

SUP  
PROJECT ID:  
WITH: N/A

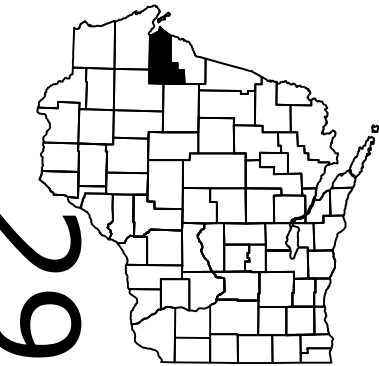
1180-00-82

COUNTY:  
ASHLAND

NOVEMBER 2026  
ORDER OF SHEETS

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

TOTAL SHEETS = 86



DESIGN DESIGNATION 1180-00-12

|              |      |   |           |
|--------------|------|---|-----------|
| A.A.D.T.     | 2027 | = | 4800      |
| A.A.D.T.     | 2047 | = | 4800      |
| D.H.V.       |      | = | UNKNOWN   |
| D.D.         |      | = | UNKNOWN   |
| T.           |      | = | 20%       |
| DESIGN SPEED |      | = | 55 MPH    |
| ESALS        |      | = | 2,150,000 |

CONVENTIONAL SYMBOLS

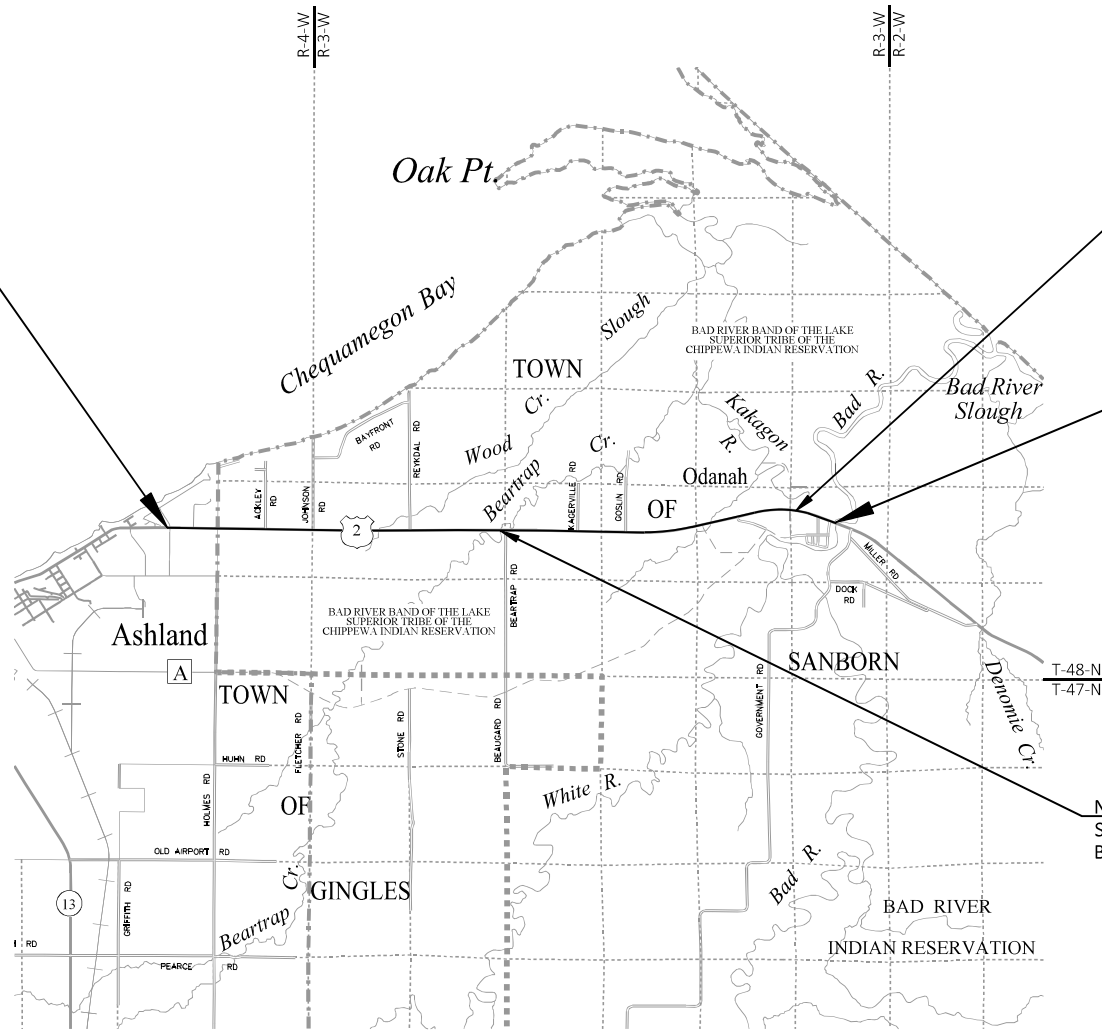
PLAN

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

PROFILE

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

BEGIN PROJECT  
STA 75+08  
Y=329,543.92  
X=514,493.47



LAYOUT  
SCALE 0 2 MI  
TOTAL NET LENGTH OF CENTERLINE = 6.837 MI

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

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

ASHLAND - SAXON

36TH AVE TO GOVERNMENT RD

USH 2

ASHLAND COUNTY

|                      |
|----------------------|
| STATE PROJECT NUMBER |
| 1180-00-82           |

| STATE PROJECT | FEDERAL PROJECT |          |
|---------------|-----------------|----------|
|               | PROJECT         | CONTRACT |
| 1180-00-82    | WISC 2027043    | 1        |
|               |                 |          |
|               |                 |          |
|               |                 |          |



327 N 17th Avenue, Suite 304  
Wausau, WI 54401  
Phone: 715-845-1081  
Fax: 414-347-1347



7/2/2026  
(Date)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

|                     |                   |
|---------------------|-------------------|
| PREPARED BY         | QUEST             |
| Surveyor            | EMCS, INC.        |
| Designer            | MATTHEW VANNATTA  |
| Project Manager     | REGIONAL EXAMINER |
| Regional Examiner   | MATTHEW VANNATTA  |
| Regional Supervisor |                   |

APPROVED FOR THE DEPARTMENT  
DATE: Location: Superior, WI  
Reason: I am approving this document  
Date: 2026.07.09 09:31:15-05'00'  
(Signature)

E

GENERAL NOTES

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

ORDER OF SECTION 2 DETAIL SHEETS

- PROJECT OVERVIEW
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- GUARDRAIL DETAILS
- TRAFFIC CONTROL

| CORING LOG |         |        |                               |
|------------|---------|--------|-------------------------------|
| CORE #     | STATION | OFFSET | ASPHALTIC PAVEMENT DEPTH (IN) |
| C-1        | 78+00   | 6' RT  | 14                            |
| C-2        | 93+00   | 6' LT  | 6                             |
| C-3        | 108+00  | 6' RT  | 12.25                         |
| C-4        | 123+00  | 6' LT  | 8.5                           |
| C-5        | 138+00  | 6' RT  | 10.75                         |
| C-6        | 153+00  | 6' LT  | 6.75                          |
| C-7        | 168+00  | 6' RT  | 9.25                          |
| C-8        | 183+00  | 6' LT  | 5.25                          |
| C-9        | 198+00  | 6' RT  | 11.5                          |
| C-10       | 213+00  | 6' LT  | 7.75                          |
| C-11       | 228+00  | 6' RT  | 11.5                          |
| C-12       | 243+00  | 6' LT  | 5.5                           |
| C-13       | 258+00  | 6' RT  | 13                            |
| C-14       | 273+00  | 6' LT  | 6.75                          |
| C-15       | 288+00  | 6' RT  | 13.5                          |
| C-16       | 303+00  | 6' LT  | 6.5                           |
| C-17       | 318+00  | 6' RT  | 10.5                          |
| C-18       | 333+00  | 6' LT  | 5.5                           |
| C-19       | 348+00  | 6' RT  | 9.5                           |
| C-20       | 363+00  | 6' LT  | 7                             |
| C-21       | 378+00  | 6' RT  | 6.5                           |
| C-22       | 393+00  | 6' LT  | 6                             |
| C-23       | 408+00  | 6' RT  | 6.5                           |
| C-24       | 415+00  | 6' LT  | 4.5                           |
| C-25       | 432+00  | 6' RT  | 6.5                           |

UTILITIES

COMMUNICATIONS

BRIGHTSPEED OF NORTH CENTRAL WISCONSIN, LLC  
BEN BAKER  
425 ELLINGSON AVE  
HAWKINS WI 54530  
OFFICE PHONE: (715) 567-0725  
BEN.BAKER@BRIGHTSPEED.COM

MERIT NETWORK INC  
JOHN SITKA  
880 TECHNOLOGY WAY, SUITE B  
ANN ABOR, MI 48108-8963  
OFFICE PHONE: (616) 970-1703  
JCSITKA@MERIT.EDU

NORVADO  
GUY FOLSOM  
P.O. BOX 67  
CABLE, WI 43705  
OFFICE PHONE: (715) 798-7123  
GFOLSOM@NORVADO.COM

SPECTRUM  
MICKEY BENIK  
2016 18 3/4 ST  
RICE LAKE, WI 54868  
OFFICE PHONE: (715) 210-3868  
MIKEY.BENIK@CHARTER.COM

GAS/PETROLEUM

XCEL ENERGY  
JOHN KELSER  
1414 W HAMILTON AVE  
P.O. BOX 8  
EAU CLAIRE, WI 54702  
OFFICE PHONE: (715) 737-6020  
JOHN.KELSER@XCELENERGY.COM

ELECTRIC

XCEL ENERGY  
JOHN KELSER  
1414 W HAMILTON AVE  
P.O. BOX 8  
EAU CLAIRE, WI 54702  
OFFICE PHONE: (715) 737-6020  
JOHN.KELSER@XCELENERGY.COM

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

SANITARY SEWER

CITY OF ASHLAND WATER & WASTEWATER  
NILES FETTER  
2020 6TH ST. E  
ASHLAND, WI 54806  
OFFICE PHONE: (715) 682-7045  
NFETTER@COAWI.ORG

WATER

CITY OF ASHLAND WATER & WASTEWATER  
NILES FETTER  
2020 6TH ST. E  
ASHLAND, WI 54806  
OFFICE PHONE: (715) 682-7045  
NFETTER@COAWI.ORG

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                   | .16 | .22      | .12                   | .20 | .27      | .15                   | .24 | .33      | .19                   | .28 | .38      |
|                         | .22                   | .30 | .38      | .26                   | .34 | .44      | .30                   | .37 | .50      | .34                   | .41 | .56      |
| MEDIAN STRIP-<br>TURF   | .19                   | .20 | .24      | .19                   | .22 | .26      | .20                   | .23 | .30      | .20                   | .25 | .30      |
|                         | .24                   | .26 | .30      | .25                   | .28 | .33      | .26                   | .30 | .37      | .27                   | .32 | .40      |
| SIDE SLOPE-<br>TURF     |                       |     | .25      |                       |     | .27      |                       |     | .28      |                       |     | .30      |
|                         |                       |     | .32      |                       |     | .34      |                       |     | .36      |                       |     | .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 = 131 ACRES  
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0 ACRES

OTHER CONTACTS

BAD RIVER TRIBE ROADS DEPARTMENT  
BEN CONNORS SR  
ROADS DEPARTMENT MANAGER  
72682 MAPLE ST  
ASHLAND, WI 54806  
PHONE: (715) 292-1728  
ROADSMGR@BADRIVER-NSN.GOV

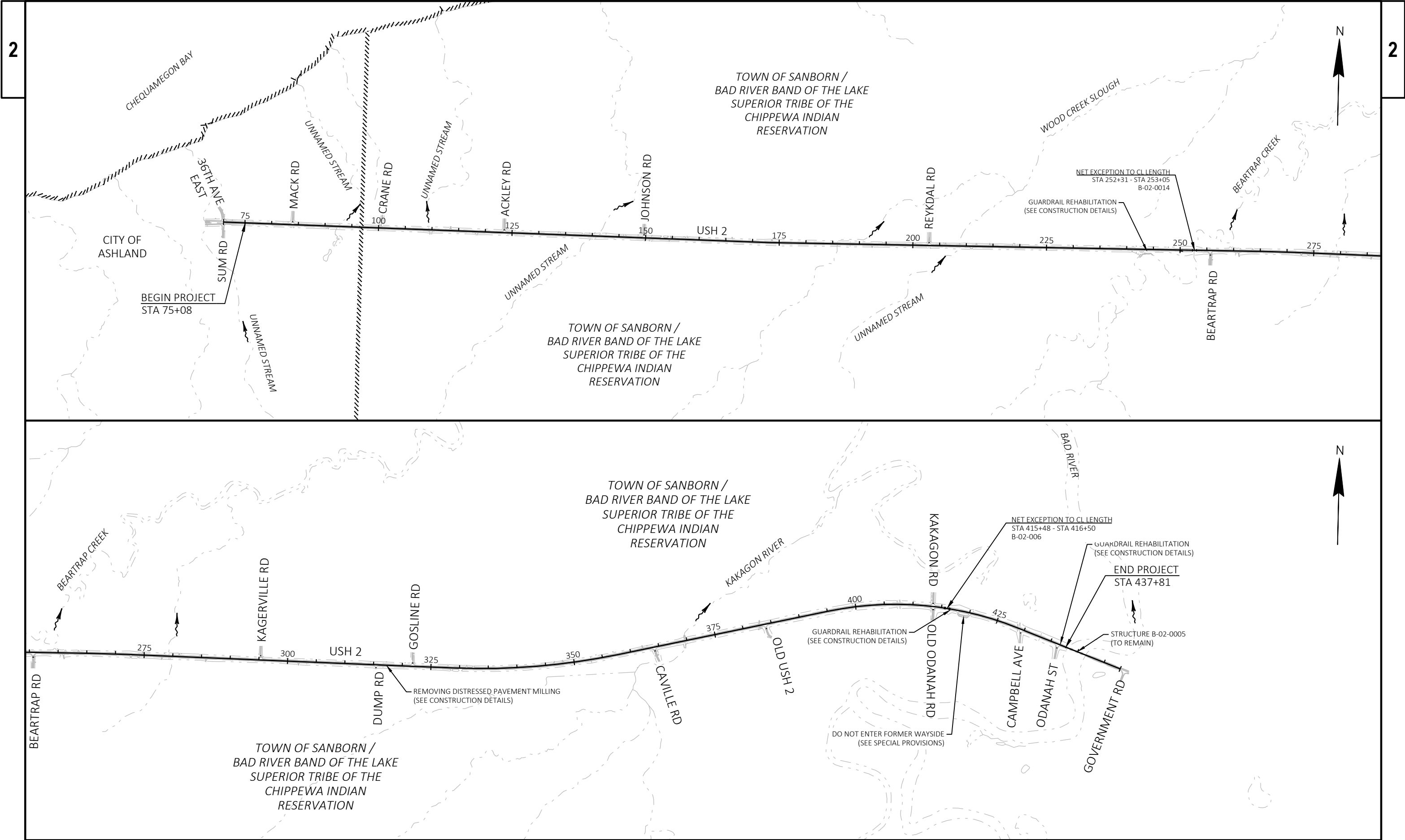
DESIGN CONTACT  
EMCS, INC.  
327 N 17TH AVE, SUITE 304  
WAUSAU, WI 54401  
OFFICE: 715-845-1081

DNR LIAISON  
SHAWN HASELEU  
DNR NORTHERN REGION HEADQUARTERS  
810 W. MAPLE STREET  
SPOONER, WI 54801  
(715)416-0478  
SHAWN.HASELEU@WISCONSIN.GOV



Dial 811 or (800)242-8511

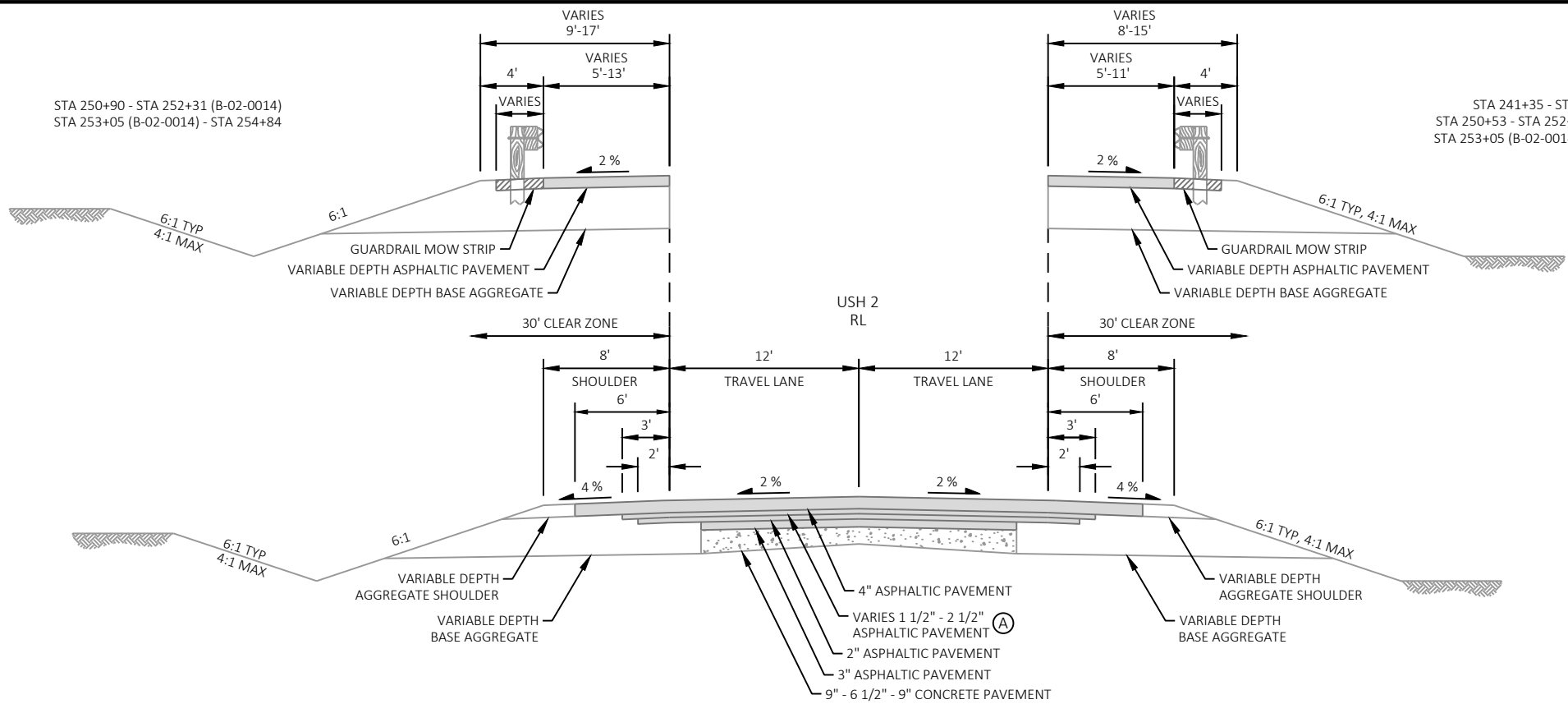
www.DiggersHotline.com



|                        |            |                 |                  |         |   |
|------------------------|------------|-----------------|------------------|---------|---|
| PROJECT NO: 1180-00-82 | HWY: USH 2 | COUNTY: ASHLAND | PROJECT OVERVIEW | SHEET 3 | E |
|------------------------|------------|-----------------|------------------|---------|---|

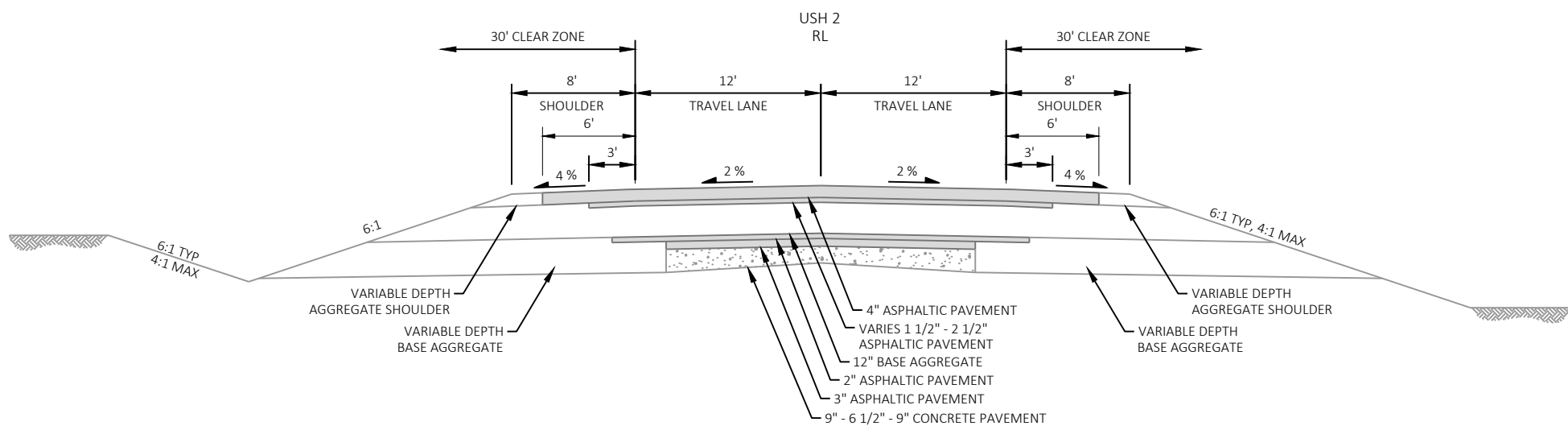
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EXISTING TYPICAL SECTION  
USH 2

STA 75+08 - STA 89+48  
STA 95+98 - STA 147+91  
STA 154+41 - STA 182+66  
STA 189+16 - STA 252+31 (B-02-0014)  
STA 253+05 (B-02-0014) - STA 261+00



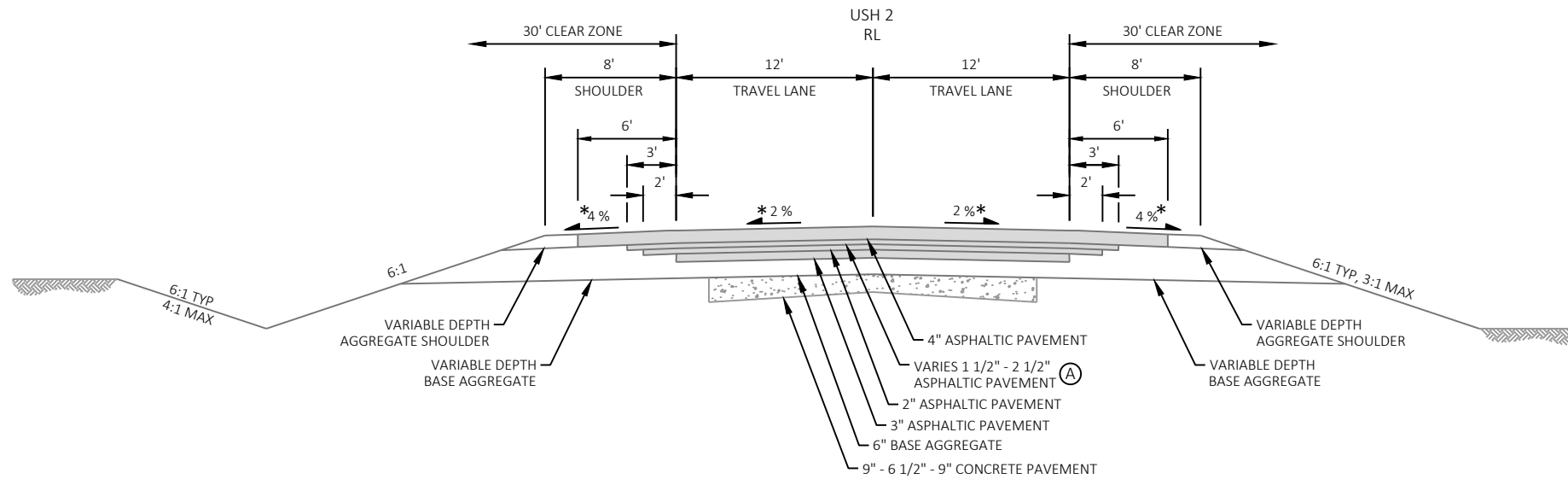
EXISTING TYPICAL SECTION  
USH 2

STA 89+48 - STA 95+98  
STA 147+91 - STA 154+41  
STA 182+66 - STA 189+16

## NOTES

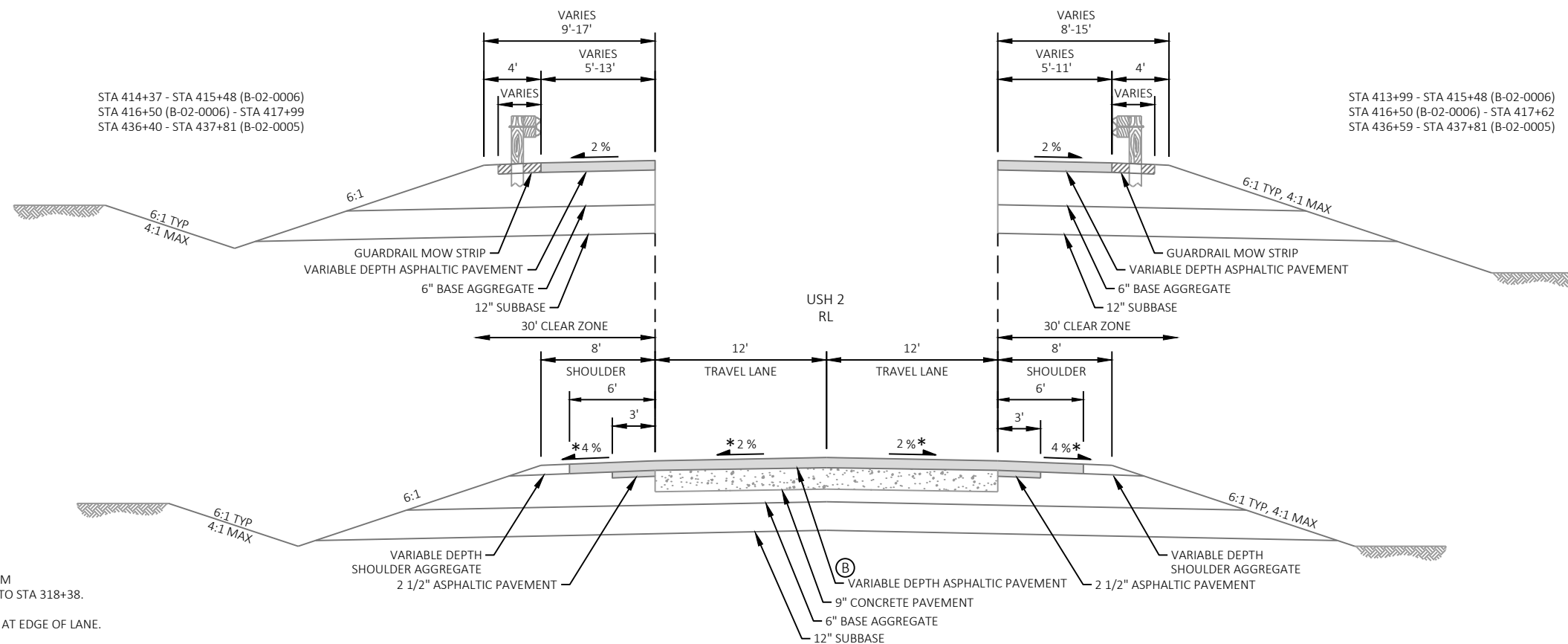
(A) EXISTING 0" TO 1" ASPHALTIC PAVEMENT FROM STA 107+14 TO STA 110+39.

EXISTING CROSS SLOPES ARE BASED ON AS-BUILT PLANS, ACTUAL CROSS SLOPES MAY VARY.



EXISTING TYPICAL SECTION  
USH 2

STA 261+00 - STA 357+52



EXISTING TYPICAL SECTION  
USH 2

STA 357+52 - STA 415+48 (B-02-0006)  
STA 416+50 (B-02-0006) - STA 437+81 (B-02-0005)

NOTES

(A) EXISTING 0" TO 1" ASPHALTIC PAVEMENT FROM  
STA 278+15 TO STA 282+19 AND STA 316+50 TO STA 318+38.

(B) EXISTING ASPHALT 6" AT CENTER LINE AND 4" AT EDGE OF LANE.

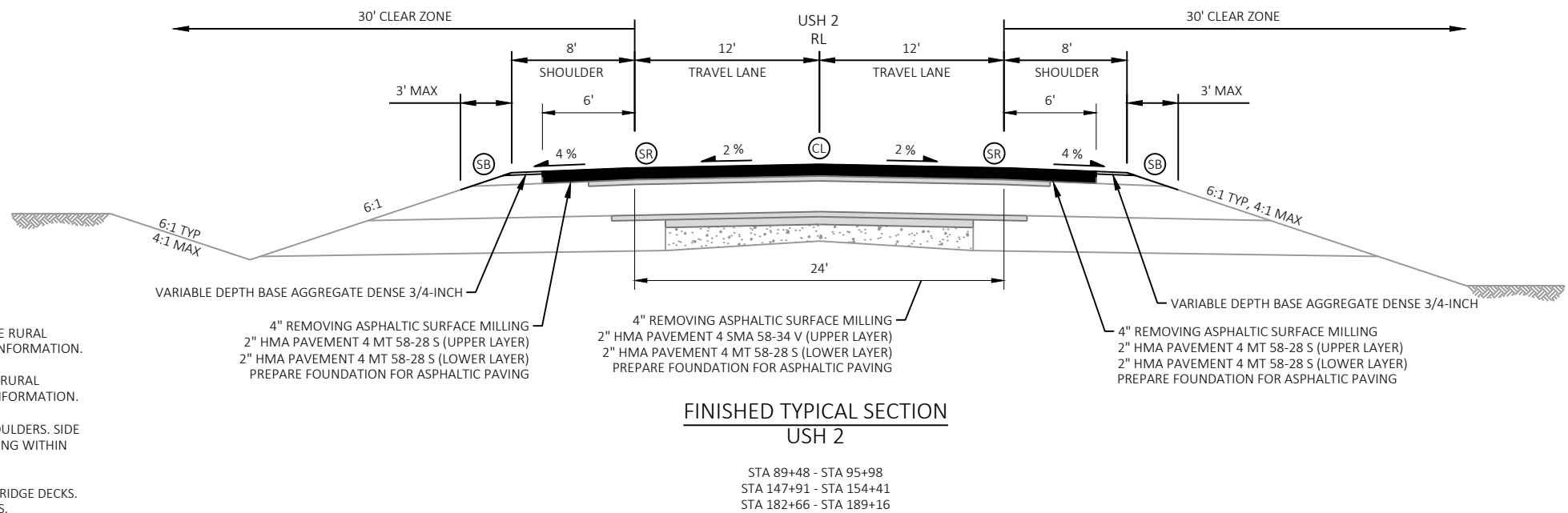
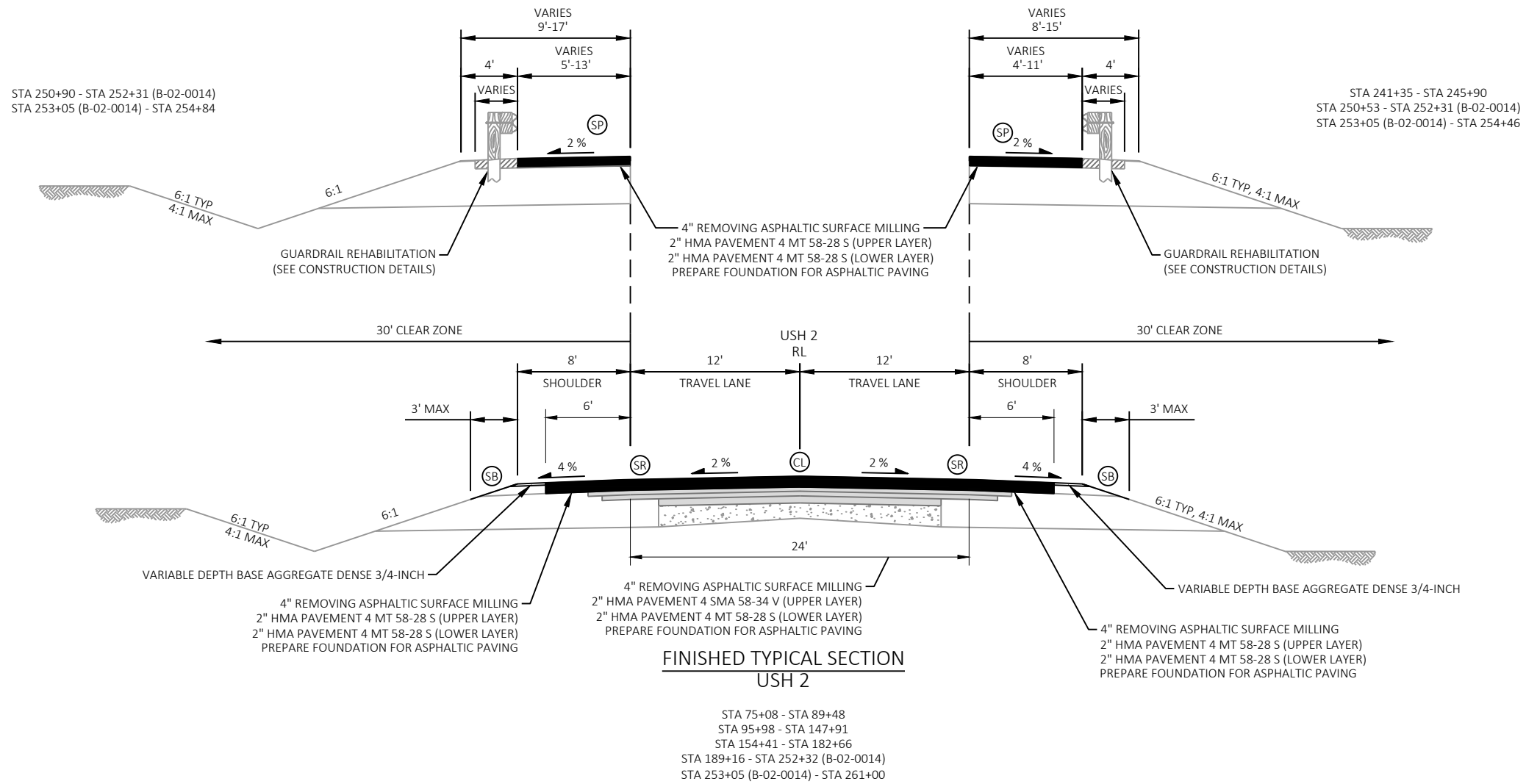
\* CROSS SLOPE VARIES DUE TO SUPERELEVATION. SEE SECTION 5  
PLAN SHEETS FOR SUPERELEVATION INFORMATION.

EXISTING CROSS SLOPES ARE BASED ON AS-BUILT PLANS, ACTUAL  
CROSS SLOPES MAY VARY.

STRUCTURE B-02-0006 HAS EXISTING CONCRETE APPROACH  
SLABS.

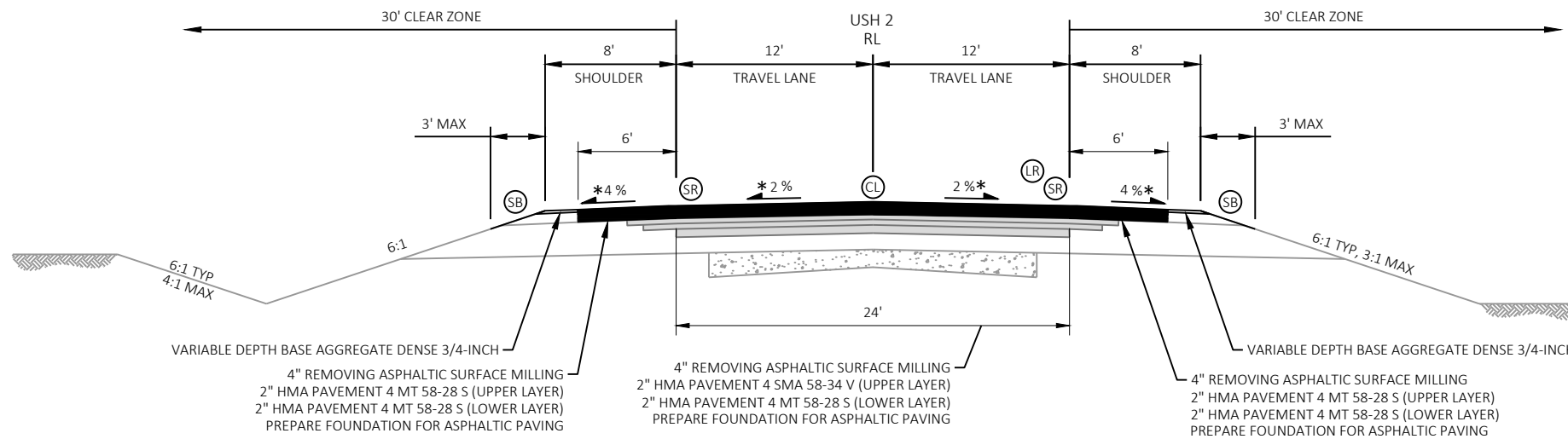
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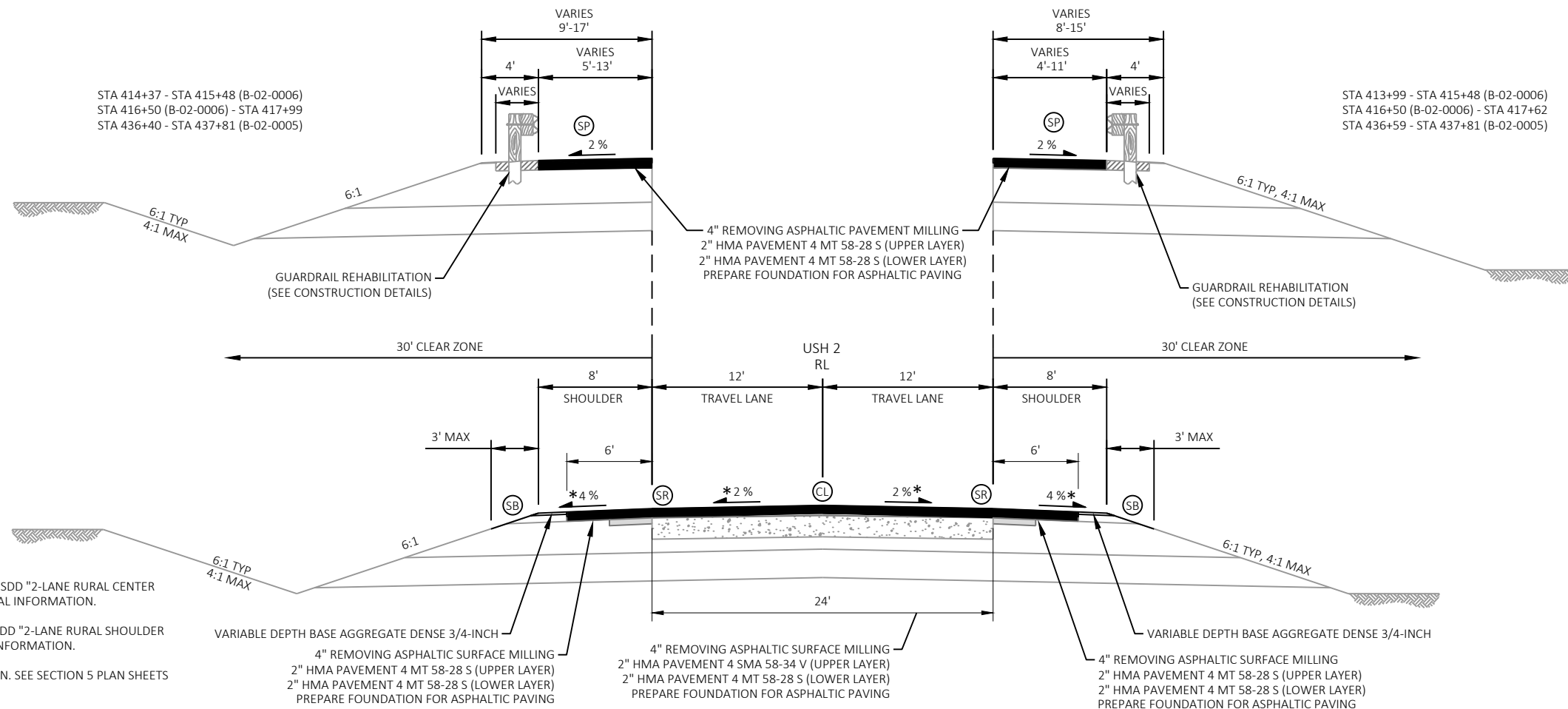
## NOTES

- (CL)** ASPHALTIC RUMBLE STRIPS, CENTERLINE. SEE SDD "2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING" FOR ADDITIONAL INFORMATION.
- (SR)** ASPHALTIC RUMBLE STRIPS, SHOULDER. SEE SDD "2-LANE RURAL SHOULDER RUMBLE STRIPS, MILLING" FOR ADDITIONAL INFORMATION.
- (SB)** BASE AGGREGATE DENSE 3/4-INCH TO ADDRESS LOW SHOULDERS. SIDE SLOPE 4:1 TYPICAL AND 3:1 MAX. KEEP ALL RE-SHOULDERING WITHIN EXISTING AGGREGATE LIMITS.
- (SP)** COMPLETE SHOULDER PAVING ALL THE WAY TO EXISTING BRIDGE DECKS. SEE CONSTRUCTION DETAILS FOR SHOULDER PAVING LIMITS.



FINISHED TYPICAL SECTION  
USH 2

STA 261+00 - STA 357+52

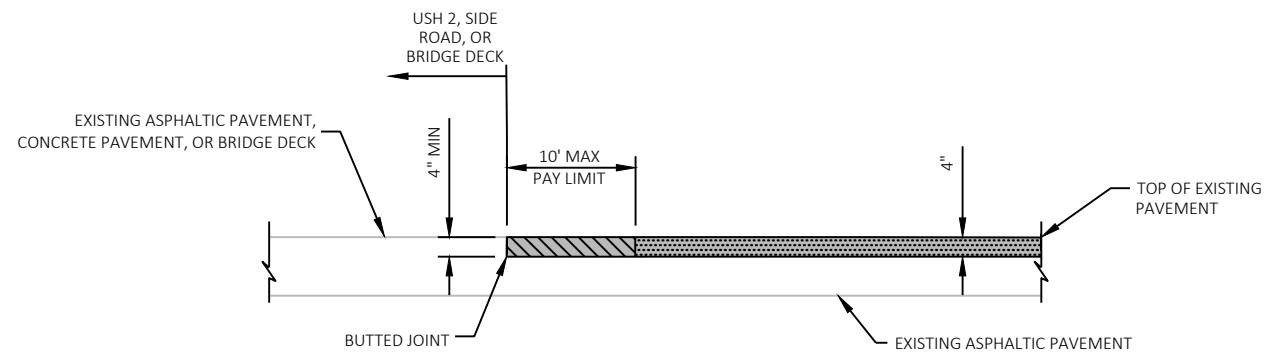


NOTES

- (CL) ASPHALTIC RUMBLE STRIPS, CENTERLINE. SEE SDD "2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING" FOR ADDITIONAL INFORMATION.
- (SR) ASPHALTIC RUMBLE STRIPS, SHOULDER. SEE SDD "2-LANE RURAL SHOULDER RUMBLE STRIPS, MILLING" FOR ADDITIONAL INFORMATION.
- \* CROSS SLOPE VARIES DUE TO SUPERELEVATION. SEE SECTION 5 PLAN SHEETS FOR SUPERELEVATION INFORMATION.
- (SB) BASE AGGREGATE DENSE 3/4-INCH TO ADDRESS LOW SHOULDERS. SIDE SLOPE 4:1 TYPICAL AND 3:1 MAX. KEEP ALL RE-SHOULDERING WITHIN EXISTING AGGREGATE LIMITS.
- (LR) LANE REPAIR BY REMOVING DISTRESSED PAVEMENT MILLING. SEE CONSTRUCTION DETAIL, STA 310+00 - STA 329+75, RT
- (SP) COMPLETE SHOULDER PAVING ALL THE WAY TO EXISTING BRIDGE DECKS. SEE CONSTRUCTION DETAILS FOR SHOULDER PAVING LIMITS.

FINISHED TYPICAL SECTION  
USH 2

STA 357+52 - STA 415+48 (B-02-0006)  
STA 416+50 (B-02-0006) - STA 437+81 (B-02-0005)

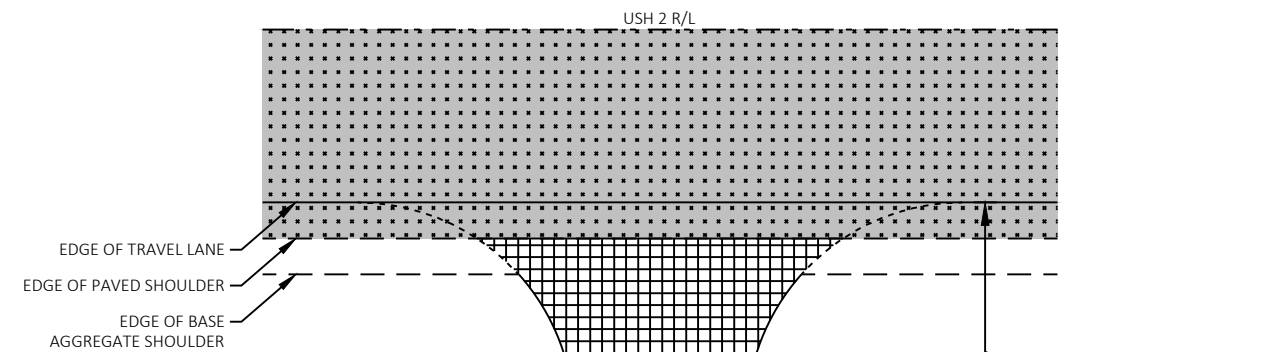


-  REMOVING ASPHALTIC SURFACE BUTT JOINTS  
DO NOT REMOVE MATERIAL UNDER THIS ITEM UNTIL 24 HOURS BEFORE PAVING
-  REMOVING ASPHALTIC SURFACE MILLING
-  PROPOSED HMA PAVEMENT OVERLAY

### USH 2 AND SIDE ROAD BUTT JOINT DETAIL

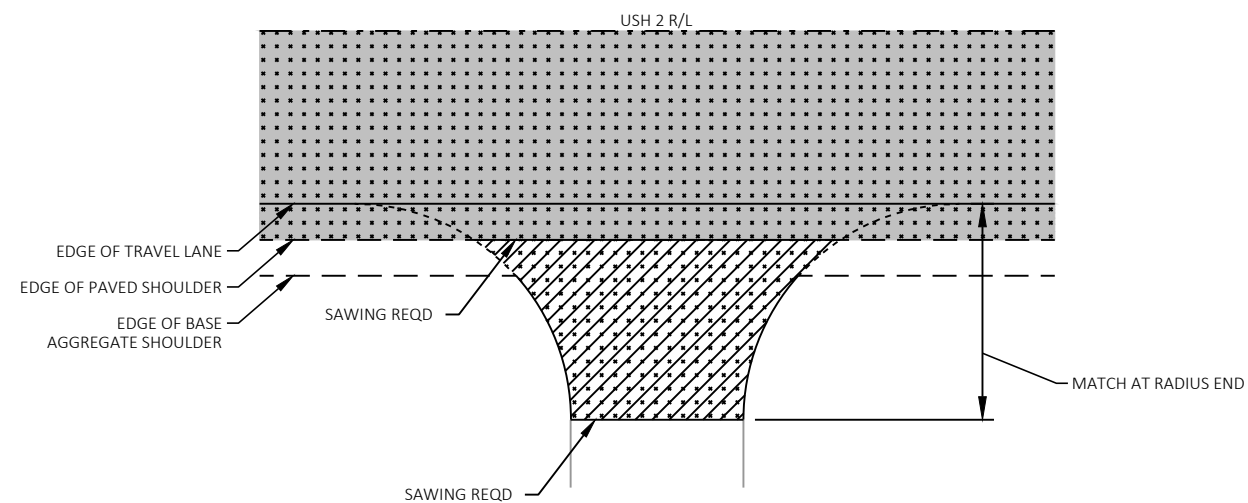
SEE SECTION 5 PLAN SHEETS FOR LOCATIONS

NOTE  
REMOVING ASPHALTIC SURFACE BUTT JOINTS IS NOT  
REQUIRED WHERE THE SIDE ROAD IS BASE AGGREGATE



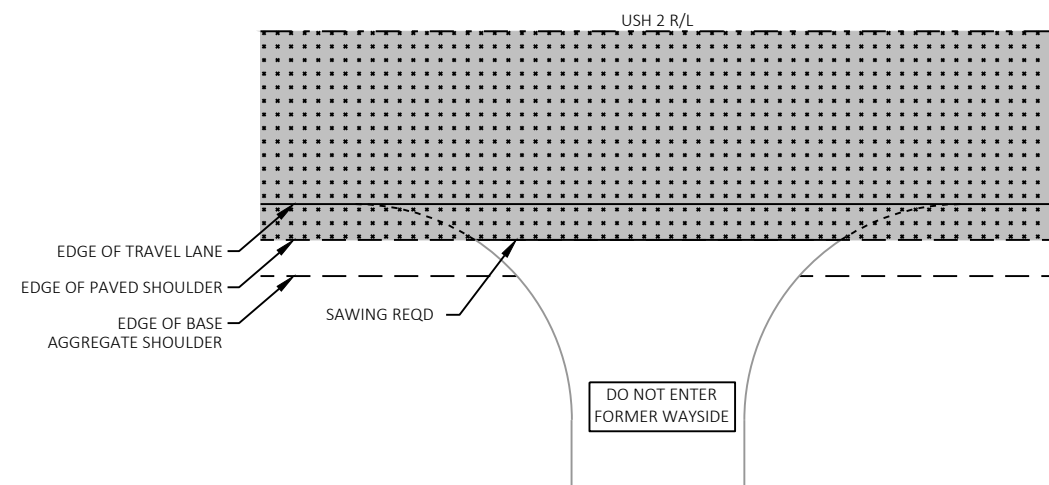
-  REMOVING ASPHALTIC SURFACE MILLING
-  PROPOSED HMA PAVEMENT OVERLAY
-  VARIABLE DEPTH BASE AGGREGATE DENSE 3/4-INCH

### UNPAVED DRIVEWAY DETAIL



-  REMOVING ASPHALTIC SURFACE MILLING
-  PROPOSED HMA PAVEMENT OVERLAY
-  REMOVING ASPHALTIC SURFACE BUTT JOINTS AND PROPOSED 3" ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES

### PAVED DRIVEWAY DETAIL



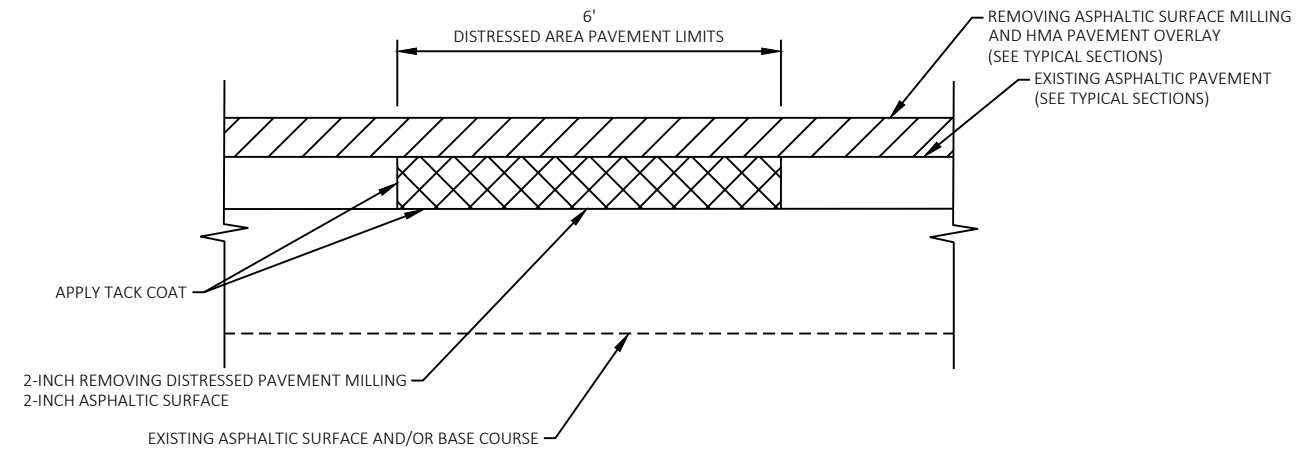
-  REMOVING ASPHALTIC SURFACE MILLING
-  PROPOSED HMA PAVEMENT OVERLAY

### PAVED DRIVEWAY DETAIL

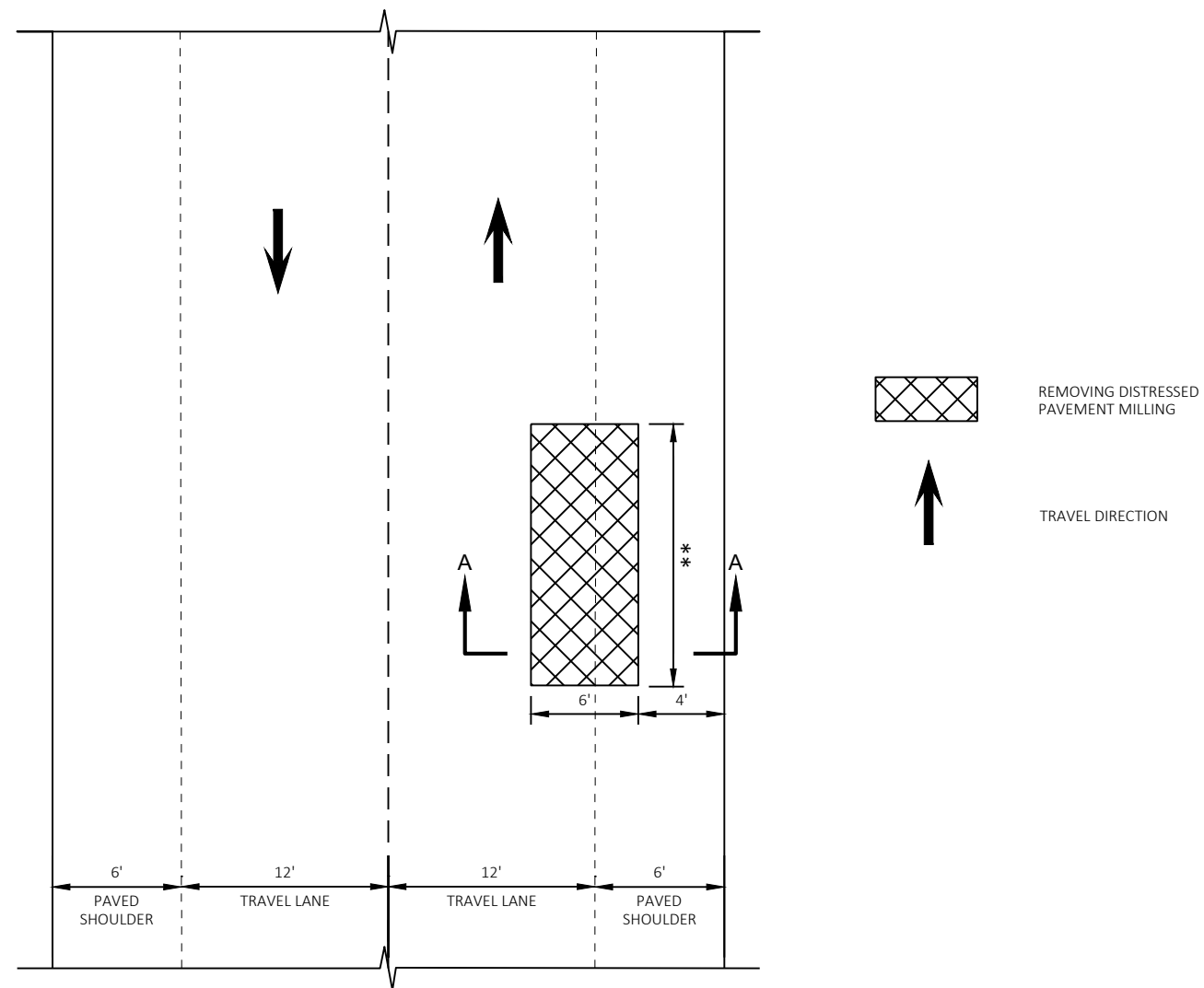
STA 417+94, RT  
STA 420+00, RT

2

2 |



SECTION A-A



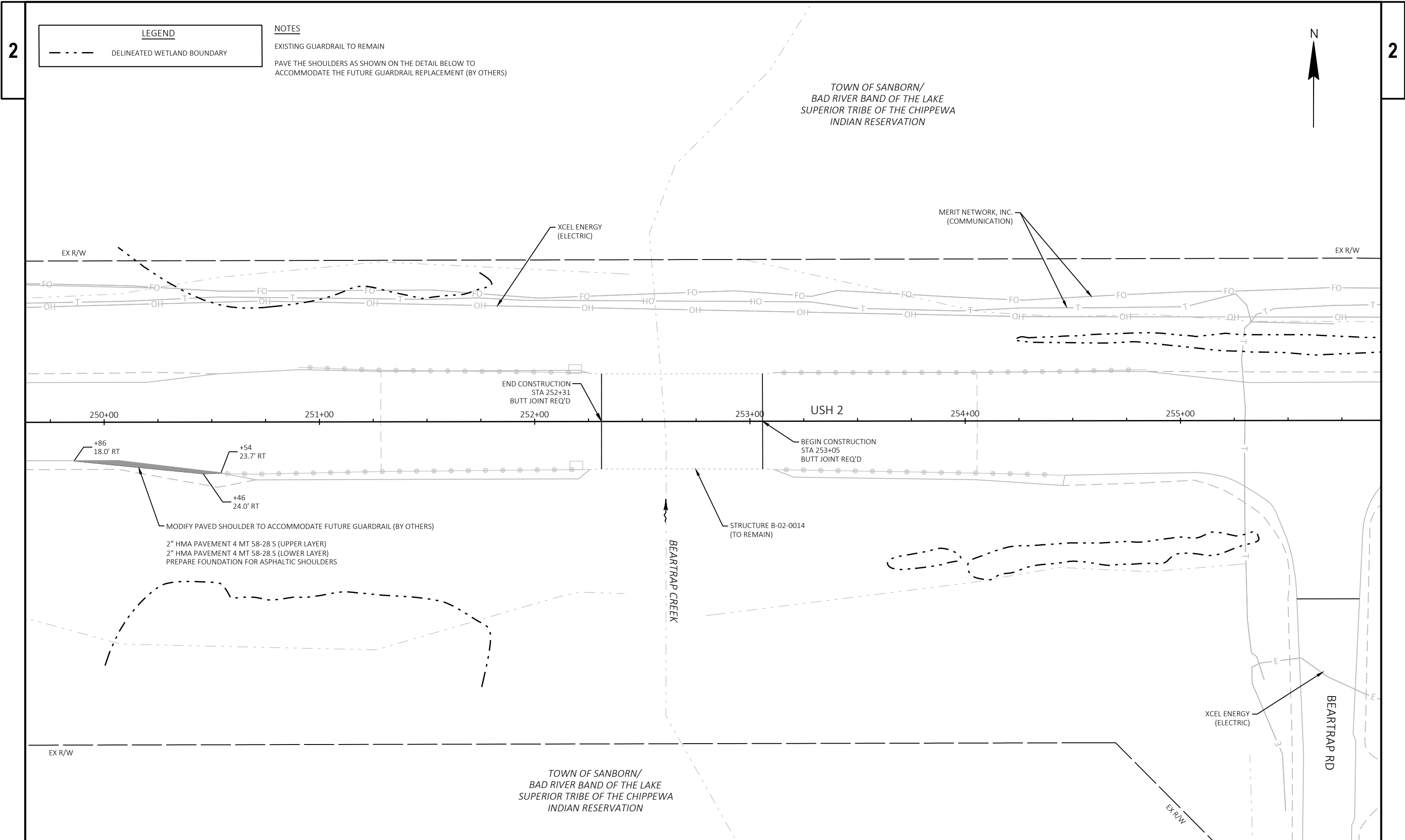
### PLAN VIEW

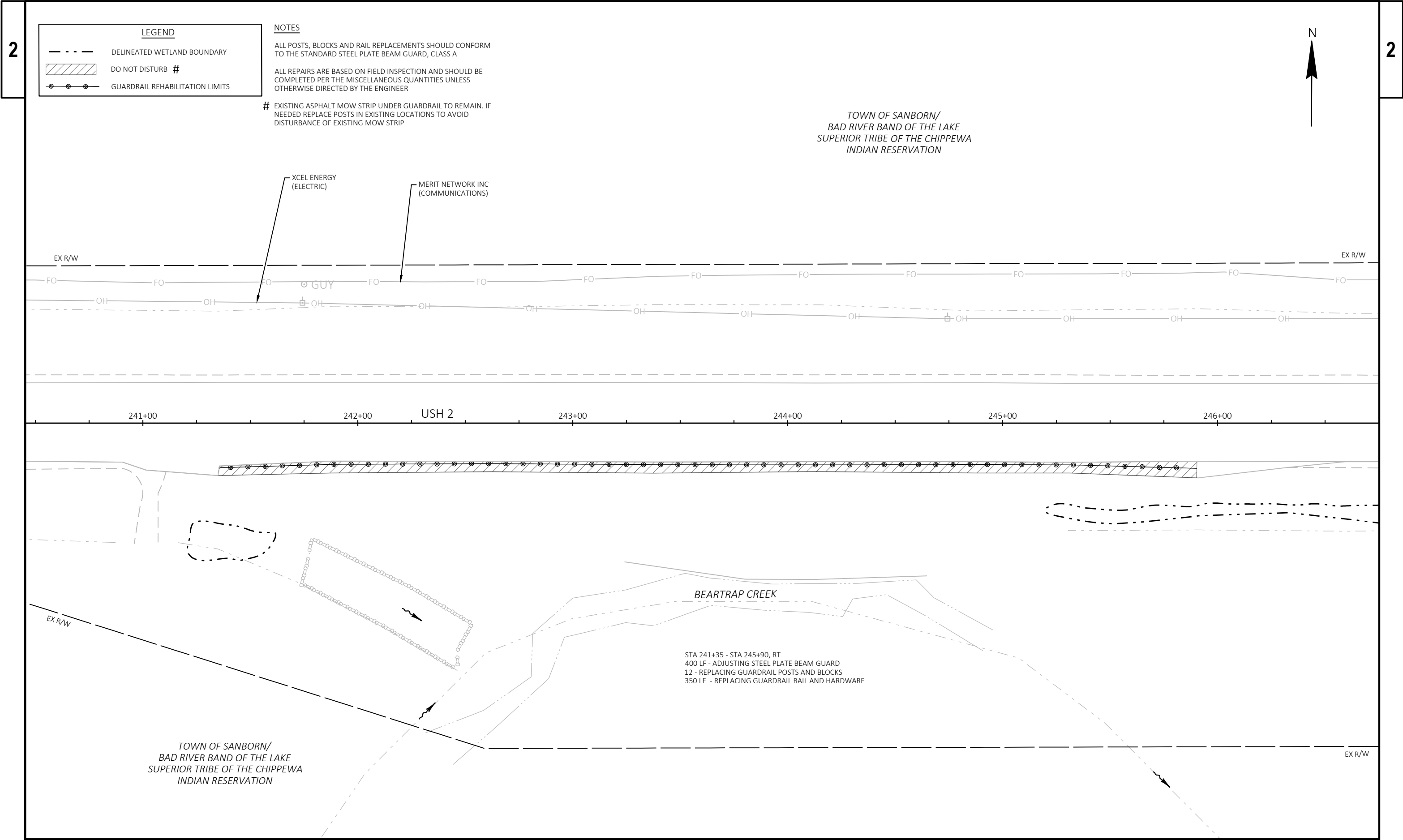
## REMOVING DISTRESSED PAVEMENT MILLING DETAIL

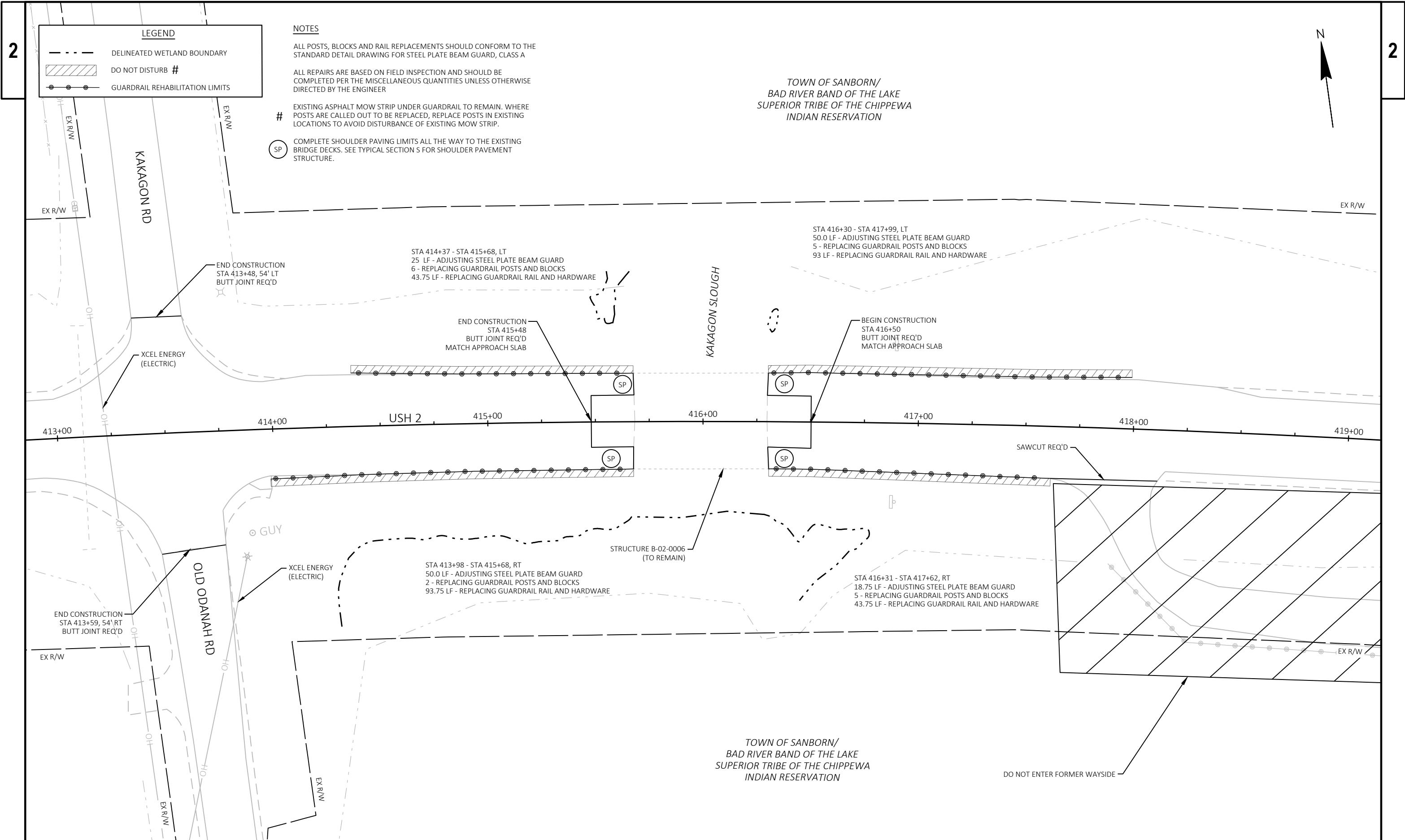
STA 310+00 - STA 329+75,RT

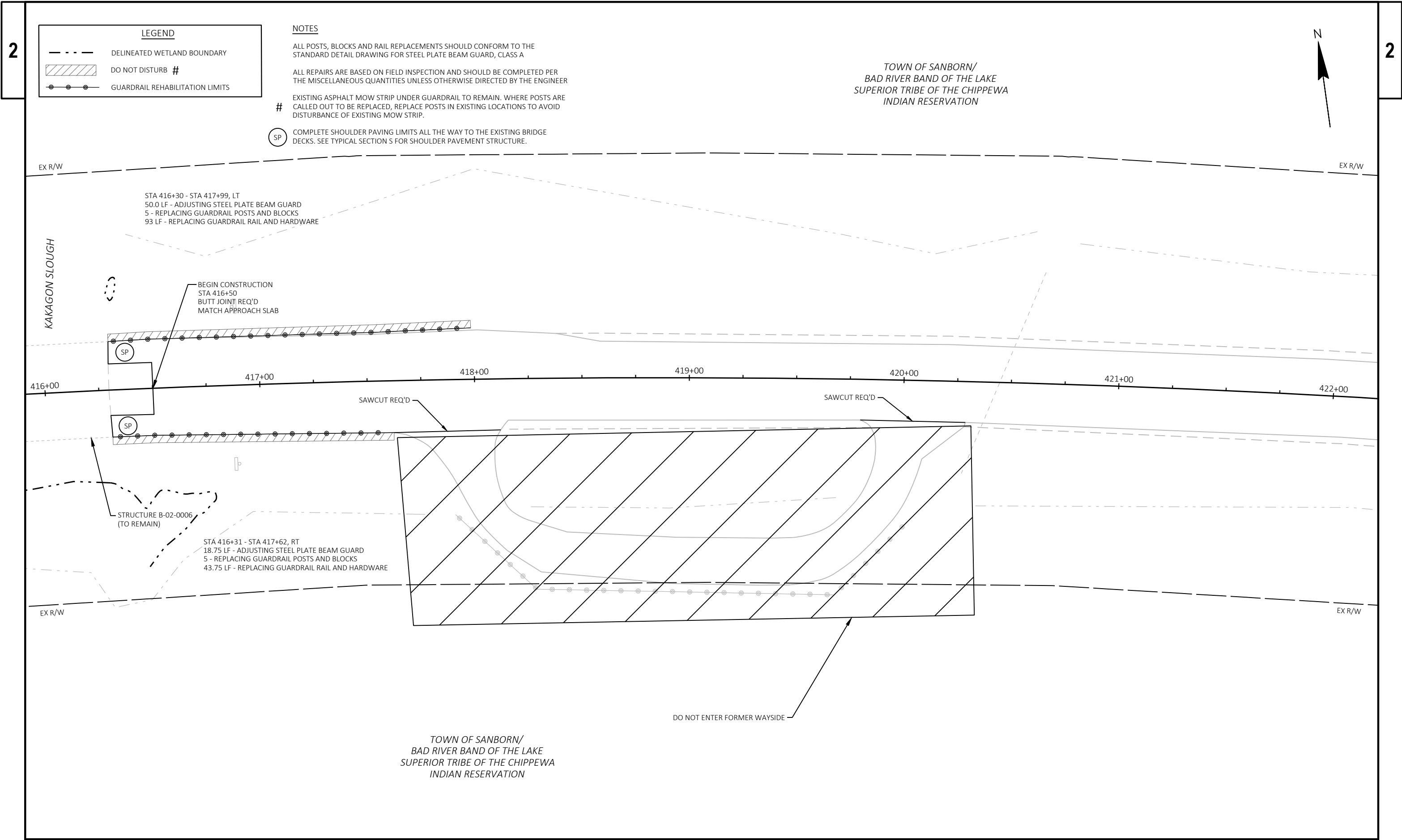
NOTE

EXACT LOCATION AND LIMITS OF REMOVING DISTRESSED PAVEMENT  
MILLING TO BE CONFIRMED BY THE ENGINEER IN THE FEILD









LEGEND

- DELINEATED WETLAND BOUNDARY
- DO NOT DISTURB #
- GUARDRAIL REHABILITATION LIMITS

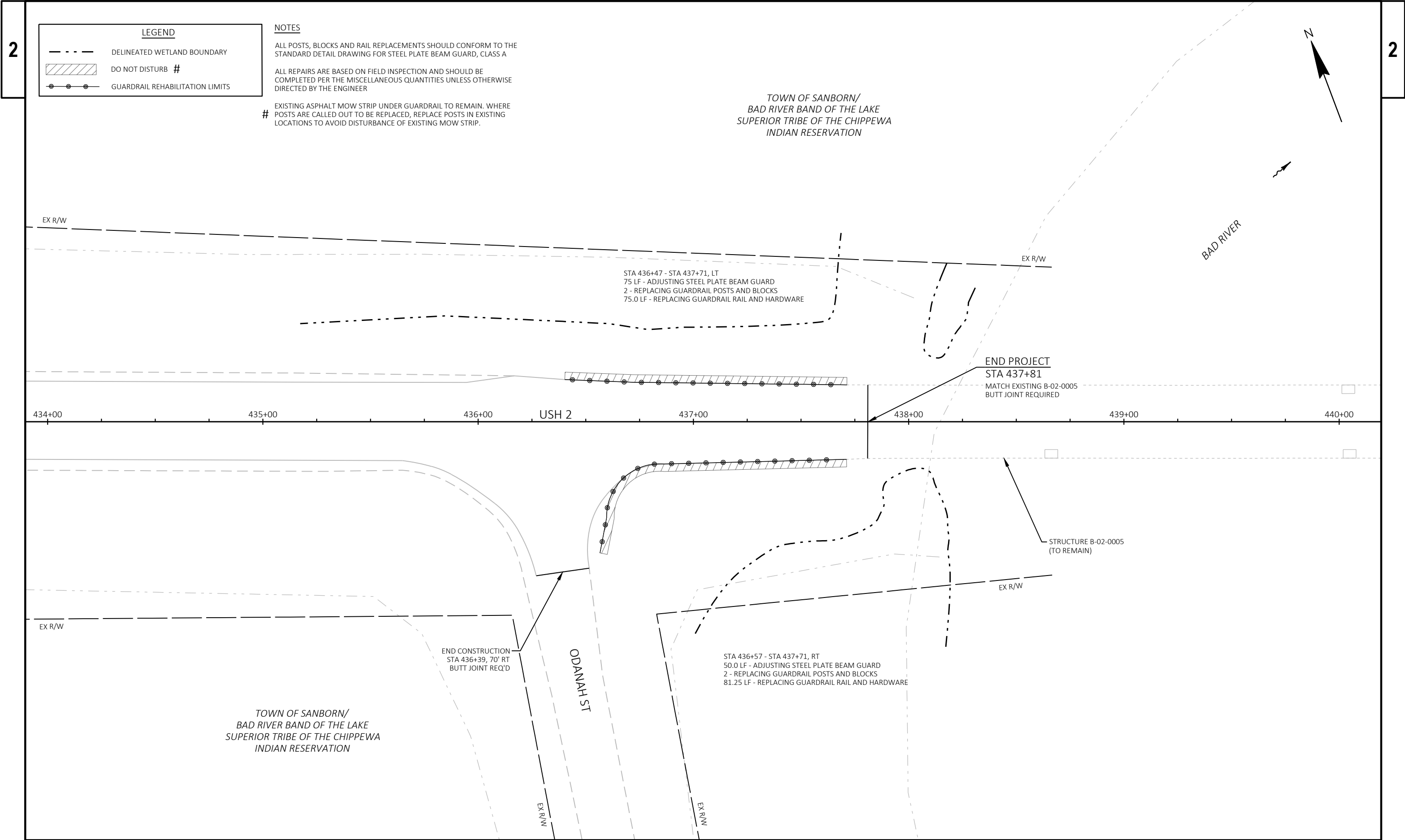
NOTES

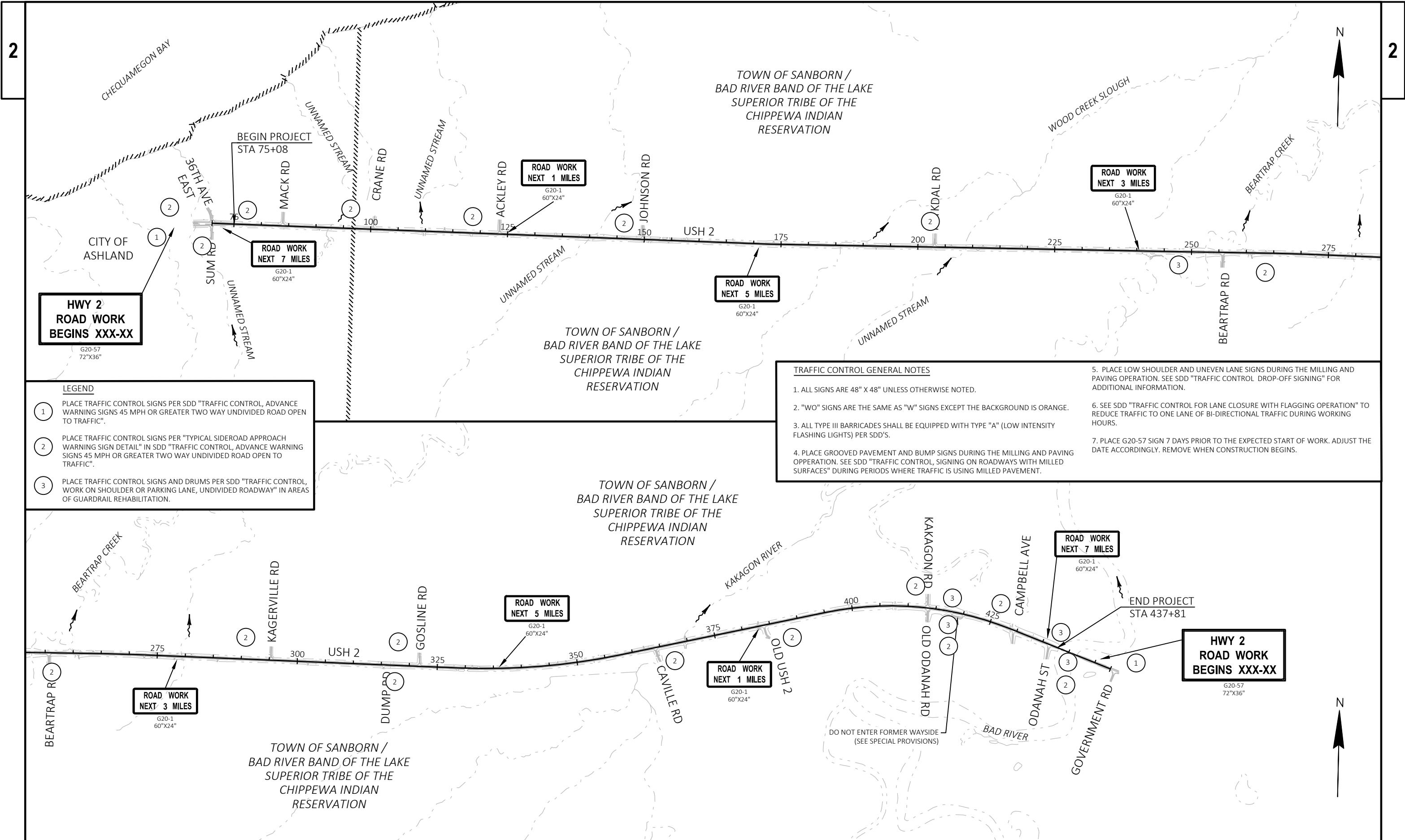
- ALL POSTS, BLOCKS AND RAIL REPLACEMENTS SHOULD CONFORM TO THE STANDARD DETAIL DRAWING FOR STEEL PLATE BEAM GUARD, CLASS A
- ALL REPAIRS ARE BASED ON FIELD INSPECTION AND SHOULD BE COMPLETED PER THE MISCELLANEOUS QUANTITIES UNLESS OTHERWISE DIRECTED BY THE ENGINEER
- # EXISTING ASPHALT MOW STRIP UNDER GUARDRAIL TO REMAIN. WHERE POSTS ARE CALLED OUT TO BE REPLACED, REPLACE POSTS IN EXISTING LOCATIONS TO AVOID DISTURBANCE OF EXISTING MOW STRIP.
- SP COMPLETE SHOULDER PAVING LIMITS ALL THE WAY TO THE EXISTING BRIDGE DECKS. SEE TYPICAL SECTION S FOR SHOULDER PAVEMENT STRUCTURE.

TOWN OF SANBORN/  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE CHIPPEWA  
INDIAN RESERVATION

DO NOT ENTER FORMER WAYSIDE

TOWN OF SANBORN/  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE CHIPPEWA  
INDIAN RESERVATION





- LEGEND**
- 1. PLACE TRAFFIC CONTROL SIGNS PER SDD "TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 MPH OR GREATER TWO WAY UNDIVIDED ROAD OPEN TO TRAFFIC".
  - 2. PLACE TRAFFIC CONTROL SIGNS PER "TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL" IN SDD "TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 MPH OR GREATER TWO WAY UNDIVIDED ROAD OPEN TO TRAFFIC".
  - 3. PLACE TRAFFIC CONTROL SIGNS AND DRUMS PER SDD "TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY" IN AREAS OF GUARDRAIL REHABILITATION.

- TRAFFIC CONTROL GENERAL NOTES**
1. ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
  2. "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
  3. ALL TYPE III BARRICADES SHALL BE EQUIPPED WITH TYPE "A" (LOW INTENSITY FLASHING LIGHTS) PER SDD'S.
  4. PLACE GROOVED PAVEMENT AND BUMP SIGNS DURING THE MILLING AND PAVING OPERATION. SEE SDD "TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES" DURING PERIODS WHERE TRAFFIC IS USING MILLED PAVEMENT.
  5. PLACE LOW SHOULDER AND UNEVEN LANE SIGNS DURING THE MILLING AND PAVING OPERATION. SEE SDD "TRAFFIC CONTROL DROP-OFF SIGNING" FOR ADDITIONAL INFORMATION.
  6. SEE SDD "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION" TO REDUCE TRAFFIC TO ONE LANE OF BI-DIRECTIONAL TRAFFIC DURING WORKING HOURS.
  7. PLACE G20-57 SIGN 7 DAYS PRIOR TO THE EXPECTED START OF WORK. ADJUST THE DATE ACCORDINGLY. REMOVE WHEN CONSTRUCTION BEGINS.

Estimate Of Quantities

1180-00-82

| Line | Item       | Item Description                                                   | Unit | Total       | Qty         |
|------|------------|--------------------------------------------------------------------|------|-------------|-------------|
| 0002 | 204.0115   | Removing Asphaltic Surface Butt Joints                             | SY   | 1,000.000   | 1,000.000   |
| 0004 | 204.0120   | Removing Asphaltic Surface Milling                                 | SY   | 148,377.000 | 148,377.000 |
| 0006 | 204.0126.S | Removing Asphaltic Longitudinal Notched Wedge Joint Milling        | LF   | 36,096.000  | 36,096.000  |
| 0008 | 211.0101   | Prepare Foundation for Asphaltic Paving (project) 01. 1180-00-82   | EACH | 1.000       | 1.000       |
| 0010 | 211.0400   | Prepare Foundation for Asphaltic Shoulders                         | STA  | 2.000       | 2.000       |
| 0012 | 213.0100   | Finishing Roadway (project) 01. 1180-00-82                         | EACH | 1.000       | 1.000       |
| 0014 | 305.0110   | Base Aggregate Dense 3/4-Inch                                      | TON  | 1,840.000   | 1,840.000   |
| 0016 | 450.6224   | HMA Pavement 4 MT 58-28 S                                          | TON  | 22,562.000  | 22,562.000  |
| 0018 | 450.8644   | HMA Pavement 4 SMA 58-34 V                                         | TON  | 10,780.000  | 10,780.000  |
| 0020 | 455.0605   | Tack Coat                                                          | GAL  | 17,927.000  | 17,927.000  |
| 0022 | 460.9000.S | Material Transfer Vehicle                                          | EACH | 1.000       | 1.000       |
| 0024 | 465.0105   | Asphaltic Surface                                                  | TON  | 350.000     | 350.000     |
| 0026 | 465.0110   | Asphaltic Surface Patching                                         | TON  | 150.000     | 150.000     |
| 0028 | 465.0120   | Asphaltic Surface Driveways and Field Entrances                    | TON  | 95.000      | 95.000      |
| 0030 | 465.0520   | Asphaltic Rumble Strips, Shoulder                                  | LF   | 63,970.000  | 63,970.000  |
| 0032 | 465.0560   | Asphaltic Rumble Strips, Centerline                                | LF   | 29,910.000  | 29,910.000  |
| 0034 | 614.0400   | Adjusting Steel Plate Beam Guard                                   | LF   | 668.750     | 668.750     |
| 0036 | 614.0950   | Replacing Guardrail Posts and Blocks                               | EACH | 34.000      | 34.000      |
| 0038 | 614.0951   | Replacing Guardrail Rail and Hardware                              | LF   | 780.500     | 780.500     |
| 0040 | 618.0100   | Maintenance and Repair of Haul Roads (project) 01. 1180-00-82      | EACH | 1.000       | 1.000       |
| 0042 | 619.1000   | Mobilization                                                       | EACH | 1.000       | 1.000       |
| 0044 | 624.0100   | Water                                                              | MGAL | 20.000      | 20.000      |
| 0046 | 642.5001   | Field Office Type B                                                | EACH | 1.000       | 1.000       |
| 0048 | 643.0300   | Traffic Control Drums                                              | DAY  | 400.000     | 400.000     |
| 0050 | 643.0900   | Traffic Control Signs                                              | DAY  | 5,260.000   | 5,260.000   |
| 0052 | 643.1000   | Traffic Control Signs Fixed Message                                | SF   | 36.000      | 36.000      |
| 0054 | 643.3165   | Temporary Marking Line Paint 6-Inch                                | LF   | 48,530.000  | 48,530.000  |
| 0056 | 643.5000   | Traffic Control                                                    | EACH | 1.000       | 1.000       |
| 0058 | 646.2040   | Marking Line Grooved Wet Ref Epoxy 6-Inch                          | LF   | 87,690.000  | 87,690.000  |
| 0060 | 650.8000   | Construction Staking Resurfacing Reference                         | LF   | 36,136.000  | 36,136.000  |
| 0062 | 650.9911   | Construction Staking Supplemental Control (project) 01. 1180-00-82 | EACH | 1.000       | 1.000       |
| 0064 | 680.0100   | Public Land Survey Monument Verify and Reset                       | EACH | 5.000       | 5.000       |
| 0066 | 690.0150   | Sawing Asphalt                                                     | LF   | 590.000     | 590.000     |
| 0068 | 706.0105   | HMA Percent Within Limits (PWL) Test Strip Volumetrics             | EACH | 1.000       | 1.000       |
| 0070 | 706.0110   | Nuclear Gauge Correlation Strip - HMA, SMA                         | EACH | 2.000       | 2.000       |
| 0072 | 706.0115   | SMA Pavement Test Strip Volumetrics                                | EACH | 1.000       | 1.000       |
| 0074 | 706.2005   | Incentive Density PWL HMA Pavement                                 | DOL  | 21,560.000  | 21,560.000  |
| 0076 | 706.2010   | Incentive Air Voids HMA Pavement                                   | DOL  | 33,340.000  | 33,340.000  |
| 0078 | 740.0440   | Incentive IRI Ride                                                 | DOL  | 27,376.000  | 27,376.000  |
| 0080 | ASP.1T0A   | On-the-Job Training Apprentice at \$5.00/HR                        | HRS  | 1,500.000   | 1,500.000   |
| 0082 | ASP.1T0G   | On-the-Job Training Graduate at \$5.00/HR                          | HRS  | 990.000     | 990.000     |
| 0084 | SPV.0180   | Special 01. Removing Distressed Pavement Milling                   | SY   | 1,320.000   | 1,320.000   |

3

|          |         |    |         | 204.0115*                                       | 204.0120                                    | SPV.0180.01                                   |
|----------|---------|----|---------|-------------------------------------------------|---------------------------------------------|-----------------------------------------------|
|          |         |    |         | REMOVING<br>ASPHALTIC<br>SURFACE BUTT<br>JOINTS | REMOVING<br>ASPHALTIC<br>SURFACE<br>MILLING | REMOVING<br>DISTRESSED<br>PAVEMENT<br>MILLING |
| CATEGORY | STATION | TO | STATION | SY                                              | SY                                          | SY                                            |
| 0010     |         |    |         |                                                 |                                             |                                               |
|          | 75+08   | -  | 149+00  | 66                                              | 30,040                                      | --                                            |
|          | 149+00  | -  | 252+31  | 84                                              | 41,938                                      | --                                            |
|          | 253+06  | -  | 321+00  | 80                                              | 28,063                                      | 735                                           |
|          | 321+00  | -  | 415+68  | 145                                             | 39,030                                      | 585                                           |
|          | 416+30  | -  | 437+81  | 65                                              | 9,306                                       | --                                            |
| TOTALS   |         |    |         | 440                                             | 148,377                                     | 1,320                                         |

\*ADDITIONAL QUANTITIES SHOWN ELSEWHERE

|          |         |    |         |        |                                                  |
|----------|---------|----|---------|--------|--------------------------------------------------|
|          |         |    |         |        | 211.0400                                         |
|          |         |    |         |        | PREPARE FOUNDATION<br>FOR ASPHALTIC<br>SHOULDERS |
| CATEGORY | STATION | TO | STATION | OFFSET | STA                                              |
| 0010     |         |    |         |        |                                                  |
|          | 249+86  | -  | 250+54  | RT     | 2                                                |
| PROJECT  |         |    |         |        | --                                               |
| TOTALS   |         |    |         |        | 2                                                |

|          |         |    |         |                |
|----------|---------|----|---------|----------------|
|          |         |    |         | 305.0110       |
|          |         |    |         | BASE AGGREGATE |
|          |         |    |         | DENSE 3/4-INCH |
| CATEGORY | STATION | TO | STATION | TON            |
| 0010     |         |    |         |                |
|          | 75+08   | -  | 149+00  | 380            |
|          | 149+00  | -  | 252+31  | 520            |
|          | 253+06  | -  | 321+00  | 441            |
|          | 321+00  | -  | 415+68  | 424            |
|          | 416+30  | -  | 437+81  | 75             |
| TOTAL    |         |    |         | 1,840          |

|          |         |    |         |        | 204.0115*                                          | 465.0120                                                     | 690.0150                |
|----------|---------|----|---------|--------|----------------------------------------------------|--------------------------------------------------------------|-------------------------|
|          |         |    |         |        | REMOVING<br>ASPHALTIC SURFACE<br>BUTT JOINTS<br>SY | ASPHALTIC SURFACE<br>DRIVEWAYS AND<br>FIELD ENTRANCES<br>TON | SAWING<br>ASPHALT<br>LF |
| CATEGORY | STATION | TO | STATION | OFFSET |                                                    |                                                              |                         |
| 0010     | 152+63  | -  | 154+79  | LT     | 239                                                | 40                                                           | 255                     |
|          | 272+47  | -  | 272+93  | RT     | 57                                                 | 10                                                           | 60                      |
|          | 329+74  | -  | 330+61  | RT     | 138                                                | 23                                                           | 138                     |
|          | 330+96  | -  | 331+46  | LT     | 56                                                 | 10                                                           | 63                      |
|          | 332+11  | -  | 332+64  | LT     | 70                                                 | 12                                                           | 74                      |
| TOTALS   |         |    |         |        | 560                                                | 95                                                           | 590                     |

\*ADDITIONAL QUANTITIES SHOWN ELSEWHERE

| ASPHALTIC ITEMS |                    |                                                             |                                          |                                                 |                                                                |               |                               |                                |                       |                                |                                      |                                        |  |
|-----------------|--------------------|-------------------------------------------------------------|------------------------------------------|-------------------------------------------------|----------------------------------------------------------------|---------------|-------------------------------|--------------------------------|-----------------------|--------------------------------|--------------------------------------|----------------------------------------|--|
|                 |                    | 706.0105                                                    | 706.0115                                 | 706.0110                                        | 204.0126.S                                                     | 455.0605      | 450.6224                      | 450.8644                       | 465.0105              | 465.0110                       | 465.0520                             | 465.0560                               |  |
|                 |                    | HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP VOLUMETRICS EACH | SMA PAVEMENT TEST STRIP VOLUMETRICS EACH | NUCLEAR GAUGE CORRELATION STRIP - HMA, SMA EACH | REMOVING ASPHALTIC LONGITUDINAL NOTCHED WEDGE JOINT MILLING LF | TACK COAT GAL | HMA PAVEMENT 4 MT 58-28 S TON | HMA PAVEMENT 4 SMA 58-34 V TON | ASPHALTIC SURFACE TON | ASPHALTIC SURFACE PATCHING TON | ASPHALTIC RUMBLE STRIPS, SHOULDER LF | ASPHALTIC RUMBLE STRIPS, CENTERLINE LF |  |
| CATEGORY        | STATION TO STATION |                                                             |                                          |                                                 |                                                                |               |                               |                                |                       |                                |                                      |                                        |  |
| 0010            |                    |                                                             |                                          |                                                 |                                                                |               |                               |                                |                       |                                |                                      |                                        |  |
|                 | 75+08 - 149+00     | --                                                          | --                                       | --                                              | 7,392                                                          | 3,613         | 4,537                         | 2,208                          | --                    | --                             | 13,448                               | 6,065                                  |  |
|                 | 149+00 - 252+31    | --                                                          | --                                       | --                                              | 10,331                                                         | 5,042         | 6,330                         | 3,086                          | --                    | --                             | 18,642                               | 9,265                                  |  |
|                 | 253+06 - 321+00    | --                                                          | --                                       | --                                              | 6,794                                                          | 3,417         | 4,277                         | 2,029                          | 84                    | --                             | 12,020                               | 5,611                                  |  |
|                 | 321+00 - 415+68    | --                                                          | --                                       | --                                              | 9,448                                                          | 4,730         | 5,954                         | 2,821                          | 66                    | --                             | 16,616                               | 7,619                                  |  |
|                 | 416+30 - 437+81    | --                                                          | --                                       | --                                              | 2,131                                                          | 1,125         | 1,464                         | 636                            | --                    | --                             | 3,244                                | 1,350                                  |  |
|                 | PROJECT            | 1                                                           | 1                                        | 2                                               | --                                                             | --            | --                            |                                | 200                   | 150                            | --                                   | --                                     |  |
| TOTALS          |                    | 1                                                           | 1                                        | 2                                               | 36,096                                                         | 17,927        | 22,562                        | 10,780                         | 350                   | 150                            | 63,970                               | 29,910                                 |  |

NOTES:  
UNDISTRIBUTED ASPHALTIC SURFACE USED FOR WEDGING, LEVELING AND SPOT LANE FAILURES AFTER MILLING  
UNDISTRIBUTED ASPHALTIC SURFACE PATCHING USED FOR MISCELLANEOUS REPAIRS DESIGNATED BY THE ENGINEER

MIXTURE ACCEPTANCE TABLE

|                                |         |    |        |                                                                    |                                              |                                                 |        | QUALITY MANAGEMENT PROGRAM TO BE USED FOR: |                    |
|--------------------------------|---------|----|--------|--------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------|--------|--------------------------------------------|--------------------|
| LOCATION                       | STA     | TO | STA    | MIXTURE USE                                                        | UNDERLYING SURFACE                           | BID ITEM                                        | TONS   | THICKNESS                                  | MIXTURE ACCEPTANCE |
| 12' DRIVING LANE               | 75+08   | -  | 437+81 | LOWER LAYER                                                        | MILLED EXISTING HMA SURFACE                  | HMA PAVEMENT 4 MT 58-28 S                       | 10,780 | 2"                                         | PWL                |
| 12' DRIVING LANE               | 75+08   | -  | 437+81 | UPPER LAYER                                                        | HMA PAVEMENT 4 MT 58-28 S                    | HMA PAVEMENT 4 SMA 58-34 V                      | 10,780 | 2"                                         | PWL                |
| SHOULDER (6' TYP) / SIDE ROADS | 75+08   | -  | 437+81 | LOWER LAYER                                                        | MILLED EXISTING HMA SURFACE                  | HMA PAVEMENT 4 MT 58-28 S                       | 5,891  | 2"                                         | PWL                |
| SHOULDER (6' TYP) / SIDE ROADS | 75+08   | -  | 437+81 | UPPER LAYER                                                        | HMA PAVEMENT 4 MT 58-28 S                    | HMA PAVEMENT 4 MT 58-28 S                       | 5,891  | 2"                                         | PWL                |
| VARIOUS                        | VARIOUS |    |        | DISTRESSED MILLED AREAS, WEDGING, LEVELING, AND SPOT LANE FAILURES | MILLED EXISTING HMA SURFACE / BASE AGGREGATE | ASPHALTIC SURFACE                               | 350    | VARIES                                     | (SS 465)           |
| VARIOUS                        | VARIOUS |    |        | DRIVEWAYS                                                          | BASE AGGREGATE                               | ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES | 95     | 3"                                         | (SS 465)           |
| VARIOUS                        | VARIOUS |    |        | MISCELLANEOUS REPAIRS AFTER MILLING                                | BASE AGGREGATE                               | ASPHALTIC SURFACE PATCHING                      | 150    | VARIES                                     | (SS 465)           |

3

TRAFFIC CONTROL ITEMS

| CATEGORY | LOCATION           | STAGE<br>DURATION<br>DAYS | 643.0300                 |     | 643.0900                 |       |
|----------|--------------------|---------------------------|--------------------------|-----|--------------------------|-------|
|          |                    |                           | TRAFFIC CONTROL<br>DRUMS |     | TRAFFIC CONTROL<br>SIGNS |       |
|          |                    |                           | NO.                      | DAY | NO.                      | DAY   |
| 0010     | PROJECT            | 80                        | --                       | --  | 33                       | 2,640 |
|          | MILLING AND PAVING | 65                        | --                       | --  | 40                       | 2,600 |
|          | GUARDRAIL REPAIRS  | 20                        | 20                       | 400 | 1                        | 20    |
|          | TOTALS             |                           |                          | 400 |                          | 5,260 |

TRAFFIC CONTROL SIGNS FIXED MESSAGE

| CATEGORY | LOCATION      | NUMBER<br>REQUIRED | SIGN SIZE<br>W X H<br>FT X FT | 643.1000 |                               |
|----------|---------------|--------------------|-------------------------------|----------|-------------------------------|
|          |               |                    |                               | SF       | SIGN MESSAGE                  |
| 0010     | BEGIN PROJECT | 1                  | 6 X 3                         | 18       | HWY 2 ROAD WORK BEGINS XXX-XX |
|          | END PROJECT   | 1                  | 6 X 3                         | 18       | HWY 2 ROAD WORK BEGINS XXX-XX |
|          | TOTAL         |                    |                               | 36       |                               |

3

PAVEMENT MARKING ITEMS

| CATEGORY | STATION | TO | STATION | 643.3165                            |              | 646.2040                                  |              |             |
|----------|---------|----|---------|-------------------------------------|--------------|-------------------------------------------|--------------|-------------|
|          |         |    |         | TEMPORARY MARKING LINE PAINT 6-INCH |              | MARKING LINE GROOVED WET REF EPOXY 6-INCH |              |             |
|          |         |    |         | 12.5' LINE 37.5' SKIP<br>YELLOW     | SOLID YELLOW | 12.5' LINE 37.5' SKIP<br>YELLOW           | SOLID YELLOW | SOLID WHITE |
|          |         |    |         | LF                                  | LF           | LF                                        | LF           | LF          |
| 0010     | 75+08   | -  | 149+00  | 5,550                               | 1,632        | 1,850                                     | 544          | 14,582      |
|          | 149+00  | -  | 252+50  | 7,763                               | 3,258        | 2,588                                     | 1,086        | 20,488      |
|          | 252+50  | -  | 321+00  | 5,100                               | --           | 1,713                                     | --           | 13,489      |
|          | 321+00  | -  | 416+00  | 6,150                               | 10,818       | 2,050                                     | 3,710        | 18,546      |
|          | 416+00  | -  | 437+81  | 1,125                               | 7,134        | 375                                       | 2,480        | 4,190       |
|          | TOTALS  |    |         | 25,688                              | 22,842       | 8,575                                     | 7,820        | 71,295      |
|          |         |    |         | 48,530                              |              | 87,690                                    |              |             |

NOTES:  
PLACE TEMPORARY CENTERLINE MARKING ON MILLED SURFACE AND LOWER LAYER  
PLACE TEMPORARY CENTERLINE MARKING ON UPPER LAYER PRIOR TO PLACEMENT OF CENTERLINE RUMBLE STRIPS

WATER

| CATEGORY | LOCATION                | 624.0100 |
|----------|-------------------------|----------|
|          |                         | MGAL     |
| 0010     | PROJECT-BASE COMPACTION | 20       |
| TOTAL    |                         | 20       |

GUARDRAIL ITEMS

| CATEGORY | STATION | TO | STATION | OFFSET | 614.0400                               | 614.0950                                   | 614.0951                                 |
|----------|---------|----|---------|--------|----------------------------------------|--------------------------------------------|------------------------------------------|
|          |         |    |         |        | ADJUSTING STEEL<br>PLATE BEAM<br>GUARD | REPLACING<br>GUARDRAIL POSTS<br>AND BLOCKS | REPLACING GUARDRAIL RAIL<br>AND HARDWARE |
|          |         |    |         |        | LF                                     | EACH                                       | LF                                       |
| 0010     | 241+35  | -  | 245+90  | RT     | 400.00                                 | 12                                         | 350.00                                   |
|          | 413+98  | -  | 415+68  | RT     | 50.00                                  | 2                                          | 93.75                                    |
|          | 414+37  | -  | 415+68  | LT     | 25.00                                  | 6                                          | 43.75                                    |
|          | 416+30  | -  | 417+99  | LT     | 50.00                                  | 5                                          | 93.00                                    |
|          | 416+31  | -  | 417+62  | RT     | 18.75                                  | 5                                          | 43.75                                    |
|          | 436+47  | -  | 437+71  | LT     | 75.00                                  | 2                                          | 75.00                                    |
|          | 436+57  | -  | 437+71  | RT     | 50.00                                  | 2                                          | 81.25                                    |
|          | TOTALS  |    |         |        | 668.75                                 | 34                                         | 780.50                                   |

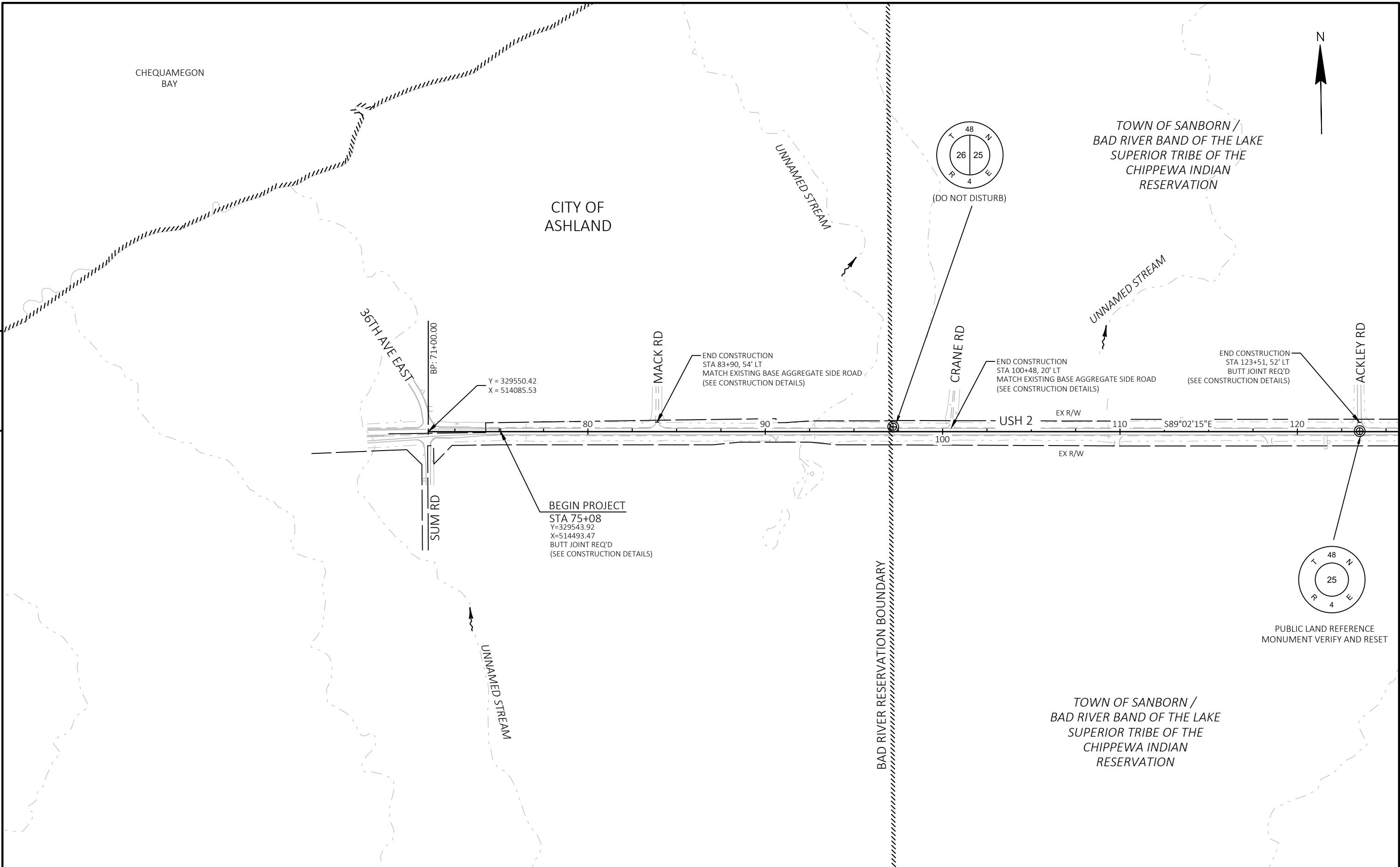
NOTE:  
CONFIRM GUARDRAIL REHABILITATION LOCATIONS INCLUDING W-BEAM AND THREE RAIL SECTIONS WITH THE ENGINEER

MONUMENT ITEMS

| CATEGORY | LOCATION             | DESCRIPTION       | 680.0100                                                   | COMMENTS                                   |
|----------|----------------------|-------------------|------------------------------------------------------------|--------------------------------------------|
|          |                      |                   | PUBLIC LAND REFERENCE<br>MONUMENT VERIFY AND RESET<br>EACH |                                            |
|          |                      |                   |                                                            |                                            |
| 0010     | SEC 25/26, T48N, R4W | QUARTER CORNER    | --                                                         | OUTSIDE OF GRAVEL SHOULDER, DO NOT DISTURB |
|          | SEC 25, T48N, R4W    | CENTER OF SECTION | 1                                                          |                                            |
|          | SEC 25, T48N, R4W    | SIXTEENTH         | 1                                                          |                                            |
|          | SEC 25/30, T48N, R3W | QUARTER CORNER    | 1                                                          |                                            |
|          | SEC 30, T48N, R3W    | CENTER OF SECTION | 1                                                          | MONUMENT NOT FOUND IN SURVEY               |
|          | SEC 30/29, T48N, R3W | QUARTER CORNER    | 1                                                          |                                            |
|          | SEC 29, T48N, R3W    | CENTER OF SECTION | --                                                         | OUTSIDE OF GRAVEL SHOULDER, DO NOT DISTURB |
|          | SEC 29/28, T48N, R3W | QUARTER CORNER    | --                                                         | OUTSIDE OF PAVING LIMITS, DO NOT DISTURB   |
|          | SEC 28, T48N, R3W    | SIXTEENTH         | --                                                         | OUTSIDE OF GRAVEL SHOULDER, DO NOT DISTURB |
|          | SEC 28, T48N, R3W    | CENTER OF SECTION | --                                                         | OUTSIDE OF GRAVEL SHOULDER, DO NOT DISTURB |
|          | SEC 28, T48N, R3W    | SIXTEENTH         | --                                                         | OUTSIDE OF GRAVEL SHOULDER, DO NOT DISTURB |
|          | SEC 27, T48N, R3W    | CENTER OF SECTION | --                                                         | OUTSIDE OF GRAVEL SHOULDER, DO NOT DISTURB |
|          | TOTAL                |                   | 5                                                          |                                            |

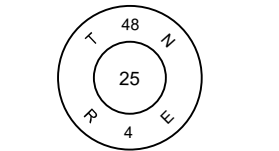
STAKING ITEMS

| CATEGORY | STATION | TO | STATION | 650.8000                                         |
|----------|---------|----|---------|--------------------------------------------------|
|          |         |    |         | CONSTRUCTION<br>STAKING RESURFACING<br>REFERENCE |
|          |         |    |         | LF                                               |
| 0010     | 75+08   | -  | 252+31  | 17,723                                           |
|          | 253+06  | -  | 415+68  | 16,262                                           |
|          | 416+30  | -  | 437+81  | 2,151                                            |
|          | PROJECT |    |         | --                                               |
| TOTALS   |         |    |         | 36,136                                           |



TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION

| CONTROL |              |             |                  |
|---------|--------------|-------------|------------------|
| NO.     | NORTHING (Y) | EASTING (X) | DESCRIPTION      |
| 800     | 329399.26    | 521244.53   | CP 0.75IR W/ CAP |
| 801     | 329466.78    | 520926.26   | CP 0.75IR W/ CAP |



PUBLIC LAND REFERENCE  
MONUMENT VERIFY AND RESET

JOHNSON RD

END CONSTRUCTION  
STA 149+69, 58' LT  
BUTT JOINT REQ'D  
(SEE CONSTRUCTION DETAILS)

CP #801

CP #800

EX R/W

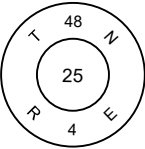
EX R/W

USH 2

N89°50'36"E

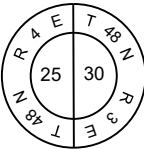
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X = 524298.15

PI: 173+14.07

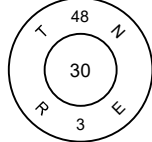


PUBLIC LAND REFERENCE  
MONUMENT VERIFY AND RESET

UNNAMED STREAM



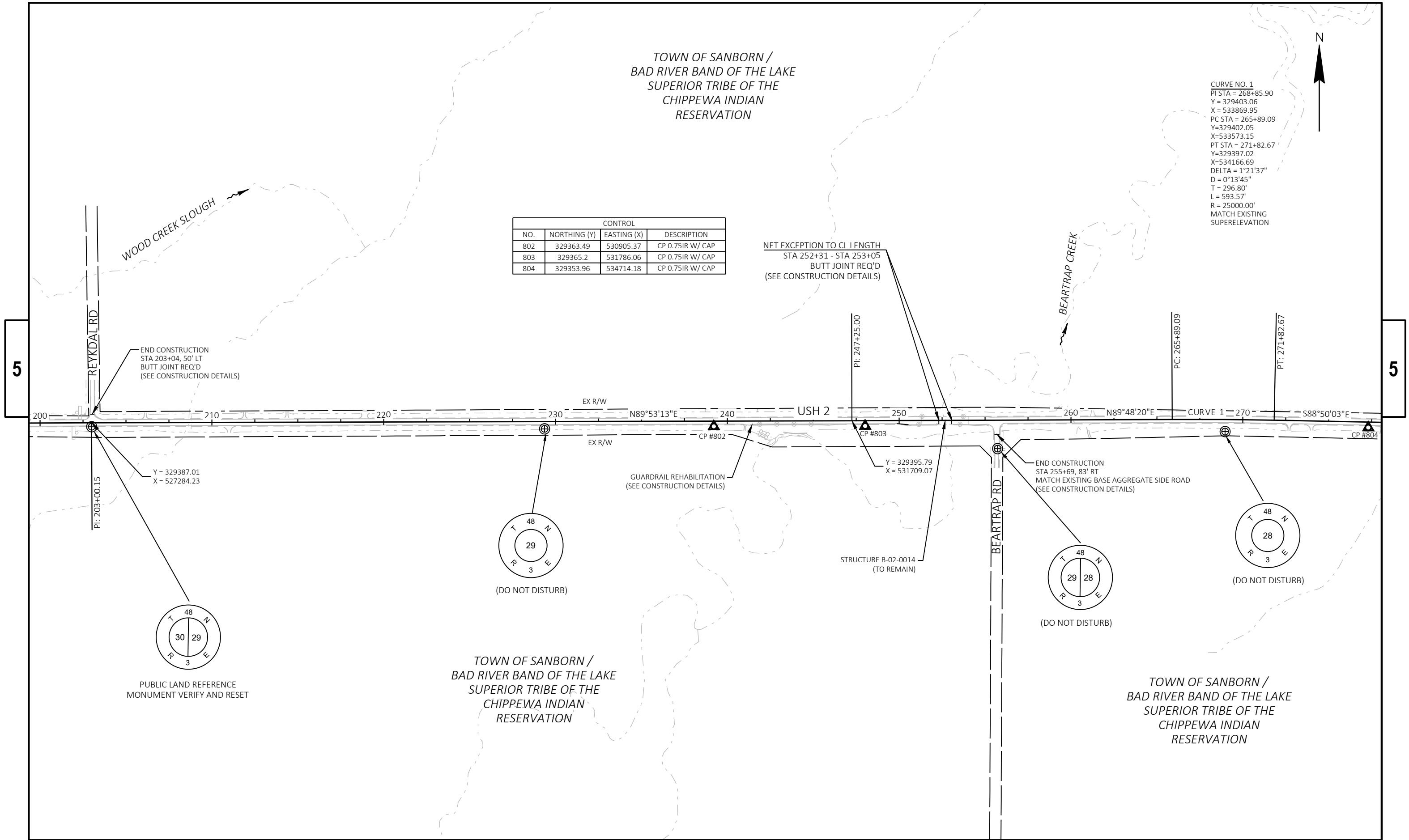
PUBLIC LAND REFERENCE  
MONUMENT VERIFY AND RESET



PUBLIC LAND REFERENCE  
MONUMENT VERIFY AND RESET

UNNAMED STREAM

TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION



| CONTROL |              |             |                  |
|---------|--------------|-------------|------------------|
| NO.     | NORTHING (Y) | EASTING (X) | DESCRIPTION      |
| 802     | 329363.49    | 530905.37   | CP 0.75IR W/ CAP |
| 803     | 329365.2     | 531786.06   | CP 0.75IR W/ CAP |
| 804     | 329353.96    | 534714.18   | CP 0.75IR W/ CAP |

CURVE NO. 1  
PI STA = 268+85.90  
Y = 329403.06  
X = 533869.95  
PC STA = 265+89.09  
Y = 329402.05  
X = 533573.15  
PT STA = 271+82.67  
Y = 329397.02  
X = 534166.69  
DELTA = 1°21'37"  
D = 0°13'45"  
T = 296.80'  
L = 593.57'  
R = 25000.00'  
MATCH EXISTING  
SUPERELEVATION

NET EXCEPTION TO CL LENGTH  
STA 252+31 - STA 253+05  
BUTT JOINT REQ'D  
(SEE CONSTRUCTION DETAILS)

END CONSTRUCTION  
STA 203+04, 50' LT  
BUTT JOINT REQ'D  
(SEE CONSTRUCTION DETAILS)

END CONSTRUCTION  
STA 255+69, 83' RT  
MATCH EXISTING BASE AGGREGATE SIDE ROAD  
(SEE CONSTRUCTION DETAILS)

GUARDRAIL REHABILITATION  
(SEE CONSTRUCTION DETAILS)

STRUCTURE B-02-0014  
(TO REMAIN)

PUBLIC LAND REFERENCE  
MONUMENT VERIFY AND RESET

TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION

TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION

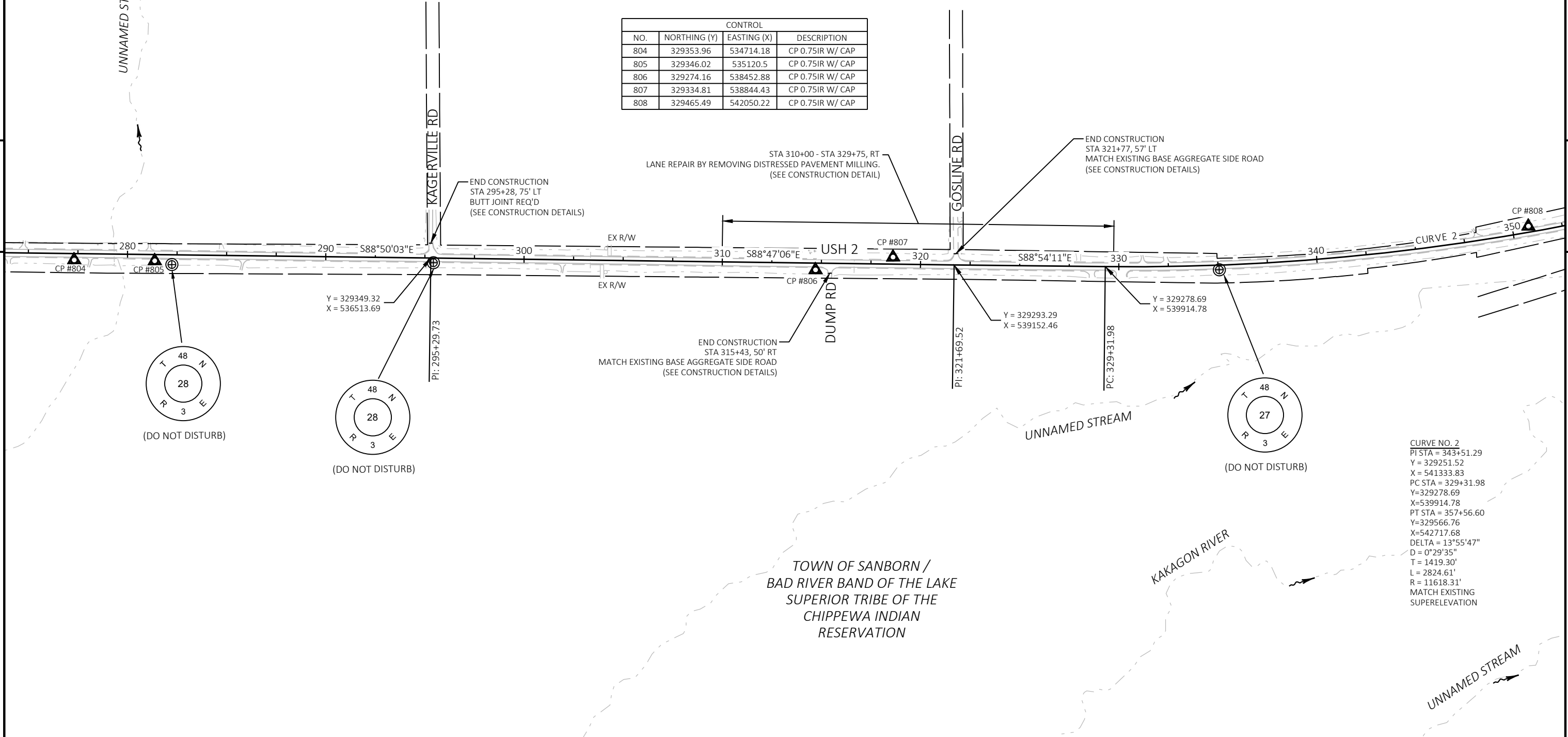
TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION



| CONTROL |              |             |                  |
|---------|--------------|-------------|------------------|
| NO.     | NORTHING (Y) | EASTING (X) | DESCRIPTION      |
| 804     | 329353.96    | 534714.18   | CP 0.75IR W/ CAP |
| 805     | 329346.02    | 535120.5    | CP 0.75IR W/ CAP |
| 806     | 329274.16    | 538452.88   | CP 0.75IR W/ CAP |
| 807     | 329334.81    | 538844.43   | CP 0.75IR W/ CAP |
| 808     | 329465.49    | 542050.22   | CP 0.75IR W/ CAP |

5

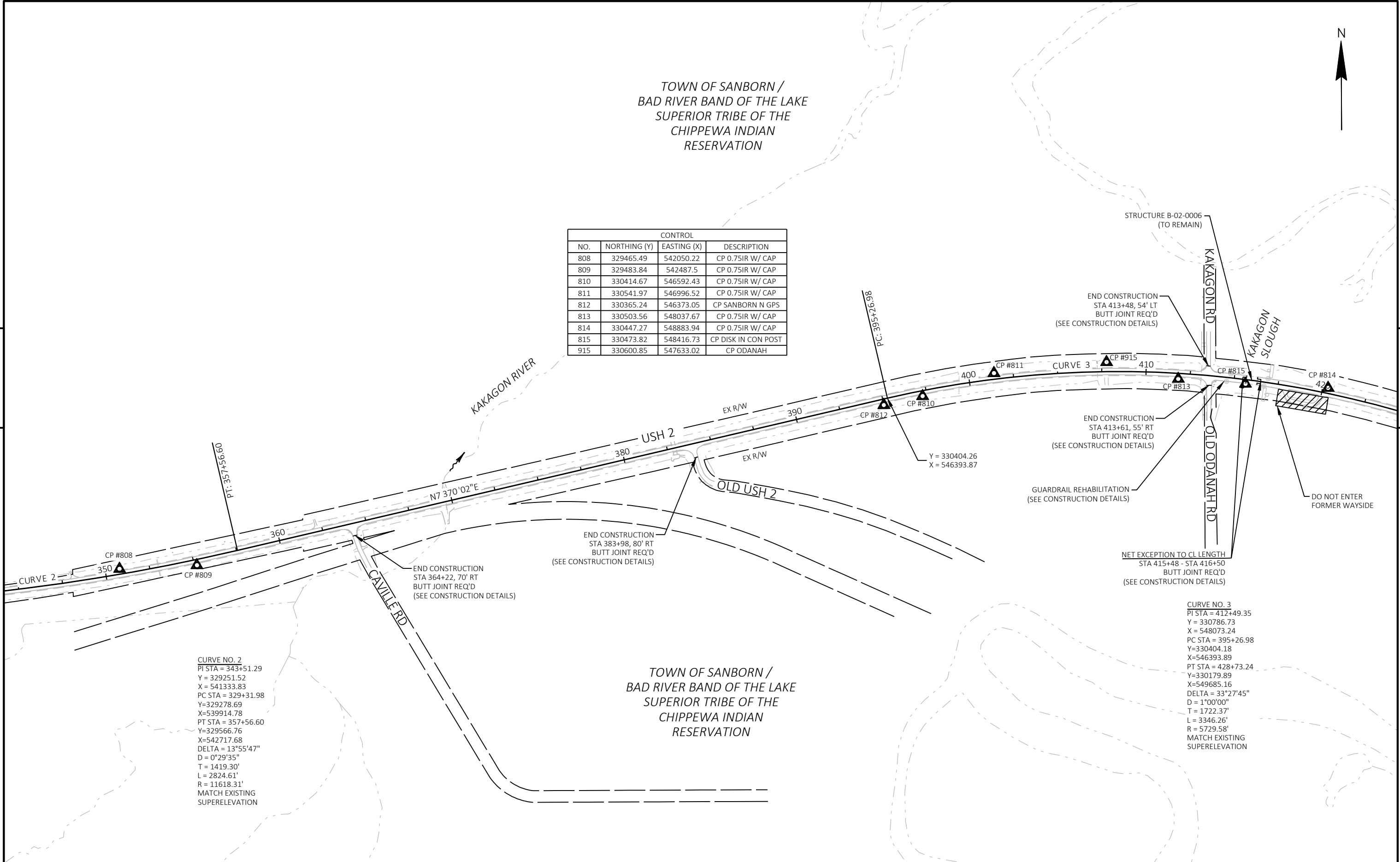
5



CURVE NO. 2  
PI STA = 343+51.29  
Y = 329251.52  
X = 541333.83  
PC STA = 329+31.98  
Y=329278.69  
X=539914.78  
PT STA = 357+56.60  
Y=329566.76  
X=542717.68  
DELTA = 13°55'47"  
D = 0°29'35"  
T = 1419.30'  
L = 2824.61'  
R = 11618.31'  
MATCH EXISTING  
SUPERELEVATION

TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION

| CONTROL |              |             |                     |
|---------|--------------|-------------|---------------------|
| NO.     | NORTHING (Y) | EASTING (X) | DESCRIPTION         |
| 808     | 329465.49    | 542050.22   | CP 0.75IR W/ CAP    |
| 809     | 329483.84    | 542487.5    | CP 0.75IR W/ CAP    |
| 810     | 330414.67    | 546592.43   | CP 0.75IR W/ CAP    |
| 811     | 330541.97    | 546996.52   | CP 0.75IR W/ CAP    |
| 812     | 330365.24    | 546373.05   | CP SANBORN N GPS    |
| 813     | 330503.56    | 548037.67   | CP 0.75IR W/ CAP    |
| 814     | 330447.27    | 548883.94   | CP 0.75IR W/ CAP    |
| 815     | 330473.82    | 548416.73   | CP DISK IN CON POST |
| 915     | 330600.85    | 547633.02   | CP ODANAH           |



CURVE NO. 2  
PI STA = 343+51.29  
Y = 329251.52  
X = 541333.83  
PC STA = 329+31.98  
Y=329278.69  
X=539914.78  
PT STA = 357+56.60  
Y=329566.76  
X=542717.68  
DELTA = 13°55'47"  
D = 0°29'35"  
T = 1419.30'  
L = 2824.61'  
R = 11618.31'  
MATCH EXISTING  
SUPERELEVATION

CURVE NO. 3  
PI STA = 412+49.35  
Y = 330786.73  
X = 548073.24  
PC STA = 395+26.98  
Y=330404.18  
X=546393.89  
PT STA = 428+73.24  
Y=330179.89  
X=549685.16  
DELTA = 33°27'45"  
D = 1°00'00"  
T = 1722.37'  
L = 3346.26'  
R = 5729.58'  
MATCH EXISTING  
SUPERELEVATION



TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION

END PROJECT  
STA 437+81  
BUTT JOINT REQ'  
(SEE CONSTRUCTION DETAILS)

STRUCTURE B-02-0005  
(TO REMAIN)

Y = 329501.03  
X = 551488.37

EP: 448+00.00

GUARDRAIL REHABILITATION  
(SEE CONSTRUCTION DETAILS)

EX R/W

EX R/W

430

440

S69°22'12"E

CURVE 3

PT: 428+73.24

CAMPBELL AVE

ODANAH ST

END CONSTRUCTION  
STA 436+39, 70' RT  
MATCH EXISTING BASE AGGREGATE SIDE ROAD  
(SEE CONSTRUCTION DETAILS)

END CONSTRUCTION  
STA 429+55, 62' RT  
MATCH EXISTING BASE AGGREGATE SIDE ROAD  
(SEE CONSTRUCTION DETAILS)

GOVERNMENT RD

CURVE NO. 3  
PI STA = 412+49.35  
Y = 330786.73  
X = 548073.24  
PC STA = 395+26.98  
Y = 330404.18  
X = 546393.89  
PT STA = 428+73.24  
Y = 330179.89  
X = 549685.16  
DELTA = 33°27'45"  
D = 1°00'00"  
T = 1722.37'  
L = 3346.26'  
R = 5729.58'  
MATCH EXISTING  
SUPERELEVATION

BAD RIVER

TOWN OF SANBORN /  
BAD RIVER BAND OF THE LAKE  
SUPERIOR TRIBE OF THE  
CHIPPEWA INDIAN  
RESERVATION

PROJECT NO: 1180-00-82

HWY: USH 2

COUNTY: ASHLAND

PLAN

SHEET

25

E

FILE NAME : Y:\57XX\5753.DP.24.USH2.ASH\CADD\11800082\SHEETS\050201-PN.DWG  
LAYOUT NAME - 06

PLOT DATE : 9/18/2026 2:12 PM

PLOT BY : PARKER TISCHAUSER

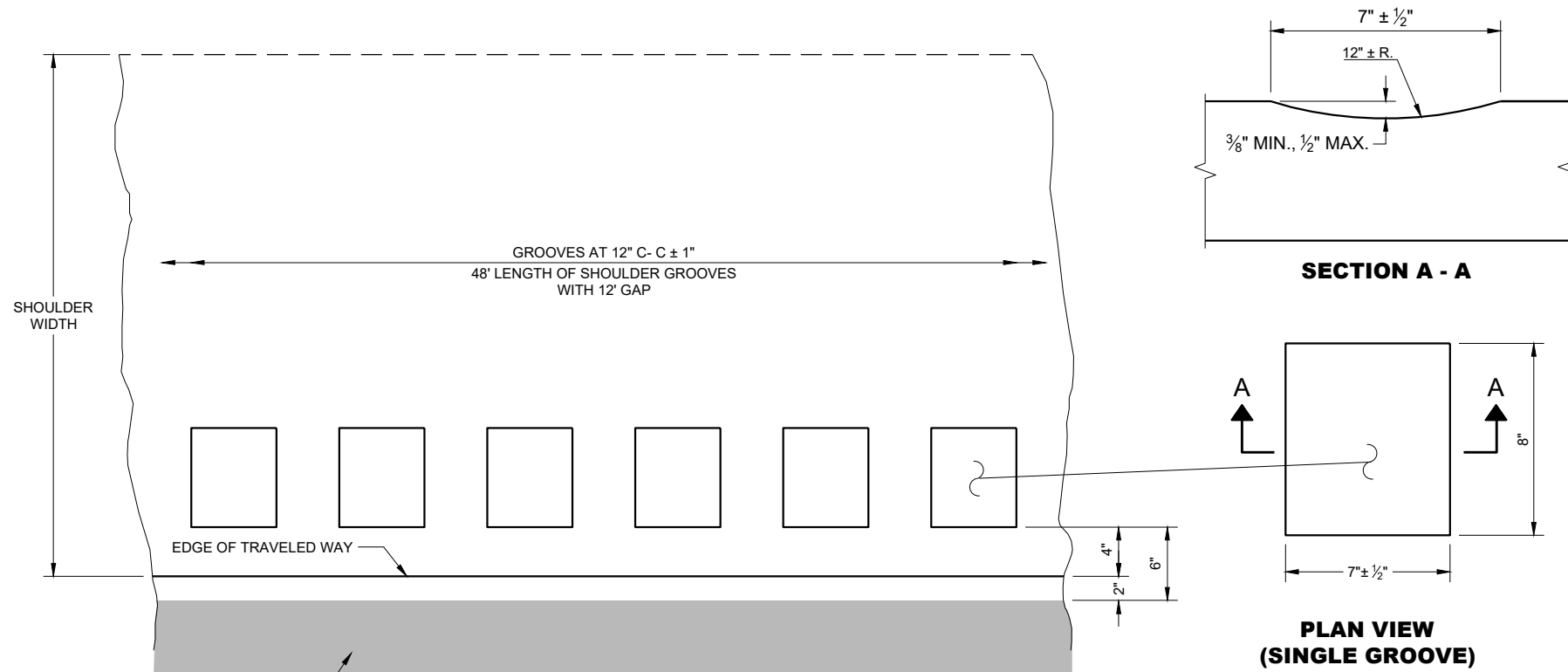
PLOT NAME :

PLOT SCALE : 1 IN:500 FT

WISDOT/CADD SHEET 42

Standard Detail Drawing List Standard Detail Drawing List

|           |                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------|
| 13A10-03A | SHOULDER RUMBLE STRIPS ASPHALT                                                                     |
| 13A10-03G | SHOULDER AND EDGE LINE RUMBLE STRIPS - CROSSINGS, INTERSECTIONS, BRIDGES, DRIVEWAYS                |
| 13A11-04A | CENTERLINE RUMBLE STRIPS - ASPHALT                                                                 |
| 13A11-04D | CENTERLINE RUMBLE STRIPS - INTERSECTIONS, DRIVEWAYS, BRIDGES, RAILROADS                            |
| 13C19-03  | HMA LONGITUDINAL JOINTS                                                                            |
| 14B28-04A | GUARDRAIL MOW STRIP                                                                                |
| 14B28-04B | GUARDRAIL MOW STRIP                                                                                |
| 14B42-07A | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                                           |
| 14B42-07B | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                                           |
| 14B42-07C | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                                           |
| 14B42-07D | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                                           |
| 14B44-04A | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)                                           |
| 14B44-04B | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)                                           |
| 14B44-04C | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)                                           |
| 14B45-05A | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05B | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05C | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05D | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05E | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05F | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05G | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05H | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05I | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05J | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05K | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B45-05L | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                                               |
| 14B53-03A | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03B | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03C | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03D | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03E | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03F | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03G | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03H | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 14B53-03I | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                                          |
| 15C04-05  | TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC |
| 15C08-24A | PERMANENT LONGITUDINAL PAVEMENT MARKINGS                                                           |
| 15C08-24B | TEMPORARY LONGITUDINAL PAVEMENT MARKING                                                            |
| 15C11-11B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS                                  |
| 15C12-09A | TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION                                           |
| 15C12-09B | TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE                             |
| 15C19-11A | MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY                                         |
| 15C35-06A | PAVEMENT MARKING (INTERSECTIONS)                                                                   |
| 15D28-06  | TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY                               |
| 15D39-03  | TRAFFIC CONTROL, DROP-OFF SIGNING                                                                  |
| 15D44-02  | TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES                                          |
| 15D45-03  | TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL                                             |
| 15D51-02  | TRAFFIC CONTROL, MOBILE OPERATIONS ON AN UNDIVIDED ROADWAY                                         |
| 16A02-01  | GEODETIC SURVEY MONUMENT                                                                           |

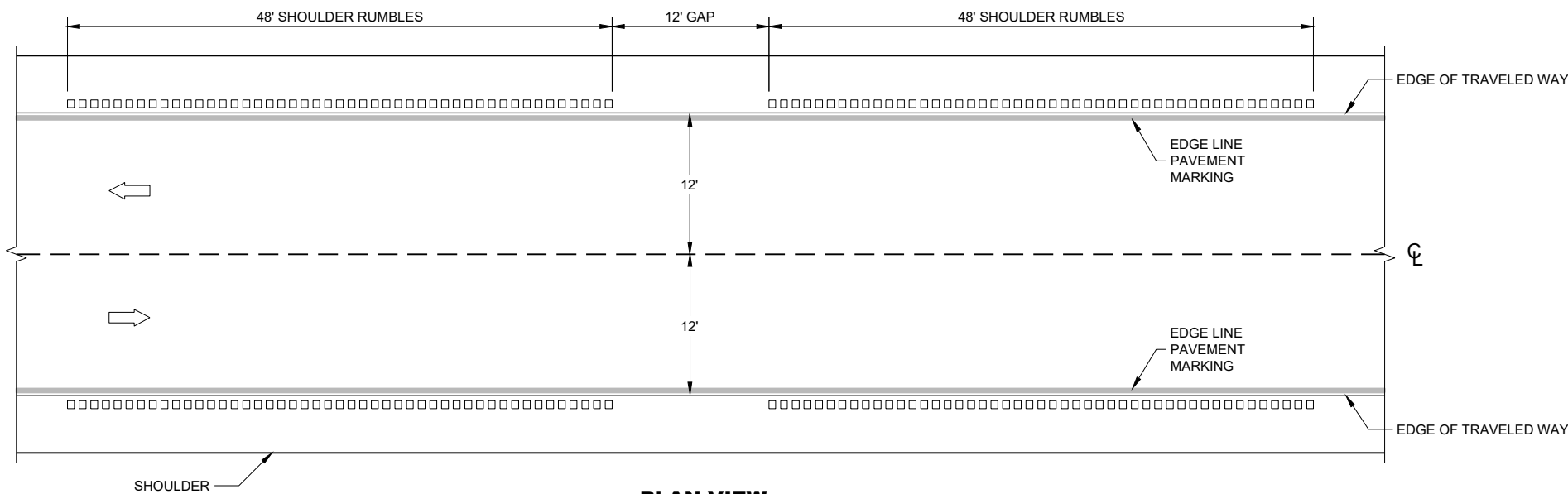
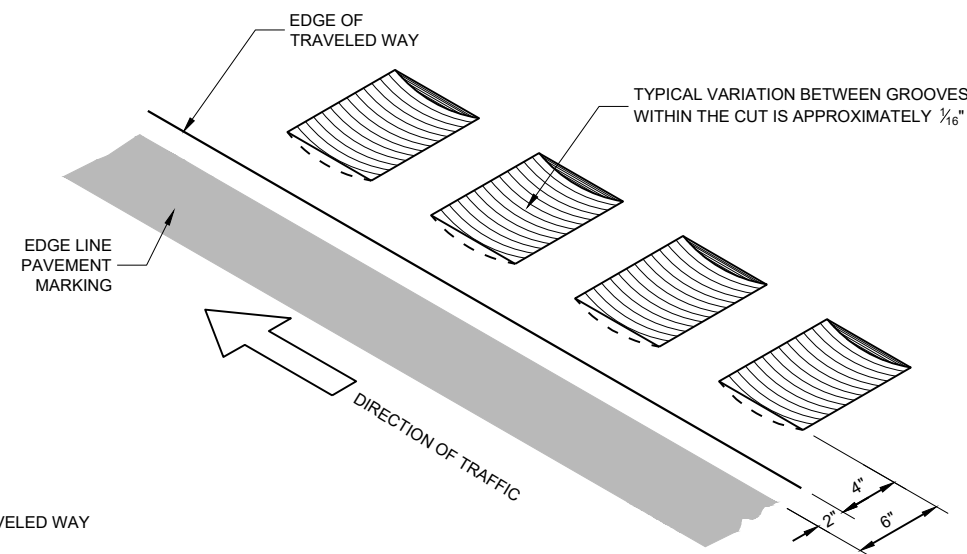


PLAN DETAIL VIEW  
SHOULDER WITH GROOVES

GENERAL NOTES

DO NOT MILL SHOULDER GROOVES THROUGH INTERSECTIONS, MARKED CROSSWALKS, NON-MOTORIZED PATH CROSSINGS, ETC. REFER TO SDD 13A10 SHEETS "g" AND "h".

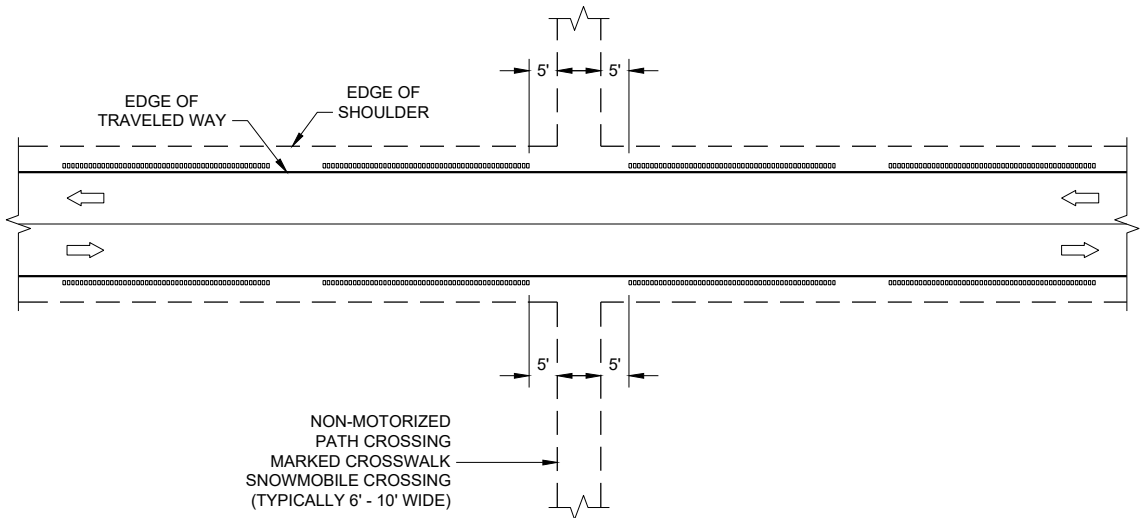
SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS WHEN DIRECTED BY THE ENGINEER.



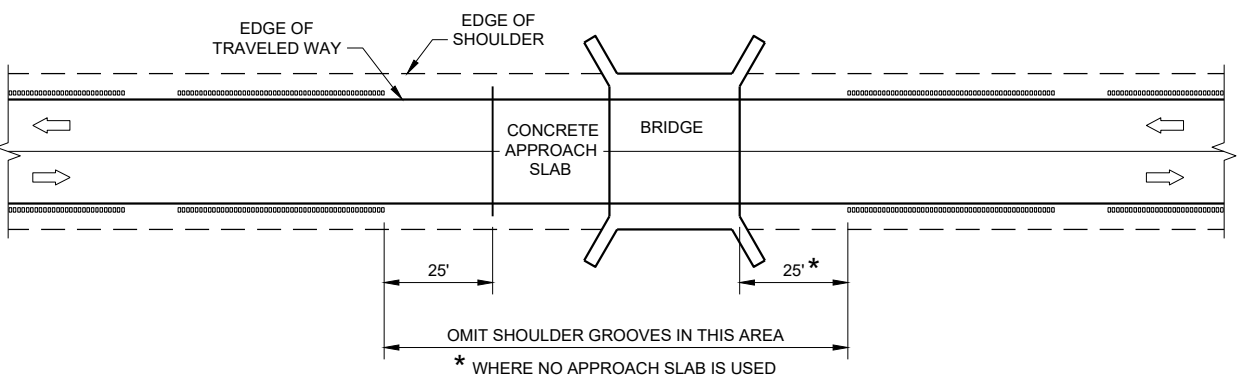
SHOULDER RUMBLE STRIPS - ASPHALT

SHOULDER RUMBLE  
STRIPS ASPHALT

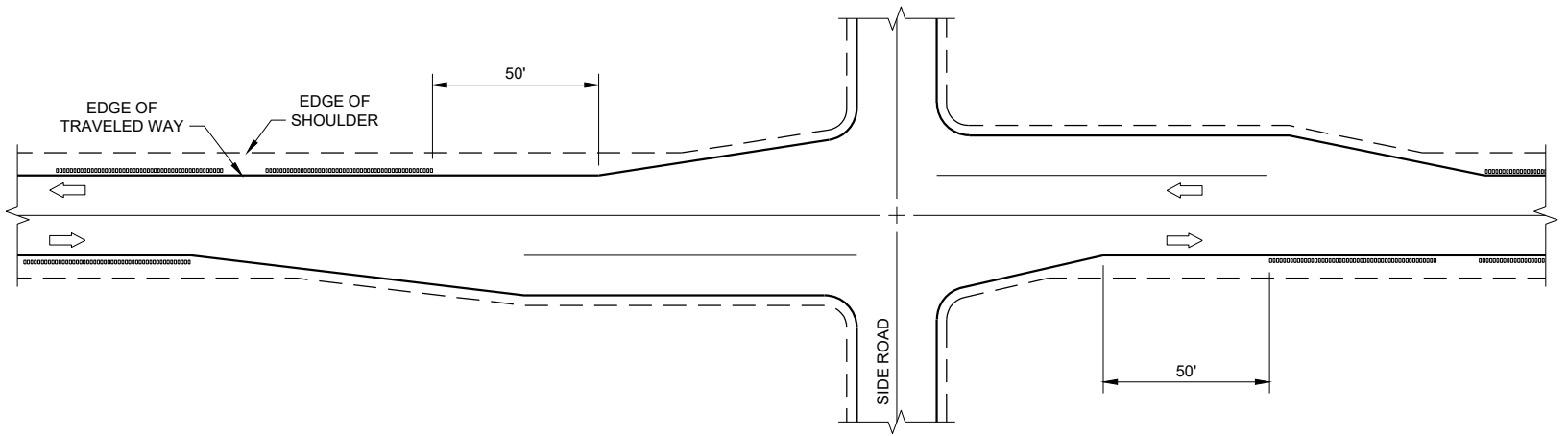
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



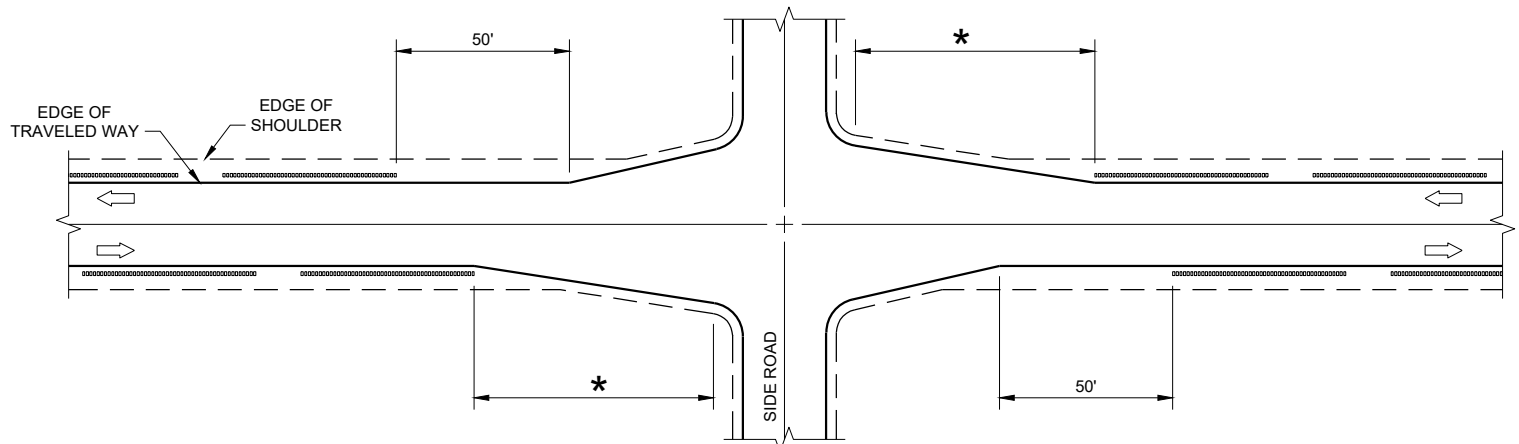
GROOVES AT MISCELLANEOUS CROSSINGS



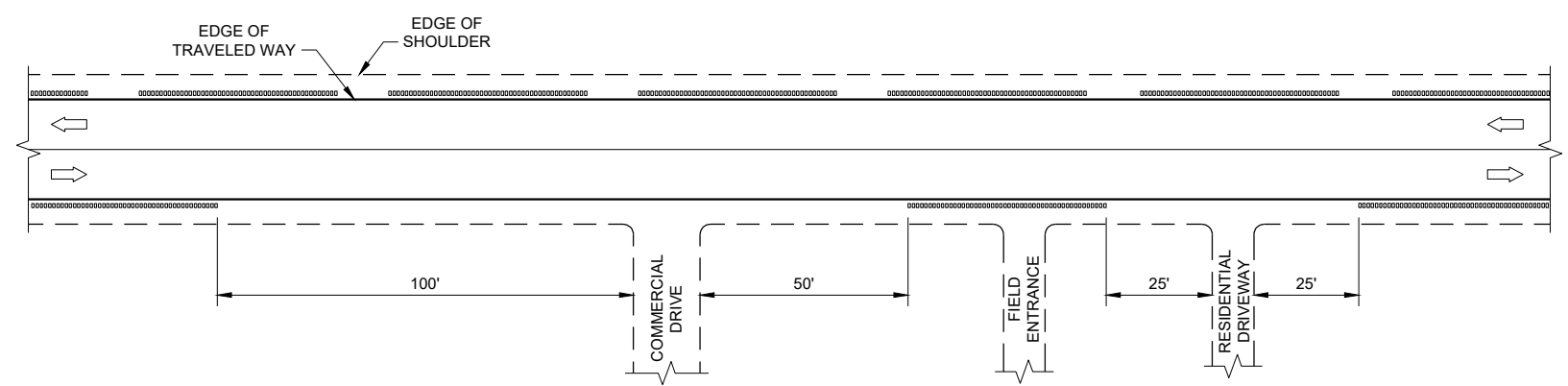
GROOVES AT BRIDGES



GROOVES AT RIGHT TURN LANE



GROOVES AT INTERSECTIONS WITH APPROACH TAPER



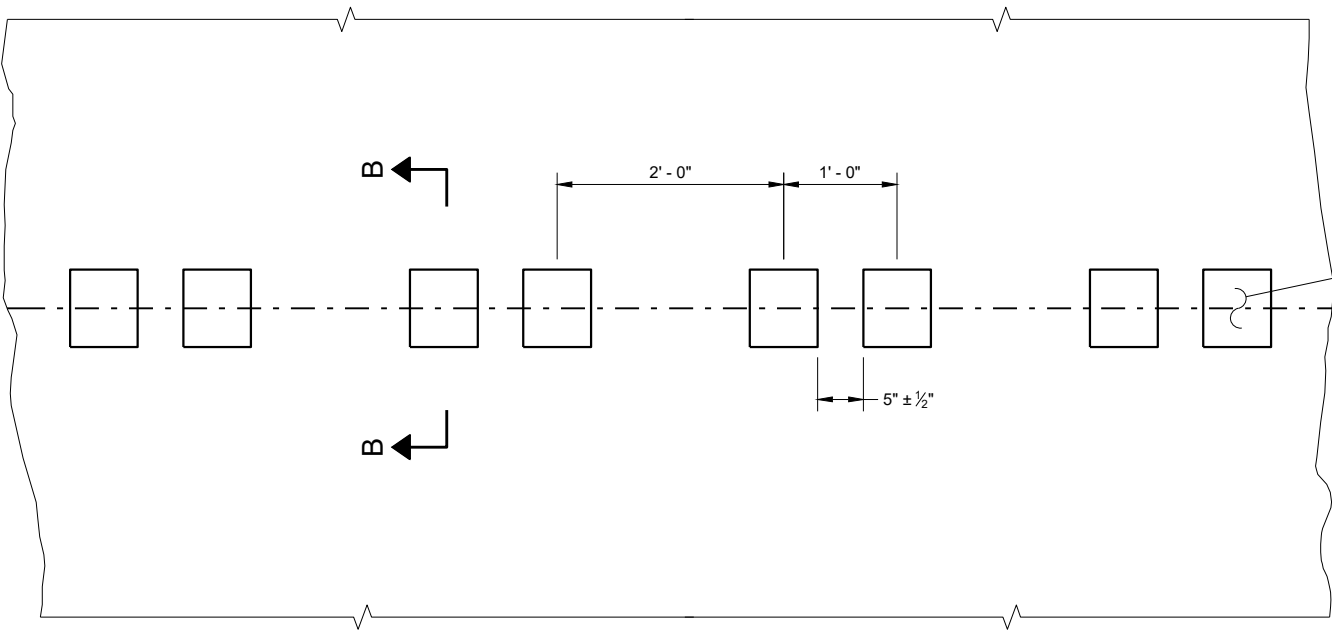
GROOVES AT DRIVEWAYS

GENERAL NOTES

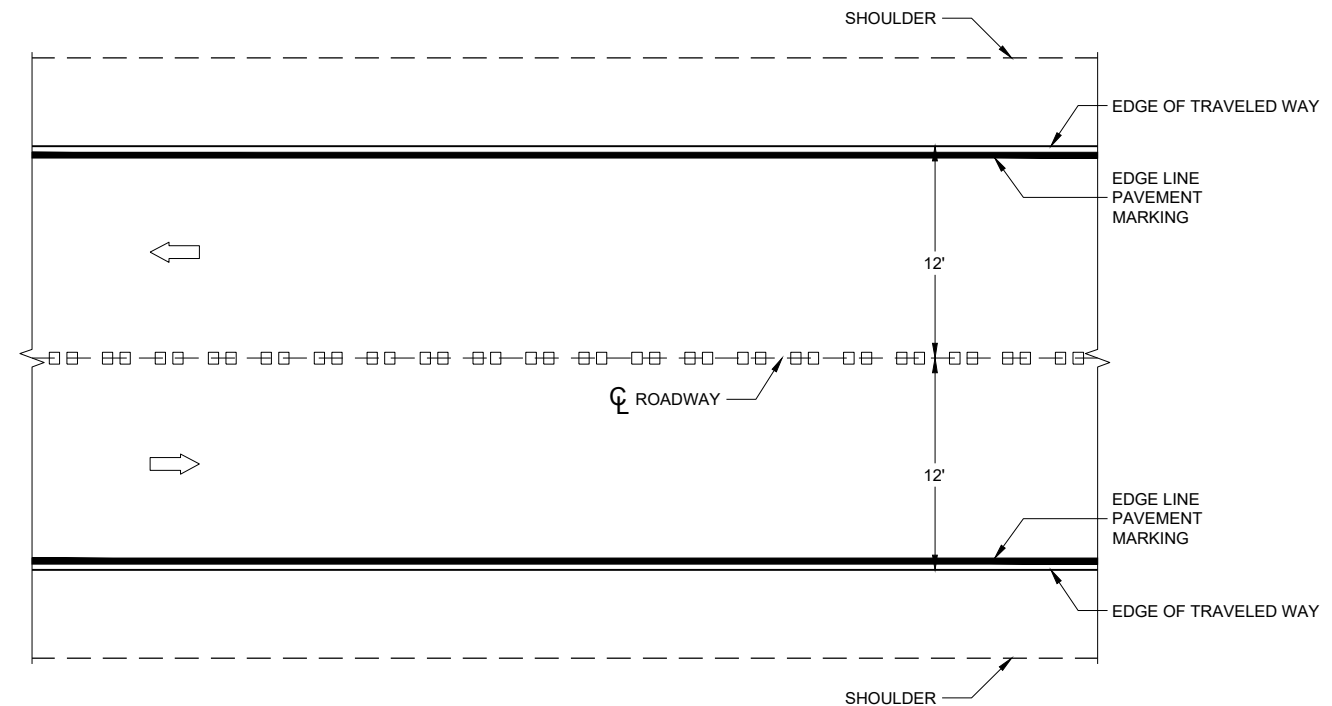
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.

**SHOULDER AND EDGE LINE  
RUMBLE STRIPS  
CROSSINGS, INTERSECTIONS,  
BRIDGES, DRIVEWAYS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

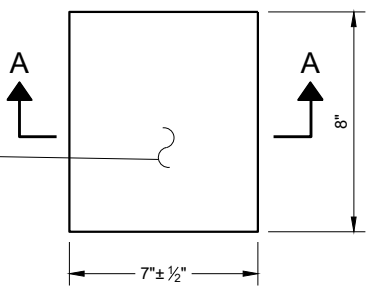


PLAN DETAIL VIEW

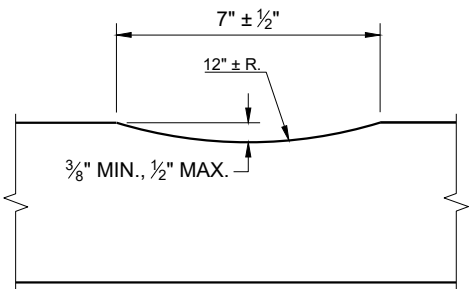


PLAN VIEW

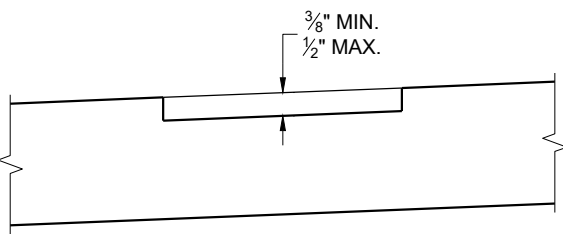
CENTERLINE RUMBLE STRIPS - ASPHALT



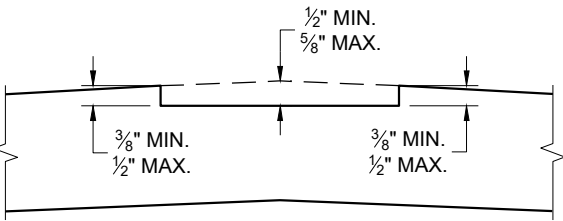
PLAN VIEW  
(SINGLE GROOVE)



SECTION A - A



SECTION B - B  
SUPERELEVATED ROADWAY

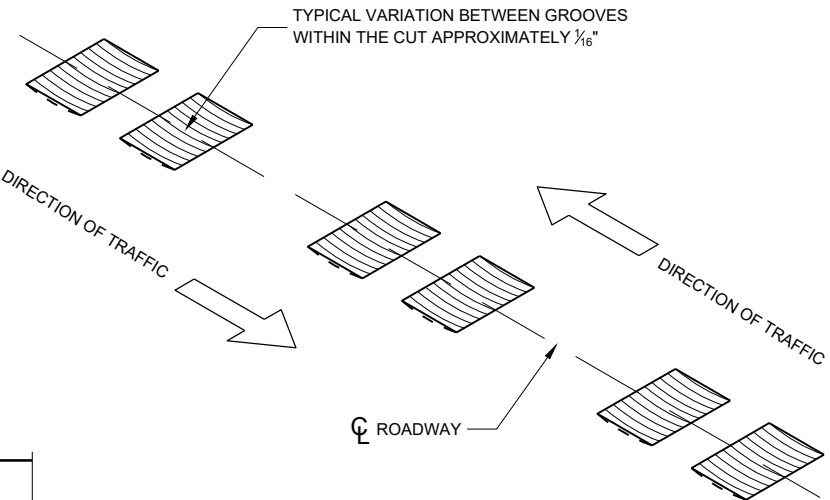


SECTION B - B  
CROWNED ROADWAY

GENERAL NOTES

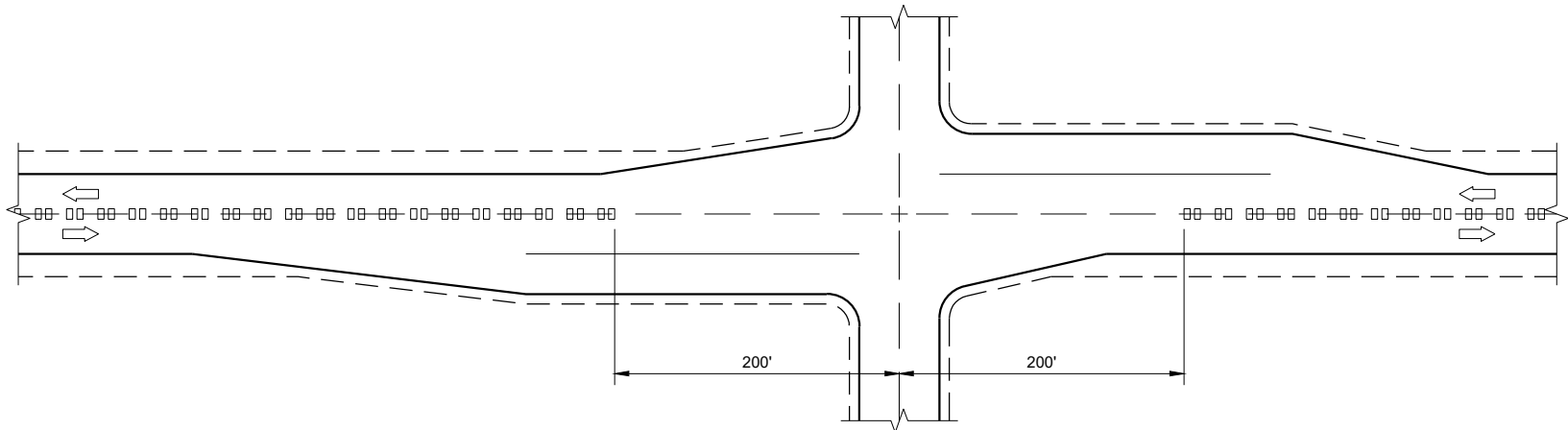
DO NOT MILL SHOULDER GROOVES THROUGH INTERSECTIONS, MARKED CROSSWALKS, NON-MOTORIZED PATH CROSSINGS, ETC. REFER TO SDD 13A11 SHEETS "d" AND "e".

CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS WHEN DIRECTED BY THE ENGINEER.

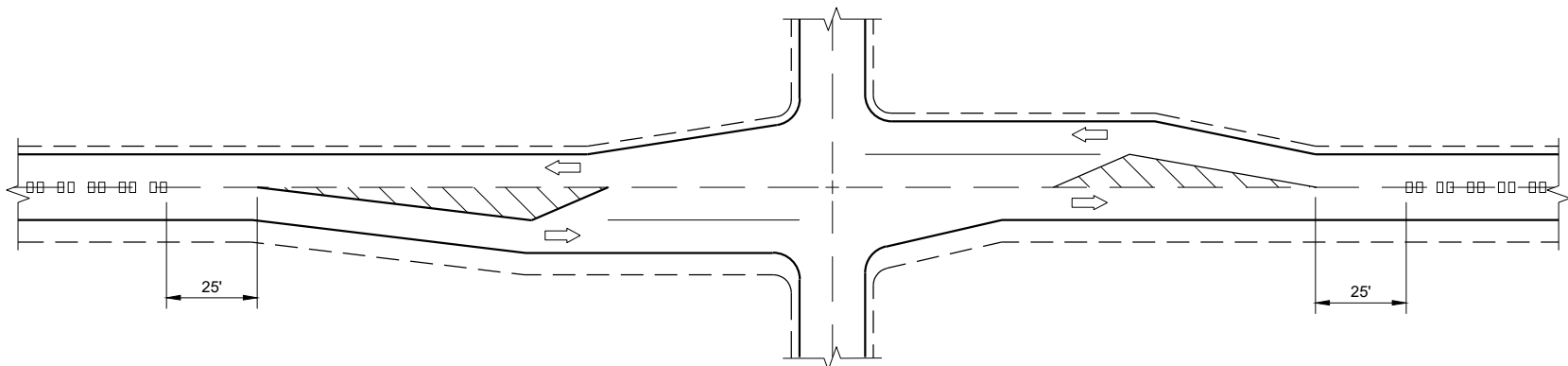


CENTERLINE RUMBLE STRIPS - ASPHALT

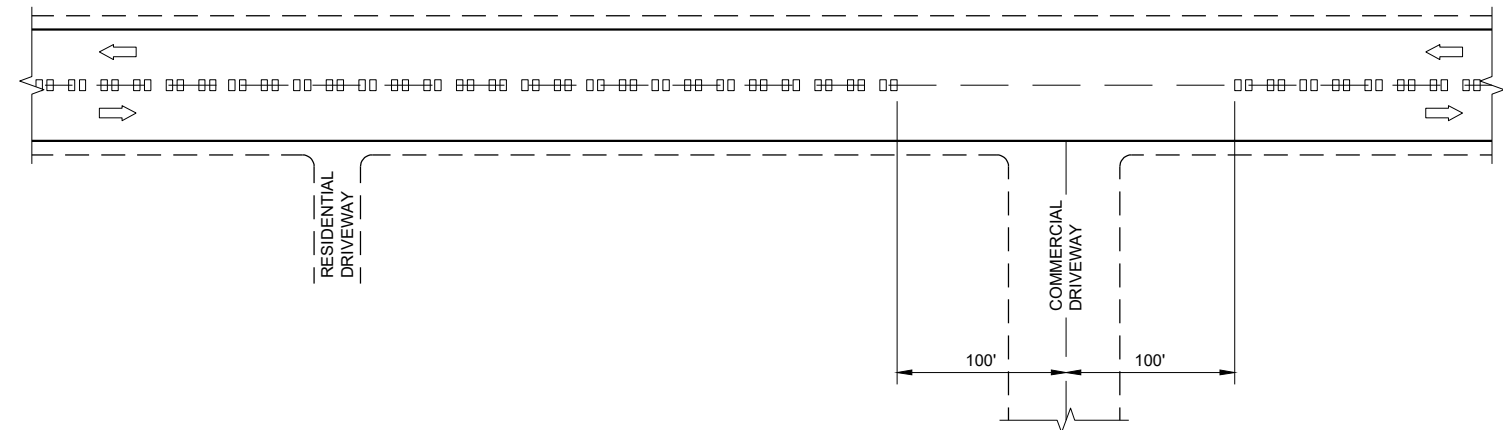
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



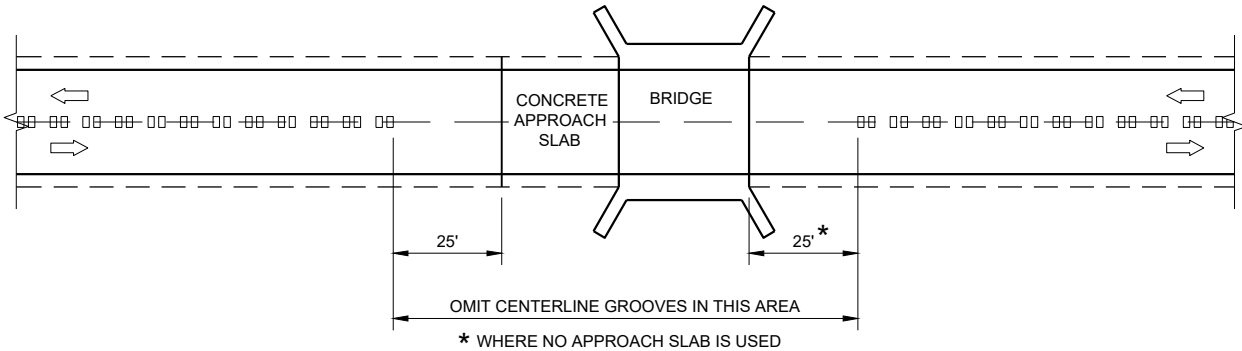
CENTERLINE GROOVES AT INTERSECTIONS  
(WITH LEFT TURN LANES)



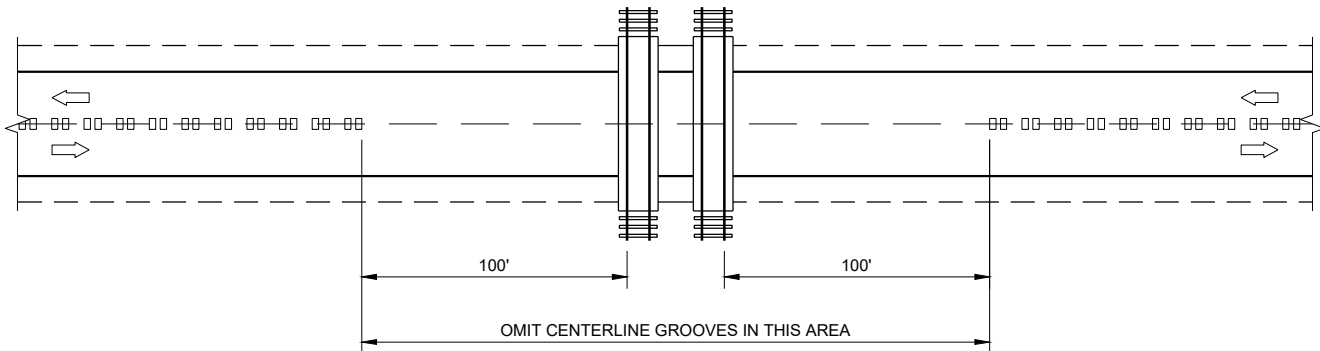
CENTERLINE GROOVES AT DRIVEWAYS<sup>①</sup>

GENERAL NOTES

① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS WHEN DIRECTED BY THE ENGINEER.



CENTERLINE GROOVES AT BRIDGES

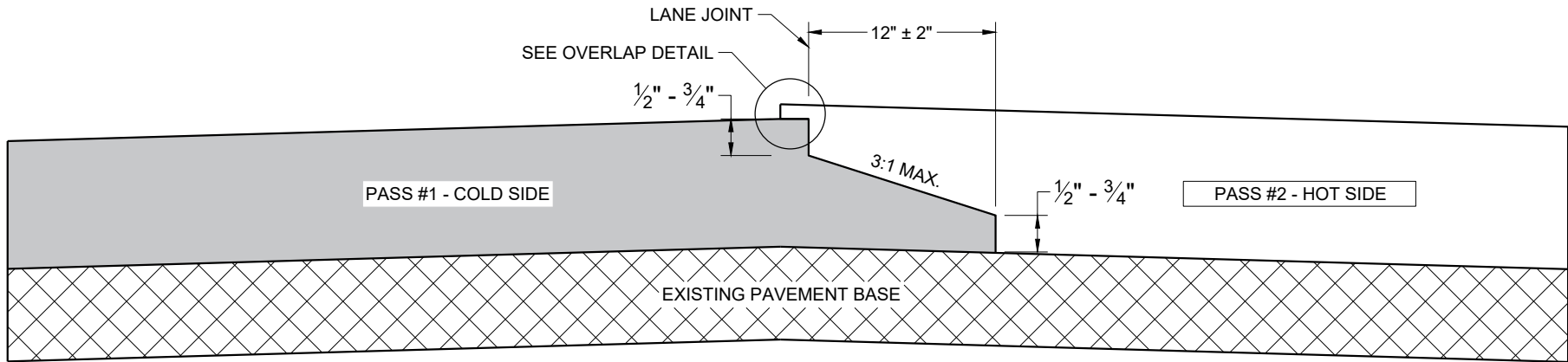


CENTERLINE GROOVES AT RAILROADS

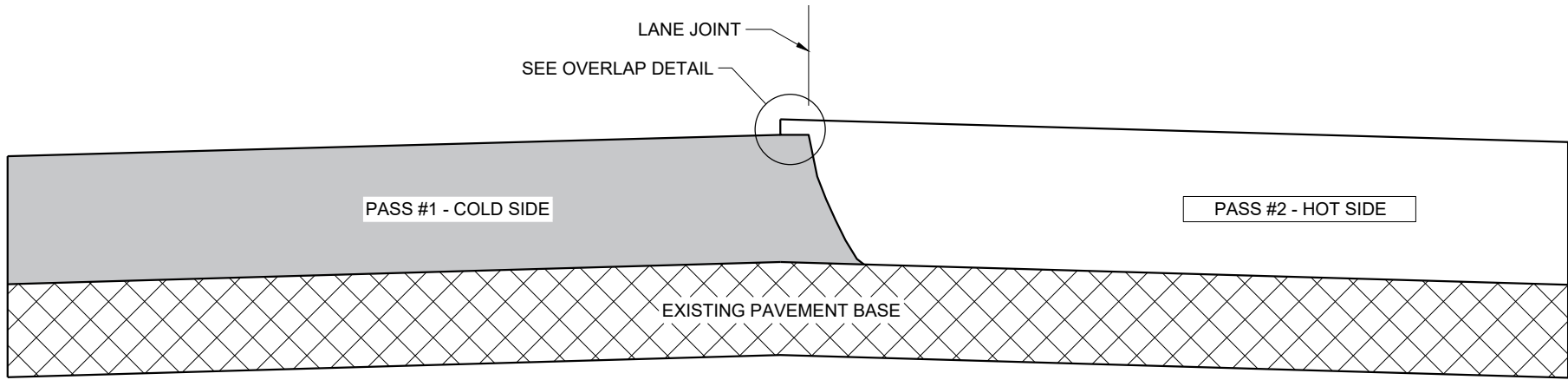
CENTER LINE  
RUMBLE STRIPS -  
INTERSECTIONS, DRIVEWAYS,  
BRIDGES, RAIL ROADS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

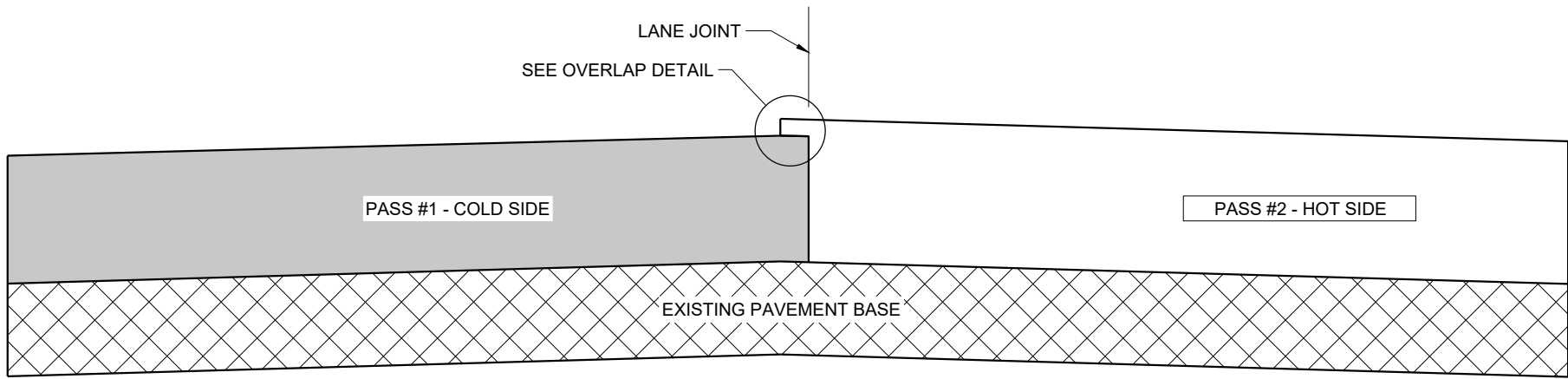
APPROVED  
May 2023  
DATE  
/S/ John Jenkins  
ROADWAY STANDARDS DEVELOPMENT ENGINEER  
30  
FHWA



**TYPICAL PAVEMENT CROSS SECTION  
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT**



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

**GENERAL NOTES**

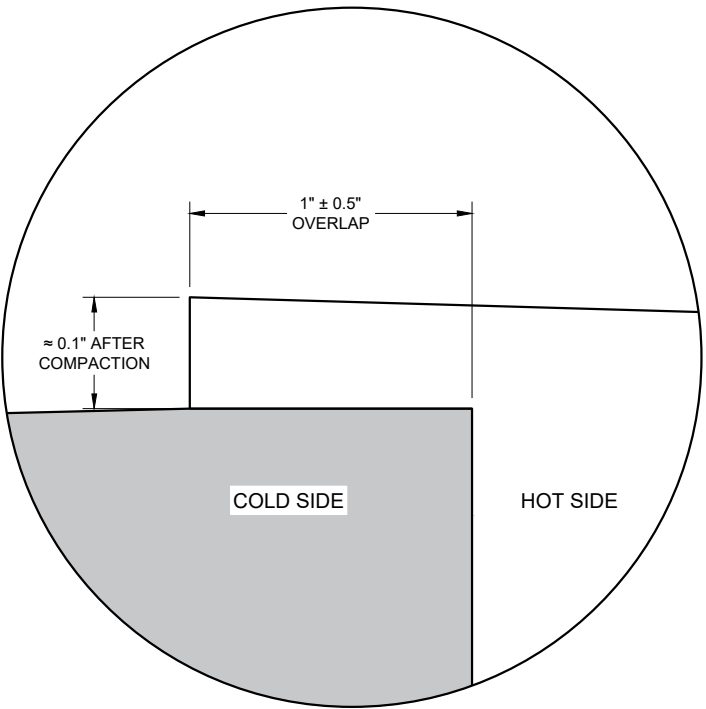
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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

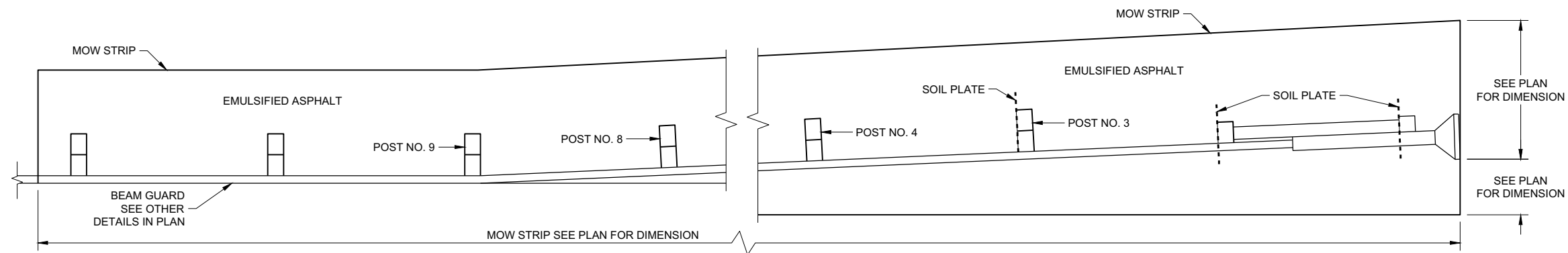


**OVERLAP DETAIL (TYPICAL)**

**HMA LONGITUDINAL JOINTS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2020 /S/ Steven Hefel  
DATE HMA PAVEMENT ENGIN 31  
FHWA

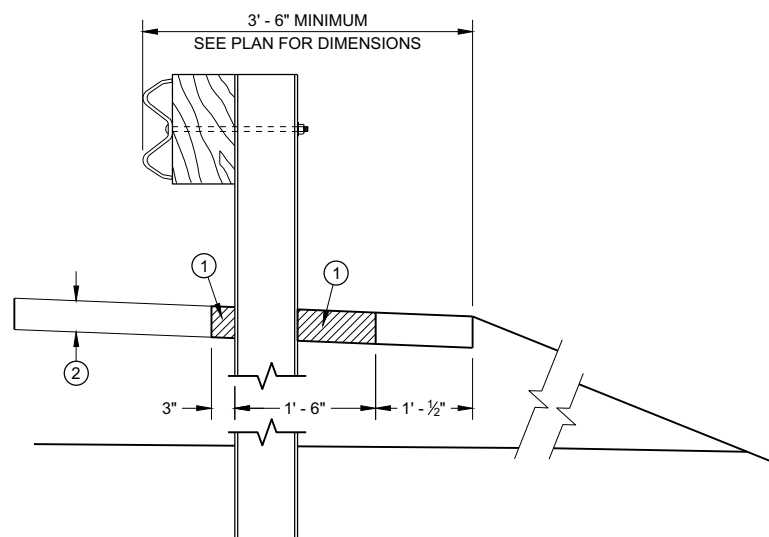


**PLAN VIEW**  
**MOW STRIP LAYOUT FOR ENERGY ABSORBING TERMINAL**

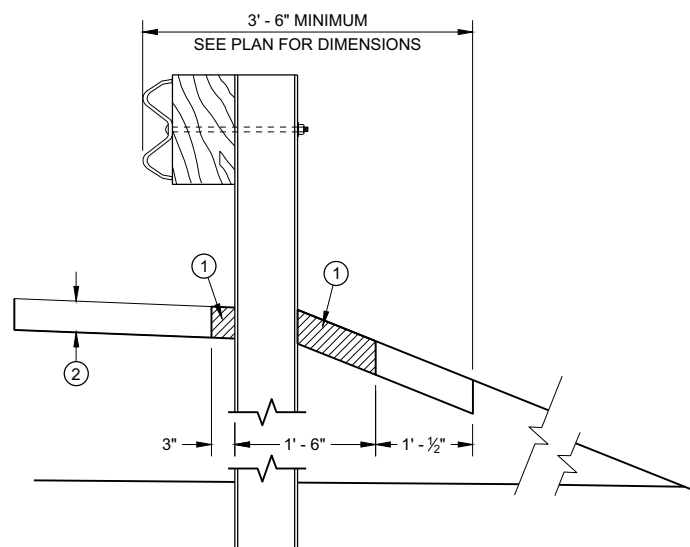
**GENERAL NOTES**

ONLY USE STEEL POSTS IN CONCRETE AND ASPHALT MOW STRIPS.

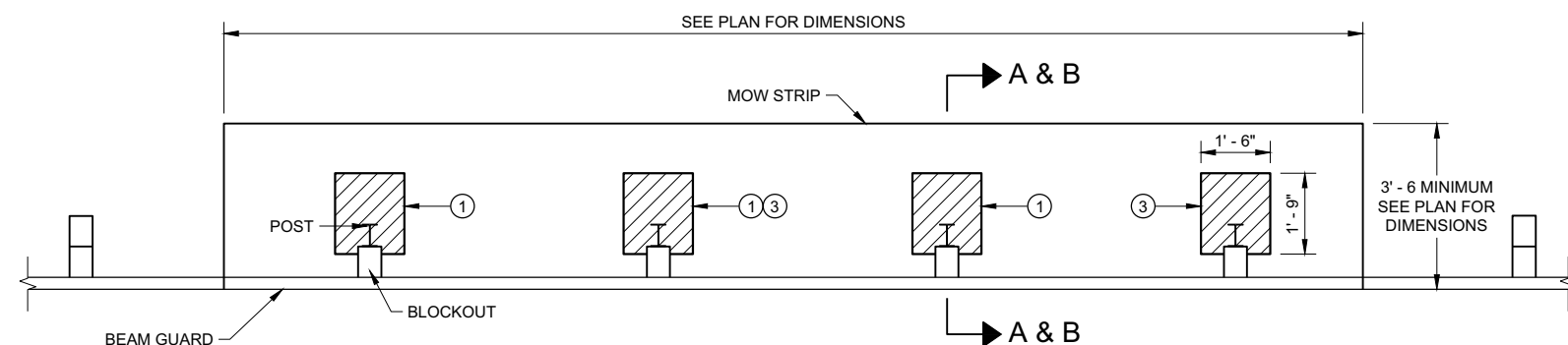
- ① CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
- ② DEPTH OF MOW STRIP:  
ASPHALT - 4"  
CONCRETE - 4"  
EMULSIFIED ASPHALT - 1" OR LESS
- ③ FOR EMULSIFIED ASPHALT, MOW STRIP STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS)



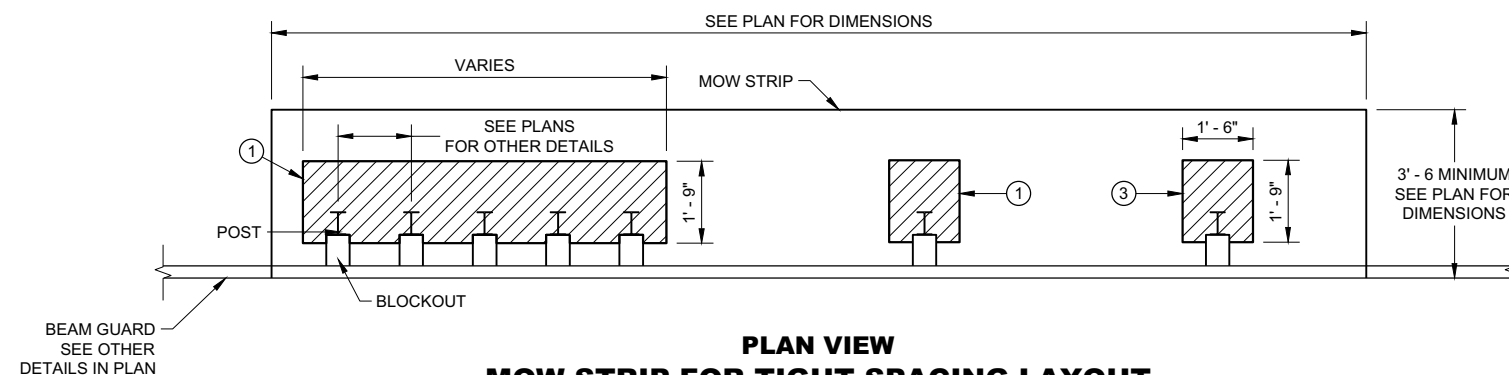
**SECTION A - A**



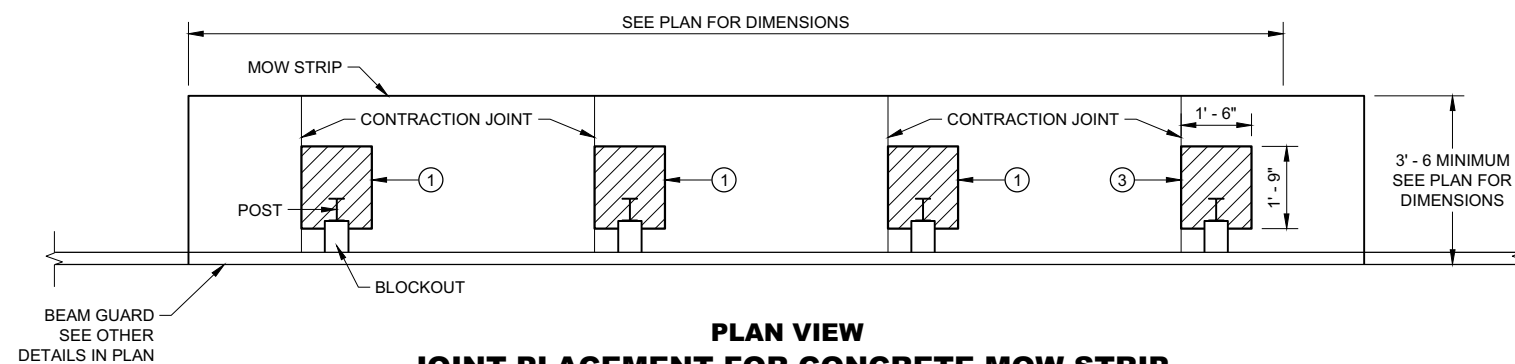
**SECTION B - B**



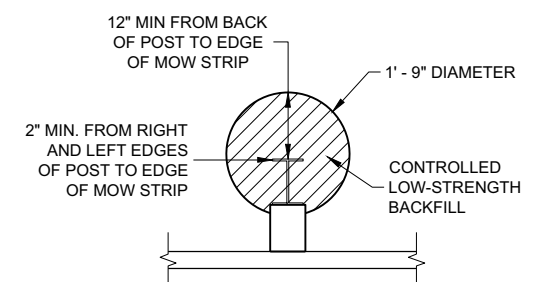
**PLAN VIEW**  
**MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT**



**PLAN VIEW**  
**MOW STRIP FOR TIGHT SPACING LAYOUT**



**PLAN VIEW**  
**JOINT PLACEMENT FOR CONCRETE MOW STRIP**



**ALTERNATIVE HMA**  
**MOW STRIP DESIGN**

**GUARDRAIL MOW STRIP**

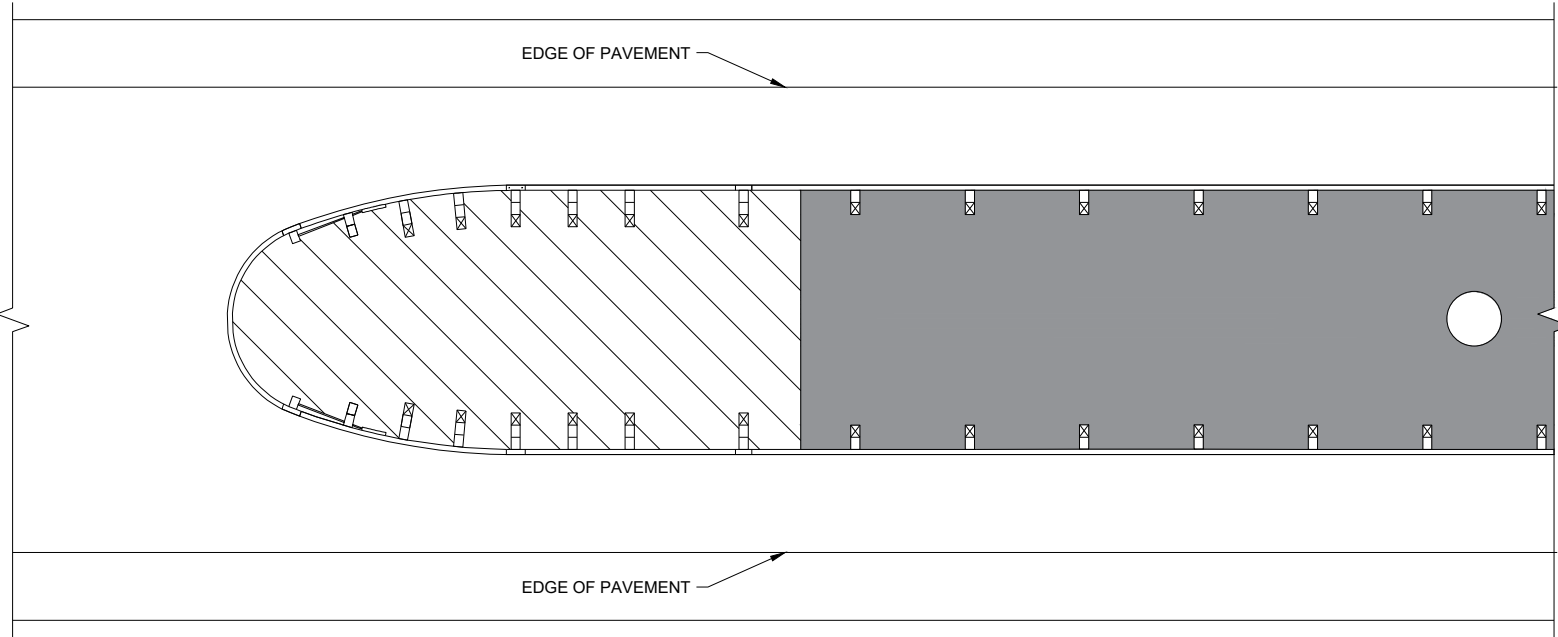
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

LEGEND

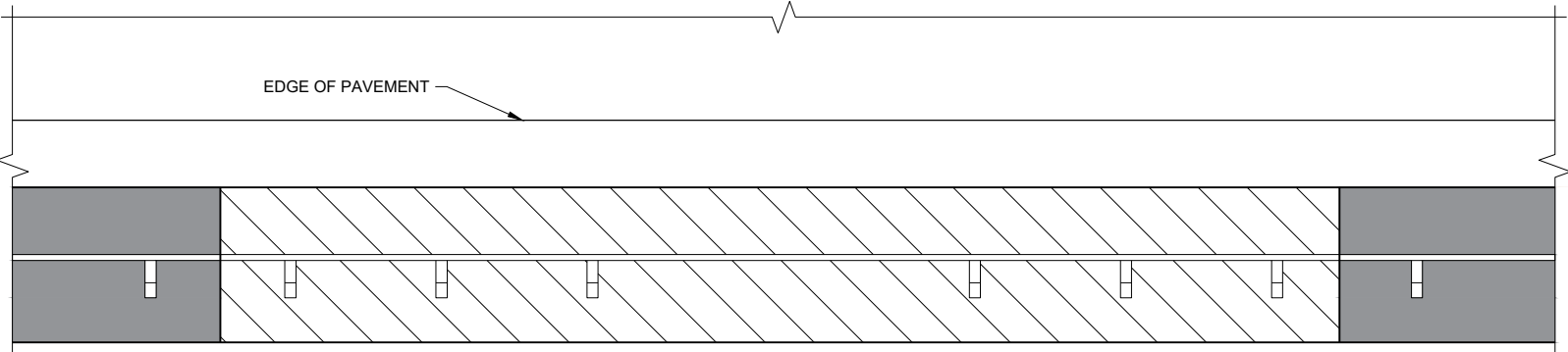
- CONCRETE, ASPHALT, OR EMULSIFIED ASPHALT MOW STRIP (SEE OTHER DETAILS)
- EMULSIFIED ASPHALT MOW STRIP (SEE OTHER DETAILS)

GENERAL NOTES

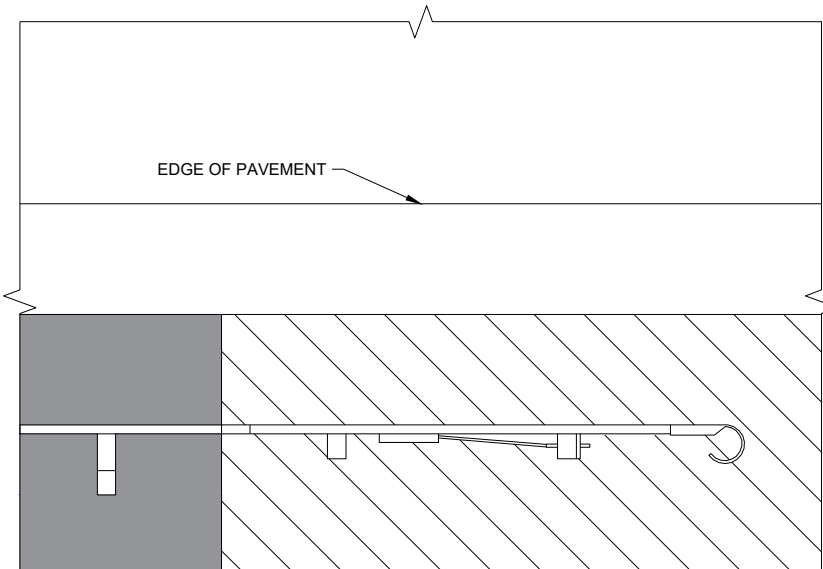
EXISTING THRIE BEAM BULLNOSES MAY HAVE WOOD POSTS. NEW THRIE BEAM BULLNOSE WILL HAVE STEEL POSTS.



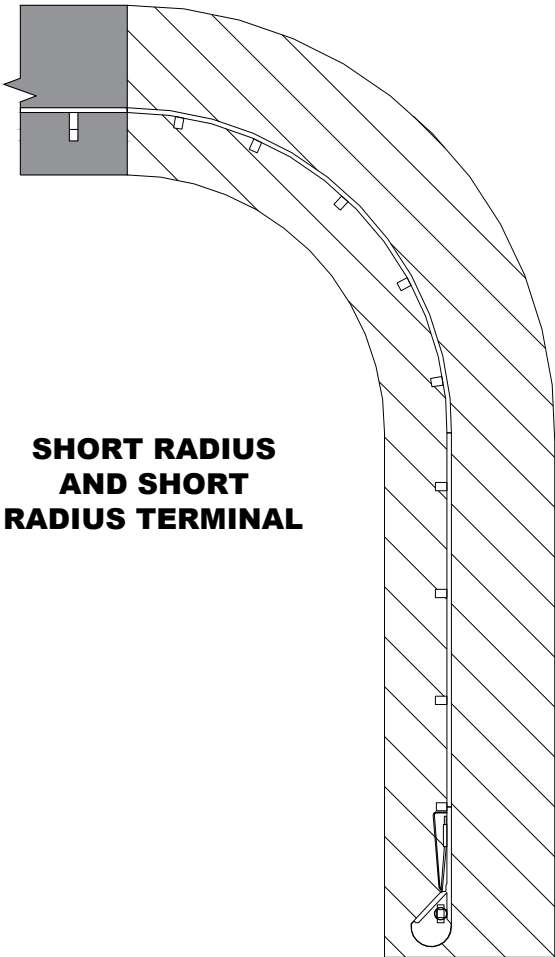
THRIE BEAM BULLNOSE



LONG - SPAN



TYPE 2 TERMINAL



SHORT RADIUS  
AND SHORT  
RADIUS TERMINAL

GUARDRAIL MOW STRIP

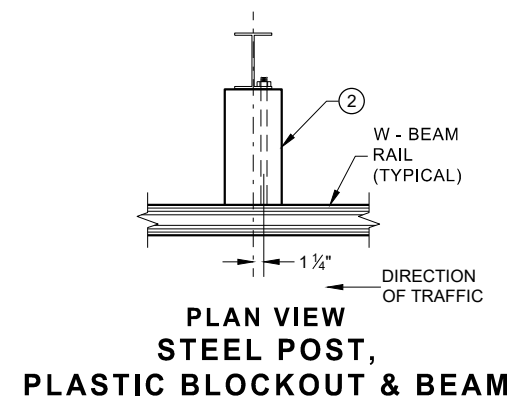
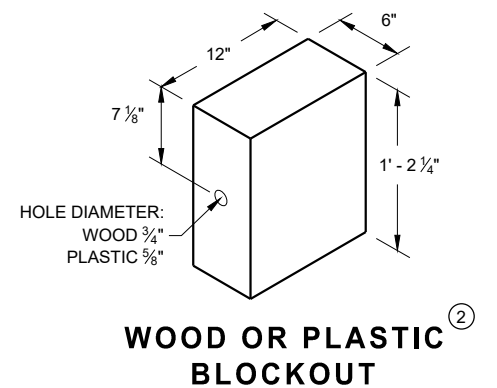
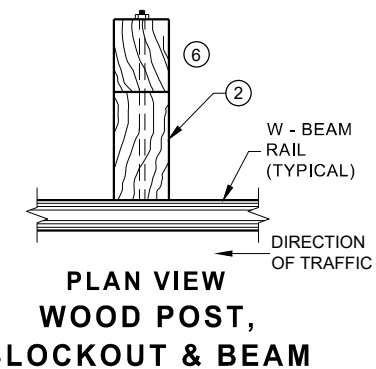
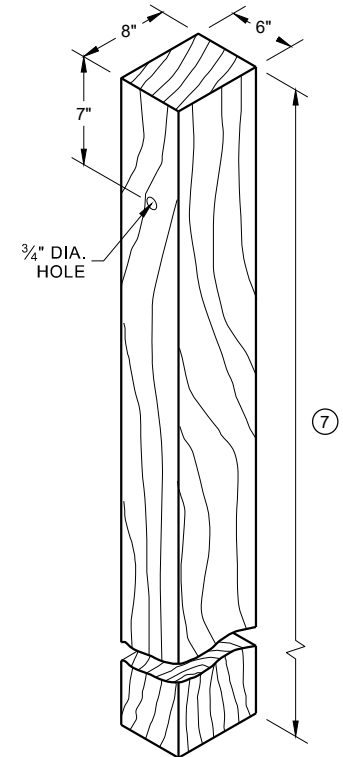
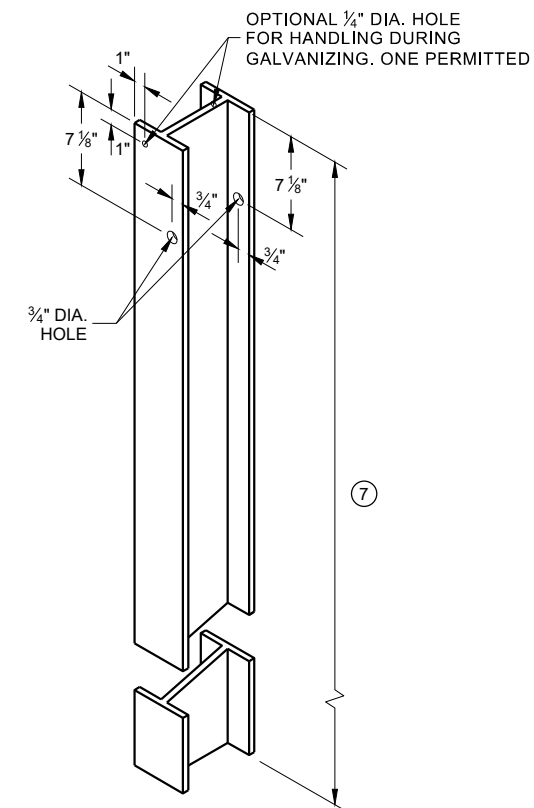
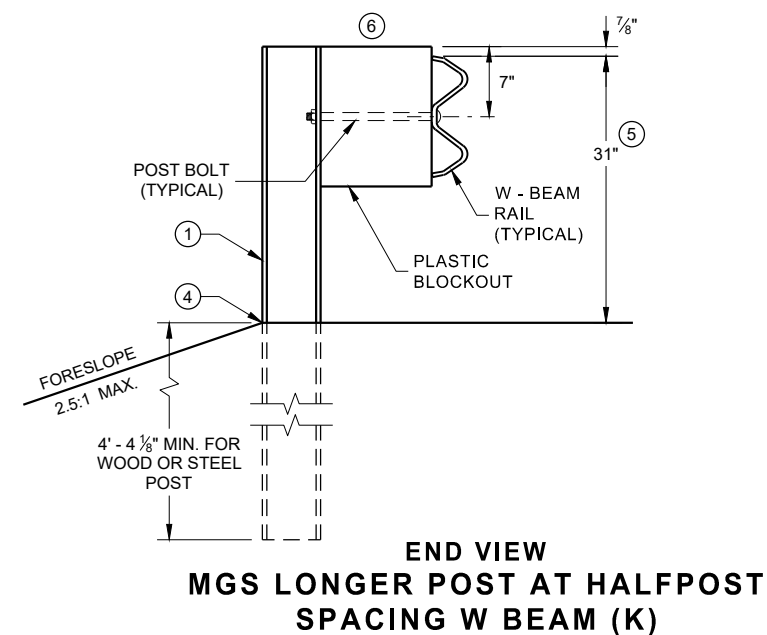
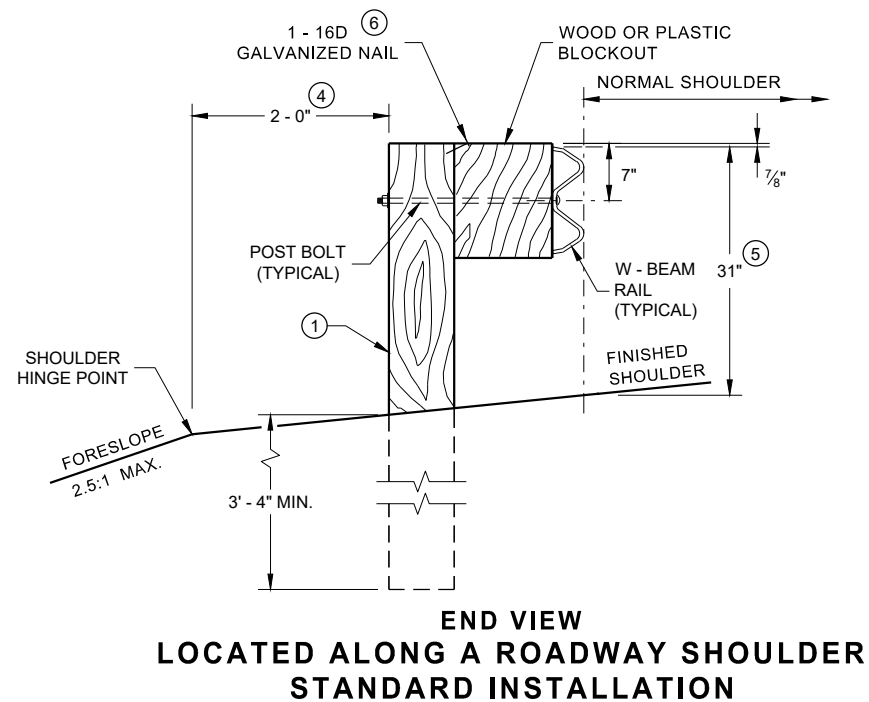
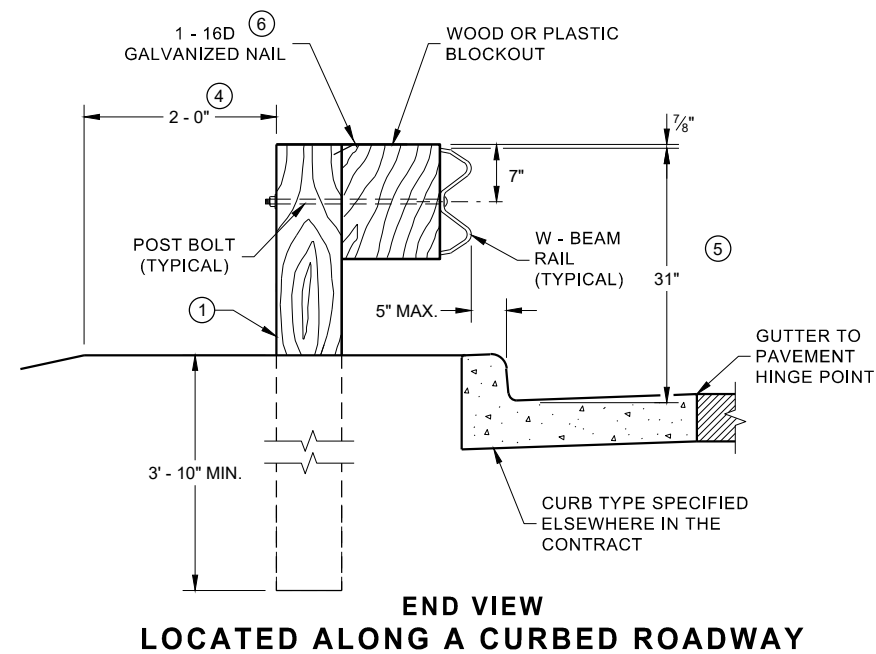
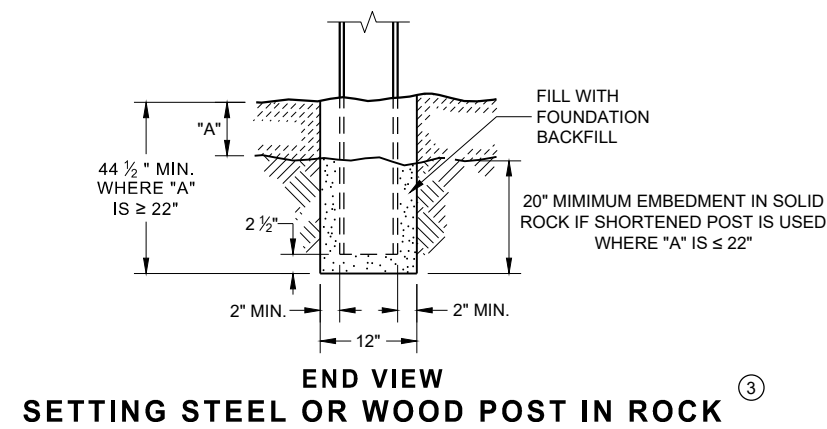
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
August 2020  
DATE

/S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

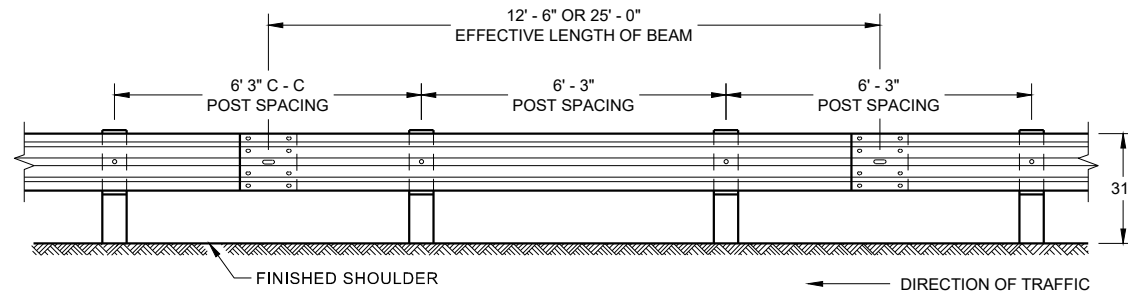
33

- 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  $\pm 1"$ . 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".

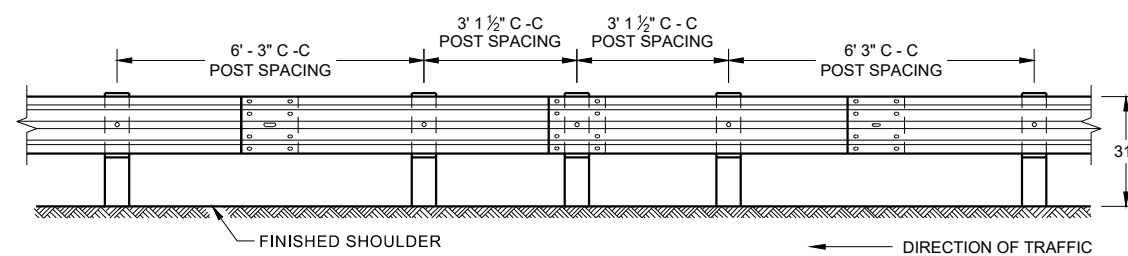


**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

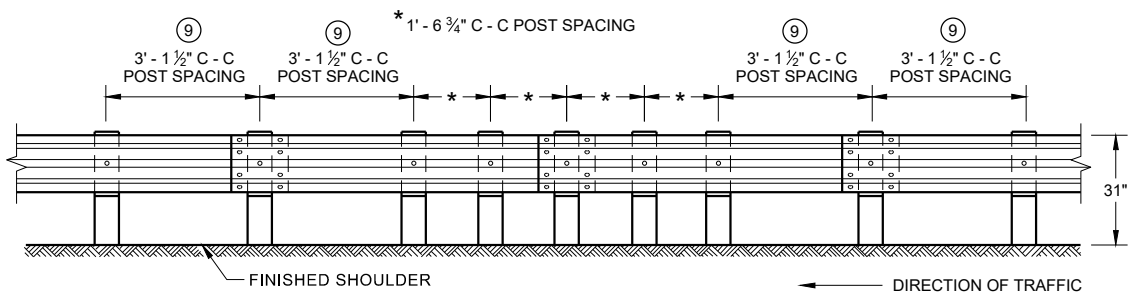
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION 34



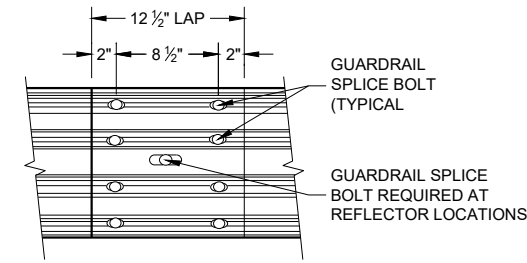
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



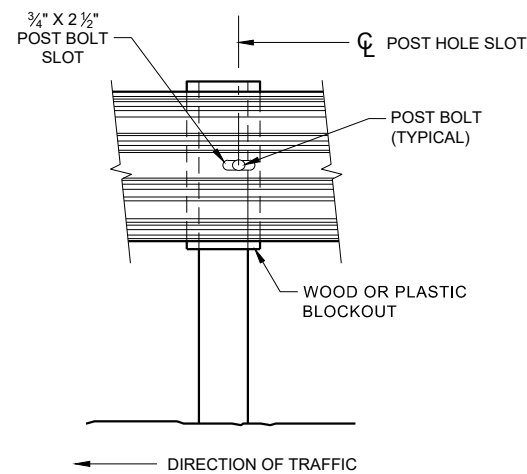
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



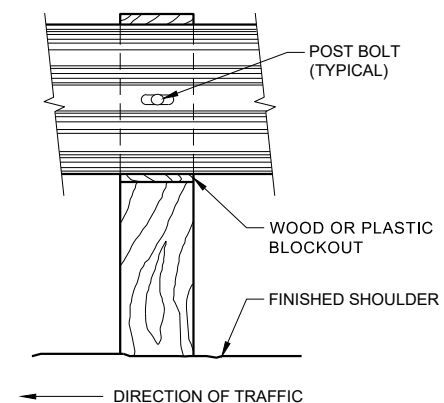
**FRONT VIEW  
QUARTER POST SPACING (QS)**



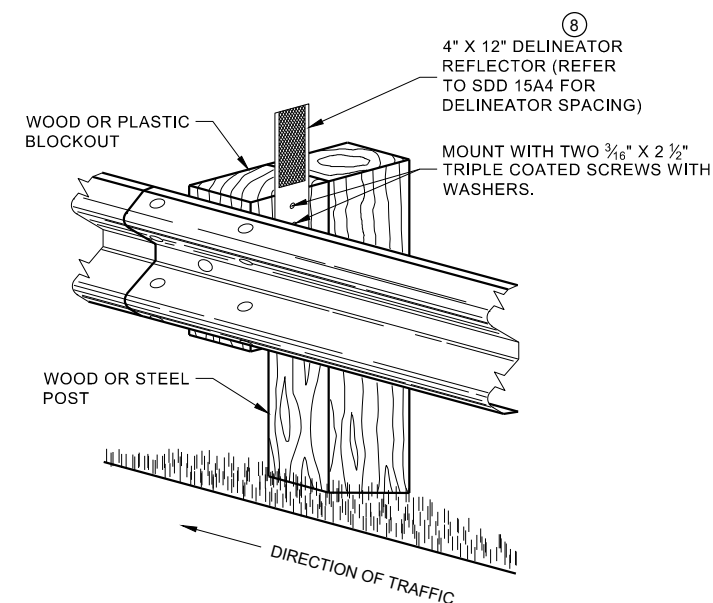
**FRONT VIEW  
MID-SPAN BEAM SPLICE**



**FRONT VIEW AT STEEL POST**



**FRONT VIEW AT WOOD POST**



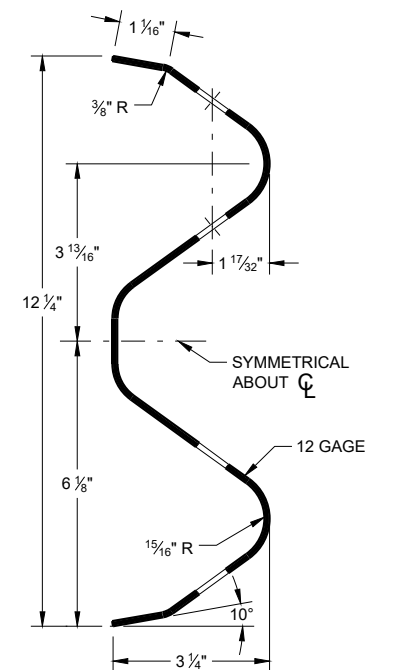
**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

## GENERAL NOTES

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

POST BOLTS ARE A  $\frac{3}{8}$ " DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES  $\frac{3}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND  $\frac{3}{8}$ " DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

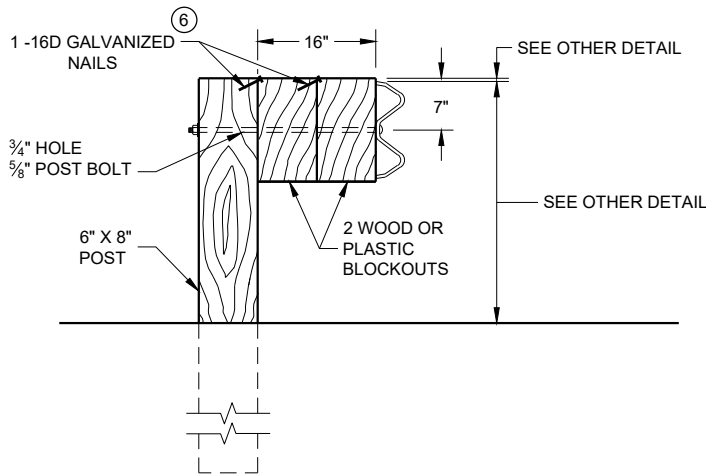
GUARD RAIL SPLICE BOLTS ARE A  $\frac{3}{8}$ " DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES  $\frac{3}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



**SECTION THRU W-BEAM RAIL**

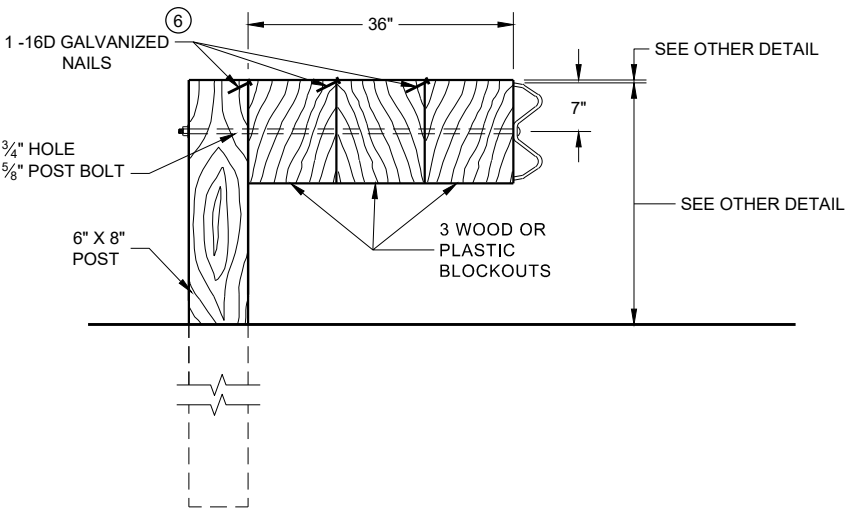
**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

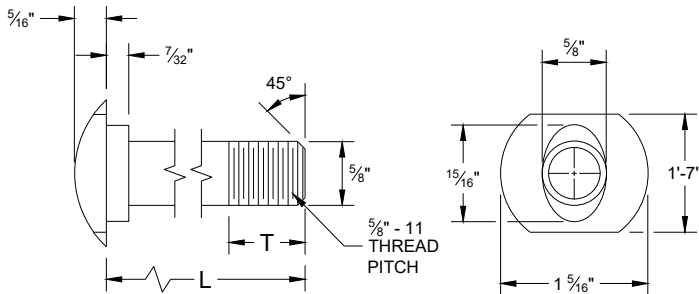
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

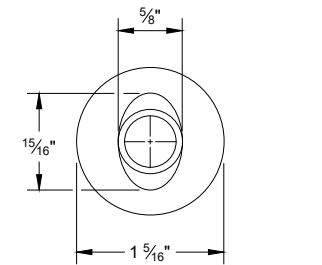
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.  
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE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

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

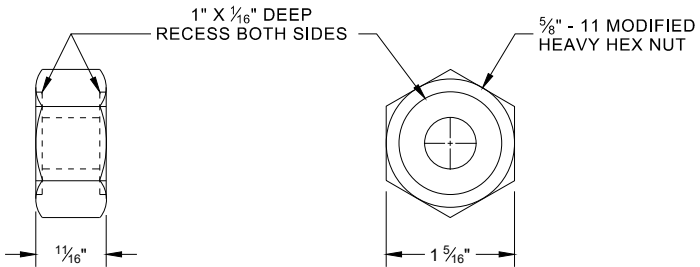


POST BOLT TABLE

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

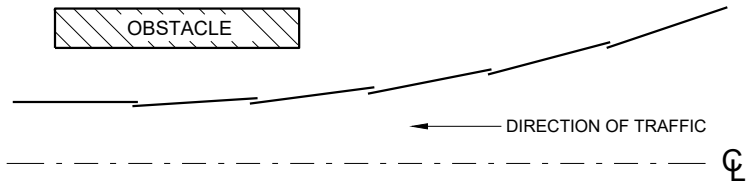


ALTERNATE BOLT HEAD

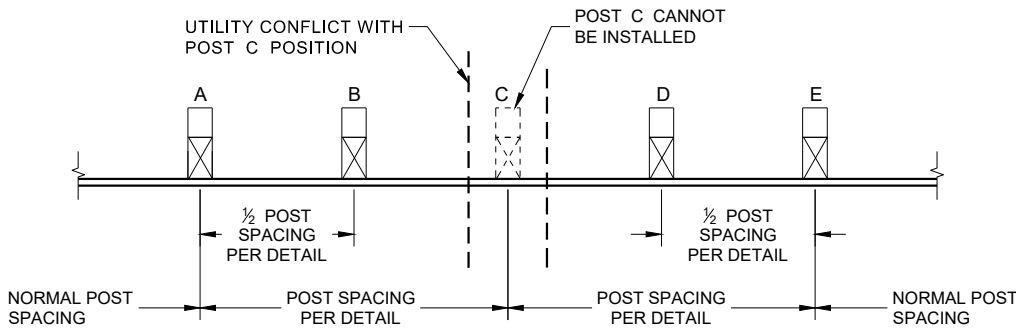


POST BOLT, SPLICE BOLT AND RECESS NUT

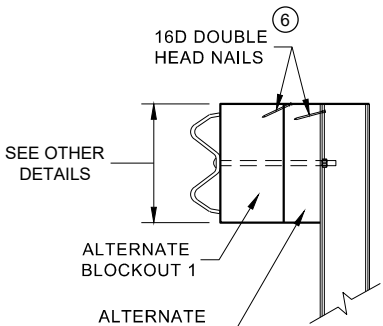
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



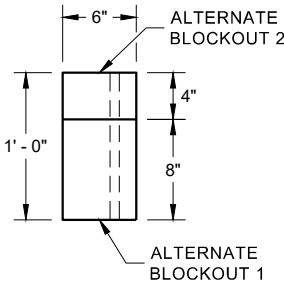
PLAN VIEW  
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS  
UNDERGROUND OBSTRUCTION



SIDE VIEW

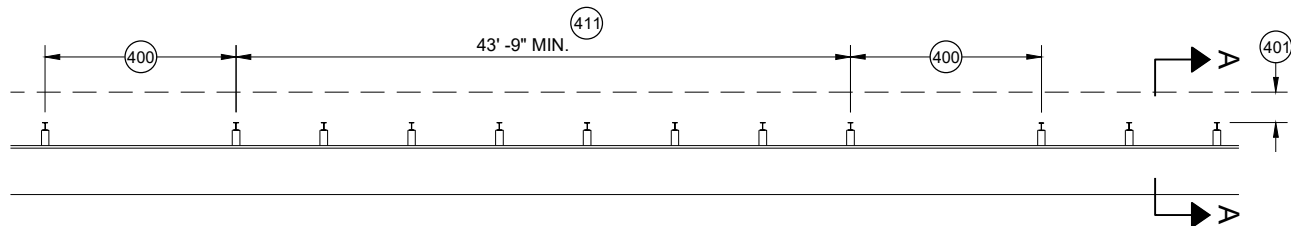


PLAN VIEW

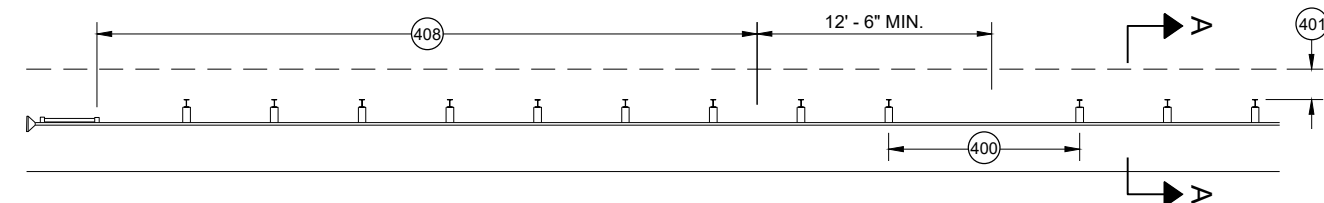
ALTERNATE WOOD  
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

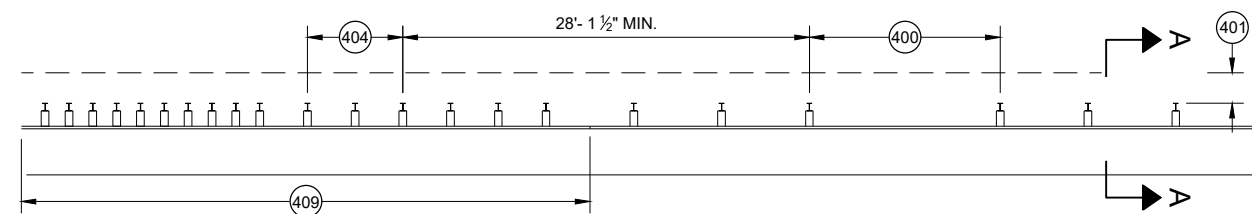
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



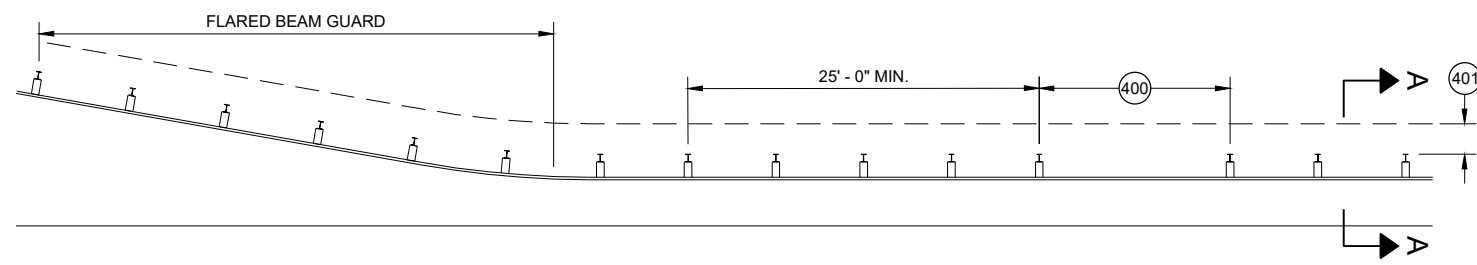
**MISSING POST IN MGS GUARDRAIL**



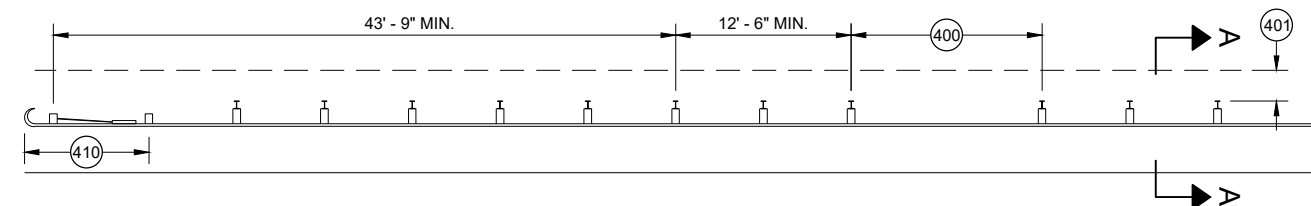
**MISSING POST IN MGS GUARDRAIL NEAR EAT**



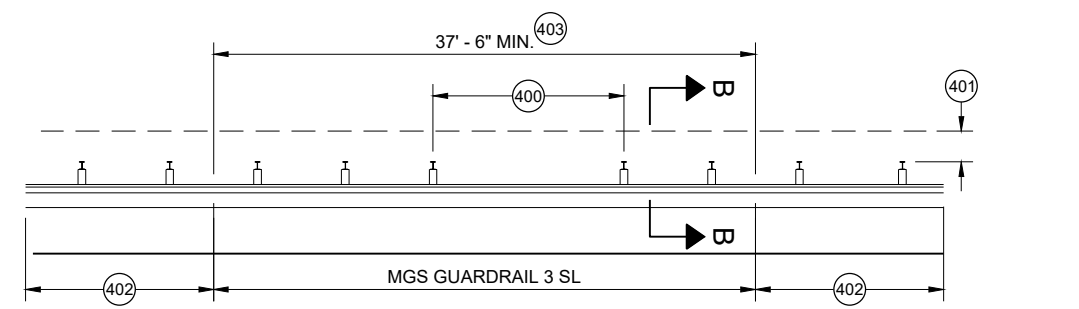
**MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION**



**MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD**

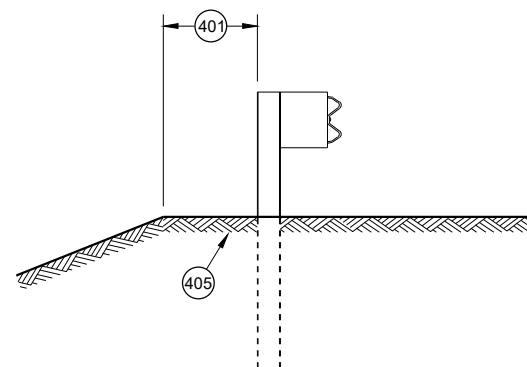


**MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL**

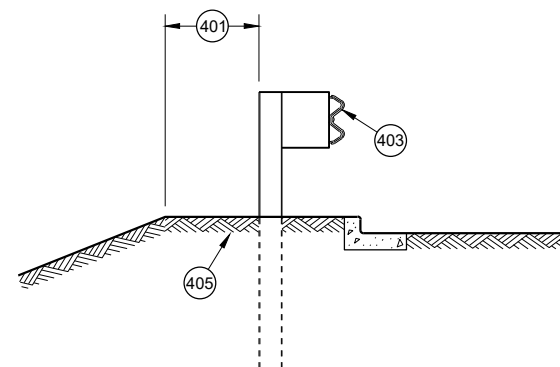


**MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)**

- (400) MAX SPAN 12' - 6"
- (401) 2' MIN.
- (402) MGS GUARDRAIL 3
- (403) NESTING BEAM GUARD
- (404) ASYMMETRIC TRANSITION
- (405) SOIL WELL DRAINED AND COMPACTED
- (406) SEE OTHER DRAWINGS IN THIS SDD
- (407) SEE OTHER DRAWINGS FOR MIN. SPACING BETWEEN SPANS
- (408) SEE SDD 14B44
- (409) SEE SDD 14B45
- (410) SEE SDD 14B47
- (411) MINIMUM DISTANCE BETWEEN MISSING POST SPANS.



**SECTION A - A**



**SECTION B - B**

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2021  
DATE  
/S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR

FHWA

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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

**\* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.**

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

7/8"

7"

31"

2' - 0" TO 3' - 0" VAR.

POST BOLT (TYP.)

HINGE POINT

SLOPE 10:1 OR FLATTER

3 1/2" HOLES

1' - 4"

TRANSITION TO 4:1 TAPER LINE

3

4

10 OR 11

CH

CLEAR ZONE LIMITS, EITHER AS SHOWN ELSEWHERE IN THE PLANS OR, IF NOT SHOWN ELSEWHERE IN THE PLANS, 15 FEET BEYOND THE HINGE POINT LINE

4:1 TAPER

VARIABLE SLOPE

GRADELINE

2'-0" (AT POST NO. 9)

PARALLEL WITH TRAVELED WAY

5'-4" AT POST NO. 5

SLOPE 10:1 MAX.

EDGE OF SHOULDER

HINGE POINT LINE

15:1 TAPER

5'-0" MIN. TO HINGE POINT

25:1 FLARE

2'-0" OFFSET TO FACE OF RAIL

SLOPE 10:1 OR FLATTER TO HINGE POINT

PLAN

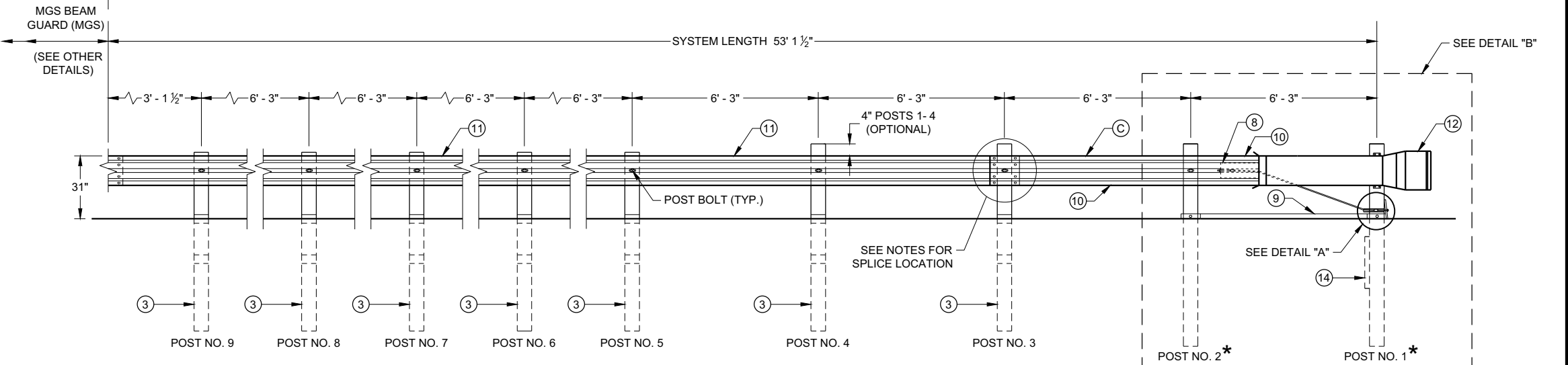
DIRECTION OF TRAVEL

A

B

C

## PLAN



Technical drawing showing a cross-section of a shoulder hinge point. The drawing includes the following labels and dimensions:

- 4"**: Dimension for the thickness of the top plate.
- 31"**: Dimension for the height of the vertical plate.
- POST BOLT (TYP.)**: Label for the bolt passing through the vertical plate.
- 10**: Callout for the wavy line representing the hinge joint.
- 15**: Callout for the vertical plate.
- SHOULDER HINGE POINT**: Label for the joint between the vertical plate and the sloped base.
- SLOPE 10:1 OR FLATTER**: Label for the sloped base.
- 16**: Callout for the sloped base.

[illegible]

8

C

10

12

15

9

7

1

E

FINISHED GROUND ELEVATION

BOTTOM OF STRUT IS PLACED FLUSH WITH AND PARALLEL TO THE FINISHED SURFACE

14

16

2

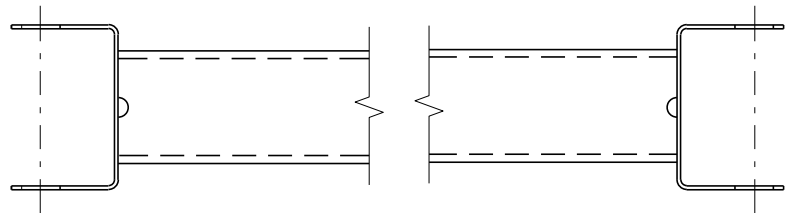
POST NO. 2\*

**DETAIL "B"**

POST NO. 1\*

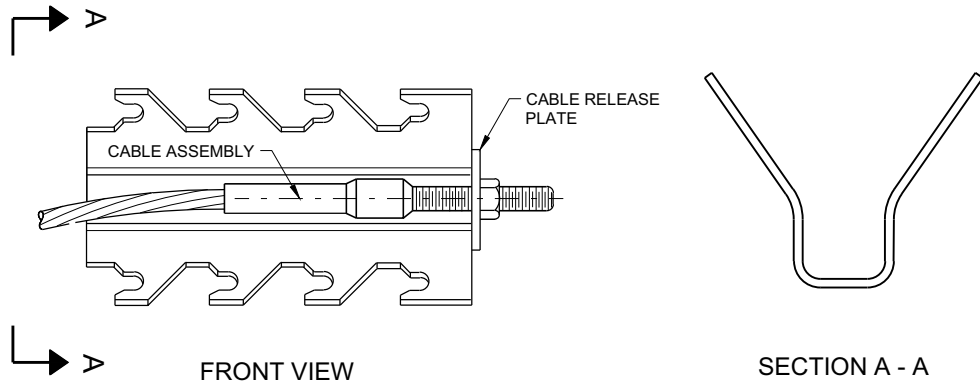
**MIDWEST GUARDRAIL SYSTEM  
ENERGY ABSORBING TERMINAL  
(MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION 38

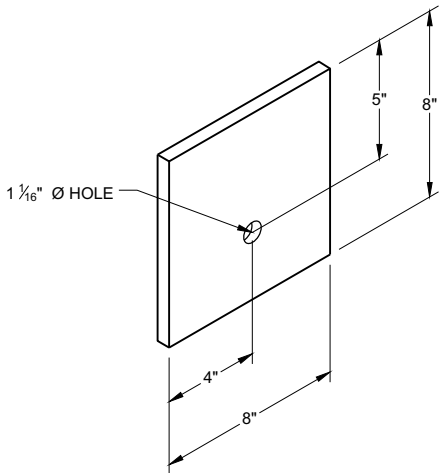


GENERIC GROUND STRUT<sup>9</sup> <sup>E</sup>

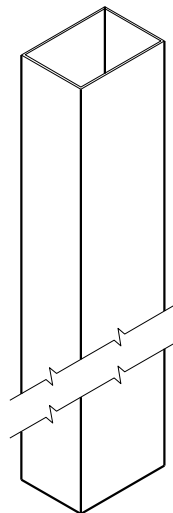
| BILL OF MATERIALS |                                                                                                                |
|-------------------|----------------------------------------------------------------------------------------------------------------|
| PART NO.          | DESCRIPTION<br>MATERIALS PROVIDED BY MGS EAT MANUFACTURER.<br>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.<br>SECTIONS VARY IN LENGTH.                                  |
| ⑫                 | IMPACT HEAD                                                                                                    |
| ⑬                 | EAT MARKER POST - YELLOW<br>(SEE APPROVED PRODUCTS LIST)                                                       |
| ⑭                 | SOIL PLATE                                                                                                     |
| ⑮                 | UPPER POST NO. 2                                                                                               |
| ⑯                 | LOWER POST NO. 2                                                                                               |



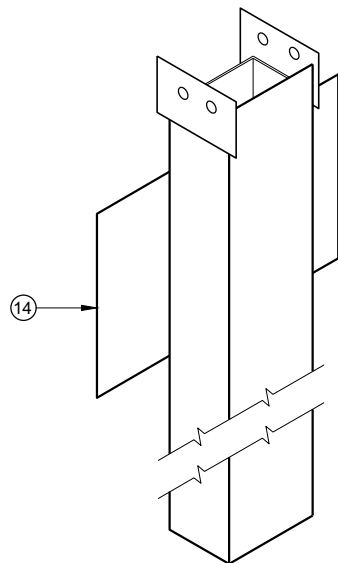
GENERIC ANCHOR CABLE BOX<sup>9</sup> <sup>E</sup>



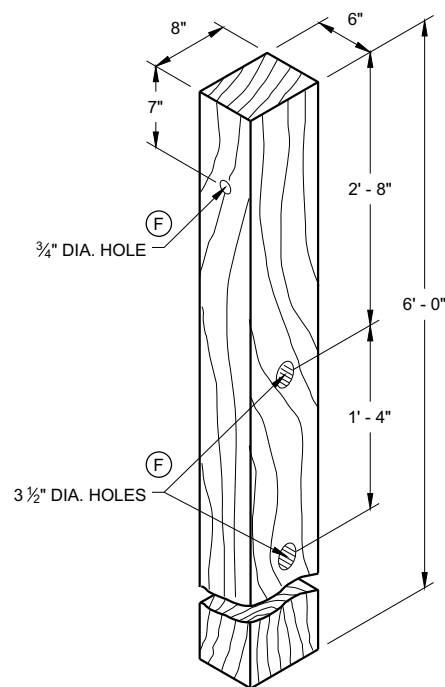
BEARING PLATE<sup>6</sup> <sup>E</sup>



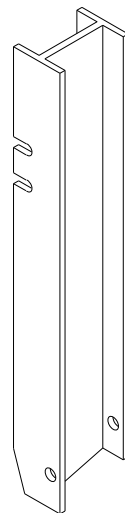
UPPER POST NO. 1 <sup>(1)</sup> (E)



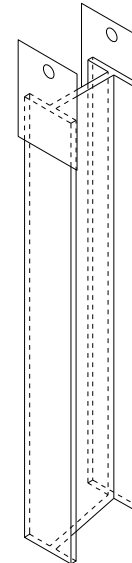
LOWER POST NO. 1 <sup>(2)</sup> (E)



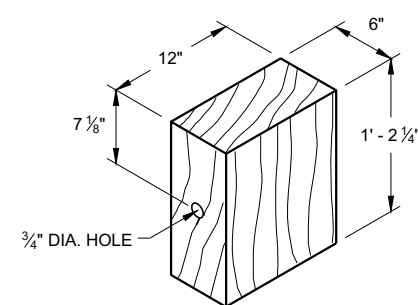
WOOD CRT POST <sup>(3)</sup> (E)  
POSTS NUMBER 3-9



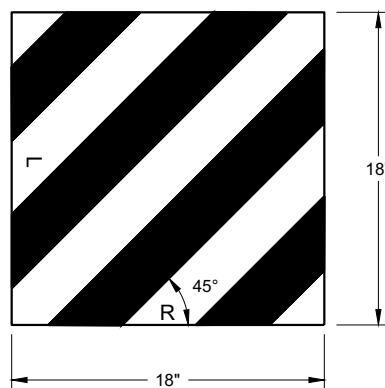
UPPER POST NO. 2 <sup>(15)</sup> (E)



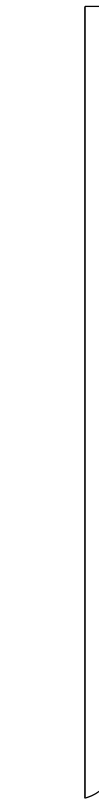
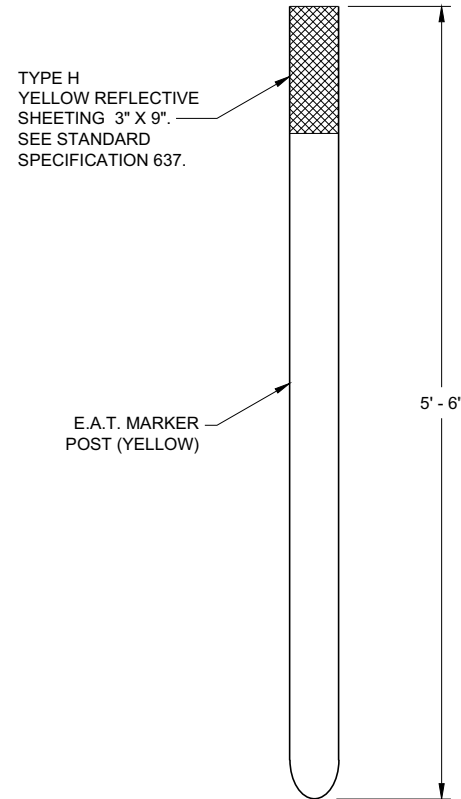
LOWER POST NO. 2 <sup>(16)</sup> (E)



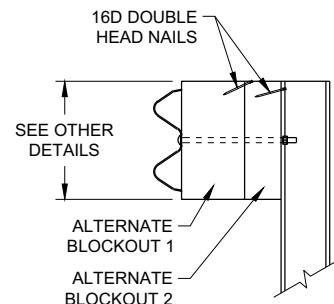
WOOD BLOCKOUT <sup>(4)</sup>  
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL <sup>(E)</sup>

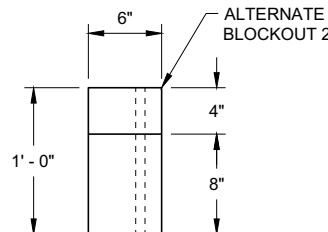


E.A.T. MARKER POST <sup>(13)</sup>



SIDE VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL

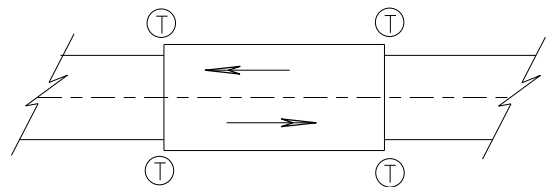


TOP VIEW

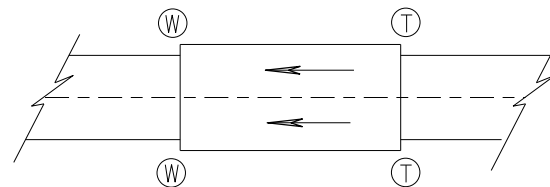
MIDWEST GUARDRAIL SYSTEM  
ENERGY ABSORBING TERMINAL  
(MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
7/2018 DATE /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR  
FHWA 40



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.

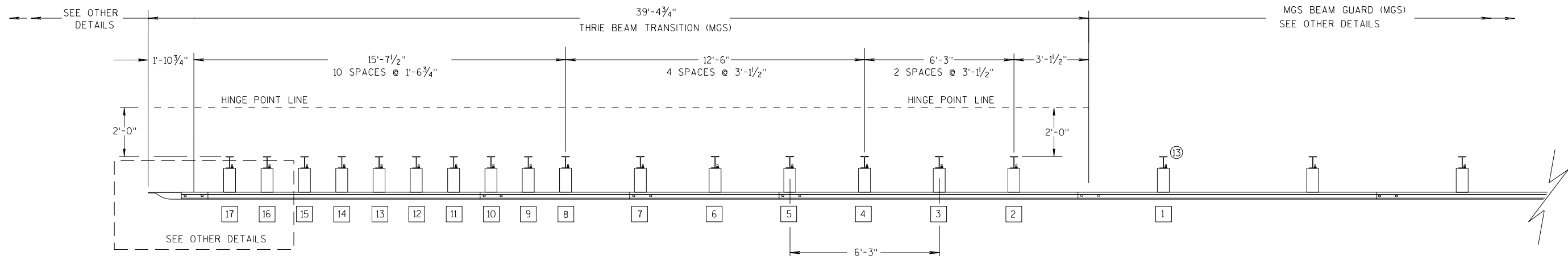
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

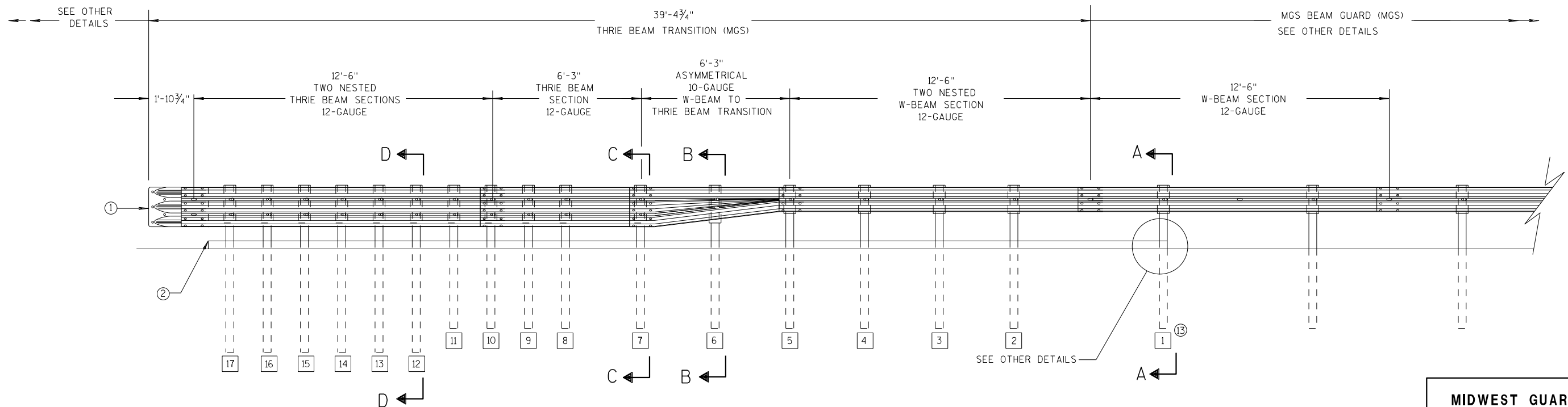
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

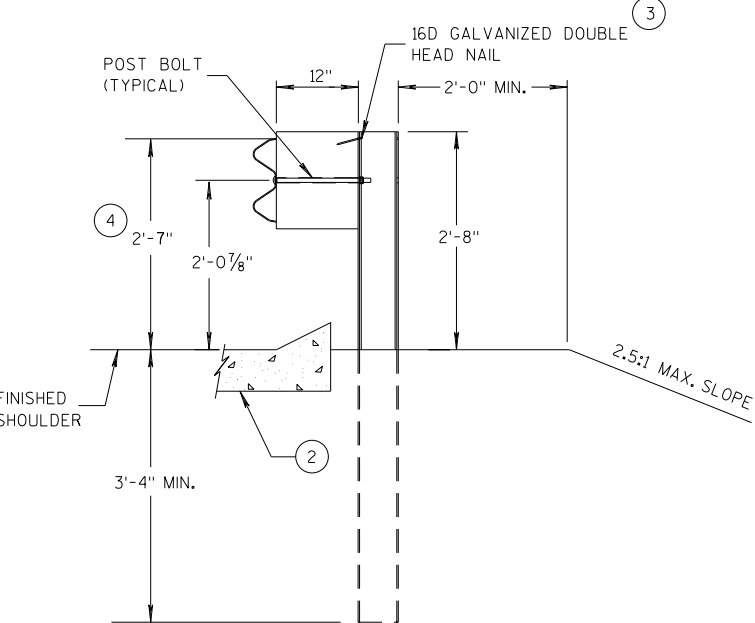
## MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

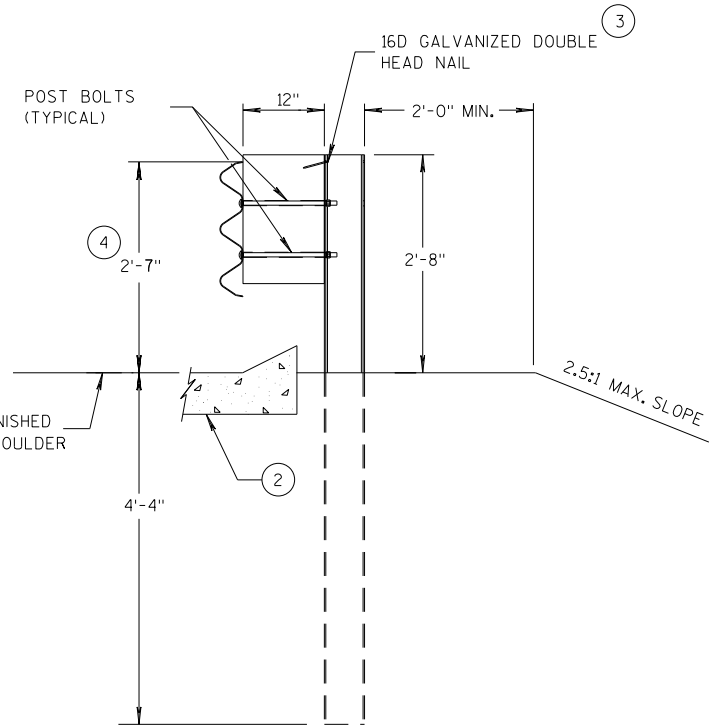
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

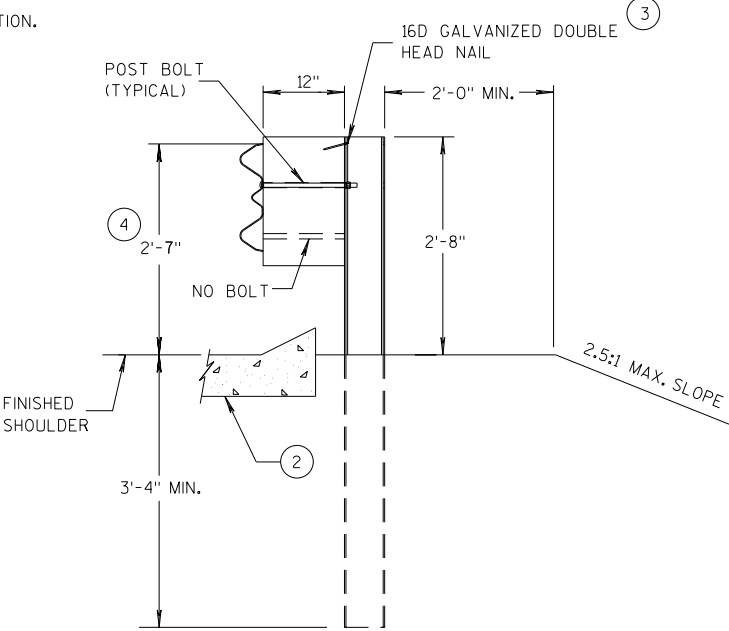
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



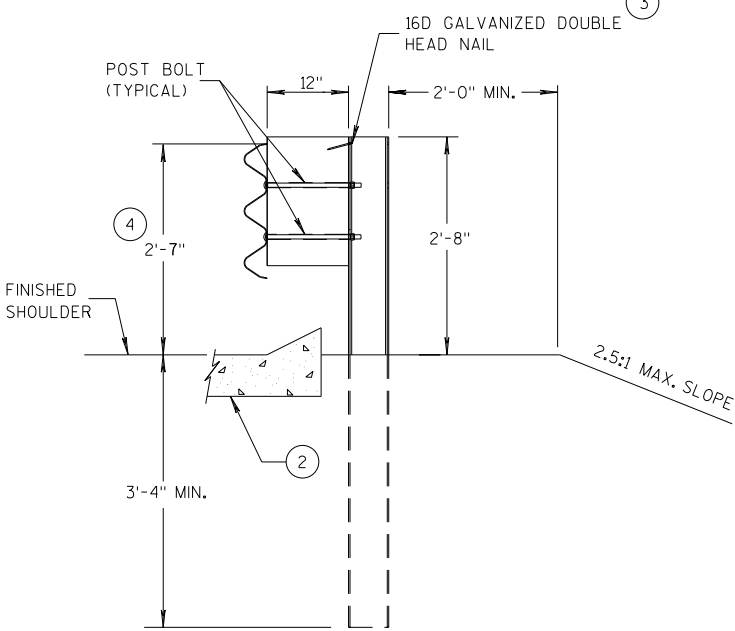
SECTION A-A  
POSTS 1-5



SECTION D-D  
POSTS 12-17



SECTION B-B  
POST 6



SECTION C-C  
POSTS 7-11

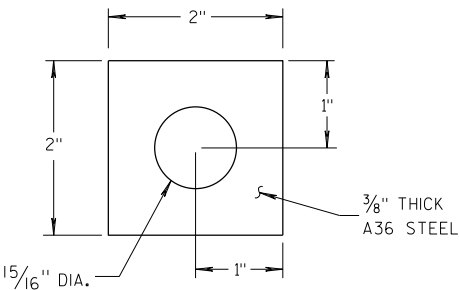
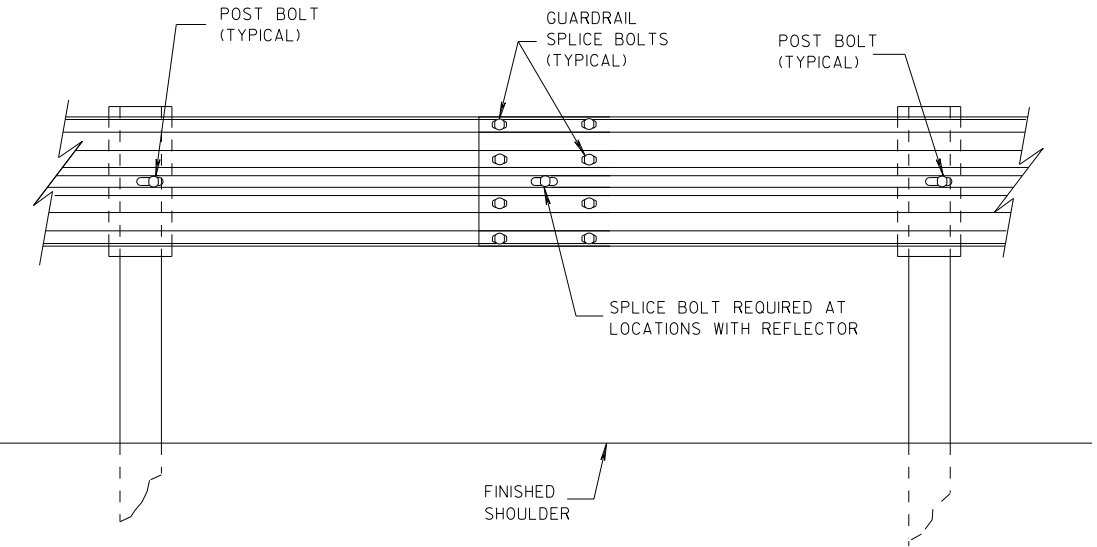
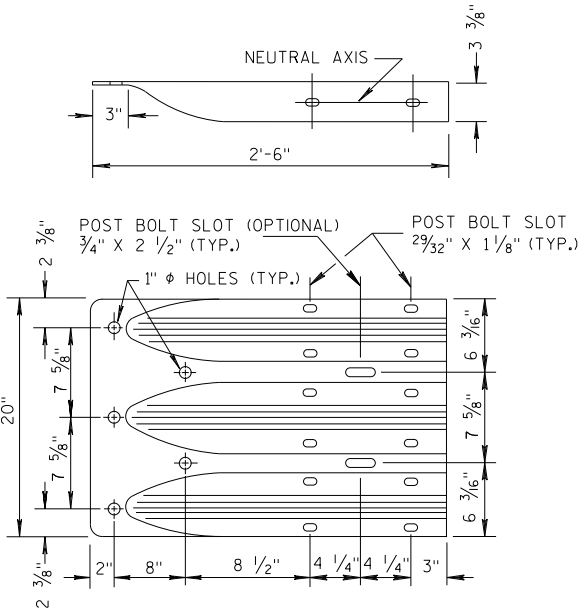


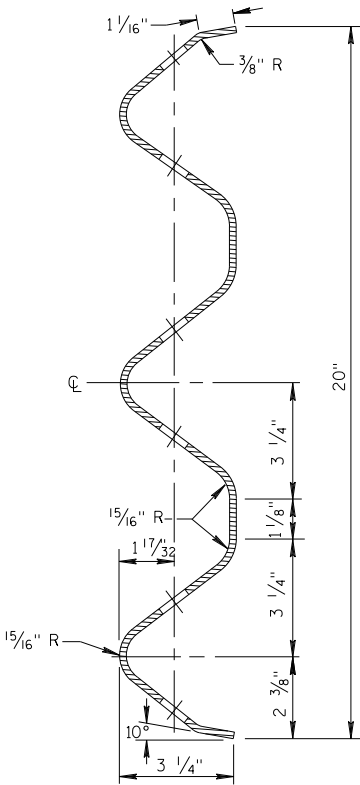
PLATE WASHER DETAIL



SPlice DETAIL



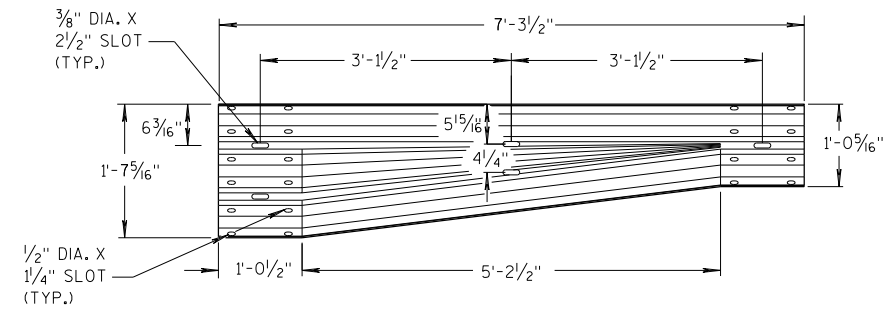
THRIE BEAM  
TERMINAL CONNECTOR



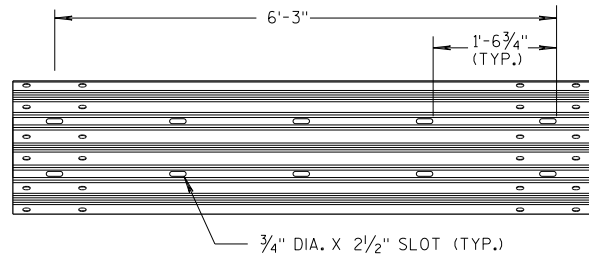
SECTION THRU THRIE  
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

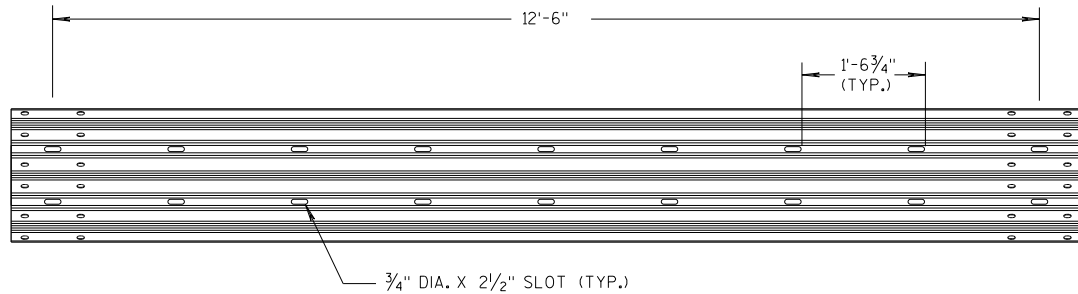
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



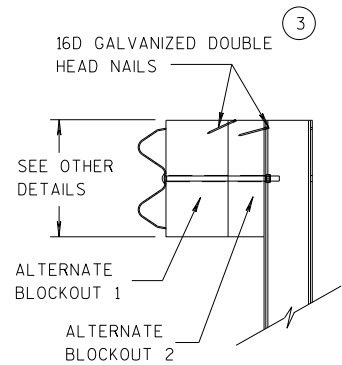
**W-BEAM TO THRIE BEAM TRANSITION SECTION**



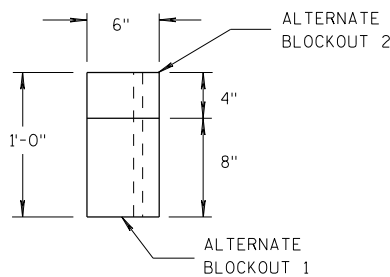
**6'-3" THRIE BEAM SECTION**



**12'-6" THRIE BEAM SECTION**

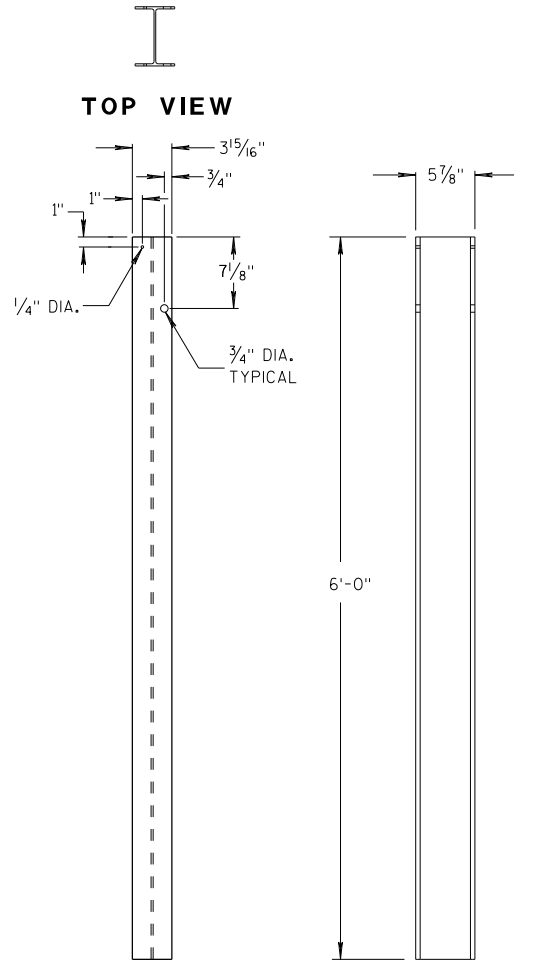


**SIDE VIEW**



**TOP VIEW**

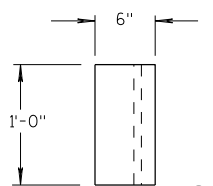
**ALTERNATE WOOD BLOCKOUT DETAIL**



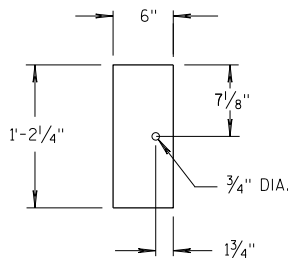
**FRONT VIEW**

**SIDE VIEW**

**STEEL POSTS 1-5**

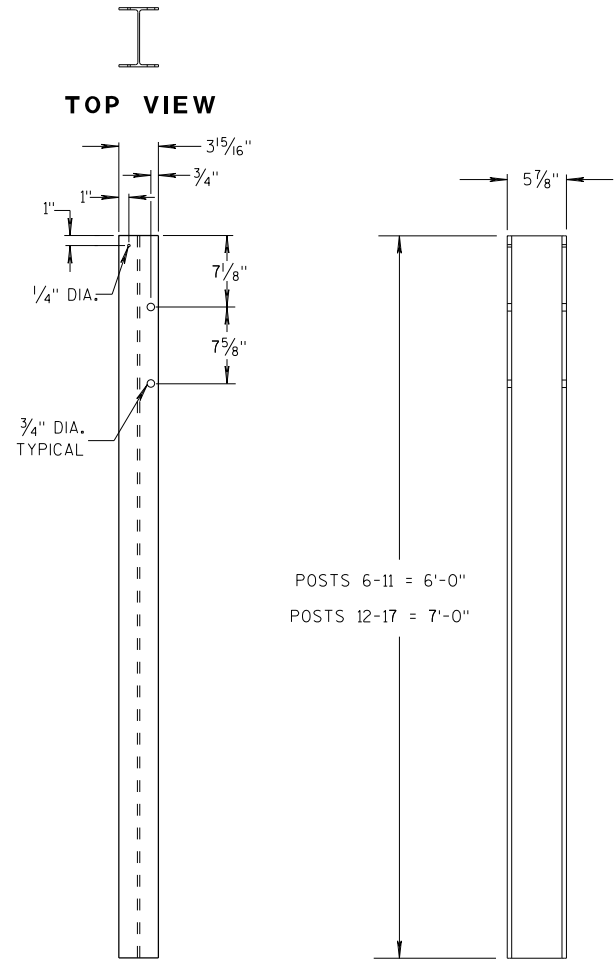


**TOP VIEW**



**FRONT VIEW**

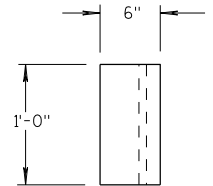
**BLOCKOUT POSTS 1-5**



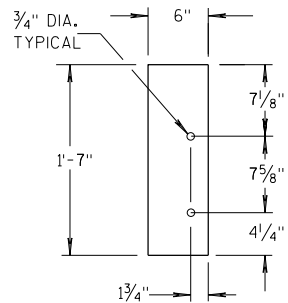
**FRONT VIEW**

**SIDE VIEW**

**STEEL POSTS 6-17**



**TOP VIEW**



**FRONT VIEW**

**BLOCKOUT POSTS 6-17**

**GENERAL NOTES**

STEEL POSTS ARE W6X9 OR W6X8.5.

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

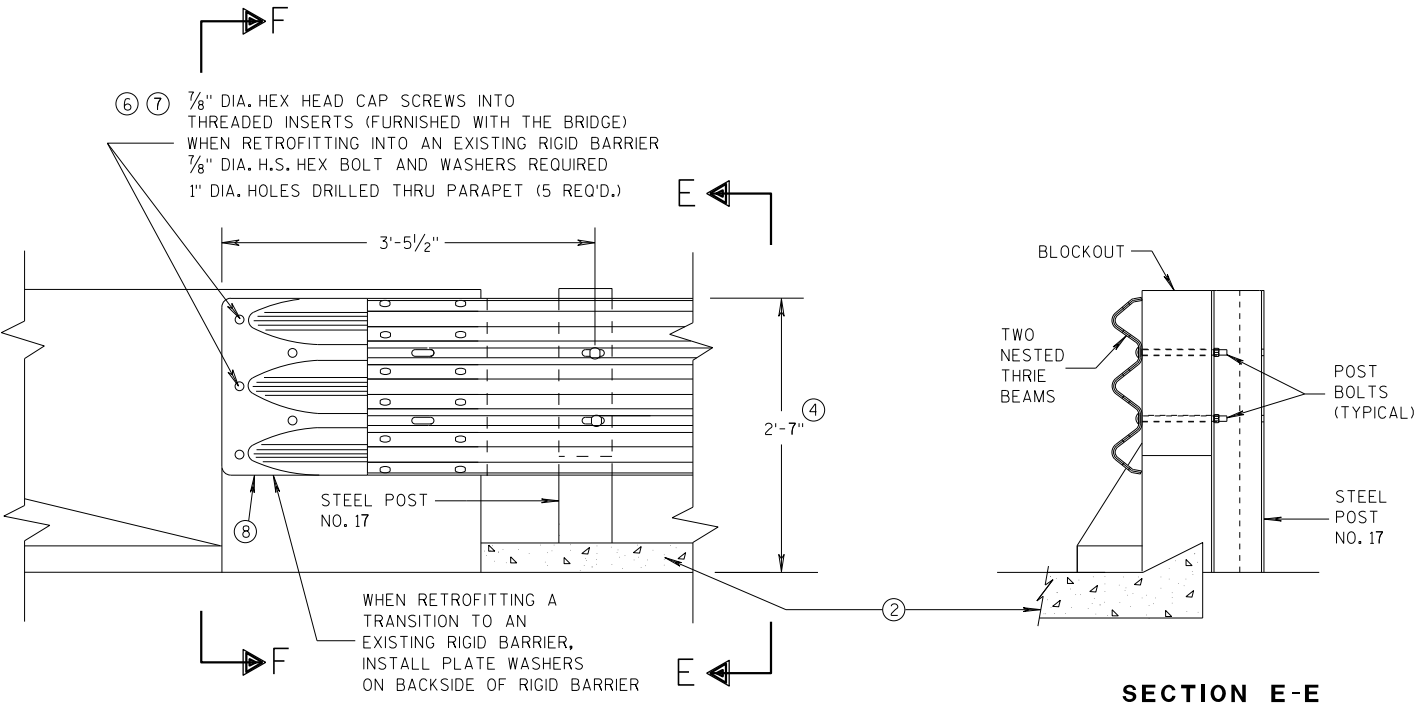
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

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

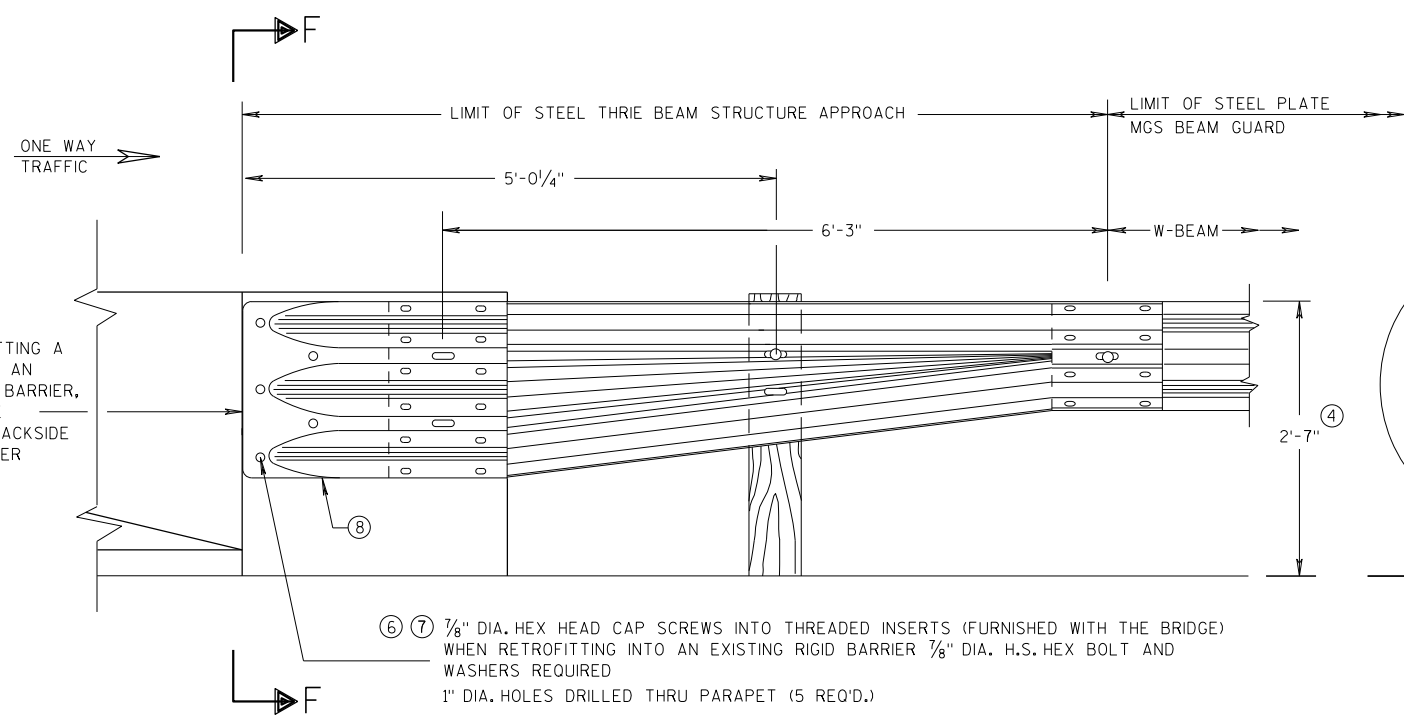
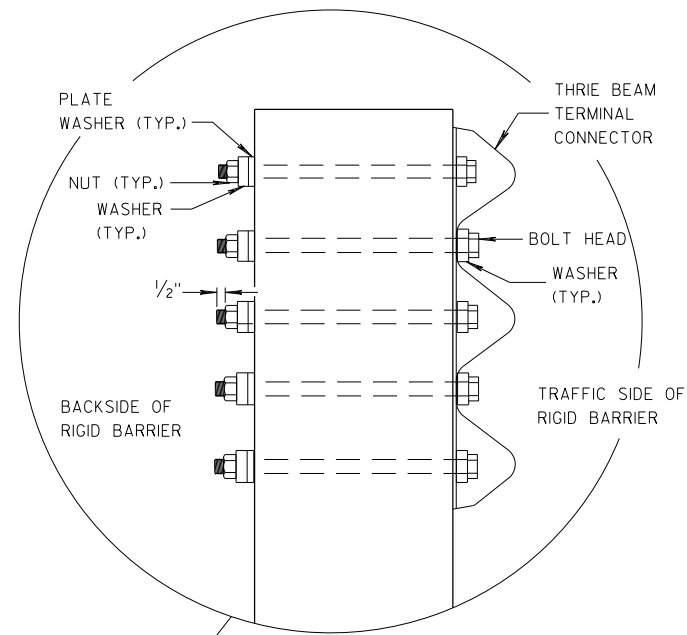
**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

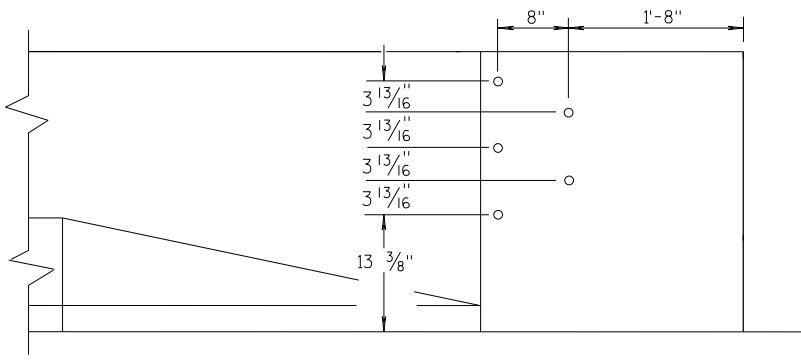


**GENERAL NOTES**

- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" 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**



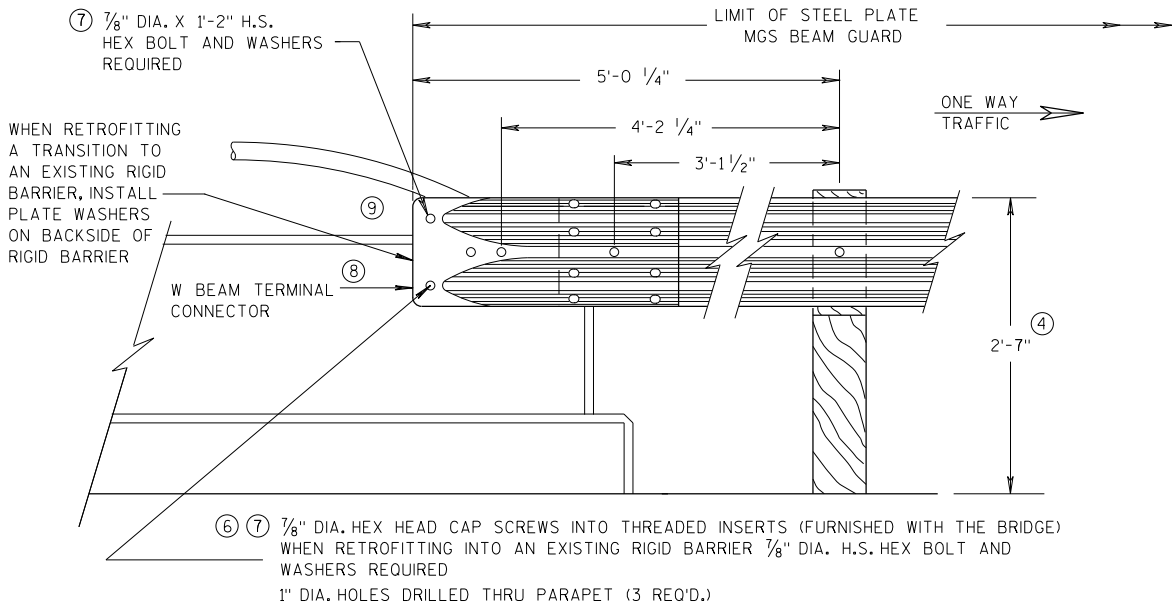
**DRILL HOLE LOCATION**

| MIDWEST GUARDRAIL SYSTEM<br>THRIE BEAM TRANSITION (MGS) |                                                        |    |  |
|---------------------------------------------------------|--------------------------------------------------------|----|--|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION      |                                                        |    |  |
| APPROVED<br>07/2018<br>DATE                             | /S/ Rodney Taylor<br>ROADWAY STANDARDS UNIT SUPERVISOR |    |  |
| FHWA                                                    | 44                                                     | NT |  |

GENERAL NOTES

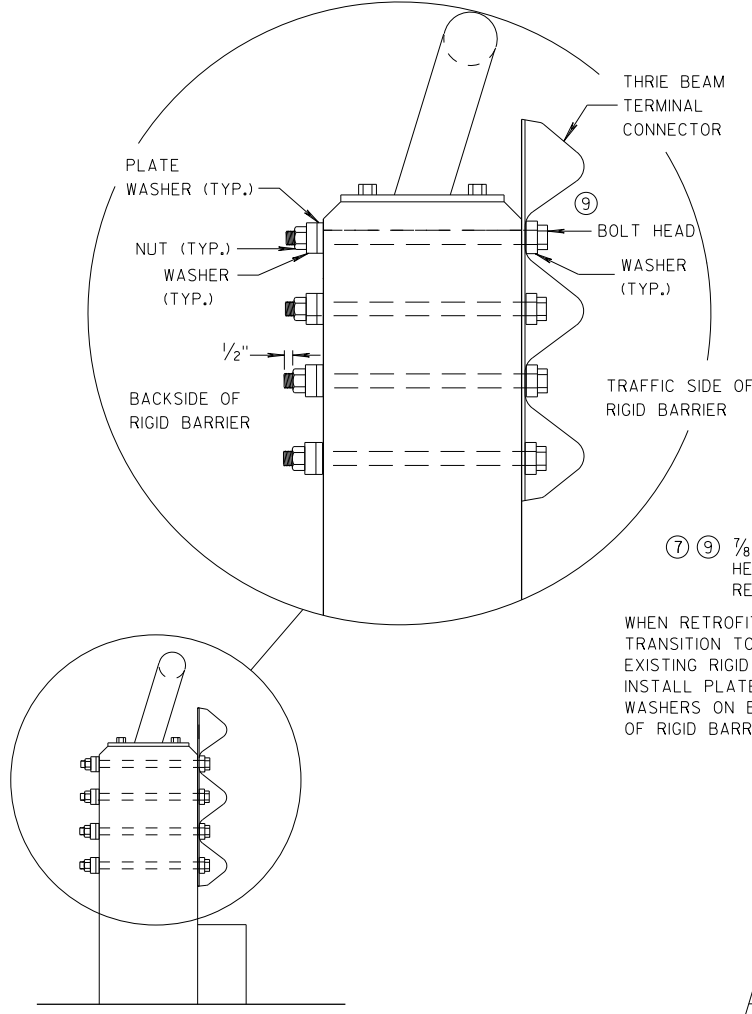
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- 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  $\frac{5}{32}"$  THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- 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  $\frac{1}{2}"$ .
- 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.

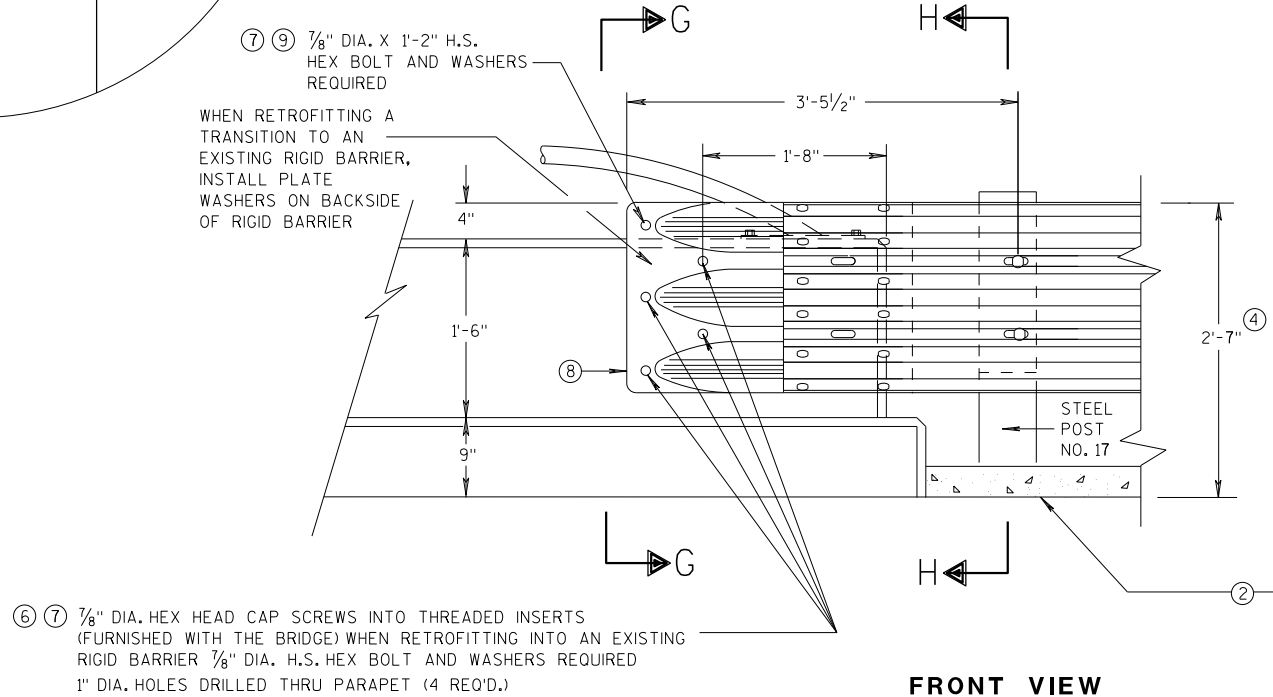


FRONT VIEW

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

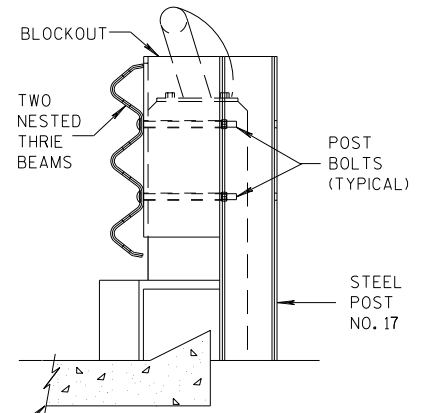


SECTION G-G



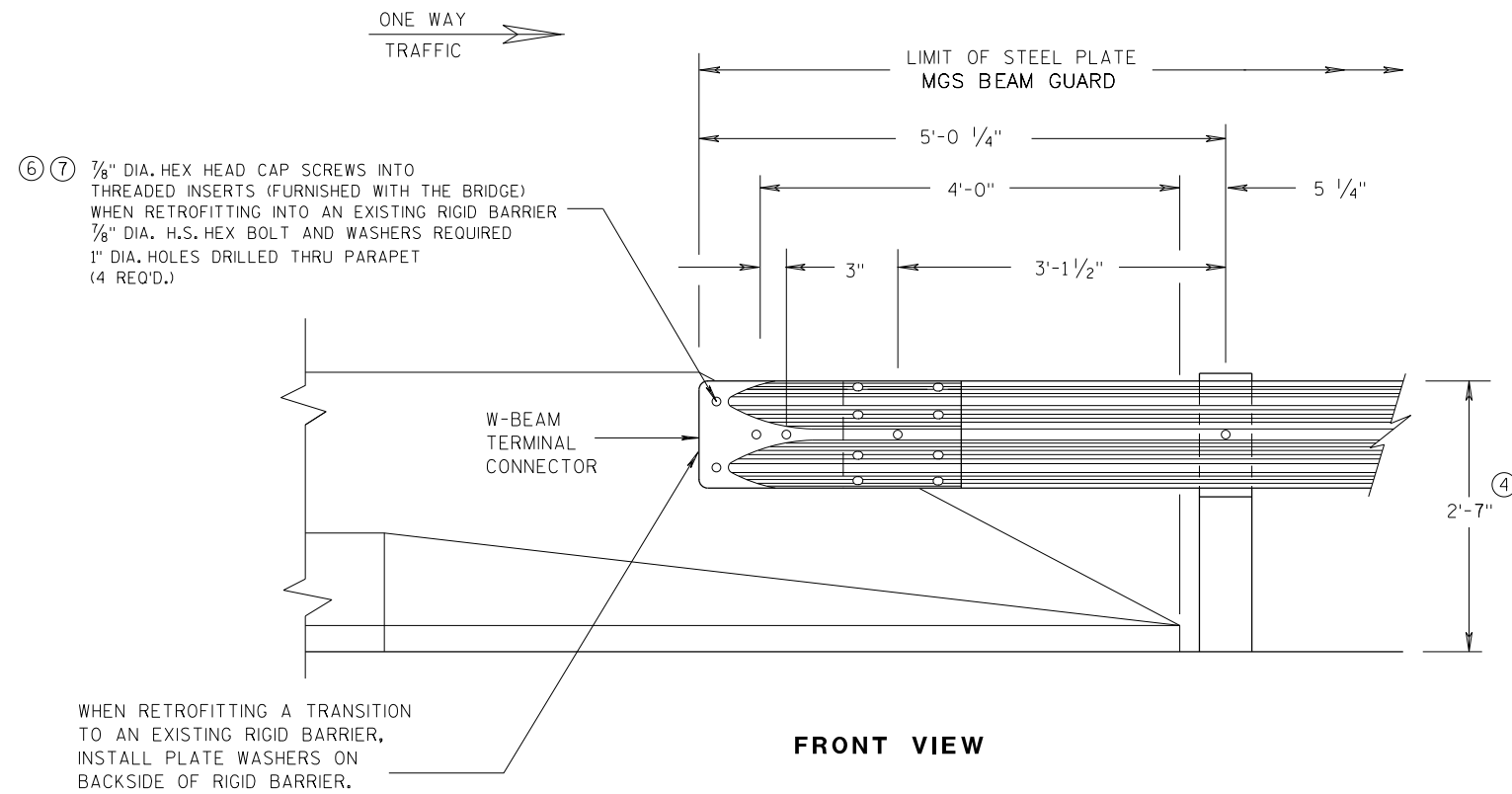
FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



SECTION H-H

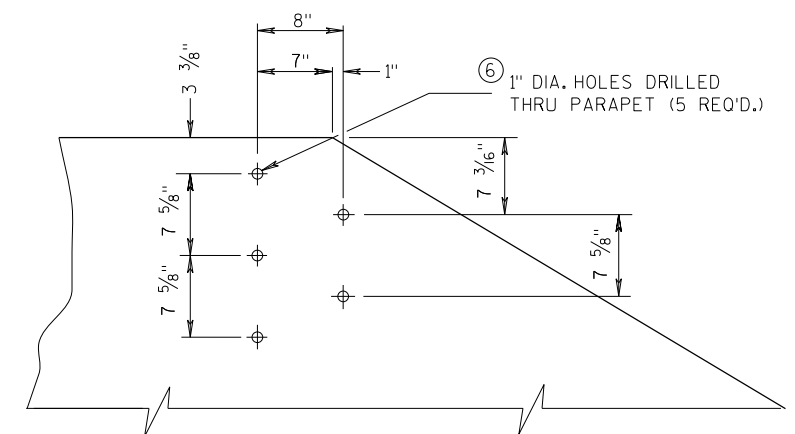
|                                                         |                   |    |     |
|---------------------------------------------------------|-------------------|----|-----|
| MIDWEST GUARDRAIL SYSTEM<br>THRIE BEAM TRANSITION (MGS) |                   |    |     |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION      |                   |    |     |
| APPROVED<br>07/2018                                     | /S/ Rodney Taylor |    |     |
| DATE                                                    | ROADWAY STANDARDS | 45 | INT |
| FHWA                                                    | UNIT SUPERVISOR   |    |     |



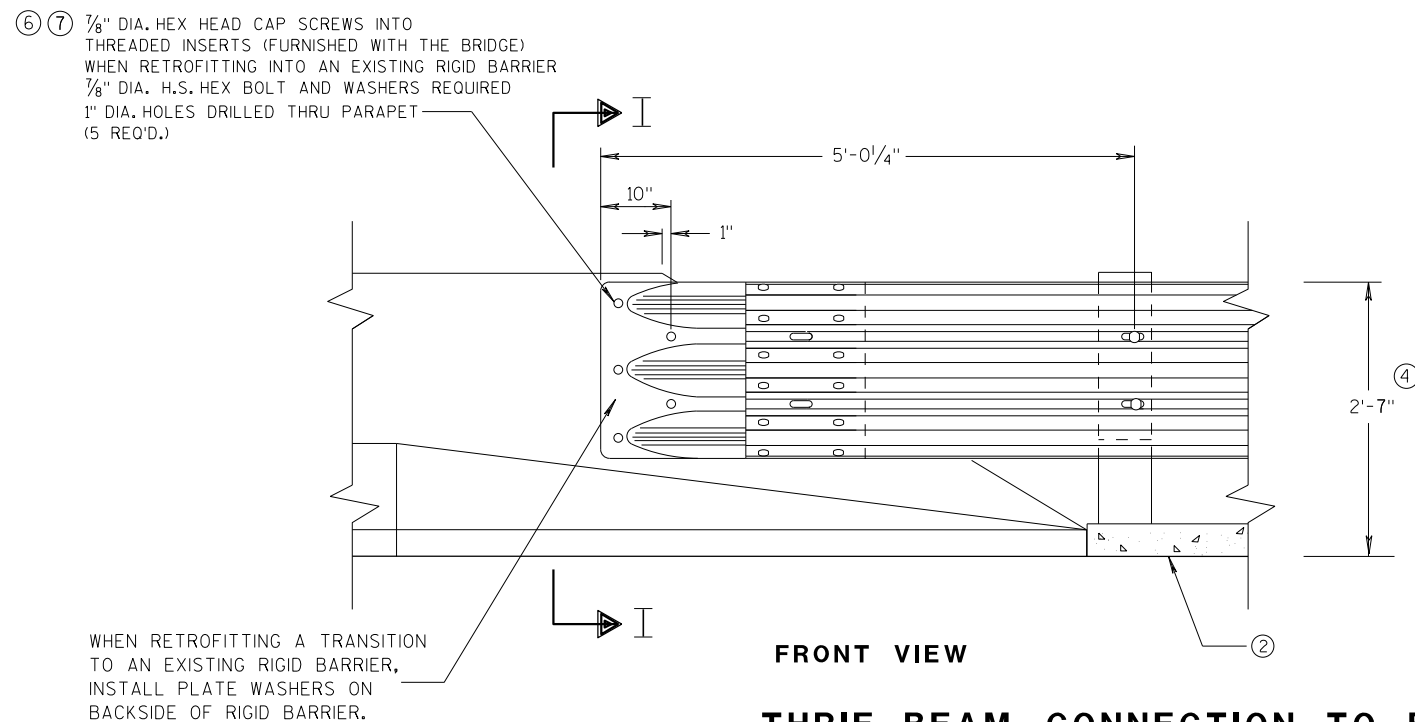
**W BEAM CONNECTION TO  
PARAPETS WITH SLOPED ENDS**  
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

## GENERAL NOTES

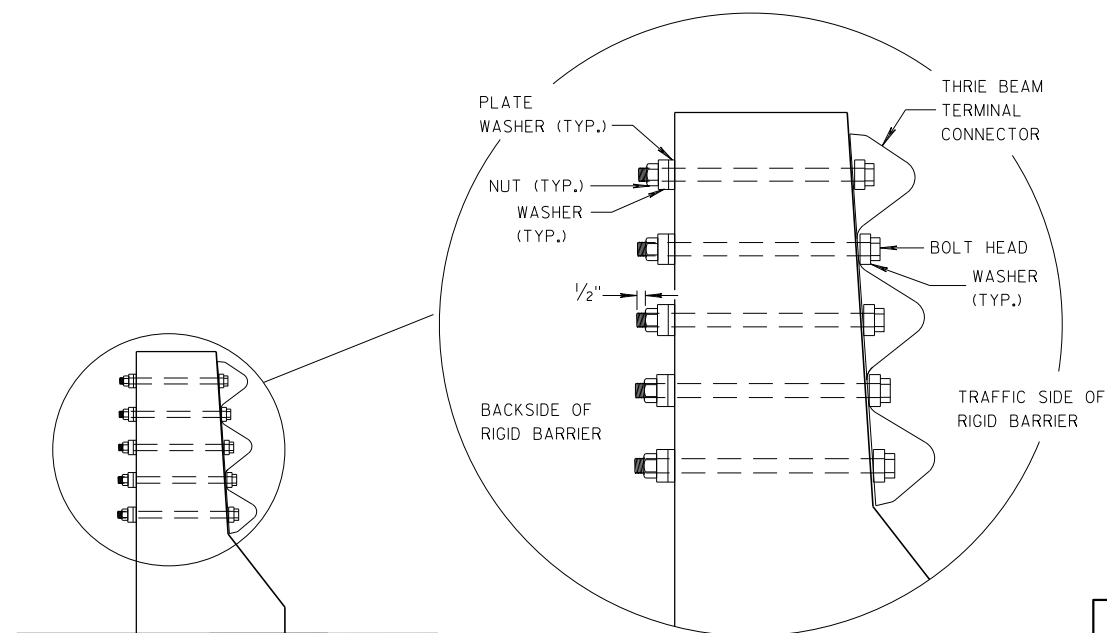
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH 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 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



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



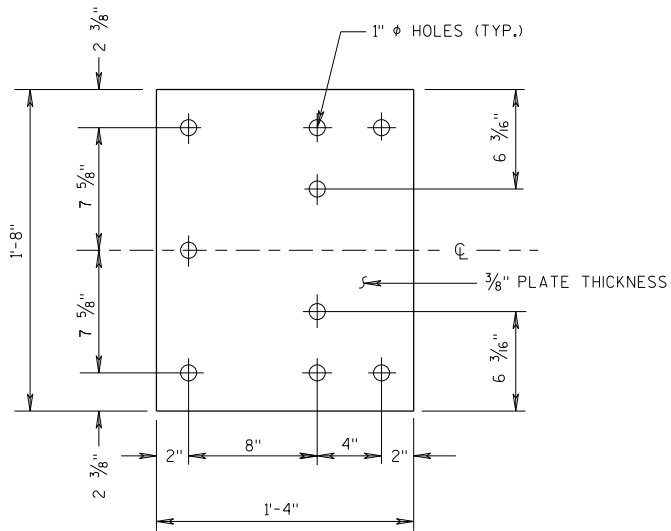
**THRIE BEAM CONNECTION TO BRIDGE  
PARAPETS WITH SLOPED ENDS**



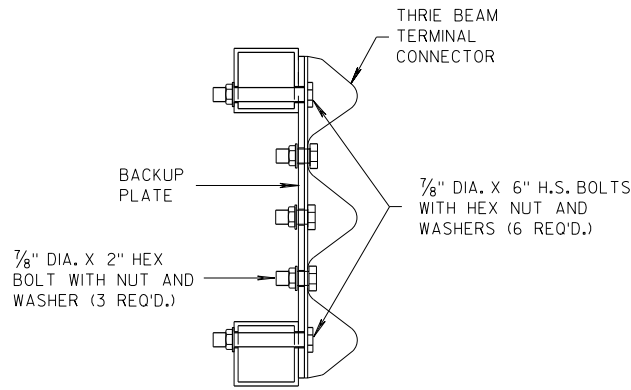
**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

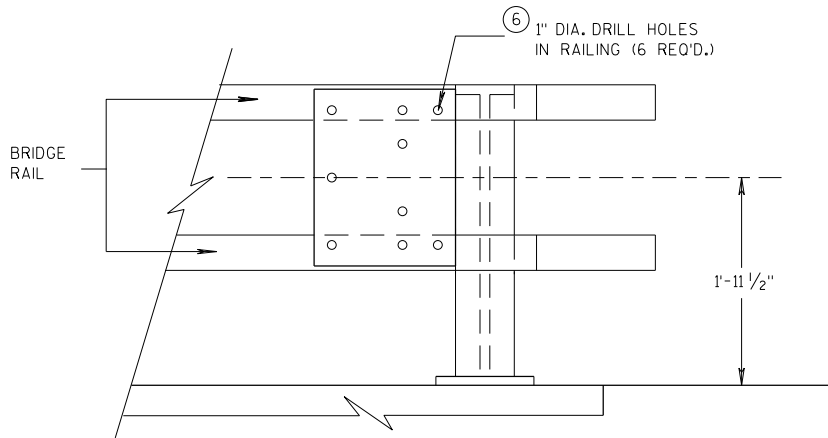
APPROVED  
DATE 07/2018 /S/ Rodney Taylor  
ROADWAY STANDARDS UNIT SUPERVISOR 46  
FHWA



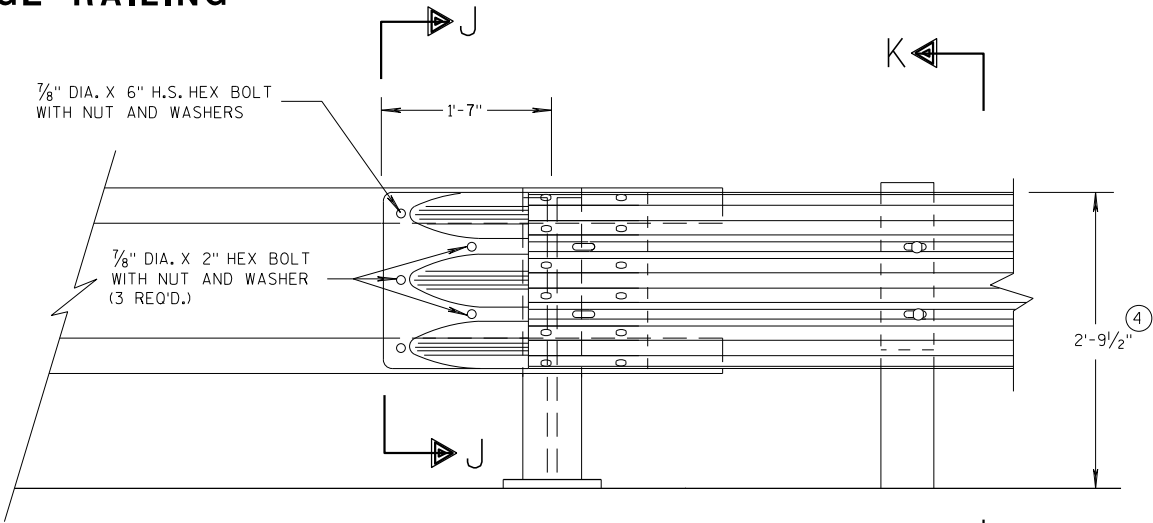
BACK-UP PLATE DETAIL



SECTION J-J

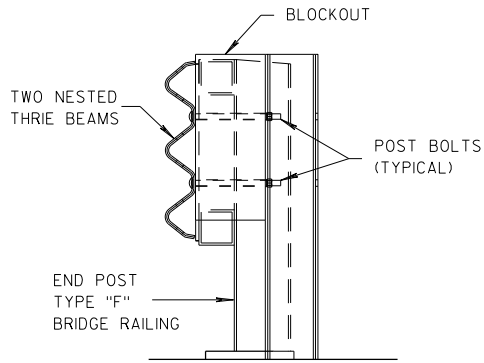


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

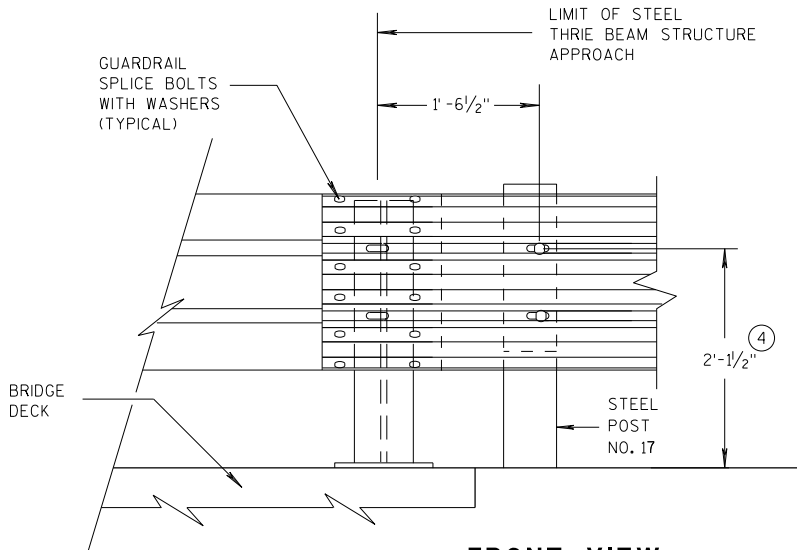
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

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.



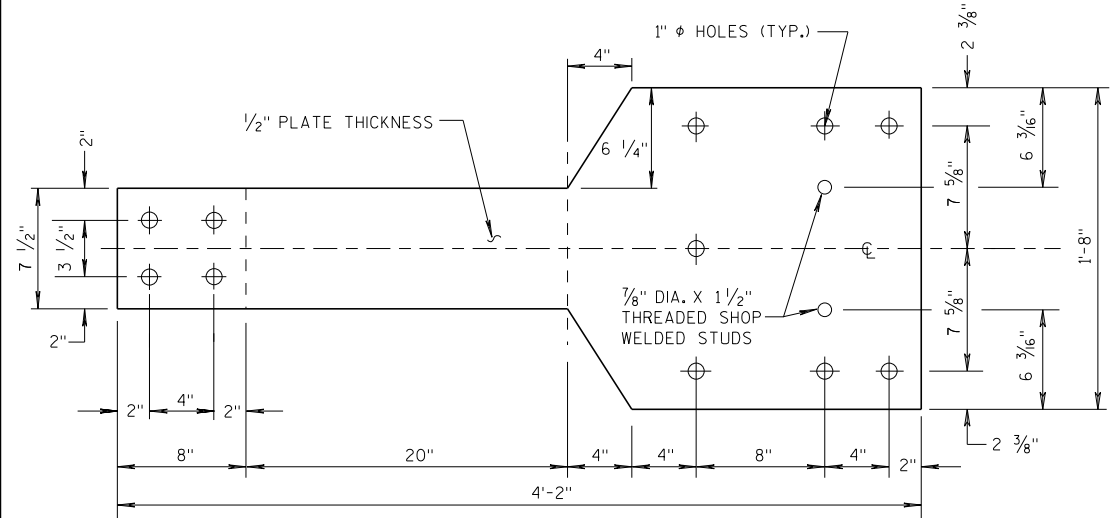
FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

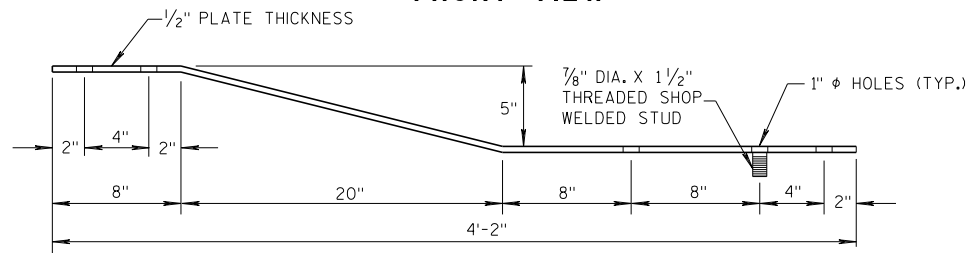
|                                                         |                                                                          |
|---------------------------------------------------------|--------------------------------------------------------------------------|
| MIDWEST GUARDRAIL SYSTEM<br>THRIE BEAM TRANSITION (MGS) |                                                                          |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION      |                                                                          |
| APPROVED<br>07/2018<br>DATE                             | /S/ Rodney Taylor 47<br>ROADWAY STANDARDS DEVELOPMENT<br>UNIT SUPERVISOR |
| FHWA                                                    |                                                                          |

**GENERAL NOTES**

④ TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm 1"$ .

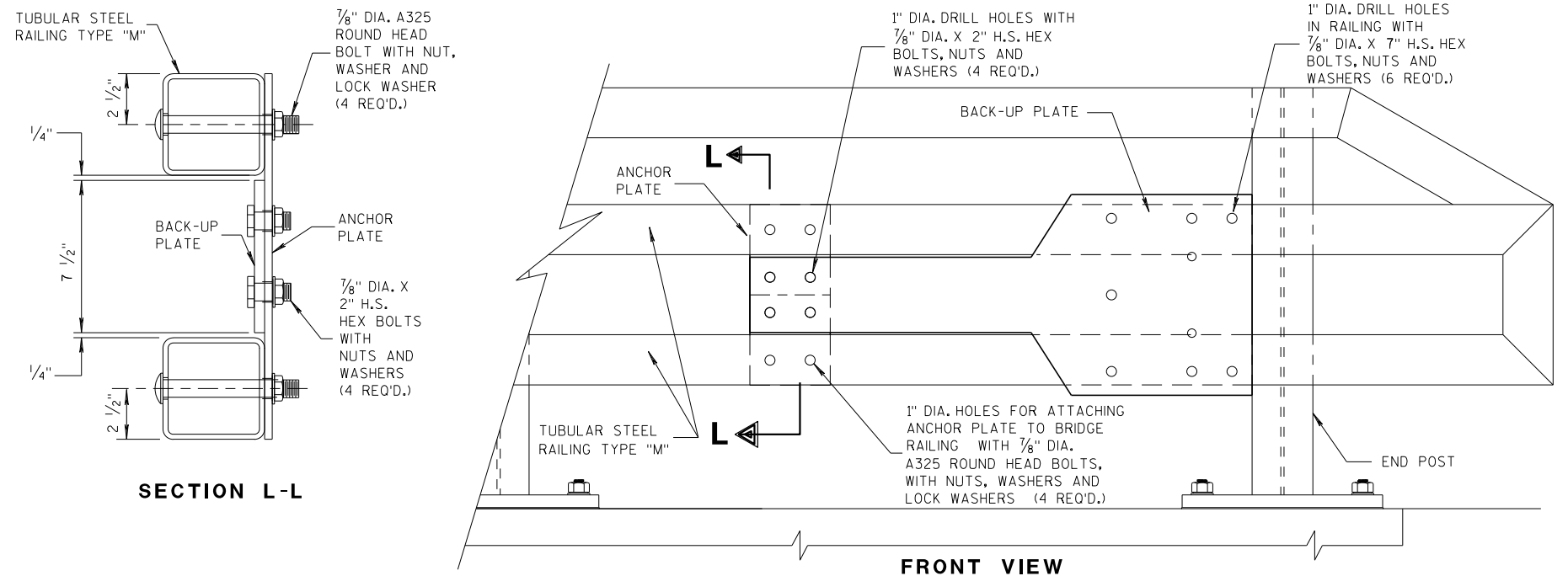


**FRONT VIEW**



**PLAN VIEW**

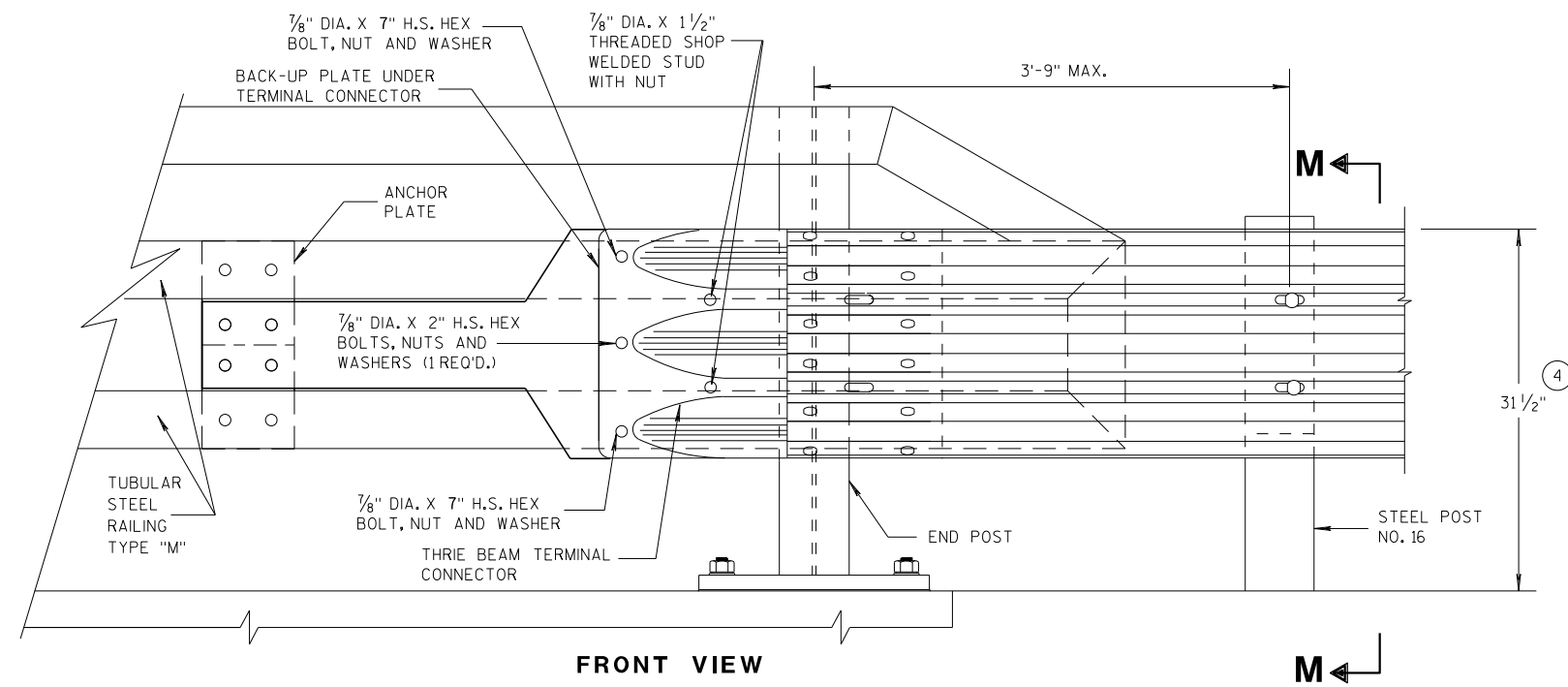
**BACK-UP PLATE DETAIL, TYPE "M"**



**SECTION L-L**

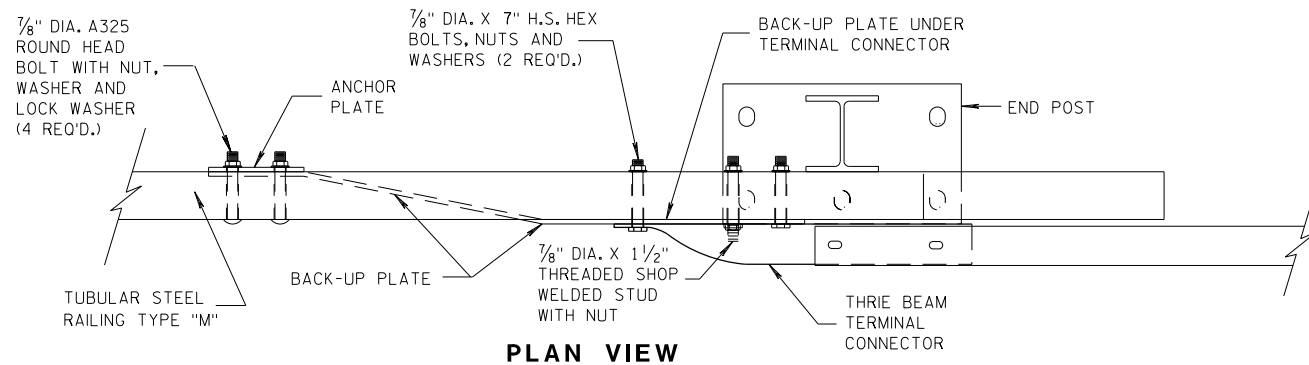
**FRONT VIEW**

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



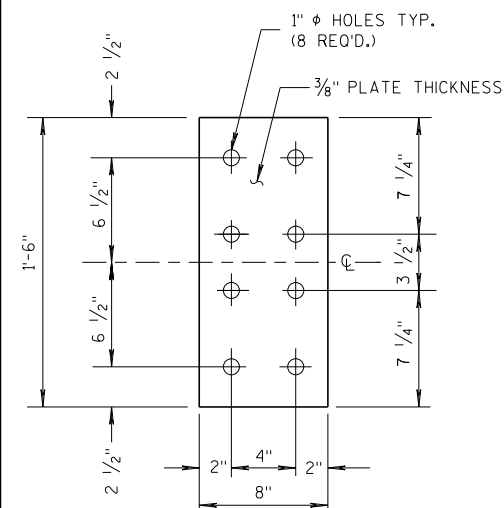
**FRONT VIEW**

**M**



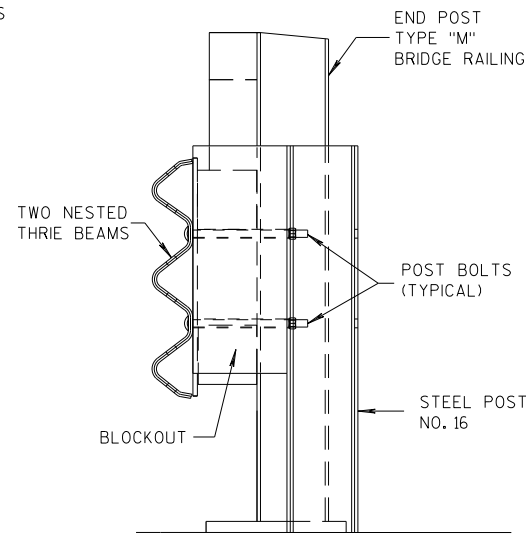
**PLAN VIEW**

**THREE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"**



**FRONT VIEW**

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

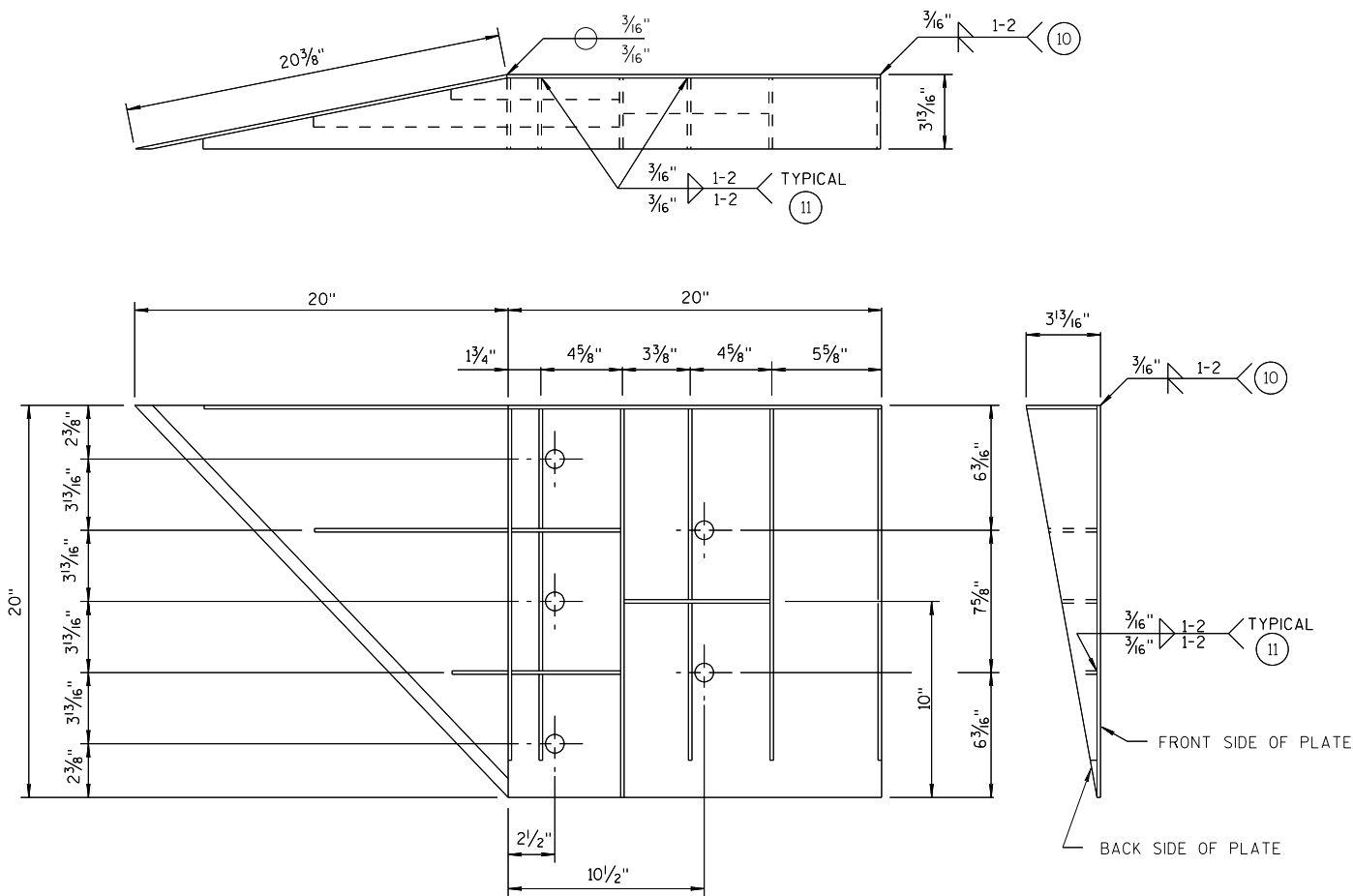


**SECTION M-M**

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
07/2018 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS UNIT SUPERVISOR  
FHWA 48 ENT

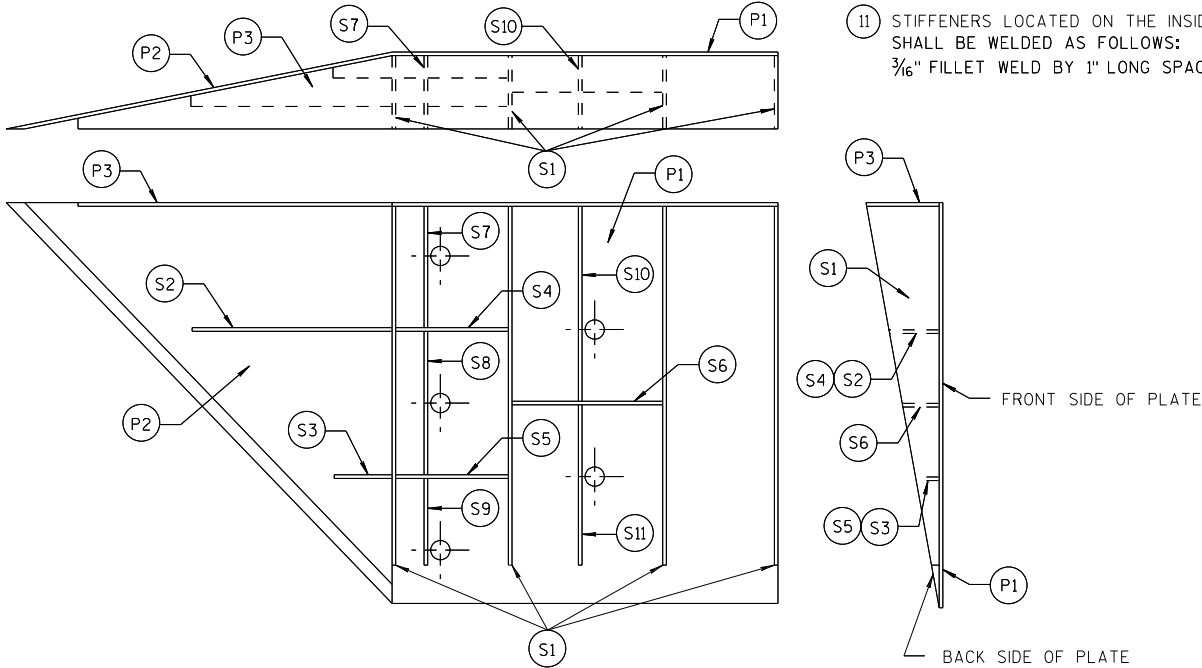


WELDING INSTRUCTION  
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION PLATE

| CONNECTOR PLATE DIMENSION<br>(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 7/16"                    | 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 7/8"      | 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 5/8" x 9 11/16" | 1/4"      |
| S11                                         | 1        |       | 8 1/2" x 8 3/4" x 1 3/16"           | 1/4"      |

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



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.

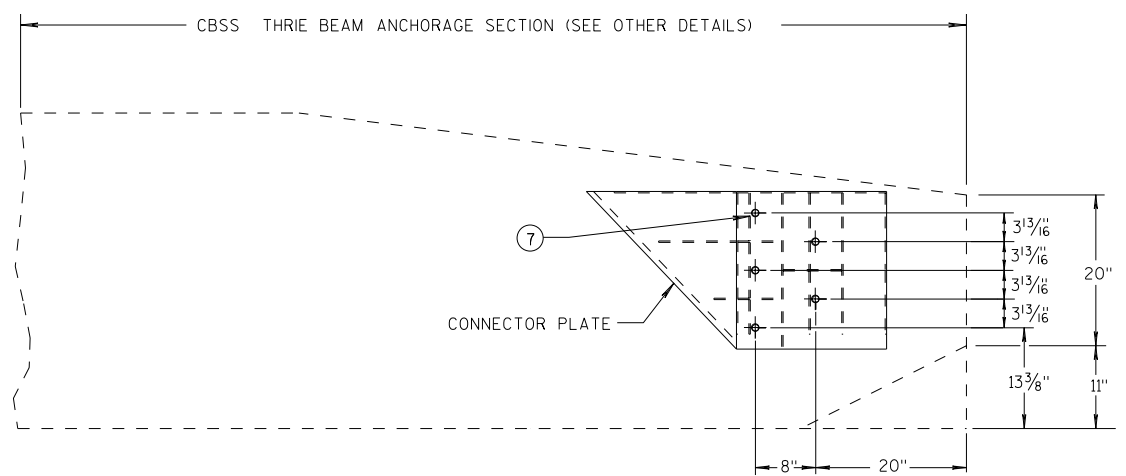
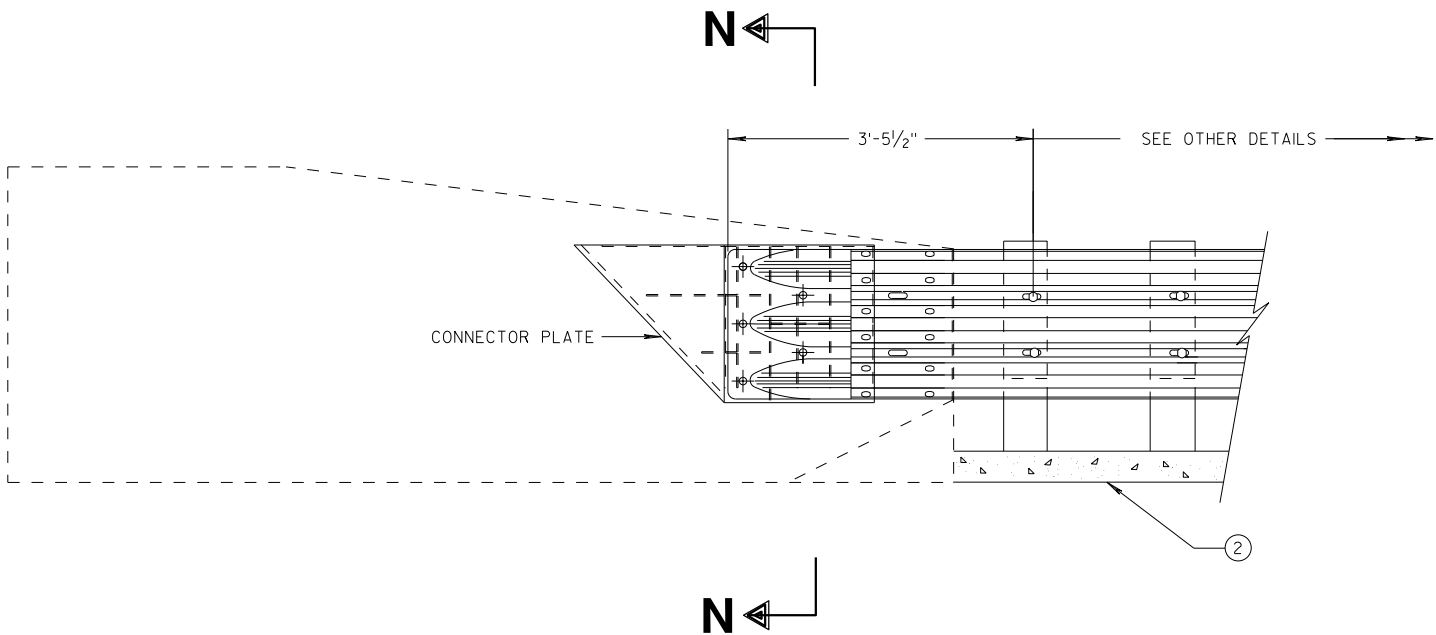
- 10 STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:  
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- 11 STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:  
3/16" FILLET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

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
7/2018 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS UNIT SUPERVISOR  
FHWA 49 ENT

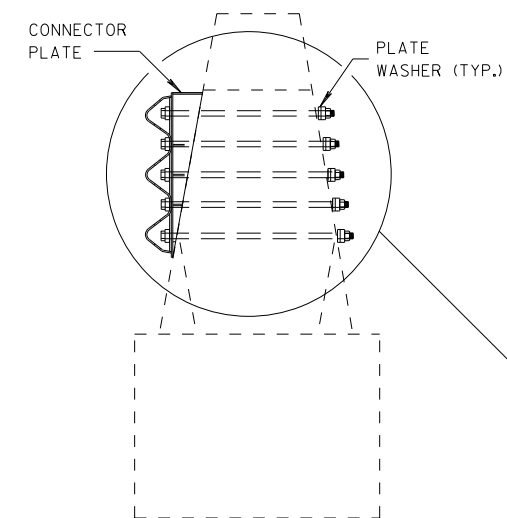
THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



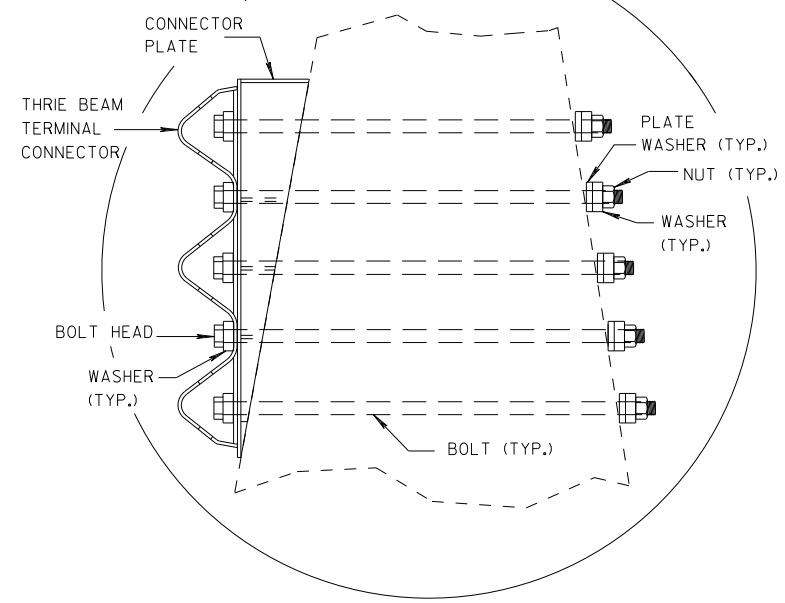
SINGLE SLOPE CONNECTION PLATE PLACEMENT

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 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

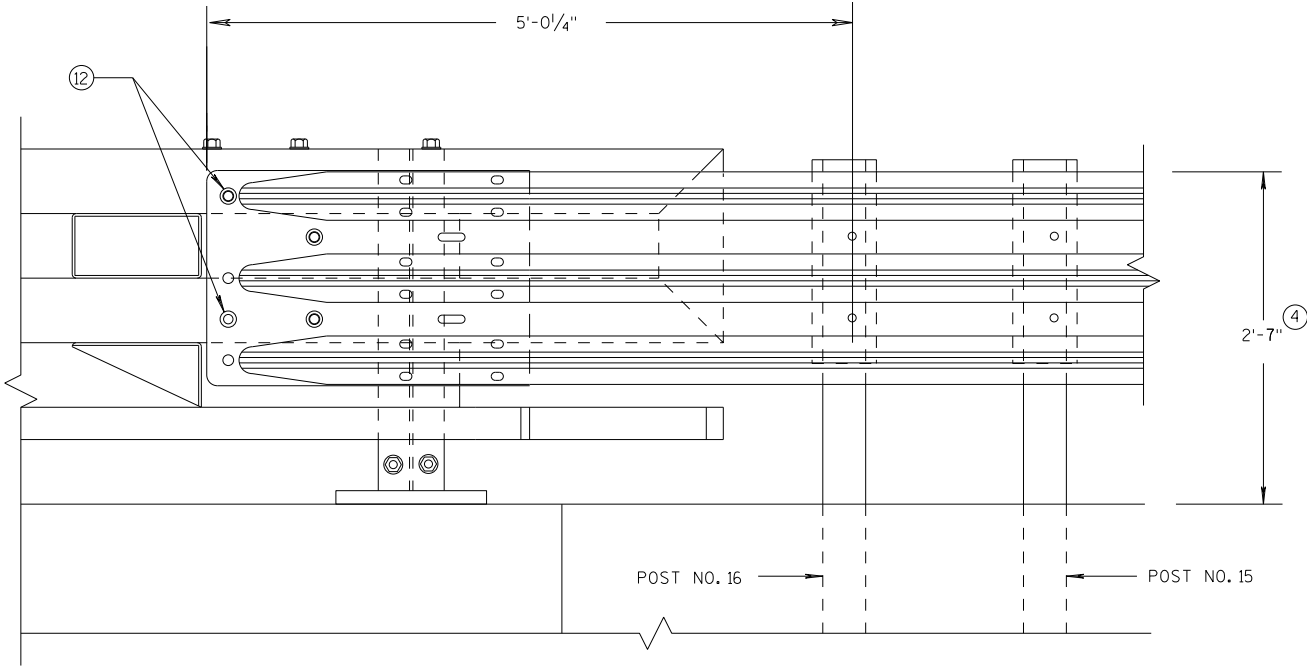
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE 7/2018  
FHWA

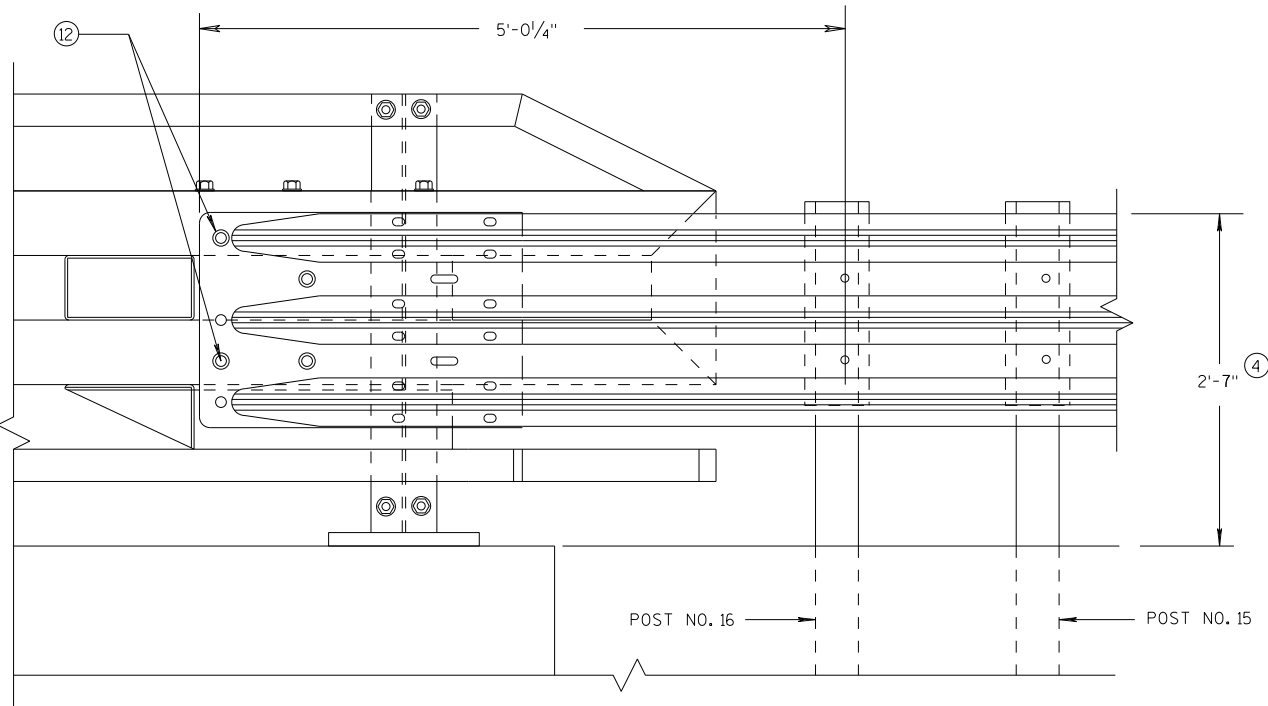
/S/ Rodney Taylor  
ROADWAY STANDARDS DISTRICT 50  
UNIT SUPERVISOR

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.



ELEVATION OF DETAIL AT NY3 END POST  
THRIE BEAM RAIL ATTACHMENT

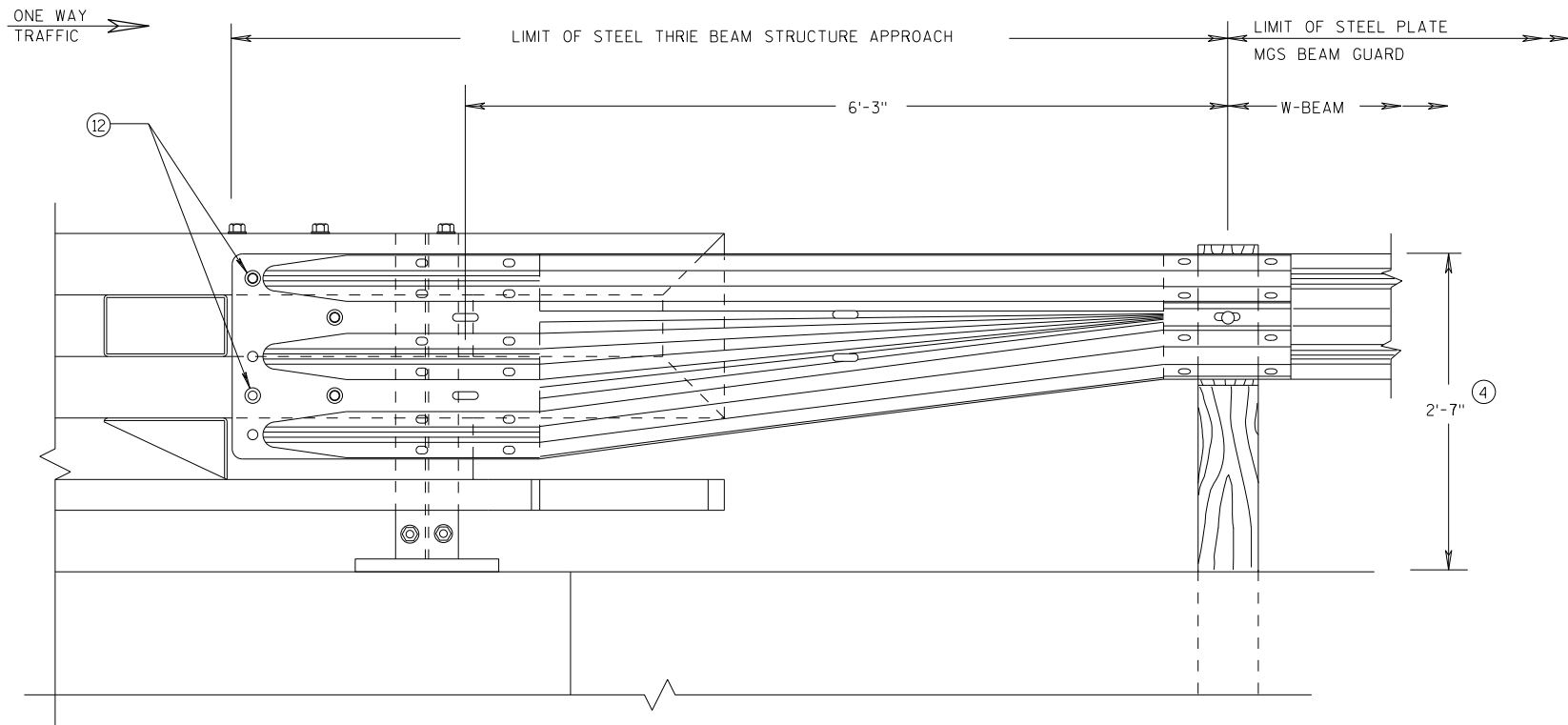


ELEVATION OF DETAIL AT NY4 END POST  
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE 7/2018 /S/ Rodney Taylor  
FHWA ROADWAY STANDARDS UNIT SUPERVISOR 51 NT



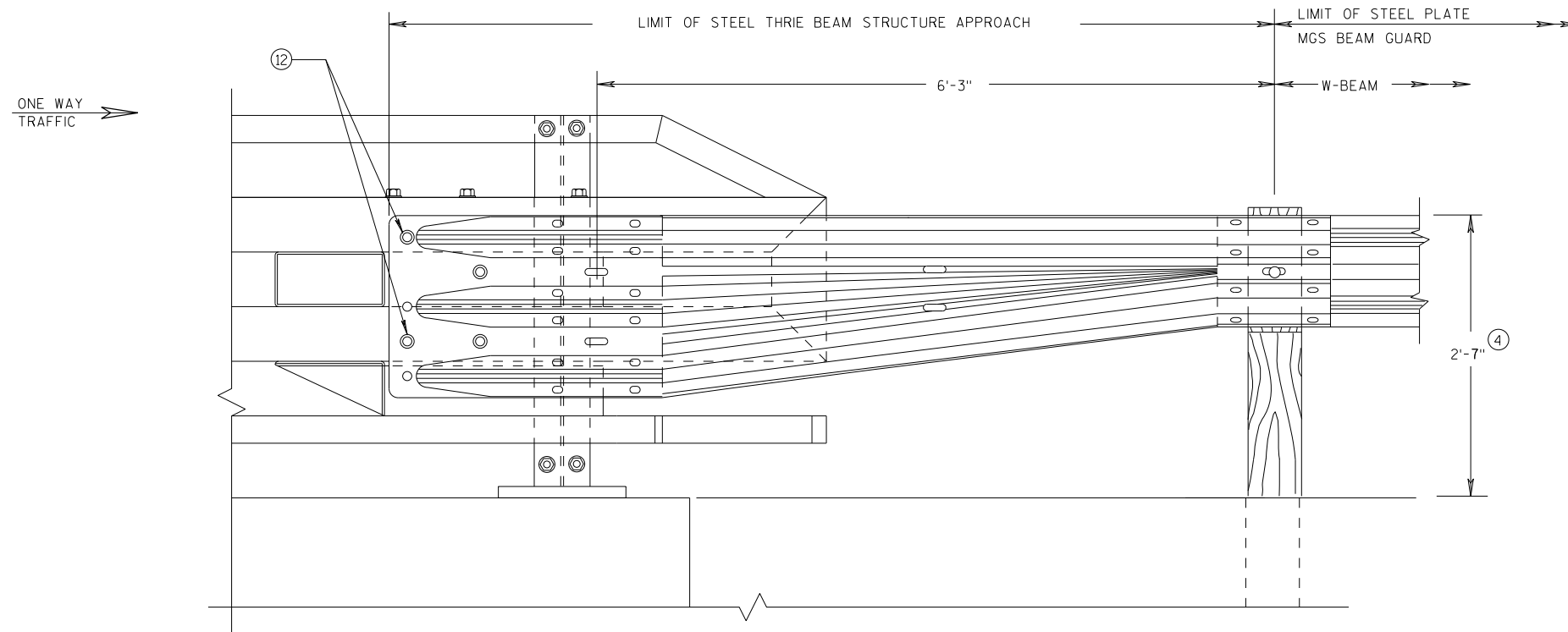
## GENERAL NOTES

(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 "NY3" (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



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

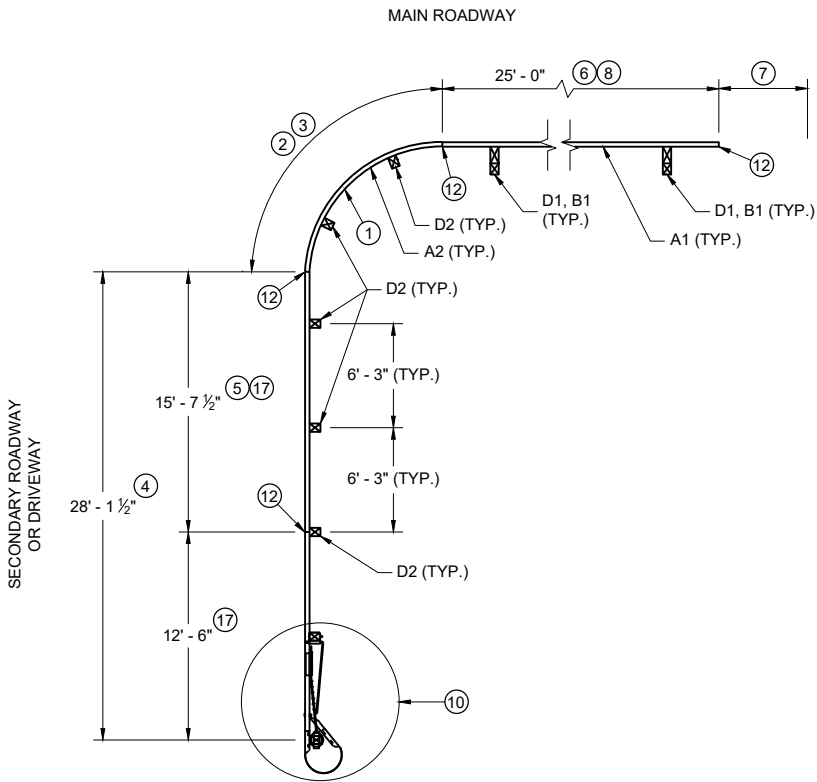
APPROVED

7/2018  
DATE

FHWA

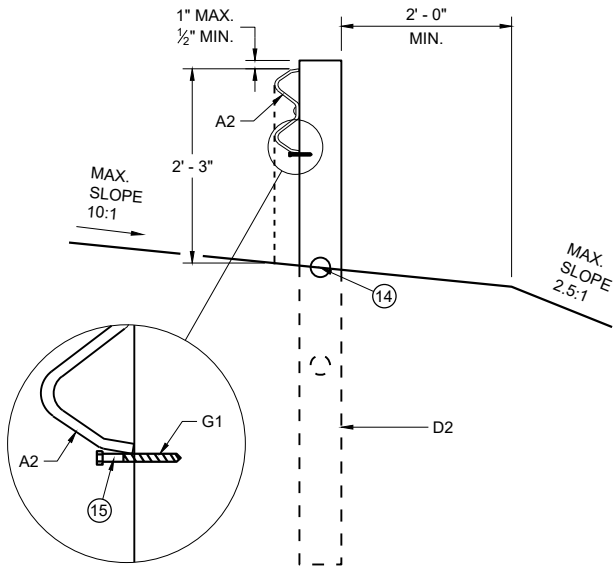
/S/ Rodney Taylor  
ROADWAY STANDARDS C 52  
UNIT SUPERVISOR

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

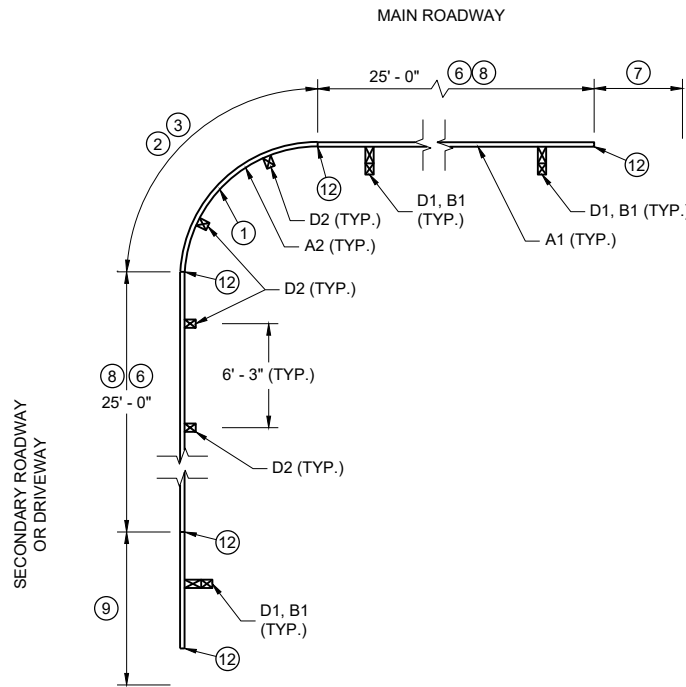


PLAN VIEW

**SHORT RADIUS BEAM GUARD WITH  
SHORT RADIUS TERMINAL ON  
SECONDARY ROAD OR DRIVEWAY**

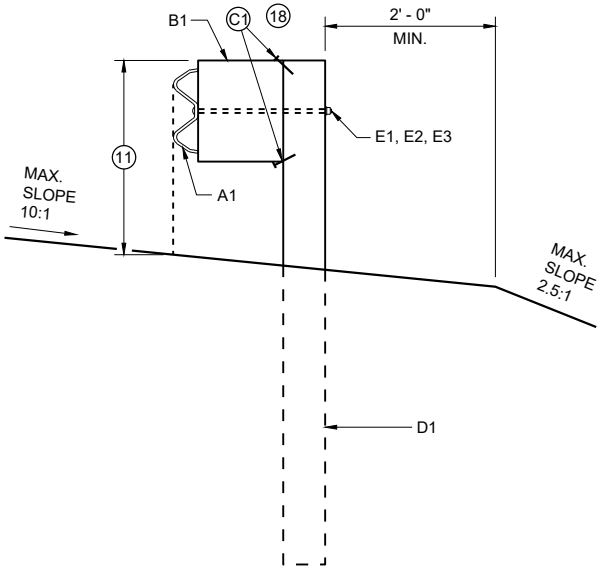


**CONTROLLED RELEASE  
TERMINAL POST (CRT) IN RADIUS**



PLAN VIEW

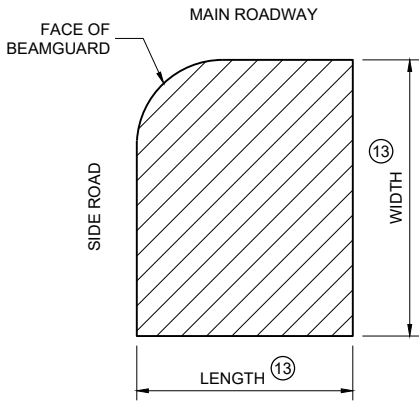
**SHORT RADIUS BEAM GUARD WITH  
EAT, ADDITIONAL BEAM GUARD  
OR  
TRANSITION TO RIGID BARRIER ON  
SECONDARY ROAD OR DRIVEWAY**



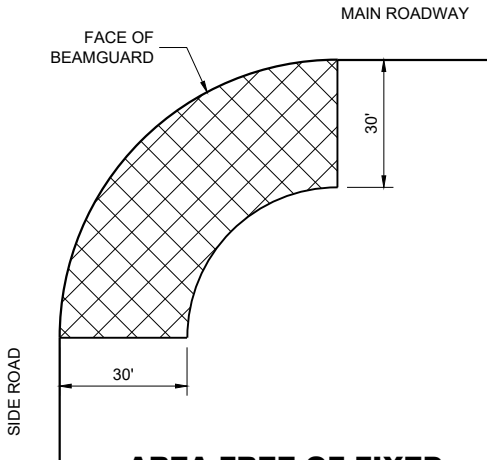
**BEAM GUARD POSTS  
IN HEIGHT TRANSITION**

**TABLE FOR RADIUS OF 32' AND LESS**

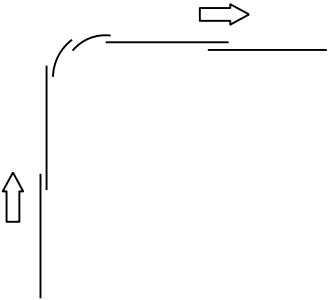
| RADIUS (FT) | LENGTH (FT) | WIDTH (FT) |
|-------------|-------------|------------|
| 8           | 25          | 15         |
| 16          | 30          | 15         |
| 24          | 40          | 20         |
| 32          | 50          | 30         |



**AREA FREE OF FIXED  
OBJECTS FOR RADIUS  
32' AND LESS**



**AREA FREE OF FIXED  
OBJECTS FOR RADIUS  
GREATER THAN 32'**



**LAP SPLICE DETAIL**

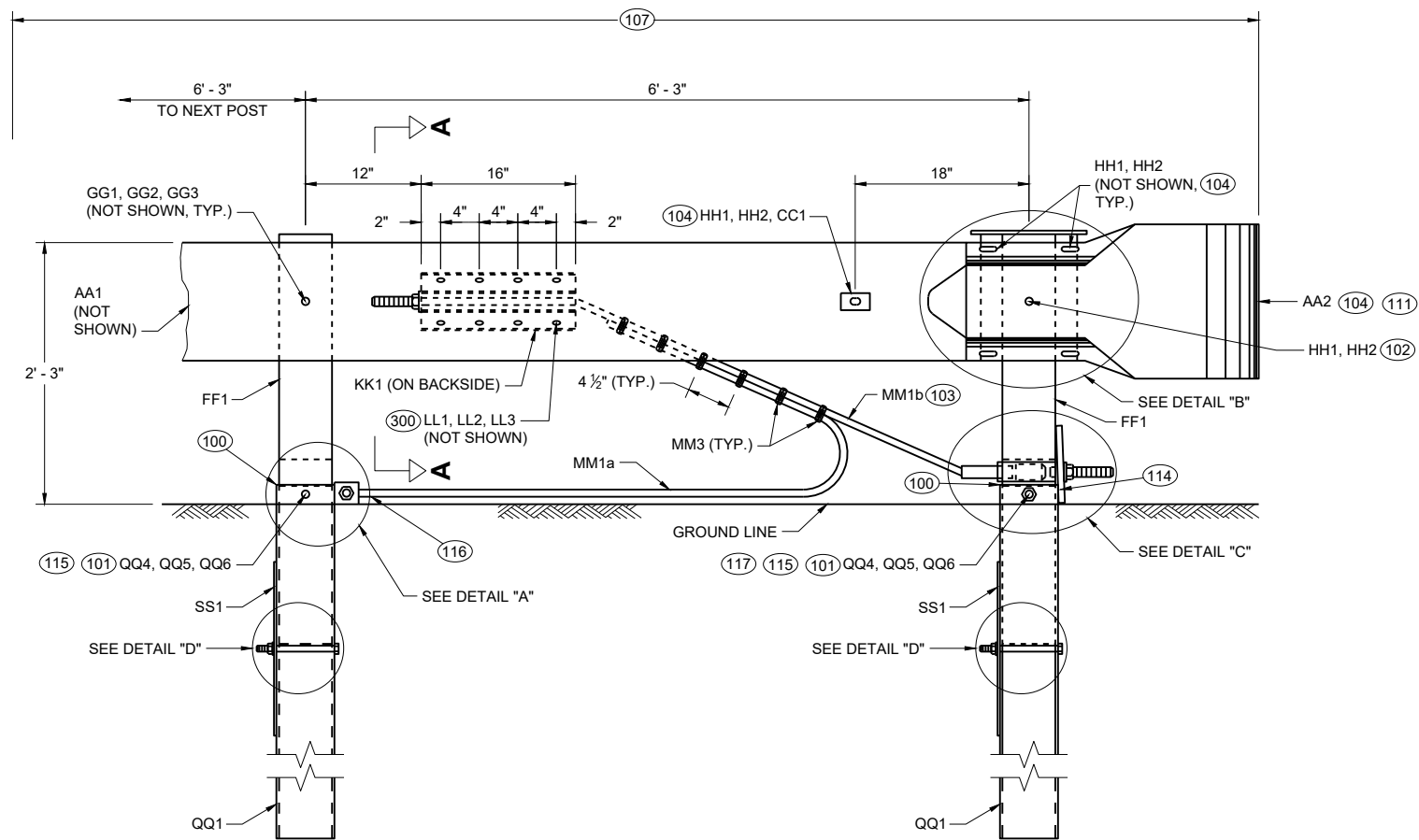
**GENERAL NOTES**

- SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.
- SEE SDD 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.
- GALVANIZE PARTS AFTER FABRICATION.
- WELDING 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 CUT.
- UNLESS NOTED OTHERWISE, CUT OR PROVIDE BOLTS THAT ARE 1/4" TO 1/2" BEYOND THE NUT.
- DRAWINGS ARE NOT TO SCALE.

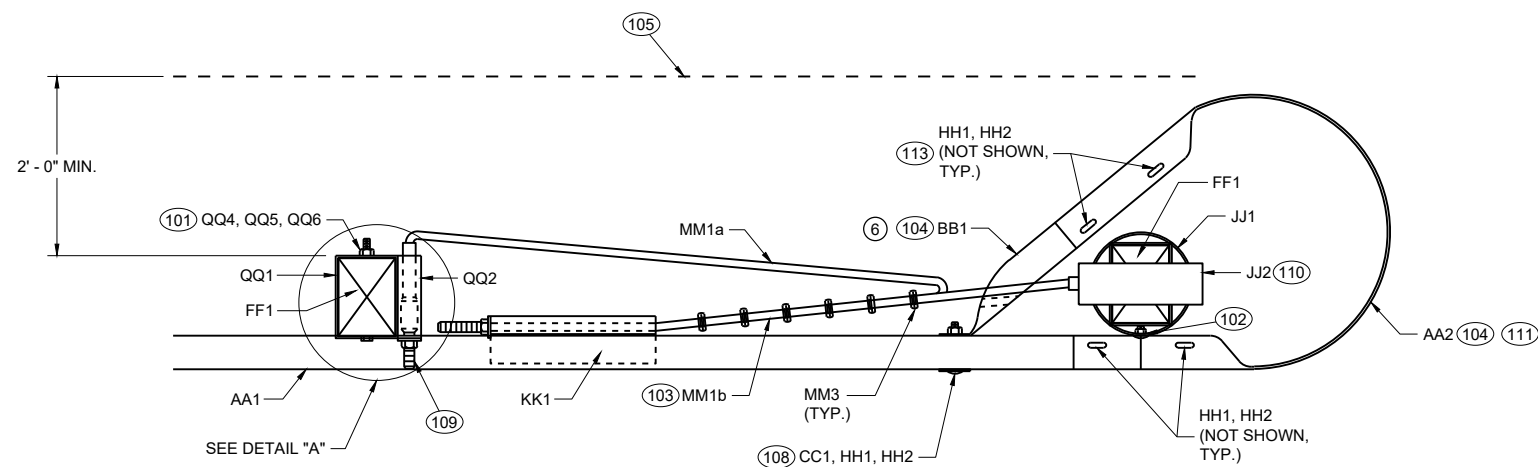
- ① RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- ② CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE USED IN THE RADIUS. CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE SPACED 6' - 3". SEE PLAN FOR NUMBER OF CONTROLLED RELEASE (CRT) POSTS.
- ③ WITHIN RADIUS BEAM GUARD RAILS ARE NOT BOLTED TO POSTS. BEAM GUARD RAIL IS 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 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 TO 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 REQUIRES 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 POST 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 (CRT).
- ⑱ INITIAL 1 NAIL AT EACH CORNER OF THE BLOCK TO CONNECT BLOCKS.

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

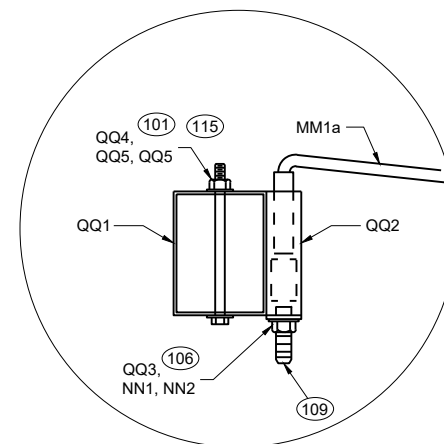
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DEPARTMENT OF TRANSPORTATION



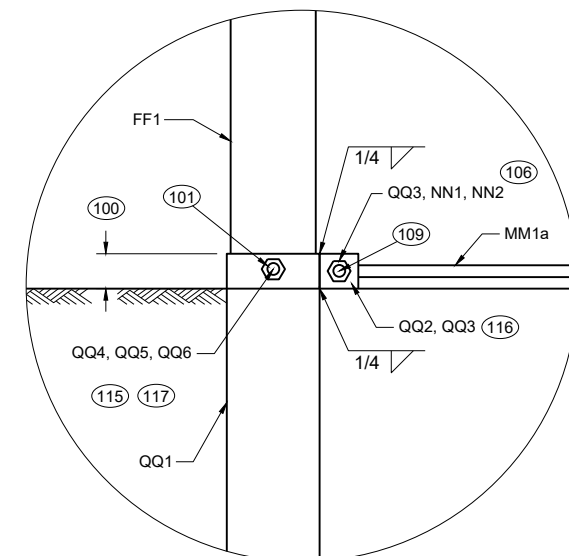
**PROFILE VIEW  
SHORT RADIUS TERMINAL**



**TOP VIEW  
SHORT RADIUS TERMINAL**



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



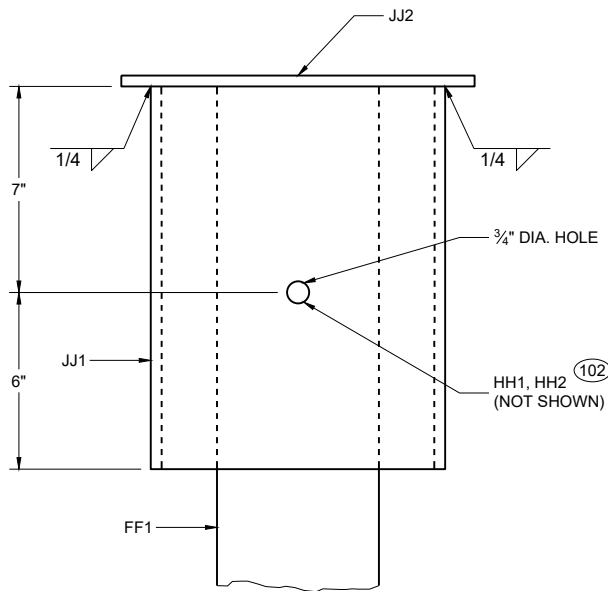
**PROFILE VIEW  
DETAIL "A"**

## GENERAL NOTES

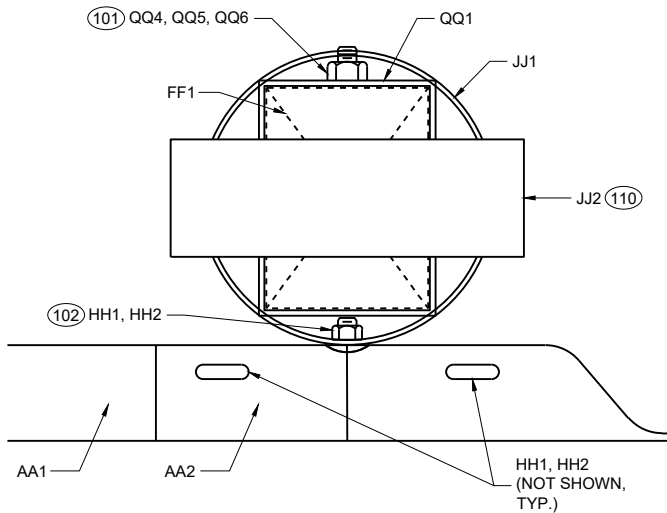
- (100) TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- (101) WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- (102) SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL "B".
- (103) CABLE IS TAUT.
- (104) ADJUST AA2 AND BB1 TO FIT.
- (105) BREAK POINT OF SHOULDER.
- (106) TACK WELD CABLE CONNECTOR TUBE PLATE TO CABLE CONNECTION TUBE. SEE DETAIL "A" PROFILE VIEW.
- (107) PAY LIMIT FOR BEAM GUARD.
- (108) SQUARE WASHER BETWEEN HEAD OF BOLT AND TRAFFIC FACE OF BEAM GUARD. ROUND WASHER REQUIRED BETWEEN NUT AND BB1.
- (109) CUT OR PROVIDE THREADED STUD THAT IS FLUSH WITH FACE OF BEAM GUARD RAIL KK1 (PLUS OR MINUS 1/2" TOLERANCE). DEBURR AFTER CUTTING.
- (110) SEE STEEL PIPE ASSEMBLY DETAILS.
- (111) ATTACH UU2 WITH UU3. SHOP APPLY UU1 TO UU2.
- (112) FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA1 TO AA2.
- (113) FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA2 TO BB1.
- (114) NO MATERIAL IS TO BE PLACED AGAINST THE VERTICAL FACES OF BEARING PLATE.
- (115) PREVENT OR REMOVE MATERIALS THAT BLOCK ACCESS TO BOLTS FOR POST AND SOIL TUBE.
- (116) PREVENT OR REMOVE MATERIALS THAT BLOCK ACCESS TO BOLT. PLACE CABLE ON TOP OF MATERIAL.
- (117) ONE WASHER BETWEEN BOLD HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.

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

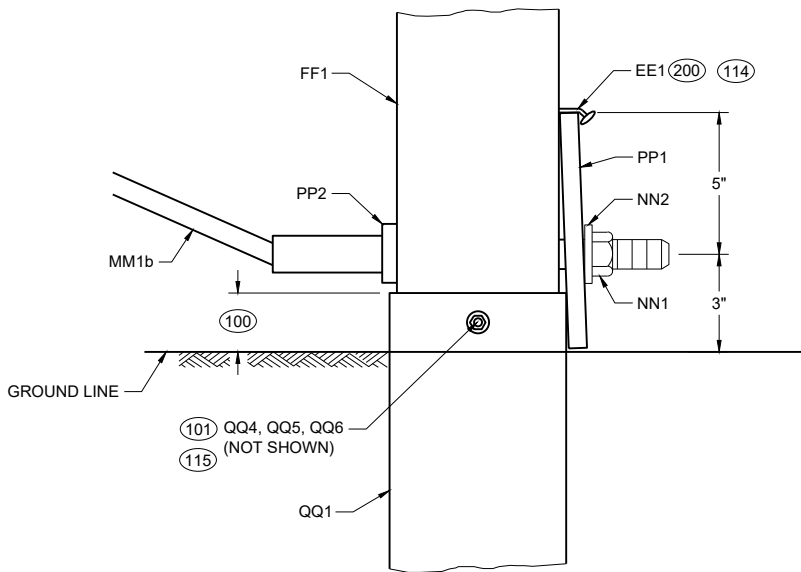
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DEPARTMENT OF TRANSPORTATION



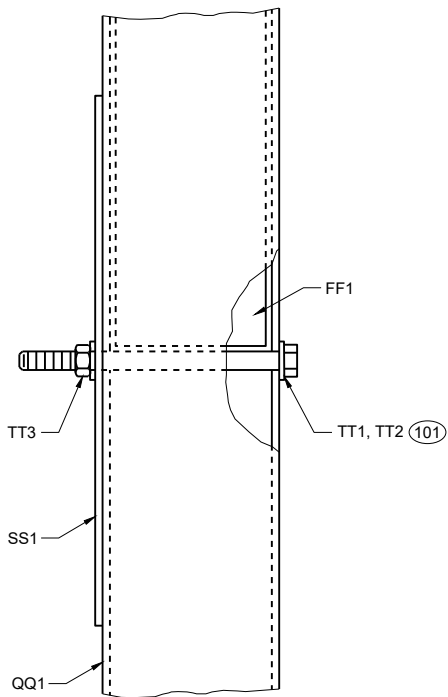
**PROFILE VIEW**  
**DETAIL "B"**  
**STEEL PIPE ASSEMBLY**  
**(BEAM GUARD AND W BEAM**  
**END SECTION NOT SHOWN)**



**PLAN VIEW**  
**DETAIL "B"**  
**STEEL PIPE ASSEMBLY**



**PROFILE VIEW**  
**DETAIL "C"**



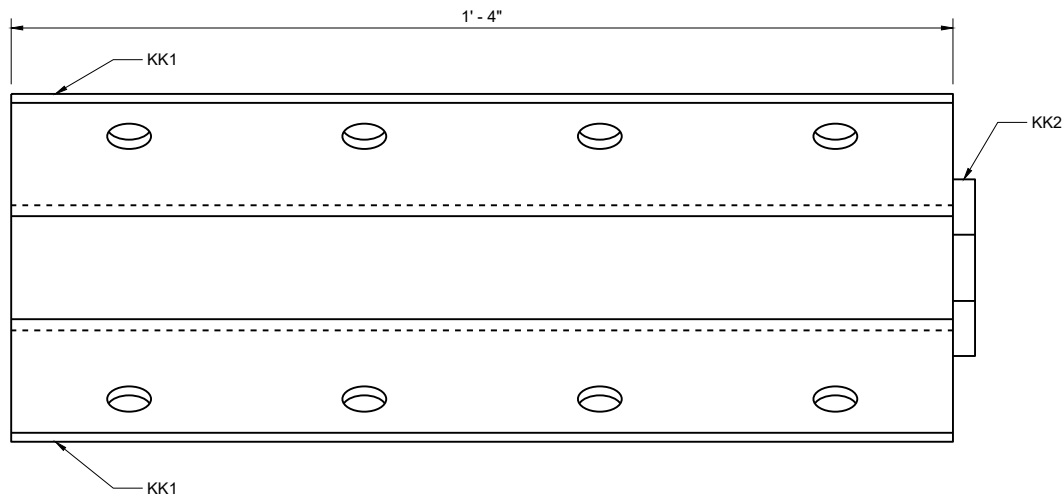
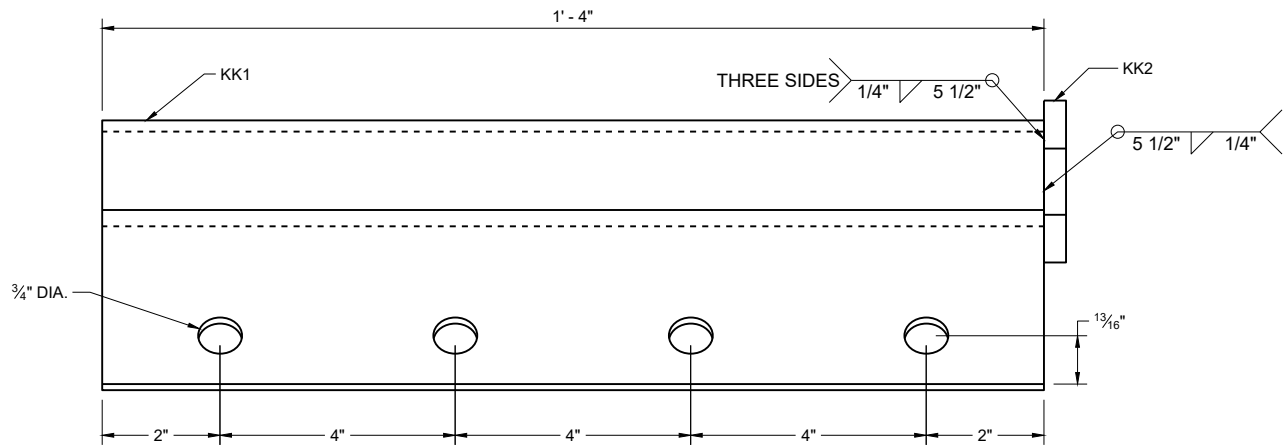
**PROFILE VIEW**  
**DETAIL "D"**

**GENERAL NOTES**

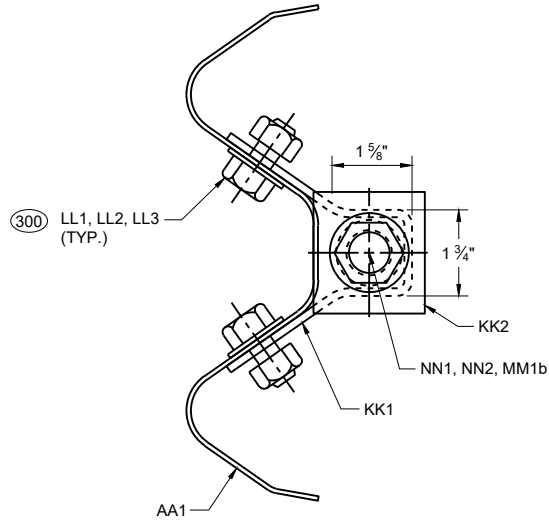
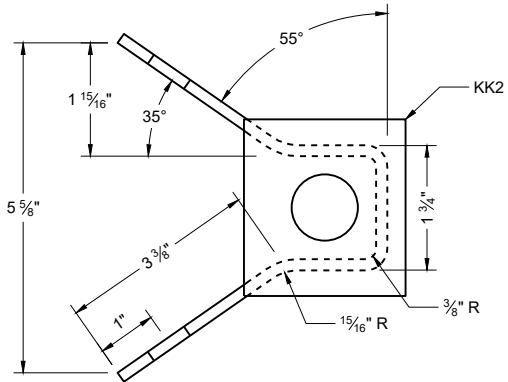
(200) TWO (2) NAILS SPACED 4 INCHES CENTER TO CENTER.

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

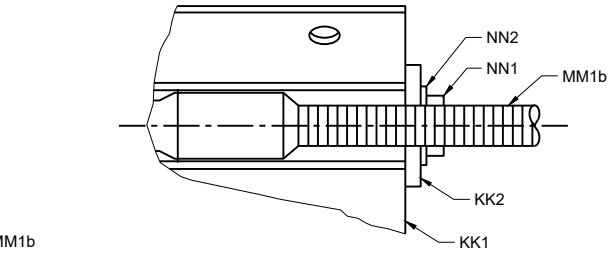
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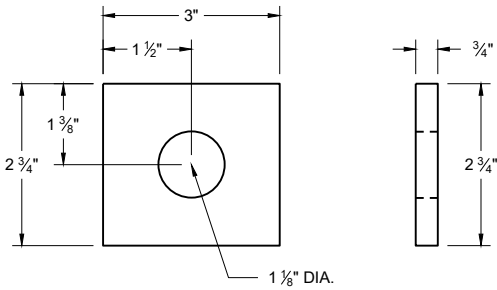
ANCHOR BRACKET (KK1, KK2)



SECTION A - A

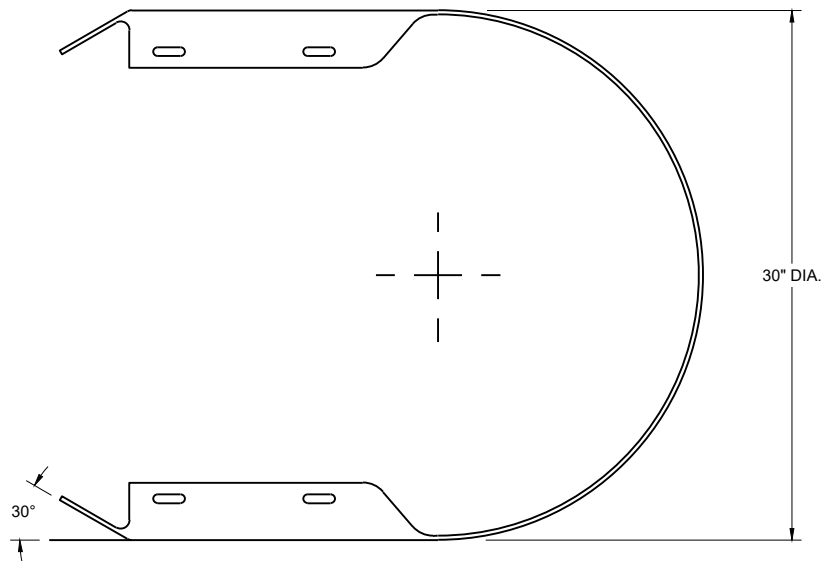


ANCHOR BRACKET BEARING PLATE (KK2)

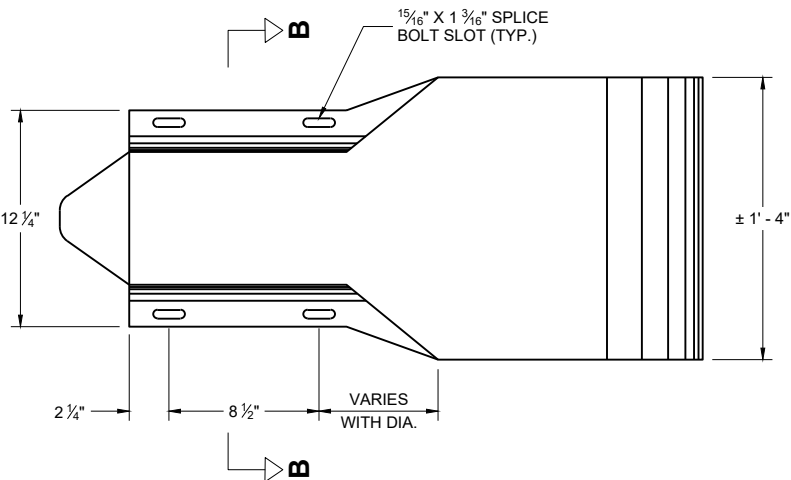


SHORT RADIUS BEAM  
GUARD (MGS) SHORT  
RADIUS TERMINAL (MGS)

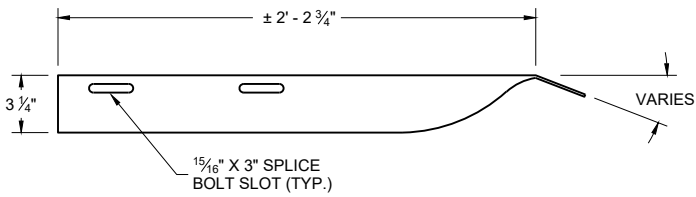
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



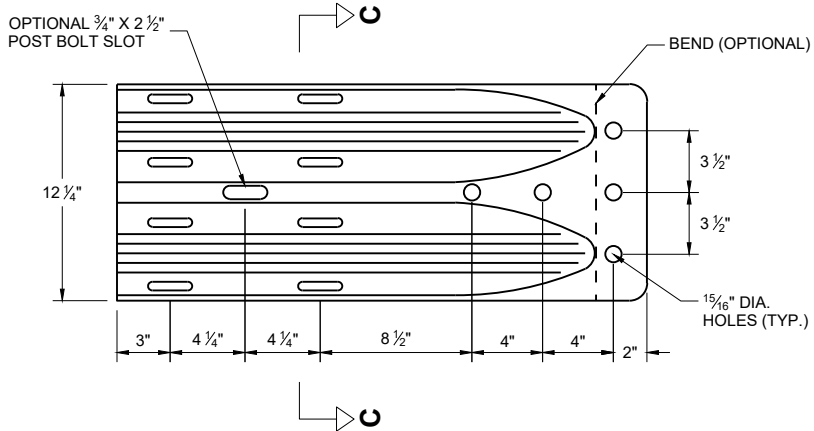
TOP VIEW



PROFILE VIEW  
W BEAM  
END SECTION BUFFER (AA2)



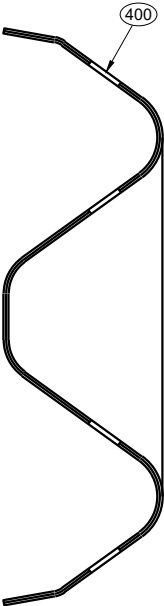
TOP VIEW



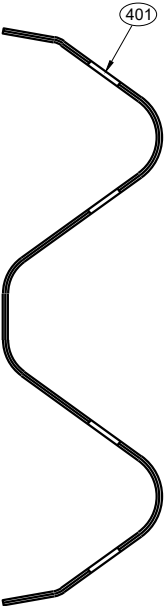
PROFILE VIEW  
W BEAM  
TERMINAL CONNECTOR (BB1)

GENERAL NOTES

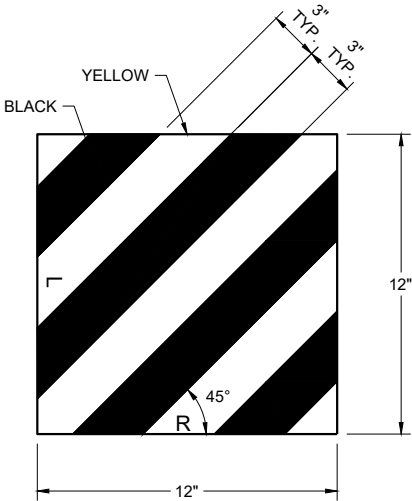
- (400) CROSS SECTION OF PART IS TO FIT OVER AA1 .
- (401) CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1 .



SECTION B -B



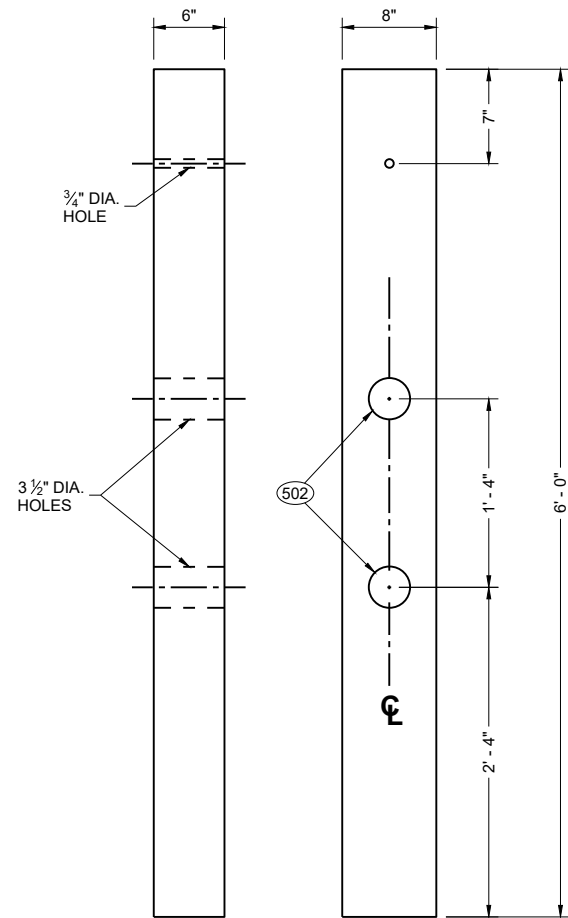
SECTION C -C



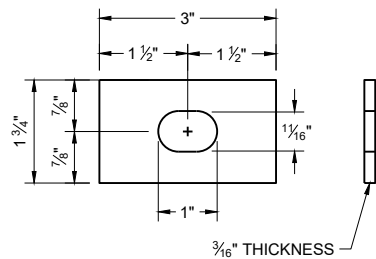
REFLECTIVE SHEETING (UU1, UU2)

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

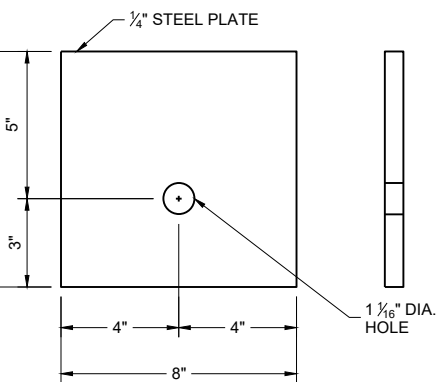
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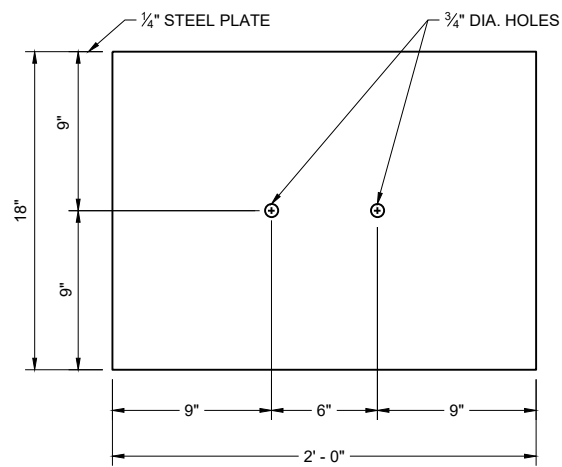
**FRONT VIEW      SIDE VIEW**  
**CONTROLLED RELEASE POST (CRT) (DD2)**



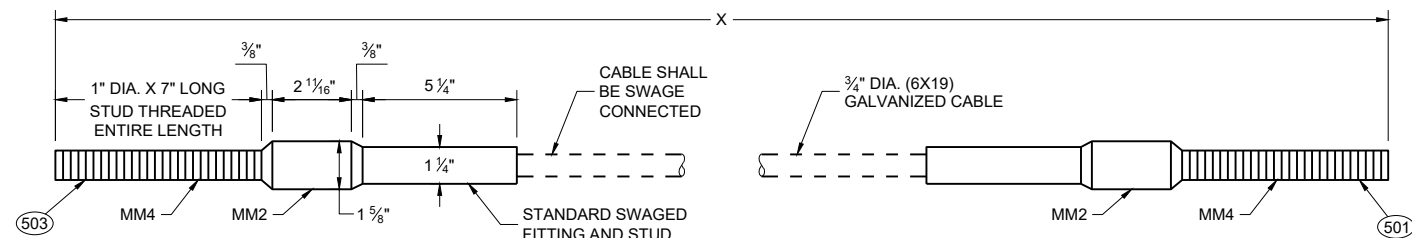
**RECTANGULAR PLATE WASHER (CC1)**



**BEARING PLATE (PP1)**



**SOIL PLATE (SS1)**

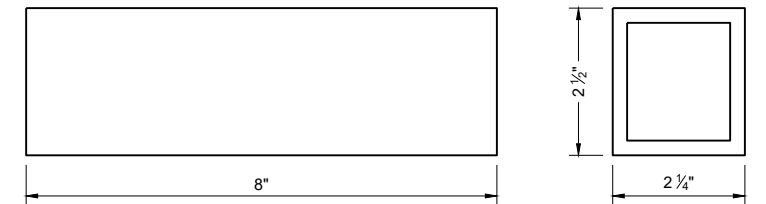


**CABLE ASSEMBLY (MM1a, MM1b)**

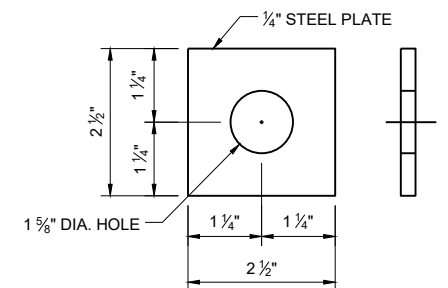
| "X" LENGTH |         |
|------------|---------|
| MM1b       | 9' - 0" |
| MM1b       | 6' - 8" |

**GENERAL NOTES**

- (500) SEE DETAIL "D" FOR LOCATION AND ATTACHMENT OF SS1.
- (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)



**FOUNDATION TUBE - ANCHOR CABLE TUBE (QQ2)**



**ANCHOR CABLE TUBE END PLATE (QQ3)**

**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 THE 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.<br><br>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.<br><br>SEE SDD 14B42 FOR BOLT 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.<br><br>SEE SDD 14B42 FOR BOLT GEOMETRY |
|      |                             | 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.<br><br>SEE SDD 14B42 FOR BOLT 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                                                                                                                | 1/2" DIA. 6" LONG                                |
| H1   | DELINEATOR - BEAM GUARD                       |                                                                                                                                                    | SEE SDD 14B42 FOR MORE INFORMATION               |
| H2   | DELINEATION - SHEETING                        | YELLOW OR WHITE                                                                                                                                    |                                                  |
|      |                                               | WISDOT SPEC 637 TYPE SH                                                                                                                            |                                                  |
|      |                                               | APPROVED PRODUCT LIST                                                                                                                              |                                                  |
| J1   | FOUNDATION BACKFILL                           | 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.<br><br>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                                                                                                                                                |                                                  |
| 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 A 123 OR GALV. HOT DIP. TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329                                             |                                                  |

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

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

| PART | DESCRIPTION                    | MATERIALS SPECIFICATIONS                                                                                                                                             | NOTES                                            |
|------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| GG3  | POST BOLT - NUT                | ASTM A563 GRADE A                                                                                                                                                    | 3/8" DIA.<br>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                                                                                                   |                                                  |
|      |                                | ASTM A563 GRADE A HEAVY HEX HEAD                                                                                                                                     |                                                  |
| HH1  | SPLICE BOLT                    | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1             | 3/8" DIA.<br><br>SEE SDD 14B42 FOR BOLT GEOMETRY |
|      |                                | ASTM A307 GRADE A OR SAE J429 GRADE 2                                                                                                                                |                                                  |
|      |                                | UNC                                                                                                                                                                  |                                                  |
|      |                                | AASHTO M180 HEAD GEOMETRY                                                                                                                                            |                                                  |
| HH2  | SPLICE BOLT - NUT              | ASTM A563 GRADE A                                                                                                                                                    | 3/8" DIA.<br><br>SEE SDD 14B42 FOR BOLT 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                                                                                                                                                                  |                                                  |
| 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<br>3/8" X 4" X 1" - 0"                |
|      |                                | GALV. AASHTO M111 / ASTM A123                                                                                                                                        |                                                  |
| KK1  | ANCHOR BRACKET                 | ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI |                                                  |
|      |                                | GALV. AASHTO M111 / ASTM A123                                                                                                                                        |                                                  |
| KK2  | ANCHOR BRACKET - BEARING PLATE | ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI |                                                  |
|      |                                | GALV. AASHTO M111 / ASTM A123                                                                                                                                        |                                                  |
| LL1  | ANCHOR BRACKET - BOLT          | ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD                                                                                                  | 5/8" DIA.                                        |
|      |                                | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1             |                                                  |
|      |                                | UNC                                                                                                                                                                  |                                                  |

| PART | DESCRIPTION                         | MATERIALS SPECIFICATIONS                                                                                                                                                | NOTES     |
|------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| LL2  | ANCHOR BRACKET - WASHER             | ASTM F436 TYPE 1 (HARDEN WASHER ONLY)                                                                                                                                   | 5/8" DIA. |
|      |                                     | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329                                                                  |           |
| LL3  | ANCHOR BRACKET - NUT                | ASTM A563 GRADE A                                                                                                                                                       | 5/8" DIA. |
|      |                                     | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1                |           |
|      |                                     | OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563                                                                                                      |           |
|      |                                     | UNC                                                                                                                                                                     |           |
| 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 SWEDGED. WITH A BREAKING STRENGTH 40,000 LBS.                                                                                          |           |
|      |                                     | GALV. AASHTO M111 / ASTM A123                                                                                                                                           |           |
|      |                                     | ASME B30.26 FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING INTO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE. |           |
| MM3  | WIRE ROPE CABLE CLAMPS              | FF-C-450D TYPE 1 CLASS 1                                                                                                                                                | 3/4"      |
|      |                                     | ASTM A153 HOT DIP CLASS D                                                                                                                                               |           |
| MM4  | ANCHOR CABLE - SWAGE FITTING - STUD | ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD                                                                                          |           |
|      |                                     | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1                |           |
|      |                                     | UNC                                                                                                                                                                     |           |
| NN1  | ANCHOR CABLE - NUT                  | ASTM A563 GRADE A                                                                                                                                                       | 1" DIA.   |
|      |                                     | AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD                                                                                                                              |           |
|      |                                     | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1                |           |
|      |                                     | OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563                                                                                                      |           |
| NN2  | ANCHOR CABLE - NUT - WASHER         | UNC                                                                                                                                                                     | 1" DIA.   |
|      |                                     | ASTM F436 TYPE 1 (HARDEN WASHER ONLY)                                                                                                                                   |           |
|      |                                     | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329                                                                  |           |

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

| PART | DESCRIPTION                                                | MATERIALS SPECIFICATIONS                                                                                                                                             | NOTES                               |
|------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| PP1  | BEARING PLATE AT POST                                      | ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI |                                     |
|      |                                                            | GALV. AASHTO M111 / ASTM A123                                                                                                                                        |                                     |
| PP2  | PIPE - STEEL                                               | ASTM A53 GALVANIZED GRADE B SCHEDULE 40                                                                                                                              | 2" DIA. x 6" LONG                   |
| QQ1  | FOUNDATION TUBE                                            | ASTM A500 GRADE B                                                                                                                                                    | 8" X 6" X 3⁄16"                     |
|      |                                                            | GALV. AASHTO M111 / ASTM A123                                                                                                                                        |                                     |
| QQ2  | SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE       | ASTM A500 GRADE B                                                                                                                                                    | DIMENSIONS<br>2 ½" X 2 ¼" X ¼" X 8" |
|      |                                                            | GALV. AASHTO M111 / ASTM A123                                                                                                                                        |                                     |
| QQ3  | SHORT RADIUS - SOIL TUBE - ANCHOR CABLE - TUBE - END PLATE | ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI | DIMENSIONS<br>2 ½" X 2 ½" X ¼"      |
|      |                                                            | GALV. AASHTO M111 / ASTM A123                                                                                                                                        |                                     |
| QQ4  | GROUND STRUT AND YOKE - BOLT                               | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1             | 5⁄8 DIA.                            |
|      |                                                            | ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD                                                                                                  |                                     |
|      |                                                            | UNC                                                                                                                                                                  |                                     |
| QQ5  | GROUND PLATE AND YOKE - WASHER                             | ASTM F436 TYPE 1 (HARDEN WASHER ONLY)                                                                                                                                | 5⁄8 DIA.                            |
|      |                                                            | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329                                                               |                                     |
| QQ6  | GROUND STRUT AND YOKE - NUT                                | HEAVY HEX                                                                                                                                                            | 5⁄8 DIA.                            |
|      |                                                            | UNC                                                                                                                                                                  |                                     |
|      |                                                            | ASTM A563 GRADE A                                                                                                                                                    |                                     |
|      |                                                            | OVER TAPPED NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563                                                                                                             |                                     |
|      |                                                            | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1             |                                     |

| PART | DESCRIPTION                    | MATERIALS SPECIFICATIONS                                                                                                                                             | NOTES                                                     |
|------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 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 / A123                                                                                                                                             |                                                           |
| TT1  | SOIL PLATE - BOLT              | ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD                                                                                                  | 5⁄8 DIA.                                                  |
|      |                                | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1             |                                                           |
|      |                                | UNC                                                                                                                                                                  |                                                           |
| TT2  | SOIL PLATE - WASHER            | ASTM F436 TYPE 1 (HARDEN WASHER ONLY)                                                                                                                                | 5⁄8 DIA.                                                  |
|      |                                | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329                                                               |                                                           |
| TT3  | SOIL PLATE - NUT               | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1             | 5⁄8 DIA.                                                  |
| UU1  | OBJECT MARKER - SHEETING       | MUTCD / WISDOT OBJECT MARKER TYPE 3                                                                                                                                  | PATTERN AND COLOR FOR SHEETING. SHEETING TYPE FOR MARKER. |
|      |                                | WISDOT SPEC 637 TYPE F                                                                                                                                               |                                                           |
|      |                                | APPROVED PRODUCT LIST                                                                                                                                                |                                                           |
| UU2  | OBJECT MARKER - ALUMINUM PLATE | WISDOT SPEC 637 ALUMINUM PLATE                                                                                                                                       | MATERIAL AND THICKNESS OF MATERIALS                       |
| UU3  | OBJECT MARKER - SCREWS         | STAINLESS SELF-TAPPING SCREWS                                                                                                                                        |                                                           |
| VV1  | FOUNDATION BACKFILL            | WISDOT SPEC 614                                                                                                                                                      |                                                           |

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

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVED

December 2024

DATE

/S/ Rodney Taylor

ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

GENERAL NOTES

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

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

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

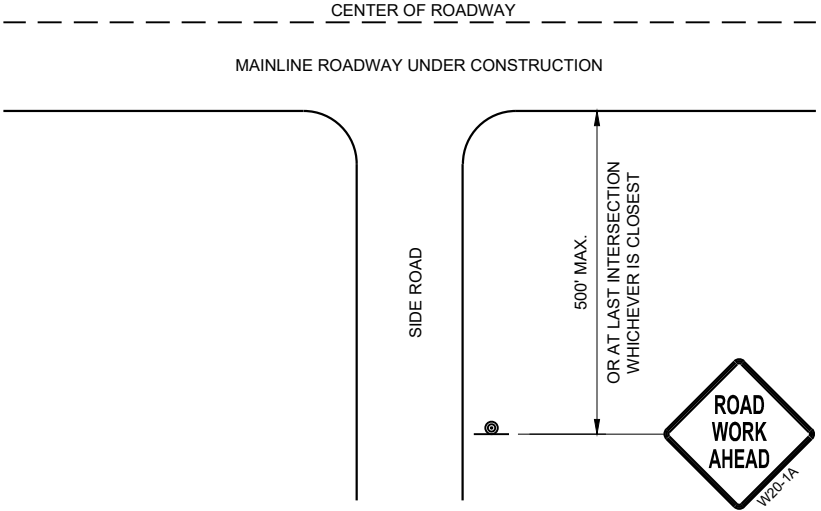
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

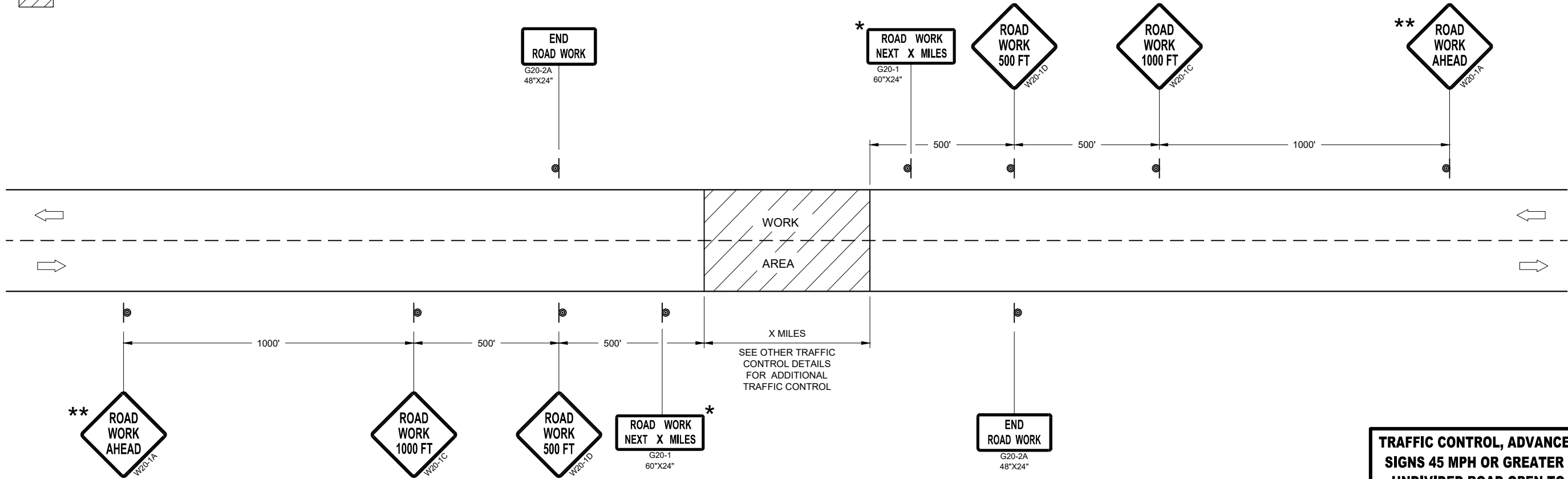
- \* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- \*\* PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH  
WARNING SIGN DETAIL

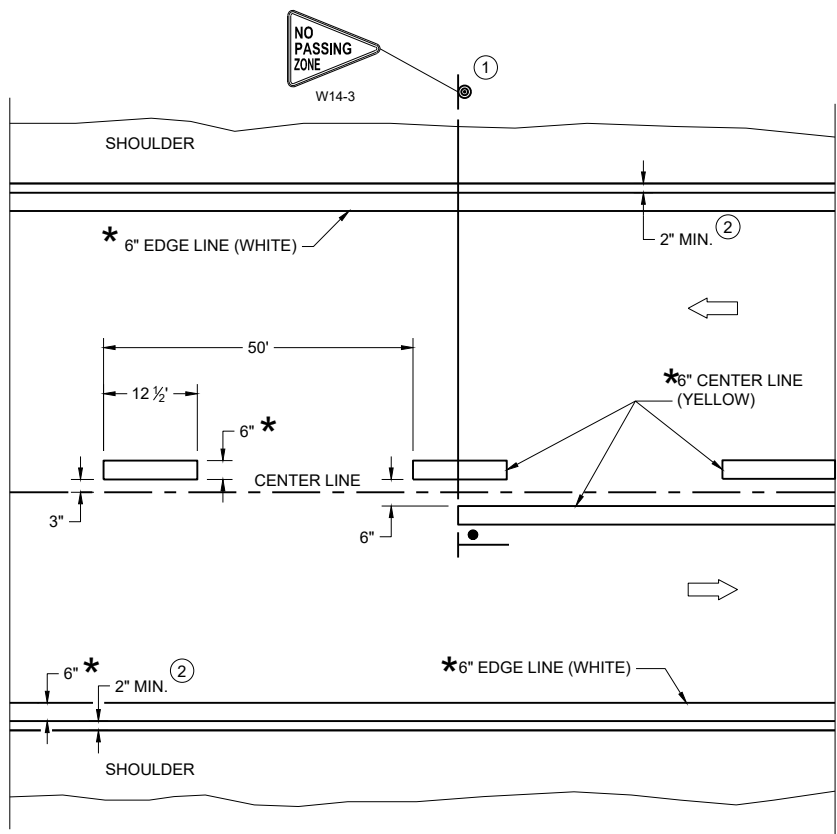


TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

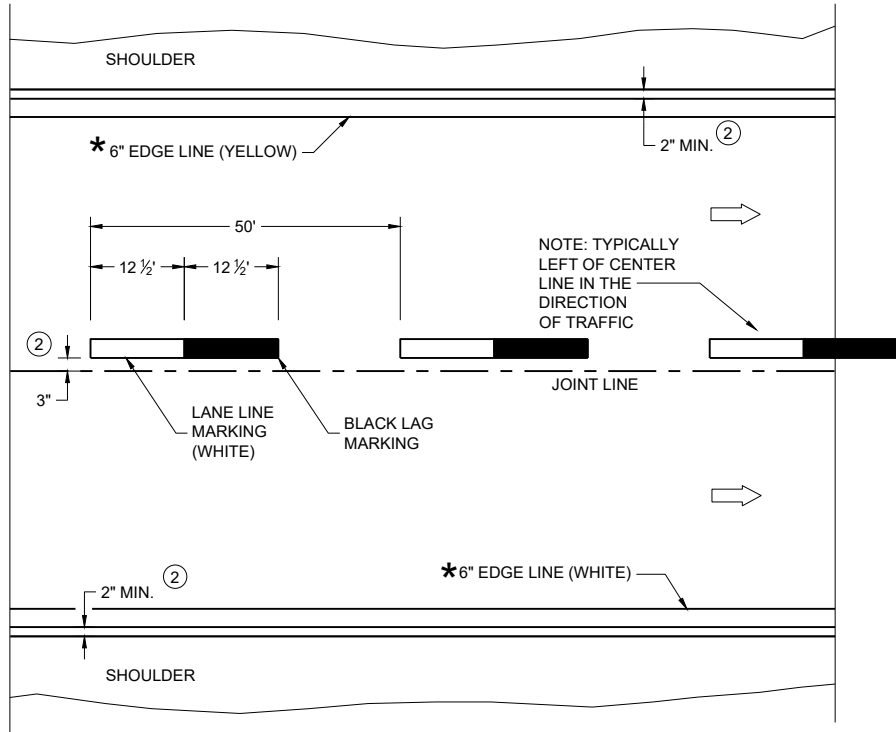
TRAFFIC CONTROL, ADVANCE WARNING  
SIGNS 45 MPH OR GREATER TWO-WAY  
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
July 2018 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER 62  
FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

\*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

GENERAL NOTES

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

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

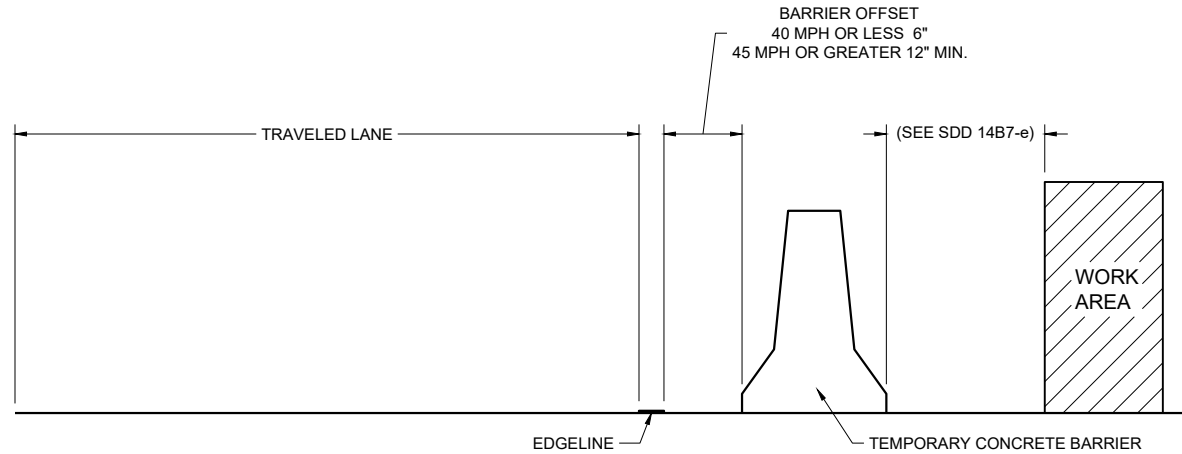
LEGEND

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

PERMANENT LONGITUDINAL PAVEMENT MARKINGS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
December 2024 /S/ Jeannie Silver  
DATE Statewide Pavement Marking Engineer



TEMPORARY BARRIER OFFSET FROM EDGE LINE

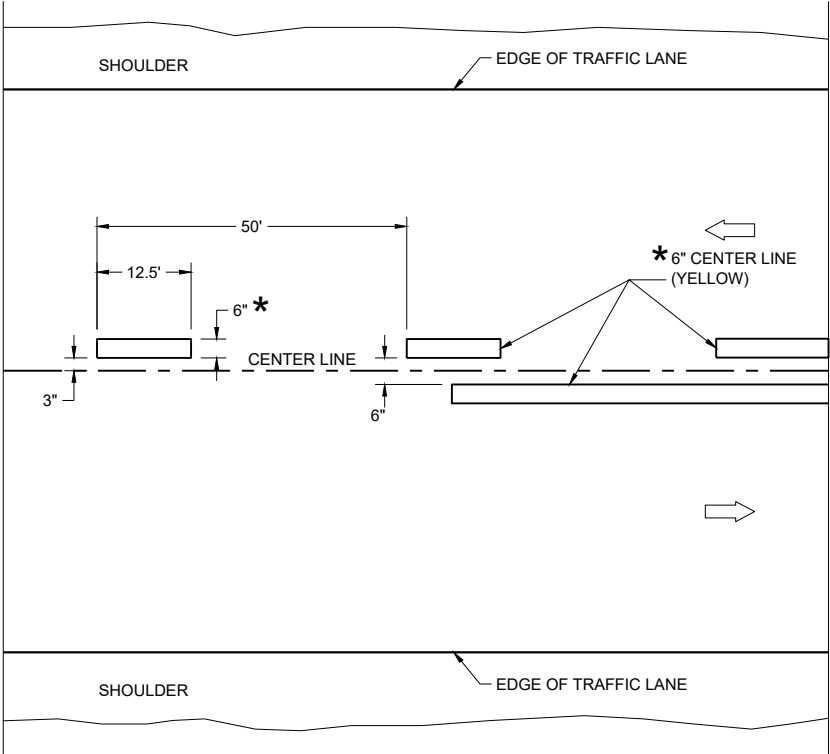
GENERAL NOTES

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

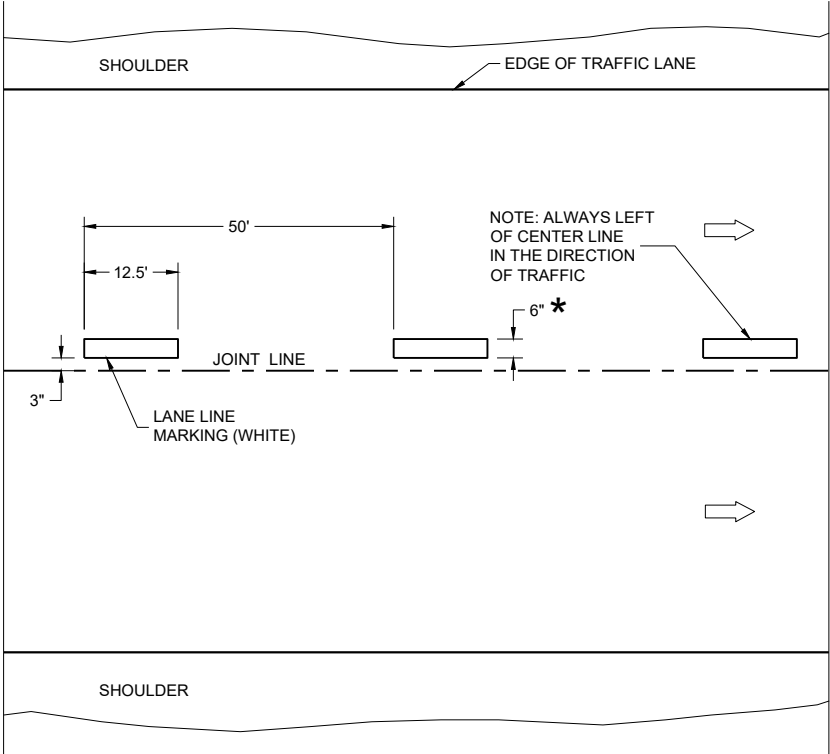
LEGEND

DIRECTION OF TRAFFIC

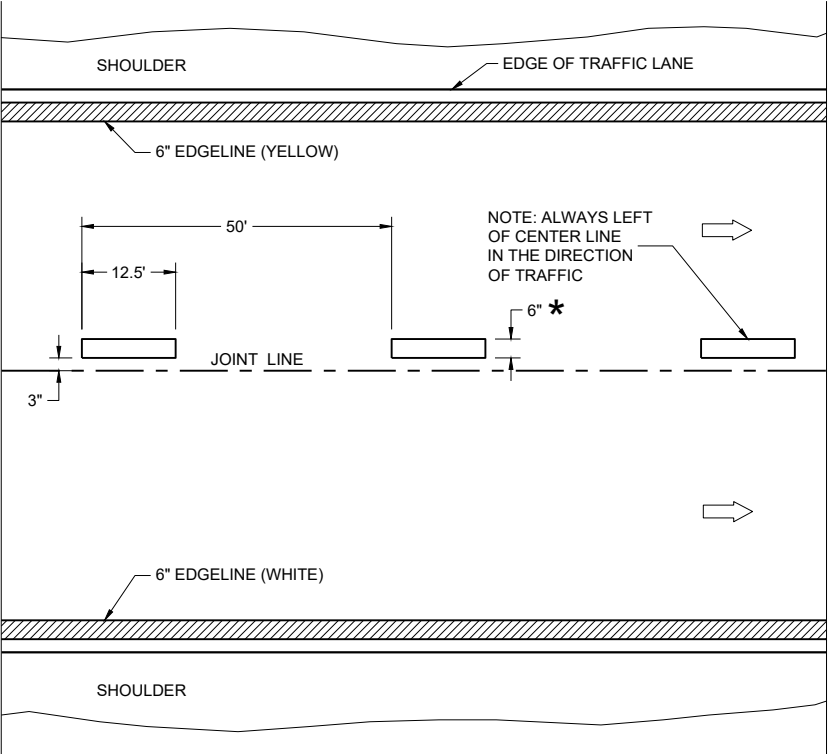
\* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES



TWO WAY TRAFFIC



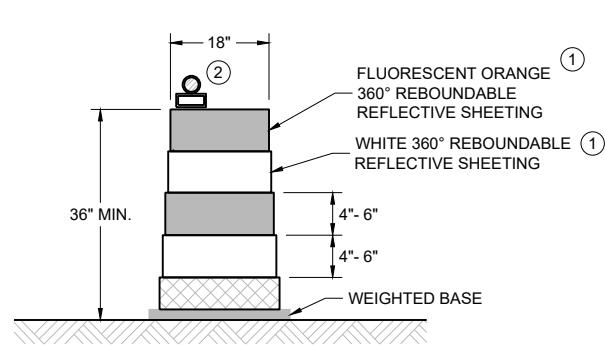
ONE WAY TRAFFIC



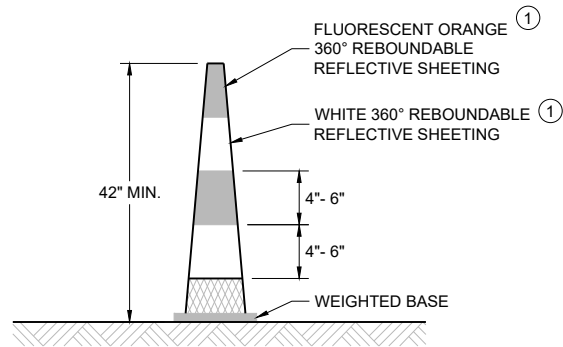
FREEWAYS AND EXPRESSWAYS

TEMPORARY PAVEMENT MARKING

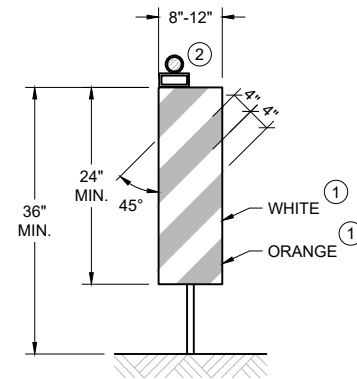
| TEMPORARY LONGITUDINAL PAVEMENT MARKING            |                                                           |
|----------------------------------------------------|-----------------------------------------------------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                                                           |
| APPROVED<br>December 2024<br>DATE                  | /S/ Jeannie Silver<br>Statewide Pavement Marking Engineer |
| FHWA                                               |                                                           |



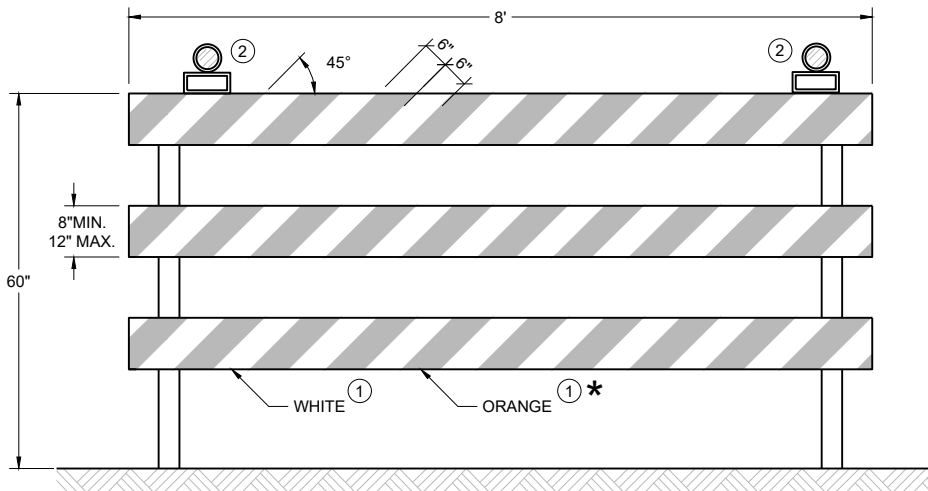
**DRUM**  
BALLAST WIDTHS  
RANGE FROM 24"-36"



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



**VERTICAL PANEL**  
THE STRIPES SHALL SLOPE DOWNWARD TO  
THE TRAFFIC SIDE FOR CHANNELIZATION.



**TYPE III BARRICADE**  
IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP  
TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.  
\* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

**GENERAL NOTES**

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

**CHANNELIZING DEVICES  
DRUMS, CONES, BARRICADES  
AND VERTICAL PANELS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2026 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

FHWA

LEGEND

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

GENERAL NOTES

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

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

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

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

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

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

FLAGGING

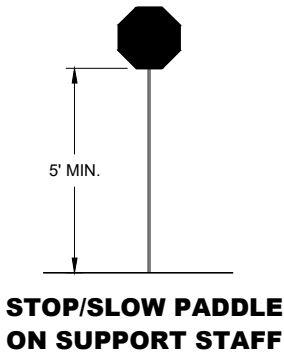
FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

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

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

TEMPORARY PORTABLE RUMBLE STRIPS

- UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSE ACROSS THE LANE AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER
- ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.
- INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.
- PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.
- DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.

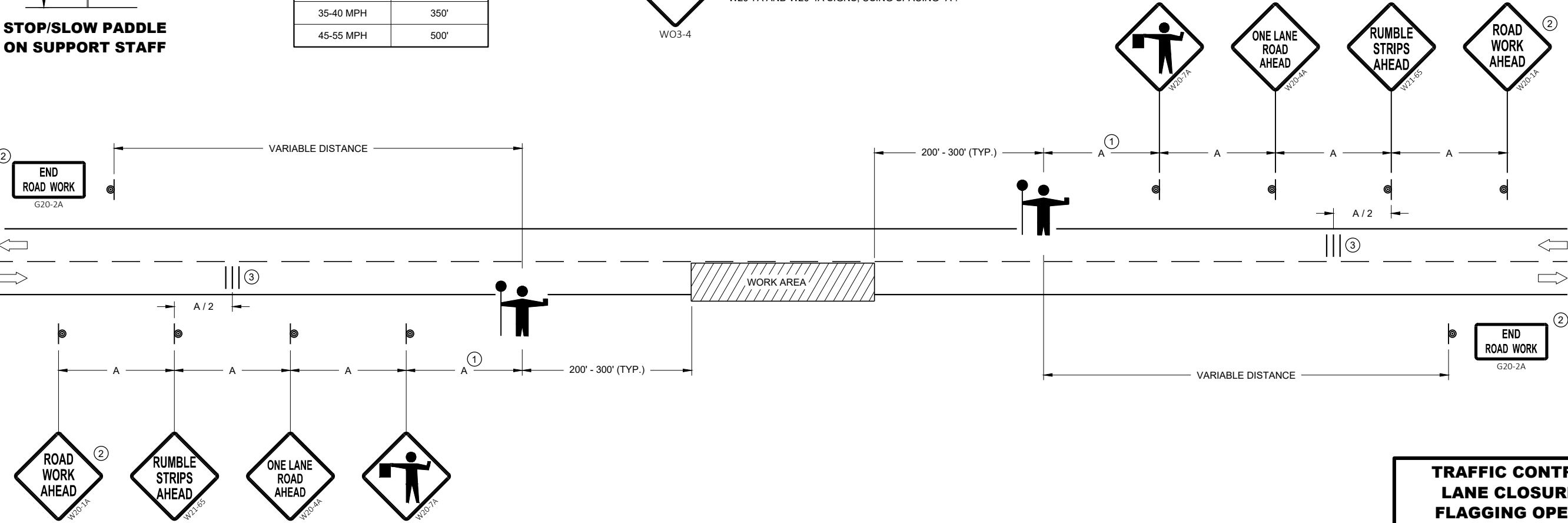


SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



USE OF W03-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".



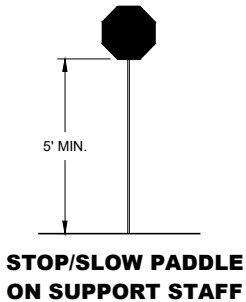
**TRAFFIC CONTROL FOR  
LANE CLOSURE WITH  
FLAGGING OPERATION**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2022 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER 66

FHWA

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



- GENERAL NOTES**  
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.  
  
ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.  
  
"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.  
  
THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS, DEVICES, AND LOCATION OF ALL FLAGGERS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.  
  
THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.  
  
WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

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

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

- FLAGGING**  
IF THE AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) STOPS WORKING, FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.  
  
WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.
- ①

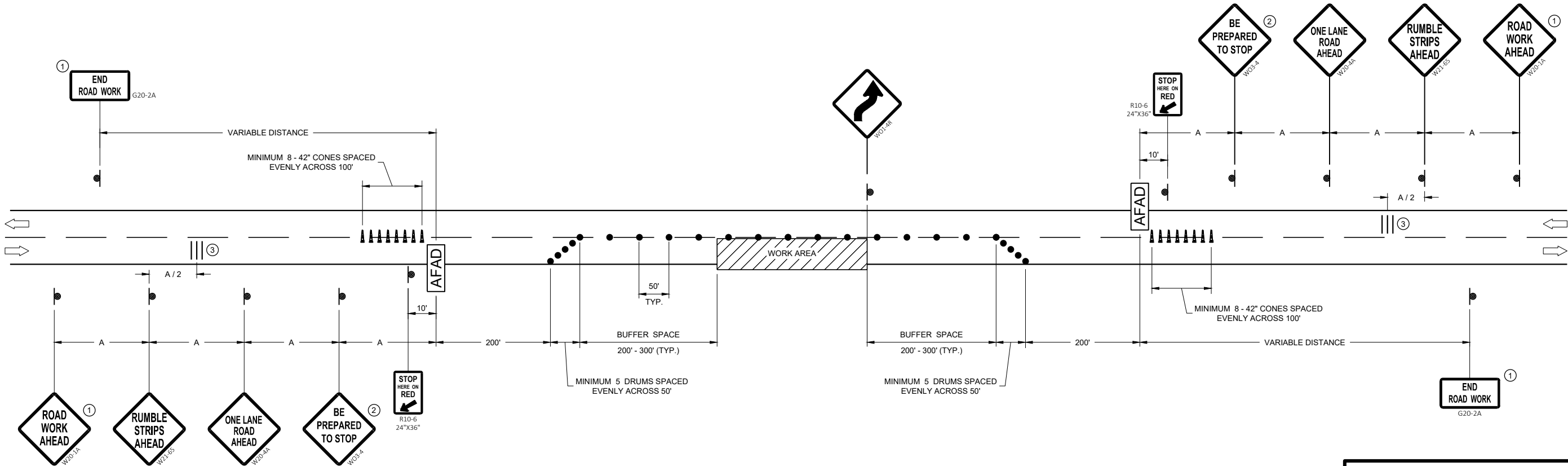
SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- ②

IF FLAGGERS ARE PHYSICALLY NEEDED TO FLAG, REPLACE WO3-4 SIGNS WITH W20-7A SIGNS.

**TEMPORARY PORTABLE RUMBLE STRIPS**  
UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.  
  
ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.  
  
PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.  
  
DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.  
  

③

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



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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2022 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER 67

FHWA

LEGEND

- V1

LEAD VEHICLE
- V2

MARKING VEHICLE
- V3

SHADOW VEHICLE
- 

TRUCK MOUNTED ATTENUATOR (TMA)
- 

SIGN ON TEMPORARY SUPPORT
- 

DIRECTION OF TRAFFIC

GENERAL NOTES

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

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

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

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

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

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH

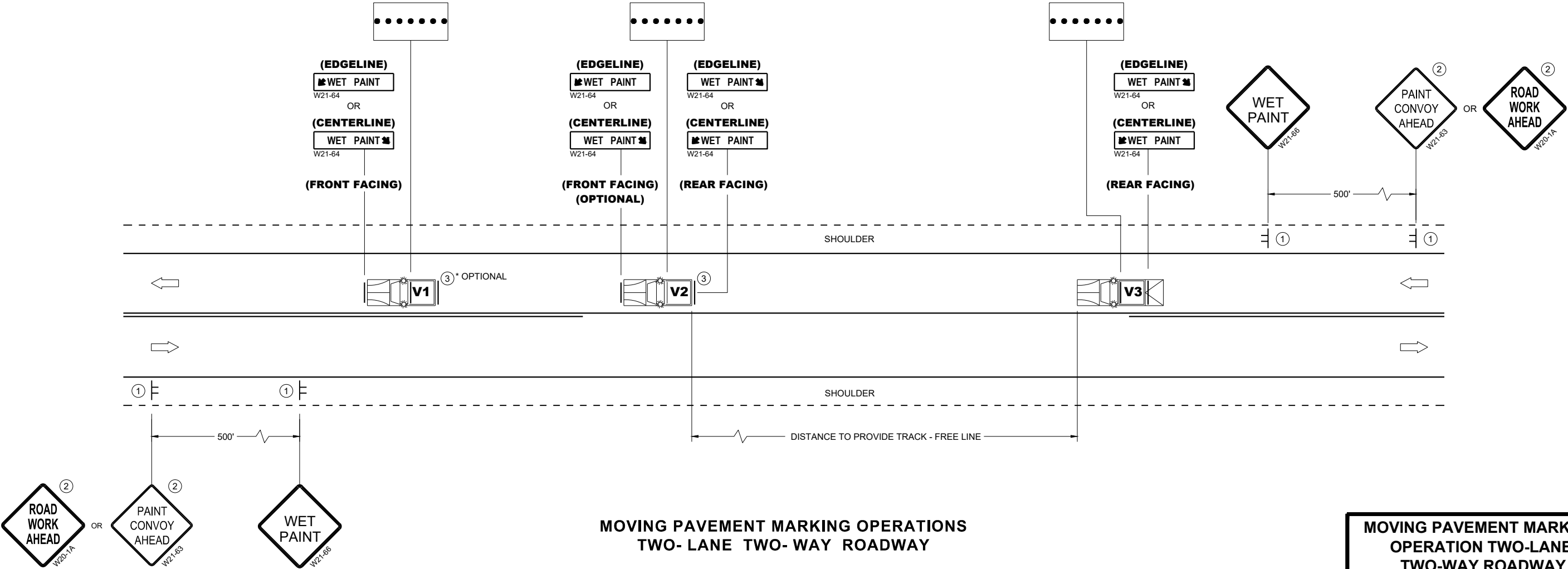
WORKERS SHALL NOT PERFORM WORK FROM ANY SHADOW OR PROTECTION VEHICLES.

UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

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

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

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

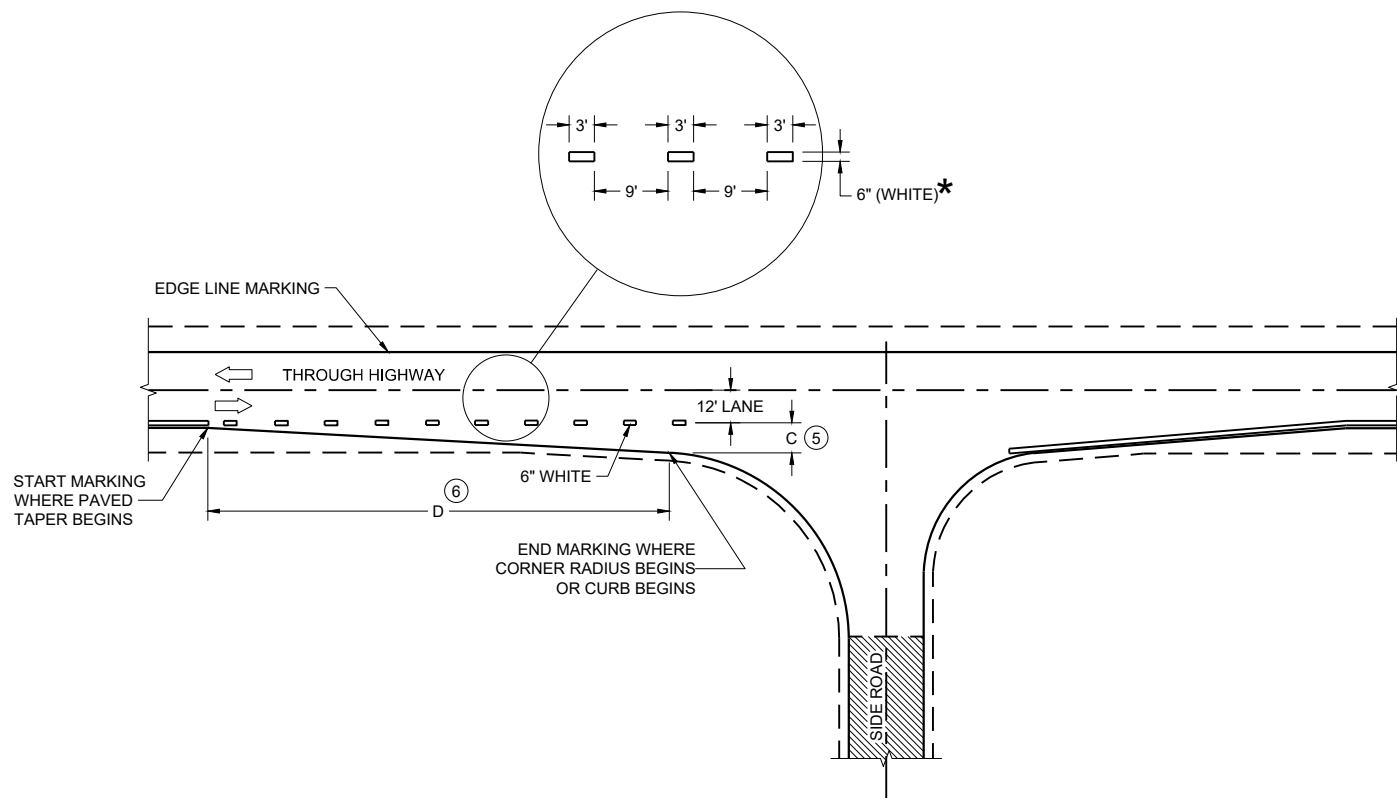


MOVING PAVEMENT MARKING  
OPERATION TWO-LANE  
TWO-WAY ROADWAY

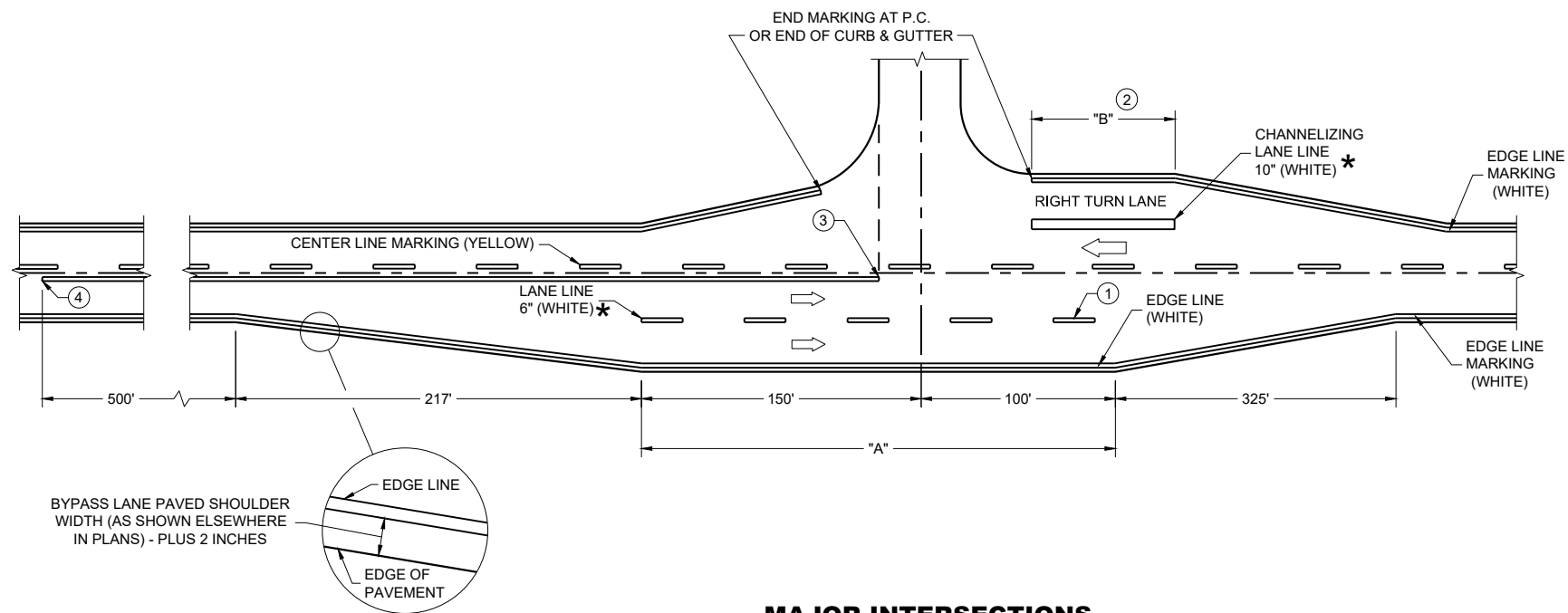
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2025 /S/ Andrew Heidtke  
DATE STATE ELECTRICAL ENGINEER

FHWA



MINOR INTERSECTION



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

\*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

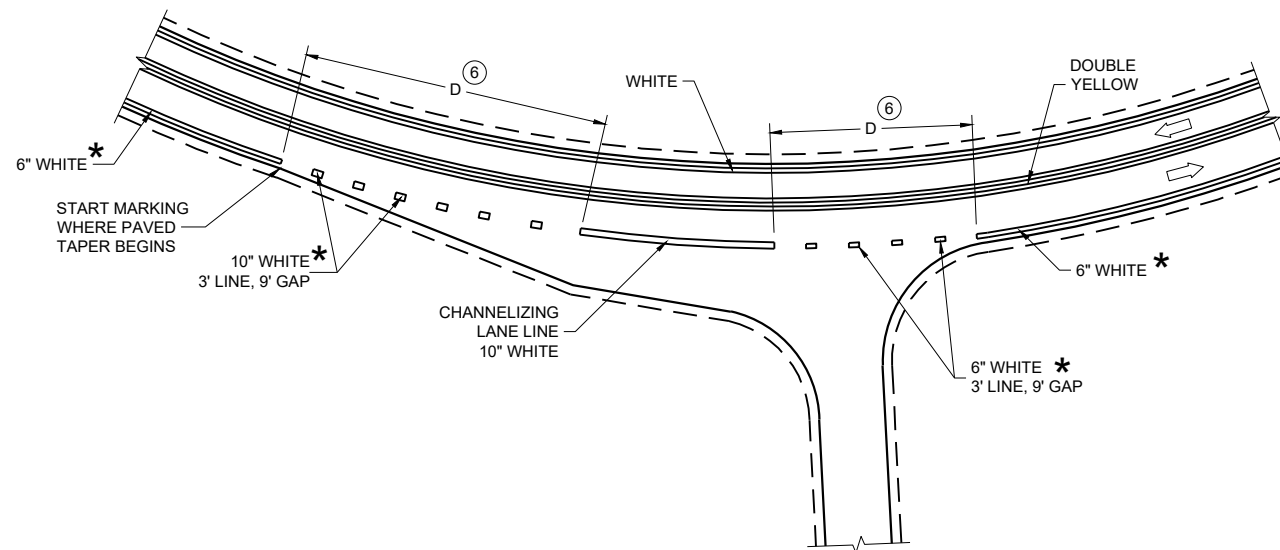
GENERAL NOTES

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

- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT / SURFACE EDGE EXTENSION.
- ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.
- ⑤ WHEN DISTANCE "C" IS LESS THAN 4 FEET, OMIT DOTTED EXTENSION.
- ⑥ WHEN DISTANCE "D" IS LESS THAN 50 FEET, OMIT DOTTED EXTENSION.

LEGEND

➡ DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING  
(INTERSECTIONS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

LEGEND

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

GENERAL NOTES

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

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

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

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

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

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

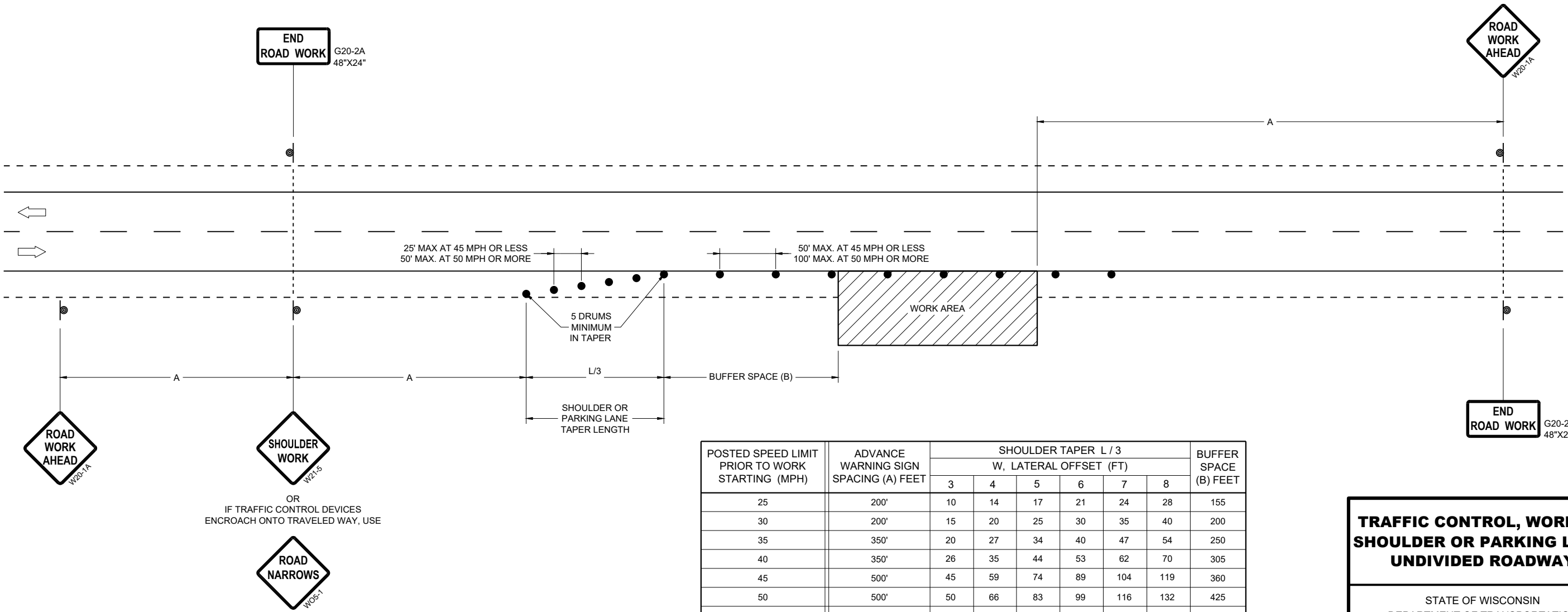
W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

6

6

SDD 15D28-06

SDD 15D28-06

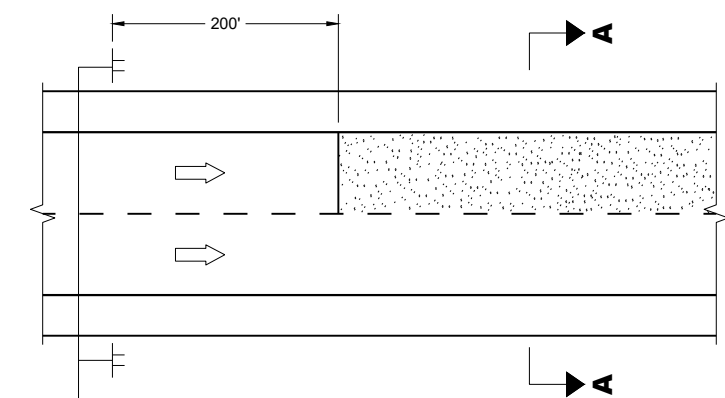


| POSTED SPEED LIMIT<br>PRIOR TO WORK<br>STARTING (MPH) | ADVANCE<br>WARNING SIGN<br>SPACING (A) FEET | SHOULDER TAPER L / 3   |    |    |     |     |     | BUFFER<br>SPACE<br>(B) FEET |
|-------------------------------------------------------|---------------------------------------------|------------------------|----|----|-----|-----|-----|-----------------------------|
|                                                       |                                             | W, LATERAL OFFSET (FT) |    |    |     |     |     |                             |
|                                                       |                                             | 3                      | 4  | 5  | 6   | 7   | 8   |                             |
| 25                                                    | 200'                                        | 10                     | 14 | 17 | 21  | 24  | 28  | 155                         |
| 30                                                    | 200'                                        | 15                     | 20 | 25 | 30  | 35  | 40  | 200                         |
| 35                                                    | 350'                                        | 20                     | 27 | 34 | 40  | 47  | 54  | 250                         |
| 40                                                    | 350'                                        | 26                     | 35 | 44 | 53  | 62  | 70  | 305                         |
| 45                                                    | 500'                                        | 45                     | 59 | 74 | 89  | 104 | 119 | 360                         |
| 50                                                    | 500'                                        | 50                     | 66 | 83 | 99  | 116 | 132 | 425                         |
| 55                                                    | 500'                                        | 54                     | 73 | 91 | 109 | 127 | 145 | 495                         |

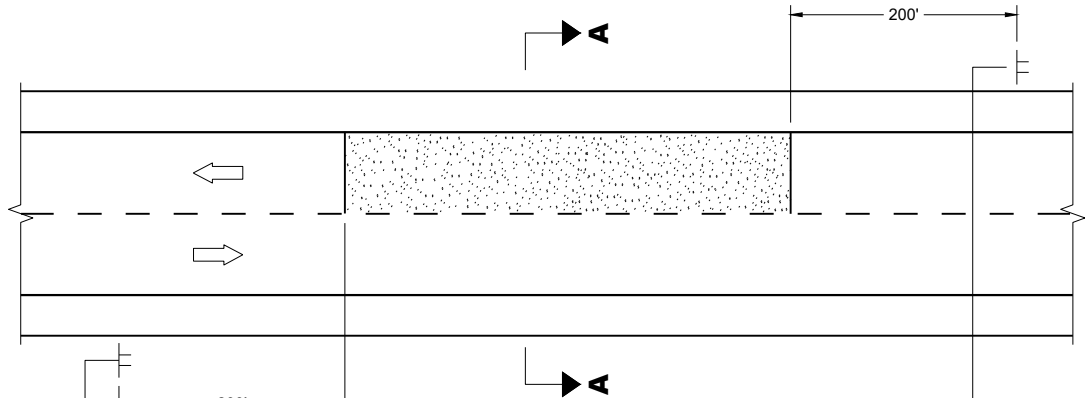
TRAFFIC CONTROL, WORK ON  
SHOULDER OR PARKING LANE,  
UNDIVIDED ROADWAY

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2026 /S/ ANDREW HEIDTKE  
DATE STATEWIDE WORK ZONE TRAFFIC  
FHWA SAFETY ENGINEER



MULTI-LANE

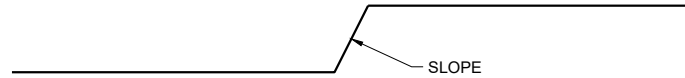


TWO-WAY TWO LANE

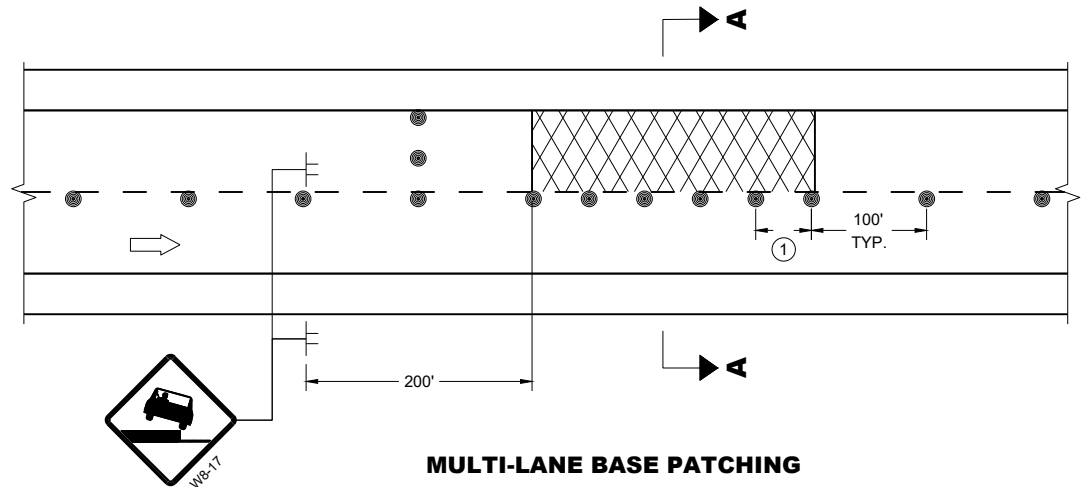


SECTION A - A

OR



SECTION A - A



MULTI-LANE BASE PATCHING

ADJACENT LANE DROP-OFFS

GENERAL NOTES

FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.

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

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

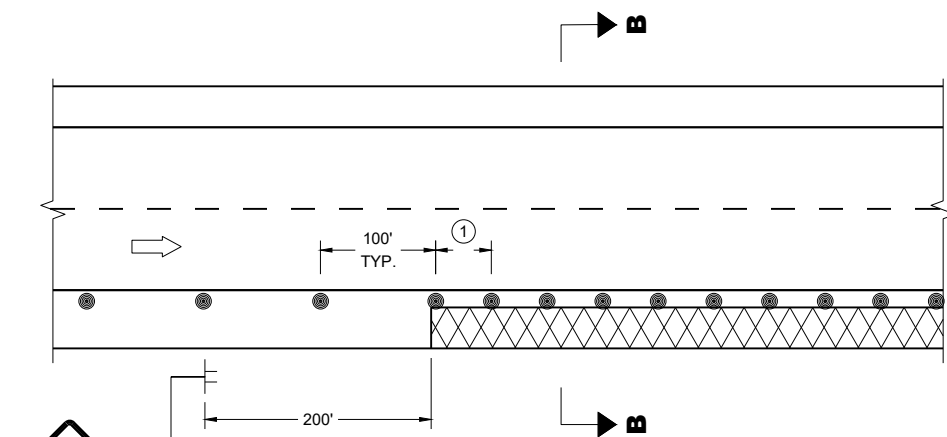
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

★ IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.

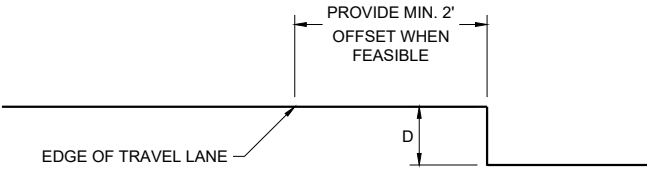
① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

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



SHOULDER DROP-OFFS



SECTION B - B

| D                                                                   | SIGN ©                       |
|---------------------------------------------------------------------|------------------------------|
| < 2" WITH A SLOPE STEEPER THAN 3:1                                  | LOW SHOULDER<br>WO8-9        |
| 2" < 6" WITH A SLOPE STEEPER THAN 3:1                               | SHOULDER DROP - OFF<br>W8-9A |
| PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT |                              |

TRAFFIC CONTROL, DROP-OFF SIGNING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2025 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

FHWA

GENERAL NOTES

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

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

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

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

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

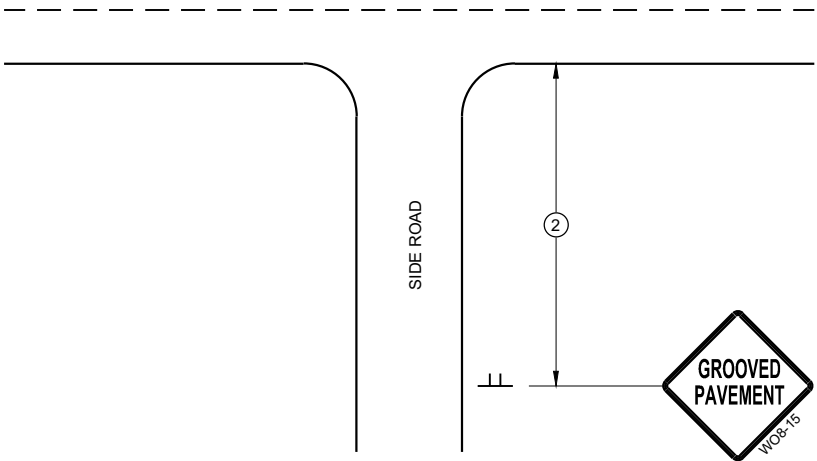
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

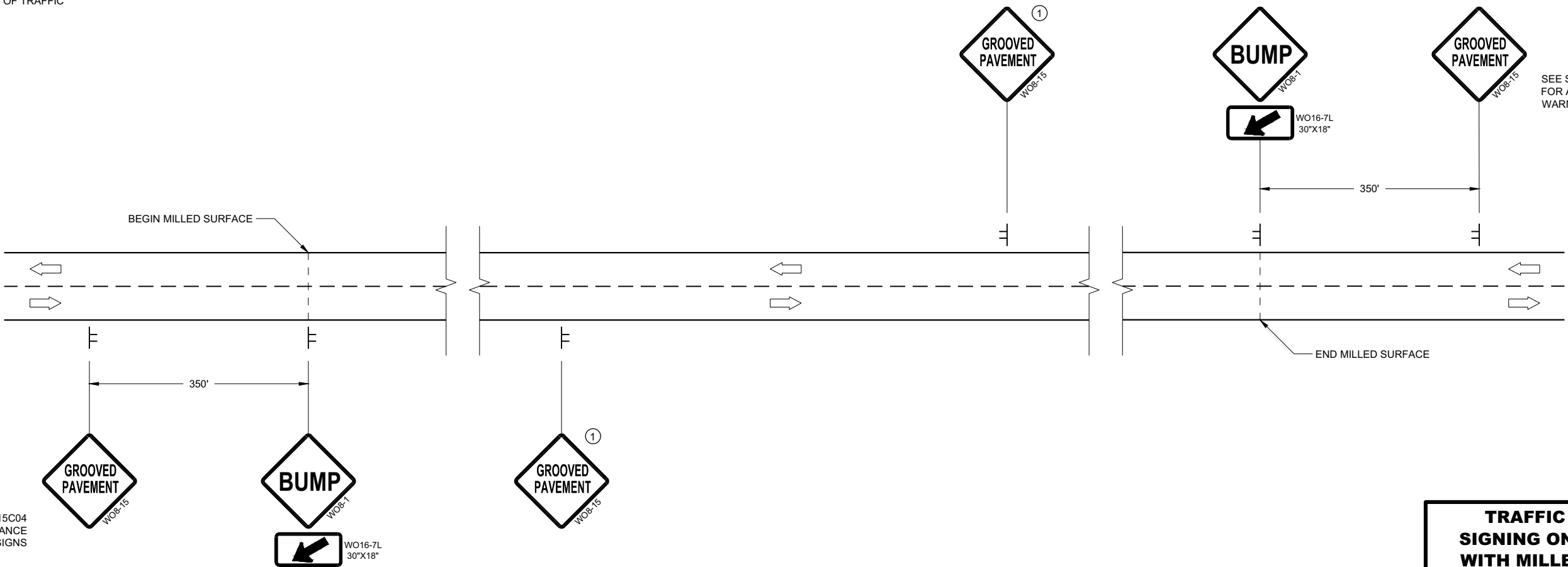
- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH  
SIGN DETAIL



SEE SDD15C04  
FOR ADVANCE  
WARNING SIGNS

SEE SDD15C04  
FOR ADVANCE  
WARNING SIGNS

DETAIL FOR SIGNING ON MILLED SURFACES

TRAFFIC CONTROL,  
SIGNING ON ROADWAYS  
WITH MILLED SURFACES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2020 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER 72

FHWA

GENERAL NOTES

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

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

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

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

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

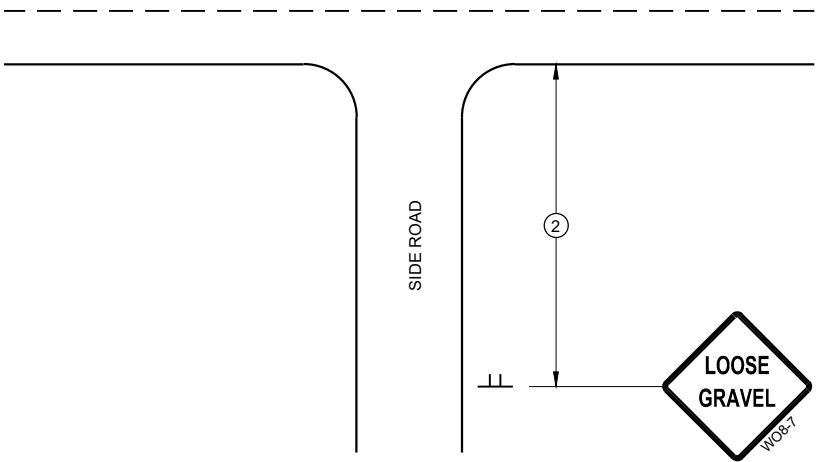
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

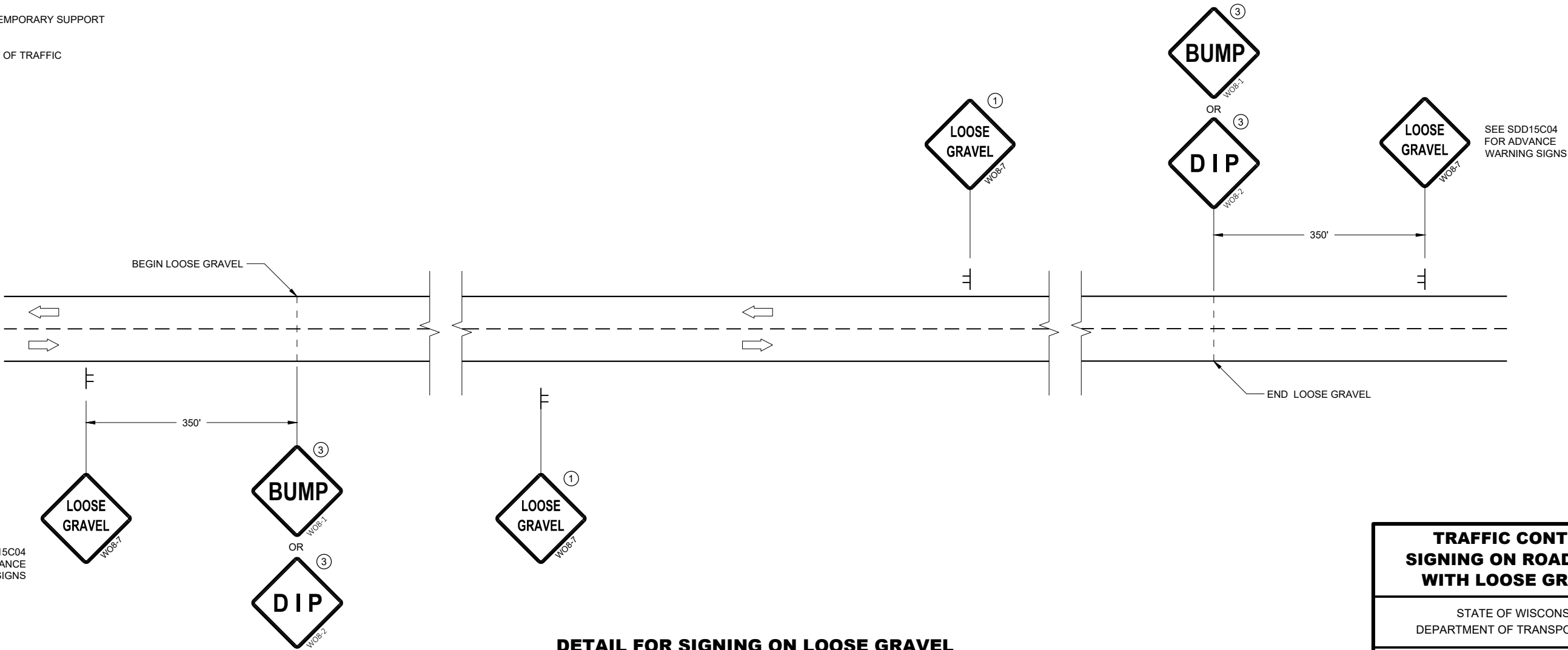
- 1 PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED OR LOOSE GRAVEL SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- 2 PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.
- 3 ADD WO8-1 OR WO8-2 SIGN WHEN THE CONDITION IS PRESENT.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH  
SIGN DETAIL



DETAIL FOR SIGNING ON LOOSE GRAVEL  
OR CHIP SEALED SURFACES

TRAFFIC CONTROL  
SIGNING ON ROADWAYS  
WITH LOOSE GRAVEL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2021 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER 73  
FHWA

LEGEND

- V1

WORK VEHICLE
- V2

SHADOW VEHICLE
- 

TRUCK MOUNTED ATTENUATOR (TMA)
- 

FLASHING ARROW PANEL (CAUTION)
- 

WORK AREA
- 

DIRECTION OF TRAFFIC

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

GENERAL NOTES

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.

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

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

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

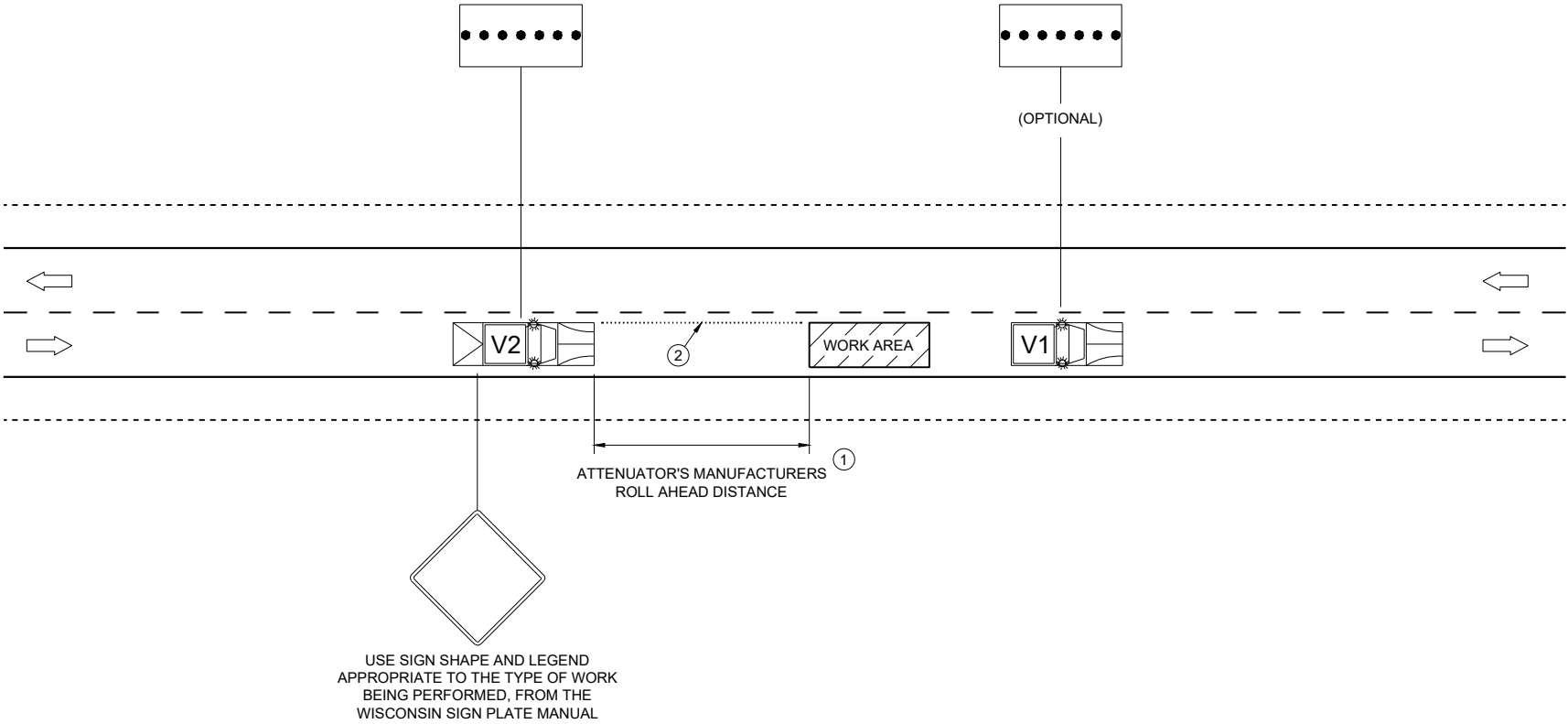
USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

WORKERS SHALL NOT PERFORM WORK FROM ANY SHADOW OR PROTECTION VEHICLES.

- ①

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

ALIGN LEFT SIDE OF SHADOW VEHICLE WITH EDGE OF WORK AREA.



TRAFFIC CONTROL,  
MOBILE OPERATIONS ON  
AN UNDIVIDED ROADWAY

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

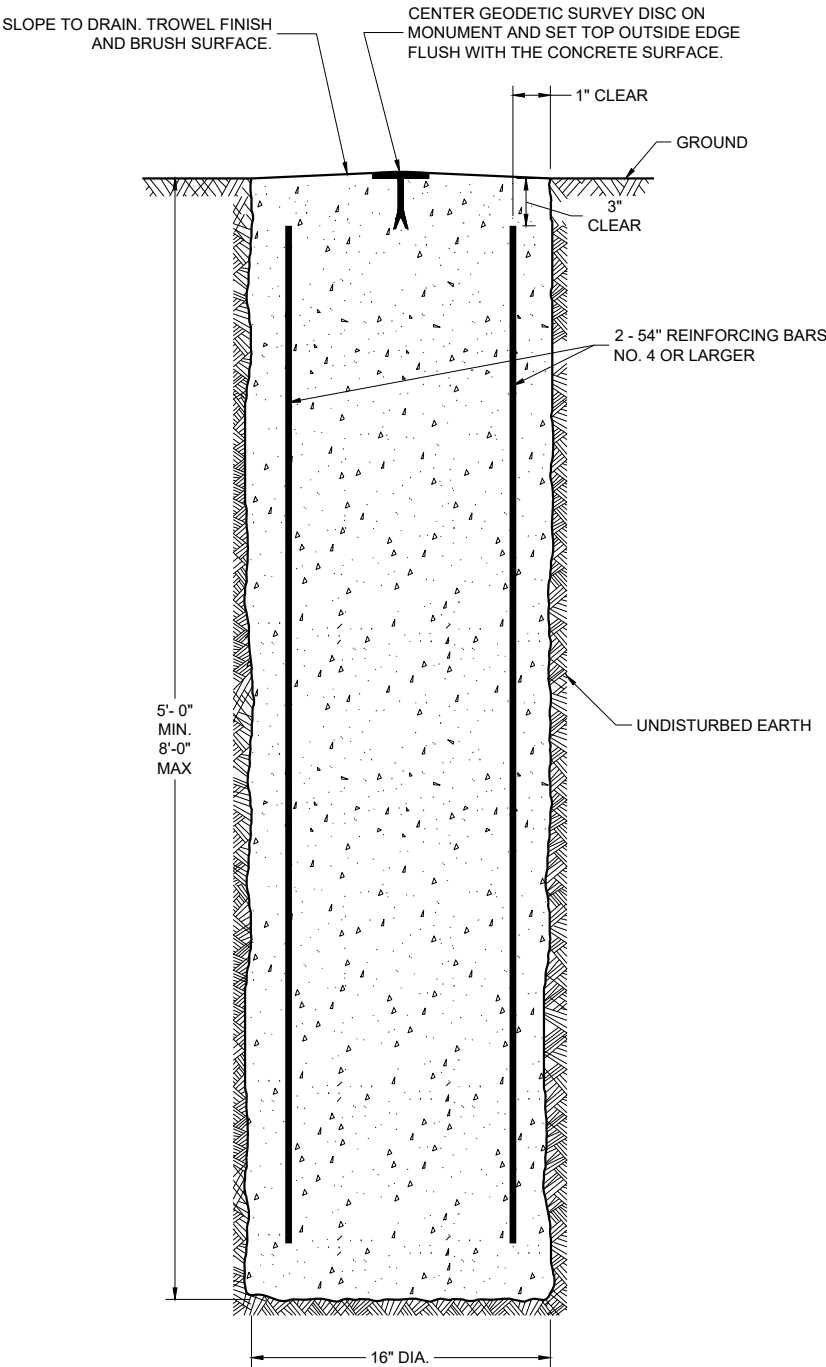
November 2025

DATE

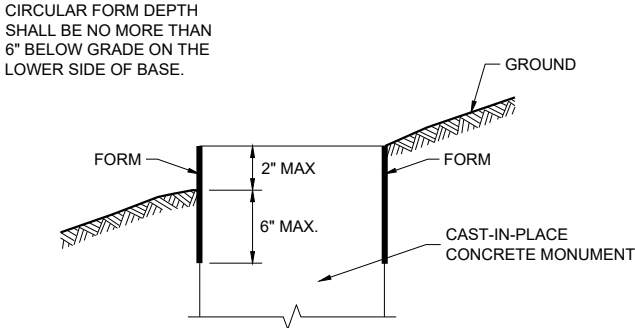
/S/ Andrew Heidtke

STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER

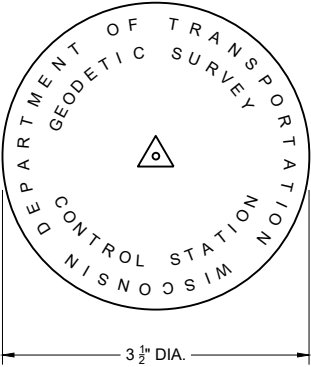
FHWA



**CAST-IN-PLACE  
CONCRETE MONUMENT**



**FORMING DETAIL**



**GEODETIC SURVEY DISC**  
FURNISHED BY WISDOT

**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.

SURVEY MONUMENT SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

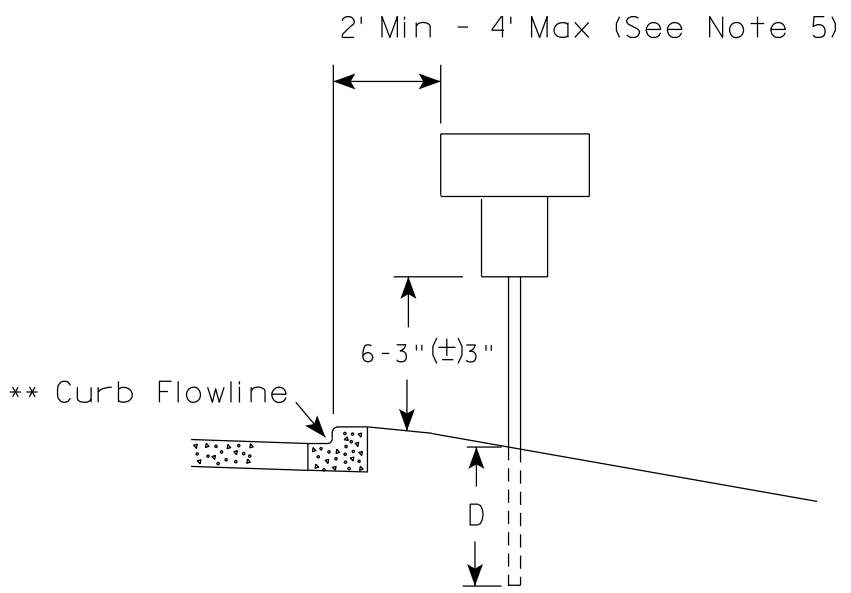
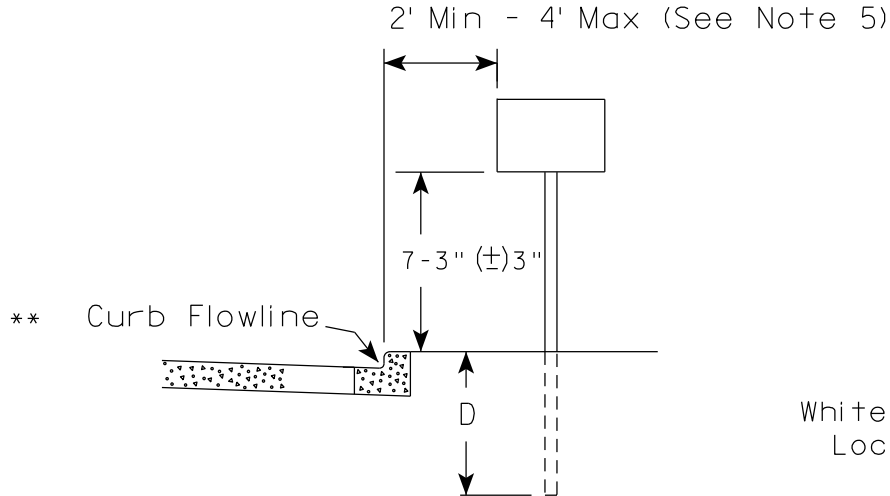
IF A SURVEY MONUMENT REQUIRES A DEEP FORM BECAUSE OF LOOSE DIRT OR FILL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.

**GEODETIC SURVEY  
MONUMENT**

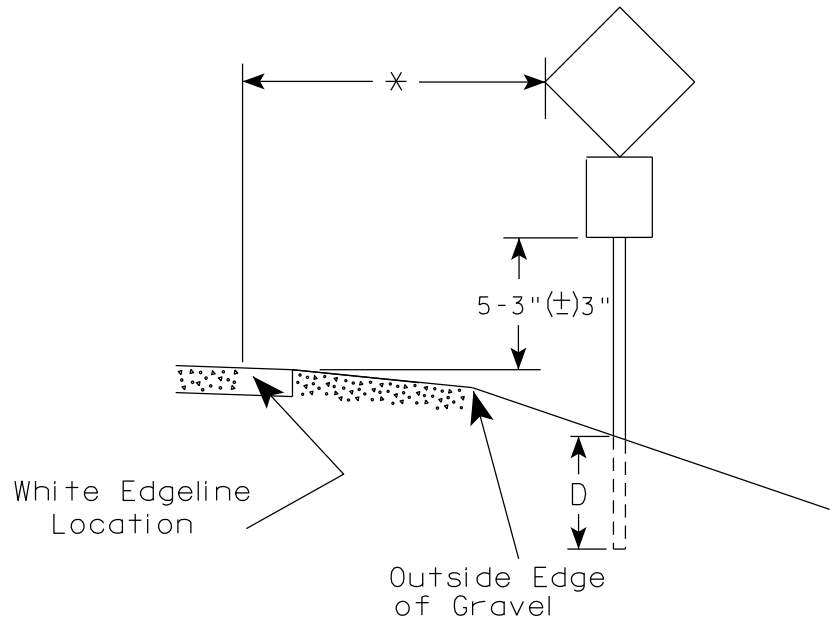
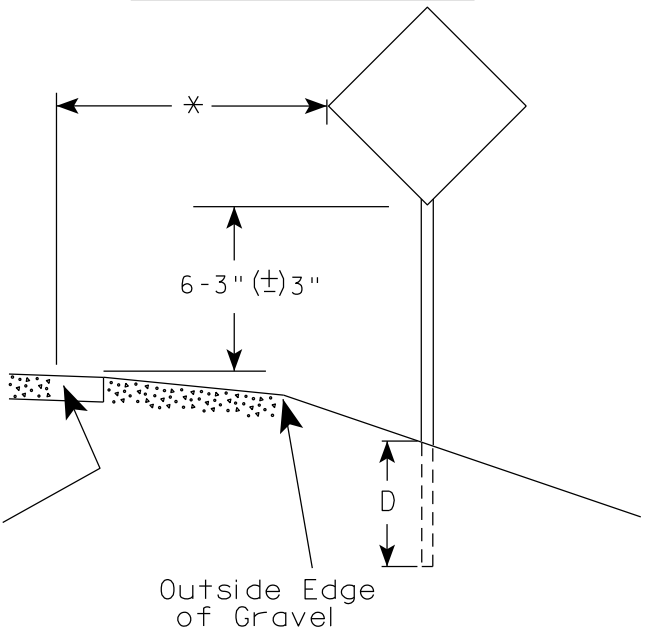
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
August 2025 /S/ DAVID J. LAYTON  
DATE CHIEF SURVEY AND MAPPING ENGINEER

URBAN AREA



RURAL AREA (See Note 2)



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 or behind barrier wall, see A4-10 sign plate.  
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±) 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" (±) 3".
3. For expressways and freeways, mounting height is 7'- 3" (±) 3" or 6'-3" (±) 3" depending upon existence of a sub-sign.
4. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±) 3".
5. Offset distance shall be consistent with existing signs or consistent throughout length of project.
6. Folding signs shall be mounted at a height of 5'-3" (±) 3" or as directed by the Engineer.

POST EMBEDMENT DEPTH

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

\* \* 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.

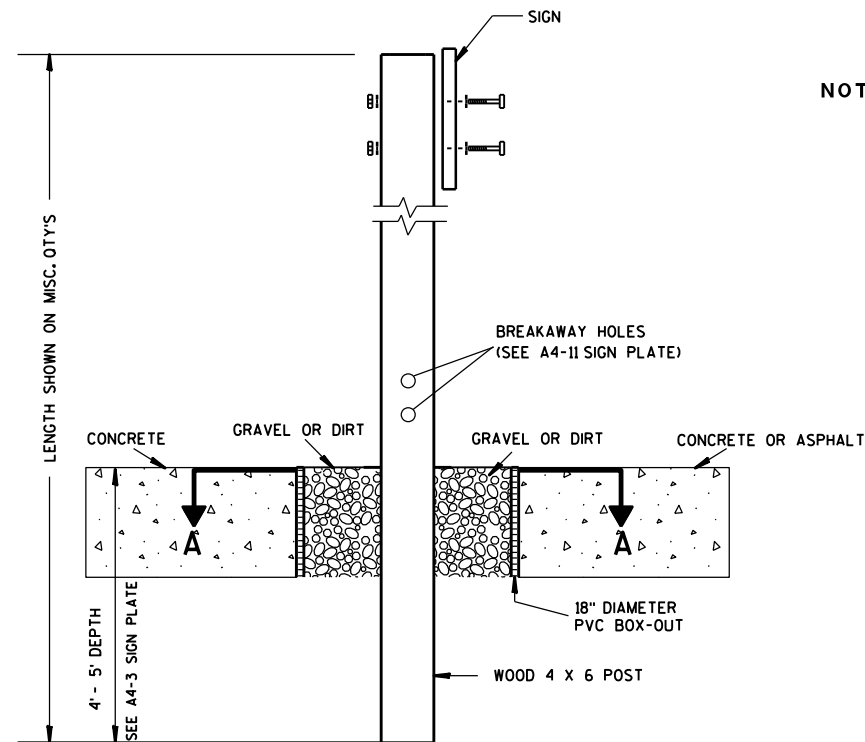
\* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION  
OF PERMANENT TYPE II  
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

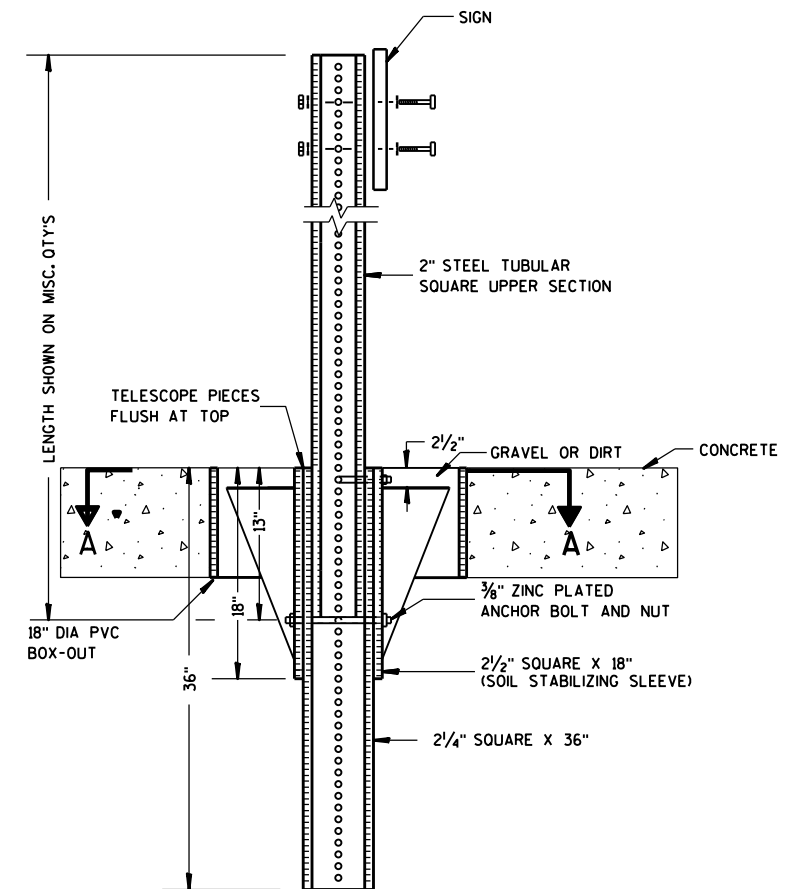
DATE 12/6/23 PLATE NO. A4-3.23



### ELEVATION VIEW

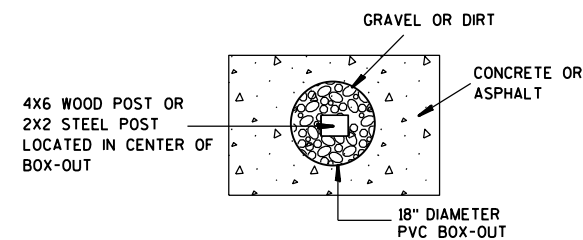
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



### ELEVATION VIEW

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



### PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST  
BOX-OUTS  
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 1/27/14 PLAT 77 A4-3B.1

PROJECT NO:

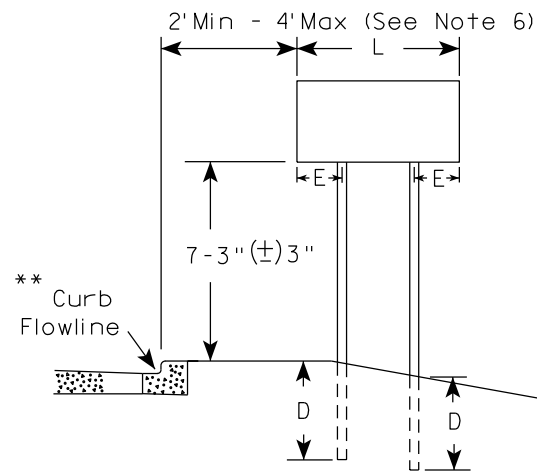
HWY:

COUNTY:

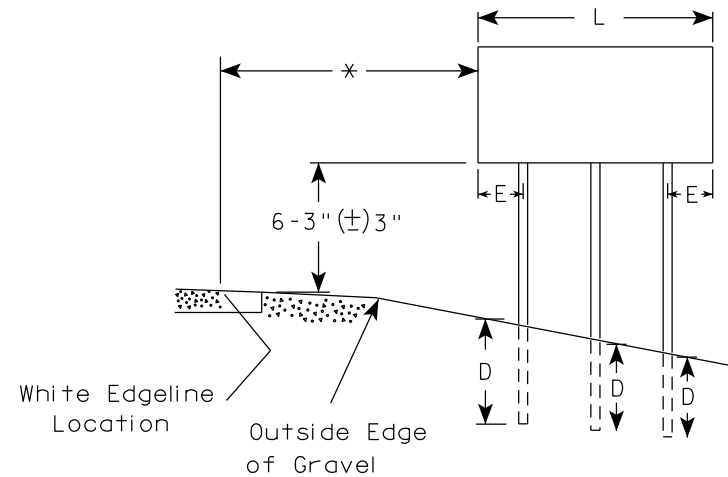
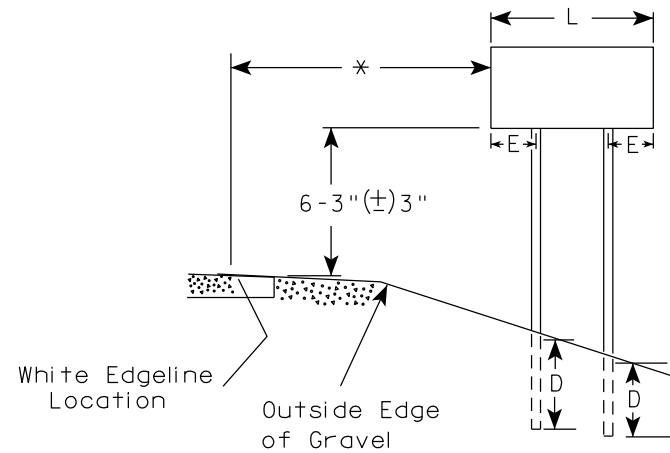
SHEET NO:

E

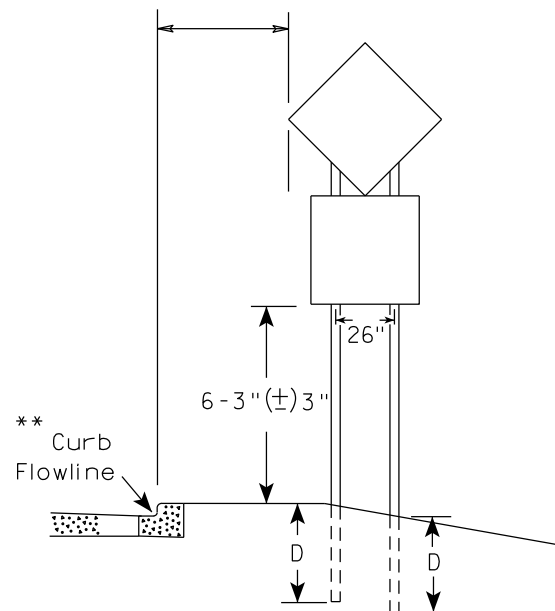
URBAN AREA



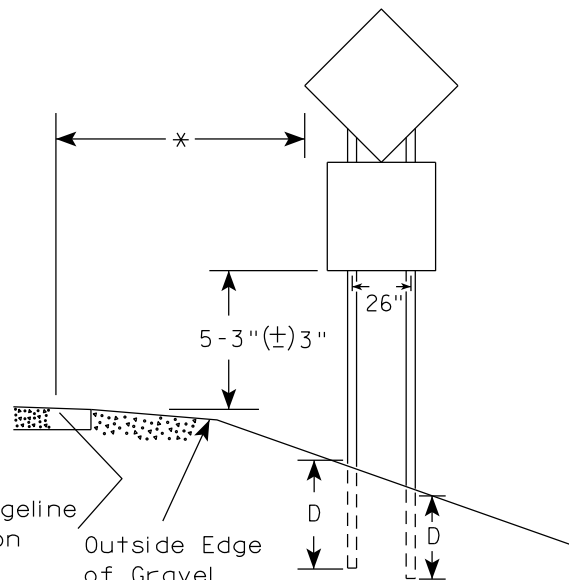
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

\*\*\*

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

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

POST EMBEDMENT DEPTH

| Area of Sign<br>Installation<br>( Sq.Ft. ) | D<br>( 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 12/6/23 PLATE NO. A4-4.16

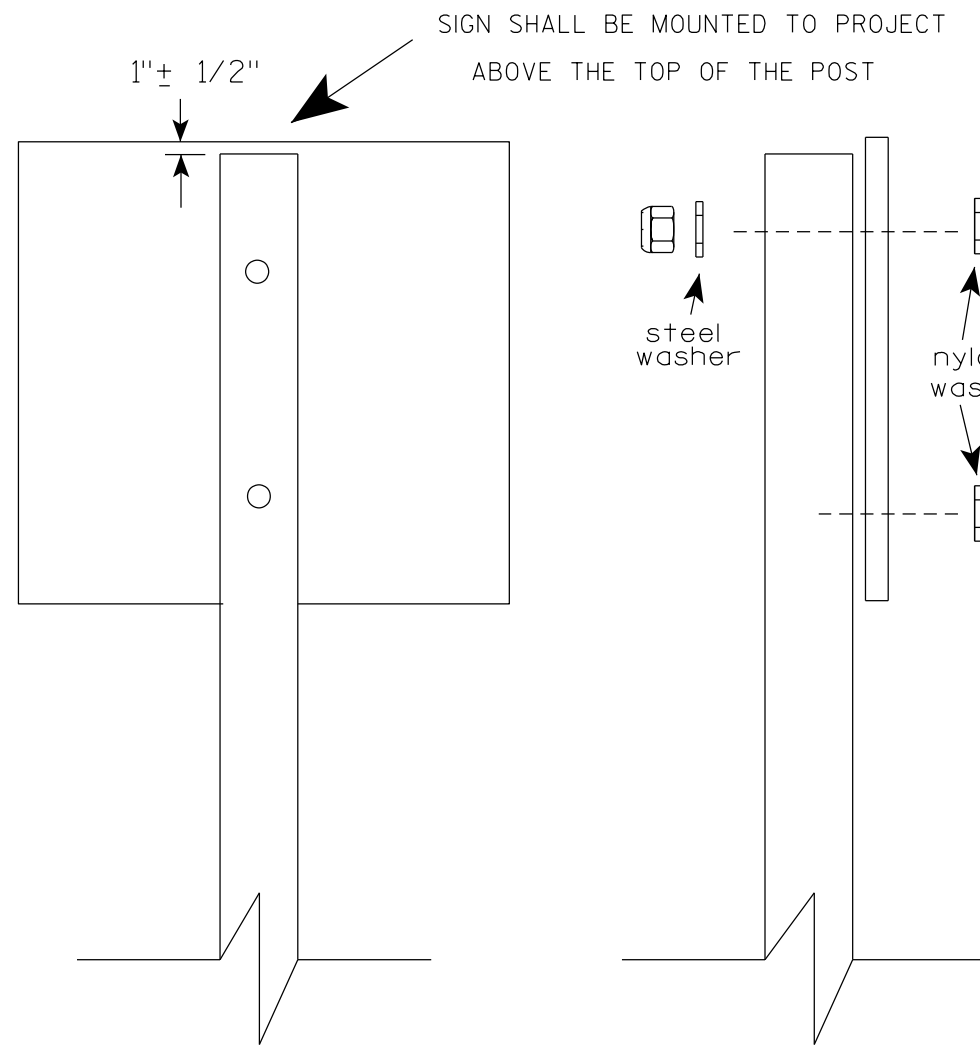
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 78

E



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.

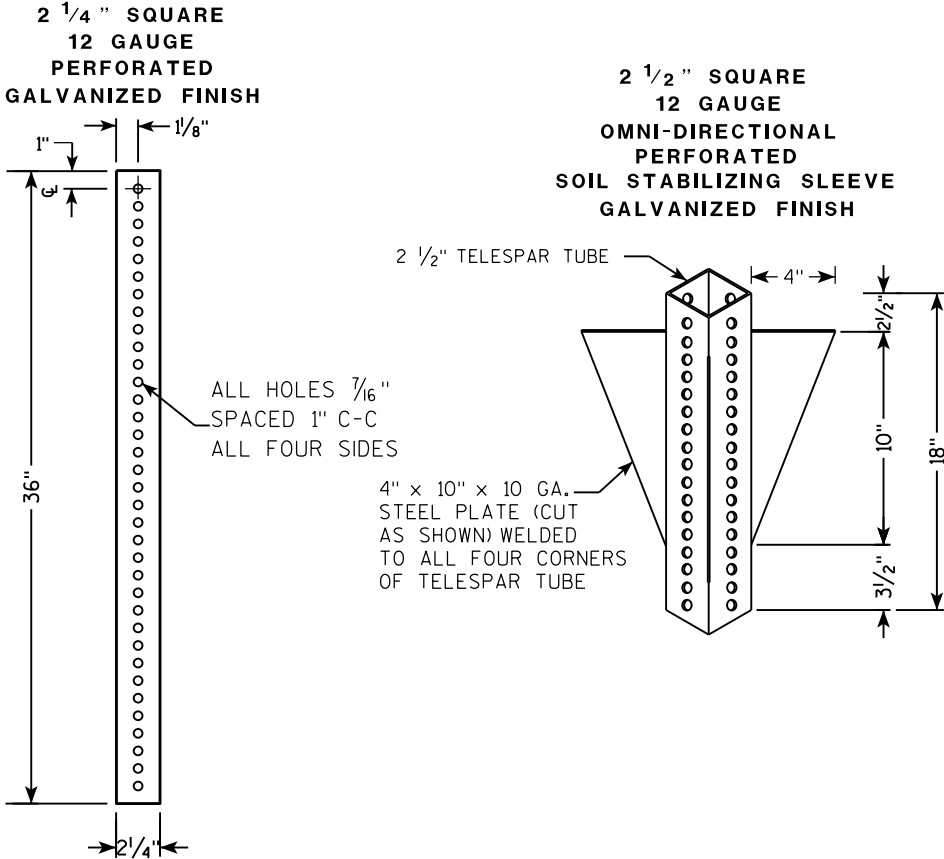
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS -  $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 6")
- LAG SCREWS -  $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
- $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS -  $\frac{3}{8}$ " X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
- $\frac{3}{8}$ " X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS -  $\frac{9}{32}$ " (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  $\frac{3}{8}$ " I.D. X  $\frac{1}{16}$ " STEEL
- 1-1/4" O.D. X  $\frac{3}{8}$ " I.D. X .080 NYLON

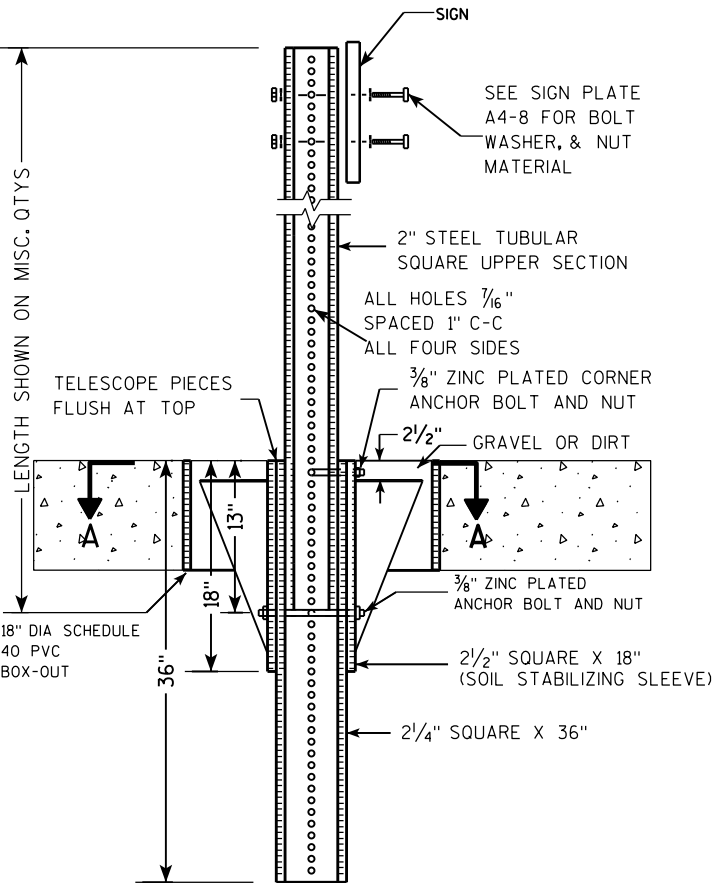
\* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

|                                  |                                                       |
|----------------------------------|-------------------------------------------------------|
| ATTACHMENT OF SIGNS<br>TO POSTS  |                                                       |
| WISCONSIN DEPT OF TRANSPORTATION |                                                       |
| APPROVED                         | <i>Matthew R. Rauch</i><br>For State Traffic Engineer |
| DATE 4/1/2020                    | PLATE NO. A4-8.9                                      |

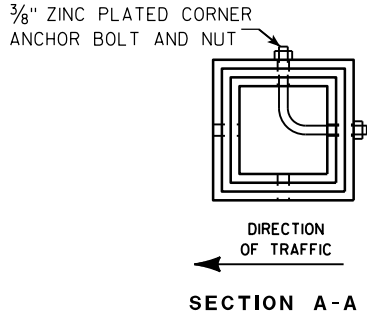
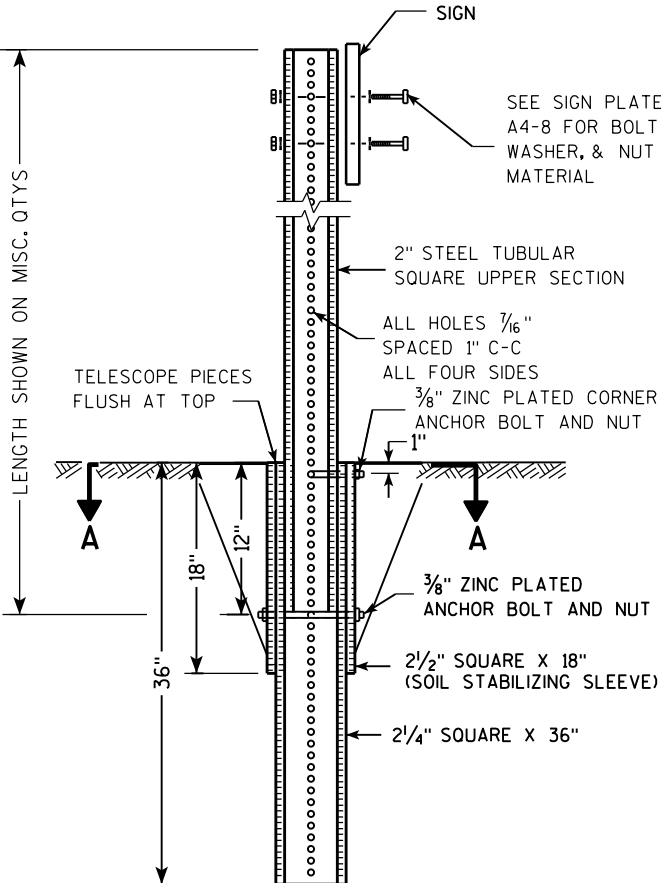
TELESCOPIC TUBING ANCHORS  
TWO PIECE SYSTEM



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



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



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

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

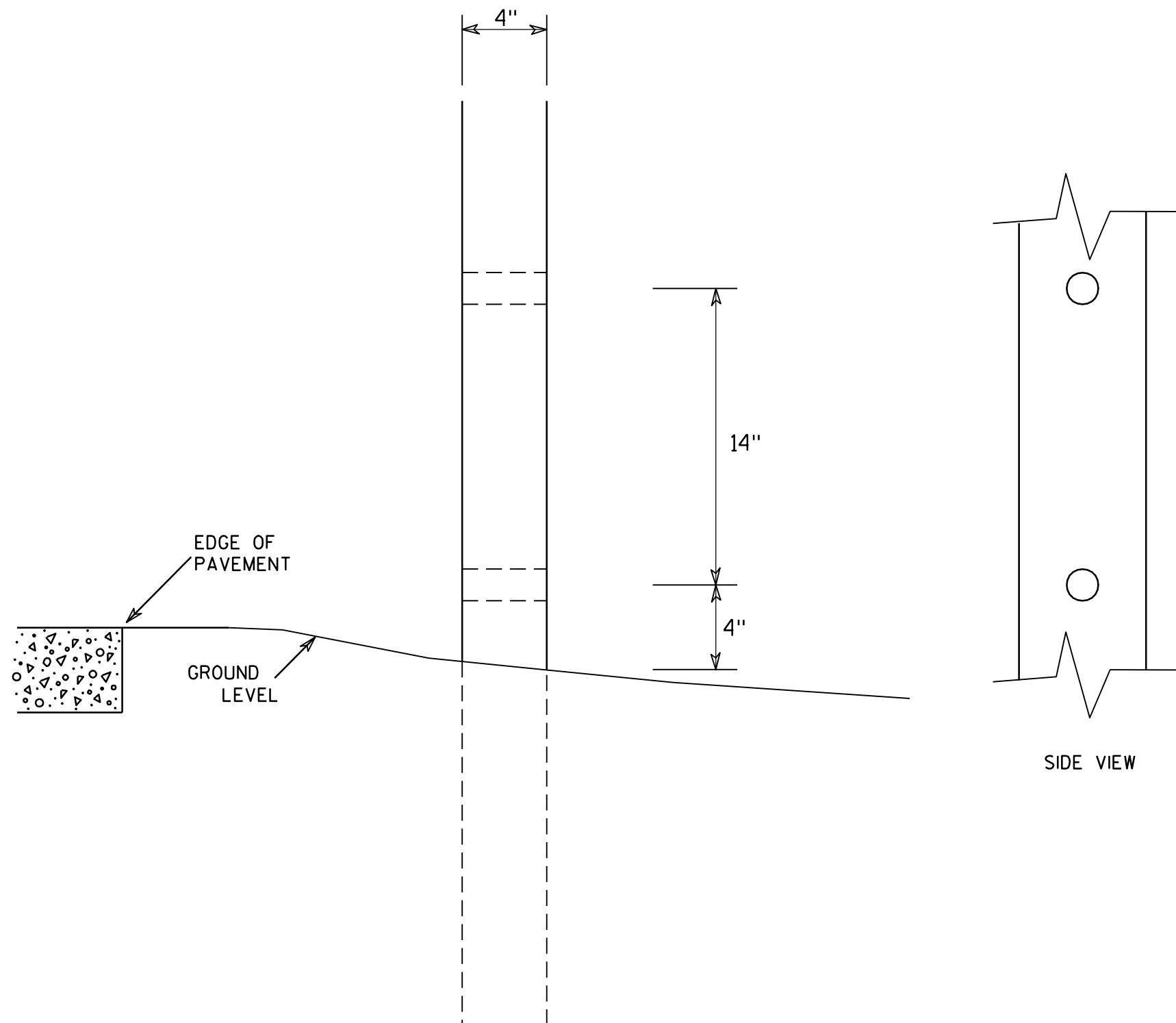
TUBULAR STEEL  
SIGN POST  
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 2/05/15 PLAT 80 14-9.9

7



### GENERAL NOTES

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

7

### 4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Chester J. Spang*  
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

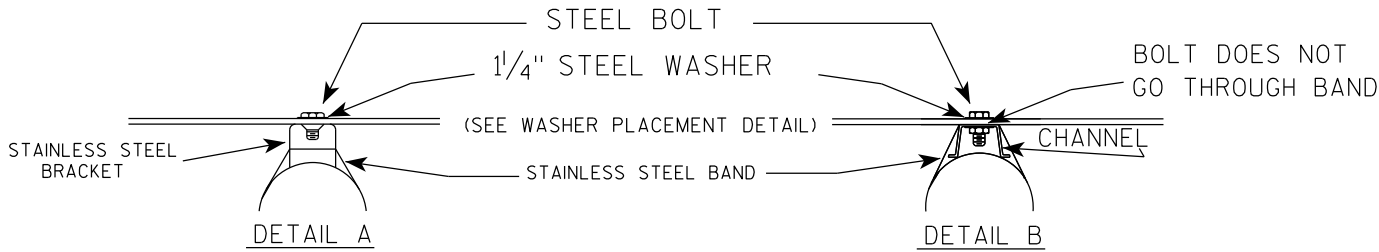
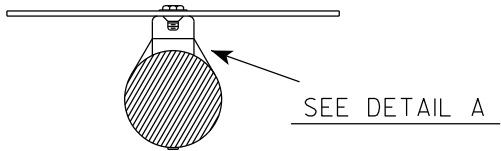
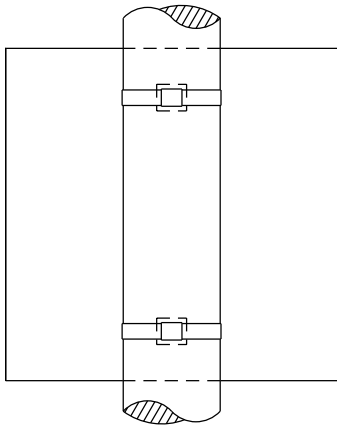
COUNTY:

SHEET NO: 81

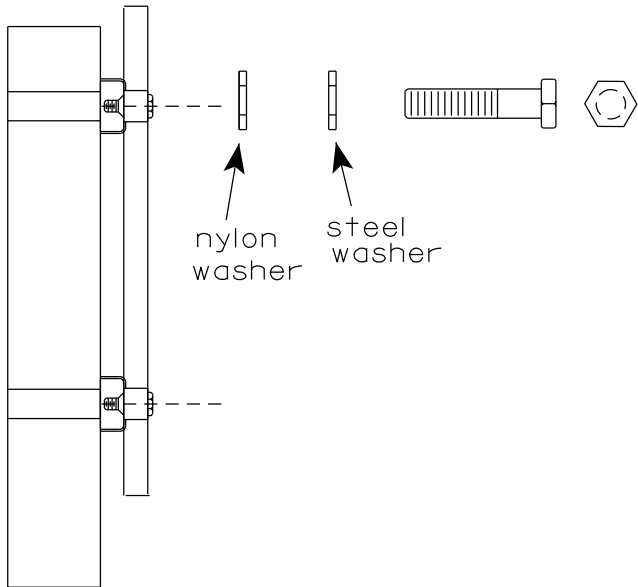
E

BANDING

SINGLE SIGN



WASHER PLACEMENT

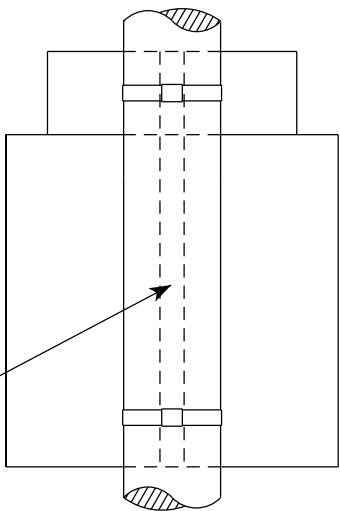


WASHERS (ALL POSTS) -  
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL  
1-1/4" O.D. X 3/8" I.D. X .080 NYLON  
FOR ALL TYPE H SIGNS

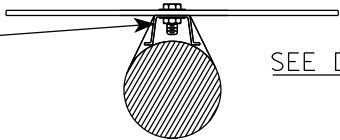
GENERAL NOTES

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

"J" ASSEMBLY



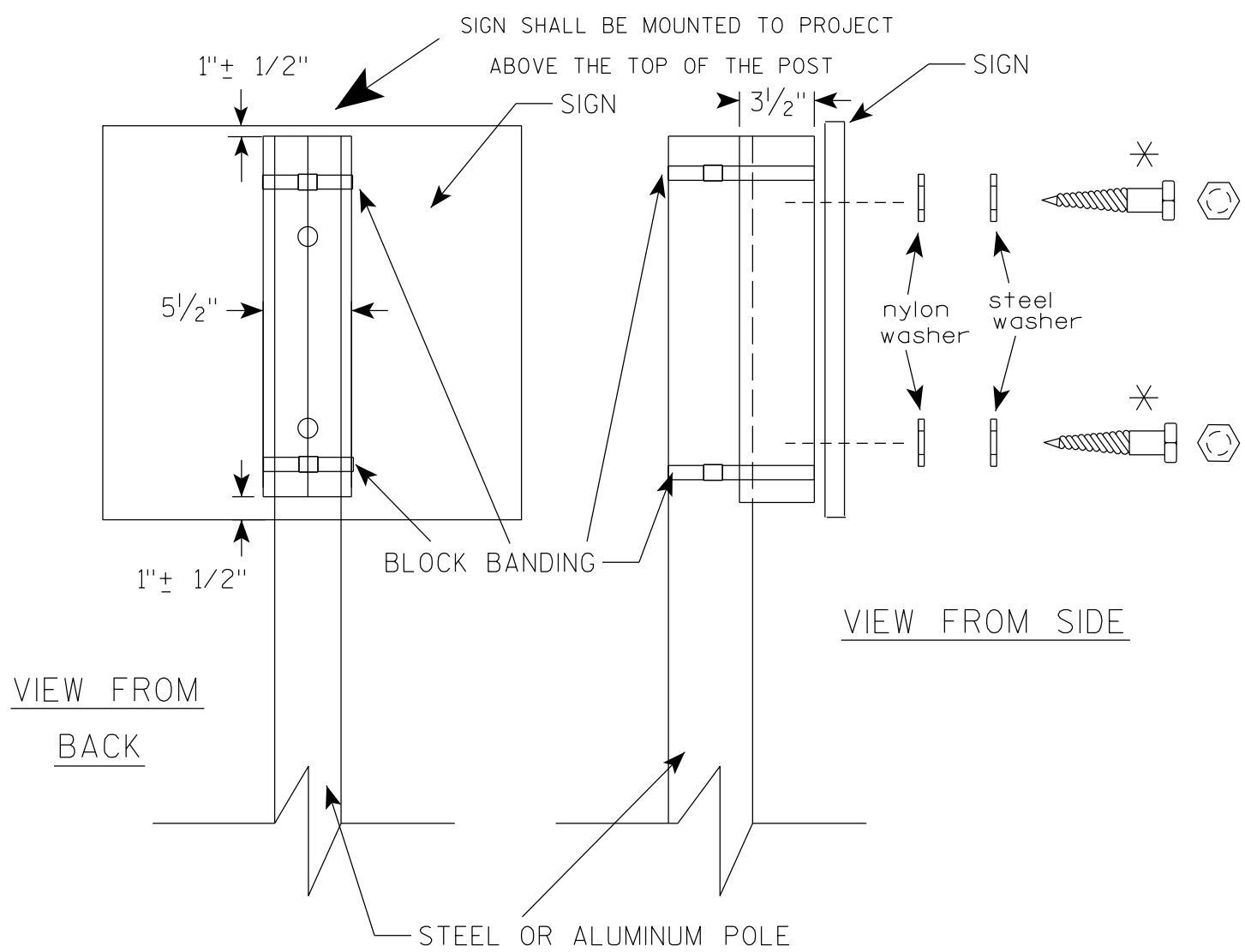
CHANNEL  
SEE TYPICAL PANEL  
INSTALLATION SHEET



STANDARD SIGN  
SIGN BANDING DETAILS

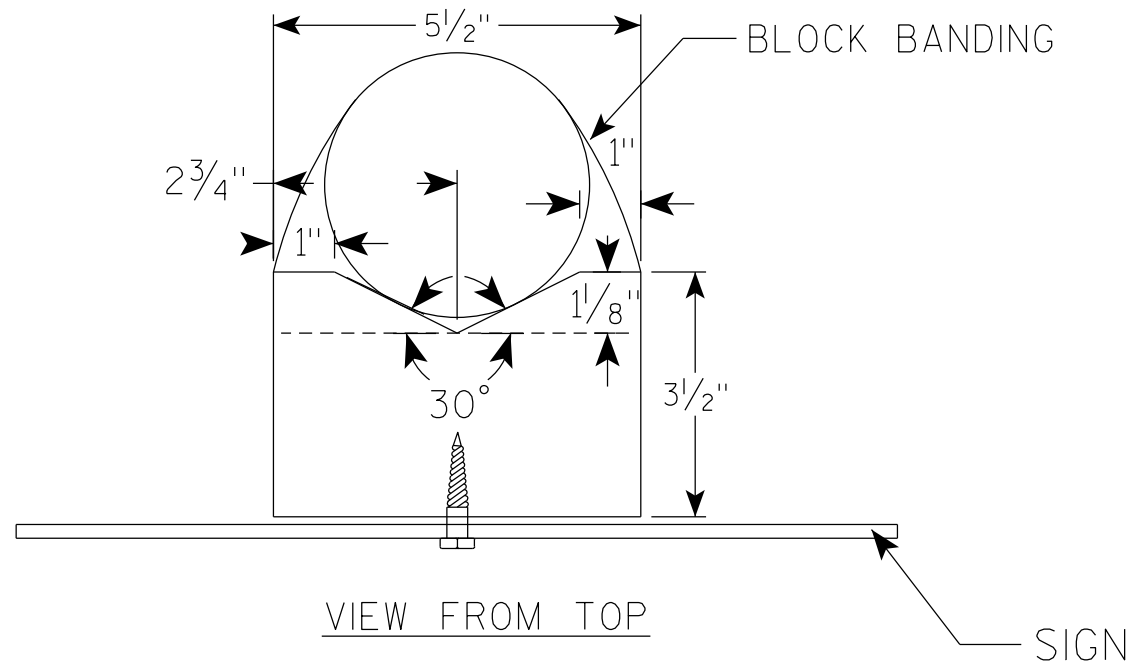
WISCONSIN DEPT OF TRANSPORTATION

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



VIEW FROM  
BACK

VIEW FROM SIDE



VIEW FROM TOP

## GENERAL NOTES

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

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

BLOCK BANDING DETAIL  
( V-BLOCK OPTION )

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 4/19/2022 PLATE NO. A5-10.3

PROJECT NO:

SHEET NO: 83

E

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
  - Background - Orange
  - Message - Black
- 3. Message Series - D
- 4. Substitute appropriate numeral and adjust spacing to achieve proper balance.



G20-57

| 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<br>sq. ft. |
|------|----|----|-------|-----|-----|---|-------|-------|--------|-------|---|--------|--------|-------|-------|--------|---|--------|-------|-------|--------|---|---|---|---|---|-----------------|
| 1    |    |    |       |     |     |   |       |       |        |       |   |        |        |       |       |        |   |        |       |       |        |   |   |   |   |   |                 |
| 2    |    |    |       |     |     |   |       |       |        |       |   |        |        |       |       |        |   |        |       |       |        |   |   |   |   |   |                 |
| 3    | 72 | 36 | 1 1/8 | 1/2 | 5/8 | 6 | 5     | 4     | 15 5/8 | 1 5/8 | 5 | 9 1/4  | 21 1/4 | 3 1/2 | 1 1/2 | 23 1/4 |   | 29 7/8 | 1 3/4 | 3 1/4 | 28 1/2 |   |   |   |   |   | 18.0            |
| 4    | 96 | 48 | 2 1/4 | 3/4 | 1   | 8 | 6 1/2 | 5 1/2 | 20 5/8 | 2 1/4 | 6 | 12 1/4 | 28 1/4 | 4 3/8 | 1 5/8 | 31     |   | 39 1/4 | 2     | 4     | 37 7/8 |   |   |   |   |   | 32.0            |
| 5    |    |    |       |     |     |   |       |       |        |       |   |        |        |       |       |        |   |        |       |       |        |   |   |   |   |   |                 |

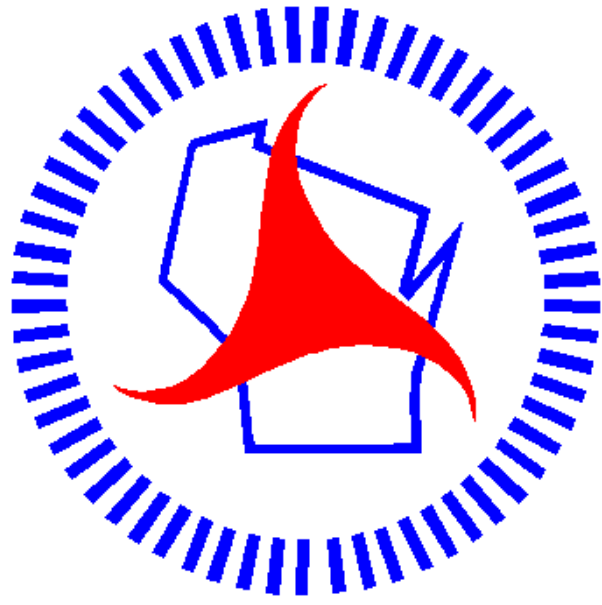
STANDARD SIGN  
G20-57

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
For State Traffic Engineer

DATE 1/22/19 PLATE NO. G20-57.3

## Notes



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

Dedicated people creating transportation solutions through innovation and exceptional service.

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