

ORDER OF SHEETS

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

TOTAL SHEETS = 114

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

MARENGO - ASHLAND

ANDERSON CREEK BRIDGE B-2-68

STH 112
ASHLAND

STATE PROJECT NUMBER
8727-04-74

| STATE PROJECT | FEDERAL PROJECT | |
|---------------|-----------------|----------|
| | PROJECT | CONTRACT |
| 8727-04-74 | WISC 2020094 | 1 |
| | | |
| | | |

PROJECT ID: 8727-04-74

37

COUNTY: ASHLAND



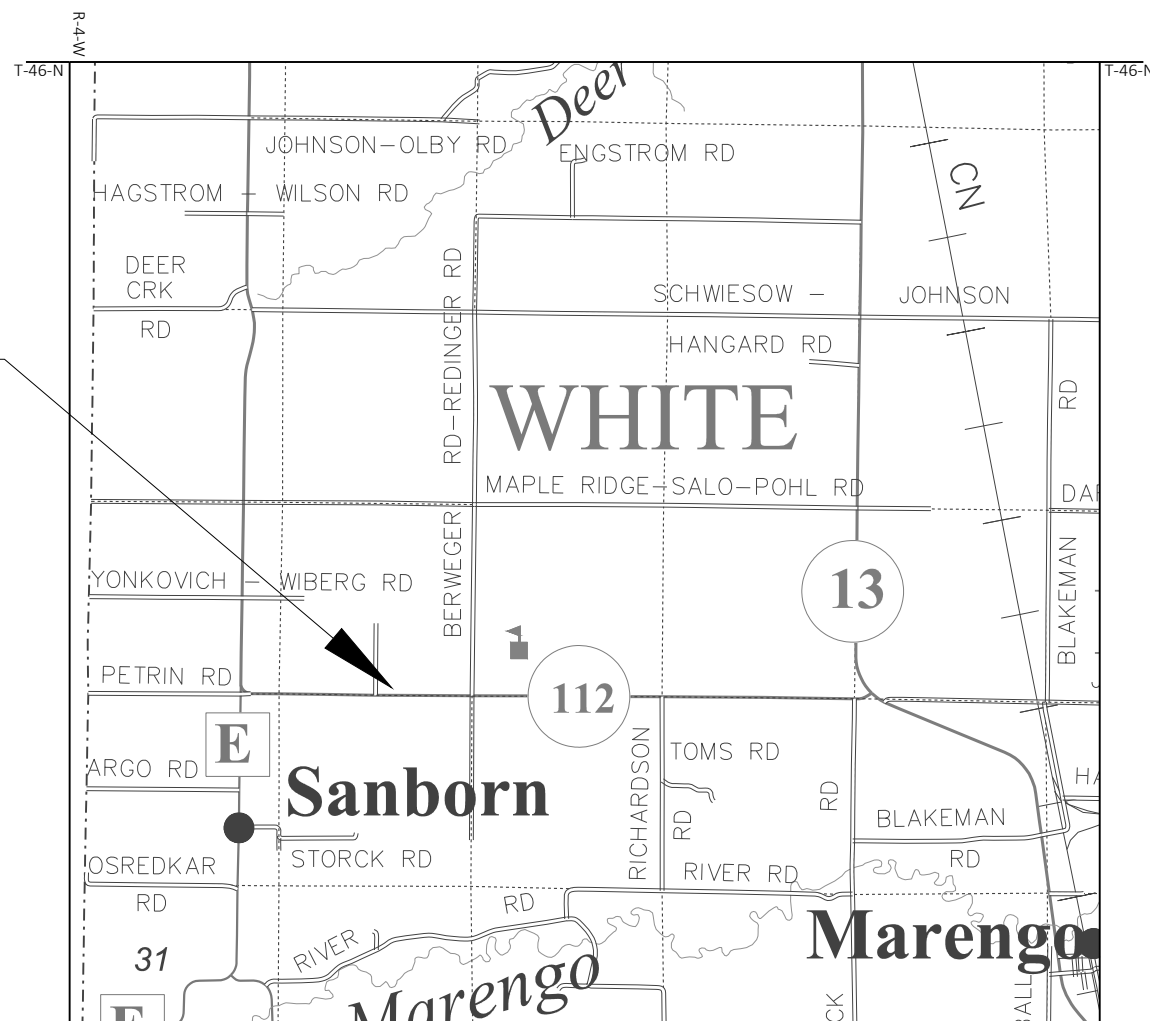
DESIGN DESIGNATION

| | | | |
|--------------|------|---|--------|
| A.A.D.T. | 2024 | = | 950 |
| A.A.D.T. | 2044 | = | 1100 |
| D.H.V. | | = | NA |
| D.D. | | = | NA |
| T. | | = | 7% |
| DESIGN SPEED | | = | 60 MPH |
| ESALS | | = | NA |

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 | |

PROJECT LOCATION
B-2-68
Sta 138+15



LAYOUT
SCALE 0 1 MI
TOTAL NET LENGTH OF CENTERLINE = .1 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, ASHLAND COUNTY, NAD83 (2017), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
|--|-------------------|
| PREPARED BY | |
| Surveyor | CBS |
| Designer | MITCHELL FINNEGAN |
| Project Manager | PHILIP KEPPERS |
| Regional Examiner | REGIONAL EXAMINER |
| Regional Supervisor | DAVID OSTROWSKI |

APPROVED FOR THE DEPARTMENT
DATE: 10/29/2019 *Philip L. Keppers*
(Signature)

E

GENERAL NOTES

WHEN THE QUANTITY OF BASE AGGREGATE OR PAVEMENT IS MEASURED FOR PAYMENT BY THE TON OR BY THE CUBIC YARD, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

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

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT FOR AREAS WITHIN FINISHED SHOULDER POINT, SHALL BE FERTILIZED SEEDED AND COVERED WITH EROSION MAT.

THE LOCATION OF DRIVEWAYS WILL BE DETERMINED BY THE ENGINEER.

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

THE EXACT LOCATION OF EROSION CONTROL DEVICES SHALL BE DETERMINED IN THE FIELD.

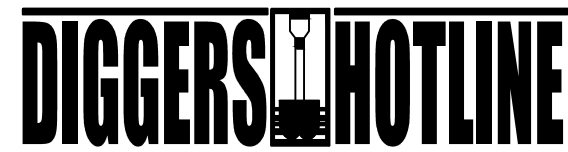
NO EQUIPMENT OR MATERIALS SHALL BE STORED IN WETLAND AREAS.


PAVEMENT QUANTITIES ARE BASED ON 112 LBS/SY COMPACTED 1" THICK.

CONVENTIONAL ABBREVIATIONS

| | | | |
|--------------------------------------|--------|--------------------------------|-------------|
| ACCESS POINT/ DRIVEWAY CONNECTION | AP | RELEASE OF RIGHTS REMAINING | ROR REM. |
| ACCESS RIGHTS | AR | RIGHT-OF-WAY | R/W |
| ACRES | AC. | SECTION | SEC. |
| AND OTHERS | ET.AL. | STATION | STA. |
| CENTERLINE | C/L | TEMPORARY LIMITED EASEMENT | TLE |
| CERTIFIED SURVEY MAP | CSM | VOLUME | V. |
| CORNER | COR. | | |
| DOCUMENT | DOC. | | |
| EASEMENT | EASE. | | |
| HIGHWAY EASEMENT | H.E. | | |
| LAND CONTRACT | LC | | |
| MONUMENT | MON. | | |
| PAGE | P. | | |
| PERMANENT LIMITED EASEMENT | PLE | | |
| PROPERTY LINE | PL | | |
| RECORDED AS | (100') | | |
| REFERENCE LINE | R/L | | |

GUY FOLSOM
NOVADO
43705 USH 63
PO BOX 67
CABLE, WI 45821-0067
715-798-7123 OFFICE
715-492-0642 MOBILE
GFOLSOM@NOVADO.COM



Dial  or (800)242-8511

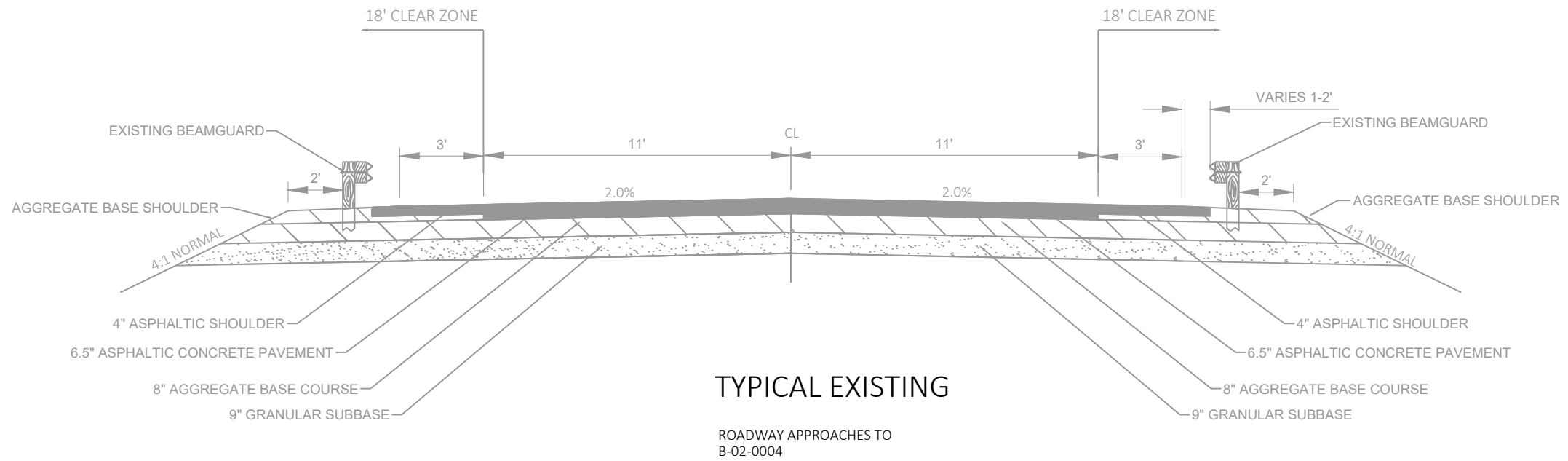
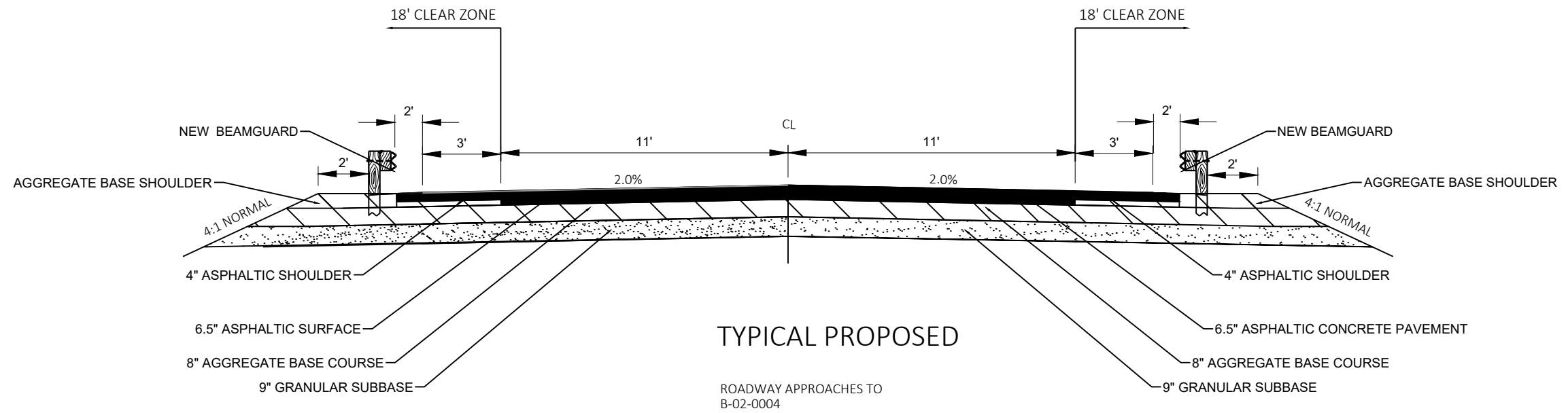
www.DiggersHotline.com

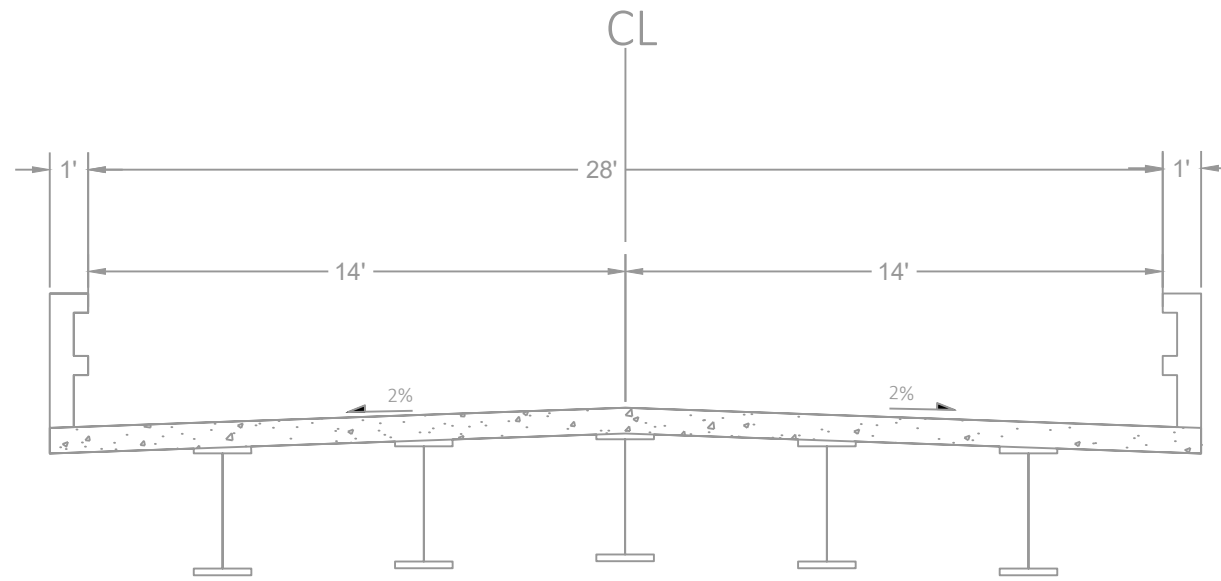
WISDNR

810 WEST MAPLE STREET
SPOONER, WI 54801
AMY CRONK, ENVIRONMENTAL
ANALYSIS AND REVIEW SPECIALIST
AMY.CRONK@WISCONSIN.GOV
715-635-4229

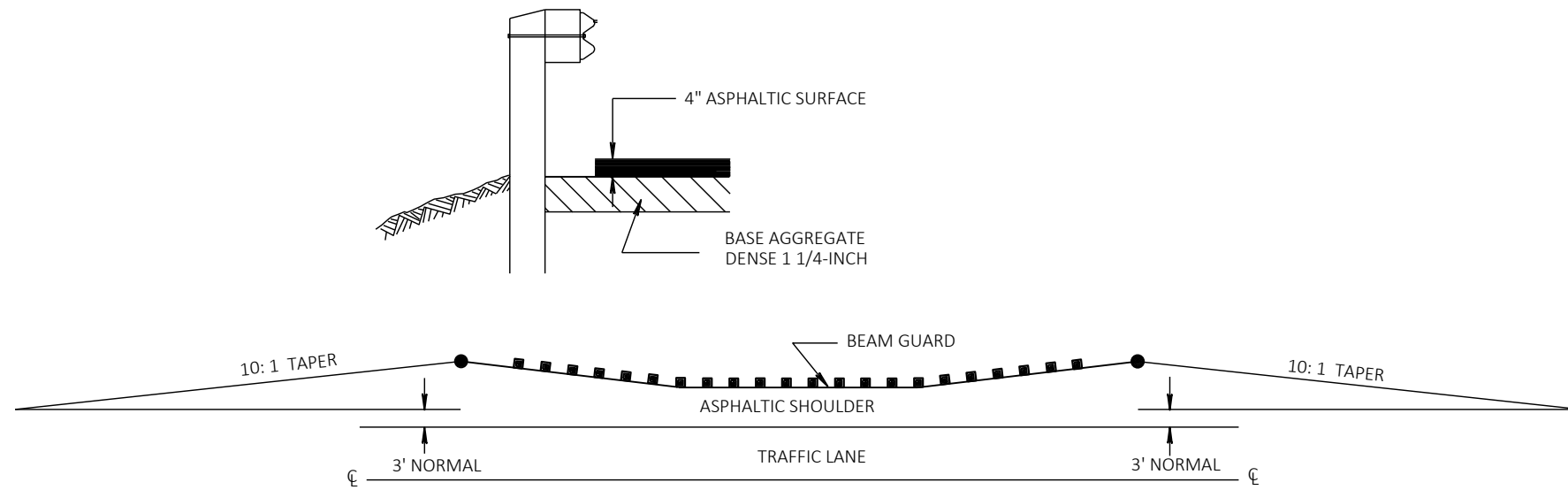
WISDOT NW REGION

1701 NORTH 4TH STREET
SUPERIOR, WI 54880
PHILIP KEPPERS
PROJECT MANAGER
PHILIP.KEPPERS@DOT.WI.GOV
715-395-3027





Typical Existing
B-02-0004

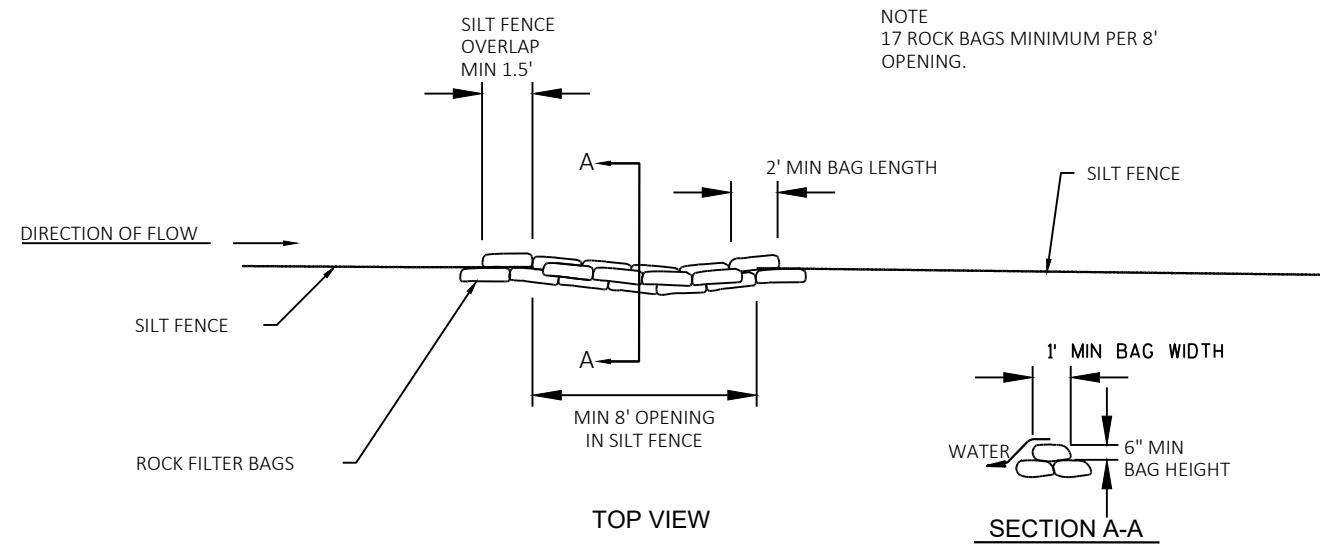


DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD

RUNOFF COEFFICIENT TABLE

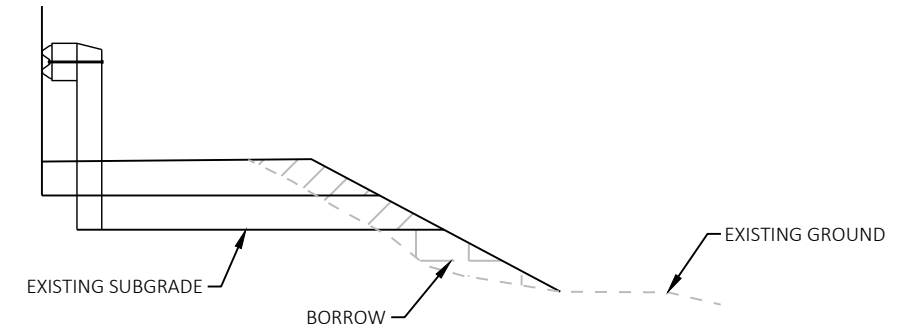
| | HYDROLOGIC SOIL GROUP | | | | | | | | | | | |
|-------------------------|-----------------------|------------|------------|-----------------------|------------|------------|-----------------------|------------|------------|-----------------------|------------|------------|
| | A | | | B | | | C | | | D | | |
| | SLOPE RANGE (PERCENT) | | | SLOPE RANGE (PERCENT) | | | SLOPE RANGE (PERCENT) | | | SLOPE RANGE (PERCENT) | | |
| LAND USE: | 0-2 | 2-6 | 6 & OVER | 0-2 | 2-6 | 6 & OVER | 0-2 | 2-6 | 6 & OVER | 0-2 | 2-6 | 6 & OVER |
| ROW CROPS | .08 .22 | .16 .30 | .22 .38 | .12 .26 | .20 .34 | .27 .44 | .15 .30 | .24 .37 | .33 .50 | .19 .34 | .28 .41 | .38 .56 |
| MEDIAN STRIP-TURF | .19 .24 | .20 .26 | .24 .30 | .19 .25 | .22 .28 | .26 .33 | .20 .26 | .23 .30 | .30 .37 | .20 .27 | .25 .32 | .30 .40 |
| SIDE SLOPE-TURF | | | .25 .32 | | | .27 .34 | | | .28 .36 | | | .30 .38 |
| PAVEMENT: | | | | | | | | | | | | |
| ASPHALT | .70 - .95 | | | | | | | | | | | |
| CONCRETE | .80 - .95 | | | | | | | | | | | |
| BRICK | .70 - .80 | | | | | | | | | | | |
| DRIVES, WALKS | .75 - .85 | | | | | | | | | | | |
| ROOFS | .75 - .95 | | | | | | | | | | | |
| GRAVEL ROADS, SHOULDERS | .40 - .60 | | | | | | | | | | | |

TOTAL PROJECT AREA = 1.15 ACRES
 TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = <1 ACRES



NOTE
17 ROCK BAGS MINIMUM PER 8'
OPENING.

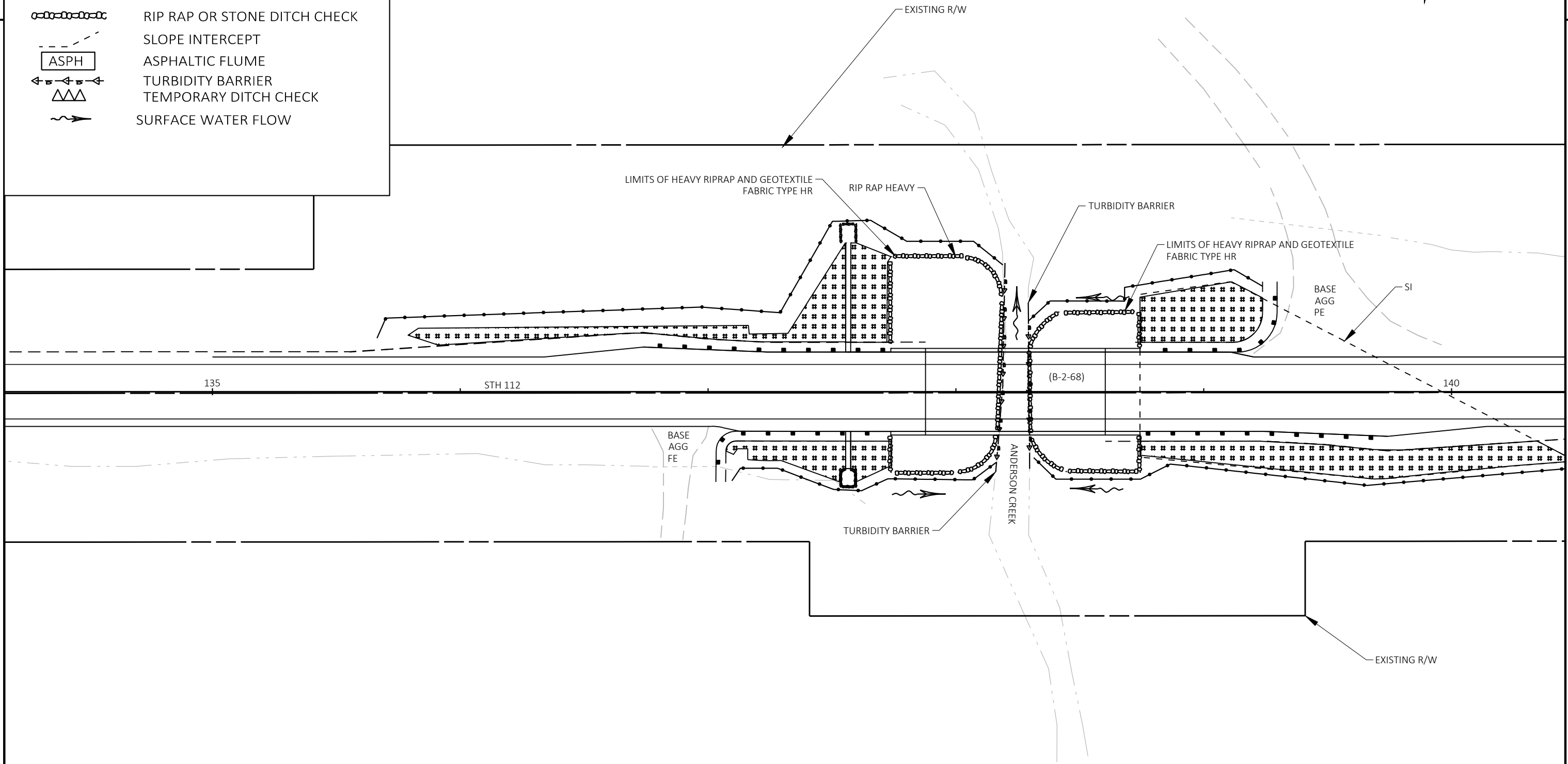
ROCK BAGS USED FOR SILT FENCE RELIEF



SHOULDER WIDENING EARTHWORK & BASE AGGREGATE FOR GUARDRAIL DETAIL

LEGEND

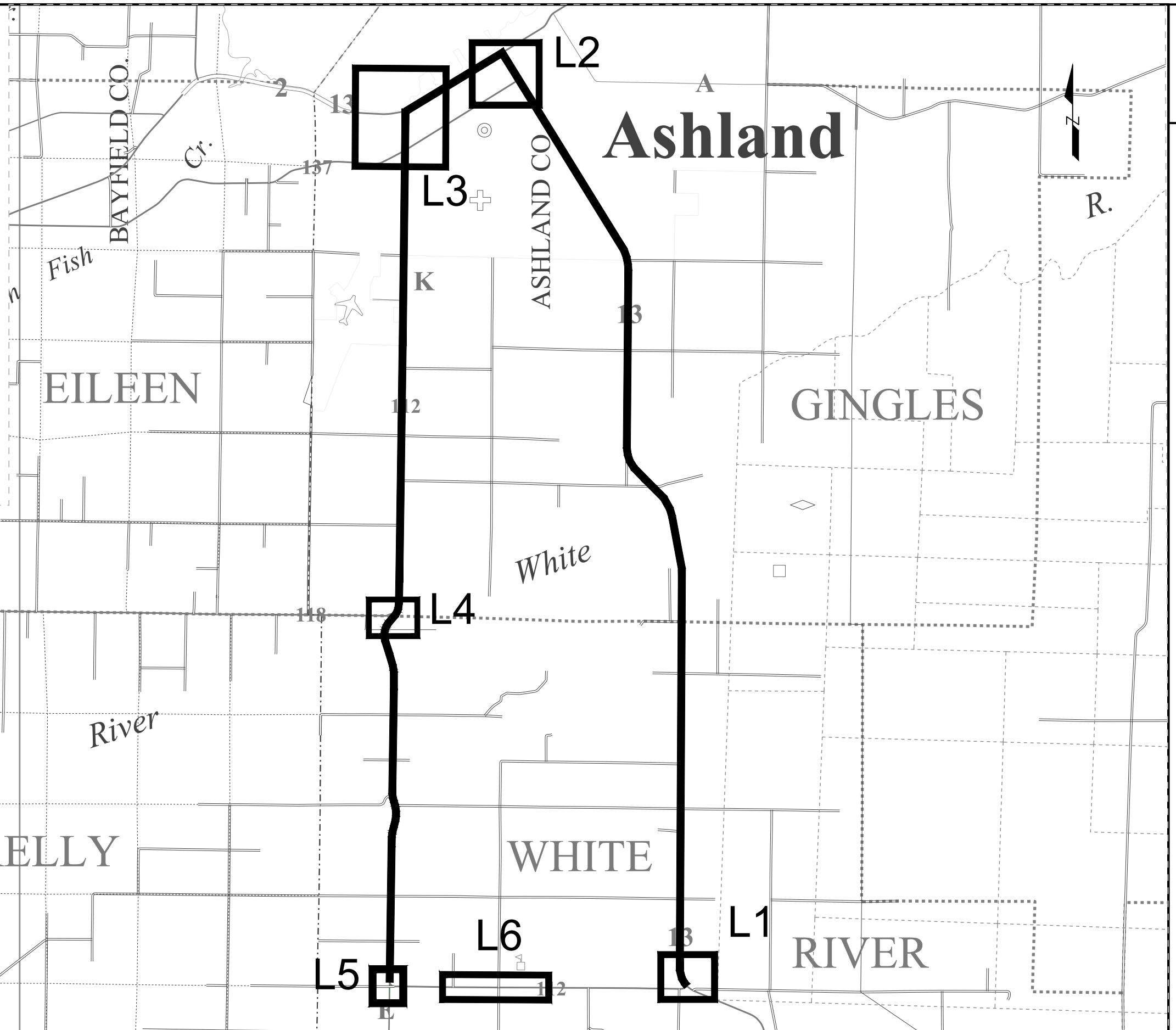
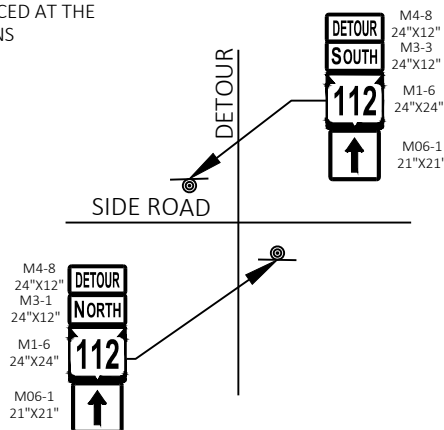
- ||||| EROSION MAT CLASS I, TYPE B
- SILT FENCE
- RIP RAP OR STONE DITCH CHECK
- - - SLOPE INTERCEPT
- ASPH ASPHALTIC FLUME
- ←←←←← TURBIDITY BARRIER
- △△△ TEMPORARY DITCH CHECK
- ~> SURFACE WATER FLOW



- LEGEND**
- SIGN ON PERMANENT SUPPORT
 - SIGN ON TEMPORARY SUPPORT
 - TYPE III BARRICADE
 - TYPE III BARRICADE WITH ATTACHED SIGN
 - M1-6 24"x24" **112** PROPOSED SIGN
 - 112** EXISTING SIGN
 - TC # TRAFFIC CONTROL SIGN GROUP #
 - L1: LOCATION 1

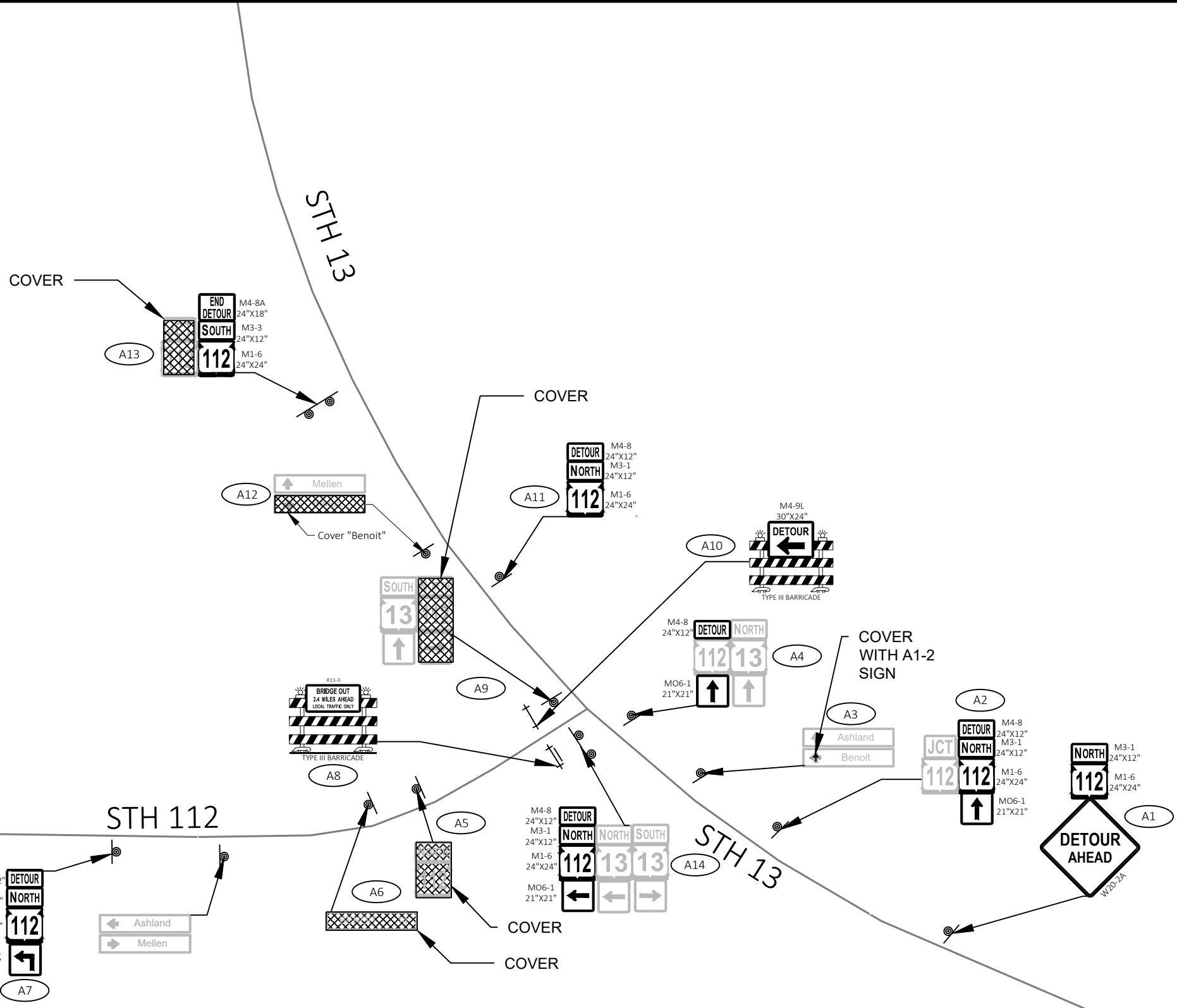
REASSURANCES TO BE PLACED AT THE FOLLOWING INTERSECTIONS

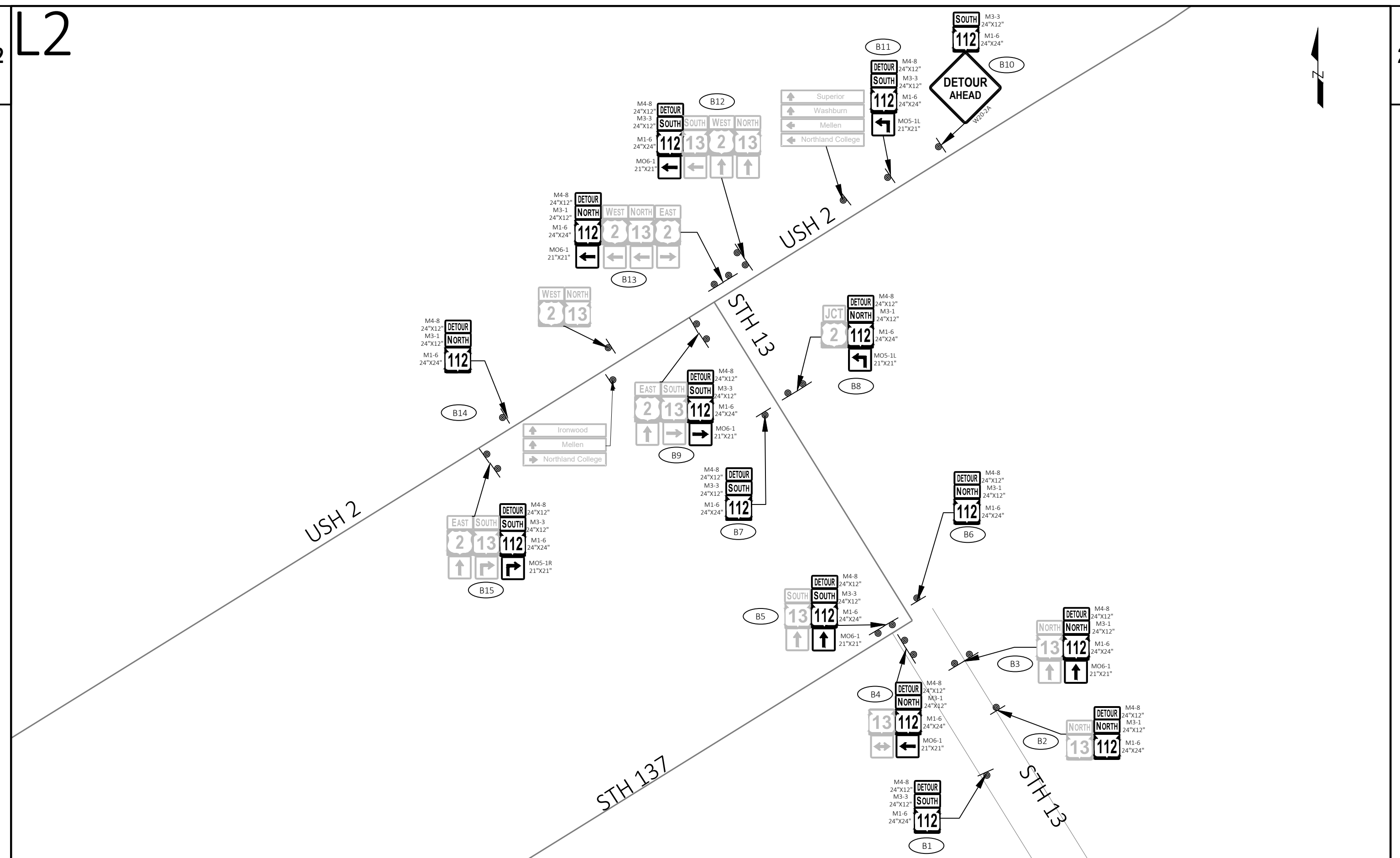
- SCHWIESOW RD
- HEGSTROM
- BINSFIELD
- SUMMIT RD W



2 L1

2





2 L4

L5 2

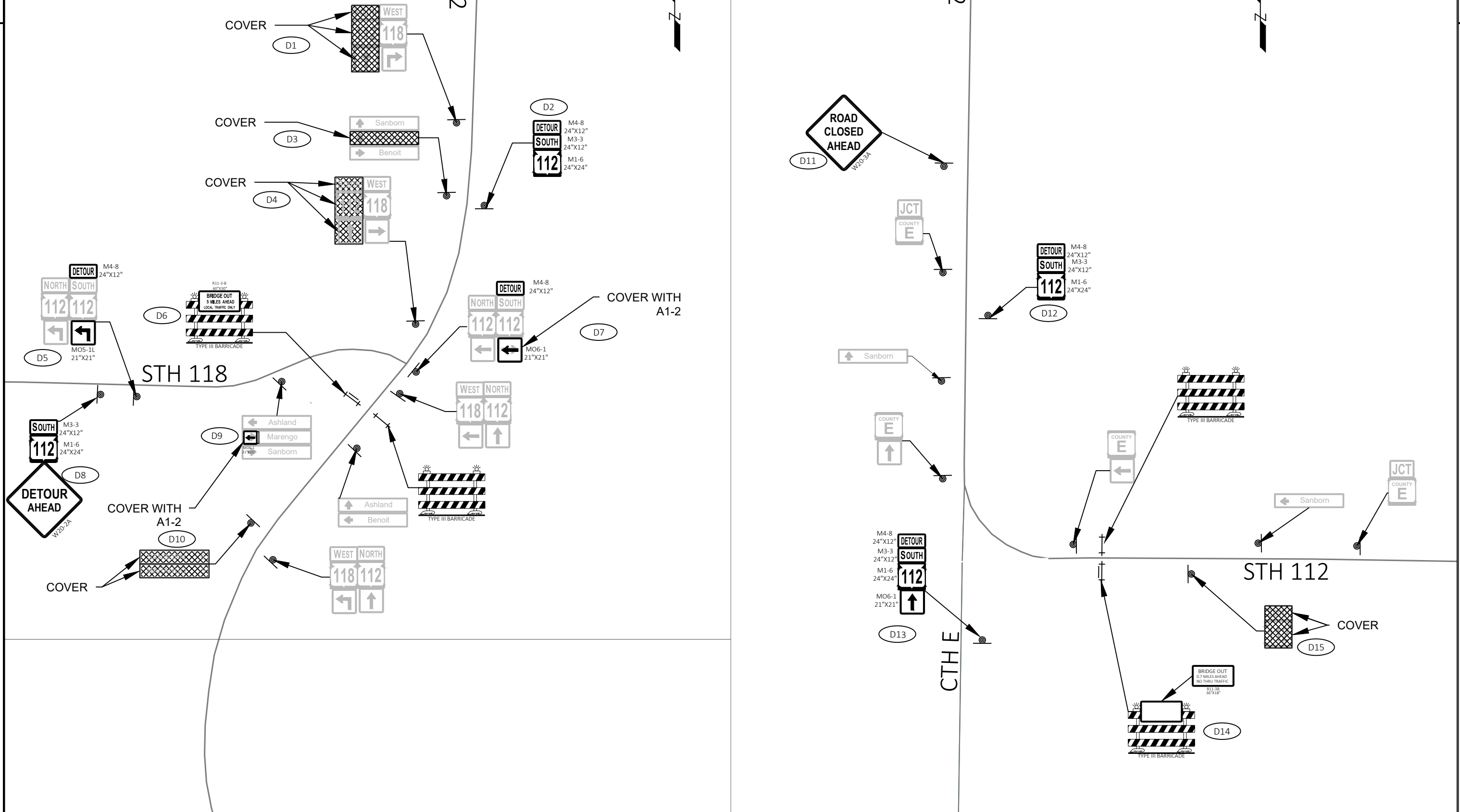
STH 112

STH 112

CTH E

STH 118

STH 112



| | | | | | |
|------------------------|----------|-----------------|----------------|-------|---|
| PROJECT NO: 8727-04-74 | HWY: 112 | COUNTY: ASHLAND | DETOUR L4 & L5 | SHEET | E |
|------------------------|----------|-----------------|----------------|-------|---|

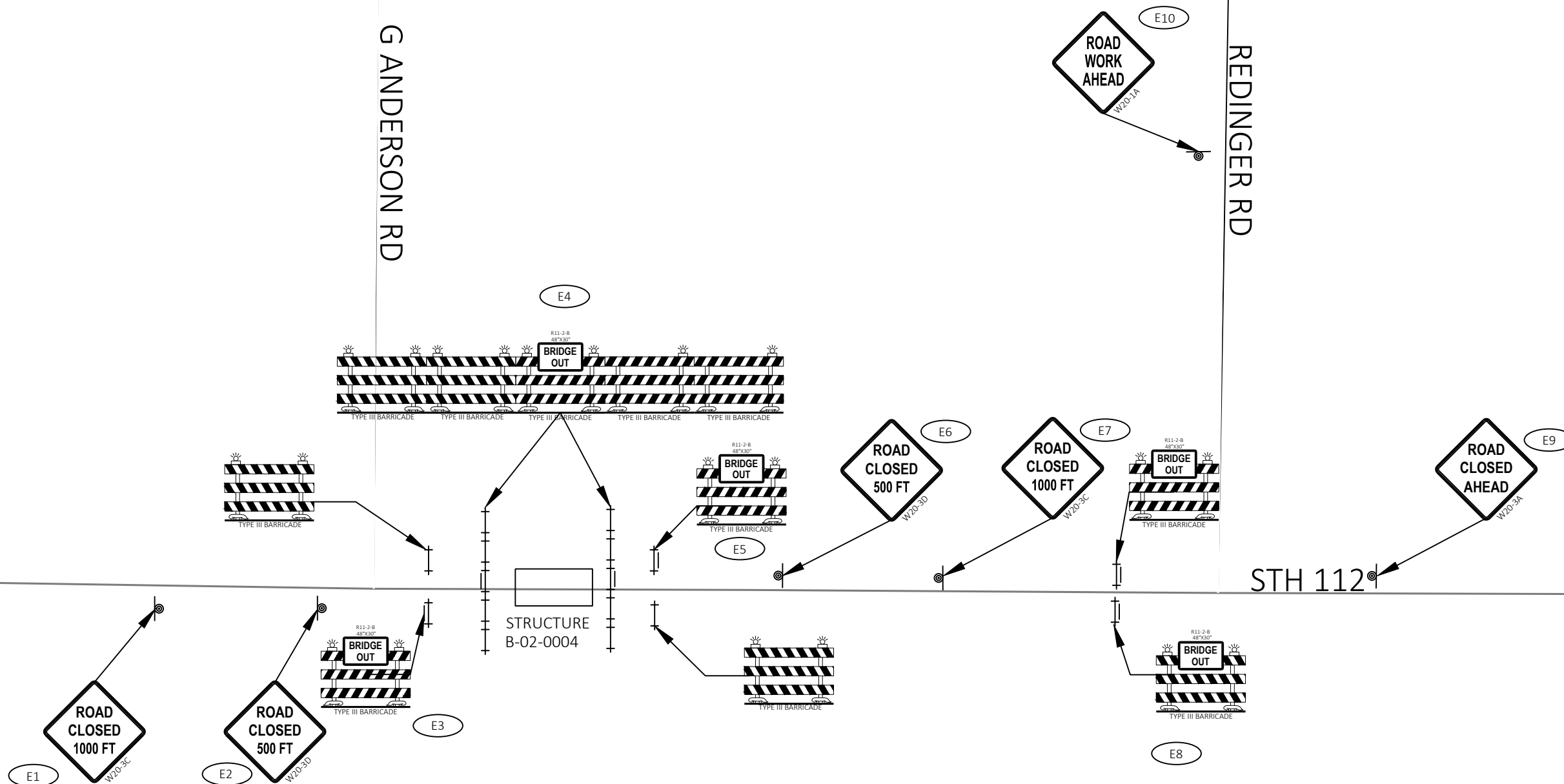
FILE NAME : N:\PDS\C3D\87270404\SHEETSPLAN\87270404DETOUR.DWG PLOT DATE : 10/29/2019 2:24 PM PLOT BY : FINNEGAN, MITCHELL PLOT NAME : PLOT SCALE : ##### WISDOT/CADD SHEET 42



G ANDERSON RD

REDINGER RD

STH 112



Estimate Of Quantities

8727-04-74

| Line | Item | Item Description | Unit | Total | Qty |
|------|------------|---|------|------------|------------|
| 0002 | 201.0105 | Clearing | STA | 2.000 | 2.000 |
| 0004 | 201.0205 | Grubbing | STA | 2.000 | 2.000 |
| 0006 | 203.0600.S | Removing Old Structure Over Waterway With Minimal Debris (station) 01. 138+24 | LS | 1.000 | 1.000 |
| 0008 | 204.0110 | Removing Asphaltic Surface | SY | 212.000 | 212.000 |
| 0010 | 204.0165 | Removing Guardrail | LF | 329.000 | 329.000 |
| 0012 | 206.1000 | Excavation for Structures Bridges (structure) 01. B-2-68 | LS | 1.000 | 1.000 |
| 0014 | 208.1100 | Select Borrow | CY | 120.000 | 120.000 |
| 0016 | 210.1500 | Backfill Structure Type A | TON | 294.000 | 294.000 |
| 0018 | 211.0400 | Prepare Foundation for Asphaltic Shoulders | STA | 4.000 | 4.000 |
| 0020 | 213.0100 | Finishing Roadway (project) 01. 8727-04-74 | EACH | 1.000 | 1.000 |
| 0022 | 305.0110 | Base Aggregate Dense 3/4-Inch | TON | 20.000 | 20.000 |
| 0024 | 305.0120 | Base Aggregate Dense 1 1/4-Inch | TON | 145.000 | 145.000 |
| 0026 | 415.0410 | Concrete Pavement Approach Slab | SY | 108.000 | 108.000 |
| 0028 | 416.1010 | Concrete Surface Drains | CY | 7.000 | 7.000 |
| 0030 | 455.0605 | Tack Coat | GAL | 20.000 | 20.000 |
| 0032 | 465.0105 | Asphaltic Surface | TON | 51.000 | 51.000 |
| 0034 | 502.0100 | Concrete Masonry Bridges | CY | 195.000 | 195.000 |
| 0036 | 502.3200 | Protective Surface Treatment | SY | 260.000 | 260.000 |
| 0038 | 502.3210 | Pigmented Surface Sealer | SY | 71.000 | 71.000 |
| 0040 | 503.0137 | Prestressed Girder Type I 36W-Inch | LF | 284.000 | 284.000 |
| 0042 | 505.0400 | Bar Steel Reinforcement HS Structures | LB | 4,180.000 | 4,180.000 |
| 0044 | 505.0600 | Bar Steel Reinforcement HS Coated Structures | LB | 25,970.000 | 25,970.000 |
| 0046 | 506.2605 | Bearing Pads Elastomeric Non-Laminated | EACH | 8.000 | 8.000 |
| 0048 | 506.4000 | Steel Diaphragms (structure) 01. B-2-68 | EACH | 6.000 | 6.000 |
| 0050 | 516.0500 | Rubberized Membrane Waterproofing | SY | 18.000 | 18.000 |
| 0052 | 550.2126 | Piling CIP Concrete 12 3/4 X 0.375-Inch | LF | 1,575.000 | 1,575.000 |
| 0054 | 606.0200 | Riprap Medium | CY | 6.000 | 6.000 |
| 0056 | 606.0300 | Riprap Heavy | CY | 435.000 | 435.000 |
| 0058 | 612.0406 | Pipe Underdrain Wrapped 6-Inch | LF | 160.000 | 160.000 |
| 0060 | 614.0150 | Anchor Assemblies for Steel Plate Beam Guard | EACH | 4.000 | 4.000 |
| 0062 | 614.2300 | MGS Guardrail 3 | LF | 75.000 | 75.000 |
| 0064 | 614.2350 | MGS Guardrail Short Radius | LF | 37.500 | 37.500 |
| 0066 | 614.2500 | MGS Thrie Beam Transition | LF | 158.000 | 158.000 |
| 0068 | 614.2610 | MGS Guardrail Terminal EAT | EACH | 2.000 | 2.000 |
| 0070 | 614.2630 | MGS Guardrail Short Radius Terminal | EACH | 2.000 | 2.000 |
| 0072 | 618.0100 | Maintenance And Repair of Haul Roads (project) 01. 8727-04-74 | EACH | 1.000 | 1.000 |
| 0074 | 619.1000 | Mobilization | EACH | 1.000 | 1.000 |
| 0076 | 624.0100 | Water | MGAL | 1.650 | 1.650 |

Estimate Of Quantities

8727-04-74

| Line | Item | Item Description | Unit | Total | Qty |
|------|----------|--|------|-----------|-----------|
| 0078 | 625.0500 | Salvaged Topsoil | SY | 536.000 | 536.000 |
| 0080 | 628.1504 | Silt Fence | LF | 795.000 | 795.000 |
| 0082 | 628.1520 | Silt Fence Maintenance | LF | 795.000 | 795.000 |
| 0084 | 628.1905 | Mobilizations Erosion Control | EACH | 2.000 | 2.000 |
| 0086 | 628.1910 | Mobilizations Emergency Erosion Control | EACH | 1.000 | 1.000 |
| 0088 | 628.2004 | Erosion Mat Class I Type B | SY | 586.000 | 586.000 |
| 0090 | 628.6005 | Turbidity Barriers | SY | 100.000 | 100.000 |
| 0092 | 629.0205 | Fertilizer Type A | CWT | 0.370 | 0.370 |
| 0094 | 630.0110 | Seeding Mixture No. 10 | LB | 10.600 | 10.600 |
| 0096 | 634.0414 | Posts Wood 4x4-Inch X 14-FT | EACH | 4.000 | 4.000 |
| 0098 | 637.2230 | Signs Type II Reflective F | SF | 12.000 | 12.000 |
| 0100 | 642.5001 | Field Office Type B | EACH | 1.000 | 1.000 |
| 0102 | 643.0420 | Traffic Control Barricades Type III | DAY | 1,122.000 | 1,122.000 |
| 0104 | 643.0705 | Traffic Control Warning Lights Type A | DAY | 2,244.000 | 2,244.000 |
| 0106 | 643.0900 | Traffic Control Signs | DAY | 7,397.000 | 7,397.000 |
| 0108 | 643.0920 | Traffic Control Covering Signs Type II | EACH | 27.000 | 27.000 |
| 0110 | 643.5000 | Traffic Control | EACH | 1.000 | 1.000 |
| 0112 | 645.0111 | Geotextile Type DF Schedule A | SY | 68.000 | 68.000 |
| 0114 | 645.0120 | Geotextile Type HR | SY | 660.000 | 660.000 |
| 0116 | 645.0130 | Geotextile Type R | SY | 9.000 | 9.000 |
| 0118 | 646.1020 | Marking Line Epoxy 4-Inch | LF | 496.000 | 496.000 |
| 0120 | 650.4500 | Construction Staking Subgrade | LF | 60.000 | 60.000 |
| 0122 | 650.5000 | Construction Staking Base | LF | 60.000 | 60.000 |
| 0124 | 650.6500 | Construction Staking Structure Layout (structure) 01. B-2-68 | LS | 1.000 | 1.000 |
| 0126 | 650.9910 | Construction Staking Supplemental Control (project) 01. 8727-04-74 | LS | 1.000 | 1.000 |
| 0128 | 650.9920 | Construction Staking Slope Stakes | LF | 499.000 | 499.000 |
| 0130 | 690.0150 | Sawing Asphalt | LF | 339.000 | 339.000 |
| 0132 | 715.0415 | Incentive Strength Concrete Pavement | DOL | 500.000 | 500.000 |

CLEARING

| STATION | TO | STATION | LOCATION | 201.0105 STA |
|------------|----|---------|----------|-----------------|
| 137+85 | - | 138+50 | RT | 1 |
| 138+00 | | 138+60 | LT | 1 |
| TOTAL 0010 | | | | <u>2</u> |

GRUBBLING

| STATION | TO | STATION | LOCATION | 201.0205 STA |
|------------|----|---------|----------|-----------------|
| 137+85 | - | 138+50 | RT | 1 |
| 138+00 | | 138+60 | LT | 1 |
| TOTAL 0010 | | | | <u>2</u> |

REMOVING ASPHALTIC SURFACE

| STATION | TO | STATION | LOCATION | 204.0110 SY |
|------------|----|---------|----------|----------------|
| 137+57 | - | 137+91 | STH 112 | 106 |
| 138+56 | - | 138+90 | STH 112 | 106 |
| TOTAL 0010 | | | | <u>212</u> |

REMOVING GUARDRAIL

| STATION | TO | STATION | LOCATION | 204.0165 LF |
|------------|----|---------|----------|----------------|
| 137+07 | - | 137+91 | LT | 84 |
| 137+07 | - | 137+91 | RT | 84 |
| 138+56 | - | 139+33 | LT | 77 |
| 138+56 | - | 139+40 | RT | 84 |
| TOTAL 0010 | | | | <u>329</u> |

SELECT BORROW

| STATION | TO | STATION | LOCATION | 208.1100 CY |
|---------------|----|---------|----------|----------------|
| 136+58 | - | 137+88 | LT & RT | 48 |
| 138+60 | - | 140+93 | LT & RT | 52 |
| UNDISTRIBUTED | | | | 20 |
| TOTAL 0010 | | | | <u>120</u> |

PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS

| STATION | TO | STATION | LOCATION | 211.0400 STA |
|------------|----|---------|----------|-----------------|
| 136+49 | - | 137+72 | RT & LT | 2 |
| 138+75 | - | 140+21 | RT & LT | 2 |
| TOTAL 0010 | | | | <u>4</u> |

BASE AGGREGATE

| STATION | TO | STATION | LOCATION | BASE AGGREGATE | BASE AGGREGATE | WATER |
|---------------|----|---------|----------|-------------------------------------|---|-------------------|
| | | | | DENSE 3/4-1 NCH 305. 0110 TON | DENSE 1 1/4- 1 NCH 305. 0120 TON | 624. 0100 MGAL |
| 136+58 | - | 137+88 | LT & RT | 8 | 56 | 0.64 |
| 138+60 | - | 140+93 | LT & RT | 6 | 74 | 0.80 |
| UNDISTRIBUTED | | | | 7 | 15 | 0.22 |
| TOTAL 0010 | | | | 20 | 145 | 1.65 |

CONCRETE PAVEMENT APPROACH SLAB

| STATION | TO | STATION | LOCATION | 415. 0410 SY |
|------------|----|---------|----------|-----------------|
| 138+60 | - | 138+75 | STH 112 | 54 |
| 137+72 | - | 137+87 | STH 112 | 54 |
| TOTAL 0010 | | | | 108 |

CONCRETE SURFACE DRAINS

| STATION | LOCATION | 416. 1010 CY |
|------------|----------|-----------------|
| 137+56 | LT & RT | 7 |
| TOTAL 0010 | | 7 |

TACK COAT

| STATION | TO | STATION | LOCATION | 455. 0605 GAL |
|------------|----|---------|----------|------------------|
| 137+57 | - | 137+72 | STH 112 | 10 |
| 138+75 | - | 138+90 | STH 112 | 10 |
| TOTAL 0010 | | | | 20 |

ASPHALTIC SURFACE

| STATION | TO | STATION | LOCATION | 465. 0105 TON |
|------------|----|---------|----------|------------------|
| 136+33 | - | 137+72 | RT< | 25 |
| 138+90 | - | 140+14 | RT< | 26 |
| TOTAL 0010 | | | | 51 |

RI PRAP MEDIUM

| STATION | LOCATION | 606.0200 CY |
|------------|----------|----------------|
| 137+56 | RT | 3 |
| 137+56 | LT | 3 |
| TOTAL 0010 | | <u>6</u> |

RI PRAP HEAVY

| STATION | TO | STATION | LOCATION | 606.0300 CY |
|------------|----|---------|----------|----------------|
| 137+74 | - | 138+18 | LT & RT | 255 |
| 138+28 | - | 138+75 | LT & RT | 180 |
| TOTAL 0020 | | | | <u>435</u> |

ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD

| STATION | LOCATION | 614.0150 EACH |
|------------|----------|------------------|
| 137+73 | LT & RT | 2 |
| 138+74 | LT & RT | 2 |
| TOTAL 0010 | | <u>4</u> |

MGS GUARDRAIL 3

| STATION | TO | STATION | LOCATION | 614.2300 LF |
|------------|----|---------|----------|----------------|
| 136+74 | - | 137+74 | LT | 12.5 |
| 137+03 | - | 137+74 | RT | 37.5 |
| 138+74 | - | 139+24 | LT | 12.5 |
| 138+74 | - | 139+74 | RT | 12.5 |
| TOTAL 0010 | | | | <u>75</u> |

MGS GUARDRAIL SHORT RADIUS

| STATION | TO | STATION | LOCATION | 614.2350 LF |
|------------|----|---------|----------|----------------|
| 137+03 | - | 137+12 | RT | 12.5 |
| 139+11 | - | 139+29 | LT | 25 |
| TOTAL 0010 | | | | <u>37.5</u> |

MGS THREE BEAM TRANSITION

| STATION | TO | STATION | LOCATION | 614.2500 LF |
|------------|----|---------|----------|----------------|
| 137+34 | - | 137+73 | STH 112 | 79 |
| 138+74 | - | 139+13 | STH 112 | 79 |
| TOTAL 0010 | | | | <u>158</u> |

MGS GUARDRAIL TERMINAL EAT

| STATION | LOCATION | 614. 2610 EACH |
|------------|----------|-------------------|
| 137+23 | LT | 1 |
| 139+24 | RT | 1 |
| TOTAL 0010 | | <u>2</u> |

MGS GUARDRAIL SHORT RADIUS TERMINAL

| STATION | LOCATION | 614. 2630 EACH |
|------------|----------|-------------------|
| 137+03 | RT | 1 |
| 139+29 | LT | 1 |
| TOTAL 0010 | | <u>2</u> |

MAINTENANCE AND REPAIR OF HAUL ROADS (8727-04-74)

| LOCATION | 618. 0100 EACH |
|------------|-------------------|
| PROJECT | 1 |
| TOTAL 0010 | <u>1</u> |

EROSION CONTROL

| STATION | TO | STATION | LOCATION | SALVAGED TOPSOIL 625. 0500 SY | SILT FENCE 628. 1504 LF | SILT FENCE MAINTENANCE 628. 1520 LF | EROSION MAT CLASS I TYPE B 628. 2004 SY | TURBIDITY BARRIERS 628. 6005 SY | FERTILIZER TYPE A 629. 0205 CWT | SEEDING MIXTURE NO. 10 630. 011 LB |
|---------------|----|---------|----------|--|----------------------------------|--|---|--|--|--|
| 138+74 | - | 140+50 | RT | 185 | 225 | 225 | 185 | - | 0. 12 | 3. 35 |
| 138+74 | - | 139+24 | LT | 113 | 105 | 105 | 113 | - | 0. 07 | 2. 05 |
| 137+07 | - | 137+74 | RT | 52 | 115 | 115 | 52 | - | 0. 03 | 0. 93 |
| 135+75 | - | 137+74 | LT | 186 | 275 | 275 | 186 | - | 0. 12 | 3. 35 |
| 138+15 | - | - | LT & RT | - | - | - | - | 47 | - | - |
| 138+30 | - | - | LT & RT | - | - | - | - | 53 | - | - |
| UNDISTRIBUTED | - | - | - | - | 75 | 75 | 50 | - | 0. 03 | 0. 90 |
| TOTAL 0010 | | | | <u>536</u> | <u>795</u> | <u>795</u> | <u>586</u> | <u>100</u> | <u>0. 37</u> | <u>10. 6</u> |

POSTS WOOD 4X4-INCH X 14-FT

| LOCATION | 634.0414 EACH |
|-------------------|------------------|
| LT&RT | 2 |
| LT&RT | 2 |
| TOTAL 0010 | 4 |

SIGNS TYPE II REFLECTIVE F

| SIGN MESSAGE | SIZE (W x H) (INCHES) | LOCATION | SIGNS TYPE II REFLECTIVE F 637.2230 SF |
|------------------------------|-----------------------------|-----------|---|
| CLEARANCE STRIPER DOWN RIGHT | 12 X 36 | 137+74 RT | 3 |
| CLEARANCE STRIPER DOWN LEFT | 12 X 36 | 137+74 LT | 3 |
| CLEARANCE STRIPER DOWN LEFT | 12 X 36 | 138+74 RT | 3 |
| CLEARANCE STRIPER DOWN RIGHT | 12 X 36 | 138+74 LT | 3 |
| TOTAL 0010 | | | 12 |

GEOTEXTILE TYPE HR

| STATION | TO | STATION | LOCATION | 645.0120 SY |
|---------|----|---------|-------------------|----------------|
| | | 137+56 | | 10 |
| | | | TOTAL 0010 | 10 |
| 137+74 | - | 138+18 | | 300 |
| 138+29 | - | 138+75 | | 350 |
| | | | TOTAL 0020 | 650 |

TRAFFIC CONTROL WARNING LIGHTS TYPE A

| LOCATION | 643.0705 DAY |
|-------------------|-----------------|
| DETOUR | 2244 |
| TOTAL 0010 | 2244 |

GEOTEXTILE TYPE R

| STATION | LOCATION | 645.0130 SY |
|---------|-------------------|----------------|
| 137+56 | RT | 5 |
| 137+56 | LT | 5 |
| | TOTAL 0010 | 9 |

TRAFFIC CONTROL BARRICADES TYPE III

| LOCATION | 643.0420 DAY |
|-------------------|-----------------|
| DETOUR | 1122 |
| TOTAL 0010 | 1122 |

3

3

TRAFFIC CONTROL

| PLAN CODE | SIGN CODE | SIGN NAME | SIZE | TRAFFIC CONTROL SIGNS | TRAFFIC CONTROL COVERING SIGNS |
|-----------|-----------|----------------------------|---------|-----------------------|--------------------------------|
| | | | | 643.0900 | 643.0920 |
| | | | | DAY | EACH |
| A1 | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | W20-2A | DETOUR AHEAD | 36"X36" | 51 | - |
| A2 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-1 | NORTH | 24"X12" | 51 | - |
| A3 | M1-6 | 112 | 24"X24" | 51 | - |
| | MO6-1 | AHEAD ARROW | 21"X21" | 51 | - |
| | | BENOIT | | - | 1 |
| A4 | M4-8 | DETOUR | 24"X12" | 51 | - |
| A5 | MO6-1 | AHEAD ARROW | 21"X21" | 51 | - |
| | | NORTH | | - | 1 |
| | | 112 | | - | 1 |
| A6 | | BENOIT | | - | 1 |
| A7 | M4-8 | DETOUR | 24"X12" | 51 | - |
| A8 | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | MO5-1L | ADVANCED ARROW LEFT TURN | 21"X21" | 51 | - |
| | R11-3 | BRIDGE OUT 2.4 MILES AHEAD | 36"X18" | 51 | - |
| A9 | | NORTH | | - | 1 |
| | | 112 | | - | 1 |
| | | RIGHT ARROW | | - | 1 |
| A10 | M4-9L | DETOUR | 30"X24" | 51 | - |
| A11 | M4-8 | DETOUR | 24"X12" | 51 | - |
| A12 | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | | BENOIT | | - | 1 |
| A13 | M4-8A | END DETOUR | 24"X18" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | | JCT | | - | 1 |
| B1 | | 112 | | - | 1 |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |

PROJECT NO: 8727-04-74

HWY: 112

COUNTY: ASHLAND

MISCELLANEOUS QUANTITIES

SHEET:

E

FILE NAME : N:\PDS\...030200_mq.pptx

PLOT DATE : July 29, 2019

PLOT BY : A.R.H.

PLOT NAME :

PLOT SCALE : 1:1

TRAFFIC CONTROL

| PLAN CODE | SIGN CODE | SIGN NAME | SIZE | TRAFFIC CONTROL SIGNS | TRAFFIC CONTROL COVERING SIGNS TYPE II |
|-----------|-----------|--------------------------|---------|-----------------------|--|
| | | | | 643.0900 | 643.0920 |
| | | | | DAY | EACH |
| B2 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| B3 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| B4 | MO6-1 | AHEAD ARROW | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | MO6-1 | LEFT ARROW | 21"X21" | 51 | - |
| B5 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | MO6-1 | AHEAD ARROW | 21"X21" | 51 | - |
| B6 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| B7 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| B8 | M1-6 | 112 | 24"X24" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| B9 | MO5-1L | ADVANCED ARROW LEFT TURN | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| B10 | M1-6 | 112 | 24"X24" | 51 | - |
| | MO6-1 | RIGHT ARROW | 21"X21" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| B11 | M1-6 | 112 | 24"X24" | 51 | - |
| | W20-2A | DETOUR AHEAD | 36"X36" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |

TRAFFIC CONTROL

| PLAN CODE | SIGN CODE | SIGN NAME | SIZE | TRAFFIC CONTROL SIGNS | TRAFFIC CONTROL COVERING SIGNS |
|-----------|-----------|---------------------------|---------|-----------------------|--------------------------------|
| | | | | 643.0900 | 643.0920 |
| | | | | DAY | EACH |
| B12 | M05-1L | ADVANCED ARROW LEFT TURN | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M06-1 | LEFT ARROW | 21"X21" | 51 | - |
| B13 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M06-1 | LEFT ARROW | 21"X21" | 51 | - |
| B14 | M4-8 | DETOUR | 24"X12" | 51 | - |
| B15 | M3-1 | NORTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| C1 | M1-6 | 112 | 24"X24" | 51 | - |
| | M05-1R | ADVANCED ARROW RIGHT TURN | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| C2 | M1-6 | 112 | 24"X24" | 51 | - |
| | M4-8A | END DETOUR | 24"X18" | 51 | - |
| C3 | M1-6 | 112 | 24"X24" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| C4 | W20-2A | DETOUR AHEAD | 36"X36" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| C5 | M06-1 | AHEAD ARROW | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| C6 | M06-1 | AHEAD ARROW | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M06-1 | RIGHT ARROW | 21"X21" | 51 | - |

3

TRAFFIC CONTROL

| PLAN CODE | SIGN CODE | SIGN NAME | SIZE | TRAFFIC CONTROL SIGNS | TRAFFIC CONTROL COVERING SIGNS TYPE II |
|-----------|-----------|-----------------------------|---------|-----------------------|--|
| | | | | 643.0900 | 643.0920 |
| | | | | DAY | EACH |
| C7 | R11-3-B | BRIDGE OUT 10.5 MILES AHEAD | 60"X30" | 51 | - |
| C8 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M05-1R | ADVANCED ARROW RIGHT TURN | 21"X21" | 51 | - |
| C9 | - | SOUTH | - | - | 1 |
| | - | 112 | - | - | 1 |
| | - | AHEAD ARROW | - | - | 1 |
| C10 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| C11 | M1-6 | 112 | 24"X24" | 51 | - |
| | M05-1R | ADVANCED ARROW RIGHT TURN | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M06-1 | LEFT TURN | 21"X21" | 51 | - |
| C12 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M05-1L | ADVANCED ARROW LEFT TURN | 21"X21" | 51 | - |
| C13 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M06-1 | RIGHT ARROW | 21"X21" | 51 | - |
| | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| C14 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M06-1 | AHEAD ARROW | 21"X21" | 51 | - |
| C15 | R11-3-B | BRIDGE OUT 10 MILE AHEAD | 60"X30" | 51 | - |
| C16 | - | SANBORN | - | - | 1 |
| D1 | - | SOUTH | - | - | 1 |
| | - | 112 | - | - | 1 |
| | - | AHEAD ARROW | - | - | 1 |
| D2 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| D3 | - | MARENGO | - | - | 1 |
| D4 | - | SOUTH | - | - | 1 |
| | - | 112 | - | - | 1 |

3

PROJECT NO: 8727-04-74

HWY: 112

COUNTY: ASHLAND

MISCELLANEOUS QUANTITIES

SHEET:

E

FILE NAME : N:\PDS\...030200_mq.pptx

PLOT DATE : July 29, 2019

PLOT BY : A.R.H.

PLOT NAME :

PLOT SCALE : 1:1

TRAFFIC CONTROL

| PLAN CODE | SIGN CODE | SIGN NAME | SIZE | TRAFFIC CONTROL SIGNS | TRAFFIC CONTROL COVERING SIGNS TYPE II |
|-----------|-----------|--------------------------|---------|-----------------------|--|
| | | | | 643.0900 | 643.0920 |
| | | | | DAY | EACH |
| | - | AHEAD ARROW | - | - | 1 |
| D5 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M05-1L | ADVANCED ARROW LEFT TURN | 21"X21" | 51 | - |
| D6 | R11-3-B | BRIDGE OUT 5 MILES AHEAD | 60"X30" | 51 | - |
| D7 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | - | RIGHT ARROW | - | - | 1 |
| D8 | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | W20-2A | DETOUR AHEAD | 36"X36" | 51 | - |
| D9 | - | MARENGO | - | - | 1 |
| D10 | - | SANBORN | - | - | 1 |
| | - | MARENGO | - | - | 1 |
| D11 | W20-3A | ROAD CLOSED AHEAD | 36"X36" | 51 | - |
| D12 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| D13 | M4-8 | DETOUR | 24"X12" | 51 | - |
| | M3-3 | SOUTH | 24"X12" | 51 | - |
| | M1-6 | 112 | 24"X24" | 51 | - |
| | M06-1 | M06-1 | 21"X21" | 51 | - |
| D14 | R11-3-B | BRIDGE OUT .7 MILE AHEAD | 36"X18" | 51 | - |
| D15 | - | SOUTH | - | - | 1 |
| | - | 112 | - | - | 1 |
| E1 | W20-3C | ROAD CLOSED 1000FT | 36"X36" | 51 | - |
| E2 | W20-3D | ROAD CLOSED 500FT | 36"X36" | 51 | - |
| E3 | R11-2-B | BRIDGE OUT | 48"X30" | 51 | - |
| E4 | R11-2-B | BRIDGE OUT | 48"X30" | 51 | - |
| E5 | R11-2-B | BRIDGE OUT | 48"X30" | 51 | - |
| E6 | W20-3D | ROAD CLOSED 500FT | 36"X36" | 51 | - |
| E7 | W20-3C | ROAD CLOSED 1000FT | 36"X36" | 51 | - |
| E8 | R11-2-B | BRIDGE OUT | 48"X30" | 51 | - |
| | R11-2-B | BRIDGE OUT | 48"X30" | 51 | - |
| E-9 | W20-3A | ROAD CLOSED AHEAD | 36"X36" | 51 | - |
| E10 | W20-1A | ROAD WORK AHEAD | 36"X36" | 51 | - |
| TOTAL | | | | <u>7397</u> | <u>27</u> |

NOTE: ALL TRAFFIC CONTROL COVERING SIGNS TYPE II ARE FOR ONE CYCLE

MARKING LINE EPOXY 4-INCH

| STATION | TO | STATION | LOCATION | 646.1020 LF |
|------------|----|---------|----------|----------------|
| 137+62 | - | 138+86 | LT & RT | 248 |
| 137+62 | - | 138+86 | LT & RT | 248 |
| TOTAL 0010 | | | | <u>496</u> |

CONSTRUCTION STAKING SUBGRADE

| STATION | TO | STATION | LOCATION | 650.4500 LF |
|------------|----|---------|----------|----------------|
| 137+57 | - | 137+87 | | 30 |
| 138+60 | - | 138+90 | | 30 |
| TOTAL 0010 | | | | <u>60</u> |

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (8727-04-74)

| LOCATION | 650.9910 LS |
|------------|----------------|
| PROJECT | 1 |
| TOTAL 0010 | <u>1</u> |

CONSTRUCTION STAKING BASE

| STATION | TO | STATION | LOCATION | 650.5000 LF |
|------------|----|---------|----------|----------------|
| 137+57 | - | 137+87 | | 30 |
| 138+60 | - | 138+90 | | 30 |
| TOTAL 0010 | | | | <u>60</u> |

CONSTRUCTION STAKING SLOPE STAKES

| STATION | TO | STATION | LOCATION | 650.9920 LF |
|------------|----|---------|----------|----------------|
| 135+75 | - | 137+74 | LT | 199 |
| 137+03 | - | 137+74 | RT | 71 |
| 138+74 | - | 139+27 | LT | 53 |
| 138+74 | - | 140+50 | RT | 176 |
| TOTAL 0010 | | | | <u>499</u> |

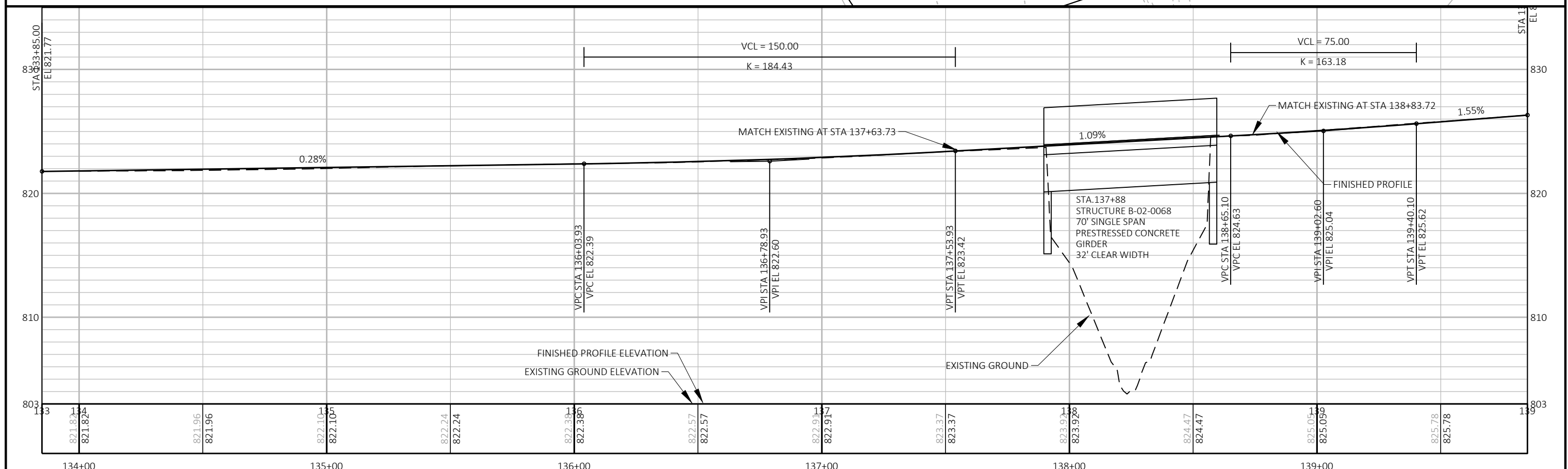
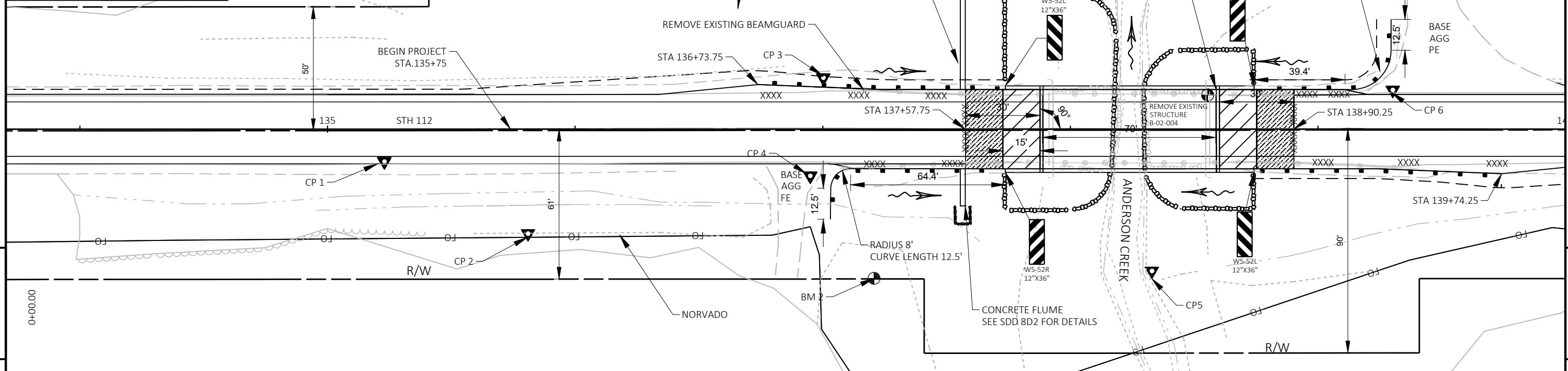
SAWING ASPHALT

| STATION | TO | STATION | LOCATION | 690.0150 LF |
|------------|----|---------|----------|----------------|
| 136+49 | - | 137+57 | LT | 108 |
| 137+03 | - | 137+57 | RT | 54 |
| 137+57 | - | 137+57 | | 32 |
| 138+90 | - | 138+90 | | 32 |
| 138+90 | - | 139+19 | LT | 29 |
| 138+90 | - | 139+74 | RT | 84 |
| TOTAL 0010 | | | | <u>339</u> |

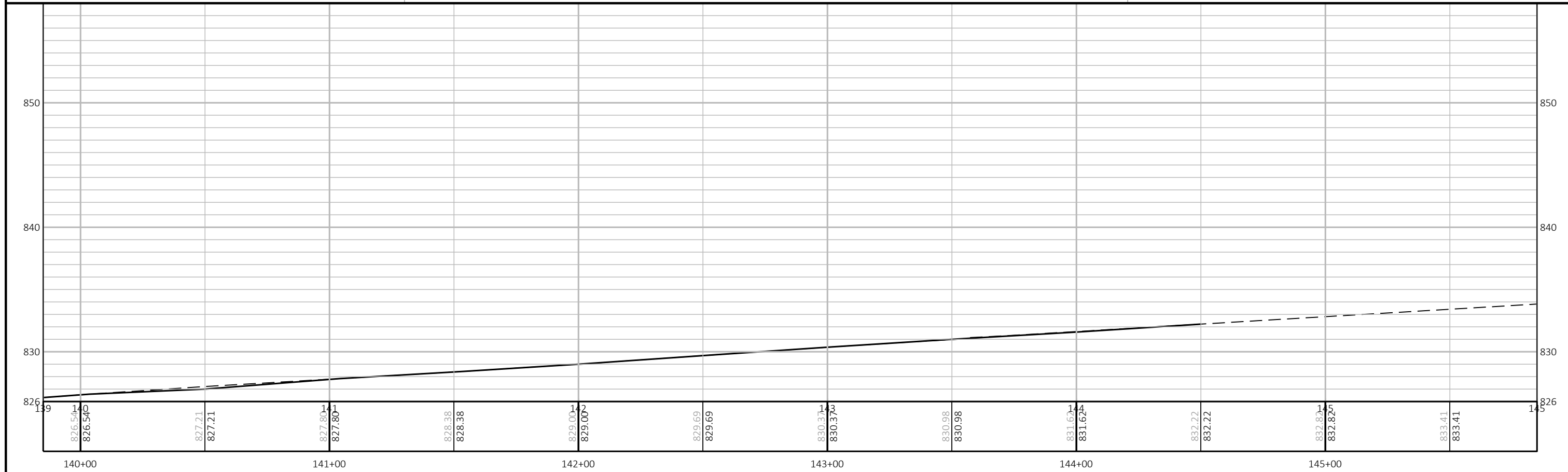
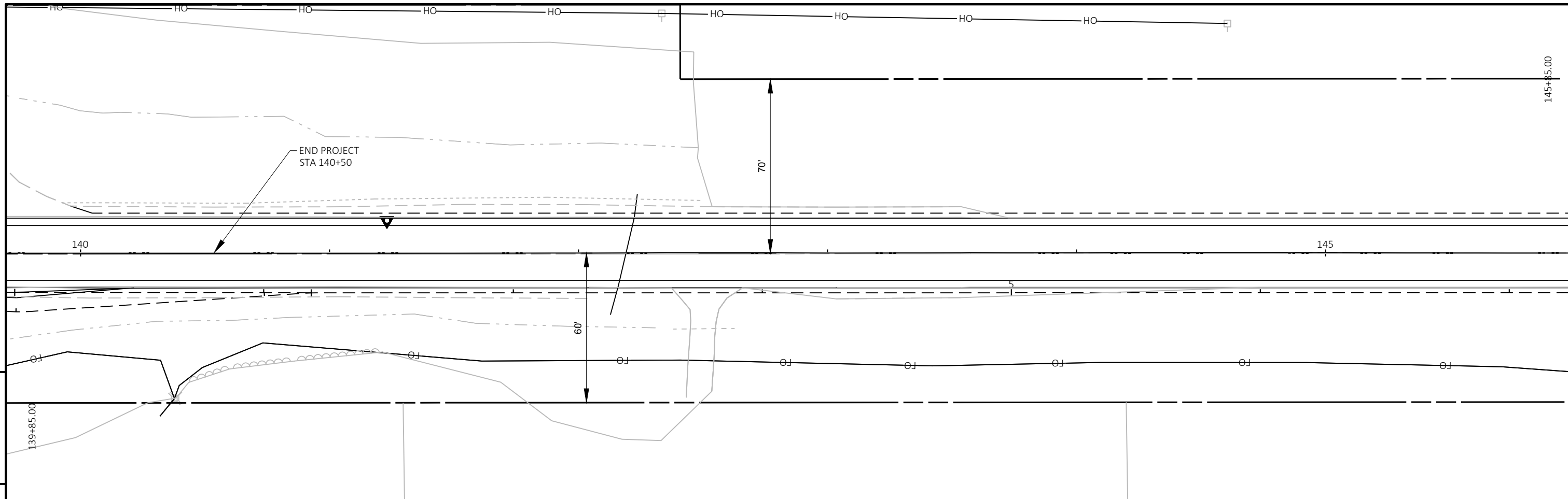
| CONTROL POINTS | | | |
|----------------|-----------|-------------|-------------|
| NO. | STATION | X | Y |
| 1 | 135+22.93 | 499897.9870 | 268847.5950 |
| 2 | 135+81.14 | 499839.9330 | 268876.6820 |
| 3 | 137+00.40 | 499720.7169 | 268813.7453 |
| 4 | 136+95.15 | 499725.9352 | 268853.3157 |
| 5 | 138+33.09 | 499587.9690 | 268891.6440 |
| 6 | 139+30.40 | 499490.7059 | 268818.5207 |

- LEGEND
- CONCRETE APPROACH SLAB
 - SAWING ASPHALT
 - HEAVY RIP RAP
 - CONTROL POINT
 - REMOVE PAVEMENT/NEW PAVEMENT

| BENCH MARKS | | | | | |
|-------------|---------------------------|-----------|-----------|-------------|-------------|
| NO. | DESCRIPTION | ELEVATION | STATION | X | Y |
| 1 | RR SPIKE IN POWER POLE | 824.46' | 138+79.97 | 499541.5316 | 268737.7929 |
| 2 | RR SPIKE IN 14" PINE TREE | 825.06' | 137+20.72 | 137+20.72 | 137+20.72 |



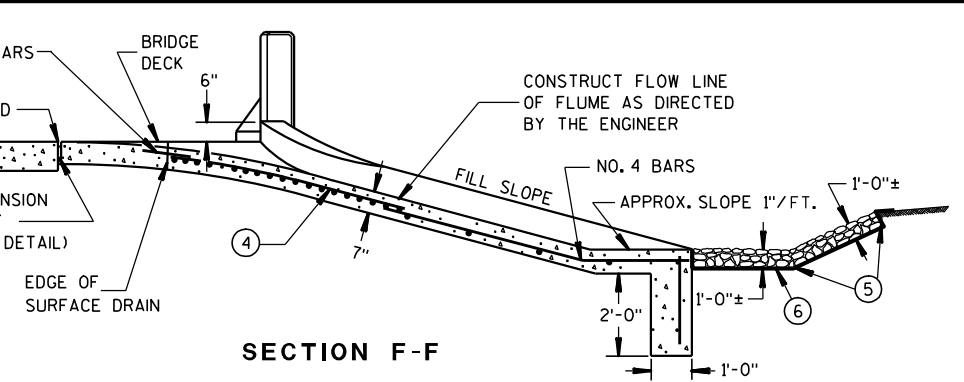
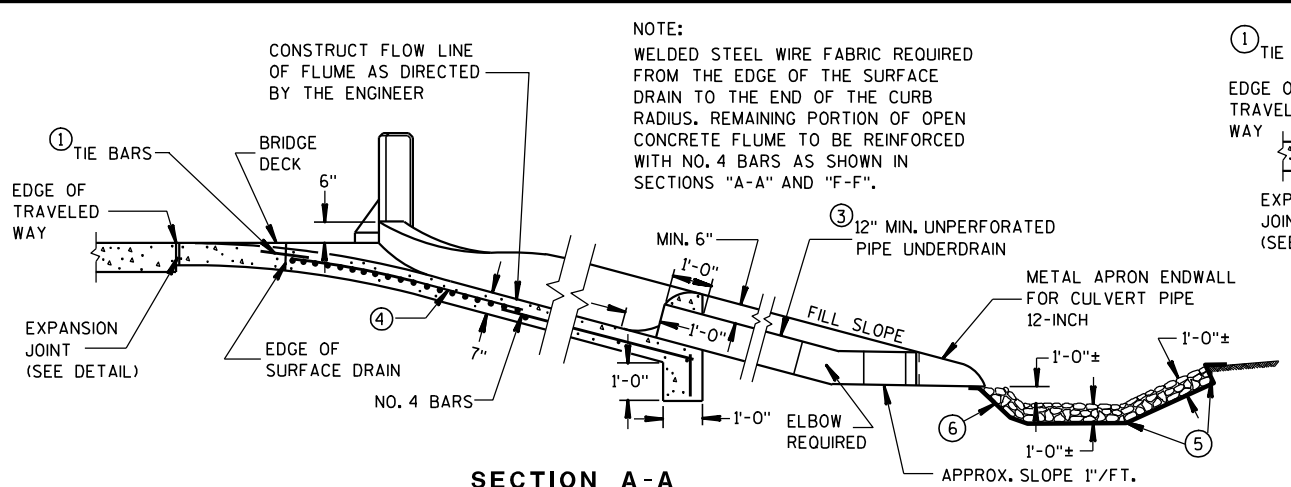
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|------------------------|----------|-----------------|------------------------------------|-------|---|
| PROJECT NO: 8727-04-74 | HWY: 112 | COUNTY: ASHLAND | PLAN AND PROFILE: PLAN AND PROFILE | SHEET | E |
|------------------------|----------|-----------------|------------------------------------|-------|---|



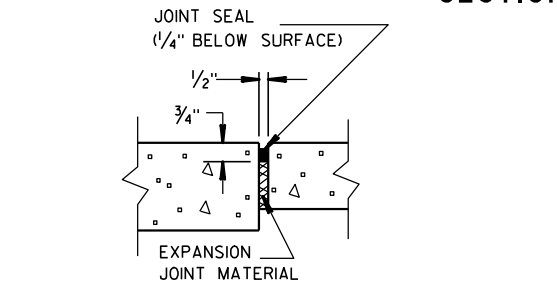
PROJECT NO: 8727-04-74 HWY: 112 COUNTY: ASHLAND PLAN AND PROFILE: PLAN AND PROFILE SHEET: E

Standard Detail Drawing List

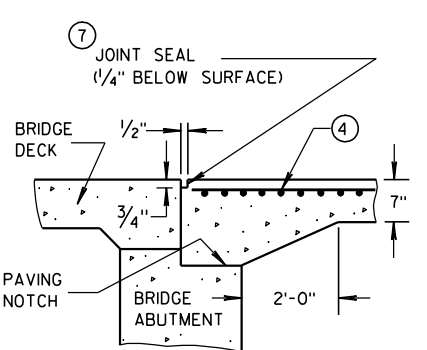
| | |
|-----------|---|
| 08D02-06 | CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES |
| 08E09-06 | SILT FENCE |
| 08E11-02 | TURBIDITY BARRIER |
| 12A04-03 | STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES & OVERHEAD SIGN SUPPORTS & TRAFFIC SIGNALS |
| 13B02-09A | CONCRETE PAVEMENT APPROACH SLAB |
| 14B42-06A | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-06B | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-06C | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-06D | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B44-04A | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B44-04B | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B44-04C | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B45-05A | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05B | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05C | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05D | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05E | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05F | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05G | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05H | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05I | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05J | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05K | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B45-05L | MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS) |
| 14B53-01A | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01B | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01C | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01D | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01E | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01F | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01G | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01H | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01I | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 15C02-07A | BARRICADES AND SIGNS FOR MAINLINE CLOSURES |
| 15C02-07B | BARRICADES AND SIGNS FOR VARIOUS CLOSURES |
| 15C02-07C | DETOUR SIGNING FOR MAINLINE CLOSURES |
| 15C08-19A | LONGITUDINAL MARKING (MAINLINE) |
| 15C11-07B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS |
| 15D38-02A | TEMPORARY TRAFFIC CONTROL SIGN MOUNTING |
| 15D38-02B | ATTACHMENT OF SIGNS TO POSTS |



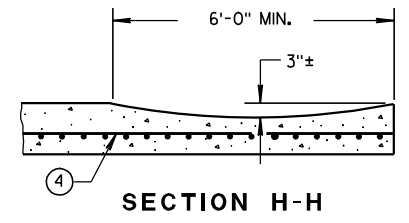
- GENERAL NOTES**
- DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.
- ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
- NO. 4 X 2'-0" TIE BARS SPACED AT 3'-0" CENTERS TO BE USED ONLY WHEN ADJACENT TO P.C. CONCRETE.
 - NO. 4 X 2'-0" TIE BARS SPACED AT 12" CENTERS TO BE PLACED BY BRIDGE CONTRACTOR, OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
 - PIPE UNDERDRAIN MAY BE ANY OF THE MATERIALS LISTED IN SECTION 612.2 OF THE STANDARD SPECIFICATIONS EXCEPT DRAIN TILE.
 - MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
 - LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
 - GEOTEXTILE FABRIC, TYPE 'R'
 - HOT POURED SEALANT UNLESS OTHERWISE SPECIFIED.
 - THIS DIMENSION MAY VARY DEPENDING ON THE SPACING OF POSTS FOR THE STEEL PLATE BEAM GUARD. THE TYPICAL LOCATION FOR THE SURFACE DRAIN IS WHERE THE POST SPACING WIDENS TO 3'-1/2".



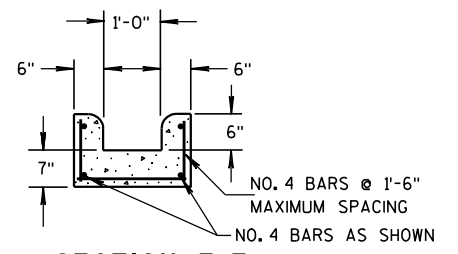
EXPANSION JOINT DETAIL



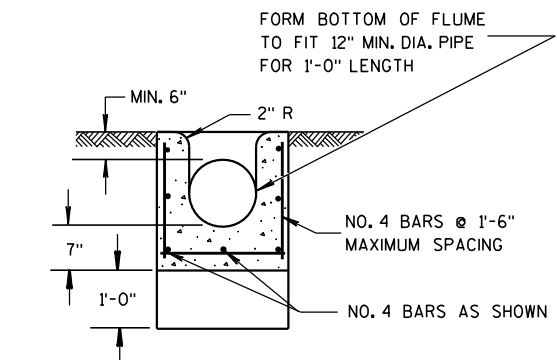
SECTION D-D



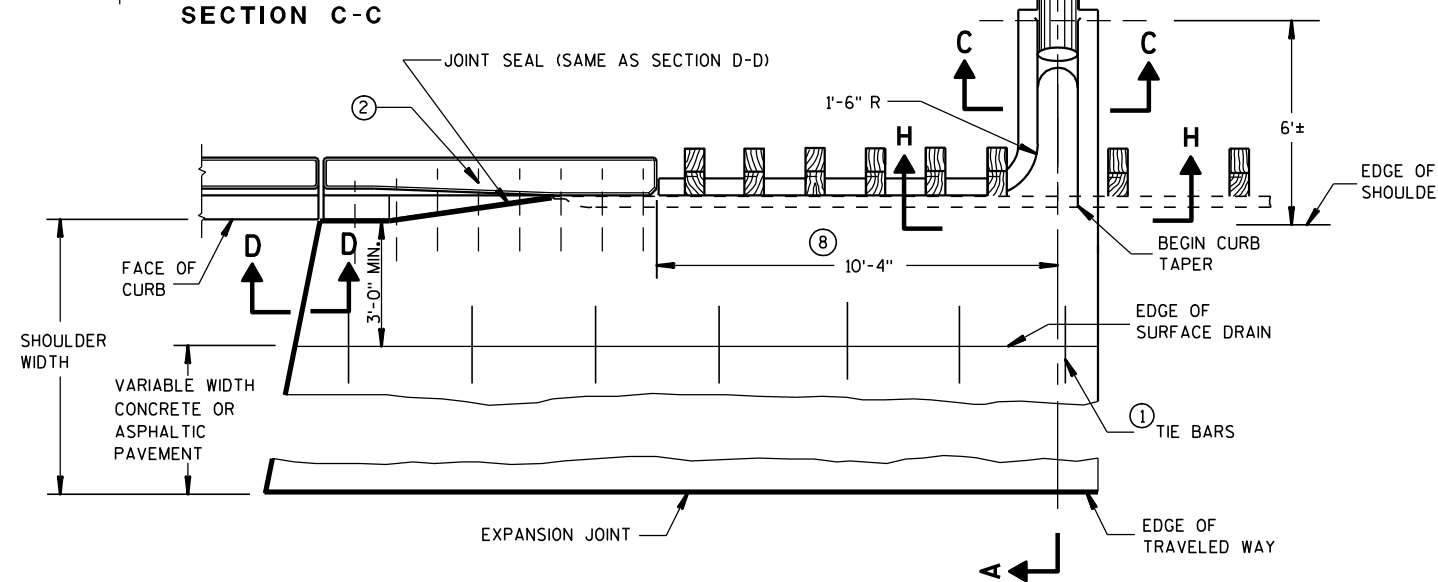
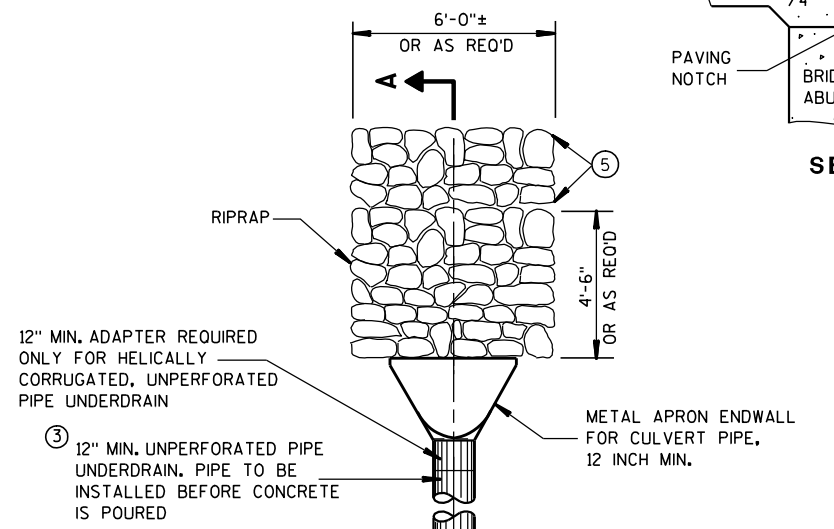
SECTION H-H



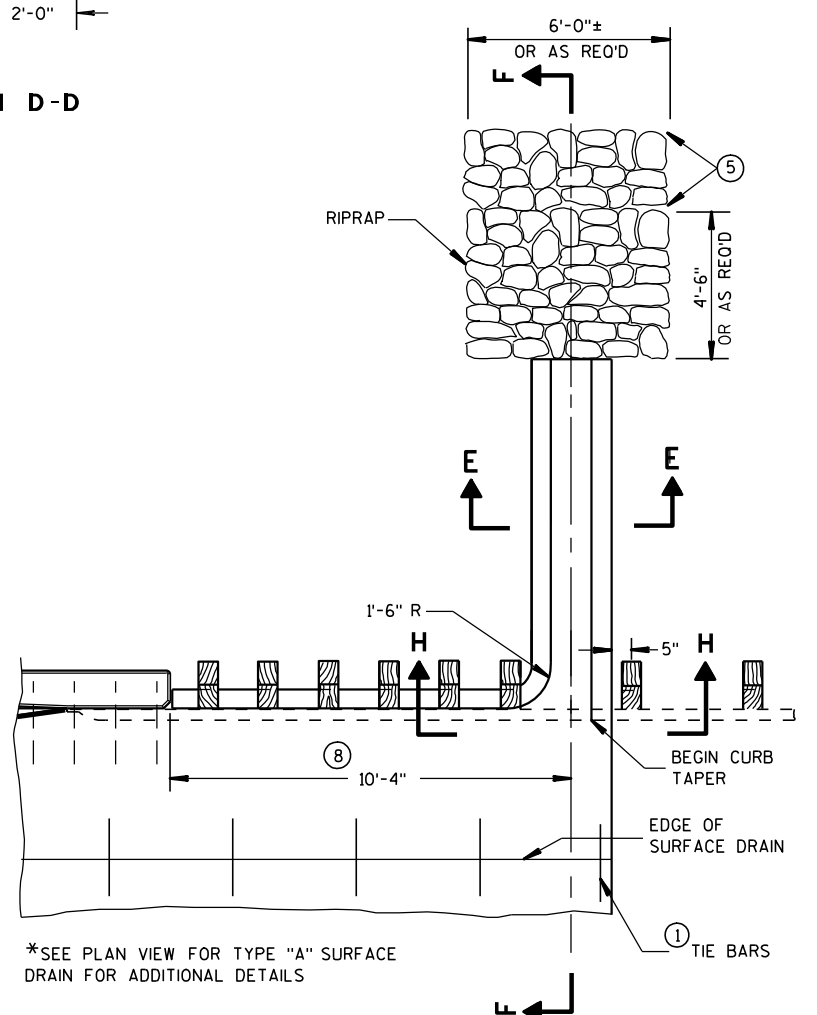
SECTION E-E



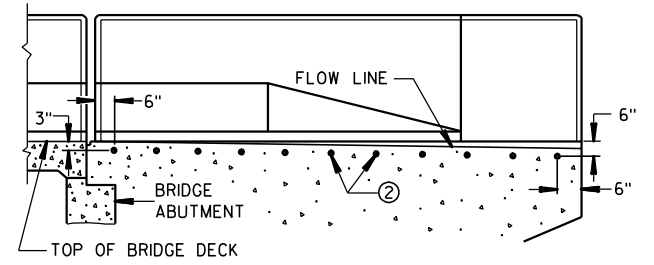
SECTION C-C



PLAN VIEW SURFACE DRAIN WITH PIPE TYPE "A"



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



LOCATION OF TIE BARS IN WINGWALL

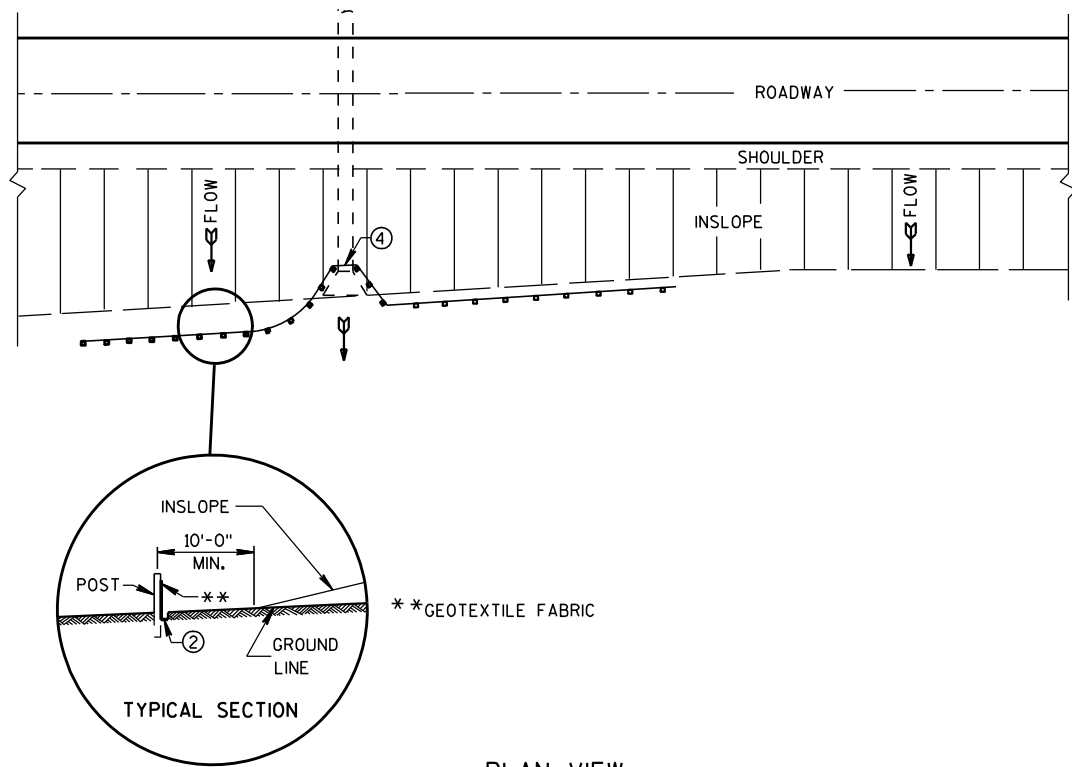
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|---|--|
| CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED 9/4/08 DATE | /s/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER |
| FHWA | |

6

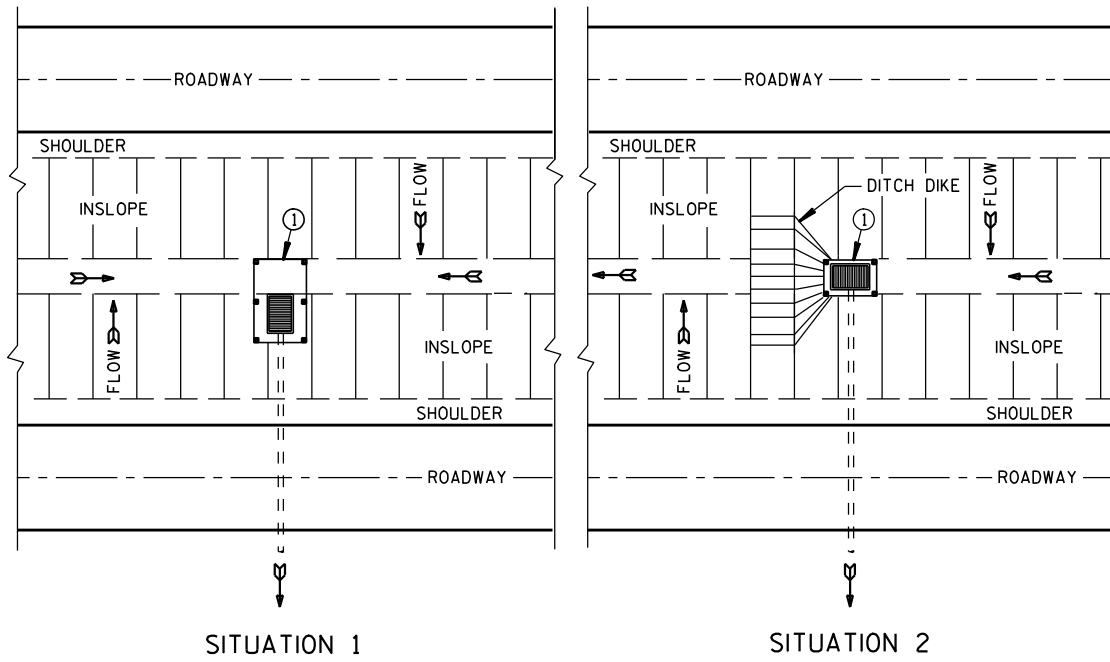
6

S.D.D. 8 D 2-6

S.D.D. 8 D 2-6



PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

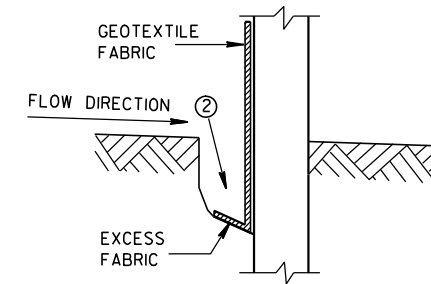


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

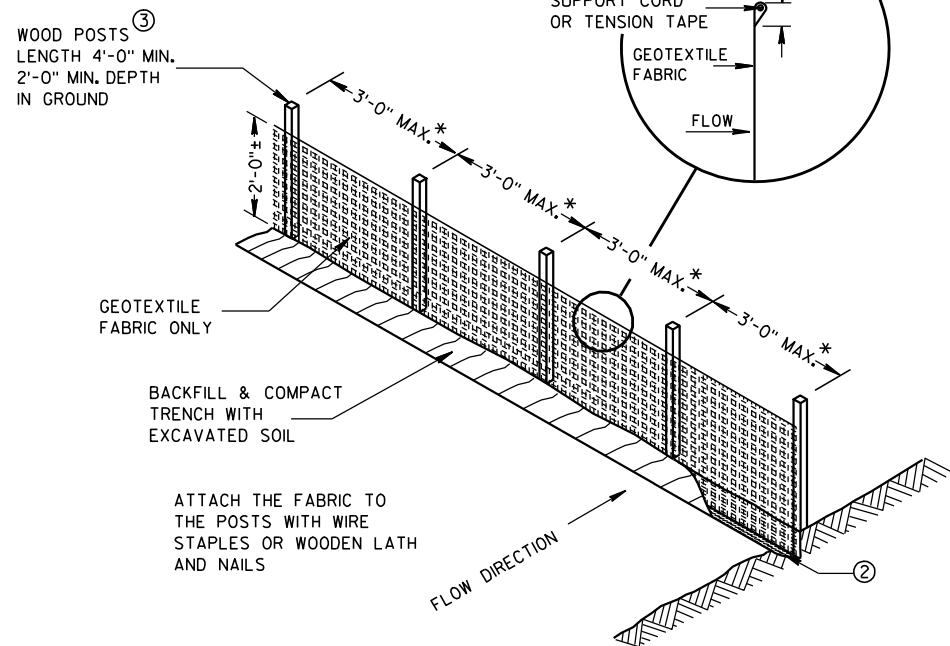
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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



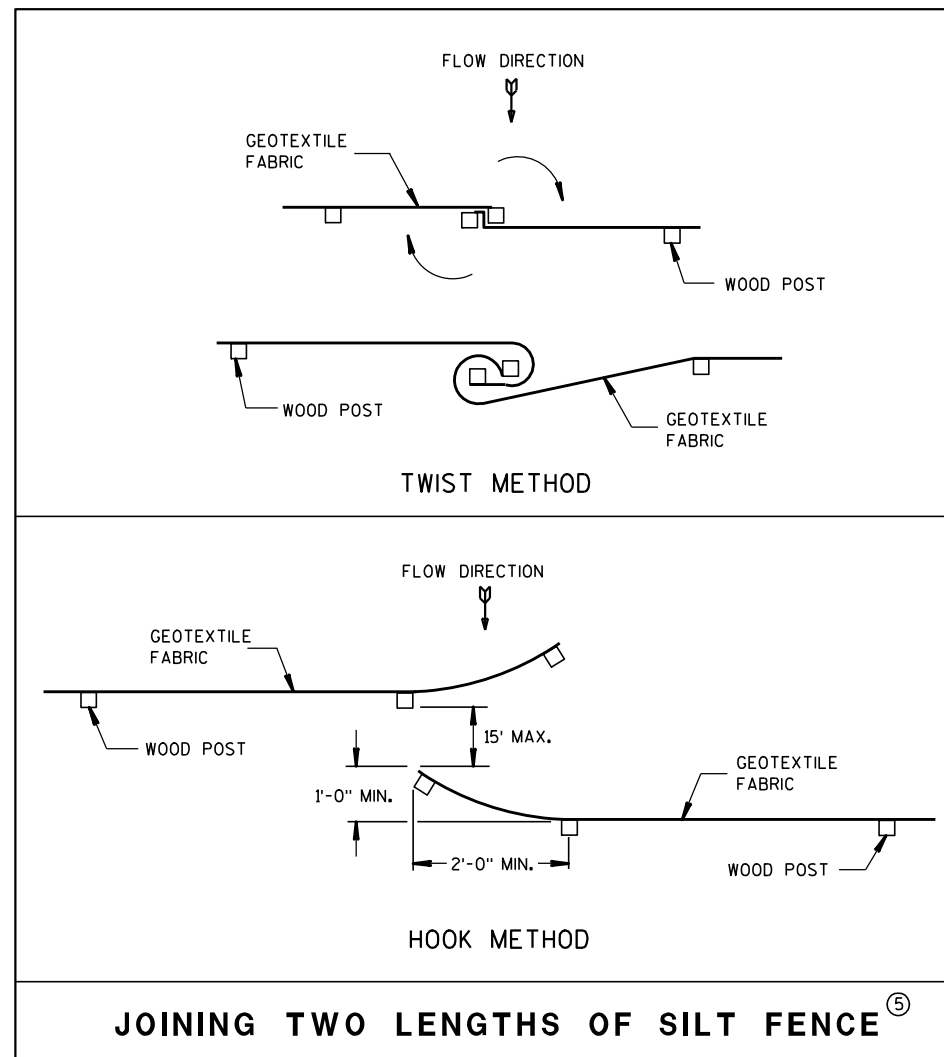
TRENCH DETAIL

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

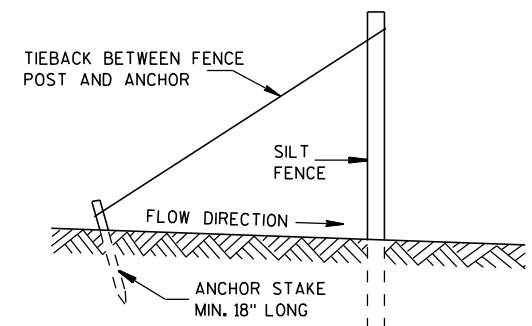


SILT FENCE

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



JOINING TWO LENGTHS OF SILT FENCE ⑤

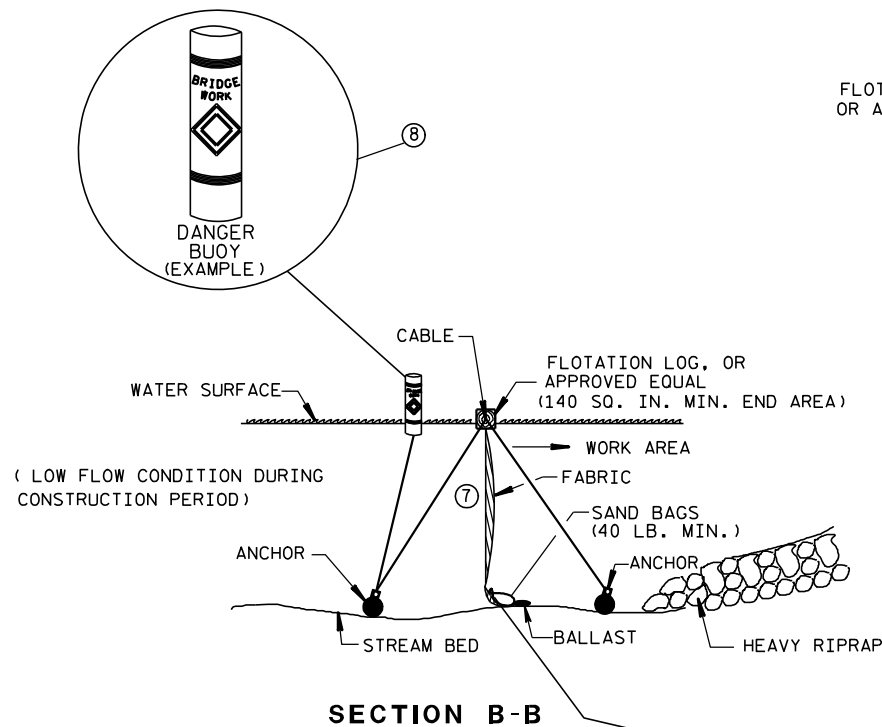


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

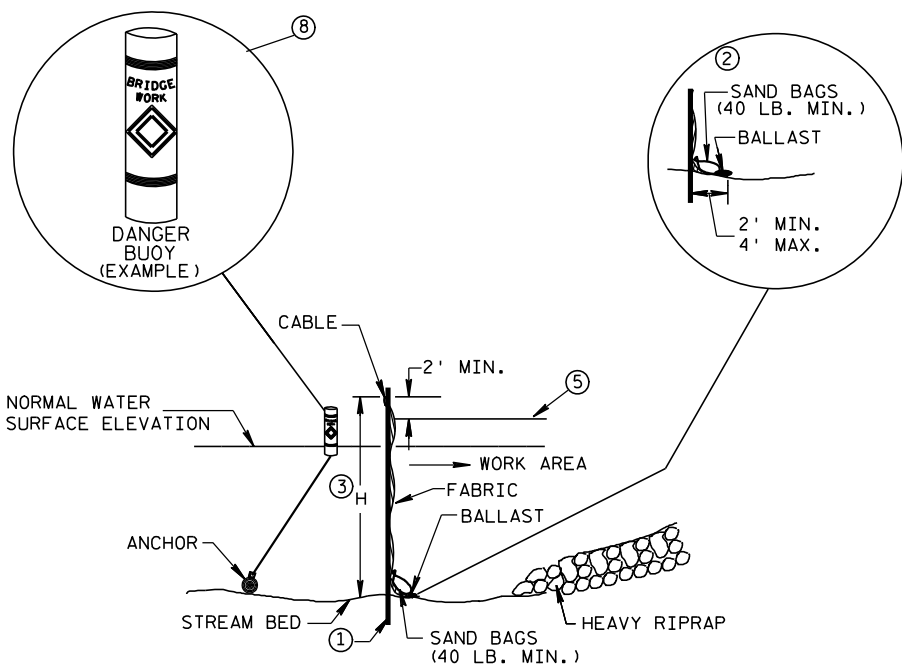
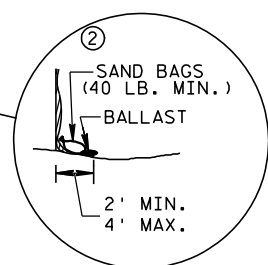
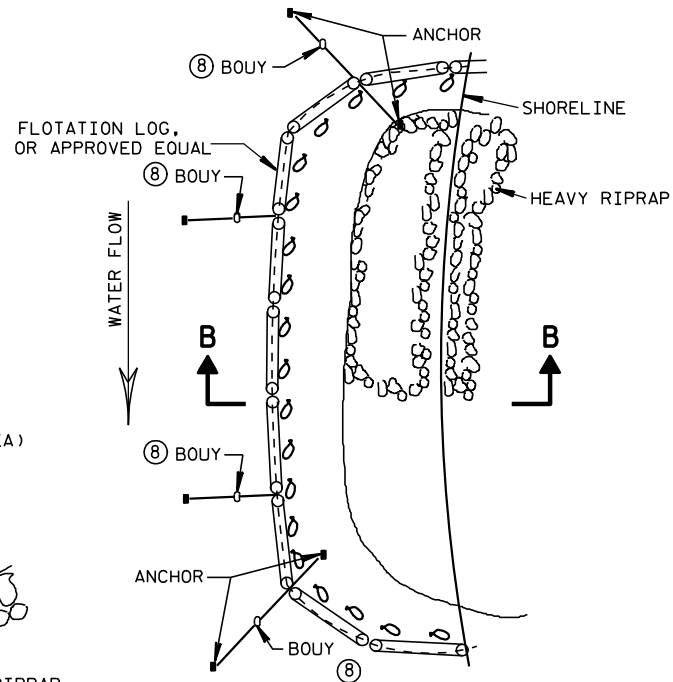
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



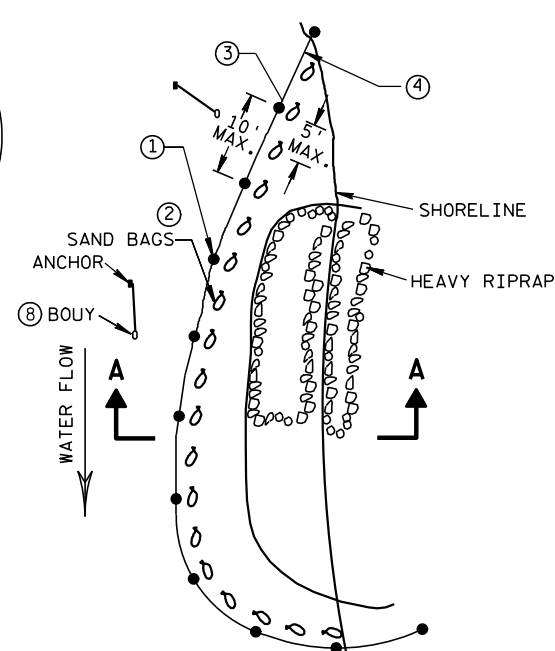
SECTION B-B

TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A

TURBIDITY BARRIER STANDARD POST INSTALLATION



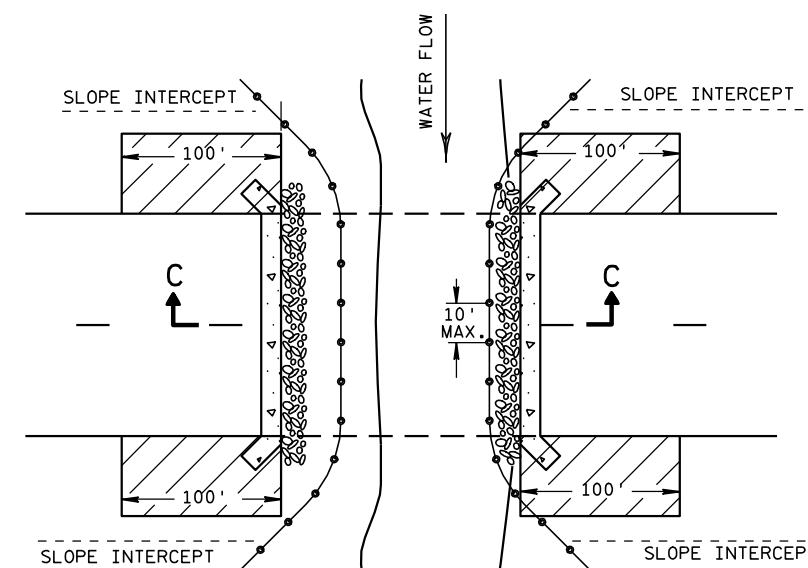
PLAN VIEW

GENERAL NOTES

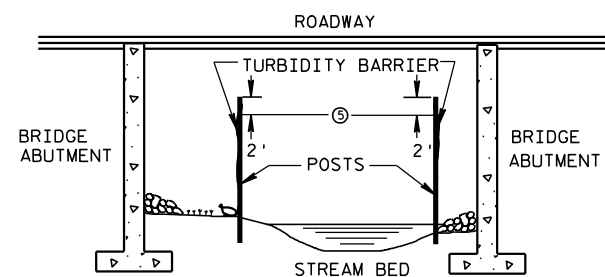
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

- ① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- ② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
- ③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.
- ④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
- ⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE O2 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER IS GREATER.
- ⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.
- ⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- ⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



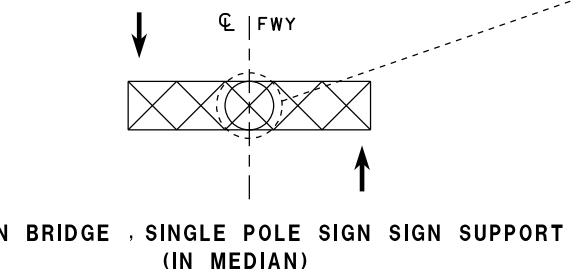
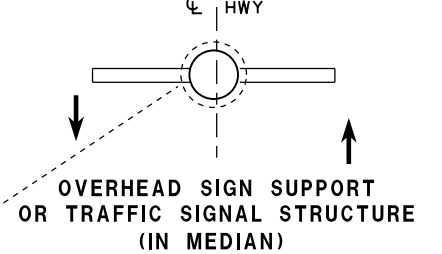
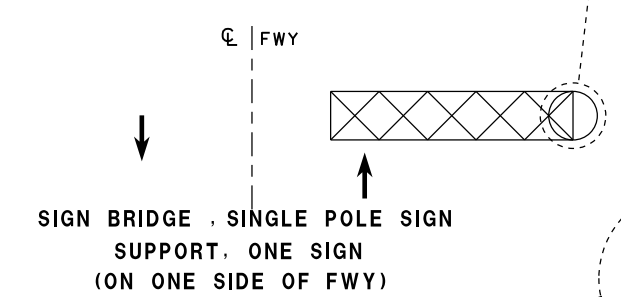
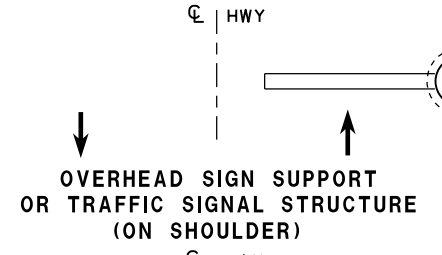
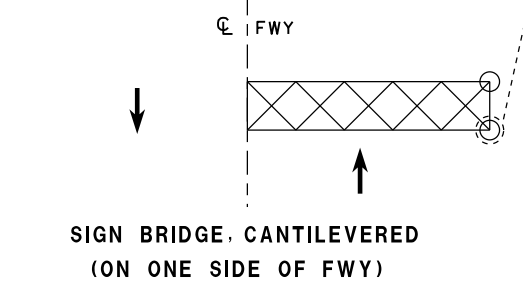
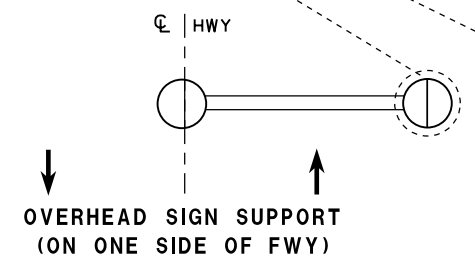
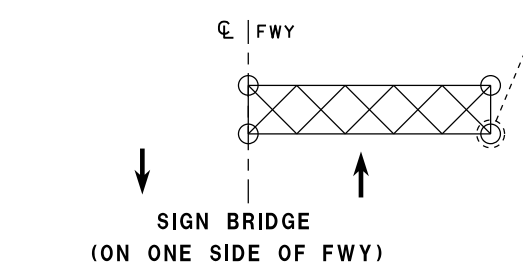
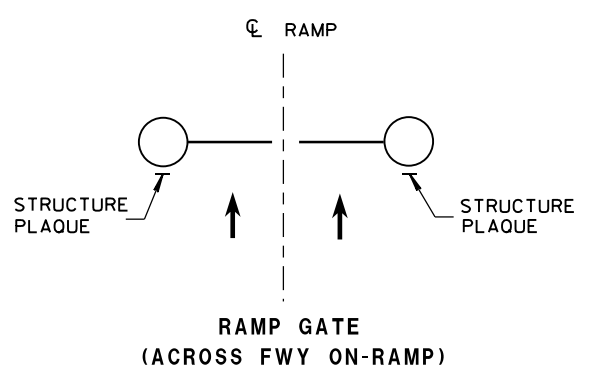
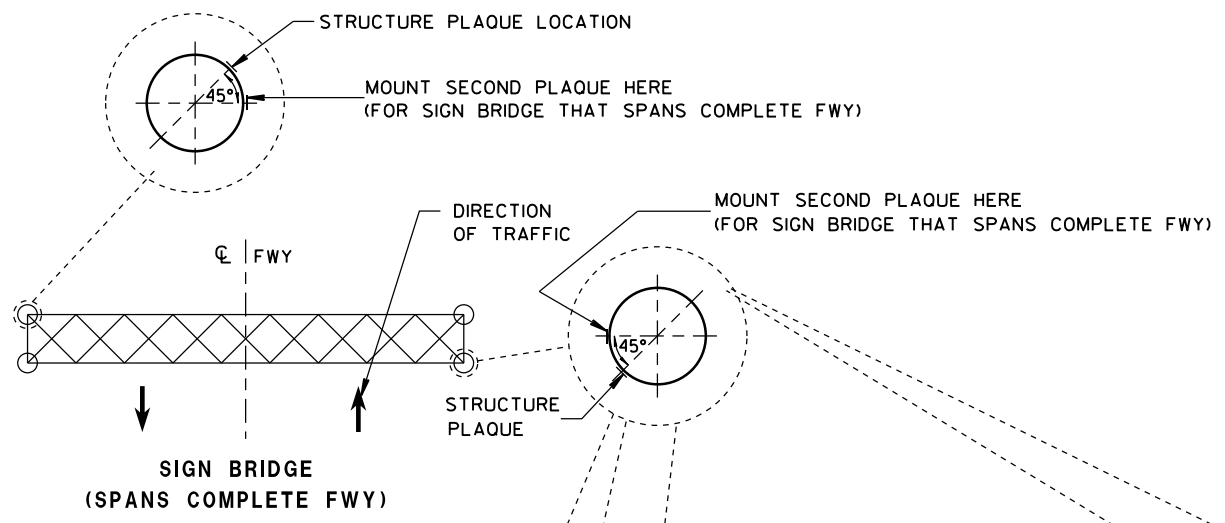
SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING
TYPICAL PLACEMENT AT STRUCTURES

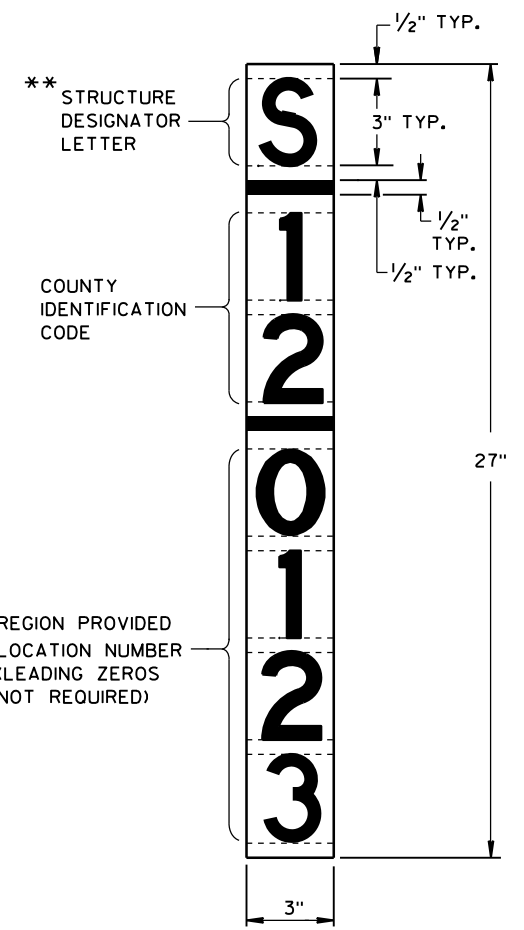
TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



* WHEN SIGNS OR GATES FACE TRAFFIC IN ONE DIRECTION, THE PLAQUE SHALL FACE TRAFFIC IN THE SAME DIRECTION. WHEN SIGNS OR GATES ARE FACING TRAFFIC IN BOTH DIRECTIONS, THE PLAQUE SHALL FACE TRAFFIC IN THE CARDINAL DIRECTION.



GENERAL NOTES

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

PLAQUES SHALL BE INCIDENTAL TO ALL NEW INSTALLATIONS.

IF THE PROPOSED SIGN BRIDGE OR OVERHEAD SIGN SUPPORT IS REPLACING AN EXISTING SIGN BRIDGE OR OVERHEAD SIGN SUPPORT, A NEW IDENTIFICATION PLAQUE WILL BE REQUIRED.

FASTEN TOP, CENTER AND BOTTOM OF PLAQUE TO POLE OR OTHER LOCATION AS FOLLOWS:

- GALVANIZED STEEL SHAFT - 3 STAINLESS STEEL POP RIVETS
- A588 STEEL SHAFT - SHIM FOR DRAINAGE WITH STAINLESS WASHERS; FASTEN WITH STAINLESS SELF-TAPPING SCREWS
- ALUMINUM SHAFTS - 3 ALUMINUM POP RIVETS

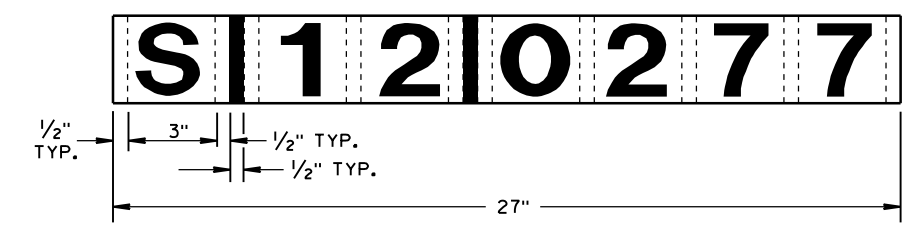
MOUNTING HEIGHT SHALL BE APPROXIMATELY 5.0' ABOVE CURB OR SHOULDER. ADJUST IF IT IS KNOWN THAT REQUIRED TRAFFIC SIGNS WILL OBSTRUCT.

PLAQUE MATERIALS:

- BASE - SHEET ALUMINUM, 0.060" THICK.
- FACE - WHITE, SELF-ADHESIVE VINYL SHEETING, NON-RETROREFLECTIVE
- LINES - BLACK, 1/2" WIDE, SELF-ADHESIVE
- CHARACTERS:- BLACK, SELF ADHESIVE, SERIES "D", SIZE AS SHOWN.

FOR SIGN BRIDGES, STRUCTURE MOUNTED, THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY AS SHOWN ON THE DRAWING. THE STRUCTURE PLAQUE SHALL BE MOUNTED HORIZONTALLY TO THE BACK OF THE SIGN, BETWEEN THE ALUMINUM EXTRUSIONS, NEAR THE TOP LEFT HAND CORNER OF THE SIGN. THE BASE MATERIAL SHALL BE OMITTED AND THE FACE ADHERED DIRECTLY TO THE ALUMINUM SURFACE. PRIOR TO ADHERING THE MATERIAL, THE ALUMINUM SURFACE SHALL BE SMOOTH, CLEAN AND DRY.

WHERE SIGN BRIDGE ILLUMINATION IS PROVIDED, THE STRUCTURE MUST ALSO HAVE A SIGN BRIDGE CIRCUIT PLAQUE AS SHOWN IN THE ELECTRICAL DETAILS.



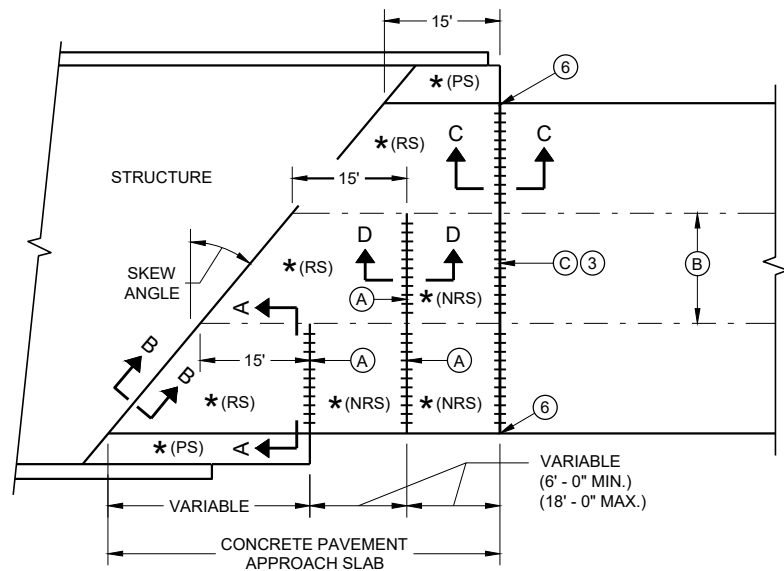
IDENTIFICATION PLAQUE FOR SIGN BRIDGE, STRUCTURE MOUNTED

** LETTER "G" UTILIZED FOR RAMP GATES. LETTER "S" UTILIZED FOR SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, AND TRAFFIC SIGNALS.

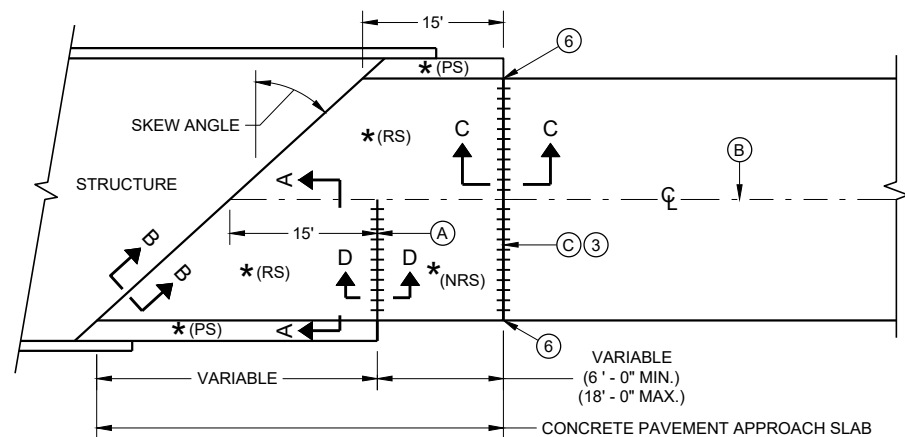
LOCATION OF RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT & TRAFFIC SIGNAL STRUCTURE PLAQUES

RAMP GATE, SIGN BRIDGE, OVERHEAD SIGN SUPPORT AND TRAFFIC SIGNAL STRUCTURE PLAQUE FOR SIGN BRIDGES AND OVERHEAD SIGN SUPPORT WHICH ARE NOT STRUCTURE MOUNTED

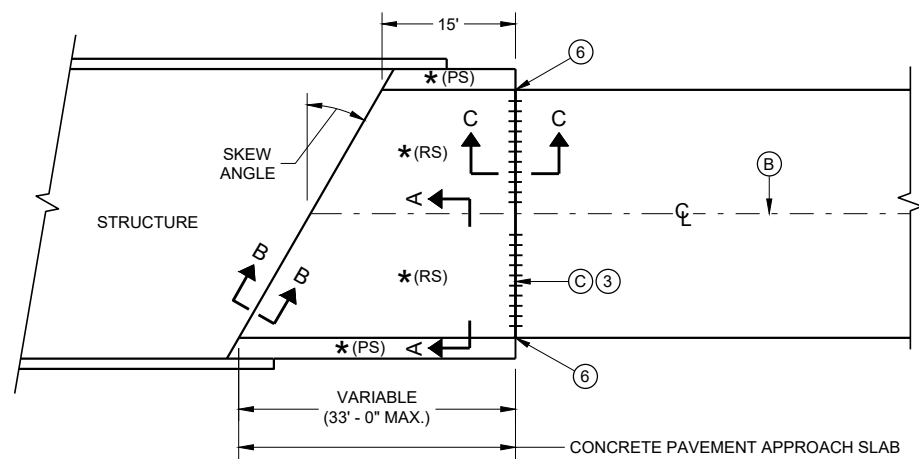
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|--|---|
| STRUCTURE IDENTIFICATION PLAQUES, RAMP GATES, SIGN BRIDGES, OVERHEAD SIGN SUPPORTS, & TRAFFIC SIGNALS | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED 12/4/2012 DATE | /s/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN |
| FHWA | |



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

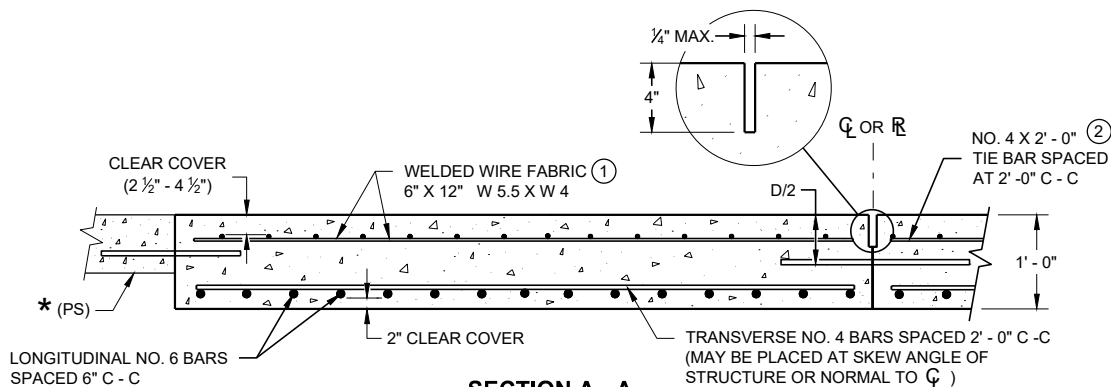


**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**

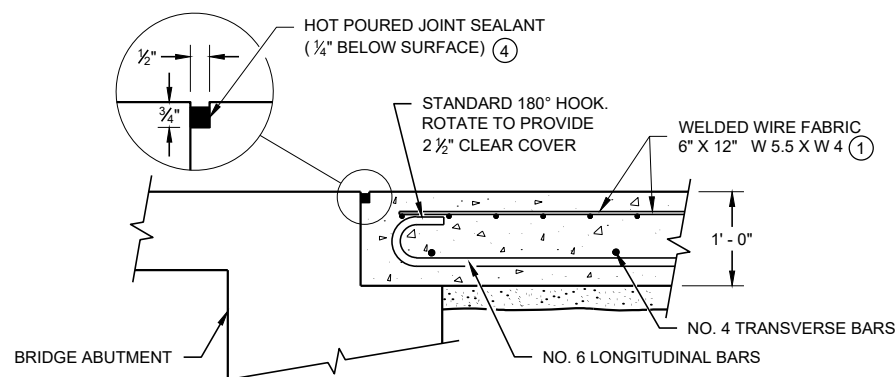


**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**
APPROACH SLAB AND ADJACENT PAVEMENT

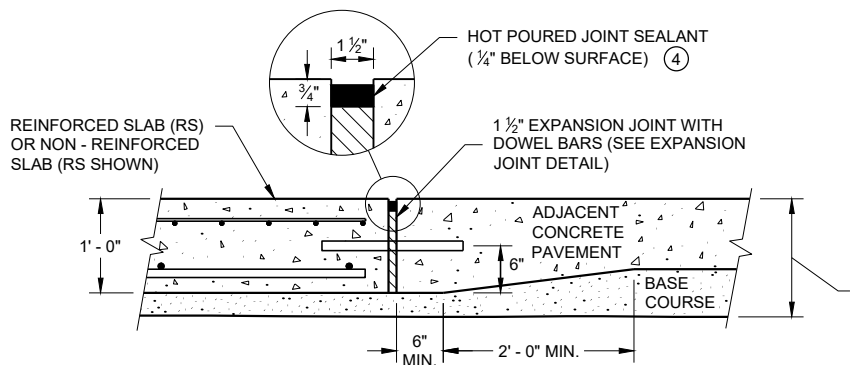
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) - NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



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



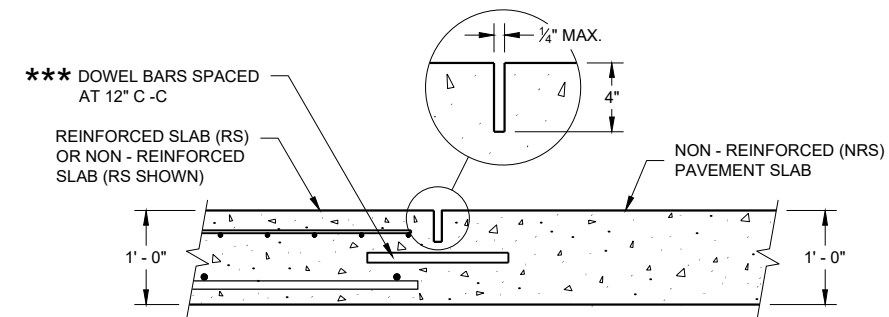
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

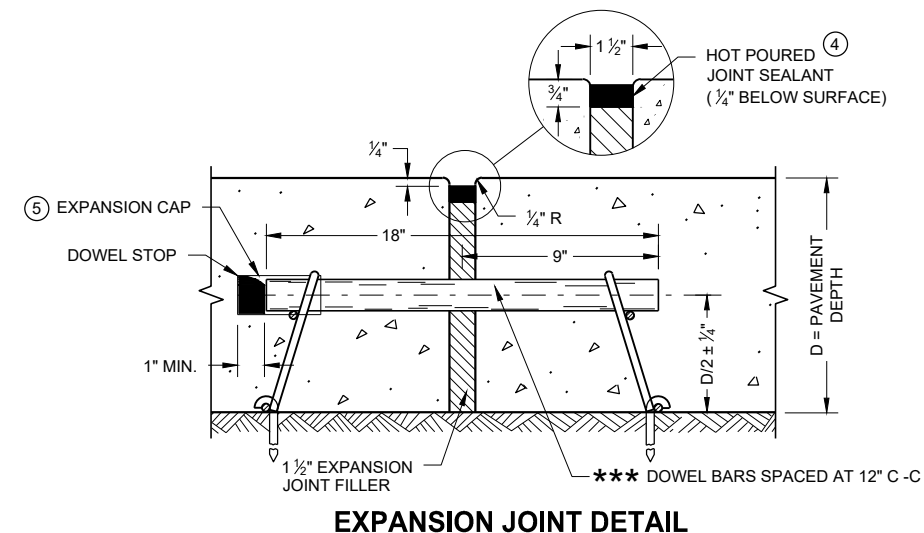
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

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



**SECTION D - D
CONTRACTION JOINT**



EXPANSION JOINT DETAIL

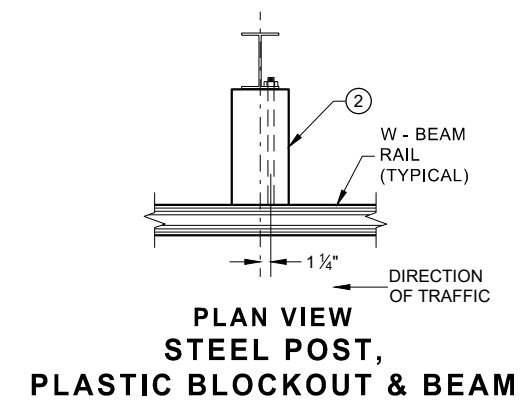
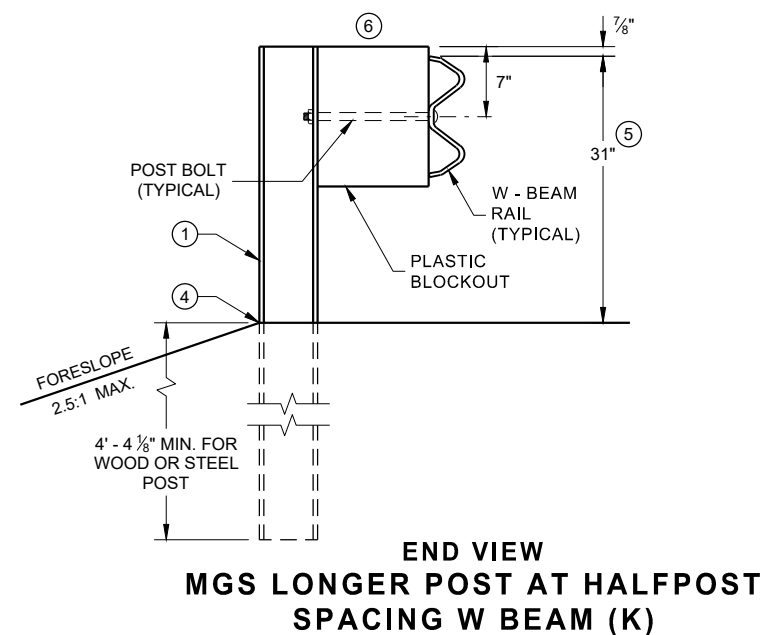
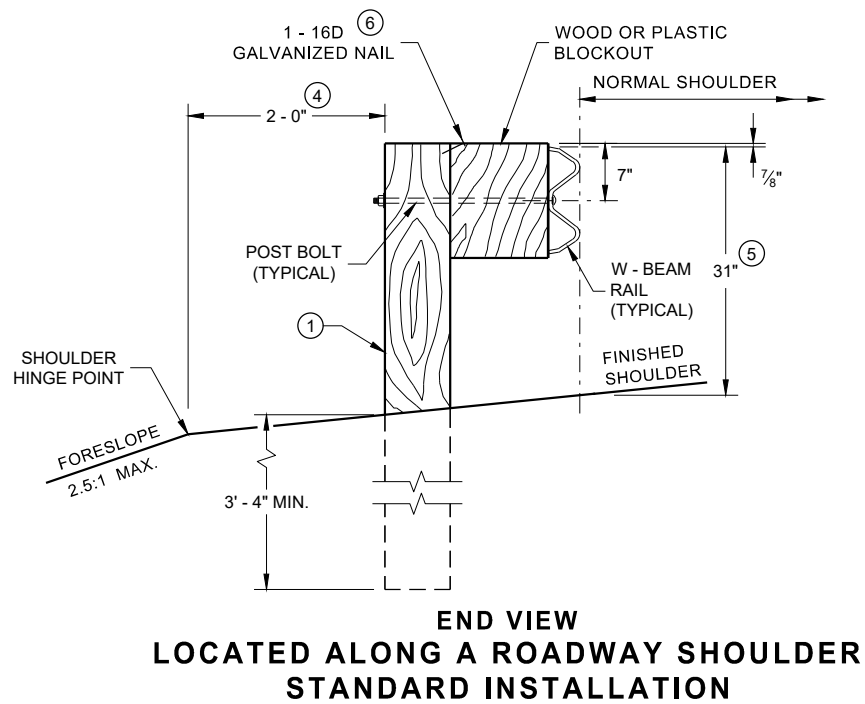
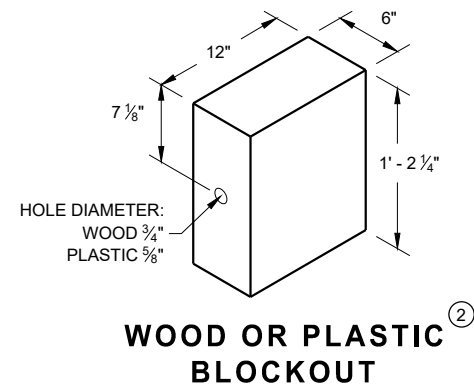
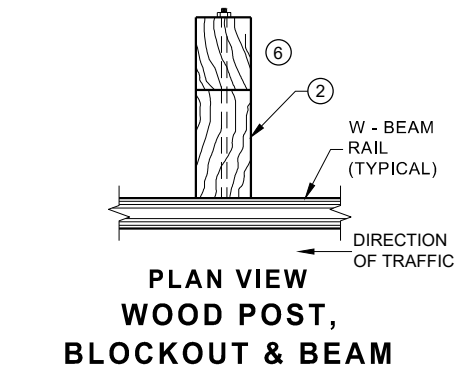
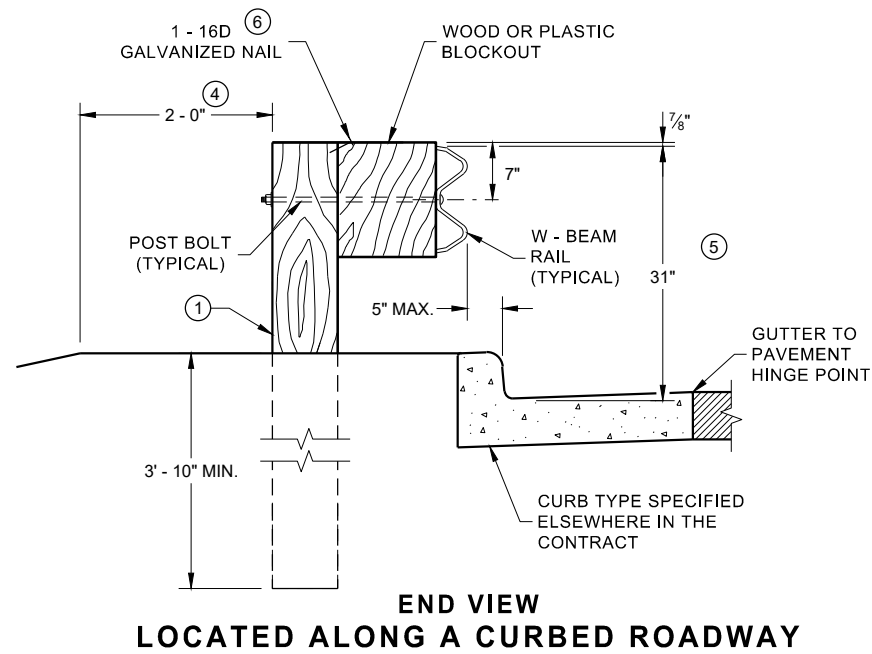
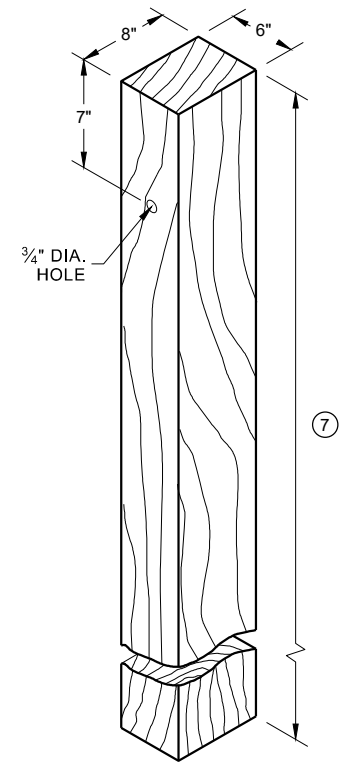
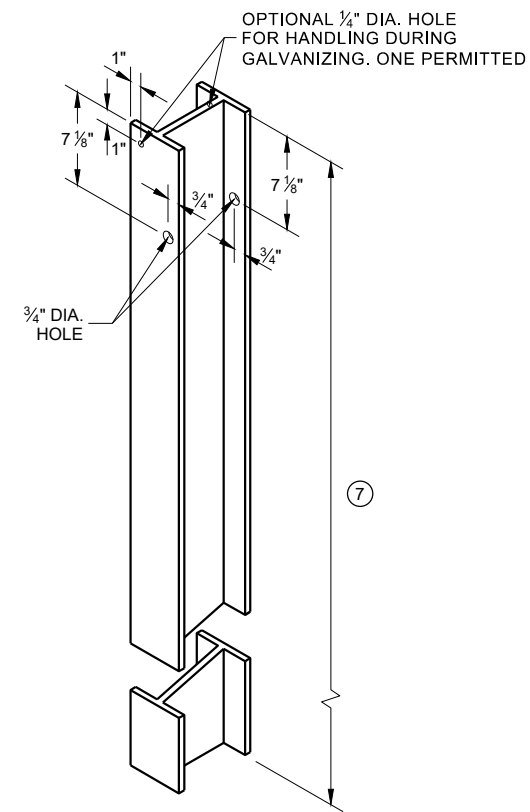
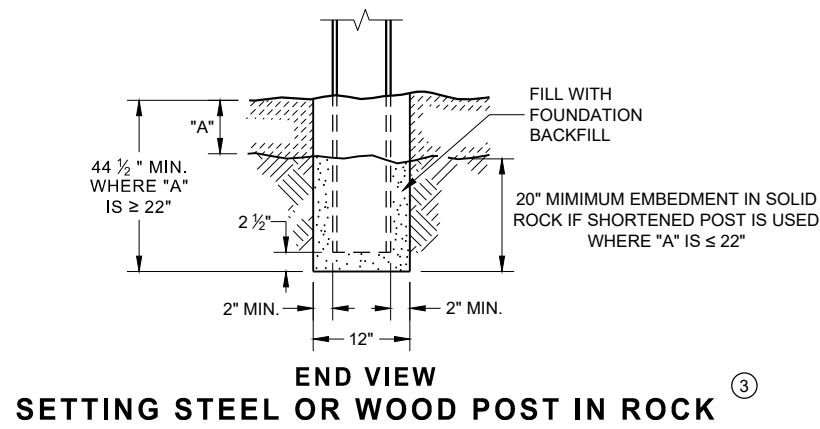
**CONCRETE PAVEMENT
APPROACH SLAB**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

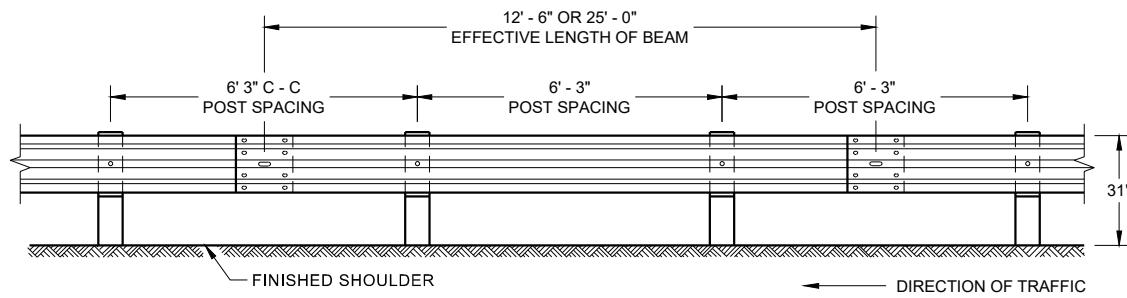
FHWA

- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0". TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

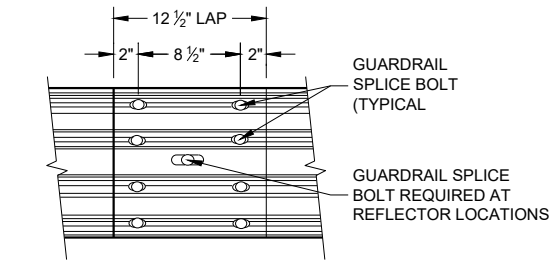


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



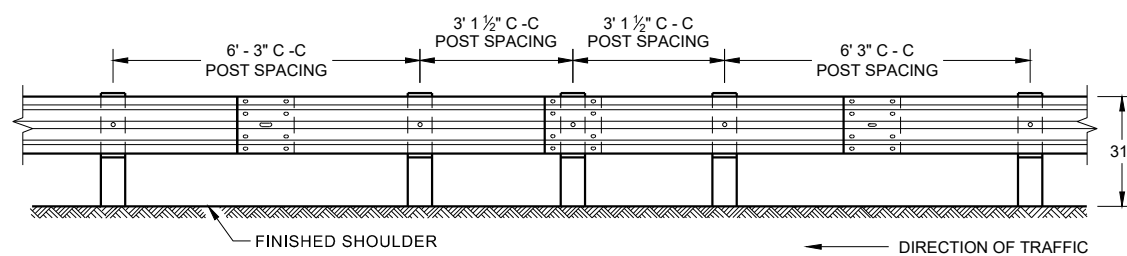
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



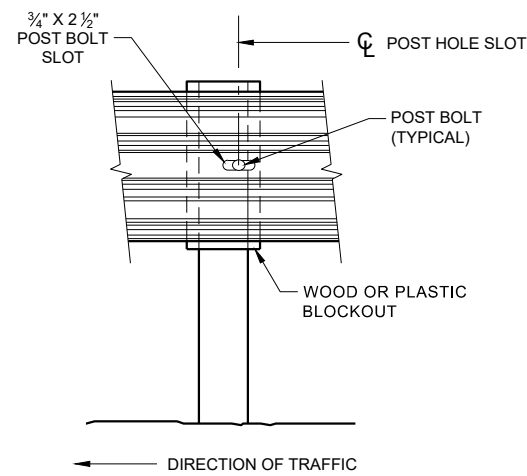
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

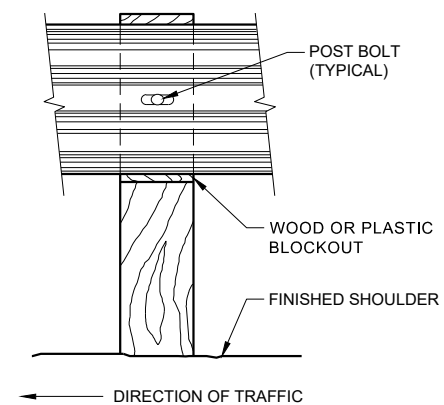
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



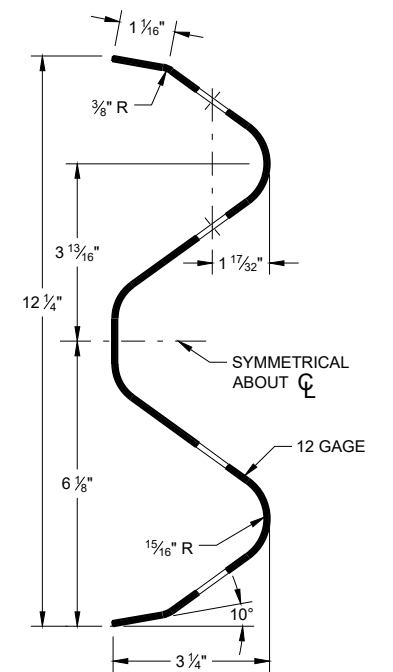
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



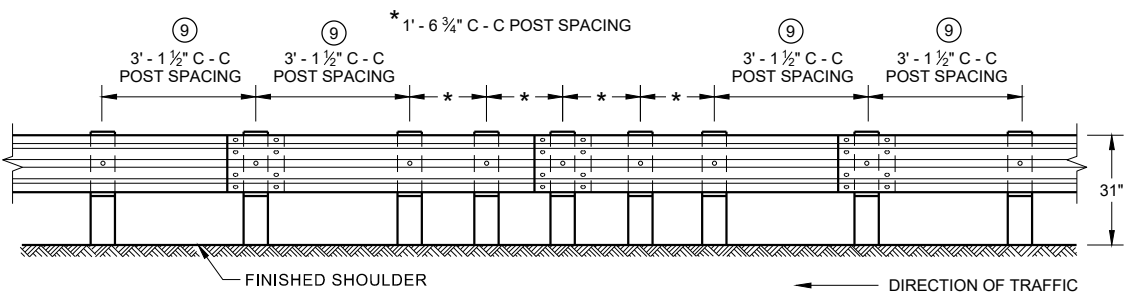
FRONT VIEW AT STEEL POST



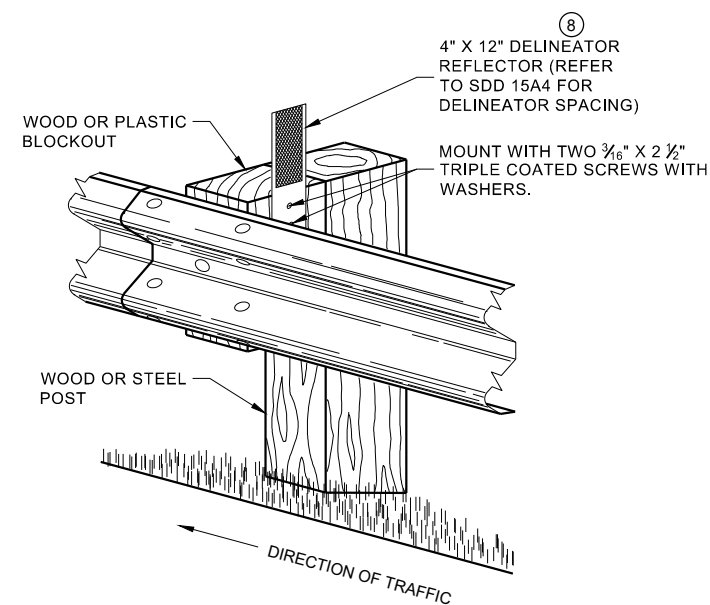
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



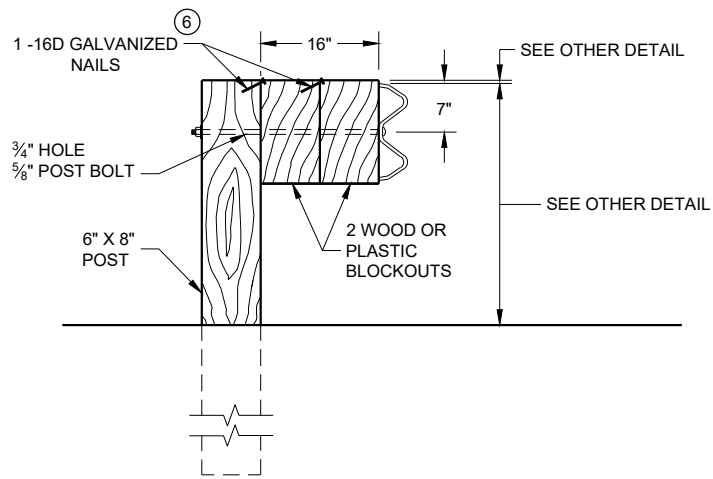
**FRONT VIEW
QUARTER POST SPACING (QS)**



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

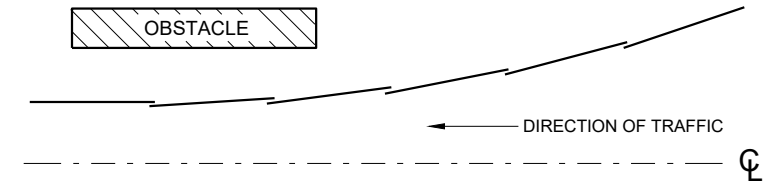
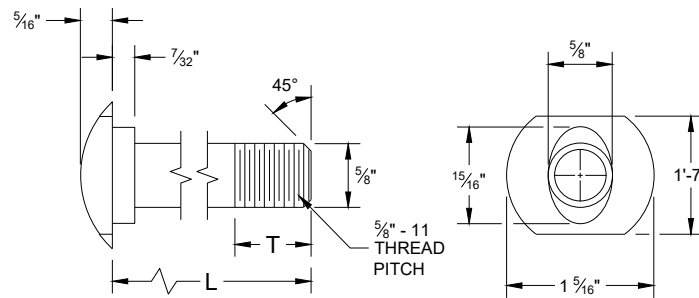


DETAIL FOR 16" BLOCKOUT DEPTH

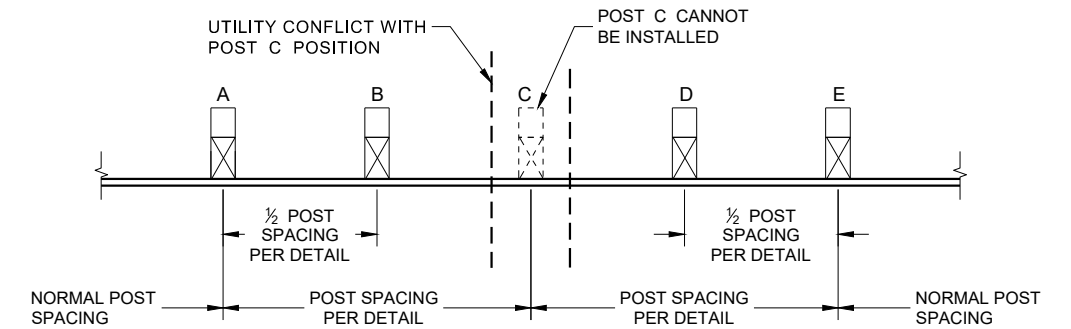
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

NOTE:

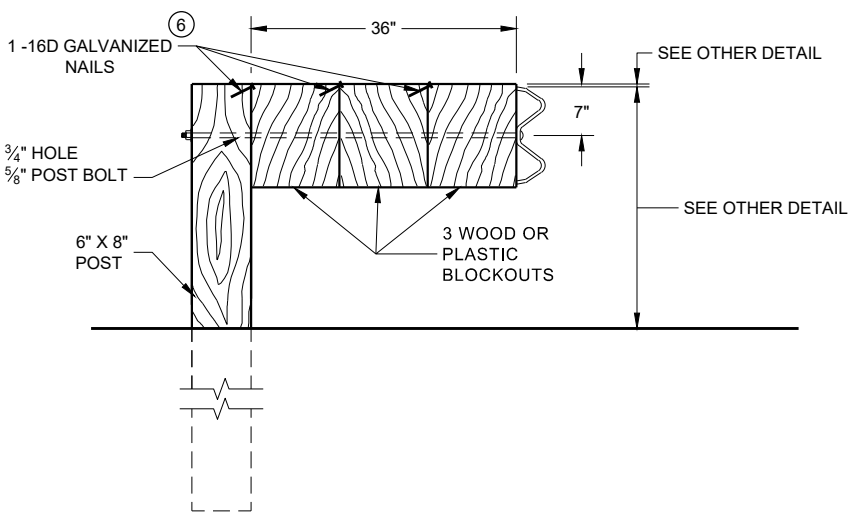
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.



**PLAN VIEW
BEAM LAPPING DETAIL**



**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

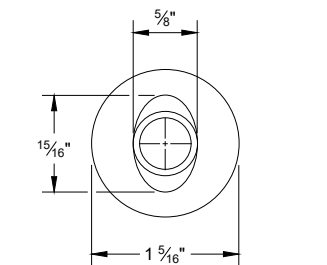


DETAIL FOR 36" BLOCKOUT DEPTH

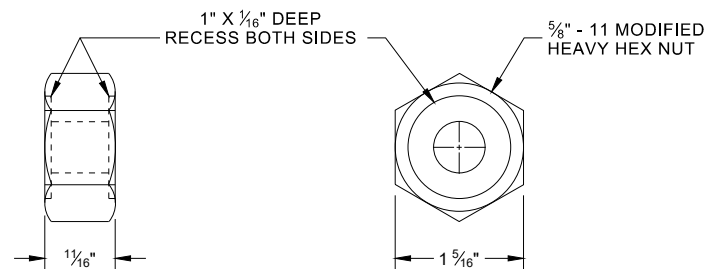
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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

POST BOLT TABLE

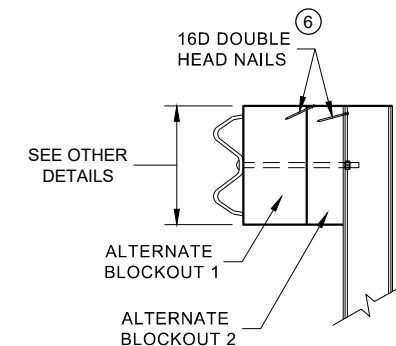
| L | T (MIN.) |
|--------|----------|
| 1 1/4" | 1 1/8" |
| 2" | 1 3/4" |
| 10" | 4" |
| 14" | 4 1/16" |
| 18" | 4" |
| 21" | 4 1/16" |
| 25" | 4" |



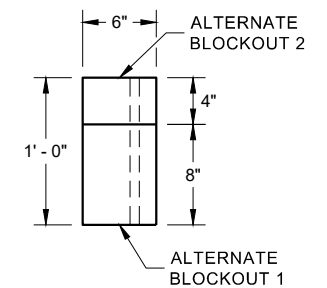
ALTERNATE BOLT HEAD



**POST BOLT, SPLICE BOLT
AND RECESS NUT**



SIDE VIEW



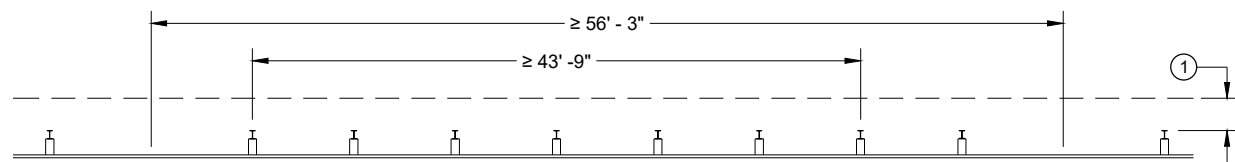
PLAN VIEW

**ALTERNATE WOOD
BLOCKOUT DETAIL**

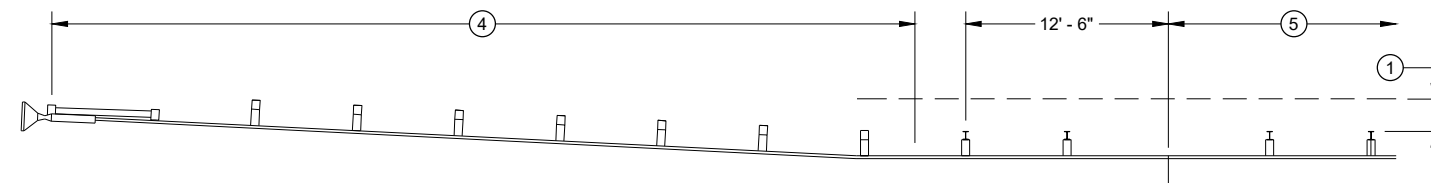
⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

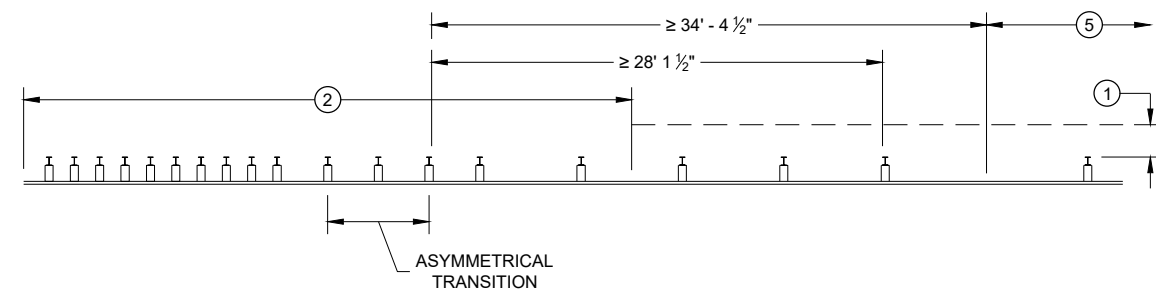
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



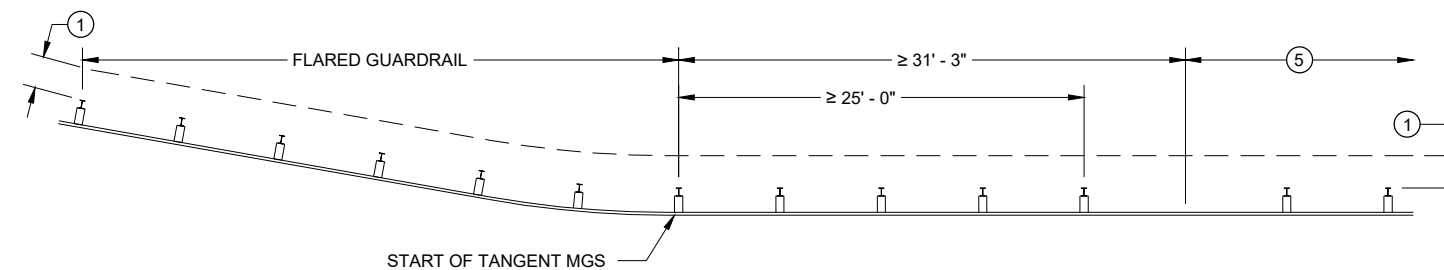
MISSING POST IN NORMAL BEAM GUARD RUN



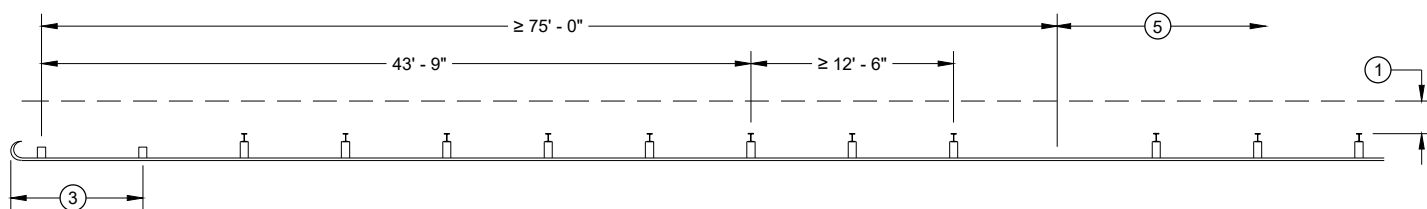
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



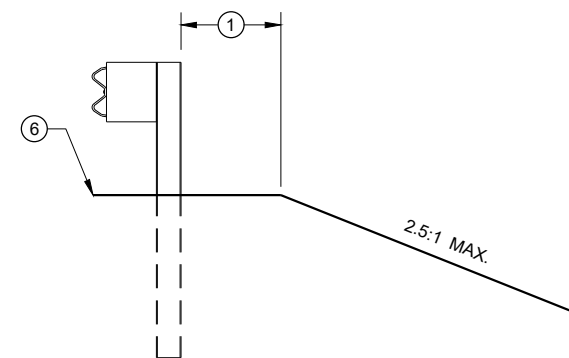
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



MISSING POST IN NORMAL BEAM GUARD RUN NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

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

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

GENERAL NOTES

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

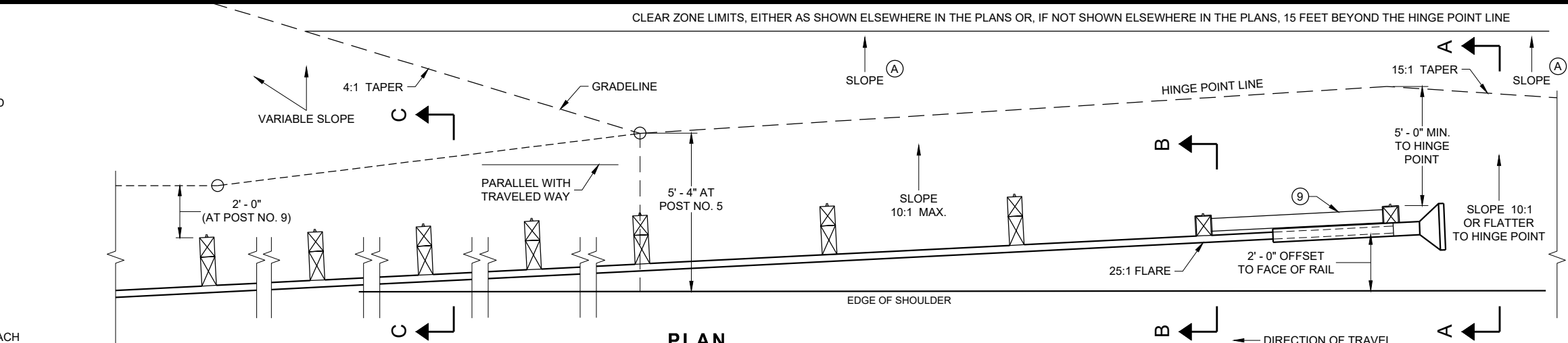
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

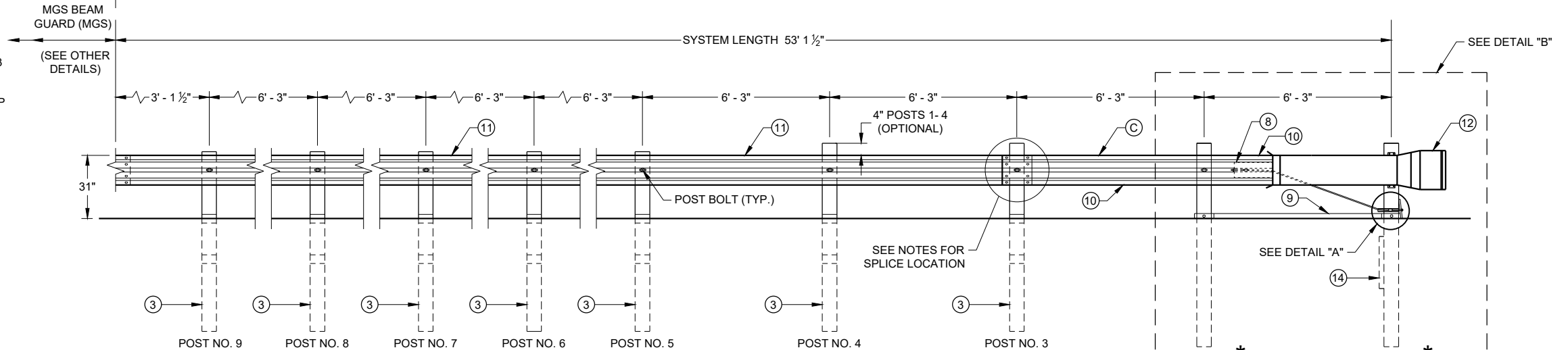
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

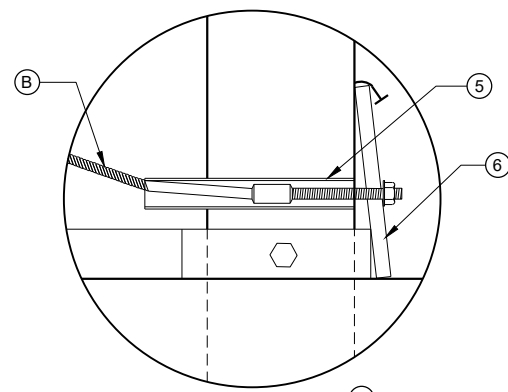
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



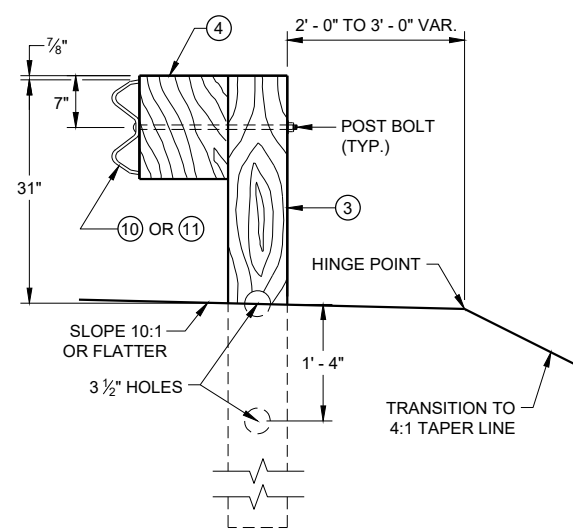
PLAN



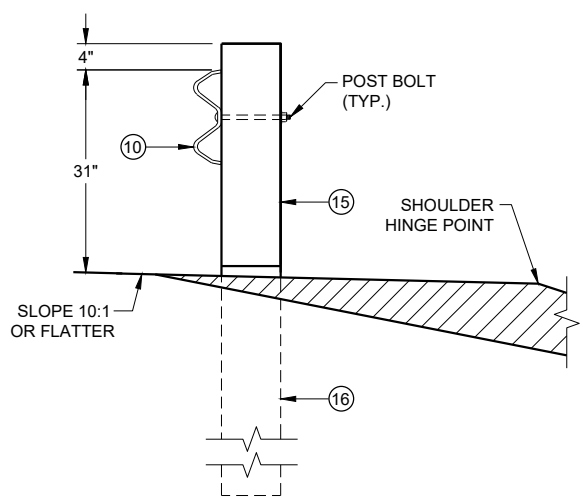
ELEVATION



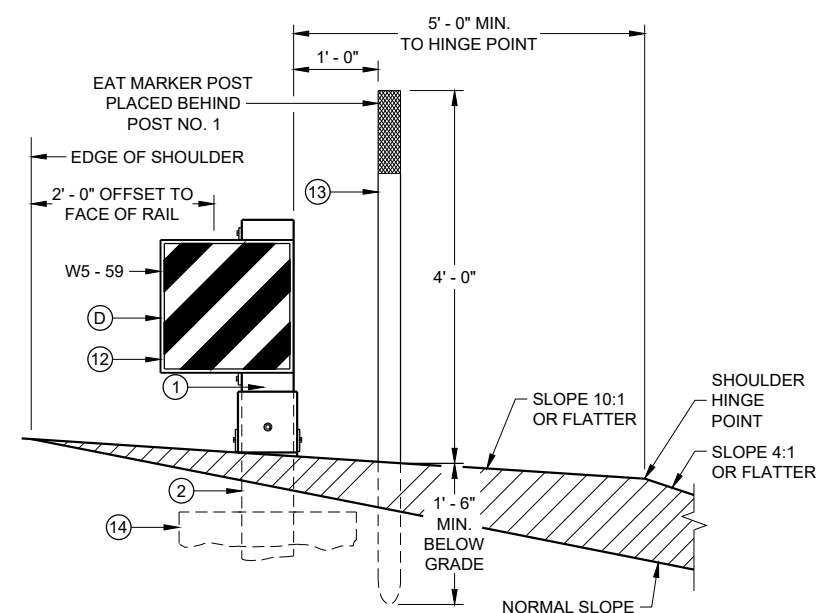
DETAIL "A"



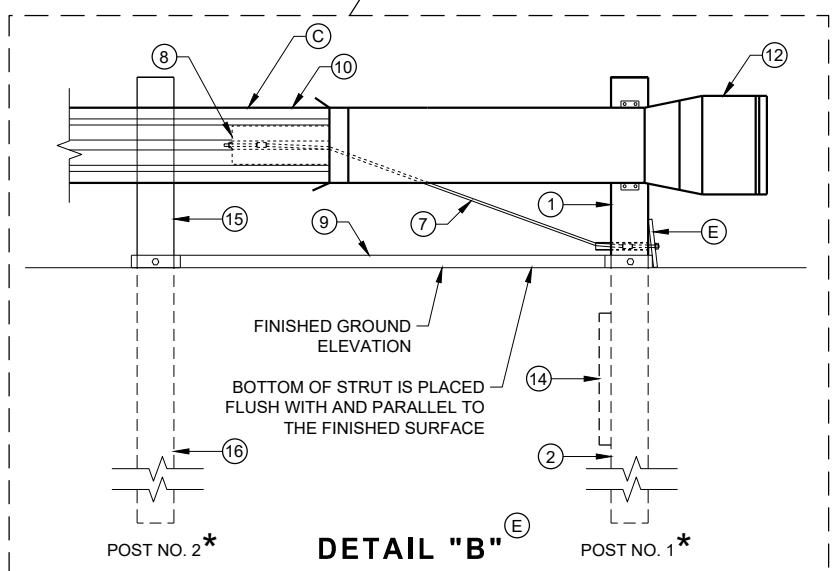
**SECTION C - C
TYPICAL AT POST NOS. 3 - 9**



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



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



DETAIL "B"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

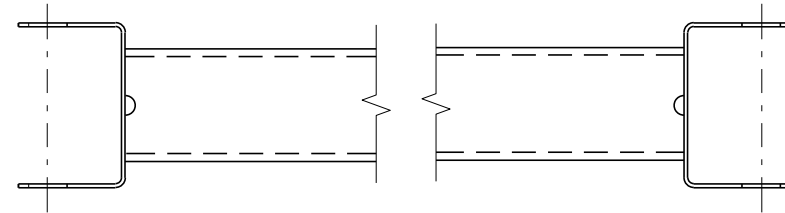
6

SDD 14B44 - 04a

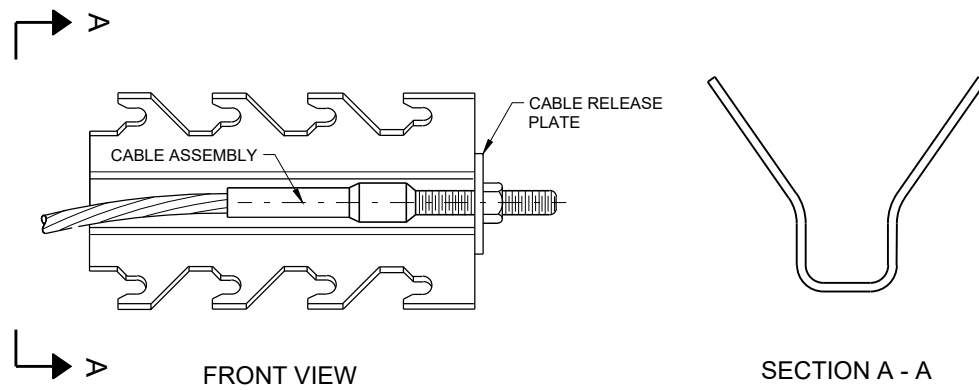
SDD 14B44 - 04a

BILL OF MATERIALS

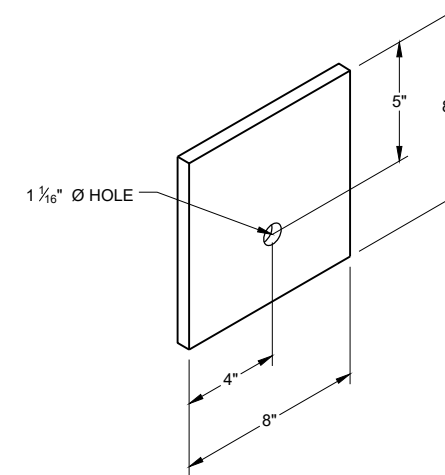
| PART NO. | DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION. |
|----------|--|
| ① | UPPER POST NO. 1 6" X 6" TUBE |
| ② | LOWER POST NO. 1 |
| ③ | WOOD CRT |
| ④ | WOOD BLOCKOUT |
| ⑤ | PIPE SLEEVE |
| ⑥ | BEARING PLATE |
| ⑦ | BCT CABLE ASSEMBLY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



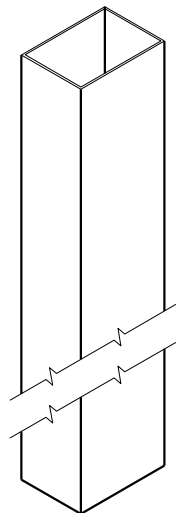
GENERIC GROUND STRUT ⑨ ⑤



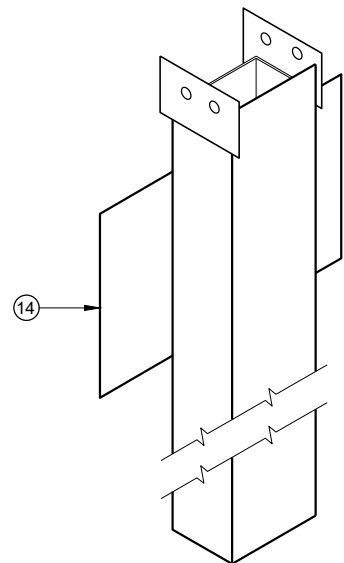
GENERIC ANCHOR CABLE BOX ⑨ ⑤



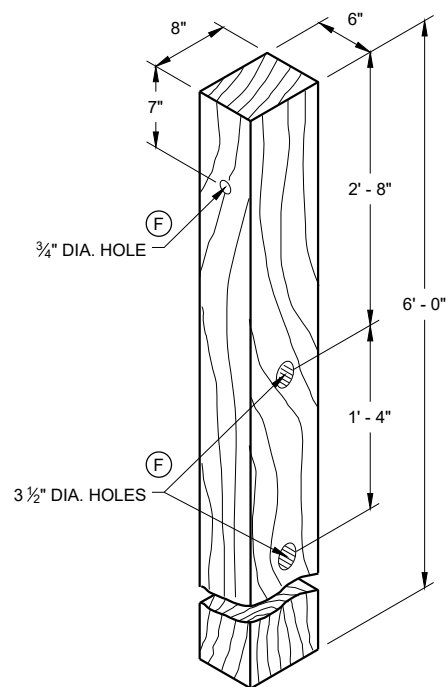
BEARING PLATE ⑥ ⑤



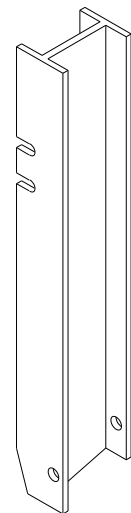
UPPER POST NO. 1 ⁽¹⁾ (E)



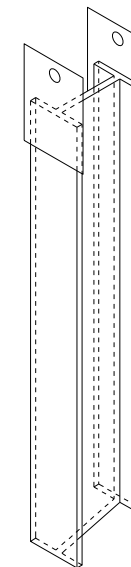
LOWER POST NO. 1 ⁽²⁾ (E)



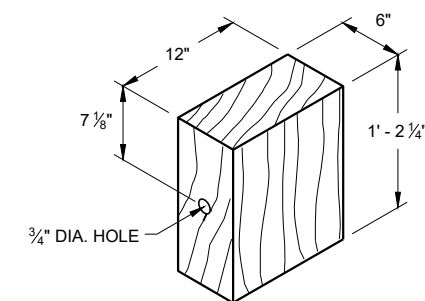
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

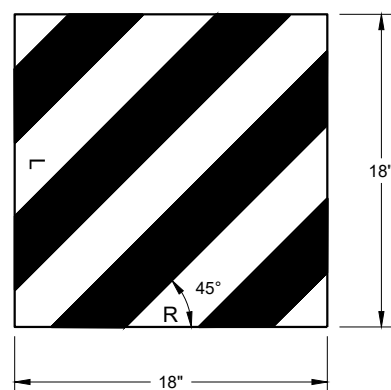


LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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

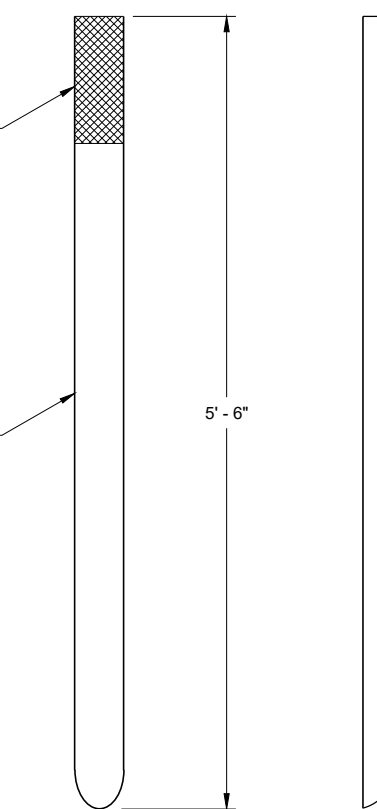
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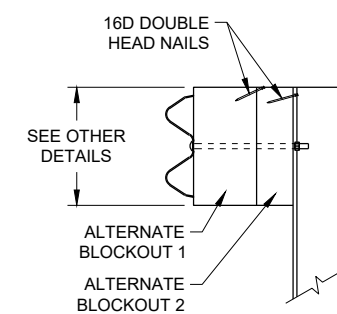
W5 - 59
REFLECTIVE SHEETING DETAIL ^(E)

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

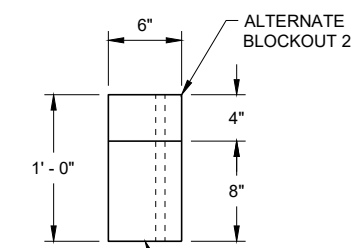
E.A.T. MARKER
POST (YELLOW)



FRONT VIEW SIDE VIEW
E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

6

SDD 14B44 - 04c

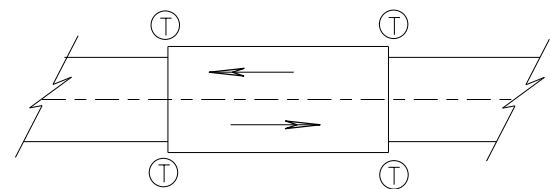
SDD 14B44 - 04c

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

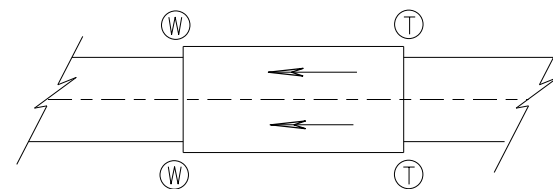
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

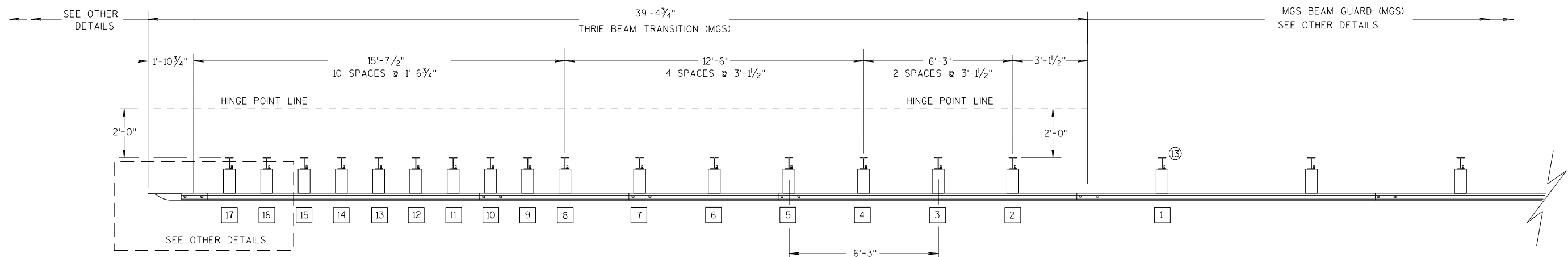
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

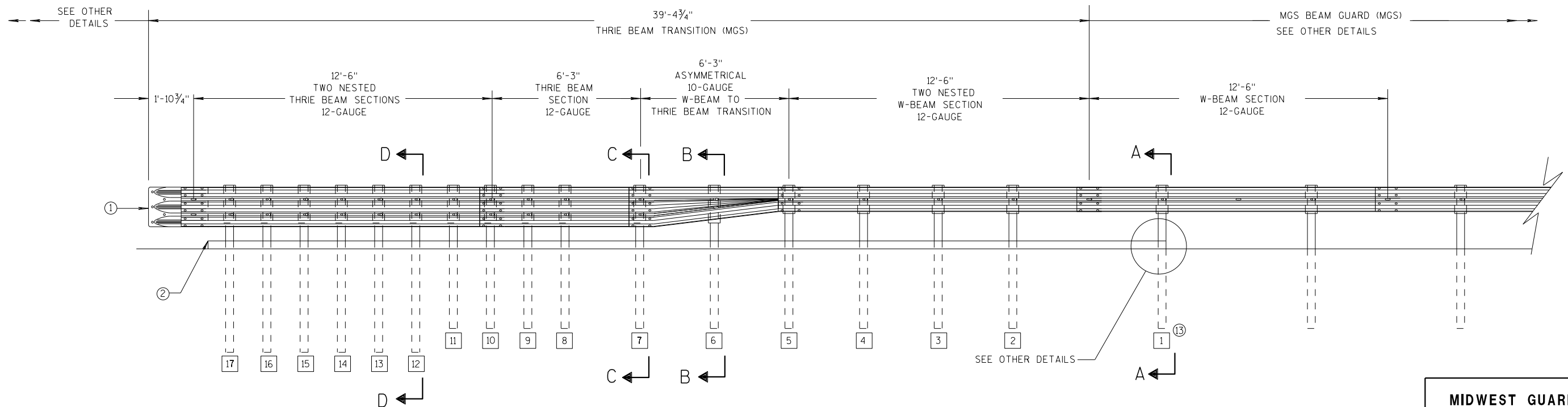
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

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



PLAN VIEW



ELEVATION VIEW

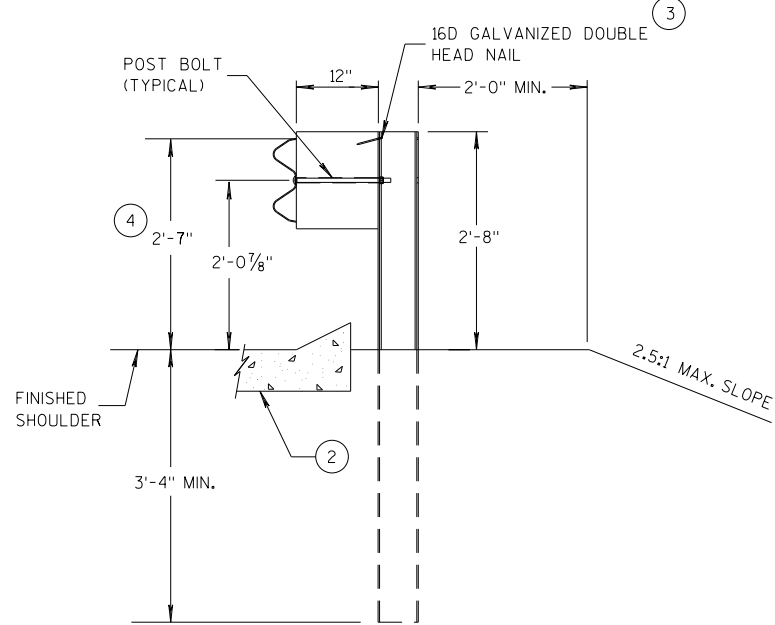
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

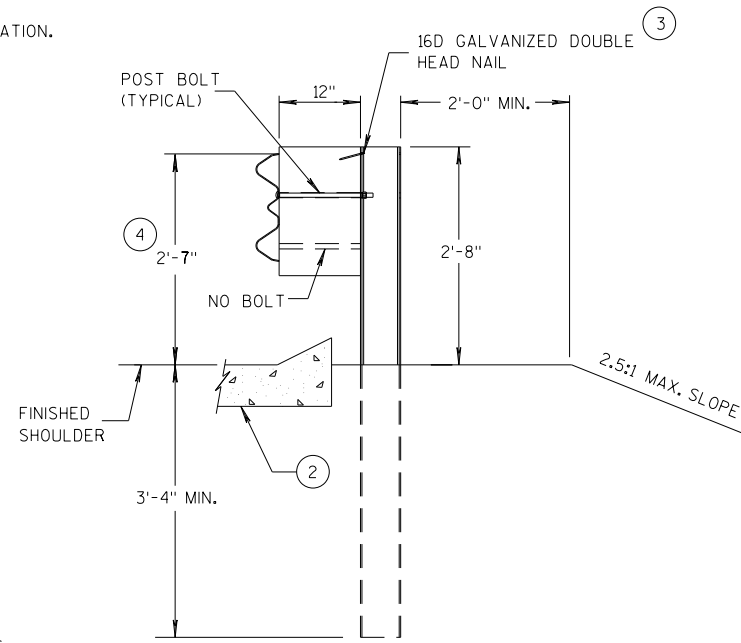
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

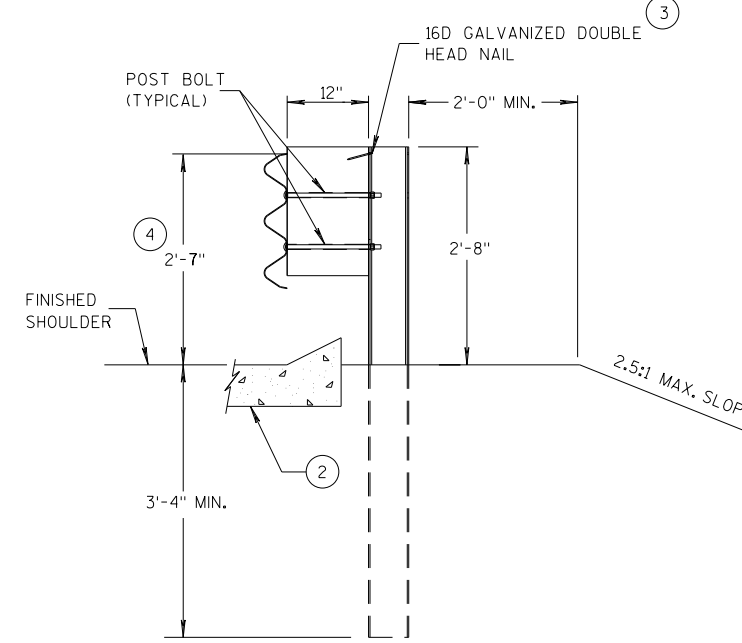
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



**SECTION A-A
POSTS 1-5**



**SECTION B-B
POST 6**



**SECTION C-C
POSTS 7-11**

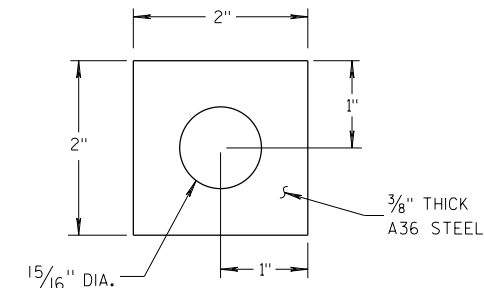
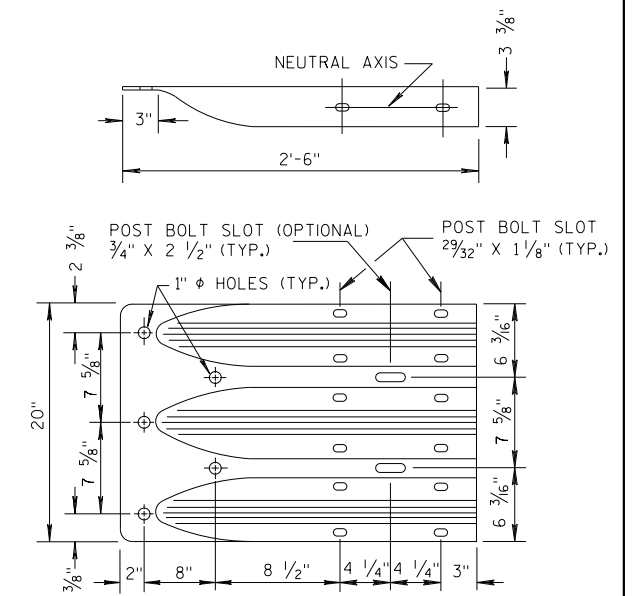
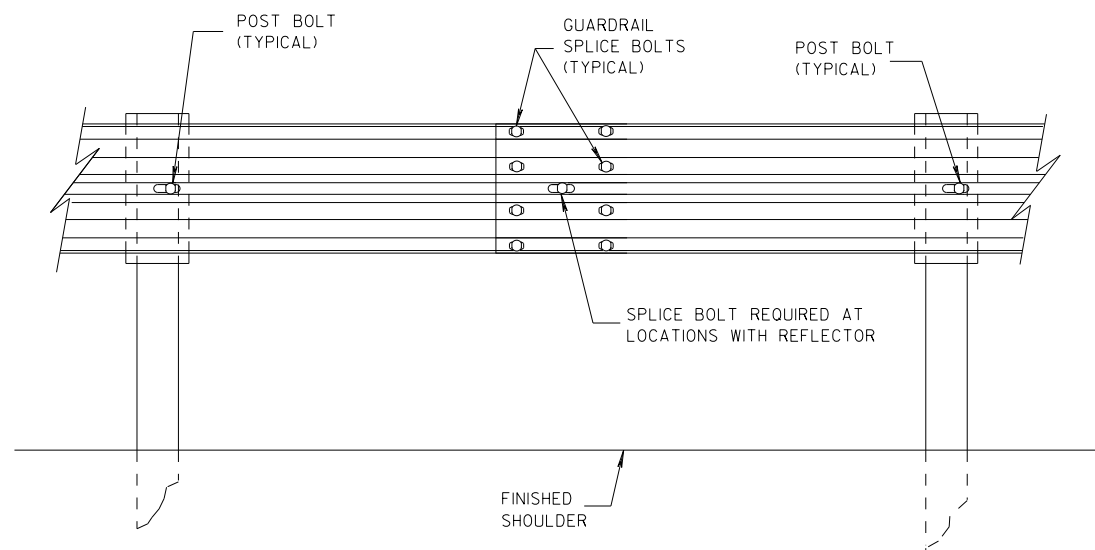


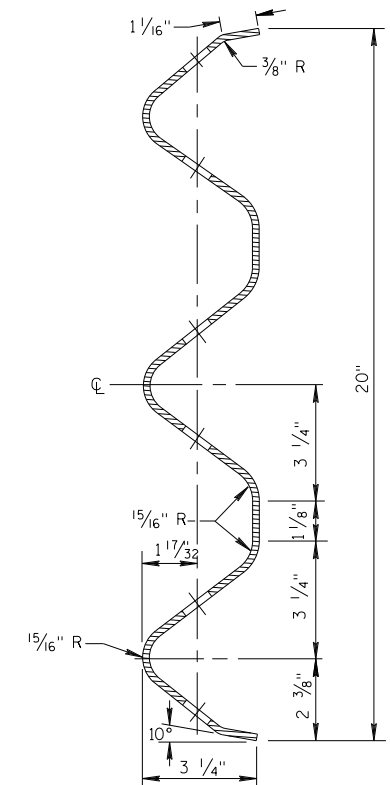
PLATE WASHER DETAIL



**THRIE BEAM
TERMINAL CONNECTOR**



SPLICE DETAIL

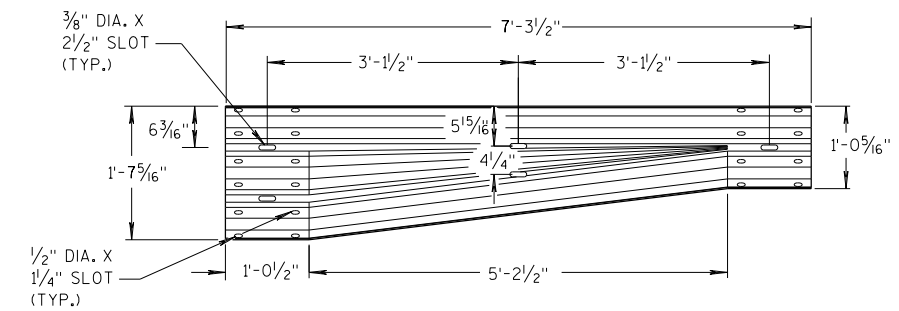


**SECTION THRU THRIE
BEAM RAIL ELEMENT**

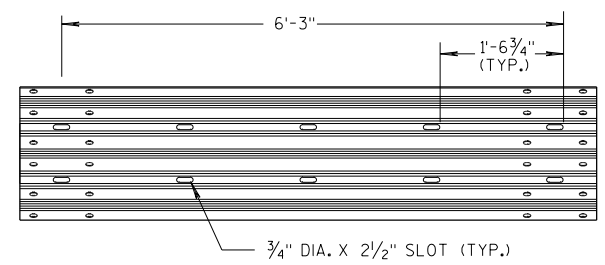
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

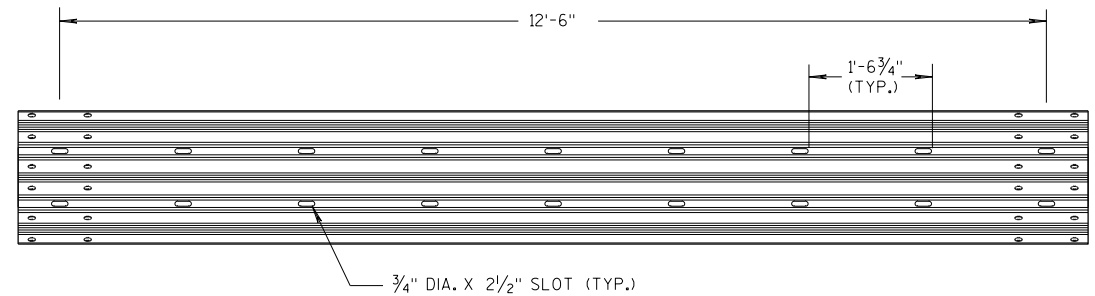
**SECTION D-D
POSTS 12-17**



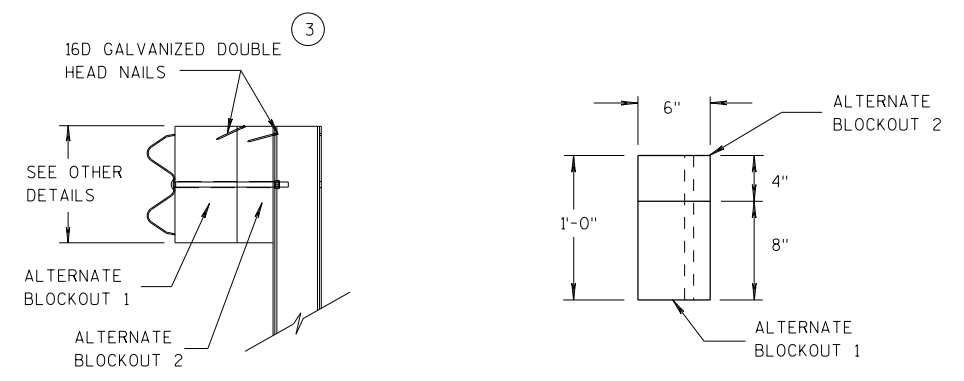
W-BEAM TO THRIE BEAM TRANSITION SECTION



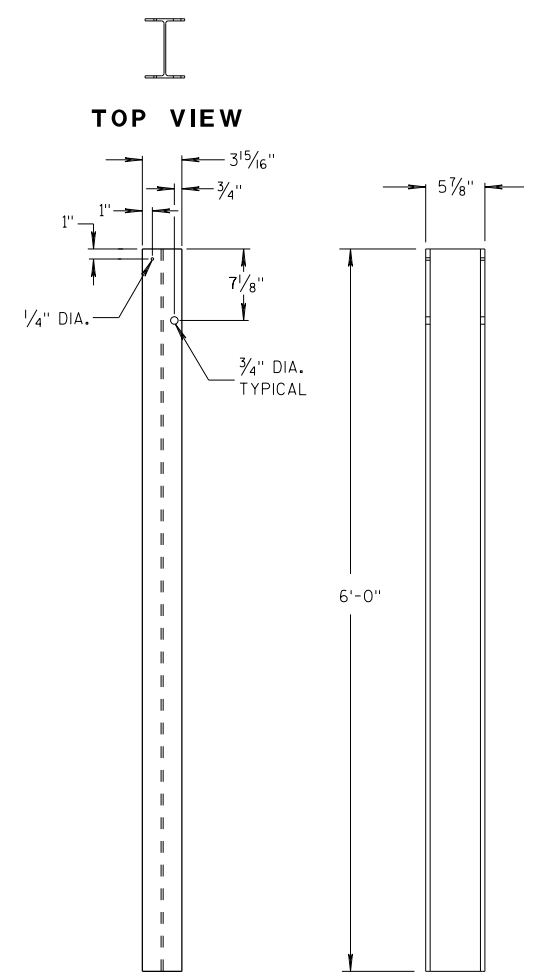
6'-3\"/>



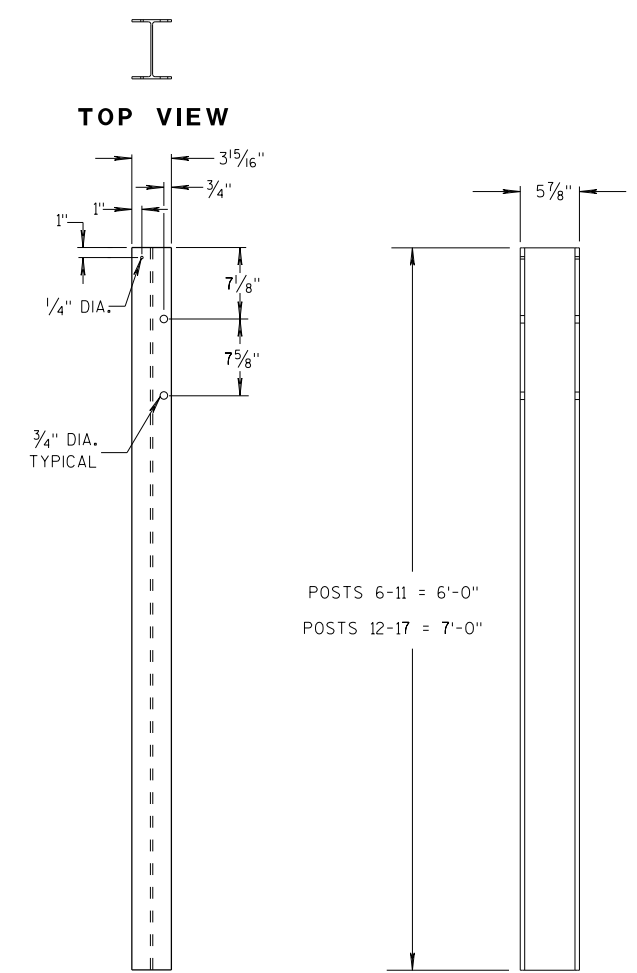
12'-6\"/>



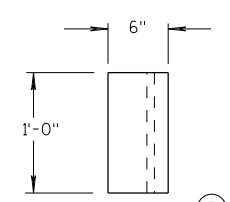
ALTERNATE WOOD BLOCKOUT DETAIL



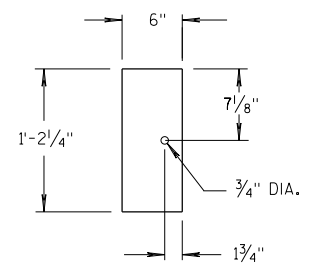
STEEL POSTS 1-5



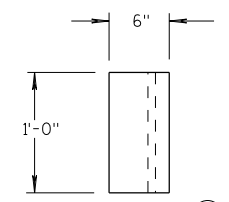
STEEL POSTS 6-17



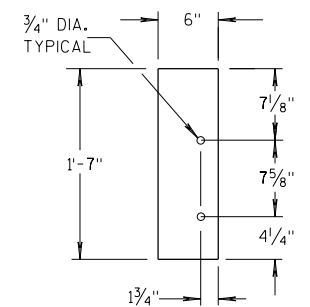
BLOCKOUT POSTS 1-5



BLOCKOUT POSTS 1-5



BLOCKOUT POSTS 6-17



BLOCKOUT POSTS 6-17

GENERAL NOTES

- STEEL POSTS ARE W6X9 OR W6X8.5.
- BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.
- (3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- (5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.
- (13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

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

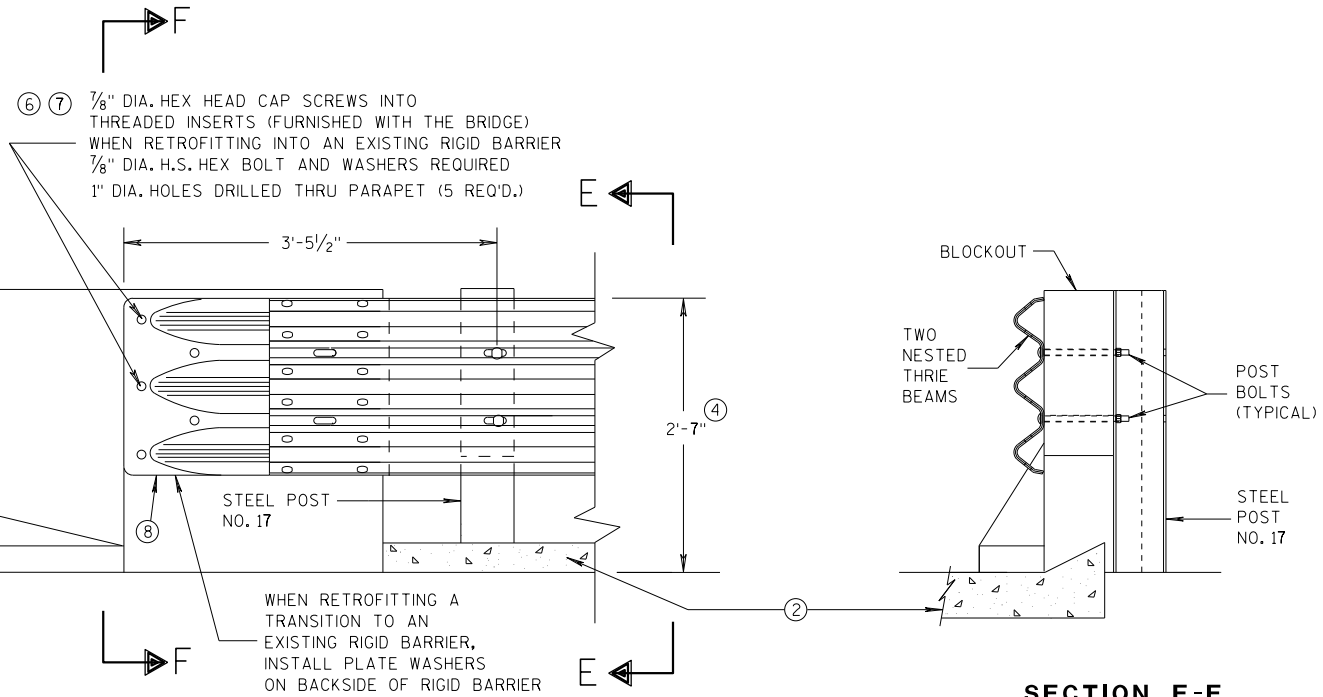
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

S.D.D. 14 B 45-5c

S.D.D. 14 B 45-5c



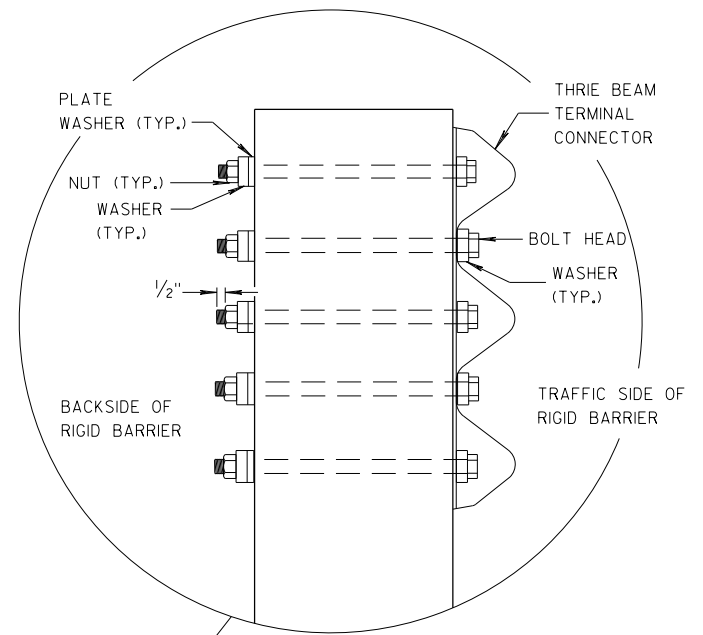
FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

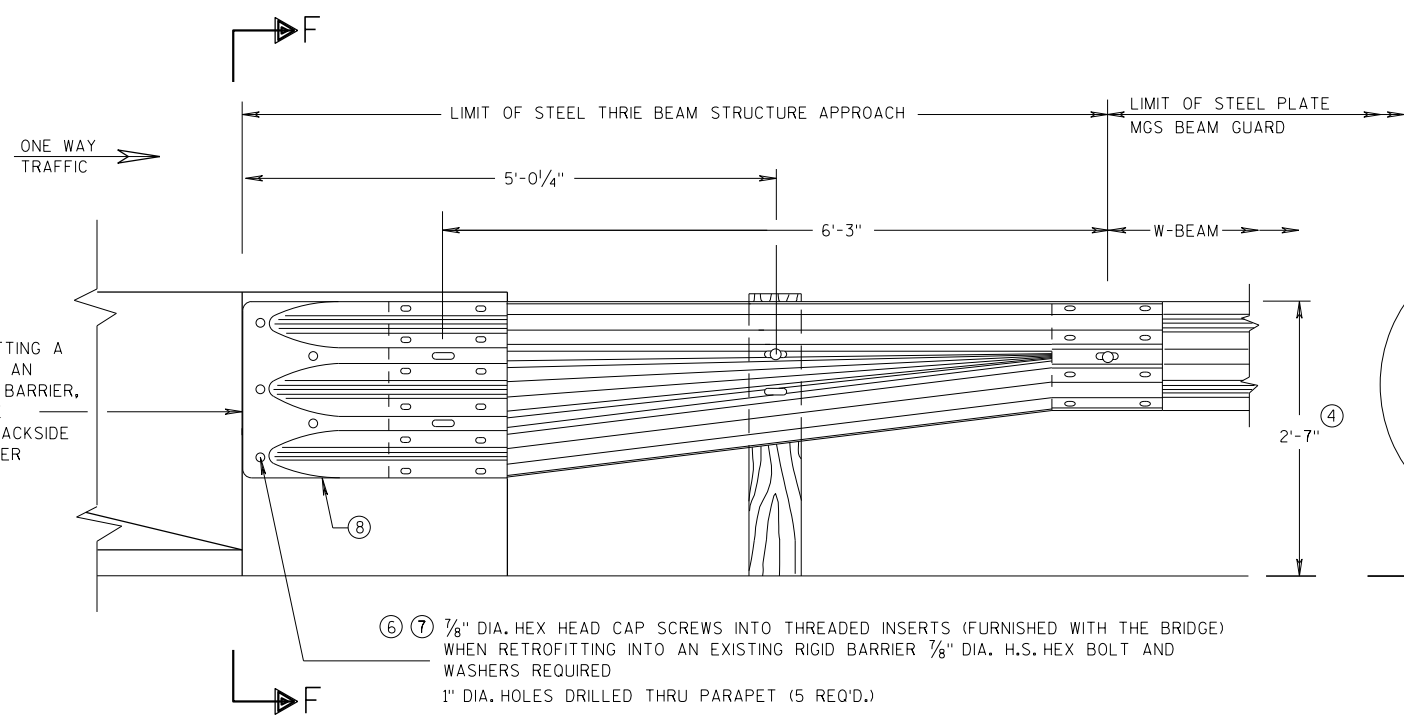
SECTION E-E

GENERAL NOTES

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

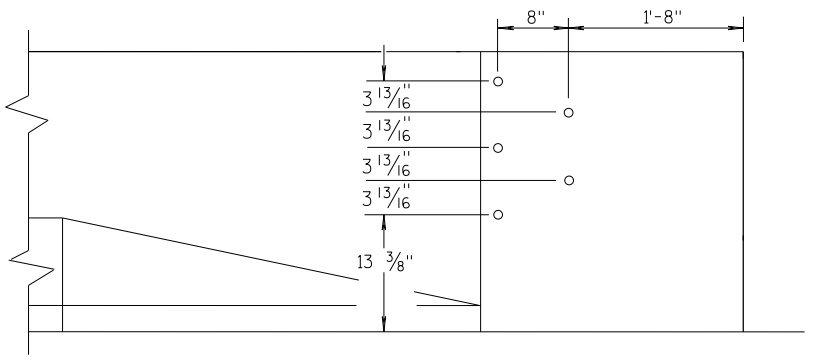


SECTION F-F



FRONT VIEW

**W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)**



DRILL HOLE LOCATION

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

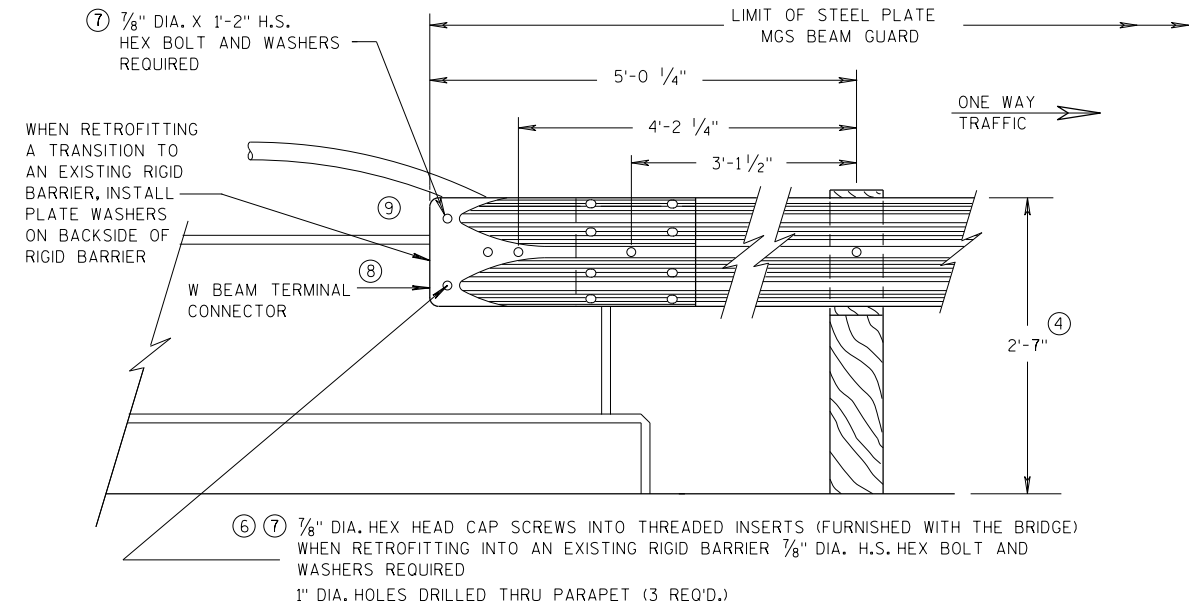
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

GENERAL NOTES

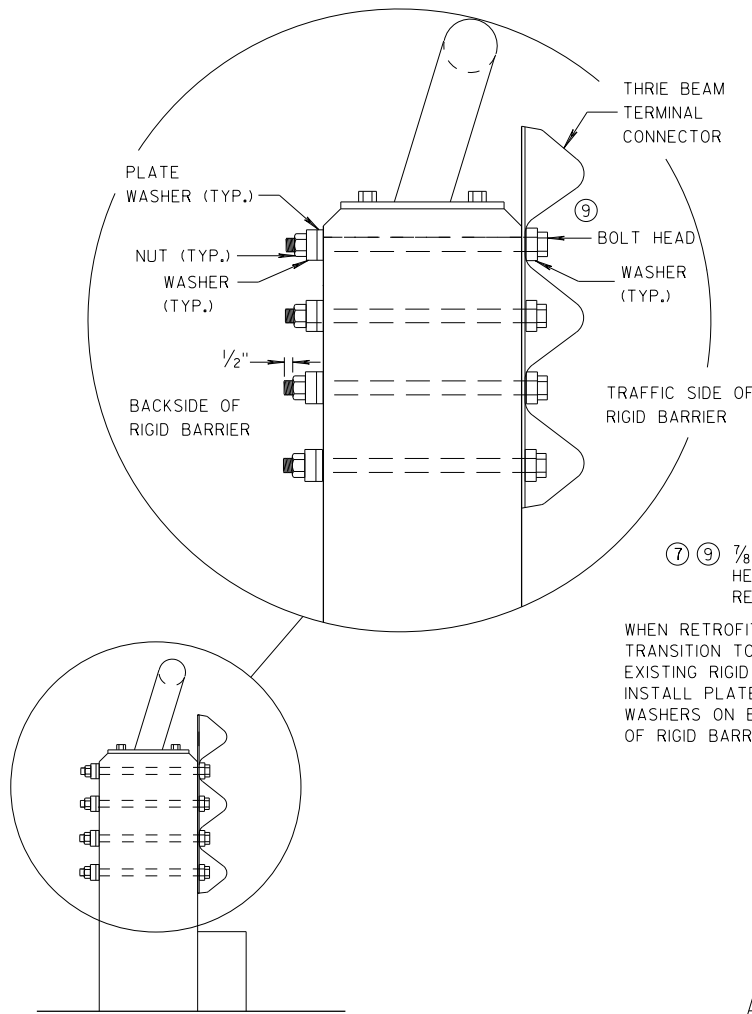
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- ⑨ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.

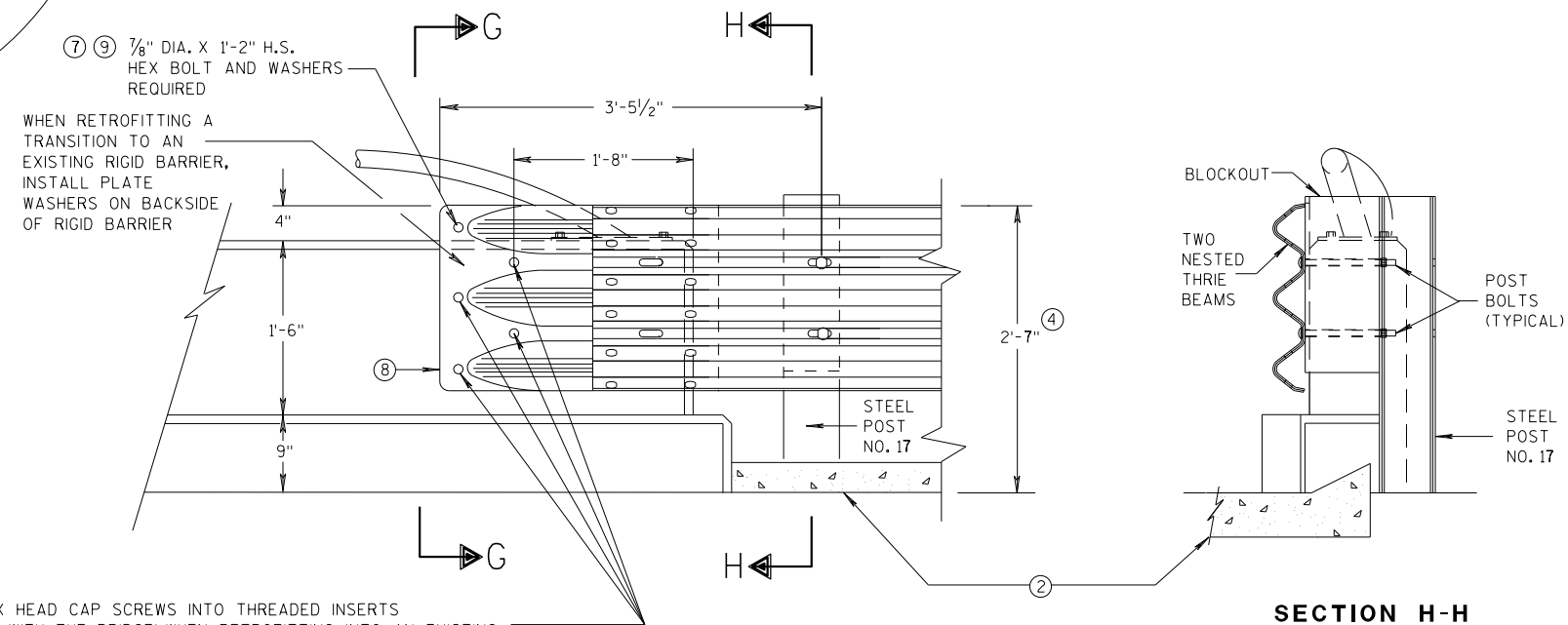


FRONT VIEW

**W BEAM CONNECTION TO VERTICAL FACE PARAPET
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)**



SECTION G-G



FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

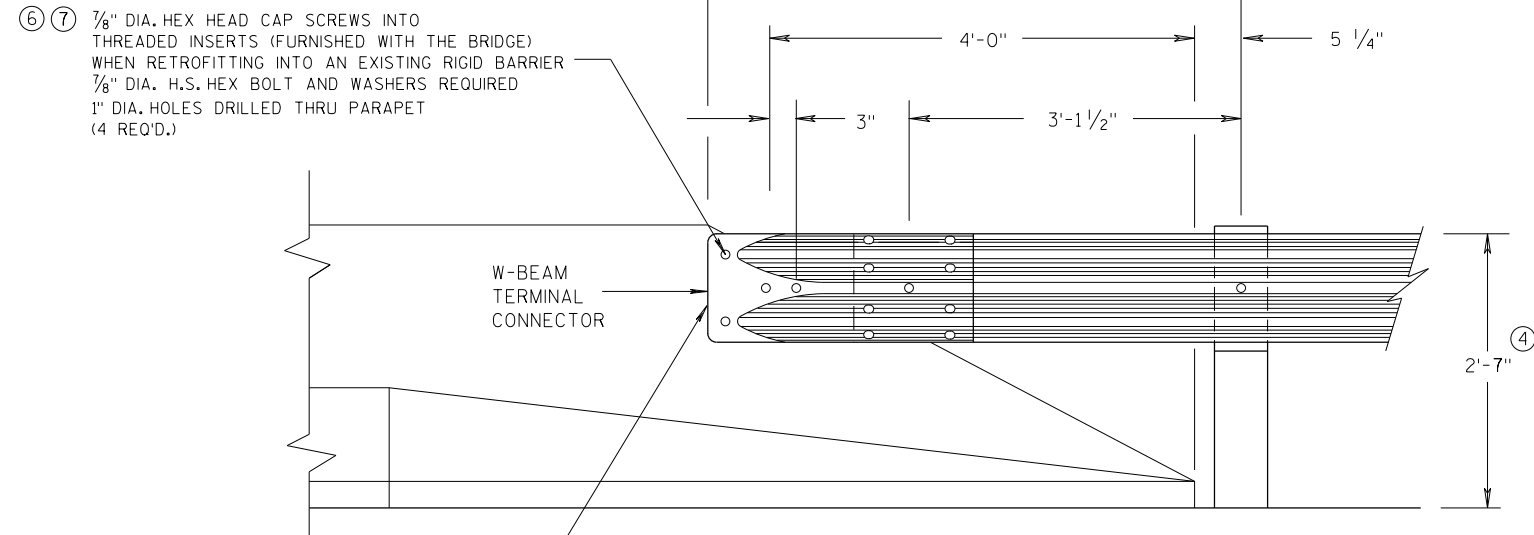
- ⑥ ⑦ 7/8" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER 7/8" DIA. H.S. HEX BOLT AND WASHERS REQUIRED 1" DIA. HOLES DRILLED THRU PARAPET (4 REQ'D.)

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR

ONE WAY
TRAFFIC



W-BEAM
TERMINAL
CONNECTOR

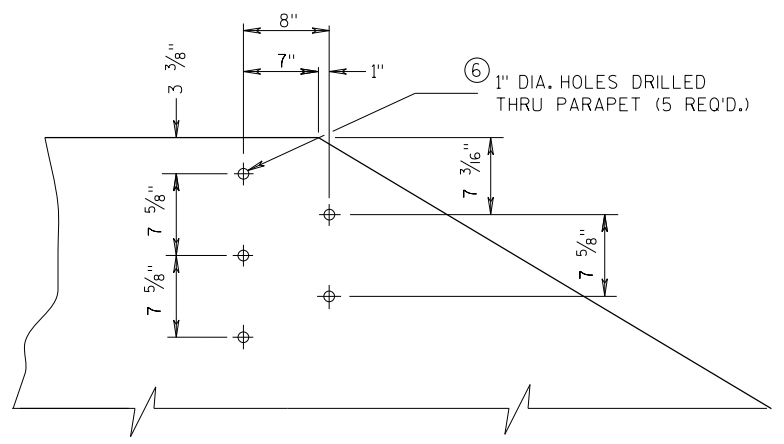
FRONT VIEW

WHEN RETROFITTING A TRANSITION
TO AN EXISTING RIGID BARRIER,
INSTALL PLATE WASHERS ON
BACKSIDE OF RIGID BARRIER.

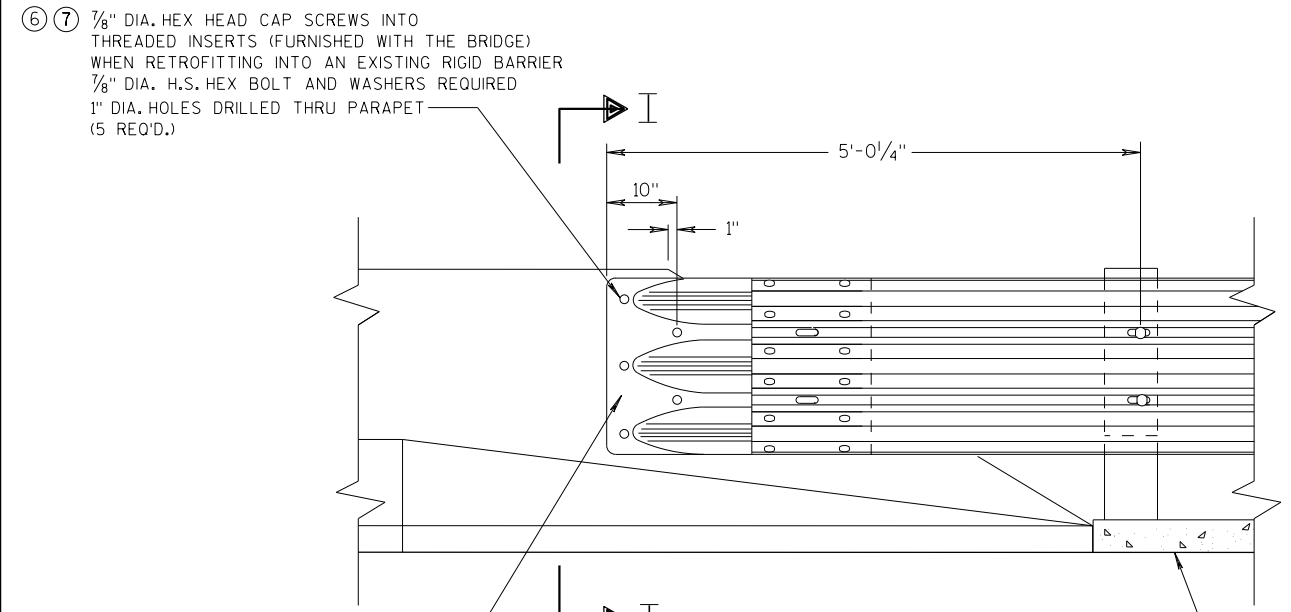
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)**

GENERAL NOTES

- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 3/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



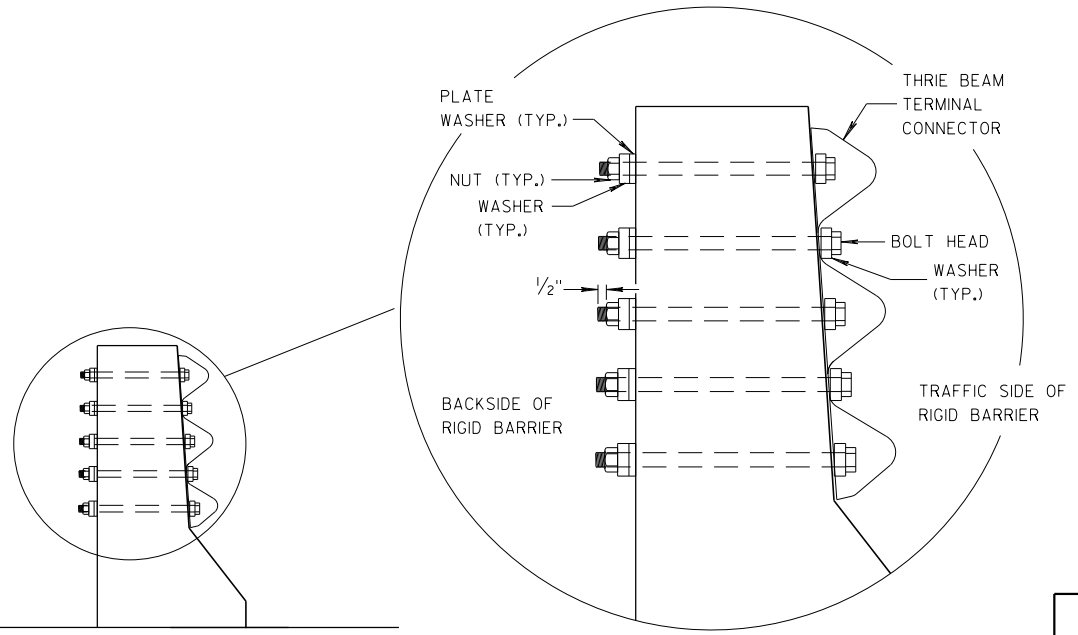
**DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION**



FRONT VIEW

WHEN RETROFITTING A TRANSITION
TO AN EXISTING RIGID BARRIER,
INSTALL PLATE WASHERS ON
BACKSIDE OF RIGID BARRIER.

**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



SECTION I-I

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

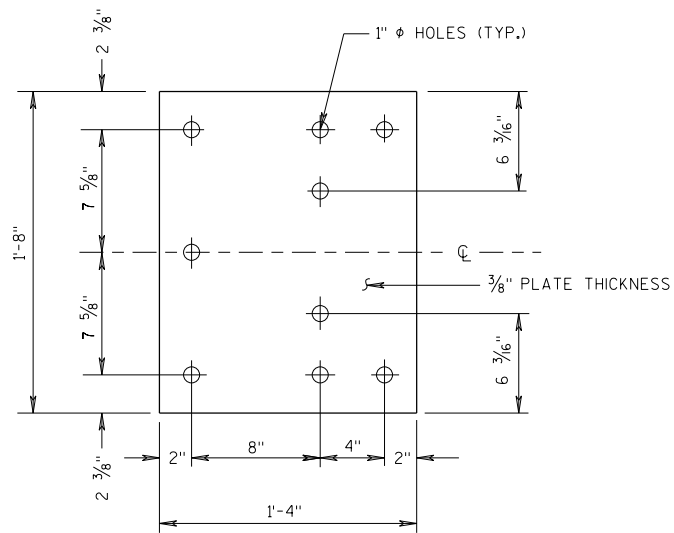
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

6

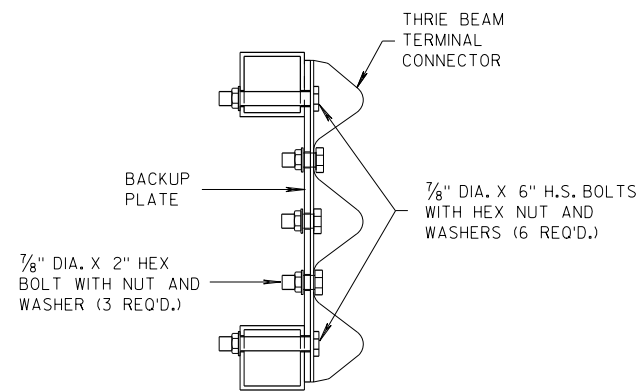
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S.D.D. 14 B 45-5f

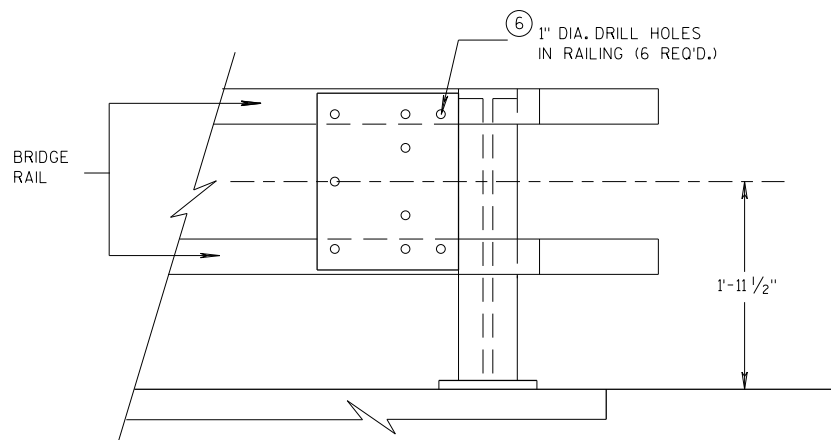
S.D.D. 14 B 45-5f



BACK-UP PLATE DETAIL



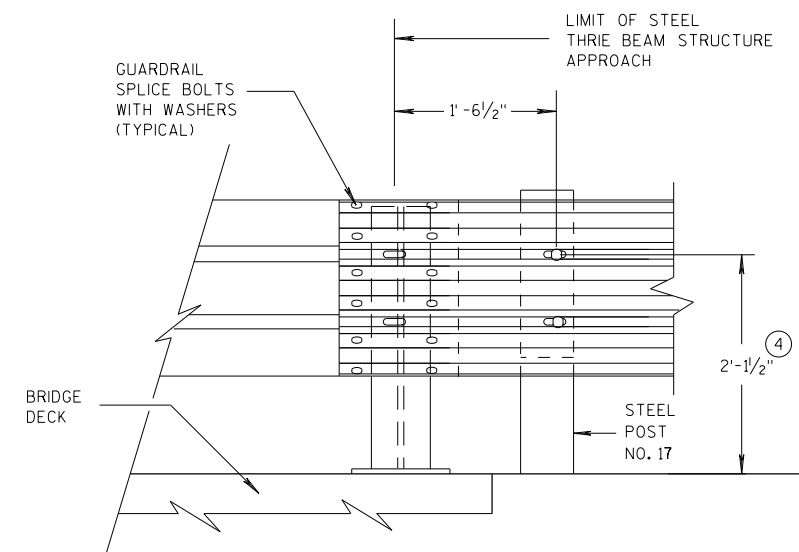
SECTION J-J



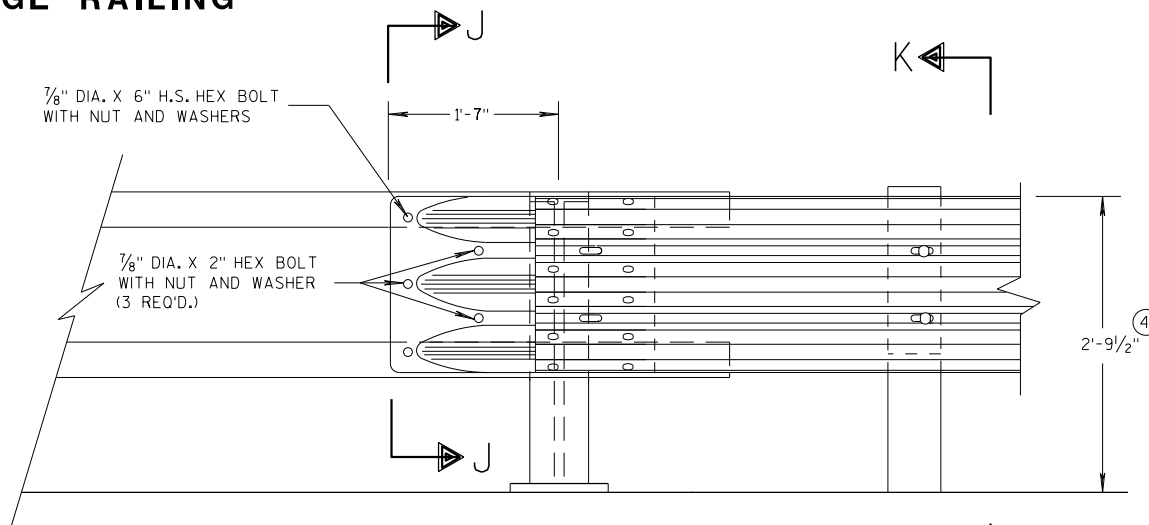
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1'$.
- ⑥ DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

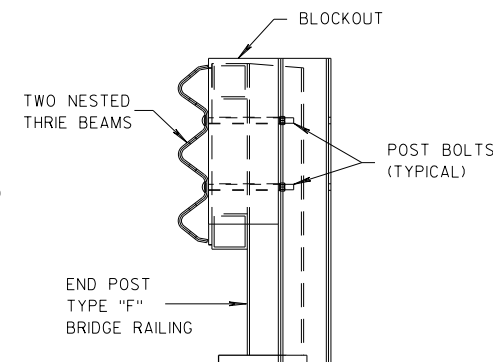


**FRONT VIEW
THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"**



FRONT VIEW

**THRIE BEAM CONNECTION TO
TUBULAR RAILING TYPE "F"**

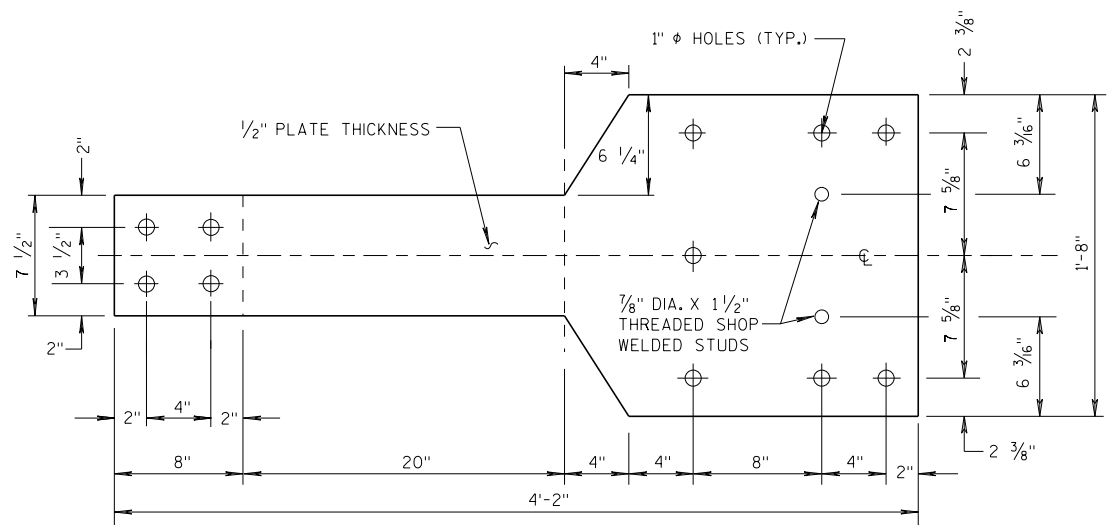


SECTION K-K

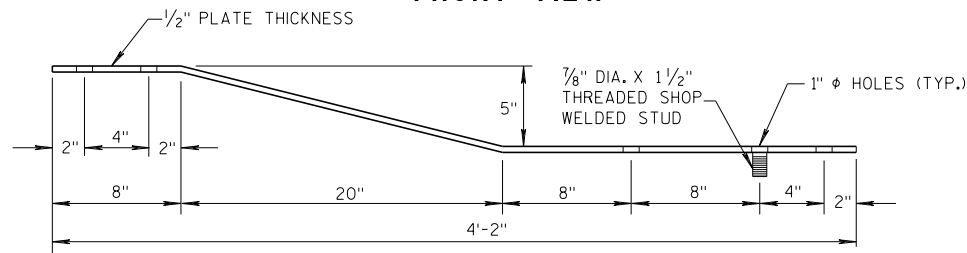
| | |
|---|---|
| MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED 07/2018 DATE | /S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR |
| FHWA | |

GENERAL NOTES

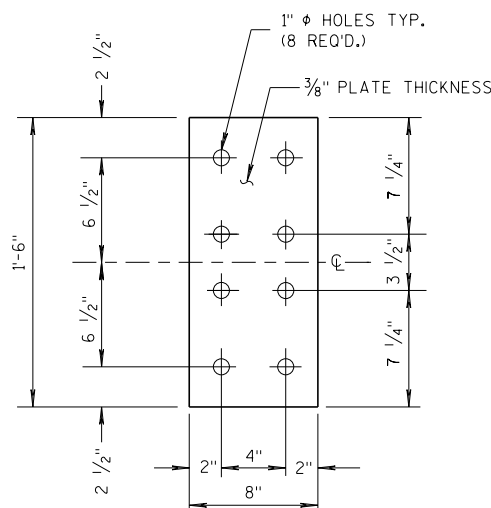
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



FRONT VIEW

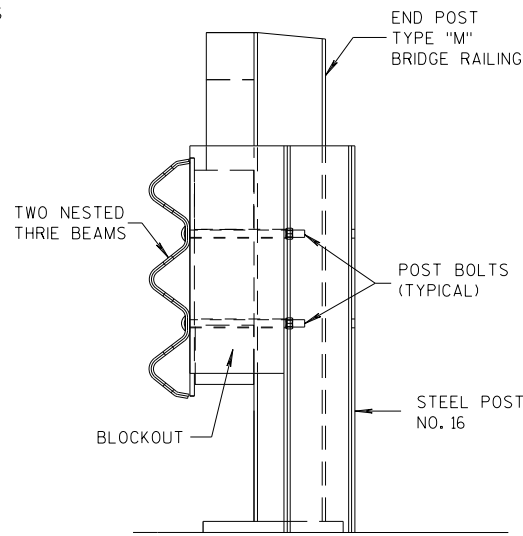


**PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"**

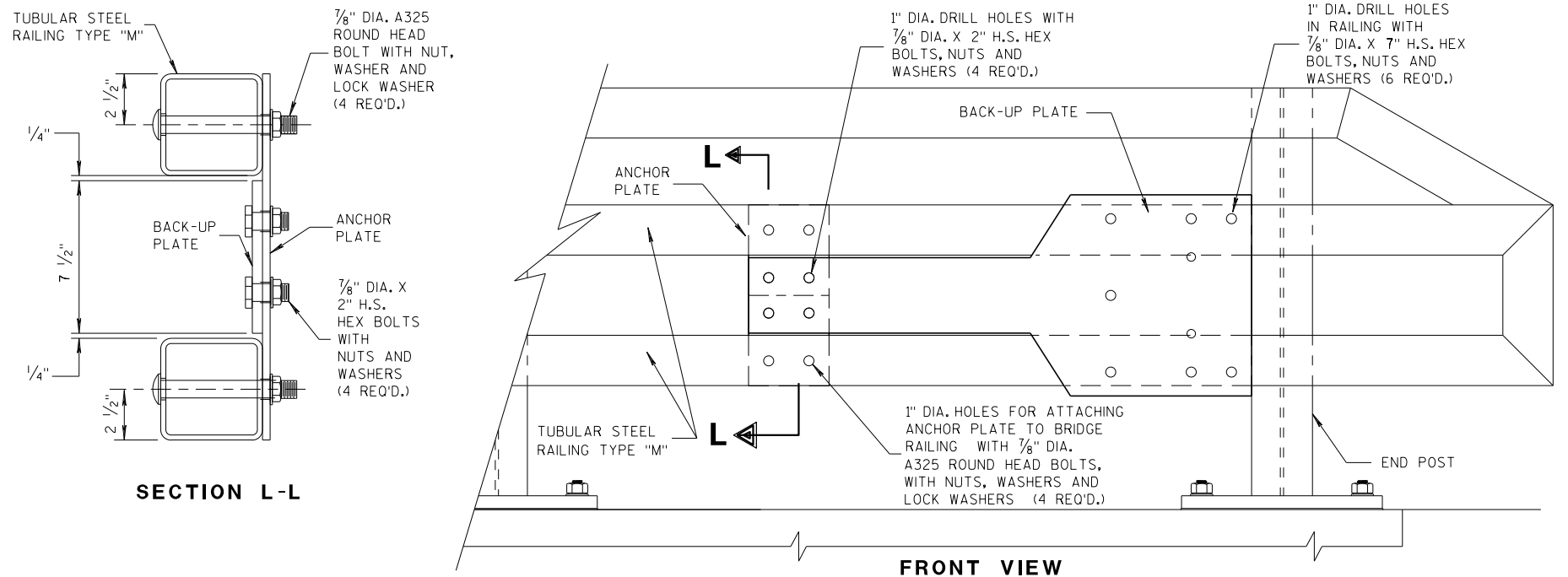


FRONT VIEW

**ANCHOR
PLATE DETAIL,
TYPE "M"**



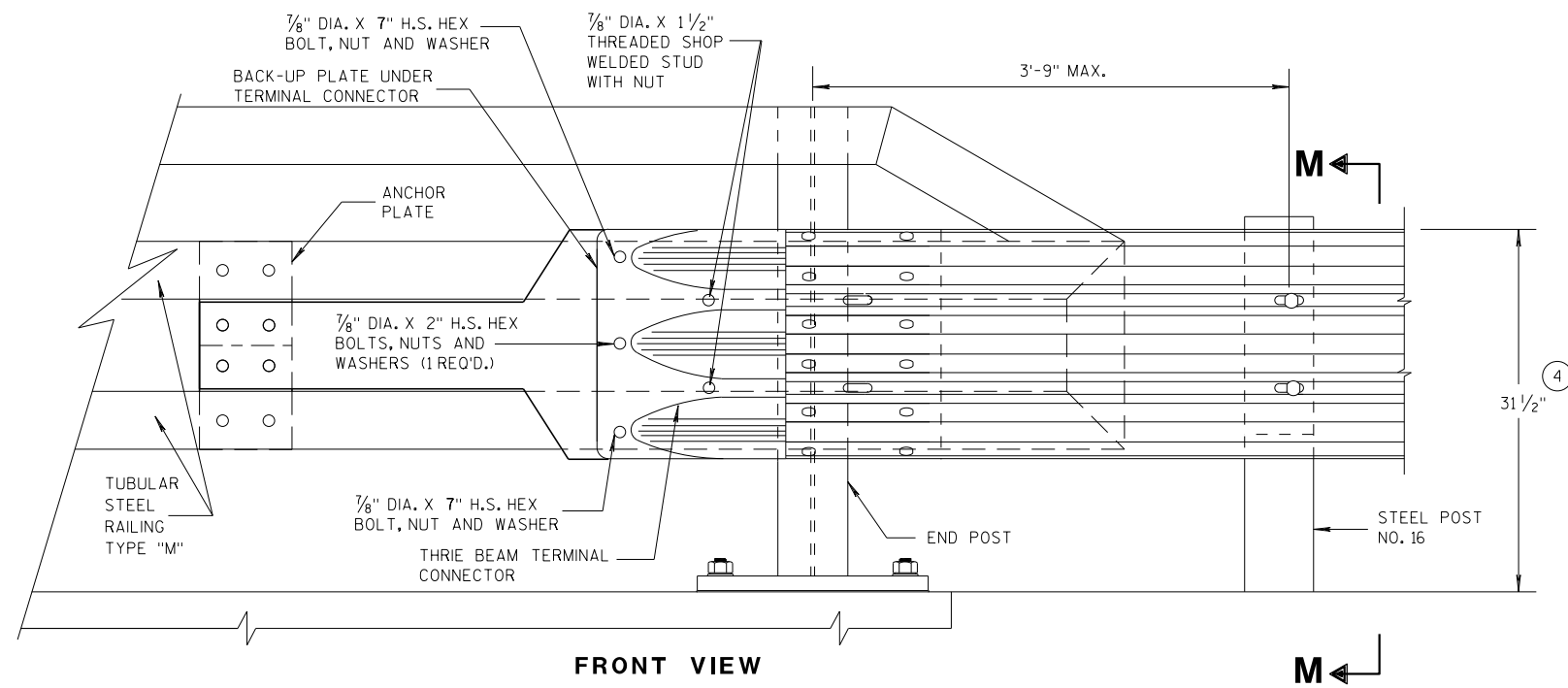
SECTION M-M



SECTION L-L

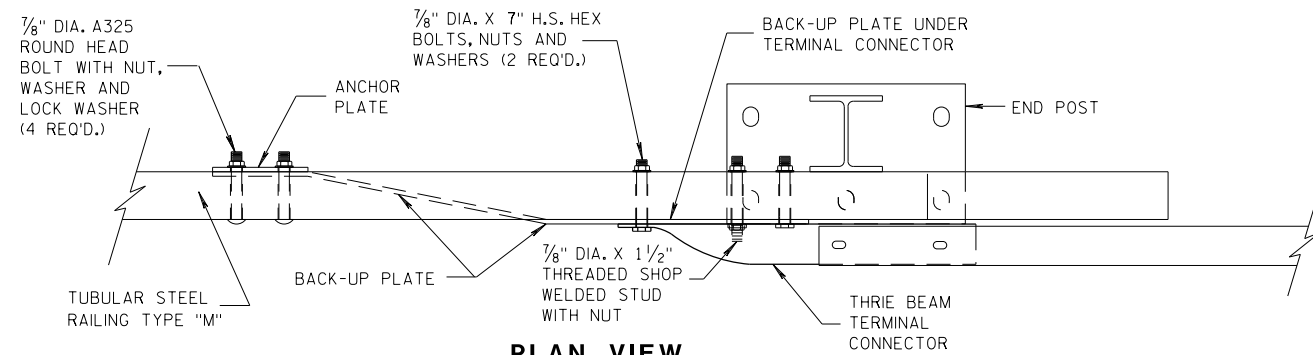
FRONT VIEW

ANCHOR AND BACK-UP PLATE MOUNTING TO BRIDGE RAILING, TYPE "M"



FRONT VIEW

M



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

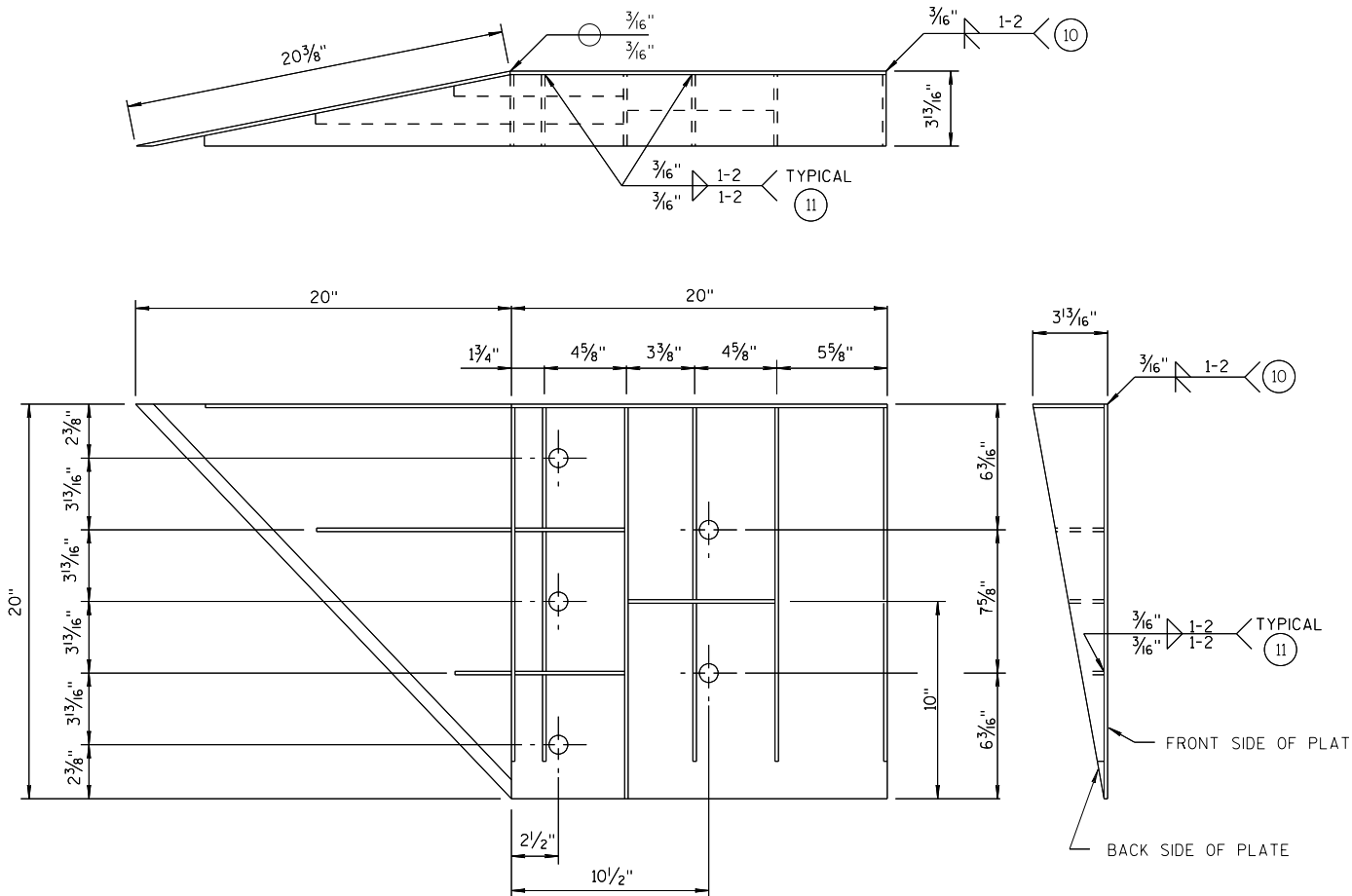
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

GENERAL NOTES

- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

- (10) STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- (11) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".



WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

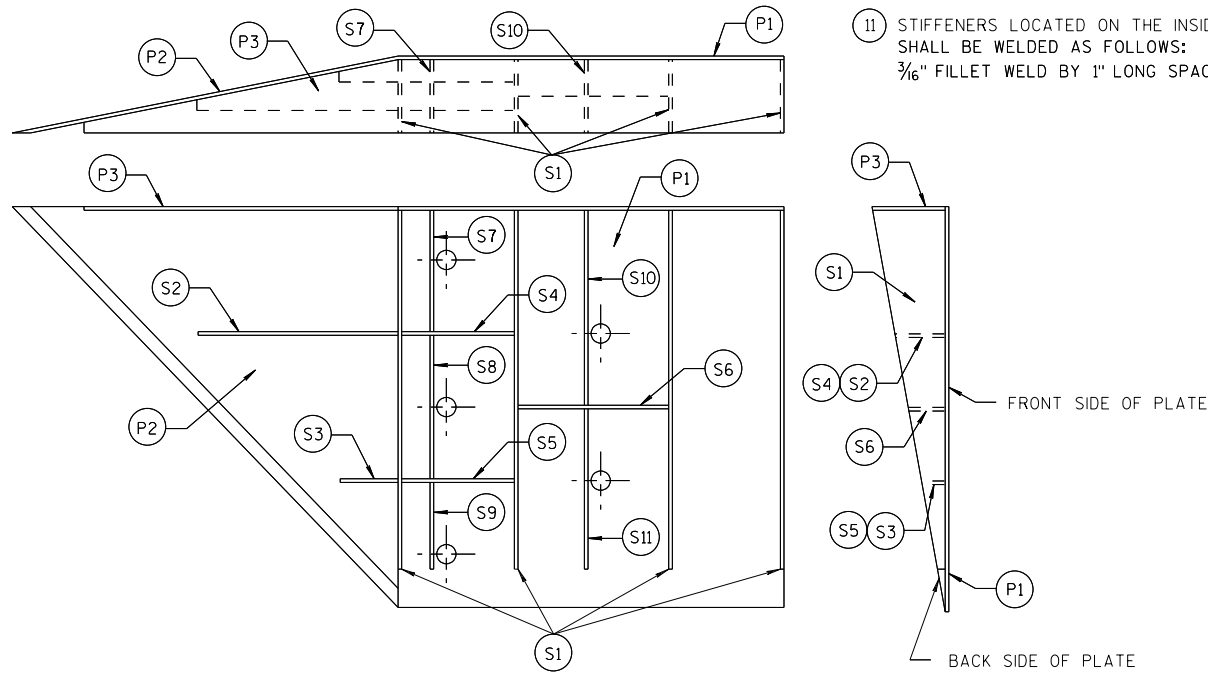


PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

| CONNECTOR PLATE DIMENSION (PER ASSEMBLY) | | | | |
|--|----------|-------|--------------------------------------|-----------|
| PLATE | QUANTITY | SHAPE | SIZE (A x B x C x D) | THICKNESS |
| P1 | 1 | | 20" x 20" | 3/16" |
| P2 | 1 | | 20" x 20" x 28 3/16" | 3/16" |
| P3 | 1 | | 39" x 3 5/8" x 20" x 19 5/16" | 3/16" |
| S1 | 4 | | 18 7/16" x 3 5/8" x 18 3/4" | 1/4" |
| S2 | 1 | | 10 1/4" x 2 1/16" x 10 3/8" x 1/2" | 1/4" |
| S3 | 1 | | 3" x 1 1/16" x 3 3/8" x 1/2" | 1/4" |
| S4 | 1 | | 6 1/8" x 2 1/16" | 1/4" |
| S5 | 1 | | 6 1/8" x 1 1/16" | 1/4" |
| S6 | 1 | | 7 3/4" x 1 3/4" | 1/4" |
| S7 | 1 | | 2 3/16" x 6" x 3 5/8" x 5 1/8" | 1/4" |
| S8 | 1 | | 1 5/32" x 7 1/2" x 2 1/2" x 7 3/8" | 1/4" |
| S9 | 1 | | 6 1/16" x 6 3/16" x 1 3/32" | 1/4" |
| S10 | 1 | | 1 7/8" x 9 7/8" x 3 3/8" x 9 1 1/16" | 1/4" |
| S11 | 1 | | 8 1/2" x 8 3/4" x 1 3/16" | 1/4" |

SINGLE SLOPE CONNECTION PLATE

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

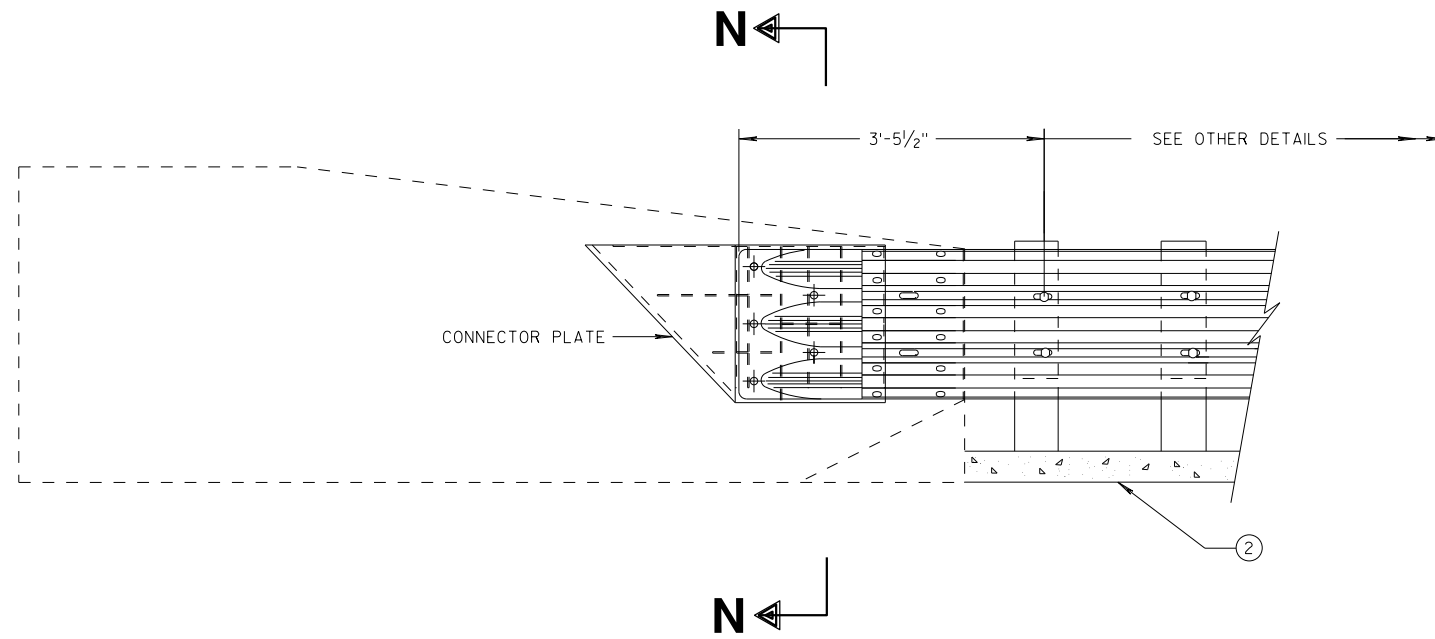
APPROVED
7/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR

GENERAL NOTES

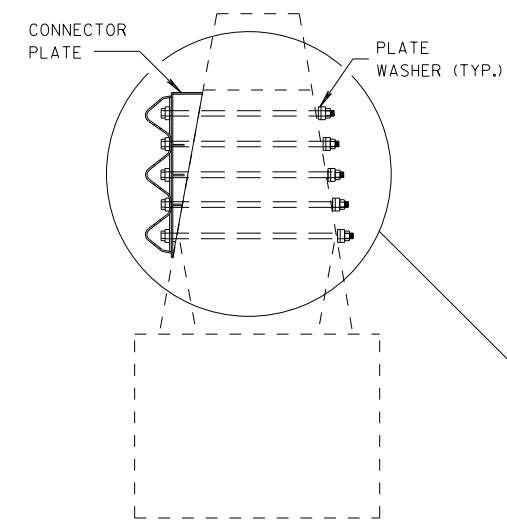
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

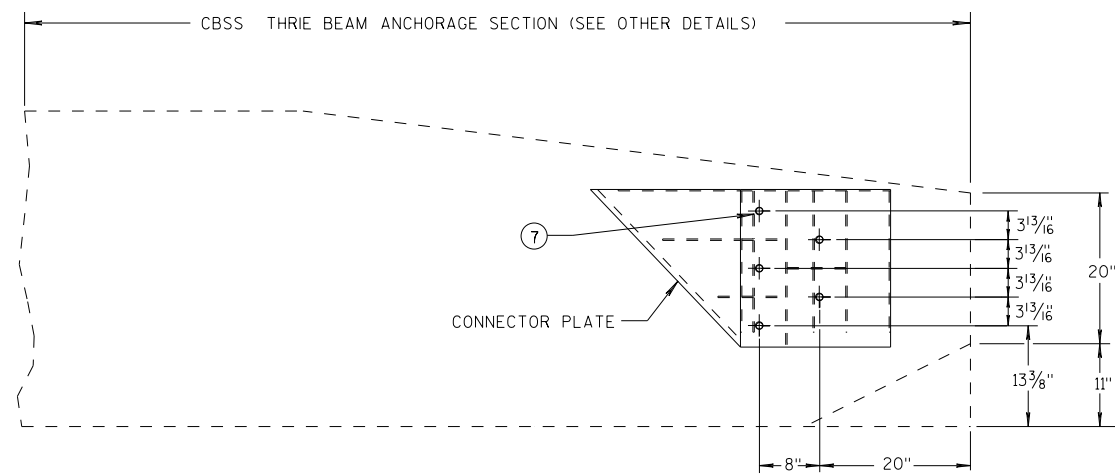
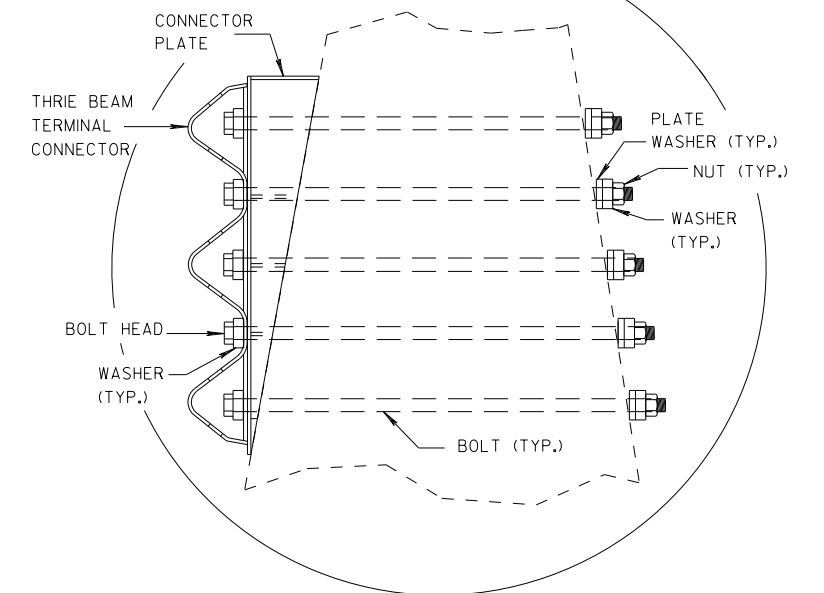
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



SECTION N-N

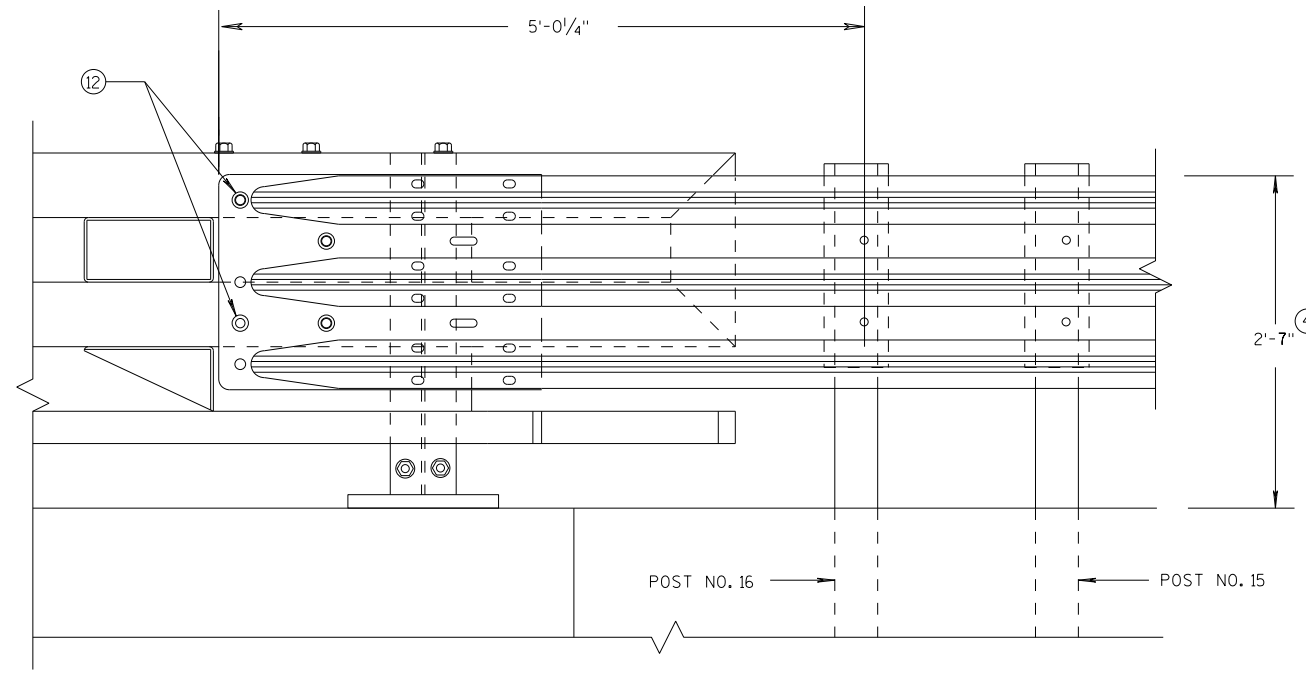


SINGLE SLOPE CONNECTION PLATE PLACEMENT

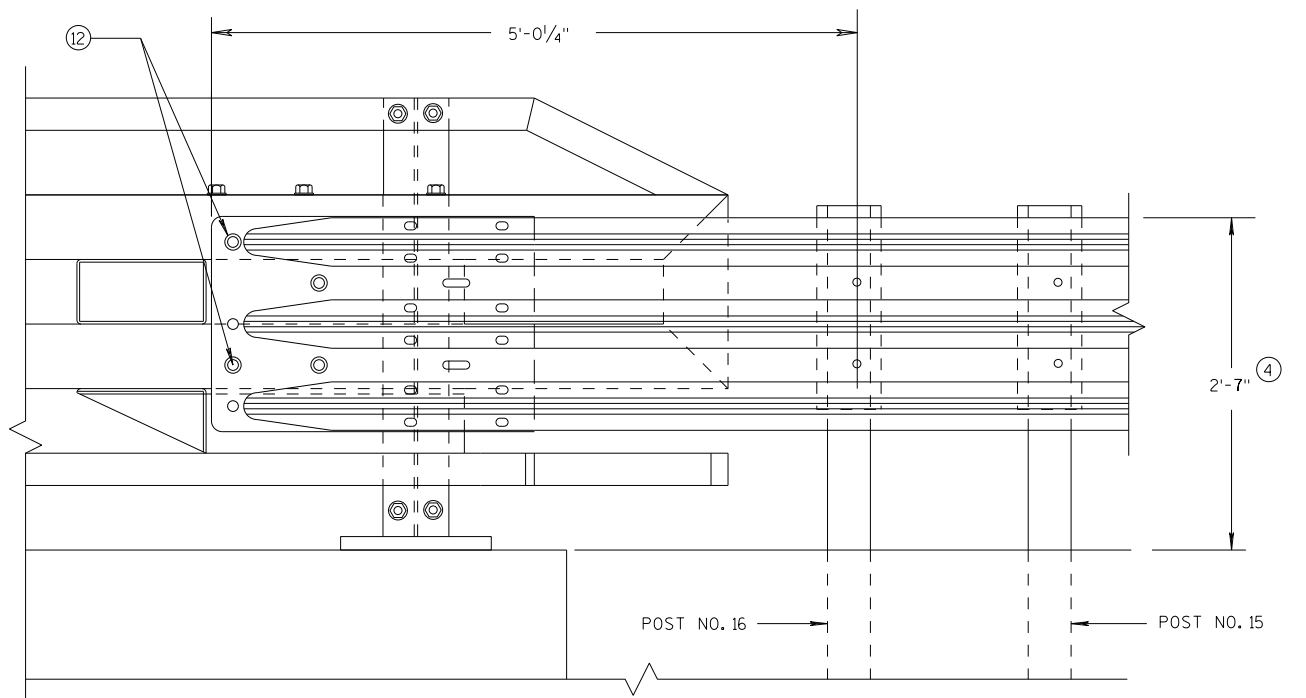
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT



ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

GENERAL NOTES

- (4) TOLERANCE FOR TOP OF BEAM IS ± 1".
- (12) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND 1/2-INCH BEYOND NUT.

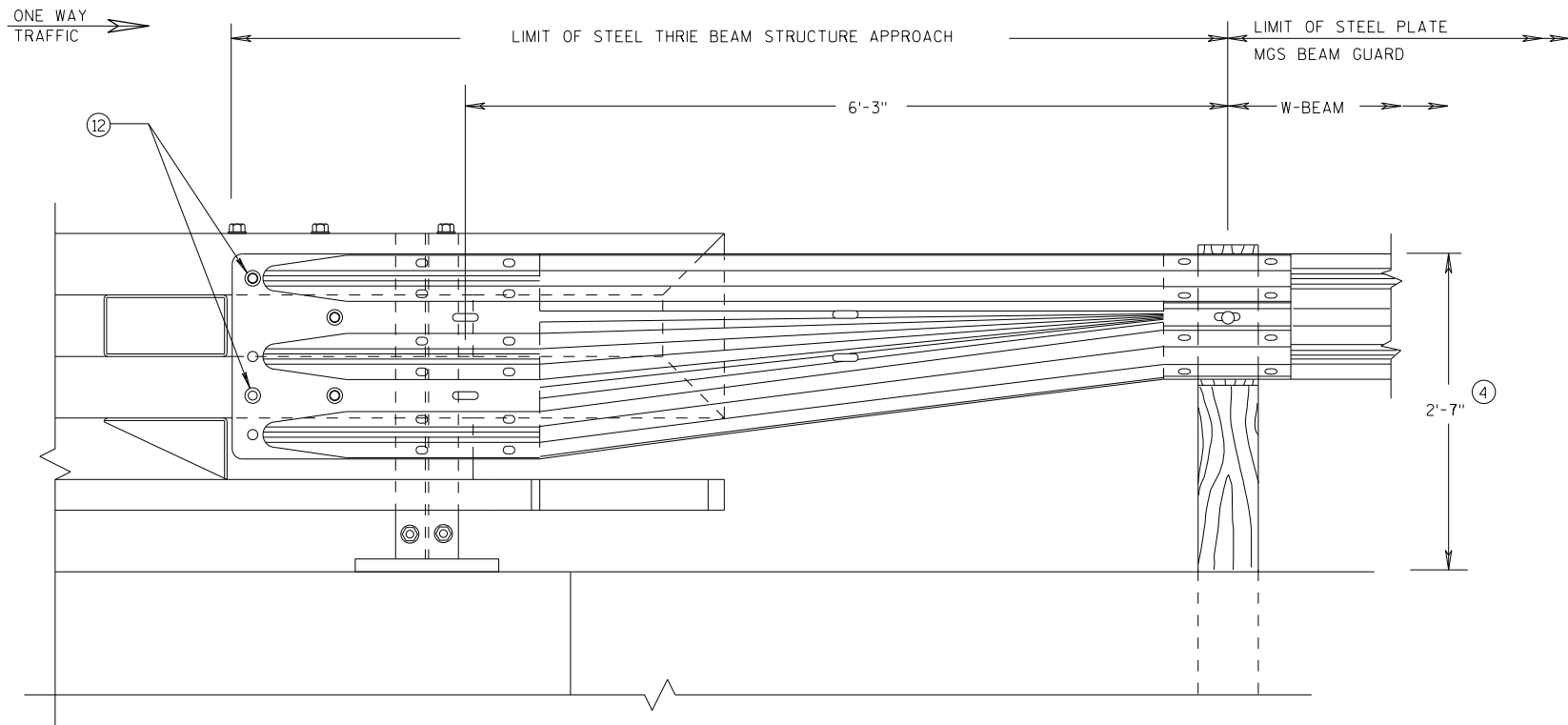
6

6

S.D.D. 14 B 45-5K

S.D.D. 14 B 45-5K

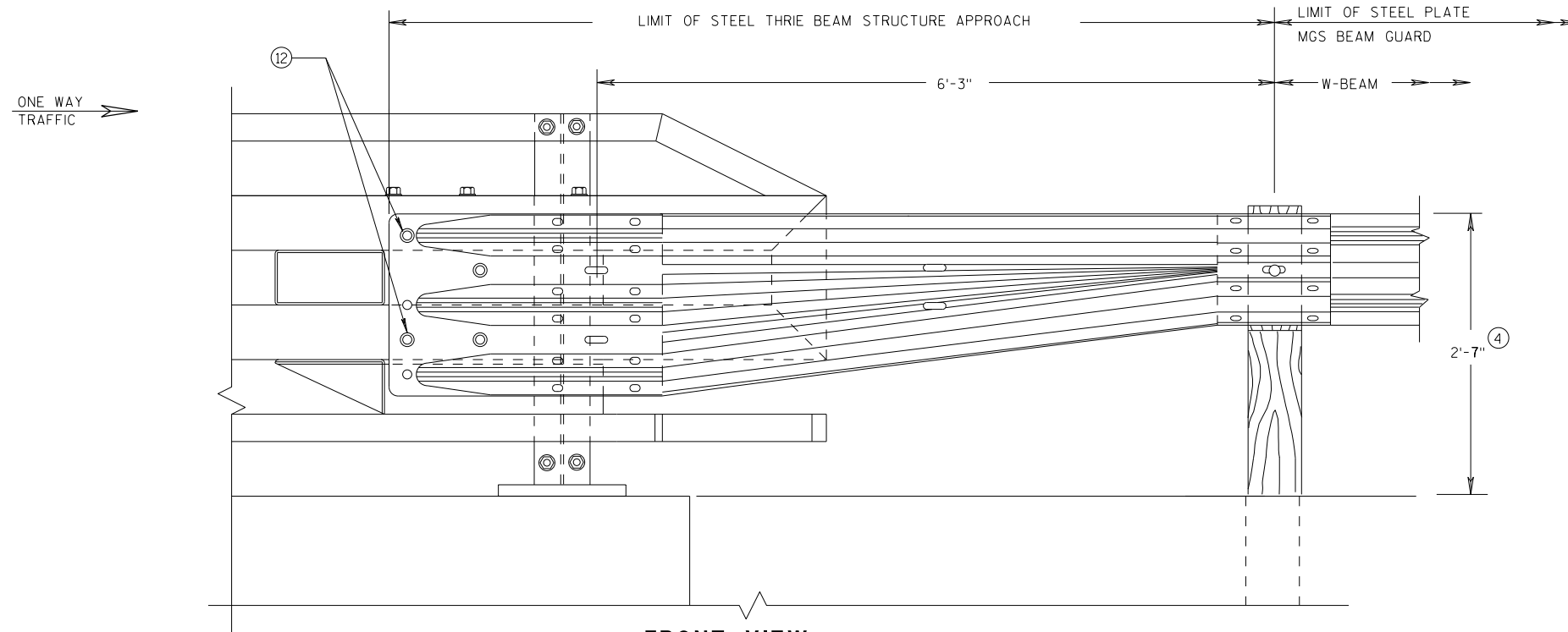
| | |
|---|---|
| MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED DATE | /S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR |
| FHWA | |



FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY3"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND $\frac{1}{2}$ -INCH BEYOND NUT.

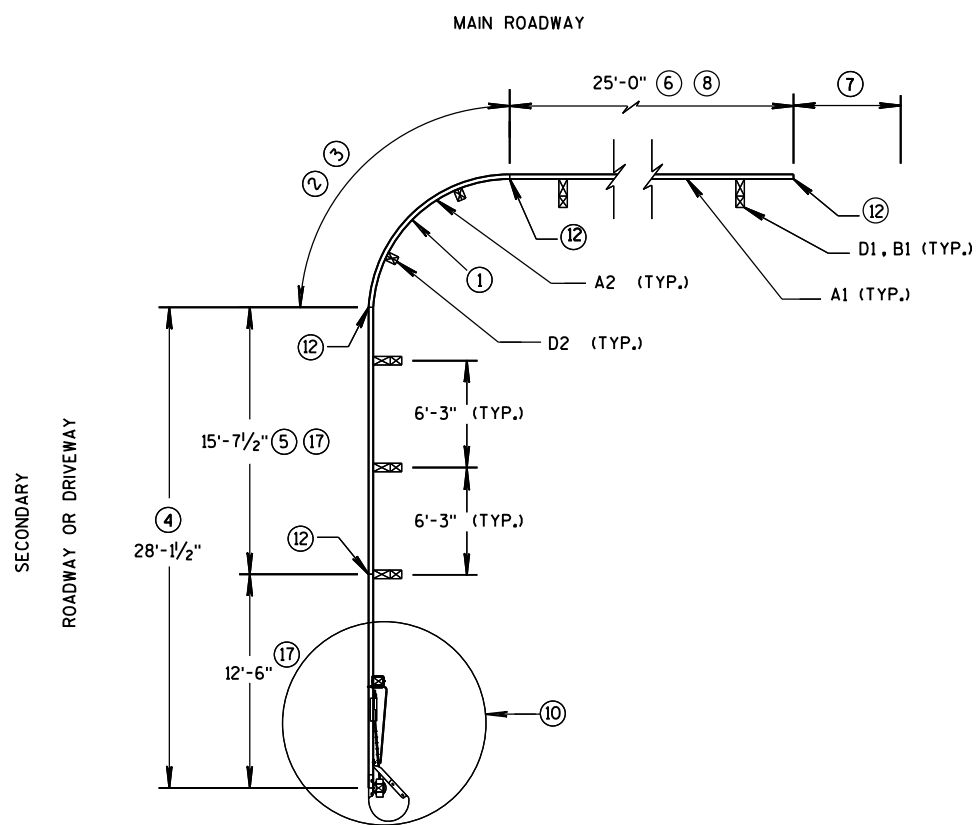


FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY4"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

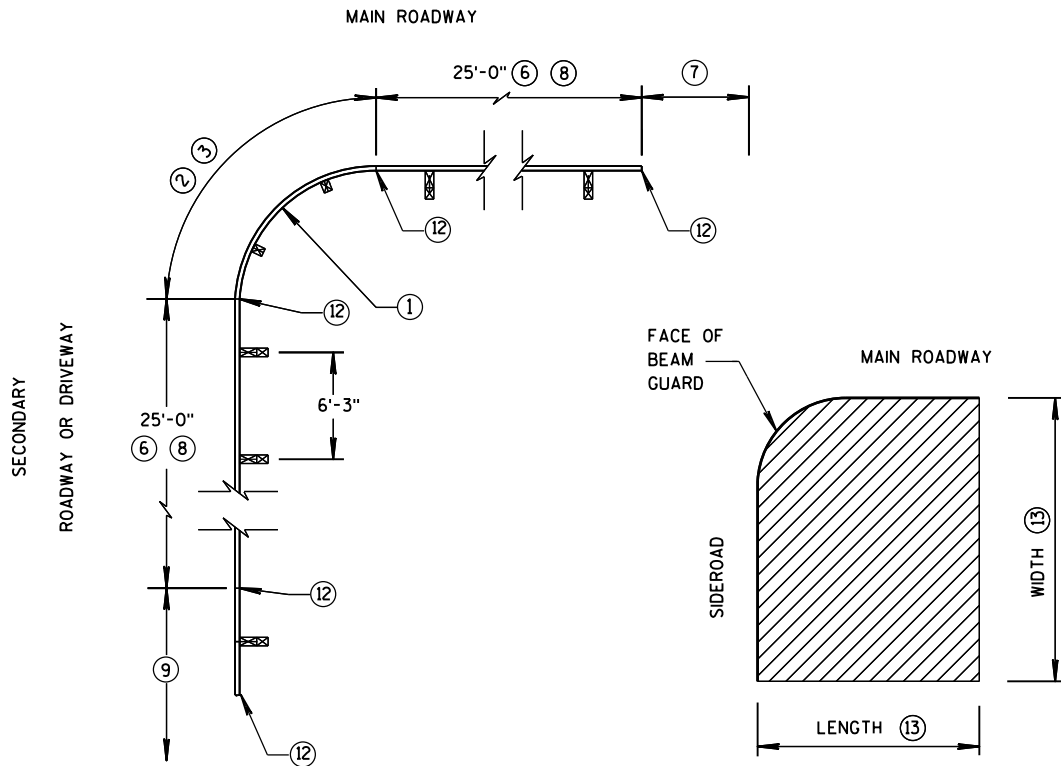
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

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



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



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

TABLE FOR RADIUS OF 32' AND LESS

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

GENERAL NOTES

SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.

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

GALVANIZE PARTS AFTER FABRICATION.

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

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

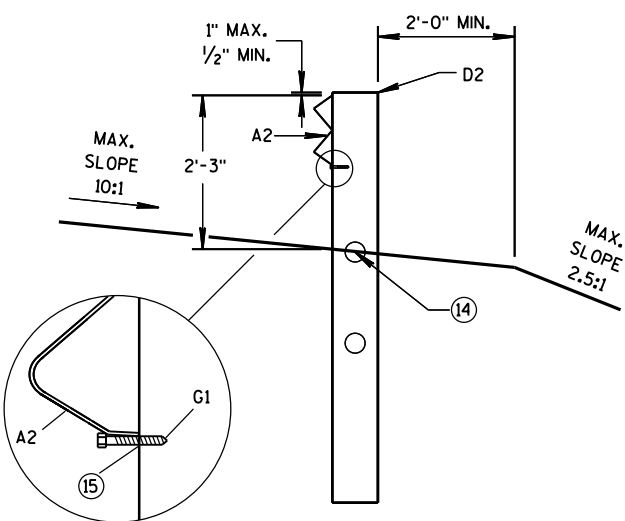
UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERTICAL.

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

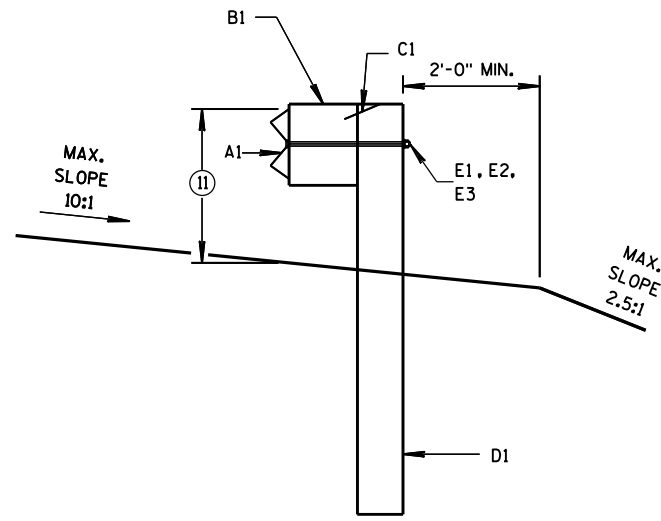
UNLESS NOTED OTHERWISE CUT OR PROVIDE BOLTS THAT ARE 1/4" TO 1/2" BEYOND THE NUT

DRAWINGS ARE NOT TO SCALE.

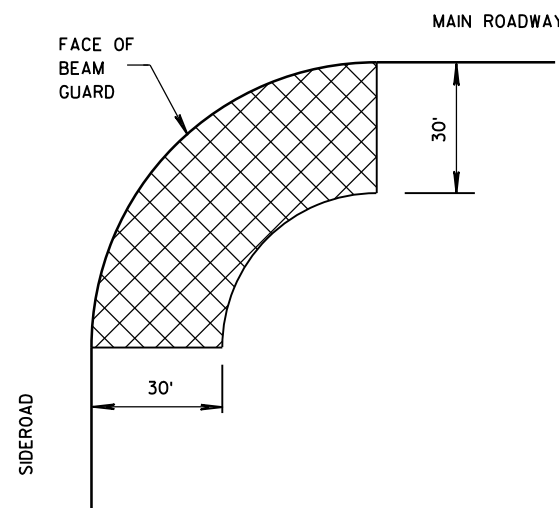
- ① RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- ② CONTROLLED RELEASE TERMINAL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



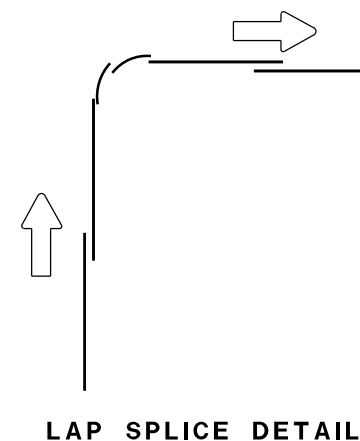
CONTROLLED RELEASE TERMINAL POST (CRT) IN RADIUS



BEAM GUARD POSTS IN HEIGHT TRANSITION



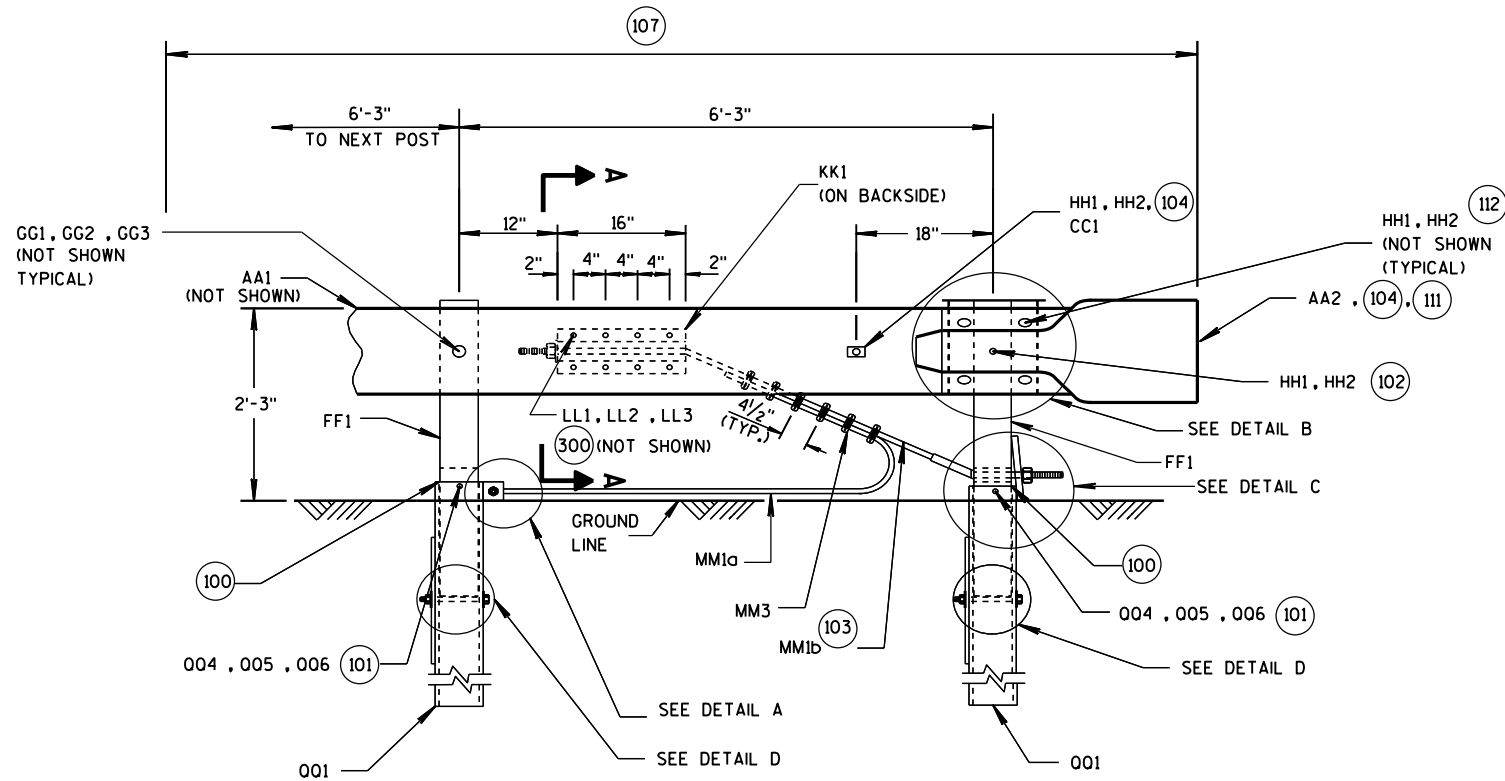
AREA FREE OF FIXED OBJECTS RADIUS GREATER THAN 32'



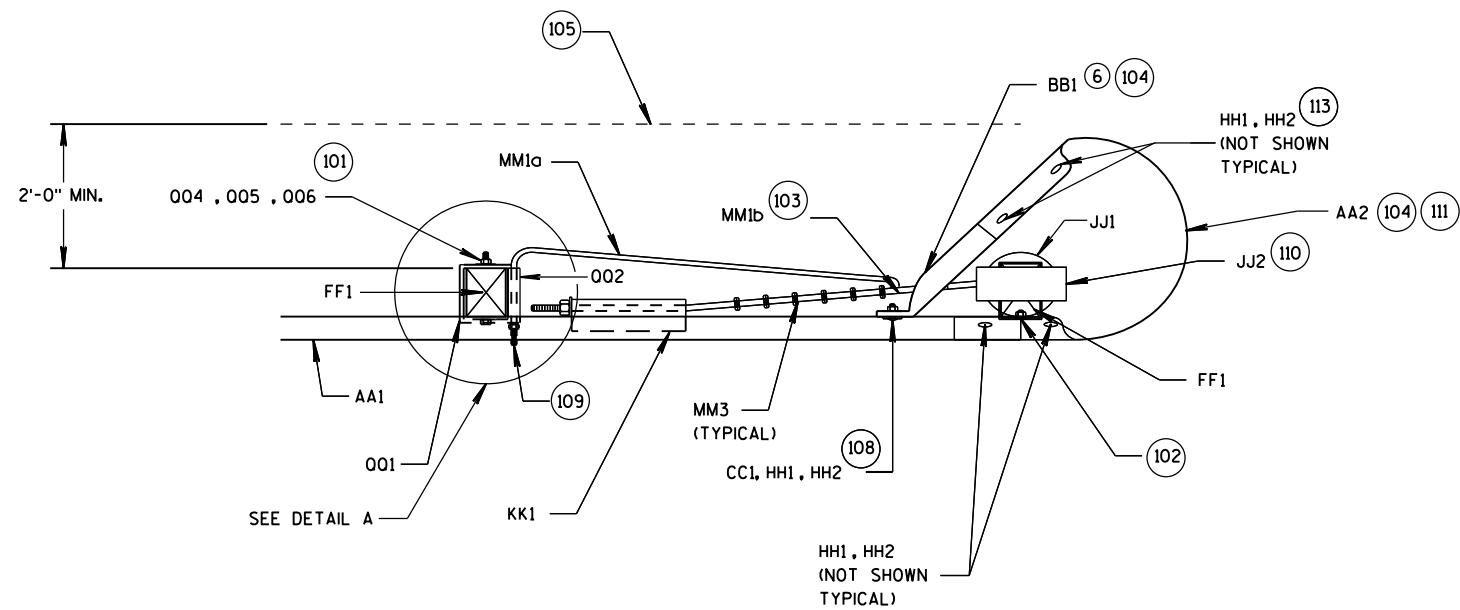
LAP SPLICE DETAIL

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

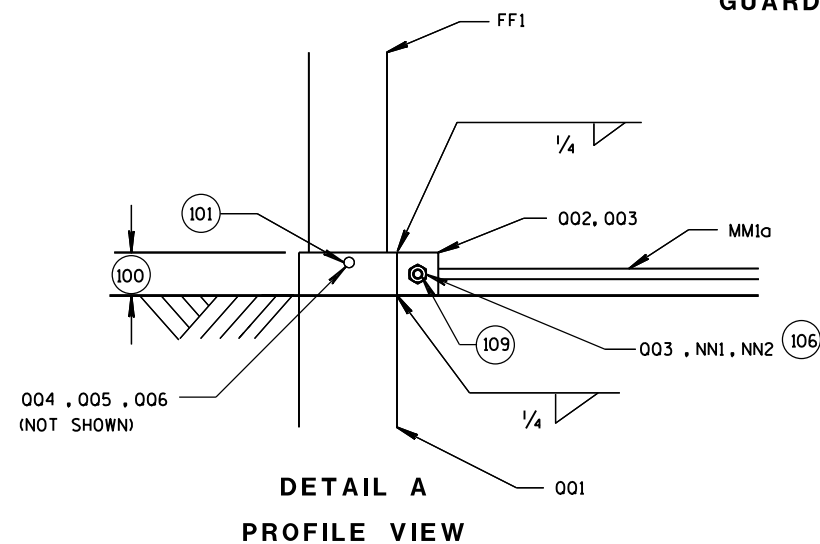
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



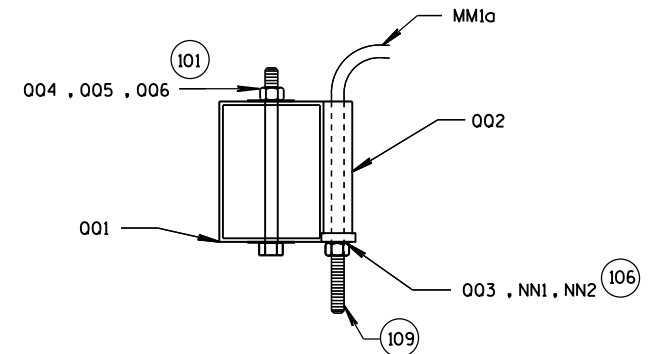
**SHORT RADIUS TERMINAL
PROFILE VIEW**



**SHORT RADIUS TERMINAL
TOP VIEW**



**DETAIL A
PROFILE VIEW**

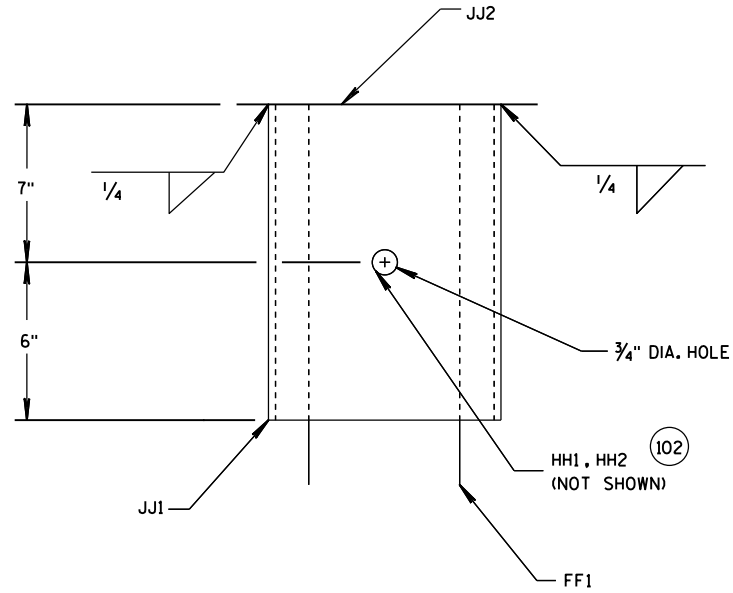


**DETAIL A
TOP VIEW
(WOOD BREAKAWAY AND BEAM
GUARD RAIL POSTS NOT SHOWN)**

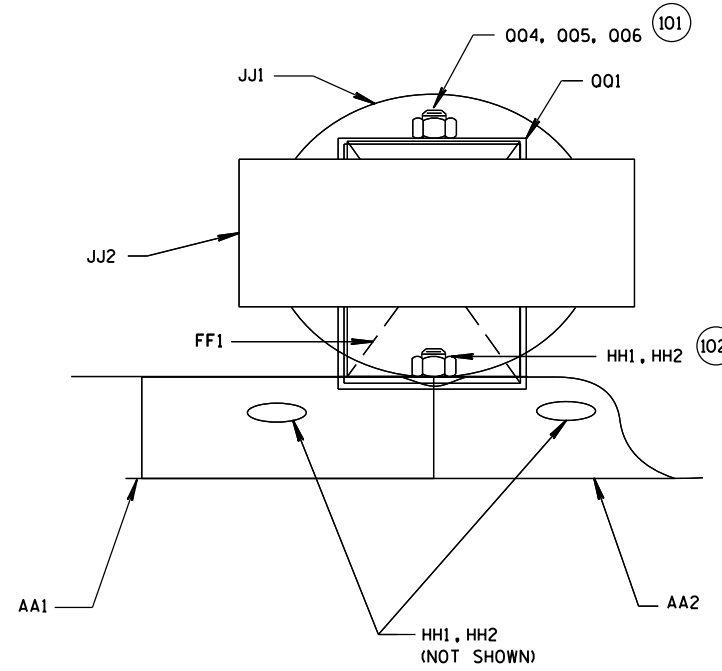
- 100 TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- 101 WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- 102 SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM END SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

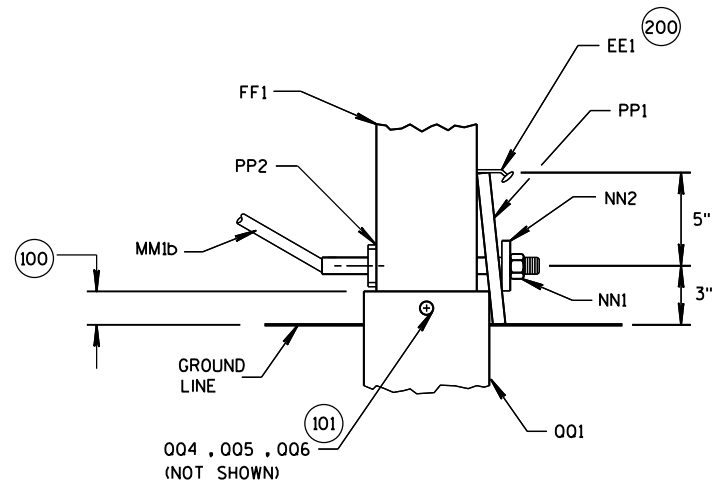


DETAIL B
PROFILE VIEW OF STEEL PIPE ASSEMBLY
 (BEAM GUARD AND W-BEAM
 END SECTION NOT SHOWN)

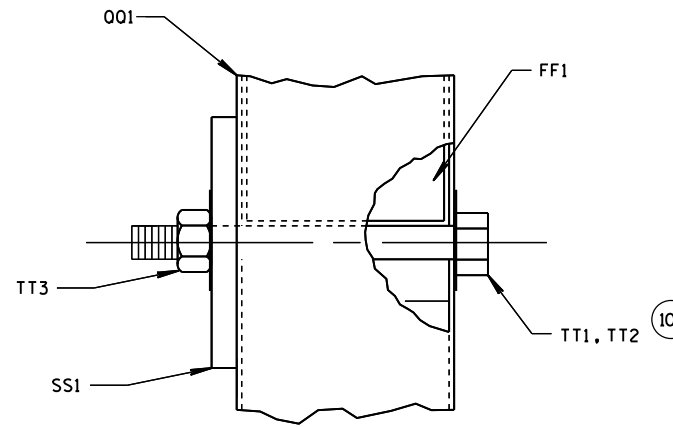


DETAIL B
PLAN VIEW OF STEEL PIPE ASSEMBLY

(200) 2 NAILS SPACED 4 INCHES CENTER TO CENTER.



DETAIL C
PROFILE VIEW

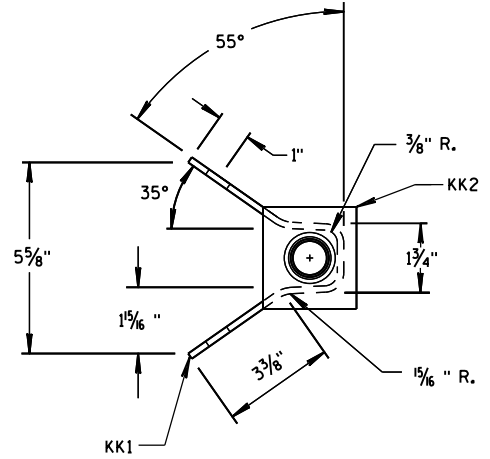
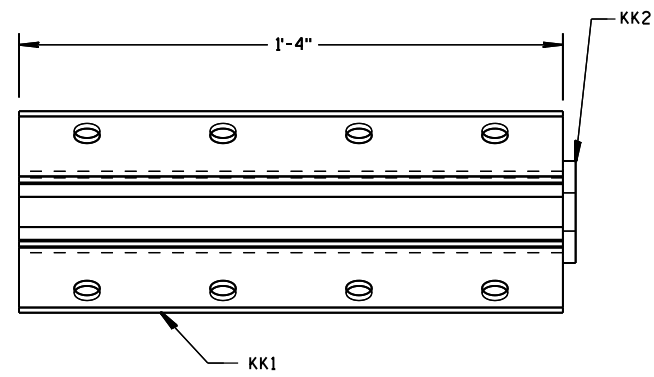
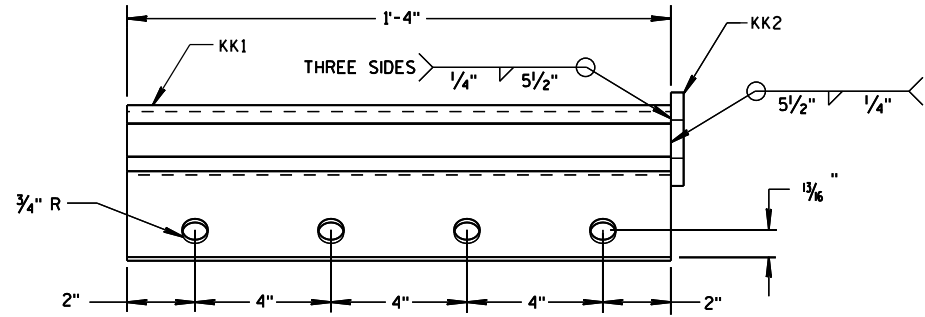


DETAIL D
PROFILE VIEW

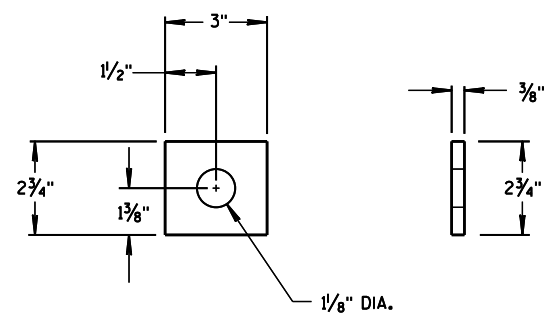
**SHORT RADIUS BEAM GUARD
 (MGS) SHORT RADIUS
 TERMINAL (MGS)**

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

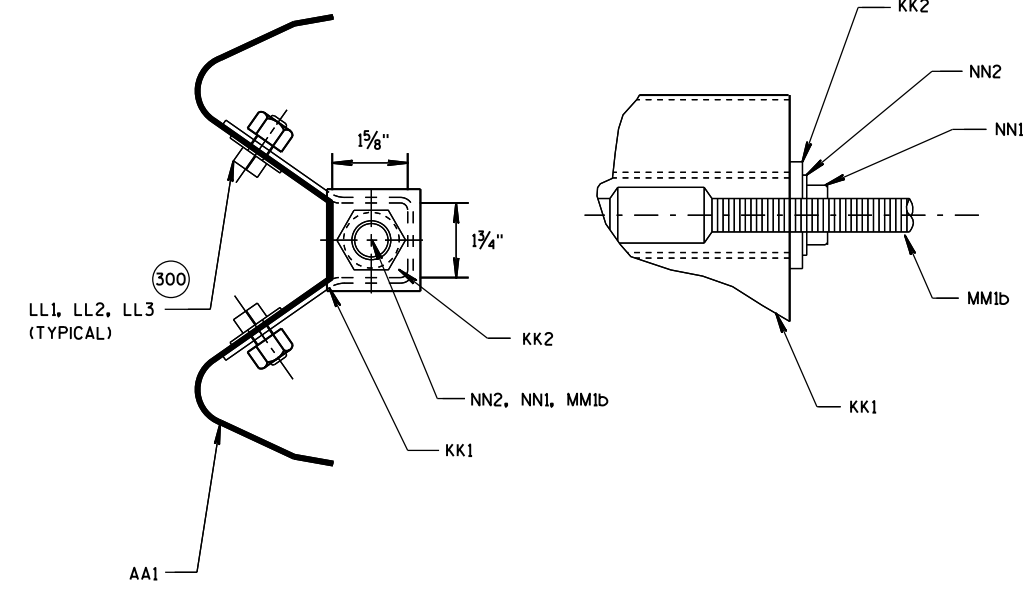
300 WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT LL1 AND LL3 REQUIRED. SIXTEEN LL2 REQUIRED.



ANCHOR BRACKET (KK1, KK2)



ANCHOR BRACKET BEARING PLATE (KK2)



SECTION A-A

6

6

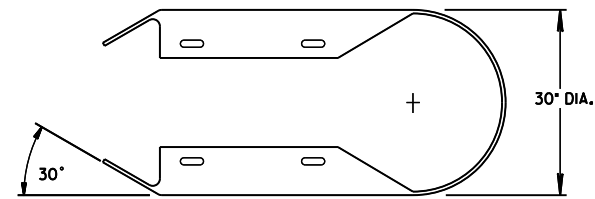
S.D.D. 14 B 53-1d

S.D.D. 14 B 53-1d

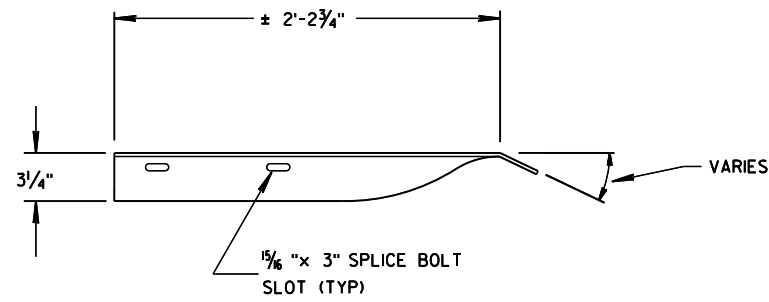
SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

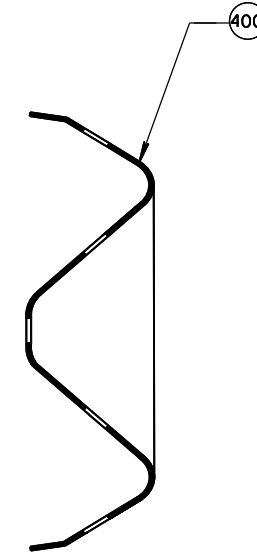
400 CROSS SECTION OF PART IS TO FIT OVER AAL.
 401 CROSS SECTION OF PART IS TO FIT OVER OR UNDER AAL.



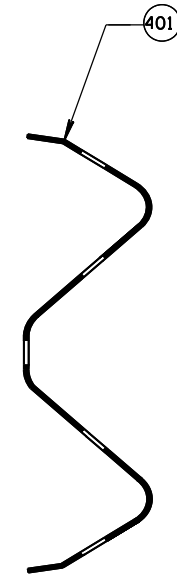
TOP VIEW



TOP VIEW

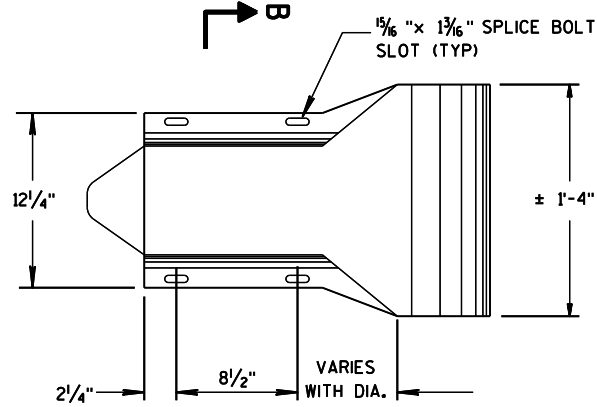


SECTION B-B

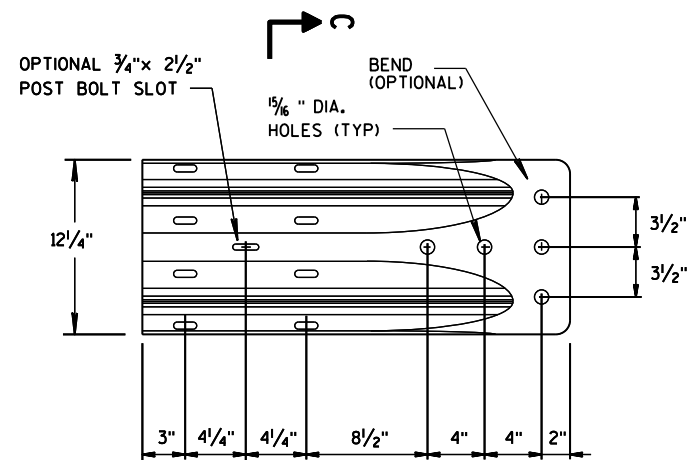


SECTION C-C

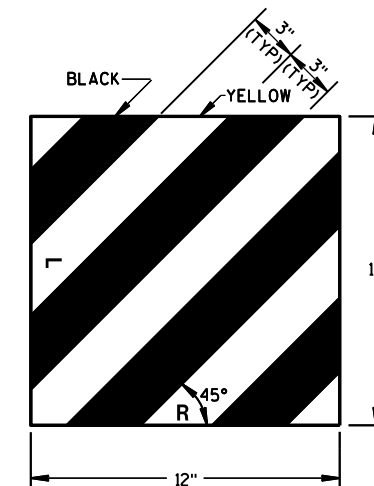
6



W-BEAM
 END SECTION BUFFER (AA2)
 PROFILE VIEW



W-BEAM
 TERMINAL CONNECTOR (BB1)
 PROFILE VIEW



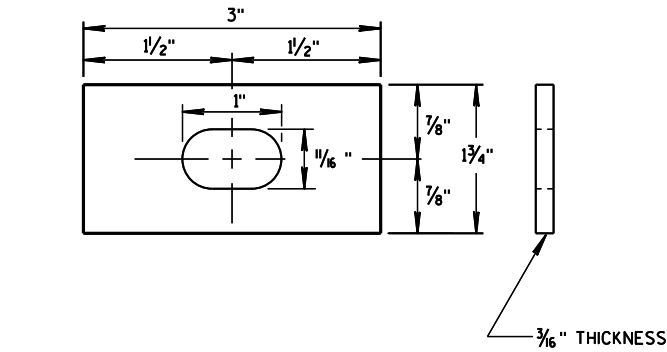
REFLECTIVE SHEETING
 (UU1, UU2)

6

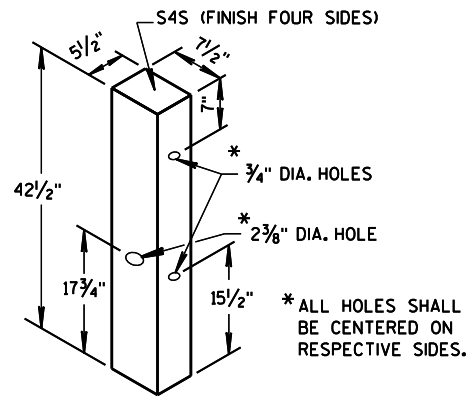
S.D.D. 14 B 53-1e

S.D.D. 14 B 53-1e

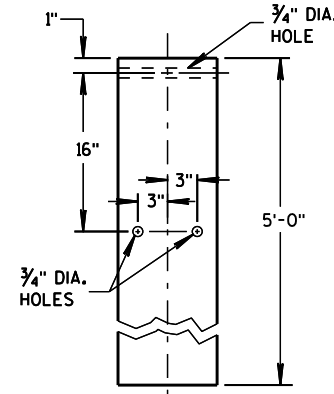
SHORT RADIUS BEAM GUARD
 (MGS) SHORT RADIUS
 TERMINAL (MGS)
 STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION



**RECTANGULAR
PLATE WASHER (CC1)**

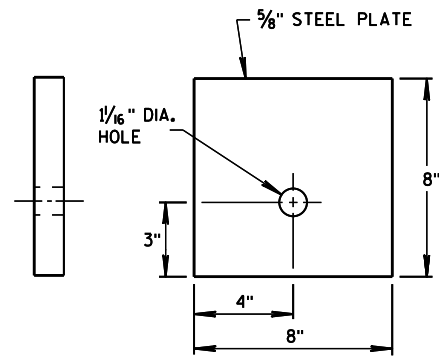


**WOOD BREAKAWAY POST
(FF1)**

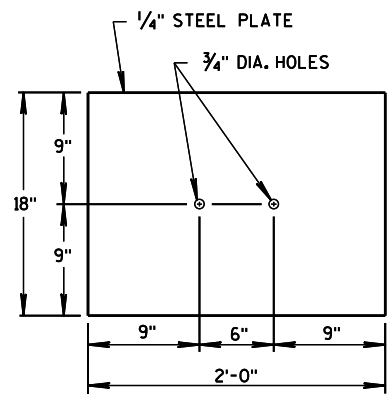


FOUNDATION TUBE (QQ1) ⁽⁵⁰⁰⁾

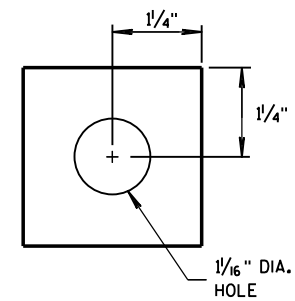
- (500) SEE DETAIL "D" FOR LOCATION AND ATTACHING SSI.
- (501) FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.
- (502) LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.
- (503) MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE (109).



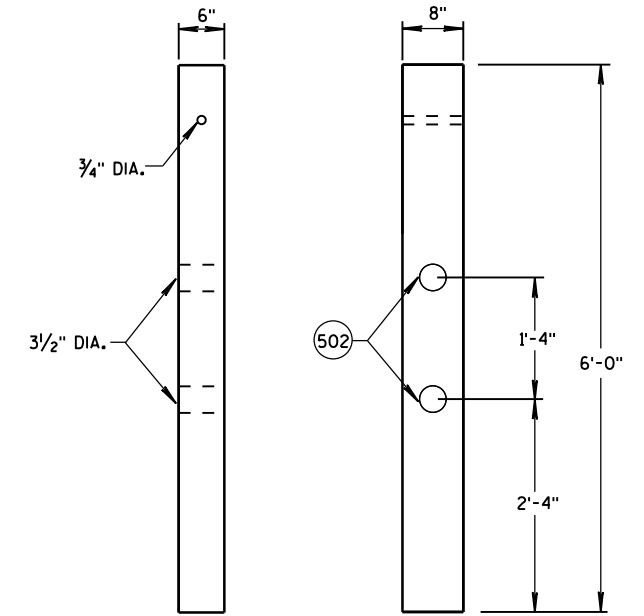
BEARING PLATE (PP1)



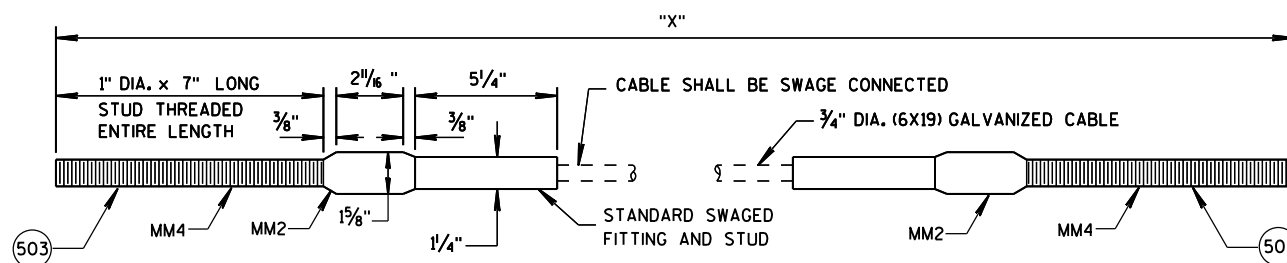
SOIL PLATE (SS1)



TUBE END PLATE (QQ3)



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



CABLE ASSEMBLY (MM1a , MM1b)

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

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

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S.D.D. 14 B 53-19

S.D.D. 14 B 53-19

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

| PART | DESCRIPTION | MATERIALS SPECIFICATIONS | NOTES |
|------|--|---|--|
| MM1a | ANCHOR CABLE | AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIC CLASS C ZINC COATED | |
| MM1b | ANCHOR CABLE | AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIC CLASS C ZINC COATED | |
| MM2 | ANCHOR CABLE - SWAGE FITTING | ASTM A576 GRADE 1035 | |
| | | SWAGE FITTINGS ARE TO BE FACTORY SWAGED. WITH A BREAKING STRENGTH 40,000 LBS. | |
| | | GALV. AASHTO M111 / ASTM A123 | |
| MM3 | WIRE ROPE CABLE CLAMPS | FF-C-450D TYPE 1 CLASS 1 | $\frac{3}{4}$ " |
| | | ASTM A153 HOT DIP CLASS D | |
| MM4 | ANCHOR CABLE - SWAGE FITTING - STUD | ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD | |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1 | |
| | | UNC | |
| NN1 | ANCHOR CABLE - NUT | ASTM A563 GRADE A | 1" DIA. |
| | | AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD | |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1 | |
| NN2 | ANCHOR CABLE - NUT - WASHER | OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A563 | 1" DIA. |
| | | UNC | |
| PP1 | BEARING PLATE AT POST | ASTM F436 TYPE 1 (HARDEN WASHER ONLY) | 1" DIA. |
| | | GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 | |
| PP2 | PIPE - STEEL | 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 | 2" DIA. x 6" LONG |
| | | GALV. AASHTO M111 / ASTM A123 | |
| Q01 | FOUNDATION TUBE | ASTM A500 GRADE B | 8" X 6" X $\frac{3}{16}$ " |
| | | GALV. AASHTO M111 / ASTM A123 | |
| Q02 | SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE | ASTM A500 GRADE B | DIMENSIONS $\frac{2}{2}$ " X $\frac{2}{4}$ " X $\frac{1}{4}$ " X 8" |
| | | GALV. AASHTO M111 / ASTM A123 | |

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S.D.D. 14 B 53-1h

S.D.D. 14 B 53-1h

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

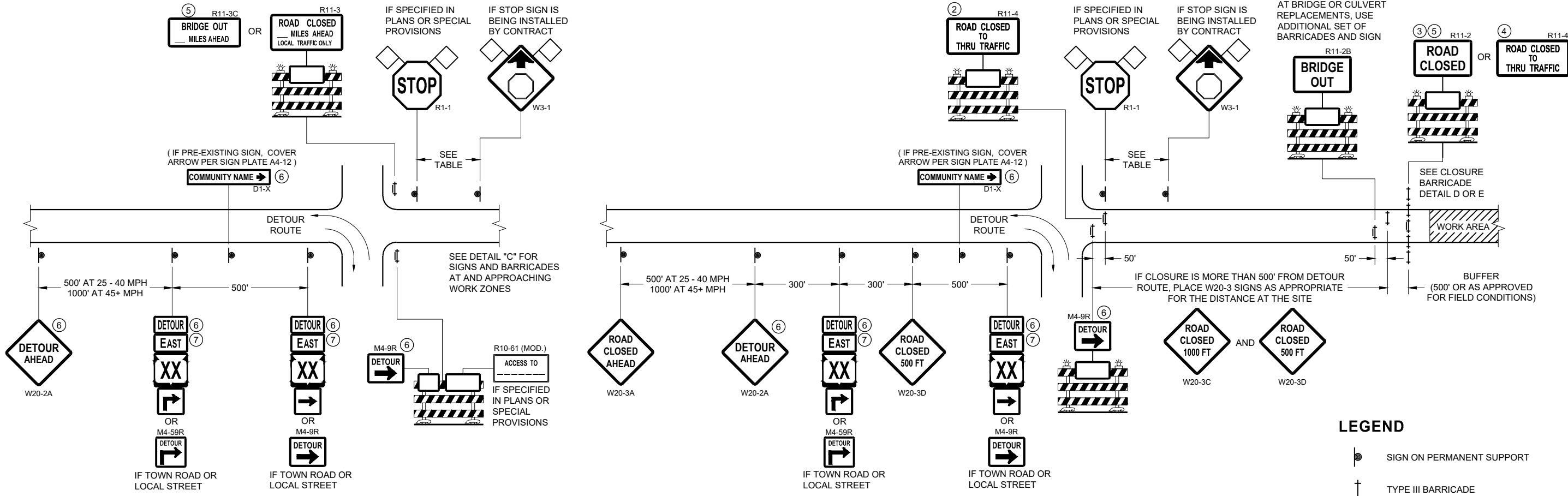
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S.D.D. 14 B 53-11

S.D.D. 14 B 53-11

| | |
|--|---|
| SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED June 2017 DATE | /S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR FHWA |



DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR
 WORK ZONE GREATER THAN OR EQUAL TO 1/2 MILE FROM
 DETOUR ROUTE (1000 FEET IF URBAN)

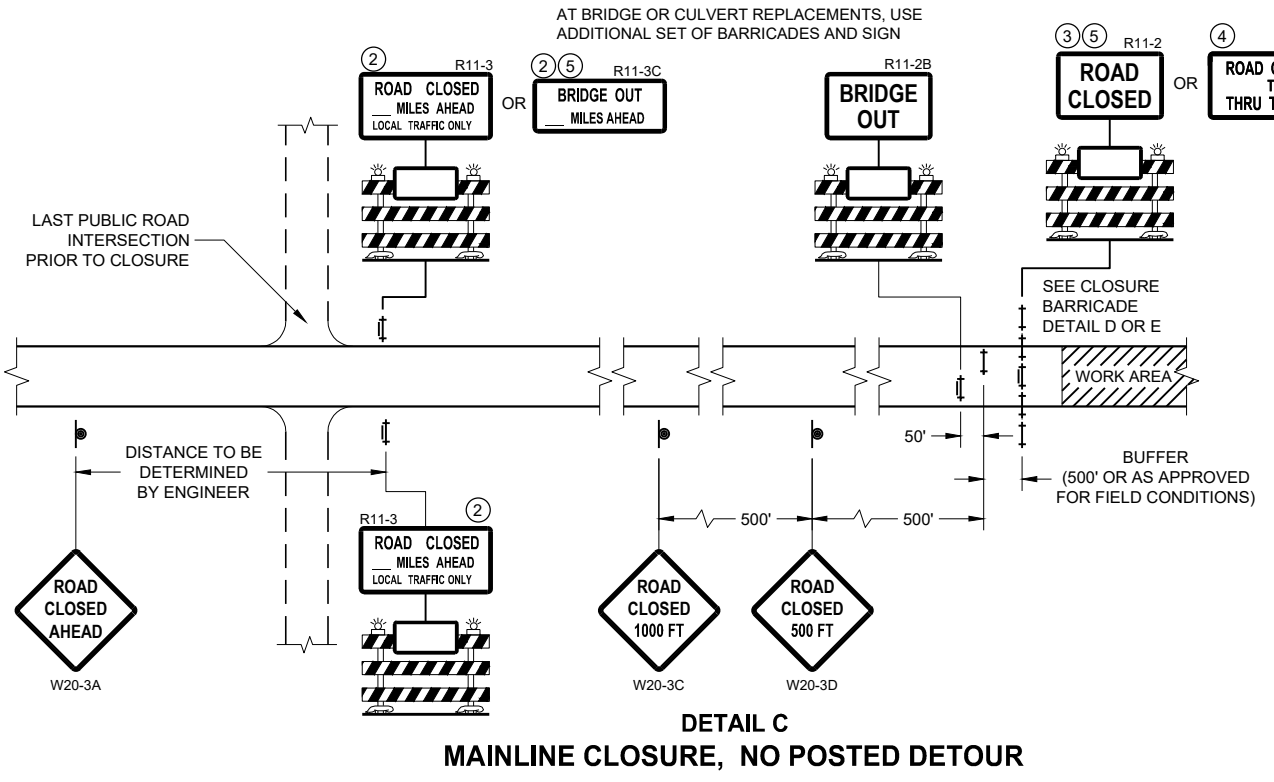
DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR
 WORK ZONE LESS THAN 1/2 MILE FROM
 DETOUR ROUTE (1000 FEET IF URBAN)

LEGEND

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

M4 - 8
 M3 - X
 M1 - 4 OR M1 - 6 OR M1 - 5A
 M05 - 1 OR M06 - 1

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

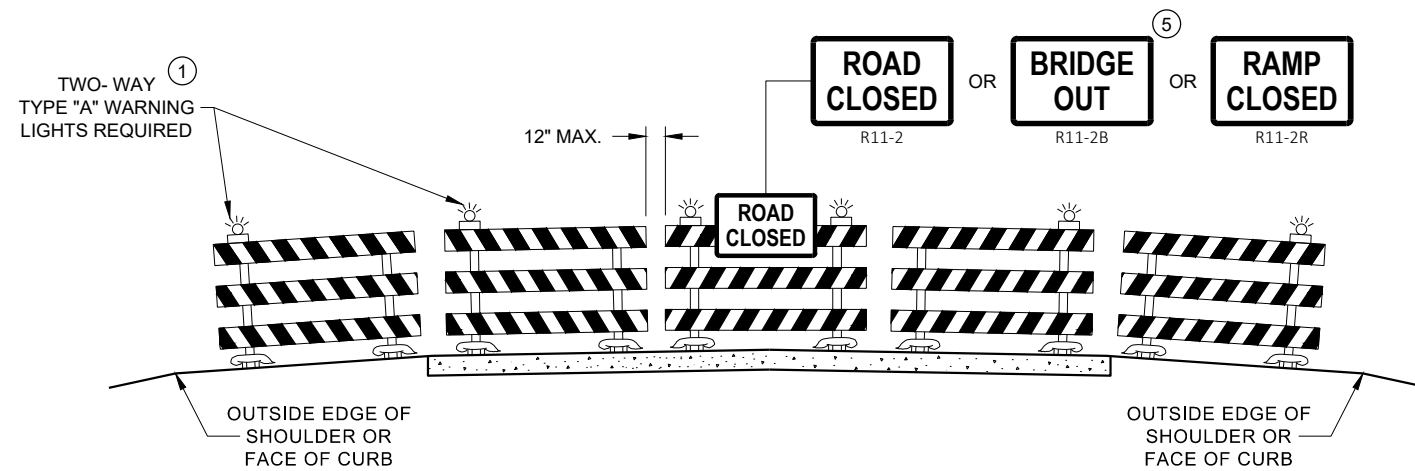
SEE SDD 15C2-SHEET "b"
 FOR GENERAL NOTES
 AND FOOTNOTES ① THROUGH ⑦

**BARRICADES AND SIGNS
 FOR MAINLINE CLOSURES**

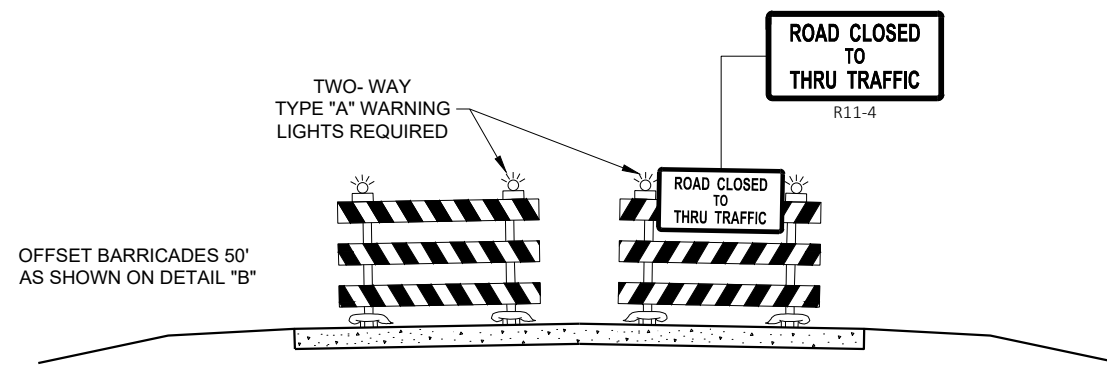
STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

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

FHWA



**DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW**



**DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW**

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

**BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

LEGEND

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- M4 - 8
- M3 - X
- M1 - 4
- M1 - 6
- M1 - 5A
- M05 - 1
- M06 - 1
- M06 - 1

GENERAL NOTES

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

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

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

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

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

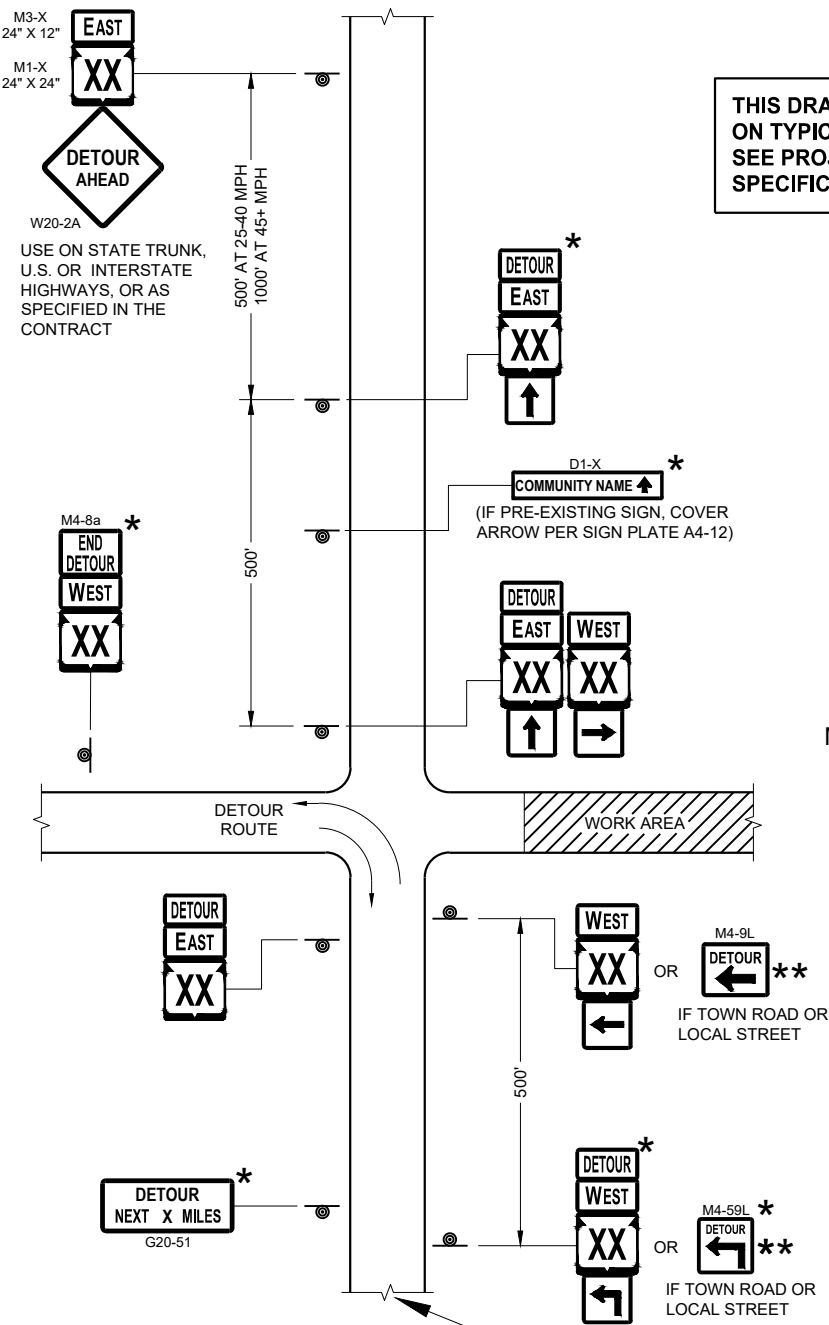
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

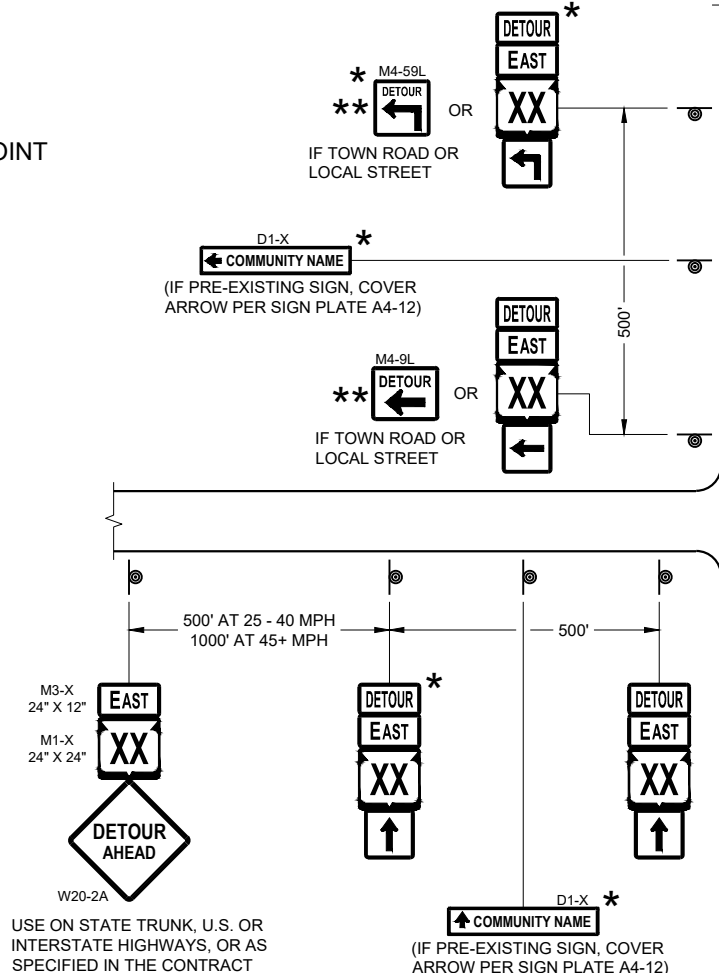
- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING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

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

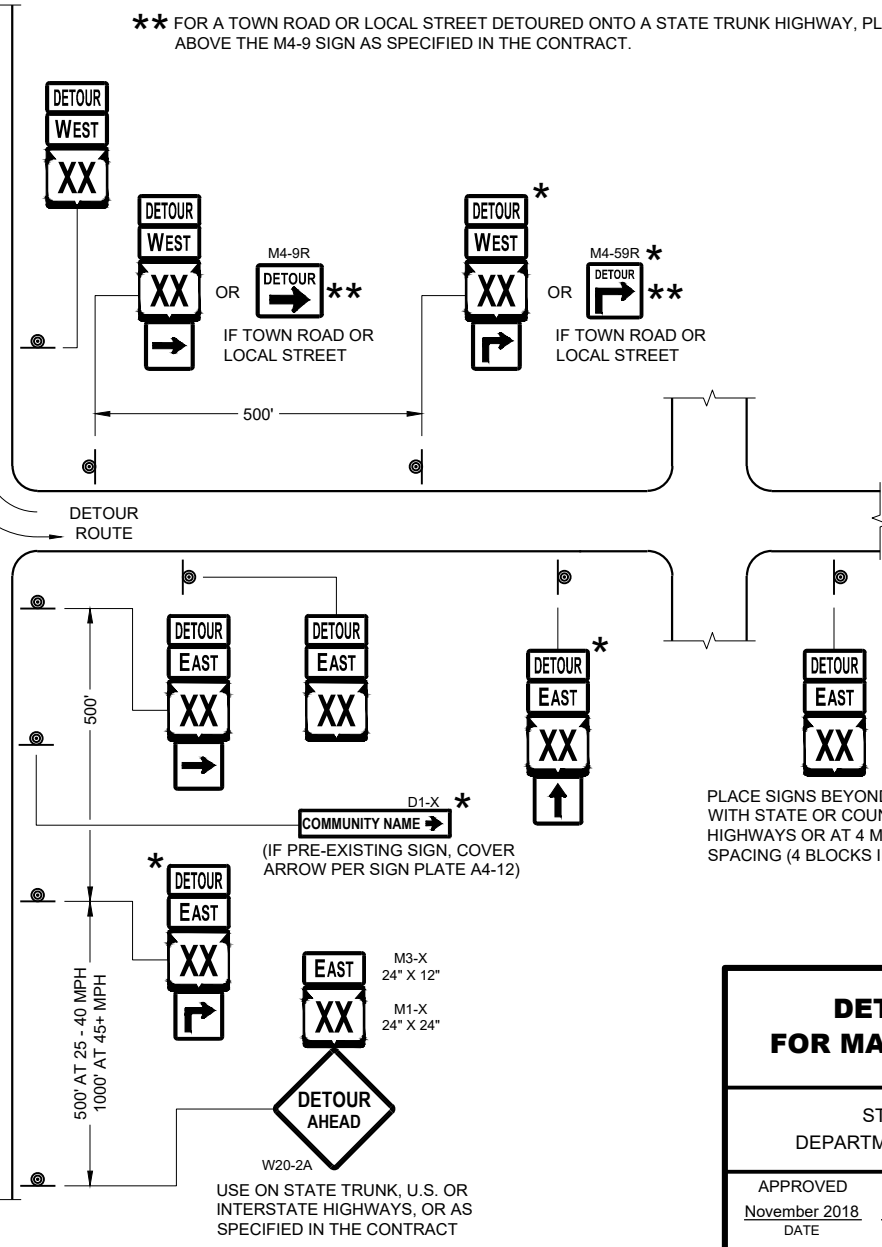
THIS DRAWING PROVIDES GENERAL GUIDANCE ON TYPICAL DETOUR SIGN LAYOUT AND SPACING. SEE PROJECT DETOUR SIGNING SHEETS FOR SPECIFIC DETAILS FOR EACH PROJECT.



MATCH POINT



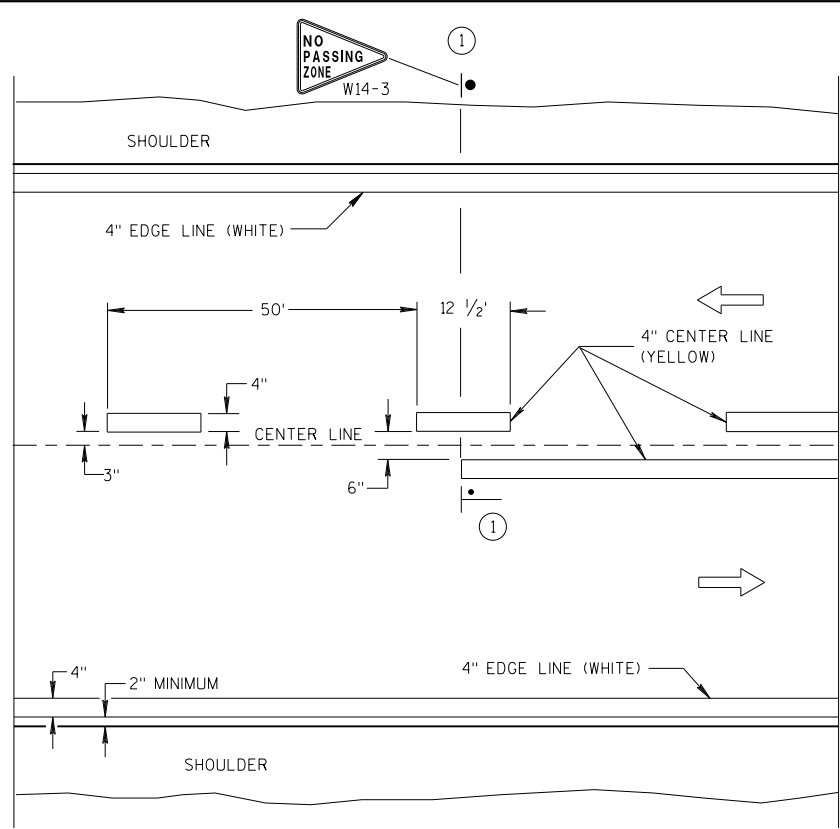
DETAIL F
DETOUR SIGNING



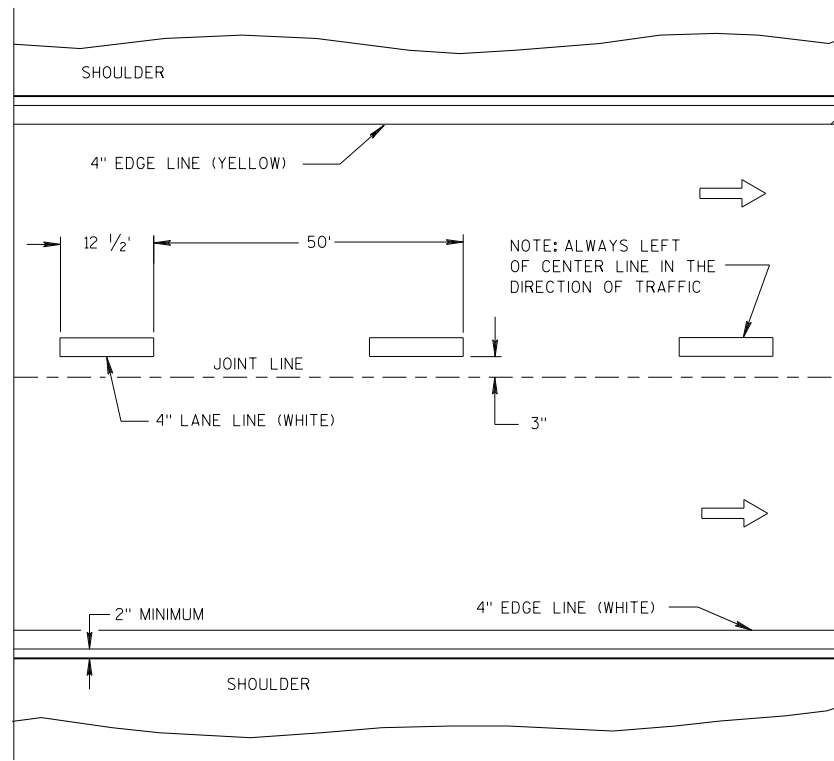
SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS AND DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

| | |
|--|--|
| DETOUR SIGNING FOR MAINLINE CLOSURES | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED November 2018 DATE | /s/ Andrew Heidtke WORK ZONE ENGINEER |
| FHWA | |

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

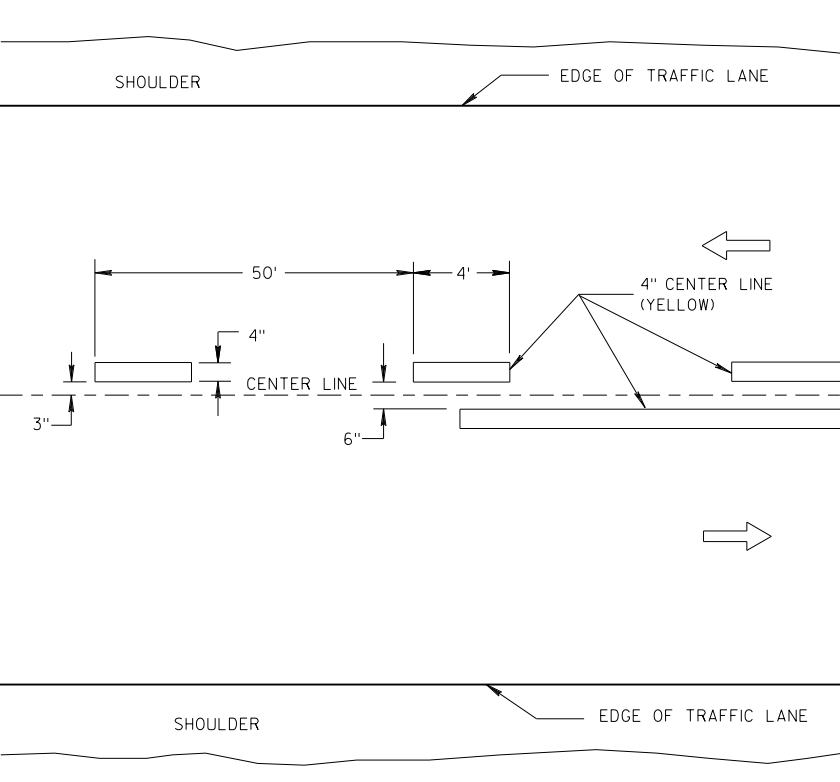


TWO WAY TRAFFIC

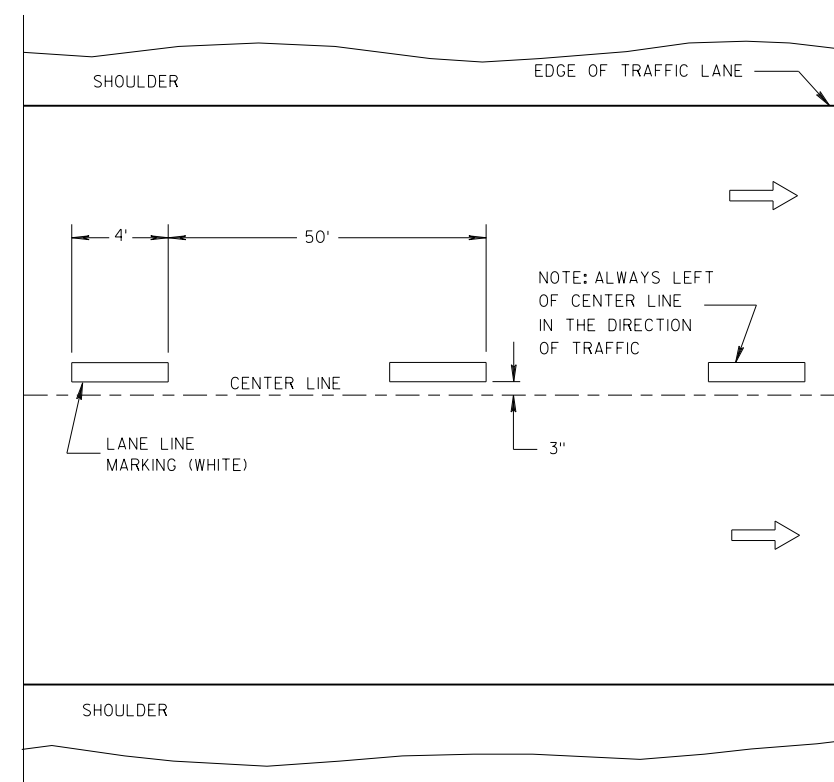


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

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

① LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING.

NOTE

ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL

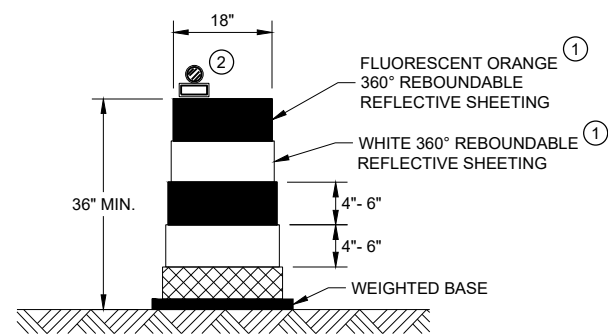
LEGEND

- "T" MARKING
- POST MOUNTED SIGN

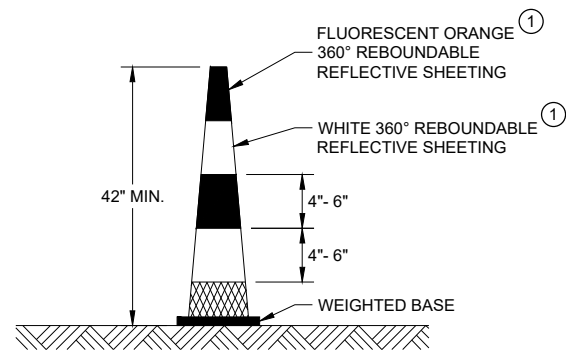
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

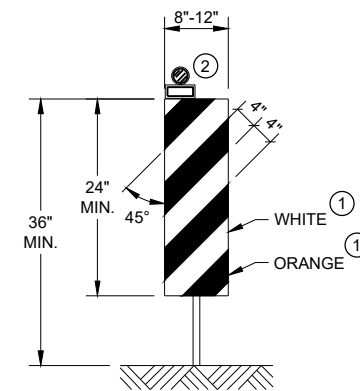


DRUM



42" CONE

DO NOT USE IN TAPERS
 1/2 SPACING OF DRUMS

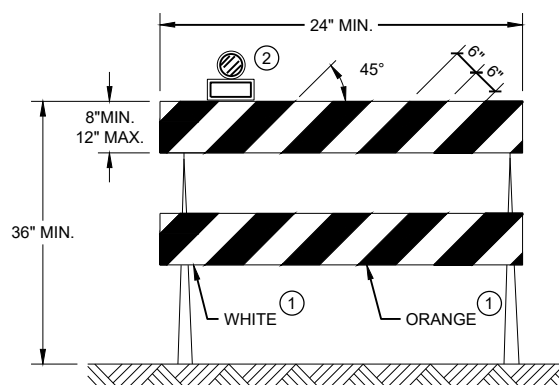


VERTICAL PANEL

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

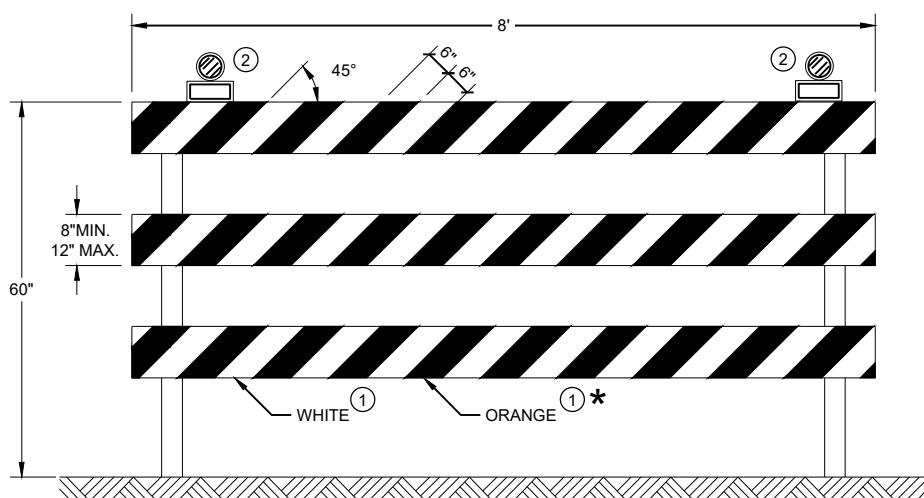
GENERAL NOTES

- 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.

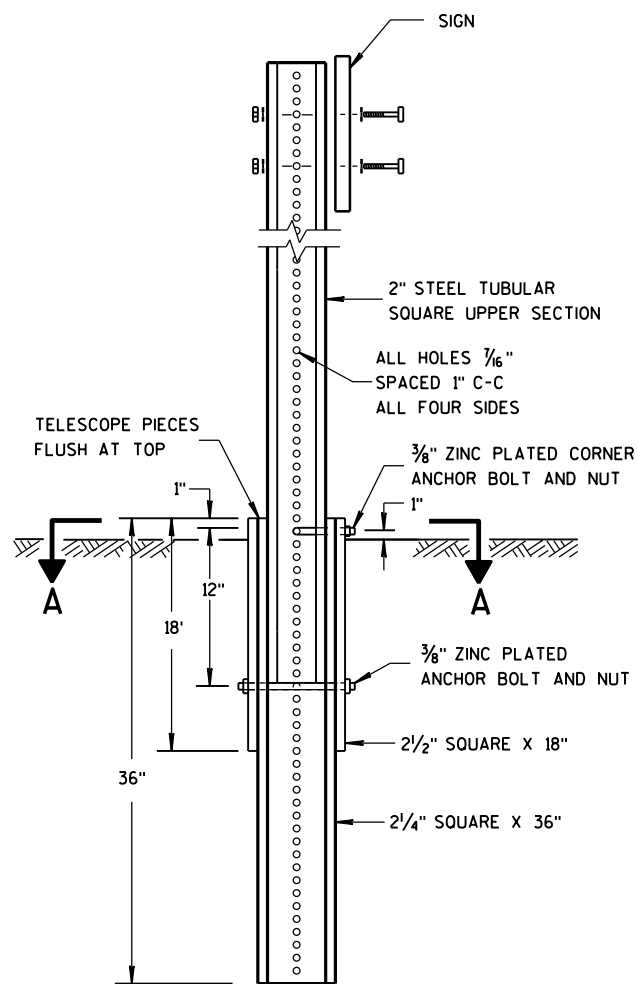


TYPE III BARRICADE

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.

| | |
|--|--|
| CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED June 2017 DATE | /S/ Andrew Heidtke WORK ZONE ENGINEER |
| FHWA | |



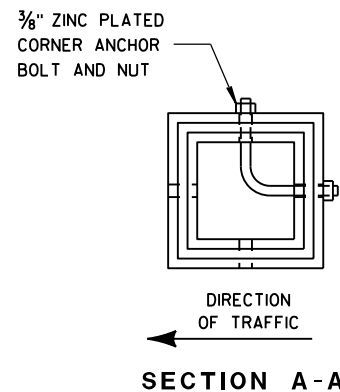
DETAIL OF TUBULAR STEEL SIGN POST

TUBULAR STEEL POSTS

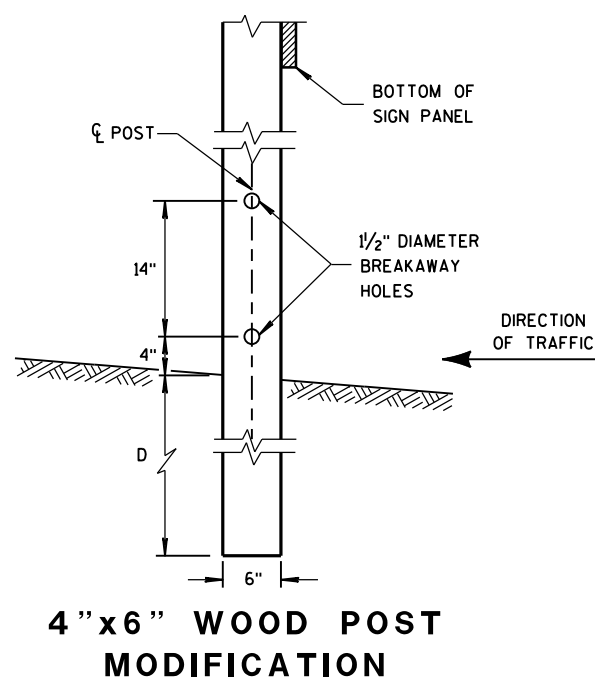
| AREA OF SIGN INSTALLATION (SQ. FT.) | NUMBER OF REQUIRED TUBULAR STEEL POSTS |
|--|--|
| 9 OR LESS | 1 |
| GREATER THAN 9 LESS THAN OR EQUAL TO 18 | 2 |
| GREATER THAN 18 LESS THAN OR EQUAL TO 27 | 3 |

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).

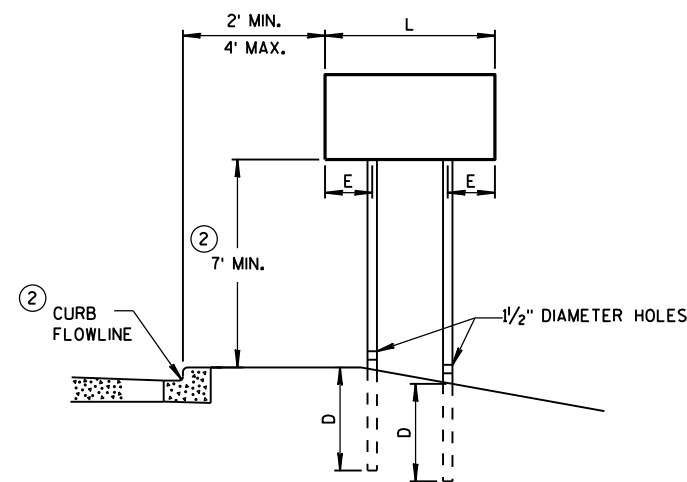
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.



SECTION A-A



4" X 6" WOOD POST MODIFICATION

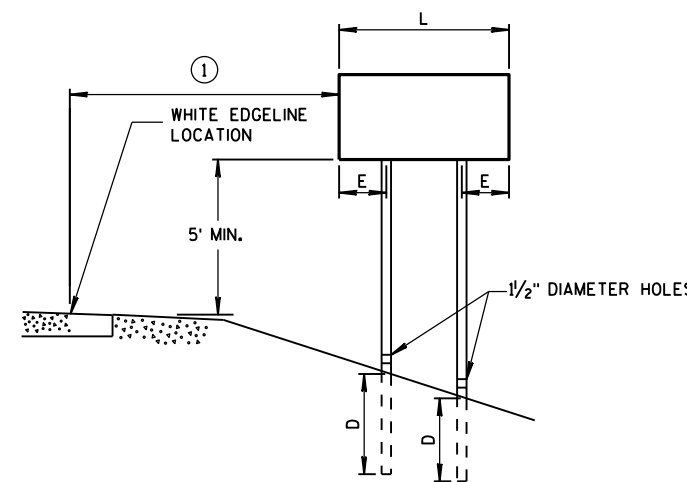


URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH

| AREA OF SIGN INSTALLATION (SQ. FT.) | D (MIN) |
|-------------------------------------|---------|
| 20 OR LESS | 4' |
| GREATER THAN 20 | 5' |



RURAL AREA

4" X 6" WOOD POST

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

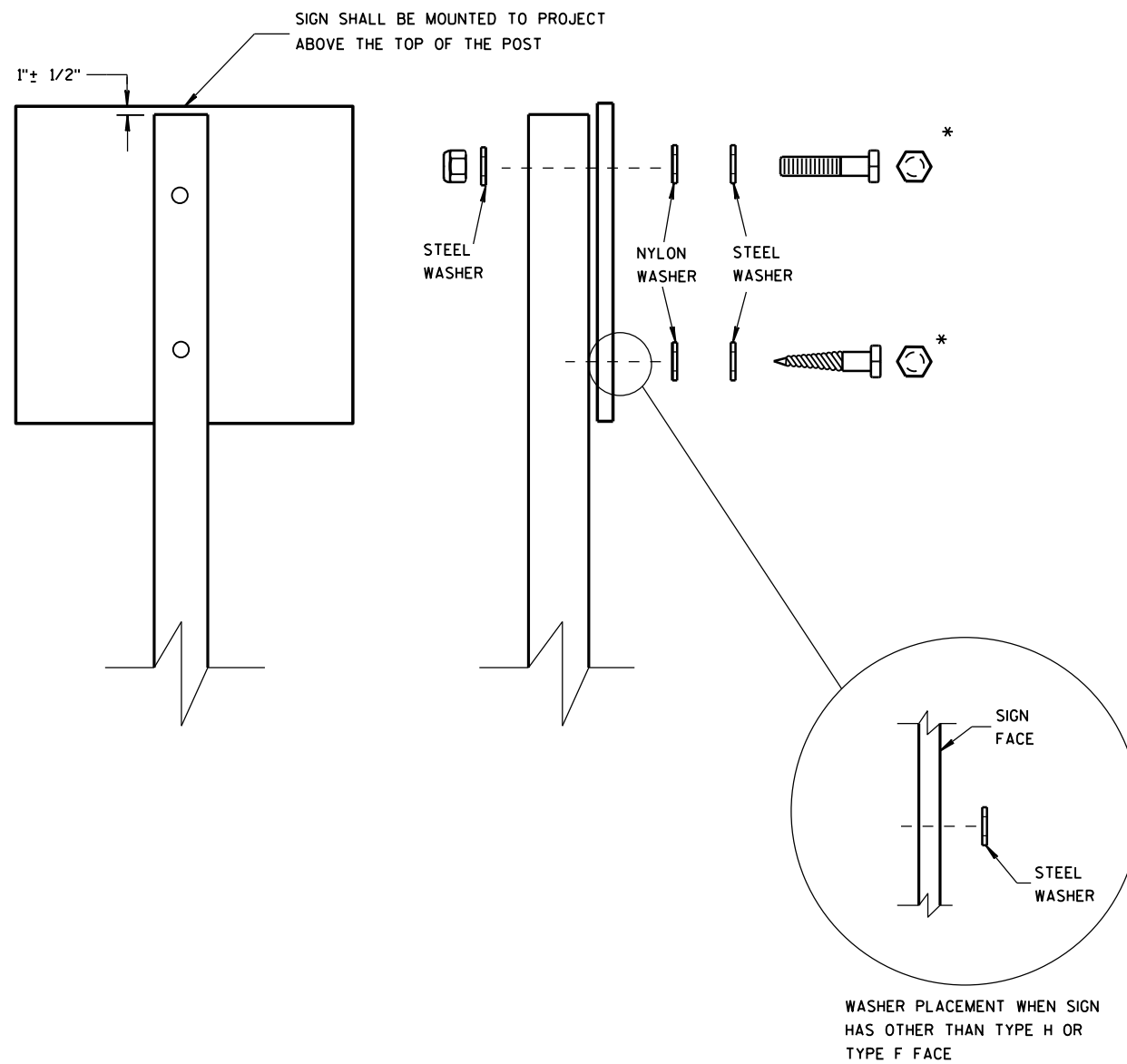
SEE NOTE ③

GENERAL NOTES

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

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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

A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3

B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

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

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3"

MACHINE BOLTS - 5/16" X 6-1/2" OR 7" LENGTH W/ NUTS

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" LENGTH W/ NUTS

RIVETS - 5/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

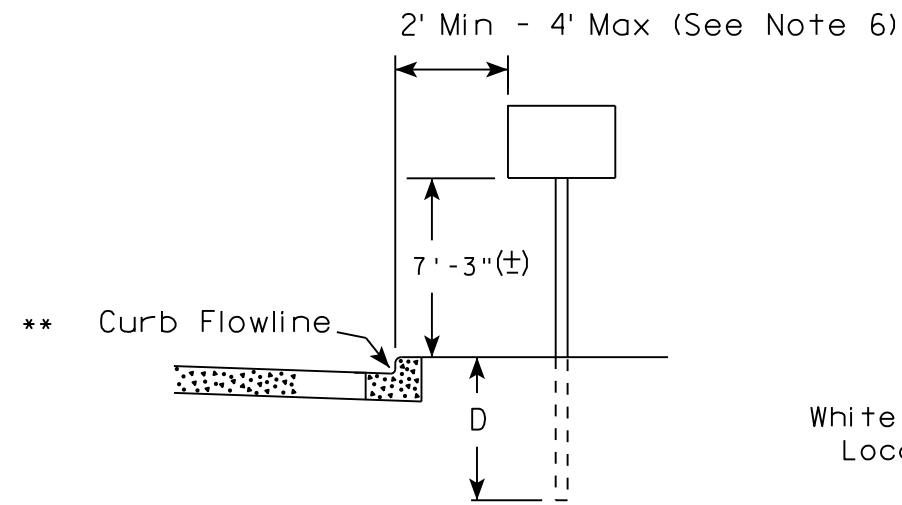
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL

1-1/4" O.D. X 3/8" I.D. X .080 NYLON FOR ALL TYPE H SIGNS

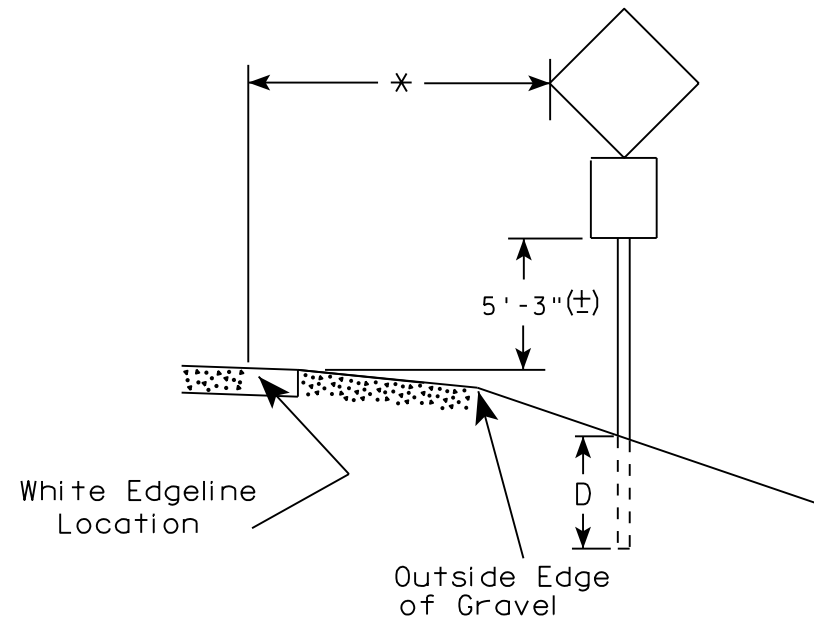
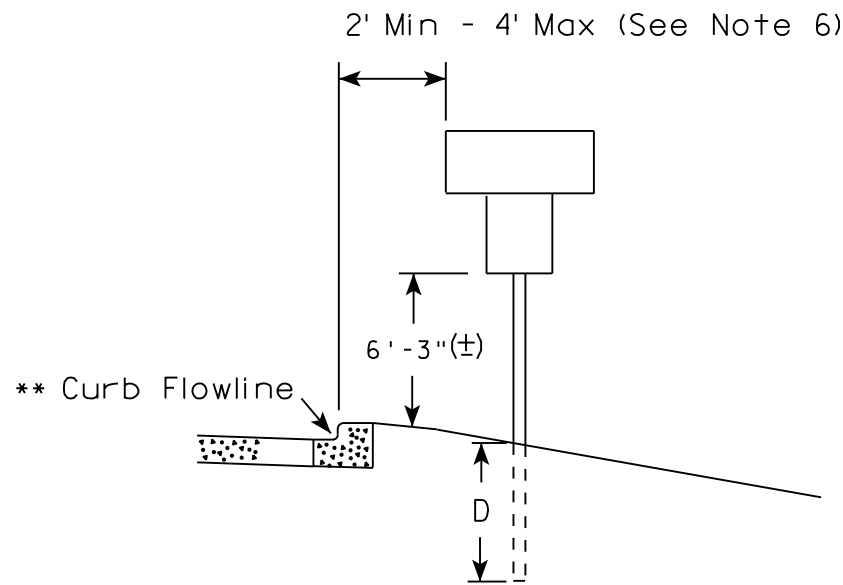
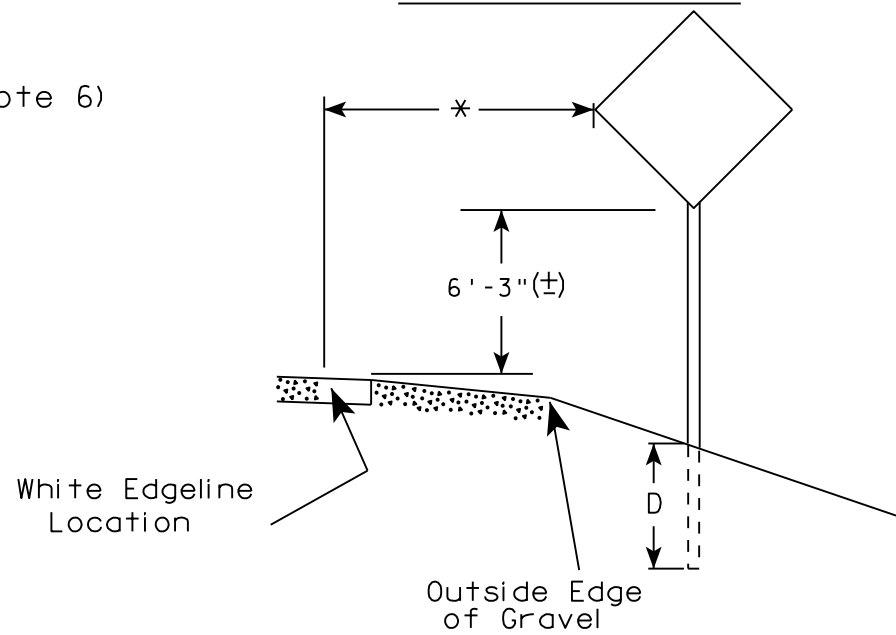
* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

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

URBAN AREA



RURAL AREA (See Note 2)



POST EMBEDMENT DEPTH

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

GENERAL NOTES

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

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

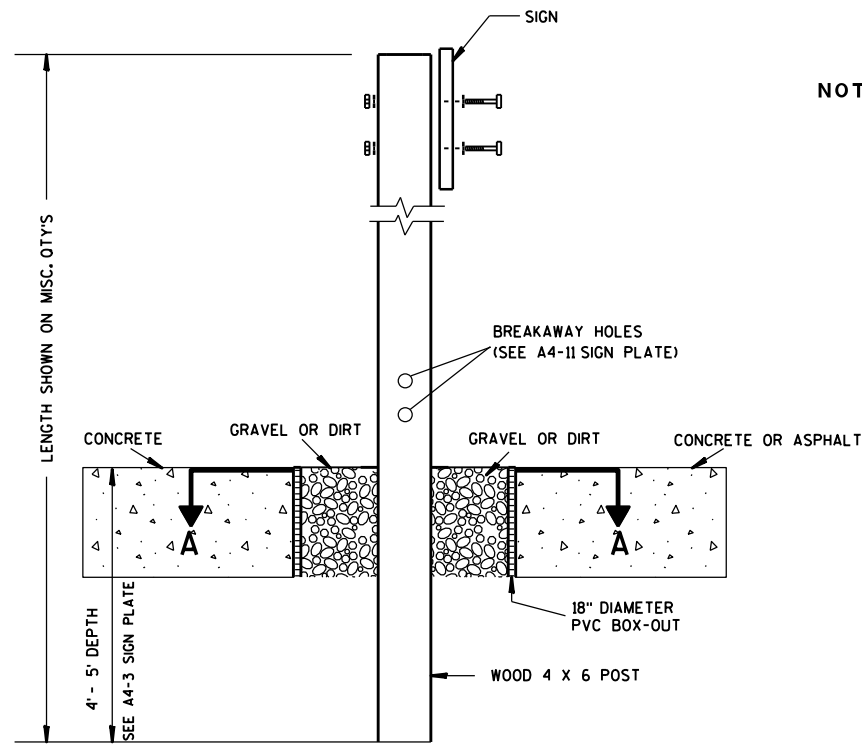
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

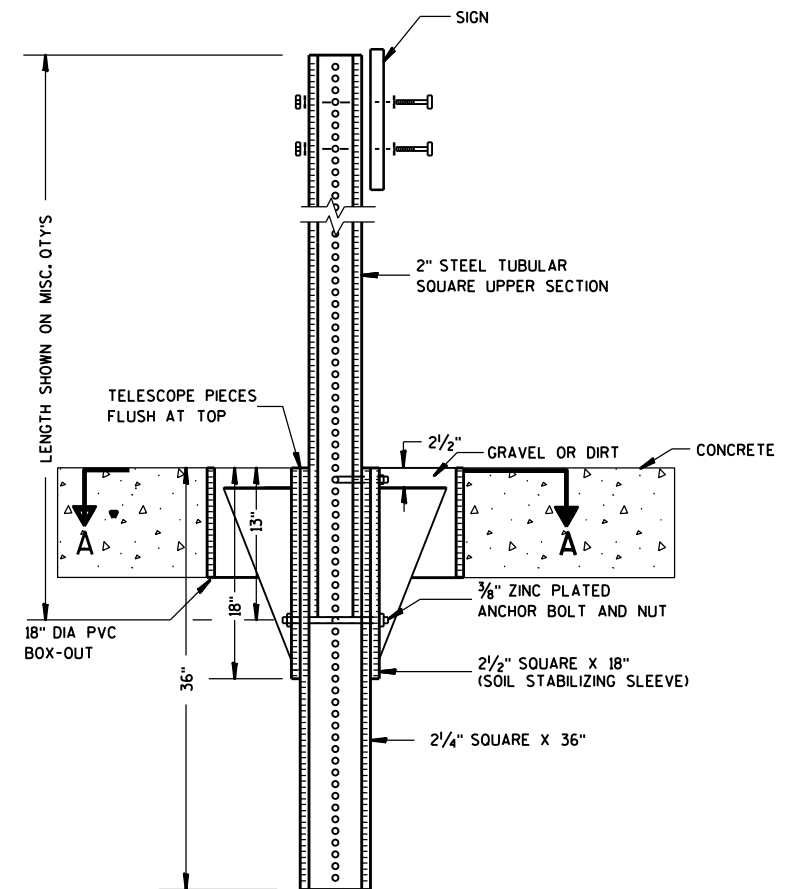
DATE 8/21/17 PLATE NO. A4-3.21



ELEVATION VIEW

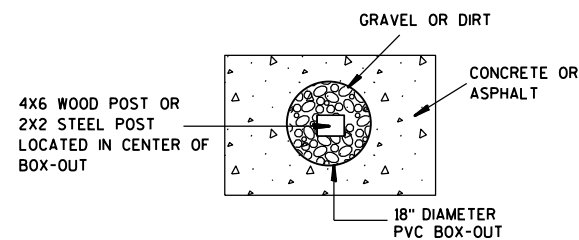
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

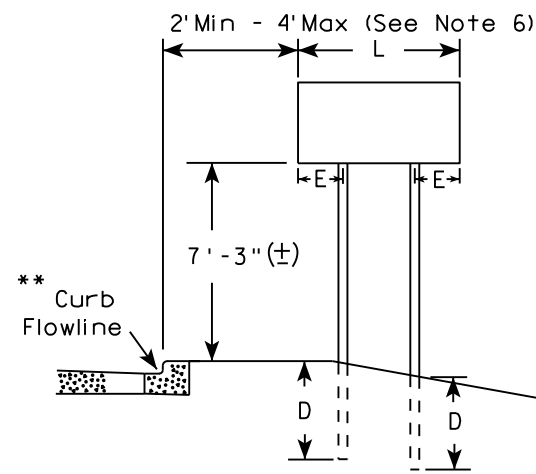
FOR NEW CONCRETE/ ASPHALT INSTALLATIONS

| | |
|---|----------------------------------|
| SIGN POST BOX-OUTS A4-3B | |
| <small>WISCONSIN DEPT OF TRANSPORTATION</small> | |
| APPROVED <i>Matthew R. Rauch</i> <small>for State Traffic Engineer</small> | |
| <small>DATE 1/27/14</small> | <small>PLATE NO. A4-3B.1</small> |

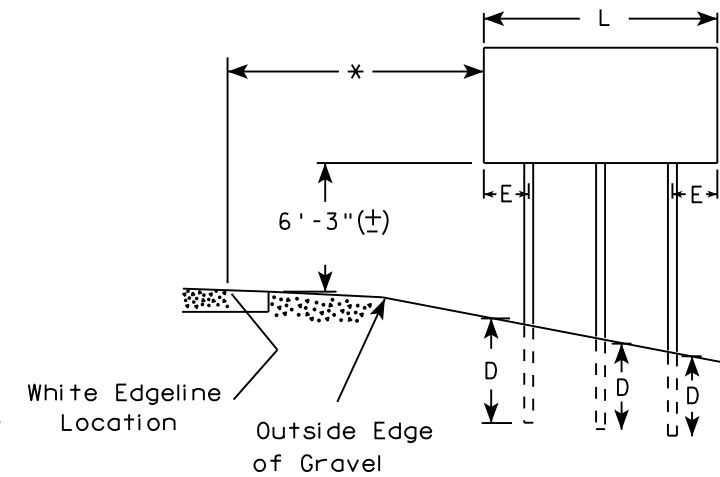
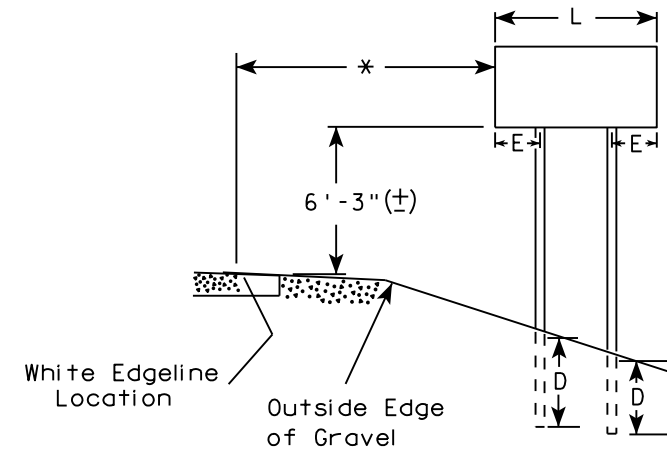
GENERAL NOTES

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

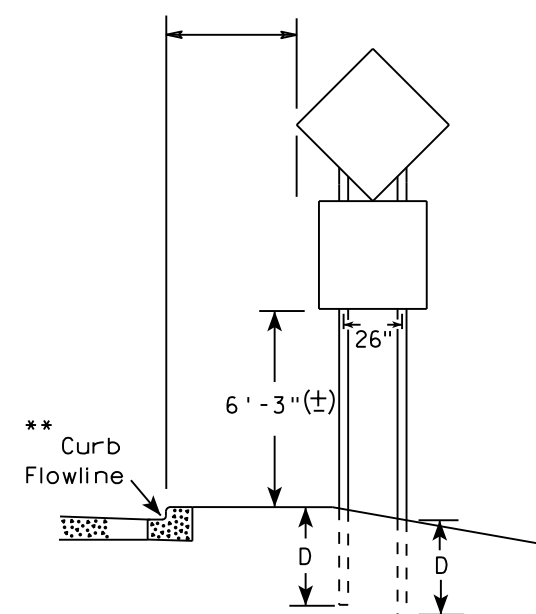
URBAN AREA



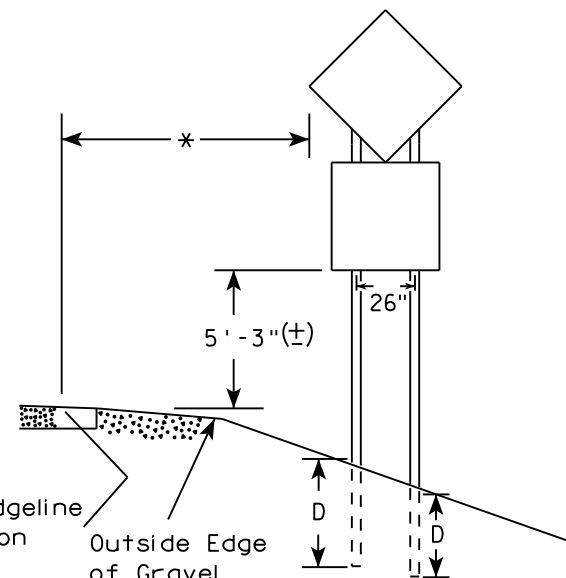
RURAL AREA (See Note 3)



2' Min - 4' Max (See Note 6)



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

*** See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.

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

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

POST EMBEDMENT DEPTH

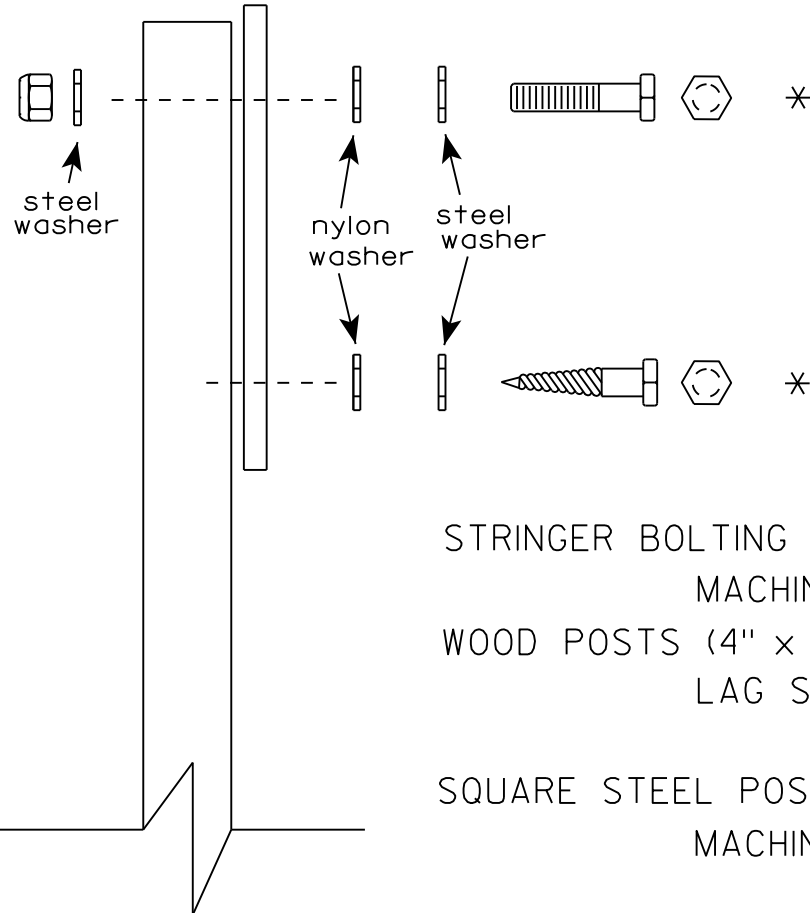
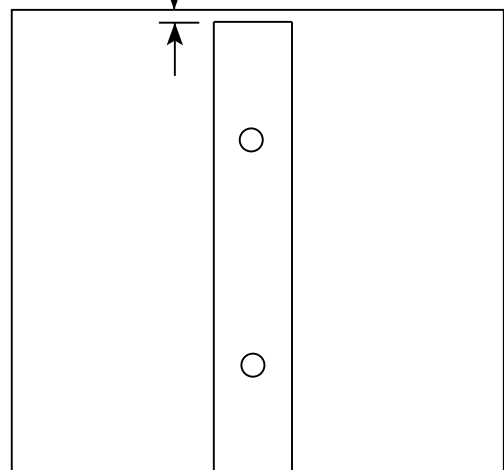
| Area of Sign Installation (Sq. Ft.) | D (Min) |
|---------------------------------------|-----------|
| 20 or Less | 4' |
| Greater than 20 | 5' |

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION
 APPROVED *Matthew R. Rauch*
 For State Traffic Engineer
 DATE 8/21/17 PLATE NO. A4-4.15

1"± 1/2"

SIGN SHALL BE MOUNTED TO PROJECT ABOVE THE TOP OF THE POST



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

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

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

STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)

MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
3/8" X 4" (STRINGERS ON BACK OF SIGN)

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)

RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL

1-1/4" O.D. X 3/8" I.D. X .080 NYLON

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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

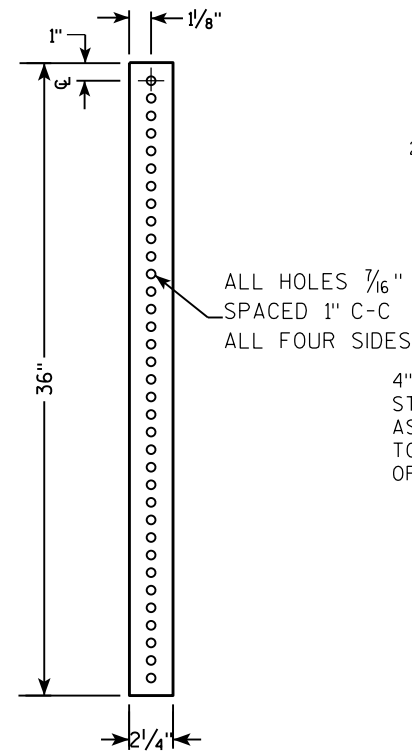
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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

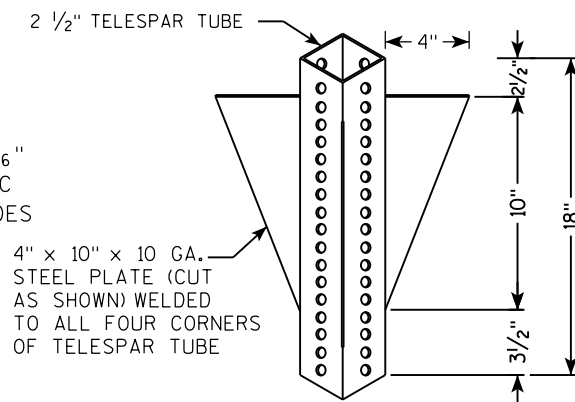
7

**TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM**

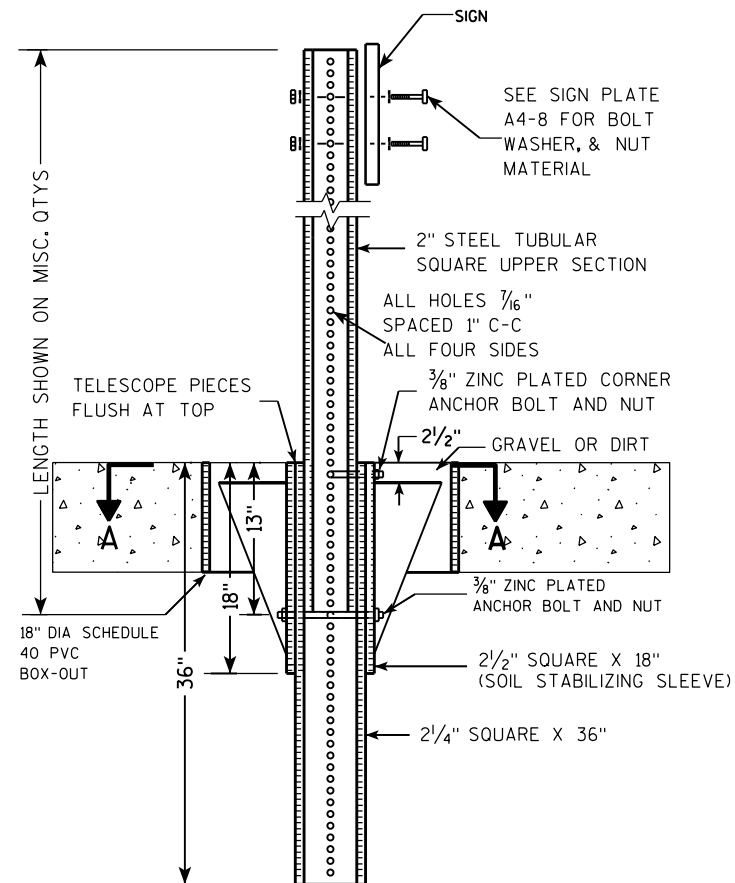
2 1/4" SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



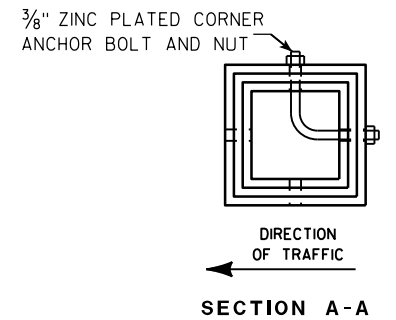
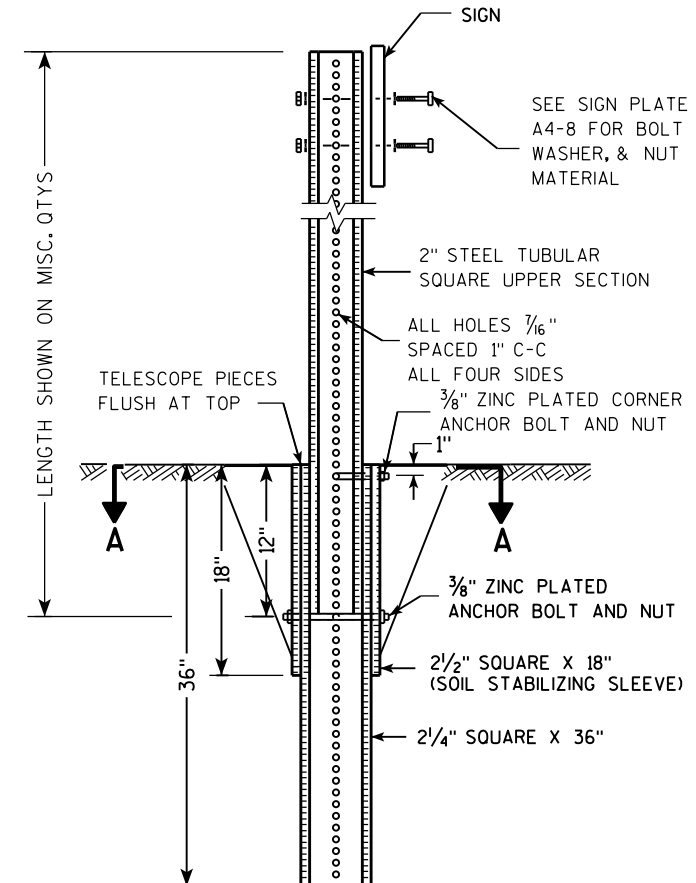
2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH



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



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



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

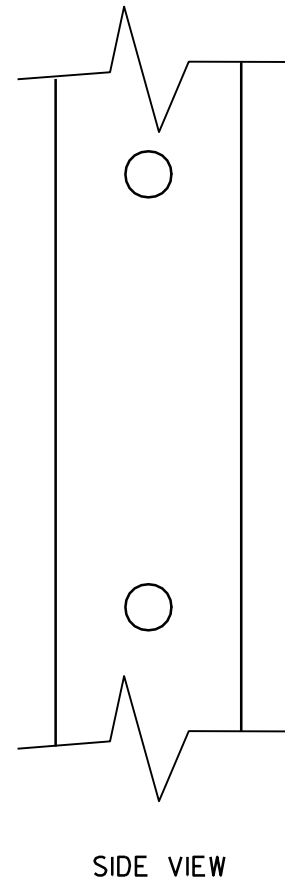
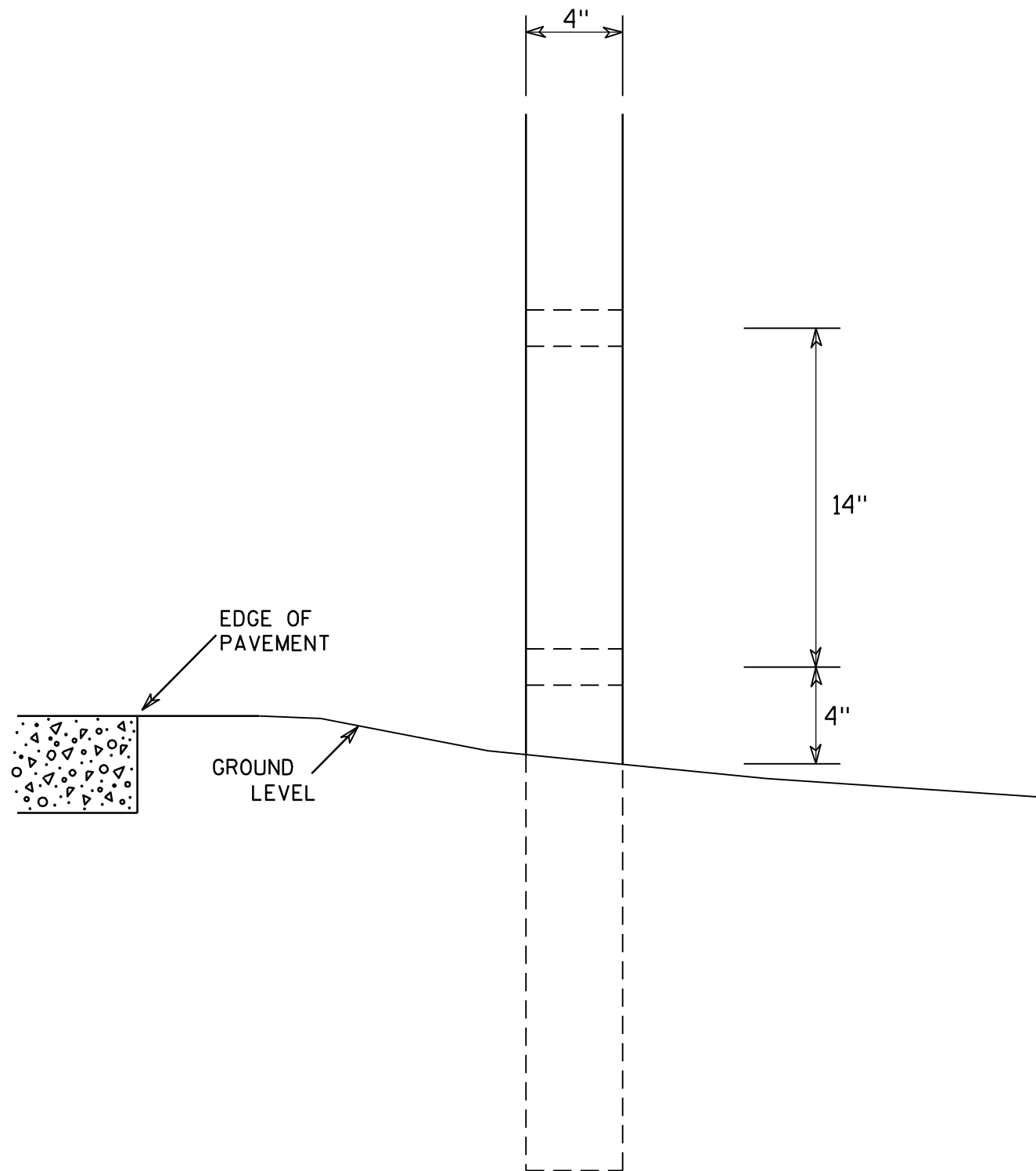
Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

**TUBULAR STEEL
SIGN POST
A4-9**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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



GENERAL NOTES

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

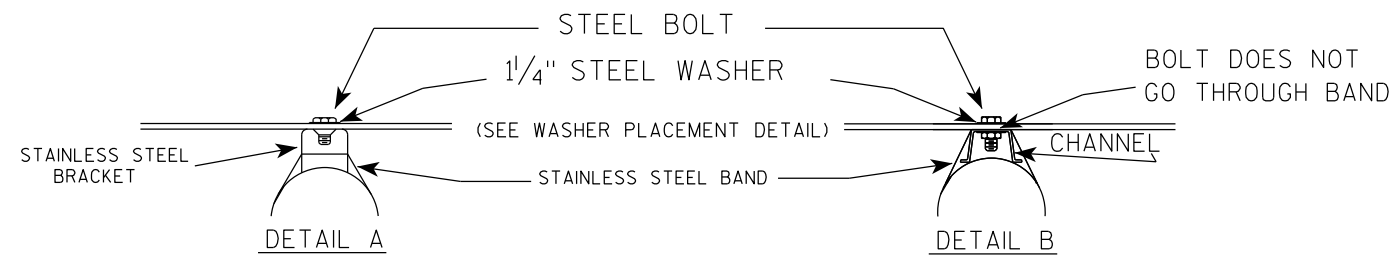
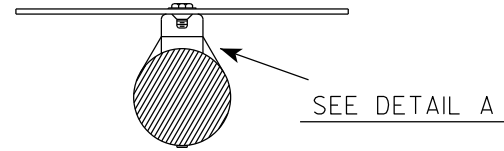
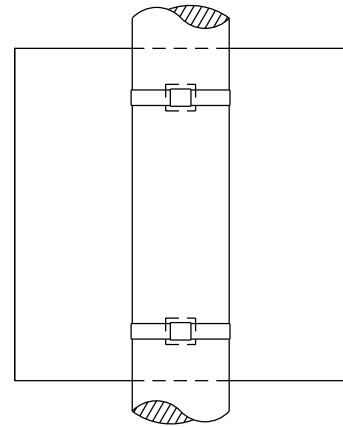
7

7

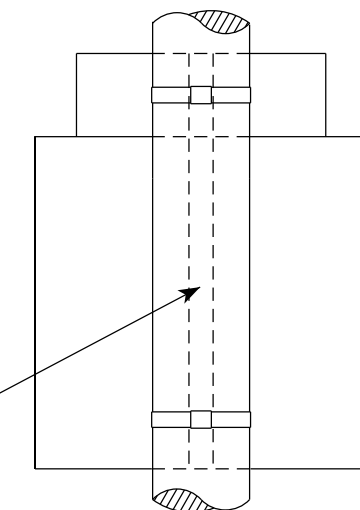
| | |
|--|--|
| 4 X 6 WOOD POST MODIFICATIONS | |
| <i>WISCONSIN DEPT OF TRANSPORTATION</i> | |
| APPROVED | <i>Chester J Spang</i> for State Traffic Engineer |
| DATE <u>3/27/97</u> | PLATE NO. <u>A4-11.2</u> |

BANDING

SINGLE SIGN



"J" ASSEMBLY

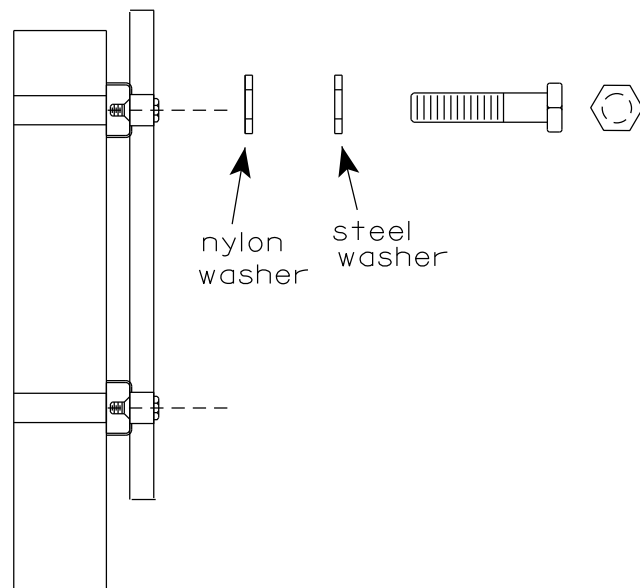


CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



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

WASHER PLACEMENT



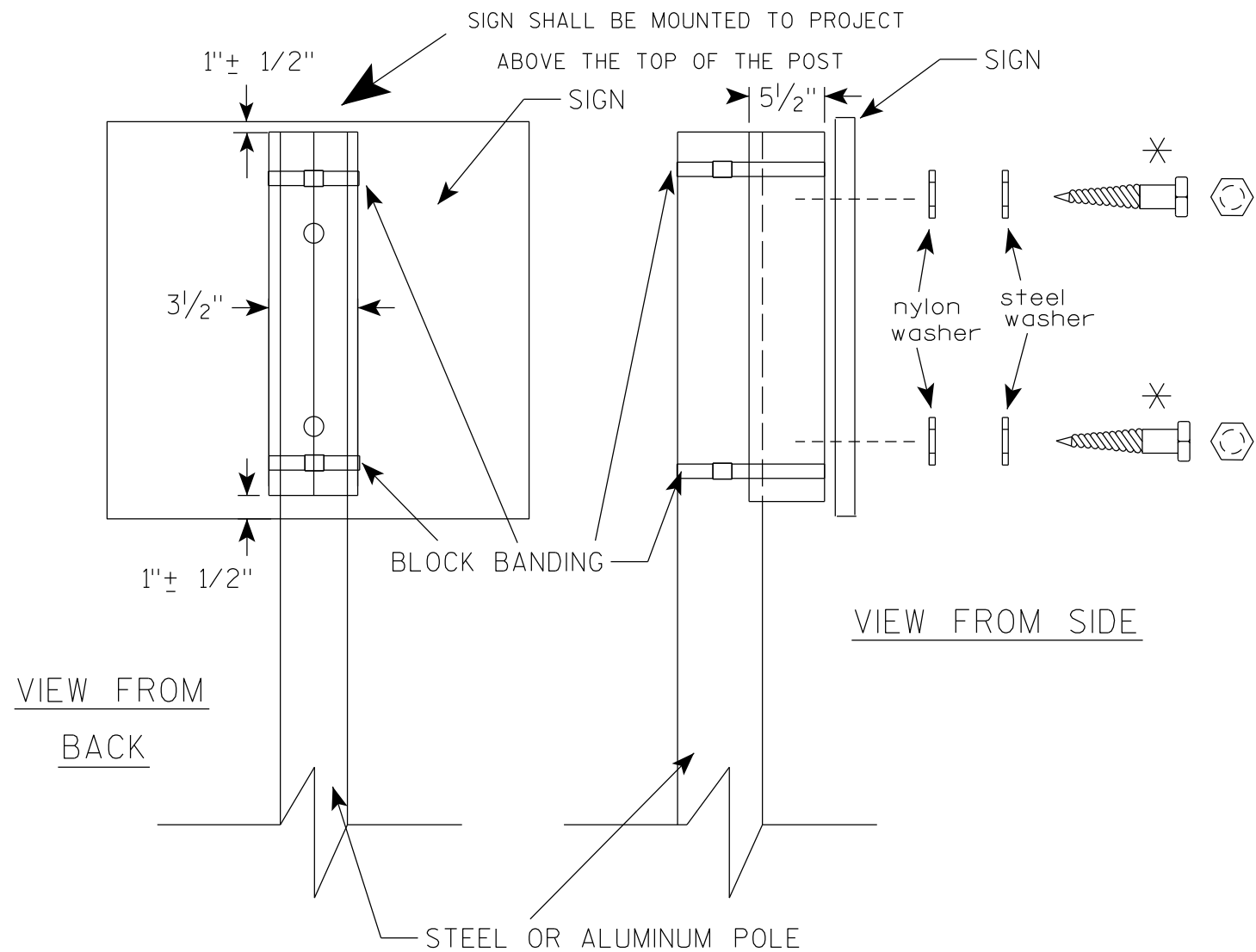
WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

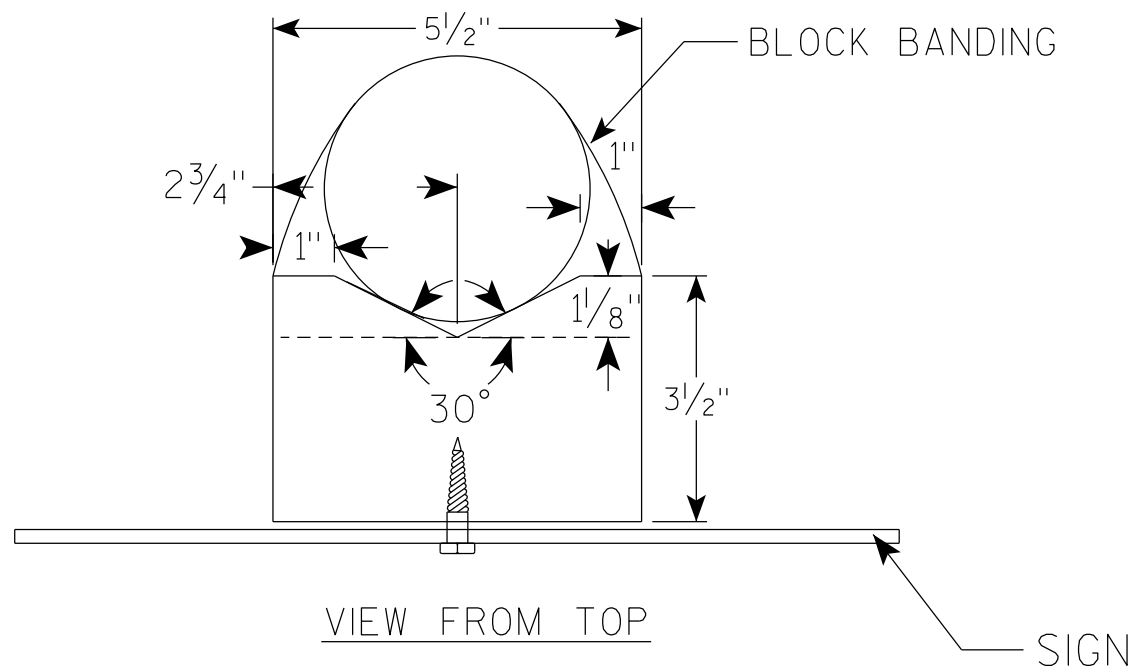
DATE 6/10/19 PLATE NO. A5-9.4



GENERAL NOTES

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

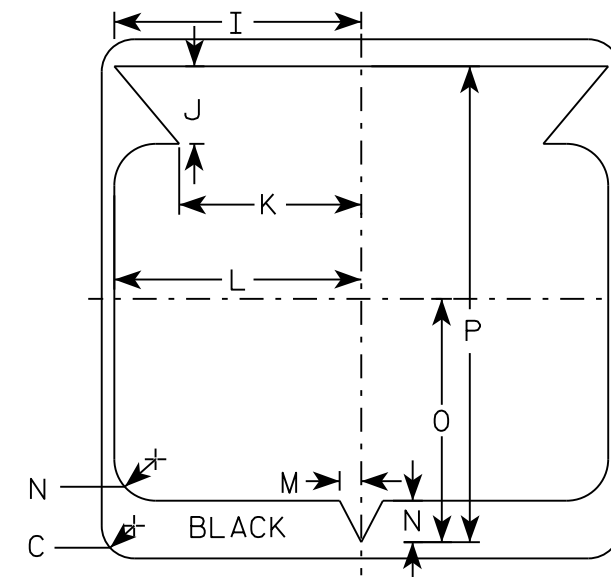
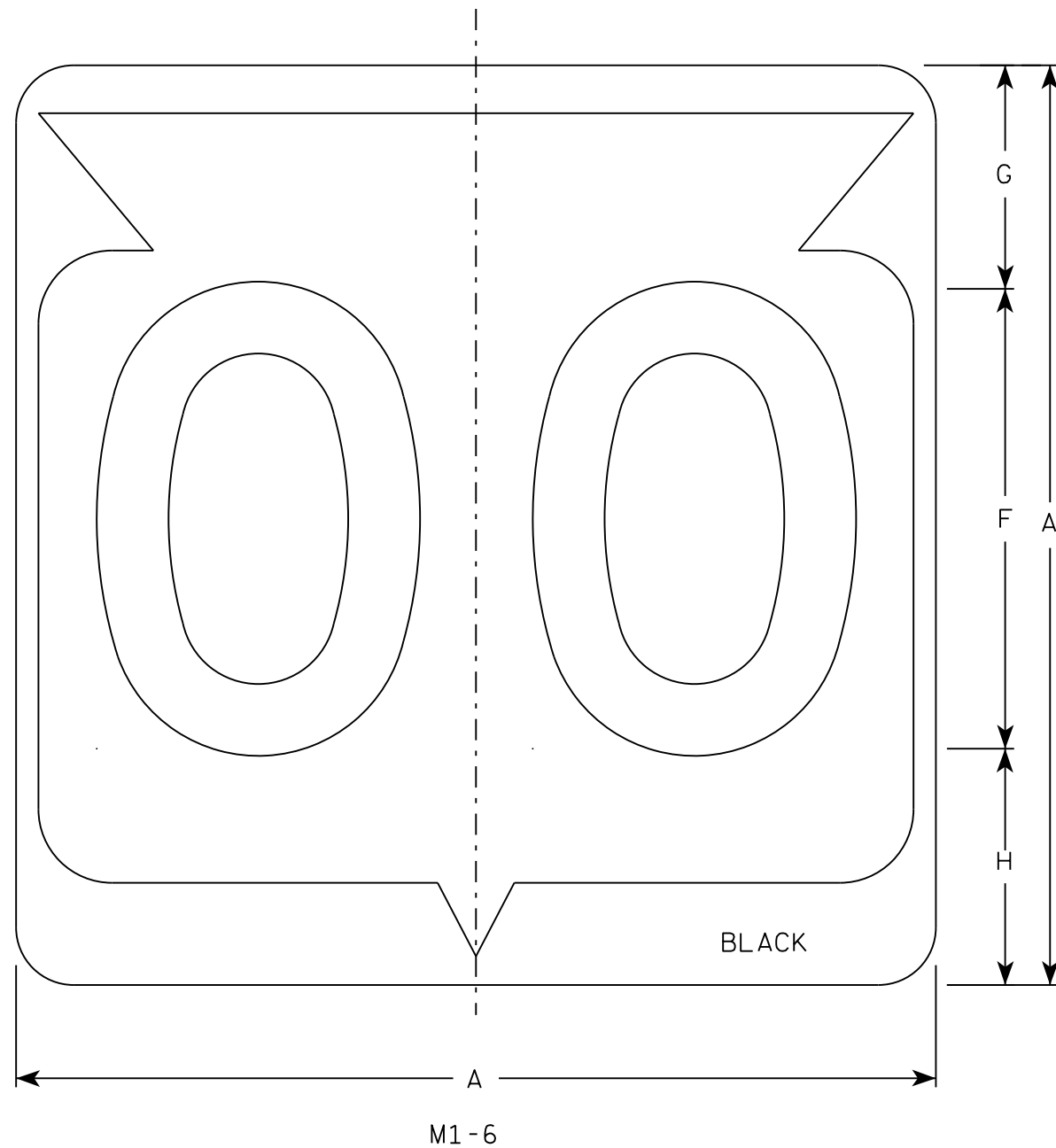
✱ LAG BOLTS SHALL BE 3/8" X 2 1/2"



| | |
|--|--|
| BLOCK BANDING DETAIL (V-BLOCK OPTION) | |
| WISCONSIN DEPT OF TRANSPORTATION | |
| APPROVED | <i>Matthew R Rauch</i> for State Traffic Engineer |
| DATE 6/10/19 | PLATE NO. A5-10.2 |

NOTES

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



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

STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

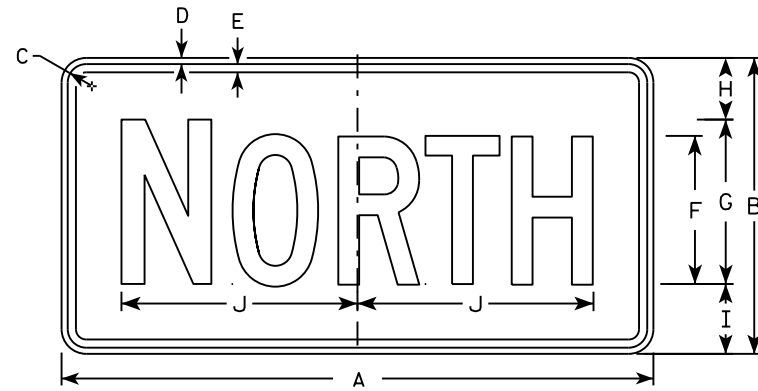
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

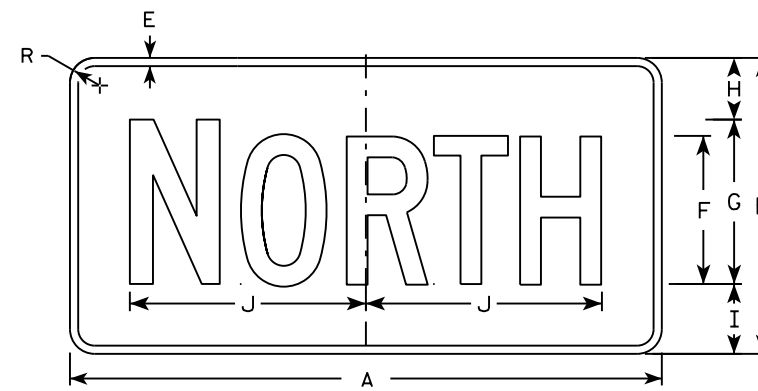
DATE 3/16/18 PLATE NO. M1-6.10

NOTES

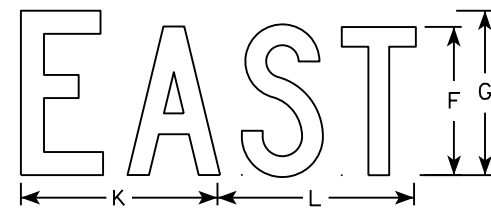
- All Signs Type II - Type H
- Color:
 - Background - See note 5
 - Message - See note 5
- Message Series - C
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M3-1 thru M3-4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



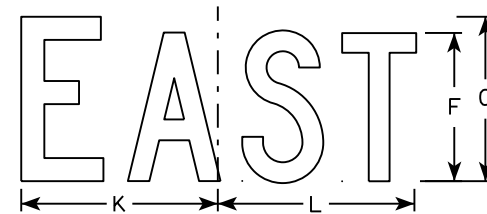
M3-1
MM3-1
MP3-1



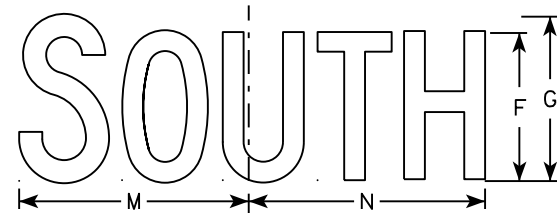
MB3-1
MK3-1
MN3-1



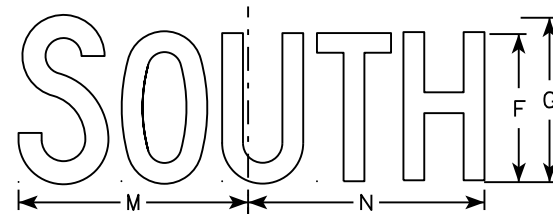
M3-2
MM3-2
MP3-2



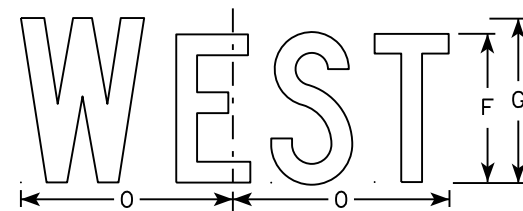
MB3-2
MK3-2
MN3-2



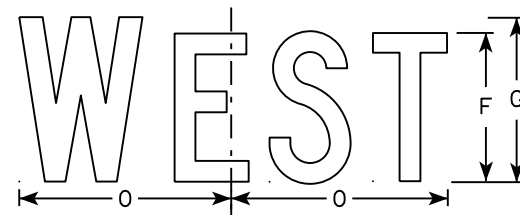
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

7

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

STANDARD SIGNS
M3-1 thru M3-4
SERIES

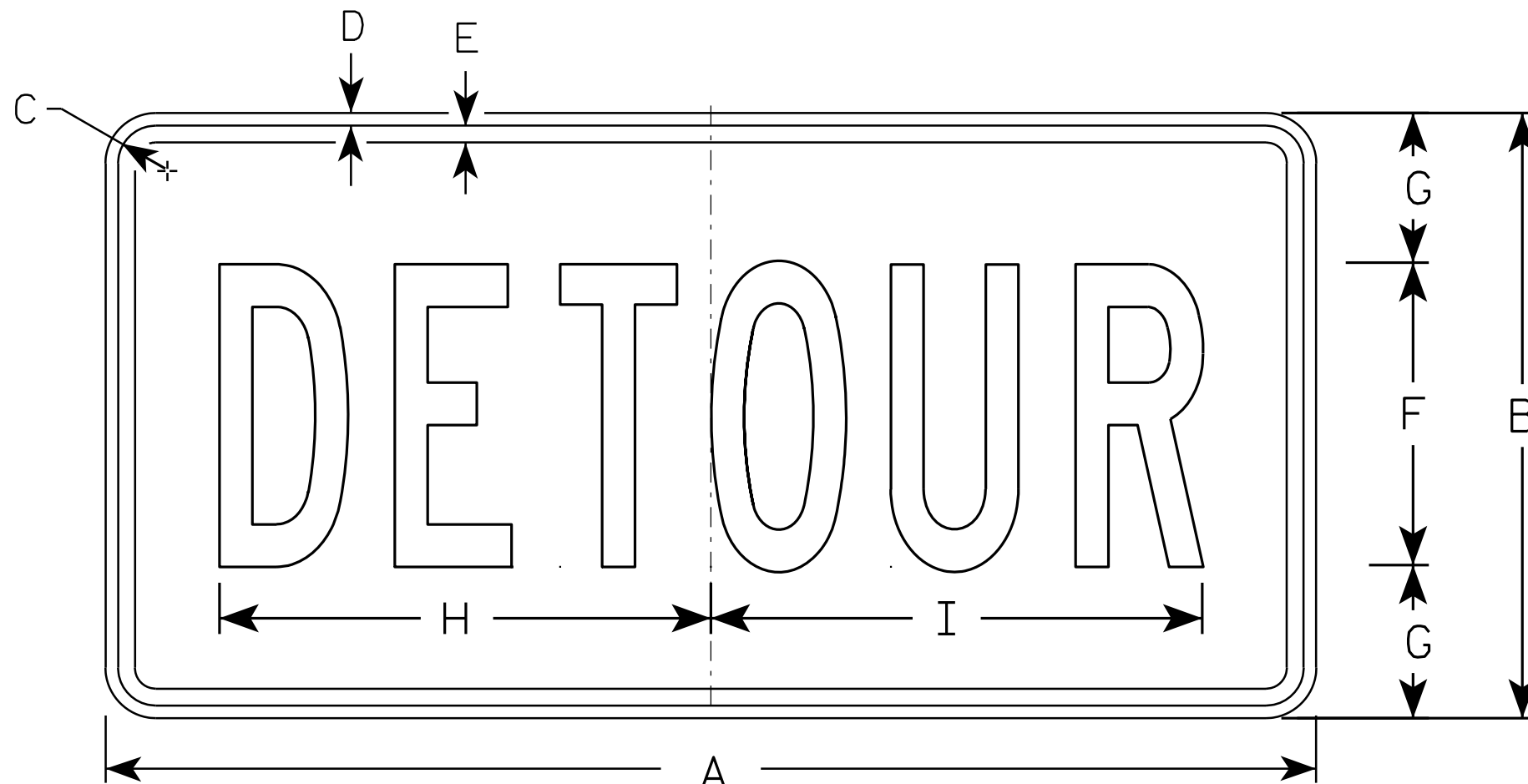
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

NOTES

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



M4-8

7

7

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

STANDARD SIGN
M4-8

WISCONSIN DEPT OF TRANSPORTATION

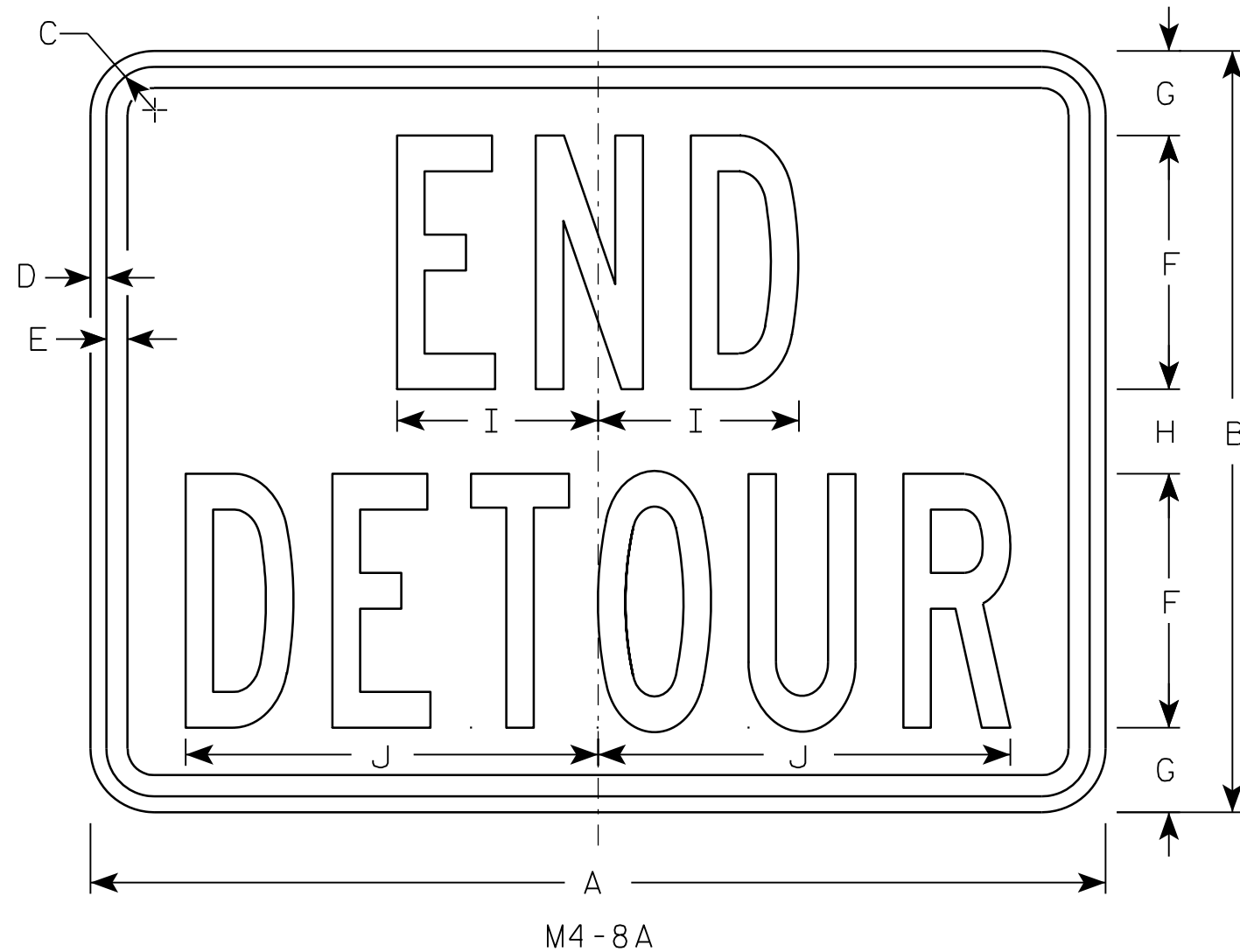
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**

NOTES

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



7

7

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

STANDARD SIGN
M4-8A

WISCONSIN DEPT OF TRANSPORTATION

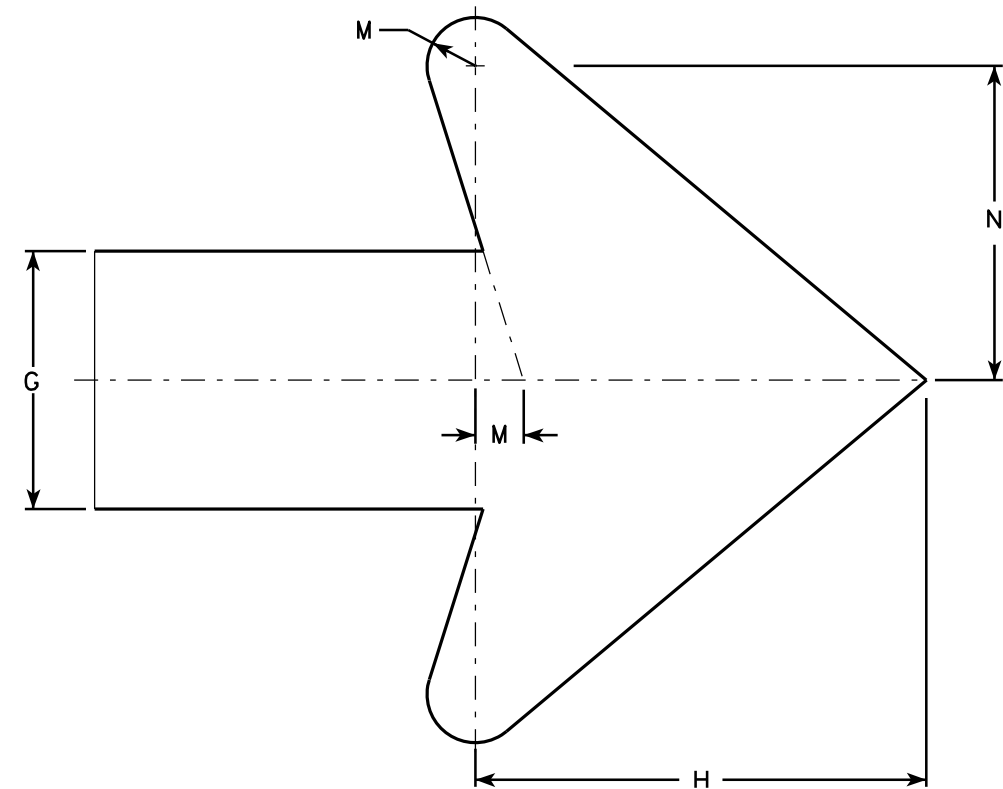
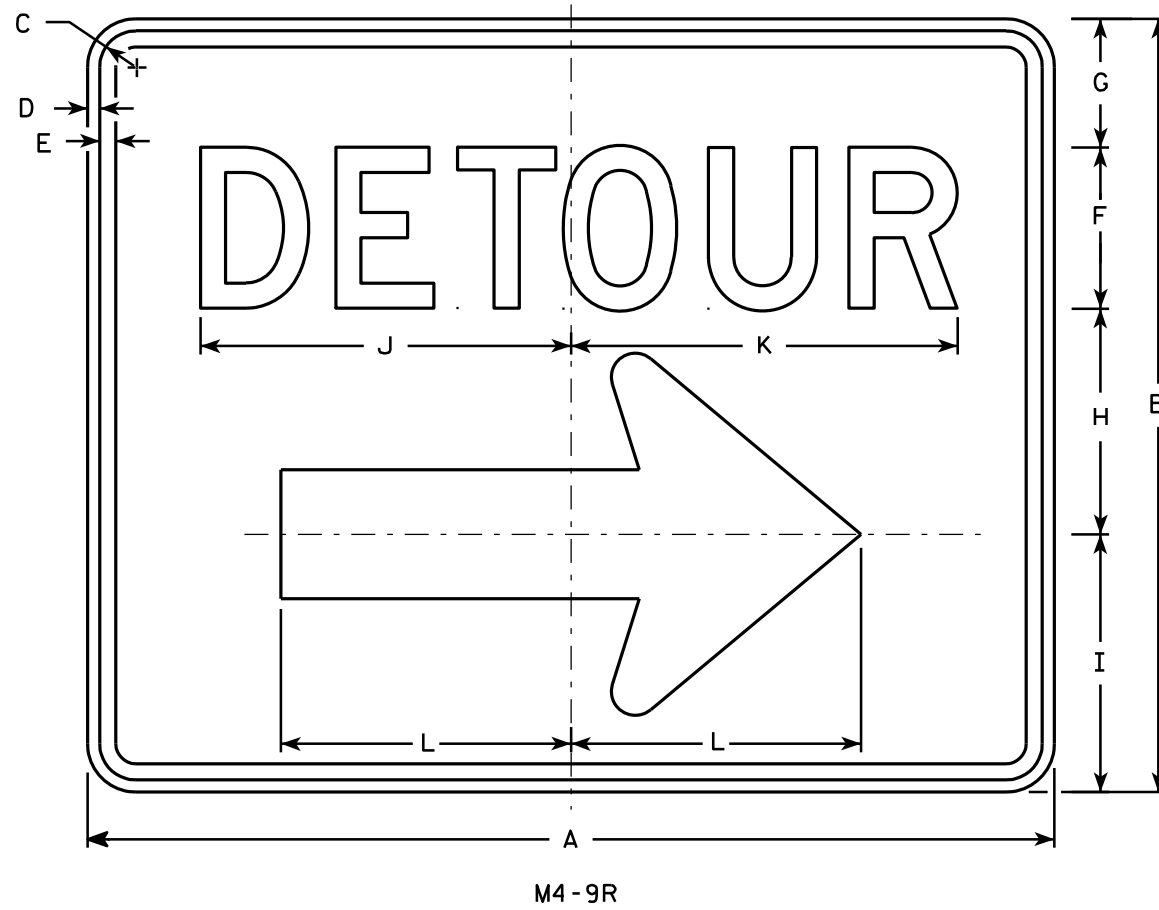
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**

NOTES

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



Arrow Detail

7

7

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

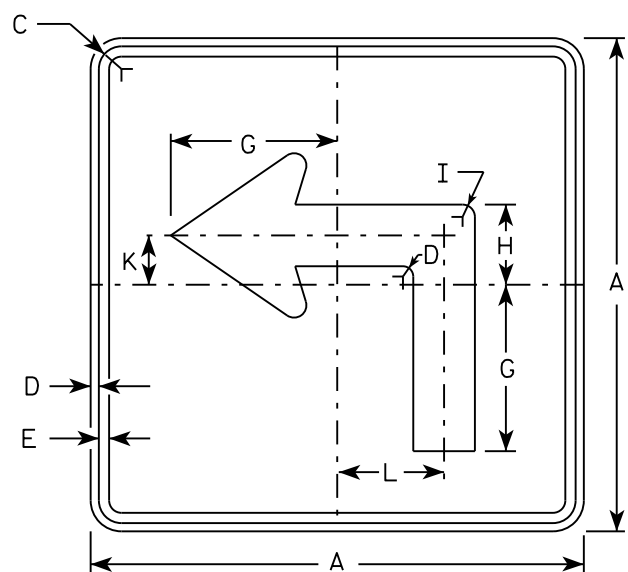
STANDARD SIGN
M4-9 R & L

WISCONSIN DEPT OF TRANSPORTATION

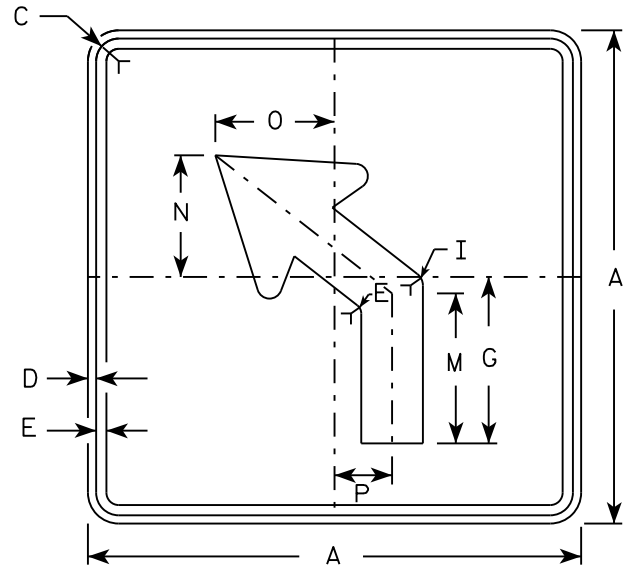
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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

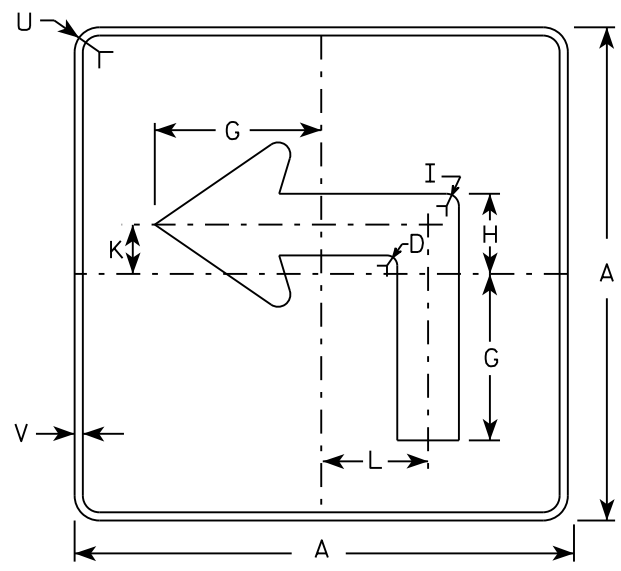
PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**



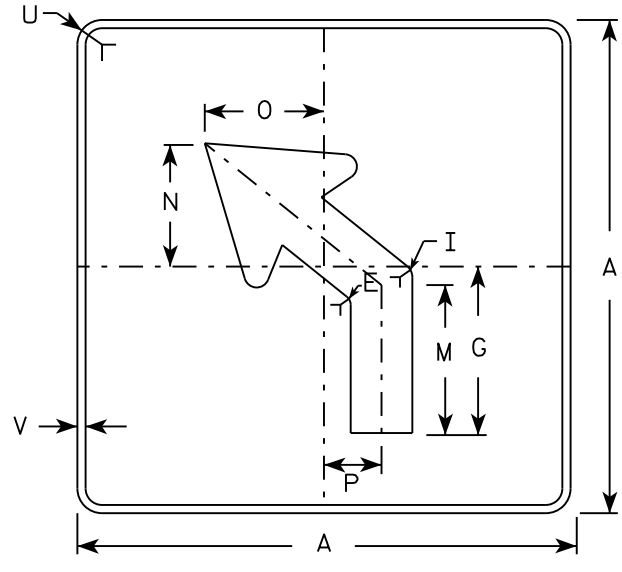
M5-1L
MM5-1L
M05-1L
MP5-1L



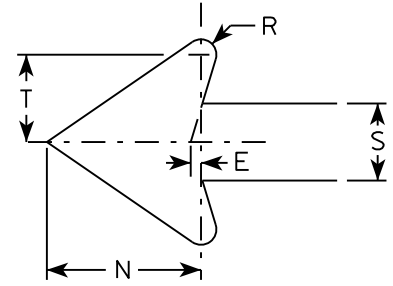
M5-2L
MM5-2L
M05-2L
MP5-2L



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



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



NOTES

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

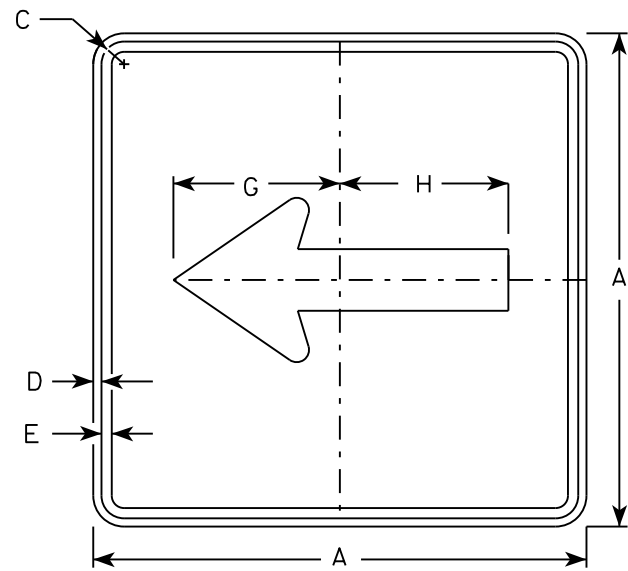
| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|------|----|---|-------|-----|-----|---|--------|-------|-----|---|-------|-------|-------|-------|-------|-------|---|-----|-------|-------|-------|-----|---|---|---|---|--------------|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

STANDARD SIGN
M5-1 & M5-2

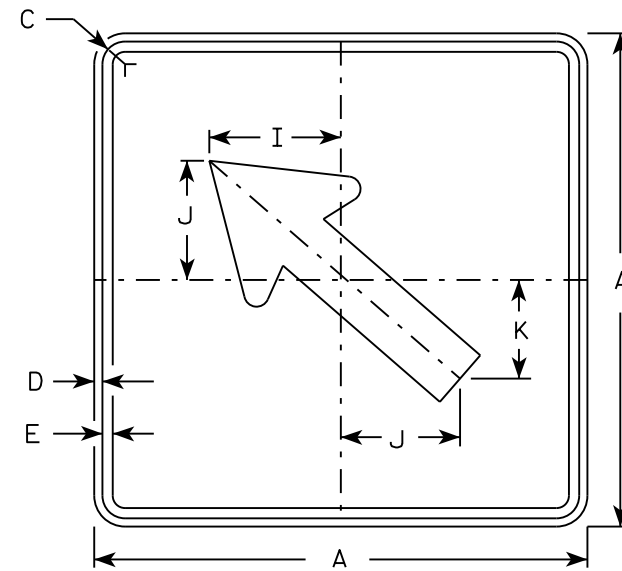
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

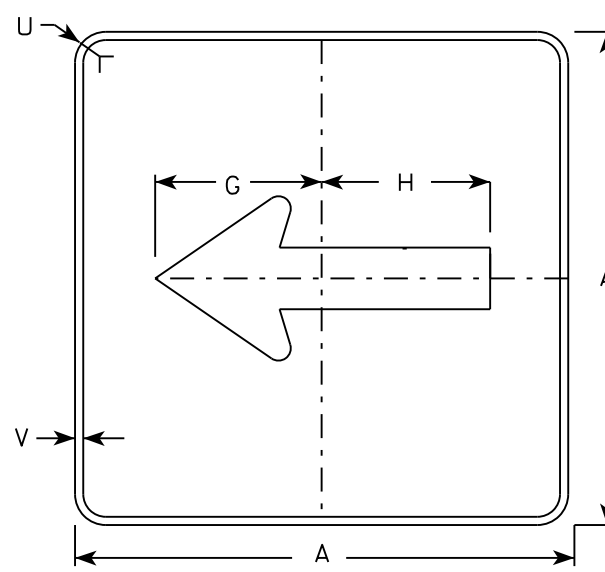
DATE 10/15/15 PLATE NO. M5-1.13



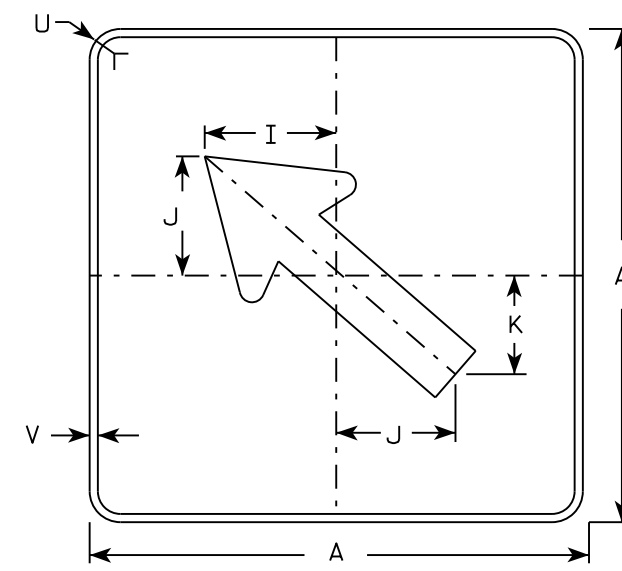
M6-1
MM6-1
M06-1
MP6-1



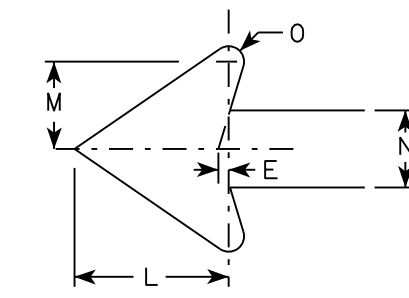
M6-2
MM6-2
M06-2
MP6-2



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



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



NOTES

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

7

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

STANDARD SIGN
M6-1 & M6-2
SERIES

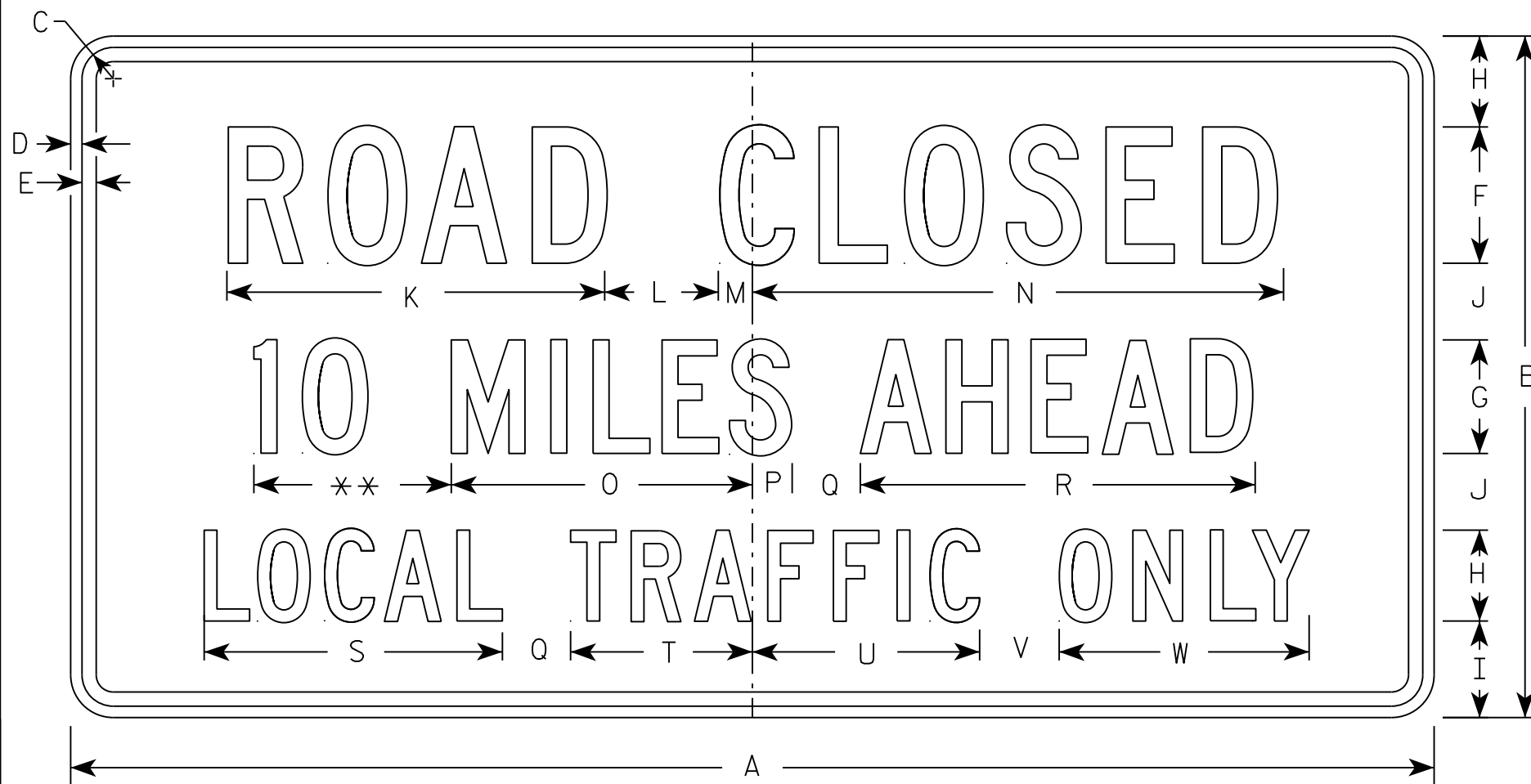
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

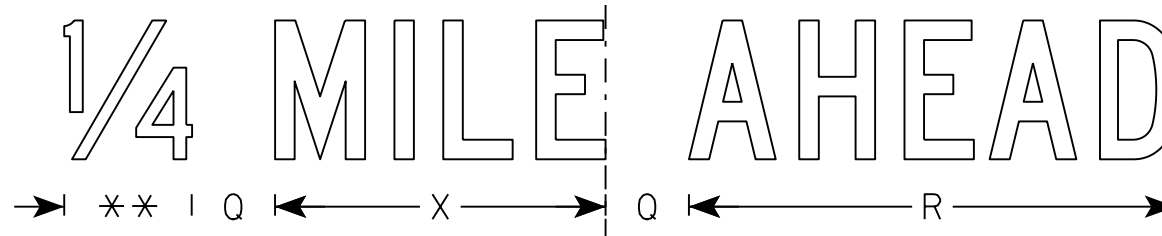
NOTES

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



R11-3

** See Note 5



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

STANDARD SIGN
R11-3

WISCONSIN DEPT OF TRANSPORTATION

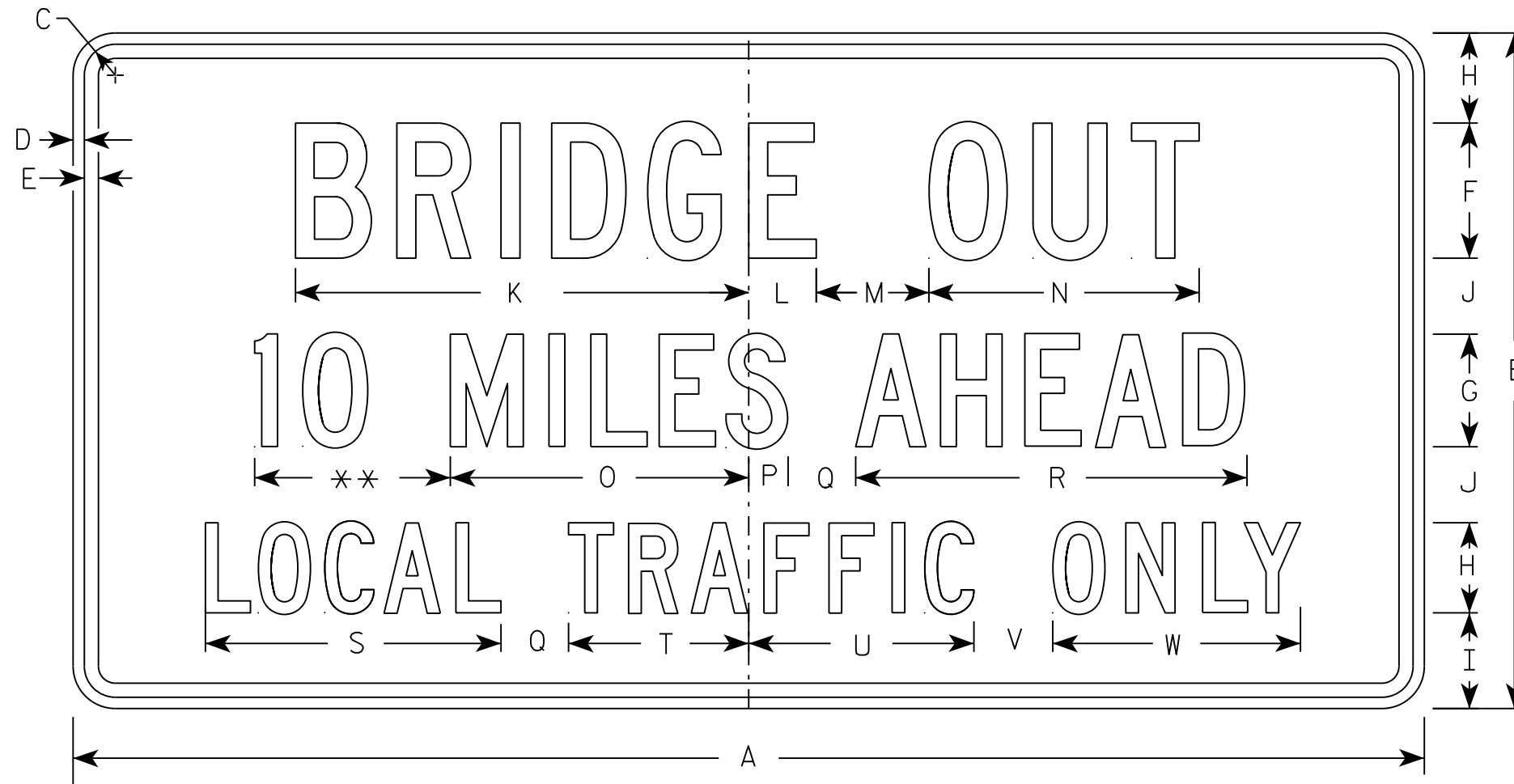
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/15/17 PLATE NO. R11-3.8

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**

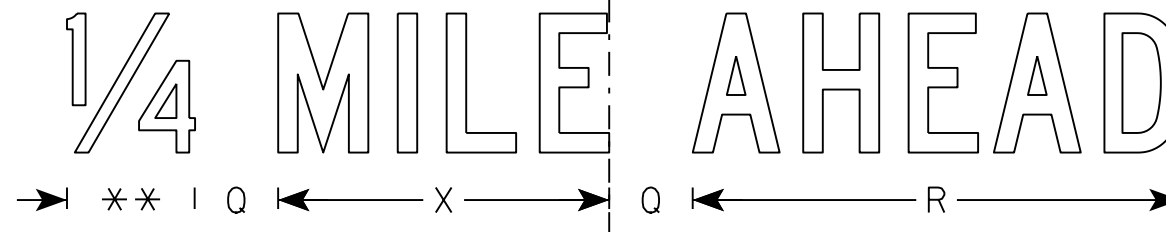
NOTES

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



** See Note 5

R11-3B



| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|------|----|----|-------|-----|-----|---|---|-------|-------|-------|--------|-------|---|----|--------|-------|---|--------|--------|-------|-------|-------|-------|--------|---|------|--------------|
| 1 | 36 | 18 | 1 3/8 | 1/2 | 5/8 | 4 | 3 | 2 1/2 | 2 | 2 | 13 1/4 | 2 1/4 | 3 | 8 | 8 | 1 1/2 | 2 | 10 3/4 | 8 3/8 | 4 3/4 | 6 1/2 | 2 | 6 3/4 | 7 1/8 | | 4.5 | |
| 2S | 60 | 30 | 1 3/8 | 1/2 | 5/8 | 6 | 5 | 4 | 4 1/4 | 3 3/8 | 20 1/8 | 3 | 5 | 12 | 13 1/4 | 1 3/4 | 3 | 17 3/8 | 13 1/8 | 8 | 10 | 3 1/2 | 11 | 11 7/8 | | 12.5 | |
| 2M | 60 | 30 | 1 3/8 | 1/2 | 5/8 | 6 | 5 | 4 | 4 1/4 | 3 3/8 | 20 1/8 | 3 | 5 | 12 | 13 1/4 | 1 3/4 | 3 | 17 3/8 | 13 1/8 | 8 | 10 | 3 1/2 | 11 | 11 7/8 | | 12.5 | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

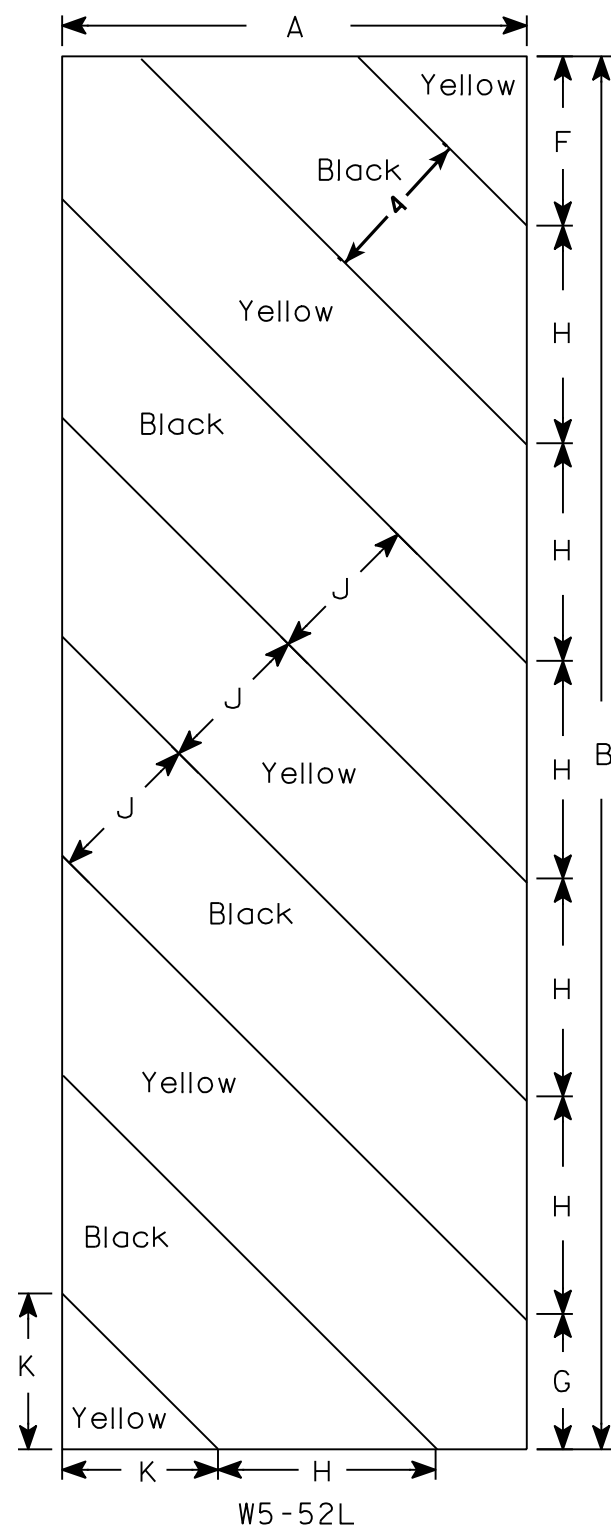
STANDARD SIGN
R11-3B

WISCONSIN DEPT OF TRANSPORTATION

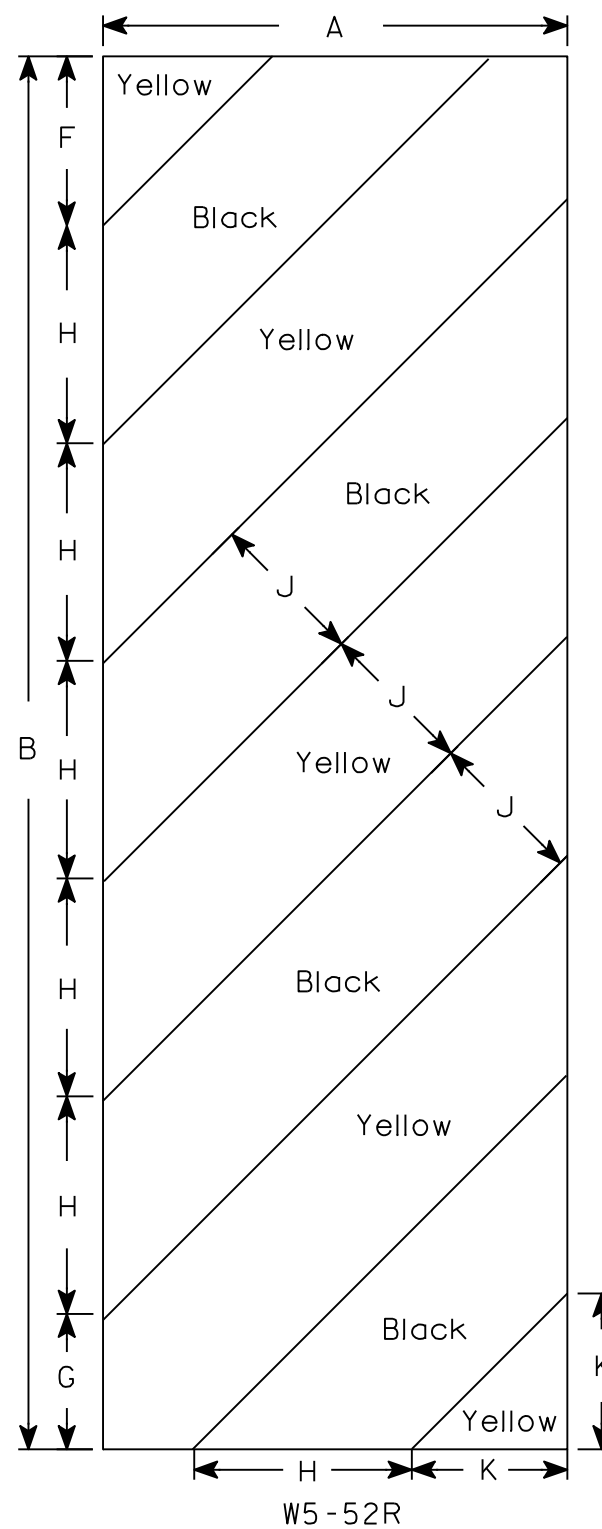
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/21/17 PLATE NO. R11-3B.3

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**



W5-52L



W5-52R

NOTES

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

7

7

| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|------|----|----|---|---|---|-------|-------|-------|-----|---|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2S | 12 | 36 | | | | 4 3/8 | 3 1/2 | 5 5/8 | 45° | 4 | 4 | | | | | | | | | | | | | | | | 3.0 |
| 2M | 12 | 36 | | | | 4 3/8 | 3 1/2 | 5 5/8 | 45° | 4 | 4 | | | | | | | | | | | | | | | | 3.0 |
| 3 | 18 | 54 | | | | 6 | 5 1/2 | 8 1/2 | 45° | 6 | 6 9/16 | | | | | | | | | | | | | | | | 6.75 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

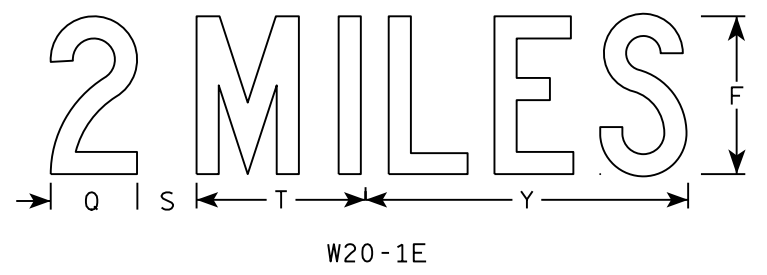
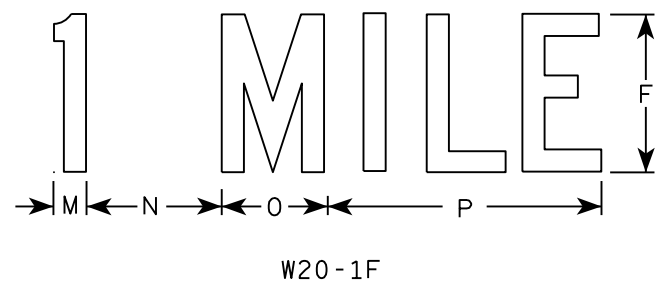
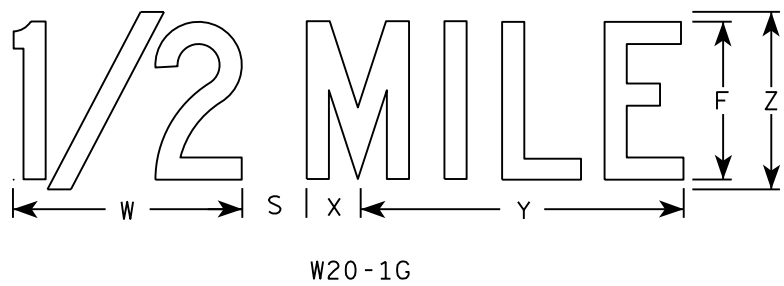
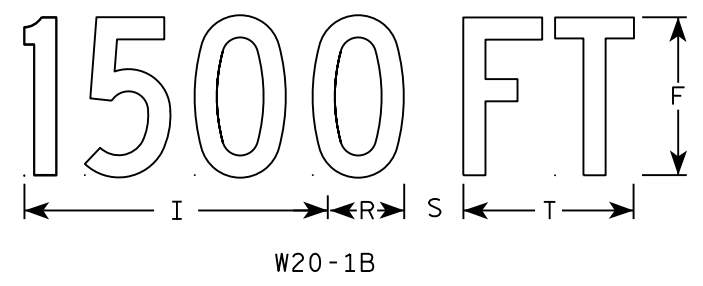
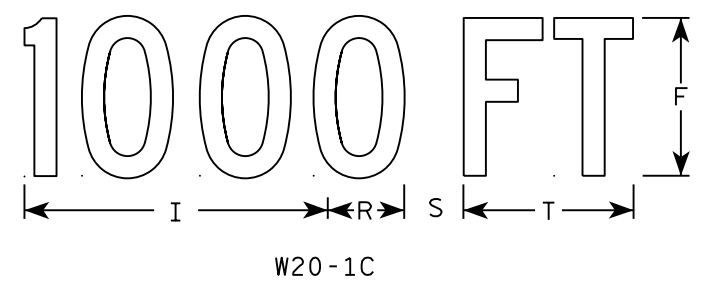
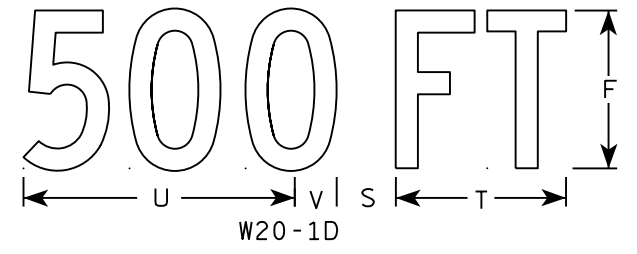
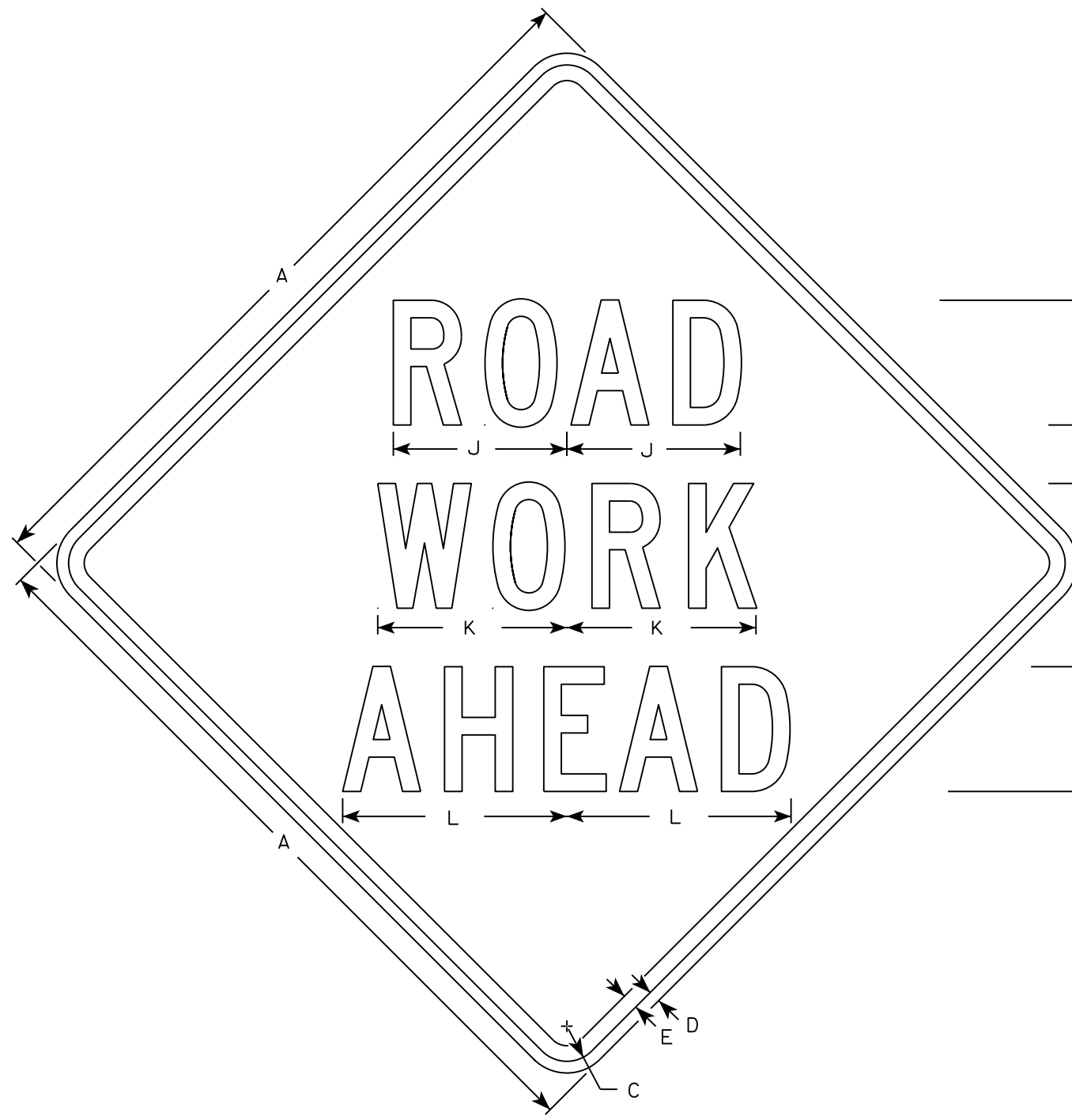
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/29/12 PLATE NO. W5-52.9

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ E

NOTES

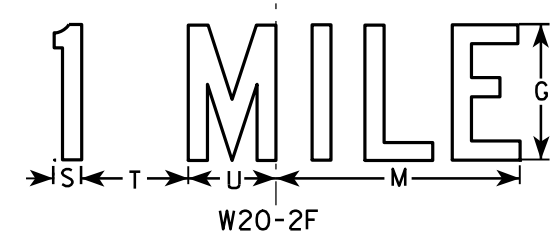
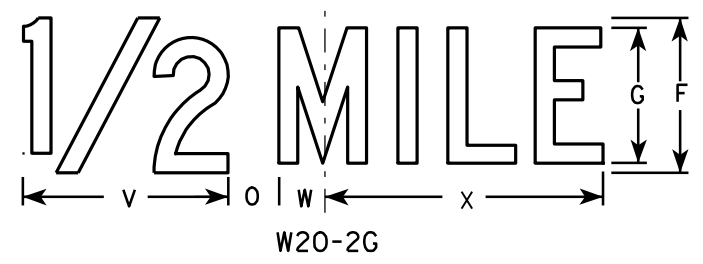
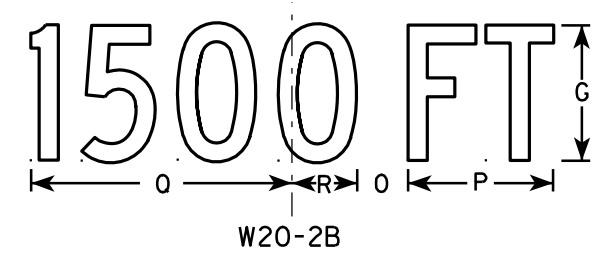
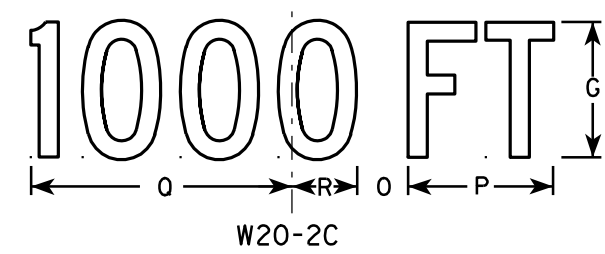
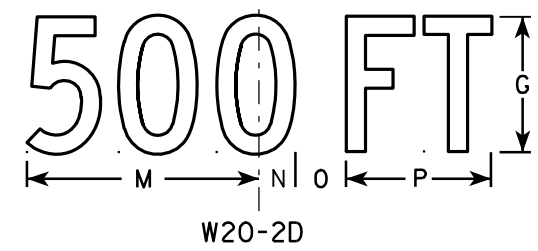
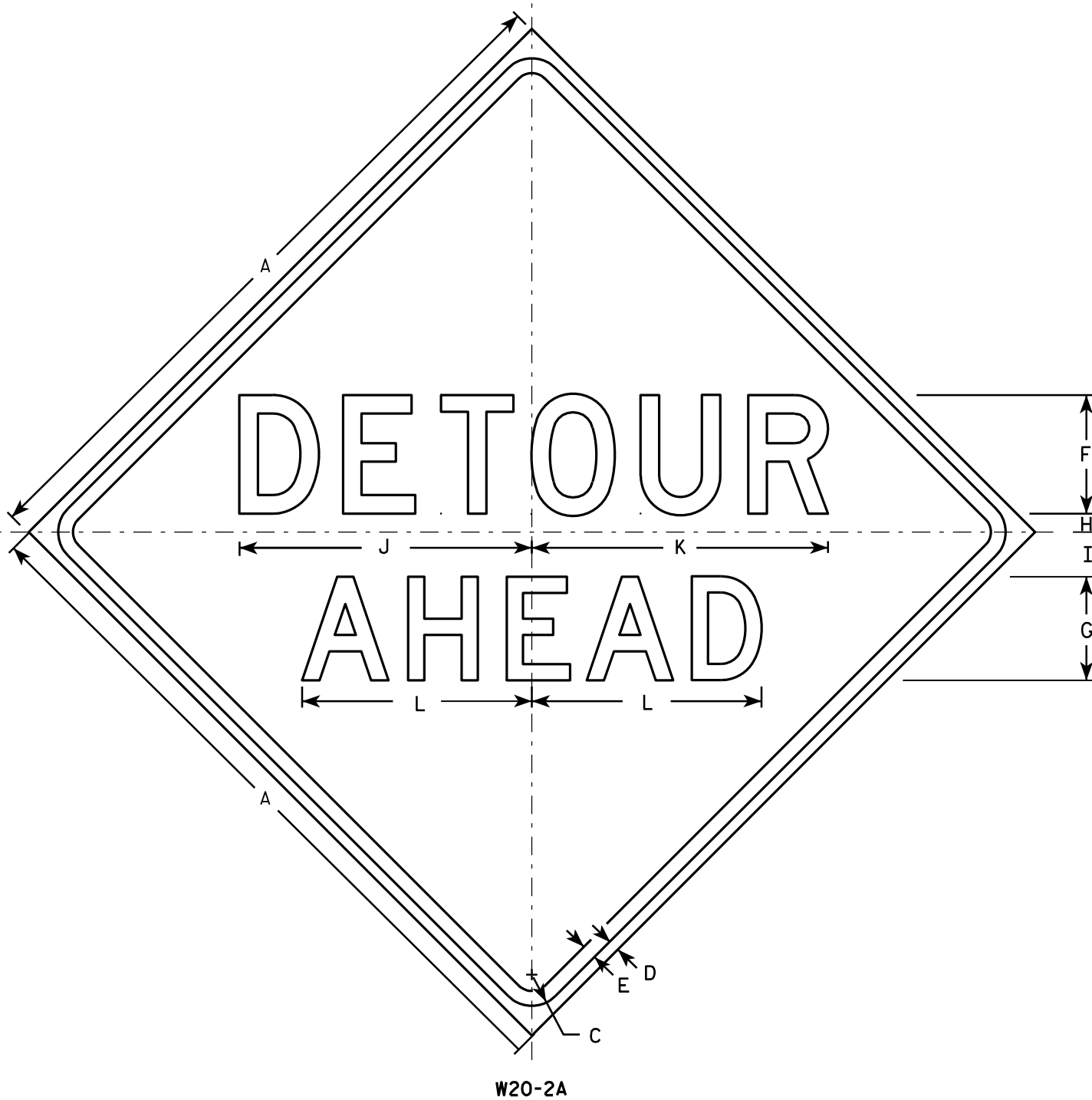
1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
Message - Black
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



7

| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|------|----|---|-------|-----|-----|---|-------|-------|--------|--------|--------|--------|-------|-------|-------|--------|-------|-------|-------|-------|--------|-------|--------|-------|--------|---|--------------|
| 1 | 36 | | 1 3/8 | 1/2 | 5/8 | 5 | 2 5/8 | 3 1/4 | 10 1/8 | 7 | 7 5/8 | 8 7/8 | 1 1/8 | 4 1/2 | 3 1/2 | 9 | | 2 1/2 | 2 1/4 | 5 5/8 | 9 | 1 3/8 | 8 | 1 3/4 | 10 3/4 | 6 | 9.0 |
| 2S | 48 | | 2 1/4 | 3/4 | 1 | 8 | 3 3/4 | 5 1/8 | 15 3/8 | 11 1/8 | 12 1/8 | 14 3/8 | 1 5/8 | 6 7/8 | 5 3/8 | 13 7/8 | 4 3/8 | 3 7/8 | 3 | 8 5/8 | 13 3/4 | 2 1/8 | 11 7/8 | 2 3/4 | 16 3/8 | 9 | 16.0 |
| 2M | 48 | | 2 1/4 | 3/4 | 1 | 8 | 3 3/4 | 5 1/8 | 15 3/8 | 11 1/8 | 12 1/8 | 14 3/8 | 1 5/8 | 6 7/8 | 5 3/8 | 13 7/8 | 4 3/8 | 3 7/8 | 3 | 8 5/8 | 13 3/4 | 2 1/8 | 11 7/8 | 2 3/4 | 16 3/8 | 9 | 16.0 |
| 3 | 48 | | 2 1/4 | 3/4 | 1 | 8 | 3 3/4 | 5 1/8 | 15 3/8 | 11 1/8 | 12 1/8 | 14 3/8 | 1 5/8 | 6 7/8 | 5 3/8 | 13 7/8 | 4 3/8 | 3 7/8 | 3 | 8 5/8 | 13 3/4 | 2 1/8 | 11 7/8 | 2 3/4 | 16 3/8 | 9 | 16.0 |
| 4 | 48 | | 2 1/4 | 3/4 | 1 | 8 | 3 3/4 | 5 1/8 | 15 3/8 | 11 1/8 | 12 1/8 | 14 3/8 | 1 5/8 | 6 7/8 | 5 3/8 | 13 7/8 | 4 3/8 | 3 7/8 | 3 | 8 5/8 | 13 3/4 | 2 1/8 | 11 7/8 | 2 3/4 | 16 3/8 | 9 | 16.0 |
| 5 | 48 | | 2 1/4 | 3/4 | 1 | 8 | 3 3/4 | 5 1/8 | 15 3/8 | 11 1/8 | 12 1/8 | 14 3/8 | 1 5/8 | 6 7/8 | 5 3/8 | 13 7/8 | 4 3/8 | 3 7/8 | 3 | 8 5/8 | 13 3/4 | 2 1/8 | 11 7/8 | 2 3/4 | 16 3/8 | 9 | 16.0 |

STANDARD SIGN
W20-1A, B, C, D, F & G
WISCONSIN DEPT OF TRANSPORTATION
APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 5/07/15 PLATE NO. W20-1.10



NOTES

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

7

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

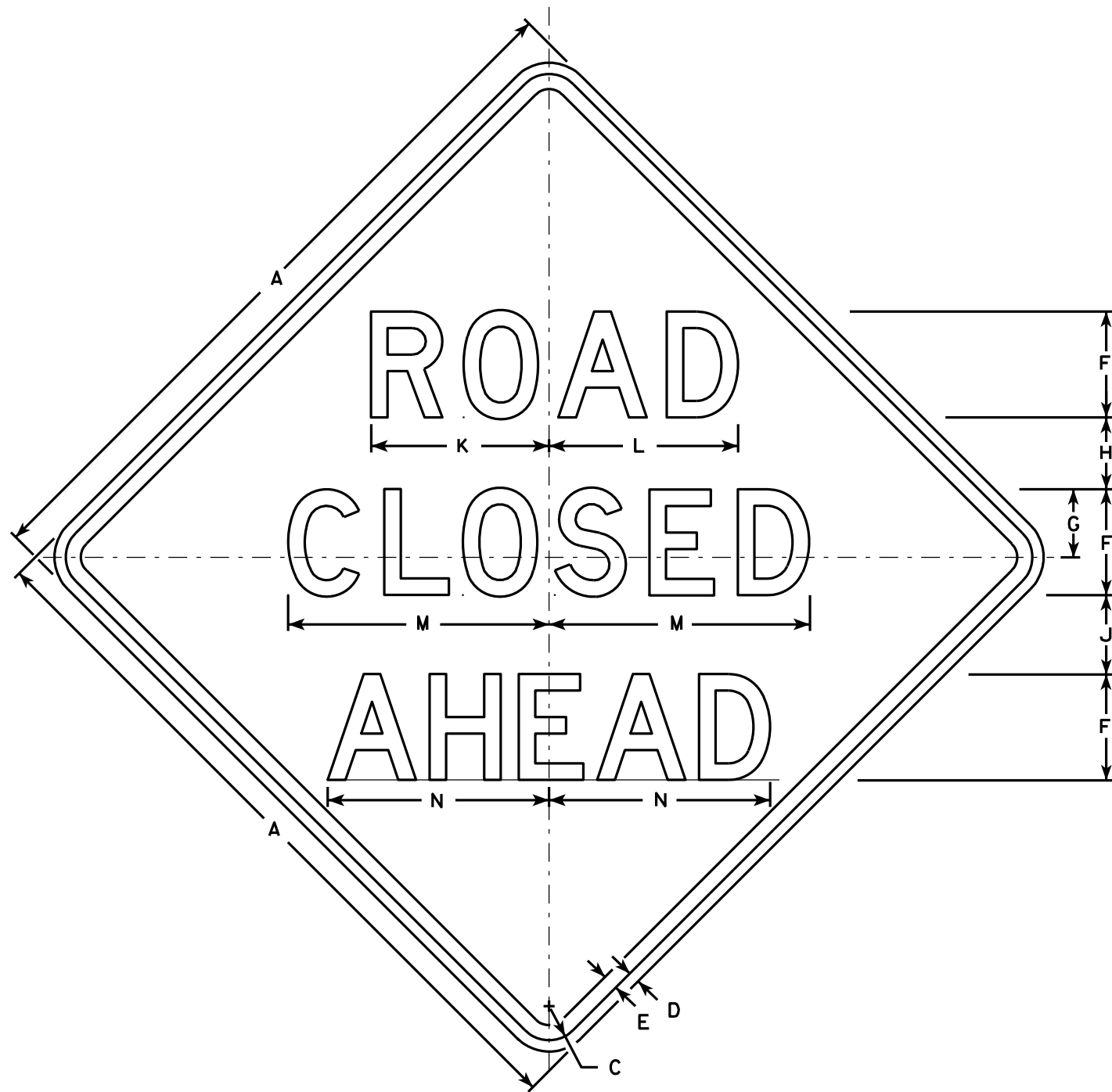
STANDARD SIGN
W20-2A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

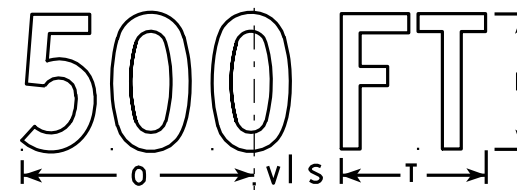
APPROVED *Matthew R. Raub*
for State Traffic Engineer

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

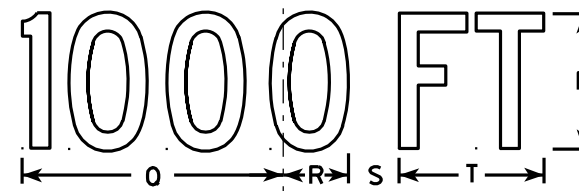
PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ E



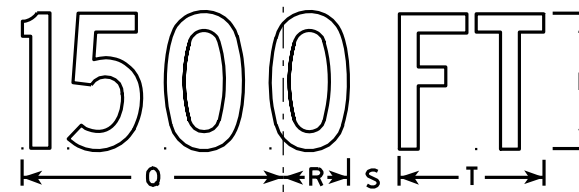
W20-3A



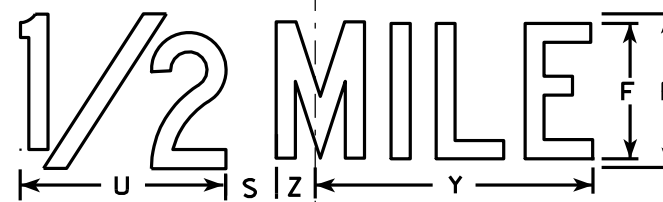
W20-3D



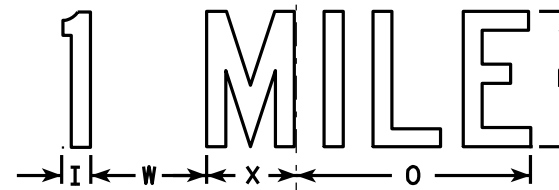
W20-3C



W20-3B



W20-3G



W20-3F

NOTES

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

7

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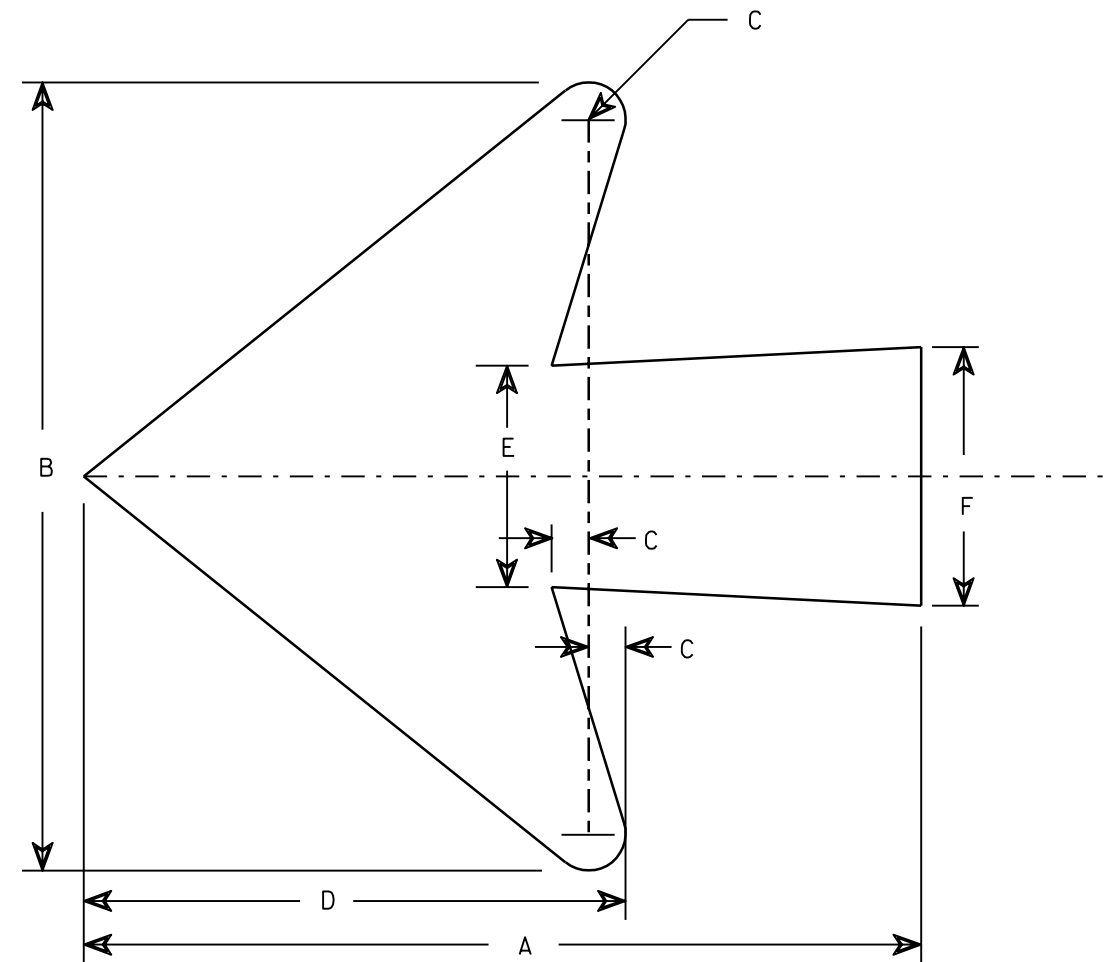
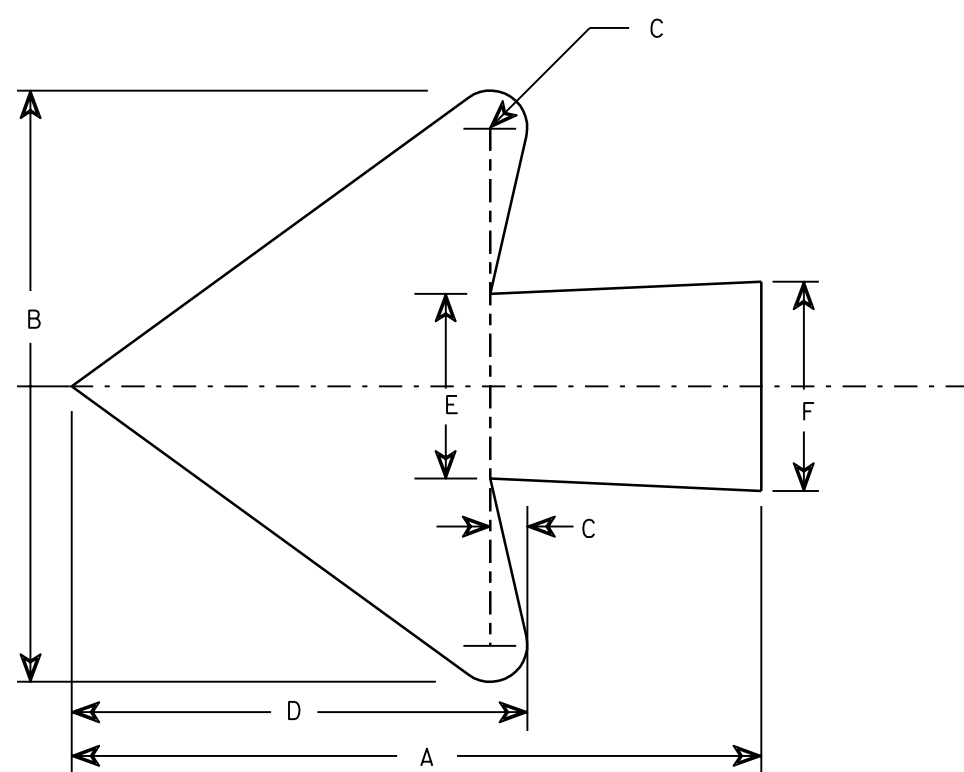
| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|------|----|---|-------|-----|-----|---|-------|-------|-------|-------|--------|--------|--------|--------|----|---|--------|-------|-------|-------|--------|-------|-------|-------|--------|-------|--------------|
| 1 | 36 | | 1 5/8 | 5/8 | 3/4 | 5 | 3 3/8 | 3 1/2 | 1 1/8 | 4 | 8 3/8 | 8 7/8 | 12 1/2 | 11 | 9 | 6 | 10 1/8 | 2 1/2 | 1 7/8 | 5 5/8 | 8 | 1 3/8 | 4 1/2 | 3 1/2 | 10 3/4 | 1 3/4 | 9.0 |
| 2S | 48 | | 2 1/4 | 3/4 | 1 | 7 | 4 1/2 | 4 3/4 | 1 1/2 | 5 1/4 | 11 3/4 | 12 1/2 | 17 1/4 | 14 5/8 | 12 | 8 | 13 1/2 | 3 3/8 | 2 5/8 | 7 1/2 | 10 5/8 | 1 7/8 | 6 | 4 5/8 | 14 3/8 | 2 3/8 | 16.0 |
| 2M | 48 | | 2 1/4 | 3/4 | 1 | 7 | 4 1/2 | 4 3/4 | 1 1/2 | 5 1/4 | 11 3/4 | 12 1/2 | 17 1/4 | 14 5/8 | 12 | 8 | 13 1/2 | 3 3/8 | 2 5/8 | 7 1/2 | 10 5/8 | 1 7/8 | 6 | 4 5/8 | 14 3/8 | 2 3/8 | 16.0 |
| 3 | 48 | | 2 1/4 | 3/4 | 1 | 7 | 4 1/2 | 4 3/4 | 1 1/2 | 5 1/4 | 11 3/4 | 12 1/2 | 17 1/4 | 14 5/8 | 12 | 8 | 13 1/2 | 3 3/8 | 2 5/8 | 7 1/2 | 10 5/8 | 1 7/8 | 6 | 4 5/8 | 14 3/8 | 2 3/8 | 16.0 |
| 4 | 48 | | 2 1/4 | 3/4 | 1 | 7 | 4 1/2 | 4 3/4 | 1 1/2 | 5 1/4 | 11 3/4 | 12 1/2 | 17 1/4 | 14 5/8 | 12 | 8 | 13 1/2 | 3 3/8 | 2 5/8 | 7 1/2 | 10 5/8 | 1 7/8 | 6 | 4 5/8 | 14 3/8 | 2 3/8 | 16.0 |
| 5 | 48 | | 2 1/4 | 3/4 | 1 | 7 | 4 1/2 | 4 3/4 | 1 1/2 | 5 1/4 | 11 3/4 | 12 1/2 | 17 1/4 | 14 5/8 | 12 | 8 | 13 1/2 | 3 3/8 | 2 5/8 | 7 1/2 | 10 5/8 | 1 7/8 | 6 | 4 5/8 | 14 3/8 | 2 3/8 | 16.0 |

STANDARD SIGN
W20-3A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-3.7



| Lower Case Copy Size | Right or Left | A | | B | C | D | E | F |
|----------------------|---------------|----------|----------|---|-----|-------|-------|-------|
| | | * 2 Town | * 3 Town | | | | | |
| 3 3/4 Series C | 7 | 11 | 18 | 6 | 3/8 | 4 5/8 | 1 7/8 | 2 1/8 |

* Indicates Ahead and Tilt for 2 & 3 Town applications.

| Lower Case Copy Size | Right or Left | A | | B | C | D | E | F |
|----------------------|---------------|----------|----------|--------|-----|-------|-------|-------|
| | | * 2 Town | * 3 Town | | | | | |
| 4 1/2 Series D&E | 8 1/2 | 11 | 18 | 8 | 3/8 | 5 1/2 | 2 1/4 | 2 5/8 |
| 6 Series D&E | 12 | 18 | 24 | 10 3/4 | 1/2 | 7 3/8 | 3 1/4 | 3 1/2 |
| 8 Series E | 15 1/2 | 24 | 30 | 14 1/4 | 3/4 | 9 3/4 | 4 1/4 | 4 1/2 |

* Indicates Ahead and Tilt for 2 & 3 Town applications.

STANDARD ARROWS
FOR D1 GUIDE SIGNS
WISCONSIN DEPT OF TRANSPORTATION
APPROVED *Chester J Spang*
for State Traffic Engineer
DATE 8/10/92 PLATE NO. A1-2.3

7

7

DESIGN DATA

LIVE LOAD:
DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: RF = 1.12
OPERATING RATING FACTOR: RF = 1.46
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 & STRUCTURAL APPROACH SLAB - f'c = 4,000 P.S.I.
ALL OTHER - f'c = 3,500 P.S.I.
BAR STEEL REINFORCEMENT:
GRADE 60 - fy = 60,000 P.S.I.
36W PRESTRESSED GIRDERS:
CONCRETE MASONRY - f'c = 8,000 P.S.I.
STRANDS: 0.6" DIA. WITH ULTIMATE TENSILE STRENGTH OF 270,000 P.S.I.

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON 12.75" X .375" CIP CONCRETE PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 210 TONS ** PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA.
ESTIMATED 120' LONG ON EAST ABUTMENT AND 105' LONG ON WEST ABUTMENT.
** 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 DRIVEN PILE CAPACITY.

HYDRAULIC DATA

100 YEAR FREQUENCY
Q100 = 900 C.F.S.
VEL100 = 9.5 F.P.S.
HW100 = EL. 810.72
WATERWAY AREA = 95 SQ. FT.
DRAINAGE AREA = 1.31 SQ. MI.
ROADWAY OVERTOPPING = N/A
SCOUR CRITICAL CODE = 8

2 YEAR FREQUENCY

Q2 = 175 C.F.S.
VEL2 = 5.5 F.P.S.
HW2 = EL. 806.91

TRAFFIC VOLUME

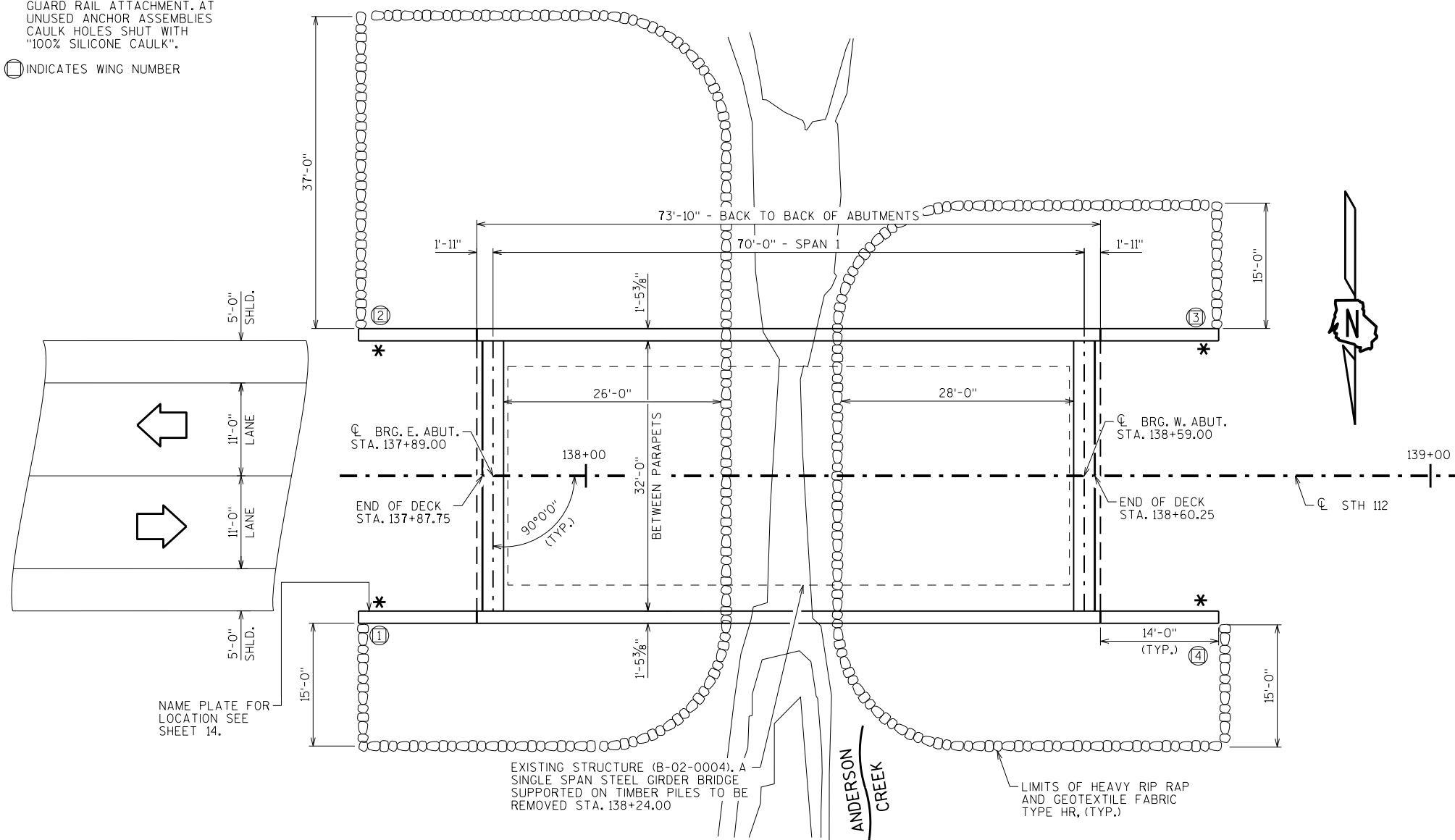
STH 112
ADT = 1,100 (2040)
R.D.S. = 60 M.P.H.

LIST OF DRAWINGS

- 1. GENERAL PLAN
2. CROSS SECTION & QUANTITIES
3. SUBSURFACE EXPLORATION
4. EAST ABUTMENT
5. EAST ABUTMENT DETAILS
6. WEST ABUTMENT
7. WEST ABUTMENT DETAILS
8. 36W PRESTRESSED GIRDER DETAILS 1
9. 36W PRESTRESSED GIRDER DETAILS 2
10. STEEL DIAPHRAGM
11. SUPERSTRUCTURE
12. SUPERSTRUCTURE DETAILS
13. SINGLE SLOPE PARAPET 42SS

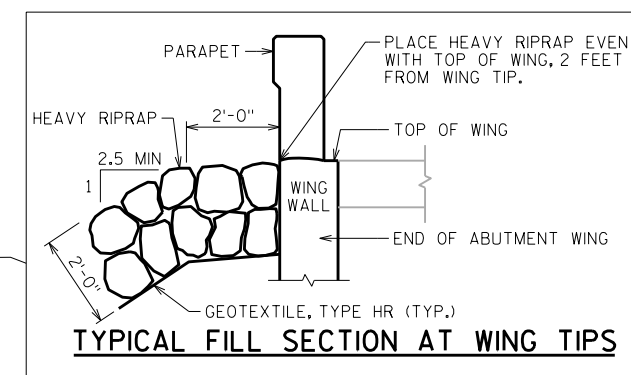
* PROVIDE FOR THREE BEAM GUARD RAIL ATTACHMENT. AT UNUSED ANCHOR ASSEMBLIES CAULK HOLES SHUT WITH "100% SILICONE CAULK".

INDICATES WING NUMBER

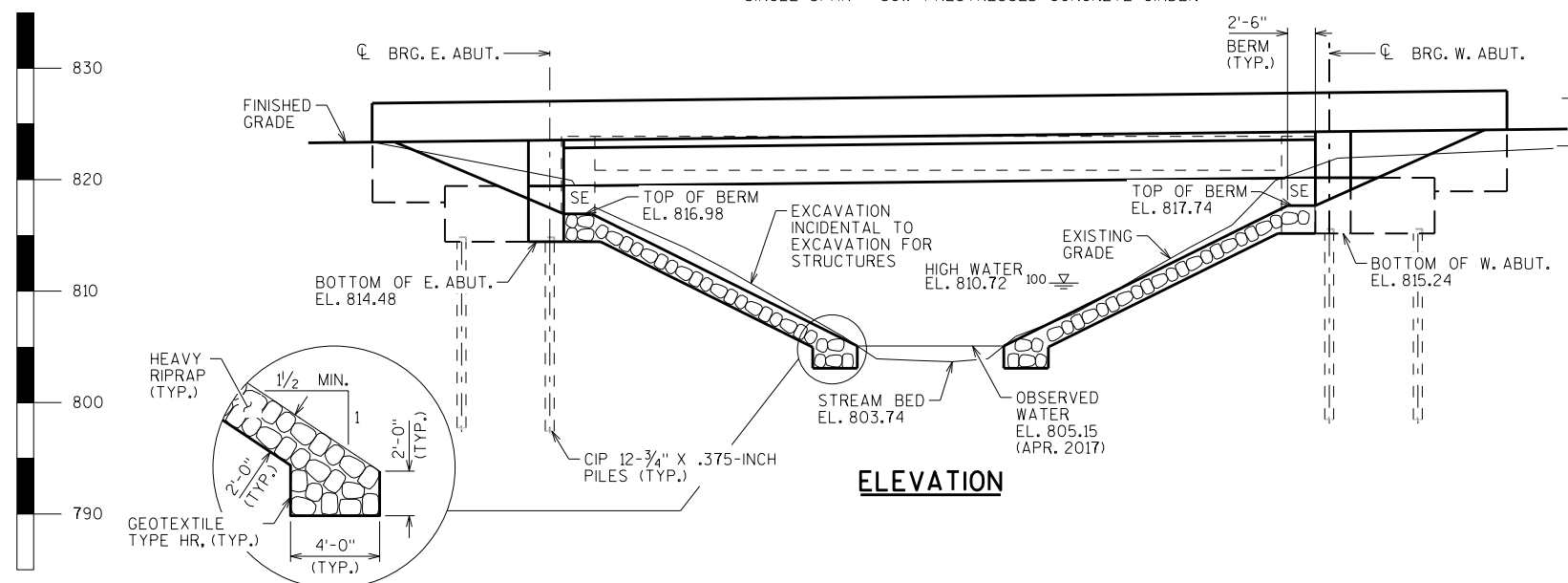


PLAN

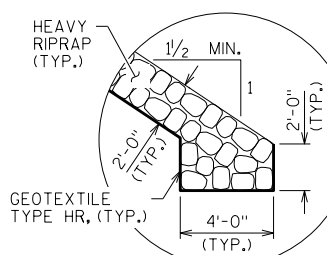
SINGLE SPAN - 36W PRESTRESSED CONCRETE GIRDER



TYPICAL FILL SECTION AT WING TIPS



ELEVATION



HEAVY RIPRAP (TYP.)
GEOTEXTILE TYPE HR, (TYP.)

STRUCTURE DESIGN CONTACTS:

JOEL MAAS (608) 267-0273
LAURA SHADEWALD (608) 267-9592

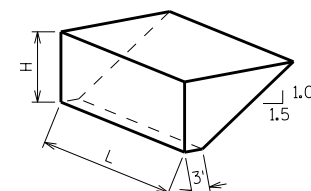
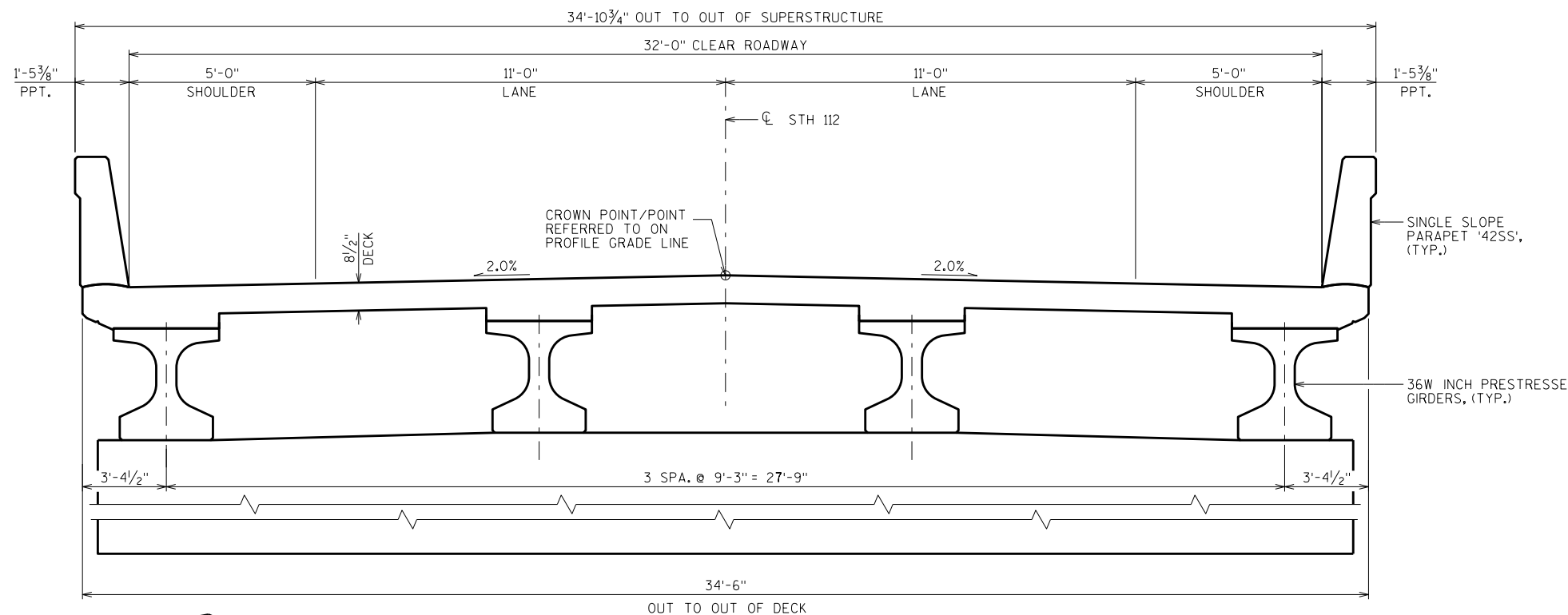
Table with columns for NO., DATE, REVISION, and BY. Includes Bureau of Structures logo and project information: STRUCTURE B-2-68, STH 112 OVER ANDERSON CREEK.

GENERAL PLAN

SHEET 1 OF 13

GENERAL NOTES

- DRAWINGS SHALL NOT BE SCALED.
- BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
- THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.
- BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.
- THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-2-68" SHALL BE THE EXISTING GROUNDLINE.
- 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.
- EXCAVATION BELOW THE ABUTMENT AND USE OF 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.
- PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE ENTIRE EXPOSED TOP OF DECK SURFACE AND TO THE VERTICAL AND HORIZONTAL SURFACES OF THE PAVING NOTCHES AT ABUTMENT DIAPHRAGMS.
- PIGMENTED PROTECTIVE SURFACE SEALER TO BE APPLIED TO THE FRONT FACE AND THE TOP OF THE PARAPETS.
- 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.
- ELASTOMERIC BEARING PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TRUE.
- THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE "36W PRESTRESSED GIRDER DETAILS 2" SHEET.



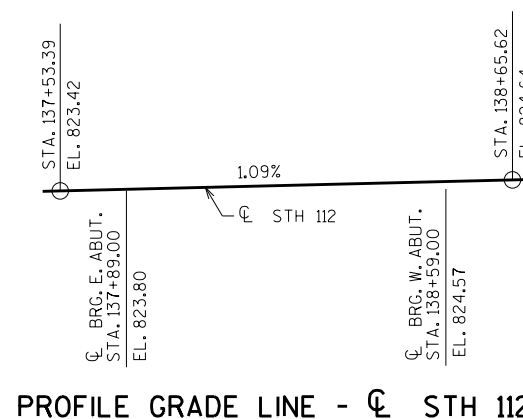
CROSS SECTION THRU ROADWAY
LOOKING WEST

ABUTMENT BACKFILL DIAGRAM FOR WINGS PARALLEL TO ROADWAY

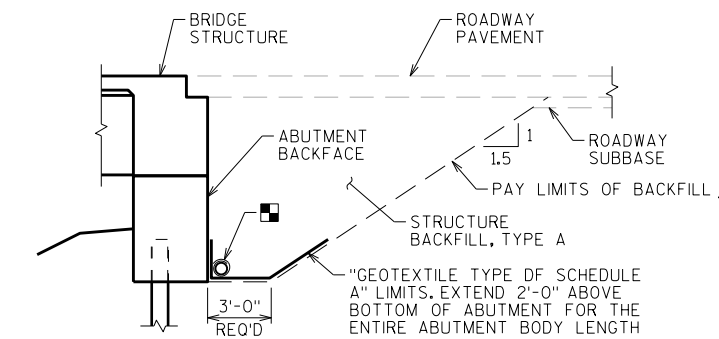
- L = OUT TO OUT OF ABUTMENT, INCLUDING WINGS (FT)
- H = AVERAGE ABUTMENT FILL HEIGHT (FT)
- EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)
- $V_{CF} = (L)(3.0)(H) + (L)(0.5)(1.5H)(H)$
- $V_{CY} = V_{CF} / 27$
- $V_{TON} = V_{CY} (2.0)$

TOTAL ESTIMATED QUANTITIES

| BID ITEM NUMBER | BID ITEMS | UNIT | SUPER. | EAST ABUT. | WEST ABUT. | TOTALS |
|-----------------|---|------|--------|------------|------------|------------|
| 203.0600.S | REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 138+24.00 | LS | --- | --- | --- | 1 |
| 206.1000 | EXCAVATION FOR STRUCTURES BRIDGES B-2-68 | LS | --- | --- | --- | 1 |
| 210.1500 | BACKFILL STRUCTURE TYPE A | TON | --- | 147 | 147 | 294 |
| 502.0100 | CONCRETE MASONRY BRIDGES | CY | 115 | 40 | 40 | 195 |
| 502.3200 | PROTECTIVE SURFACE TREATMENT | SY | 260 | --- | --- | 260 |
| 502.3210 | PIGMENTED SURFACE SEALER | SY | 71 | --- | --- | 71 |
| 503.0137 | PRESTRESSED GIRDER TYPE I 36W-INCH | LF | 284 | --- | --- | 284 |
| 505.0400 | BAR STEEL REINFORCEMENT HS STRUCTURES | LB | --- | 2,090 | 2,090 | 4,180 |
| 505.0600 | BAR STEEL REINFORCEMENT HS COATED STRUCTURES | LB | 21,070 | 2,450 | 2,450 | 25,970 |
| 506.2605 | BEARING PADS ELASTOMERIC NON-LAMINATED | EACH | 8 | --- | --- | 8 |
| 506.4000 | STEEL DIAPHRAGMS B-2-68 | EACH | 6 | --- | --- | 6 |
| 516.0500 | RUBBERIZED MEMBRANE WATERPROOFING | SY | --- | 9 | 9 | 18 |
| 550.2126 | PILING CIP CONCRETE 12 3/4 X 0.375-INCH | LF | --- | 840 | 735 | 1,575 |
| 606.0300 | RIPRAP HEAVY | CY | --- | 250 | 185 | 435 |
| 612.0406 | PIPE UNDERDRAIN WRAPPED 6-INCH | LF | --- | 80 | 80 | 160 |
| 614.0150 | ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD | EACH | --- | 2 | 2 | 4 |
| 645.0111 | GEOTEXTILE TYPE DF SCHEDULE A | SY | --- | 34 | 34 | 68 |
| 645.0120 | GEOTEXTILE TYPE HR | SY | --- | 380 | 280 | 660 |
| NON-BID ITEMS | | | | | | |
| | FILLER | SIZE | --- | --- | --- | 1/2", 3/4" |



PROFILE GRADE LINE - STH 112



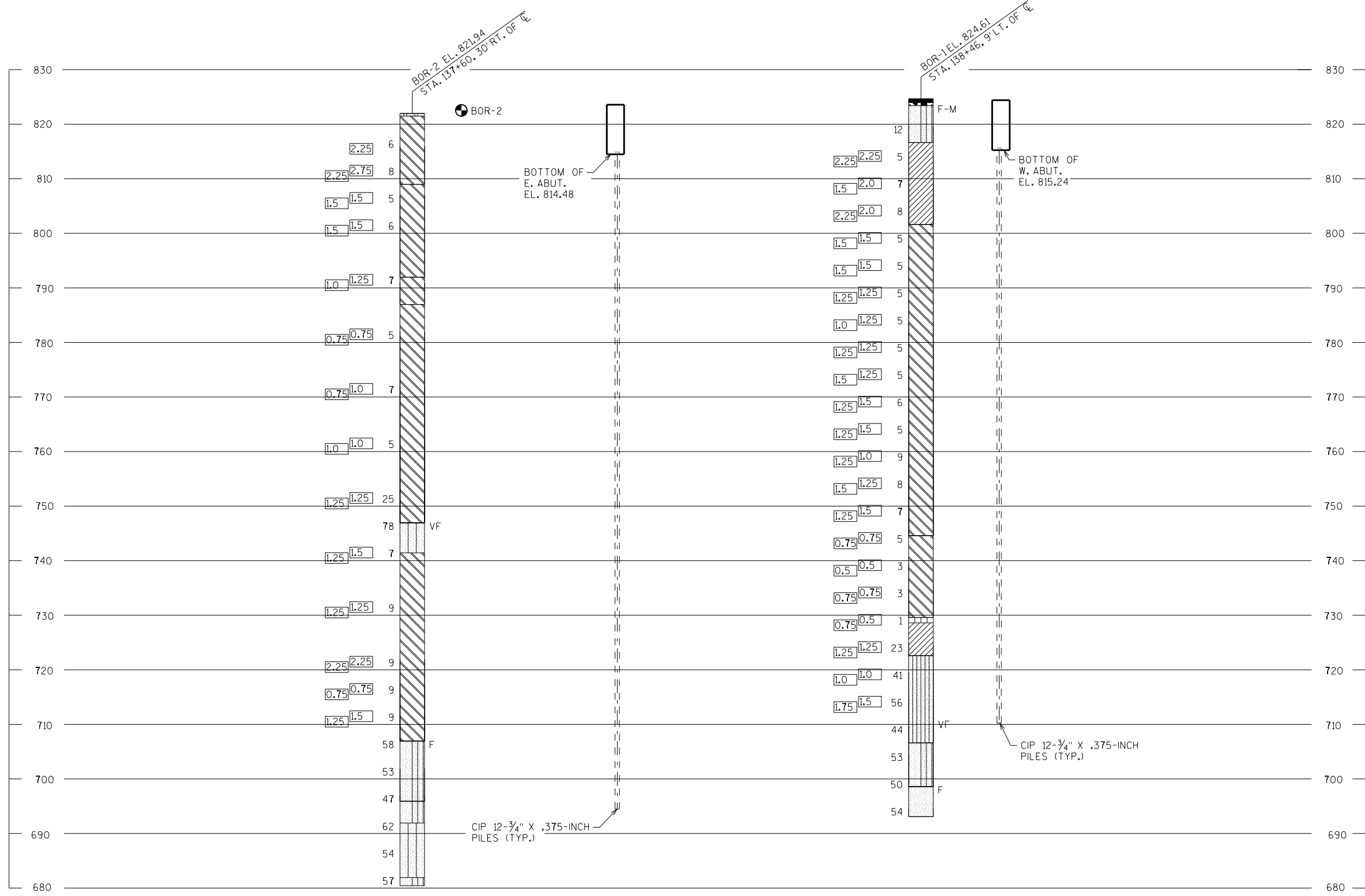
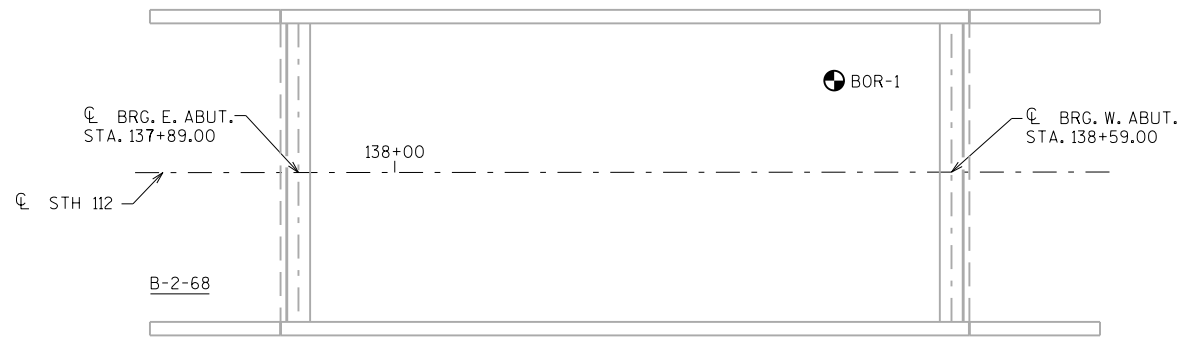
TYPICAL SECTION THRU ABUTMENT

- ▲ 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.

| NO. | DATE | REVISION | BY |
|---|------|----------|----------------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY | | MJH | PLANS CKD. JDM |
| CROSS SECTION & QUANTITIES | | | SHEET 2 |

| BORING # | DATE COMPLETED | NORTHING (Y) | EASTING (X) |
|----------|----------------|--------------|-------------|
| 1 | 1/16/2019 | 268825 | 499575 |
| 2 | 1/17/2019 | 268864 | 499661 |

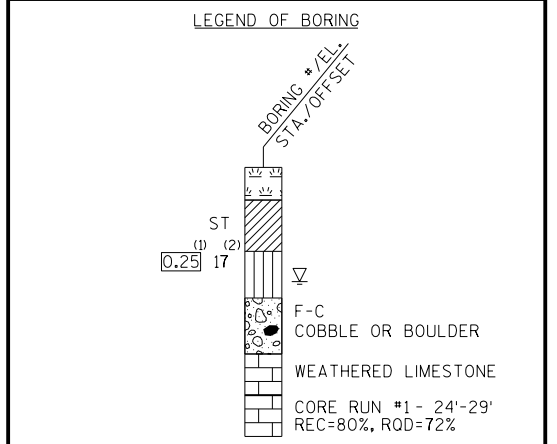
BORINGS COMPLETED BY: WISDOT
 REPORT COMPLETED BY: WISDOT
 ALL COORDINATES REFERENCED TO WCCS NAD 83(91) ASHLAND COUNTY
 COORDINATES COLLECTED USING NON-SURVEY GRADE EQUIPMENT



STATE PROJECT NUMBER
8727-04-74

MATERIAL SYMBOLS

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



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

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

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

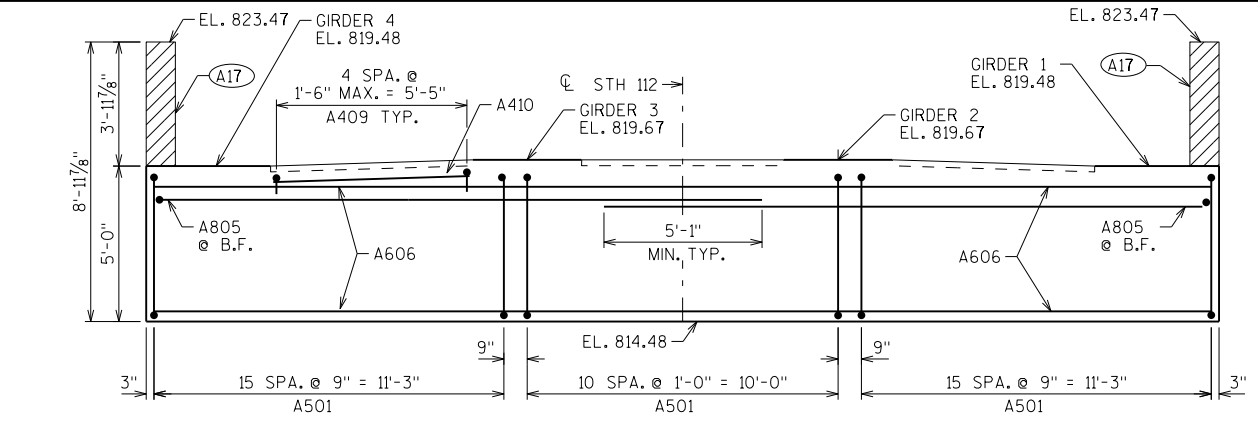
BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT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

| NO. | DATE | REVISION | BY |
|---|------|-----------------|---------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY MJH/TLP | | PLANS CK'D. JDM | |
| SUBSURFACE EXPLORATION | | | SHEET 3 |

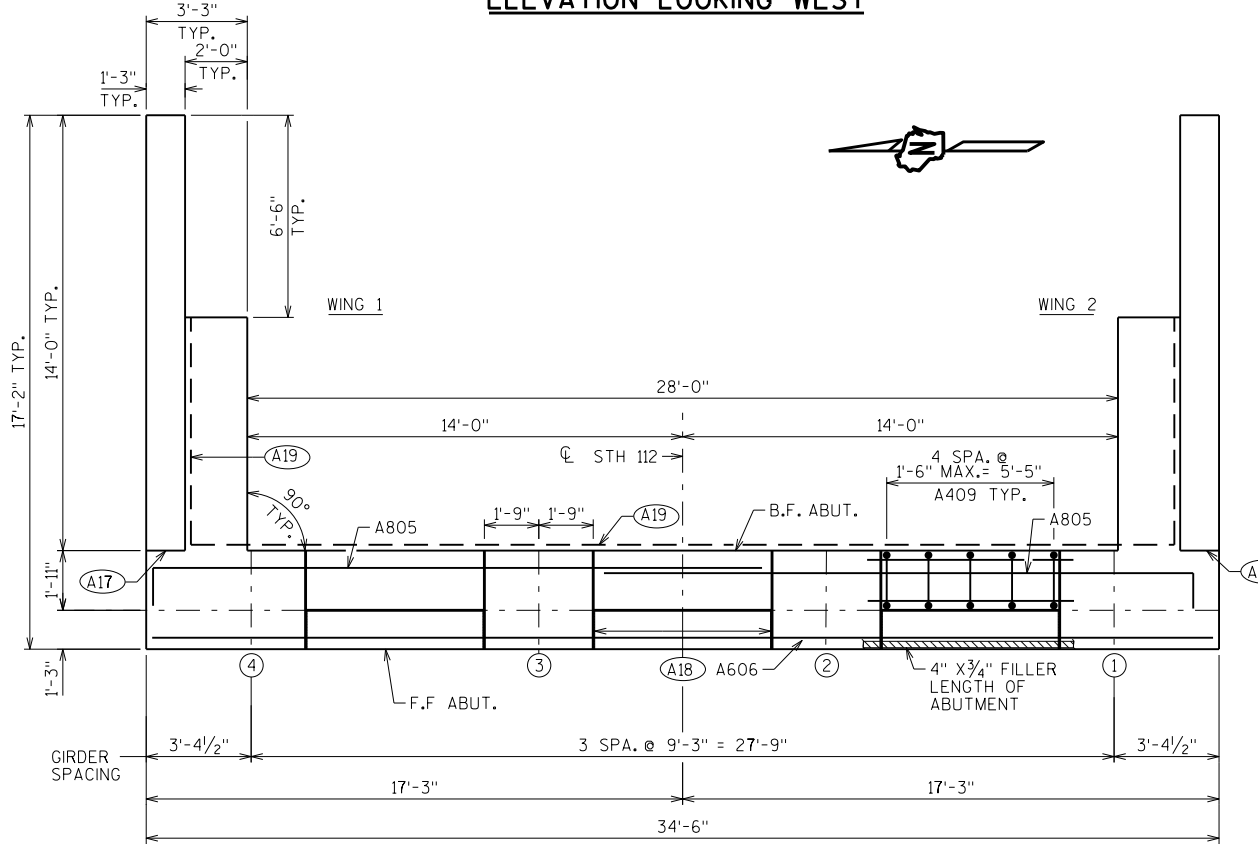
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8

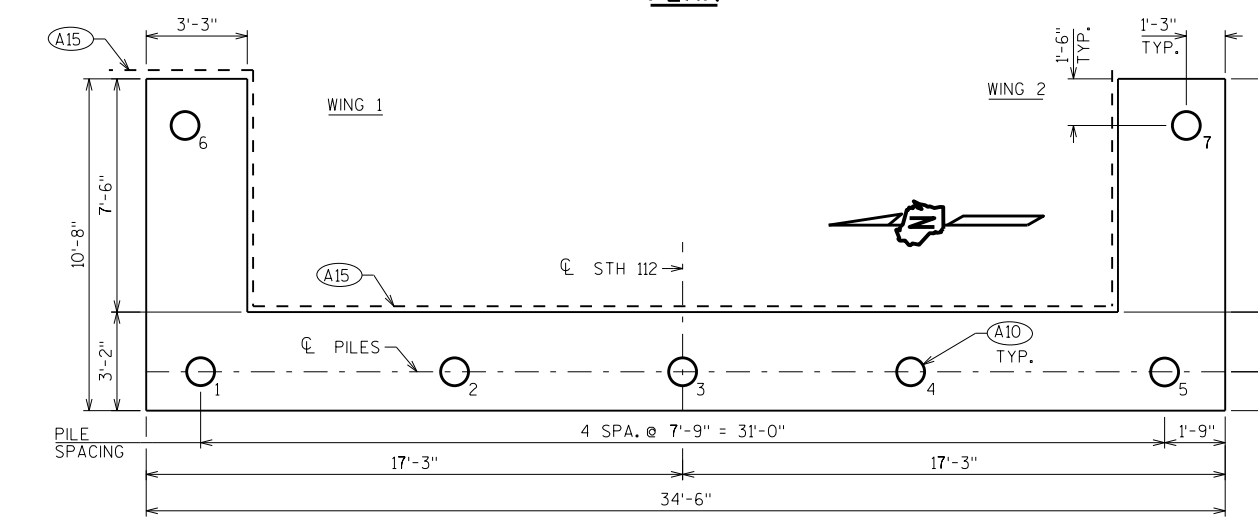
SCALE =



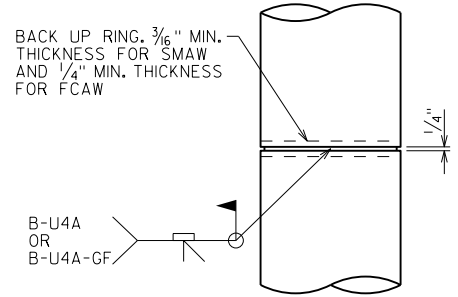
ELEVATION LOOKING WEST



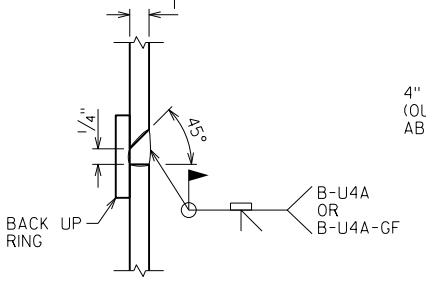
PLAN



PILE PLAN

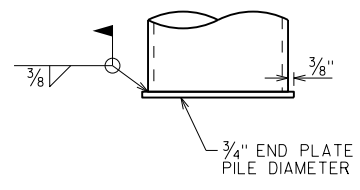


CAST-IN-PLACE 'PIPE PILE'

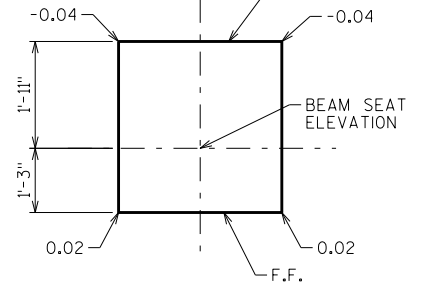


C.I.P. PILE WELD DETAIL

PILE DETAILS

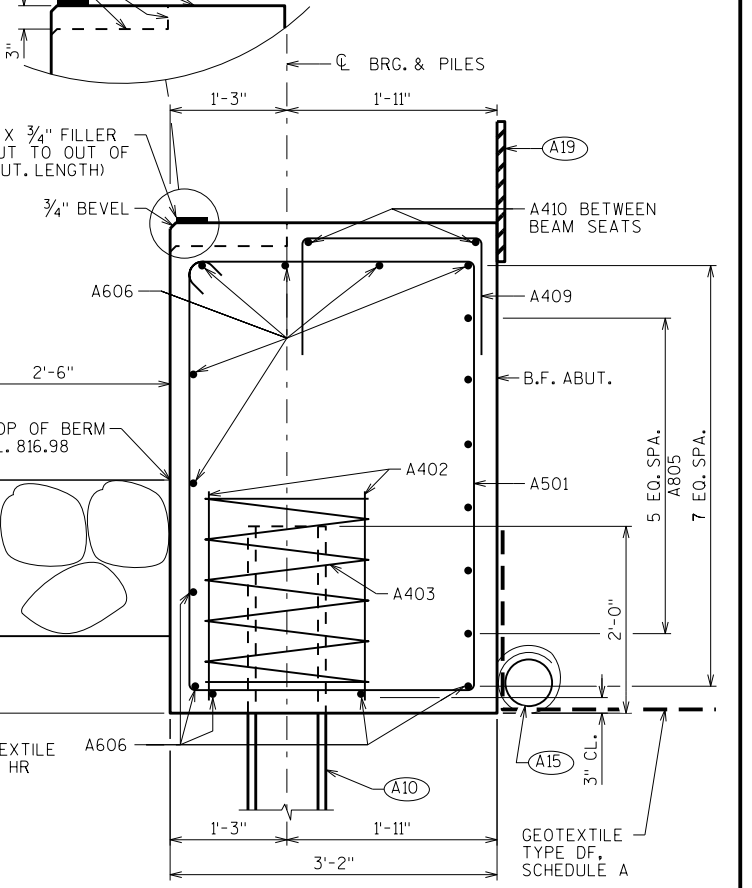


END PLATE DETAIL

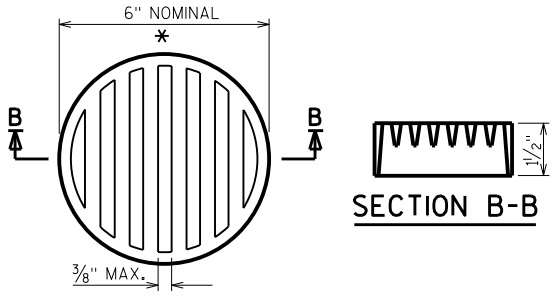


SLOPED BEAM SEATS
(EAST ABUTMENT ONLY)

STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".



SECTION THRU BODY



RODENT SHIELD DETAIL

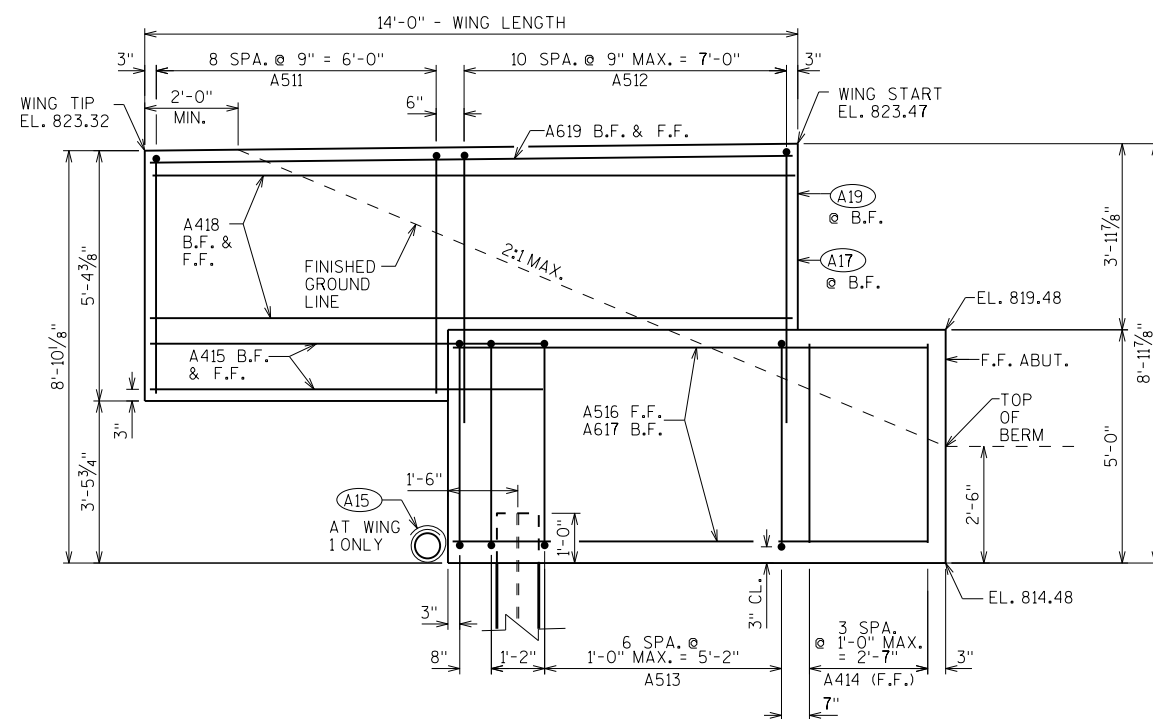
* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

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

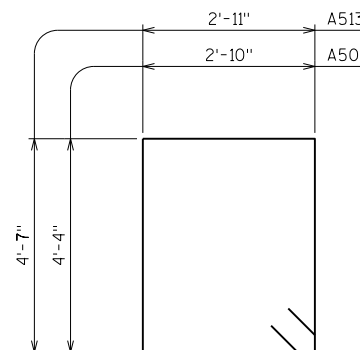
THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH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

- (A10) SUPPORT ABUTMENT ON 12 3/4" DIA. X 0.375" CIP CONCRETE PILING, ESTIMATED 120'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- (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 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- (A18) 3/4" CORK FILLER UP VERT. BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.
- (A19) 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

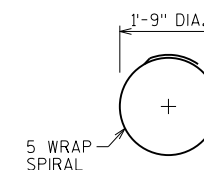
| NO. | DATE | REVISION | BY |
|---|------|----------|----------------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY | | MJH | PLANS CKD. JDM |
| EAST ABUTMENT | | SHEET 4 | |



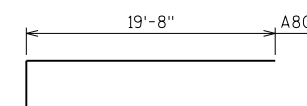
WING 1 ELEVATION
WING 2 SIMILAR



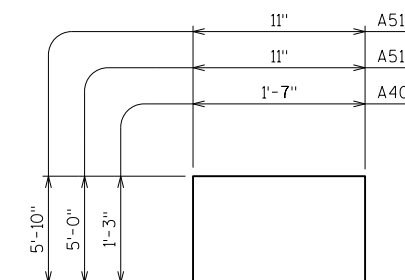
A501, A513



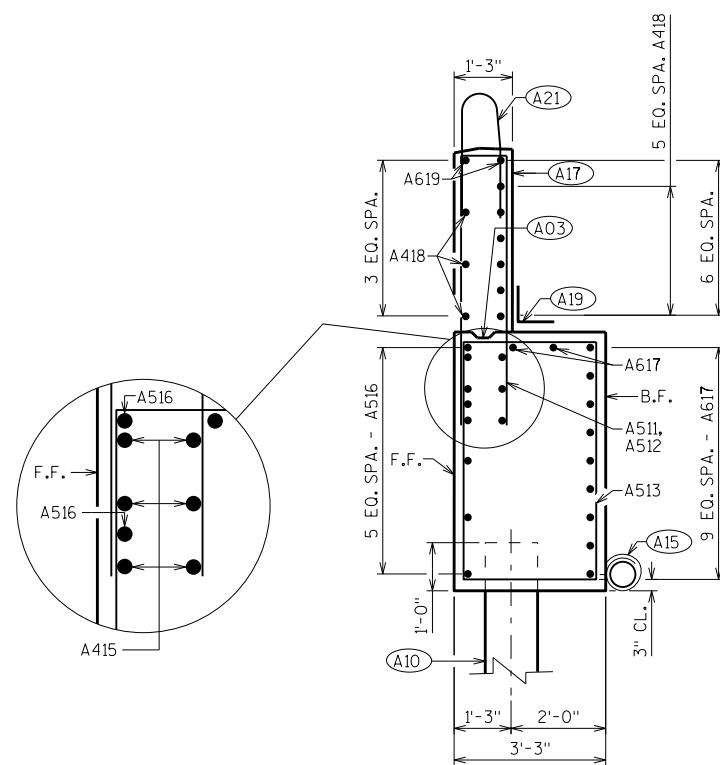
A403



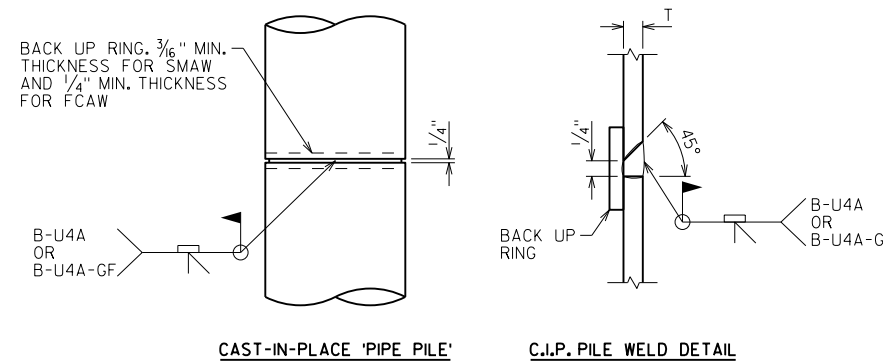
A805



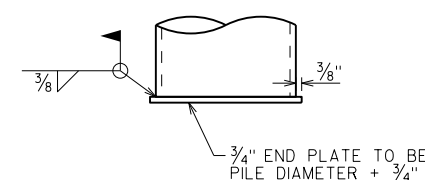
A409, A511, A512



WING 1 SECTION
WING 2 SIMILAR



PILE DETAILS



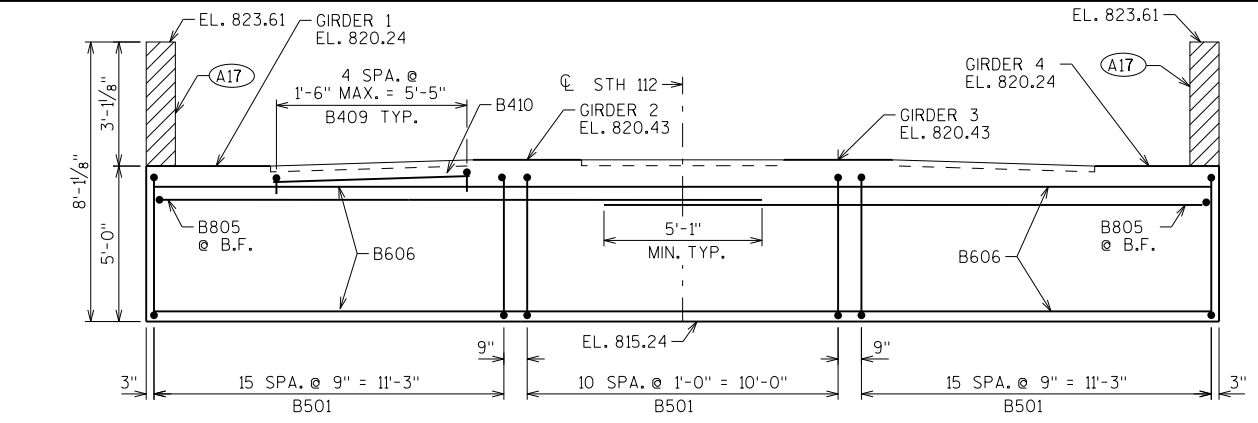
END PLATE DETAIL

BILL OF BARS

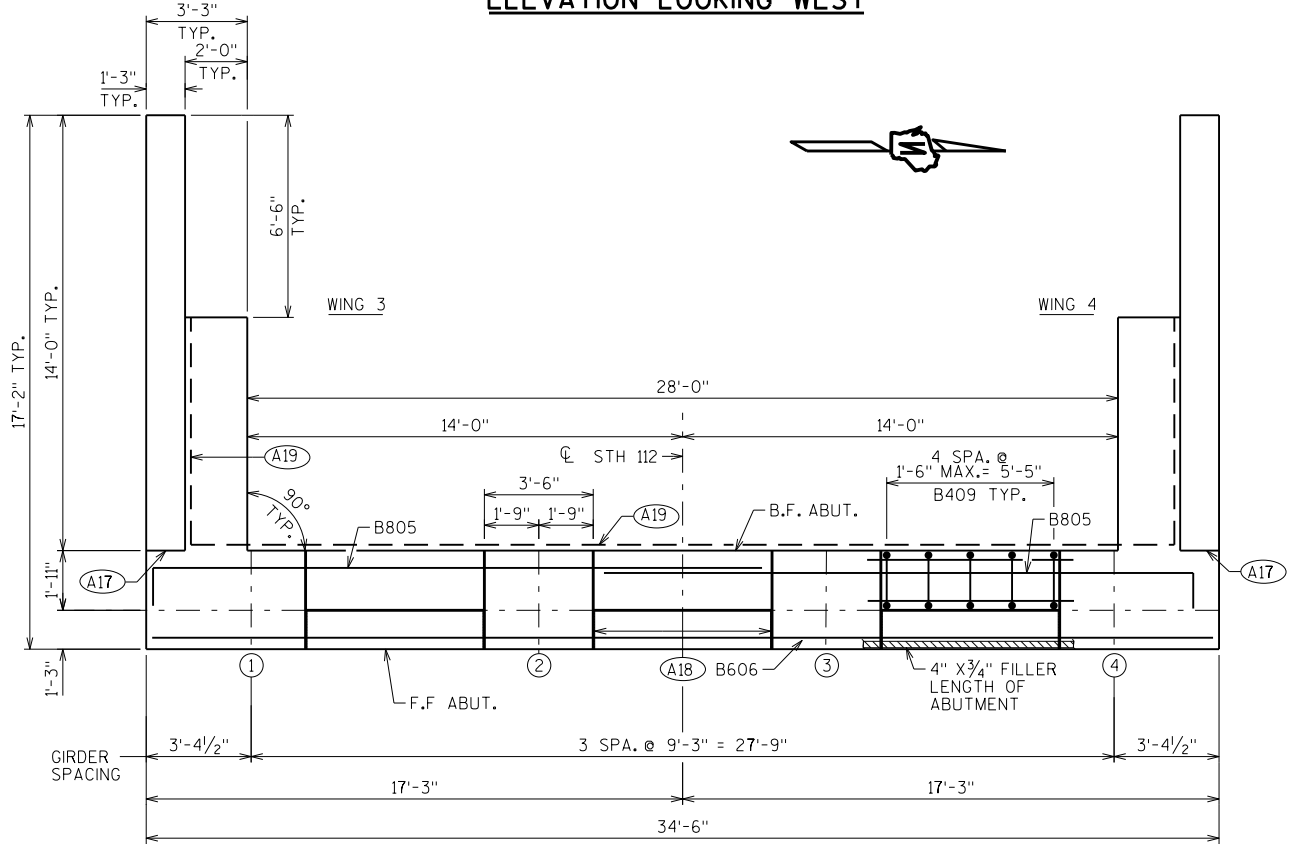
| BAR MARK | COAT | NO. REQ'D. | LENGTH | BEND | BAR SERIES | LOCATION |
|----------|------|------------|--------|------|------------|--|
| A501 | | 43 | 15'-0" | X | | BODY-STIRRUPS |
| A402 | | 10 | 2'-3" | | | PILES - 2 PER BODY PILE - VERT |
| A403 | | 5 | 28'-0" | X | | PILES - 1 PER BODY PILE - SPIRAL |
| | | NOT USED | | | | |
| A805 | | 12 | 21'-0" | X | | BODY - HORIZONTAL - B.F. - END |
| A606 | | 11 | 34'-2" | | | BODY - HORIZONTAL - TOP, BOT. & F.F. |
| | | NOT USED | | | | |
| | | NOT USED | | | | |
| A409 | | 15 | 3'-11" | X | | BODY - VERTICAL - TOP - BTWN. BEAM SEATS |
| A410 | | 6 | 7'-9" | | | BODY - HORIZONTAL - TOP - BTWN. BEAM SEATS |
| A511 | X | 18 | 10'-8" | X | | WINGS 1 & 2 - VERTICAL - UPPER WING |
| A512 | X | 22 | 12'-4" | X | | WINGS 1 & 2 - VERTICAL - UPPER WING |
| A513 | X | 14 | 15'-8" | X | | WINGS 1 & 2 - STIRRUP - LOWER WING |
| A414 | X | 8 | 4'-6" | | | WINGS 1 & 2 - VERTICAL - END OF ABUTMENTS - F.F. |
| A415 | X | 6 | 7'-9" | | | WINGS 1 & 2 - HORIZONTAL |
| A516 | X | 12 | 10'-4" | | | WINGS 1 & 2 - HORIZONTAL - F.F. - LOWER WING |
| A617 | X | 24 | 10'-4" | | | WINGS 1 & 2 - HORIZONTAL - B.F. - LOWER WING |
| A418 | X | 18 | 13'-8" | | | WINGS 1 & 2 - HORIZONTAL - B.F. & F.F. |
| A619 | X | 4 | 13'-8" | | | WINGS 1 & 2 - HORIZONTAL - B.F. & F.F. |

- (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).
- (A10) SUPPORT ABUTMENT ON 12 3/4" DIA. X 0.375" CIP CONCRETE PILING, ESTIMATED 120'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- (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 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" 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.
- (A21) FOR PPT. BARS & DIMENSIONS SEE "SINGLE SLOPE PARAPET 42SS"

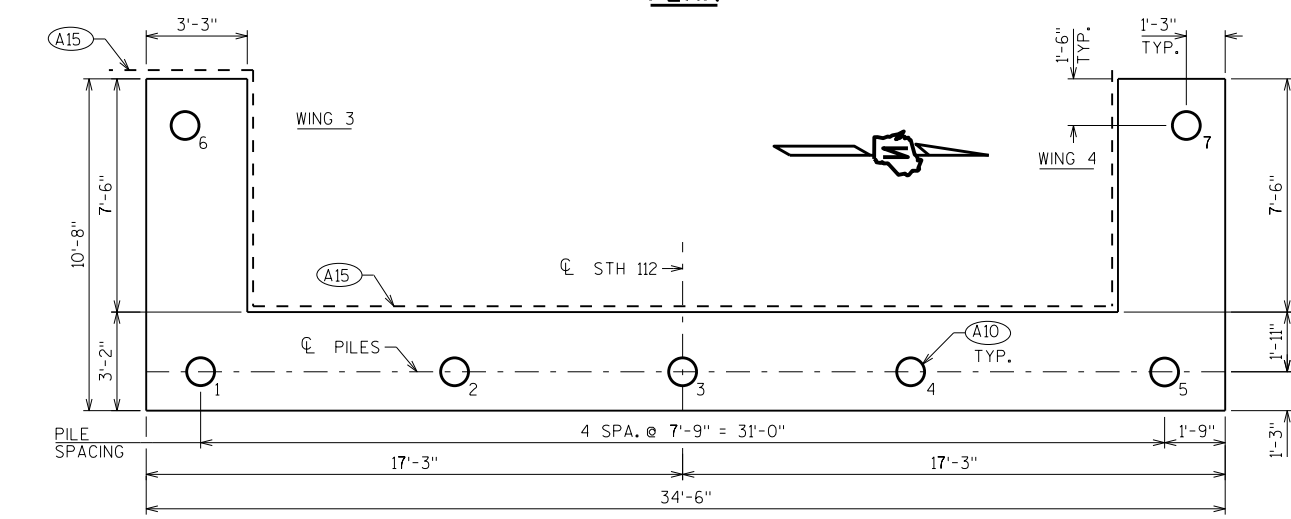
| NO. | DATE | REVISION | BY |
|---|------|----------|----------------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY | | MJH | PLANS CKD. JDM |
| EAST ABUTMENT DETAILS | | | SHEET 5 |



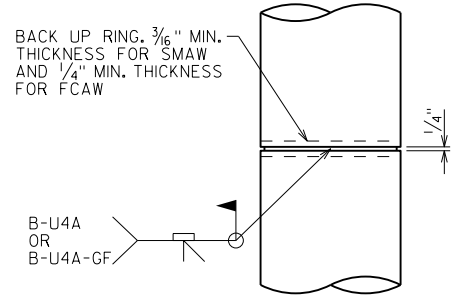
ELEVATION LOOKING WEST



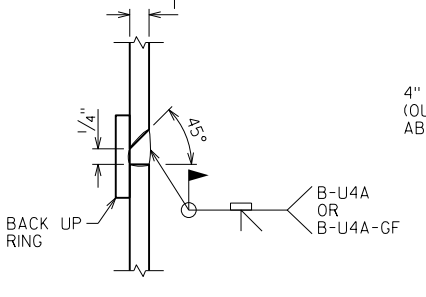
PLAN



PILE PLAN

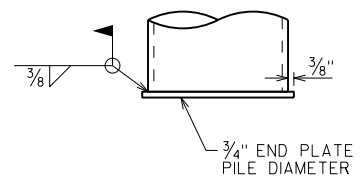


CAST-IN-PLACE 'PIPE PILE'

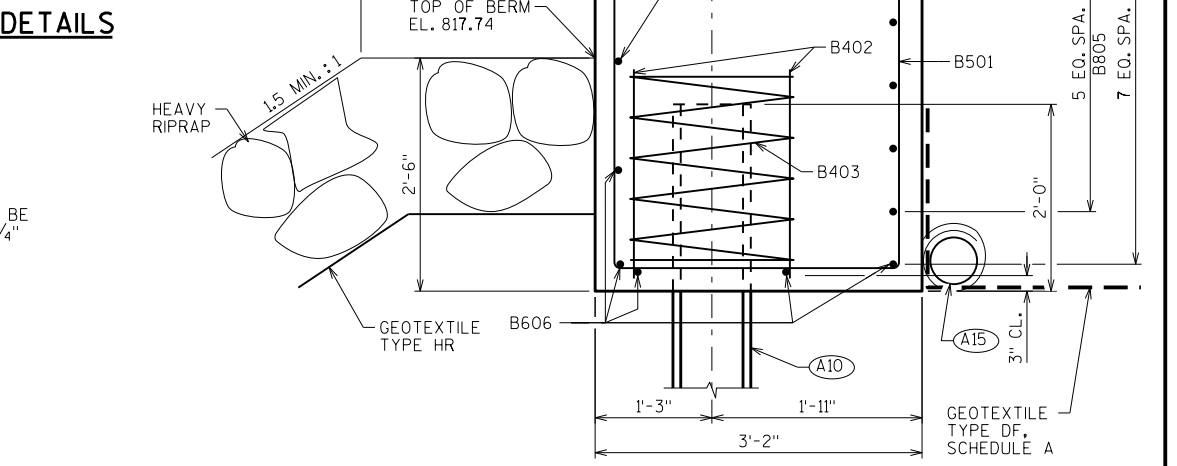


C.I.P. PILE WELD DETAIL

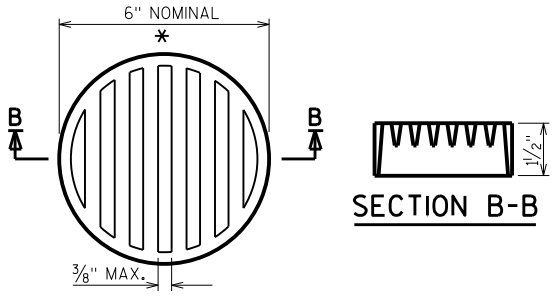
PILE DETAILS



END PLATE DETAIL



SECTION THRU BODY



RODENT SHIELD DETAIL

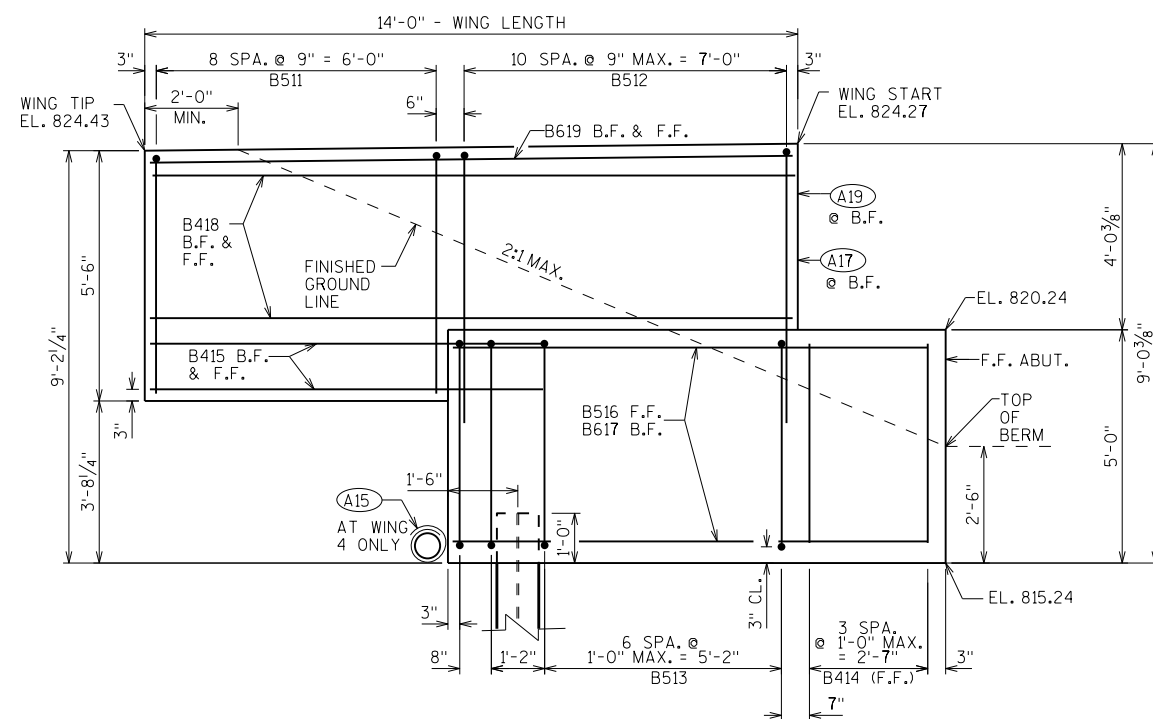
* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

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

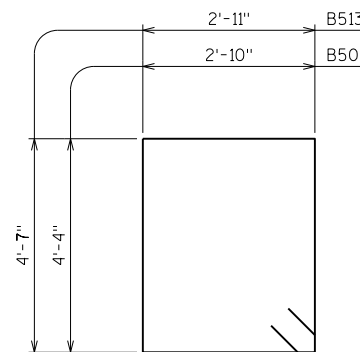
THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH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

- (A10) SUPPORT ABUTMENT ON 12 3/4" DIA. X 0.375" CIP CONCRETE PILING, ESTIMATED 105'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- (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 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- (A18) 3/4" CORK FILLER UP VERT. BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.
- (A19) 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

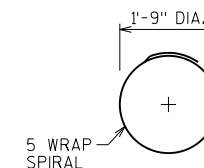
| NO. | DATE | REVISION | BY |
|---|------|----------|----------------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY | | MJH | PLANS CKD. JDM |
| WEST ABUTMENT | | SHEET 6 | |



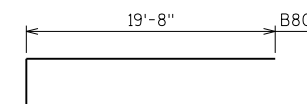
WING 3 ELEVATION
WING 4 SIMILAR



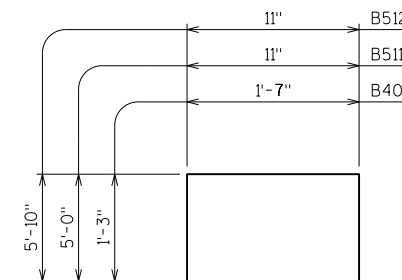
B501, B513



B403



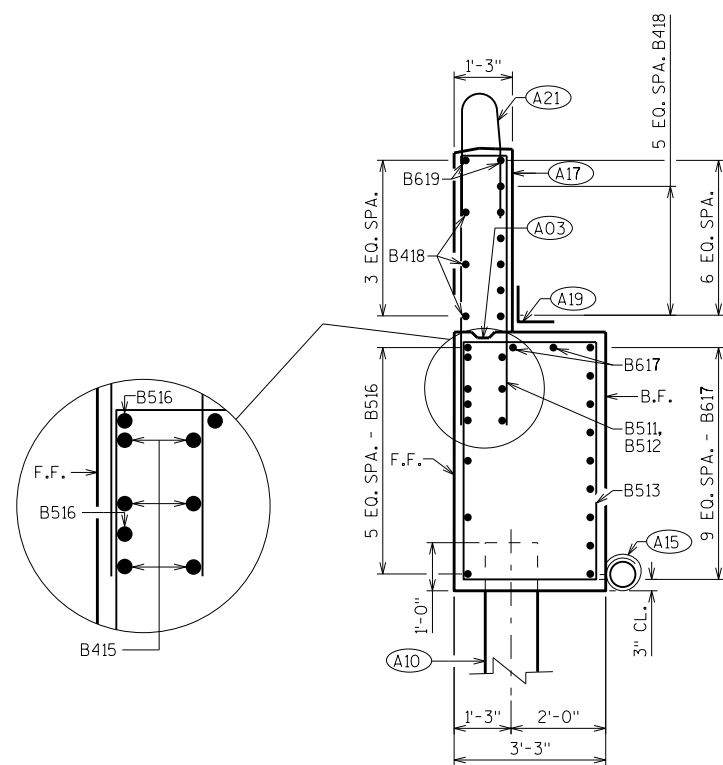
B805



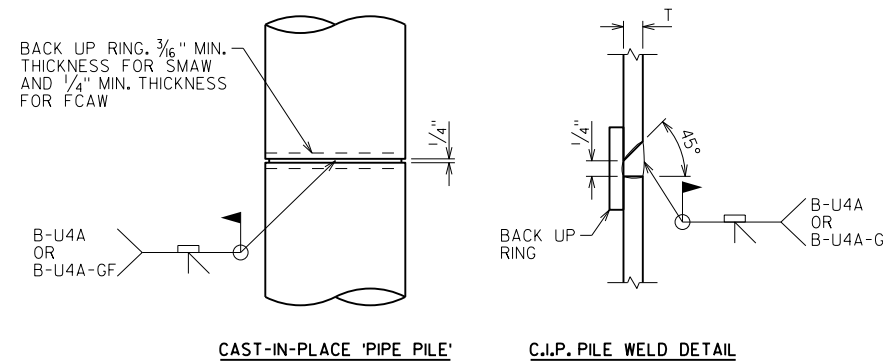
B409, B511, B512

BILL OF BARS

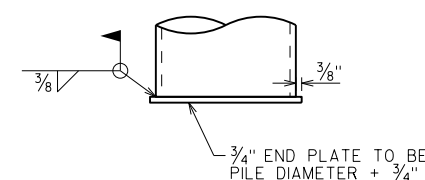
| BAR MARK | CO ₄ T | NO. REQ'D. | LENGTH | BENT | BAR SERIES | LOCATION |
|----------|-------------------|------------|--------|------|------------|--|
| B501 | | 43 | 15'-0" | X | | BODY-STIRRUPS |
| B402 | | 10 | 2'-3" | | | PILES - 2 PER BODY PILE - VERT |
| B403 | | 5 | 28'-0" | X | | PILES - 1 PER BODY PILE - SPIRAL |
| | | NOT USED | | | | |
| B805 | | 12 | 21'-0" | X | | BODY - HORIZONTAL - B.F. - END |
| B606 | | 11 | 34'-2" | | | BODY - HORIZONTAL - TOP, BOT. & F.F. |
| | | NOT USED | | | | |
| | | NOT USED | | | | |
| B409 | | 15 | 3'-11" | X | | BODY - VERTICAL - TOP - BTWN. BEAM SEATS |
| B410 | | 6 | 7'-9" | | | BODY - HORIZONTAL - TOP - BTWN. BEAM SEATS |
| B511 | X | 18 | 10'-8" | X | | WINGS 3 & 4 - VERTICAL - UPPER WING |
| B512 | X | 22 | 12'-4" | X | | WINGS 3 & 4 - VERTICAL - LOWER WING |
| B513 | X | 14 | 15'-8" | X | | WINGS 3 & 4 - STIRRUP - LOWER WING |
| B414 | X | 8 | 4'-6" | | | WINGS 3 & 4 - VERTICAL - END OF ABUTMENTS - F.F. |
| B415 | X | 6 | 7'-9" | | | WINGS 3 & 4 - HORIZONTAL |
| B516 | X | 12 | 10'-4" | | | WINGS 3 & 4 - HORIZONTAL - F.F. - LOWER WING |
| B617 | X | 24 | 10'-4" | | | WINGS 3 & 4 - HORIZONTAL - B.F. - LOWER WING |
| B418 | X | 18 | 13'-8" | | | WINGS 3 & 4 - HORIZONTAL - B.F. & F.F. |
| B619 | X | 4 | 13'-8" | | | WINGS 3 & 4 - HORIZONTAL - B.F. & F.F. |



WING 3 SECTION
WING 4 SIMILAR



PILE DETAILS



END PLATE DETAIL

- (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).
- (A10) SUPPORT ABUTMENT ON 12 3/4" DIA. X 0.375" CIP CONCRETE PILING, ESTIMATED 105'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- (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 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" 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.
- (A21) FOR PPT. BARS & DIMENSIONS SEE "SINGLE SLOPE PARAPET 42SS"

| NO. | DATE | REVISION | BY |
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| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY | | MJH | PLANS CKD. JDM |
| WEST ABUTMENT DETAILS | | | SHEET 7 |

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS, SEE SECT. 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

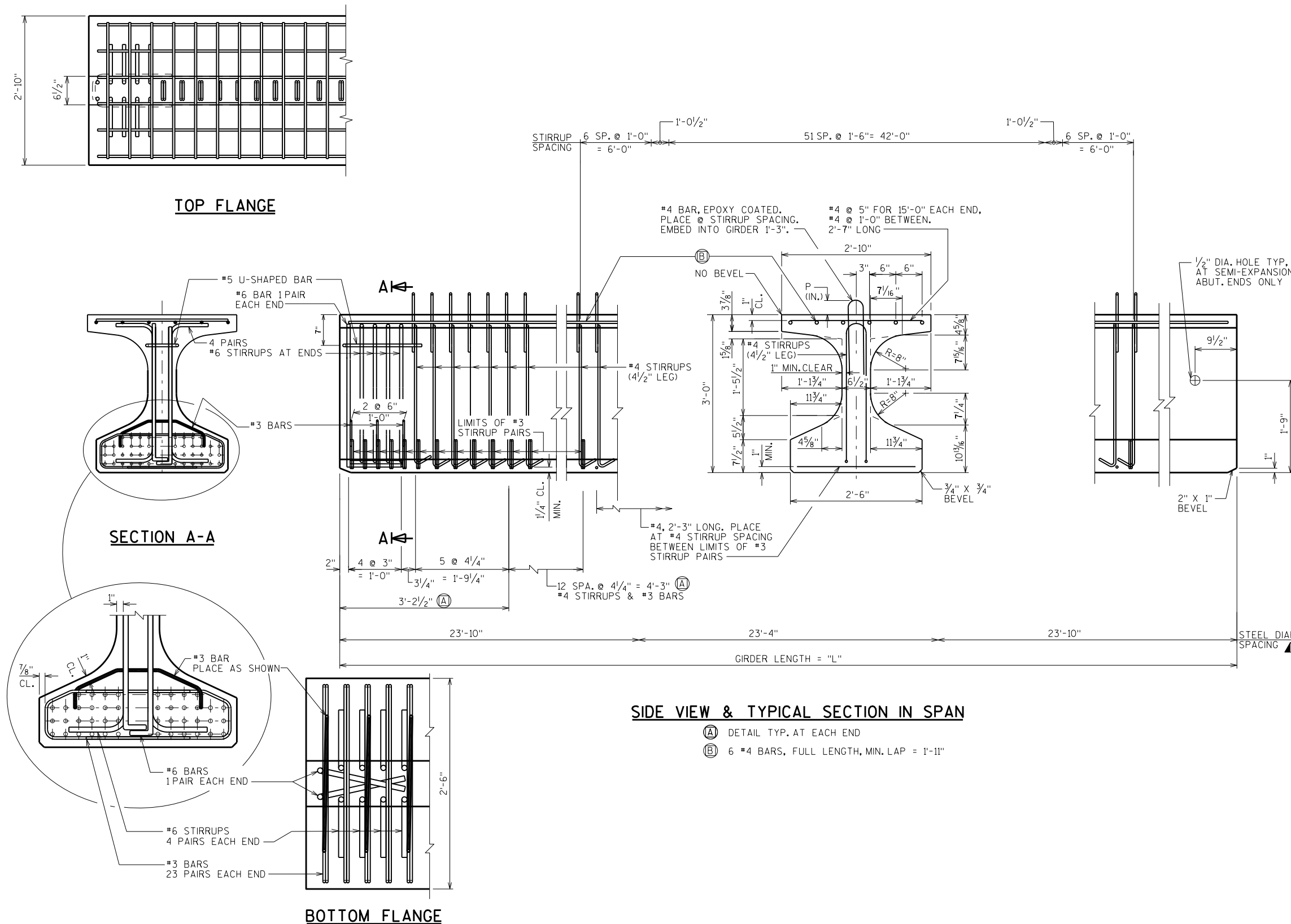
ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON ACCEPTANCE OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE (0.6" DIA.)-7 WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET.



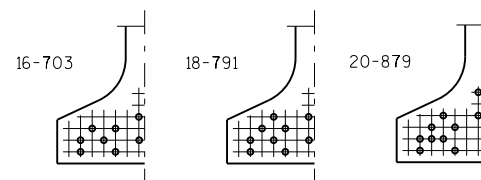
SIDE VIEW & TYPICAL SECTION IN SPAN

- (A) DETAIL TYP. AT EACH END
- (B) 6 #4 BARS, FULL LENGTH, MIN. LAP = 1'-11"

* MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.

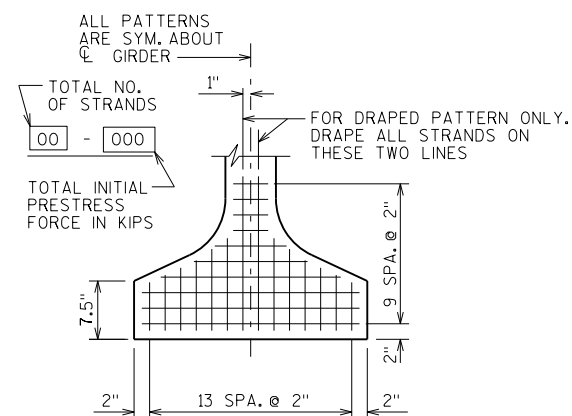
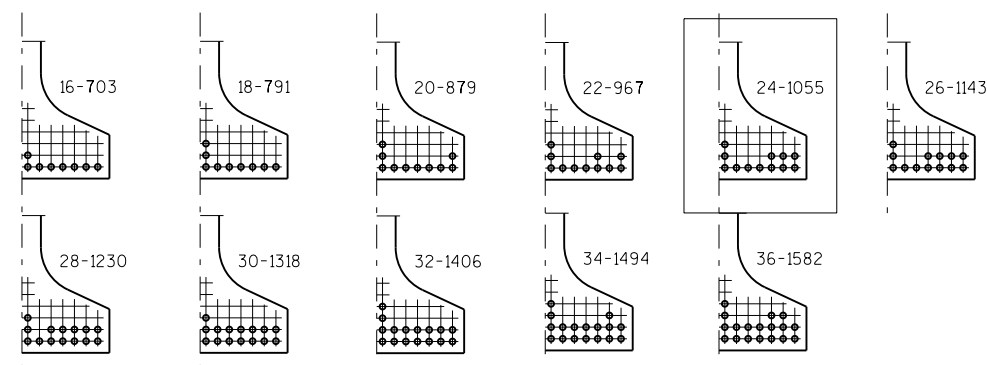
| SPAN | GIRDER | GIRDER LENGTH "L" | DEAD LOAD DEFL. (IN.) | | | | | | | | | | CONC. STRGTH. f'c (p.s.i.) | "P" 1ST 1/3 OF GIRDER | "P" MID 1/3 OF GIRDER | "P" END 1/3 OF GIRDER | DIA. OF STRAND (IN.) | DRAPED PATTERN (IN.) | | | | | |
|------|--------|-------------------|-----------------------|------|------|------|------|------|------|------|------|-------|----------------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|---------------|-------------|----|---|--|
| | | | 1/10 | 2/10 | 3/10 | 4/10 | 5/10 | 6/10 | 7/10 | 8/10 | 9/10 | 10/10 | | | | | | TOTAL NO. OF STRANDS | f'ci (P.S.I.) | "A" "B" "C" | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ALL | 71'-0" | 0.3 | 0.6 | 0.8 | 0.9 | 1.0 | 0.9 | 0.8 | 0.6 | 0.3 | 8,000 | 7" | 6 1/2" | 7" | 0.6" | 24 | 6,400 | 32 | 11 | 14 | 4 | |

| NO. | DATE | REVISION | BY |
|---|------|-------------|---------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY | | PLANS CK'D. | |
| M J H | | J D M | |
| 36W" PRESTRESSED GIRDER DETAILS 1 | | | SHEET 8 |

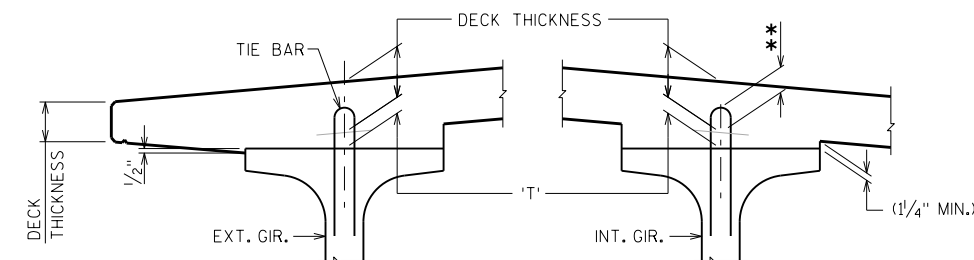


STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF STRANDS

0.6"φ STRANDS



TYP. STRAND PATTERN



DECK HAUNCH DETAIL

IF 1/4" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR, THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN 1/2" OR, ** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

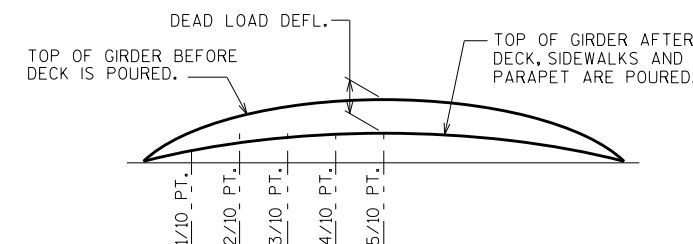
TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT Q OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

$$\begin{aligned} & \text{TOP OF DECK ELEV. AT FINAL GRADE} \\ & - \text{TOP OF GIRDER ELEVATION} \\ & + \text{DEAD LOAD DEFLECTION} \\ & - \text{DECK THICKNESS} \\ & = \text{HAUNCH HEIGHT 'T'} \end{aligned}$$

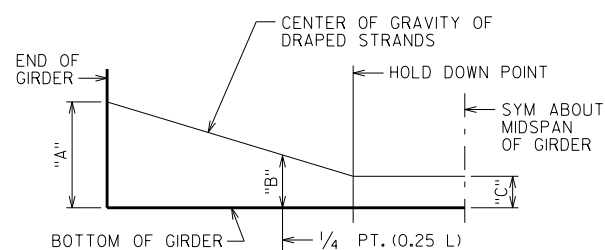
NOTE: AN AVERAGE HAUNCH ('T') OF 2.85" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

ARRANGEMENT AT Q SPAN - FOR GIRDERS WITH DRAPED STRANDS

0.6"φ STRANDS



DEAD LOAD DEFLECTION DIAGRAM



DRAPED STRAND PROFILE

* THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

| SPAN | CAMBER (IN.) * |
|------|----------------|
| 1 | 2.1 |
| | |
| | |
| | |

THESE VALUES ARE NOT TO BE USED IN DETERMINING 'T'. USE ACTUAL GIRDER SHOTS. THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.

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| STRUCTURE B-2-68 | | | |
| DRAWN BY MJH | | PLANS CKD. JDM | |
| 36W" PRESTRESSED GIRDER DETAILS 2 | | | SHEET 9 |

NOTES

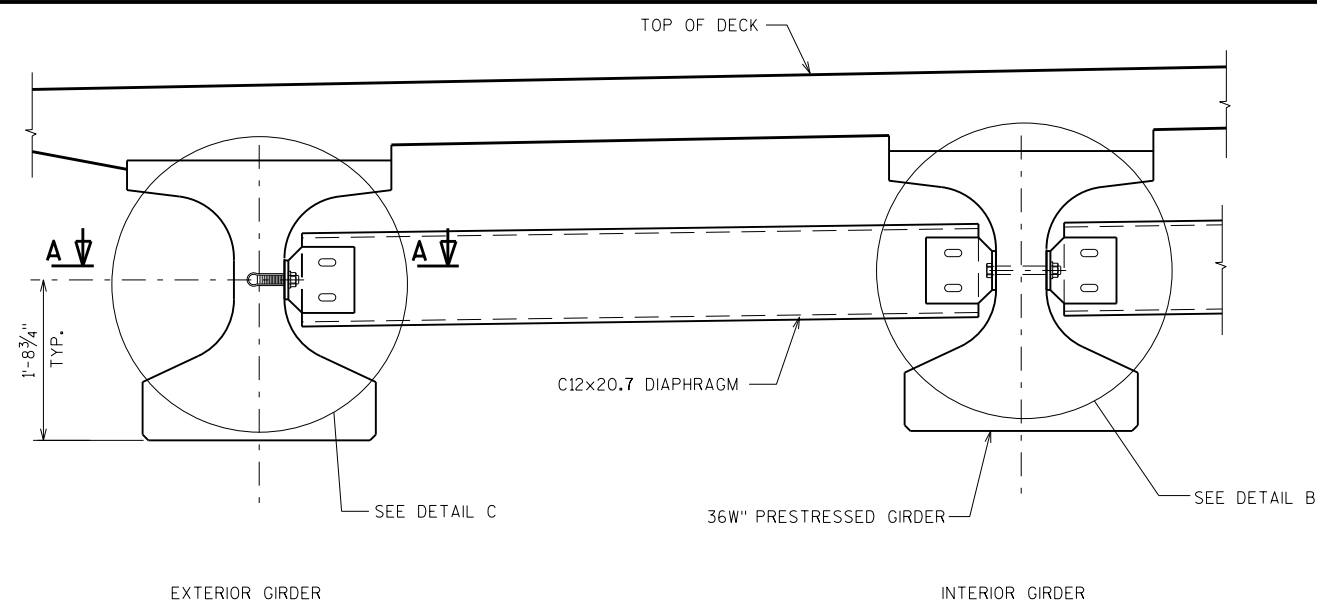
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-4-114", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

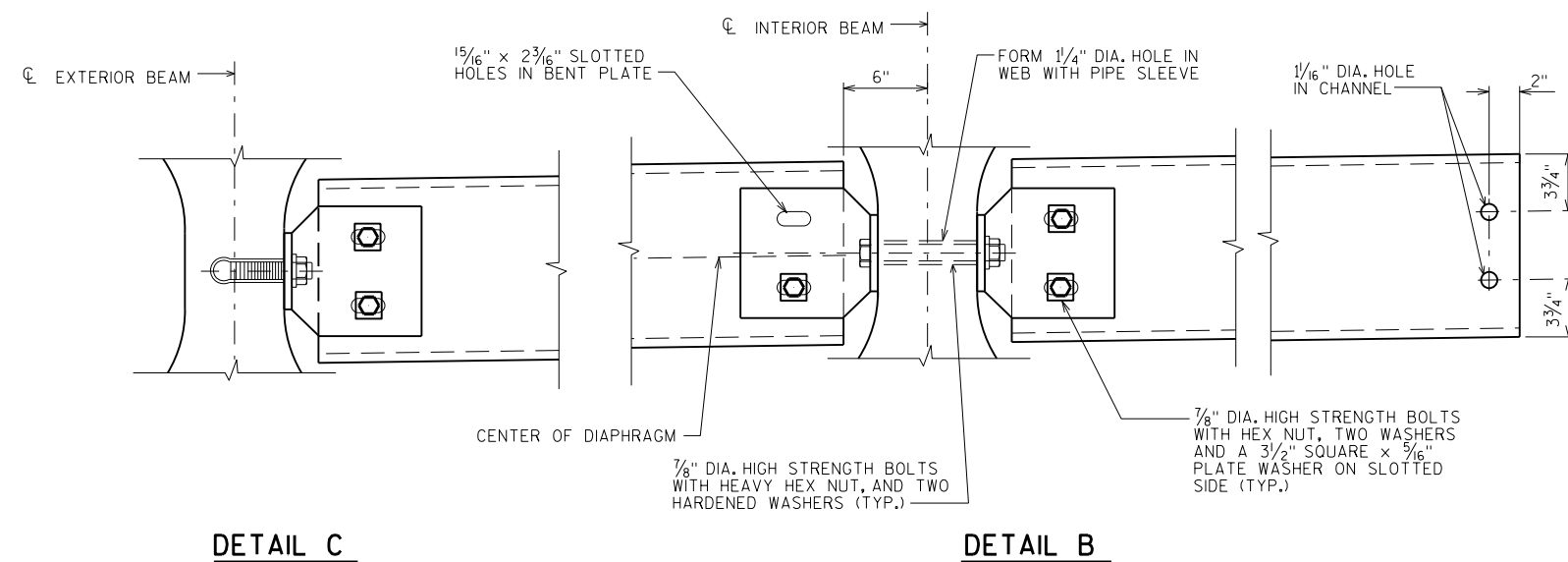
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

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

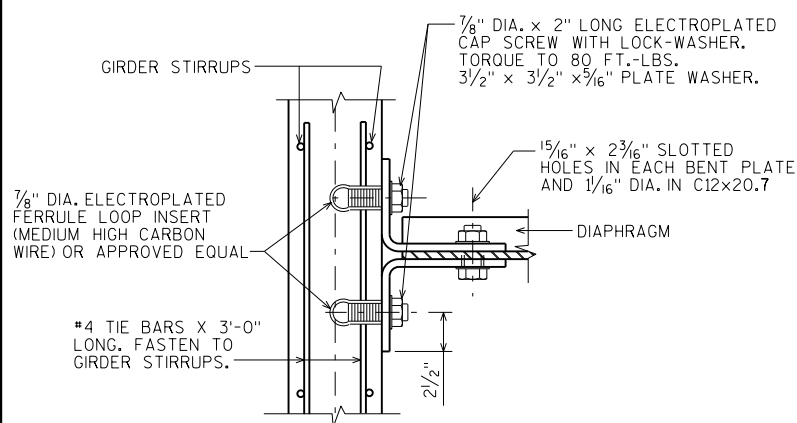
STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.



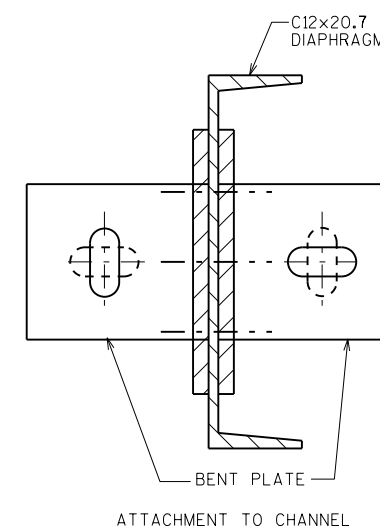
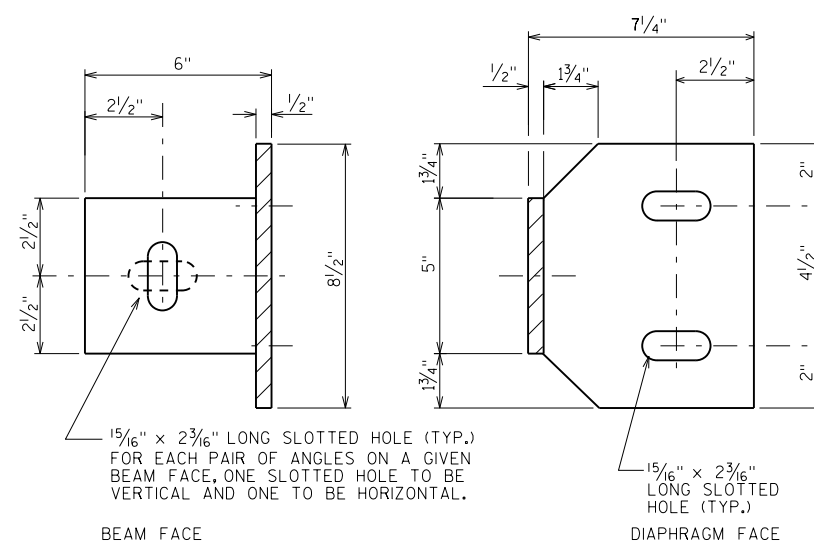
PART TRANSVERSE SECTION AT DIAPHRAGM



8

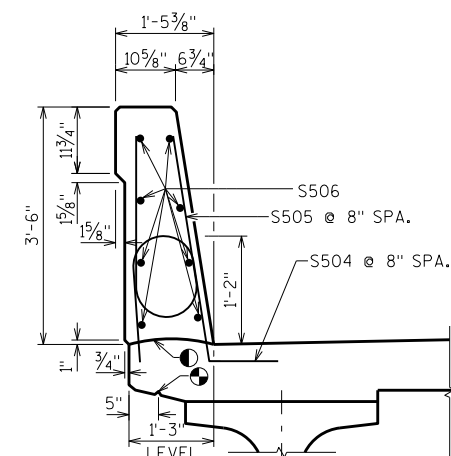


SECTION A-A
(FOR EXTERIOR ATTACHMENT)



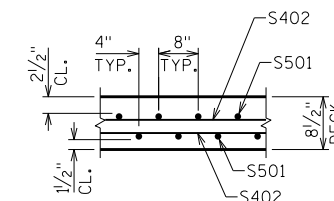
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| NO. | DATE | REVISION | BY |
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| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY MJH | | PLANS CK'D. JDM | |
| STEEL DIAPHRAGM | | | SHEET 10 |

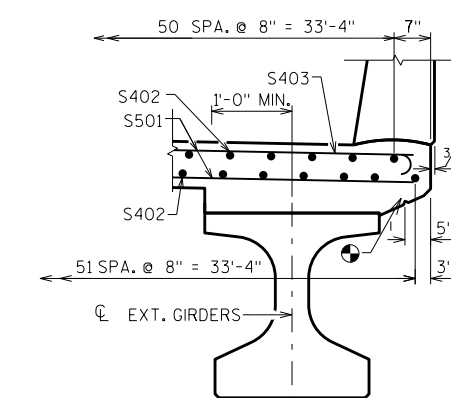


SECTION THRU PARAPET

● CONSTR. - JT. - STRIKE OFF AS SHOWN



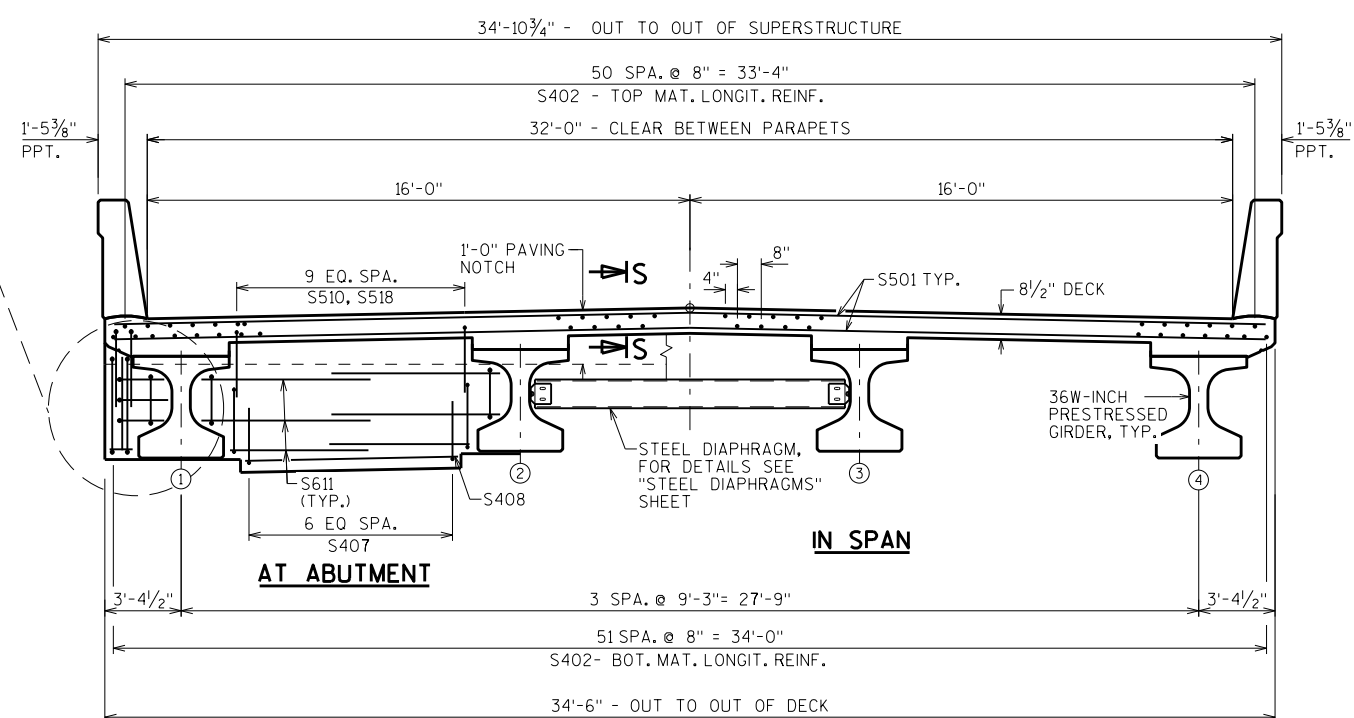
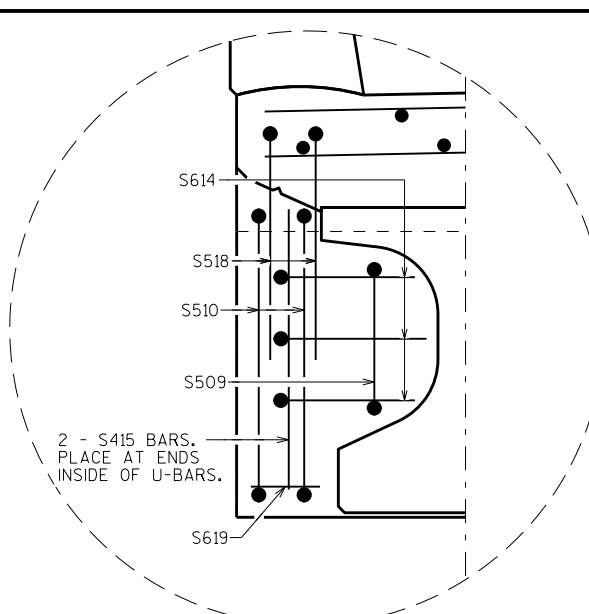
SECTION S-S



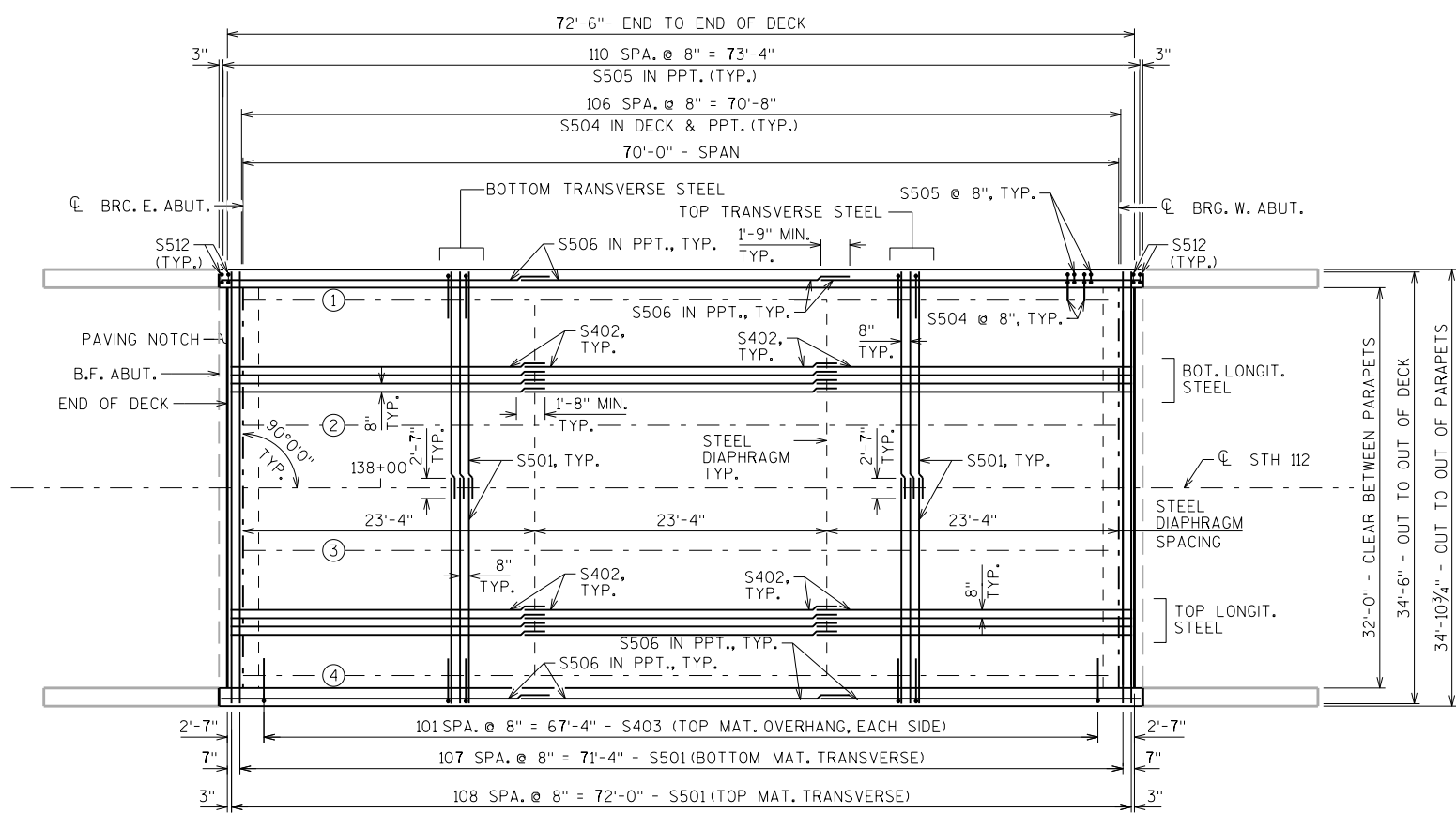
SECTION THRU EDGE OF DECK

● 3/4" V-GROOVE REQ'D. EXTEND TO 6" FROM F.F. OF ABUT. DIAPHRAGM

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| STRUCTURE B-2-68 | | | |
| DRAWN BY MJH | | PLANS CK'D. JDM | |
| SUPERSTRUCTURE | | | SHEET 11 |



CROSS SECTION THRU ROADWAY
LOOKING WEST

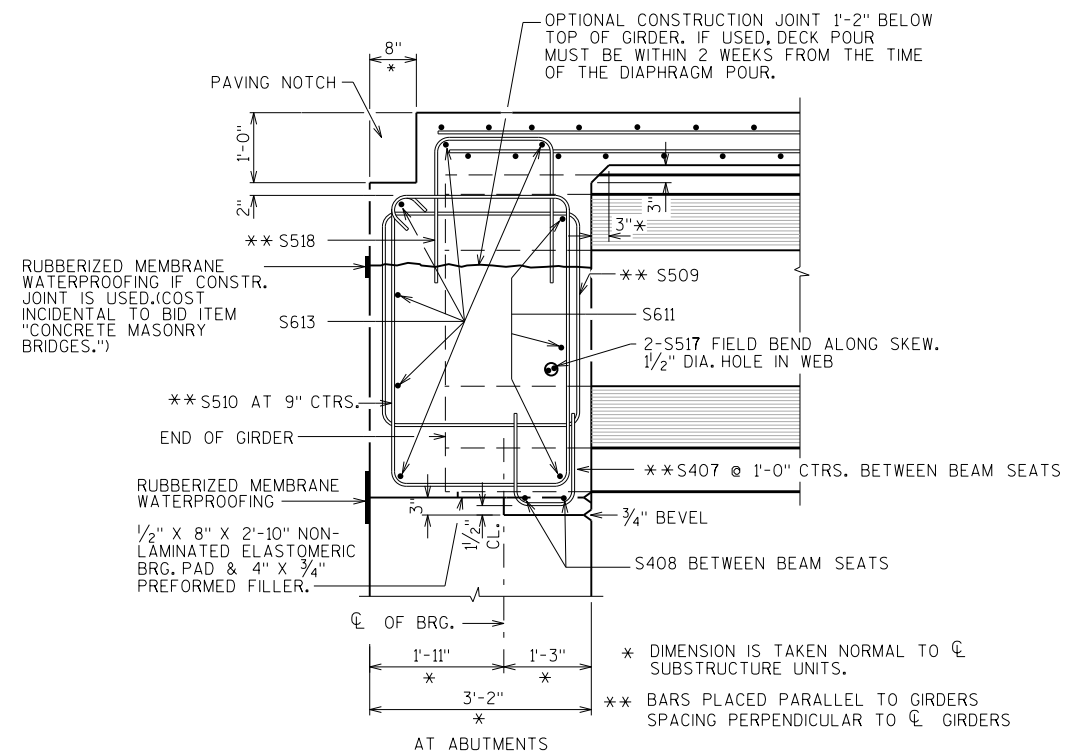


PLAN

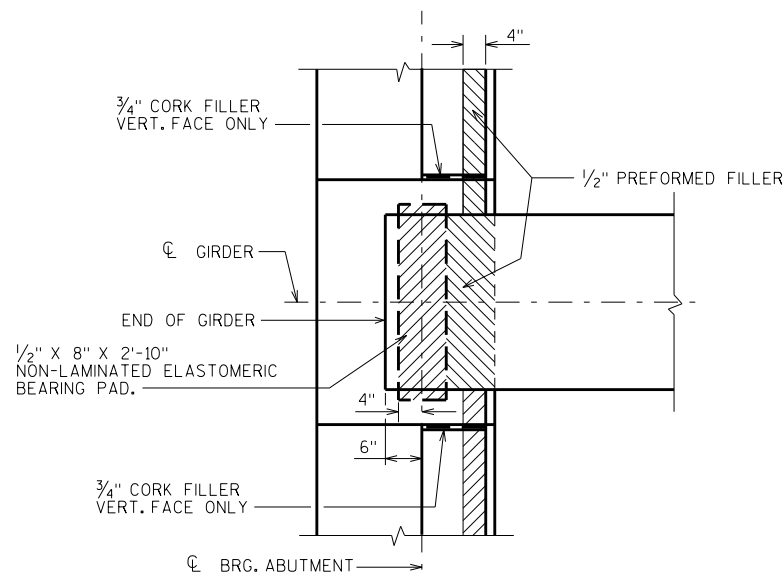
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8





PART LONGIT. SECTION

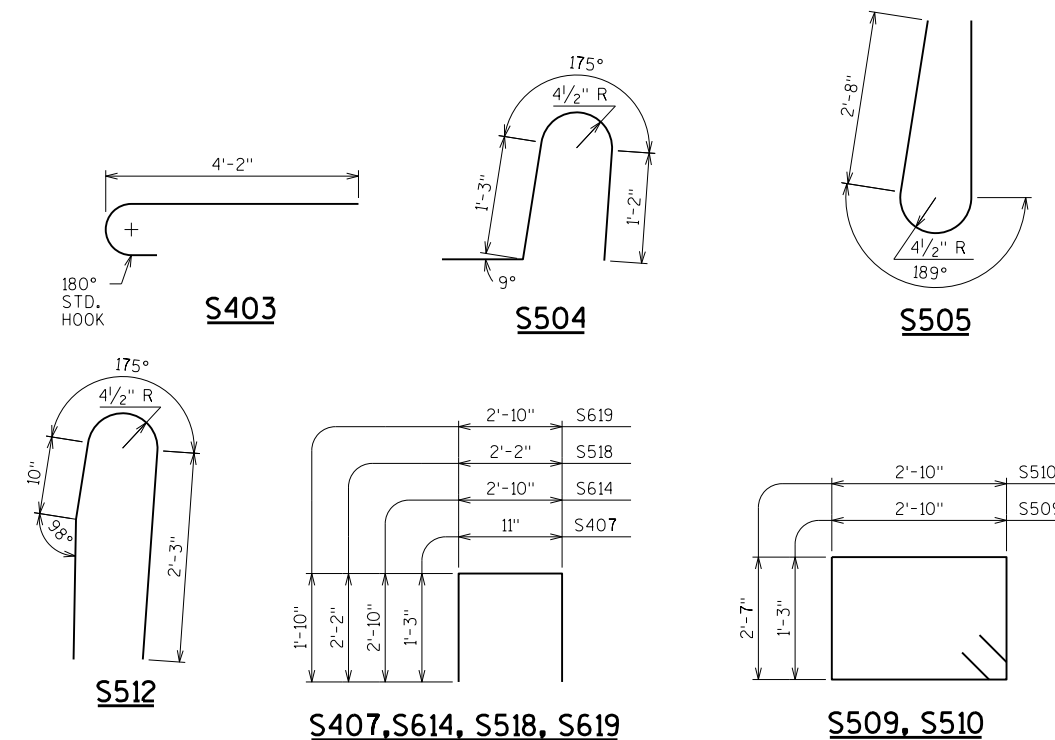


BEARING PAD DETAIL

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 | BEND | BAR SERIES | LOCATION |
|----------|------|-----------|--------|------|------------|--|
| S501 | X | 437 | 18'-7" | | | DECK - TRANSVERSE - TOP & BOTTOM |
| S402 | X | 309 | 25'-3" | | | DECK - LONGITUDINAL - TOP & BOTTOM |
| S403 | X | 204 | 4'-9" | X | | DECK - OVERHANG |
| S504 | X | 214 | 4'-5" | X | | DECK & PPT. - VERT. |
| S505 | X | 222 | 6'-8" | X | | PPT. - VERT. |
| S506 | X | 48 | 25'-7" | | | PPT. - HORIZ. |
| S407 | X | 42 | 3'-4" | X | | ABUT. DIAPH - VERT. - BTW. BEAM SEATS |
| S408 | X | 12 | 5'-5" | | | ABUT. DIAPH - HORIZ. - BTW. BEAM SEATS |
| S509 | X | 16 | 8'-10" | X | | ABUT. DIAPH - VERT. UNDER FLANGES |
| S510 | X | 68 | 11'-6" | X | | ABUT. DIAPH - VERT. BTWNS. GIRDERS |
| S611 | X | 36 | 6'-3" | | | ABUT. DIAPH - HORIZ. - F.F. - ABUT. BTWNS. GIRDERS |
| S512 | X | 8 | 5'-10" | X | | PPT. - VERT. |
| S613 | X | 24 | 19'-3" | | | ABUT. DIAPH - HORIZ. - B.F. - ABUT. |
| S614 | X | 12 | 8'-4" | X | | ABUT. DIAPH. ENDS - HORIZ. |
| S415 | X | 8 | 3'-8" | | | ABUT. DIAPH. ENDS - VERT. |
| | | NOT USED | | | | |
| S517 | X | 16 | 6'-0" | | | ABUT. DIAPH. - HORIZ. - THRU GIRS. |
| S518 | X | 68 | 6'-3" | X | | ABUT. DIAPH. - DECK - VERT. |
| S619 | X | 4 | 6'-2" | X | | ABUT. DIAPH. ENDS - HORIZ. - BOT. |



TOP OF DECK ELEVATIONS

| | CL BRG. E. ABUT. | 1/10 | 2/10 | 3/10 | 4/10 | 5/10 | 6/10 | 7/10 | 8/10 | 9/10 | CL BRG. W. ABUT. |
|----------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|
| L EOD | 823.49 | 823.56 | 823.64 | 823.72 | 823.79 | 823.87 | 823.95 | 824.02 | 824.10 | 824.17 | 824.25 |
| GIRDER 1 | 823.53 | 823.61 | 823.68 | 823.76 | 823.84 | 823.91 | 823.99 | 824.06 | 824.14 | 824.22 | 824.29 |
| GIRDER 2 | 823.72 | 823.79 | 823.87 | 823.94 | 824.02 | 824.10 | 824.17 | 824.25 | 824.33 | 824.40 | 824.48 |
| GIRDER 3 | 823.72 | 823.79 | 823.87 | 823.94 | 824.02 | 824.10 | 824.17 | 824.25 | 824.33 | 824.40 | 824.48 |
| GIRDER 4 | 823.53 | 823.61 | 823.68 | 823.76 | 823.84 | 823.91 | 823.99 | 824.06 | 824.14 | 824.22 | 824.29 |
| R EOD | 823.49 | 823.56 | 823.64 | 823.72 | 823.79 | 823.87 | 823.95 | 824.02 | 824.10 | 824.17 | 824.25 |

| NO. | DATE | REVISION | BY |
|---|------|----------------|----------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-2-68 | | | |
| DRAWN BY MJH | | PLANS CKD. JDM | |
| SUPERSTRUCTURE DETAILS | | | SHEET 12 |

BILL OF BARS

FOR ABUTMENT PARAPETS

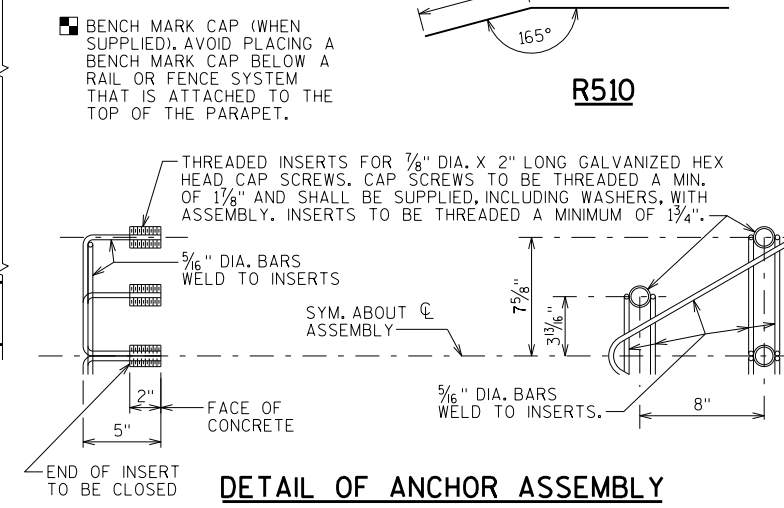
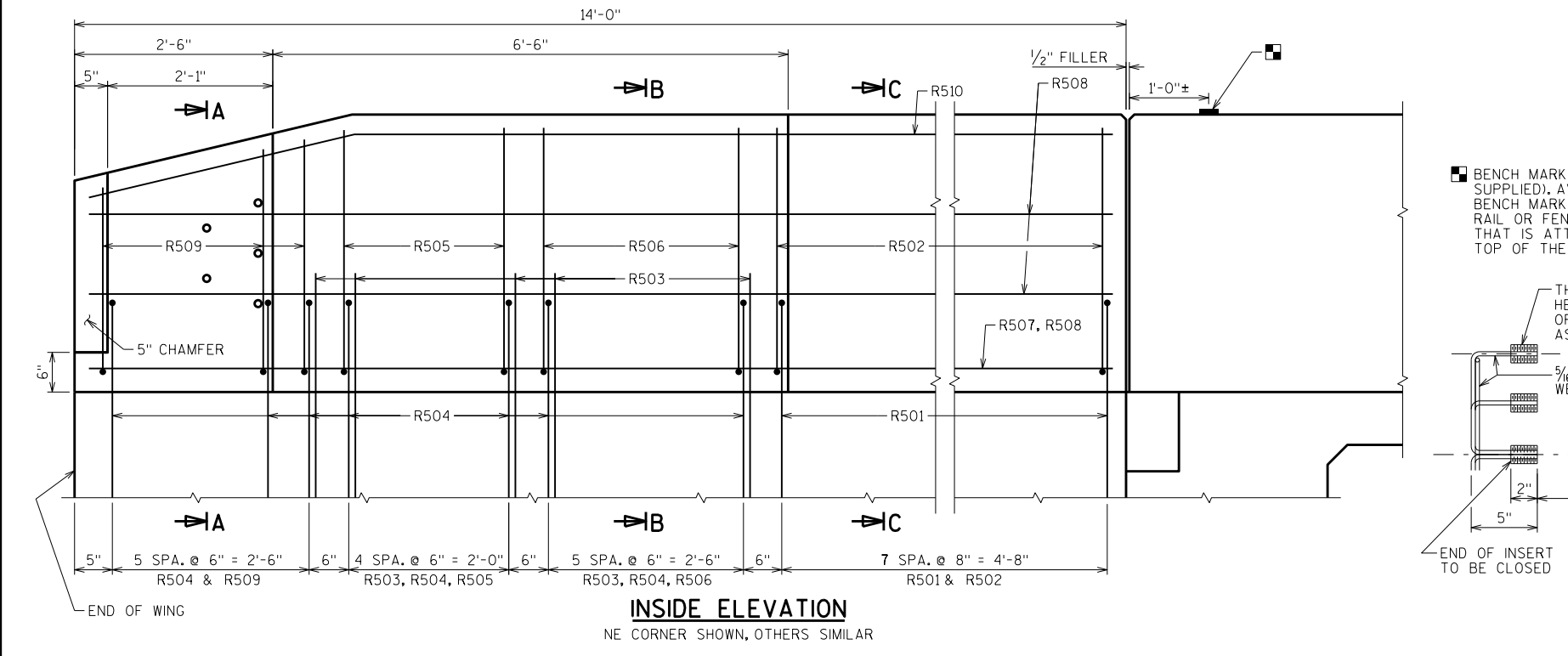
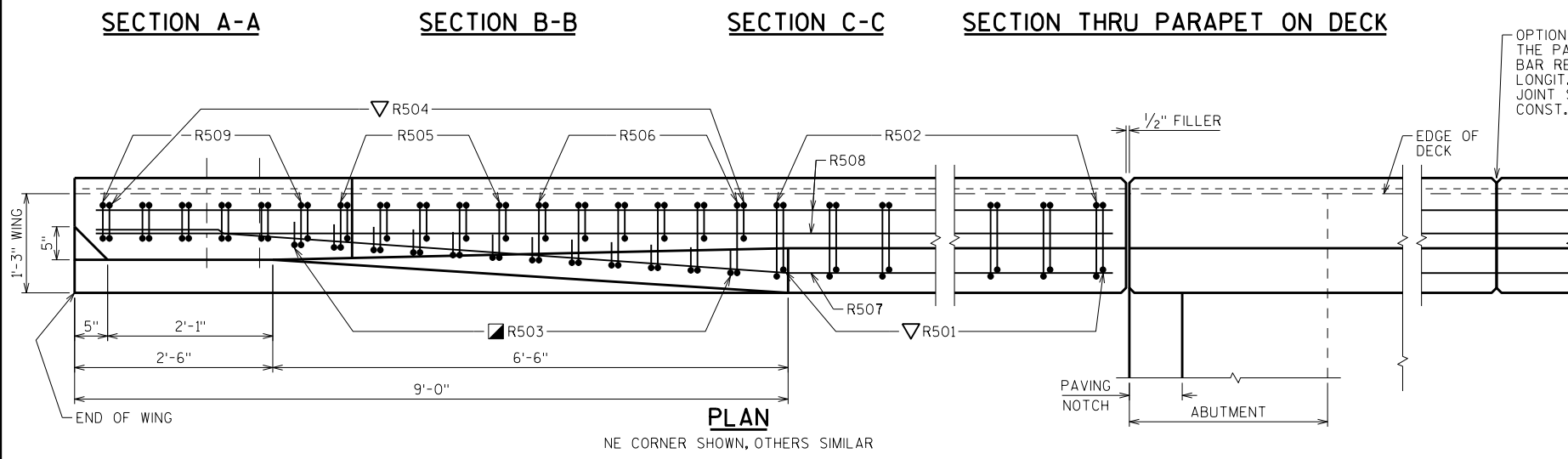
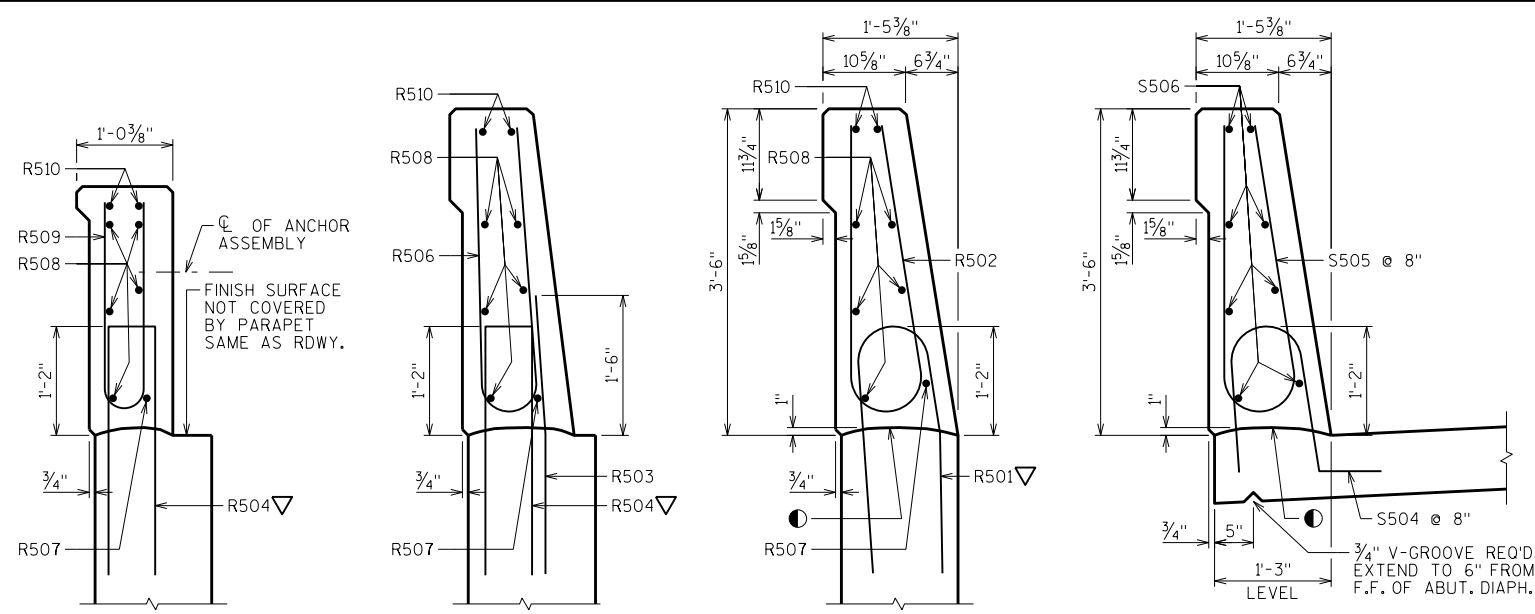
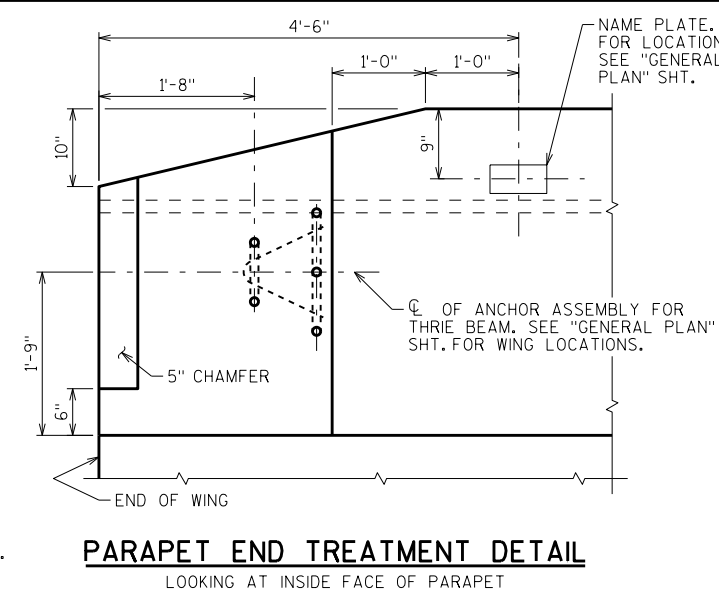
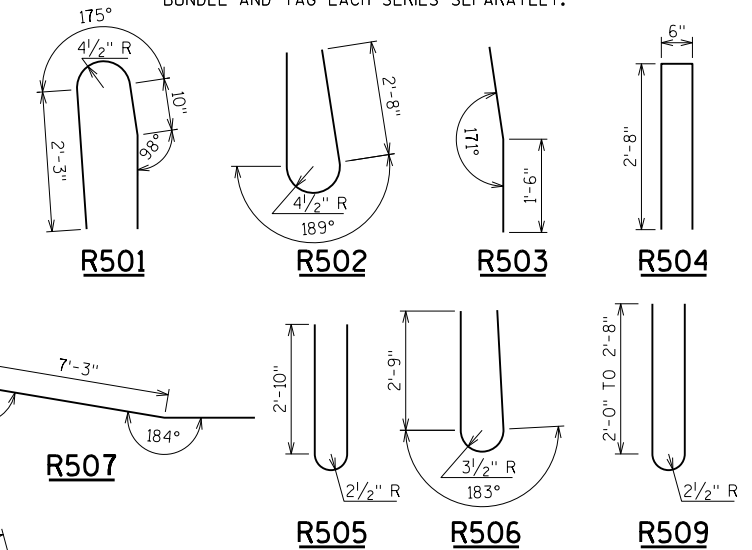
| BAR MARK | COAT | EAST ABUT. | WEST ABUT. | LENGTH | BENT | BAR SERIES | LOCATION |
|----------|------|------------|------------|--------|------|------------|----------------|
| R501 | X | 16 | 16 | 5'-10" | X | | PARAPET VERT. |
| R502 | X | 16 | 16 | 6'-8" | X | | PARAPET VERT. |
| R503 | X | 24 | 24 | 3'-0" | X | | PARAPET VERT. |
| R504 | X | 34 | 34 | 5'-7" | X | | PARAPET VERT. |
| R505 | X | 10 | 10 | 6'-5" | X | | PARAPET VERT. |
| R506 | X | 12 | 12 | 6'-6" | X | | PARAPET VERT. |
| R507 | X | 2 | 2 | 13'-8" | X | | PARAPET HORIZ. |
| R508 | X | 10 | 10 | 13'-8" | | | PARAPET HORIZ. |
| R509 | X | 12 | 12 | 5'-5" | X | ▲ | PARAPET VERT. |
| R510 | X | 4 | 4 | 13'-8" | X | | PARAPET HORIZ. |

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

BAR SERIES TABLE

| BAR MARK | NO. REQ'D | LENGTH |
|----------|---------------|----------------|
| R509 | 4 SERIES OF 6 | 4'-9" TO 6'-1" |

BUNDLE AND TAG EACH SERIES SEPARATELY.



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

| NO. | DATE | REVISION | BY |
|-----|------|----------|----|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-2-68

DRAWN BY MJH PLANS CK'D. JDM

SINGLE SLOPE PARAPET 42SS

SHEET 13

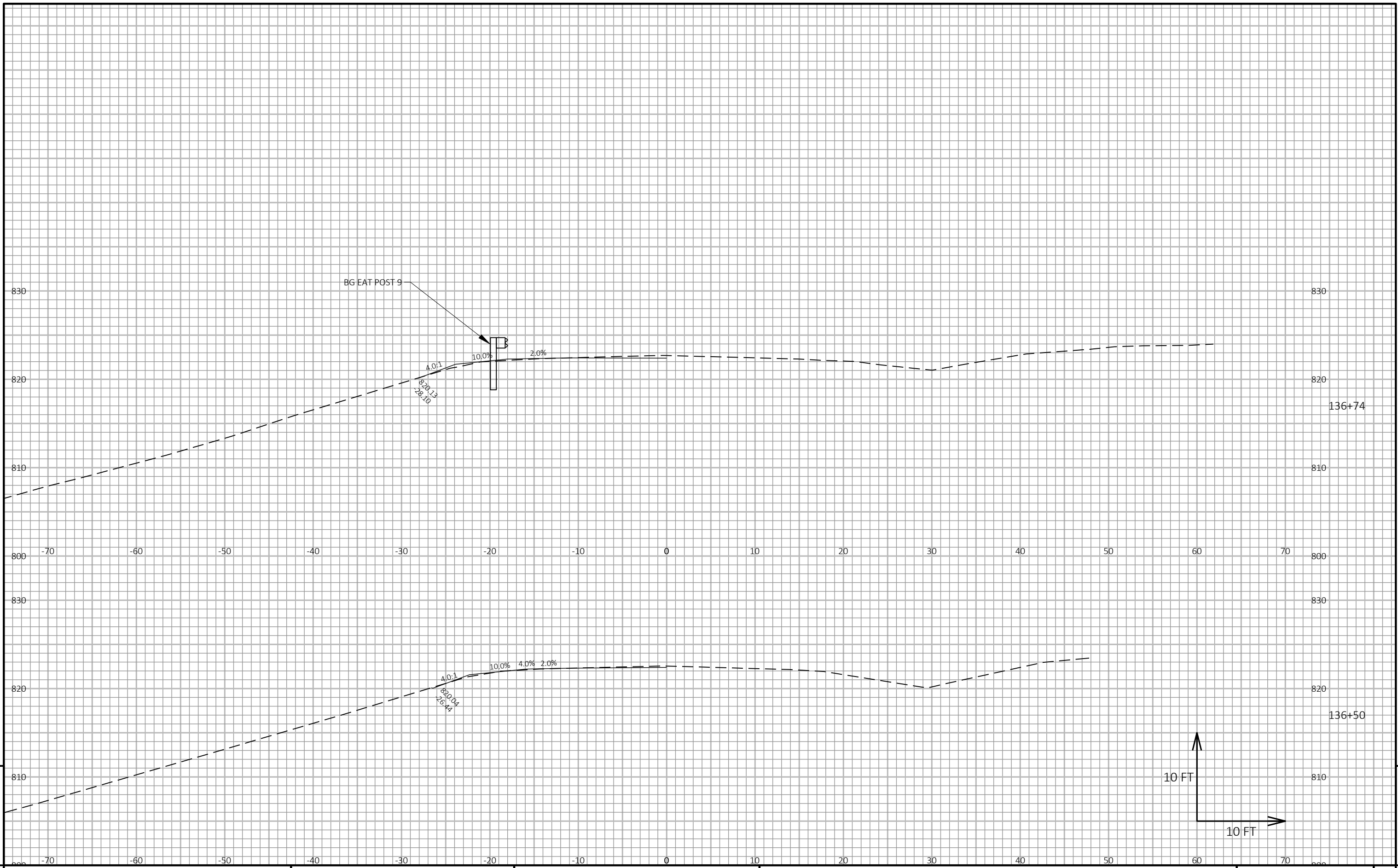
EARTHWORK DATA: STH 112 (8727-04-74)

| STATION | AREA (SF) | | | INCREMENTAL VOLUME (CY) | | | CUMULATIVE VOLUME (CY) | NOTES |
|----------------|---------------|---------------|---------------|-------------------------|----------------------|-----------------------------------|------------------------|-------|
| | CUT | REUSEABLE CUT | FILL | CUT | (1) REUSEABLE CUT | 208.0100 BORROW (2) FILL | MASS ORDINATE | |
| STH 112 | | | | | | | | |
| 136+50 | 0.00 | 0.00 | 1.35 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 136+74 | 0.00 | 0.00 | 3.23 | 0.00 | 0.00 | 1.00 | -1.00 | |
| 136+99 | 0.00 | 0.00 | 6.00 | 0.00 | 0.00 | 4.00 | -5.00 | |
| 137+24 | 0.00 | 0.00 | 1.63 | 0.00 | 0.00 | 3.00 | -8.00 | |
| 137+50 | 0.00 | 0.00 | 2.78 | 0.00 | 0.00 | 1.00 | -9.00 | |
| 137+58 | 0.00 | 0.00 | 15.64 | 0.00 | 0.00 | 1.00 | -10.00 | |
| 137+73 | 60.40 | 60.40 | 112.72 | 36.23 | 36.23 | 12.00 | 14.23 | |
| 137+88 | 44.30 | 44.30 | 52.10 | 22.90 | 22.90 | 16.00 | 21.13 | |
| 138+70 | 44.30 | 44.30 | 50.53 | 22.90 | 22.90 | 1.00 | 43.03 | |
| 138+85 | 60.40 | 60.40 | 100.16 | 36.23 | 36.23 | 11.00 | 68.26 | |
| 139+00 | 0.00 | 0.00 | 0.95 | 0.00 | 0.00 | 4.00 | 64.26 | |
| 139+24 | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 64.26 | |
| 139+49 | 0.00 | 0.00 | 1.57 | 0.00 | 0.00 | 0.00 | 64.26 | |
| 139+74 | 0.00 | 0.00 | 16.47 | 0.00 | 0.00 | 4.00 | 60.26 | |
| 140+00 | 0.00 | 0.00 | 10.17 | 0.00 | 0.00 | 7.00 | 53.26 | |
| 140+50 | 0.00 | 0.00 | 6.08 | 0.00 | 0.00 | 9.00 | 44.26 | |
| 140+93 | 0.00 | 0.00 | 1.41 | 0.00 | 0.00 | 4.00 | 40.26 | |
| TOTAL | 209.40 | 209.40 | 382.98 | 118.26 | 118.26 | 78.00 | 40.26 | |

-- (1): REUSEABLE CUT MATERIAL AVAILABLE FOR USE IN CONSTRUCTION OUTSIDE ROADWAY 1:1

-- (2): FILL QUANTITIES ARE EXPANDED (BORROW=1.18)

(3): THE CUT INCLUDES BASE AGG AND SUBASE 30' FORM BOTH ENDS OF THE BRIDGE. THIS WILL BE PAID FOR UNDER EXCAVATION FOR STRUCTURES BRIDGES



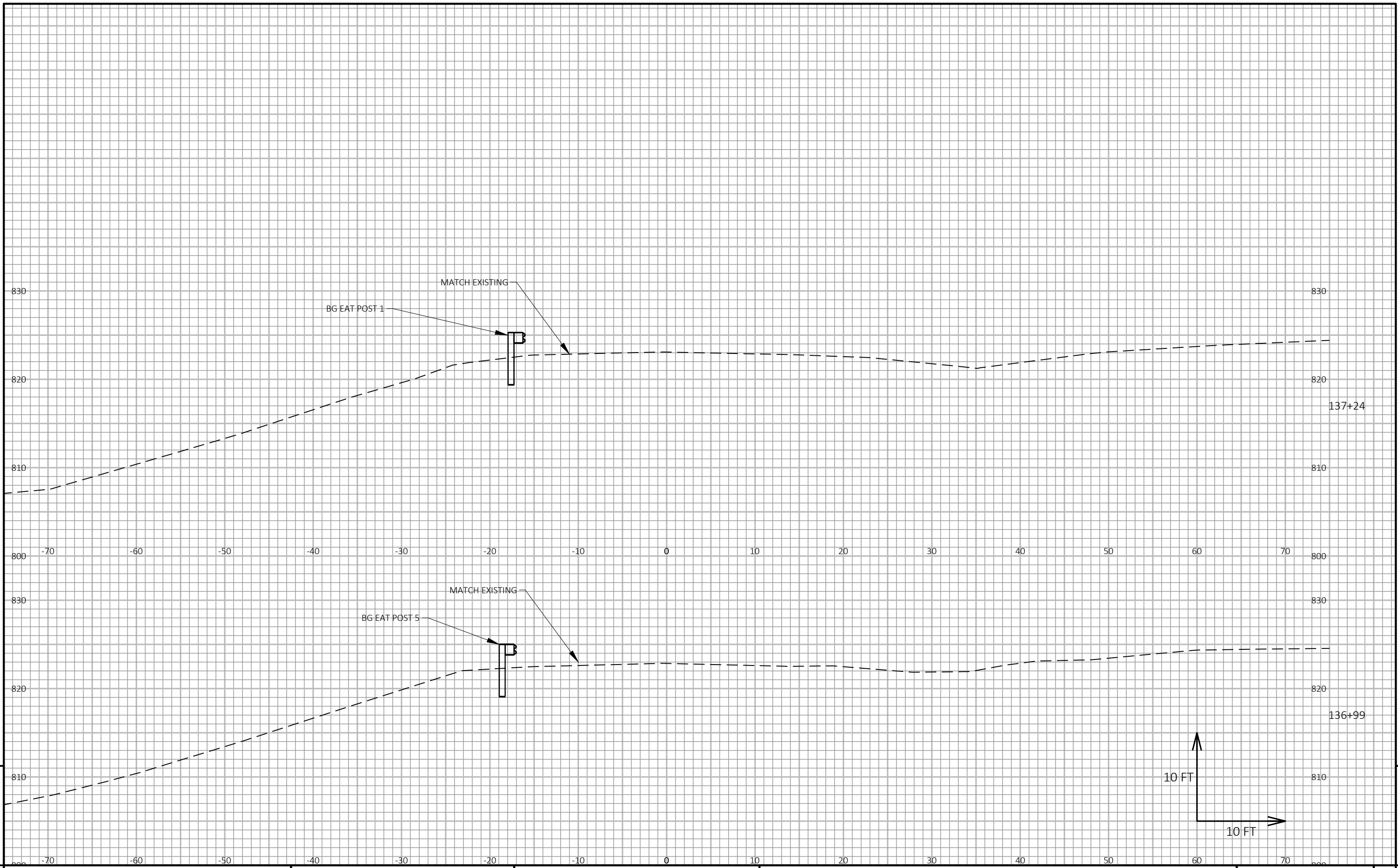
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|------------------------|----------|-----------------|-----------------|-------|---|
| PROJECT NO: 8727-04-74 | HWY: 112 | COUNTY: ASHLAND | CROSS SECTIONS: | SHEET | E |
|------------------------|----------|-----------------|-----------------|-------|---|

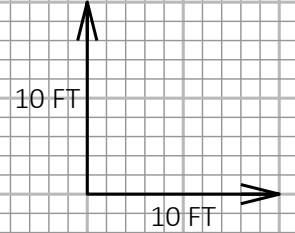
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LAYOUT NAME - 1



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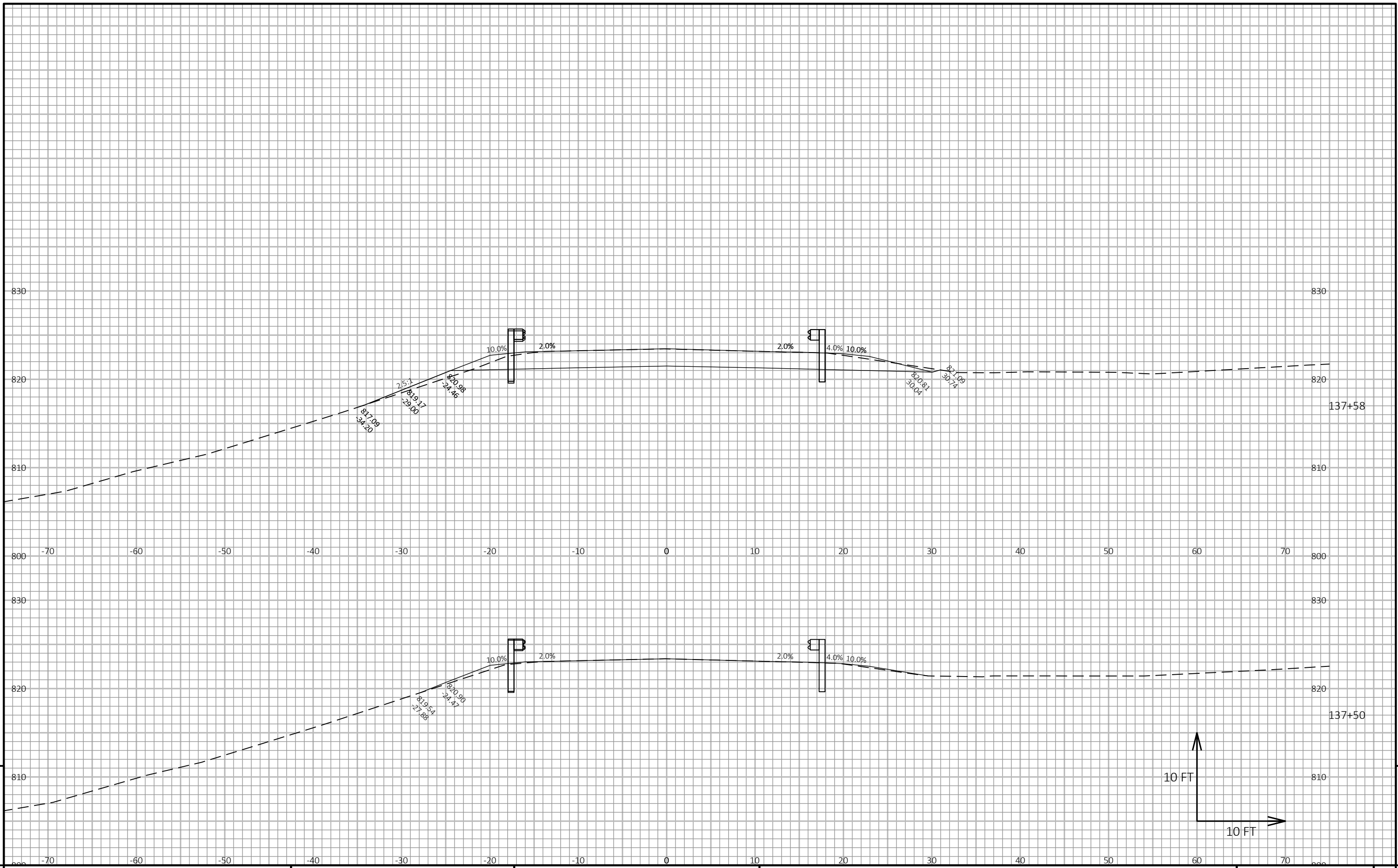
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|------------------------|----------|-----------------|-----------------|-------|---|
| PROJECT NO: 8727-04-74 | HWY: 112 | COUNTY: ASHLAND | CROSS SECTIONS: | SHEET | E |
|------------------------|----------|-----------------|-----------------|-------|---|

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LAYOUT NAME - 2



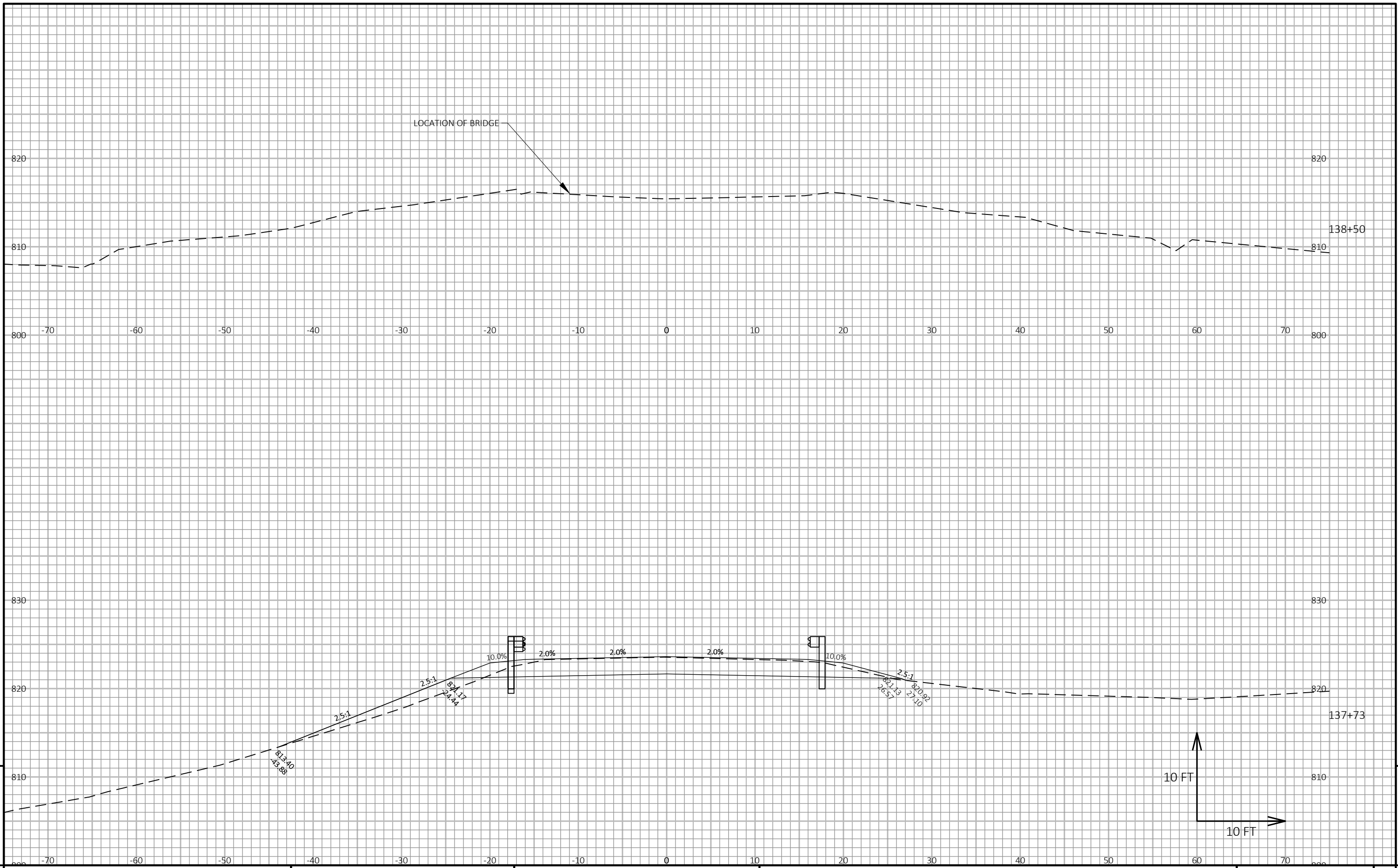
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|------------------------|----------|-----------------|-----------------|-------|---|
| PROJECT NO: 8727-04-74 | HWY: 112 | COUNTY: ASHLAND | CROSS SECTIONS: | SHEET | E |
|------------------------|----------|-----------------|-----------------|-------|---|

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LAYOUT NAME - 3



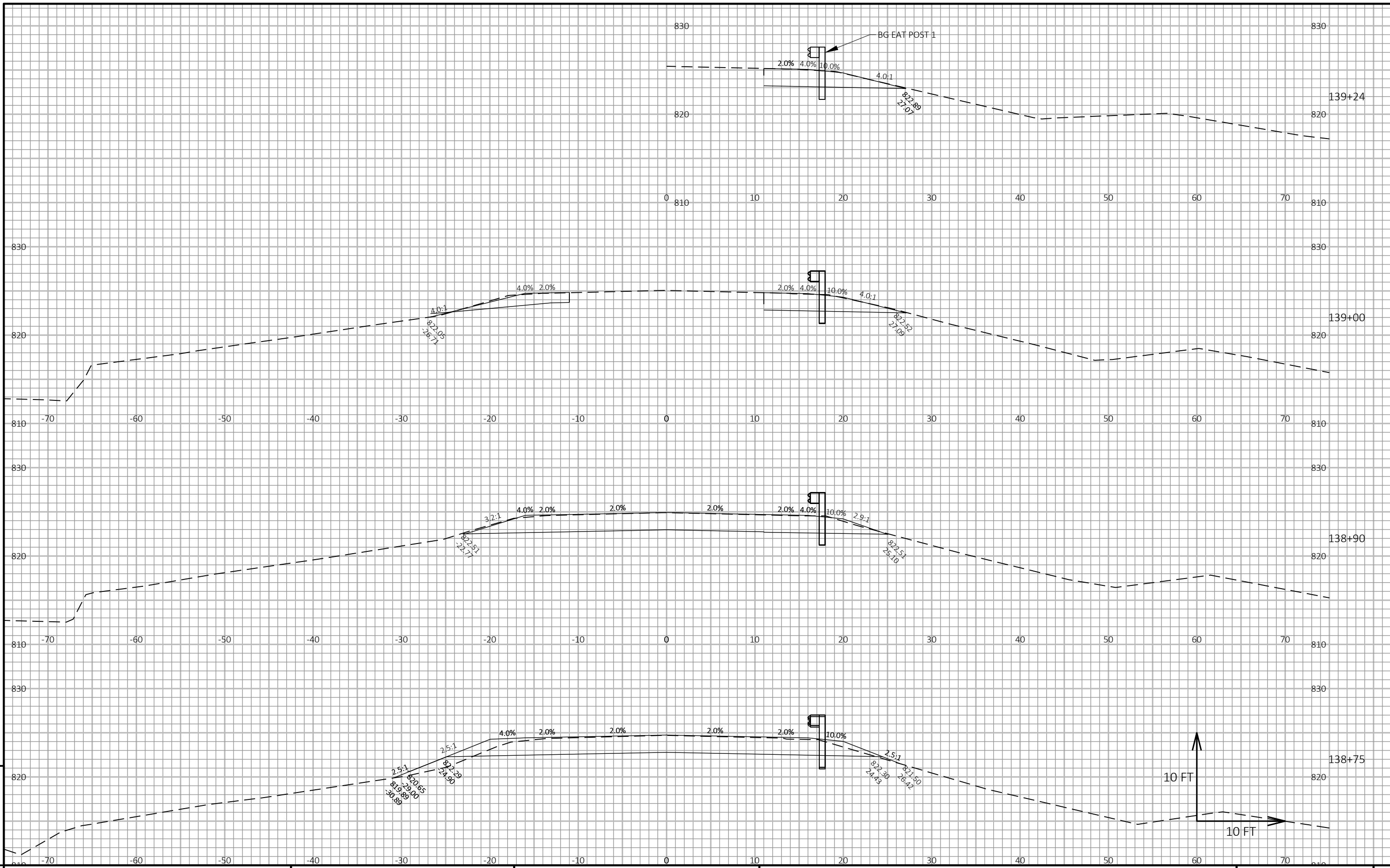
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PROJECT NO: 8727-04-74 HWY: 112 COUNTY: ASHLAND CROSS SECTIONS: SHEET E

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LAYOUT NAME - 4



PROJECT NO: 8727-04-74

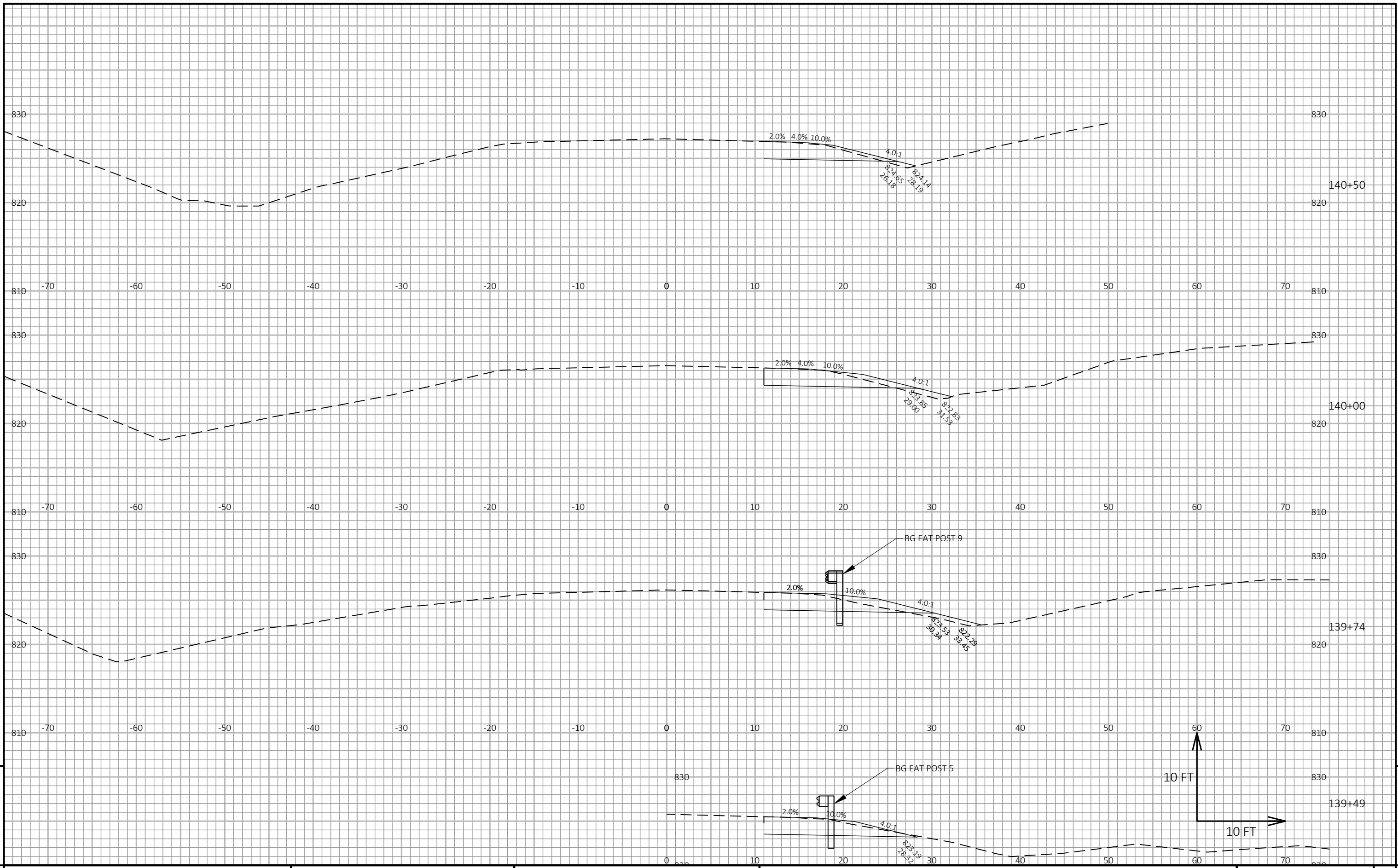
HWY: 112

COUNTY: ASHLAND

CROSS SECTIONS:

SHEET

E



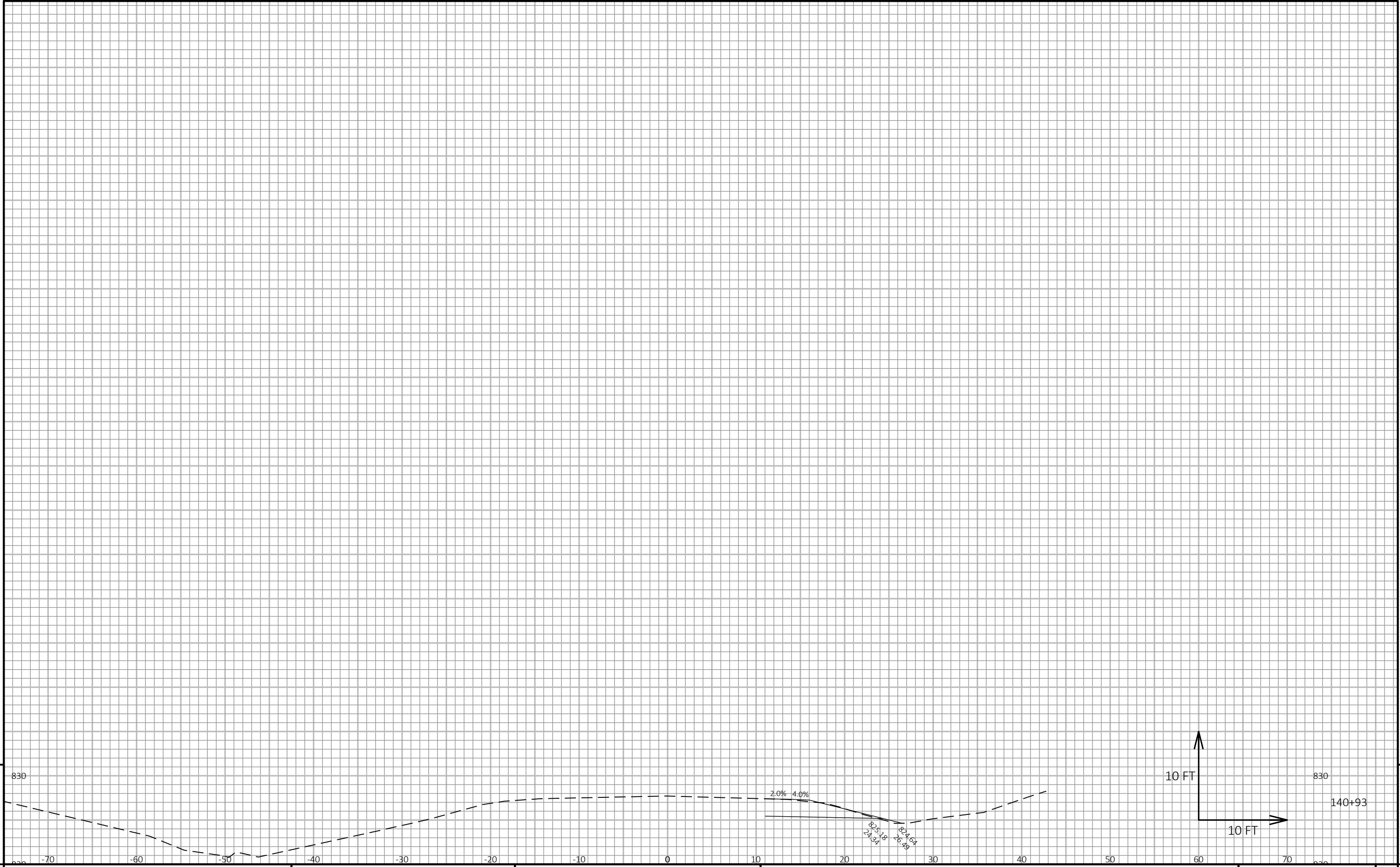
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PROJECT NO: 8727-04-74 HWY: 112 COUNTY: ASHLAND CROSS SECTIONS: SHEET E

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LAYOUT NAME - 6



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|------------------------|----------|-----------------|-----------------|-------|---|
| PROJECT NO: 8727-04-74 | HWY: 112 | COUNTY: ASHLAND | CROSS SECTIONS: | SHEET | E |
|------------------------|----------|-----------------|-----------------|-------|---|

FILE NAME : N:\PDS\C3D\87270404\DESIGN\CORRIDORS\PAVEMENTCORRIDORS\87270404_BG-CORRIDOR.DWG PLOT DATE : 1/9/2020 1:41 PM PLOT BY : FINNEGAN, MITCHELL PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - 7

Notes



Wisconsin Department of Transportation

Dedicated people creating transportation solutions through innovation and exceptional service.

<http://www.dot.wisconsin.gov>