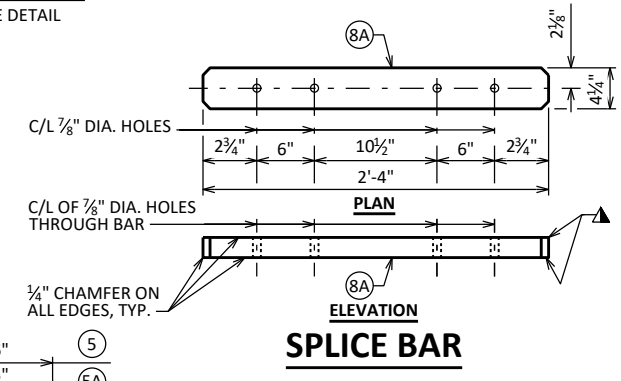
BASE PLATE DETAIL

**SECTION B-B**

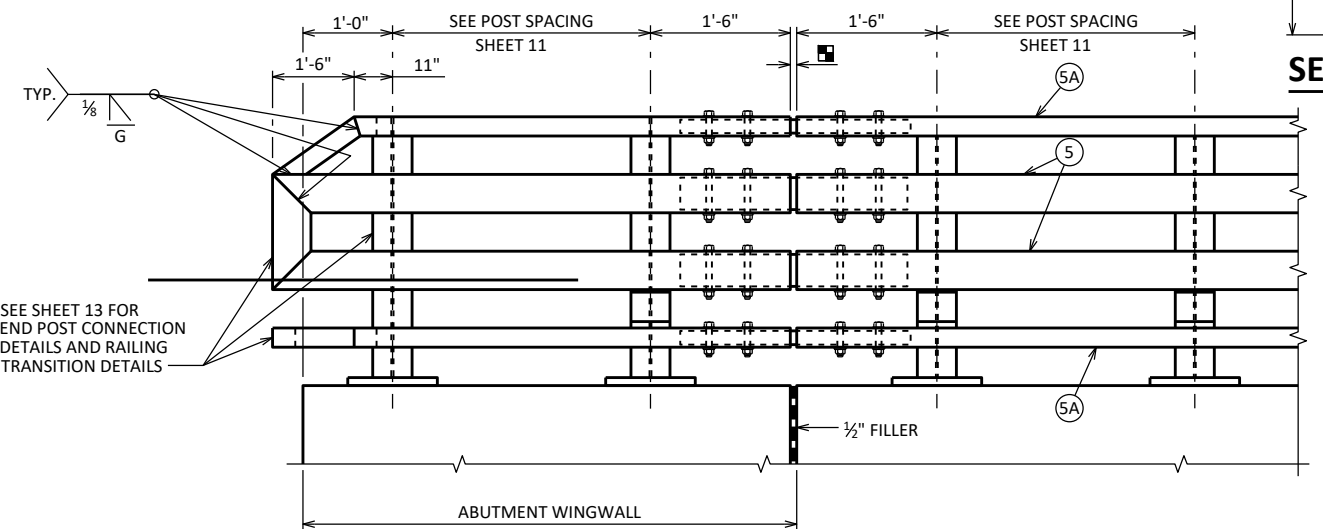
ANCHOR PLATE DETAIL



**SPLICE TUBE**

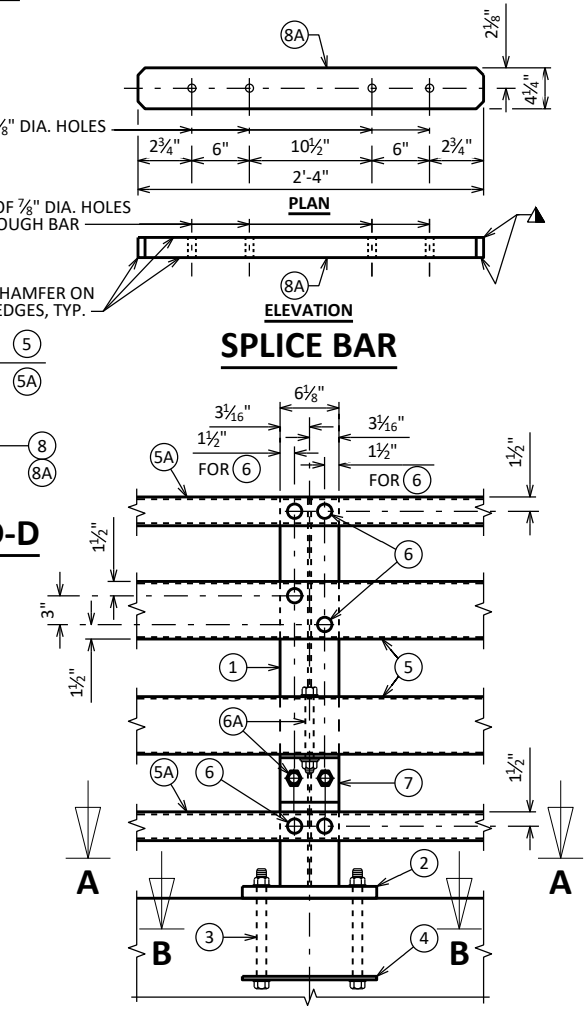


**SPLICE BAR**



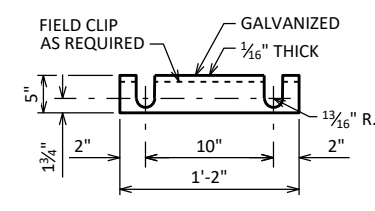
**PART ELEVATION OF RAILING**

INTERIOR ELEVATION



**PART ELEVATION OF RAILING AT POST**

INTERIOR ELEVATION



**POST SHIM DETAIL**

8

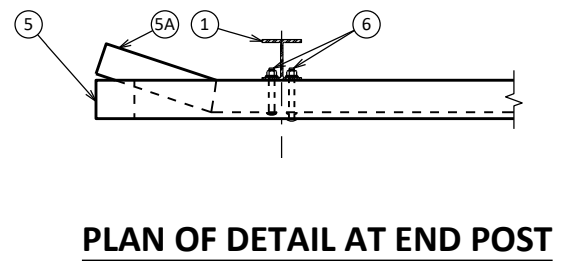
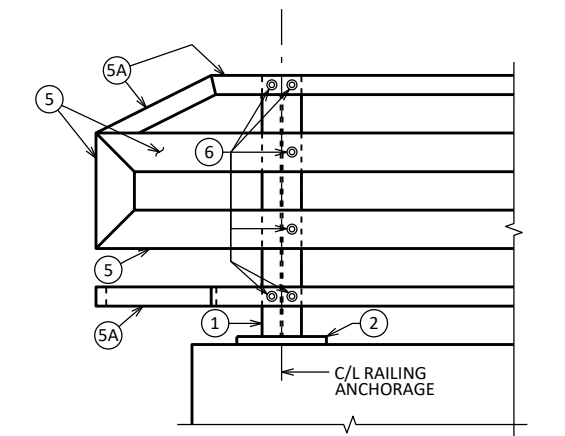
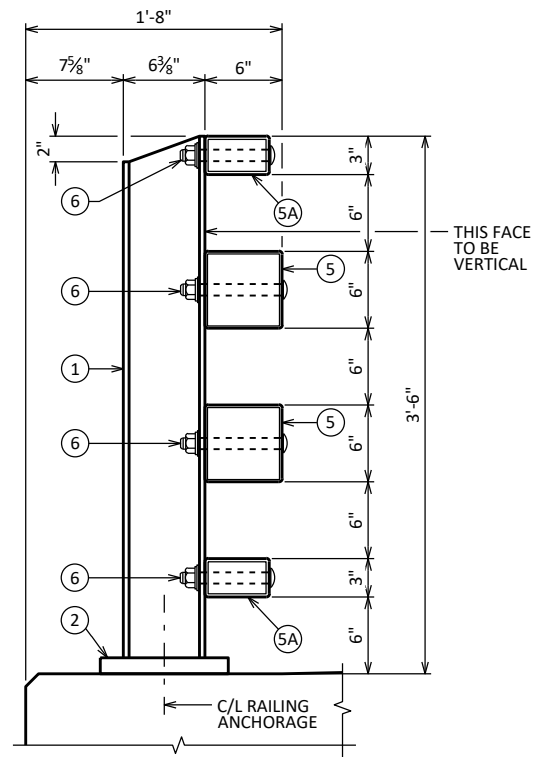
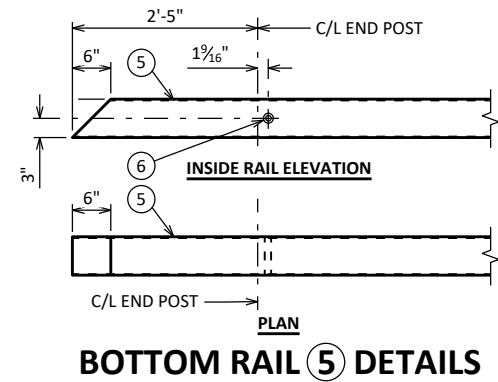
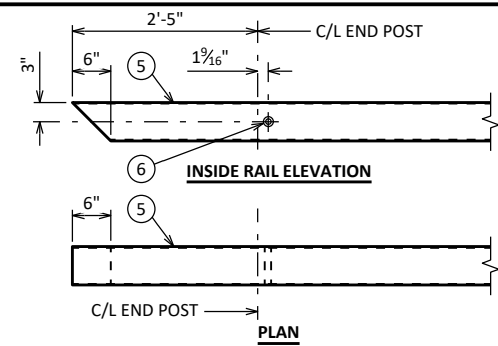
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SEE SHEET 13 FOR END POST CONNECTION DETAILS AND RAILING TRANSITION DETAILS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-67-397</b>			
DRAWN BY		PLANS CK'D	KGW
CWG			
<b>TUBULAR STEEL RAILING TYPE NY4</b>			SHEET 12 OF 13

SCALE =





**LEGEND**

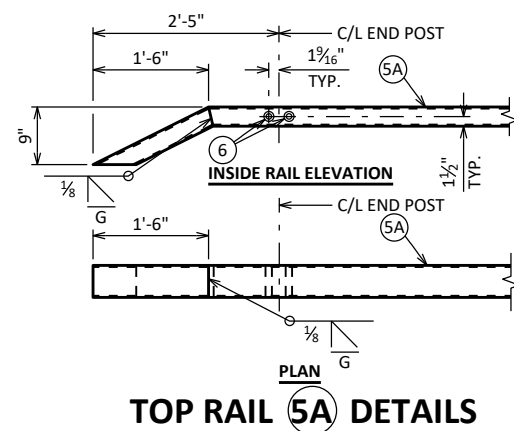
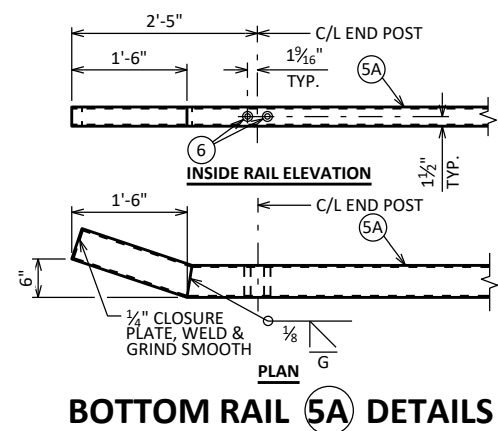
- ① W6 X 25 WITH 1 3/8" X 1 3/8" HORIZONTAL SLOTTED HOLES ON EACH SIDE OF POST FOR BOLT NO. 6 AT NO. 5 & AT TOP RAIL NO. 5A. USE 1" DIA. HOLE FOR BOLT NO. 6 AT NO. 5A BOTTOM RAIL. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- ② PLATE 1 1/4" X 10" X 1'-2". SEE SHEET "TUBULAR STEEL RAILING NY4" FOR MORE INFORMATION.
- ⑤ TS 6 X 6 X 3/16" STRUCTURAL TUBING. USE 7/8" DIA. HOLES IN TOP AND BOTTOM OF RAILS FOR BOLT NO. 13 AS SHOWN IN PLAN DETAILS. USE 1" DIA. HOLES IN FRONT AND BACK OF RAILS FOR BOLTS NO. 6 & NO. 14 AS SHOWN IN ELEVATION DETAILS.
- ⑤A TS 5 X 3 X 3/4" STRUCTURAL TUBING. USE 1" DIA. HOLES FOR TOP RAIL NO. 5A (FRONT & BACK). USE 1 3/8" X 1 3/8" HORIZONTAL SLOTTED HOLES FOR BOLT NO. 6 IN BOTTOM RAIL (FRONT & BACK) AND A 2" O.D. WASHER UNDER BOLT HEAD.
- ⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH HEX NUT, 3/16" X 1 3/4" X 1 3/4" WASHER, AND SPRING LOCK WASHER (1 REQUIRED AT RAIL NO. 5 TO POST NO. 1 CONNECTION LOCATIONS SHOWN. 2 REQUIRED AT RAIL NO. 5A TO POST NO. 1 CONNECTION LOCATIONS SHOWN).

**NOTES**

STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED  $f_y = 50$  KSI. STRUCTURAL ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50.

WORK THIS SHEET WITH "TUBULAR STEEL RAILING TYPE NY4" SHEET.

8



8

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
<b>STRUCTURE B-67-397</b>			
DRAWN BY		PLANS CK'D	
CWG		KGW	
<b>END POST FOR RAILING TYPE NY4</b>			SHEET 13 OF 13

SCALE =

Division 1 - ALI - ENTERPRISE AVE

STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)		
		CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	EXPANDED FILL	MASS ORDINATE
NOTE 1	NOTE 2	NOTE 3	NOTE 1	NOTE 8						
104+02.32	0.00	73.50	73.50	0.00	0	0	0	0	0	0
104+25	22.68	89.36	89.36	0.00	68	68	0	68	0	0
104+50	25.00	67.52	67.52	0.03	73	73	0	141	0	0
104+75	25.00	53.48	53.48	9.50	56	56	4	197	5	-5

NOTES:	
1 - CUT	CUT INCLUDES SALVAGED/UNUSABLE PAVEMENT MATERIAL
2 - SALVAGED/UNUSABLE PAVEMENT MATERIAL	THIS DOES NOT SHOW UP IN CROSS SECTIONS
3 - FILL	DOES NOT INCLUDE UNUSABLE PAVEMENT EXC VOLUME
8 - MASS ORDINATE	MO = [CUT - SALVAGED PAVT - (FILL * FILL FACTOR)]

Division 1 - ALI - ENTERPRISE AVE

STATION	DISTANCE	AREA (SF)			INCREMENTAL VOL (CY) (UNADJUSTED)			CUMULATIVE VOL (CY)		
		CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	SALVAGED/UNUSABLE PAVEMENT MATERIAL	FILL	CUT	EXPANDED FILL	MASS ORDINATE
NOTE 1	NOTE 2	NOTE 3	NOTE 1	NOTE 8						
105+25	0.00	57.70	57.70	9.50	0	0	0	0	0	0
105+50	25.00	55.50	55.50	15.03	52	52	11	52	13	-13
105+75	25.00	72.28	72.28	0.00	59	59	7	111	22	-22
105+97.988	22.99	75.19	75.19	0.00	63	63	0	174	22	-22

NOTES:	
1 - CUT	CUT INCLUDES SALVAGED/UNUSABLE PAVEMENT MATERIAL
2 - SALVAGED/UNUSABLE PAVEMENT MATERIAL	THIS DOES NOT SHOW UP IN CROSS SECTIONS
3 - FILL	DOES NOT INCLUDE UNUSABLE PAVEMENT EXC VOLUME
8 - MASS ORDINATE	MO = [CUT - SALVAGED PAVT - (FILL * FILL FACTOR)]

9

9

ALL ITEMS CATEGORY 0010

PROJECT NO: 2721-00-76

HWY: ENTERPRISE AVENUE

COUNTY: WAUKESHA

EARTHWORK QUANTITIES

SHEET:

E

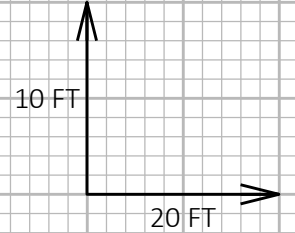
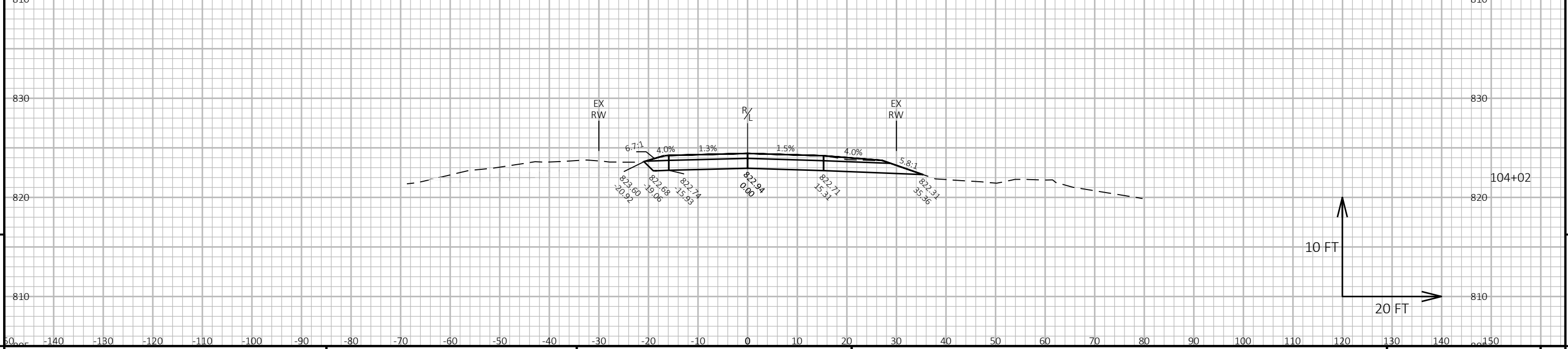
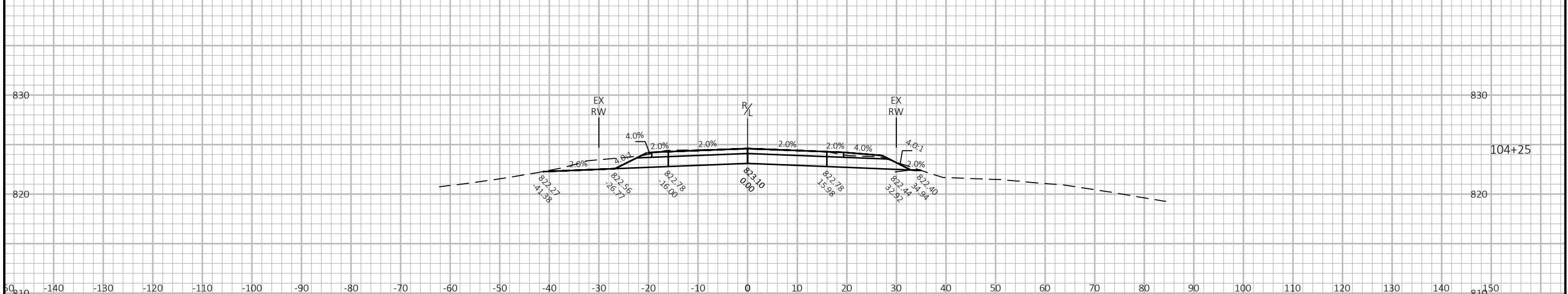
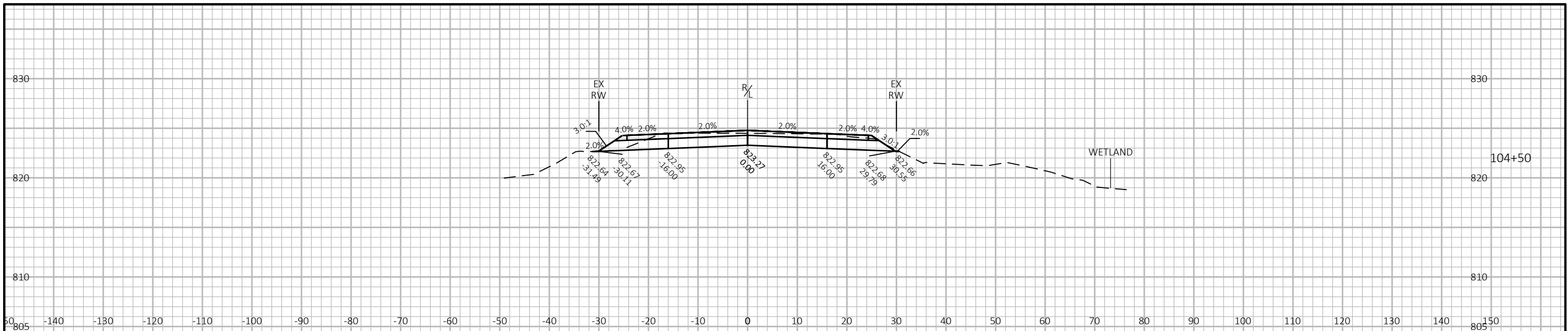
FILE NAME :

PLOT DATE :

PLOT BY :

PLOT NAME :

PLOT SCALE : 1:1



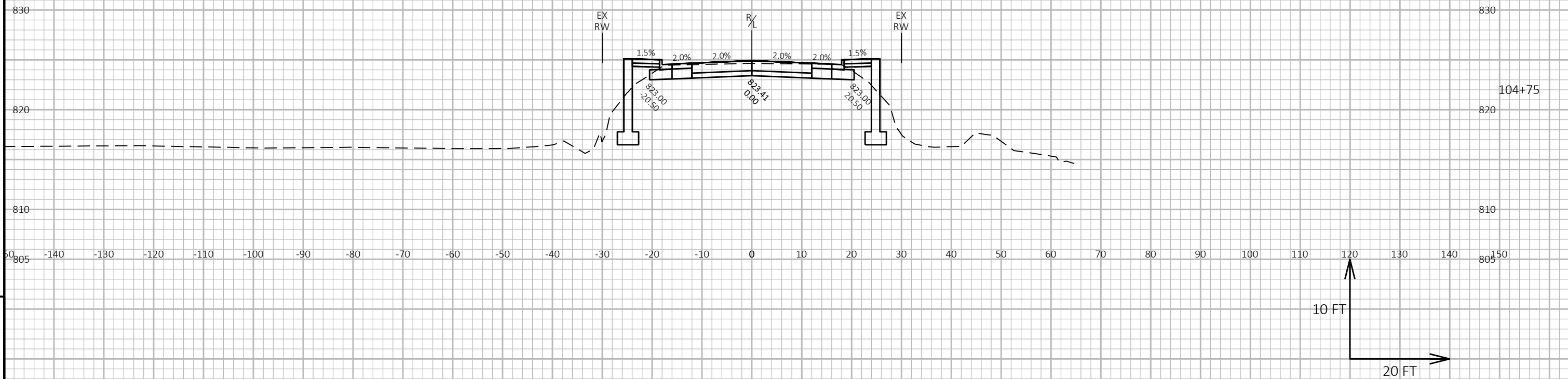
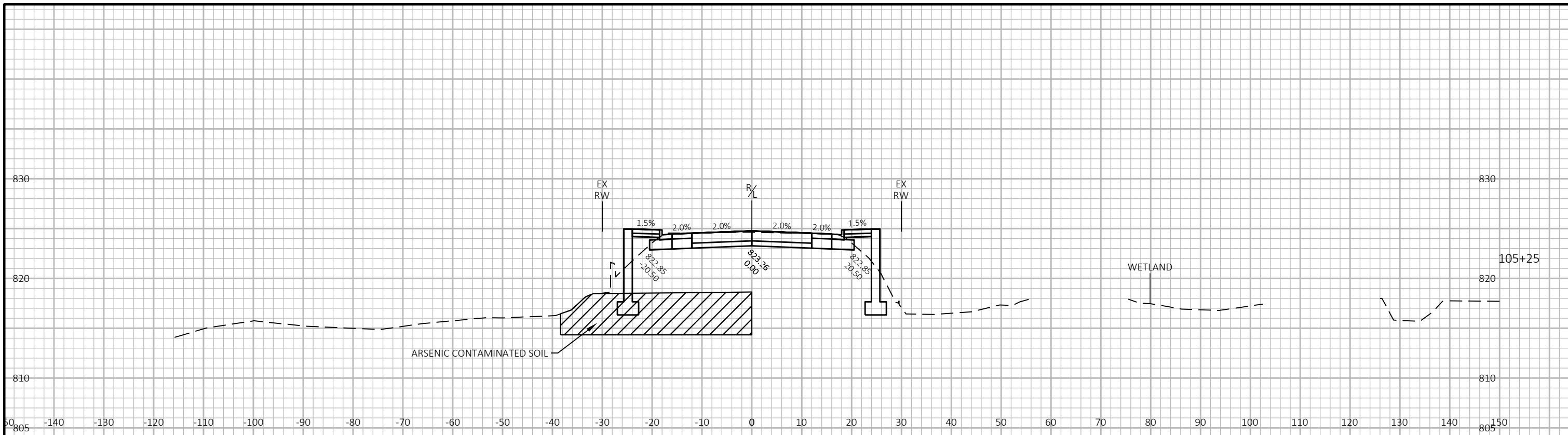
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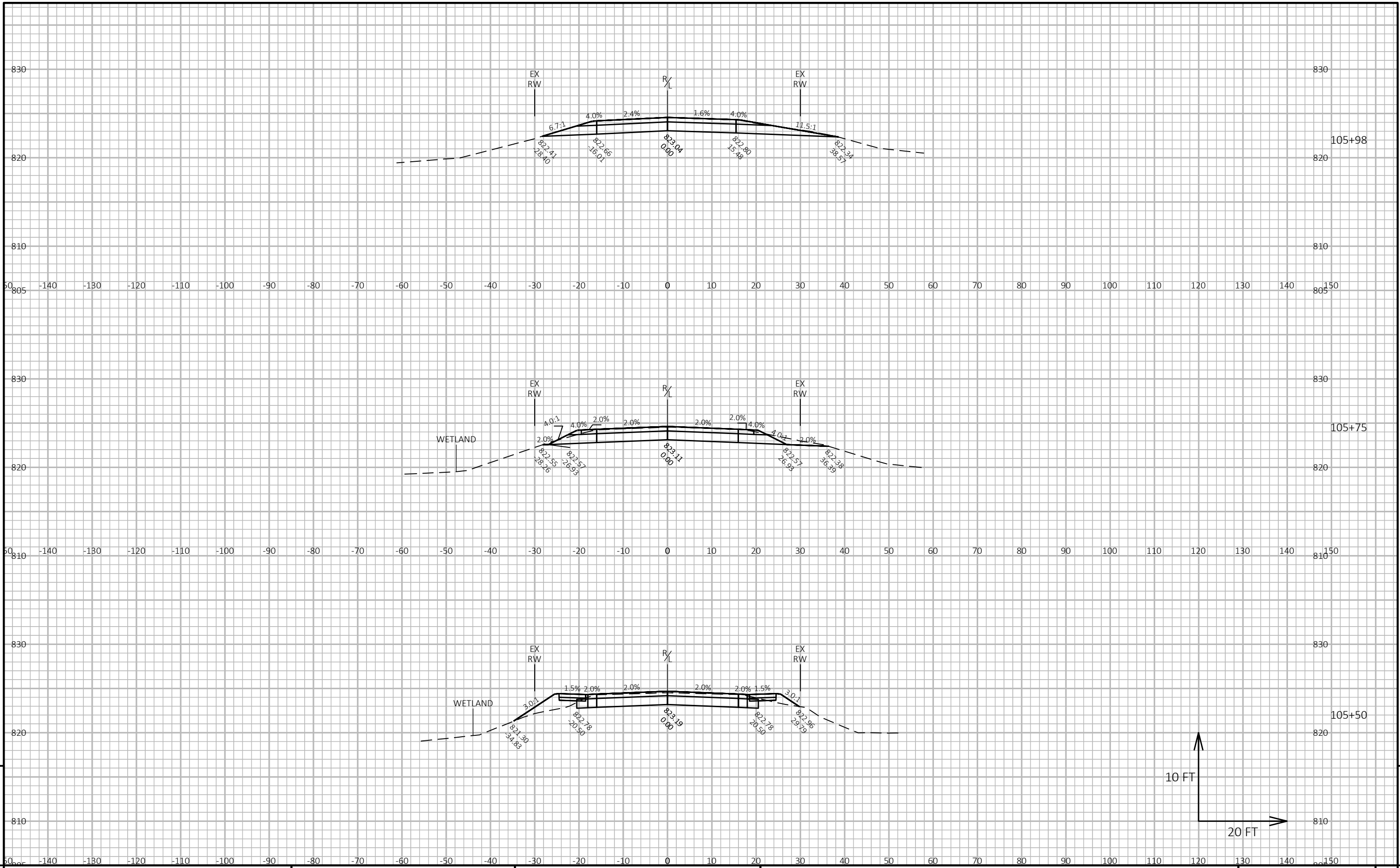
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PROJECT NO: 2726-00-06      HWY: ENTERPRISE AVENUE      COUNTY: WAUKESHA      CROSS SECTIONS      SHEET      E

FILE NAME: X:\ML\2023\20230014\DESIGN\TRANSPORTATION\SHEETSPLAN\090201\_XS.DWG      PLOT DATE: 10/12/2023 1:20 PM      PLOT BY: BARRETT, WILL      PLOT NAME:      PLOT SCALE: 1 IN:20 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - 090201\_xs





9

9

PROJECT NO: 2721-00-06      HWY: ENTERPRISE AVENUE      COUNTY: WAUKESHA      CROSS SECTIONS      SHEET      E

FILE NAME : X:\ML\2023\20230014\DESIGN\TRANSPORTATION\SHEETSPLAN\090201\_XS.DWG      PLOT DATE : 10/12/2023 1:20 PM      PLOT BY : BARRETT, WILL      PLOT NAME :      PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - 090203\_xs



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

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