GRE

DECEMBER 2019

PROJECT ID: 9246-10-71

WITH: N/A

COUNTY: MARINETTE

ORDER OF SHEETS



TOTAL SHEETS = 46

| STATE PROJECT | FEDERAL PROJECT | |
|---|---|---|
| | PROJECT | CONTRACT |
| 9246-10-71 | ——— | — |
| | | |
| | | |
| | | |

STATE OF WISCONSIN

# DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

# T GROVER, TOWER HILL ROAD

**LITTLE PESHTIGO RIVER BRIDGE**

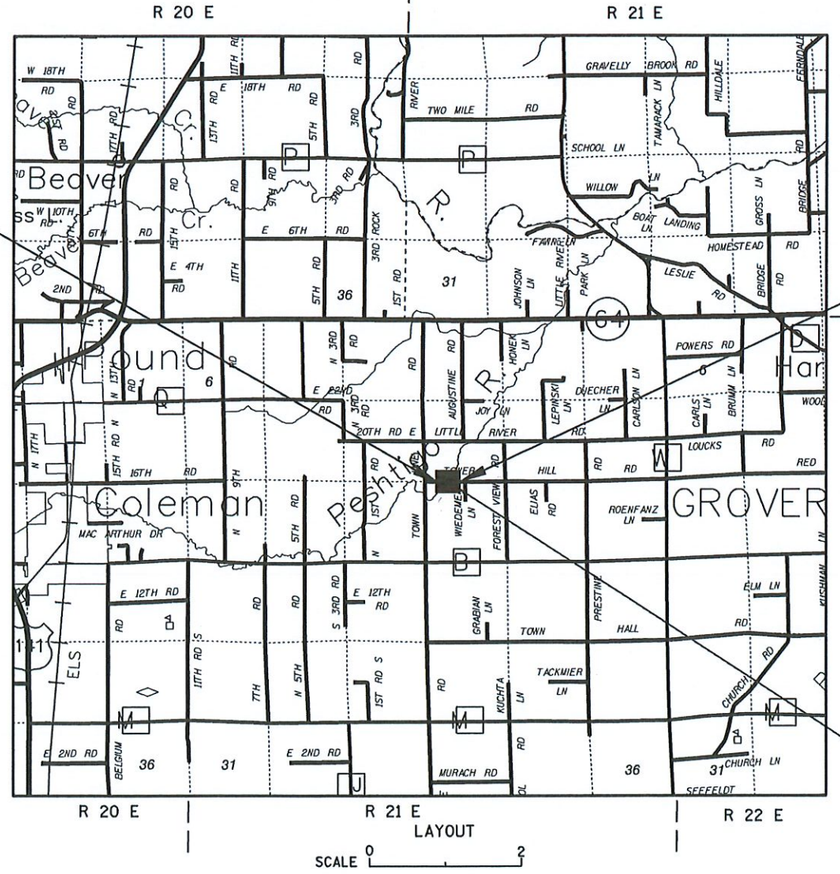
## LOC STR

MARINETTE COUNTY

PROJECT LOCATION

STATE PROJECT NUMBER

9246-10-71




TOTAL NET LENGTH OF CENTERLINE = 0.033

DESIGN DESIGNATION

| | | | |
|---|---|---|---|
| A.A.D.T. | 2020 | = | 30 |
| A.A.D.T. | 2040 | = | 50 |
| D.H.V. | 2039 | = | 60 |
| D.D. | | = | 60/40 |
| T. | | = | 15.2% |
| DESIGN SPEED | | = | 55 MPH |
| ESALS | | = | 7,300 |

CONVENTIONAL SYMBOLS

| PLAN | | PROFILE | |
|---|---|---|---|
| CORPORATE LIMITS | | GRADE LINE | |
| PROPERTY LINE | | ORIGINAL GROUND | |
| LOT LINE | | MARSH OR ROCK PROFILE (To be noted as such) | ROCK |
| LIMITED HIGHWAY EASEMENT | | SPECIAL DITCH | LABEL |
| EXISTING RIGHT OF WAY | | GRADE ELEVATION | 95.36 |
| PROPOSED OR NEW R/W LINE | | CULVERT (Profile View) | |
| SLOPE INTERCEPT | | UTILITIES | |
| REFERENCE LINE | | ELECTRIC | E |
| EXISTING CULVERT | | FIBER OPTIC | FO |
| PROPOSED CULVERT (Box or Pipe) | | GAS | G |
| COMBUSTIBLE FLUIDS | CAUTION | SANITARY SEWER | SAN |
| | | STORM SEWER | SS |
| | | TELEPHONE | T |
| MARSH AREA | | WATER | W |
| | | UTILITY PEDESTAL | |
| WOODED OR SHRUB AREA | | POWER POLE | |
| | | TELEPHONE POLE | |

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, MARINETTE COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ACCEPTED FOR
TOWN OF GROVER

7-16-2019 (DATE) Wayne Hardt (TOWN CHAIRMAN)

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES

WISCONSIN
ANDREW C. DANA
34172
OCONTO, WI
PROFESSIONAL ENGINEER

7-16-2019
(Date)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

| | |
|---|---|
| Surveyor | AYRES ASSOCIATES |
| Designer | AYRES ASSOCIATES |
| Regional Examiner | TIMOTHY VERHAGEN |
| Regional Supervisor | JAMES THOMPSON |

APPROVED FOR THE DEPARTMENT

DATE: 7/23/19 Tim Verhagen (Signature)

E

## GENERAL NOTES

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

FILL EXPANSION FACTOR IS 30%.

CONSTRUCT ASPHALTIC SURFACE WITH A 1 3/4" UPPER LAYER AND A 2 1/4" LOWER LAYER.

PROPERTY LINES AS SHOWN ARE APPROXIMATE.

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

BEARINGS SHOWN ON THIS PLAN ARE TRUE BEARINGS TO THE NEAREST SECOND.

ALL TIES ON THIS PLAN ARE HORIZONTAL UNLESS DESCRIBED OTHERWISE.

EROSION CONTROL LOCATIONS AS SHOWN ON THE EROSION CONTROL PLAN ARE APPROXIMATE. THE EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREAS WITHIN THE FINISHED SUBGRADE SHOULDER POINTS ARE TO BE FERTILIZED, SEEDED, AND EROSION MAT AS DIRECTED BY THE ENGINEER.

ALL ELEVATIONS ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF NAVD 88 (2012).

WISDOT WILL FURNISH A BENCHMARK MONUMENT TO BE SET BY THE CONTRACTOR.

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

## UTILITIES

*WISCONSIN PUBLIC SERVICE CORPORATION TELEPHONE 920-680-2188

2850 S. ASHLAND AVENUE
GREEN BAY, WISCONSIN 54304
ATTENTION: SCOTT ZELLNER
E-MAIL: scott.zellner@wisconsinpublicservice.com

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

*-MEMBER OF DIGGERS HOTLINE

## RUNOFF COEFFICIENT TABLE

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

TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.23 ACRES
SOIL GROUP C

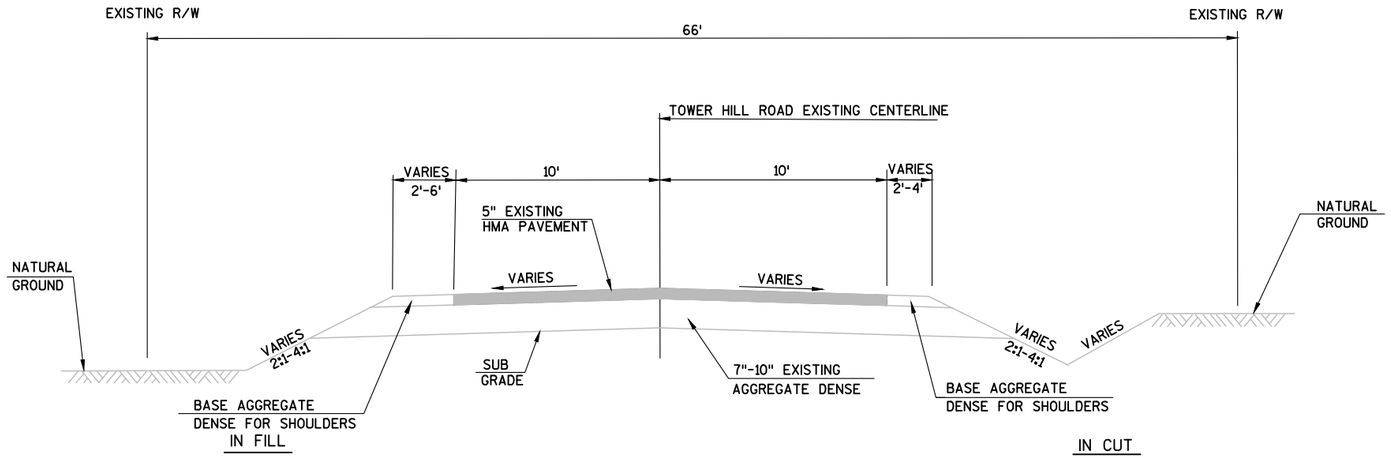
## STANDARD ABBREVIATIONS

| | | | |
|---|---|---|---|
| ADT | AVERAGE DAILY TRAFFIC | NC | NORMAL CROWN |
| AC | ASPHALT CEMENT | PT | POINT OF TANGENCY |
| AGG | AGGREGATE | PC | POINT OF CURVATURE |
| ASPH | ASPHALT | PI | POINT OF INTERSECTION |
| BM | BENCH MARK | PE | PRIVATE ENTRANCE |
| C/L | CENTERLINE | R | RADIUS |
| CONC | CONCRETE | REM | REMOVE |
| CMP | CORRUGATED METAL PIPE | R/L OR RL | REFERENCE LINE |
| CR. | CREEK | RCCP | REINFORCED CONCRETE CULVERT PIPE |
| D | DEGREE OF CURVE | RCPSS | REINFORCED CONCRETE PIPE STORM SEWER |
| DHV | DESIGN HOUR VOLUME | R.O. | RUNOUT |
| ESALS | EQUIVALENT SINGLE AXIS LOADS | R/W | RIGHT-OF-WAY |
| EXIST | EXISTING | STA | STATION |
| FE | FIELD ENTRANCE | SE | SUPER ELEVATION |
| HYD | HYDRANT | SS | STORM SEWER |
| IP | IRON PIPE OR PIN | T | TANGENT |
| L | LENGTH OF CURVE | TEL | TELEPHONE |
| LC | LONG CHORD OF CURVE | TLE | TEMPORARY LIMITED EASEMENT |
| LR | LENGTH OF RUNOFF | T | TRUCKS |
| MH | MANHOLE | VC | VERTICAL CURVE |
| | | W | WELL |

## DEPARTMENT OF NATURAL RESOURCES

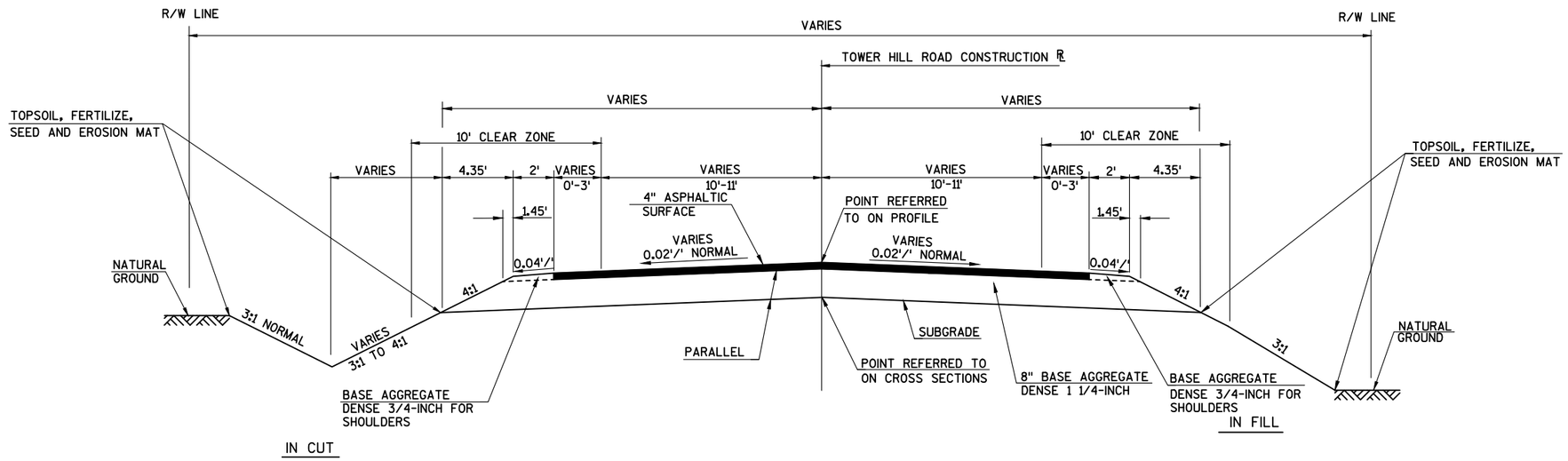
WDNR TELEPHONE 920-412-0165

2984 SHAWANO AVE.
GREEN BAY, WISCONSIN 54313
ATTENTION: JIM DOPERALSKI
E-MAIL: James.doperalski@WISCONSIN.GOV




## EXISTING TYPICAL SECTION FOR TOWER HILL ROAD

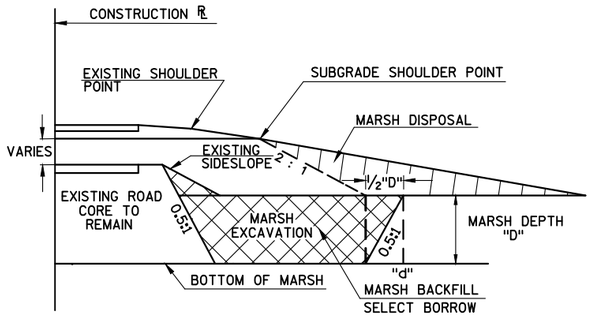
STA. 9+25 - STA. 11+00




## TYPICAL FINISHED SECTION FOR TOWER HILL ROAD

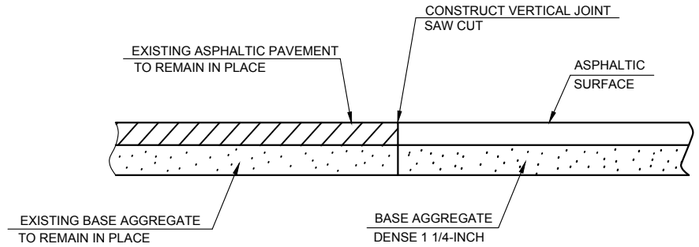
STA. 9+25 - STA. 9+81.75
STA. 10+18.25 - STA. 11+00

| PROJECT NO: 4202-06-71 | HWY: CREEK ROAD | COUNTY: SHEBOYGAN | TYPICAL SECTIONS | SHEET 3 | E |
|---|---|---|---|---|---|



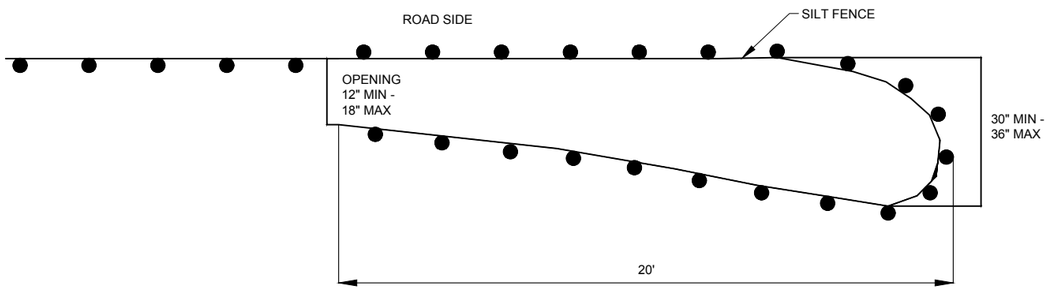

NOTE: BACKFILL QUANTITIES COMPUTED FROM POINT "d" TO COMPENSATE FOR PROBABLE DISPLACED MARSH AREA.

## TYPICAL SECTION-MARSH EXCAVATION




## SAW CUT DETAIL

STA. 9+25
STA. 11+00

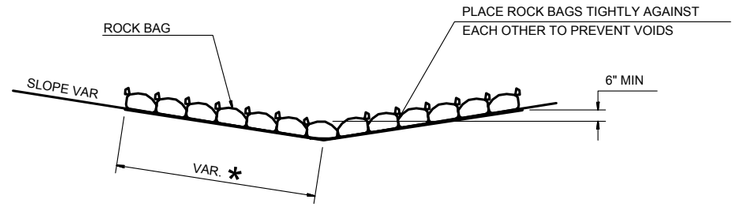



PLAN VIEW

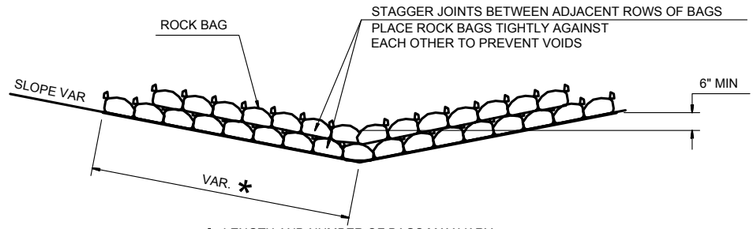
GENERAL NOTES:

SILT FENCE POSTS FOR THE TURN-AROUND SHOULD BE ON THE OUTSIDE OF THE TURN-AROUND. AND TRENCHED IN ACCORDING TO SILT FENCE REQUIREMENTS.

## TEMPORARY SMALL ANIMAL TURN-AROUND




SIDE VIEW (SINGLE LAYER)

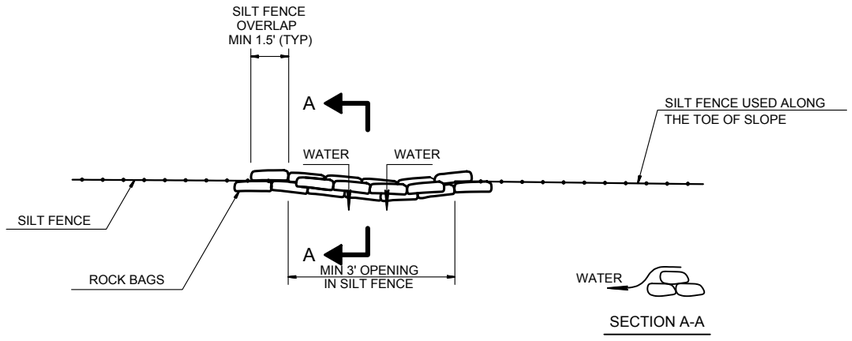



* LENGTH AND NUMBER OF BAGS MAY VARY DEPENDING ON DESIRED DEPTH OF WATER POOL

SIDE VIEW (MULTIPLE LAYER)

## ROCK BAGS DITCH CHECK

PAID AS ROCK BAGS
(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)




TOP VIEW

## ROCK BAGS USED FOR SILT FENCE RELIEF DETAIL

PAID AS ROCK BAGS
(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)

2

## LEGEND

- EROSION MAT, CLASS II, TYPE C
- EROSION MAT URBAN, CLASS I, TYPE B
- SILT FENCE
- SLOPE INTERCEPT
- SURFACE WATER FLOW
- ROCK BAGS
- TURBIDITY BARRIER

N

2

LITTLE PESHTIGO RIVER

SLOPE INTERCEPTS

WETLANDS

WOODS

LIMITS OF WETLANDS

R/W LINE

CABC FE

18" CP

EXISTING R/W

7 TOWER HILL ROAD 8 9 10 11 12 13

OH

BEGIN PROJECT
STA. 9+25

END PROJECT
STA. 11+00

| PROJECT NO: 9246-10-71 | HWY: TOWER HILL RD. | COUNTY: MARINETTE | EROSION CONTROL | SHEET | E |
|---|---|---|---|---|---|



FILE NAME : V:\TRANS-GB\450449 TOWER HILL\C3D\SHEETSPLAN\022001 EC.DWG
LAYOUT NAME - 022001 ec
PLOT DATE : 7/11/2019 1:51 PM
PLOT BY : SOUFAL, KEVIN
PLOT NAME :
PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42

9246-10-71

| Line | Item | Item Description | Unit | Total | Qty |
|---|---|---|---|---|---|
| 0002 | 201.0105 | Clearing | STA | 3.000 | 3.000 |
| 0004 | 201.0205 | Grubbing | STA | 3.000 | 3.000 |
| 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 | 130.000 | 130.000 |
| 0010 | 205.0100 | Excavation Common | CY | 175.000 | 175.000 |
| 0012 | 205.0400 | Excavation Marsh | CY | 814.000 | 814.000 |
| 0014 | 206.1000 | Excavation for Structures Bridges (structure) 01. B-38-150 | LS | 1.000 | 1.000 |
| 0016 | 208.0100 | Borrow | CY | 920.000 | 920.000 |
| 0018 | 208.1100 | Select Borrow | CY | 1,221.000 | 1,221.000 |
| 0020 | 210.1500 | Backfill Structure Type A | TON | 820.000 | 820.000 |
| 0022 | 213.0100 | Finishing Roadway (project) 01. 9246-10-71 | EACH | 1.000 | 1.000 |
| 0024 | 305.0110 | Base Aggregate Dense 3/4-Inch | TON | 15.000 | 15.000 |
| 0026 | 305.0120 | Base Aggregate Dense 1 1/4-Inch | TON | 130.000 | 130.000 |
| 0028 | 455.0605 | Tack Coat | GAL | 30.000 | 30.000 |
| 0030 | 465.0105 | Asphaltic Surface | TON | 85.000 | 85.000 |
| 0032 | 502.0100 | Concrete Masonry Bridges | CY | 174.000 | 174.000 |
| 0034 | 502.3200 | Protective Surface Treatment | SY | 145.000 | 145.000 |
| 0036 | 505.0400 | Bar Steel Reinforcement HS Structures | LB | 5,140.000 | 5,140.000 |
| 0038 | 505.0600 | Bar Steel Reinforcement HS Coated Structures | LB | 16,270.000 | 16,270.000 |
| 0040 | 513.4061 | Railing Tubular Type M | LF | 77.000 | 77.000 |
| 0042 | 516.0500 | Rubberized Membrane Waterproofing | SY | 12.000 | 12.000 |
| 0044 | 550.0020 | Pre-Boring Rock or Consolidated Materials | LF | 140.000 | 140.000 |
| 0046 | 550.1100 | Piling Steel HP 10-Inch X 42 Lb | LF | 280.000 | 280.000 |
| 0048 | 606.0300 | Riprap Heavy | CY | 130.000 | 130.000 |
| 0050 | 612.0406 | Pipe Underdrain Wrapped 6-Inch | LF | 180.000 | 180.000 |
| 0052 | 618.0100 | Maintenance And Repair of Haul Roads (project) 01. 9246-10-71 | EACH | 1.000 | 1.000 |
| 0054 | 619.1000 | Mobilization | EACH | 1.000 | 1.000 |
| 0056 | 624.0100 | Water | MGAL | 2.000 | 2.000 |
| 0058 | 625.0100 | Topsoil | SY | 600.000 | 600.000 |
| 0060 | 628.1504 | Silt Fence | LF | 250.000 | 250.000 |
| 0062 | 628.1520 | Silt Fence Maintenance | LF | 500.000 | 500.000 |
| 0064 | 628.1905 | Mobilizations Erosion Control | EACH | 4.000 | 4.000 |
| 0066 | 628.1910 | Mobilizations Emergency Erosion Control | EACH | 3.000 | 3.000 |
| 0068 | 628.2008 | Erosion Mat Urban Class I Type B | SY | 485.000 | 485.000 |
| 0070 | 628.2027 | Erosion Mat Class II Type C | SY | 115.000 | 115.000 |
| 0072 | 628.6005 | Turbidity Barriers | SY | 290.000 | 290.000 |
| 0074 | 628.7570 | Rock Bags | EACH | 60.000 | 60.000 |

9246-10-71

| Line | Item | Item Description | Unit | Total | Qty |
|---|---|---|---|---|---|
| 0076 | 629.0210 | Fertilizer Type B | CWT | 0.500 | 0.500 |
| 0078 | 630.0120 | Seeding Mixture No. 20 | LB | 20.000 | 20.000 |
| 0080 | 630.0200 | Seeding Temporary | LB | 20.000 | 20.000 |
| 0082 | 630.0500 | Seed Water | MGAL | 15.000 | 15.000 |
| 0084 | 634.0612 | Posts Wood 4x6-Inch X 12-FT | EACH | 4.000 | 4.000 |
| 0086 | 637.2230 | Signs Type II Reflective F | SF | 12.000 | 12.000 |
| 0088 | 638.2602 | Removing Signs Type II | EACH | 4.000 | 4.000 |
| 0090 | 638.3000 | Removing Small Sign Supports | EACH | 4.000 | 4.000 |
| 0092 | 642.5001 | Field Office Type B | EACH | 1.000 | 1.000 |
| 0094 | 643.0420 | Traffic Control Barricades Type III | DAY | 1,080.000 | 1,080.000 |
| 0096 | 643.0705 | Traffic Control Warning Lights Type A | DAY | 1,680.000 | 1,680.000 |
| 0098 | 643.0900 | Traffic Control Signs | DAY | 600.000 | 600.000 |
| 0100 | 643.5000 | Traffic Control | EACH | 1.000 | 1.000 |
| 0102 | 645.0111 | Geotextile Type DF Schedule A | SY | 120.000 | 120.000 |
| 0104 | 645.0120 | Geotextile Type HR | SY | 295.000 | 295.000 |
| 0106 | 650.4500 | Construction Staking Subgrade | LF | 139.000 | 139.000 |
| 0108 | 650.5000 | Construction Staking Base | LF | 139.000 | 139.000 |
| 0110 | 650.6500 | Construction Staking Structure Layout (structure) 01. B-38-150 | LS | 1.000 | 1.000 |
| 0112 | 650.9910 | Construction Staking Supplemental Control (project) 01. 9246-10-71 | LS | 1.000 | 1.000 |
| 0114 | 650.9920 | Construction Staking Slope Stakes | LF | 139.000 | 139.000 |
| 0116 | 690.0150 | Sawing Asphalt | LF | 40.000 | 40.000 |
| 0118 | 715.0502 | Incentive Strength Concrete Structures | DOL | 1,044.000 | 1,044.000 |

## CLEARING AND GRUBBING

| STATION | TO | STATION | LOCATION | 201.0105 CLEARING STA | 201.0205 GRUBBING STA |
|---|---|---|---|---|---|
| 9+25 | - | 9+82 | TOWER HILL RD, LT | 1 | 1 |
| 10+18 | - | 11+00 | TOWER HILL RD, LT | 1 | 1 |
| 10+18 | - | 11+00 | TOWER HILL RD, RT | 1 | 1 |
| | | | TOTALS | 3 | 3 |

## REMOVING GUARDRAIL

| STATION | TO | STATION | LOCATION | 204.0165 LF |
|---|---|---|---|---|
| 9+67 | - | 10+32 | TOWER HILL RD, LT | 65 |
| 9+67 | - | 10+32 | TOWER HILL RD, RT | 65 |
| | | | TOTAL | 130 |

## EARTHWORK SUMMARY

| STATION | TO | STATION | LOCATION | 205.0100 EXCAVATION COMMON (1) CY | UNUSABLE PAVEMENT MATERIAL | AVAILABLE MATERIAL (2) | 205.0400 EXCAVATION MARSH CY | EXPANDED MARSH BACKFILL (10) | UNEXPANDED FILL | EXPANDED FILL (13) | MASS ORDINATE +/- (14) | 208.0100 BORROW CY | 208.1100 SELECT BORROW CY | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9+25 | - | 11+00 | TOWER HILL RD | 175 | 59 | 116 | 814 | 1221 | 797 | 1036 | -920 | 920 | 1221 | |
| | | | TOTALS | 175 | 59 | 116 | 814 | 1221 | 797 | 1036 | -920 | 920 | 1221 | |

## BASE AGGREGATE DENSE AND WATER

| STATION | TO | STATION | LOCATION | 305.0110 BASE AGGREGATE DENSE 3/4-INCH TON | 305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON | 624.0100 WATER MGAL |
|---|---|---|---|---|---|---|
| 9+25 | - | 9+82 | TOWER HILL RD | 5 | 55 | 1 |
| 10+18 | - | 11+00 | TOWER HILL RD | 10 | 75 | 1 |
| | | | TOTALS | 15 | 130 | 2 |

## ASPHATLIC SURFACE

| STATION | TO | STATION | LOCATION | 455.0605 TACK COAT TON | 465.0105 ASPHALTIC SURFACE TON |
|---|---|---|---|---|---|
| 9+25 | - | 9+82 | TOWER HILL RD | 12 | 35 |
| 10+18 | - | 11+00 | TOWER HILL RD | 18 | 50 |
| | | | TOTAL | 30 | 85 |

ALL ITEMS CATEGORY 0010 UNLESS SPECIFIED.

3

## LANDSCAPING ITEMS

| STATION | TO | STATION | LOCATION | 625.0100 TOPSOIL SY | 628.2008 EROSION MAT URBAN CLASS I TYPE B SY | 628.2027 EROSION MAT CLASS II TYPE C SY | 629.0210 FERTILIZER TYPE B CWT | 630.0120 SEEDING MIXTURE NO. 20 LB | 630.0200 SEEDING TEMPORARY LB | 630.0500 SEED WATER MGAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 9+25 | - | 11+00 | TOWER HILL RD | 170 | 145 | 25 | 0.1 | 5 | 5 | 4 |
| 9+25 | - | 11+00 | TOWER HILL RD | 330 | 260 | 70 | 0.2 | 10 | 10 | 8 |
| UNDISTRIBUTED | | | TOWER HILL RD | 100 | 80 | 20 | 0.2 | 5 | 5 | 3 |
| | | | TOTALS | 600 | 485 | 115 | 0.5 | 20 | 20 | 15 |

## SILT FENCE

| STATION | TO | STATION | LOCATION | 628.1504 SILT FENCE LF | 628.1520 SILT FENCE MAINTENANCE LF |
|---|---|---|---|---|---|
| 9+25 | - | 11+00 | TOWER HILL RD | 85 | 170 |
| 9+25 | - | 11+00 | TOWER HILL RD | 125 | 250 |
| UNDISTRIBUTED | | | TOWER HILL RD | 40 | 80 |
| | | | TOTALS | 250 | 500 |

## EROSION CONTROL MOBILIZATIONS

| LOCATION | 628.1905 MOBILIZATIONS EROSION CONTROL EACH | 628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH |
|---|---|---|
| TOWER HILL RD | 4 | 3 |
| TOTALS | 4 | 3 |

## TURBIDITY BARRIERS

| LOCATION | 628.6005 SY |
|---|---|
| WEST ABUTMENT | 130 |
| EAST ABUTMENT | 160 |
| TOTAL | 290 |

## ROCK BAGS

| STATION | LOCATION | 628.7570 EACH |
|---|---|---|
| 9+75 | TOWER HILL RD, LT | 15 |
| 10+25 | TOWER HILL RD, LT & RT | 30 |
| UNDISTRIBUTED | TOWER HILL RD | 15 |
| | TOTAL | 60 |

## SIGNS TYPE II AND POSTS

| STATION | LOCATION | 634.0612 POSTS WOOD 4x6-Inch X 12-FT EACH | 637.2230 SIGNS TYPE II REFLECTIVE F SF | REMARKS |
|---|---|---|---|---|
| 9+82 | TOWER HILL RD, LT | 1 | 3 | W5-52L |
| 9+82 | TOWER HILL RD, RT | 1 | 3 | W5-52R |
| 10+18 | TOWER HILL RD, LT | 1 | 3 | W5-52R |
| 10+18 | TOWER HILL RD, RT | 1 | 3 | W5-52L |
| | TOTALS | 4 | 12 | |

## REMOVING SIGNS AND POSTS

| STATION | LOCATION | 638.2602 REMOVING SIGNS TYPE II EACH | 638.3000 REMOVING SMALL SIGN SUPPORTS EACH |
|---|---|---|---|
| 9+82 | TOWER HILL RD, LT | 1 | 1 |
| 9+82 | TOWER HILL RD, RT | 1 | 1 |
| 10+18 | TOWER HILL RD, LT | 1 | 1 |
| 10+18 | TOWER HILL RD, RT | 1 | 1 |
| | TOTALS | 4 | 4 |

ALL ITEMS CATEGORY 0010 UNLESS SPECIFIED.

3

3

## TRAFFIC CONTROL SUMMARY

| LOCATION | APPROXIMATE SERVICE DAYS | 643.0420 TRAFFIC CONTROL BARRICADES TYPE III NUMBER REQ'D | 643.0420 DAY | 643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A NUMBER REQ'D | 643.0705 DAY | 643.0900 TRAFFIC CONTROL SIGNS NUMBER REQ'D | 643.0900 DAY | REMARKS |
|---|---|---|---|---|---|---|---|---|
| TOWER HILL RD / TOWN LINE RD | 60 | 2 | 120 | 4 | 240 | 3 | 180 | ADVANCE WARNING SIGNS - SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C |
| WEST WORK ZONE LIMITS | 60 | 7 | 420 | 10 | 600 | 2 | 120 | SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C, D, & E |
| EAST WORK ZONE LIMITS | 60 | 7 | 420 | 10 | 600 | 2 | 120 | SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C, D, & E |
| TOWER HILL RD / FOREST VIEW RD | 60 | 2 | 120 | 4 | 240 | 3 | 180 | BRIDGE OUT 3/4 MILE AHEAD - SEE BARRICADES AND SIGNS FOR MAINLINE CLOSURES DETAIL C |
| TOTALS | | | 1080 | | 1680 | | 600 | |

## CONSTRUCTION STAKING

| CATEGORY | STATION TO | STATION | LOCATION | 650.4500 SUBGRADE LF | 650.5000 BASE LF | 650.6500.01 STRUCTURE LAYOUT (01. B-38-0150) LS | 650.9910.01 SUPPLEMENTAL CONTROL (01. 9246-10-71) LS | 650.9920 SLOPE STAKES LF |
|---|---|---|---|---|---|---|---|---|
| 0010 | 9+25 - | 9+82 | TOWER HILL RD | 57 | 57 | - | 1 | 57 |
| 0010 | 10+18 - | 11+00 | TOWER HILL RD | 82 | 82 | - | | 82 |
| | | | TOTALS 0010 | 139 | 139 | 0 | 1 | 139 |
| 0020 | | | B-38-0150 | - | - | 1 | - | - |
| | | | TOTALS 0020 | 0 | 0 | 1 | 0 | 0 |
| | | | TOTALS | 139 | 139 | 1 | 1 | 139 |

## SAWING ASPHALT

| STATION | LOCATION | 690.0150 LF |
|---|---|---|
| 9+25 | TOWER HILL RD | 20 |
| 11+00 | TOWER HILL RD | 20 |
| | TOTAL | 40 |

ALL ITEMS CATEGORY 0010 UNLESS SPECIFIED.

## CONVENTIONAL SYMBOLS

FOUND IRON PIPE/PIN (1" UNLESS NOTED) — TEMPORARY LIMITED EASEMENT
R/W MONUMENT — (SET) PERMANENT LIMITED EASEMENT
R/W STANDARD — (SET) R/W BOUNDARY POINT (RWB20)
SIGN (ISIGN) — PARCEL NUMBER (103)
SECTION CORNER MONUMENT — UTILITY PARCEL NUMBER (32)
SECTION CORNER SYMBOL — SIGN NUMBER (OFF PREMISE) (21-)
FEE (HATCH VARIES) — BUILDING

SECTION LINE
QUARTER LINE
SIXTEENTH LINE
NEW REFERENCE LINE (10)
NEW R/W LINE
EXISTING R/W LINE
PROPERTY LINE (P.L.)
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)

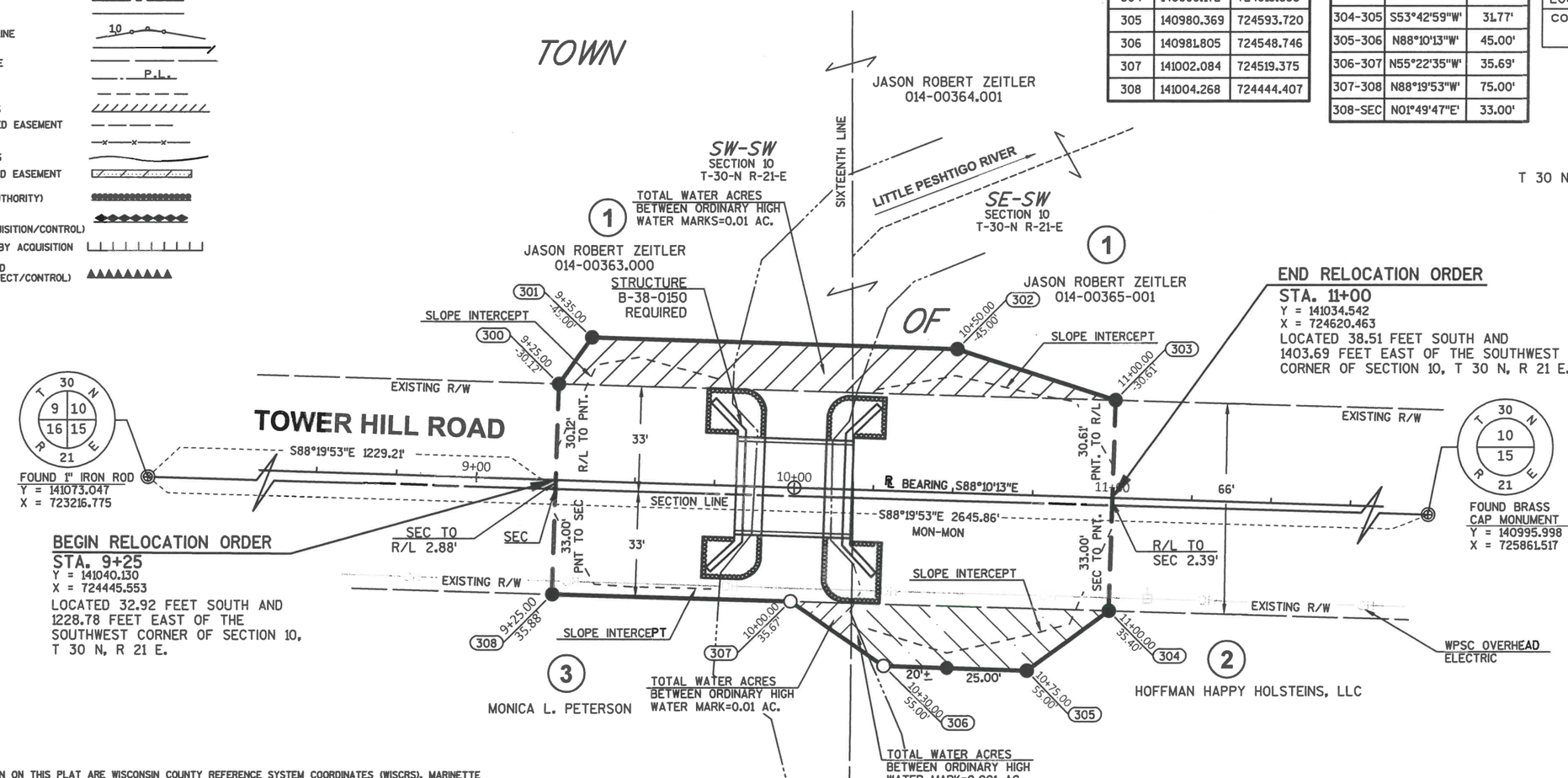
## SCHEDULE OF LANDS AND INTERESTS REQUIRED

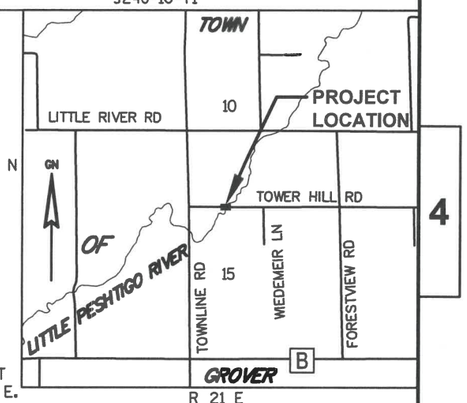
| PARCEL NO. | OWNER(S) | INTEREST REQUIRED | R/W (ACRES) FEE | EXISTING | TOTAL |
|---|---|---|---|---|---|
| 1 | JASON ROBERT ZEITLER | FEE | 0.05 | 0.13 | 0.18 |
| 2 | HOFFMAN HAPPY HOLSTEINS, LLC | FEE | 0.03 | 0.06 | 0.09 |
| 3 | MONICA L. PETERSON | FEE | 0.01 | 0.07 | 0.08 |

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

| POINT TABLE | | |
|---|---|---|
| POINT | Y | X |
| 300 | 141070.235 | 724446.514 |
| 301 | 141084.788 | 724456.984 |
| 302 | 141081.116 | 724571.926 |
| 303 | 141065.139 | 724621.441 |
| 304 | 140999.172 | 724619.333 |
| 305 | 140980.369 | 724593.720 |
| 306 | 140981.805 | 724548.746 |
| 307 | 141002.084 | 724519.375 |
| 308 | 141004.268 | 724444.407 |

| COURSE TABLE | | |
|---|---|---|
| COURSE | BEARING | DISTANCE |
| SEC-300 | N01°49'47"E' | 33.00' |
| 300-301 | N35°43'58"E' | 17.93' |
| 301-302 | S88°10'13"E' | 115.00' |
| 302-303 | S72°07'00"E' | 52.03' |
| 303-304 | S01°49'47"W' | 66.00' |
| 304-305 | S53°42'59"W' | 31.77' |
| 305-306 | N88°10'13"W' | 45.00' |
| 306-307 | N55°22'35"W' | 35.69' |
| 307-308 | N88°19'53"W' | 75.00' |
| 308-SEC | N01°49'47"E' | 33.00' |




NET RELOCATION ORDER LENGTH 0.033 MI

| R/W PROJECT NUMBER | SHEET NUMBER | TOTAL SHEETS |
|---|---|---|
| 9246-10-00 | 4.01 | 1 |
| FEDERAL PROJECT NUMBER ---------- | | |

PLAT OF RIGHT-OF-WAY REQUIRED FOR

**T GROVER TOWER HILL ROAD**
**LITTLE PESHTIGO RIVER BRIDGE**

LOCAL STREET — MARINETTE COUNTY

CONSTRUCTION PROJECT NUMBER
9246-10-71

APPROVED FOR TOWN OF GROVER
10-31-18 (DATE) Wayne Staral (signature)

PLAT PREPARED BY
AYRES ASSOCIATES

THE SURVEY IS PREPARED AT THE REQUEST OF TOWN OF GROVER. THE TOPOGRAPHY AND UTILITY SURVEY WAS PERFORMED IN SEPTEMBER 2017. THIS SURVEY IS ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

WISCONSIN — James R. Cappeart S-3044 Green Bay Wis. — LAND SURVEYOR

James Cappeart
JAMES CAPPEART
REGISTRATION NUMBER S-3044

10/19/2018
DATE

REVISION DATE

PLOT SCALE : 1:40

## NOTES:

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

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 TOWER HILL ROAD SHOWN HEREIN IS BASED ON VOLUME 289, PAGE 304, VOLUME 289, PAGE 306, AND VOLUME 289, PAGE 307.

## CONVENTIONAL UTILITY SYMBOLS

| | | | |
|---|---|---|---|
| WATER | —W— | SANITARY SEWER | —SAN— |
| GAS | —G— | STORM SEWER | —SS— |
| TELEPHONE | —T— | | NON COMPENSABLE |
| OVERHEAD TRANSMISSION LINES | —OH— | | COMPENSABLE |
| | | POWER POLE | ● |
| ELECTRIC | —E— | TELEPHONE POLE | ● |
| CABLE TELEVISION | —TV— | TELEPHONE PEDESTAL | ✕ |
| FIBER OPTIC | —FO— | ELECTRIC TOWER | ⊠ |

## CONVENTIONAL ABBREVIATIONS

| | | | |
|---|---|---|---|
| ACCESS POINT/ DRIVEWAY CONNECTION | AP | BUILDING | BLDG |
| ACCESS RIGHTS | AR | REFERENCE LINE | R/L |
| ACRES | AC. | RELEASE OF RIGHTS | ROR |
| AND OTHERS | ET.AL. | REMAINING | REM. |
| CENTERLINE | C/L | RIGHT-OF-WAY | R/W |
| CERTIFIED SURVEY MAP | CSM | SECTION | SEC. |
| CORNER | COR. | STATION | STA. |
| DOCUMENT | DOC. | TEMPORARY LIMITED EASEMENT | TLE |
| EASEMENT | EASE. | VOLUME | V. |
| FIELD ENTRANCE | F.E. | CURVE DATA | |
| LAND CONTRACT | LC | LONG CHORD | LCH |
| MONUMENT | MON. | LONG CHORD BEARING | LCB |
| PAGE | P. | RADIUS | R |
| PERMANENT LIMITED EASEMENT | PLE | DEGREE OF CURVE | D |
| PROPERTY LINE | PL | CENTRAL ANGLE OR DELTA | DELTA |
| RECORDED AS | (100') | LENGTH OF CURVE | L |
| | | TANGENT | TAN |

BENCH MARKS

| NO. | STATION | DESCRIPTION | ELEV. |
|---|---|---|---|
| 200 | 7+57 | SPK. IN PP#3021 15W10-32' RT. | 745.43 |
| 201 | 9+97 | CHIS. SQ. N. SIDE BRIDGE DECK-13.3' LT. | 750.39 |
| 202 | 14+86 | SPK. IN PP#3021 15W12-30' RT. | 748.16 |
| | | | |

LEGEND

XXXX XXXX SAW CUT

DAVID A. ZEITLER

JASON ZEITLER

LITTLE PESHTIGO RIVER

R/W LINE

SLOPE INTERCEPTS

LIMITS OF WETLANDS

WETLANDS

WOODS

CABC FE

18" CP

EXISTING R/W

7 TOWER HILL RD. 8 9 10 11 12 13

99'

OH

3/4" REBAR

TOWER HILL ROAD

24.36'

21.86'

23.64'

PK NAIL

PK NAIL

PK NAIL

CP#101
STA. 15+84.16-13.41' LT.
Y=141032.488
Y=725104.803

N

PK NAIL

21.34'

TOWER HILL ROAD

22.42'

23.31'

PK NAIL

PK NAIL

3/4" REBAR

CP#100
STA. 6+50.13-13.18' RT.
Y=141035.732
Y=724170.405

MONICA L. PETERSON

HOFFMAN HAPPY HOLSTEINS LLC

BEGIN PROJECT
STA. 9+25
Y = 141040.130
X = 724445.553

STRUCTURE B-38-0150
REQUIRED

P.L.

END PROJECT
STA. 11+00
Y = 141034.542
X = 724620.463

5

5

656
654
652
650
648
646
644
642
640

STA 9+25.00
EL 649.81

VPC STA 9+50.00
VPC EL 650.25

FINISHED GRADE

VPI STA 10+00.00
VPI EL 651.13

VPT STA 10+50.00
VPT EL 650.34

STA 11+00.00
EL 649.54

1.77%

-1.59%

HIGH WATER$_{100}$ ELEV.= 649.29

EXISTING PROFILE

HIGH WATER$_{2}$ ELEV.=646.9

VCL = 100.00

K = 29.79

WATER ELEV.= 641.7 (9/25/17)

STA. 10+00
REMOVE STRUCTURE P-38-103
SINGLE SPAN CONCRETE DECK GIRDER BRIDGE
30 FEET LONG
27.7 FOOT CLEAR ROADWAY

STA. 10+00
STRUCTURE B-38-0150 REQ'D.
SINGLE SPAN CONCRETE FLAT SLAB BRIDGE
36.5 FOOT OVERALL LENGTH
28 FOOT CLEAR ROADWAY

647.81 647.77 647.82 647.91 648.17 648.44 648.89 649.34 649.81 649.81 650.27 650.25 650.50 650.59 640.47 650.71 650.51 650.63 650.27 650.34 649.91 649.94 649.54 649.54 649.21 648.86 648.68 648.50 648.48 648.46 648.46

8+00 9+00 10+00 11+00 12+00

| PROJECT NO: 9246-10-71 | HWY: TOWER HILL RD. | COUNTY: MARINETTE | PLAN AND PROFILE: TOWER HILL ROAD | SHEET 12 | E |
|---|---|---|---|---|---|

FILE NAME : V:\TRANS-GB\450449 TOWER HILL\C3D\SHEETSPLAN\050101 PP.DWG
LAYOUT NAME - 050101 pp

PLOT DATE : 7/11/2019 1:51 PM PLOT BY : SOUFAL, KEVIN PLOT NAME : PLOT SCALE : 1 IN:40 FT

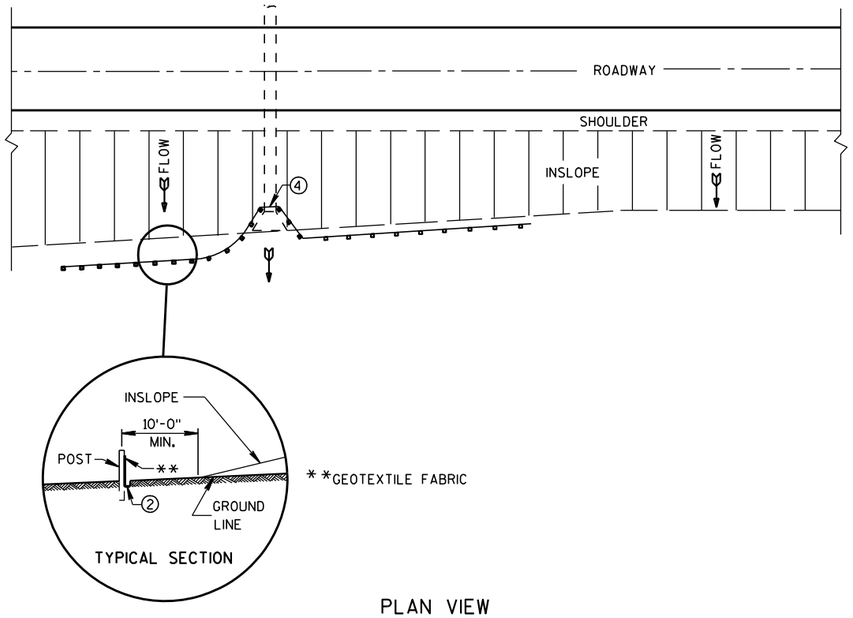
WISDOT/CADDS SHEET 44

# Standard Detail Drawing List

| | |
|---|---|
| 08E09-06 | SILT FENCE |
| 08E11-02 | TURBIDITY BARRIER |
| 12A03-10 | NAME PLATE (STRUCTURES) |
| 15C02-07A | BARRICADES AND SIGNS FOR MAINLINE CLOSURES |
| 15C02-07B | BARRICADES AND SIGNS FOR VARIOUS CLOSURES |
| 15C06-09 | SIGNING & MARKING FOR TWO LANE BRIDGES |
| 15C11-07B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS |
| 15D38-02A | TEMPORARY TRAFFIC CONTROL SIGN MOUNTING |
| 15D38-02B | ATTACHMENT OF SIGNS TO POSTS |

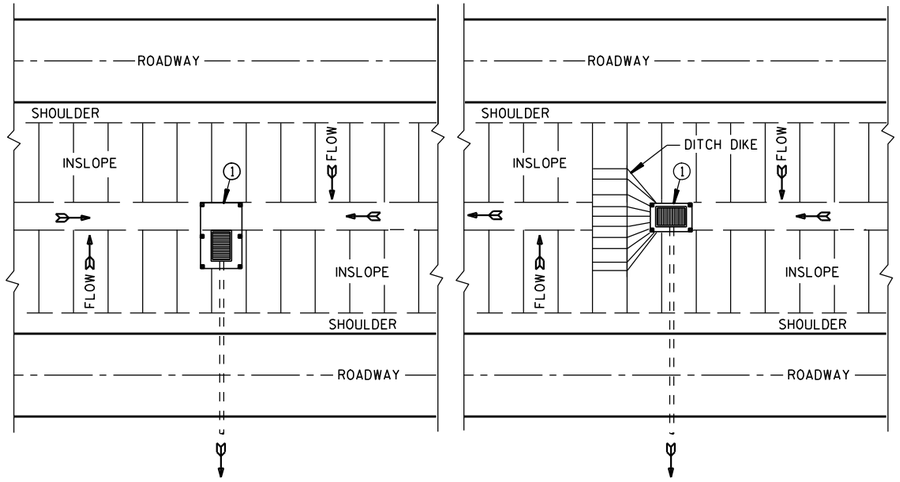
6

6




PLAN VIEW

## TYPICAL APPLICATION OF SILT FENCE




PLAN VIEW

## SILT FENCE AT MEDIAN SURFACE DRAINS

## GENERAL NOTES

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

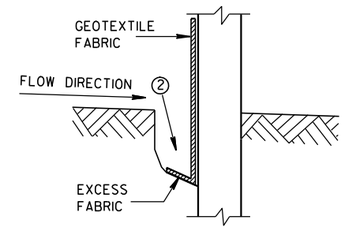
① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.

② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.

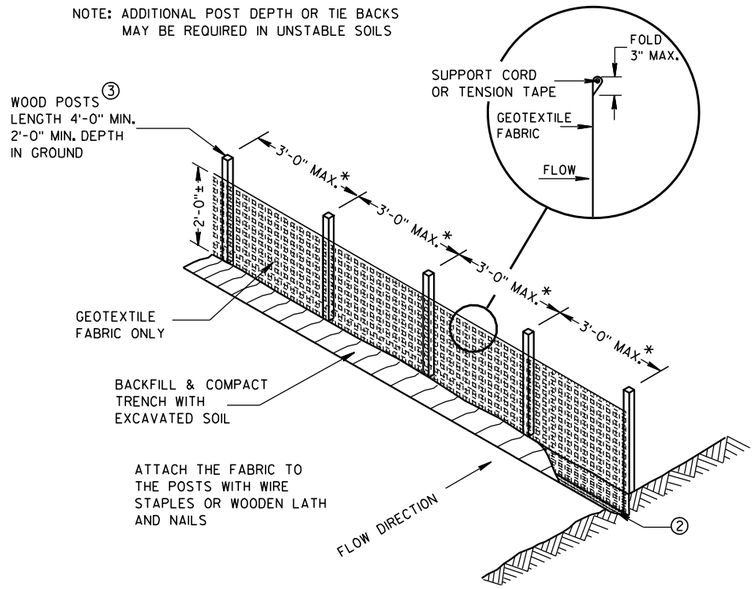
③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.

④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.

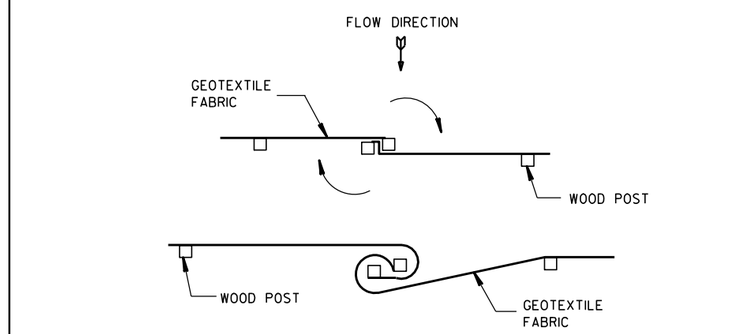
⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



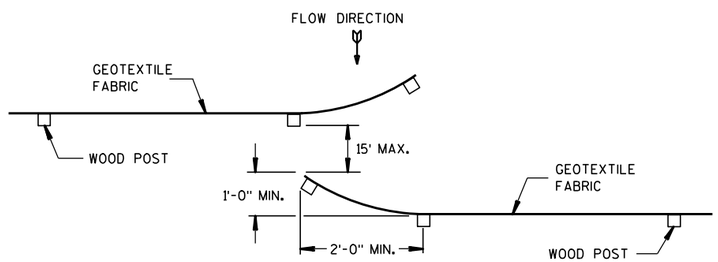

## TRENCH DETAIL




## SILT FENCE

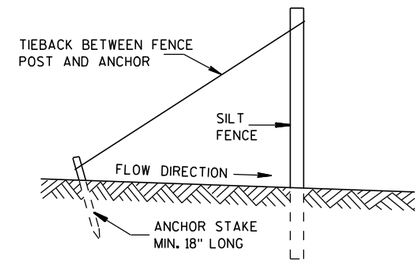



TWIST METHOD




HOOK METHOD

## JOINING TWO LENGTHS OF SILT FENCE ⑤




## SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

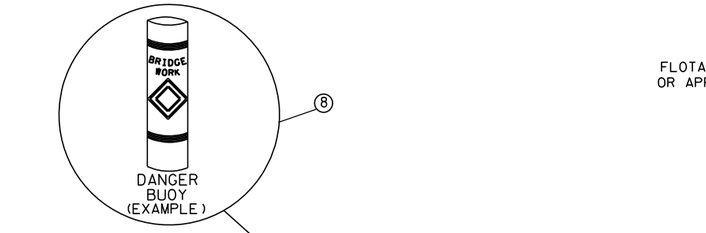


6

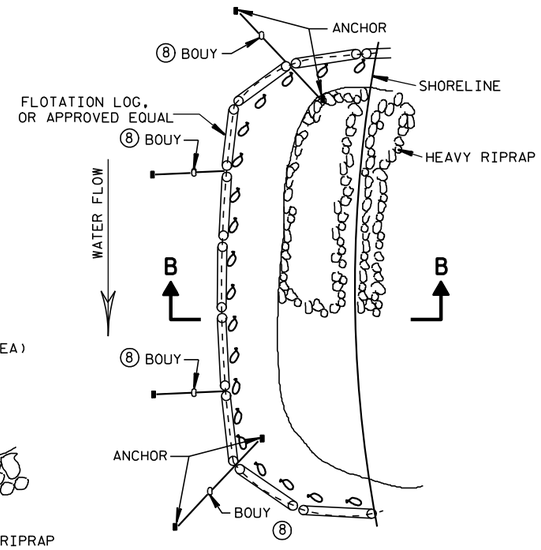
S.D.D. 8 E 9-6

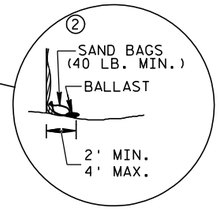
6

S.D.D. 8 E 9-6

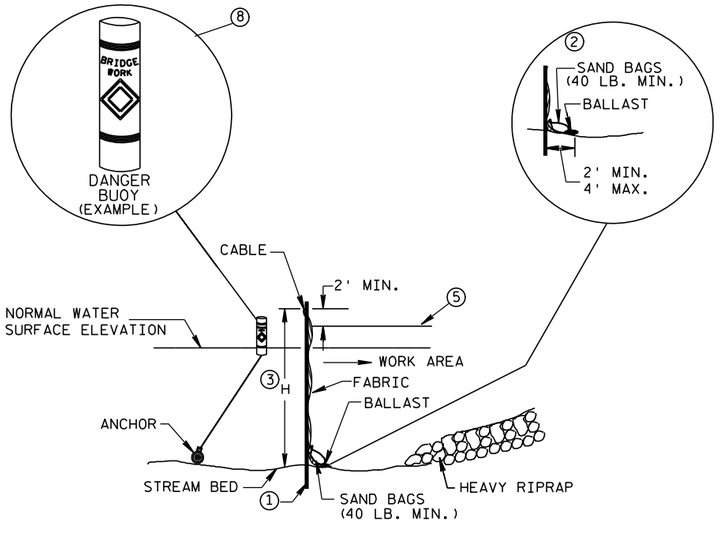



**SECTION B-B**



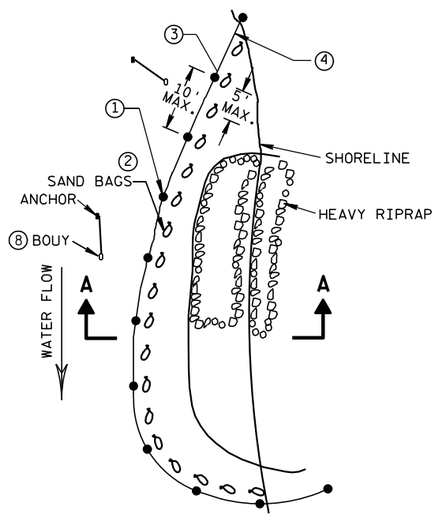




**TURBIDITY BARRIER FLOAT ALTERNATIVE**
**CAUTION - SEE NOTE 6**




**SECTION A-A**




**PLAN VIEW**

**TURBIDITY BARRIER STANDARD POST INSTALLATION**

**TURBIDITY BARRIER PLACEMENT DETAILS**

## GENERAL NOTES

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

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

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② 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.

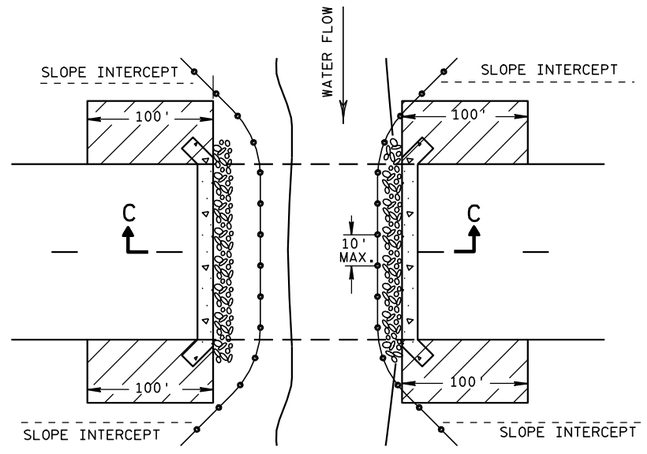
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

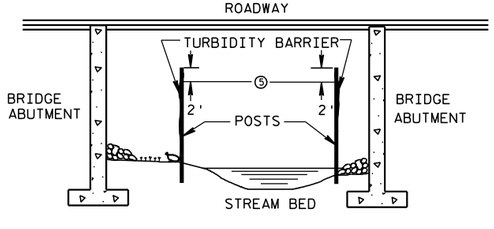
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.

⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.




**PLAN VIEW**




**SECTION C-C**

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

**TURBIDITY BARRIER**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

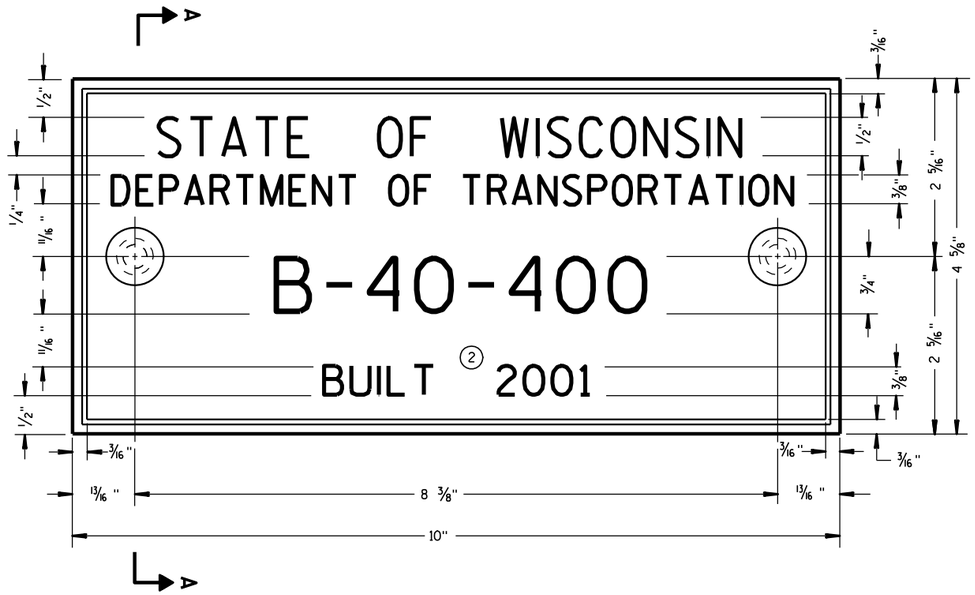
APPROVED
6/04/02 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



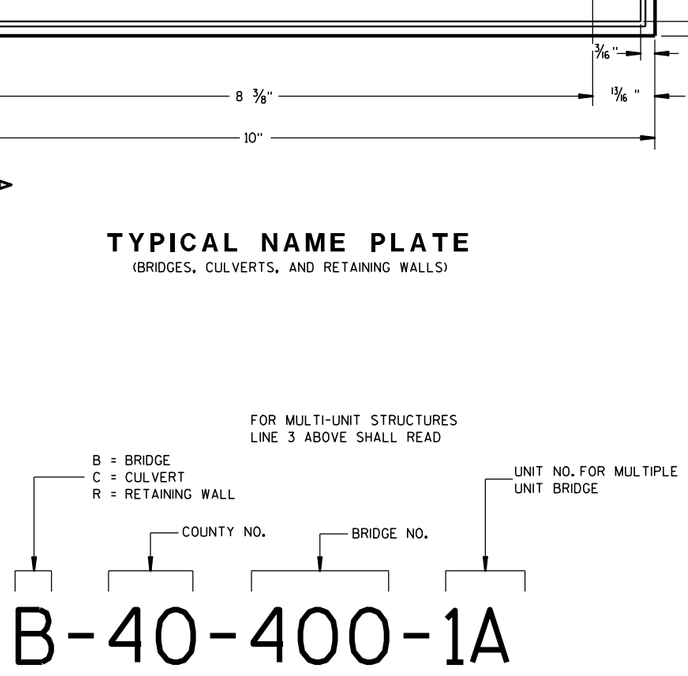
6

S.D.D. 8 E 11-2

S.D.D. 8 E 11-2




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




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

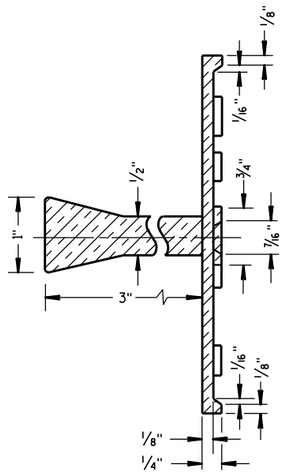
## GENERAL NOTES

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.

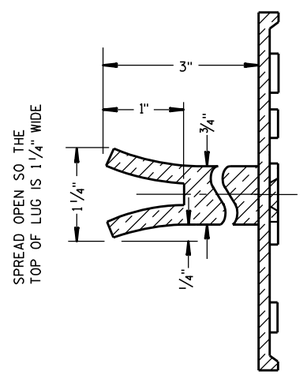
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(1) EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

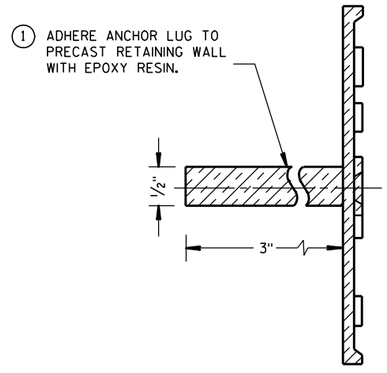
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.




**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 Beck -- CHIEF STRUCTURAL DEVELOP ENGINEER

FHWA

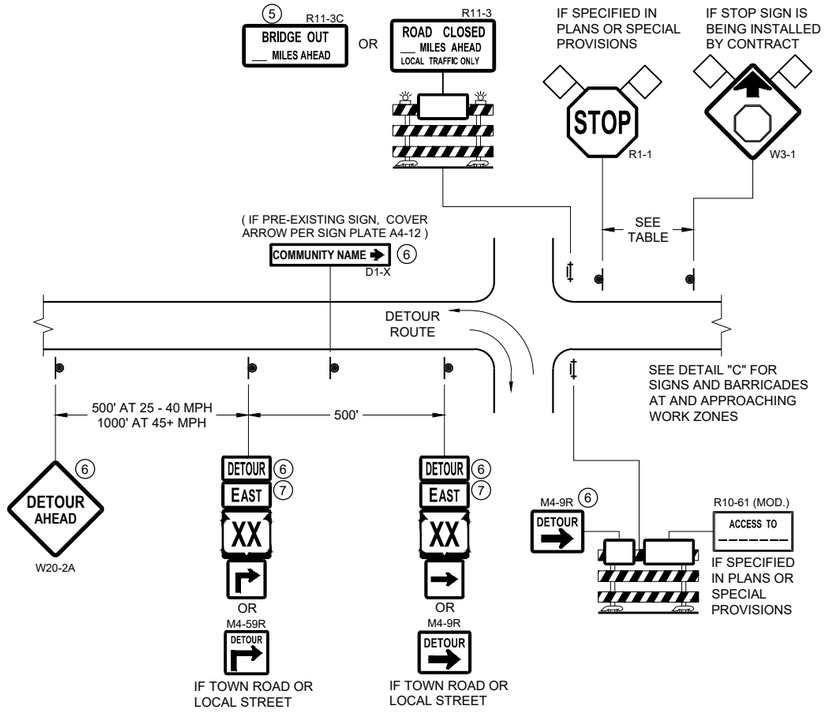


6

S.D.D. 12 A 3-10

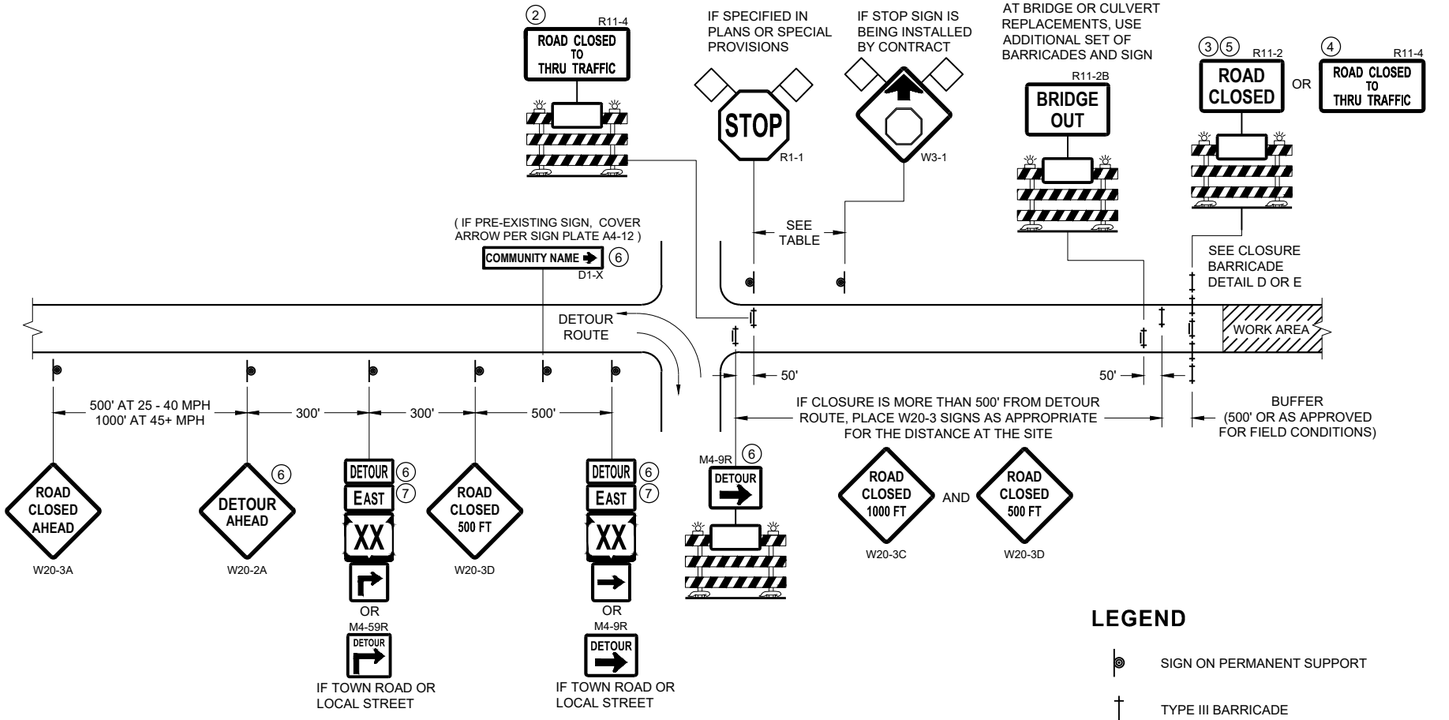
6

S.D.D. 12 A 3-10



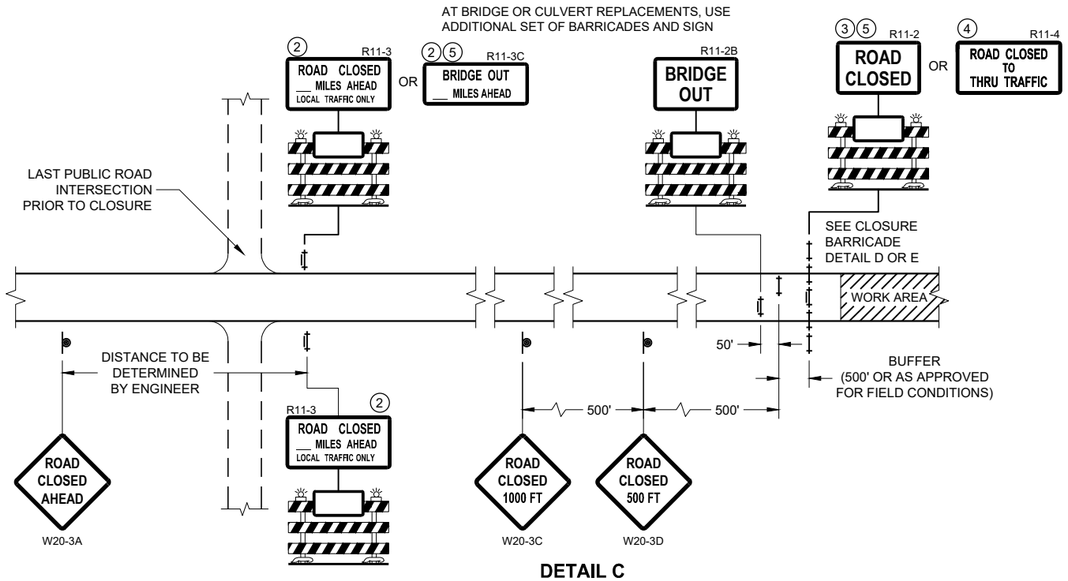

## DETAIL A
## MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN OR EQUAL TO ½ MILE FROM DETOUR ROUTE ( 1000 FEET IF URBAN )




## DETAIL B
## MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE ( 1000 FEET IF URBAN )




## DETAIL C
## MAINLINE CLOSURE, NO POSTED DETOUR

| 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

## LEGEND

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

DETOUR M4 - 8
EAST M3 - X
XX M1 - 4 OR XX M1 - 6 OR COUNTY X M1 - 5A
M05 - 1 OR M06 - 1

# BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

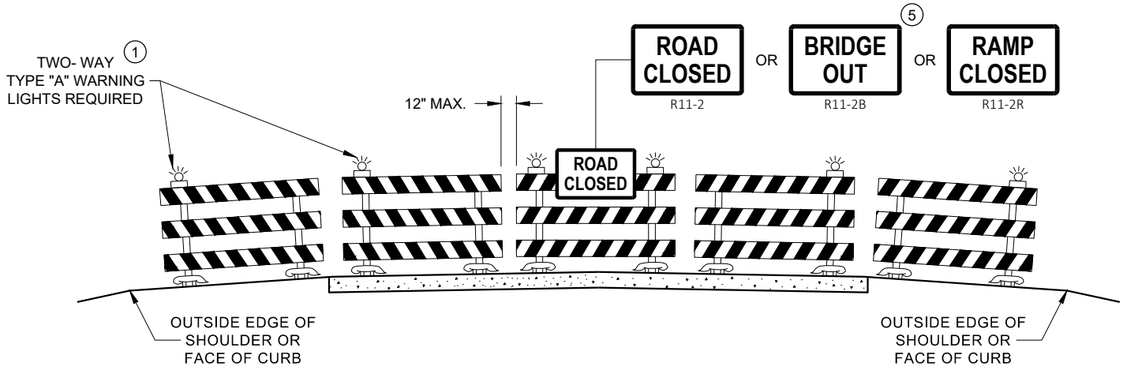
FHWA



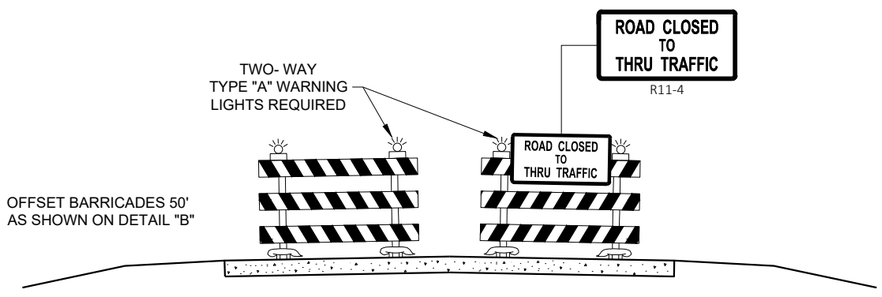
6

SDD 15C02 - 07a

SDD 15C02 - 07a




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




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

SEE SDD 15C2 - SHEET "a" FOR LEGEND

## GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING.

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT AN INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "D".

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "E".

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11 - 2 AND R11 - 3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

**BARRICADES AND SIGNS FOR VARIOUS CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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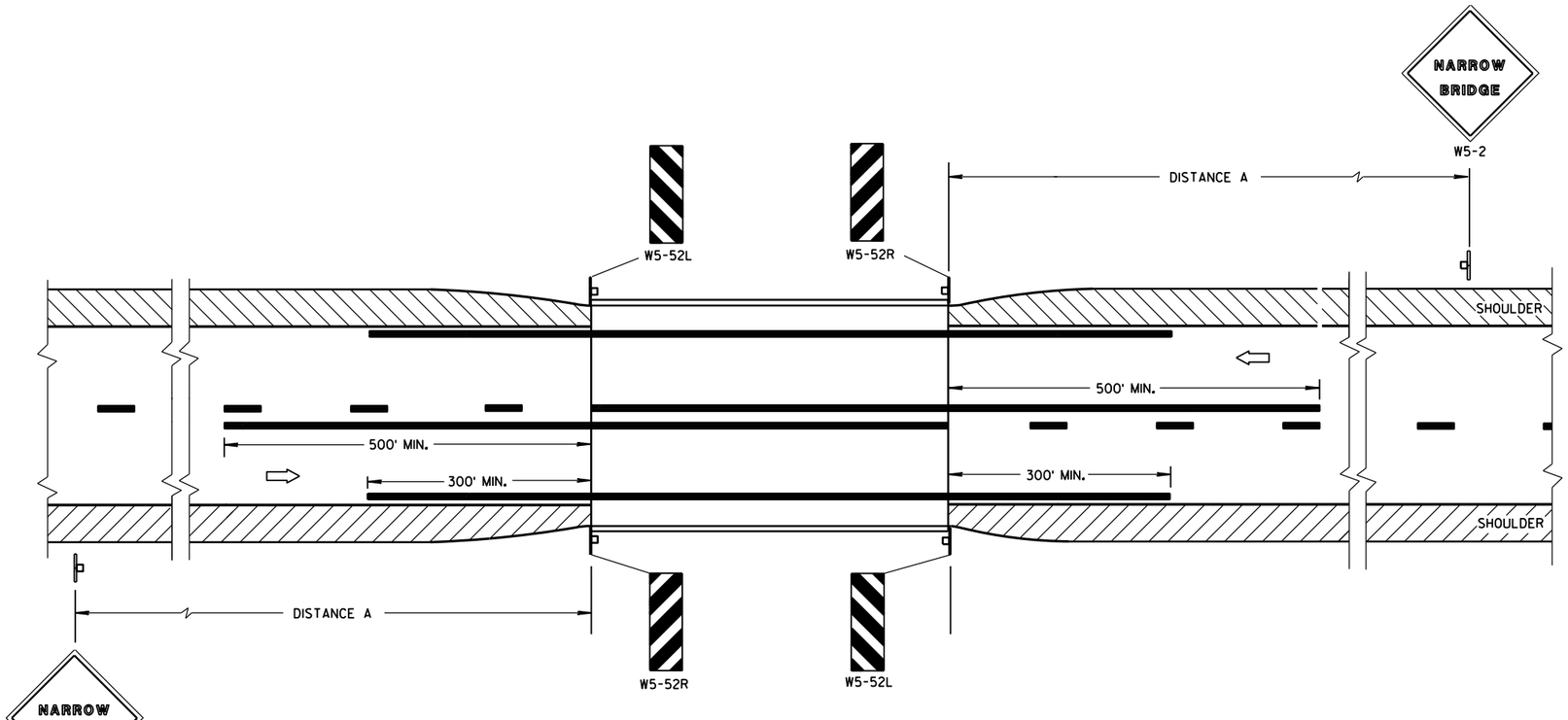
SDD 15C02 - 07b




## 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

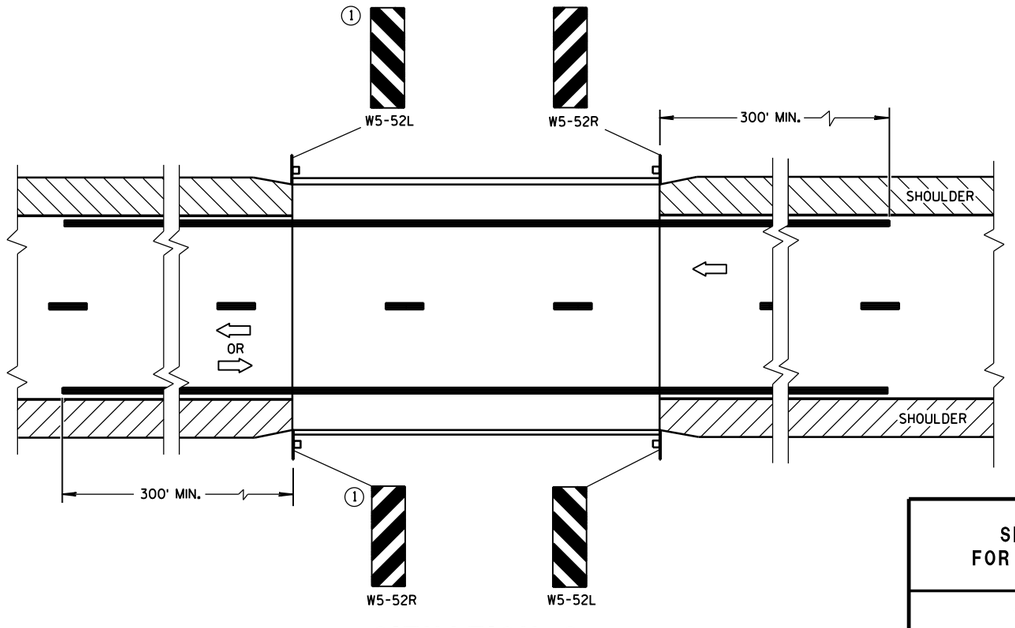
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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 MAR[illegible]EER
FHWA

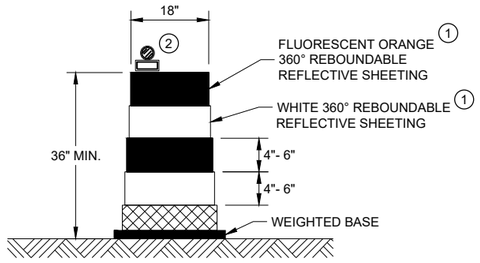



6

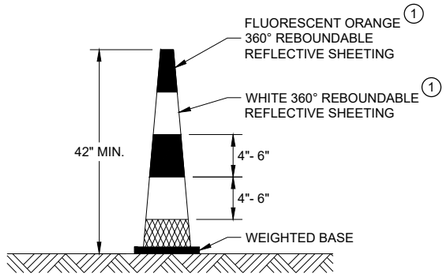
S.D.D. 15 C 6-9

## GENERAL NOTES

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

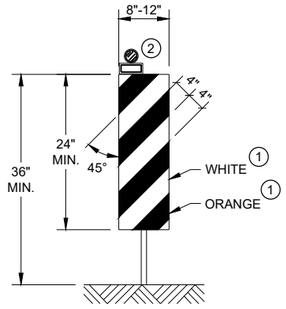



### DRUM



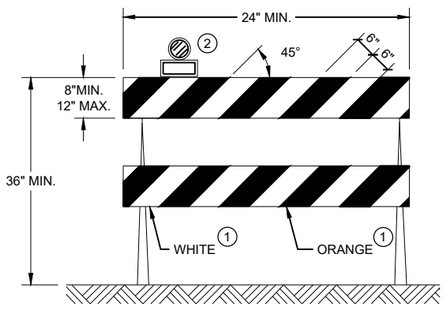

### 42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



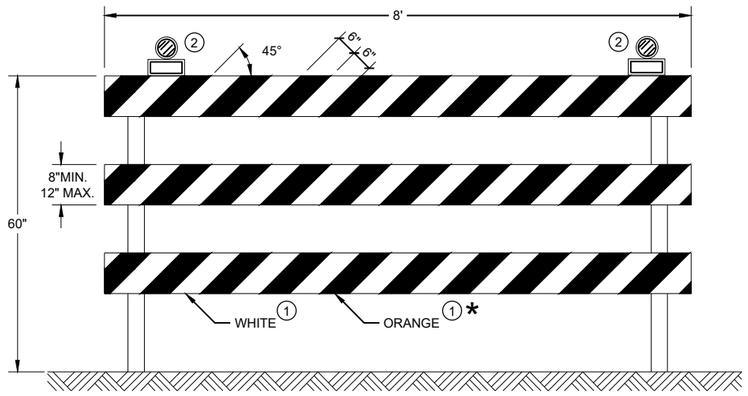

### VERTICAL PANEL

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




### TYPE II BARRICADE

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




### TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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SDD 15C11 - 07b

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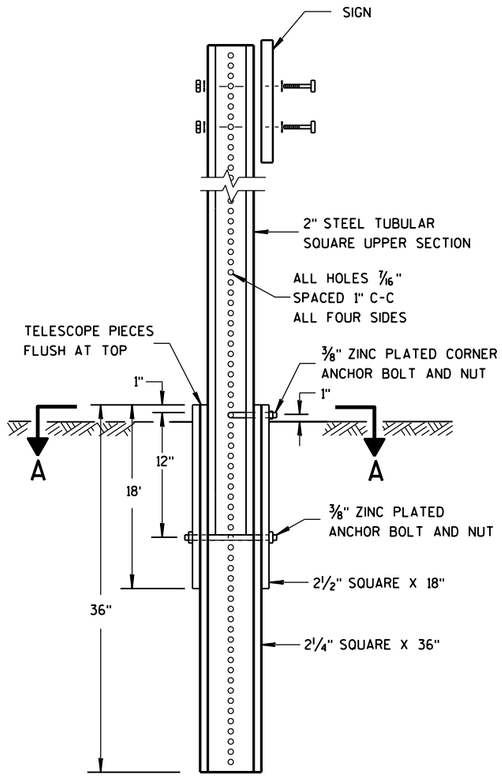
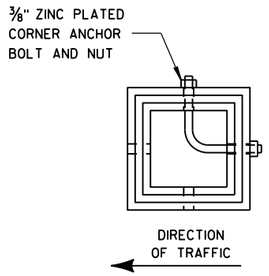
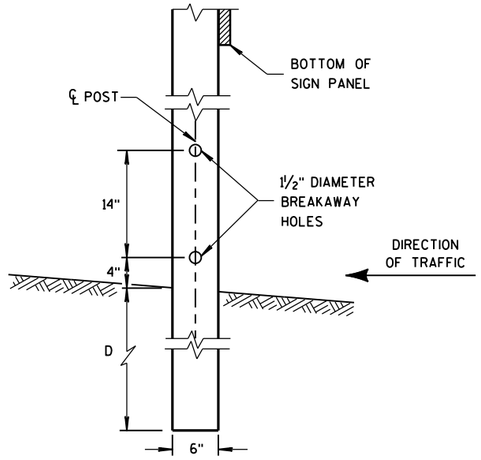
SDD 15C11 - 07b




## DETAIL OF TUBULAR STEEL SIGN POST




## SECTION A-A



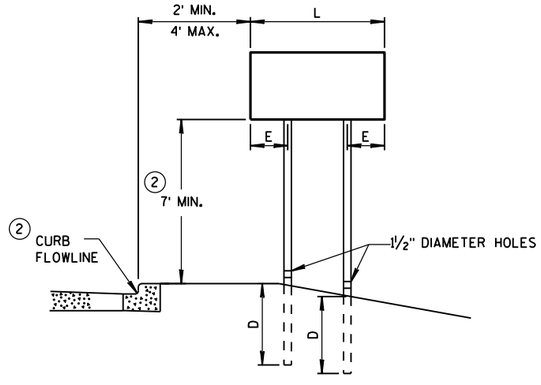

## 4"x6" WOOD POST MODIFICATION

## GENERAL NOTES

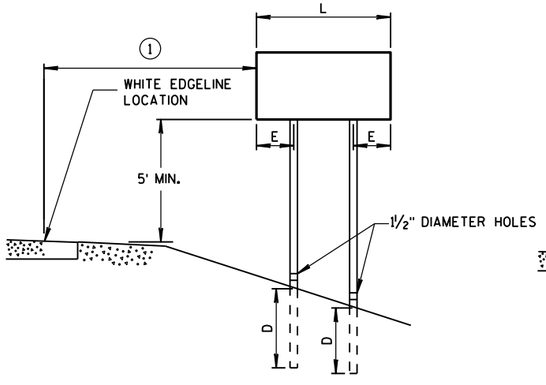
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

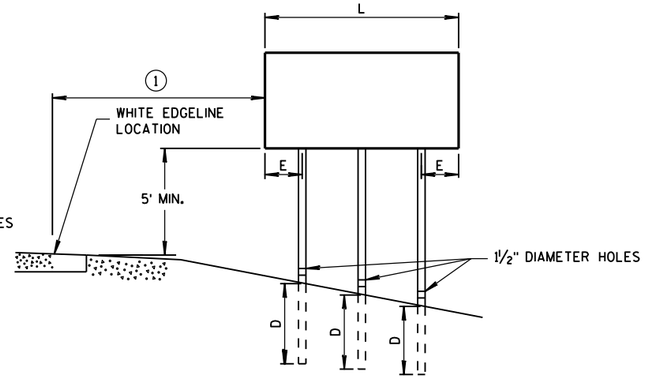
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK 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.




## URBAN AREA




## RURAL AREA

## POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

### TUBULAR STEEL POSTS

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

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

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

### WOOD POST EMBEDMENT DEPTH

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

### 4" X 6" WOOD POST

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

SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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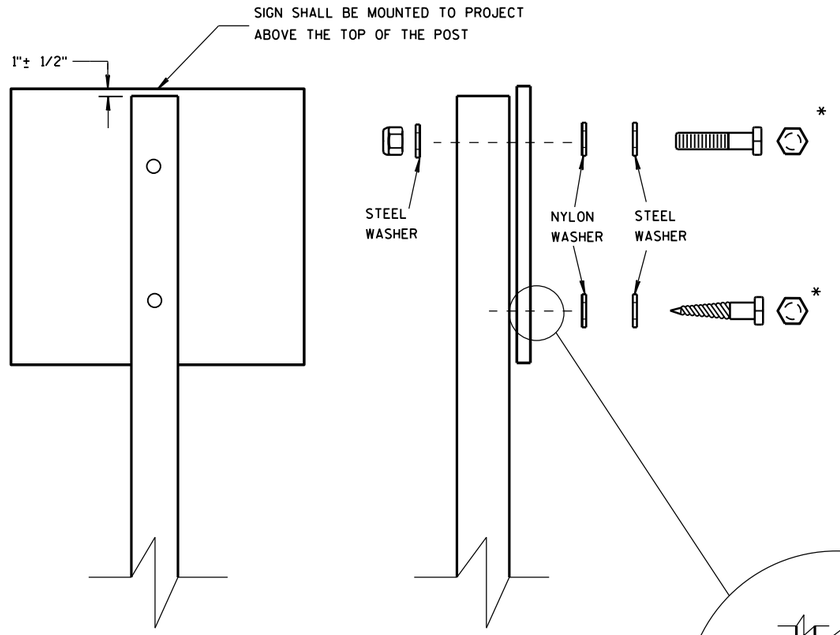
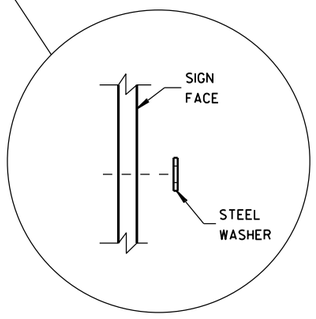
S.D.D. 15 D 38-2a
S.D.D. 15 D 38-2a










WASHER PLACEMENT WHEN SIGN HAS OTHER THAN TYPE H OR TYPE F FACE

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.

6

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S.D.D. 15 D 38-2b

S.D.D. 15 D 38-2b

# ATTACHMENT OF SIGNS TO POSTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

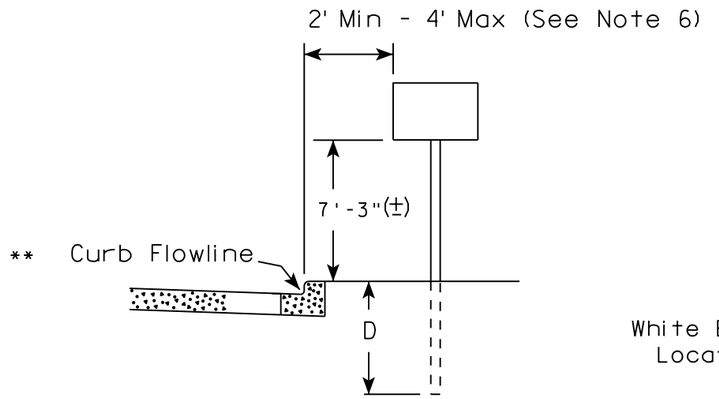
APPROVED

June 2017
DATE

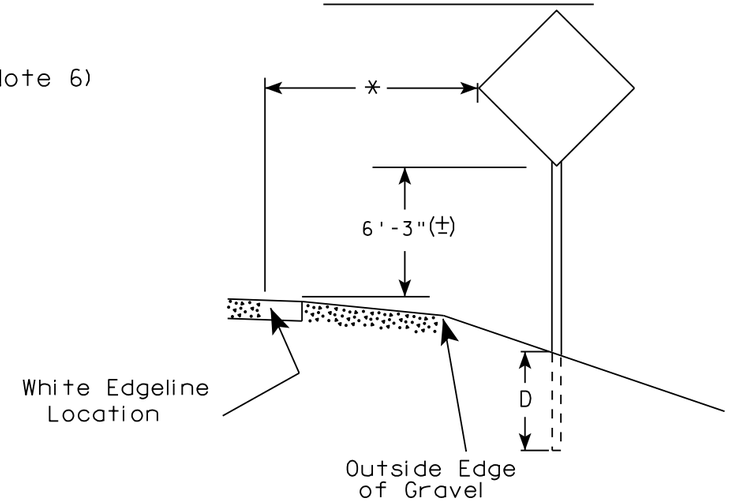
/S/ Andrew Heldtke
WORK ZONE ENG

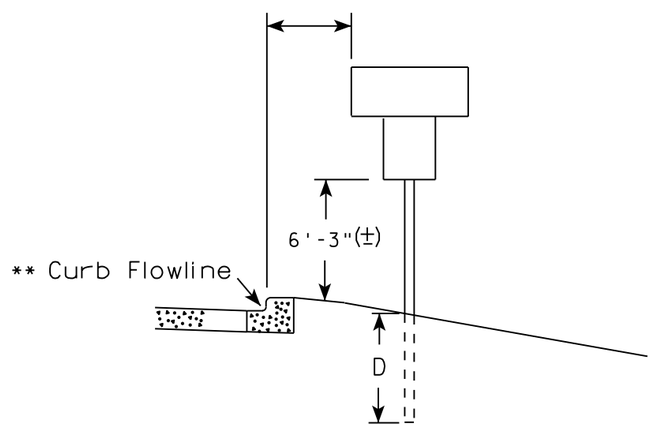
FHWA

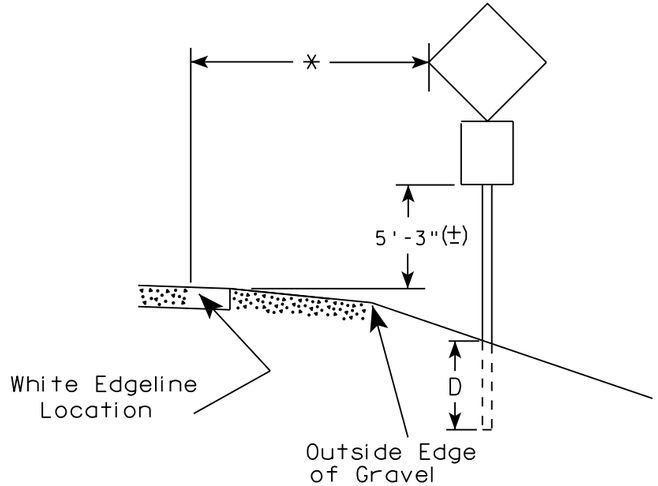
## URBAN AREA




## RURAL AREA (See Note 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. Offset of signs is measured from the flow line.

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

### POST EMBEDMENT DEPTH

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

### GENERAL NOTES

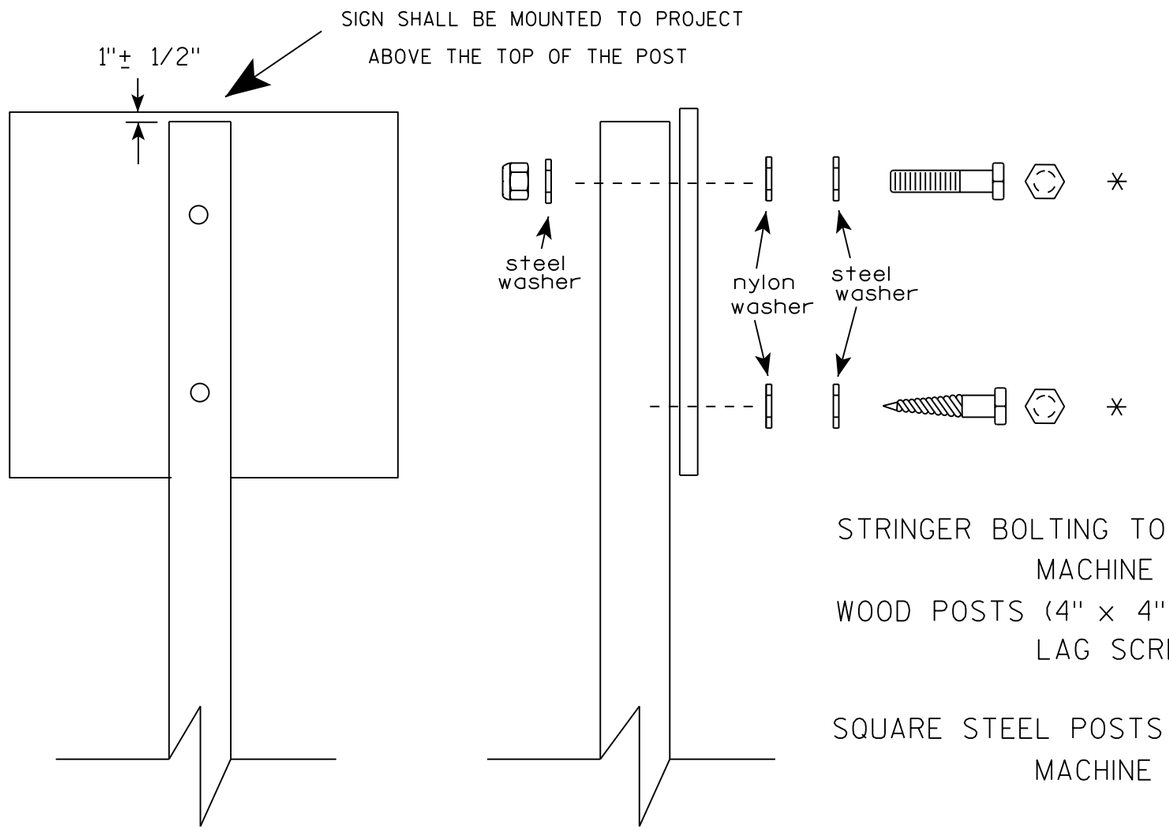
1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. J-Assemblies are considered to be one sign for mounting height.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding signs shall be mounted at a height of 5'-3" (±) or as directd 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

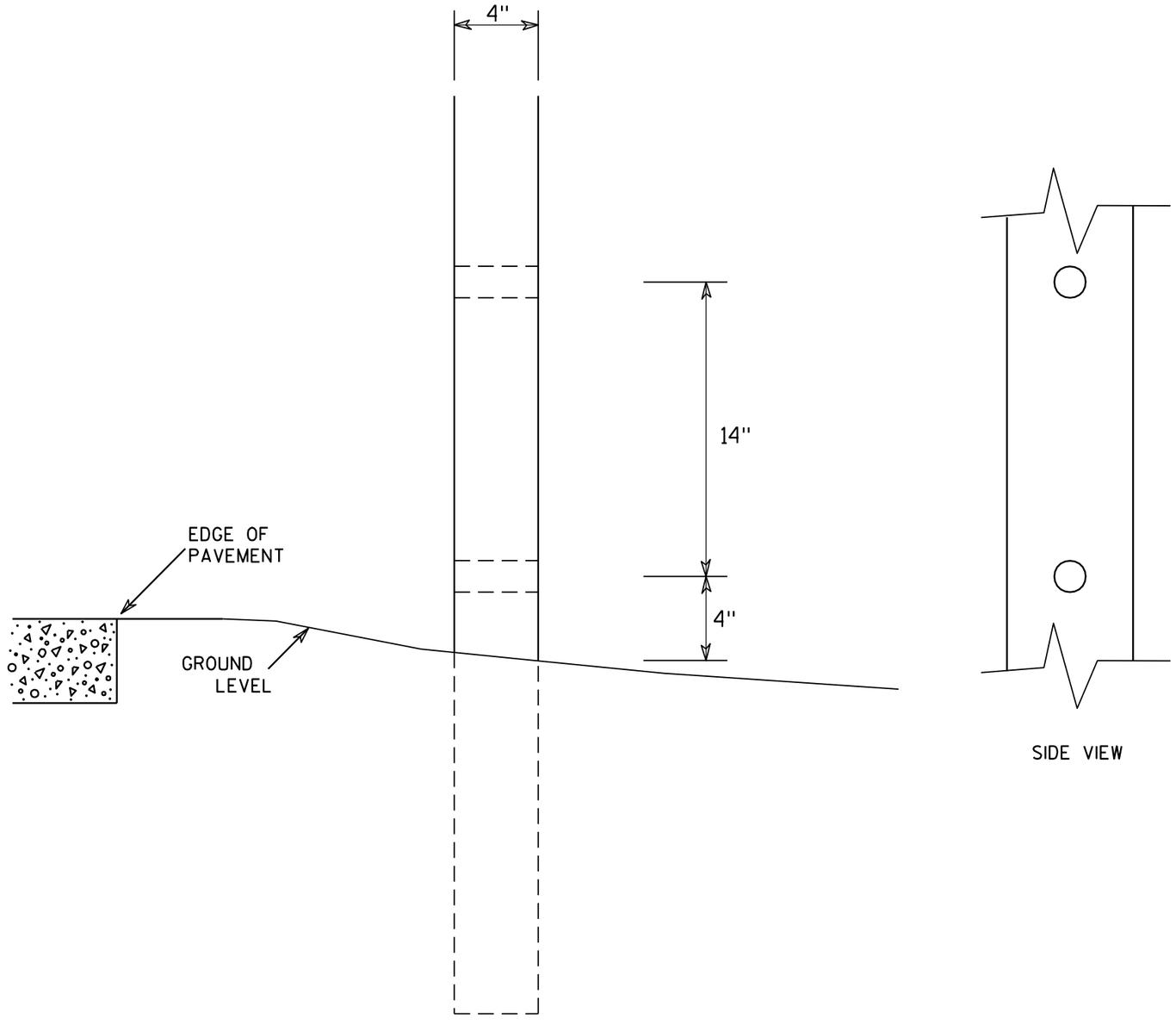
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

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



PROJECT NO: SHEET NO: E






SIDE VIEW

GENERAL NOTES

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

7

7

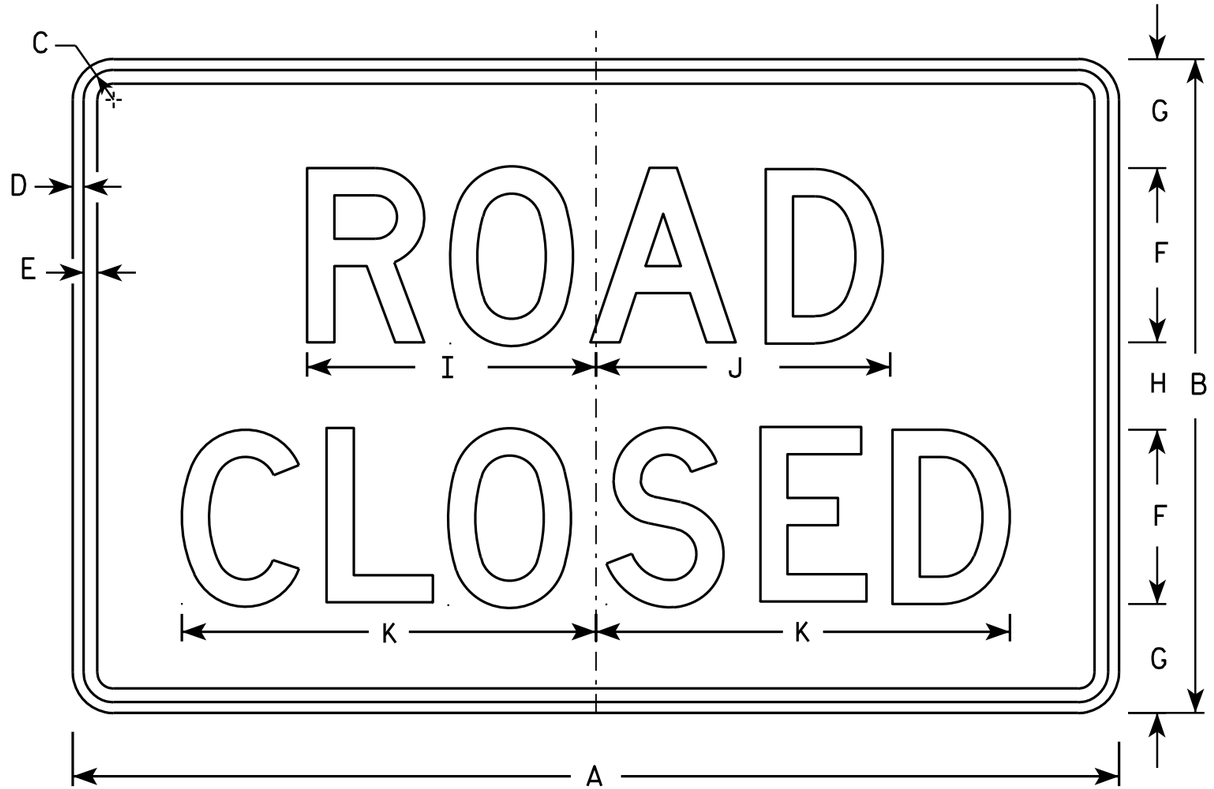
# 4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang
for State Traffic Engineer

DATE 3/27/97 PLATE NO. A4-11.2

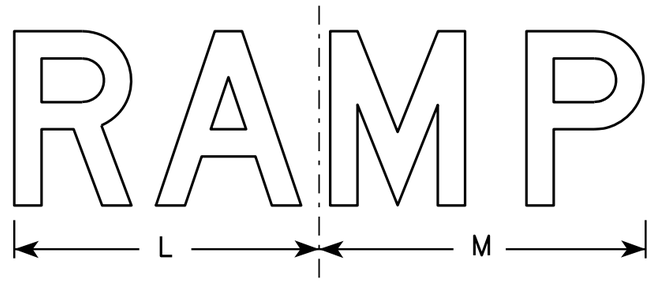
| PROJECT NO: | HWY: | COUNTY: | | SHEET NO: 25 | E |
|---|---|---|---|---|---|



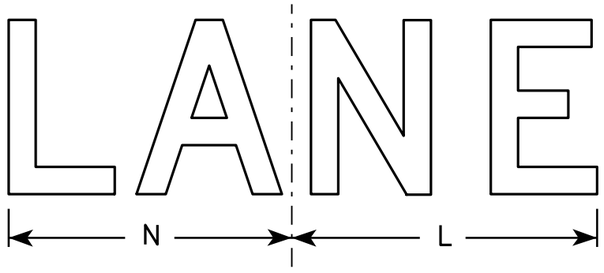

R11-2

NOTES

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




R11-2R




R11-2L

| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2S | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 13 1/4 | 13 1/2 | 19 | 14 | 15 | 13 | | | | | | | | | | | | | 10.0 |
| 2M | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 13 1/4 | 13 1/2 | 19 | 14 | 15 | 13 | | | | | | | | | | | | | 10.0 |
| 3 | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 13 1/4 | 13 1/2 | 19 | 14 | 15 | 13 | | | | | | | | | | | | | 10.0 |
| 4 | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 13 1/4 | 13 1/2 | 19 | 14 | 15 | 13 | | | | | | | | | | | | | 10.0 |
| 5 | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 13 1/4 | 13 1/2 | 19 | 14 | 15 | 13 | | | | | | | | | | | | | 10.0 |

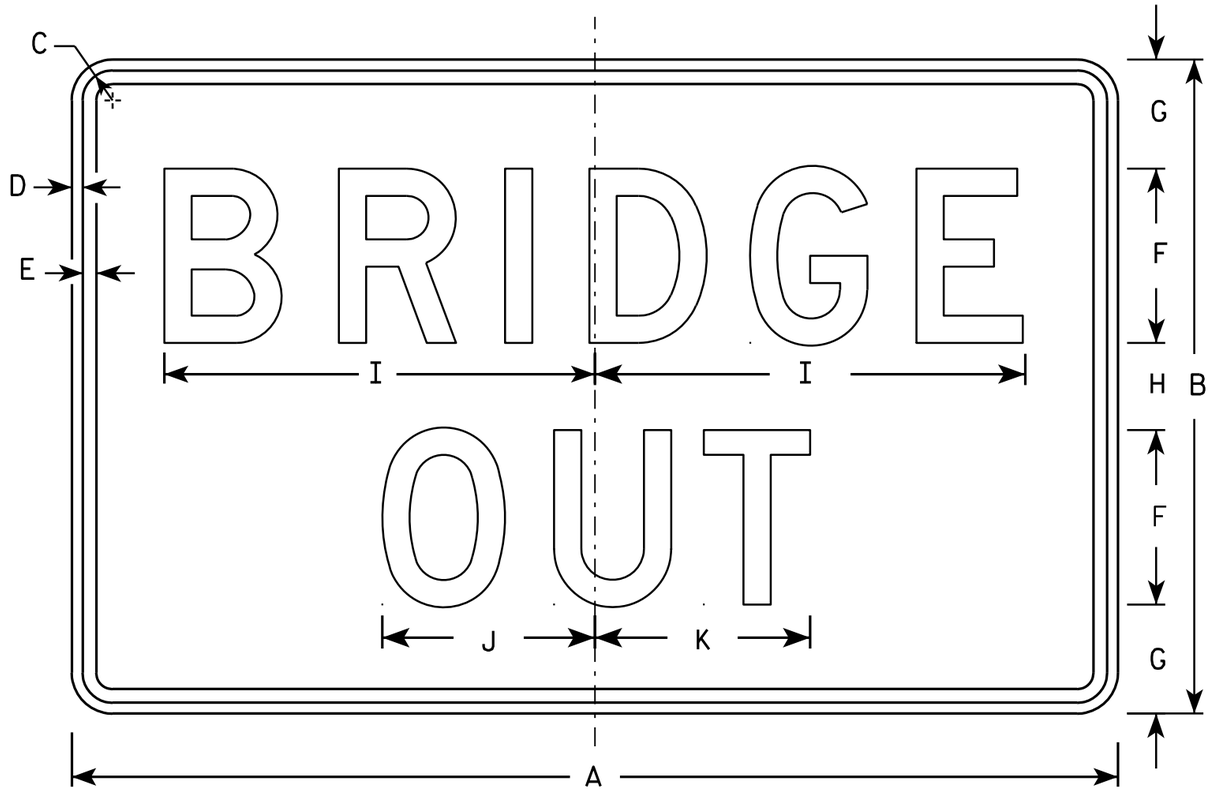
STANDARD SIGN
R11-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-2.10

| PROJECT NO: | HWY: | COUNTY: | | SHEET NO: 26 | E |
|---|---|---|---|---|---|




R11-2B

NOTES

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

| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2S | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 19 3/4 | 9 3/4 | 9 7/8 | | | | | | | | | | | | | | | | 10.0 |
| 2M | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 19 3/4 | 9 3/4 | 9 7/8 | | | | | | | | | | | | | | | | 10.0 |
| 3 | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 19 3/4 | 9 3/4 | 9 7/8 | | | | | | | | | | | | | | | | 10.0 |
| 4 | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 19 3/4 | 9 3/4 | 9 7/8 | | | | | | | | | | | | | | | | 10.0 |
| 5 | 48 | 30 | 1 3/8 | 1/2 | 5/8 | 8 | 5 | 4 | 19 3/4 | 9 3/4 | 9 7/8 | | | | | | | | | | | | | | | | 10.0 |

STANDARD SIGN
R11-2B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

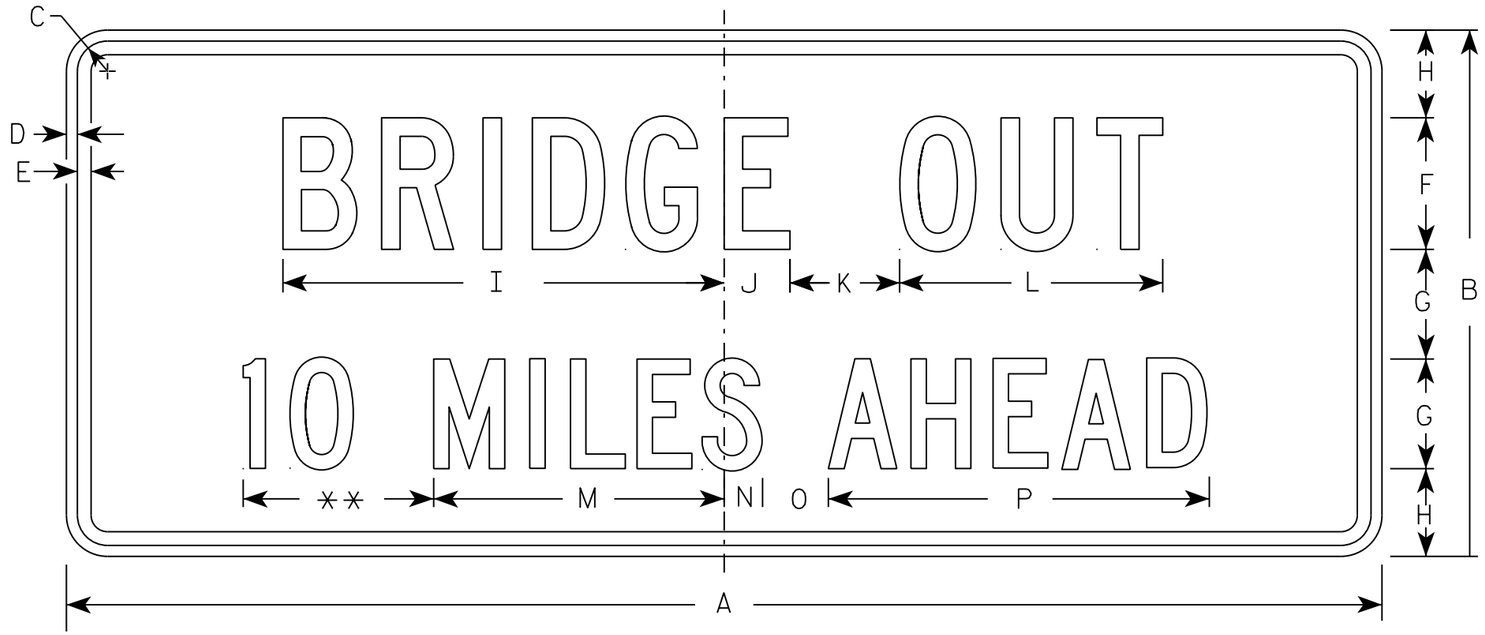
DATE 4/1/11 PLATE NO. R11-2B.2

PROJECT NO:

SHEET NO: 27 E

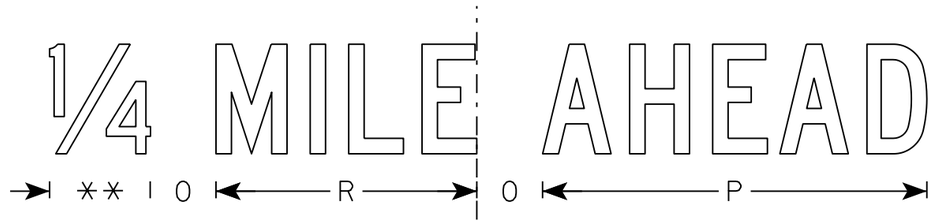
NOTES

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




R11-3C

** See Note 5




| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | 15 | 1 3/8 | 1/2 | 5/8 | 4 | 3 | 2 1/2 | 13 1/4 | 2 1/4 | 3 | 8 | 8 | 1 1/2 | 2 | 10 3/4 | | 7 1/8 | | | | | | | | | 3.75 |
| 2S | 60 | 24 | 1 3/8 | 1/2 | 5/8 | 6 | 5 | 4 | 20 1/8 | 3 | 5 | 12 | 13 1/4 | 1 3/4 | 3 | 17 3/8 | | 11 7/8 | | | | | | | | | 10.0 |
| 2M | 60 | 24 | 1 3/8 | 1/2 | 5/8 | 6 | 5 | 4 | 20 1/8 | 3 | 5 | 12 | 13 1/4 | 1 3/4 | 3 | 17 3/8 | | 11 7/8 | | | | | | | | | 10.0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

STANDARD SIGN
R11-3C

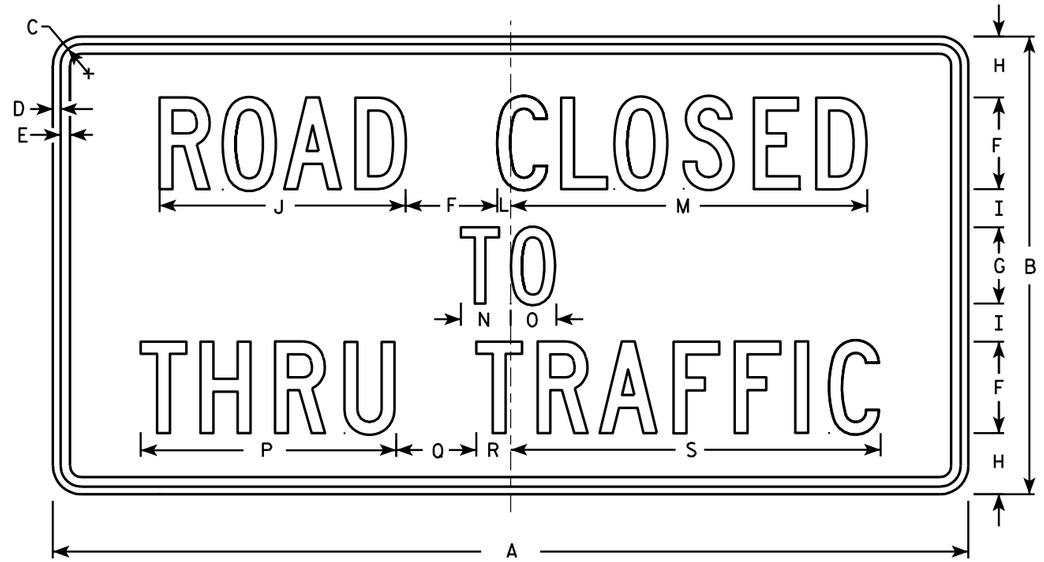
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 7/28/16 PLATE NO. R11-3C.3

PROJECT NO:

SHEET NO: 28 E




R11-4

NOTES

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

| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2S | 60 | 30 | 1 3/8 | 1/2 | 5/8 | 6 | 5 | 4 | 2 1/2 | 16 1/8 | | 7/8 | 23 3/8 | 3 1/4 | 3 | 16 3/4 | 5 1/4 | 2 1/4 | 24 1/4 | | | | | | | | 12.5 |
| 2M | 60 | 30 | 1 3/8 | 1/2 | 5/8 | 6 | 5 | 4 | 2 1/2 | 16 1/8 | | 7/8 | 23 3/8 | 3 1/4 | 3 | 16 3/4 | 5 1/4 | 2 1/4 | 24 1/4 | | | | | | | | 12.5 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

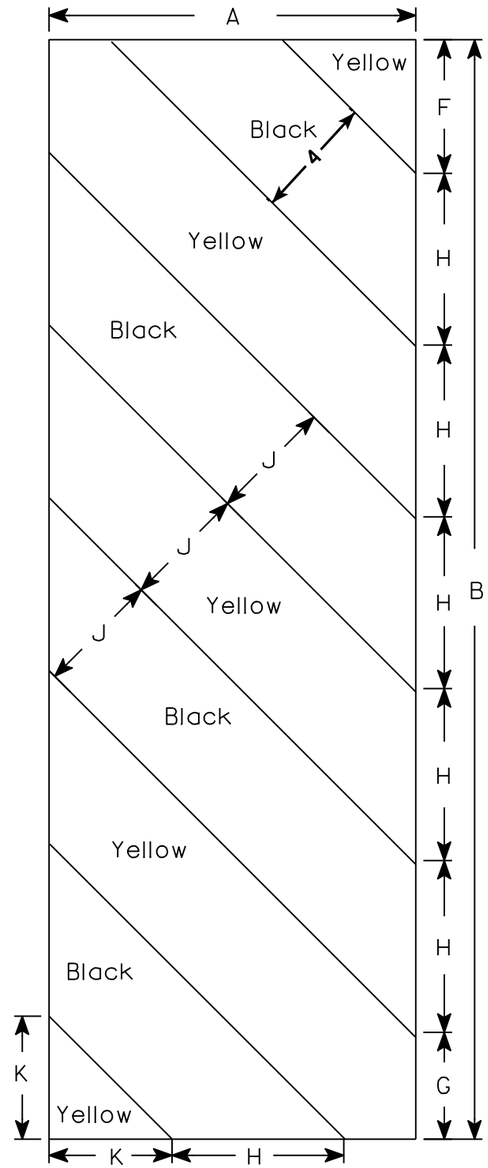
STANDARD SIGN
R11 - 4

WISCONSIN DEPT OF TRANSPORTATION

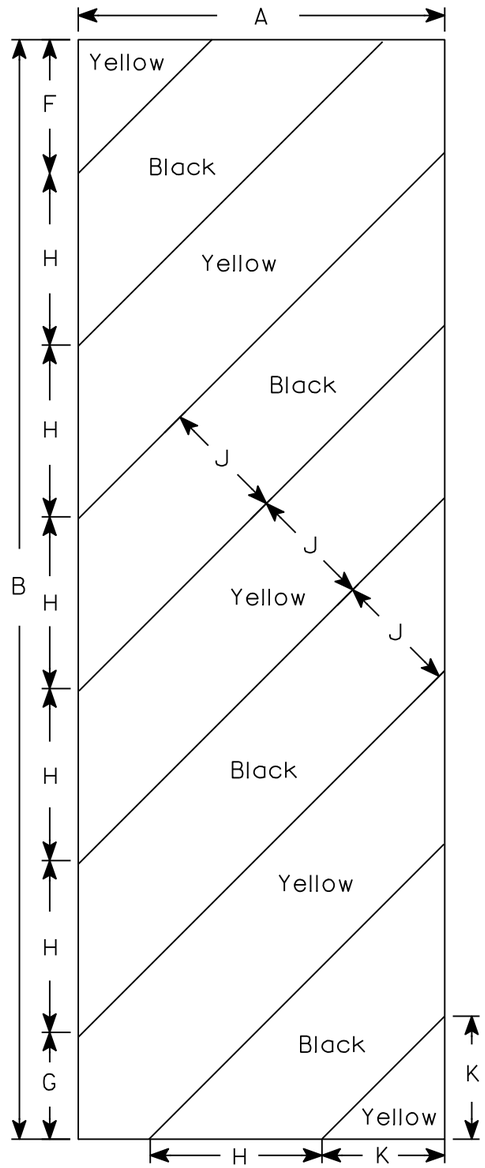
APPROVED Matthew R Rauch for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-4.3

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 29 | E




W5-52L




W5-52R

NOTES

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

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

STANDARD SIGN

W5-52L & W5-52R

*WISCONSIN DEPT OF TRANSPORTATION*

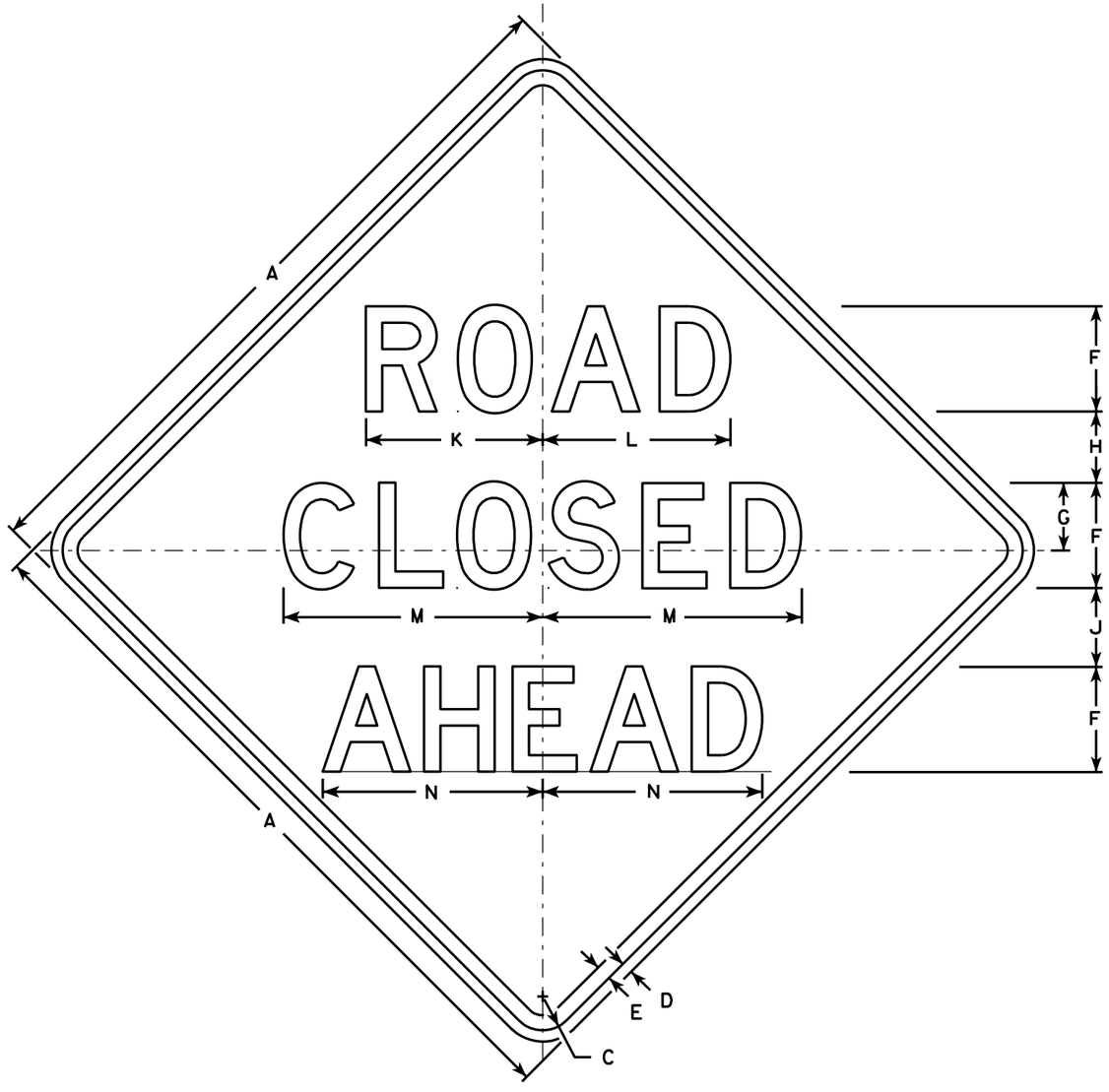
APPROVED Matthew R Rauch
for State Traffic Engineer

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

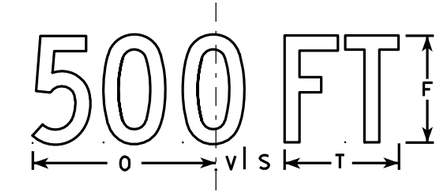
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 30 | E


7

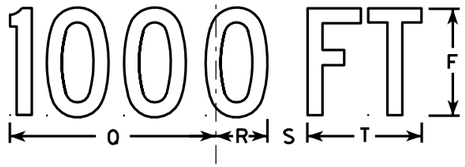
FILE NAME : C:\CAEFiles\Projects\tr_stdplate\W552.DGN PLOT DATE : 29-MAY-2012 13:03 PLOT BY : mscsja PLOT NAME : PLOT SCALE : 4.961899:1.000000



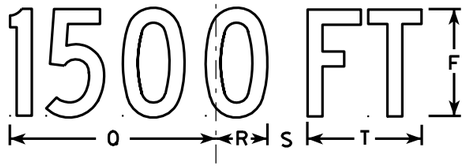

W20-3A



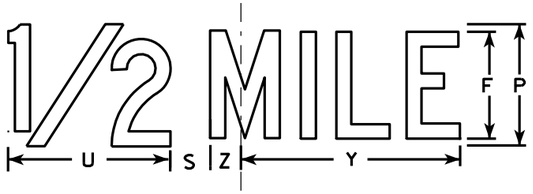

W20-3D



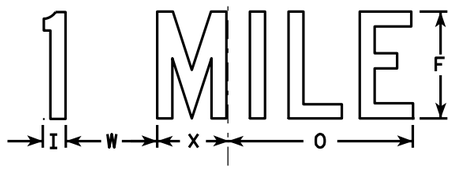

W20-3C




W20-3B




W20-3G




W20-3F

## NOTES

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

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

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

WISCONSIN DEPT OF TRANSPORTATION

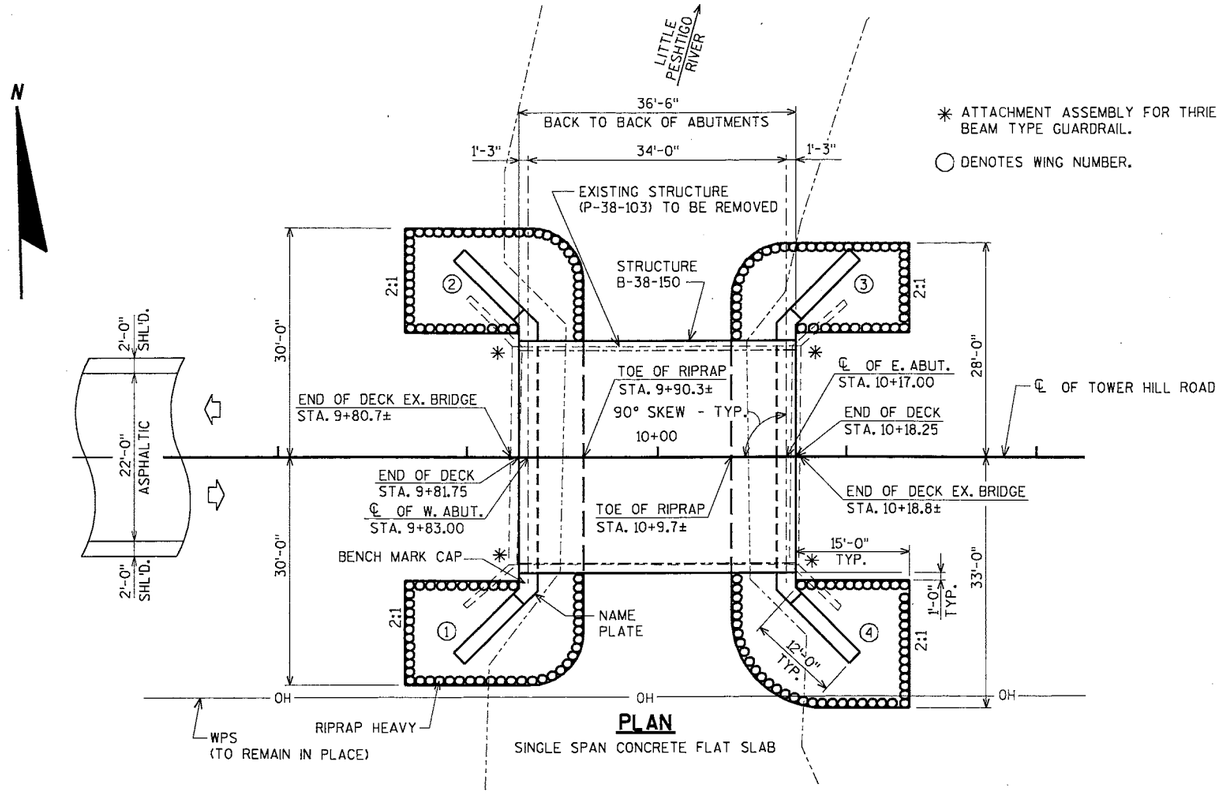
APPROVED Matthew R Rauch
for State Traffic Engineer

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

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 31 | E

STATE PROJECT NUMBER

9246-10-71

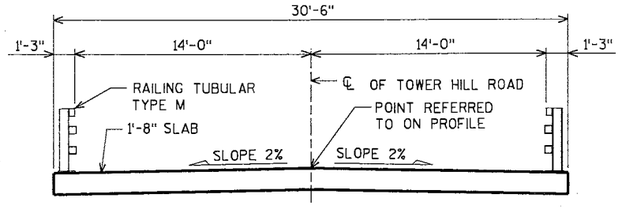



PLAN

SINGLE SPAN CONCRETE FLAT SLAB

✱ ATTACHMENT ASSEMBLY FOR THRIE BEAM TYPE GUARDRAIL.

◯ DENOTES WING NUMBER.




TYPICAL SECTION THRU BRIDGE

## DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.14
OPERATING RATING FACTOR: 1.48
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

$Q_{100}$ = 1270 c.f.s. { BRIDGE = 735 c.f.s. / OVERFLOW = 535 c.f.s.
VEL.= 2.9 f.p.s.
$HW_{100}$ = EL. 649.2
WATERWAY AREA = 253 sq. ft.
DRAINAGE AREA = 67.5 sq. mi.
SCOUR CRITICAL CODE = 8
DATUM = NAVD88 (2012)

2 YEAR FREQUENCY

$Q_2$ = 470 c.f.s.
VEL.= 2.4 f.p.s.
$HW_2$ = EL. 646.9

ROADWAY OVERTOPPING FREQUENCY

$Q_8$ = 770 c.f.s.
FREQUENCY = 8 YEARS
WATER SURFACE EL. 647.8

FOUNDATION DATA:

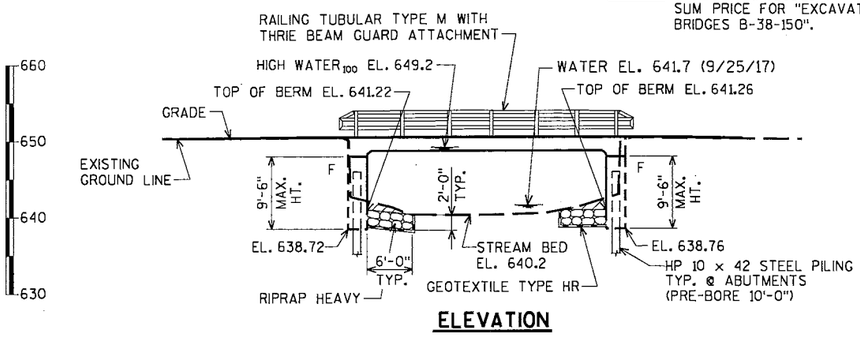
ABUTMENTS TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 125 TONS # PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED LENGTH OF 20'-0". (PRE-BORE PILES 10'-0").

#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.

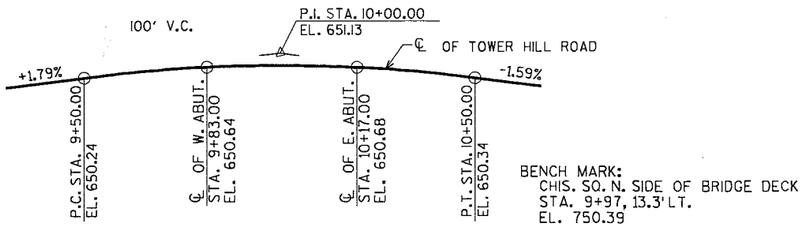
TRAFFIC DATA:

A.A.D.T. = 30 (2020)
A.A.D.T. = 50 (2040)
R.D.S. = 35 M.P.H.

▨ COST OF EXCAVATION IN THE HATCHED AREAS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-38-150".




ELEVATION

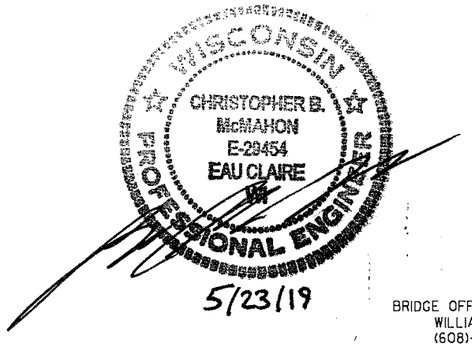



PROFILE GRADE LINE
(TOWER HILL ROAD)

BENCH MARK:
CHIS. SQ. N. SIDE OF BRIDGE DECK
STA. 9+97, 13.3' LT.
EL. 750.39

## LIST OF DRAWINGS






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

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

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 08/27/19
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-38-150

TOWER HILL ROAD OVER LITTLE PESHTIGO RIVER

| COUNTY | TOWN/~~CITY/VILLAGE~~ |
|---|---|
| MARINETTE | GROVER |

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

| DESIGNED BY | KLW | DESIGN CK'D. | ZSS | DRAWN BY | CLS | PLANS CK'D. | CBM |
|---|---|---|---|---|---|---|---|

GENERAL PLAN

SHE 32 F 11

DATE:
CHECKED BY:
BACK CHECKED BY:
CORRECTED BY:

8

8

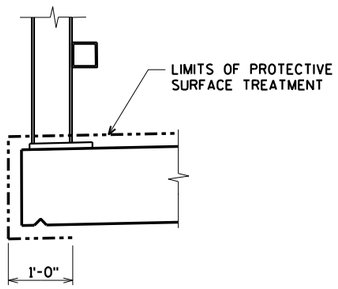
5/22/2019

PENTABLE:BReau_shd_util.tbl

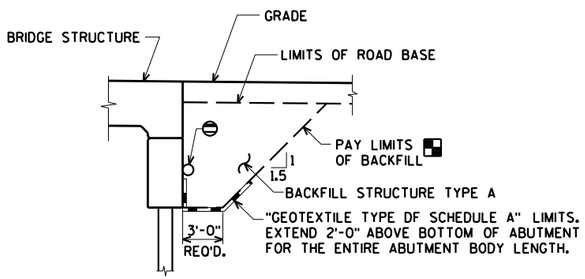
I.D.

## TOTAL ESTIMATED QUANTITIES

| BID ITEM NUMBER | BID ITEMS | UNIT | W. ABUT. | E. ABUT. | SUPER. | TOTAL |
|---|---|---|---|---|---|---|
| 203.0600.S | REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DERIS STATION 10+00 | LS | ----- | ----- | ----- | 1 |
| 206.1000 | EXCAVATION FOR STRUCTURES BRIDGES B-38-150 | LS | ----- | ----- | ----- | 1 |
| 210.1500 | BACKFILL STRUCTURE TYPE A | TON | 410 | 410 | ----- | 820 |
| 502.0100 | CONCRETE MASONRY BRIDGES | CY | 50 | 50 | 74 | 174 |
| 502.3200 | PROTECTIVE SURFACE TREATMENT | SY | ----- | ----- | 145 | 145 |
| 505.0400 | BAR STEEL REINFORCEMENT HS STRUCTURES | LB | 2,570 | 2,570 | ----- | 5,140 |
| 505.0600 | BAR STEEL REINFORCEMENT HS COATED STRUCTURES | LB | 1,760 | 1,760 | 12,750 | 16,270 |
| 513.4061 | RAILING TUBULAR TYPE M | LF | ----- | ----- | 77 | 77 |
| 516.0500 | RUBBERIZED MEMBRANE WATERPROOFING | SY | 6 | 6 | ----- | 12 |
| 550.0020 | PRE-BORING ROCK OR CONSOLIDATED MATERIALS | LF | 70 | 70 | ----- | 140 |
| 550.1100 | PILING STEEL HP 10-INCH x 42 LB | LF | 140 | 140 | ----- | 280 |
| 606.0300 | RIPRAP HEAVY | CY | 65 | 65 | ----- | 130 |
| 612.0406 | PIPE UNDERDRAIN WRAPPED 6-INCH | LF | 90 | 90 | ----- | 180 |
| 645.0111 | GEOTEXTILE TYPE DF SCHEDULE A | SY | 60 | 60 | ----- | 120 |
| 645.0120 | GEOTEXTILE TYPE HR | SY | 145 | 150 | ----- | 295 |
| | | | | | | |
| | NON-BID ITEMS | | | | | |
| | FILLER | SIZE | ----- | ----- | ----- | ½" & ¾" |
| | | | | | | |
| | | | | | | |




## PROTECTIVE SURFACE TREATMENT DETAIL




## BACKFILL STRUCTURE LIMITS

▪ 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.

## GENERAL NOTES

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 THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE TYPE HR TO THE EXTENT 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-38-150" SHALL BE THE EXISTING GROUNDLINE.

THE EXISTING STRUCTURE, P-38-103, TO BE REMOVED, IS A SINGLE SPAN CONCRETE DECK GIRDER BRIDGE, 38.0 FT. LONG WITH A 27.7 FT. CLEAR ROADWAY WIDTH.

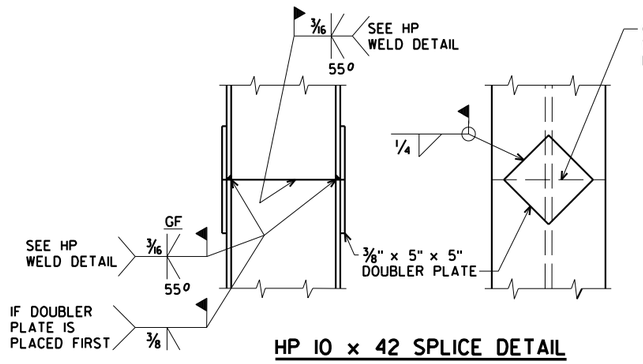
AT THE BACK FACE OF ABUTMENTS, ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE TYPE A.

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

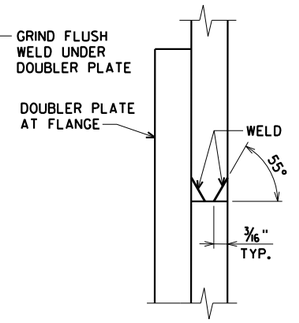
BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS NOTED OTHERWISE.

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.

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 BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.




## HP 10 x 42 SPLICE DETAIL




## HP WELD DETAIL

FLANGE SHOWN, WEB SIMILAR

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

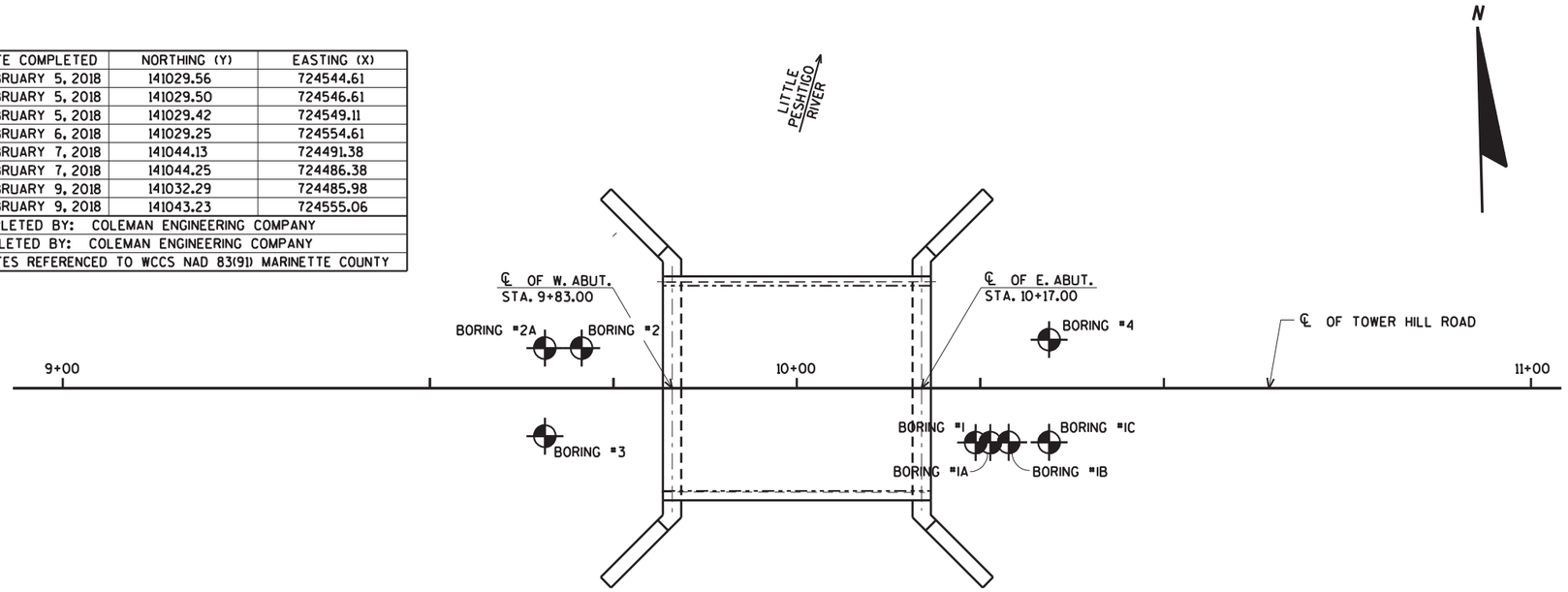
DRAWN BY CLS | PLANS CK'D. CBM

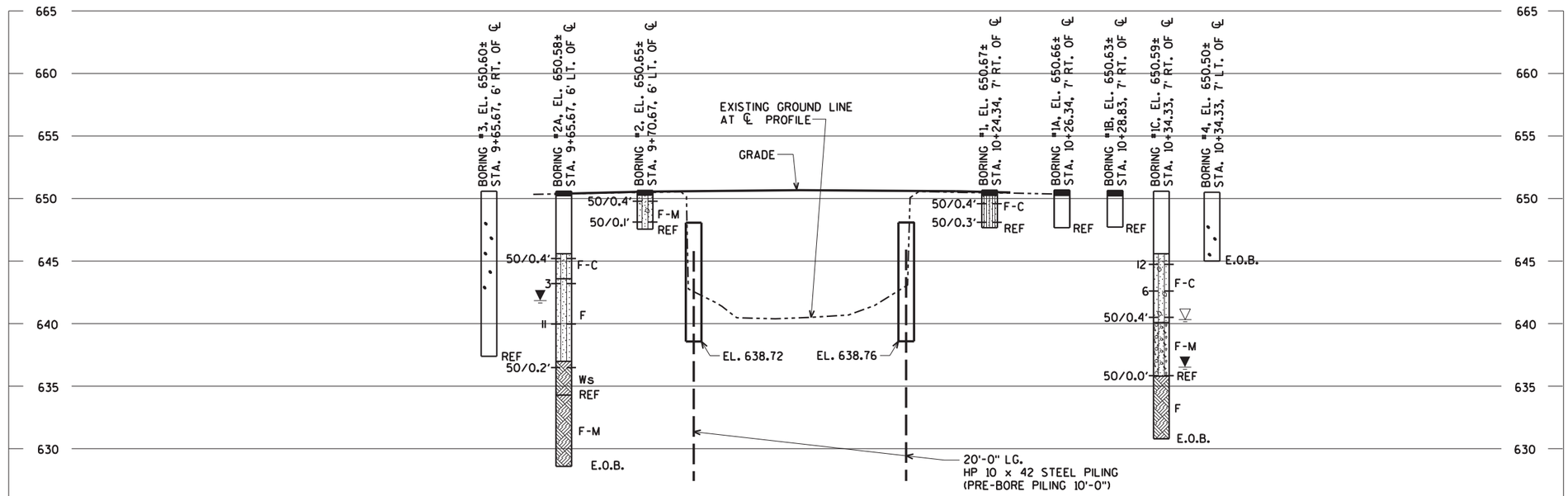
QUANTITIES AND NOTES

SHEET 2 OF 11
33

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

| BORING # | DATE COMPLETED | NORTHING (Y) | EASTING (X) |
|---|---|---|---|
| 1 | FEBRUARY 5, 2018 | 141029.56 | 724544.61 |
| 1A | FEBRUARY 5, 2018 | 141029.50 | 724546.61 |
| 1B | FEBRUARY 5, 2018 | 141029.42 | 724549.11 |
| 1C | FEBRUARY 6, 2018 | 141029.25 | 724554.61 |
| 2 | FEBRUARY 7, 2018 | 141044.13 | 724491.38 |
| 2A | FEBRUARY 7, 2018 | 141044.25 | 724486.38 |
| 3 | FEBRUARY 9, 2018 | 141032.29 | 724485.98 |
| 4 | FEBRUARY 9, 2018 | 141043.23 | 724555.06 |
| BORINGS COMPLETED BY: COLEMAN ENGINEERING COMPANY | | | |
| REPORT COMPLETED BY: COLEMAN ENGINEERING COMPANY | | | |
| ALL COORDINATES REFERENCED TO WCCS NAD 83(91) MARINETTE COUNTY | | | |



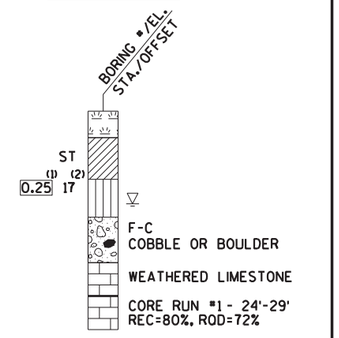

STATE PROJECT NUMBER

9246-10-71

MATERIAL SYMBOLS

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

LEGEND OF BORING




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

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

GROUND WATER ELEVATION

- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

DRAWN BY CLS | PLANS CK'D. CBM

SUBSURFACE EXPLORATION

SHEET 3 OF 11
34

8

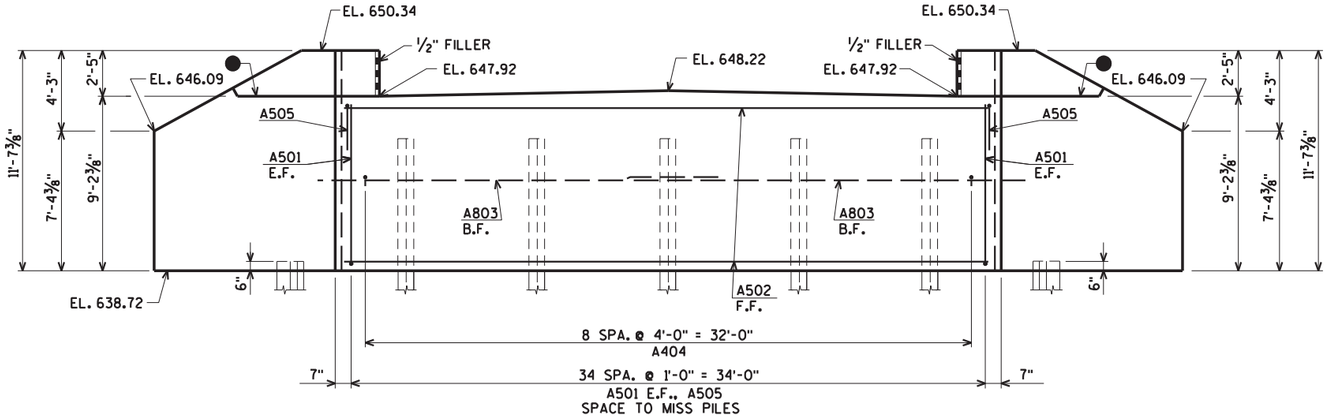
8

$PRFNAME$
U:\45-0449.00 - Marinette Co. Tower Hill Rd over Lt. Peshtigo River\Structures\450449 soils.dgn

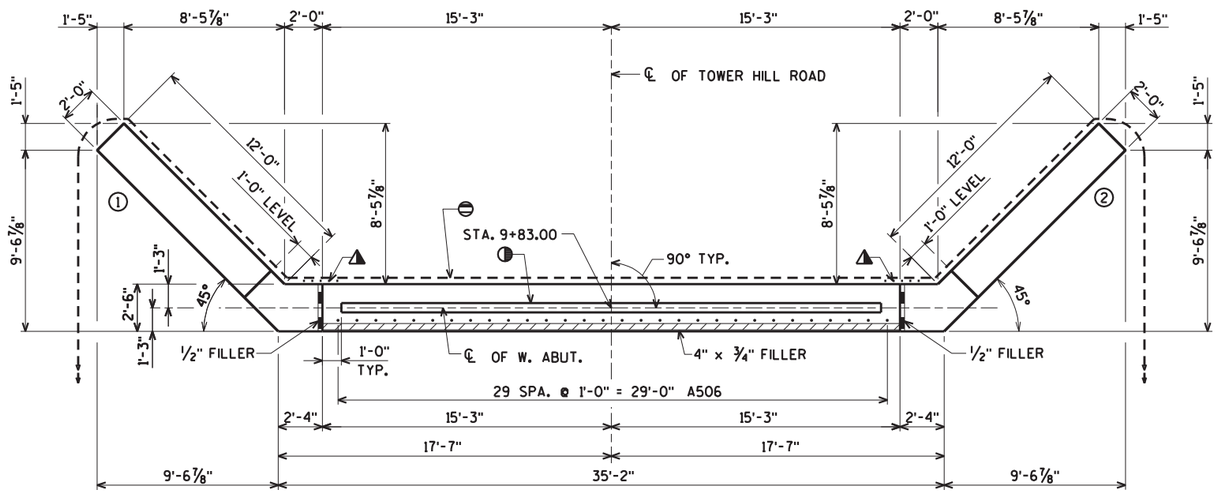
5/22/2019

PENTABLE:BReau_shd_util.tbl

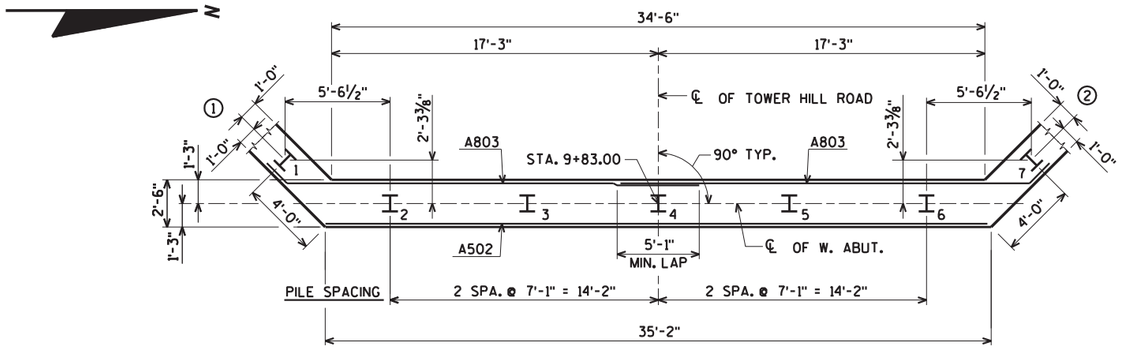
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)



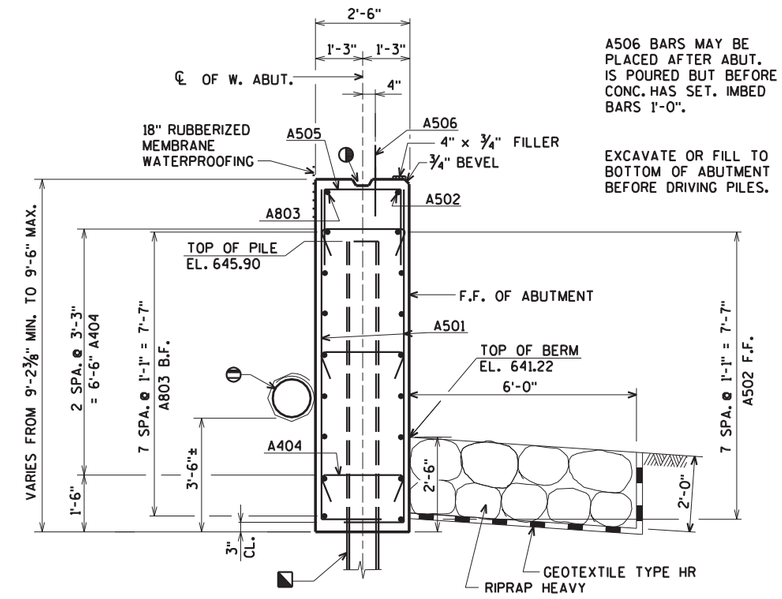

## ELEVATION
(LOOKING WEST)




## PLAN




## PILE LAYOUT




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

EXCAVATE OR FILL TO BOTTOM OF ABUTMENT BEFORE DRIVING PILES.

## TYPICAL SECTION THRU BODY

◥ ABUTMENT TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REO'D. DRIVING RESISTANCE OF 125 TONS PER PILE. ESTIMATED LENGTH 20'-0". PRE-BORE PILES 10'-0".

NOTE: 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.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

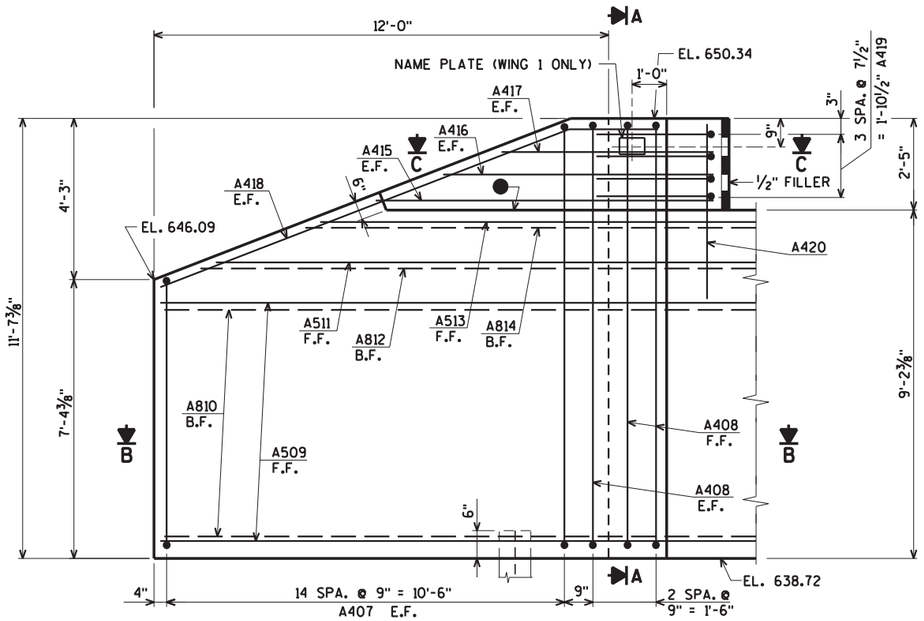
STRUCTURE B-38-150

DRAWN BY CLS | PLANS CK'D. CBM

WEST ABUTMENT

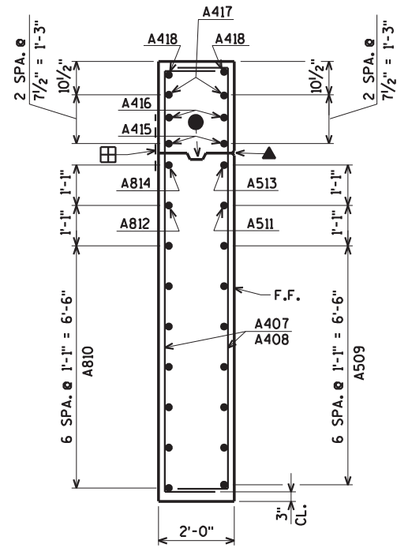
SHEET 4 OF 11
35

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

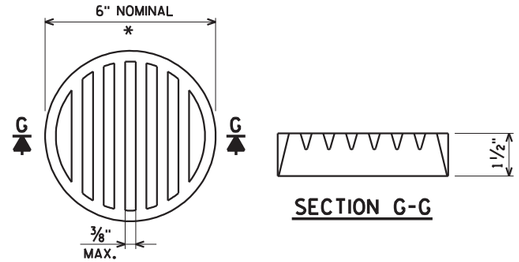



## ELEVATION - WING 1

(WING 2 SIMILAR)




## SECTION A



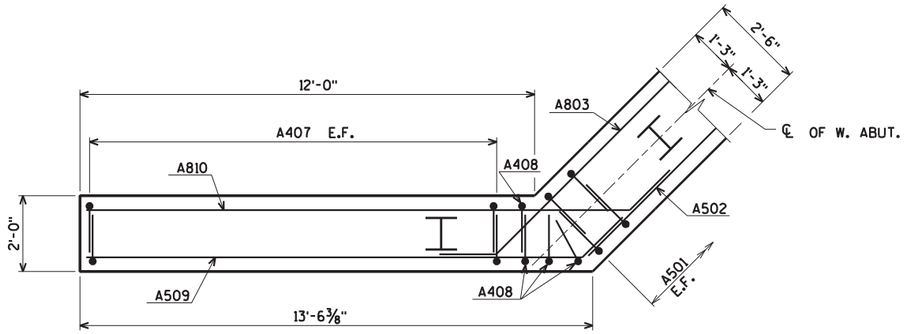

## SECTION G-G

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

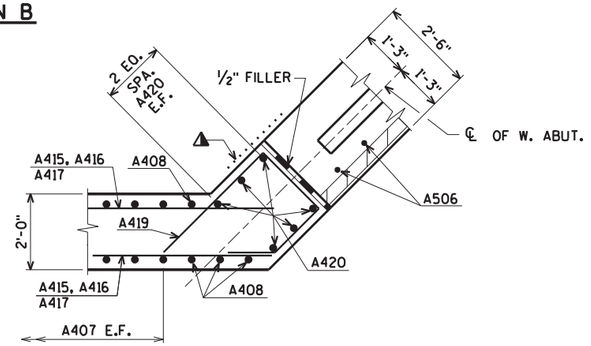
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY 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




## SECTION B




## SECTION C

▲ ¾" 'V' GROOVE ON F.F. OF WINGWALL - 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. JT. IS USED. (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES").

FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

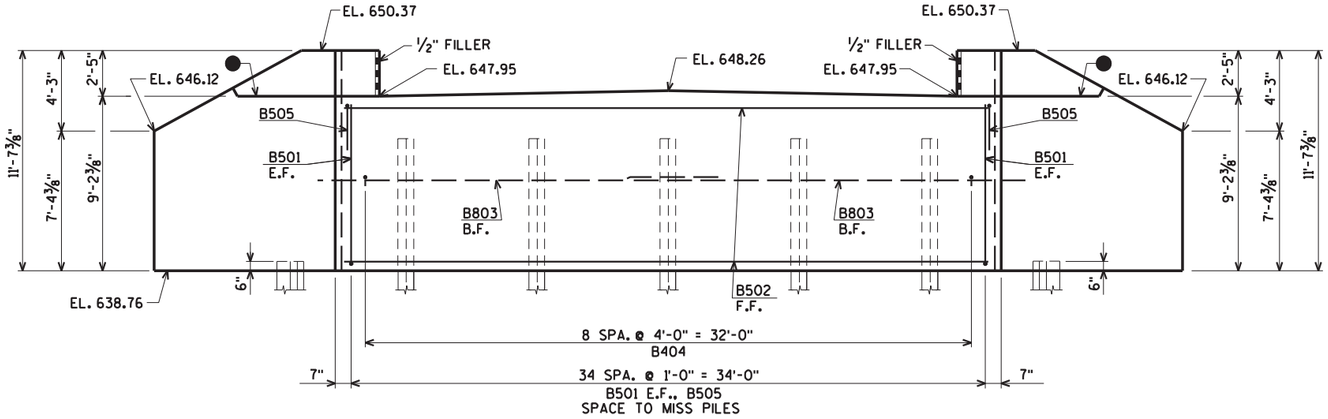
DRAWN BY CLS | PLANS CK'D. CBM

WEST ABUTMENT WING DETAILS

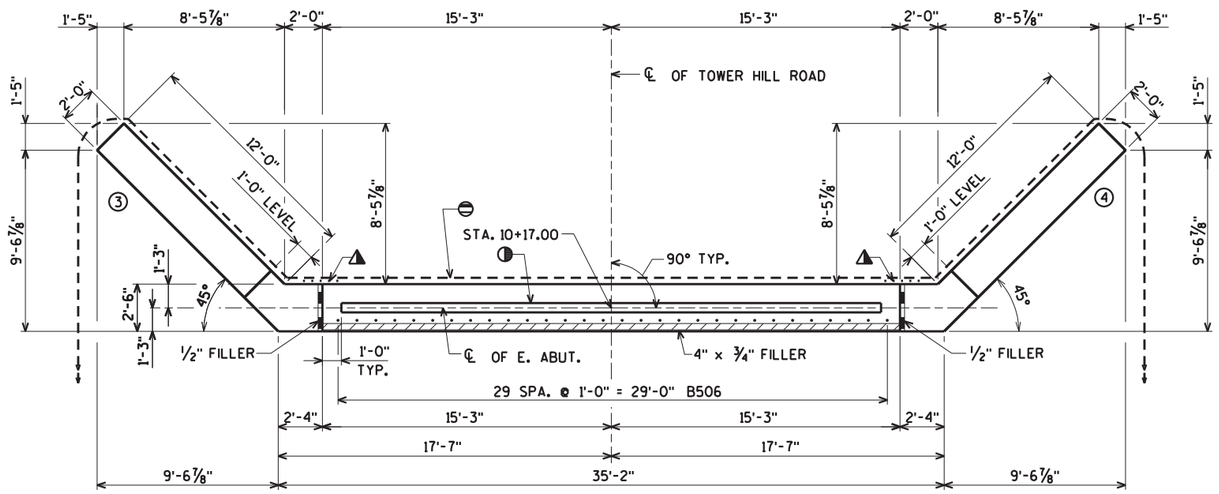
SHEET 5 OF 11
36

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

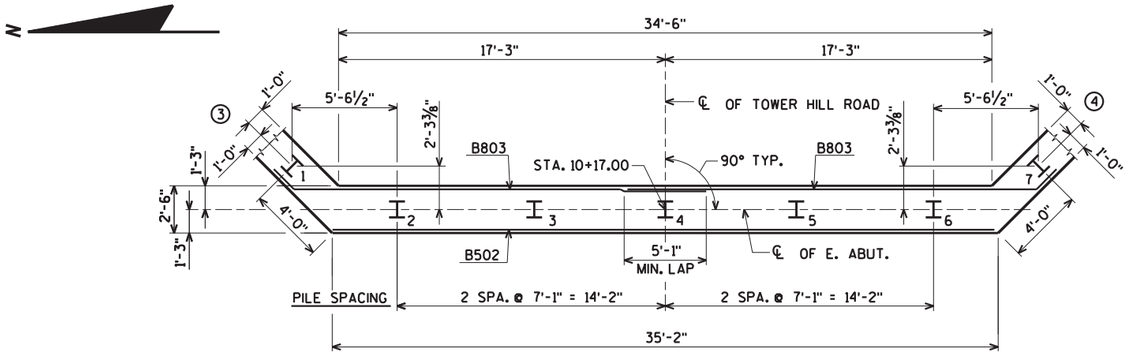
NOTE: SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)



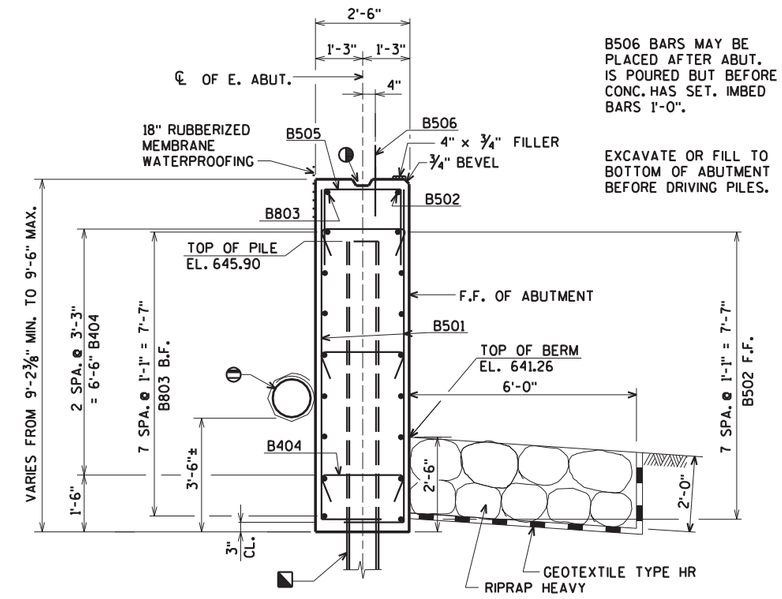

**ELEVATION**
(LOOKING EAST)




**PLAN**




**PILE LAYOUT**




B506 BARS MAY BE PLACED AFTER ABUT. IS POURED BUT BEFORE CONC. HAS SET. IMBED BARS 1'-0".

EXCAVATE OR FILL TO BOTTOM OF ABUTMENT BEFORE DRIVING PILES.

## TYPICAL SECTION THRU BODY

◥ ABUTMENT TO BE SUPPORTED ON HP 10 x 42 STEEL PILING DRIVEN TO A REQ'D. DRIVING RESISTANCE OF 125 TONS PER PILE. ESTIMATED LENGTH 20'-0". PRE-BORE PILES 10'-0".

NOTE: 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.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

DRAWN BY CLS | PLANS CK'D. CBM

EAST ABUTMENT

SHEET 6 OF 11
37

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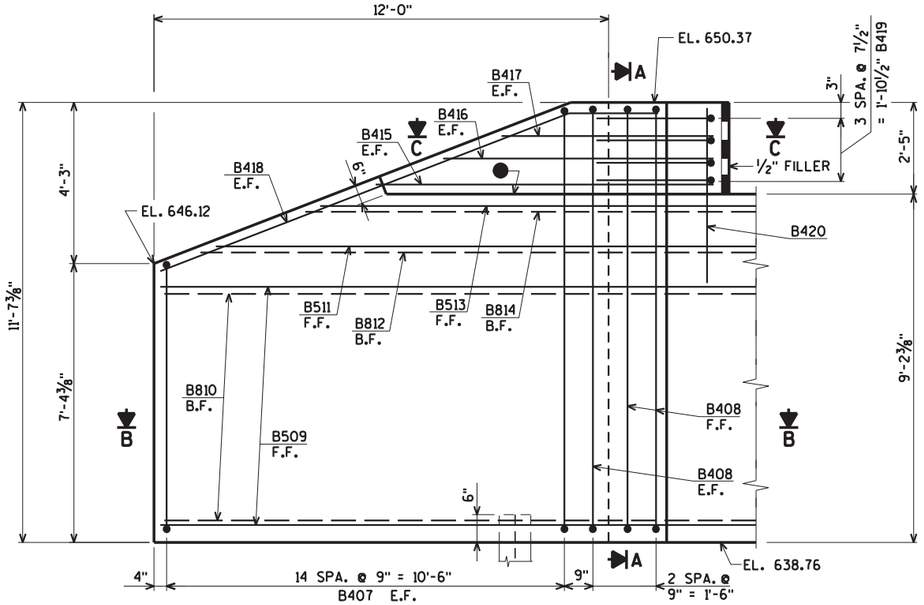
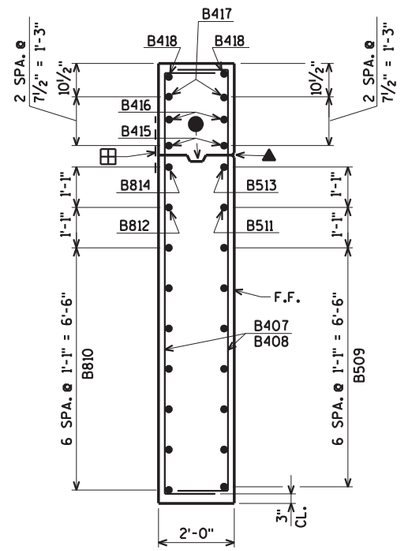
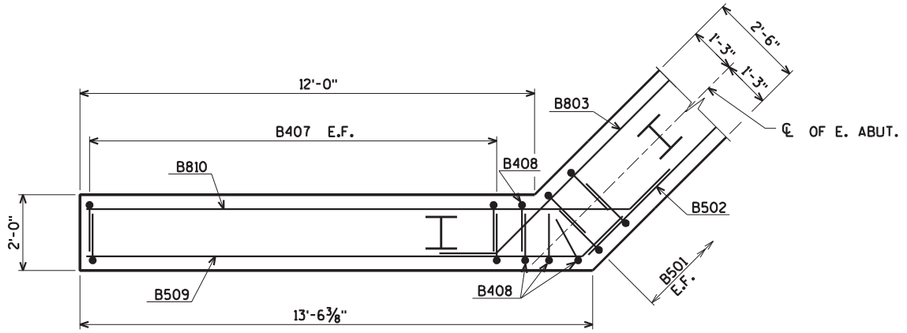


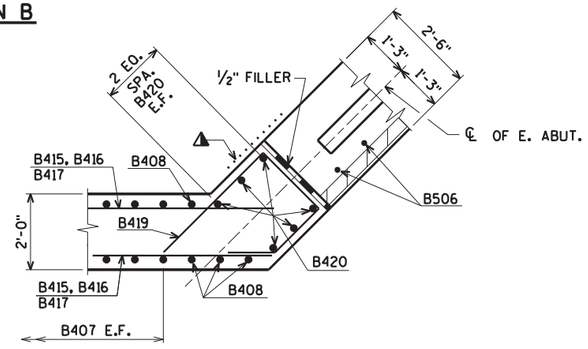

## ELEVATION - WING 3
(WING 4 SIMILAR)




## SECTION A




## SECTION B




## SECTION C

▲ ¾" 'V' GROOVE ON F.F. OF WINGWALL - 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. JT. IS USED. (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES").

FOR PILE SPLICE DETAIL SEE SHEET 2.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

E.F. DENOTES EACH FACE.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

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# EAST ABUTMENT WING DETAILS

SHEET 7 OF 11
38

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## BILL OF BARS - WEST ABUTMENT

| BAR NO. | COATED BAR | NO. REQ'D. | LENGTH | BENT BAR | BUNDLED BAR SERIES | 2,570# UNCOATED 1,760# COATED LOCATION |
|---|---|---|---|---|---|---|
| A501 | | 70 | 10-3 | X | | BODY VERT. E.F. |
| A502 | | 9 | 34-10 | | | BODY HORIZ. F.F. |
| A803 | | 18 | 23-8 | X | | BODY HORIZ. B.F. |
| A404 | | 27 | 2-9 | X | | BODY TIES |
| A505 | | 35 | 8-5 | X | | BODY VERT. TOP |
| A506 | X | 30 | 2-0 | | | BODY DOWELS |
| A407 | X | 60 | 11-5 | X | ⊗ | WING VERT. E.F. |
| A408 | X | 8 | 13-8 | X | | WING VERT. E.F. |
| A509 | X | 14 | 14-7 | X | | WING HORIZ. F.F. |
| A810 | X | 14 | 16-1 | X | | WING HORIZ. B.F. |
| A511 | X | 2 | 13-0 | X | | WING HORIZ. F.F. |
| A812 | X | 2 | 14-6 | X | | WING HORIZ. B.F. |
| A513 | X | 2 | 10-3 | X | | WING HORIZ. F.F. |
| A814 | X | 2 | 11-9 | X | | WING HORIZ. B.F. |
| A415 | X | 4 | 8-6 | | | WING HORIZ. E.F. |
| A416 | X | 4 | 5-11 | | | WING HORIZ. E.F. |
| A417 | X | 4 | 4-4 | | | WING HORIZ. E.F. |
| A418 | X | 4 | 14-0 | X | | WING DIAG. E.F. |
| A419 | X | 8 | 8-5 | X | | WING HORIZ. |
| A420 | X | 12 | 3-10 | | | 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.

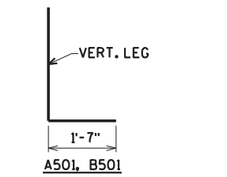
B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

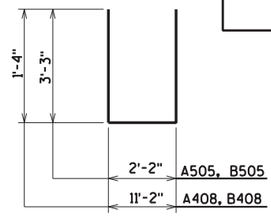
E.F. DENOTES EACH FACE.

## BILL OF BARS - EAST ABUTMENT

| BAR NO. | COATED BAR | NO. REQ'D. | LENGTH | BENT BAR | BUNDLED BAR SERIES | 2,570# UNCOATED 1,760# COATED LOCATION |
|---|---|---|---|---|---|---|
| B501 | | 70 | 10-3 | X | | BODY VERT. E.F. |
| B502 | | 9 | 34-10 | | | BODY HORIZ. F.F. |
| B803 | | 18 | 23-8 | X | | BODY HORIZ. B.F. |
| B404 | | 27 | 2-9 | X | | BODY TIES |
| B505 | | 35 | 8-5 | X | | BODY VERT. TOP |
| B506 | X | 30 | 2-0 | | | BODY DOWELS |
| B407 | X | 60 | 11-5 | X | ⊗ | WING VERT. E.F. |
| B408 | X | 8 | 13-8 | X | | WING VERT. E.F. |
| B509 | X | 14 | 14-7 | X | | WING HORIZ. F.F. |
| B810 | X | 14 | 16-1 | X | | WING HORIZ. B.F. |
| B511 | X | 2 | 13-0 | X | | WING HORIZ. F.F. |
| B812 | X | 2 | 14-6 | X | | WING HORIZ. B.F. |
| B513 | X | 2 | 10-3 | X | | WING HORIZ. F.F. |
| B814 | X | 2 | 11-9 | X | | WING HORIZ. B.F. |
| B415 | X | 4 | 8-6 | | | WING HORIZ. E.F. |
| B416 | X | 4 | 5-11 | | | WING HORIZ. E.F. |
| B417 | X | 4 | 4-4 | | | WING HORIZ. E.F. |
| B418 | X | 4 | 14-0 | X | | WING DIAG. E.F. |
| B419 | X | 8 | 8-5 | X | | WING HORIZ. |
| B420 | X | 12 | 3-10 | | | WING VERT. |

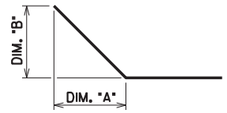



A501, B501

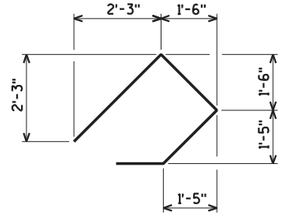



A505, B505

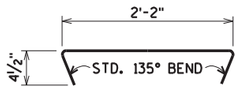
A408, B408




| BAR NO. | DIM. "A" | DIM. "B" |
|---|---|---|
| A803 | 1'-0¾" | 1'-0¾" |
| A509 | 1'-0¾" | 1'-0¾" |
| A810 | 1'-0¾" | 1'-0¾" |
| A511 | 1'-0¾" | 1'-0¾" |
| A812 | 1'-0¾" | 1'-0¾" |
| A513 | 1'-0¾" | 1'-0¾" |
| A814 | 1'-0¾" | 1'-0¾" |
| A418 | 11'-0" | 4'-3" |
| B803 | 1'-0¾" | 1'-0¾" |
| B509 | 1'-0¾" | 1'-0¾" |
| B810 | 1'-0¾" | 1'-0¾" |
| B511 | 1'-0¾" | 1'-0¾" |
| B812 | 1'-0¾" | 1'-0¾" |
| B513 | 1'-0¾" | 1'-0¾" |
| B814 | 1'-0¾" | 1'-0¾" |
| B418 | 11'-0" | 4'-3" |




A419, B419

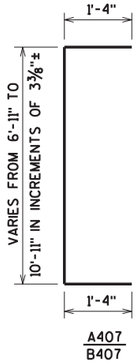



A404
B404

## BAR SERIES TABLE

| BAR MARK | NO REQ'D. | LENGTH |
|---|---|---|
| A407 | 4 SERIES OF 15 | 9'-5" TO 13'-5" |
| B407 | 4 SERIES OF 15 | 9'-5" TO 13'-5" |

BUNDLE AND TAG EACH SERIES SEPARATELY.




A407
B407

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

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ABUTMENT
BILL OF BARS

SHEET 8 OF 11
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8

8

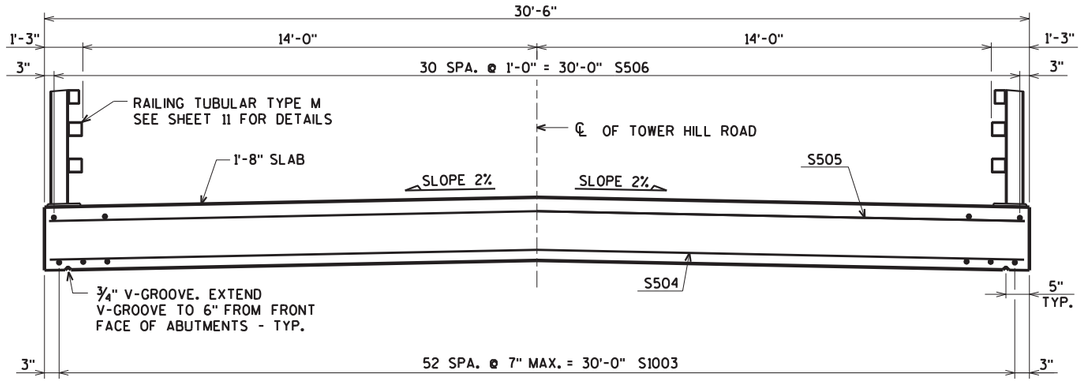
$PRFNAME$
U:\45-0449.00 - Marinette Co. Tower Hill Rd over Lt. Peshtigo River\Structures\450449 wa.dgn

5/22/2019

PENTABLE:BReau_shd_util.tbl

STATE PROJECT NUMBER

9246-10-71




TYPICAL SECTION THRU BRIDGE

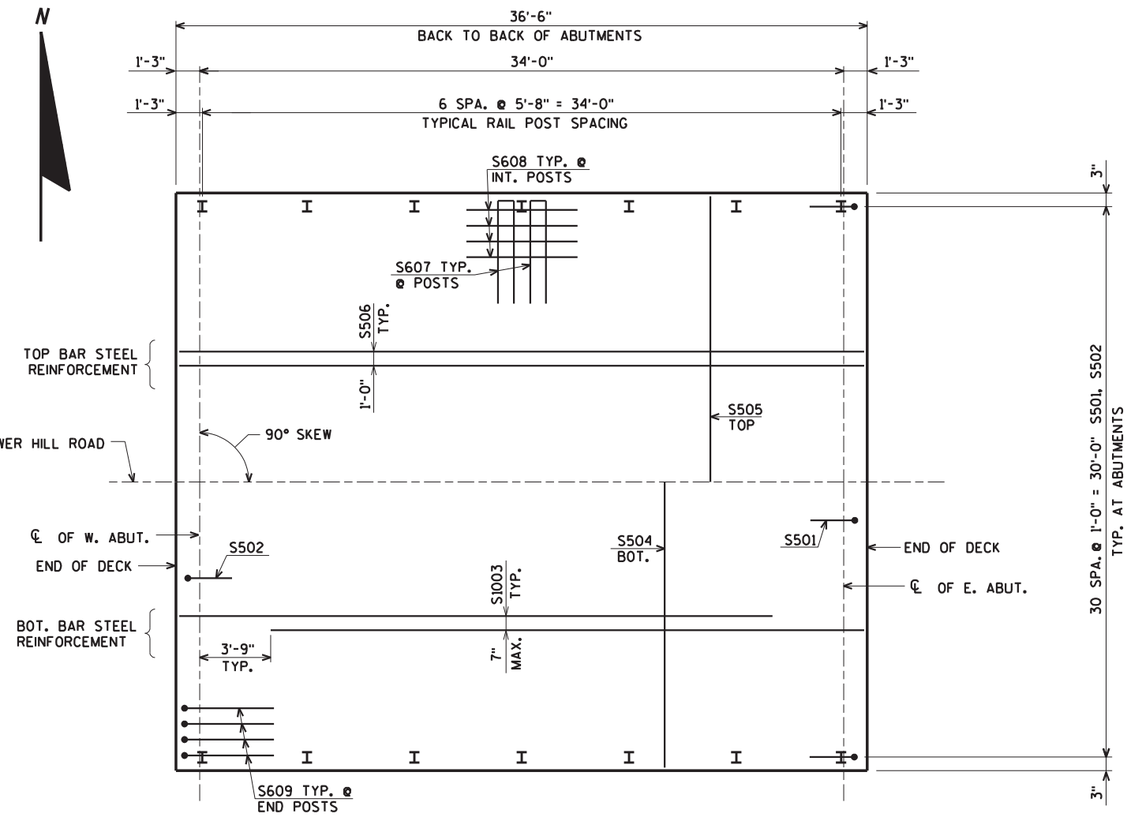
TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

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

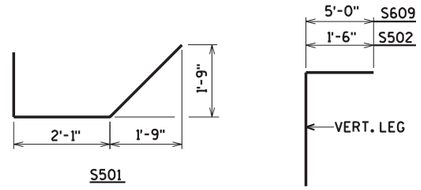
## BILL OF BARS

| BAR NO. | COATED BAR | NO. REQ'D. | LENGTH | BENT BAR | BUNDLED BAR SERIES | 12,750# COATED LOCATION |
|---|---|---|---|---|---|---|
| S501 | X | 62 | 6-3 | X | | SLAB @ ABUT. |
| S502 | X | 62 | 3-5 | X | | SLAB @ ABUT. |
| S1003 | X | 53 | 31-4 | | | SLAB LONG. BOT. |
| S504 | X | 52 | 30-2 | | | SLAB TRANS. BOT. |
| S505 | X | 37 | 30-2 | | | SLAB TRANS. TOP |
| S506 | X | 31 | 36-2 | | | SLAB LONG. TOP |
| S607 | X | 28 | 12-0 | X | | SLAB @ RAIL POSTS |
| S608 | X | 40 | 6-0 | | | SLAB @ INT. RAIL POSTS |
| S609 | X | 16 | 6-0 | X | | SLAB @ END RAIL POSTS |

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

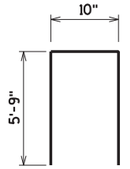



PLAN




S501




S607

| NO. | DATE | REVISION | BY |
|---|---|---|---|
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STATE OF WISCONSIN
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STRUCTURE B-38-150

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SUPERSTRUCTURE

SHEET 9 OF 11
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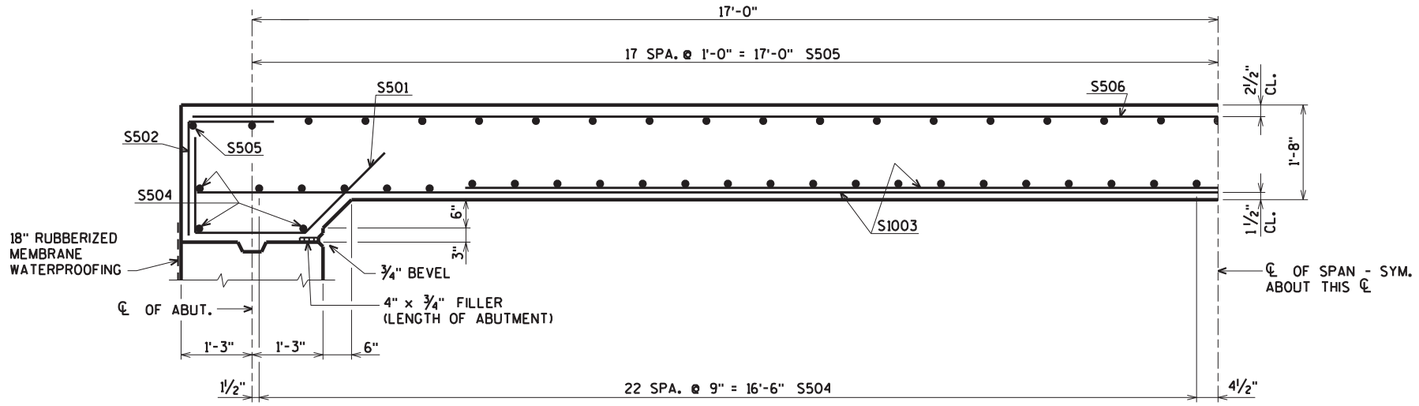
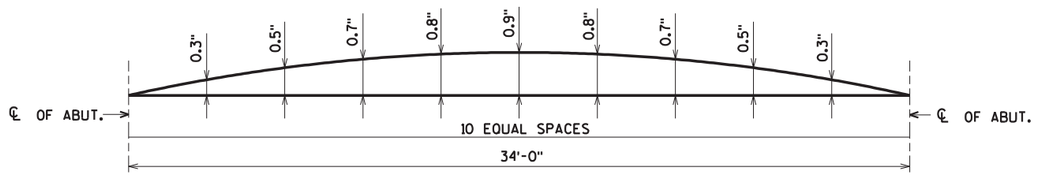
5/22/2019
PENTABLE:BReau_shd_util.tbl

U:±45-0449.00 - Marinette Co. Tower Hill Rd over Lt. Peshtigo River±Structures±450449 sup.dgn




## PART LONGITUDINAL SECTION




## CAMBER DIAGRAM

CAMBER SPAN 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 ℄ OF ABUTMENTS, AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF SLAB AND CROWN OR ℄.

## TOP OF DECK ELEVATIONS

| LOCATION | ℄ OF W. ABUT. | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | ℄ OF E. ABUT. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N. EDGE OF SLAB | 650.34 | 650.36 | 650.38 | 650.39 | 650.40 | 650.41 | 650.41 | 650.40 | 650.40 | 650.39 | 650.37 |
| ℄ OF STRUCTURE | 650.64 | 650.67 | 650.68 | 650.70 | 650.70 | 650.71 | 650.71 | 650.71 | 650.70 | 650.69 | 650.68 |
| S. EDGE OF SLAB | 650.34 | 650.36 | 650.38 | 650.39 | 650.40 | 650.41 | 650.41 | 650.40 | 650.40 | 650.39 | 650.37 |

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

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DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

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SUPERSTRUCTURE DETAILS

SHEET 10 OF 11
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## LEGEND

(1) W6 x 25 WITH 1⅛" X 1½" 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.

(2) PLATE 1¼" x 11¾" x 1'-8" WITH 1⅝" X 1⅝" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.

(3) ASTM A449 - 1⅛" 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 10¾" 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.)

(4) ⅝" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1³⁄₁₆" DIA. HOLES FOR ANCHOR BOLTS NO. 3

(5) TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

(5A) TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

(6) ⅞" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, ³⁄₁₆" X 1⅝" X 1⅝" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)

(7) ½" THK. BACK-UP PLATE WITH 2 - ⅞" X 1½" 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.

(8) 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR ⅞" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.

(9) SPLICE SLEEVE FABRICATED FROM ¼" PLATE. PROVIDE "SLIDING FIT".

(10) ⅜" X 3⅝" X 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.

(10A) ⅜" X 2⅝" X 2'-4" PLATE USED IN NO. 5, ⅜" X 3⅝" X 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.

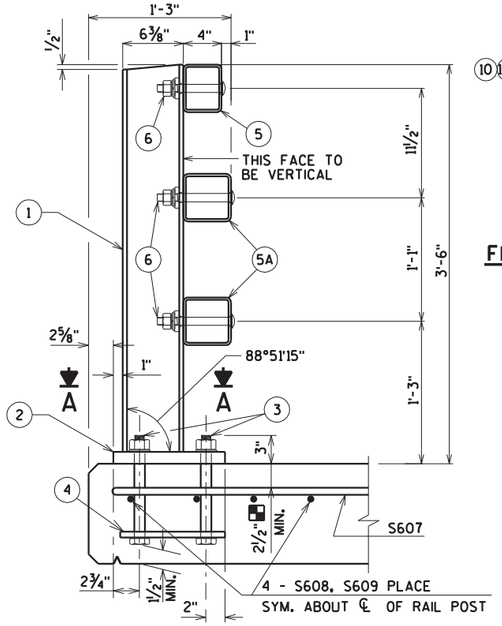
(11) ⅞" Φ A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1⅝" X 1¼" LONGIT. SLOTTED HOLES AT FIELD JOINTS ~~AND 1⅝" X 2¼" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS~~ IN PLATE NO. 10A.

(12) ⅞" DIA. X 1½" LONG THREADED SHOP WELDED STUDS (2 REQ'D).

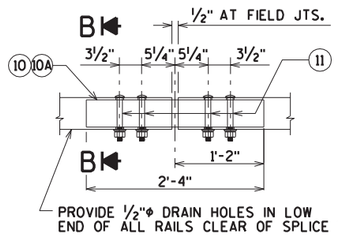
(13) ⅜" X 8" X 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.

(14) ⅞" DIA. X 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).

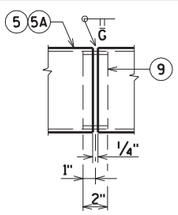
(15) 1" Φ HOLES IN TUBES NO. 5A FOR ⅞" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.




## SECTION THRU RAILING ON DECK

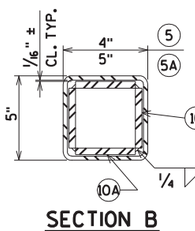



## FIELD ERECTION JOINT DETAIL

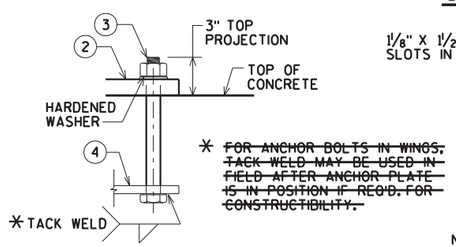



## SHOP RAIL SPLICE DETAIL

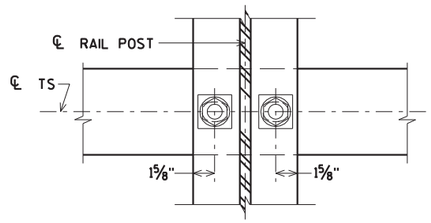
(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)



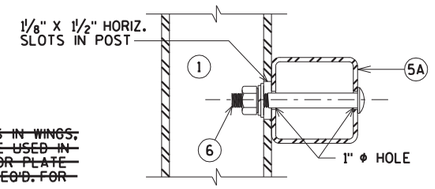

## SECTION B




## ANCHOR BOLTS

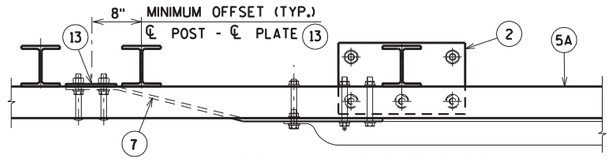



## SECTION THRU POST WEB



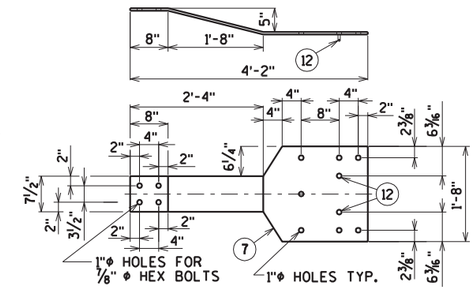

## SECTION THRU RAIL

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




## TOP VIEW AT END POST

(THRIE BEAM RAIL ATTACHMENT)



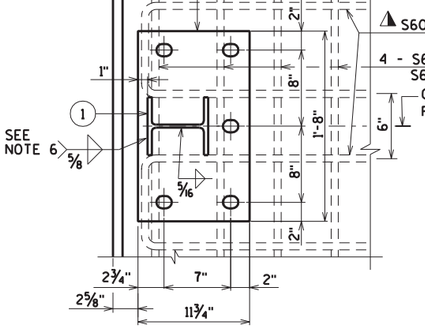

## BACK-UP PLATE DETAIL

(AT BEAM GUARD ATTACHMENT)

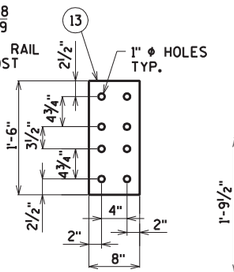
## TYPICAL RAIL TO POST CONNECTIONS

PLACE BELOW TOP MAT OF SLAB REINFORCEMENT

TIE TO TOP MAT OF STEEL.

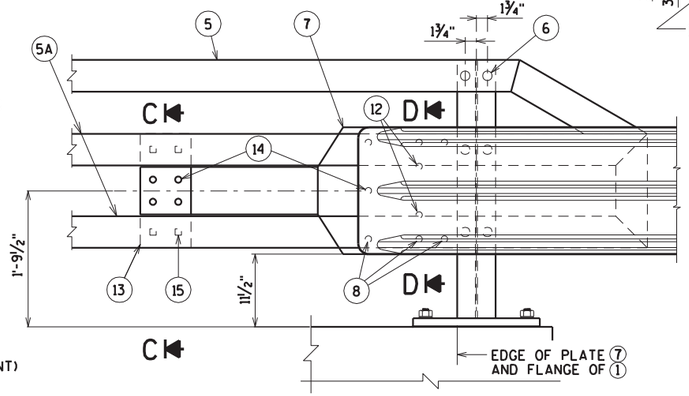



## SECTION A



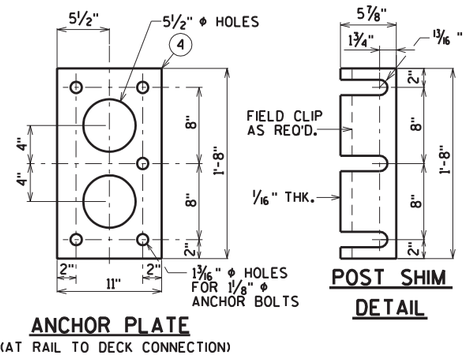

## ANCHOR PLATE

(AT BEAM GUARD ATTACHMENT)




## DETAIL AT END POST

(THRIE BEAM RAIL ATTACHMENT)

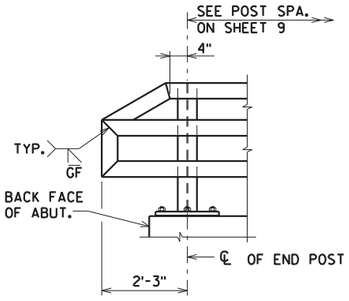



## ANCHOR PLATE

(AT RAIL TO DECK CONNECTION)



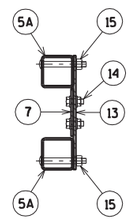

## POST SHIM DETAIL



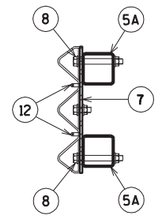

## PART ELEVATION OF RAILING

## GENERAL NOTES

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M" WHICH INCLUDES ALL ITEMS SHOWN.
2. 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.
3. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ⅛ TURN.
4. 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.~~
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
7. 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.
8. 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.
9. 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.
10. ~~WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.~~




## SECTION C




## SECTION D

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-38-150

DRAWN BY CLS | PLANS CK'D. CBM

RAILING TUBULAR TYPE M

SHEET 11 OF 11
42

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

EARTHWORK - TOWER HILL RD

| STATION | AREA (SF) | | | | Incremental Vol (CY) (Unadjusted) | | | | Cumulative Vol (CY) | | | Mass Ordinate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cut | Unusable Pavement Material | Fill | Marsh Exc | Cut | Unusable Pavement Material | Fill | Marsh Exc | Cut | Expanded Fill | Expanded Marsh Backfill | |
| | | | | | | | | | 1.00 | 1.30 | 1.50 | |
| | | | | | Note 1 | Note 2 | Note 3 | | Note 1 | | Note 4 | Note 8 |
| 9+25 | 21 | 8.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9+50 | 28 | 8.3 | 55 | 150 | 23 | 8 | 25 | 69 | 23 | 33 | 104 | -18 |
| 9+82 | 26 | 8.3 | 180 | 150 | 32 | 10 | 139 | 178 | 55 | 213 | 371 | -176 |
| B-38-0150 | | | | | | | | | | | | |
| 10+18 | 23 | 8.3 | 180 | 140 | 31 | 11 | 240 | 187 | 85 | 525 | 651 | -469 |
| 10+50 | 27 | 8.3 | 122 | 135 | 46 | 15 | 280 | 255 | 132 | 889 | 1,033 | -801 |
| 11+00 | 20 | 8.3 | 0 | 0 | 44 | 15 | 113 | 125 | 175 | 1,036 | 1,220 | -920 |
| | | | | | 175 | 59 | 797 | 814 | | | | |

| Notes: | |
|---|---|
| 1 - Cut | Cut includes Unusable Pavement material |
| 2 - Unusable Pavement Material | This does not show up in cross sections |
| 3 - Fill | Does not include Unusable Pavement Exc volume |
| 4 - Expanded Marsh Backfill | Will be backfilled with Granular Backfill |
| 8 - Mass Ordinate | Cut - Unusable Pavement Material - (Fill * Fill Factor) |

STRUCTURE B-538-0150 REQUIRED

10+00

9+50

9+25

BEGIN PROJECT
STA. 9+25

RW

3.0:1

4.0:1

2.0%

1.9%

1.1%

648.06
-21.00

648.90
-17.66

649.02
-11.49

649.25
0.00

649.07
12.11

648.21
21.00

648.89
18.28

644.10
-39.30

643.93
-36.10

644.37
32.82

648.63
-9.52

648.81
0.00

648.70
10.62

MARSH
EXCAVATION

MARSH
EXCAVATION

10 FT

10 FT

650
640
630
660

-70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70

9

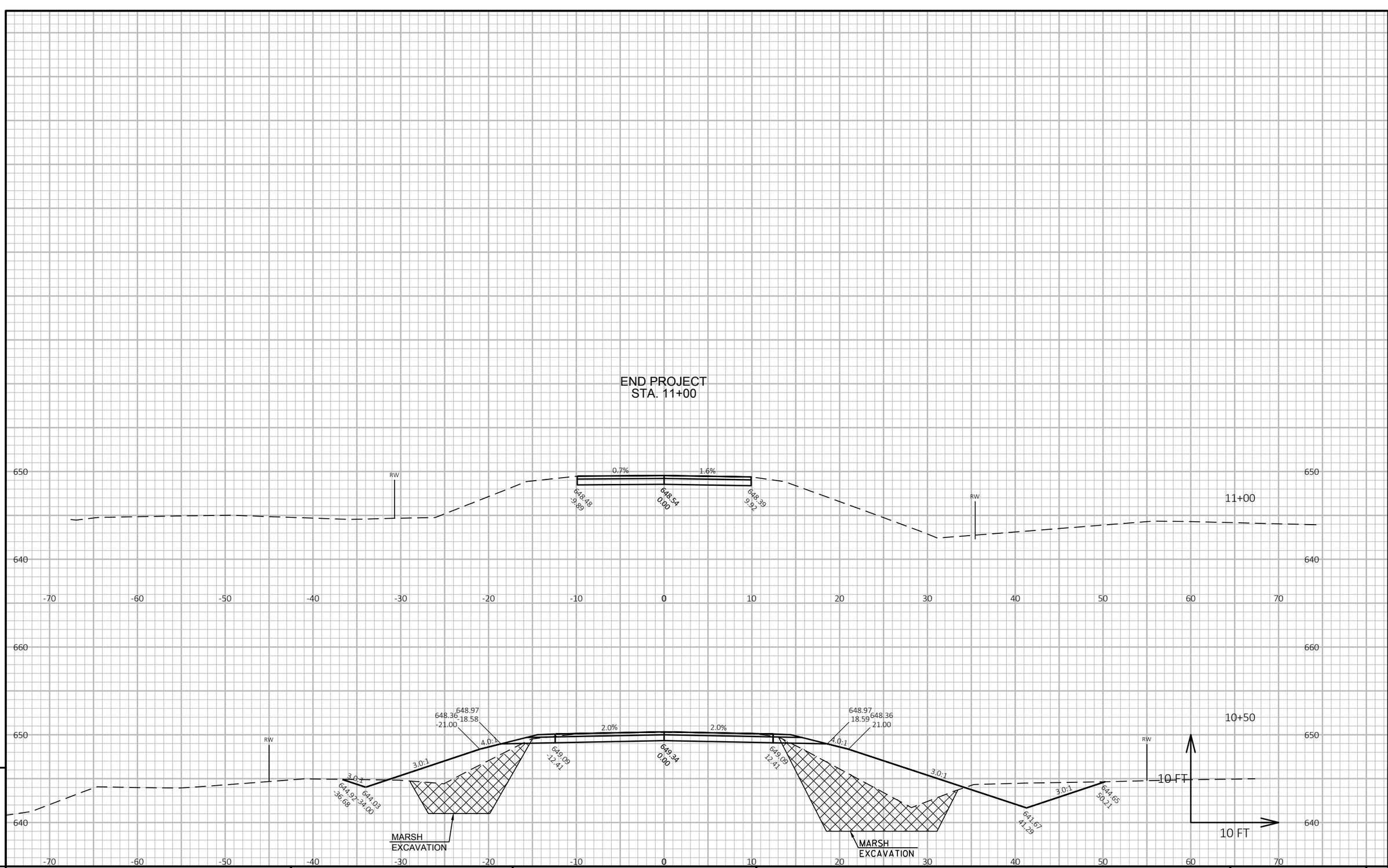
9

| PROJECT NO: 9246-10-71 | HWY: TOWER HILL RD. | COUNTY: MARINETTE | CROSS SECTIONS: | SHEET 44 | E |
|---|---|---|---|---|---|

FILE NAME : V:\TRANS-GB\450449 TOWER HILL\C3D\SHEETSPLAN\090201 XS.DWG
LAYOUT NAME - Tower Hill - 1

PLOT DATE : 7/11/2019 1:52 PM PLOT BY : SOUFAL, KEVIN PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

END PROJECT
STA. 11+00




9 9

| PROJECT NO: 9246-10-71 | HWY: TOWER HILL RD. | COUNTY: MARINETTE | CROSS SECTIONS: | SHEET 45 | E |
|---|---|---|---|---|---|

FILE NAME : V:\TRANS-GB\450449 TOWER HILL\C3D\SHEETSPLAN\090201 XS.DWG
LAYOUT NAME - Tower Hill - 2

PLOT DATE : 7/11/2019 1:52 PM PLOT BY : SOUFAL, KEVIN PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

**Wisconsin Department of Transportation**

Dedicated people creating transportation solutions
through innovation and exceptional service.

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