

RHI
PROJECT ID:
WITH: N/A

9140-12-61

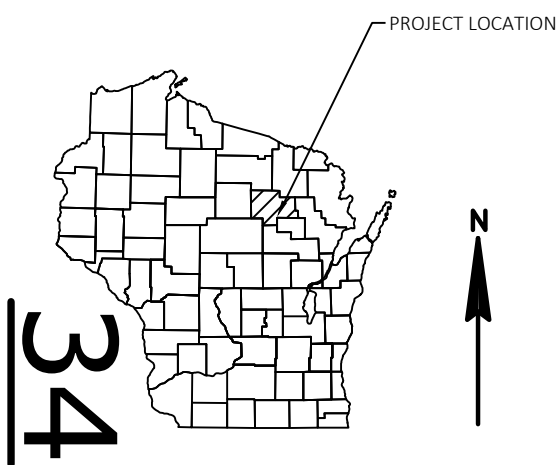
COUNTY:
LANGLADE

JANUARY 2022

ORDER OF SHEETS

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

TOTAL SHEETS = 154



DESIGN DESIGNATION

| | | | |
|--------------|------|---|--------|
| A.A.D.T. | 2023 | = | 2400 |
| A.A.D.T. | 2043 | = | 2700 |
| D.H.V. | | = | |
| D.D. | | = | |
| T. | | = | 16% |
| DESIGN SPEED | | = | 55 MPH |
| ESALS | | = | |

CONVENTIONAL SYMBOLS

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

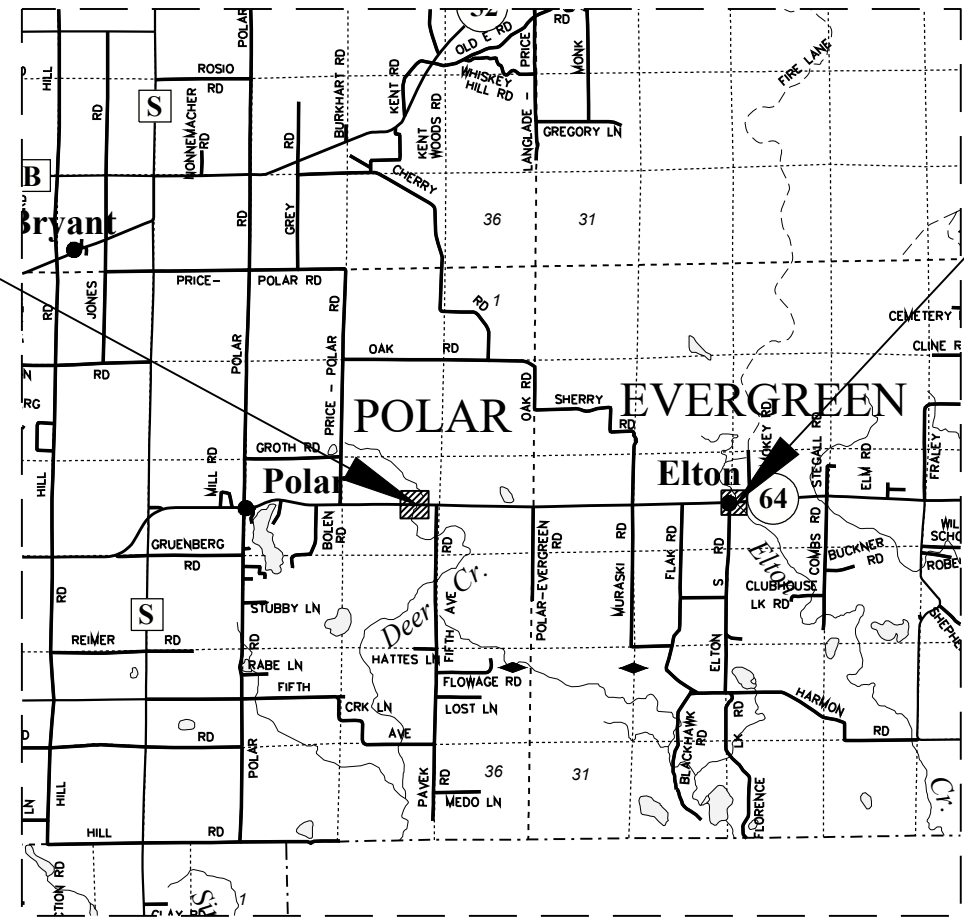
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT

ANTIGO - LANGLADE

STH 64 CULVERT REPLACEMENTS

STH 64
LANGLADE

STATE PROJECT NUMBER
9140-12-61



C 34064001329
STA 102+20 - STA 103+20

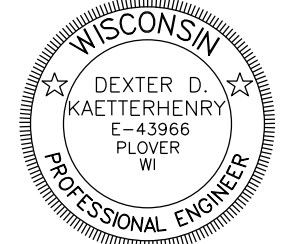
B-34-0058
STA 201+25 - STA 207+05

LAYOUT
SCALE 0 2 MI
TOTAL NET LENGTH OF CENTERLINE = 0.028 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), LANGLADE COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

| STATE PROJECT | FEDERAL PROJECT | |
|---------------|-----------------|----------|
| | PROJECT | CONTRACT |
| 9140-12-61 | WISC 2022131 | 1 |
| | | |
| | | |

ORIGINAL PLANS PREPARED BY
GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Stevens Point • Fond du Lac
120 Wiskho Boulevard North • Stevens Point, WI 54481
(715) 341-4565 • fax (715) 341-1256



7/5/2021
DATE
DEXTER D. KAETTERHENRY, PE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

| | |
|---------------------|------------------------------|
| Surveyor | GREMMER AND ASSOCIATES, INC. |
| Designer | GREMMER AND ASSOCIATES, INC. |
| Project Manager | NICHOLAS VOS, P.E. |
| Regional Examiner | REGIONAL EXAMINER |
| Regional Supervisor | DAN ERVA, P.E. |

APPROVED FOR THE DEPARTMENT
DATE: 7-29-2021
(Signature)

E

GENERAL NOTES

ALL DISTANCES AND STATIONING SHOWN ON THIS PLAN ARE GROUND VALUES.

UTILITY FACILITIES SHOWN WITHIN THE PLANS ARE APPROXIMATE AND THERE MAY BE OTHER UTILITIES NOT SHOWN. PRIVATE UTILITIES AND OTHER UTILITIES NOT LOCATED BY A DIGGERS HOTLINE LOCATE ARE NOT SHOWN. FIELD VERIFY AND LOCATE ALL UTILITIES FOR ACTUAL LOCATIONS, OTHER FACILITIES SIZES, TYPES, MATERIAL AND DEPTHS.

WHEN THE QUANTITY OF THE ITEM OF BASE AGGREGATE DENSE OR HMA PAVEMENT IS MEASURED FOR PAYMENT BY THE TON, THE THICKNESS SHOWN ON THE PLAN IS APPROXIMATE. THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER IN THE FIELD.

CURVE DATA IS BASED ON ARC DEFINITION.

ORDER OF SECTION 2 SHEETS

- TITLE SHEET
- PROJECT OVERVIEW
- GENERAL NOTES
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- EROSION CONTROL
- PAVEMENT MARKING
- TRAFFIC CONTROL

WNDR CONTACT

DEPARTMENT OF NATURAL RESOURCES
 ATTN: WENDY HENNIGES
 107 SULTIFF AVENUE
 RHINELANDER, WI 54501
 OFFICE: 715.365.8916
 EMAIL: Wendy.Henniges@wisconsin.gov

UTILITIES

ALLIANT ENERGY (ELECTRIC)
 ATTN: STEVEN CYCHOSZ
 708 NORTH EAST 7TH STREET
 MARION, WI 54950
 PHONE: 920.290.4102
 EMAIL: STEVENCYCHOSZ@ALLIANTENERGY.COM

FRONTIER COMMUNICATIONS (COMMUNICATIONS) ATTN:
 ATTN: TIM DAVIS
 1851 NORTH 14TH AVENUE
 WAUSAU, WI 54401
 PHONE: 231.288.9940
 EMAIL: TIMOTHY.M.DAVIS@FTR.COM

WISCONSIN PUBLIC SERVICE CORP. (GAS/PETROLEUM)
 ATTN: STEVE BONECK
 1717 10TH AVENUE
 MENOMINEE, MI 49858
 PHONE: 920.863.4320
 MOBILE: 920.606.3338
 EMAIL: STEVEN.BONECK@WISCONSINPUBLICSERVICE.COM

WITTENBERG TELEPHONE COMPANY (COMMUNICATIONS)
 ATTN: SCOTT SICKLER
 104 WEST WALKER STREET
 P.O. BOX 160
 WITTENBERG, WI 54499
 PHONE: 715.253.2111
 MOBILE: 715.881.0302
 EMAIL: SCOTT@WITTELCO.COM

RUNOFF COEFFICIENT TABLE

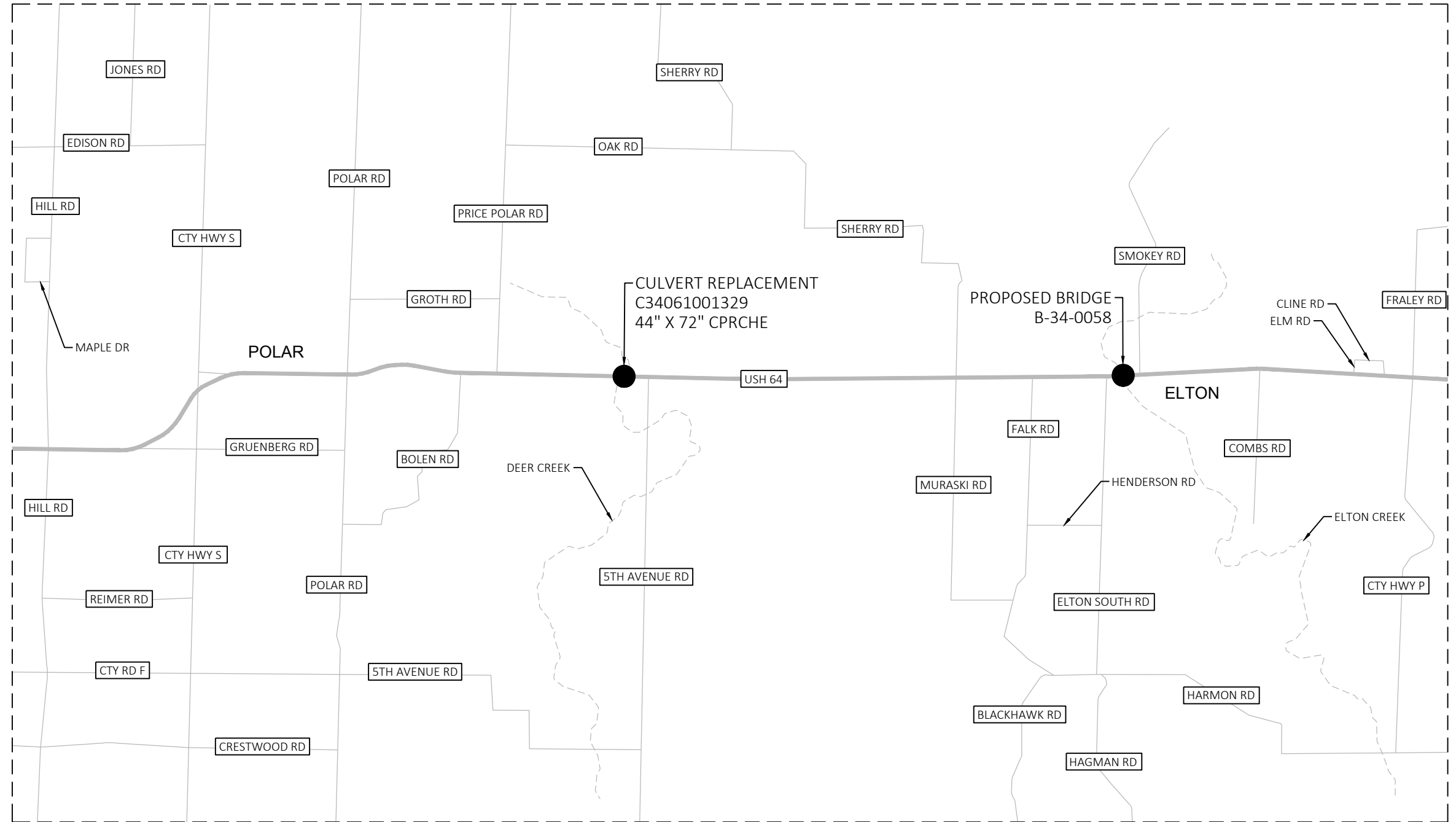
| | HYDROLOGIC SOIL GROUP | | | | | | | | | | | |
|-------------------------|-----------------------|------------|------------|-----------------------|------------|------------|-----------------------|------------|------------|-----------------------|------------|------------|
| | A | | | B | | | C |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

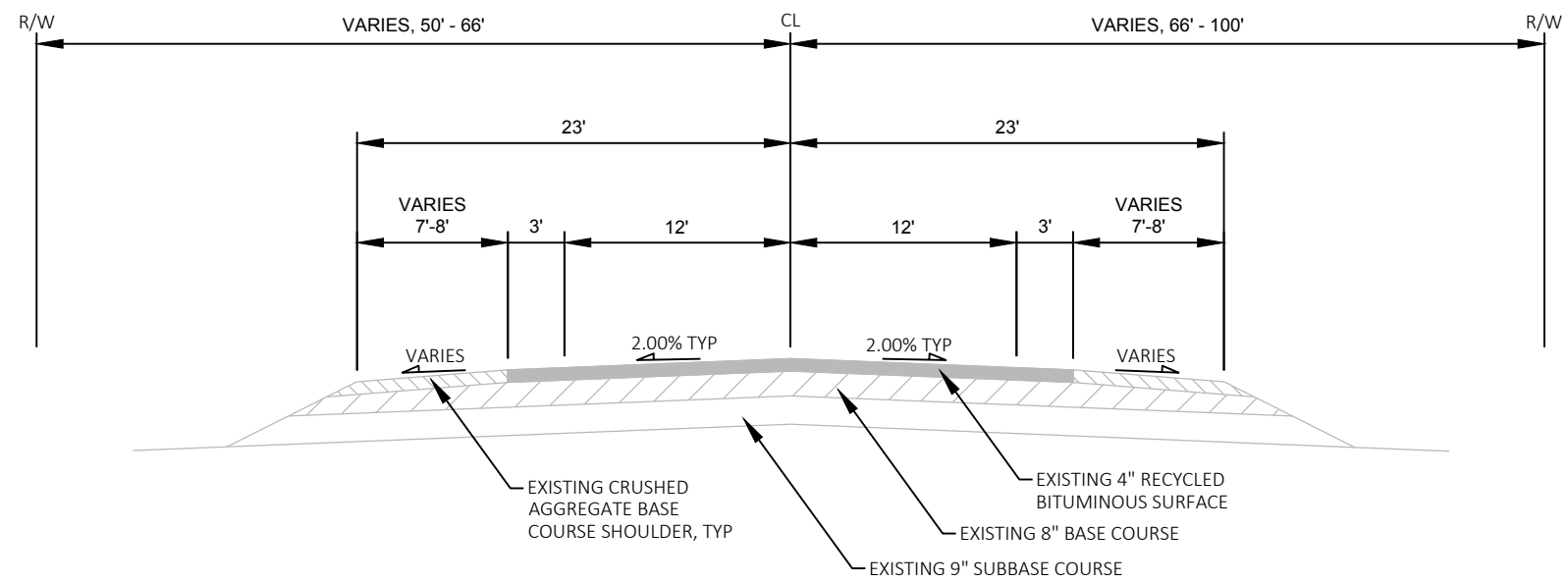
TOTAL PROJECT AREA = 1.6 ACRES
 TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.6 ACRES



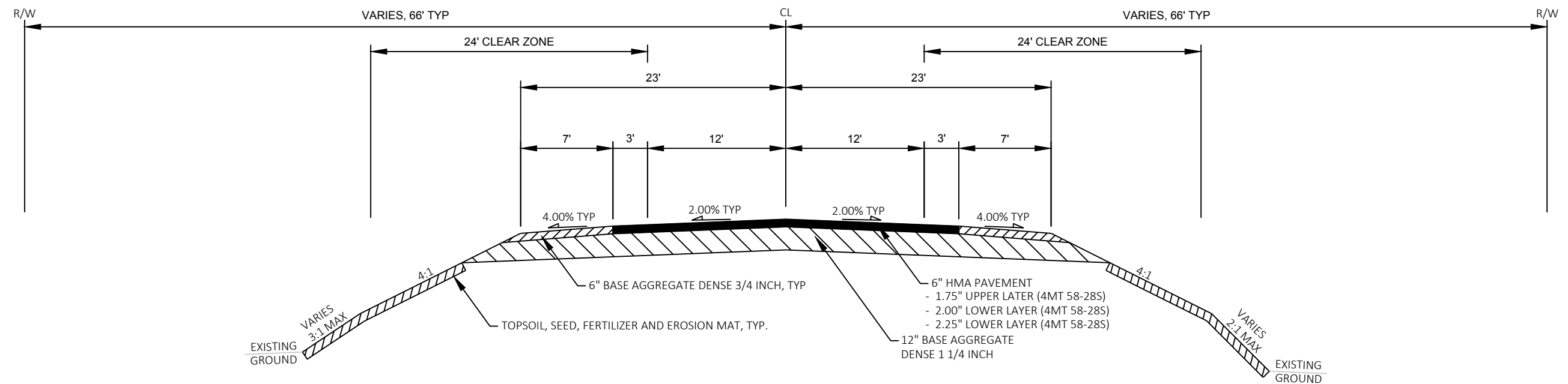


PROJECT LOCATION
LANGLADE COUNTY
NC REGION - RHINELANDER OFFICE





TYPICAL EXISTING SECTION
 STA 102+20 - STA 103+20
 STA 201+25 - STA 207+05



TYPICAL FINISHED SECTION
 STA 102+20 - STA 103+20
 STA 201+25 - STA 207+05

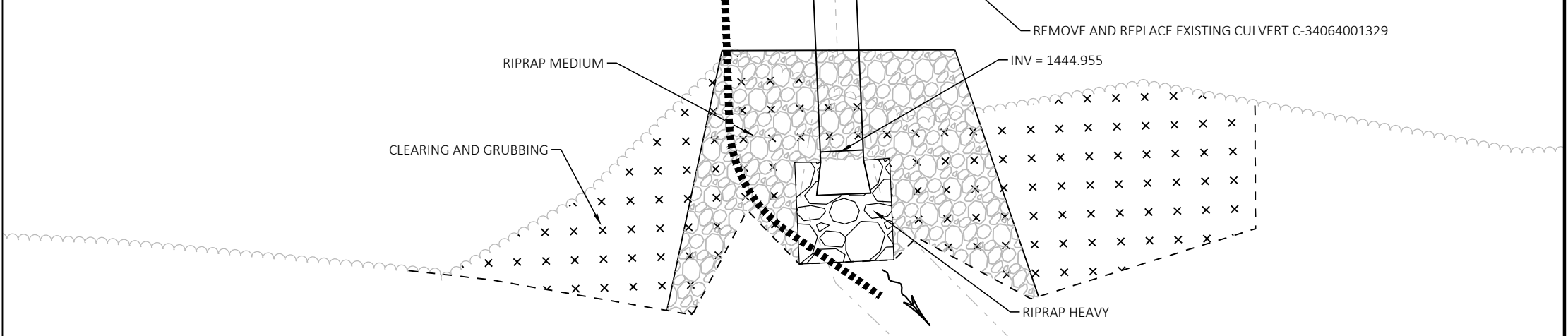
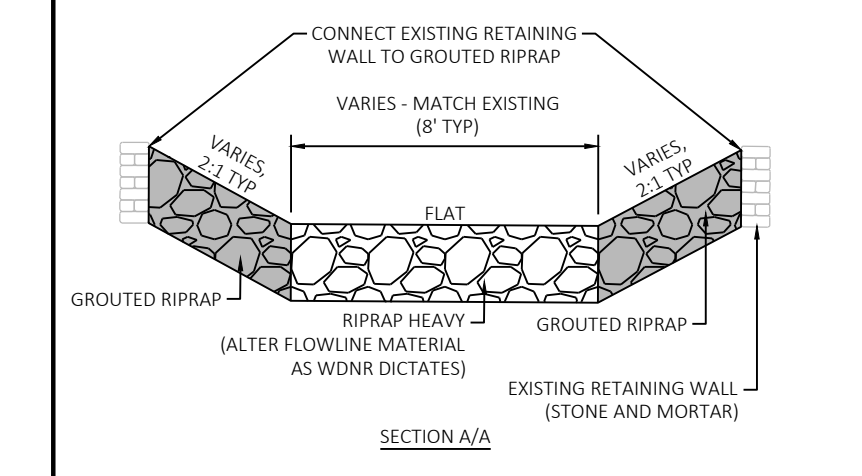
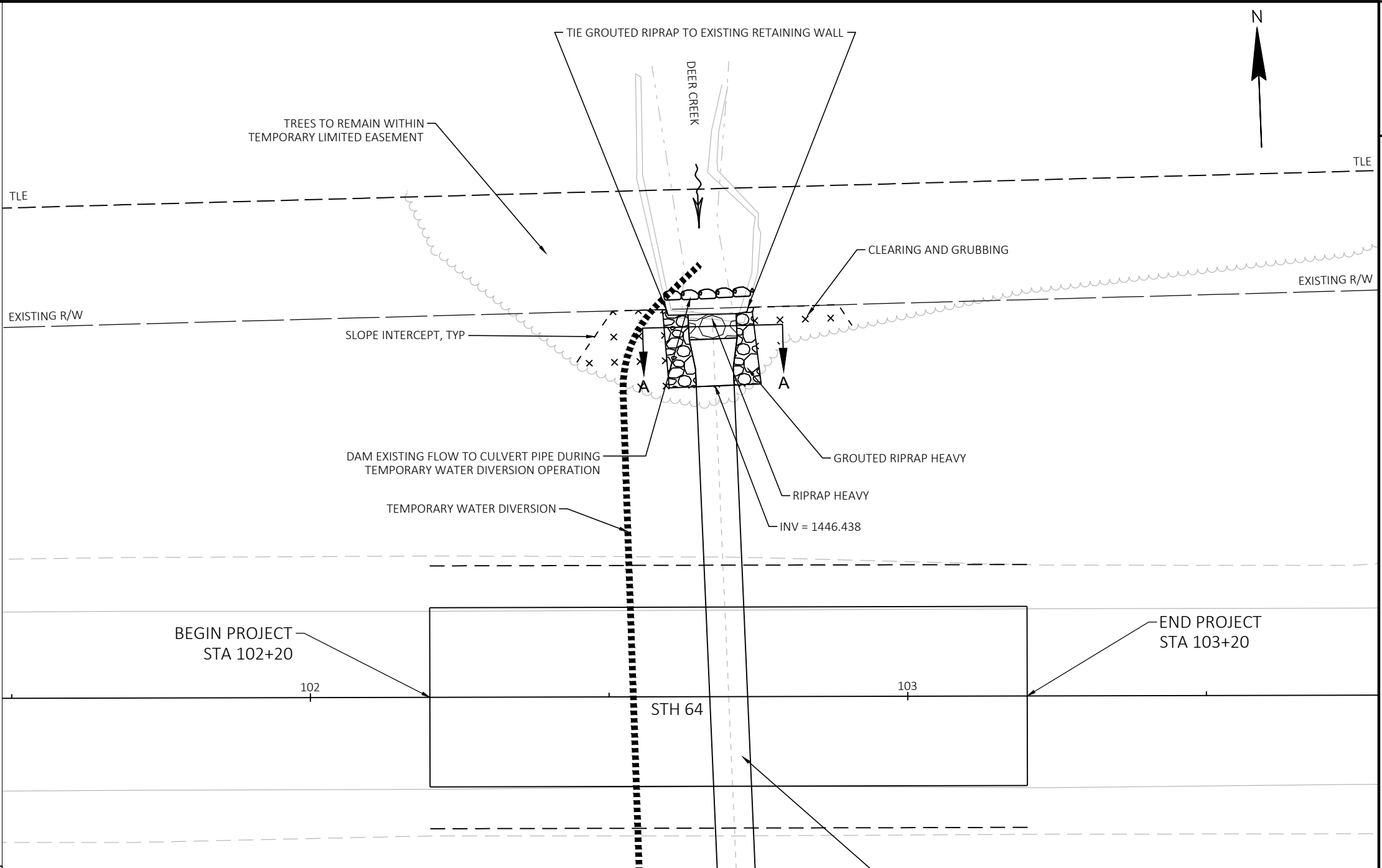
2

NOTES:
 NO TREE REMOVAL WITHOUT THE ENGINEER ON-SITE'S APPROVAL.

TEMPORARY LIMITED EASEMENT FOR TEMPORARY WATER DIVERSION OPERATION. NO STORAGE OF EQUIPMENT / STOCKPILES / WASTE MATERIAL ALLOWED WITHIN TEMPORARY LIMITED EASEMENT. NO ADDITIONAL WORK OR REMOVAL TO OCCUR WITHIN TEMPORARY LIMITED EASEMENT WITHOUT APPROVAL BY ENGINEER ON-SITE.

PROPOSED INVERTS FOR CULVERT PIPE ARE INTENDED TO BE BURIED 1 FOOT BELOW EXISTING STREAMBED.

PROPOSED GROUTED RIPRAP IS INTENDED TO TIE INTO EXISTING RETAINING WALL. UTILIZE GROUT MATERIAL TO FILL VOIDS AT CONNECTION.



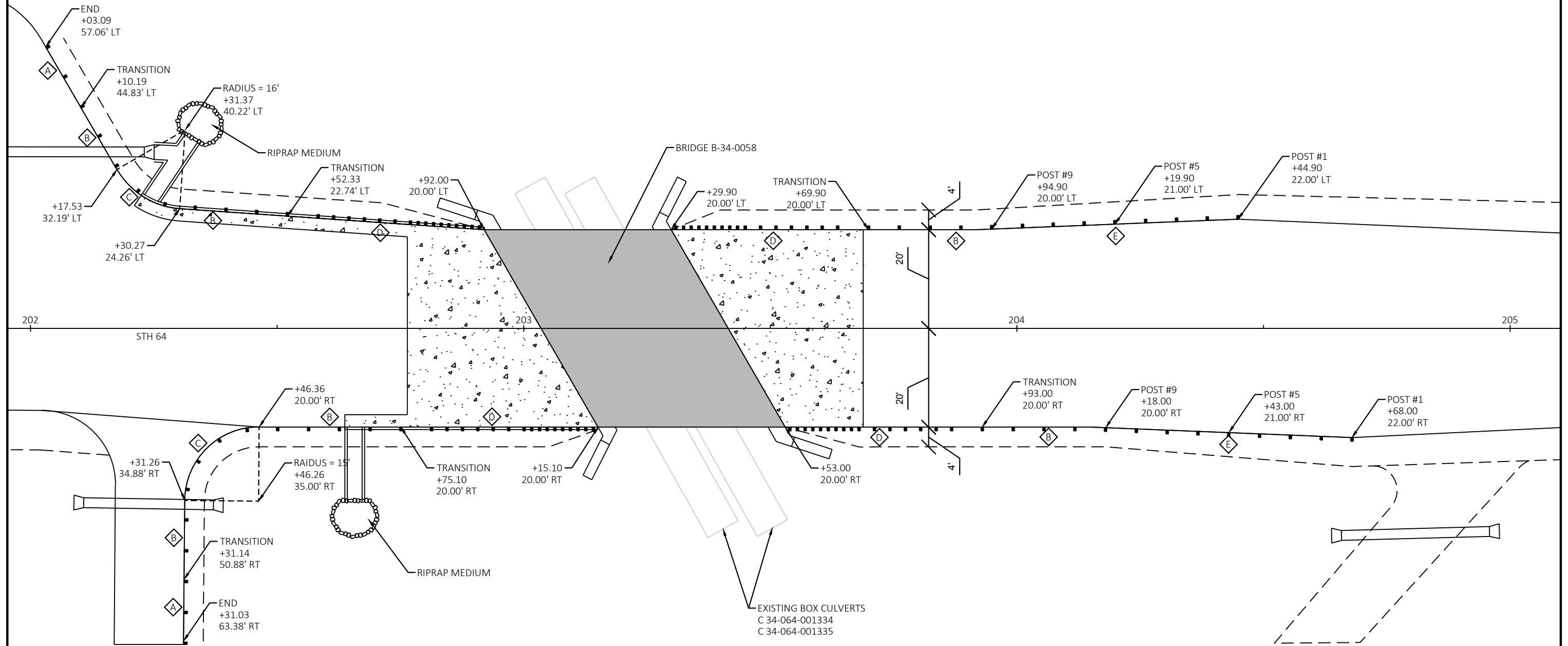
- MATERIALS:**
- A MGS GUARDRAIL SHORT RADIUS TERMINAL
 - B MGS GUARDRAIL 3
 - C MGS GUARDRAIL SHORT RADIUS
 - D MGS THRIE BEAM TRANSITION
 - E MGS GUARDRAIL TERMINAL EAT

NOTES:
 SURFACE DRAINS TO BE PLACED BETWEEN GUARDRAIL POSTS.
 SEE STANDARD DETAIL DRAWING FOR MORE INFORMATION.

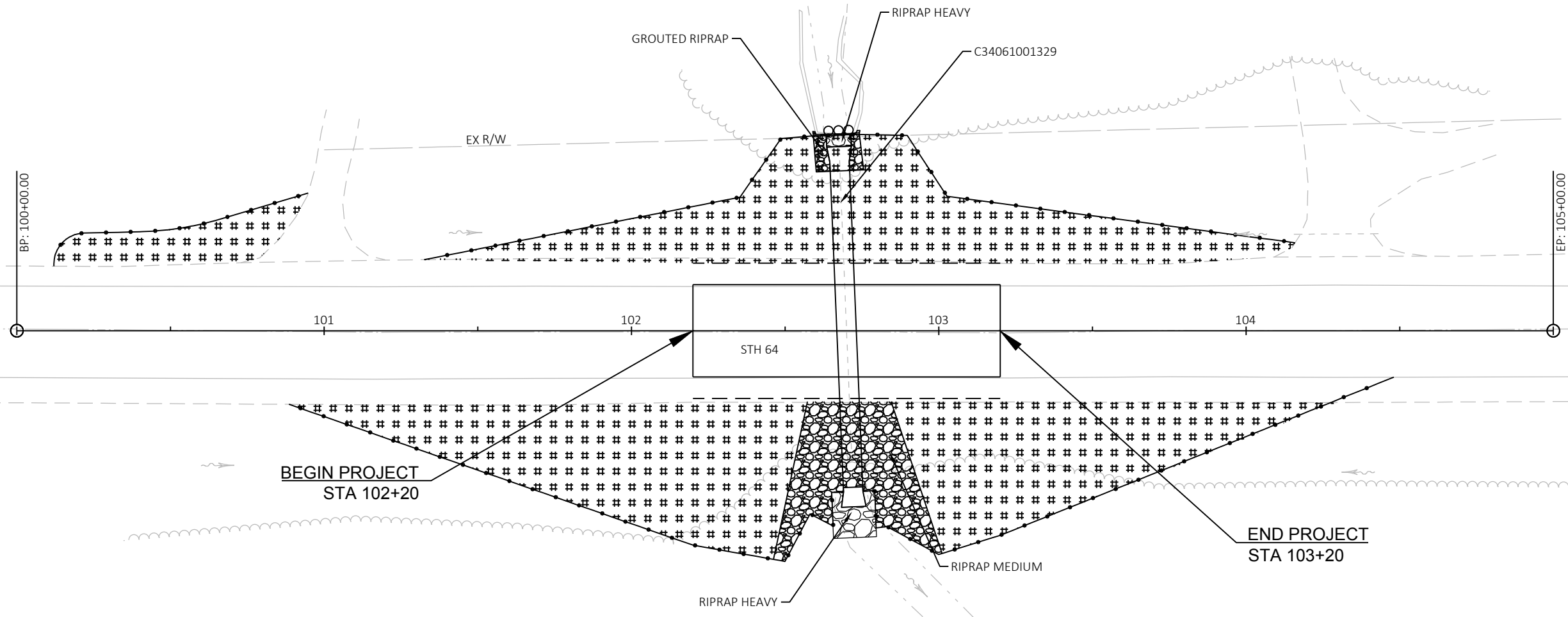


2

2



| | | | | | |
|------------------------|-------------|------------------|----------------------------------------------|-------|----------|
| PROJECT NO: 9140-12-61 | HWY: STH 64 | COUNTY: LANGLADE | CONSTRUCTION DETAILS - ELTON CREEK GUARDRAIL | SHEET | E |
|------------------------|-------------|------------------|----------------------------------------------|-------|----------|



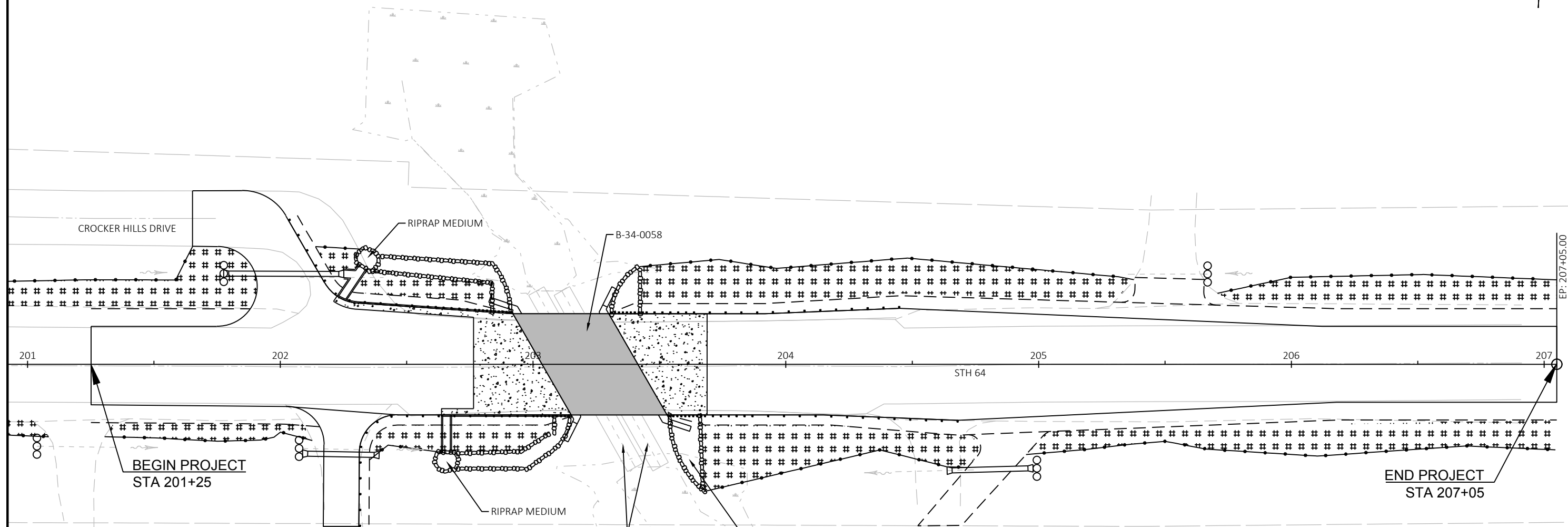
LEGEND

| | |
|-----------|-----------------------------------|
| ##### | EROSION MAT URBAN CLASS I, TYPE B |
| —●—●—●—●— | SILT FENCE |
| —○—○—○—○— | RIP RAP |
| —/—/—/—/— | SLOPE INTERCEPT |
| ○ | CULVERT PIPE CHECK OR ROCK BAG |
| ~~~~~ | SURFACE WATER FLOW |
| | MAPPED WETLANDS |

EROSION CONTROL NOTES

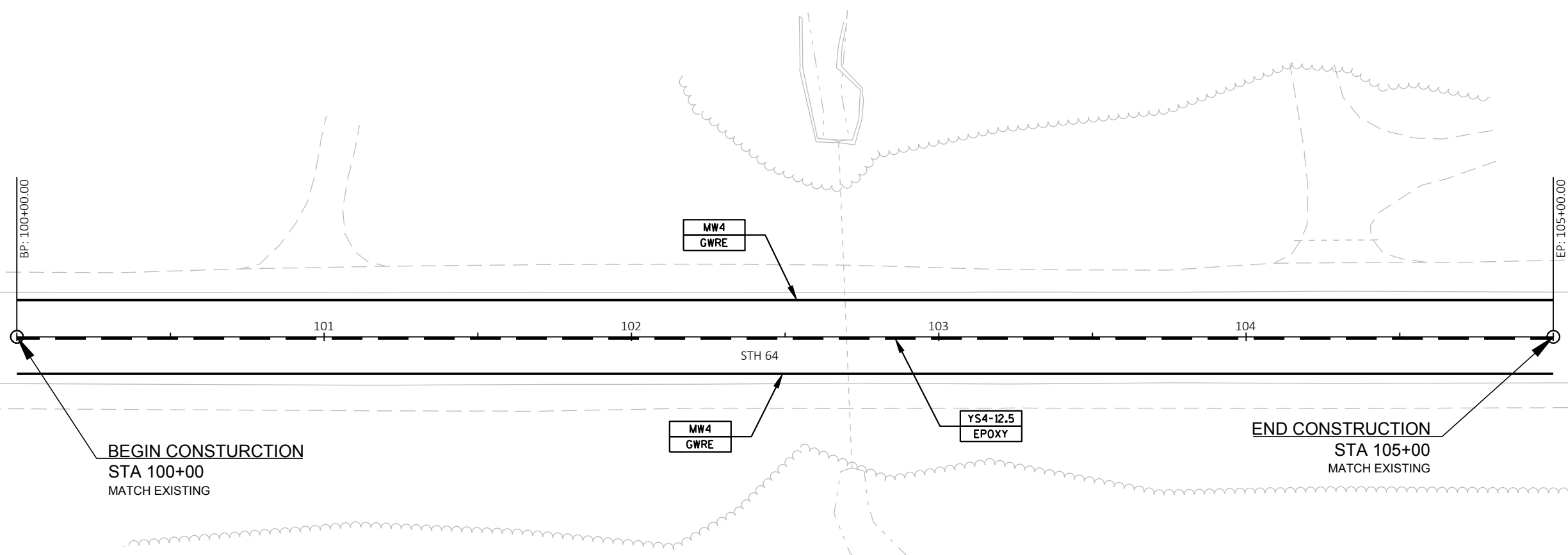
WETLANDS ARE PRESENT AT THE SITE. NO GRADING ALLOWED OUTSIDE OF THE LIMIT SHOWN ON THE PLAN.

DO NOT APPLY FERTILIZER WITHIN 20 FEET OF DEER CREEK, ELTON CREEK, OR WETLANDS.



| LEGEND | |
|-----------|-----------------------------------|
| ##### | EROSION MAT URBAN CLASS I, TYPE B |
| —●—●—●—●— | SILT FENCE |
| —○—○—○—○— | RIP RAP |
| —/—/—/—/— | SLOPE INTERCEPT |
| ○ ○ | CULVERT PIPE CHECK OR ROCK BAG |
| ~> | SURFACE WATER FLOW |
| ⊠ ⊠ | MAPPED WETLANDS |

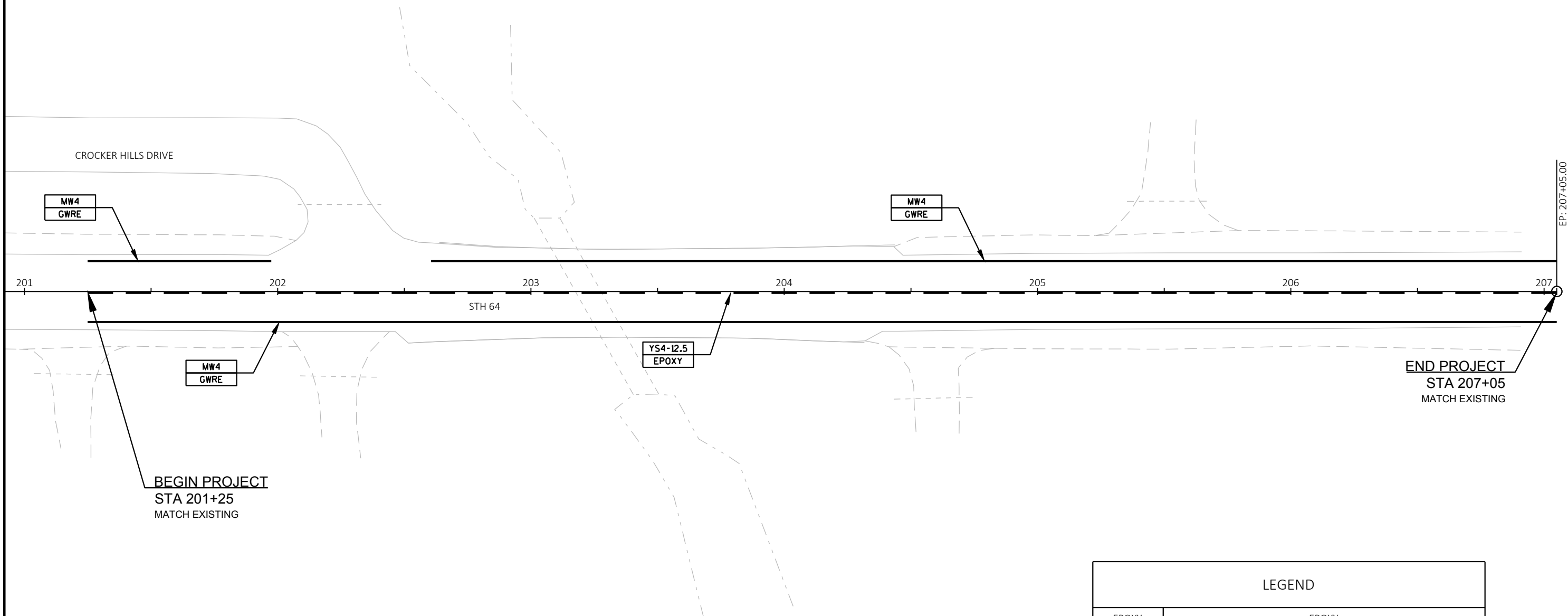
EROSION CONTROL NOTES
 WETLANDS ARE PRESENT AT THE SITE. NO GRADING ALLOWED OUTSIDE OF THE LIMIT SHOWN ON THE PLAN TO LIMIT DISTURBANCE. 0.02 ACRES OF PERMITTED WETLANDS
 DO NO APPLY FERTILIZER WITHIN 20 FEET OF DEER CREEK, ELTON CREEK, OR WETLANDS



BEGIN CONSTRUCTION
 STA 100+00
 MATCH EXISTING

END CONSTRUCTION
 STA 105+00
 MATCH EXISTING

| LEGEND | |
|----------|-----------------------------------|
| EPOXY | EPOXY |
| GWRE | GROOVED WET REFLECTIVE EPOXY |
| MW4 | MARKING LINE 4-INCH (WHITE) |
| YS4-12.5 | MARKING LINE 4-INCH (YELLOW SKIP) |

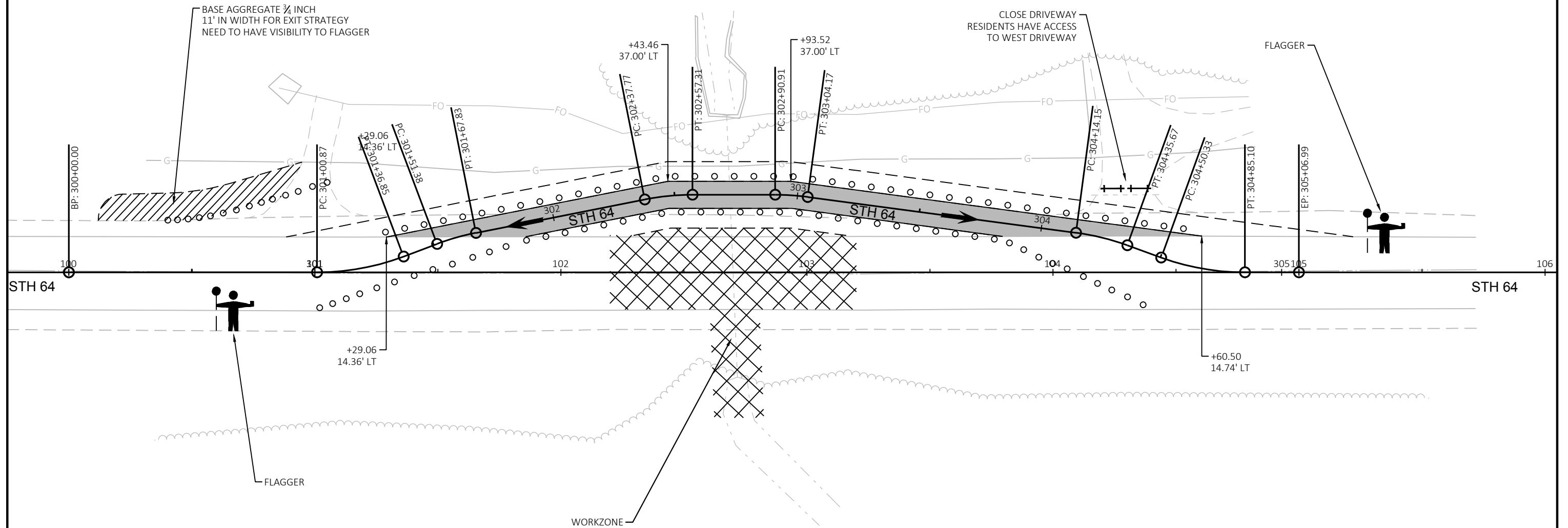






END PROJECT
 STA 207+05
 MATCH EXISTING

BEGIN PROJECT
 STA 201+25
 MATCH EXISTING

| LEGEND | |
|----------|-----------------------------------|
| EPOXY | EPOXY |
| GWRE | GROOVED WET REFLECTIVE EPOXY |
| MW4 | MARKING LINE 4-INCH (WHITE) |
| YS4-12.5 | MARKING LINE 4-INCH (YELLOW SKIP) |

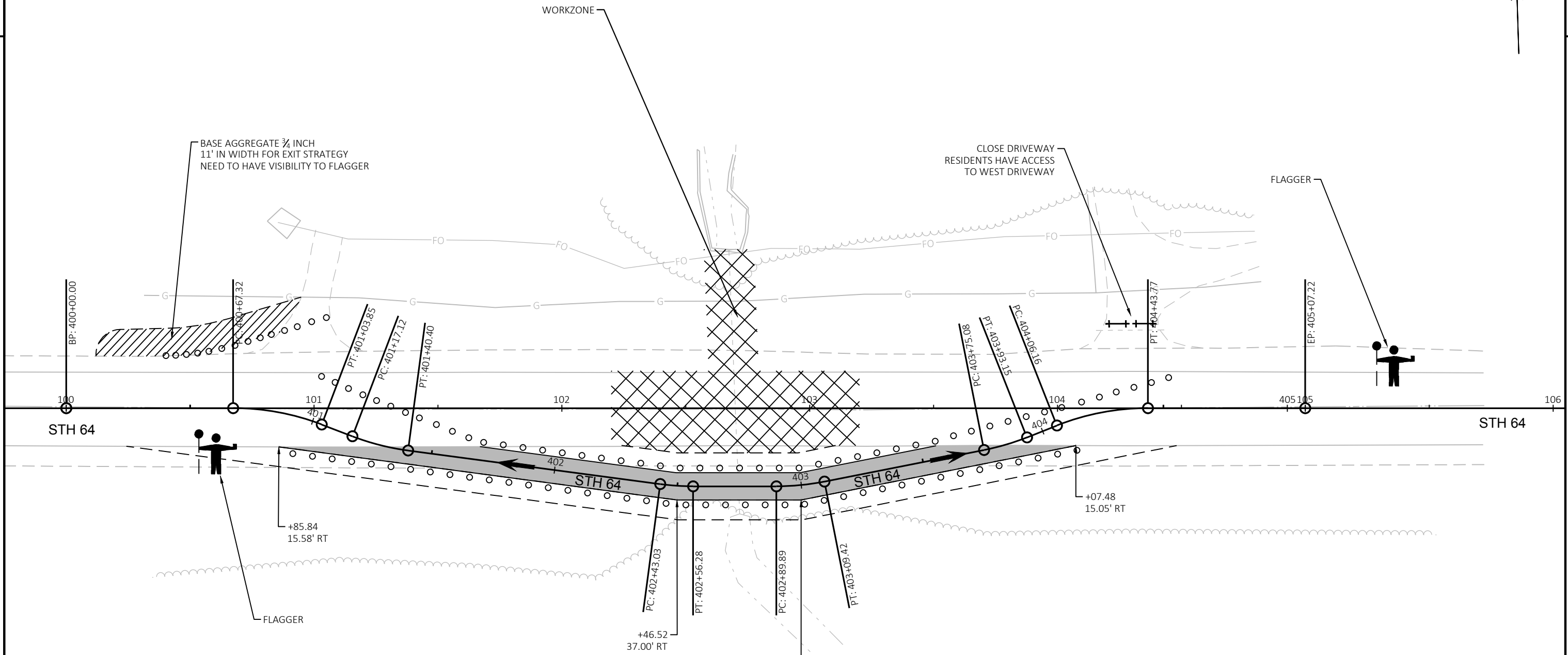
NOTES:
SEE STANDARD DETAIL DRAWINGS TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATION FOR MORE INFORMATION



- LEGEND
-  TYPE III BARRICADE
 -  TRAFFIC CONTROL DRUM
 -  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF
 -  DIRECTION OF TRAFFIC

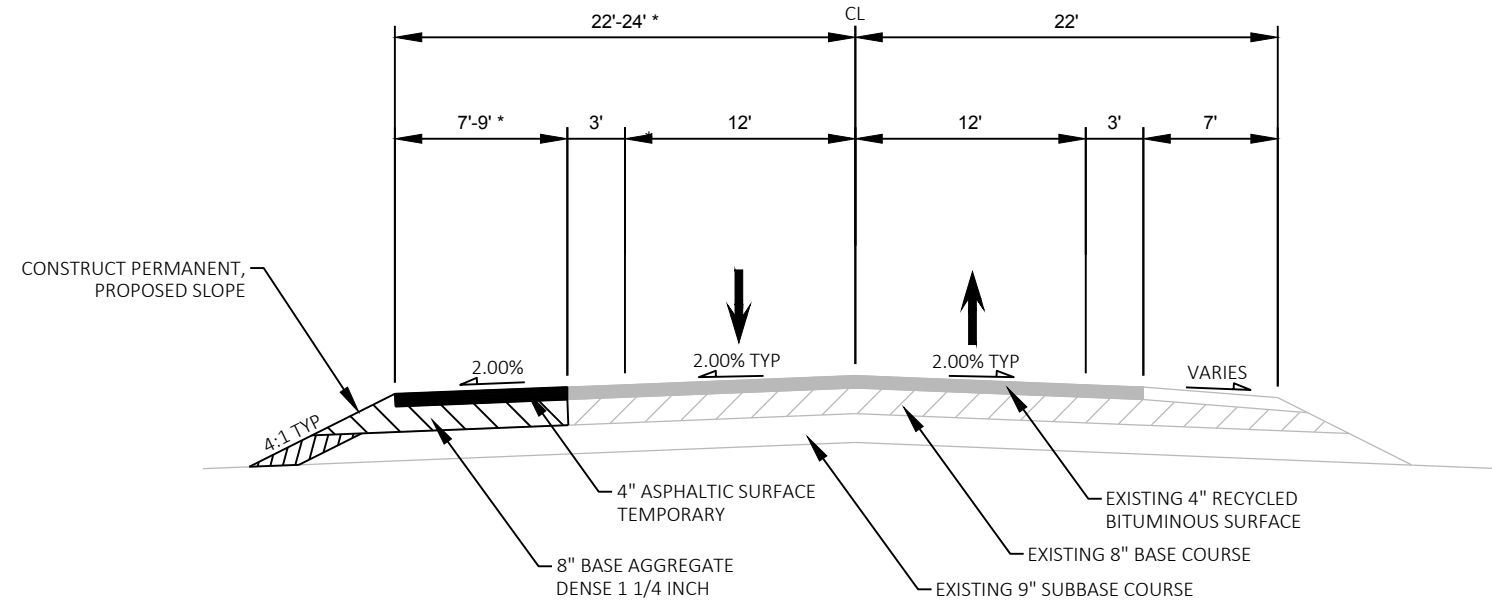
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|------------------------|-------------|------------------|-----------------------------------------------|-------|----------|
| PROJECT NO: 9140-12-61 | HWY: STH 64 | COUNTY: LANGLADE | TRAFFIC CONTROL: DEER CREEK - STAGE 1 DAYTIME | SHEET | E |
|------------------------|-------------|------------------|-----------------------------------------------|-------|----------|

NOTES:
SEE STANDARD DETAIL DRAWINGS TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATION FOR MORE INFORMATION



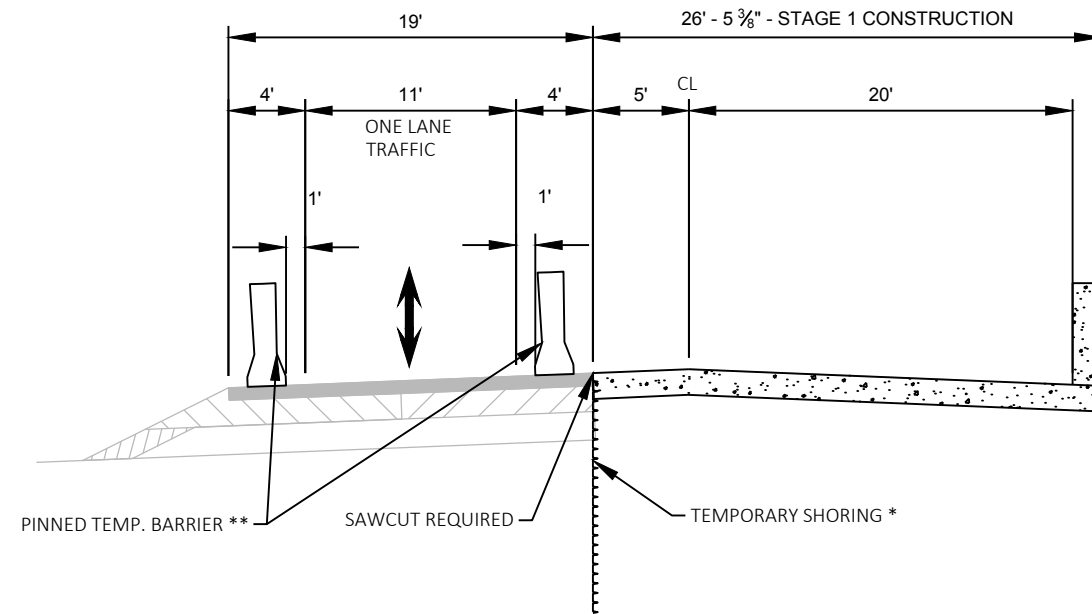
- LEGEND**
- ↑ TYPE III BARRICADE
 - TRAFFIC CONTROL DRUM
 - 👤 FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF
 - ➔ DIRECTION OF TRAFFIC

| | | | | | |
|------------------------|-------------|------------------|-----------------------------------------------|-------|----------|
| PROJECT NO: 9140-12-61 | HWY: STH 64 | COUNTY: LANGLADE | TRAFFIC CONTROL: DEER CREEK - STAGE 2 DAYTIME | SHEET | E |
|------------------------|-------------|------------------|-----------------------------------------------|-------|----------|



* CONSTRUCT PERMANENT SLOPES ACCORDING TO PLAN CROSS SECTIONS WHERE POSSIBLE.

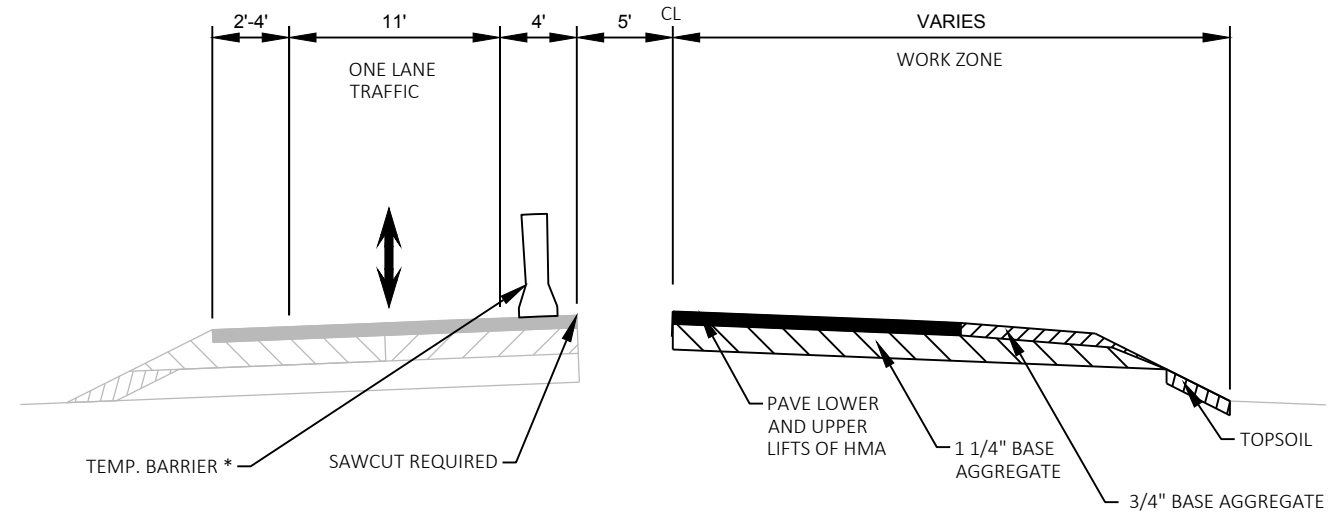
TYPICAL SECTION STAGE 1A
STA 201+00 - STA 207+75



* TEMPORARY SHORING USED AT EXISTING CULVERT LOCATIONS. SOUTH HALF OF CULVERTS TO BE REMOVED PRIOR TO STAGE 1 BRIDGE CONSTRUCTION.

** SEE STAGING PLAN SHEETS FOR BARRIER LIMITS.

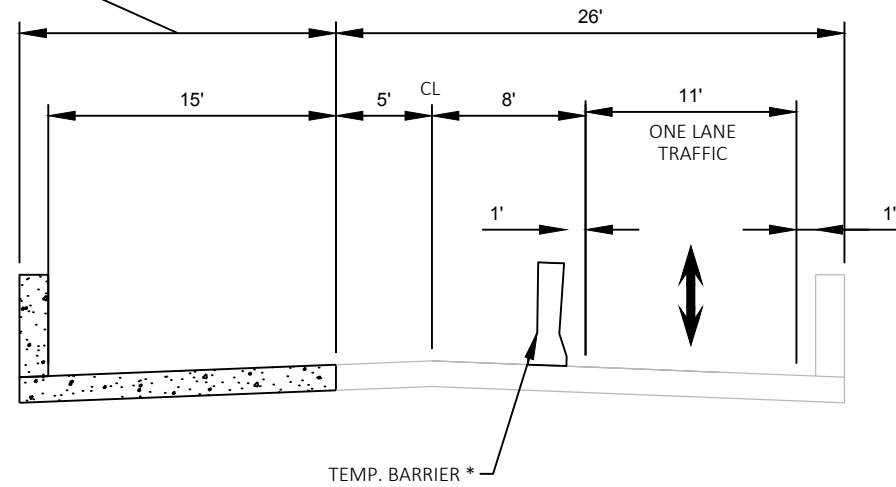
TYPICAL SECTION STAGE 1B
STA 203+03 - 203+43



TYPICAL SECTION STAGE 1B
 STA 202+00 - 203+03
 STA 203+43 - 206+00

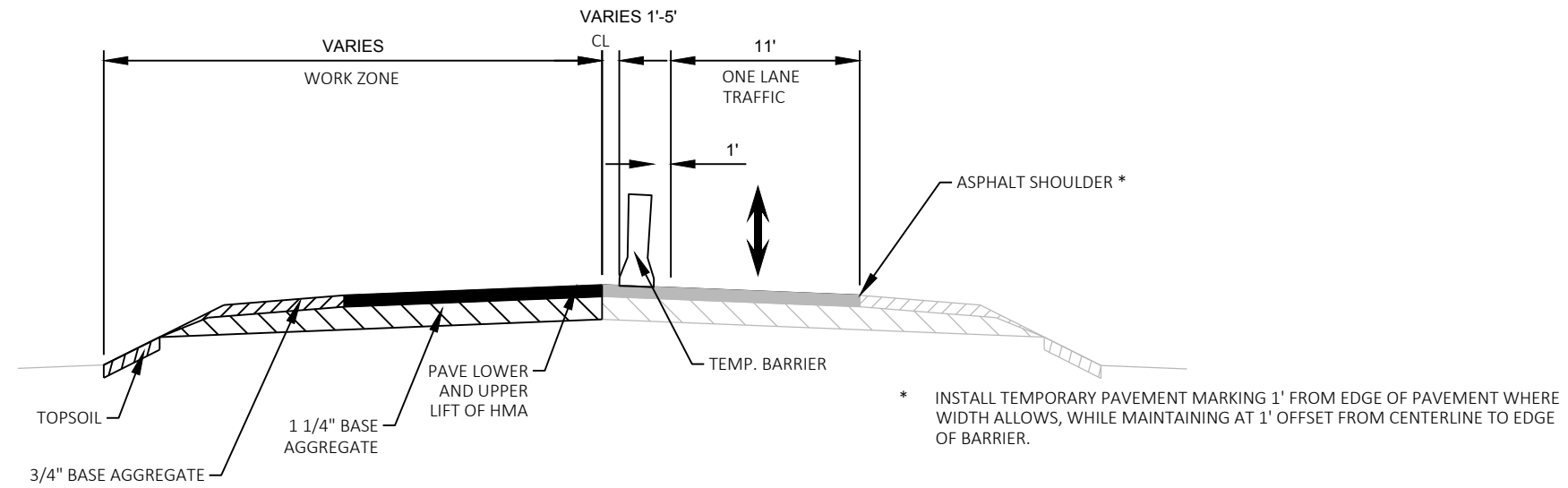
* SEE STAGING PLAN SHEETS FOR BARRIER LIMITS.

16' - 5 3/8" - STAGE 2 CONSTRUCTION



TYPICAL SECTION STAGE 2
 STA 203+03 - 203+43

* SEE STAGING PLAN SHEETS FOR BARRIER LIMITS.



* INSTALL TEMPORARY PAVEMENT MARKING 1' FROM EDGE OF PAVEMENT WHERE WIDTH ALLOWS, WHILE MAINTAINING AT 1' OFFSET FROM CENTERLINE TO EDGE OF BARRIER.

TYPICAL SECTION STAGE 2
 STA 200+00 - 203+03
 STA 203+43 - 206+00



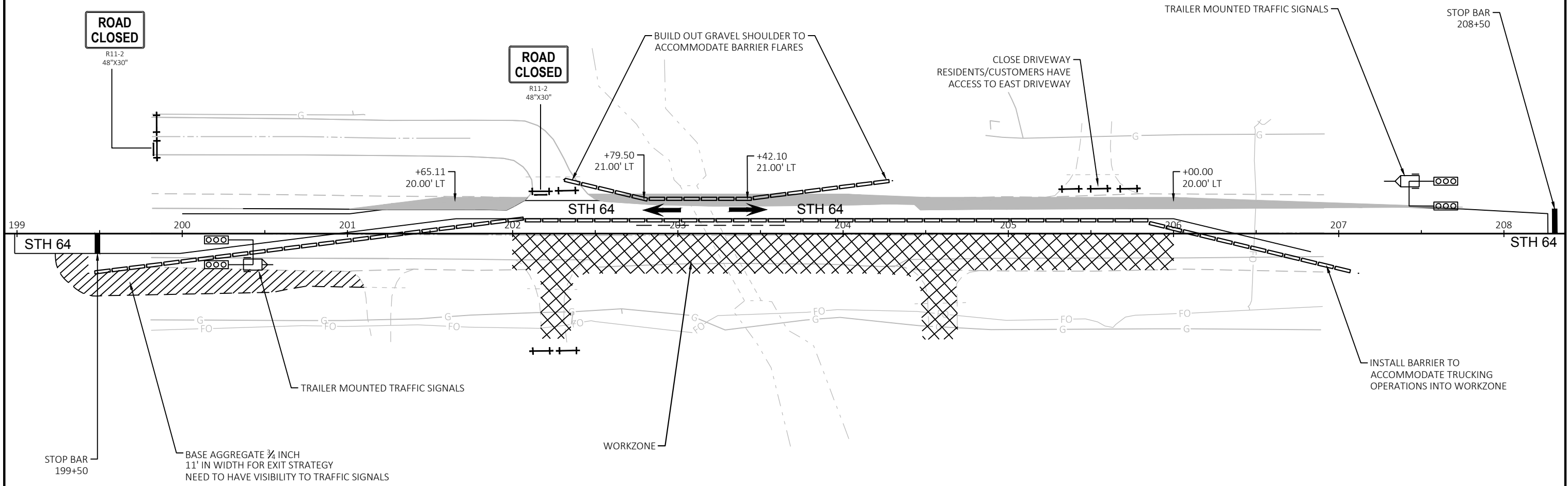
LEGEND

- ↑ TYPE III BARRICADE
- ↑ TYPE III BARRICADE WITH ATTACHED SIGN
- TRAFFIC CONTROL DRUM
- TEMPORARY MARKING LINE REMOVABLE TAPE 4-INCH
- TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH
- ➔ DIRECTION OF TRAFFIC

TEMPORARY TRAFFIC SIGNALS:

| TIMING #1 6:00 AM TO 8:00 PM | | | |
|------------------------------|----|----|---------|
| INTERVAL | EB | WB | SECONDS |
| 1 | G | R | 20 |
| 2 | Y | R | 4.5 |
| 3 | R | R | 27 |
| 4 | R | G | 20 |
| 5 | R | Y | 4.5 |
| 6 | R | R | 27 |

| TIMING #2 8:00 PM TO 6:00 AM | | | |
|------------------------------|----|----|---------|
| INTERVAL | EB | WB | SECONDS |
| 1 | G | R | 16 |
| 2 | Y | R | 4.5 |
| 3 | R | R | 27 |
| 4 | R | G | 16 |
| 5 | R | Y | 4.5 |
| 6 | R | R | 27 |



NOTES:
 SEE BRIDGE PLANS FOR CONSTRUCTION STAGING ON BRIDGE STRUCTURE.
 ALL WORK OUTSIDE OF SHOWN WORK ZONES WILL BE COMPLETED UNDER A FLAGGING OPERATION.
 TRAFFIC WILL BE REDUCED TO A SINGLE LANE CONTROLLED BY A TEMPORARY TRAFFIC SIGNAL.
 REFER TO THE FOLLOWING STANDARD DETAIL DRAWINGS
 TRAFFIC CONTROL, ONE LANE WITH TEMPORARY SIGNALS
 BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION, SHEET C
 BARRICADES AND SIGNS FOR SIDEROAD CLOSURE



- LEGEND**
- ↑ TYPE III BARRICADE
 - ↑ TYPE III BARRICADE WITH ATTACHED SIGN
 - TRAFFIC CONTROL DRUM
 - TEMPORARY MARKING LINE REMOVABLE TAPE 4-INCH
 - TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH
 - ➔ DIRECTION OF TRAFFIC

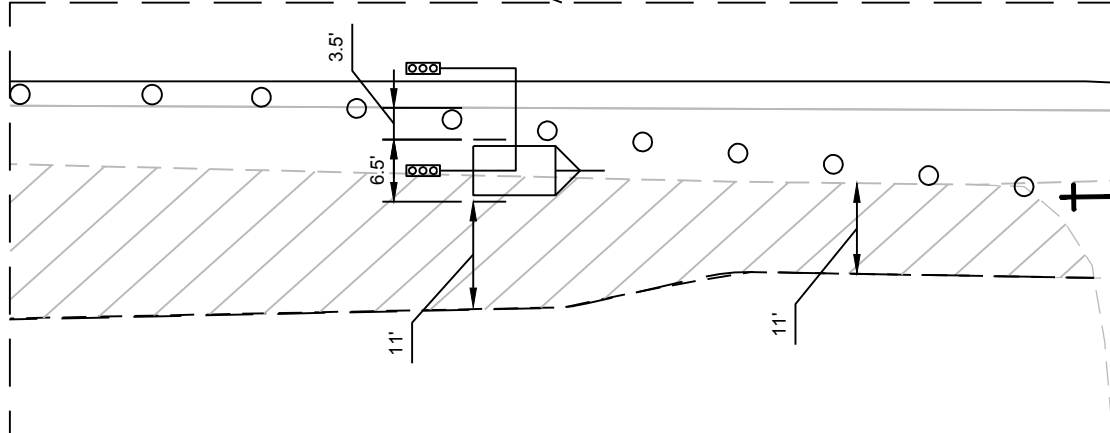
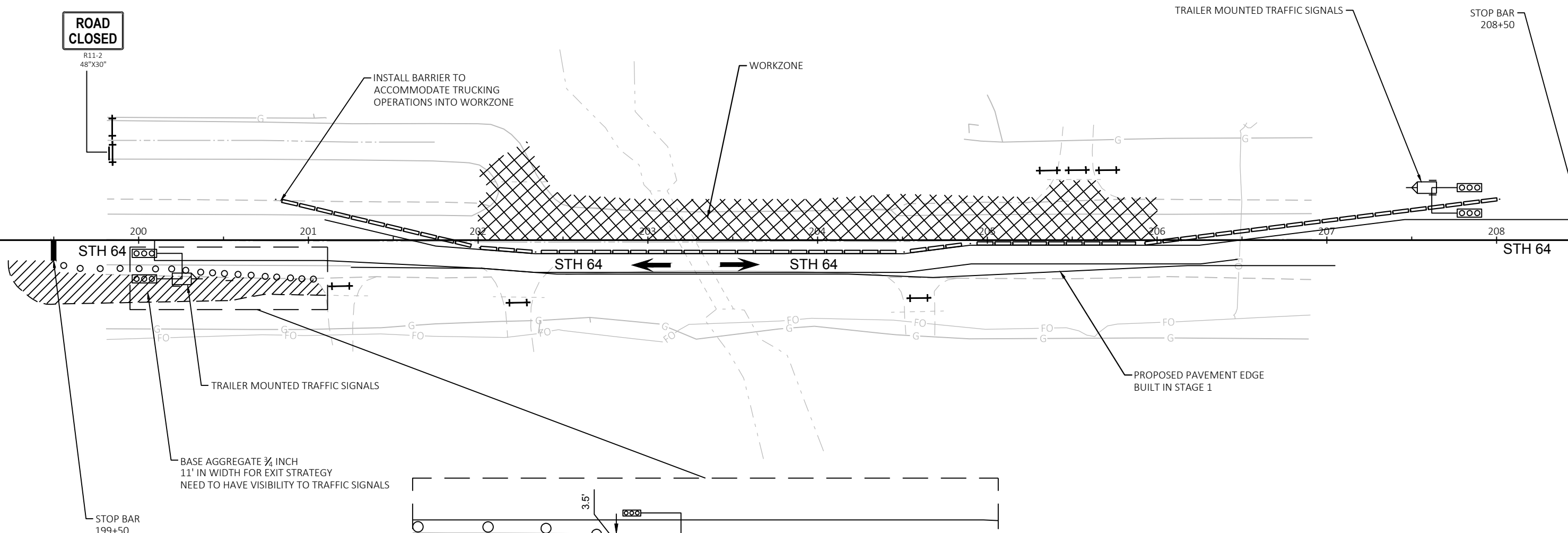
TEMPORARY TRAFFIC SIGNALS:

TIMING #1 6:00 AM TO 8:00 PM

| INTERVAL | EB | WB | SECONDS |
|----------|----|----|---------|
| 1 | G | R | 20 |
| 2 | Y | R | 4.5 |
| 3 | R | R | 27 |
| 4 | R | G | 20 |
| 5 | R | Y | 4.5 |
| 6 | R | R | 27 |

TIMING #2 8:00 PM TO 6:00 AM

| INTERVAL | EB | WB | SECONDS |
|----------|----|----|---------|
| 1 | G | R | 16 |
| 2 | Y | R | 4.5 |
| 3 | R | R | 27 |
| 4 | R | G | 16 |
| 5 | R | Y | 4.5 |
| 6 | R | R | 27 |



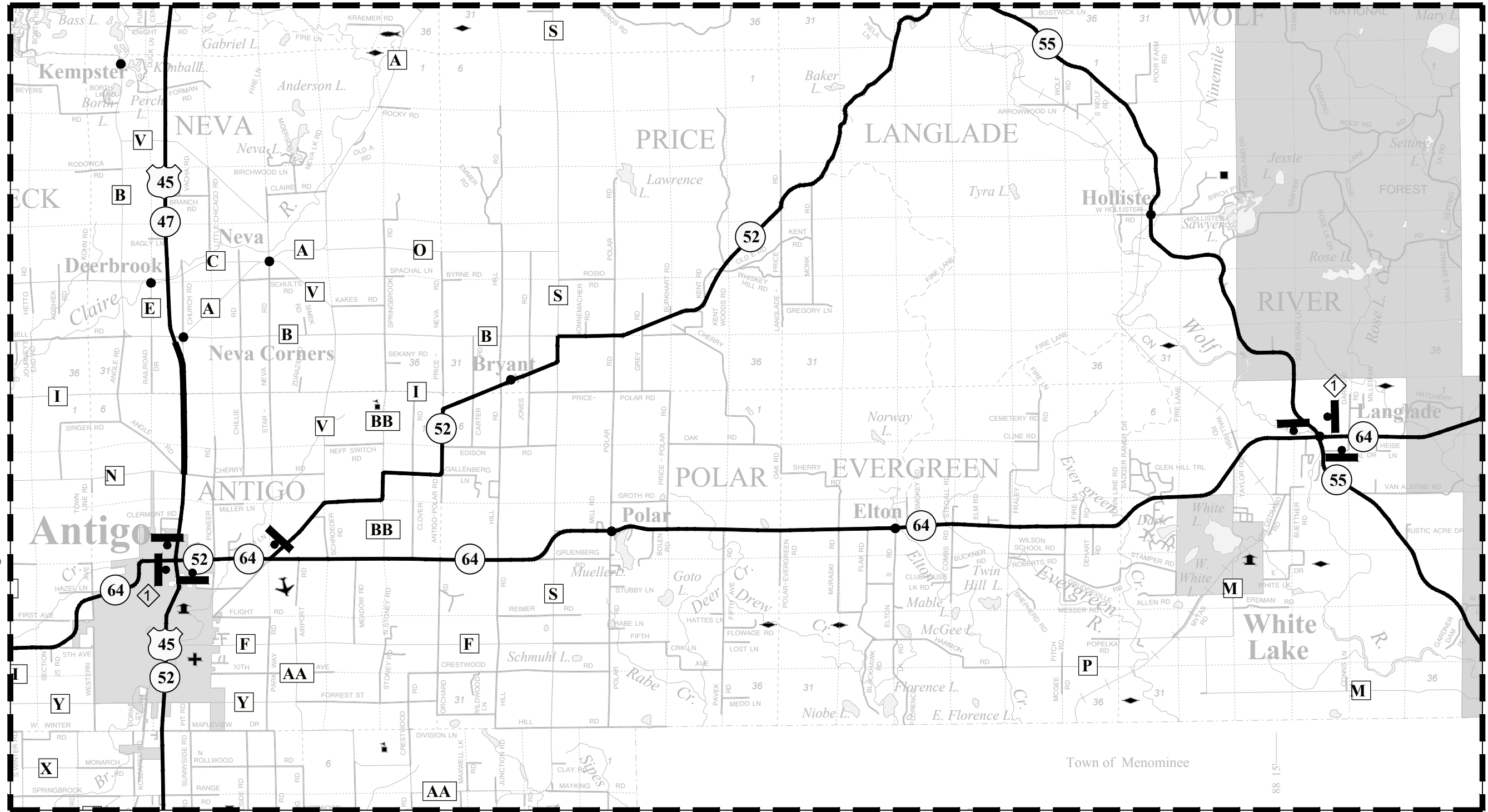
NOTES:

- SEE BRIDGE PLANS FOR CONSTRUCTION STAGING ON BRIDGE STRUCTURE.
- ALL WORK OUTSIDE OF SHOWN WORK ZONES WILL BE COMPLETED UNDER A FLAGGING OPERATION.
- TRAFFIC WILL BE REDUCED TO A SINGLE LANE CONTROLLED BY A TEMPORARY TRAFFIC SIGNAL.
- REFER TO THE FOLLOWING STANDARD DETAIL DRAWINGS
 - TRAFFIC CONTROL, ONE LANE WITH TEMPORARY SIGNALS
 - BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION, SHEET C
 - BARRICADES AND SIGNS FOR SIDEROAD CLOSURE



NOTES:
 ENGINEER ON SITE TO VERIFY AND APPROVE THE LOCATION OF ALL W12-52 & G20-55 SIGNS.

① THE SIGNS PLACED ON STH 64 APPROACHES DO NOT REQUIRE THE STH 64 SHIELD



EAST
 M3-2
 24"x12"
64
 M1-6
 24"x24"
MAX. 12' WIDTH
 W12-52
 48"x48"
10 MILES AHEAD
 W057-52
 36"x24"

WEST
 M3-4
 24"x12"
64
 M1-6
 24"x24"
MAX. 12' WIDTH
 W12-52
 48"x48"
8 MILES AHEAD
 W057-52
 36"x24"

Estimate Of Quantities

9140-12-61

| Line | Item | Item Description | Unit | Total | Qty |
|------|------------|--------------------------------------------------------------------------------------|------|------------|------------|
| 0002 | 201.0110 | Clearing | SY | 315.000 | 315.000 |
| 0004 | 201.0210 | Grubbing | SY | 315.000 | 315.000 |
| 0006 | 203.0100 | Removing Small Pipe Culverts | EACH | 4.000 | 4.000 |
| 0008 | 203.0260 | Removing Structure Over Waterway Minimal Debris (structure) 01. B-34-58 | EACH | 2.000 | 2.000 |
| 0010 | 204.0165 | Removing Guardrail | LF | 360.000 | 360.000 |
| 0012 | 205.0100 | Excavation Common | CY | 3,555.000 | 3,555.000 |
| 0014 | 206.1000 | Excavation for Structures Bridges (structure) 01. B-34-58 | LS | 1.000 | 1.000 |
| 0016 | 208.0100 | Borrow | CY | 956.000 | 956.000 |
| 0018 | 208.1500.S | Temporary Lane Shift During Culvert Work | EACH | 2.000 | 2.000 |
| 0020 | 210.1500 | Backfill Structure Type A | TON | 544.000 | 544.000 |
| 0022 | 213.0100 | Finishing Roadway (project) 01. 9140-12-61 | EACH | 1.000 | 1.000 |
| 0024 | 305.0110 | Base Aggregate Dense 3/4-Inch | TON | 850.000 | 850.000 |
| 0026 | 305.0120 | Base Aggregate Dense 1 1/4-Inch | TON | 4,250.000 | 4,250.000 |
| 0028 | 415.0070 | Concrete Pavement 7-Inch | SY | 80.000 | 80.000 |
| 0030 | 415.0410 | Concrete Pavement Approach Slab | SY | 118.000 | 118.000 |
| 0032 | 416.1010 | Concrete Surface Drains | CY | 4.000 | 4.000 |
| 0034 | 455.0605 | Tack Coat | GAL | 280.000 | 280.000 |
| 0036 | 460.2000 | Incentive Density HMA Pavement | DOL | 610.000 | 610.000 |
| 0038 | 460.6224 | HMA Pavement 4 MT 58-28 S | TON | 950.000 | 950.000 |
| 0040 | 465.0120 | Asphaltic Surface Driveways and Field Entrances | TON | 14.000 | 14.000 |
| 0042 | 465.0125 | Asphaltic Surface Temporary | TON | 95.000 | 95.000 |
| 0044 | 502.0100 | Concrete Masonry Bridges | CY | 182.000 | 182.000 |
| 0046 | 502.3200 | Protective Surface Treatment | SY | 180.000 | 180.000 |
| 0048 | 502.3210 | Pigmented Surface Sealer | SY | 38.000 | 38.000 |
| 0050 | 505.0400 | Bar Steel Reinforcement HS Structures | LB | 6,390.000 | 6,390.000 |
| 0052 | 505.0600 | Bar Steel Reinforcement HS Coated Structures | LB | 25,130.000 | 25,130.000 |
| 0054 | 505.0908 | Bar Couplers No. 8 | EACH | 18.000 | 18.000 |
| 0056 | 511.1200 | Temporary Shoring (structure) 01. B-34-0058 | SF | 380.000 | 380.000 |
| 0058 | 516.0500 | Rubberized Membrane Waterproofing | SY | 26.000 | 26.000 |
| 0060 | 520.2072 | Culvert Pipe Temporary 72-Inch | LF | 16.000 | 16.000 |
| 0062 | 520.3424 | Culvert Pipe Class III-A Non-metal 24-Inch | LF | 100.000 | 100.000 |
| 0064 | 521.1024 | Apron Endwalls for Culvert Pipe Steel 24-Inch | EACH | 6.000 | 6.000 |
| 0066 | 522.2348 | Culvert Pipe Reinforced Concrete Horizontal Elliptical Class HE-III 48x76-Inch | LF | 104.000 | 104.000 |
| 0068 | 522.2648 | Apron Endwalls for Culvert Pipe Reinforced Concrete Horizontal Elliptical 48x76-Inch | EACH | 2.000 | 2.000 |
| 0070 | 550.0020 | Pre-Boring Rock or Consolidated Materials | LF | 298.000 | 298.000 |
| 0072 | 550.1100 | Piling Steel HP 10-Inch X 42 Lb | LF | 405.000 | 405.000 |
| 0074 | 601.0588 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type TBT | LF | 93.000 | 93.000 |
| 0076 | 601.0590 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type TBTT | LF | 24.000 | 24.000 |
| 0078 | 603.8000 | Concrete Barrier Temporary Precast Delivered | LF | 975.000 | 975.000 |
| 0080 | 603.8125 | Concrete Barrier Temporary Precast Installed | LF | 1,701.000 | 1,701.000 |
| 0082 | 606.0200 | Riprap Medium | CY | 108.000 | 108.000 |
| 0084 | 606.0300 | Riprap Heavy | CY | 234.000 | 234.000 |
| 0086 | 606.0700 | Grouted Riprap Heavy | CY | 8.000 | 8.000 |
| 0088 | 612.0406 | Pipe Underdrain Wrapped 6-Inch | LF | 180.000 | 180.000 |
| 0090 | 614.0150 | Anchor Assemblies for Steel Plate Beam Guard | EACH | 4.000 | 4.000 |
| 0092 | 614.2300 | MGS Guardrail 3 | LF | 112.000 | 112.000 |
| 0094 | 614.2350 | MGS Guardrail Short Radius | LF | 40.000 | 40.000 |
| 0096 | 614.2500 | MGS Thrie Beam Transition | LF | 156.000 | 156.000 |
| 0098 | 614.2610 | MGS Guardrail Terminal EAT | EACH | 2.000 | 2.000 |

Estimate Of Quantities

9140-12-61

| Line | Item | Item Description | Unit | Total | Qty |
|------|----------|--------------------------------------------------------------------|------|-----------|-----------|
| 0100 | 614.2630 | MGS Guardrail Short Radius Terminal | EACH | 2.000 | 2.000 |
| 0102 | 618.0100 | Maintenance And Repair of Haul Roads (project) 01. 9140-12-61 | EACH | 1.000 | 1.000 |
| 0104 | 619.1000 | Mobilization | EACH | 1.000 | 1.000 |
| 0106 | 624.0100 | Water | MGAL | 45.000 | 45.000 |
| 0108 | 625.0100 | Topsoil | SY | 5,167.000 | 5,167.000 |
| 0110 | 628.1504 | Silt Fence | LF | 2,460.000 | 2,460.000 |
| 0112 | 628.1520 | Silt Fence Maintenance | LF | 1,229.000 | 1,229.000 |
| 0114 | 628.1905 | Mobilizations Erosion Control | EACH | 4.000 | 4.000 |
| 0116 | 628.1910 | Mobilizations Emergency Erosion Control | EACH | 2.000 | 2.000 |
| 0118 | 628.2008 | Erosion Mat Urban Class I Type B | SY | 5,167.000 | 5,167.000 |
| 0120 | 628.6005 | Turbidity Barriers | SY | 200.000 | 200.000 |
| 0122 | 628.7555 | Culvert Pipe Checks | EACH | 18.000 | 18.000 |
| 0124 | 628.7570 | Rock Bags | EACH | 100.000 | 100.000 |
| 0126 | 629.0210 | Fertilizer Type B | CWT | 3.260 | 3.260 |
| 0128 | 630.0160 | Seeding Mixture No. 60 | LB | 70.000 | 70.000 |
| 0130 | 630.0200 | Seeding Temporary | LB | 70.000 | 70.000 |
| 0132 | 630.0500 | Seed Water | MGAL | 129.000 | 129.000 |
| 0134 | 633.5200 | Markers Culvert End | EACH | 4.000 | 4.000 |
| 0136 | 638.2102 | Moving Signs Type II | EACH | 10.000 | 10.000 |
| 0138 | 642.5201 | Field Office Type C | EACH | 1.000 | 1.000 |
| 0140 | 643.0300 | Traffic Control Drums | DAY | 1,800.000 | 1,800.000 |
| 0142 | 643.0420 | Traffic Control Barricades Type III | DAY | 456.000 | 456.000 |
| 0144 | 643.0705 | Traffic Control Warning Lights Type A | DAY | 888.000 | 888.000 |
| 0146 | 643.0715 | Traffic Control Warning Lights Type C | DAY | 600.000 | 600.000 |
| 0148 | 643.0900 | Traffic Control Signs | DAY | 840.000 | 840.000 |
| 0150 | 643.5000 | Traffic Control | EACH | 1.000 | 1.000 |
| 0152 | 645.0111 | Geotextile Type DF Schedule A | SY | 136.000 | 136.000 |
| 0154 | 645.0120 | Geotextile Type HR | SY | 571.000 | 571.000 |
| 0156 | 646.1040 | Marking Line Grooved Wet Ref Epoxy 4-Inch | LF | 2,200.000 | 2,200.000 |
| 0158 | 646.4520 | Marking Line Same Day Epoxy 4-Inch | LF | 400.000 | 400.000 |
| 0160 | 649.0150 | Temporary Marking Line Removable Tape 4-Inch | LF | 3,100.000 | 3,100.000 |
| 0162 | 649.0850 | Temporary Marking Stop Line Removable Tape 18-Inch | LF | 30.000 | 30.000 |
| 0164 | 650.4500 | Construction Staking Subgrade | LF | 1,267.000 | 1,267.000 |
| 0166 | 650.5000 | Construction Staking Base | LF | 599.000 | 599.000 |
| 0168 | 650.5500 | Construction Staking Curb Gutter and Curb & Gutter | LF | 68.000 | 68.000 |
| 0170 | 650.6000 | Construction Staking Pipe Culverts | EACH | 2.000 | 2.000 |
| 0172 | 650.6500 | Construction Staking Structure Layout (structure) 01. B-34-0058 | LS | 1.000 | 1.000 |
| 0174 | 650.9910 | Construction Staking Supplemental Control (project) 01. 9140-12-61 | LS | 1.000 | 1.000 |
| 0176 | 650.9920 | Construction Staking Slope Stakes | LF | 1,311.000 | 1,311.000 |
| 0178 | 661.0100 | Temporary Traffic Signals for Bridges (structure) 01. B-34-0058 | LS | 1.000 | 1.000 |
| 0180 | 690.0150 | Sawing Asphalt | LF | 559.000 | 559.000 |
| 0182 | 715.0502 | Incentive Strength Concrete Structures | DOL | 1,092.000 | 1,092.000 |
| 0184 | 715.0720 | Incentive Compressive Strength Concrete Pavement | DOL | 500.000 | 500.000 |
| 0186 | ASP.1T0A | On-the-Job Training Apprentice at \$5.00/HR | HRS | 1,200.000 | 1,200.000 |
| 0188 | ASP.1T0G | On-the-Job Training Graduate at \$5.00/HR | HRS | 600.000 | 600.000 |
| 0190 | SPV.0060 | Special 01. Boulders | EACH | 5.000 | 5.000 |
| 0192 | SPV.0060 | Special 02. Temporary Water Diversion | EACH | 1.000 | 1.000 |

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CLEARING AND GRUBBING ITEMS

| STATION | LOCATION | 201.011 | 201.0120 | COMMENTS |
|--------------------|----------|-------------|-------------|------------|
| | | CLEARING SY | GRUBBING SY | |
| CATEGORY CODE 0010 | | | | |
| 102+20 - 103+33 | RT | 275 | 275 | DEER CREEK |
| 102+46 - 102+96 | LT | 40 | 40 | DEER CREEK |
| TOTALS | | 315 | 315 | |

REMOVING SMALL PIPE CULVERTS

| STATION | LOCATION | 203.0100 | COMMENTS |
|--------------------|----------|-----------------------------------|------------------------------|
| | | REMOVING SMALL PIPE CULVERTS EACH | |
| CATEGORY CODE 0010 | | | |
| 102+70 | LT & RT | 1 | CMCP 44"X72" (DEER CREEK) |
| 202+23 | LT | 1 | CMCP 24" (CROCKER HILLS DR.) |
| 202+24 | RT | 1 | CMCP 24" (DRIVEWAY) |
| 204+80 | RT | 1 | CMCP 24" (DRIVEWAY) |
| TOTALS | | 4 | |

REMOVING GUARDRAIL

| STATION - STATION | LOCATION | 204.0165 | COMMENTS |
|--------------------|----------|------------|-------------|
| | | LF | |
| CATEGORY CODE 0010 | | | |
| 202+52 - 204+32 | RT | 180 | ELTON CREEK |
| 202+64 - 204+44 | LT | 180 | ELTON CREEK |
| TOTAL | | 360 | |

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EARTHWORK SUMMARY

| FROM/TO STATION | LOCATION | COMMON EXCAVATION (ITEM #205.0100) (NOTE 1) | | SALVAGED / UNUSABLE PAVEMENT MATERIAL (NOTE 3) | AVAILABLE MATERIAL (NOTE 4) | UNEXPANDED FILL | EXPANDED FILL (NOTE 5) | MASS ORDINATE +/- (NOTE 6) | WASTE | BORROW (208.0100) (NOTE 7) | COMMENTS |
|-------------------------|--------------------|---------------------------------------------|----------------|------------------------------------------------|-----------------------------|-----------------|------------------------|----------------------------|-------|----------------------------|----------|
| | | CUT (NOTE 2) | EBS EXCAVATION | | | | | | | | |
| | | | | | | | FACTOR 1.25 | | | | |
| 102+20 - 103+20 | DEER CREEK CULVERT | 2,430 | 0 | 100 | 2,330 | 0 | 0 | 0 | 0 | 261 | |
| 201+25 - 207+05 | ELTON CREEK BRIDGE | 1,125 | 0 | 100 | 1,025 | 0 | 0 | 0 | 0 | 695 | |
| TOTAL COMMON EXCAVATION | | 3,555 | | | | | | | 0 | 956 | |

- 1) COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS.
- 2) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.
- 3) SALVAGED/UNUSABLE PAVEMENT MATERIAL = LENGTH * TYPICAL WIDTH * TYPICAL DEPTH
- 4) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
- 5) EXPANDED FILL. FACTOR = 1.25. EXPANDED FILL = UNEXPANDED FILL * FILL FACTOR
- 6) THE MASS ORDINATE + OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATED A SHORTAGE OF MERTIAL WITHIN THE DEVISION
- 7) BORROW TO BE USED WHEN EXISTING MATERIAL IS UNSUITABLE AT RELAI D PIPE LOCATIONS

ASPHALTIC ITEMS

| STATION - STATION | LOCATION | 455.0605 | 460.6224 | 465.0120 | 465.0125 | COMMENTS |
|--------------------|----------|---------------|-------------------------------|-----------------------------------------------------|---------------------------------|----------------------------|
| | | TACK COAT GAL | HMA PAVEMENT 4 MT 58-28 S TON | ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES TON | ASPHALTIC SURFACE TEMPORARY TON | |
| CATEGORY CODE 0010 | | | | | | |
| 102+20 - 103+20 | LT & RT | 35 | 120 | -- | -- | ROADWAY |
| 201+00 - 207+75 | LT | -- | -- | -- | 95 | STAGE 1 TEMPORARY WIDENING |
| 201+25 - 203+10 | LT & RT | 100 | 330 | -- | -- | ROADWAY |
| 203+63 - 207+05 | LT & RT | 145 | 500 | -- | -- | ROADWAY |
| 202+24 | RT | -- | -- | 14 | -- | |
| TOTALS | | 280 | 950 | 14 | 95 | |

CONCRETE BARRIER ITEMS

| STATION - STATION | LOCATION | 603.8000 | 603.8125 | COMMENTS |
|--------------------|----------|--------------------------------|--------------------------------|-------------------------|
| | | TEMPORARY PRECAST DELIVERED LF | TEMPORARY PRECAST INSTALLED LF | |
| CATEGORY CODE 0010 | | | | |
| 199+43 - 207+12 | LT & RT | 774 | 774 | STAGE 1 TRAFFIC CONTROL |
| 202+31 - 204+30 | LT | 201 | 201 | STAGE 1 TRAFFIC CONTROL |
| 200+81 - 208+02 | LT & RT | -- | 726 | STAGE 2 TRAFFIC CONTROL |
| TOTALS | | 975 | 1,701 | |

MISC. SHEET 1

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BASE AGGREGATE DENSE ITEMS

| STATION - STATION | LOCATION | 305.0110 | 305.0120 | COMMENTS |
|--------------------|----------|-----------------------------------|-------------------------------------|-----------------------------------------------------|
| | | BASE AGGREGATE DENSE 3/4-INCH TON | BASE AGGREGATE DENSE 1 1/4-INCH TON | |
| CATEGORY CODE 0010 | | | | |
| 100+88 - 105+22 | LT | -- | 425 | STAGE 1 BYPASS |
| 100+86 - 104+48 | RT | -- | 400 | STAGE 2 BYPASS |
| 199+25 - 201+10 | RT | 120 | -- | TEMPORARY DRIVEWAY |
| 102+20 - 103+20 | LT & RT | -- | 420 | |
| 102+20 - 103+20 | LT | 50 | -- | SHOULDER |
| 102+20 - 103+20 | RT | 50 | -- | SHOULDER |
| 201+00 - 207+75 | LT | -- | 325 | TEMPORARY WIDENING |
| 201+25 - 203+04 | LT & RT | -- | 850 | |
| 203+41 - 207+75 | LT & RT | -- | 1,650 | |
| 201+25 - 202+92 | LT | 50 | -- | SHOULDER |
| 203+29 - 207+75 | LT | 100 | -- | SHOULDER |
| 201+25 - 203+16 | RT | 75 | -- | SHOULDER |
| 203+53 - 207+75 | RT | 100 | -- | SHOULDER |
| 202+24 | RT | -- | 30 | DRIVEWAY |
| 204+60 | RT | 50 | -- | DRIVEWAY |
| 205+52 | LT | 20 | -- | DRIVEWAY |
| UNDISTRIBUTED | -- | 235 | 150 | TEMP DWY - 205+52 LT (IF ACCESS RESTRICTED EAST) |
| TOTALS | | 850 | 4,250 | |

CONCRETE PAVEMENT ITEMS

| STATION - STATION | 415.0070 | 415.0410 | 416.1010 | COMMENTS |
|-------------------------|-----------------------------|------------------------------------|---------------------------|---------------|
| | CONCRETE PAVEMENT 7-INCH SY | CONCRETE PAVEMENT APPROACH SLAB SY | CONCRETE SURFACE DRAIN CY | |
| CATEGORY CODE 0010 | | | | |
| 202+82 - 203+10 LT & RT | -- | 59 | -- | WEST APPROACH |
| 202+82 - 203+10 LT | 12 | -- | -- | WEST APPROACH |
| 202+82 - 203+10 RT | 28 | -- | -- | WEST APPROACH |
| 203+35 - 203+63 LT & RT | -- | 59 | -- | EAST APPROACH |
| 203+35 - 203+63 LT | 12 | -- | -- | EAST APPROACH |
| 203+35 - 203+63 RT | 28 | -- | -- | EAST APPROACH |
| 202+40 LT | -- | -- | 2 | WEST APPROACH |
| 202+62 RT | -- | -- | 2 | WEST APPROACH |
| TOTALS | | 80 | 118 | 4 |

3

RIPRAP AND GEOTEXTILE FABRIC ITEMS

| STATION | LOCATION | 606.0200 | 606.0300 | 606.0700 | 645.0120 |
|--------------------|----------|------------------|-----------------|-------------------------|------------------------------|
| | | RIPRAP MEDIUM CY | RIPRAP HEAVY CY | GROUTED RIPRAP HEAVY CY | GEOTEXTILE FABRIC TYPE HR SY |
| CATEGORY CODE 0010 | | | | | |
| 102+70 | LT | -- | 3 | 8 | 16 |
| 102+70 | RT | 92 | 13 | -- | 202 |
| 202+56 - 202+92 | LT | -- | 30 | -- | 44 |
| 202+72 - 203+15 | RT | -- | 23 | -- | 34 |
| 203+31 - 203+43 | LT | -- | 11 | -- | 16 |
| 203+53 - 203+67 | RT | -- | 19 | -- | 28 |
| 202+45 | LT | 3 | -- | -- | 6 |
| 202+62 | RT | 3 | -- | -- | 6 |
| UNDISTRIBUTED | PROJECT | 10 | 10 | -- | 30 |
| TOTALS | | 108 | 109 | 8 | 382 |

CONCRETE CURB AND GUTTER ITEMS

| STATION - STATION | LOCATION | 601.0588 | 601.0590 | COMMENTS |
|--------------------|----------|----------------------------------------------------------|-----------------------------------------------------------|---------------|
| | | CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE TBT LF | CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE TBTT LF | |
| CATEGORY CODE 0010 | | | | |
| 202+40 - 202+82 | LT | 71 | -- | WEST APPROACH |
| 202+60 - 202+82 | RT | 22 | -- | WEST APPROACH |
| 202+82 - 203+05 | RT | -- | 24 | WEST APPROACH |
| TOTALS | | 93 | 24 | |

WATER

| STATION - STATION | LOCATION | 624.0100 |
|--------------------|----------|-----------|
| CATEGORY CODE 0010 | | |
| 101+00 - 105+00 | LT & RT | 14 |
| 201+00 - 208+00 | LT & RT | 31 |
| TOTAL | | 45 |

BEAMGUARD ITEMS

| STATION - STATION | LOCATION | 641.2300 | 641.2350 | 641.2500 | 641.2610 | 641.2630 | COMMENTS |
|--------------------|----------|--------------------|-------------------------------|------------------------------|---------------------------------|-------------------------------------------|----------|
| | | MGS GUARDRAIL 3 LF | MGS GUARDRAIL SHORT RADIUS LF | MGS THRIE BEAM TRANSITION LF | MGS GUARDRAIL TERMINAL EAT EACH | MGS GUARDRIAL SHORT RADIUS TERMINALS EACH | |
| CATEGORY CODE 0010 | | | | | | | |
| 202+25 - 202+91 | LT | 38 | 16 | 39 | -- | 1 | |
| 202+31 - 203+14 | RT | 48 | 24 | 39 | -- | 1 | |
| 203+31 - 204+46 | LT | 13 | -- | 39 | 1 | -- | |
| 203+54 - 204+52 | RT | 13 | -- | 39 | 1 | -- | |
| TOTAL | | 112 | 40 | 156 | 2 | 2 | |

MISC. SHEET 2

3

3

CULVERT PIPE ITEMS

| STATION | LOCATION | 520.2027 | 520.3424 | 521.1024 | 522.2348 | 523.0565 | 633.5200 | COMMENTS |
|--------------------|----------|--------------|--------------|--------------------|---------------------|-------------------------|----------|--------------------------|
| | | CULVERT PIPE | CULVERT PIPE | APRON ENDWALLS FOR | CULVERT PIPE | APRON ENDWALL FOR | CULVERT | |
| | | TEMPORARY | CLASS III-A | CULVERT PIPE | REINFORCED CONCRETE | CULVERT PIPE REINFORCED | MARKERS | |
| | | 72-INCH | 24-INCH | 24-INCH | 48X76-INCH | 48X76-INCH | | |
| | | LF | LF | EA | LF | EACH | EACH | |
| CATEGORY CODE 0010 | | | | | | | | |
| 102+70 | LT & RT | -- | -- | -- | 104 | 2 | 2 | |
| 102+72 | RT | 16 | -- | -- | -- | -- | -- | EXTENSION DURING STAGE 2 |
| 202+24 | LT | -- | 44 | 2 | -- | -- | 2 | CROCKER HILLS DRIVE |
| 202+24 | RT | -- | 26 | 2 | -- | -- | -- | DRIVEWAY |
| 204+81 | RT | -- | 30 | 2 | -- | -- | -- | DRIVEWAY |
| TOTALS | | 16 | 100 | 6 | 104 | 2 | 4 | |

LANDSCAPING ITEMS

| STATION - STATION | LOCATION | 625.0100 | 629.0210 | 630.0160 | 630.0200 | 630.0500 | COMMENTS |
|--------------------|----------|--------------|-------------|-----------|-----------|------------|----------|
| | | TOPSOIL | FERTILIZER | SEED MIX | SEEDING | SEED WATER | |
| | | TYPE B | NO. 60 | TEMPORARY | | | |
| | | SY | CWT | LBS | LBS | MGAL | |
| CATEGORY CODE 0010 | | | | | | | |
| 101+00 - 105+50 | LT | 1,600 | 1.01 | 22 | 22 | 40 | |
| 100+50 - 104+50 | RT | 1,500 | 0.95 | 20 | 20 | 38 | |
| 201+00 - 207+50 | LT | 1,350 | 0.85 | 18 | 18 | 34 | |
| 199+00 - 207+05 | RT | 717 | 0.45 | 10 | 10 | 18 | |
| TOTALS | | 5,167 | 3.26 | 70 | 70 | 129 | |

SIGNING ITEMS

| STATION - STATION | 638.2102 |
|--------------------|--------------|
| CATEGORY CODE 0010 | MOVING SIGNS |
| | TYPE II |
| | EACH |
| UNDISTRIBUTED | 10 |
| TOTALS | 10 |

EROSION CONTROL ITEMS

| STATION - STATION | LOCATION | 628.1504 | 628.1520 | 628.2008 | 628.6005 | 628.7555 | 628.7570 | 628.1910 | 628.1910 |
|--------------------|----------|--------------|--------------|---------------|------------|-------------|------------|-----------------|-------------------------|
| | | SILT | SILT FENCE | EROSION MAT | TURBITITY | CULVERT | ROCK | MOBILIZATIONS | MOBILIZATIONS EMERGENCY |
| | | FENCE | MAINTENANCE | URBAN CLASS 1 | BARRIERS | PIPE CHECKS | BAGS | EROSION CONTROL | EROSION CONTROL |
| | | SY | SY | TYPE B | SY | EACH | EACH | EACH | EACH |
| | | | | SY | | | | | |
| CATEGORY CODE 0010 | | | | | | | | | |
| PROJECT | -- | -- | -- | -- | -- | -- | -- | 4 | 2 |
| 101+00 - 105+50 | LT | 450 | 225 | 1,600 | -- | 1 | -- | -- | -- |
| 100+50 - 104+50 | RT | 400 | 200 | 1,500 | -- | -- | -- | -- | -- |
| 201+00 - 207+50 | LT | 605 | 302 | 1,350 | -- | 2 | -- | -- | -- |
| 199+00 - 207+05 | RT | 805 | 402 | 717 | -- | 3 | -- | -- | -- |
| 203+35 | LT & RT | -- | -- | -- | 100 | -- | -- | -- | -- |
| 203+55 | LT & RT | -- | -- | -- | 100 | -- | -- | -- | -- |
| UNDISTRIBUTED | LT/RT | 200 | 100 | -- | -- | -- | 100 | -- | -- |
| TOTALS | | 2,460 | 1,229 | 5,167 | 200 | 6 | 100 | 4 | 2 |

MISC. SHEET 3

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CONSTRUCTION STAKING ITEMS

| STATION - STATION | LOCATION | 650.4500 SUBGRADE LF | 650.5000 BASE LF | 650.5500 CURB & GUTTER LF | 650.6000 PIPE CULVERTS EACH | 650.6500 STRUCTURE LAYOUT LS | 650.9910 SUPPLEMENTAL CONTROL LS | 650.9920 SLOPE STAKES LF |
|---------------------------|----------|----------------------------|------------------------|------------------------------------|--------------------------------------|---------------------------------------|-------------------------------------------|--------------------------------|
| CATEGORY CODE 0010 | | | | | | | | |
| PROJECT 9140-12-61 | -- | -- | -- | -- | -- | 1 | 1 | -- |
| 102+20 - 103+20 | LT & RT | 100 | 100 | -- | 1 | -- | -- | 100 |
| 201+25 - 202+82 | LT & RT | 157 | 157 | -- | -- | -- | -- | -- |
| 203+63 - 207+05 | LT & RT | 342 | 342 | -- | -- | -- | -- | -- |
| 201+25 - 203+04 | LT & RT | -- | -- | -- | 1 | -- | -- | 179 |
| 203+41 - 207+05 | LT & RT | -- | -- | -- | -- | -- | -- | 364 |
| 202+40 - 202+82 | LT | -- | -- | 46 | -- | -- | -- | -- |
| 202+60 - 202+82 | RT | -- | -- | 22 | -- | -- | -- | -- |
| 301+14 - 304+61 | LT | 347 | -- | -- | -- | -- | -- | 347 |
| 400+86 - 404+07 | RT | 321 | -- | -- | -- | -- | -- | 321 |
| TOTALS | | 1,267 | 599 | 68 | 2 | 1 | 1 | 1,311 |

SAWING ITEMS

| LOCATION | 690.0150 SAWING ASPHALT LF | COMMENTS |
|---------------------------|-------------------------------------|-------------------|
| CATEGORY CODE 0010 | | |
| 102+20 | 30 | BEGIN PROJECT |
| 103+20 | 30 | END PROJECT |
| 201+25 | 30 | BEGIN PROJECT |
| 207+05 | 30 | END PROJECT |
| 202+24 LT | 25 | CROCKER HILLS DR. |
| 202+24 RT | 14 | DRIVEWAY |
| 202+00 - 206+00 LT | 400 | STAGE 1 SAWCUT |
| TOTALS | | 559 |

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PAVEMENT MARKING

| LOCATION | OFFSET | 646.4520 | 646.1040 | 649.0850 | 649.0150 | COMMENTS |
|---------------------------|---------|----------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------|---------------------------|
| | | MARKING LINE SAME DAY EPOXY 4-INCH YELLOW | MARKING LINE GROOVED WET REF EPOXY 4-INCH WHITE | TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH | TEMPORARY MARKING REMOVABLE LINE TAPE 4-INCH | |
| | | LF | LF | LF | LF | |
| CATEGORY CODE 0010 | | | | | | |
| 100+50 - 105+00 | CL | 200 | -- | -- | -- | |
| 100+50 - 105+00 | LT & RT | -- | 900 | -- | -- | |
| 201+25 - 207+05 | CL | 200 | -- | -- | -- | |
| 201+25 - 207+05 | LT & RT | -- | 1,300 | -- | -- | |
| 199+50 | RT | -- | -- | 15 | -- | STAGE 1&2 TRAFFIC CONTROL |
| 208+00 | LT | -- | -- | 15 | -- | STAGE 1&2 TRAFFIC CONTROL |
| 199+50 - 208+00 | LT & RT | -- | -- | -- | 1,600 | STAGE 1 TRAFFIC CONTROL |
| 200+10 - 208+50 | LT & RT | -- | -- | -- | 1,500 | STAGE 2 TRAFFIC CONTROL |
| TOTALS | | 400 | 2,200 | 30 | 3,100 | |

TEMPORARY TRAFFIC SIGNALS FOR BRIDGES

| STATION | LOCATION | 661.0100 TEMPORARY TRAFFIC SIGNALS FOR BRIDGES LS | COMMENTS |
|---------------------------|----------|------------------------------------------------------------|-----------|
| CATEGORY CODE 0010 | | | |
| 203+26 | | 1 | B-34-0058 |
| TOTALS | | 1 | |

TRAFFIC CONTROL ITEMS

| LOCATION | 208.1500.S TEMPORARY LANE SHIFT DURING CULVERT WORK EACH | 643.0300 DRUMS DAYS | 643.0420 BARRICADES TYPE III DAYS | 643.0705 WARNING LIGHTS TYPE A DAYS | 643.0715 WARNING LIGHTS TYPE C DAYS | 643.0900 SIGNS DAYS | 643.5000 TRAFFIC CONTROL EACH |
|---------------------------|----------------------------------------------------------------------|---------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------------------------|---------------------------|----------------------------------------|
| CATEGORY CODE 0010 | | | | | | | |
| PROJECT 9140-12-60 | | -- | -- | -- | -- | -- | 1 |
| 101+00 - 105+00 STAGE 1 | 1 | 150 | 18 | 24 | -- | 30 | -- |
| 101+00 - 105+00 STAGE 2 | 1 | 150 | 18 | 24 | -- | 30 | -- |
| 200+00 - 208+00 STAGE 1 | -- | 750 | 270 | 540 | 300 | 390 | -- |
| 200+00 - 208+00 STAGE 2 | -- | 750 | 150 | 300 | 300 | 390 | -- |
| TOTALS | | 2 | 1,800 | 456 | 888 | 600 | 840 |

MISC. SHEET 4

3

BOULDERS

| STATION | LOCATION | SPV.0060 BOULDERS EACH | COMMENTS |
|---------------------------|----------|------------------------------|-------------|
| <u>CATEGORY CODE 0010</u> | | | |
| 203+26 | LT & RT | 5 | ELTON CREEK |
| TOTALS | | 5 | |

FIELD OFFICE

| STATION - STATION | 642.5001 FIELD OFFICE TYPE C EACH |
|---------------------------|-----------------------------------------|
| <u>CATEGORY CODE 0010</u> | |
| PROJECT 9140-12-61 | 1 |
| TOTALS | |
| | 1 |

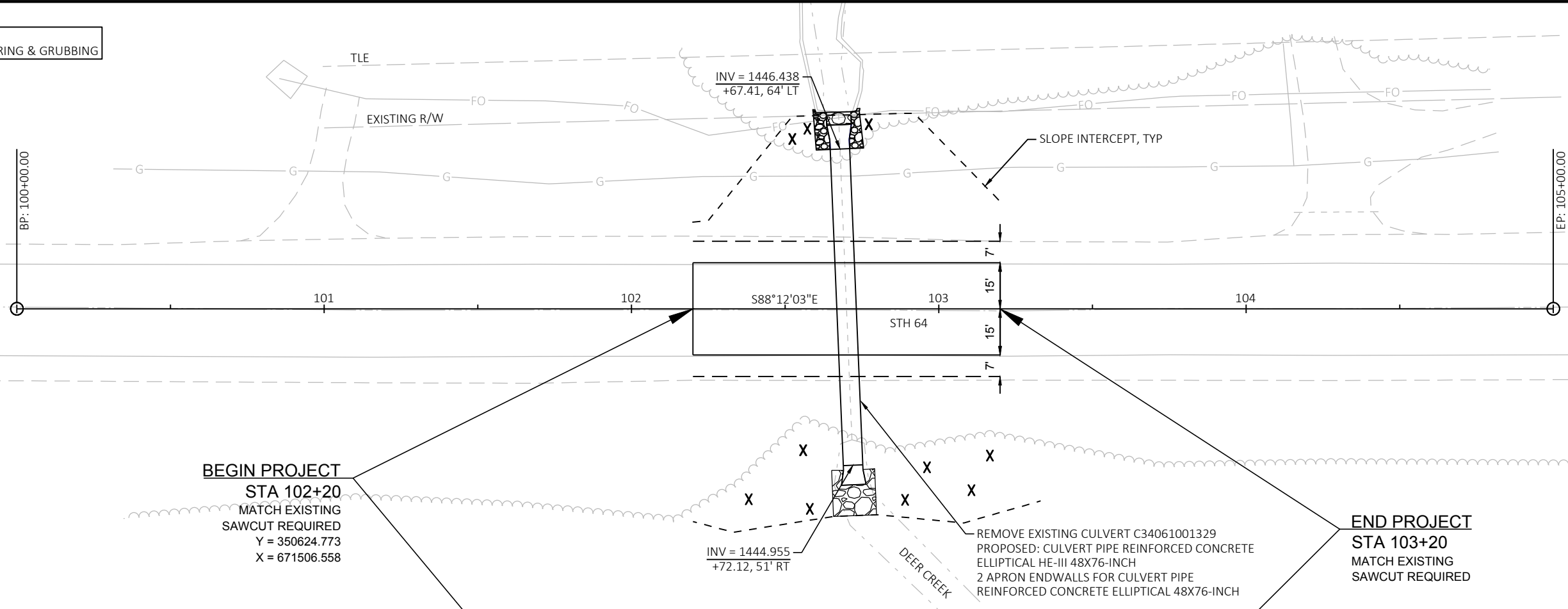
TEMPORARY WATER DIVERSION

| STATION | LOCATION | SPV.0060 TEMPORARY WATER DIVERSION EACH | COMMENTS |
|---------------------------|----------|--------------------------------------------------|------------|
| <u>CATEGORY CODE 0010</u> | | | |
| 102+70 | LT & RT | 1 | DEER CREEK |
| TOTALS | | 1 | |

3

MISC. SHEET 5

LEGEND:
X CLEARING & GRUBBING



BEGIN PROJECT
STA 102+20
 MATCH EXISTING
 SAWCUT REQUIRED
 Y = 350624.773
 X = 671506.558

END PROJECT
STA 103+20
 MATCH EXISTING
 SAWCUT REQUIRED

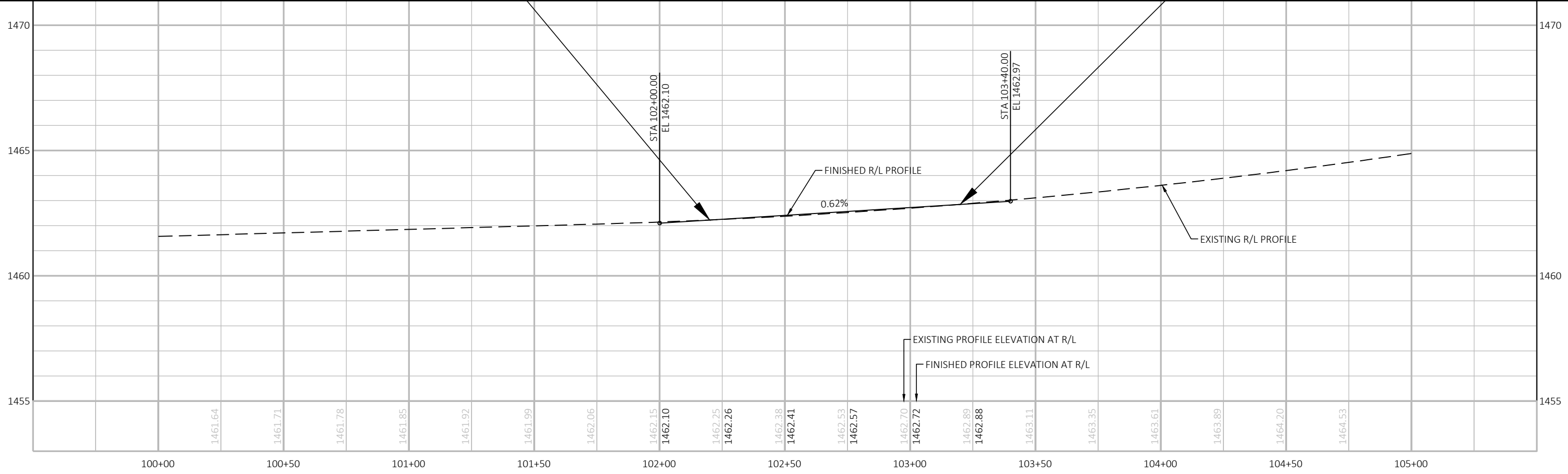
REMOVE EXISTING CULVERT C34061001329
 PROPOSED: CULVERT PIPE REINFORCED CONCRETE
 ELLIPTICAL HE-III 48X76-INCH
 2 APRON ENDWALLS FOR CULVERT PIPE
 REINFORCED CONCRETE ELLIPTICAL 48X76-INCH

INV = 1446.438
 +67.41, 64' LT

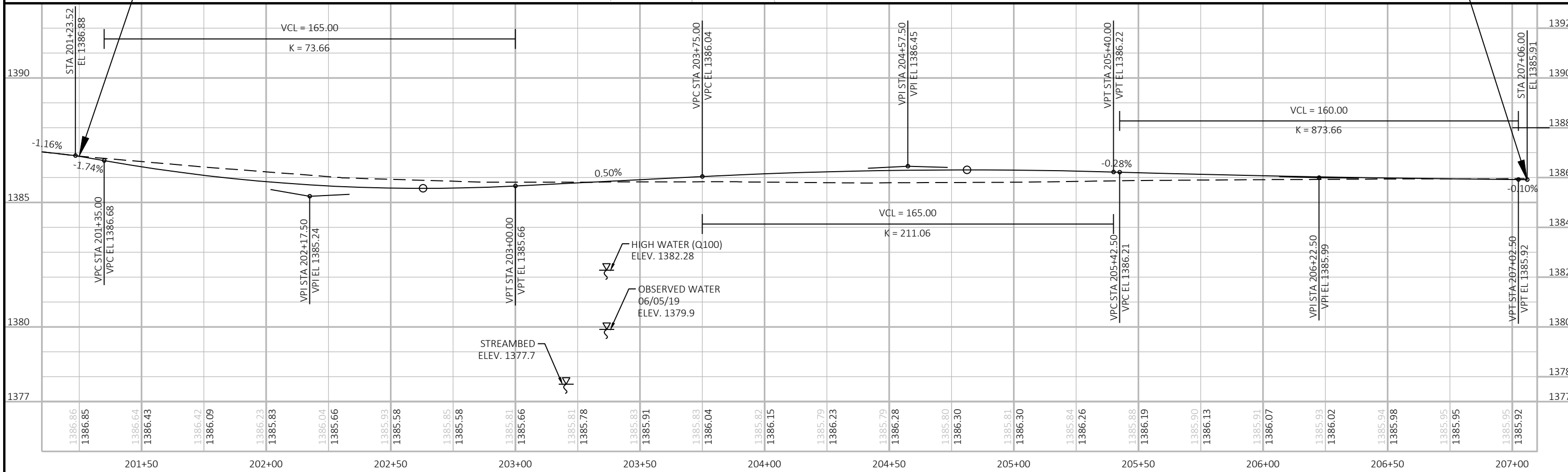
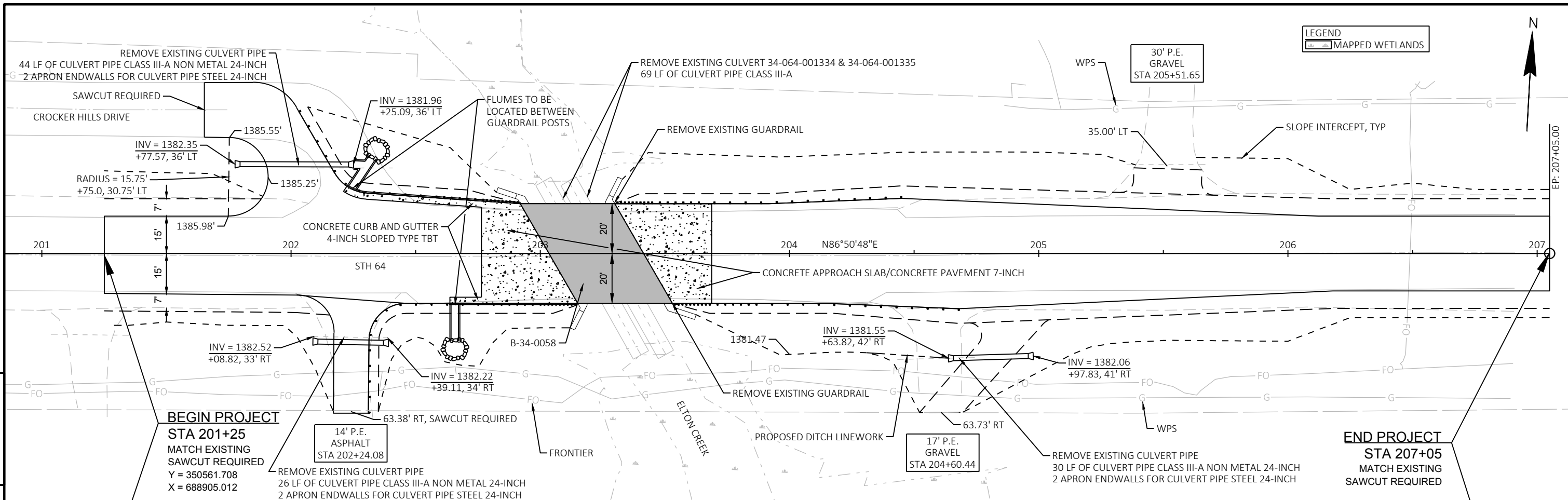
INV = 1444.955
 +72.12, 51' RT

5

5



| | | | | | |
|------------------------|-------------|------------------|---------------------------------------|-------|----------|
| PROJECT NO: 9140-12-61 | HWY: STH 64 | COUNTY: LANGLADE | PLAN AND PROFILE: STH 64 - DEER CREEK | SHEET | E |
|------------------------|-------------|------------------|---------------------------------------|-------|----------|



PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE PLAN AND PROFILE: STH 64 - ELTON CREEK SHEET: 5

Standard Detail Drawing List

| | |
|-----------|----------------------------------------------------------------------------------------------------|
| 08D02-07A | CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES |
| 08D02-07B | CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES |
| 08D02-07C | CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES |
| 08D04-05 | CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES |
| 08E09-06 | SILT FENCE |
| 08E11-02 | TURBIDITY BARRIER |
| 08E15-01 | CULVERT PIPE CHECK |
| 08F01-11 | APRON ENDWALLS FOR CULVERT PIPE |
| 08F02-01 | APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE |
| 08F04-07 | JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL |
| 09G02-05A | BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION |
| 09G02-05B | BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION |
| 09G02-05C | BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION |
| 12A03-10 | NAME PLATE (STRUCTURES) |
| 13B02-09A | CONCRETE PAVEMENT APPROACH SLAB |
| 13C19-03 | HMA LONGITUDINAL JOINTS |
| 14B07-15A | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15B | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15C | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15D | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15E | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15F | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15G | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15H | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B07-15I | CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" |
| 14B42-07A | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-07B | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-07C | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-07D | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B44-04A | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B44-04B | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B44-04C | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B45-05A | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05B | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05C | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05D | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05E | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05F | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05G | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05H | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05I | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05J | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05K | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B45-05L | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 14B53-01A | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01B | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01C | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01D | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01E | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01F | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01G | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01H | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 14B53-01I | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS) |
| 15A03-02A | FLEXIBLE MARKER POST FOR CULVERT END |
| 15A03-02B | FLEXIBLE MARKER POST FOR CULVERT END |
| 15C03-05 | BARRICADES AND SIGNS FOR SIDEROAD CLOSURES |
| 15C04-05 | TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC |
| 15C08-20A | LONGITUDINAL MARKING (MAINLINE) |
| 15C11-08B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS |
| 15C12-07 | TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION |
| 15C33-04 | STOP LINE AND CROSSWALK PAVEMENT MARKING |
| 15D33-06 | TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS |
| 15D45-03 | TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL |
| 15D48-01 | TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATION |

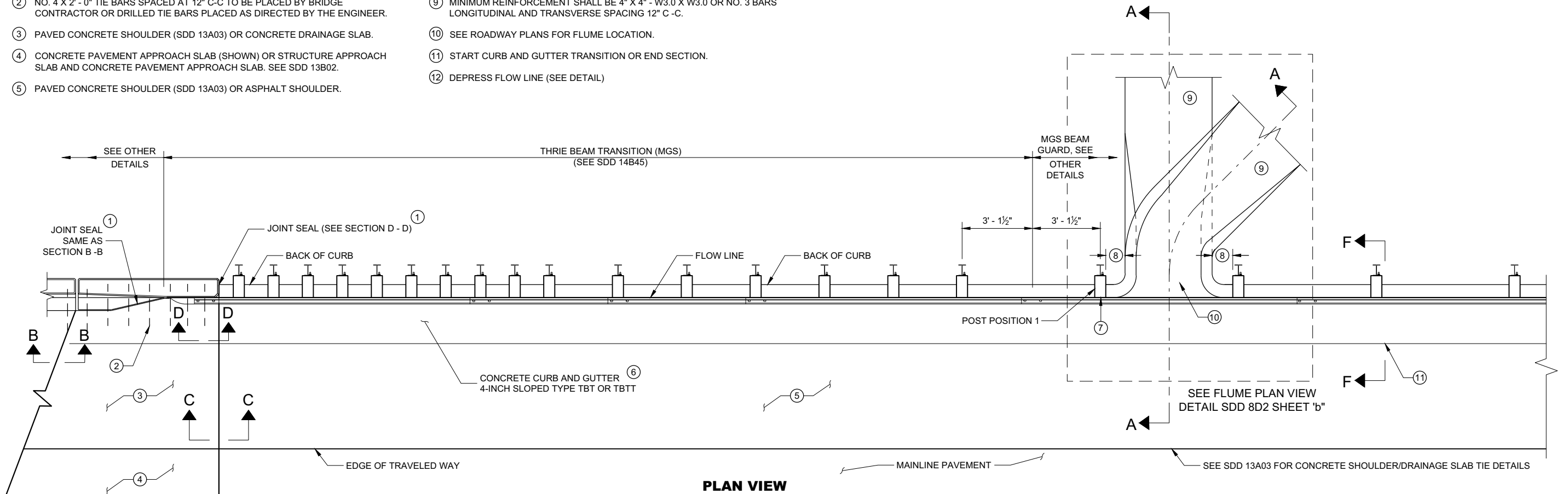
GENERAL NOTES

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

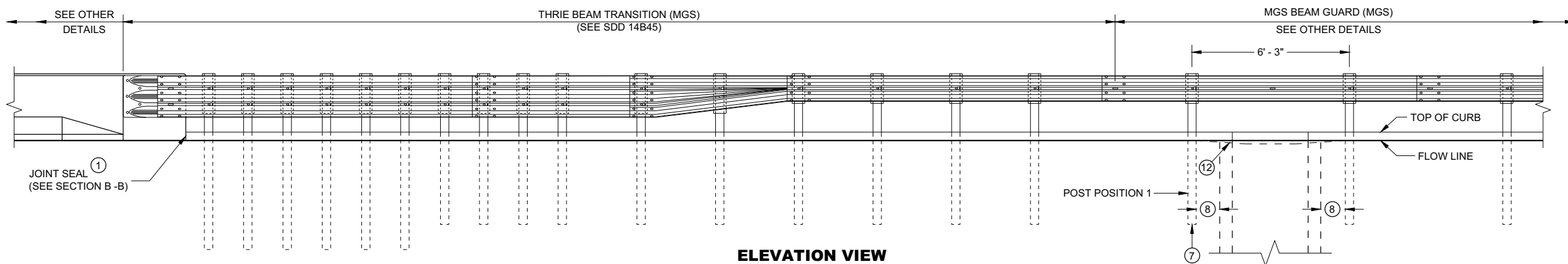
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.

- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)



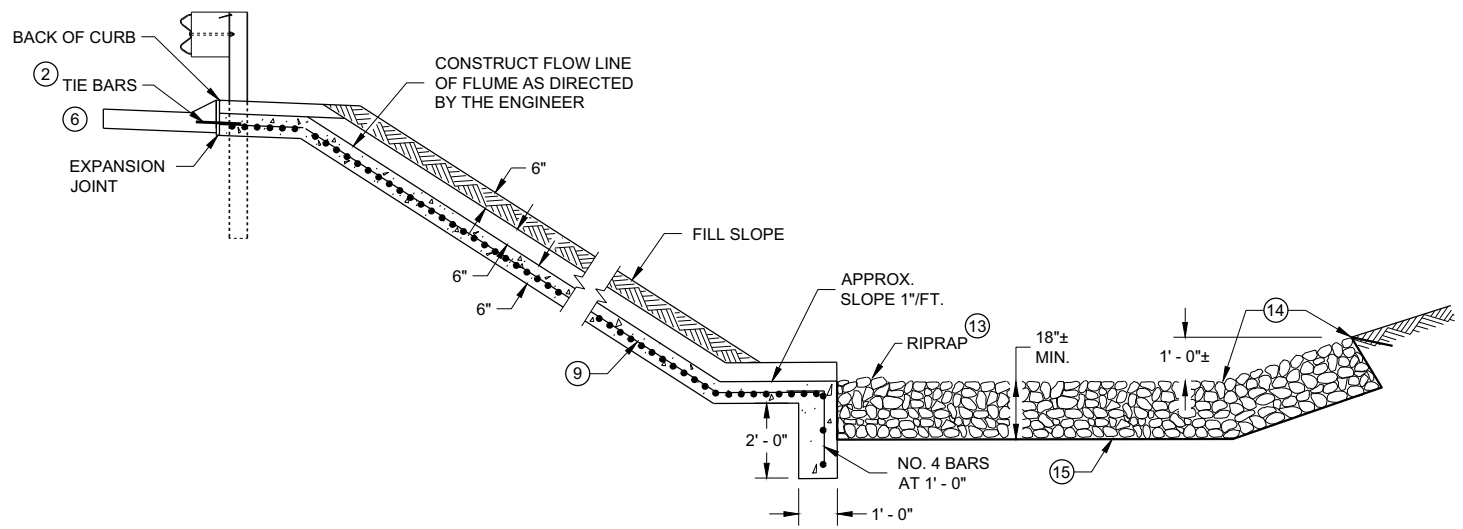
PLAN VIEW



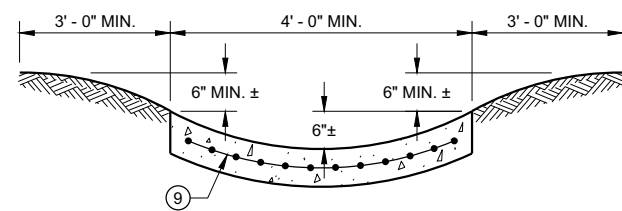
ELEVATION VIEW

**CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES**

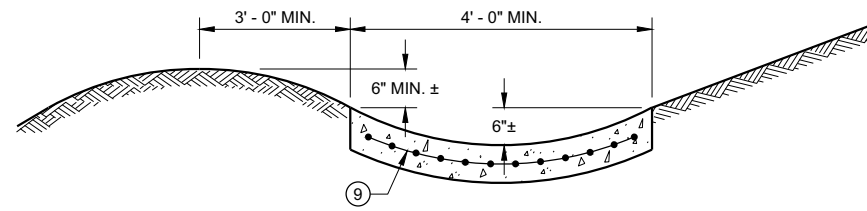
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



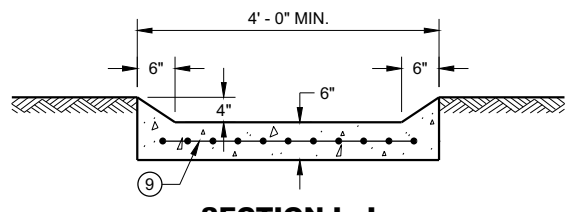
SECTION A - A



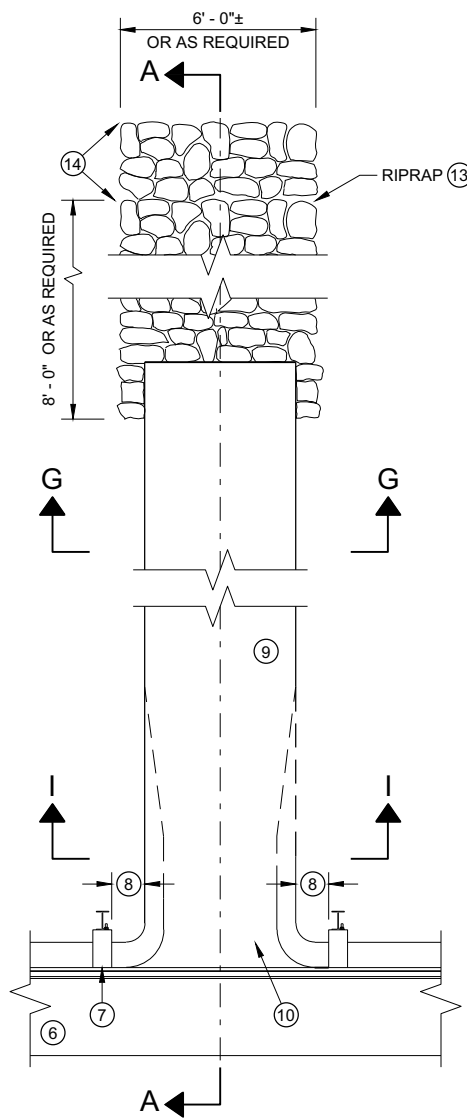
SECTION G - G



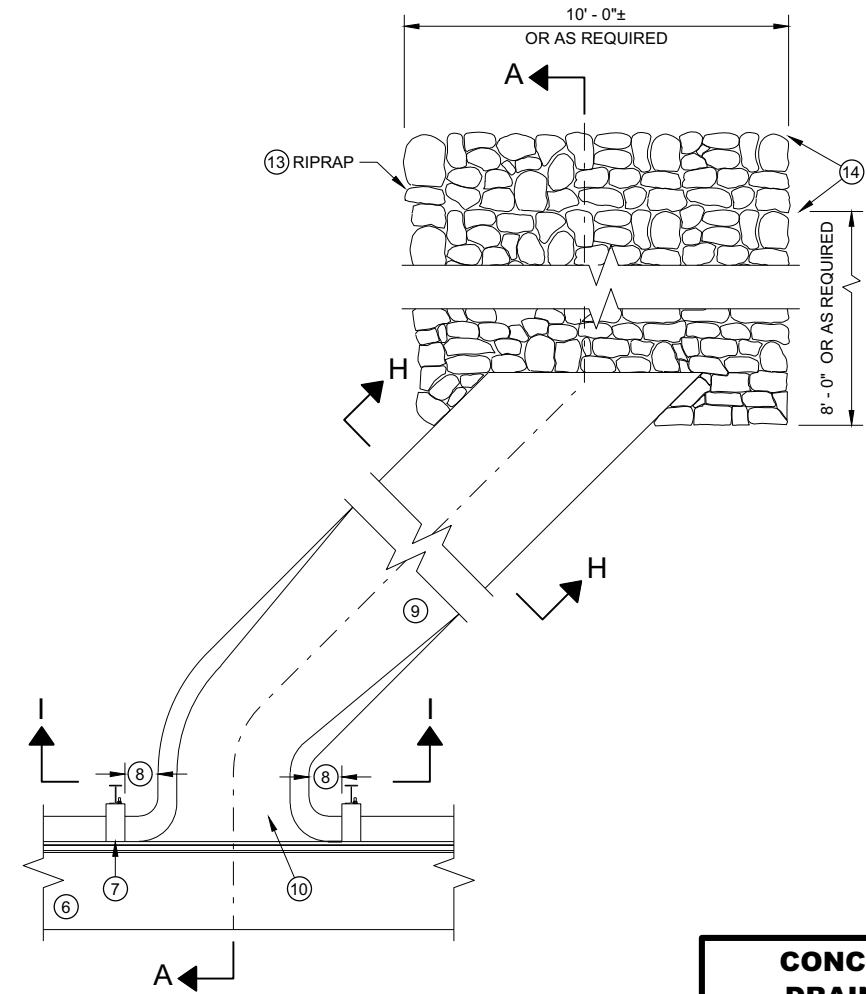
SECTION H - H



SECTION I - I



PLAN VIEW PERPENDICULAR FLUME



PLAN VIEW SKEWED FLUME

GENERAL NOTES

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

ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2'-0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2'-0" TIE BARS SPACED AT 3'-0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.

- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)
- ⑬ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑭ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH AS REQUIRED.
- ⑮ GEOTEXTILE FABRIC TYPE HR.

CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES

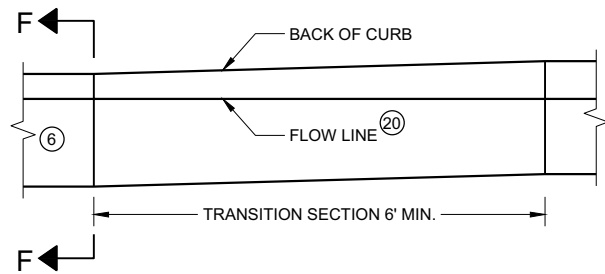
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

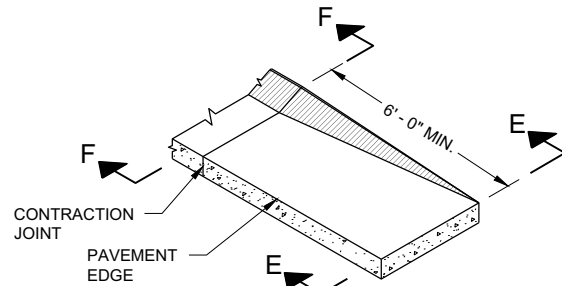
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SDD08D02 - 07b

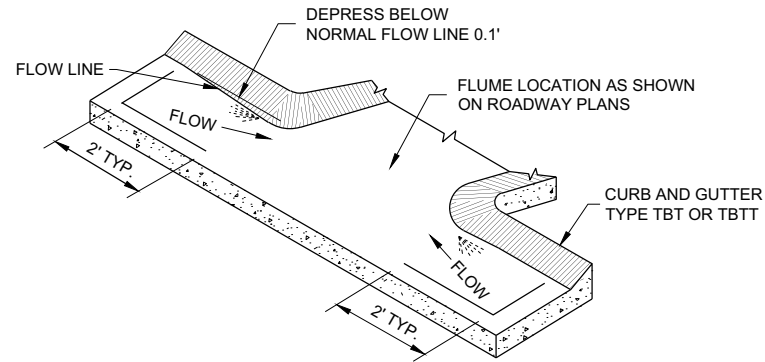
SDD08D02 - 07b



**CURB AND GUTTER TRANSITION SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



**CURB AND GUTTER END SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



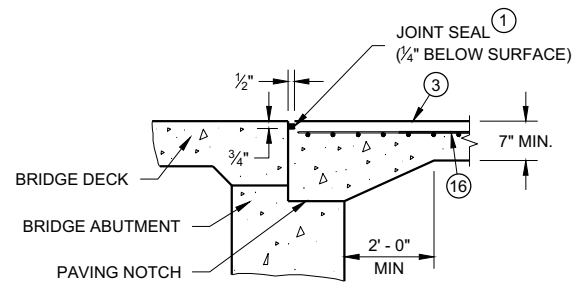
**CURB AND GUTTER FLOW LINE DEPRESSION
AT FLUMES CONCRETE CURB AND GUTTER
4-INCH SLOPED 36 INCH TYPE TBT OR TBTT**

GENERAL NOTES

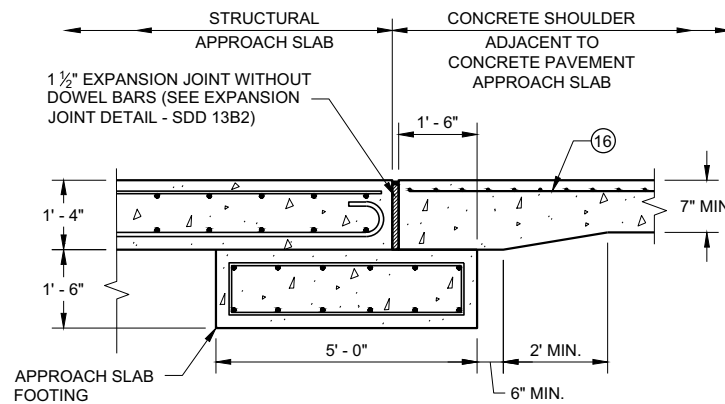
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

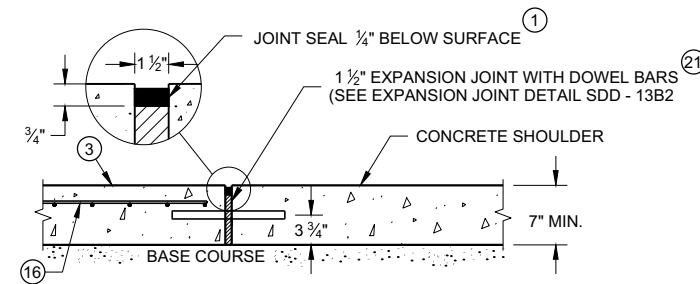
- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)
- ⑬ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑭ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
- ⑮ GEOTEXTILE FABRIC TYPE HR.
- ⑯ MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑰ MSG THRIE BEAM TRANSITION POST 1. SEE SDD 14B45 FOR ADDITIONAL CONSTRUCTION DETAILS AND ACCEPTABLE MATERIALS.
- ⑱ MAINTAIN WIDTH, THICKNESS AND CROSS SLOPE OF ADJACENT TYPE TBT OR TBTT CURB. SEE NOTE 6 FOR TIE BAR SPACING.
- ⑲ ALIGN FACE OF POST BLOCK WITH FLOW LINE.
- ⑳ MAINTAIN FLOW LINE AT EDGE OF PAVEMENT/FACE OF BEAM GUARD AS APPLICABLE.
- ㉑ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING HMA PAVEMENTS.



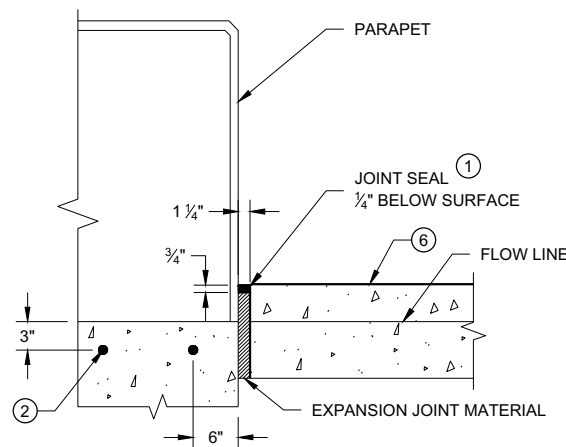
SECTION B-B



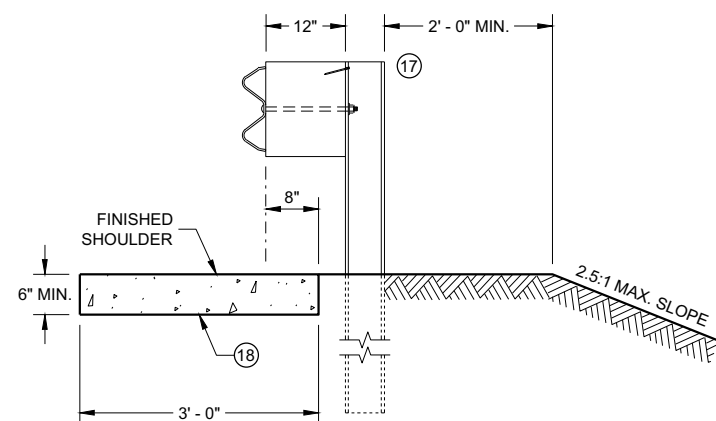
**SECTION C - C
JOINT DETAIL FOR BRIDGE WITH STRUCTURAL
APPROACH SLAB AND CONCRETE APPROACH SLAB**



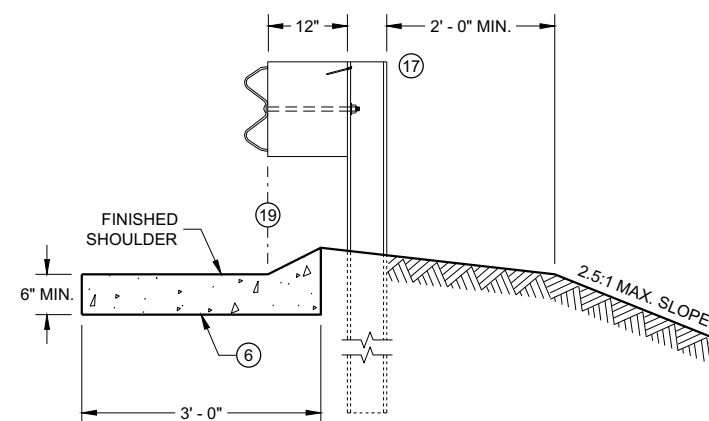
**SECTION C - C
JOINT DETAIL FOR BRIDGE APPROACH
WITH CONCRETE SHOULDERS**



SECTION D - D



SECTION E - E



SECTION F - F

6

6

SDD08D02 - 07C

SDD08D02 - 07C

**CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

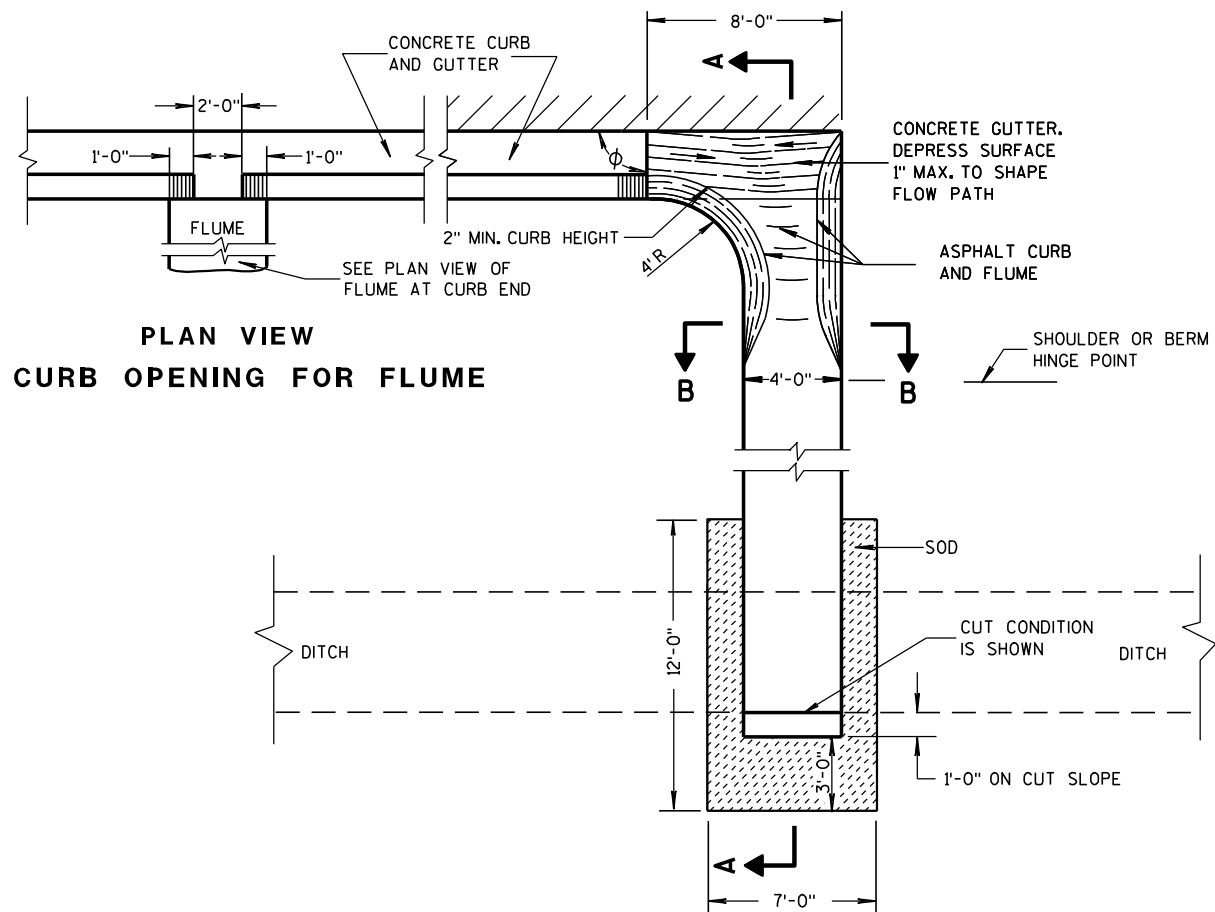
APPROVED
February 2020 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

FHWA

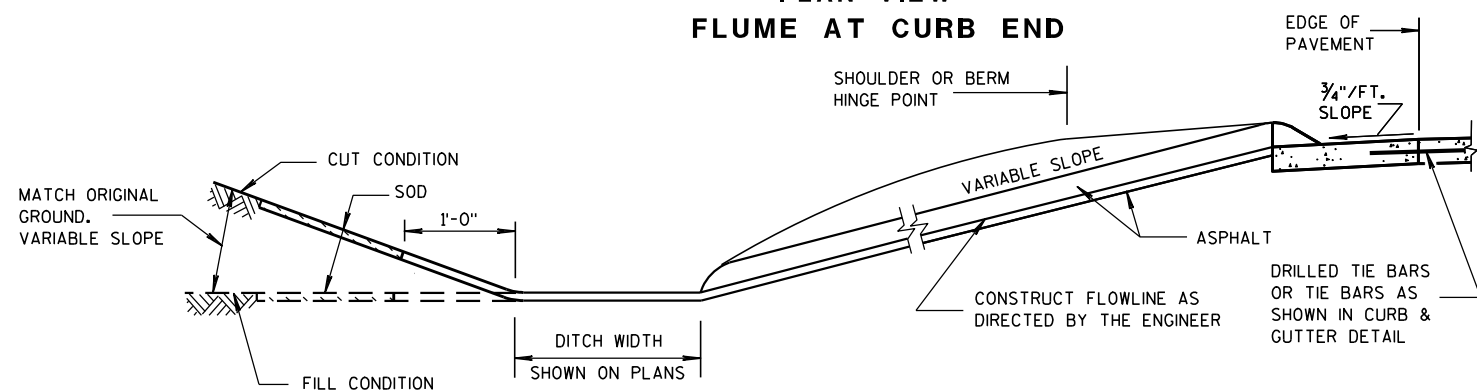
ASPHALTIC FLUME

NOTE: TAPER CURB ENDS TO GUTTER IN 1'-0"

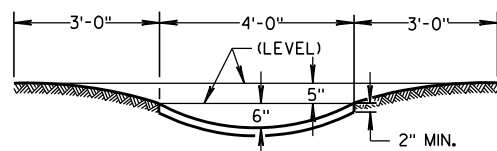
INCREASE ϕ FROM RIGHT ANGLE TO BEST FIT FIELD CONDITIONS



PLAN VIEW FLUME AT CURB END



SECTION B-B



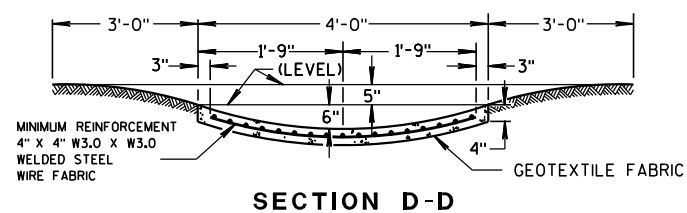
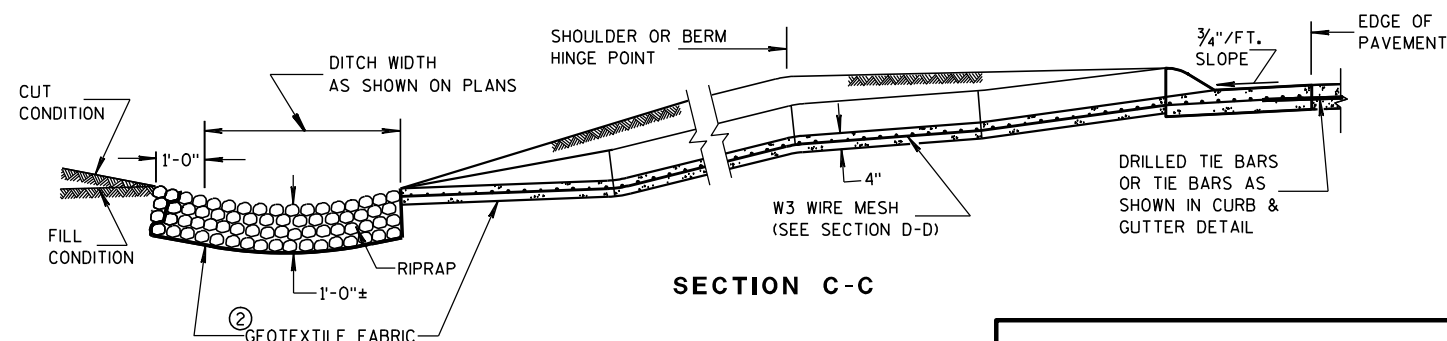
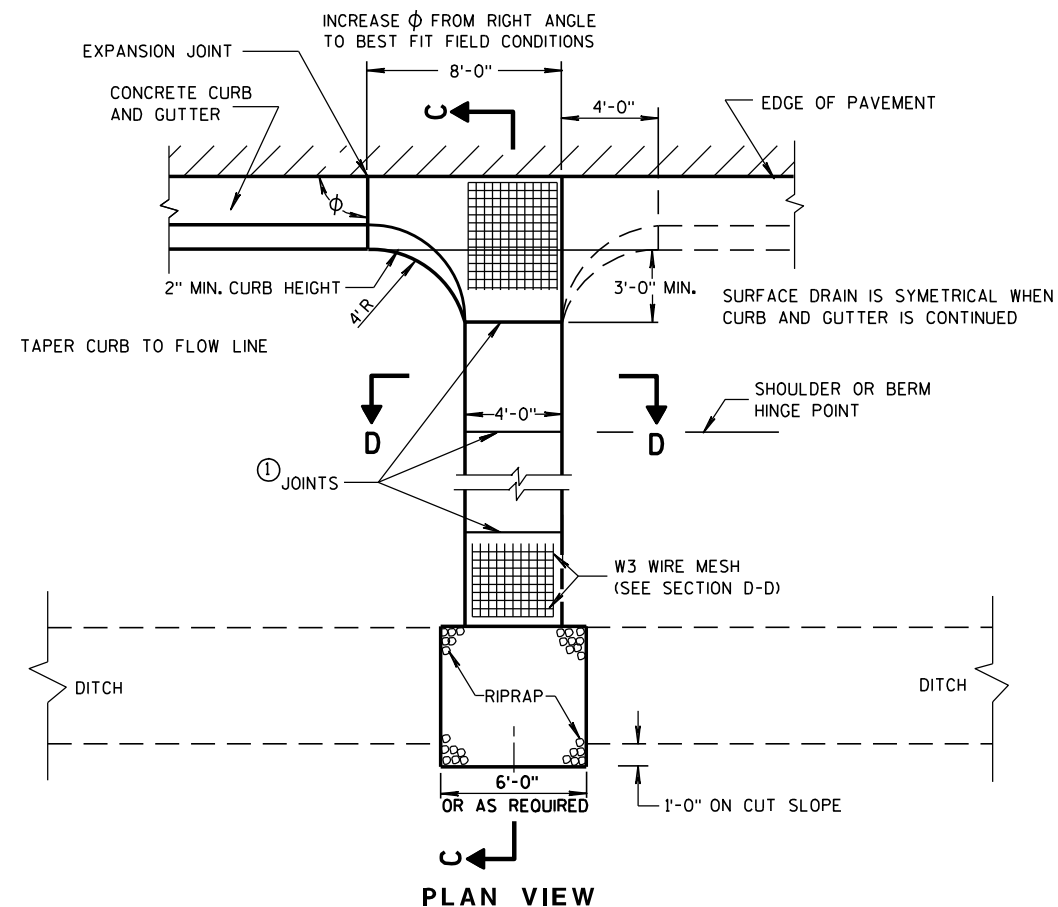
GENERAL NOTES

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

WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- ① JOINTS SHALL BE 1/8 TO 1/4 INCH WIDE BY 1 1/2 INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

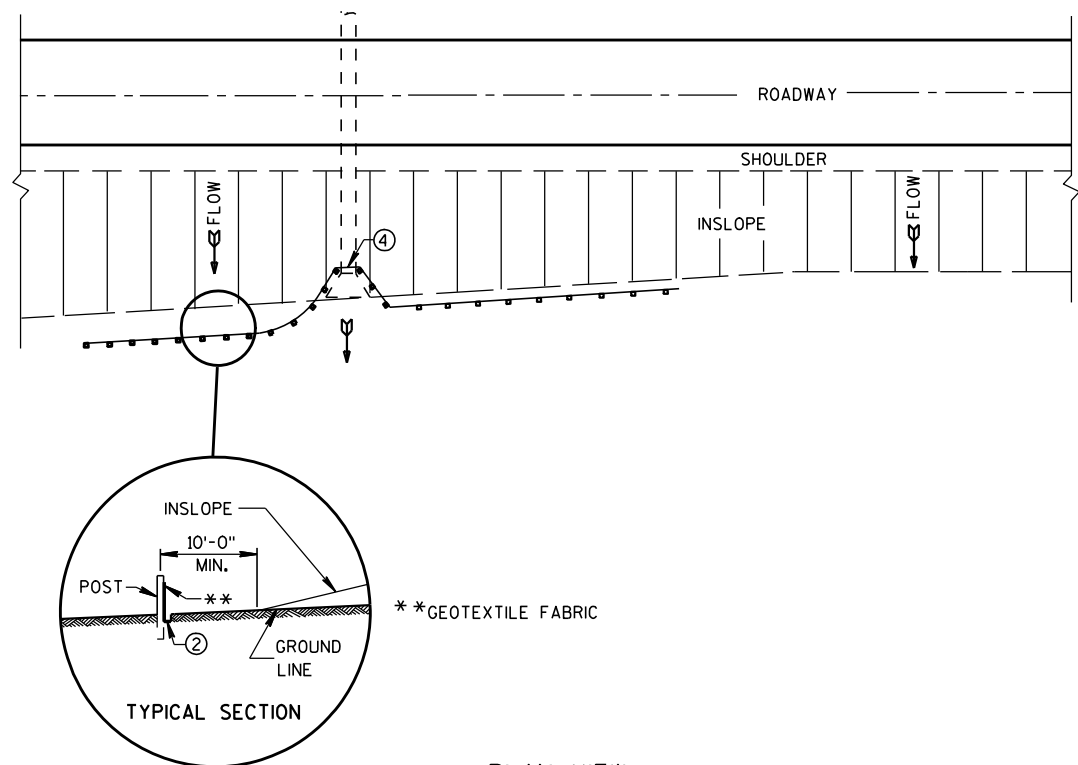
③ CONCRETE SURFACE DRAIN



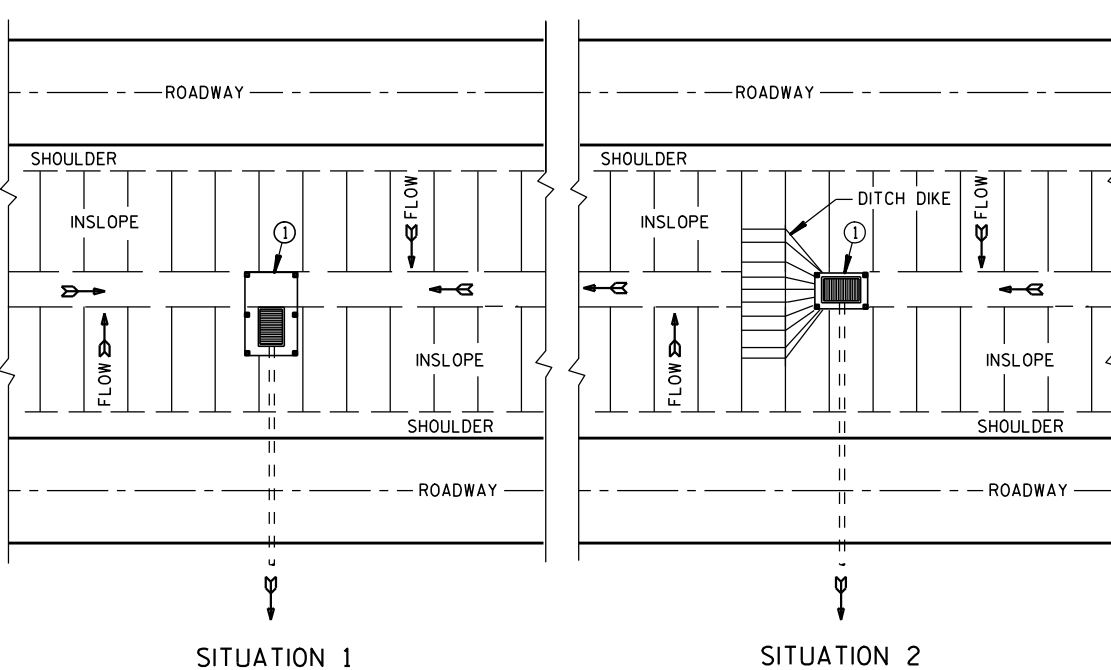
CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9-4-08 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

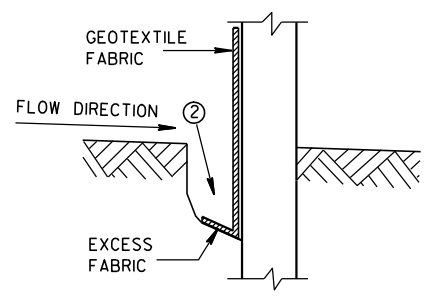


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

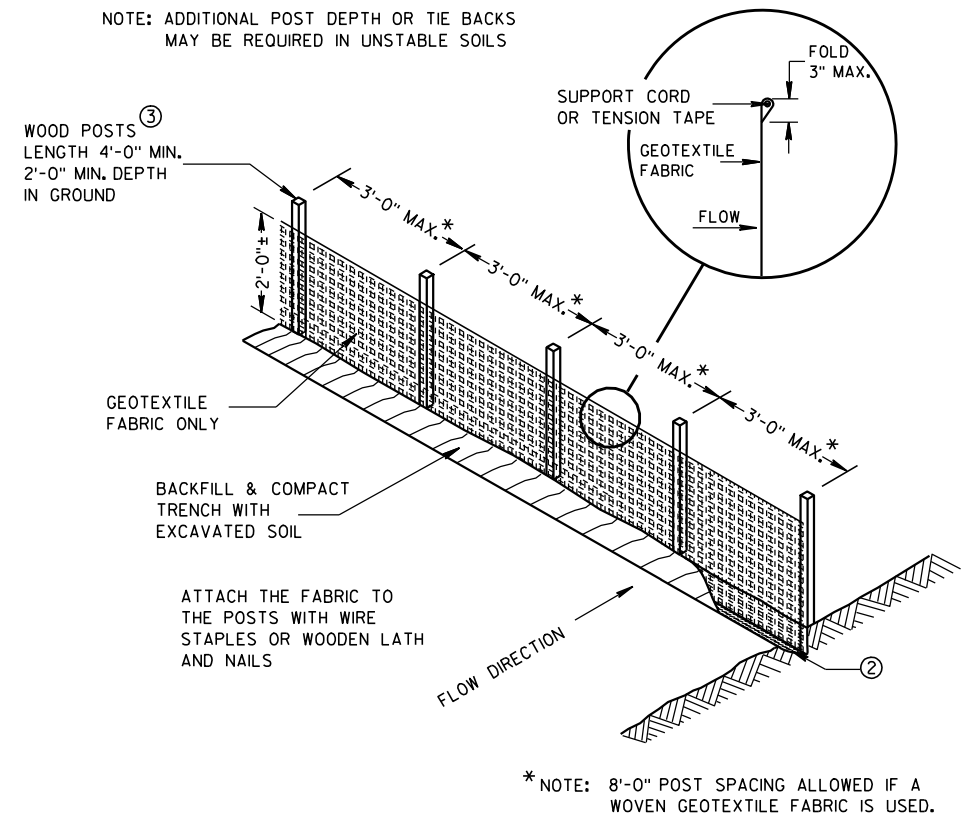
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

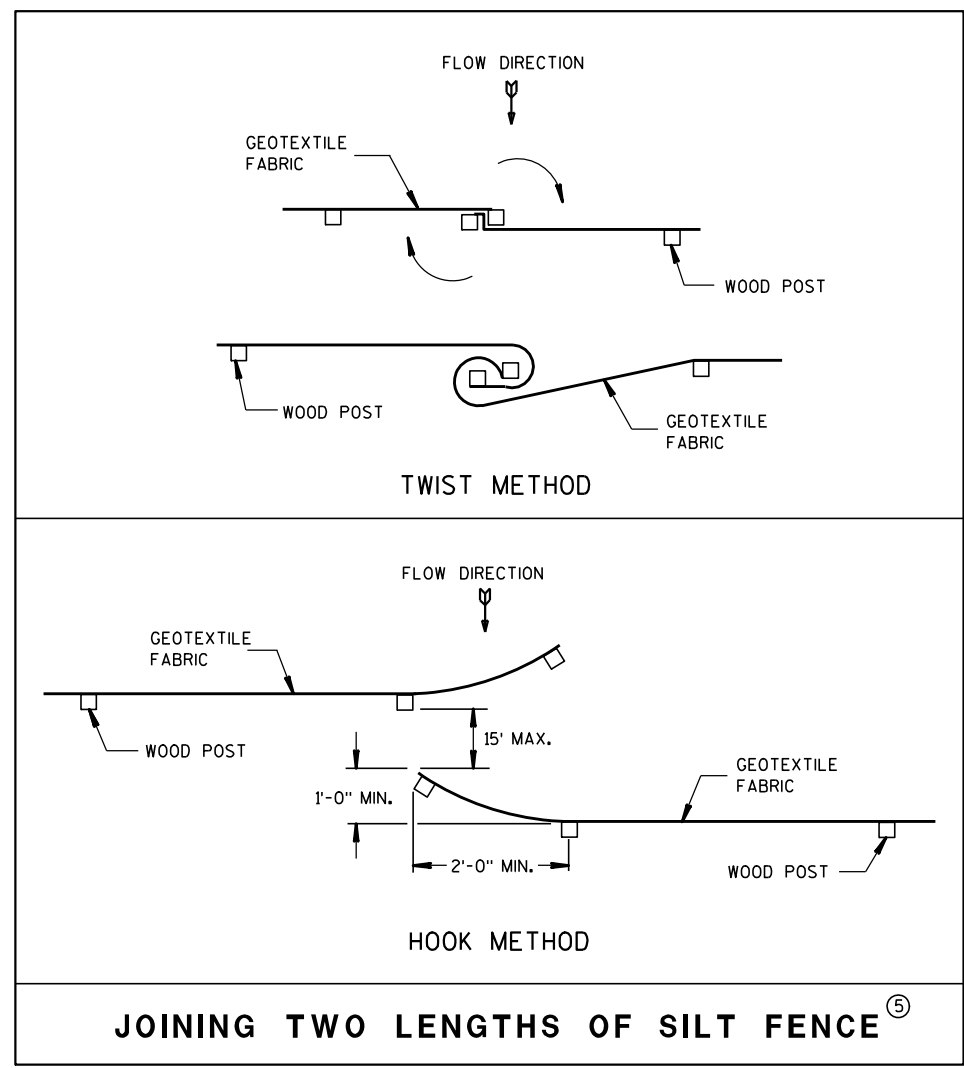


TRENCH DETAIL

6

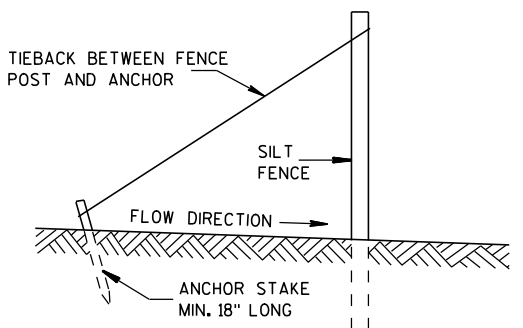


SILT FENCE



JOINING TWO LENGTHS OF SILT FENCE ⑤

6

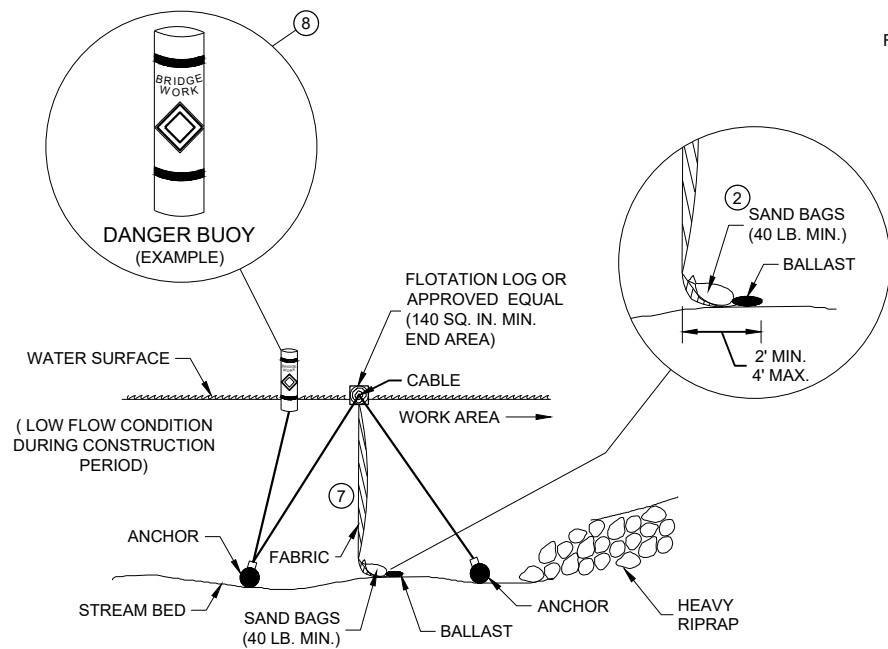


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

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

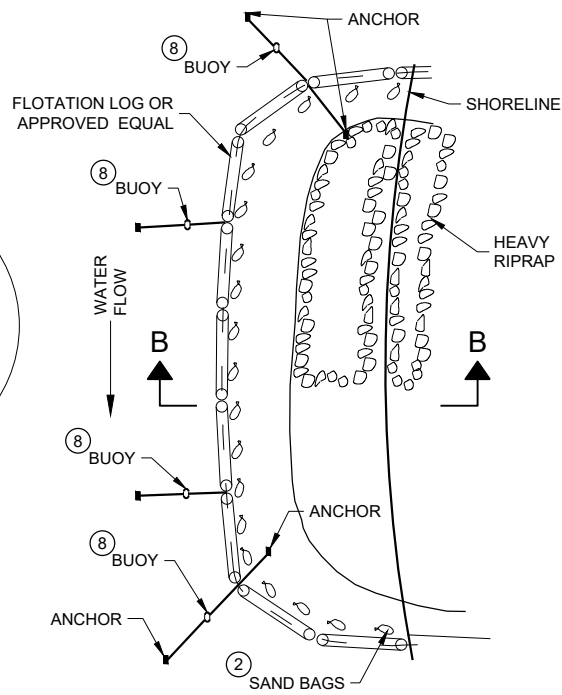
S.D.D. 8 E 9-6

S.D.D. 8 E 9-6

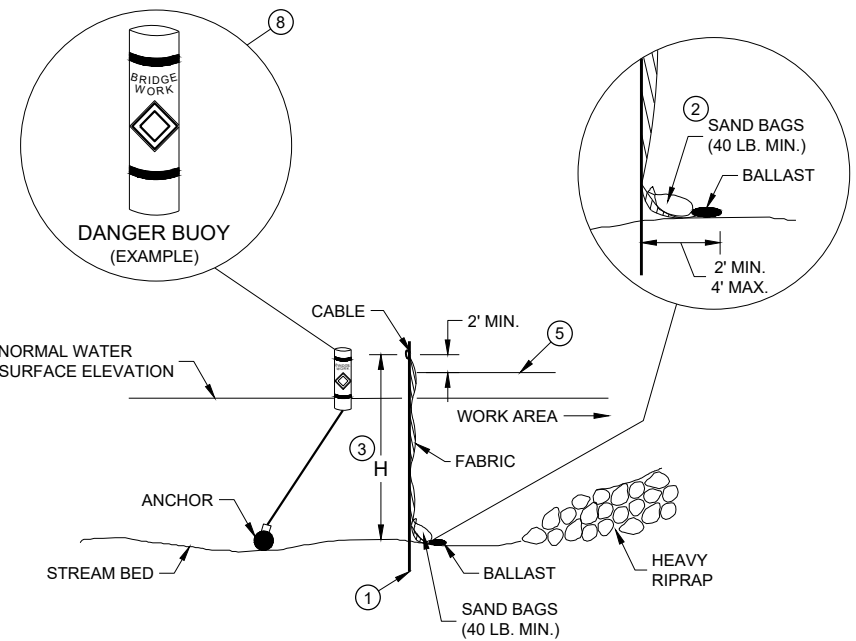


SECTION B - B

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

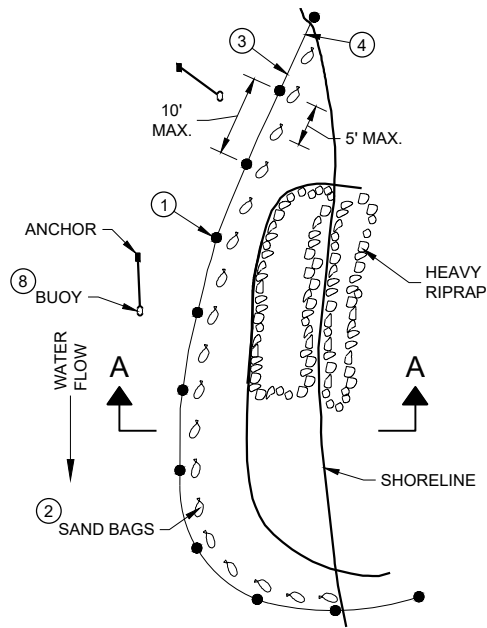


PLAN VIEW



SECTION A - A

TURBIDITY BARRIER - STANDARD POST INSTALLATION



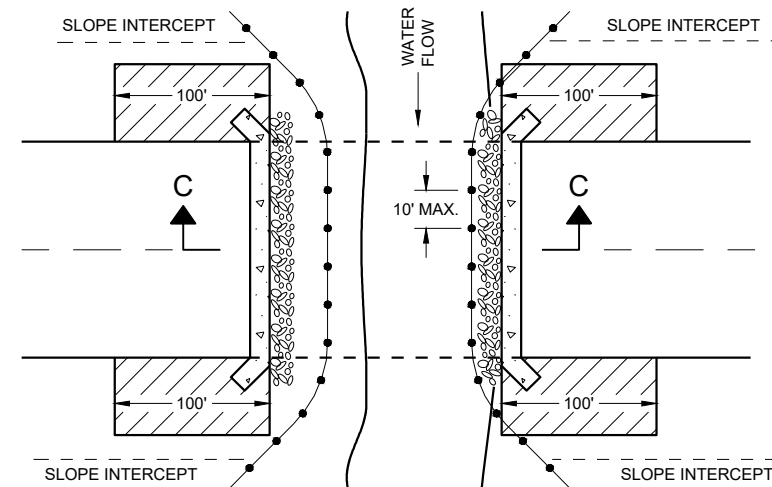
PLAN VIEW

GENERAL NOTES

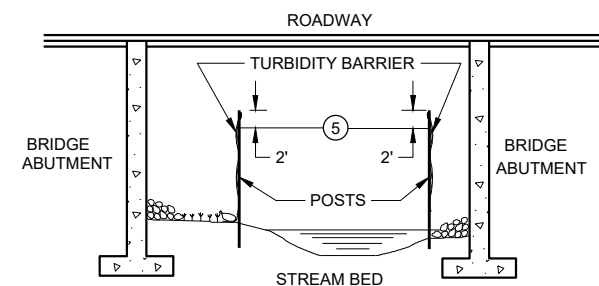
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

- ① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- ② SAND BAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
- ③ WHEN BARRIER HEIGHT "H" EXCEEDS 8 FEET, POST SPACING MAY NEED TO BE DECREASED.
- ④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
- ⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE Q2 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER IS GREATER.
- ⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BEDROCK PREVENTS THE INSTALLATION OF POSTS.
- ⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- ⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



SECTION C - C

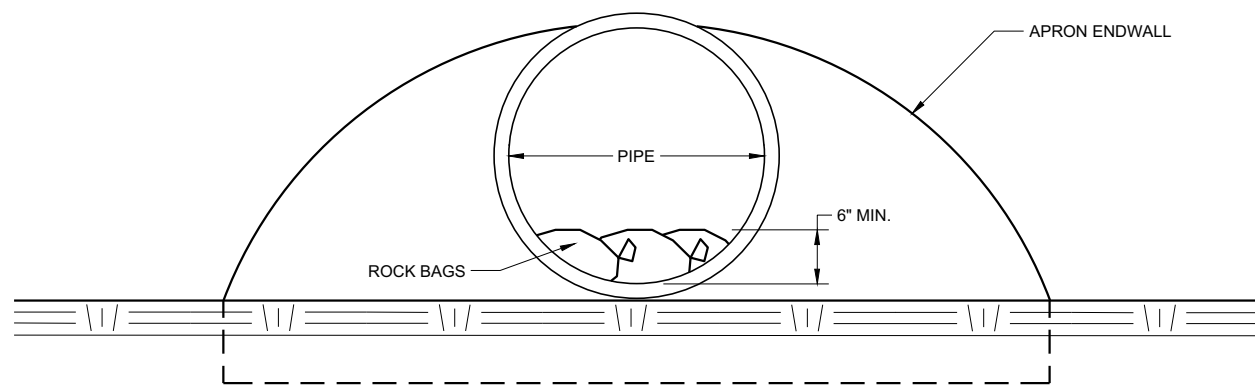
**TURBIDITY BARRIER DETAIL SHOWING
TYPICAL PLACEMENT AT STRUCTURES**

TURBIDITY BARRIER

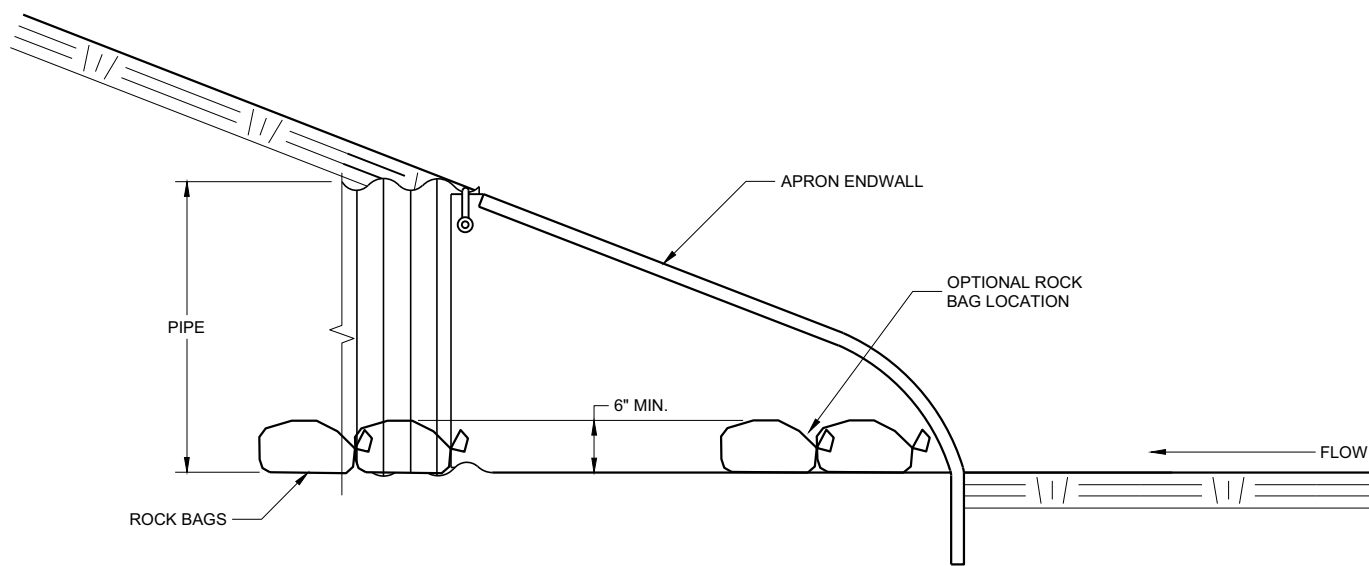
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



END VIEW



SIDE VIEW

CULVERT PIPE CHECK
 (INSTALL ON INLET END ONLY)

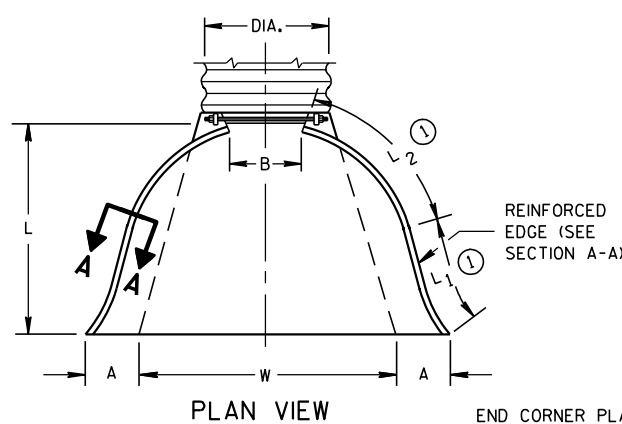
| | |
|----------------------------------------------------|-----------------------------------------------|
| CULVERT PIPE CHECK | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED May 2019 DATE | /S/ Daniel Schave EROSION CONTROL ENGINEER |
| <small>FHWA</small> | |

| METAL APRON ENDWALLS | | | | | | | | | | | |
|----------------------|----------------------|-------|---------------------|----------|---------|-------------|----|--------|---------|---------------|-------|
| PIPE DIA. (IN.) | MIN. THICK. (Inches) | | DIMENSIONS (Inches) | | | | | | | APPROX. SLOPE | BODY |
| | STEEL | ALUM. | A (±1") | B (MAX.) | H (±1") | L (±1 1/2") | L1 | L2 | W (±2") | | |
| 12 | .064 | .060 | 6 | 6 | 6 | 21 | 12 | 17 1/2 | 24 | 2 1/2 to 1 | 1 Pc. |
| 15 | .064 | .060 | 7 | 8 | 6 | 26 | 14 | 21 3/4 | 30 | 2 1/2 to 1 | 1 Pc. |
| 18 | .064 | .060 | 8 | 10 | 6 | 31 | 15 | 28 1/4 | 36 | 2 1/2 to 1 | 1 Pc. |
| 21 | .064 | .060 | 9 | 12 | 6 | 36 | 18 | 29 5/8 | 42 | 2 1/2 to 1 | 1 Pc. |
| 24 | .064 | .075 | 10 | 13 | 6 | 41 | 18 | 37 1/4 | 48 | 2 1/2 to 1 | 1 Pc. |
| 30 | .079 | .075 | 12 | 16 | 8 | 51 | 18 | 52 1/4 | 60 | 2 1/2 to 1 | 1 Pc. |
| 36 | .079 | .105 | 14 | 19 | 9 | 60 | 24 | 59 3/4 | 72 | 2 1/2 to 1 | 2 Pc. |
| 42 | .109 | .105 | 16 | 22 | 11 | 69 | 24 | 75 5/8 | 84 | 2 1/2 to 1 | 2 Pc. |
| 48 | .109 | .105 | 18 | 27 | 12 | 78 | 24 | 81 | 90 | 2 1/4 to 1 | 3 Pc. |
| 54 | .109 | .105 | 18 | 30 | 12 | 84 | 30 | 85 1/2 | 102 | 2 1/4 to 1 | 3 Pc. |
| 60 | .109x | .105x | 18 | 33 | 12 | 87 | — | — | 114 | 2 to 1 | 3 Pc. |
| 66 | .109x | .105x | 18 | 36 | 12 | 87 | — | — | 120 | 2 to 1 | 3 Pc. |
| 72 | .109x | .105x | 18 | 39 | 12 | 87 | — | — | 126 | 2 to 1 | 3 Pc. |
| 78 | .109x | .105x | 18 | 42 | 12 | 87 | — | — | 132 | 1 1/2 to 1 | 3 Pc. |
| 84 | .109x | .105x | 18 | 45 | 12 | 87 | — | — | 138 | 1 1/2 to 1 | 3 Pc. |
| 90 | .109x | .105x | 18 | 37 | 12 | 87 | — | — | 144 | 1 1/2 to 1 | 3 Pc. |
| 96 | .109x | .105x | 18 | 35 | 12 | 87 | — | — | 150 | 1 1/2 to 1 | 3 Pc. |

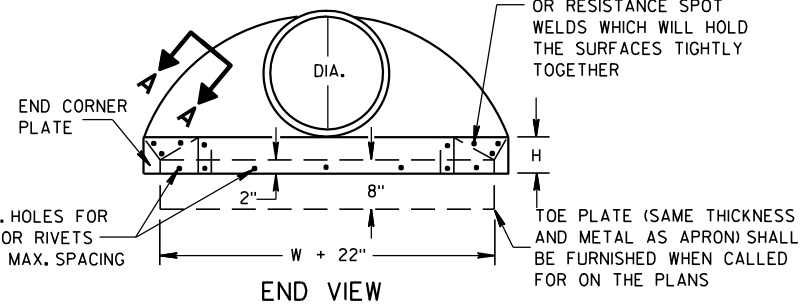
* EXCEPT CENTER PANEL SEE GENERAL NOTES

| REINFORCED CONCRETE APRON ENDWALLS | | | | | | | | | |
|------------------------------------|---------------------|--------|--------|-----------|------------|-----|-------|---------------|--|
| PIPE DIA. (IN.) | DIMENSIONS (Inches) | | | | | | | APPROX. SLOPE | |
| | T | A | B | C | D | E | G | | |
| 12 | 2 | 4 | 24 | 48 1/8 | 72 1/8 | 24 | 2 | 3 to 1 | |
| 15 | 2 1/4 | 6 | 27 | 46 | 73 | 30 | 2 1/4 | 3 to 1 | |
| 18 | 2 1/2 | 9 | 27 | 46 | 73 | 36 | 2 1/2 | 3 to 1 | |
| 21 | 2 3/4 | 9 | 36 | 37 1/2 | 73 1/2 | 42 | 2 3/4 | 3 to 1 | |
| 24 | 3 | 9 1/2 | 43 1/2 | 30 | 73 1/2 | 48 | 3 | 3 to 1 | |
| 27 | 3 1/4 | 10 1/2 | 49 1/2 | 24 | 73 1/2 | 54 | 3 1/4 | 3 to 1 | |
| 30 | 3 1/2 | 12 | 54 | 19 3/4 | 73 1/2 | 60 | 3 1/2 | 3 to 1 | |
| 36 | 4 | 15 | 63 | 34 3/4 | 97 3/4 | 72 | 4 | 3 to 1 | |
| 42 | 4 1/2 | 21 | 63 | 35 | 98 | 78 | 4 1/2 | 3 to 1 | |
| 48 | 5 | 24 | 72 | 26 | 98 | 84 | 5 | 3 to 1 | |
| 54 | 5 1/2 | 27 | 65 | 33 1/4-35 | 98 1/4-100 | 90 | 5 1/2 | 2 1/2 to 1 | |
| 60 | 6 | 30-35 | 60 | 39 | 99 | 96 | 5 | 2 to 1 | |
| 66 | 6 1/2 | 30-35 | 72-78 | 21-27 | 99 | 102 | 5 1/2 | 2 to 1 | |
| 72 | 7 | 30-35 | 78 | 21 | 99 | 108 | 6 | 2 to 1 | |
| 78 | 7 1/2 | 30-35 | 78 | 21 | 99 | 114 | 6 1/2 | 2 to 1 | |
| 84 | 8 | 36 | 90 1/2 | 21 | 111 1/2 | 120 | 6 1/2 | 1 1/2 to 1 | |
| 90 | 8 1/2 | 41 | 87 1/2 | 24 | 111 1/2 | 132 | 6 1/2 | 1 1/2 to 1 | |

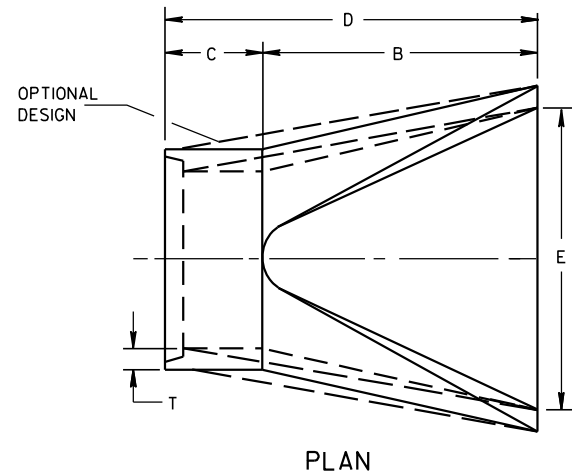
* MINIMUM
** MAXIMUM



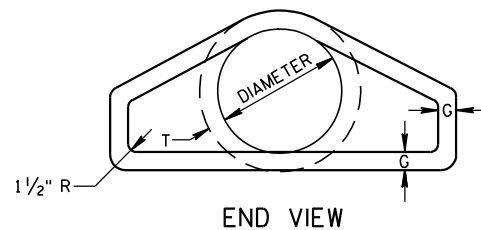
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



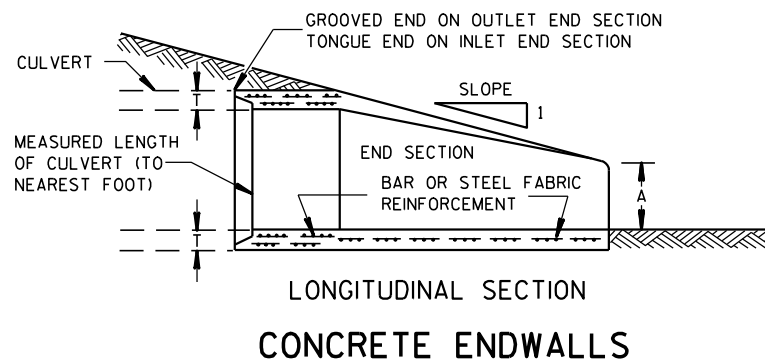
SIDE ELEVATION
METAL ENDWALLS



PLAN

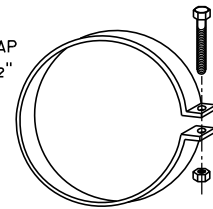


END VIEW

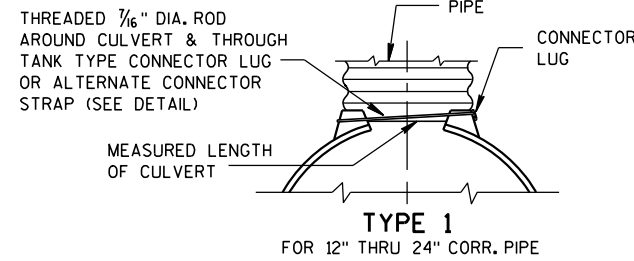


LONGITUDINAL SECTION
CONCRETE ENDWALLS

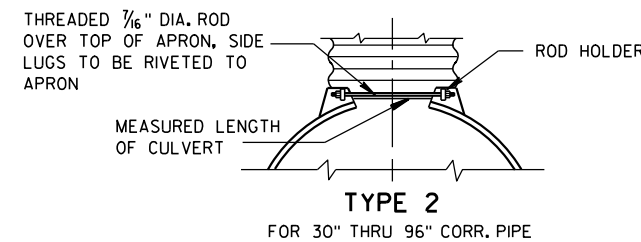
1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



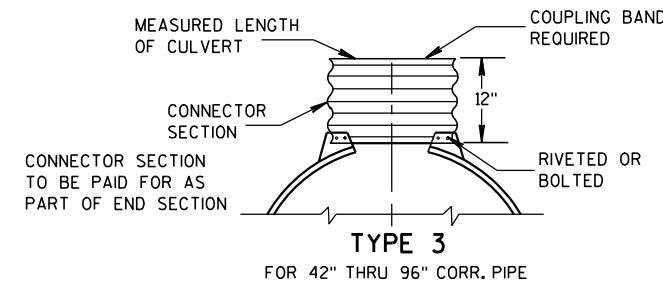
ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



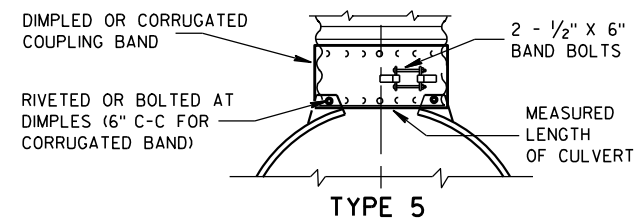
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

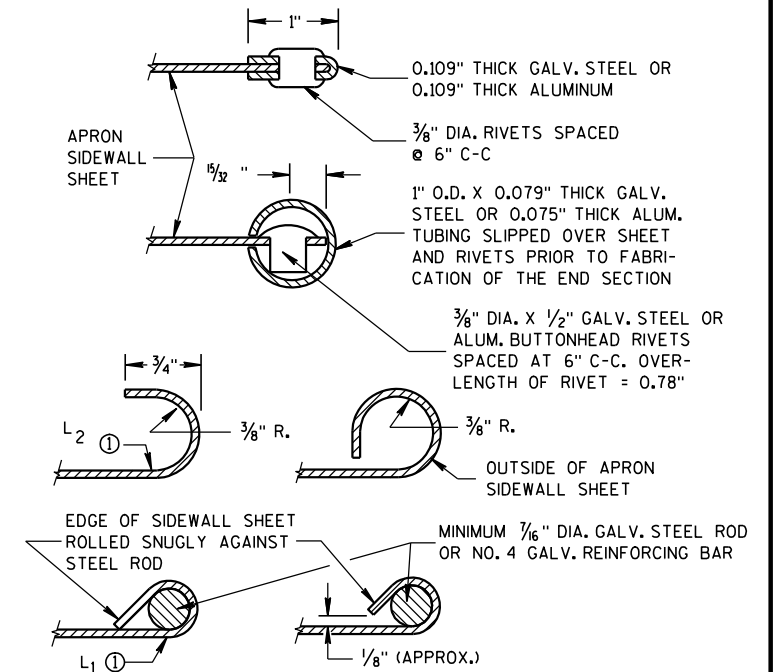
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

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.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VICE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

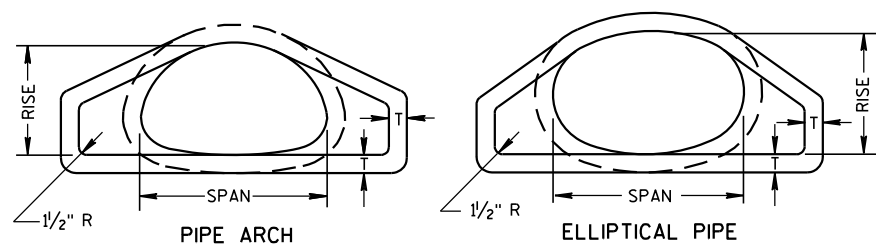
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

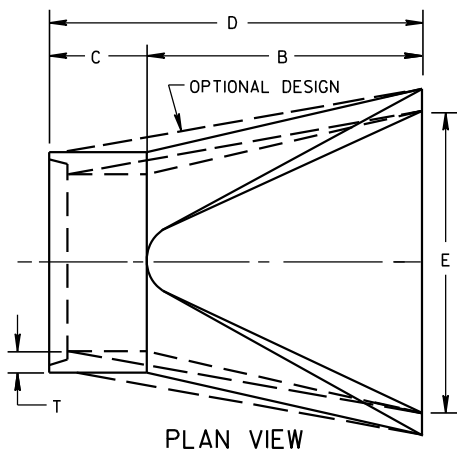
APRON ENDWALLS FOR
CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

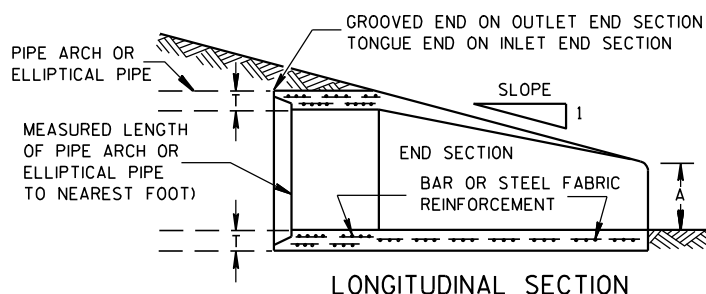
APPROVED
11/30/94 /S/ Rory L. Rhinesmith
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



END VIEW



PLAN VIEW



LONGITUDINAL SECTION

CONCRETE ENDWALLS

| 2- 2/3" X 1/2" CORRUGATIONS | | | | | | | | | | | | | |
|-----------------------------|----------|------|----------------------|-------|---------------------|----------|---------|-------------|----------|----------|---------|---------------|-------|
| EQUIV. DIA. (Inches) | (Inches) | | MIN. THICK. (Inches) | | DIMENSIONS (Inches) | | | | | | | APPROX. SLOPE | BODY |
| | SPAN | RISE | STEEL | ALUM. | A (±1") | B (MAX.) | H (±1") | L (±1 1/2") | L1 (±1") | L2 (±1") | W (±2") | | |
| 15 | 17 | 13 | .064 | .060 | 7 | 9 | 6 | 19 | 14 | 16 | 30 | 2 1/2 to 1 | 1 Pc. |
| 18 | 21 | 15 | .064 | .060 | 7 | 10 | 6 | 23 | 14 | 19 3/8 | 36 | 2 1/2 to 1 | 1 Pc. |
| 21 | 24 | 18 | .064 | .060 | 8 | 12 | 6 | 28 | 18 | 21 3/4 | 42 | 2 1/2 to 1 | 1 Pc. |
| 24 | 28 | 20 | .064 | .060 | 9 | 14 | 6 | 32 | 18 | 27 1/2 | 48 | 2 1/2 to 1 | 1 Pc. |
| 30 | 35 | 24 | .079 | .075 | 10 | 16 | 6 | 39 | 18 | 37 5/8 | 60 | 2 1/2 to 1 | 1 Pc. |
| 36 | 42 | 29 | .079 | .075 | 12 | 18 | 8 | 46 | 24 | 45 3/8 | 75 | 2 1/2 to 1 | 1 Pc. |
| 42 | 49 | 33 | .109 | .105 | 13 | 21 | 9 | 53 | 24 | 54 3/4 | 85 | 2 1/2 to 1 | 2 Pc. |
| 48 | 57 | 38 | .109 | .105 | 18 | 26 | 12 | 63 | 24 | 68 | 90 | 2 1/2 to 1 | 3 Pc. |
| 54 | 64 | 43 | .109 | .105 | 18 | 30 | 12 | 70 | 24 | 72 3/4 | 102 | 2 1/4 to 1 | 3 Pc. |
| 60 | 71 | 47 | .109* | .105* | 18 | 33 | 12 | 77 | 30 | 82 1/4 | 114 | 2 1/4 to 1 | 3 Pc. |
| 66 | 77 | 52 | .109* | .105* | 18 | 36 | 12 | 77 | — | — | 126 | 2 to 1 | 3 Pc. |
| 72 | 83 | 57 | .109* | .105* | 18 | 39 | 12 | 77 | — | — | 138 | 2 to 1 | 3 Pc. |

| 3" X 1" CORRUGATIONS | | | | | | | | | | | | | |
|----------------------|----------|------|----------------------|-------|---------------------|----------|---------|-------------|----------|----------|---------|---------------|-------|
| EQUIV. DIA. (Inches) | (Inches) | | MIN. THICK. (Inches) | | DIMENSIONS (Inches) | | | | | | | APPROX. SLOPE | BODY |
| | SPAN | RISE | STEEL | ALUM. | A (±1") | B (MAX.) | H (±1") | L (±1 1/2") | L1 (±1") | L2 (±1") | W (±2") | | |
| 48 | 53 | 41 | .109 | .105 | 18 | 26 | 12 | 63 | 24 | 72 3/4 | 90 | 2 1/2 to 1 | 2 Pc. |
| 54 | 60 | 46 | .109 | .105 | 18 | 30 | 12 | 70 | 30 | 82 1/4 | 102 | 2 to 1 | 2 Pc. |
| 60 | 66 | 51 | .109* | .105* | 18 | 33 | 12 | 77 | — | — | 114 | 1 1/2 to 1 | 3 Pc. |
| 66 | 73 | 55 | .109* | .105* | 18 | 36 | 12 | 77 | — | — | 126 | 1 1/2 to 1 | 3 Pc. |
| 72 | 81 | 59 | .109* | .105* | 18 | 39 | 12 | 77 | — | — | 138 | 2 to 1 | 3 Pc. |
| 78 | 87 | 63 | .109* | .105* | 22 | 38 | 12 | 77 | — | — | 148 | 1 1/2 to 1 | 3 Pc. |
| 84 | 95 | 67 | .109* | .105* | 22 | 34 | 12 | 77 | — | — | 162 | 1 1/2 to 1 | 3 Pc. |
| 90 | 103 | 71 | .109* | .105* | 22 | 38 | 12 | 77 | — | — | 174 | 1 1/2 to 1 | 3 Pc. |
| 96 | 112 | 75 | .109* | .105* | 24 | 40 | 12 | 77 | — | — | 174 | 1 1/2 to 1 | 3 Pc. |

NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED. * EXCEPT CENTER PANEL SEE GENERAL NOTES

| REINFORCED CONCRETE PIPE ARCH | | | | | | | | | | |
|-------------------------------|---------------------|--------|-------|--------|----|----|-----|-----|--------|---------------|
| EQUIV. DIA. (Inches) | DIMENSIONS (Inches) | | | | | | | | | APPROX. SLOPE |
| | **SPAN | **RISE | T | A | B | C | D | E | | |
| 24 | 29 | 18 | 3 | 8 1/2 | 39 | 33 | 72 | 48 | 3 to 1 | |
| 30 | 36 | 22 | 3 1/2 | 9 1/2 | 50 | 46 | 96 | 60 | 3 to 1 | |
| 36 | 44 | 27 | 4 | 11 1/8 | 60 | 36 | 96 | 72 | 3 to 1 | |
| 42 | 51 | 31 | 4 1/2 | 15 1/8 | 60 | 36 | 96 | 78 | 3 to 1 | |
| 48 | 58 | 36 | 5 | 21 | 60 | 36 | 96 | 84 | 3 to 1 | |
| 54 | 65 | 40 | 5 1/2 | 25 1/2 | 60 | 36 | 96 | 90 | 3 to 1 | |
| 60 | 73 | 45 | 6 | 31 | 60 | 36 | 96 | 96 | 3 to 1 | |
| 72 | 88 | 54 | 7 | 31 | 60 | 39 | 99 | 120 | 2 to 1 | |
| 84 | 102 | 62 | 8 | 28 1/2 | 83 | 19 | 102 | 144 | 2 to 1 | |

| REINFORCED CONCRETE ELLIPTICAL PIPE | | | | | | | | | | |
|-------------------------------------|---------------------|--------|-------|--------|----|----|----|----|------------|---------------|
| EQUIV. DIA. (Inches) | DIMENSIONS (Inches) | | | | | | | | | APPROX. SLOPE |
| | **SPAN | **RISE | T | A | B | C | D | E | | |
| 24 | 30 | 19 | 3 1/4 | 8 1/2 | 39 | 33 | 72 | 48 | 3 to 1 | |
| 30 | 38 | 24 | 3 3/4 | 9 1/2 | 54 | 18 | 72 | 60 | 3 to 1 | |
| 36 | 45 | 29 | 4 1/2 | 11 1/8 | 60 | 24 | 84 | 72 | 2 1/2 to 1 | |
| 42 | 53 | 34 | 5 | 15 3/4 | 60 | 36 | 96 | 78 | 2 1/2 to 1 | |
| 48 | 60 | 38 | 5 1/2 | 21 | 60 | 36 | 96 | 84 | 2 1/2 to 1 | |
| 54 | 68 | 43 | 6 | 25 1/2 | 60 | 36 | 96 | 90 | 2 1/2 to 1 | |
| 60 | 76 | 48 | 6 1/2 | 30 | 60 | 36 | 96 | 96 | 2 1/2 to 1 | |

**NOMINAL SIZE

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.

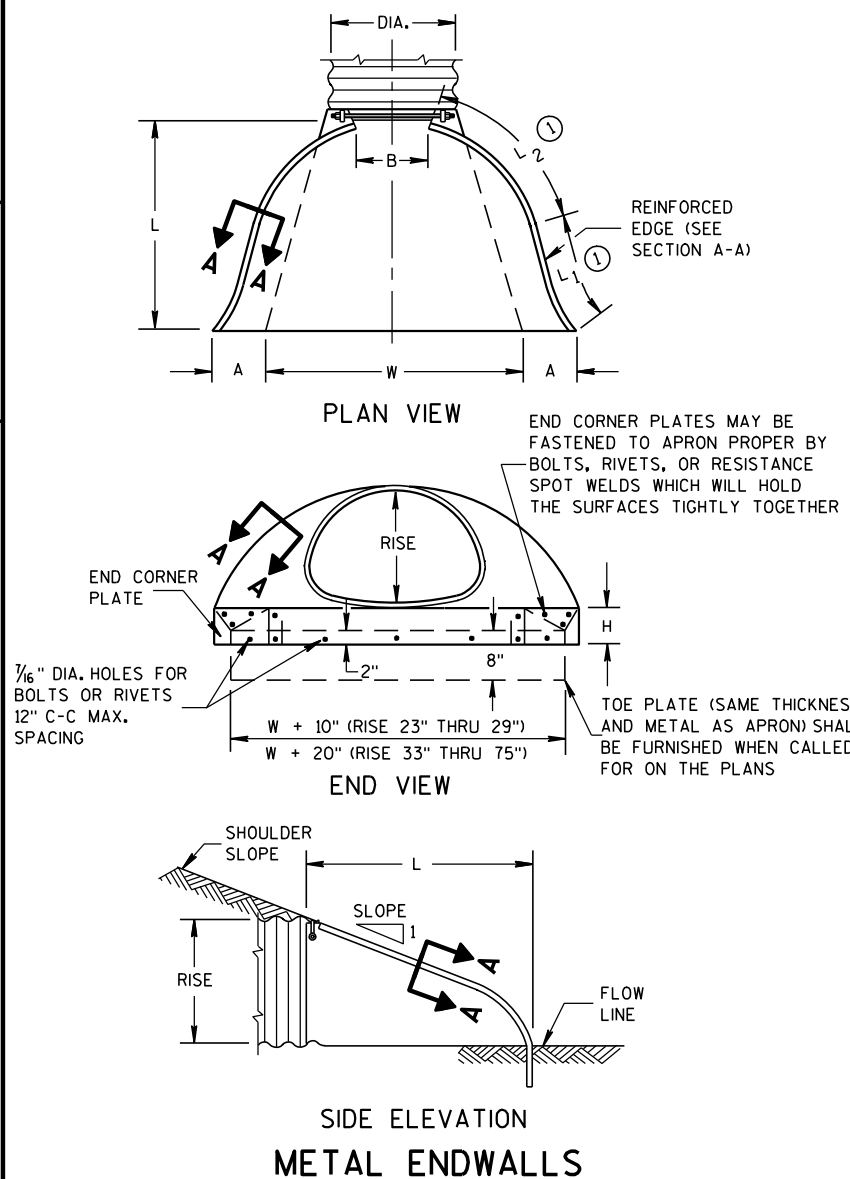
CONCRETE APRON ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM APRON ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE ARCH PERIMETER.

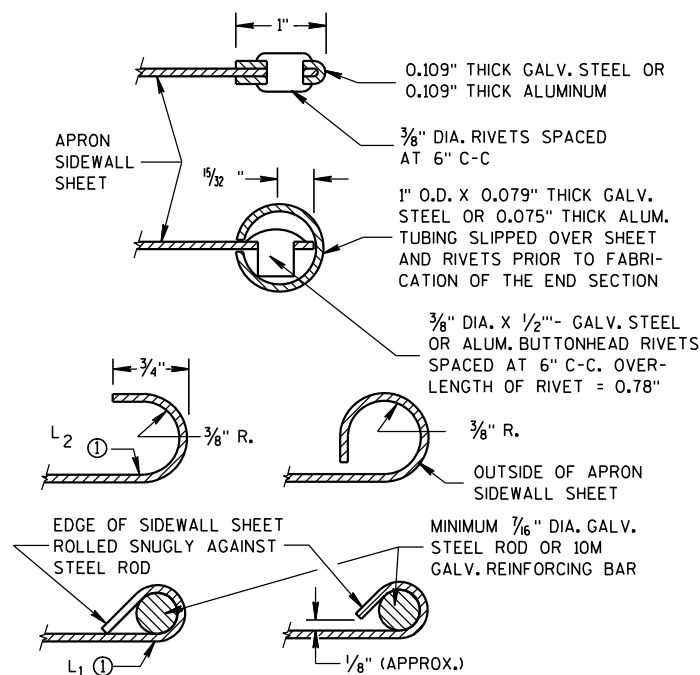
LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 77" X 52" THROUGH 112" X 75" APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE ARCH SIZES UP TO 73" X 55" A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.



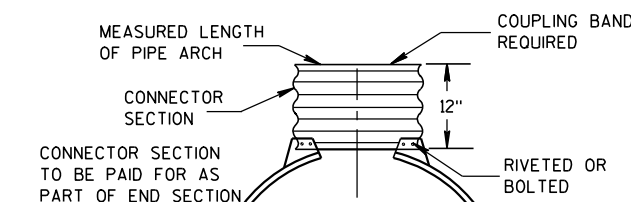
METAL ENDWALLS



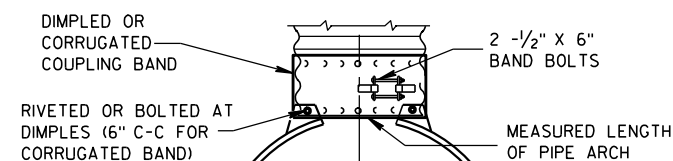
SECTION A-A



TYPE 2 FOR 17" X 13" THRU 112" X 75" PIPE ARCH



TYPE 3 FOR 64" X 43" THRU 112" X 75" PIPE ARCH



TYPE 5 ALTERNATE FOR: ALL SIZES CORRUGATED PIPE ARCHES

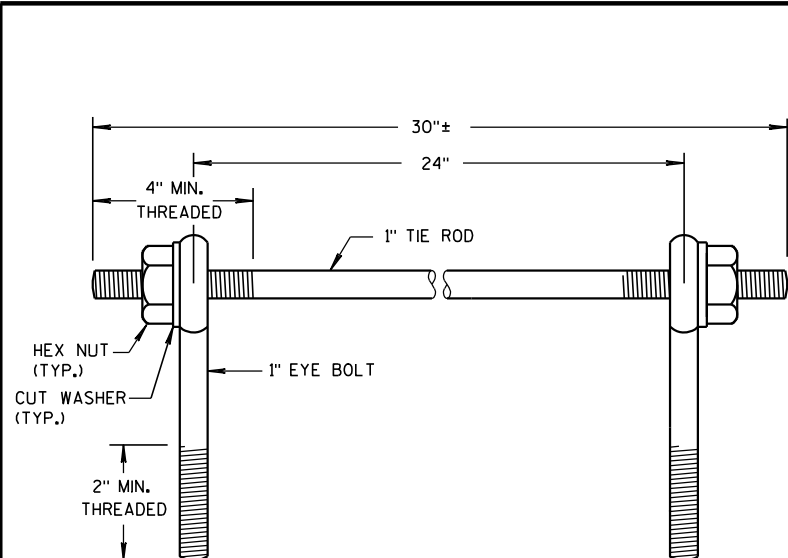
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL.

CONNECTION DETAILS

APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE

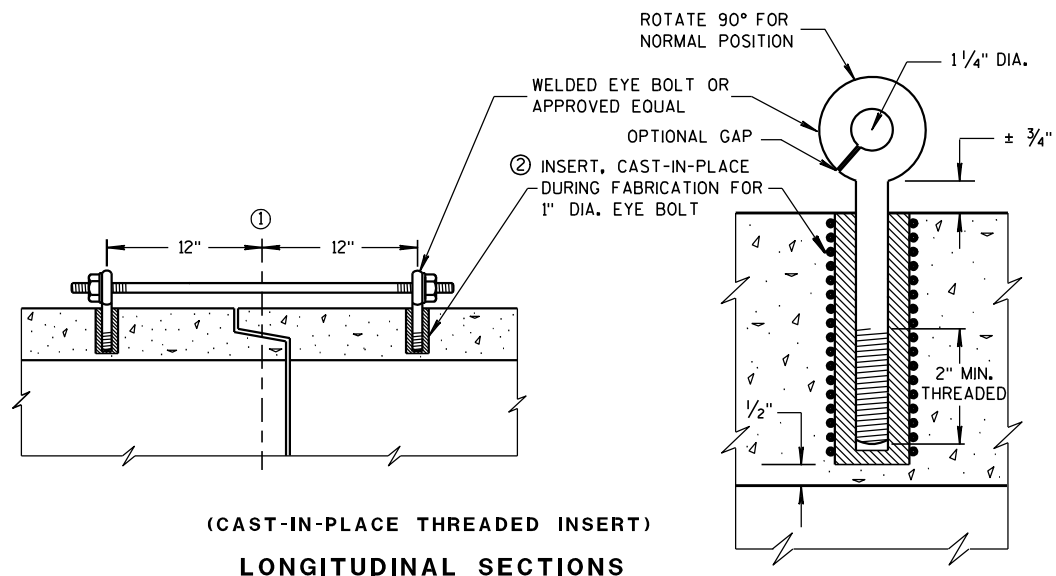
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94 /S/ Rory L. Rhinesmith
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



EYE BOLTS AND TIE ROD

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)



(CAST-IN-PLACE THREADED INSERT) LONGITUDINAL SECTIONS

GENERAL NOTES

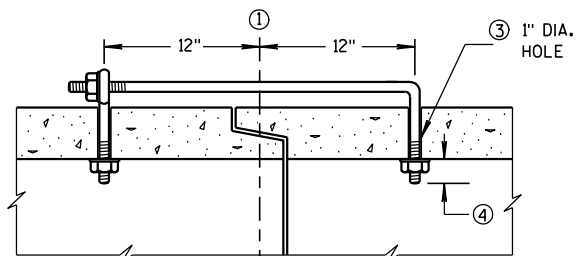
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT AND STORM SEWER PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED IN THE STANDARD SPECIFICATIONS AND THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT. THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE THE PIPE BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO THE PIPE AND APRON ENDWALLS IF REQUIRED.

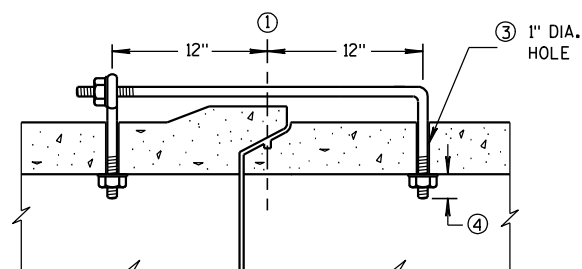
DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

- ① ϕ OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- ② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- ③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED 12 INCHES FROM ϕ OF TONGUE AND GROOVE.
- ④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.
- ⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.
- ⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.



(TONGUE & GROOVE PIPE)



(MODIFIED BELL PIPE) LONGITUDINAL SECTION

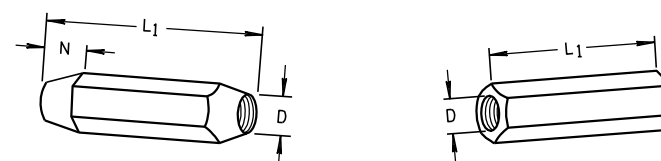
EYE BOLT DIMENSION TABLE

| PIPE SIZE | L = LENGTH | |
|------------|----------------------|--------------------|
| | TONGUE & GROOVE PIPE | MODIFIED BELL PIPE |
| 18" TO 24" | 4 1/2" | 6 1/4" |
| 30" | 5" | 7" |
| 36" | 5 1/2" | 7" |
| 42" | 6" | |
| 48" | 6 1/2" | |
| 60" | 7 1/2" | |
| 66" | 8" | |

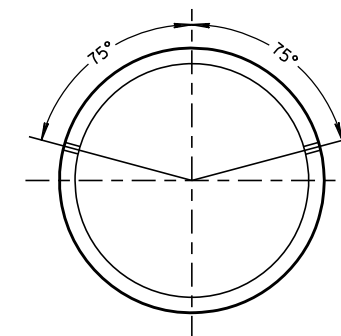
ADJUSTABLE TIE ROD TABLE

| PIPE DIAMETER | TIE ROD DIAMETER | D | L ₁ | N |
|---------------|------------------|-----|----------------|-------|
| 12-60 | 5/8 | 5/8 | 5 | 1/2 |
| 66-84 | 3/4 | 3/4 | 5 | 1/2 |
| 90-108 | 1 | 1 | 7 | 1 1/6 |

DIMENSIONS SHOWN ARE IN INCHES

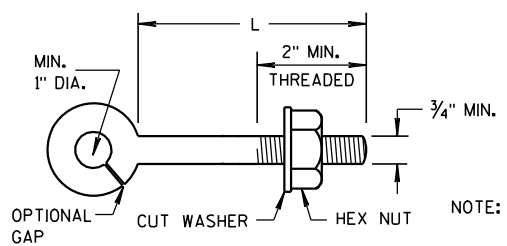


TAPERED PLAIN RIGHT AND LEFT THREADS SLEEVE NUTS



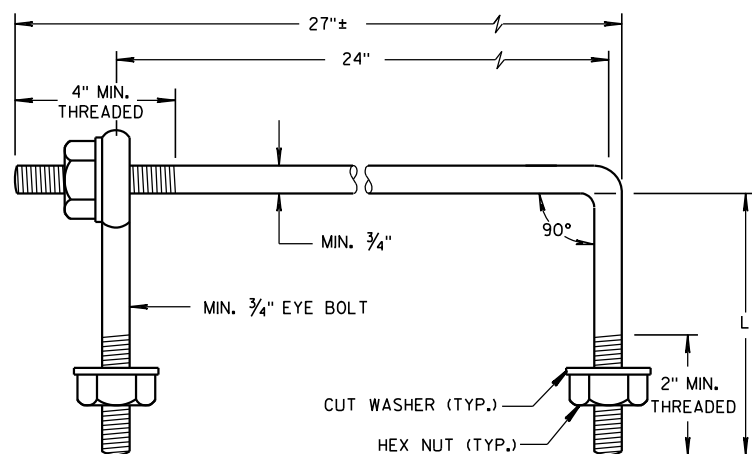
PLACEMENT OF (2) CAST-IN-PLACE INSERTS OR HOLES DURING FABRICATION FOR PIPE SECTIONS REQUIRING TIE RODS

TRANSVERSE SECTION



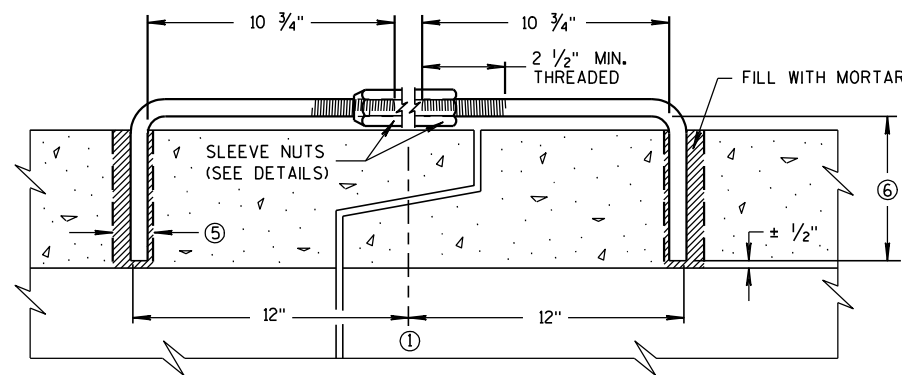
EYE BOLT

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



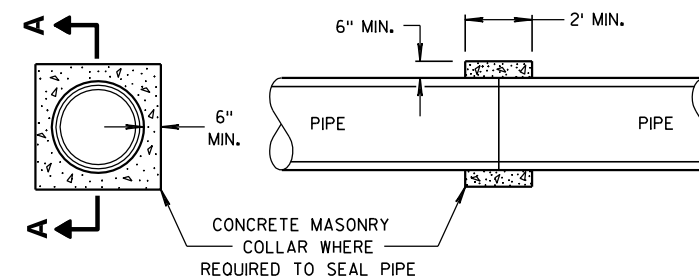
EYE BOLT AND TIE ROD

(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE) EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)



LONGITUDINAL SECTION

(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE) ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



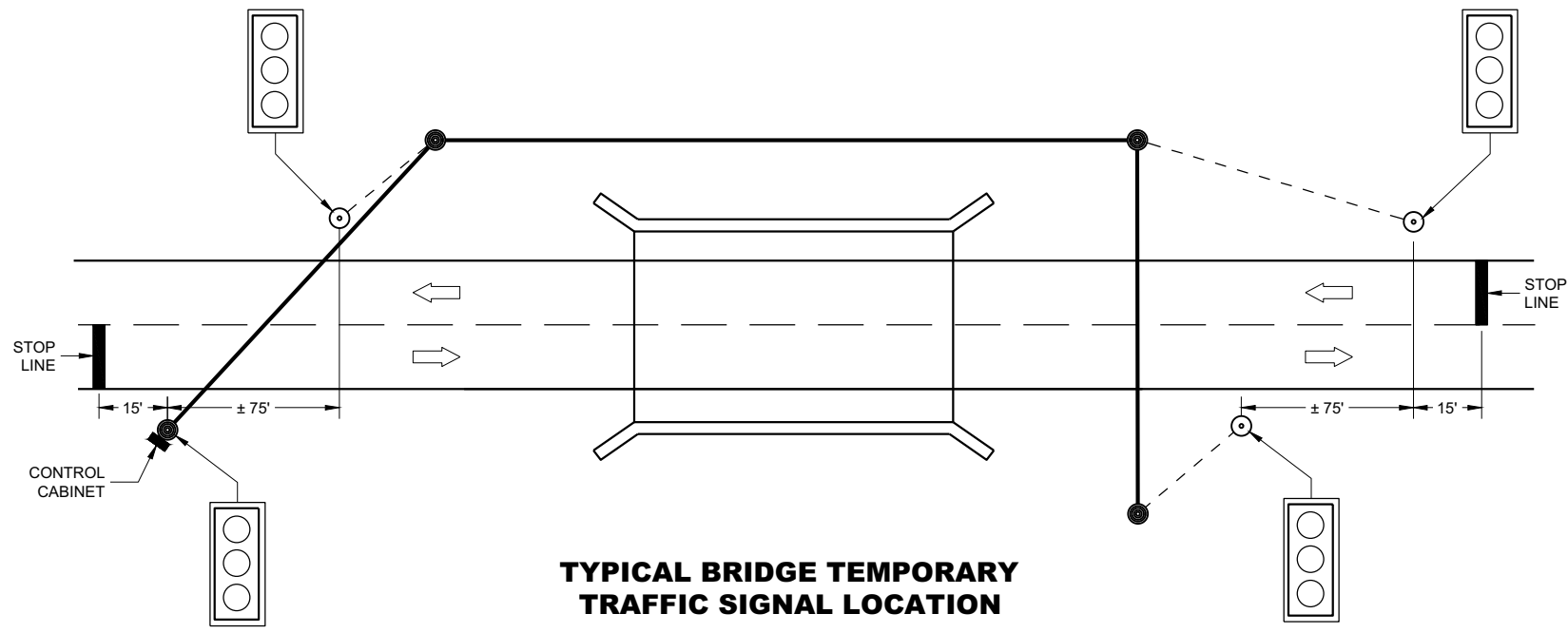
SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVED 6/5/2012 DATE /S/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER FHWA



TYPICAL BRIDGE TEMPORARY TRAFFIC SIGNAL LOCATION

LEGEND

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

GENERAL NOTES

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

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

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

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

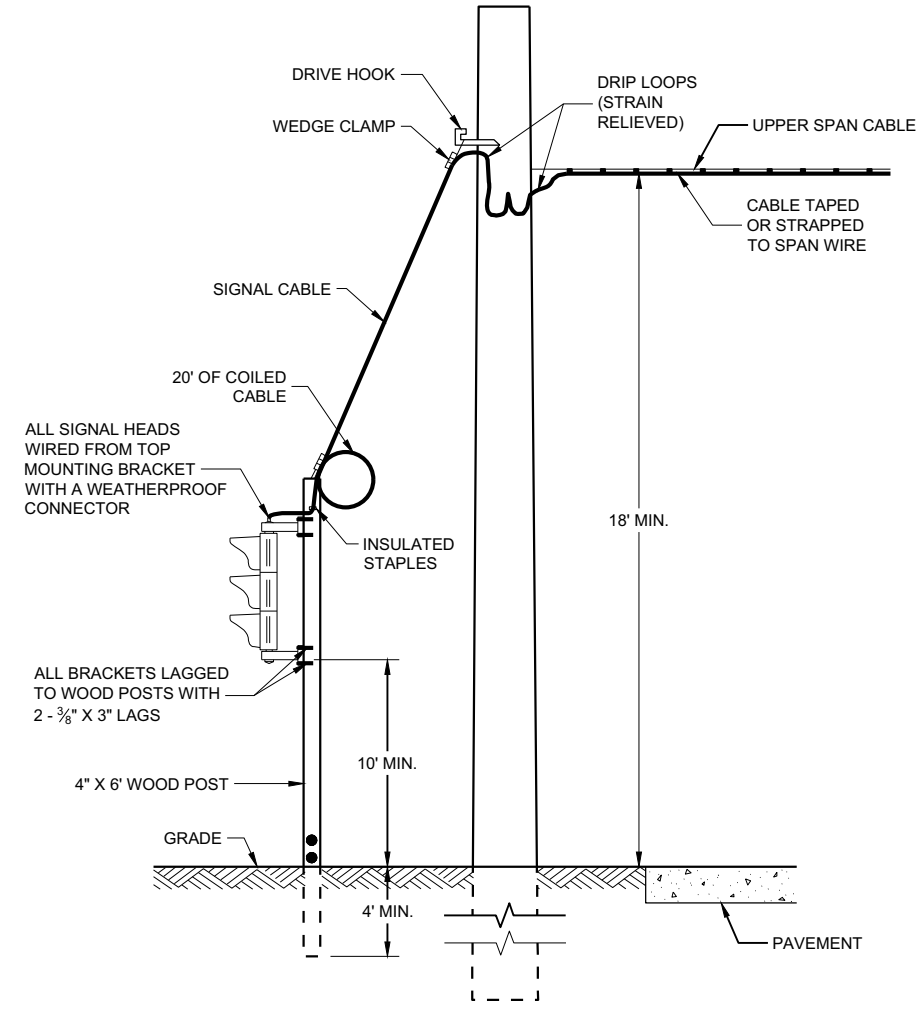
WOOD POSTS (BREAKAWAY) SHALL BE NO CLOSER THAN 2 FEET OUTSIDE OF SHOULDER.

VERTICAL CLEARANCE ETC. PER NEC.

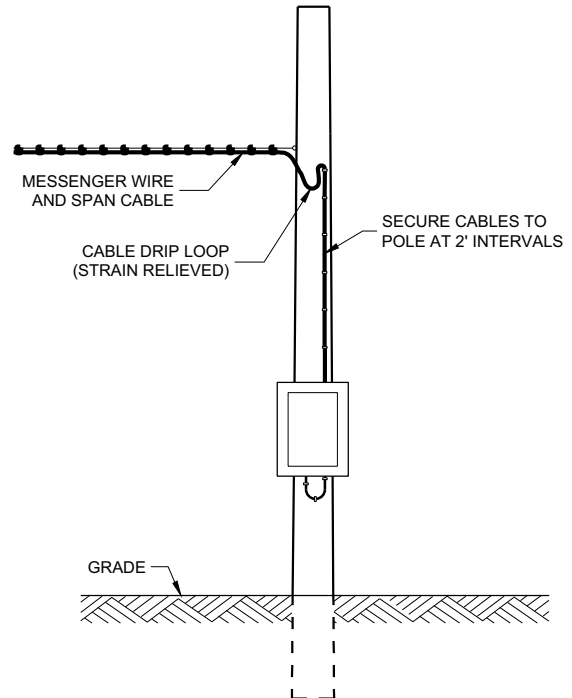
TRAFFIC SIGNAL FACES SHALL BE TYPICALLY PLACED 12 FEET FROM EDGE OF PAVEMENT.

EACH TRAFFIC SIGNAL SHALL HAVE A BACKPLATE.

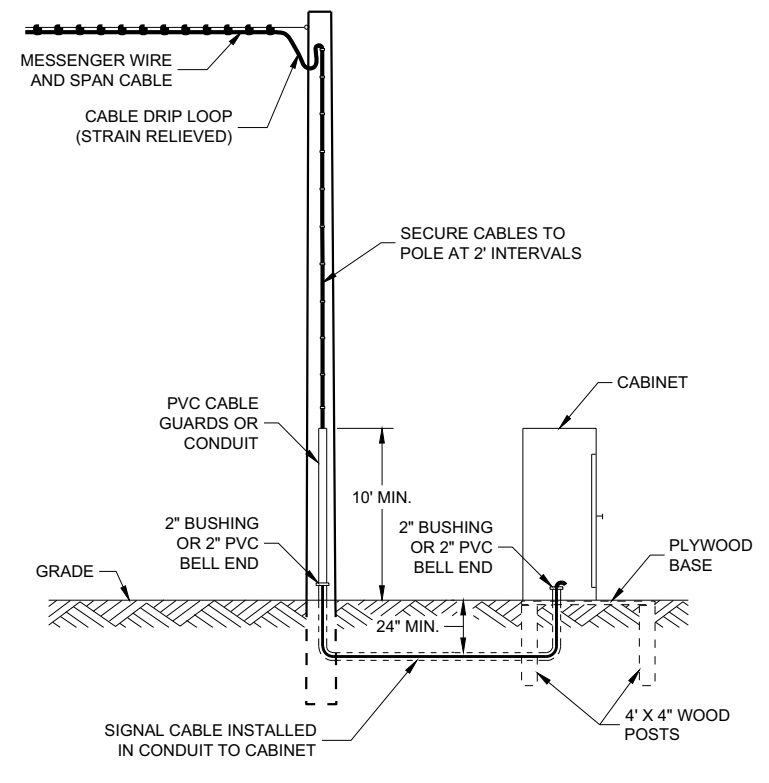
SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15D33.



TYPICAL DROP TO TRAFFIC SIGNAL FACE



POLE MOUNT CABINET INSTALLATION



GROUND MOUNT CABINET INSTALLATION

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

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

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

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

6

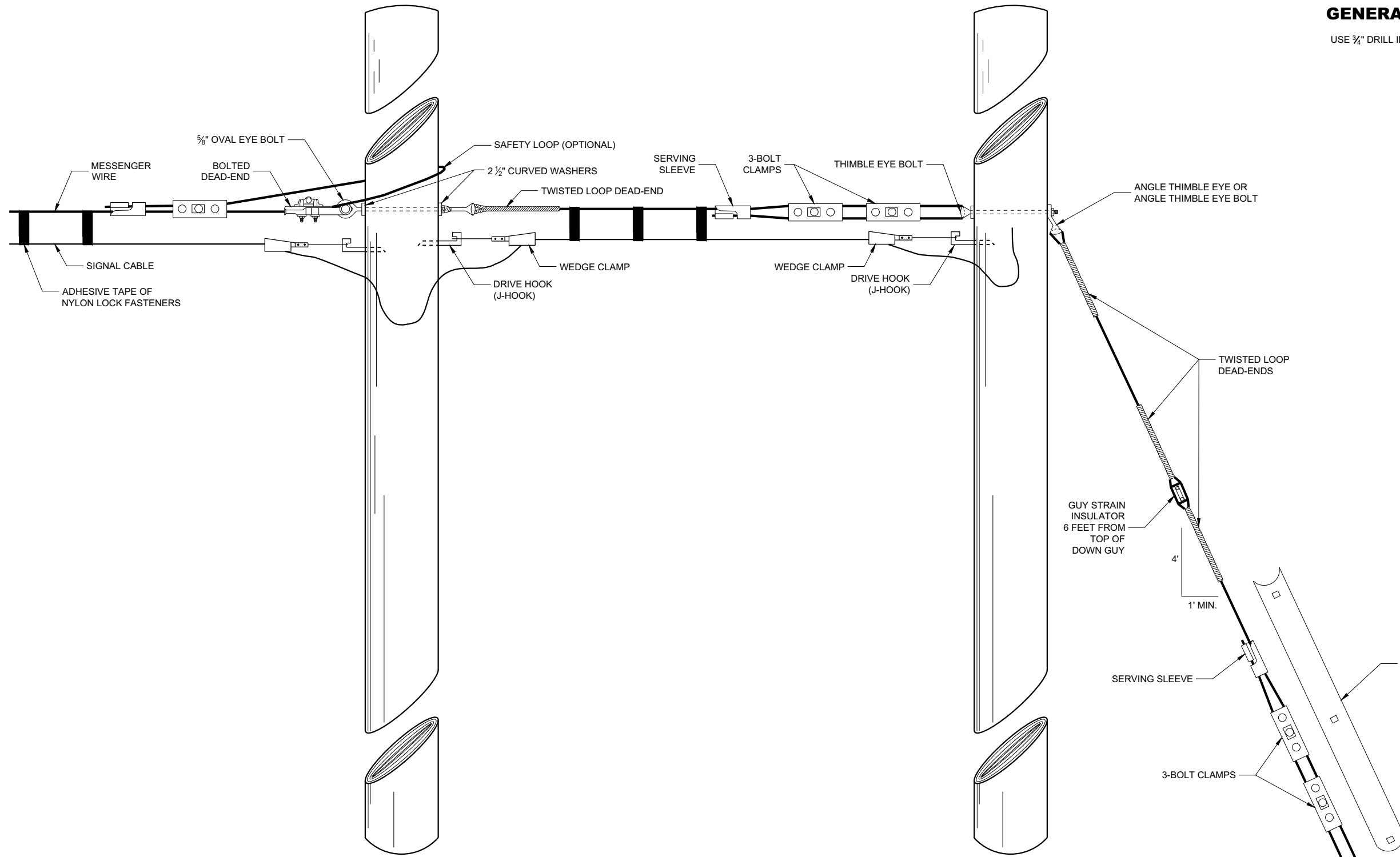
6

SDD09G02 - 05a

SDD09G02 - 05a

GENERAL NOTES

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



SPAN WIRE POLE

GUY POLE

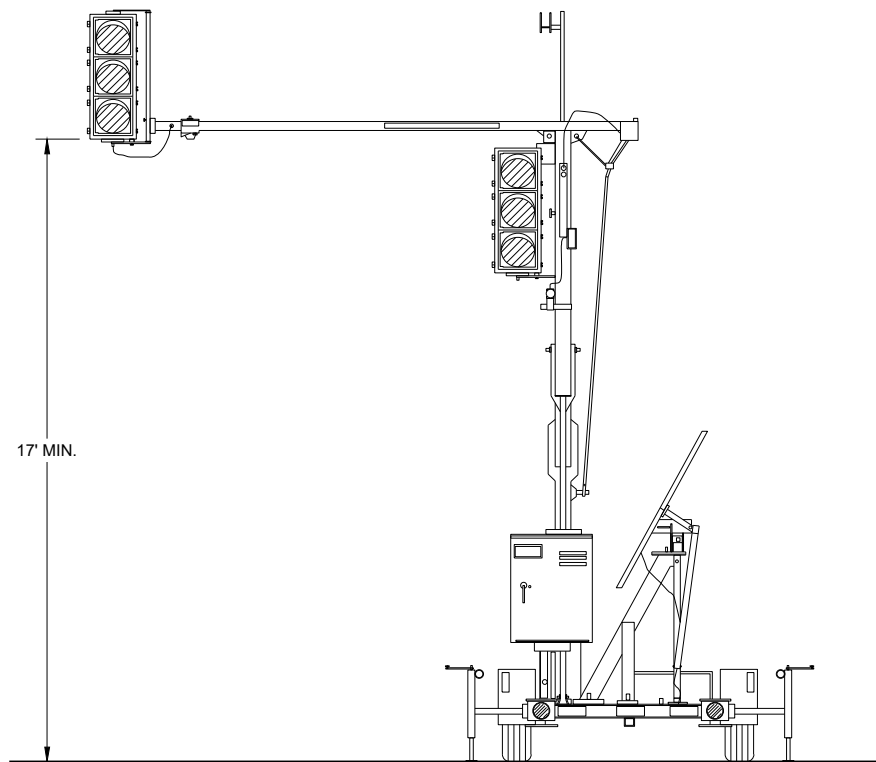
TYPICAL DEAD-ENDINGS OR GUYING

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

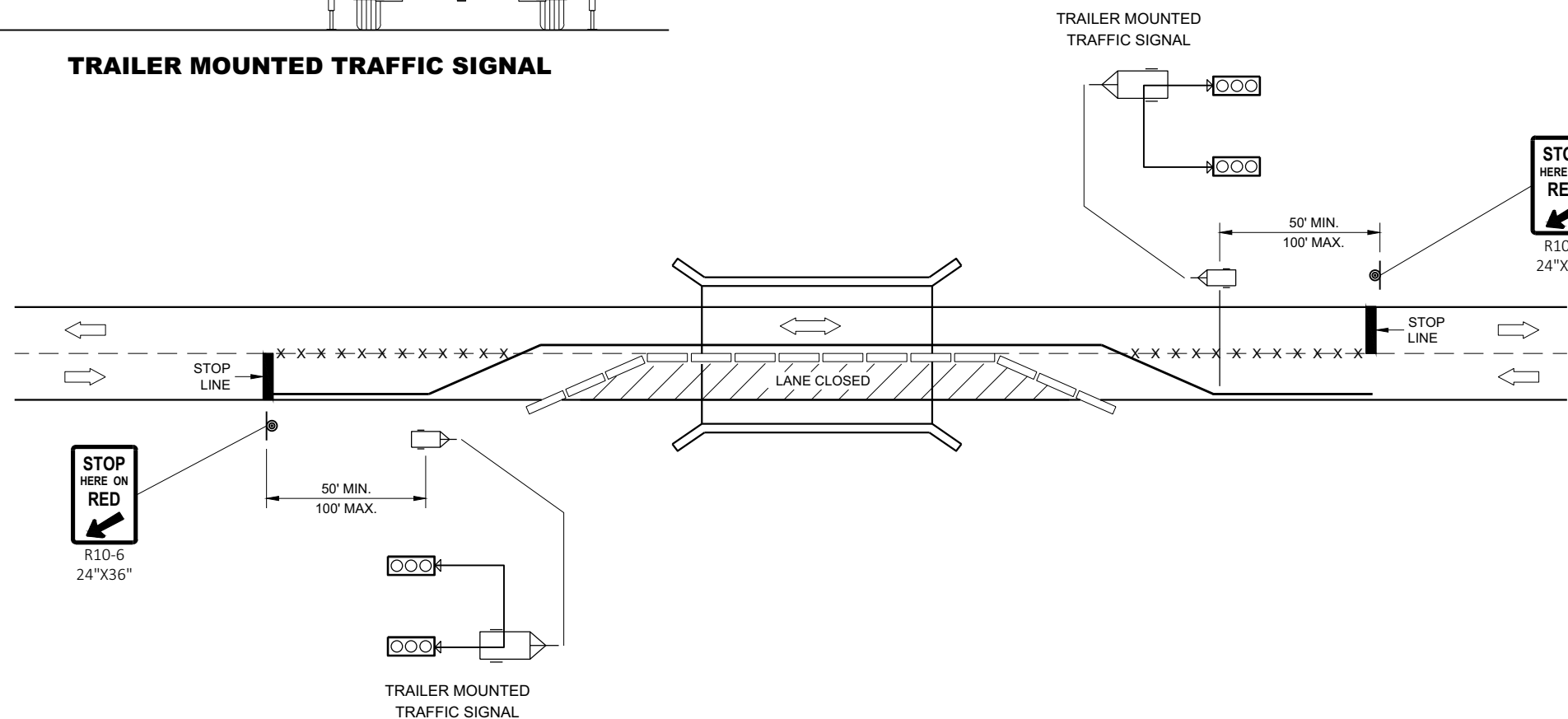


TRAILER MOUNTED TRAFFIC SIGNAL

GENERAL NOTES



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

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



TYPICAL TRAILER MOUNTED TRAFFIC SIGNAL LOCATION

LEGEND

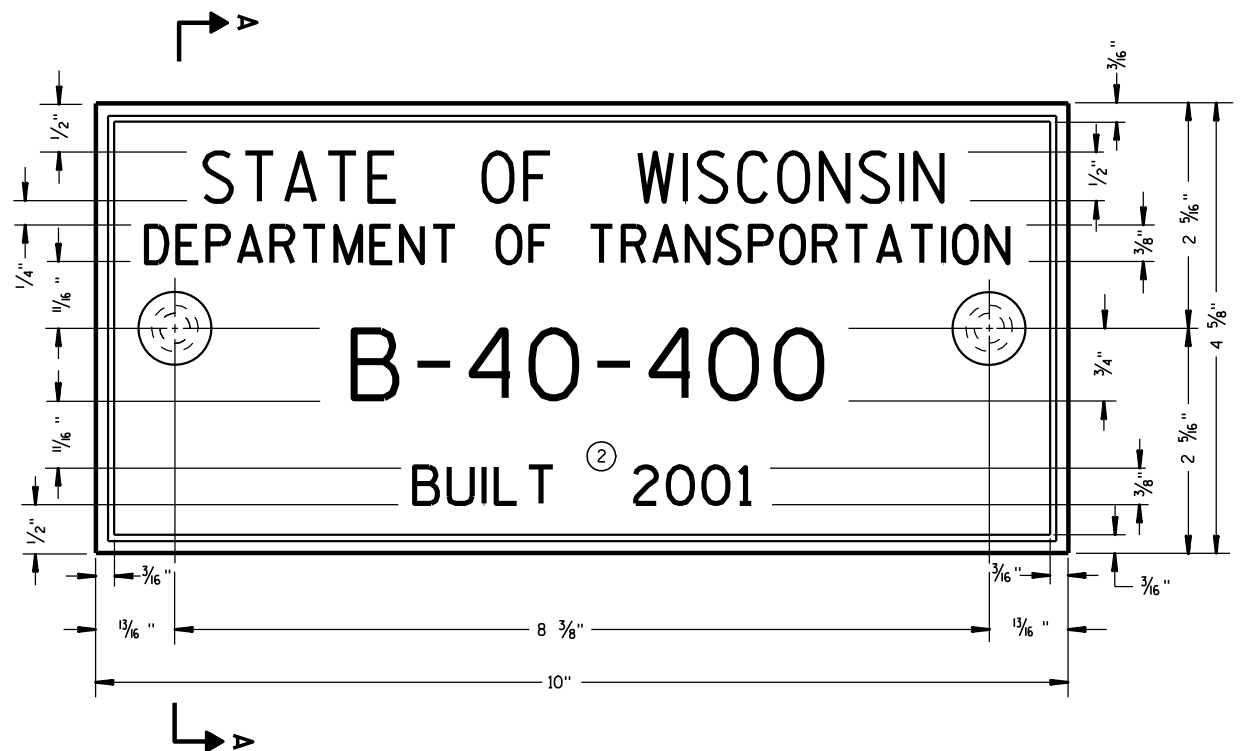
-  POST MOUNTED SIGN
-  TEMPORARY PRECAST CONCRETE BARRIER
-  TRAILER MOUNTED TRAFFIC SIGNAL
-  REMOVE PAVEMENT MARKINGS
-  DIRECTION OF TRAFFIC

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



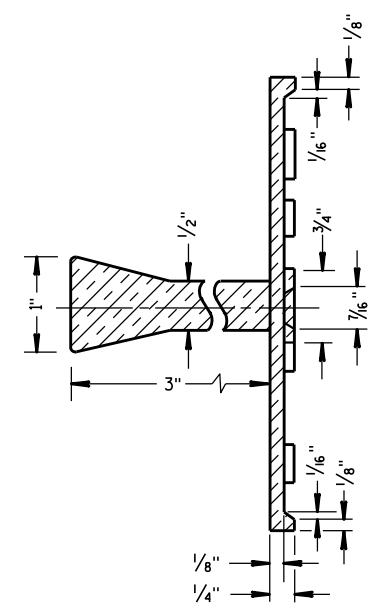
TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)

GENERAL NOTES

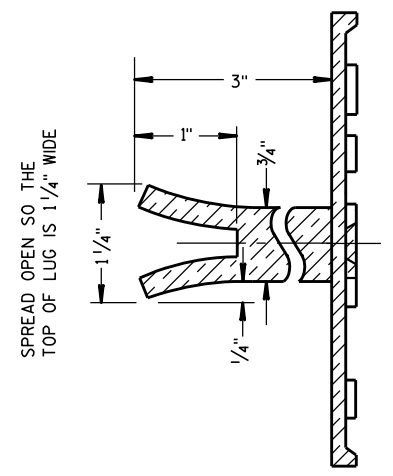
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

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



SECTION A-A



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

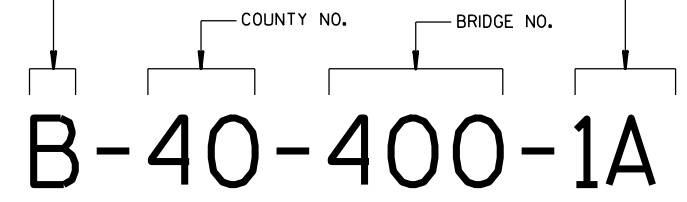
ALTERNATE LUG

6

6

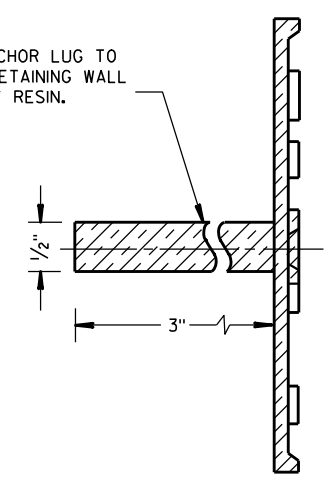
FOR MULTI-UNIT STRUCTURES
LINE 3 ABOVE SHALL READ

- B = BRIDGE
- C = CULVERT
- R = RETAINING WALL
- UNIT NO. FOR MULTIPLE UNIT BRIDGE



**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

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

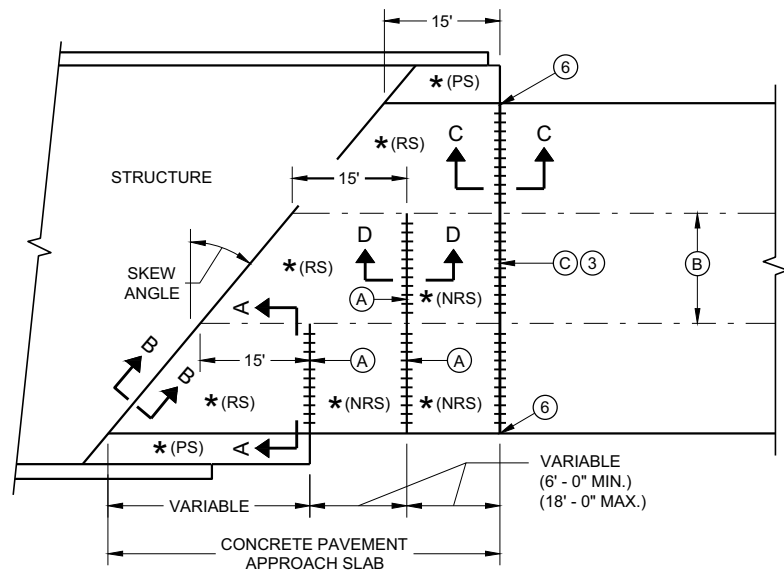


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

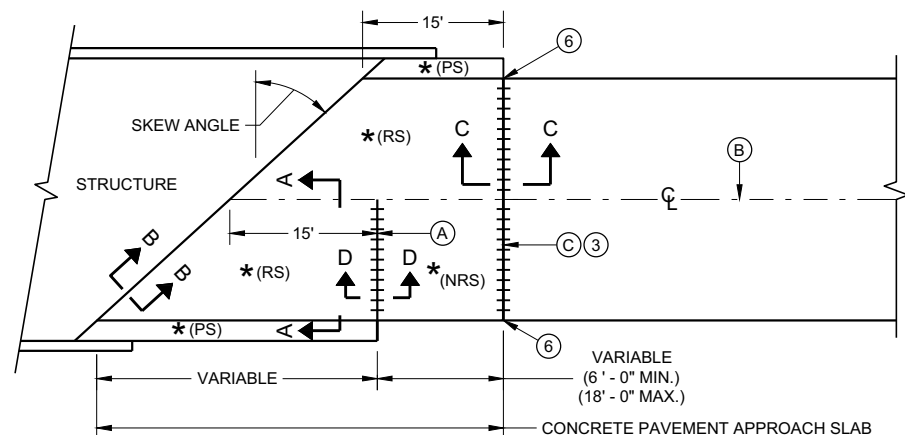
S.D.D. 12 A 3-10

S.D.D. 12 A 3-10

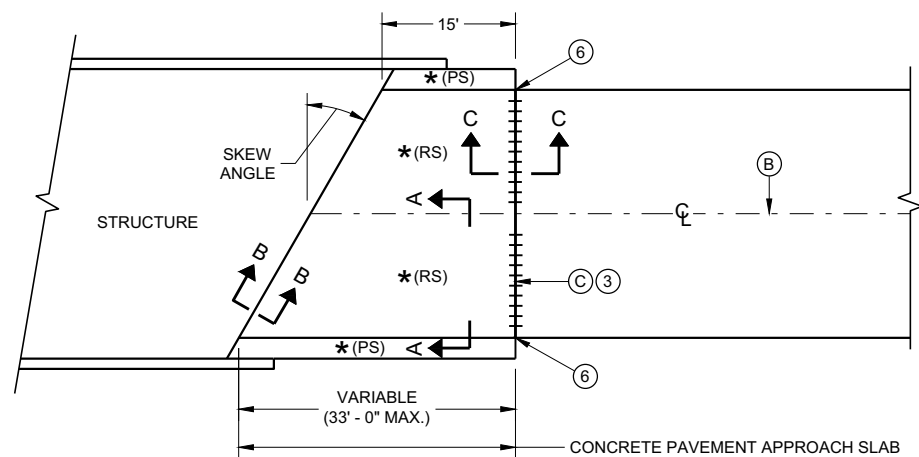
| | |
|----------------------------------------------------|----------------------------------------------------------|
| NAME PLATE (STRUCTURES) | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED DATE 3/26/10 | /S/ Scot Becker CHIEF STRUCTURAL DEVELOPMENT ENGINEER |
| FHWA | |



**SKewed Approach
(Pavement More Than Two Lanes)**

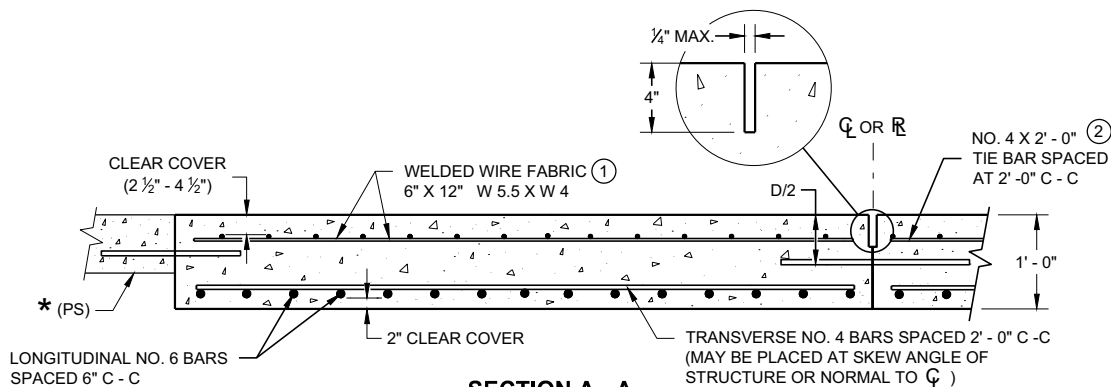


**Skews > 20°
(Pavement Width ≤ 30')**

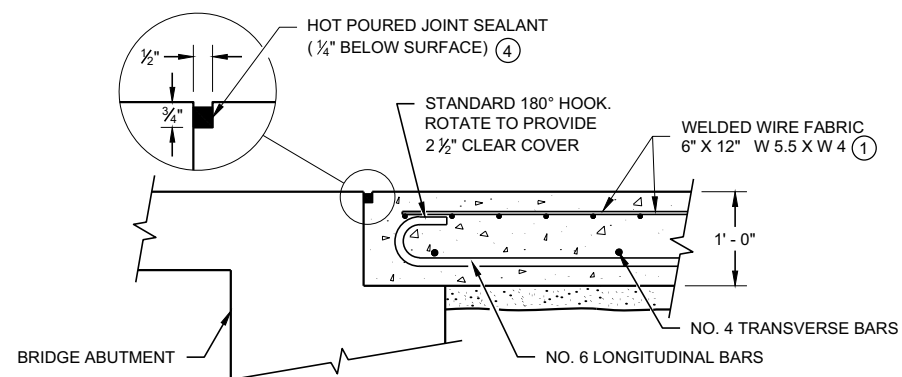


**Skews ≤ 20°
(Pavement Width ≤ 30')**
Approach Slab and Adjacent Pavement

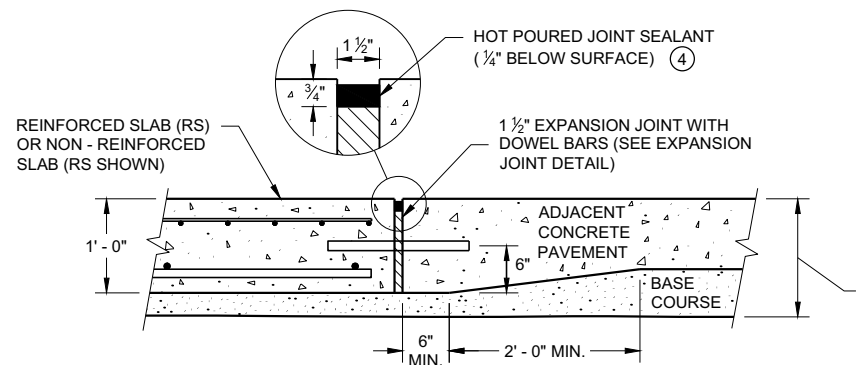
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



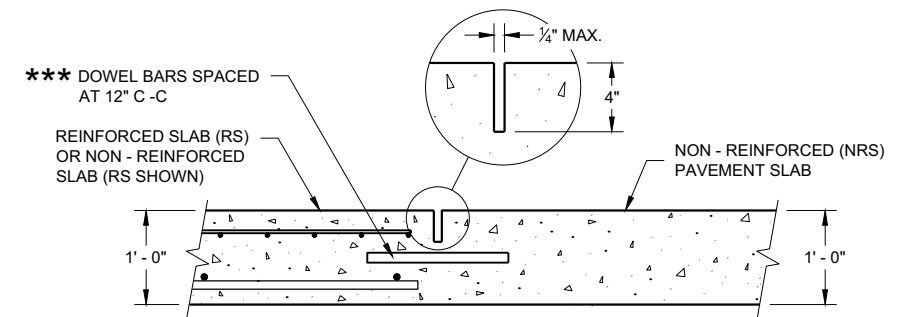
**SECTION B - B
BEND DETAIL
BOTTOM REINFORCEMENT**



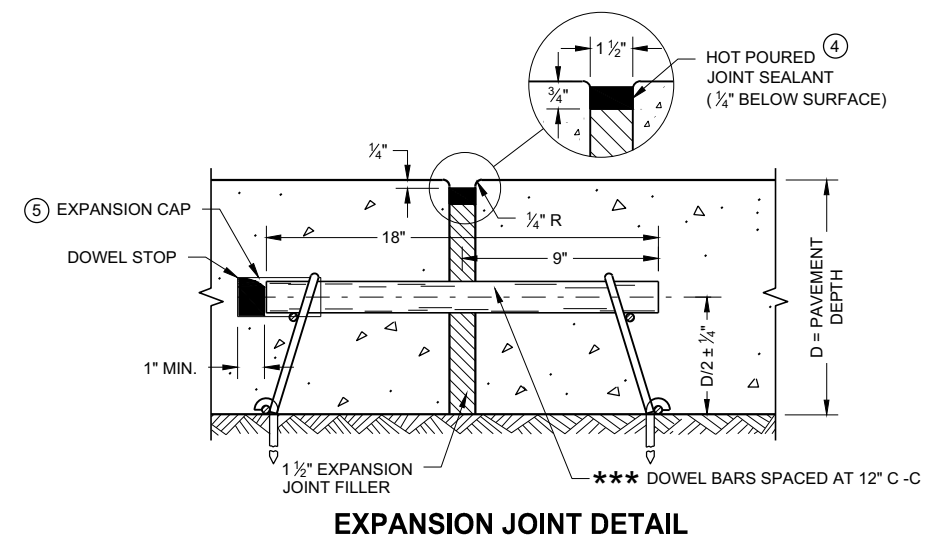
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

- THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.
- TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.
- ① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2' - 0" C - C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
 - ② THE CONTRACTOR MAY OMIT THE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
 - ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
 - ④ USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
 - ⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.
 - ⑥ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
 - (A) STANDARD CONTRACTION JOINT NORMAL TO \bar{C} OR \bar{R} .
 - (B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
 - (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO \bar{C} OR \bar{R} .



**SECTION D - D
CONTRACTION JOINT**



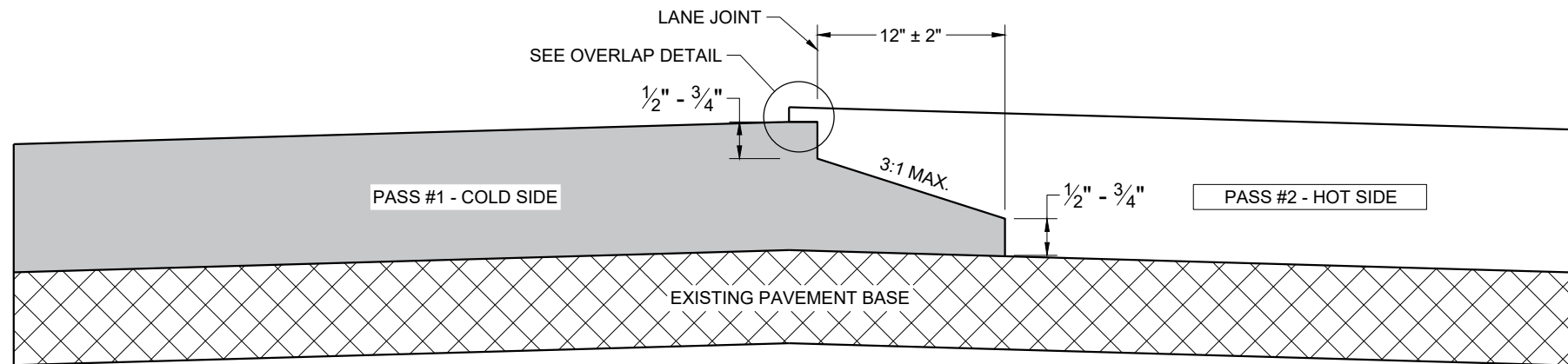
EXPANSION JOINT DETAIL

**CONCRETE PAVEMENT
APPROACH SLAB**

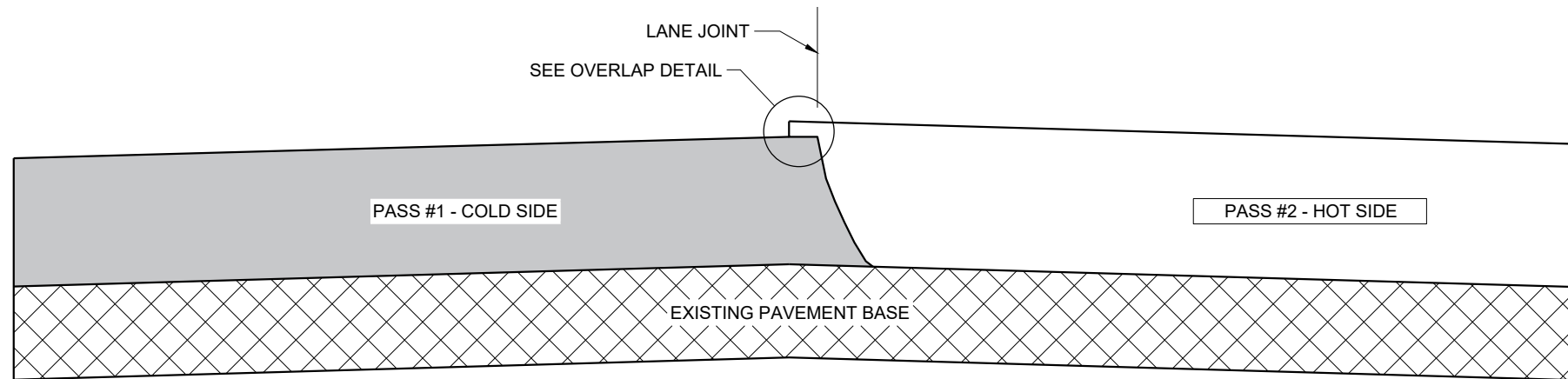
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

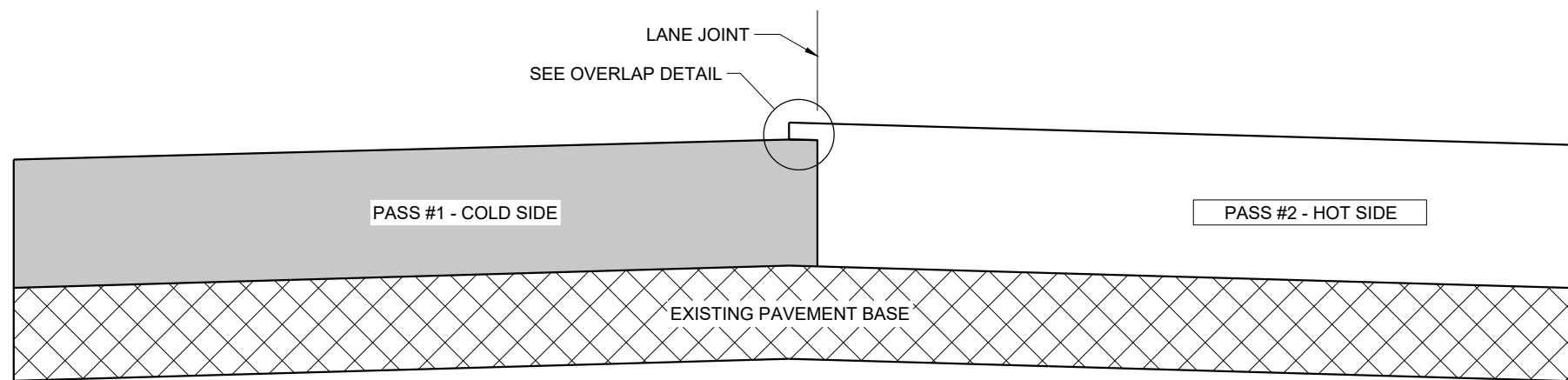
FHWA



**TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT**



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

GENERAL NOTES

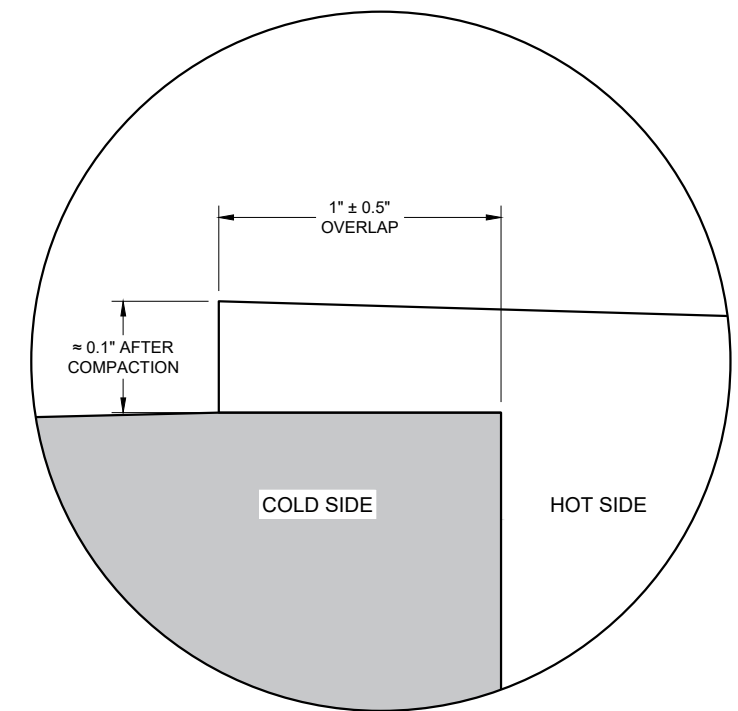
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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



OVERLAP DETAIL (TYPICAL)

6

6

SDD 13C19 - 03

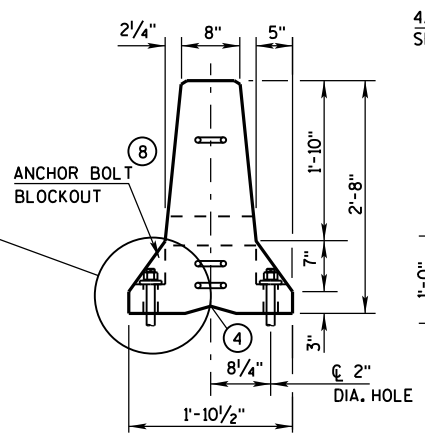
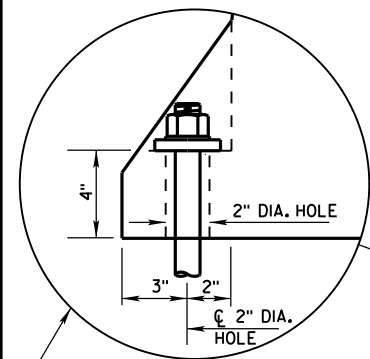
SDD 13C19 - 03

HMA LONGITUDINAL JOINTS

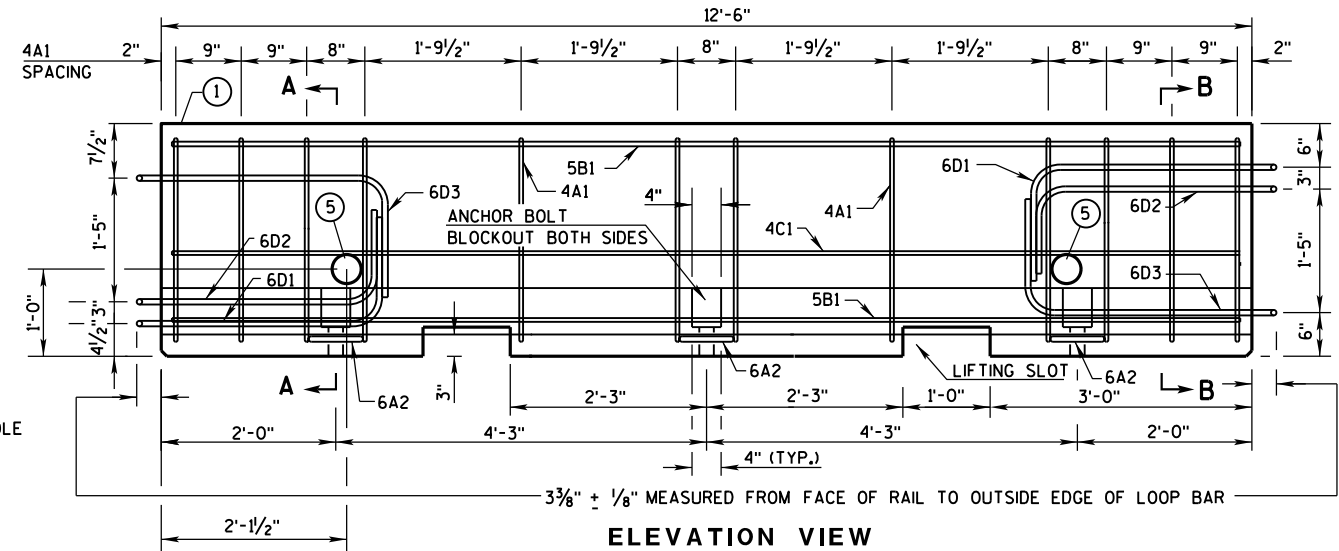
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2020 DATE /S/ Steven Hefel
HMA PAVEMENT ENGINEER

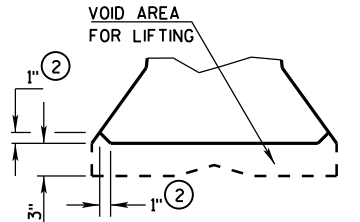
FHWA



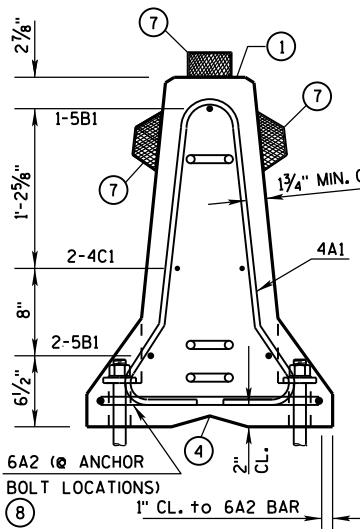
END VIEW



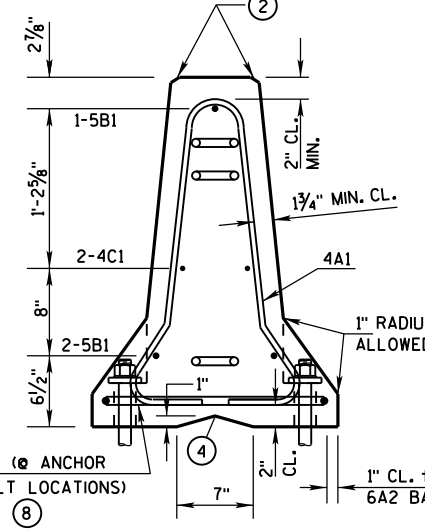
ELEVATION VIEW



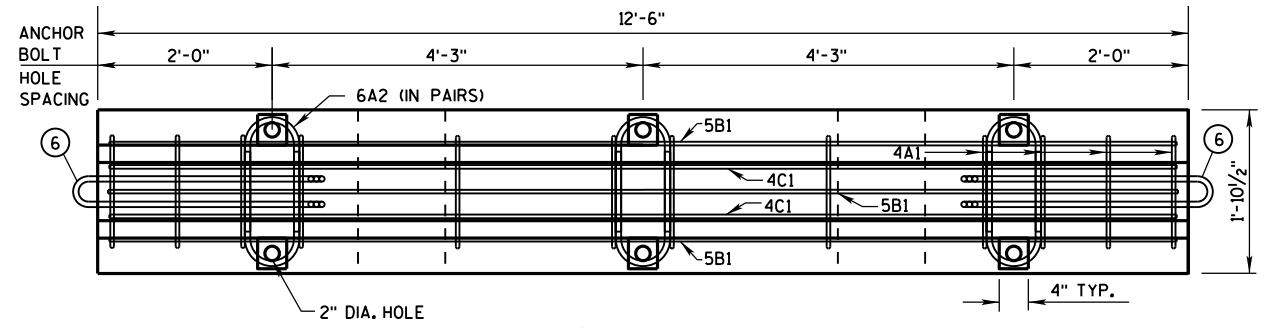
DETAIL "B"
LIFTING SLOT DETAIL



SECTION A-A
(STIRRUP PLACEMENT)



SECTION B-B
(STIRRUP PLACEMENT)



PLAN VIEW

DETAILS OF BARRIER SECTION

GENERAL NOTES

THESE GENERAL NOTES APPLY TO SHEETS 14B7-15(d) THRU 14B7-15(i).

DO NOT INTERMIX CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" (CBTP12.5) WITH OTHER TEMPORARY CONCRETE BARRIERS.

USE ASTM A-615, GRADE 60, DEFORMED STEEL BARS FOR BARS 4A1, 6A2, 5B1 AND 4C1 IN THE BARRIER SECTION AND FOR 4V1, 4V2, 4V3, 4V4, 4V5, 4V6, 4F1, 4F2 AND 5F3 IN THE BARRIER TAPER SECTION.

LOOP BARS 6D1, 6D2 AND 6D3 SHALL BE 3/4" SMOOTH STEEL BARS WITH A MINIMUM YIELD STRENGTH OF 60 KSI, A TENSILE STRENGTH OF NOT LESS THAN 1.25 TIMES THE YIELD STRENGTH BUT A MINIMUM OF 80 KSI, A MINIMUM 14% ELONGATION IN 8 INCHES AND PASSING A 180 DEGREE BEND TEST USING A 3-1/2" PIN BEND DIAMETER FOR BEND TESTS. THE LOOPS SHALL BE INSTALLED WITHIN 1/8" OF THE PLAN DIMENSION.

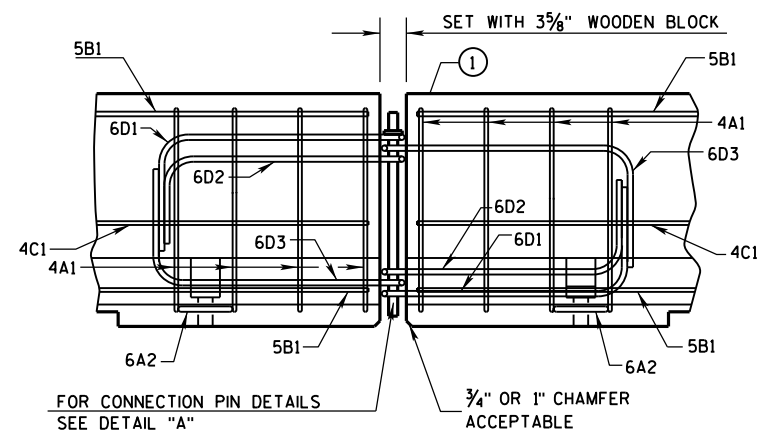
CONSTRUCT LIFTING SLOTS AS SPECIFIED ON THE PLANS TO FACILITATE THE DRAINAGE OF WATER AFTER INSTALLATION.

PLACE BARRIER ON A PAVED SURFACE. REMOVE ALL LOOSE DIRT AND SAND FROM THE ROADWAY SURFACE PRIOR TO PLACEMENT OF THE BARRIER.

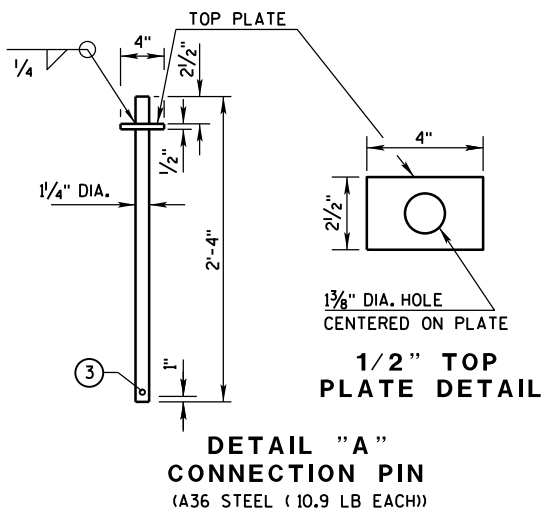
INSTALL MECHANICAL OR ADHESIVE ANCHORS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MANUFACTURER'S INFORMATION TO PROJECT ENGINEER.

- ① MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
 - a. TYPE: WICBTP
 - b. MANUFACTURER
 - c. DATE MANUFACTURED (MONTH AND YEAR)
- ② 1" CHAMFER TO PREVENT SPALLING.
- ③ A 3/8" HOLE IN THE CONNECTION PIN, AT THE LOCATION SHOWN, IS ACCEPTABLE, BUT NOT REQUIRED..
- ④ "V" NOTCH IS OPTIONAL.
- ⑤ THE 4" DIAMETER, 11 GAUGE STEEL, ROUND MECHANICAL TUBING SLEEVE FOR LIFTING (OPTIONAL).
- ⑥ NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.
- ⑦ USE DELINEATORS CONFORMING TO SECTION 633 OF THE STANDARD SPECIFICATIONS. CONTRACTOR MAY USE ALTERNATE SHAPES AND HOUSING. INSTALL DELINEATORS ACCORDING TO MANUFACTURER'S INSTRUCTION. INSTALL YELLOW REFLECTORS WHEN BARRIER IS LOCATED TO THE LEFT OF TRAFFIC AND WHITE REFLECTORS WHEN BARRIER IS LOCATED TO THE RIGHT OF TRAFFIC. SPACE DELINEATORS A MAXIMUM OF 25 FEET APART. PROVIDE TOP MOUNTED DELINEATORS IN ADDITION TO THE SIDE MOUNTED DELINEATORS ON ALL BARRIER INSTALLATIONS LOCATED ON A CURVED ALIGNMENT LONGER THAN 200 FEET AND ON BARRIERS USED TO SEPARATE OPPOSING TRAFFIC.
- ⑧ SEE SHEET D FOR HOW TO ANCHOR BARRIER. SEE SHEET E FOR WHEN TO ANCHOR BARRIER.
- ⑨ 1" CHAMFER OPTIONAL.

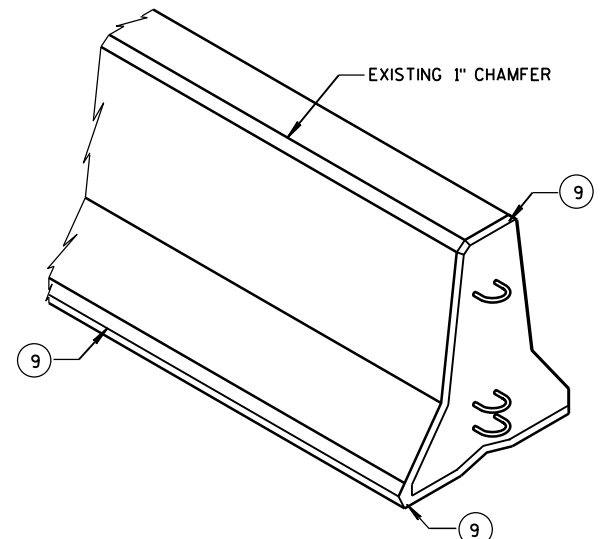
f'c = 4,000 psi



DETAILS OF BARRIER CONNECTION



DETAIL "A"
CONNECTION PIN
(A36 STEEL (10.9 LB EACH))



CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

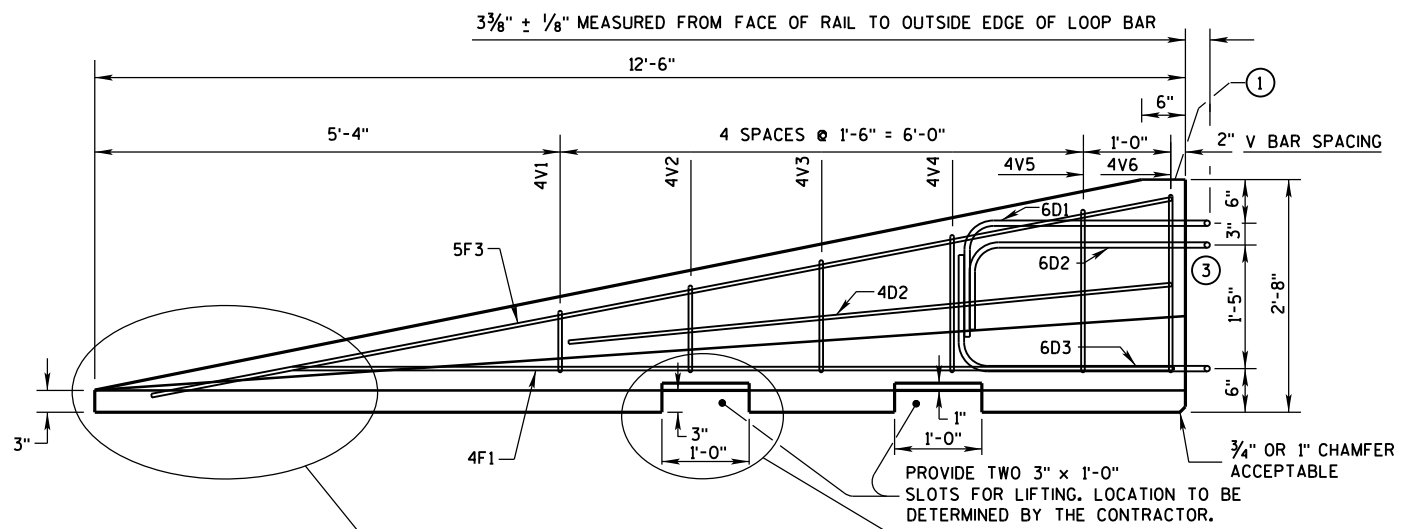
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

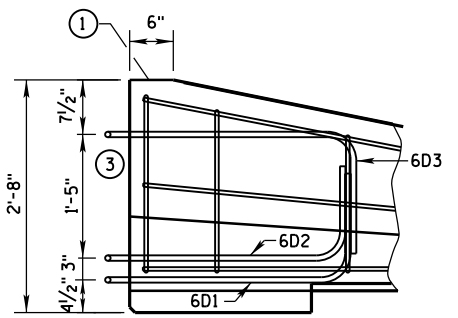
6

S.D.D. 14 B 7-15a

S.D.D. 14 B 7-15a



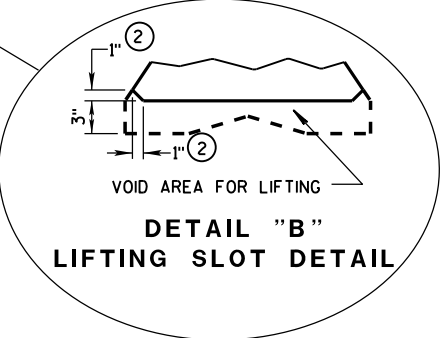
SIDE ELEVATION
(FOR CONNECTION TO LEFT END OF BARRIER)



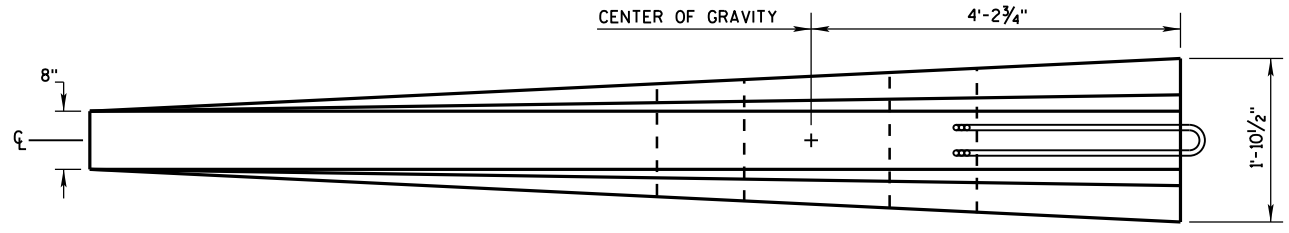
SIDE ELEVATION
LOOP BAR ASSEMBLY INVERTED
FOR OPPOSITE END.
(FOR CONNECTION TO RIGHT END OF BARRIER)

GENERAL NOTES

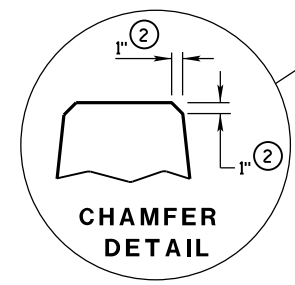
- ① MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
a. TYPE WICBTP
b. MANUFACTURER
c. DATE MANUFACTURED (MONTH AND YEAR)
- ② 1" CHAMFER TO PREVENT SPALLING.
- ③ NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.



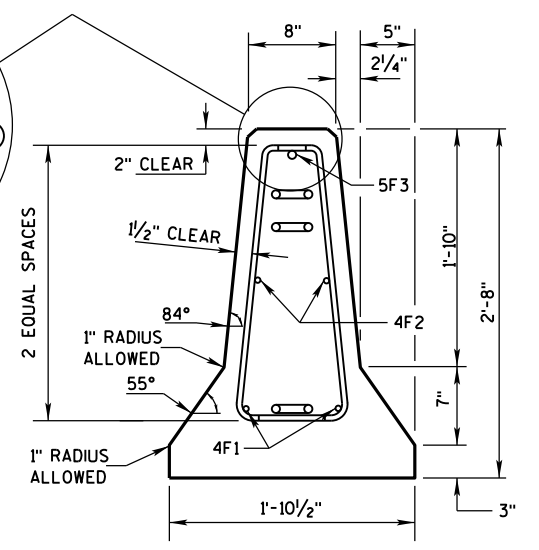
DETAIL "B"
LIFTING SLOT DETAIL



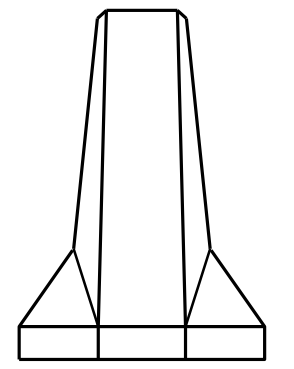
PLAN VIEW



CHAMFER DETAIL

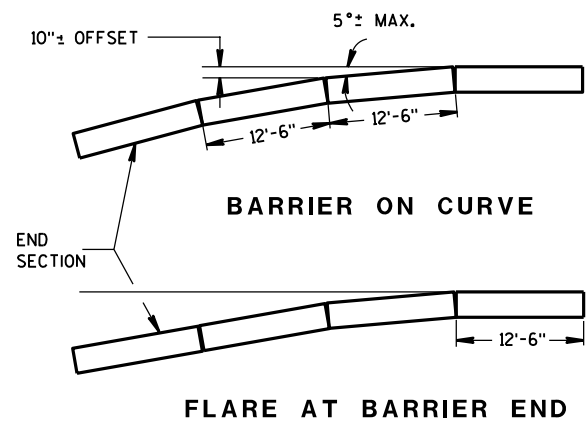


END SECTION



FRONT ELEVATION

DETAILS OF BARRIER TAPER SECTION



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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

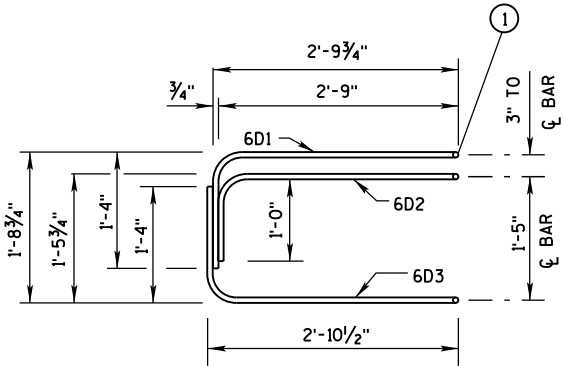
GENERAL NOTES

① NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

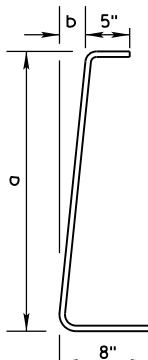
**BARRIER TAPER SECTION
BILL OF MATERIALS**
(PER 12'-6" BARRIER TAPER SECTION)

| BAR | BAR SIZE | NO. OF BARS | LENGTH FT. |
|-----|----------|-------------|------------|
| 4V1 | 4 | 2 | 1'-11" |
| 4V2 | 4 | 2 | 2'-2" |
| 4V3 | 4 | 2 | 2'-6" |
| 4V4 | 4 | 2 | 2'-9" |
| 4V5 | 4 | 2 | 3'-2" |
| 4V6 | 4 | 2 | 3'-4" |
| 4F1 | 4 | 2 | 12'-0" |
| 4F2 | 4 | 2 | 7'-6" |
| 5F3 | 5 | 1 | 11'-9" |

| LOOP ASSEMBLY | | | |
|---------------|---|---|-------|
| 6D1 | 6 | 1 | 8'-5" |
| 6D2 | 6 | 1 | 7'-7" |
| 6D3 | 6 | 1 | 8'-6" |

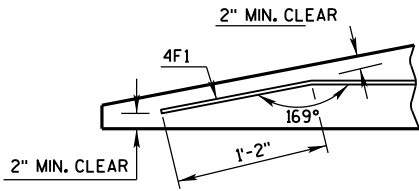


**ELEVATION
LOOP BAR ASSEMBLY**



| BAR | a | b |
|-----|-----------|--------|
| V1 | 10" | 1" |
| V2 | 1'-1" | 1 1/4" |
| V3 | 1'-5" | 1 5/8" |
| V4 | 1'-8" | 1 7/8" |
| V5 | 2'-0 1/2" | 2 3/8" |
| V6 | 2'-3" | 2 3/4" |

4V BARS
2 AT EACH SIZE REQUIRED
FOR STIRRUP ASSEMBLY



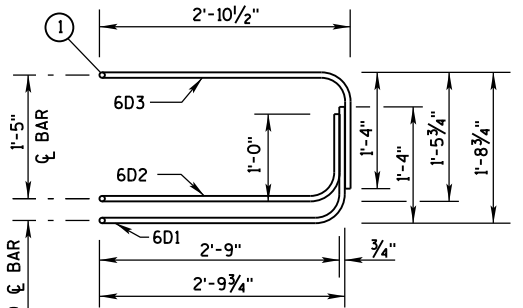
**DETAIL "C"
BENT BAR DETAIL**

TAPER BARRIER SECTION

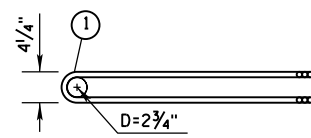
**BARRIER SECTION
BILL OF MATERIALS**
(PER 12'-6" BARRIER SECTION)

| BAR | BAR SIZE | NO. OF BARS | LENGTH FT. |
|-----|----------|-------------|------------|
| 4A1 | 4 | 12 | 6'-0" |
| 6A2 | 6 | 6 | 2'-11" |
| 5B1 | 5 | 3 | 12'-2" |
| 4C1 | 4 | 2 | 12'-2" |

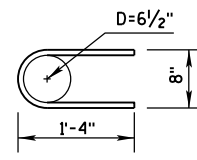
| LOOP ASSEMBLY | | | |
|---------------|---|---|-------|
| 6D1 | 6 | 2 | 8'-5" |
| 6D2 | 6 | 2 | 7'-7" |
| 6D3 | 6 | 2 | 8'-6" |



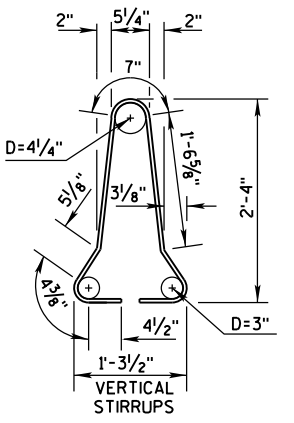
ELEVATION VIEW



**PLAN VIEW
LOOP BAR ASSEMBLY**
(MARKED END SHOWN, INVERT FOR OTHER END)



6A2

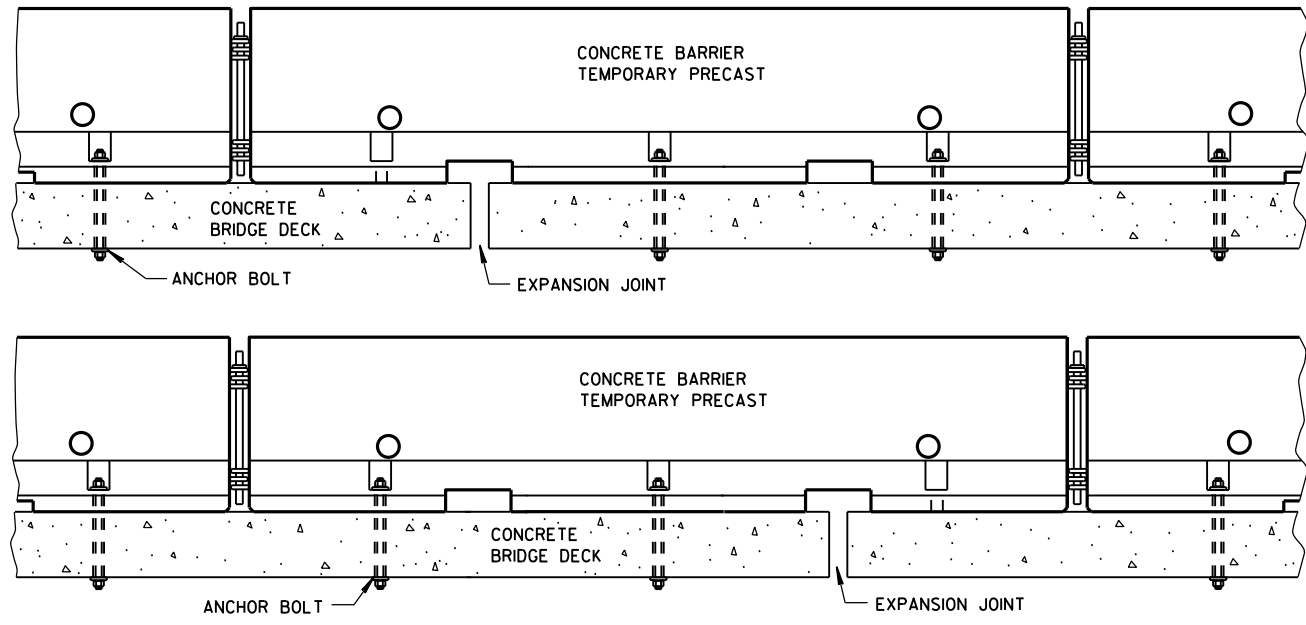


4A1

BARRIER SECTION

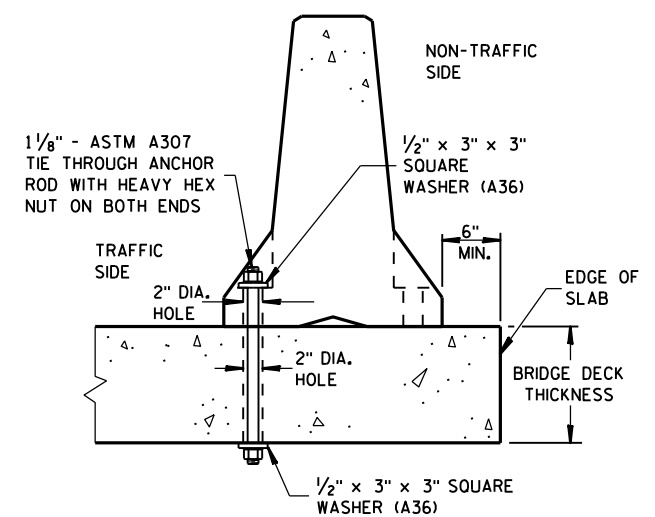
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



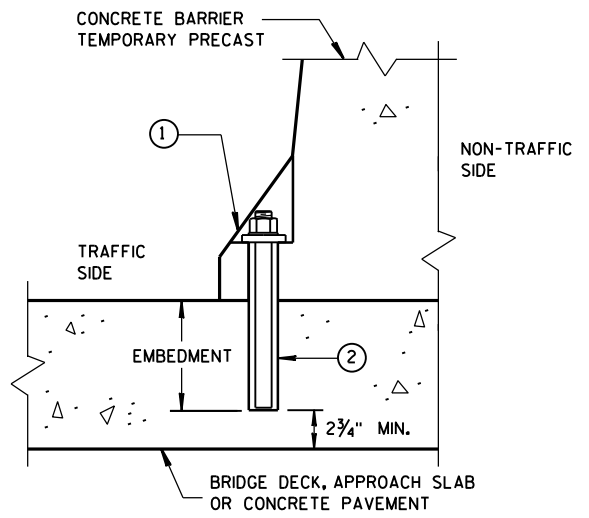
TREATMENT AT BRIDGE DECK EXPANSION JOINTS

(NO SINGLE CONCRETE BARRIER SECTION SHALL BE ANCHORED TO BOTH THE BRIDGE DECK AND THE APPROACH SLAB. ALL ANCHOR BOLT LOCATIONS SHALL BE ANCHORED TO THE DECK IN ACCORDANCE WITH THE DETAIL. NO MORE THAN ONE ANCHOR BOLT SHALL BE ELIMINATED FROM A BARRIER SECTION WHEN SPANNING AN EXPANSION JOINT.)



THROUGH BOLTED ANCHOR INSTALLATION ON BRIDGE DECK

(DO NOT USE ON CONCRETE BRIDGE DECK WITH ASPHALT OVERLAY)



REMOVABLE ADHESIVE ANCHOR INSTALLATION ON CONCRETE BRIDGE DECK, CONCRETE APPROACH SLAB, OR CONCRETE PAVEMENT

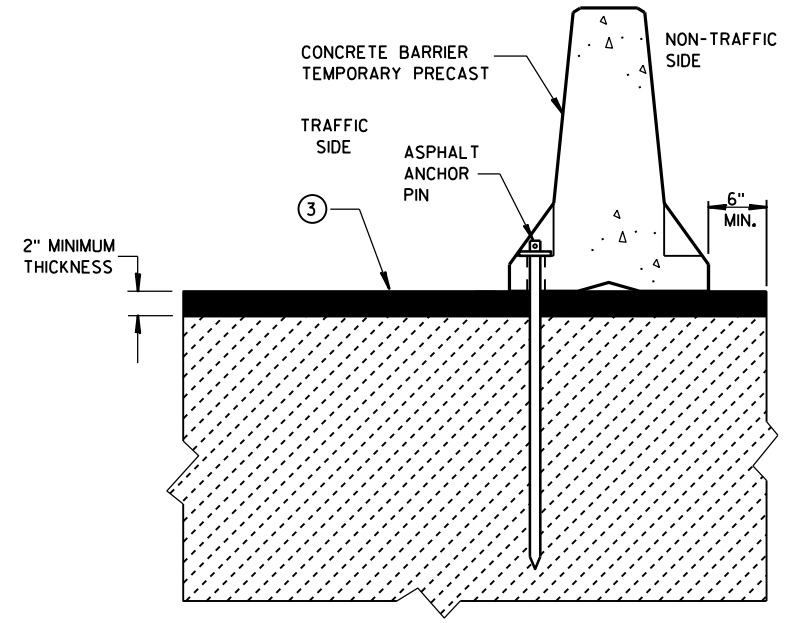
(DO NOT USE ON CONCRETE WITH AN ASPHALTIC OVERLAY)

GENERAL NOTES

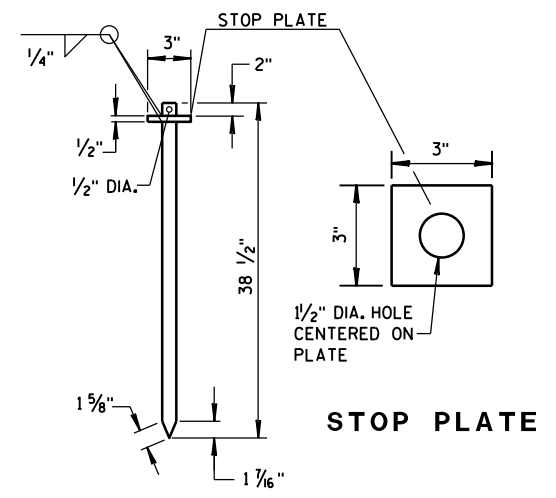
SEE SHEET E FOR WHEN TO ANCHOR. OTHER PARTS OF THE PLAN MAY SHOW ADDITIONAL LOCATIONS REQUIRING ANCHORING.

REMOVE ALL ANCHORS WHEN NO LONGER NEEDED. FILL CONCRETE PAVEMENTS, DECKS AND APPROACH SLABS WITH NON-SHRINK COMMERCIAL GROUT FROM THE APPROVED PRODUCT LIST. FILL ASPHALT PAVEMENTS WITH ASTM D6690 TYPE II RUBBERIZED CRACK FILLER.

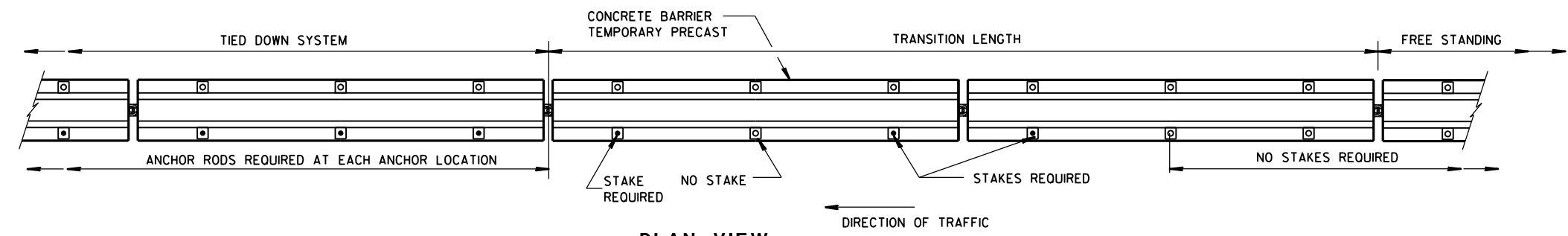
- ① 1/8" DIAMETER A307 THREADED ROD, 1/2" X 3" X 3" SQUARE PLATE WASHER WITH ASTM A36 STEEL, ASTM A563A HEAVY HEX NUT.
- ② ADHESIVE ANCHORS WITH A MINIMUM BOND STRENGTH OF 1,800 PSI AND 5/4" EMBEDMENT. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.
- ③ ASPHALT SURFACE SHOWN. CONTRACTOR MAY DRILL THROUGH CONCRETE PAVEMENT AND THEN DRIVE ASPHALT ANCHOR PIN.



STAKE DOWN INSTALLATION FOR ASPHALTIC SURFACE



ASPHALT ANCHOR PIN
(ASTM A36 STEEL)



FREE STANDING TRANSITION TO TIED-DOWN SYSTEM

(PLACE TRANSITION IN A TANGENT SECTION OF BARRIER PARALLEL TO THE ROADWAY. IF TRANSITION OCCURS ON STRUCTURAL SLAB, ANCHOR AS SHOWN.)

CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

6

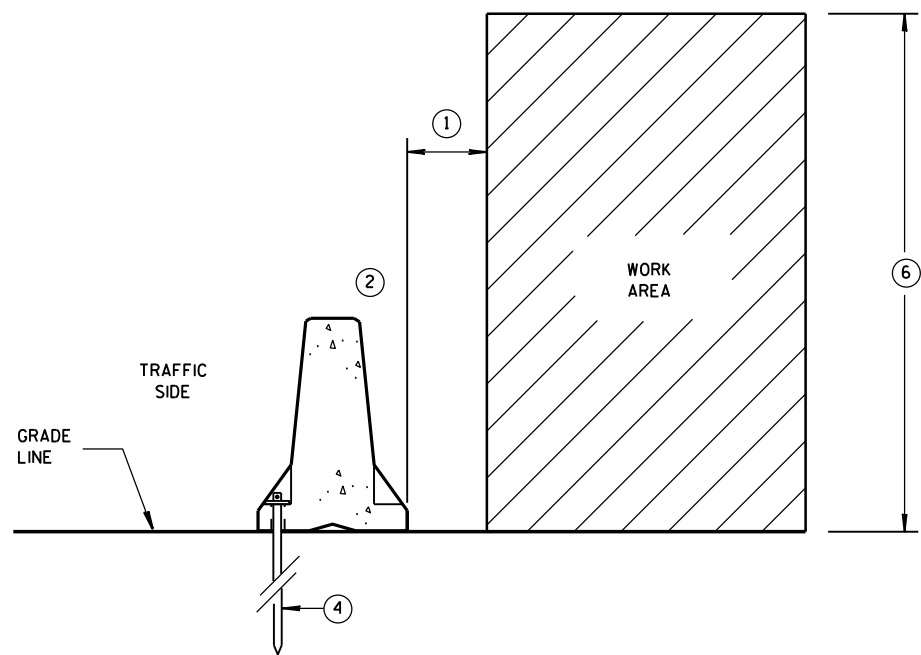
6

S.D.D. 14 B 7-15d

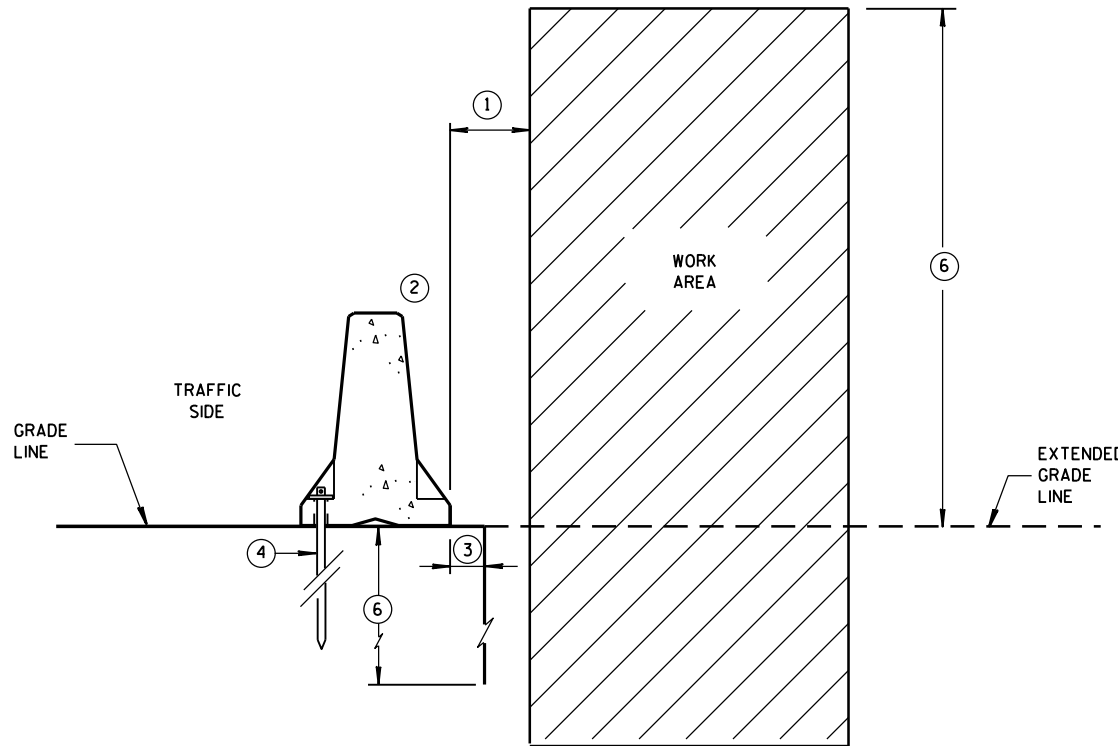
S.D.D. 14 B 7-15d

GENERAL NOTES

- ① WHEN OBJECTS EXTEND ABOVE THE GRADE, A MINIMUM OF 1 FOOT IS REQUIRED FROM BACK OF BARRIER TO OBJECT. SEE OTHER DETAILS FOR THE MINIMUM OFFSET FROM BACK OF BARRIER TO SLOPES OR VERTICAL DROPS.
- ② OBJECTS ARE NOT TO BE PLACED ON, MOUNTED TO, OR LEANED AGAINST THE BARRIER WITHOUT PERMISSION OF THE PROJECT ENGINEER.
- ③ SEE OTHER DETAIL ON SHEET "D" FOR SPACE REQUIREMENTS.
- ④ SEE BOLT THROUGH DECK, REMOVABLE ADHESIVE ANCHOR, OR A STAKE DOWN FOR ASPHALTIC SURFACE TREATMENT DETAILS. ASPHALTIC ANCHOR SHOWN.
- ⑤ DEPTH OF 3 FEET OR MORE.
- ⑥ Y = 6'-6".

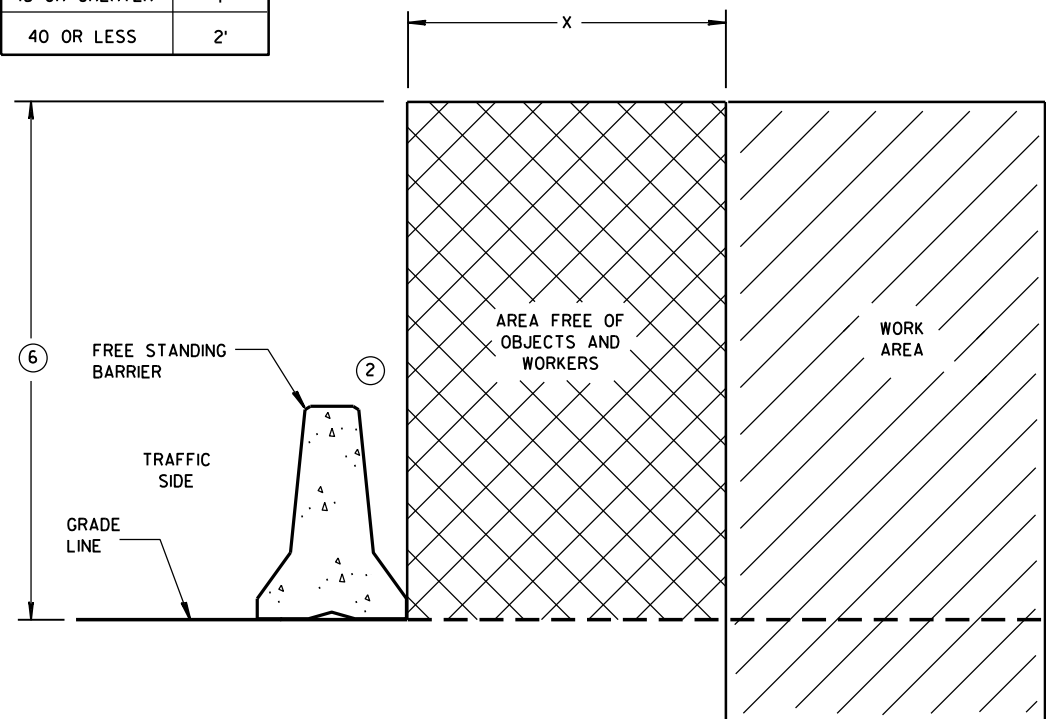


ANCHORED BARRIER SPACE REQUIREMENTS FOR HAZARDS EXTENDED ABOVE THE GRADE LINE

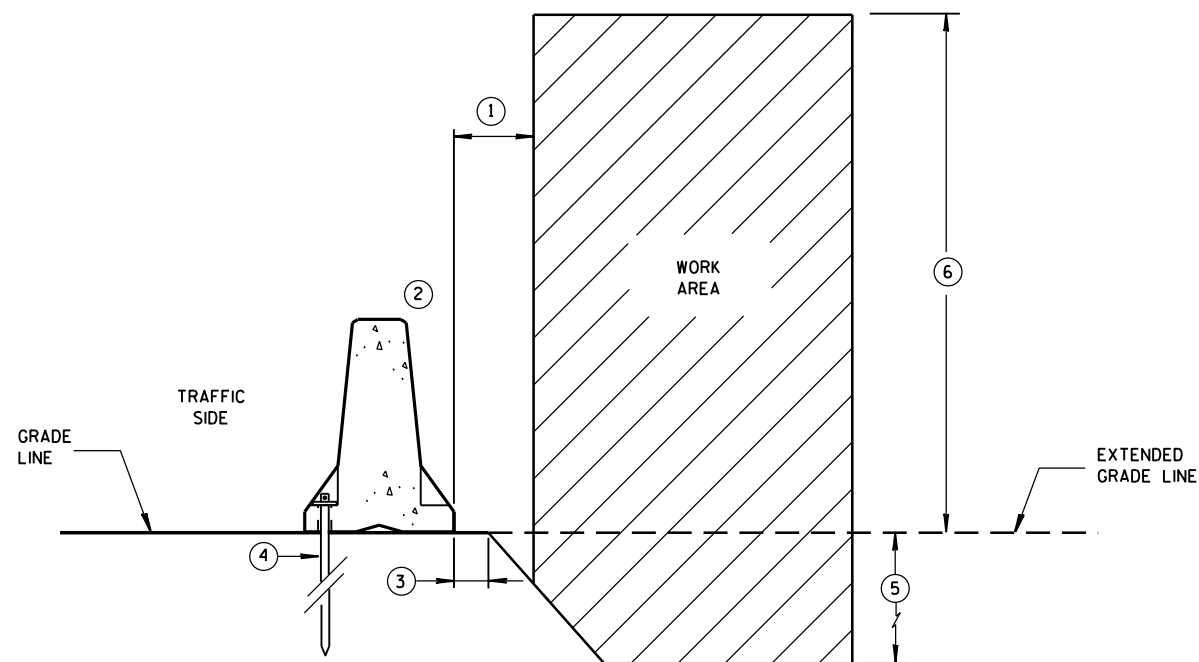


ANCHORED BARRIER SPACE REQUIREMENTS ON VERTICAL DROP OFFS

| POSTED SPEED MPH | X |
|------------------|----|
| 45 OR GREATER | 4' |
| 40 OR LESS | 2' |



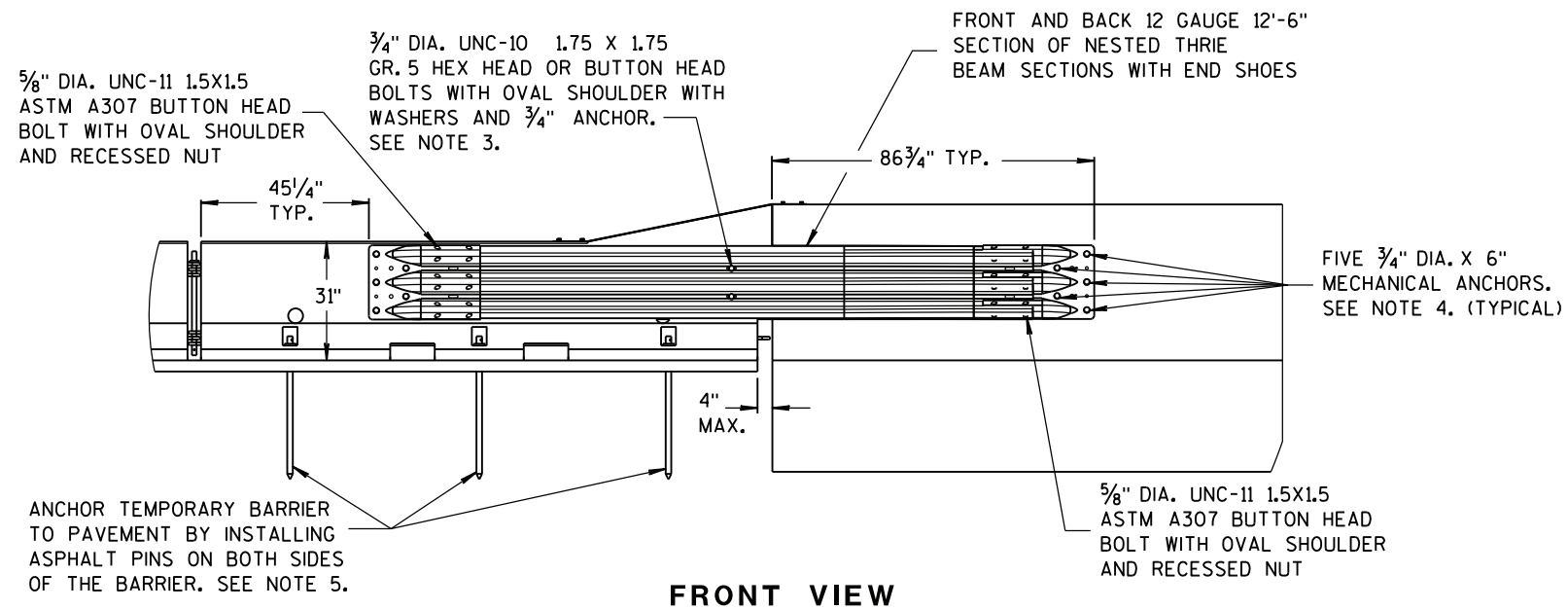
FREE STANDING BARRIER SPACE REQUIREMENTS



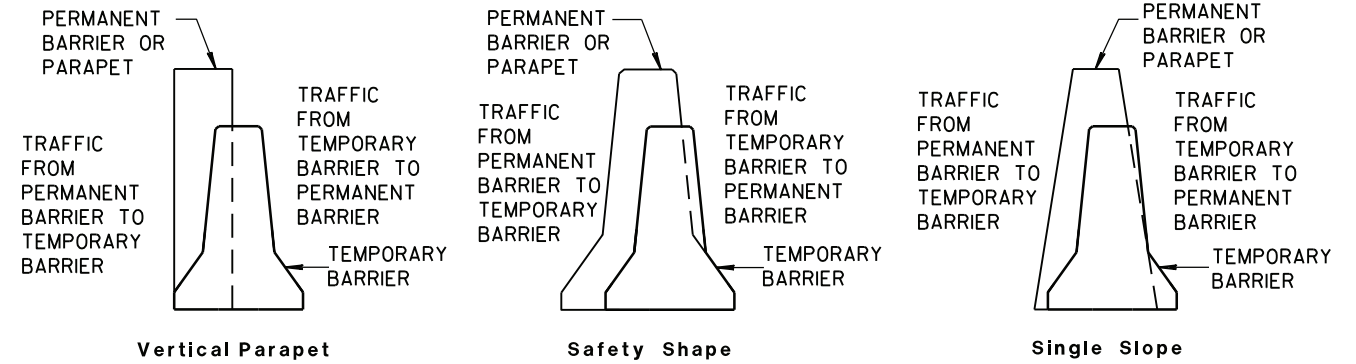
ANCHORED BARRIER SPACE REQUIREMENTS ON SLOPES

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

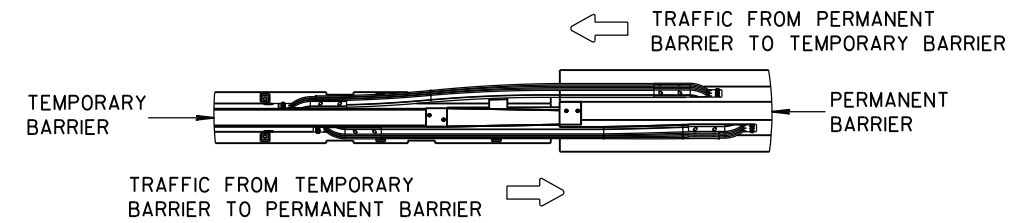
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



FRONT VIEW

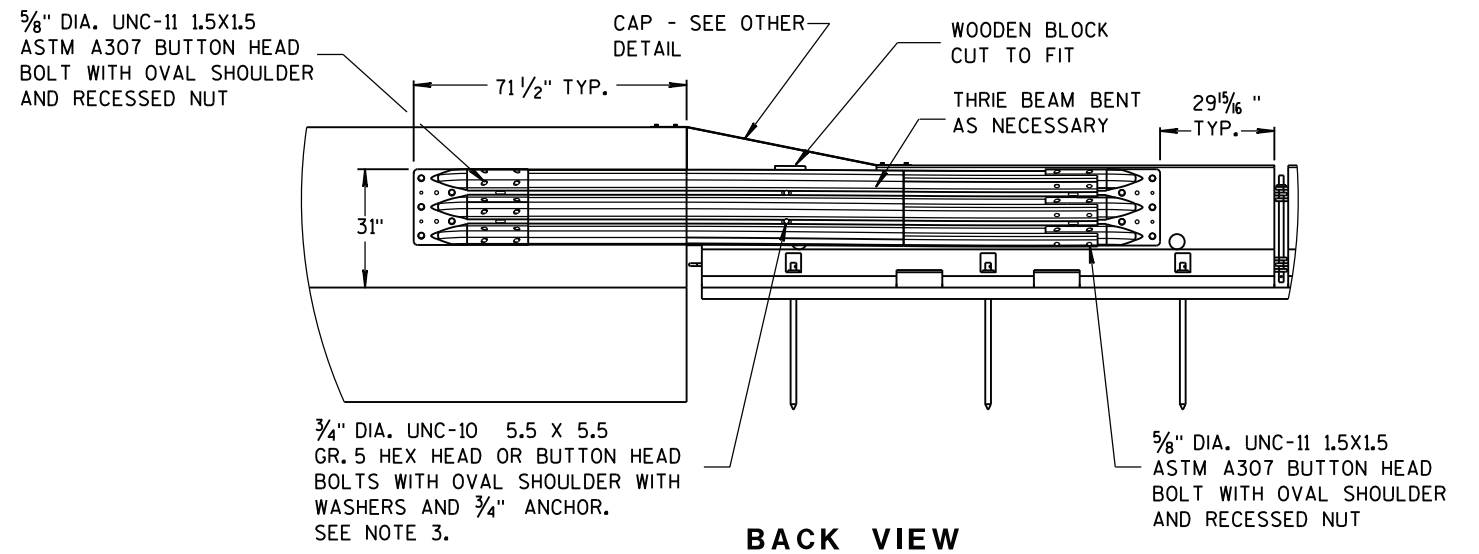


TEMPORARY BARRIER PLACEMENT FOR TRANSITION TO TIED DOWN SYSTEM

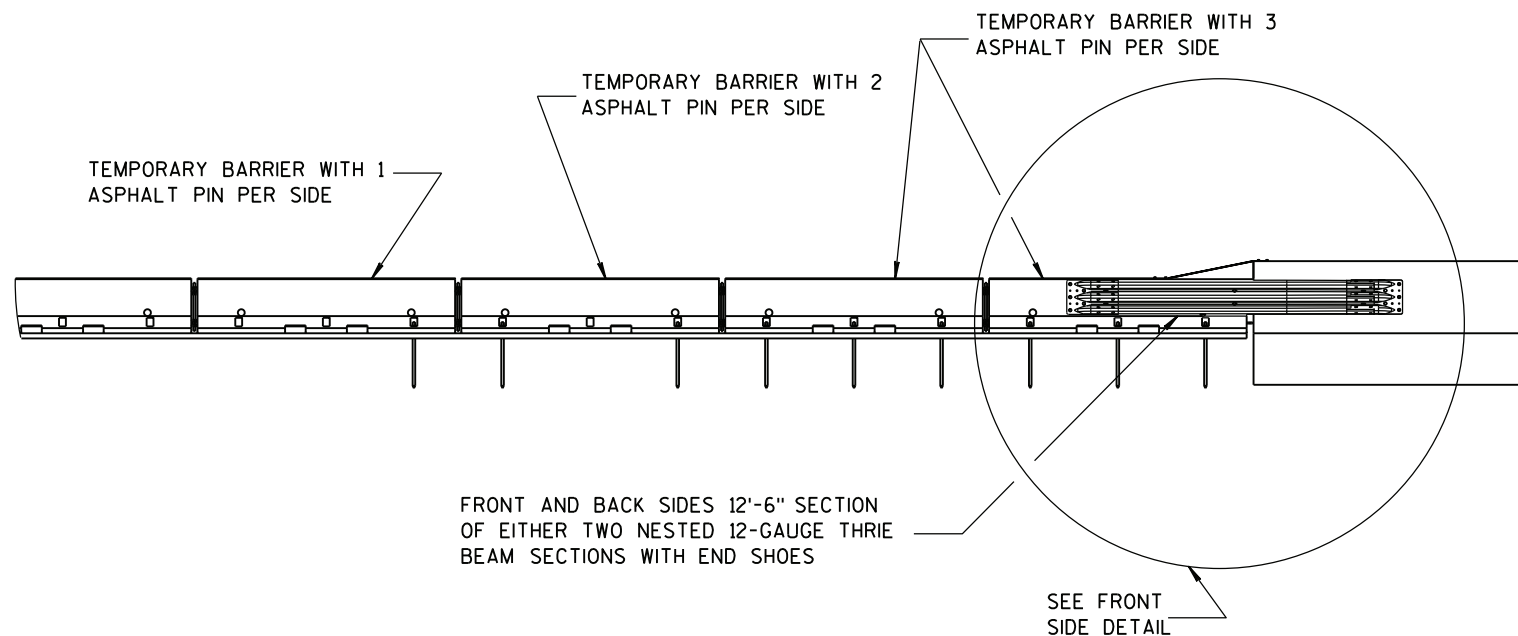


NOTES

- NESTED THRIE BEAM IS REQUIRED ON BOTH SIDES OF THE TEMPORARY BARRIER FOR ALL INSTALLATIONS REGARDLESS OF TRAFFIC.
- CAP END PLATE PLACED FLUSH WITH UPSTREAM END OF PERMANENT BARRIER OR PARAPET.
 - THRIE BEAM PIECES ARE OFFSET 15 1/4" TO PREVENT INTERFERENCE FROM THE ANCHORS ON OPPOSING SIDES.
 - MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 9.48 KIPS AND ULTIMATE SHEAR LOAD 10.48 KIPS.
 - MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 17.9 KIPS AND ULTIMATE SHEAR LOAD 21.96 KIPS.
 - MAY BE USED ON CONCRETE OR ASPHALT PAVEMENTS. ASPHALT OPTION SHOWN. FOR CONCRETE OPTION SEE OTHER DETAILS.
 - MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 12.14 KIPS AND ULTIMATE SHEAR LOAD 17.5 KIPS.

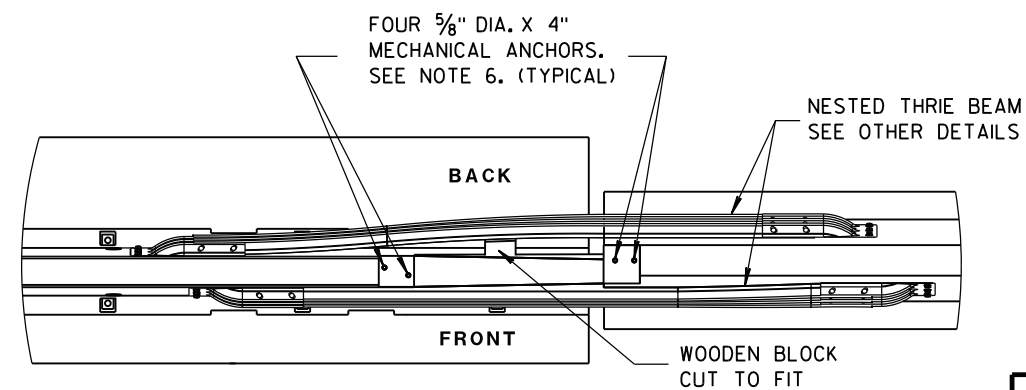


BACK VIEW



FRONT VIEW

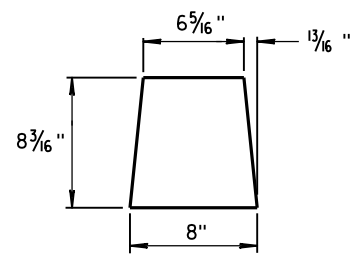
TRANSITION TO TIED DOWN SYSTEM



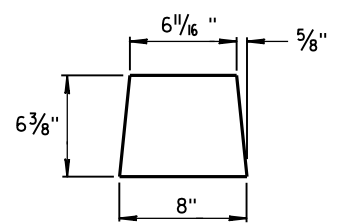
PLAN VIEW

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

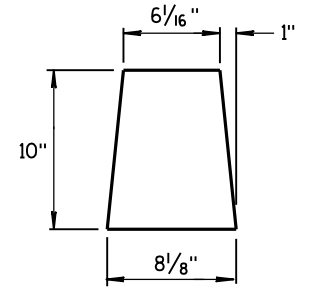
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



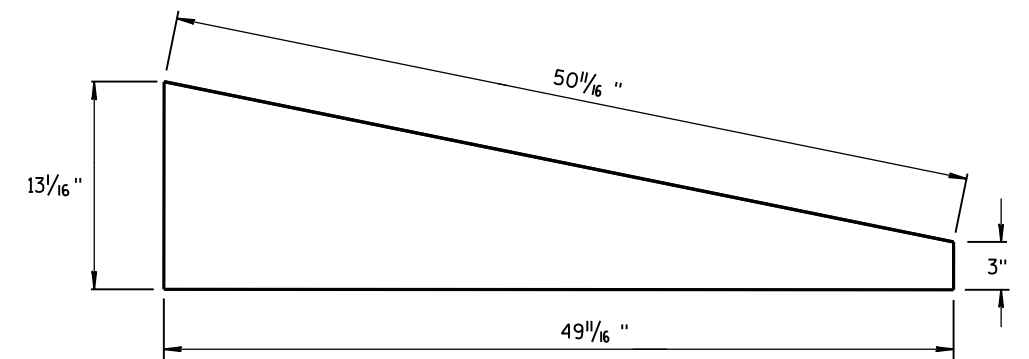
GUSSET 1



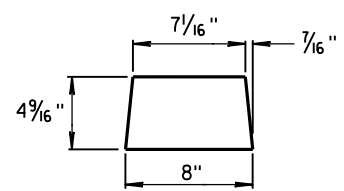
GUSSET 2



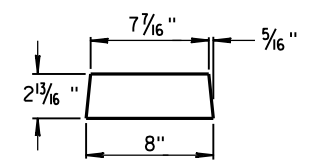
END PLATE



SIDE PLATE

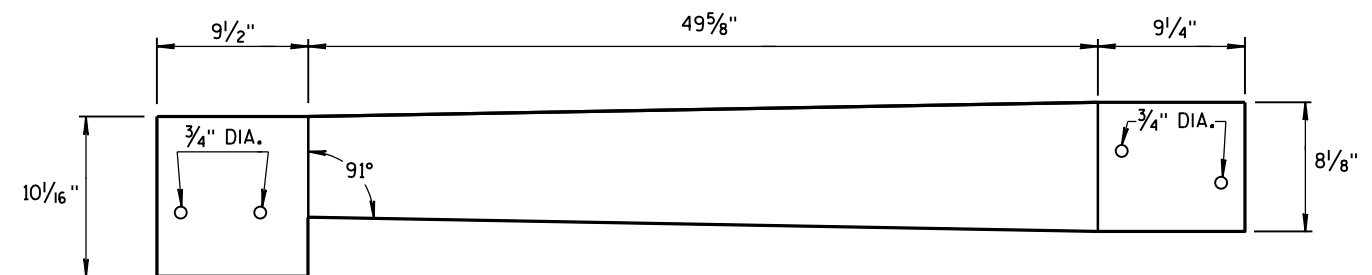


GUSSET 3

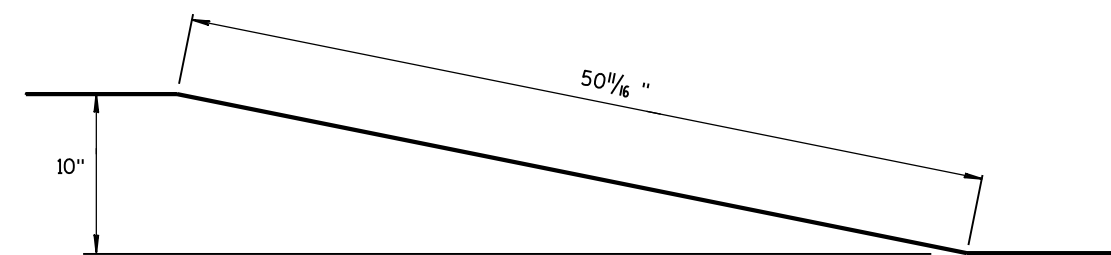


GUSSET 4

GUSSETS

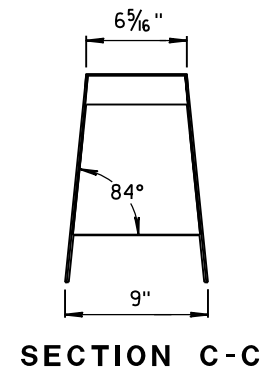
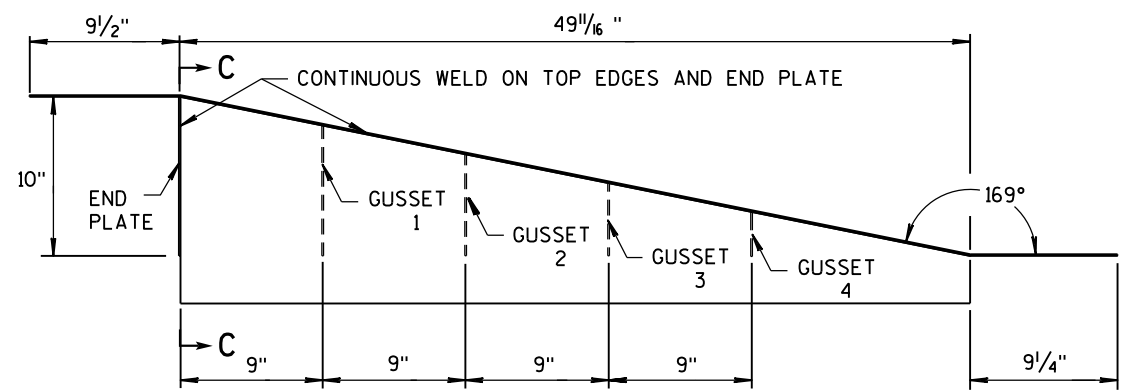
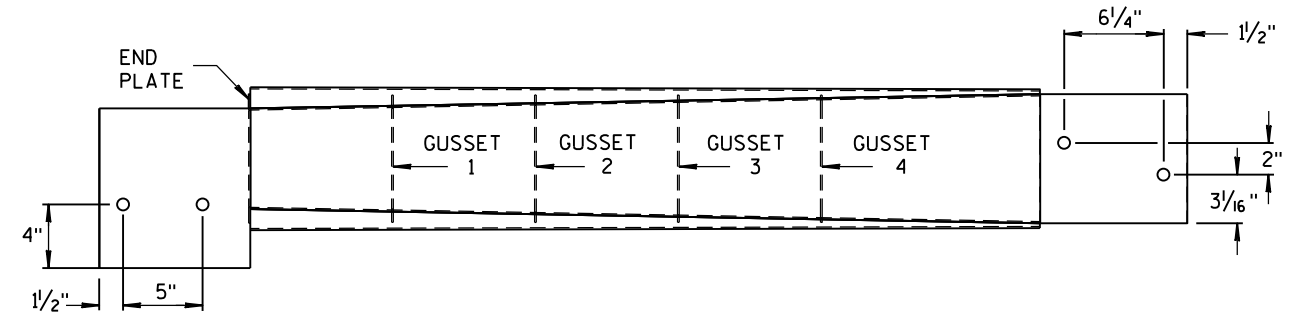


TOP PLATE



SIDE, TOP AND END PLATES FOR CAP FROM TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 GALVANIZED STEEL.



SECTION C-C

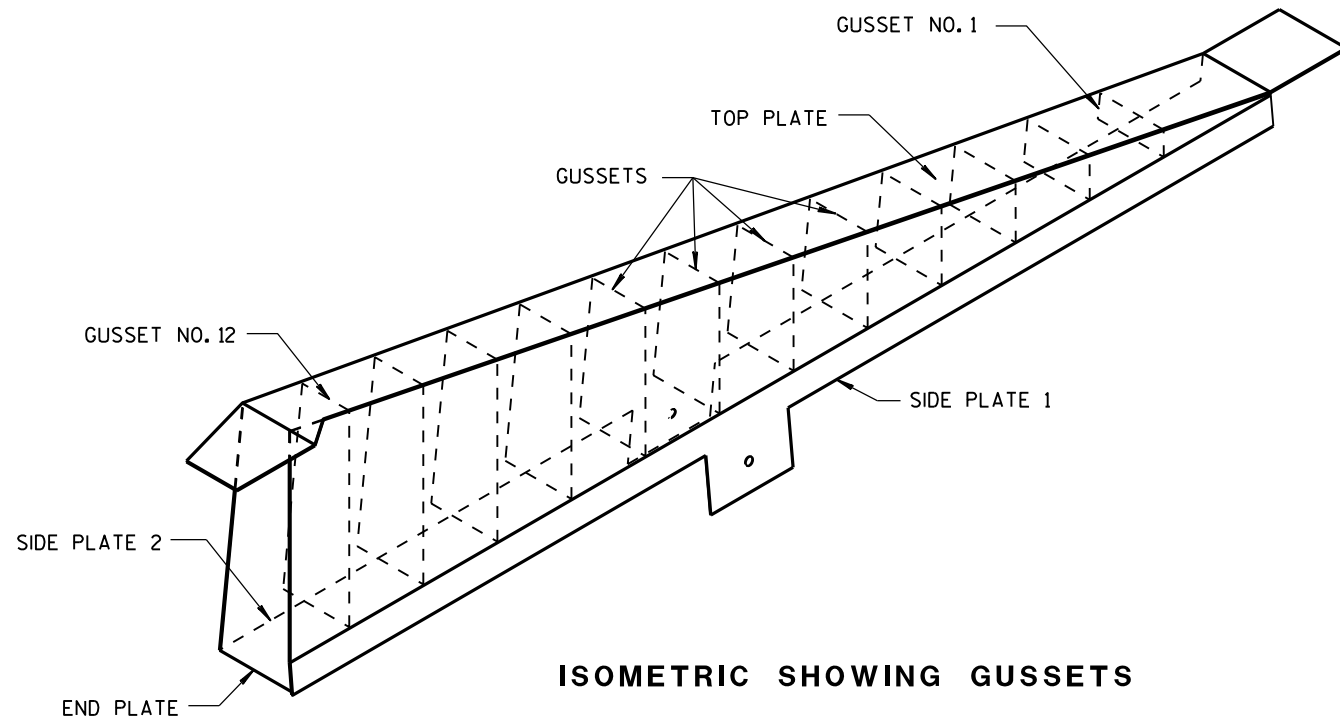
NOTES

- FOUR GUSSETS AND END PLATE ARE STITCH WELDED ON THREE SIDES.
- TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE, AND GUSSETS.

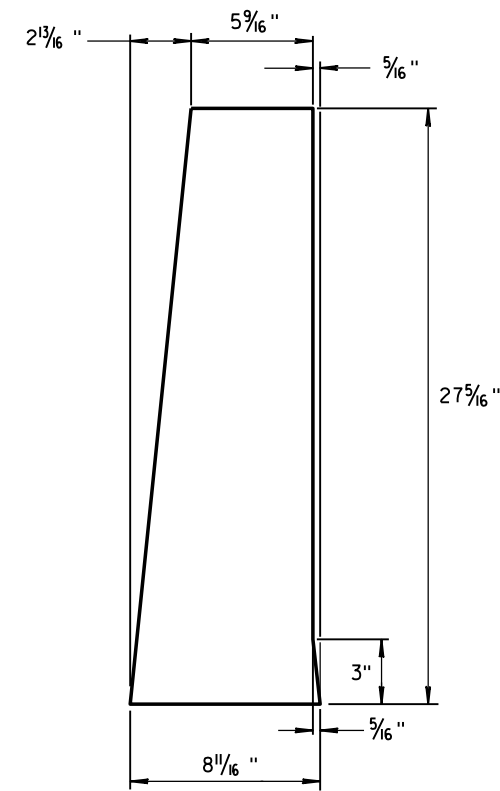
CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

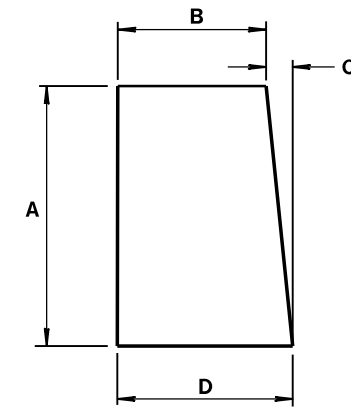


ISOMETRIC SHOWING GUSSETS



END PLATE

1/8" STEEL PLATE



GUSSETS 1 - 12

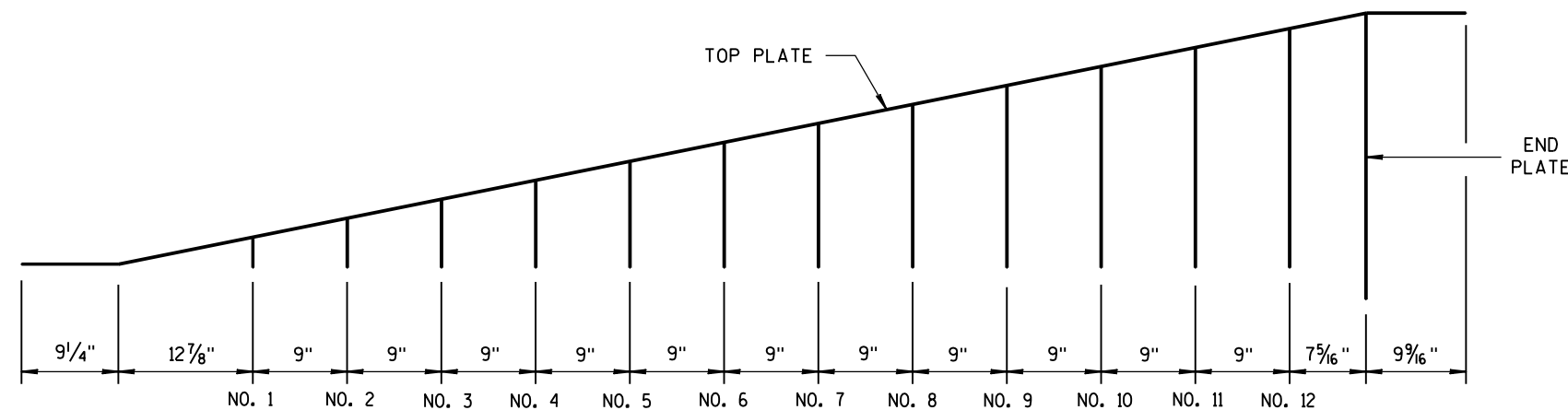
ALL GUSSETS 1/8" STEEL PLATE

GUSSET DIMENSIONS

| GUSSET NO. | A | B | C | D |
|------------|------------|-----------|-----------|----------|
| 1 | 2 7/8" | 7 3/4" | 1/4" | 8 |
| 2 | 4 1/16 " | 7 7/16 " | 1/2" | 8 |
| 3 | 6 1/2" | 7 3/8 " | 11/16 " | 8 1/16 " |
| 4 | 8 5/16 " | 7 3/16 " | 7/8 " | 8 1/16 " |
| 5 | 10 1/8 " | 7" | 1 1/16 " | 8 1/16 " |
| 6 | 11 5/16 " | 6 13/16 " | 1 1/4" | 8 1/16 " |
| 7 | 13 3/4" | 6 5/8 " | 1 7/16 " | 8 1/16 " |
| 8 | 15 3/16 " | 6 7/16 " | 1 9/16 " | 8 1/16 " |
| 9 | 17 3/8 " | 6 1/4" | 1 13/16 " | 8 1/16 " |
| 10 | 19 3/16 " | 6 1/16 " | 1 15/16 " | 8 1/16 " |
| 11 | 21" | 5 7/8 " | 2 3/16 " | 8 1/16 " |
| 12 | 22 13/16 " | 5 11/16 " | 2 5/16 " | 8 1/16 " |

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 STEEL AND GALVANIZED.

GUSSETS AND END PLATE ARE STITCH WELDED ON 3 SIDES. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE AND GUSSETS.

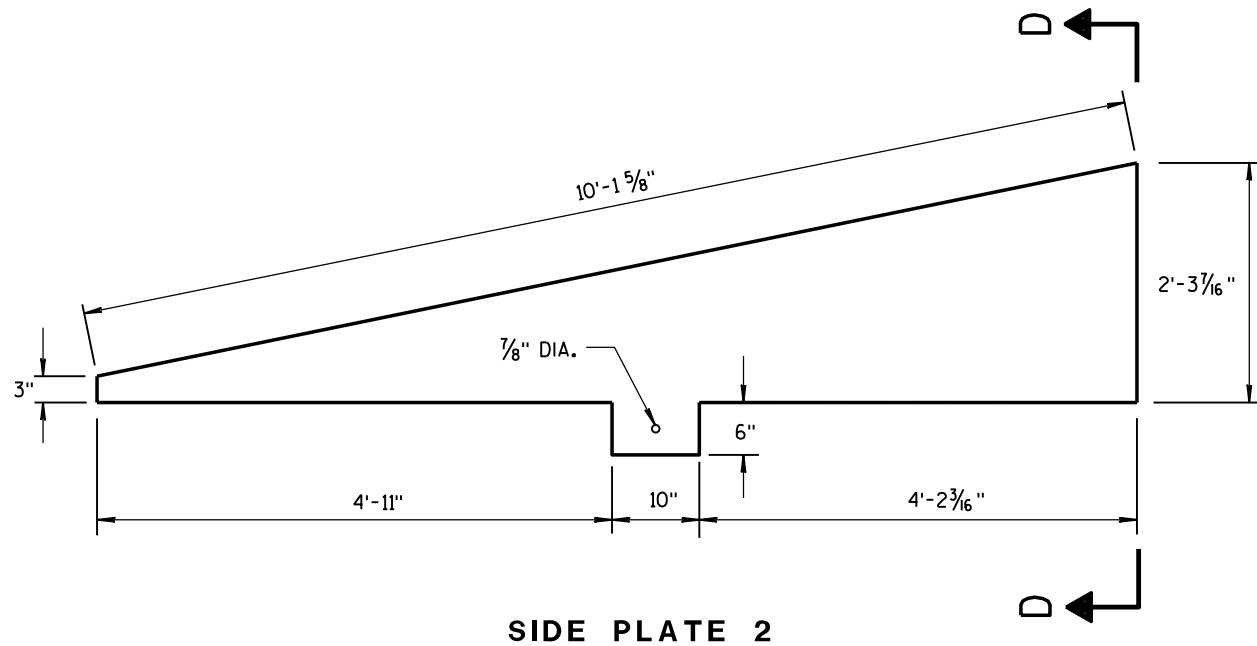


GUSSET LOCATION

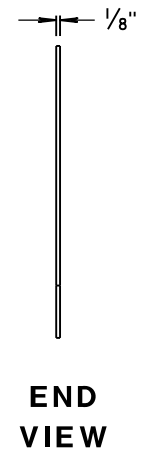
CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

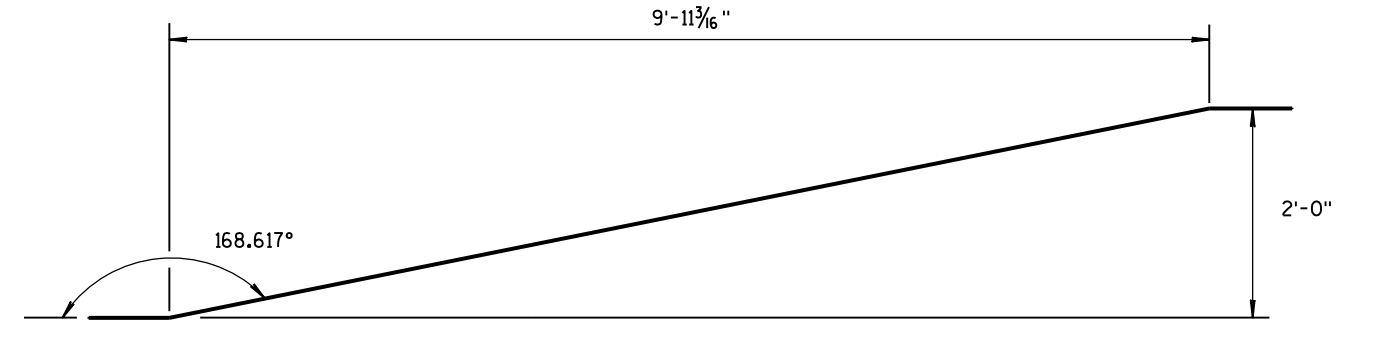
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



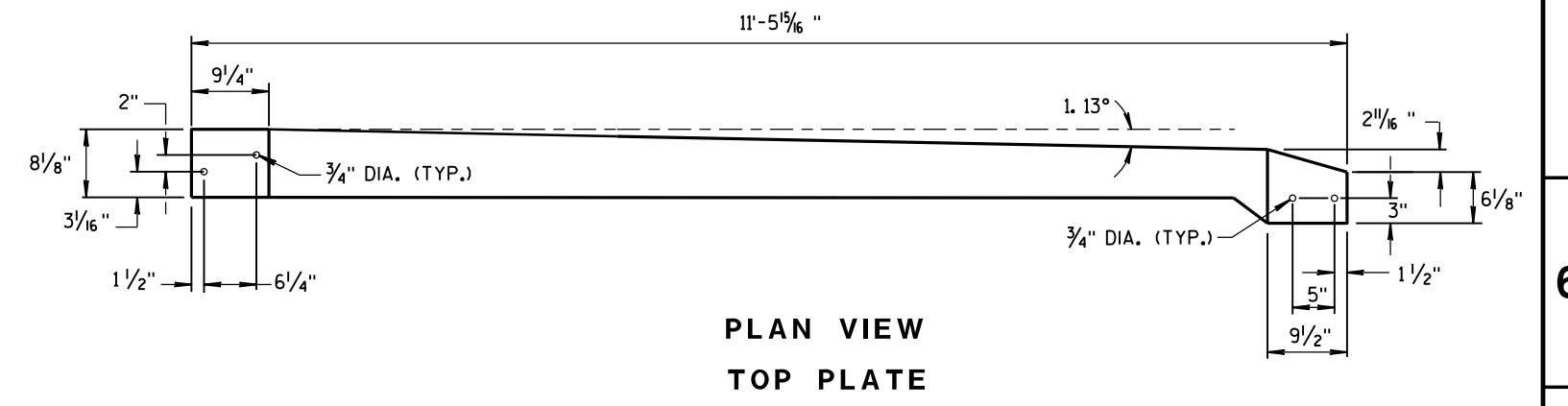
SIDE PLATE 2



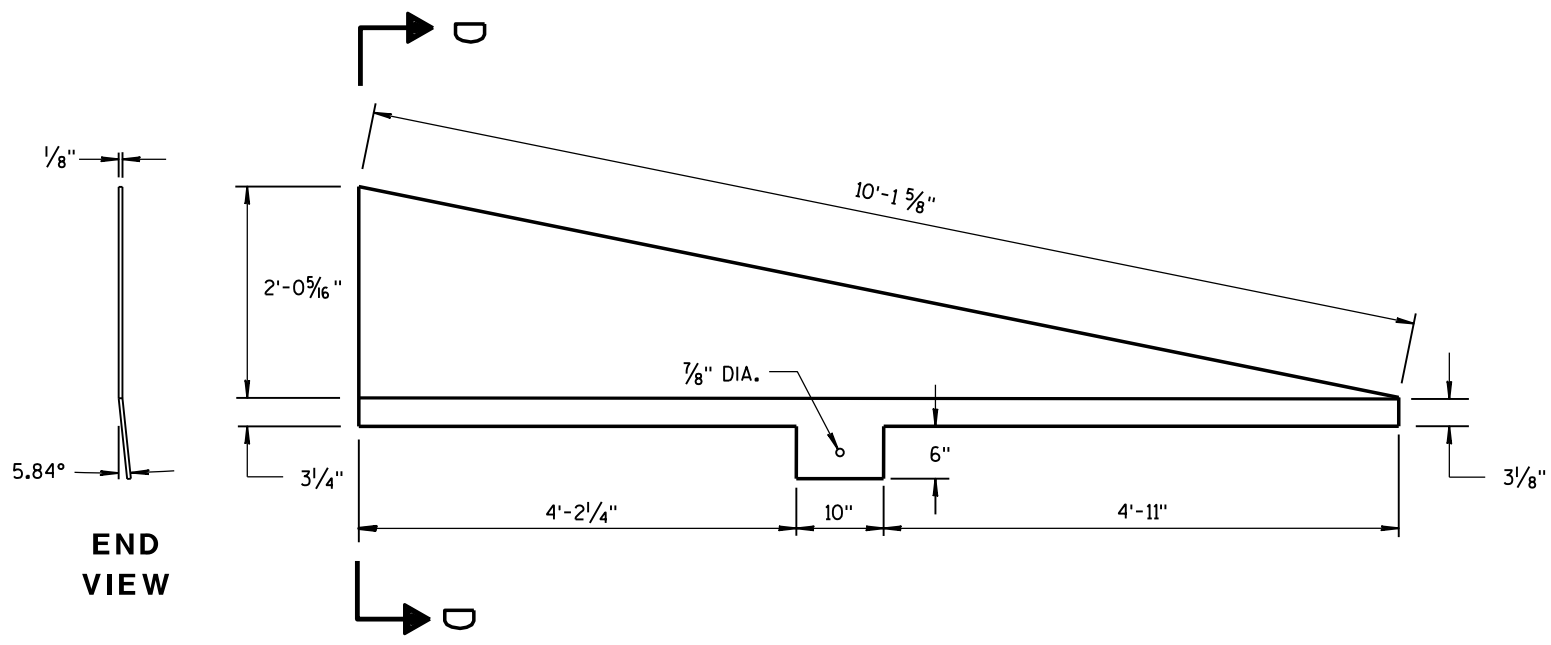
END VIEW



SIDE VIEW
TOP PLATE

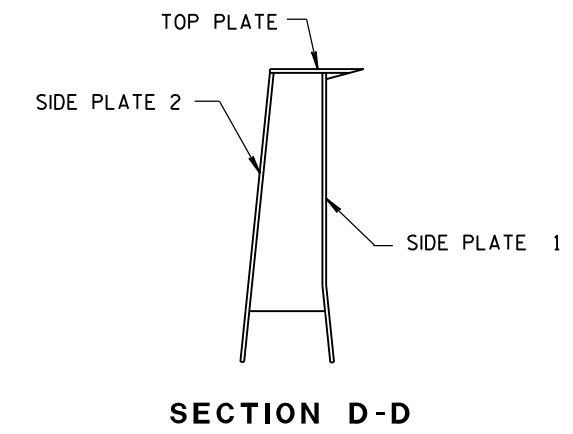


PLAN VIEW
TOP PLATE



SIDE PLATE 1

END VIEW



SECTION D-D

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER

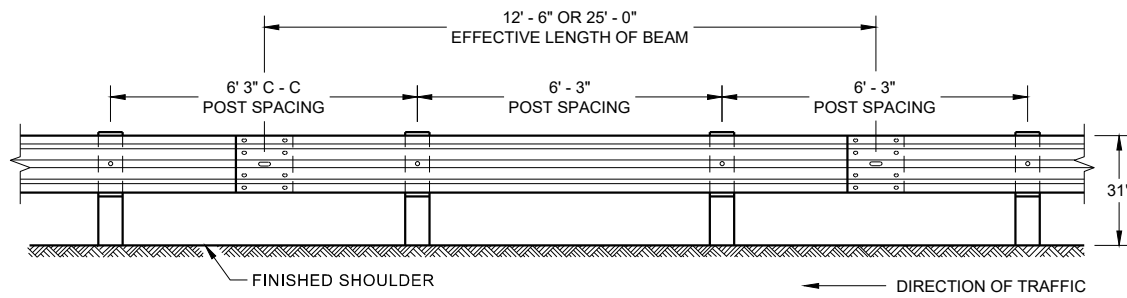
| | |
|-------------------------------------------------------|----------------------------------------------------------------------|
| CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED June 2017 DATE | /s/ Rodney Taylor ROADWAY STANDARD DEVELOPMENT UNIT SUPERVISOR |
| FHWA | |

6

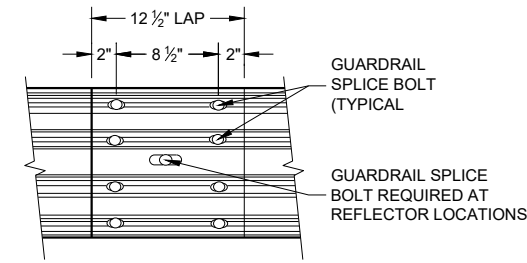
6

S.D.D. 14 B 7-15i

S.D.D. 14 B 7-15i



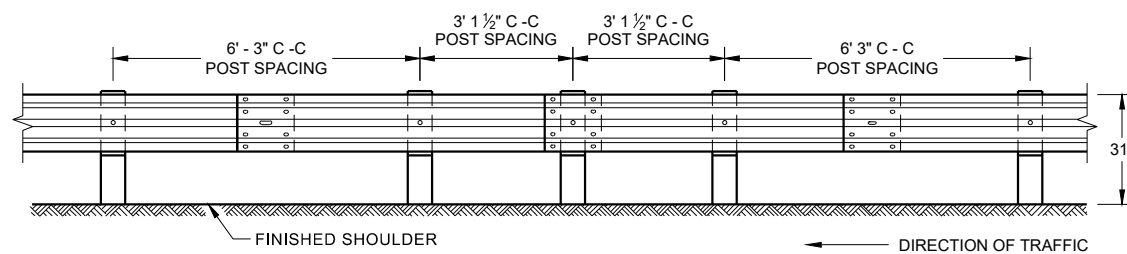
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



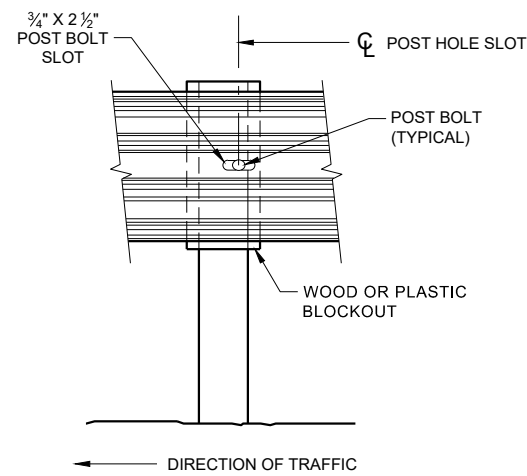
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

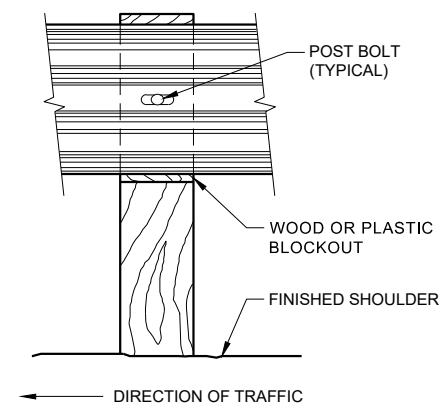
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER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



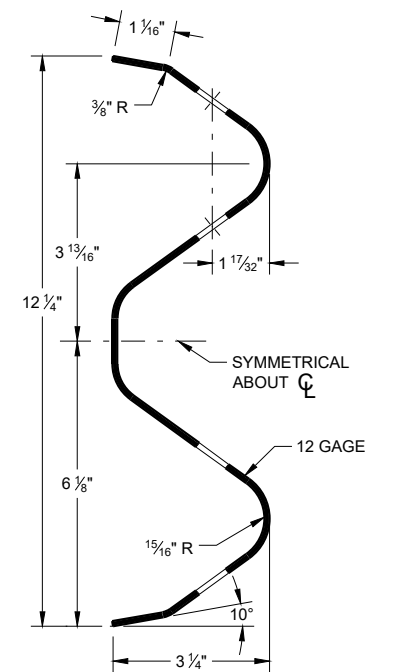
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



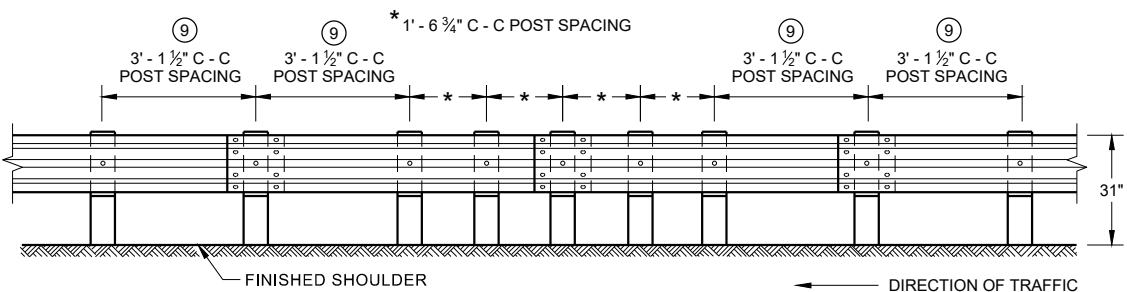
FRONT VIEW AT STEEL POST



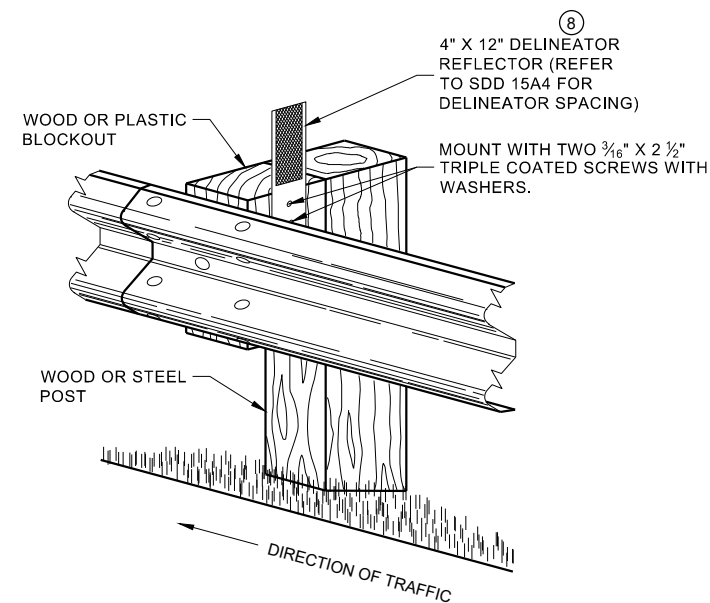
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



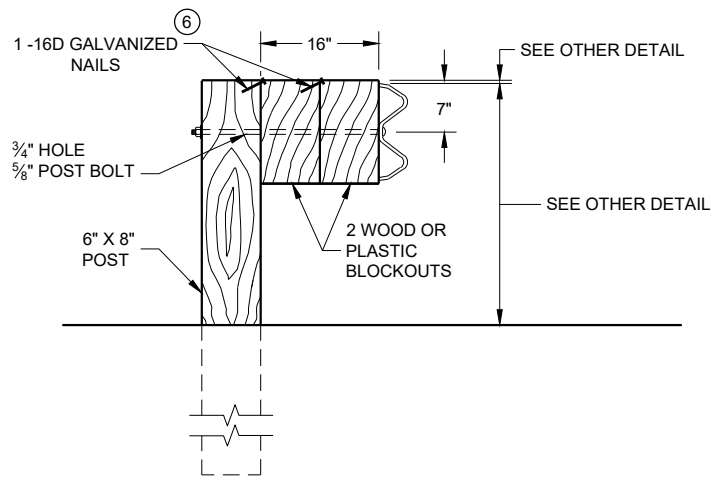
**FRONT VIEW
QUARTER POST SPACING (QS)**



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

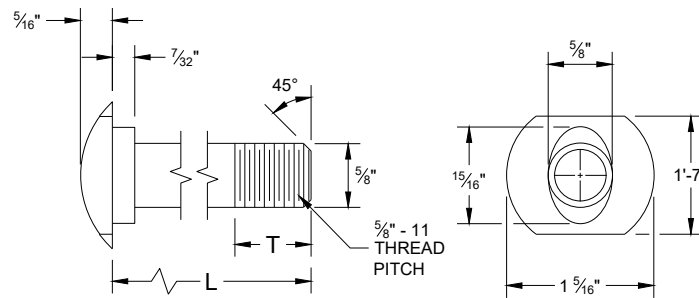


DETAIL FOR 16" BLOCKOUT DEPTH

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

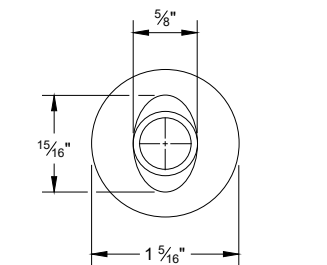
NOTE:

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

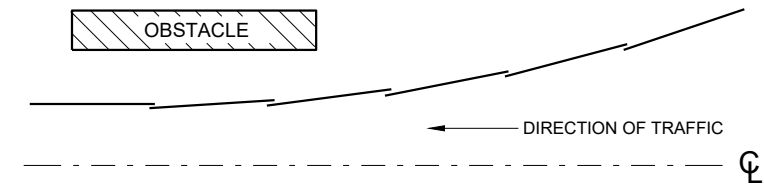


POST BOLT TABLE

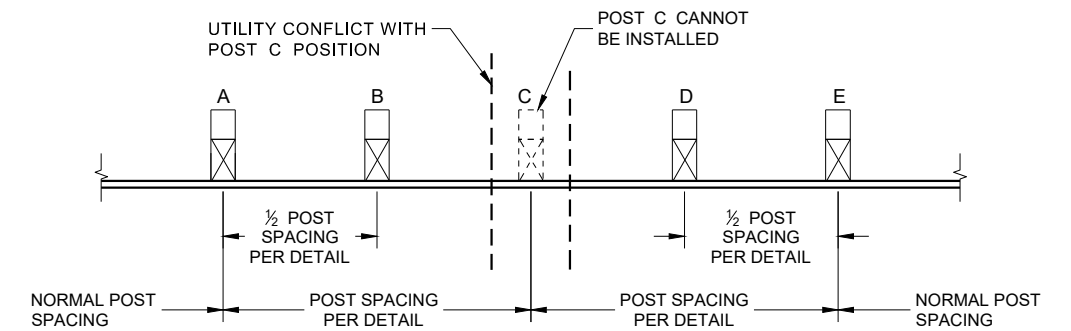
| L | T (MIN.) |
|--------|----------|
| 1 1/4" | 1 1/8" |
| 2" | 1 3/4" |
| 10" | 4" |
| 14" | 4 1/16" |
| 18" | 4" |
| 21" | 4 1/16" |
| 25" | 4" |



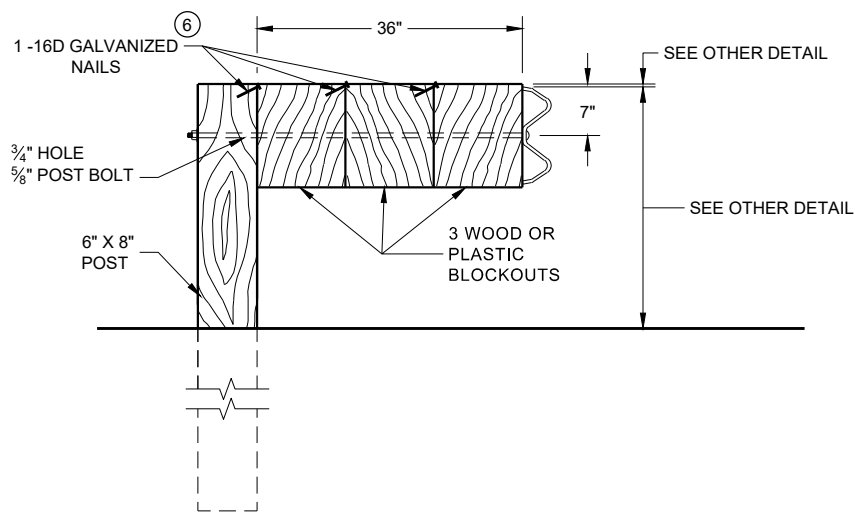
ALTERNATE BOLT HEAD



**PLAN VIEW
BEAM LAPPING DETAIL**

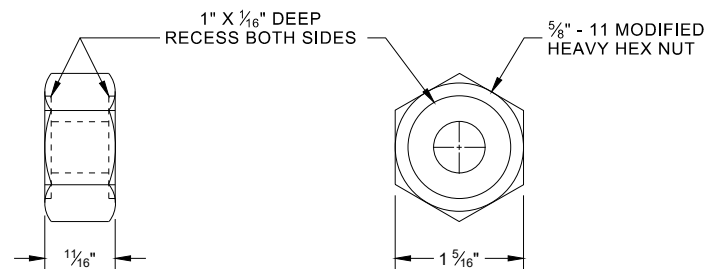


**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

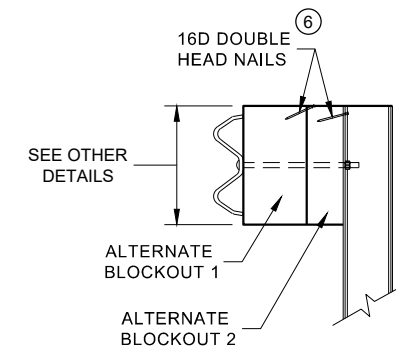


DETAIL FOR 36" BLOCKOUT DEPTH

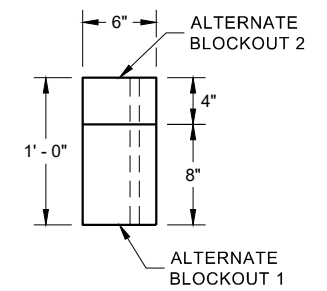
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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



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



SIDE VIEW



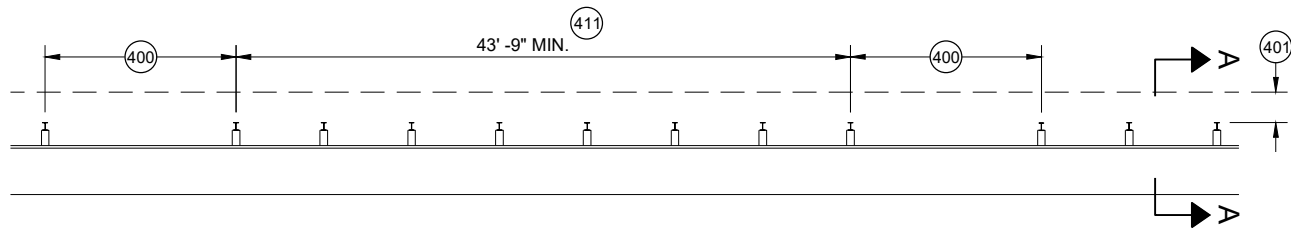
PLAN VIEW

**ALTERNATE WOOD
BLOCKOUT DETAIL**

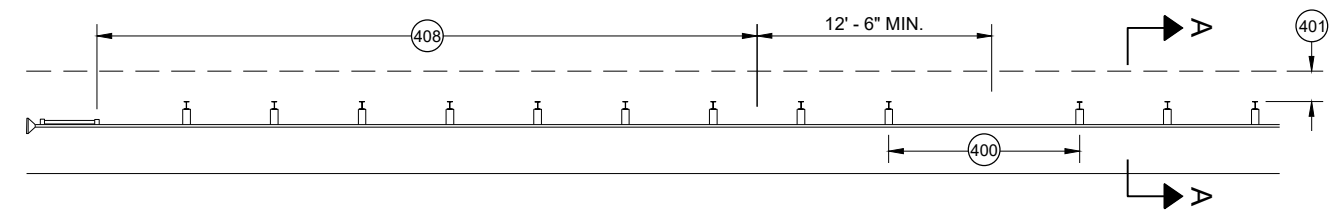
6 WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

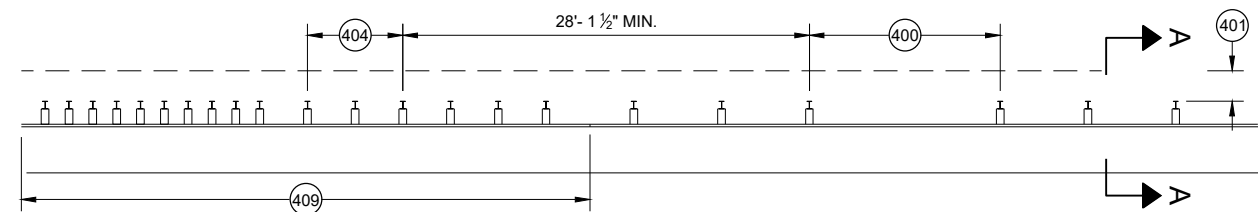
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



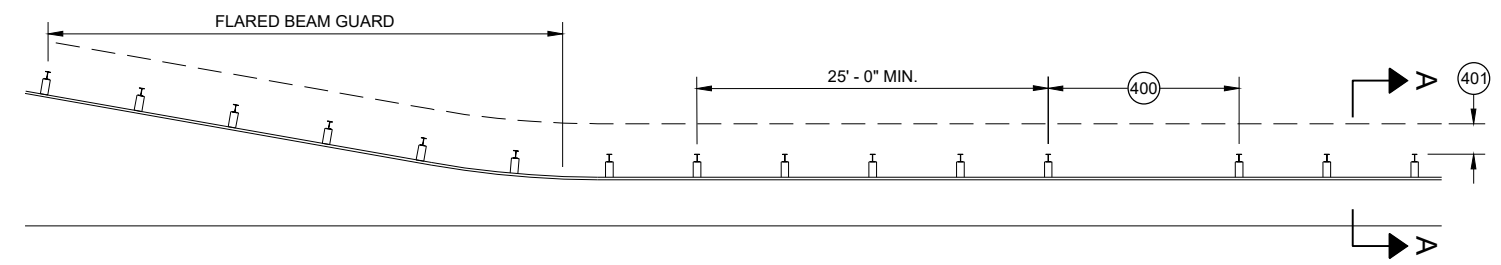
MISSING POST IN MGS GUARDRAIL



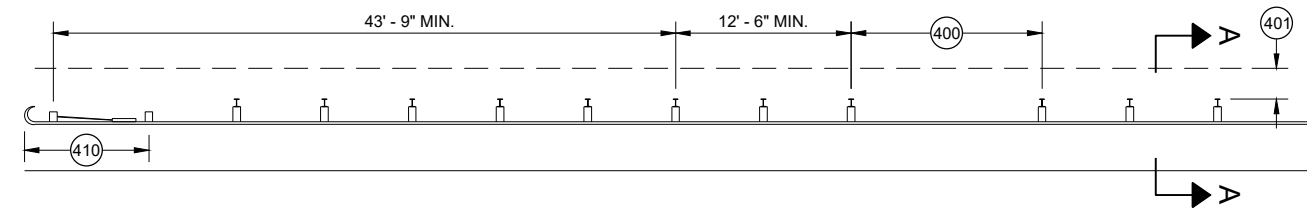
MISSING POST IN MGS GUARDRAIL NEAR EAT



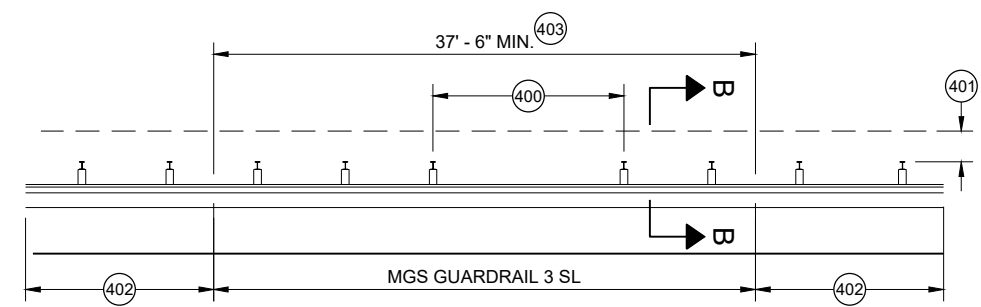
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

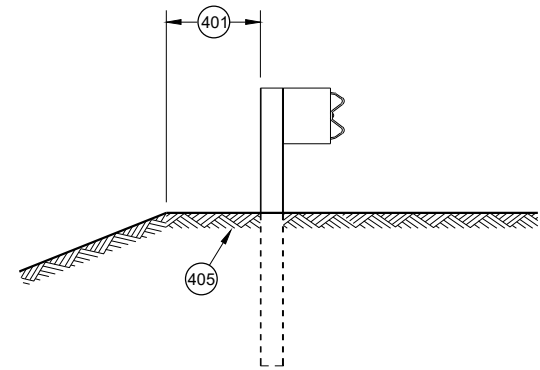


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

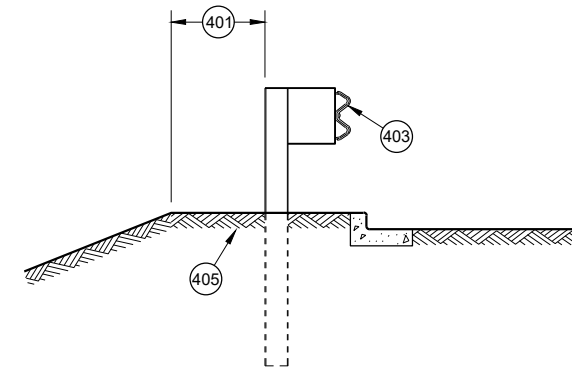


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

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



SECTION A - A



SECTION B - B

| | |
|-----------------------------------------------------|-----------------------------------------------------------------------|
| MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED May 2021 DATE | /S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR |
| <small>FHWA</small> | |

GENERAL NOTES

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

SEE SDD 14B42 FOR MORE INFORMATION.

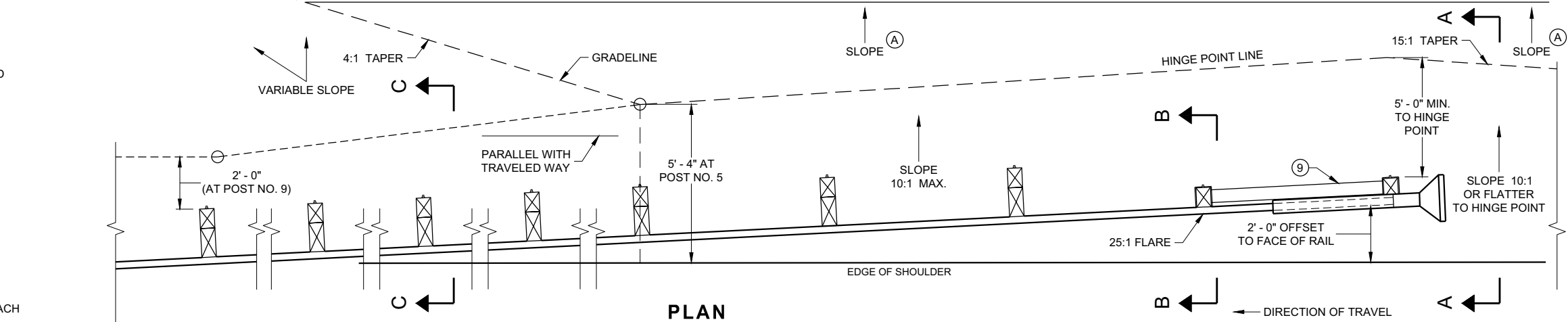
* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

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

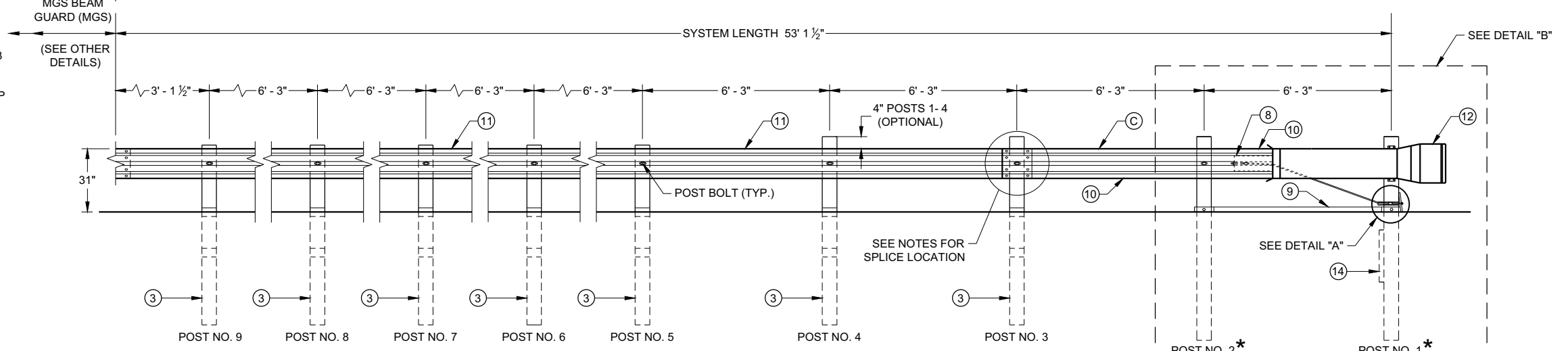
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

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

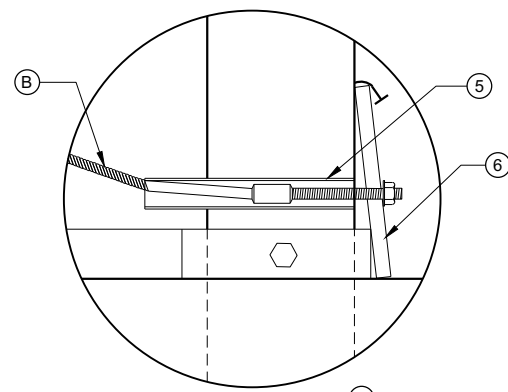
CLEAR ZONE LIMITS, EITHER AS SHOWN ELSEWHERE IN THE PLANS OR, IF NOT SHOWN ELSEWHERE IN THE PLANS, 15 FEET BEYOND THE HINGE POINT LINE



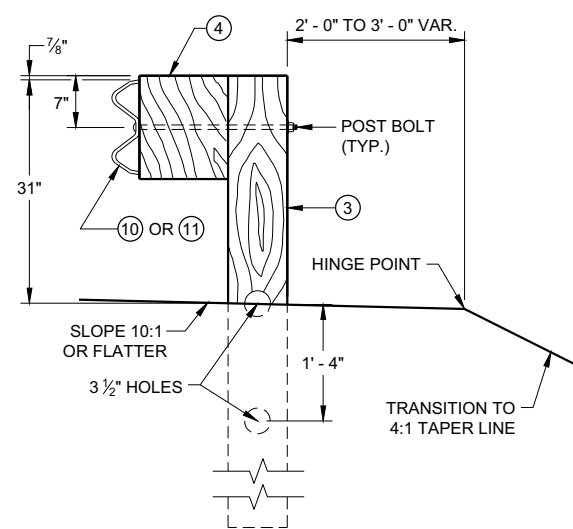
PLAN



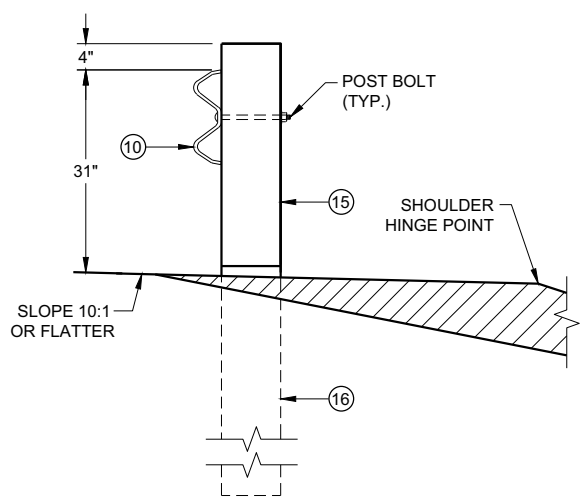
ELEVATION



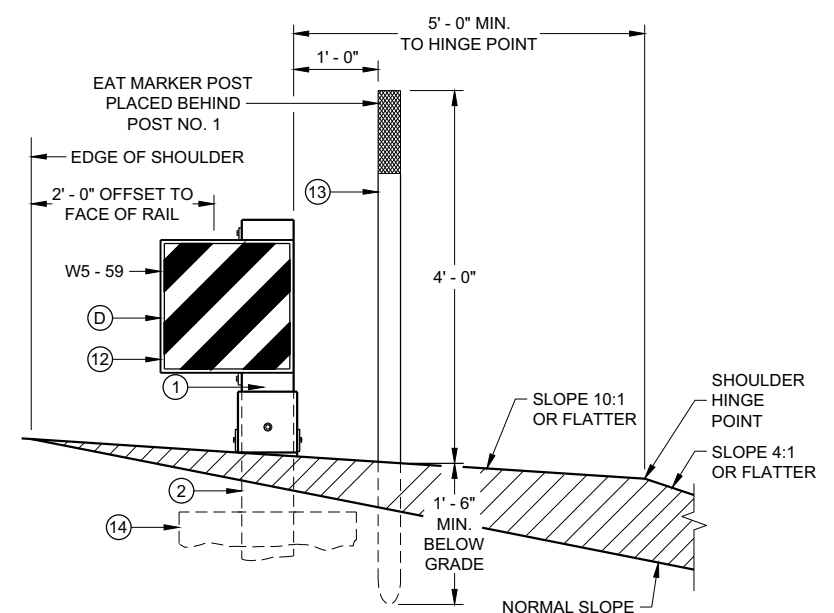
DETAIL "A"



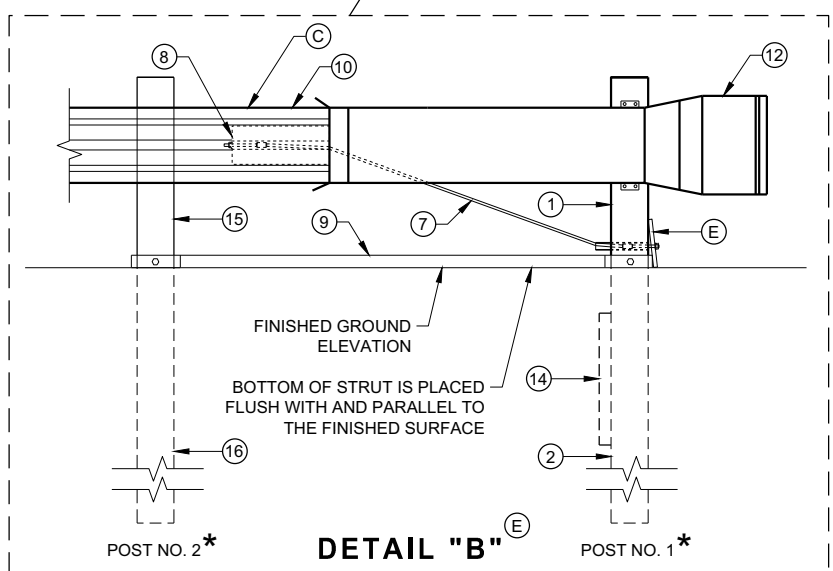
**SECTION C - C
TYPICAL AT POST NOS. 3 - 9**



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



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



DETAIL "B"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

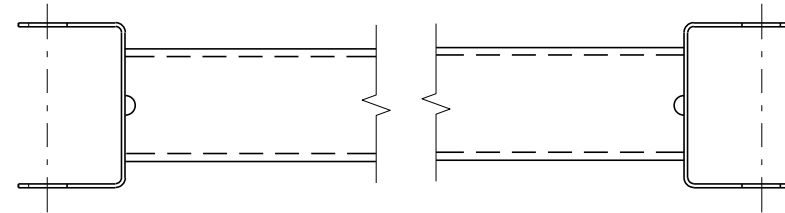
6

SDD 14B44 - 04a

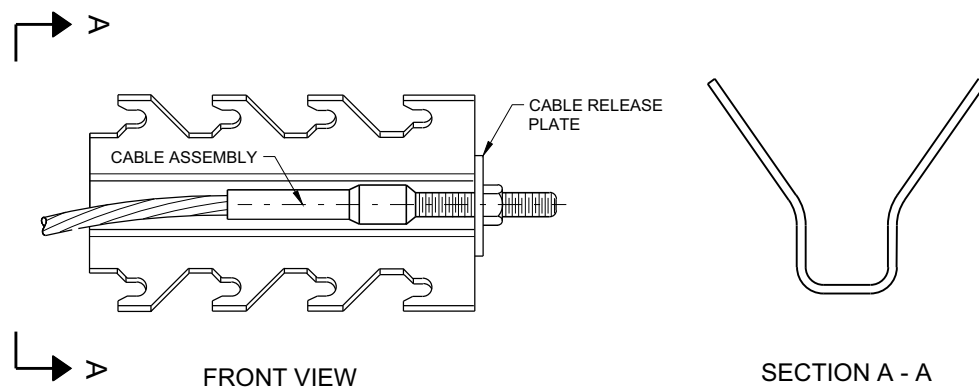
SDD 14B44 - 04a

BILL OF MATERIALS

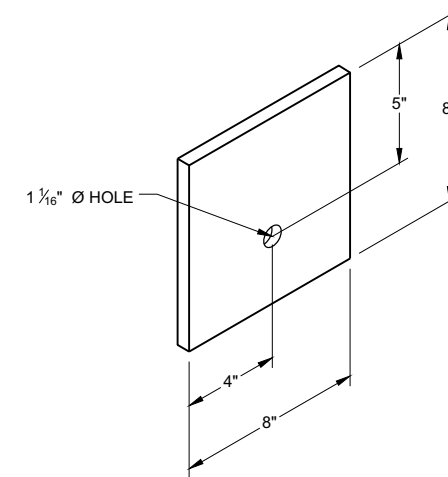
| PART NO. | DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION. |
|----------|----------------------------------------------------------------------------------------------------------------|
| ① | UPPER POST NO. 1 6" X 6" TUBE |
| ② | LOWER POST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



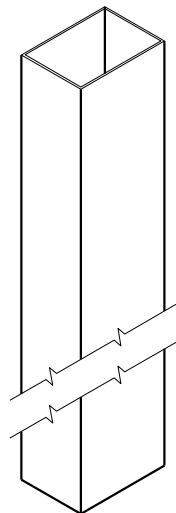
GENERIC GROUND STRUT ⑨ ⑤



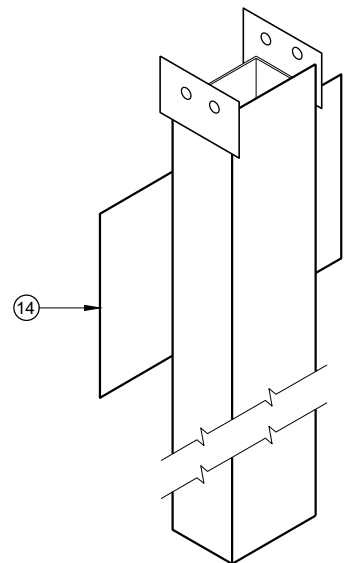
GENERIC ANCHOR CABLE BOX ⑨ ⑤



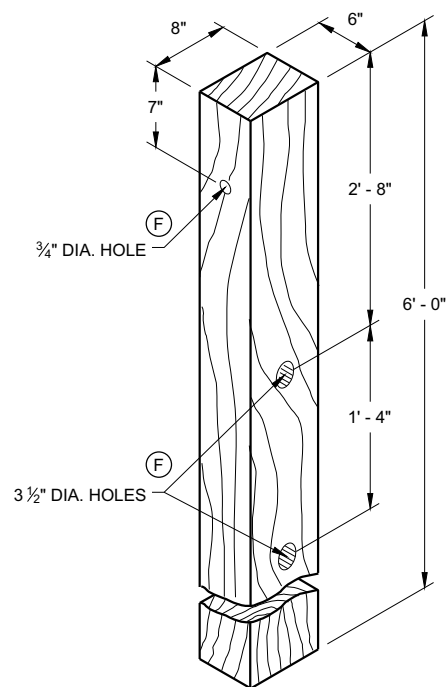
BEARING PLATE ⑥ ⑤



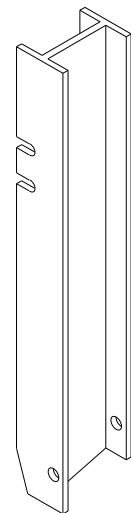
UPPER POST NO. 1 ⁽¹⁾ (E)



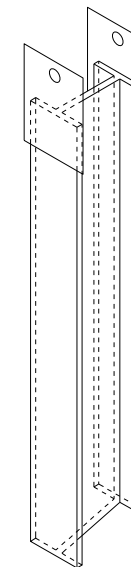
LOWER POST NO. 1 ⁽²⁾ (E)



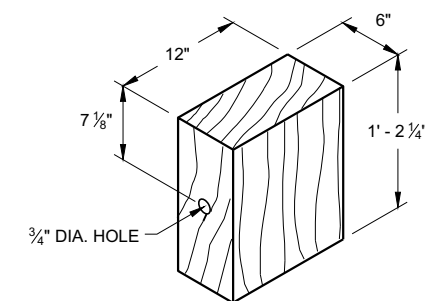
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

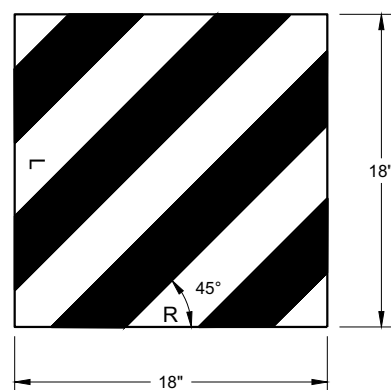


LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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

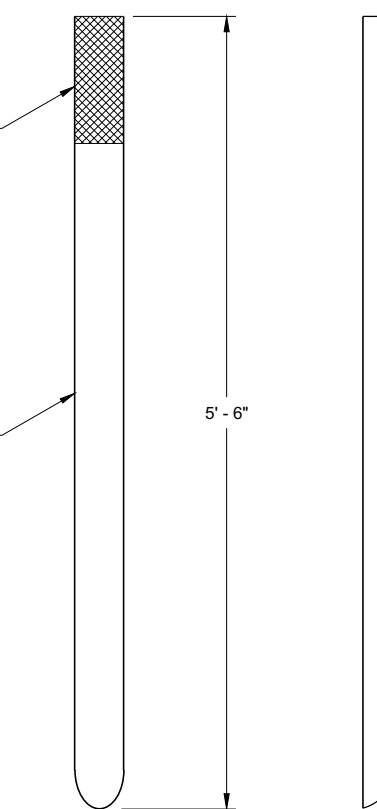
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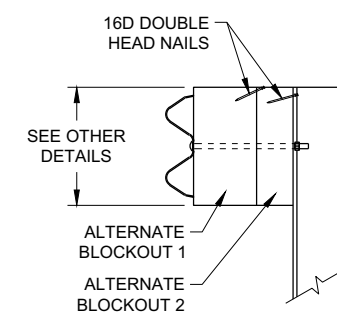
W5 - 59
REFLECTIVE SHEETING DETAIL ^(E)

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

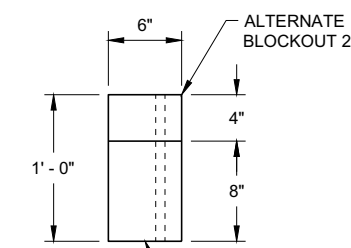
E.A.T. MARKER
POST (YELLOW)



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



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

6

SDD 14B44 - 04c

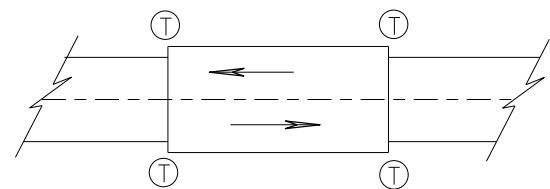
SDD 14B44 - 04c

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

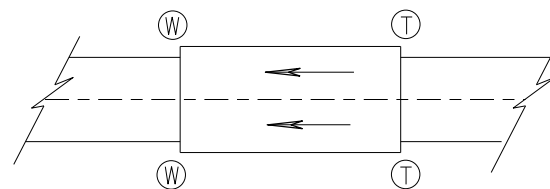
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

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

TRANSITION USES STEEL POSTS ONLY.

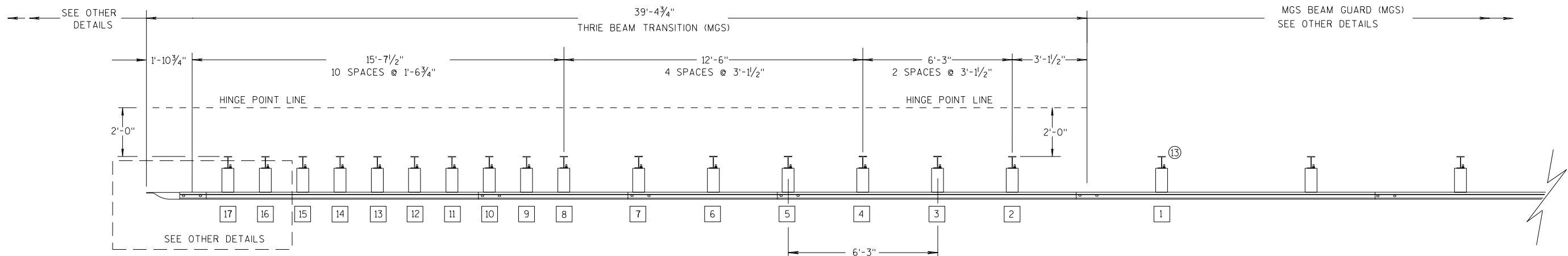
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

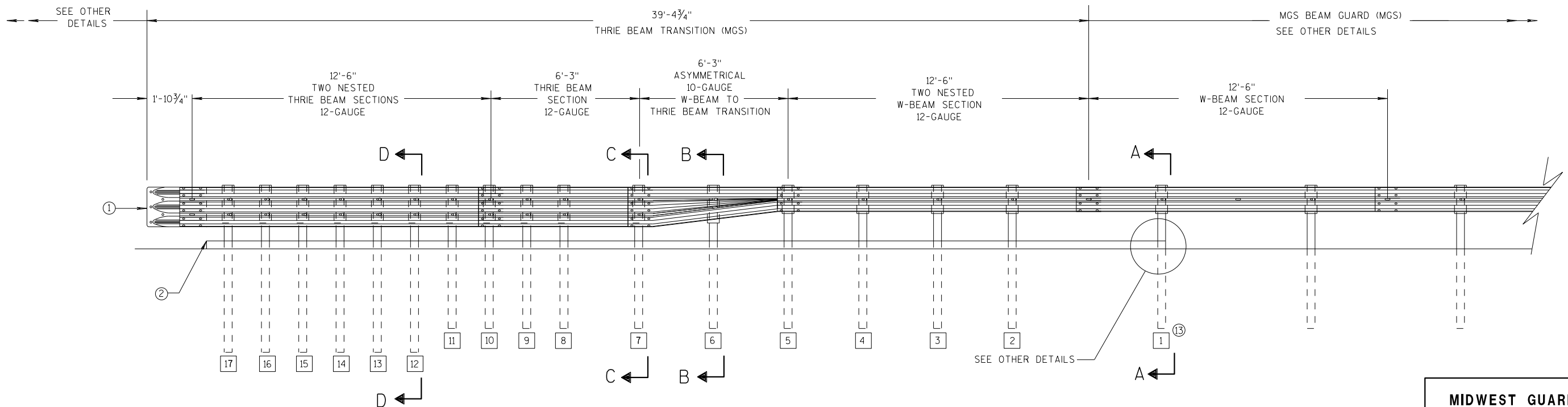
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

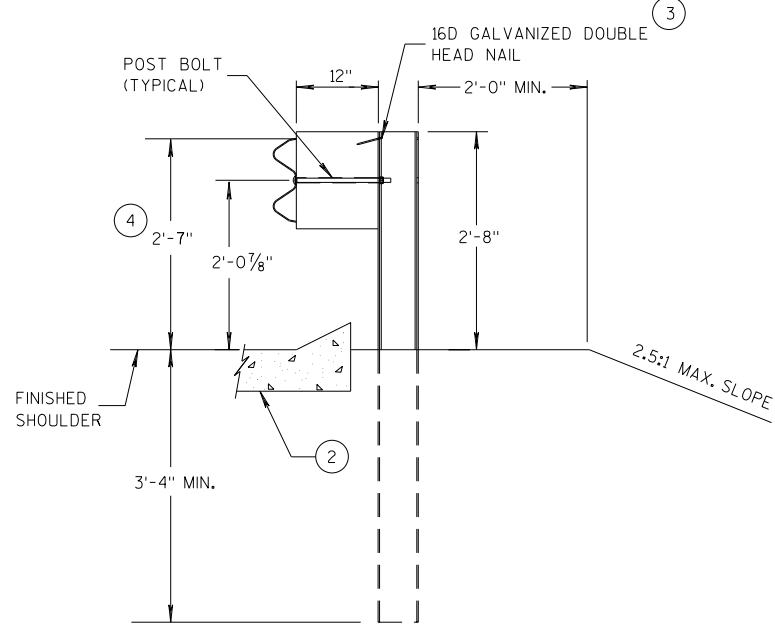
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

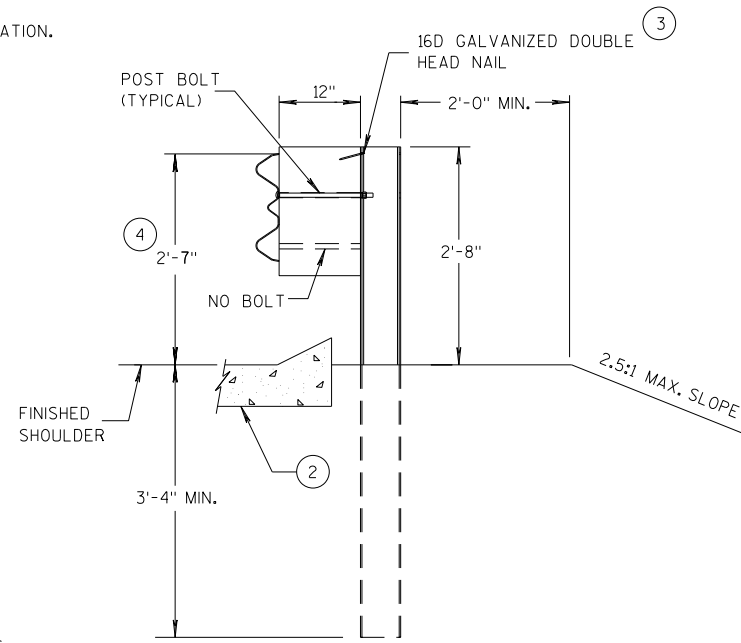
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

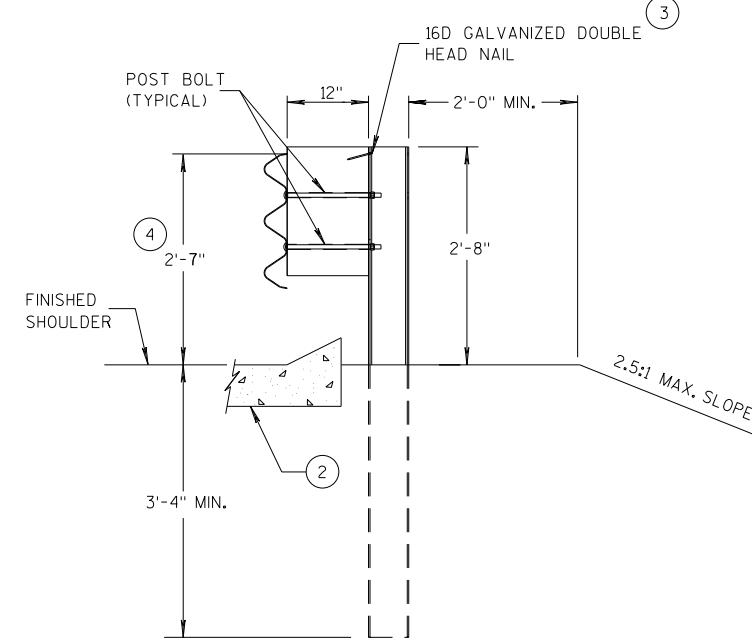
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



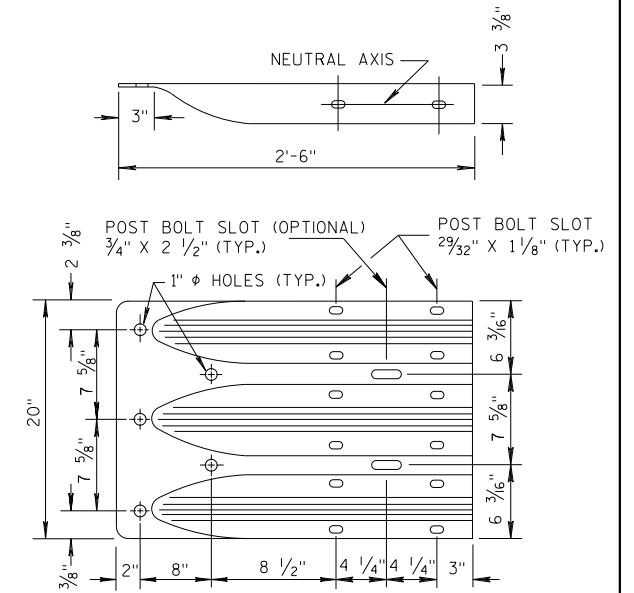
**SECTION A-A
POSTS 1-5**



**SECTION B-B
POST 6**



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



**THRIE BEAM
TERMINAL CONNECTOR**

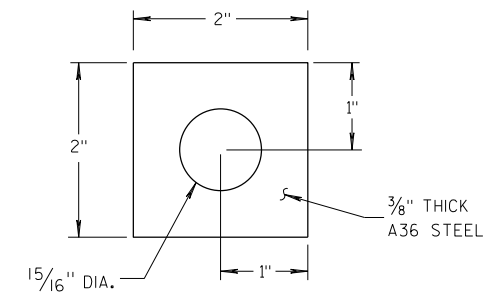
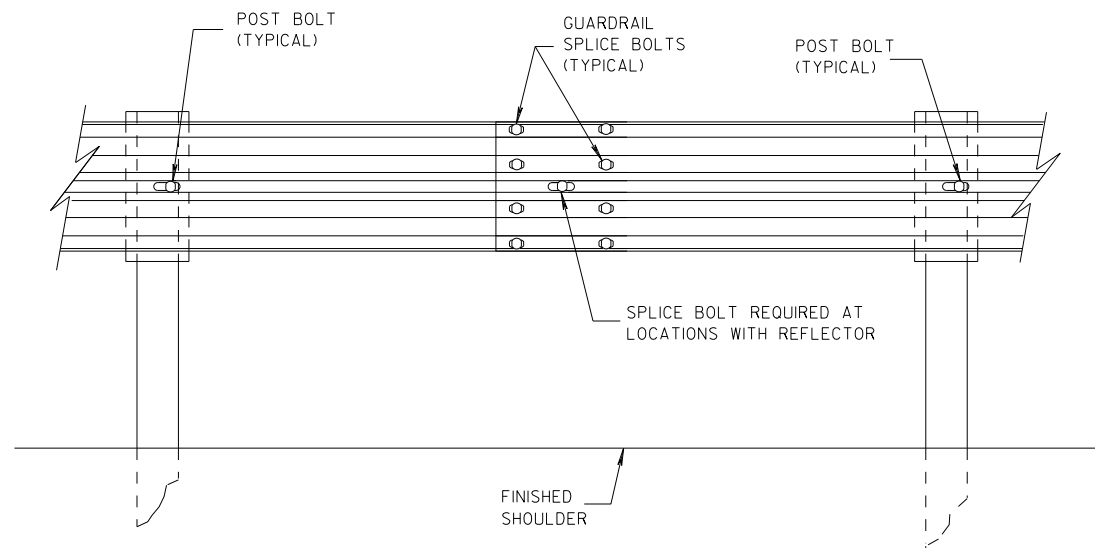
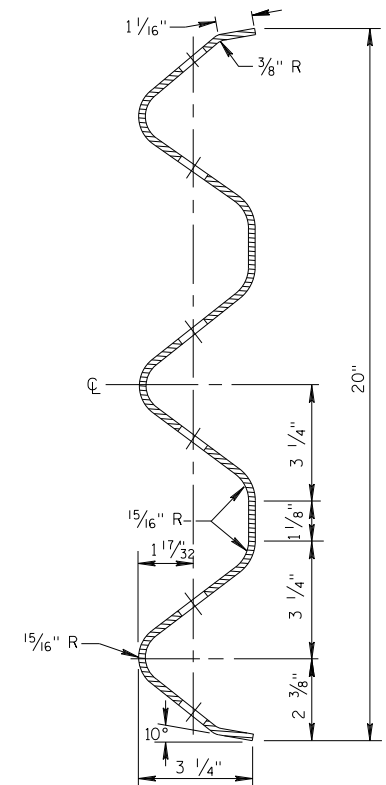


PLATE WASHER DETAIL



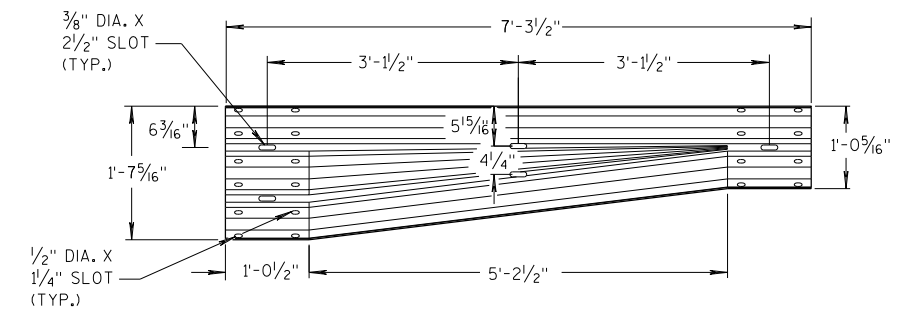
SPLICE DETAIL



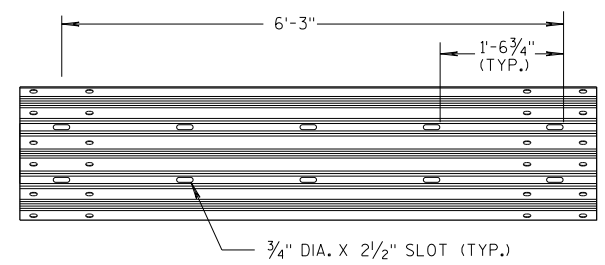
**SECTION THRU THRIE
BEAM RAIL ELEMENT**

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

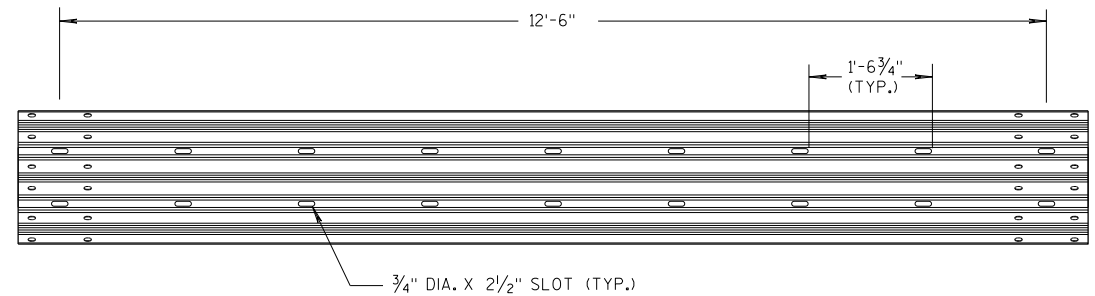
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



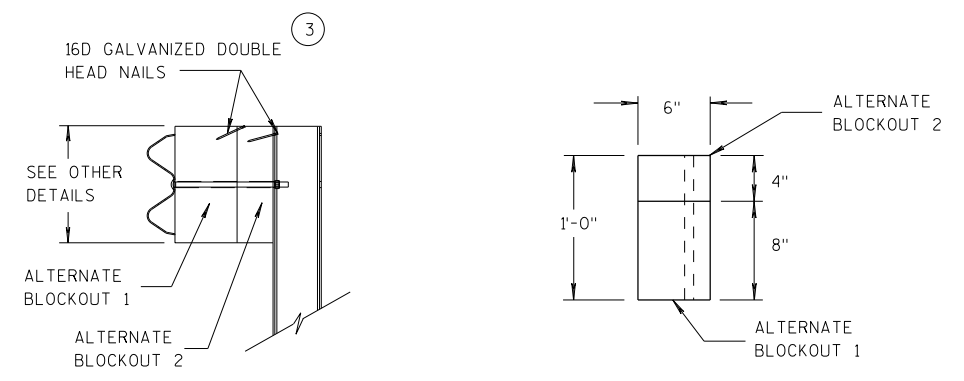
W-BEAM TO THRIE BEAM TRANSITION SECTION



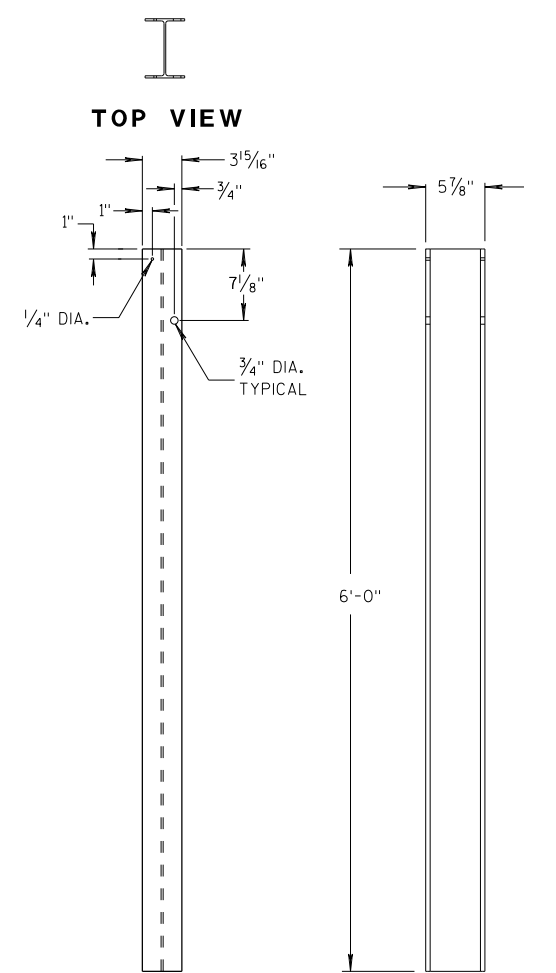
6'-3\"/>



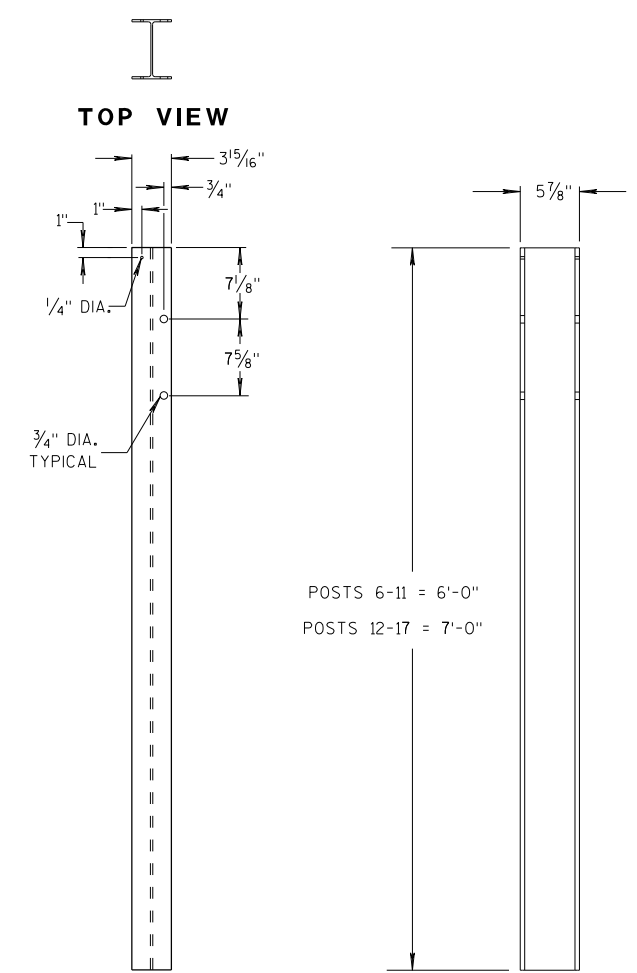
12'-6\"/>



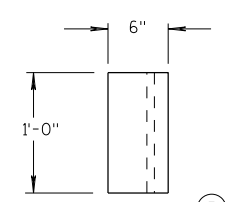
ALTERNATE WOOD BLOCKOUT DETAIL



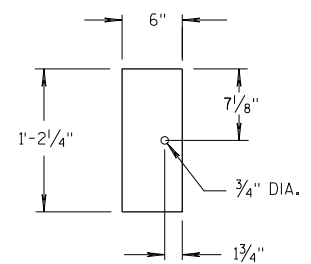
STEEL POSTS 1-5



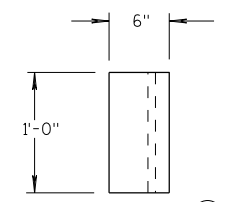
STEEL POSTS 6-17



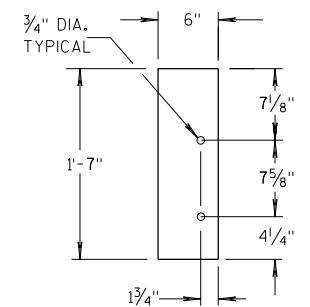
TOP VIEW



BLOCKOUT POSTS 1-5



TOP VIEW



BLOCKOUT POSTS 6-17

GENERAL NOTES

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

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

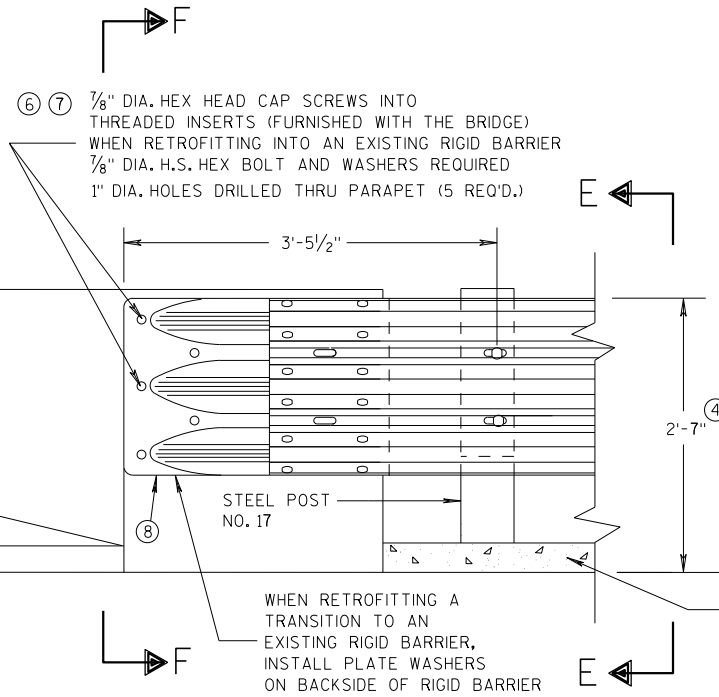
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

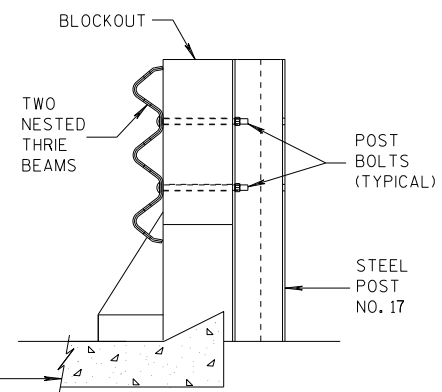
S.D.D. 14 B 45-5c

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

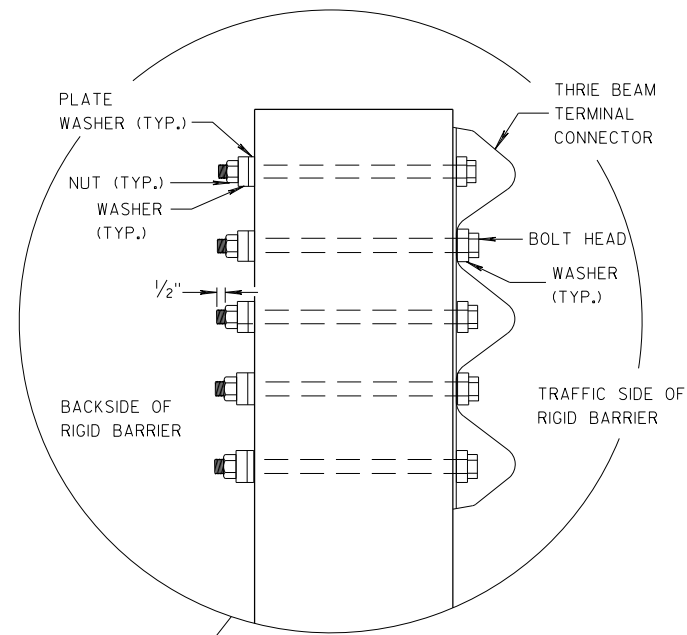


FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

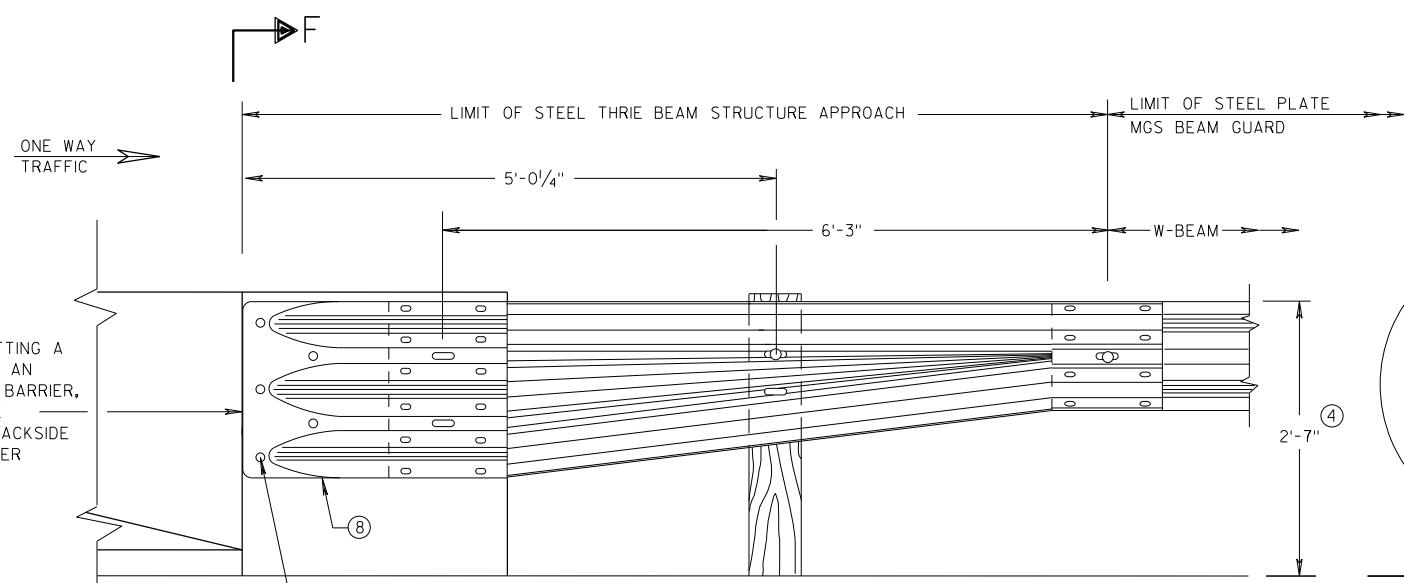


SECTION E-E



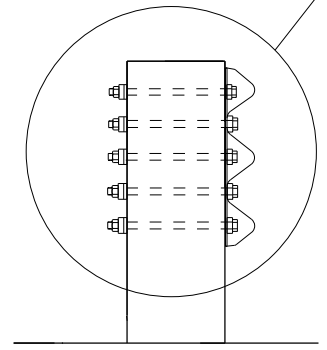
GENERAL NOTES

- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS ± 1\".
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2\" O.D. X 5/32\" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6\" X 2'-0\" X 3 1/2\".

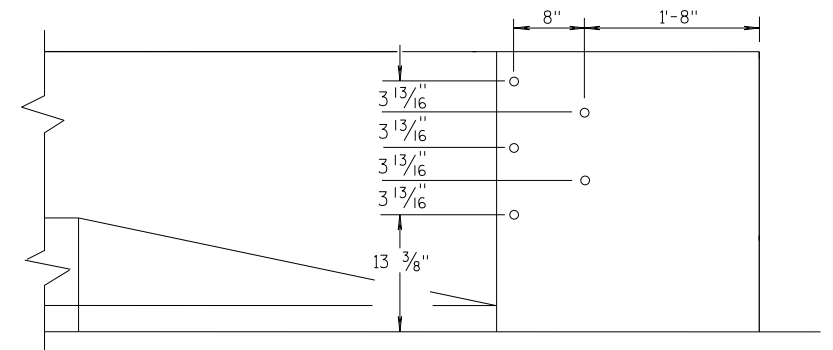


FRONT VIEW

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



SECTION F-F



DRILL HOLE LOCATION

6

6

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

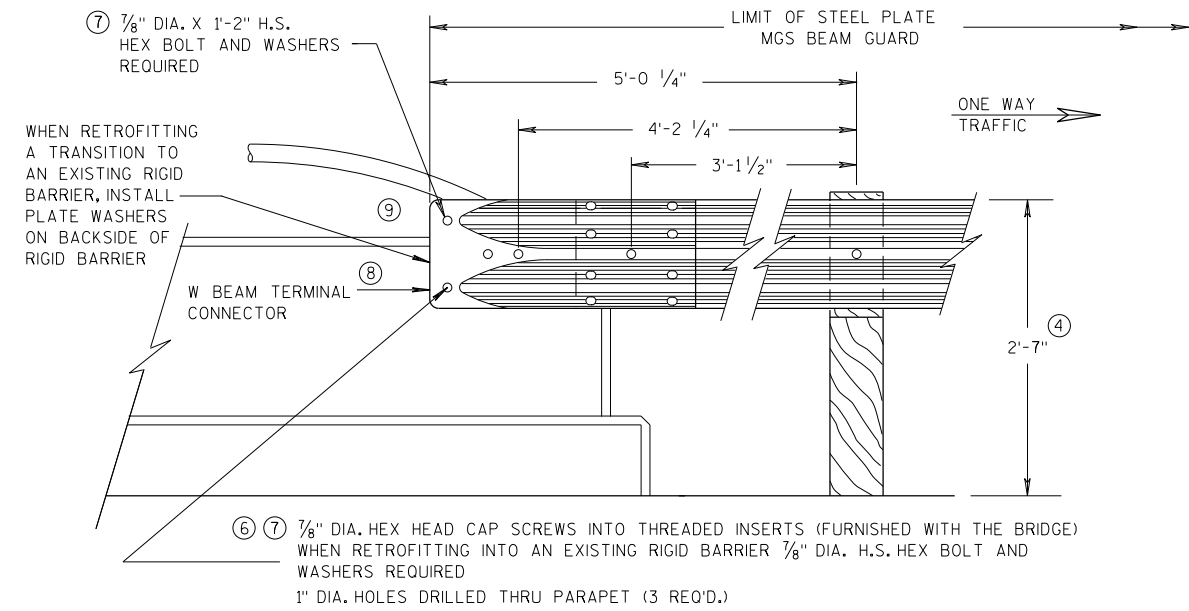
S.D.D. 14 B 45-5d

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

GENERAL NOTES

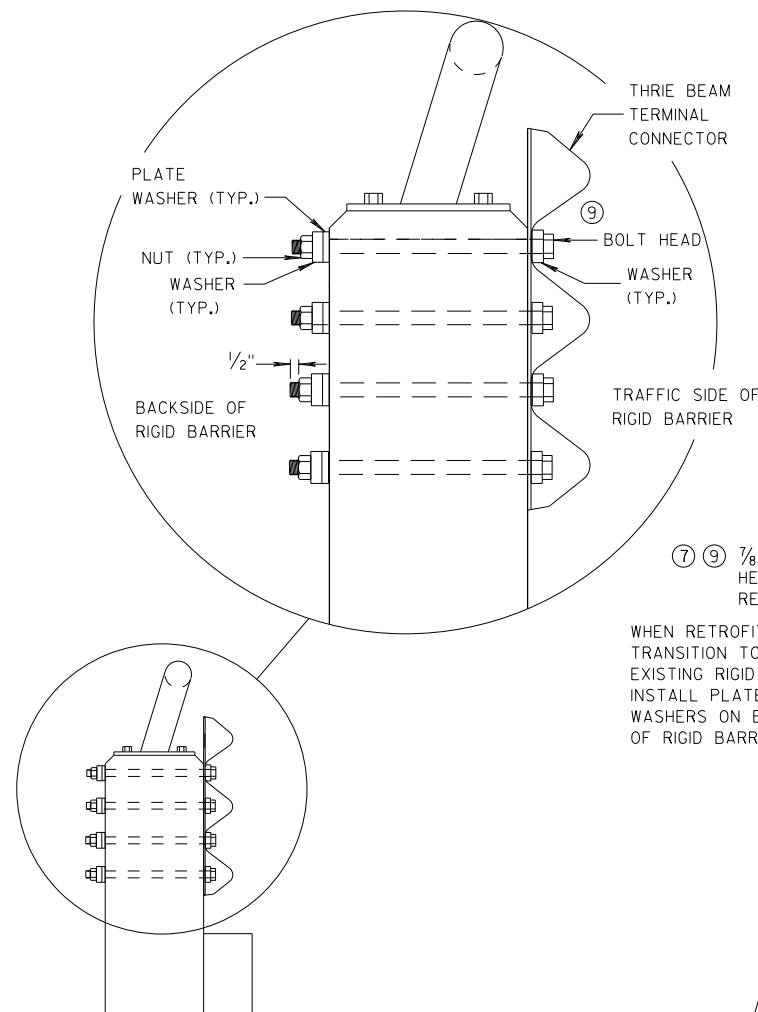
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- ⑨ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.

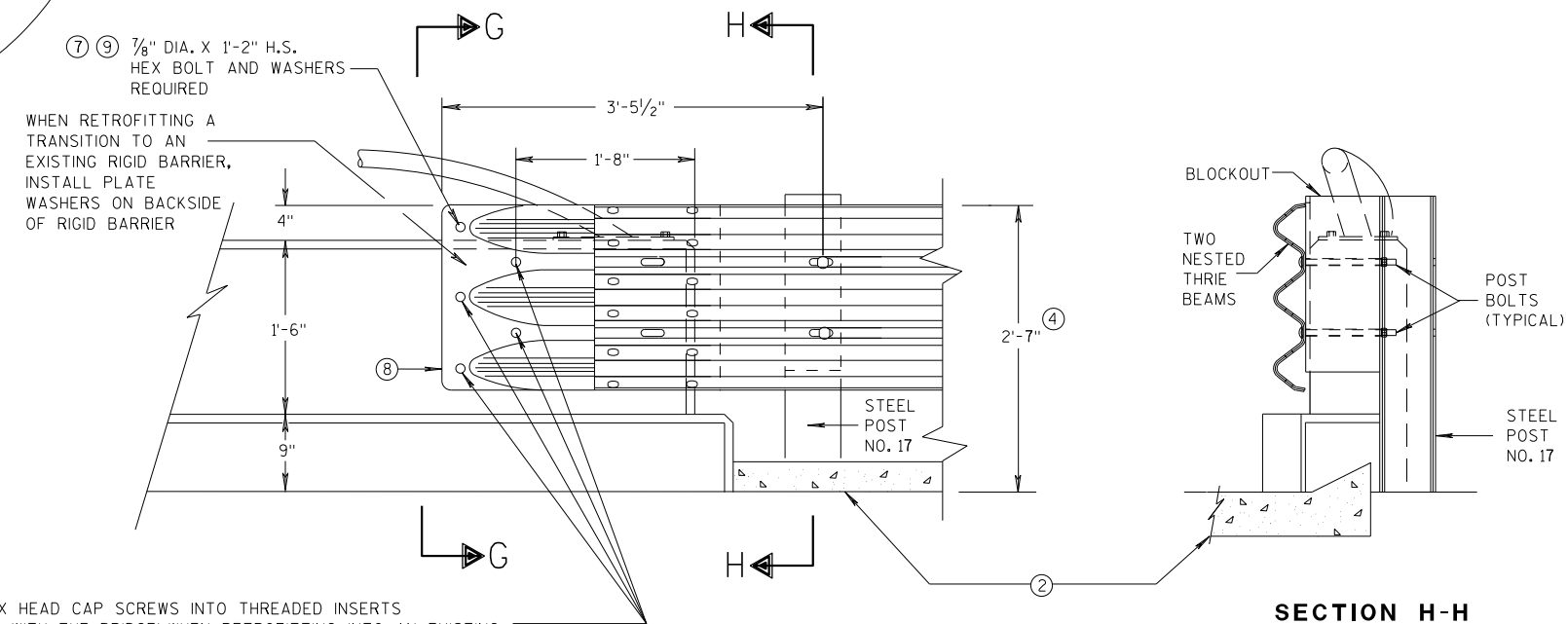


FRONT VIEW

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



SECTION G-G



FRONT VIEW

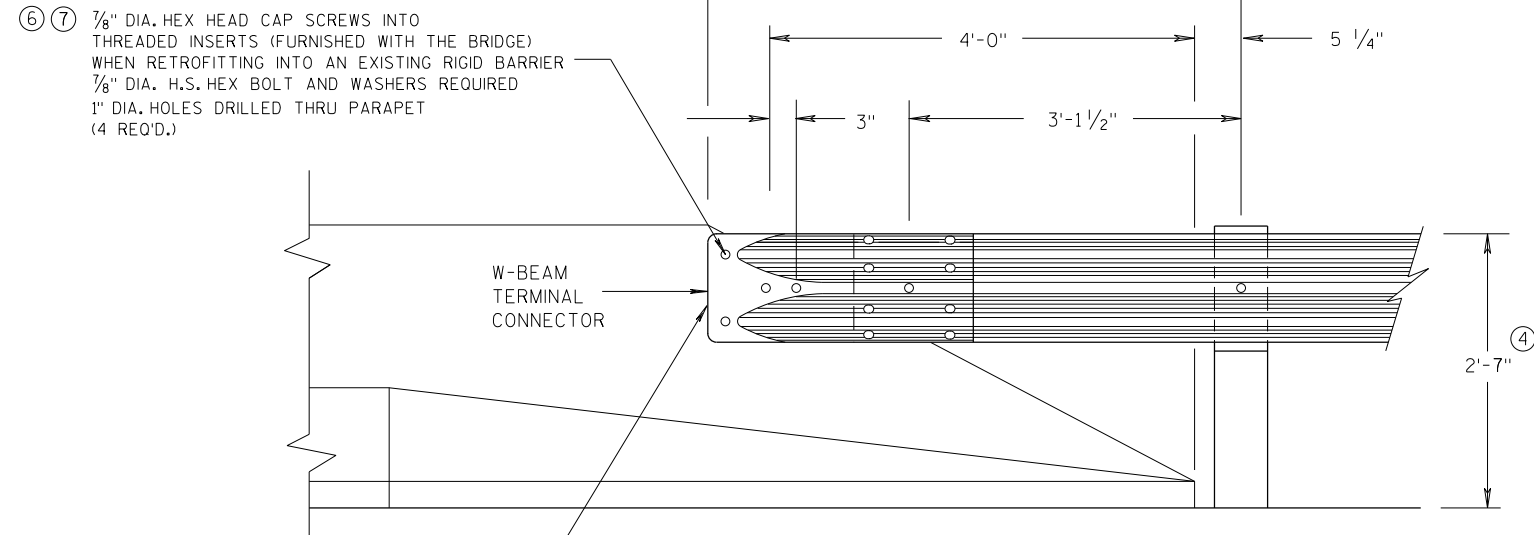
THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

ONE WAY
TRAFFIC



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

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

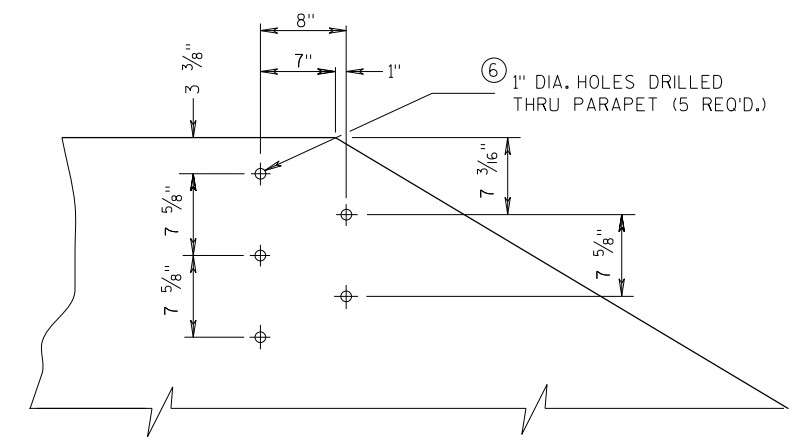
FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

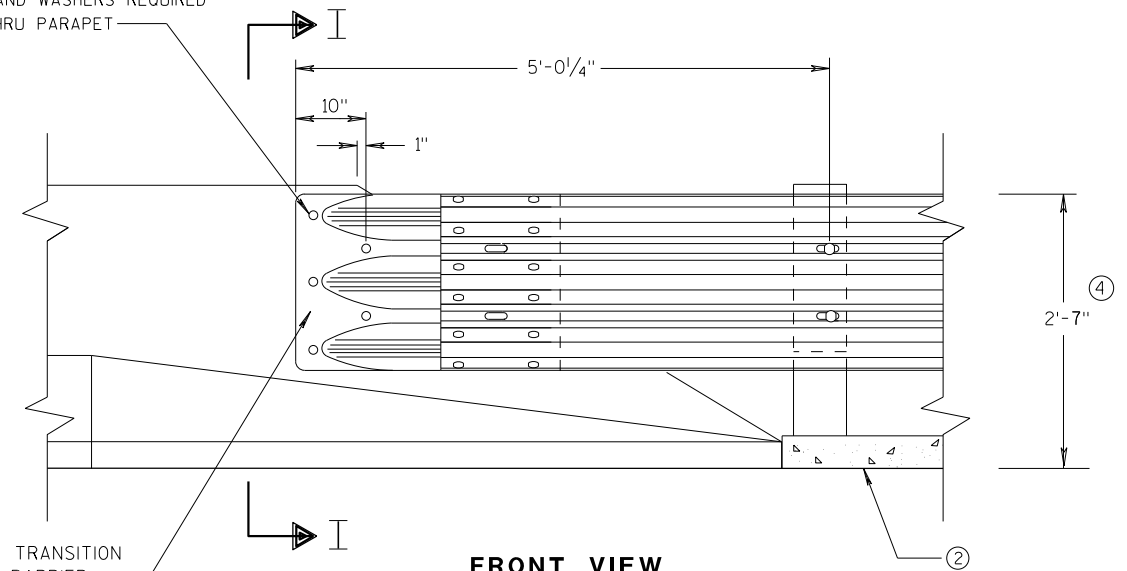
GENERAL NOTES

- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION

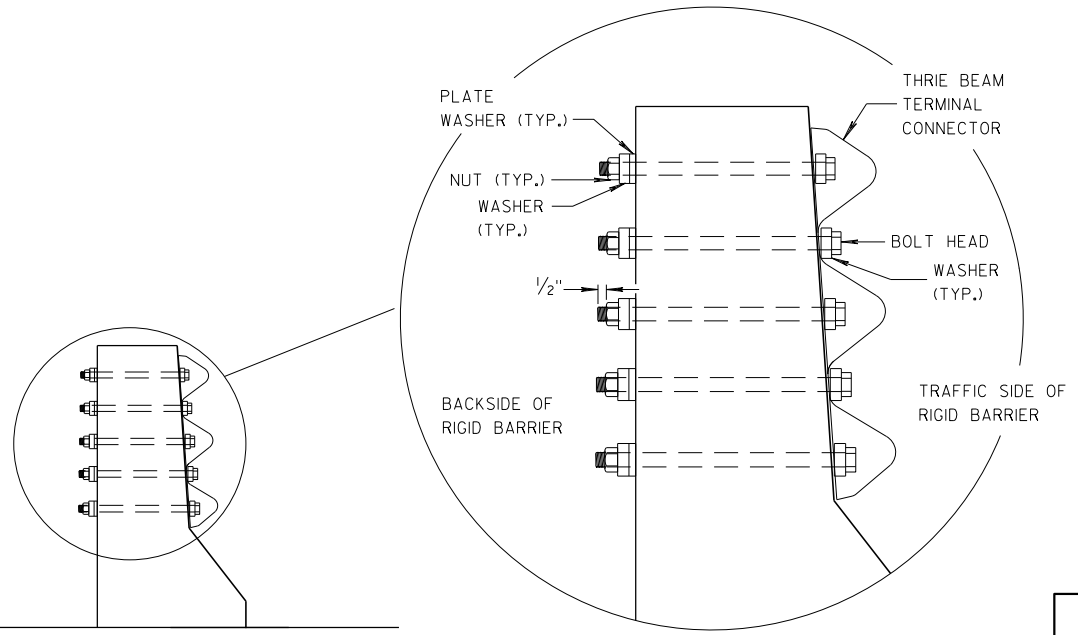
⑥ ⑦ 7/8" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER 7/8" DIA. H.S. HEX BOLT AND WASHERS REQUIRED 1" DIA. HOLES DRILLED THRU PARAPET (5 REQ'D.)



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

FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

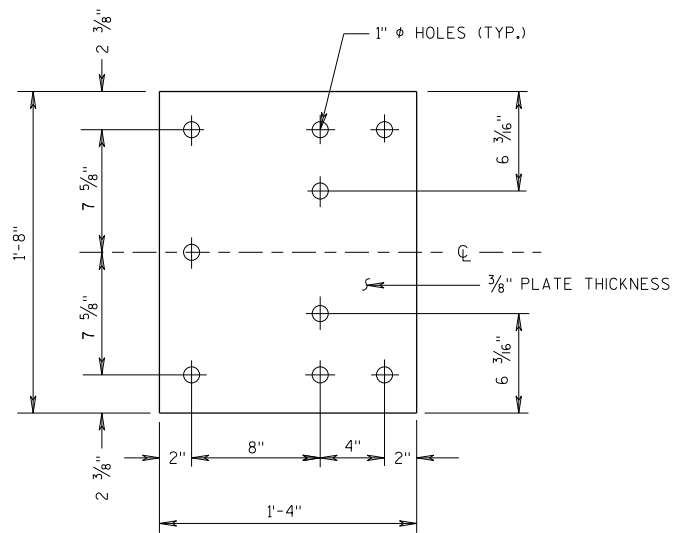


SECTION I-I

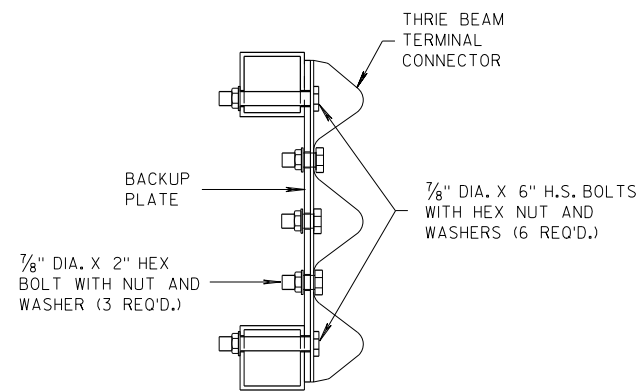
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

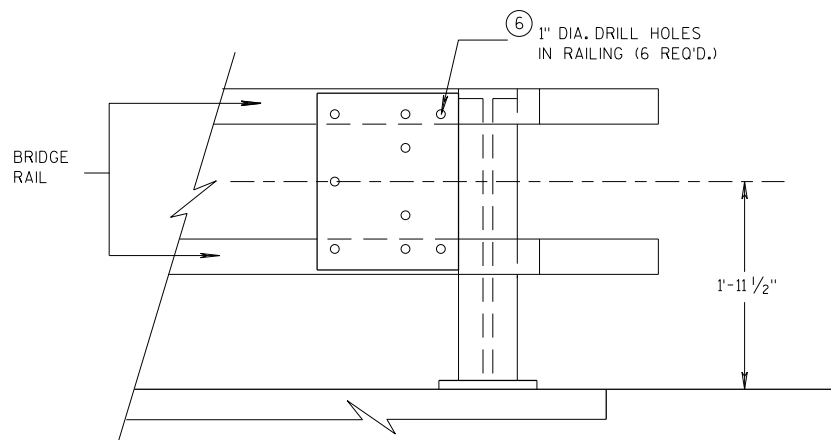
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



BACK-UP PLATE DETAIL



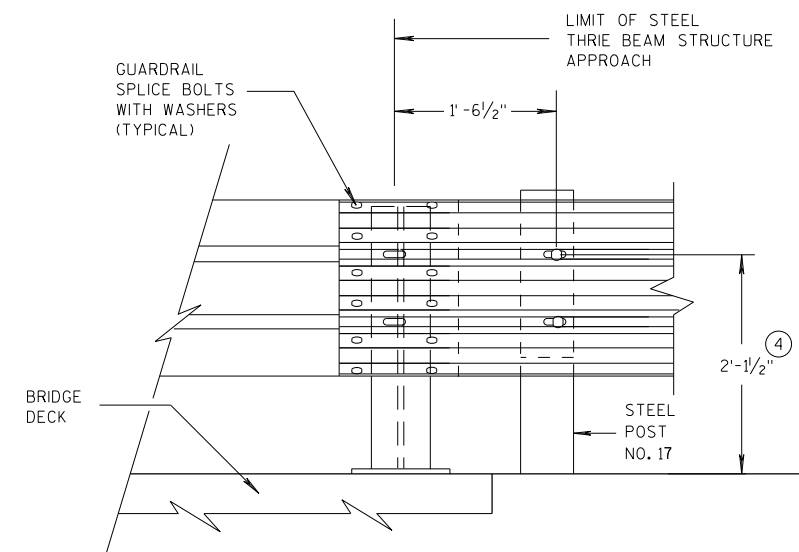
SECTION J-J



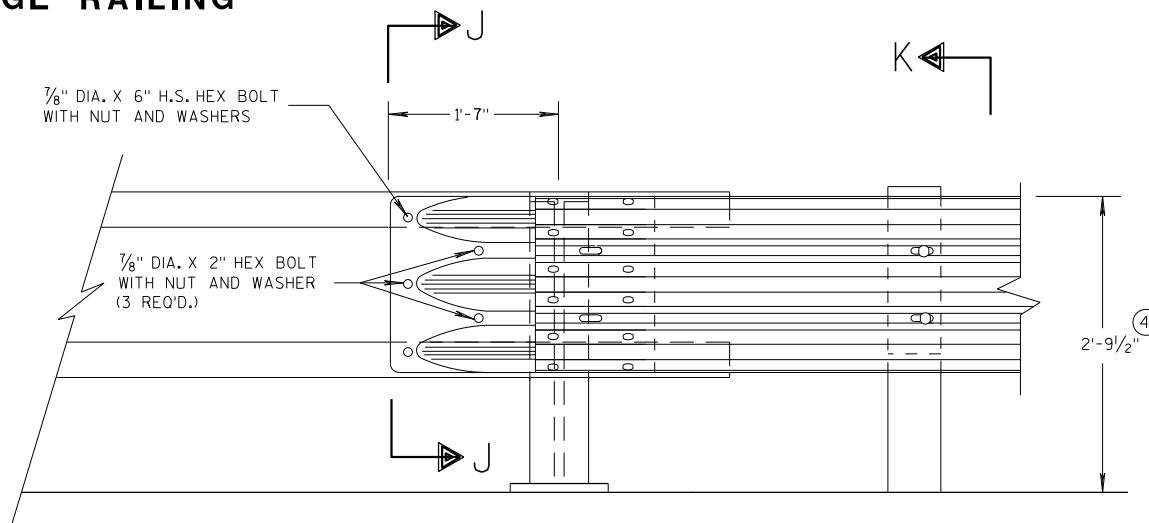
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

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

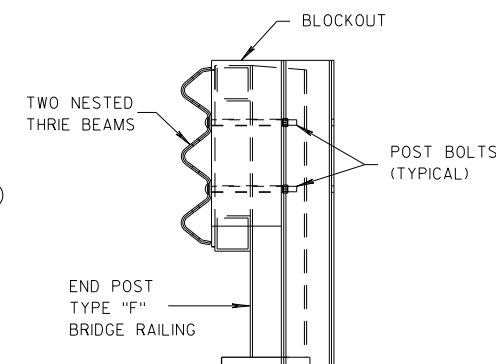


**FRONT VIEW
THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"**



FRONT VIEW

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



SECTION K-K

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

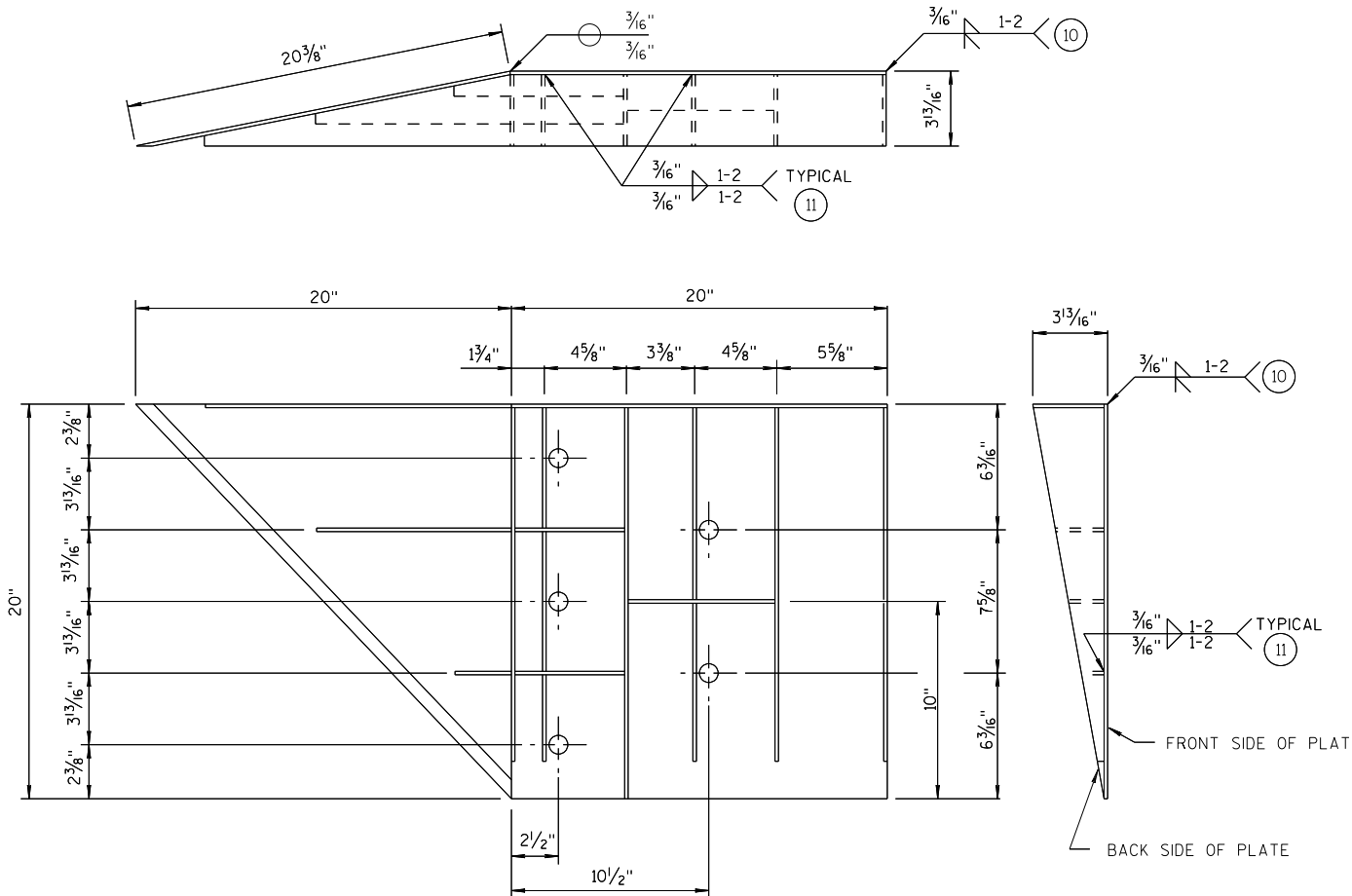
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

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

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



WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

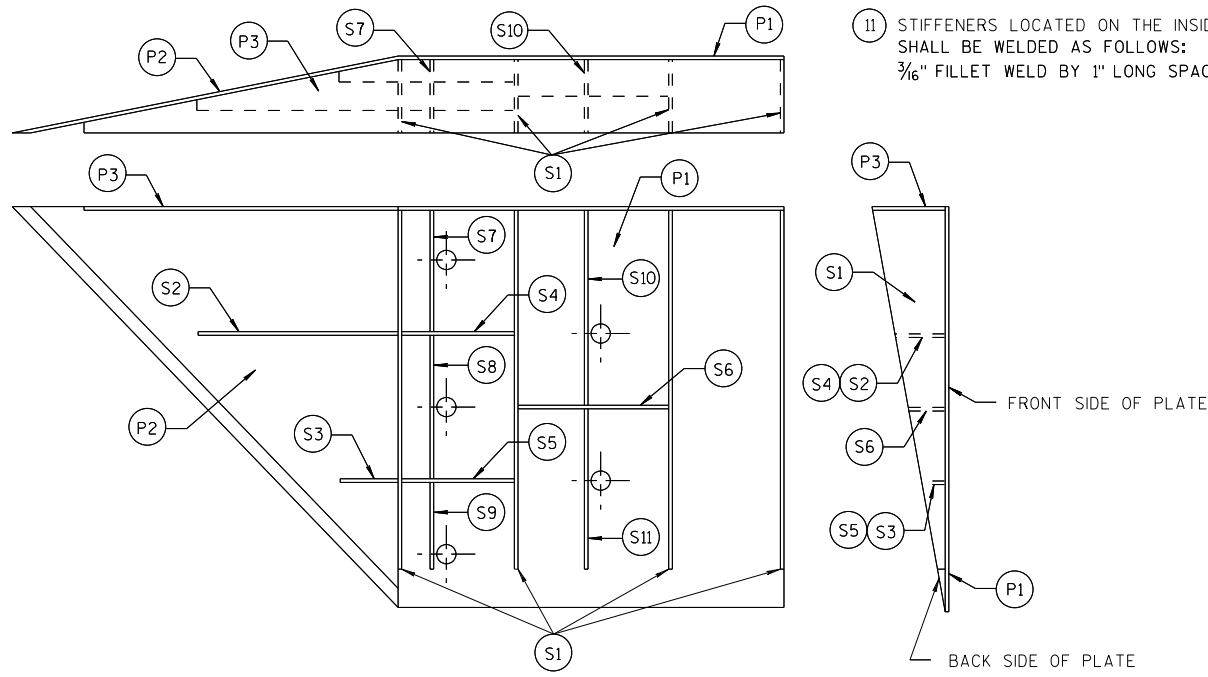


PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

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

SINGLE SLOPE CONNECTION PLATE

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

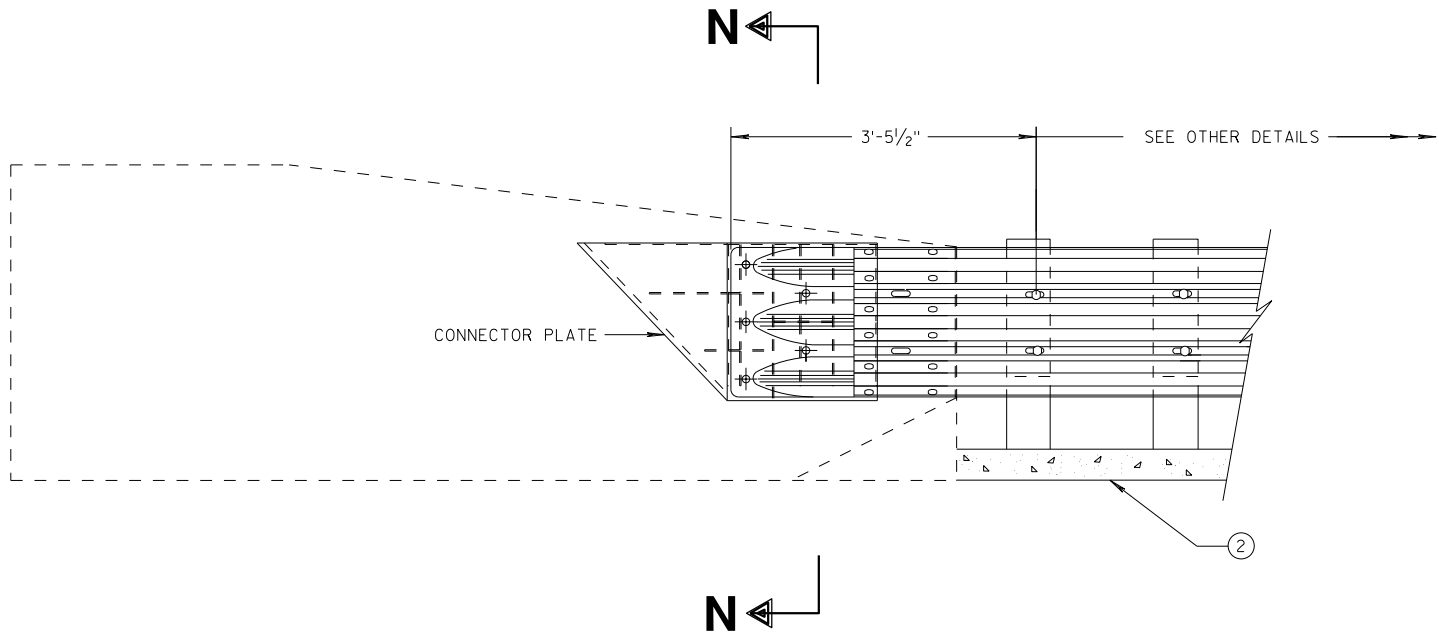
FHWA

GENERAL NOTES

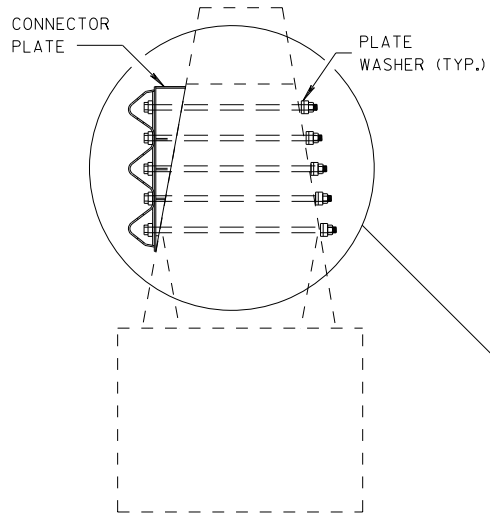
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

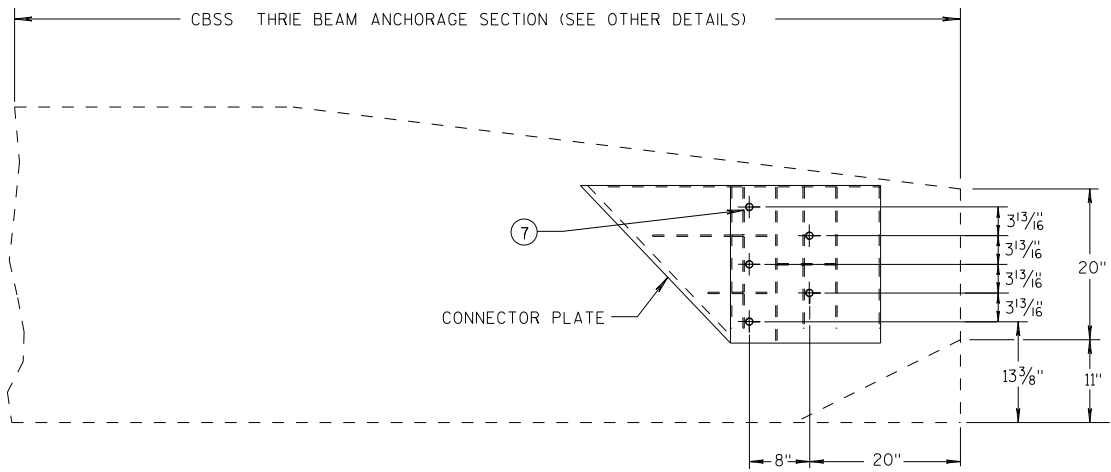
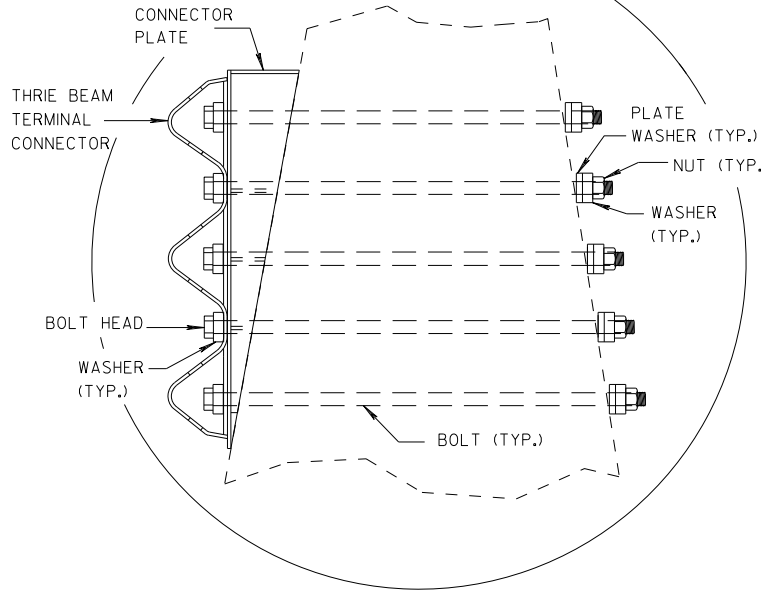
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTION PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



SECTION N-N

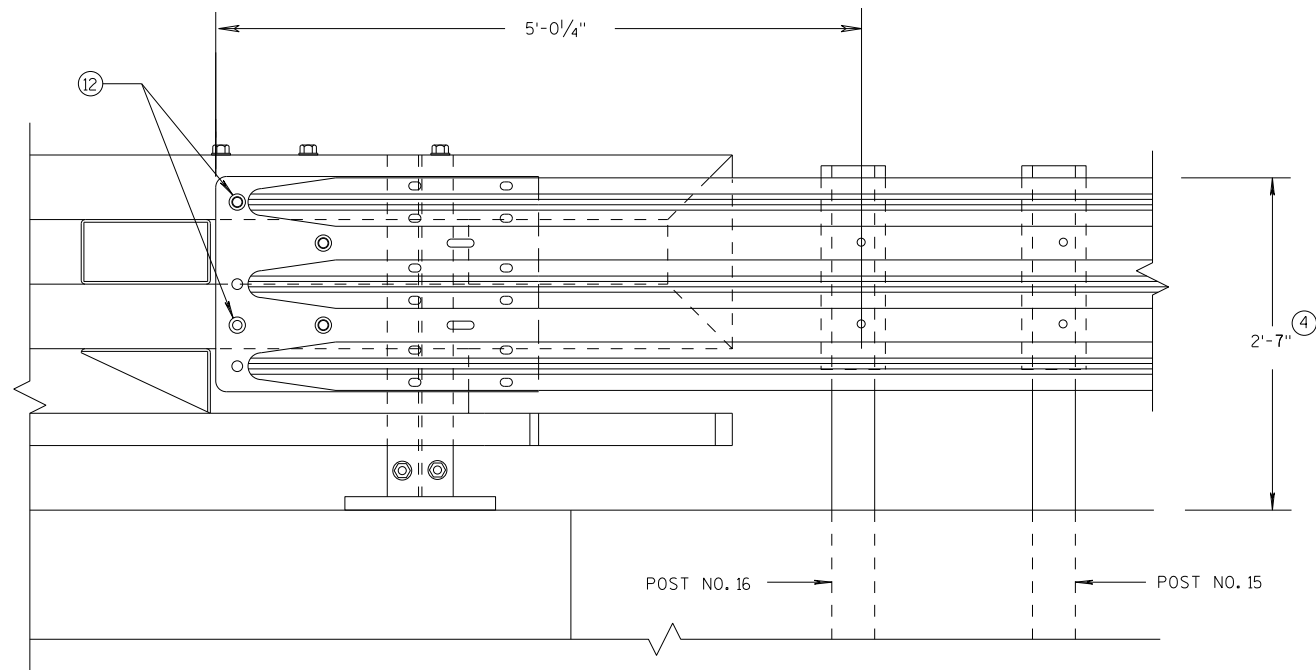


SINGLE SLOPE CONNECTION PLATE PLACEMENT

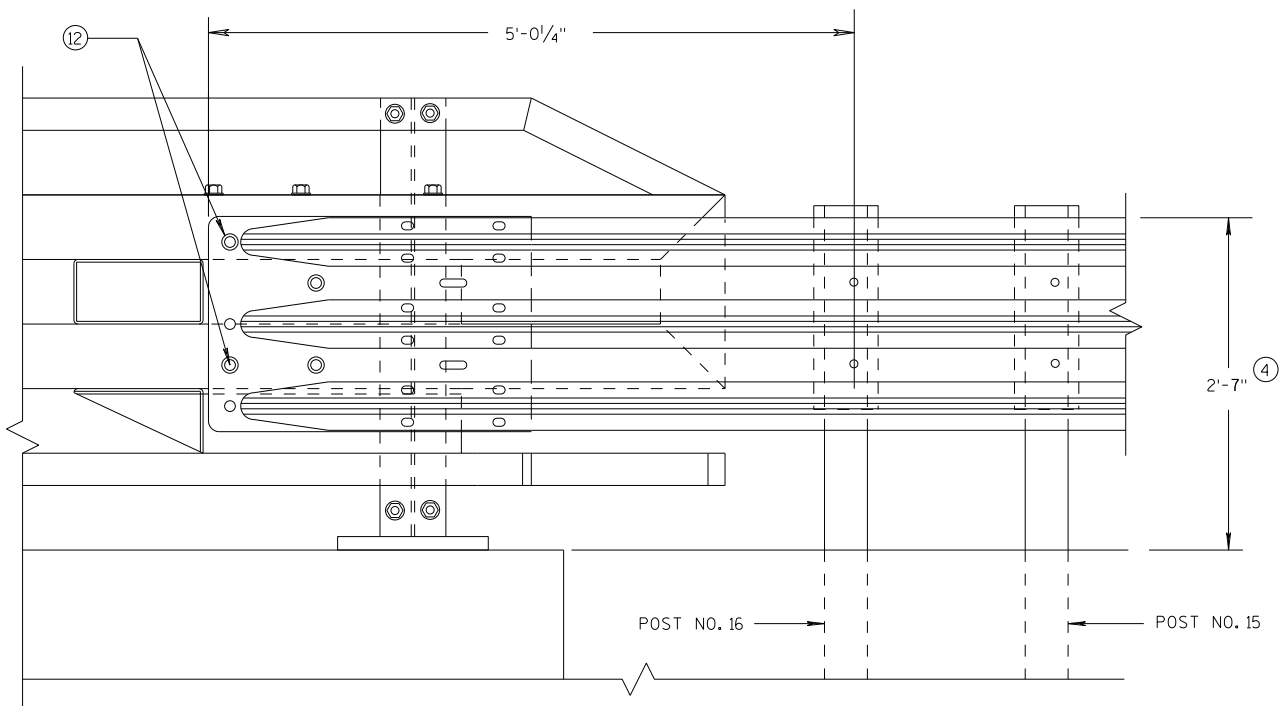
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



**ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT**



**ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT**

GENERAL NOTES

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

6

6

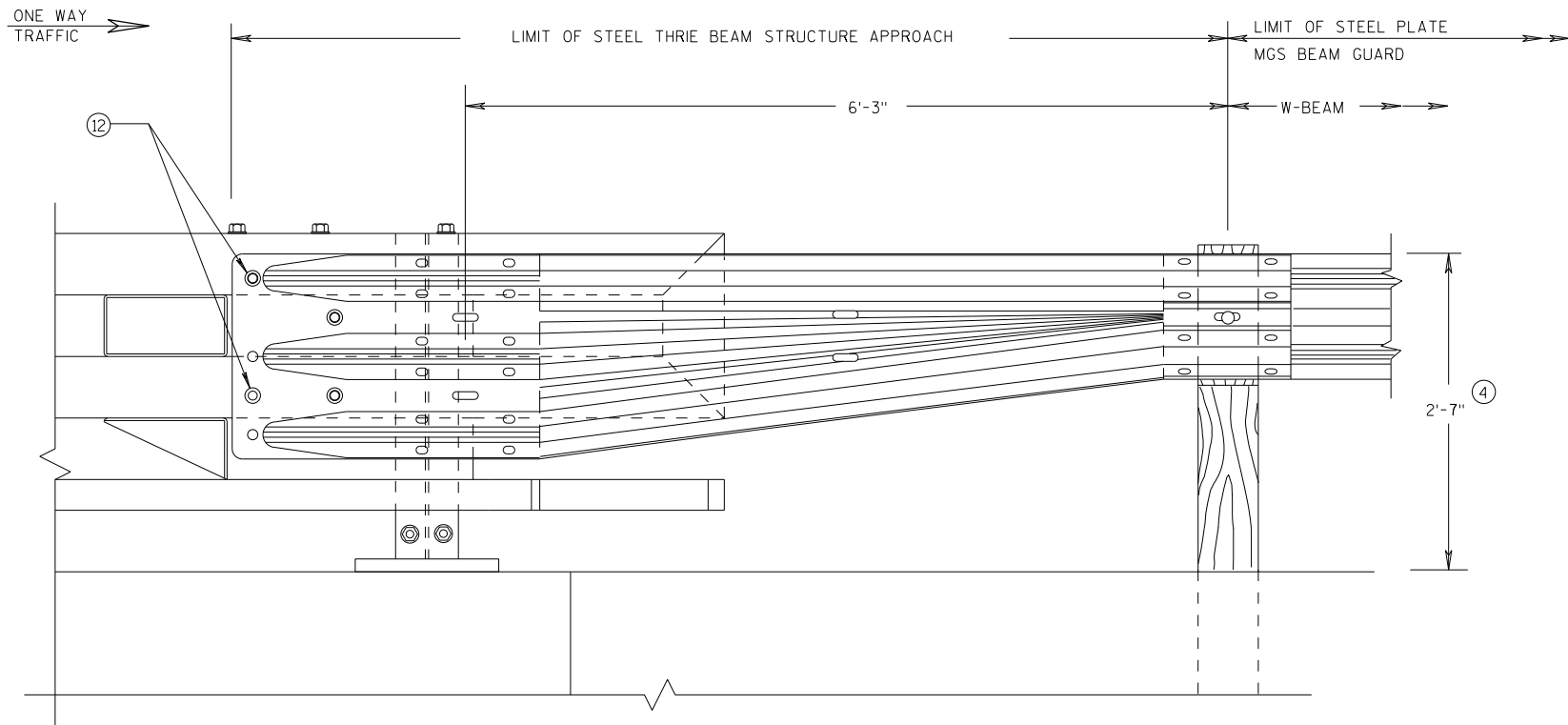
S.D.D. 14 B 45-5k

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

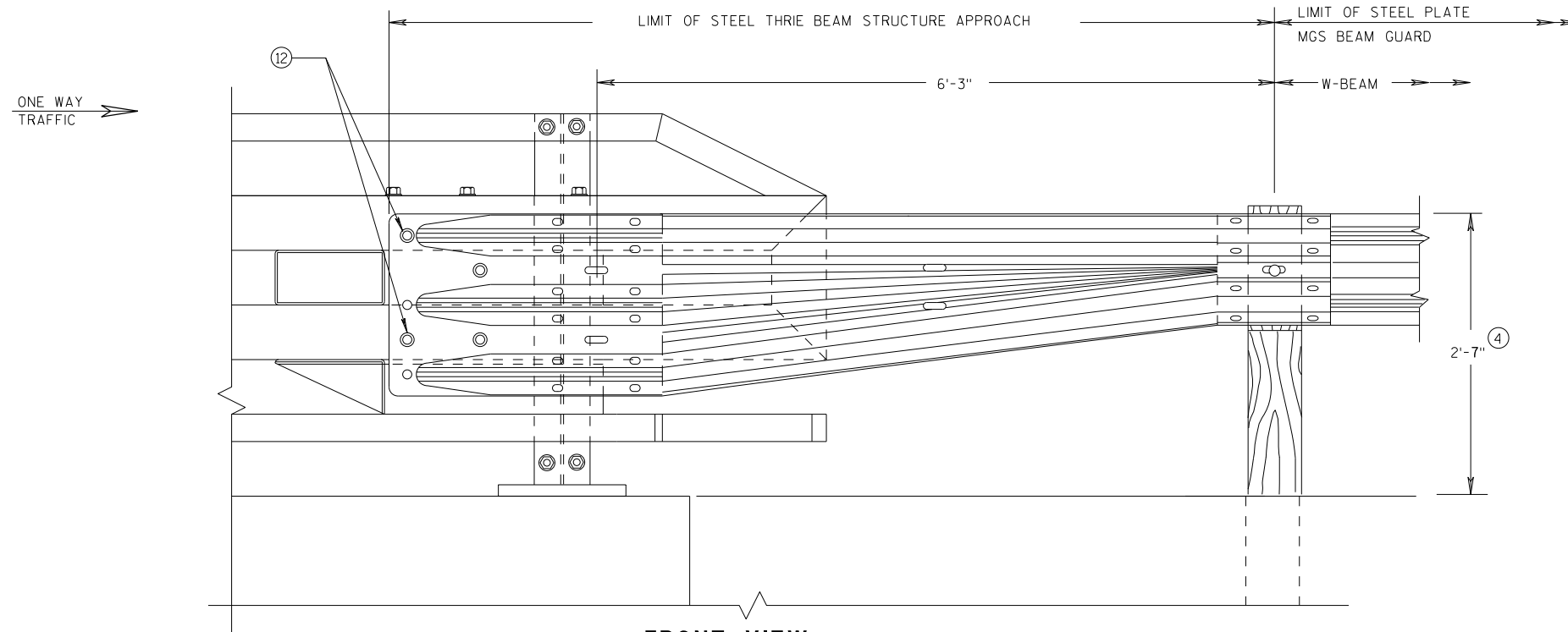
APPROVED
DATE 7/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



GENERAL NOTES

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

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



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

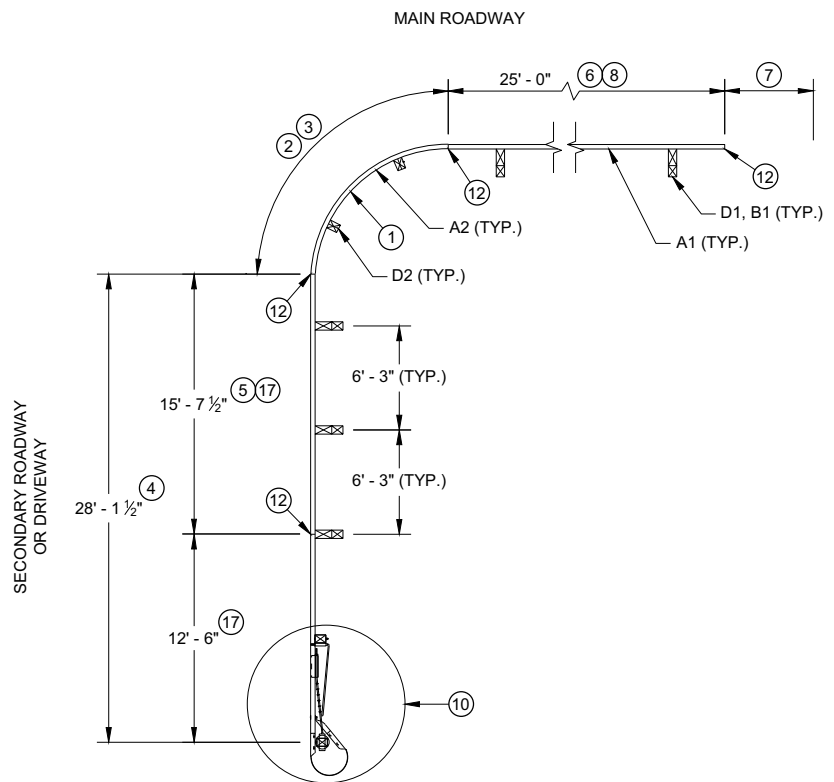
6

6

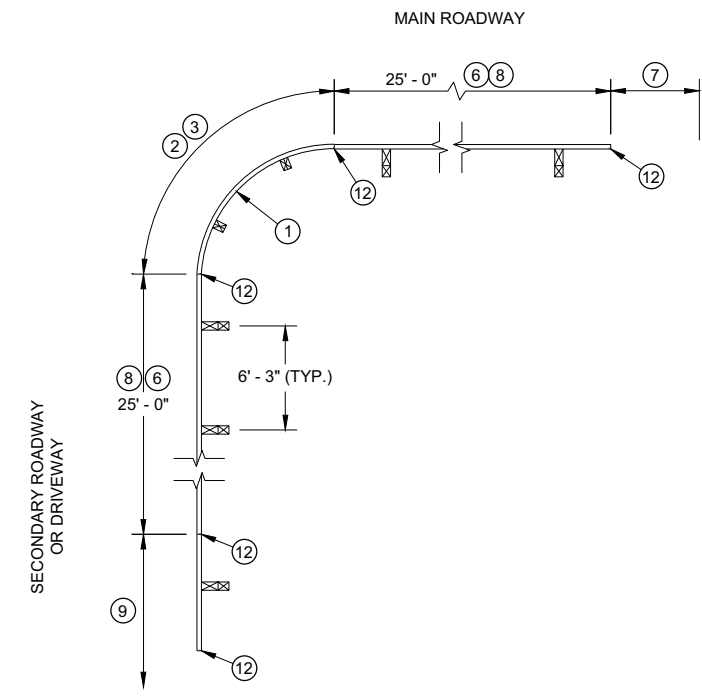
S.D.D. 14 B 45-5L

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

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



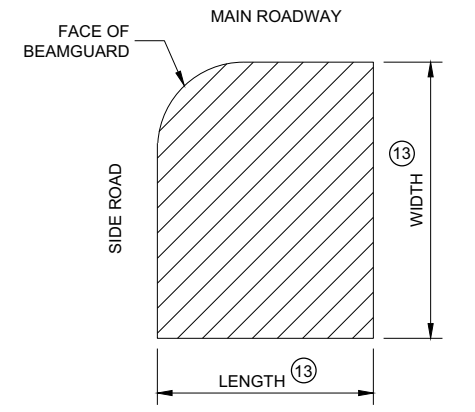
PLAN VIEW
SHORT RADIUS BEAM GUARD WITH
SHORT RADIUS TERMINAL ON
SECONDARY ROAD OR DRIVEWAY



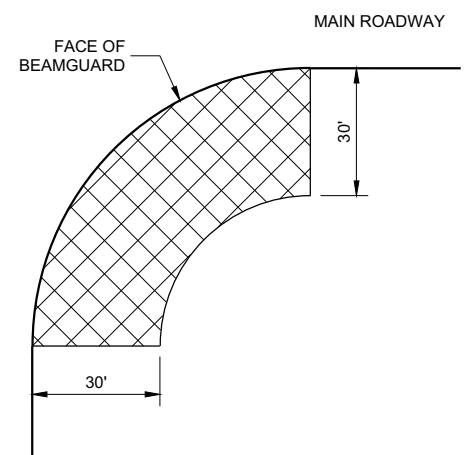
PLAN VIEW
SHORT RADIUS BEAM GUARD WITH
EAT, ADDITIONAL BEAM GUARD
OR
TRANSITION TO RIGID BARRIER ON
SECONDARY ROAD OR DRIVEWAY

TABLE FOR RADIUS OF 32' AND LESS

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



AREA FREE OF FIXED
OBJECTS FOR RADIUS
32' AND LESS

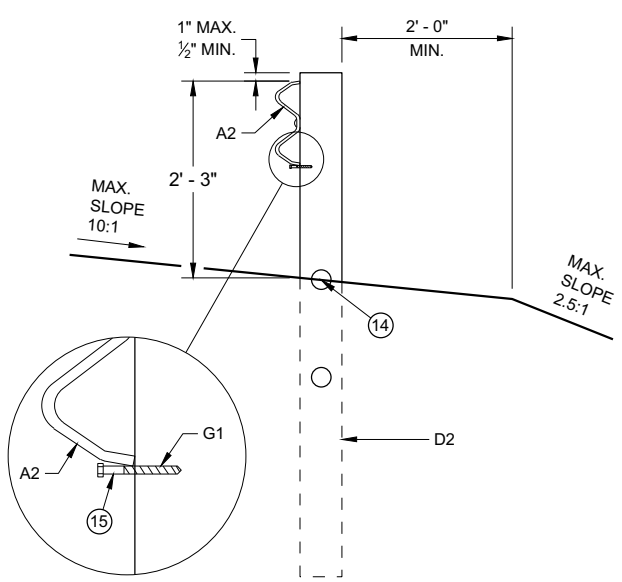


AREA FREE OF FIXED
OBJECTS FOR RADIUS
GREATER THAN 32'

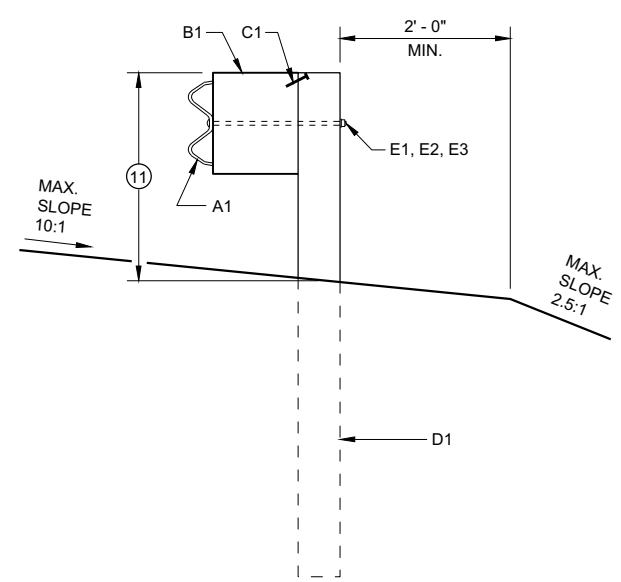
GENERAL NOTES

- SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.
- SEE SDD 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.
- GALVANIZE PARTS AFTER FABRICATION.
- WELDING TO FOLLOW CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI / AWS D1.1.
- UNLESS NOTED OTHERWISE, ALL PLATES ARE FLAT AND FREE OF WARP.
- UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERTICAL.
- ALL CUTS AND HOLES, EXCEPT IN BEAM GUARD RAIL ARE TO BE MACHINED OR MACHINE FLAME CUT.
- UNLESS NOTED OTHERWISE, CUT OR PROVIDE BOLTS THAT ARE 1/4" TO 1/2" BEYOND THE NUT.
- DRAWINGS ARE NOT TO SCALE.

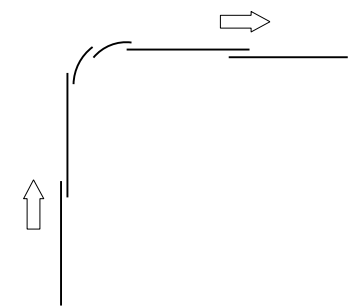
- ① RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- ② CONTROLLED RELEASE TERMINAL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



CONTROLLED RELEASE
TERMINAL POST (CRT) IN RADIUS



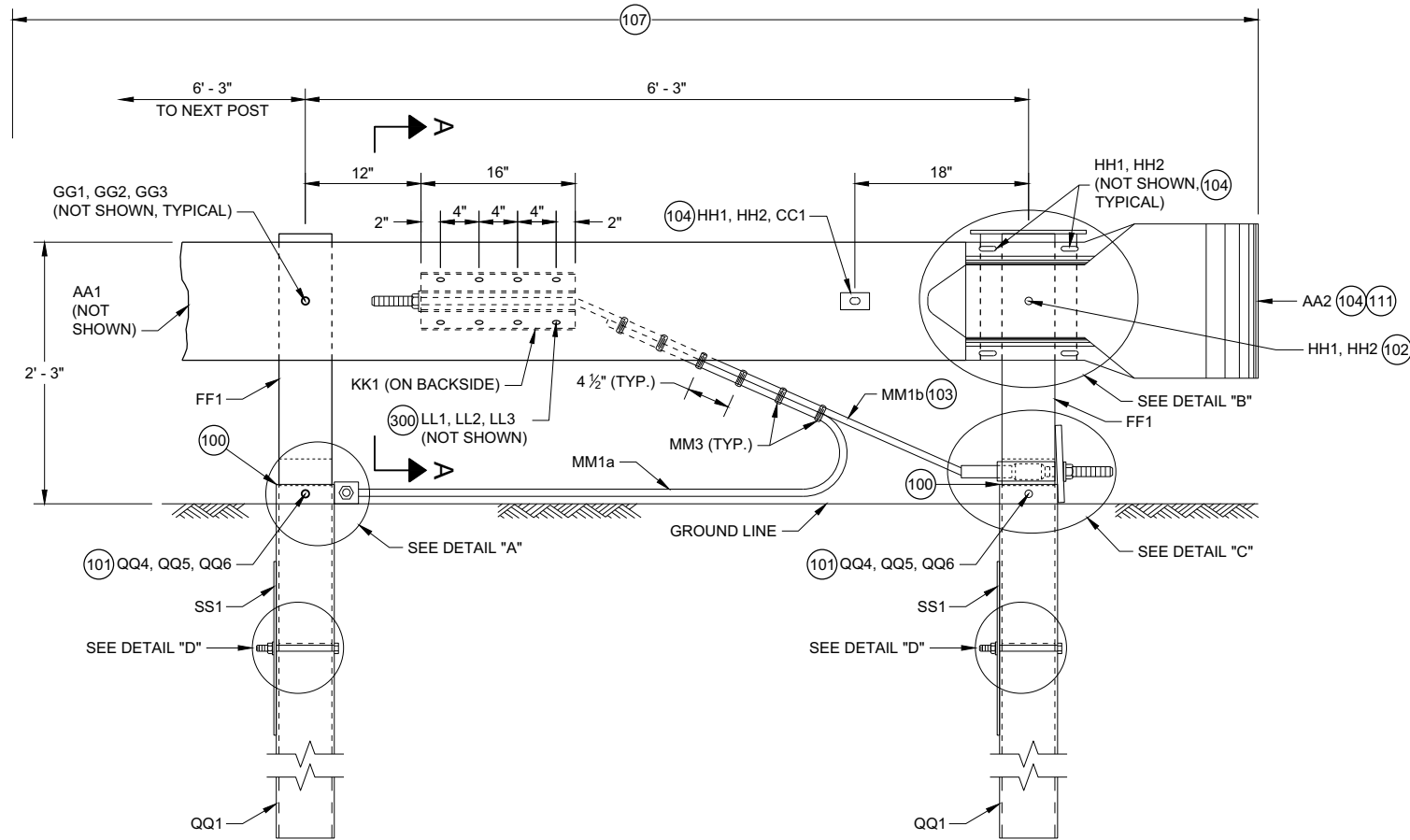
BEAM GUARD POSTS
IN HEIGHT TRANSITION



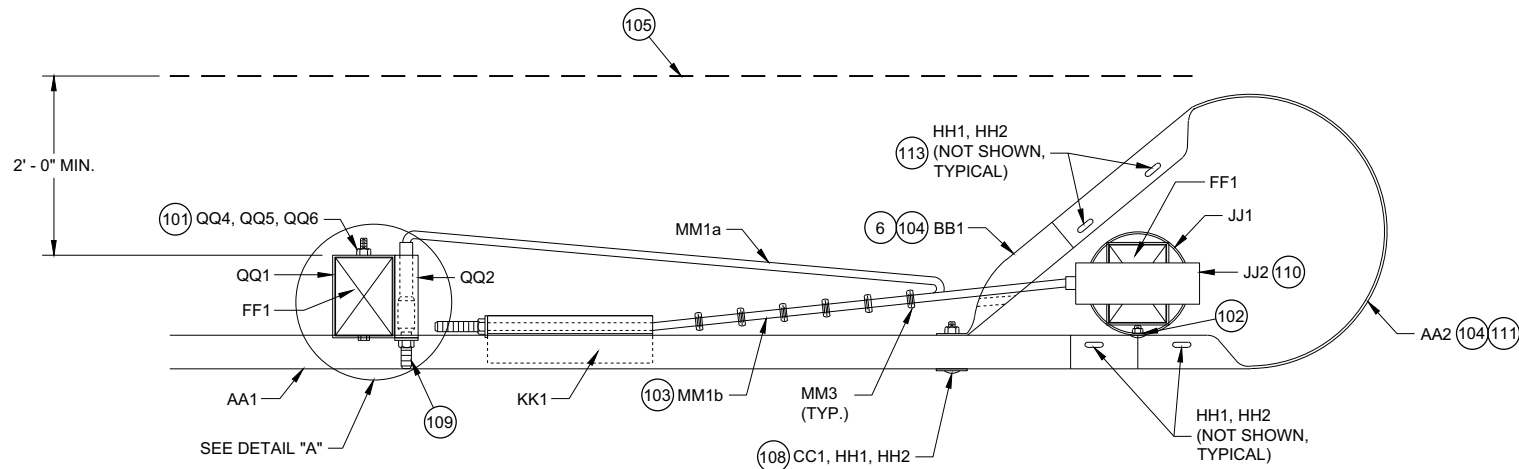
LAP SPLICE DETAIL

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

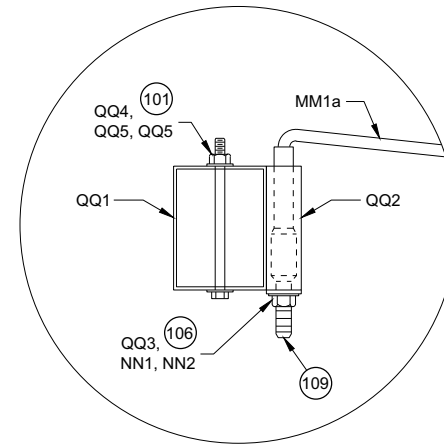
STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION



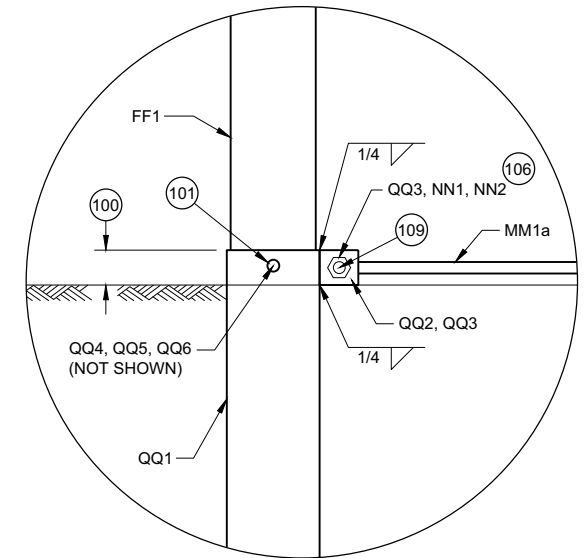
**PROFILE VIEW
SHORT RADIUS TERMINAL**



**TOP VIEW
SHORT RADIUS TERMINAL**



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



**PROFILE VIEW
DETAIL "A"**

GENERAL NOTES

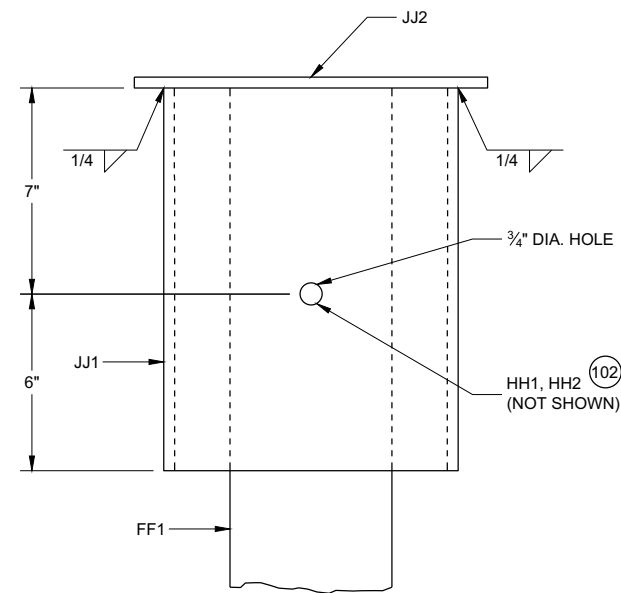
- 100 TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- 101 WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- 102 SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL "B".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

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

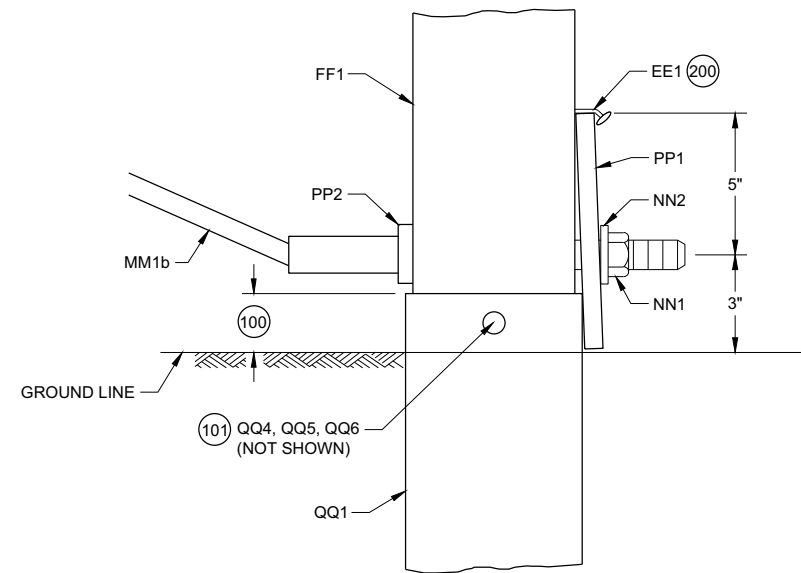
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

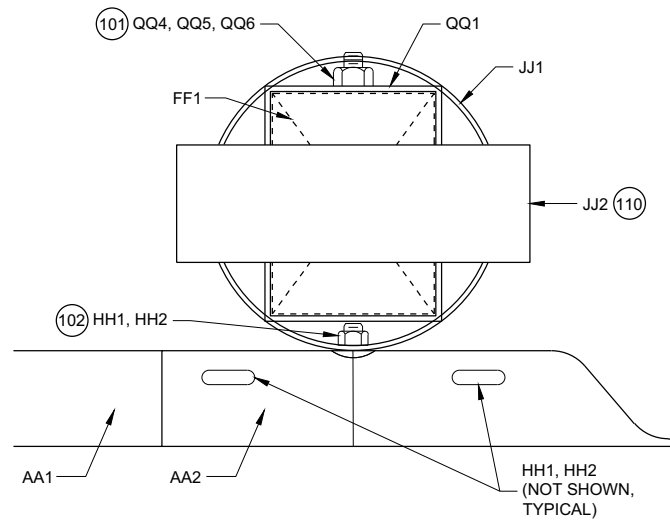
(200) TWO (2) NAILS SPACED 4 INCHES CENTER TO CENTER.



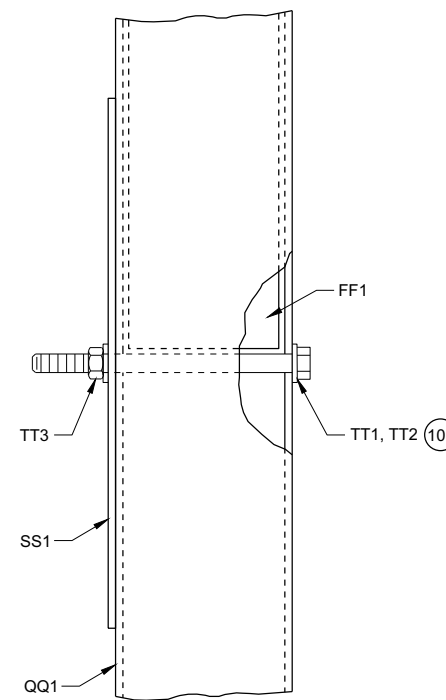
**PROFILE VIEW
DETAIL "B"
STEEL PIPE ASSEMBLY
(BEAM GUARD AND W BEAM
END SECTION NOT SHOWN)**



**PROFILE VIEW
DETAIL "C"**



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



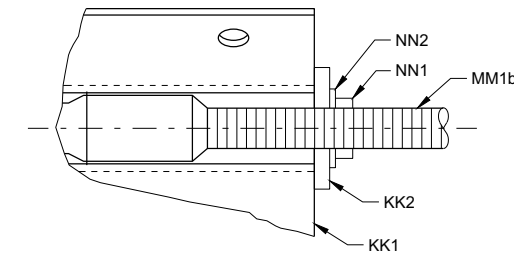
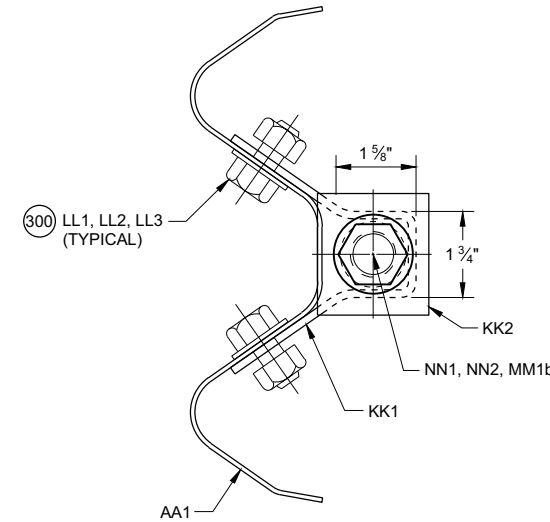
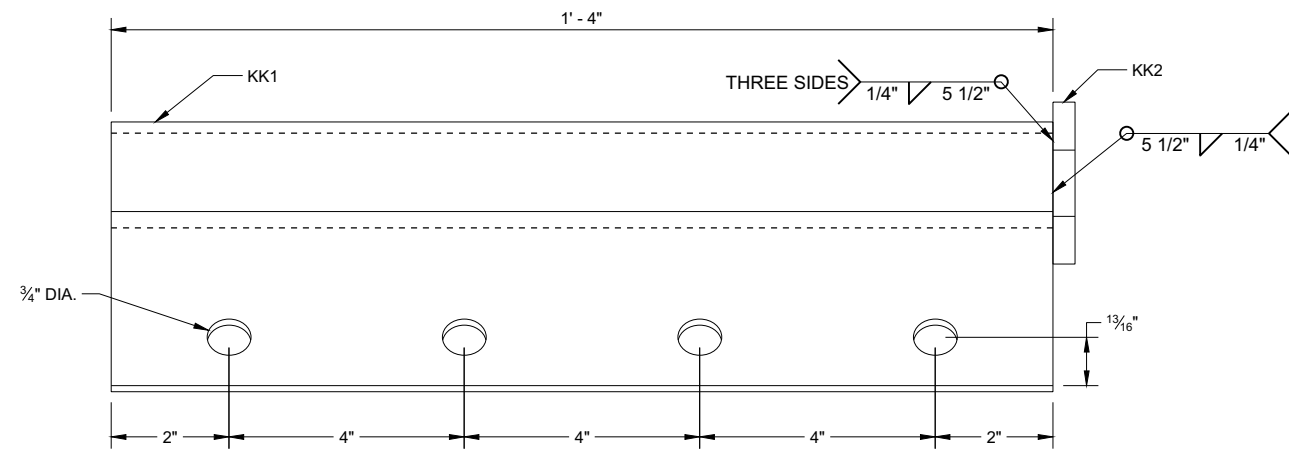
**PROFILE VIEW
DETAIL "D"**

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

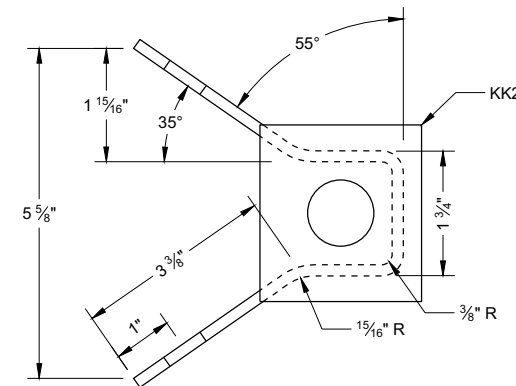
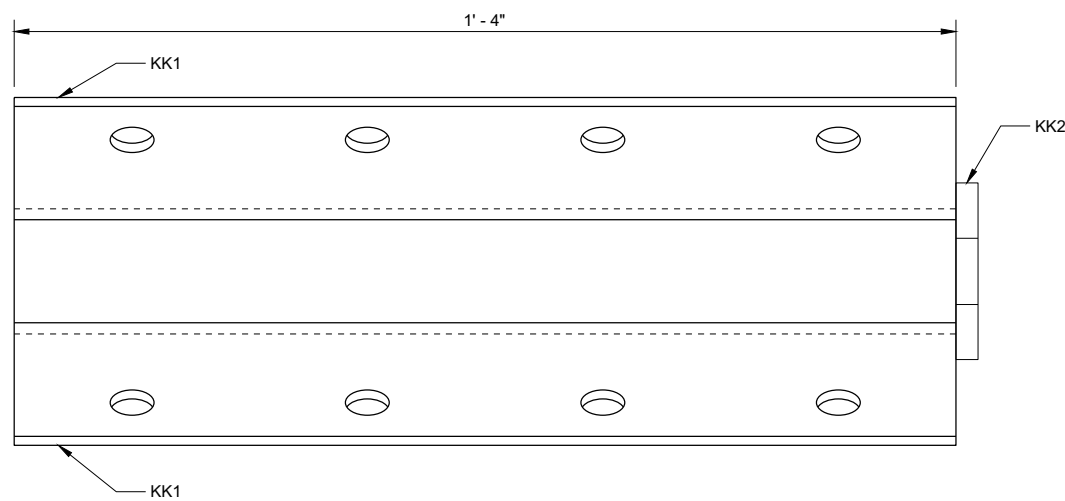
GENERAL NOTES

300 WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT (8) LL1 AND LL3 REQUIRED. SIXTEEN (16) LL2 REQUIRED.

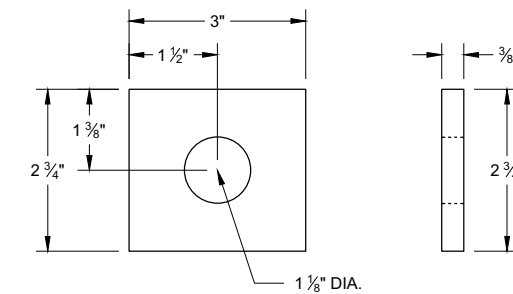


SECTION A - A

6



ANCHOR BRACKET BEARING PLATE (KK2)



ANCHOR BRACKET (KK1, KK2)

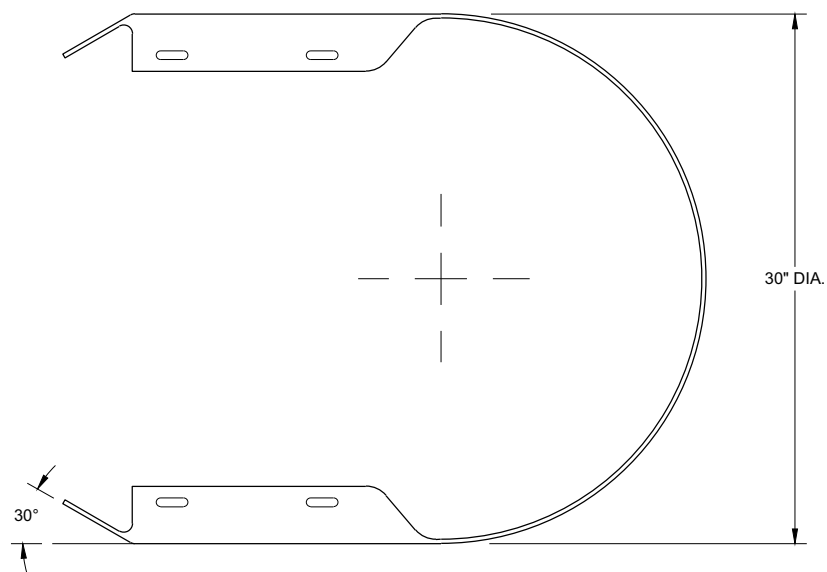
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SDD 14B53 - 01d

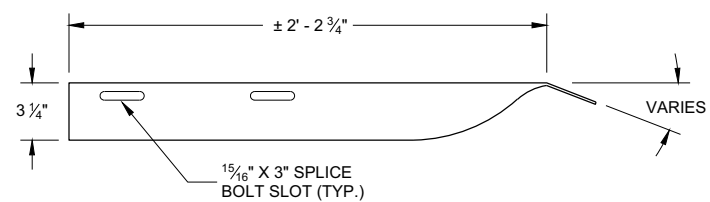
SDD 14B53 - 01d

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



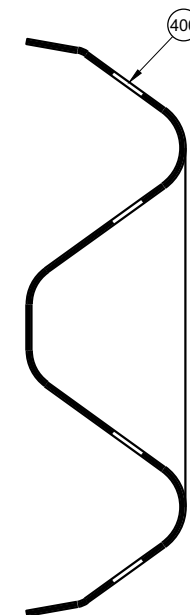
TOP VIEW



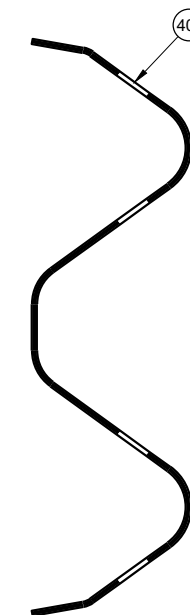
TOP VIEW

GENERAL NOTES

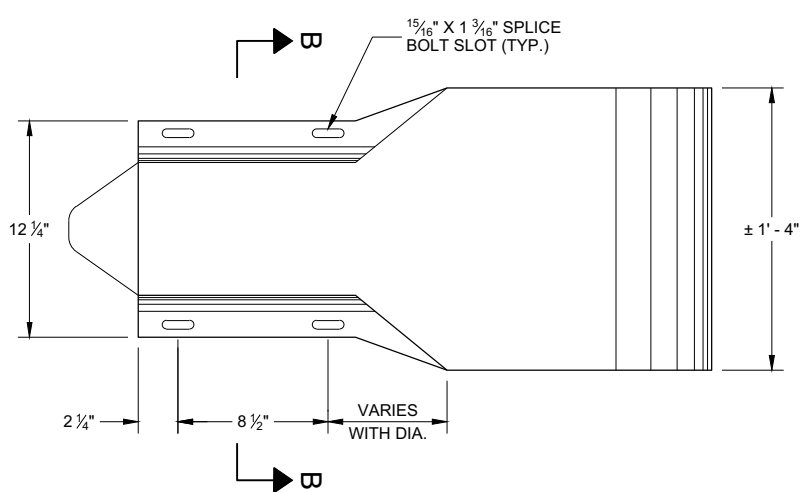
- (400) CROSS SECTION OF PART IS TO FIT OVER AA1 .
- (401) CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1 .



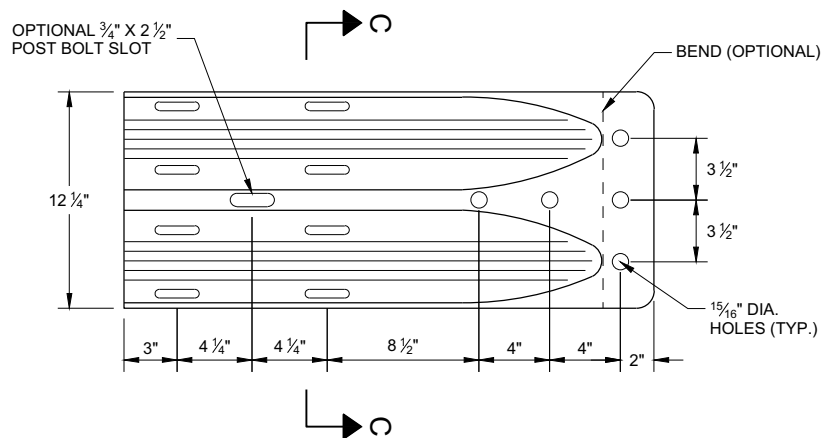
SECTION B - B



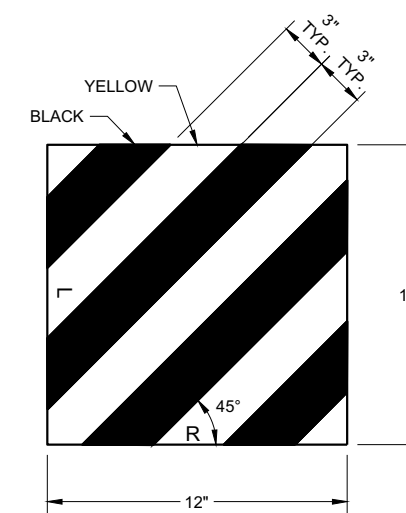
SECTION C - C



**PROFILE VIEW
W BEAM
END SECTION BUFFER (AA2)**



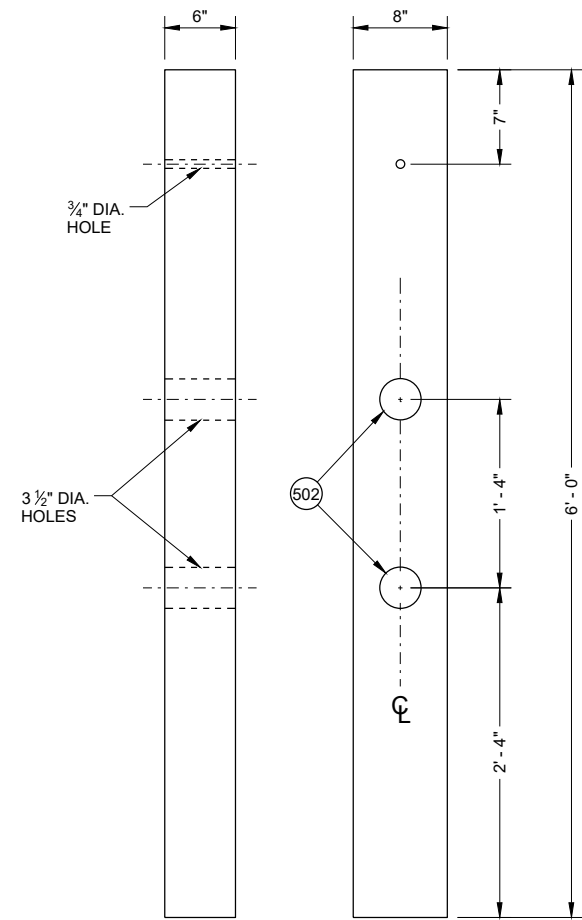
**PROFILE VIEW
W BEAM
TERMINAL CONNECTOR (BB1)**



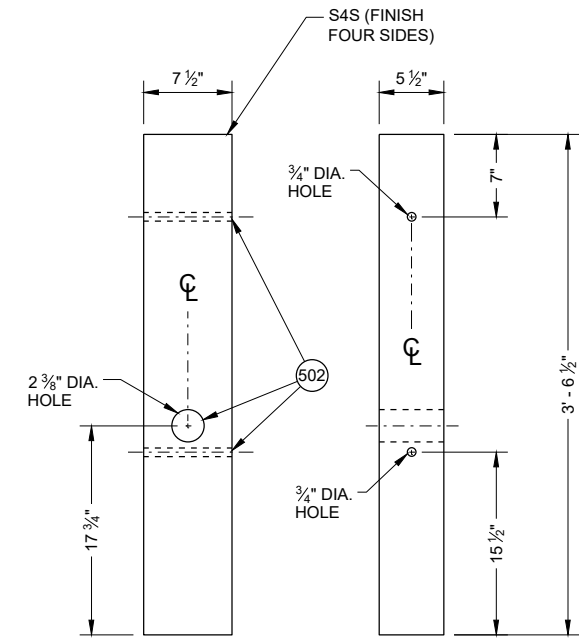
REFLECTIVE SHEETING (UU1, UU2)

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

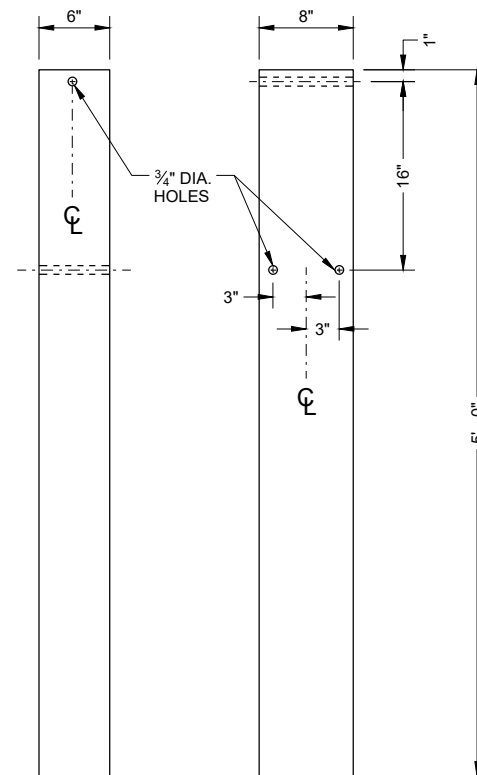
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



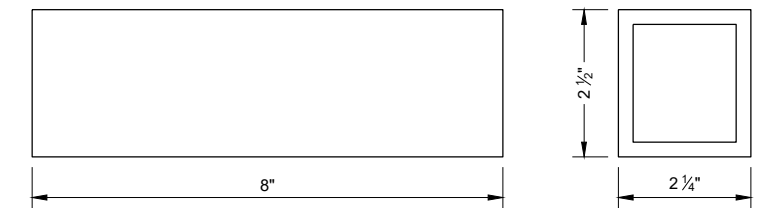
**FRONT VIEW SIDE VIEW
CONTROLLED RELEASE
POST (CRT) (DD2)**



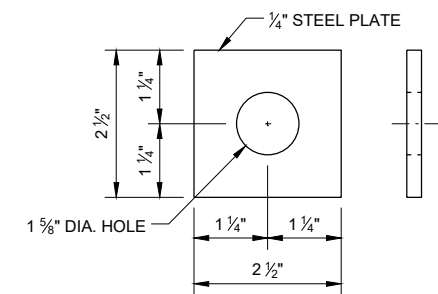
**FRONT VIEW SIDE VIEW
WOOD BREAKAWAY POST (FF1)**



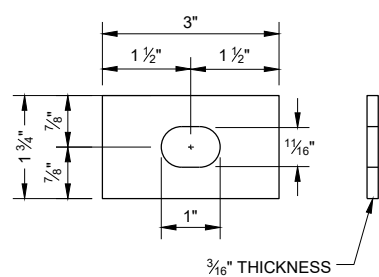
**FRONT VIEW SIDE VIEW
FOUNDATION TUBE (QQ1)**



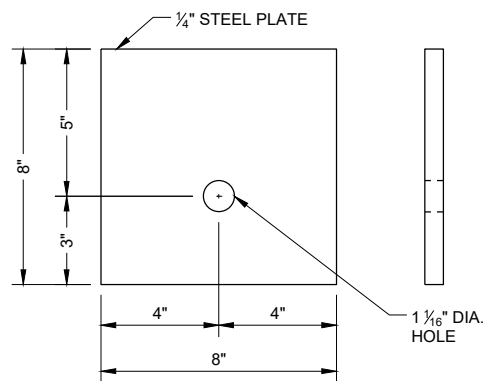
**FOUNDATION TUBE -
ANCHOR CABLE TUBE (QQ2)**



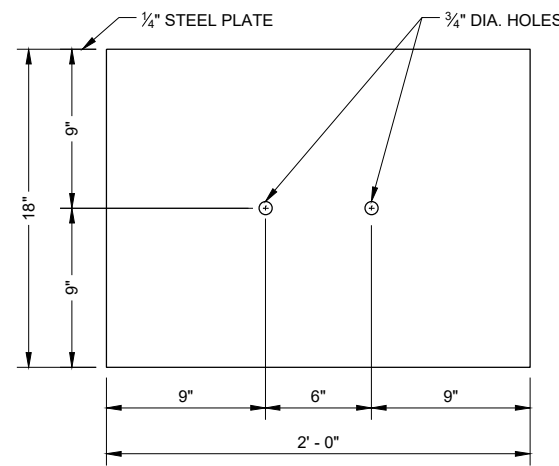
**ANCHOR CABLE TUBE
END PLATE (QQ3)**



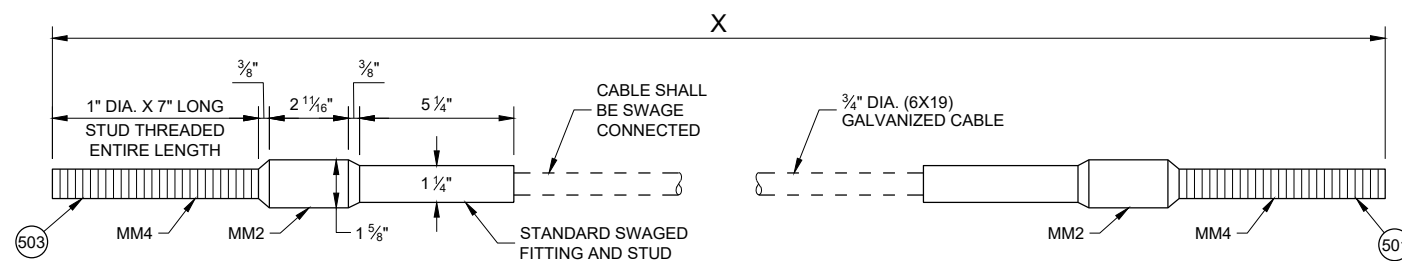
**RECTANGULAR PLATE
WASHER (CC1)**



BEARING PLATE (PP1)



SOIL PLATE (SS1)



CABLE ASSEMBLY (MM1a, MM1b)

"X" LENGTH

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

GENERAL NOTES

- (500) SEE DETAIL "D" FOR LOCATION AND ATTACHMENT OF SS1.
- (501) FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.
- (502) LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.
- (503) MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE (109).

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

| PART | DESCRIPTION | MATERIALS SPECIFICATIONS | NOTES |
|------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| F2 | SPLICE BOLT - NUT | ASTM A563 GRADE A | 5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY |
| | | AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD | |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1 | |
| | | OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563 | |
| | | UNC | |
| G1 | LAG SCREW | ASTM A308 GRADE A ASTM A153 CLASS D | 1/2" DIA. 6" LONG |
| H1 | DELINEATOR - BEAM GUARD | | SEE SDD 14B42 FOR MORE INFORMATION |
| H2 | DELINEATION - SHEETING | YELLOW OR WHITE | |
| | | WISDOT SPEC 637 TYPE SH | |
| | | APPROVED PRODUCT LIST | |
| J1 | FOUNDATION BACKFILL | STANDARD SPEC. 614 | |
| AA1 | BEAM GUARD RAIL - PUNCHED | AASHTO M180, CLASS A, TYPE 2 | |
| | | APPROVED PRODUCER | |
| AA2 | BEAM GUARD RAIL - END SECTION BUFFER | AASHTO M180, CLASS A, TYPE 2 | |
| | | APPROVED PRODUCER | |
| BB1 | BEAM GUARD RAIL - TERMINAL CONNECTOR MODIFIED | AASHTO M180, CLASS A, TYPE 2 | |
| | | APPROVED PRODUCER | |
| CC1 | SHORT RADIUS - SQUARE WASHER | AASHTO M180 | |
| | | GALV. AASHTO M111 / ASTM A123 | |
| EE1 | NAIL | ASTM A153 HOT DIP CLASS D | |
| | | ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEADED) | |
| FF1 | POST - BCT - WOOD | S4S FINISH ON 4 SIDES | |
| | | WISDOT SPEC. 614 | |
| GG1 | POST BOLT | ASTM A307 GRADE A OR SAE J429 GRADE 2 | 5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY |
| | | AASHTO M180 | |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1 | |
| | | UNC | |
| GG2 | POST BOLT - WASHER | ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD) | 5/8" DIA. |
| | | GALV. AASHTO M111 / ASTM A 123 OR GALV. HOT DIP. TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 | |

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SDD 14B53 - 019

SDD 14B53 - 019

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

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

| PART | DESCRIPTION | MATERIALS SPECIFICATIONS | NOTES |
|------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| LL2 | ANCHOR BRACKET - WASHER | ASTM F436 TYPE 1 (HARDEN WASHER ONLY) | 3/8" DIA. |
| | | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 | |
| LL3 | ANCHOR BRACKET - NUT | ASTM A563 GRADE A | 3/8" DIA. |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1 | |
| | | OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563 | |
| | | UNC | |
| MM1a | ANCHOR CABLE | AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED | |
| MM1b | ANCHOR CABLE | AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED | |
| MM2 | ANCHOR CABLE - SWAGE FITTING | ASTM A576 GRADE 1035 | |
| | | SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. WITH A BREAKING STRENGTH 40,000 LBS. | |
| | | GALV. AASHTO M111 / ASTM A123 | |
| | | ASME B30.26 FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING INTO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE. | |
| MM3 | WIRE ROPE CABLE CLAMPS | FF-C-450D TYPE 1 CLASS 1 | 3/4" |
| | | ASTM A153 HOT DIP CLASS D | |
| MM4 | ANCHOR CABLE - SWAGE FITTING - STUD | ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD | |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1 | |
| | | UNC | |
| NN1 | ANCHOR CABLE - NUT | ASTM A563 GRADE A | 1" DIA. |
| | | AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD | |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1 | |
| | | OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563 | |
| NN2 | ANCHOR CABLE - NUT - WASHER | UNC | 1" DIA. |
| | | ASTM F436 TYPE 1 (HARDEN WASHER ONLY) | |
| | | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 | |

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SDD 14B53 - 01h

SDD 14B53 - 01h

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

| PART | DESCRIPTION | MATERIALS SPECIFICATIONS | NOTES |
|------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| PP1 | BEARING PLATE AT POST | ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI | |
| | | GALV. AASHTO M111 / ASTM A123 | |
| PP2 | PIPE - STEEL | ASTM A53 GALVANIZED GRADE B SCHEDULE 40 | 2" DIA. x 6" LONG |
| QQ1 | FOUNDATION TUBE | ASTM A500 GRADE B | 8" X 6" X 3/8" |
| | | GALV. AASHTO M111 / ASTM A123 | |
| QQ2 | SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE | ASTM A500 GRADE B | DIMENSIONS 2 1/2" X 2 1/4" X 1/4" X 8" |
| | | GALV. AASHTO M111 / ASTM A123 | |
| QQ3 | SHORT RADIUS - SOIL TUBE - ANCHOR CABLE - TUBE - END PLATE | ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI | DIMENSIONS 2 1/2" X 2 1/2" X 1/4" |
| | | GALV. AASHTO M111 / ASTM A123 | |
| QQ4 | GROUND STRUT AND YOKE - BOLT | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1 | 5/8 DIA. |
| | | ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD | |
| | | UNC | |
| QQ5 | GROUND PLATE AND YOKE - WASHER | ASTM F436 TYPE 1 (HARDEN WASHER ONLY) | 5/8 DIA. |
| | | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 | |
| QQ6 | GROUND STRUT AND YOKE - NUT | HEAVY HEX | 5/8 DIA. |
| | | UNC | |
| | | ASTM A563 GRADE A | |
| | | OVER TAPPED NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 | |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1 | |

| PART | DESCRIPTION | MATERIALS SPECIFICATIONS | NOTES |
|------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| SS1 | SOIL PLATE | ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI | |
| | | GALV. AASHTO M111 / A123 | |
| TT1 | SOIL PLATE - BOLT | ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD | 5/8 DIA. |
| | | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1 | |
| | | UNC | |
| TT2 | SOIL PLATE - WASHER | ASTM F436 TYPE 1 (HARDEN WASHER ONLY) | 5/8 DIA. |
| | | GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 | |
| TT3 | SOIL PLATE - NUT | GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1 | 5/8 DIA. |
| UU1 | OBJECT MARKER - SHEETING | MUTCD / WISDOT OBJECT MARKER TYPE 3 | PATTERN AND COLOR FOR SHEETING. SHEETING TYPE FOR MARKER. |
| | | WISDOT SPEC 637 TYPE F | |
| | | APPROVED PRODUCT LIST | |
| UU2 | OBJECT MARKER - ALUMINUM PLATE | WISDOT SPEC 637 ALUMINUM PLATE | MATERIAL AND THICKNESS OF MATERIALS |
| UU3 | OBJECT MARKER - SCREWS | STAINLESS SELF-TAPPING SCREWS | |
| VV1 | FOUNDATION BACKFILL | WISDOT SPEC 614 | |

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SDD 14B53 - 01i

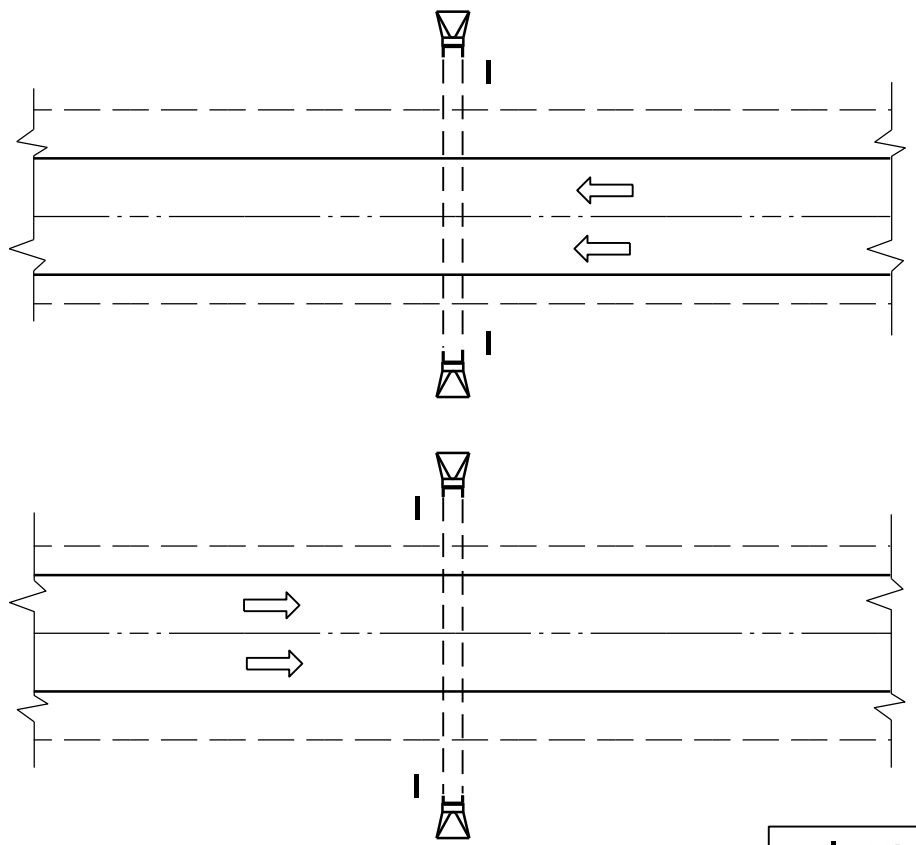
SDD 14B53 - 01i

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

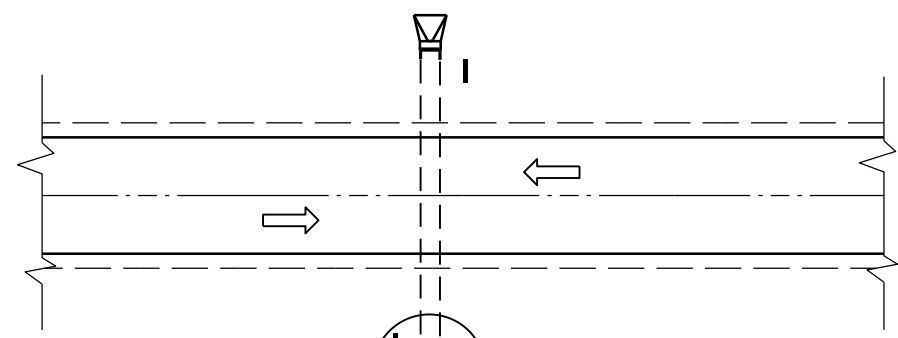
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER

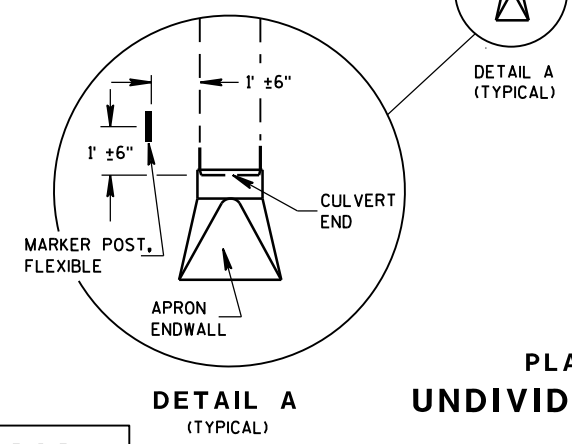
FHWA



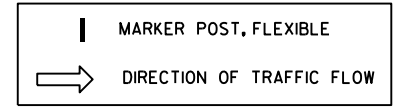
PLAN VIEW
DIVIDED HIGHWAY



PLAN VIEW
UNDIVIDED HIGHWAY

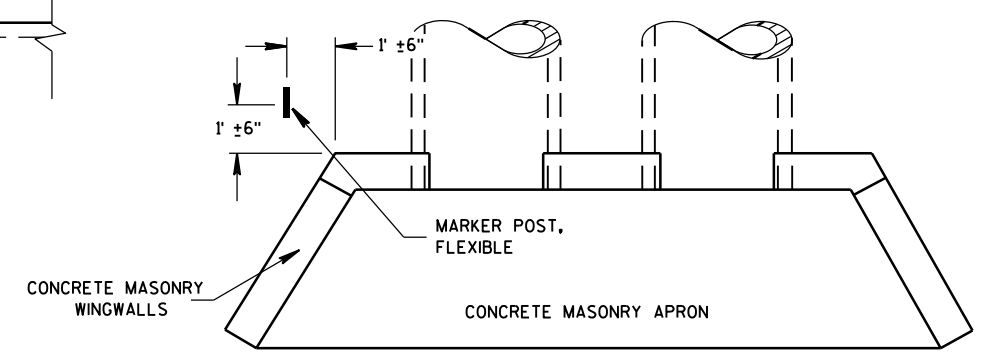


DETAIL A
(TYPICAL)



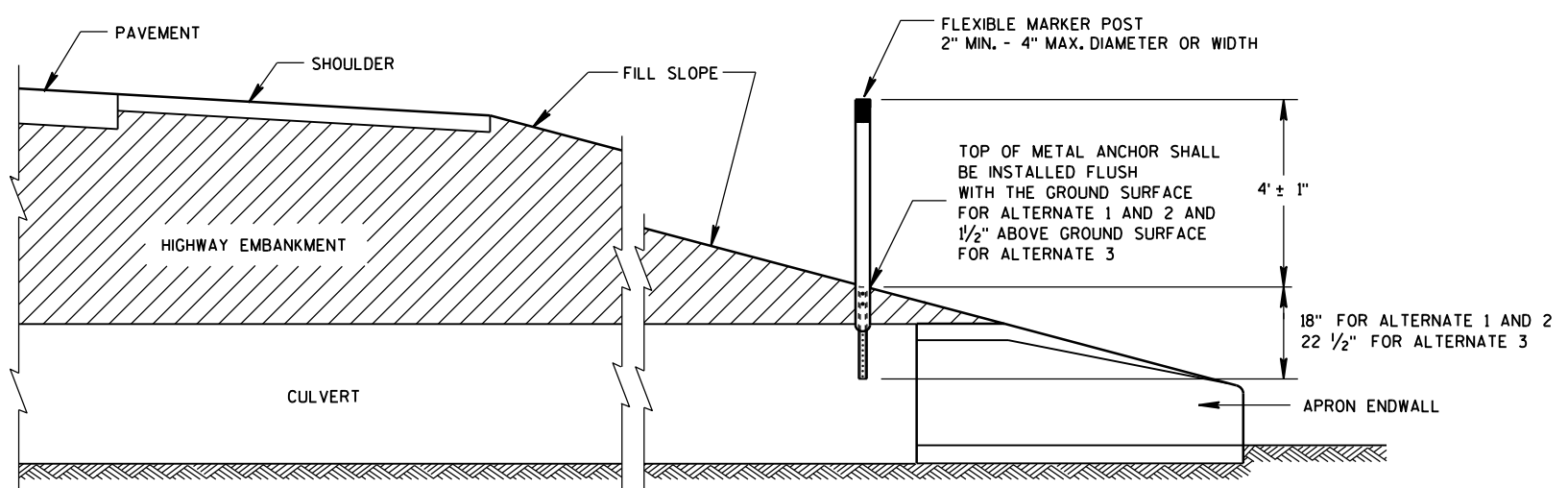
GENERAL NOTES

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.



PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION
FLEXIBLE MARKER POST

**FLEXIBLE MARKER POST
FOR CULVERT END**

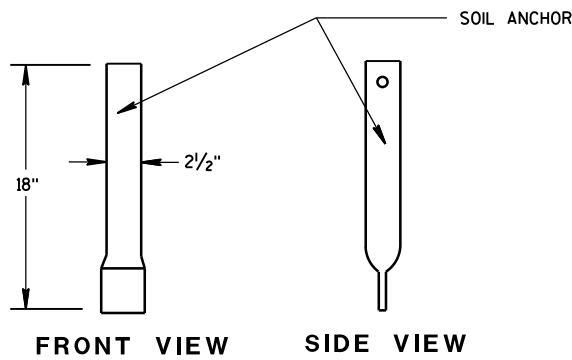
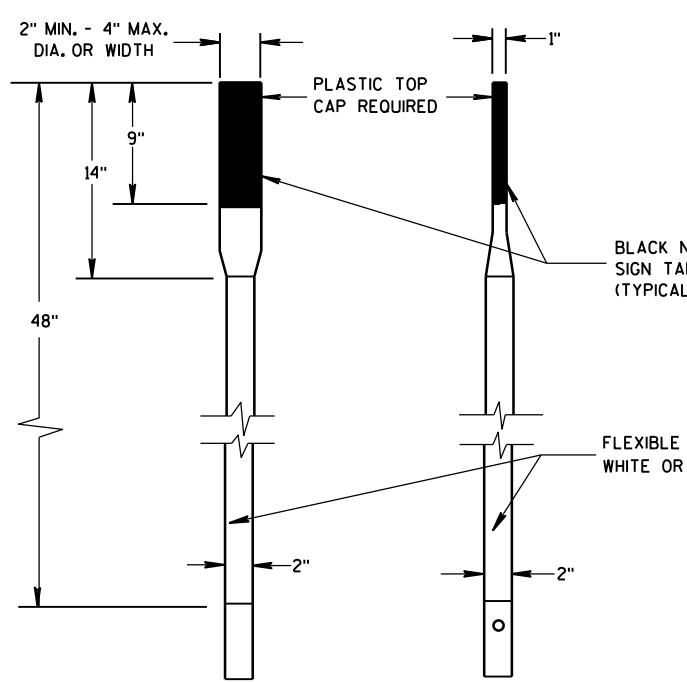
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

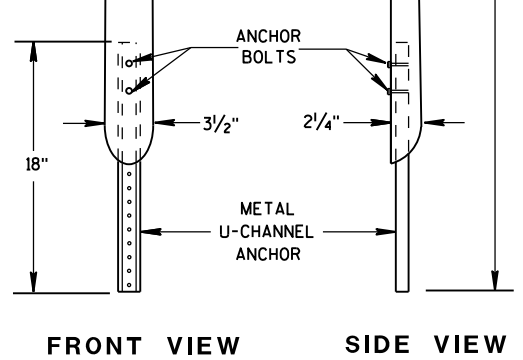
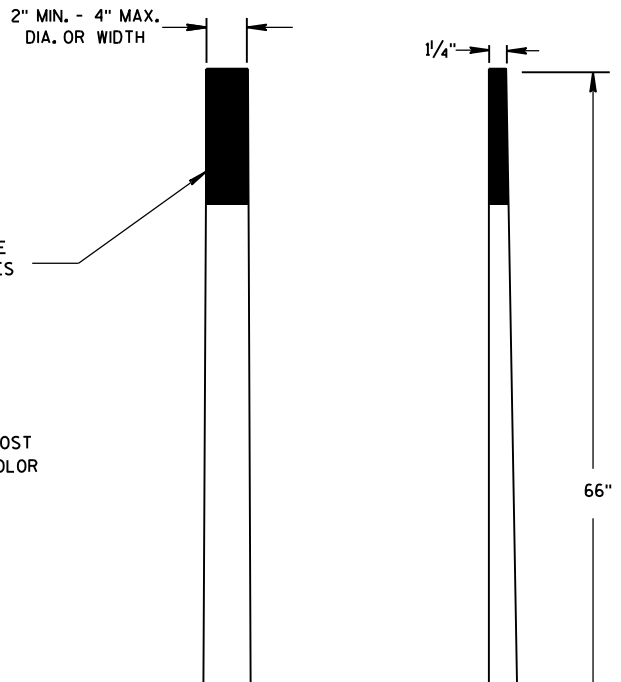
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S.D.D. 15 A 3-2a

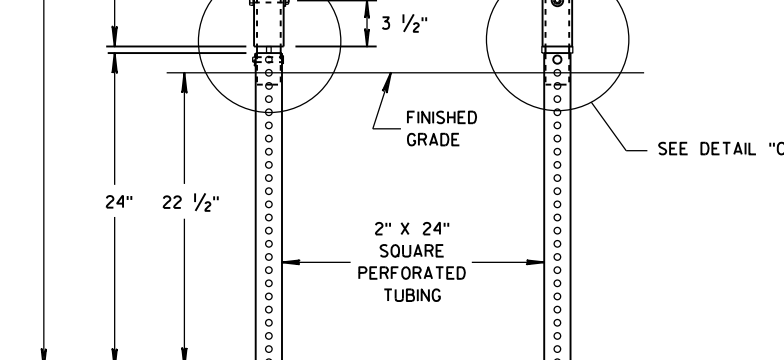
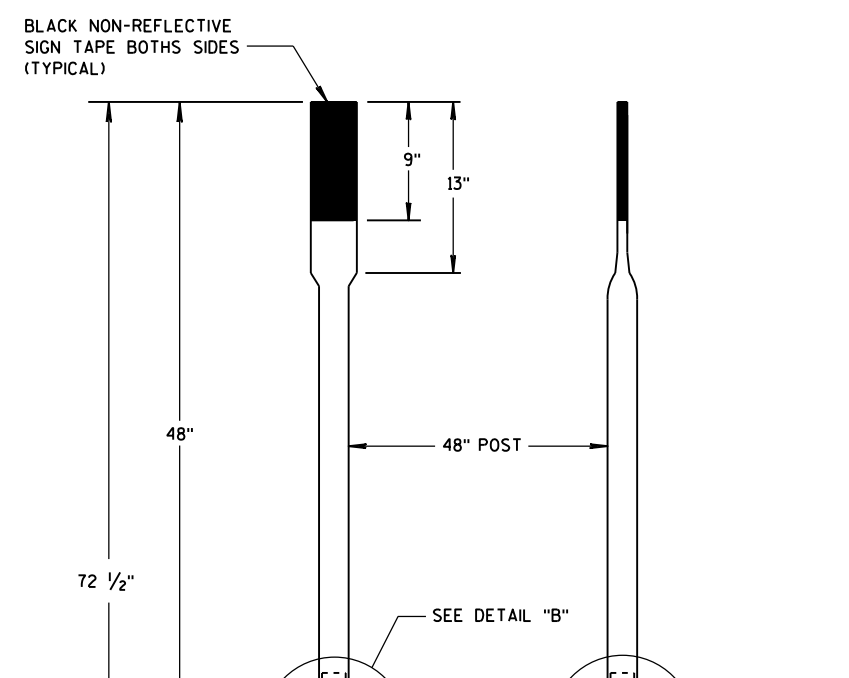
S.D.D. 15 A 3-2a



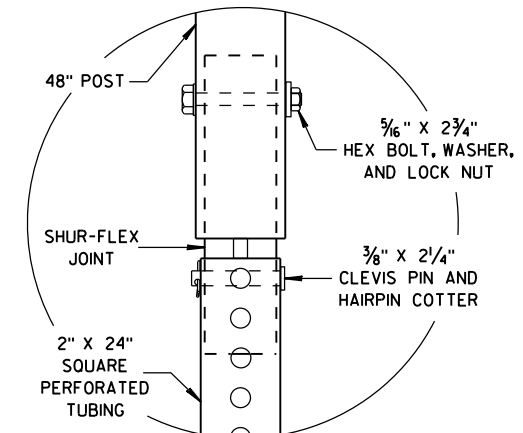
FRONT VIEW SIDE VIEW
ALTERNATE 1



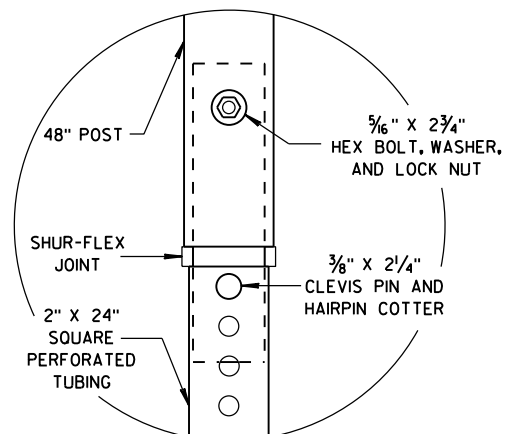
FRONT VIEW SIDE VIEW
ALTERNATE 2



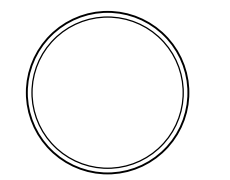
FRONT VIEW SIDE VIEW
ALTERNATE 3



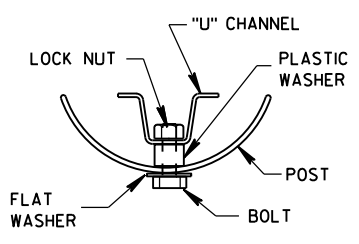
DETAIL B



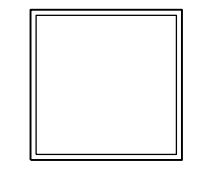
DETAIL C



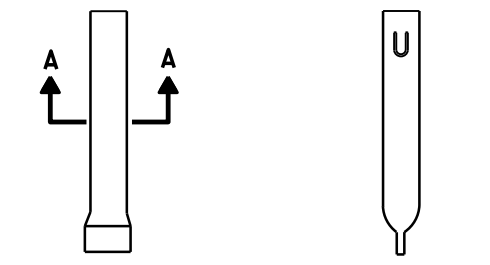
SECTION A-A



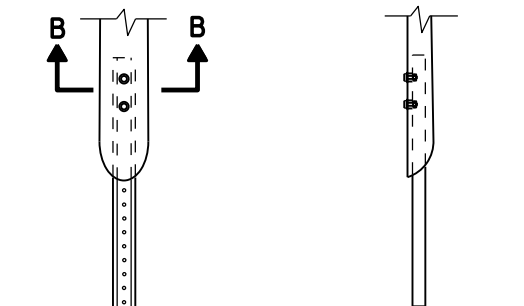
SECTION B-B



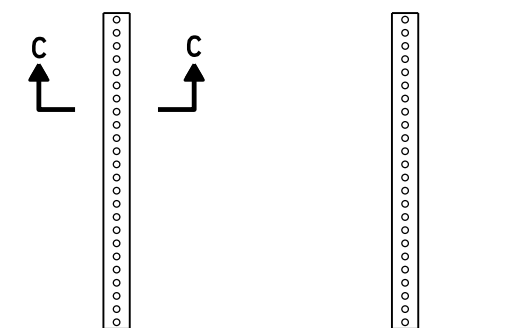
SECTION C-C



FRONT VIEW SIDE VIEW
ALTERNATE 1



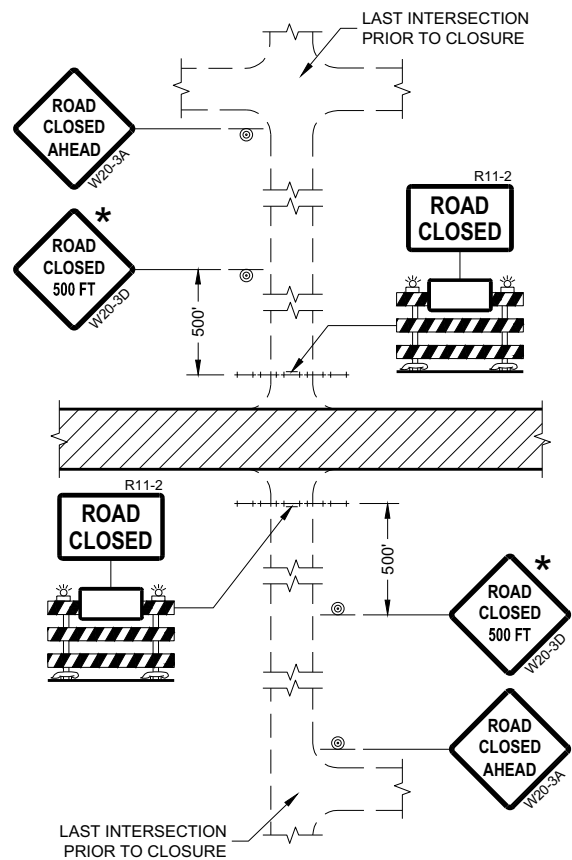
FRONT VIEW SIDE VIEW
ALTERNATE 2



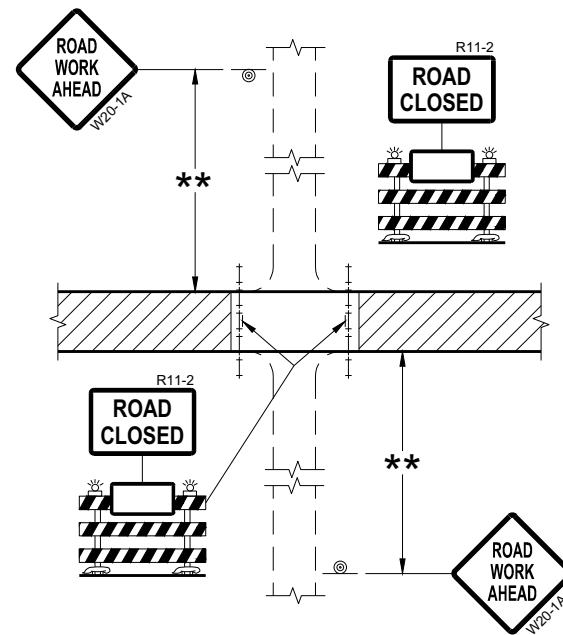
FRONT VIEW SIDE VIEW
ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS

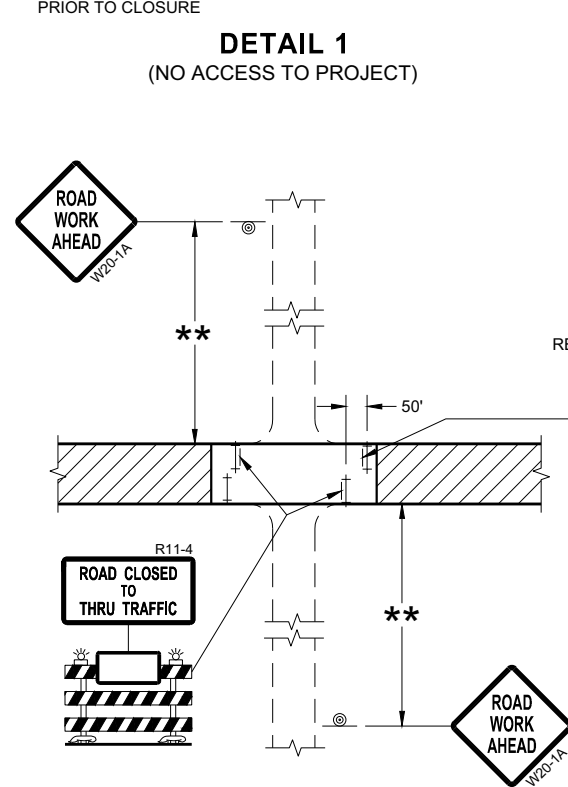
| | |
|----------------------------------------------------|-------------------------------------------------------|
| FLEXIBLE MARKER POST FOR CULVERT END | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED 10/1/2012 DATE | /S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN |
| FHWA | |



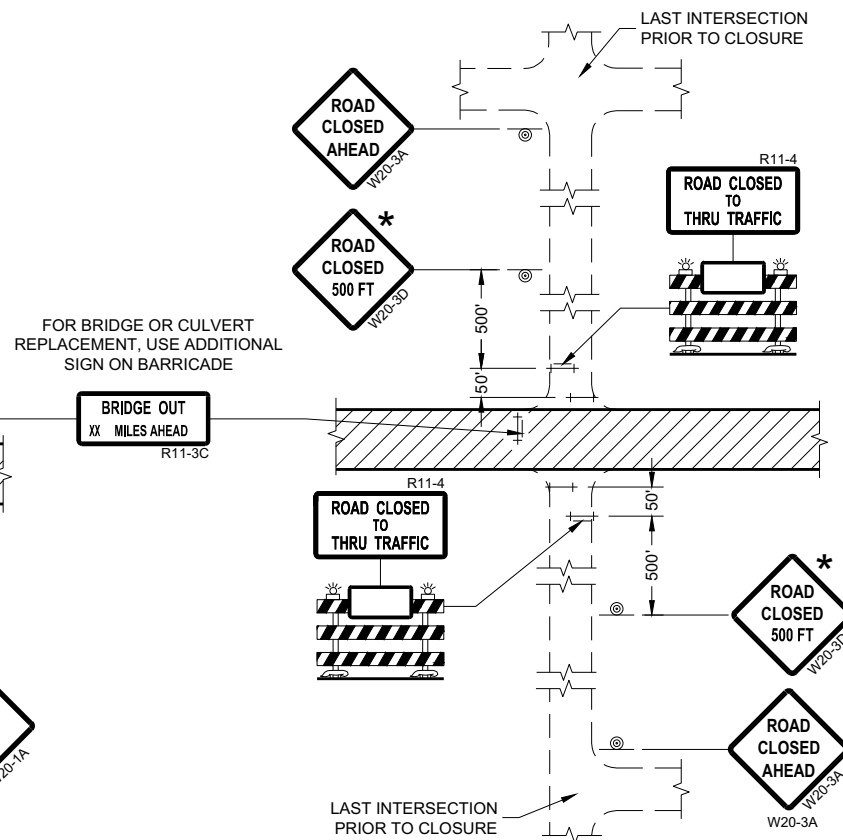
DETAIL 1
(NO ACCESS TO PROJECT)



DETAIL 2
(PUBLIC CROSS-TRAFFIC MAINTAINED.
NO ACCESS TO PROJECT)



DETAIL 3
(PUBLIC CROSS-TRAFFIC MAINTAINED.
CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)



DETAIL 4
(CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)

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 (500 FEET DESIRABLE) TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

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

SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN 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, AND R11-4 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
R11-2 SHALL BE 48" X 30".
R11-4 AND R11-3 SHALL BE 60" X 30".

* OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FEET OR LESS FROM THE WORK ZONE.

** 500' MAX. OR AT LAST INTERSECTION, WHICHEVER IS CLOSEST.

LEGEND

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

**BARRICADES AND SIGNS
FOR
SIDEROAD CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

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

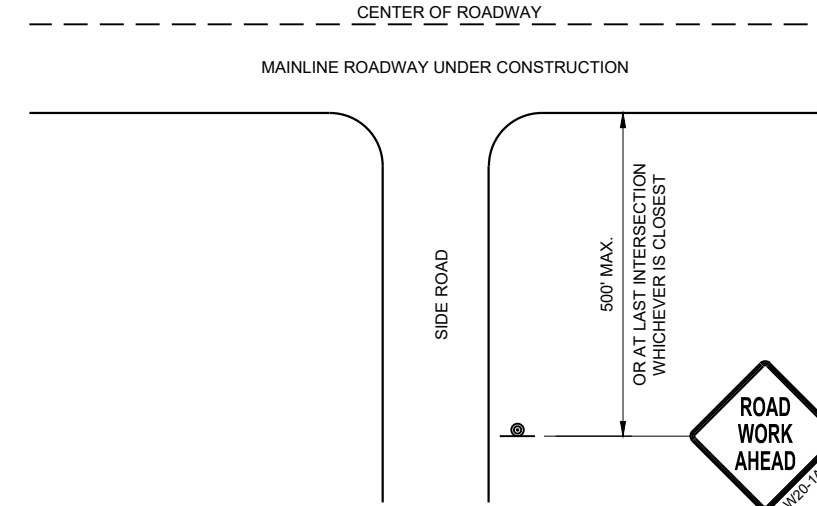
THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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

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

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

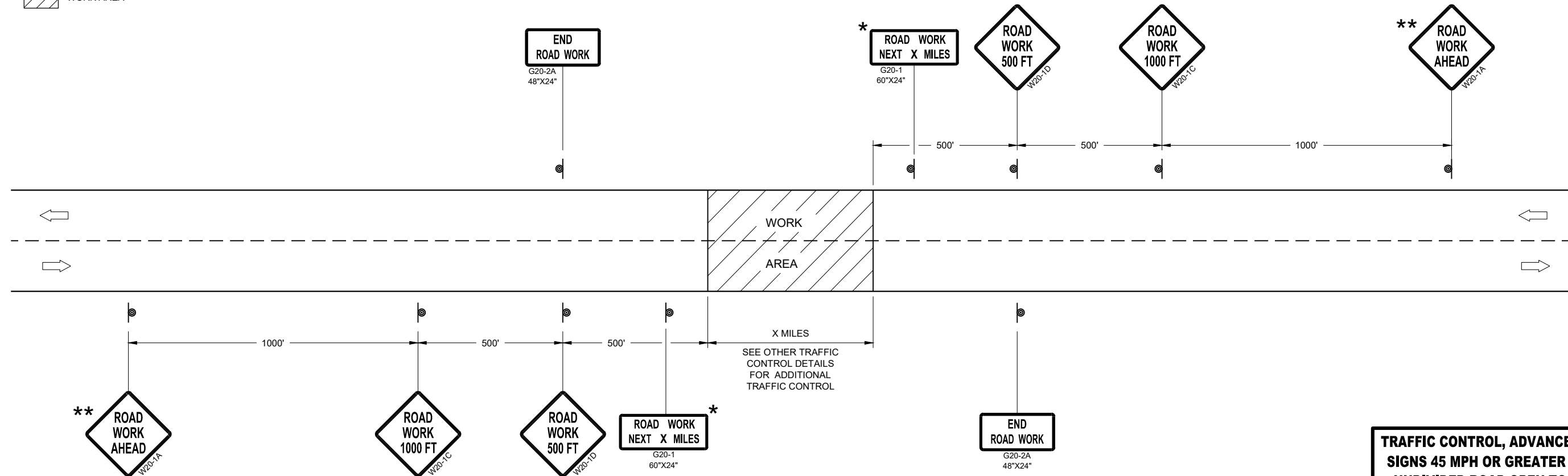
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



**TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL**

LEGEND

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



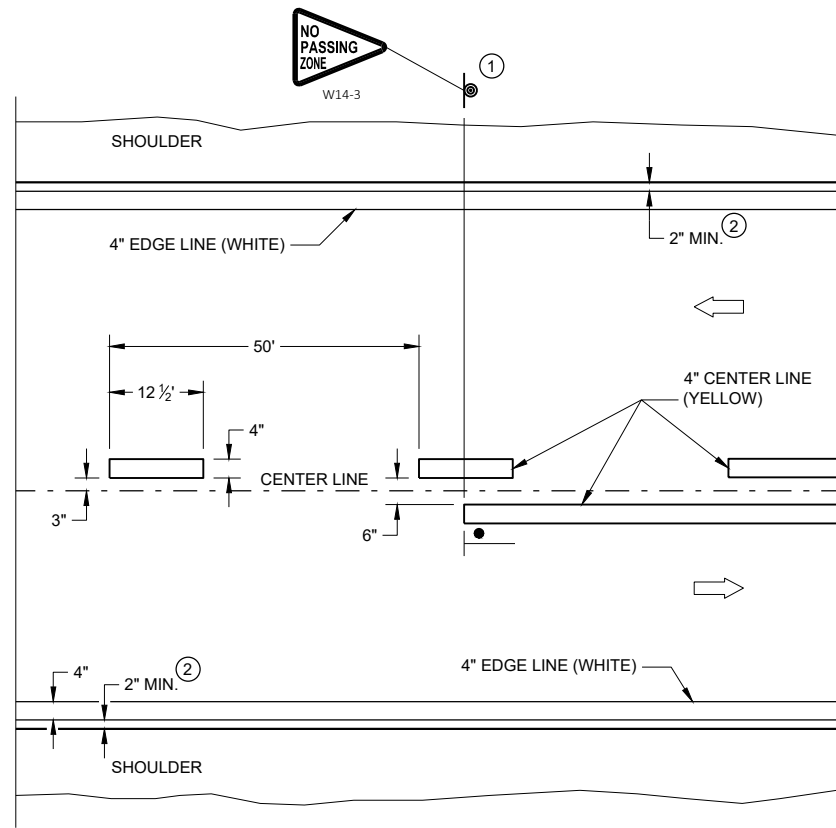
TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

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

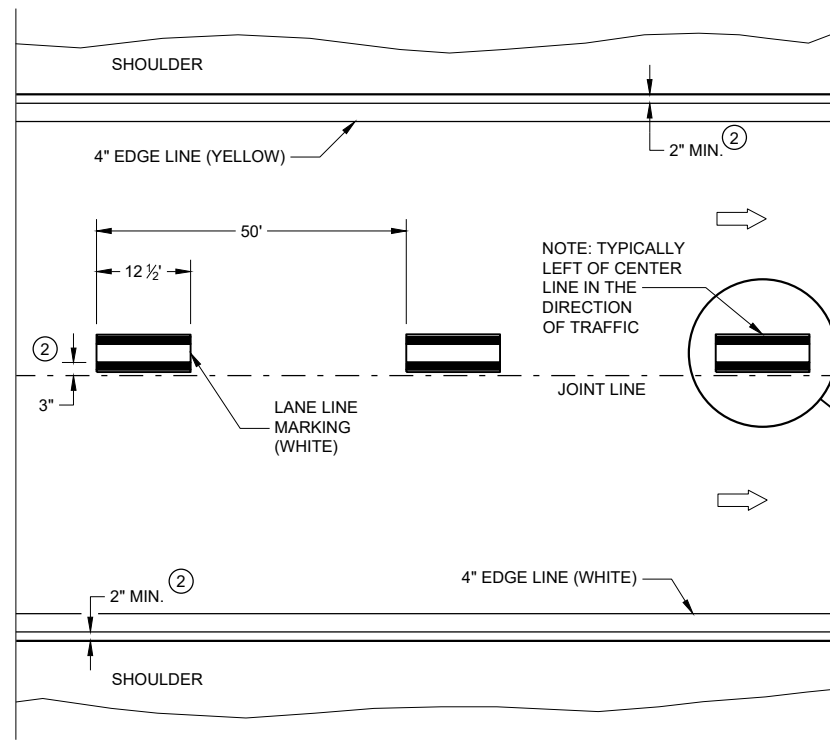
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

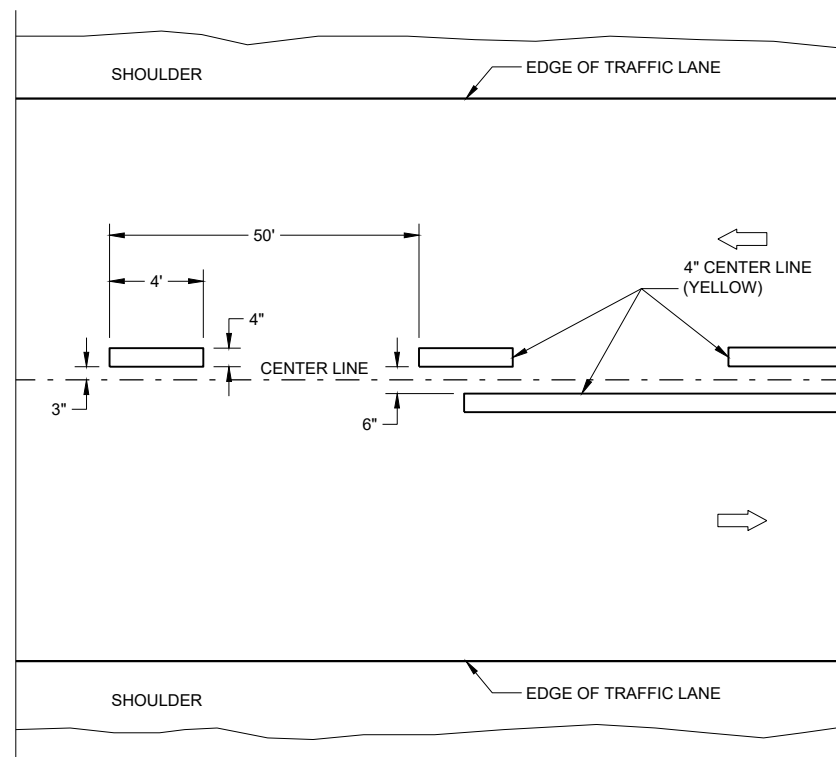


TWO WAY TRAFFIC

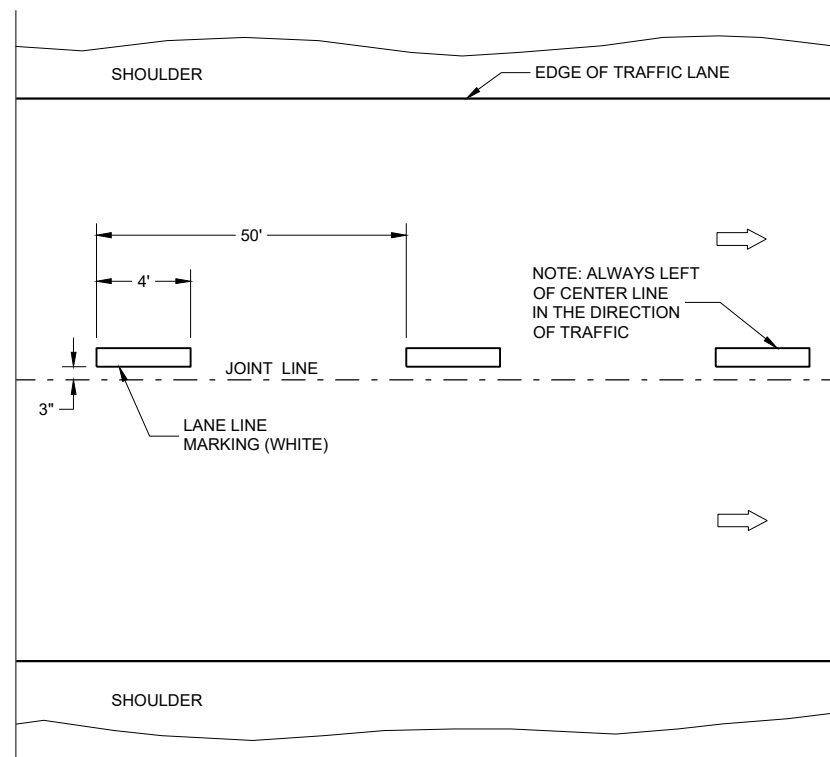


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

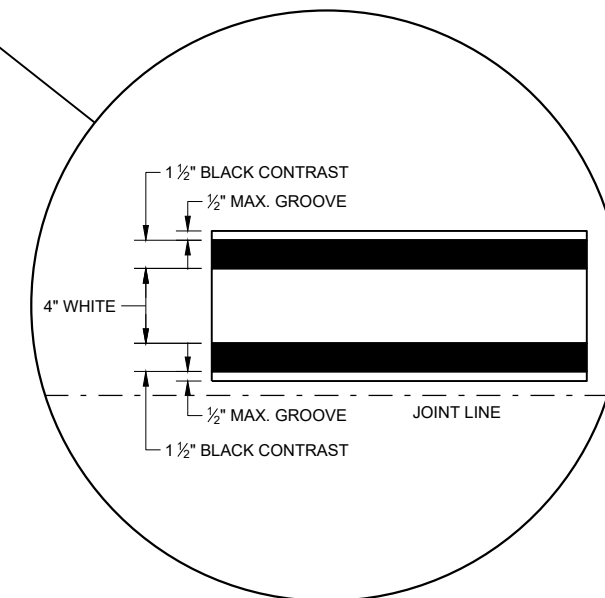
GENERAL NOTES

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

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

LEGEND

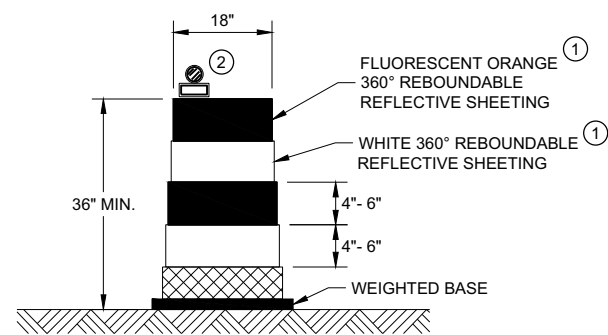
- |— "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC



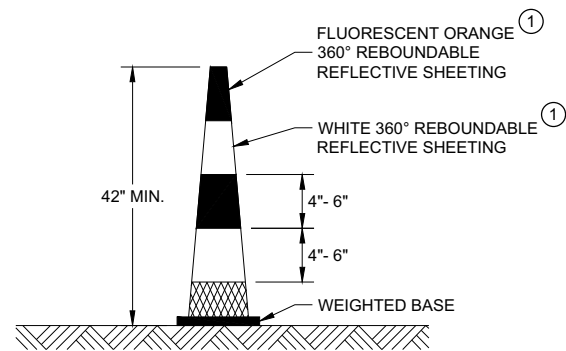
**LONGITUDINAL MARKING
(MAINLINE)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Matthew Rauch
DATE STATEWIDE SIGNING AND MARKING
ENGINEER



DRUM

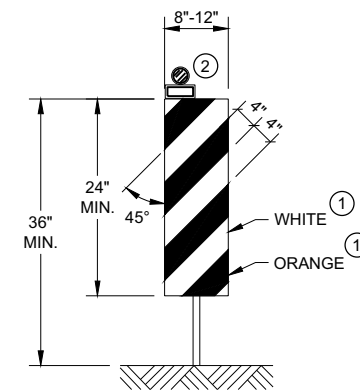


42" CONE

DO NOT USE IN TAPERS
1/2 SPACING OF DRUMS

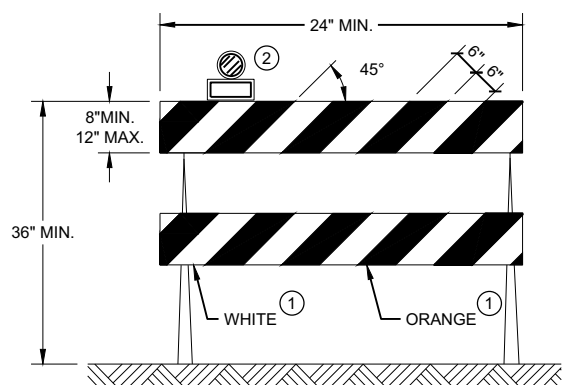
GENERAL NOTES

- 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.



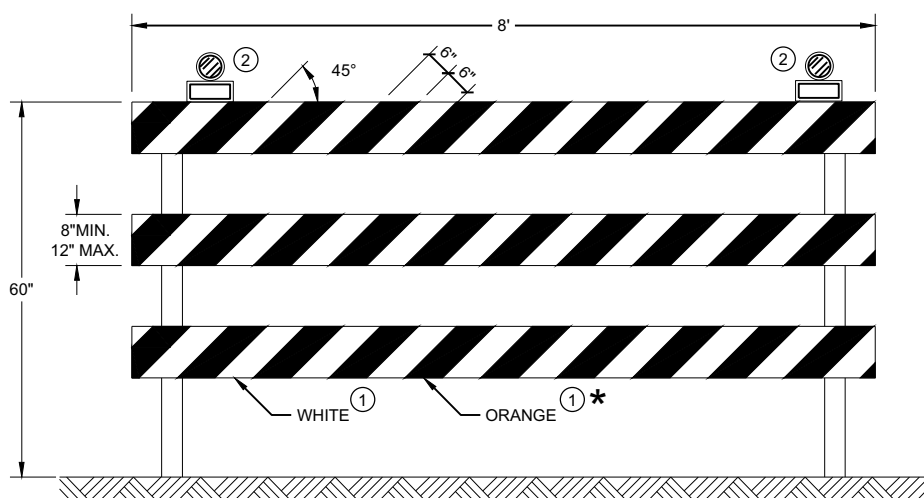
VERTICAL PANEL

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
 November 2020 /S/ Andrew Heidtke
 DATE WORK ZONE ENGINEER
 FHWA

LEGEND

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

GENERAL NOTES

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

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

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

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

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

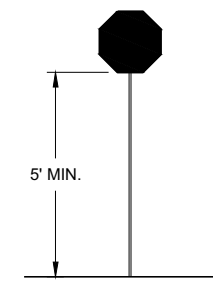
WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

FLAGGING

- FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.
- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
 - ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

TEMPORARY PORTABLE RUMBLE STRIPS

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



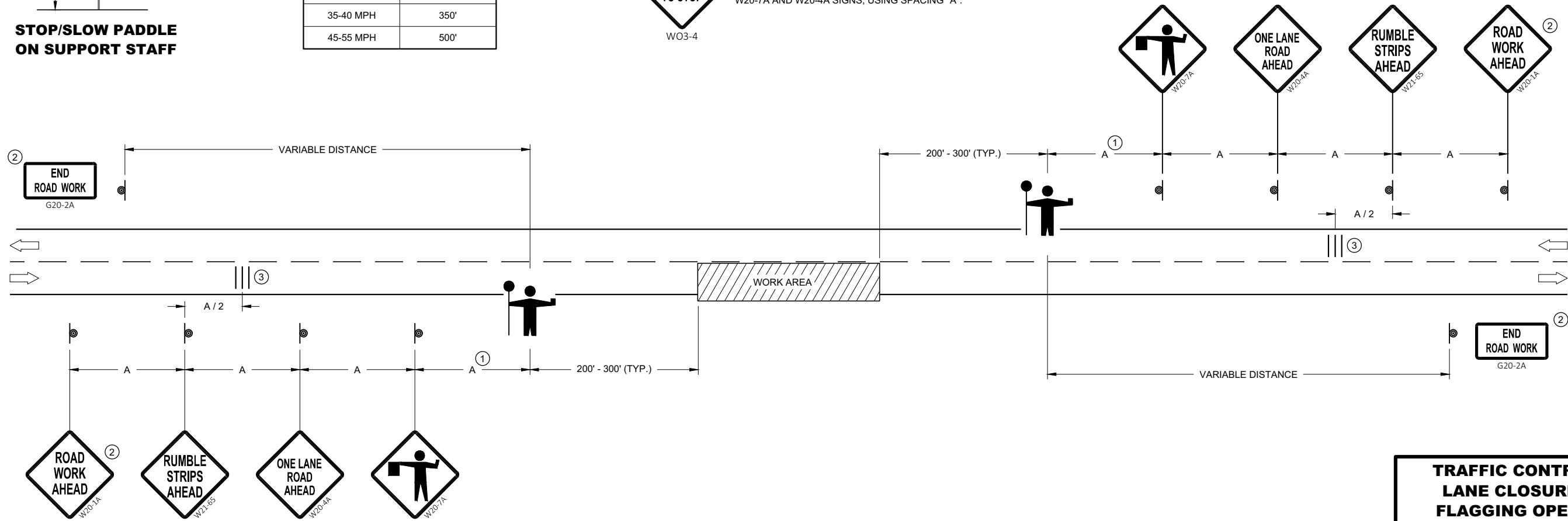
STOP/SLOW PADDLE ON SUPPORT STAFF

SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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



TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

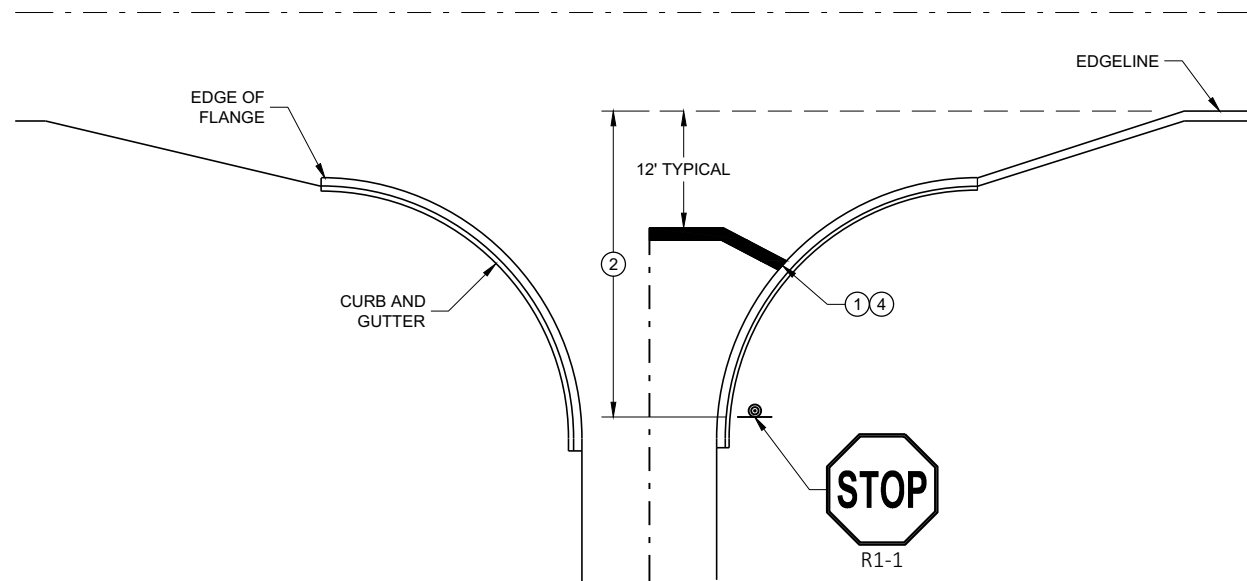
APPROVED
DATE May 2019 /S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

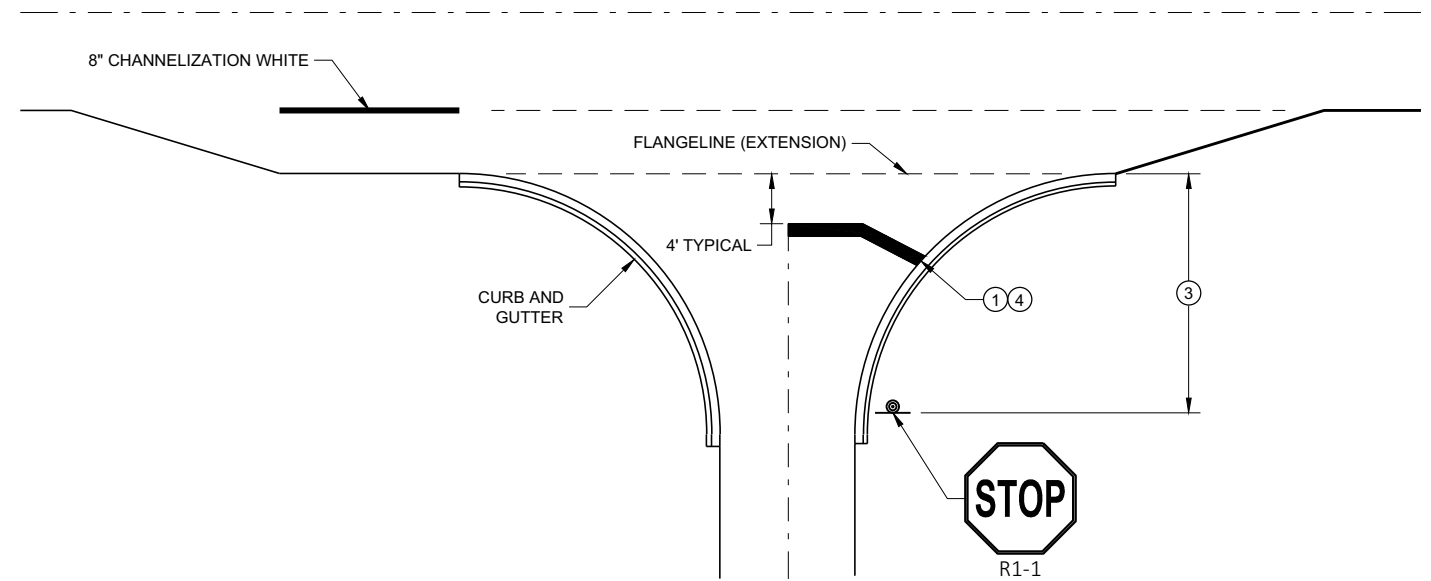
GENERAL NOTES

STOP SIGN SHALL BE PLACED A MINIMUM OF 6 FEET TO A MAXIMUM OF 50 FEET FROM THE EDGELINE LOCATION.

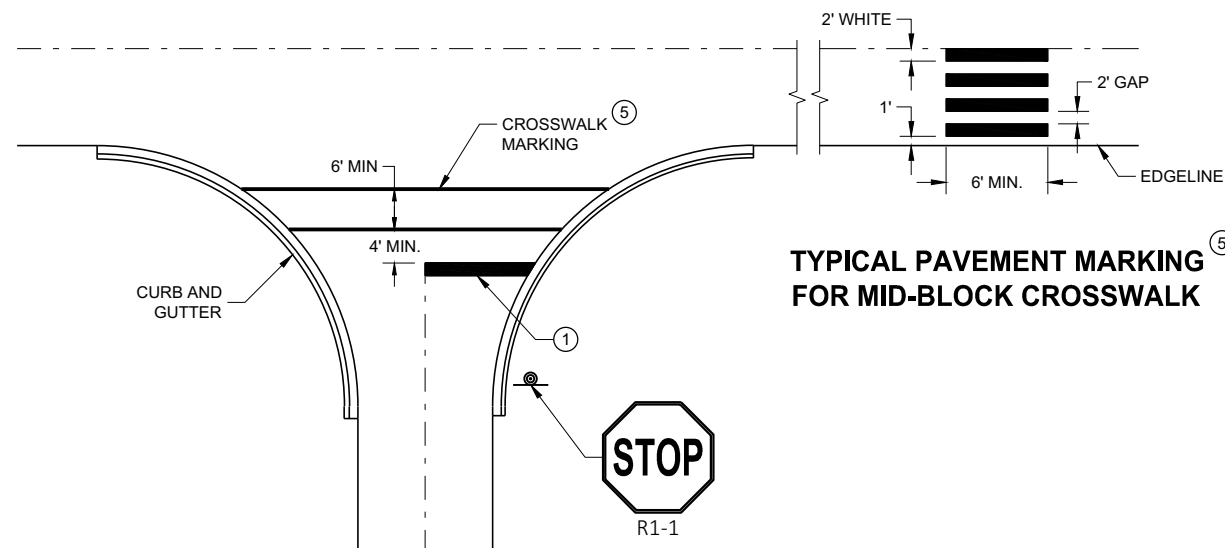
- ① 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE REGION MARKING ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- ② NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGELINE.
- ③ NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE EXTENSION.
- ④ MOVE CLOSER TO THE EDGE OF TRAVEL LINE AS NEEDED FOR VISIBILITY AND SIGHT LINES (NO CLOSER THAN 4 FEET).
- ⑤ LADDER BAR CROSSWALKS SHOULD ONLY BE USED FOR MID BLOCK CROSSINGS. USE 2 - 6" TRANSVERSE LINES INSTEAD.



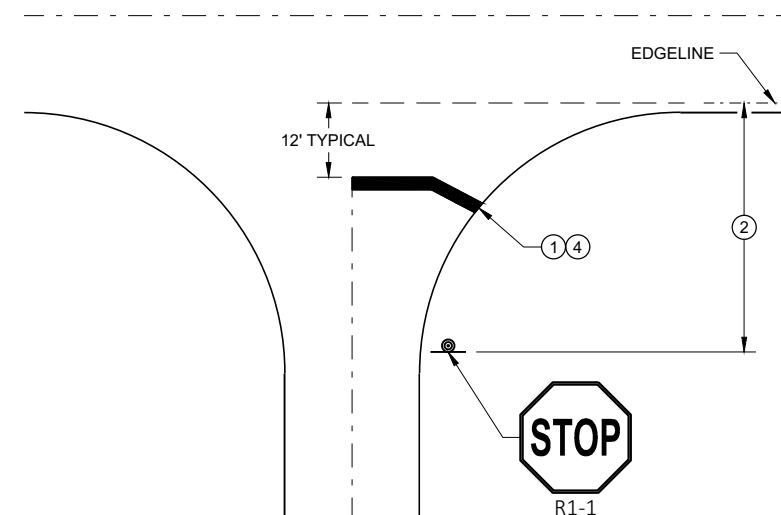
TYPICAL STOP LINE PAVEMENT MARKING WITH CURB AND GUTTER



TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH RIGHT TURN LANE



TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH CROSSWALK MARKING



TYPICAL STOP LINE PAVEMENT MARKING WITHOUT CURB AND GUTTER

STOP LINE AND CROSSWALK PAVEMENT MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

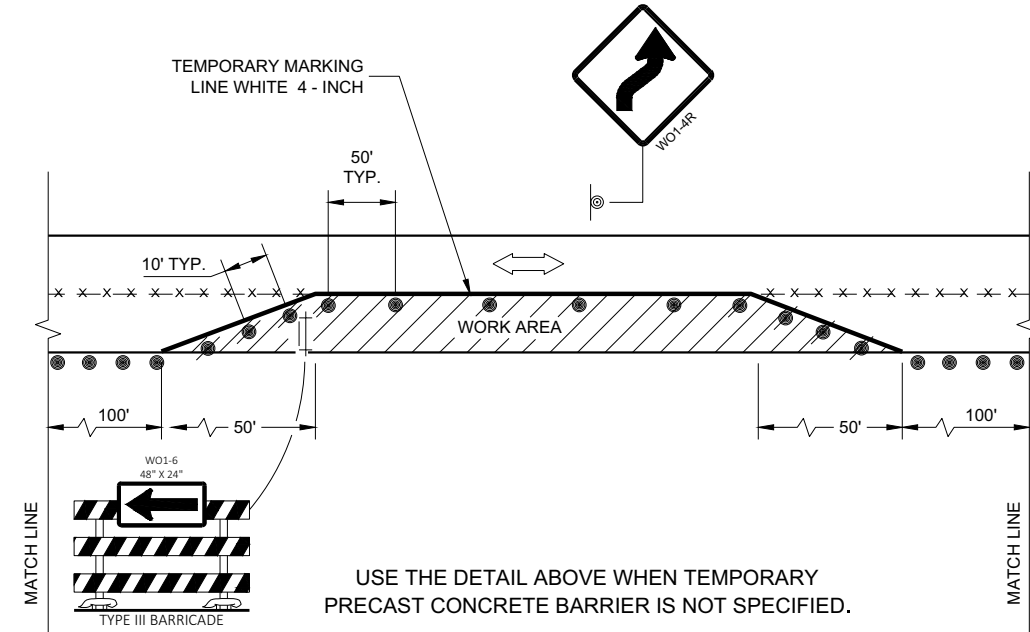
APPROVED
November 2019 /S/ Matthew Rauch
DATE STATE SIGNING AND MARKING ENGINEER

FHWA

LEGEND

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

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



TEMPORARY MARKING LINE WHITE 4 - INCH (STOPLINE TO STOPLINE). REMOVE EXISTING EDGELINE AND OFFSET THE TEMPORARY EDGELINE IF THE DISTANCE FROM THE EDGELINE TO CONCRETE BARRIER WALL IS LESS THAN 9 FEET.

GENERAL NOTES

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

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

THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.

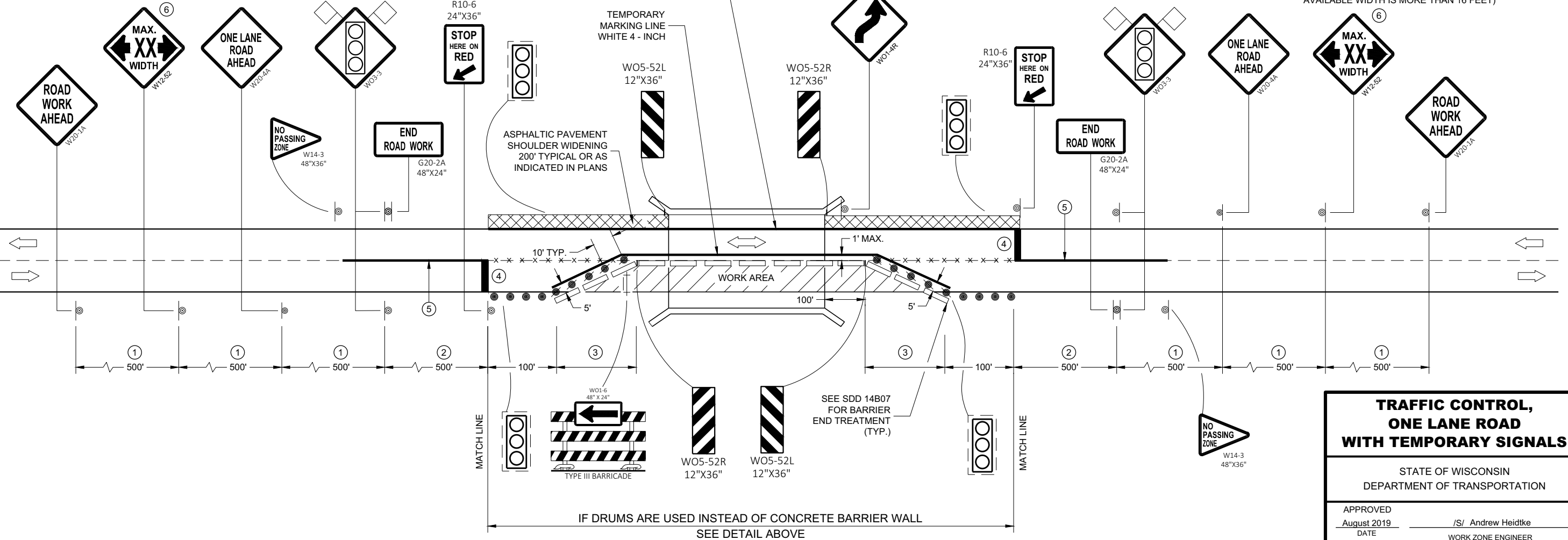
ALL SIGNS ARE 48" x 48" UNLESS OTHERWISE NOTED.

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

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

PLACE TEMPORARY PAVEMENT MARKING EDGELINE AND CENTERLINE AND REMOVE EXISTING PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE 4 OR MORE CONTINUOUS DAYS AND NIGHTS OR AS NOTED ON DETAIL.

- ① 500 FOOT SPACING SHOWN IS FOR ROADWAYS WITH A PRE-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE. FOR 35 - 40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25 - 30 MPH, USE 200 FOOT TYPICAL SPACING.
- ② USE 300 FOOT SPACING IF THE PRE - CONSTRUCTION REGULATORY SPEED IS 35 MPH OR LESS.
- ③ DIMENSION DETERMINED BY CBTP TAPER FROM EDGE LINE TO TANGENT SECTION OF THE ROAD.
- ④ TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18 - INCH.
- ⑤ 700 FOOT TEMPORARY MARKING LINE, DOUBLE YELLOW 4 - INCH . WHEN THE DISTANCE FOR THE PRECEDING NO - PASSING ZONE IS LESS THAN THE MINIMUM DISTANCE BETWEEN ZONES AS INDICATED IN THE SPECIFICATIONS, THE TWO ZONES SHALL BE CONNECTED.
- ⑥ SEE SDD 15C02 - SHEET "F" FOR ADVANCED WIDTH RESTRICTION SIGNING.



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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2019 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

GENERAL NOTES

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

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

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

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



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

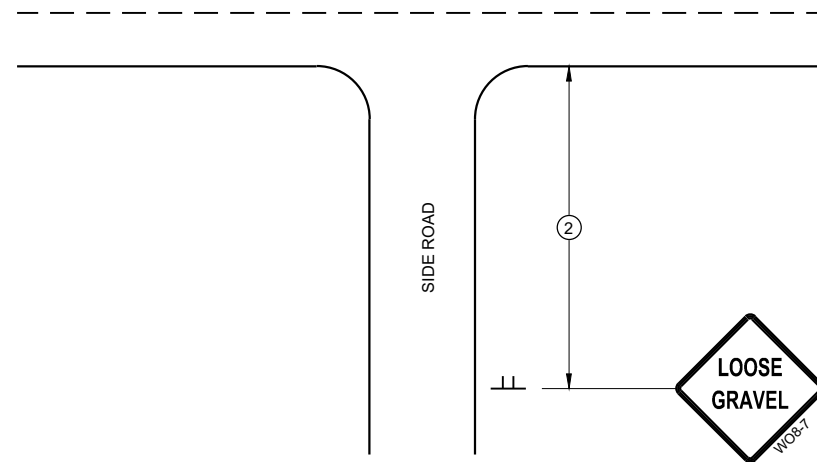
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

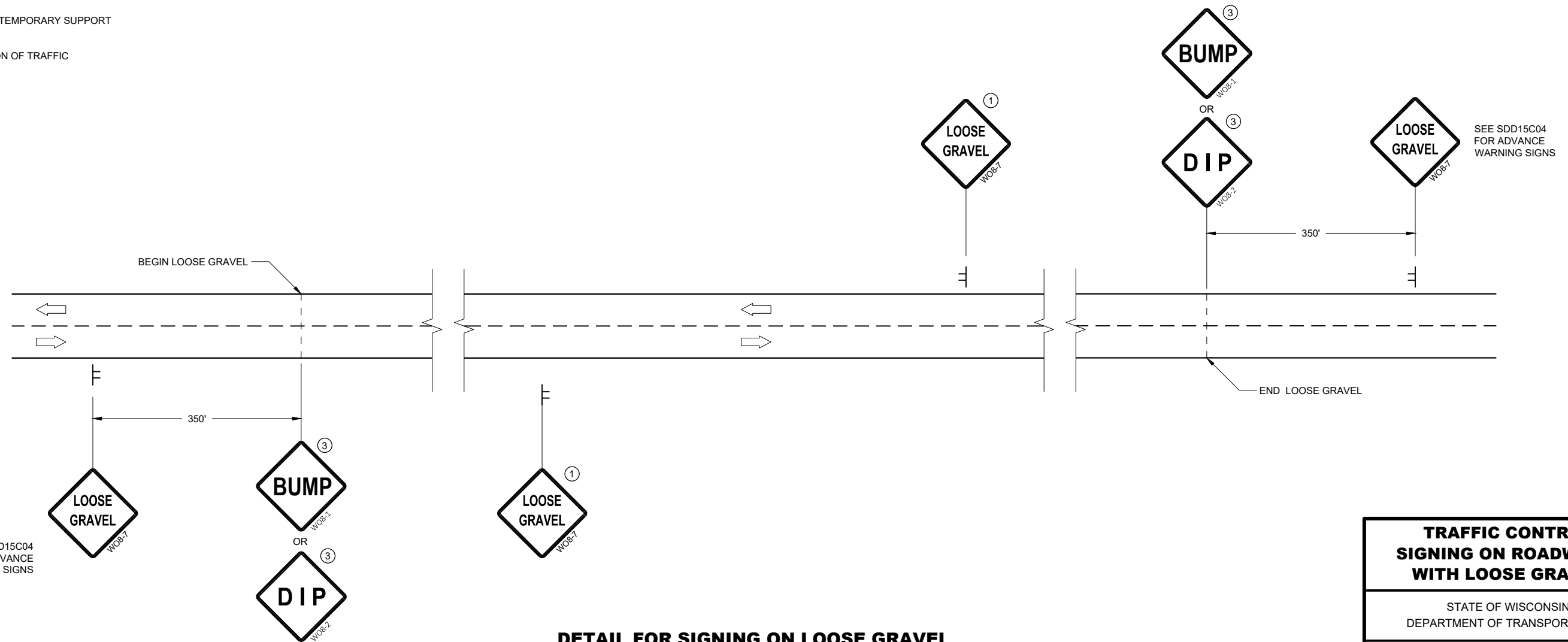
- ① PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED OR LOOSE GRAVEL SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.
- ③ ADD WO8-1 OR WO8-2 SIGN WHEN THE CONDITION IS PRESENT.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH SIGN DETAIL



DETAIL FOR SIGNING ON LOOSE GRAVEL OR CHIP SEALED SURFACES

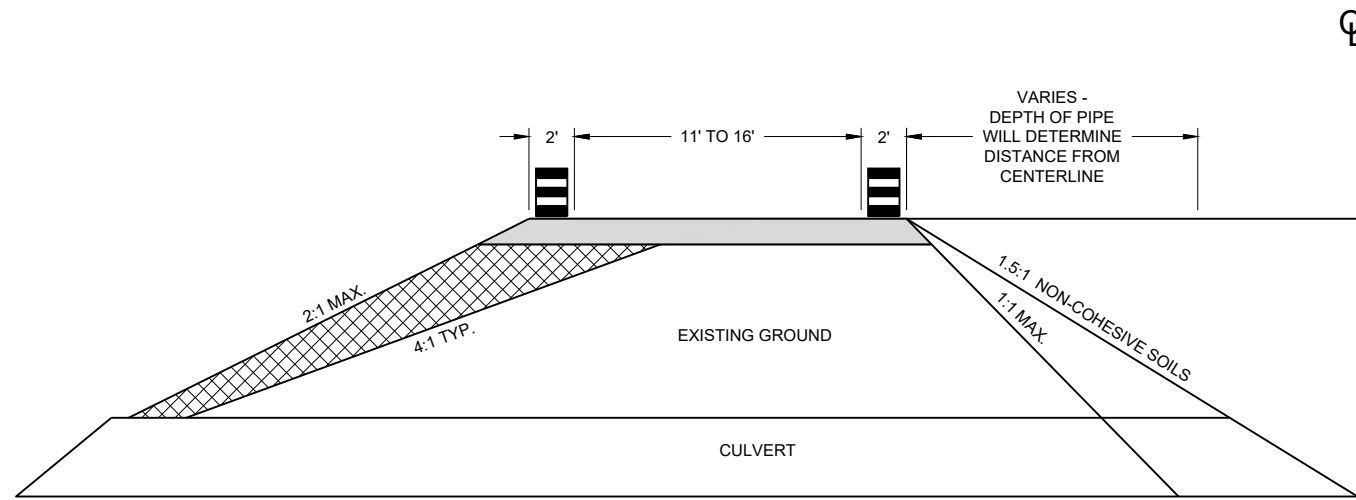
SEE SDD15C04 FOR ADVANCE WARNING SIGNS

SEE SDD15C04 FOR ADVANCE WARNING SIGNS

TRAFFIC CONTROL SIGNING ON ROADWAYS WITH LOOSE GRAVEL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



CROSS SECTION

GENERAL NOTES

USE 1:1 FOR COHESIVE CLAYS AND SILTS, LOAMS, SANDY CLAYS AND ANGULAR GRAVEL SOILS.
 USE 1.5:1 FOR NON-COHESIVE SOILS.

THE TAPER SHOULD EXTEND ACROSS THE SHOULDER UNLESS DOING SO WOULD GREATLY CONFLICT WITH THE WORK OPERATION.






ALL LANE CLOSURE SIGNS SHALL BE REMOVED OR COVERED AND ALL DEVICES REMOVED BEYOND THE SHOULDER WHEN WORK IS NOT IN PROGRESS AND THE LANE IS RESTORED TO A SAFE OPERATING CONDITION.

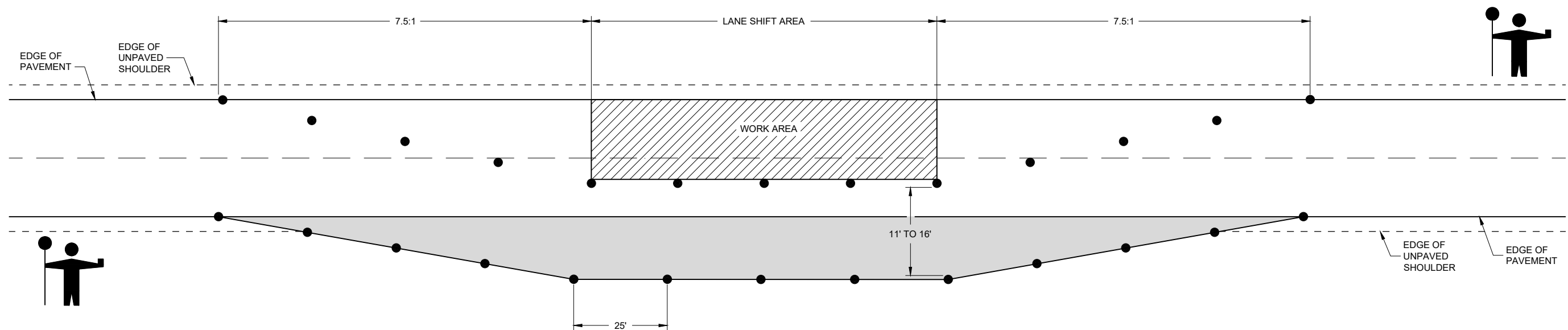
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

USE WITH SDD 15C12 "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATIONS"

USE WITH SDD 15D45 "SIGNING ON ROADWAYS WITH LOOSE GRAVEL"

LEGEND

-  DRUM WITHOUT WARNING LIGHT
-  6" BASE AGGREGATE DENSE 1 1/2" - INCIDENTAL TO LANE SHIFT ITEM
-  FILL - INCIDENTAL TO LANE SHIFT ITEM
-  WORK AREA
-  FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF



LANE SHIFT IN FLAGGING OPERATION

**TRAFFIC CONTROL,
 TEMPORARY LANE SHIFT
 DURING CULVERT WORK**

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

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

FHWA

6

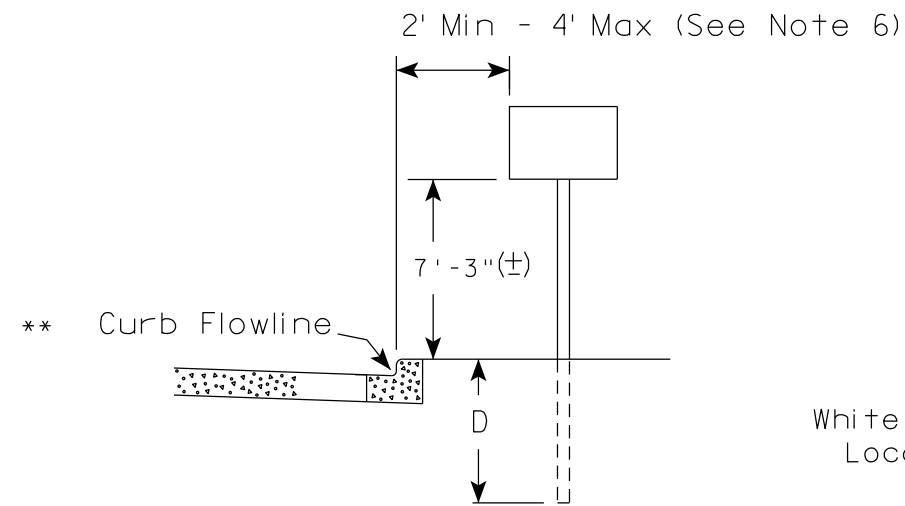
6

SDD 15D48 - 01

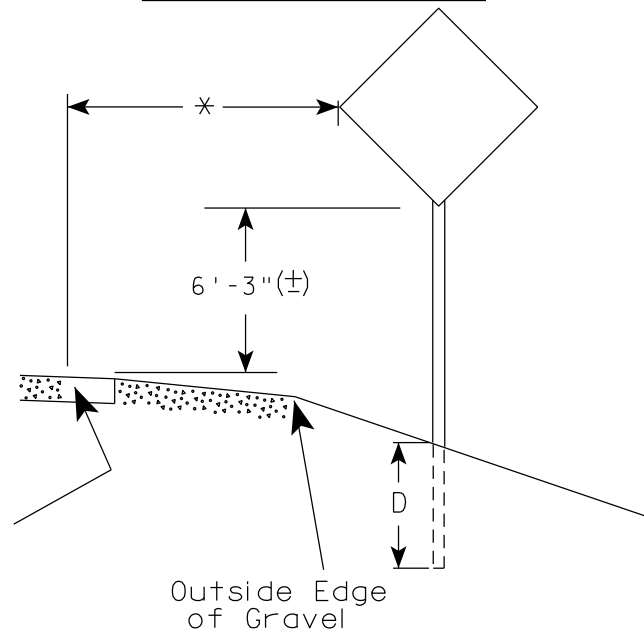
SDD 15D48 - 01

URBAN AREA

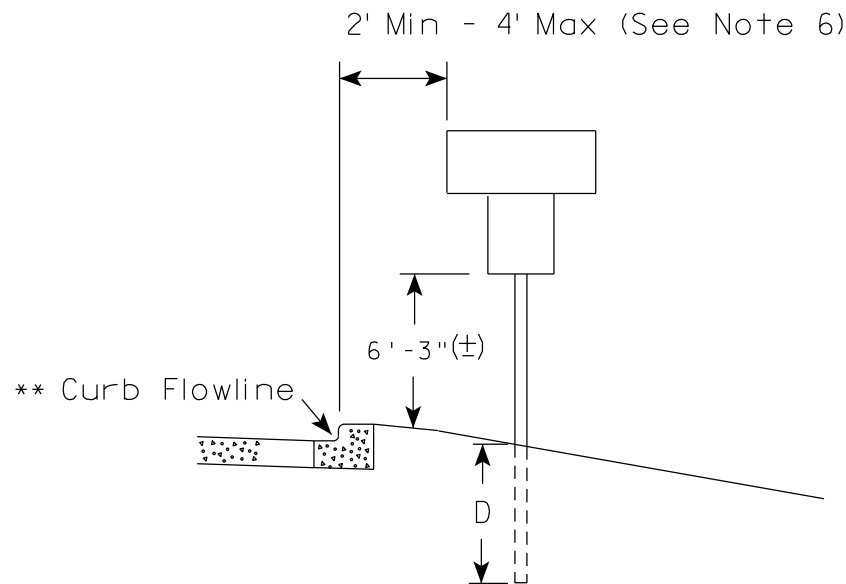
RURAL AREA (See Note 2)



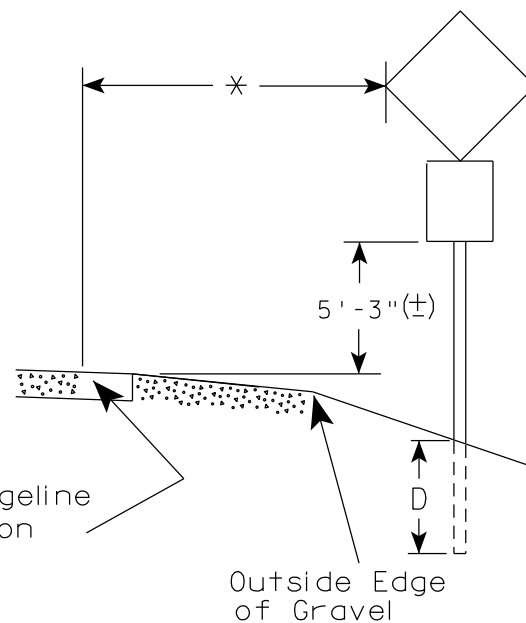
White Edgeline Location



Outside Edge of Gravel



White Edgeline Location



Outside Edge of Gravel

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

7

7

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

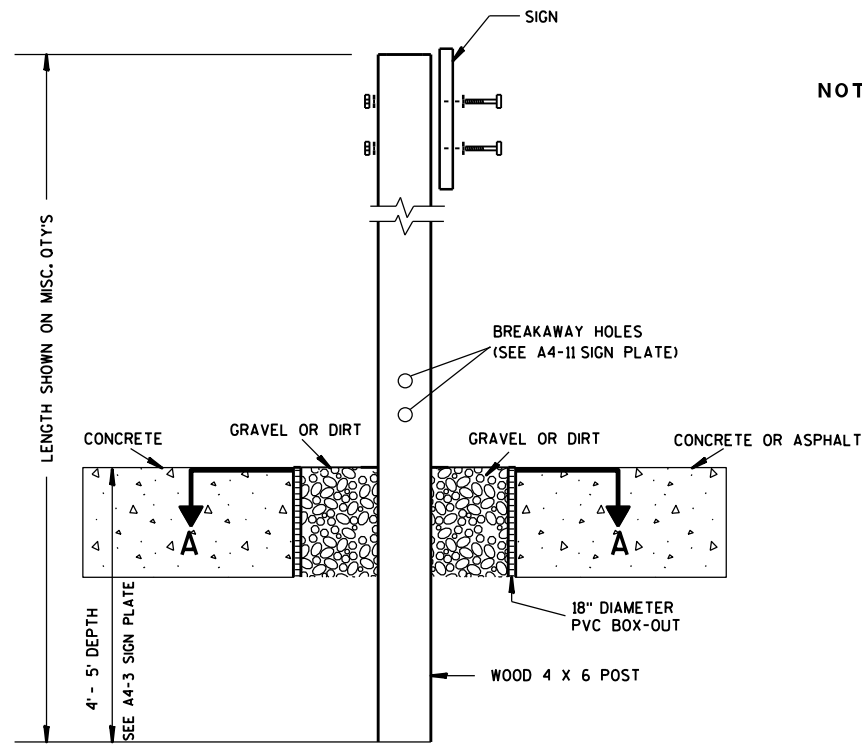
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

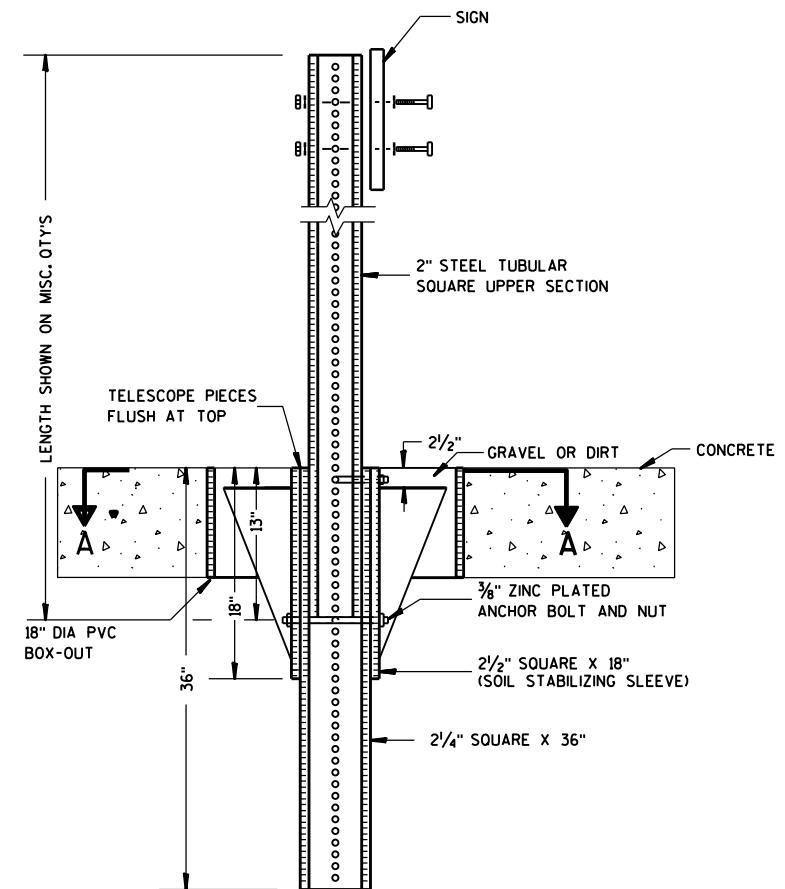
DATE 5/13/2020 PLATE NO. A4-3.22



ELEVATION VIEW

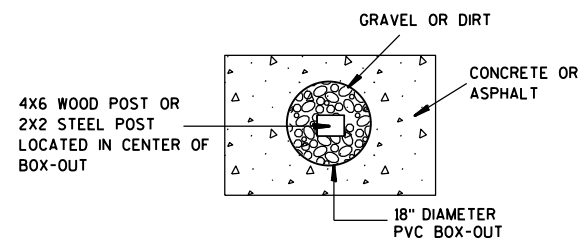
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ ASPHALT INSTALLATIONS

**SIGN POST
BOX-OUTS
A4-3B**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R Rauch*
for State Traffic Engineer

DATE 1/27/14 PLATE NO. A4-3B.1

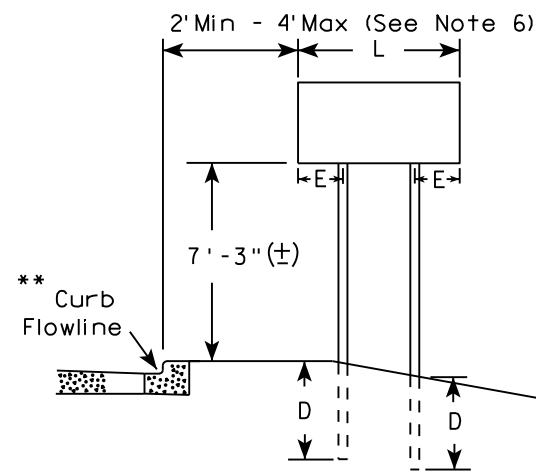
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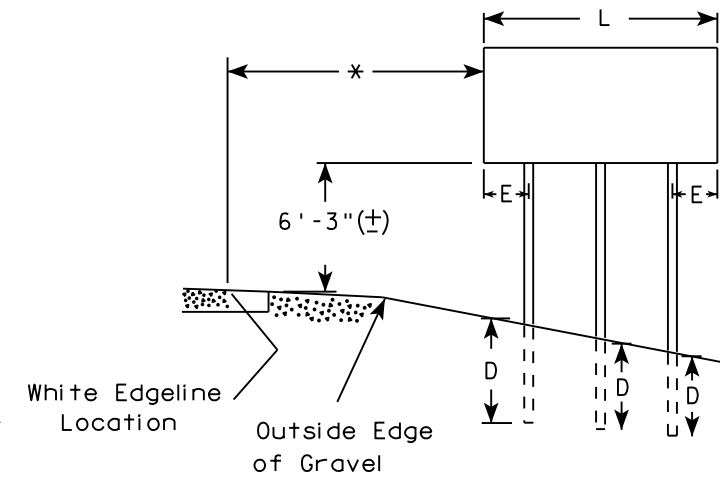
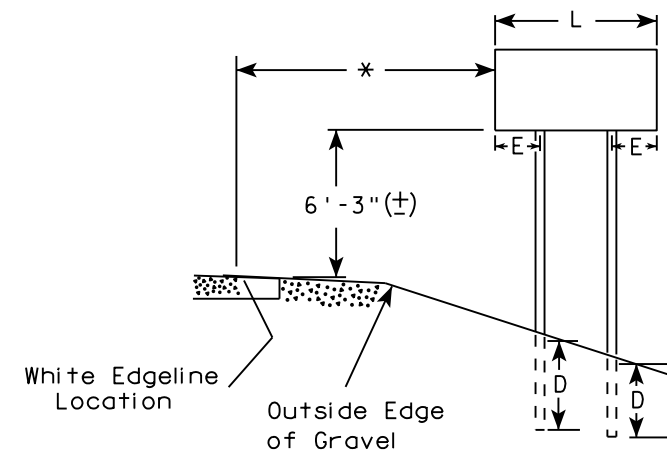
GENERAL NOTES

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

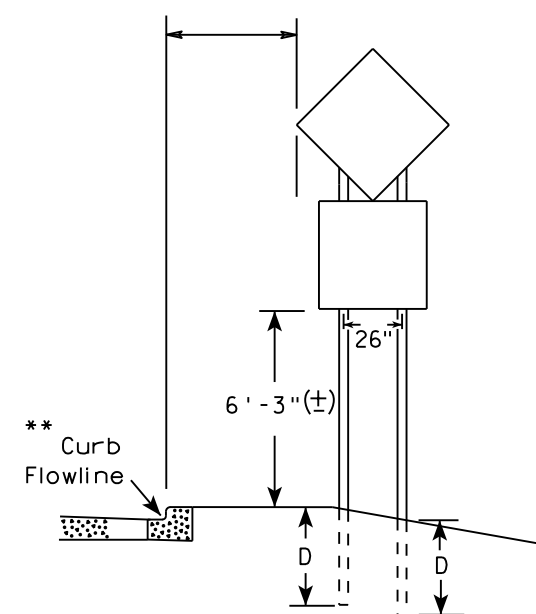
URBAN AREA



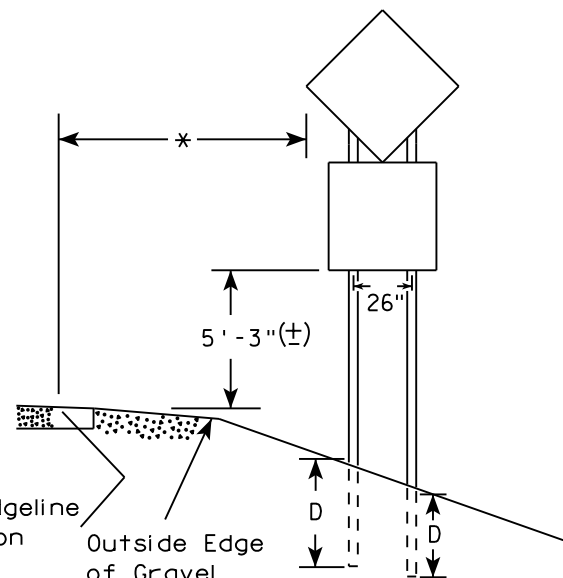
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

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

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

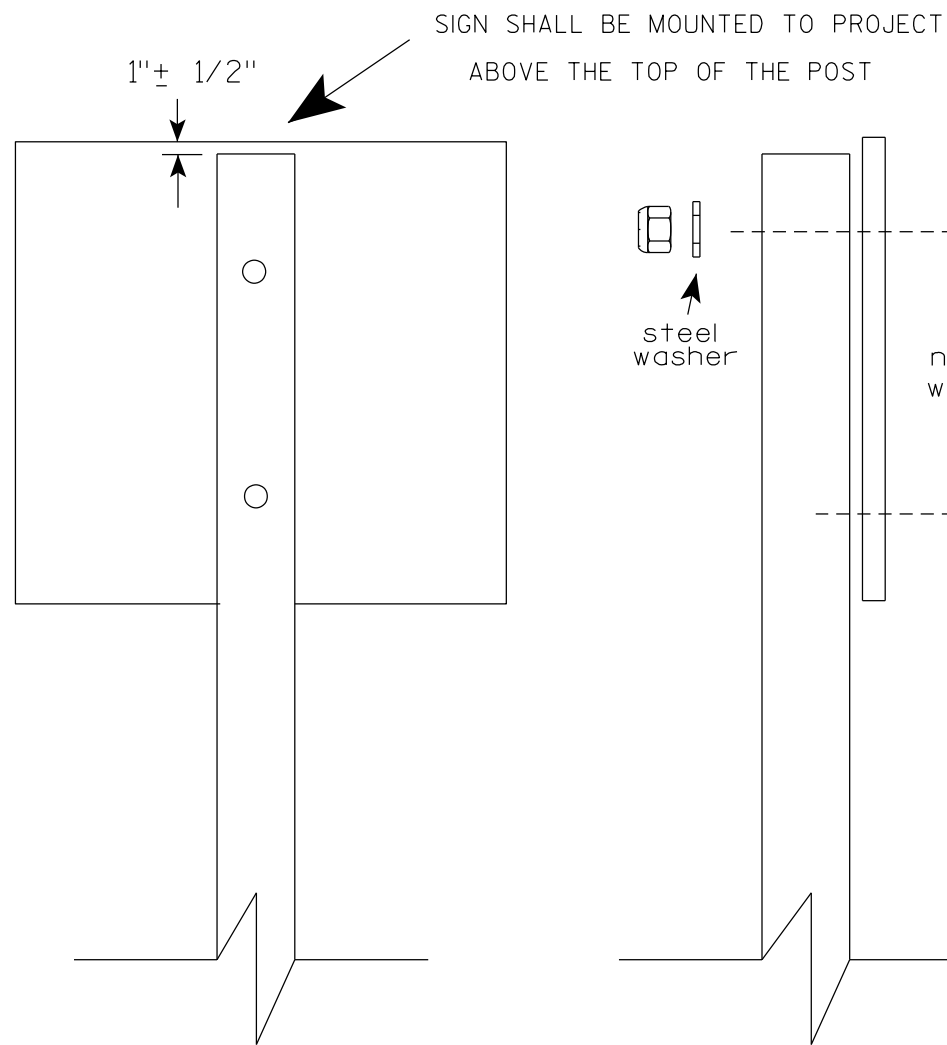
| SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED) | |
|------------------------------------------------------|-----|
| L | E |
| Greater than 108" to 144" | 12" |

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

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



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

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

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

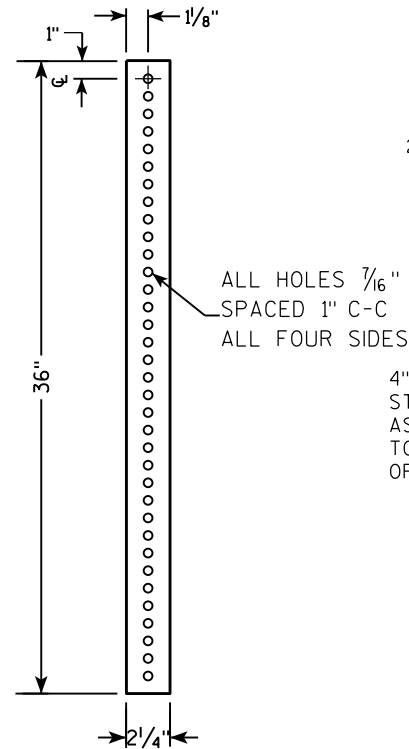
- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE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

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

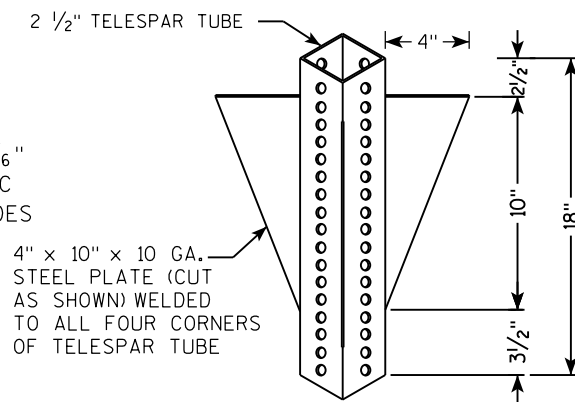
| | |
|----------------------------------|------------------------------------------------------|
| ATTACHMENT OF SIGNS TO POSTS | |
| WISCONSIN DEPT OF TRANSPORTATION | |
| APPROVED | <i>Matthew R Rauch</i> For State Traffic Engineer |
| DATE 4/1/2020 | PLATE NO. A4-8.9 |

**TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM**

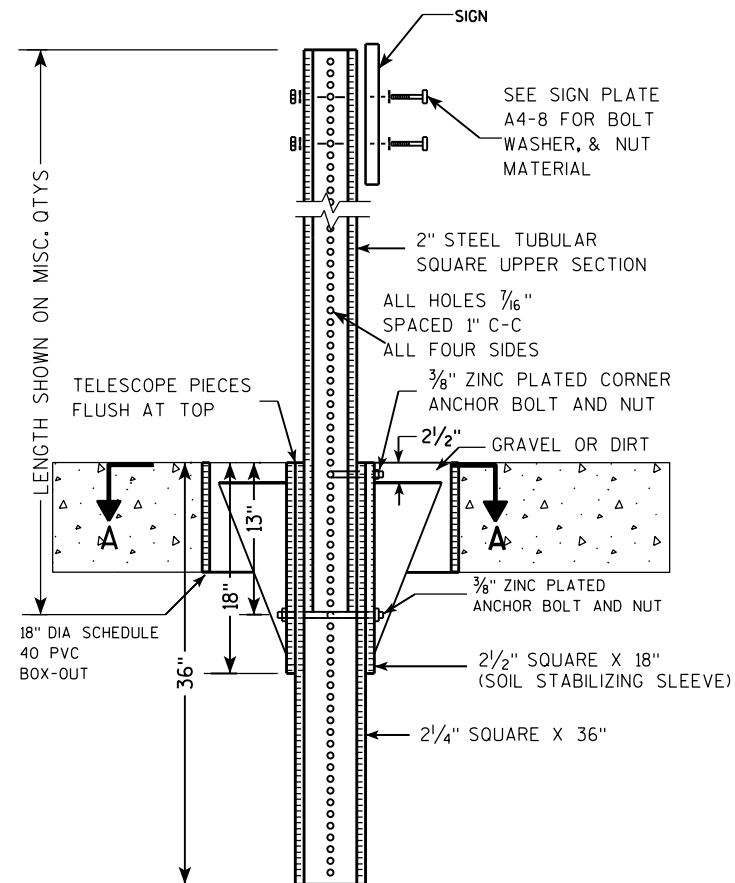
**2 1/4" SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH**



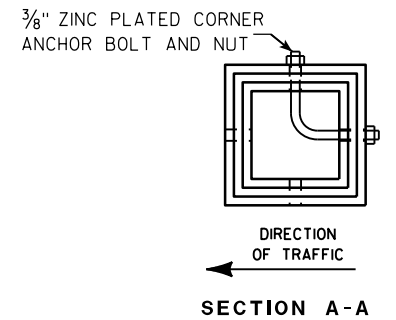
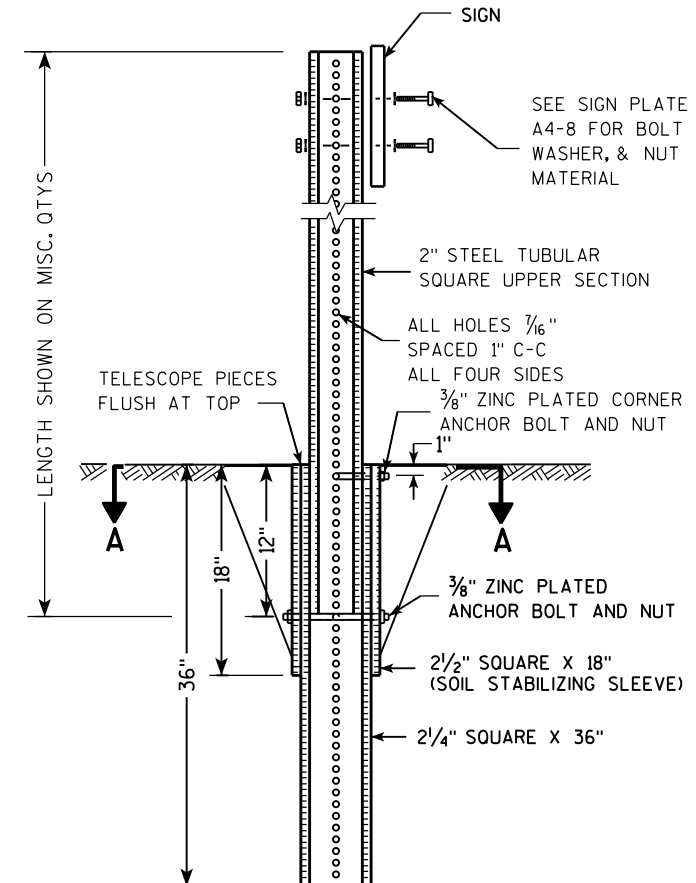
**2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH**



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



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



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

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

**TUBULAR STEEL
SIGN POST
A4-9**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

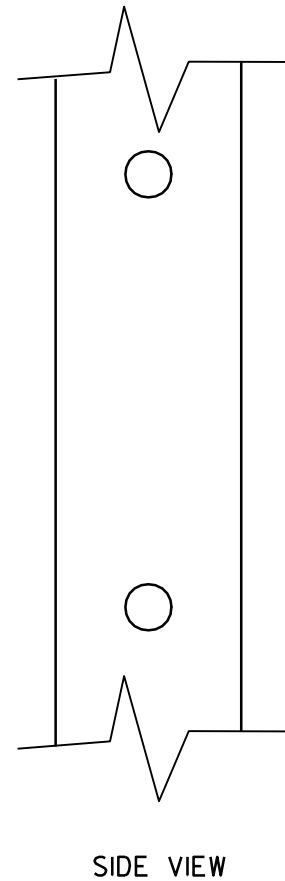
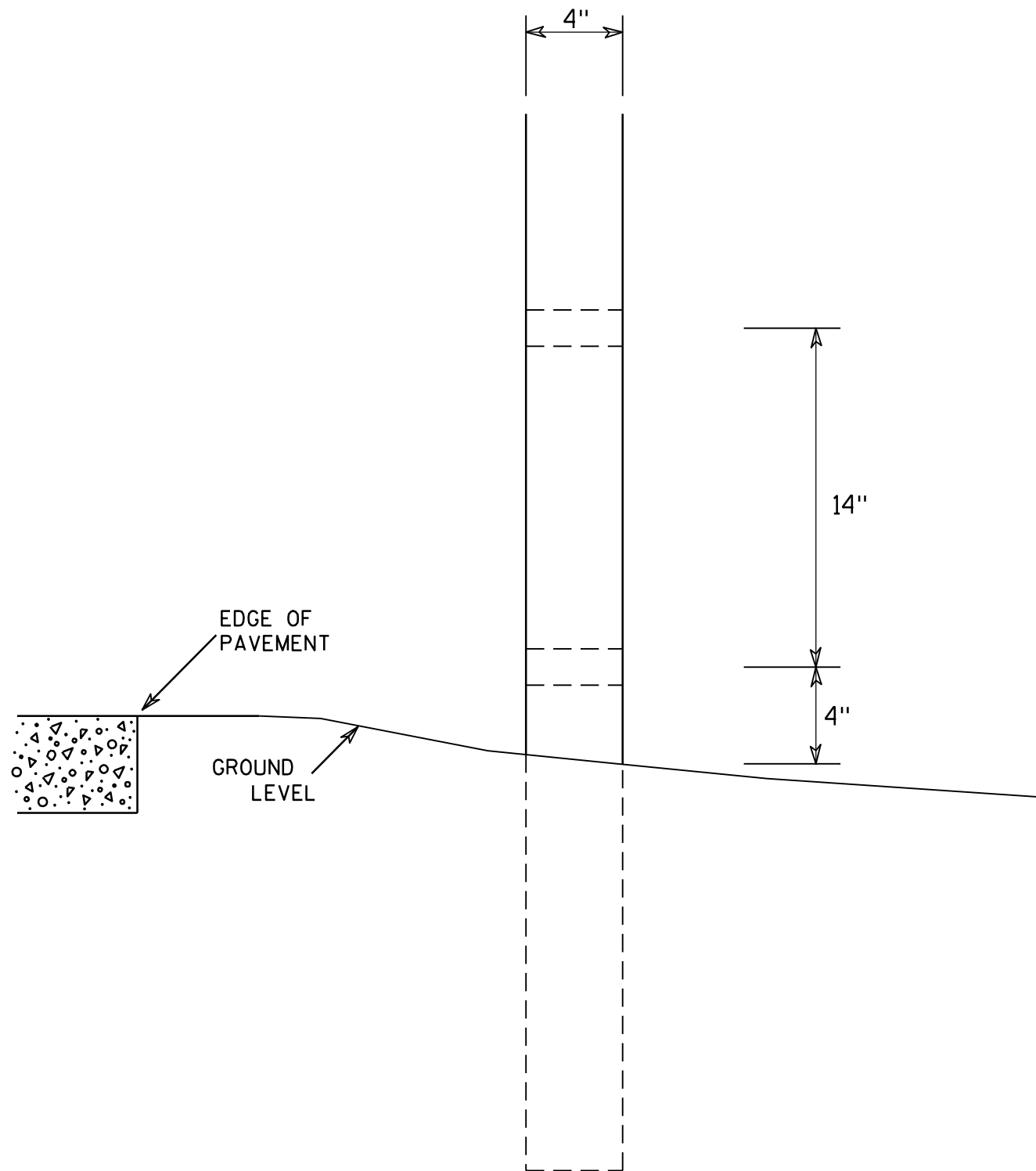
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



GENERAL NOTES

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

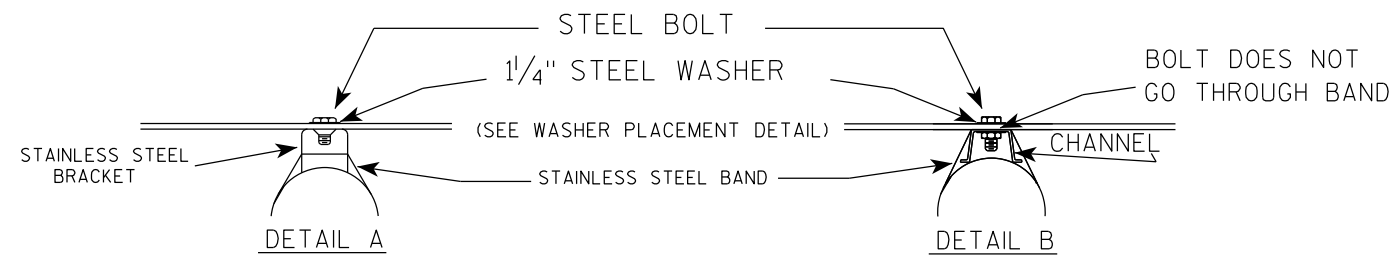
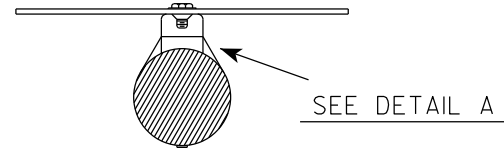
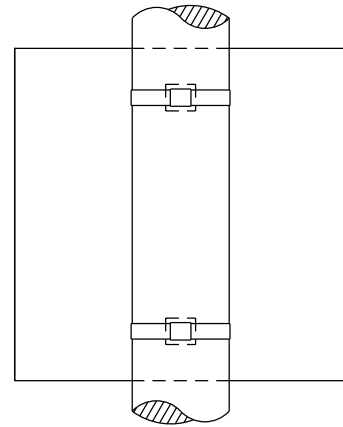
7

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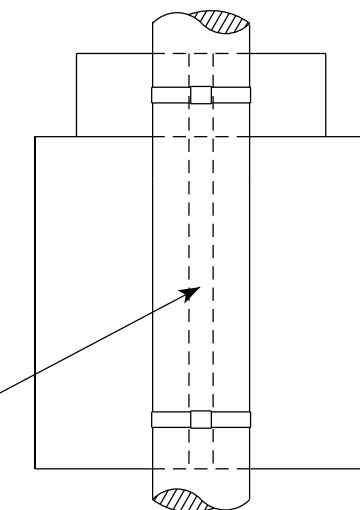
| | |
|-----------------------------------------|------------------------------------------------------|
| 4 X 6 WOOD POST MODIFICATIONS | |
| <i>WISCONSIN DEPT OF TRANSPORTATION</i> | |
| APPROVED | <i>Chester J Spang</i> for State Traffic Engineer |
| DATE <u>3/27/97</u> | PLATE NO. <u>A4-11.2</u>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

BANDING

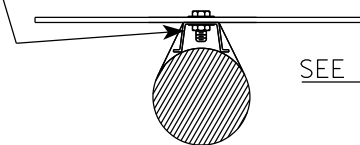
SINGLE SIGN



"J" ASSEMBLY

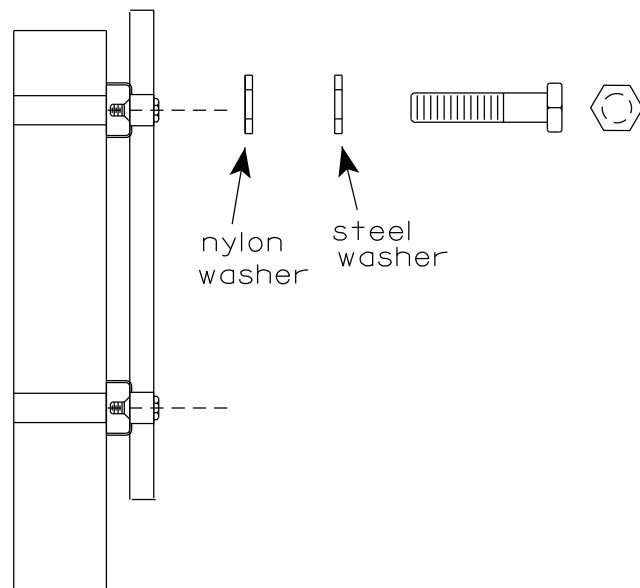


CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



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

WASHER PLACEMENT



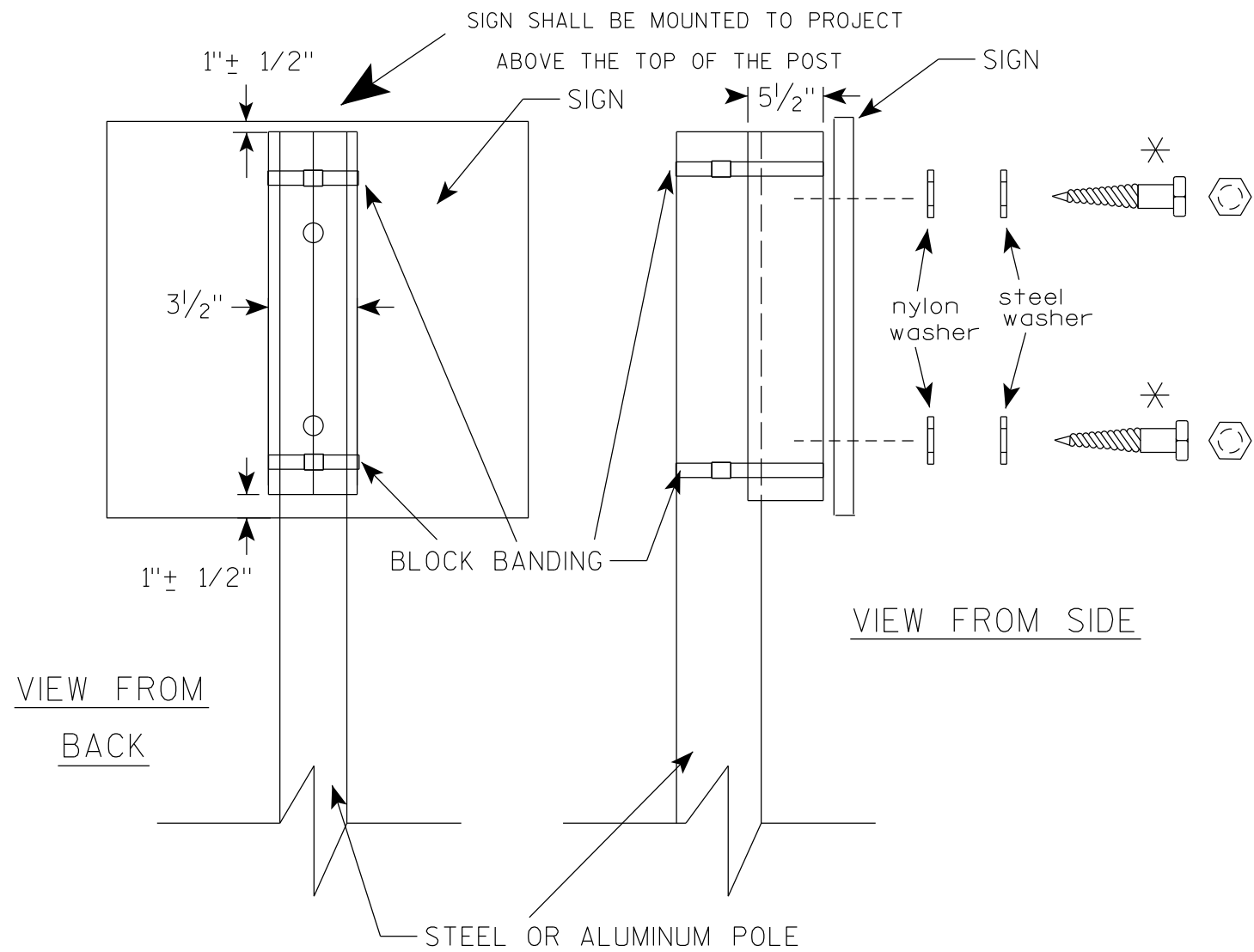
WASHERS (ALL POSTS) -
 1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
 1-1/4" O.D. X 3/8" I.D. X .080 NYLON
 FOR ALL TYPE H SIGNS

STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

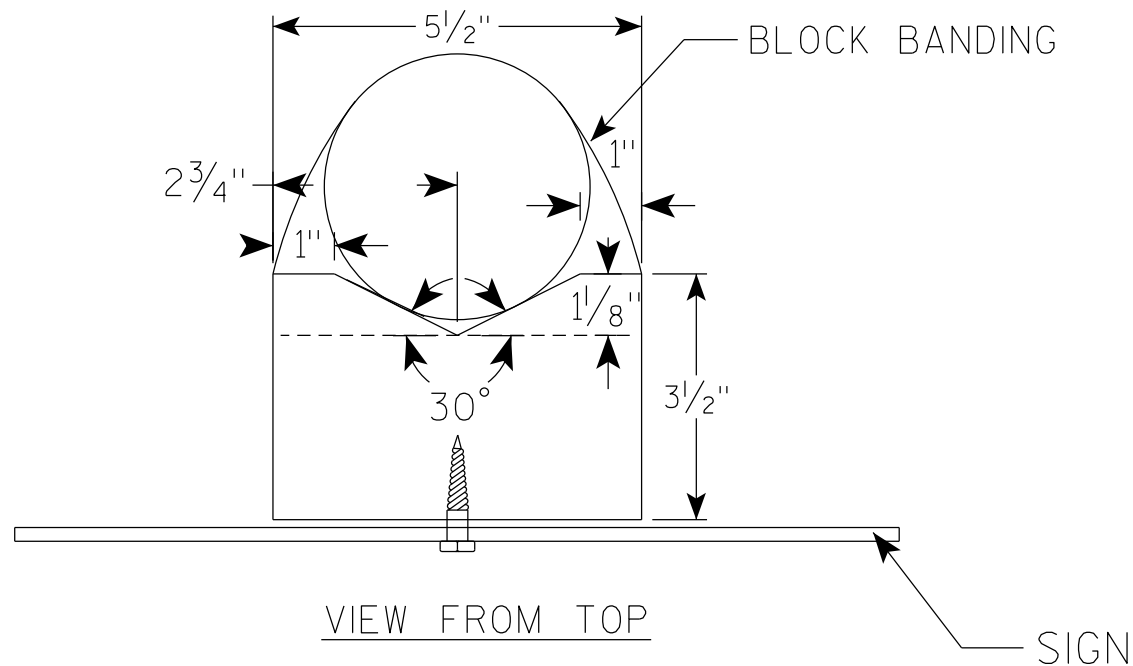
DATE 6/10/19 PLATE NO. A5-9.4



GENERAL NOTES

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

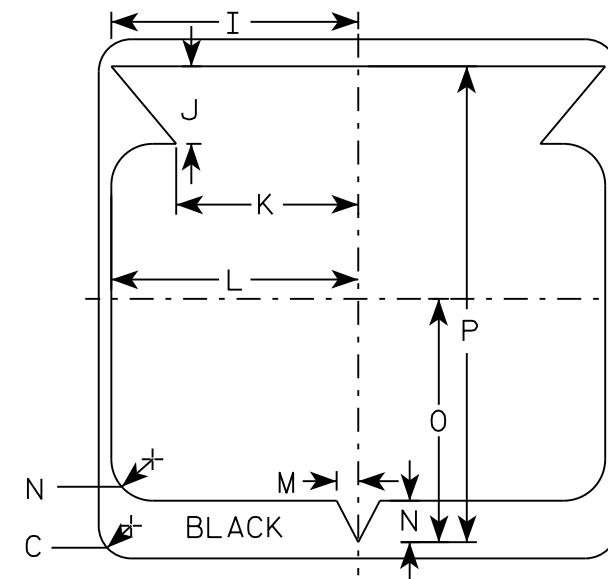
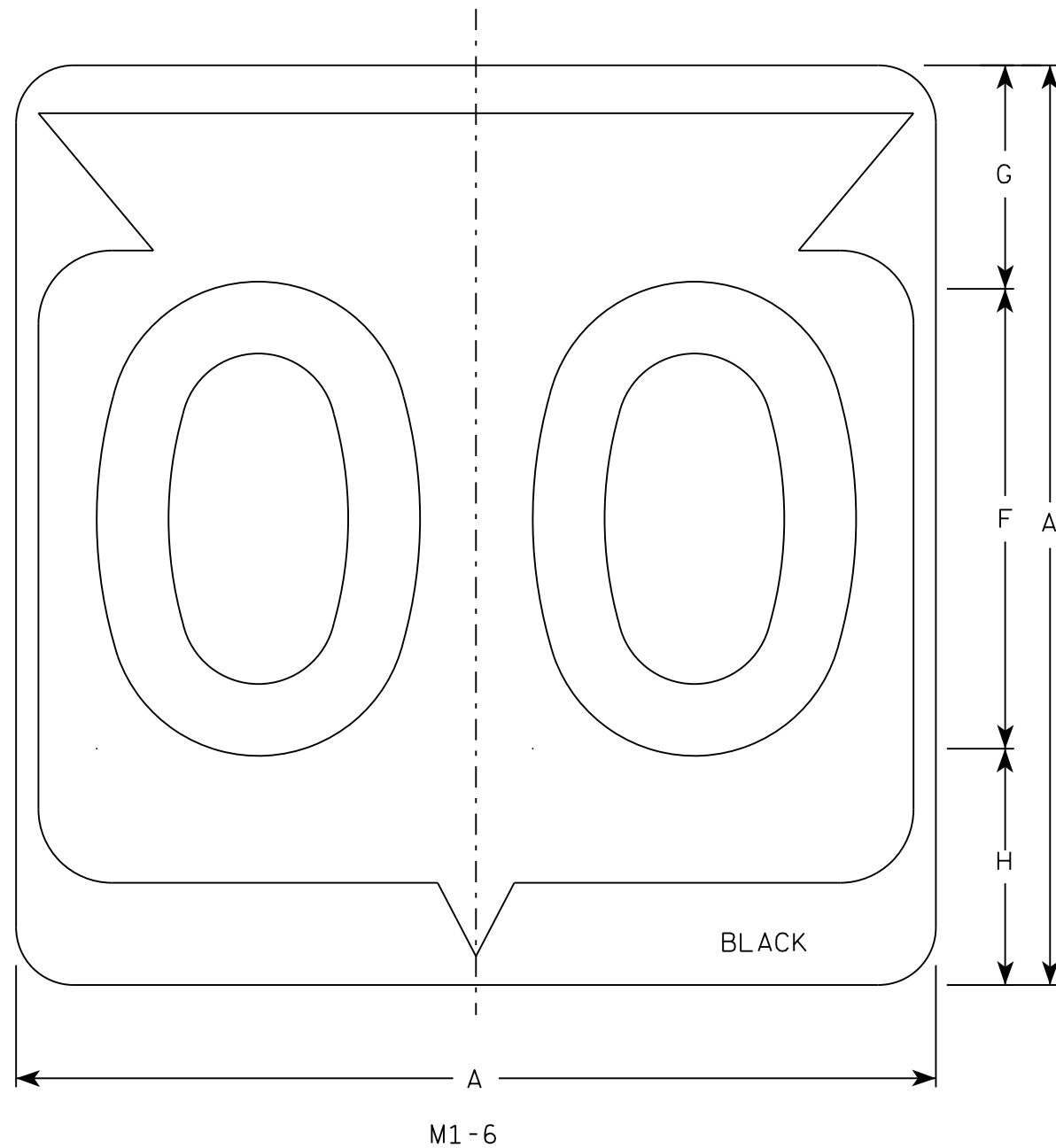
✱ LAG BOLTS SHALL BE 3/8" X 2 1/2"



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

NOTES

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



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

STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

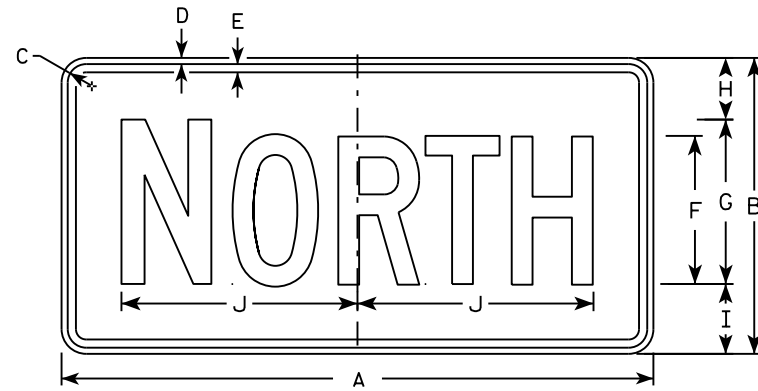
PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**

7

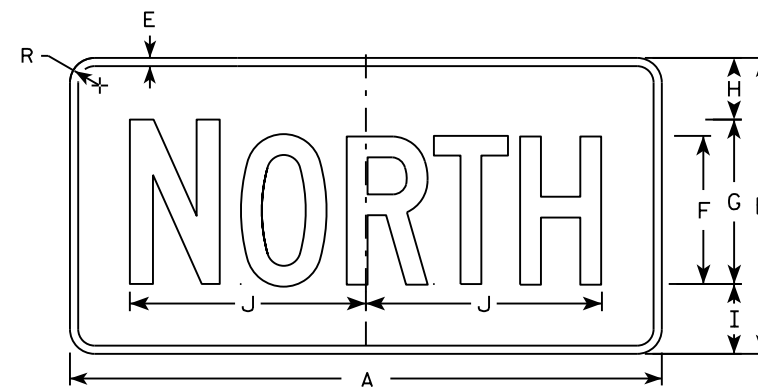
7

NOTES

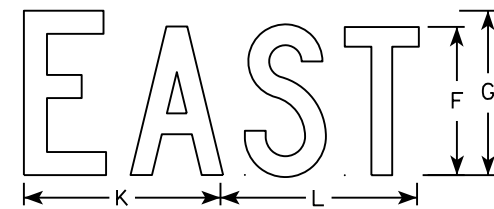
- All Signs Type II - Type H
- Color:
 - Background - See note 5
 - Message - See note 5
- Message Series - C
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M3-1 thru M3-4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



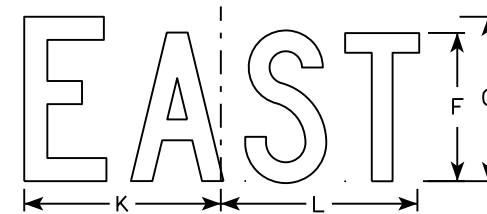
M3-1
MM3-1
MP3-1



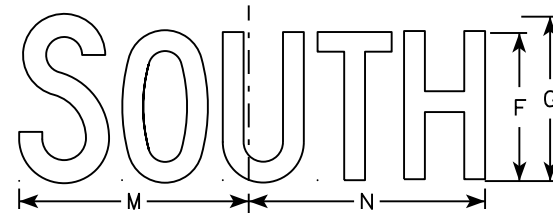
MB3-1
MK3-1
MN3-1



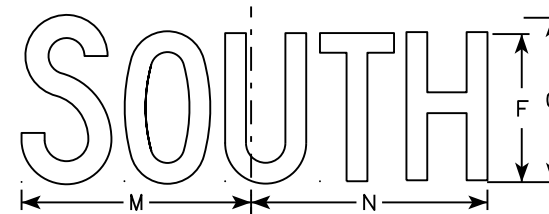
M3-2
MM3-2
MP3-2



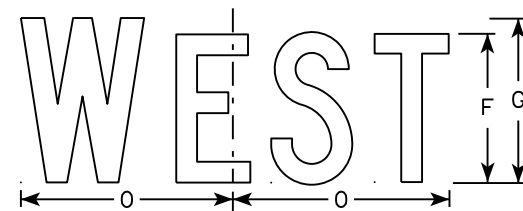
MB3-2
MK3-2
MN3-2



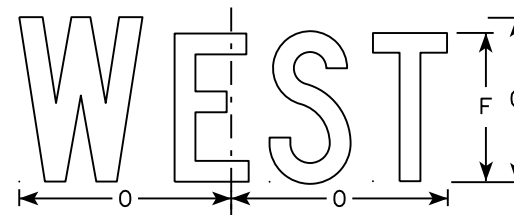
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

7

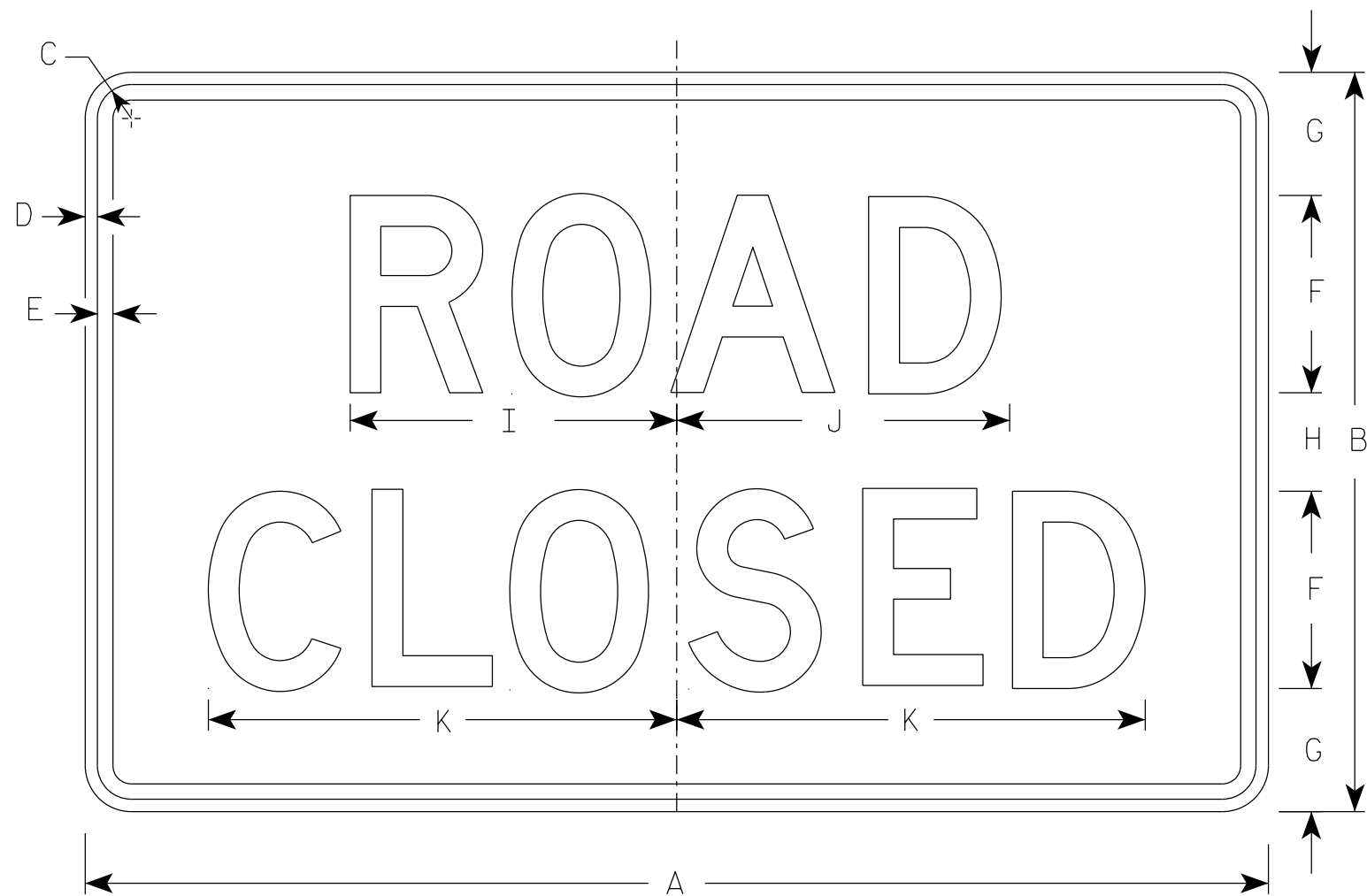
| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|------|----|----|-------|-----|-----|---|----|-------|-------|--------|-------|--------|--------|--------|-------|---|---|-------|---|---|---|---|---|---|---|---|--------------|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

STANDARD SIGNS
M3-1 thru M3-4
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

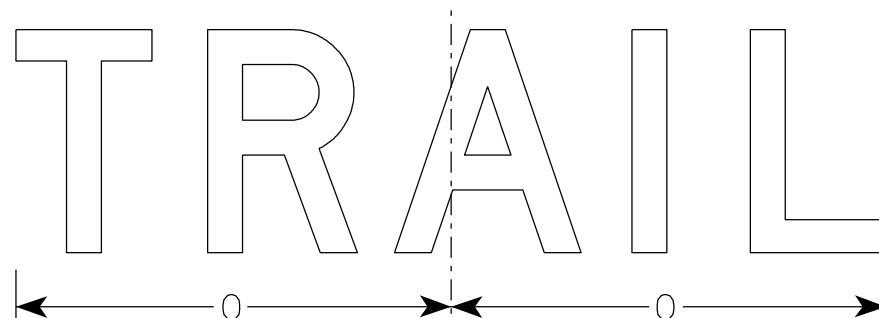
DATE 10/15/15 PLATE NO. M3-1.14



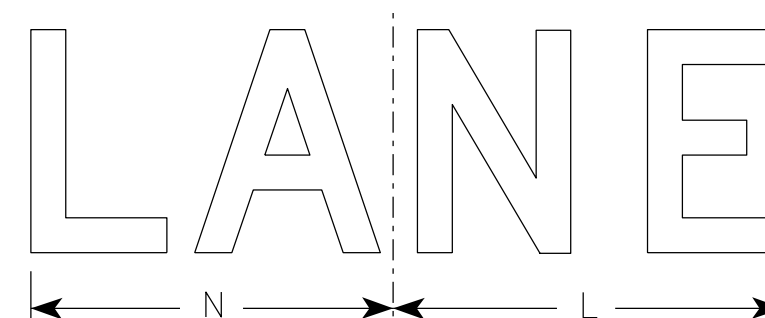
R11-2



R11-2R



R11-2T



R11-2L

NOTES

1. Sign is Type II - Type H Reflective
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.

7

7

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

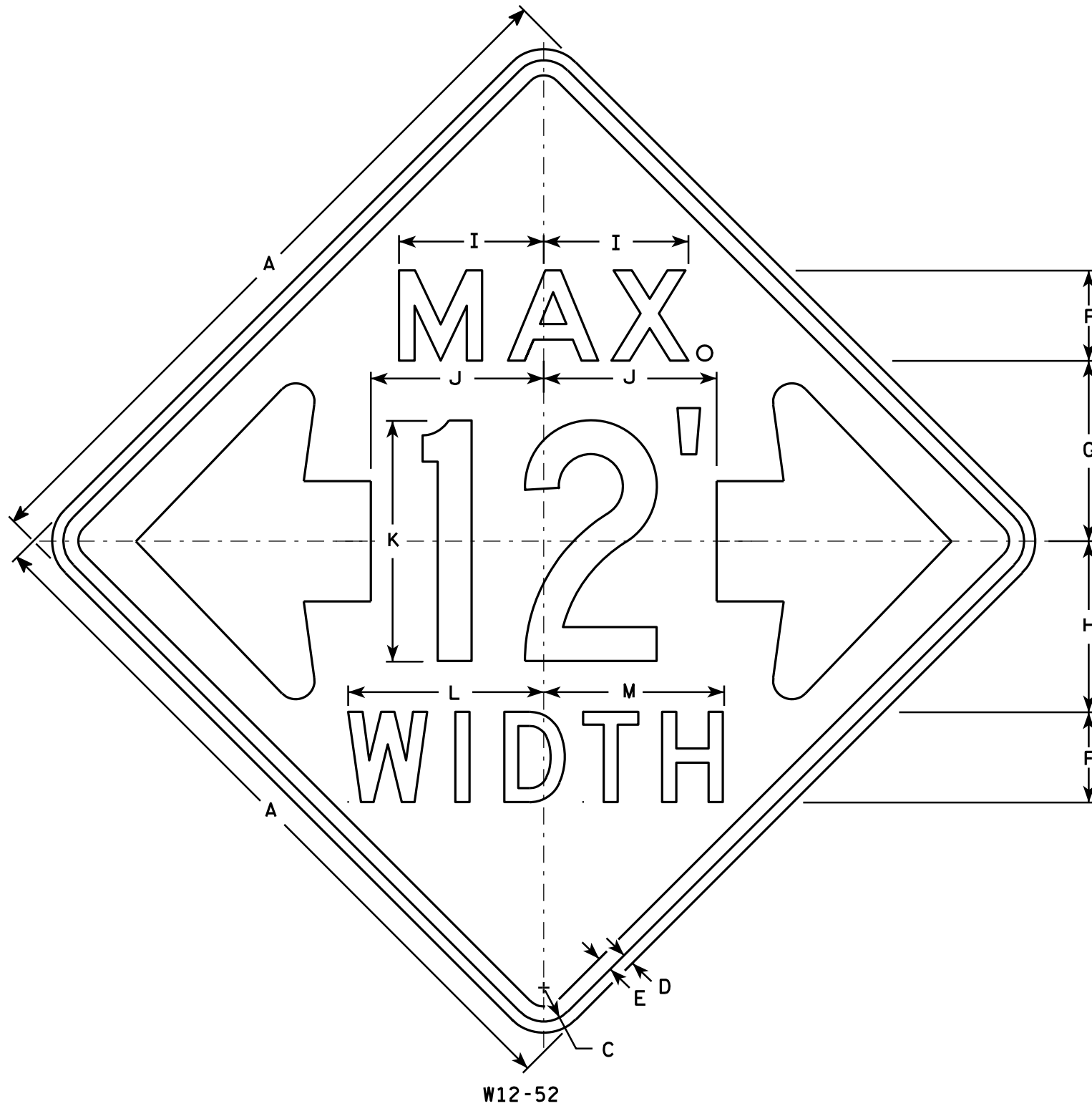
STANDARD SIGN
R11-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R Rauch*
For State Traffic Engineer

DATE 3/29/2021 PLATE NO. R11-2.11

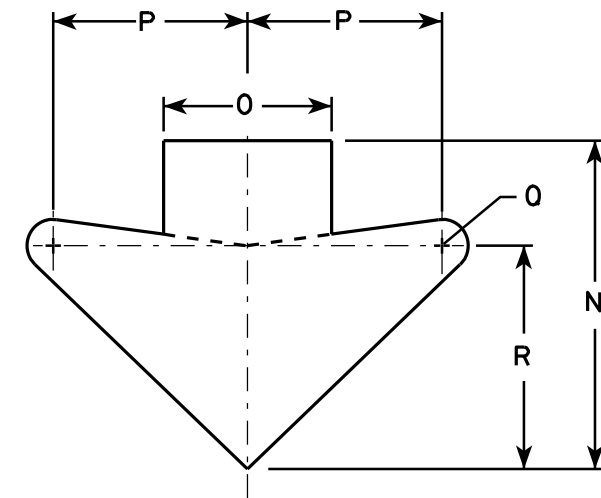
PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ **E**



W12-52

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. The top line is series E, the numerals are series C, and the bottom line is series D.
6. Substitute appropriate numerals and adjust spacing as required.



ARROW DETAIL

| 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 | | 2 1/4 | 3/4 | 1 | 6 | 12 | 11 3/8 | 9 5/8 | 11 1/2 | 16 | 13 | 12 | 15 5/8 | 8 | 9 1/4 | 1 1/4 | 10 5/8 | | | | | | | | 16.0 | |
| 2M | 48 | | 2 1/4 | 3/4 | 1 | 6 | 12 | 11 3/8 | 9 5/8 | 11 1/2 | 16 | 13 | 12 | 15 5/8 | 8 | 9 1/4 | 1 1/4 | 10 5/8 | | | | | | | | 16.0 | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

STANDARD SIGN
W12-52

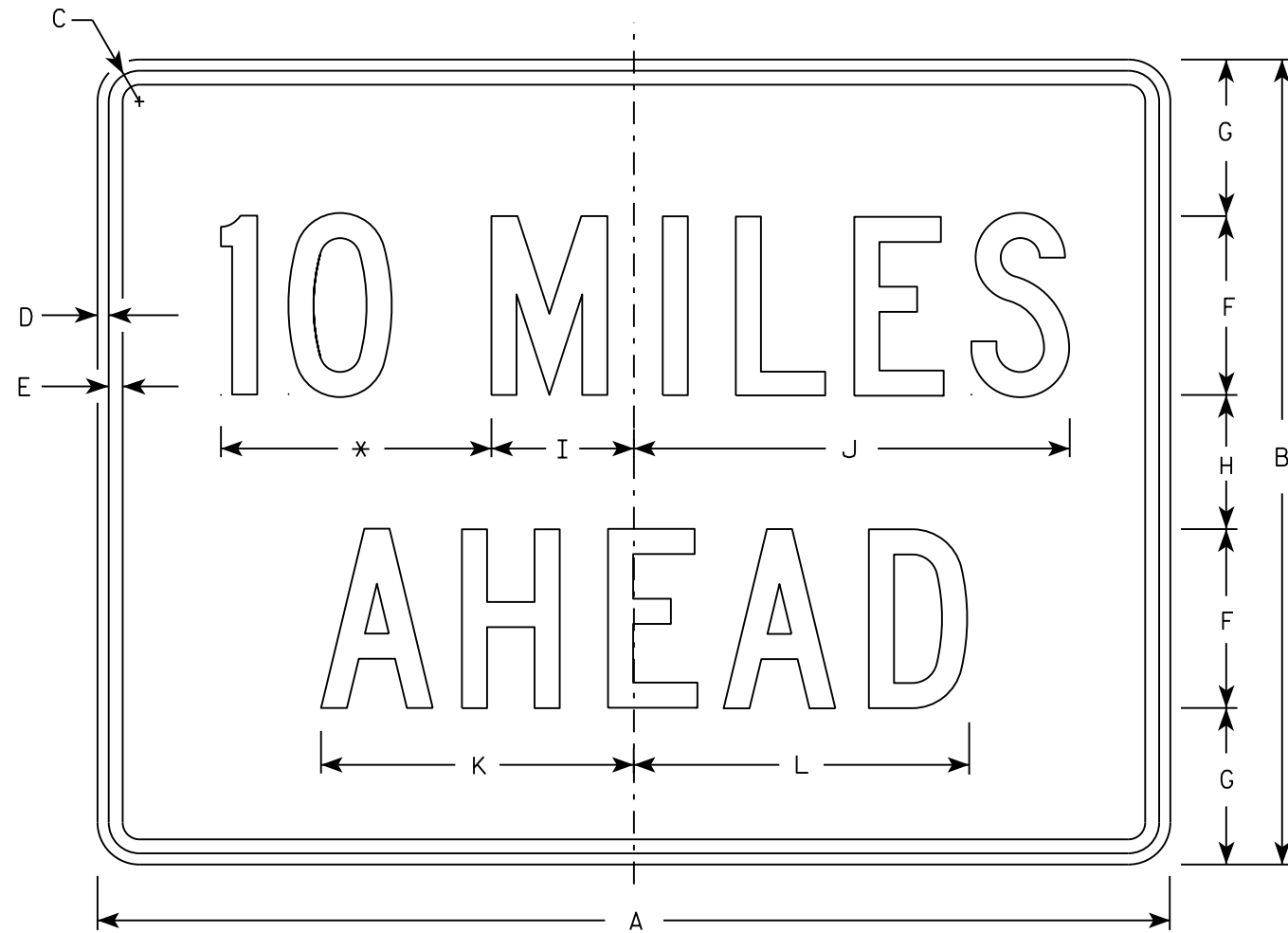
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

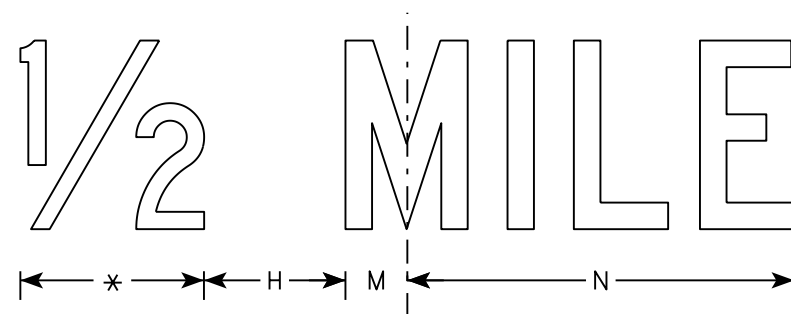
DATE 3/16/11 PLATE NO. W12-52.7

NOTES

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



W057-52



* 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 | 24 | 1 1/8 | 3/8 | 1/2 | 6 | 4 1/2 | 3 | 4 3/4 | 14 5/8 | 10 5/8 | 11 3/8 | 2 | 12 | | | | | | | | | | | | | 6.0 |
| 2S | 48 | 36 | 1 3/8 | 1/2 | 5/8 | 8 | 7 | 6 | 6 3/8 | 19 1/2 | 14 | 15 | 2 3/4 | 16 3/8 | | | | | | | | | | | | | 12.0 |
| 2M | 48 | 36 | 1 3/8 | 1/2 | 5/8 | 8 | 7 | 6 | 6 3/8 | 19 1/2 | 14 | 15 | 2 3/4 | 16 3/8 | | | | | | | | | | | | | 12.0 |
| 3 | 48 | 36 | 1 3/8 | 1/2 | 5/8 | 8 | 7 | 6 | 6 3/8 | 19 1/2 | 14 | 15 | 2 3/4 | 16 3/8 | | | | | | | | | | | | | 12.0 |
| 4 | 48 | 36 | 1 3/8 | 1/2 | 5/8 | 8 | 7 | 6 | 6 3/8 | 19 1/2 | 14 | 15 | 2 3/4 | 16 3/8 | | | | | | | | | | | | | 12.0 |
| 5 | 48 | 36 | 1 3/8 | 1/2 | 5/8 | 8 | 7 | 6 | 6 3/8 | 19 1/2 | 14 | 15 | 2 3/4 | 16 3/8 | | | | | | | | | | | | | 12.0 |

STANDARD SIGN
W057-52

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 3/21/17 PLATE NO. W057-52.2

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

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
 INVENTORY RATING FACTOR: RF = 1.08
 OPERATING RATING FACTOR: RF = 1.40
 WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 250(KIPS)

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.

MATERIAL PROPERTIES:

CONCRETE MASONRY: _____ f'c = 4,000 P.S.I.
 SUPERSTRUCTURE _____ f'c = 3,500 P.S.I.
 ALL OTHER _____ f'c = 3,500 P.S.I.

BAR STEEL REINFORCEMENT: _____ fy = 60,000 P.S.I.
 GRADE 60 _____ fy = 60,000 P.S.I.

FOUNDATION DATA

EAST AND WEST ABUTMENTS TO BE SUPPORTED ON HP 10 X 42 STEEL PILING SEATED IN PREBORED HOLES CORED INTO CONSOLIDATED MATERIAL AND DO NOT REQUIRE DRIVING. THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS 125 TONS MULTIPLIED BY A RESISTANCE FACTOR OF 0.5. ALL PILES REQUIRE A MINIMUM DEPTH OF 10'-0" BELOW BOTTOM OF ABUTMENT OR 3'-0" INTO CONSOLIDATED MATERIAL, WHICHEVER DEPTH IS GREATER. CASING IS REQUIRED DURING PREBORING.

ESTIMATED 20'-0" LONG AT WEST ABUTMENT
 ESTIMATED 25'-0" LONG AT EAST ABUTMENT

HYDRAULIC DATA

100 YEAR FREQUENCY

Q₁₀₀ = 375 C.F.S.
 VEL.₁₀₀ = 5.27 F.P.S.
 HW.₁₀₀ = EL. 1382.29
 WATERWAY AREA = 71.16 SQ. FT.
 DRAINAGE AREA = 12.9 SQ. MI.
 ROADWAY OVERTOPPING = N/A
 SCOUR CRITICAL CODE = 5

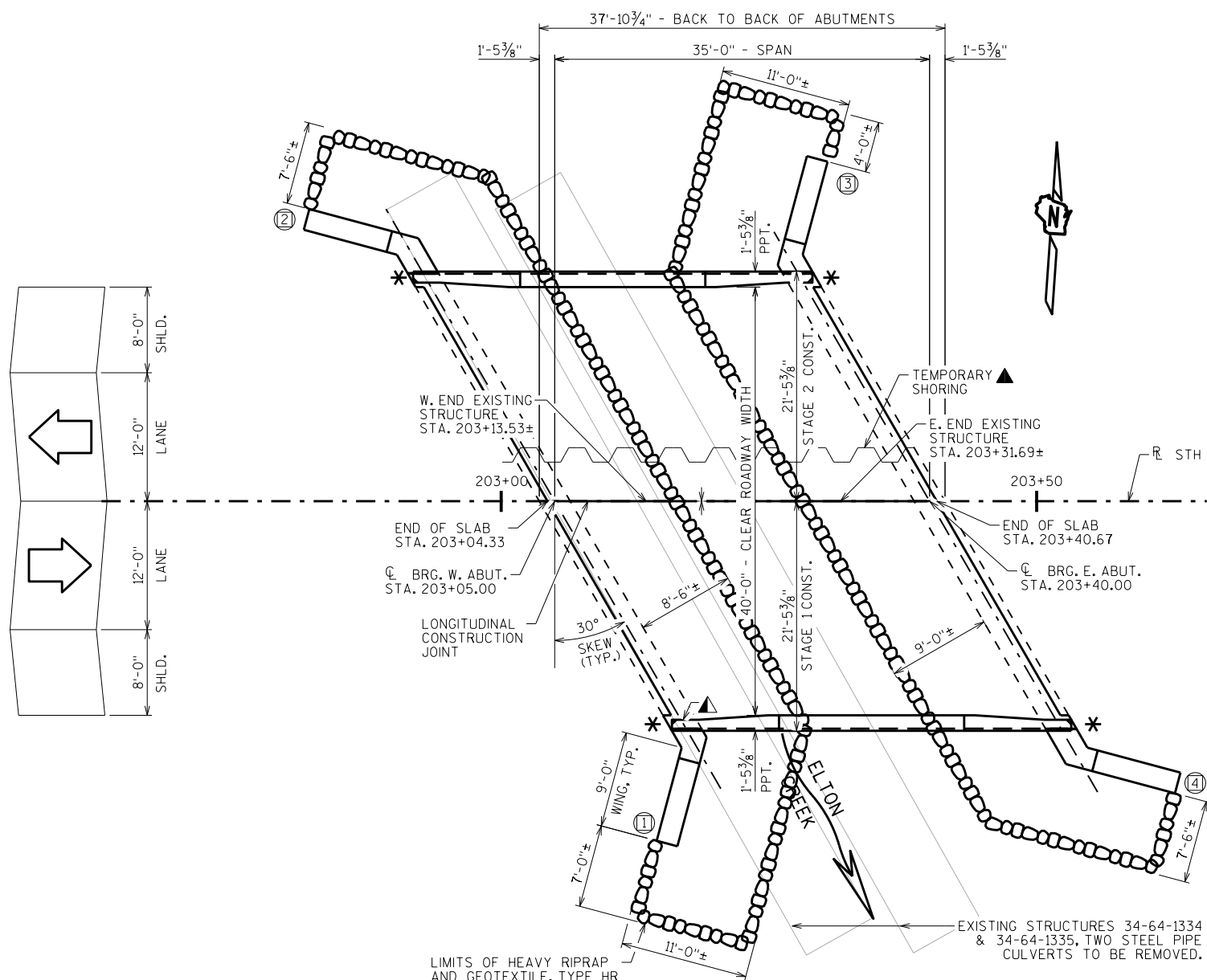
2 YEAR FREQUENCY

Q₂ = 120 C.F.S.
 VEL.₂ = 3.19 F.P.S.
 HW.₂ = EL. 1381.43

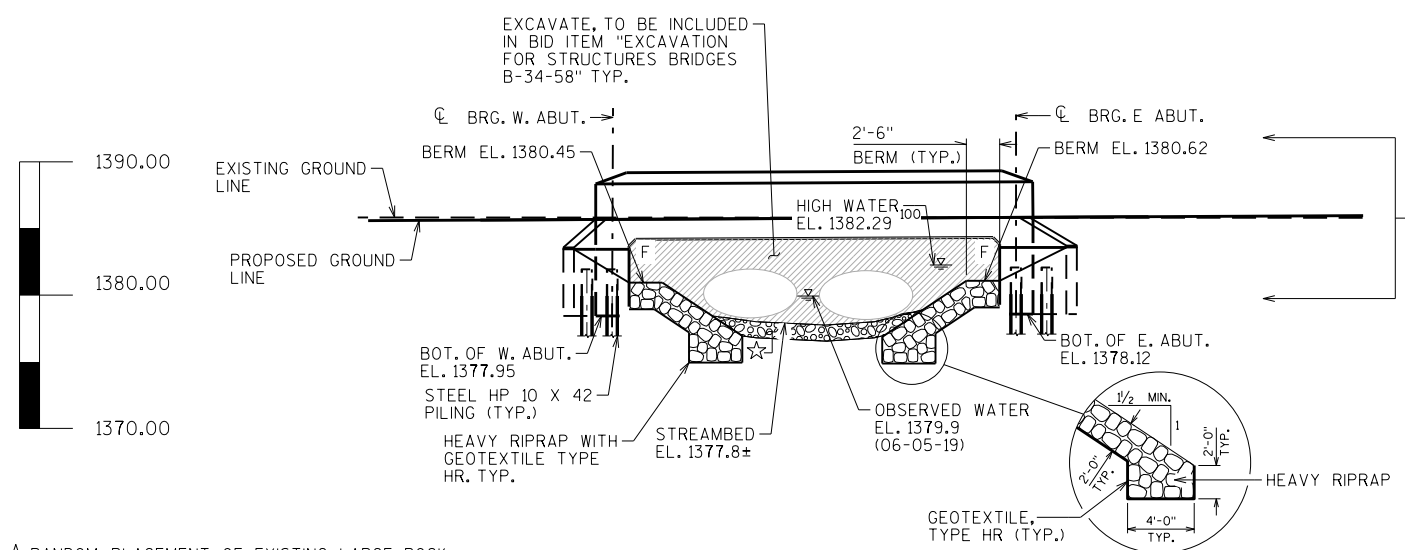
TRAFFIC VOLUME

STH 64
 ADT = 2400 (2023)
 R.D.S. = 45 M.P.H.

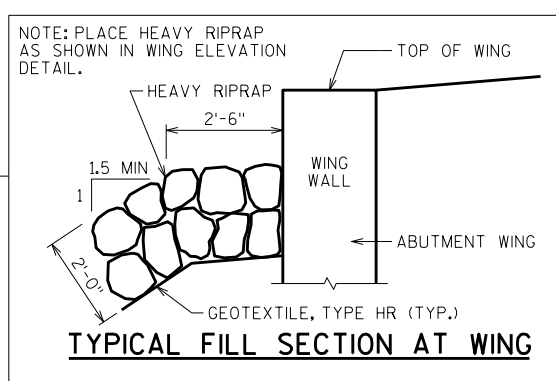
- * PROVIDE FOR THREE BEAM GUARD RAIL ATTACHMENT. AT UNUSED ANCHOR ASSEMBLIES CAULK HOLES SHUT WITH "100% SILICONE CAULK".
- ⊖ INDICATES WING NUMBER
- ▲ BENCH MARK AND NAME PLATE - FOR LOCATIONS SEE "SINGLE SLOPE PARAPET 42SS" SHEET.
- ▲ INSTALL TEMPORARY SHORING THAT MEETS THE CONTRACT REQUIREMENTS FOR MAINTAINING THE CHANNEL FLOW. SEE ROADWAY PLANS FOR MORE INFORMATION.
- ☆ RANDOM PLACEMENT OF EXISTING LARGE ROCK. SEE SPECIAL PROVISIONS ON ROADWAY PLANS FOR DETAILS.



PLAN
 SINGLE SPAN FLAT SLAB



ELEVATION
 LOOKING NORTH (UPSTREAM)



TYPICAL FILL SECTION AT WING

LIST OF DRAWINGS

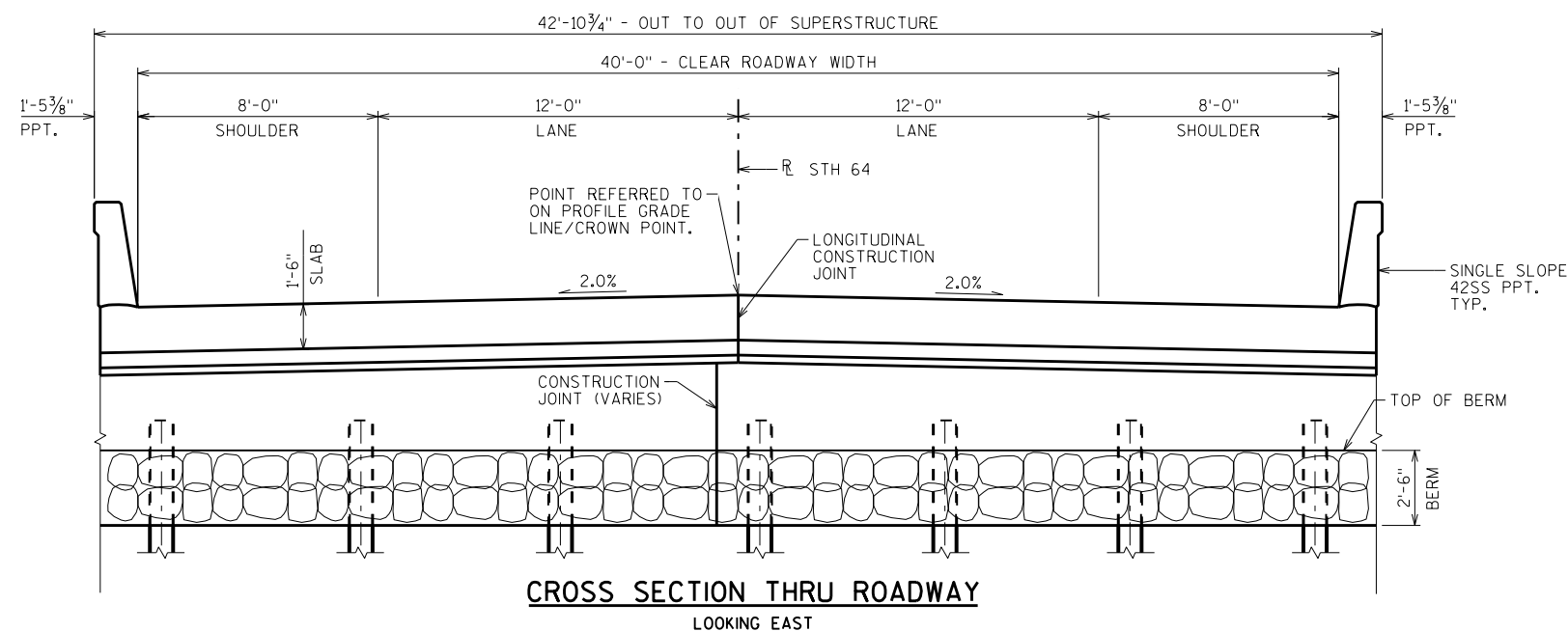
1. GENERAL PLAN
2. CROSS SECTION & QUANTITIES
3. CONSTRUCTION STAGING
4. SUBSURFACE EXPLORATION
5. WEST ABUTMENT
6. WEST ABUTMENT DETAILS 1
7. WEST ABUTMENT DETAILS 2
8. EAST ABUTMENT
9. EAST ABUTMENT DETAILS 1
10. EAST ABUTMENT DETAILS 2
11. SUPERSTRUCTURE
12. SUPERSTRUCTURE DETAILS
13. SINGLE SLOPE PARAPET 42SS

STRUCTURE DESIGN CONTACTS:

JOEL MAAS (608) 267-0273
 DOMINIQUE BECHLE (608) 261-8205

| NO. | DATE | REVISION | BY |
|-------------------------------------------------------|----------------|-------------------|---------------|
| | | | |
| | | | |
| STRUCTURE B-34-58 | | | |
| STH 64 OVER ELTON CREEK | | | |
| COUNTY | | TOWN/CITY/VILLAGE | |
| LANGLADE | | EVERGREEN | |
| DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS | | | |
| DESIGNED BY | DESIGNED CK'D. | DRAWN BY | PLANS CK'D. |
| JDM | JDM | SCL/MJH | JDM |
| GENERAL PLAN | | | SHEET 1 OF 13 |

SCALE = 7.00

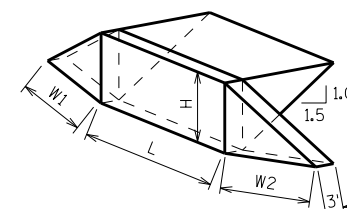


GENERAL NOTES

- DRAWINGS SHALL NOT BE SCALED.
- BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
- THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.
- BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.
- THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES B-34-58" SHALL BE THE EXISTING GROUNDLINE.
- AT THE BACK FACE OF ABUTMENT ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL TYPE A.
- EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.
- THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.
- PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE ENTIRE EXPOSED TOP OF SLAB AND TO THE VERTICAL AND HORIZONTAL SURFACES OF THE PAVING NOTCHES AT ABUTMENTS.
- PIGMENTED SURFACE SEALER TO BE APPLIED TO THE FRONT FACE AND THE TOP OF THE PARAPETS.
- THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE TYPE "HR" TO THE EXTENT SHOWN ON SHEET 1 AND THE ABUTMENT DETAILS.
- SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE, UNLESS AN ALTERNATE METHOD IS APPROVED BY THE ENGINEER.
- AT ABUTMENTS, CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 OF THE STANDARD SPECIFICATIONS.
- INVASIVE SPECIES OF FAUCET SNAILS AND CURLY LEAF PONDWEED EXIST AT THE STREAM CROSSING. SEE SPECIAL PROVISIONS ON ROADWAY PLANS FOR DETAILS.

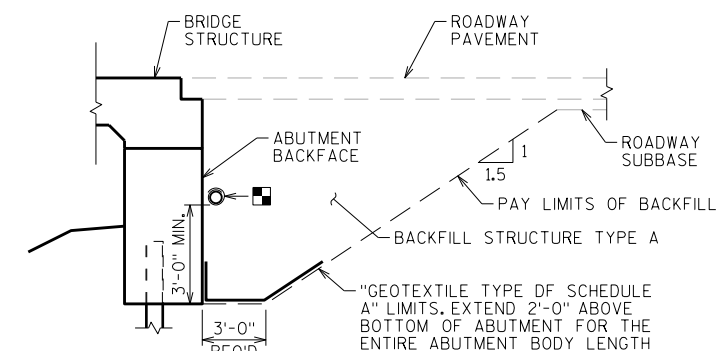
TOTAL ESTIMATED QUANTITIES

| BID ITEM NUMBER | BID ITEMS | UNIT | SUPER | WEST ABUT. | EAST ABUT. | TOTALS |
|-----------------|-------------------------------------------------------------------|------|--------|------------|------------|------------|
| 203.0260 | REMOVING STRUCTURE OVER WATERWAY MINIMAL DEBRIS (34-64-1334/1335) | EACH | | | | 1 |
| 206.1000 | EXCAVATION FOR STRUCTURES BRIDGES (B-34-58) | LS | | | | 1 |
| 210.1500 | BACKFILL STRUCTURE TYPE A | TON | | 272 | 272 | 544 |
| 502.0100 | CONCRETE MASONRY BRIDGES | CY | 108 | 37 | 37 | 182 |
| 502.3200 | PROTECTIVE SURFACE TREATMENT | SY | 180 | | | 180 |
| 502.3210 | PIGMENTED SURFACE SEALER | SY | 38 | | | 38 |
| 505.0400 | BAR STEEL REINFORCEMENT HS STRUCTURES | LB | | 3,190 | 3,200 | 6,390 |
| 505.0600 | BAR STEEL REINFORCEMENT HS COATED STRUCTURES | LB | 21,890 | 1,620 | 1,620 | 25,130 |
| 505.0908 | BAR COUPLERS NO. 8 | EACH | | 9 | 9 | 18 |
| 511.1200 | TEMPORARY SHORING B-34-58 | SF | 380 | | | 380 |
| 516.0500 | RUBBERIZED MEMBRANE WATERPROOFING | SY | | 13 | 13 | 26 |
| 550.0020 | PRE-BORING ROCK OR CONSOLIDATED MATERIALS | LF | | 126 | 172 | 298 |
| 550.1100 | PILING STEEL HP 10-INCH X 42 LB | LF | | 180 | 225 | 405 |
| 606.0300 | RIPRAP HEAVY | CY | | 63 | 62 | 125 |
| 612.0406 | PIPE UNDERDRAIN WRAPPED 6-INCH | LF | | 90 | 90 | 180 |
| 614.0150 | ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD | EACH | 4 | | | 4 |
| 645.0111 | GEOTEXTILE TYPE DF SCHEDULE A | SY | | 68 | 68 | 136 |
| 645.0120 | GEOTEXTILE TYPE HR | SY | | 95 | 94 | 189 |
| | NON-BID ITEMS | | | | | |
| | FILLER | SIZE | | | | 1/2", 3/4" |



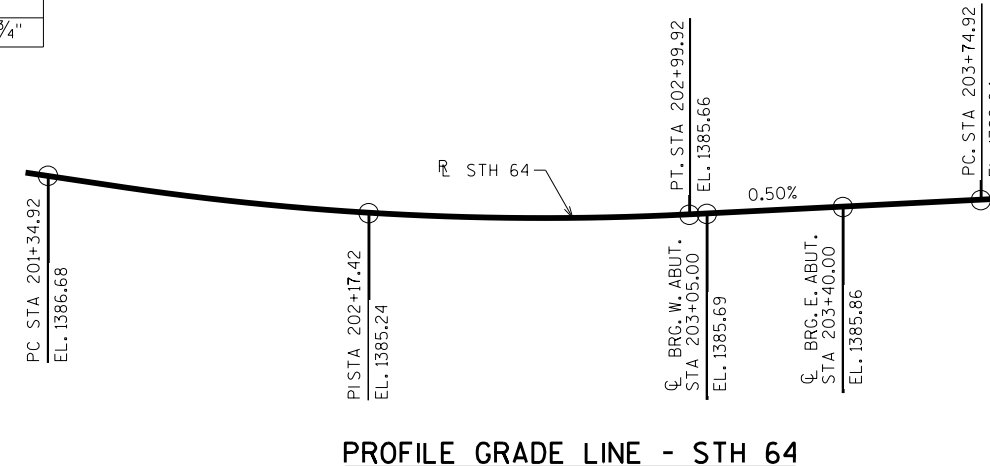
ABUTMENT BACKFILL DIAGRAM

- L = OUT TO OUT OF ABUTMENT BODY (FT)
- H = AVERAGE ABUTMENT FILL HEIGHT (FT)
- W1 = WING 1 LENGTH (FT)
- W2 = WING 2 LENGTH (FT)
- EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)
- $V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H) + (3.0')(0.5)(W1+W2)(H)$
- $V_{CY} = V_{CF} / 2.7$
- $V_{TON} = V_{CY} (2.0)$



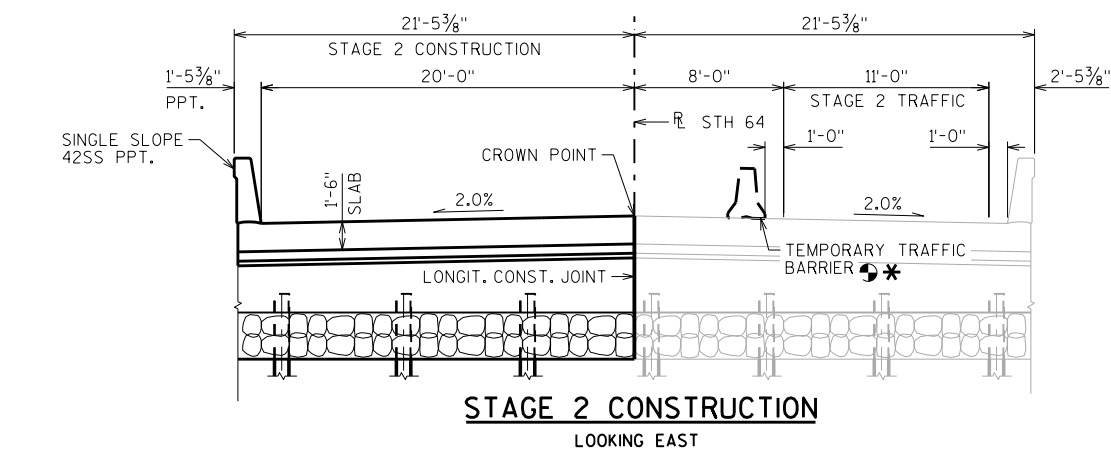
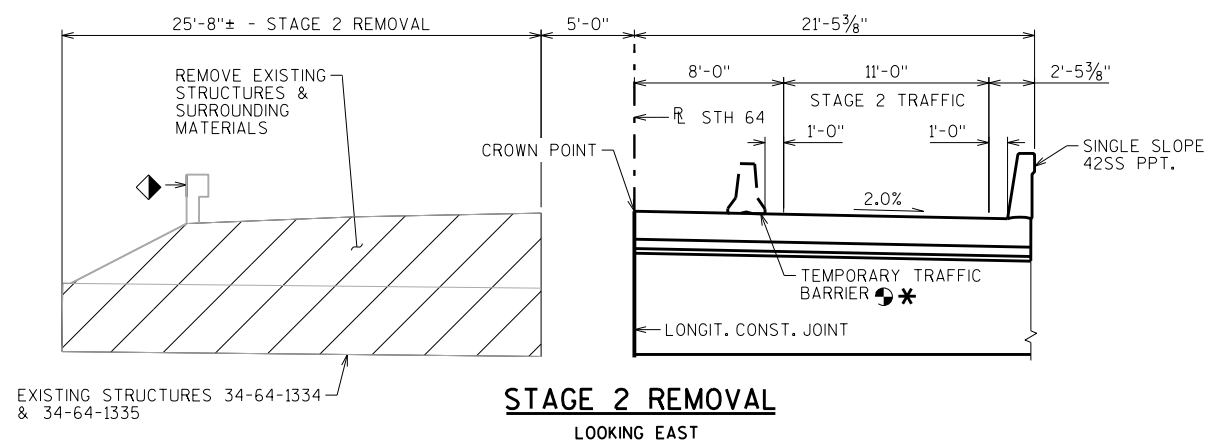
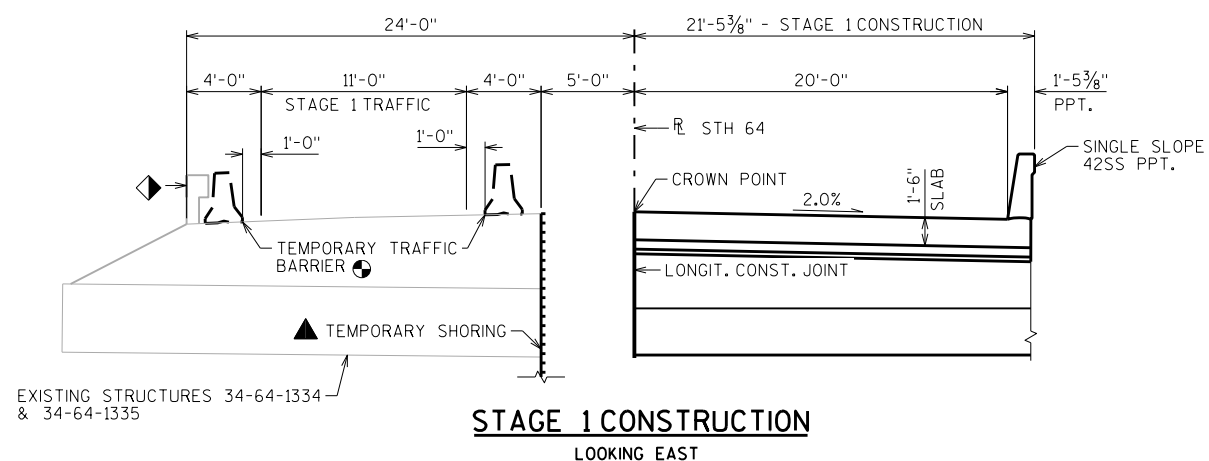
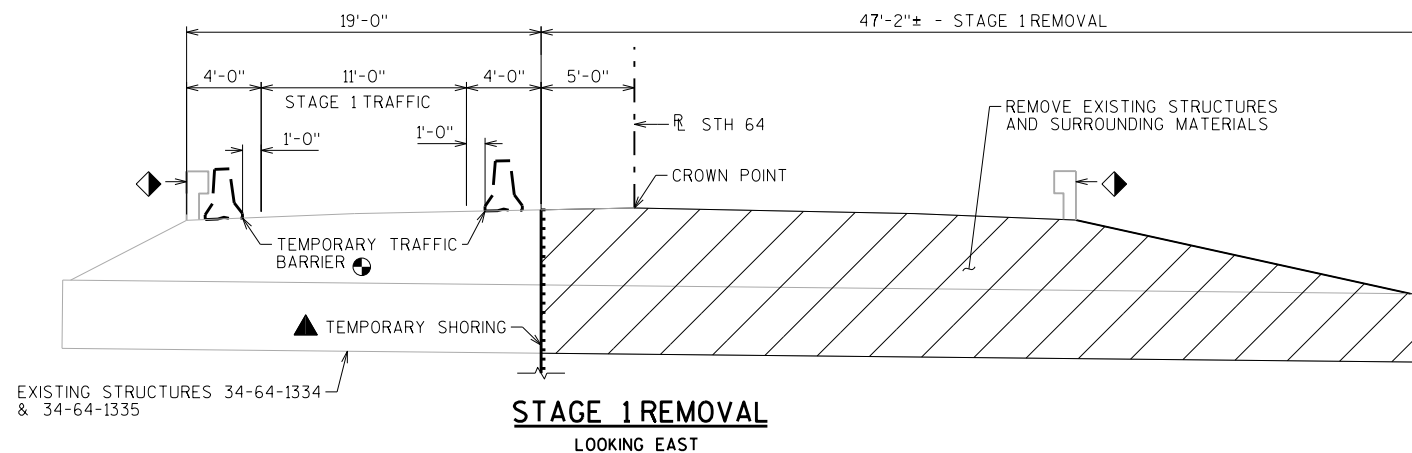
TYPICAL SECTION THRU ABUTMENT

- ▲ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.
- PIPE UNDERDRAIN WRAPPED (6 INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. PIPE UNDERDRAIN TO DAYLIGHT NO LOWER THAN EL. 1381.00



PROFILE GRADE LINE - STH 64

| NO. | DATE | REVISION | BY |
|----------------------------------------------------------------------------------------|------|-----------------|---------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY SCL/MJH | | PLANS CK'D. JDM | |
| CROSS SECTION & QUANTITIES | | | SHEET 2 |



STAGING NOTE: SLAB SUPPORTING FALSEWORK FROM STAGE 1 CONSTRUCTION MUST REMAIN IN PLACE UNTIL THE COMPLETION OF THE ENTIRE SLAB AT THE END OF STAGE 2. DO NOT RELEASE ANY FALSEWORK UNTIL STAGE 2 PORTION OF THE SLAB HAS CURED AND REACHED THE 28 DAY COMPRESSIVE STRENGTH, F'C, SPECIFIED IN THE PLANS.

▲ INSTALL TEMPORARY SHORING THAT MEETS THE CONTRACT REQUIREMENTS FOR MAINTAINING THE CHANNEL FLOW. SEE ROADWAY PLANS FOR MORE INFORMATION.

◊ SEE ROADWAY PLANS FOR EXISTING GUARDRAIL REMOVAL.

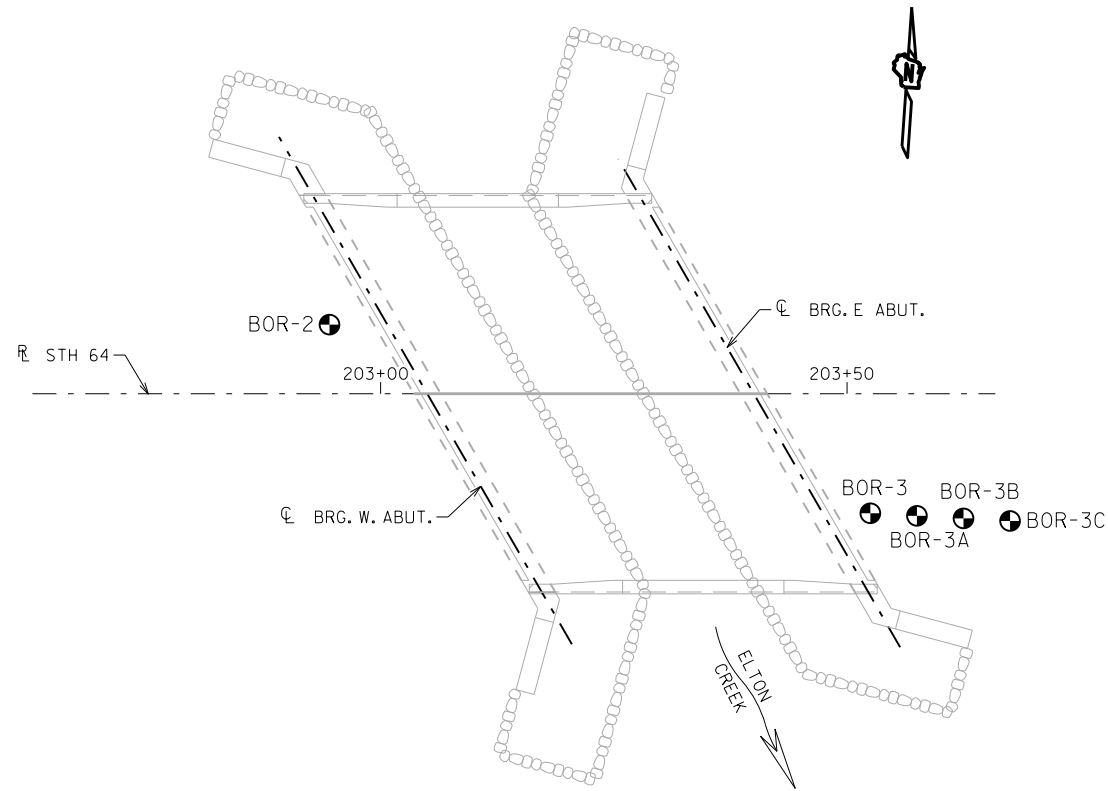
● TEMPORARY TRAFFIC BARRIER PAID FOR UNDER ROADWAY BID ITEMS. SEE ROADWAY PLANS FOR DETAILS.

* FREE STANDING TEMPORARY TRAFFIC BARRIER, ANCHORING BARRIER TO BRIDGE DECK PROHIBITED.

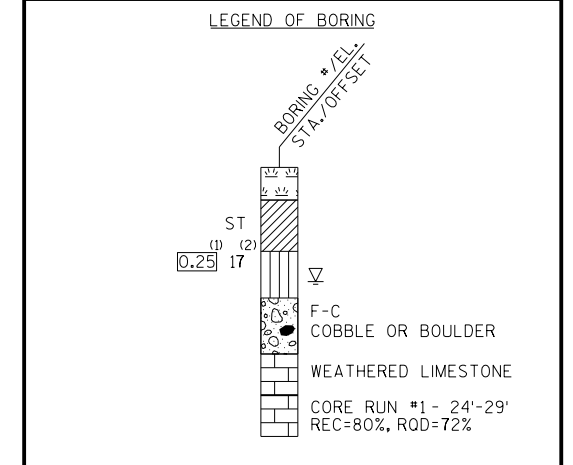
| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|-----------------|---------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY SCL/MJH | | PLANS CK'D. JDM | |
| CONSTRUCTION STAGING | | | SHEET 3 |

| BORING # | DATE COMPLETED | NORTHING (Y) | EASTING (X) |
|----------|----------------|--------------|-------------|
| 2 | 10/20/2020 | 350586 | 689200 |
| 3 | 10/19/2020 | 350569 | 689259 |
| 3A | 10/20/2020 | 350569 | 689264 |
| 3B | 10/20/2020 | 350569 | 689269 |
| 3C | 10/20/2020 | 350569 | 689274 |

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



| STATE PROJECT NUMBER | | |
|----------------------|---------------------|--|
| 9140-12-61 | | |
| MATERIAL SYMBOLS | | |
| | ASPHALT | |
| | CONCRETE | |
| | SAND | |
| | BOULDERS OR COBBLES | |
| | SHALE | |
| | LIMESTONE | |
| | SANDSTONE | |
| | IGNEOUS/META | |



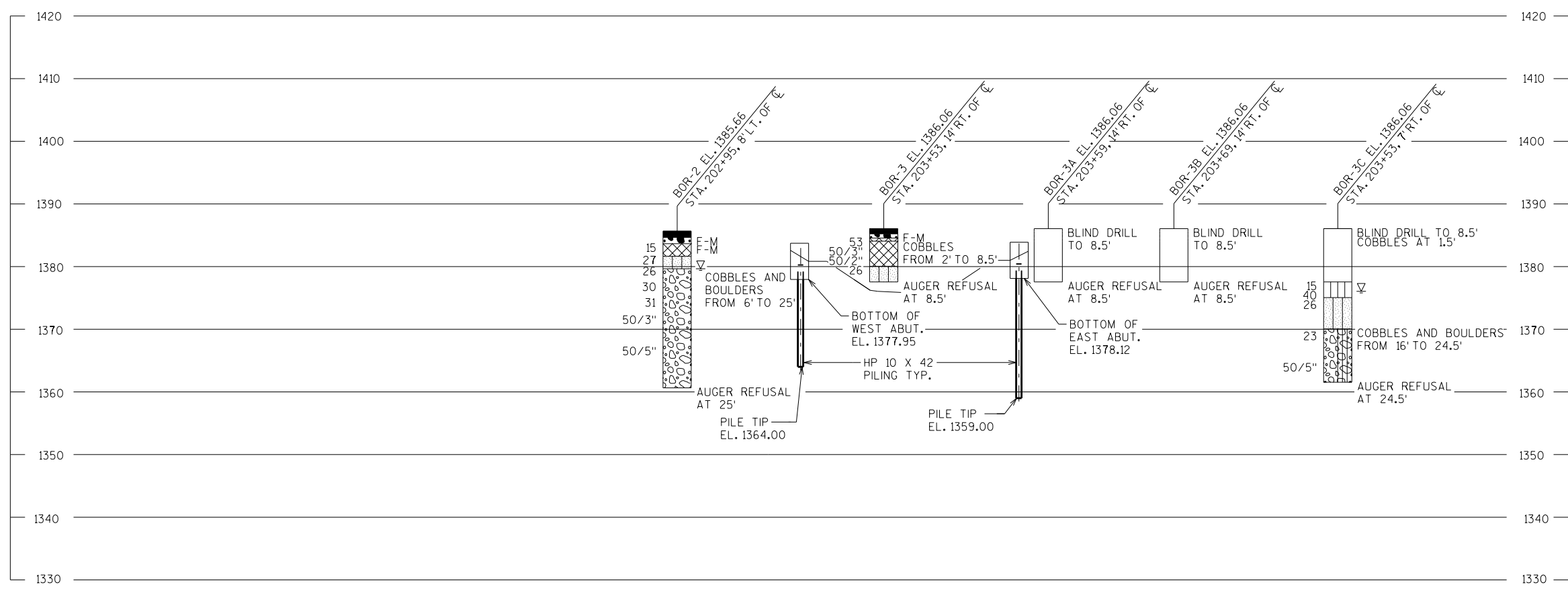
(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)
 (2) UNLESS OTHERWISE SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

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

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

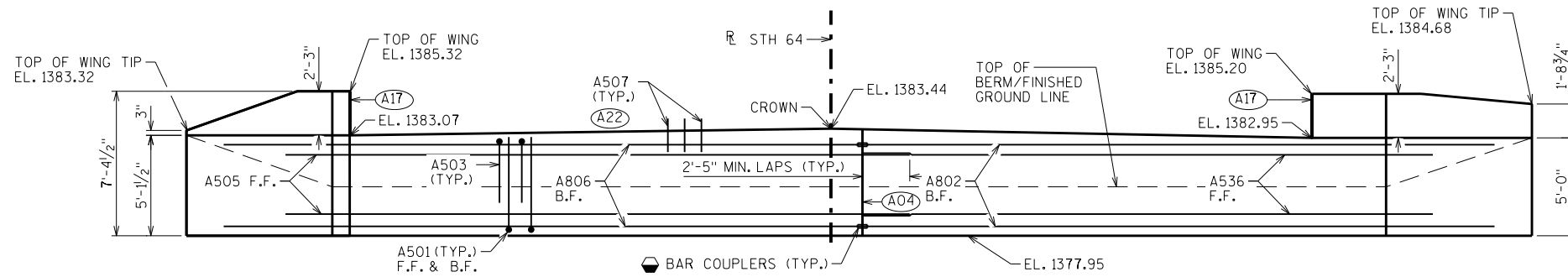


| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|----------------|---------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY TLP/MJH | | PLANS CKD. JDM | |
| SUBSURFACE EXPLORATION | | | SHEET 4 |

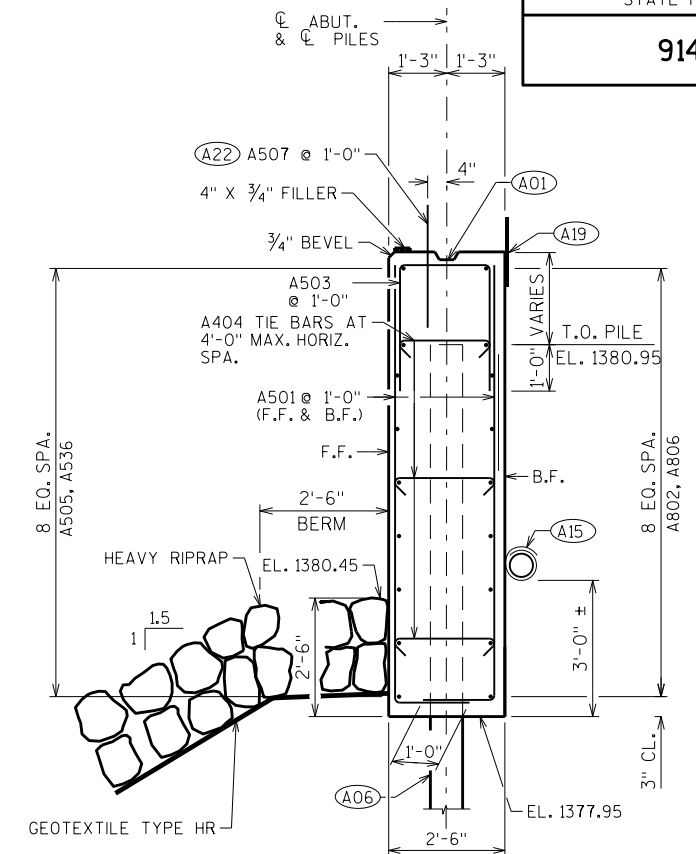
8

8

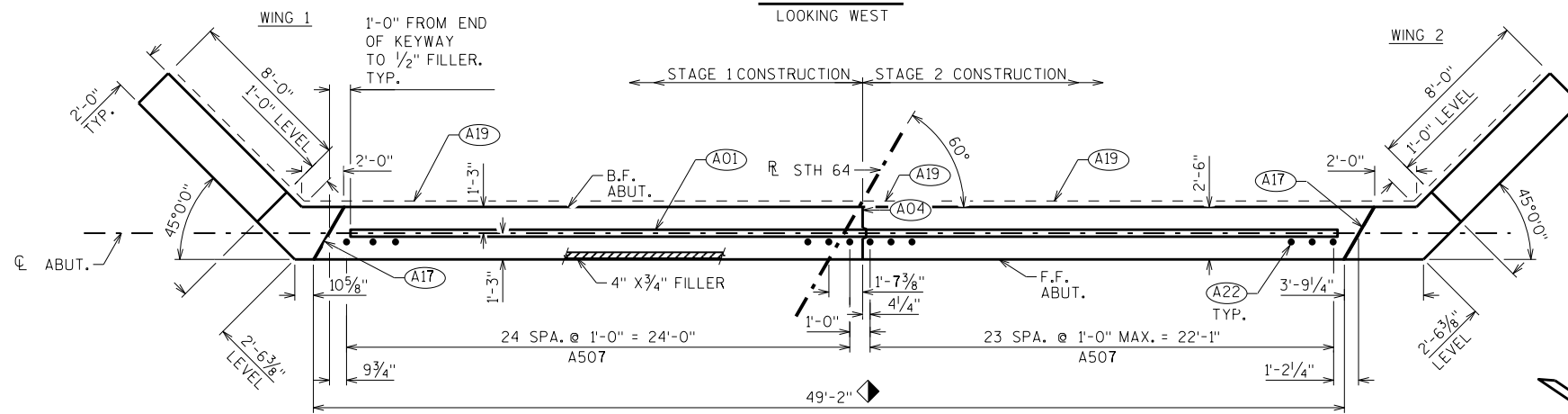
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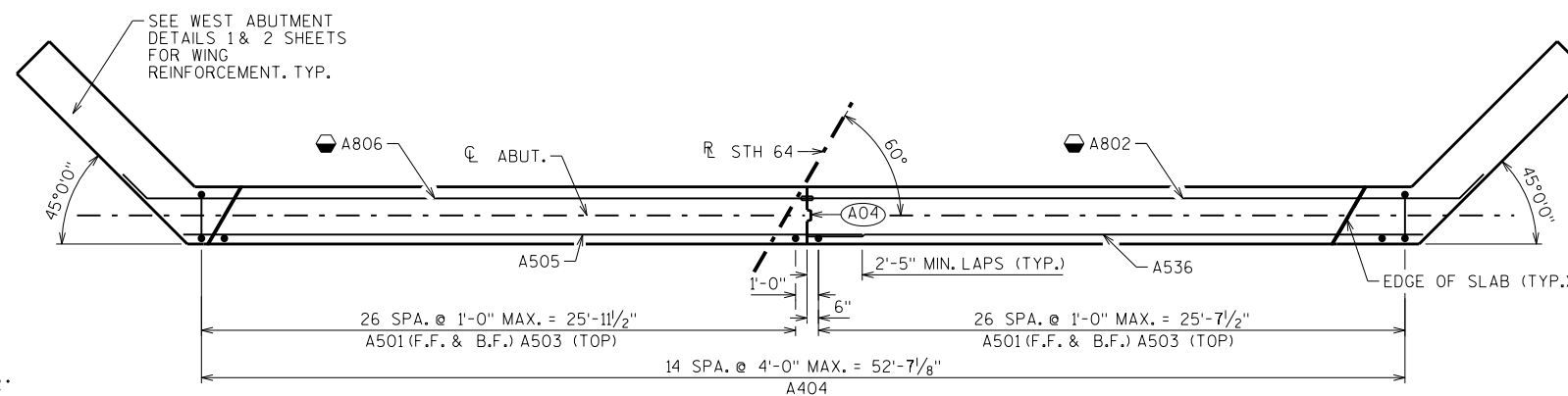
ELEVATION
LOOKING WEST



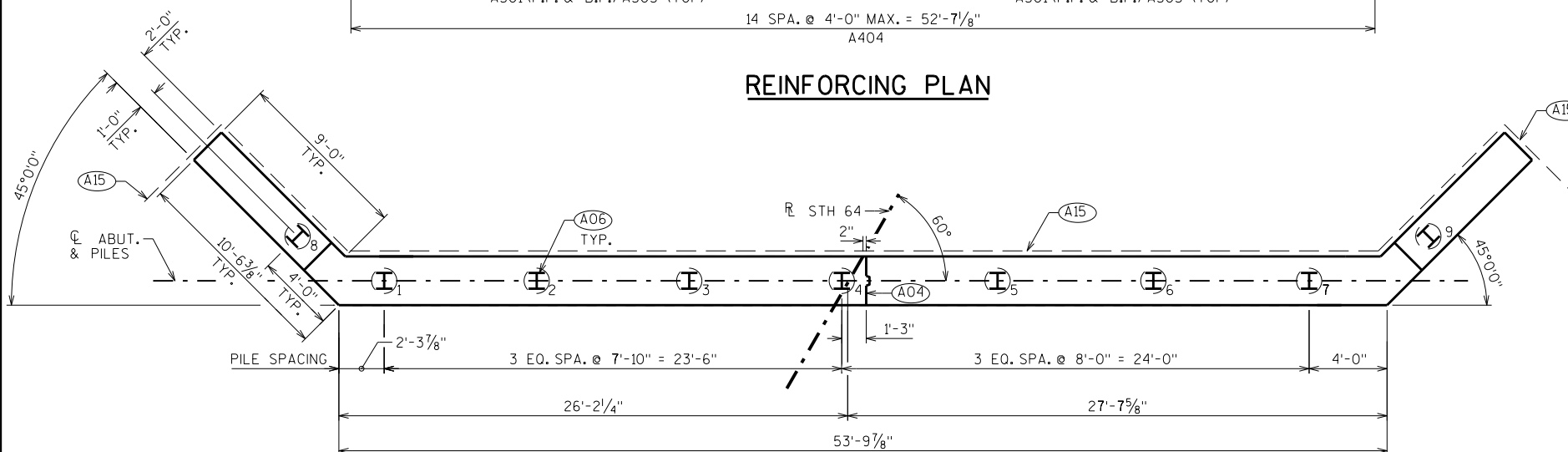
SECTION THRU ABUTMENT BODY



PLAN



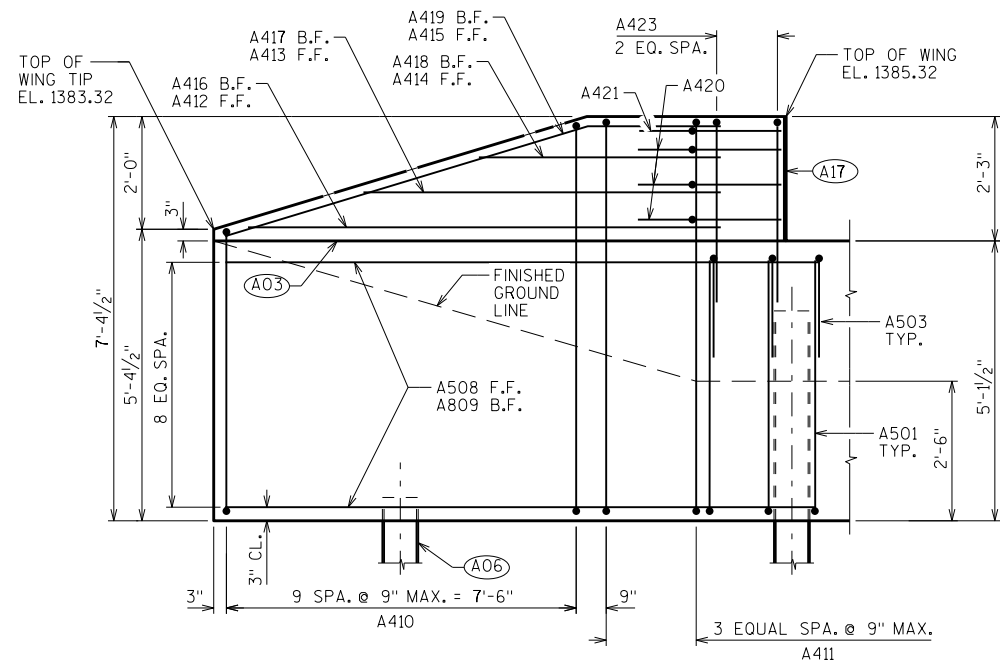
REINFORCING PLAN



PILE PLAN

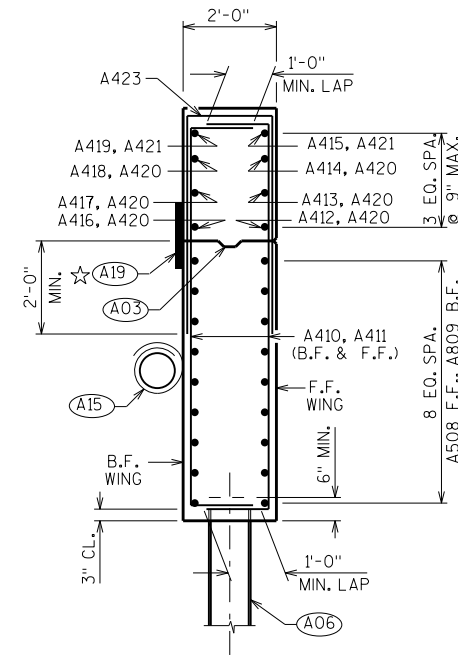
- (9) #8 BARS COUPLERS AT STAGING LINE. (PER ABUT.) BAR COUPLERS REQUIRED. BAR LENGTH DETERMINED AND CALCULATED TO CL OF JOINT AT SPLICE LOCATION. MODIFY IF NECESSARY TO BAR COUPLER MANUFACTURER'S SPECIFICATIONS. PAY BASED ON BARS AS DETAILED.
- INCLUDES 1/2" FILLER
- CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 x 6.
- VERT. CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 x 8. 3/4" "V" GROOVE @ THE FRONT FACE AND 18" RMW @ BACKFACE.
- SUPPORT ABUTMENT ON HP 10 X 42 STEEL PILING, ESTIMATED 20'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE. SEE GENERAL PLAN SHEET FOR PRE-BORING REQUIREMENTS.
- PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED. PIPE UNDERDRAIN TO DAYLIGHT NO LOWER THAN EL. 1381.00
- 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- A507 BARS @ 1'-0" CTRS. MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. (EMBED 1'-0" INTO CONC.)

| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|----------|-----------------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY | | MJH | PLANS CK'D. JDM |
| WEST ABUTMENT | | SHEET 5 | |

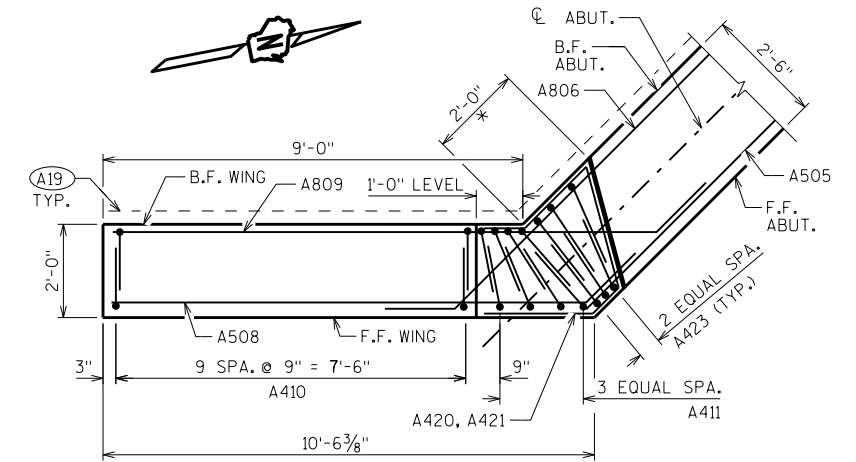


WING 1 ELEVATION

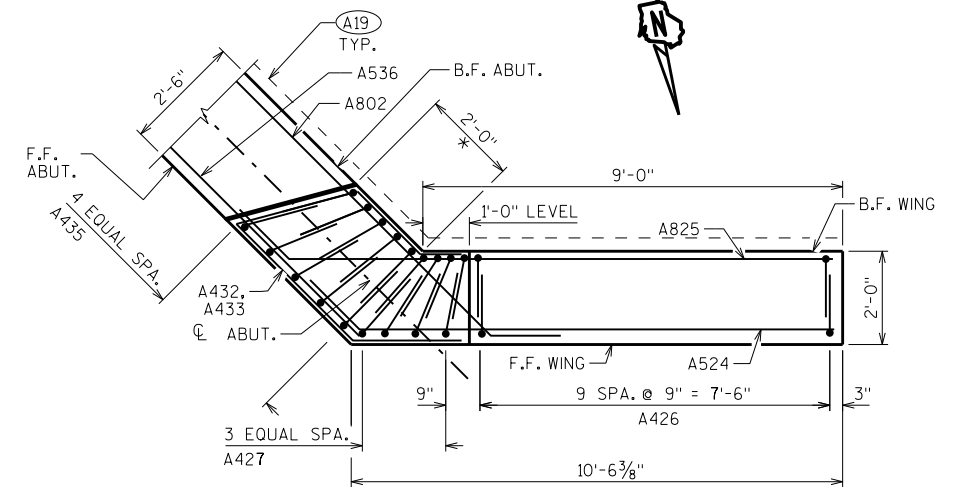
LOOKING WEST



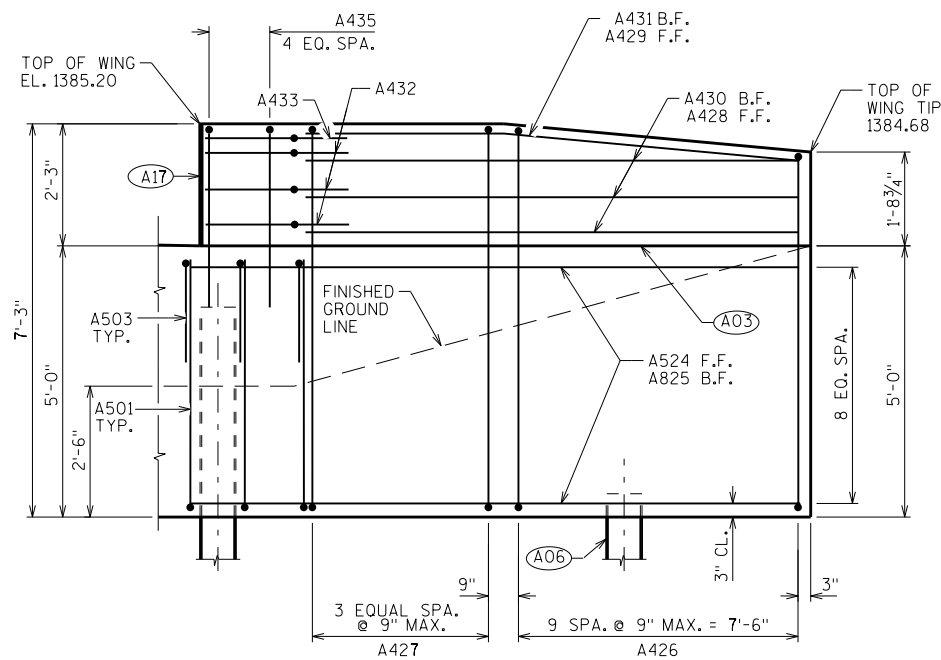
SECTION THRU WING 1



WING 1 PLAN

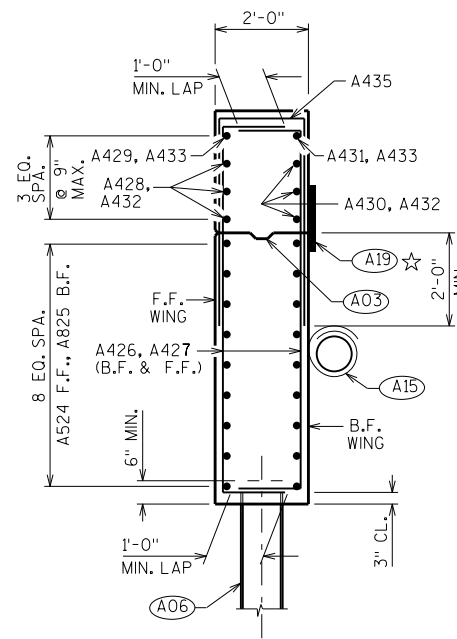


WING 2 PLAN



WING 2 ELEVATION

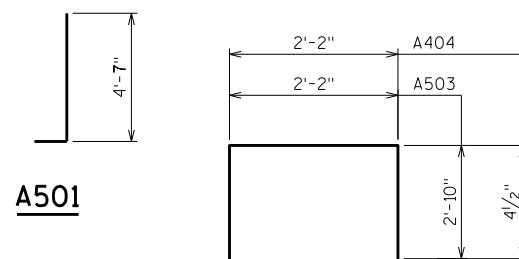
LOOKING SOUTH



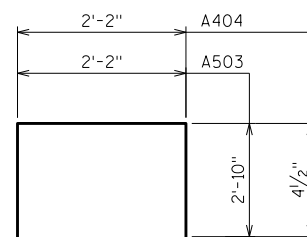
SECTION THRU WING 2

- ☆ IF CONSTRUCTION JOINT IS USED, COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES"
- * INCLUDES 1/2" FILLER
- (A03) OPTIONAL CONST. JOINT: KEYWAY FORMED BY BEVELED 2 x 6. (18" RMW @ B.F. & 3/4" "V" GROOVE @ F.F. IF JOINT IS USED).
- (A06) SUPPORT ABUTMENT ON HP 10 x 42 STEEL PILING, ESTIMATED 20'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE. SEE GENERAL PLAN SHEET FOR PRE-BORING REQUIREMENTS.
- (A15) PIPE UNDERDRAIN WRAPPED (6-INCH), SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED. UNDERDRAIN TO DAYLIGHT NO LOWER THAN EL. 1381.00
- (A17) 1/2" FILLER (INCLUDED IN WING LENGTH); SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- (A19) 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

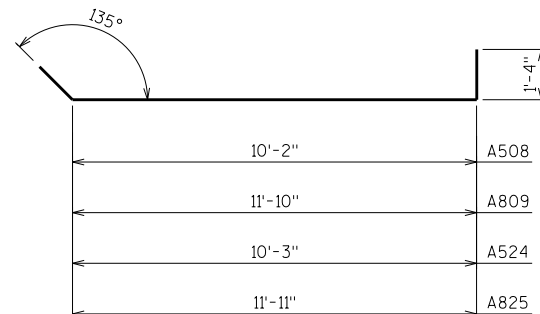
| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|------------|---------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY | | PLANS CKD. | |
| M J H | | J D M | |
| WEST ABUTMENT DETAILS 1 | | | SHEET 6 |



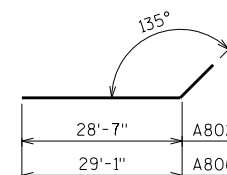
A501



A503, A404



A508, A809, A524, A825



A802, A806

BILL OF BARS

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

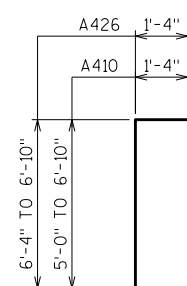
| BAR MARK | COAT | NO. REQ'D. | LENGTH | BENT | BAR SERIES | LOCATION |
|----------|------|------------|---------|------|------------|--------------------------------|
| A501 | | 108 | 6'-1" | X | | BODY - VERT. - F.F. & B.F. |
| A802 | | 9 | 30'-3" | X | | BODY - VERT. - B.F. - STAGE 2 |
| A503 | | 54 | 7'-8" | X | | BODY - VERT. - TOP |
| A404 | | 45 | 2'-9" | X | | BODY - VERT. - TIE BARS |
| A505 | | 9 | 29'-5" | | | BODY - HORIZ. - F.F. - STAGE 1 |
| A806 | | 9 | 30'-7" | X | | BODY - HORIZ. - B.F. - STAGE 1 |
| A507 | X | 49 | 2'-0" | | | DOWEL BARS |
| A508 | X | 9 | 12'-10" | X | | WING 1 - HORIZ. - F.F. |
| A809 | X | 9 | 14'-4" | X | | WING 1 - HORIZ. - B.F. |
| A410 | X | 22 | 8'-5" | X | ▲ | WING 1 - VERT. - F.F. & B.F. |
| A411 | X | 8 | 10'-0" | X | | WING 1 - VERT. - F.F. & B.F. |
| A412 | X | 1 | 10'-2" | | | WING 1 - HORIZ. - F.F. |
| A413 | X | 1 | 7'-7" | | | WING 1 - HORIZ. - F.F. |
| A414 | X | 1 | 5'-1" | | | WING 1 - HORIZ. - F.F. |
| A415 | X | 1 | 10'-5" | X | | WING 1 - HORIZ. - F.F. - TOP |
| A416 | X | 1 | 10'-2" | | | WING 1 - HORIZ. - B.F. |
| A417 | X | 1 | 7'-7" | | | WING 1 - HORIZ. - B.F. |
| A418 | X | 1 | 5'-1" | | | WING 1 - HORIZ. - B.F. |
| A419 | X | 1 | 10'-5" | X | | WING 1 - HORIZ. - B.F. - TOP |
| A420 | X | 3 | 9'-3" | X | | WING 1 - HORIZ. |
| A421 | X | 1 | 7'-11" | X | | WING 1 - HORIZ. - TOP |
| A422 | | NOT USED | | | | |
| A423 | X | 6 | 5'-11" | X | | WING 1 - VERT. |
| A524 | X | 9 | 12'-11" | X | | WING 2 - HORIZ. - F.F. |
| A825 | X | 9 | 14'-5" | X | | WING 2 - HORIZ. - B.F. |
| A426 | X | 22 | 9'-0" | X | ▲ | WING 2 - VERT. - F.F. & B.F. |
| A427 | X | 8 | 9'-11" | X | | WING 2 - VERT. - F.F. & B.F. |
| A428 | X | 3 | 10'-2" | | | WING 2 - HORIZ. - F.F. |
| A429 | X | 1 | 10'-2" | X | | WING 2 - HORIZ. - F.F. - TOP |
| A430 | X | 3 | 10'-2" | | | WING 2 - HORIZ. - B.F. |
| A431 | X | 1 | 10'-2" | X | | WING 2 - HORIZ. - F.F. - TOP |
| A432 | X | 3 | 12'-2" | X | | WING 2 - HORIZ. |
| A433 | X | 1 | 10'-10" | X | | WING 2 - HORIZ. - TOP |
| A434 | | NOT USED | | | | |
| A435 | X | 10 | 5'-11" | X | | WING 2 - VERT. |
| A536 | | 9 | 26'-8" | | | BODY - HORIZ. - F.F. - STAGE 2 |

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

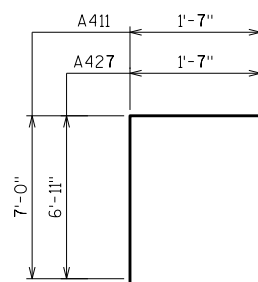
BAR SERIES TABLE

| MARK | NO. REQ'D. | LENGTH |
|------|----------------|----------------|
| A410 | 2 SERIES OF 11 | 7'-6" TO 9'-4" |
| A426 | 2 SERIES OF 11 | 8'-9" TO 9'-3" |

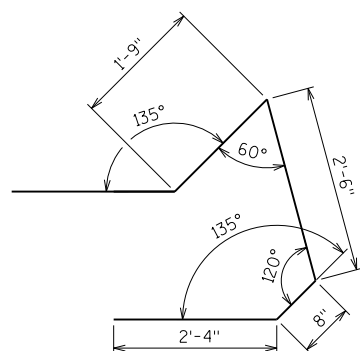
BUNDLE AND TAG EACH SERIES SEPARATELY.



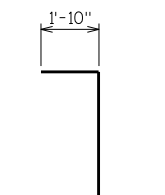
A410, A426



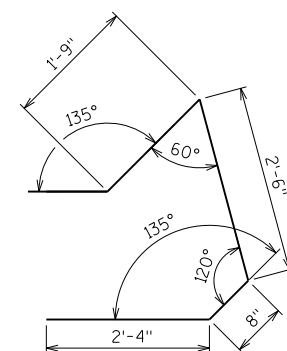
A411, A427



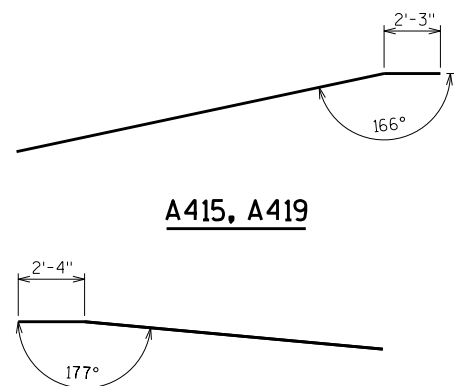
A420



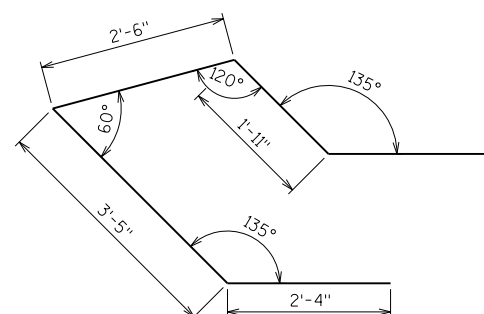
A423, A435



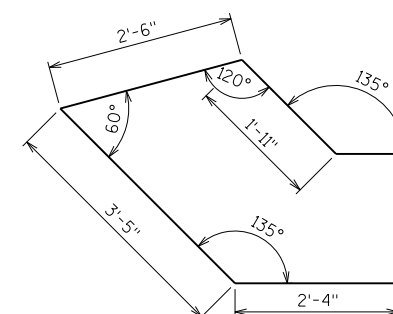
A421



A415, A419

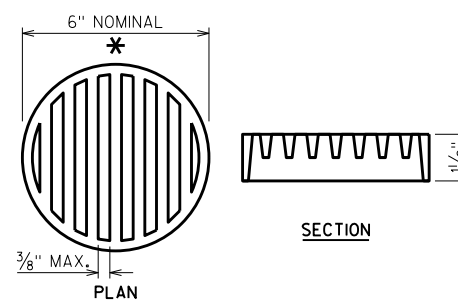


A432



A433

A429, A431

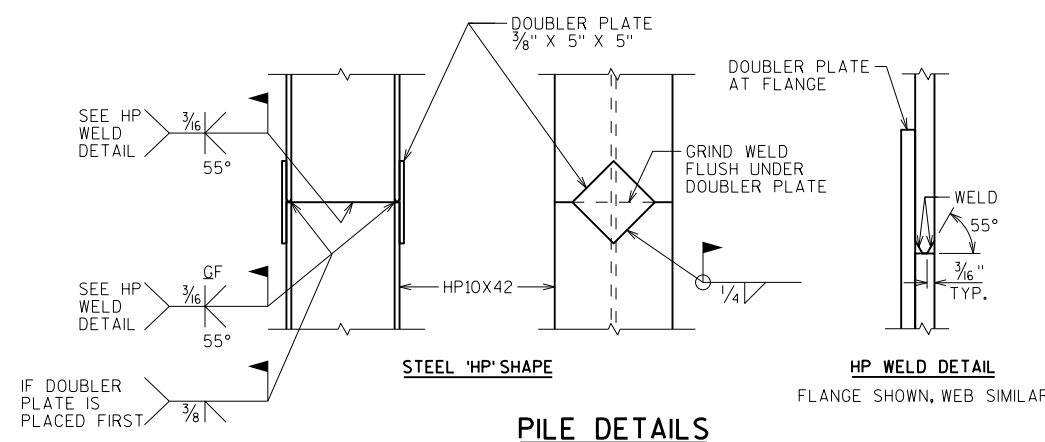


RODENT SHIELD DETAIL

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

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

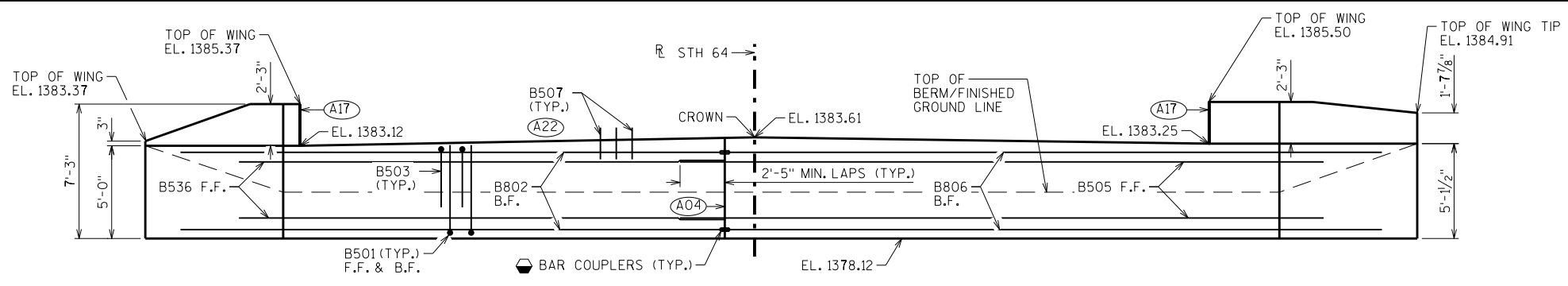
THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH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



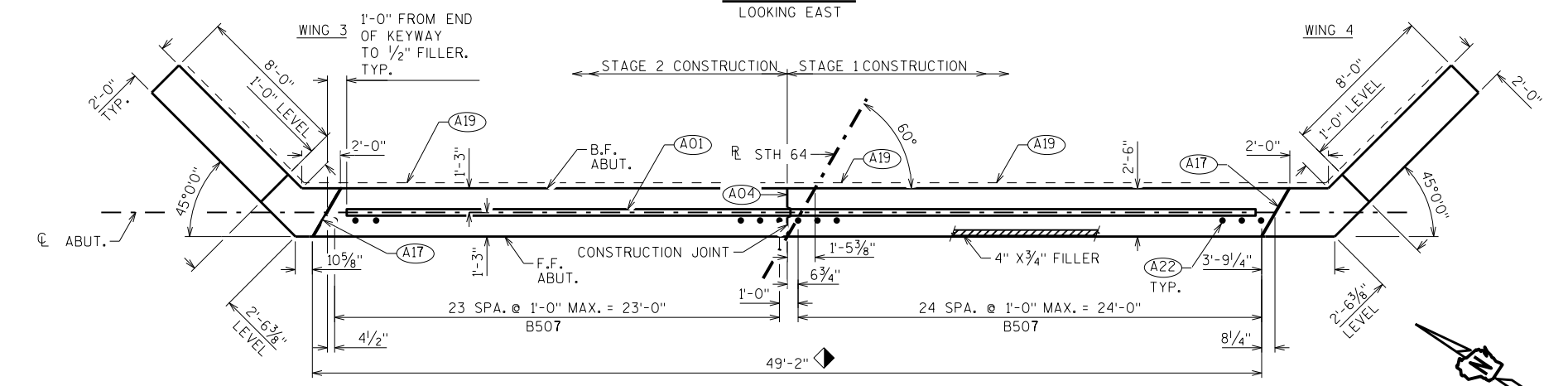
PILE DETAILS

| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|-----------------|---------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY MJH | | PLANS CK'D. JDM | |
| WEST ABUTMENT DETAILS 2 | | | SHEET 7 |

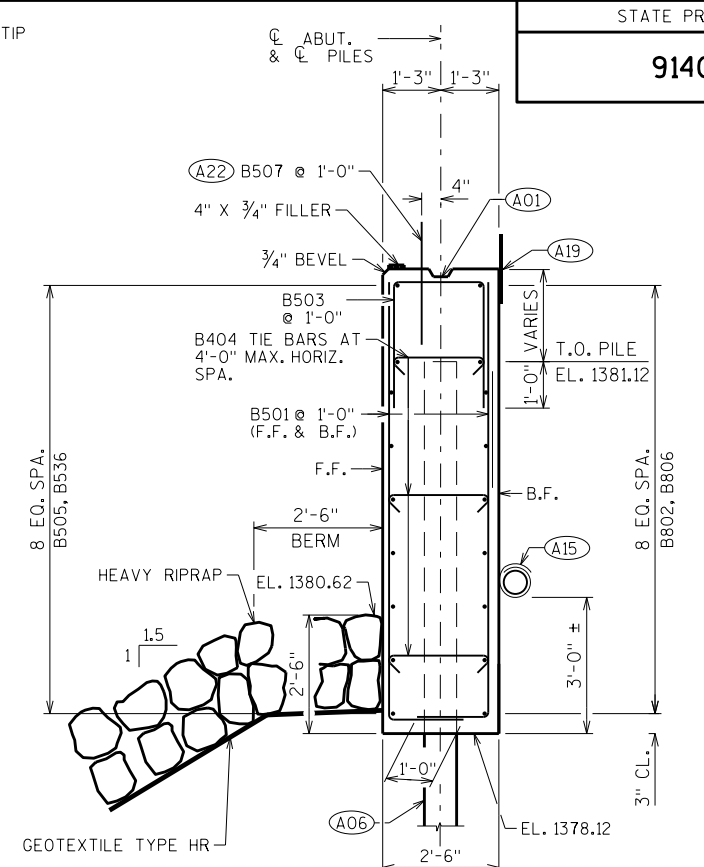
● (9) #8 BARS COUPLERS AT STAGING LINE. (PER ABUT.) BAR COUPLERS REQUIRED. BAR LENGTH DETERMINED AND CALCULATED TO C OF JOINT AT SPLICE LOCATION. MODIFY IF NECESSARY TO BAR COUPLER MANUFACTURER'S SPECIFICATIONS. PAY BASED ON BARS AS DETAILED.



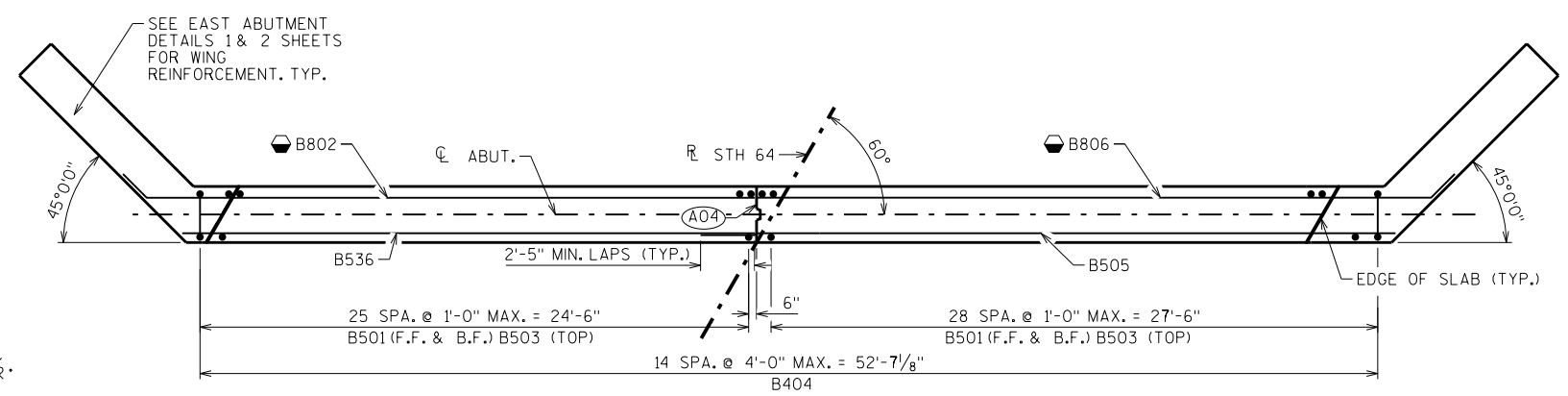
ELEVATION
LOOKING EAST



PLAN

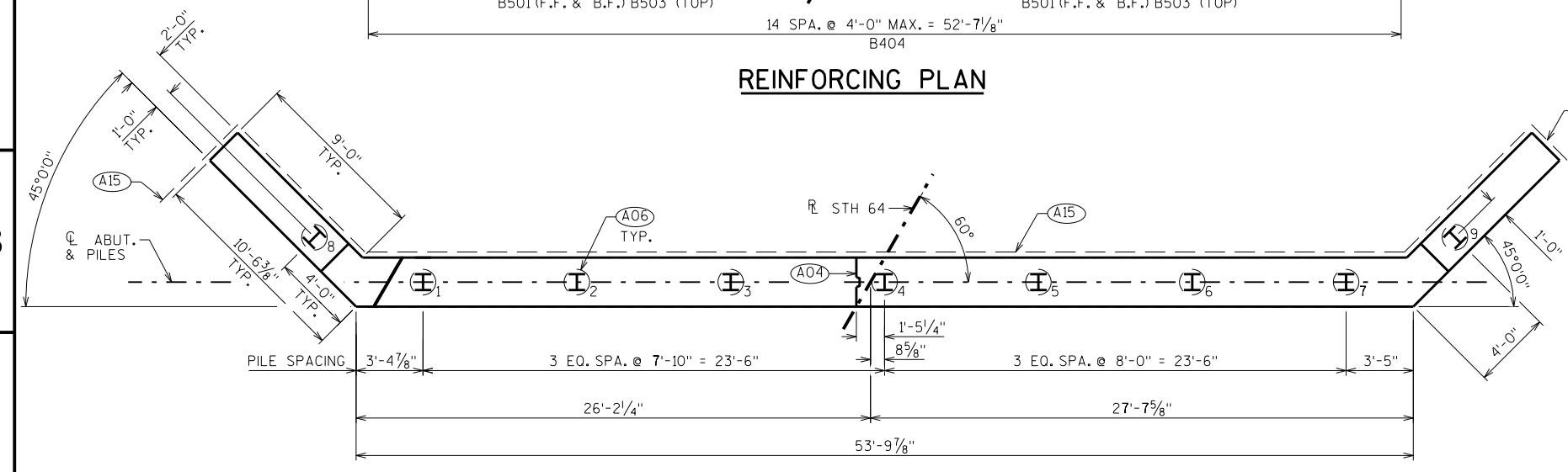


SECTION THRU ABUTMENT BODY



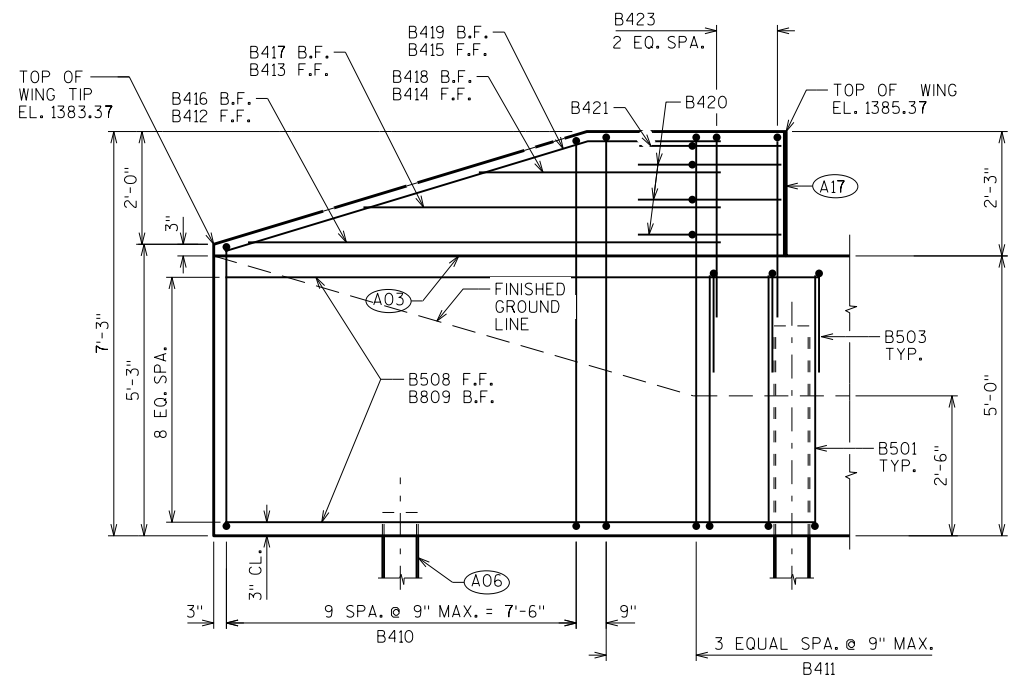
REINFORCING PLAN

- ◐ (9) #8 BARS COUPLERS AT STAGING LINE. (PER ABUT.) BAR COUPLERS REQUIRED. BAR LENGTH DETERMINED AND CALCULATED TO C/L OF JOINT AT SPLICE LOCATION. MODIFY IF NECESSARY TO BAR COUPLER MANUFACTURER'S SPECIFICATIONS. PAY BASED ON BARS AS DETAILED.
- ◑ INCLUDES 1/2" FILLER
- ⓐ A01 CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 X 6.
- ⓐ A04 VERT. CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 X 8. 3/4" "V" GROOVE @ THE FRONT FACE AND 18" RMW @ BACKFACE.
- ⓐ A06 SUPPORT ABUTMENT ON HP 10 X 42 STEEL PILING, ESTIMATED 25'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE. SEE GENERAL PLAN SHEET FOR PRE-BORING REQUIREMENTS.
- ⓐ A15 PIPE UNDERDRAIN WRAPPED (6-INCH), SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED. PIPE UNDERDRAIN TO DAYLIGHT NO LOWER THAN EL. 1381.00
- ⓐ A17 1/2" FILLER (INCLUDED IN WING LENGTH); SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- ⓐ A19 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.
- ⓐ A22 B507 BARS @ 1'-0" CTRS. MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. (EMBED 1'-0" INTO CONG.)



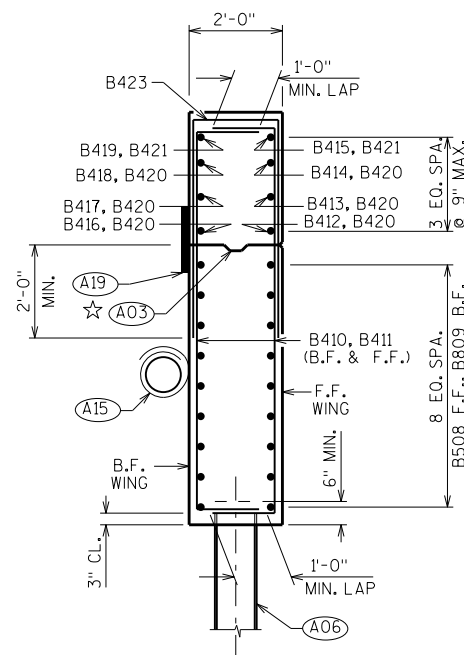
PILE PLAN

| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|-------------|-----|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY | | PLANS CK'D. | JDM |
| MJD | | SHEET 8 | |
| EAST ABUTMENT | | | |

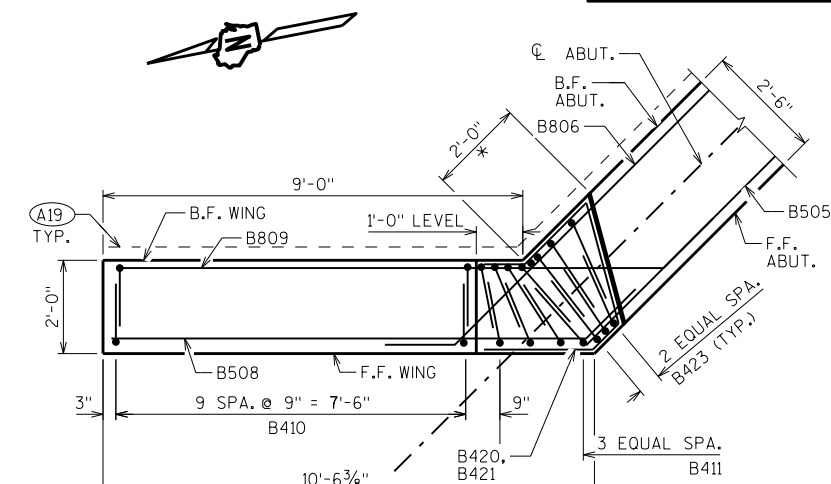


WING 3 ELEVATION

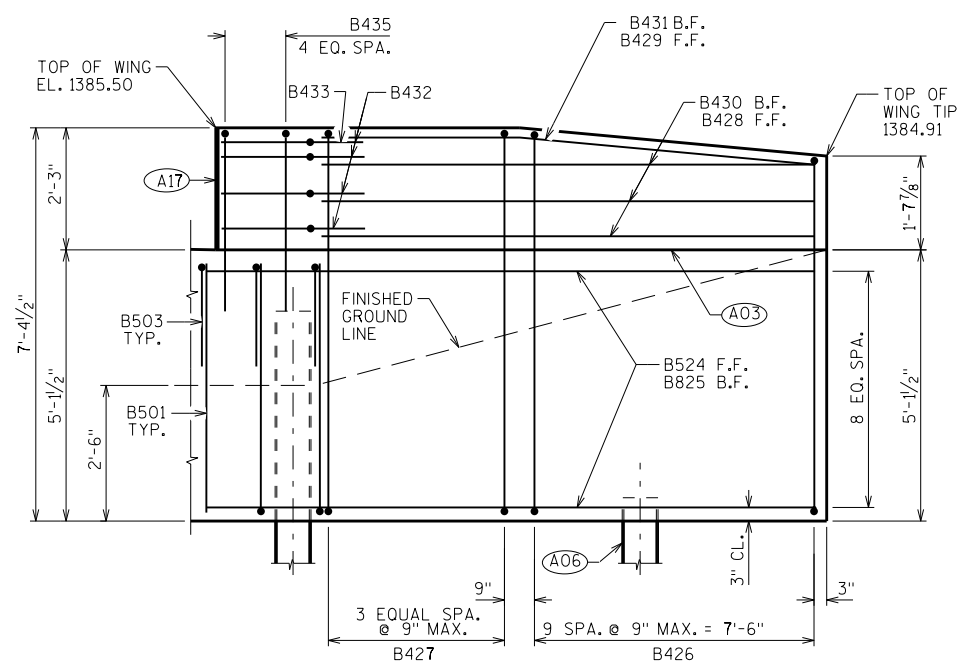
LOOKING EAST



SECTION THRU WING 3

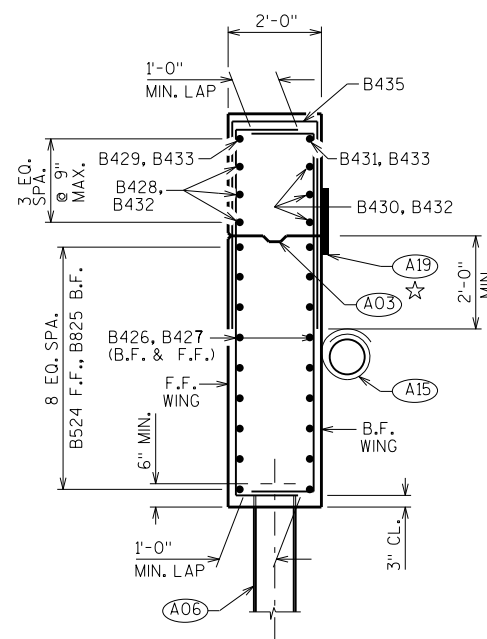


WING 3 PLAN

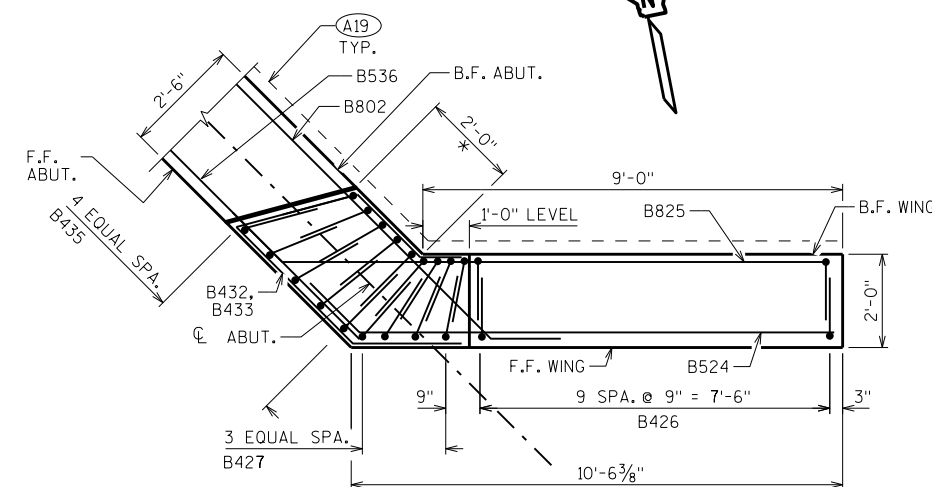


WING 4 ELEVATION

LOOKING NORTH



SECTION THRU WING 4

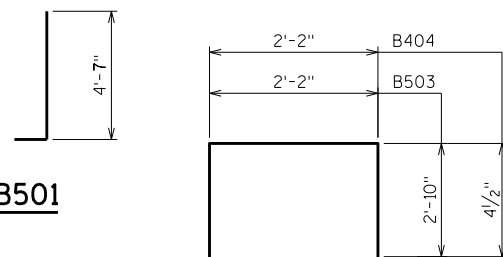


WING 4 PLAN

- ☆ IF CONSTRUCTION JOINT IS USED, COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES"
- * INCLUDES 1/2" FILLER
- (A03) OPTIONAL CONST. JOINT: KEYWAY FORMED BY BEVELED 2 x 6. (18" RMW @ B.F. & 3/4" "V" GROOVE @ F.F. IF JOINT IS USED).
- (A06) SUPPORT ABUTMENT ON HP 10 X 42 STEEL PILING, ESTIMATED 25'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE. SEE GENERAL PLAN SHEET FOR PRE-BORING REQUIREMENTS.
- (A15) PIPE UNDERDRAIN WRAPPED (6-INCH), SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED. UNDERDRAIN TO DAYLIGHT NO LOWER THAN EL. 1381.00
- (A17) 1/2" FILLER (INCLUDED IN WING LENGTH); SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- (A19) 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

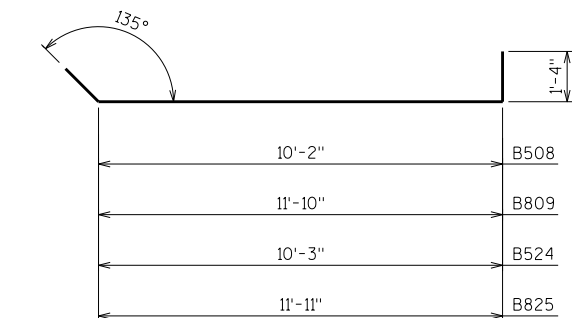
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| STRUCTURE B-34-58 | | | |
| DRAWN BY MJH | | PLANS CK'D. JDM | |
| EAST ABUTMENT DETAILS 1 | | | SHEET 9 |

B501

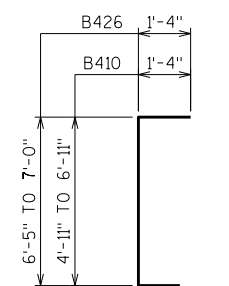
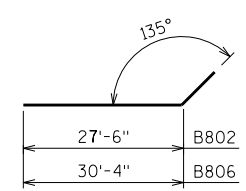


B503, B404

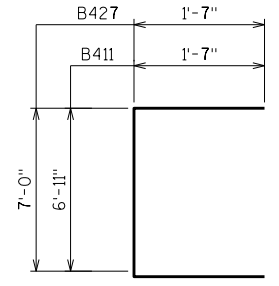
B508, B809, B524, B825



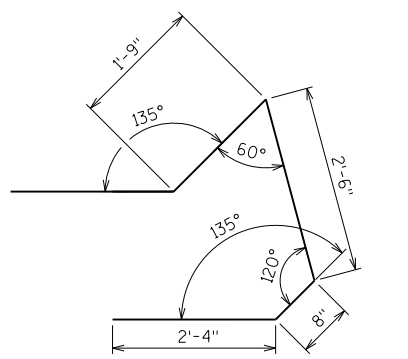
B802, B806



B410, B426

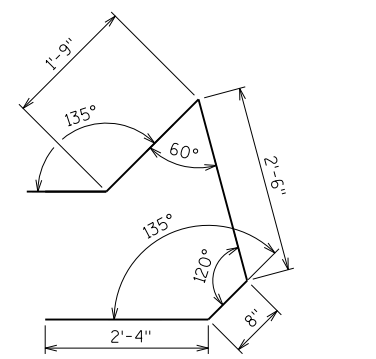
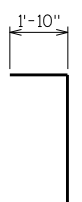


B411, B427

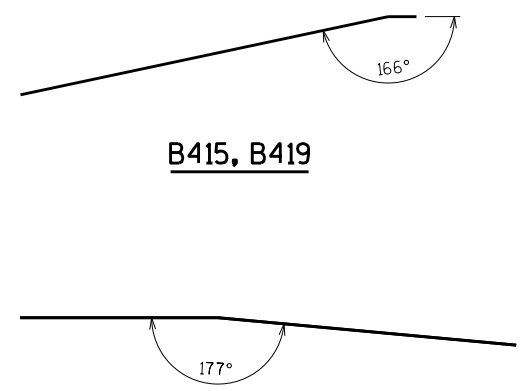


B420

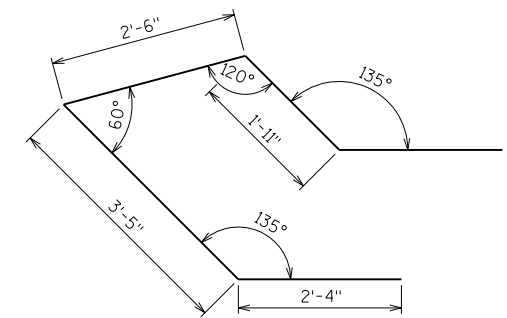
B423, B435



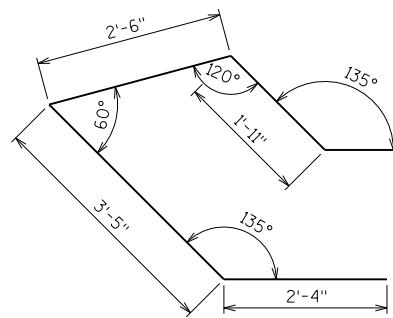
B421



B415, B419



B432



B433

B429, B431

BILL OF BARS

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

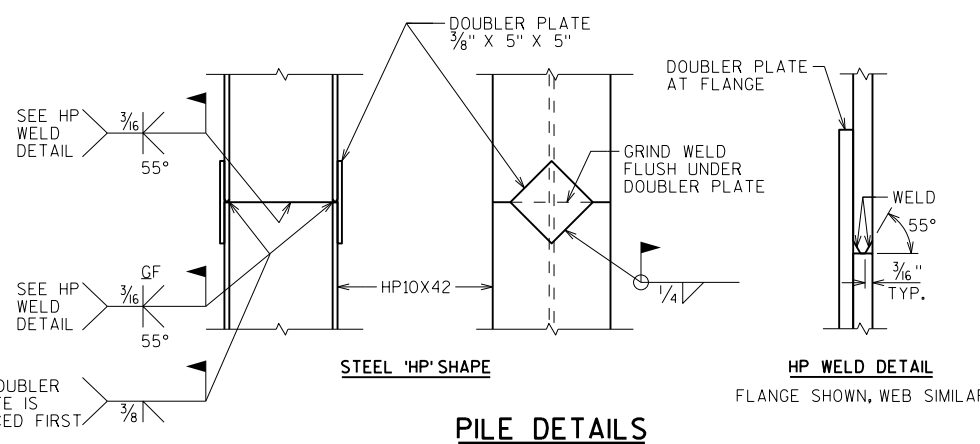
| BAR MARK | COAT | NO. REQ'D. | LENGTH | BENT | BAR SERIES | LOCATION |
|----------|------|------------|---------|------|------------|--------------------------------|
| B501 | | 110 | 6'-1" | X | | BODY - VERT. - F.F. & B.F. |
| B802 | | 9 | 29'-0" | X | | BODY - VERT. - B.F. - STAGE 2 |
| B503 | | 54 | 7'-8" | X | | BODY - VERT. - TOP |
| B404 | | 45 | 2'-9" | X | | BODY - VERT. - TIE BARS |
| B505 | | 9 | 30'-9" | | | BODY - HORIZ. - F.F. - STAGE 1 |
| B806 | | 9 | 31'-10" | X | | BODY - HORIZ. - B.F. - STAGE 1 |
| B507 | X | 49 | 2'-0" | | | DOWEL BARS |
| B508 | X | 9 | 12'-10" | X | | WING 3 - HORIZ. - F.F. |
| B809 | X | 9 | 14'-4" | X | | WING 3 - HORIZ. - B.F. |
| B410 | X | 22 | 8'-5" | X | ▲ | WING 3 - VERT. - F.F. & B.F. |
| B411 | X | 8 | 9'-11" | X | | WING 3 - VERT. - F.F. & B.F. |
| B412 | X | 1 | 10'-2" | | | WING 3 - HORIZ. - F.F. |
| B413 | X | 1 | 7'-7" | | | WING 3 - HORIZ. - F.F. |
| B414 | X | 1 | 5'-1" | | | WING 3 - HORIZ. - F.F. |
| B415 | X | 1 | 10'-5" | X | | WING 3 - HORIZ. - F.F. - TOP |
| B416 | X | 1 | 10'-2" | | | WING 3 - HORIZ. - B.F. |
| B417 | X | 1 | 7'-7" | | | WING 3 - HORIZ. - B.F. |
| B418 | X | 1 | 5'-1" | | | WING 3 - HORIZ. - B.F. |
| B419 | X | 1 | 10'-5" | X | | WING 3 - HORIZ. - B.F. - TOP |
| B420 | X | 3 | 9'-3" | X | | WING 3 - HORIZ. |
| B421 | X | 1 | 7'-11" | X | | WING 3 - HORIZ. - TOP |
| B422 | | NOT USED | | | | |
| B423 | X | 6 | 5'-11" | X | | WING 3 - VERT. |
| B524 | X | 9 | 12'-11" | X | | WING 4 - HORIZ. - F.F. |
| B825 | X | 9 | 14'-5" | X | | WING 4 - HORIZ. - B.F. |
| B426 | X | 22 | 9'-2" | X | ▲ | WING 4 - VERT. - F.F. & B.F. |
| B427 | X | 8 | 10'-0" | X | | WING 4 - VERT. - F.F. & B.F. |
| B428 | X | 3 | 10'-2" | | | WING 4 - HORIZ. - F.F. |
| B429 | X | 1 | 10'-2" | X | | WING 4 - HORIZ. - F.F. - TOP |
| B430 | X | 3 | 10'-2" | | | WING 4 - HORIZ. - B.F. |
| B431 | X | 1 | 10'-2" | X | | WING 4 - HORIZ. - F.F. - TOP |
| B432 | X | 3 | 12'-2" | X | | WING 4 - HORIZ. |
| B433 | X | 1 | 10'-10" | X | | WING 4 - HORIZ. - TOP |
| B434 | | NOT USED | | | | |
| B435 | X | 10 | 5'-11" | X | | WING 4 - VERT. |
| B536 | | 9 | 25'-3" | | | BODY - HORIZ. - F.F. - STAGE 2 |

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

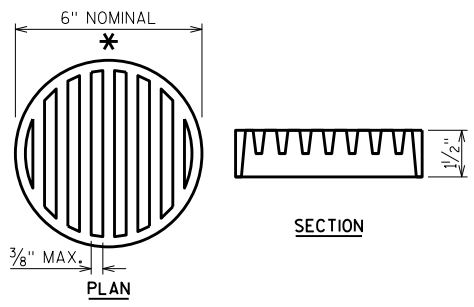
BAR SERIES TABLE

| MARK | NO. REQ'D. | LENGTH |
|------|----------------|-----------------|
| B410 | 2 SERIES OF 11 | 7'-5" TO 9'-5" |
| B426 | 2 SERIES OF 11 | 8'-11" TO 9'-5" |

BUNDLE AND TAG EACH SERIES SEPARATELY.



PILE DETAILS



RODENT SHIELD DETAIL

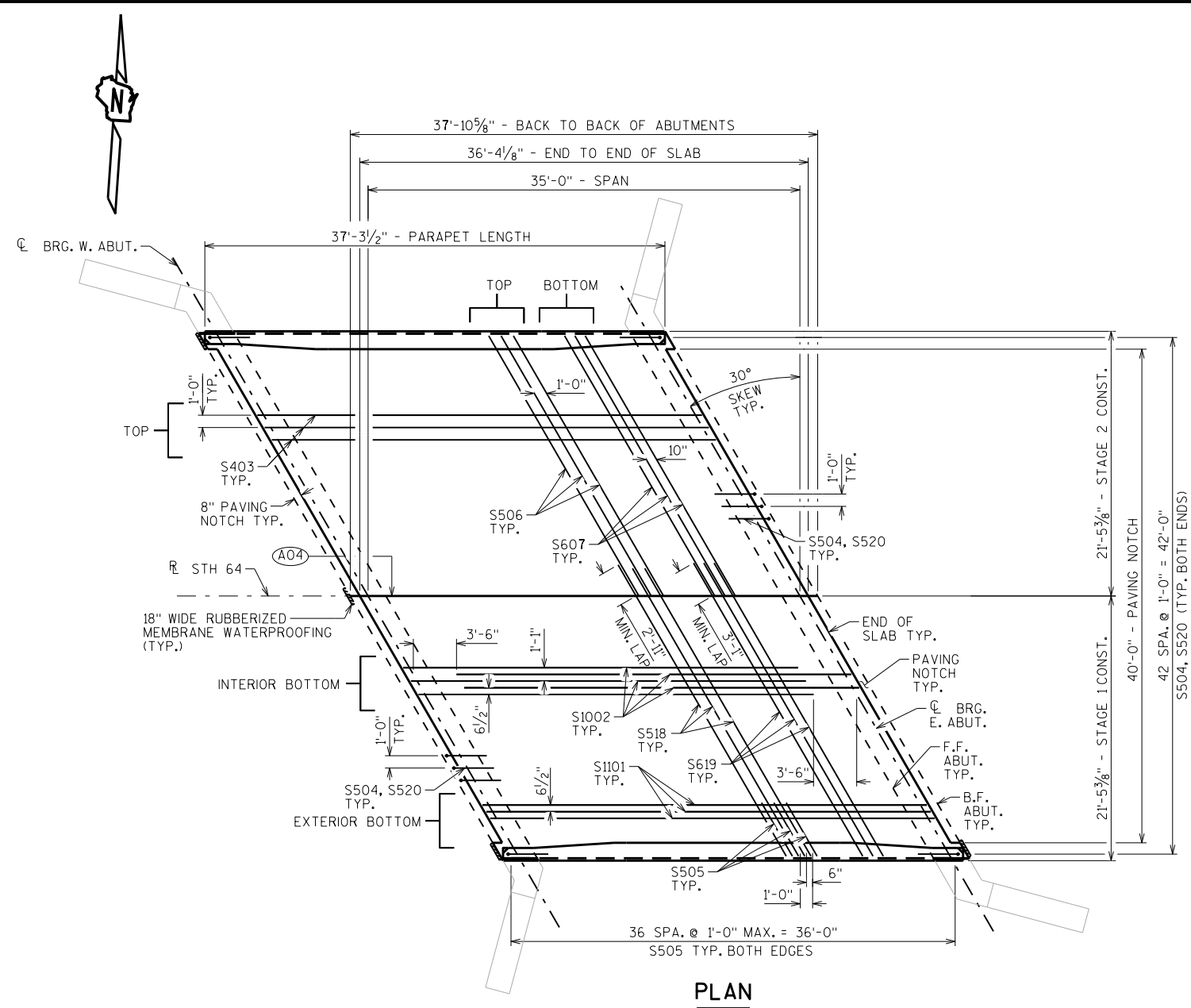
* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

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

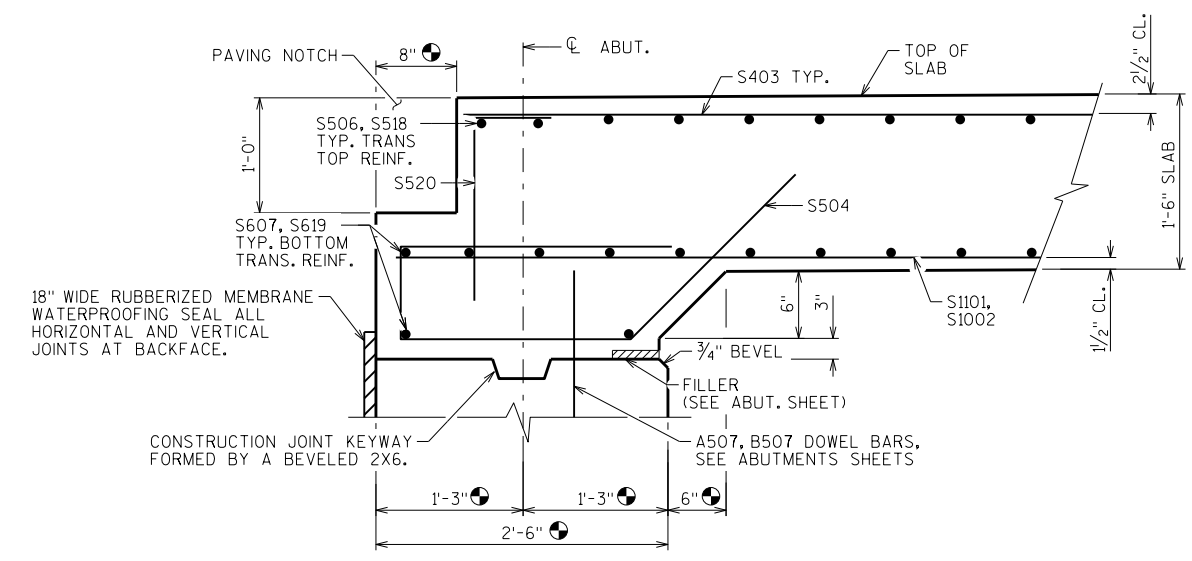
THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH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

● (9) #8 BARS COUPLERS AT STAGING LINE. (PER ABUT.) BAR COUPLERS REQUIRED. BAR LENGTH DETERMINED AND CALCULATED TO C/L OF JOINT AT SPLICE LOCATION. MODIFY IF NECESSARY TO BAR COUPLER MANUFACTURER'S SPECIFICATIONS. PAY BASED ON BARS AS DETAILED.

| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|----------|-------------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| | | DRAWN BY | PLANS CK'D. |
| | | MJH | JDM |
| EAST ABUTMENT DETAILS 2 | | | SHEET 10 |

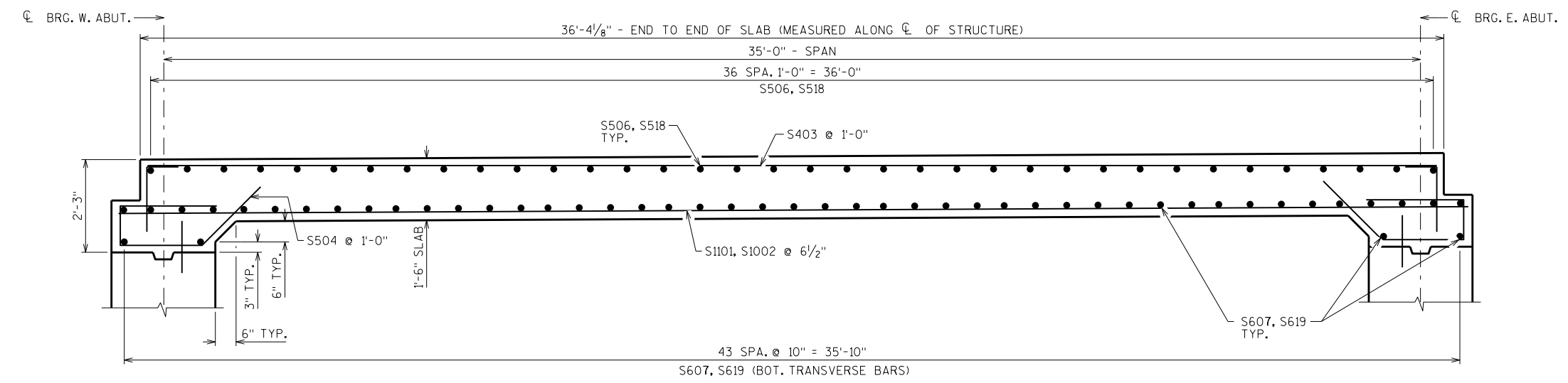


PLAN



TYPICAL REINF. DETAIL AT ABUT.

⊙ DIMENSION IS TAKEN NORMAL TO CL ABUTMENT



LONGITUDINAL SECTION THRU SLAB

(A04) LONGITUDINAL CONSTRUCTION JOINT: KEYWAY FORMED BY A BEVELED 2 X 8.

| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|----------------|----------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY MJH | | PLANS CKD. JDM | |
| SUPERSTRUCTURE | | | SHEET 11 |

BILL OF BARS

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

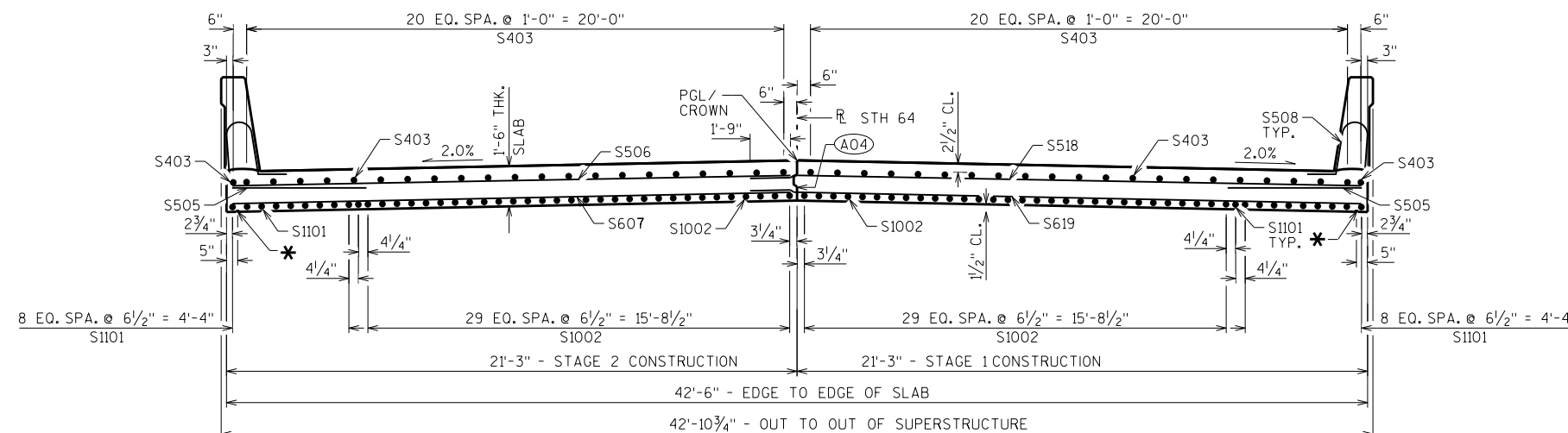
| BAR MARK | COAT | NO. REQ'D. | LENGTH | BENT | BAR SERIES | LOCATION |
|----------|------|------------|--------|------|------------|----------------------------------|
| S1101 | X | 20 | 36'-0" | | | SLAB - LONGIT. - BOT. - EXT |
| S1002 | X | 60 | 32'-0" | | | SLAB - LONGIT. - BOT. - INTERIOR |
| S403 | X | 44 | 36'-0" | | | SLAB - LONGIT. - TOP |
| S504 | X | 86 | 7'-6" | X | | SLAB - VERT. AT ABUTS |
| S505 | X | 74 | 5'-0" | | | TOP MAT - TRANS. - EDGE OF SLAB |
| S506 | X | 37 | 24'-4" | | | SLAB - TRANS. - TOP - STAGE 2 |
| S607 | X | 44 | 24'-4" | | | SLAB - TRANS. - BOT. - STAGE 2 |
| S508 | X | 62 | 4'-5" | X | | PARAPET VERT. |
| S509 | X | 62 | 6'-8" | X | | PARAPET VERT. |
| S510 | X | 44 | 2'-9" | X | | PARAPET VERT. |
| S511 | X | 68 | 4'-4" | X | | PARAPET VERT. |
| S512 | X | 20 | 6'-5" | X | | PARAPET VERT. |
| S513 | X | 24 | 6'-6" | X | | PARAPET VERT. |
| S514 | X | 4 | 10'-9" | X | | PARAPET HORIZ. |
| S515 | X | 16 | 19'-0" | | | PARAPET HORIZ. |
| S516 | X | 24 | 5'-5" | X | ▲ | PARAPET VERT. |
| S517 | X | 8 | 10'-9" | X | | PARAPET HORIZ. |
| S518 | X | 37 | 27'-3" | | | SLAB - TRANS. - TOP - STAGE 1 |
| S619 | X | 44 | 27'-5" | | | SLAB - TRANS. - BOT. - STAGE 1 |
| S520 | X | 86 | 2'-8" | X | | SLAB - VERT. AT ABUTS |

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

BAR SERIES TABLE

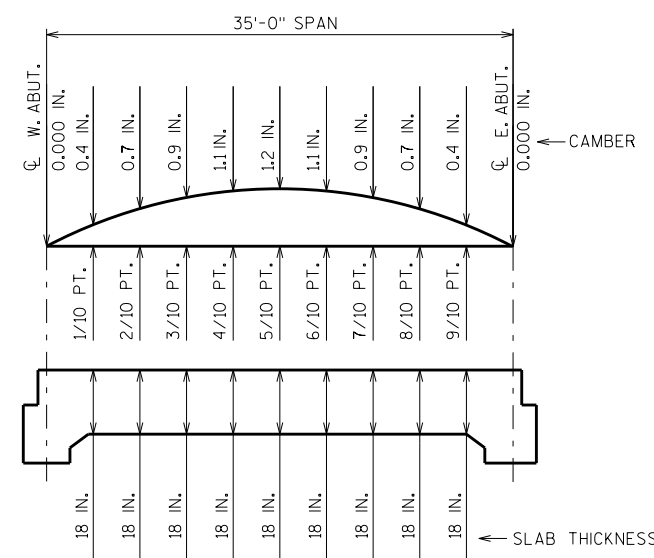
| BAR MARK | NO. REQ'D | LENGTH |
|----------|---------------|----------------|
| S516 | 4 SERIES OF 6 | 4'-9" TO 6'-1" |

BUNDLE AND TAG EACH SERIES SEPARATELY.



SLAB CROSS SECTION

(LOOKING EAST UP STATION)
(AT CENTER OF BRIDGE)



CAMBER AND SLAB THICKNESS DIAGRAM

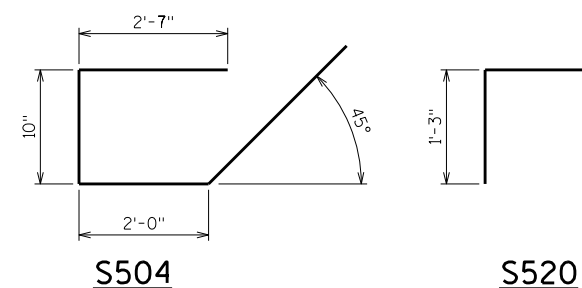
CAMBER IS BASED ON 3 TIMES DEAD LOAD DEFLECTIONS. CAMBER SPAN AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION & FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

PARAPETS PLACED ON TOP OF SLAB SHALL BE POURED AFTER FALSEWORK HAS BEEN RELEASED, EXCEPT FOR STAGED CONSTRUCTION.

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

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

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE CL OF ABUTMENTS, AND AT 5/10 PTS. TO VERIFY CAMBER, TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN OF SLAB. RECORD THE ELEVATIONS IN THE ABOVE TABLE FOR THE "AS BUILT" PLANS.



S504

S520

SURVEY TOP OF SLAB ELEVATIONS

| | CL BRG. W. ABUT. | 5/10 PT. | CL BRG. E. ABUT. |
|---------------------------|------------------|----------|------------------|
| N. GUTTER | | | |
| R. STH 64/ CROWN POINT | | | |
| S. GUTTER | | | |

TOP OF SLAB ELEVATIONS

| | CL BRG. W. ABUT. | 1/10 | 2/10 | 3/10 | 4/10 | 5/10 | 6/10 | 7/10 | 8/10 | 9/10 | CL BRG. E. ABUT. |
|-----------|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------------|
| LEFT EOS | 1385.22 | 1385.24 | 1385.26 | 1385.28 | 1385.29 | 1385.31 | 1385.33 | 1385.35 | 1385.36 | 1385.38 | 1385.40 |
| LEFT GL | 1385.23 | 1385.24 | 1385.26 | 1385.28 | 1385.30 | 1385.32 | 1385.33 | 1385.35 | 1385.37 | 1385.39 | 1385.40 |
| PGL/CROWN | 1385.69 | 1385.70 | 1385.72 | 1385.74 | 1385.76 | 1385.77 | 1385.79 | 1385.81 | 1385.83 | 1385.84 | 1385.86 |
| RIGHT GL | 1385.34 | 1385.36 | 1385.38 | 1385.40 | 1385.41 | 1385.43 | 1385.45 | 1385.47 | 1385.48 | 1385.50 | 1385.52 |
| RIGHT EOS | 1385.34 | 1385.36 | 1385.38 | 1385.40 | 1385.42 | 1385.43 | 1385.45 | 1385.47 | 1385.49 | 1385.50 | 1385.52 |

* 3/4" V-GROOVE REQ'D EXTEND TO 6" FROM F.F. OF ABUT. BODY TYP. BOTH EDGES OF SLAB.

(A04) LONGITUDINAL CONSTRUCTION JOINT: KEYWAY FORMED BY A BEVELED 2 X 8.

NOTES

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

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

| NO. | DATE | REVISION | BY |
|---------------------------------------------------------------------------------|------|-----------------|----------|
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION | | | |
| STRUCTURE B-34-58 | | | |
| DRAWN BY MJH | | PLANS CK'D. JDM | |
| SUPERSTRUCTURE DETAILS | | | SHEET 12 |

| STATION | REAL STATION | DISTANCE | AREA (SF) | | INCREMENTAL VOL (CY) (UNADJUSTED) | | CUMULATIVE VOL (CY) | | MASS ORDINATE |
|--------------------|--------------|----------|-----------|-------|-----------------------------------|-------|---------------------|-----------------------|---------------|
| | | | CUT | FILL | CUT | FILL | CUT 1 | EXPANDED FILL 1.25 | |
| 102+20.000 | 20750.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102+50.000 | 20800.00 | 30.00 | 33.7 | 64.7 | 18.7 | 35.9 | 18.7 | 44.9 | -26.2 |
| 102+69.205 | 20850.00 | 19.20 | 31.1 | 105.4 | 23.0 | 60.5 | 41.8 | 120.5 | -78.8 |
| 103+20.000 | 20900.00 | 50.80 | 20.1 | 14.0 | 48.2 | 112.4 | 90.0 | 261.0 | -171.0 |
| DEER CREEK | | | | | 90.0 | | 261.0 | | |
| 201+25.000 | 20125.00 | 0.00 | 43.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 201+50.000 | 20150.00 | 25.00 | 58.5 | 4.6 | 47.0 | 2.1 | 47.0 | 2.7 | 44.3 |
| 202+00.000 | 20200.00 | 50.00 | 57.4 | 0.5 | 107.3 | 4.8 | 154.3 | 8.6 | 145.7 |
| 202+50.000 | 20250.00 | 50.00 | 87.3 | 2.7 | 133.9 | 3.0 | 288.2 | 12.4 | 275.8 |
| 203+00.000 | 20300.00 | 50.00 | 57.0 | 0.9 | 133.6 | 3.4 | 421.8 | 16.6 | 405.3 |
| 203+50.000 | 20350.00 | 50.00 | 39.3 | 17.5 | 89.2 | 17.0 | 511.0 | 37.9 | 473.1 |
| 204+00.000 | 20400.00 | 50.00 | 33.8 | 19.4 | 67.7 | 34.2 | 578.7 | 80.6 | 498.1 |
| 204+50.000 | 20450.00 | 50.00 | 71.2 | 29.0 | 97.3 | 44.9 | 676.0 | 136.7 | 539.3 |
| 205+00.000 | 20500.00 | 50.00 | 23.1 | 57.4 | 87.4 | 80.1 | 763.4 | 236.8 | 526.6 |
| 205+50.000 | 20550.00 | 50.00 | 29.5 | 15.9 | 48.7 | 67.9 | 812.1 | 321.6 | 490.4 |
| 206+00.000 | 20600.00 | 50.00 | 34.7 | 14.9 | 59.4 | 28.5 | 871.5 | 357.3 | 514.3 |
| 207+00.000 | 20650.00 | 50.00 | 40.5 | 5.7 | 69.6 | 19.0 | 941.2 | 381.0 | 560.1 |
| ELTON CREEK | | | | | 941.2 | | 381.0 | | |

ADDITIONAL COMMON EXCAVATION AT DEER CREEK:

DEER CREEK CULVERT TRANSITIONAL CUT (DEPTH = 5', LENGTH = 110', WIDTH = 80', SLOPES: 10:1): 740 CY
DEER CREEK CULVERT PAVEMENT REMOVAL CUT (PVT THICKNESS = 1.5', LENGTH = 110', WIDTH = 40'): 250 CY
DEER CREEK STAGE 1 / STAGE 2 OVERLAP CUT* (TRIANGLE: DEPTH: 15', LENGTH = 110', WIDTH = 44'): 1350 CY

*OVERLAP AREA BETWEEN STAGE 1 AND STAGE 2 IS ONLY CONSIDERED FROM EXISTING EDGE OF SHOULDER (22' LT) TO EXISTING EDGE OF SHOULDER (22' RT). ALL OTHER EARTHWORK FOR TEMPORARY LANES PAID AS: TEMPORARY LANE SHIFT DURING CULVERT WORK (EARTHWORK SHOWN ELSEWHERE IN PLANS)

| STATION | REAL STATION | DISTANCE | AREA (SF) | | INCREMENTAL VOL (CY) (UNADJUSTED) | | CUMULATIVE VOL (CY) | | MASS ORDINATE |
|-------------------------------------------------------------|--------------|----------|-----------|-------|-----------------------------------|-------|---------------------|-----------------------|---------------|
| | | | CUT | FILL | CUT | FILL | CUT 1 | EXPANDED FILL 1.25 | |
| 301+50.000 | 30150.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 302+00.000 | 30200.00 | 50.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 302+50.000 | 30250.00 | 50.00 | 32.7 | 215.1 | 30.3 | 199.2 | 30.3 | 249.0 | -218.7 |
| 302+75.000 | 30275.00 | 25.00 | 0.0 | 653.5 | 15.1 | 402.1 | 45.4 | 751.7 | -706.3 |
| 303+00.000 | 30300.00 | 25.00 | 33.2 | 185.0 | 15.4 | 388.2 | 60.8 | 1236.9 | -1176.1 |
| 303+25.000 | 30325.00 | 25.00 | 8.4 | 61.4 | 19.3 | 114.1 | 80.0 | 1379.5 | -1299.5 |
| 303+50.000 | 30350.00 | 25.00 | 0.0 | 0.0 | 3.9 | 28.4 | 83.9 | 1415.0 | -1331.1 |
| 304+00.000 | 30400.00 | 50.00 | 0.0 | 0.0 | 0.0 | 0.0 | 83.9 | 1415.0 | -1331.1 |
| DEER CREEK STAGE 1 - FOR INFORMATIONAL PURPOSES ONLY | | | | | 83.9 | | 1415.0 | | |
| 401+25.000 | 40125.00 | 0.00 | 3.5 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 401+50.000 | 40150.00 | 25.00 | 2.2 | 26.3 | 2.6 | 12.4 | 2.6 | 15.5 | -12.9 |
| 401+75.000 | 40175.00 | 25.00 | 3.6 | 51.1 | 2.7 | 35.8 | 5.3 | 60.3 | -55.0 |
| 402+00.000 | 40200.00 | 25.00 | 7.2 | 52.2 | 5.0 | 47.8 | 10.3 | 120.1 | -109.8 |
| 402+25.000 | 40225.00 | 25.00 | 24.9 | 66.3 | 14.9 | 54.9 | 25.2 | 188.7 | -163.5 |
| 402+50.000 | 40250.00 | 25.00 | 78.4 | 120.2 | 47.8 | 86.3 | 73.0 | 296.6 | -223.6 |
| 402+75.000 | 40275.00 | 25.00 | 136.4 | 300.0 | 99.5 | 194.6 | 172.5 | 539.8 | -367.3 |
| 403+00.000 | 40300.00 | 25.00 | 76.9 | 117.6 | 98.8 | 193.3 | 271.3 | 781.5 | -510.2 |
| 403+25.000 | 40325.00 | 25.00 | 9.7 | 48.7 | 40.1 | 77.0 | 311.3 | 877.7 | -566.3 |
| 403+50.000 | 40350.00 | 25.00 | 4.3 | 24.2 | 6.5 | 33.7 | 317.8 | 919.9 | -602.1 |
| 403+75.000 | 40375.00 | 25.00 | 5.5 | 9.3 | 4.5 | 15.5 | 322.3 | 939.3 | -616.9 |
| DEER CREEK STAGE 2 - FOR INFORMATIONAL PURPOSES ONLY | | | | | 322.3 | | 939.3 | | |
| 201+00.000 | 20100.00 | 0.00 | 3.4 | 5.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 201+50.000 | 20150.00 | 50.00 | 7.4 | 4.6 | 10.0 | 9.3 | 10.0 | 11.6 | -1.6 |
| 202+00.000 | 20200.00 | 50.00 | 21.1 | 1.3 | 26.4 | 5.4 | 36.4 | 18.4 | 18.0 |
| 202+50.000 | 20250.00 | 50.00 | 24.7 | 0.2 | 42.4 | 1.4 | 78.8 | 20.0 | 58.8 |
| 203+00.000 | 20300.00 | 50.00 | 14.2 | 31.1 | 36.0 | 29.0 | 114.8 | 56.3 | 58.6 |
| 203+50.000 | 20350.00 | 50.00 | 8.1 | 21.0 | 20.6 | 48.2 | 135.5 | 116.5 | 18.9 |
| 204+00.000 | 20400.00 | 50.00 | 0.2 | 21.9 | 7.6 | 39.6 | 143.1 | 166.1 | -23.0 |
| 204+50.000 | 20450.00 | 50.00 | 1.1 | 20.0 | 1.2 | 38.7 | 144.3 | 214.5 | -70.1 |
| 205+00.000 | 20500.00 | 50.00 | 1.8 | 17.4 | 2.7 | 34.6 | 147.0 | 257.8 | -110.8 |
| 205+50.000 | 20550.00 | 50.00 | 8.7 | 6.4 | 9.7 | 22.0 | 156.7 | 285.3 | -128.6 |
| 206+00.000 | 20600.00 | 50.00 | 5.7 | 8.7 | 13.4 | 13.9 | 170.1 | 302.7 | -132.6 |
| 206+50.000 | 20650.00 | 50.00 | 3.6 | 0.4 | 8.7 | 8.3 | 178.8 | 313.1 | -134.4 |
| 207+00.000 | 20700.00 | 50.00 | 2.2 | 0.1 | 5.4 | 0.4 | 184.1 | 313.6 | -129.5 |
| ELTON CREEK TEMP PAVEMENT | | | | | 184.1 | | 313.6 | | |

9

9

PROJECT NO: 9140-12-61

HWY: STH 64

COUNTY: LANGLADE

EARTHWORK:

SHEET

E

FILE NAME : P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-TC.DWG

PLOT DATE : 11/5/2021 6:32 AM

PLOT BY : DEXTER KAETTERHENRY

PLOT NAME :

WISDOT/CADD SHEET 49

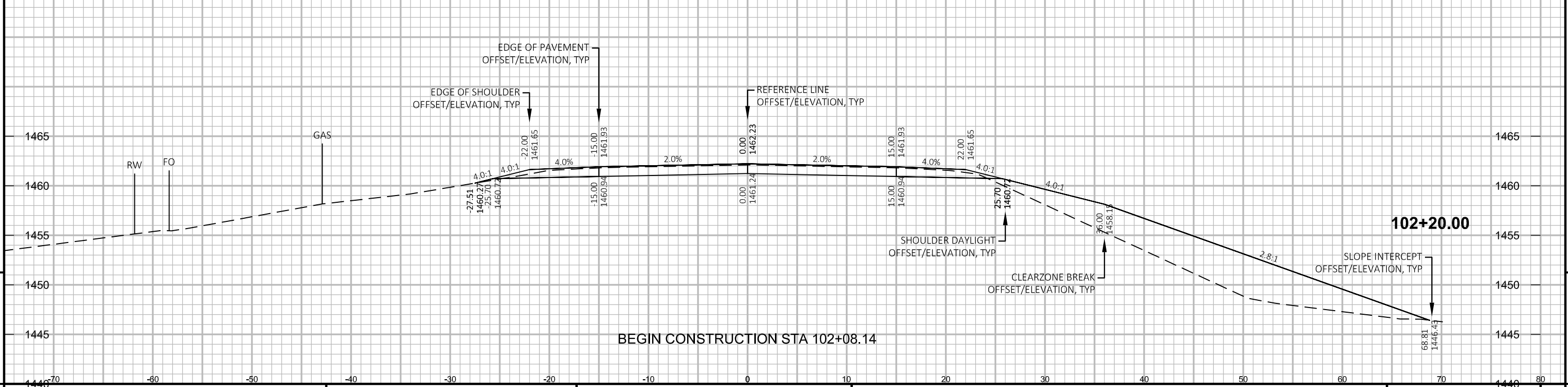
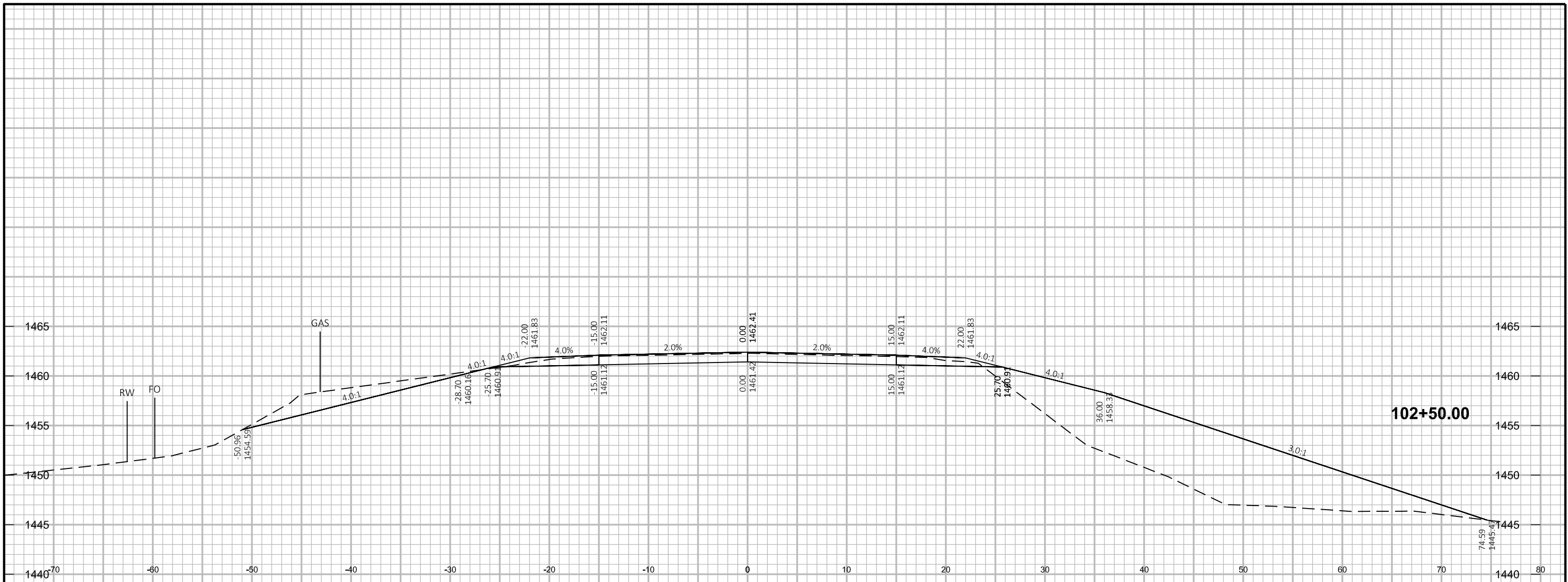
EARTHWORK SUMMARY:

| | CUT (CY) | EXPANDED FILL (CY) |
|-----------------------------|------------|--------------------|
| DEER CREEK MAINLINE: | 90 | 261 |
| DEER CREEK STAGE 2 OVERLAP: | 1350 | 0 |
| DEER CREEK CULVERT: | <u>990</u> | <u>0</u> |
| TOTAL: | 2430 | 261 |

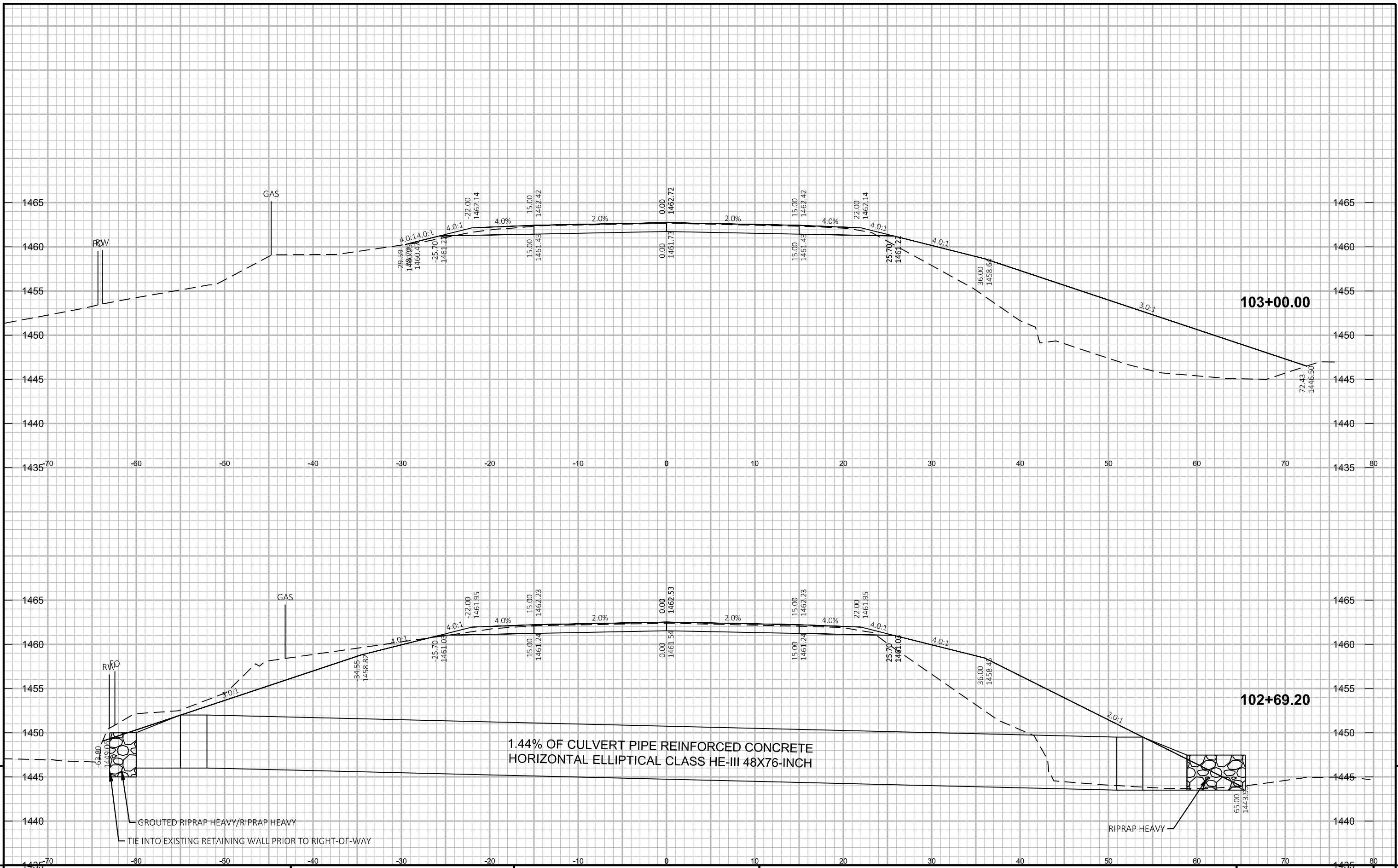
| | | |
|-----------------------|------------|------------|
| ELTON CREEK MAINLINE: | 941 | 381 |
| ELTON CREEK TEMP PVT: | <u>184</u> | <u>314</u> |
| TOTAL: | 1125 | 695 |

FOR INFORMATIONAL PURPOSES:

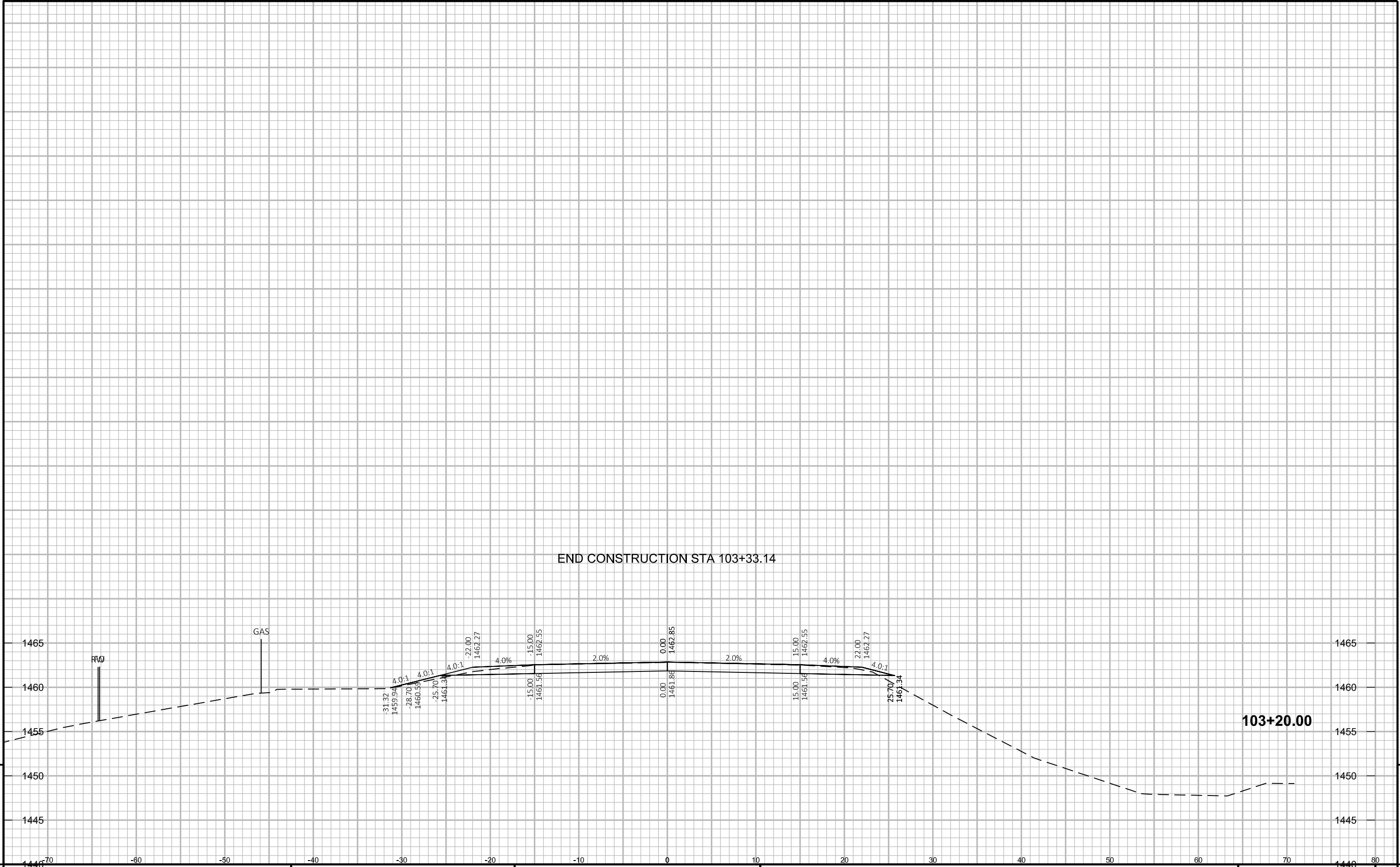
| | | |
|------------------------|------------|------------|
| DEER CREEK TC STAGE 1: | 84 | 1415 |
| DEER CREEK TC STAGE 2: | <u>322</u> | <u>939</u> |
| TOTAL: | 406 | 2354 |



PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: STH 64 SHEET E



PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: STH 64 SHEET E

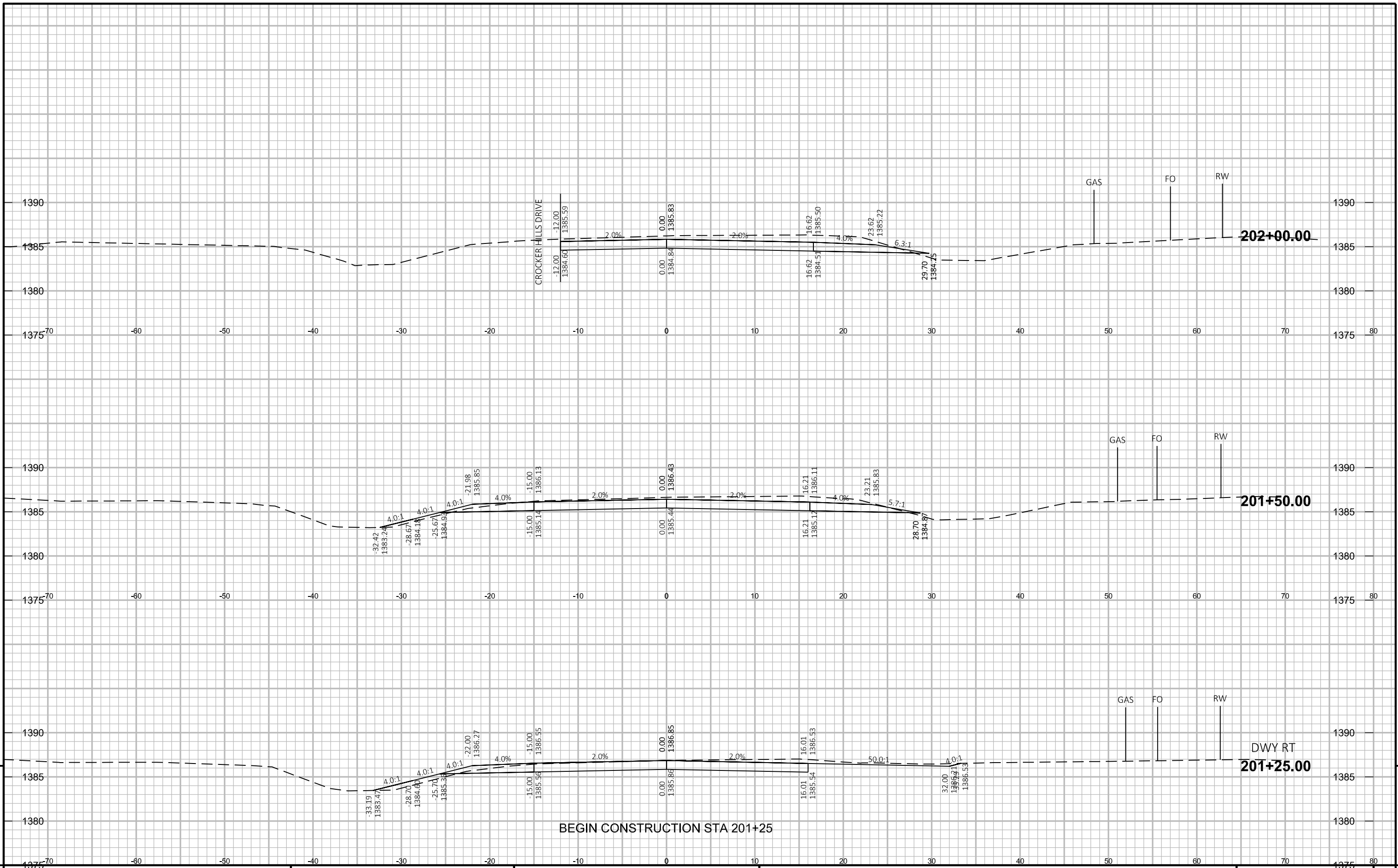


9

9

PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: STH 64 SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-WESTUPDATED.DWG PLOT DATE: 5/24/2021 10:02 AM PLOT BY: JARED HALBUR PLOT NAME:

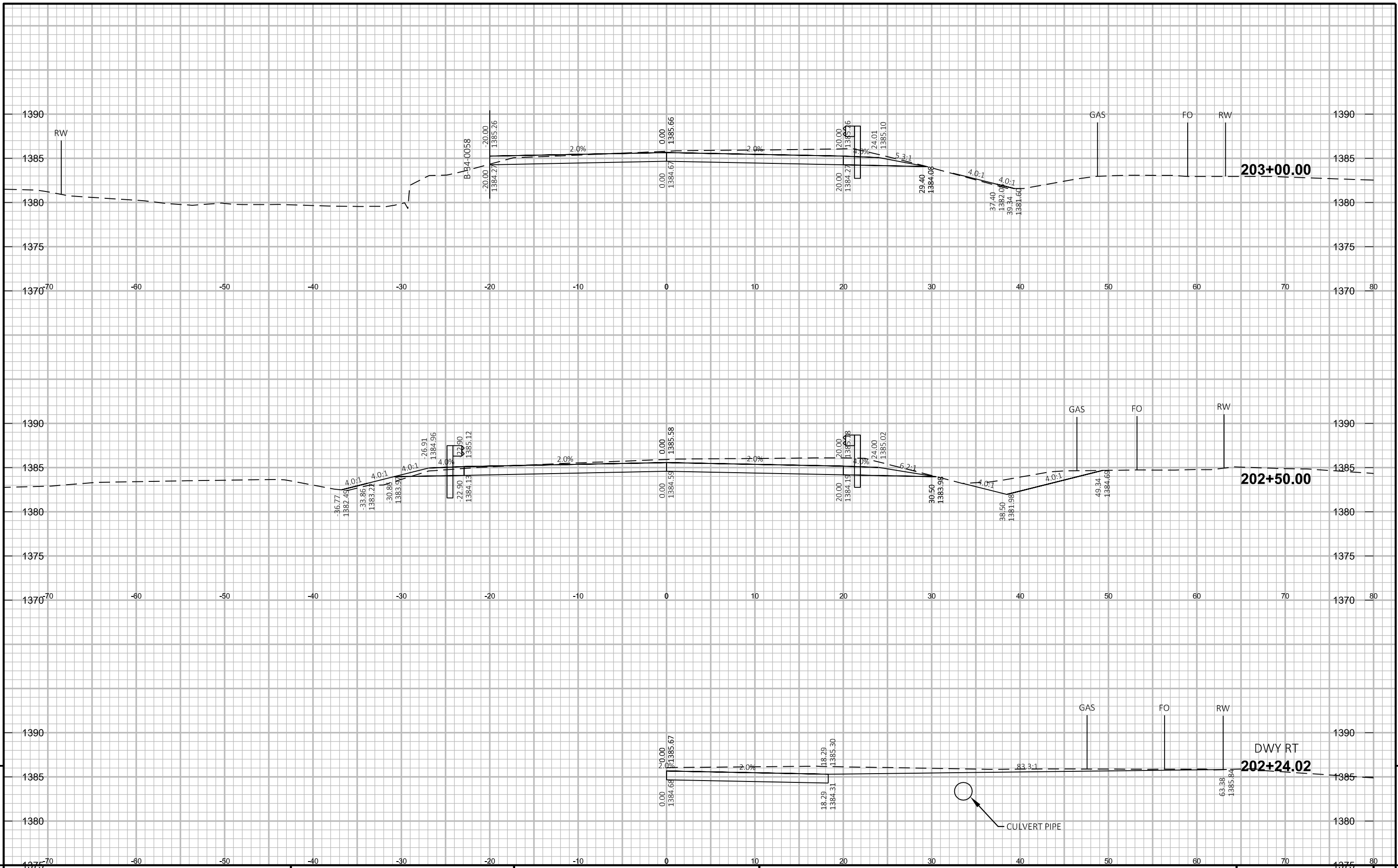


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: STH 64 SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-WESTUPDATED.DWG PLOT DATE: 5/24/2021 10:06 AM PLOT BY: JARED HALBUR PLOT NAME:

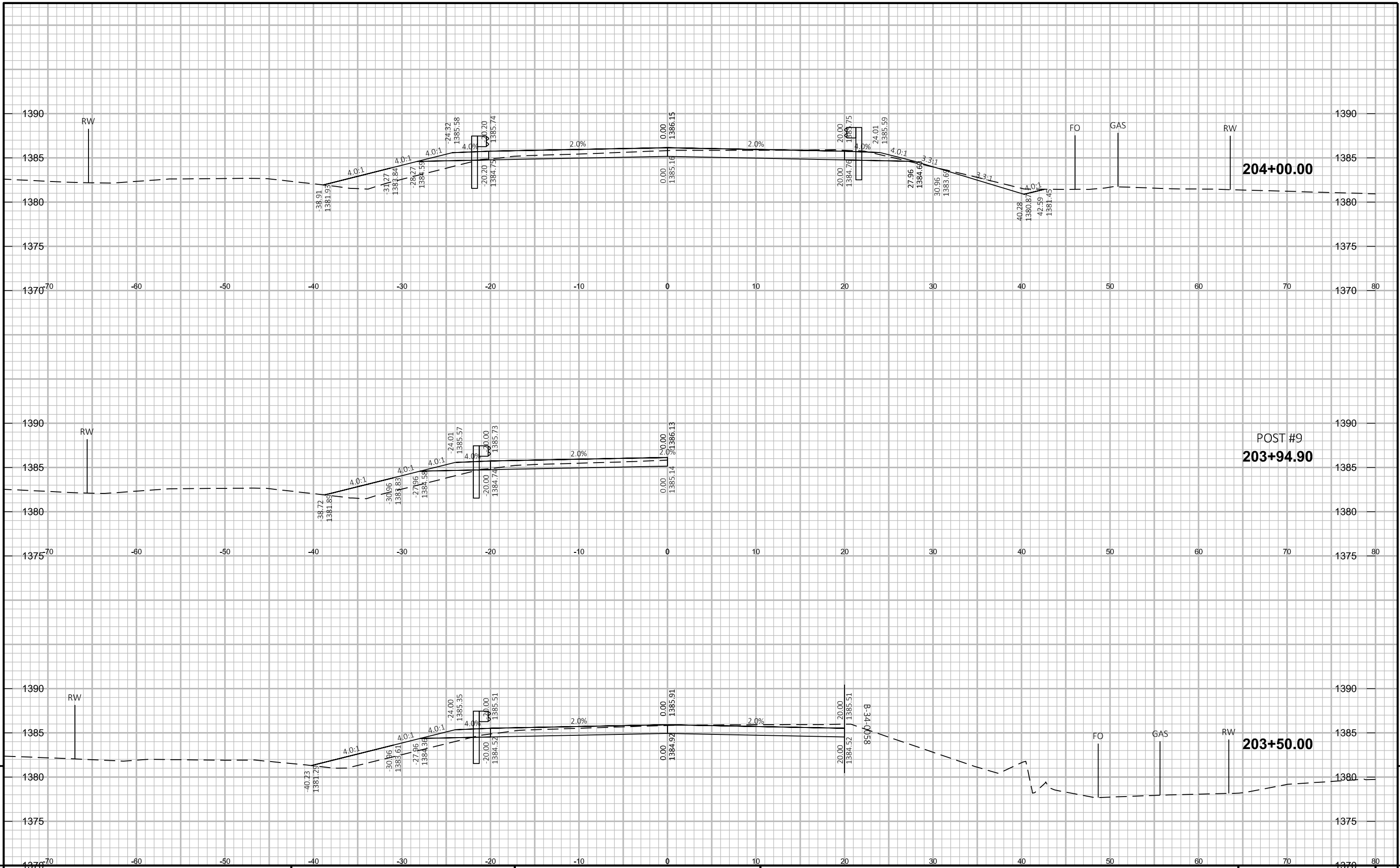


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: STH 64 SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-WESTUPDATED.DWG PLOT DATE: 5/24/2021 10:06 AM PLOT BY: JARED HALBUR PLOT NAME: WISDOT/CADD SHEET 49



PROJECT NO: 9140-12-61

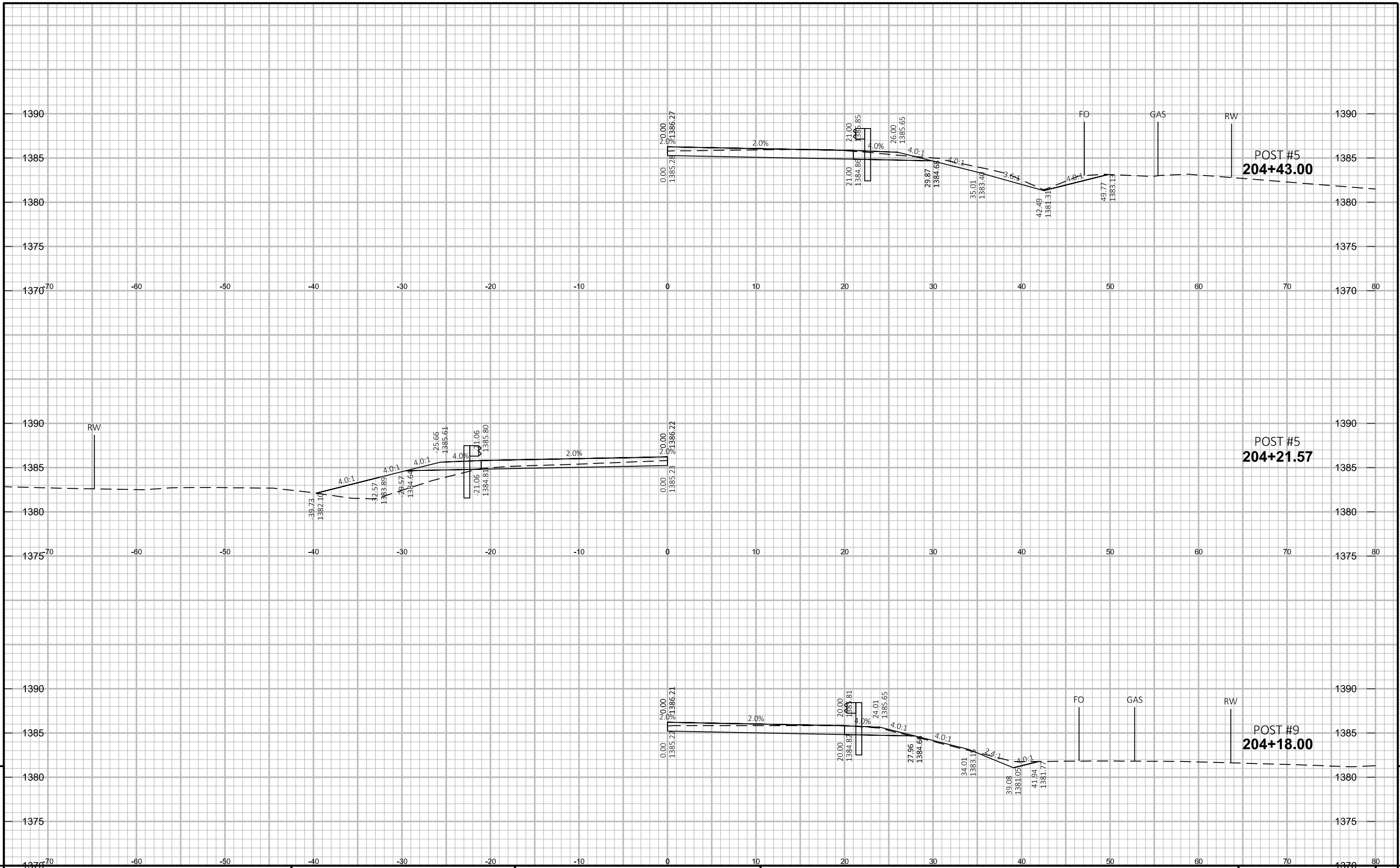
HWY: STH 64

COUNTY: LANGLADE

CROSS SECTIONS: STH 64

SHEET

E

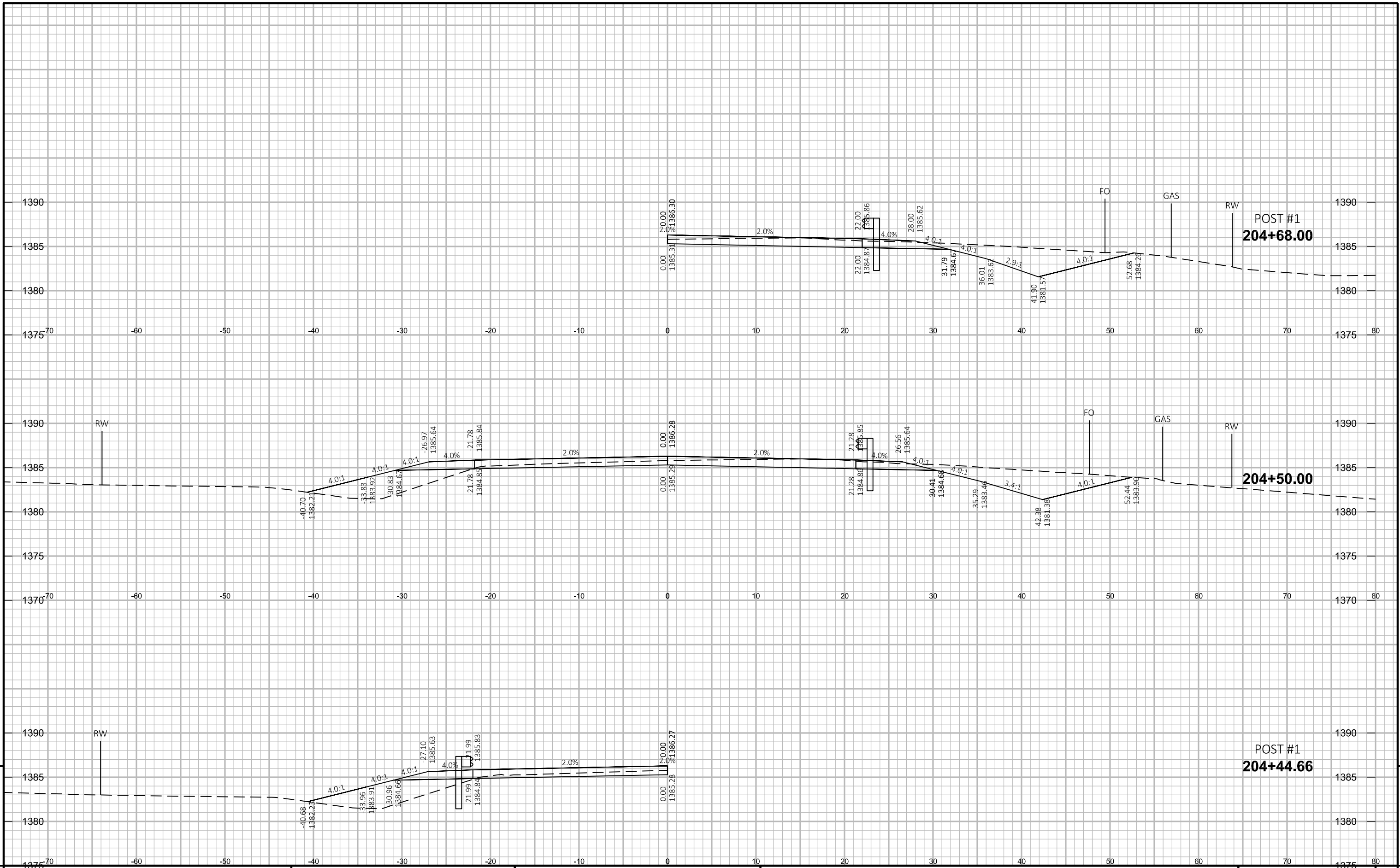


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: STH 64 SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-WESTUPDATED.DWG PLOT DATE: 5/24/2021 10:06 AM PLOT BY: JARED HALBUR PLOT NAME:



PROJECT NO: 9140-12-61

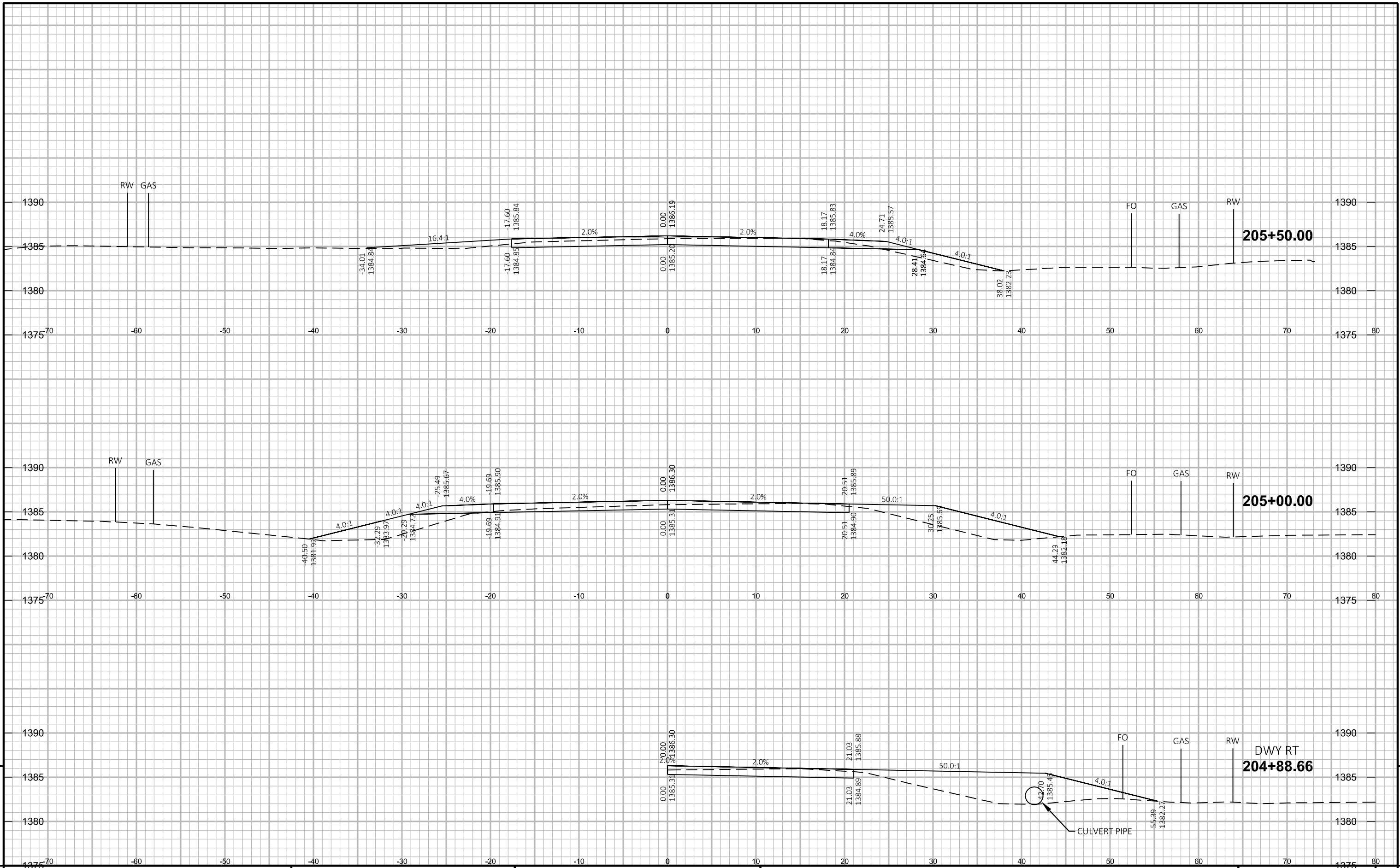
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COUNTY: LANGLADE

CROSS SECTIONS: STH 64

SHEET

E

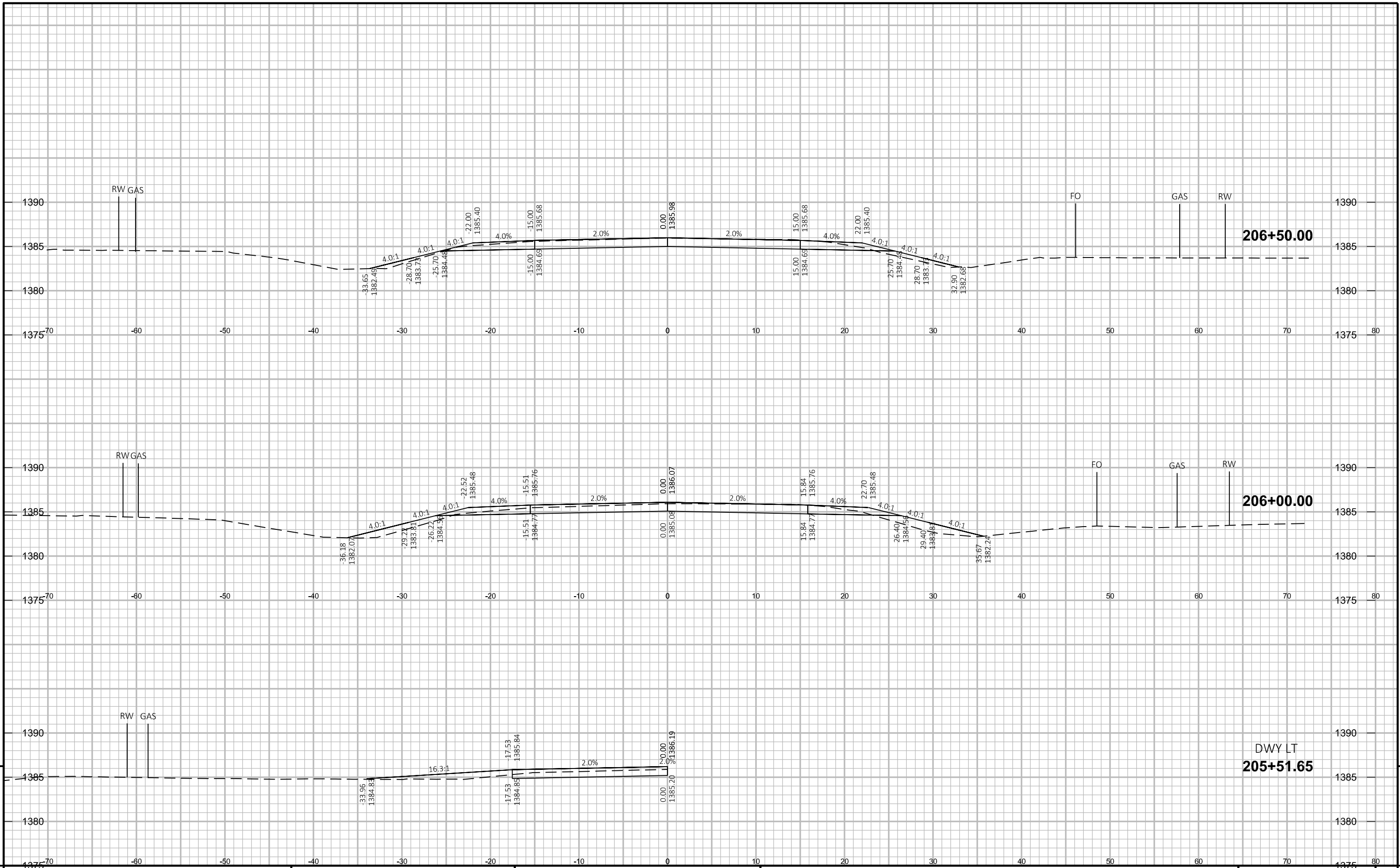


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: STH 64 SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-WESTUPDATED.DWG PLOT DATE: 5/24/2021 10:06 AM PLOT BY: JARED HALBUR PLOT NAME: WISDOT/CADD SHEET 49



PROJECT NO: 9140-12-61

HWY: STH 64

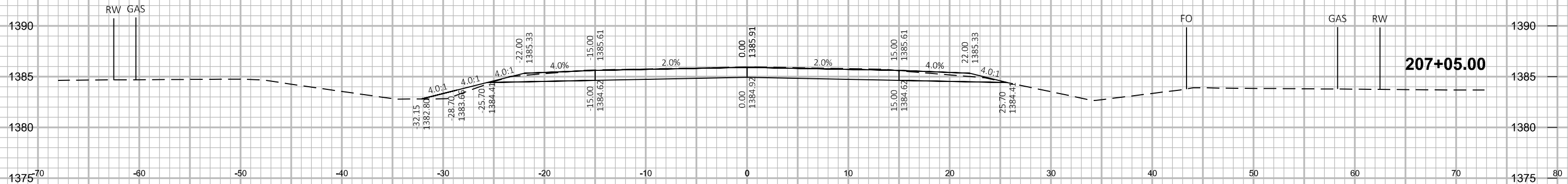
COUNTY: LANGLADE

CROSS SECTIONS: STH 64

SHEET

E

END PROJECT STA 207+05



PROJECT NO: 9140-12-61

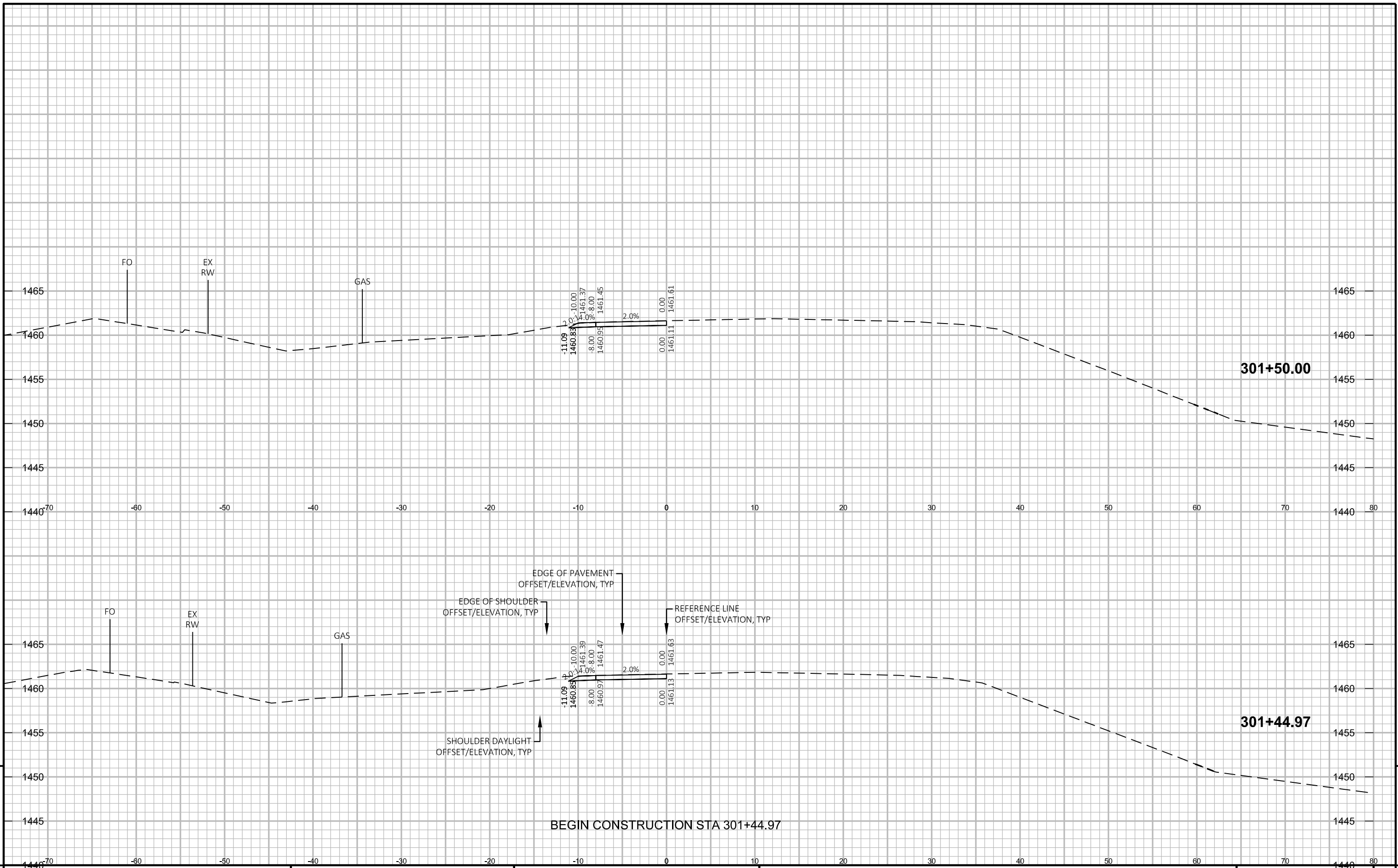
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COUNTY: LANGLADE

CROSS SECTIONS: STH 64

SHEET

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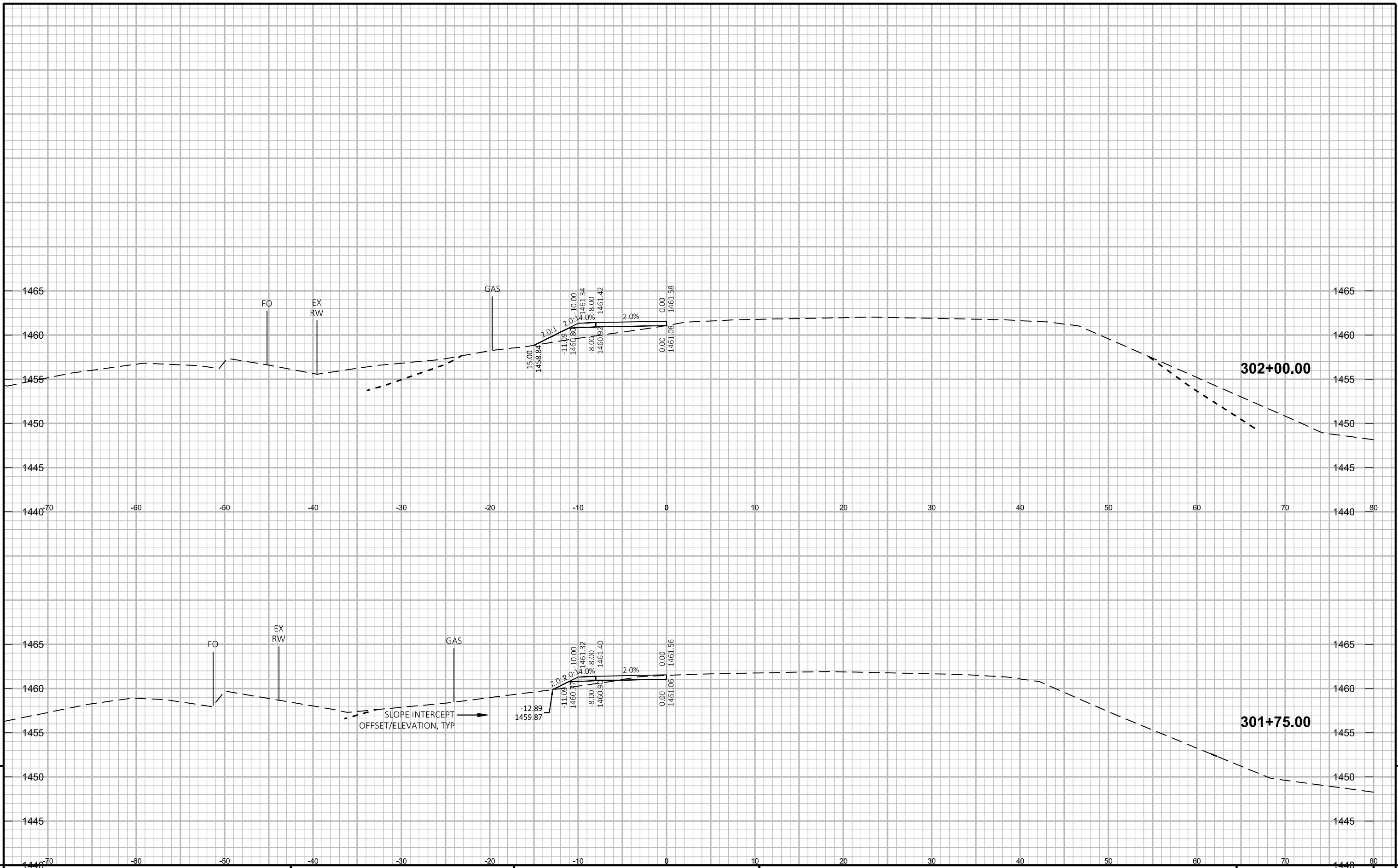


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 DEER CREEK SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-TC.DWG PLOT DATE: 5/24/2021 10:43 AM PLOT BY: JARED HALBUR PLOT NAME:

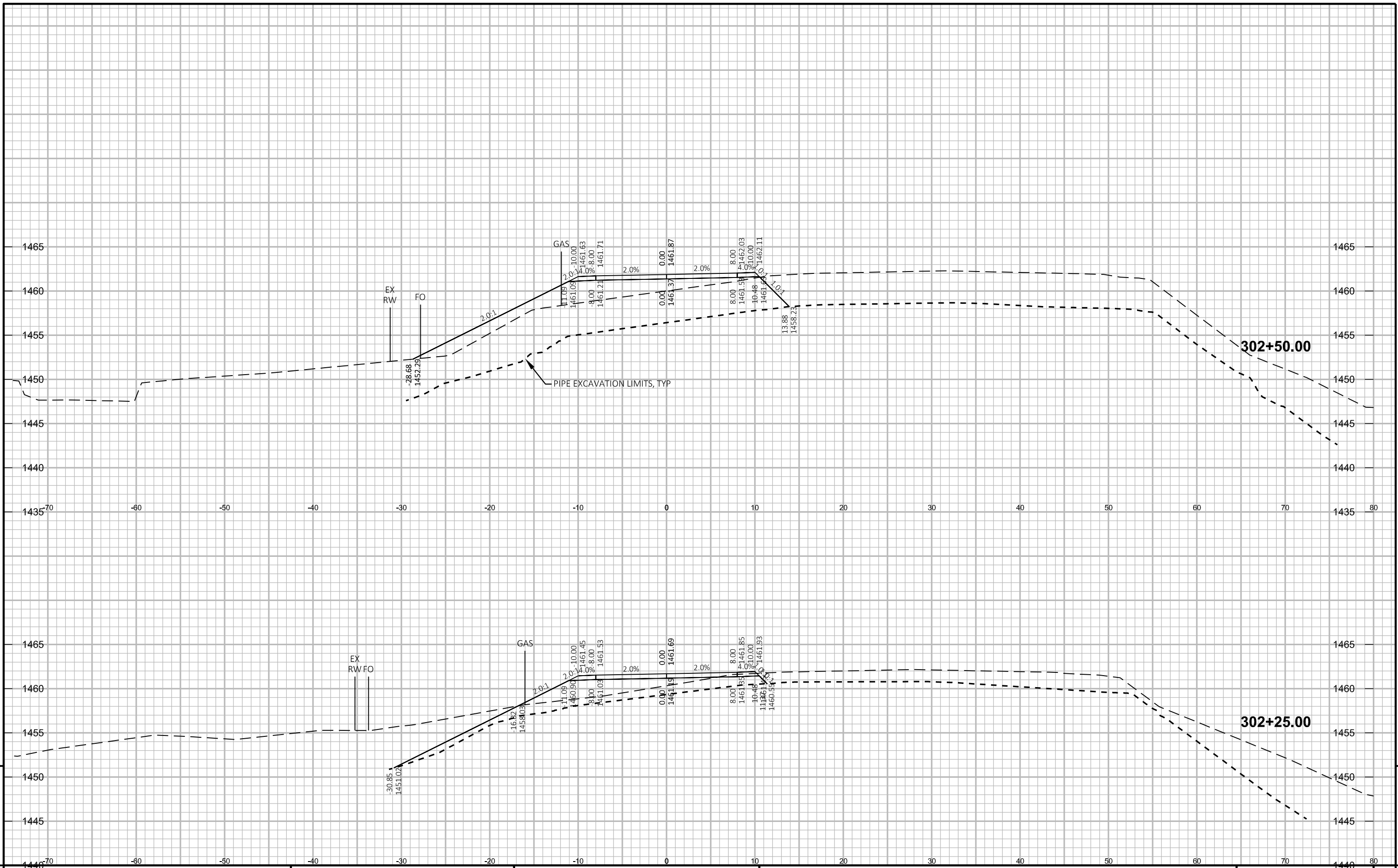


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 DEER CREEK SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-TC.DWG PLOT DATE: 5/24/2021 10:43 AM PLOT BY: JARED HALBUR PLOT NAME: WISDOT/CADDs SHEET 49

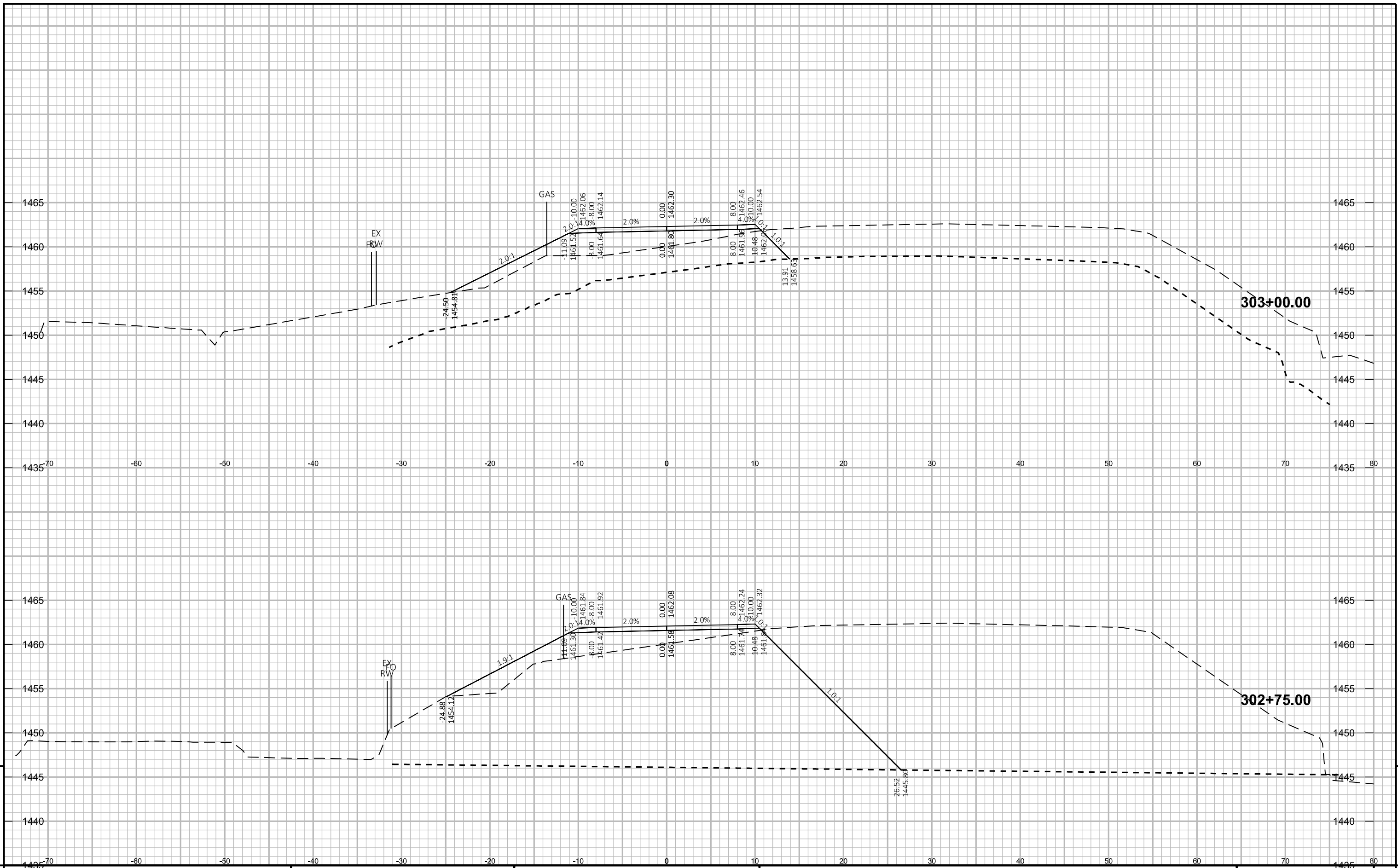


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 DEER CREEK SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-TC.DWG PLOT DATE: 5/24/2021 10:43 AM PLOT BY: JARED HALBUR PLOT NAME:

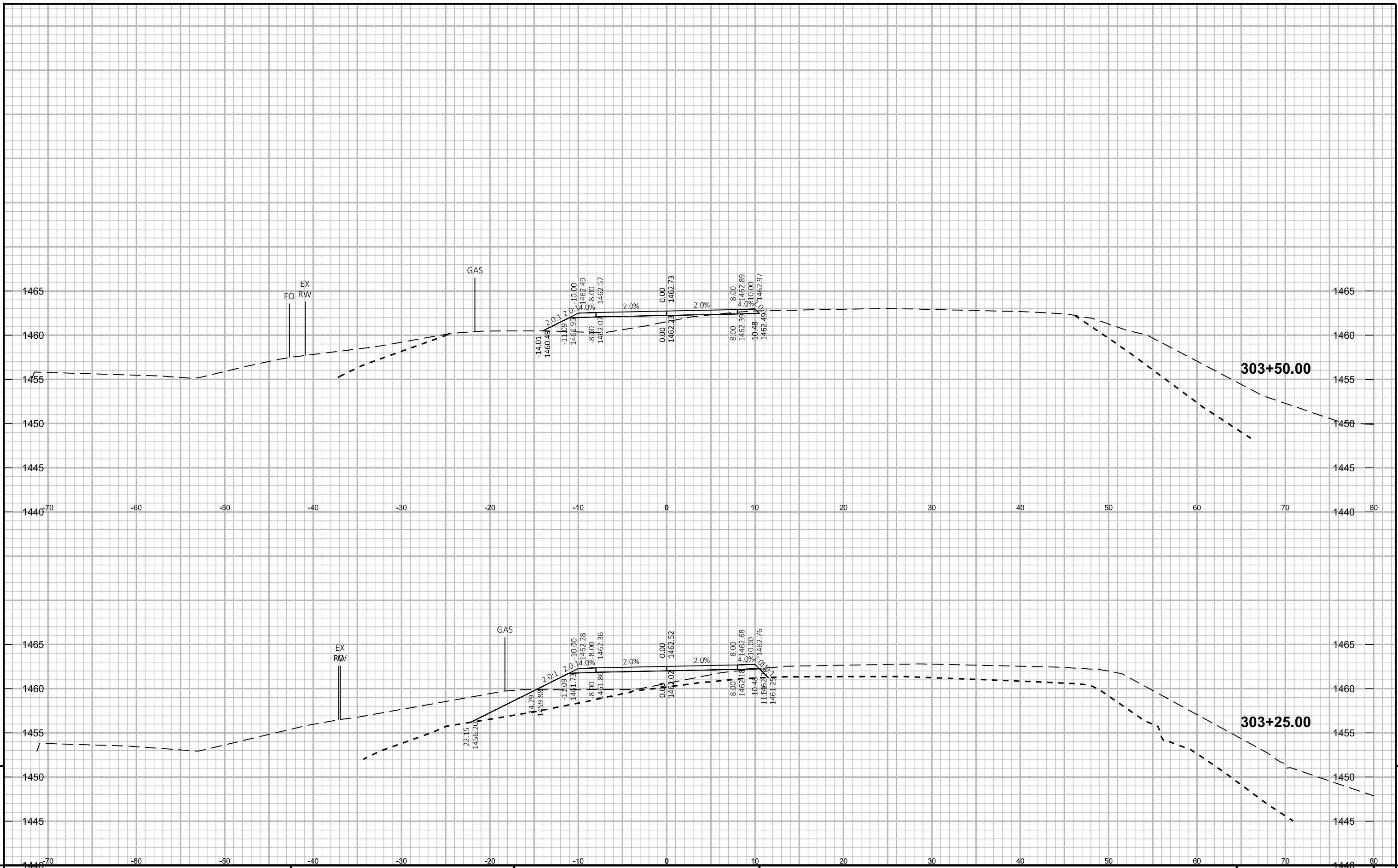


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 DEER CREEK SHEET E

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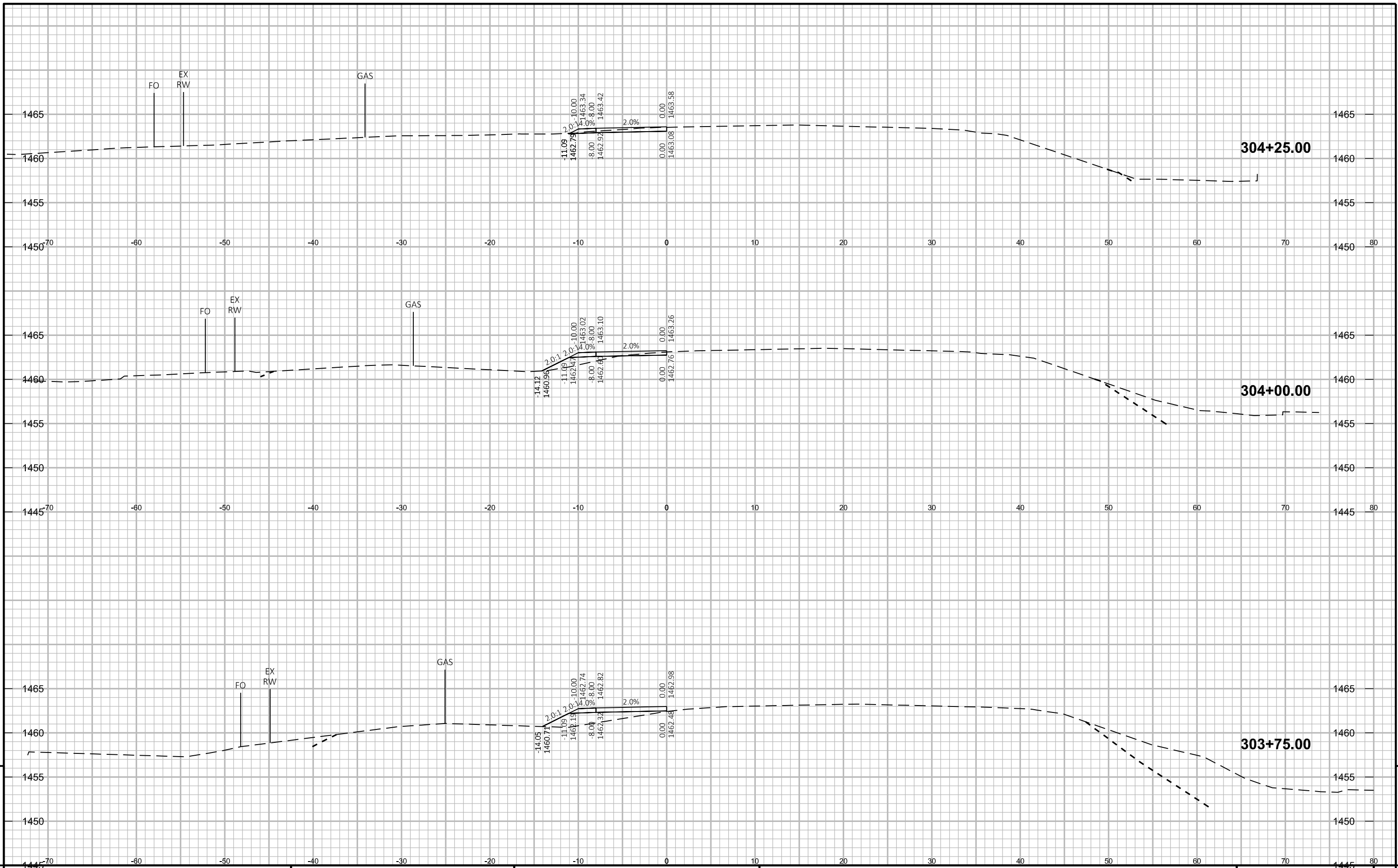


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 DEER CREEK SHEET E

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PROJECT NO: 9140-12-61

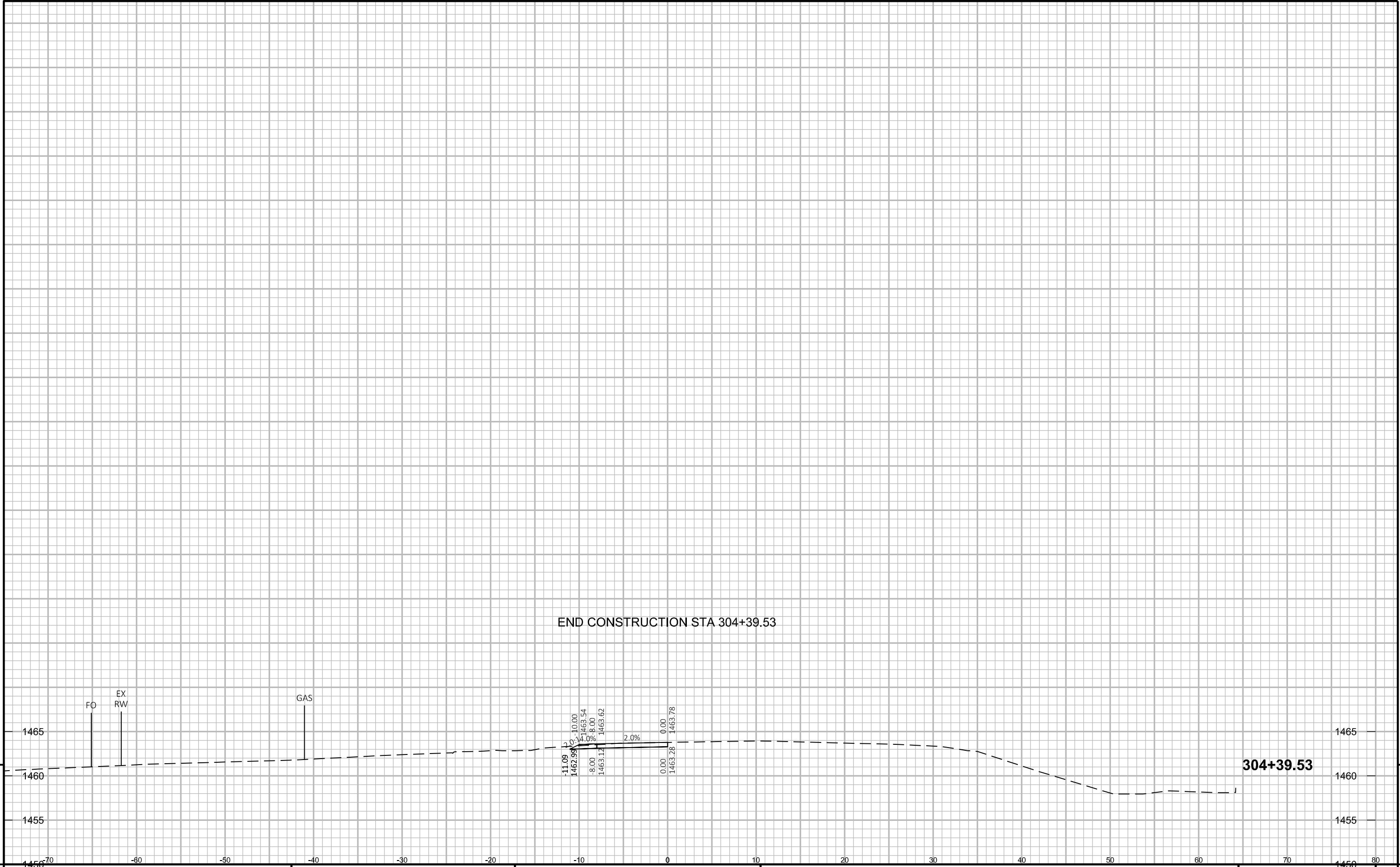
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COUNTY: LANGLADE

CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 DEER CREEK

SHEET

E



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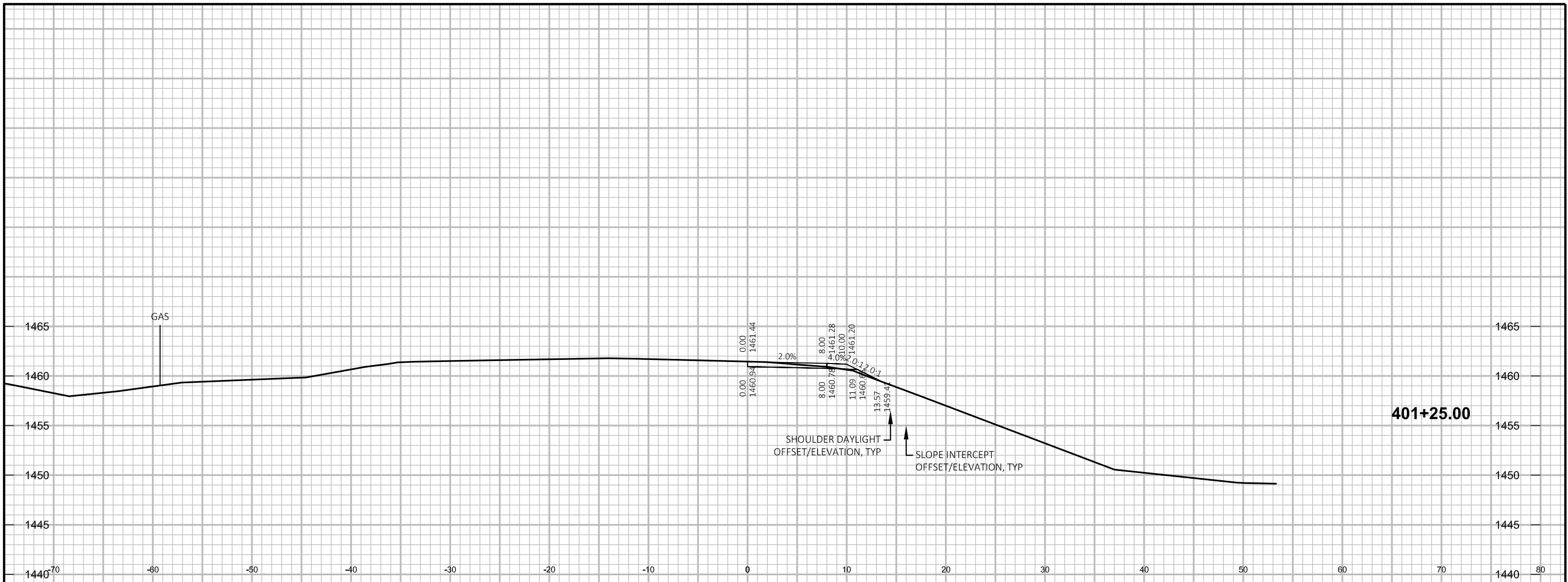
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END CONSTRUCTION STA 304+39.53

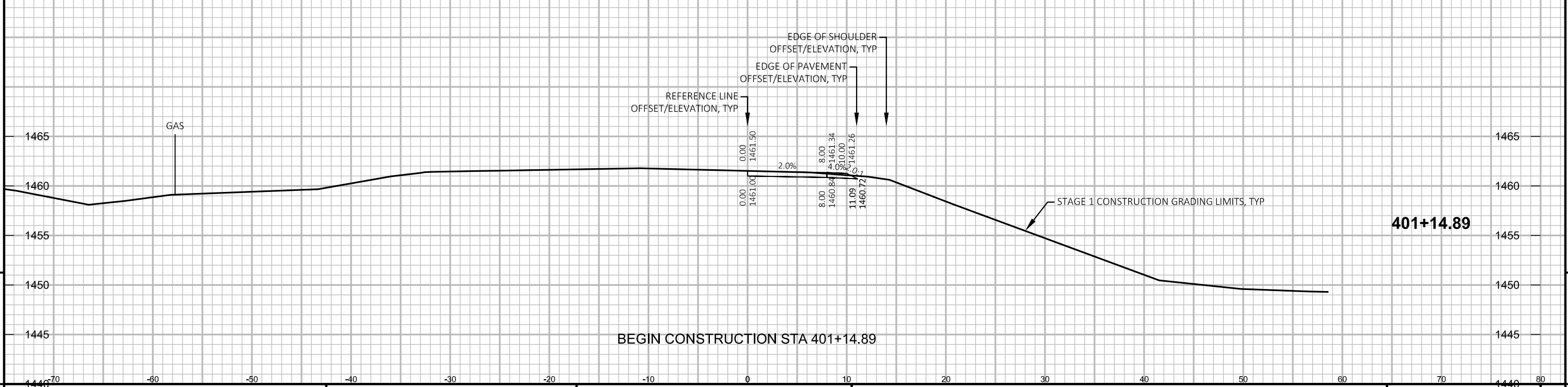
304+39.53

PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 DEER CREEK SHEET E

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401+25.00

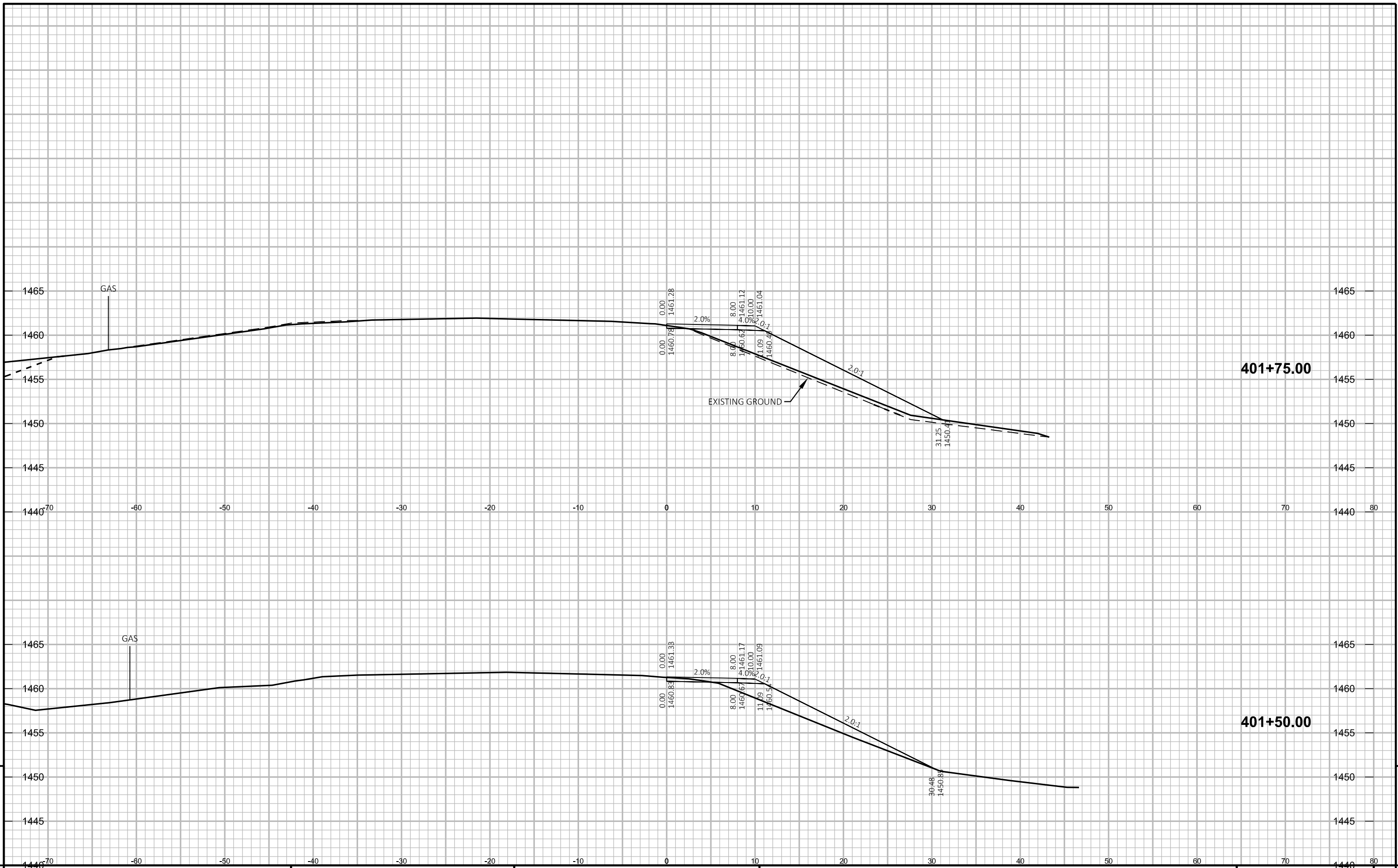


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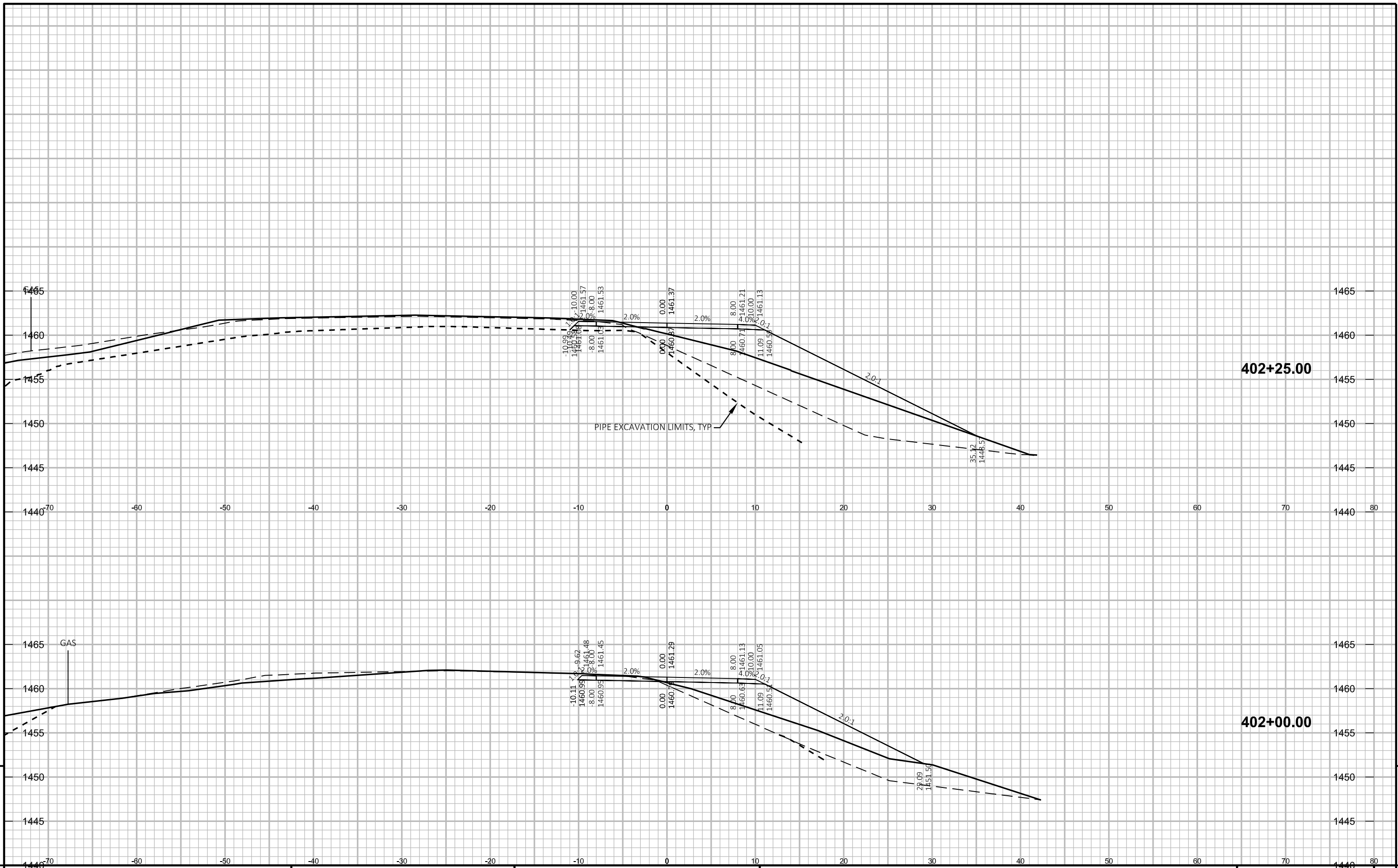
BEGIN CONSTRUCTION STA 401+14.89

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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 2 DEER CREEK SHEET E



PROJECT NO: 9140-12-61

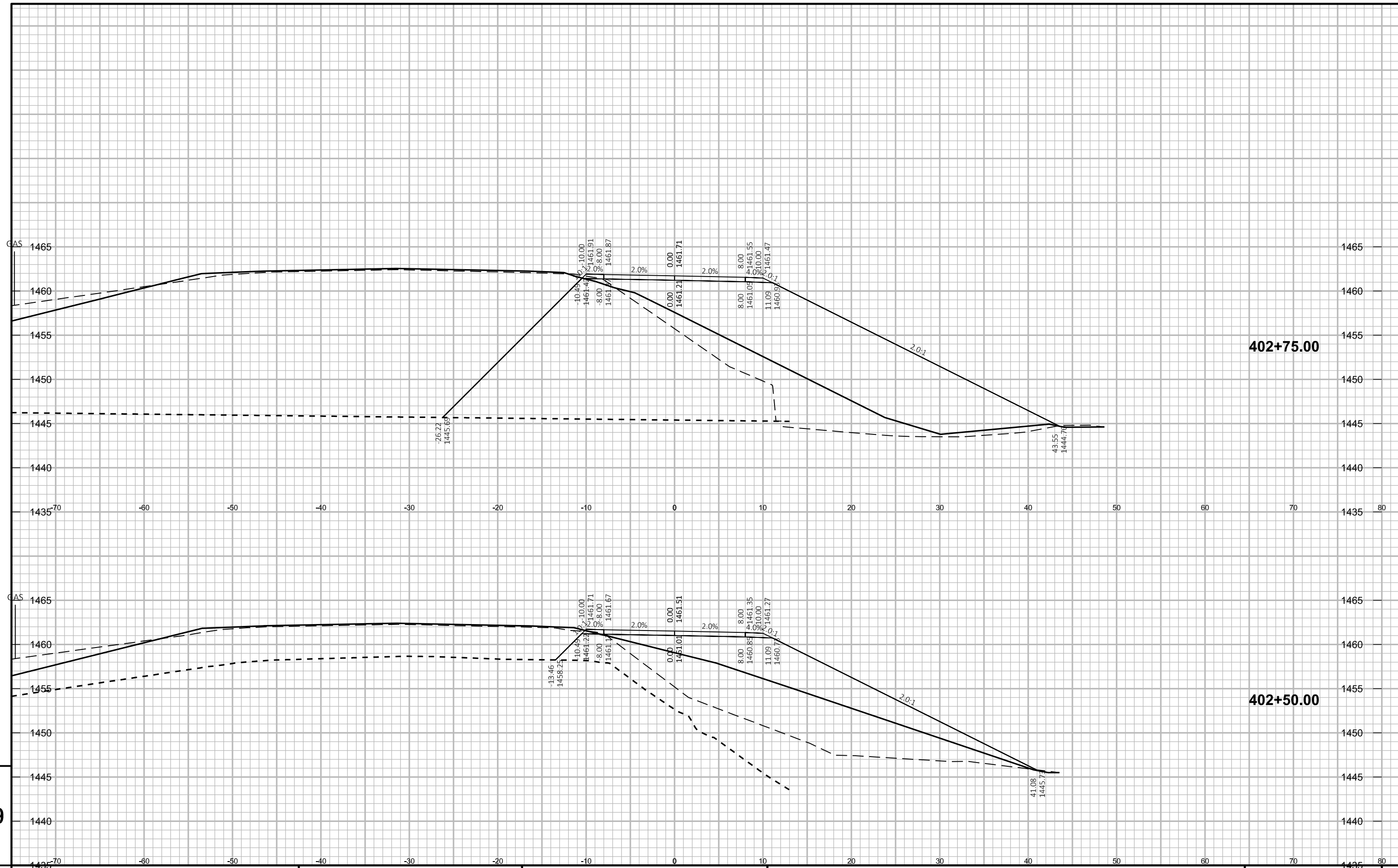
HWY: STH 64

COUNTY: LANGLADE

CROSS SECTIONS: TRAFFIC CONTROL - STAGE 2 DEER CREEK

SHEET

E



PROJECT NO: 9140-12-61

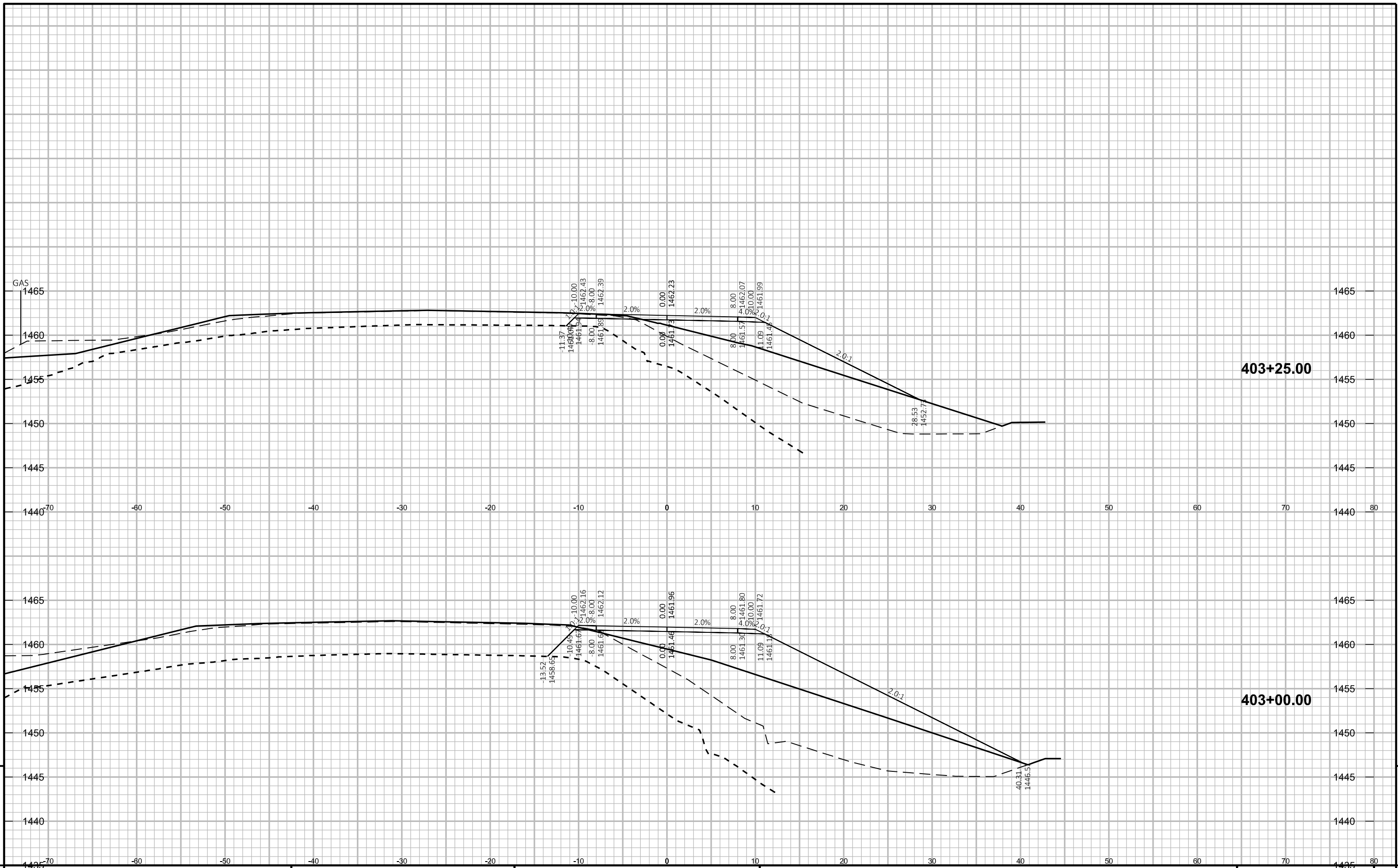
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COUNTY: LANGLADE

CROSS SECTIONS: TRAFFIC CONTROL - STAGE 2 DEER CREEK

SHEET

E



PROJECT NO: 9140-12-61

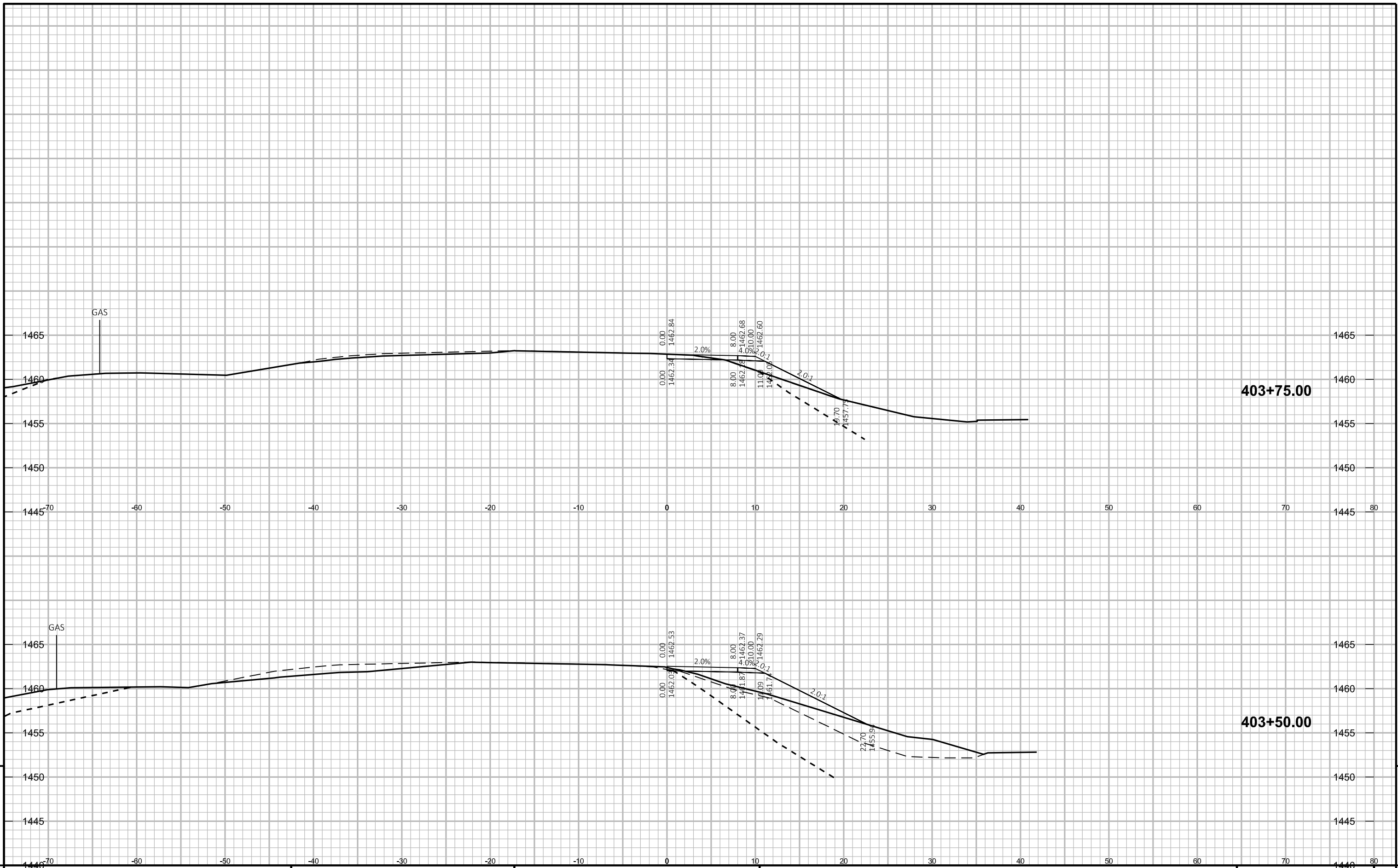
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COUNTY: LANGLADE

CROSS SECTIONS: TRAFFIC CONTROL - STAGE 2 DEER CREEK

SHEET

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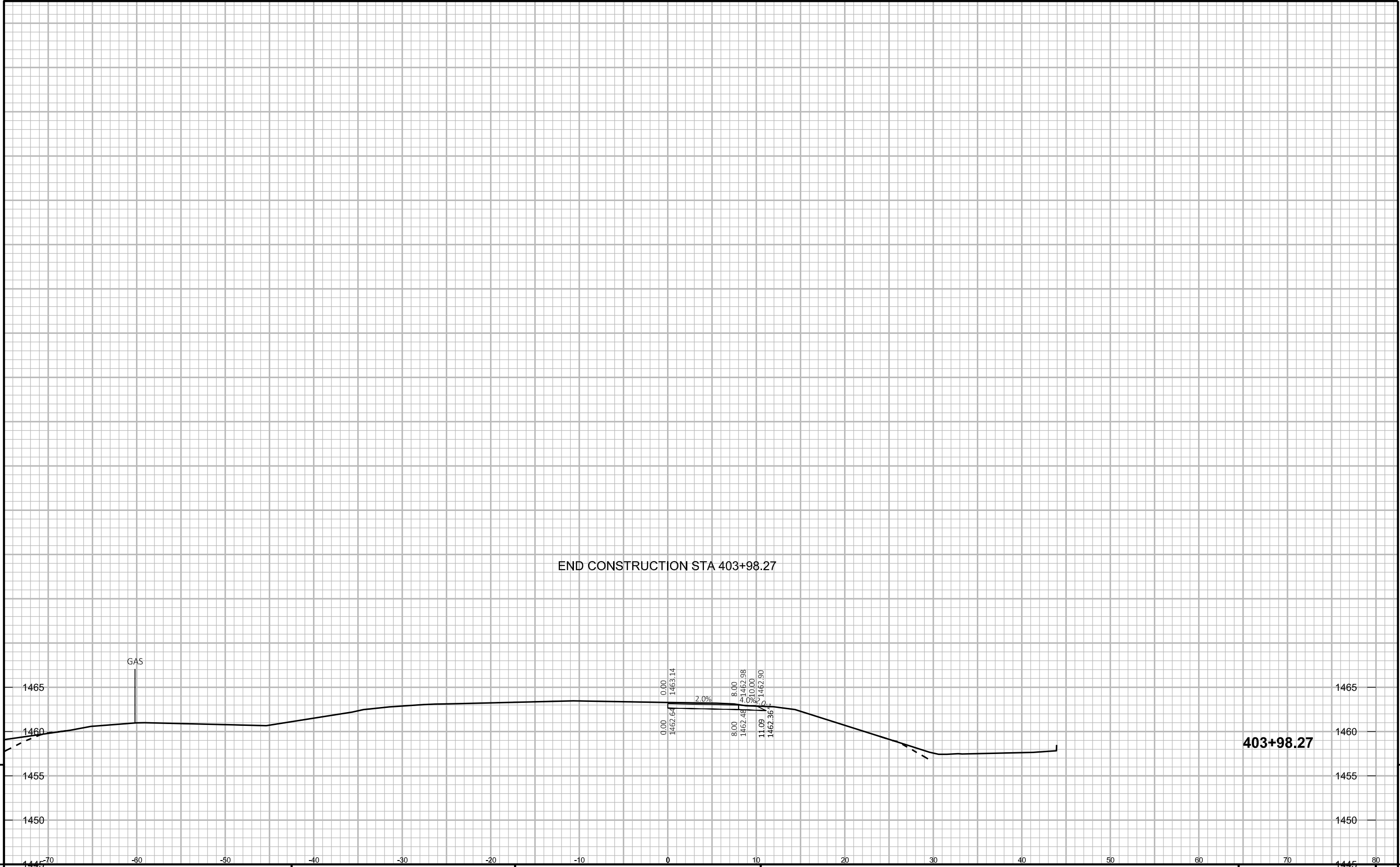


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 2 DEER CREEK SHEET E

FILE NAME: P:\PROJECTS_CURRENT\LANGLADE\WISDOT_NCR-RHINELANDER\STH 64 - CULVERT REPLACEMENT\ACAD\DESIGN\CORRIDOR\STH64-CORR-TC.DWG PLOT DATE: 5/24/2021 10:44 AM PLOT BY: JARED HALBUR PLOT NAME: WISDOT/CADD SHEET 49



END CONSTRUCTION STA 403+98.27

403+98.27

GAS

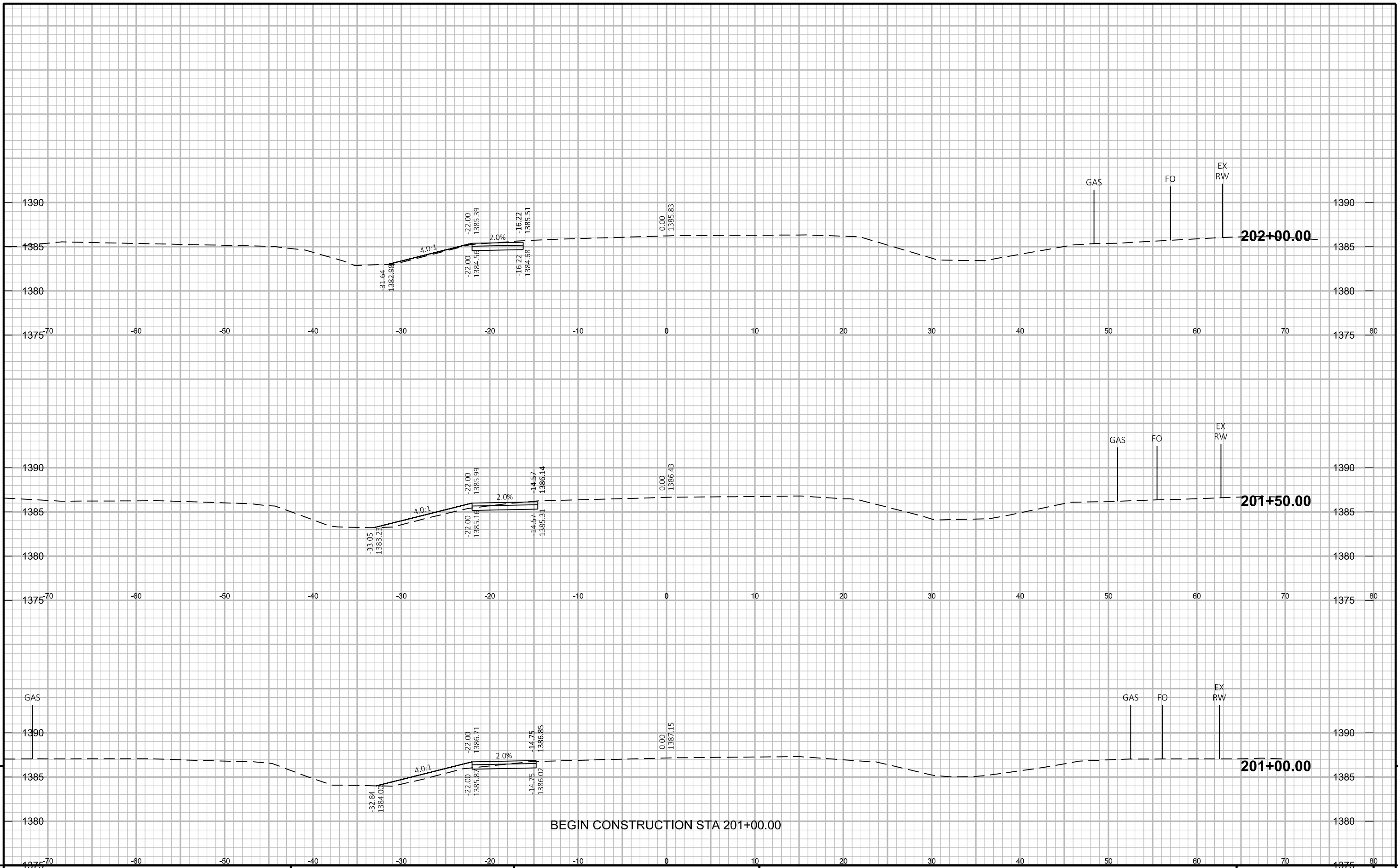
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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 2 DEER CREEK SHEET E

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BEGIN CONSTRUCTION STA 201+00.00

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PROJECT NO: 9140-12-61

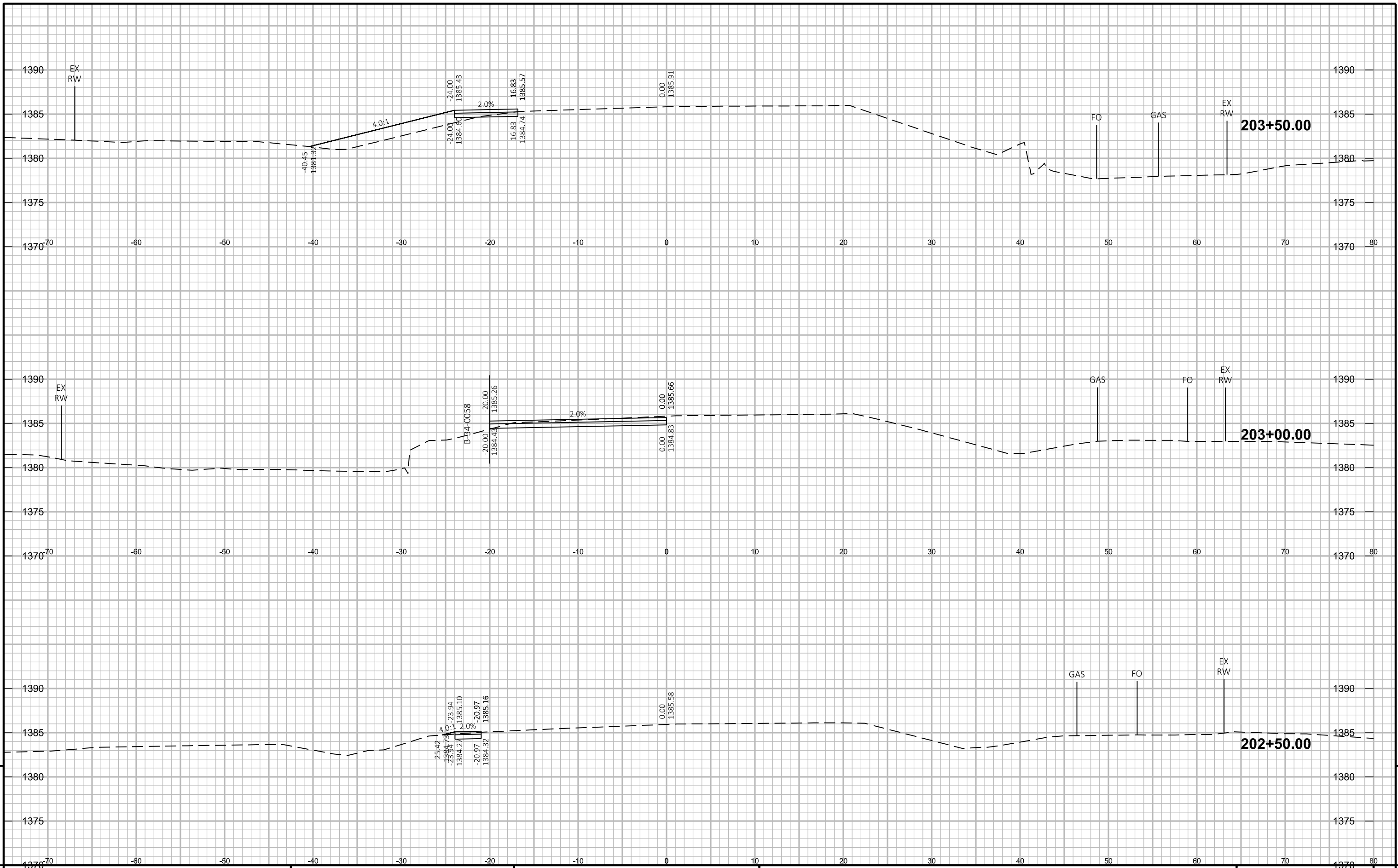
HWY: STH 64

COUNTY: LANGLADE

CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 ELTON CREEK

SHEET

E

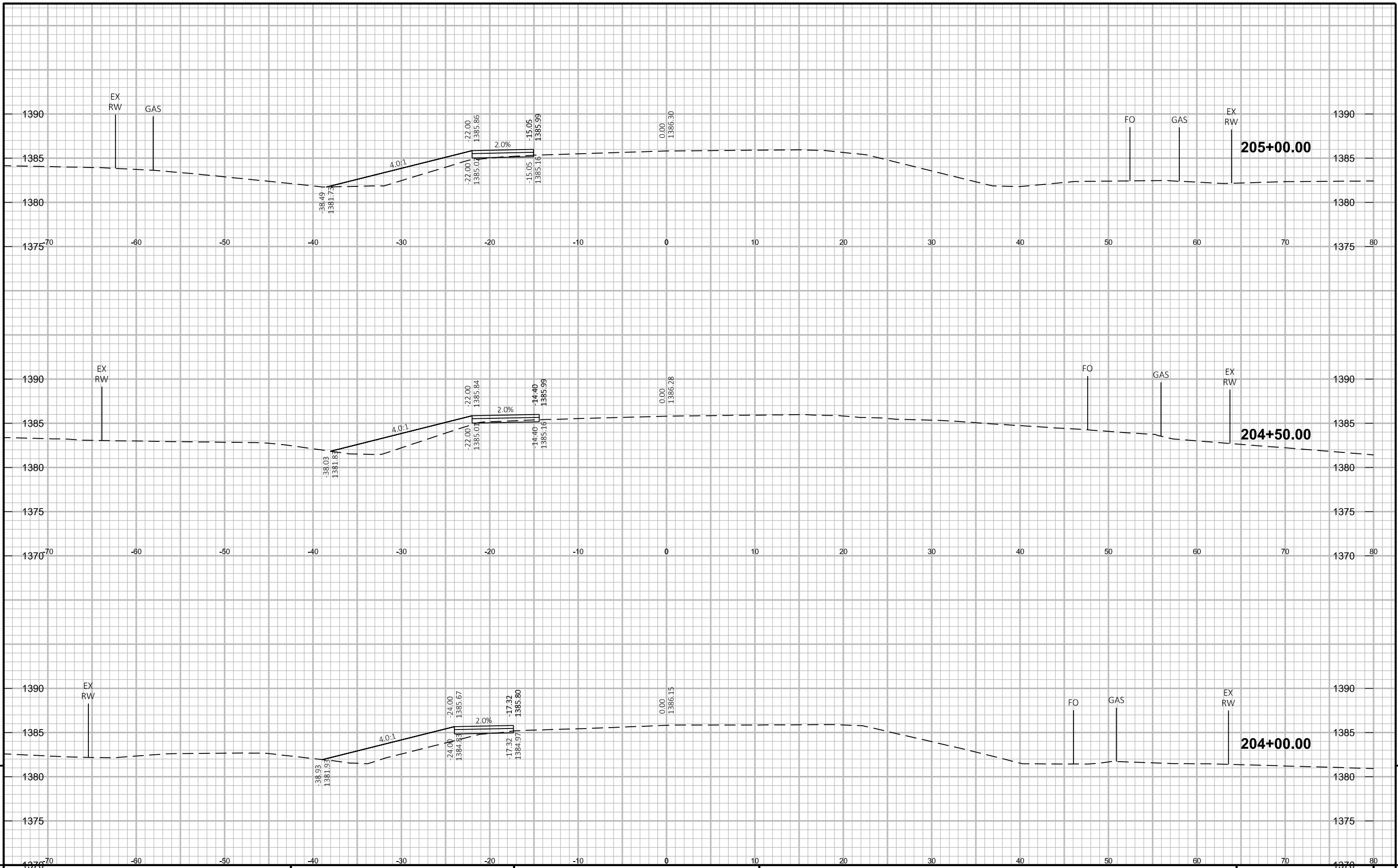


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 ELTON CREEK SHEET E

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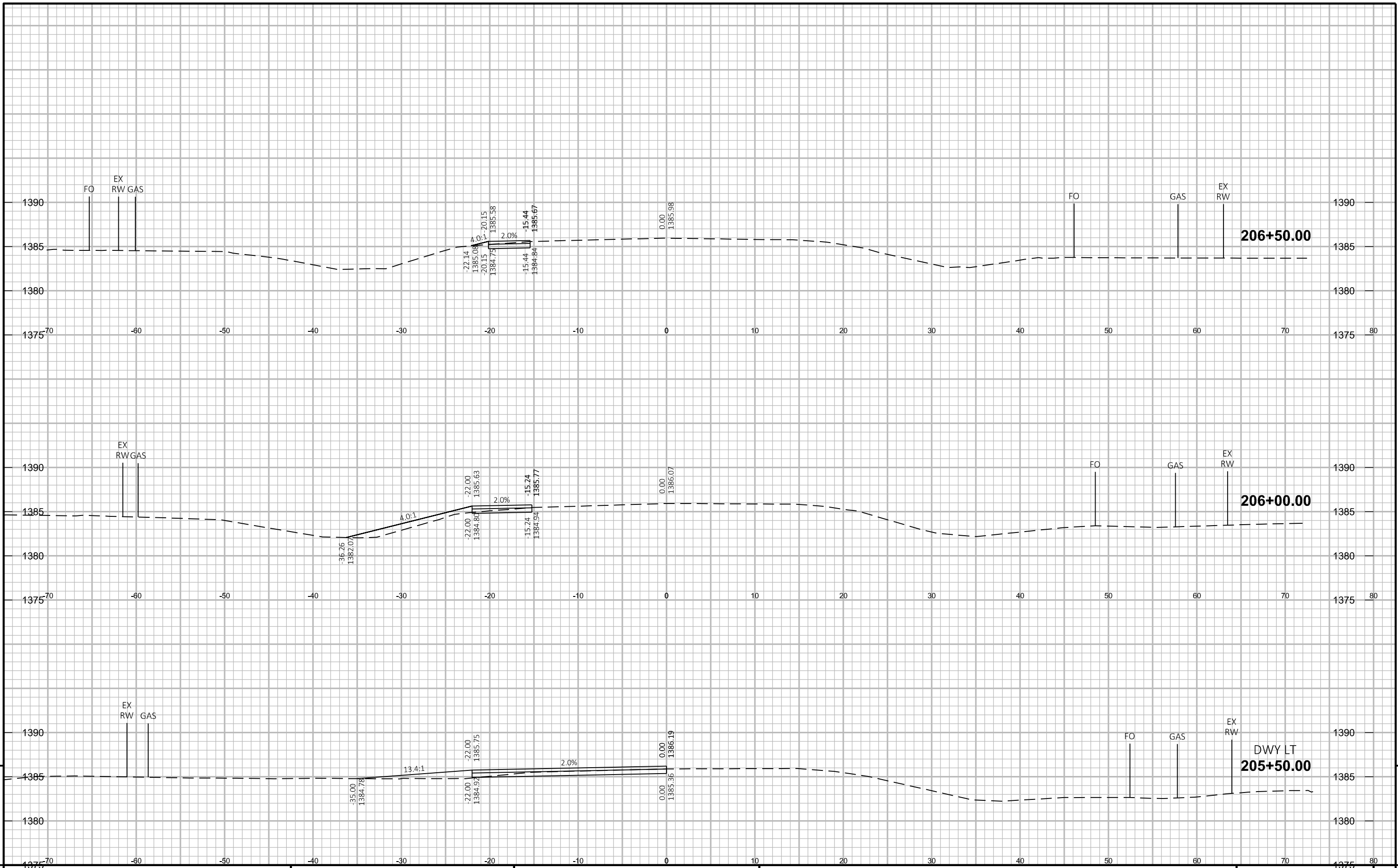


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 ELTON CREEK SHEET E

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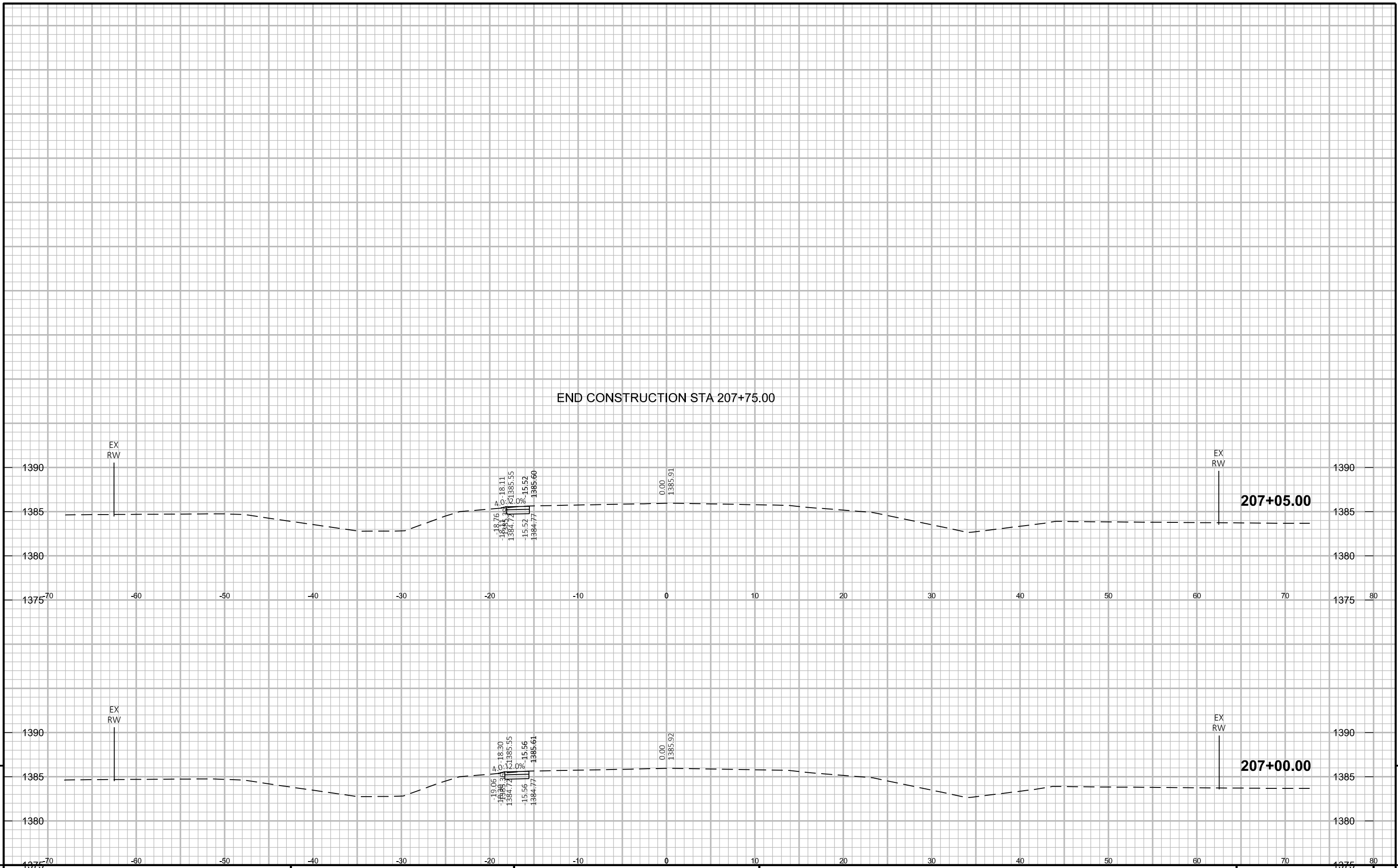


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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 ELTON CREEK SHEET E

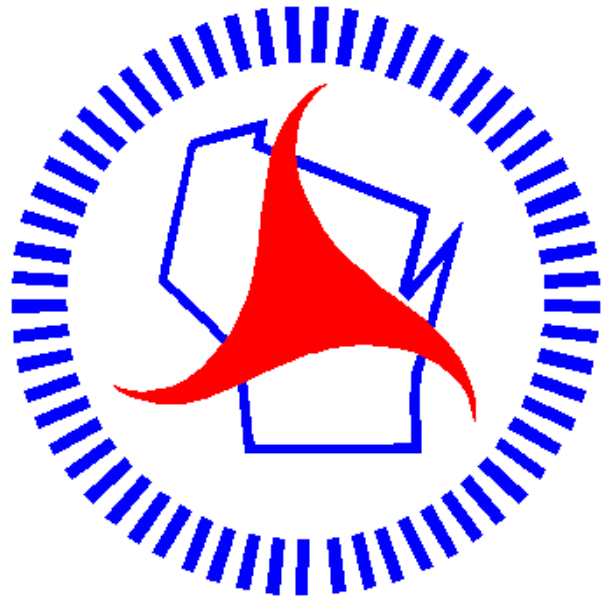
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PROJECT NO: 9140-12-61 HWY: STH 64 COUNTY: LANGLADE CROSS SECTIONS: TRAFFIC CONTROL - STAGE 1 ELTON CREEK SHEET E



Wisconsin Department of Transportation

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