

SUP  
PROJECT ID: 8896-05-74  
WITH: N/A

COUNTY: TAYLOR

DECEMBER 2018  
ORDER OF SHEETS

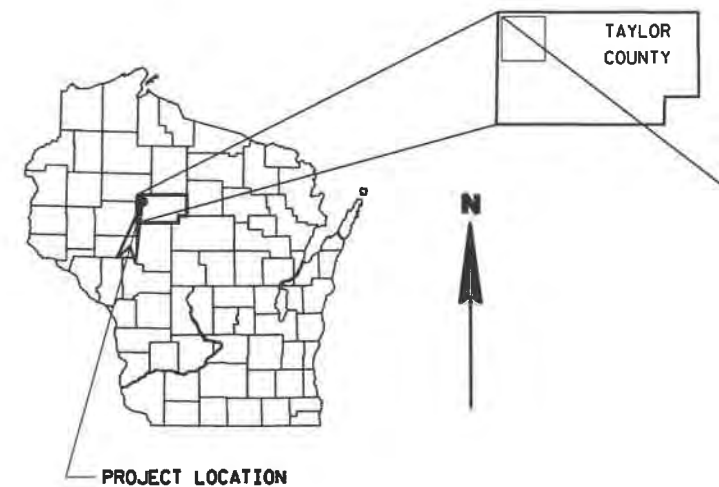
- Section No. 1 Title
- Section No. 2 Typical Sections and Details  
(Includes Erosion Control Plans)
- Section No. 3 Estimate of Quantities
- Section No. 3 Miscellaneous Quantities
- Section No. 4 Right of Way Plat
- Section No. 5 Plan and Profile
- Section No. 6 Standard Detail Drawings
- Section No.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

TOTAL SHEETS = 84

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
PLAN OF PROPOSED IMPROVEMENT  
STH 73 - PERKINSTOWN  
YELLOW RIVER BRIDGE B600146  
CTH M  
TAYLOR COUNTY

| STATE PROJECT | FEDERAL PROJECT |          |
|---------------|-----------------|----------|
|               | PROJECT         | CONTRACT |
| 8896-05-74    |                 |          |
|               |                 |          |
|               |                 |          |
|               |                 |          |

STATE PROJECT NUMBER  
8896-05-74



DESIGN DESIGNATION

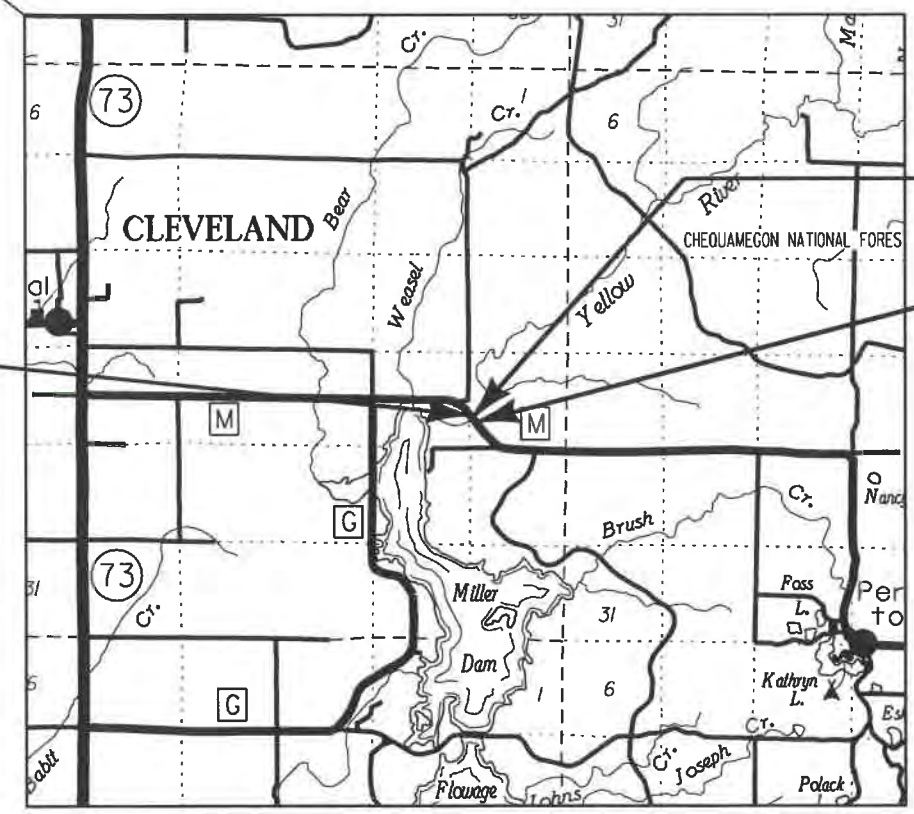
- A.A.D.T. (2019) = 350
- A.A.D.T. (2039) = 470
- D.H.V. = 40
- D. = 50/50
- T. = 10%
- DESIGN SPEED = 55 MPH
- ESALS = 73,000

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
- HIGH VOLTAGE
- 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
- OVERHEAD ELECTRIC
- ELECTRIC
- FIBER OPTIC
- GAS
- SANITARY SEWER
- STORM SEWER
- TELEPHONE
- WATER
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

BEGIN PROJECT  
STA. 9+01.75  
Y = 375951.59  
X = 558339.13



T-33-N  
T-32-N

STRUCTURE B-60-146

END PROJECT  
STA. 10+98.25  
Y = 375801.27  
X = 558465.68

T-32-N  
T-31-N

LAYOUT  
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.037 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO  
THE WISCONSIN COUNTY COORDINATE SYSTEM, (WCCS)  
TAYLOR COUNTY, NAD 83

ACCEPTED FOR  
County of Taylor  
Date 7-2-18  
County Commissioner

ORIGINAL PLANS PREPARED BY  
AYRES ASSOCIATES  
3433 Oakwood Hills Parkway  
Eau Claire, WI 54701  
www.AyresAssociates.com

PROFESSIONAL ENGINEER  
CHRISTOPHER B. McMAHON  
E-29454  
EAU CLAIRE, WI

DATE 6/27/18

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY  
Surveyor  
Designer  
Management Consultant

KNIGHT E/A INC.

APPROVED FOR THE DEPARTMENT  
DATE: 7/30/18  
Management Consultant Signature

E

GENERAL NOTES

EROSION CONTROL ITEMS TO BE PLACED AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.

NO TREES (AND/OR SHRUBS) ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

EXCAVATION FOR STRUCTURES SHALL INCLUDE FURNISHING, PLACEMENT AND COMPACTION OF ANY FILL MATERIAL REQUIRED TO PROVIDE A SUITABLE FOUNDATION FOR SUBSTRUCTURE UNITS.

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

THE DEPARTMENT OF TRANSPORTATION WILL FURNISH THE CONTRACTOR WITH A MONUMENT TO BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).

WETLANDS EXIST IN THE PROJECT AREA. NO DISTURBANCE IS ALLOWED OUTSIDE THE SLOPE INTERCEPT.

THE LOCATION AND WIDTH OF THE EXISTING RIGHT-OF-WAY WAS NOT DETERMINED FOR THIS PROJECT. THE INFORMATION SHOWN IS ASSUMED AND AYRES ASSOCIATES DOES NOT WARRANT ITS ACCURACY.

ASPHALTIC SURFACE SHALL USE 12.5mm (1/2 INCH) NOMINAL AGGREGATE SIZE.

UTILITIES

|                             |                                 |
|-----------------------------|---------------------------------|
| CENTURYLINK                 | JUMP RIVER ELECTRIC COOPERATIVE |
| 425 ELLINGSON AVENUE        | 1102 WEST 9TH STREET NORTH      |
| P.O. BOX 78                 | P.O. BOX 99                     |
| HAWKINS, WI 54530           | LADYSMITH, WI 54848             |
| ATTN: BRIAN HUHNS           | ATTN: SAM HOWARD                |
| 715-532-0023                | 715-532-5524                    |
| brian.huhns@centurylink.com | 717-415-0539 (CELL)             |
|                             | showard@jrec.com                |

\* \* DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS



TAYLOR COUNTY

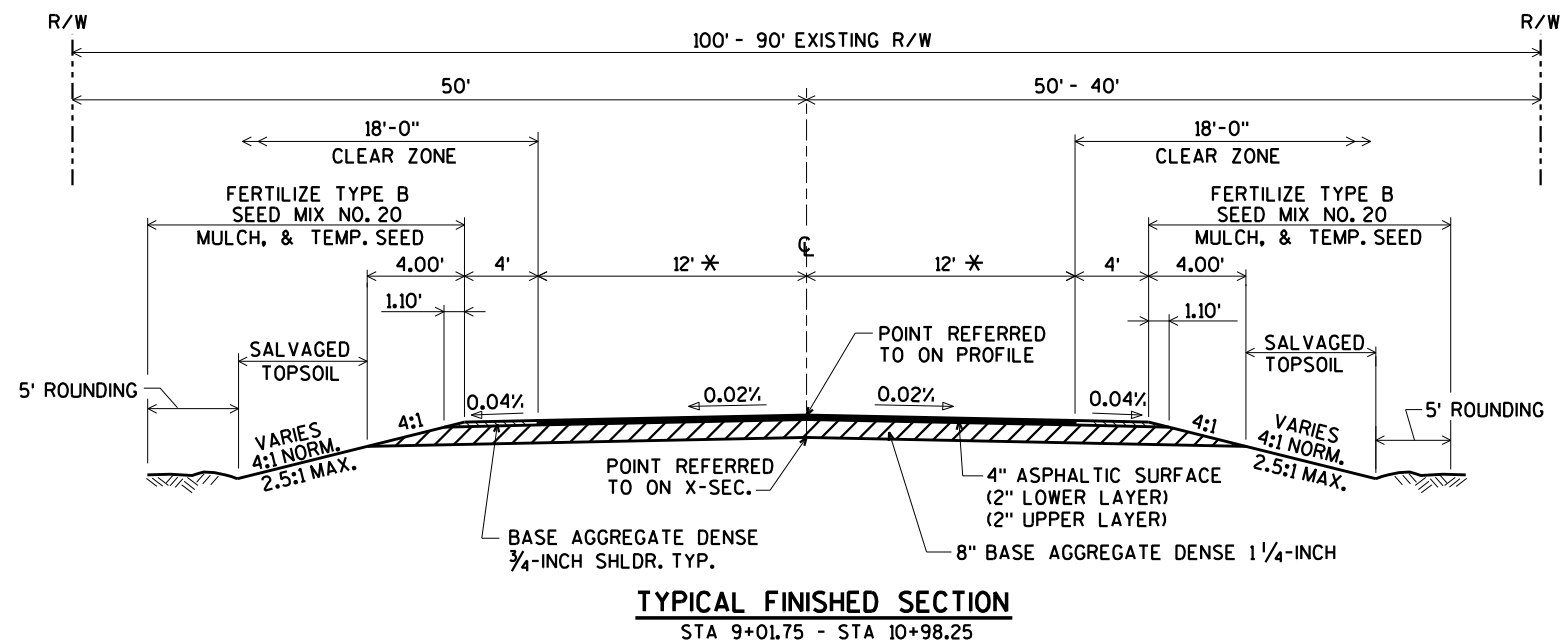
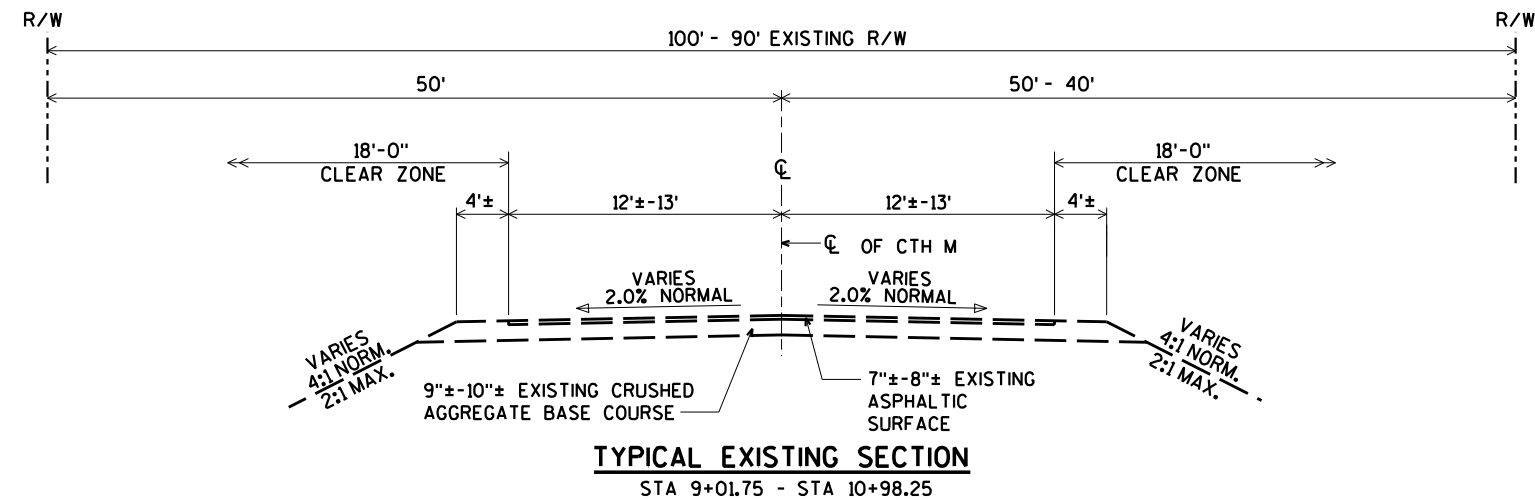
TAYLOR COUNTY, COMMISSIONER  
209 NORTH 8th STREET  
P.O. BOX 89  
MEDFORD, WI 54451  
ATTN: JESS SACKMANN  
715-748-2456  
jess.sackmann@co.taylor.wi.us

DESIGNER

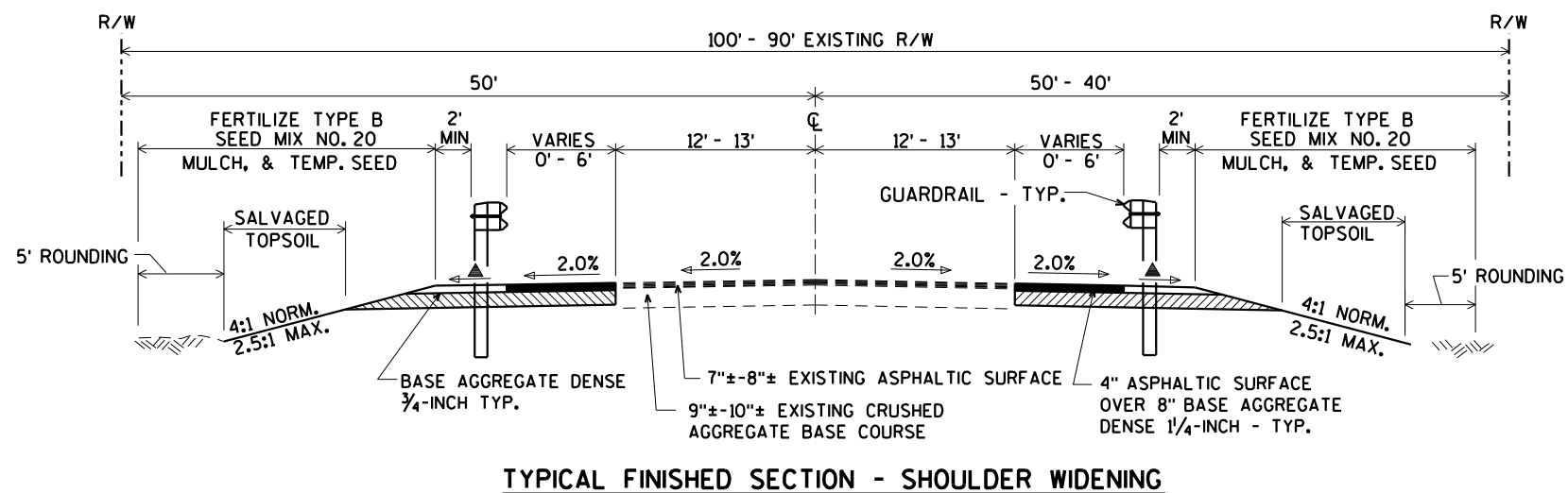
AYRES ASSOCIATES  
3433 OAKWOOD HILLS PARKWAY  
EAU CLAIRE, WI 54701  
ATTN: CHRIS McMAHON, PE  
715-834-3161  
mcmahonc@ayresassociates.com

WISCONSIN DEPARTMENT OF  
NATURAL RESOURCES CONTACT:

WENDY HENNIGES  
107 SUTLIFF  
RHINELANDER, WI 54501  
715-365-8916  
wendy.henniges@wisconsin.gov



\* THE ASPHALTIC SURFACE SHALL BE PLACED 30 FEET WIDE AT THE ENDS OF THE BRIDGE AND FOLLOW THE FACE OF THE GUARDRAIL AND TAPER TO MATCH EXISTING AT THE ENDS OF THE PROJECT.



▲ 4.0%  
STA 7+67.56 - STA 9+01.75 RT.  
STA 7+92.56 - STA 9+01.75 LT.  
STA 10+98.25 - STA 11+62.52 RT.  
STA 10+98.25 - STA 11+73.11 LT.

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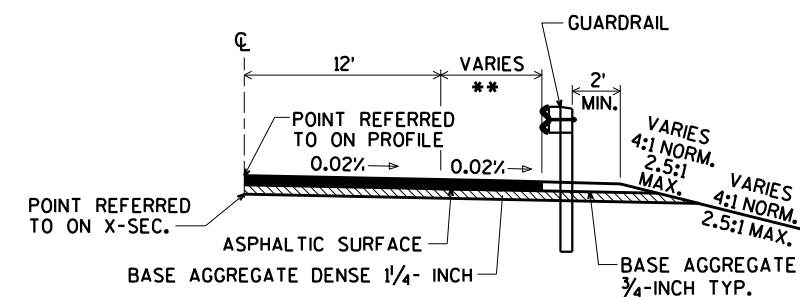
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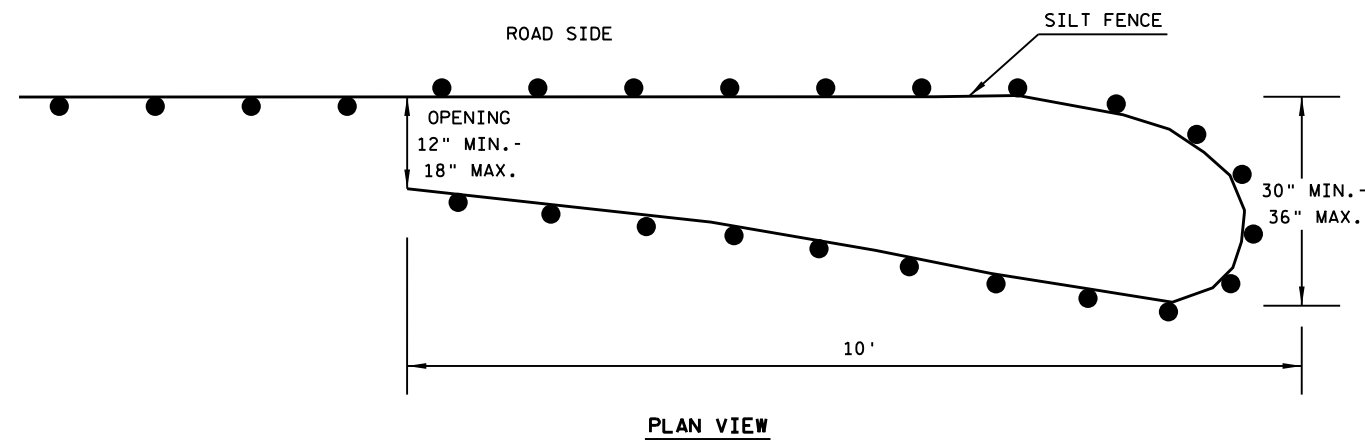
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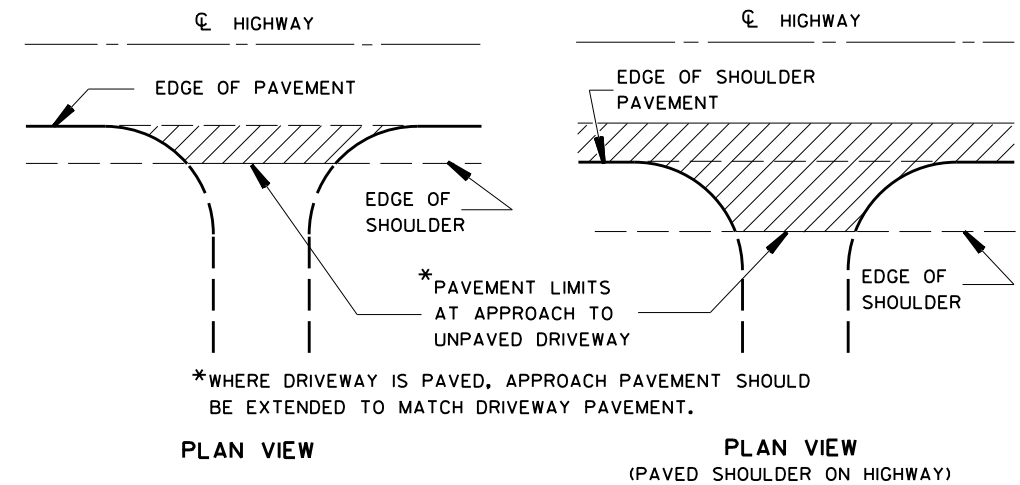
\*\* 4' NORMAL  
3' MIN. (AT END OF BRIDGE)  
6' MAX. (AT END TERMINAL)

STA 7+99.56 - STA 11+30.50, RT  
STA 8+24.56 - STA 11+40.13, LT

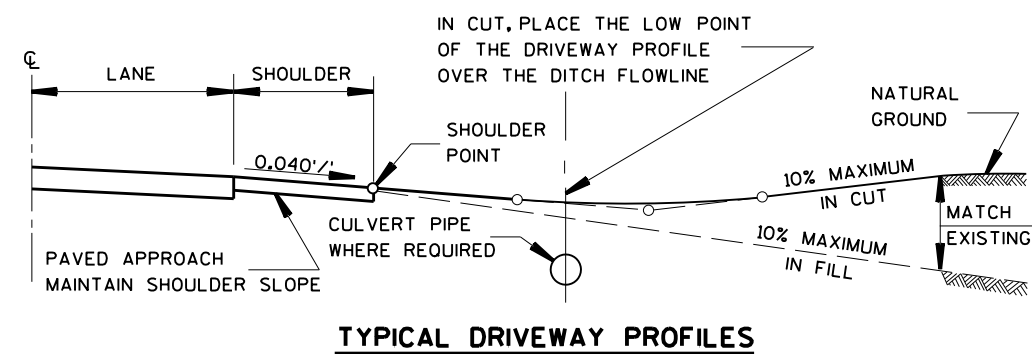
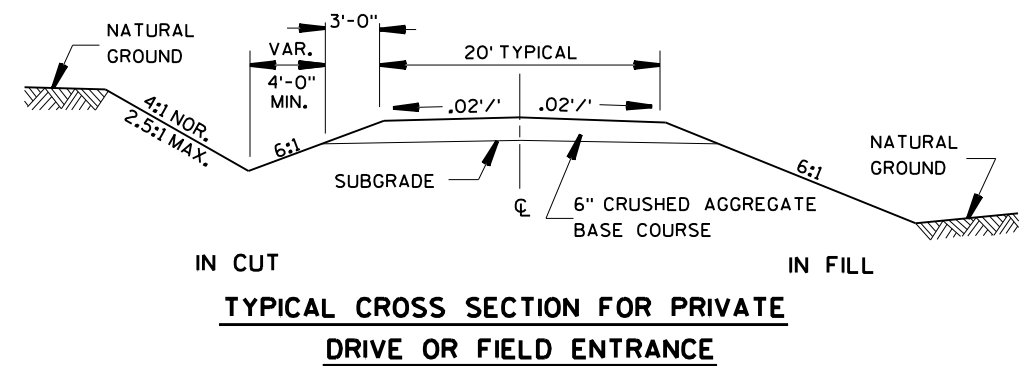


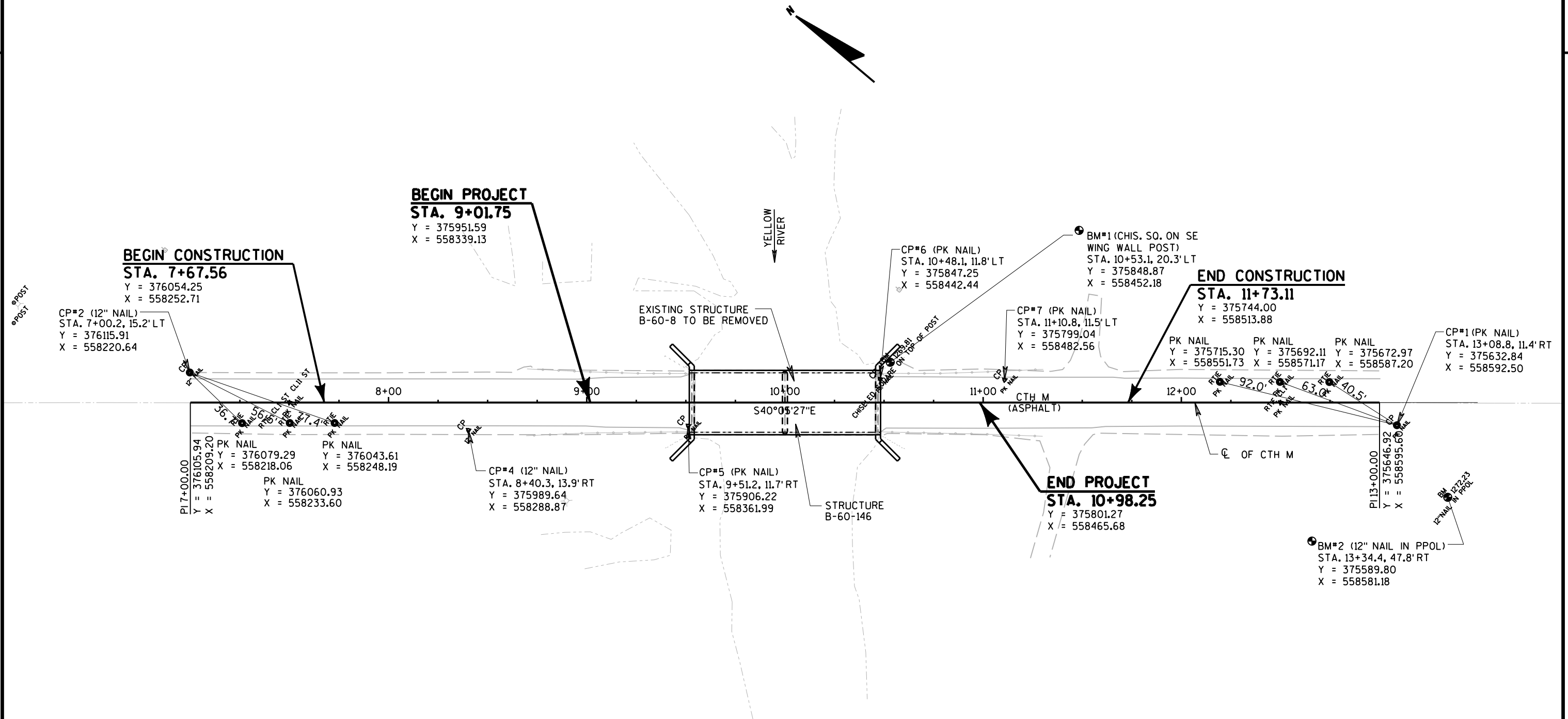
NOTES:  
THE PURPOSE OF THE TURTLE TURN-AROUNDS ARE TO REDIRECT THE TURTLES AWAY FROM THE CONSTRUCTION ZONE.  
DESIGN SHOULD ALSO INCLUDE TRENCHED-IN SEDIMENT FENCING AND FENCING SUPPORTS ON UPSLOPE SIDE OF FENCE.  
SILT FENCE POSTS FOR THE TURN-AROUND SHOULD BE ON THE OUTSIDE OF THE TURN-AROUND.

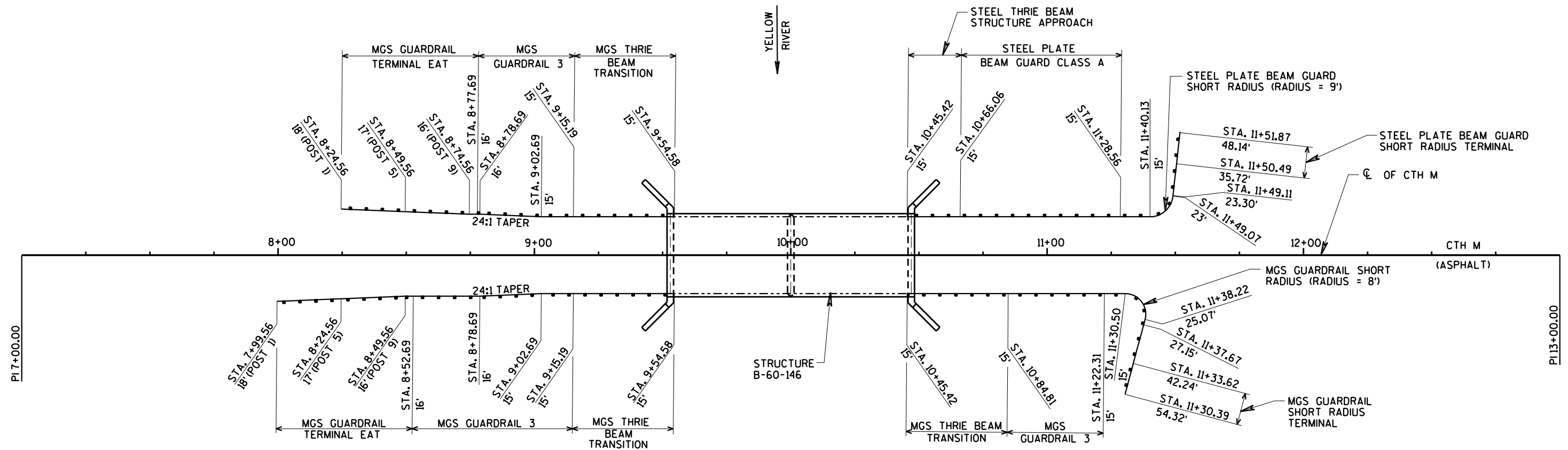
### TEMPORARY TURTLE TURN-AROUND DETAIL

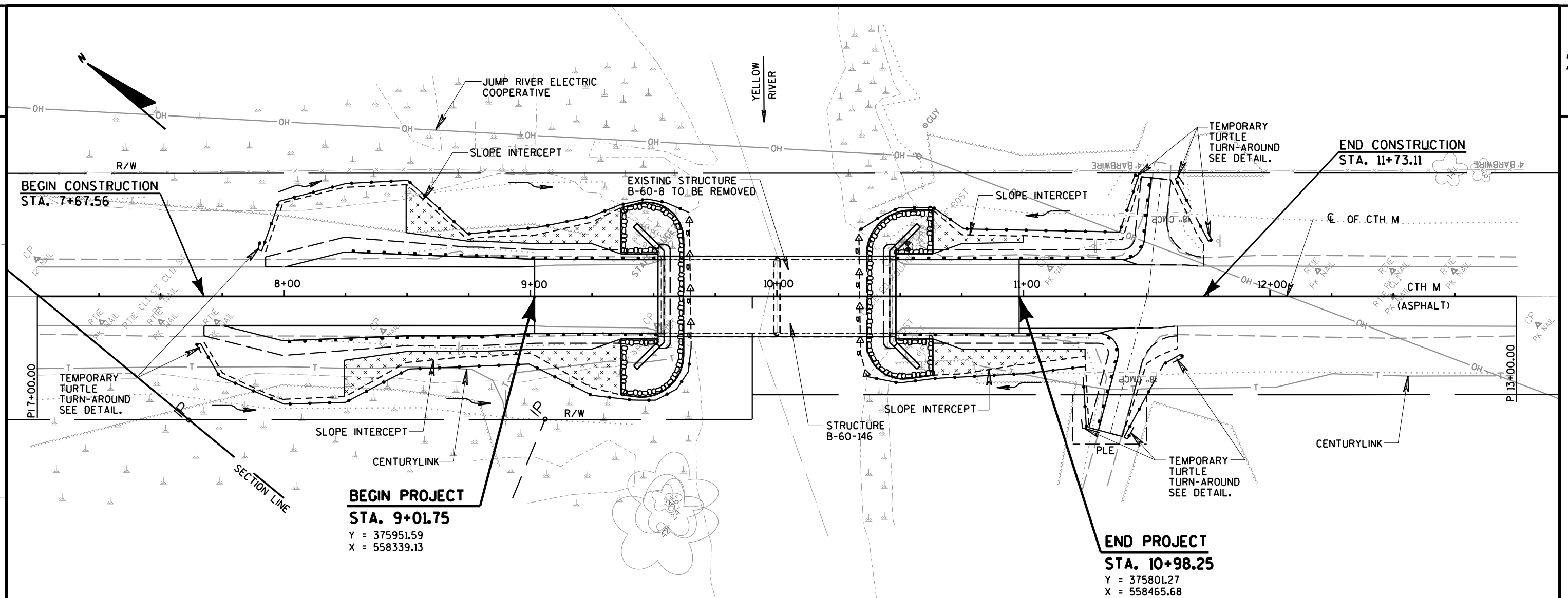


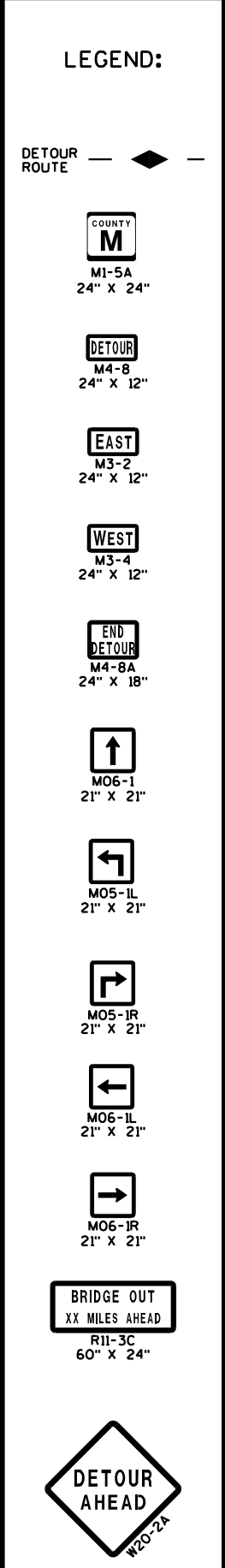
### RURAL DRIVEWAY INTERSECTION DETAIL





GUARDRAIL LAYOUT





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Estimate Of Quantities

8896-05-74

| Line | Item       | Item Description                                                             | Unit | Total      | Qty        |
|------|------------|------------------------------------------------------------------------------|------|------------|------------|
| 0002 | 201.0105   | Clearing                                                                     | STA  | 4.000      | 4.000      |
| 0004 | 201.0205   | Grubbing                                                                     | STA  | 4.000      | 4.000      |
| 0006 | 203.0600.S | Removing Old Structure Over Waterway With Minimal Debris (station) 01. 10+00 | LS   | 1.000      | 1.000      |
| 0008 | 204.0165   | Removing Guardrail                                                           | LF   | 336.000    | 336.000    |
| 0010 | 205.0100   | Excavation Common                                                            | CY   | 215.000    | 215.000    |
| 0012 | 206.1000   | Excavation for Structures Bridges (structure) 01. B-60-146                   | LS   | 1.000      | 1.000      |
| 0014 | 208.0100   | Borrow                                                                       | CY   | 84.000     | 84.000     |
| 0016 | 210.1500   | Backfill Structure Type A                                                    | TON  | 740.000    | 740.000    |
| 0018 | 213.0100   | Finishing Roadway (project) 01. 8896-05-74                                   | EACH | 1.000      | 1.000      |
| 0020 | 305.0110   | Base Aggregate Dense 3/4-Inch                                                | TON  | 125.000    | 125.000    |
| 0022 | 305.0120   | Base Aggregate Dense 1 1/4-Inch                                              | TON  | 385.000    | 385.000    |
| 0024 | 455.0605   | Tack Coat                                                                    | GAL  | 32.000     | 32.000     |
| 0026 | 465.0105   | Asphaltic Surface                                                            | TON  | 105.000    | 105.000    |
| 0028 | 502.0100   | Concrete Masonry Bridges                                                     | CY   | 337.000    | 337.000    |
| 0030 | 502.3200   | Protective Surface Treatment                                                 | SY   | 405.000    | 405.000    |
| 0032 | 505.0400   | Bar Steel Reinforcement HS Structures                                        | LB   | 7,620.000  | 7,620.000  |
| 0034 | 505.0600   | Bar Steel Reinforcement HS Coated Structures                                 | LB   | 54,710.000 | 54,710.000 |
| 0036 | 513.4061   | Railing Tubular Type M                                                       | LF   | 197.000    | 197.000    |
| 0038 | 516.0500   | Rubberized Membrane Waterproofing                                            | SY   | 14.000     | 14.000     |
| 0040 | 550.0500   | Pile Points                                                                  | EACH | 24.000     | 24.000     |
| 0042 | 550.2106   | Piling CIP Concrete 10 3/4 X 0.365-Inch                                      | LF   | 1,605.000  | 1,605.000  |
| 0044 | 606.0300   | Riprap Heavy                                                                 | CY   | 245.000    | 245.000    |
| 0046 | 612.0406   | Pipe Underdrain Wrapped 6-Inch                                               | LF   | 170.000    | 170.000    |
| 0048 | 614.0200   | Steel Thrie Beam Structure Approach                                          | LF   | 21.000     | 21.000     |
| 0050 | 614.0305   | Steel Plate Beam Guard Class A                                               | LF   | 62.500     | 62.500     |
| 0052 | 614.0345   | Steel Plate Beam Guard Short Radius                                          | LF   | 37.500     | 37.500     |
| 0054 | 614.0390   | Steel Plate Beam Guard Short Radius Terminal                                 | EACH | 1.000      | 1.000      |
| 0056 | 614.2300   | MGS Guardrail 3                                                              | LF   | 137.500    | 137.500    |
| 0058 | 614.2350   | MGS Guardrail Short Radius                                                   | LF   | 55.000     | 55.000     |
| 0060 | 614.2500   | MGS Thrie Beam Transition                                                    | LF   | 120.000    | 120.000    |
| 0062 | 614.2610   | MGS Guardrail Terminal EAT                                                   | EACH | 2.000      | 2.000      |
| 0064 | 614.2630   | MGS Guardrail Short Radius Terminal                                          | EACH | 1.000      | 1.000      |
| 0066 | 618.0100   | Maintenance And Repair of Haul Roads (project) 01. 8896-05-74                | EACH | 1.000      | 1.000      |
| 0068 | 619.1000   | Mobilization                                                                 | EACH | 1.000      | 1.000      |
| 0070 | 624.0100   | Water                                                                        | MGAL | 14.000     | 14.000     |
| 0072 | 625.0500   | Salvaged Topsoil                                                             | SY   | 525.000    | 525.000    |
| 0074 | 627.0200   | Mulching                                                                     | SY   | 425.000    | 425.000    |

Estimate Of Quantities

8896-05-74

| Line | Item     | Item Description                                                   | Unit | Total     | Qty       |
|------|----------|--------------------------------------------------------------------|------|-----------|-----------|
| 0076 | 628.1504 | Silt Fence                                                         | LF   | 975.000   | 975.000   |
| 0078 | 628.1520 | Silt Fence Maintenance                                             | LF   | 1,950.000 | 1,950.000 |
| 0080 | 628.1905 | Mobilizations Erosion Control                                      | EACH | 4.000     | 4.000     |
| 0082 | 628.1910 | Mobilizations Emergency Erosion Control                            | EACH | 4.000     | 4.000     |
| 0084 | 628.2027 | Erosion Mat Class II Type C                                        | SY   | 315.000   | 315.000   |
| 0086 | 628.6005 | Turbidity Barriers                                                 | SY   | 185.000   | 185.000   |
| 0088 | 628.7504 | Temporary Ditch Checks                                             | LF   | 50.000    | 50.000    |
| 0090 | 629.0210 | Fertilizer Type B                                                  | CWT  | 0.500     | 0.500     |
| 0092 | 630.0120 | Seeding Mixture No. 20                                             | LB   | 23.000    | 23.000    |
| 0094 | 630.0200 | Seeding Temporary                                                  | LB   | 23.000    | 23.000    |
| 0096 | 634.0612 | Posts Wood 4x6-Inch X 12-FT                                        | EACH | 4.000     | 4.000     |
| 0098 | 637.2230 | Signs Type II Reflective F                                         | SF   | 12.000    | 12.000    |
| 0100 | 638.2602 | Removing Signs Type II                                             | EACH | 6.000     | 6.000     |
| 0102 | 638.3000 | Removing Small Sign Supports                                       | EACH | 6.000     | 6.000     |
| 0104 | 642.5001 | Field Office Type B                                                | EACH | 1.000     | 1.000     |
| 0106 | 643.0420 | Traffic Control Barricades Type III                                | DAY  | 1,260.000 | 1,260.000 |
| 0108 | 643.0705 | Traffic Control Warning Lights Type A                              | DAY  | 1,960.000 | 1,960.000 |
| 0110 | 643.0900 | Traffic Control Signs                                              | DAY  | 9,100.000 | 9,100.000 |
| 0112 | 643.5000 | Traffic Control                                                    | EACH | 1.000     | 1.000     |
| 0114 | 645.0111 | Geotextile Type DF Schedule A                                      | SY   | 130.000   | 130.000   |
| 0116 | 645.0120 | Geotextile Type HR                                                 | SY   | 460.000   | 460.000   |
| 0118 | 646.1020 | Marking Line Epoxy 4-Inch                                          | LF   | 675.000   | 675.000   |
| 0120 | 650.4500 | Construction Staking Subgrade                                      | LF   | 310.000   | 310.000   |
| 0122 | 650.5000 | Construction Staking Base                                          | LF   | 310.000   | 310.000   |
| 0124 | 650.6500 | Construction Staking Structure Layout (structure) 01. B-60-146     | LS   | 1.000     | 1.000     |
| 0126 | 650.9910 | Construction Staking Supplemental Control (project) 01. 8896-05-74 | LS   | 1.000     | 1.000     |
| 0128 | 650.9920 | Construction Staking Slope Stakes                                  | LF   | 310.000   | 310.000   |
| 0130 | 690.0150 | Sawing Asphalt                                                     | LF   | 50.000    | 50.000    |
| 0132 | 715.0502 | Incentive Strength Concrete Structures                             | DOL  | 2,022.000 | 2,022.000 |

CLEARING AND GRUBBING

|         |    |         |         | 201.0105<br>CLEARING | 201.0205<br>GRUBBING |
|---------|----|---------|---------|----------------------|----------------------|
| STATION | TO | STATION | OFFSET  | STA                  | STA                  |
| 7+00    | -  | 10+00   | LT & RT | 3                    | 3                    |
| 10+00   | -  | 11+00   | LT & RT | 1                    | 1                    |
| TOTALS  |    |         |         | 4                    | 4                    |

FINISHING ROADWAY  
(ID 8896-05-74)

| 213.0100.01 |      |
|-------------|------|
| LOCATION    | EACH |
| CTH M       | 1    |
| TOTAL       | 1    |

CTH M EARTHWORK SUMMARY

| From/To Station    | Location | Excavation Common<br>(1)<br>(item # 205.0100) | Salvaged / Unuseable<br>Pavement Material (5) | Unexpanded<br>Fill | Expanded Fill<br>(2) | Mass Ordinate +/-<br>(3) | Waste | Borrow<br>(item #208.0100) | Comment: |
|--------------------|----------|-----------------------------------------------|-----------------------------------------------|--------------------|----------------------|--------------------------|-------|----------------------------|----------|
|                    |          | Cut                                           |                                               |                    | Factor<br>1.30       |                          |       |                            |          |
| 7+67.56 - 11+73.11 | CTH M    | 215                                           | 55                                            | 188                | 244                  | -84                      |       | 84                         |          |

- 1) Excavation Common is the Cut. Item number 205.0100.
- 2) Expanded Fill. Factor = 1.30; Expanded Fill = Unexpanded Fill \* Fill Factor
- 3) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material on the project.
- 4) All quantities shown in CY.
- 5) Existing existing salvaged/unuseable asphalt pavement.

PAVING AND BASE QUANTITIES

|               |    |         | 305.0110<br>BASE AGGREGATE<br>DENSE 3/4-INCH | 305.0120<br>BASE AGGREGATE<br>DENSE 1 1/4-INCH | 455.0605<br>TACK<br>COAT | 465.0105<br>ASPHALTIC SURFACE |
|---------------|----|---------|----------------------------------------------|------------------------------------------------|--------------------------|-------------------------------|
| STA           | TO | STA     | TON                                          | TON                                            | GAL                      | TON                           |
| 7+67.56       | -- | 9+51.75 | 45                                           | 235                                            | 19                       | 60                            |
| 10+48.25      | -- | 11+46   | 20                                           | 130                                            | 13                       | 40                            |
| FE 11+51 LT   |    |         | 25                                           | 0                                              | 0                        | 0                             |
| PE 11+50 RT   |    |         | 30                                           | 0                                              | 0                        | 0                             |
| UNDISTRIBUTED |    |         | 5                                            | 20                                             | 0                        | 5                             |
| TOTALS        |    |         | 125                                          | 385                                            | 32                       | 105                           |

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

| MGS GUARDRAIL |    |           |             |             |              |              |             |              |            |              |              |      |      |  |
|---------------|----|-----------|-------------|-------------|--------------|--------------|-------------|--------------|------------|--------------|--------------|------|------|--|
|               |    | 204.0165  | 614.0200    | 614.0305    | 614.0345     | 614.0390     | 614.2300    | 614.2350     | 614.2500   | 614.2610     | 614.2630     |      |      |  |
|               |    | REMOVING  | STEEL THRIE | STEEL PLATE | STEEL PLATE  | STEEL PLATE  | MGS         | MGS          | MGS THRIE  | MGS          | MGS          |      |      |  |
|               |    | GUARDRAIL | BEAM        | BEAM GUARD  | BEAM GUARD   | BEAM GUARD   | GUARDRAIL 3 | GUARDRAIL    | BEAM       | GUARDRAIL    | GUARDRAIL    |      |      |  |
|               |    |           | STRUCTURE   | CLASS A     | SHORT RADIUS | SHORT RADIUS |             | SHORT RADIUS | TRANSITION | TERMINAL EAT | SHORT RADIUS |      |      |  |
|               |    |           | APPROACH    |             |              | TERMINAL     |             |              |            |              | TERMINAL     |      |      |  |
| STA           | TO | STA       | LOCATION    | LF          | LF           | LF           | LF          | EACH         | LF         | LF           | LF           | EACH | EACH |  |
| 7+99.56       | -- | 8+52.69   | RT          | --          | --           | --           | --          | --           | --         | --           | --           | 1    | --   |  |
| 8+24.56       | -- | 8+77.69   | LT          | --          | --           | --           | --          | --           | --         | --           | --           | 1    | --   |  |
| 8+52.69       | -- | 9+15.19   | RT          | --          | --           | --           | --          | --           | 62.5       | --           | --           | --   | --   |  |
| 8+77.69       | -- | 9+15.19   | LT          | --          | --           | --           | --          | --           | 37.5       | --           | --           | --   | --   |  |
| 9+15.19       | -- | 9+54.58   | RT          | --          | --           | --           | --          | --           | --         | --           | 40           | --   | --   |  |
| 9+15.19       | -- | 9+54.58   | LT          | --          | --           | --           | --          | --           | --         | --           | 40           | --   | --   |  |
| 8+70          | -- | 9+54      | RT          | 84          | --           | --           | --          | --           | --         | --           | --           | --   | --   |  |
| 8+70          | -- | 9+54      | LT          | 84          | --           | --           | --          | --           | --         | --           | --           | --   | --   |  |
| 10+46         | -- | 11+30     | LT          | 84          | --           | --           | --          | --           | --         | --           | --           | --   | --   |  |
| 10+46         | -- | 11+30     | RT          | 84          | --           | --           | --          | --           | --         | --           | --           | --   | --   |  |
| 10+45.42      | -- | 10+84.81  | RT          | --          | --           | --           | --          | --           | --         | --           | 40           | --   | --   |  |
| 10+45.42      | -- | 10+66.06  | LT          | --          | 21           | --           | --          | --           | --         | --           | --           | --   | --   |  |
| 10+84.81      | -- | 11+22.31  | RT          | --          | --           | --           | --          | --           | 37.5       | --           | --           | --   | --   |  |
| 10+66.06      | -- | 11+28.56  | LT          | --          | --           | 62.5         | --          | --           | --         | --           | --           | --   | --   |  |
| 11+22.31      | -- | 11+33.62  | RT          | --          | --           | --           | --          | --           | --         | 55           | --           | --   | --   |  |
| 11+28.56      | -- | 11+50.49  | LT          | --          | --           | --           | 37.5        | --           | --         | --           | --           | --   | --   |  |
| 11+33.62      | -- | 11+30.39  | RT          | --          | --           | --           | --          | --           | --         | --           | --           | --   | 1    |  |
| 11+50.49      | -- | 11+51.87  | LT          | --          | --           | --           | --          | 1            | --         | --           | --           | --   | --   |  |
| TOTALS        |    |           |             | 336         | 21           | 62.5         | 37.5        | 1            | 137.5      | 55           | 120          | 2    | 1    |  |

MAINTENANCE AND REPAIR  
OF HAUL ROADS  
ID 8896-05-74

| 618.0100.01 |      |
|-------------|------|
| CATEGORY    | EACH |
| 0030        | 1    |

TOTAL 1

MOBILIZATION

| 619.1000 |      |
|----------|------|
| CATEGORY | EACH |
| 0010     | 0.2  |
| 0020     | 0.8  |

TOTAL 1

WATER

| 624.0100     |               |
|--------------|---------------|
| PURPOSE      | WATER<br>MGAL |
| COMPACTION   | 6             |
| DUST CONTROL | 8             |

TOTAL 14

EROSION CONTROL MOBILIZATION ITEMS

| 628.1905      |      | 628.1910      |
|---------------|------|---------------|
| MOBILIZATIONS |      | MOBILIZATIONS |
| EROSION       |      | EMERGENCY     |
| CONTROL       |      | EROSION       |
|               |      | CONTROL       |
| LOCATION      | EACH | EACH          |
| ID 8896-05-74 | 4    | 4             |

TOTALS 4 4

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

EROSION CONTROL ITEMS

|               |    |          |          | 625.0500 | 627.0200 | 628.1504   | 628.1520    | 628.2027    | 629.0210   | 630.0120 | 630.0200  |
|---------------|----|----------|----------|----------|----------|------------|-------------|-------------|------------|----------|-----------|
|               |    |          |          | SALVAGED | MULCHING | SILT FENCE | SILT FENCE  | EROSION MAT | FERTILIZER | SEEDING  | SEEDING   |
|               |    |          |          | TOPSOIL  |          |            | MAINTENANCE | CLASS II    | TYPE B     | MIXTURE  | TEMPORARY |
|               |    |          |          |          |          |            |             | TYPE C      |            | NO. 20   |           |
| STA           | TO | STA      | LOCATION | SY       | SY       | LF         | LF          | SY          | CWT        | LB       | LB        |
| 7+67.56       | -- | 9+51.75  | RT       | 155      | 140      | 235        | 470         | 95          | 0.1        | 6        | 6         |
| 7+92.56       | -- | 9+51.75  | LT       | 165      | 160      | 205        | 410         | 75          | 0.1        | 6        | 6         |
| 10+48.25      | -- | 11+62.52 | RT       | 60       | 55       | 165        | 330         | 55          | 0.1        | 3        | 3         |
| 10+48.25      | -- | 11+73.11 | LT       | 40       | 70       | 175        | 350         | 25          | 0.1        | 3        | 3         |
| UNDISTRIBUTED |    |          |          | 105      | --       | 195        | 390         | 65          | 0.1        | 5        | 5         |
| TOTALS        |    |          |          | 525      | 425      | 975        | 1,950       | 315         | 0.5        | 23       | 23        |

TURBIDITY BARRIERS

| LOCATION      | 628.6005<br>SY |
|---------------|----------------|
| WEST ABUTMENT | 70             |
| EAST ABUTMENT | 80             |
| UNDISTRIBUTED | 35             |
| TOTAL         | 185            |

TEMPORARY DITCH CHECKS

| LOCATION      | 628.7504<br>LF |
|---------------|----------------|
| UNDISTRIBUTED | 50             |
| TOTAL         | 50             |

OBJECT MARKERS

|         |          | 634.0612         | 637.2230      | 638.2602      | 638.3000   | SIGNAGE TYPE         |
|---------|----------|------------------|---------------|---------------|------------|----------------------|
|         |          | POSTS WOOD       | SIGNS TYPE II | REMOVING      | REMOVING   |                      |
|         |          | 4X6-INCH X 12-FT | REFLECTIVE F  | SIGNS TYPE II | SMALL SIGN | SUPPORTS             |
| STATION | LOCATION | EACH             | SF            | EACH          | EACH       |                      |
| 8+72    | RT       | --               | --            | 1             | 1          | WEIGHT LIMIT 45 TONS |
| 9+51    | LT       | 1                | 3             | 1             | 1          | W5-52L               |
| 9+51    | RT       | 1                | 3             | 1             | 1          | W5-52R               |
| 10+49   | LT       | 1                | 3             | 1             | 1          | W5-52R               |
| 10+49   | RT       | 1                | 3             | 1             | 1          | W5-52L               |
| 11+28   | LT       | --               | --            | 1             | 1          | WEIGHT LIMIT 45 TONS |
| TOTALS  |          | 4                | 12            | 6             | 6          |                      |

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

FIELD OFFICE TYPE B

| CATEGORY | 642.5001<br>EACH |
|----------|------------------|
| 0010     | 0.2              |
| 0020     | 0.8              |
| TOTAL    | 1                |

TRAFFIC CONTROL ITEMS

| LOCATION        | DURATION<br>DAYS | 643.0420<br>BARRICADES |       | 643.0705<br>WARNING LIGHTS |       | 643.0900<br>SIGNS |       | 643.5000<br>TRAFFIC<br>CONTROL |
|-----------------|------------------|------------------------|-------|----------------------------|-------|-------------------|-------|--------------------------------|
|                 |                  | TYPE III<br>NO.        | DAY   | TYPE A<br>NO.              | DAY   | NO.               | DAY   | EACH                           |
| PER SDD 15C2    | 70               | 18                     | 1,260 | 28                         | 1,960 | 14                | 980   | --                             |
| PER DETOUR PLAN | 70               | --                     | --    | --                         | --    | 116               | 8,120 | --                             |
| CTH M           | --               | --                     | --    | --                         | --    | --                | --    | 1                              |
| TOTALS          |                  |                        | 1,260 |                            | 1,960 |                   | 9,100 | 1                              |

TRAFFIC CONTROL PLACEMENT SUBJECT TO ENGINEER APPROVAL

MARKING LINE EPOXY 4-INCH

|               |    |          |                             |             | 646.1020 |       |
|---------------|----|----------|-----------------------------|-------------|----------|-------|
|               |    |          |                             |             | YELLOW   | WHITE |
| STA           | TO | STA      | LOCATION                    | DESCRIPTION | LF       |       |
| 9+01.75       | -  | 10+98.25 | LT                          | EDGE LINE   | --       | 197   |
| 9+01.75       | -  | 10+98.25 | RT                          | EDGE LINE   | --       | 197   |
| 9+01.75       | -  | 10+98.25 | SOLID & DASHED CENTER LINES |             | 247      | --    |
| UNDISTRIBUTED |    |          |                             |             | 15       | 19    |
| SUBTOTALS     |    |          |                             |             | 262      | 413   |
| TOTAL         |    |          |                             |             | 675      |       |

STAKING ITEMS

| CATEGORY | LOCATION           | 650.4500<br>CONSTRUCTION<br>STAKING<br>SUBGRADE | 650.5000<br>CONSTRUCTION<br>STAKING<br>BASE | 650.6500.01<br>CONSTRUCTION<br>STAKING<br>STRUCTURE LAYOUT<br>(B-60-0146) | 650.9910.01<br>CONSTRUCTION STAKING<br>SUPPLEMENTAL CONTROL<br>(ID 8896-05-74) | 650.9920<br>CONSTRUCTION<br>STAKING<br>SLOPE<br>STAKES |
|----------|--------------------|-------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------|
|          |                    | LF                                              | LF                                          | LS                                                                        | LS                                                                             | LF                                                     |
| 0010     | 7+67.56 - 11+73.11 | 310                                             | 310                                         | --                                                                        | 1                                                                              | 310                                                    |
| 0020     | B-60-146           | --                                              | --                                          | 1                                                                         | --                                                                             | --                                                     |
| TOTALS   |                    | 310                                             | 310                                         | 1                                                                         | 1                                                                              | 310                                                    |

SAWING ASPHALT

| 690.0150 |          |    |
|----------|----------|----|
| STATION  | LOCATION | LF |
| 9+01.75  | LT & RT  | 24 |
| 10+98.25 | LT & RT  | 26 |
| TOTAL    |          | 50 |

ALL QUANTITIES CATEGORY 0010 UNLESS OTHERWISE NOTED

**CONVENTIONAL SYMBOLS**

FOUND IRON PIPE/PIV (IF UNLESS NOTED) TEMPORARY LIMITED EASEMENT  
 R/W MONUMENT (KSET) PERMANENT LIMITED EASEMENT  
 R/W STANDARD (KSET) EASEMENT  
 SIGN R/W BOUNDARY POINT  
 SECTION CORNER MONUMENT PARCEL NUMBER  
 SECTION CORNER SYMBOL UTILITY PARCEL NUMBER  
 FEE (HATCH VARIES) SIGN NUMBER (OFF PREMISE)  
 BUILDING

SECTION LINE  
 QUARTER LINE  
 SIXTEENTH LINE  
 NEW REFERENCE LINE  
 NEW R/W LINE  
 EXISTING R/W LINE  
 PROPERTY LINE  
 LOT & TIE  
 CORPORATE LIMITS  
 TEMPORARY LIMITED EASEMENT  
 FENCE  
 SLOPE INTERCEPTS  
 PERMANENT LIMITED EASEMENT  
 NO ACCESS (BY STATUTORY AUTHORITY)  
 NO ACCESS (BY PREVIOUS ACQUISITION/CONTROL)  
 ACCESS CONTROL BY ACQUISITION  
 ACCESS RESTRICTED (BY PREVIOUS PROJECT/CONTROL)

**CONVENTIONAL ABBREVIATIONS**

ACCESS POINT/ DRIVEWAY CONNECTION AP  
 ACCESS RIGHTS AC  
 ACRES AC  
 AND OTHERS ET.AL.  
 CENTERLINE C/L  
 CERTIFIED SURVEY MAP CSM  
 CORNER COR.  
 DOCUMENT DOC.  
 EASEMENT EASE.  
 FIELD ENTRANCE F.E.  
 LAND CONTRACT LC  
 MONUMENT MON.  
 PAGE P.  
 PERMANENT LIMITED EASEMENT PLE  
 PROPERTY LINE PL  
 RECORDED AS (100')

BUILDING BLDG  
 REFERENCE LINE R/L  
 RELEASE OF RIGHTS ROR  
 REMAINING REM.  
 RIGHT-OF-WAY R/W  
 SECTION SEC.  
 STATION STA.  
 TEMPORARY LIMITED EASEMENT TLE  
 VOLUME V.  
 CURVE DATA  
 LONG CHORD LCH  
 LONG CHORD BEARING LCB  
 RADIUS R  
 DEGREE OF CURVE D  
 CENTRAL ANGLE OR DELTA DELTA  
 LENGTH OF CURVE L  
 TANGENT TAN

**CONVENTIONAL UTILITY SYMBOLS**

WATER W  
 GAS C  
 TELEPHONE T  
 OVERHEAD OH  
 TRANSMISSION LINES E  
 SANITARY SEWER SAN  
 STORM SEWER SS  
 CABLE TELEVISION TV  
 FIBER OPTIC FO

| COURSE TABLE |             |          |
|--------------|-------------|----------|
| COURSE       | BEARING     | DISTANCE |
| 100-101      | S40°06'16"E | 30.00'   |
| 101-102      | S49°54'33"W | 20.07'   |
| 102-103      | N40°05'27"W | 30.00'   |
| 103-100      | N49°54'33"E | 20.07'   |

| R/W POINT TABLE |             |             |
|-----------------|-------------|-------------|
| POINT           | NORTHING    | EASTING     |
| 100             | 375,758.910 | 558,449.132 |
| 101             | 375,735.964 | 558,468.458 |
| 102             | 375,723.036 | 558,453.101 |
| 103             | 375,745.987 | 558,433.781 |

**NOTES:**

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COUNTY REFERENCE SYSTEM (WISCRS), TAYLOR ZONE, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

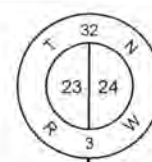
ALL NEW RIGHT-OF-WAY MONUMENTS WILL BE TYPE 2 (TYPICALLY 3/4" X 24" CAPPED IRON BARS), UNLESS OTHERWISE NOTED, AND WILL BE PLACED PRIOR TO THE COMPLETION OF THE PROJECT.

RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY SYSTEM OR OTHER "SURVEYS OF PUBLIC RECORD."

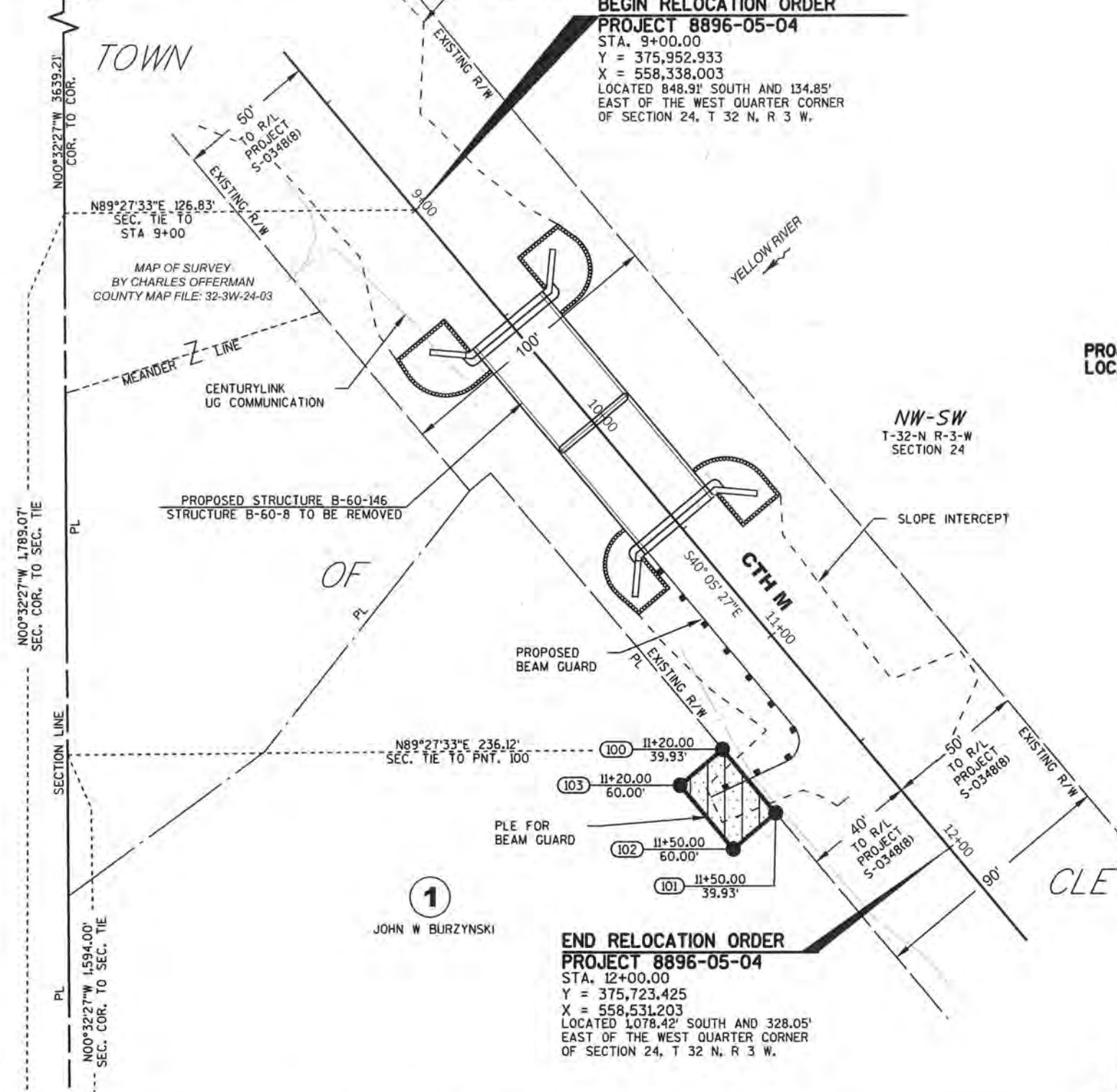
DIMENSIONING FOR THE NEW RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO THE NEW REFERENCE LINES.

PROPERTY LINES SHOWN ON THIS PLAT ARE DRAWN FROM DATA DERIVED FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPATIONAL LINES, THIS PLAT MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES, EXCLUDING RIGHT-OF-WAY, AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

EXISTING HIGHWAY RIGHT-OF-WAY SHOWN HEREIN IS BASED ON THE FOLLOWING POINT OF REFERENCE:  
 EXISTING HIGHWAY RIGHT-OF-WAY FOR CTH M SHOWN HEREIN IS BASED ON PREVIOUS PROJECT S-0343(8).



FOUND BRASS  
 CAPPED MONUMENT  
 Y = 376,801.845  
 X = 558,203.153

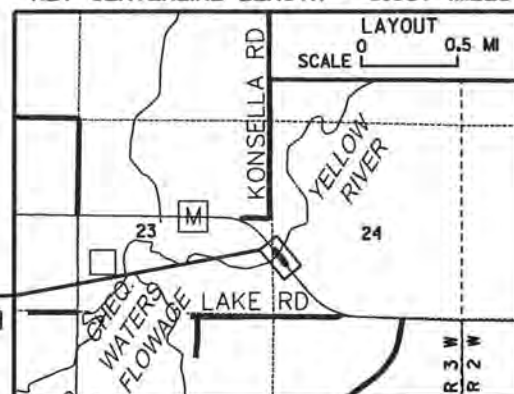


| SCHEDULE OF LANDS AND INTERESTS REQUIRED |                  |                   |             |          |       |       |
|------------------------------------------|------------------|-------------------|-------------|----------|-------|-------|
| PARCEL NO.                               | OWNER(S)         | INTEREST REQUIRED | R/W (ACRES) |          |       |       |
|                                          |                  |                   | FEE         | EXISTING | TOTAL | PLE   |
| 1                                        | JOHN W BURZYNSKI | PLE               | ---         | ---      | ---   | 0.014 |

OWNER'S NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE COUNTY.

|                                                                                              |                      |                   |
|----------------------------------------------------------------------------------------------|----------------------|-------------------|
| R/W PROJECT NUMBER<br>8896-05-04                                                             | SHEET NUMBER<br>4.01 | TOTAL SHEETS<br>1 |
| FEDERAL PROJECT NUMBER                                                                       |                      |                   |
| PLAT OF RIGHT-OF-WAY REQUIRED FOR<br>STH 73 - PERKINSTOWN<br>(YELLOW RIVER BRIDGE P-60-0008) |                      |                   |
| CTH M                                                                                        |                      | TAYLOR COUNTY     |
| CONSTRUCTION PROJECT NUMBER<br>8896-05-74                                                    |                      |                   |

NET CENTERLINE LENGTH = 0.057 MILES



ACCEPTED FOR  
 TAYLOR COUNTY

7-16-18  
 (Date) County Highway Commissioner

ORIGINAL PLAT PREPARED BY

**AYRES ASSOCIATES**

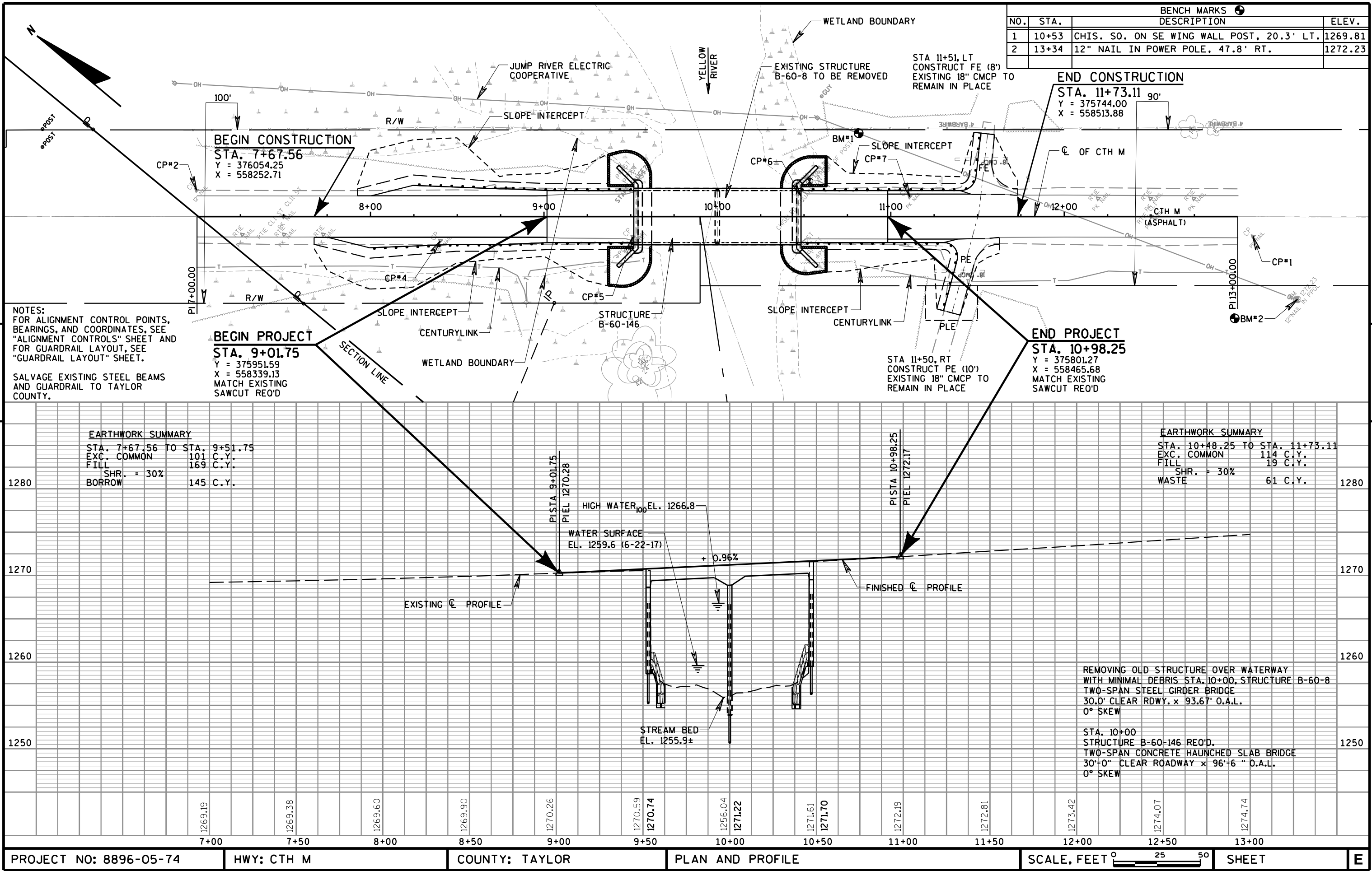
THIS SURVEY IS PREPARED AT THE REQUEST OF TAYLOR COUNTY.

THE FIELD SURVEY WAS PERFORMED IN JUNE 2017.

THIS SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



(SIGNATURE) James R. Cappeart  
 DATE: 07/11/2018  
 (PRINTED NAME) JAMES R. CAPPEART  
 (REGISTRATION NUMBER) S-3044



| BENCH MARKS |       |                                           |         |
|-------------|-------|-------------------------------------------|---------|
| NO.         | STA.  | DESCRIPTION                               | ELEV.   |
| 1           | 10+53 | CHIS. SQ. ON SE WING WALL POST, 20.3' LT. | 1269.81 |
| 2           | 13+34 | 12" NAIL IN POWER POLE, 47.8' RT.         | 1272.23 |

NOTES:  
FOR ALIGNMENT CONTROL POINTS,  
BEARINGS, AND COORDINATES, SEE  
"ALIGNMENT CONTROLS" SHEET AND  
FOR GUARDRAIL LAYOUT, SEE  
"GUARDRAIL LAYOUT" SHEET.

SALVAGE EXISTING STEEL BEAMS  
AND GUARDRAIL TO TAYLOR  
COUNTY.

**BEGIN CONSTRUCTION**  
STA. 7+67.56  
Y = 376054.25  
X = 558252.71

**BEGIN PROJECT**  
STA. 9+01.75  
Y = 375951.59  
X = 558339.13  
MATCH EXISTING  
SAWCUT REQ'D

**END CONSTRUCTION**  
STA. 11+73.11  
Y = 375744.00  
X = 558513.88

**END PROJECT**  
STA. 10+98.25  
Y = 375801.27  
X = 558465.68  
MATCH EXISTING  
SAWCUT REQ'D

**EARTHWORK SUMMARY**

|                              |          |
|------------------------------|----------|
| STA. 7+67.56 TO STA. 9+51.75 |          |
| EXC. COMMON                  | 101 C.Y. |
| FILL                         | 169 C.Y. |
| SHR. = 30%                   |          |
| BORROW                       | 145 C.Y. |

**EARTHWORK SUMMARY**

|                                |          |
|--------------------------------|----------|
| STA. 10+48.25 TO STA. 11+73.11 |          |
| EXC. COMMON                    | 114 C.Y. |
| FILL                           | 19 C.Y.  |
| SHR. = 30%                     |          |
| WASTE                          | 61 C.Y.  |

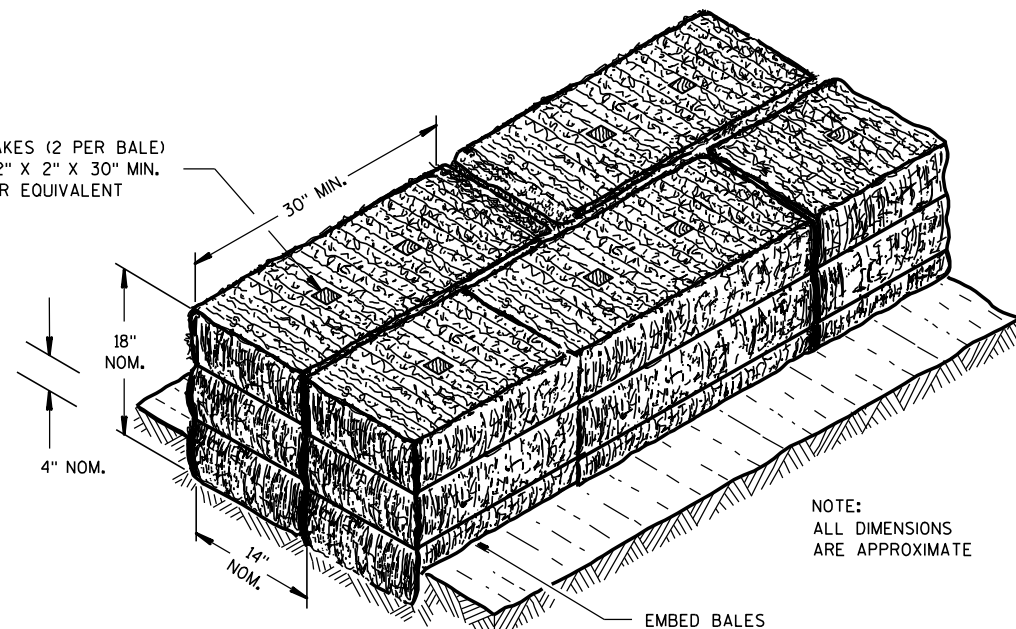
REMOVING OLD STRUCTURE OVER WATERWAY  
WITH MINIMAL DEBRIS STA. 10+00, STRUCTURE B-60-8  
TWO-SPAN STEEL GIRDER BRIDGE  
30'-0" CLEAR RDWY. x 93.67' O.A.L.  
0° SKEW

STA. 10+00  
STRUCTURE B-60-146 REQ'D.  
TWO-SPAN CONCRETE HAUNCHED SLAB BRIDGE  
30'-0" CLEAR ROADWAY x 96'-6" O.A.L.  
0° SKEW

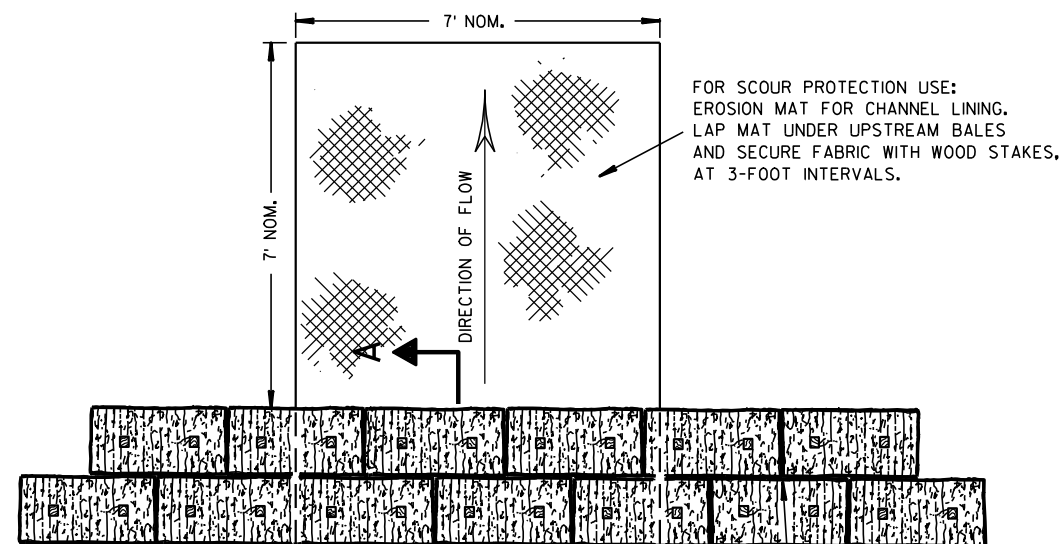
Standard Detail Drawing List

|           |                                                                                   |
|-----------|-----------------------------------------------------------------------------------|
| 08E08-03  | TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS                   |
| 08E09-06  | SILT FENCE                                                                        |
| 08E11-02  | TURBIDITY BARRIER                                                                 |
| 12A03-10  | NAME PLATE (STRUCTURES)                                                           |
| 14B15-11A | STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS                         |
| 14B15-11B | STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS                         |
| 14B15-11C | STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS                        |
| 14B18-06A | STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDERoads/DRIVEWAYS) |
| 14B20-11A | STEEL THRIE BEAM STRUCTURE APPROACH                                               |
| 14B20-11F | STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"        |
| 14B27-01A | STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL                                      |
| 14B27-01B | STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL                                      |
| 14B27-01C | STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL                                      |
| 14B42-06A | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B42-06B | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B42-06C | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B42-06D | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B44-04A | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)                          |
| 14B44-04B | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)                          |
| 14B44-04C | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)                          |
| 14B45-05A | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05B | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05C | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05H | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B53-01A | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01B | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01C | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01D | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01E | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01F | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01G | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01H | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 14B53-01I | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)                         |
| 15C02-06A | BARRICADES AND SIGNS FOR MAINLINE CLOSURES                                        |
| 15C02-06B | BARRICADES AND SIGNS FOR MAINLINE CLOSURES                                        |
| 15C02-06C | DETOUR SIGNING FOR MAINLINE CLOSURES                                              |
| 15C06-09  | SIGNING & MARKING FOR TWO LANE BRIDGES                                            |
| 15C08-19A | LONGITUDINAL MARKING (MAINLINE)                                                   |
| 15D38-02A | TEMPORARY TRAFFIC CONTROL SIGN MOUNTING                                           |
| 15D38-02B | ATTACHMENT OF SIGNS TO POSTS                                                      |

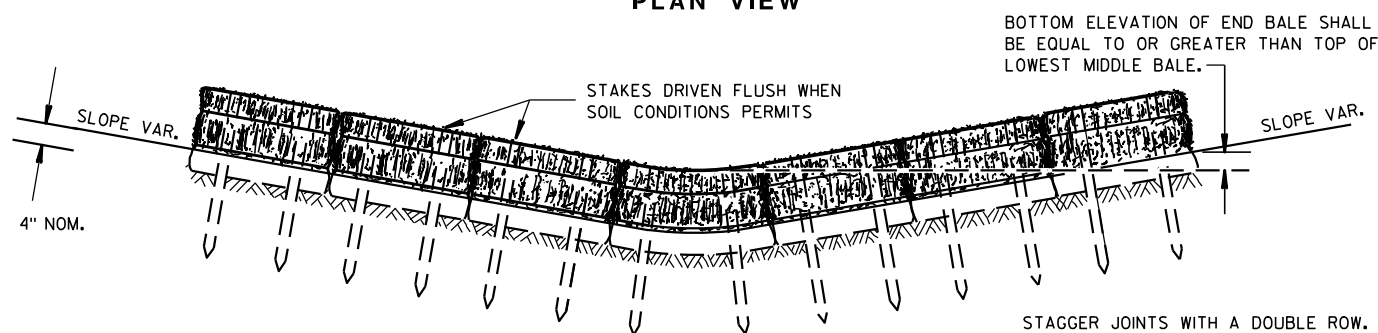
WOOD STAKES (2 PER BALE)  
NOMINAL 2" X 2" X 30" MIN.  
LENGTH OR EQUIVALENT



SECTION A-A



PLAN VIEW



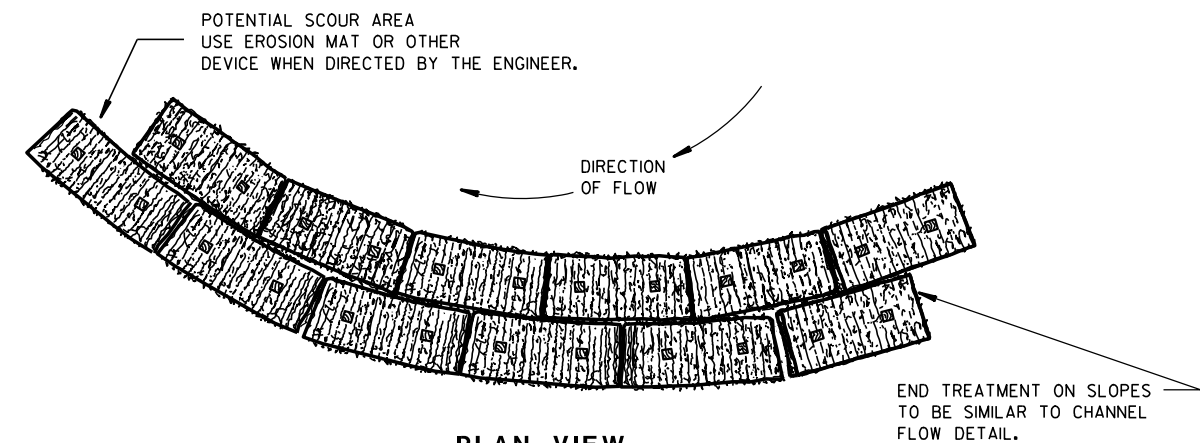
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

## GENERAL NOTES

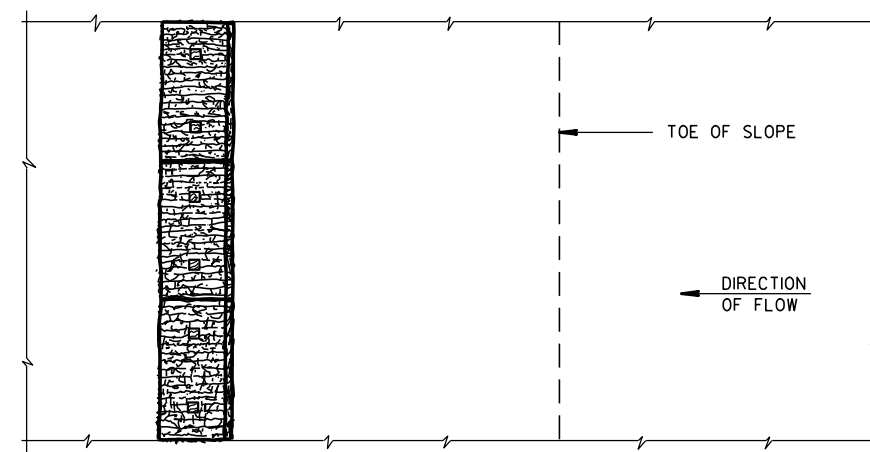
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

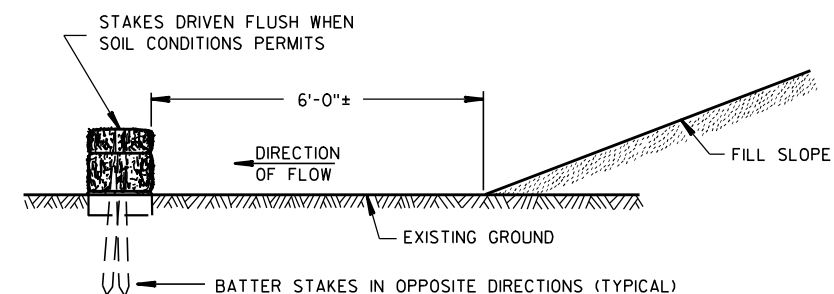


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF  
EROSION BALES / TEMPORARY  
DITCH CHECKS

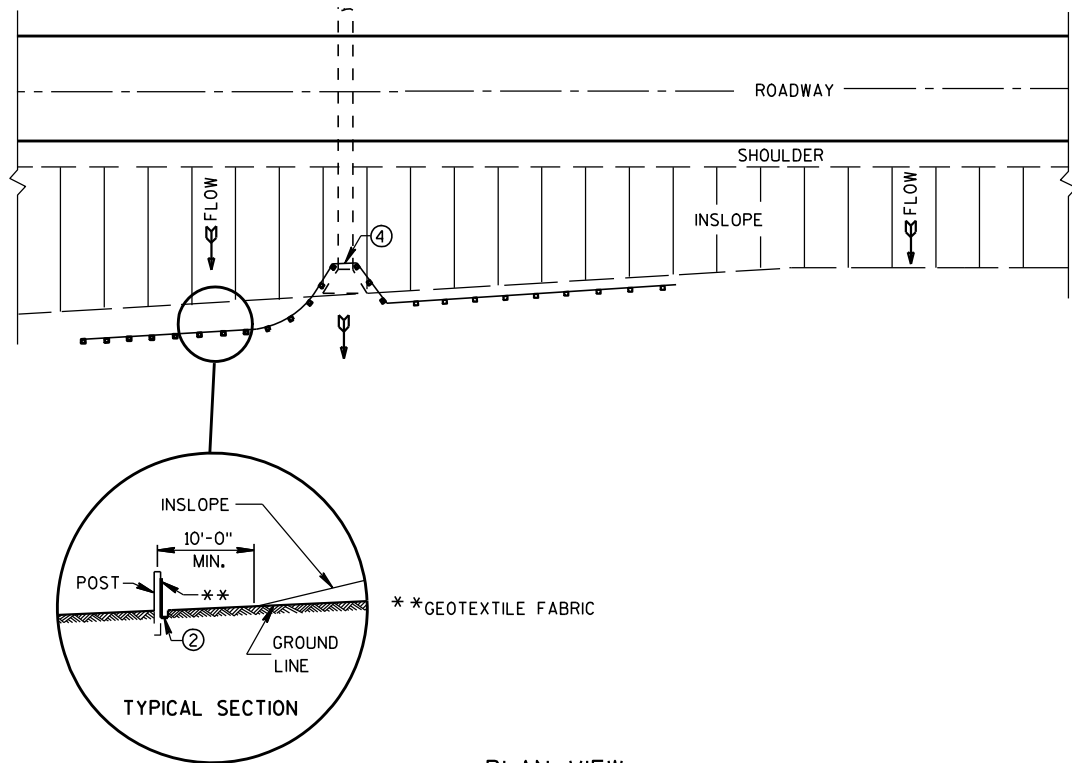
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

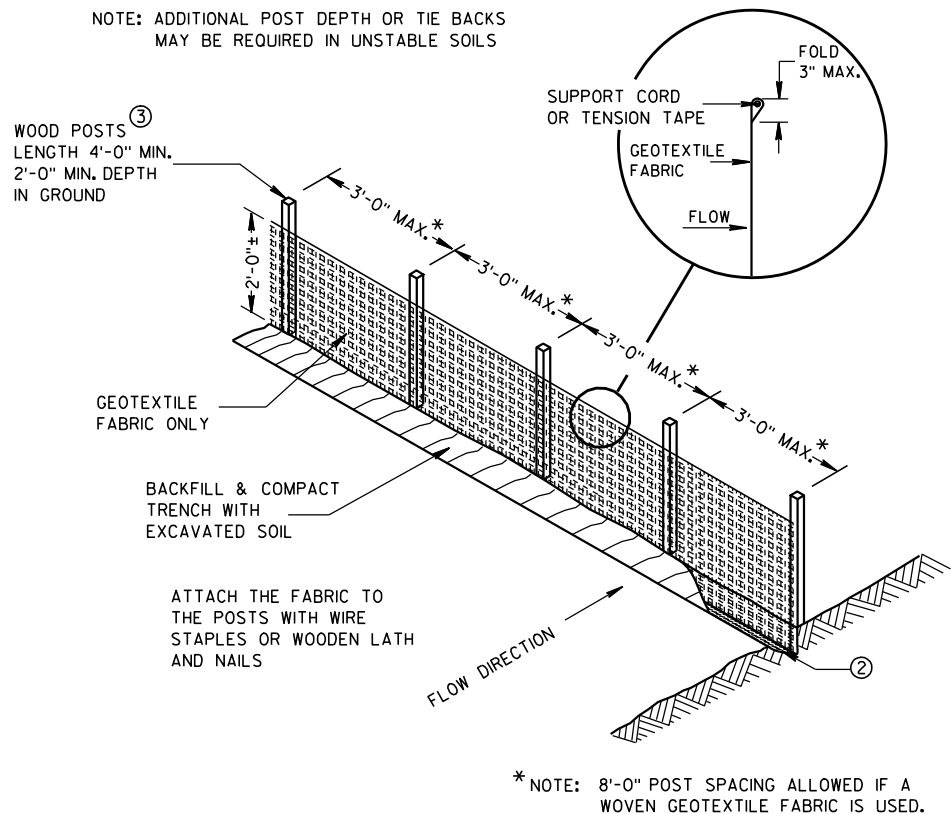
6/04/02  
DATE

/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER

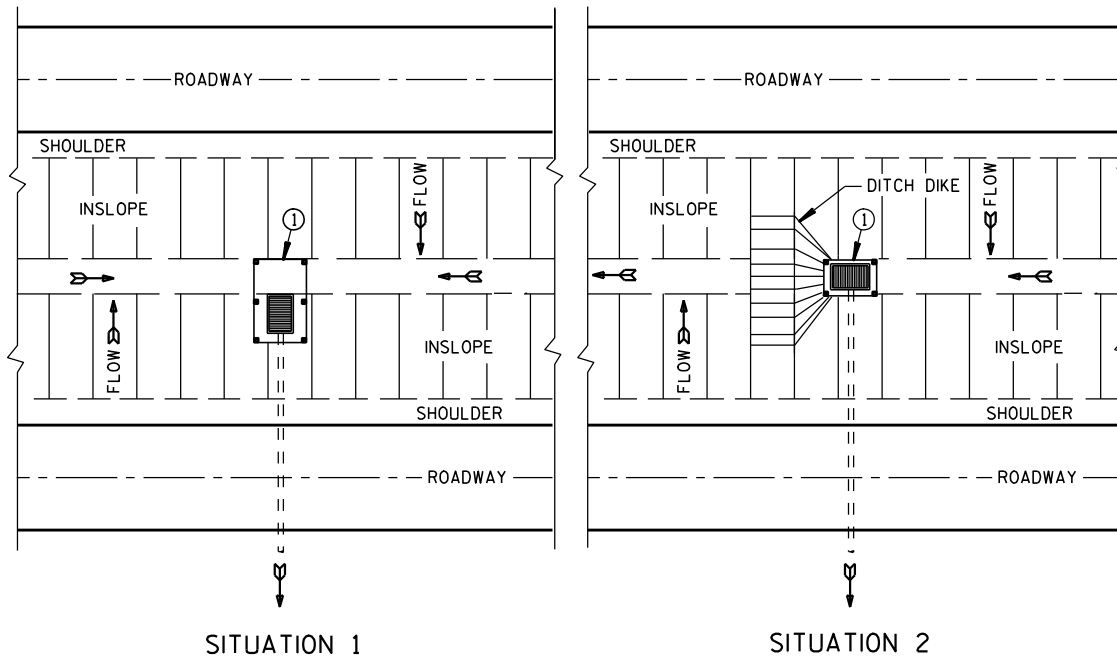
FHWA



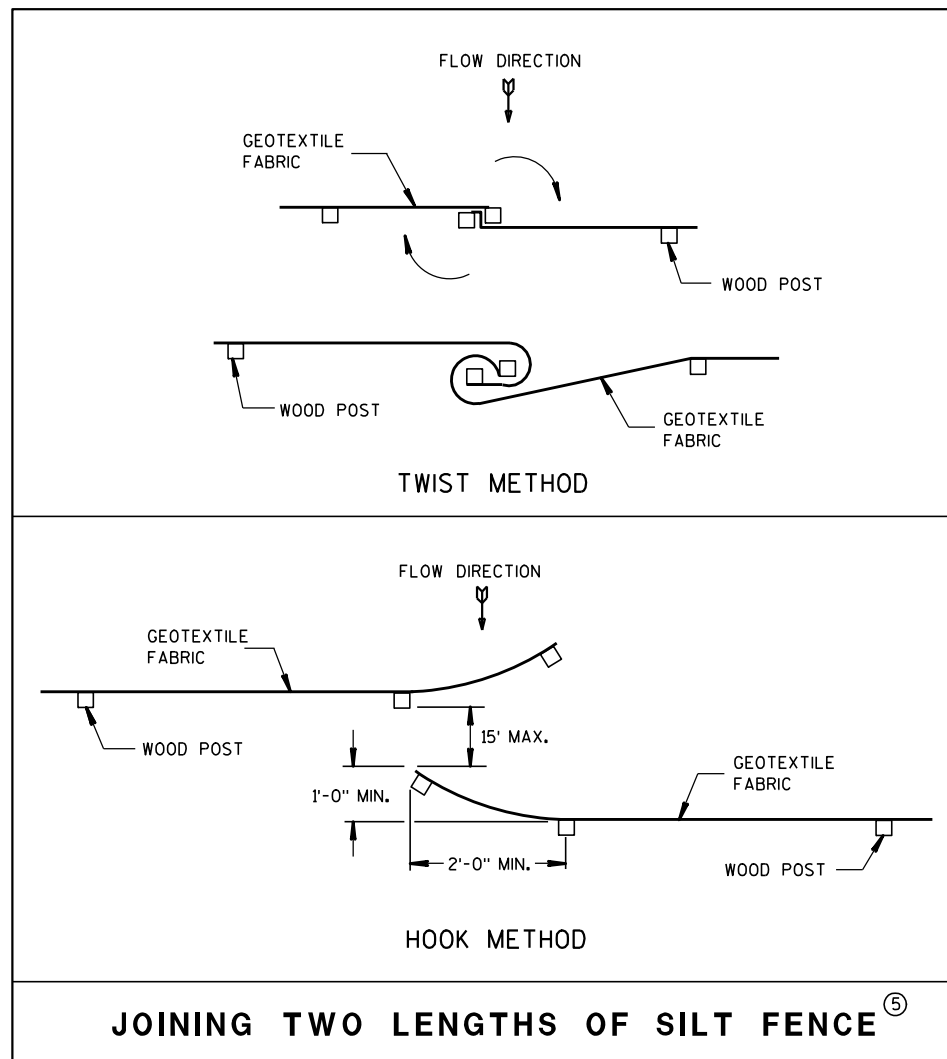
PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

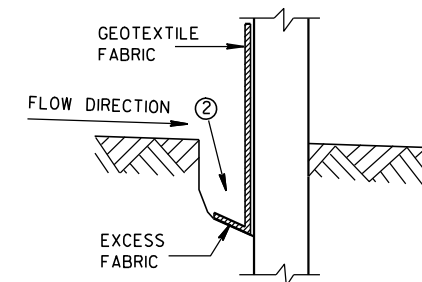


JOINING TWO LENGTHS OF SILT FENCE<sup>⑤</sup>

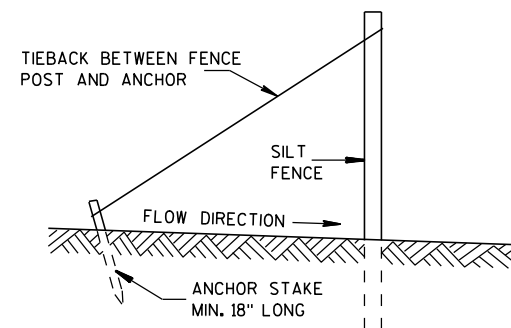
GENERAL NOTES

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

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

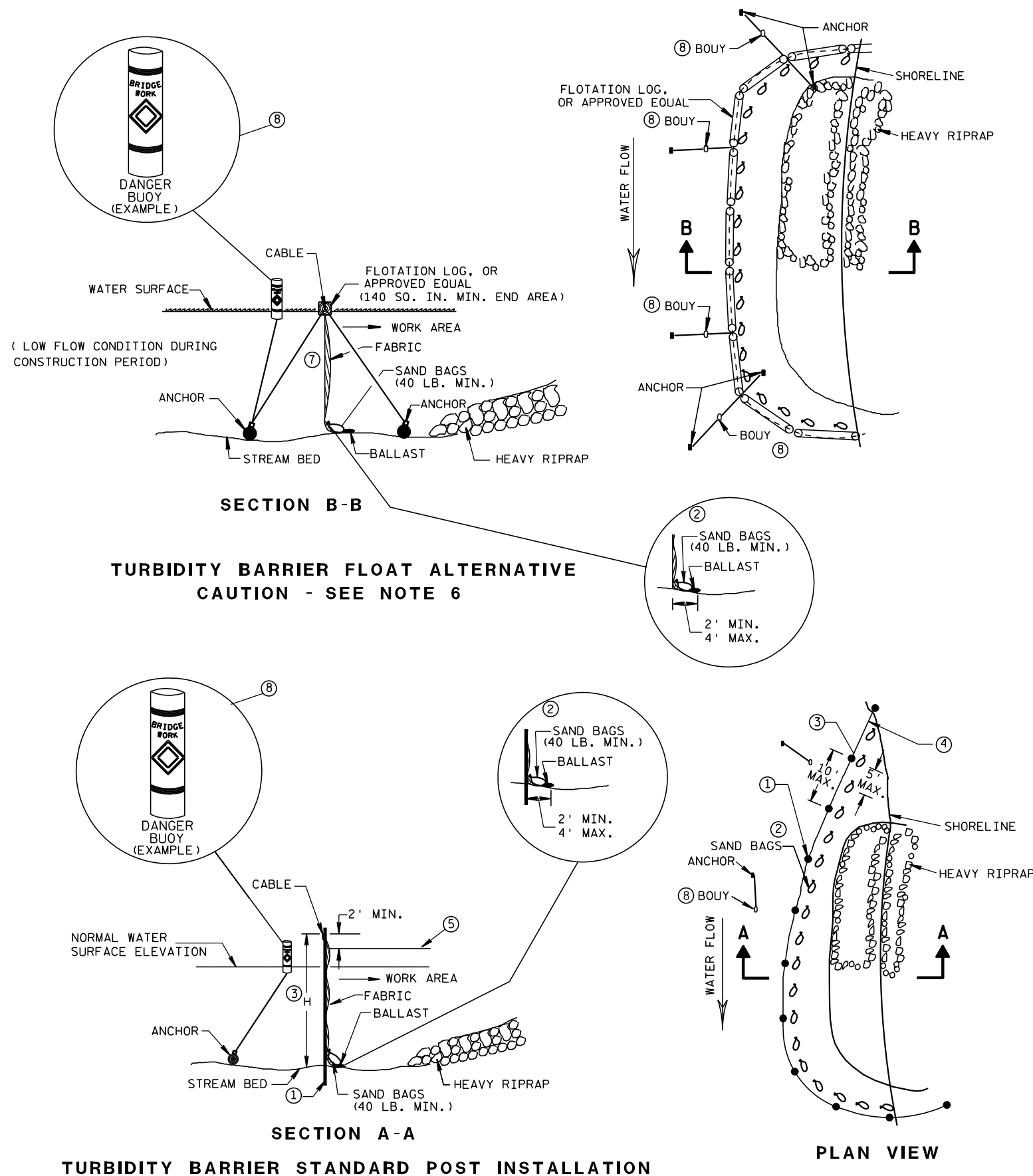


TRENCH DETAIL



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

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

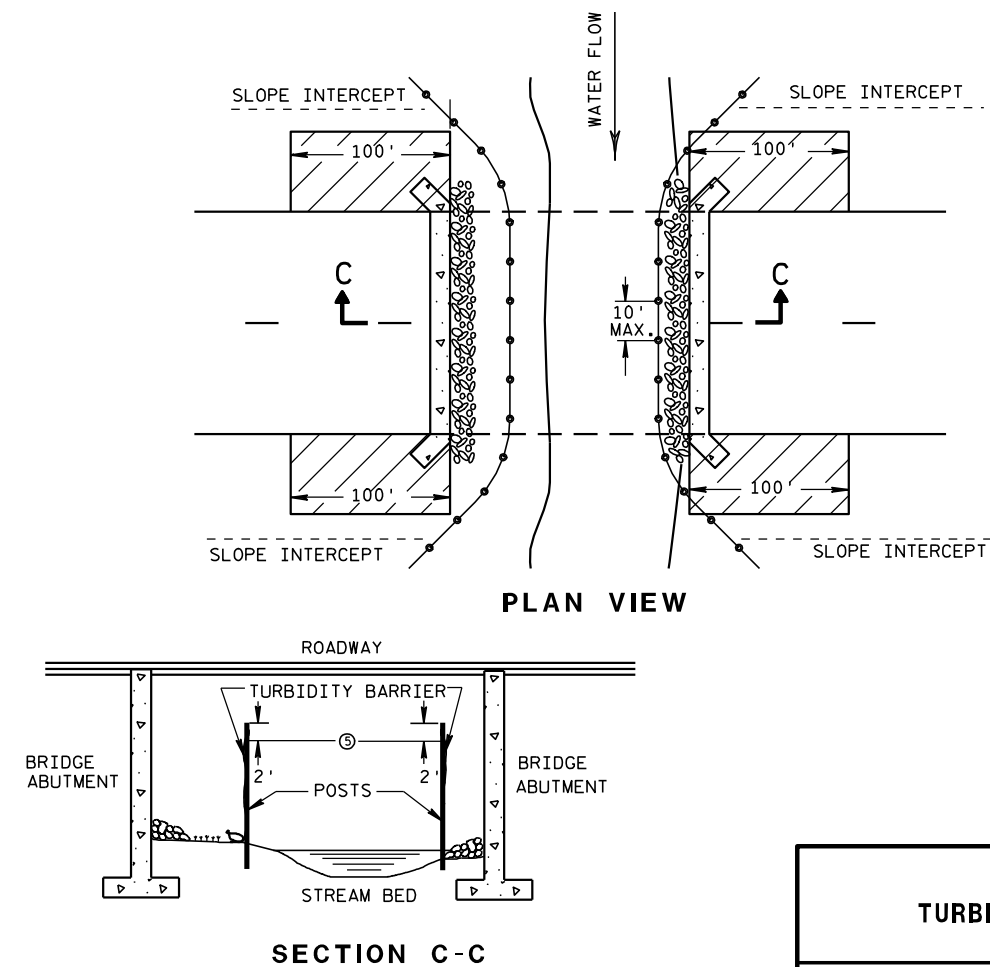


## GENERAL NOTES

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

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

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



## TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

### TURBIDITY BARRIER

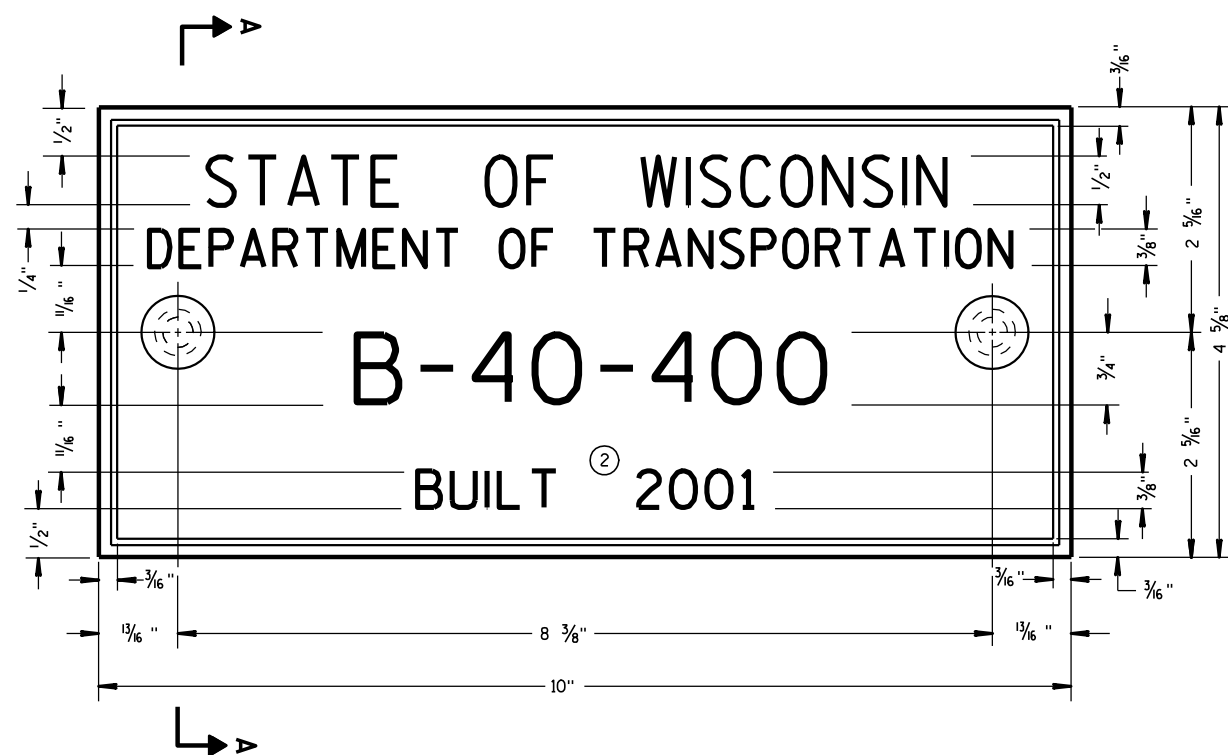
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02  
DATE

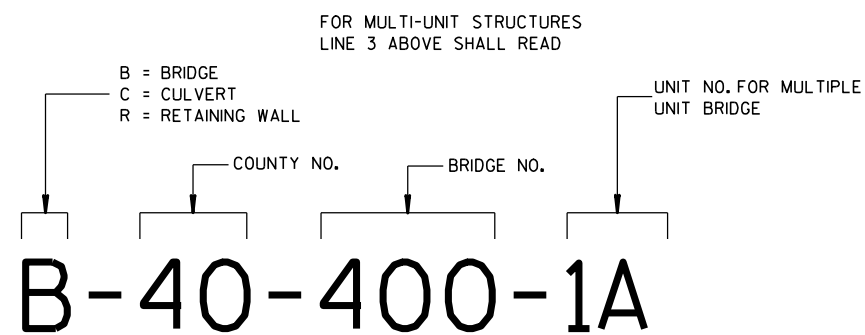
FHWA

/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER



## TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



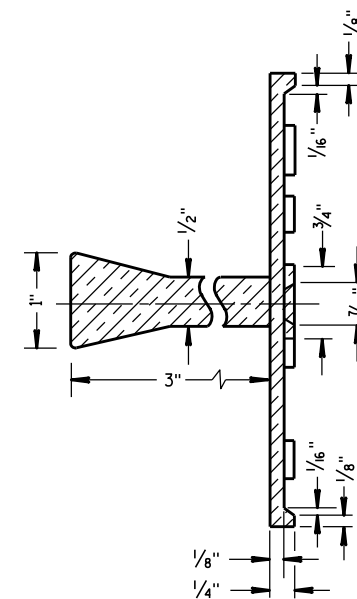
**NUMBERING DESIGNATION**  
**MULTI-UNIT STRUCTURES**

## GENERAL NOTES

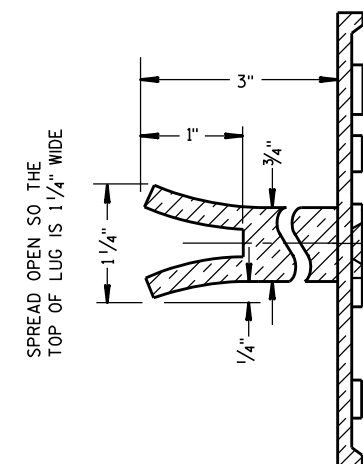
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

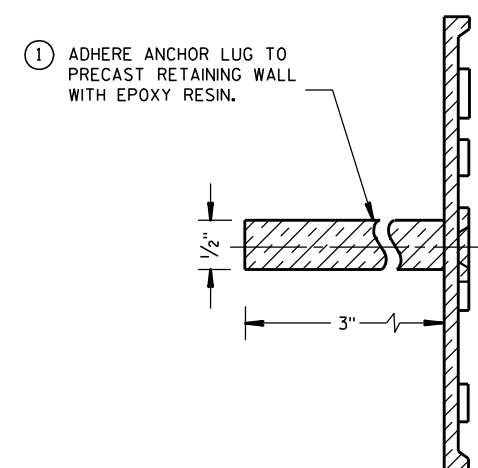
- ① EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ② REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



**SECTION A-A**



### ALTERNATE LUG



### ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE  
(STRUCTURES)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

3/26/10  
DATE

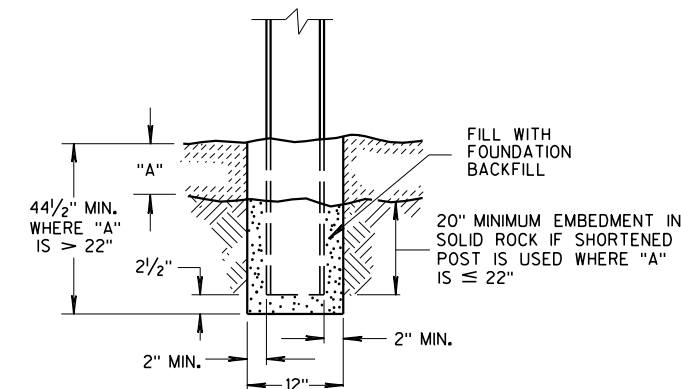
/S/ Scot Becker  
CHIEF STRUCTURAL DEVELOPMENT ENGINEER

FHWA

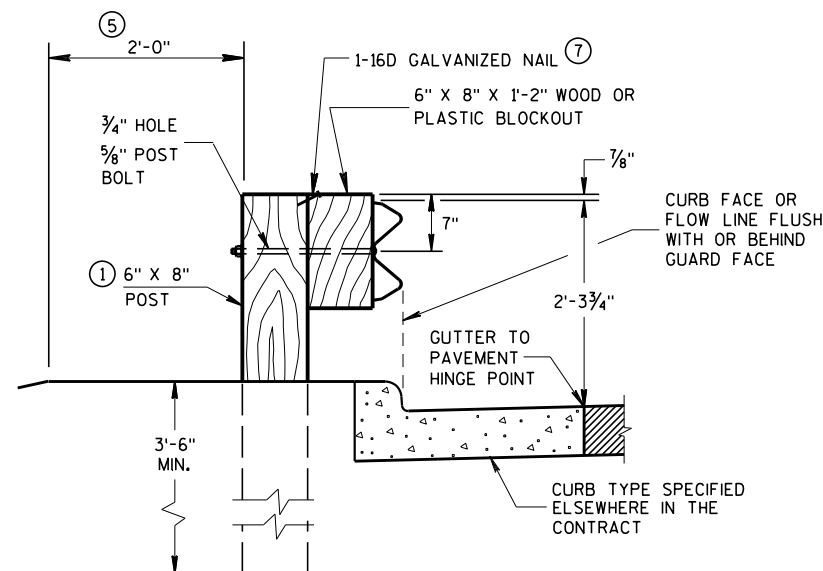
## GENERAL NOTES

- W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS. DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.
- USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.
- INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.
- IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).
- IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2 INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN THE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATELY.
- 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.

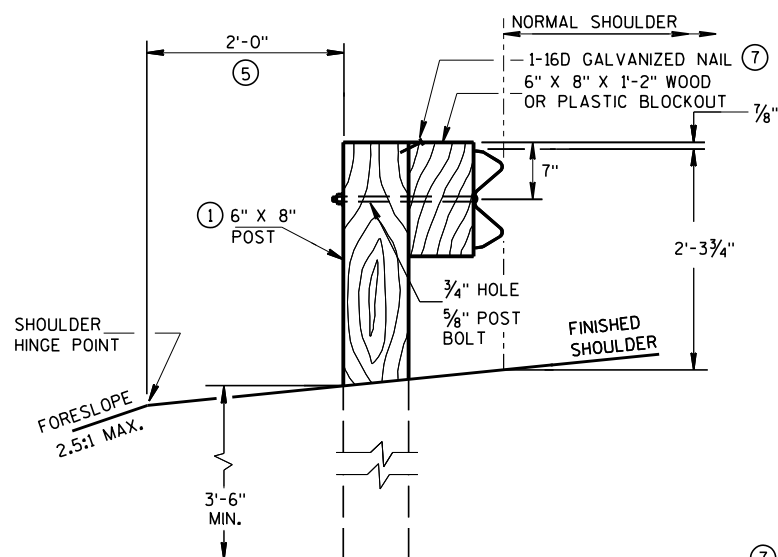
INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



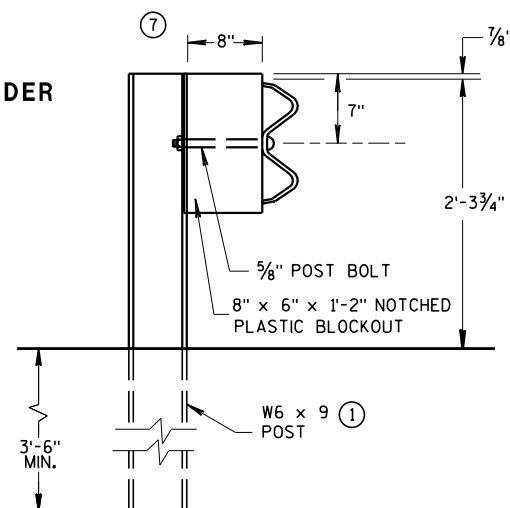
END VIEW  
SETTING STEEL OR WOOD POST IN ROCK ⑥



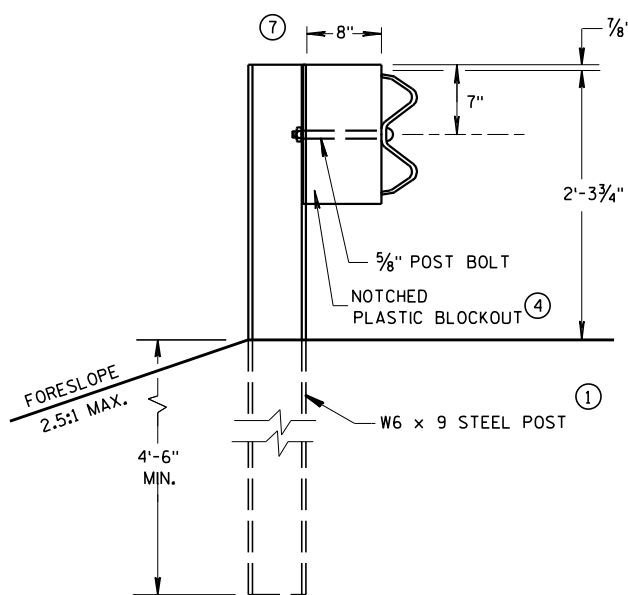
END VIEW  
LOCATED ALONG A CURBED ROADWAY



END VIEW  
LOCATED ALONG A ROADWAY SHOULDER  
STANDARD INSTALLATION

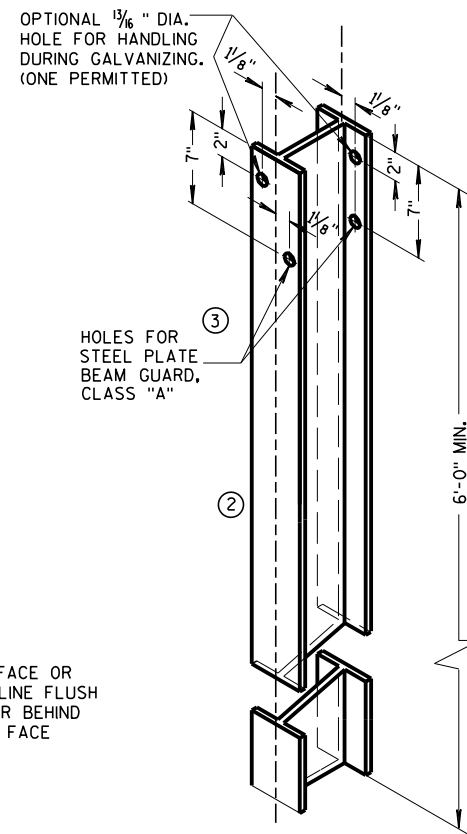


END VIEW  
STEEL POST & NOTCHED  
PLASTIC BLOCKOUT ALTERNATIVE  
STANDARD INSTALLATION



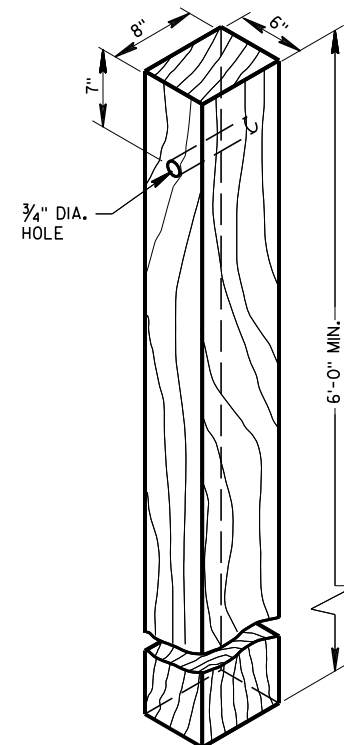
END VIEW  
LONGER POST AT HALF  
POST SPACING W BEAM  
(LHW)

## TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

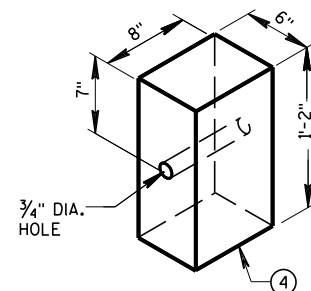


STEEL POST &  
HOLE PUNCHING DETAIL  
(W6 X 9) ①

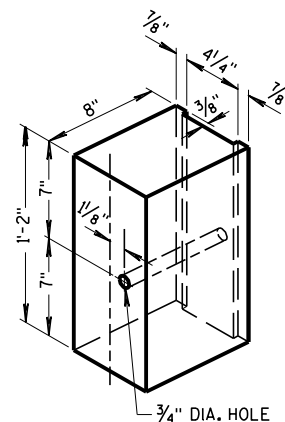
ALL HOLES 1/8" DIAMETER EXCEPT AS NOTED



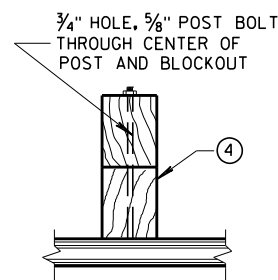
WOOD POST  
(6"X8") NOMINAL



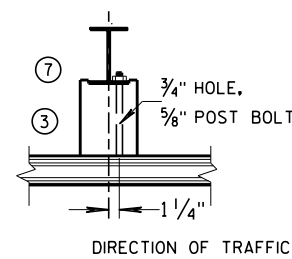
WOOD OR PLASTIC  
BLOCKOUT FOR  
WOOD POSTS



TYPICAL NOTCHED  
PLASTIC BLOCKOUT  
FOR STEEL POSTS ①



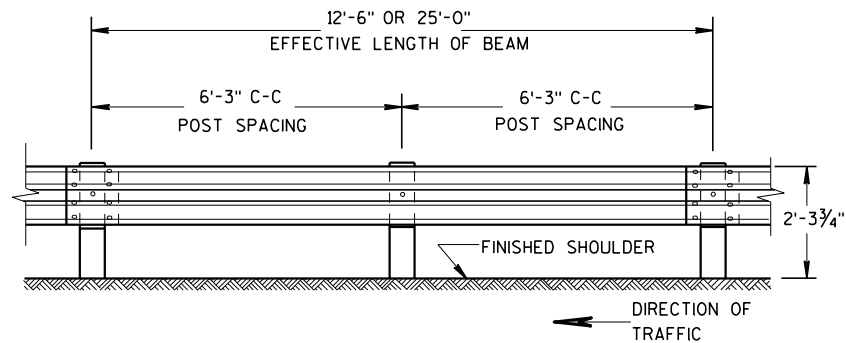
PLAN VIEW  
WOOD POST, BLOCKOUT & BEAM



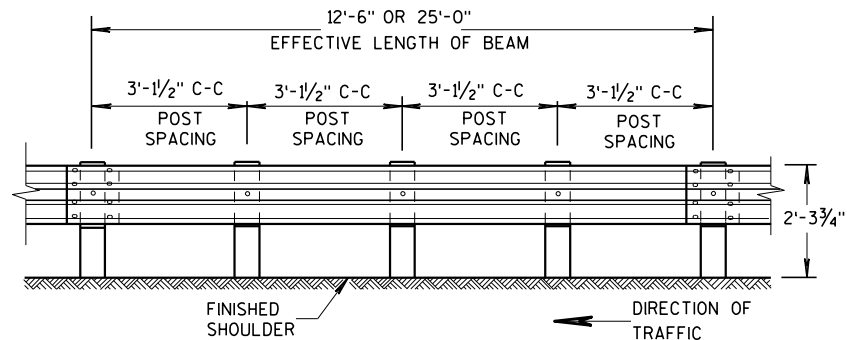
PLAN VIEW  
STEEL POST, NOTCHED  
PLASTIC BLOCKOUT & BEAM

STEEL PLATE BEAM GUARD,  
CLASS "A"  
INSTALLATION & ELEMENTS

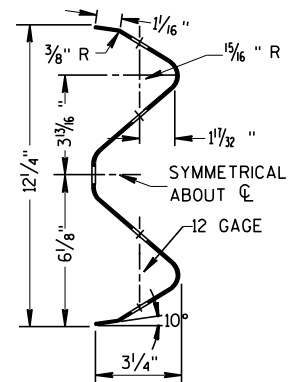
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



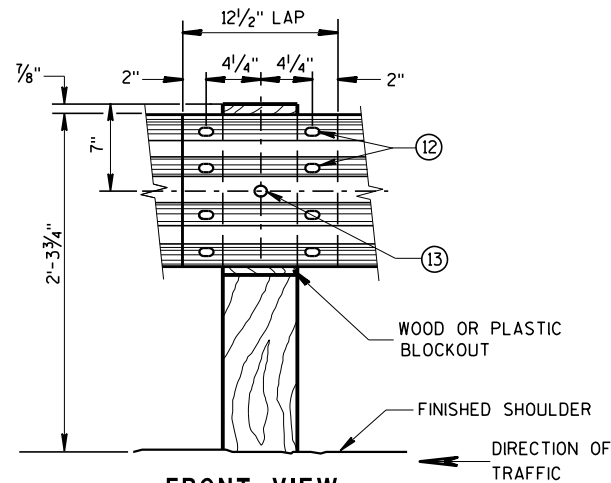
FRONT VIEW  
POST SPACING STANDARD INSTALLATION



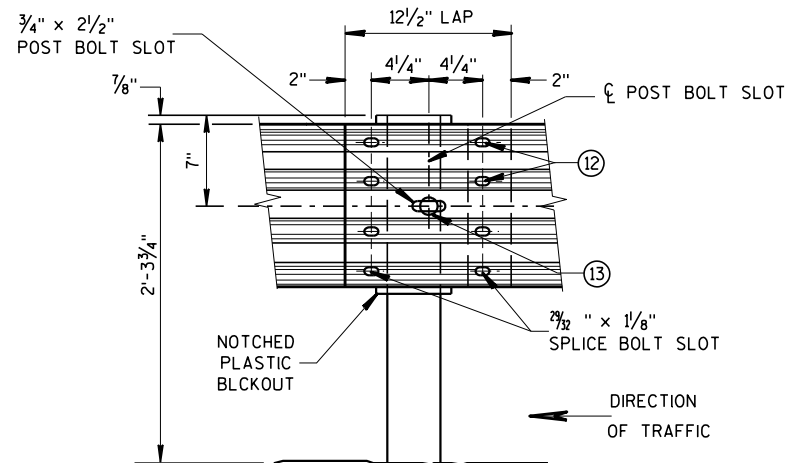
FRONT VIEW  
POST SPACING FOR LONGER POST  
AT HALF POST SPACING W BEAM (LHW)



SECTION THRU W BEAM



FRONT VIEW  
BEAM SPLICE AT WOOD POST  
AND POST MOUNTING DETAIL

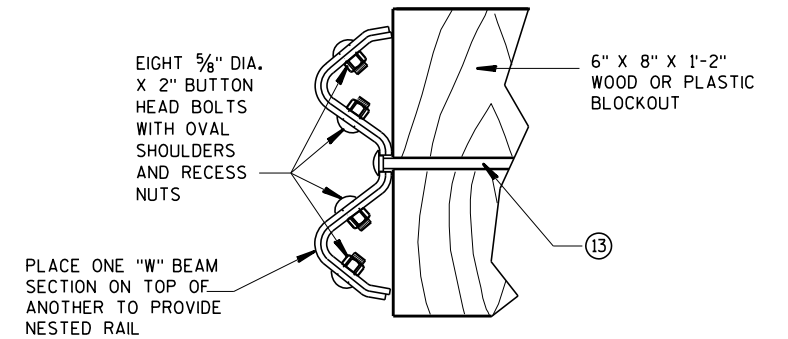


FRONT VIEW  
BEAM SPLICE AT STEEL POST  
TYPICAL SPlicing DETAILS  
OF STEEL PLATE BEAM GUARD

## GENERAL NOTES

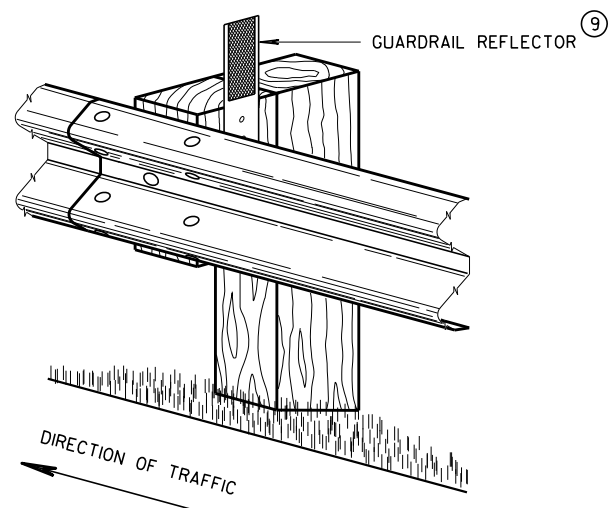
FURNISH GUARDRAIL DEFLECTORS FROM APPROVED PRODUCTS LIST.

- ⑨ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINA. START REFLECTORS AT POST #9 AND SPACE EVENLY EVERY 100 FEET (MAX.) TO THE END OF GUARDRAIL RUN, USING A MINIMUM OF 3 REFLECTORS.
- ⑫ 8 - 5/8"  $\phi$  X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
- ⑬ 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.

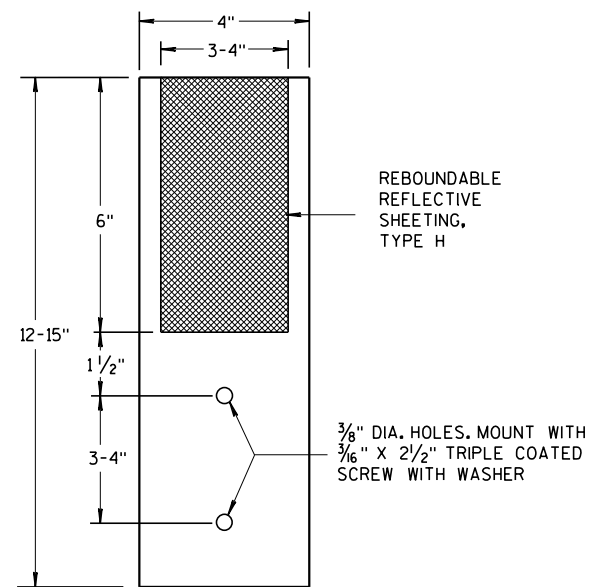


NESTED W BEAM (NW)  
USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR  
CONSTRUCTING NESTED W BEAM (NW)

\* USE DOUBLE SIDED WHITE GUARDRAIL REFLECTORS ON ROADWAYS WITH BI-DIRECTIONAL TRAFFIC (NO MEDIAN). USE SINGLE SIDED WHITE (RIGHT SIDE) AND SINGLE SIDED YELLOW (LEFT SIDE) ON ROADWAYS WITH MEDIAN SEPARATION.



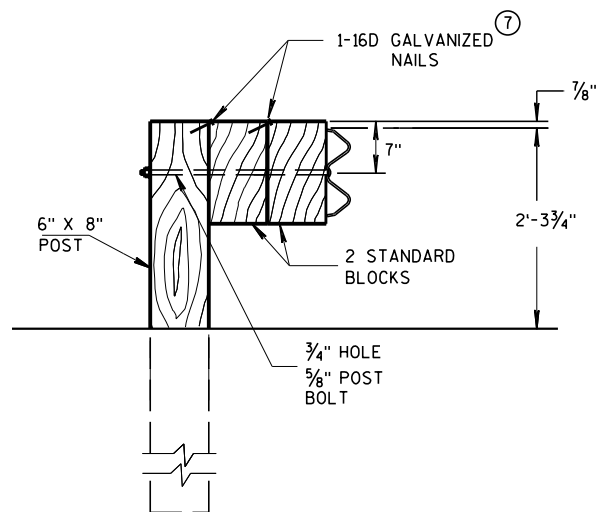
4" X 12" GUARDRAIL REFLECTOR DETAIL  
AND TYPICAL INSTALLATION \*



4"x 12" GUARDRAIL REFLECTOR

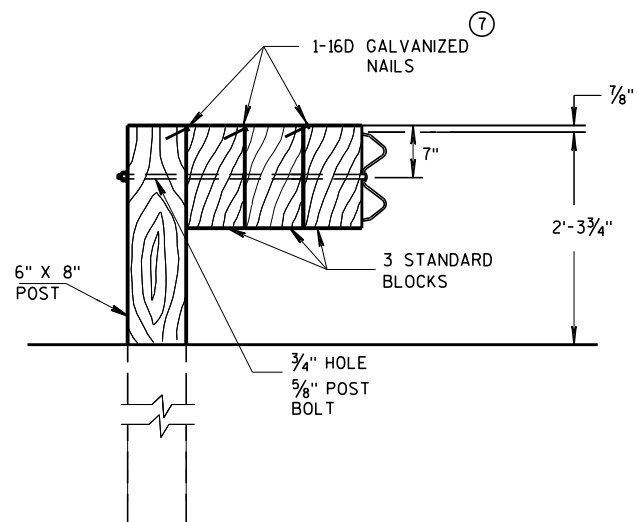
STEEL PLATE BEAM GUARD,  
CLASS "A",  
INSTALLATION & ELEMENTS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



#### DETAIL FOR DOUBLE BLOCKS

THE NUMBER OF DOUBLE BLOCK POSTS  
WITHIN A BARRIER RUN IS UNLIMITED

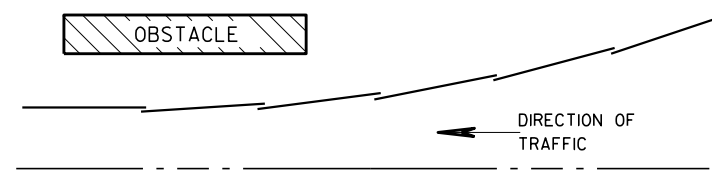


#### DETAIL FOR TRIPLE BLOCKS

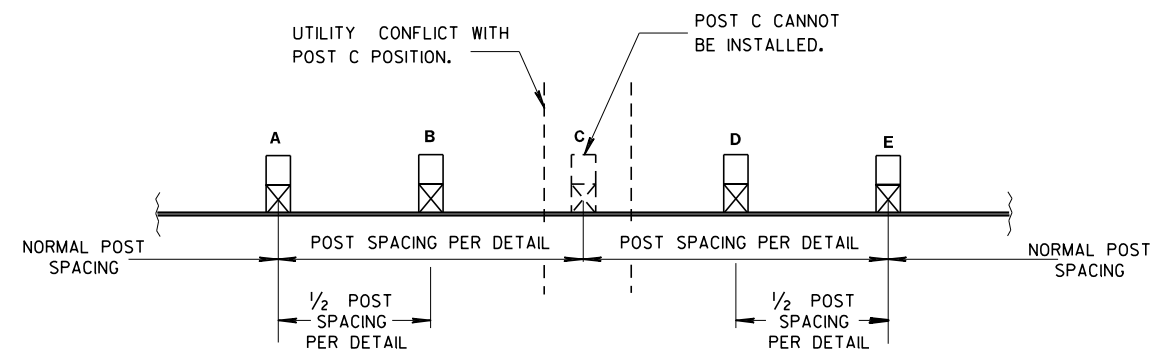
TRIPLE BLOCK DETAIL IS LIMITED TO ONE  
LOCATION WITHIN A BEAM GUARD RUN.

NOTES: USE DOUBLE OR TRIPLE BLOCKS WHEN UNDERGROUND OBSTACLES  
PREVENT THE POST FROM BEING INSTALLED.

DO NOT USE EXTRA 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.



#### PLAN VIEW BEAM LAPPING DETAIL

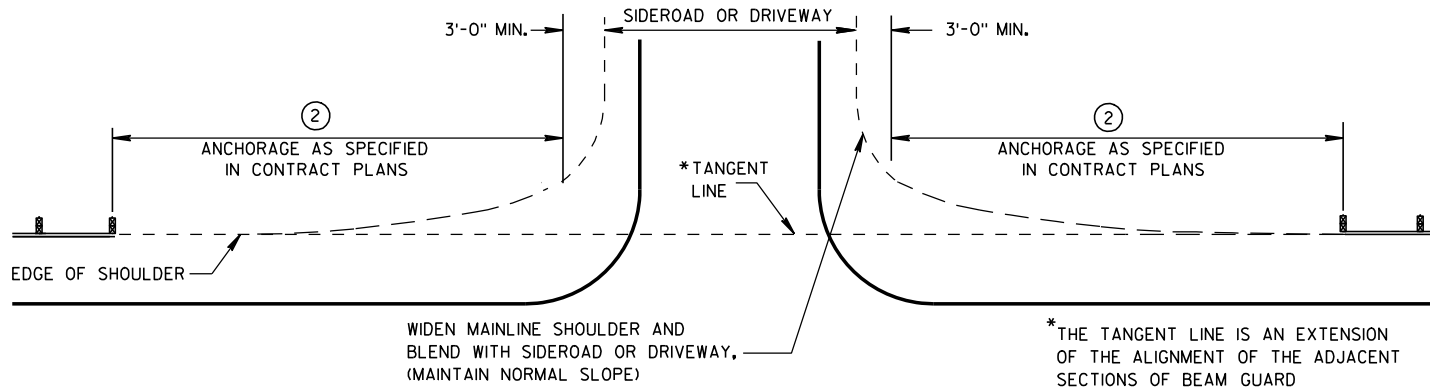


#### POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

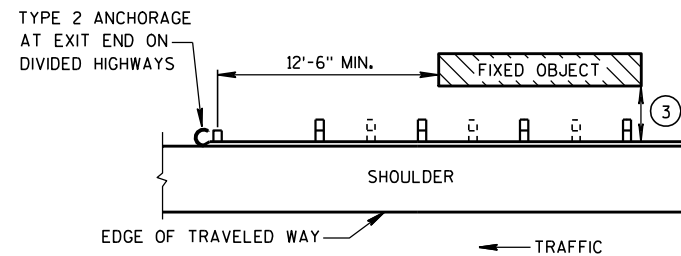
#### STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

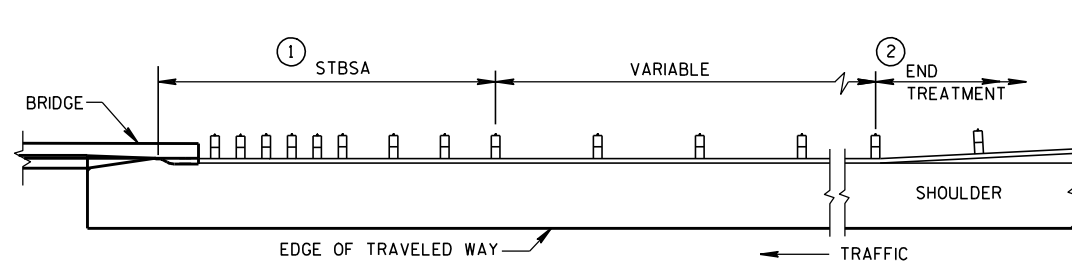
|           |                               |
|-----------|-------------------------------|
| APPROVED  | /S/ Rodney Taylor             |
| June 2017 | DATE                          |
|           | ROADWAY STANDARDS DEVELOPMENT |
|           | UNIT SUPERVISOR               |
| FHWA      |                               |



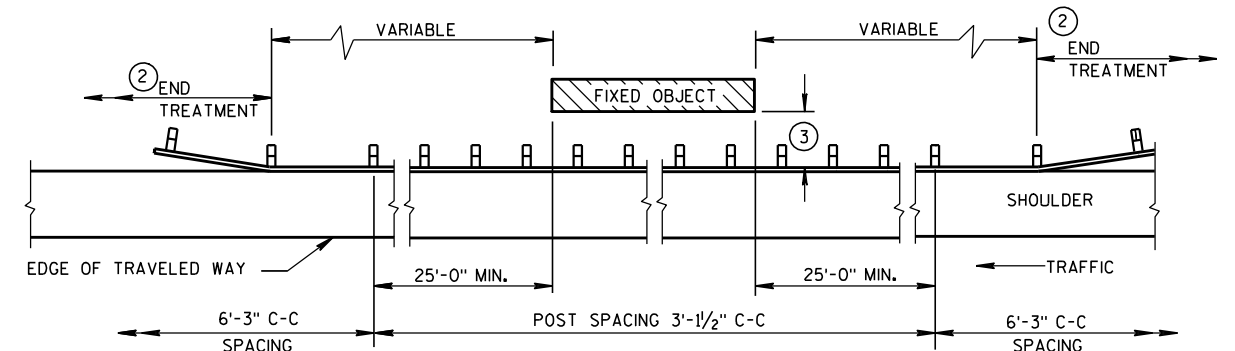
### BEAM GUARD AT SIDEROADS OR DRIVEWAYS



### BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC



### BEAM GUARD AT FULL WIDTH BRIDGES

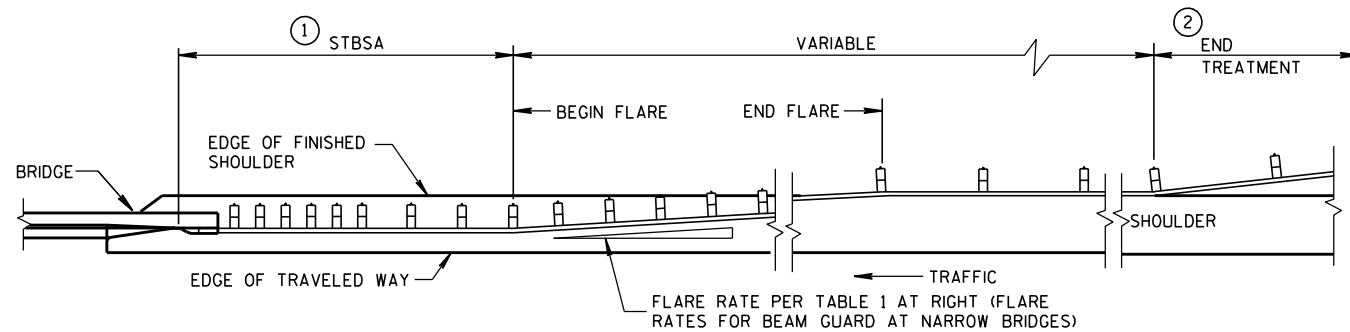


### BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")

TABLE 1  
FLARE RATES FOR BEAM  
GUARD AT NARROW BRIDGES

| POSTED SPEED (MPH) | FLARE RATE |
|--------------------|------------|
| 25                 | 13:1       |
| 30                 | 15:1       |
| 35                 | 16:1       |
| 40                 | 18:1       |
| 45                 | 21:1       |
| 50                 | 24:1       |
| 55                 | 26:1       |
| 65                 | 30:1       |



### BEAM GUARD AT NARROW BRIDGES (FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

### GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

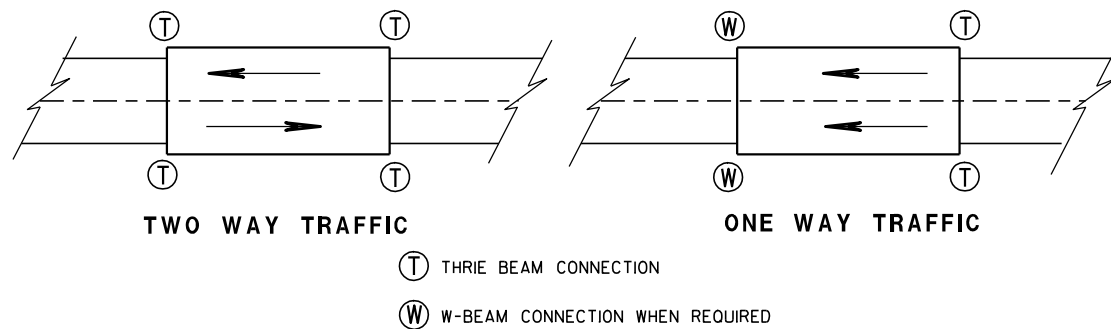
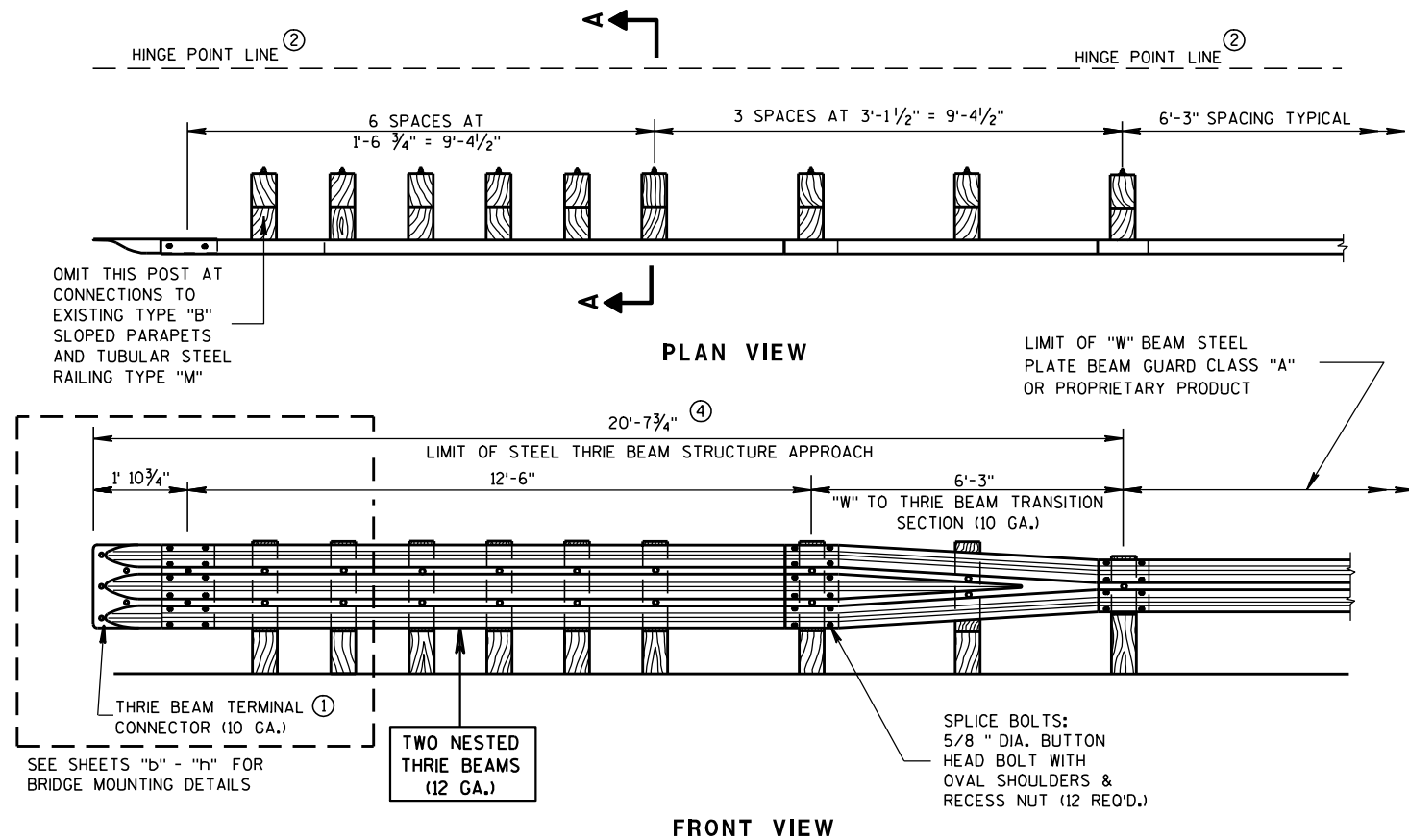
- STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.
- USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

| MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT | POST SPACING |
|------------------------------------------------------------------|--------------|
| 3'-6"                                                            | 3' - 1 1/2"  |
| 4'-6"                                                            | 6' - 3"      |

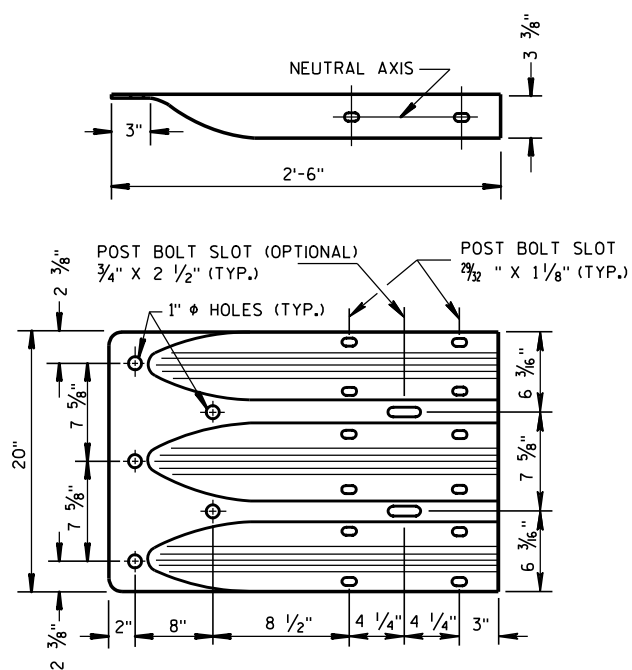
STEEL PLATE BEAM GUARD  
CLASS "A"  
AT BRIDGES, OBSTACLES  
AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

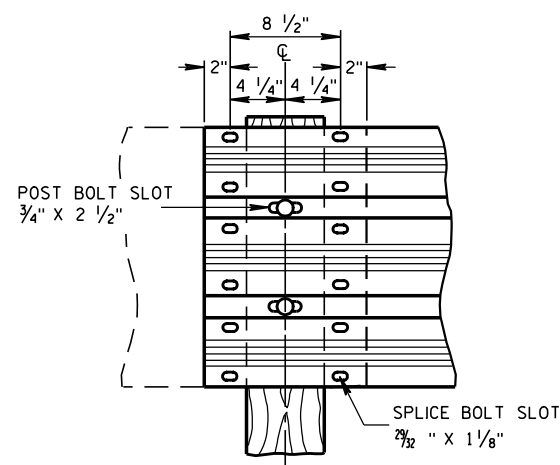
APPROVED  
8-21-07  
DATE  
/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA



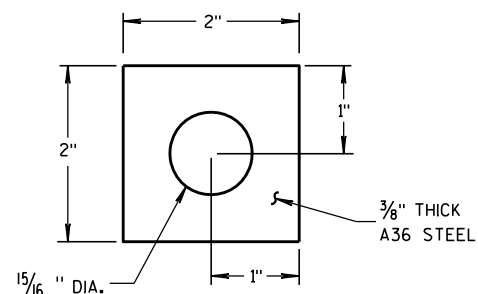
**TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE**



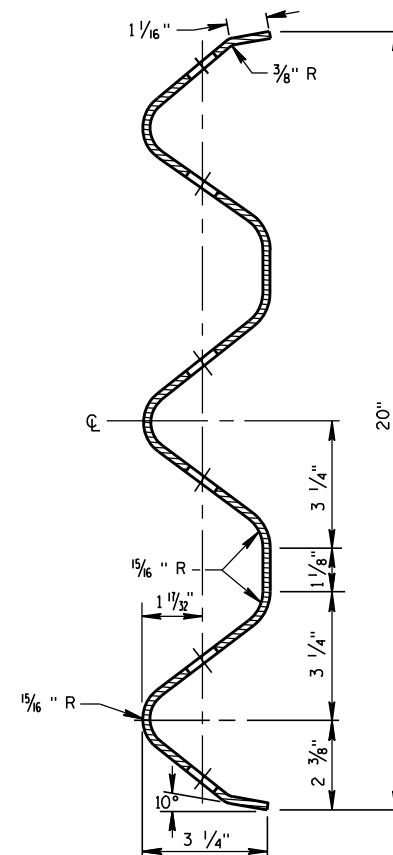
**THRIE BEAM TERMINAL CONNECTOR**



**THRIE BEAM SPLICE**



**PLATE WASHER DETAIL**



**SECTION THRU THRIE BEAM RAIL ELEMENT**

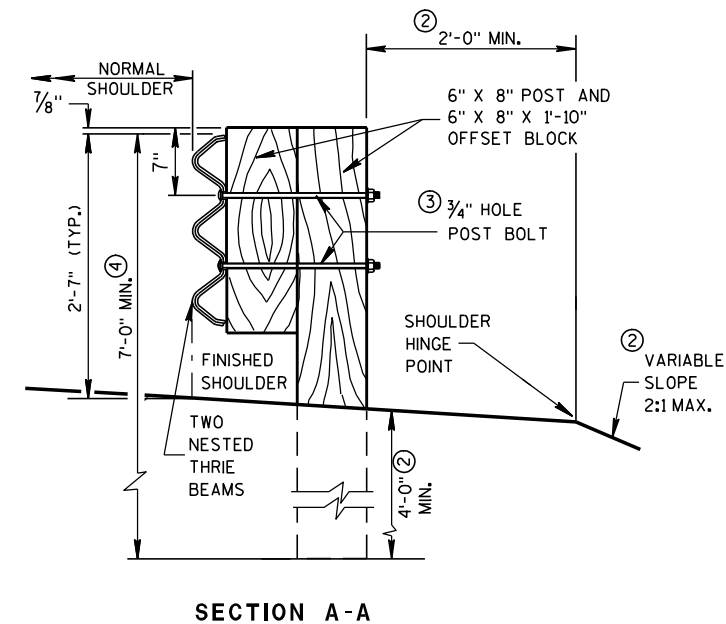
## GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.
- ③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.
- ④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



## STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

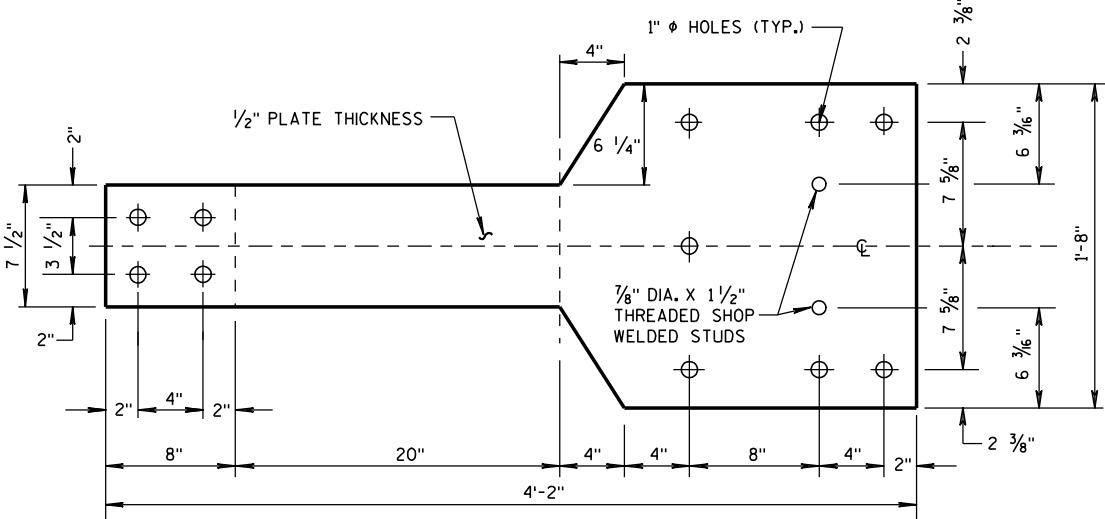
8/31/2012  
DATE

FHWA

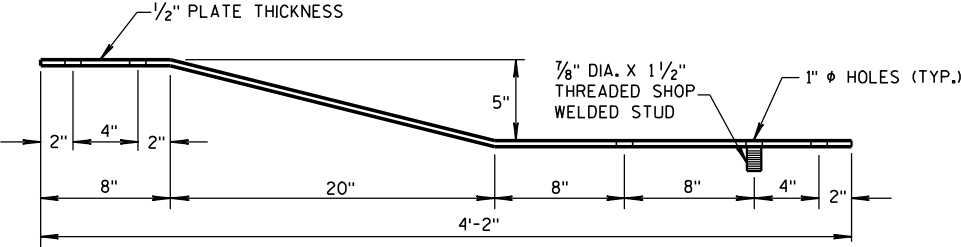
/s/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

**GENERAL NOTES**

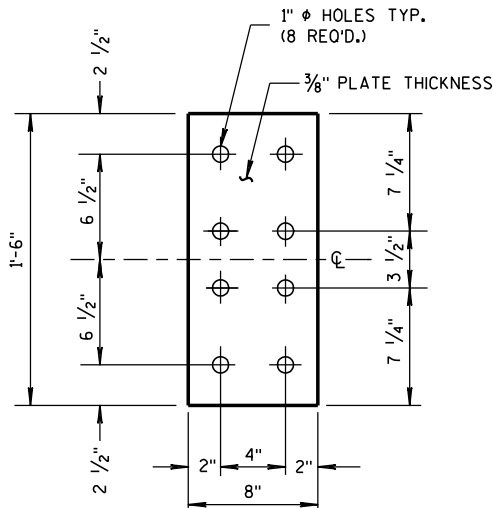
① VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL BE AS CLOSE AS FEASIBLE TO THE STEEL END POST.



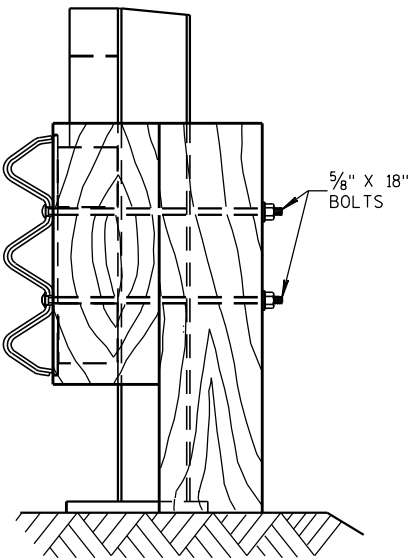
**FRONT VIEW**



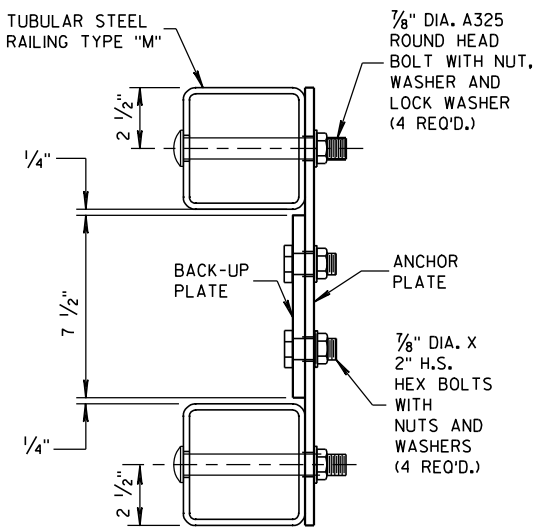
**PLAN VIEW  
BACK-UP PLATE DETAIL, TYPE "M"**



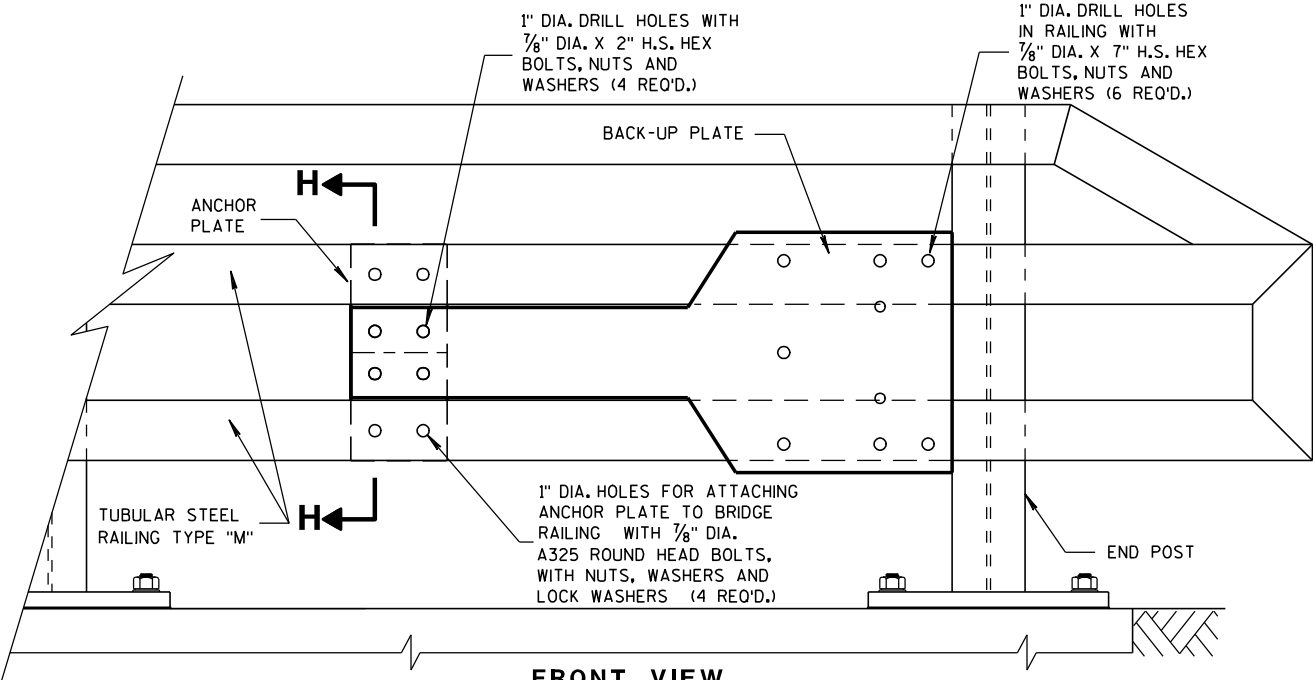
**FRONT VIEW  
ANCHOR PLATE DETAIL,  
TYPE "M"**



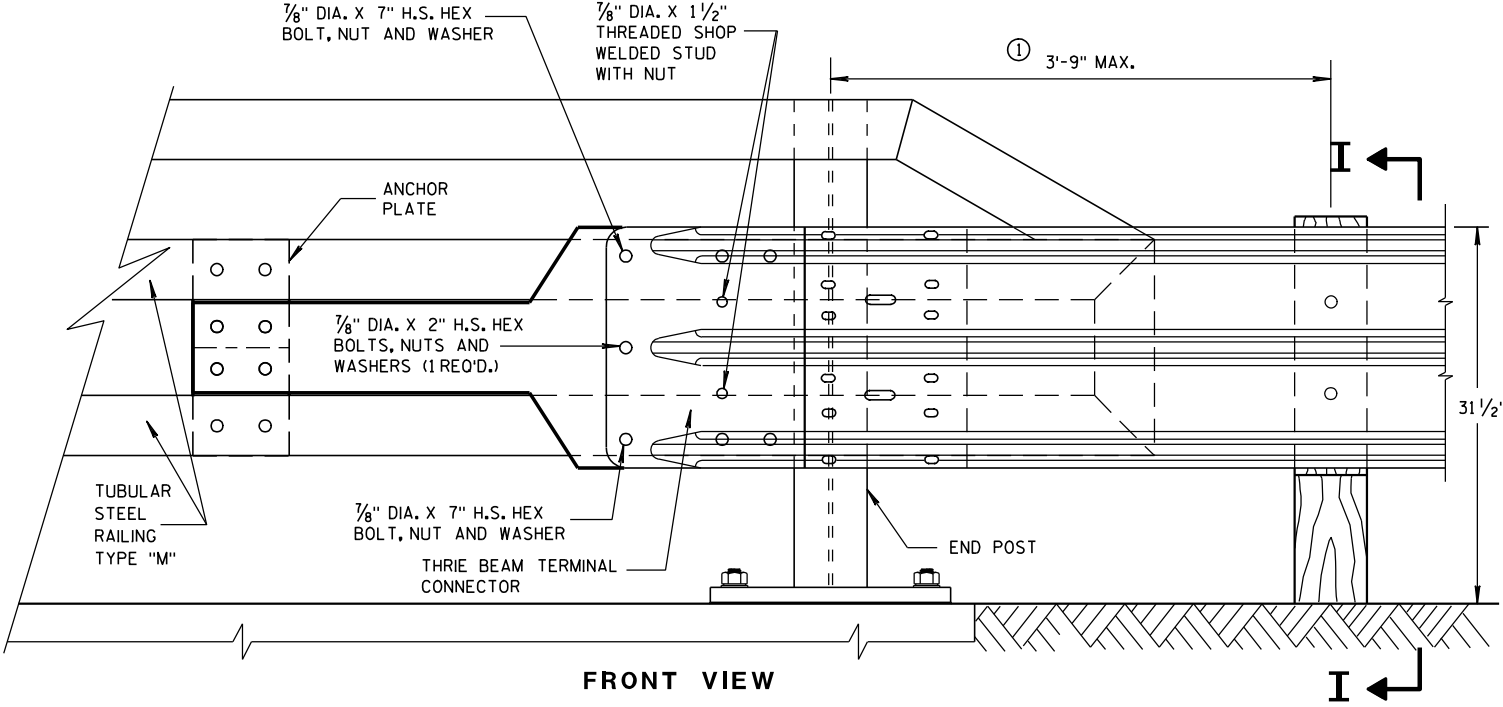
**SECTION I-I**



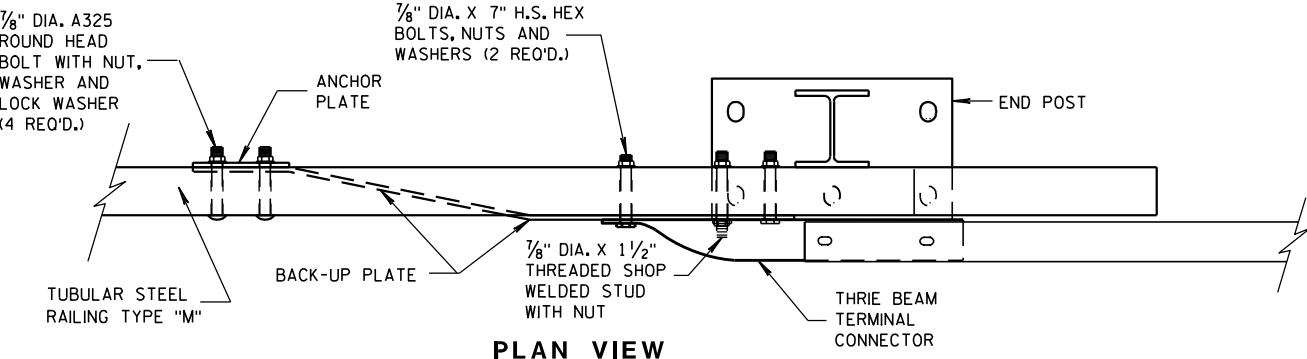
**SECTION H-H**



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



**FRONT VIEW**

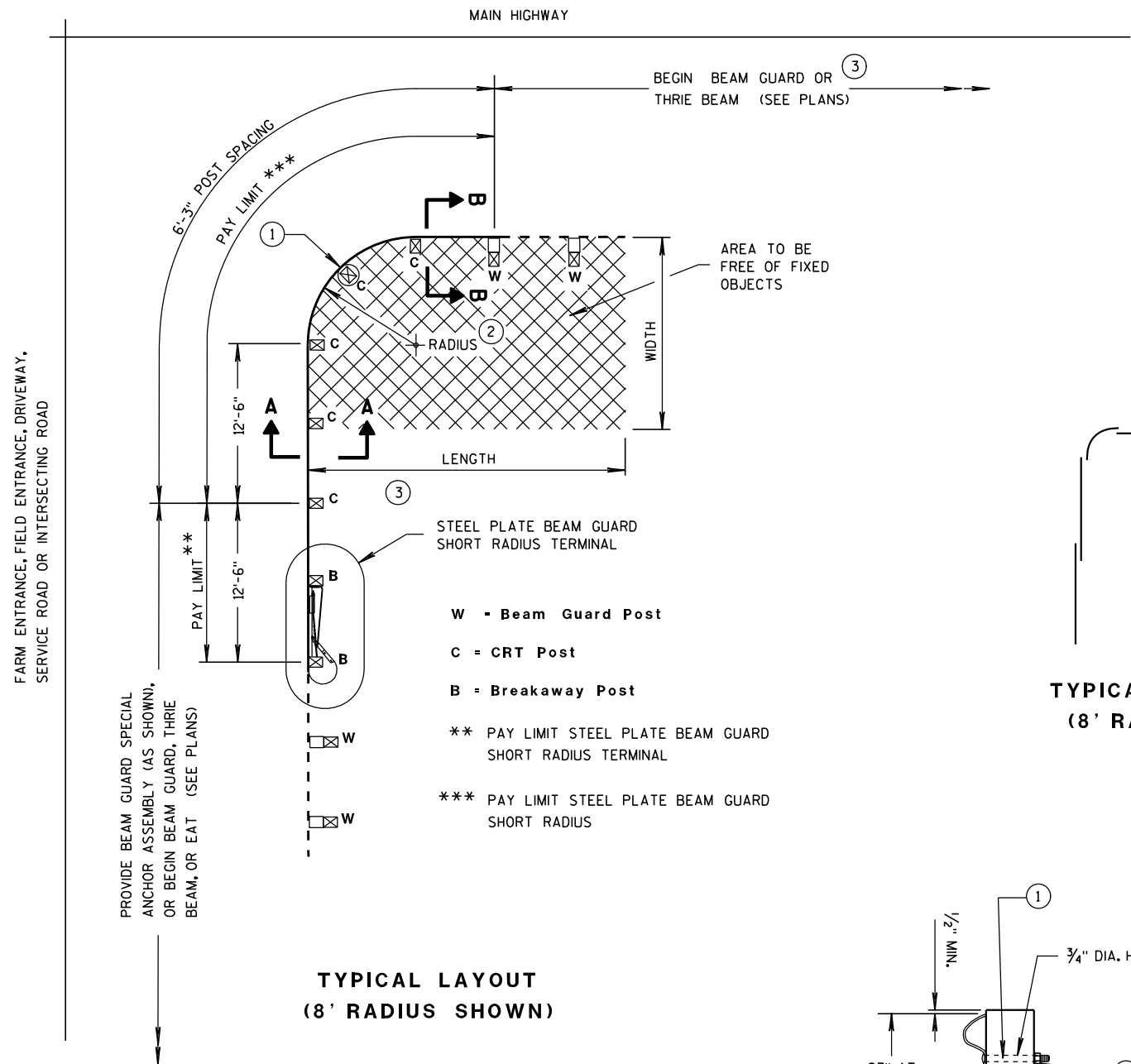


**THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"**

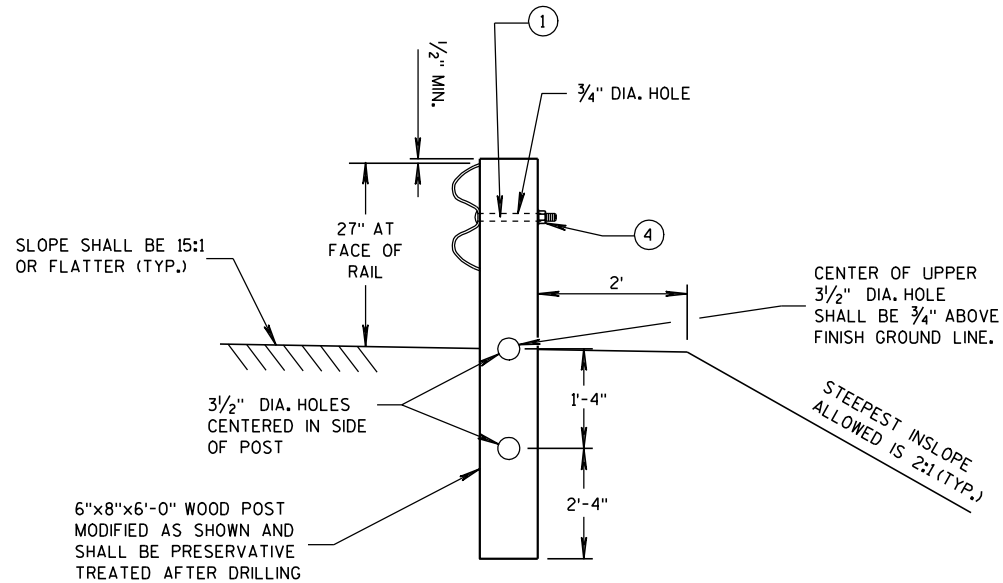
**STEEL THRIE BEAM STRUCTURE  
APPROACH CONNECTION TO  
BRIDGE RAILING TYPE "M"**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8/31/2012  
DATE  
/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA



TYPICAL LAYOUT  
(8' RADIUS SHOWN)



SECTION A-A  
(CRT POST)

TYPICAL LAP SPLICES  
(8' RADIUS SHOWN)

## GENERAL NOTES

ALL ANGLES, CHANNELS, AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36 AND THE STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500. WELDING SHALL MEET THE CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123. PUNCHING, DRILLING, CUTTING, OR WELDING WILL NOT BE PERMITTED AFTER GALVANIZING. FURNISH AND INSTALL HARDWARE PER STANDARD SPECIFICATION 614.2, UNLESS NOTED OTHERWISE.

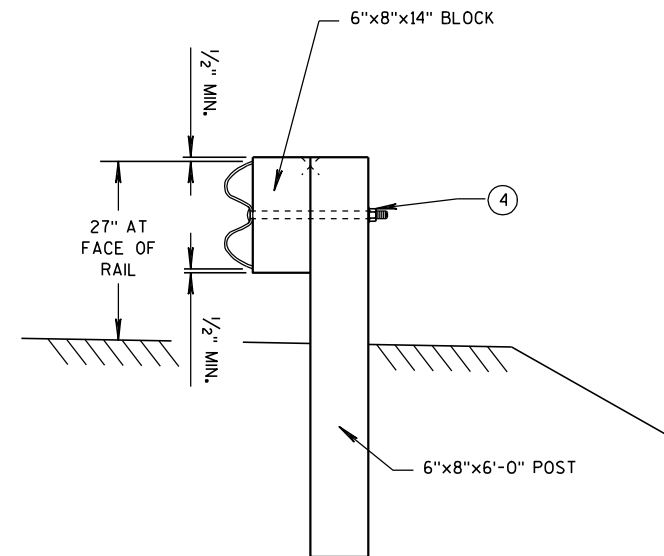
SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

- 1 ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.
- 2 RADIUS FROM 8' - 36'. SEE PLAN.
- 3 HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.
- 4 5/8" Ø X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

| RADIUS | NUMBER OF CRT POSTS | *NUMBER AND LENGTH OF CURVED RAILS | REQUIRED AREA FREE OF FIXED OBJECTS (LENGTH x WIDTH) |
|--------|---------------------|------------------------------------|------------------------------------------------------|
| 8'     | 5                   | 1 at 12.5'                         | 25' x 15'                                            |
| 16'    | 7                   | 1 at 25'                           | 30' x 15'                                            |
| 24'    | 9                   | 1 at 25' and 1 at 12.5'            | 40' x 20'                                            |
| 32'    | 11                  | 2 at 25'                           | 50' x 20'                                            |

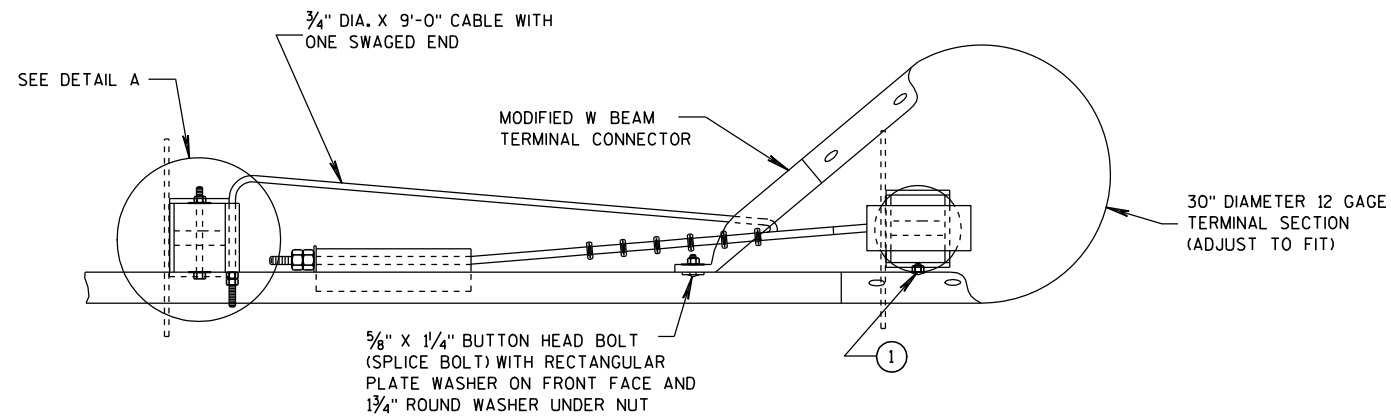
\* THE NUMBER OF RAILS IS BASED ON A 90° INTERSECTION. SEE PLAN FOR NON 90° INSTALLATIONS.



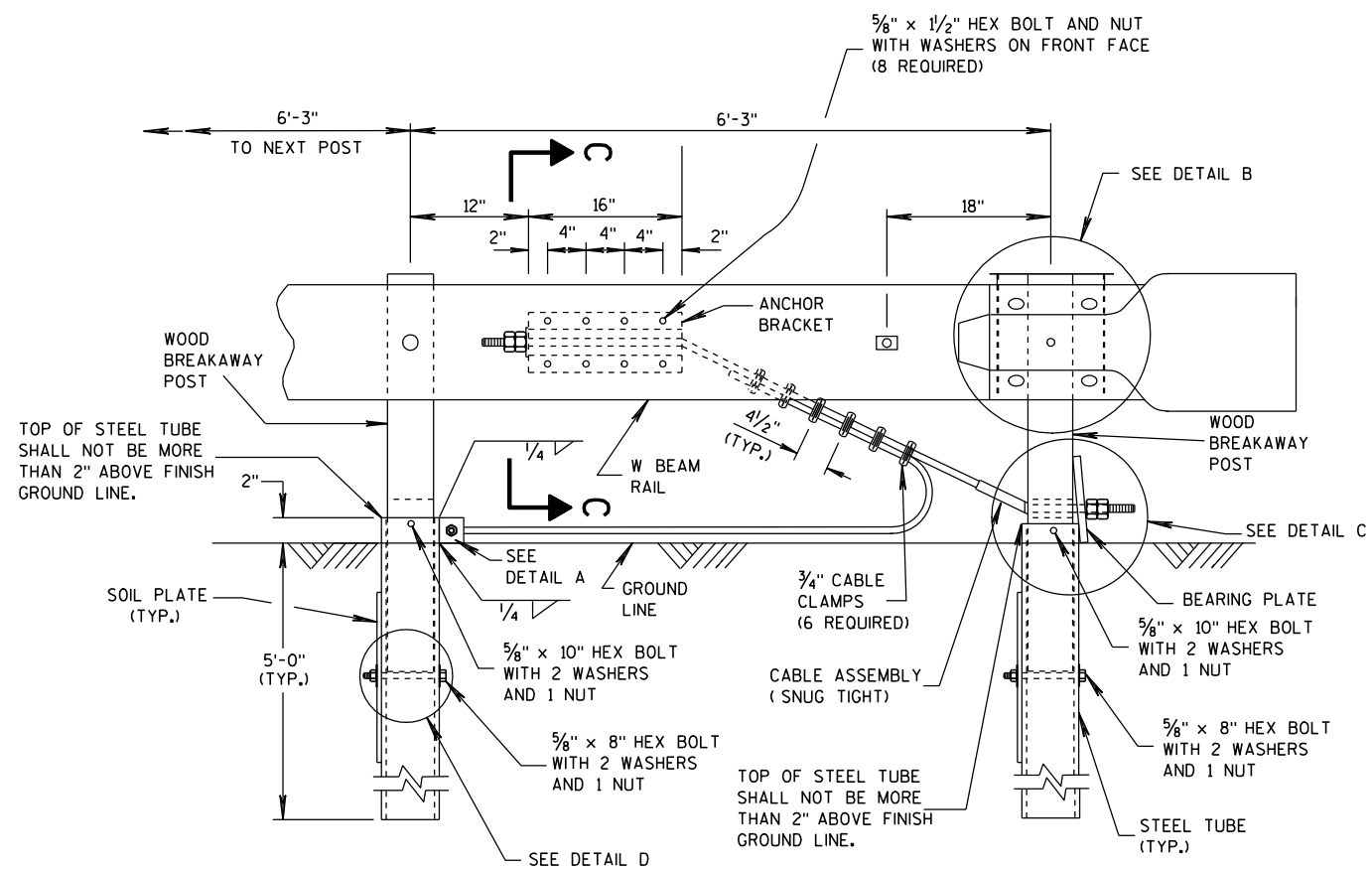
SECTION B-B  
(BEAM GUARD POST)

STEEL PLATE BEAM GUARD  
SHORT RADIUS TERMINAL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



PLAN VIEW

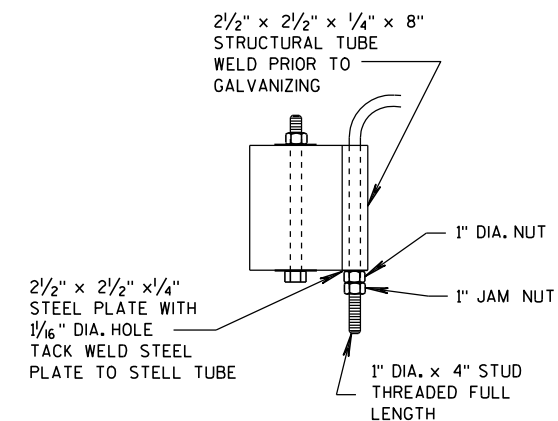


ELEVATION VIEW

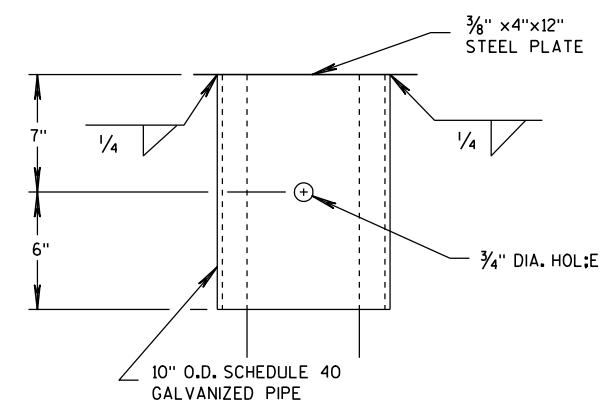
# STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

## GENERAL NOTES

- ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A 5/8" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.
- INSTALL GALVANIZED 3/4" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A

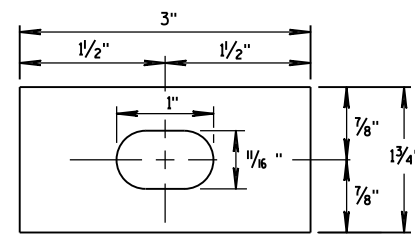


DETAIL B

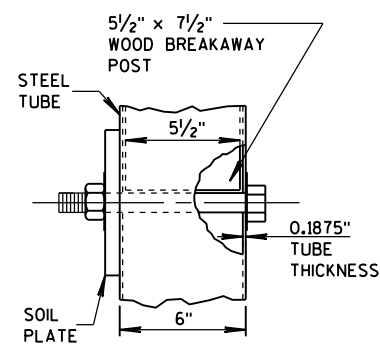
(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

STEEL PLATE BEAM GUARD  
SHORT RADIUS TERMINAL

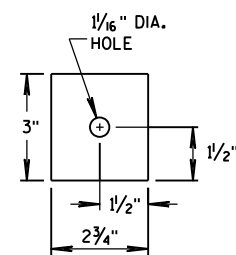
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



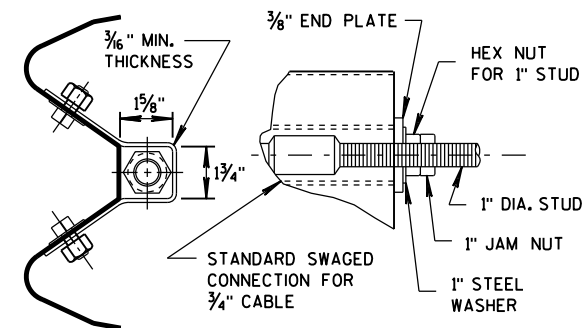
**RECTANGULAR  
PLATE WASHER**



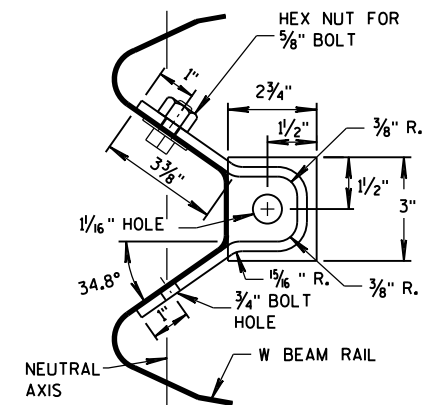
### DETAIL D



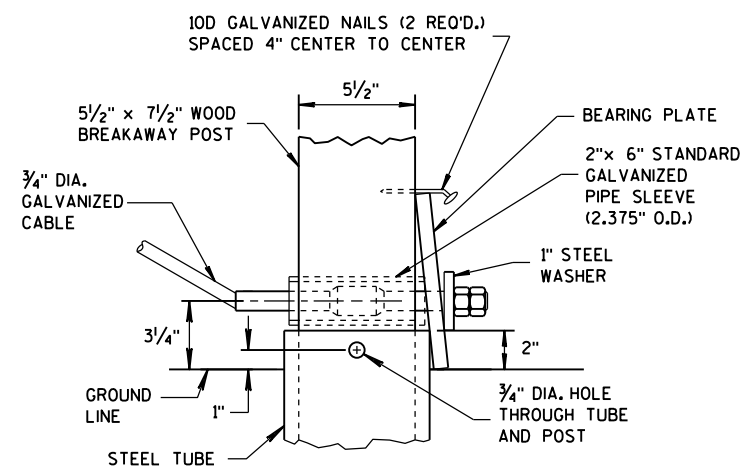
## END PLATE



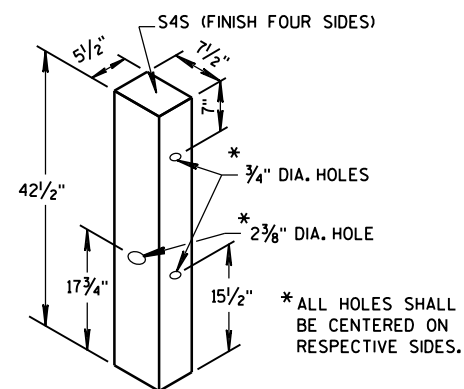
**SECTION C-C**  
**(END PLATE REMOVED)**



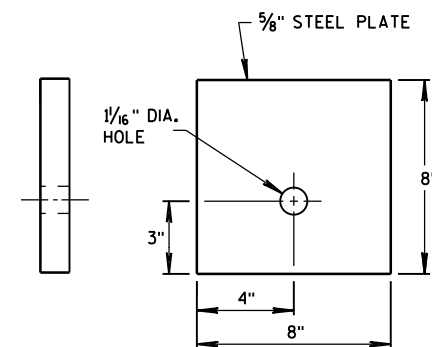
## ANCHOR BRACKET



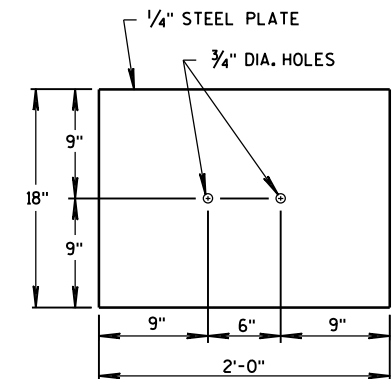
### DETAIL C



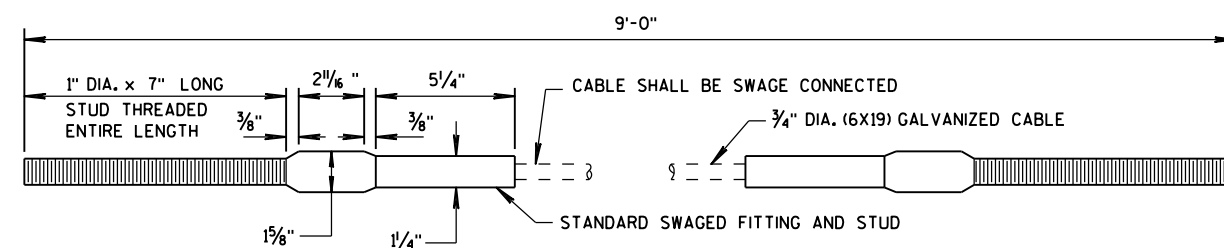
## WOOD BREAKAWAY POST



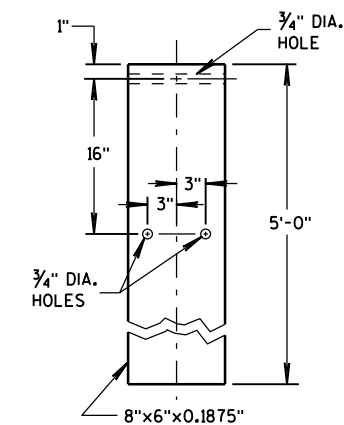
## BEARING PLATE



## SOIL PLATE



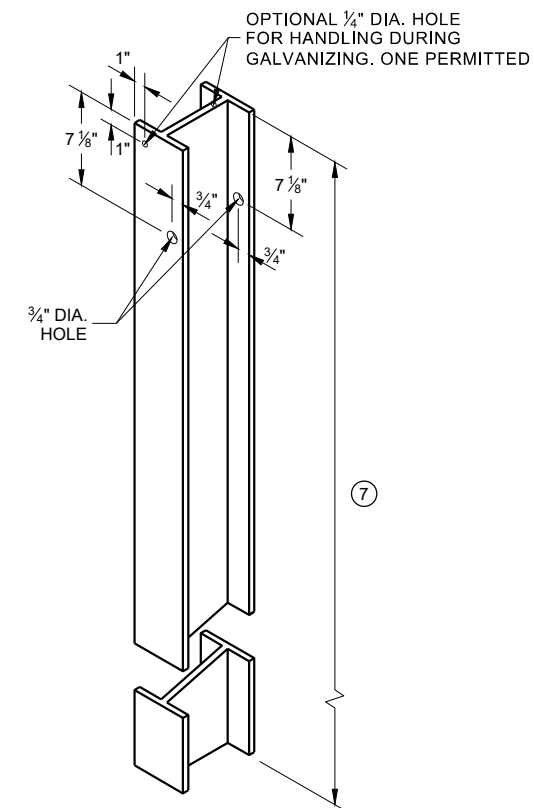
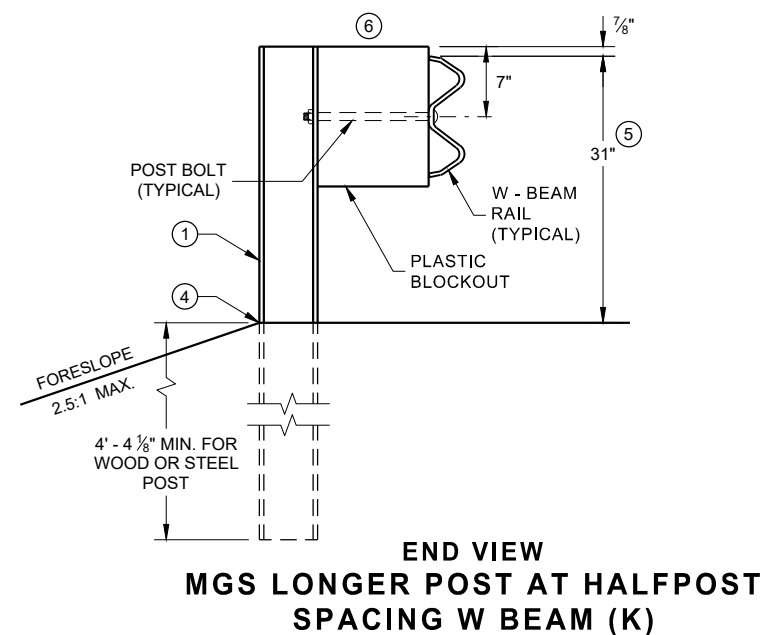
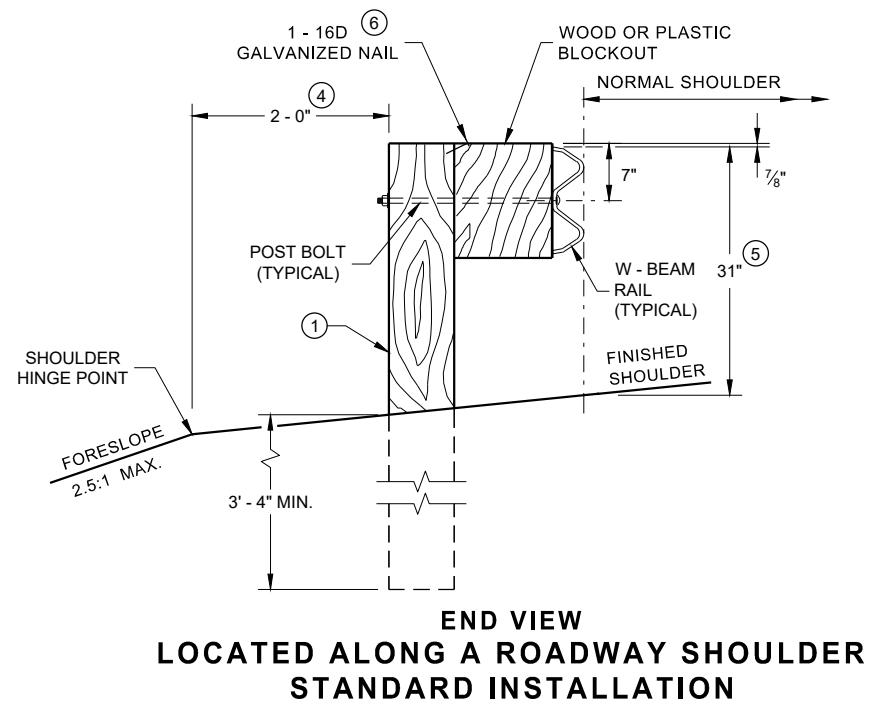
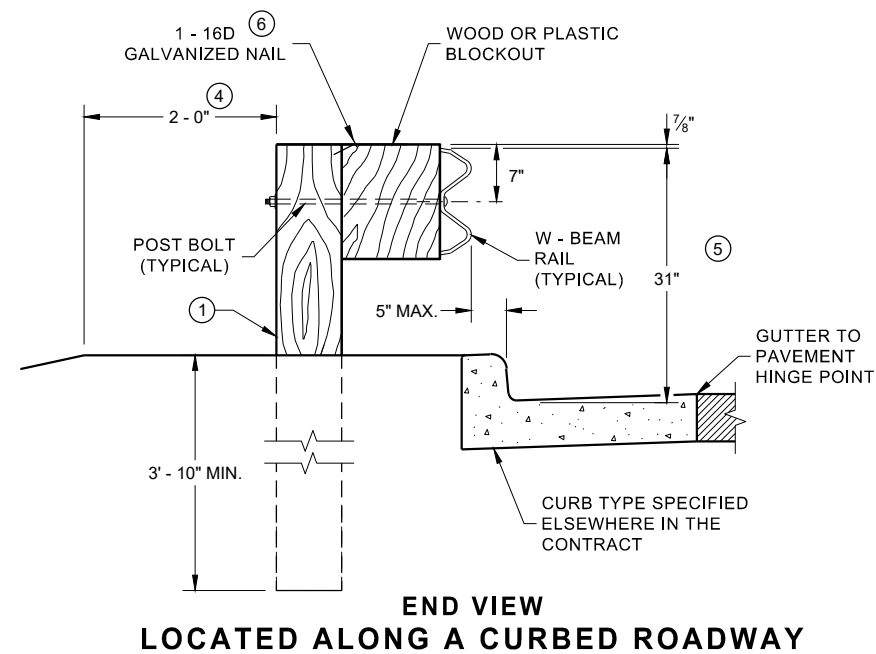
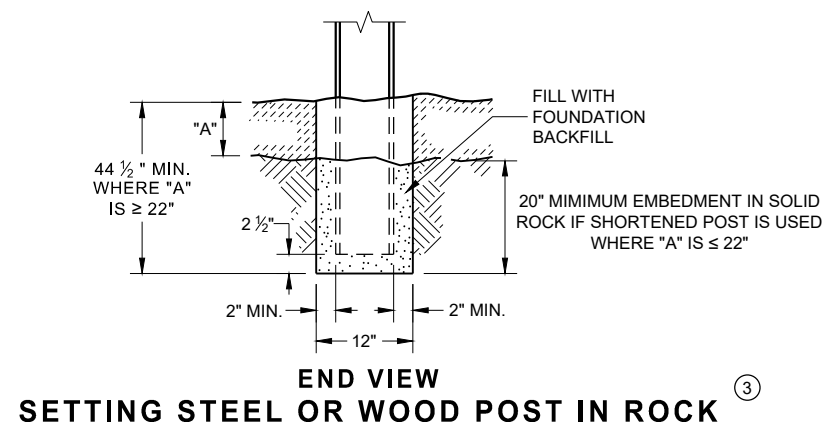
## CABLE ASSEMBLY



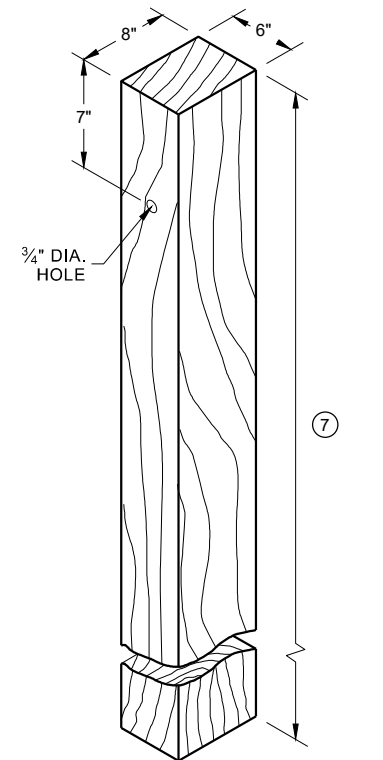
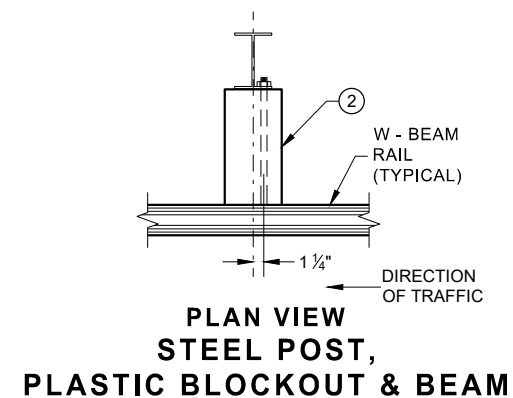
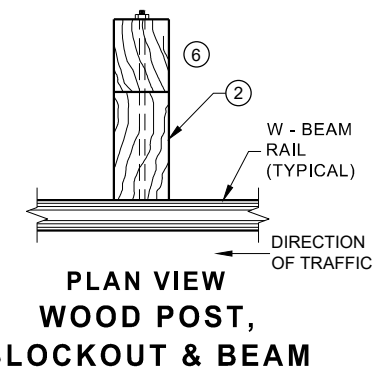
## STEEL TUBE

|                                                            |                                                                         |
|------------------------------------------------------------|-------------------------------------------------------------------------|
| <p>STEEL PLATE BEAM GUARD<br/>SHORT RADIUS TERMINAL</p>    |                                                                         |
| <p>STATE OF WISCONSIN<br/>DEPARTMENT OF TRANSPORTATION</p> |                                                                         |
| <p>APPROVED<br/>12/18/08<br/>DATE</p>                      | <p>/S/ Jerry H. Zogg<br/>ROADWAY STANDARDS DEVELOPMENT<br/>ENGINEER</p> |
| <p>FHWA</p>                                                |                                                                         |

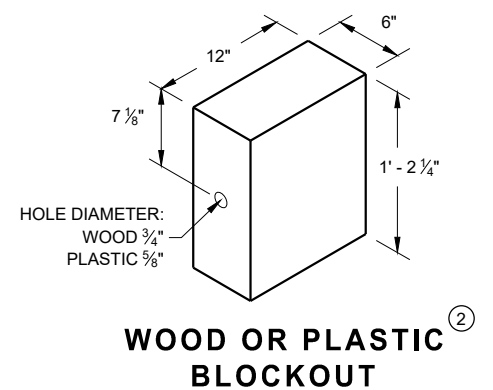
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL.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

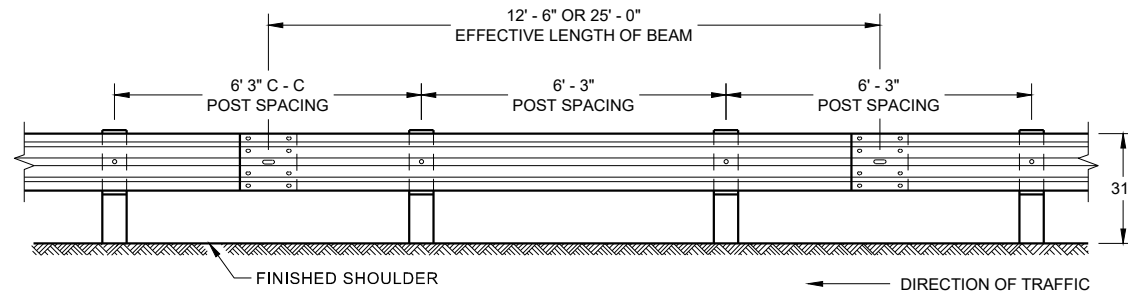


**STEEL POST & HOLE  
PUNCHING DETAIL  
(W 6 X 9) ①**

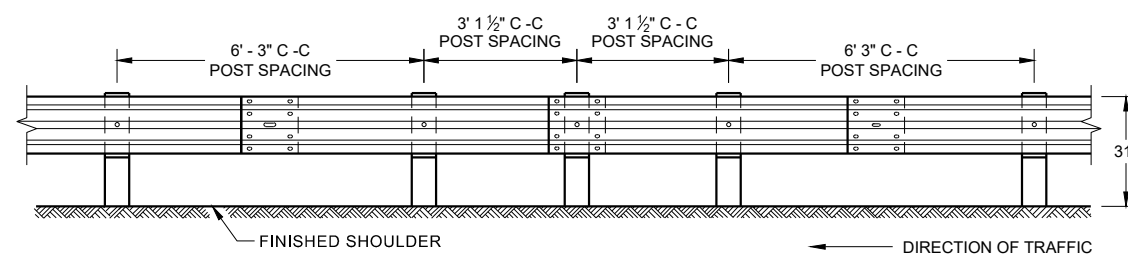


**WOOD POST (6" X 8") NOMINAL** <sup>(1)</sup>

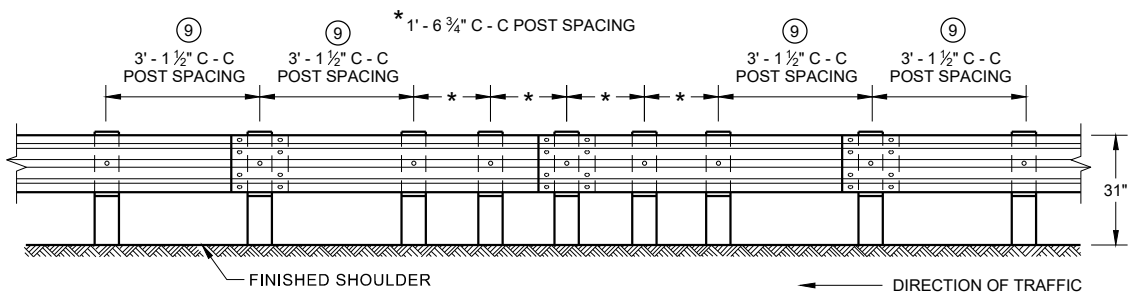




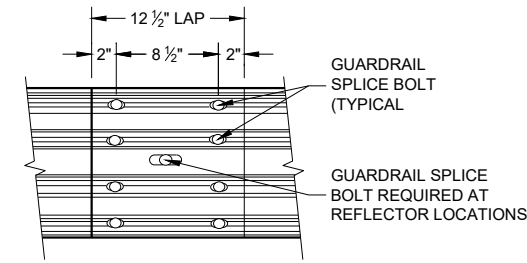
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



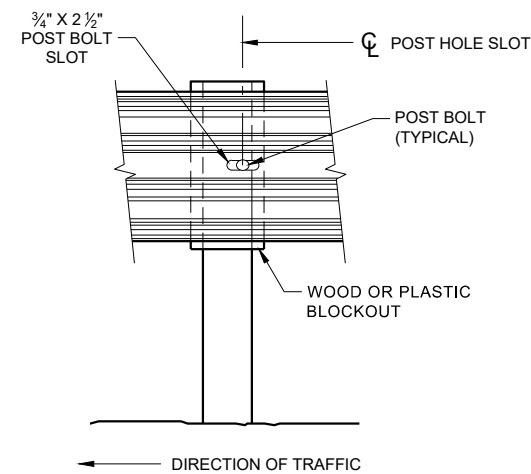
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



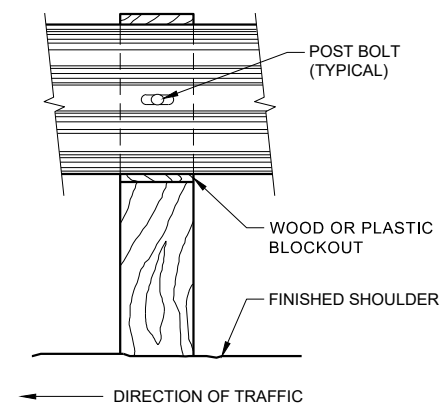
**FRONT VIEW  
QUARTER POST SPACING (QS)**



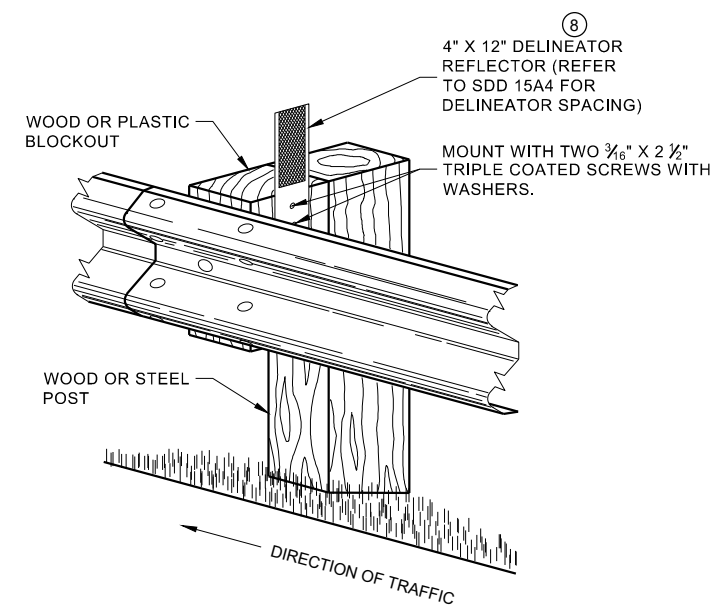
**FRONT VIEW  
MID-SPAN BEAM SPLICE**



**FRONT VIEW AT STEEL POST**



**FRONT VIEW AT WOOD POST**



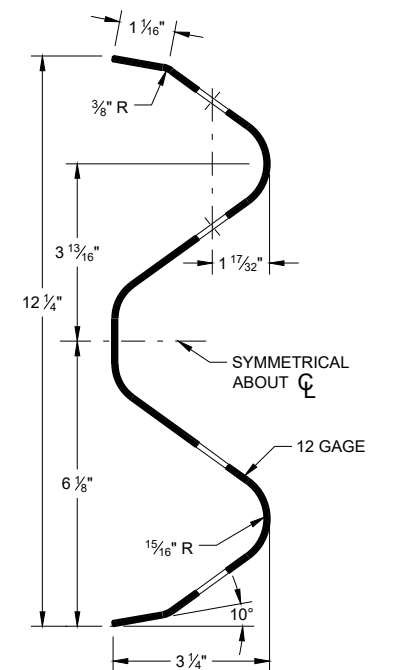
**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

## GENERAL NOTES

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

POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/4" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

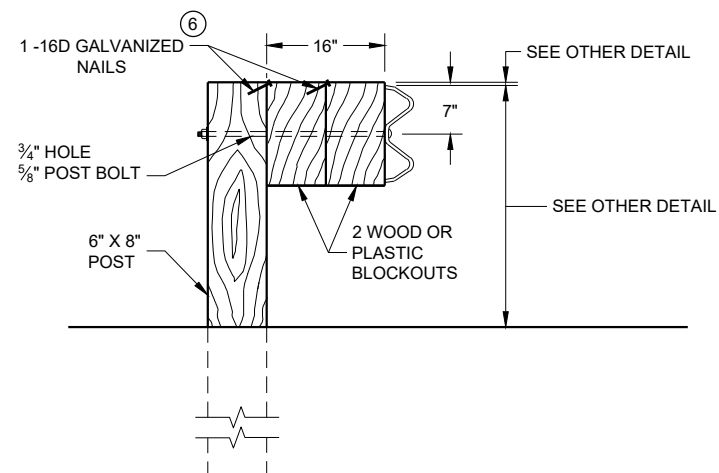
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



**SECTION THRU W-BEAM RAIL**

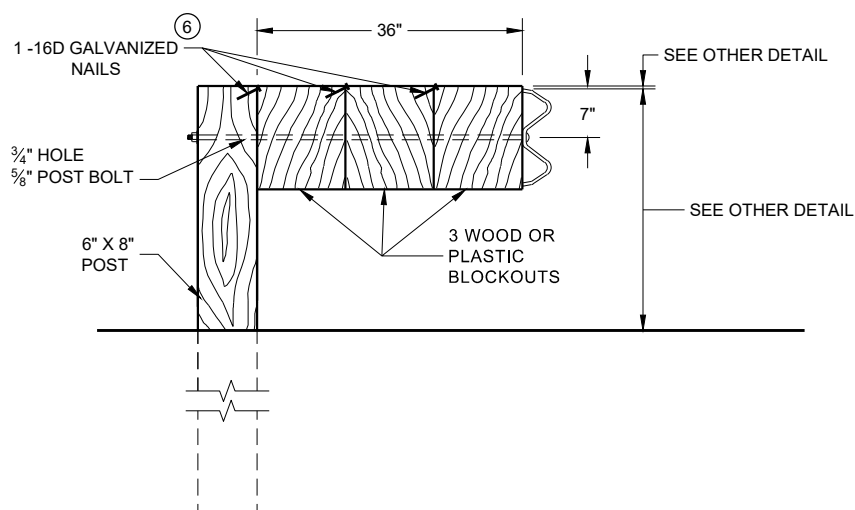
**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

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.



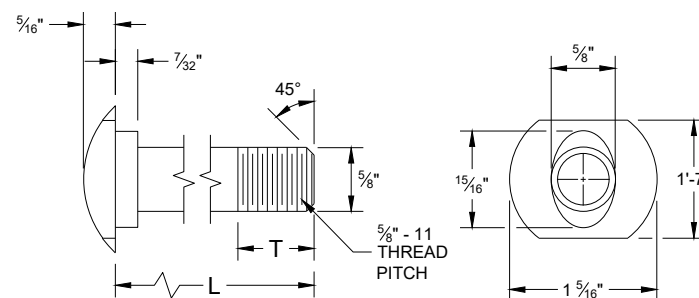
### DETAIL FOR 36" BLOCKOUT DEPTH

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.

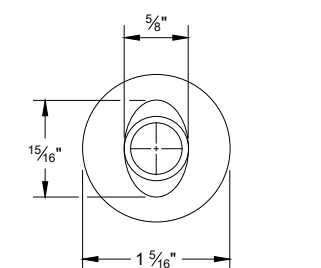
NOTE:

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

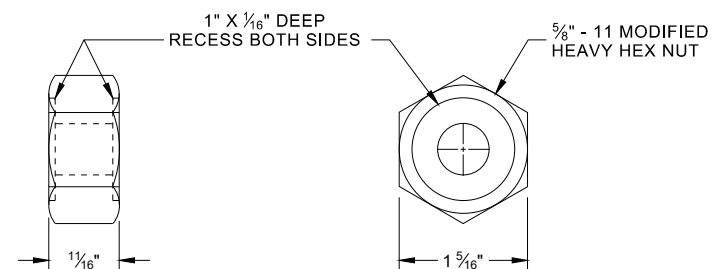


## POST BOLT TABLE

| L    | T (MIN.) |
|------|----------|
| 1 ¼" | 1 ⅝"     |
| 2"   | 1 ¾"     |
| 10"  | 4"       |
| 14"  | 4 ⅙"     |
| 18"  | 4"       |
| 21"  | 4 ⅙"     |
| 25"  | 4"       |

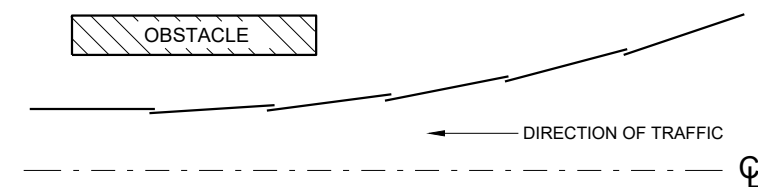


### ALTERNATE BOLT HEAD

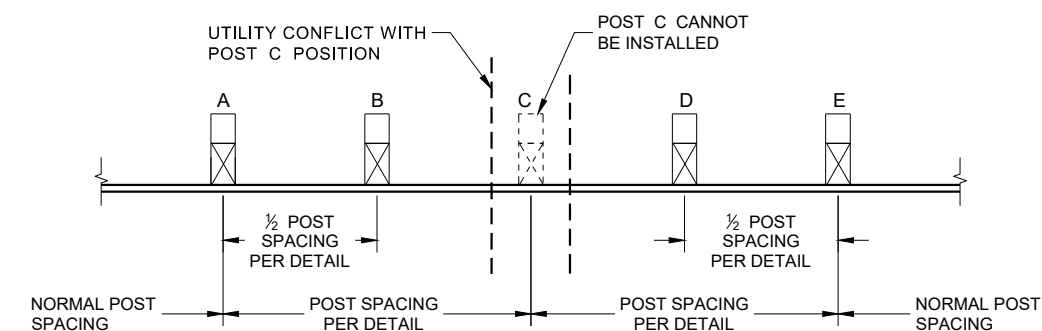


## POST BOLT, SPLICE BOLT AND RECESS NUT

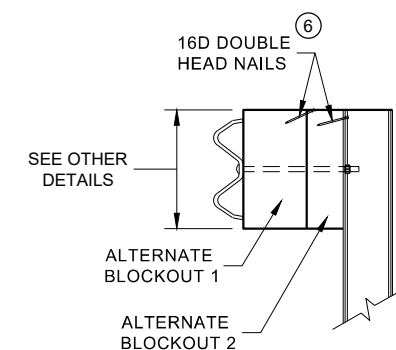
⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



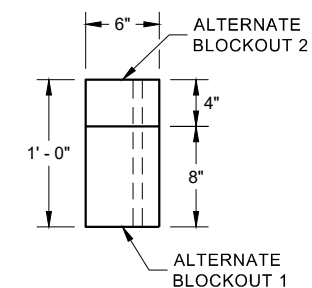
**PLAN VIEW**  
**BEAM LAPPING DETAIL**



## POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



### SIDE VIEW

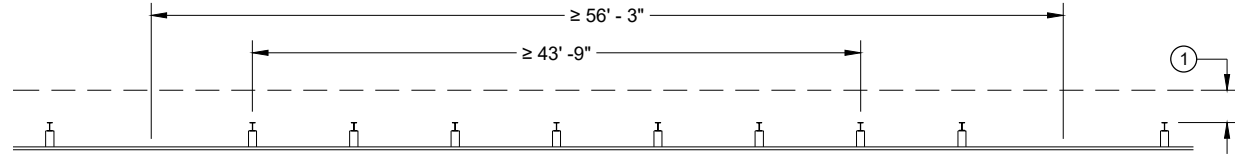


### PLAN VIEW

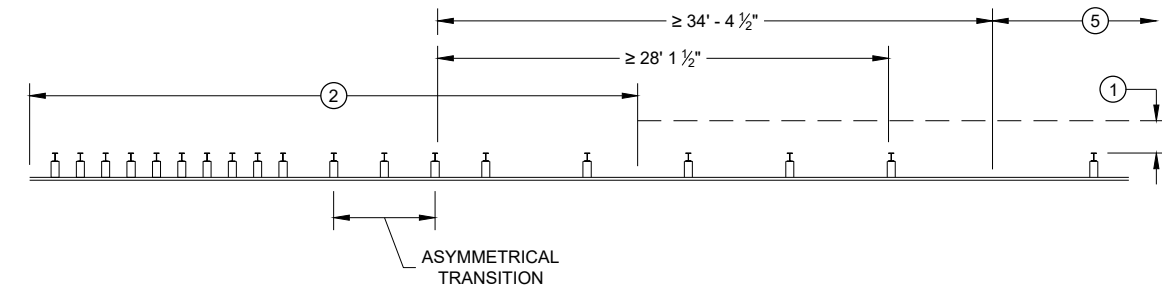
## ALTERNATE WOOD BLOCKOUT DETAIL

## MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

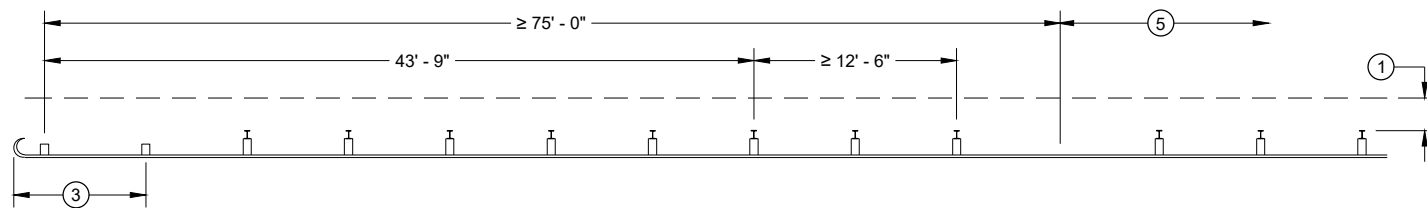
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



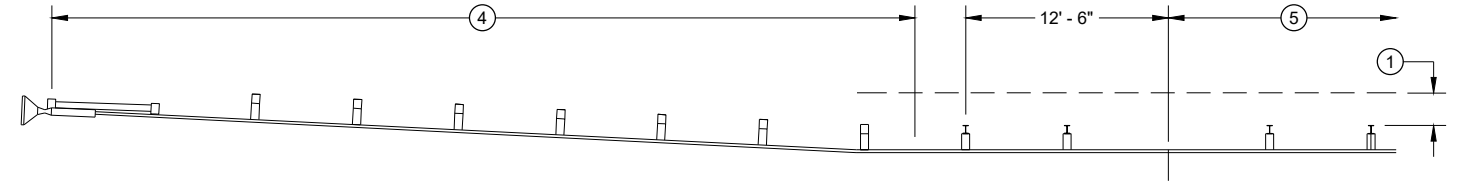
MISSING POST IN NORMAL BEAM GUARD RUN



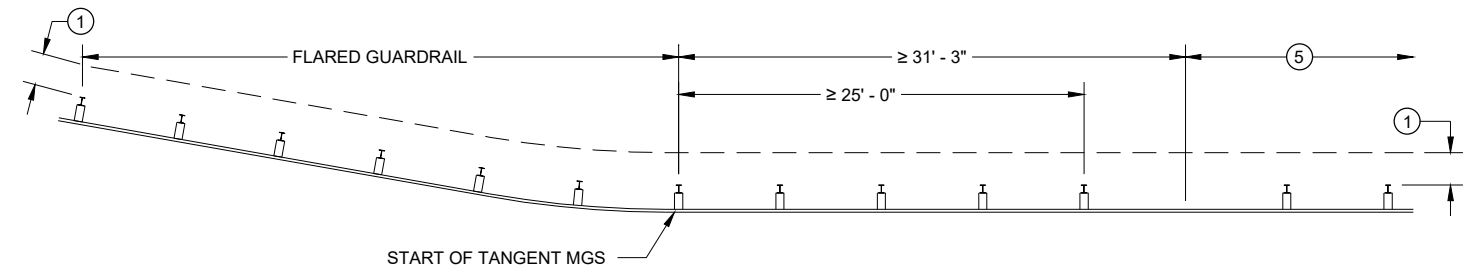
MISSING POST NEAR APPROACH THREE BEAM TRANSITION



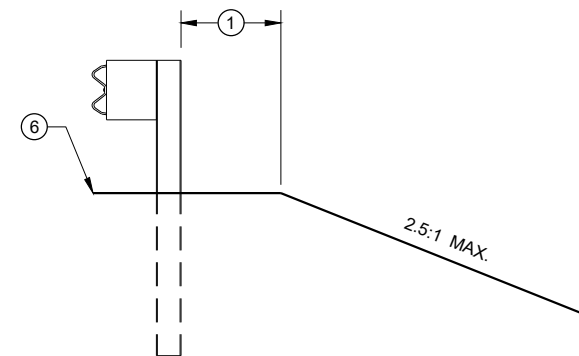
MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR TYPE 2 TERMINAL



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR FLARED BEAM GUARD



CROSS SECTION VIEW

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

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

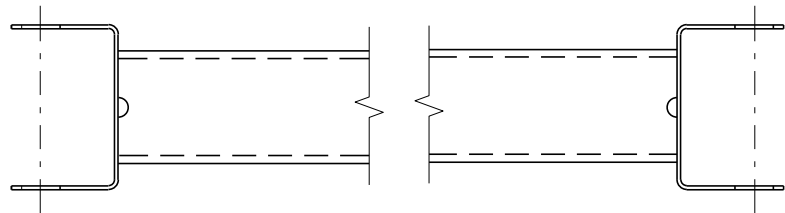
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS.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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

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

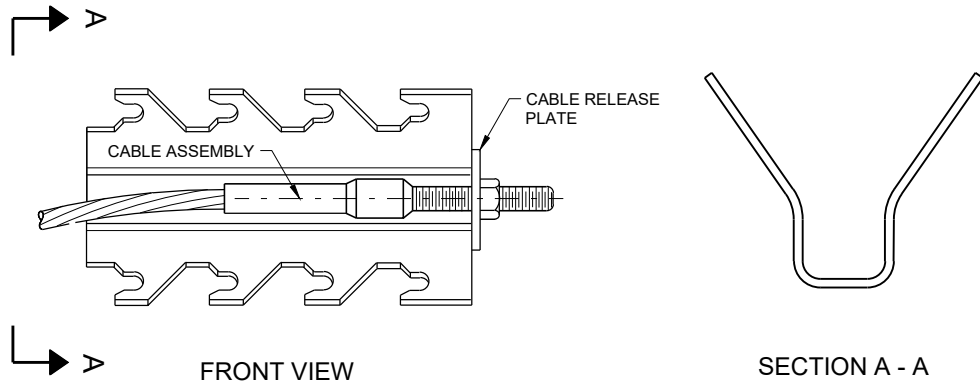


STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

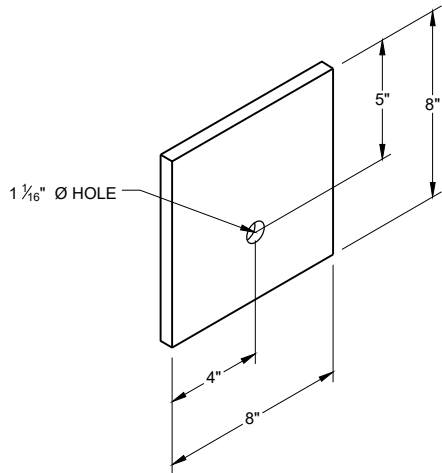


GENERIC GROUND STRUT<sup>⑨</sup> <sup>Ⓔ</sup>

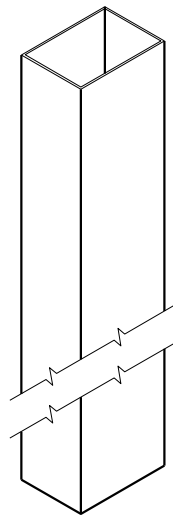
| BILL OF MATERIALS |                                                                                                                |
|-------------------|----------------------------------------------------------------------------------------------------------------|
| PART NO.          | DESCRIPTION<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                                                                                               |



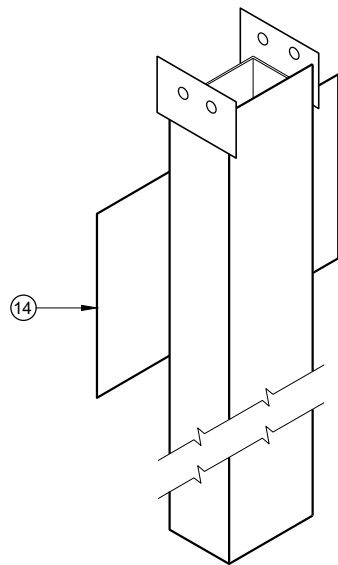
GENERIC ANCHOR CABLE BOX<sup>⑨</sup> <sup>Ⓔ</sup>



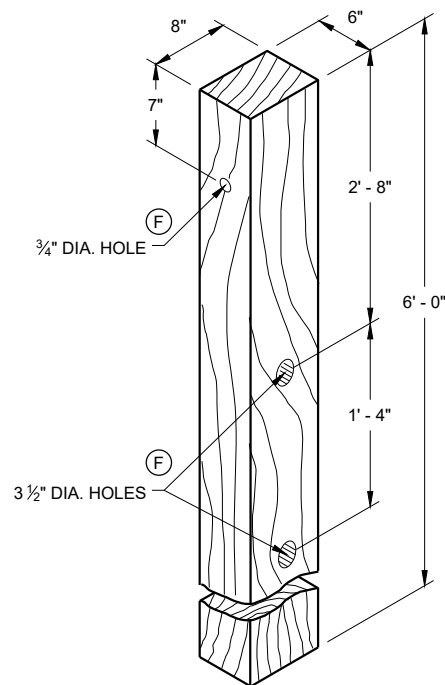
BEARING PLATE<sup>⑥</sup> <sup>Ⓔ</sup>



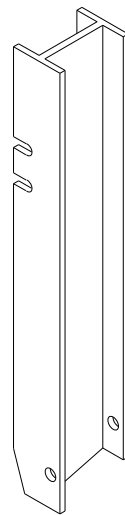
UPPER POST NO. 1 <sup>(1)</sup> (E)



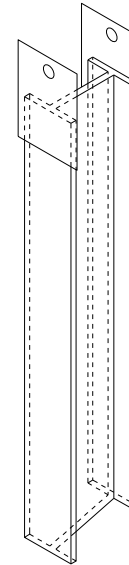
LOWER POST NO. 1 <sup>(2)</sup> (E)



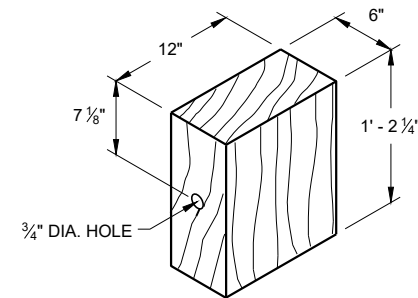
WOOD CRT POST <sup>(3)</sup> (E)  
POSTS NUMBER 3-9



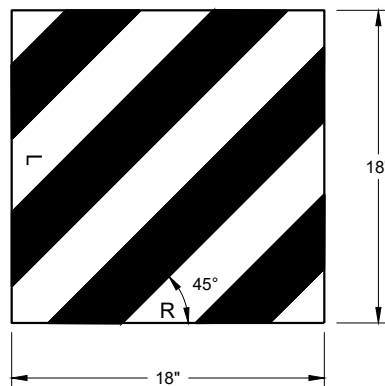
UPPER POST NO. 2 <sup>(15)</sup> (E)



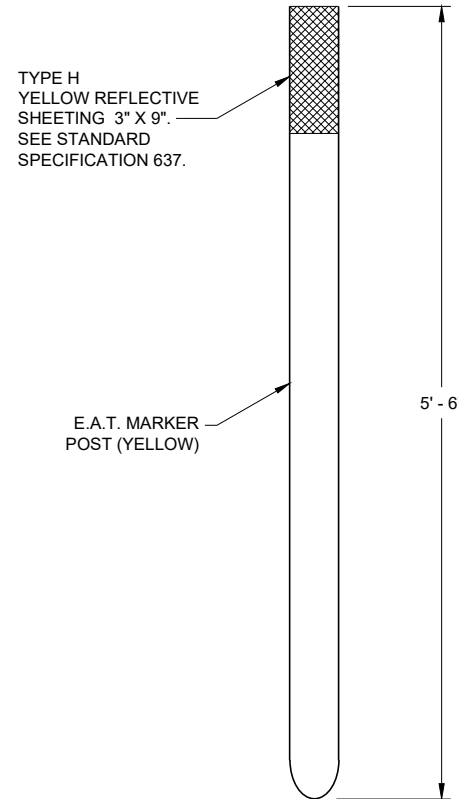
LOWER POST NO. 2 <sup>(16)</sup> (E)



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

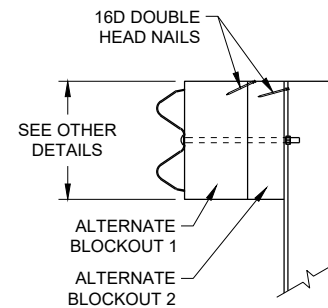


REFLECTIVE SHEETING DETAIL <sup>(E)</sup>



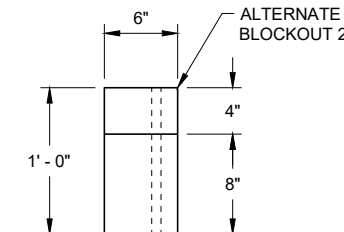
FRONT VIEW SIDE VIEW

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



SIDE VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL

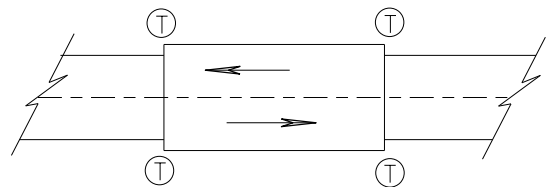


TOP VIEW

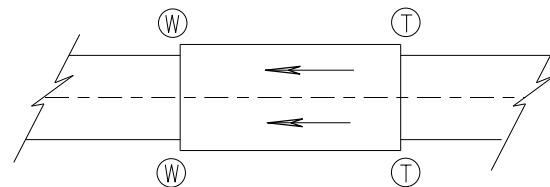
**MIDWEST GUARDRAIL SYSTEM  
ENERGY ABSORBING TERMINAL  
(MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



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

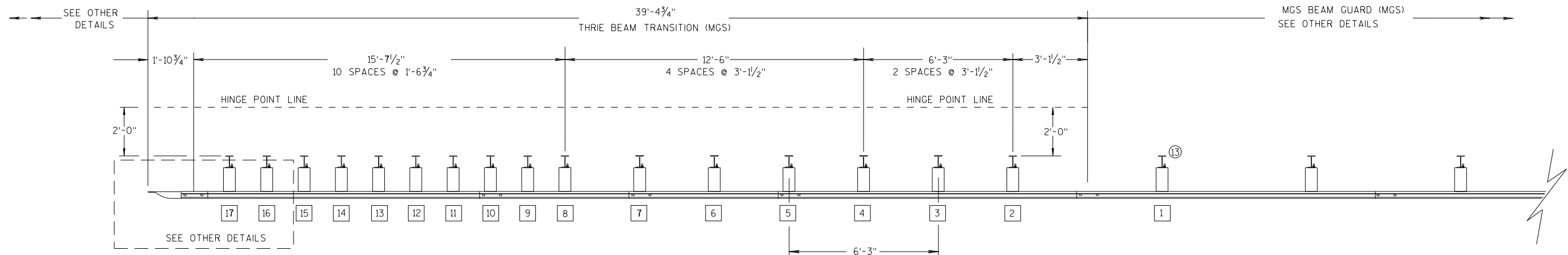
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

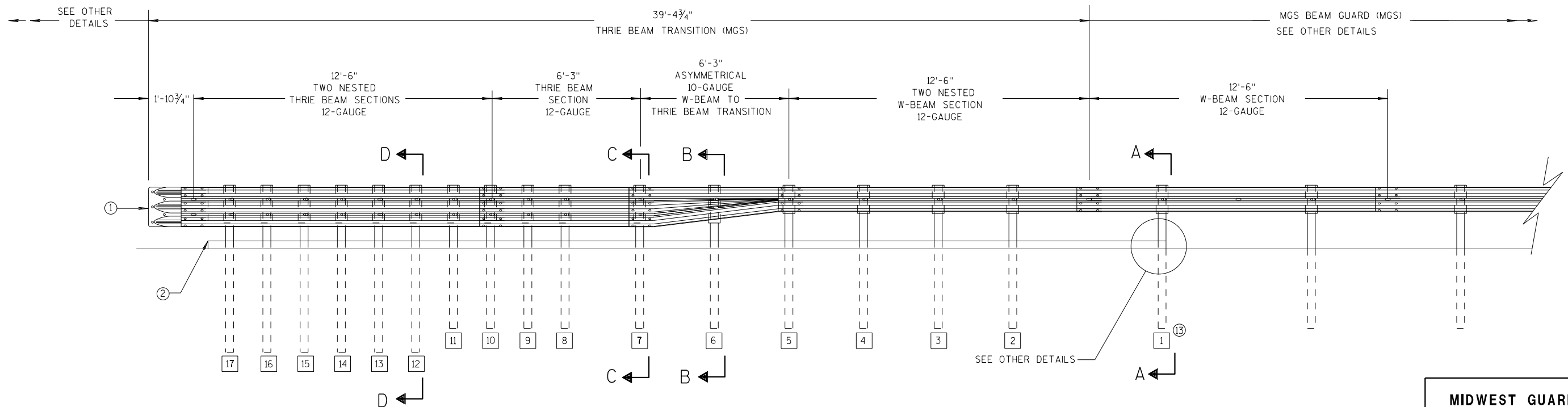
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

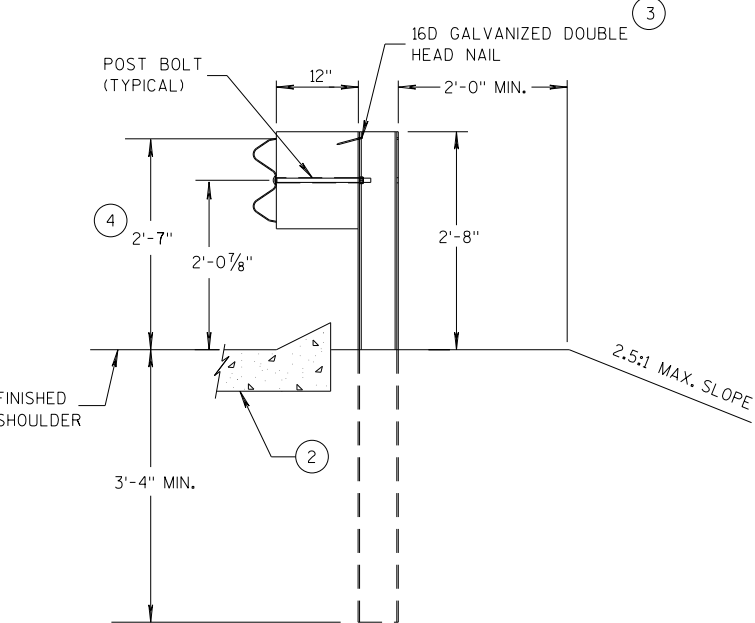
## MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

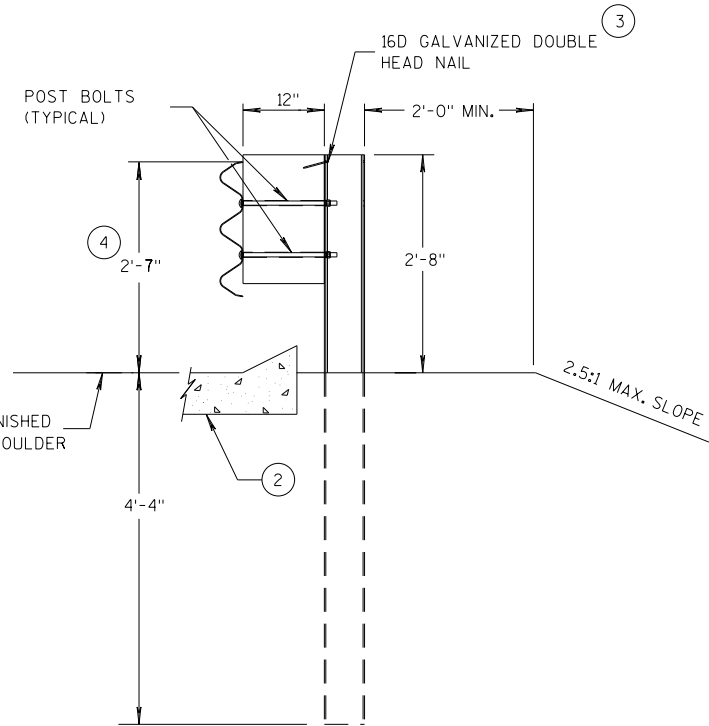
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

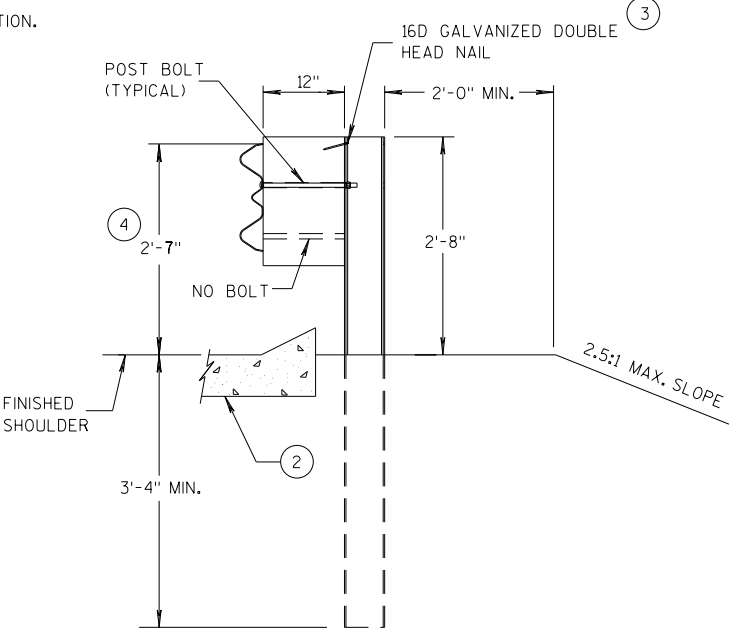
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm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



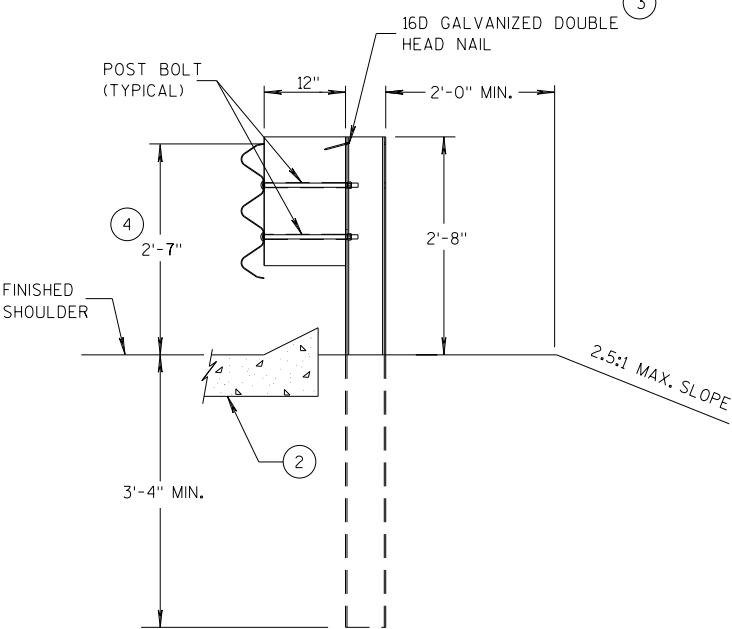
SECTION A-A  
POSTS 1-5



SECTION D-D  
POSTS 12-17



SECTION B-B  
POST 6



SECTION C-C  
POSTS 7-11

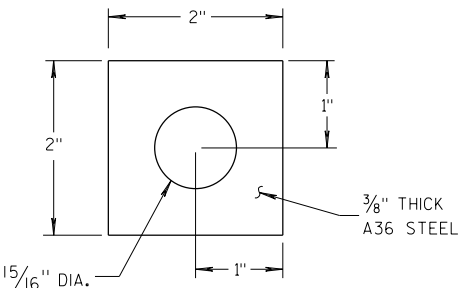
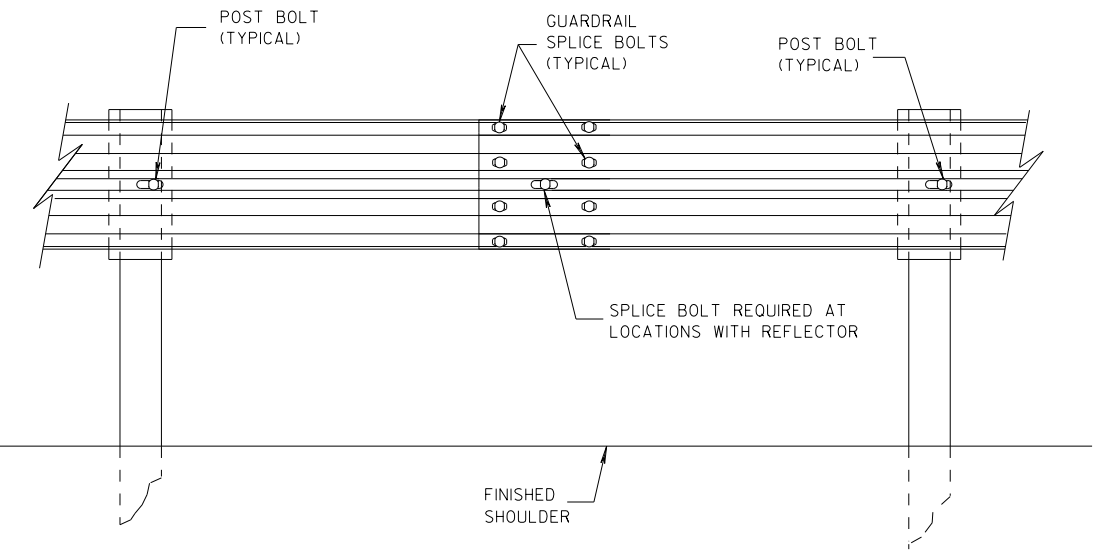
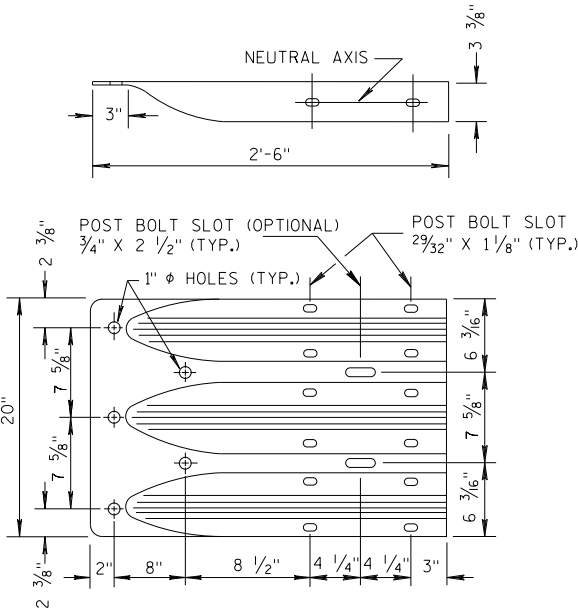


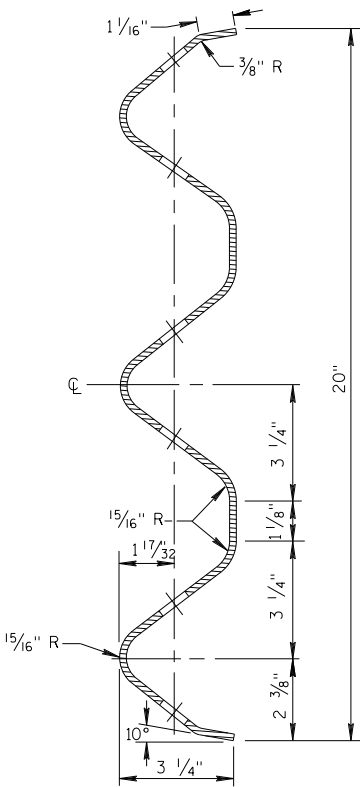
PLATE WASHER DETAIL



SPLICE DETAIL



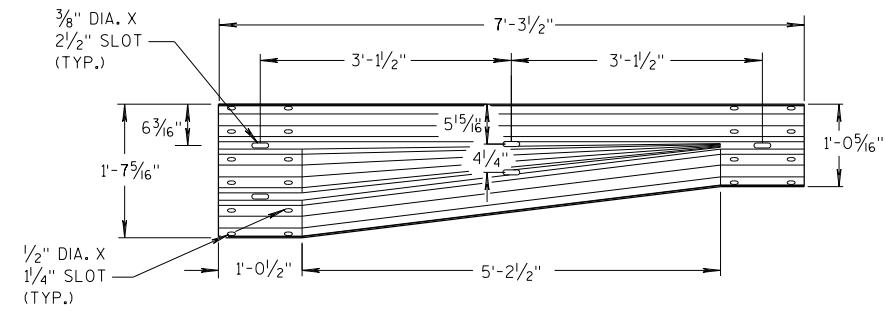
THRIE BEAM  
TERMINAL CONNECTOR



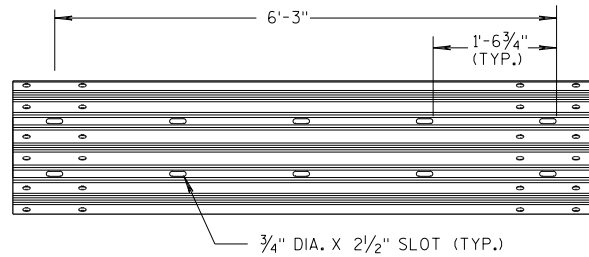
SECTION THRU THRIE  
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

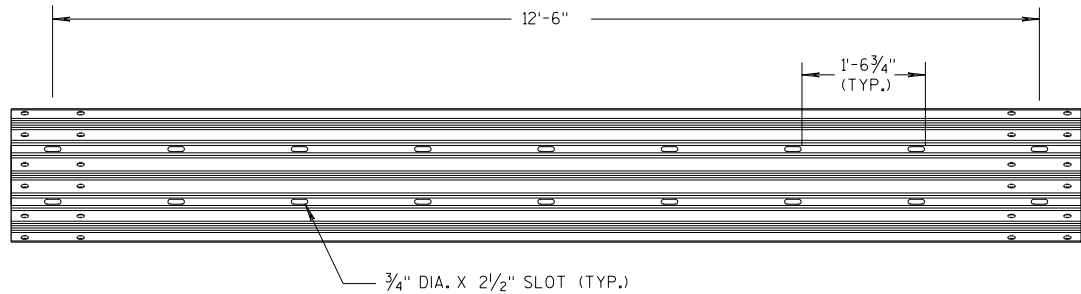
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



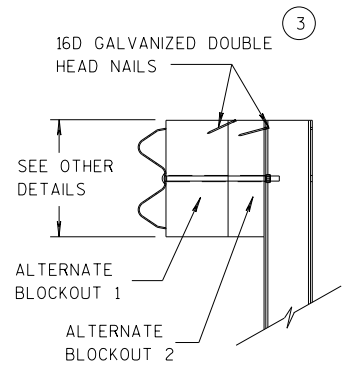
W-BEAM TO THRIE BEAM TRANSITION SECTION



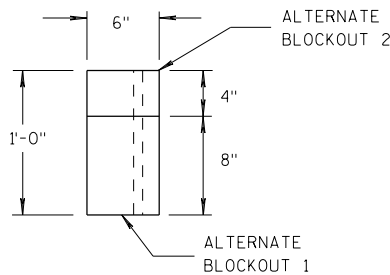
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

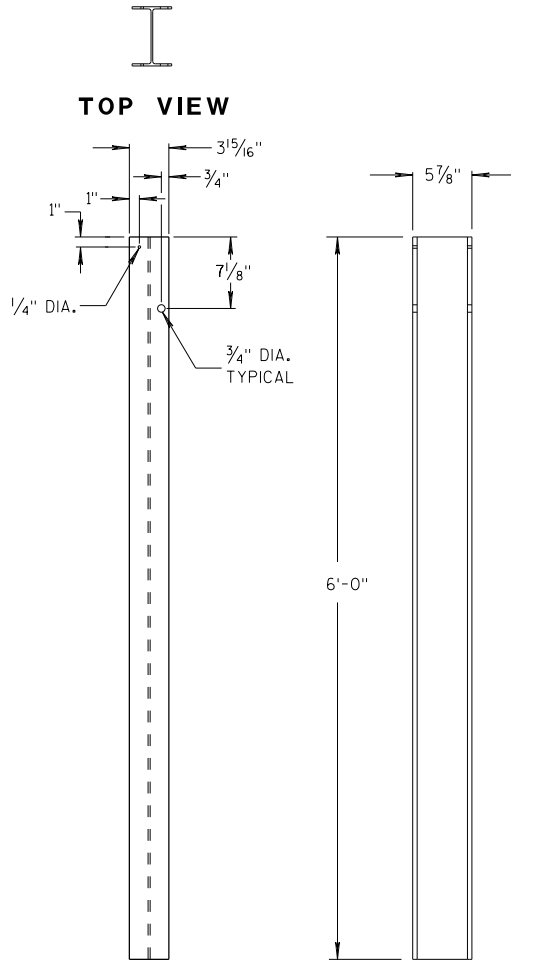


SIDE VIEW



TOP VIEW

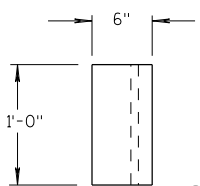
ALTERNATE WOOD BLOCKOUT DETAIL



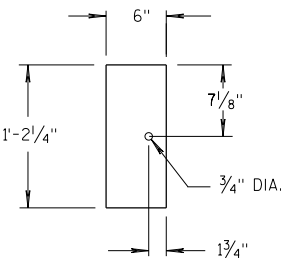
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

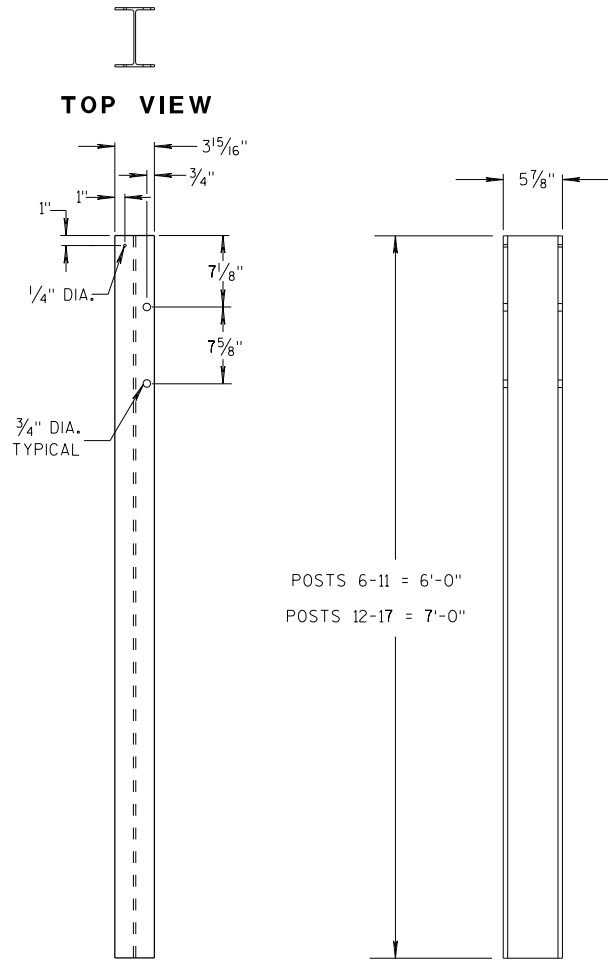


TOP VIEW



FRONT VIEW

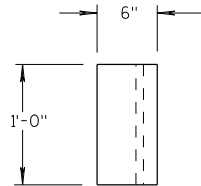
BLOCKOUT POSTS 1-5



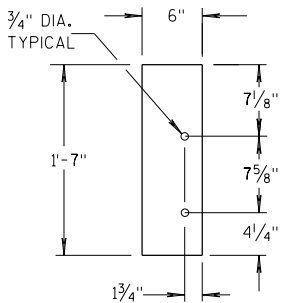
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

### GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

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

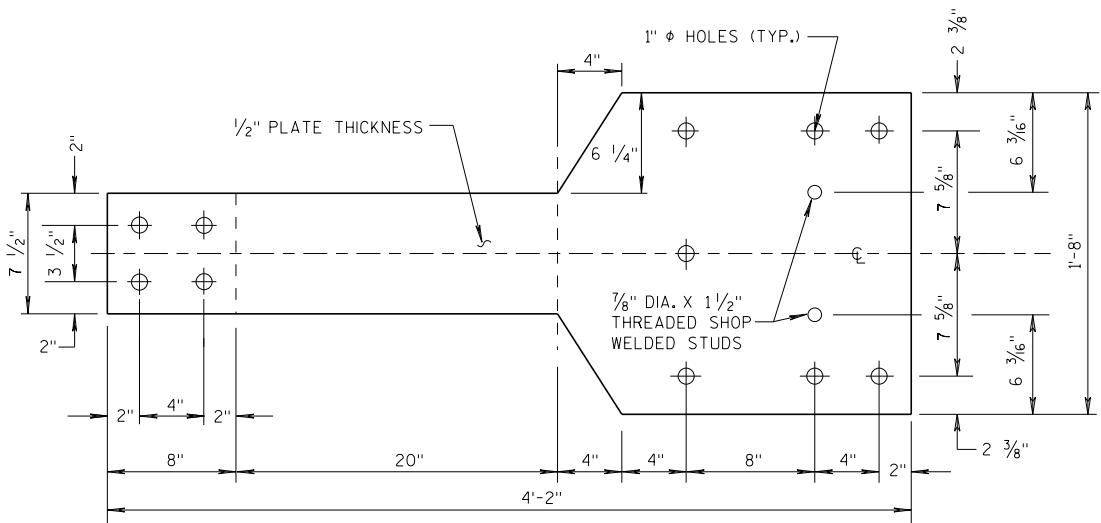
(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

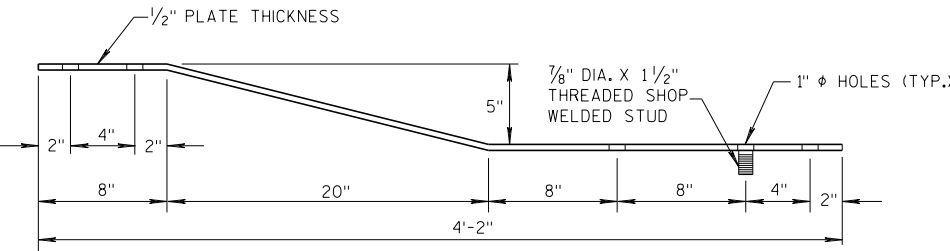
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

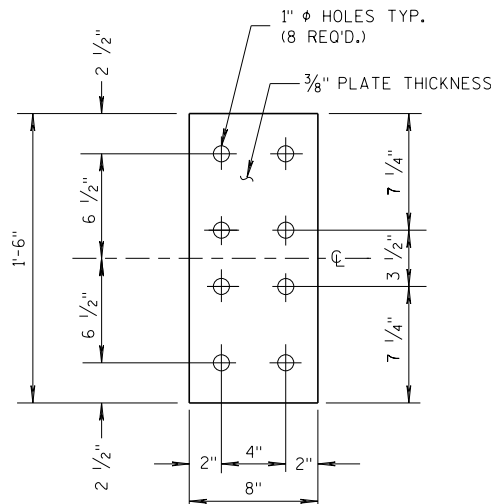
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm 1"$ .



FRONT VIEW

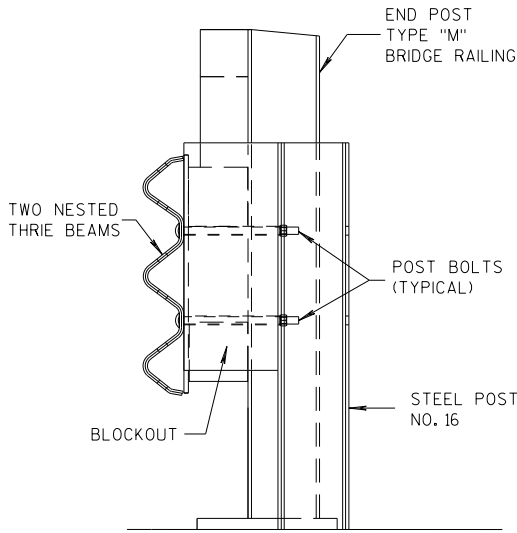


PLAN VIEW  
BACK-UP PLATE DETAIL, TYPE "M"

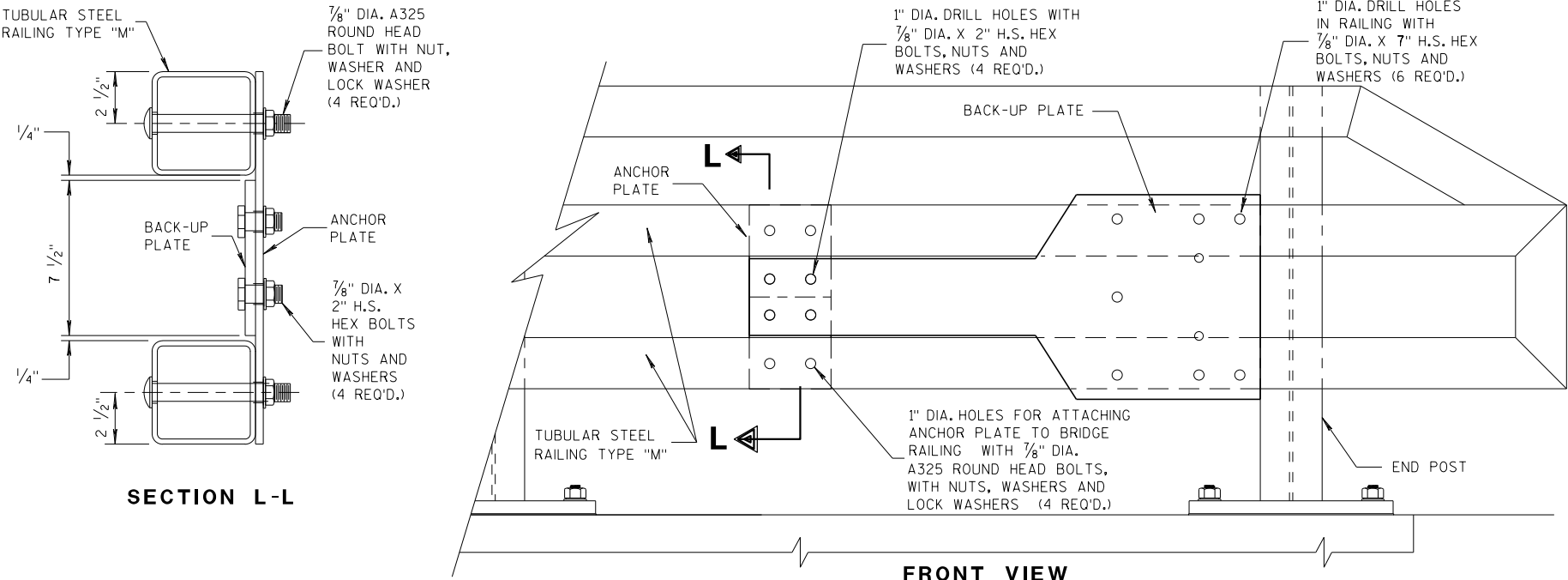


FRONT VIEW

ANCHOR  
PLATE DETAIL,  
TYPE "M"



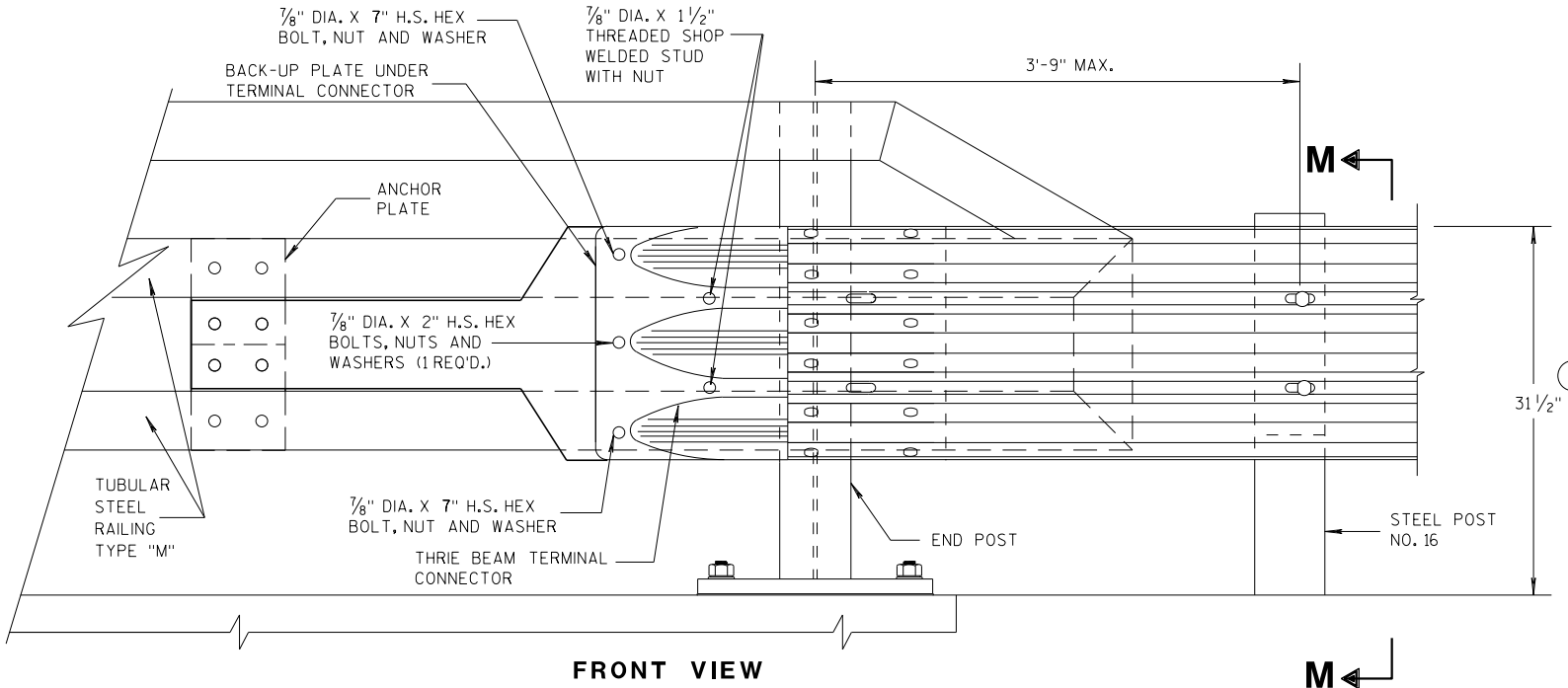
SECTION M-M



SECTION L-L

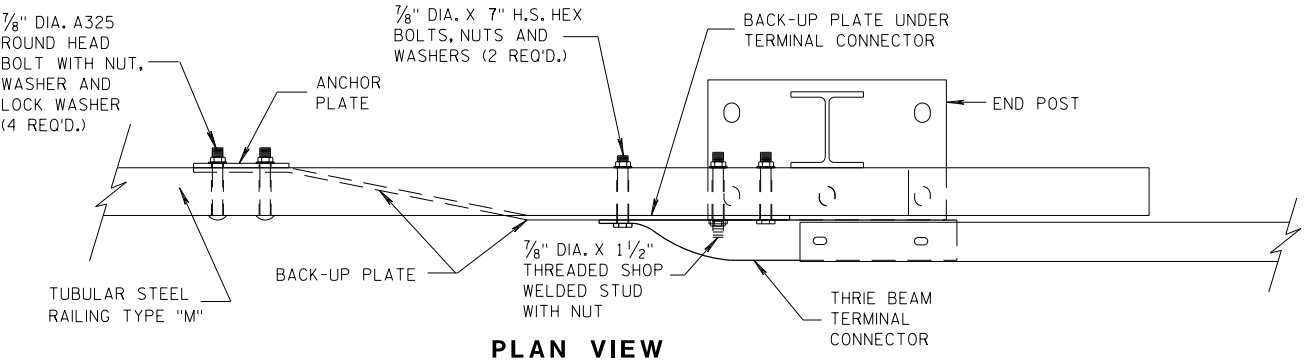
FRONT VIEW

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



FRONT VIEW

M



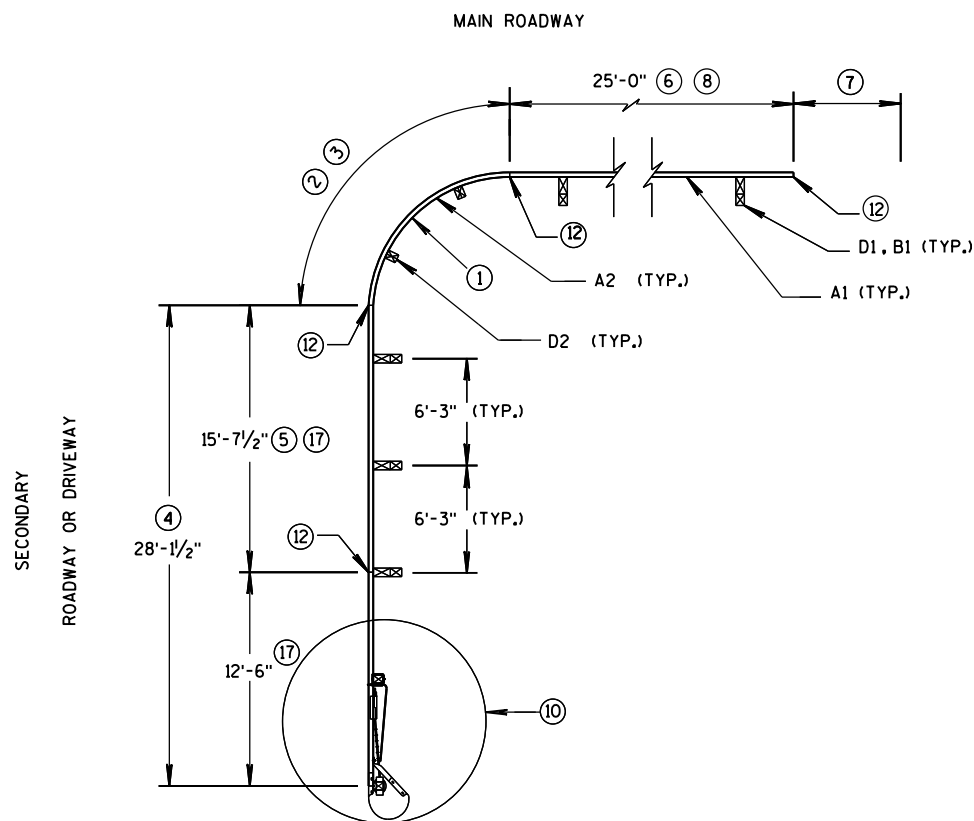
PLAN VIEW

THREE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

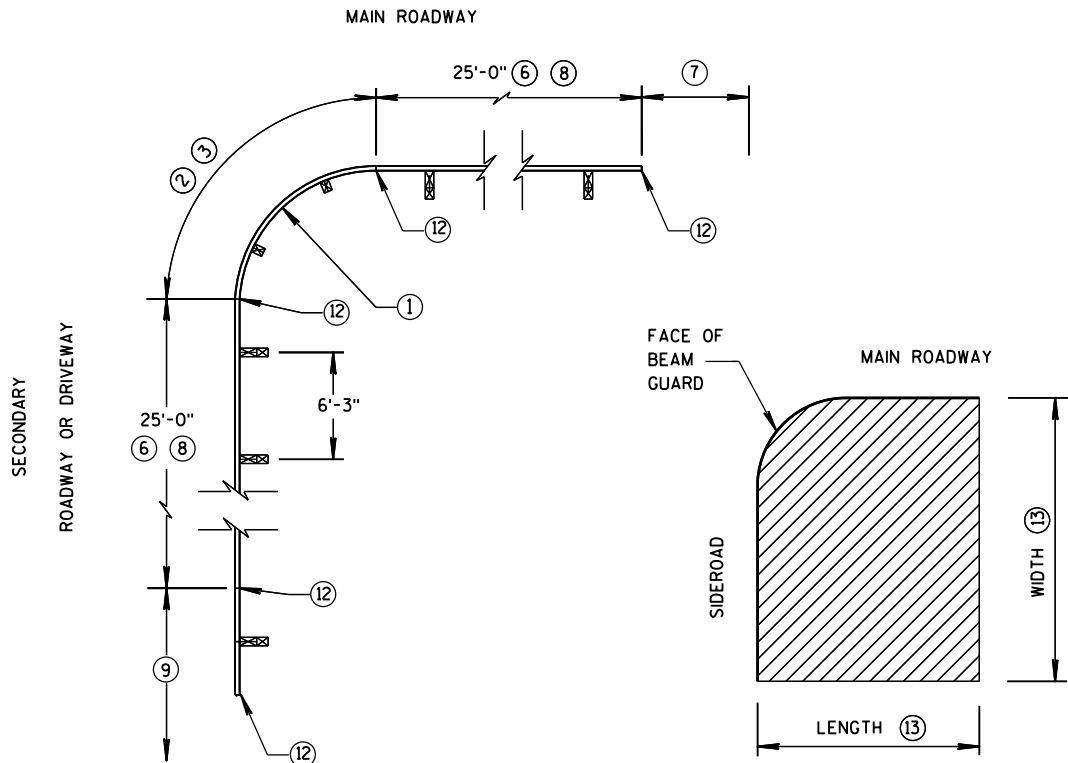
MIDWEST GUARDRAIL SYSTEM  
THREE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

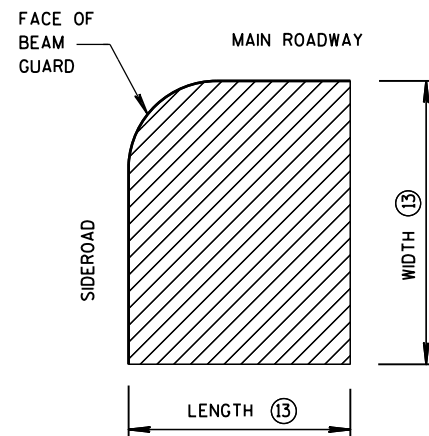
APPROVED  
07/2018  
DATE  
/S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR  
FHWA



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



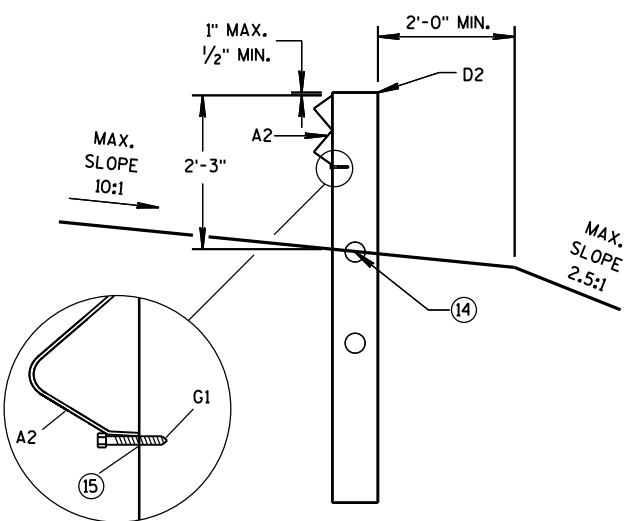
SHORT RADIUS BEAM GUARD WITH  
EAT, ADDITIONAL BEAM GUARD  
OR  
TRANSITION TO RIGID BARRIER  
ON SECONDARY ROAD OR  
DRIVEWAY  
PLAN VIEW



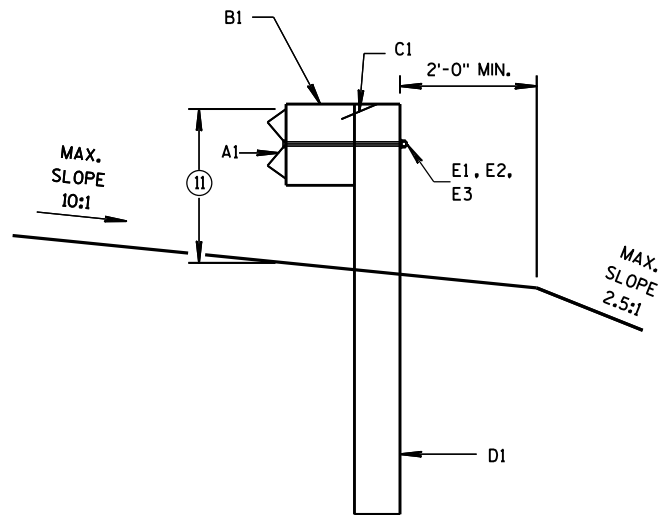
AREA FREE OF  
FIXED OBJECTS FOR  
RADIUS 32' AND LESS (16)

TABLE FOR RADIUS OF 32' AND LESS

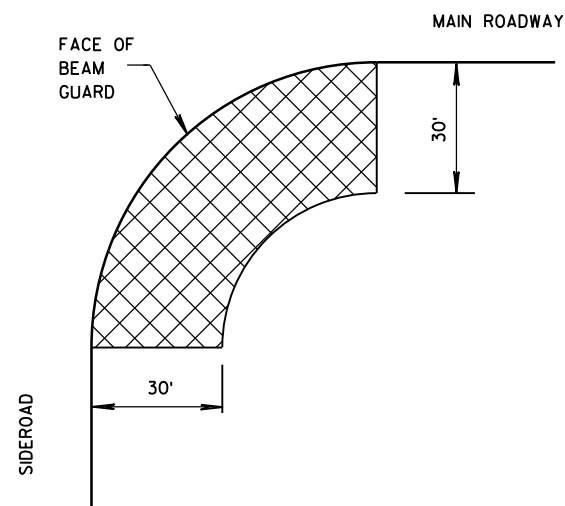
| RADIUS<br>FT | LENGTH<br>FT | WIDTH<br>FT |
|--------------|--------------|-------------|
| 8            | 25           | 15          |
| 16           | 30           | 15          |
| 24           | 40           | 20          |
| 32           | 50           | 30          |



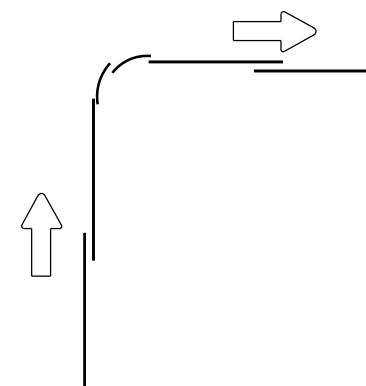
CONTROLLED RELEASE  
TERMINAL POST (CRT) IN RADIUS



BEAM GUARD POSTS  
IN HEIGHT TRANSITION



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



LAP SPLICE DETAIL

## GENERAL NOTES

SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.

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

GALVANIZE PARTS AFTER FABRICATION.

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

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

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

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

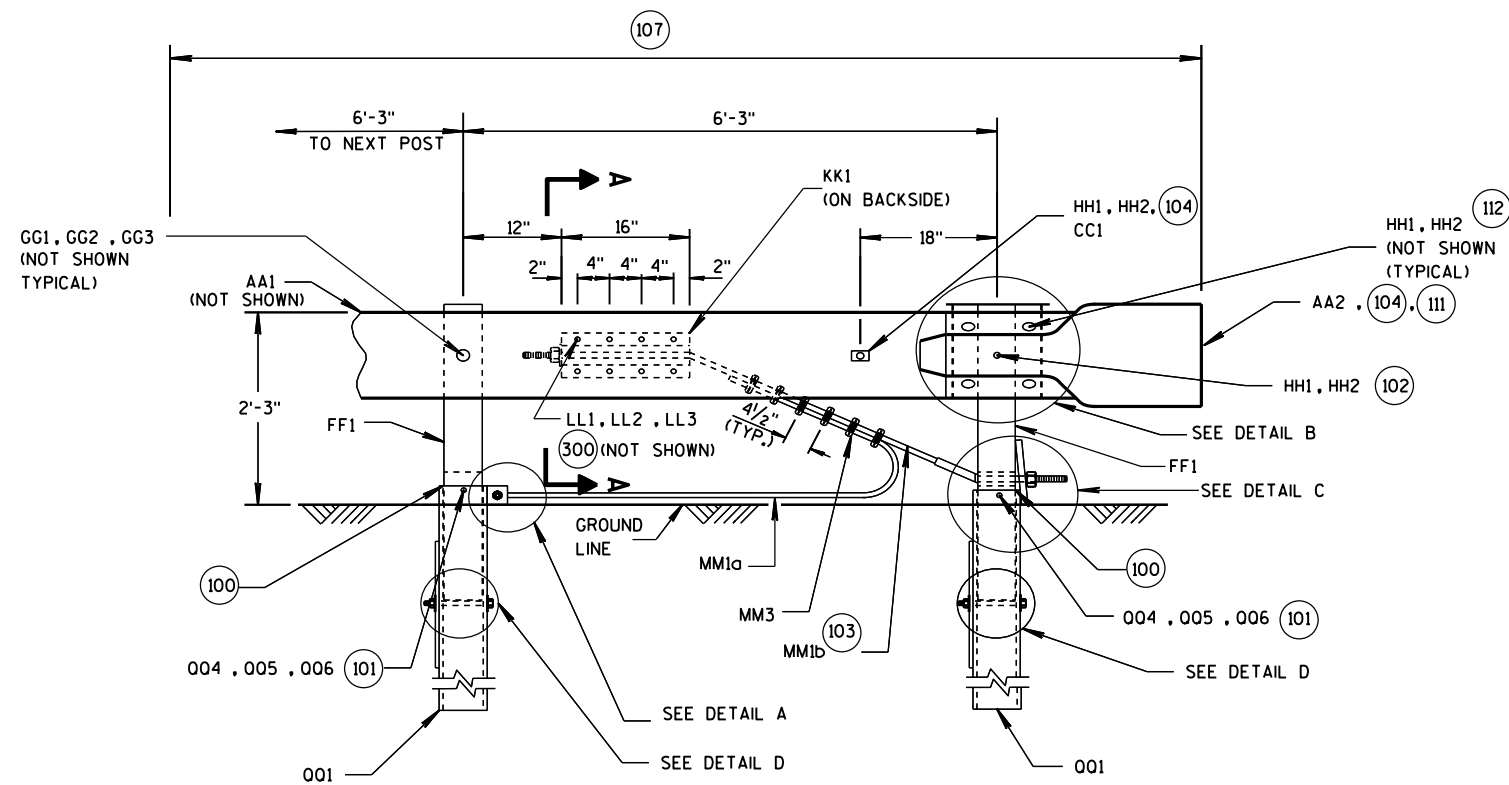
UNLESS NOTED OTHERWISE CUT OR PROVIDE BOLTS THAT ARE 1/4" TO 1/2" BEYOND THE NUT

DRAWINGS ARE NOT TO SCALE.

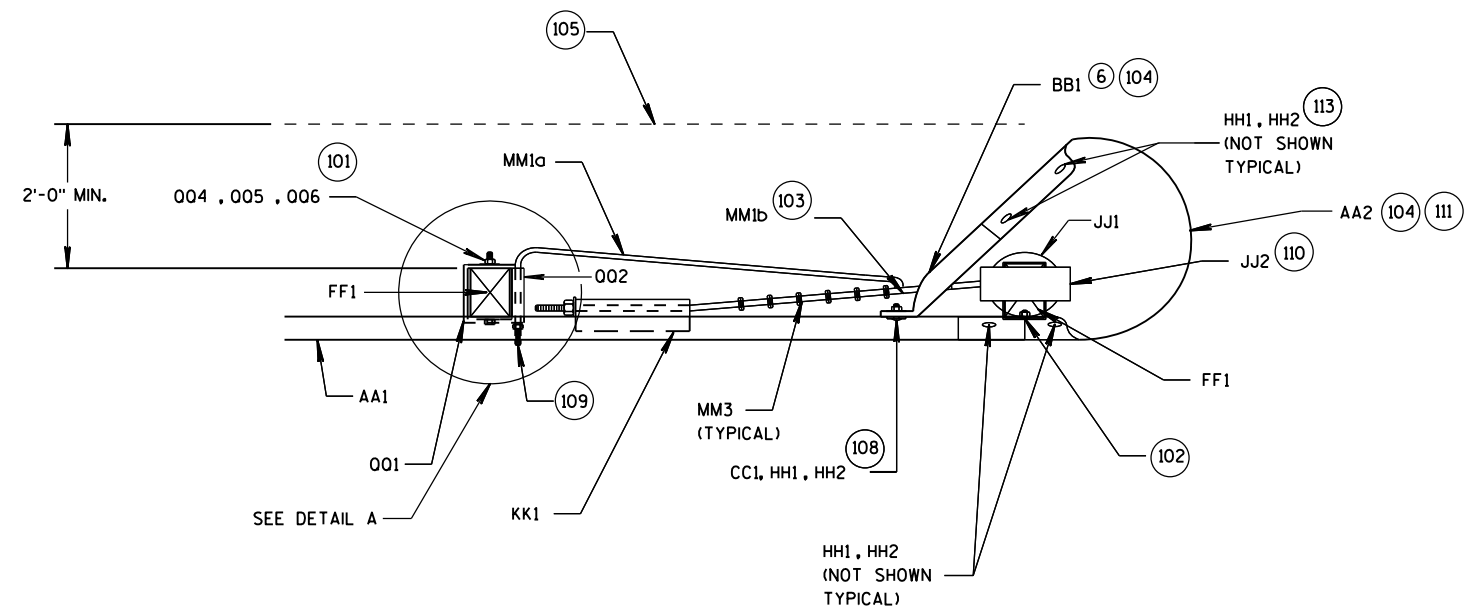
- RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- CONTROLLED RELEASE TERMINAL (CRT)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

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

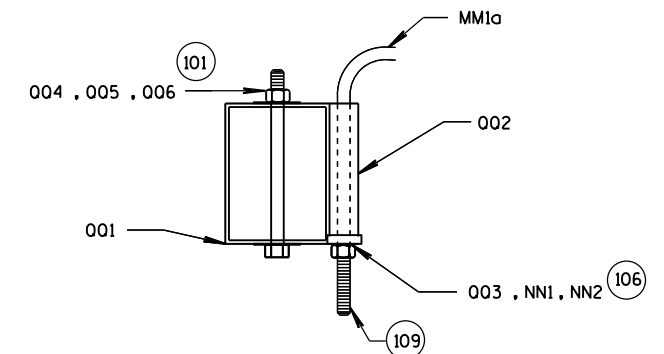


**SHORT RADIUS TERMINAL  
PROFILE VIEW**

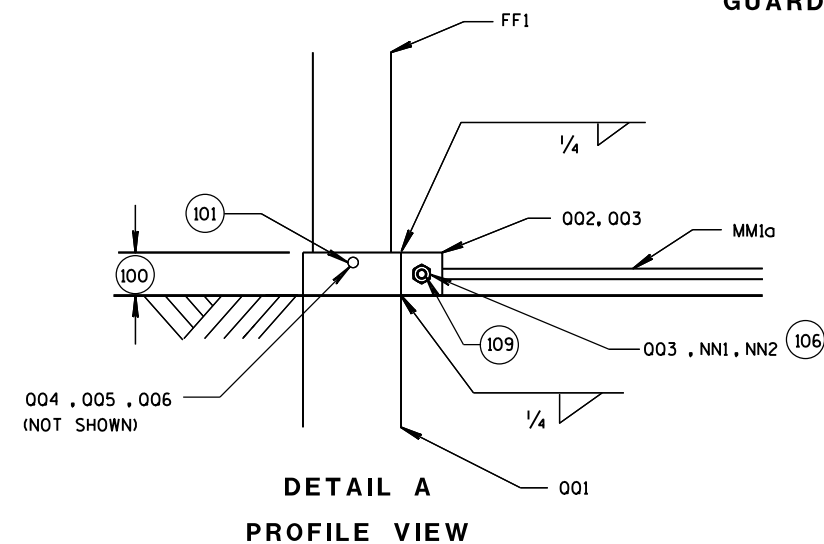


**SHORT RADIUS TERMINAL  
TOP VIEW**

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



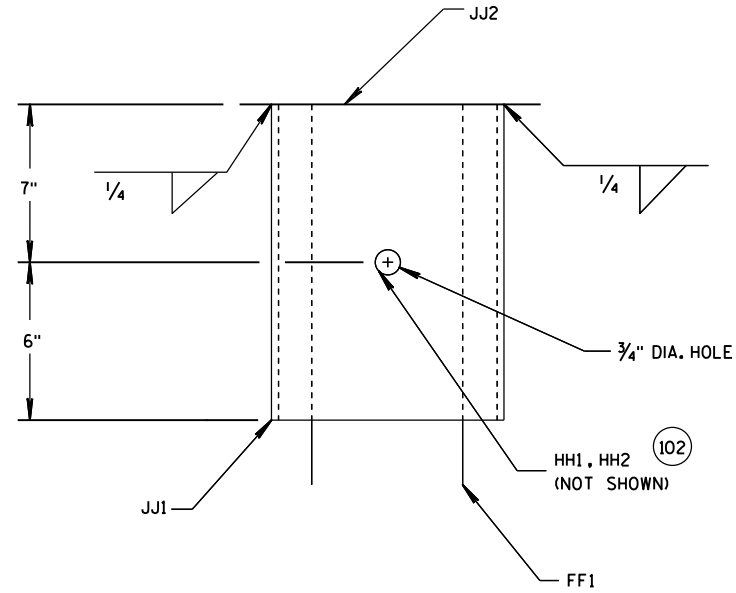
**DETAIL A  
TOP VIEW  
(WOOD BREAKAWAY AND BEAM  
GUARD RAIL POSTS NOT SHOWN)**



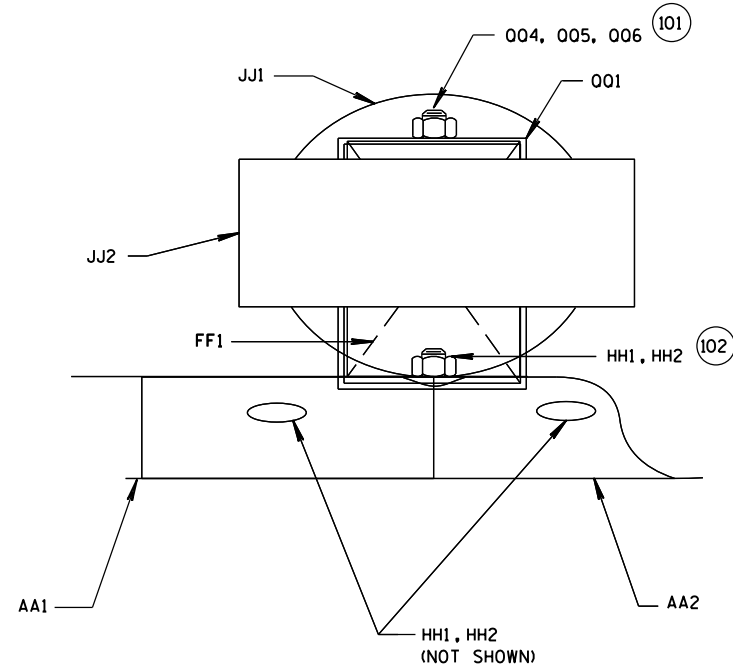
**DETAIL A  
PROFILE VIEW**

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

**STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION**

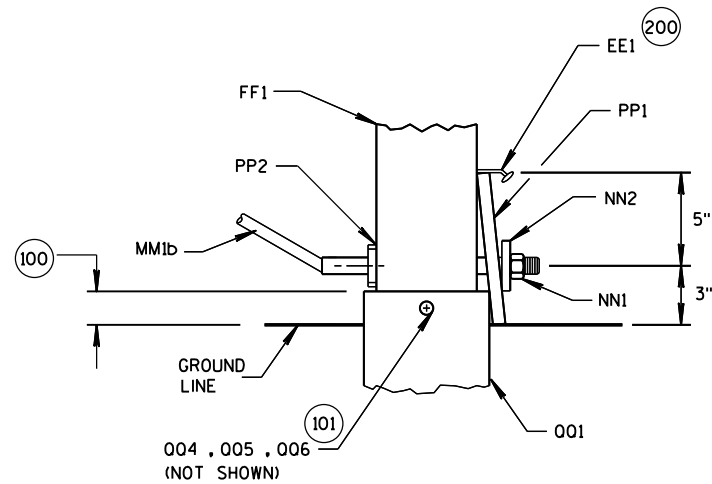


**DETAIL B**  
**PROFILE VIEW OF STEEL PIPE ASSEMBLY**  
**(BEAM GUARD AND W-BEAM**  
**END SECTION NOT SHOWN)**

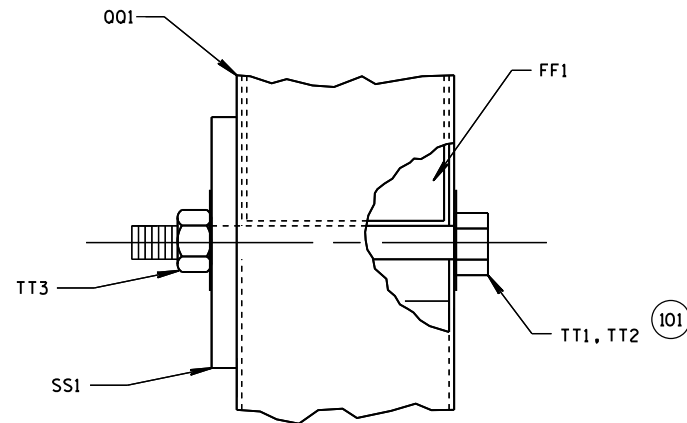


**DETAIL B**  
**PLAN VIEW OF STEEL PIPE ASSEMBLY**

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



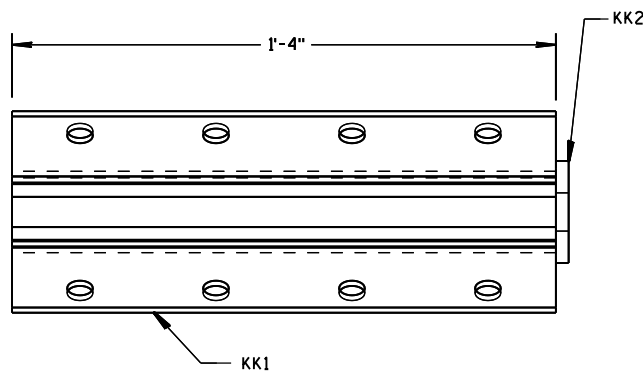
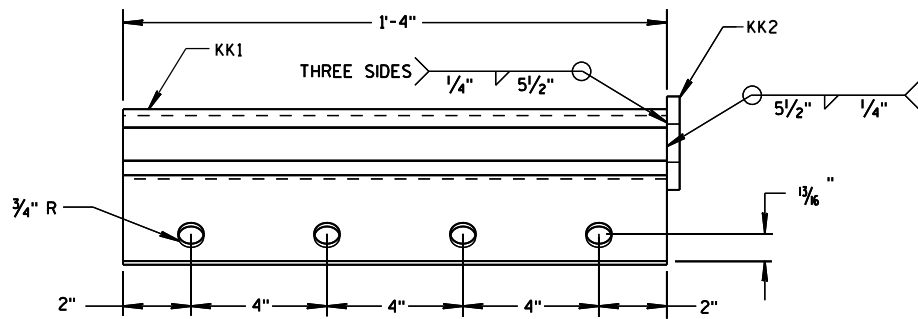
**DETAIL C**  
**PROFILE VIEW**



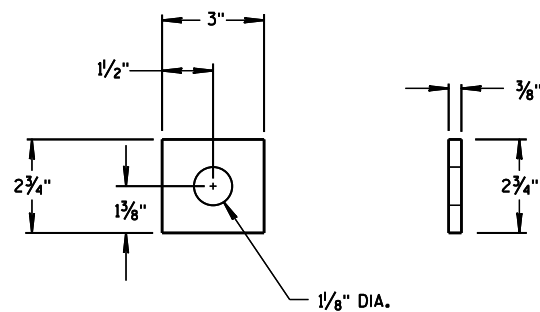
**DETAIL D**  
**PROFILE VIEW**

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

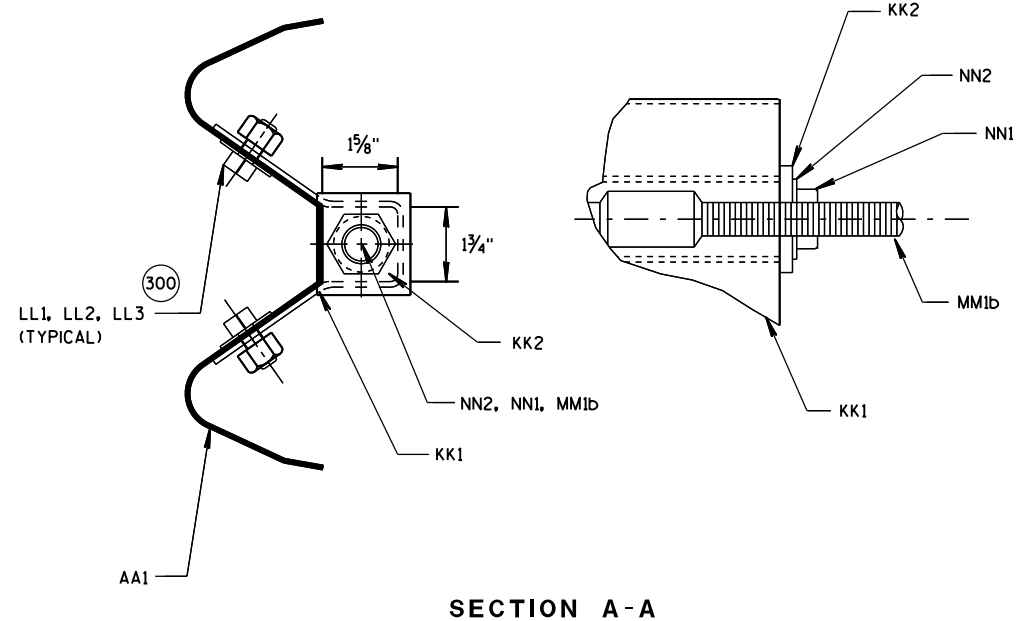
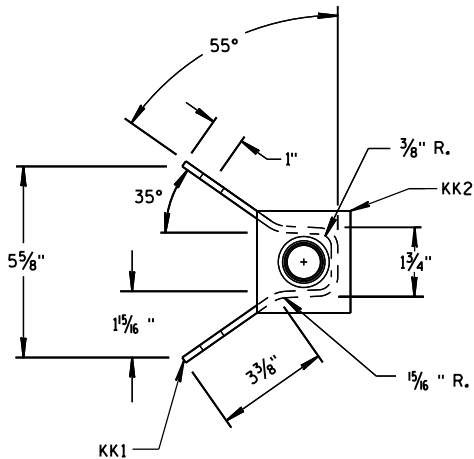
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



ANCHOR BRACKET (KK1, KK2)



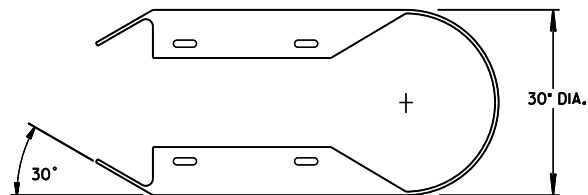
ANCHOR BRACKET BEARING PLATE (KK2)



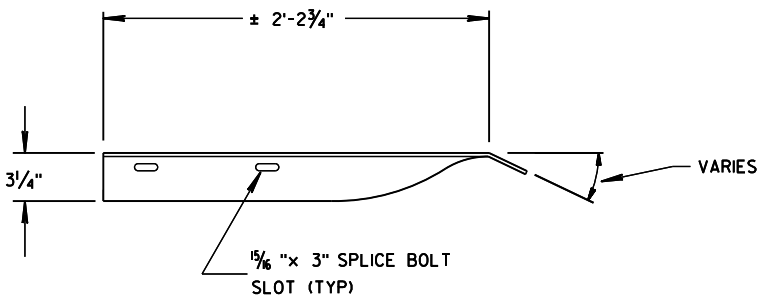
(300) WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT LL1 AND LL3 REQUIRED. SIXTEEN LL2 REQUIRED.

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

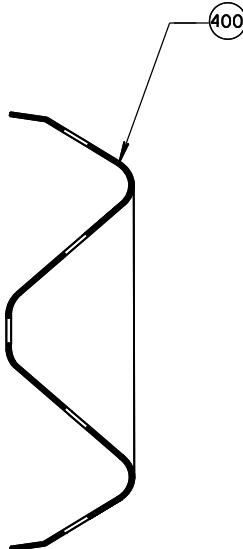


TOP VIEW

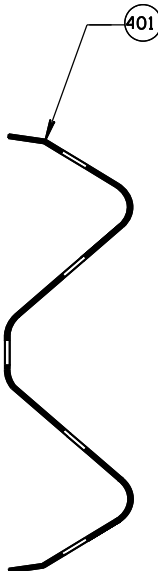


TOP VIEW

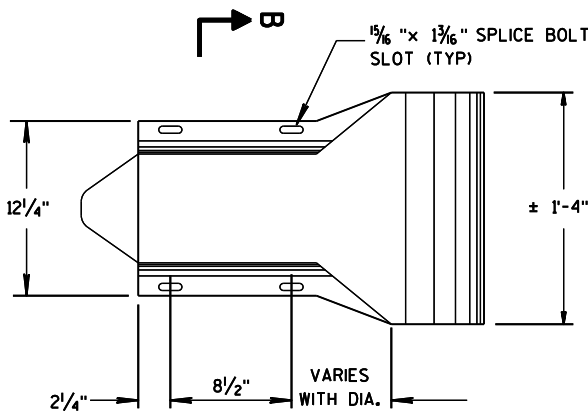
400 CROSS SECTION OF PART IS TO FIT OVER AA1.  
401 CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1.



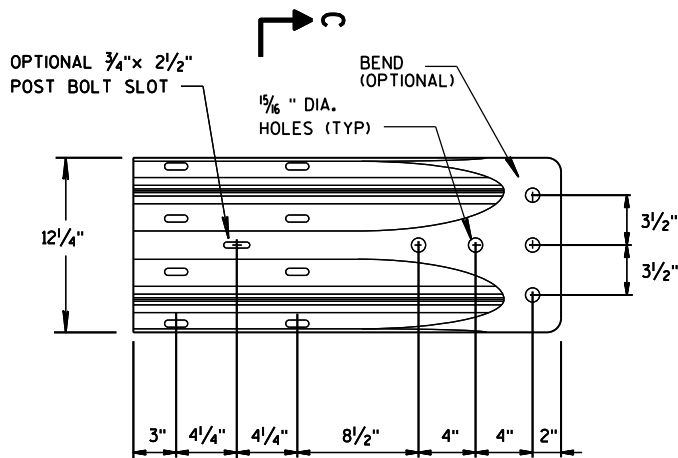
SECTION B-B



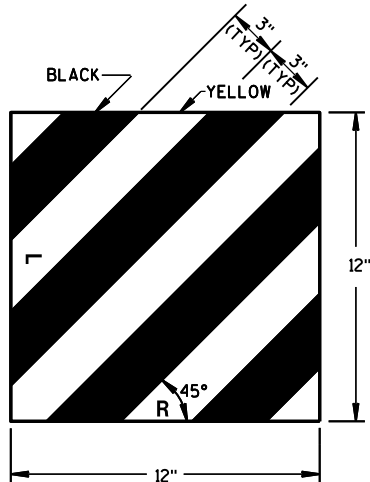
SECTION C-C



W-BEAM  
END SECTION BUFFER (AA2)  
PROFILE VIEW



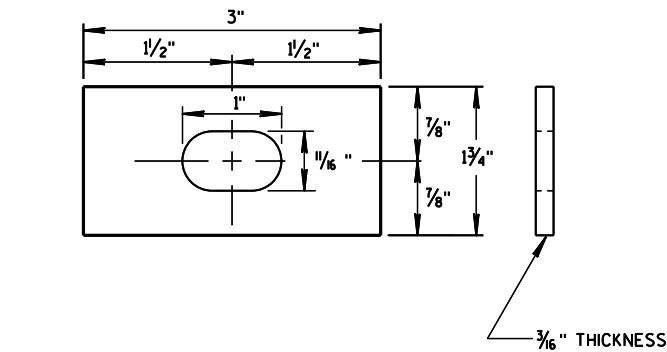
W-BEAM  
TERMINAL CONNECTOR (BB1)  
PROFILE VIEW



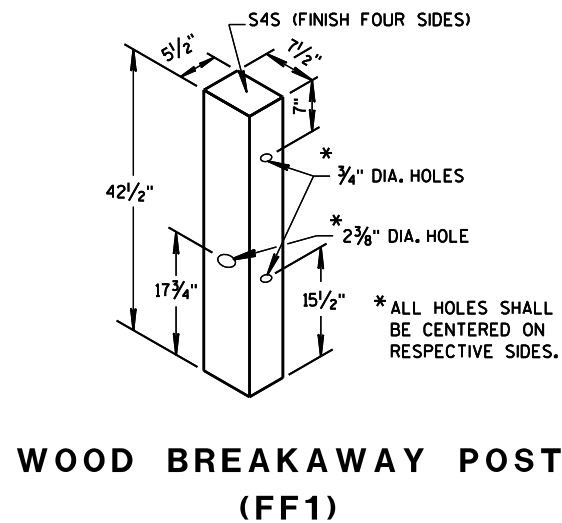
REFLECTIVE SHEETING  
(UU1, UU2)

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

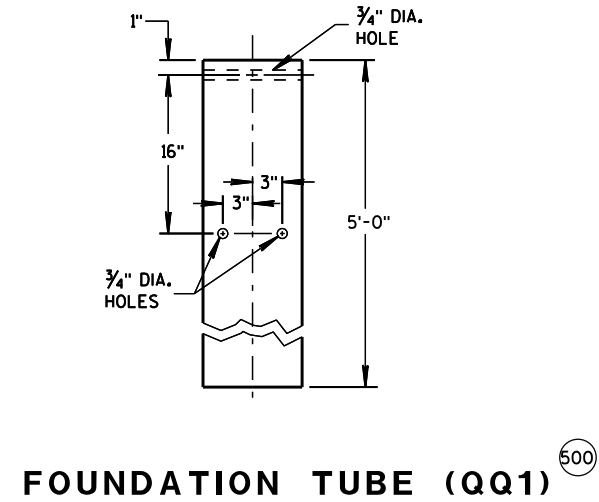
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



**RECTANGULAR  
PLATE WASHER (CC1)**

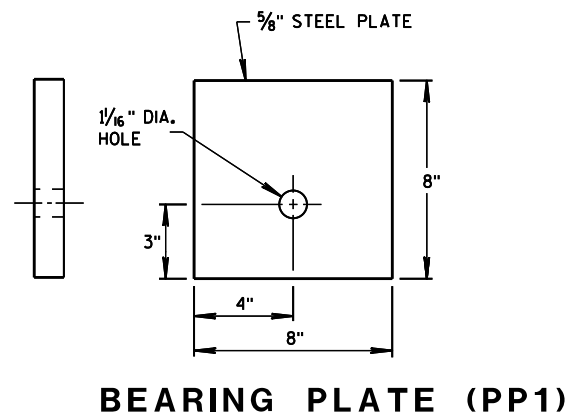


**WOOD BREAKAWAY POST  
(FF1)**

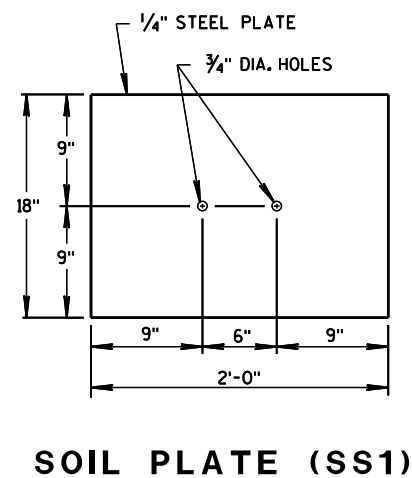


**FOUNDATION TUBE (QQ1)**

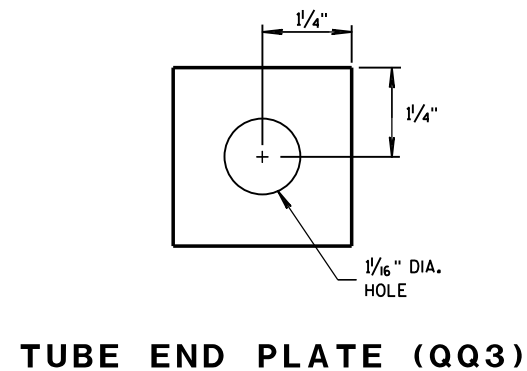
- (500) SEE DETAIL "D" FOR LOCATION AND ATTACHING SSL.
- (501) FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.
- (502) LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.
- (503) MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE (109).



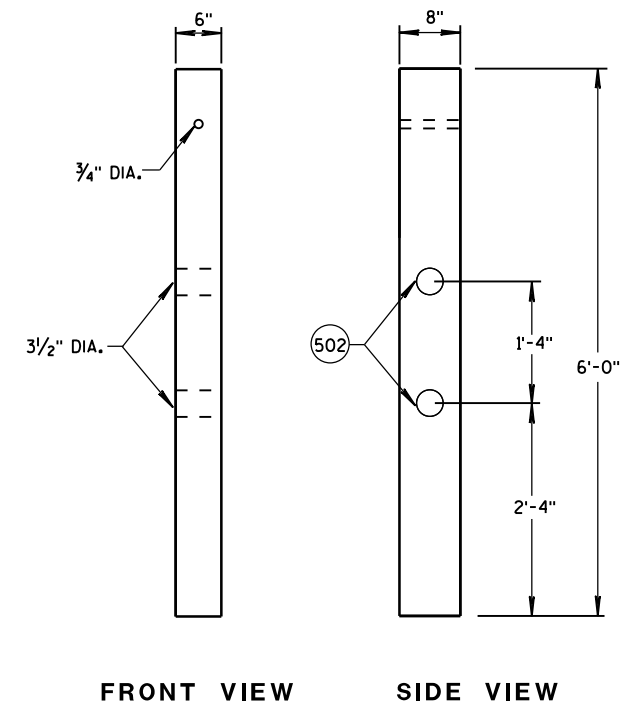
**BEARING PLATE (PP1)**



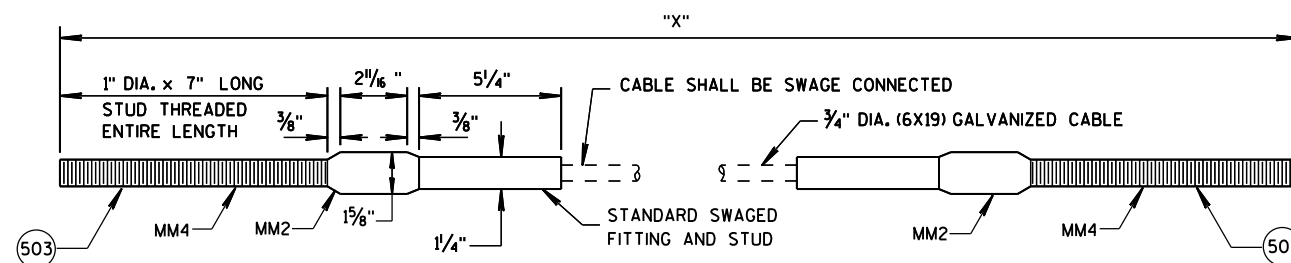
**SOIL PLATE (SS1)**



**TUBE END PLATE (QQ3)**



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



**CABLE ASSEMBLY (MM1a, MM1b)**

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

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

| PART | DESCRIPTION                                   | MATERIALS SPECIFICATIONS                                                                                                                             | NOTES                                       |
|------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| F2   | SPLICE BOLT - NUT                             | ASTM A563 GRADE A                                                                                                                                    | 5/8" DIA.<br><br>SEE SDD 14B42 FOR GEOMETRY |
|      |                                               | AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD                                                                                                           |                                             |
|      |                                               | GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1   |                                             |
|      |                                               | OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563                                                                                   |                                             |
| G1   | LAG SCREW                                     | ASTM A308 GRADE A ASTM A153 CLASS D                                                                                                                  | 3/8" DIA. 3" LONG                           |
|      |                                               | UNC                                                                                                                                                  |                                             |
| H1   | DELINEATOR - BEAM GUARD                       |                                                                                                                                                      | SEE SDD 14B42 FOR MORE INFORMATION          |
| H2   | DELINEATION - SHEETING                        | YELLOW OR WHITE                                                                                                                                      |                                             |
|      |                                               | WISDOT SPEC 637 TYPE SH                                                                                                                              |                                             |
| J1   | FOUNDATION BACKFILL                           | APPROVED PRODUCT LIST<br>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>SEE SDD 14B42 FOR GEOMETRY     |
|      |                                               | AASHTO M180                                                                                                                                          |                                             |
|      |                                               | GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1 |                                             |
| GG2  | POST BOLT - WASHER                            | UNC                                                                                                                                                  | 3/8" DIA.                                   |
|      |                                               | ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)                                                    |                                             |
|      |                                               | GALV. AASHTO M111 / ASTM A123 OR 5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329                                             |                                             |

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

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

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

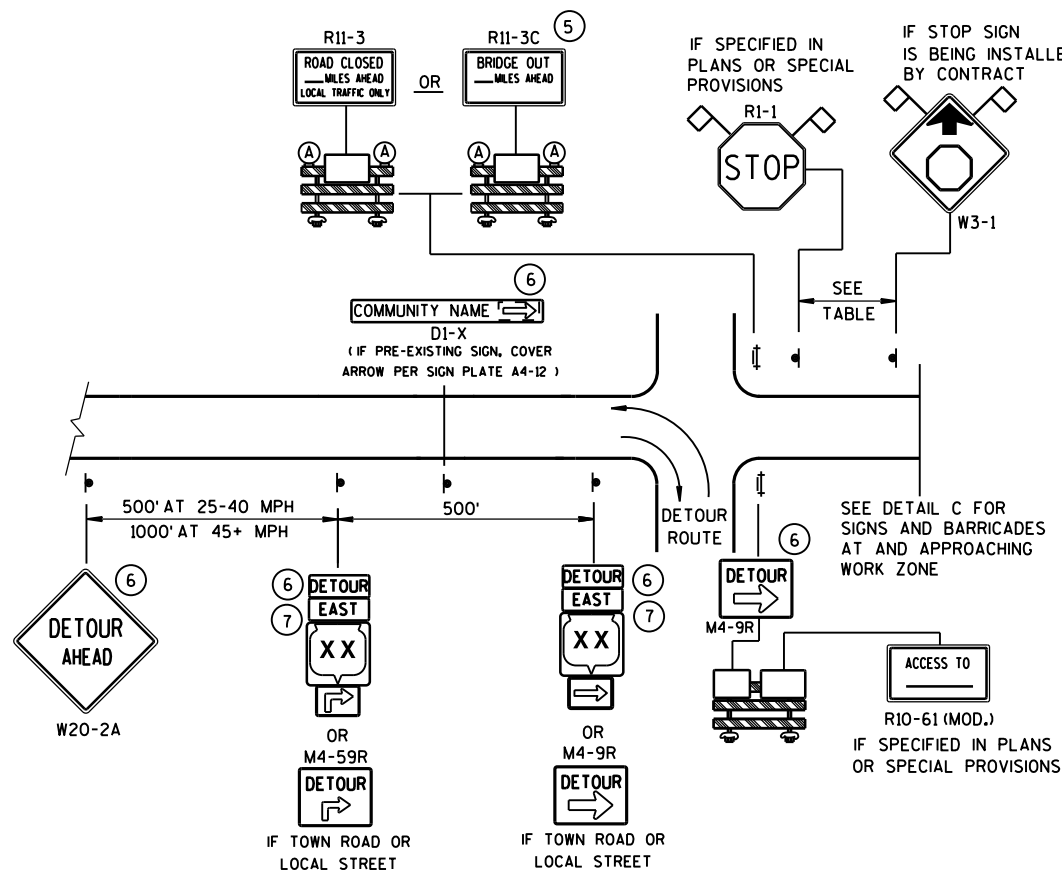
SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

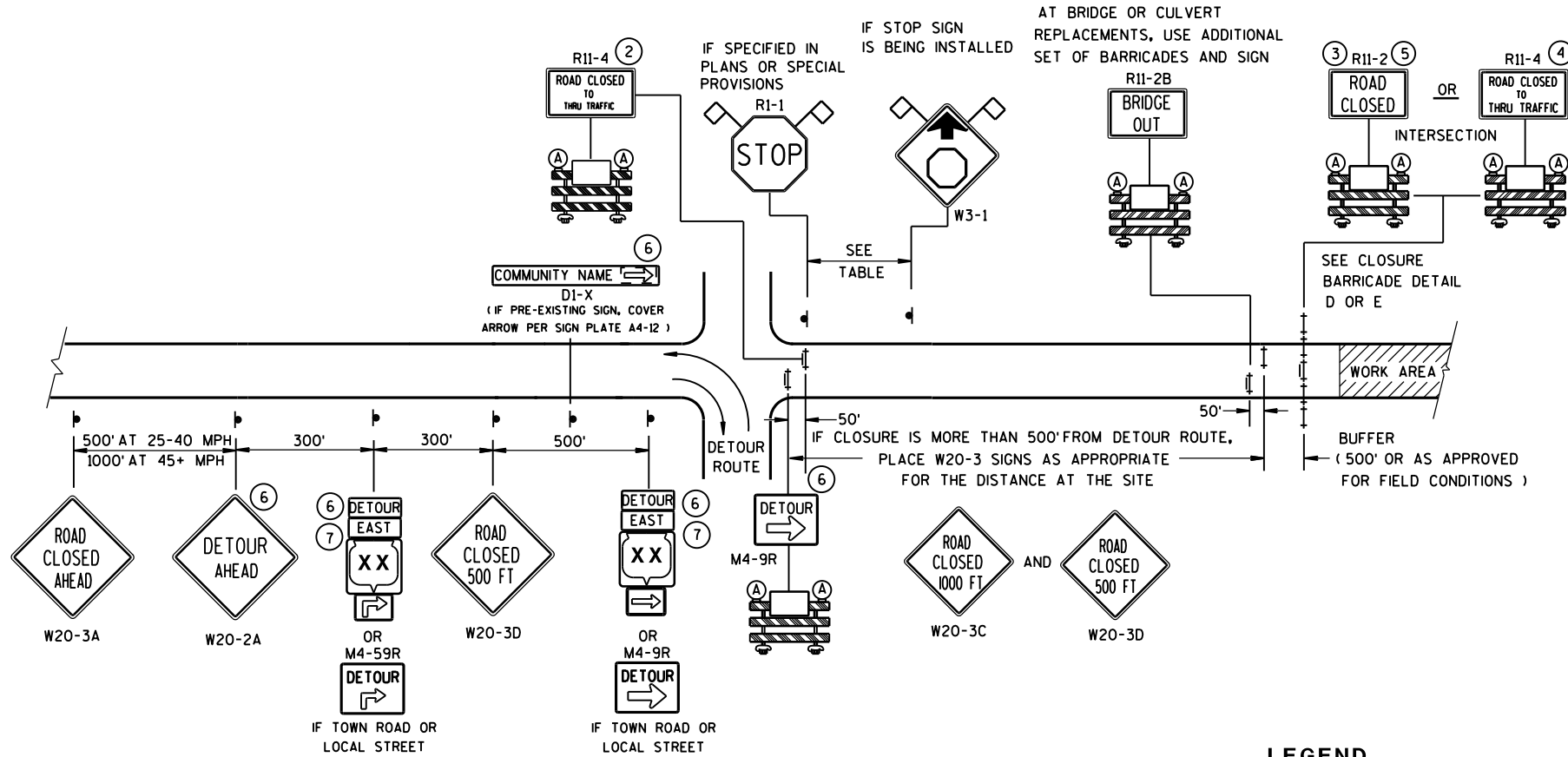
BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

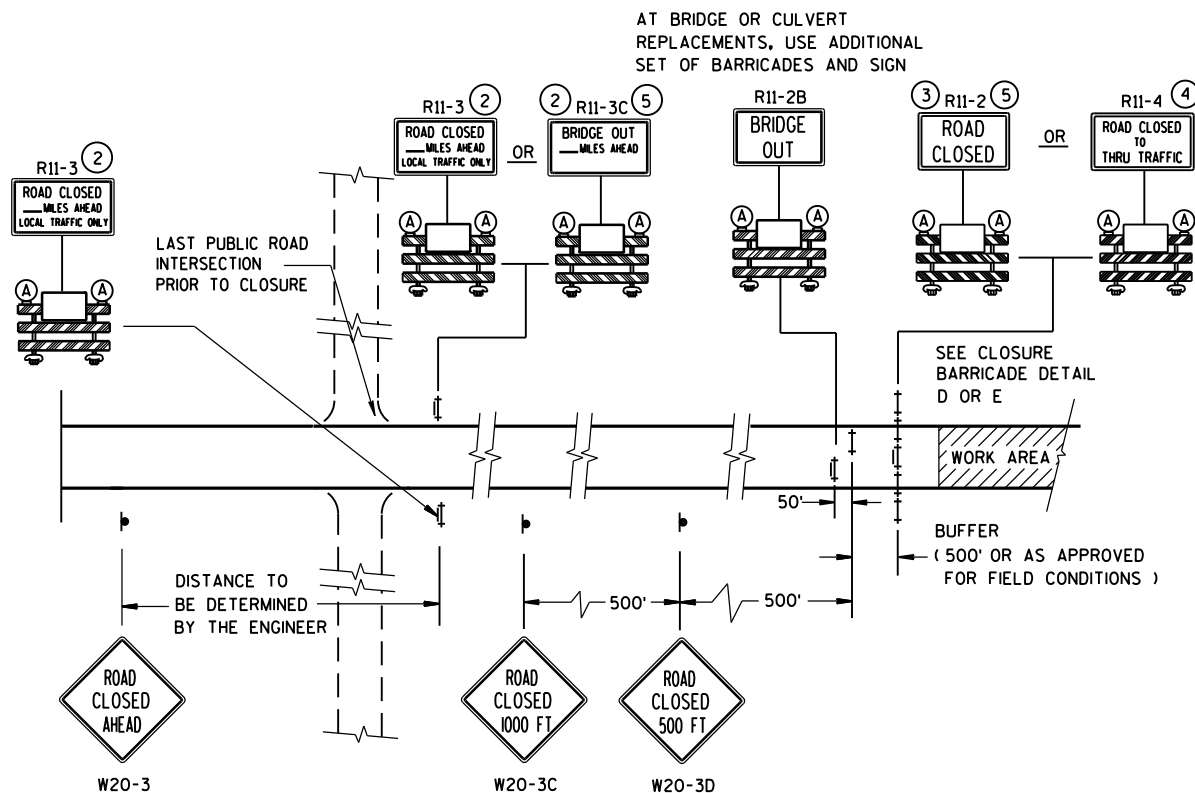
|                                                                 |                                                                               |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------|
| SHORT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



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



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



DETAIL C  
MAINLINE CLOSURE, NO POSTED DETOUR

LEGEND

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

WORK AREA

DETOUR EAST  
M4-8  
M3-X  
XX OR XX OR XX  
M1-4 M1-5A M1-6

OR  
M05-1 M06-1

FLAGS, 16" X 16" MIN., (ORANGE)

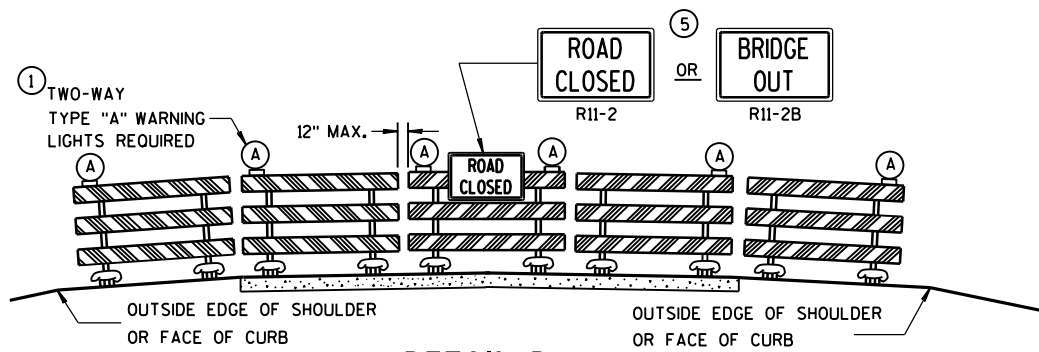
| SPEED LIMIT (MPH) | "STOP AHEAD" ADVANCE WARNING DISTANCE (FT) |
|-------------------|--------------------------------------------|
| 25                | 200                                        |
| 30                | 200                                        |
| 35                | 350       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

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

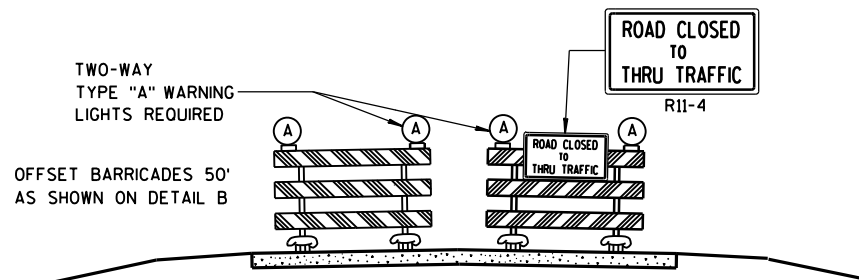
BARRICADES AND SIGNS  
FOR  
MAINLINE CLOSURES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

Sept. 2015 /S/ Peter Amokobe Atepe  
DATE STATEWIDE WORK ZONE TRAFFIC  
FHWA SAFETY ENGINEER



DETAIL D  
ROAD CLOSURE BARRICADE DETAIL  
APPROACH VIEW



DETAIL E  
LANE CLOSURE BARRICADE DETAIL  
APPROACH VIEW

SEE SDD 15C2-SHEET "a" FOR LEGEND

## GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

R11-2 SHALL BE 48" X 30".

R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".

M4-9 SHALL BE 30" X 24".

M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)

M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)

M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)

M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)

D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

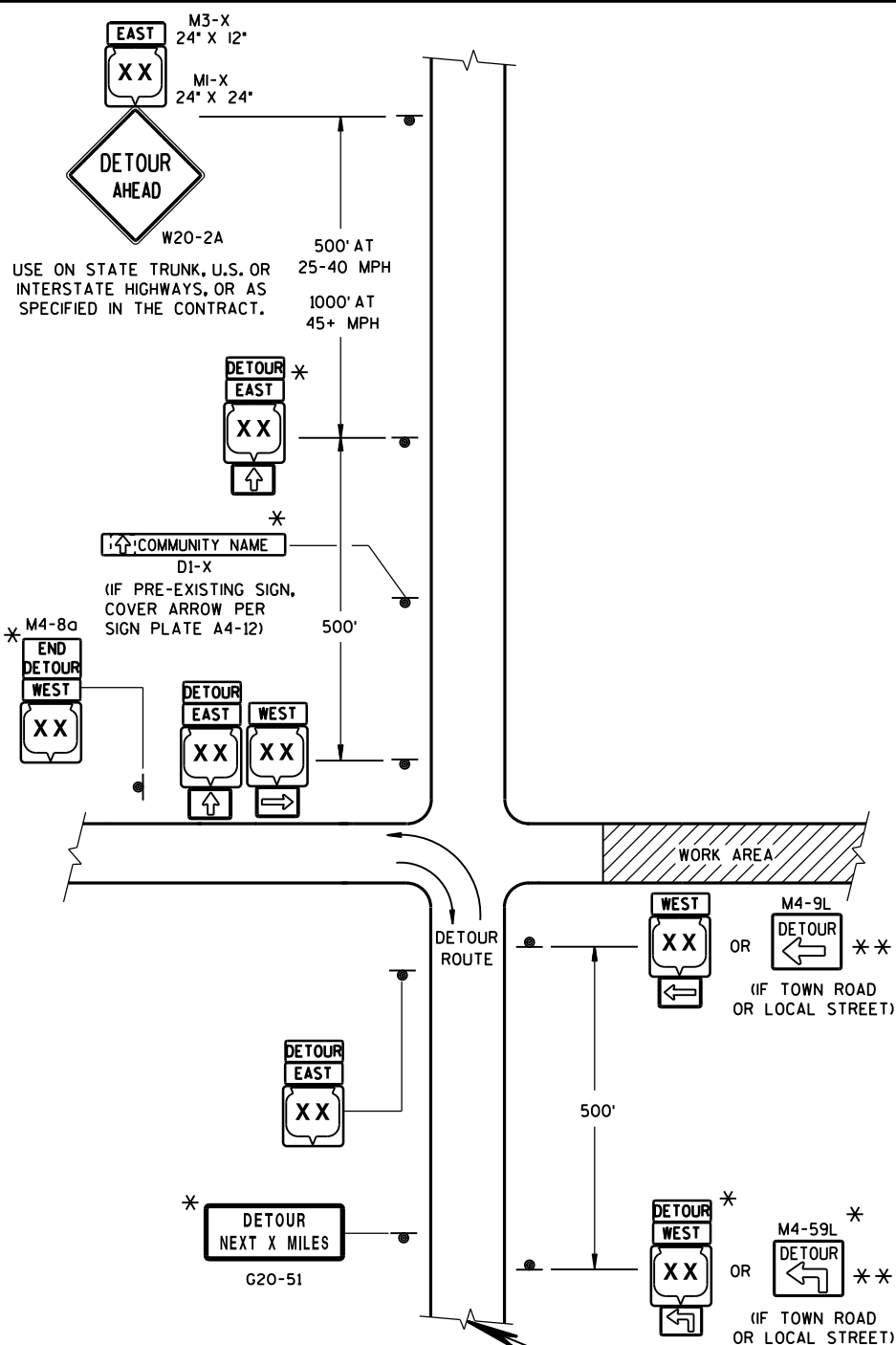
R1-1 SHALL BE 36" X 36".

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

## BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

Sept. 2015 /S/ Peter Amokobe Atepe  
DATE STATEWIDE WORK ZONE TRAFFIC  
FHWA SAFETY ENGINEER



**LEGEND**

● SIGN ON PERMANENT SUPPORT

▨ WORK AREA

DETOUR EAST M4-8 M3-X

M1-4 OR COUNTY M1-5A OR M1-6

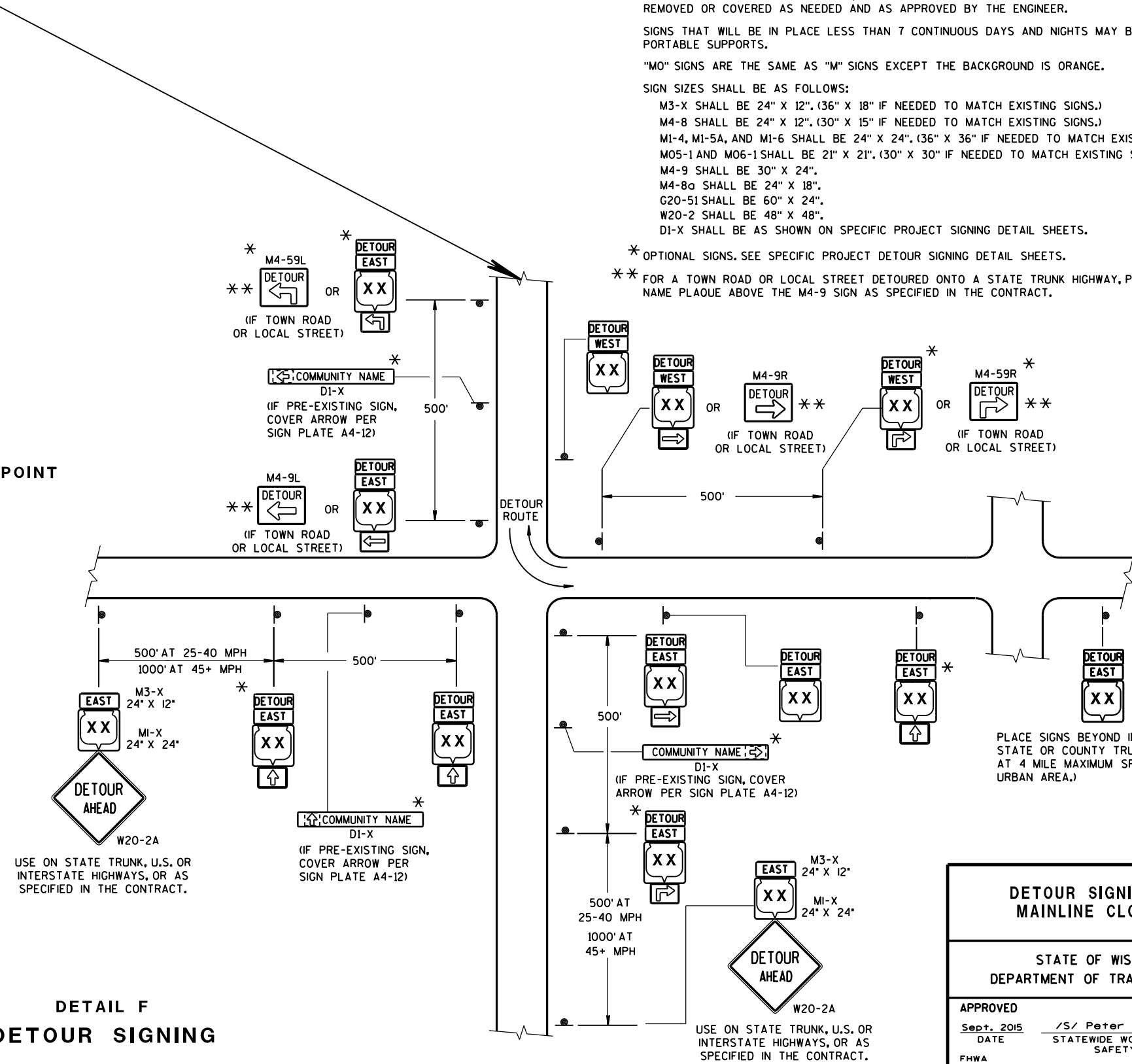
M05-1 OR M06-1 OR M06-1

SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS AND DETAIL A OR B ON SDD 15C2-SHEET "a"

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

MATCH POINT

DETAIL F  
DETOUR SIGNING



**GENERAL NOTES**

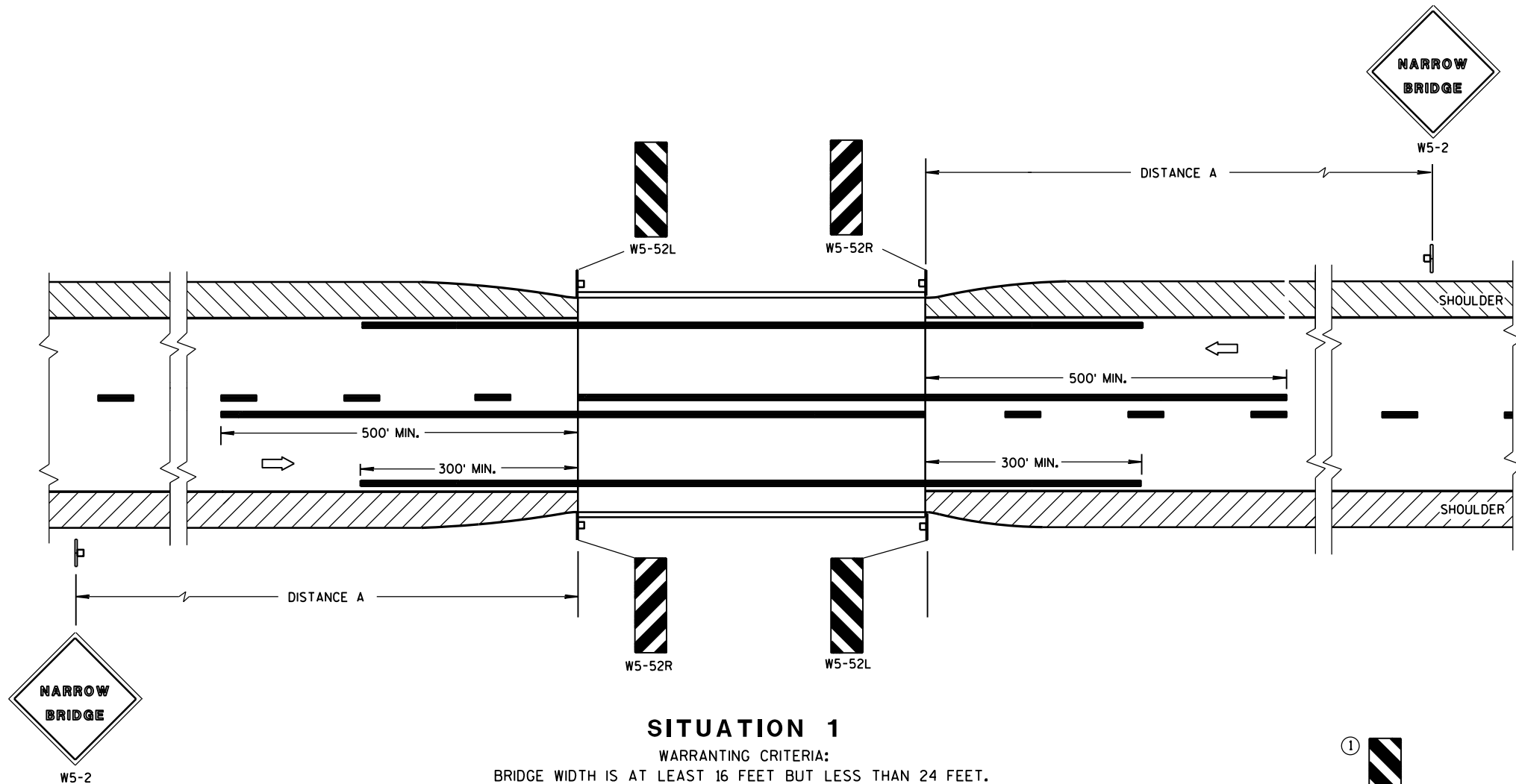
- THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS, MODIFY EXISTING SIGNS WHERE POSSIBLE.
- THE SPACING BETWEEN TRAFFIC CONTROL AND DETOUR SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.
- ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE", SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.
- SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.
- "MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- SIGN SIZES SHALL BE AS FOLLOWS:
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
  - M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
  - M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
  - M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
  - M4-9 SHALL BE 30" X 24".
  - M4-8a SHALL BE 24" X 18".
  - G20-51 SHALL BE 60" X 24".
  - W20-2 SHALL BE 48" X 48".
  - D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- \* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.
- \*\* FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.

**DETOUR SIGNING FOR MAINLINE CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE Sept. 2015 /S/ Peter Amakobe Atepe  
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER

FHWA



### SITUATION 1

WARRANTING CRITERIA:  
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET.

DISTANCE TABLE

| POSTED OR 85th PERCENTILE SPEED | DISTANCE "A" |
|---------------------------------|--------------|
| 25                              | 150'         |
| 30                              | 200'         |
| 35                              | 250'         |
| 40                              | 300'         |
| 45                              | 400'         |
| 50                              | 550'         |
| 55                              | 750'         |

### GENERAL NOTES

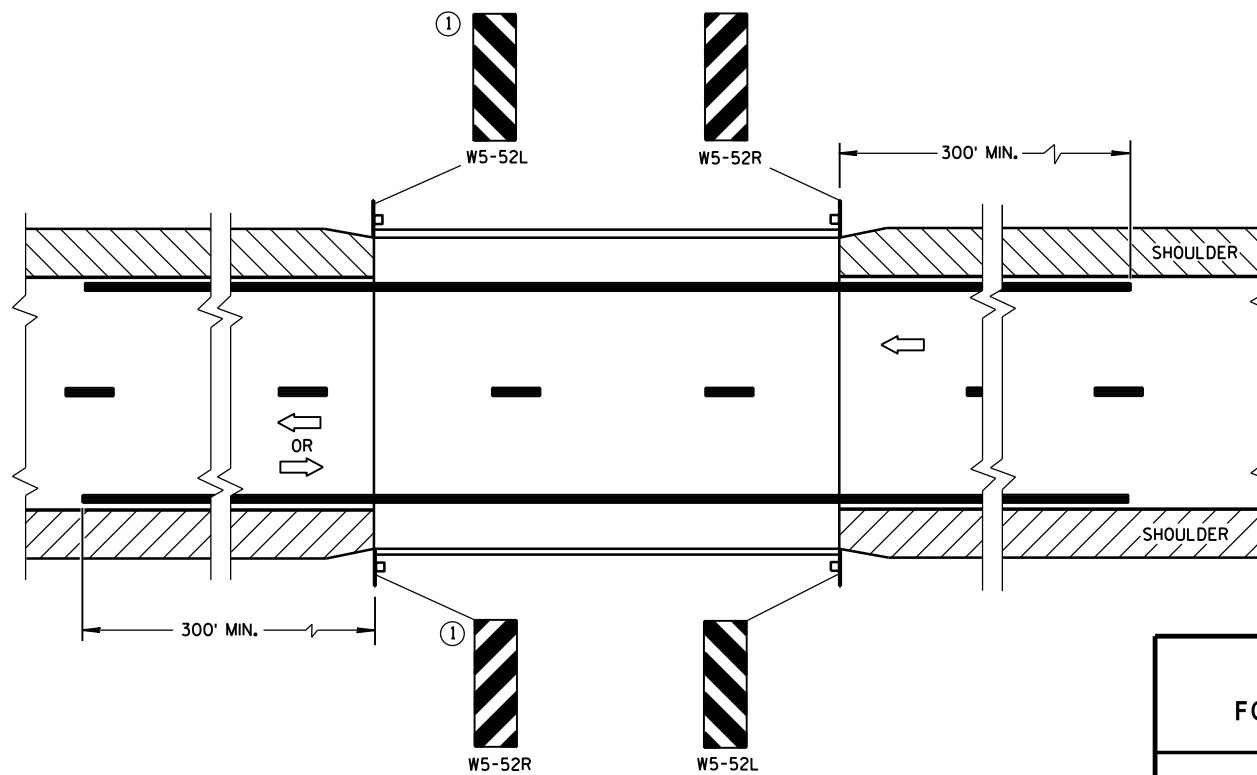
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.

PLACE THE EDGE OF THE W5-52 SIGN IN LINE WITH FACE OF CURB OR PARAPET.

① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



### SITUATION 2

WARRANTING CRITERIA:  
1. BRIDGE WIDTH IS AT LEAST 24 FEET AND  
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

### SIGNING & MARKING FOR TWO LANE BRIDGES

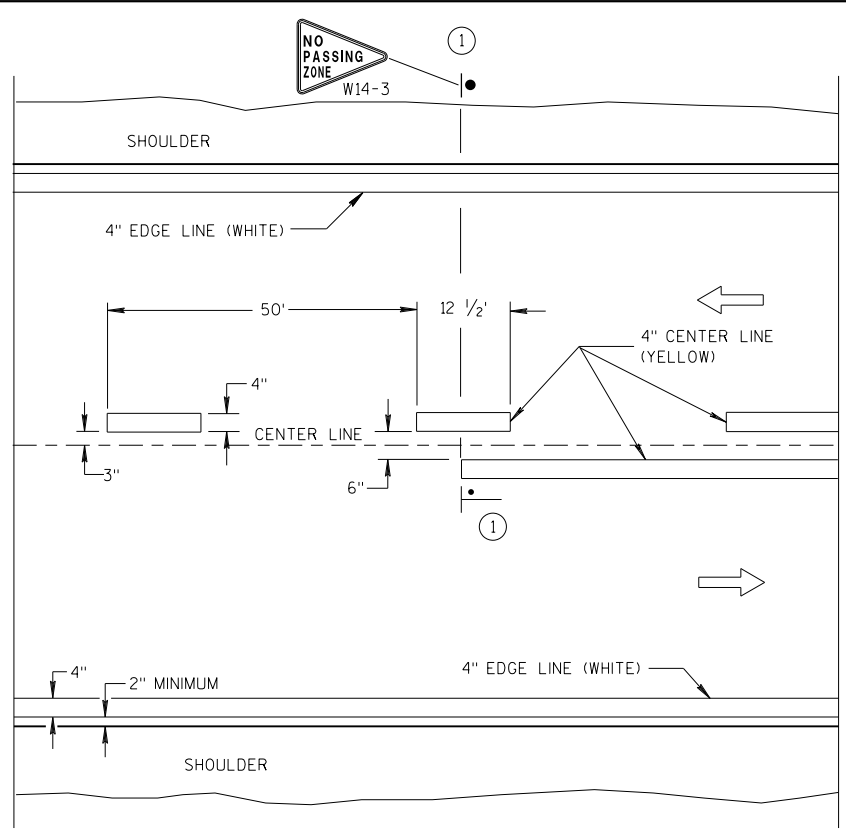
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

#### APPROVED

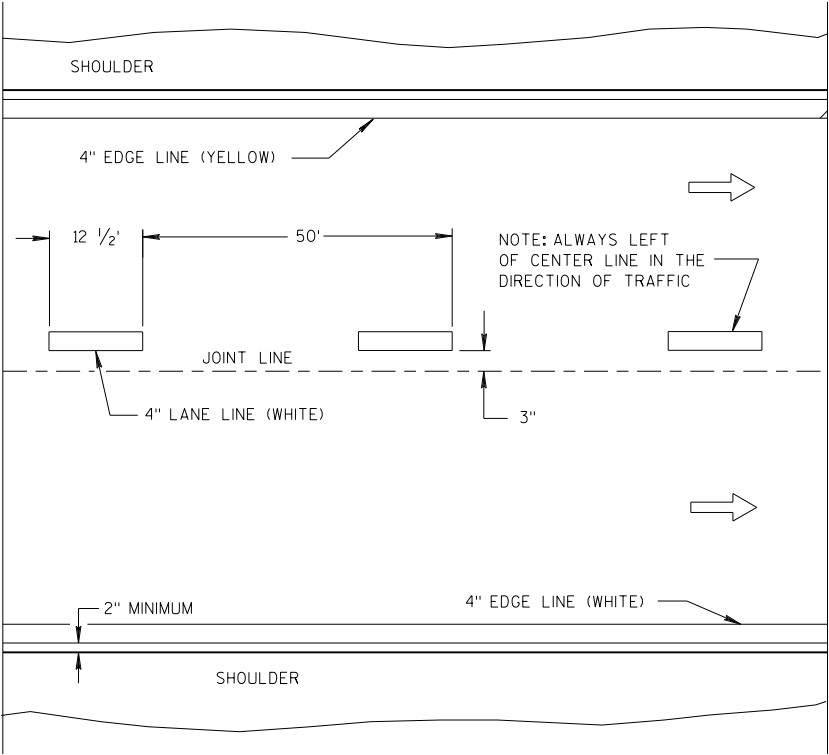
June 2017  
DATE

/S/ Matthew R. Rauch  
STATE SIGNING AND MARKING ENGINEER

FHWA

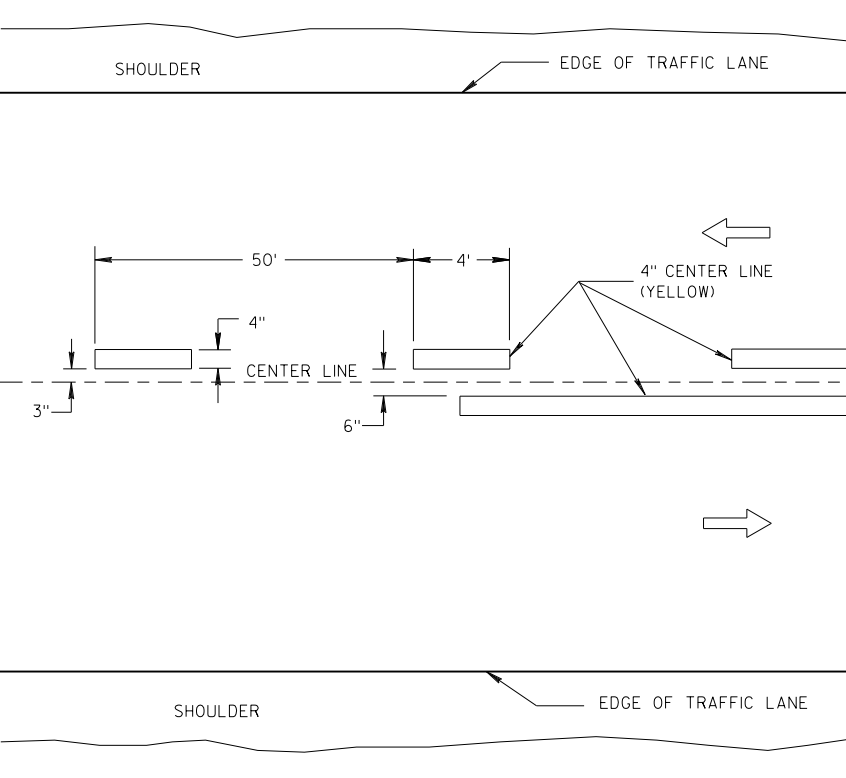


TWO WAY TRAFFIC

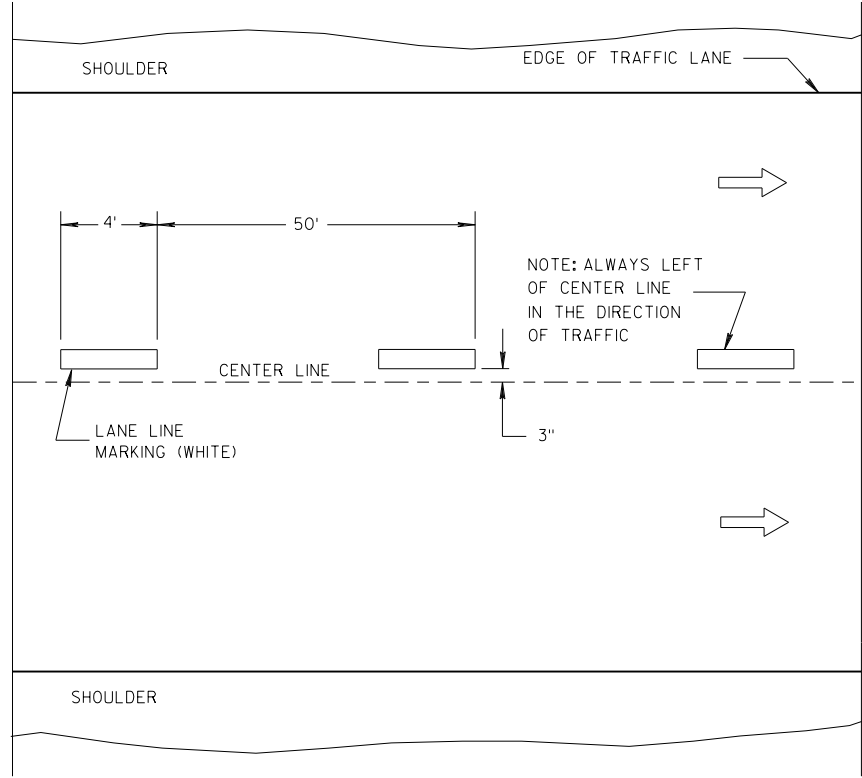


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

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

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

NOTE

ARROW SYMBOL (➡) SHOWS DIRECTION OF TRAVEL

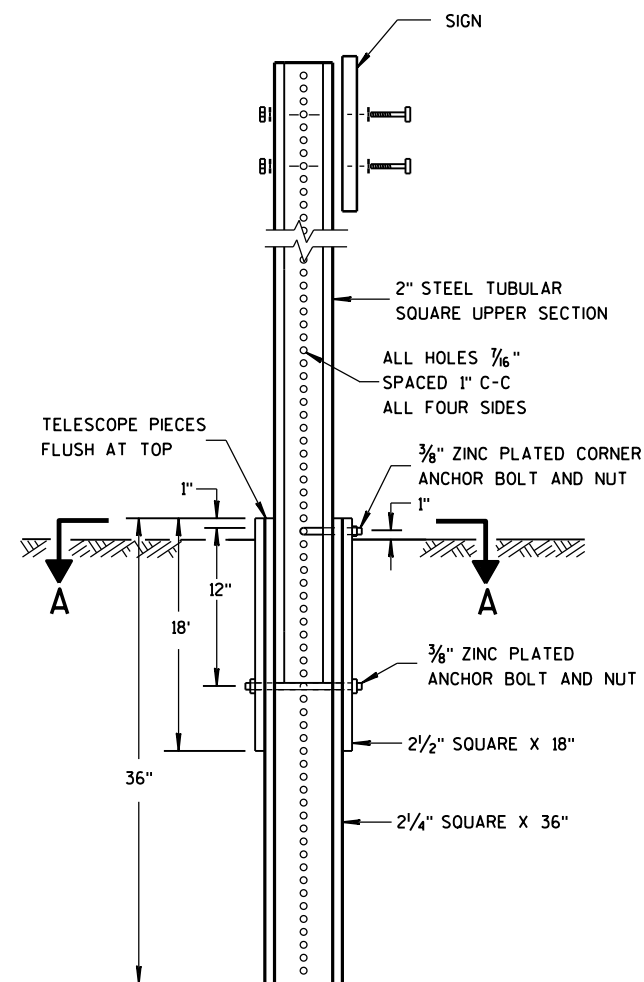
LEGEND

- "T" MARKING
- POST MOUNTED SIGN

LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

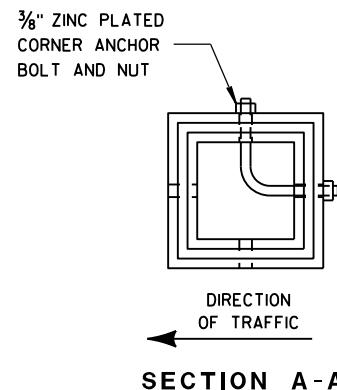


DETAIL OF TUBULAR  
STEEL SIGN POST

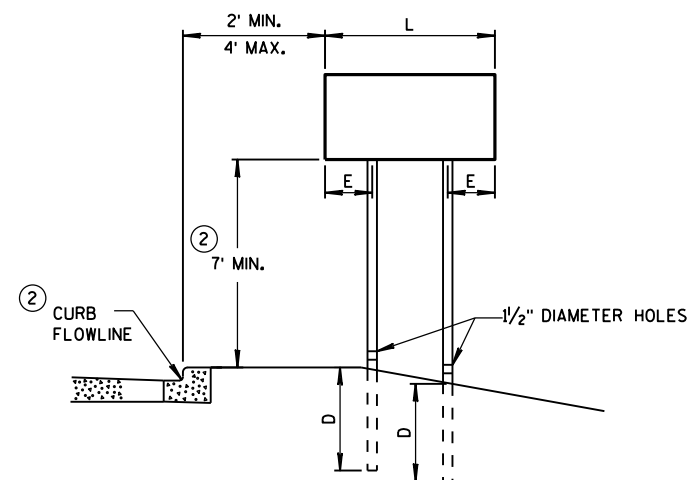
TUBULAR STEEL POSTS

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

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



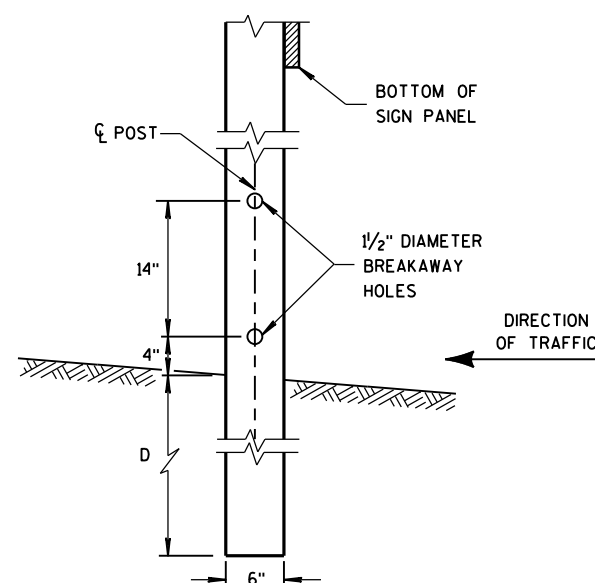
SECTION A-A



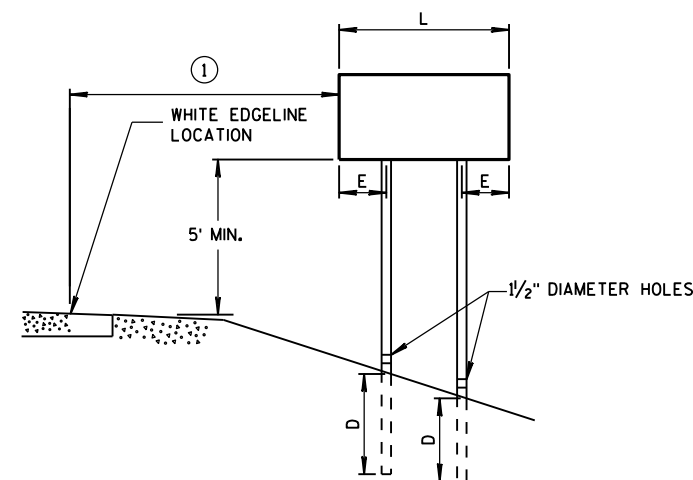
URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

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



4 "x6 " WOOD POST  
MODIFICATION



RURAL AREA

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

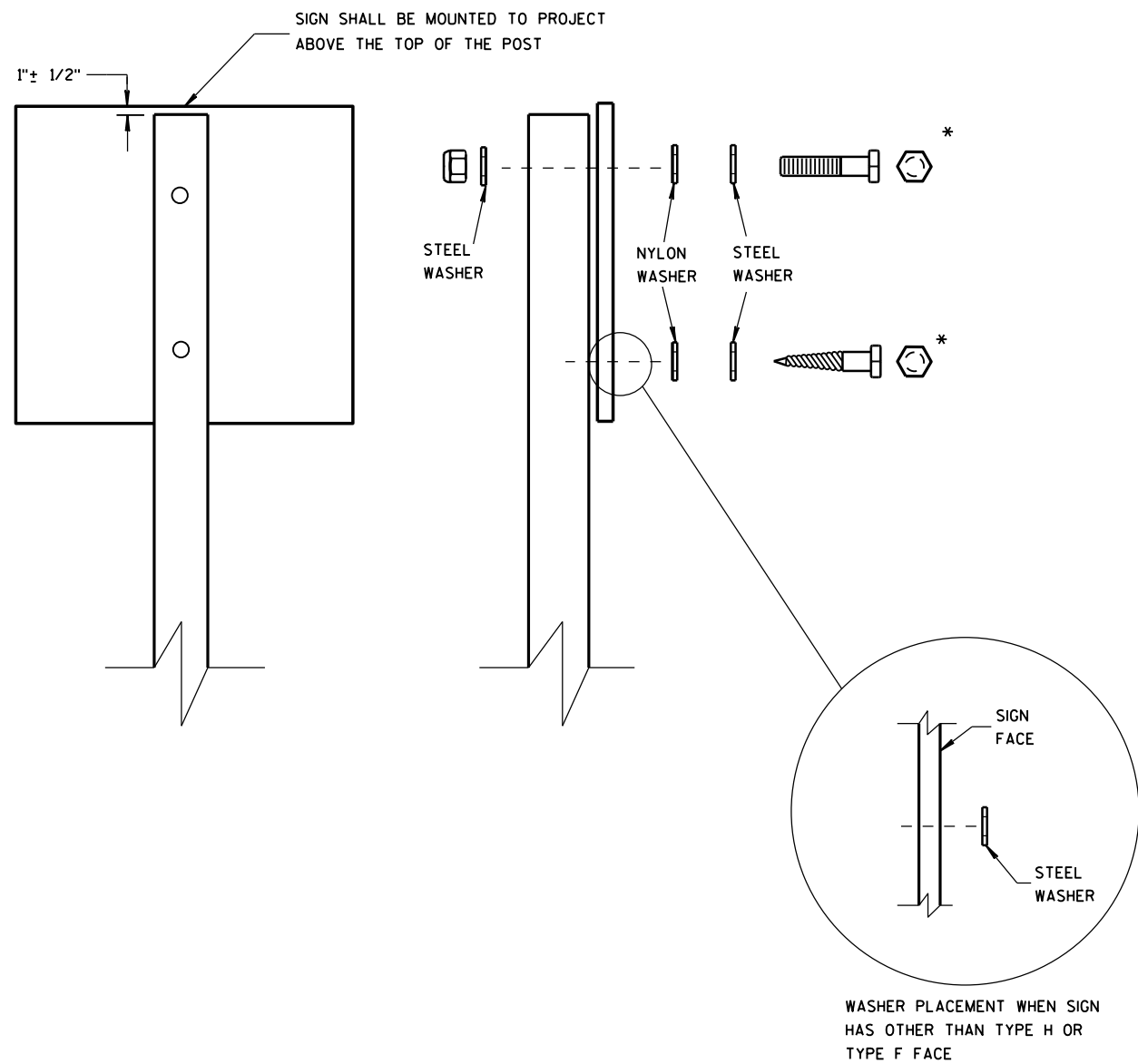
SEE NOTE ③

GENERAL NOTES

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

TEMPORARY TRAFFIC CONTROL  
SIGN MOUNTING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



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

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

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

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

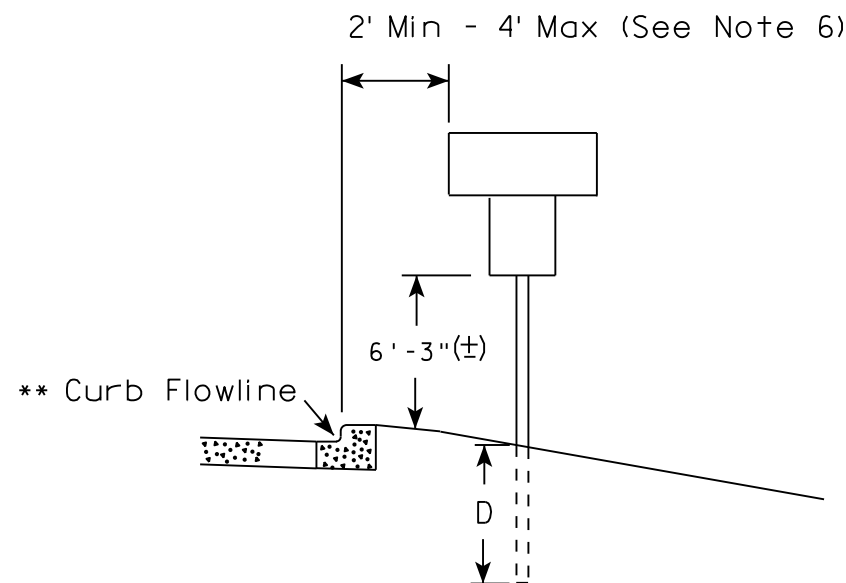
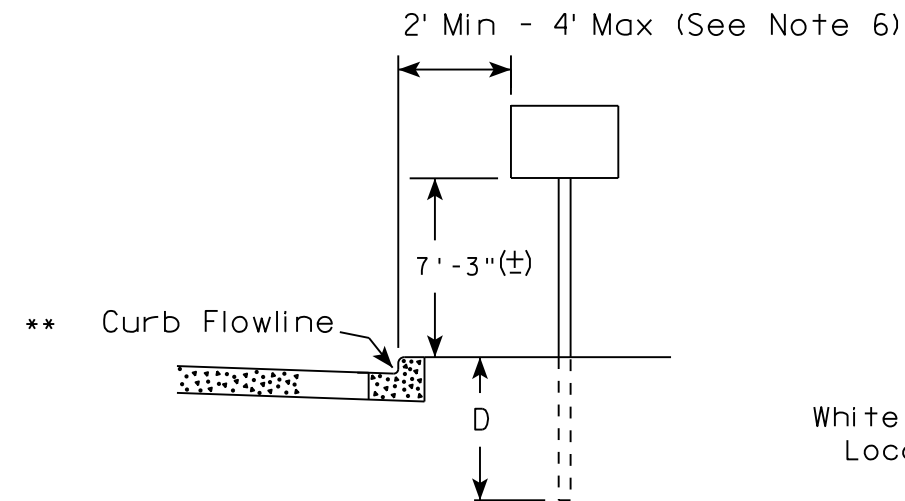
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS
  - RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

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

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

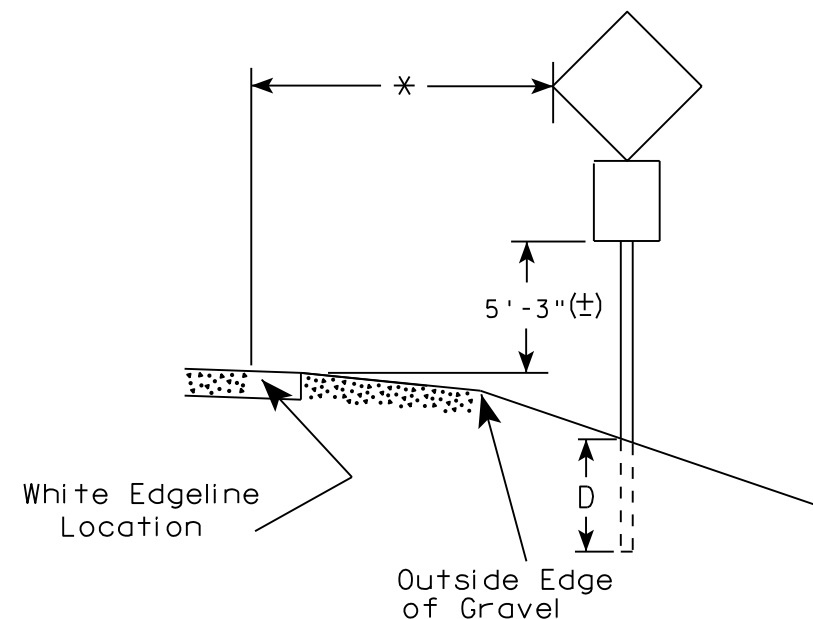
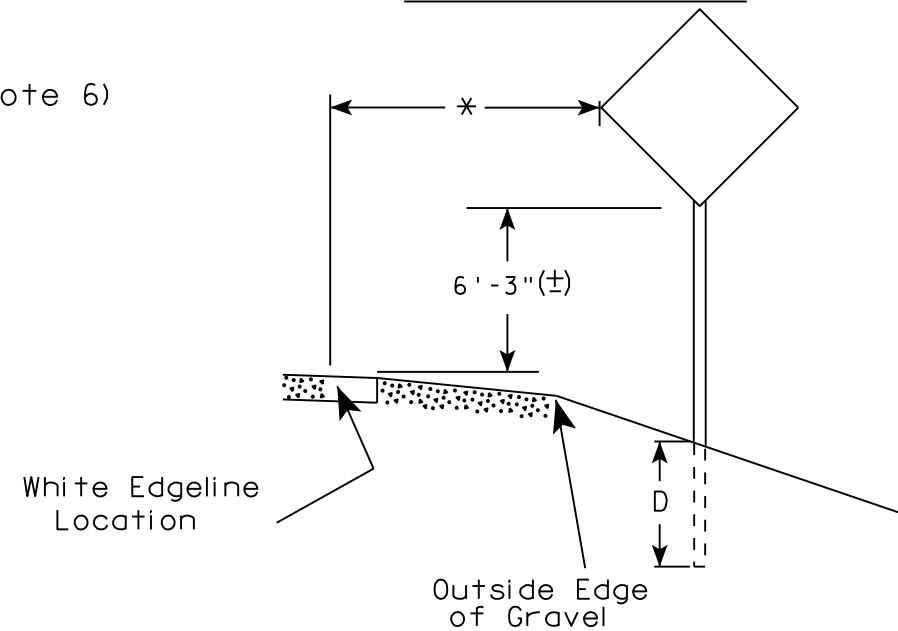
|                                                    |                                          |
|----------------------------------------------------|------------------------------------------|
| ATTACHMENT OF SIGNS<br>TO POSTS                    |                                          |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                                          |
| APPROVED<br>June 2017<br>DATE                      | /S/ Andrew Heldtke<br>WORK ZONE ENGINEER |
| FHWA                                               |                                          |

## URBAN AREA



✱✱ 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.

## RURAL AREA (See Note 2)



\* 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.

POST EMBEDMENT DEPTH

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

## GENERAL NOTES

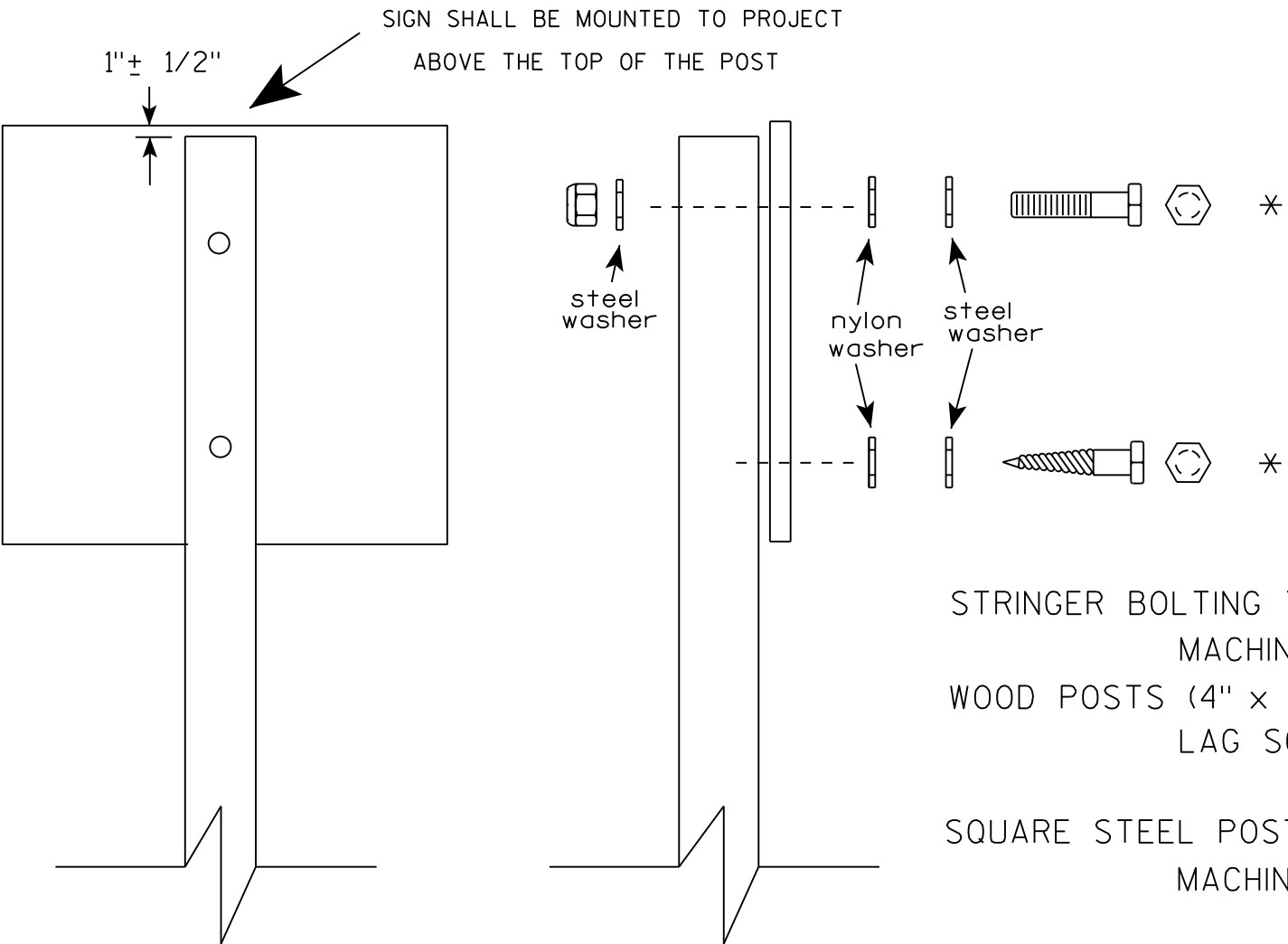
1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. J-Assemblies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

TYPICAL INSTALLATION  
OF PERMANENT TYPE II  
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

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



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

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

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

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

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

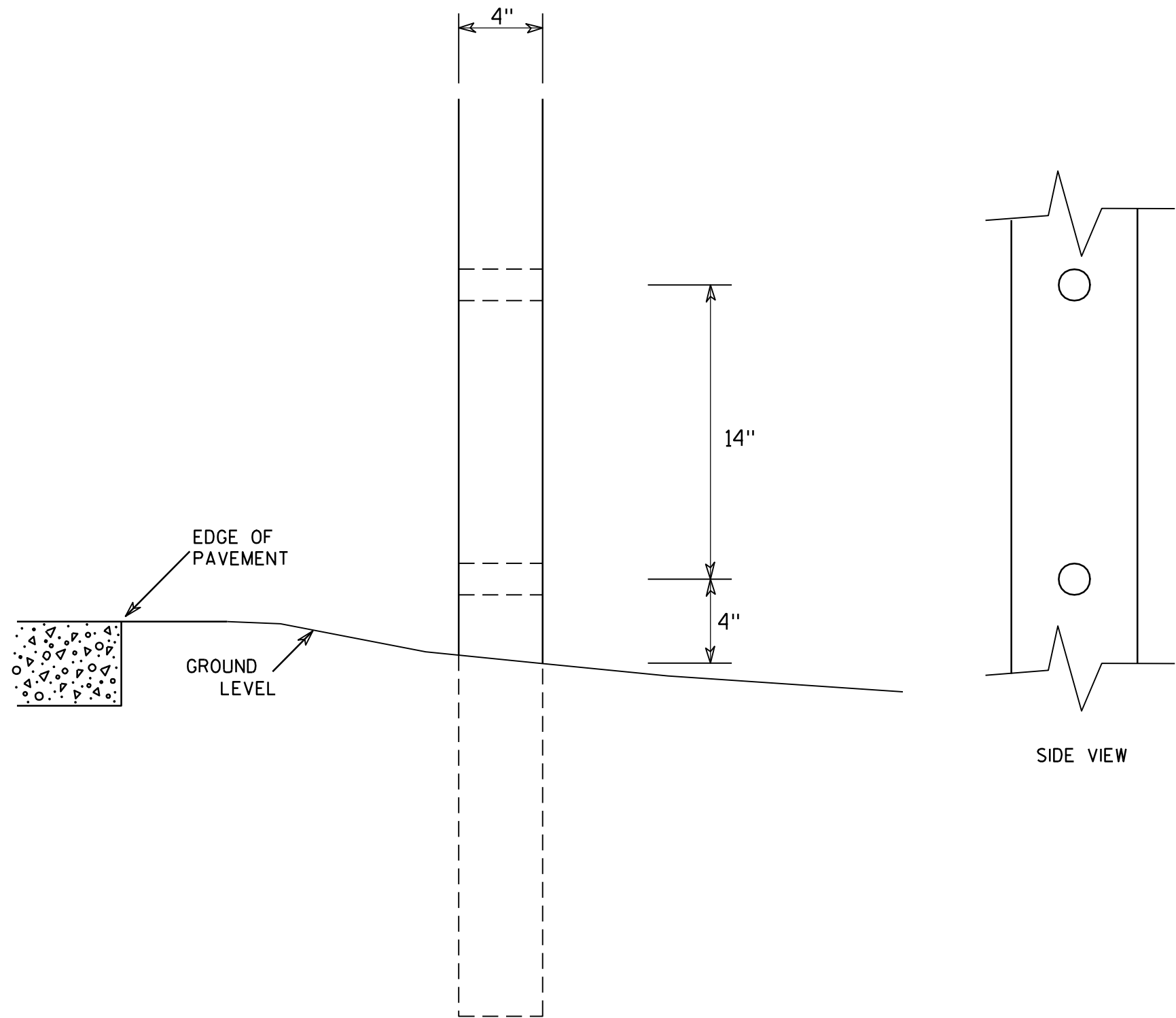
ATTACHMENT OF SIGNS  
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
For State Traffic Engineer

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

7

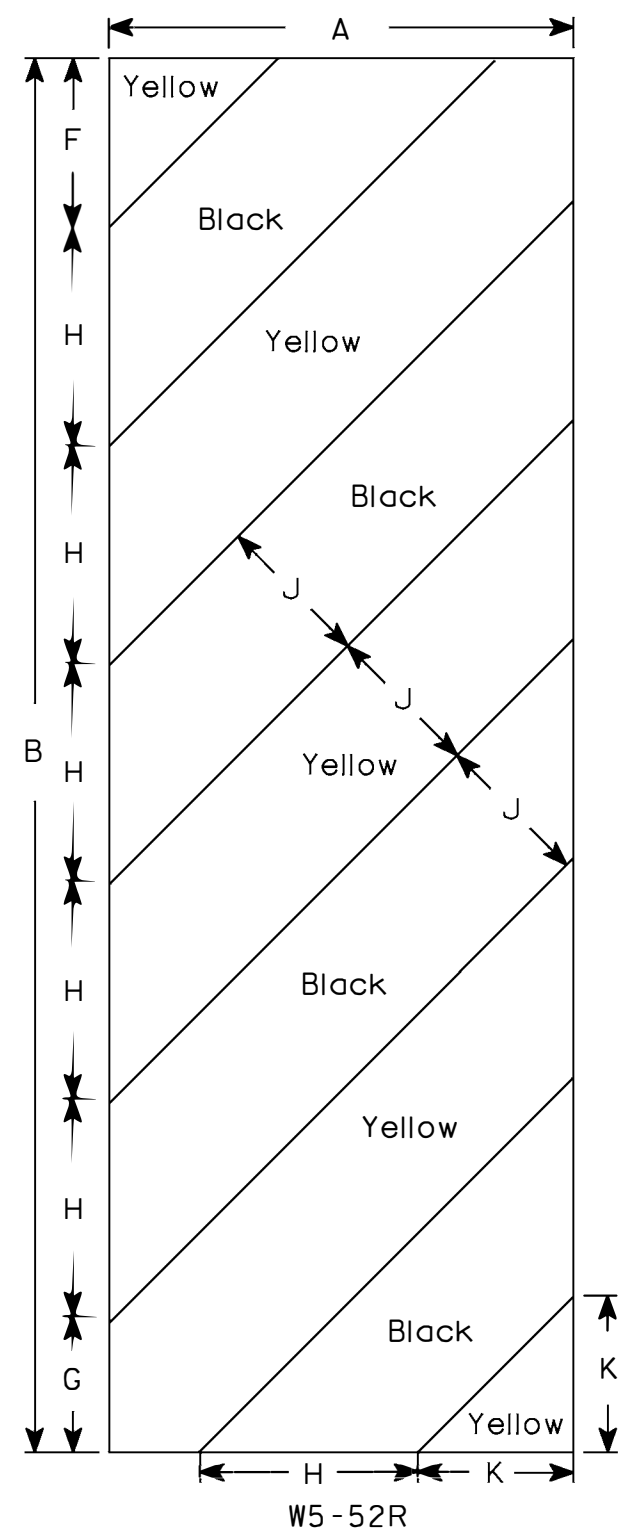
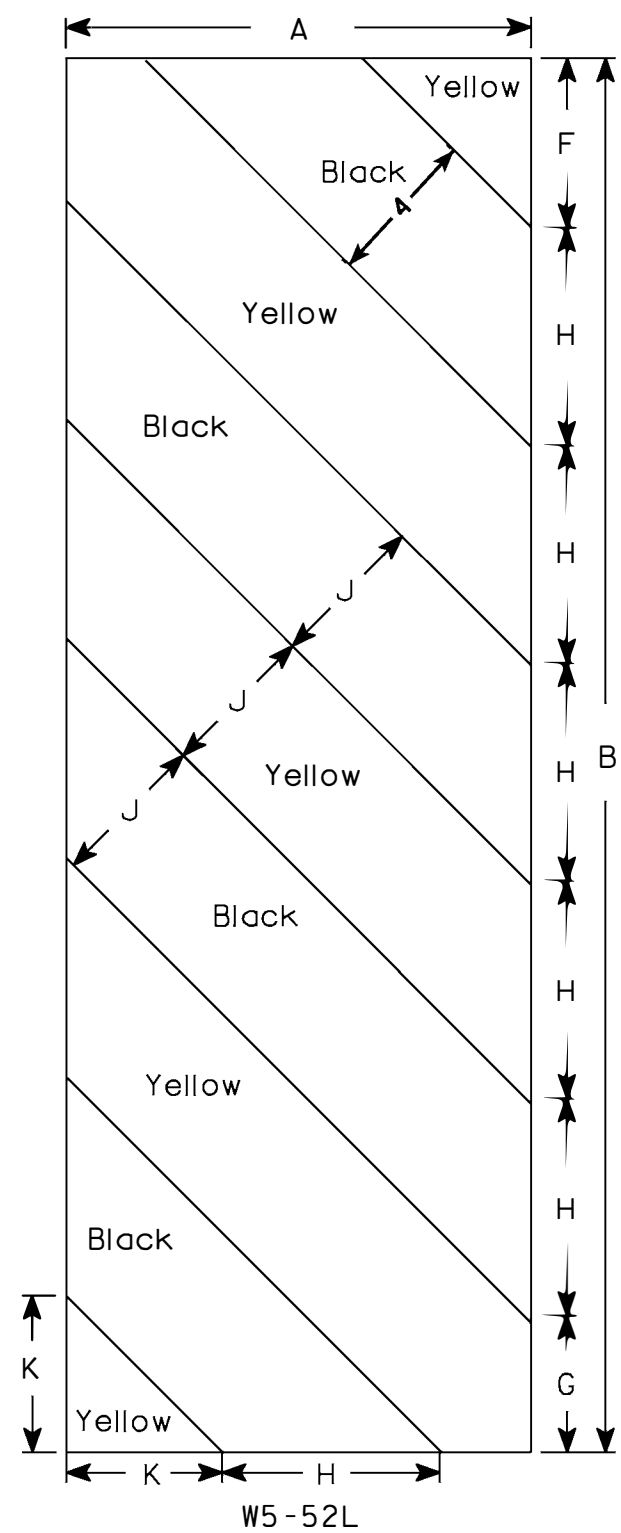


GENERAL NOTES

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



NOTES

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

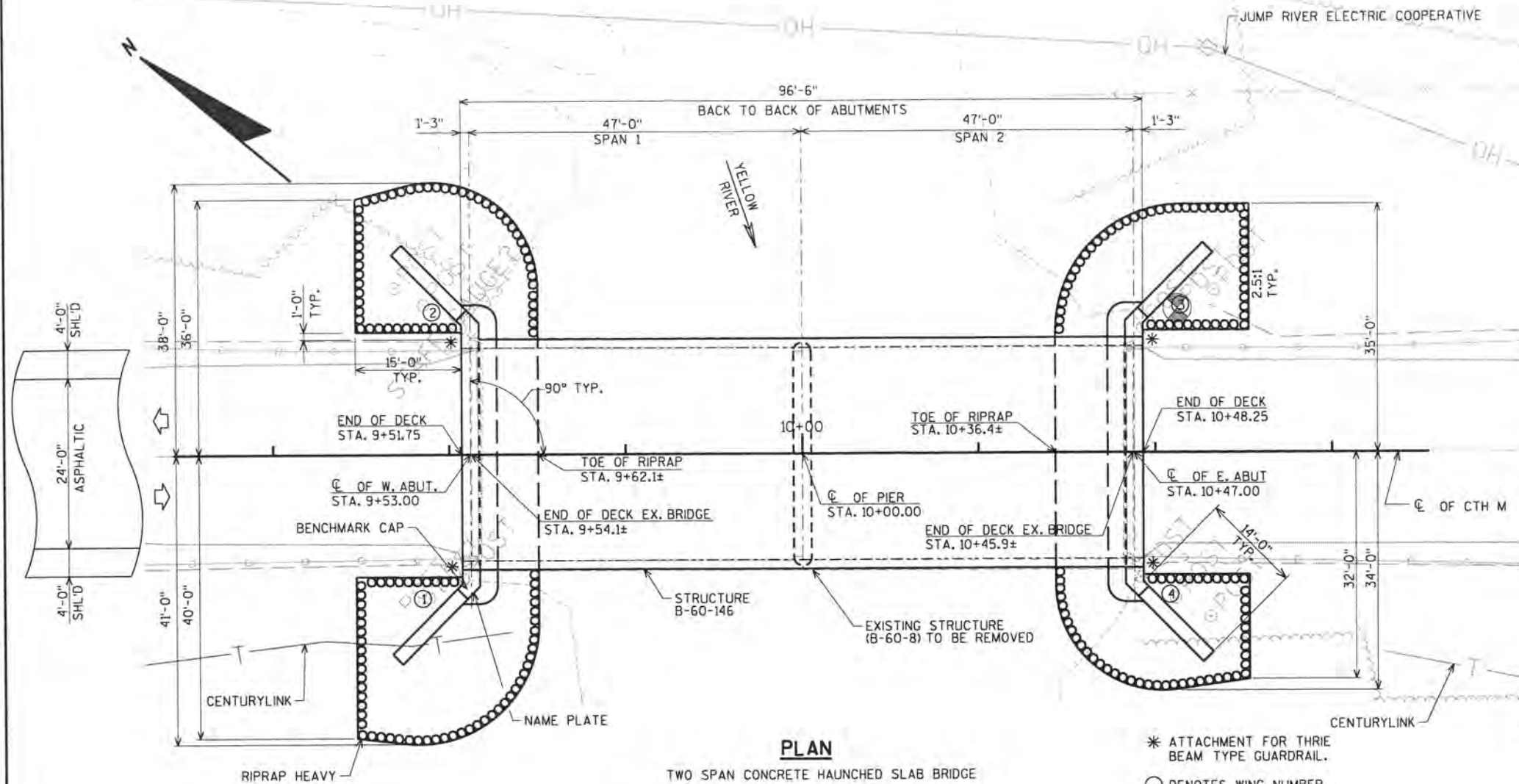
| SIZE | A  | B  | C | D | E | F     | G     | H     | I   | J | K     | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area<br>sq. ft. |
|------|----|----|---|---|---|-------|-------|-------|-----|---|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|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

STANDARD SIGN  
W5-52L & W5-52R

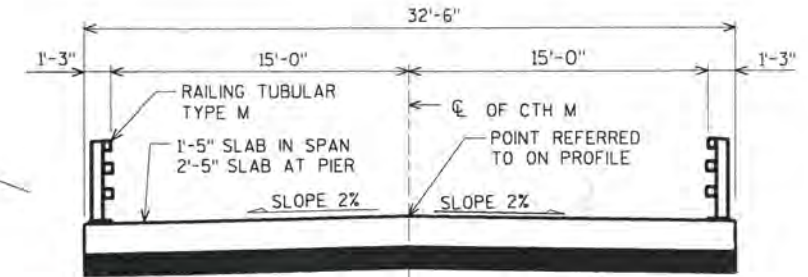
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

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



**PLAN**  
TWO SPAN CONCRETE HAUNCHED SLAB BRIDGE



**CROSS SECTION THRU ROADWAY**

**DESIGN DATA**

**LIVE LOAD:**

DESIGN LOADING: HL-93  
INVENTORY RATING FACTOR: 1.11  
OPERATING RATING FACTOR: 1.44  
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 #/S.F.

**MATERIAL PROPERTIES:**

CONCRETE MASONRY { SUPERSTRUCTURE  $f'_c = 4,000$  p.s.i.  
ALL OTHER  $f'_c = 3,500$  p.s.i.  
HIGH STRENGTH BAR STEEL REINFORCEMENT (GRADE 60)  $f_y = 60,000$  p.s.i.

**HYDRAULIC DATA:**

**100 YEAR FREQUENCY**

$Q_{100} = 4,800$  c.f.s.  
VEL. = 6.9 f.p.s.  
HW<sub>100</sub> = EL. 1266.8  
WATERWAY AREA = 698 sq. ft.  
DRAINAGE AREA = 87.5 sq. mi.  
SCOUR CRITICAL CODE = 5  
DATUM = NAVD88 (2012)

**2 YEAR FREQUENCY**

$Q_2 = 1,945$  c.f.s.  
VEL. = 4.3 f.p.s.  
HW<sub>2</sub> = EL. 1263.6

**FOUNDATION DATA:**

WEST ABUTMENT TO BE SUPPORTED ON  $10\frac{3}{4}$ "  $\phi$  X 0.365" CIP CONCRETE (WITH PILE POINTS) WITH A REQUIRED DRIVING RESISTANCE OF 130 TONS  $\pm$  PER PILE, ESTIMATED LENGTH OF 55'-0".

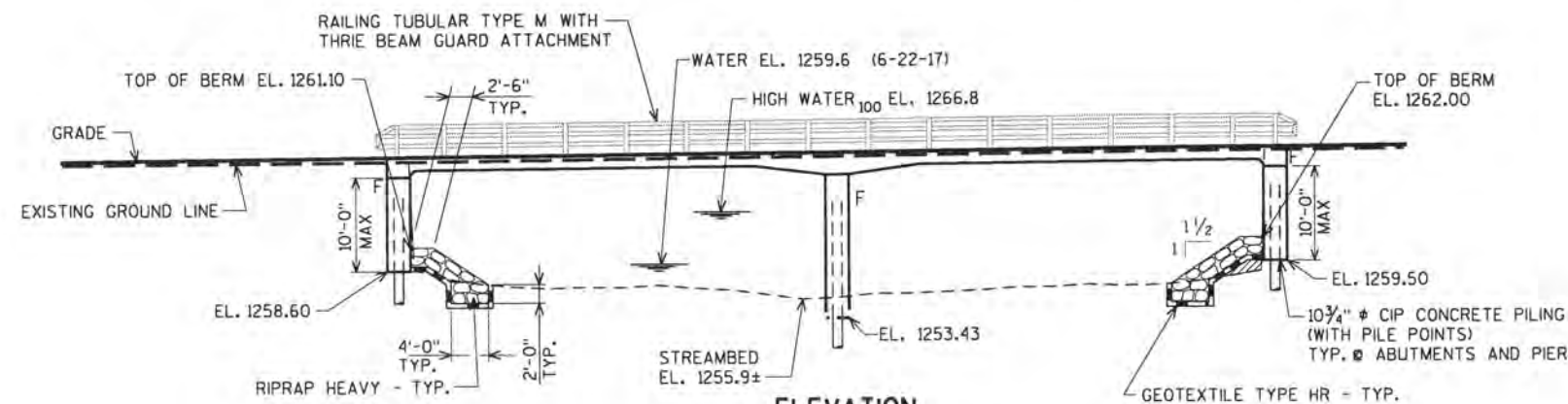
PIER TO BE SUPPORTED ON  $10\frac{3}{4}$ "  $\phi$  X 0.365" CIP CONCRETE (WITH PILE POINTS) WITH A REQUIRED DRIVING RESISTANCE OF 150 TONS  $\pm$  PER PILE, ESTIMATED LENGTH OF 75'-0".

EAST ABUTMENT TO BE SUPPORTED ON  $10\frac{3}{4}$ "  $\phi$  X 0.365" CIP CONCRETE (WITH PILE POINTS) WITH A REQUIRED DRIVING RESISTANCE OF 130 TONS  $\pm$  PER PILE, ESTIMATED LENGTH OF 70'-0".

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

**TRAFFIC DATA:**

A.A.D.T. = 350 (2019)  
A.A.D.T. = 470 (2039)  
R.D.S. = 55 M.P.H.



**ELEVATION**

**LIST OF DRAWINGS**

1. GENERAL PLAN
2. QUANTITIES AND NOTES
3. SUBSURFACE EXPLORATION
4. WEST ABUTMENT
5. WEST ABUTMENT WING DETAILS
6. EAST ABUTMENT
7. EAST ABUTMENT WING DETAILS
8. ABUTMENT BILL OF BARS
9. PIER
10. SUPERSTRUCTURE
11. SUPERSTRUCTURE PLAN
12. RAILING TUBULAR TYPE M

COST OF EXCAVATION OR FILL IN THE HATCHED AREAS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-60-146".



BRIDGE OFFICE CONTACT:  
WILLIAM DREHER  
(608)-266-8489

CONSULTANT CONTACT:  
CHRIS MCMAHON  
(715)-834-3161

| NO.                                                                                                                                 | DATE     | REVISION          | BY               |
|-------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|------------------|
| ORIGINAL PLANS PREPARED BY<br><b>AYRES ASSOCIATES</b> 3433 Oakwood Hills Parkway<br>Eau Claire, WI 54701<br>www.AyresAssociates.com |          |                   |                  |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION                                                                                  |          |                   |                  |
| ACCEPTED: <i>William C. Dreher</i> SDR                                                                                              |          | DATE: 08/17/18    |                  |
| CHIEF STRUCTURES DESIGN ENGINEER                                                                                                    |          |                   |                  |
| <b>STRUCTURE B-60-146</b>                                                                                                           |          |                   |                  |
| CTH M OVER THE YELLOW RIVER                                                                                                         |          |                   |                  |
| COUNTY                                                                                                                              | TAYLOR   | TOWN/CITY/VILLAGE | CLEVELAND        |
| DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS                                                                               |          |                   |                  |
| DESIGNED BY                                                                                                                         | AEB CKD. | DRAWN BY          | CJM/JLB CKD. CBM |
| GENERAL PLAN                                                                                                                        |          |                   | SHEET 1 OF 12    |

\$PRNAME\$  
U:\42-1088.00 -Taylor Co.CTH M over the Yellow River\Structures\Find\421088 gp find.dgn

DATE: \_\_\_\_\_  
DATE: \_\_\_\_\_  
DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
BACK CHECKED BY: \_\_\_\_\_  
CORRECTED BY: \_\_\_\_\_

8

8

## GENERAL NOTES

| BID ITEM<br>NUMBER | BID ITEMS                                                              | UNIT | W. ABUT. | PIER  | E. ABUT. | SUPER. | TOTAL       |
|--------------------|------------------------------------------------------------------------|------|----------|-------|----------|--------|-------------|
| 203.0600.S         | REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 10+00 | LS   | -----    | ----- | -----    | -----  | 1           |
| 206.1000           | EXCAVATION FOR STRUCTURES BRIDGES B-60-146                             | LS   | -----    | ----- | -----    | -----  | 1           |
| 210.1500           | BACKFILL STRUCTURE TYPE A                                              | TON  | 370      | ----- | 370      | -----  | 740         |
| 502.0100           | CONCRETE MASONRY BRIDGES                                               | CY   | 56       | 43    | 56       | 182    | 337         |
| 502.3200           | PROTECTIVE SURFACE TREATMENT                                           | SY   | -----    | ----- | -----    | 405    | 405         |
| 505.0400           | BAR STEEL REINFORCEMENT HS STRUCTURES                                  | LB   | 2,780    | 2,060 | 2,780    | -----  | 7,620       |
| 505.0600           | BAR STEEL REINFORCEMENT HS COATED STRUCTURES                           | LB   | 2,000    | 60    | 2,000    | 50,650 | 54,710      |
| 513.4061           | RAILING TUBULAR TYPE M                                                 | LF   | -----    | ----- | -----    | 197    | 197         |
| 516.0500           | RUBBERIZED MEMBRANE WATERPROOFING                                      | SY   | 7        | ----- | 7        | -----  | 14          |
| 550.0500           | PILE POINTS                                                            | EACH | 7        | 10    | 7        | -----  | 24          |
| 550.2106           | PILING CIP CONCRETE 10 3/4 x 0.365-INCH                                | LF   | 375      | 750   | 480      | -----  | 1,605       |
| 606.0300           | RIPRAP HEAVY                                                           | CY   | 130      | ----- | 115      | -----  | 245         |
| 612.0406           | PIPE UNDERDRAIN WRAPPED 6-INCH                                         | LF   | 85       | ----- | 85       | -----  | 170         |
| 645.0111           | GEOTEXTILE TYPE DF SCHEDULE A                                          | SY   | 65       | ----- | 65       | -----  | 130         |
| 645.0120           | GEOTEXTILE TYPE HR                                                     | SY   | 240      | ----- | 220      | -----  | 460         |
|                    |                                                                        |      |          |       |          |        |             |
|                    |                                                                        |      |          |       |          |        |             |
|                    | NON-BID ITEMS                                                          |      |          |       |          |        |             |
|                    | FILLER                                                                 | SIZE | -----    | ----- | -----    | -----  | 1/2" & 3/4" |
|                    |                                                                        |      |          |       |          |        |             |

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST DIGIT OF A THREE DIGIT BAR NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. SIGNIFIES THE BAR SIZE. JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 153, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M 213.

THE SLOPE OF FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY, AND GEOTEXTILE TYPE HR AS SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.

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

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-60-146" SHALL BE THE EXISTING GROUNDLINE.

THE EXISTING STRUCTURE, B-60-8, TO BE REMOVED, IS A TWO-SPAN STEEL DECK GIRDER BRIDGE ON VERTICAL TIMBER BACKED ABUTMENTS AND PILE BENT PIER, 93.67-FT LONG WITH A 30.0-FT CLEAR ROADWAY WIDTH.

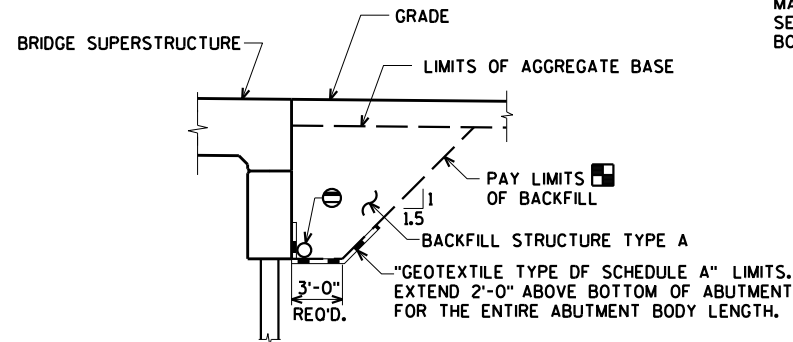
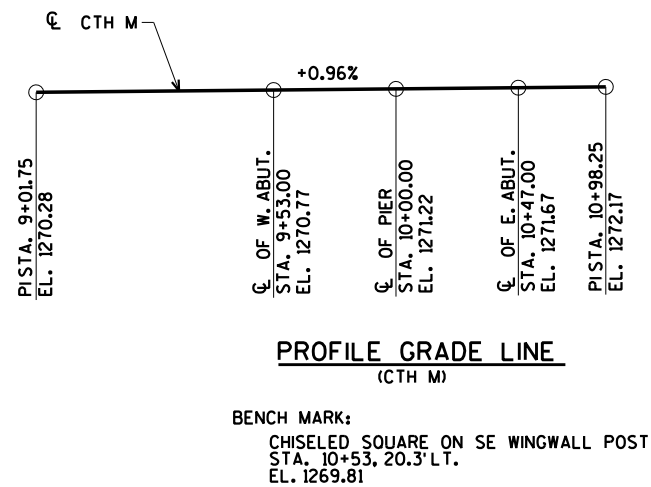
THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED DIRECTLY BEHIND ABUTMENTS AND ABUTMENT WINGS FOR 3 FEET. BACKFILL PLACED BEHIND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION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

PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED AS SHOWN IN DETAIL ON THIS SHEET.

BEVEL EXPOSED EDGES OF CONCRETE  $\frac{3}{4}$ " UNLESS NOTED OTHERWISE.

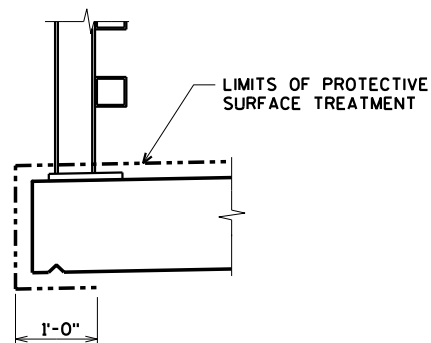
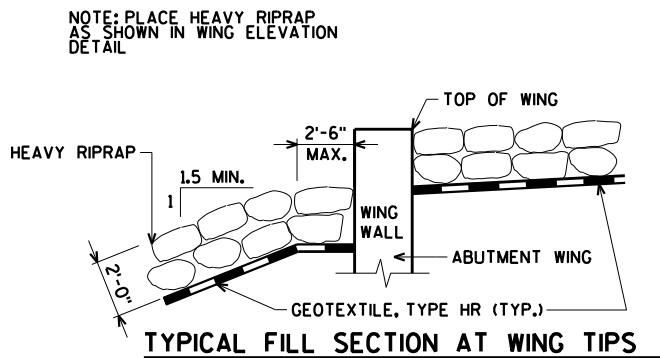
EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.

① SALVAGE EXISTING STEEL BEAMS TO TAYLOR COUNTY

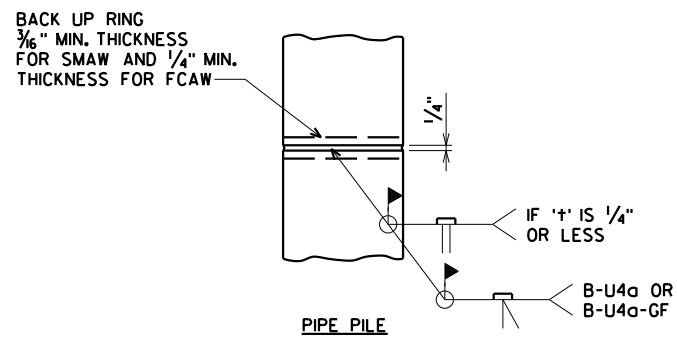


## BACKFILL STRUCTURE LIMITS THRU ABUTMENT

- ☐ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.
- ⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 5.

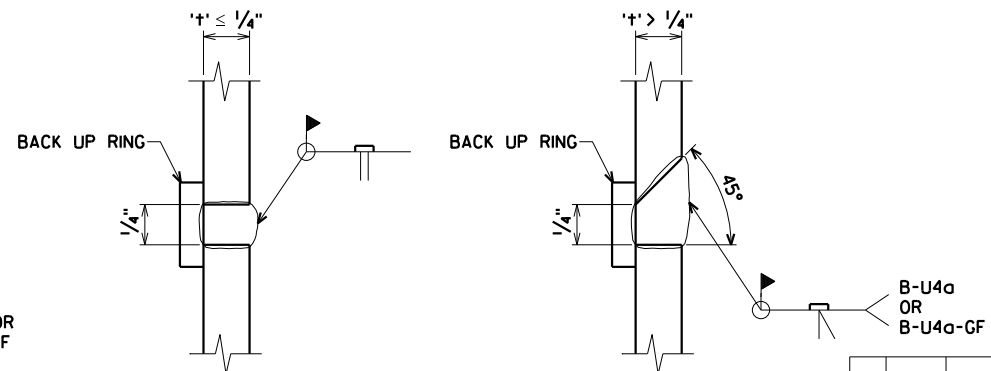


### PROTECTIVE SURFACE TREATMENT DETAIL



### PILE SPLICE DETAIL

CAST-IN-PLACE PILE SHELL MATERIAL SHALL BE  
IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.  
GRINDING MAY BE USED IN LIEU OF BACKGOUGING.



### CIP PILE WELD DETAIL

|                                                    |      |                     |                    |
|----------------------------------------------------|------|---------------------|--------------------|
|                                                    |      |                     |                    |
| NO.                                                | DATE | REVISION            | BY                 |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |                     |                    |
| STRUCTURE B-60-146                                 |      |                     |                    |
|                                                    |      | DRAWN<br>BY JLB/CJM | PLANS<br>CK'D. ZSS |
| QUANTITIES<br>AND NOTES                            |      | SHEET 2 OF 12       |                    |
|                                                    |      |                     |                    |

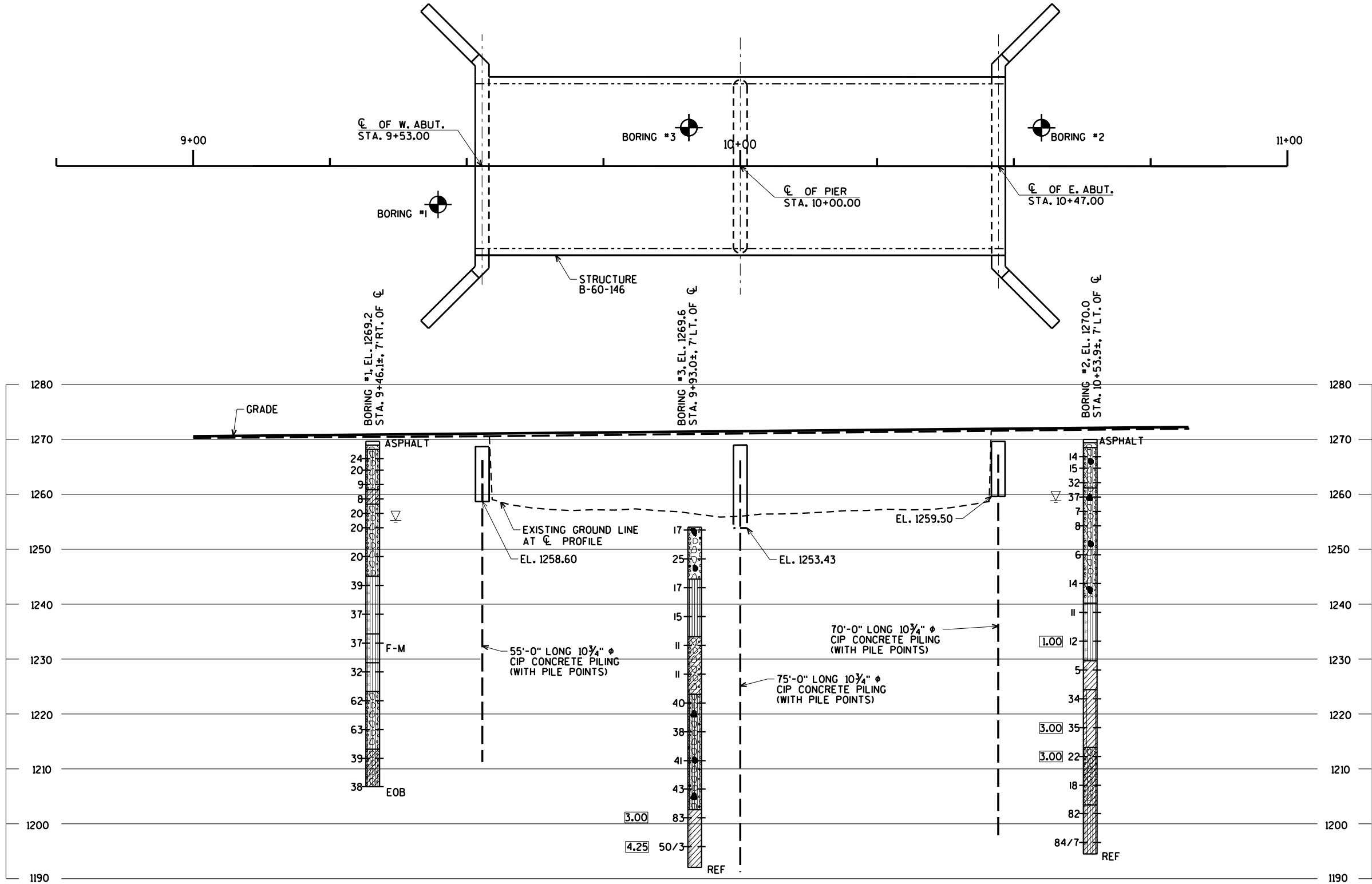
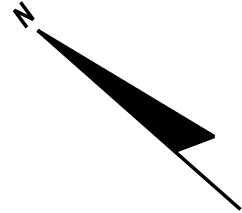
\$PRNAME\$  
U:\42-1088.00 -Taylor Co.CTH M over the Yellow River#Structures#Final#421088 soils final.dgn

8

| BORING # | DATE COMPLETED | NORTHING (Y) | EASTING (X) |
|----------|----------------|--------------|-------------|
| 1        | 12/11/2017     | 375914.00    | 558361.62   |
| 2        | 12/11/2017     | 375838.39    | 558443.08   |
| 3        | 12/12/2017     | 375888.10    | 558401.74   |

BORINGS COMPLETED BY: GEOTECHNICAL DRILLING CONTRACTORS, LLC.  
REPORT COMPLETED BY: ECS MIDWEST, LLC.  
ALL COORDINATES REFERENCED TO WCCS NAD 83(11) TAYLOR COUNTY

YELLOW  
RIVER



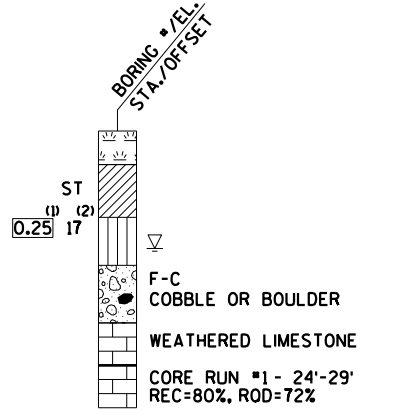
STATE PROJECT NUMBER

8896-05-74

MATERIAL SYMBOLS

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

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

(2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATION

- ▽ AT TIME OF DRILLING
- ▼ END OF DRILLING
- ▼ AFTER DRILLING

ABBREVIATIONS

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

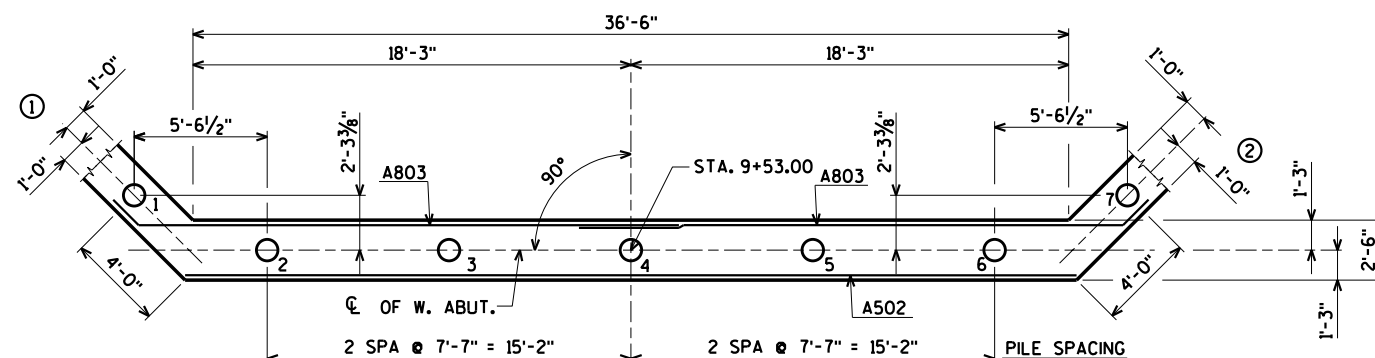
SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

8

| NO.                                                | DATE | REVISION        | BY |
|----------------------------------------------------|------|-----------------|----|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |                 |    |
| STRUCTURE B-60-146                                 |      |                 |    |
| DRAWN BY JLB/CJM                                   |      | PLANS CK'D. ZSS |    |
| SUBSURFACE EXPLORATION                             |      | SHEET 3 OF 12   |    |

Elevation view of the bridge deck showing structural details, elevations, and dimensions. The deck is symmetrical about a central vertical axis. The top surface is labeled with elevations: EL. 1266.61 at the outer edges and EL. 1270.44 at the centerline. The bottom surface is labeled with elevations: EL. 1268.27 at the centerline and EL. 1258.60 at the outer edges. The deck is supported by a central pier and two side piers. The central pier is labeled with a 1/2" FILLER. The side piers are labeled with 1/2" FILLER. The deck is reinforced with A505 bars (top), A501 E.F. bars (bottom), and A803 B.F. bars (bottom). The deck is also reinforced with A404 bars (bottom). The deck is shown with a 6" gap between the deck and the pier. The deck is shown with a 7" gap between the deck and the pier. The deck is shown with a 6" gap between the deck and the pier. The deck is shown with a 7" gap between the deck and the pier.

[illegible]

VARIES FROM 9'-8 1/8" TO 10'-0"

2 SPA. @ 3'-4 1/2" = 6'-9" A404

7 SPA. @ 1'-1 1/2" = 7'-10 1/2" A803 B.F.

1'-6"

3'-0" ±

3" CL.

CL. OF W. ABUT.

18" RUBBERIZED MEMBRANE WATERPROOFING

A505

A506

4" x 3/4" FILLER

3/4" BEVEL

A502

A803

TOP OF PILE EL. 1266.00

F.F. OF ABUTMENT

A501

TOP OF BERM EL. 1261.10

2'-6"

RIPRAP HEAVY

1 1/2

2'-6"

GEOTEXTILE TYPE HR

2'-6"

1'-3" 1'-3"

4"

7 SPA. @ 1'-1 1/2" = 7'-10 1/2" A502 F.F.

EXCAVATE OR FILL TO BOTTOM OF ABUTMENT BEFORE DRIVING PILE

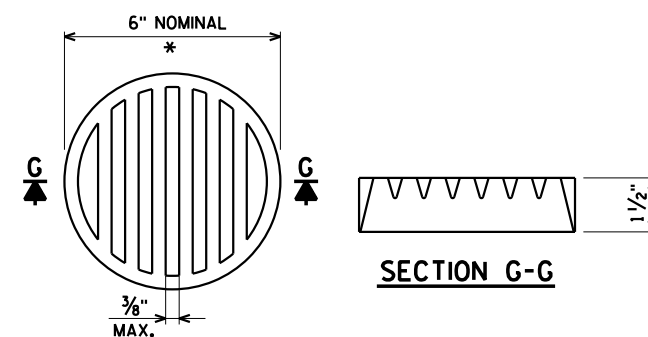
A506 BARS MAY BE PLACED AFTER ABUTMENT IS POURED BUT BEFORE CONC. HAS SET. IMBED BARS 1'-0".

ABUTMENT TO BE SUPPORTED ON 12" x 12" x 0.365" CIP CONCRETE (WITH 4 POINTS) DRIVEN TO A REQ'D. PILING RESISTANCE OF 130 TONS. PILE ESTIMATED LENGTH 55'-0".

NOTES: DO NOT PLACE FILL ABOVE  
THREE FEET FROM BOTTOM OF  
ABUTMENT UNTIL SUPERSTRUCTURE  
IS IN PLACE.

- E.F. DENOTES EACH FACE.

|                                                    |      |              |                 |
|----------------------------------------------------|------|--------------|-----------------|
|                                                    |      |              |                 |
| NO.                                                | DATE | REVISION     | BY              |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |              |                 |
| STRUCTURE B-60-146                                 |      |              |                 |
| DRAWN BY                                           |      | CJM          | PLANS CK'D. ZSS |
| WEST ABUTMENT                                      |      | SHEET 4 OF 1 |                 |



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

### RODENT SHIELD DETAIL



- E.F. DENOTES EACH FACE.

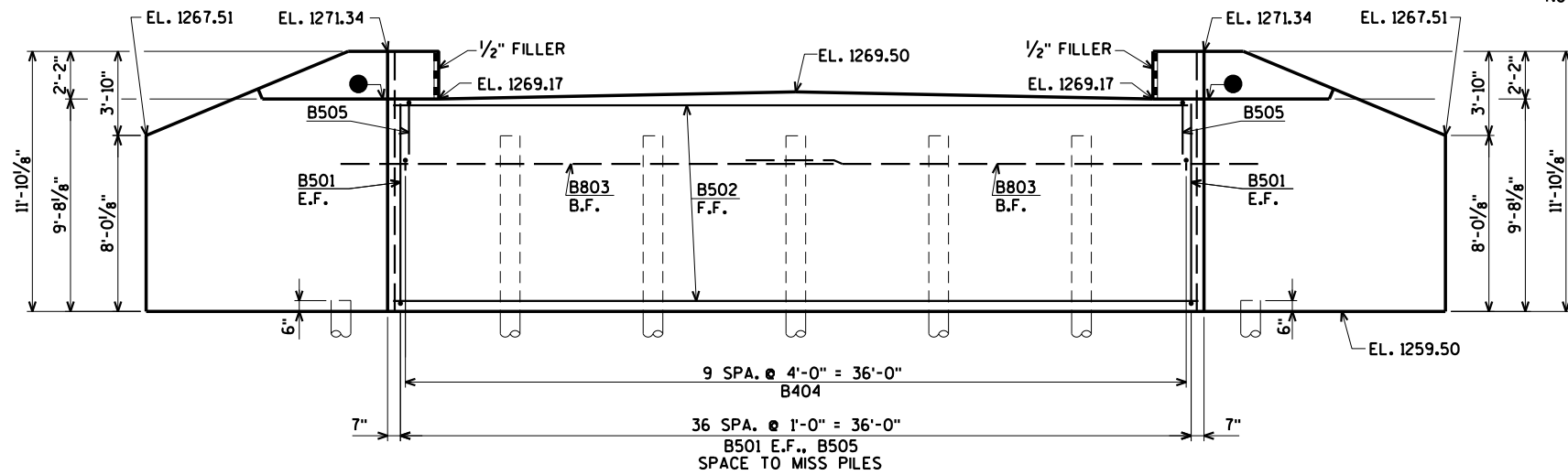
|                                                    |          |              |                 |
|----------------------------------------------------|----------|--------------|-----------------|
|                                                    |          |              |                 |
| NO.                                                | DATE     | REVISION     | BY              |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |          |              |                 |
| STRUCTURE B-60-146                                 |          |              |                 |
|                                                    | DRAWN BY | CJM          | PLANS CK'D. ZSS |
| WEST<br>ABUTMENT<br>WING DETAILS                   |          | SHEET 5 OF 1 |                 |

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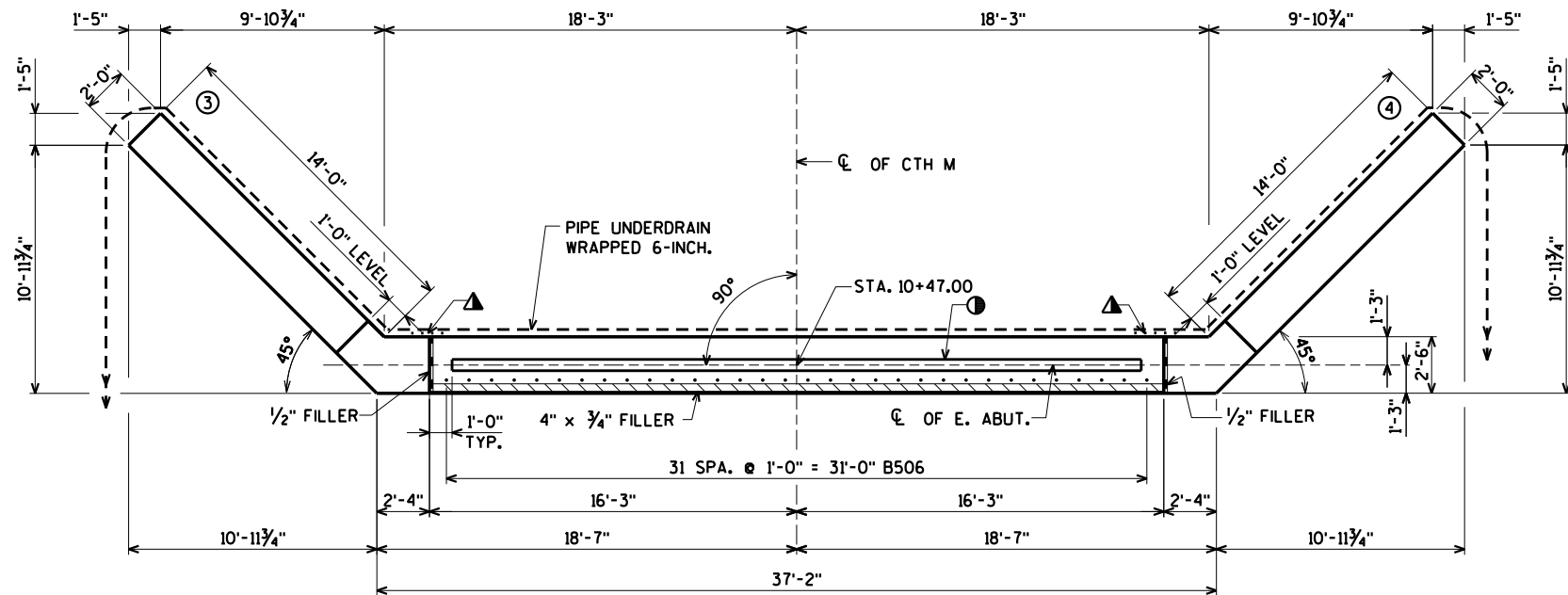
STATE PROJECT NUMBER

8896-05-74

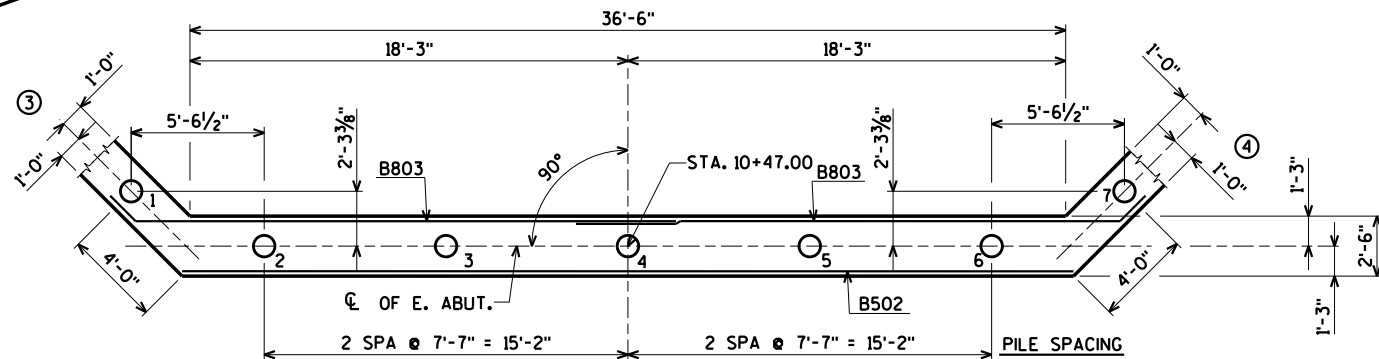
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)



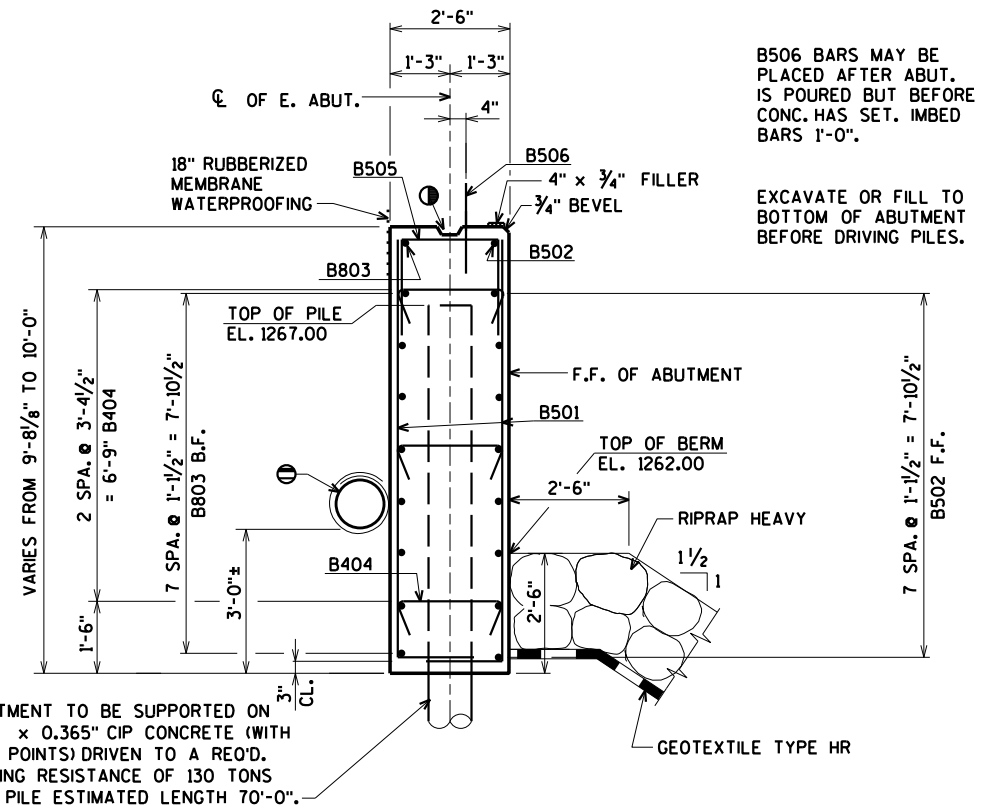
**ELEVATION**  
(LOOKING EAST)



**PLAN**



**PILE LAYOUT**



**TYPICAL SECTION THRU BODY**

NOTES: DO NOT PLACE FILL ABOVE THREE FEET FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. FOR RODENT SHIELD DETAIL SEE SHEET 5.

● OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

⊙ KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING.

FOR PILE SPlice DETAIL SEE SHEET 2.

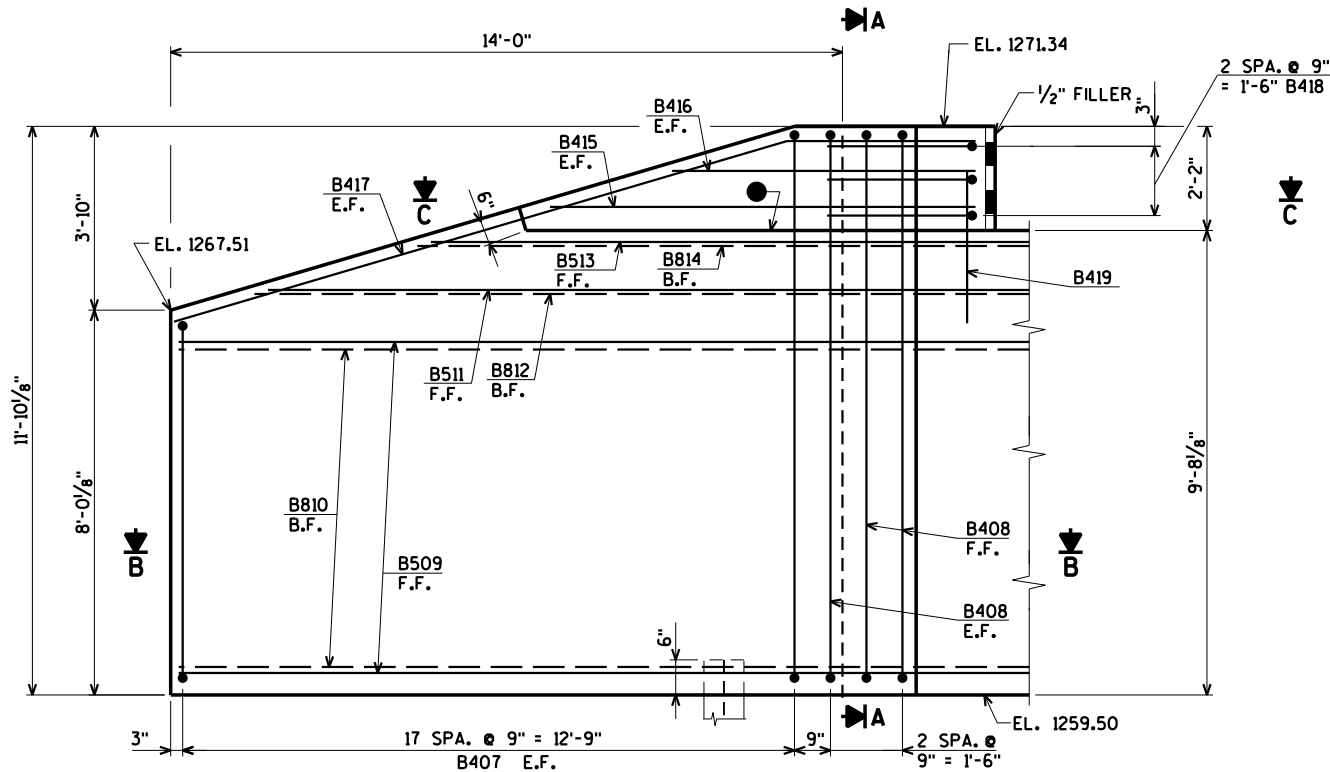
B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

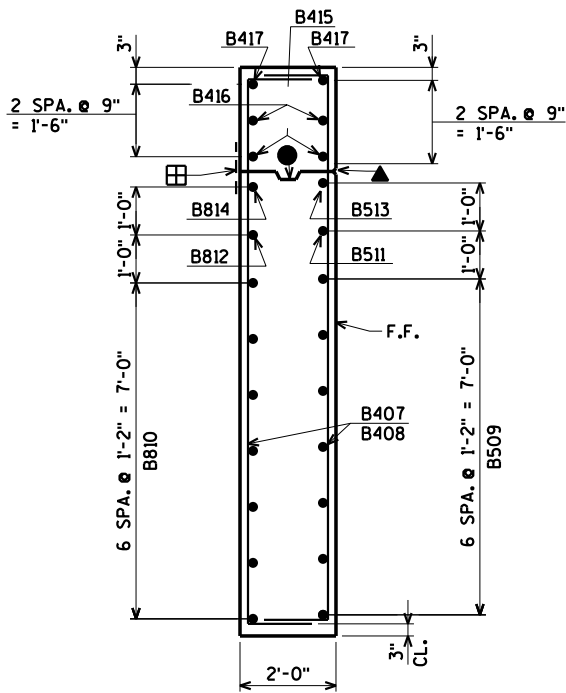
E.F. DENOTES EACH FACE.

ORIGINAL PLANS PREPARED BY  
**AYRES ASSOCIATES**  
3433 Oakwood Hills Parkway  
Eau Claire, WI 54701  
www.AyresAssociates.com

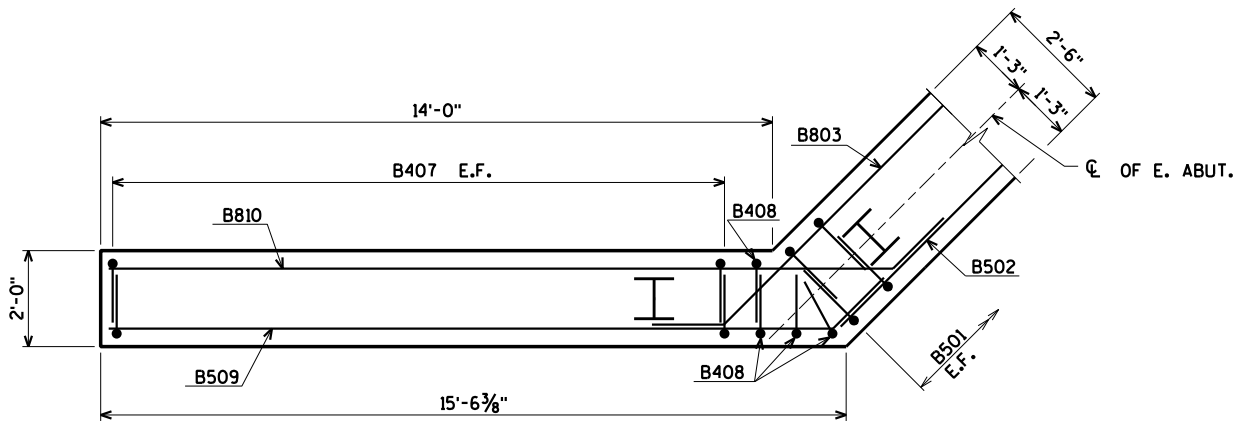
| NO.                                                | DATE | REVISION        | BY |
|----------------------------------------------------|------|-----------------|----|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |                 |    |
| STRUCTURE B-60-146                                 |      |                 |    |
| DRAWN BY CJM                                       |      | PLANS CK'D. ZSS |    |
| EAST ABUTMENT                                      |      | SHEET 6 OF 12   |    |



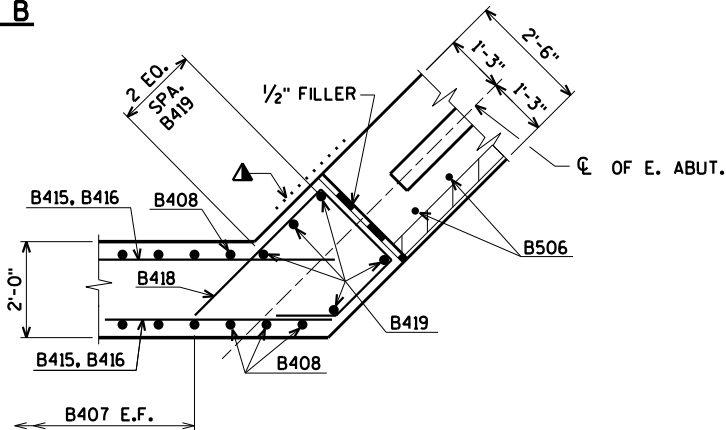
ELEVATION - WING 3  
(WING 3 SHOWN, WING 4 SIMILAR)



SECTION A



SECTION B



SECTION C

- ▲ 3/4" 'V' GROOVE ON F.F. OF WING WALL - NOT REQUIRED IF CONST. JT. IS NOT USED.
  - OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".
  - ▲ 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM BEAM SEAT TO TOP OF WINGWALL.
  - ▣ 18" RUBBERIZED MEMBRANE WATERPROOFING IF CONST. JOINT IS USED (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES").
- B.F. DENOTES BACK FACE.  
F.F. DENOTES FRONT FACE.  
E.F. DENOTES EACH FACE.

ORIGINAL PLANS PREPARED BY  
**AYRES ASSOCIATES**  
3433 Oakwood Hills Parkway  
Eau Claire, WI 54701  
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| NO.                                                | DATE | REVISION      | BY              |
|----------------------------------------------------|------|---------------|-----------------|
|                                                    |      |               |                 |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |               |                 |
| STRUCTURE B-60-146                                 |      |               |                 |
| DRAWN BY                                           |      | CJM           | PLANS CK'D. ZSS |
| EAST ABUTMENT WING DETAILS                         |      | SHEET 7 OF 12 |                 |

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BILL OF BARS - WEST ABUTMENT

| BAR NO. | COATED BAR | NO. REQ'D. | LENGTH  | BENT BAR | BUNDLED | BAR SERIES | 2,780# UNCOATED<br>2,000# COATED |
|---------|------------|------------|---------|----------|---------|------------|----------------------------------|
|         |            |            |         |          |         |            | LOCATION                         |
| A501    |            | 74         | 10'-8"  | X        |         |            | BODY VERT. E.F.                  |
| A502    |            | 9          | 36'-11" |          |         |            | BODY HORIZ. F.F.                 |
| A803    |            | 18         | 24'-10" | X        |         |            | BODY HORIZ. B.F.                 |
| A404    |            | 30         | 2'-9"   | X        |         |            | BODY TIES                        |
| A505    |            | 37         | 9'-3"   | X        |         |            | BODY VERT. TOP                   |
| A506    | X          | 32         | 2'-0"   |          |         |            | BODY DOWELS                      |
| A407    | X          | 72         | 11'-11" | X        |         | ⊗          | WING VERT. E.F.                  |
| A408    | X          | 8          | 13'-11" | X        |         |            | WING VERT. E.F.                  |
| A509    | X          | 14         | 16'-7"  | X        |         |            | WING HORIZ. F.F.                 |
| A810    | X          | 14         | 18'-5"  | X        |         |            | WING HORIZ. B.F.                 |
| A511    | X          | 2          | 15'-6"  | X        |         |            | WING HORIZ. F.F.                 |
| A812    | X          | 2          | 17'-3"  | X        |         |            | WING HORIZ. B.F.                 |
| A513    | X          | 2          | 12'-1"  | X        |         |            | WING HORIZ. F.F.                 |
| A814    | X          | 2          | 13'-10" | X        |         |            | WING HORIZ. B.F.                 |
| A415    | X          | 4          | 7'-8"   |          |         |            | WING HORIZ. E.F.                 |
| A416    | X          | 4          | 5'-2"   |          |         |            | WING HORIZ. E.F.                 |
| A417    | X          | 4          | 14'-8"  | X        |         |            | WING DIAG. E.F.                  |
| A418    | X          | 6          | 8'-6"   | X        |         |            | WING HORIZ.                      |
| A419    | X          | 10         | 3'-3"   |          |         |            | WING VERT.                       |

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

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

B.F. DENOTES BACK FACE.

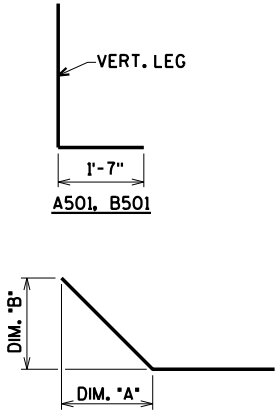
F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

BILL OF BARS - EAST ABUTMENT

| BAR NO. | COATED BAR | NO. REQ'D. | LENGTH  | BENT BAR | BUNDLED | BAR SERIES | 2,780# UNCOATED<br>2,000# COATED |
|---------|------------|------------|---------|----------|---------|------------|----------------------------------|
|         |            |            |         |          |         |            | LOCATION                         |
| B501    |            | 74         | 10'-8"  | X        |         |            | BODY VERT. E.F.                  |
| B502    |            | 9          | 36'-11" |          |         |            | BODY HORIZ. F.F.                 |
| B803    |            | 18         | 24'-10" | X        |         |            | BODY HORIZ. B.F.                 |
| B404    |            | 30         | 2'-9"   | X        |         |            | BODY TIES                        |
| B505    |            | 37         | 9'-3"   | X        |         |            | BODY VERT. TOP                   |
| B506    | X          | 32         | 2'-0"   |          |         |            | BODY DOWELS                      |
| B407    | X          | 72         | 11'-11" | X        |         | ⊗          | WING VERT. E.F.                  |
| B408    | X          | 8          | 13'-11" | X        |         |            | WING VERT. E.F.                  |
| B509    | X          | 14         | 16'-7"  | X        |         |            | WING HORIZ. F.F.                 |
| B810    | X          | 14         | 18'-5"  | X        |         |            | WING HORIZ. B.F.                 |
| B511    | X          | 2          | 15'-6"  | X        |         |            | WING HORIZ. F.F.                 |
| B812    | X          | 2          | 17'-3"  | X        |         |            | WING HORIZ. B.F.                 |
| B513    | X          | 2          | 12'-1"  | X        |         |            | WING HORIZ. F.F.                 |
| B814    | X          | 2          | 13'-10" | X        |         |            | WING HORIZ. B.F.                 |
| B415    | X          | 4          | 7'-8"   |          |         |            | WING HORIZ. E.F.                 |
| B416    | X          | 4          | 5'-2"   |          |         |            | WING HORIZ. E.F.                 |
| B417    | X          | 4          | 14'-8"  | X        |         |            | WING DIAG. E.F.                  |
| B418    | X          | 6          | 8'-6"   | X        |         |            | WING HORIZ.                      |
| B419    | X          | 10         | 3'-3"   |          |         |            | WING VERT.                       |

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

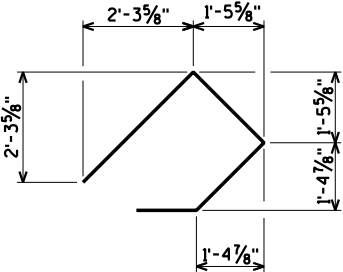
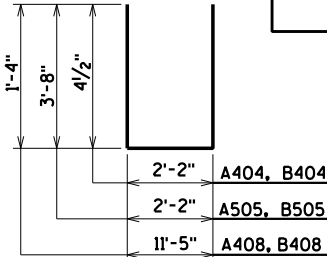


| BAR NO. | DIM. "A"  | DIM. "B"  |
|---------|-----------|-----------|
| A803    | 1'-0 3/4" | 1'-0 3/4" |
| A509    | 1'-0 3/4" | 1'-0 3/4" |
| A810    | 1'-0 3/4" | 1'-0 3/4" |
| A511    | 1'-0 3/4" | 1'-0 3/4" |
| A812    | 1'-0 3/4" | 1'-0 3/4" |
| A513    | 1'-0 3/4" | 1'-0 3/4" |
| A814    | 1'-0 3/4" | 1'-0 3/4" |
| A417    | 12'-10"   | 3'-9"     |
| B803    | 1'-0 3/4" | 1'-0 3/4" |
| B509    | 1'-0 3/4" | 1'-0 3/4" |
| B810    | 1'-0 3/4" | 1'-0 3/4" |
| B511    | 1'-0 3/4" | 1'-0 3/4" |
| B812    | 1'-0 3/4" | 1'-0 3/4" |
| B513    | 1'-0 3/4" | 1'-0 3/4" |
| B814    | 1'-0 3/4" | 1'-0 3/4" |
| B417    | 12'-10"   | 3'-9"     |

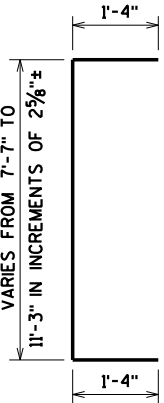
BAR SERIES TABLE

| BAR MARK | NO REQ'D.      | LENGTH             |
|----------|----------------|--------------------|
| A407     | 4 SERIES OF 18 | 10' -1" TO 13' -9" |
| B407     | 4 SERIES OF 18 | 10' -1" TO 13' -9" |

BUNDLE AND TAG EACH SERIES SEPARATELY.



A418, B418



A407, B407

STATE PROJECT NUMBER

8896-05-74

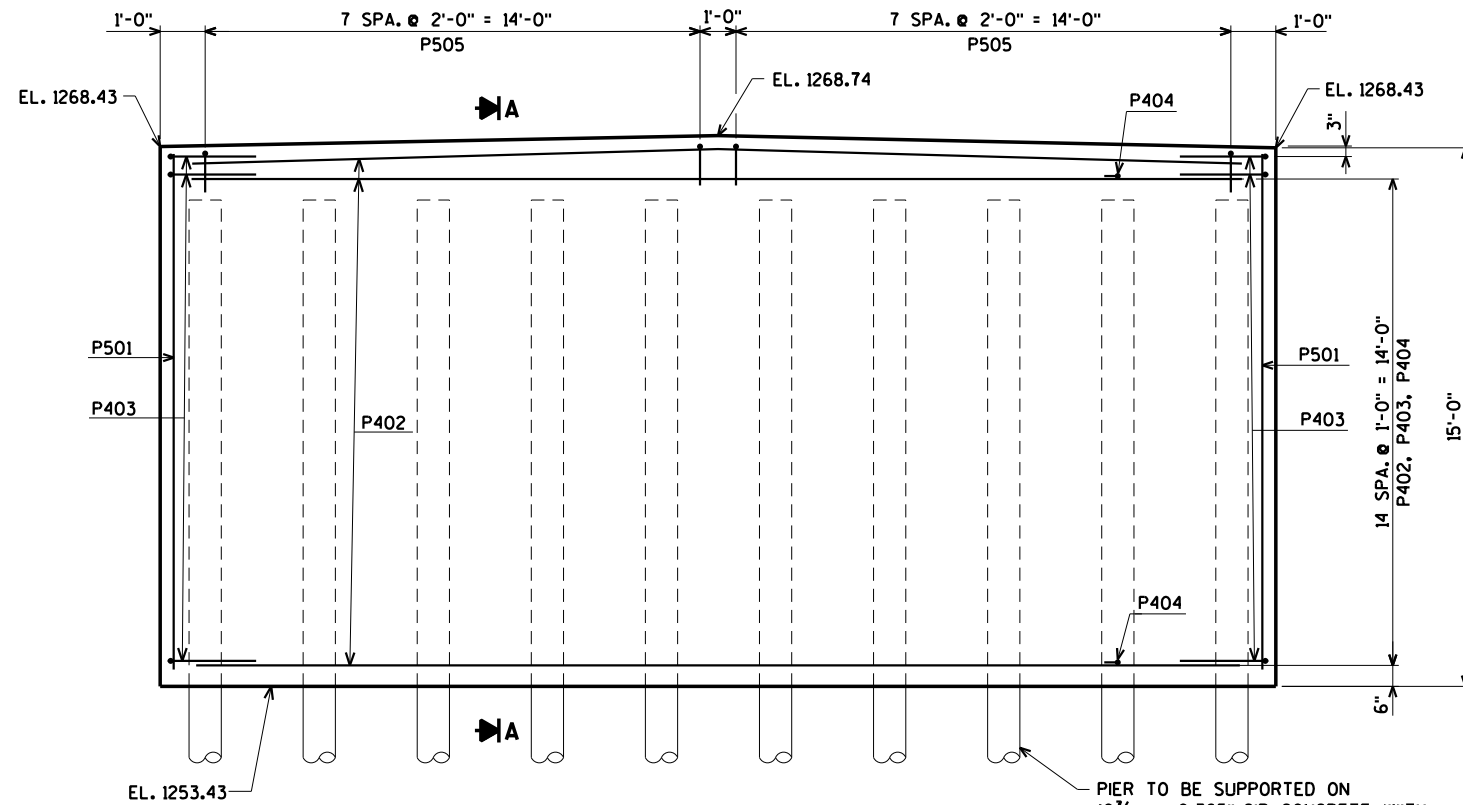
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|----------------------------------------------------|------|----------|-----------------|
| NO.                                                | DATE | REVISION | BY              |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |          |                 |
| STRUCTURE B-60-146                                 |      |          |                 |
| DRAWN BY                                           |      | CJM      | PLANS CK'D. ZSS |
| ABUTMENT<br>BILL OF BARS                           |      |          | SHEET 8 OF 12   |

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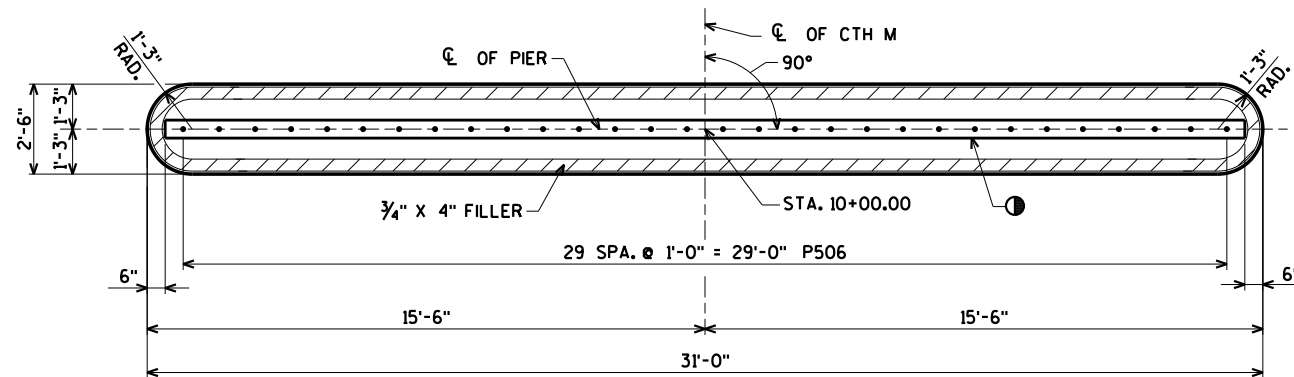
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U:\42-1088.00 -Taylor Co.CTH M over the Yellow River\Structures\Final\421088 pier.dgn

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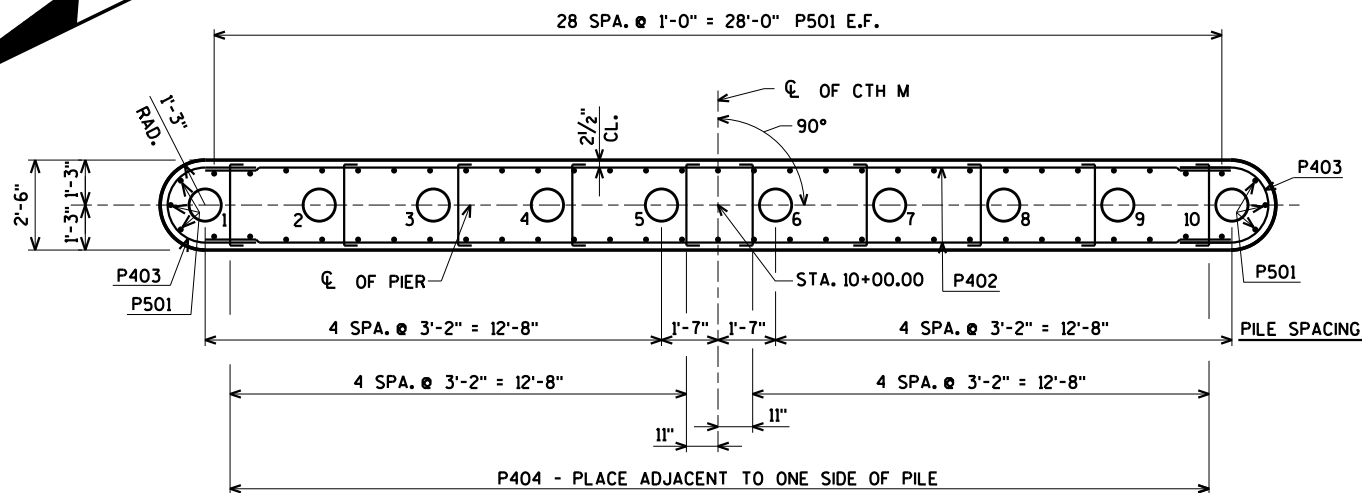
8896-05-74



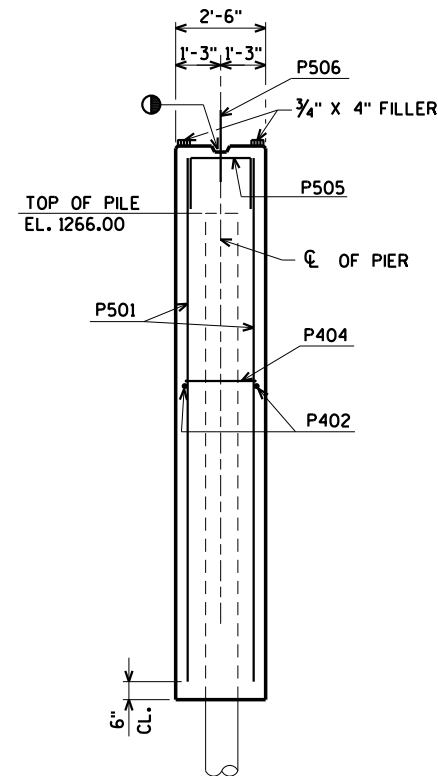
**ELEVATION**  
(LOOKING EAST)



**PLAN**



**PILE LAYOUT**



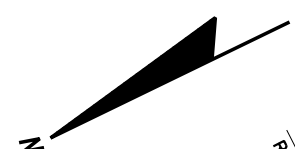
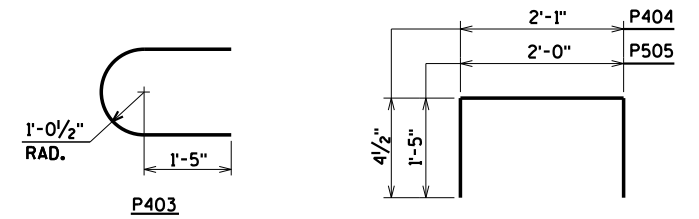
**SECTION A**

P506 BARS MAY BE  
PLACED AFTER PIER  
IS POURED BUT BEFORE  
CONC. HAS SET. IMBED  
BARS 1'-0".

**BILL OF BARS**

| BAR NO. | COATED BAR | NO. REQ'D. | LENGTH | BENT BAR | BUNDLE | BAR SERIES | 60" COATED<br>2,060" UNCOATED |
|---------|------------|------------|--------|----------|--------|------------|-------------------------------|
|         |            |            |        |          |        |            | LOCATION                      |
| P501    |            | 64         | 14-4   |          |        |            | COLUMN VERT.                  |
| P402    |            | 32         | 28-6   |          |        |            | COLUMN HORIZ.                 |
| P403    |            | 32         | 6-1    | X        |        |            | COLUMN HORIZ.                 |
| P404    |            | 160        | 2-8    | X        |        |            | COLUMN TIES                   |
| P505    |            | 16         | 4-7    | X        |        |            | COLUMN TOP                    |
| P506    | X          | 30         | 2-0    |          |        |            | COLUMN DOWELS                 |
|         |            |            |        |          |        |            |                               |
|         |            |            |        |          |        |            |                               |
|         |            |            |        |          |        |            |                               |
|         |            |            |        |          |        |            |                               |

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.



8

8

KEYED CONST. JOINT - FORMED  
BY A BEVELED 2" x 6".

FOR PILE SPLICE DETAIL SEE SHEET 2.

E.F. DENOTES EACH FACE

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| STRUCTURE B-60-146                                 |      |               |                 |
| DRAWN BY                                           |      | CJM           | PLANS CK'D. ZSS |
| PIER                                               |      | SHEET 9 OF 12 |                 |



### BUNDLING DETAIL

| BAR. NO. | COATED BAR | NO. REQ'D. | LENGTH | BENT BAR | BUNDLED | BAR SERIES | 50,650* COATED         |
|----------|------------|------------|--------|----------|---------|------------|------------------------|
|          |            |            |        |          |         |            | LOCATION               |
| S501     | X          | 66         | 5-4    | X        |         |            | SLAB @ ABUT.           |
| S502     | X          | 66         | 3-3    | X        |         |            | SLAB @ ABUT.           |
| S1003    | X          | 76         | 45-3   |          | X       |            | SLAB LONG. BOT.        |
| S1004    | X          | 70         | 29-7   |          |         |            | SLAB LONG. BOT.        |
| S805     | X          | 36         | 20-10  | X        |         |            | SLAB LONG. BOT. @ PIER |
| S506     | X          | 110        | 32-2   |          |         |            | SLAB TRANS. BOT.       |
| S507     | X          | 97         | 32-2   |          |         |            | SLAB TRANS. TOP        |
| S508     | X          | 72         | 20-8   |          |         |            | SLAB LONG. TOP         |
| S1009    | X          | 71         | 44-4   |          |         |            | SLAB LONG. TOP @ PIER  |
| S610     | X          | 64         | 12-0   | X        |         |            | SLAB @ RAIL POSTS      |
| S611     | X          | 112        | 6-0    |          |         |            | SLAB @ INT. RAIL POSTS |
| S612     | X          | 16         | 6-0    | X        |         |            | SLAB @ END RAIL POSTS  |
|          |            |            |        |          |         |            |                        |
|          |            |            |        |          |         |            |                        |

Figure 1: Reinforcement details for the bridge deck. The figure shows four cross-sections: S501 (left), S502 (top), S805 (bottom), and S610 (right). S501 shows a horizontal leg of 2'-1" and a vertical leg of 1'-9". S502 shows a horizontal leg of 1'-6" and a vertical leg of 5'-0". S805 shows a horizontal leg of 2'-8" and a vertical leg of 1'-1". S610 shows a horizontal leg of 10" and a vertical leg of 5'-9". The sections are labeled S501, S502, S805, and S610. A vertical line is labeled "VERT. LEG". A dashed line is labeled "SYM. ABOUT C OF PIER".

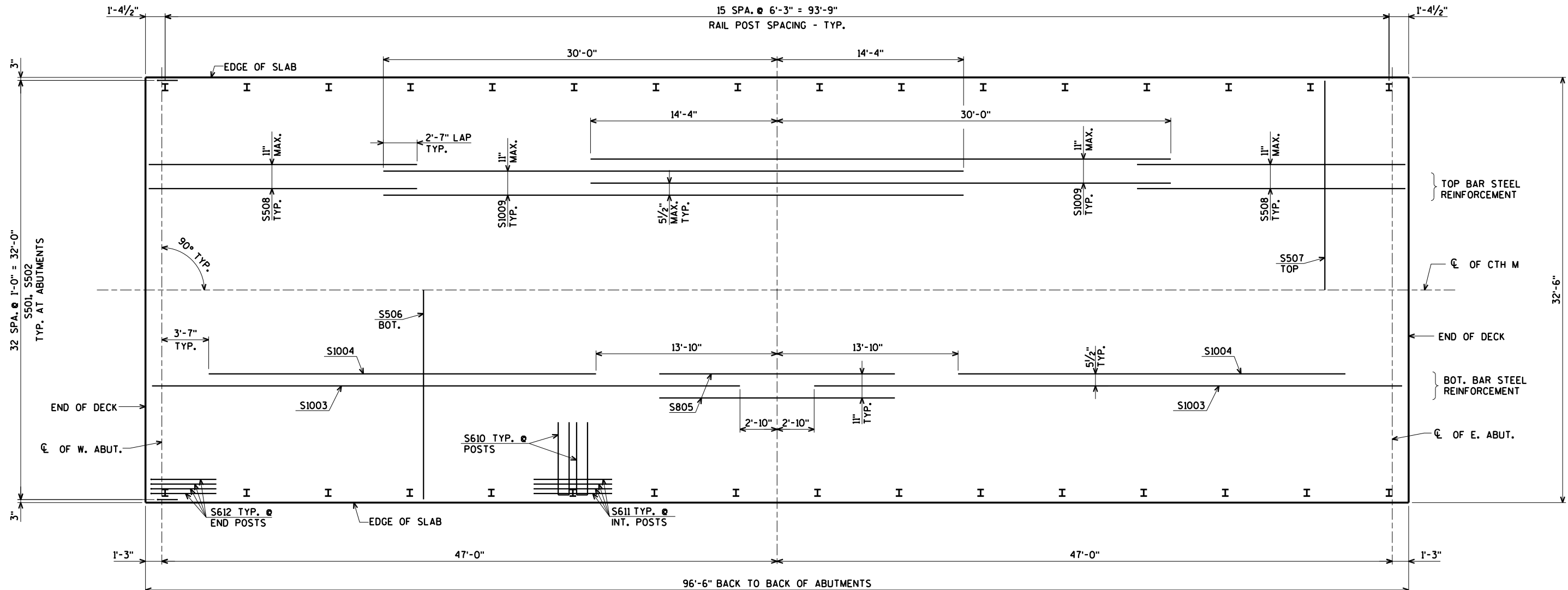


|                                                    |      |                |                        |
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| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |                |                        |
| STRUCTURE B-60-146                                 |      |                |                        |
| DRAWN<br>BY                                        |      | CJM            | PLANS<br>CK'D. ZSS/CBM |
| SUPERSTRUCTURE                                     |      | SHEET 10 OF 12 |                        |

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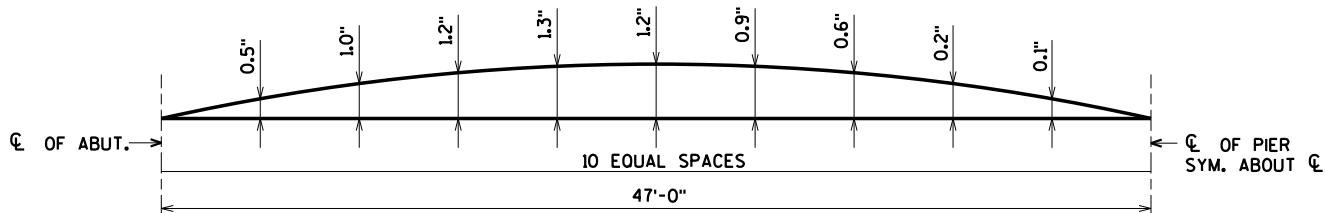
8896-05-74



### TOP OF DECK ELEVATIONS

ELEVATIONS SHOWN ARE FINISHED DECK AND DO NOT INCLUDE ALLOWANCES OF DEAD LOAD DEFLECTION AND FUTURE CREEP.

| LOCATION        | CL OF W. ABUT. | 0.1     | 0.2     | 0.3     | 0.4     | 0.5     | 0.6     | 0.7     | 0.8     | 0.9     | CL OF PIER | 0.1     | 0.2     | 0.3     | 0.4     | 0.5     | 0.6     | 0.7     | 0.8     | 0.9     | CL OF E. ABUT. |
|-----------------|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------------|
| N. EDGE OF SLAB | 1270.44        | 1270.48 | 1270.53 | 1270.57 | 1270.62 | 1270.66 | 1270.71 | 1270.75 | 1270.80 | 1270.84 | 1270.89    | 1270.93 | 1270.98 | 1271.02 | 1271.07 | 1271.11 | 1271.16 | 1271.20 | 1271.25 | 1271.29 | 1271.34        |
| CL OF STRUCTURE | 1270.77        | 1270.81 | 1270.86 | 1270.90 | 1270.95 | 1270.99 | 1271.04 | 1271.08 | 1271.13 | 1271.17 | 1271.22    | 1271.26 | 1271.31 | 1271.35 | 1271.40 | 1271.44 | 1271.49 | 1271.53 | 1271.58 | 1271.62 | 1271.67        |
| S. EDGE OF SLAB | 1270.44        | 1270.48 | 1270.53 | 1270.57 | 1270.62 | 1270.66 | 1270.71 | 1270.75 | 1270.80 | 1270.84 | 1270.89    | 1270.93 | 1270.98 | 1271.02 | 1271.07 | 1271.11 | 1271.16 | 1271.20 | 1271.25 | 1271.29 | 1271.34        |



### CAMBER DIAGRAM

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

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE CL OF ABUTMENTS AND 5/10 POINTS TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF SLAB AND CROWN OR CL.

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| STRUCTURE B-60-146                                 |      |                     |                |
| DRAWN BY CJM                                       |      | PLANS CK'D, ZSS/CBM |                |
| SUPERSTRUCTURE PLAN                                |      |                     | SHEET 11 OF 12 |

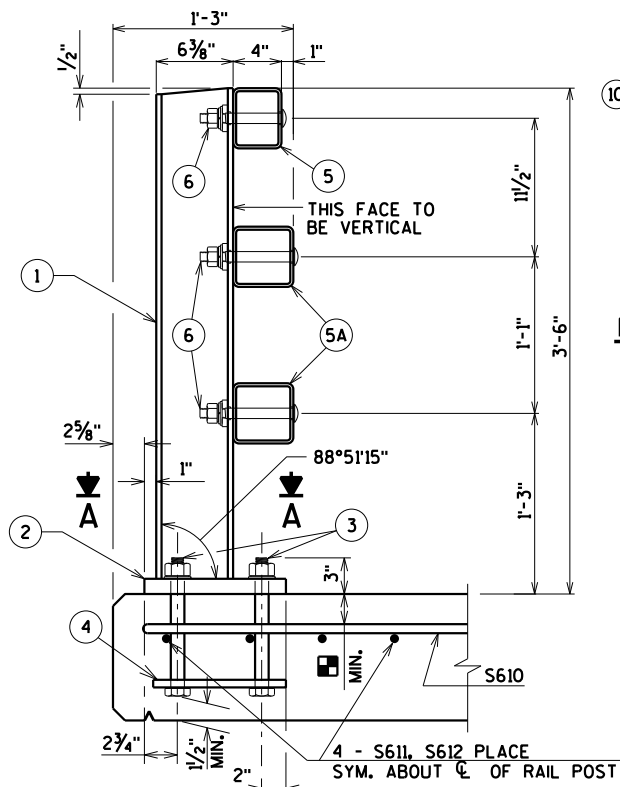
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STATE PROJECT NUMBER

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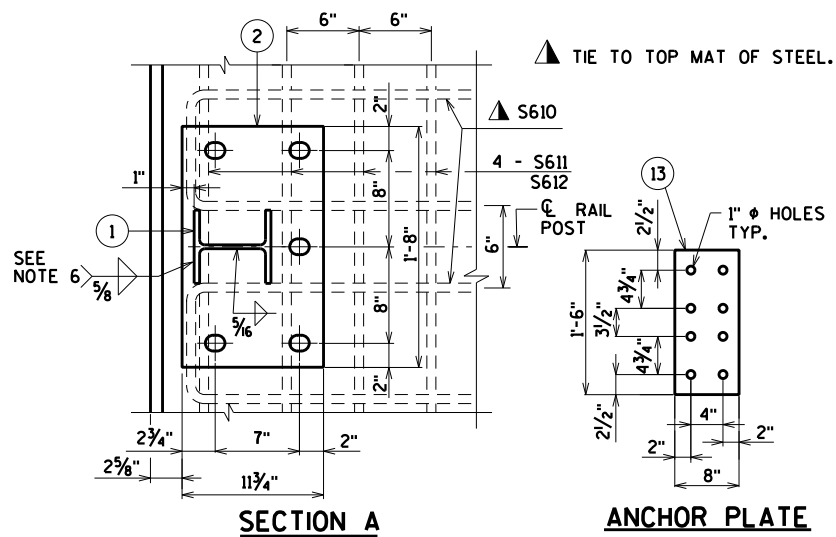
### LEGEND

- W6 x 25 WITH 1/8" x 1/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- PLATE 1/4" x 1 3/4" x 1'-8" WITH 1 5/8" x 1 5/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ASTM A449 - 1/6" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. ~~USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10 3/4" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)~~
- 5/8" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 5/8" DIA. HOLES FOR ANCHOR BOLTS NO. 3
- TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/8" x 1 5/8" x 1 5/8" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- 1/2" THK. BACK-UP PLATE WITH 2 - 7/8" x 1/2" THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
- 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR 7/8" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
- SPLICE SLEEVE FABRICATED FROM 1/4" PLATE. PROVIDE "SLIDING FIT".
- 3/8" x 3 5/8" x 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- 3/8" x 2 5/8" x 2'-4" PLATE USED IN NO. 5. 3/8" x 3 5/8" x 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- 7/8" A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1 5/8" x 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS ~~AND 1 5/8" x 2 1/4" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.~~
- 7/8" DIA. x 1/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
- 3/8" x 8" x 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
- 7/8" DIA. x 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
- 1" HOLES IN TUBES NO. 5A FOR 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.



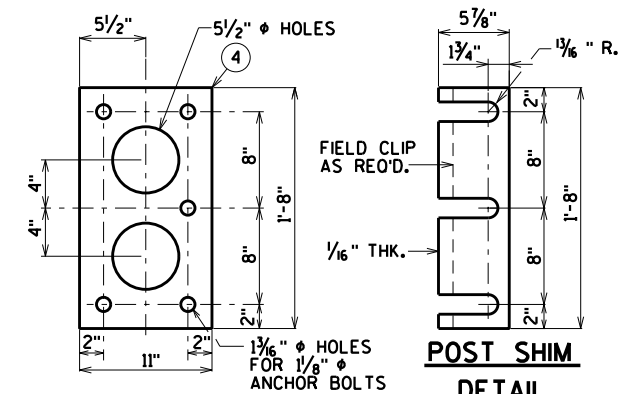
SECTION THRU RAILING ON DECK

PLACE BELOW TOP MAT SLAB REINFORCEMENT.



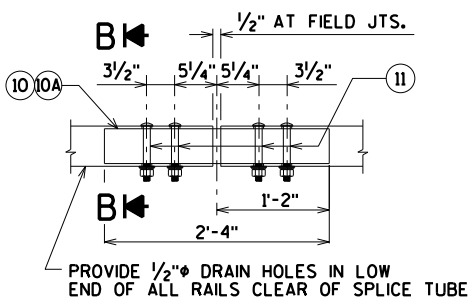
SECTION A

ANCHOR PLATE  
(AT BEAM GUARD ATTACHMENT)

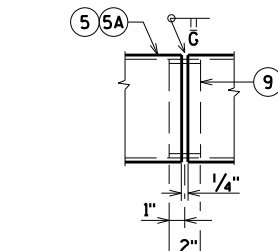


ANCHOR PLATE  
(AT RAIL TO DECK CONNECTION)

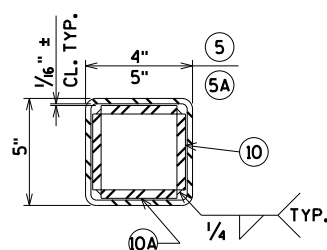
POST SHIM  
DETAIL



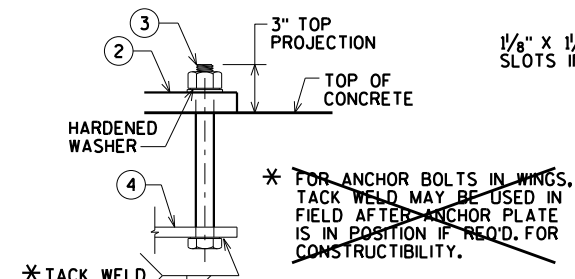
FIELD ERECTION JOINT DETAIL



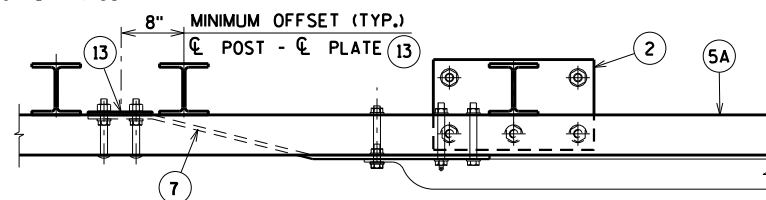
SHOP RAIL SPLICE DETAIL  
(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)



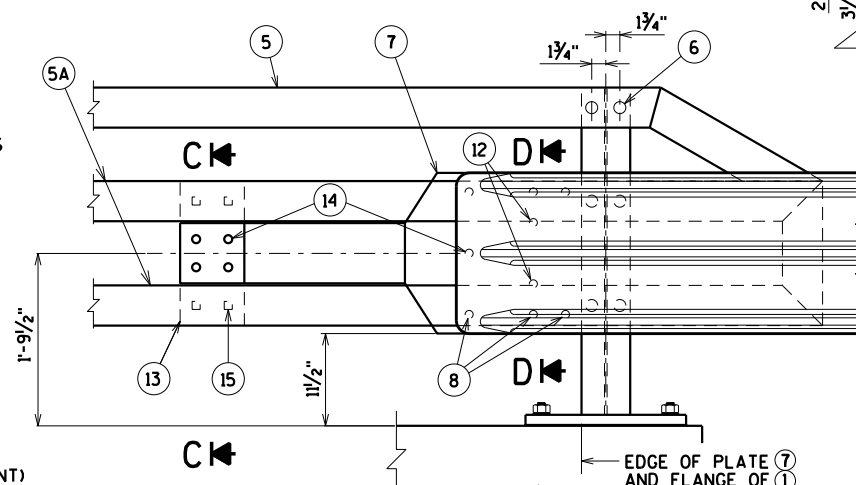
SECTION B



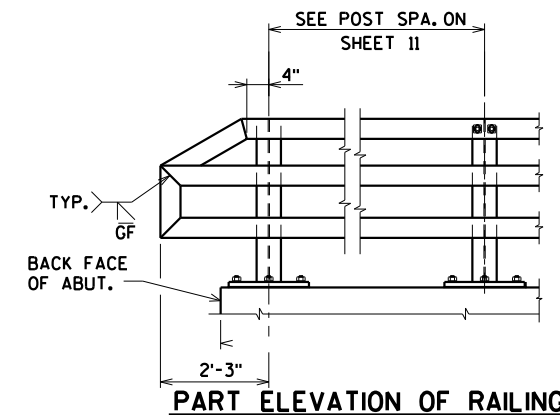
ANCHOR BOLTS



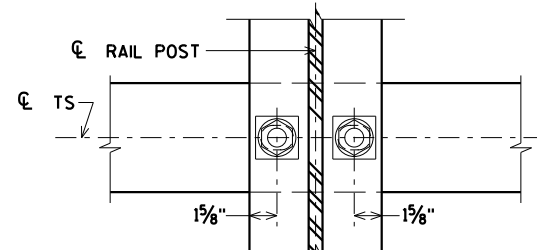
TOP VIEW AT END POST  
(THRIE BEAM RAIL ATTACHMENT)



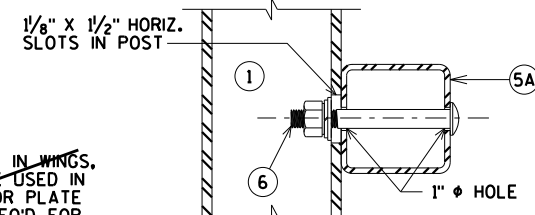
DETAIL AT END POST  
(THRIE BEAM RAIL ATTACHMENT)



PART ELEVATION OF RAILING



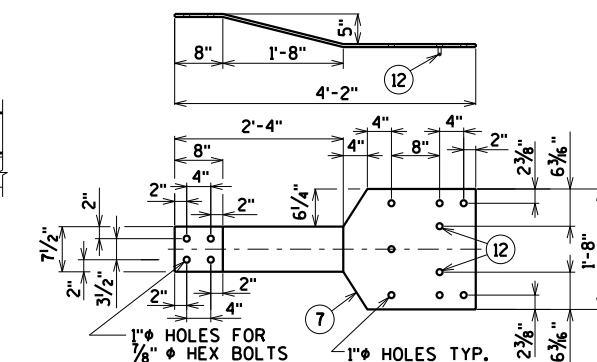
SECTION THRU POST WEB



SECTION THRU RAIL

NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

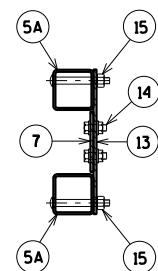
TYPICAL RAIL TO POST CONNECTIONS



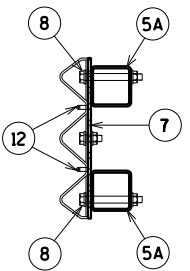
BACK-UP PLATE DETAIL  
(AT BEAM GUARD ATTACHMENT)

### GENERAL NOTES

- BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-60-146" WHICH INCLUDES ALL ITEMS SHOWN.
- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
- THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
- ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
- WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
- FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY S.S.P.C. SPECIFICATIONS.
- WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.
- THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).



SECTION C



SECTION D

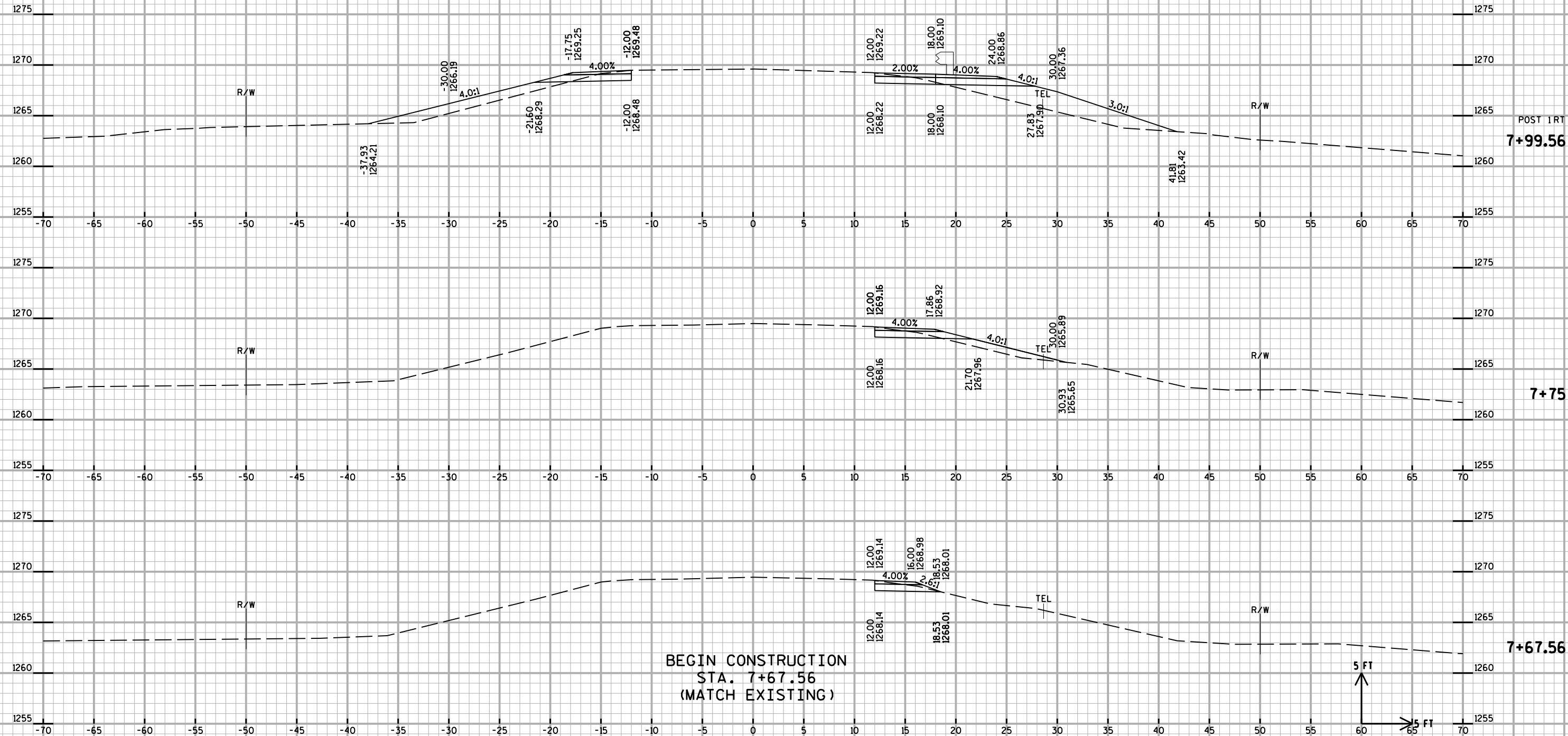
| NO.                                                | DATE | REVISION        | BY             |
|----------------------------------------------------|------|-----------------|----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      |                 |                |
| STRUCTURE B-60-146                                 |      |                 |                |
| DRAWN BY CJM                                       |      | PLANS CK'D. ZSS |                |
| RAILING TUBULAR<br>TYPE M                          |      |                 | SHEET 12 OF 12 |

ORIGINAL PLANS PREPARED BY  
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| CTH M COMPUTER EARTHWORK |          |           |                             |      |                                   |                             |        |                     |          |               |
|--------------------------|----------|-----------|-----------------------------|------|-----------------------------------|-----------------------------|--------|---------------------|----------|---------------|
| Station                  | Distance | Area (SF) |                             |      | Incremental Vol (CY) (Unadjusted) |                             |        | Cumulative Vol (CY) |          | Mass Ordinate |
|                          |          | Cut       | Unuseable Pavement Material | Fill | Cut                               | Salvaged /                  | Fill   | Cut                 | Expanded |               |
|                          |          |           |                             |      |                                   | Unuseable Pavement Material |        |                     | 1.00     |               |
|                          |          |           |                             |      | Note 1                            | Note 4                      | Note 2 | Note 5              |          | Note 3        |
| 7+67.56                  | --       | 3.8       | 0.0                         | 0.0  |                                   |                             |        |                     |          |               |
| 7+75                     | 7.44     | 3.8       | 0.0                         | 5.8  | 1                                 | 0                           | 1      | 1                   | 1        | 0             |
| 7+99.56                  | 24.56    | 7.8       | 0.0                         | 43.1 | 5                                 | 0                           | 22     | 6                   | 30       | -24           |
| 8+00                     | 0.44     | 7.8       | 0.0                         | 43.4 | 0                                 | 0                           | 1      | 6                   | 31       | -24           |
| 8+24.56                  | 24.56    | 8.1       | 0.0                         | 60.3 | 7                                 | 0                           | 47     | 14                  | 92       | -78           |
| 8+25                     | 0.44     | 8.1       | 0.0                         | 59.8 | 0                                 | 0                           | 1      | 14                  | 93       | -80           |
| 8+49.56                  | 24.56    | 8.3       | 0.0                         | 36.4 | 7                                 | 0                           | 44     | 21                  | 150      | -129          |
| 8+50                     | 0.44     | 8.3       | 0.0                         | 35.6 | 0                                 | 0                           | 1      | 21                  | 151      | -130          |
| 8+74.56                  | 24.56    | 11.2      | 0.0                         | 0.6  | 9                                 | 0                           | 16     | 30                  | 172      | -142          |
| 8+75                     | 0.44     | 11.2      | 0.0                         | 0.7  | 0                                 | 0                           | 0      | 31                  | 172      | -142          |
| 9+00                     | 25.00    | 10.5      | 0.0                         | 1.1  | 10                                | 0                           | 1      | 41                  | 174      | -133          |
| 9+01.75                  | 1.75     | 9.9       | 0.0                         | 1.4  | 1                                 | 0                           | 0      | 41                  | 174      | -132          |
| 9+01.75                  | --       | 34.1      | 14.1                        | 1.4  |                                   |                             |        |                     |          |               |
| 9+25                     | 23.25    | 31.5      | 14.8                        | 24.3 | 28                                | 12                          | 11     | 57                  | 188      | -131          |
| 9+51.75                  | 26.75    | 31.5      | 14.8                        | 24.3 | 31                                | 15                          | 24     | 74                  | 219      | -146          |
| B-60-146                 | --       | --        | --                          | --   | --                                |                             | --     | --                  | --       | --            |
| 10+48.25                 | --       | 33.4      | 15.1                        | 11.2 | --                                |                             | --     | --                  | --       | --            |
| 10+75                    | 26.75    | 33.4      | 15.1                        | 11.2 | 33                                | 15                          | 11     | 92                  | 234      | -142          |
| 10+98.25                 | 23.25    | 34.0      | 15.0                        | 3.7  | 29                                | 13                          | 6      | 108                 | 242      | -134          |
| 10+98.25                 | --       | 7.9       | 0.0                         | 3.7  |                                   |                             |        |                     |          |               |
| 11+00                    | 1.75     | 7.9       | 0.0                         | 3.6  | 1                                 | 0                           | 0      | 108                 | 242      | -134          |
| 11+25                    | 25.00    | 13.2      | 0.0                         | 0.0  | 10                                | 0                           | 2      | 118                 | 244      | -126          |
| 11+40                    | 15.00    | 33.5      | 0.0                         | 0.0  | 13                                | 0                           | 0      | 131                 | 244      | -113          |
| 11+50                    | 10.00    | 30.0      | 0.0                         | 0.0  | 12                                | 0                           | 0      | 143                 | 244      | -102          |
| 11+56                    | 6.00     | 28.3      | 0.0                         | 0.0  | 6                                 | 0                           | 0      | 149                 | 244      | -95           |
| 11+73.11                 | 17.11    | 5.9       | 0.0                         | 0.0  | 11                                | 0                           | 0      | 160                 | 244      | -84           |
|                          |          |           |                             |      | 215                               | 55                          | 188    |                     |          |               |

|                                                 |                                                            |
|-------------------------------------------------|------------------------------------------------------------|
| Note 1 - Cut                                    | Cut includes existing asphalt pavement.                    |
| Note 2 - Fill                                   | Volume needed to be filled.                                |
| Note 3 - Mass Ordinate                          | (Cut) - (Fill * 1.30)                                      |
| Note 4 - Salvaged / Unuseable Pavement Material | Existing existing asphalt pavement to be removed from Cut. |
| Note 5 - Cut                                    | Cut reduced by salvaged/unuseable asphaltic pavement       |

STA. 7+67.56 TO 7+99.56



PROJECT NO: 8896-05-74

HWY: CTH M

COUNTY: TAYLOR

CROSS SECTIONS

SHEET

E

FILE NAME : U:\42-1088.00 -Taylor Co. CTH M over the Yellow River\Roadway\421088\_xs.dgn

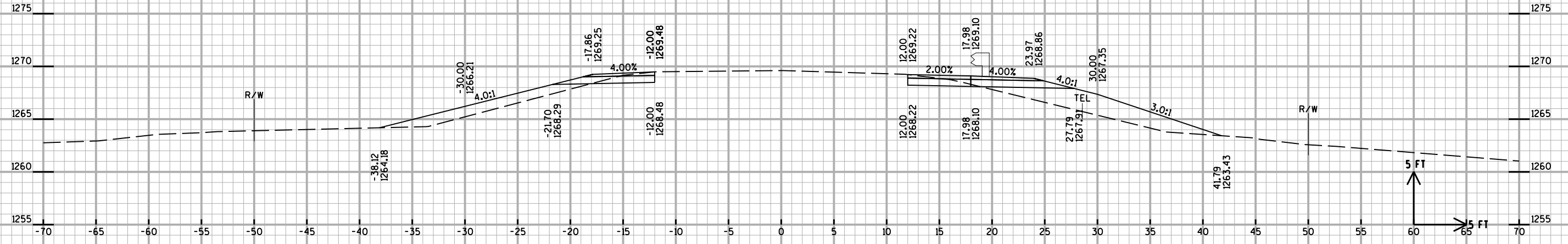
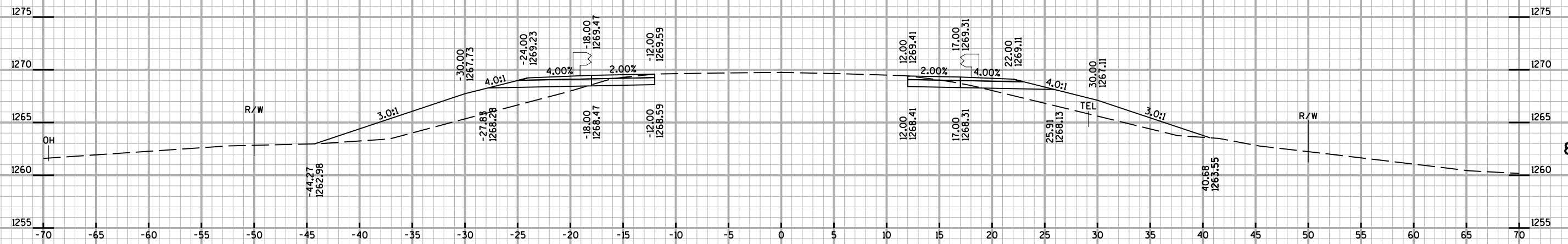
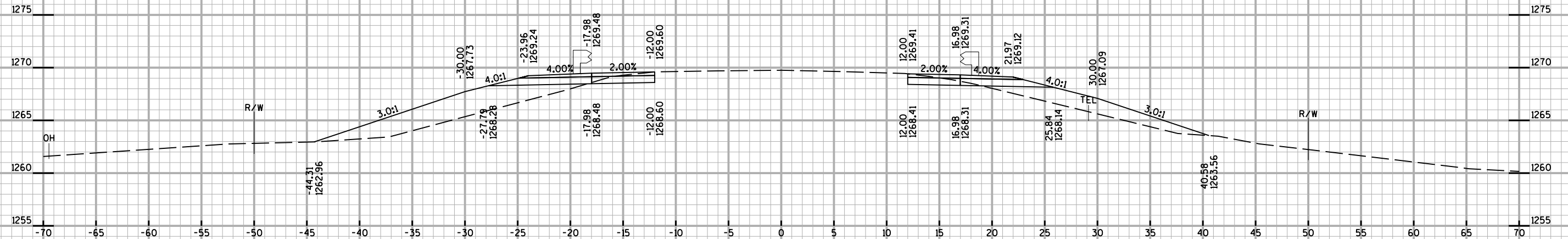
PLOT DATE : 5/17/2018

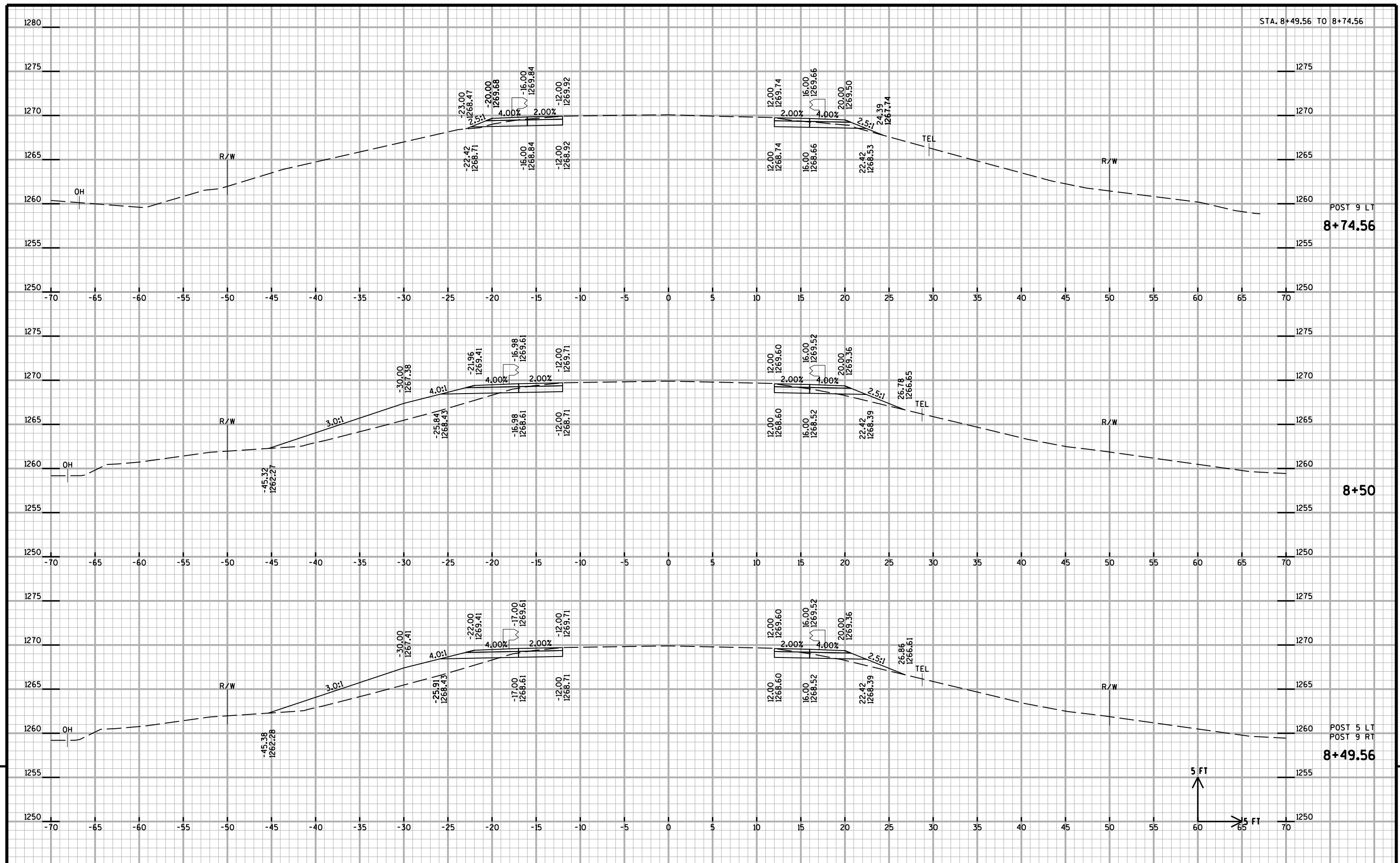
PLOT BY : walderak

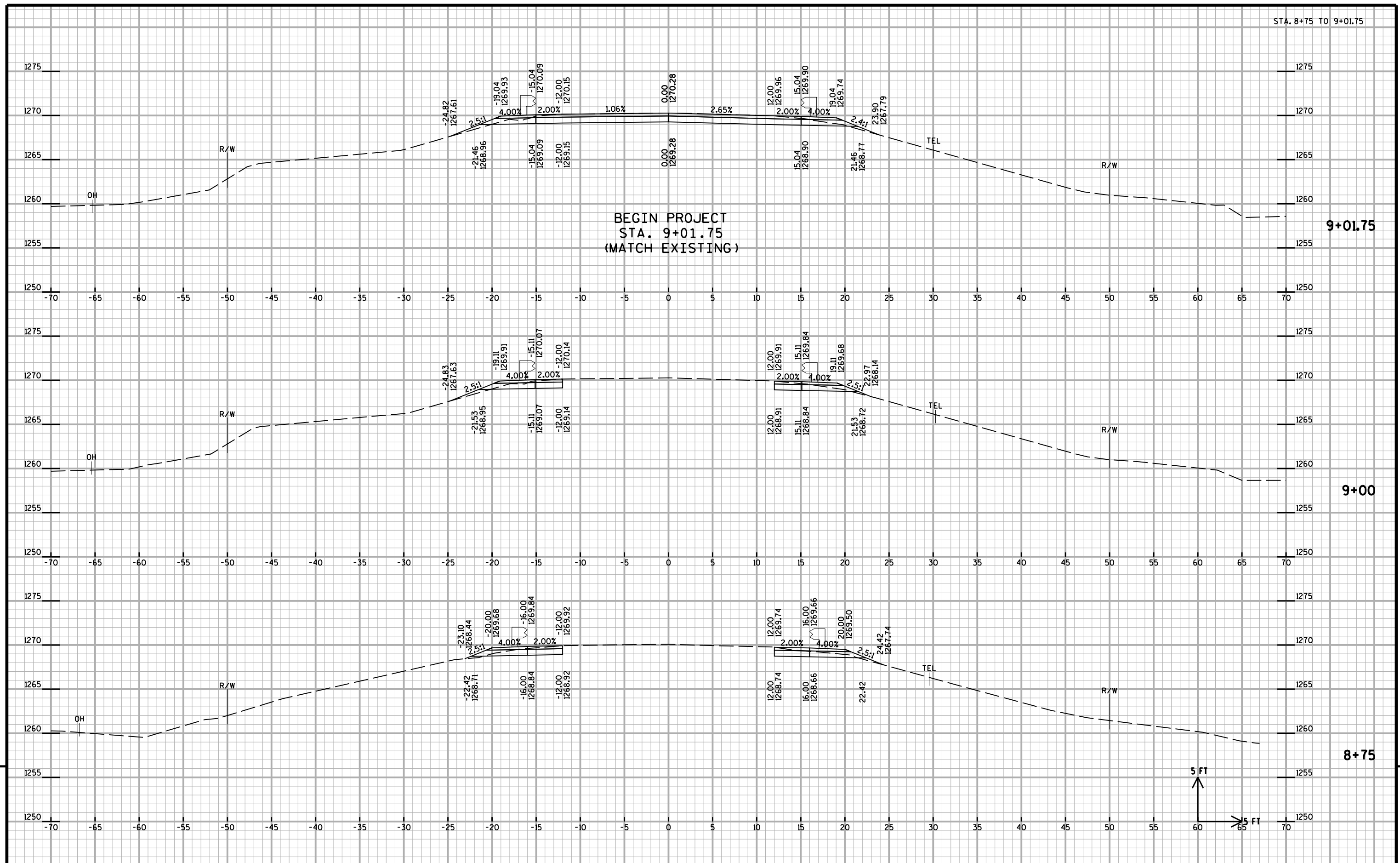
PLOT NAME :

PLOT SCALE : 1:10

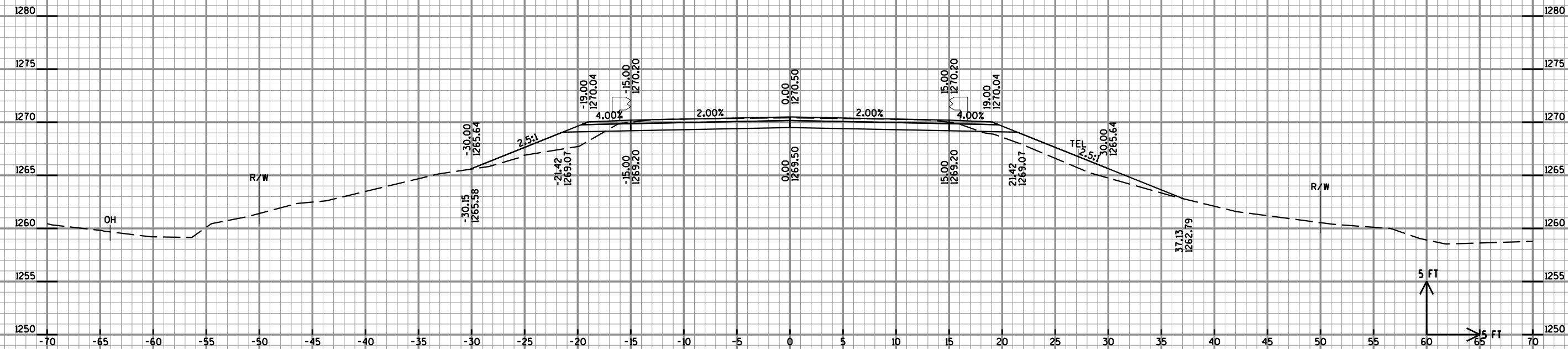
WISDOT/CADDs SHEET 21



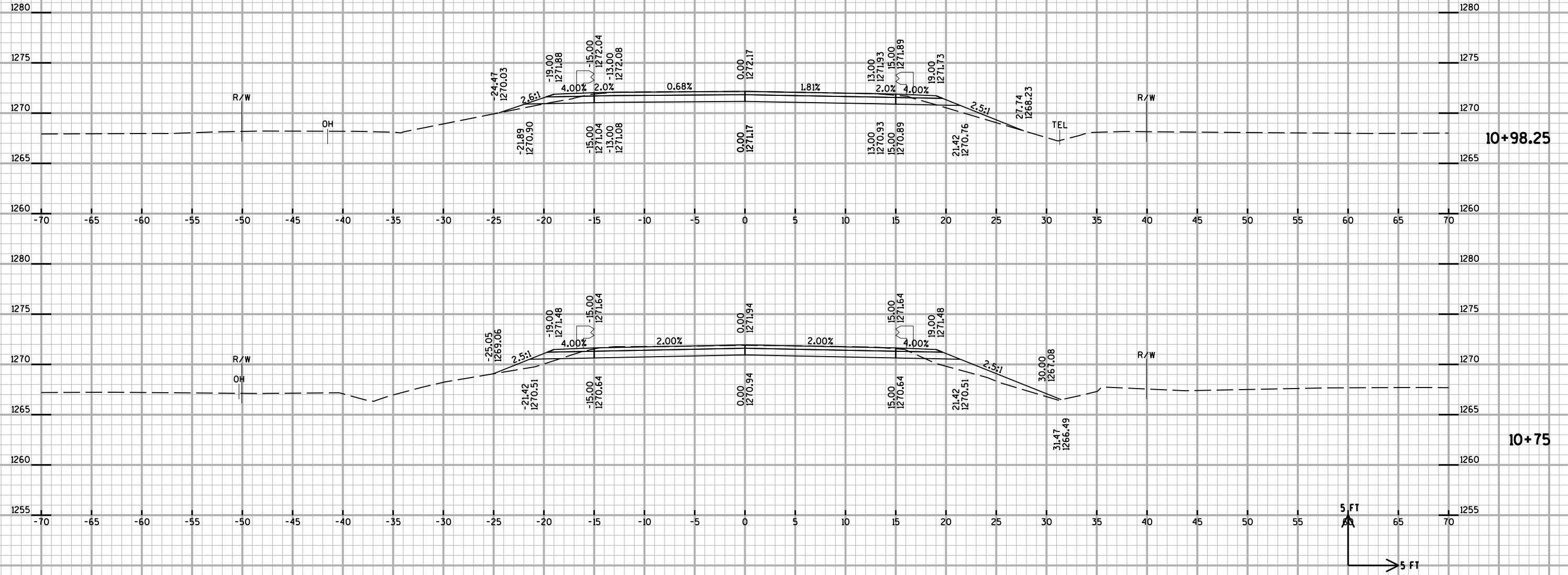


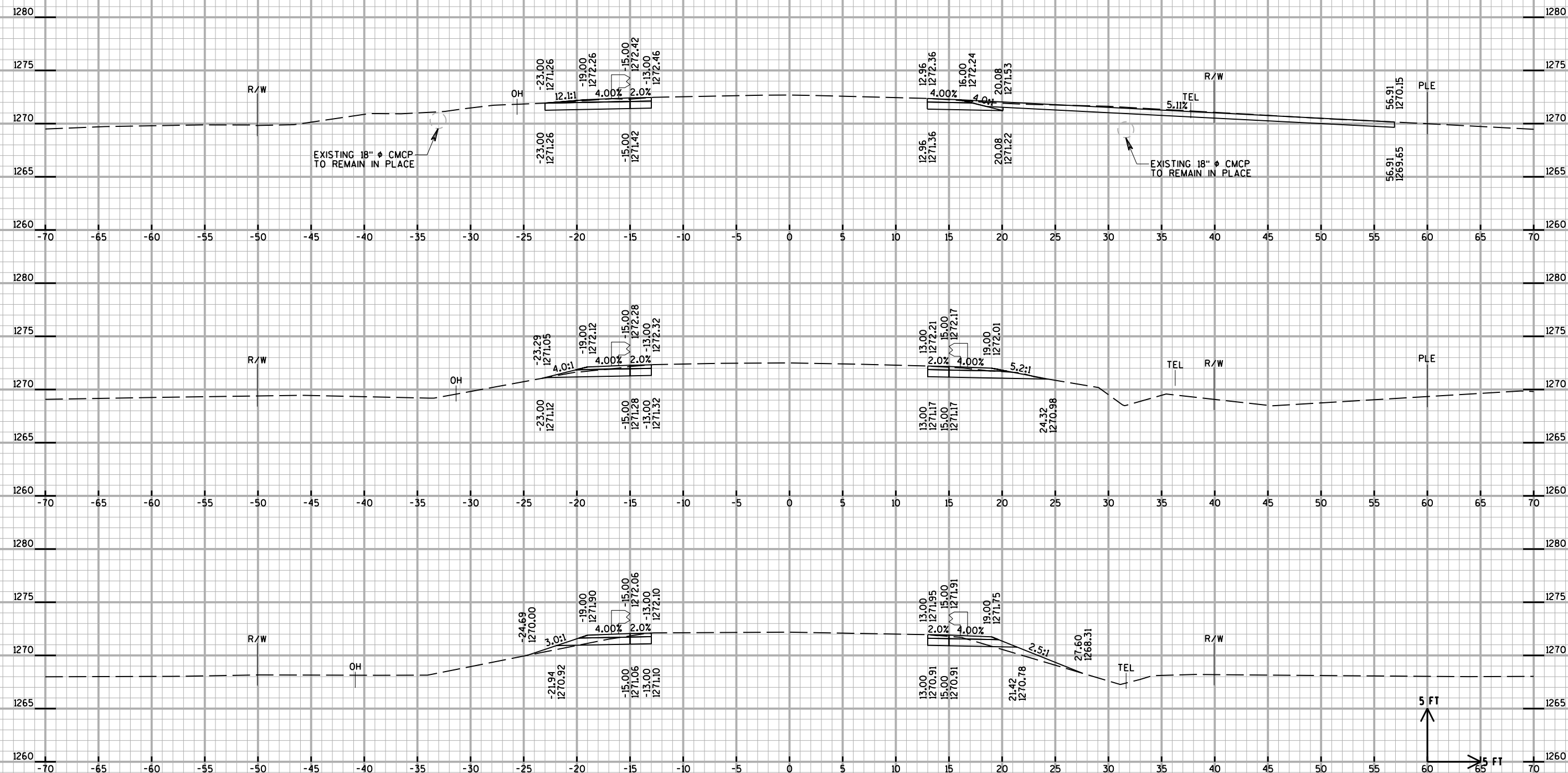


STRUCTURE B-60-146  
STA. 9+51.75 - STA. 10+48.25

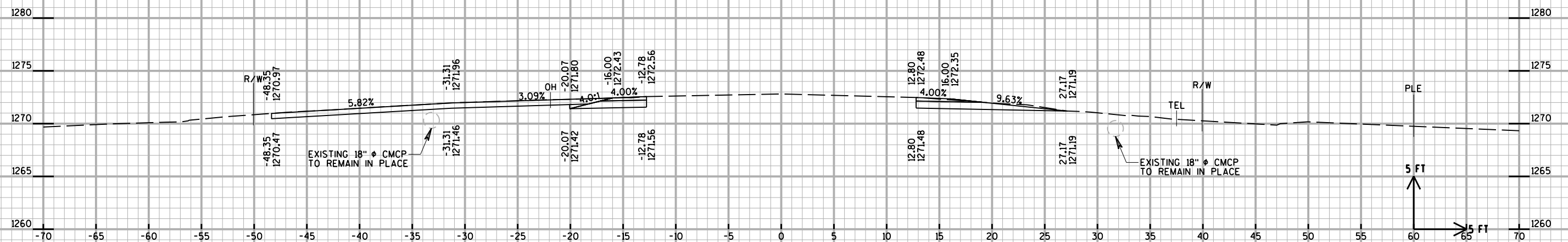
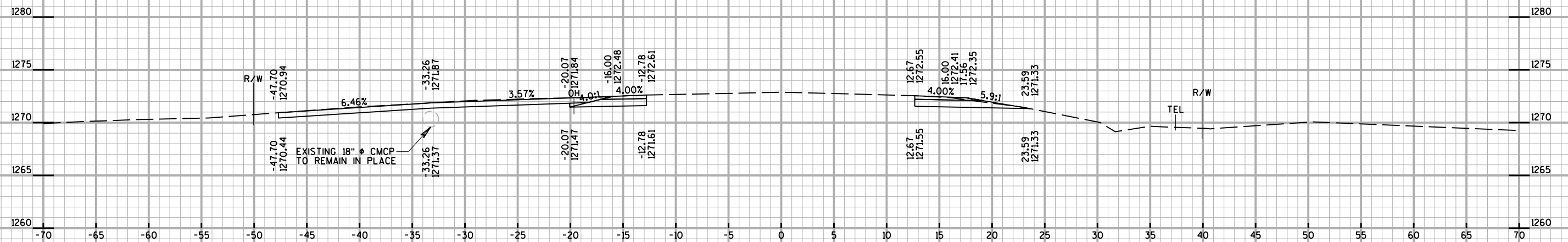
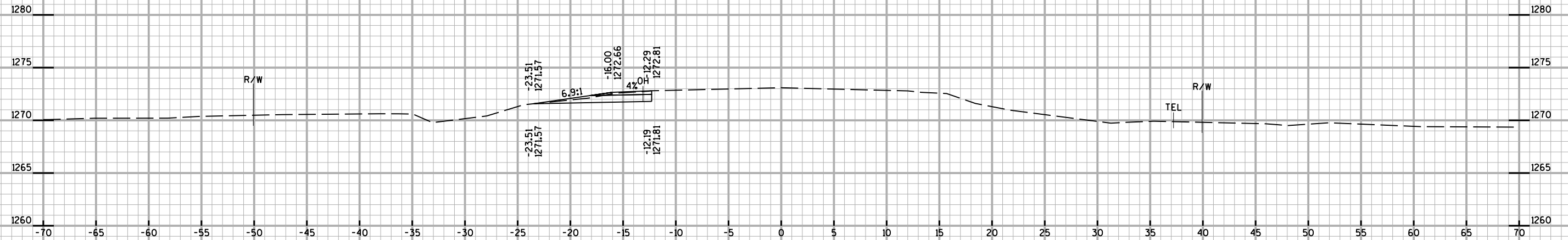


END PROJECT  
STA. 10+98.25  
(MATCH EXISTING)

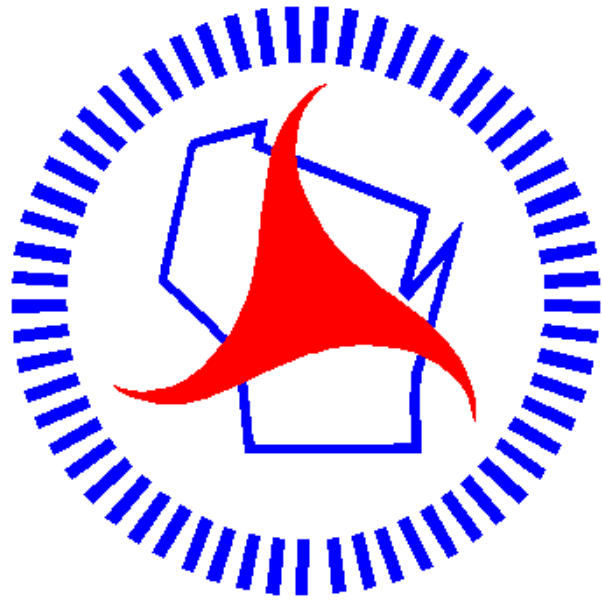




END CONSTRUCTION  
STA. 11+73.11  
(MATCH EXISTING)



## Notes



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

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