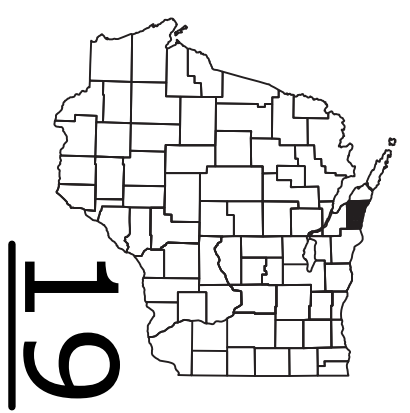


GRE NOVEMBER 2021
 PROJECT ID: 4125-14-60
 WITH: N/A
 COUNTY: KEWAUNEE

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 = 148

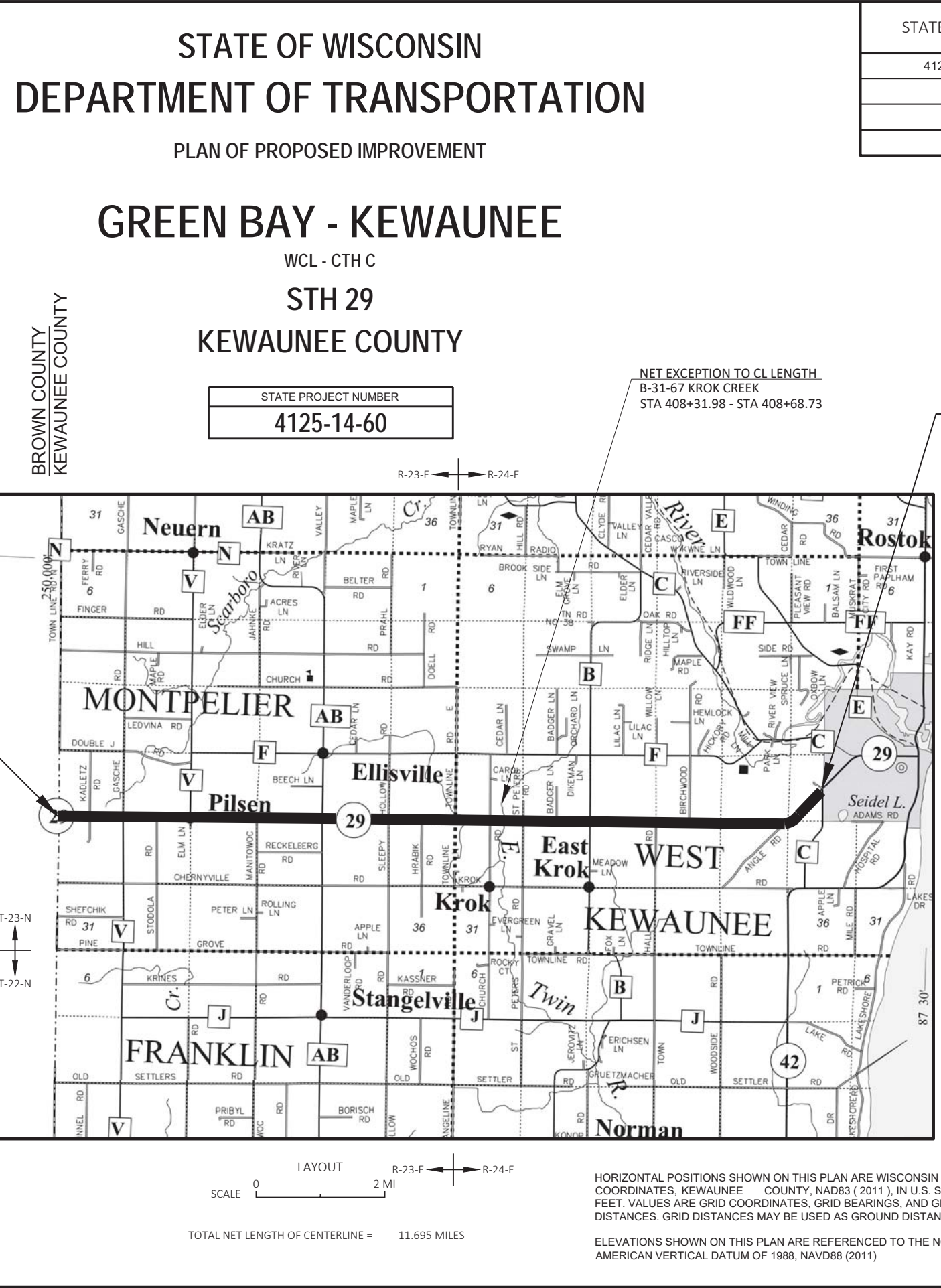


DESIGN DESIGNATION

| | | | |
|--------------|------|---|-----------|
| A.A.D.T. | 2025 | = | 5240 |
| A.A.D.T. | 2045 | = | 6110 |
| D.H.V. | | = | 665 |
| D.D. | | = | 60/40 |
| T.D.H.V. | | = | 9.2% |
| DESIGN SPEED | | = | 55 mph |
| ESALS | | = | 1,400,000 |

CONVENTIONAL SYMBOLS

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

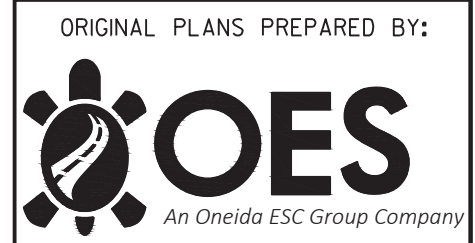


| STATE PROJECT | FEDERAL PROJECT | |
|---------------|-----------------|----------|
| | PROJECT | CONTRACT |
| 4125-14-60 | WISC 2022015 | 1 |
| | | |
| | | |

STATE PROJECT NUMBER
4125-14-60

NET EXCEPTION TO CL LENGTH
 B-31-67 KROK CREEK
 STA 408+31.98 - STA 408+68.73

END PROJECT
 STA 672+36.00



DATE: 6/28/21 *Chad R. Even*
 (Signature)

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

PREPARED BY

| | |
|---------------------|------------------------------|
| Surveyor | ONEIDA ENGINEERING SOLUTIONS |
| Designer | ONEIDA ENGINEERING SOLUTIONS |
| Project Manager | PAUL BRAUER |
| Regional Examiner | NE REGION |
| Regional Supervisor | TAMMY RABE |

APPROVED FOR THE DEPARTMENT

DATE: 6/28/2021 *Paul Brauer, PE*
 (Signature)

LAYOUT SCALE 0 2 MI

TOTAL NET LENGTH OF CENTERLINE = 11.695 MILES

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

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD88 (2011)

UTILITIES

AT&T WISCONSIN - COMMUNICATION LINE
205 SOUTH JEFFERSON STREET
GREEN BAY, WI 54301
ATTN: SHEA GORZELANCZYK
PHONE: (920) 433-4250
EMAIL: SG2528@ATT.COM

ATC MANAGEMENT - ELECTRICITY TRANSMISSION
5303 FEN OAK DRIVE
MADISON, WI 53718
ATTN: DOUG VOSBERG
PHONE: (608) 877-7650
EMAIL: DVOSBERG@ATCLLC.COM

CENTURY LINK - COMMUNICATION LINE
224 INDUSTRIAL DRIVE
NORTH PRAIRIE, WI 53153
ATTN: MATT GUNDERSON
PHONE: (920) 837-2334
EMAIL: MATT.GUNDERSON@CENTURYLINK.COM

CHARTER COMMUNICATIONS - COMMUNICATION LINE
3520 E DESTINATION DRIVE
APPLETON, WI 54915
ATTN: VINCE ALBIN
PHONE: (920) 378-0444
EMAIL: VINCE.ALBIN@CHARTER.COM

CITY OF KEWAUNEE - SEWER
401 FIFTH ST.
KEWAUNEE, WI 54216
ATTN: TONY SINKULA
PHONE: (920) 255-1553
TSINKULA@CITYOFKEWAUNEE.ORG

CITY OF KEWAUNEE - WATER
401 FIFTH ST.
KEWAUNEE, WI 54216
ATTN: TONY SINKULA
PHONE: (920) 255-1553
TSINKULA@CITYOFKEWAUNEE.ORG

NET LEC, LLC. - COMMUNICATION LINE
1345B NORTH ROAD
GREEN BAY, WI 54313
ATTN: DENNIS LAFAVE
PHONE: (920) 619-9774
EMAIL: DLAFAVE@MI-TECH.US

WISCONSIN PUBLIC SERVICE CORPORATION - ELECTRICITY
700 NORTH ADAMS STREET
PO BOX 19001
GREEN BAY, WI 54307-9001
ATTN: RYAN VOSKUIL
PHONE: (920) 655-1584
EMAIL: RYAN.VOSKUIL@WISCONSINPUBLICSERVICE.COM

WISCONSIN PUBLIC SERVICE CORPORATION - GAS
2850 S. ASHLAND AVE
GREEN BAY, WI 54304
ATTN: JIM EIDEN
PHONE: (920) 676-8068
EMAIL: JAMES.EIDEN@WISCONSINPUBLICSERVICE.COM

ORDER OF SECTION 2 SHEETS

GENERAL NOTES
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
PLAN DETAILS
MARKING AND SIGNING
TRAFFIC CONTROL

DESIGN CONSULTANT

ONEIDA ENGINEERING SOLUTIONS, LLC (OES)
2555 PACKERLAND DRIVE
GREEN BAY, WI 54313
ATTN: CHAD EVEN, P.E.
PHONE: (920) 884-3975
EMAIL: CEVEN@OESLLC.COM

REGIONAL SURVEY COORDINATOR

WISCONSIN DEPARTMENT OF TRANSPORTATION - NE REGION
944 VANDERPERREN WAY
GREEN BAY, WI 54304
ATTN: CORMAC MCINNIS, P.L.S.
PHONE: (920) 492-5638
EMAIL: CORMAC.MCINNIS@DOT.WI.GOV

WISDOT PROJECT MANAGER

WISCONSIN DEPARTMENT OF TRANSPORTATION
NE REGION
944 VAN DER PERREN WAY
GREEN BAY, WI 54304
ATTN: PAUL BRAUER, P.E.
PHONE: (920) 492-5629
EMAIL: PAUL.BRAUER@DOT.WI.GOV

WDNR LIAISON

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
WDNR NORTHEAST REGION HQ
2984 SHAWANO AVENUE
GREEN BAY, WI 54313-6727
ATTN: MATT SCHAEVE
PHONE: (920) 366-1544
EMAIL: MATTHEW.SCHAEVE@WISCONSIN.GOV



GENERAL NOTES

THERE ARE UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH A CALL TO "DIGGERS HOTLINE" AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THE AREA. NOT ALL UTILITIES ARE MEMBERS OF DIGGERS HOTLINE.

COORDINATE SURVEY MONUMENT WITH THE NE REGION SURVEY COORDINATOR.

PAVING LIMITS AT INTERSECTIONS ARE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

RIGHT-OF-WAY SHOWN ON THE PLANS IS APPROXIMATE.

CULVERTS SHALL BE REPLACED AT THE SAME ELEVATION. CONTRACTOR SHALL VERIFY DEPTH OF CULVERTS PRIOR TO REMOVING OLD CULVERT.

TEMPORARY STORAGE OF ANY EQUIPMENT OR EXCAVATED MATERIAL WILL NOT BE PERMITTED IN WETLANDS, FLOODWAY OR FLOODPLAIN OF ANY WETLANDS, UNLESS APPROVED BY THE ENGINEER.

PLACE EROSION CONTROL DEVICES IN SEQUENCE WITH CONSTRUCTION OPERATIONS OR AS DETERMINED BY THE ENGINEER. EROSION CONTROL FEATURES ARE SHOWN IN APPROXIMATE LOCATIONS WITH EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER.

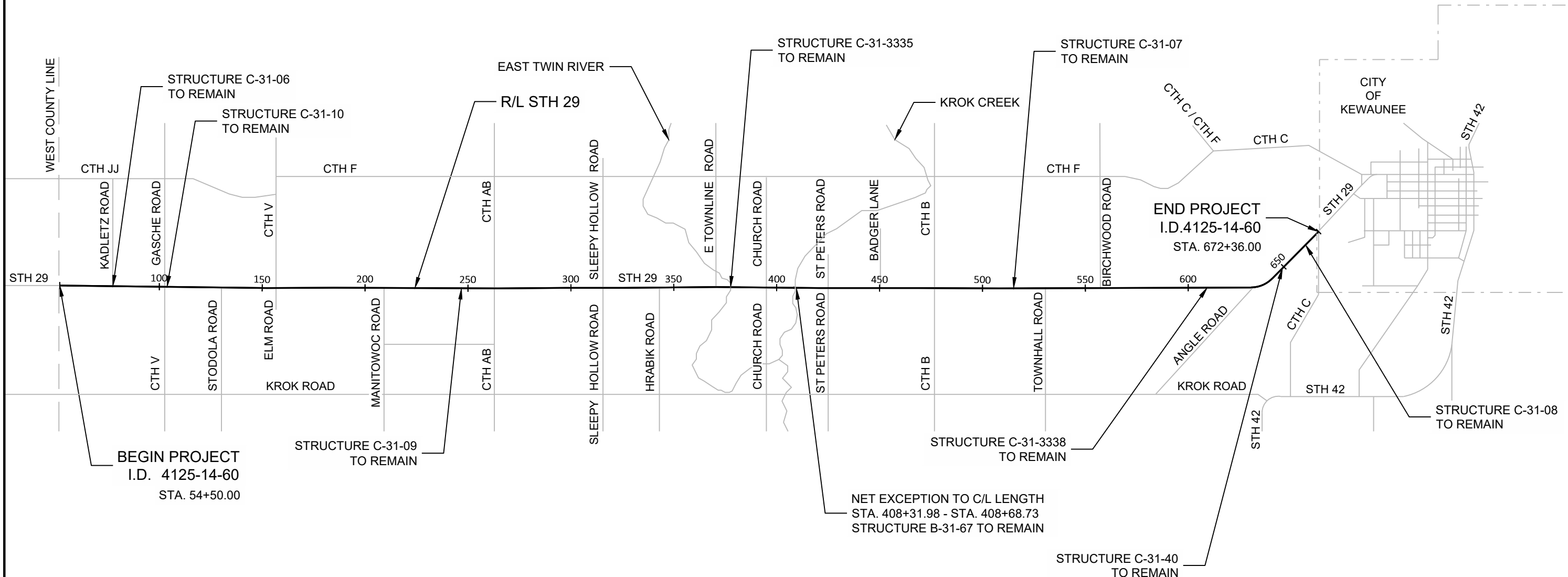
DO NOT USE FERTILIZER WITHIN 20 FEET OF NAVIGABLE WATERWAYS OR WETLANDS.

PLACE TOPSOIL OR SALVAGED TOPSOIL IN ALL GRADED AREAS AS DESIGNATED BY THE ENGINEER IMMEDIATELY AFTER GRADING HAS BEE COMPLETED. SEE, MULCH AND FERTILIZE ALL AREAS WITHIN 5 DAYS AFTER PLACEMENT OF TOPSOIL OR SALVAGED TOPSOIL. RESTORATION ITEMS ARE INCIDENTAL TO OTHER ITEMS WITHIN THIS CONTRACT.

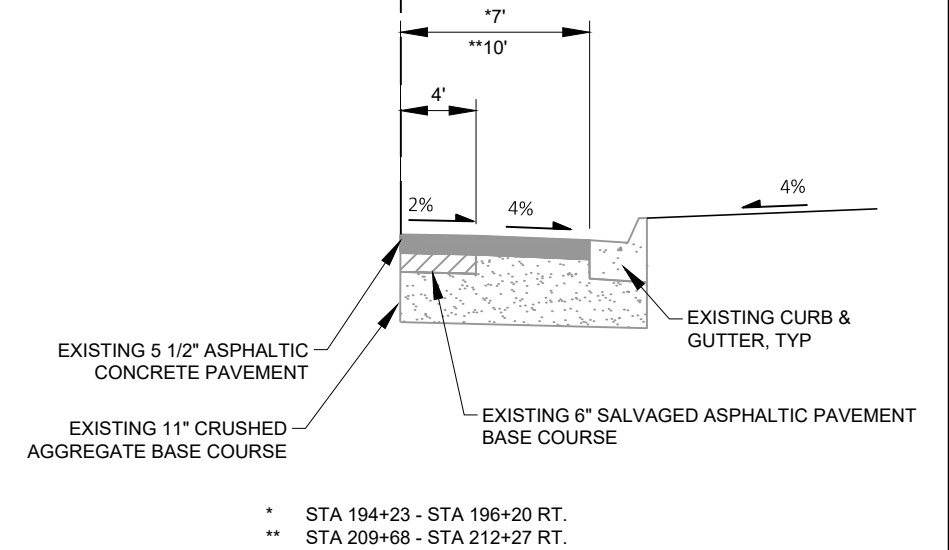
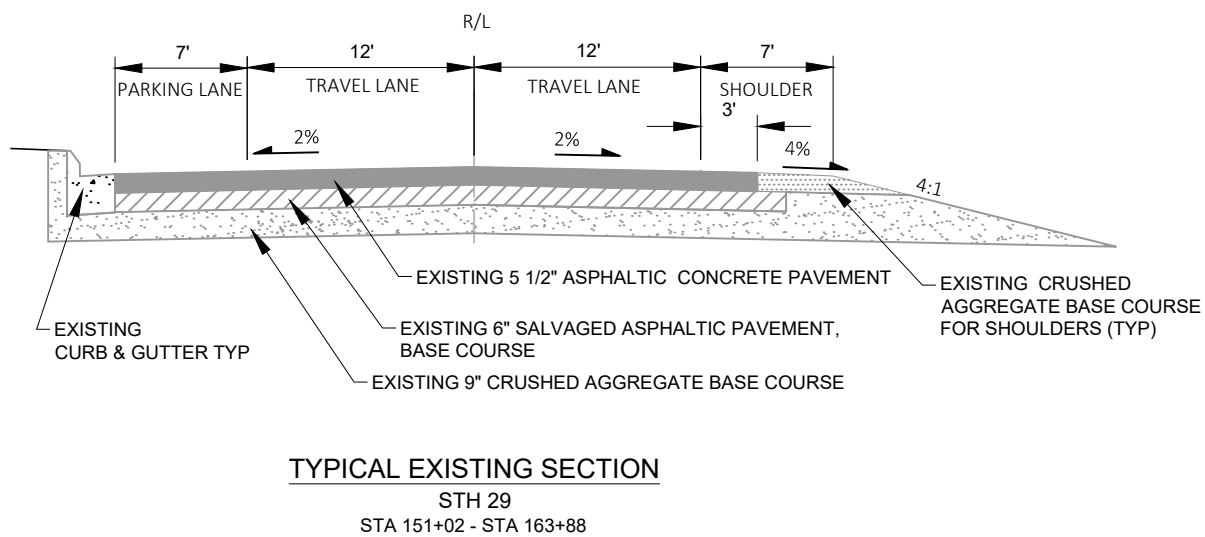
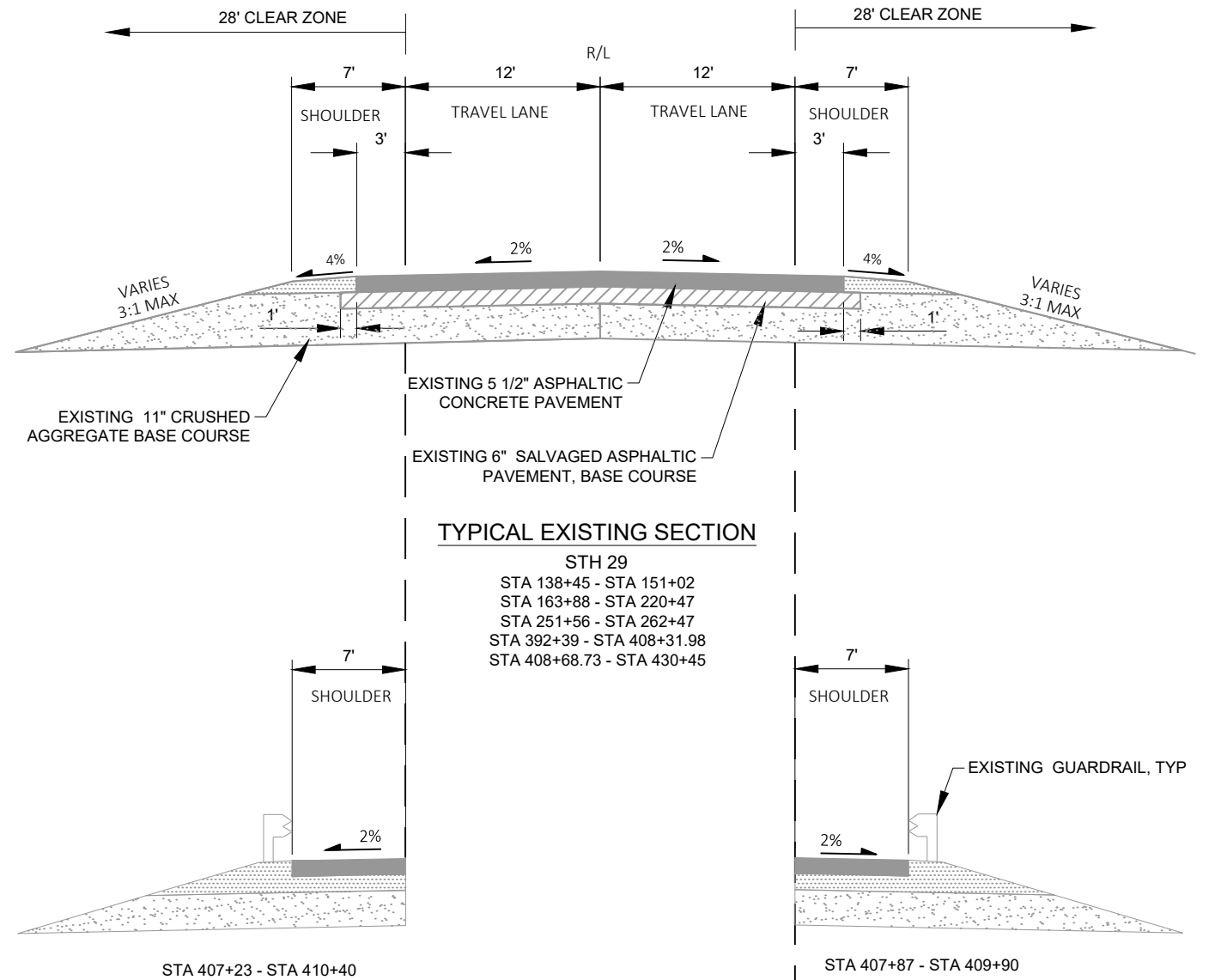
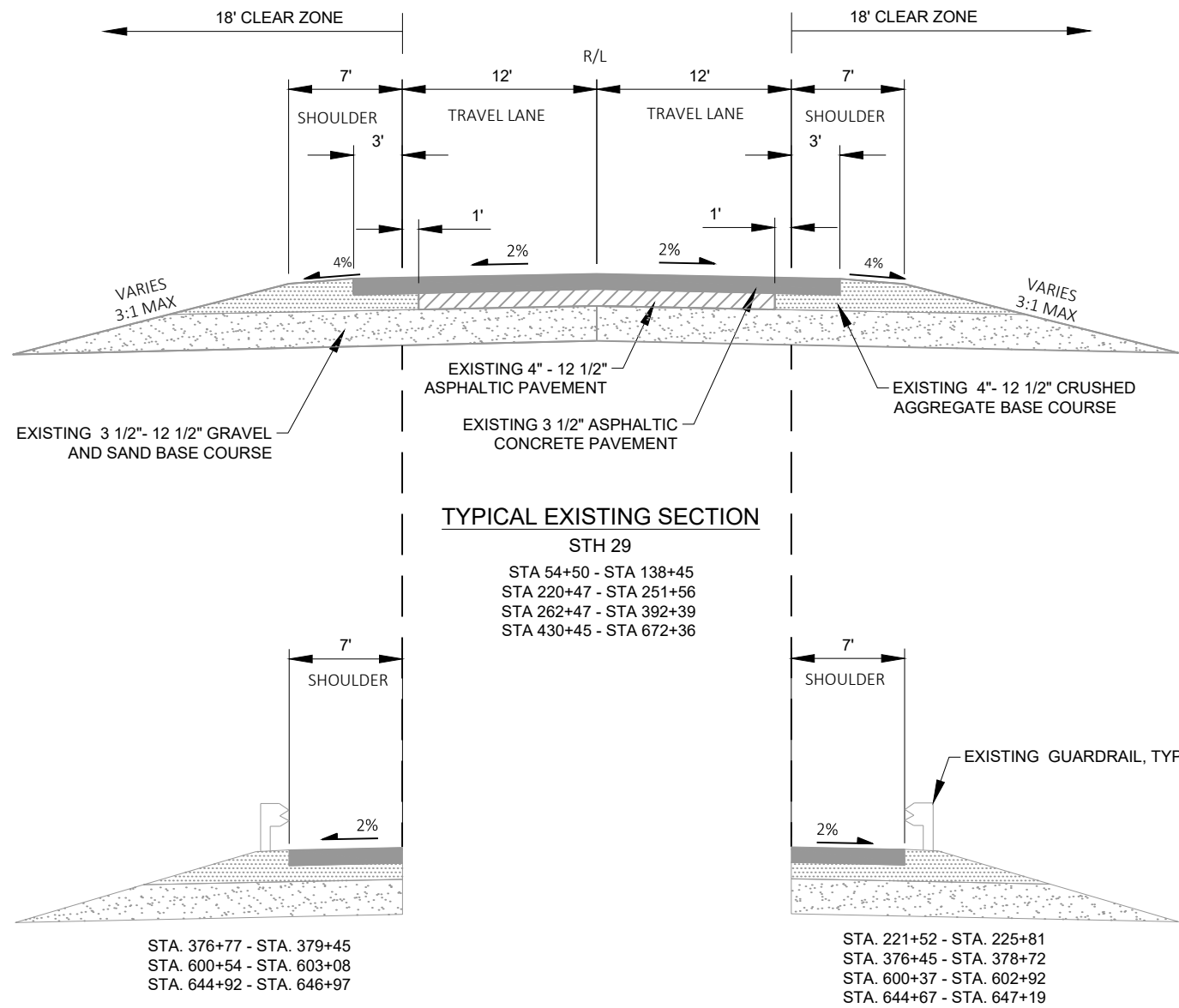
NO TREES OR SHRUBS SHALL BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.

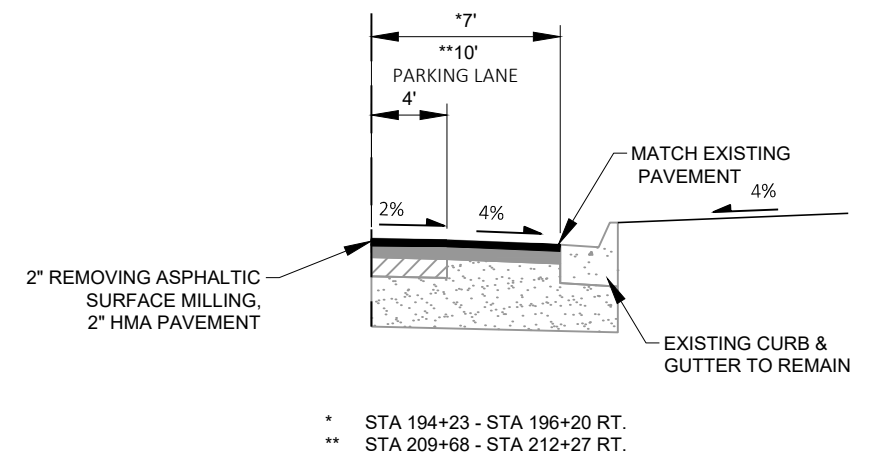
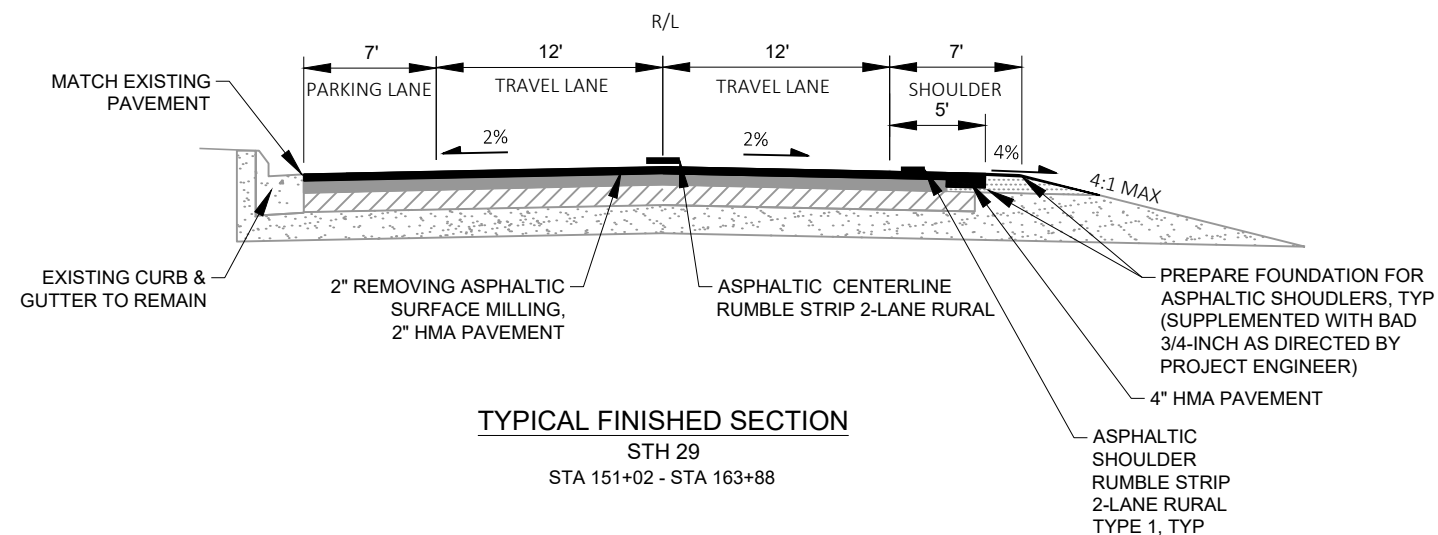
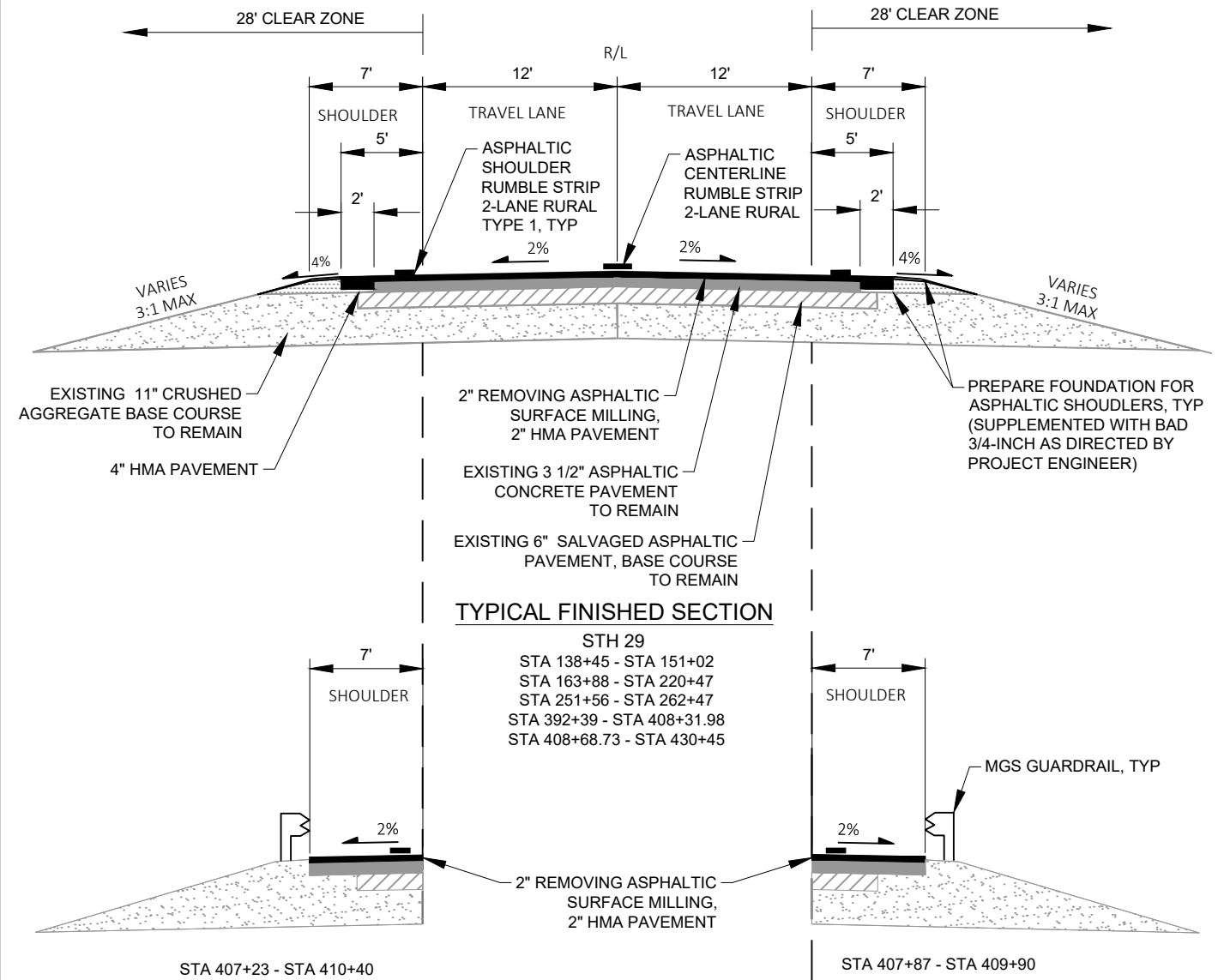
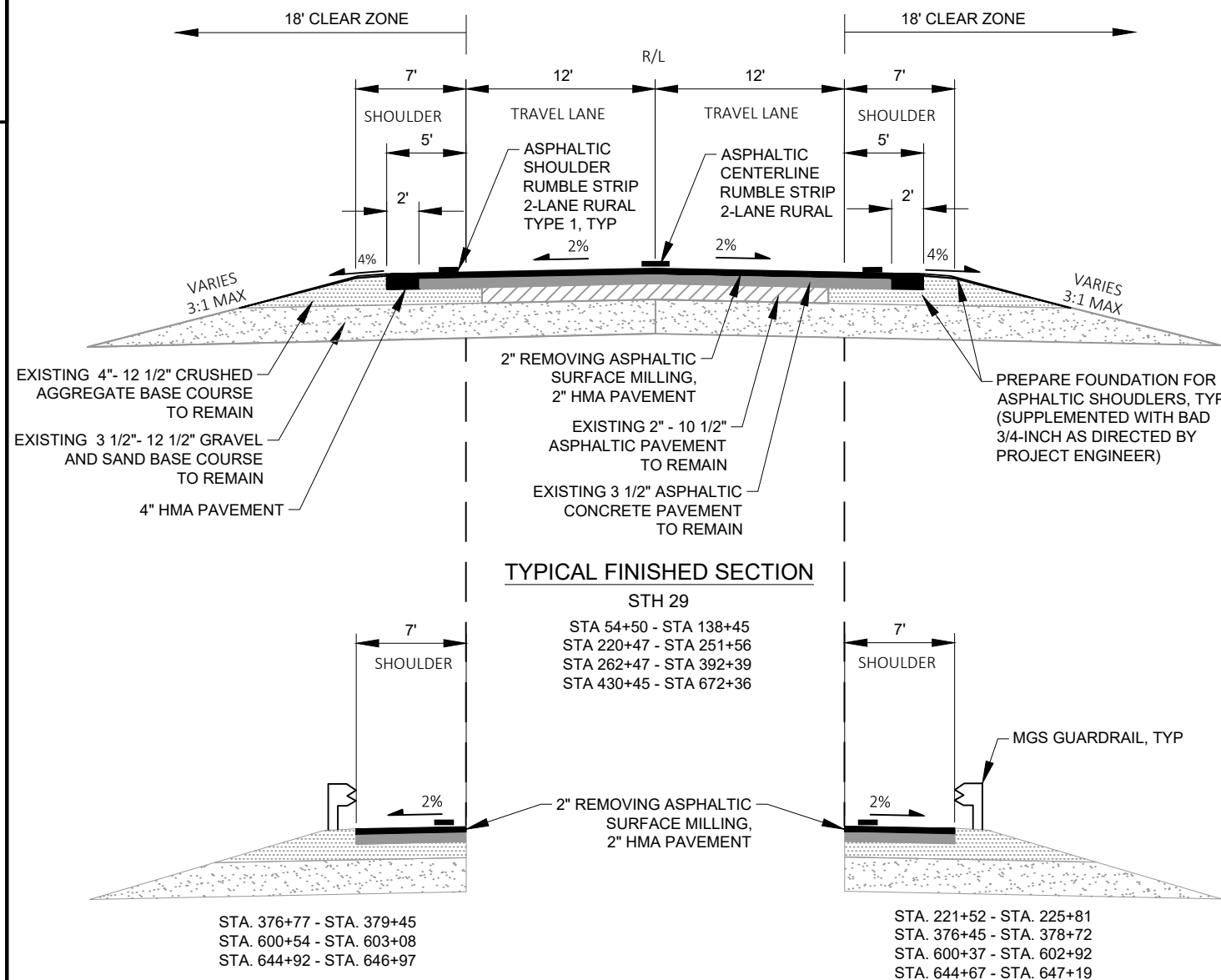
CONSTRUCT HMA PAVEMENT WITH THE FOLLOWING LAYERS AND GRADATIONS:

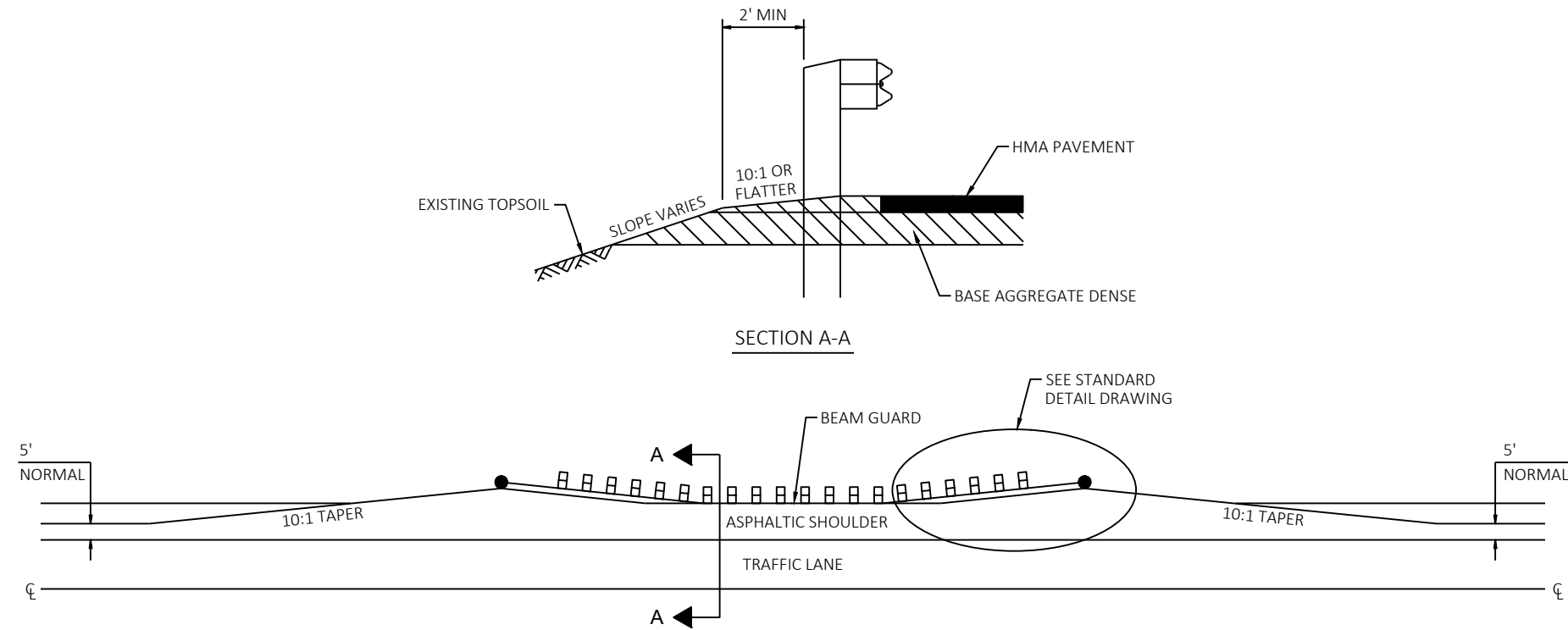
| TOTAL DEPTH | PAVEMENT TYPE | LAYER DEPTH |
|-------------|---------------|------------------|
| 2.0" | 4 MT 58-28 S | 2.0" UPPER LAYER |
| 4.0" | 4 MT 58-28 S | 2.0" UPPER LAYER |
| | 4 MT 58-28 S | 2.0" LOWER LAYER |



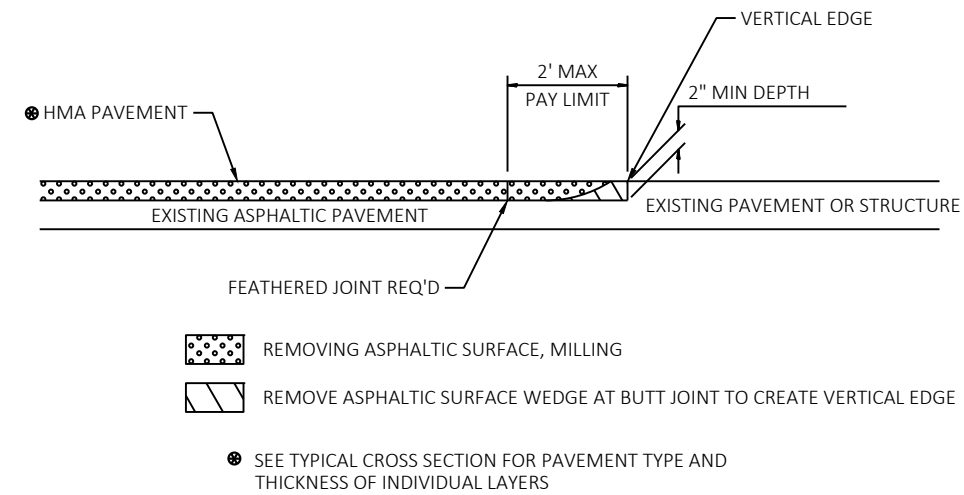
| | | | | | |
|------------------------|-------------|------------------|------------------|-------|----------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PROJECT OVERVIEW | SHEET | E |
|------------------------|-------------|------------------|------------------|-------|----------|



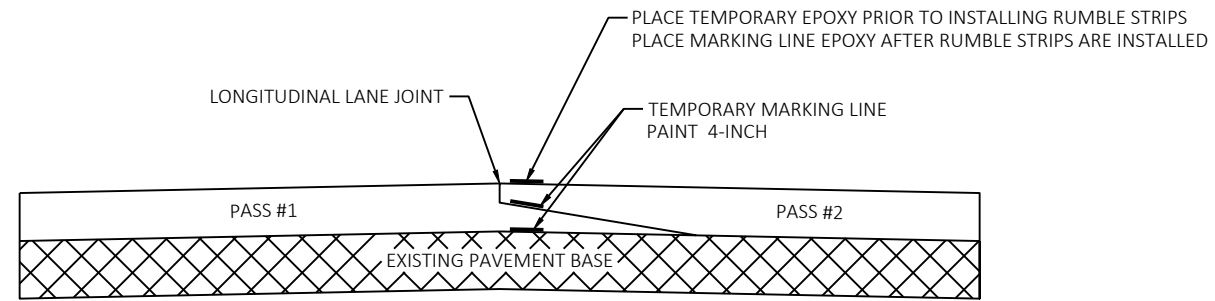




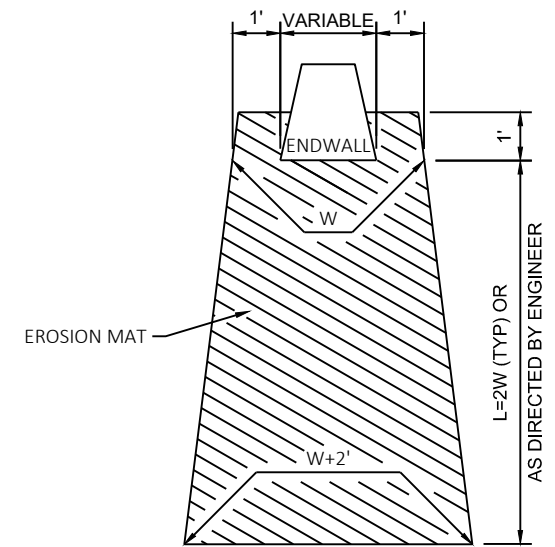
DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD



BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)



PAVEMENT MARKING DETAIL FOR TAPERED OVERLAPPING JOINTS IN HMA PAVEMENTS



EROSION MAT TREATMENT AT CULVERTS

NOTES:

PIPE INSTALLATION AREA WILL FOLLOW SECTION 520 FOR INSTALLATION, WIDTHS AND PAYMENT.

CONSTRUCT TRANSITION PERPENDICULAR TO CULVERT PIPE.

CULVERT PIPE TRANSITION AREAS WILL BE PAID BY FOUNDATION BACKFILL. COMMON EXCAVATION FOR PIPE TRANSITION AREA WILL BE PAID SEPARATELY.

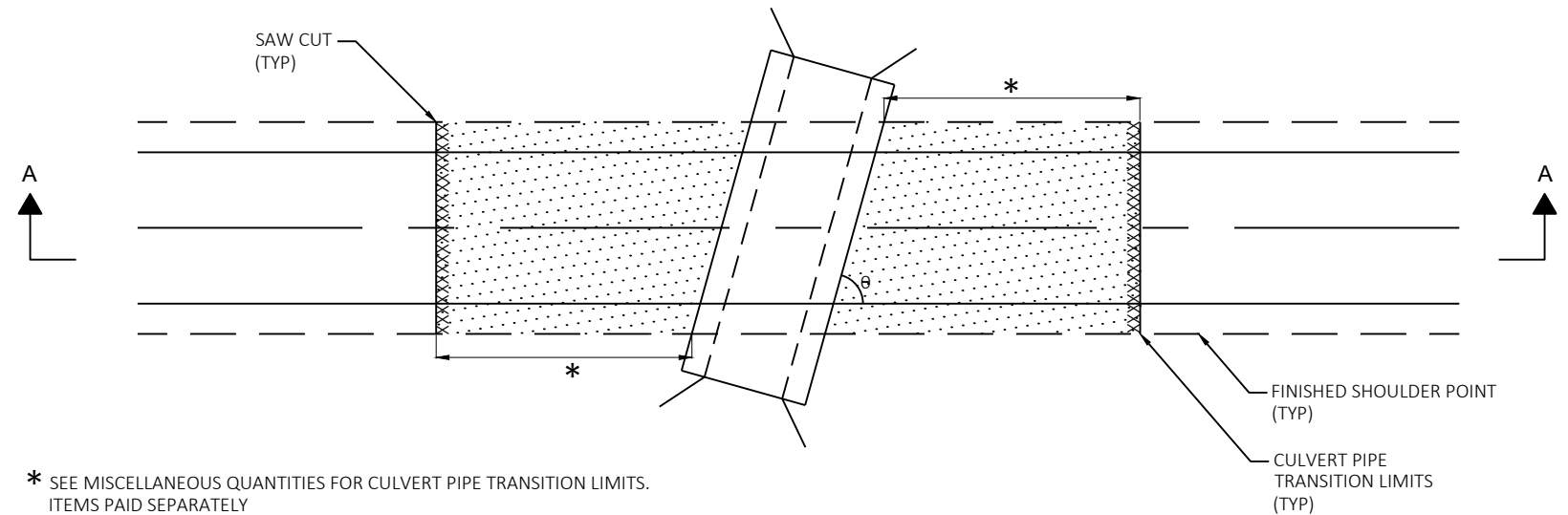
PAVEMENT SAW CUT TO BE PERPENDICULAR TO ROADWAY ALIGNMENT.

CALCULATE * BY THE FOLLOWING EQUATION:

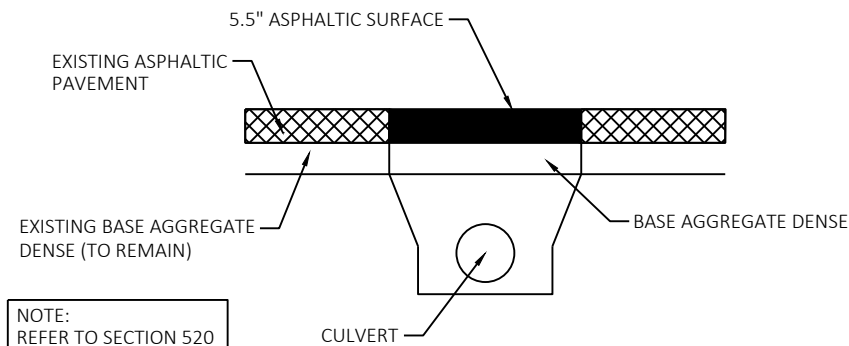
CULVERT TRANSITION LIMITS = $\frac{10(D - \text{PAVEMENT STRUCTURE})}{\sin \theta}$

USE THIS DETAIL IF TOP OF PROPOSED PIPE IS 4-FT OR LESS FROM TOP OF FINISHED PAVEMENT.

PLACE 5.5" ASPHALTIC SURFACE PRIOR TO OPENING ROADWAY TO TRAFFIC AT TRAFFIC. TOP 2" TO BE MILLED OFF PRIOR TO OVERLAY.



* SEE MISCELLANEOUS QUANTITIES FOR CULVERT PIPE TRANSITION LIMITS. ITEMS PAID SEPARATELY

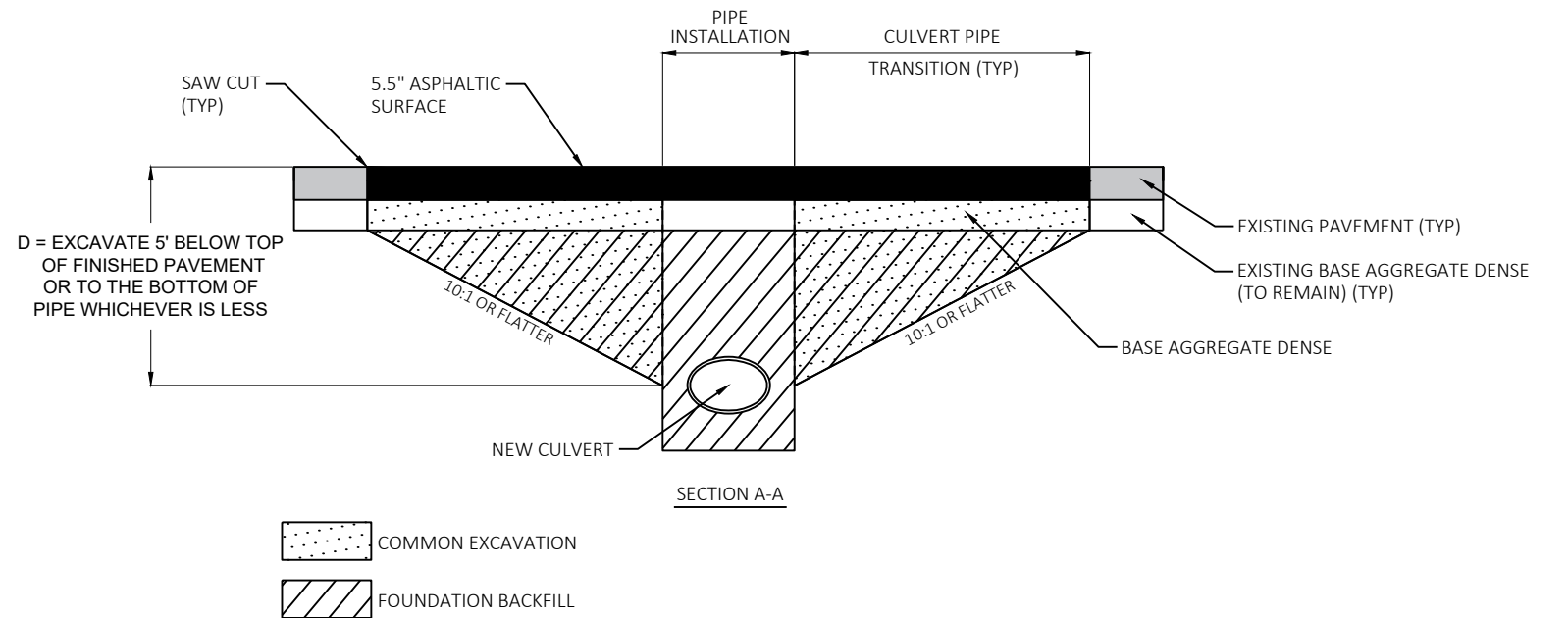


PAVEMENT AT CULVERT REPLACEMENTS

STA 135+80
STA 266+60
STA 387+77
STA 607+92

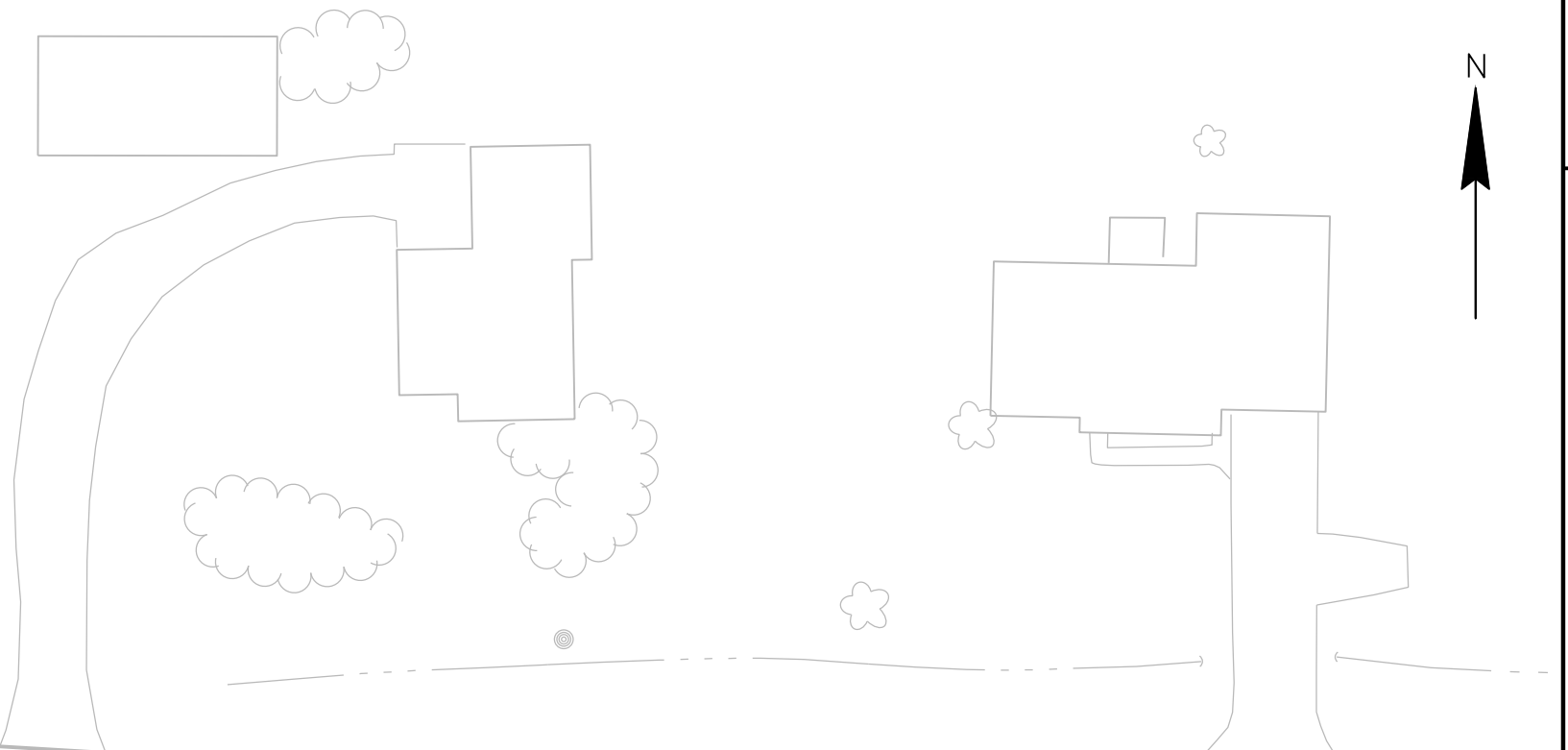
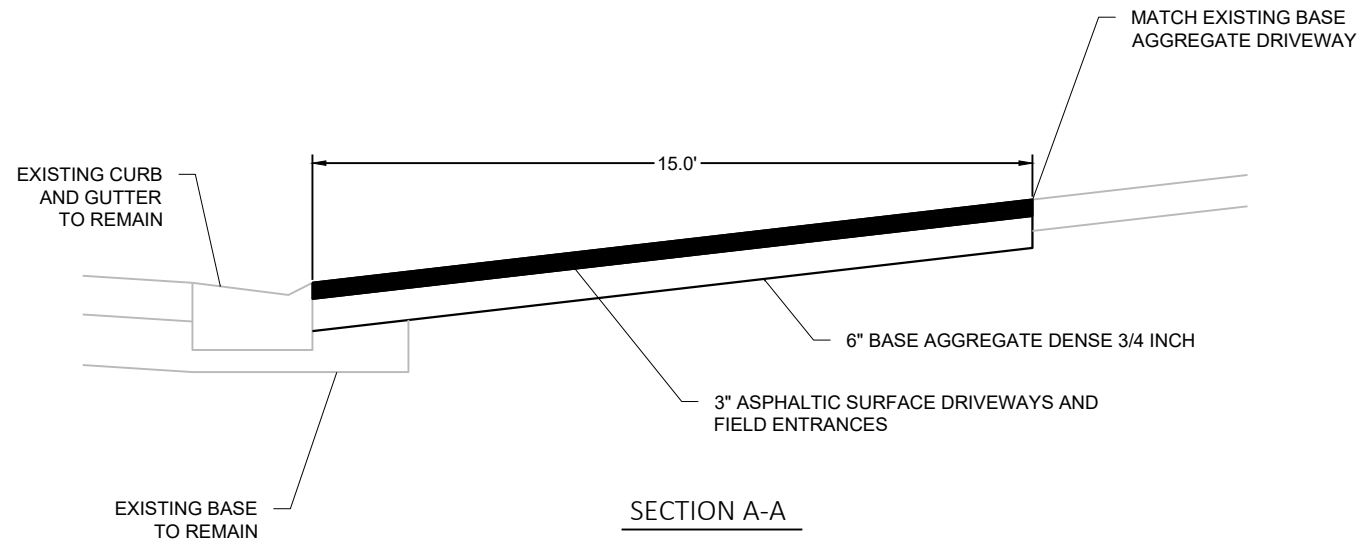
NOTES:

PLACE 5.5" ASPHALTIC SURFACE PRIOR TO OPENING ROADWAY TO TRAFFIC AT TRAFFIC. TOP 2" TO BE MILLED OFF PRIOR TO OVERLAY.

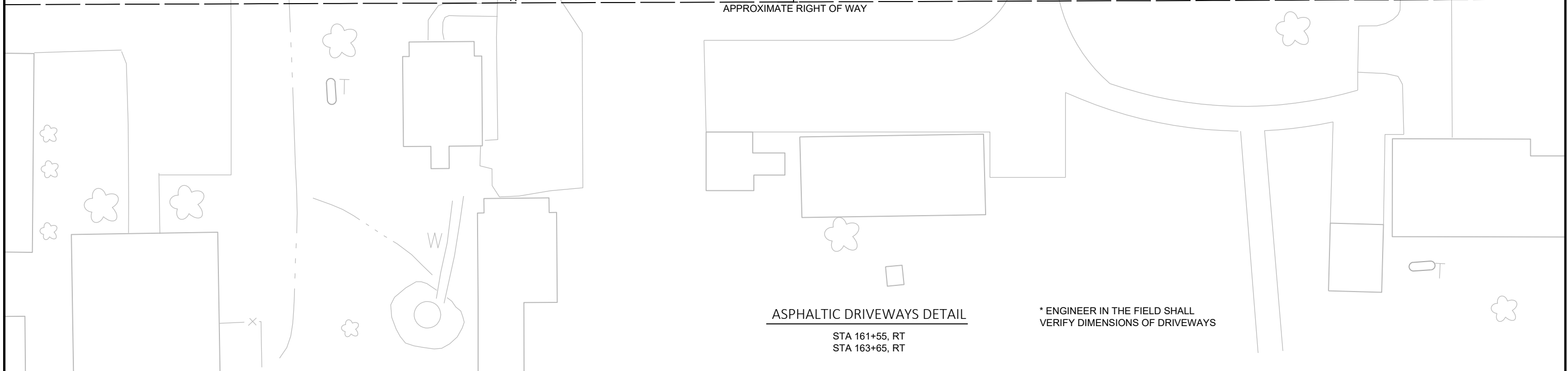
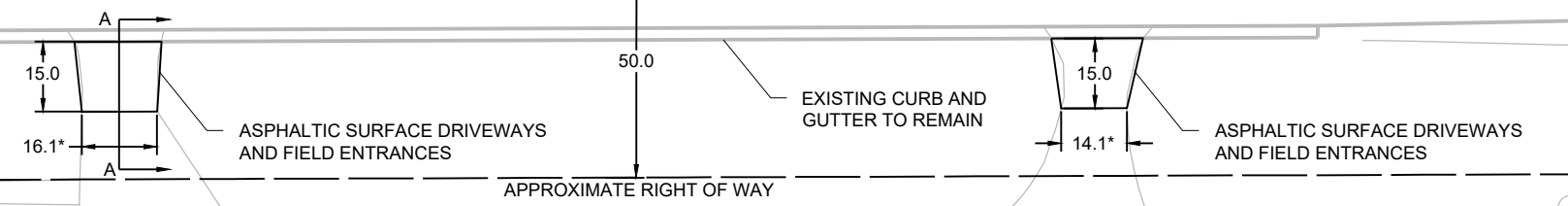


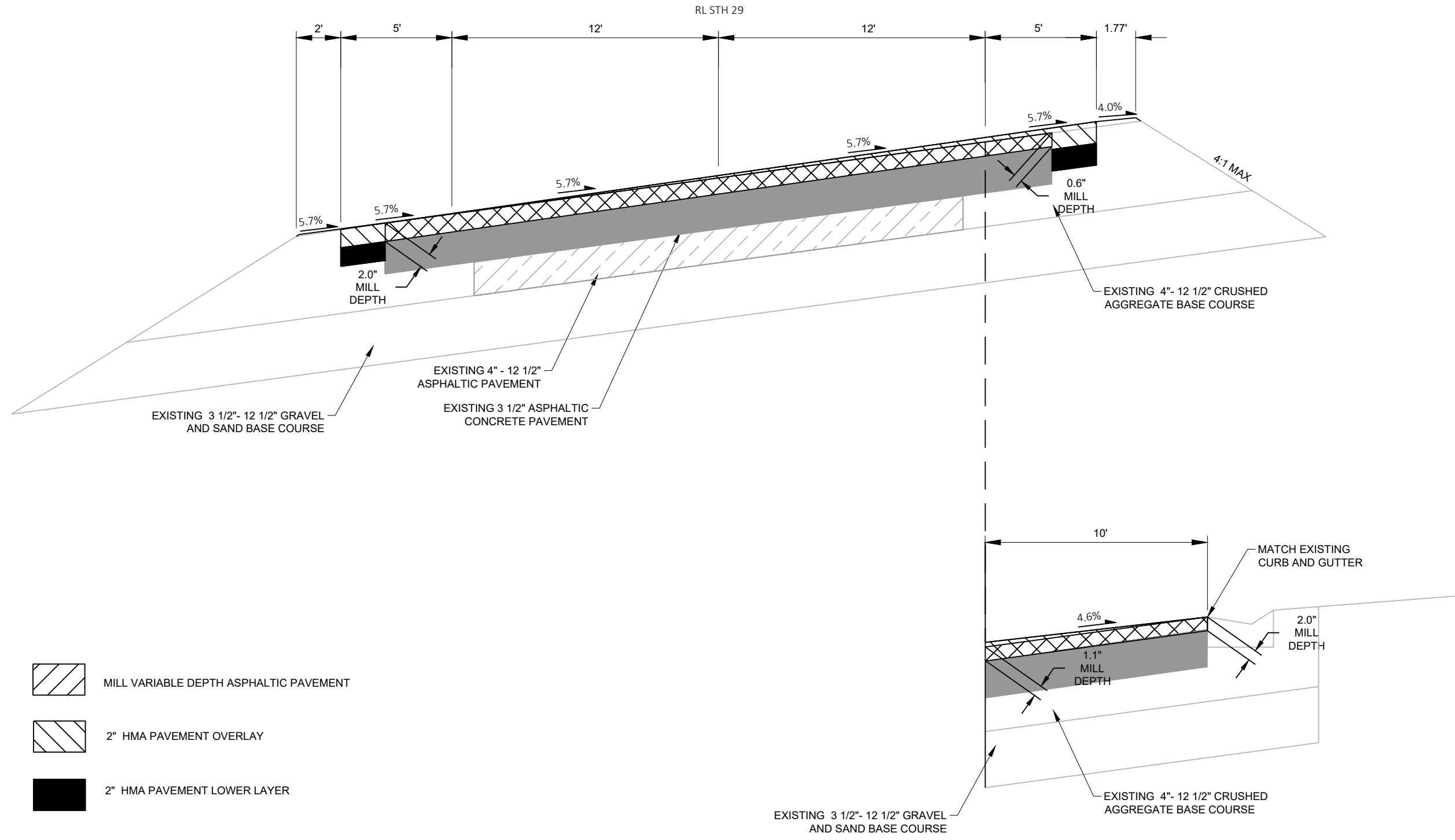
NEW CULVERT PIPES WITH TRANSITION




STA 442+74
STA 456+15
STA 537+06
STA 616+59



160+00 161+00 162+00 163+00 STH 29 164+00 165+00

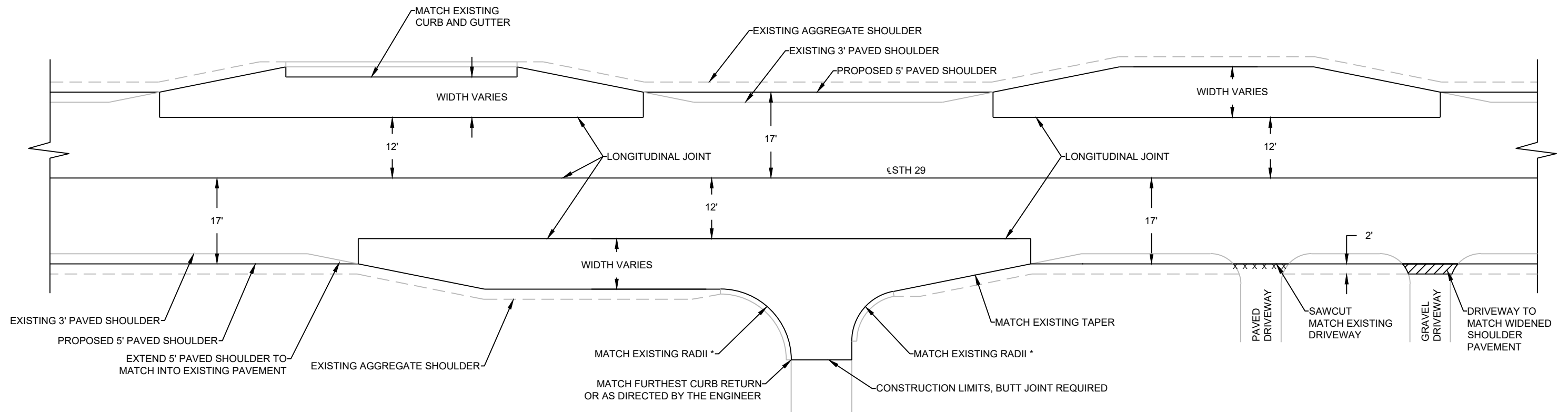




-  MILL VARIABLE DEPTH ASPHALTIC PAVEMENT
-  2" HMA PAVEMENT OVERLAY
-  2" HMA PAVEMENT LOWER LAYER

SUPERELEVATION SLOPE CHANGE DETAIL

STA 631+03 - STA 641+34



* MATCH CURB AND GUTTER FLANGE FOR INTERSECTIONS WITH CURB AND GUTTER.
 MATCH EXISTING EDGE OF PAVEMENT FOR INTERSECTIONS WITHOUT CURB AND GUTTER

HMA LONGITUDINAL JOINT DETAIL, DRIVEWAY DETAIL, AND TYPICAL SIDE ROAD DETAIL
 TO BE USED AT ALL INTERSECTIONS, BYPASS LANES,
 RURAL CURB SECTIONS, AND RURAL DRIVEWAYS

LEGEND:

- CULVERT PIPE CHECK
- ▨ PAVEMENT REPLACEMENT (SEE CONSTRUCTION DETAIL)

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.

24-INCH RCP
 REMOVE AND REPLACE LAST
 2 SECTIONS OF CULVERT PIPE
 ADD APRON ENDWALL
 CONCRETE COLLAR REQ'D

WPS ELEC

CENTURY LINK

APPROXIMATE RW

132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00

STH 29

NETLEC

WPS GAS

APPROXIMATE RW

STODOLA ROAD



LEGEND:

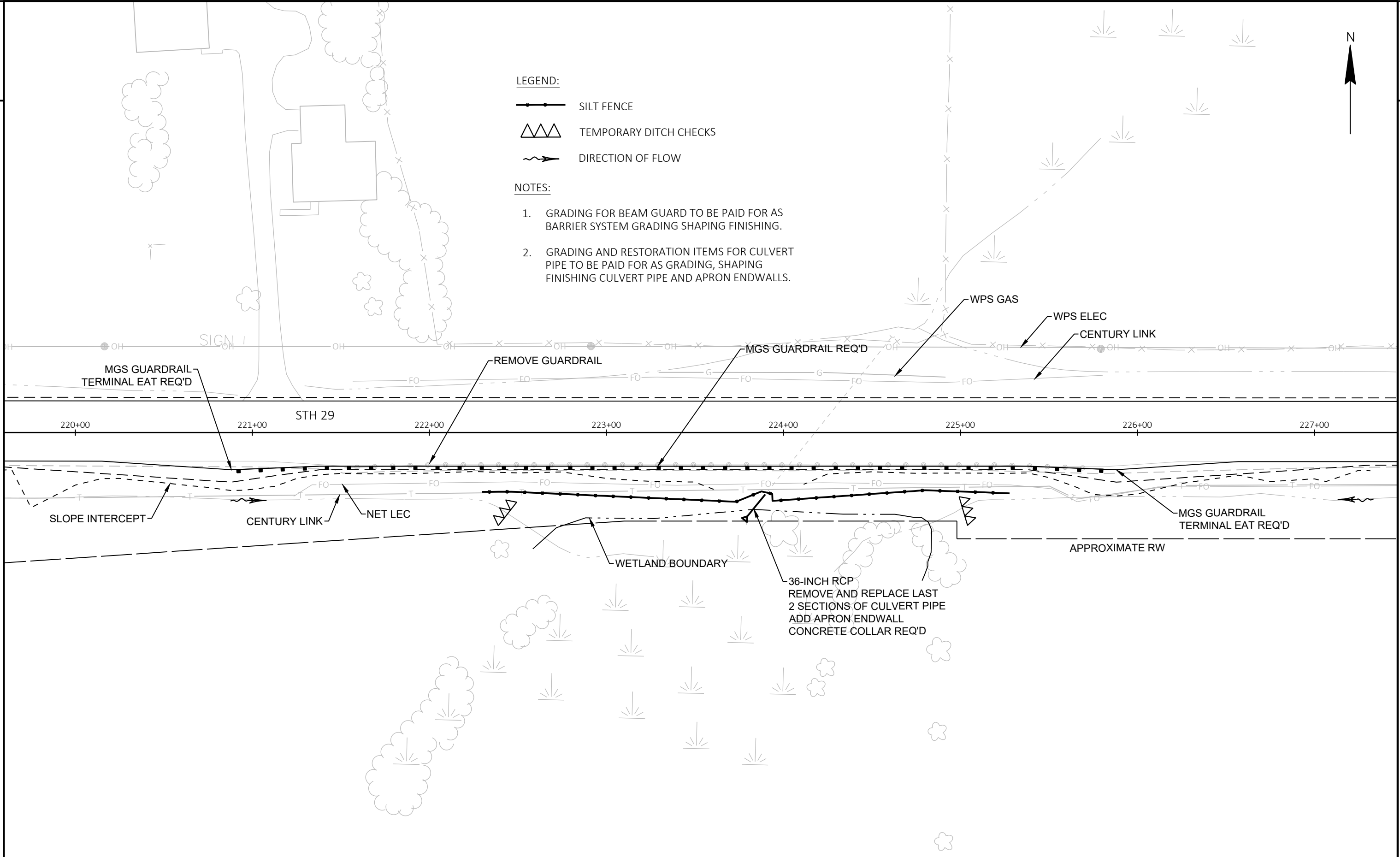
—●— SILT FENCE

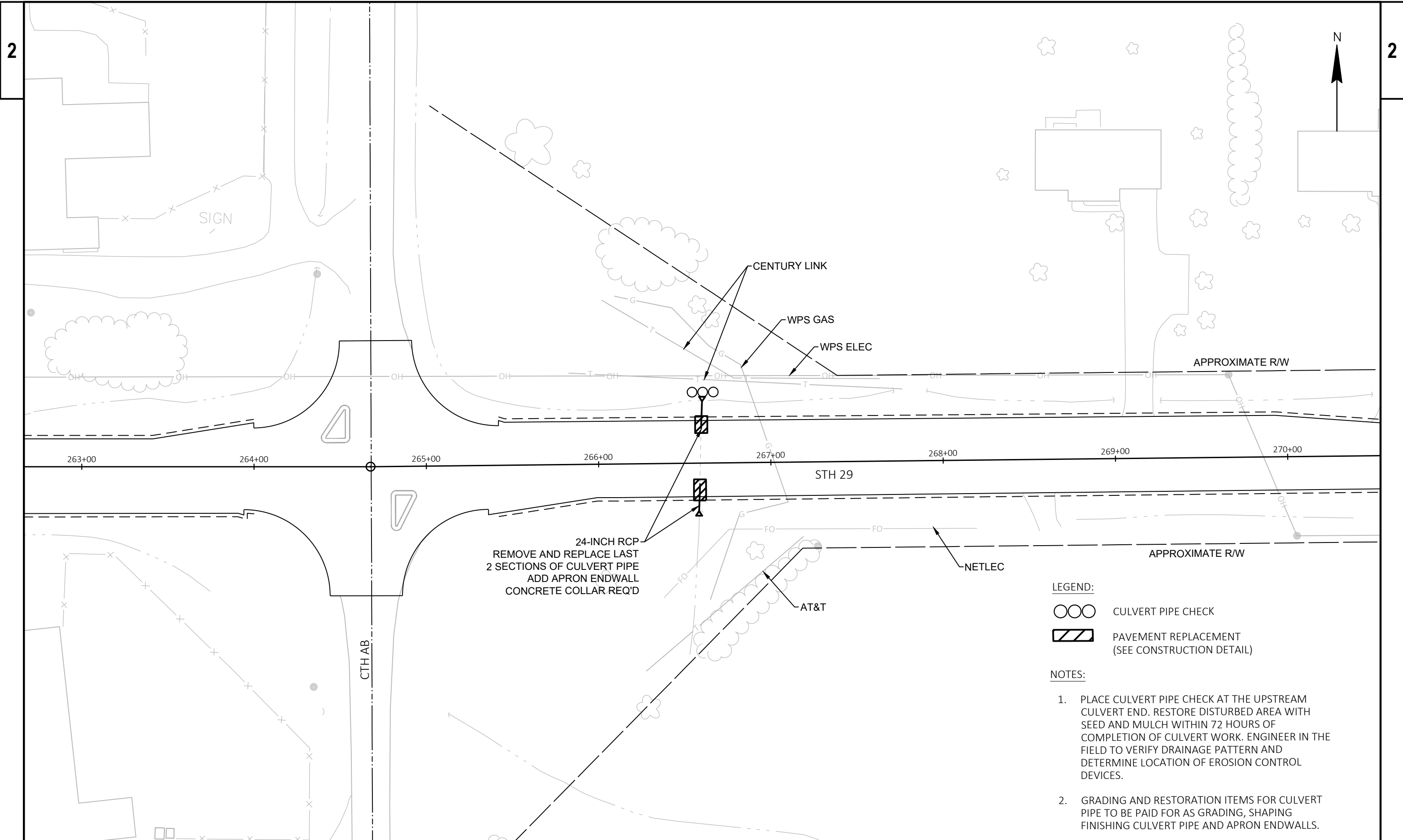
▲▲▲ TEMPORARY DITCH CHECKS

→ DIRECTION OF FLOW

NOTES:

- 1. GRADING FOR BEAM GUARD TO BE PAID FOR AS BARRIER SYSTEM GRADING SHAPING FINISHING.
- 2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.





24-INCH RCP
 REMOVE AND REPLACE LAST
 2 SECTIONS OF CULVERT PIPE
 ADD APRON ENDWALL
 CONCRETE COLLAR REQ'D

LEGEND:



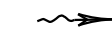
- CULVERT PIPE CHECK
- ▨ PAVEMENT REPLACEMENT
(SEE CONSTRUCTION DETAIL)

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.

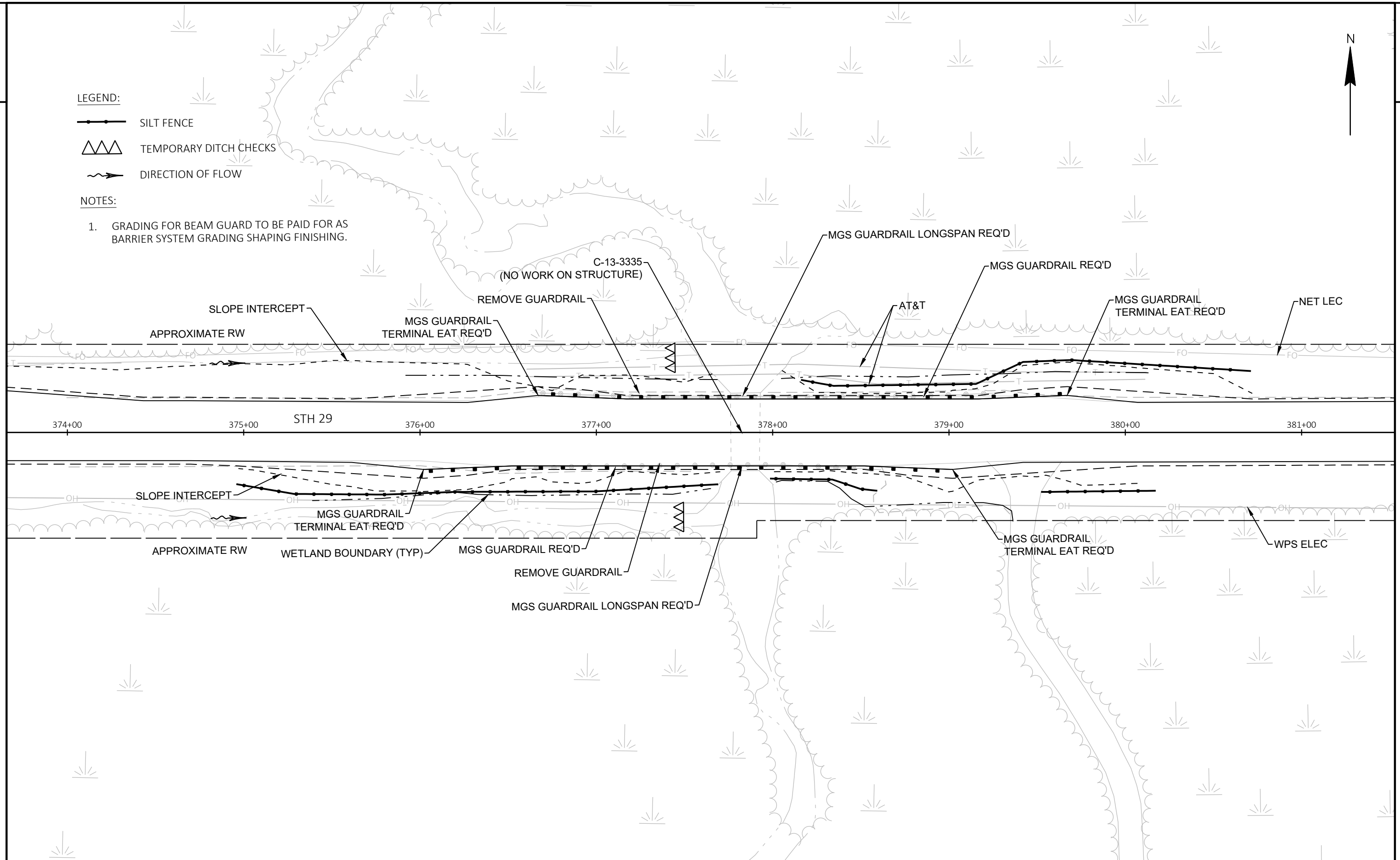


LEGEND:

-  SILT FENCE
-  TEMPORARY DITCH CHECKS
-  DIRECTION OF FLOW

NOTES:

1. GRADING FOR BEAM GUARD TO BE PAID FOR AS BARRIER SYSTEM GRADING SHAPING FINISHING.

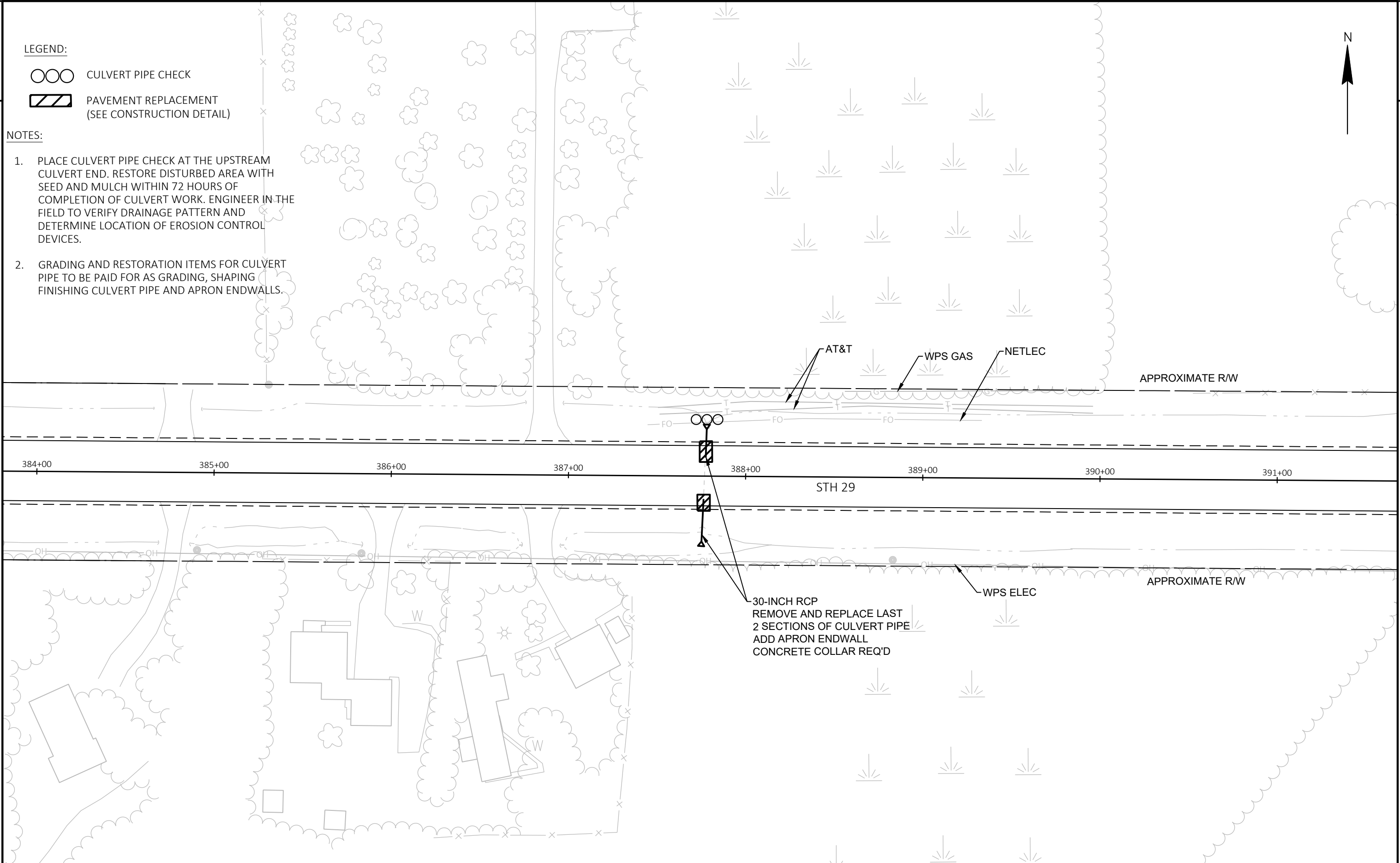


LEGEND:




- CULVERT PIPE CHECK
- ▨ PAVEMENT REPLACEMENT (SEE CONSTRUCTION DETAIL)

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.

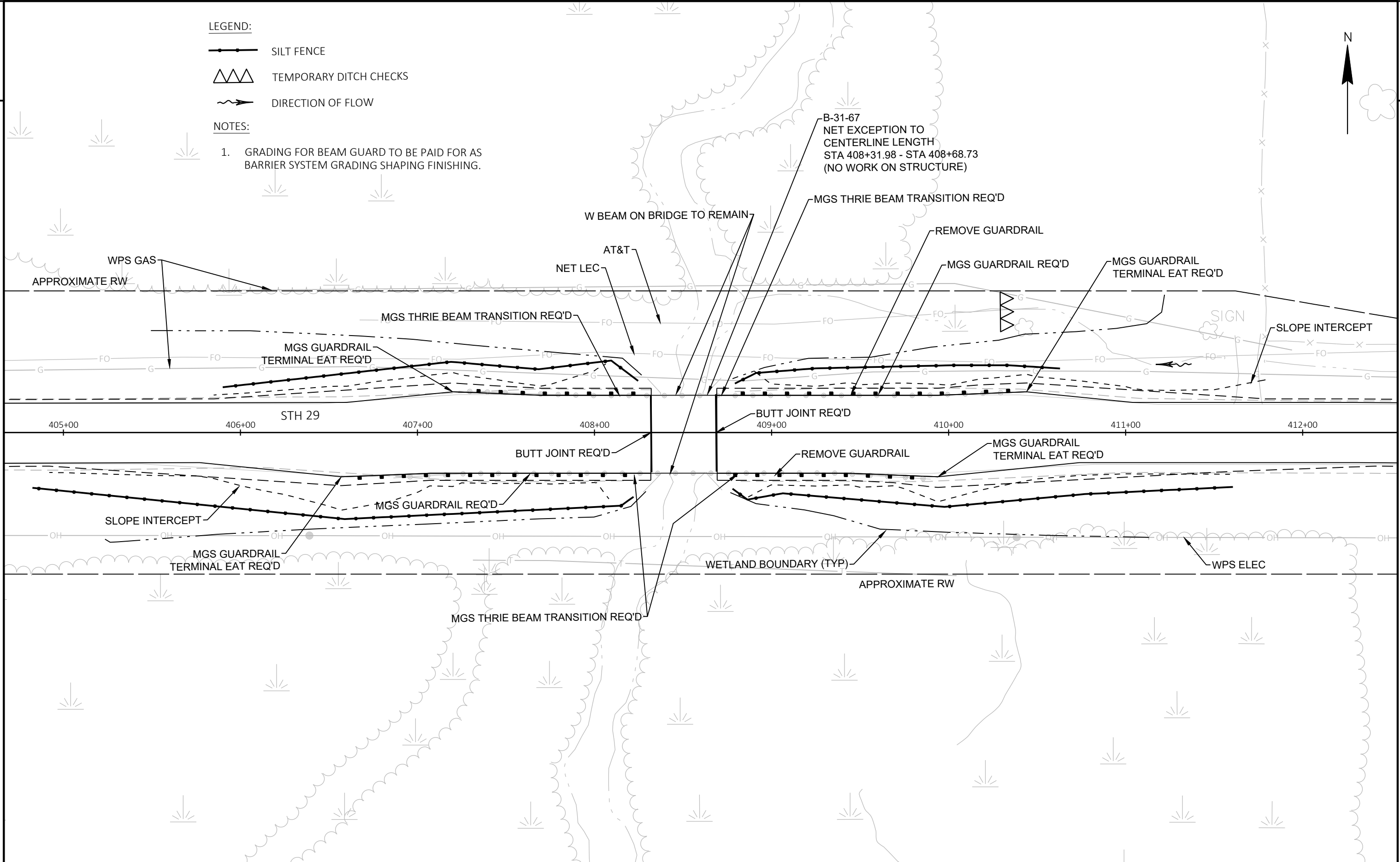


LEGEND:

-  SILT FENCE
-  TEMPORARY DITCH CHECKS
-  DIRECTION OF FLOW



NOTES:

1. GRADING FOR BEAM GUARD TO BE PAID FOR AS BARRIER SYSTEM GRADING SHAPING FINISHING.



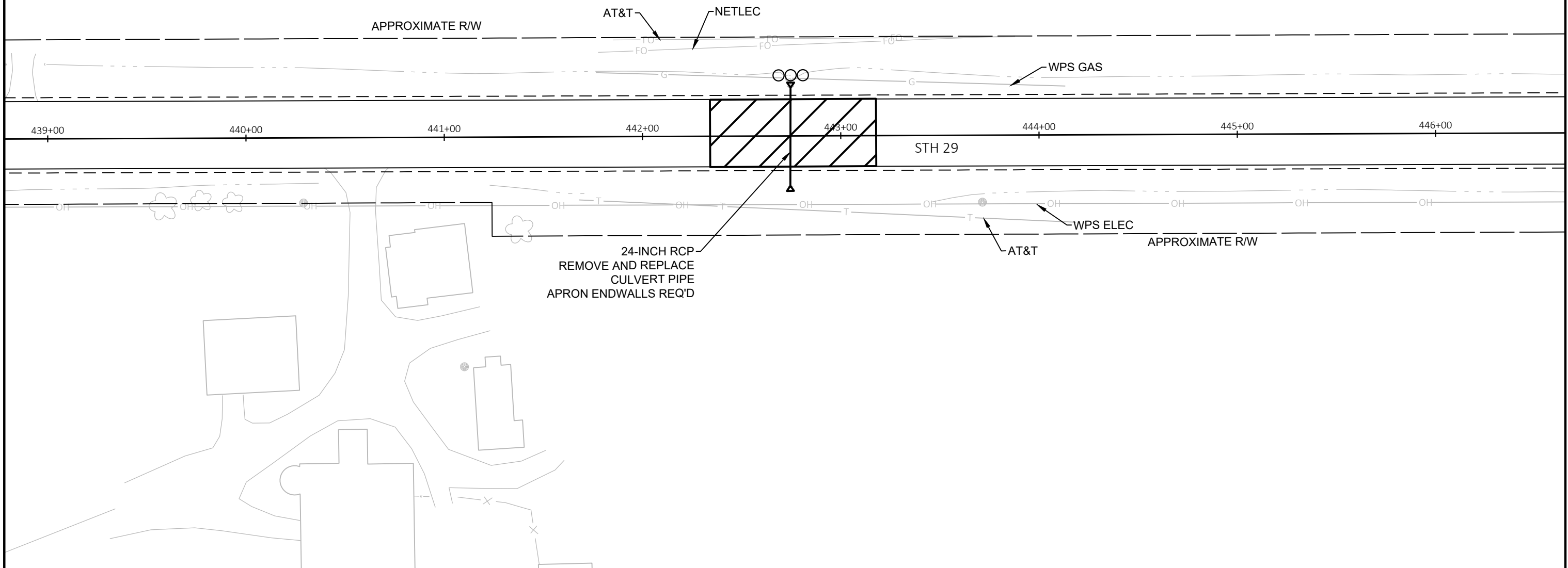


LEGEND:

-  CULVERT PIPE CHECK
-  PAVEMENT REPLACEMENT
(SEE CONSTRUCTION DETAIL)

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.



| | | | | | |
|------------------------|-------------|------------------|--------------|-------|----------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN DETAILS | SHEET | E |
|------------------------|-------------|------------------|--------------|-------|----------|

LEGEND:



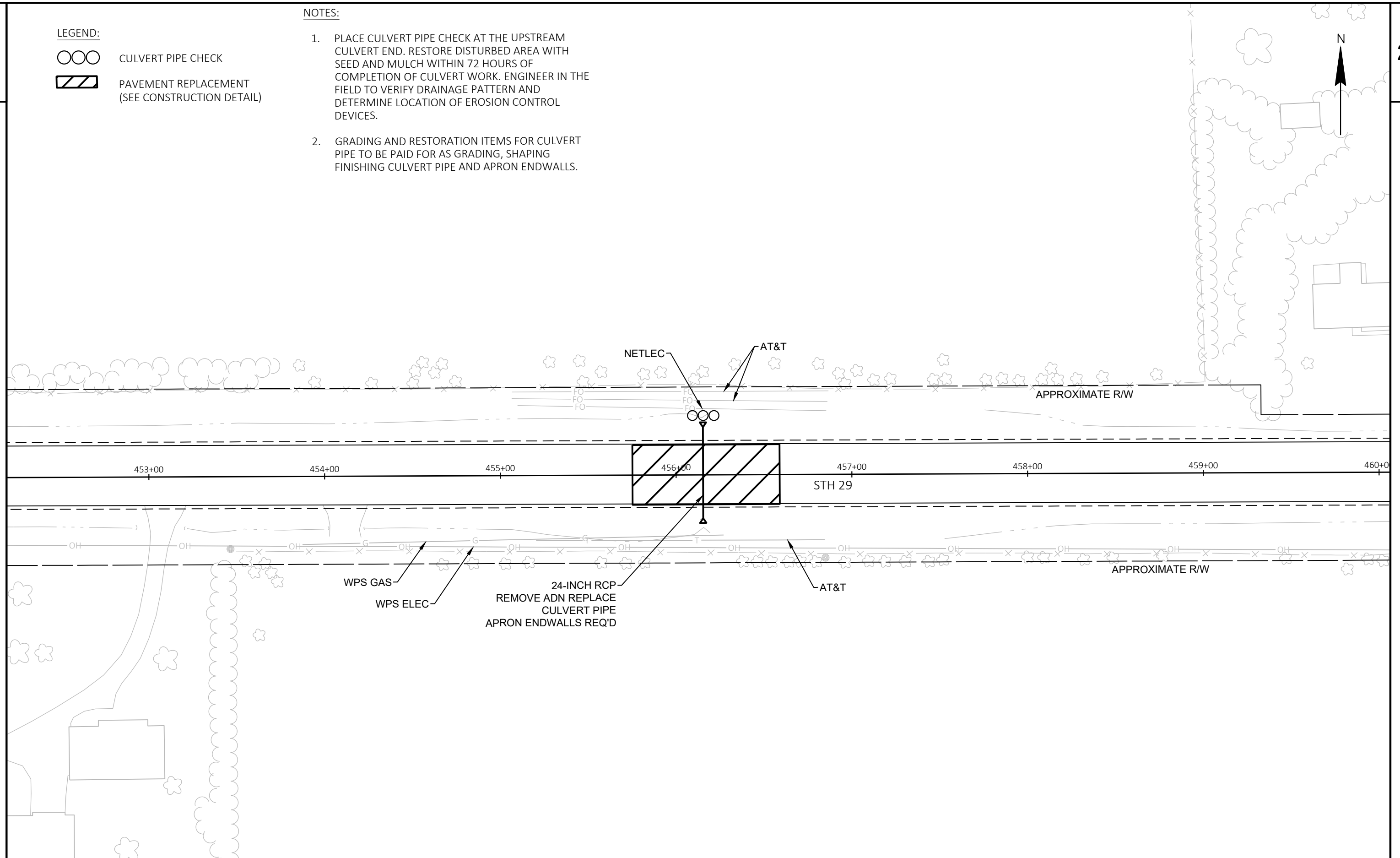
CULVERT PIPE CHECK



PAVEMENT REPLACEMENT
(SEE CONSTRUCTION DETAIL)

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.

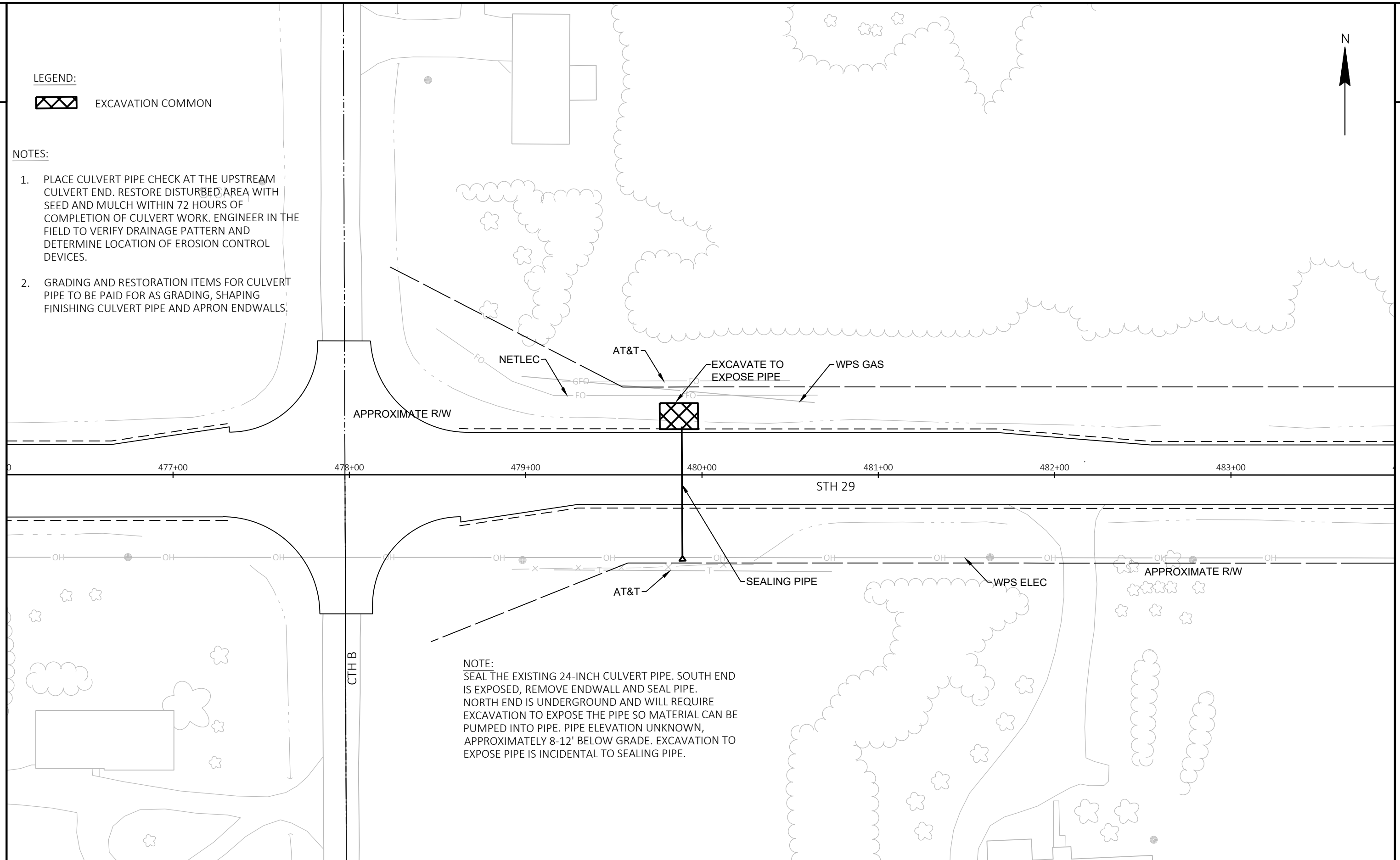


LEGEND:

 EXCAVATION COMMON

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.



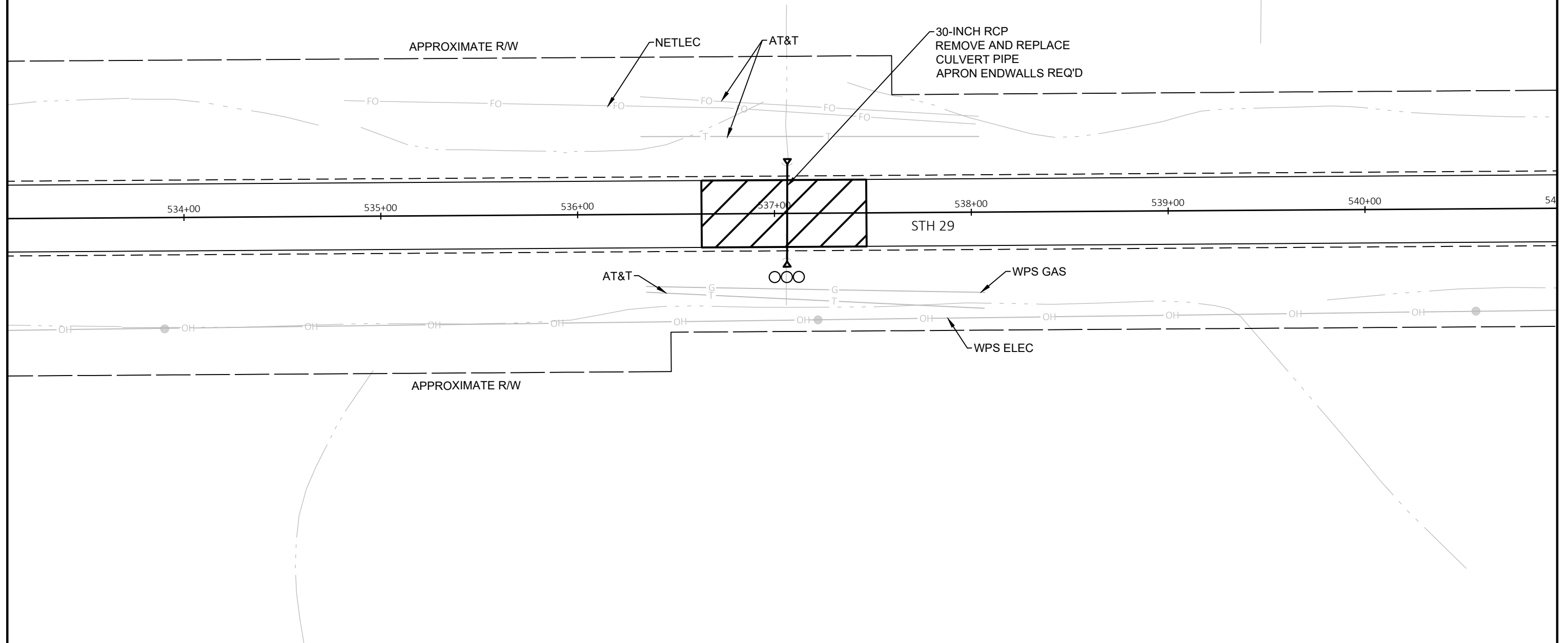
NOTE:
 SEAL THE EXISTING 24-INCH CULVERT PIPE. SOUTH END IS EXPOSED, REMOVE ENDWALL AND SEAL PIPE. NORTH END IS UNDERGROUND AND WILL REQUIRE EXCAVATION TO EXPOSE THE PIPE SO MATERIAL CAN BE PUMPED INTO PIPE. PIPE ELEVATION UNKNOWN, APPROXIMATELY 8-12' BELOW GRADE. EXCAVATION TO EXPOSE PIPE IS INCIDENTAL TO SEALING PIPE.

LEGEND:

- CULVERT PIPE CHECK
- ▨ PAVEMENT REPLACEMENT (SEE CONSTRUCTION DETAIL)

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.



LEGEND:

○○○ CULVERT PIPE CHECK

NOTES:

- 1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
- 2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.



30-INCH RCP
ADD SECTION OF PIPE
AND APRON ENDWALL
CONCRETE COLLAR REQ'D

AT&T
NETLEC

30-INCH RCP
ADD SECTION OF PIPE
AND APRON ENDWALL
CONCRETE COLLAR REQ'D

WPS GAS
WPS ELEC




APPROXIMATE R/W

APPROXIMATE R/W

STH 29

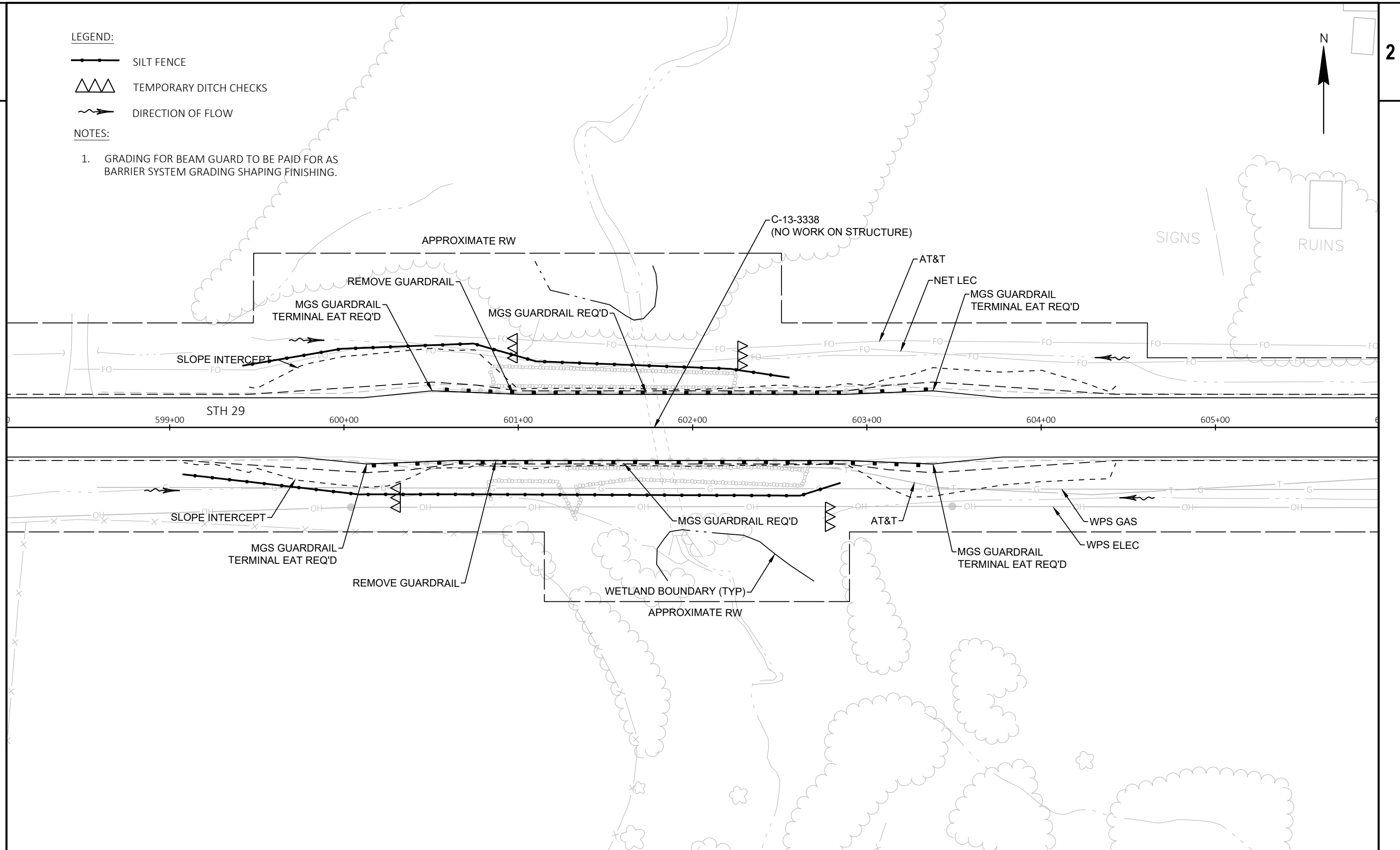
568+00 569+00 570+00 571+00 572+00 573+00 574+00 575+00

LEGEND:

-  SILT FENCE
-  TEMPORARY DITCH CHECKS
-  DIRECTION OF FLOW

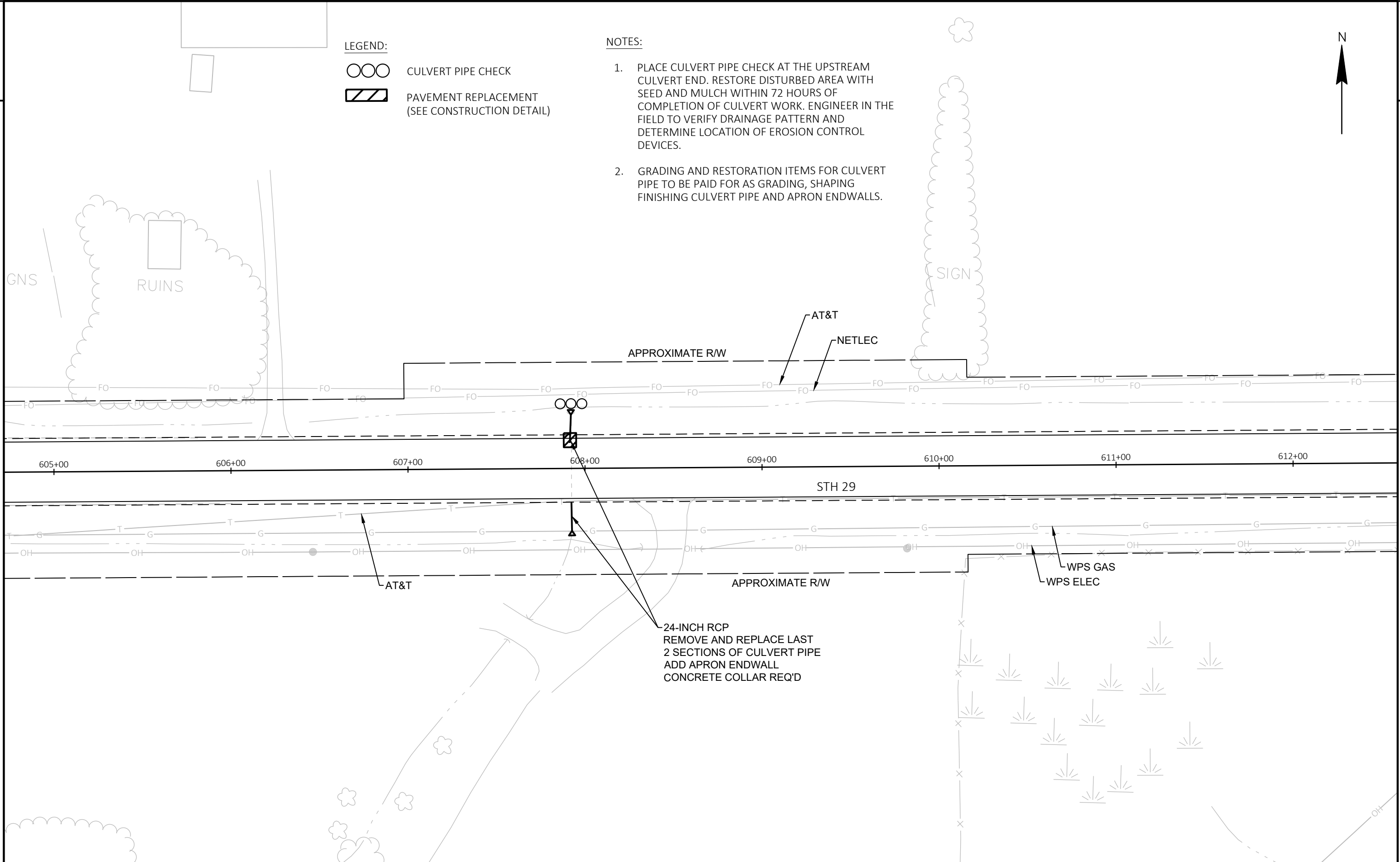
NOTES:

1. GRADING FOR BEAM GUARD TO BE PAID FOR AS BARRIER SYSTEM GRADING SHAPING FINISHING.



- LEGEND:**
- CULVERT PIPE CHECK
 - ▨ PAVEMENT REPLACEMENT (SEE CONSTRUCTION DETAIL)



- NOTES:**
1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
 2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.



24-INCH RCP
 REMOVE AND REPLACE LAST
 2 SECTIONS OF CULVERT PIPE
 ADD APRON ENDWALL
 CONCRETE COLLAR REQ'D

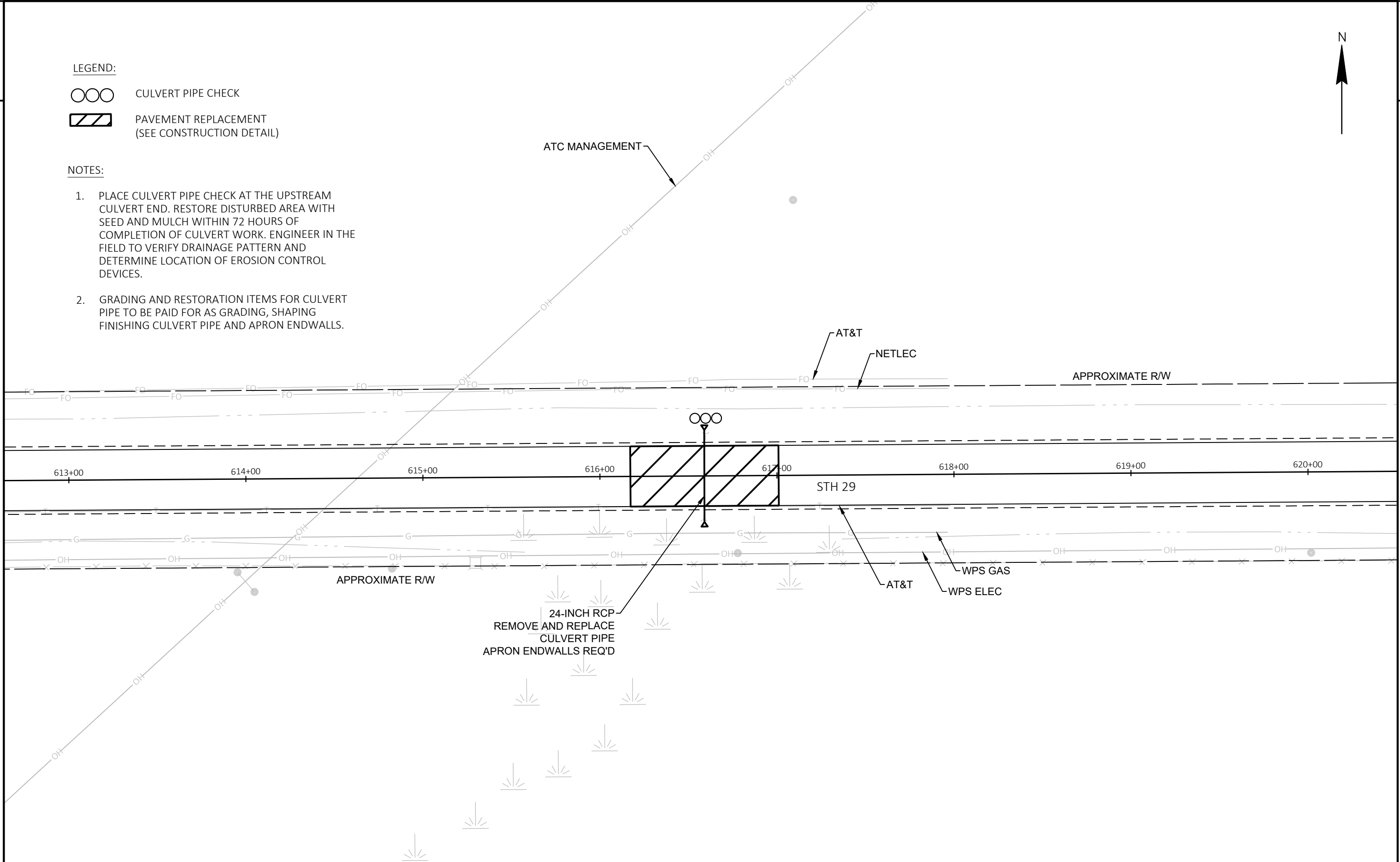


LEGEND:

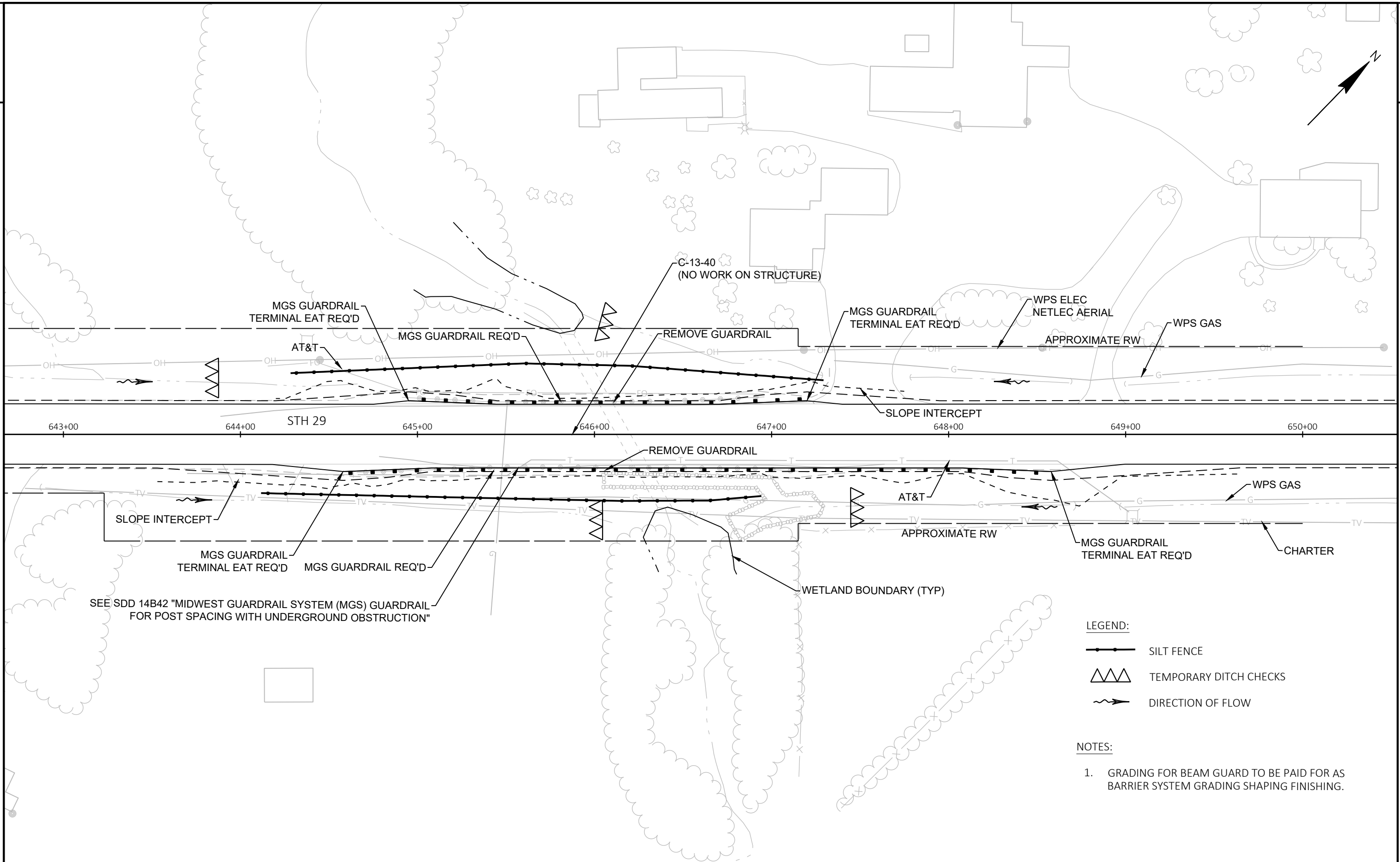
-  CULVERT PIPE CHECK
-  PAVEMENT REPLACEMENT (SEE CONSTRUCTION DETAIL)

NOTES:

1. PLACE CULVERT PIPE CHECK AT THE UPSTREAM CULVERT END. RESTORE DISTURBED AREA WITH SEED AND MULCH WITHIN 72 HOURS OF COMPLETION OF CULVERT WORK. ENGINEER IN THE FIELD TO VERIFY DRAINAGE PATTERN AND DETERMINE LOCATION OF EROSION CONTROL DEVICES.
2. GRADING AND RESTORATION ITEMS FOR CULVERT PIPE TO BE PAID FOR AS GRADING, SHAPING FINISHING CULVERT PIPE AND APRON ENDWALLS.

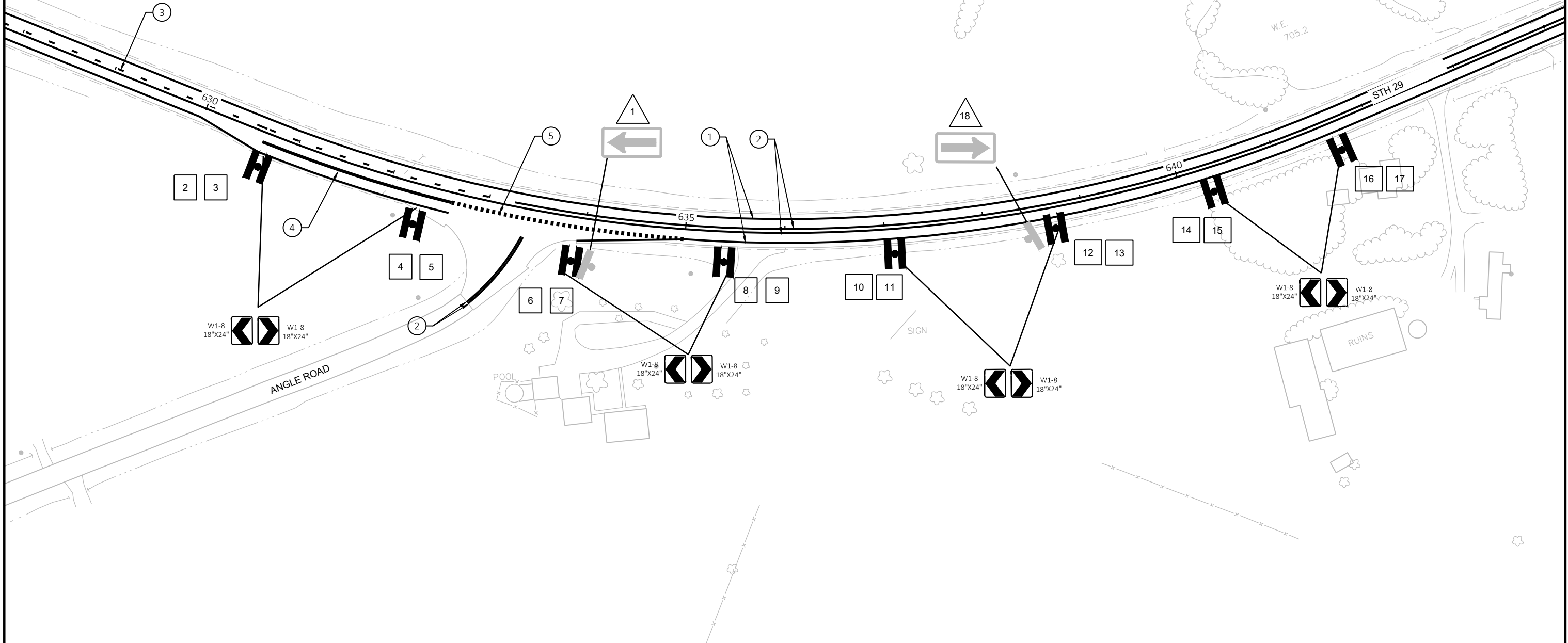


| | | | |
|------------------------|-------------|------------------|----------------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN DETAILS |
| | | | SHEET E |



- LEGEND**
- 1 MARKING LINE GROOVED WET REF EPOXY 4-INCH (WHITE)
 - 2 MARKING LINE EPOXY 4-INCH (YELLOW)
 - 3 MARKING LINE EPOXY 4-INCH (YELLOW, 12.5' LINE, 37.5' SKIP)
 - 4 MARKING LINE GROOVED WET REF EPOXY 8-INCH (WHITE)
 - 5 MARKING LINE GROOVED WET REF EPOXY 8-INCH (WHITE, 3' DASH, 9' SKIP)
 - X PROPOSED SIGN
 - X REMOVE SIGN

- NOTES:**
1. SEE STANDARD DETAIL DRAWINGS FOR ADDITIONAL PAVEMENT MARKINGS NOT SHOWN ON THIS SHEET.
- * SDD 15C8 - PAVEMENT MARKING, MAINLINE
 - * SDD 15C33 - STOP LINE AND CROSSWALK PAVEMENT MARKING
 - * SDD 15C35 - PAVEMENT MARKING, INTERSECTIONS



| | | | |
|------------------------|-------------|------------------|---------------------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | MARKING AND SIGNING |
| SHEET | | | E |

NOTES:

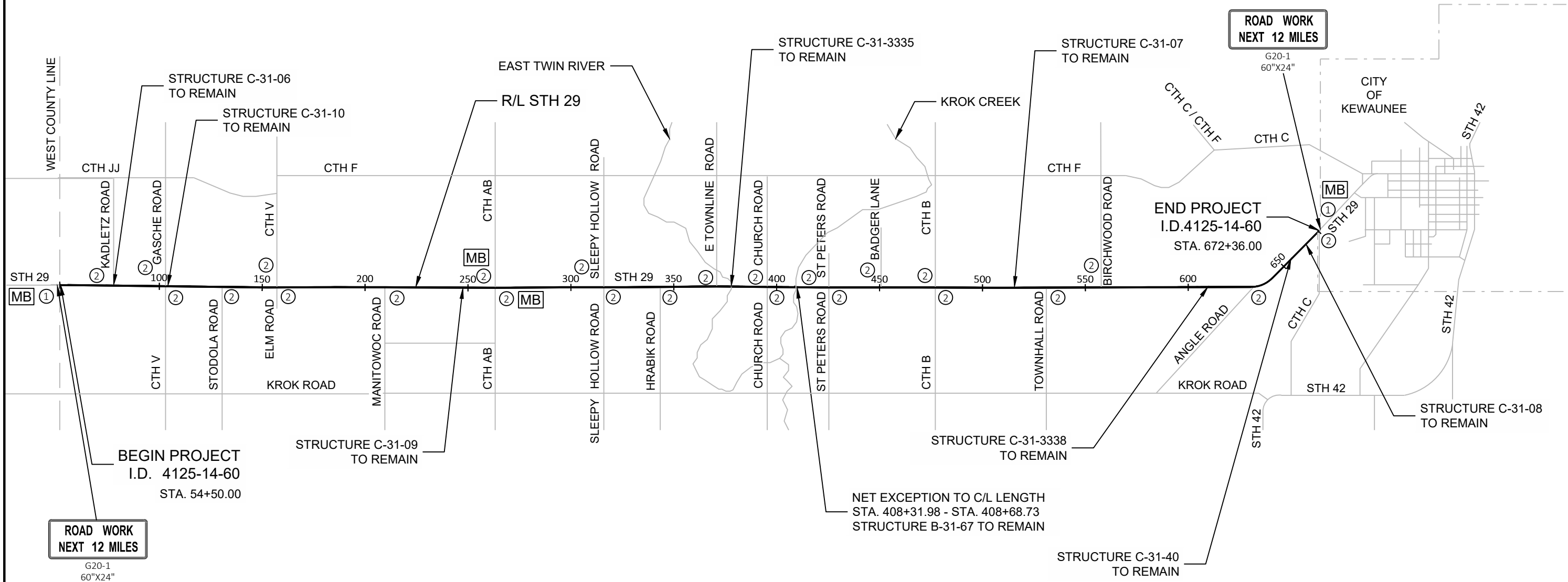
- 1) PLACE MESSAGE BOARDS AS FAR AWAY FROM LIVE TRAFFIC LANES AS POSSIBLE WITHOUT HAMPERING VISIBILITY. THE LOCATION SELECTED SHOULD BE AT OR SLIGHTLY ABOVE THE ELEVATION OF THE ROADWAY. FOR INTERMITTENT WORK, OR WHERE SITE CONDITIONS DO NOT ALLOW OTHERWISE, THE SIGNS MAY BE PLACED ON THE SHOULDER. THE SITE SHOULD BE VISITED TO ASSURE VISIBILITY, SAFETY, AND MAINTENANCE CONSIDERATIONS. A TAPER OF REFLECTORIZED DRUMS OR BARRICADES SHOULD BE PLACED AHEAD OF PCMS PLACED ON THE SHOULDER IF IT IS NOT SHIELDED BY A BARRIER.
- 2) PLACE MESSAGE BOARDS AND AND DISPLAY THE "PRIOR TO CONSTRUCTION" MESSAGE 7 CALENDAR DAYS PRIOR TO THE EXPECTED START OF THE PROPOSED WORK THAT WILL REQUIRE LANE CLOSURES. ADJUST THE MESSAGE DATE ACCORDINGLY. CONTACT WISDOT NE REGION FOR MESSAGES.

LEGEND:

- MB** TRAFFIC CONTROL SIGNS PCMS
- ① PLACE TRAFFIC CONTROL SIGNS PER SDD 15C04 "TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER UNDIVIDED ROAD OPEN TO TRAFFIC"
- ② PLACE W20-1A SIGNS PER "TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL" IN SDD 15C04 "TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER UNDIVIDED ROAD OPEN TO TRAFFIC"

ADDITIONAL STANDARD DETAIL DRAWINGS:

- 1) SEE SDD 15C12 "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION" DURING DAYTIME WORKING HOURS
- 2) SEE SDD 15C19-A "MOVING PAVEMENT MARKING OPERATION, TWO-LANE TWO-WAY ROADWAY" DURING MARKING LINE PLACEMENT
- 3) SEE SDD 15D39 "TRAFFIC CONTROL, DROP-OFF SIGNING" WHEN UNEVEN LANES ARE PRESENT
- 4) SEE SDD 15D44 "TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES" WHEN TRAFFIC WILL RUN ON MILLED SURFACE



| | | | | | |
|------------------------|-------------|------------------|-----------------|-------|----------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | TRAFFIC CONTROL | SHEET | E |
|------------------------|-------------|------------------|-----------------|-------|----------|

Estimate Of Quantities

4125-14-60

| Line | Item | Item Description | Unit | Total | Qty |
|------|------------|--|------|-------------|-------------|
| 0002 | 203.0100 | Removing Small Pipe Culverts | EACH | 12.000 | 12.000 |
| 0004 | 204.0115 | Removing Asphaltic Surface Butt Joints | SY | 198.000 | 198.000 |
| 0006 | 204.0120 | Removing Asphaltic Surface Milling | SY | 225,250.000 | 225,250.000 |
| 0008 | 204.0165 | Removing Guardrail | LF | 2,415.000 | 2,415.000 |
| 0010 | 204.0280 | Sealing Pipes | EACH | 1.000 | 1.000 |
| 0012 | 205.0100 | Excavation Common | CY | 1,470.000 | 1,470.000 |
| 0014 | 211.0100 | Prepare Foundation for Asphaltic Paving (project) 01. 4125-14-60 | LS | 1.000 | 1.000 |
| 0016 | 211.0400 | Prepare Foundation for Asphaltic Shoulders | STA | 1,167.000 | 1,167.000 |
| 0018 | 213.0100 | Finishing Roadway (project) 01. 4125-14-60 | EACH | 1.000 | 1.000 |
| 0020 | 305.0110 | Base Aggregate Dense 3/4-Inch | TON | 1,515.000 | 1,515.000 |
| 0022 | 305.0120 | Base Aggregate Dense 1 1/4-Inch | TON | 86.000 | 86.000 |
| 0024 | 455.0605 | Tack Coat | GAL | 13,660.000 | 13,660.000 |
| 0026 | 460.0105.S | HMA Percent Within Limits (PWL) Test Strip Volumetrics | EACH | 1.000 | 1.000 |
| 0028 | 460.0110.S | HMA Percent Within Limits (PWL) Test Strip Density | EACH | 1.000 | 1.000 |
| 0030 | 460.2005 | Incentive Density PWL HMA Pavement | DOL | 19,010.000 | 19,010.000 |
| 0032 | 460.2007 | Incentive Density HMA Pavement Longitudinal Joints | DOL | 61,800.000 | 61,800.000 |
| 0034 | 460.2010 | Incentive Air Voids HMA Pavement | DOL | 12,210.000 | 12,210.000 |
| 0036 | 460.6224 | HMA Pavement 4 MT 58-28 S | TON | 31,220.000 | 31,220.000 |
| 0038 | 465.0105 | Asphaltic Surface | TON | 370.000 | 370.000 |
| 0040 | 465.0110 | Asphaltic Surface Patching | TON | 50.000 | 50.000 |
| 0042 | 465.0120 | Asphaltic Surface Driveways and Field Entrances | TON | 13.000 | 13.000 |
| 0044 | 465.0425 | Asphaltic Shoulder Rumble Strips 2-Lane Rural | LF | 99,730.000 | 99,730.000 |
| 0046 | 465.0475 | Asphalt Centerline Rumble Strips 2-Lane Rural | LF | 52,540.000 | 52,540.000 |
| 0048 | 520.8000 | Concrete Collars for Pipe | EACH | 10.000 | 10.000 |
| 0050 | 520.8700 | Cleaning Culvert Pipes | EACH | 9.000 | 9.000 |
| 0052 | 522.0124 | Culvert Pipe Reinforced Concrete Class III 24-Inch | LF | 230.000 | 230.000 |
| 0054 | 522.0130 | Culvert Pipe Reinforced Concrete Class III 30-Inch | LF | 98.000 | 98.000 |
| 0056 | 522.0136 | Culvert Pipe Reinforced Concrete Class III 36-Inch | LF | 16.000 | 16.000 |
| 0058 | 522.1024 | Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch | EACH | 11.000 | 11.000 |
| 0060 | 522.1030 | Apron Endwalls for Culvert Pipe Reinforced Concrete 30-Inch | EACH | 6.000 | 6.000 |
| 0062 | 522.1036 | Apron Endwalls for Culvert Pipe Reinforced Concrete 36-Inch | EACH | 1.000 | 1.000 |
| 0064 | 614.0010 | Barrier System Grading Shaping Finishing | EACH | 18.000 | 18.000 |
| 0066 | 614.2300 | MGS Guardrail 3 | LF | 227.000 | 227.000 |
| 0068 | 614.2330 | MGS Guardrail 3 K | LF | 1,356.000 | 1,356.000 |
| 0070 | 614.2340 | MGS Guardrail 3 L | LF | 300.000 | 300.000 |
| 0072 | 614.2500 | MGS Thrie Beam Transition | LF | 160.000 | 160.000 |
| 0074 | 614.2610 | MGS Guardrail Terminal EAT | EACH | 18.000 | 18.000 |
| 0076 | 618.0100 | Maintenance And Repair of Haul Roads (project) 01. 4125-14-60 | EACH | 1.000 | 1.000 |
| 0078 | 619.1000 | Mobilization | EACH | 1.000 | 1.000 |
| 0080 | 624.0100 | Water | MGAL | 10.000 | 10.000 |
| 0082 | 628.1504 | Silt Fence | LF | 4,040.000 | 4,040.000 |
| 0084 | 628.1520 | Silt Fence Maintenance | LF | 4,040.000 | 4,040.000 |
| 0086 | 628.1905 | Mobilizations Erosion Control | EACH | 1.000 | 1.000 |
| 0088 | 628.1910 | Mobilizations Emergency Erosion Control | EACH | 1.000 | 1.000 |
| 0090 | 628.7504 | Temporary Ditch Checks | LF | 330.000 | 330.000 |
| 0092 | 628.7555 | Culvert Pipe Checks | EACH | 43.000 | 43.000 |
| 0094 | 633.5200 | Markers Culvert End | EACH | 35.000 | 35.000 |
| 0096 | 634.0612 | Posts Wood 4x6-Inch X 12-FT | EACH | 8.000 | 8.000 |
| 0098 | 637.2230 | Signs Type II Reflective F | SF | 48.000 | 48.000 |

Estimate Of Quantities

4125-14-60

| Line | Item | Item Description | Unit | Total | Qty |
|------|----------|---|------|-------------|-------------|
| 0100 | 638.2602 | Removing Signs Type II | EACH | 2.000 | 2.000 |
| 0102 | 638.3000 | Removing Small Sign Supports | EACH | 2.000 | 2.000 |
| 0104 | 642.5201 | Field Office Type C | EACH | 1.000 | 1.000 |
| 0106 | 643.0300 | Traffic Control Drums | DAY | 180.000 | 180.000 |
| 0108 | 643.0900 | Traffic Control Signs | DAY | 6,710.000 | 6,710.000 |
| 0110 | 643.1050 | Traffic Control Signs PCMS | DAY | 28.000 | 28.000 |
| 0112 | 643.5000 | Traffic Control | EACH | 1.000 | 1.000 |
| 0114 | 646.1020 | Marking Line Epoxy 4-Inch | LF | 52,800.000 | 52,800.000 |
| 0116 | 646.1040 | Marking Line Grooved Wet Ref Epoxy 4-Inch | LF | 119,000.000 | 119,000.000 |
| 0118 | 646.3040 | Marking Line Grooved Wet Ref Epoxy 8-Inch | LF | 4,600.000 | 4,600.000 |
| 0120 | 646.6120 | Marking Stop Line Epoxy 18-Inch | LF | 80.000 | 80.000 |
| 0122 | 649.0105 | Temporary Marking Line Paint 4-Inch | LF | 83,600.000 | 83,600.000 |
| 0124 | 649.0120 | Temporary Marking Line Epoxy 4-Inch | LF | 51,000.000 | 51,000.000 |
| 0126 | 650.6000 | Construction Staking Pipe Culverts | EACH | 10.000 | 10.000 |
| 0128 | 650.8000 | Construction Staking Resurfacing Reference | LF | 61,749.000 | 61,749.000 |
| 0130 | 650.9910 | Construction Staking Supplemental Control (project) 01. 4125-14-60 | LS | 1.000 | 1.000 |
| 0132 | 690.0150 | Sawing Asphalt | LF | 420.000 | 420.000 |
| 0134 | 740.0440 | Incentive IRI Ride | DOL | 46,780.000 | 46,780.000 |
| 0136 | ASP.1T0A | On-the-Job Training Apprentice at \$5.00/HR | HRS | 2,000.000 | 2,000.000 |
| 0138 | ASP.1T0G | On-the-Job Training Graduate at \$5.00/HR | HRS | 1,320.000 | 1,320.000 |
| 0140 | SPV.0035 | Special 01. Foundation Backfill | CY | 640.000 | 640.000 |
| 0142 | SPV.0060 | Special 01. Grading, Shaping and Finishing Culvert Pipes and Apron Endwalls | EACH | 18.000 | 18.000 |

REMOVING GUARDRAIL

| CATEGORY | STATION | TO STATION | | 204.0165 LF |
|----------|---------|------------|----|----------------|
| 0010 | 222+00 | - 225+50 | RT | 350 |
| | 376+50 | - 378+60 | RT | 210 |
| | 376+75 | - 379+50 | LT | 275 |
| | 406+90 | - 409+85 | RT | 295 |
| | 407+10 | - 410+30 | LT | 320 |
| | 600+35 | - 602+90 | RT | 255 |
| | 600+50 | - 603+10 | LT | 260 |
| | 644+70 | - 647+15 | RT | 245 |
| | 644+95 | - 647+00 | LT | 205 |
| TOTAL | | | | 2,415 |

FINISHING ROADWAY

| CATEGORY | PROJECT | 213.0100 EACH |
|----------|------------|------------------|
| 0010 | 4125-14-60 | 1 |
| TOTAL | | 1 |

REMOVING ASPHALTIC SURFACE MILLING

| CATEGORY | STATION | TO STATION | | 204.0120 SY |
|----------|---------|------------|--|----------------|
| 0010 | 54+50 | - 78+97 | | 8,470 |
| | 78+97 | - 105+44 | | 9,890 |
| | 105+44 | - 132+18 | | 9,830 |
| | 132+18 | - 158+90 | | 9,760 |
| | 158+90 | - 211+74 | | 19,640 |
| | 211+74 | - 264+68 | | 19,400 |
| | 264+68 | - 317+46 | | 19,490 |
| | 317+46 | - 344+05 | | 9,760 |
| | 344+05 | - 370+69 | | 9,280 |
| | 370+69 | - 398+43 | | 10,910 |
| | 398+43 | - 408+32 | | 4,360 |
| | 408+69 | - 424+84 | | 6,270 |
| | 424+84 | - 451+36 | | 9,420 |
| | 451+36 | - 477+98 | | 9,900 |
| | 477+98 | - 531+09 | | 19,040 |
| | 531+09 | - 557+32 | | 9,270 |
| | 557+32 | - 633+51 | | 26,920 |
| | 633+51 | - 672+36 | | 13,640 |
| TOTAL | | | | 225,250 |

REMOVING ASPHALTIC SURFACE BUTT JOINTS

| CATEGORY | STATION | LOCATION | 204.0115 SY |
|----------|---------|---------------------------|----------------|
| 0010 | 54+50 | STH 29 BEGIN PROJECT | 7 |
| | 78+97 | KADLETZ ROAD (NORTH) | 13 |
| | 105+44 | CTH V (SOUTH)/GASCHE ROAD | 13 |
| | 132+17 | STODOLA ROAD | 6 |
| | 158+92 | CTH V (NORTH)/ELM ROAD | 13 |
| | 211+74 | MANITOWOC ROAD | 7 |
| | 264+68 | CTH AB | 19 |
| | 317+47 | SLEEPY HOLLOW ROAD | 13 |
| | 344+05 | HRABIK ROAD | 6 |
| | 370+67 | TOWNLINE ROAD | 7 |
| | 398+42 | CHURCH ROAD | 13 |
| | 408+32 | B-31-0067 | 10 |
| | 408+69 | B-31-0067 | 10 |
| | 424+84 | ST PETERS ROAD | 13 |
| | 451+36 | BADGER LANE | 7 |
| | 477+97 | CTH B | 13 |
| | 531+09 | TOWNHALL ROAD | 7 |
| | 557+31 | BIRCHWOOD ROAD | 7 |
| | 633+00 | ANGLE ROAD | 5 |
| | 672+36 | STH 29 END PROJECT | 9 |
| TOTAL | | | 198 |

3

3

CULVERT ITEMS

| CATEGORY | STATION | 203.0100 | 204.0280 | 520.8000 | 520.8700 | 522.0124 | 522.0130 | 522.0136 | 522.1024 | 522.1030 | 522.1036 | SPV.0060.01 | * | * | * | * | * | REMARKS |
|----------|---------|----------|----------|----------|----------|-------------------------|----------|----------|----------------------------|----------|----------|------------------|---------|----------|-------|-----------|---------|-----------------|
| | | REMOVING | SEALING | CONCRETE | CLEANING | CULVERT PIPE REINFORCED | | | APRON ENDWALLS FOR CULVERT | | | GRADING, SHAPING | | | | | | |
| | | SMALL | PIPES | COLLARS | CULVERT | CONCRETE CLASS III | | | PIPE REINFORCED CONCRETE | | | AND FINISHING | | | | SEEDING | SEEDING | |
| | | EACH | EACH | FOR PIPE | PIPES | 24-INCH | 30-INCH | 36-INCH | 24-INCH | 30-INCH | 36-INCH | APRON ENDWALLS | TOPSOIL | MULCHING | NO 30 | TEMPORARY | WATER | |
| | | | | | EACH | LF | LF | LF | EACH | EACH | EACH | EACH | SY | SY | LB | LB | MGAL | |
| 0010 | 127+27 | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 135+80 | 1 | -- | 1 | -- | 16 | -- | -- | 1 | -- | -- | 1 | 100 | 100 | 1 | 1 | -- | NORTH END |
| | 147+78 | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 156+68 | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 159+20 | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 190+69 | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 224+18 | 1 | -- | 1 | -- | -- | -- | 16 | -- | -- | 1 | 1 | 200 | 200 | 1 | 2 | -- | BOTH ENDS |
| | 234+31 | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 266+60 | 2 | -- | 2 | 1 | 32 | -- | -- | 2 | -- | -- | 2 | 200 | 200 | 1 | 2 | -- | BOTH ENDS |
| | 387+77 | 2 | -- | 2 | -- | -- | 32 | -- | -- | 2 | -- | 2 | 200 | 200 | 1 | 2 | -- | BOTH ENDS |
| | 442+74 | 1 | -- | -- | -- | 50 | -- | -- | 2 | -- | -- | 2 | 300 | 300 | 2 | 4 | -- | REPLACE CULVERT |
| | 456+15 | 1 | -- | -- | -- | 50 | -- | -- | 2 | -- | -- | 2 | 300 | 300 | 2 | 4 | -- | REPLACE CULVERT |
| | 479+90 | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1 | 2 | -- | SEAL PIPE |
| | 537+06 | 1 | -- | -- | -- | -- | 50 | -- | -- | 2 | -- | 2 | 300 | 300 | 2 | 4 | -- | REPLACE CULVERT |
| | 571+17 | -- | -- | 2 | 1 | -- | 16 | -- | -- | 2 | -- | 2 | 100 | 100 | 1 | 1 | -- | BOTH ENDS |
| | 607+92 | 2 | -- | 2 | -- | 32 | -- | -- | 2 | -- | -- | 2 | 200 | 200 | 1 | 2 | -- | BOTH ENDS |
| | 616+59 | 1 | -- | -- | -- | 50 | -- | -- | 2 | -- | -- | 2 | 300 | 300 | 2 | 4 | -- | REPLACE CULVERT |
| | 632+09 | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| TOTALS | | 12 | 1 | 10 | 9 | 230 | 98 | 16 | 11 | 6 | 1 | 18 | 2200 | 2200 | 15 | 28 | 2 | |

* FOR INFORMATION ONLY. ITEMS INCIDENTAL TO GRADING, SHAPING AND FINISHING CULVERT PIPE AND APRON ENDWALLS.
NO FERTILIZER WAS USED DUE TO PROXIMITY TO WETLANDS

CULVERT ITEMS

| CATEGORY | STATION | 205.0110 | 305.0110 * | 305.0120 | 465.0105 | 690.0150 | SPV.0035.01 |
|----------|---------|------------|-----------------|-----------------|-----------|----------|-------------|
| | | EXCAVATION | BASE | | ASPHALTIC | SAWING | FOUNDATION |
| | | COMMON | AGGREGATE DENSE | AGGREGATE DENSE | SURFACE | ASPHALT | BACKFILL |
| | | CY | 3/4-INCH | 1 1/4-INCH | TON | LF | CY |
| 0010 | 135+80 | 25 | 1 | 1 | 5 | 30 | -- |
| | 224+18 | 50 | -- | -- | -- | -- | -- |
| | 266+60 | 50 | 2 | 2 | 10 | 60 | -- |
| | 387+77 | 50 | 2 | 2 | 10 | 60 | -- |
| | 442+74 | 305 | 5 | 20 | 85 | 60 | 160 |
| | 456+15 | 305 | 5 | 20 | 85 | 60 | 160 |
| | 537+06 | 305 | 5 | 20 | 85 | 60 | 160 |
| | 571+17 | 25 | -- | -- | -- | -- | -- |
| | 607+92 | 50 | 1 | 1 | 5 | 30 | -- |
| | 616+59 | 305 | 5 | 20 | 85 | 60 | 160 |
| TOTALS | | 1,470 | 25 | 86 | 370 | 420 | 640 |

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

BASE AGGREGATE FOR SHOULDERS

| CATEGORY | LOCATION | TON |
|----------|-----------|-------|
| 0010 | SHOULDERS | 1,000 |
| TOTAL | | 1,000 |

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE

MARKERS CULVERT END

| CATEGORY | STATION | | 633.5200 |
|---------------|---------|---------|----------|
| | | | EACH |
| 0010 | 135+80 | LT & RT | 2 |
| | 168+63 | RT | 1 |
| | 190+69 | LT | 1 |
| | 223+85 | RT | 1 |
| | 234+31 | RT | 1 |
| | 240+81 | RT | 1 |
| | 266+60 | LT & RT | 2 |
| | 387+77 | LT & RT | 2 |
| | 429+57 | LT | 1 |
| | 442+74 | LT & RT | 2 |
| | 456+15 | LT & RT | 2 |
| | 514+88 | RT | 1 |
| | 537+06 | LT & RT | 2 |
| | 571+17 | LT & RT | 1 |
| | 607+92 | LT | 1 |
| | 616+58 | LT & RT | 2 |
| UNDISTRIBUTED | | | 12 |
| TOTALS | | | 35 |

ASPHALT PAVEMENT ITEMS

| CATEGORY | STATION | TO | STATION | 455.0605 HMA PAVEMENT 4 MT 58-28 S | | | | 465.0110 | 465.0120 | 460.0105.S | 460.0110.S |
|----------|---------|----|---------|------------------------------------|----------|-----------------------|---------------|----------------------------|---|-----------------------------|-------------|
| | | | | TACK COAT | 460.6224 | PWL DENSITY INCENTIVE | PWL AIR VOIDS | ASPHALTIC SURFACE PATCHING | ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES | HMA PAVEMENT PWL TEST STRIP | VOLUMETRICS |
| | | | | GAL | TON | TON * | TON ** | TON | TON | EACH | EACH |
| 0010 | 54+50 | - | 78+97 | 520 | 1,220 | 750 | 470 | -- | -- | -- | -- |
| | 78+97 | - | 105+44 | 600 | 1,380 | 820 | 560 | -- | -- | -- | -- |
| | 105+44 | - | 132+18 | 600 | 1,380 | 820 | 560 | -- | -- | -- | -- |
| | 132+18 | - | 158+90 | 600 | 1,370 | 820 | 550 | -- | -- | -- | -- |
| | 158+90 | - | 211+74 | 1,150 | 2,540 | 1,620 | 920 | -- | 13 | -- | -- |
| | 211+74 | - | 264+68 | 1,180 | 2,700 | 1,630 | 1,070 | -- | -- | -- | -- |
| | 264+68 | - | 317+46 | 1,180 | 2,710 | 1,620 | 1,090 | -- | -- | -- | -- |
| | 317+46 | - | 344+05 | 580 | 1,290 | 820 | 470 | -- | -- | -- | -- |
| | 344+05 | - | 370+69 | 570 | 1,330 | 820 | 510 | -- | -- | -- | -- |
| | 370+69 | - | 398+43 | 650 | 1,450 | 860 | 590 | -- | -- | -- | -- |
| | 398+43 | - | 408+32 | 250 | 550 | 310 | 240 | -- | -- | -- | -- |
| | 408+69 | | 424+84 | 370 | 840 | 500 | 340 | -- | -- | -- | -- |
| | 424+84 | - | 451+36 | 580 | 1,340 | 820 | 520 | -- | -- | -- | -- |
| | 451+36 | - | 477+98 | 600 | 1,380 | 820 | 560 | -- | -- | -- | -- |
| | 477+98 | - | 531+09 | 1,170 | 2,680 | 1,630 | 1,050 | -- | -- | -- | -- |
| | 531+09 | - | 557+32 | 570 | 1,320 | 810 | 510 | -- | -- | -- | -- |
| | 557+32 | - | 633+51 | 1,650 | 3,800 | 2,340 | 1,460 | -- | -- | -- | -- |
| | 633+51 | - | 672+36 | 840 | 1,940 | 1,200 | 740 | -- | -- | -- | -- |
| PROJECT | | | | -- | -- | -- | -- | 50 | -- | 1 | 1 |
| TOTALS | | | | 13,660 | 31,220 | 19,010 | 12,210 | 50 | 13 | 1 | 1 |

* TONNAGE IS ELIGIBLE FOR INCENTIVE DENSITY PWL 460.2005 AND INCENTIVE AIR VOIDS 460.2010
 ** TONNAGE IS ELIGIBLE FOR INCENTIVE AIR VOIDS 460.2010 ADM DENSITY IS TESTED FOR ACCEPTANCE IN THOSE AREAS.

PREPARE FOUNDATION FOR

| CATEGORY | ROADWAY | LOCATION | 211.0100 | 211.0400 |
|----------|-------------|----------|------------------|--------------------|
| | | | ASPHALTIC PAVING | ASPHALTIC SHOULDER |
| | | | LS | STA |
| 0010 | STH 29 (WB) | LT | -- | 594 |
| | STH 29 (EB) | RT | -- | 574 |
| | 4125-14-60 | | 1 | -- |
| | | TOTAL | 1 | 1167 |

MGS GUARDRAIL

| CATEGORY | STA | TO | STA | RT | 614.0010 | 305.0110 * | ** | ** | ** | ** | ** | ** | 614.2300 | 614.2330 | 614.2340 | 614.2500 | 614.2610 | |
|----------|--------|-----|--------|----|---------------------------|----------------|------------|---------|------------|----------|------------|--------|----------|-------------|--------------|--------------|------------|-----------|
| | | | | | BARRIER SYSTEM | BASE AGGREGATE | EXCAVATION | SEEDING | FERTILIZER | SEED | MGS | MGS | MGS | MGS | MGS | | | |
| | | | | | GRADING SHAPING FINISHING | DENSE 3/4 INCH | COMMON | BORROW | TOPSOIL | MULCHING | MIX NO. 30 | TYPE B | WATER | GUARDRAIL 3 | GUARDRAIL 3K | GUARDRAIL 3L | THRIE BEAM | GUARDRAIL |
| | EACH | TON | CY | CY | SY | SY | LB | CWT | MGAL | LF | LF | LF | LF | LF | EACH | | | |
| 0010 | 220+88 | - | 225+88 | RT | 2 | 80 | 46 | 5 | 550 | 550 | 10 | 0.35 | -- | -- | 400 | -- | -- | 2 |
| | 376+02 | - | 379+02 | RT | 2 | 50 | 30 | 6 | 230 | 230 | 4 | 0.15 | -- | -- | 50 | 150 | -- | 2 |
| | 376+67 | - | 379+67 | LT | 2 | 50 | 31 | 222 | 970 | 970 | 17 | 0.61 | -- | -- | 50 | 150 | -- | 2 |
| | 406+57 | - | 408+32 | RT | 1 | 30 | 35 | 17 | 220 | 220 | 4 | 0.14 | -- | 85 | -- | -- | 40 | 1 |
| | 408+69 | - | 409+94 | RT | 1 | 20 | 35 | 17 | 100 | 100 | 2 | 0.06 | -- | 35 | -- | -- | 40 | 1 |
| | 407+20 | - | 408+32 | LT | 1 | 20 | 29 | 10 | 150 | 150 | 3 | 0.10 | -- | 22 | -- | -- | 40 | 1 |
| | 408+69 | - | 410+44 | LT | 1 | 30 | 29 | 10 | 140 | 140 | 3 | 0.09 | -- | 85 | -- | -- | 40 | 1 |
| | 600+13 | - | 603+38 | RT | 2 | 50 | 31 | 36 | 310 | 310 | 6 | 0.20 | -- | -- | 225 | -- | -- | 2 |
| | 600+50 | - | 603+38 | LT | 2 | 50 | 31 | 75 | 410 | 410 | 7 | 0.26 | -- | -- | 188 | -- | -- | 2 |
| | 644+40 | - | 648+57 | RT | 2 | 70 | 62 | 0 | 300 | 300 | 5 | 0.19 | -- | -- | 317 | -- | -- | 2 |
| | 644+95 | - | 647+21 | LT | 2 | 40 | 28 | 0 | 120 | 120 | 2 | 0.08 | -- | -- | 126 | -- | -- | 2 |
| TOTALS | | | | | 18 | 490 | 387 | 398 | 3500 | 3500 | 63 | 2.2 | 2 | 227 | 1,356 | 300 | 160 | 18 |

* ADDITIONAL QUANTITIES SHOWN ELSEWHERE
 ** FOR INFORMATION ONLY. ITEMS INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING.
 BORROW IS ESTIMATED WITH A 1.25% EXPANSION FACTOR

PERMANENT SIGNING

| CATEGORY | SIGN NO. | SIGN CODE | W | X | H | APPROX. STATION | 637.2230 | 634.0612 | 638.2602 | 638.3000 | REMARKS |
|----------|----------|-----------|----|---|----|-----------------|--------------------------|-------------------|------------------------|------------------------------|---------|
| | | | | | | | SIGNS TYPE II REFLECTIVE | POSTS WOOD 4X6X12 | REMOVING SIGNS TYPE II | REMOVING SMALL SIGN SUPPORTS | |
| | | | | | | TYPE F SF | EACH | EACH | EACH | | |
| 0010 | 1 | W1-6 | -- | X | -- | -- | -- | 1 | 1 | REMOVE SIGN | |
| | 2 | W1-8 | 18 | X | 24 | 630+70 | 3.00 | 1 | -- | MOUNT WITH SIGN 3 | |
| | 3 | W1-8 | 18 | X | 24 | 630+70 | 3.00 | -- | -- | MOUNT WITH SIGN 2 | |
| | 4 | W1-8 | 18 | X | 24 | 632+30 | 3.00 | 1 | -- | MOUNT WITH SIGN 5 | |
| | 5 | W1-8 | 18 | X | 24 | 632+30 | 3.00 | -- | -- | MOUNT WITH SIGN 4 | |
| | 6 | W1-8 | 18 | X | 24 | 633+90 | 3.00 | 1 | -- | MOUNT WITH SIGN 7 | |
| | 7 | W1-8 | 18 | X | 24 | 633+90 | 3.00 | -- | -- | MOUNT WITH SIGN 6 | |
| | 8 | W1-8 | 18 | X | 24 | 635+50 | 3.00 | 1 | -- | MOUNT WITH SIGN 9 | |
| | 9 | W1-8 | 18 | X | 24 | 635+50 | 3.00 | -- | -- | MOUNT WITH SIGN 8 | |
| | 10 | W1-8 | 18 | X | 24 | 637+10 | 3.00 | 1 | -- | MOUNT WITH SIGN 11 | |
| | 11 | W1-8 | 18 | X | 24 | 637+10 | 3.00 | -- | -- | MOUNT WITH SIGN 10 | |
| | 12 | W1-8 | 18 | X | 24 | 638+70 | 3.00 | 1 | -- | MOUNT WITH SIGN 13 | |
| | 13 | W1-8 | 18 | X | 24 | 638+70 | 3.00 | -- | -- | MOUNT WITH SIGN 12 | |
| | 14 | W1-8 | 18 | X | 24 | 640+30 | 3.00 | 1 | -- | MOUNT WITH SIGN 15 | |
| | 15 | W1-8 | 18 | X | 24 | 640+30 | 3.00 | -- | -- | MOUNT WITH SIGN 14 | |
| | 16 | W1-8 | 18 | X | 24 | 641+80 | 3.00 | 1 | -- | MOUNT WITH SIGN 17 | |
| | 17 | W1-8 | 18 | X | 24 | 641+80 | 3.00 | -- | -- | MOUNT WITH SIGN 16 | |
| | 18 | W1-6 | -- | X | -- | -- | -- | 1 | 1 | REMOVE SIGN | |
| TOTAL | | | | | | | 48.00 | 8 | 2 | 2 | |

RUMBLE STRIPS

| CATEGORY | STATION | TO | STATION | 465.0425 | 465.0475 |
|----------|---------|----|---------|------------------------|--------------------------|
| | | | | SHOULDER RUMBLE STRIPS | CENTERLINE RUMBLE STRIPS |
| | | | | 2-LANE RURAL | |
| | | | | LF | LF |
| 0010 | 54+50 | - | 78+97 | 4,000 | 2,250 |
| | 78+97 | - | 105+44 | 4,100 | 2,250 |
| | 105+44 | - | 132+18 | 4,440 | 2,270 |
| | 132+18 | - | 149+00 | 3,020 | 1,480 |
| | 172+00 | - | 211+74 | 7,210 | 3,770 |
| | 211+74 | - | 264+68 | 9,300 | 4,770 |
| | 264+68 | - | 317+46 | 8,650 | 4,880 |
| | 317+46 | - | 344+05 | 4,210 | 2,260 |
| | 344+05 | - | 370+69 | 4,500 | 2,260 |
| | 370+69 | - | 398+43 | 4,310 | 2,370 |
| | 398+43 | - | 424+84 | 4,030 | 2,180 |
| | 424+84 | - | 451+36 | 4,330 | 2,250 |
| | 451+36 | - | 477+98 | 3,690 | 1,890 |
| | 477+98 | - | 531+09 | 9,000 | 4,910 |
| | 531+09 | - | 557+32 | 4,750 | 2,220 |
| | 557+32 | - | 633+51 | 13,700 | 7,220 |
| | 633+51 | - | 672+36 | 6,490 | 3,310 |
| TOTALS | | | | 99,730 | 52,540 |

MAINTENANCE AND REPAIR OF HAUL ROAD

| CATEGORY | PROJECT | 618.0100 |
|----------|------------|----------|
| | | EACH |
| 0010 | 4125-14-60 | 1 |
| TOTAL | | 1 |

3

EROSION CONTROL ITEMS

| CATEGORY | PROJECT | 628.1905 MOBILIZATIONS EROSION CONTROL EACH | 628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH |
|----------|------------|---|---|
| 0010 | 4125-14-60 | 1 | 1 |
| TOTALS | | 1 | 1 |

EROSION CONTROL ITEMS

| CATEGORY | STA | TO | STA | 628.1504 SILT FENCE LF | 628.1520 SILT FENCE MAINTENANCE LF | 628.7504 TEMPORARY DITCH CHECKS LF | 628.7555 CULVERT PIPE CHECKS EACH |
|----------|---------------|----|--------|---------------------------------|--|--|---|
| 0010 | 135+80 | | | -- | -- | -- | 3 |
| | 222+00 | - | 225+50 | 300 | 300 | 40 | -- |
| | 266+60 | | | -- | -- | -- | 3 |
| | 375+00 | - | 381+00 | 700 | 700 | 40 | -- |
| | 387+77 | | | -- | -- | -- | 5 |
| | 406+90 | - | 410+30 | 1,100 | 1,100 | 20 | -- |
| | 442+74 | | | -- | -- | -- | 3 |
| | 456+15 | | | -- | -- | -- | 3 |
| | 537+06 | | | -- | -- | -- | 5 |
| | 571+17 | | | -- | -- | -- | 5 |
| | 599+00 | - | 604+50 | 705 | 705 | 80 | -- |
| | 607+92 | | | -- | -- | -- | 3 |
| | 616+59 | | | -- | -- | -- | 3 |
| | 644+70 | - | 647+15 | 425 | 425 | 80 | -- |
| | UNDISTRIBUTED | | | 810 | 810 | 70 | 10 |
| TOTALS | | | | 4,040 | 4,040 | 330 | 43 |

3

MARKING LINE ITEMS

| CATEGORY | STATION | STATION | LOCATION | 646.1020 MARKING LINE EPOXY 4-INCH YELLOW LF | 646.1040 MARKING LINE GROOVED WET REF EPOXY 4-INCH WHITE LF | 646.3040 MARKING LINE GROOVED WET REF EPOXY 8-INCH WHITE LF | 646.6120 STOP LINE EPOXY 18-INCH WHITE LF | 649.0105 TEMPORARY MARKING LINE PAINT 4-INCH YELLOW LF | 649.0120 TEMPORARY MARKING LINE EPOXY 4-INCH YELLOW LF |
|----------|---------|----------|-------------------------|---|--|--|--|---|---|
| 0010 | 54+50 | - 672+36 | CENTERLINE | 51,000 | -- | -- | -- | 83,600 | 51,000 |
| | 54+50 | - 672+36 | RIGHT | -- | 59,400 | 2,500 | -- | -- | -- |
| | 54+50 | - 672+36 | LEFT | -- | 59,600 | 2,100 | -- | -- | -- |
| | | | KALDETZ ROAD | 100 | -- | -- | -- | -- | -- |
| | | | CTH V SOUTH/GASCHE ROAD | 200 | -- | -- | -- | -- | -- |
| | | | STODOLA ROAD | 100 | -- | -- | -- | -- | -- |
| | | | CTH V NORTH | 100 | -- | -- | -- | -- | -- |
| | | | CTH AB | 200 | -- | -- | 50 | -- | -- |
| | | | SLEEPY HOLLOW ROAD | 200 | -- | -- | -- | -- | -- |
| | | | CHURCH ROAD | 200 | -- | -- | -- | -- | -- |
| | | | ST PETERS ROAD | 200 | -- | -- | -- | -- | -- |
| | | | BADGER LANE | 100 | -- | -- | -- | -- | -- |
| | | | CTH B | 200 | -- | -- | 30 | -- | -- |
| | | | BIRCHWOOD ROAD | 100 | -- | -- | -- | -- | -- |
| | | | ANGLE ROAD | 100 | -- | -- | -- | -- | -- |
| TOTALS | | | | 52,800 | 119,000 | 4,600 | 80 | 83,600 | 51,000 |

3

TRAFFIC CONTROL ITEMS

| CATEGORY | LOCATION | STAGE DURATION | 643.0300 TRAFFIC CONTROL DRUMS | | 643.0900 TRAFFIC CONTROL SIGNS | | 643.1050 TRAFFIC CONTROL SIGNS PCMS | | COMMENTS |
|----------|-----------------------------|-------------------|--------------------------------------|------|--------------------------------------|-------|---|-----|---|
| | | | EACH | DAYS | EACH | DAYS | EACH | DAY | |
| 0010 | STH 29 ADVANCED SIGNING | 85 | 20 | 140 | 20 | 1,700 | 4 | 28 | PLACE PCMS SIGNS 7 DAYS PRIOR TO CONSTRUCTION |
| | STH 29 MILLED SURFACE | 25 | -- | -- | 12 | 300 | -- | -- | |
| | STH 29 UNEVEN LANES | 25 | -- | -- | 2 | 50 | -- | -- | |
| | STH 29 PAVEMENT MARKING | 5 | -- | -- | 16 | 80 | -- | -- | |
| | SIDE ROADS ADVANCED WARNING | 85 | -- | -- | 24 | 2,040 | -- | -- | |
| | SIDE ROAD MILLED SURFACE | 25 | -- | -- | 48 | 1,200 | -- | -- | |
| | UNDISTRIBUTED | | | 40 | | 1,340 | -- | -- | |
| TOTALS | | | | 180 | | 6,710 | | 28 | |

TRAFFIC CONTROL

| CATEGORY | LOCATION | 643.5000 EACH |
|----------|--------------------|------------------|
| 0010 | PROJECT 4125-14-60 | 1 |
| TOTAL | | 1 |

3

FIELD OFFICE TYPE C

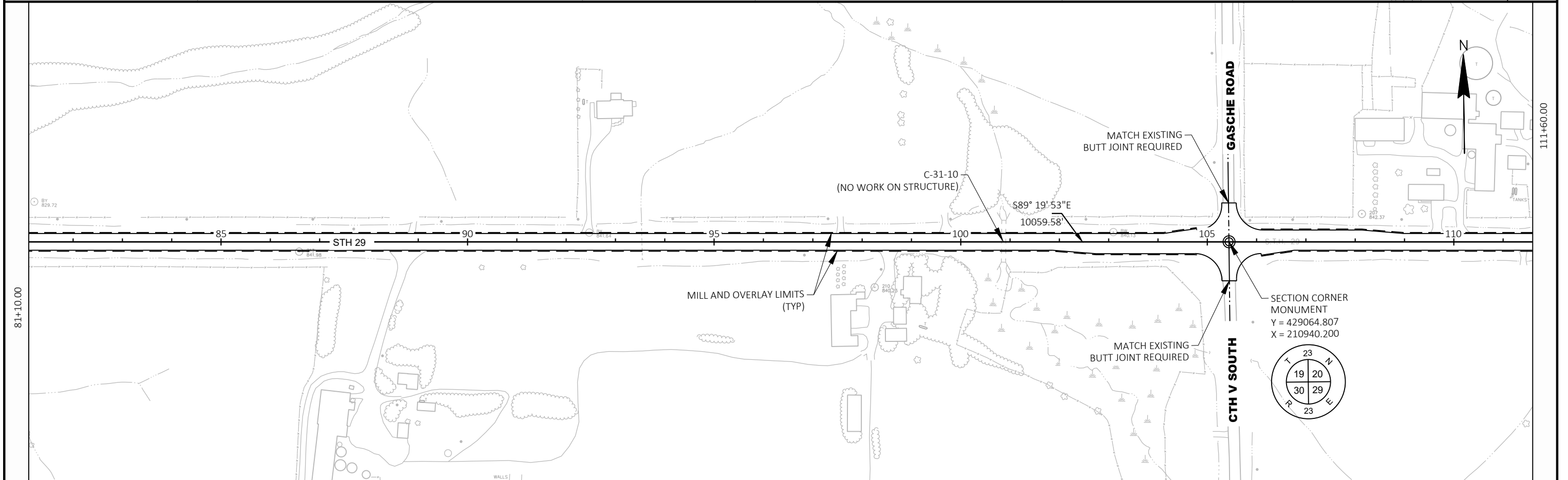
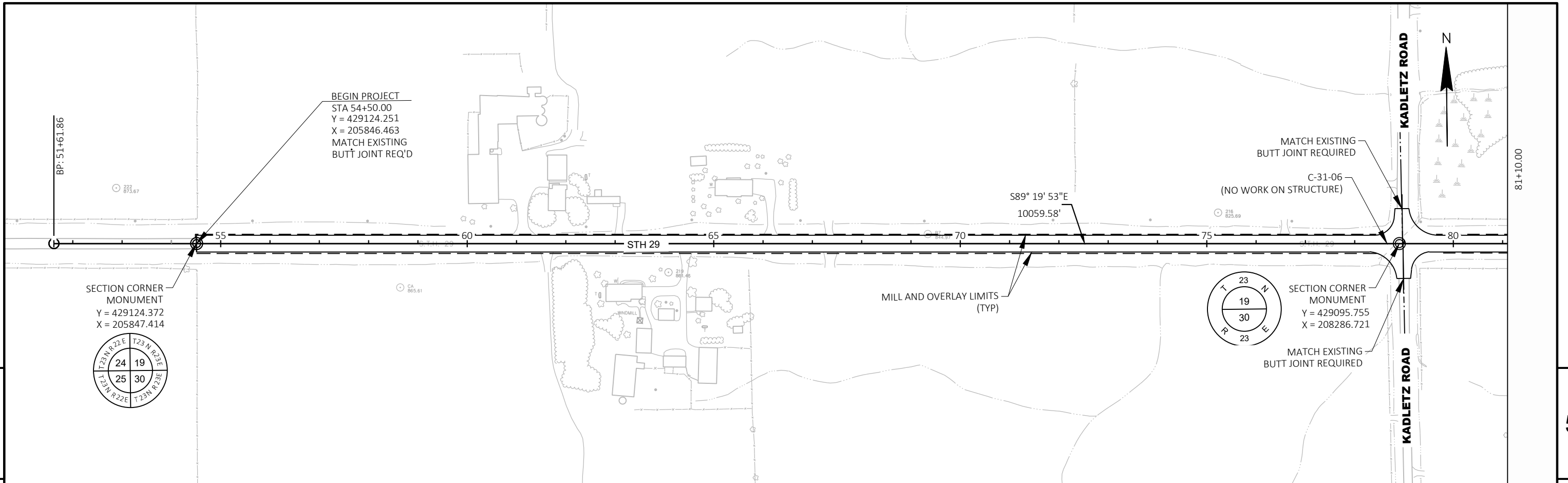
| CATEGORY | LOCATION | 642.5201 EACH |
|----------|--------------------|------------------|
| 0010 | PROJECT 4125-14-60 | 1 |
| TOTAL | | 1 |

WATER

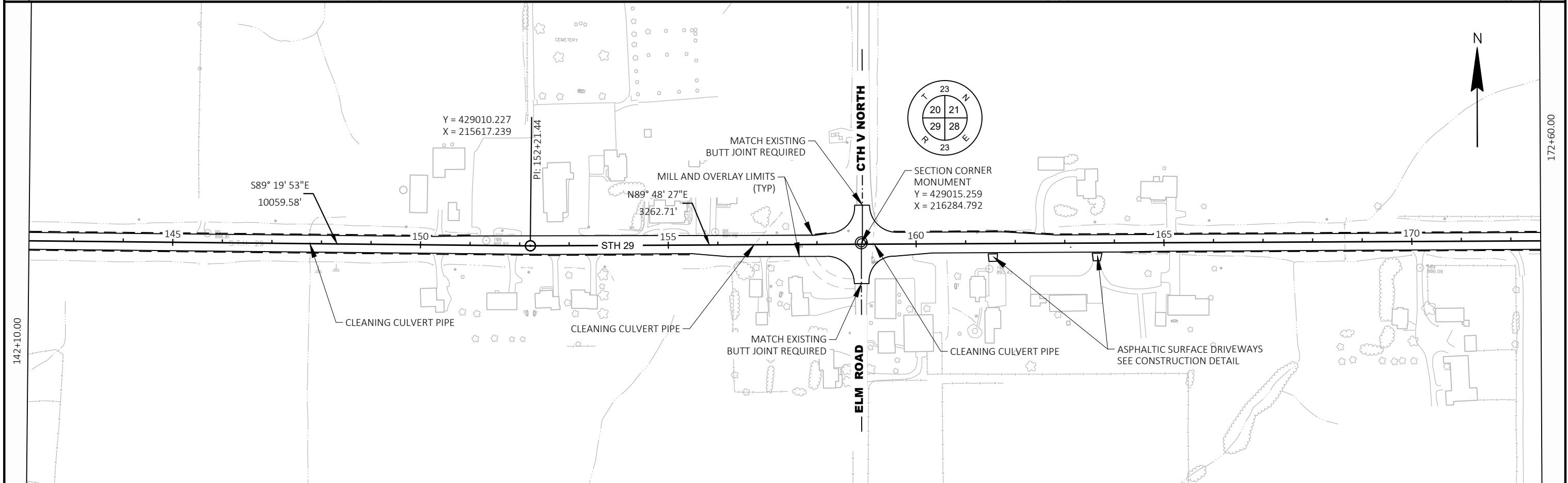
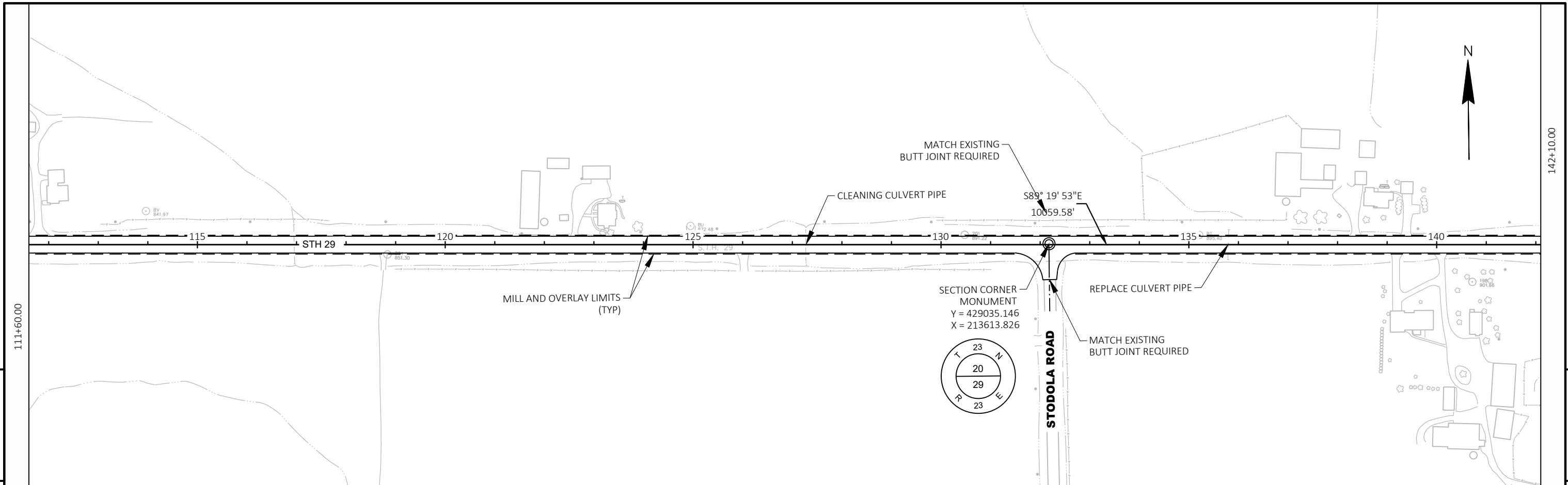
| CATEGORY | LOCATION | USE | 624.0100 WATER MGAL |
|----------|--------------------|-------------------|---------------------------|
| 0010 | PROJECT 4125-14-60 | BASE PLACEMENT | 10 |
| 0010 | PROJECT 4125-14-60 | WATER RESTORATION | -- |
| TOTAL: | | | 10 |

CONSTRUCTION STAKING

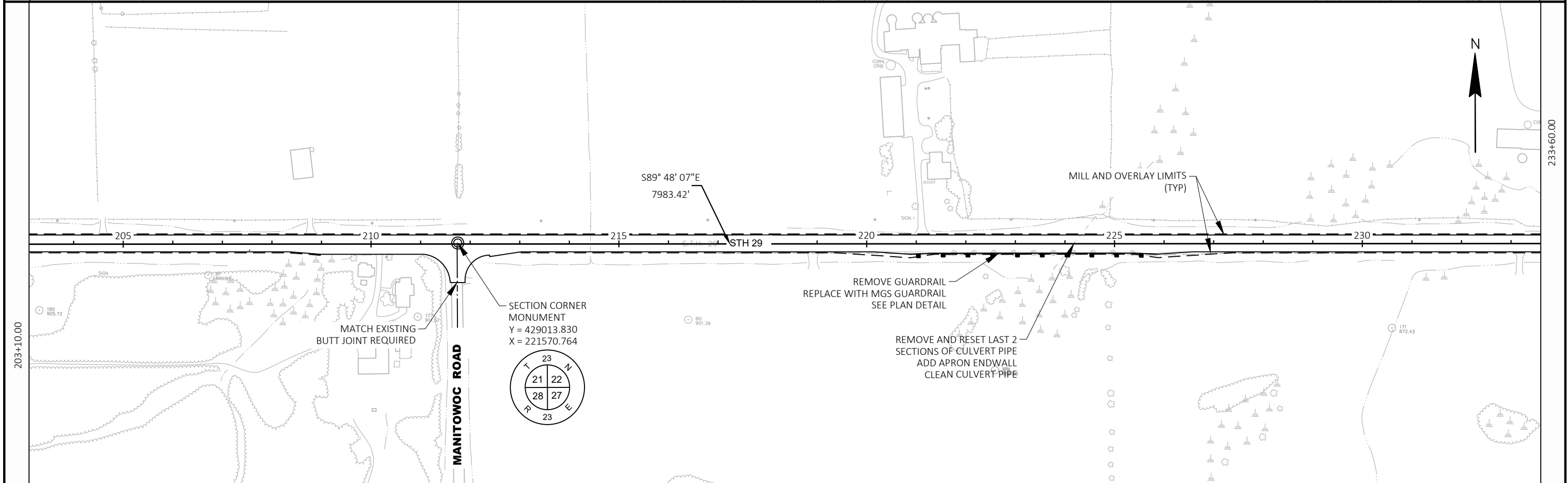
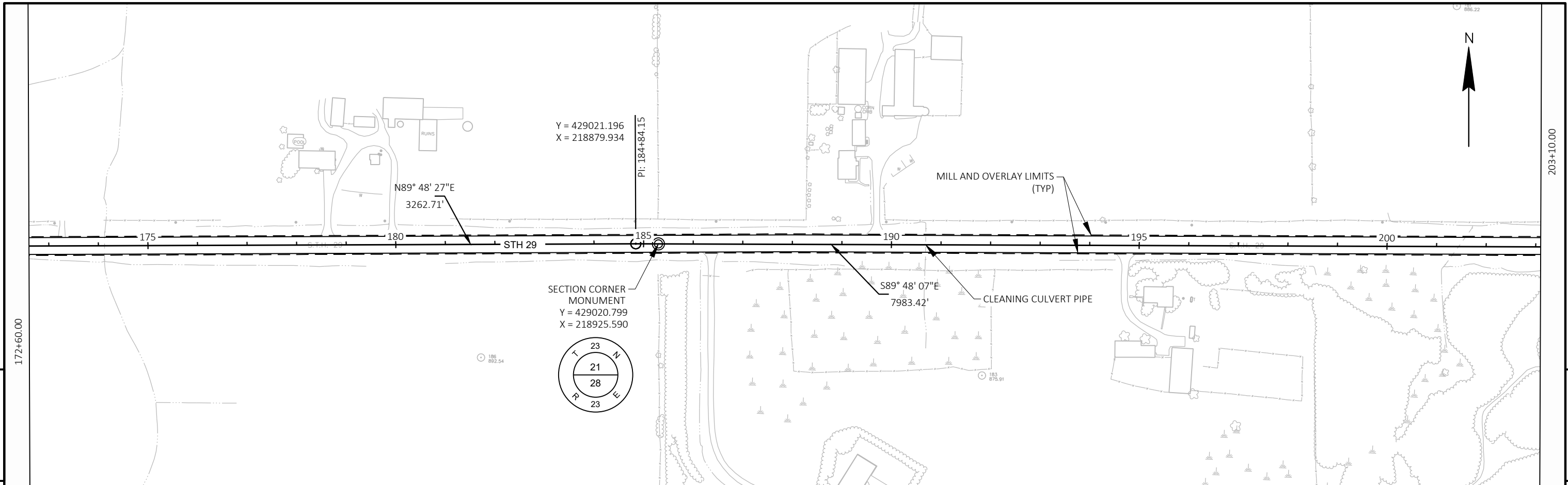
| CATEGORY | STATION | TO | STATION | 650.6000 CULVERTS EACH | 650.8000 RESURFACING REFERENCE LF | 650.9910 SUPPLEMENTAL CONTROL LS |
|----------|--------------------|----|---------|------------------------------|--|---|
| 0010 | PROJECT 4125-14-60 | | | -- | -- | 1 |
| | 54+50 | - | 408+32 | -- | 35,382 | -- |
| | 408+69 | - | 672+36 | -- | 26,367 | -- |
| | 135+80 | | | 1 | -- | -- |
| | 224+18 | | | 1 | -- | -- |
| | 266+60 | | | 1 | -- | -- |
| | 387+77 | | | 1 | -- | -- |
| | 442+74 | | | 1 | -- | -- |
| | 456+15 | | | 1 | -- | -- |
| | 537+06 | | | 1 | -- | -- |
| | 571+17 | | | 1 | -- | -- |
| | 607+92 | | | 1 | -- | -- |
| | 616+59 | | | 1 | -- | -- |
| TOTAL | | | | 10 | 61,749 | 1 |



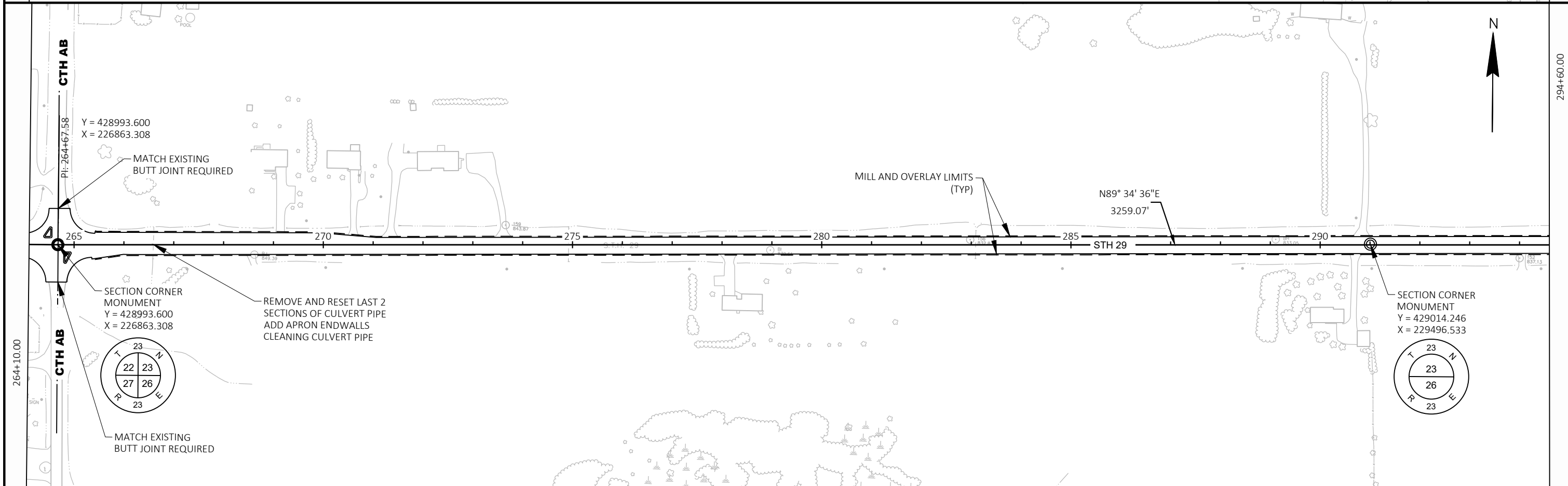
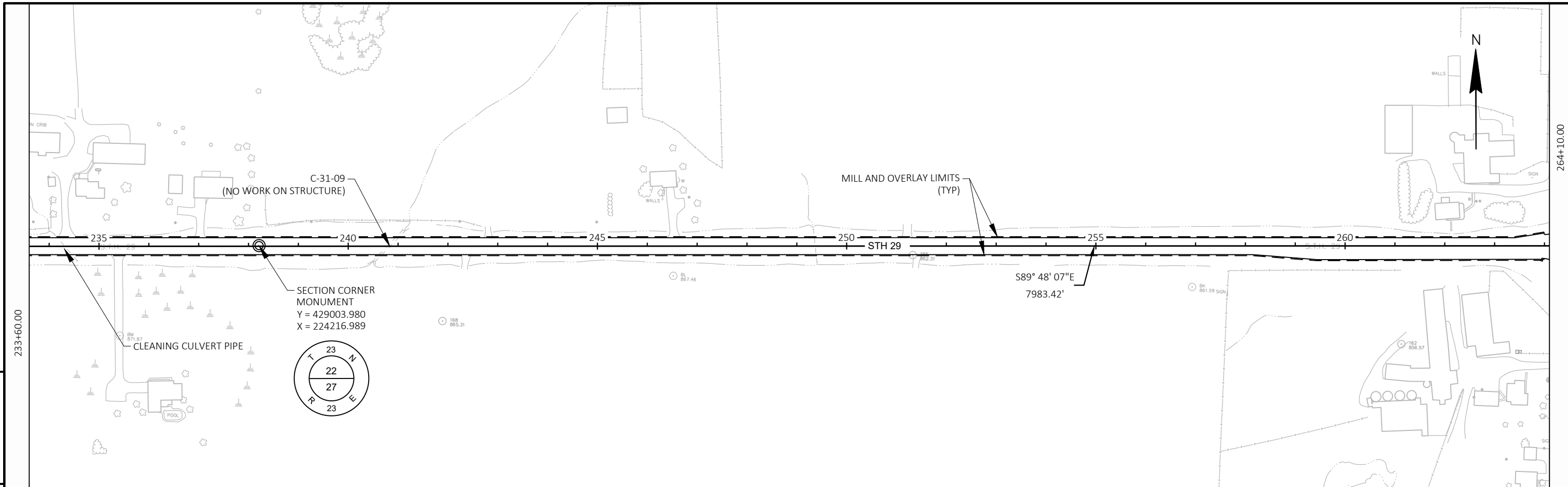
| | | | | | |
|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|



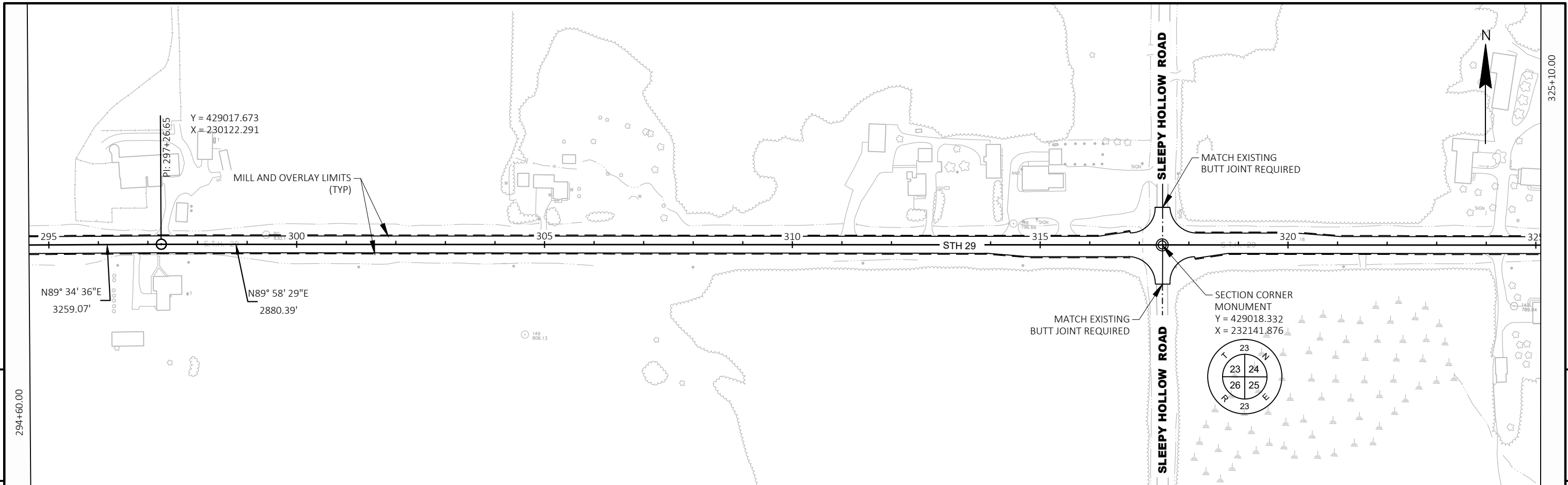
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|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|



| | | | | | |
|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|

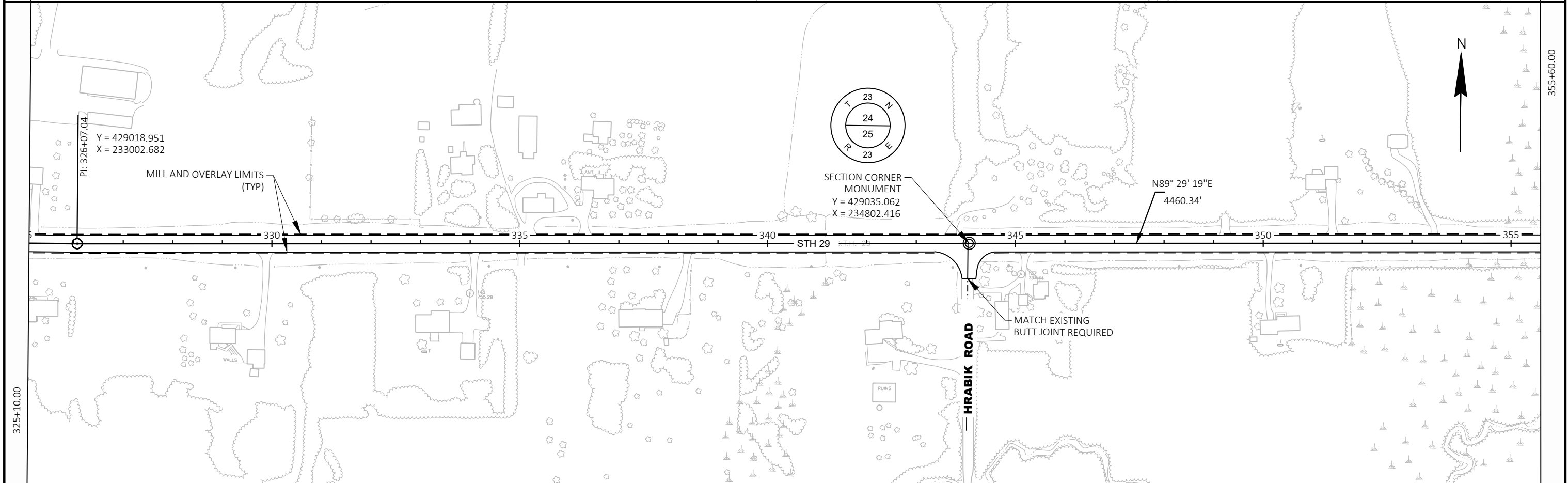


| | | | | | |
|------------------------|-------------|------------------|-------------|-------|----------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|----------|



5
294+60.00

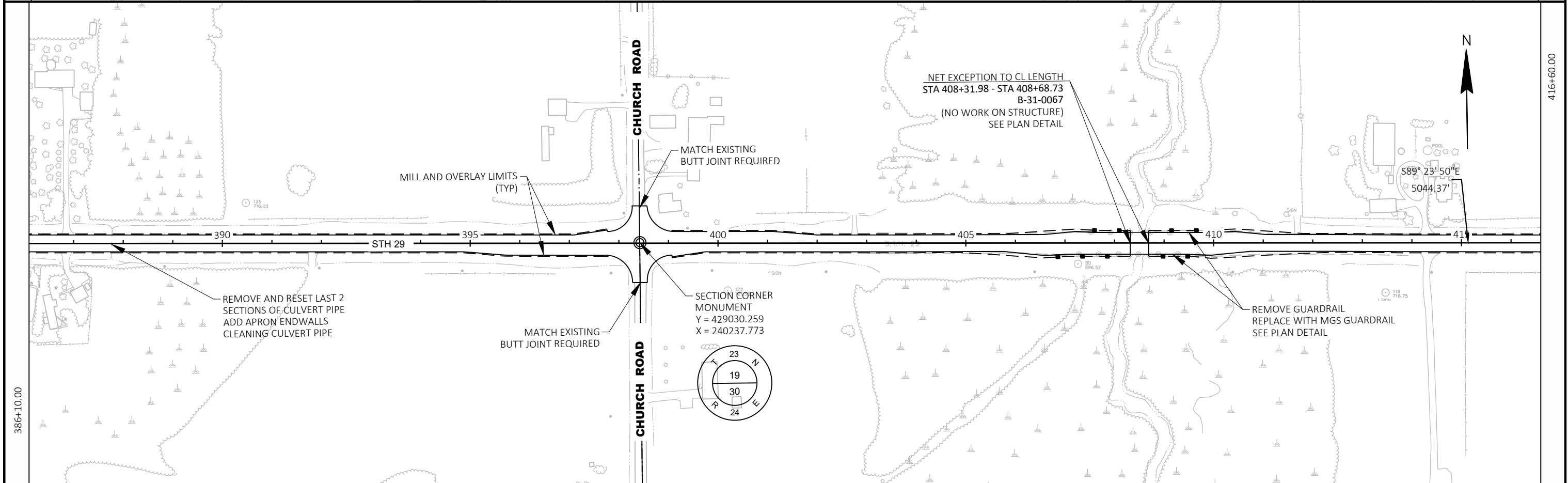
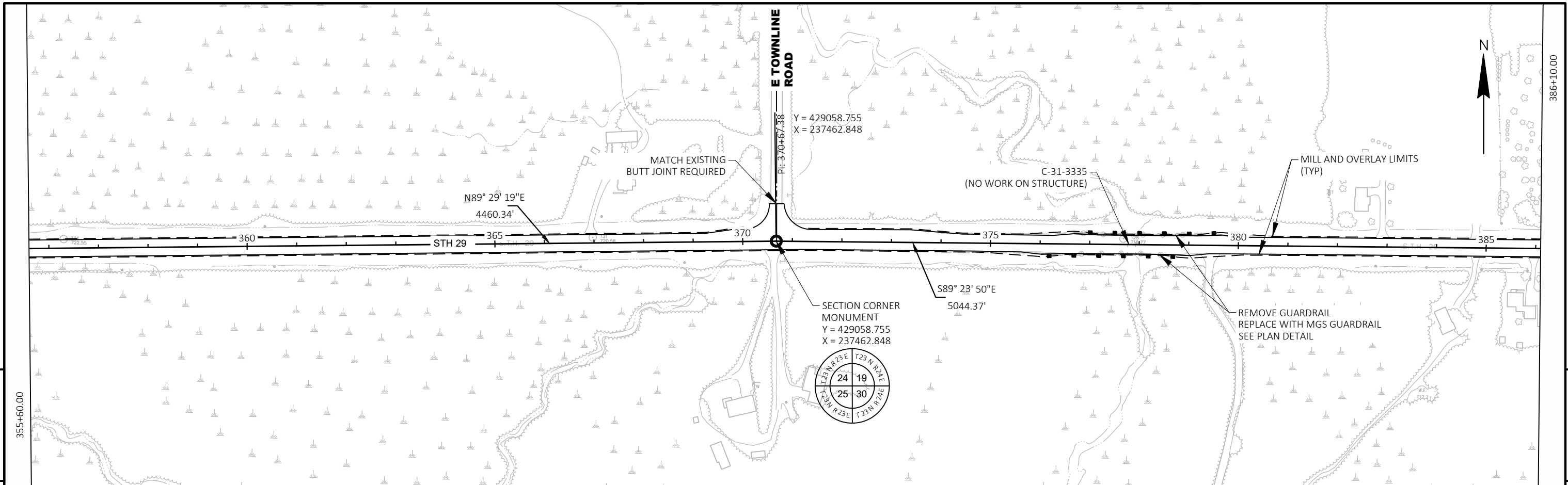
5
325+10.00



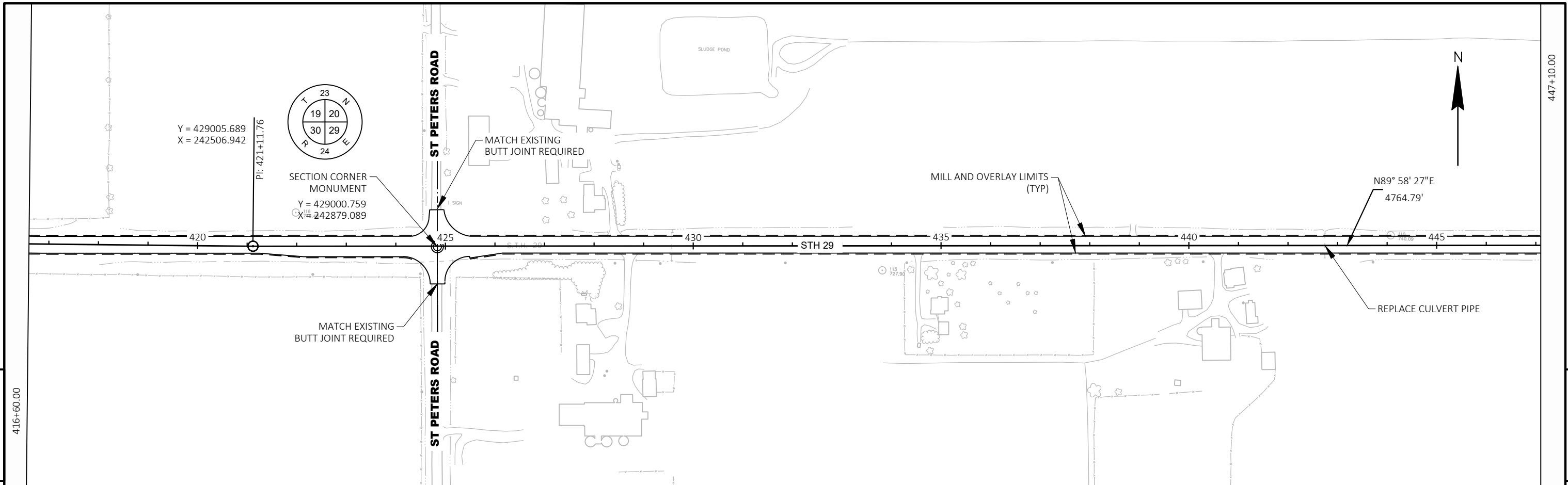
325+10.00

355+60.00

| | | | | | |
|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|

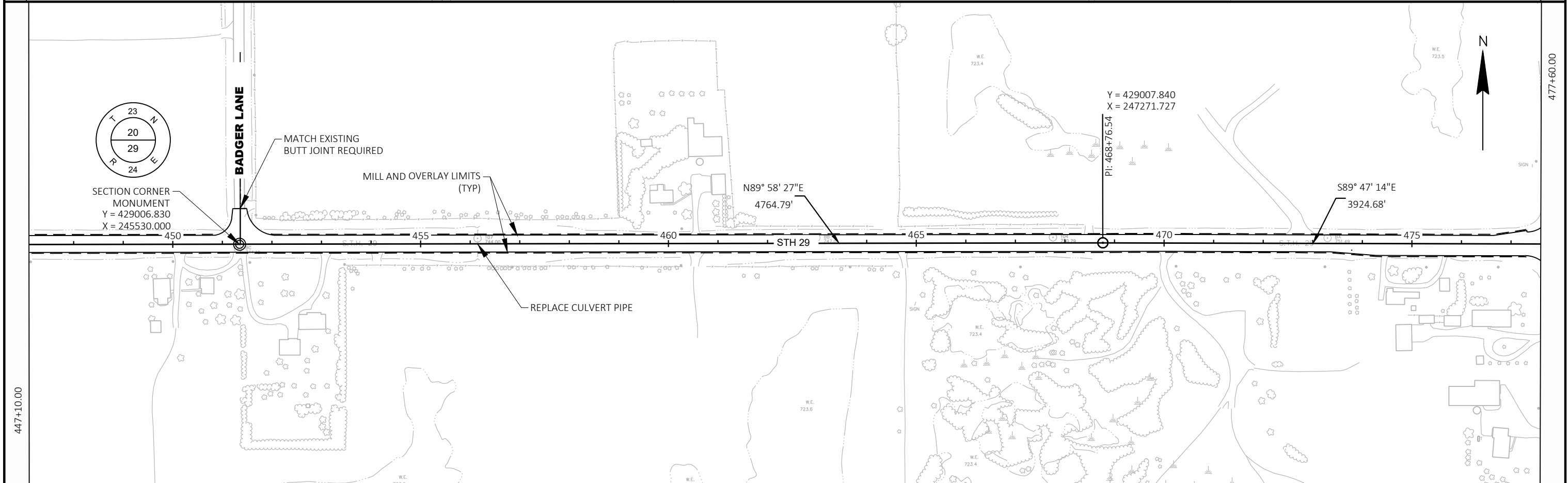


| | | | | | |
|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|



5
4.16+60.00

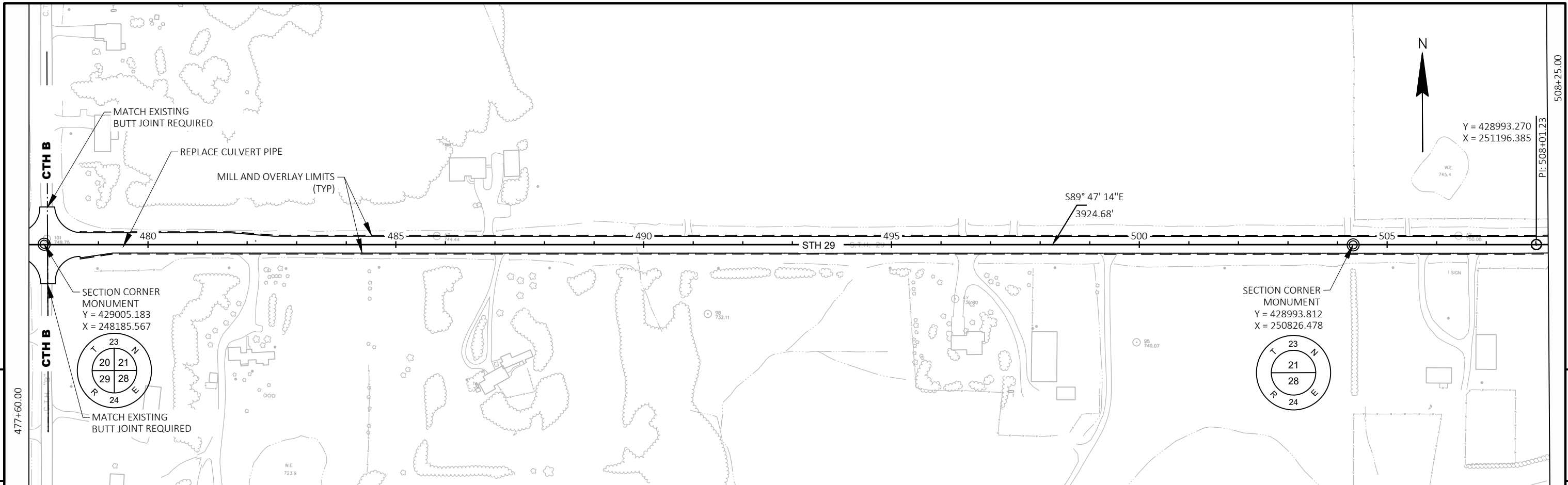
5
4.47+10.00



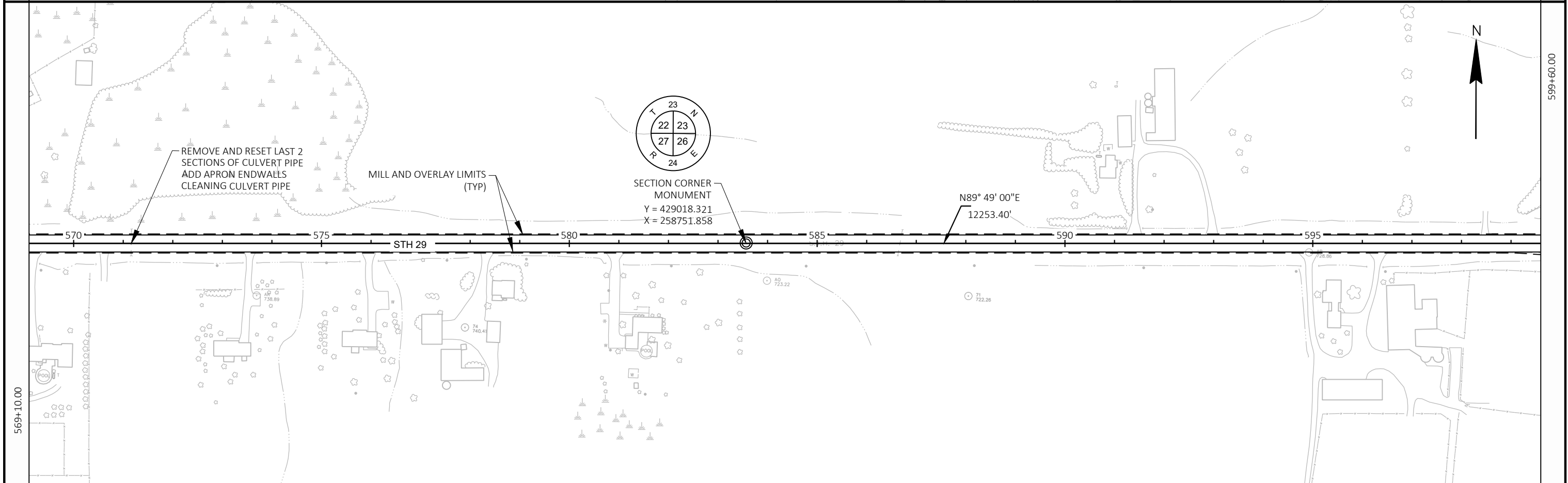
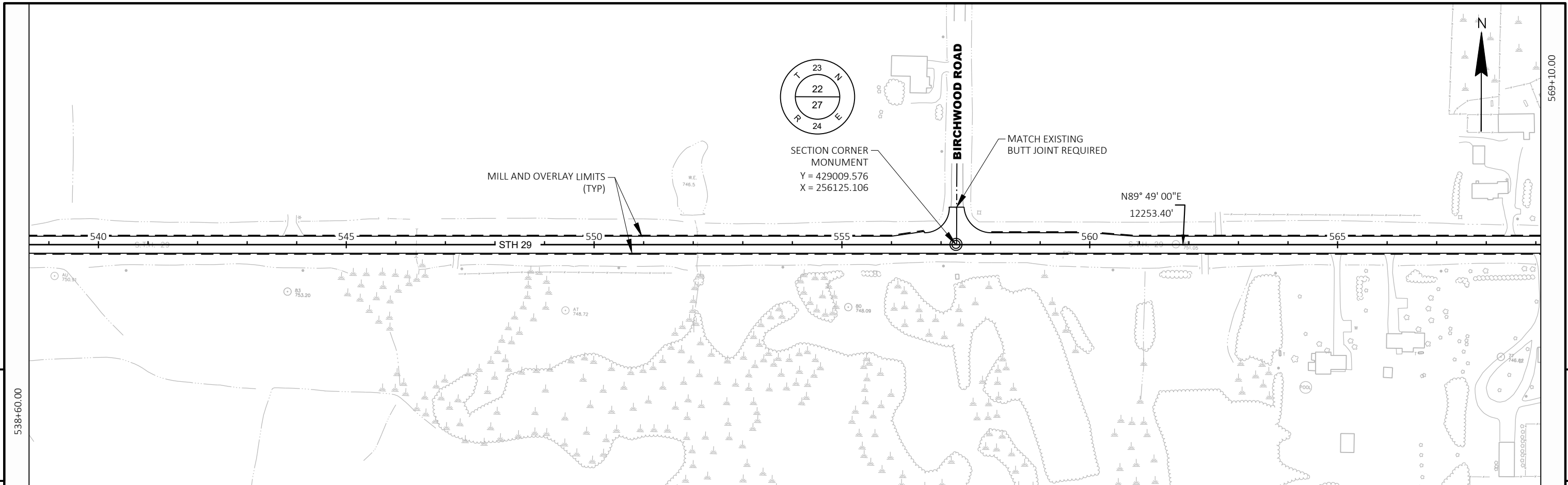
4.47+10.00

4.77+60.00

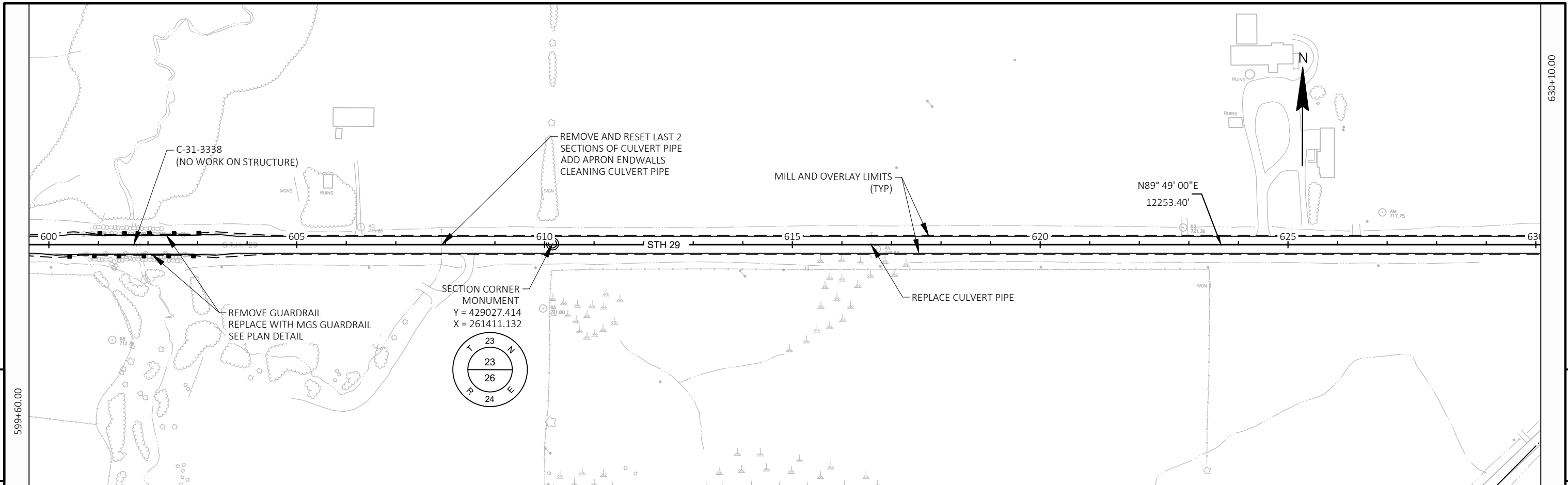
| | | | | | |
|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|



| | | | | | |
|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|

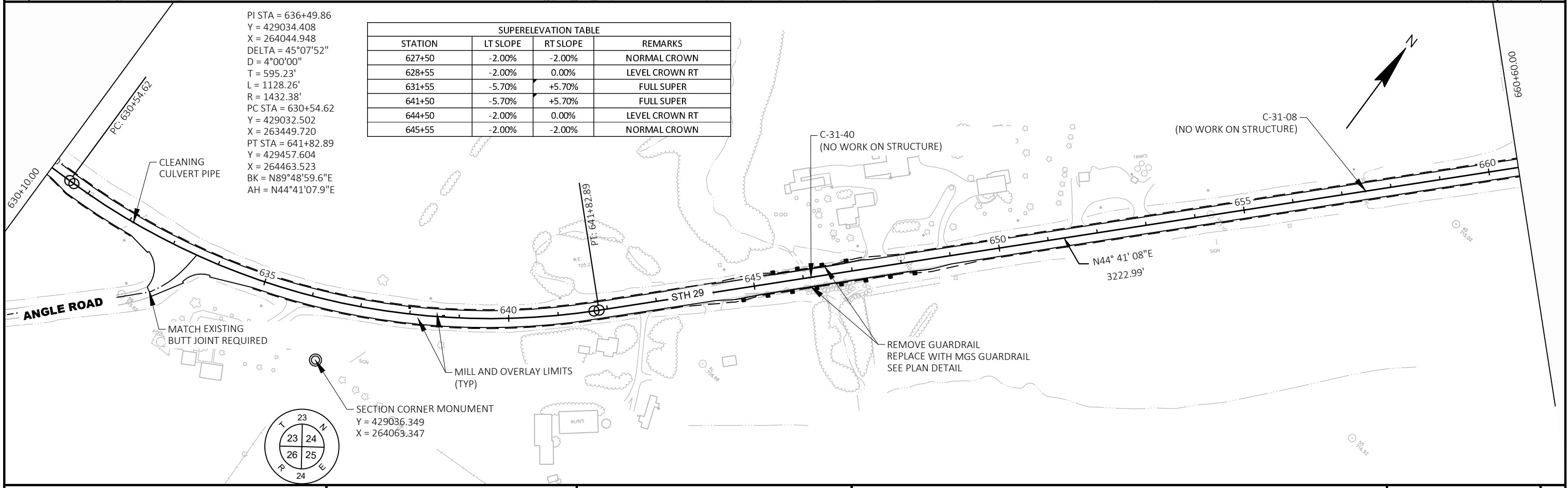


| | | | | | |
|------------------------|-------------|------------------|-------------|-------|---|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|---|



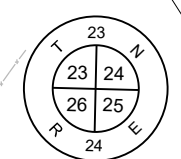
5

5

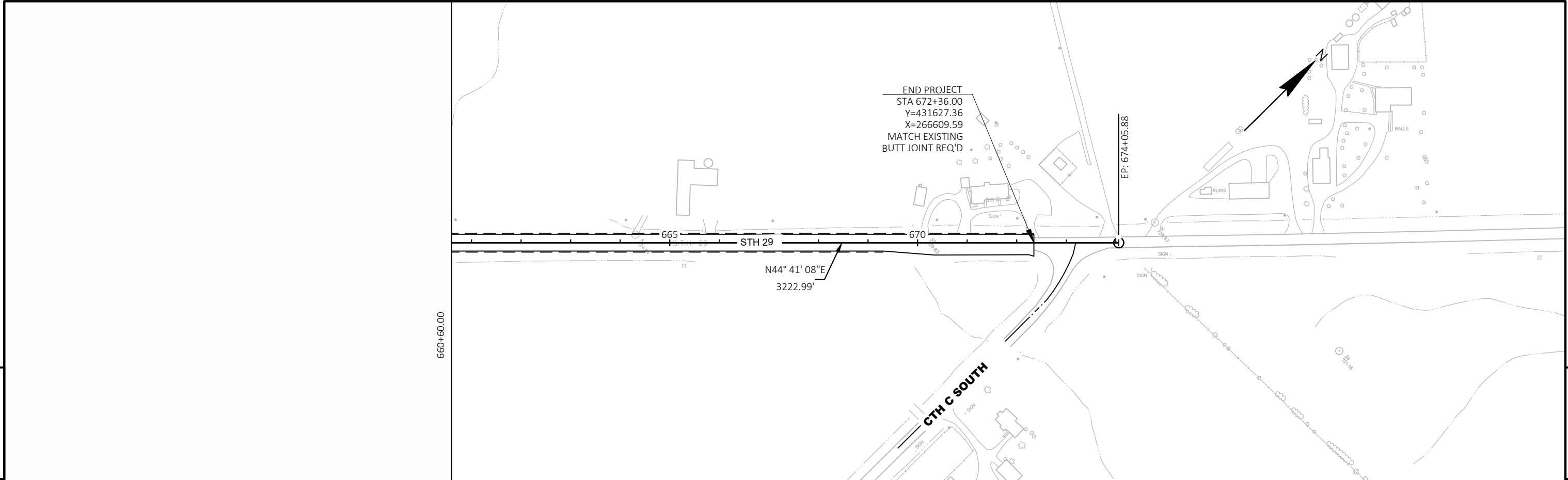


PI STA = 636+49.86
 Y = 429034.408
 X = 264044.948
 DELTA = 45°07'52"
 D = 4°00'00"
 T = 595.23'
 L = 1128.26'
 R = 1432.38'
 PC STA = 630+54.62
 Y = 429032.502
 X = 263449.720
 PT STA = 641+82.89
 Y = 429457.604
 X = 264463.523
 BK = N89°48'59.6"E
 AH = N44°41'07.9"E

| SUPERELEVATION TABLE | | | |
|----------------------|----------|----------|----------------|
| STATION | LT SLOPE | RT SLOPE | REMARKS |
| 627+50 | -2.00% | -2.00% | NORMAL CROWN |
| 628+55 | -2.00% | 0.00% | LEVEL CROWN RT |
| 631+55 | -5.70% | +5.70% | FULL SUPER |
| 641+50 | -5.70% | +5.70% | FULL SUPER |
| 644+50 | -2.00% | 0.00% | LEVEL CROWN RT |
| 645+55 | -2.00% | -2.00% | NORMAL CROWN |



PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE PLAN SHEETS SHEET E



5

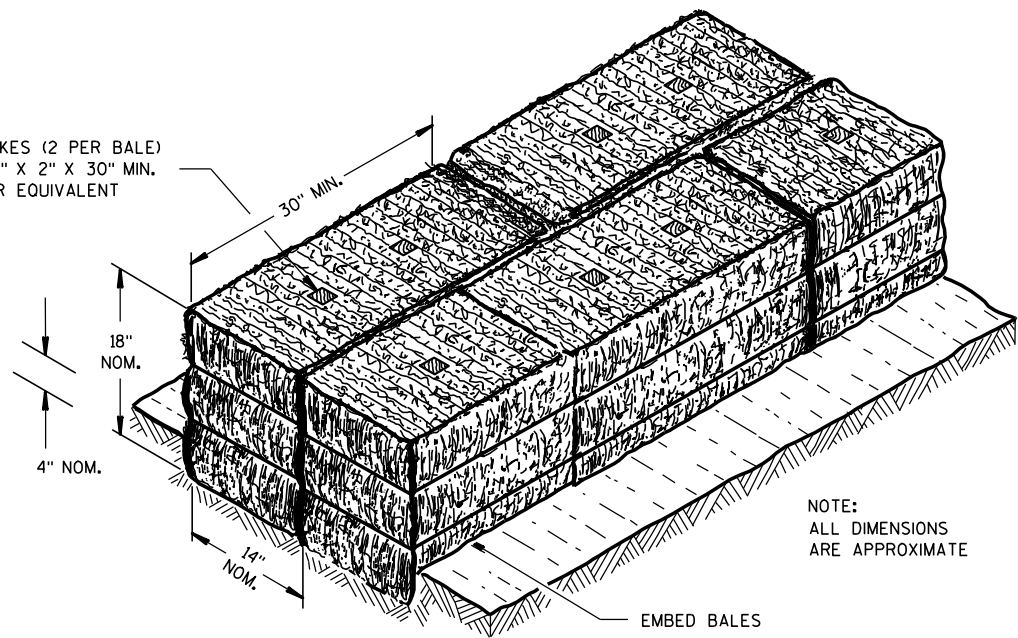
5

| | | | | | |
|------------------------|-------------|------------------|-------------|-------|----------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | PLAN SHEETS | SHEET | E |
|------------------------|-------------|------------------|-------------|-------|----------|

Standard Detail Drawing List

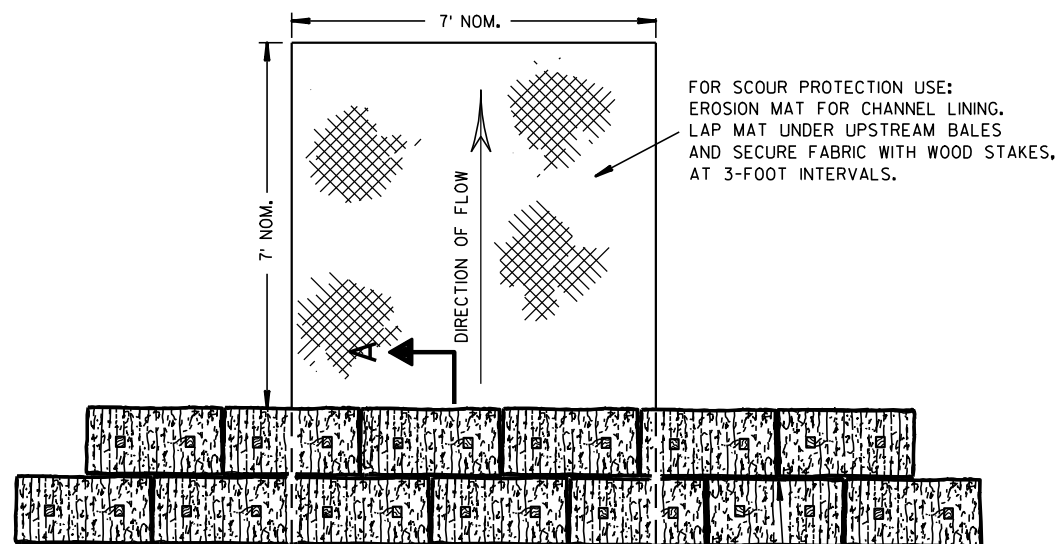
| | |
|-----------|--|
| 08E08-03 | TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS |
| 08E09-06 | SILT FENCE |
| 08E15-01 | CULVERT PIPE CHECK |
| 08F01-11 | APRON ENDWALLS FOR CULVERT PIPE |
| 08F04-07 | JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL |
| 13A10-02A | 2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING |
| 13A10-02B | 2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING |
| 13A10-02C | 2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING |
| 13A10-02D | 2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING |
| 13A11-03A | 2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING |
| 13A11-03B | 2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING |
| 13C19-03 | HMA LONGITUDINAL JOINTS |
| 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 |
| 14B43-04A | MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) |
| 14B43-04B | MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) |
| 14B43-04C | MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) |
| 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) |
| 14B45-05G | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) |
| 15A03-02A | FLEXIBLE MARKER POST FOR CULVERT END |
| 15A03-02B | FLEXIBLE MARKER POST FOR CULVERT END |
| 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) |
| 15C11-09B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS |
| 15C12-07 | TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION |
| 15C19-06A | MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY |
| 15C33-04 | STOP LINE AND CROSSWALK PAVEMENT MARKING |
| 15C35-04A | PAVEMENT MARKING (INTERSECTIONS) |
| 15D28-04 | TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY |
| 15D38-02A | TEMPORARY TRAFFIC CONTROL SIGN MOUNTING |
| 15D38-02B | ATTACHMENT OF SIGNS TO POSTS |
| 15D39-02 | TRAFFIC CONTROL, DROP-OFF SIGNING |
| 15D44-02 | TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES |
| 15D51-01 | TRAFFIC CONTROL, MOBILE OPERATIONS ON AN UNDIVIDED ROADWAY |

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



NOTE:
ALL DIMENSIONS
ARE APPROXIMATE

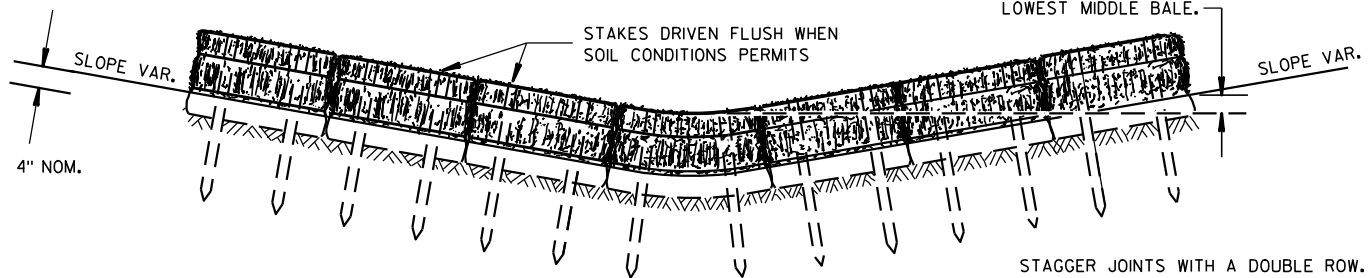
SECTION A-A



PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

BOTTOM ELEVATION OF END BALE SHALL
BE EQUAL TO OR GREATER THAN TOP OF
LOWEST MIDDLE BALE.



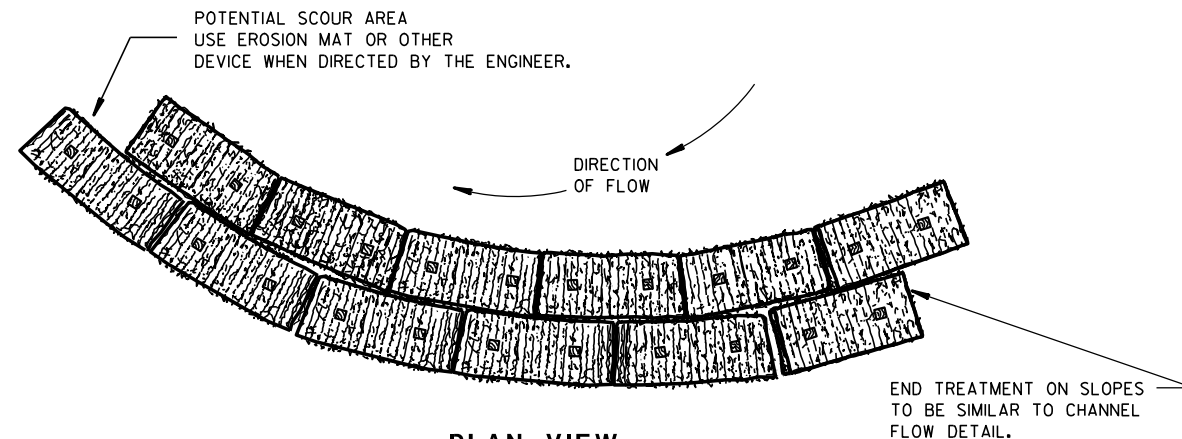
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

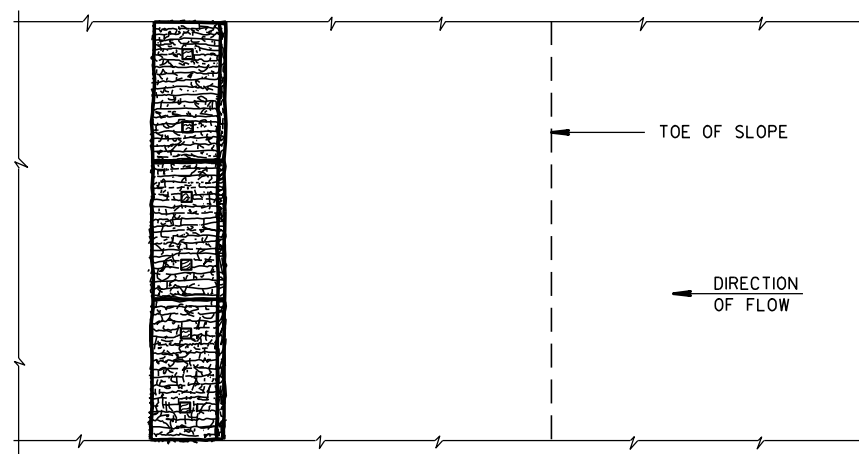
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

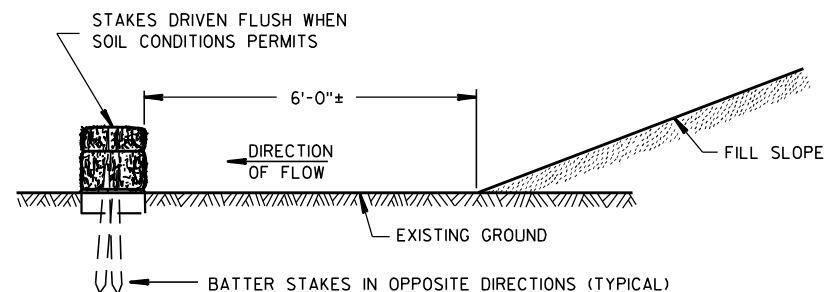


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

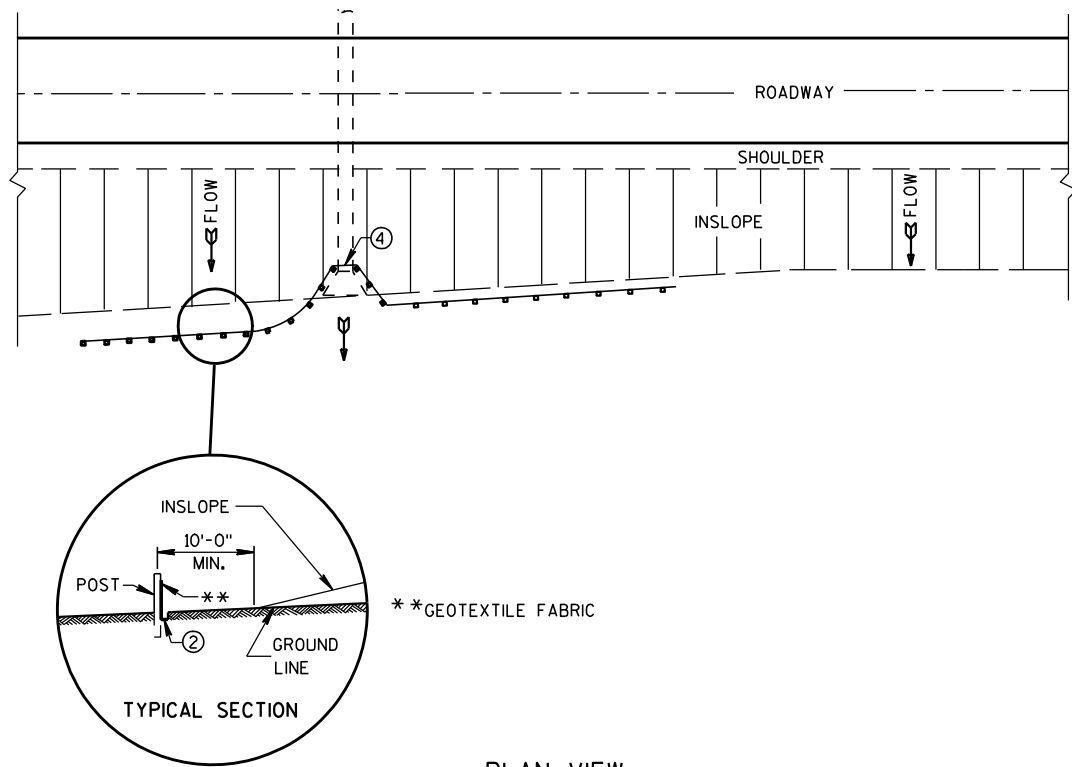
WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

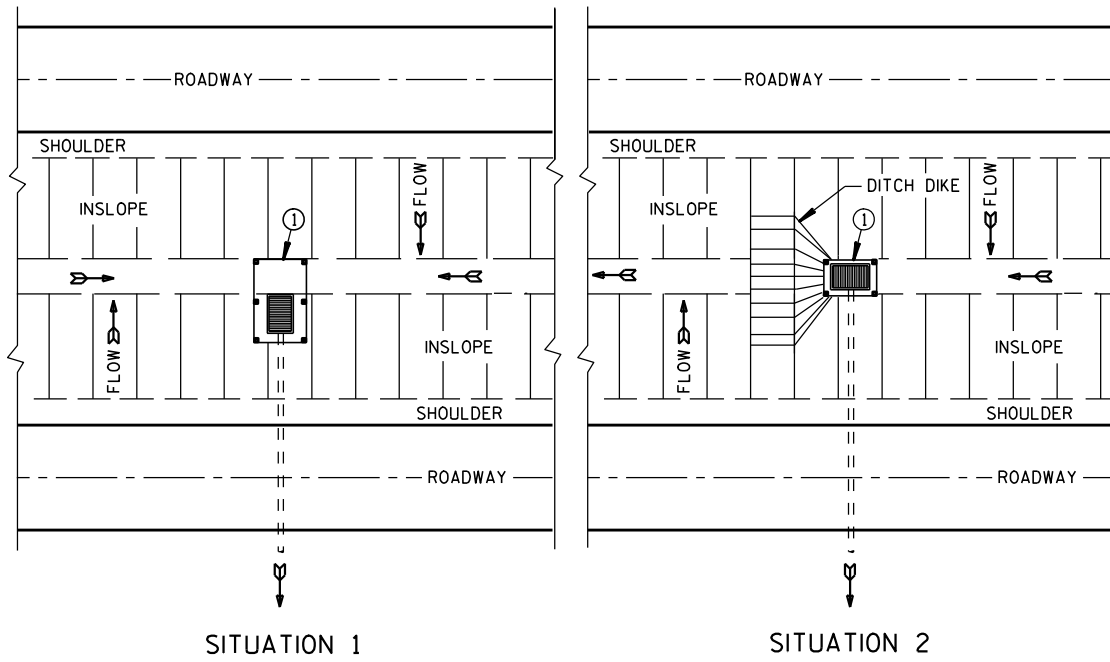
**TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

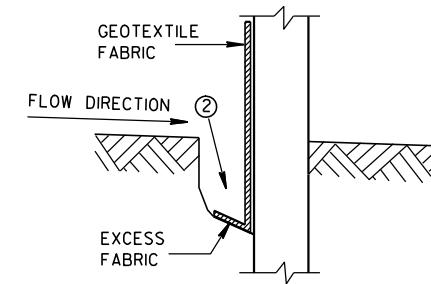


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

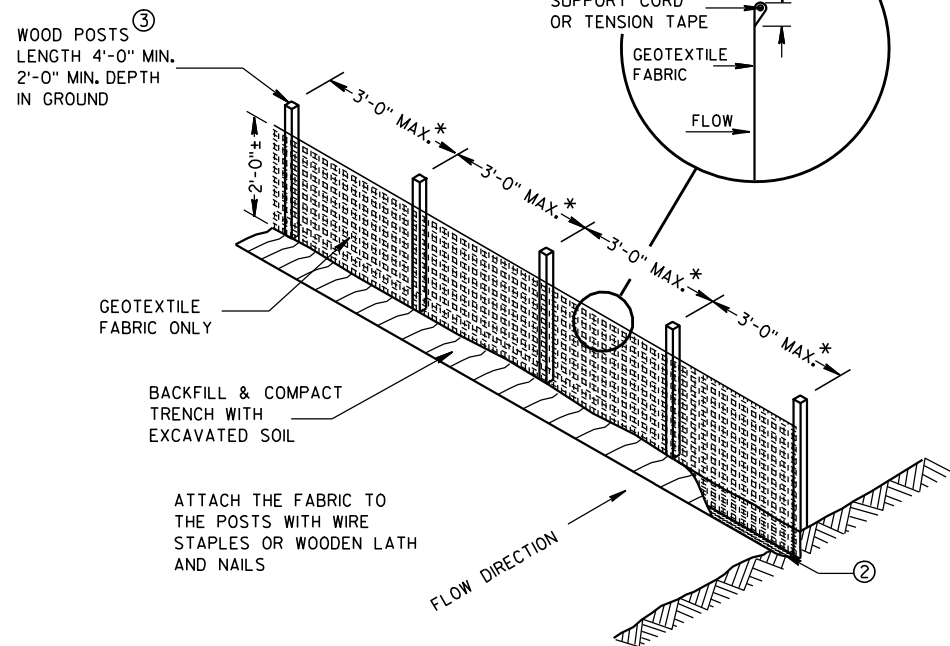
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

- 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.

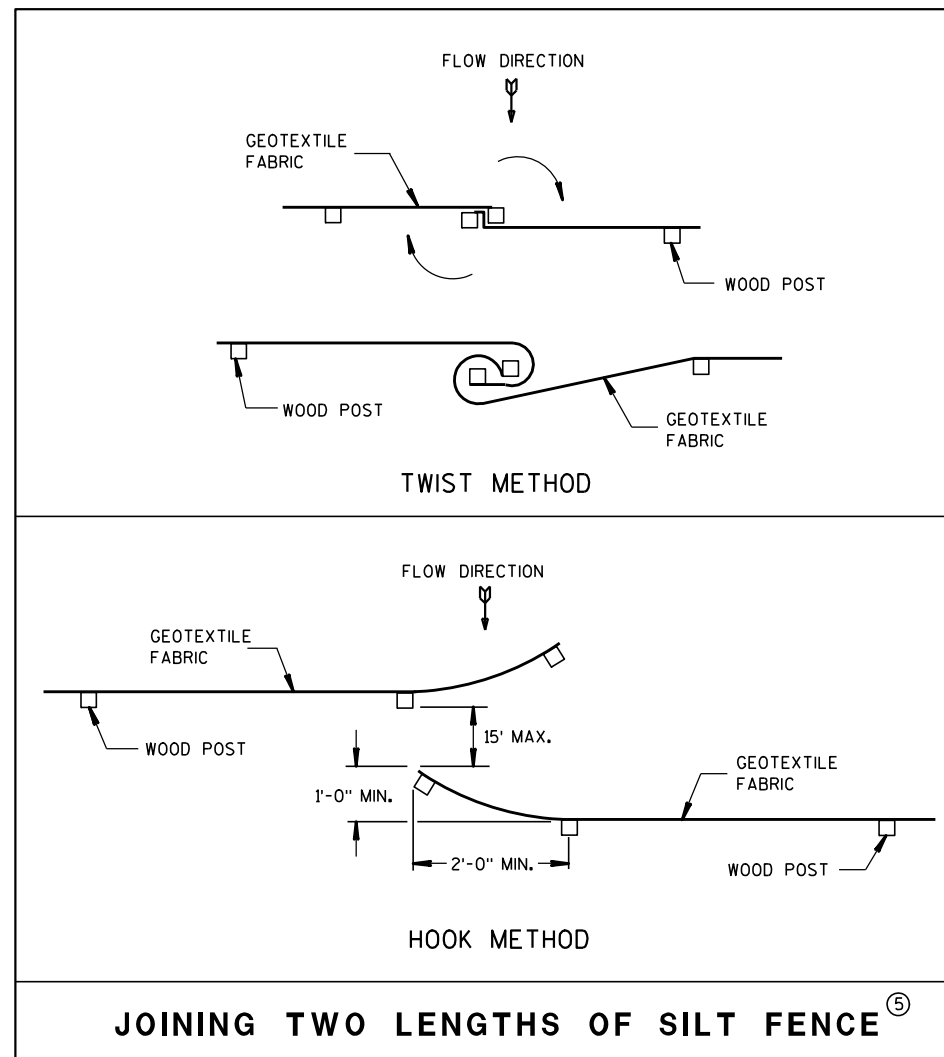


TRENCH DETAIL

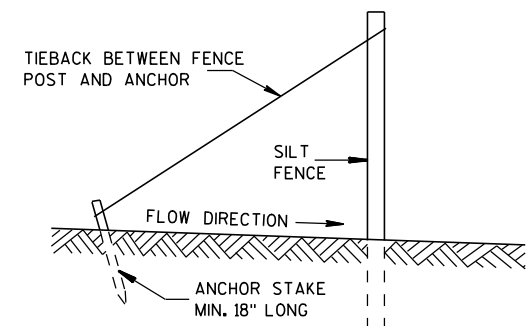
NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS



SILT FENCE



JOINING TWO LENGTHS OF SILT FENCE ⑤



SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

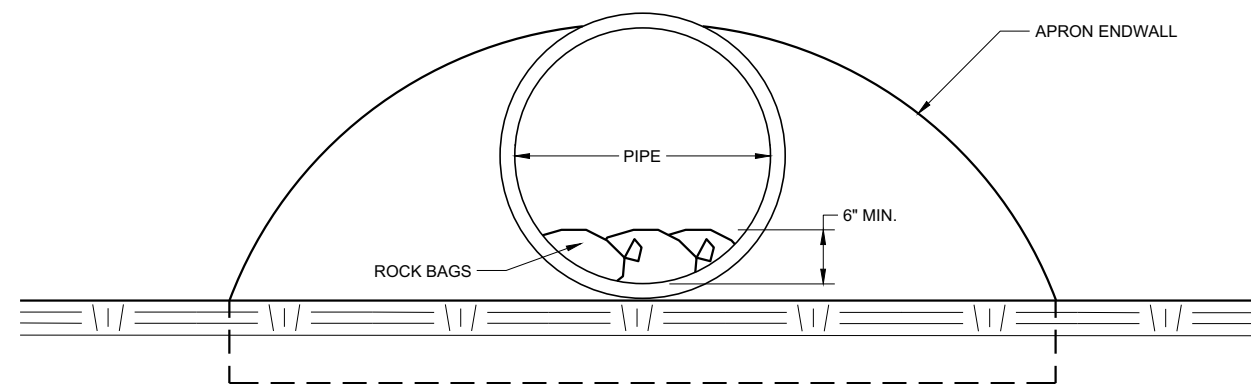
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

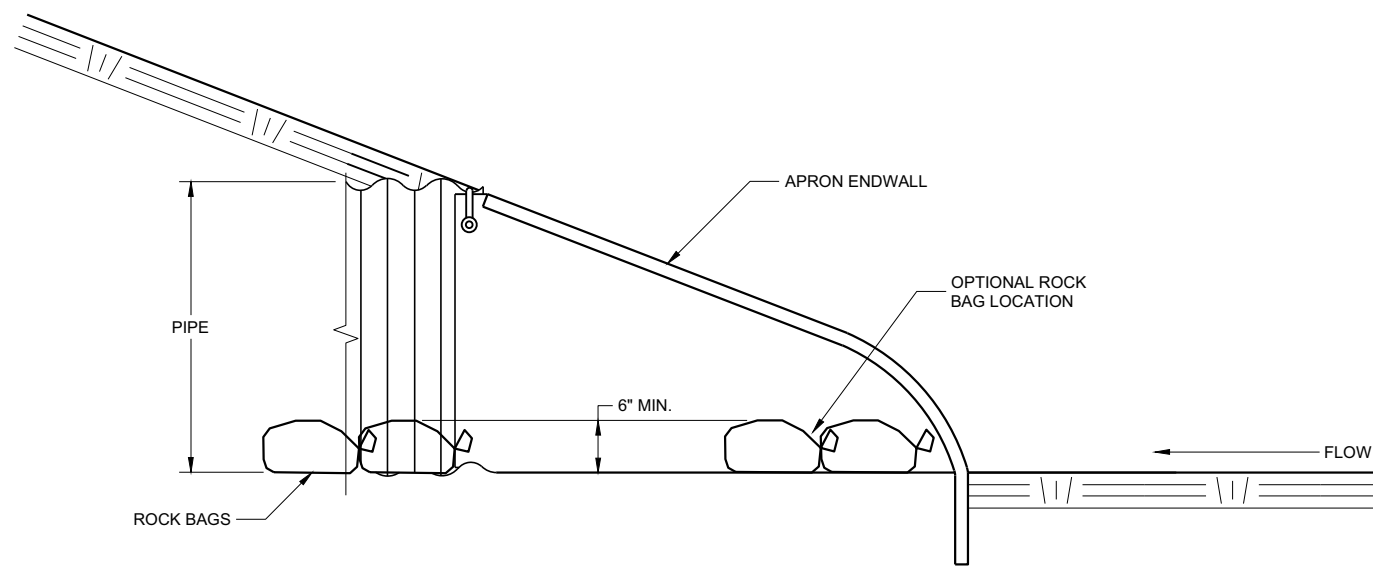
4-29-05
DATE

FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



END VIEW



SIDE VIEW

CULVERT PIPE CHECK
 (INSTALL ON INLET END ONLY)

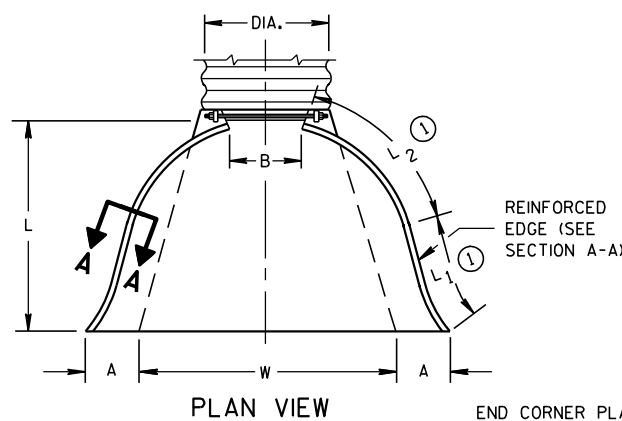
| | |
|--|---|
| CULVERT PIPE CHECK | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED May 2019 DATE | /S/ Daniel Schave EROSION CONTROL ENGINEER |
| <small>FHWA</small> | |

| 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. |

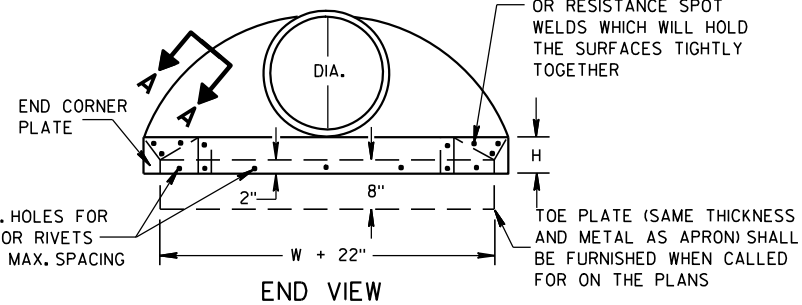
* EXCEPT CENTER PANEL SEE GENERAL NOTES

| 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 | 24-30 | 72-78 | 21-27 | 99 | 102 | 5 1/2 | 2 to 1 | |
| 72 | 7 | 24-36 | 78 | 21 | 99 | 108 | 6 | 2 to 1 | |
| 78 | 7 1/2 | 24-36 | 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 | |

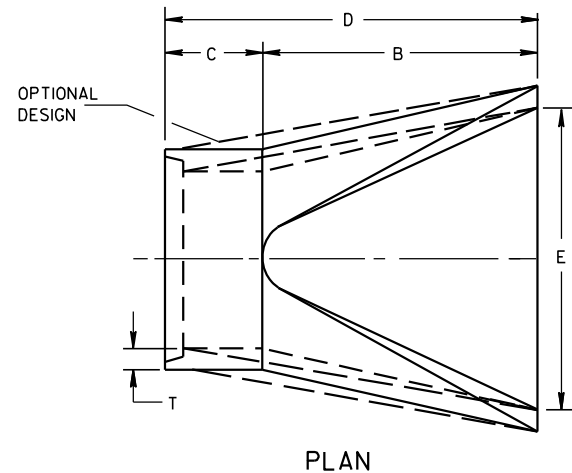
* MINIMUM
** MAXIMUM



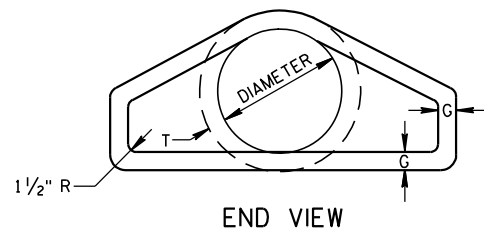
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



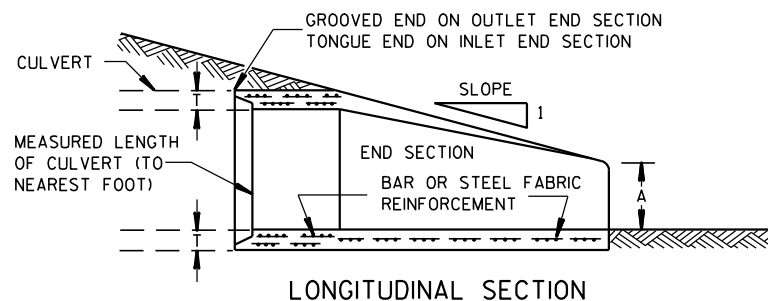
SIDE ELEVATION
METAL ENDWALLS



PLAN

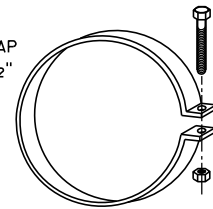


END VIEW



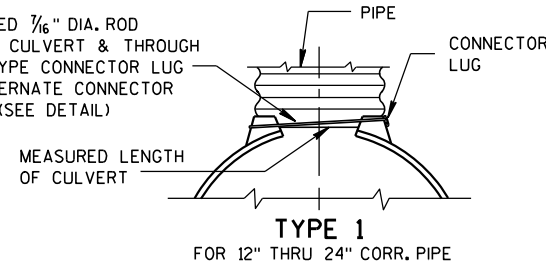
LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



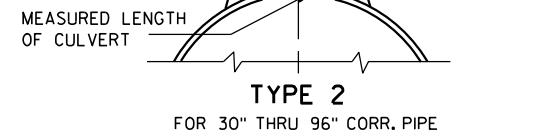
ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP

THREADED 3/16" DIA. ROD AROUND CULVERT & THROUGH TANK TYPE CONNECTOR LUG OR ALTERNATE CONNECTOR STRAP (SEE DETAIL)



TYPE 1
FOR 12" THRU 24" CORR. PIPE

THREADED 3/16" DIA. ROD OVER TOP OF APRON, SIDE LUGS TO BE RIVETED TO APRON



TYPE 2
FOR 30" THRU 96" CORR. PIPE

MEASURED LENGTH OF CULVERT

CONNECTOR SECTION TO BE PAID FOR AS PART OF END SECTION

COUPLING BAND REQUIRED

RIVETED OR BOLTED

TYPE 3
FOR 42" THRU 96" CORR. PIPE

DIMPLED OR CORRUGATED COUPLING BAND

RIVETED OR BOLTED AT DIMPLES (6" C-C FOR CORRUGATED BAND)

2 - 1/2" X 6" BAND BOLTS

MEASURED LENGTH OF CULVERT

TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

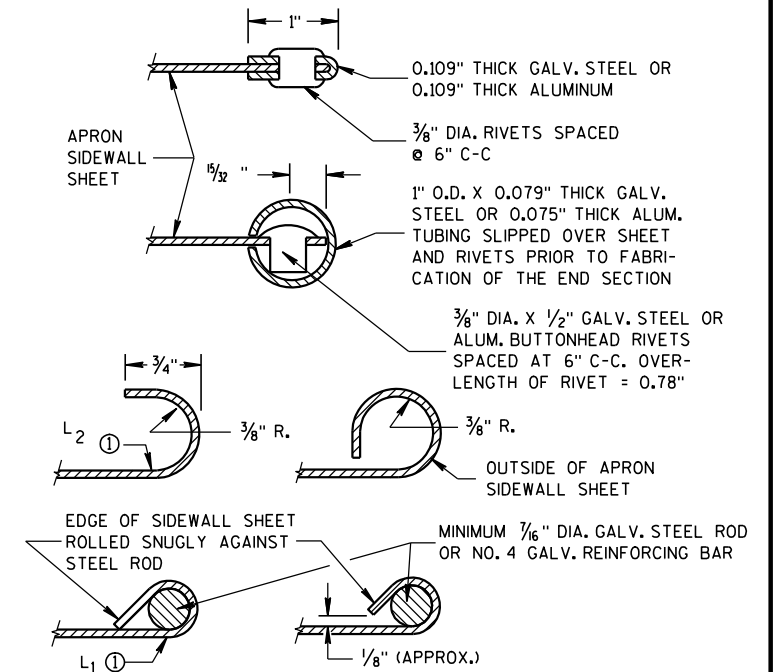
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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.

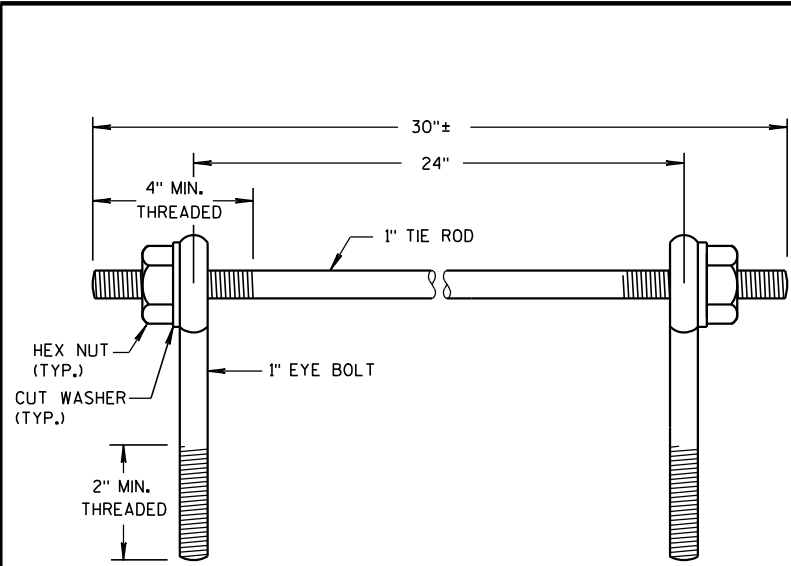
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

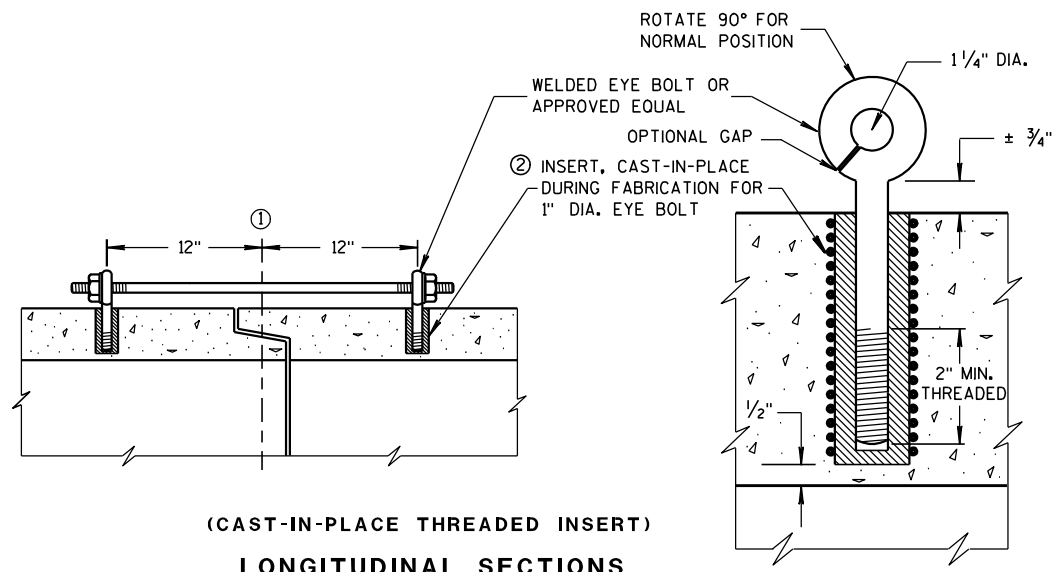
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94 DATE /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

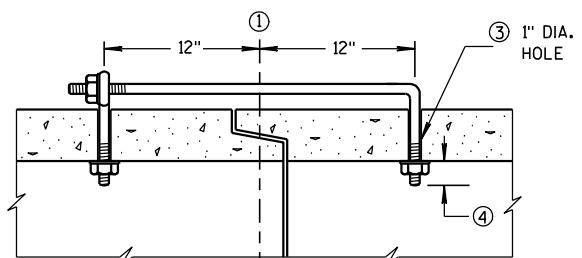
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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.

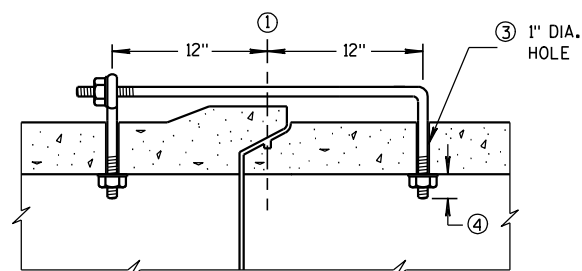
DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

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 $\frac{1}{2}$ INCH OF THE INNER SURFACE OF THE PIPE.



(TONGUE & GROOVE PIPE)



(MODIFIED BELL PIPE)
LONGITUDINAL SECTION

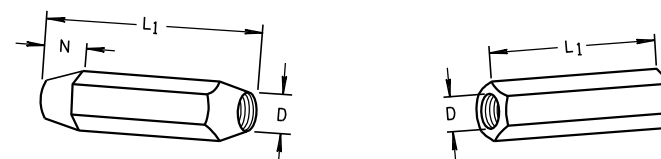
EYE BOLT DIMENSION TABLE

| 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" | |

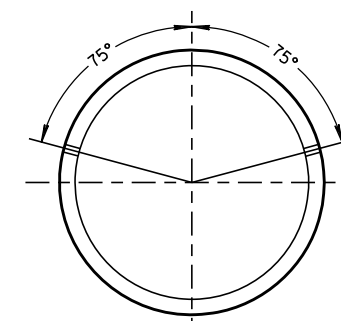
ADJUSTABLE TIE ROD TABLE

| 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

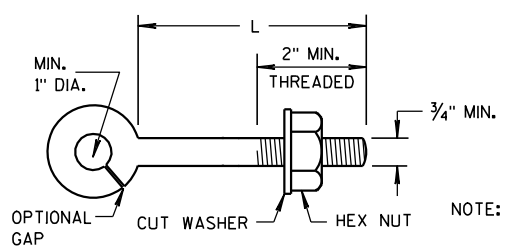


TAPERED PLAIN
RIGHT AND LEFT THREADS
SLEEVE NUTS



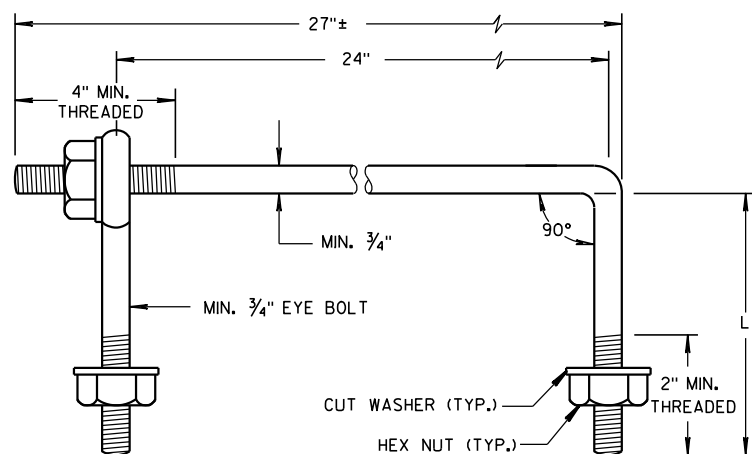
PLACEMENT OF (2) CAST-IN-PLACE
INSERTS OR HOLES DURING FABRICATION
FOR PIPE SECTIONS REQUIRING TIE RODS

TRANSVERSE SECTION



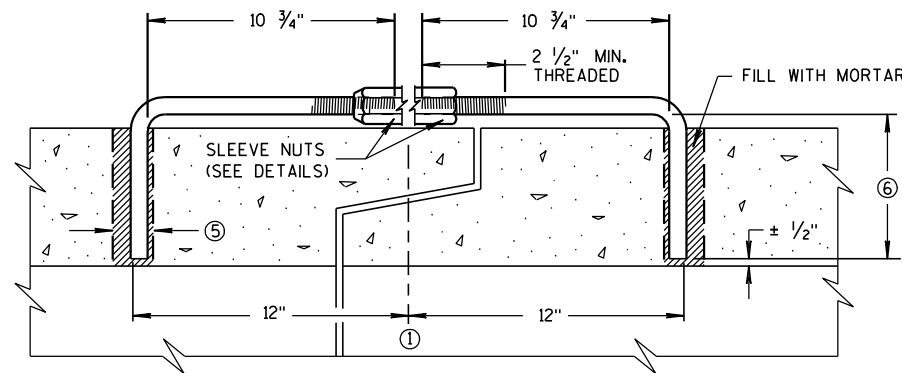
EYE BOLT

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



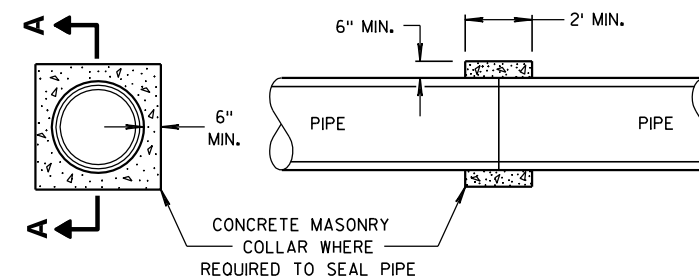
EYE BOLT AND TIE ROD

(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)



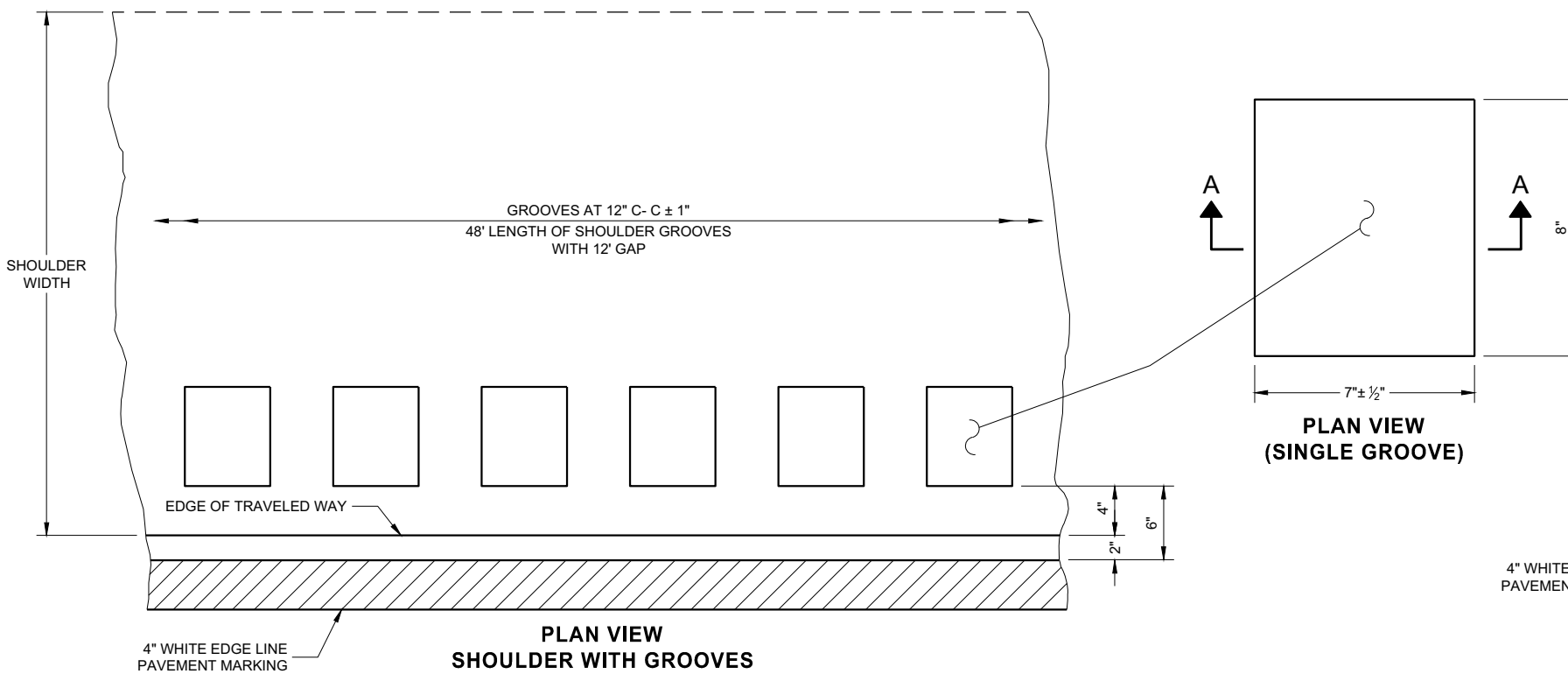
SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE
PIPE AND CONCRETE
COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



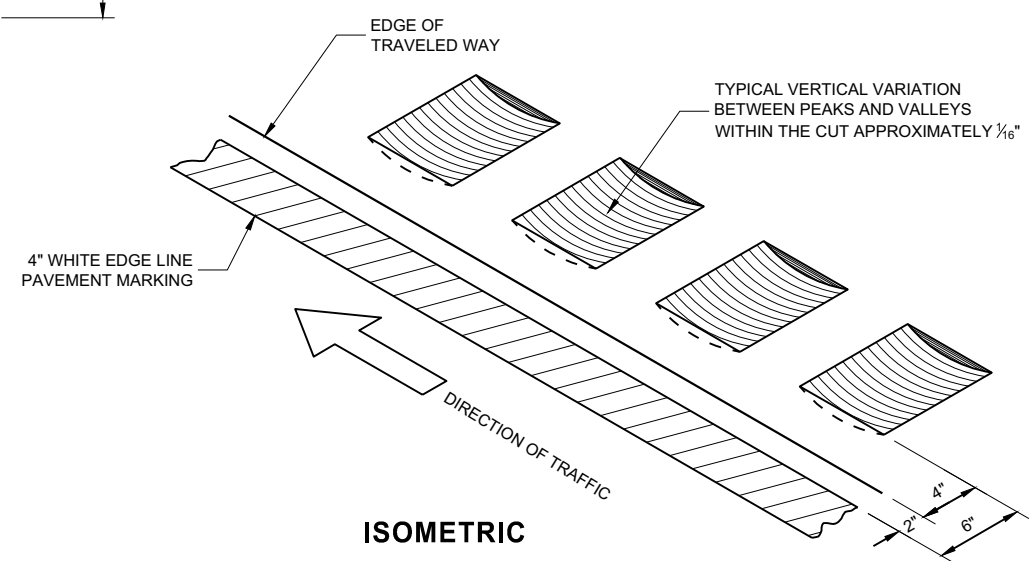
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP

GENERAL NOTES

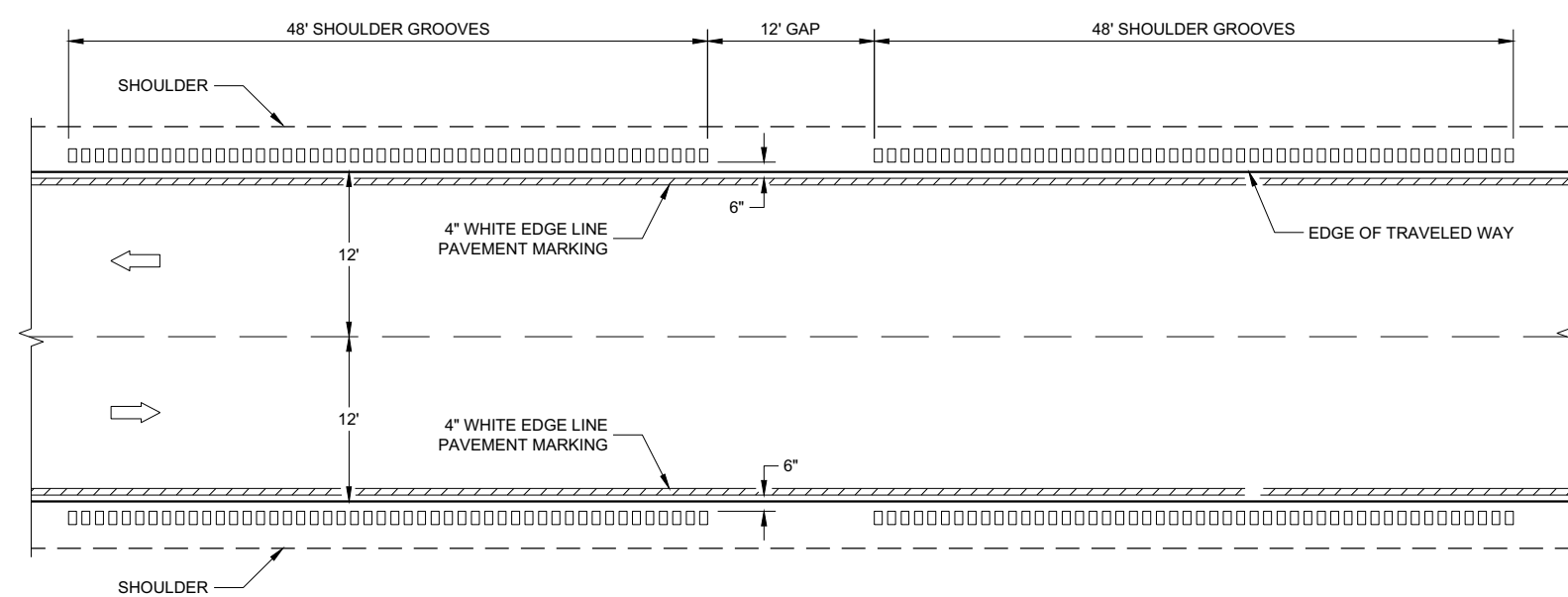
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

DO NOT MILL SHOULDER GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

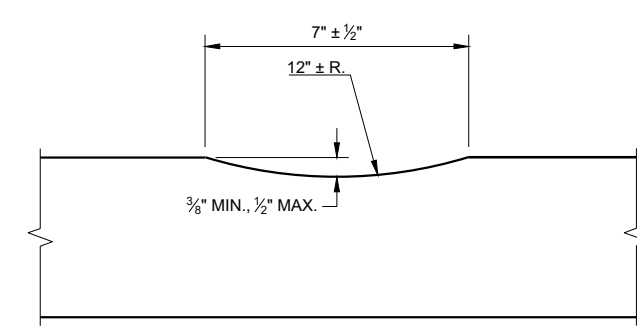
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



ISOMETRIC



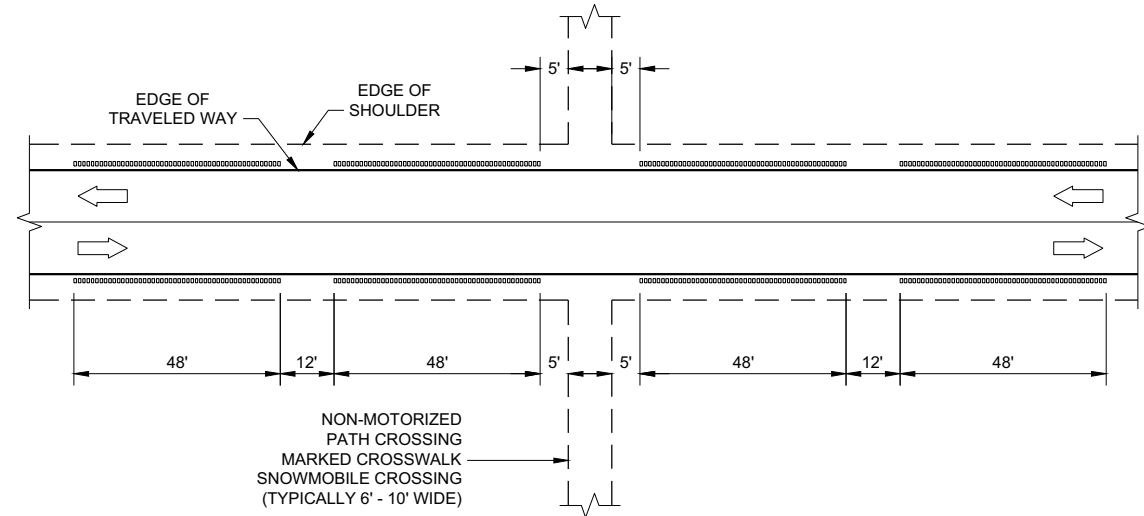
TYPE 1
2 - LANE SHOULDER RUMBLE STRIP



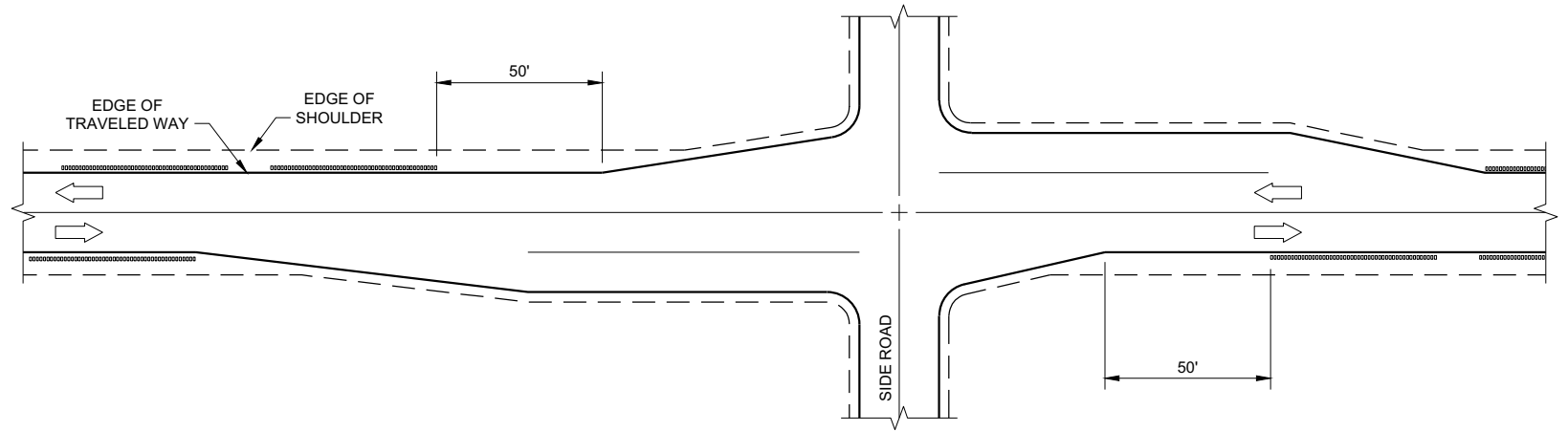
SECTION A - A

**2-LANE RURAL SHOULDER
RUMBLE STRIP, MILLING**

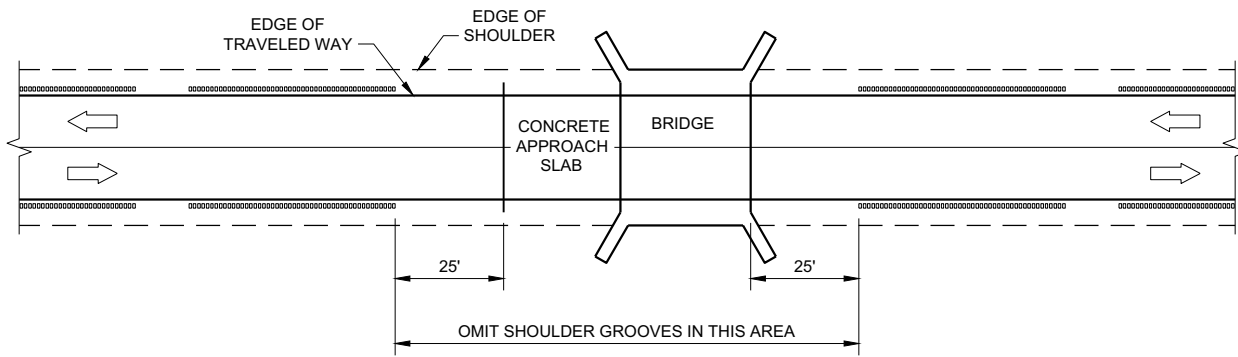
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



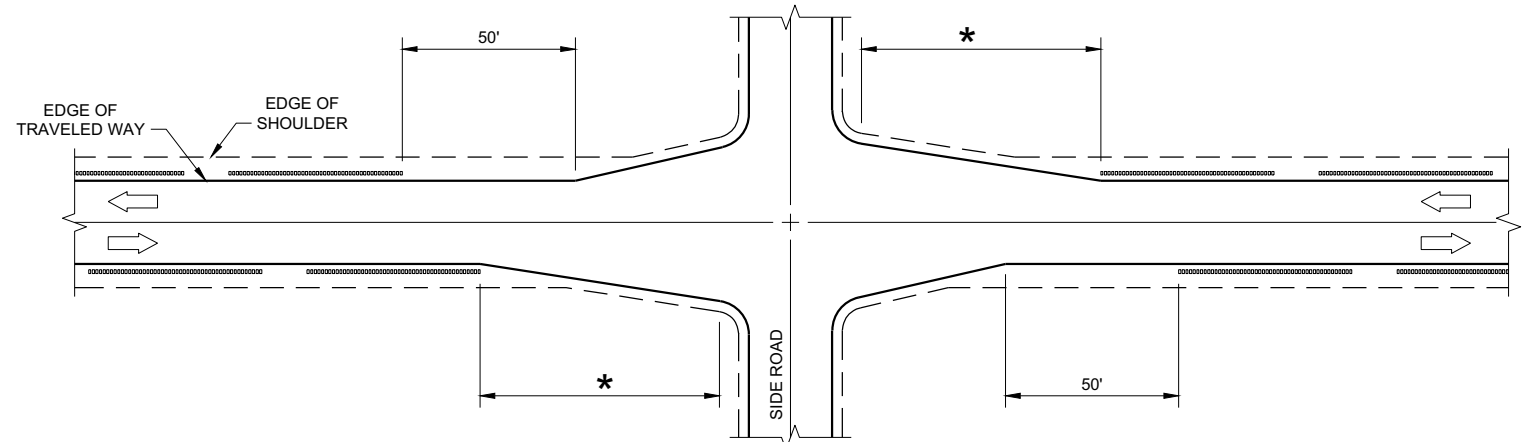
SHOULDER GROOVES AT MISCELLANEOUS CROSSINGS



SHOULDER GROOVES AT RIGHT TURN LANE

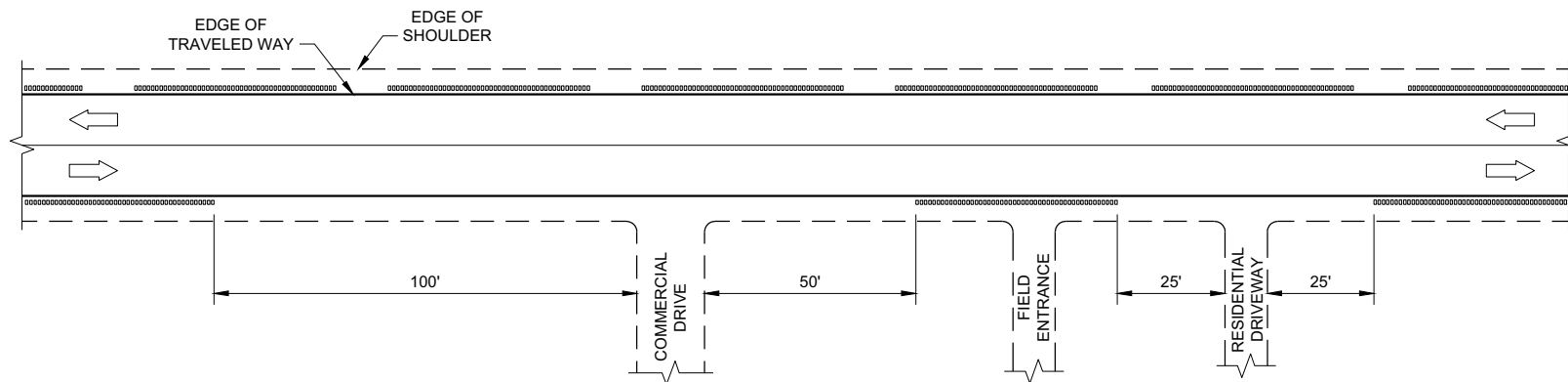


SHOULDER GROOVES AT BRIDGES



* GREATER OF 100' OR APPROACH TAPER LENGTH

SHOULDER GROOVES AT INTERSECTIONS WITH APPROACH TAPER



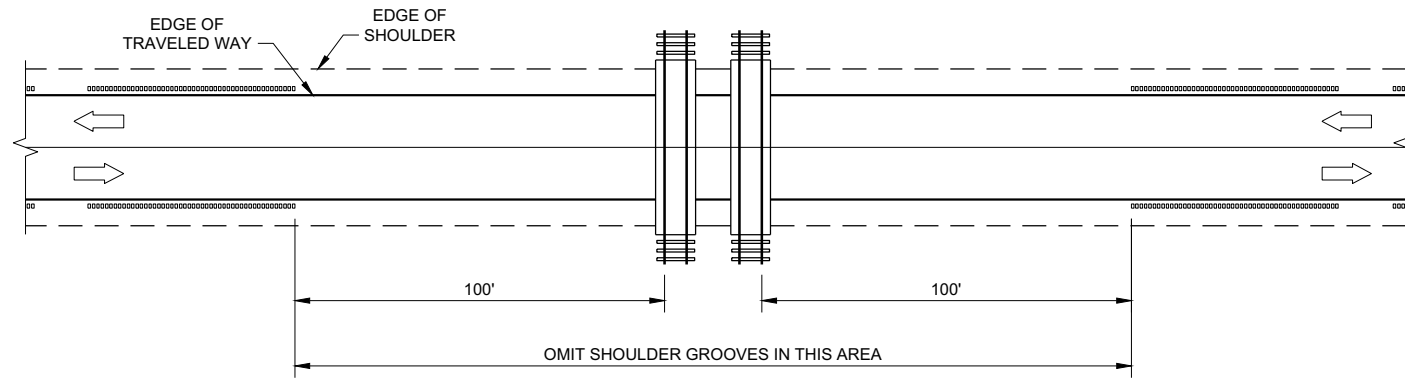
SHOULDER GROOVES AT DRIVEWAYS^①

GENERAL NOTES

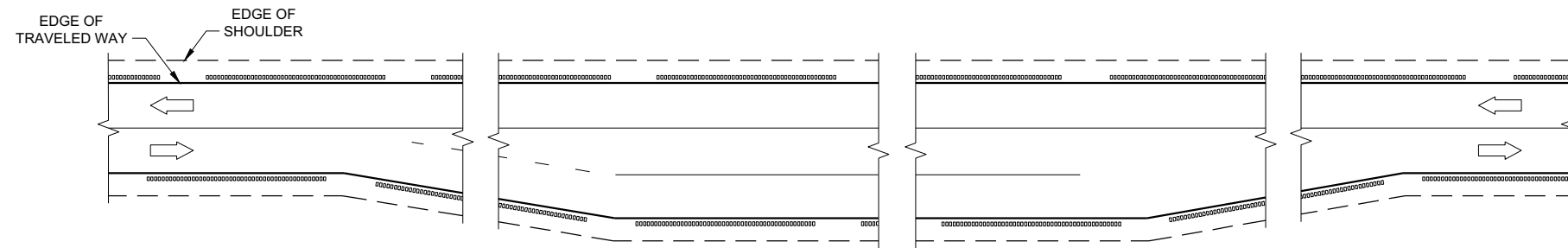
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.

**2-LANE RURAL SHOULDER
RUMBLE STRIP, MILLING**

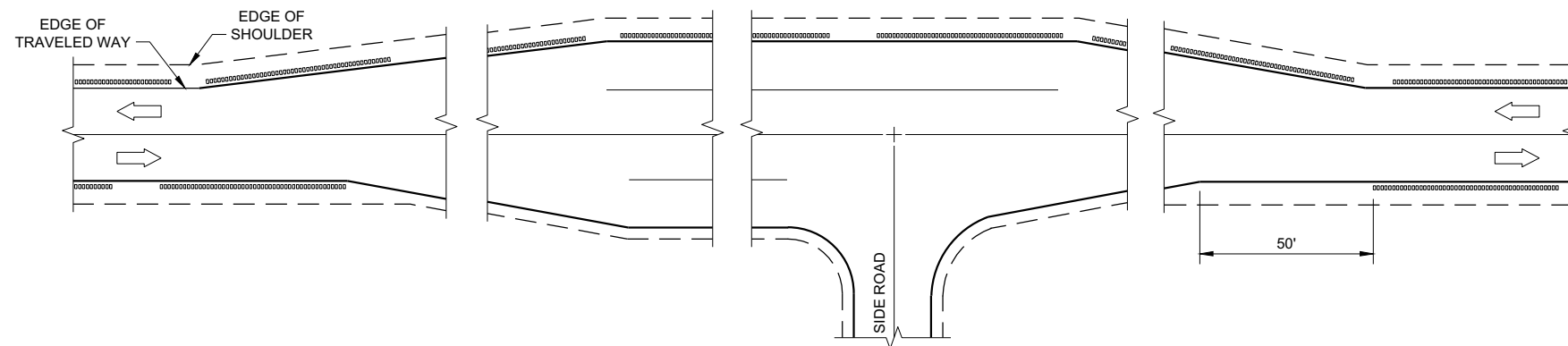
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



SHOULDER GROOVES AT RAILROADS



SHOULDER GROOVES AT PASSING AND CLIMBING LANES



SHOULDER GROOVES AT BYPASS LANES

**2-LANE RURAL SHOULDER
RUMBLE STRIP, MILLING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

FHWA

GENERAL NOTES

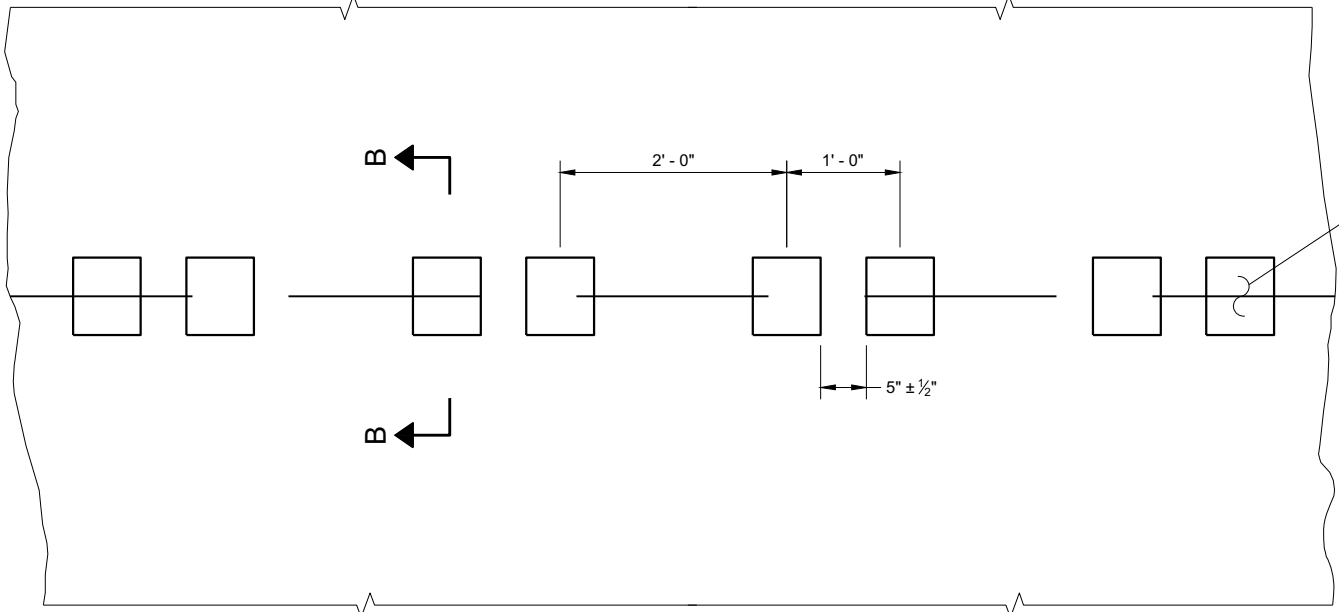
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

DO NOT MILL CENTERLINE GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

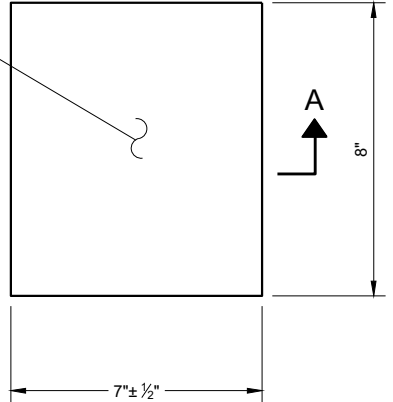
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

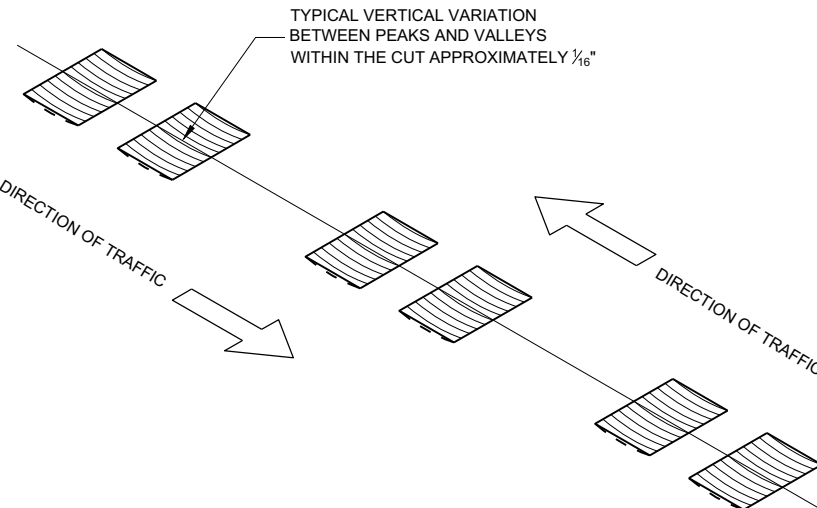
- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



**PLAN VIEW
SHOULDER WITH GROOVES**

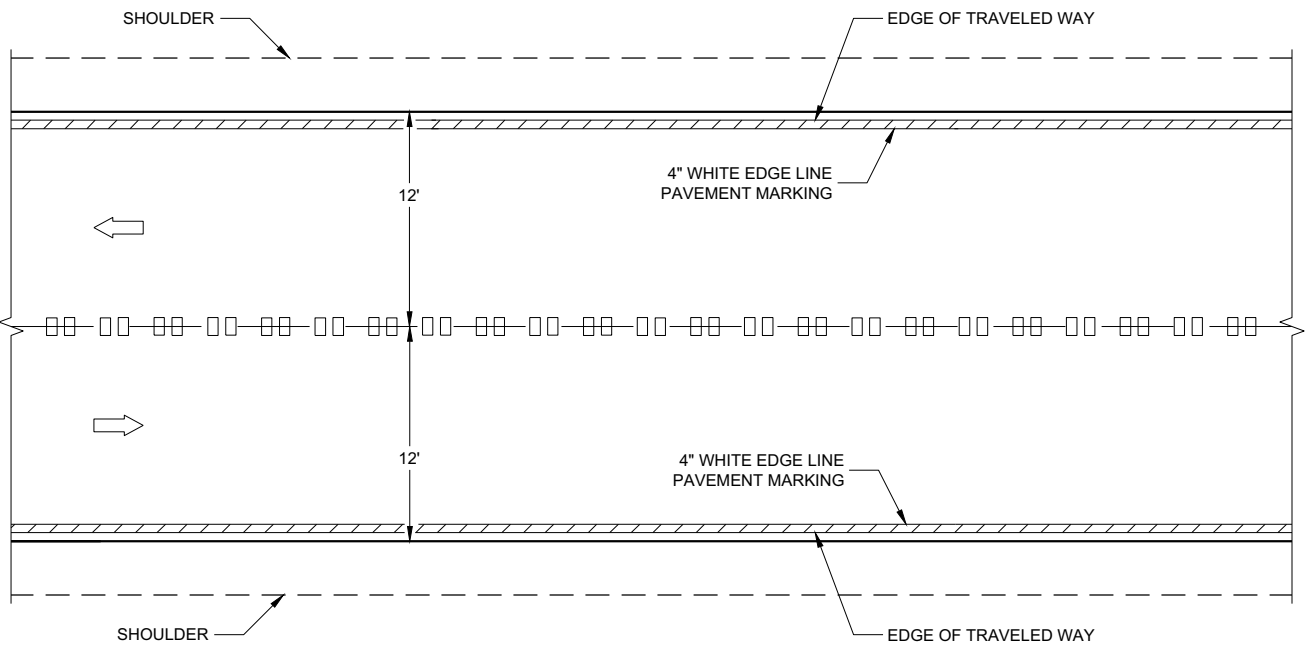


**PLAN VIEW
(SINGLE GROOVE)**

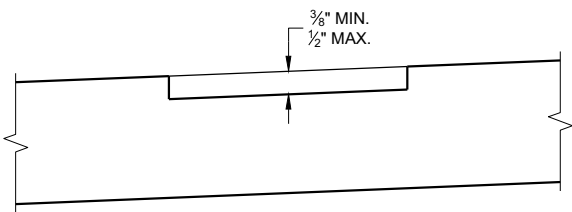


ISOMETRIC

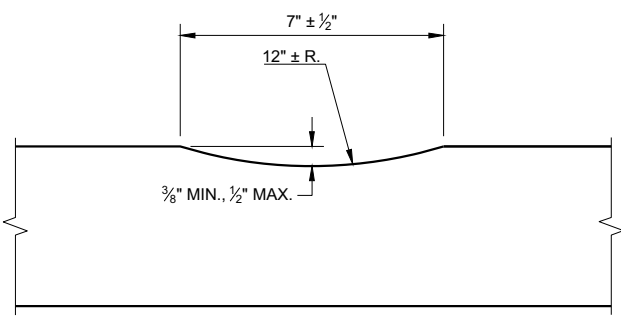
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



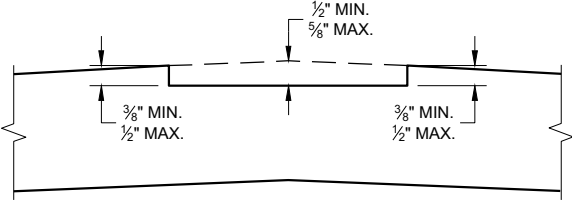
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



**SECTION B - B
SUPERELEVATED ROADWAY**



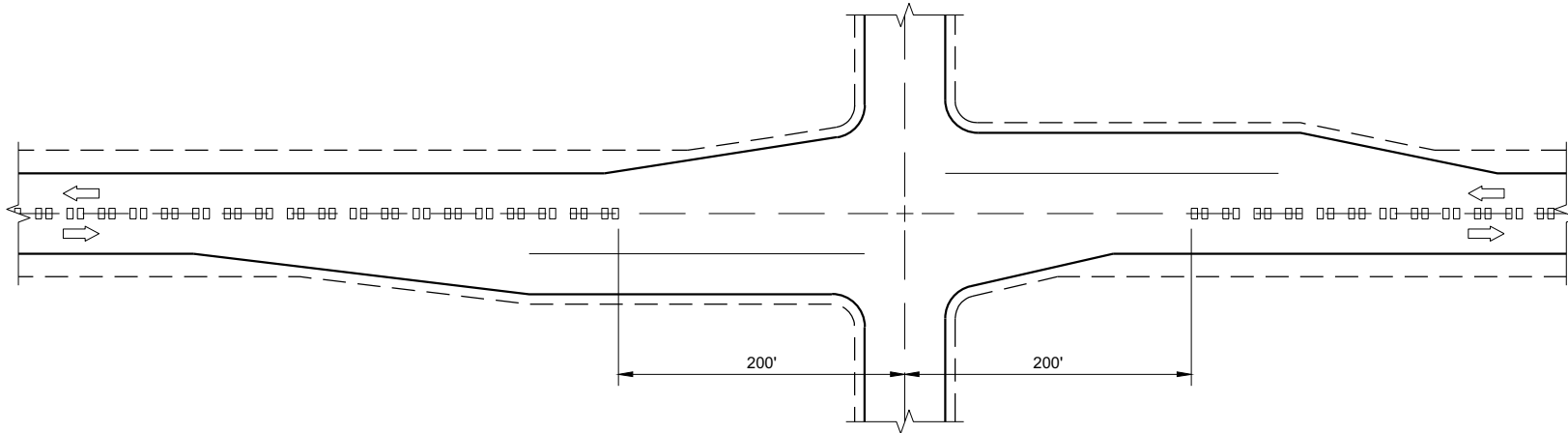
SECTION A - A



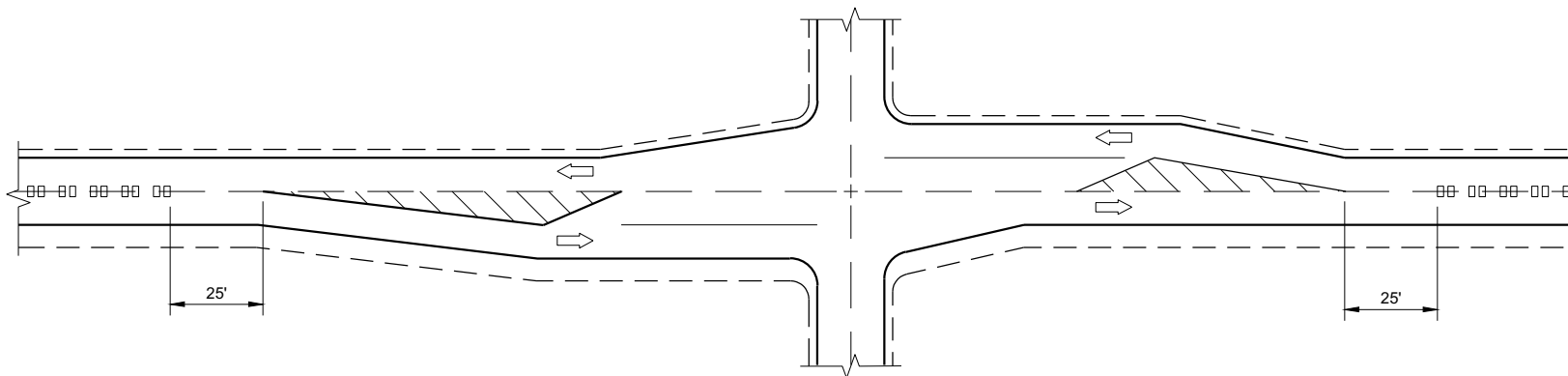
**SECTION B - B
CROWNED ROADWAY**

**2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING**

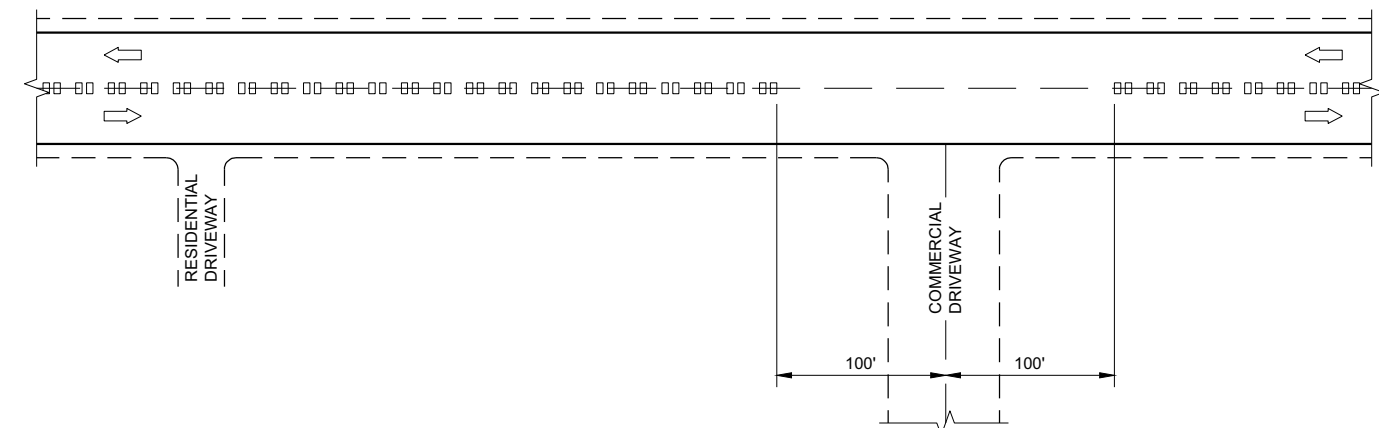
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



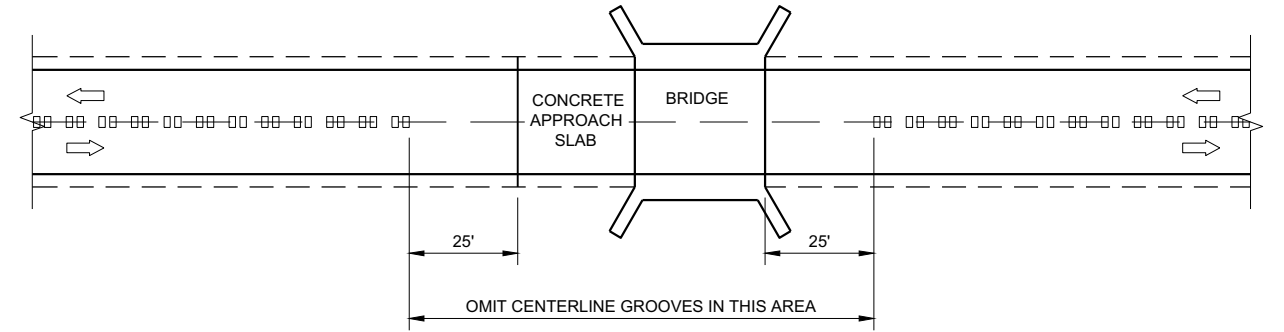
**CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)**



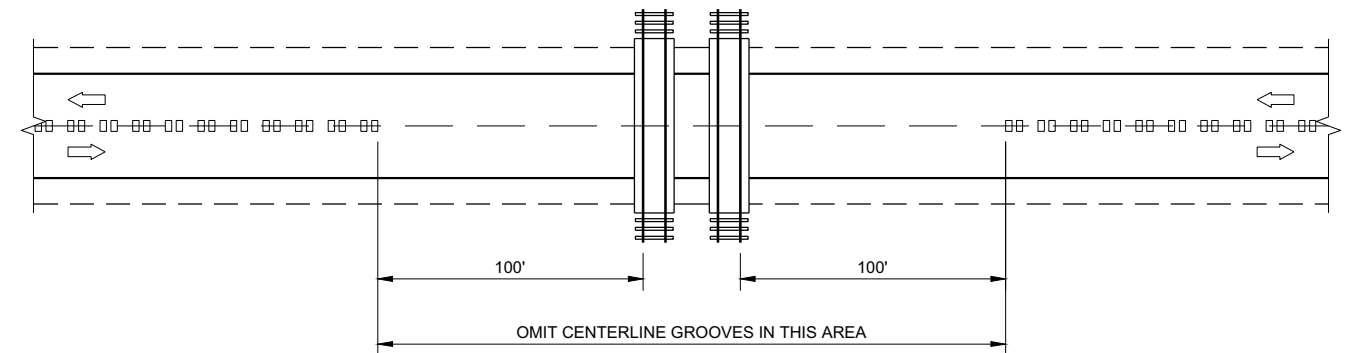
CENTERLINE GROOVES AT DRIVEWAYS ①

GENERAL NOTES

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



CENTERLINE GROOVES AT BRIDGES



CENTERLINE GROOVES AT RAILROADS

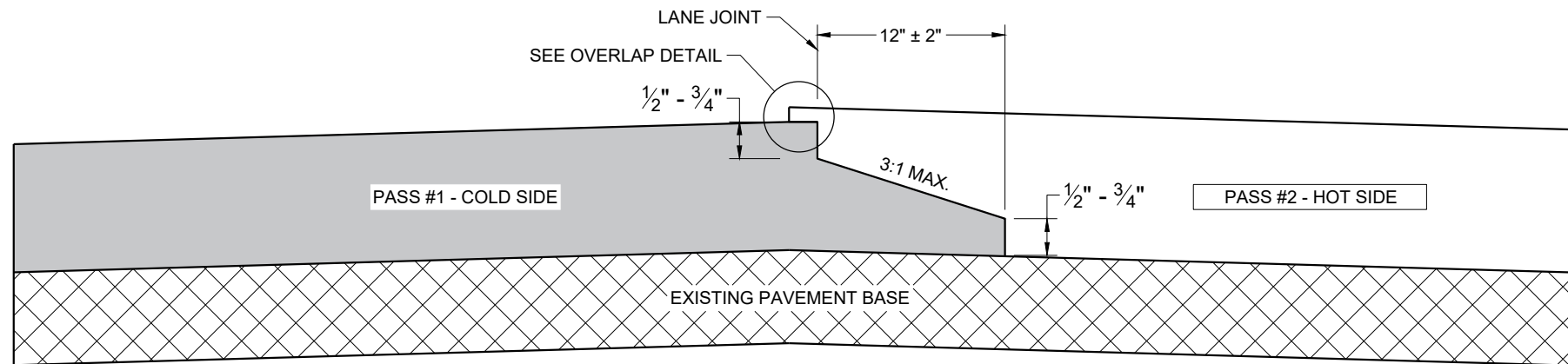
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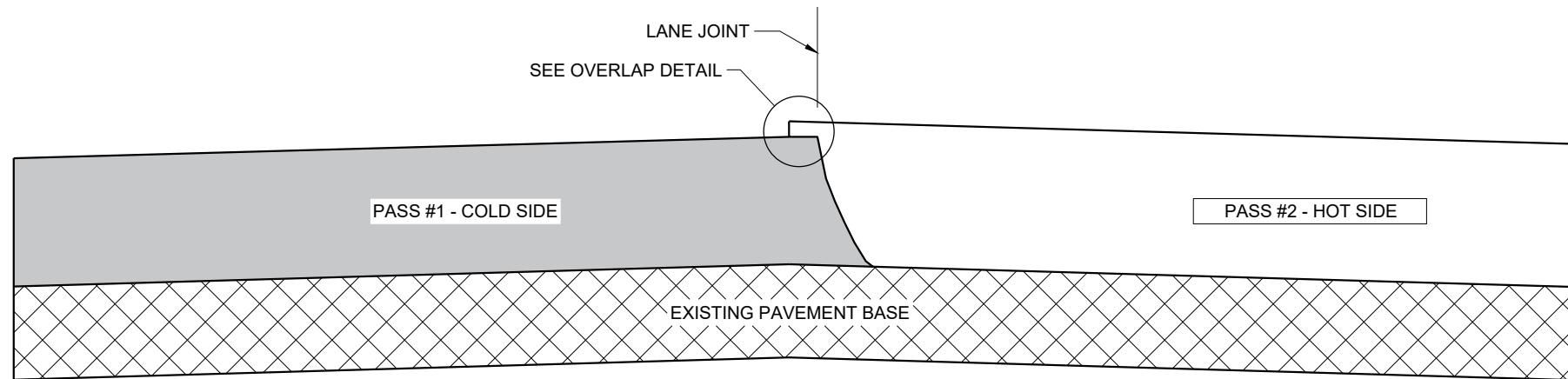
SDD 13A11 - 03b

SDD 13A11 - 03b

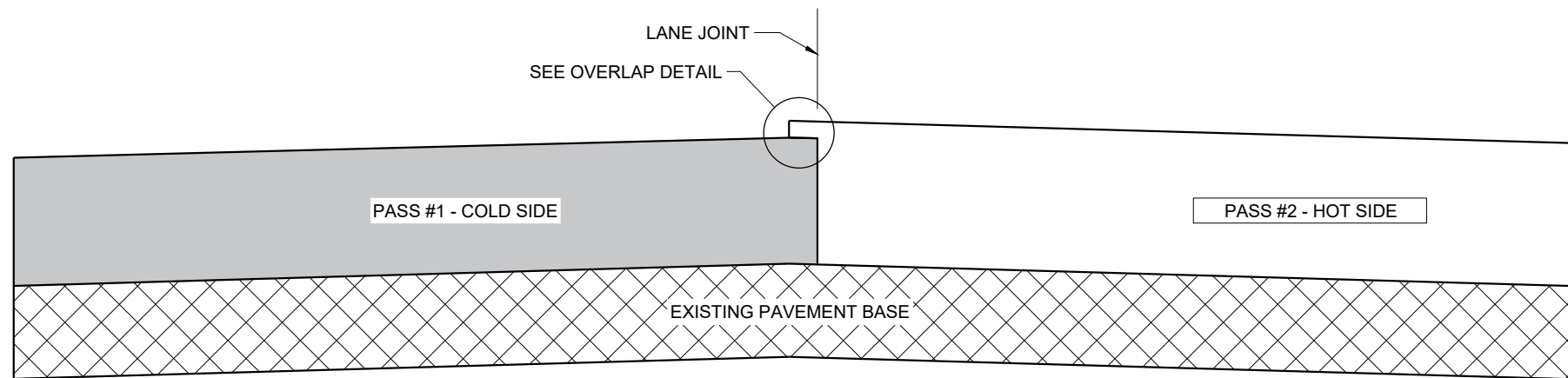
| | |
|--|--|
| 2-LANE RURAL CENTERLINE RUMBLE STRIP, MILLING | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED 7/2018 DATE | /S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT ENGINEER |
| FHWA | |



**TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT**



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

GENERAL NOTES

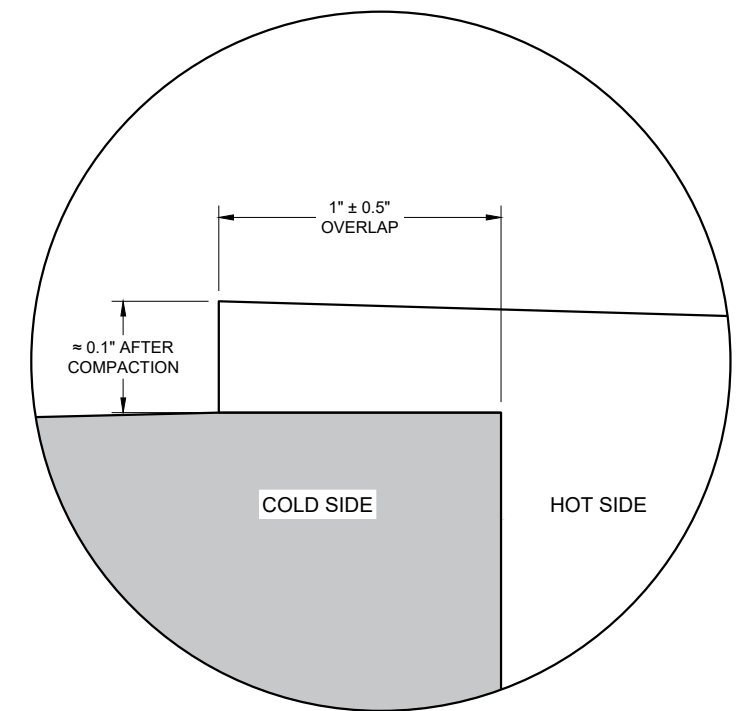
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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)

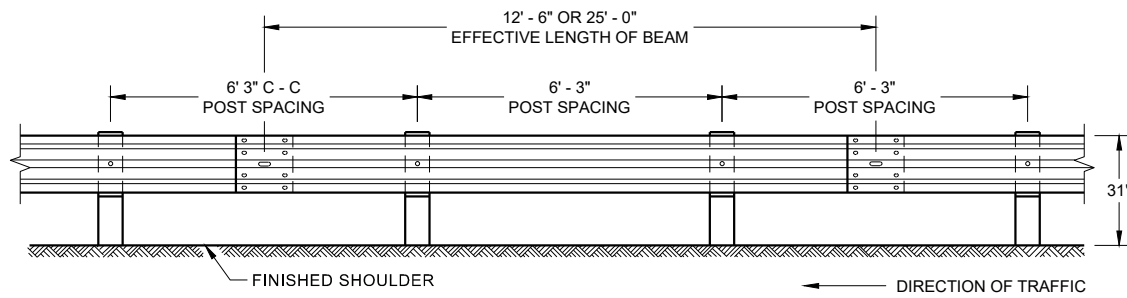
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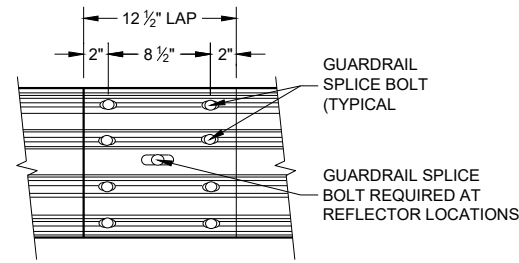
SDD 13C19 - 03

SDD 13C19 - 03

| | |
|--|---|
| HMA LONGITUDINAL JOINTS | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED November 2020 DATE | /S/ Steven Hefel HMA PAVEMENT ENGINEER |
| FHWA | |



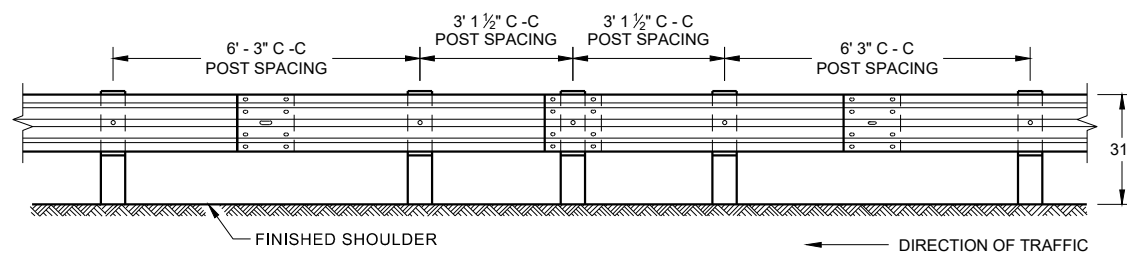
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



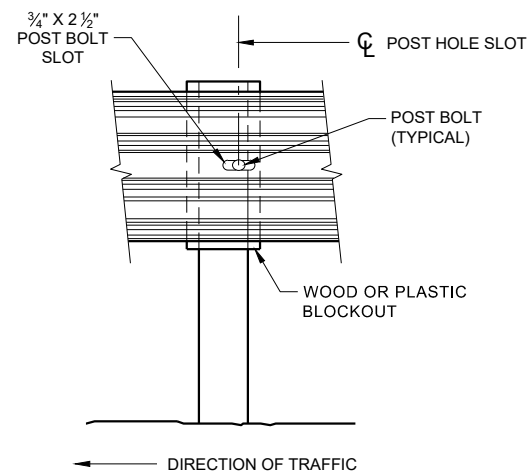
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

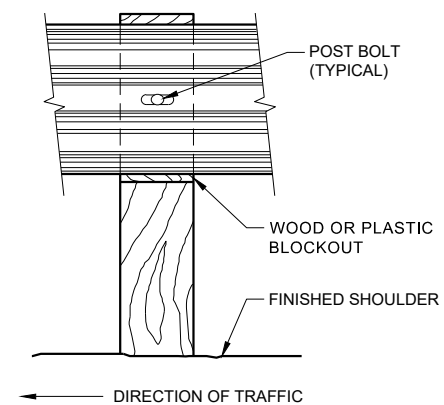
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER 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.



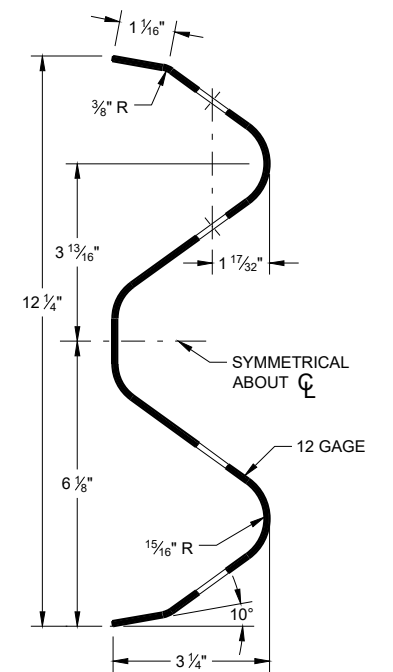
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



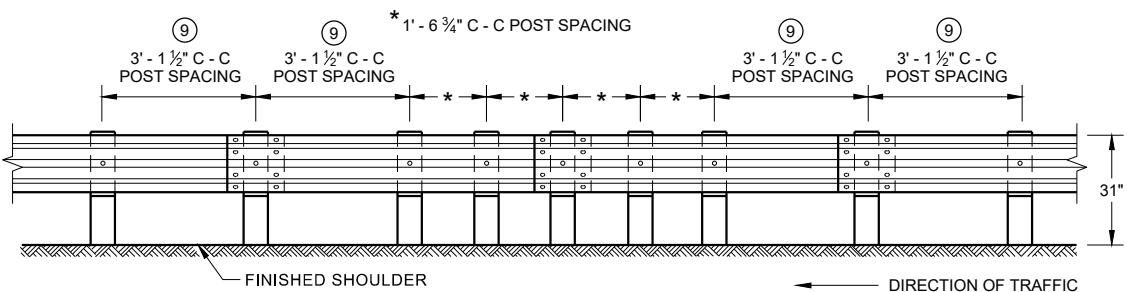
FRONT VIEW AT STEEL POST



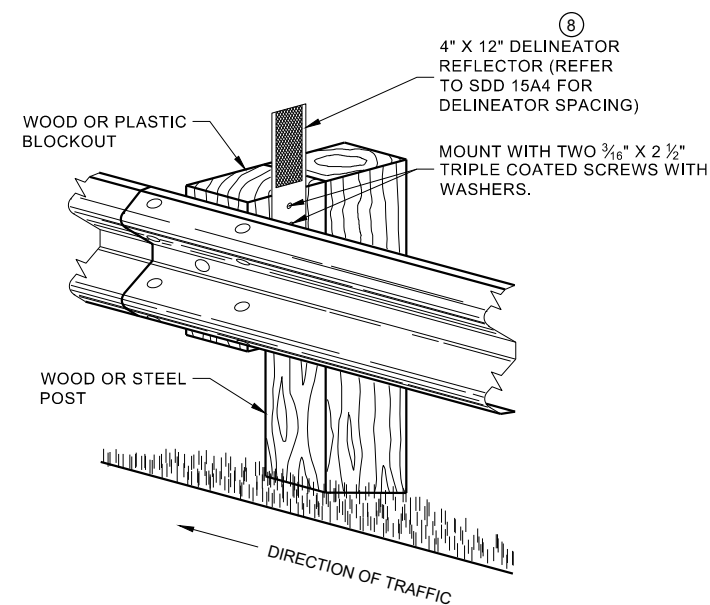
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



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



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

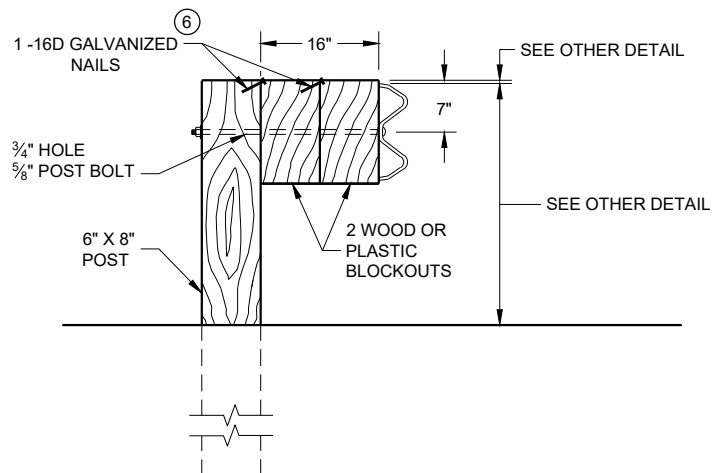
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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SDD 14B42 - 07b

SDD 14B42 - 07b

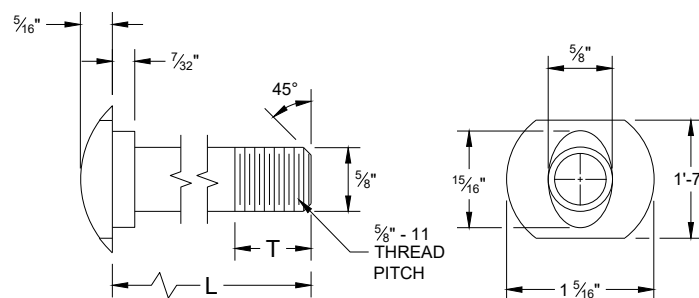


DETAIL FOR 16" BLOCKOUT DEPTH

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.

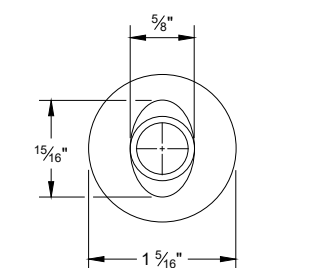
NOTE:

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.

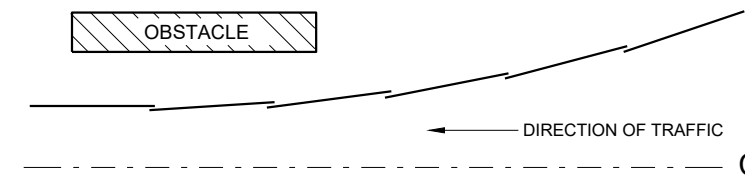


POST BOLT TABLE

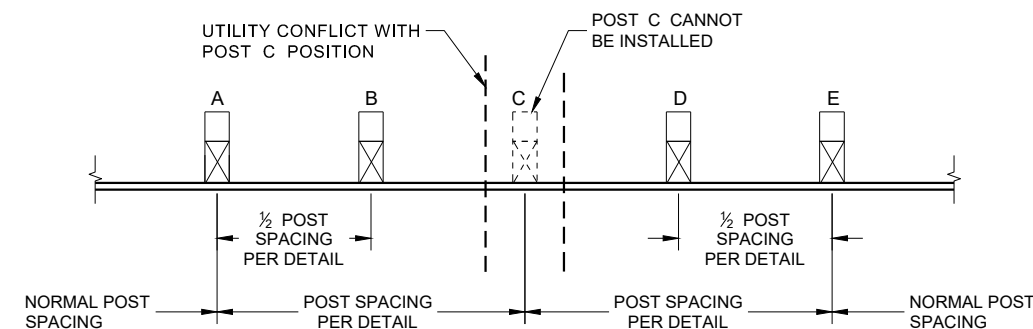
| L | T (MIN.) |
|--------|----------|
| 1 1/4" | 1 1/8" |
| 2" | 1 3/4" |
| 10" | 4" |
| 14" | 4 1/16" |
| 18" | 4" |
| 21" | 4 1/16" |
| 25" | 4" |



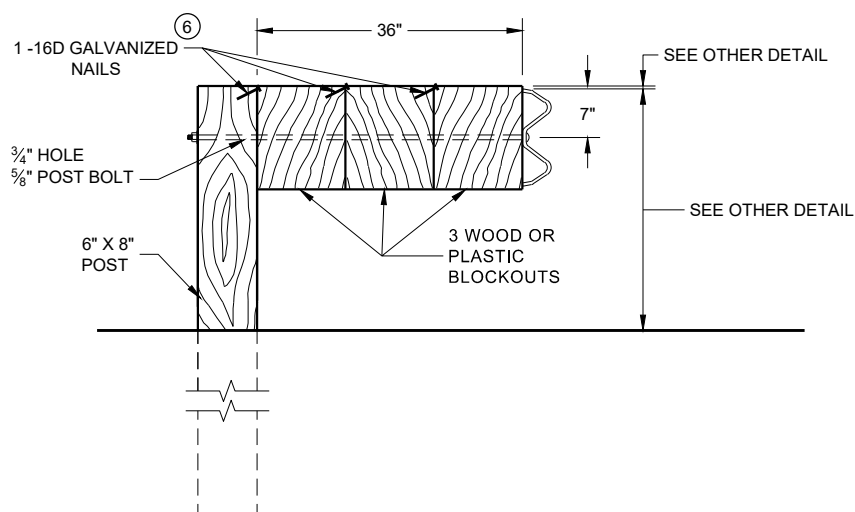
ALTERNATE BOLT HEAD



**PLAN VIEW
BEAM LAPPING DETAIL**

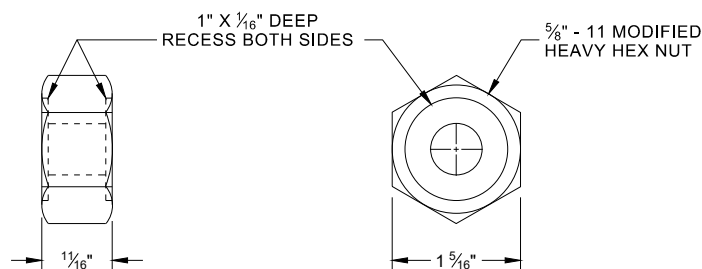


**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

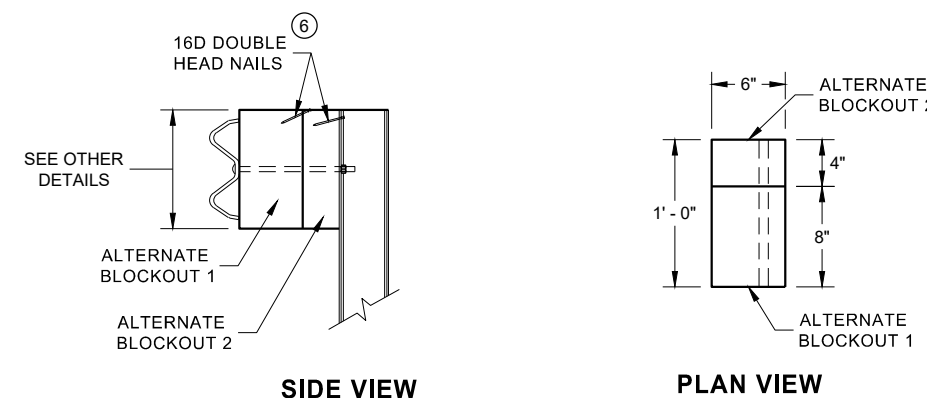


DETAIL FOR 36" BLOCKOUT DEPTH

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**

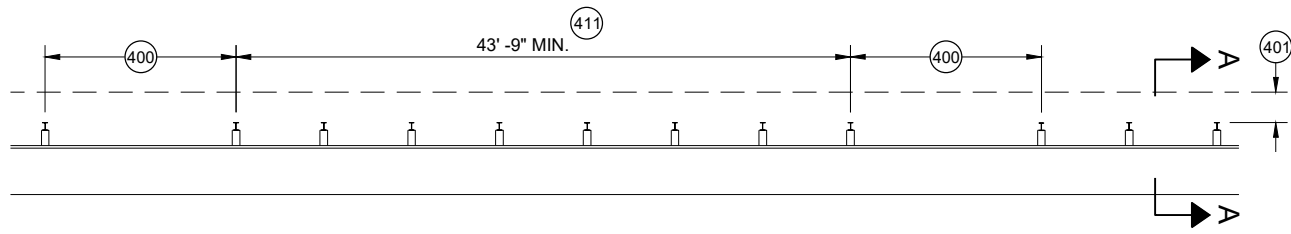


**ALTERNATE WOOD
BLOCKOUT DETAIL**

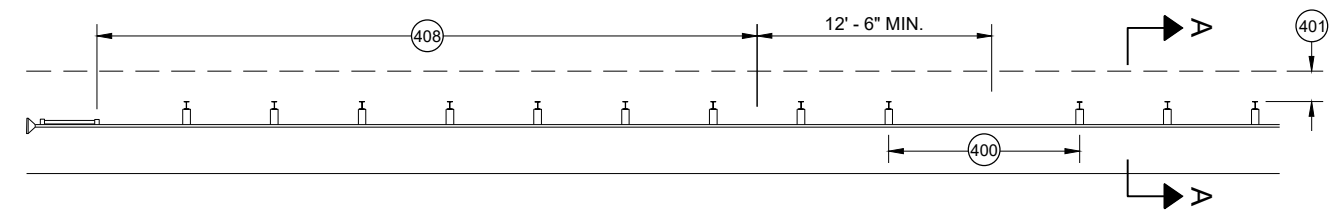
6 WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

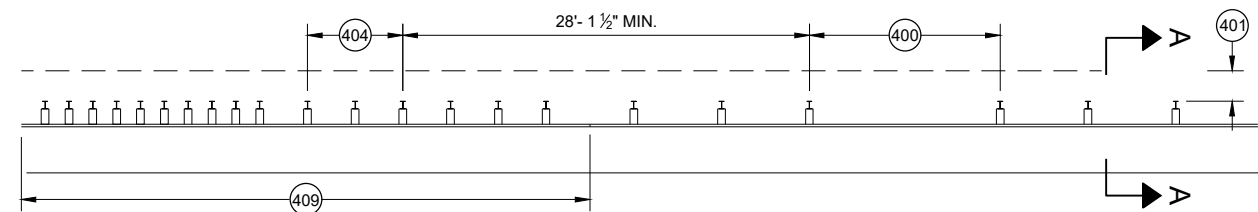
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



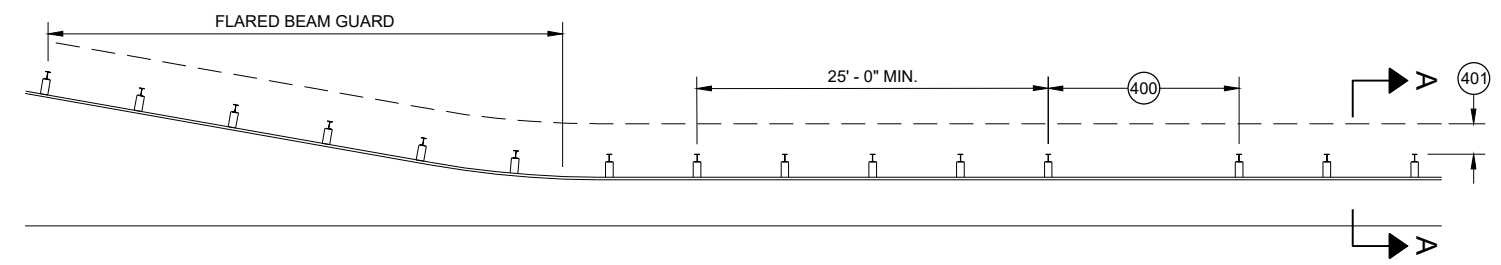
MISSING POST IN MGS GUARDRAIL



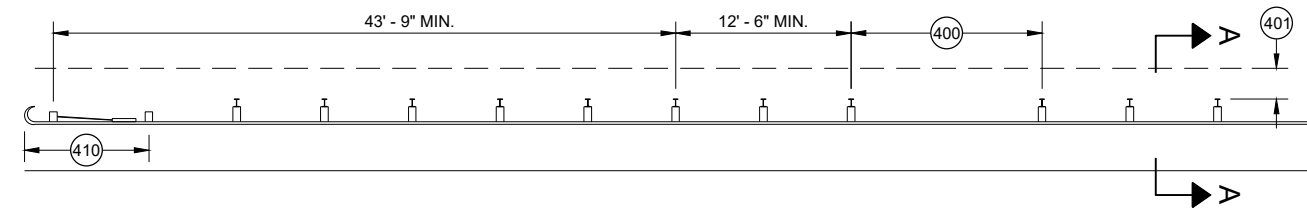
MISSING POST IN MGS GUARDRAIL NEAR EAT



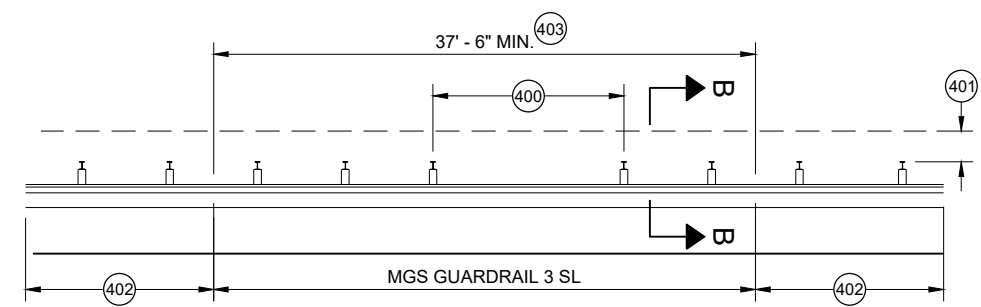
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

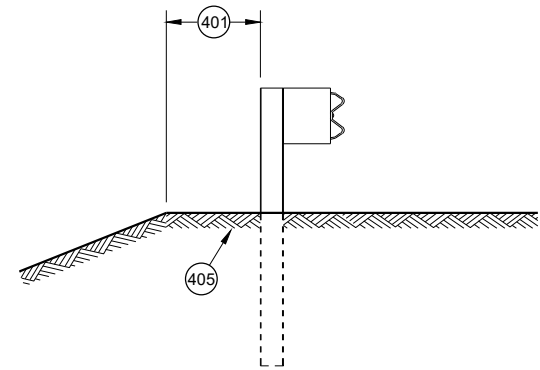


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

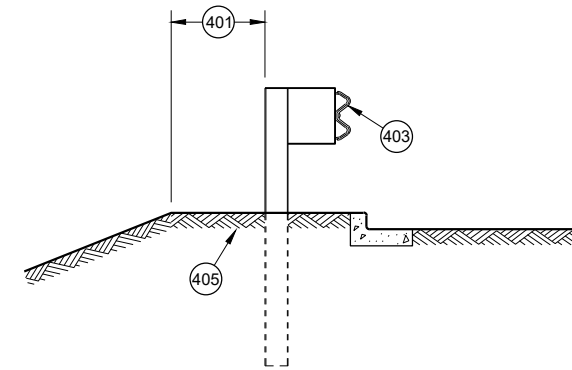


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

- 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> | |

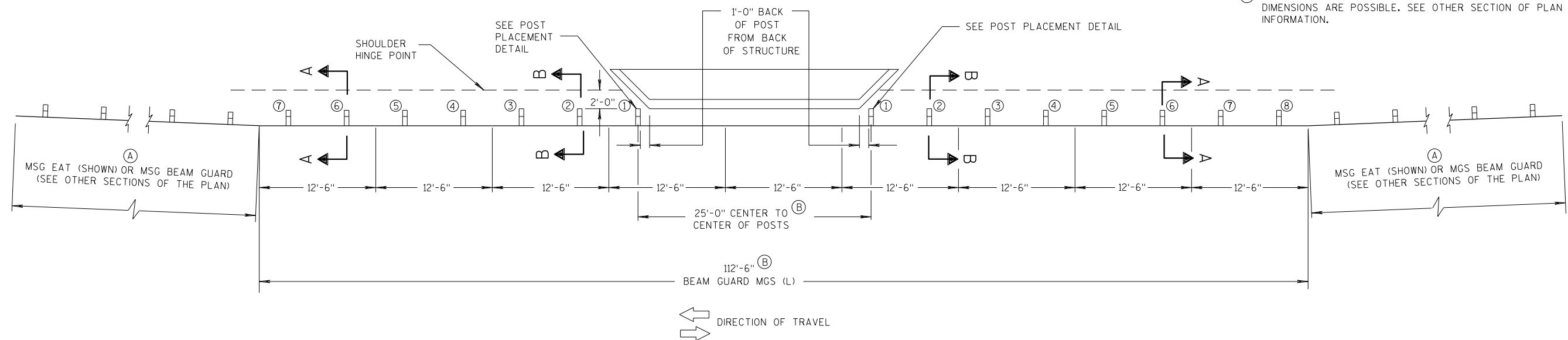
GENERAL NOTES

POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

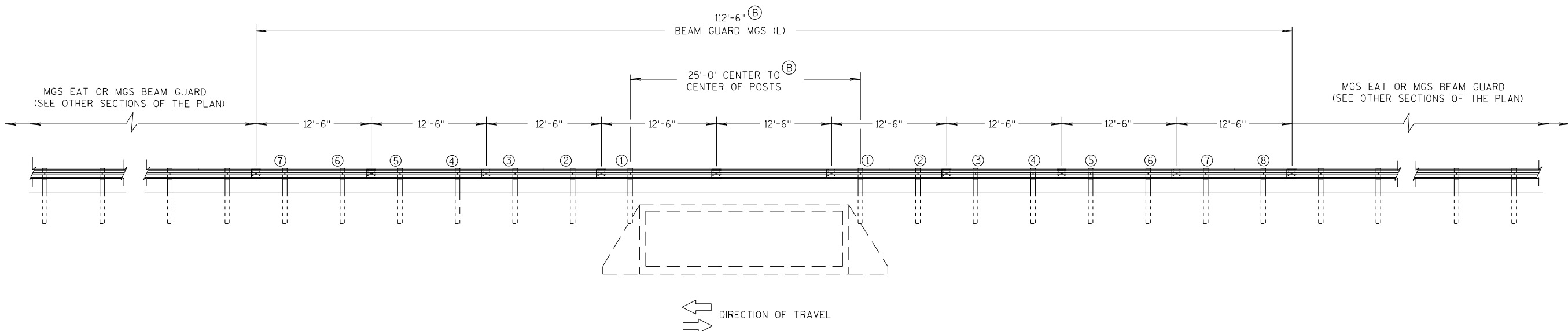
SEE SDD 14 B 42 FOR MORE DETAILS.

(A) FLARE FOR MGS EAT SHOWN, IF INSTALLING MGS NO FLARE NEEDED.

(B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) TWO-WAY TRAFFIC

| |
|--|
| <p>MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)</p> |
| <p>STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION</p> |

6

6

S.D.D. 14 B 43-4a

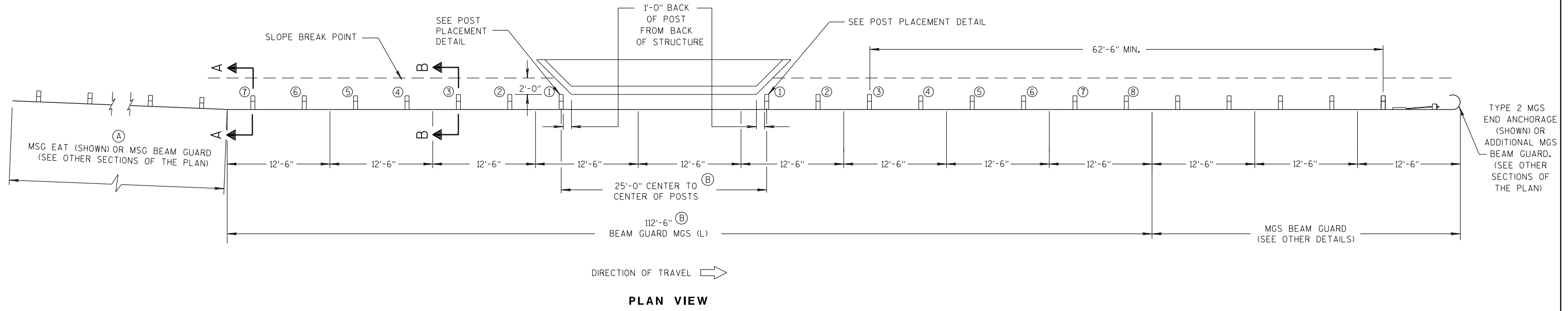
S.D.D. 14 B 43-4a

GENERAL NOTES

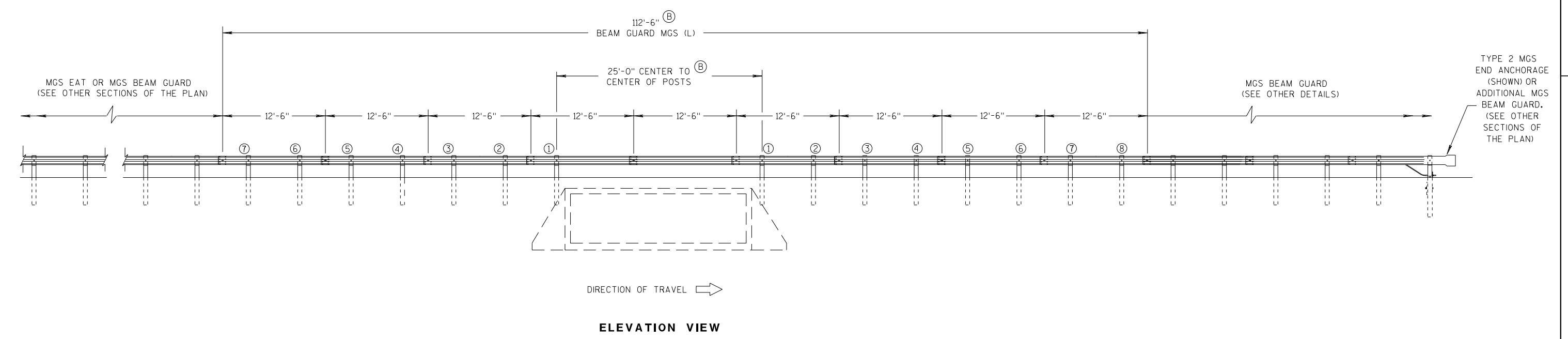
POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

SEE SDD 14 B 42 FOR MORE DETAILS.

- (A) FLARE FOR MGS EAT SHOWN. IF INSTALLING MGS NO FLARE NEEDED.
- (B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



PLAN VIEW

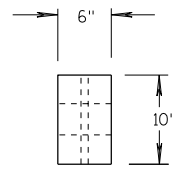


ELEVATION VIEW

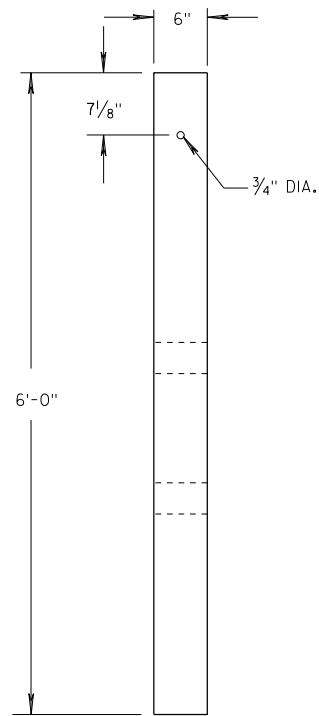
MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) ONE-WAY TRAFFIC

**MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)**

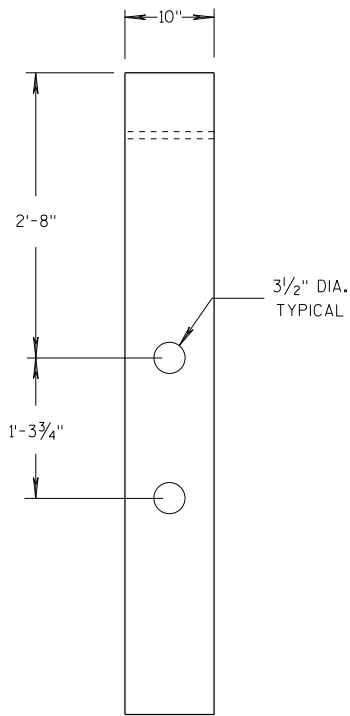
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



PLAN VIEW

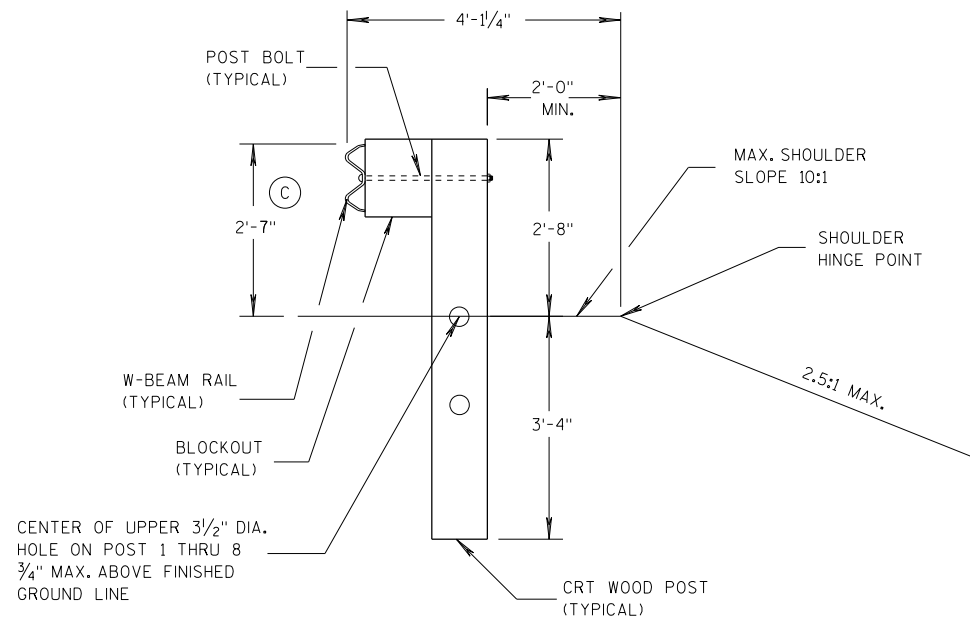


FRONT VIEW

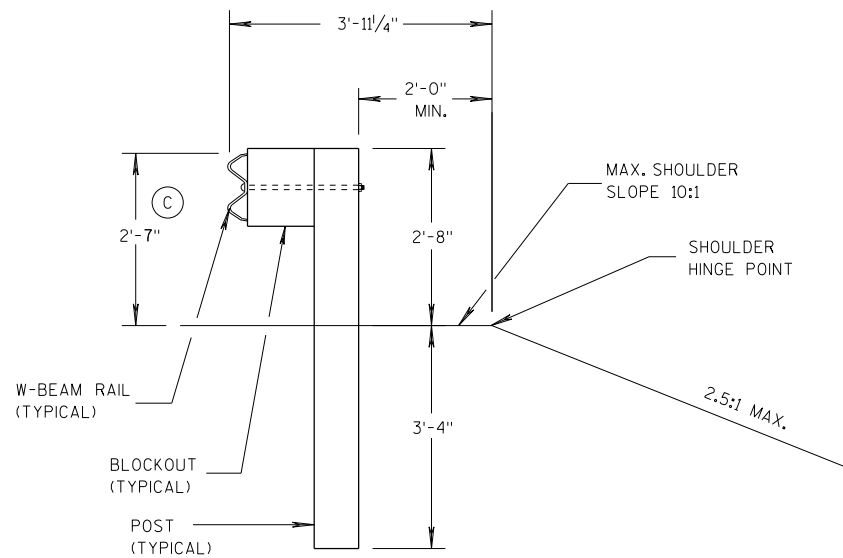


SIDE VIEW

CRT WOOD POST



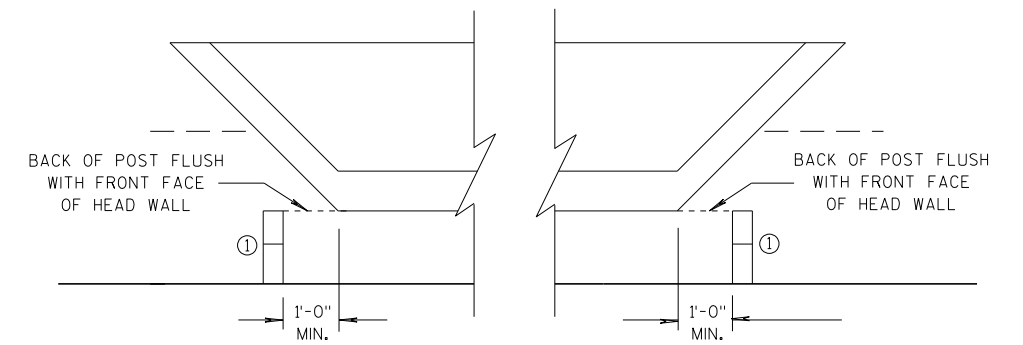
SECTION B-B
POSTS NO. 1-3
SEE OTHER DETAILS



SECTION A-A
POSTS NO. 4-8
SEE OTHER DETAILS

GENERAL NOTES

(C) TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



POST PLACEMENT DETAIL

MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

| | |
|----------|--|
| APPROVED | /S/ Rodney Taylor |
| DATE | 07/2018 |
| FHWA | ROADWAY STANDARDS DEVELOPMENT ENGINEER |

GENERAL NOTES

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

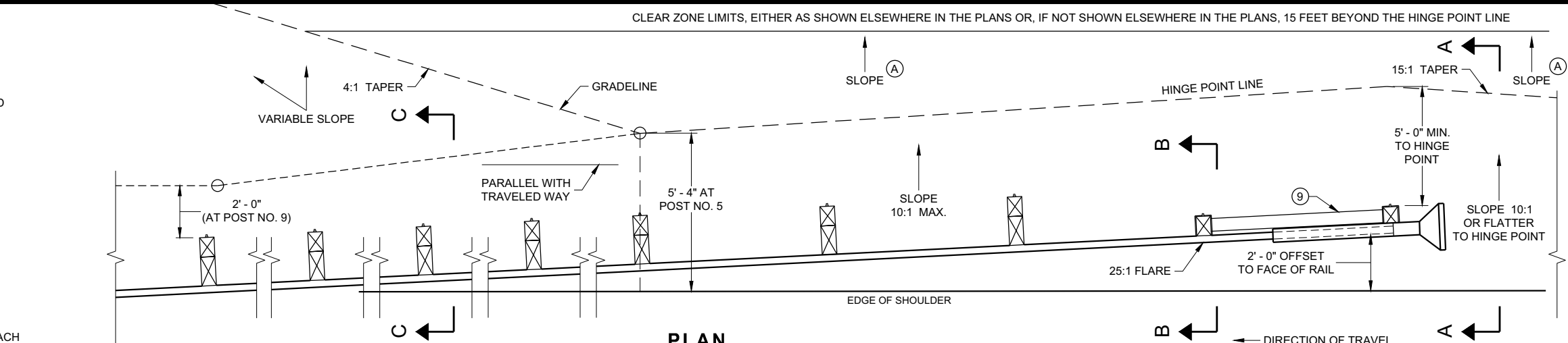
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

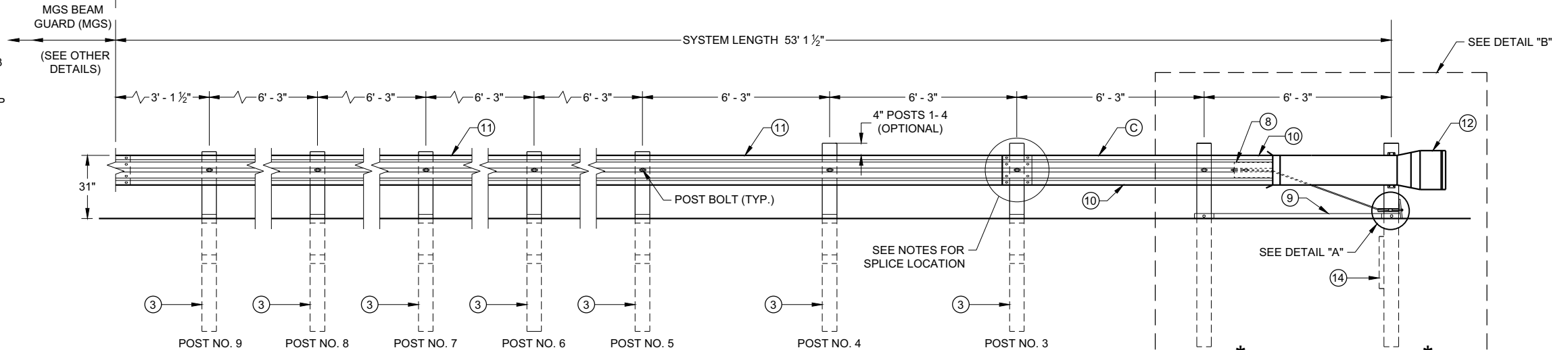
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

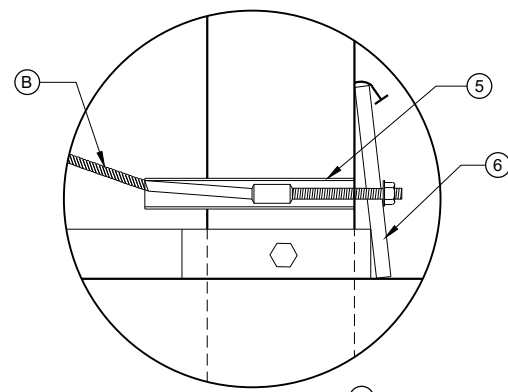
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



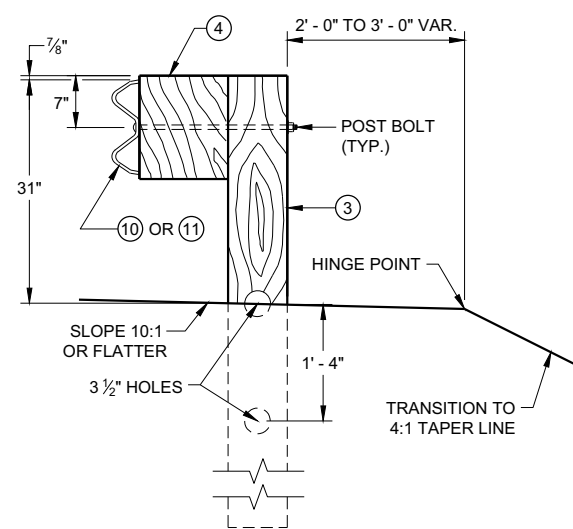
PLAN



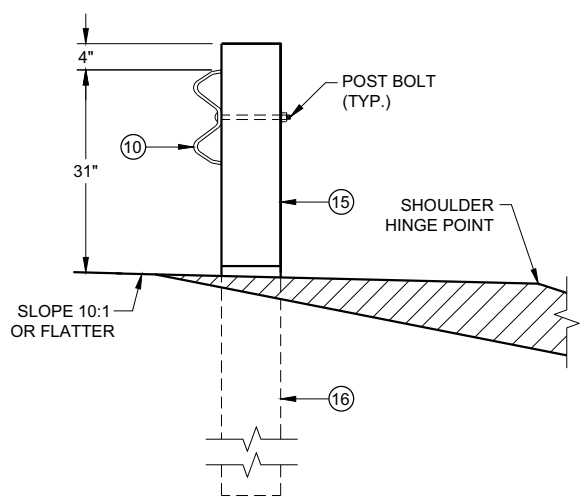
ELEVATION



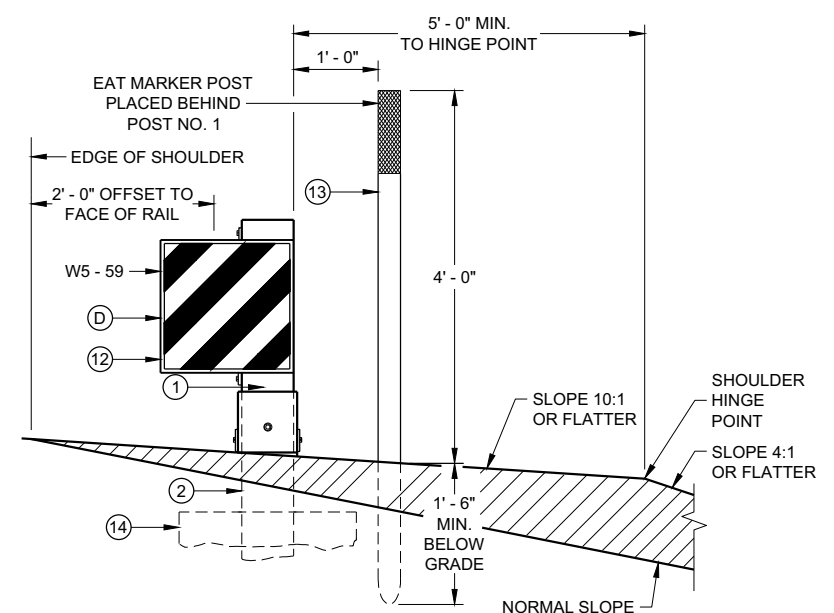
DETAIL "A"



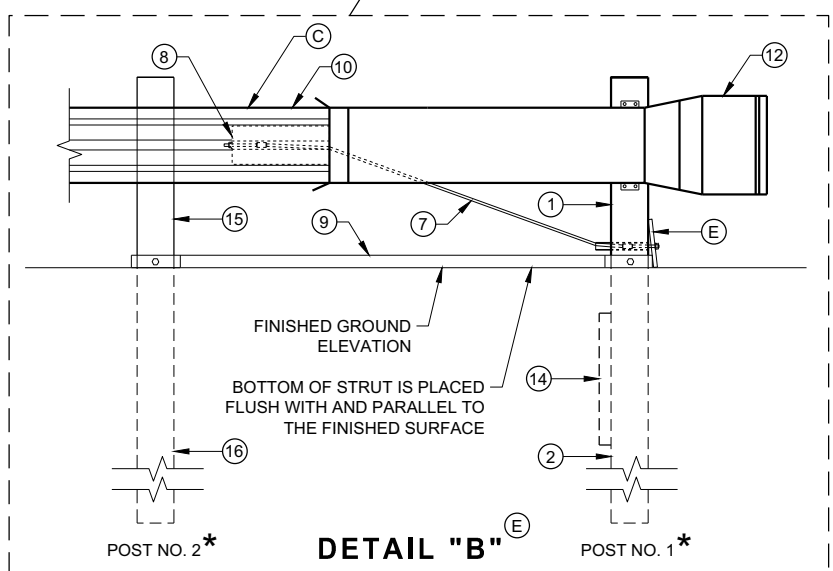
**SECTION C - C
TYPICAL AT POST NOS. 3 - 9**



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



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



DETAIL "B"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

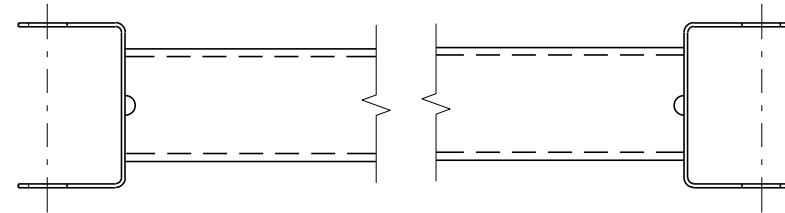
6

SDD 14B44 - 04a

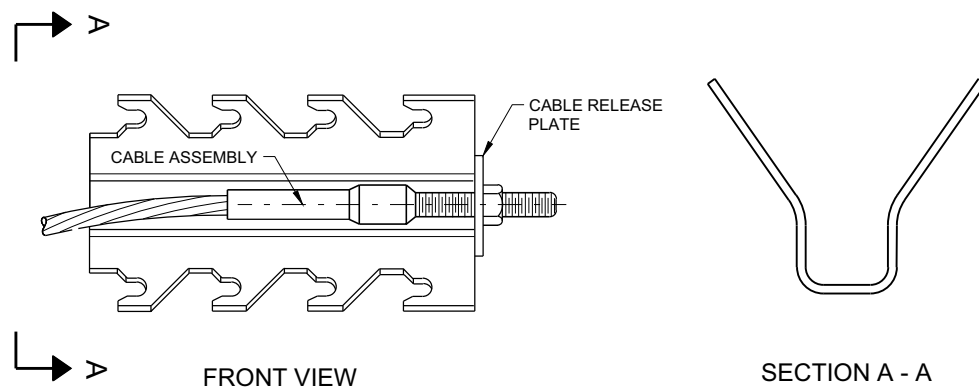
SDD 14B44 - 04a

BILL OF MATERIALS

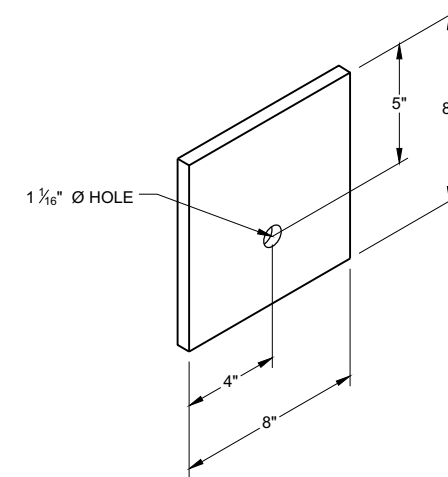
| PART NO. | DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION. |
|----------|--|
| ① | UPPER POST NO. 1 6" X 6" TUBE |
| ② | LOWER POST NO. 1 |
| ③ | WOOD CRT |
| ④ | WOOD BLOCKOUT |
| ⑤ | PIPE SLEEVE |
| ⑥ | BEARING PLATE |
| ⑦ | BCT CABLE ASSEMBLY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



GENERIC GROUND STRUT ⑨ ⑤



GENERIC ANCHOR CABLE BOX ⑨ ⑤



BEARING PLATE ⑥ ⑤

6

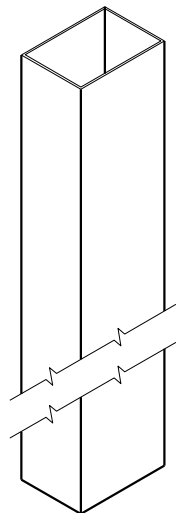
6

SDD 14B44 - 04b

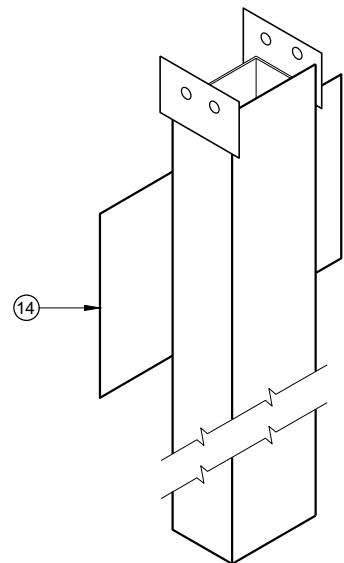
SDD 14B44 - 04b

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

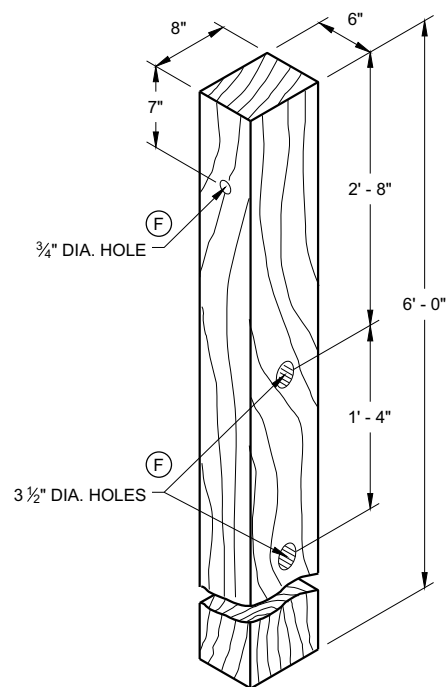
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



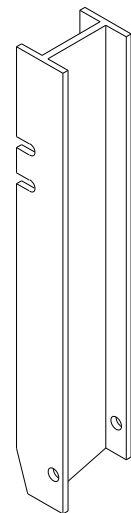
UPPER POST NO. 1 ⁽¹⁾ (E)



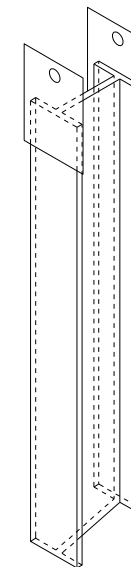
LOWER POST NO. 1 ⁽²⁾ (E)



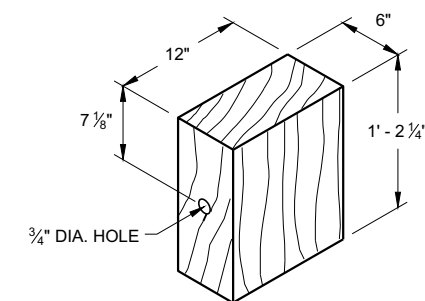
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

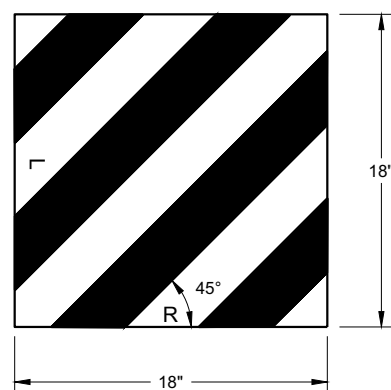


LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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

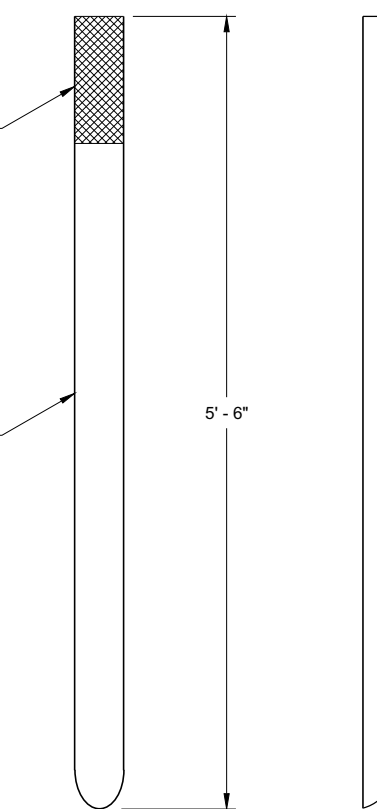
6



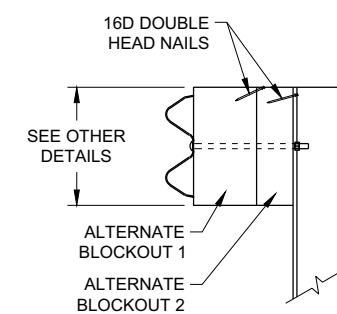
REFLECTIVE SHEETING DETAIL ^(E)

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

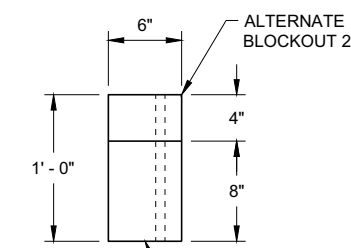
E.A.T. MARKER
POST (YELLOW)



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



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

6

SDD 14B44 - 04c

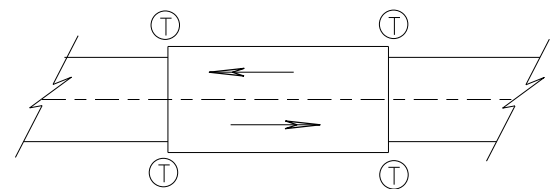
SDD 14B44 - 04c

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

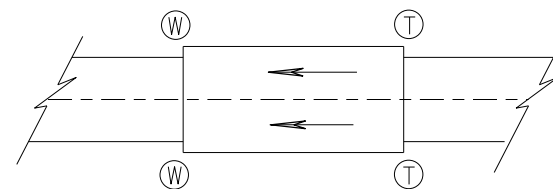
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

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

TRANSITION USES STEEL POSTS ONLY.

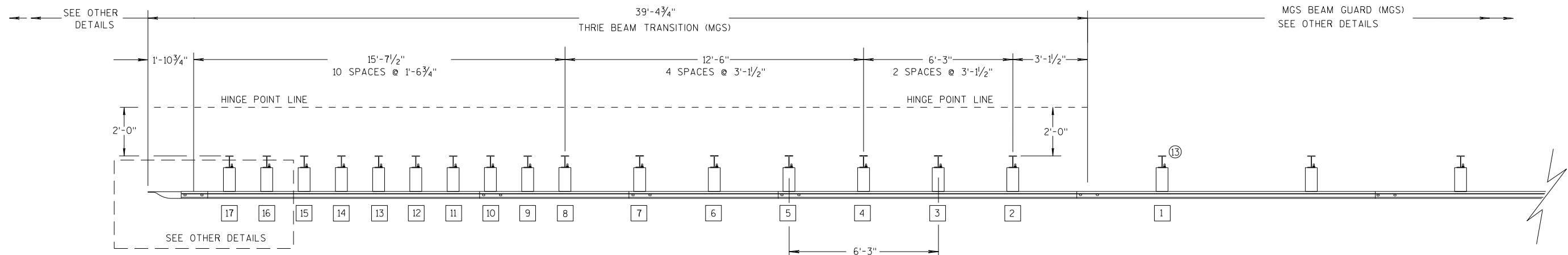
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

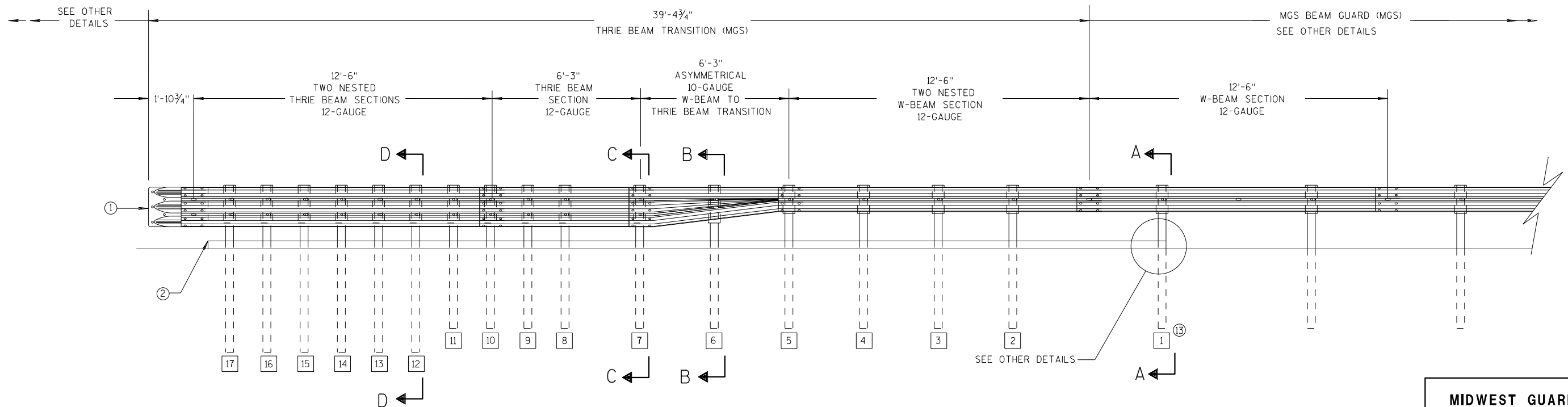
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

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



PLAN VIEW



ELEVATION VIEW

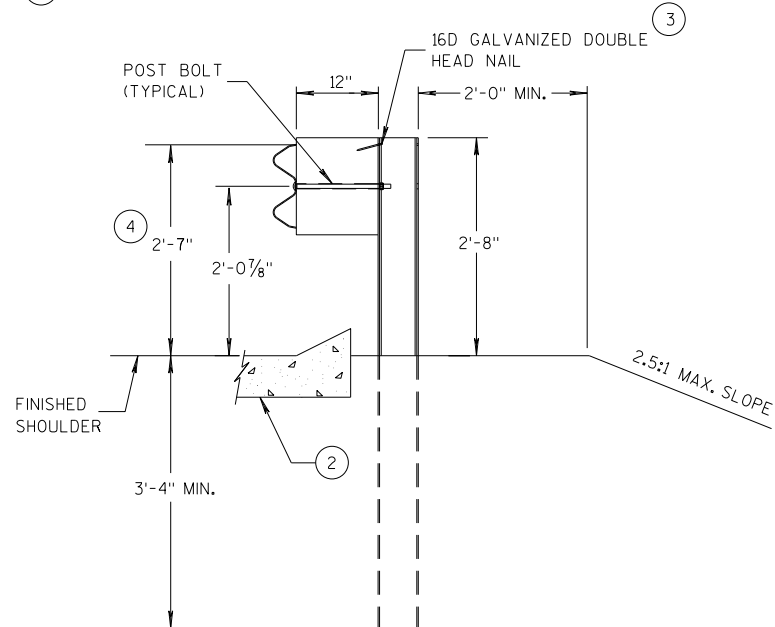
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

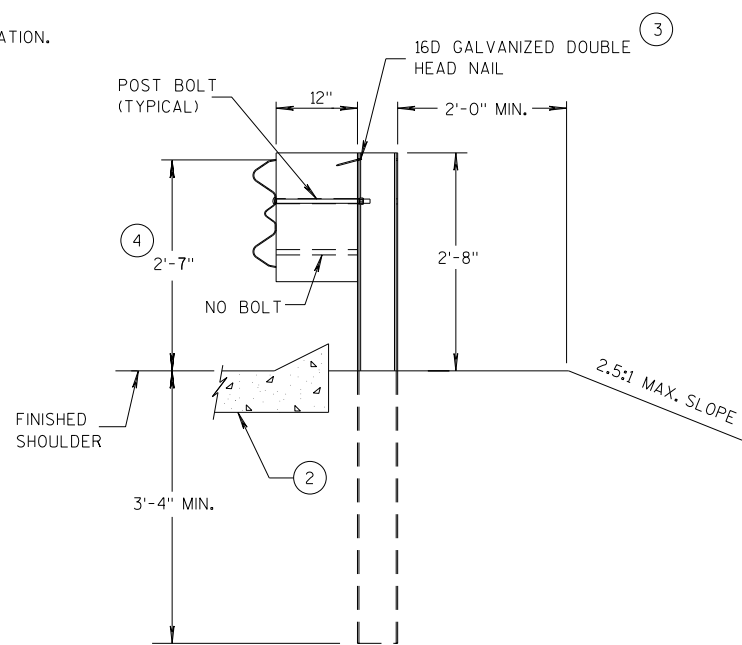
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

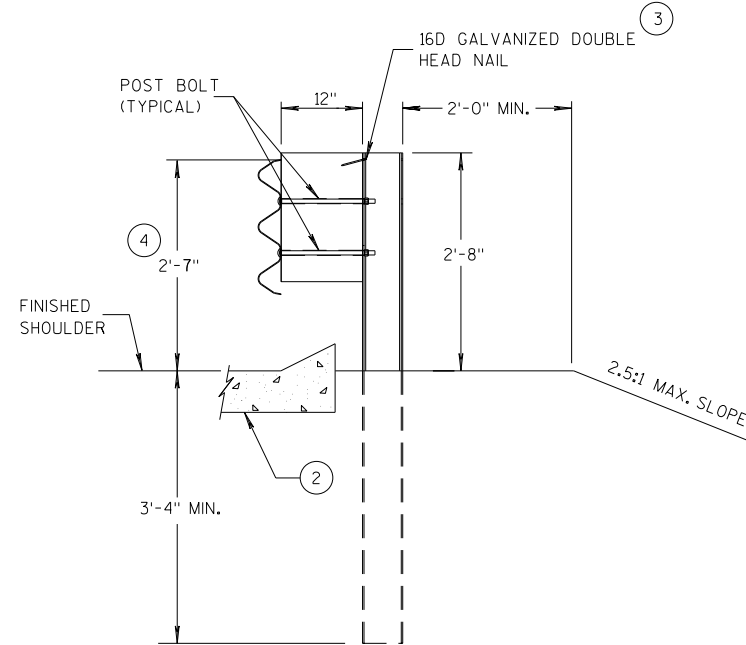
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



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



**SECTION B-B
POST 6**



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

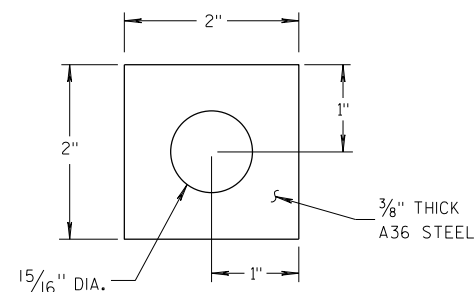
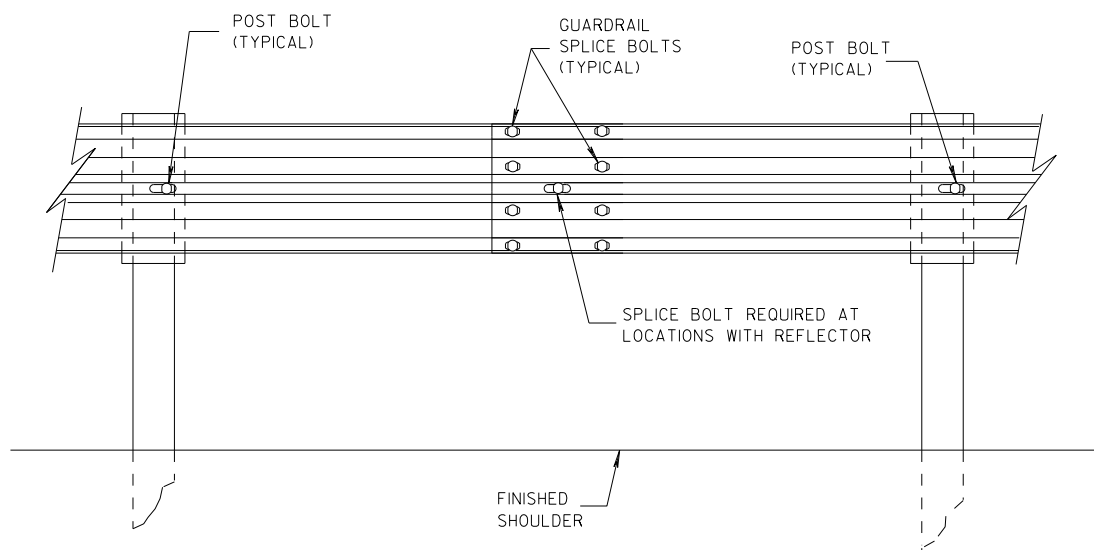
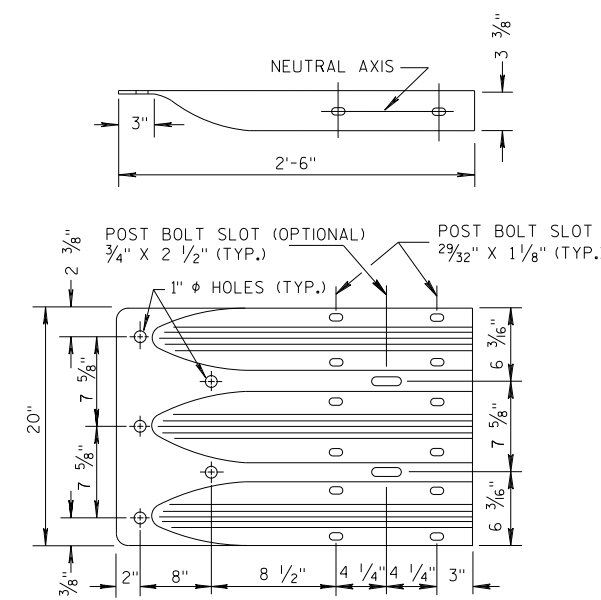


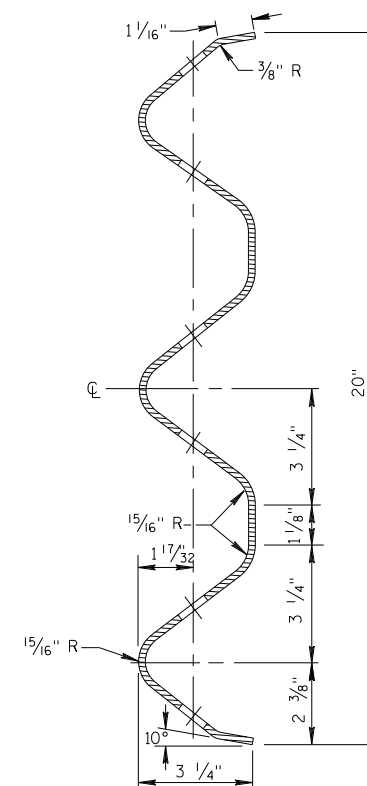
PLATE WASHER DETAIL



SPLICE DETAIL



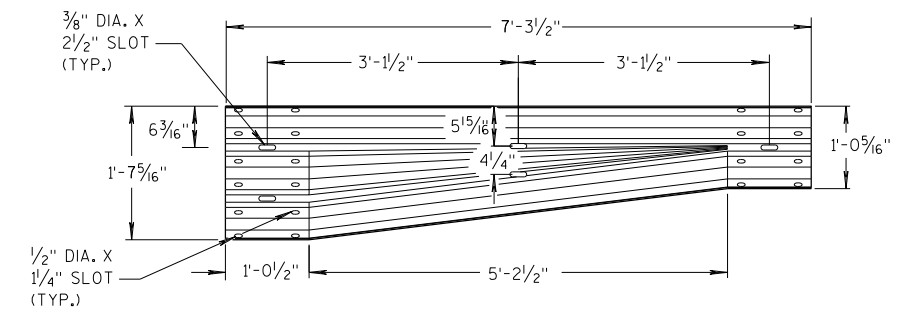
**THRIE BEAM
TERMINAL CONNECTOR**



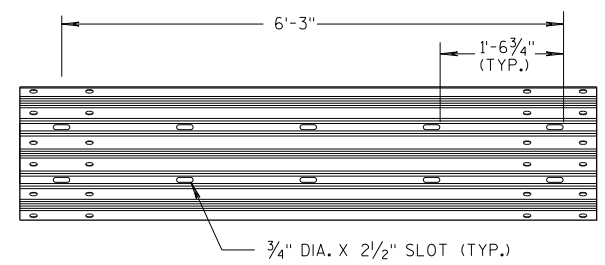
**SECTION THRU THRIE
BEAM RAIL ELEMENT**

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

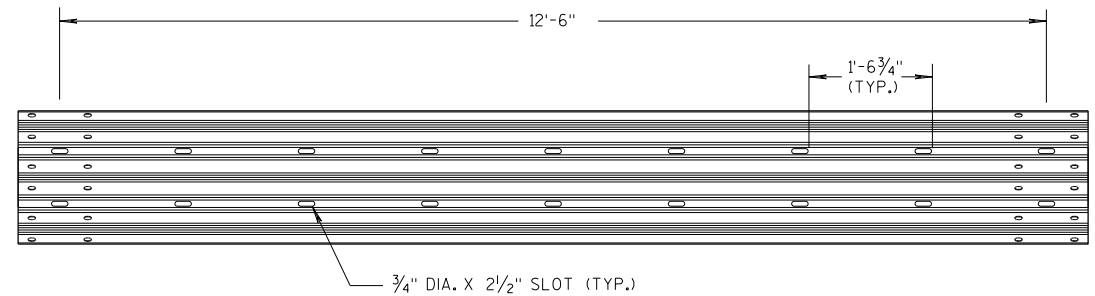
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



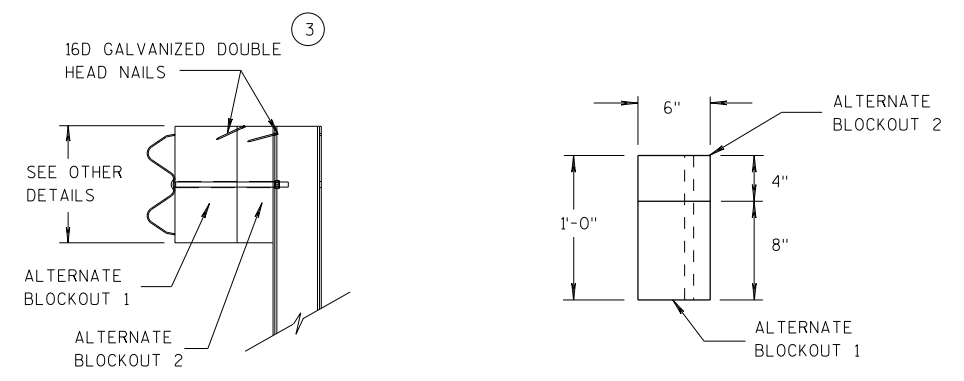
W-BEAM TO THRIE BEAM TRANSITION SECTION



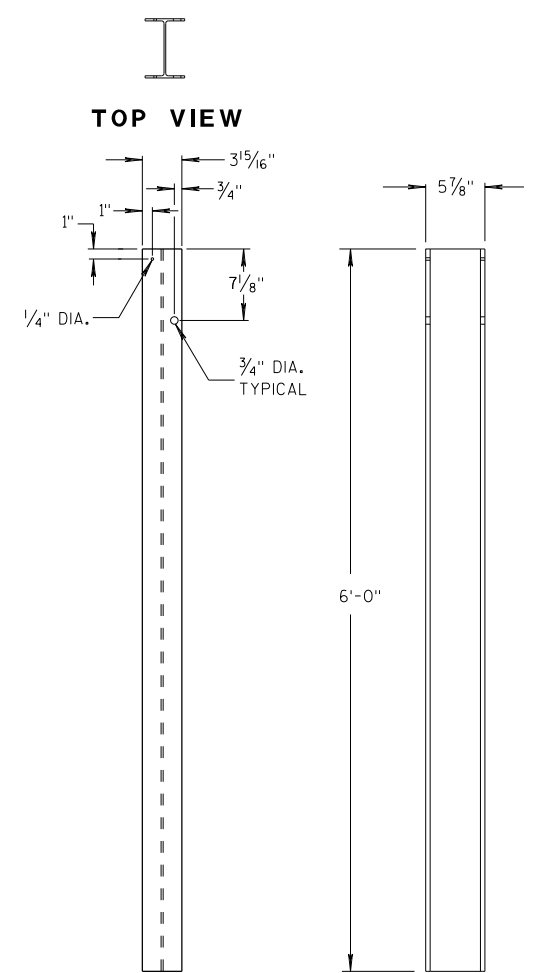
6'-3\"/>



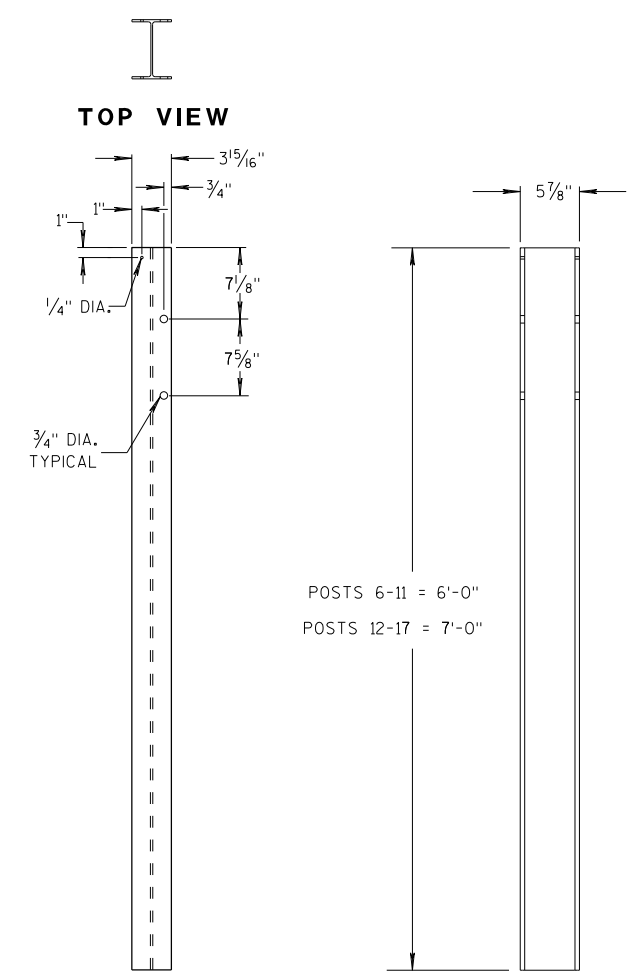
12'-6\"/>



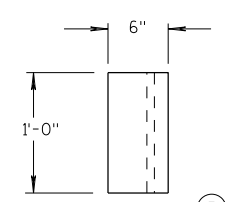
ALTERNATE WOOD BLOCKOUT DETAIL



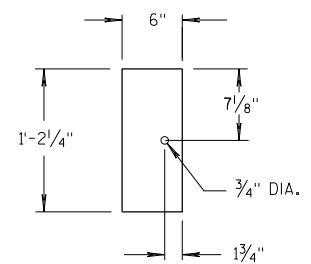
STEEL POSTS 1-5



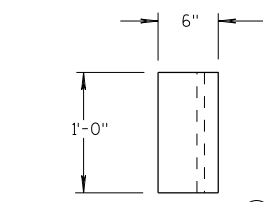
STEEL POSTS 6-17



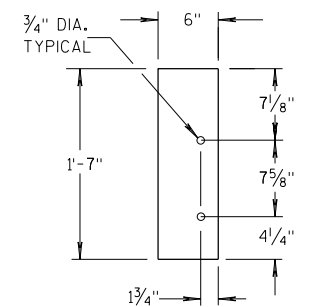
TOP VIEW



**FRONT VIEW
BLOCKOUT
POSTS 1-5**



TOP VIEW



**FRONT VIEW
BLOCKOUT
POSTS 6-17**

GENERAL NOTES

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

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

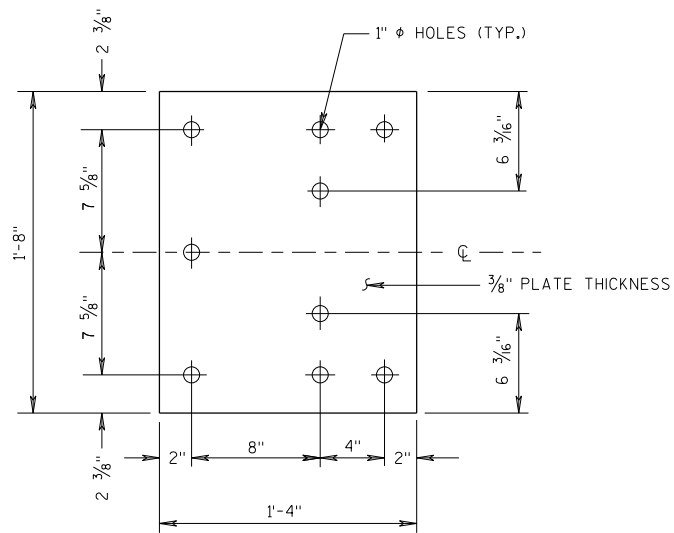
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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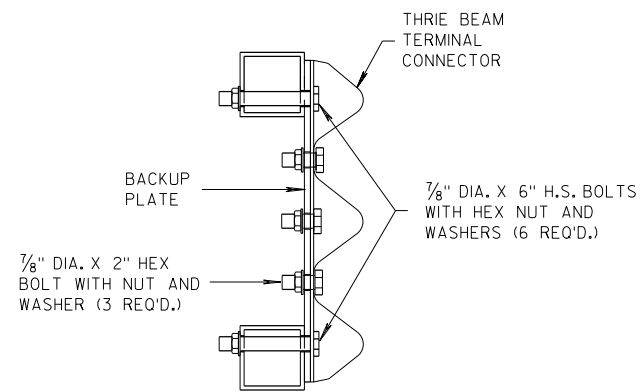
6

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

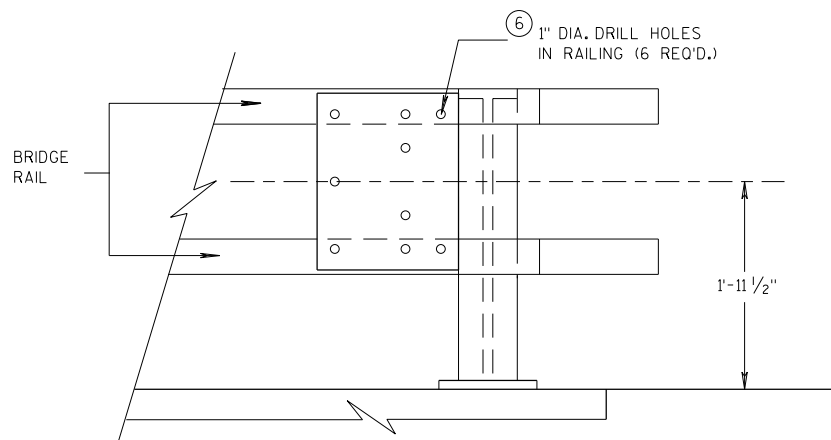
S.D.D. 14 B 45-5c



BACK-UP PLATE DETAIL



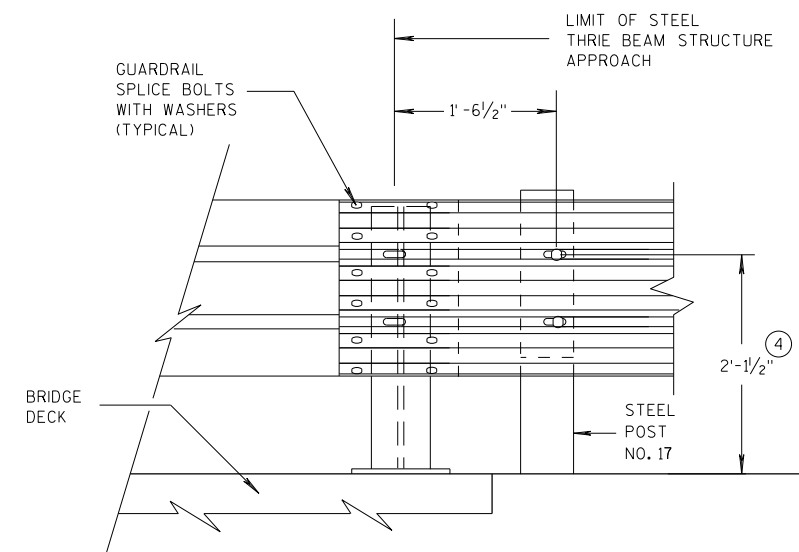
SECTION J-J



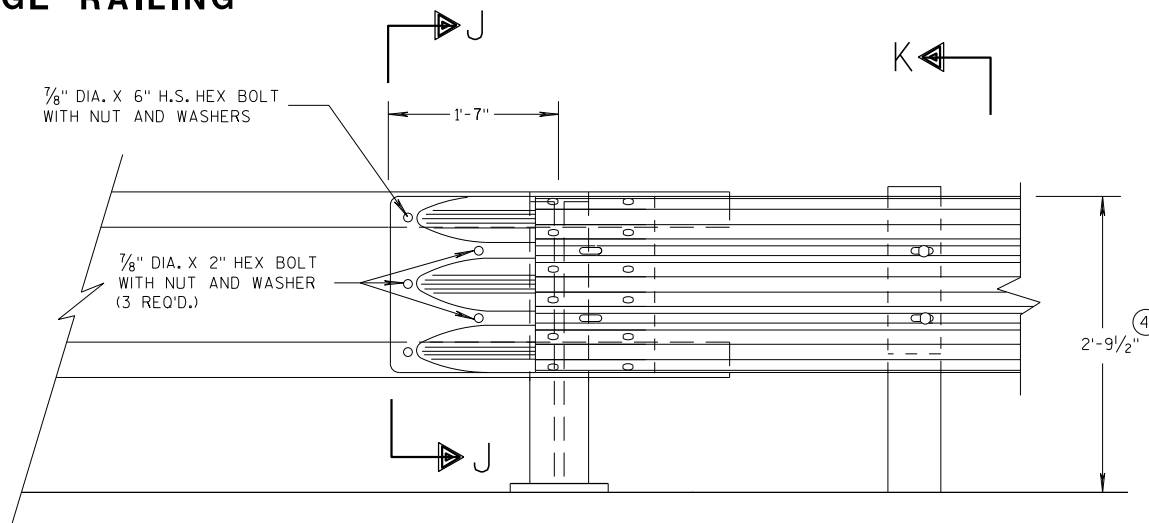
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

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

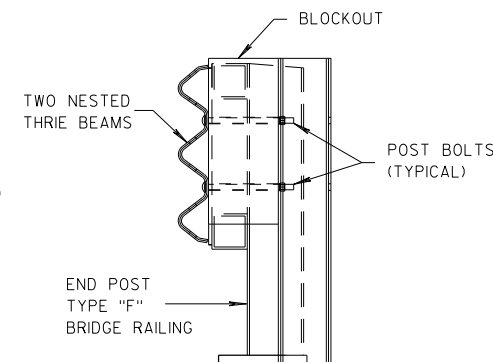


**FRONT VIEW
THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"**



FRONT VIEW

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



SECTION K-K

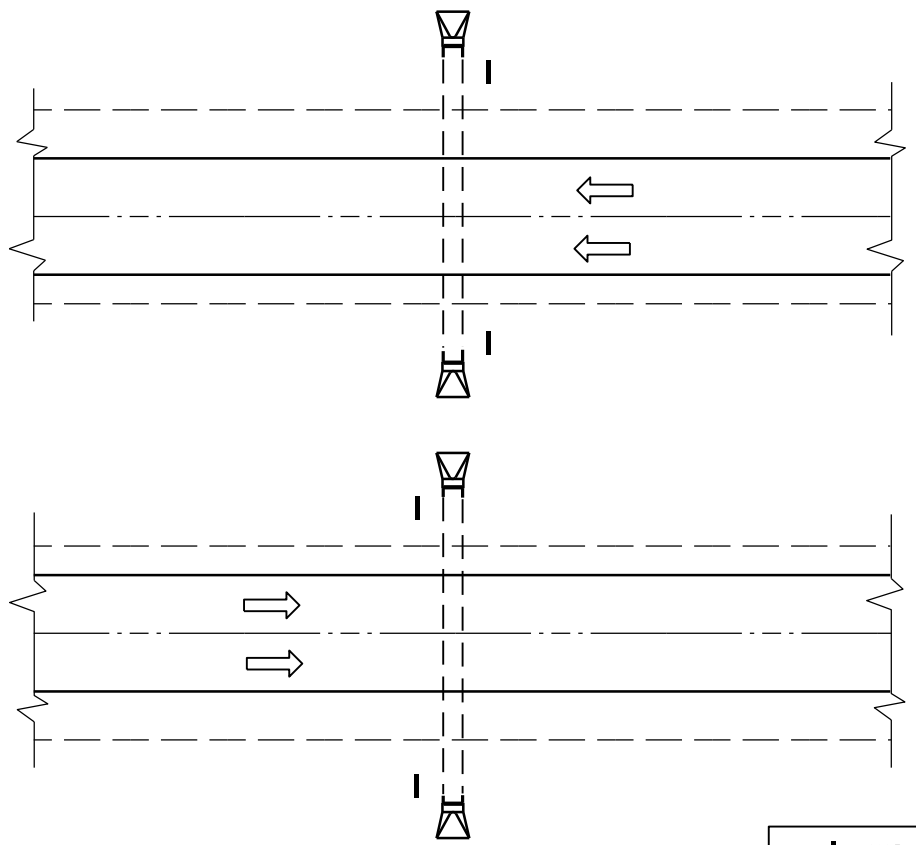
| | |
|---|---|
| MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS) | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED 07/2018 DATE | /S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR |
| FHWA | |

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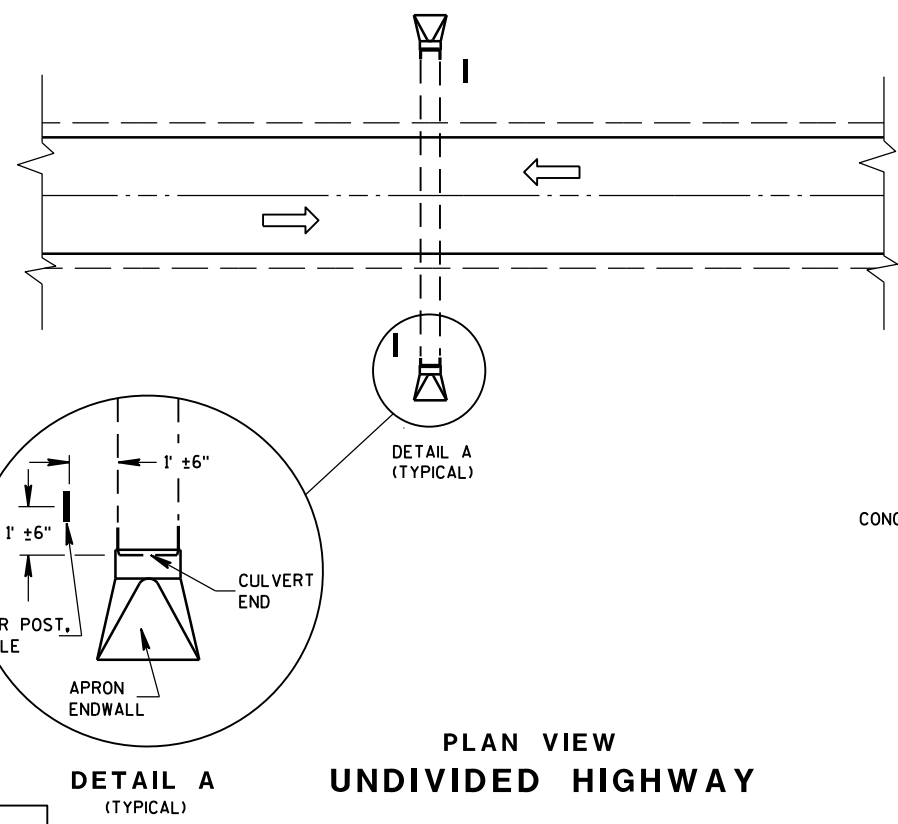
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S.D.D. 14 B 45-59

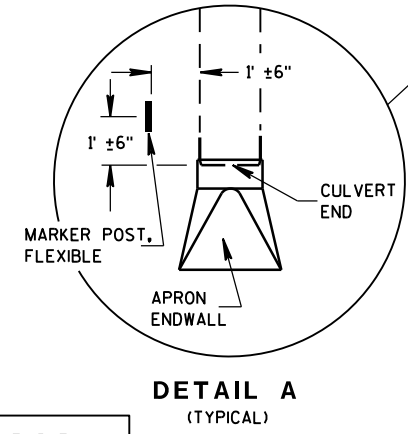
S.D.D. 14 B 45-59



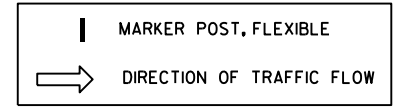
PLAN VIEW
DIVIDED HIGHWAY



PLAN VIEW
UNDIVIDED HIGHWAY



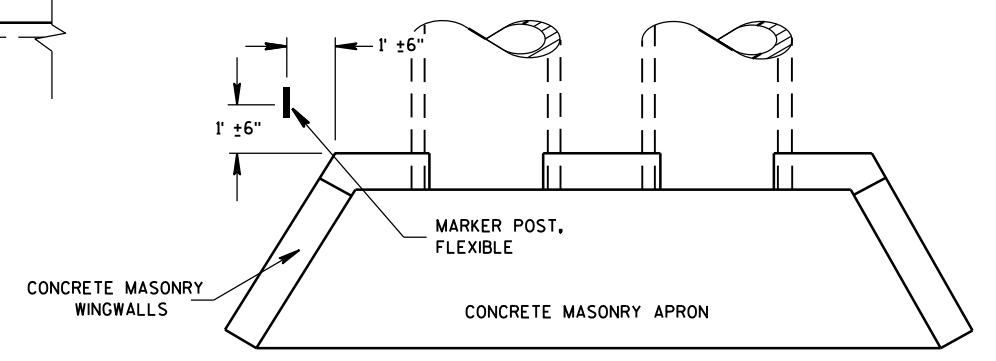
DETAIL A
(TYPICAL)



FLEXIBLE MARKER POST LOCATION

GENERAL NOTES

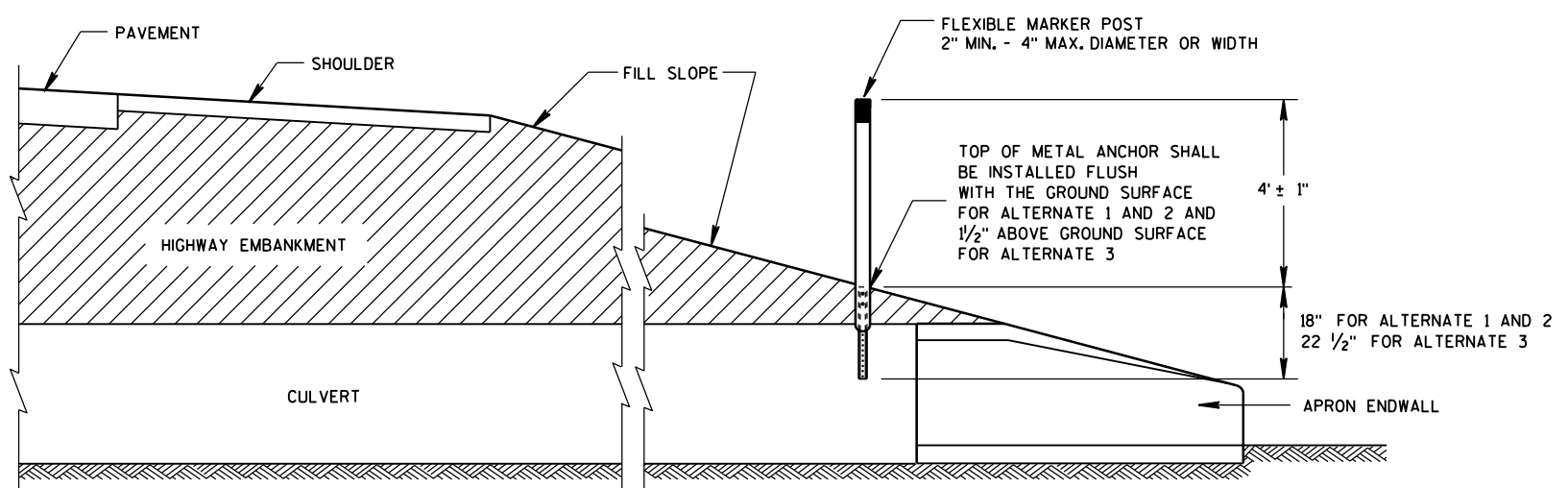
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH

6

6



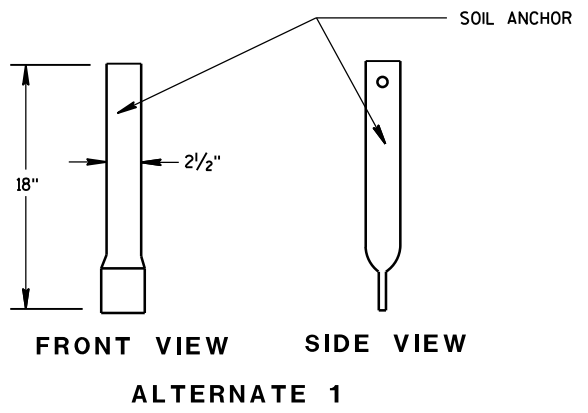
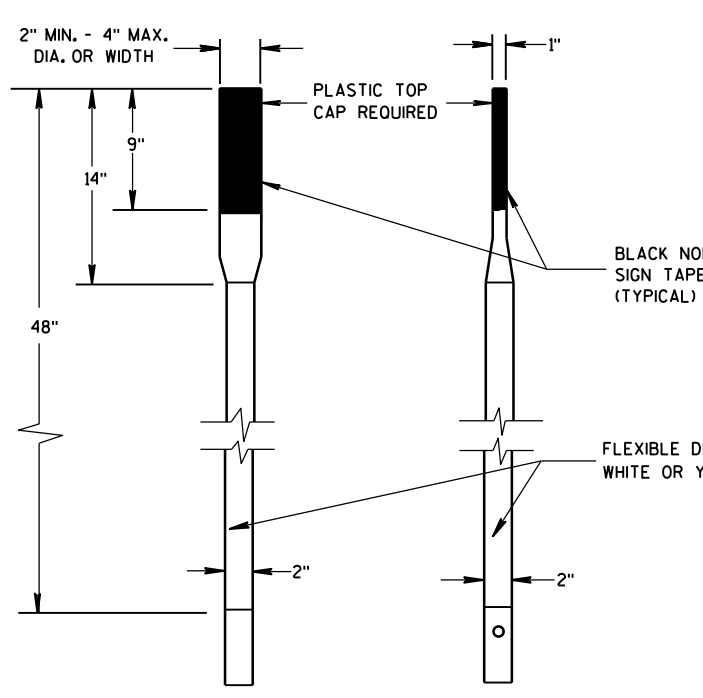
CROSS SECTION
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST
FOR CULVERT END

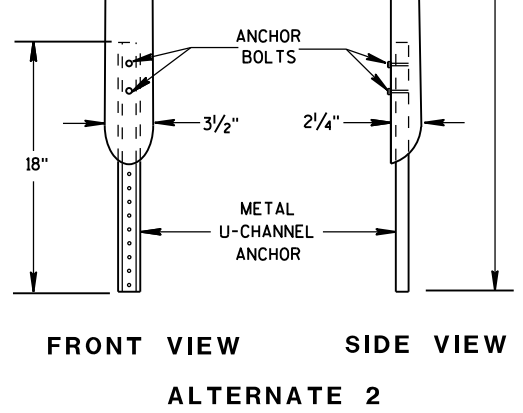
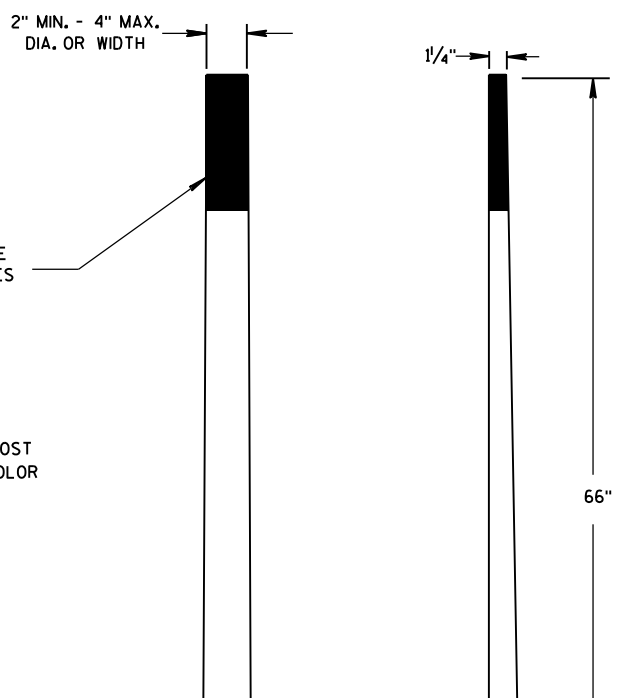
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

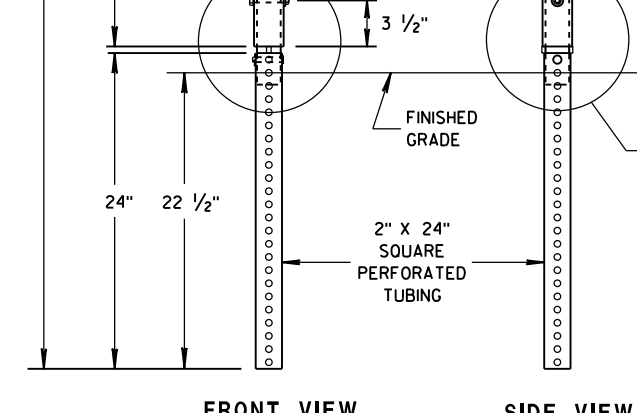
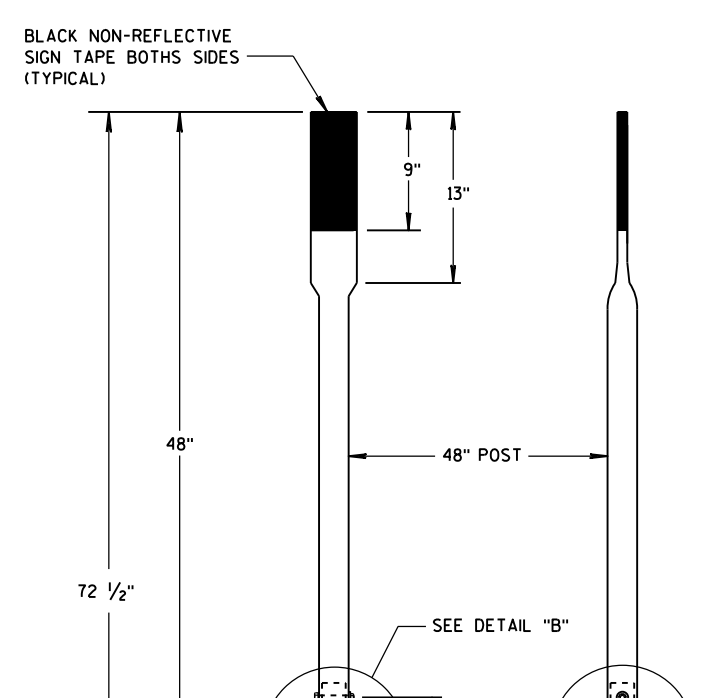


FRONT VIEW SIDE VIEW
ALTERNATE 1

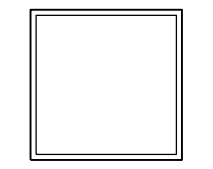


FRONT VIEW SIDE VIEW
ALTERNATE 2

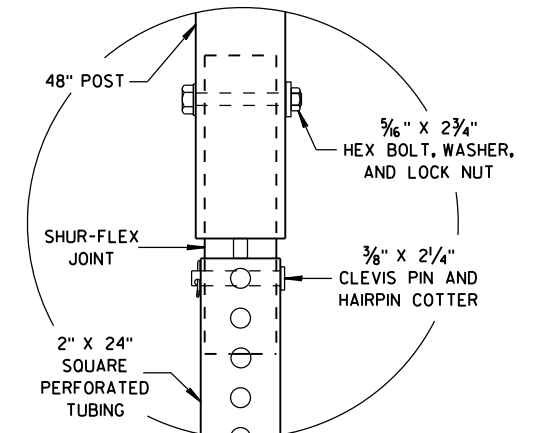
FLEXIBLE MARKER POSTS



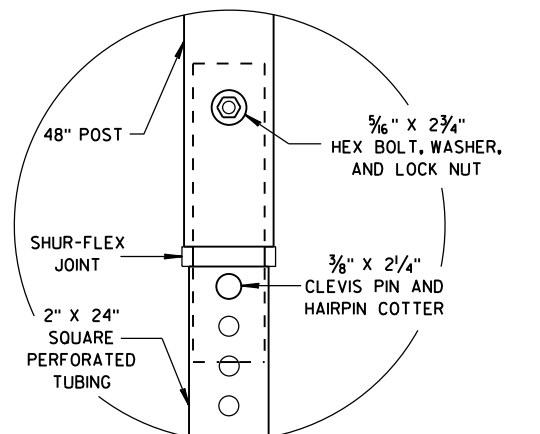
FRONT VIEW SIDE VIEW
ALTERNATE 3



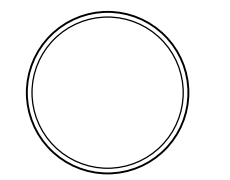
SECTION C-C



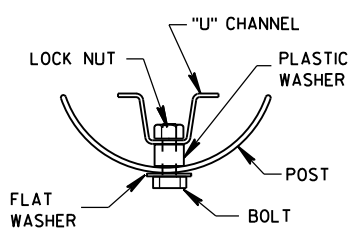
DETAIL B



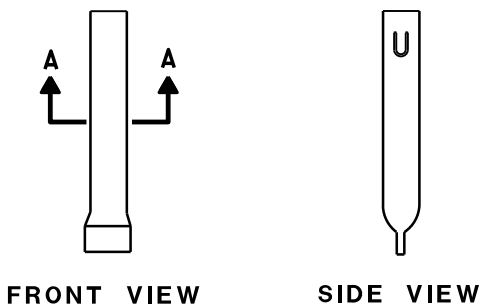
DETAIL C



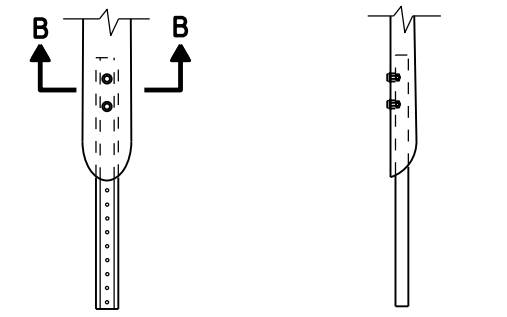
SECTION A-A



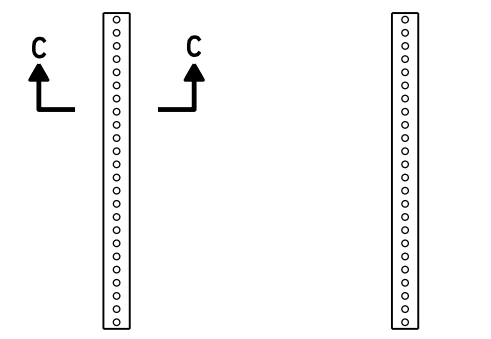
SECTION B-B



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 | |

GENERAL NOTES

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

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




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

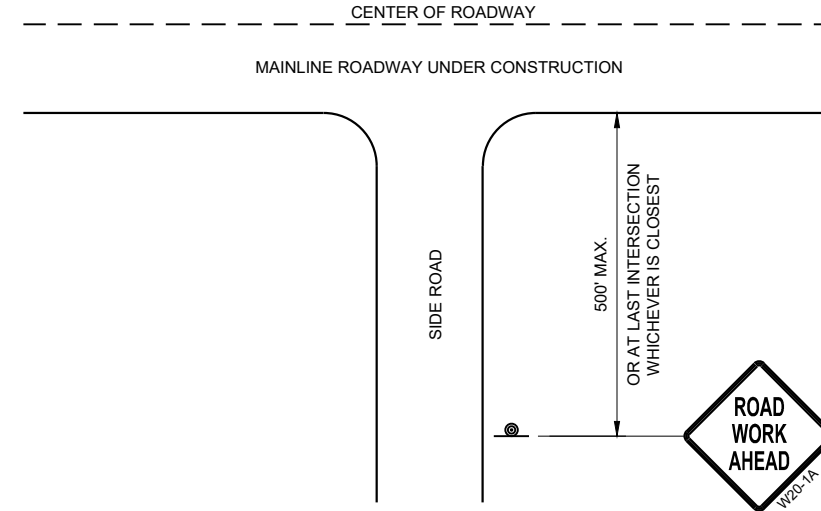
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

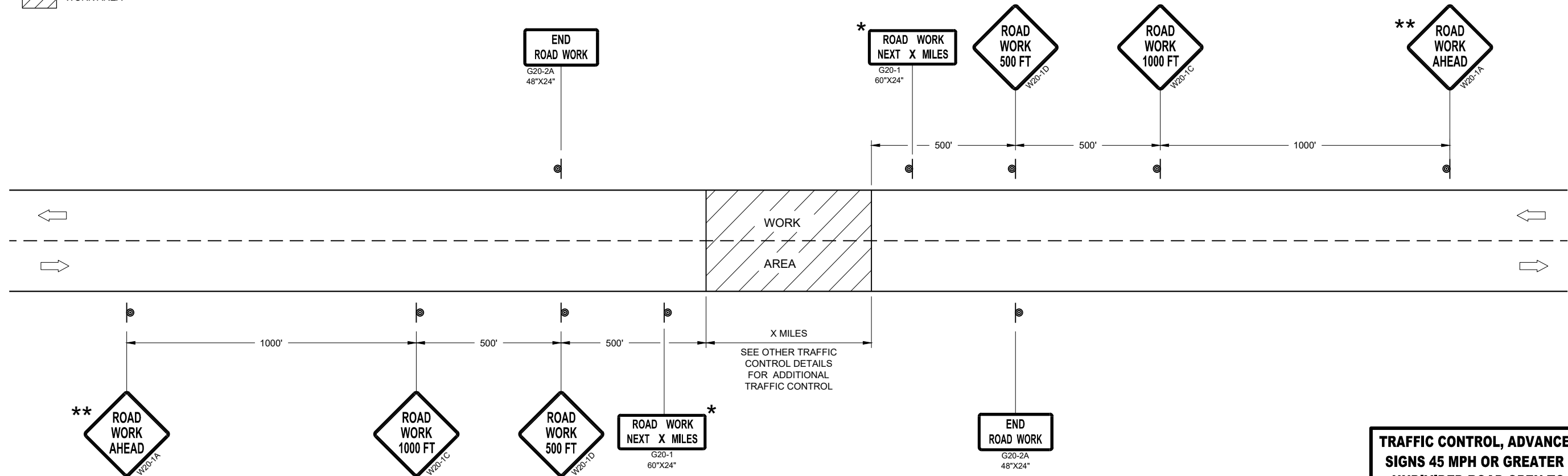
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



**TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL**



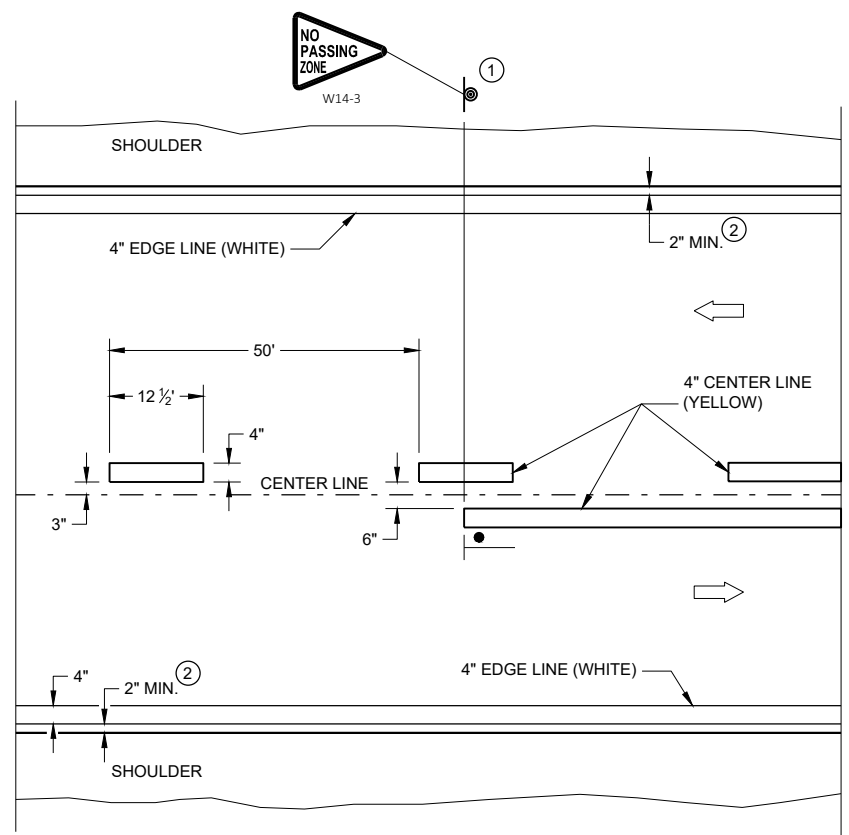
TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

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

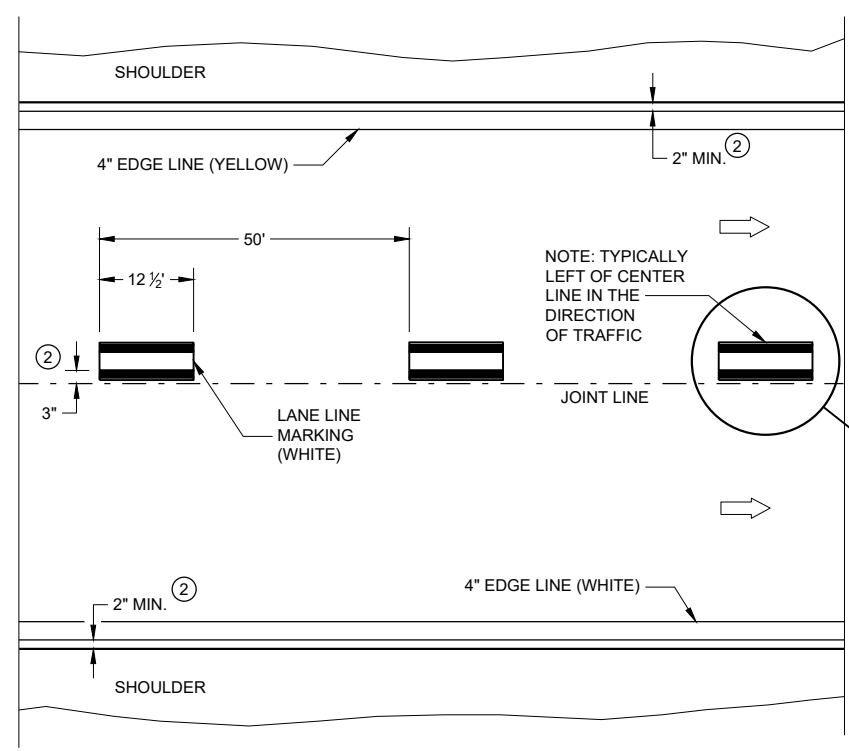
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

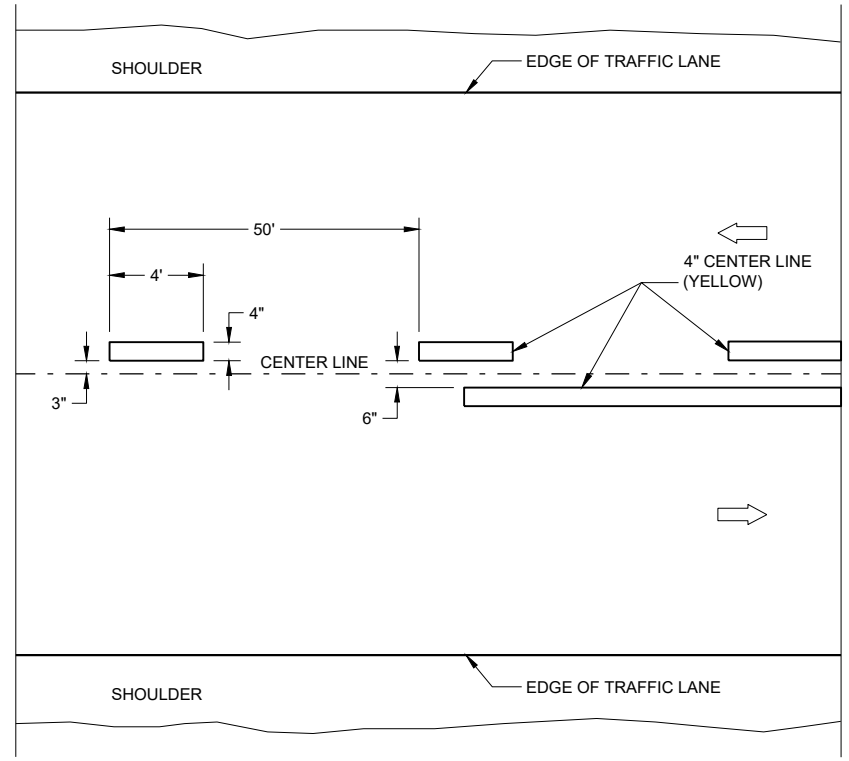


TWO WAY TRAFFIC

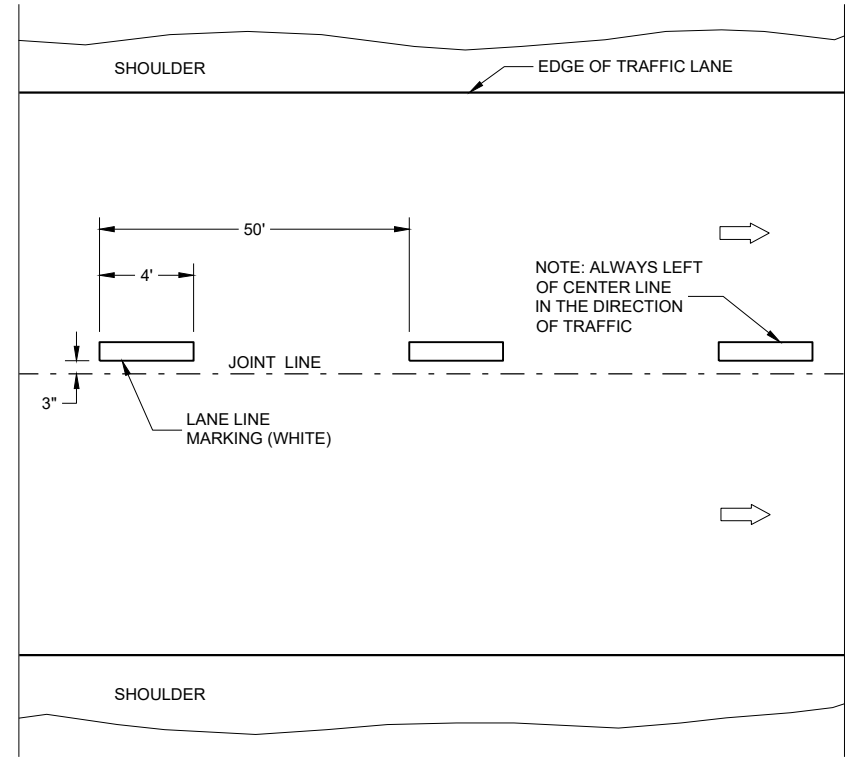


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

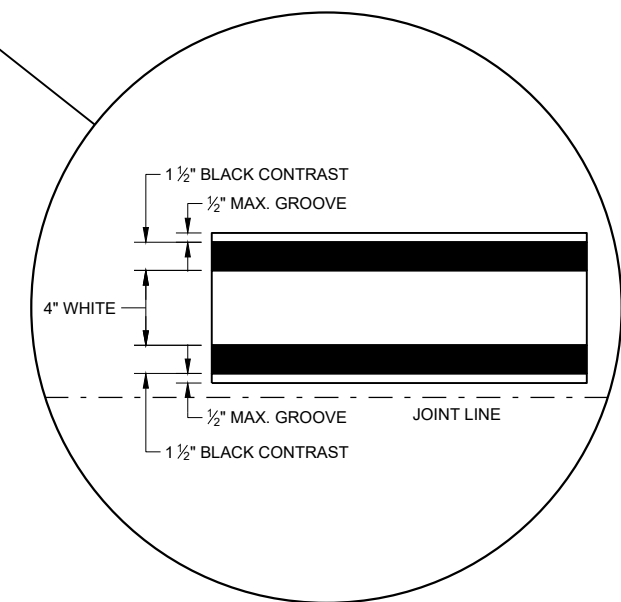
GENERAL NOTES

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

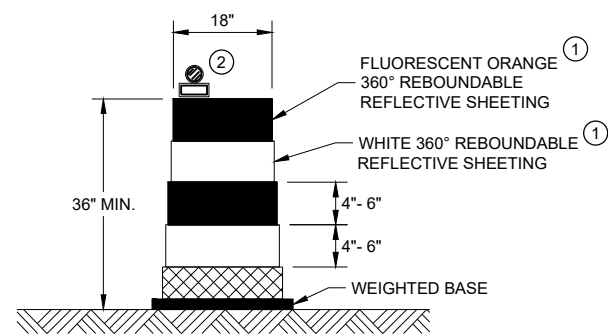
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC



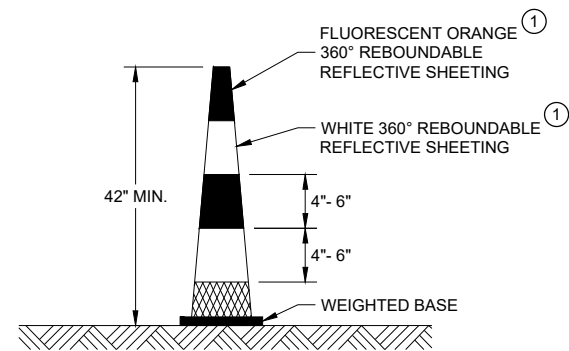
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

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

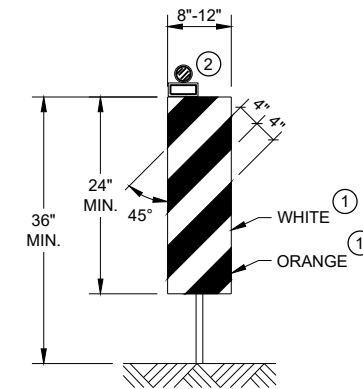


DRUM



42" CONE

DO NOT USE IN TAPERS
 1/2 SPACING OF DRUMS

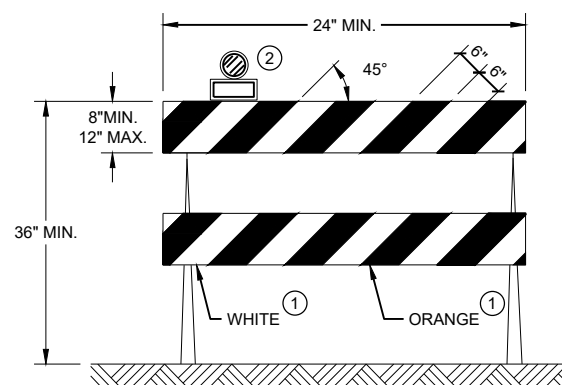


VERTICAL PANEL

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

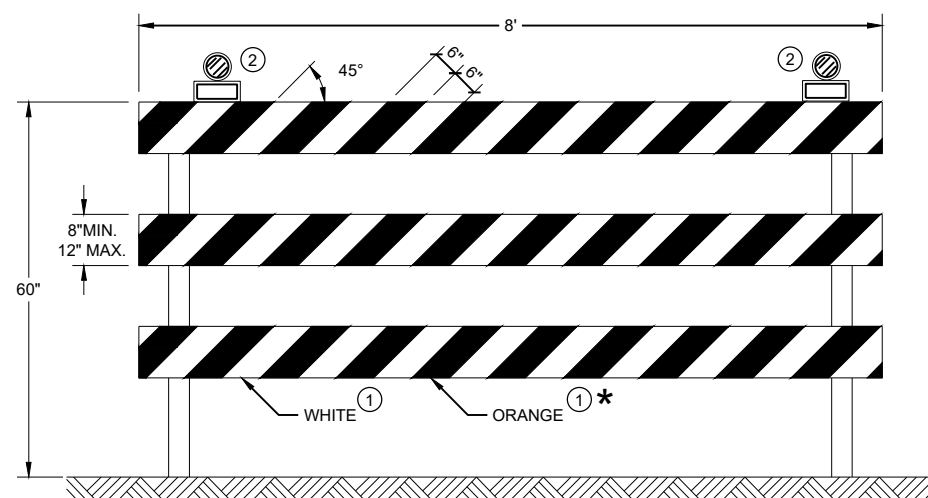
GENERAL NOTES

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



TYPE II BARRICADE

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








TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

| | |
|--|--|
| CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED May 2021 DATE | /S/ Andrew Heidtke WORK ZONE ENGINEER |
| <small>FHWA</small> | |

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.

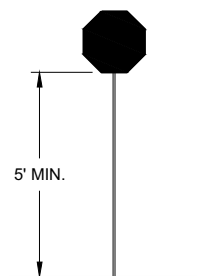
WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

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.



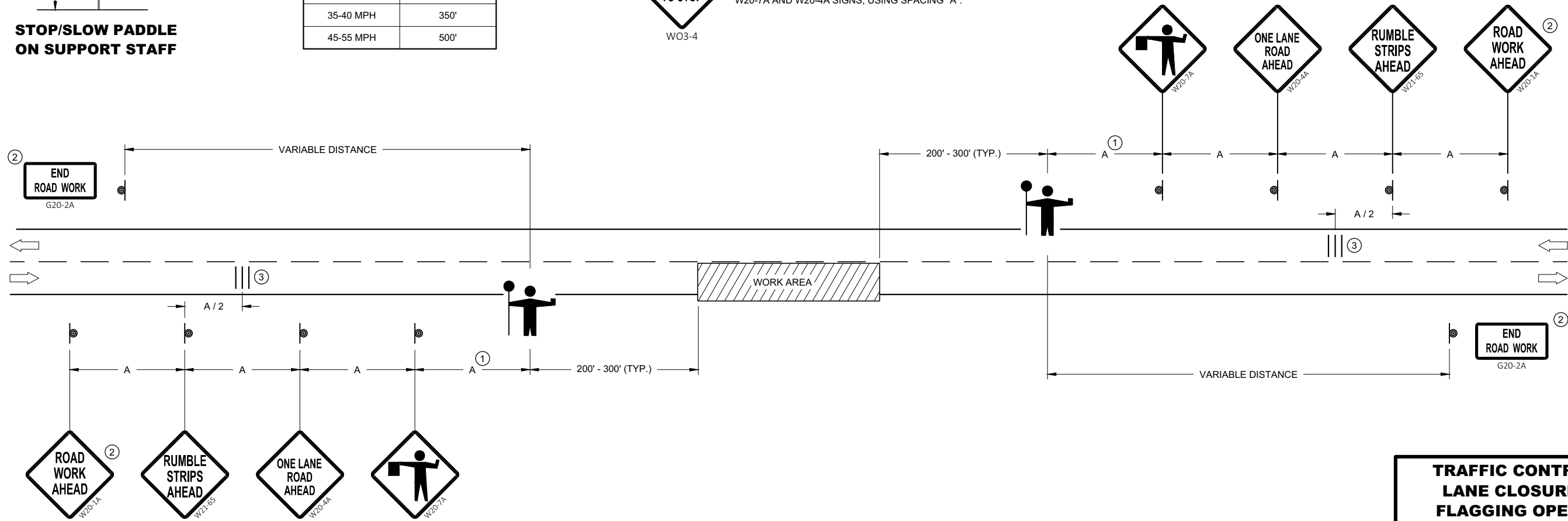
STOP/SLOW PADDLE ON SUPPORT STAFF

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

LEGEND

- V1 LEAD VEHICLE
- V2 MARKING VEHICLE
- V3 SHADOW VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC
-  FLASHING ARROW PANEL (CAUTION)

GENERAL NOTES

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

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

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

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

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

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

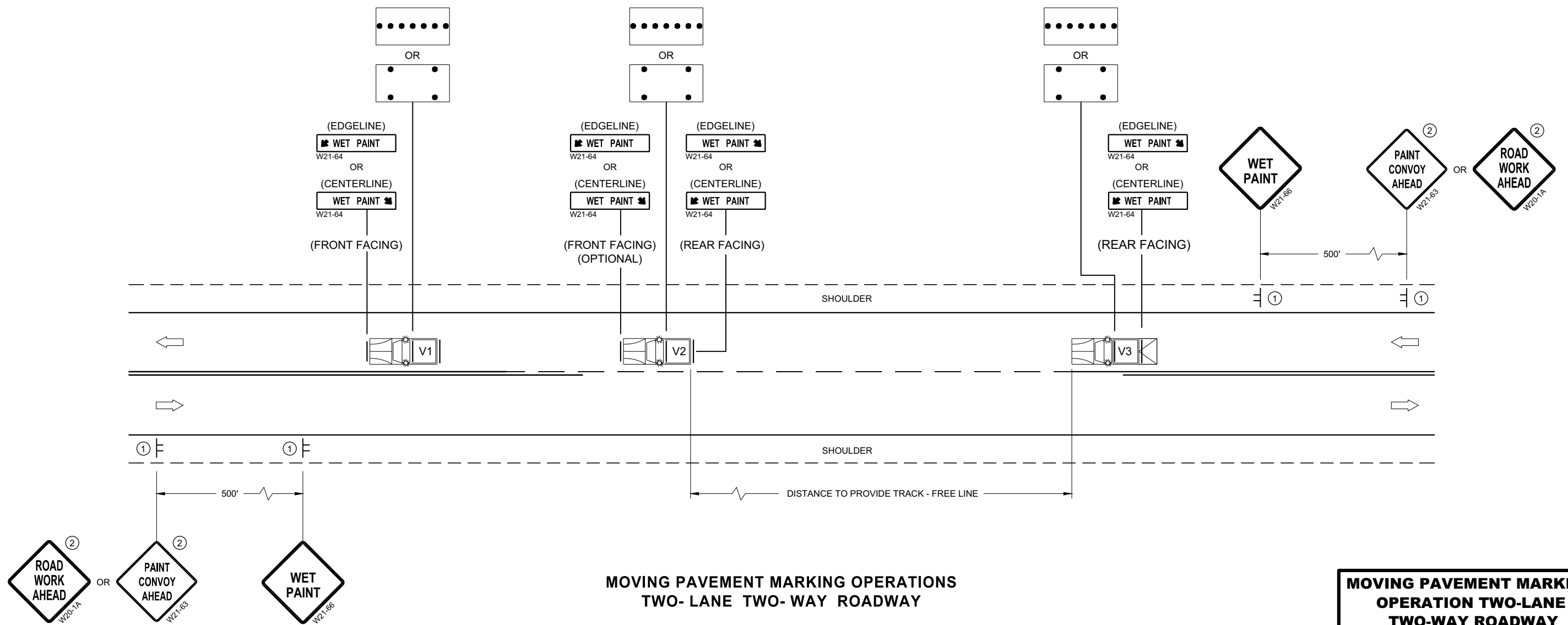
CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLE AT 100 FOOT SPACING. CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

CONES SHALL BE A MINIMUM OF 18" FOR WET PAVEMENT MARKING.

- ① SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.
- ② IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1A OR W21-63 ARE NOT REQUIRED.

6

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**MOVING PAVEMENT MARKING OPERATIONS
TWO-LANE TWO-WAY ROADWAY**

SDD 15C19 - 06a

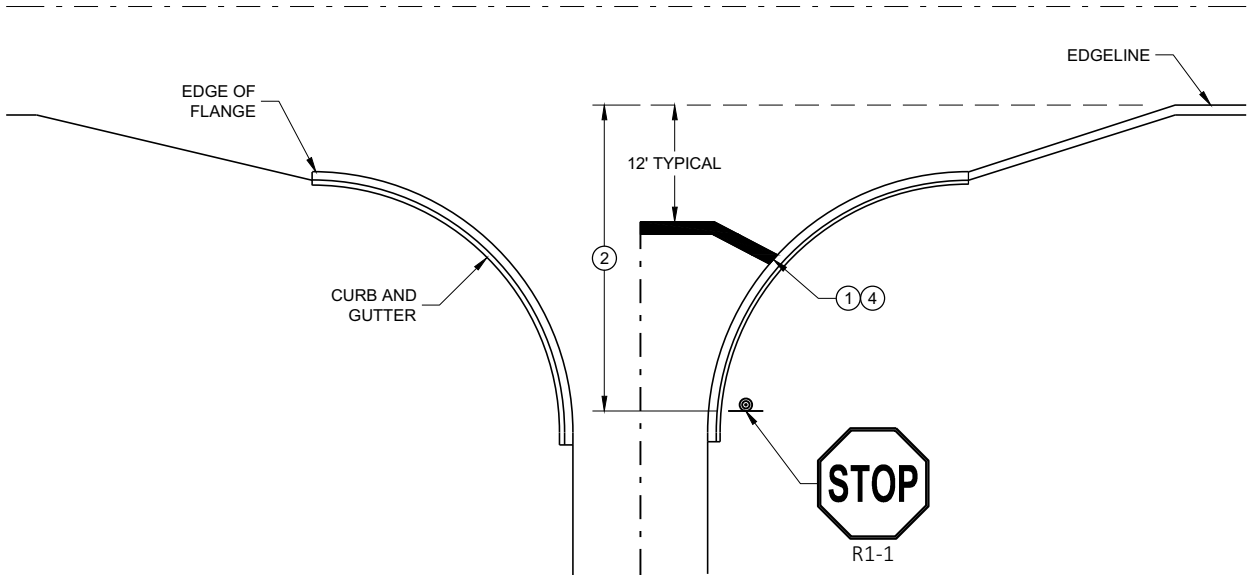
SDD 15C19 - 06a

| | |
|---|--|
| MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED November 2019 DATE | /S/ Andrew Heidtke WORK ZONE ENGINEER |
| FHWA | |

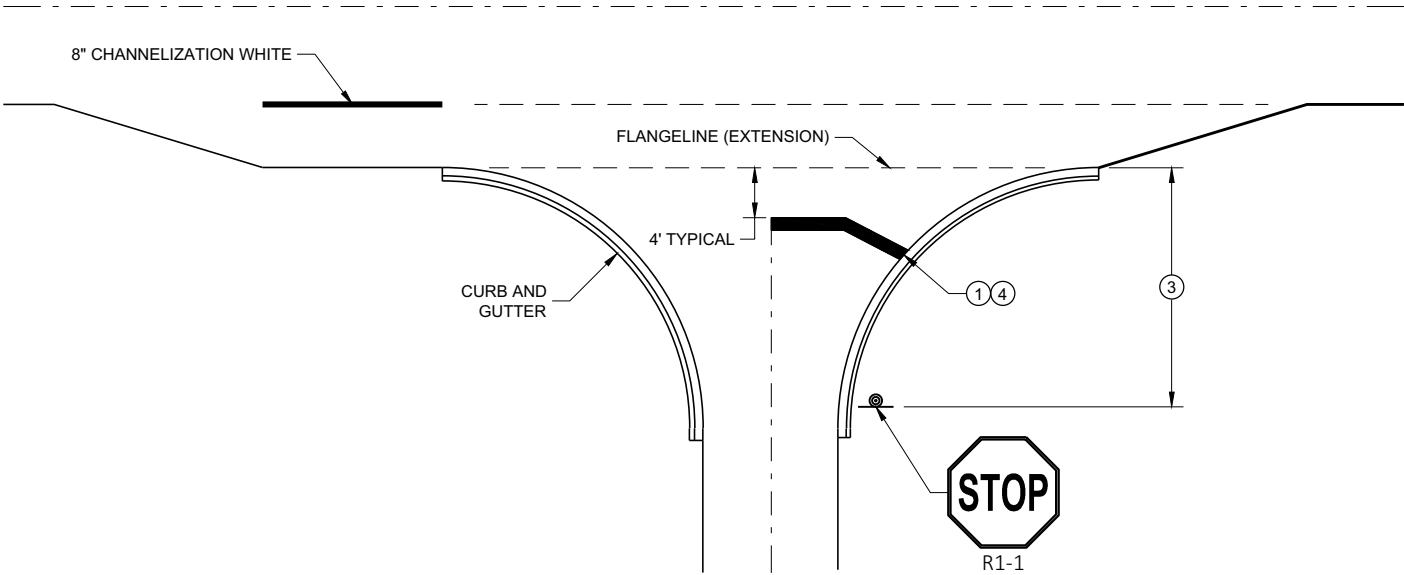
GENERAL NOTES

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

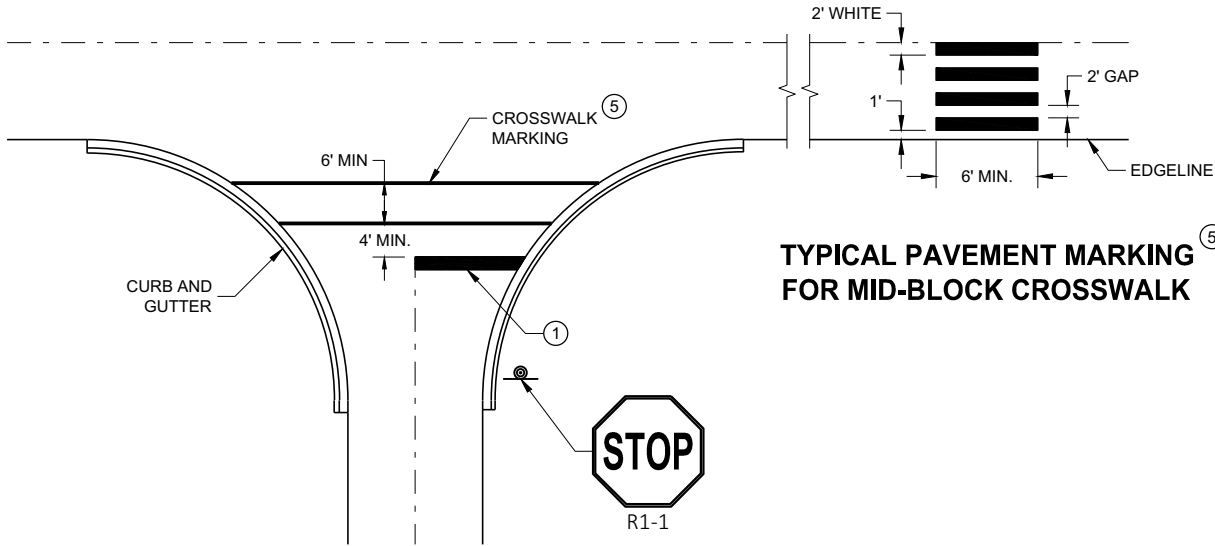
- ① 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE REGION MARKING ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- ② NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGELINE.
- ③ NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE 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

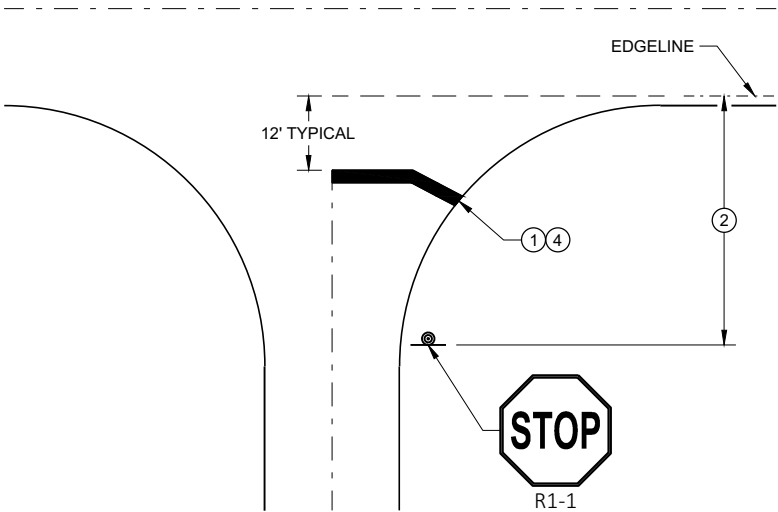


TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH RIGHT TURN LANE



TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH CROSSWALK MARKING

TYPICAL PAVEMENT MARKING FOR MID-BLOCK CROSSWALK



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

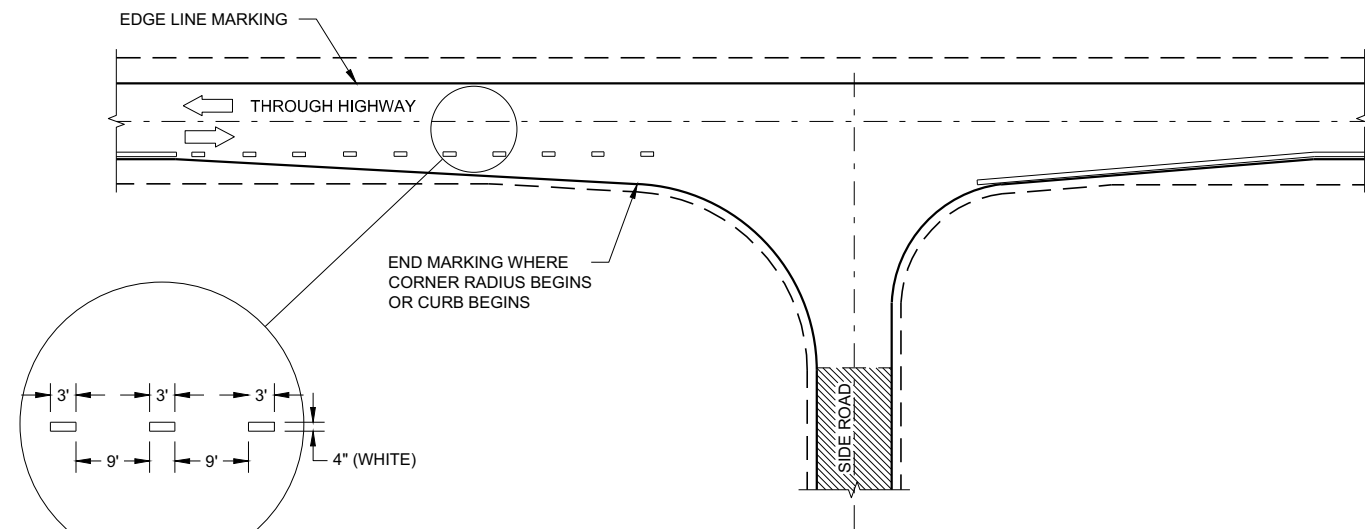
GENERAL NOTES

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

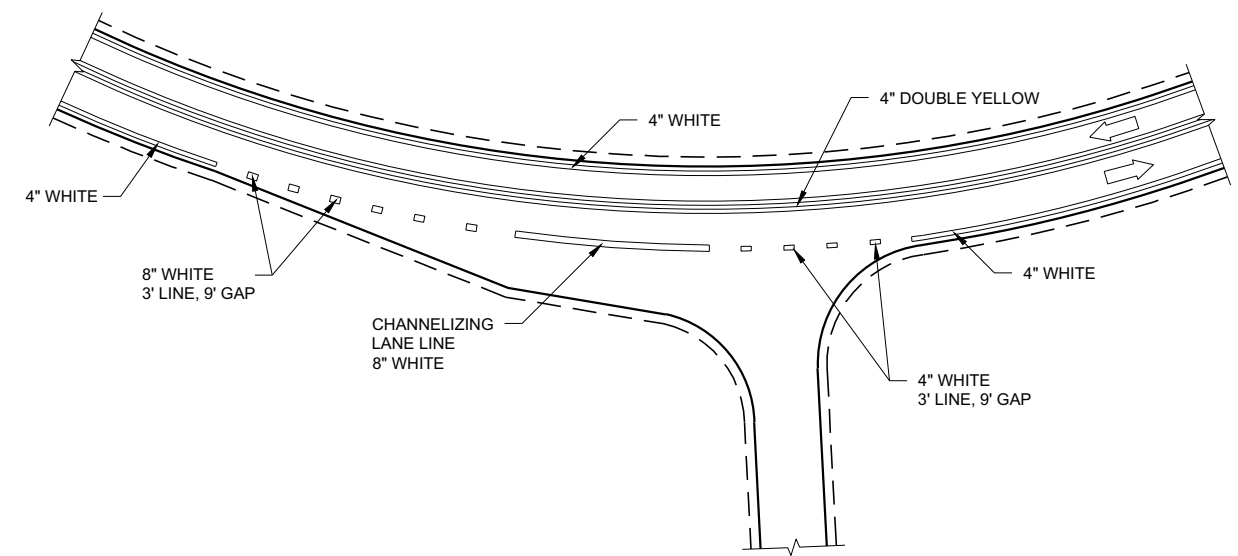
- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT / SURFACE EDGE EXTENSION.
- ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.

LEGEND

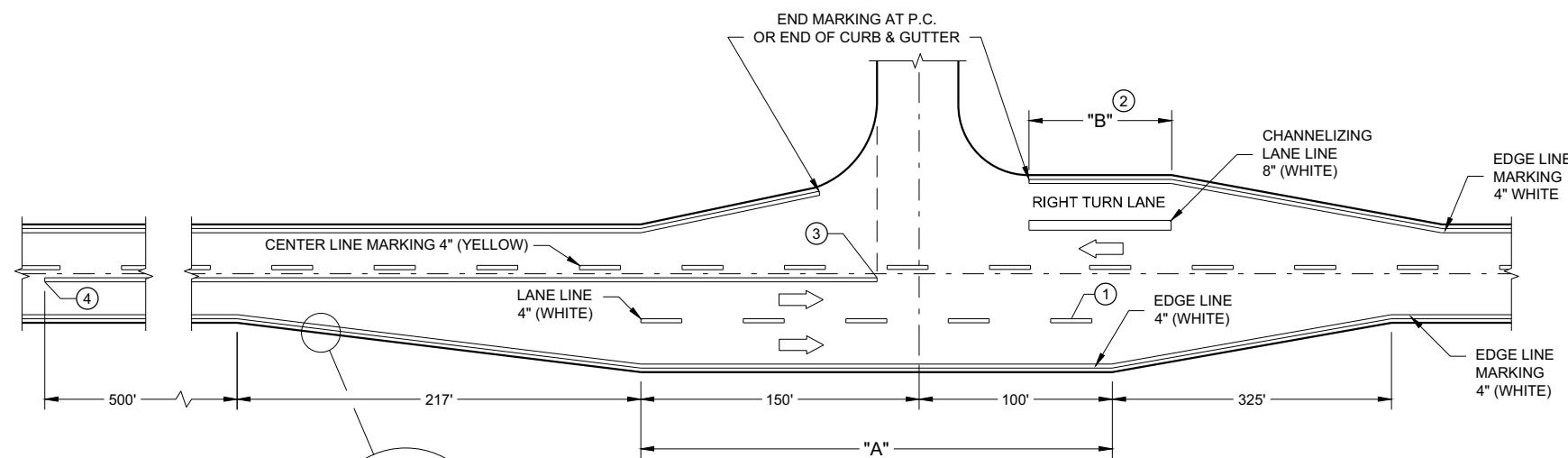
➡ DIRECTION OF TRAVEL



MINOR INTERSECTION



INTERSECTION ON OUTSIDE OF CURVE







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

**PAVEMENT MARKING
(INTERSECTIONS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

LEGEND

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

GENERAL NOTES

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

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

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

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

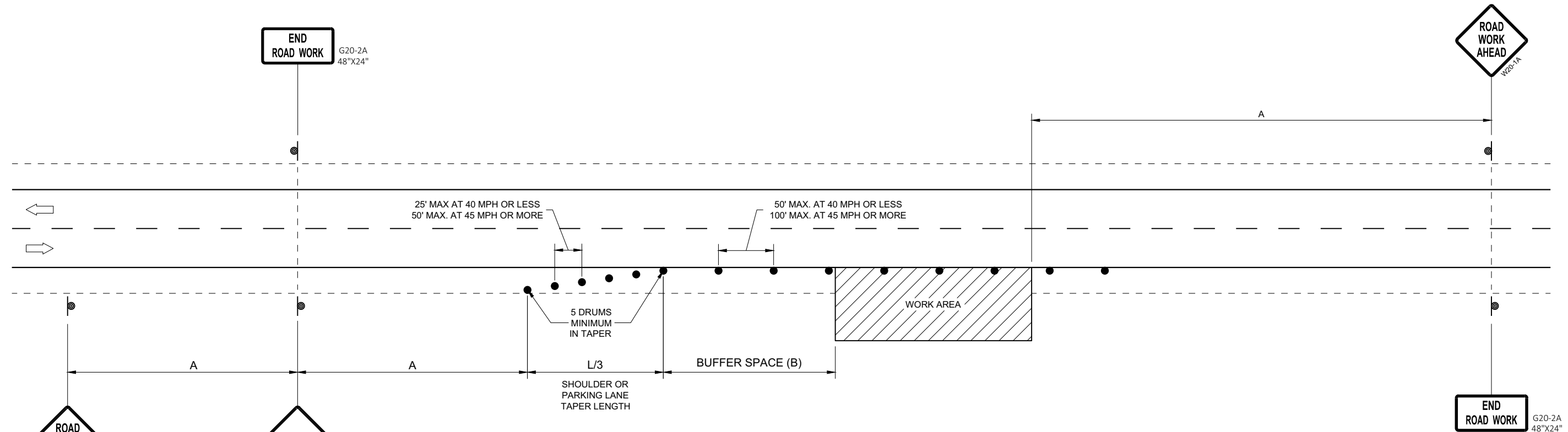
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

6

6



| POSTED SPEED LIMIT PRIOR TO WORK STARTING (MPH) | ADVANCE WARNING SIGN SPACING (A) FEET | SHOULDER TAPER L / 3 W, LATERAL OFFSET (FT) | | | | | | BUFFER SPACE (B) FEET |
|---|---------------------------------------|---|----|----|-----|-----|-----|-----------------------|
| | | 3 | 4 | 5 | 6 | 7 | 8 | |
| 25 | 200' | 10 | 14 | 17 | 21 | 24 | 28 | 55 |
| 30 | 200' | 15 | 20 | 25 | 30 | 35 | 40 | 85 |
| 35 | 350' | 20 | 27 | 34 | 40 | 47 | 54 | 120 |
| 40 | 350' | 26 | 35 | 44 | 53 | 62 | 70 | 170 |
| 45 | 500' | 45 | 59 | 74 | 89 | 104 | 119 | 220 |
| 50 | 500' | 50 | 66 | 83 | 99 | 116 | 132 | 280 |
| 55 | 500' | 54 | 73 | 91 | 109 | 127 | 145 | 335' |

OR
IF TRAFFIC CONTROL DEVICES
ENCROACH ONTO TRAVELED WAY, USE



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

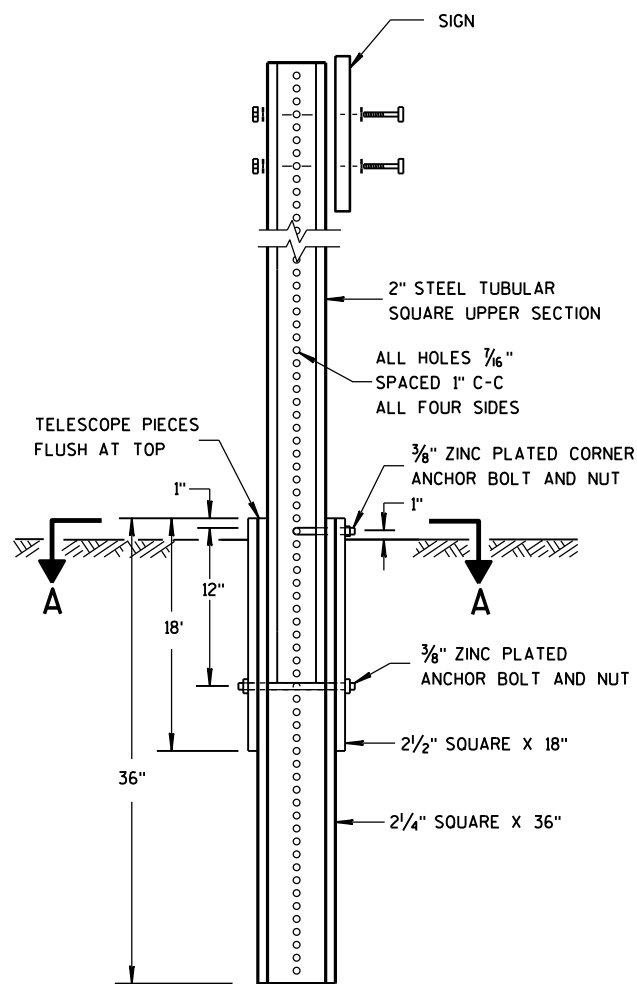
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2020 /S/ Andrew Heidtke
DATE STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER

FHWA

SDD 15D28 - 04

SDD 15D28 - 04



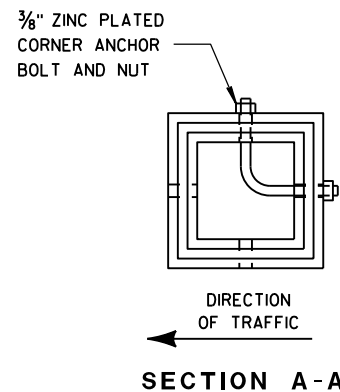
DETAIL OF TUBULAR STEEL SIGN POST

TUBULAR STEEL POSTS

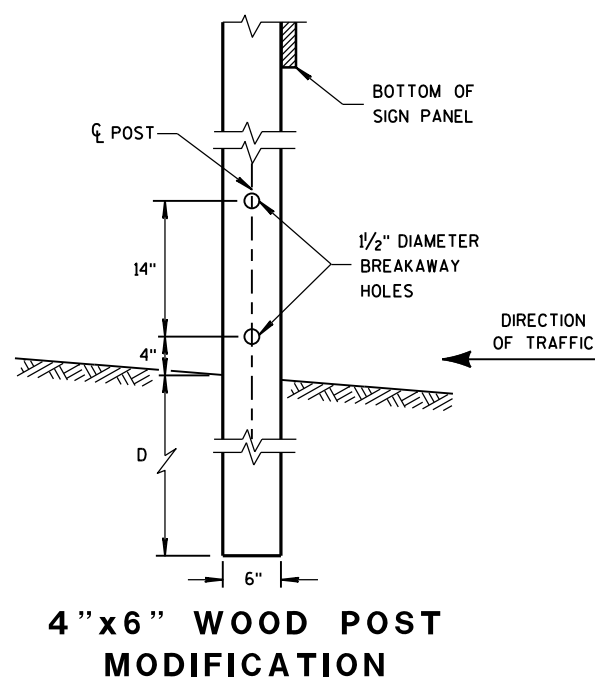
| AREA OF SIGN INSTALLATION (SQ. FT.) | NUMBER OF REQUIRED TUBULAR STEEL POSTS |
|--|--|
| 9 OR LESS | 1 |
| GREATER THAN 9 LESS THAN OR EQUAL TO 18 | 2 |
| GREATER THAN 18 LESS THAN OR EQUAL TO 27 | 3 |

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

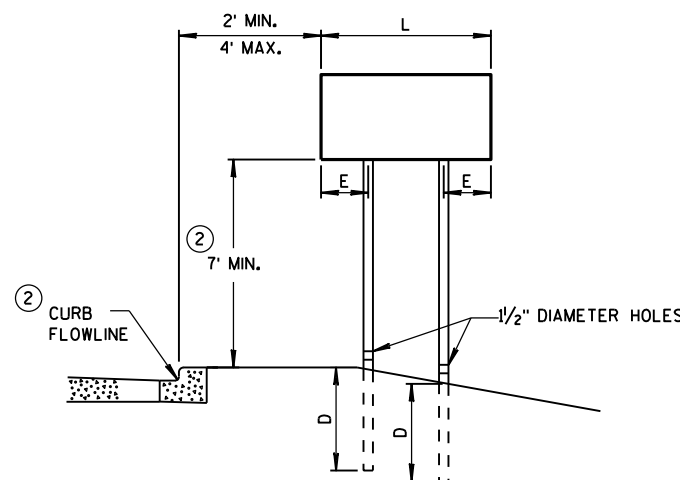
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.



SECTION A-A



4" X 6" WOOD POST MODIFICATION

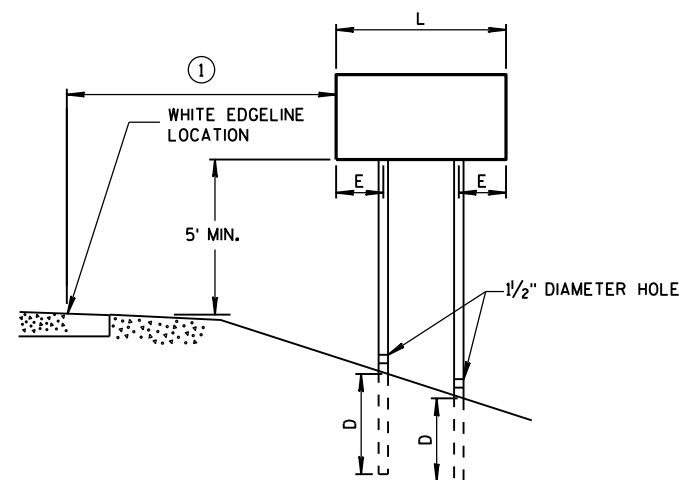


URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH

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



RURAL AREA

4" X 6" WOOD POST

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

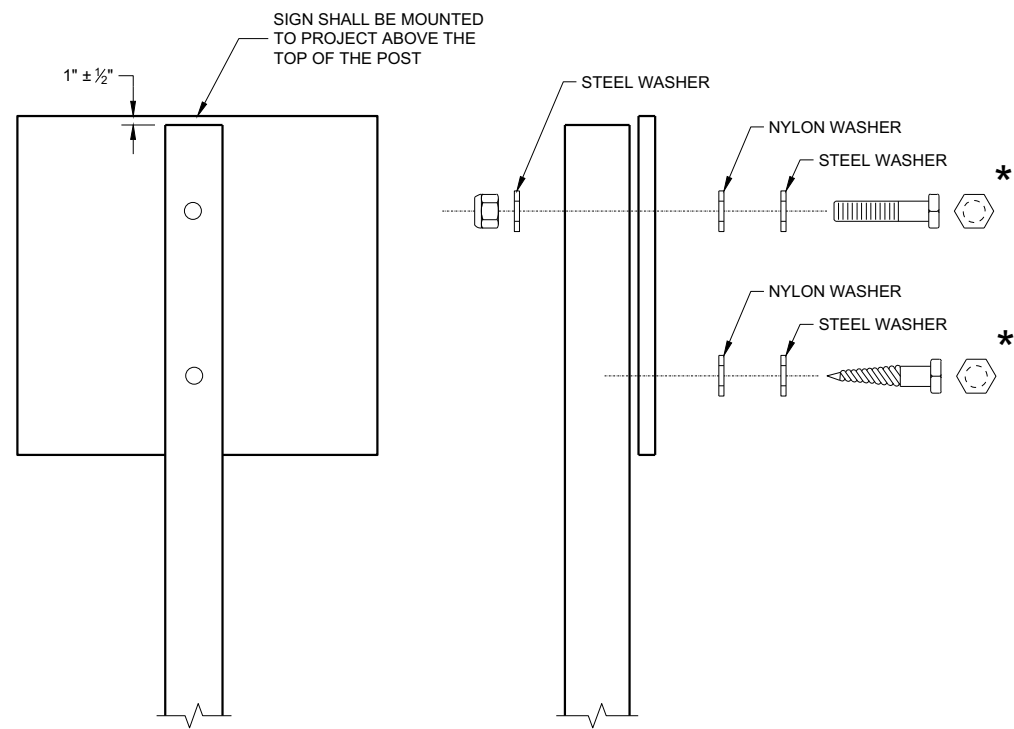
SEE NOTE ③

GENERAL NOTES

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

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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

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

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

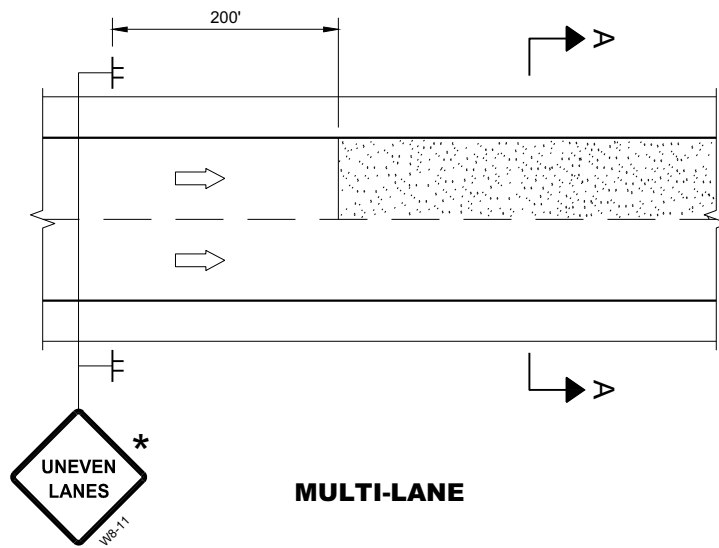
WOOD POST (4" x 6")
 LAG SCREWS - 3/8" x 3"
 MACHINE BOLTS - 5/16" x 6 1/2" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
 MACHINE BOLTS - 3/8" x 3 1/4" LENGTH W/NUTS
 RIVETS - 3/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM
 BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,
 GRIP RANGE 0.042 - 0.375 INCH

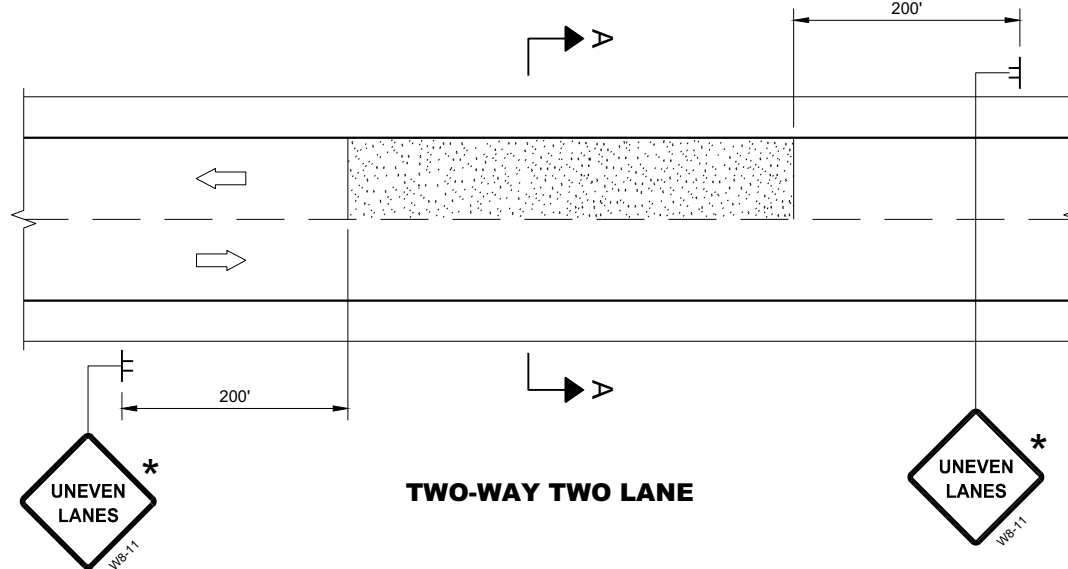
WASHERS (ALL POSTS) -
 1 1/4" O.D. x 3/8" I.D. x 1/16" STEEL
 1 1/4" O.D. x 3/8" I.D. x 0.080 NYLON

* 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. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

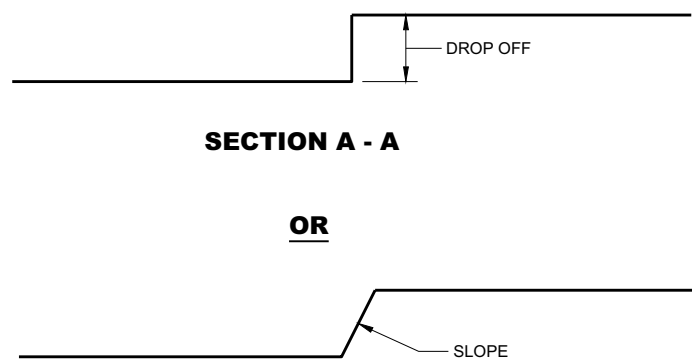
| | |
|--|--|
| ATTACHMENT OF SIGNS TO POSTS | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED June 2017 DATE | /S/ Andrew Heidtke WORK ZONE ENGINEER |
| FHWA | |



MULTI-LANE



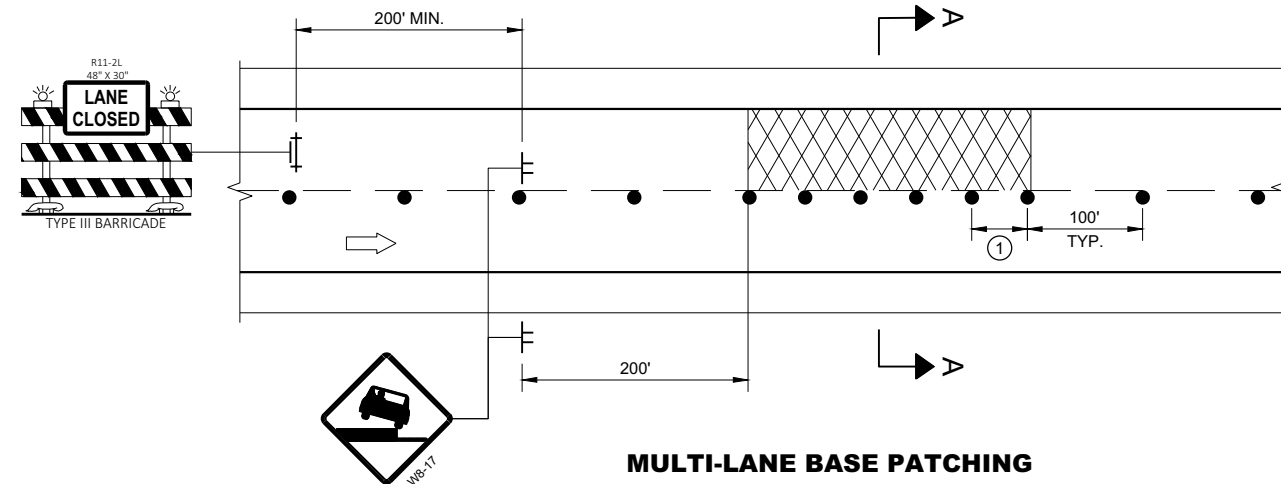
TWO-WAY TWO LANE



SECTION A - A

OR

SECTION A - A



MULTI-LANE BASE PATCHING

ADJACENT LANE DROP-OFFS

GENERAL NOTES

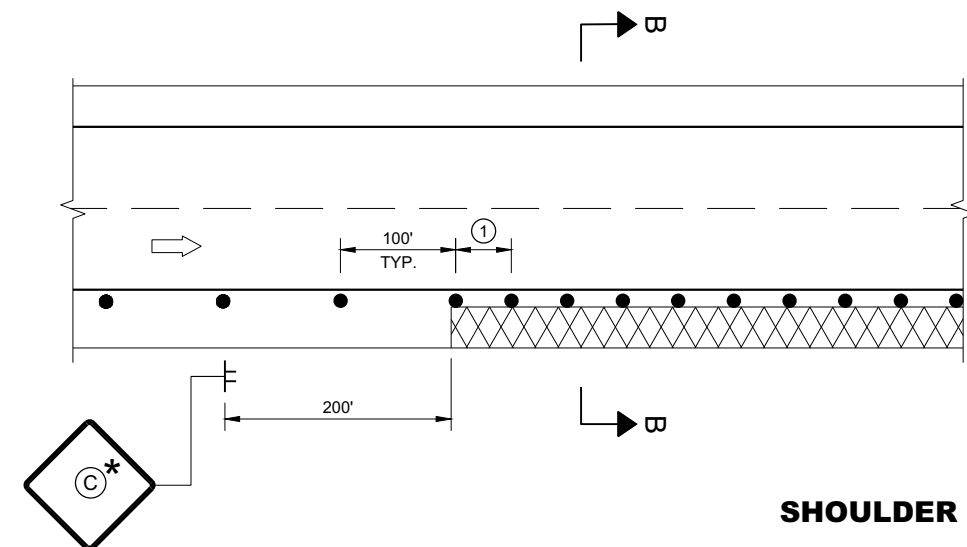
- FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.
- * IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.
- ① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

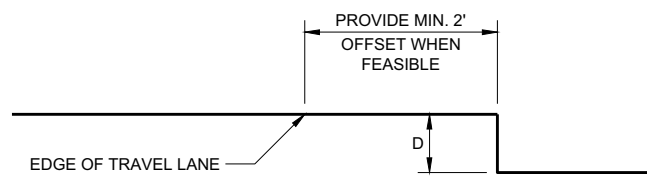
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE

6

6



SHOULDER DROP-OFFS



SECTION B - B

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

SDD 15D39 - 02

SDD 15D39 - 02

**TRAFFIC CONTROL,
DROP-OFF SIGNING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

GENERAL NOTES

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

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

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

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



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

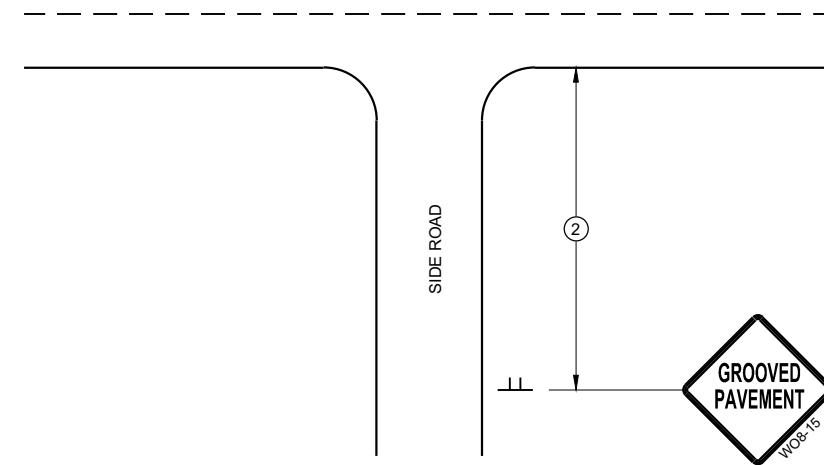
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

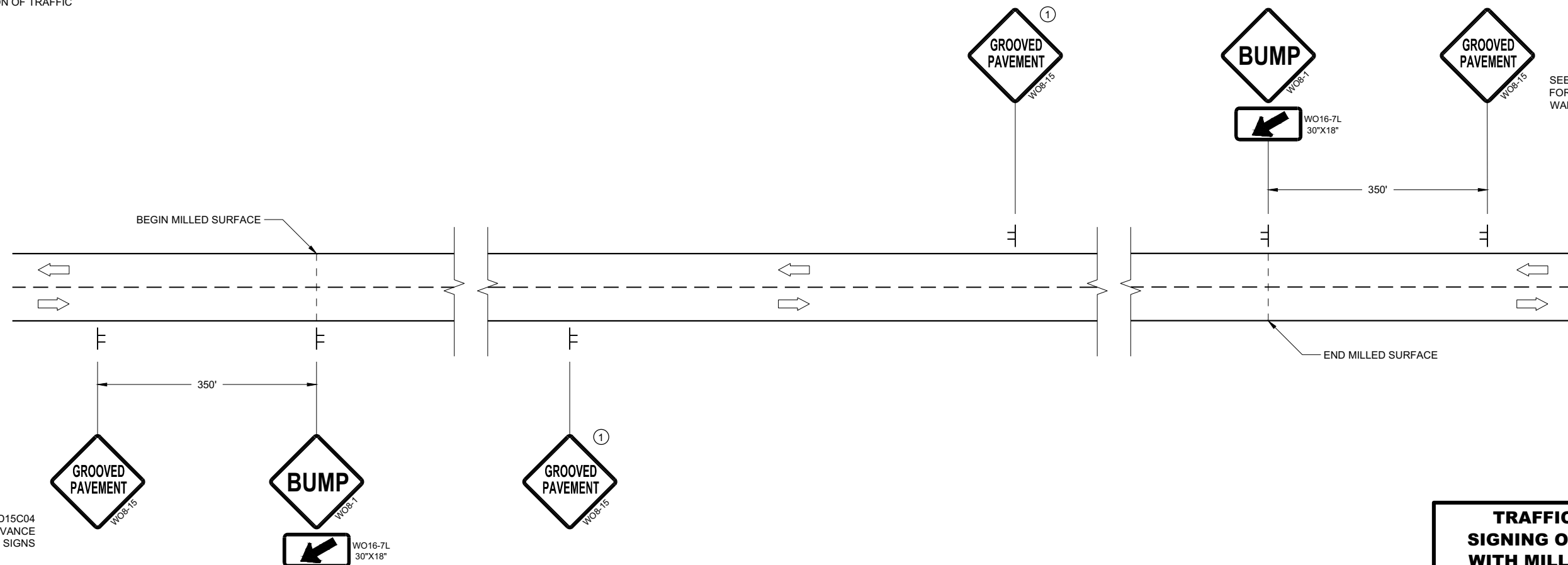
- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH SIGN DETAIL



SEE SDD15C04 FOR ADVANCE WARNING SIGNS

SEE SDD15C04 FOR ADVANCE WARNING SIGNS

DETAIL FOR SIGNING ON MILLED SURFACES





TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

LEGEND

- V1 WORK VEHICLE
- V2 SHADOW VEHICLE
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  FLASHING ARROW PANEL (CAUTION)
-  WORK AREA
-  DIRECTION OF TRAFFIC

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

GENERAL NOTES

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.

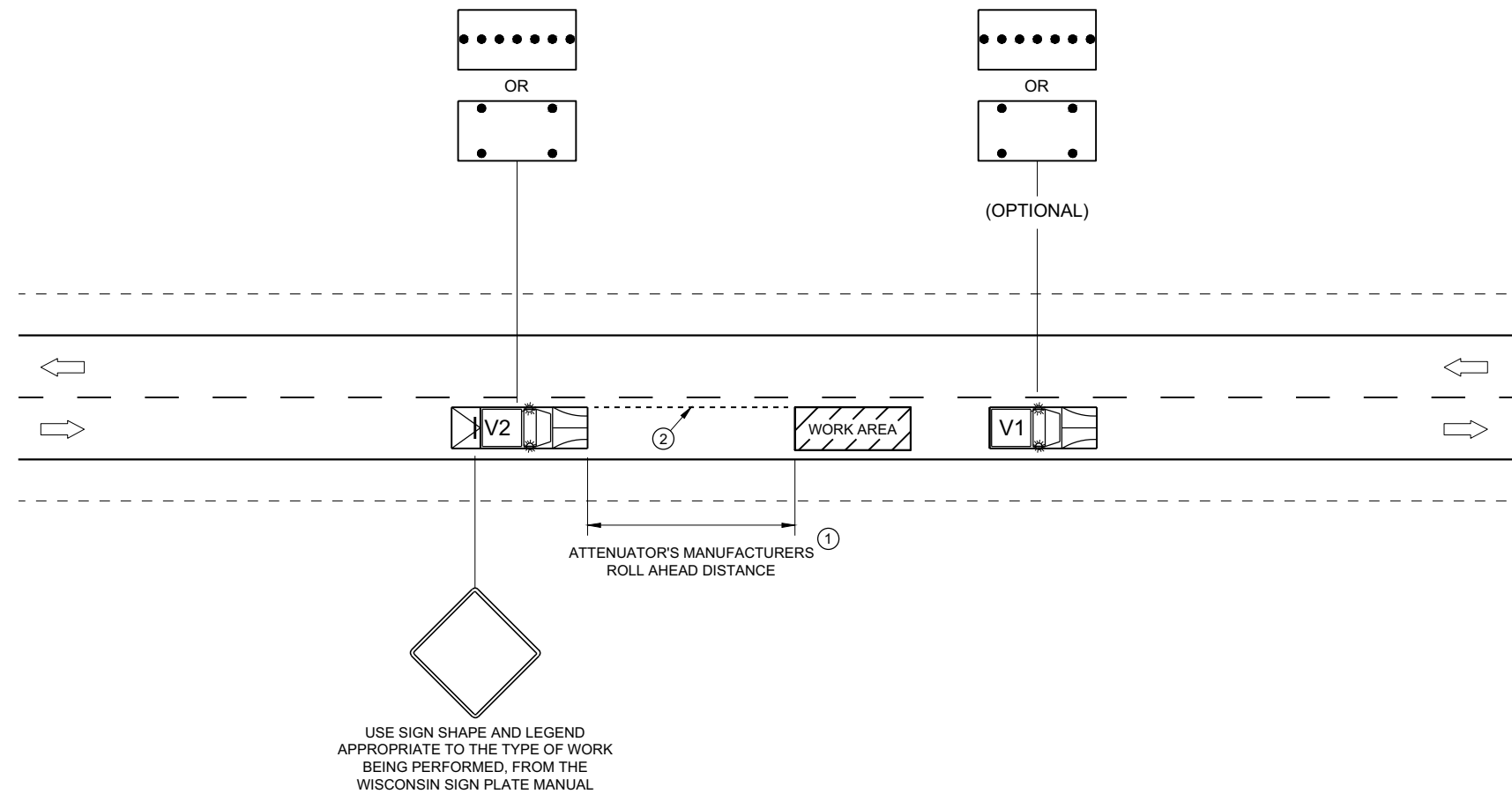
MOBILE IS WORK THAT MOVES CONTINUOUSLY OR MOVES AT LEAST THE DECISION SIGHT DISTANCE EVERY 15 MINUTES.

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

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

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

- ① DISTANCE BETWEEN VEHICLES MAY INCREASE FROM THE ATTENUATOR'S ROLL AHEAD BASED ON TERRAIN, SIGHT DISTANCE, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.
- ② ALIGN LEFT SIDE OF SHADOW VEHICLE WITH EDGE OF WORK AREA.



6

6

SDD 15D51 - 01

SDD 15D51 - 01

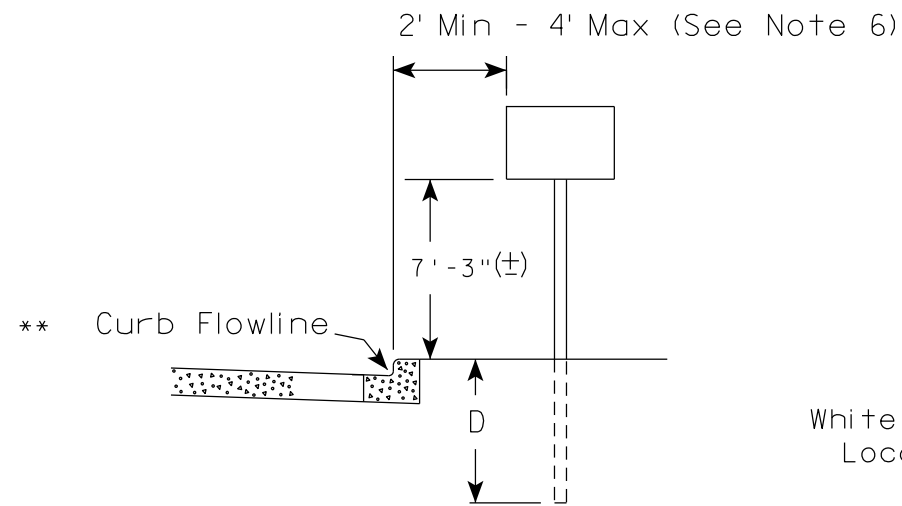
**TRAFFIC CONTROL,
MOBILE OPERATIONS ON
AN UNDIVIDED ROADWAY**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

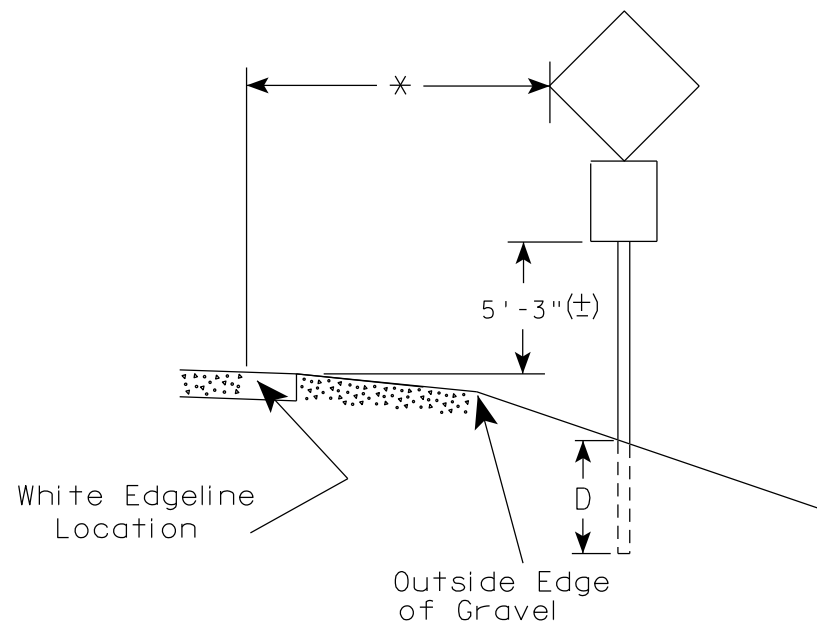
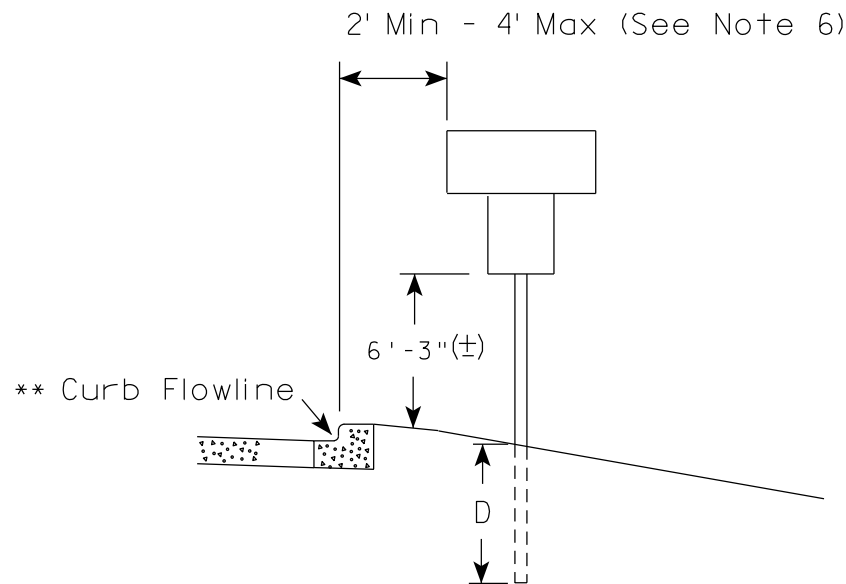
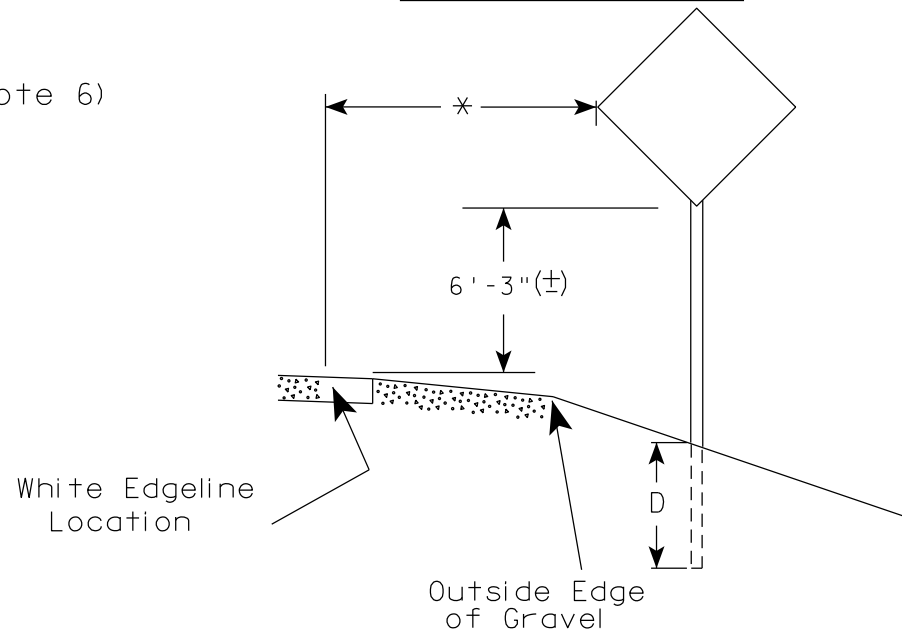
APPROVED
February 2021 DATE /S/ Andrew Heidtke
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER

FHWA

URBAN AREA



RURAL AREA (See Note 2)



POST EMBEDMENT DEPTH

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

GENERAL NOTES

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on 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.

* * 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.

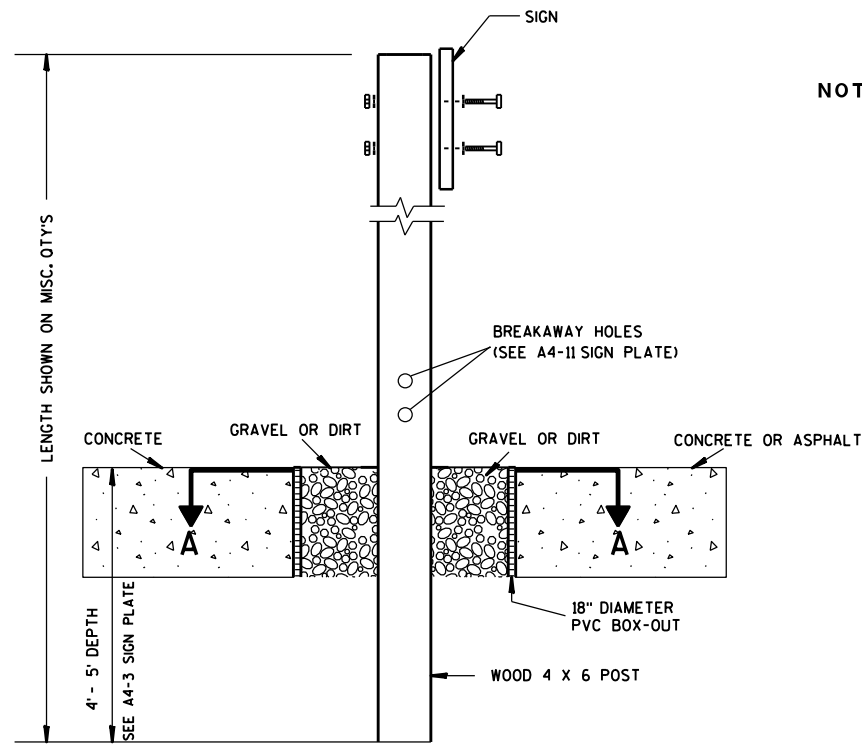
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

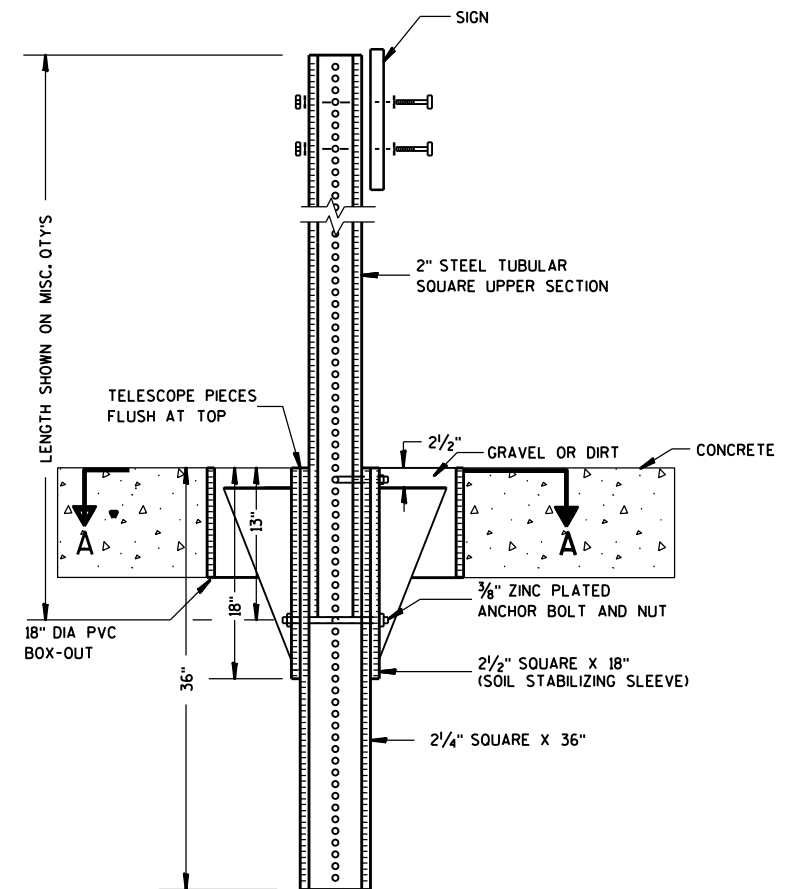
DATE 5/13/2020 PLATE NO. A4-3.22



ELEVATION VIEW

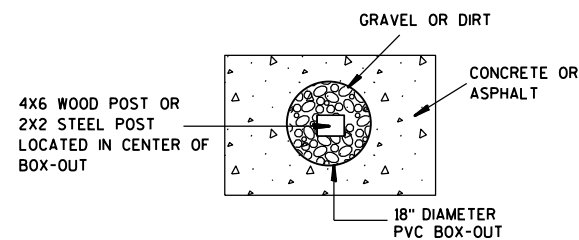
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- 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

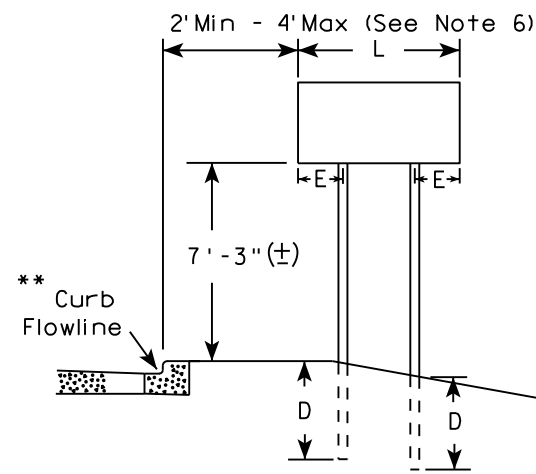
FOR NEW CONCRETE/ ASPHALT INSTALLATIONS

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

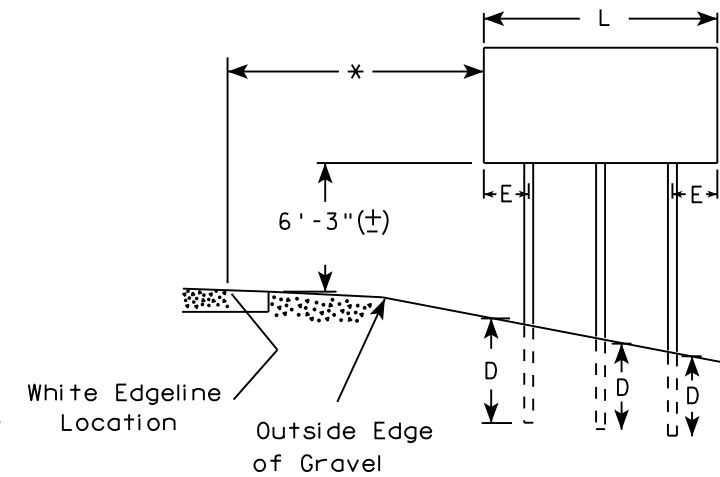
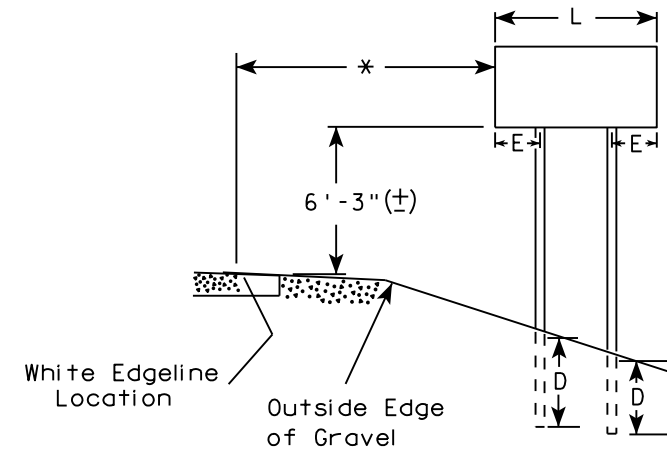
GENERAL NOTES

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

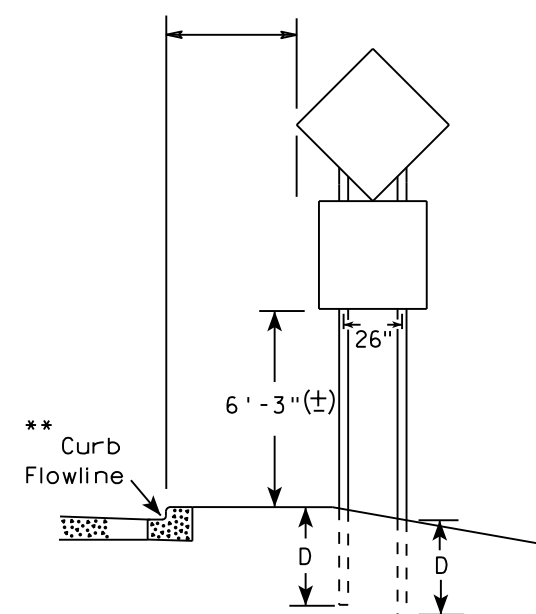
URBAN AREA



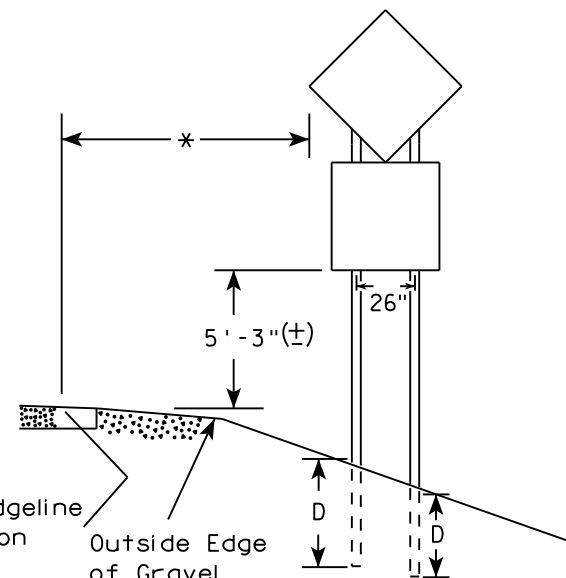
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

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

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

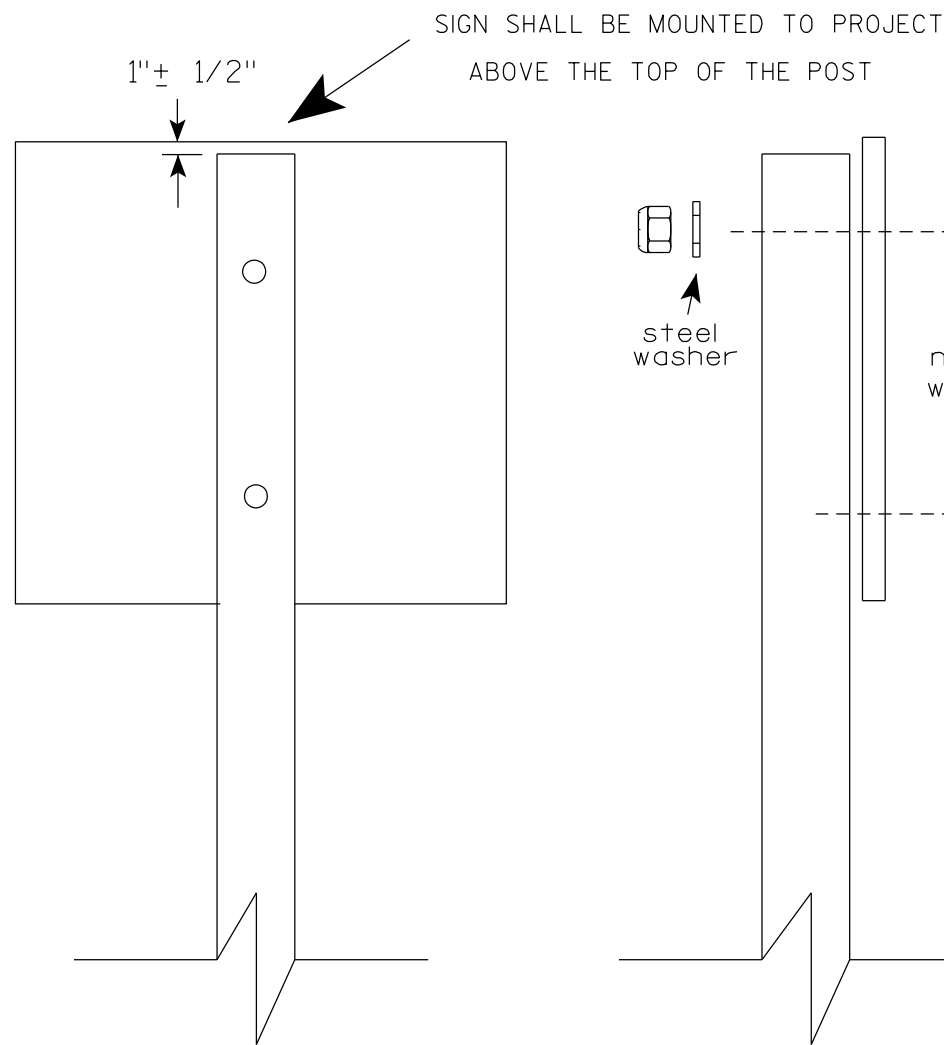
| SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED) | |
|--|-----|
| L | E |
| Greater than 108" to 144" | 12" |

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

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



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

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

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

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

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

WOOD POSTS (4" x 6")

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

SQUARE STEEL POSTS (2" x 2")

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

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

WASHERS (ALL POSTS) -

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

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

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

ATTACHMENT OF SIGNS
TO POSTS

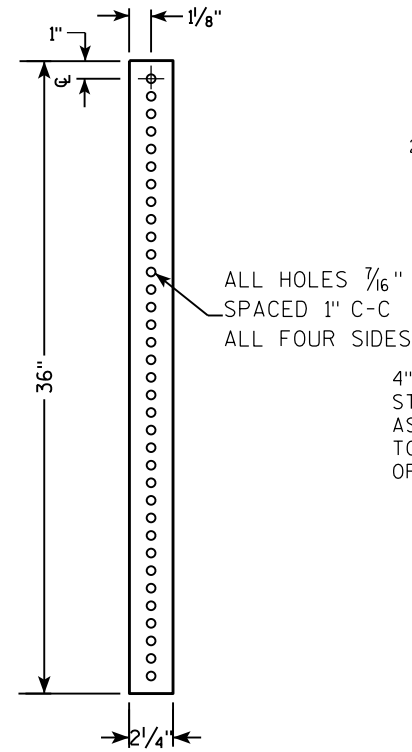
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R Rauch*
For State Traffic Engineer

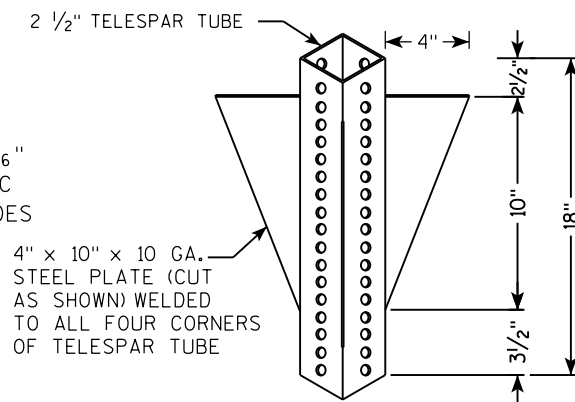
DATE 4/1/2020 PLATE NO. A4-8.9

**TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM**

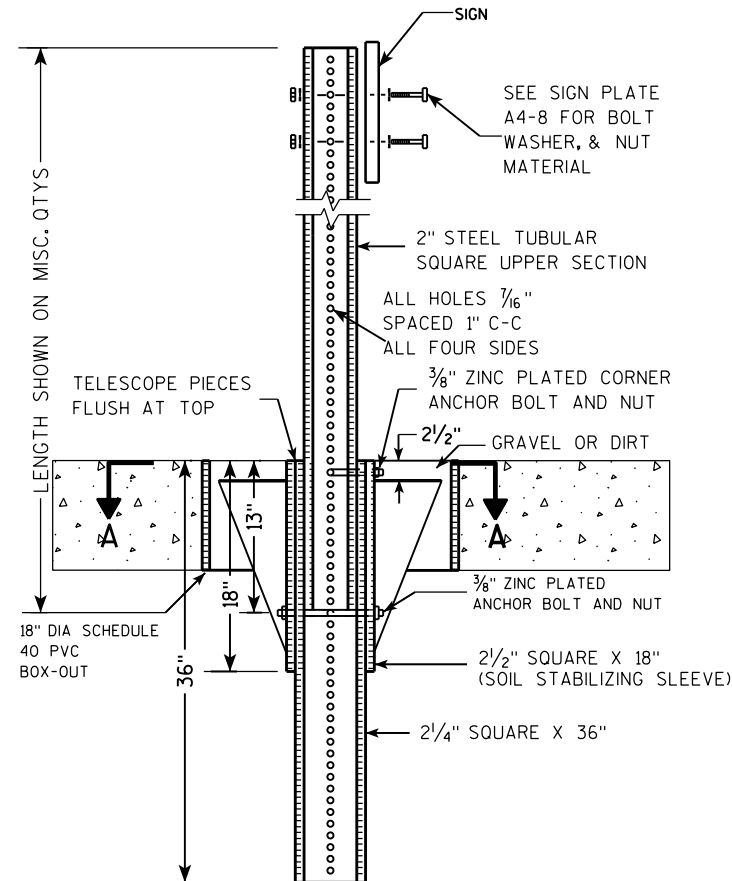
2 1/4" SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH



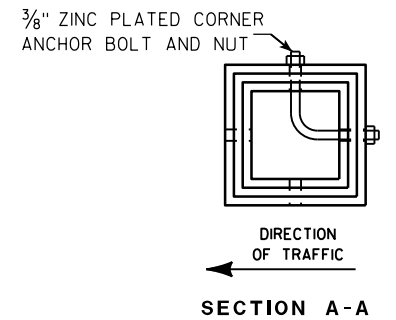
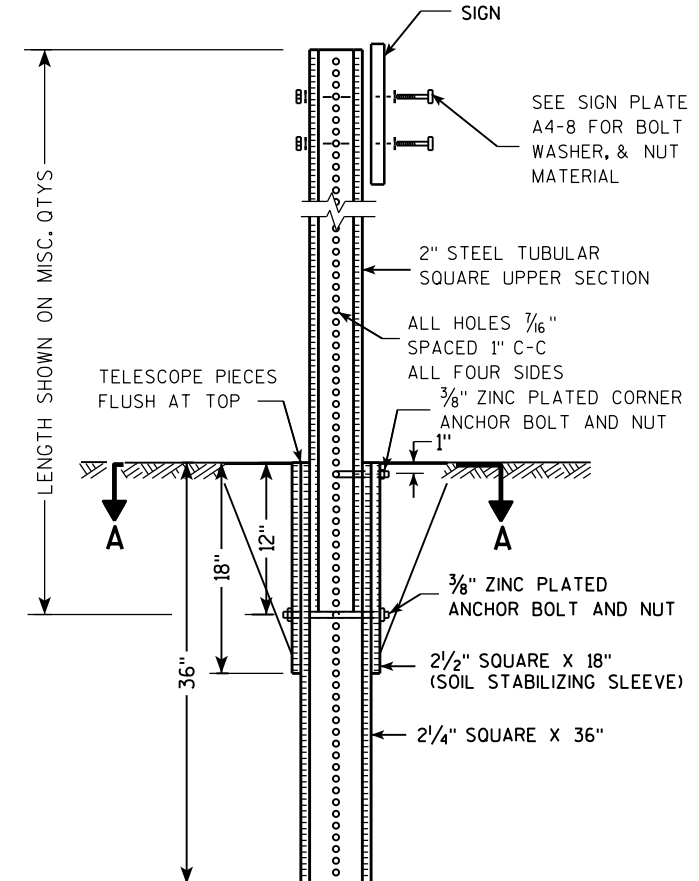
2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH



**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 |

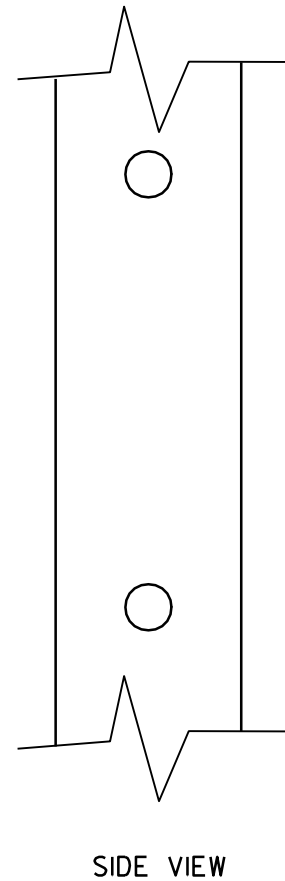
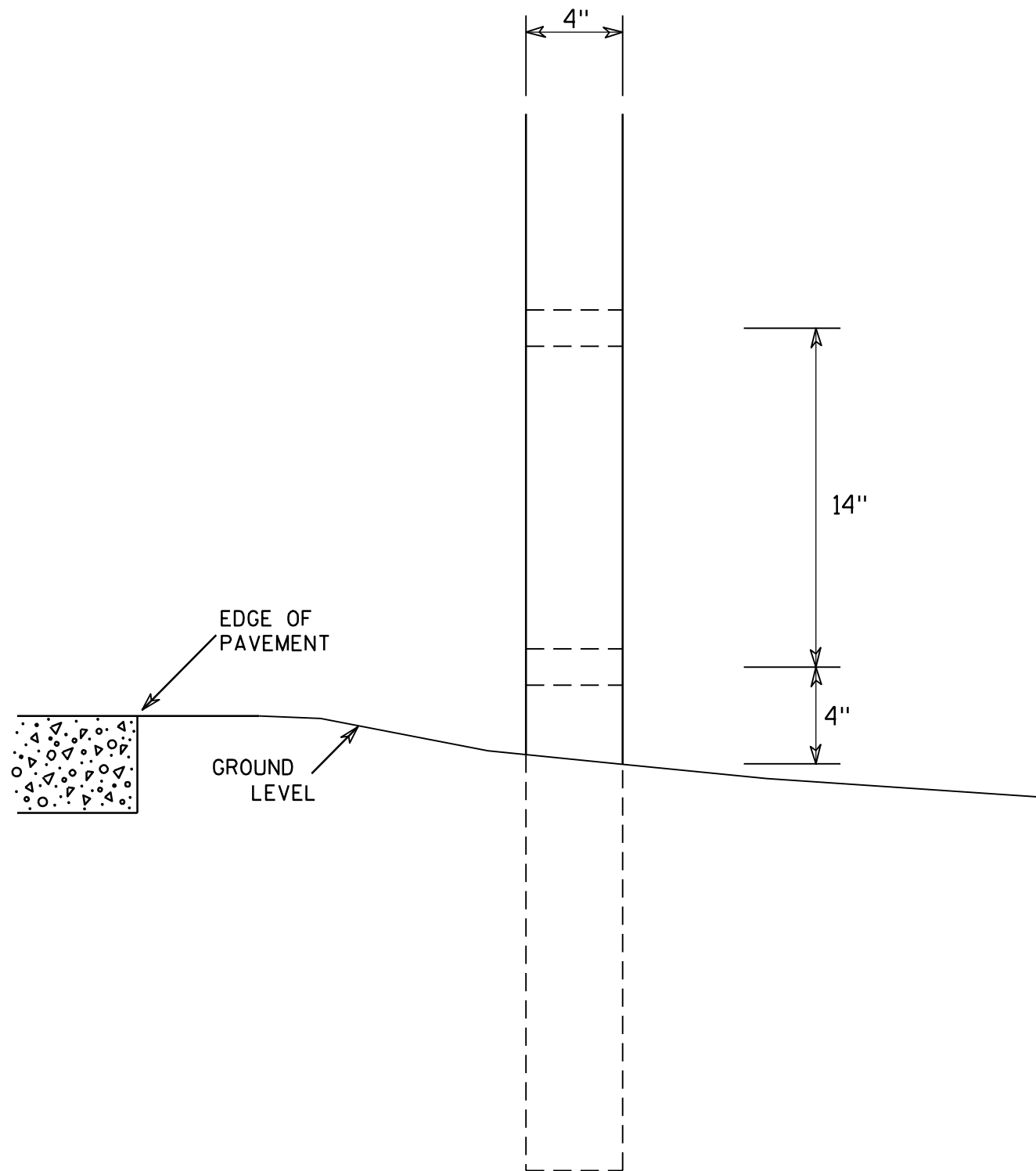
Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

**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



GENERAL NOTES

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

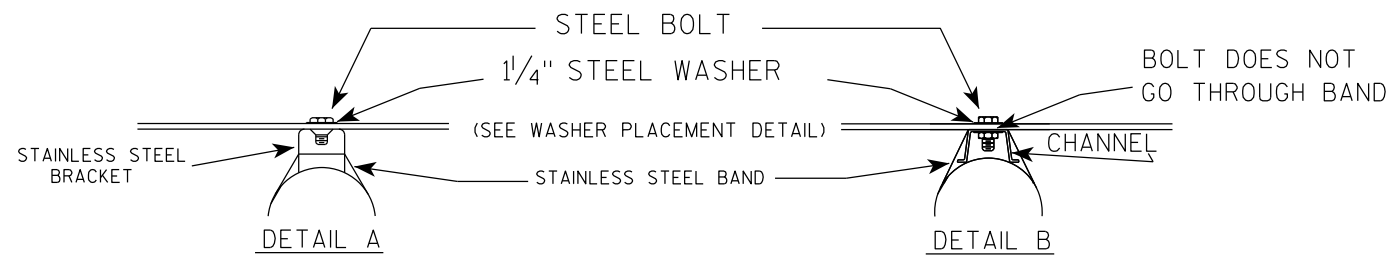
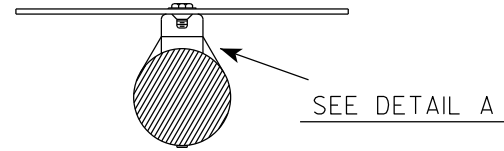
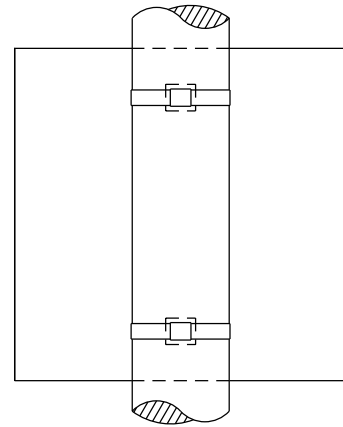
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7

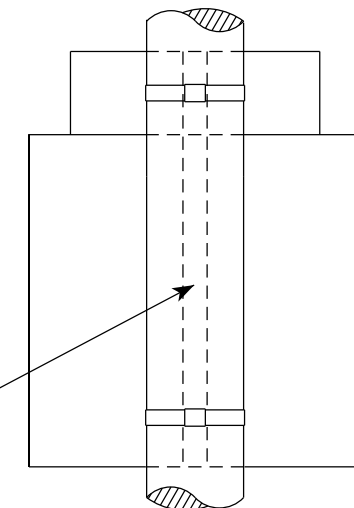
| | |
|--|--|
| 4 X 6 WOOD POST MODIFICATIONS | |
| <i>WISCONSIN DEPT OF TRANSPORTATION</i> | |
| APPROVED | <i>Chester J Spang</i> for State Traffic Engineer |
| DATE <u>3/27/97</u> | PLATE NO. <u>A4-11.2</u> |

BANDING

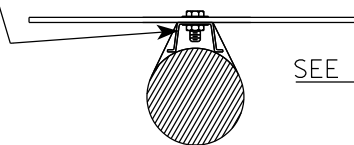
SINGLE SIGN



"J" ASSEMBLY

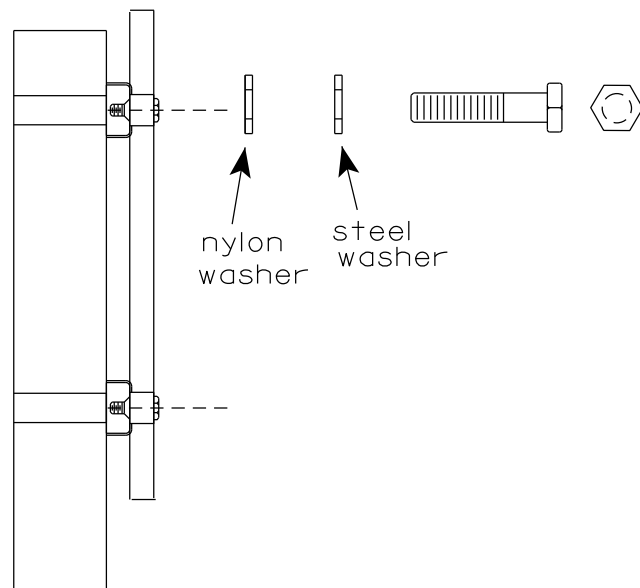


CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



- GENERAL NOTES**
1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
 2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
 3. Banding and assembly bracket shall be stainless steel. All bands shall be $\frac{3}{4}$ " 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



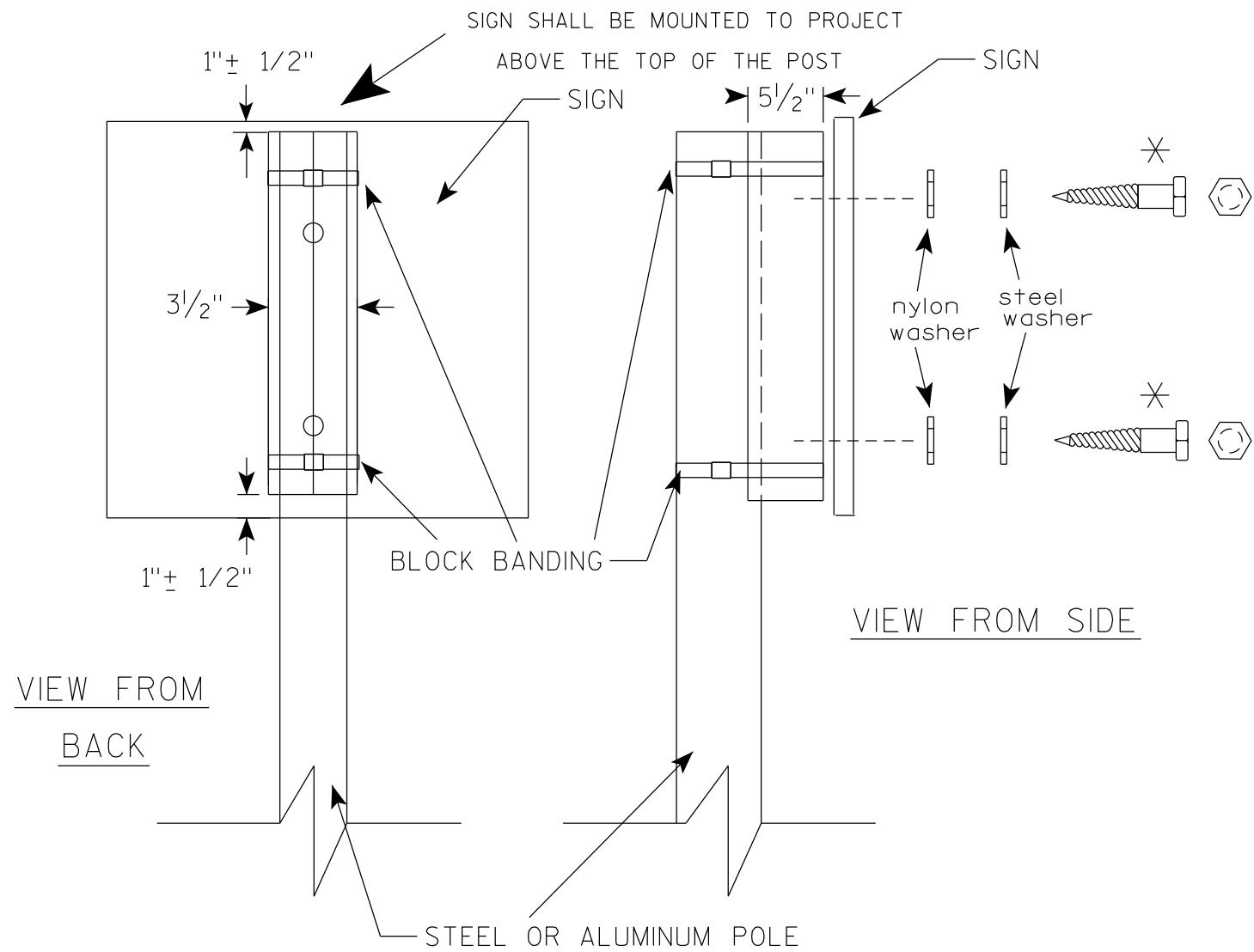
WASHERS (ALL POSTS) -
 1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
 1-1/4" O.D. X 3/8" I.D. X .080 NYLON
 FOR ALL TYPE H SIGNS

STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

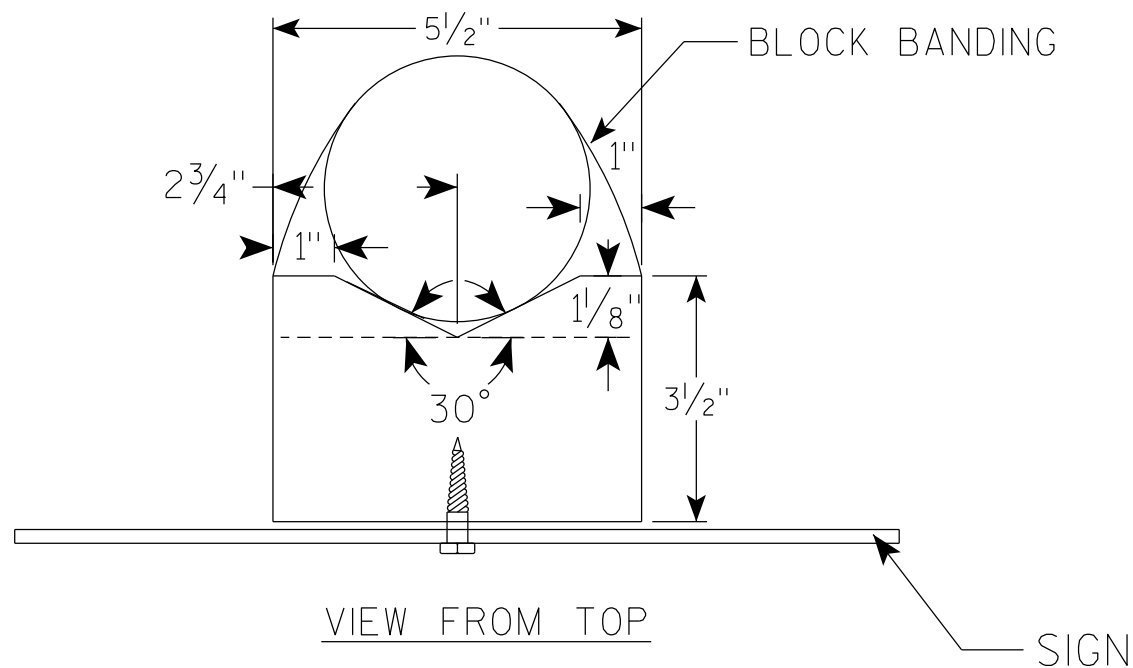
DATE 6/10/19 PLATE NO. A5-9.4



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

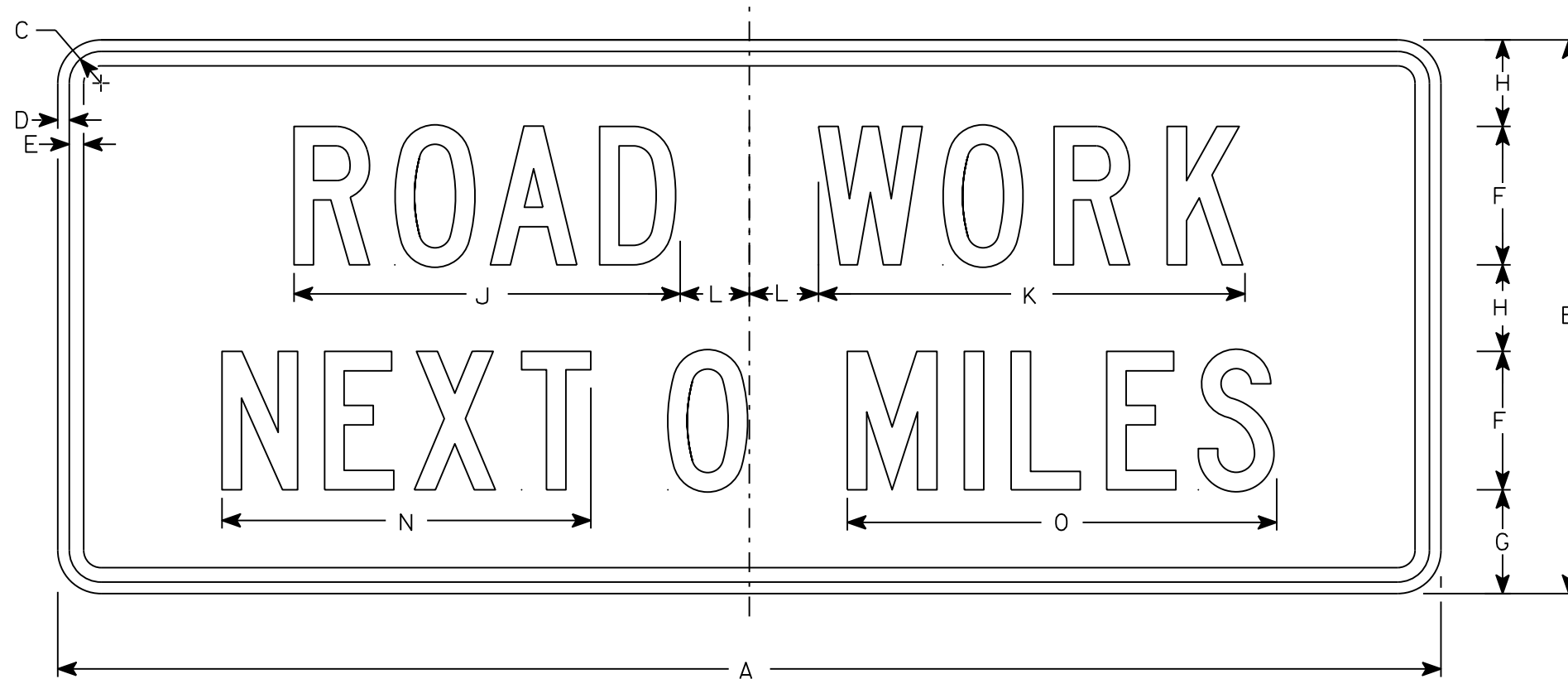
* LAG BOLTS SHALL BE 3/8" X 2 1/2"



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

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. Round distance to nearest whole Mile and substitute appropriate numerals and optically adjust spacing to achieve proper balance



G20-1

7

7

| SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Area sq. ft. |
|------|----|----|-------|-----|-----|---|-------|-------|---|--------|--------|---|---|----|--------|---|---|---|---|---|---|---|---|---|---|---|--------------|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 60 | 24 | 1 3/8 | 1/2 | 5/8 | 6 | 4 1/2 | 3 3/4 | | 16 3/4 | 18 1/2 | 3 | | 16 | 18 5/8 | | | | | | | | | | | | 10 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 60 | 24 | 1 3/8 | 1/2 | 5/8 | 6 | 4 1/2 | 3 3/4 | | 16 3/4 | 18 1/2 | 3 | | 16 | 18 5/8 | | | | | | | | | | | | 10 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

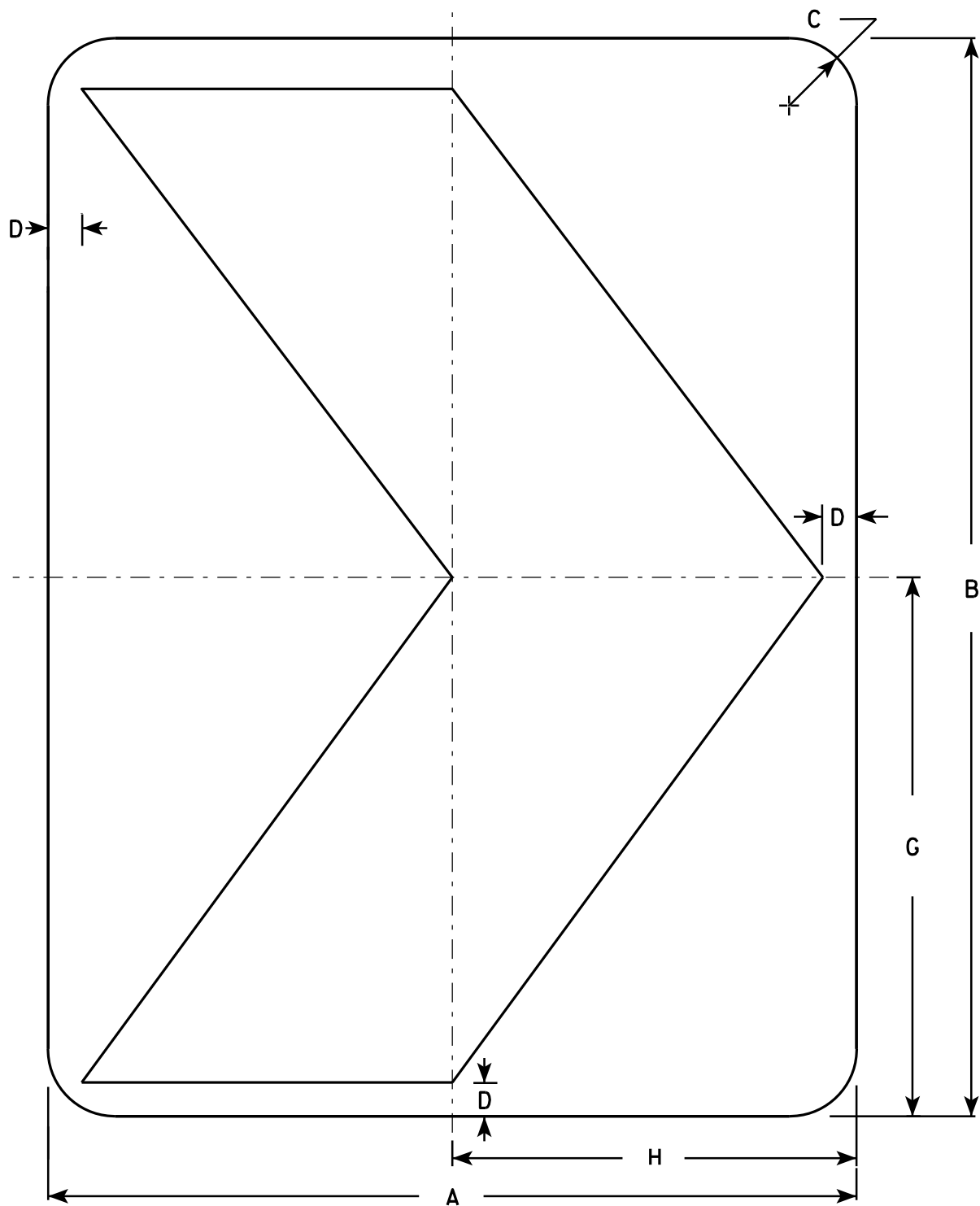
STANDARD SIGN
G20-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/14/17 PLATE NO. G20-1.8

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



NOTES

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

7

7

W1-8

| 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 | 12 | 18 | 1 1/2 | 1/2 | | | 9 | 6 | | | | | | | | | | | | | | | | | | | 1.5 |
| 2S | 18 | 24 | 1 1/2 | 3/4 | | | 12 | 9 | | | | | | | | | | | | | | | | | | | 3.0 |
| 2M | 18 | 24 | 1 1/2 | 3/4 | | | 12 | 9 | | | | | | | | | | | | | | | | | | | 3.0 |
| 3 | 24 | 30 | 1 1/2 | 1 | | | 15 | 12 | | | | | | | | | | | | | | | | | | | 5.0 |
| 4 | 30 | 36 | 1 7/8 | 1 1/4 | | | 18 | 15 | | | | | | | | | | | | | | | | | | | 7.5 |
| 5 | 36 | 48 | 2 1/4 | 1 1/2 | | | 24 | 18 | | | | | | | | | | | | | | | | | | | 12.0 |

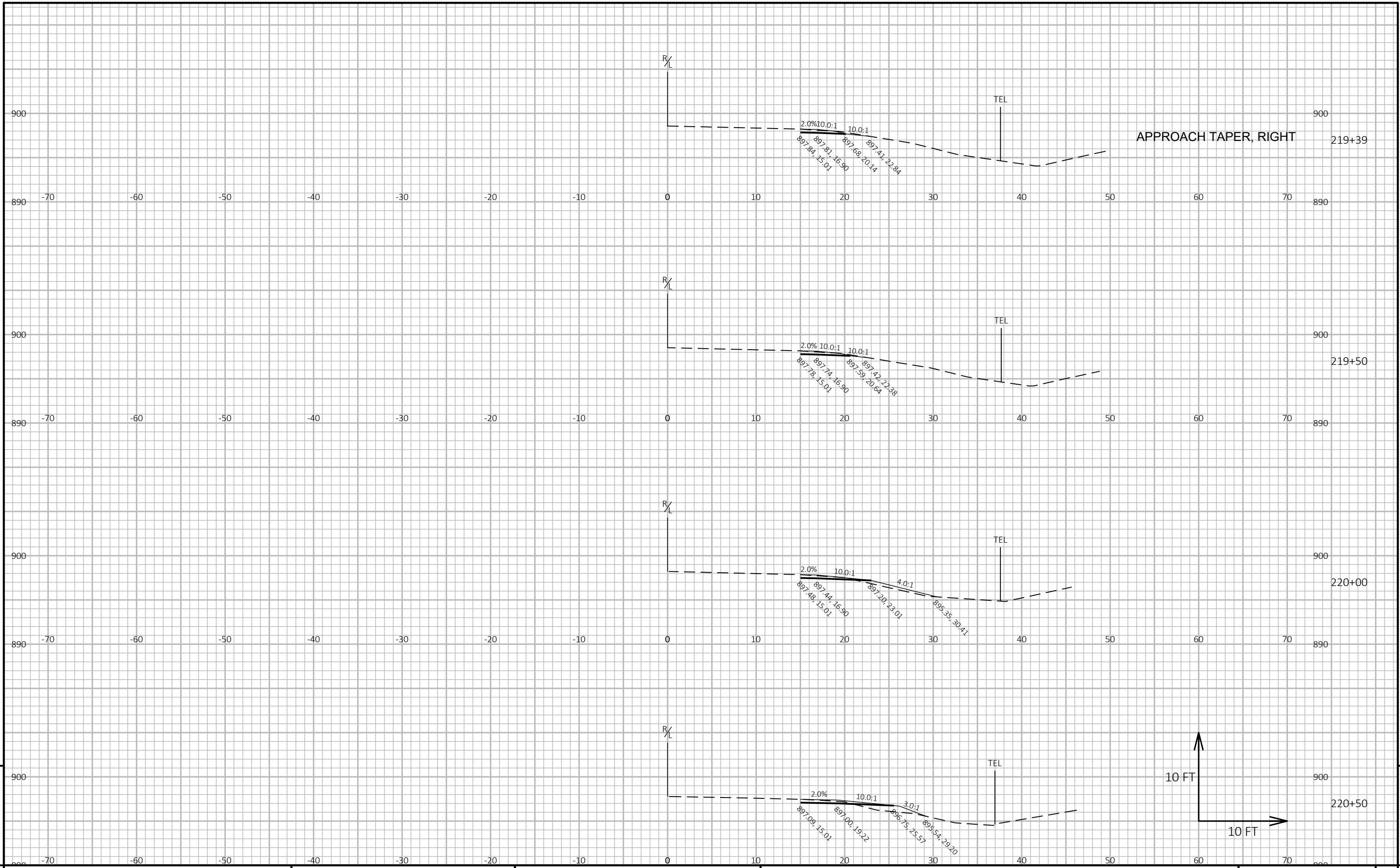
STANDARD SIGN
W1-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 6/7/10 PLATE NO. W1-8.6

PROJECT NO: _____ SHEET NO: _____ E



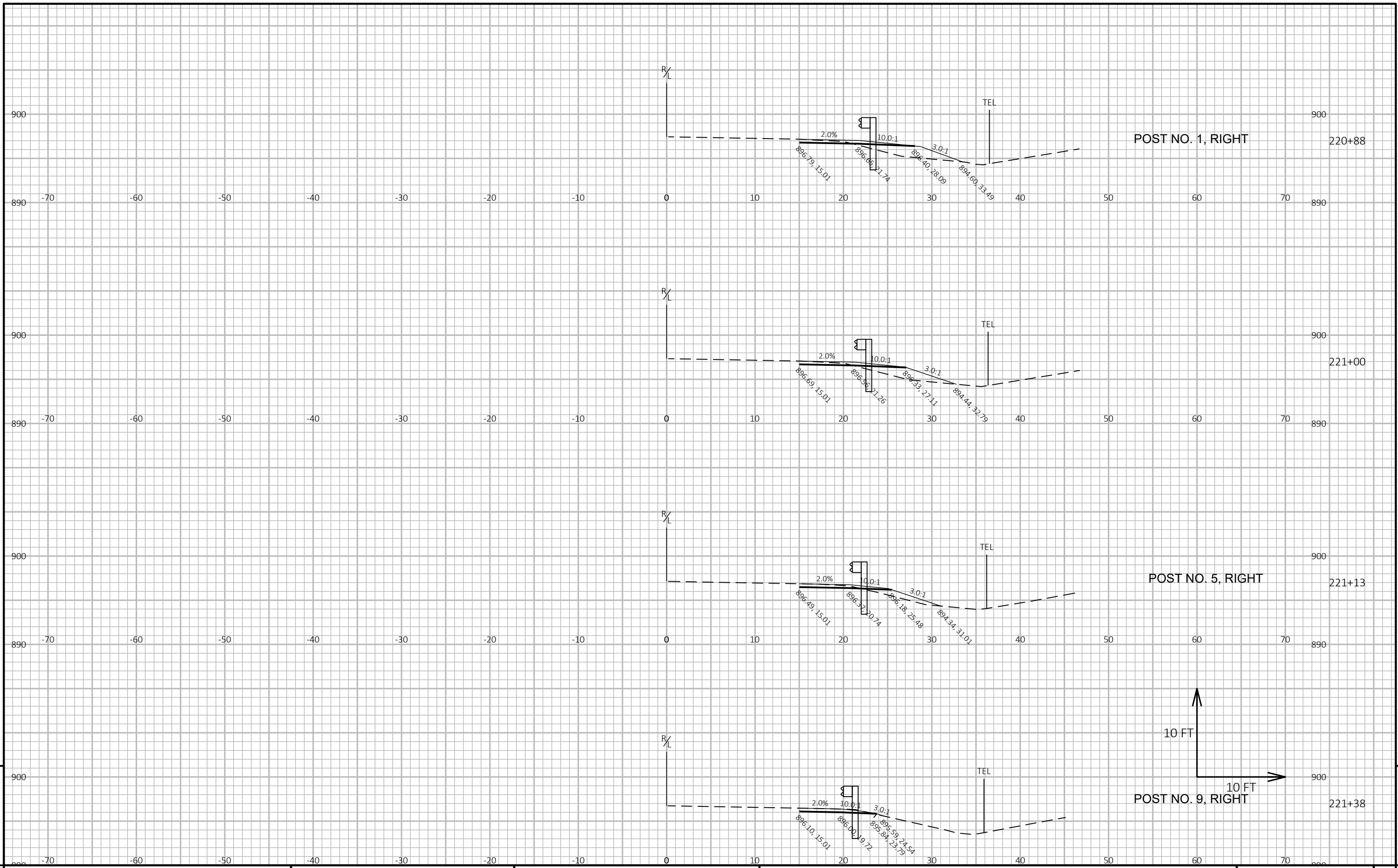
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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

FILE NAME: P:\2018 PROJECTS\5018029 - WISDOT C3D STH 29\CIVIL3D\SHEETSPLAN\0902_XS.DWG PLOT DATE: 1/14/2020 12:29 PM PLOT BY: KYLE CORNELIUS PLOT NAME: PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - 01



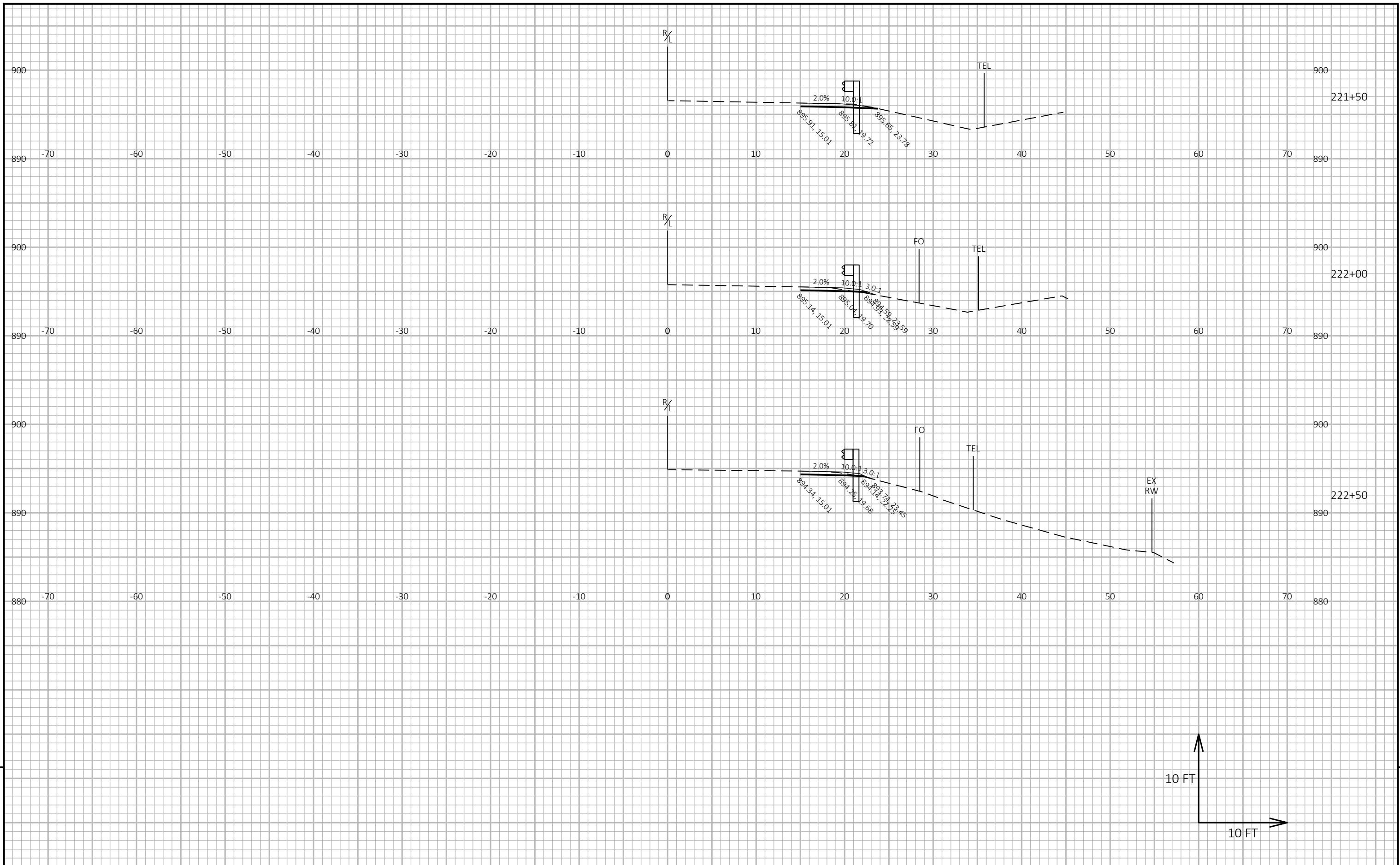
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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

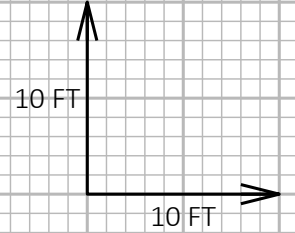
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LAYOUT NAME - 02

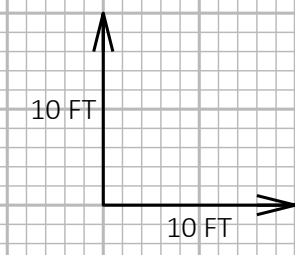
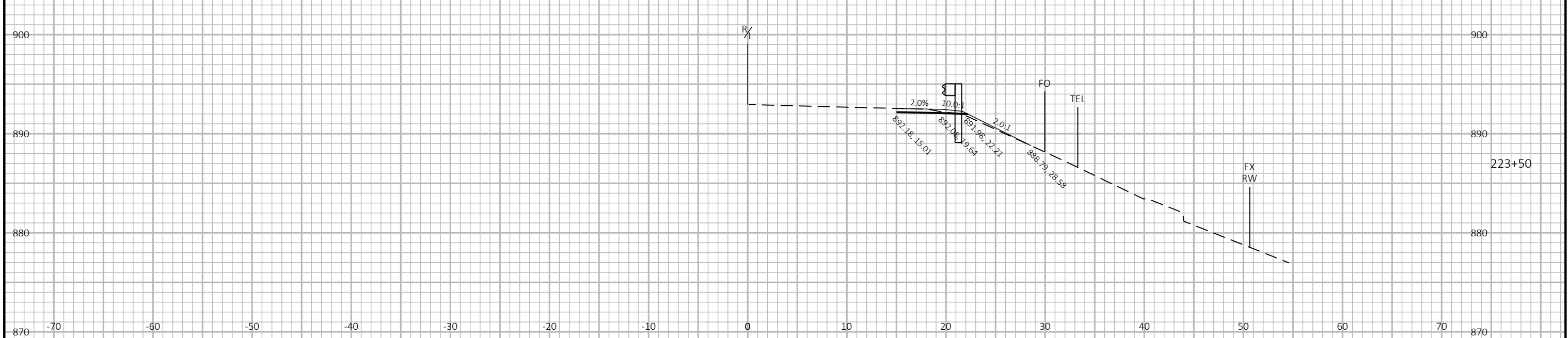
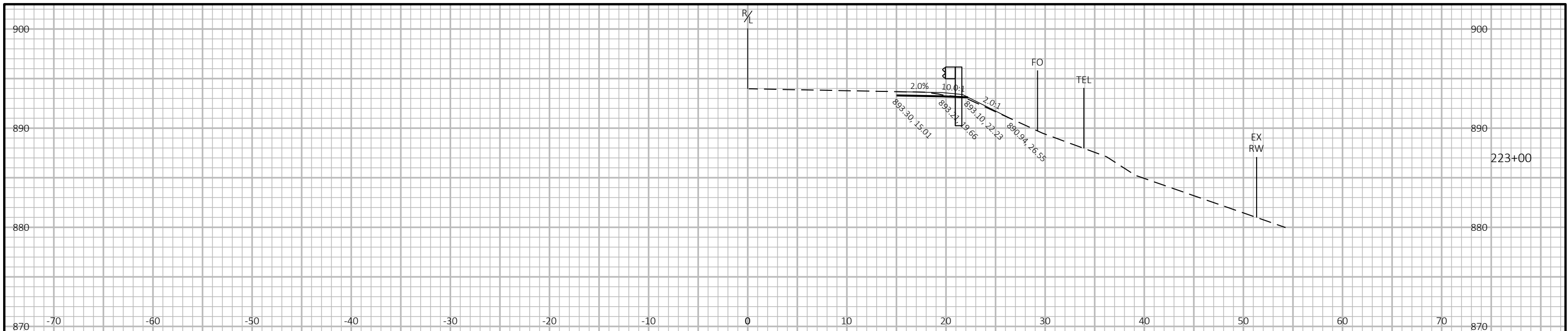


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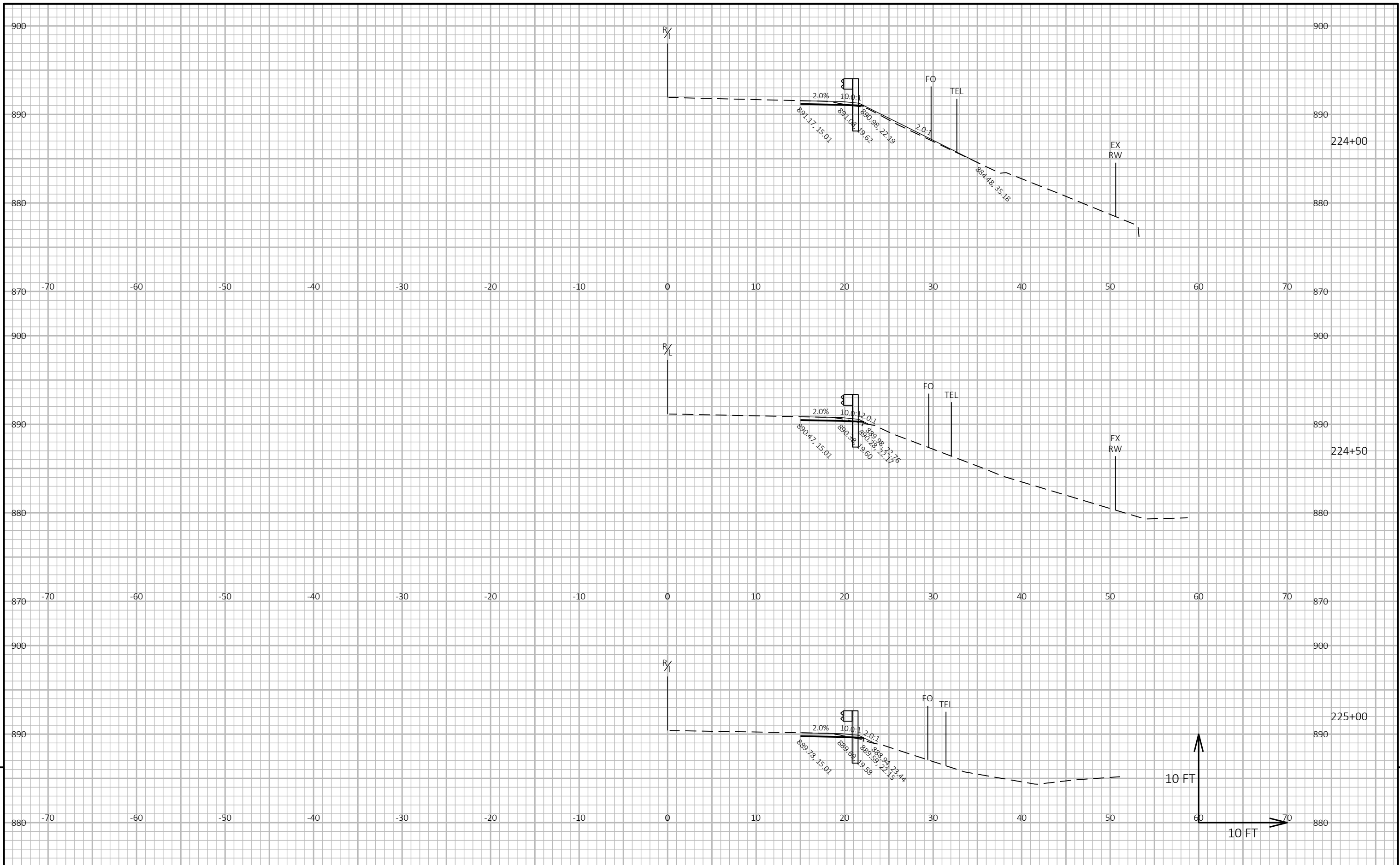
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
|------------------------|-------------|------------------|---------------------------------------|-------|---|



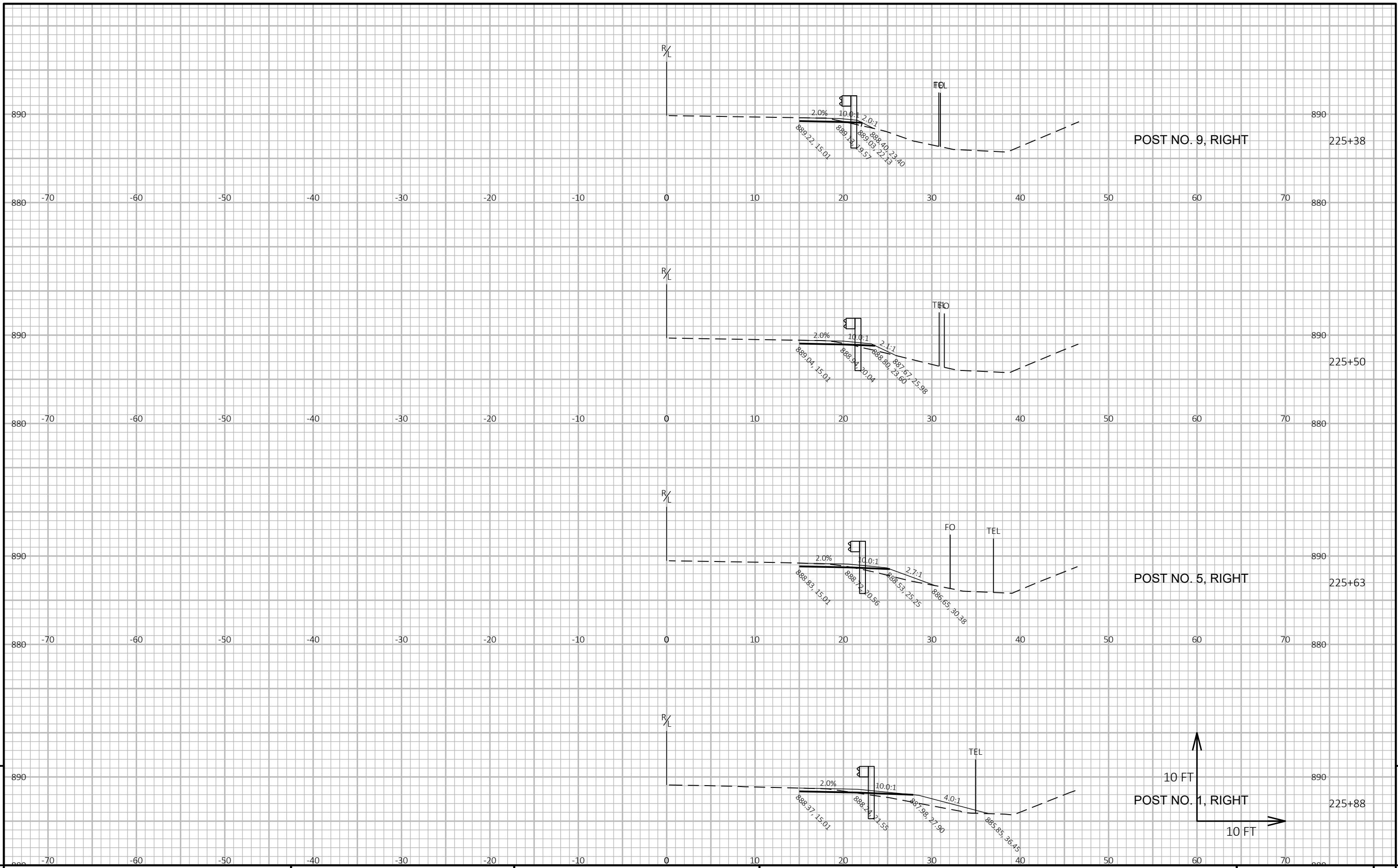
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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| | | | | |
|------------------------|-------------|------------------|---------------------------------------|---------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET E |
|------------------------|-------------|------------------|---------------------------------------|---------|



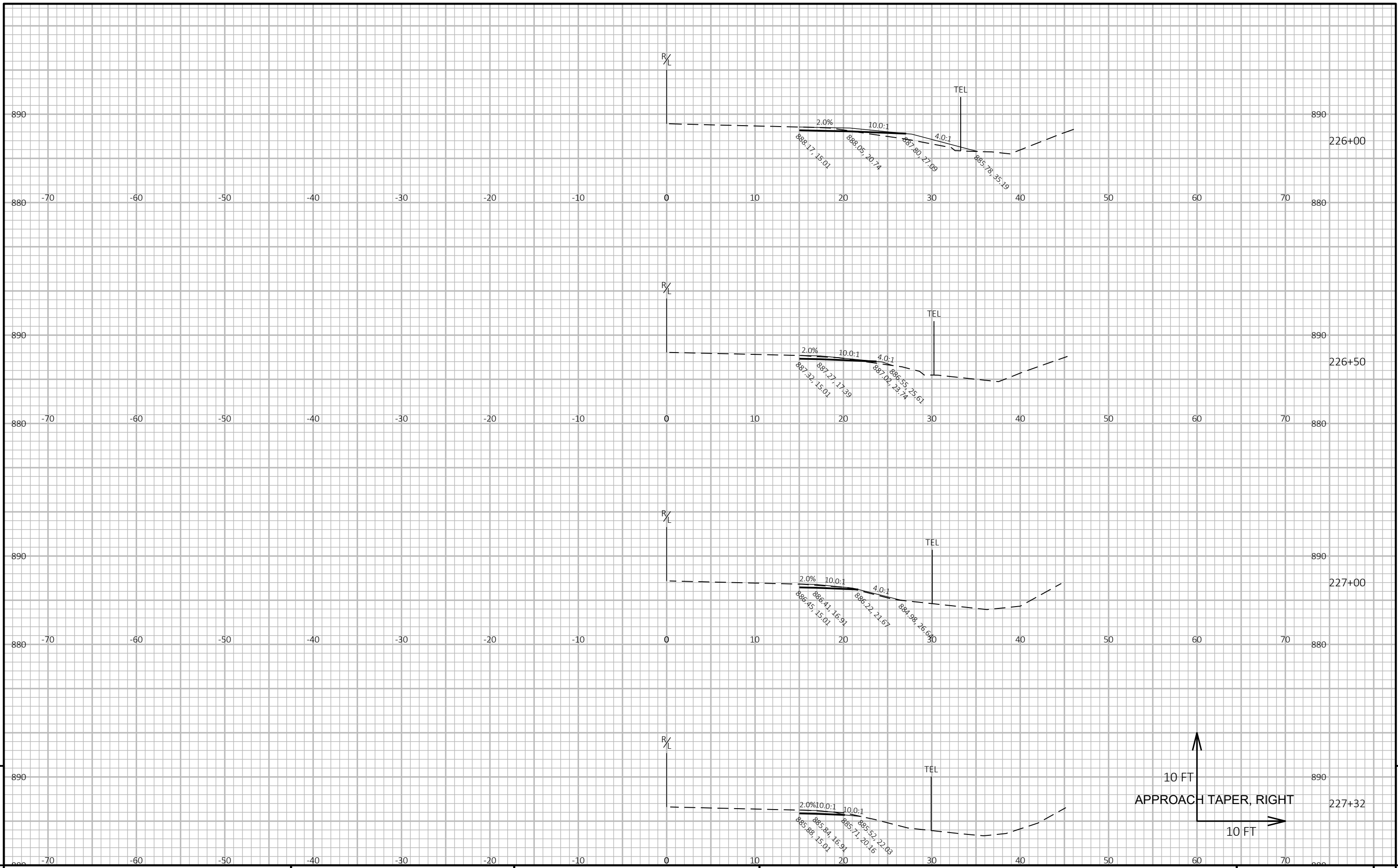
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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

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LAYOUT NAME - 06

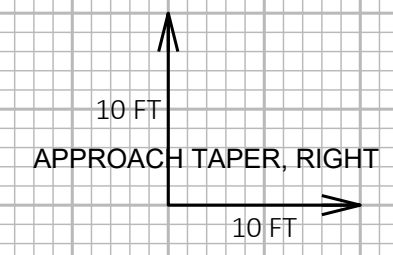


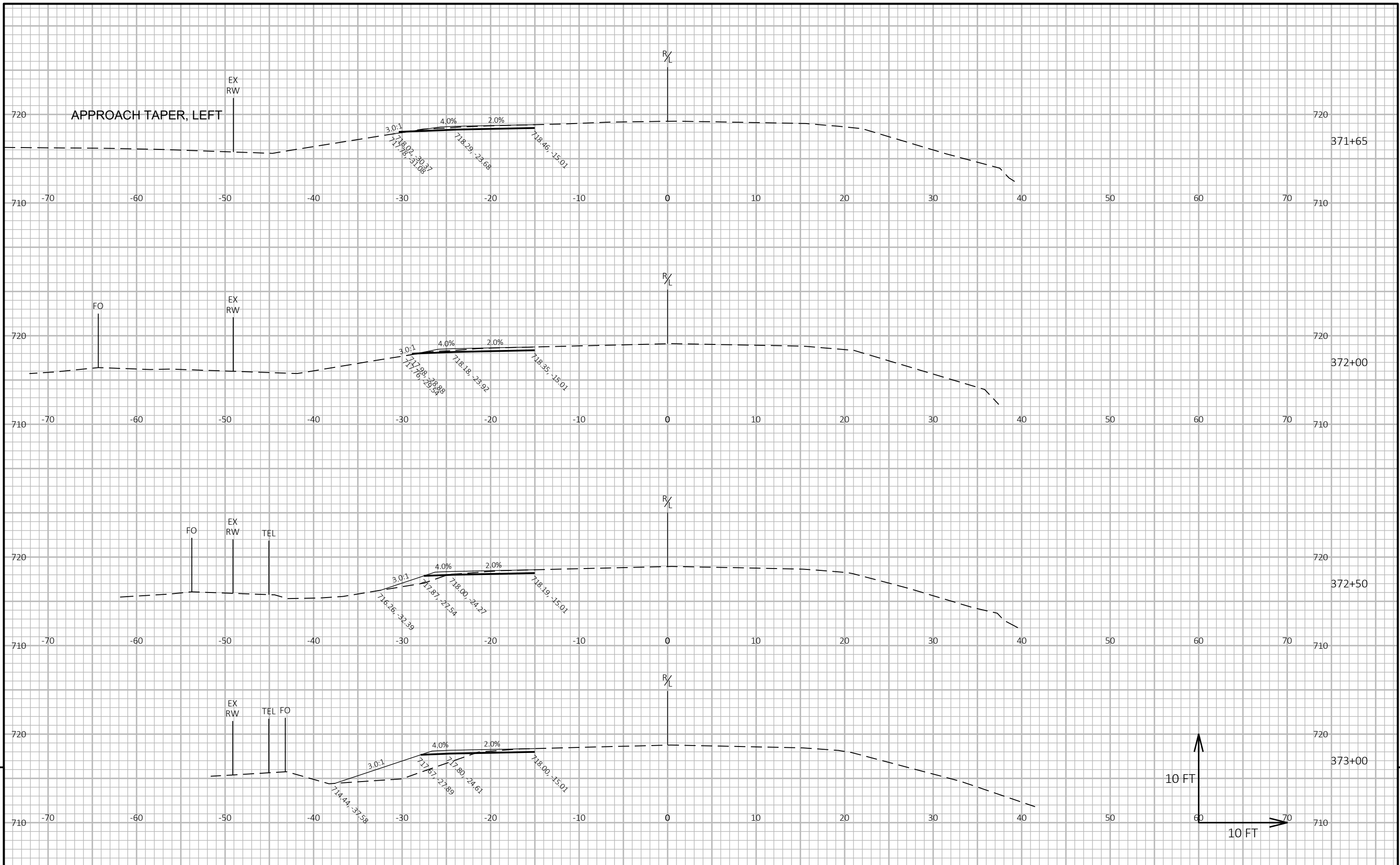
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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

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PROJECT NO: 4125-14-60

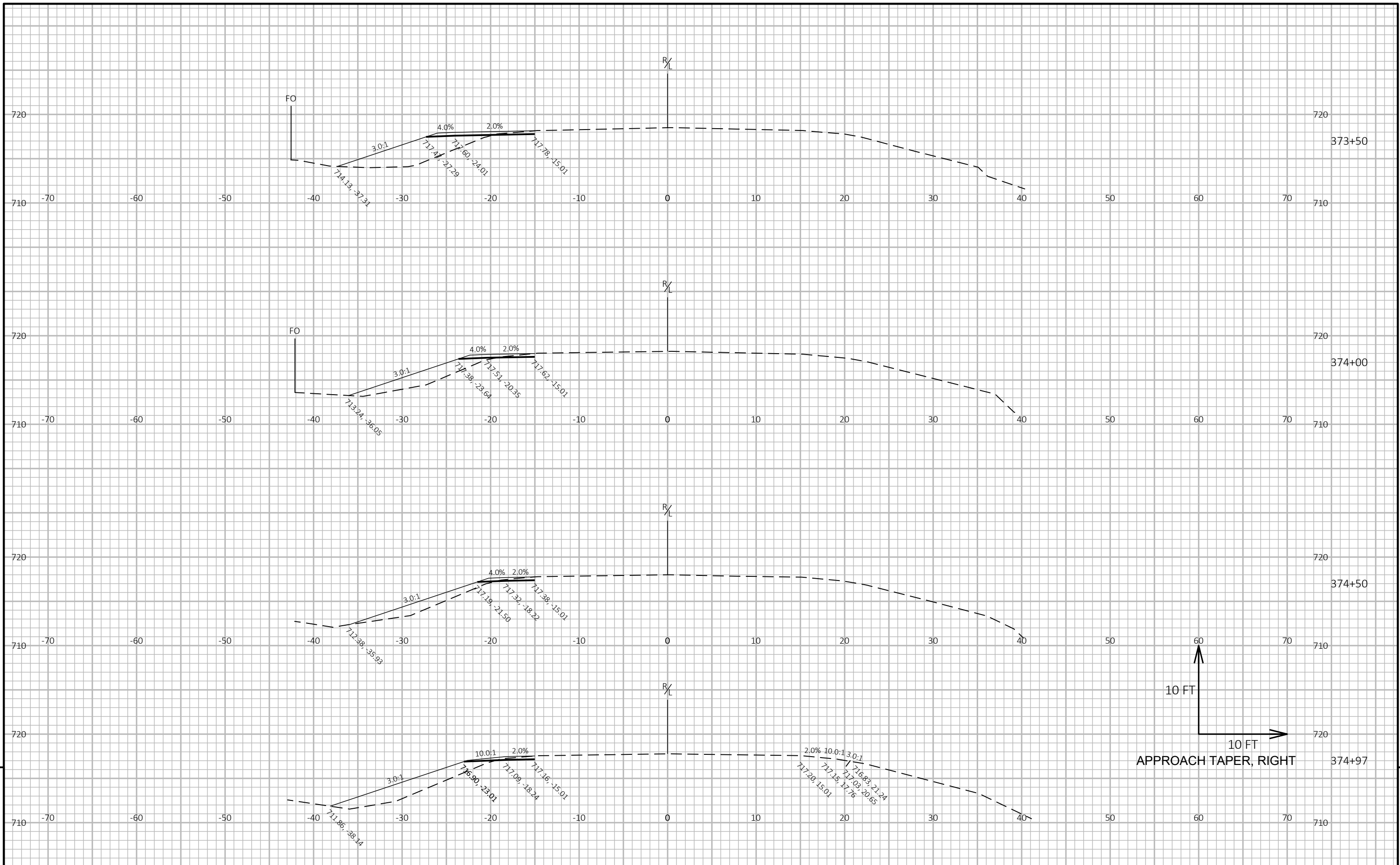
HWY: STH 29

COUNTY: KEWAUNEE

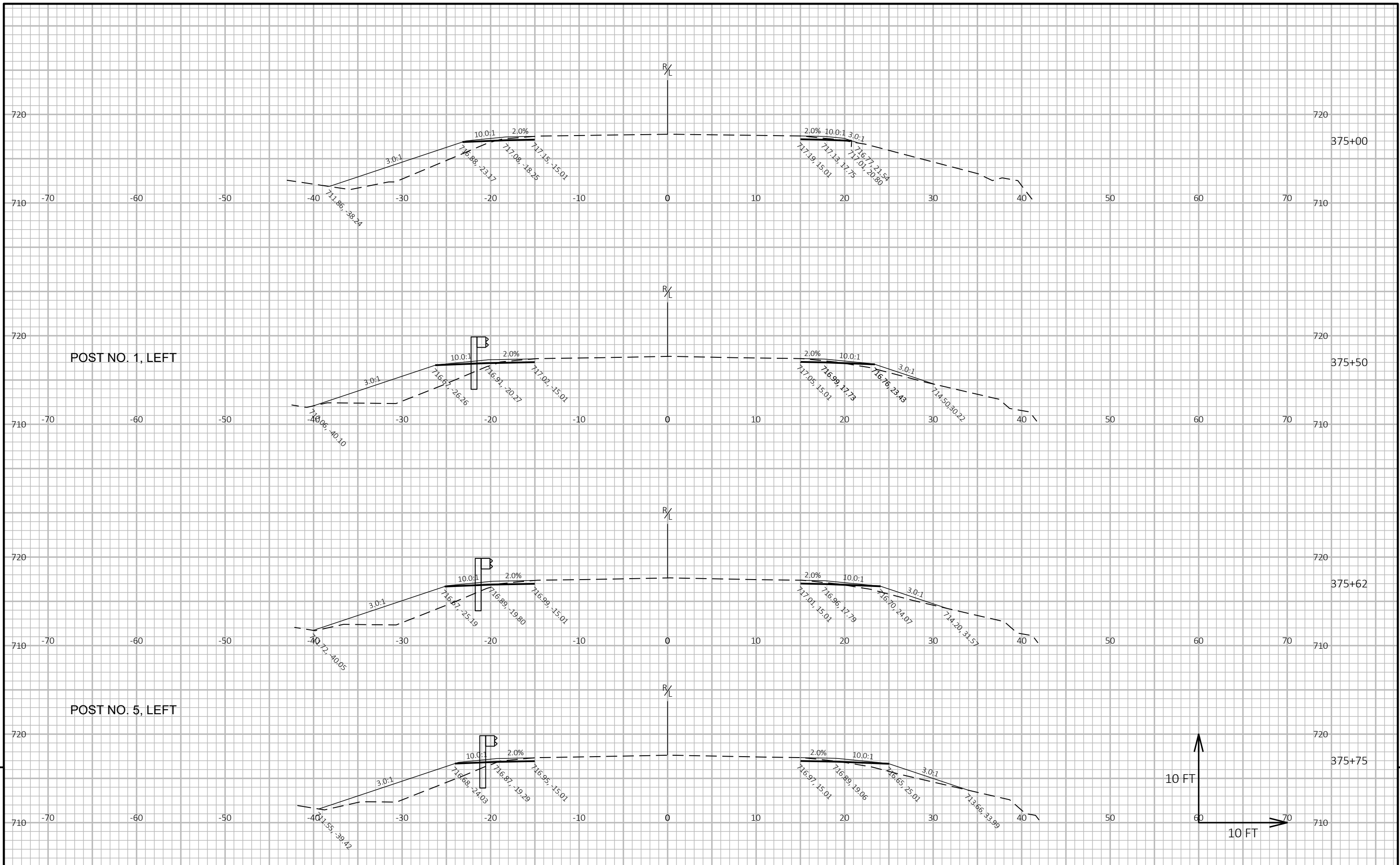
CROSS SECTIONS: GUARDRAIL REPLACEMENT

SHEET

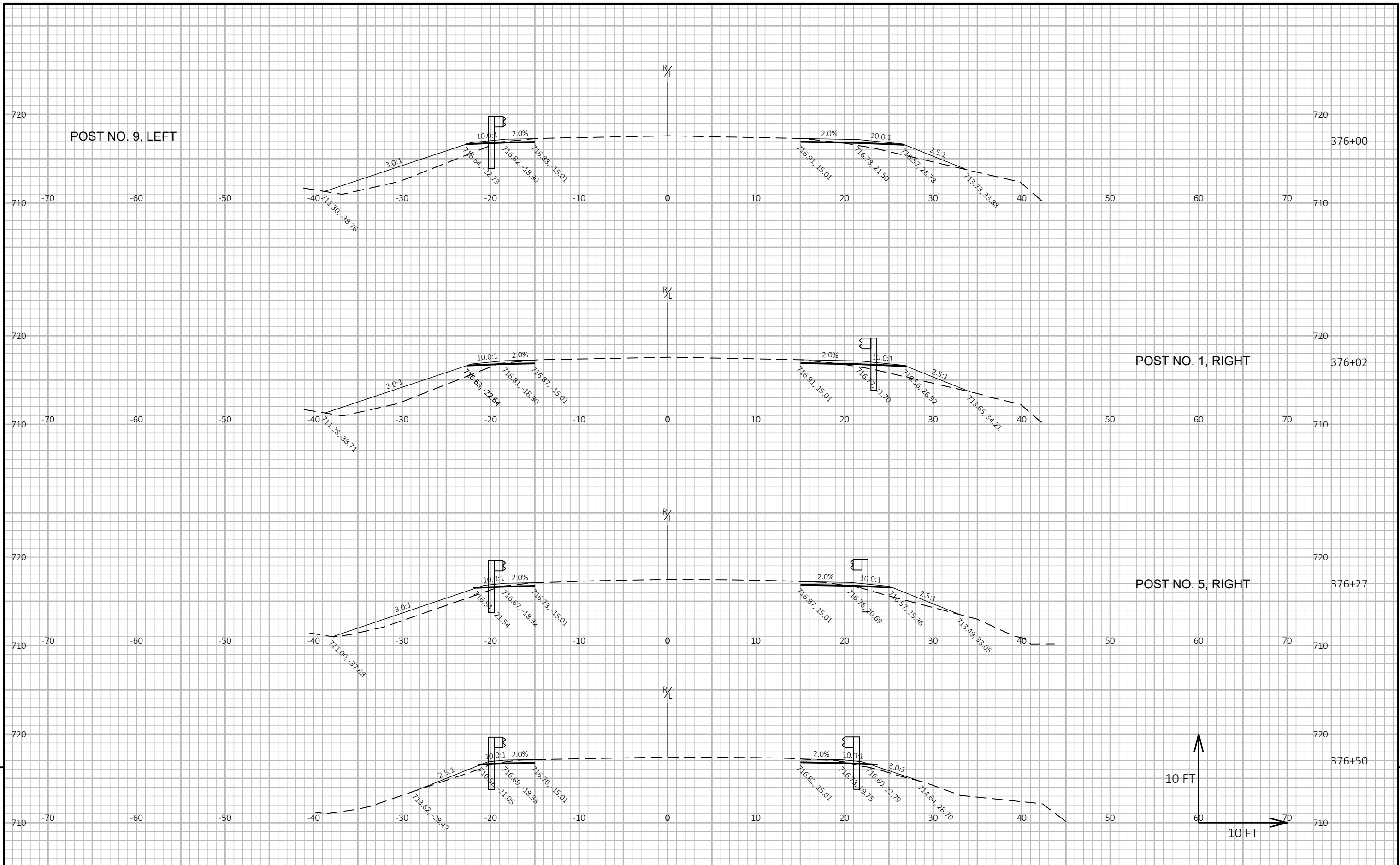
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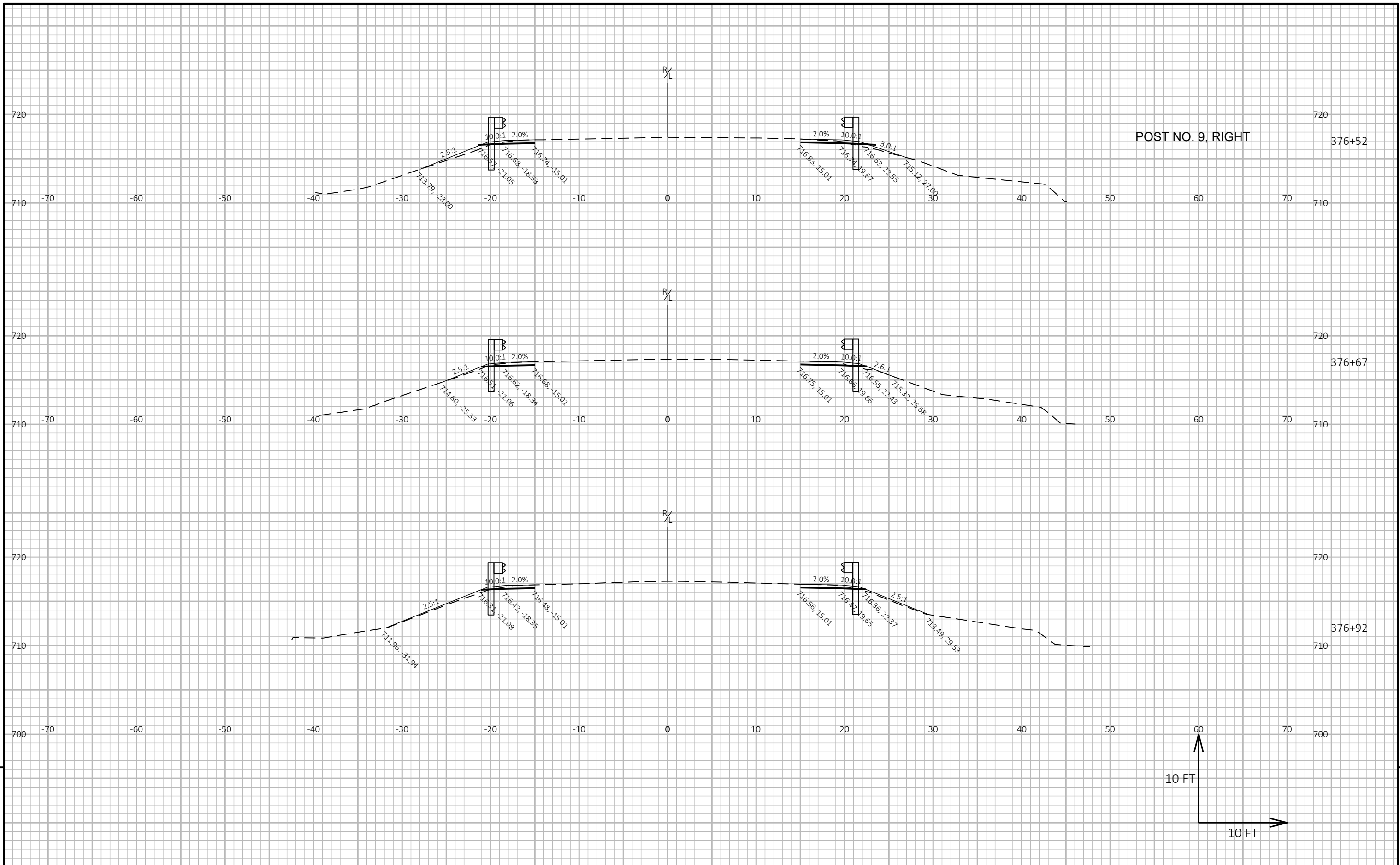
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
|------------------------|-------------|------------------|---------------------------------------|-------|----------|



| | | | | | |
|------------------------|-------------|------------------|---------------------------------------|-------|----------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
|------------------------|-------------|------------------|---------------------------------------|-------|----------|



| | | | | |
|------------------------|-------------|------------------|---------------------------------------|---------|
| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET 9 |
|------------------------|-------------|------------------|---------------------------------------|---------|

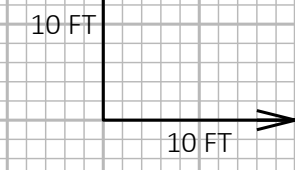


POST NO. 9, RIGHT

376+52

376+67

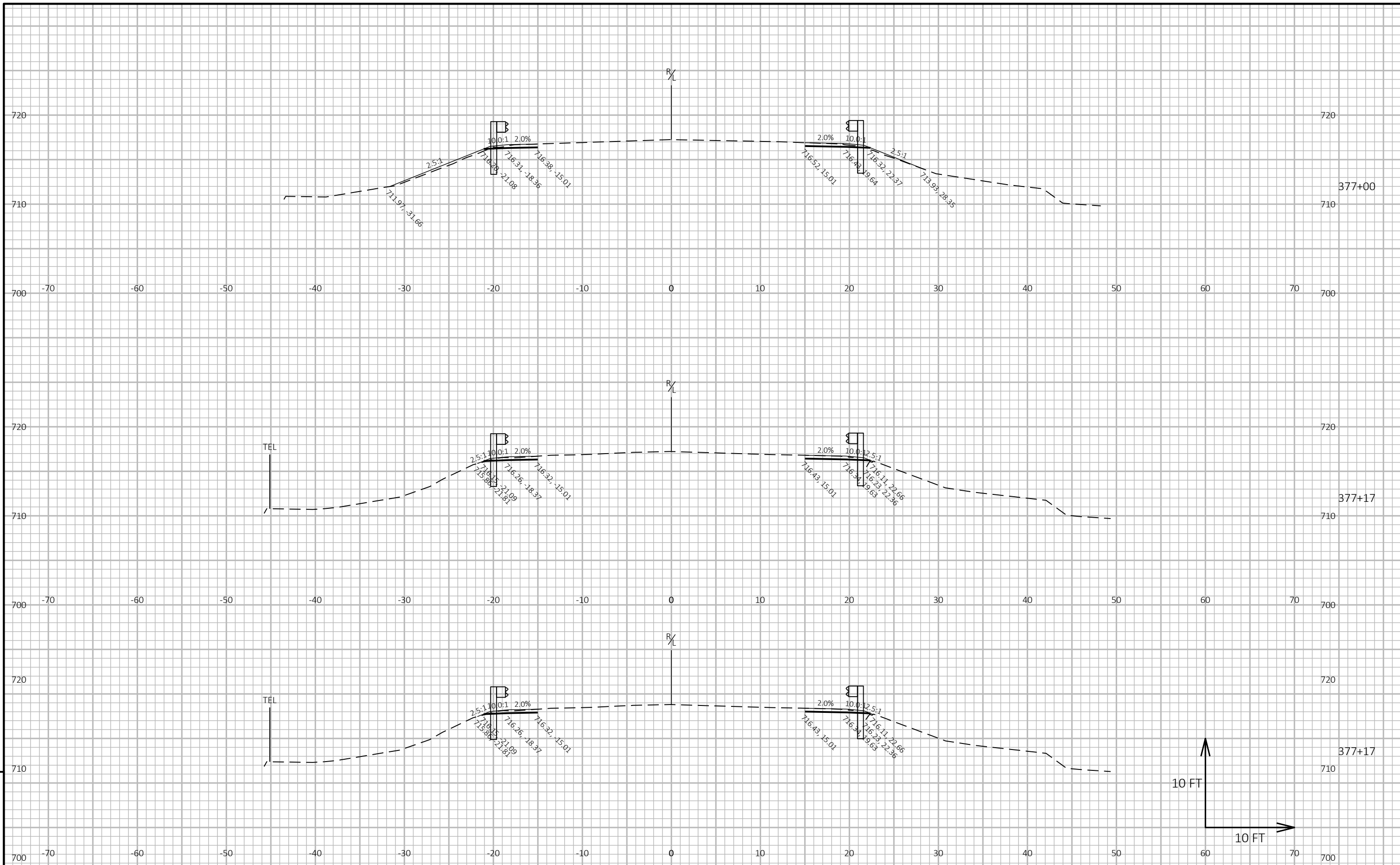
376+92



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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
|------------------------|-------------|------------------|---------------------------------------|-------|---|



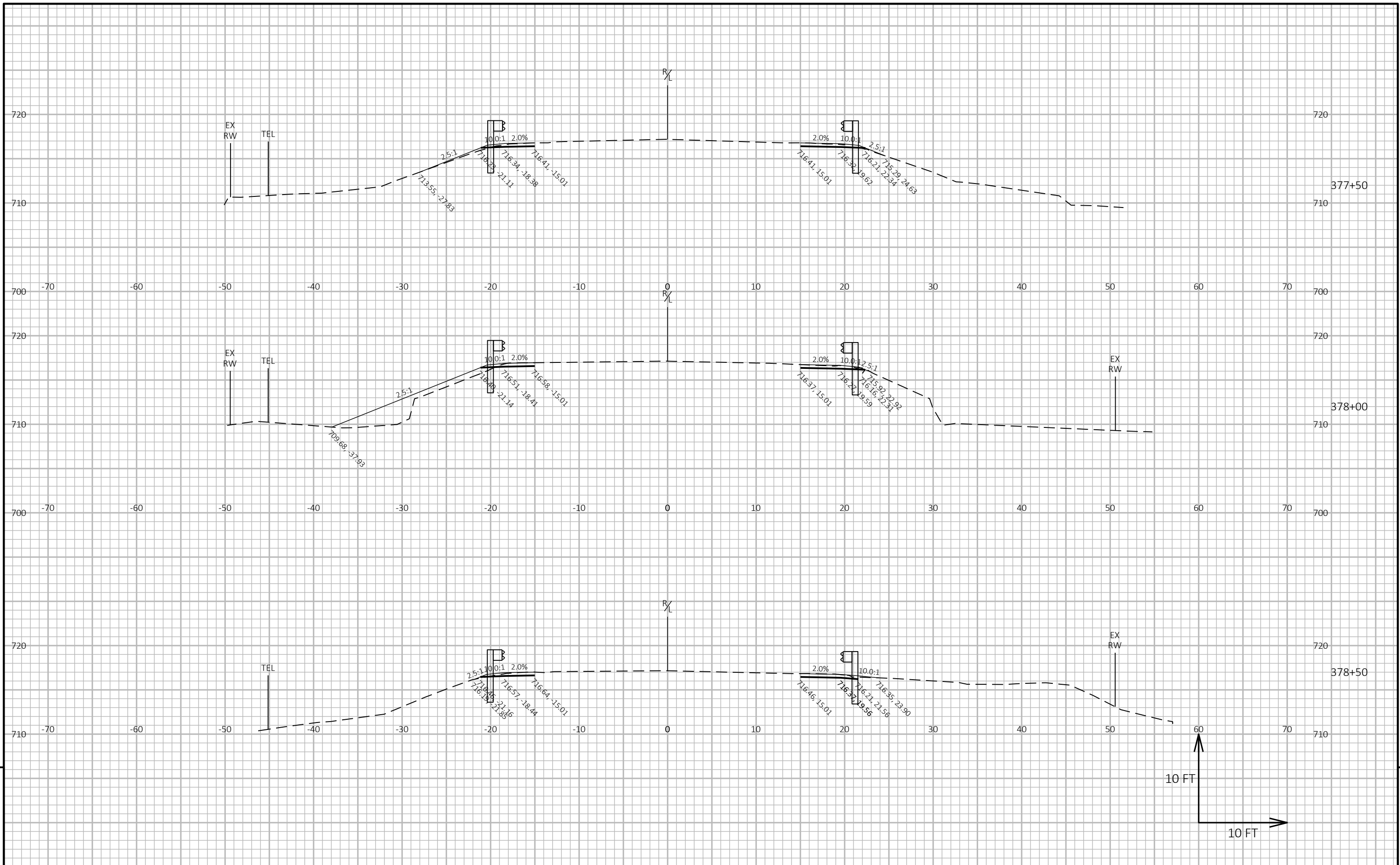
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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

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LAYOUT NAME - 13



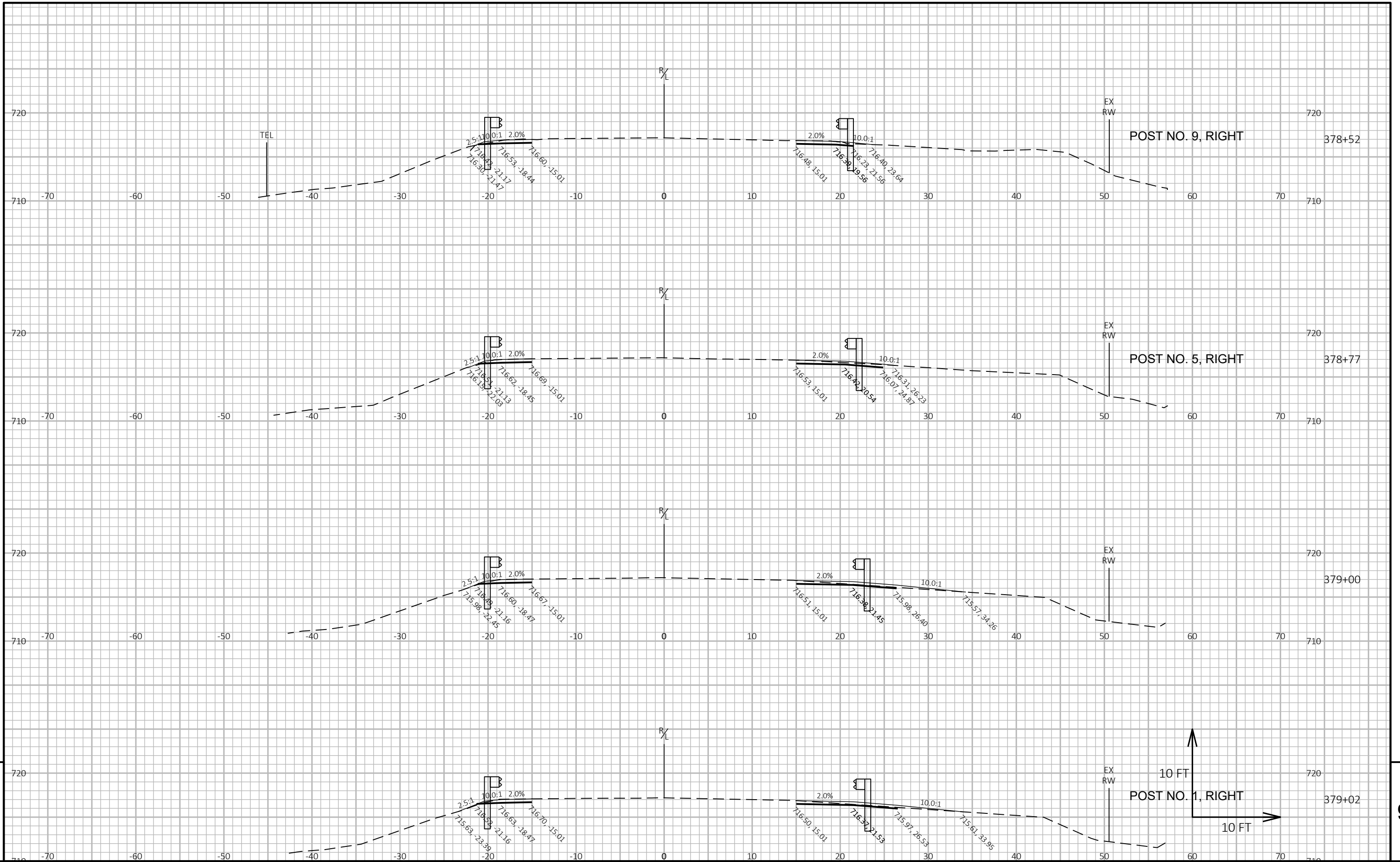
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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

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LAYOUT NAME - 14



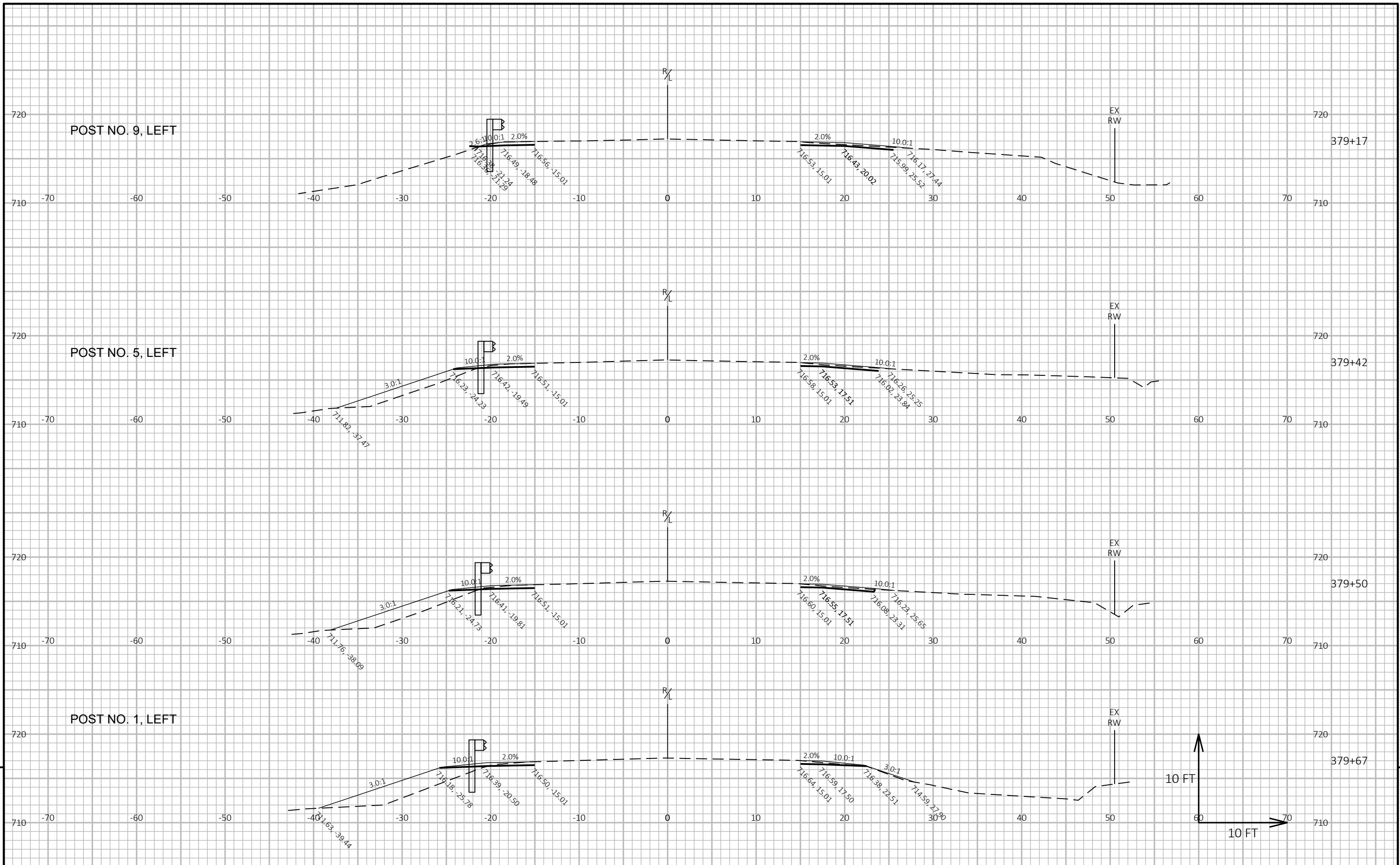
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET 9 |
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 LAYOUT NAME - 15

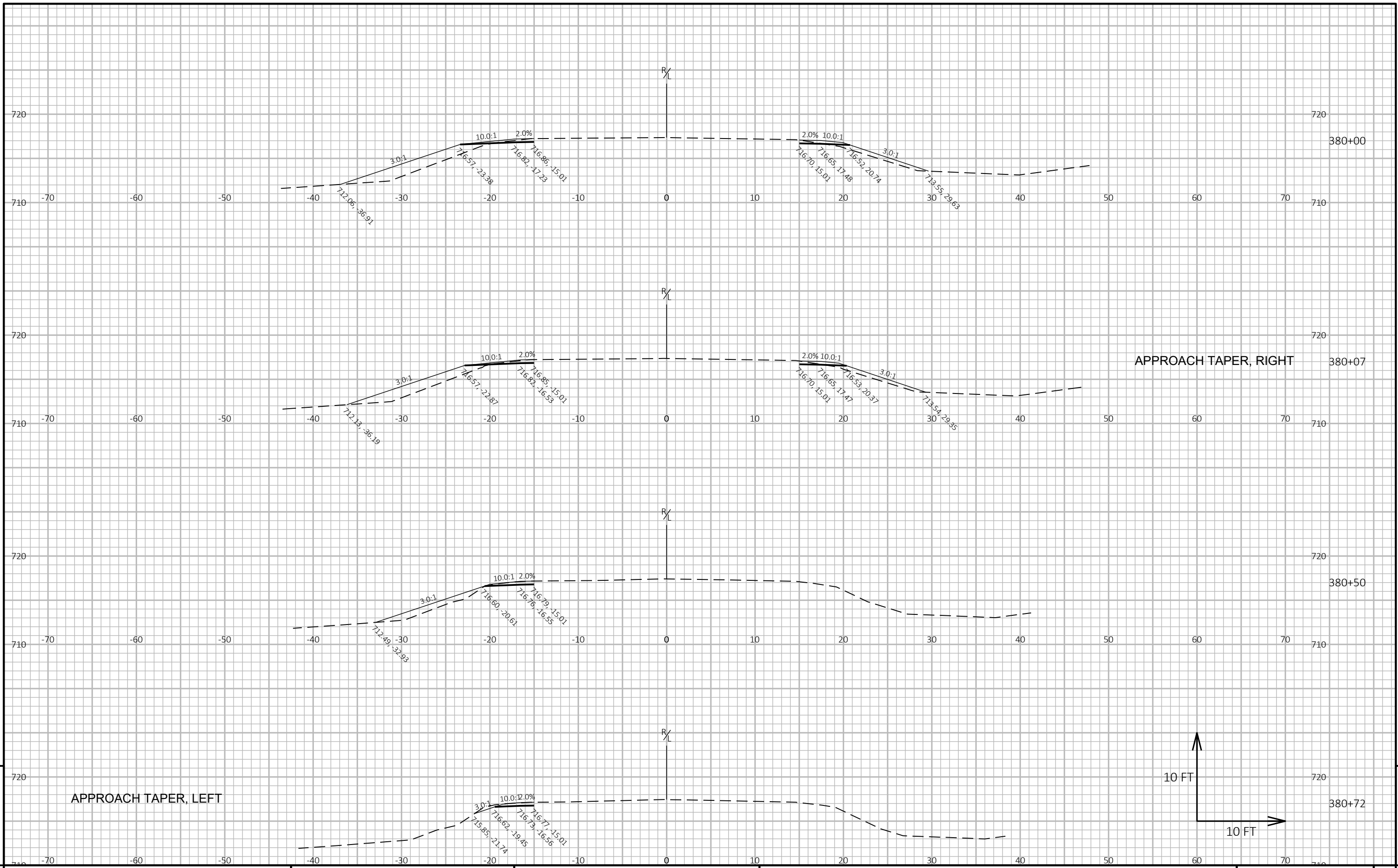
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PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADD SHEET 49



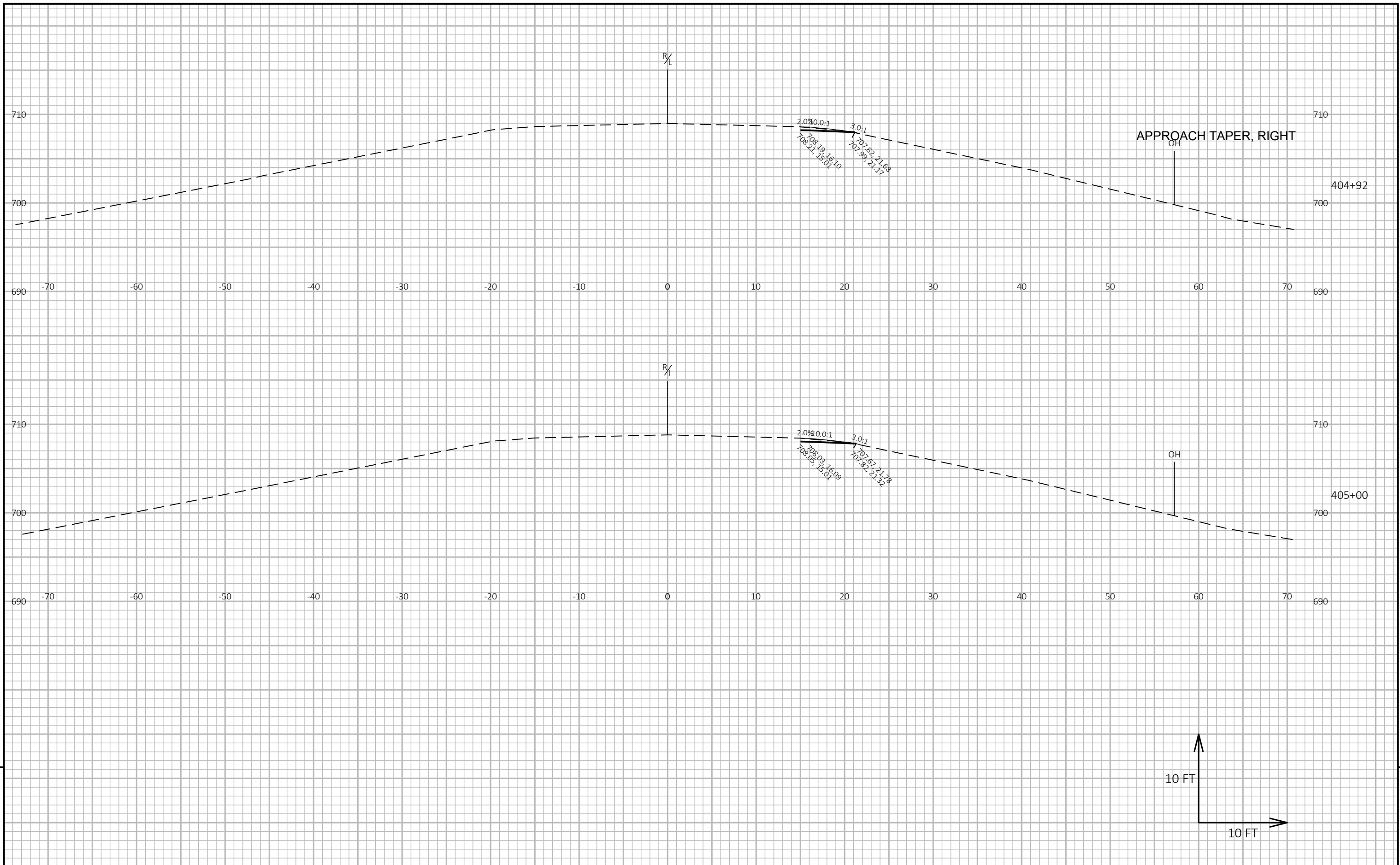
PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET 9



PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

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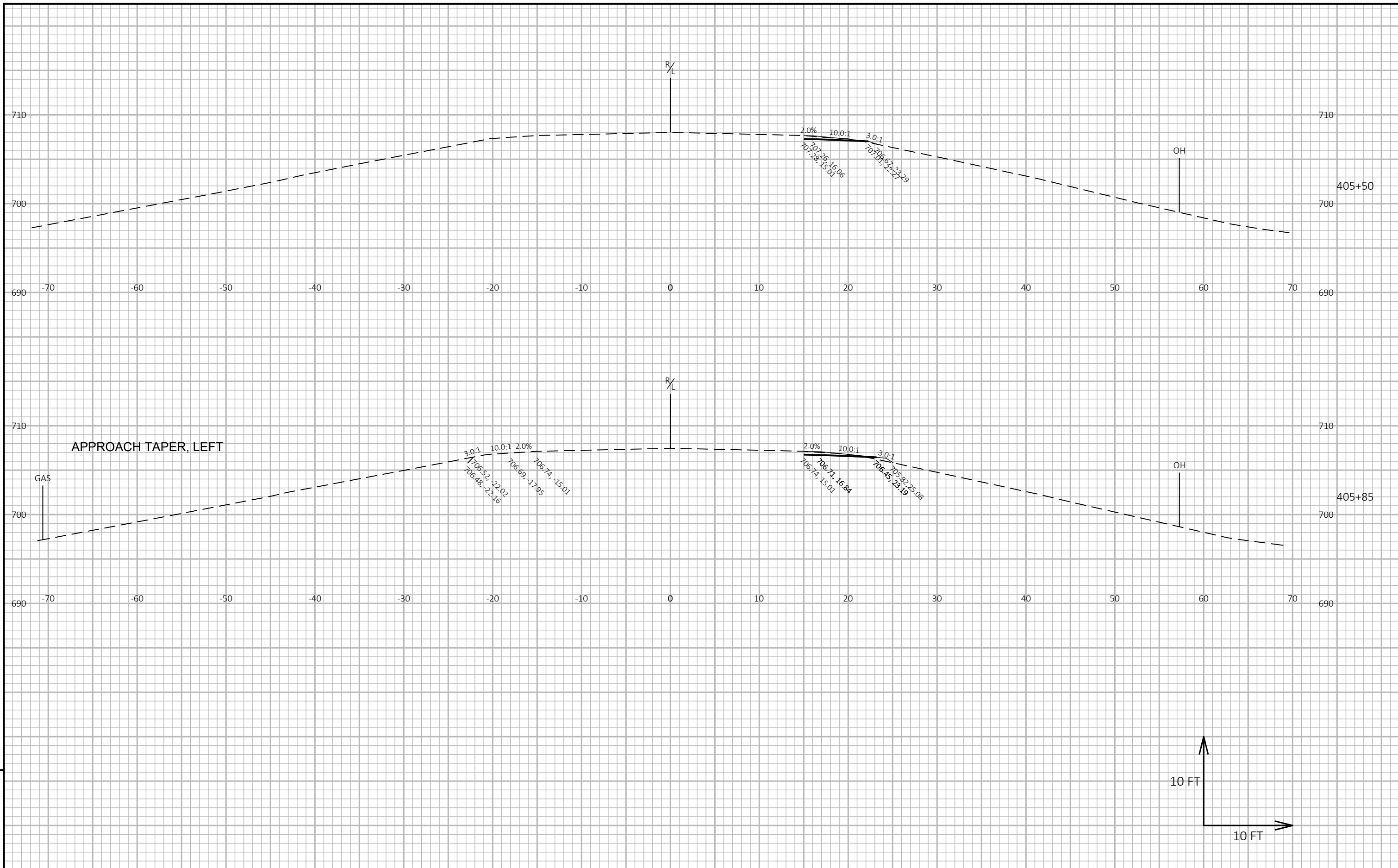
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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PROJECT NO: 4125-14-60

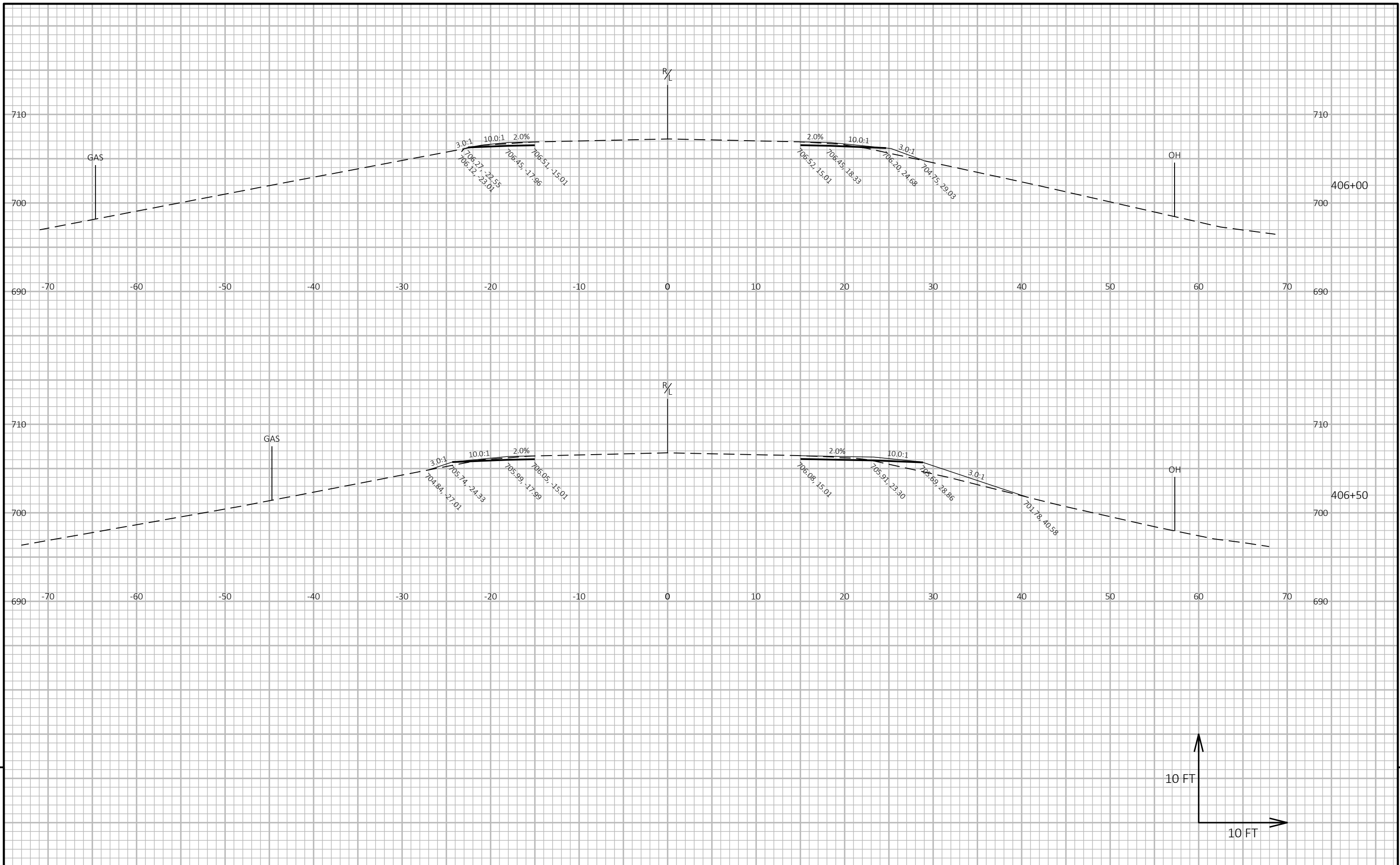
HWY: STH 29

COUNTY: KEWAUNEE

CROSS SECTIONS: GUARDRAIL REPLACEMENT

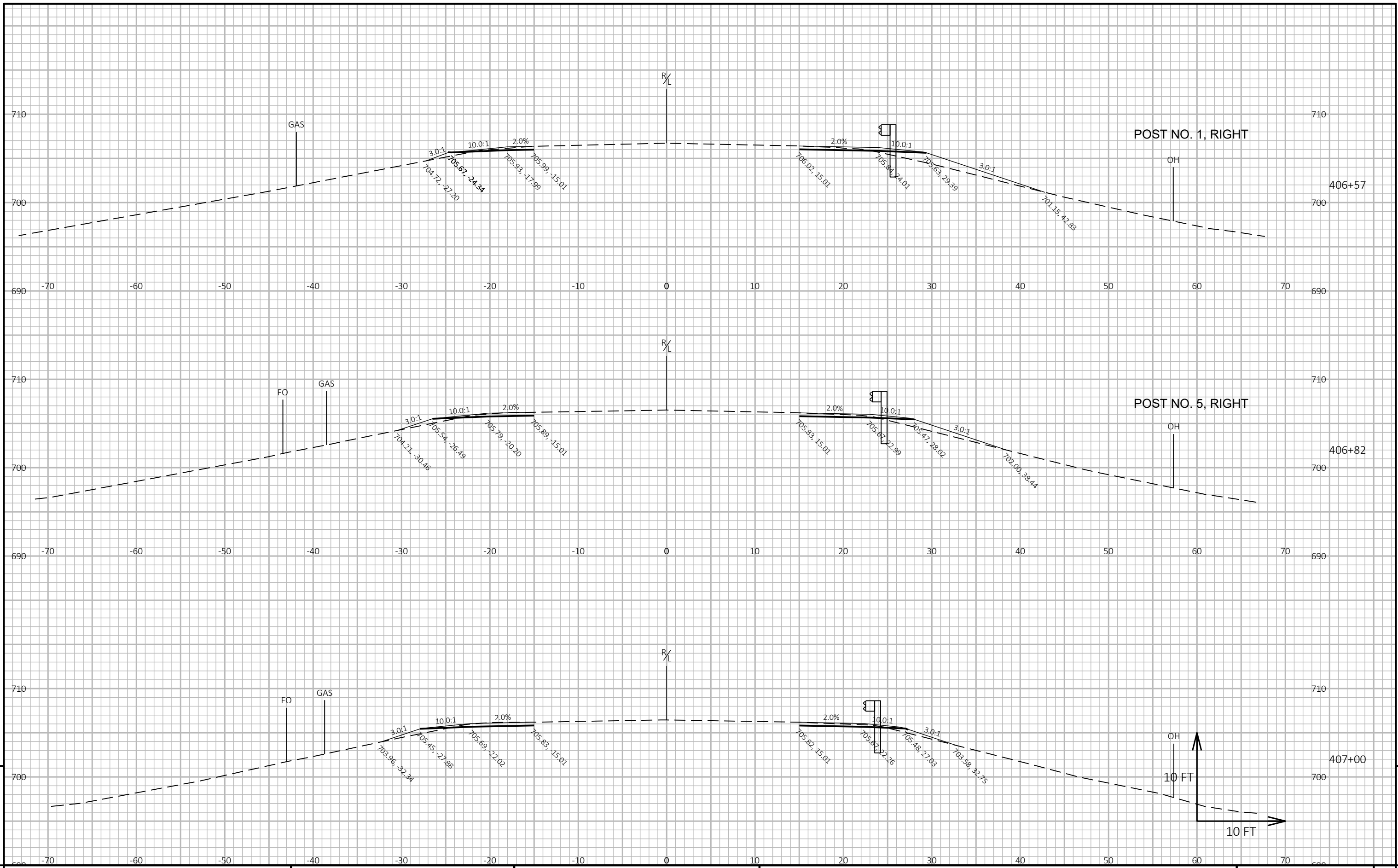
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PROJECT NO: 4125-14-60

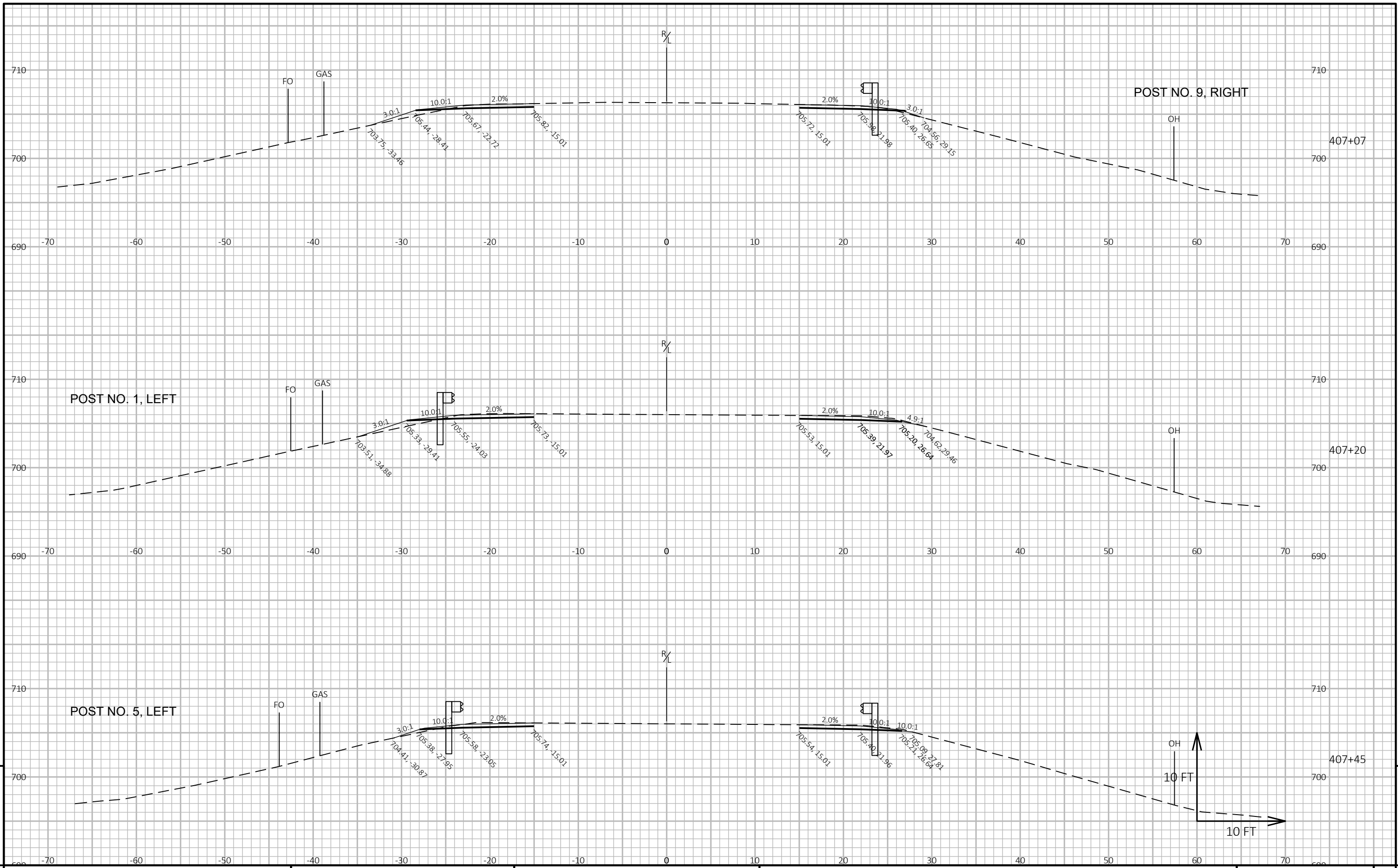
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COUNTY: KEWAUNEE

CROSS SECTIONS: GUARDRAIL REPLACEMENT

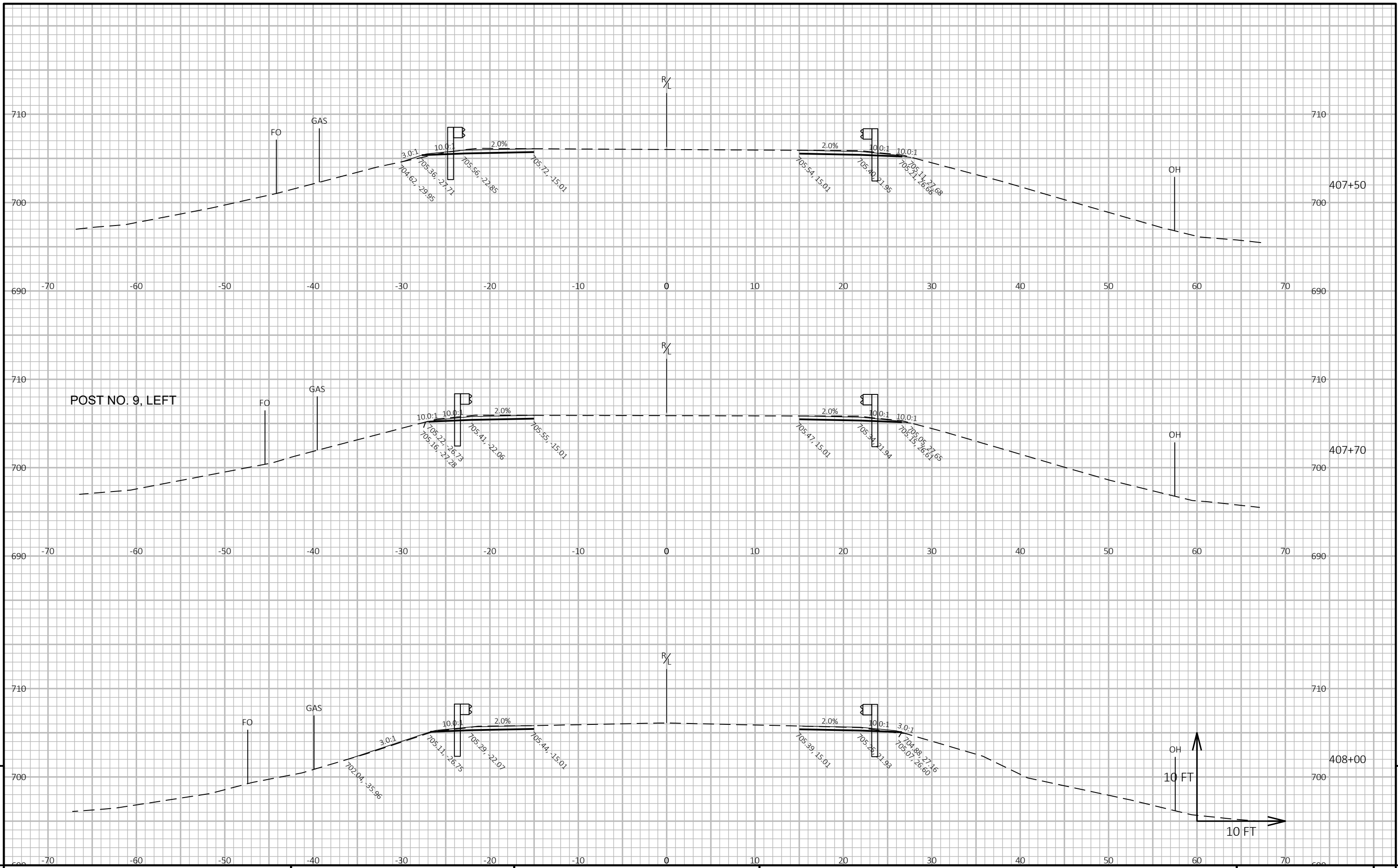
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET |
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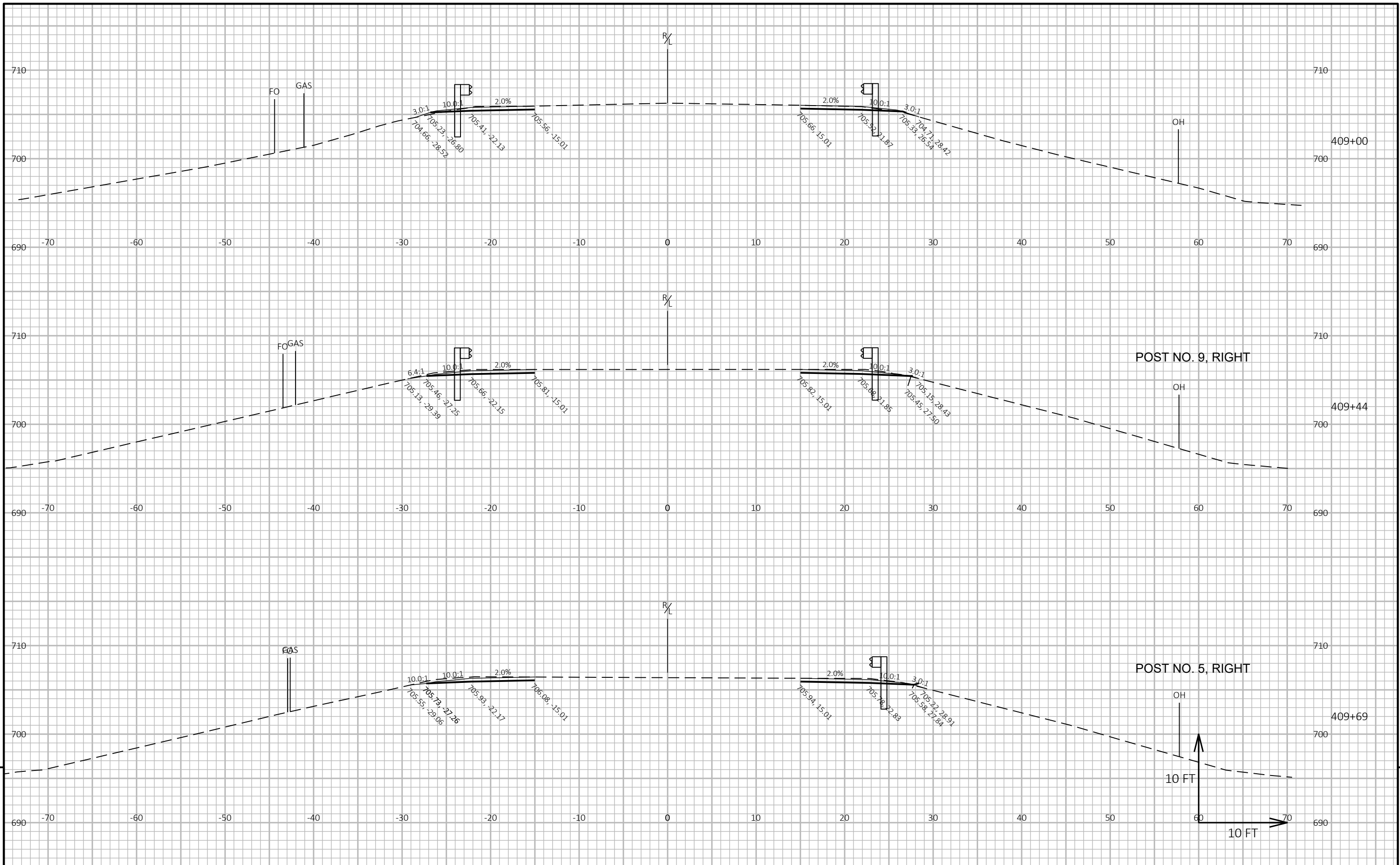


POST NO. 9, LEFT

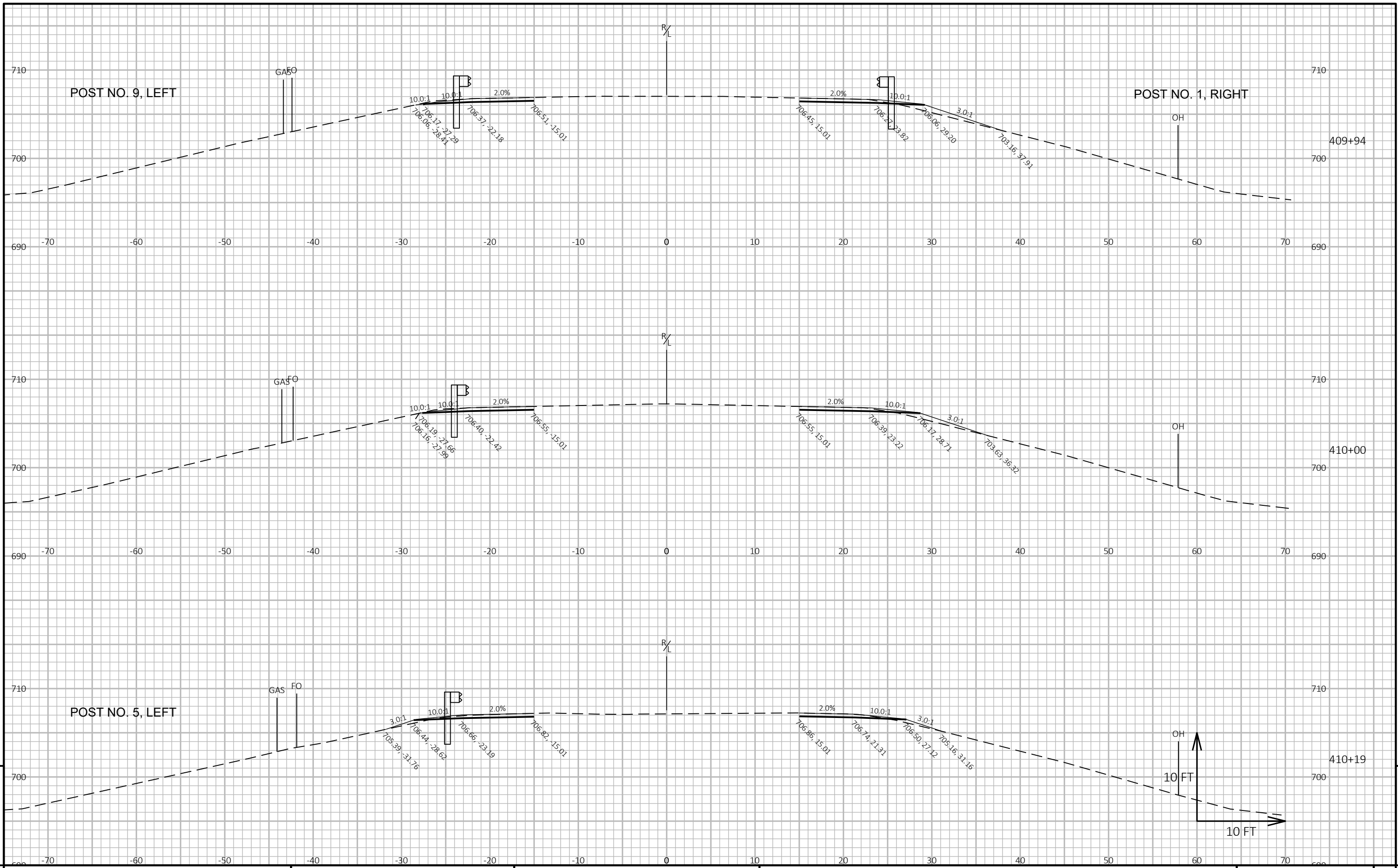
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | 9 |
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PROJECT NO: 4125-14-60

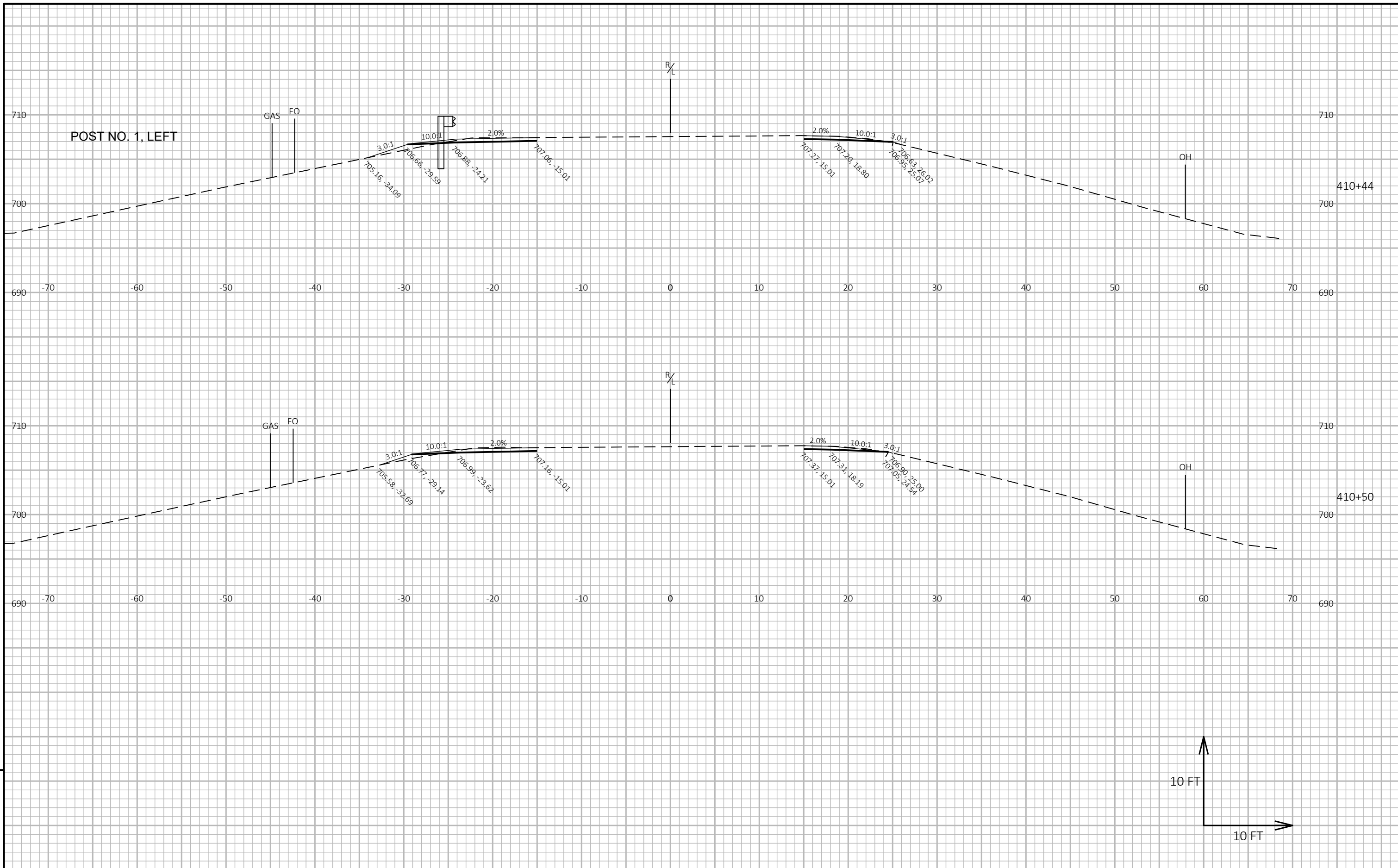
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COUNTY: KEWAUNEE

CROSS SECTIONS: GUARDRAIL REPLACEMENT

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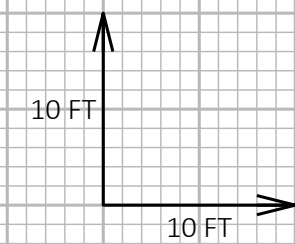
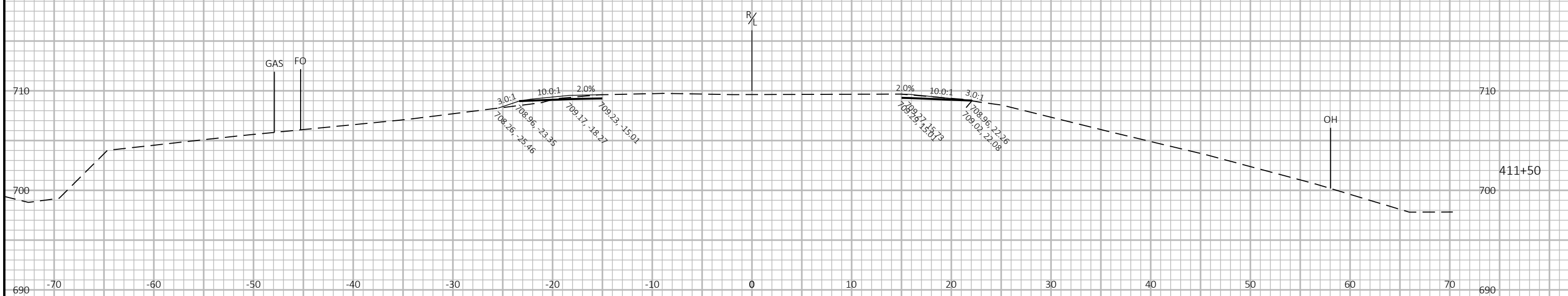
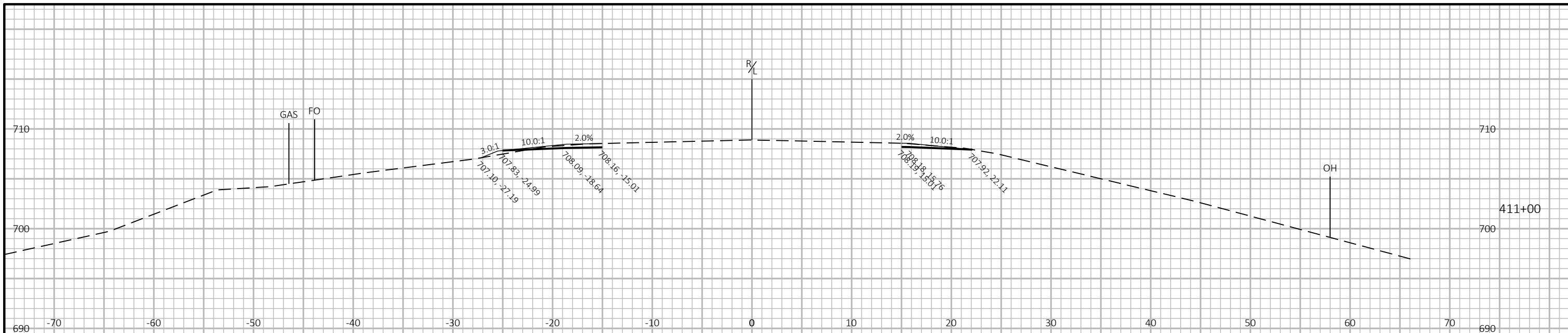
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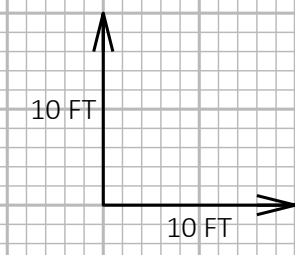
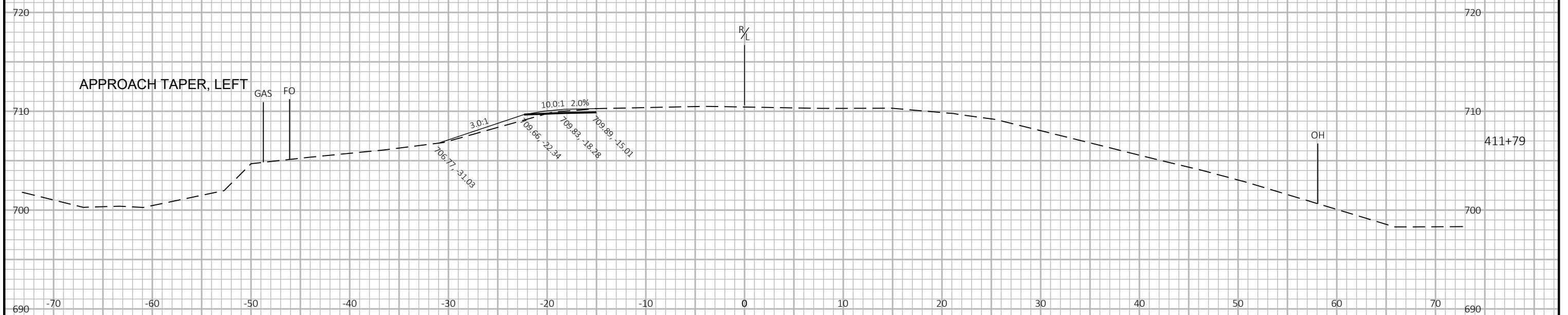
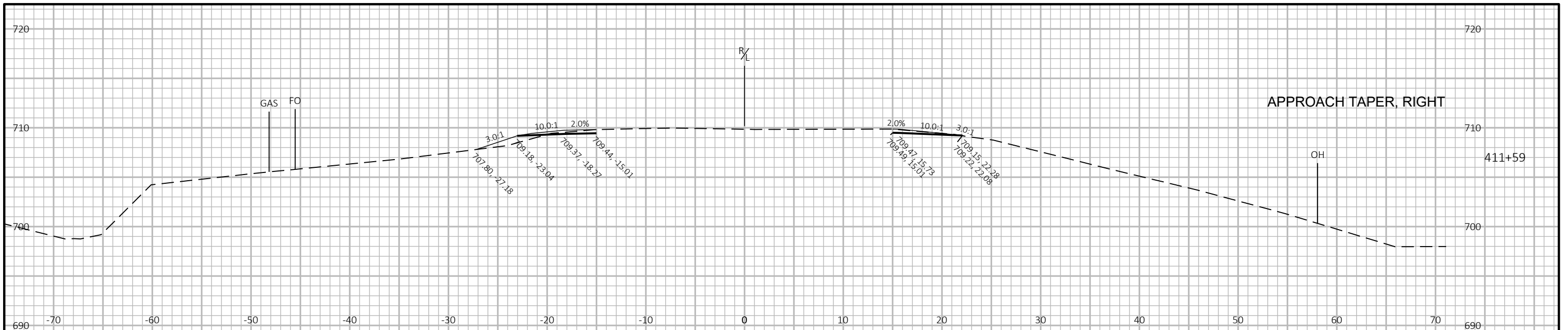
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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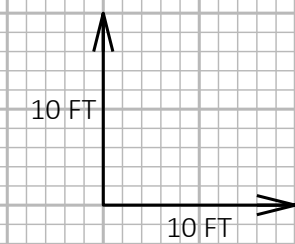
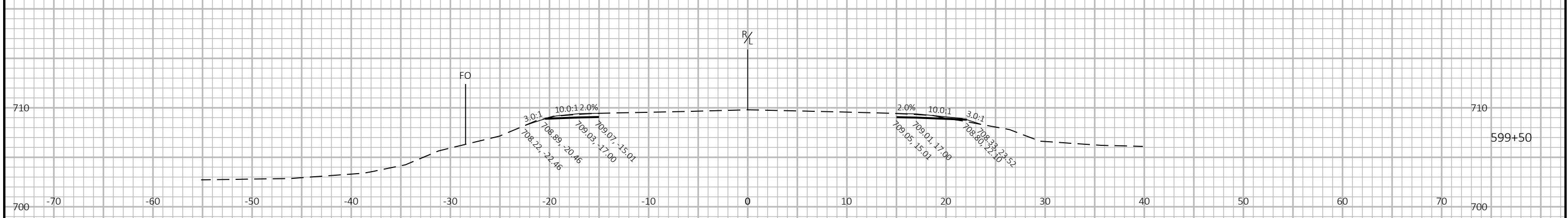
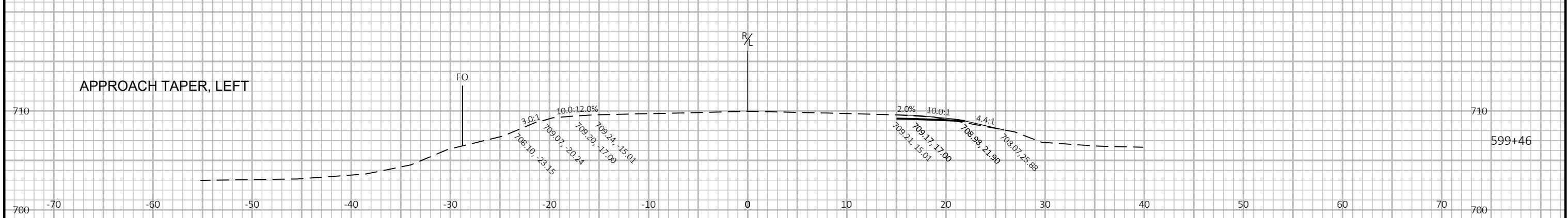
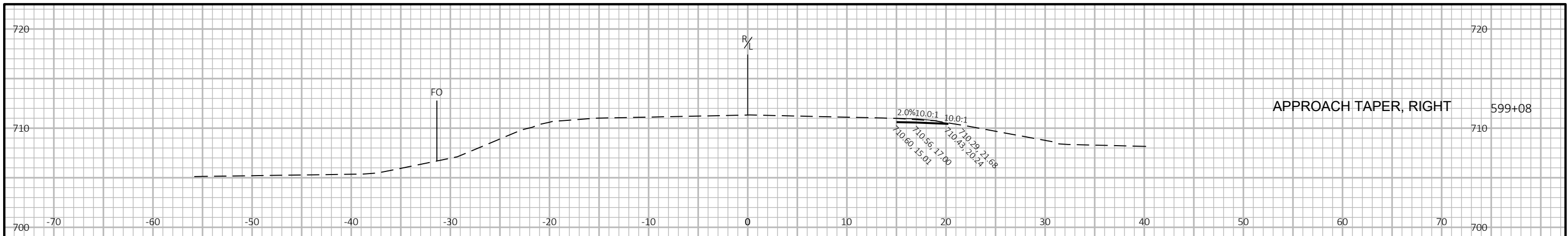
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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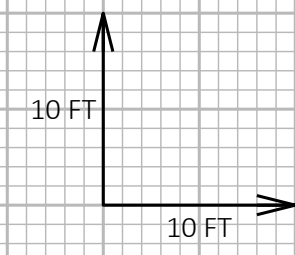
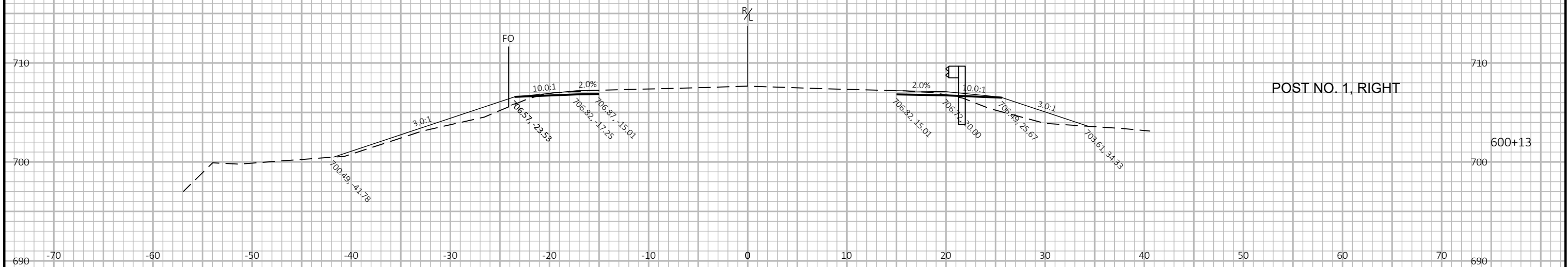
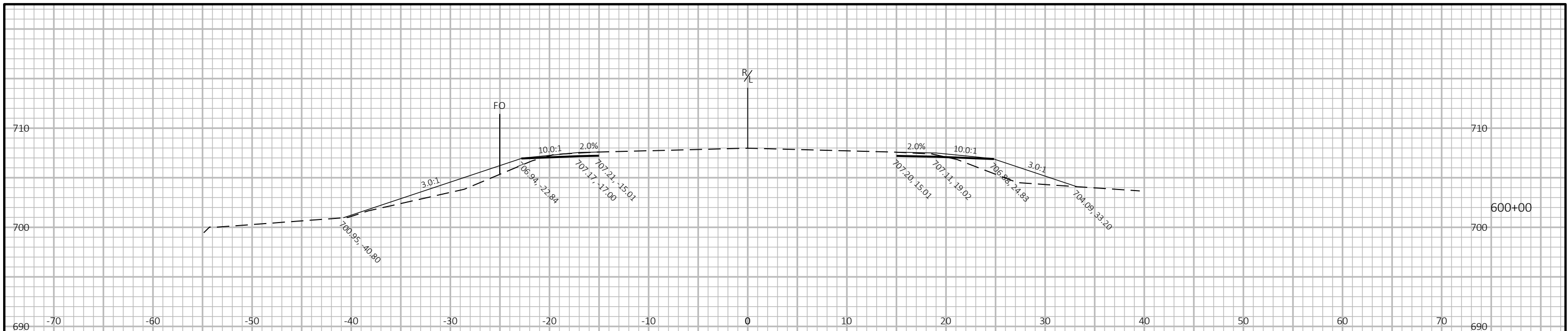
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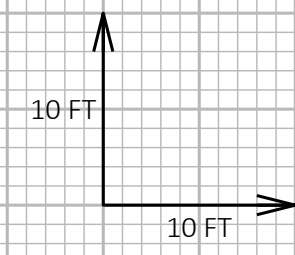
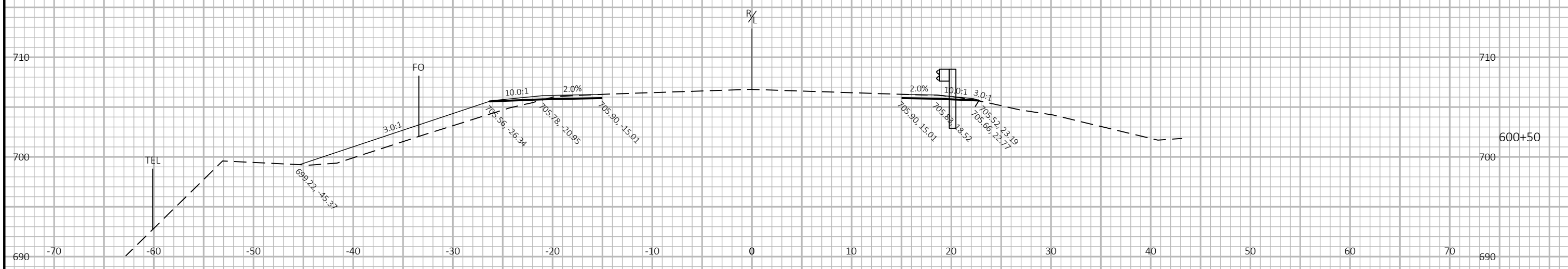
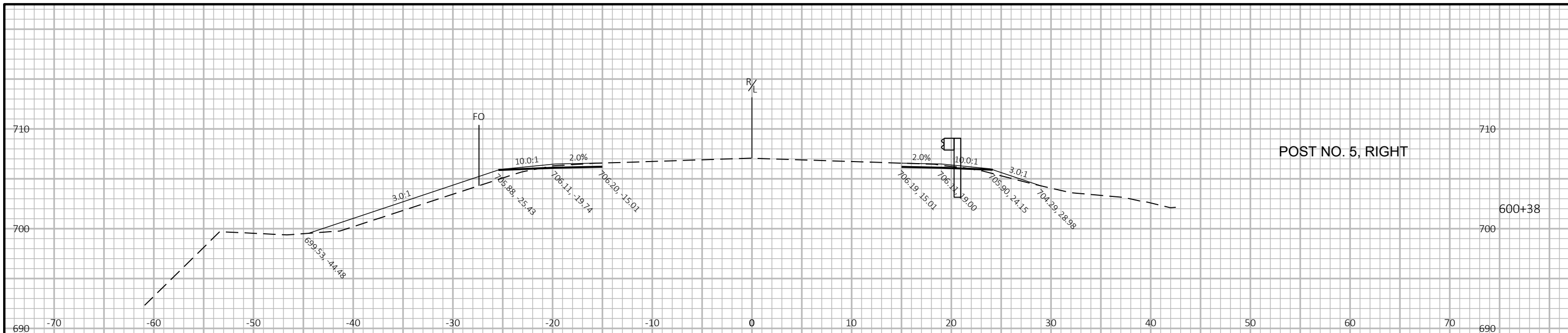
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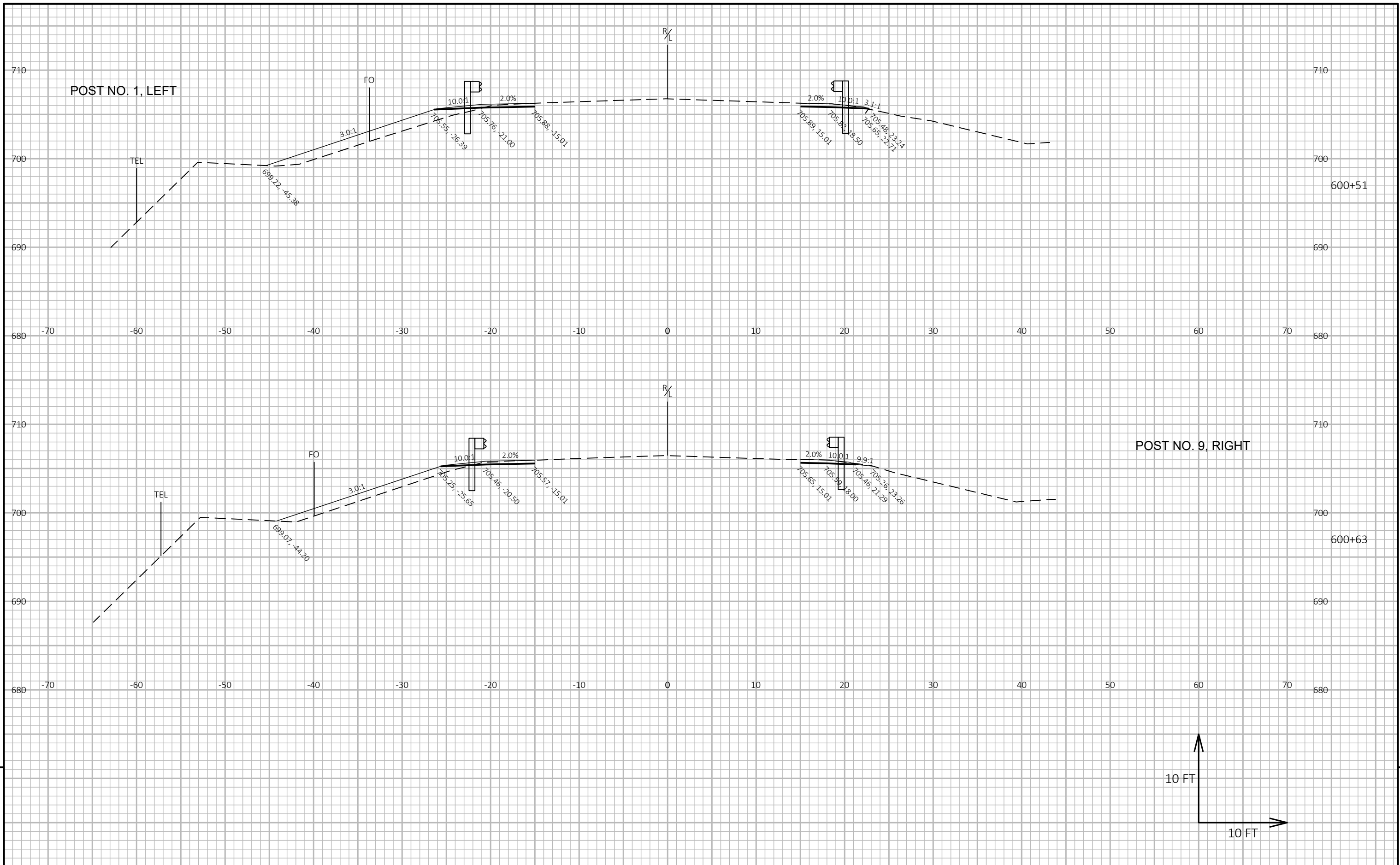
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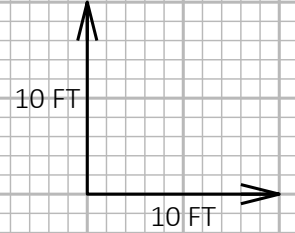
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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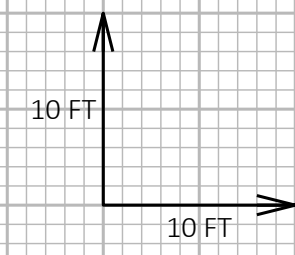
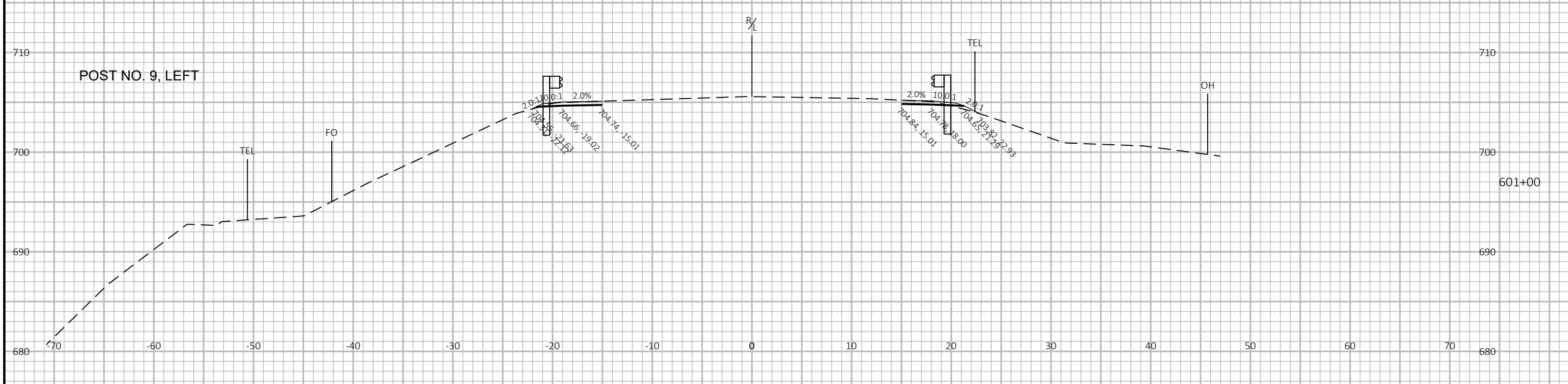
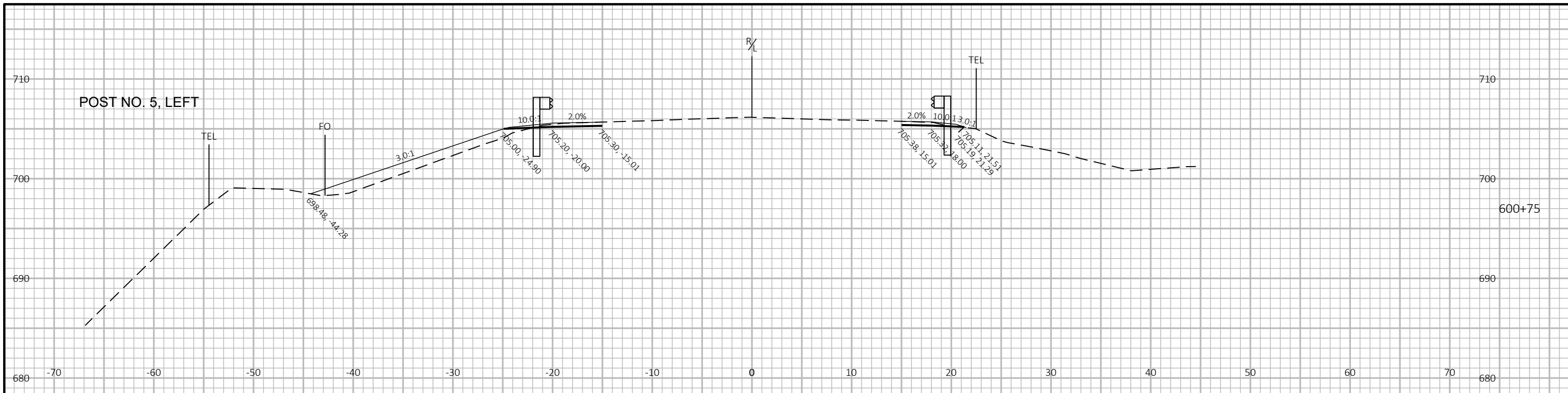


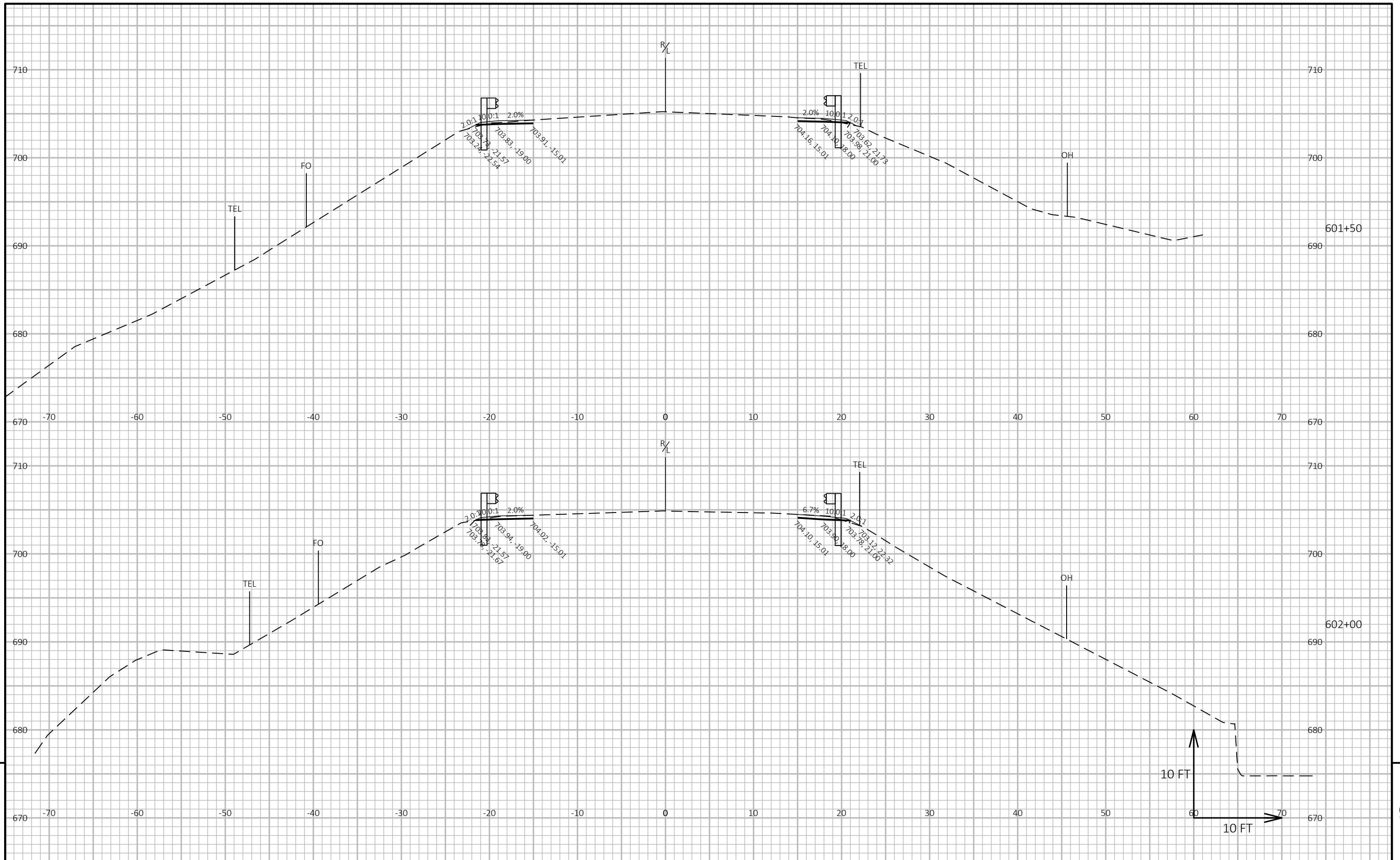
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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PROJECT NO: 4125-14-60

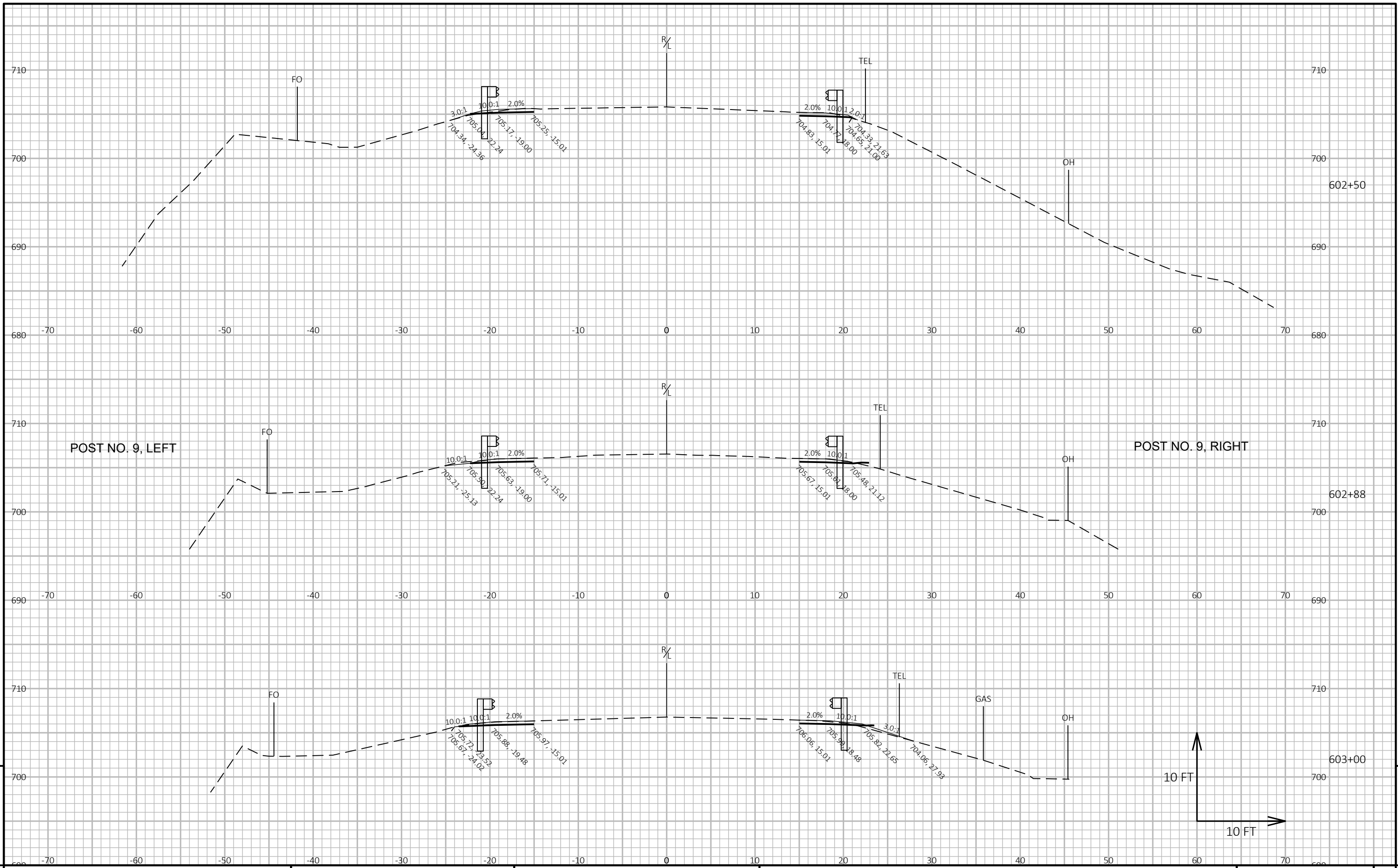
HWY: STH 29

COUNTY: KEWAUNEE

CROSS SECTIONS: GUARDRAIL REPLACEMENT

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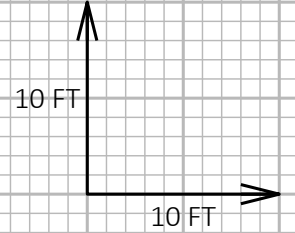


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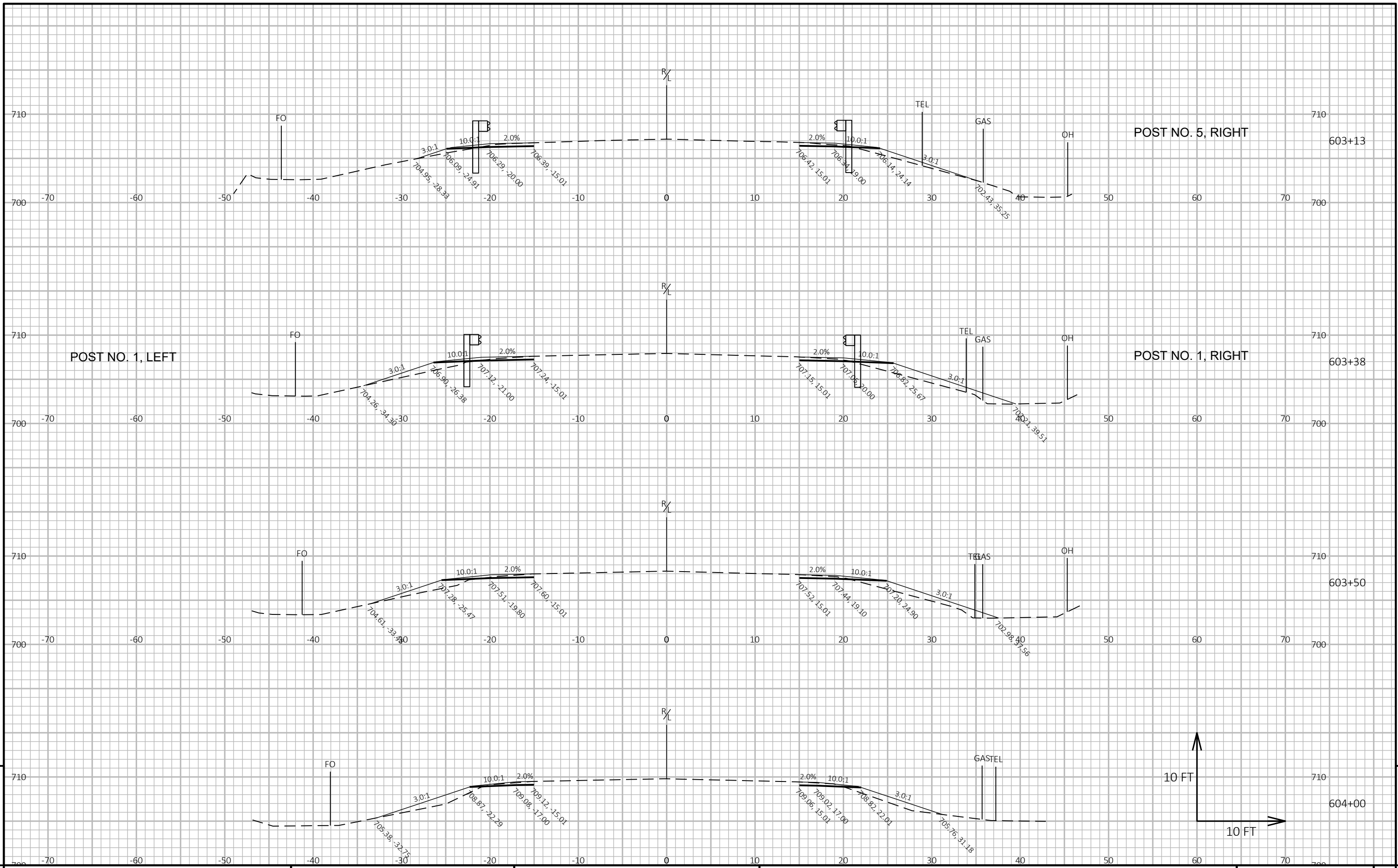
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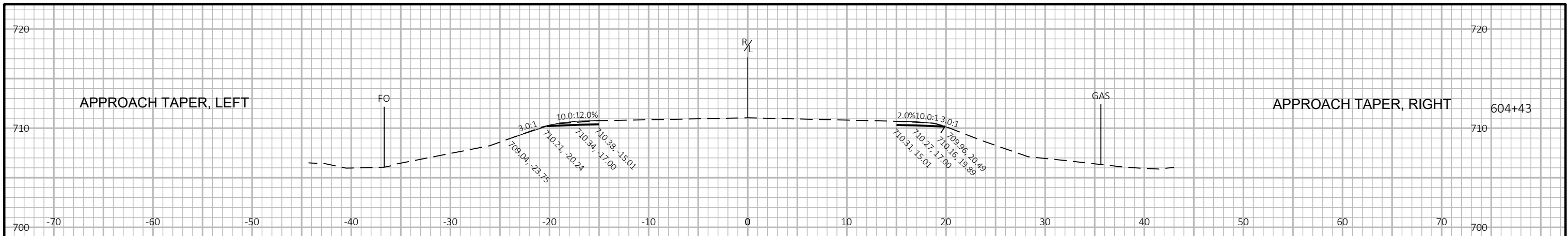
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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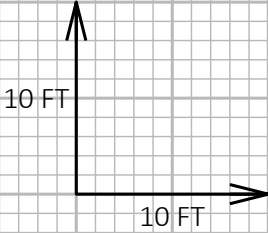


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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | 9 |
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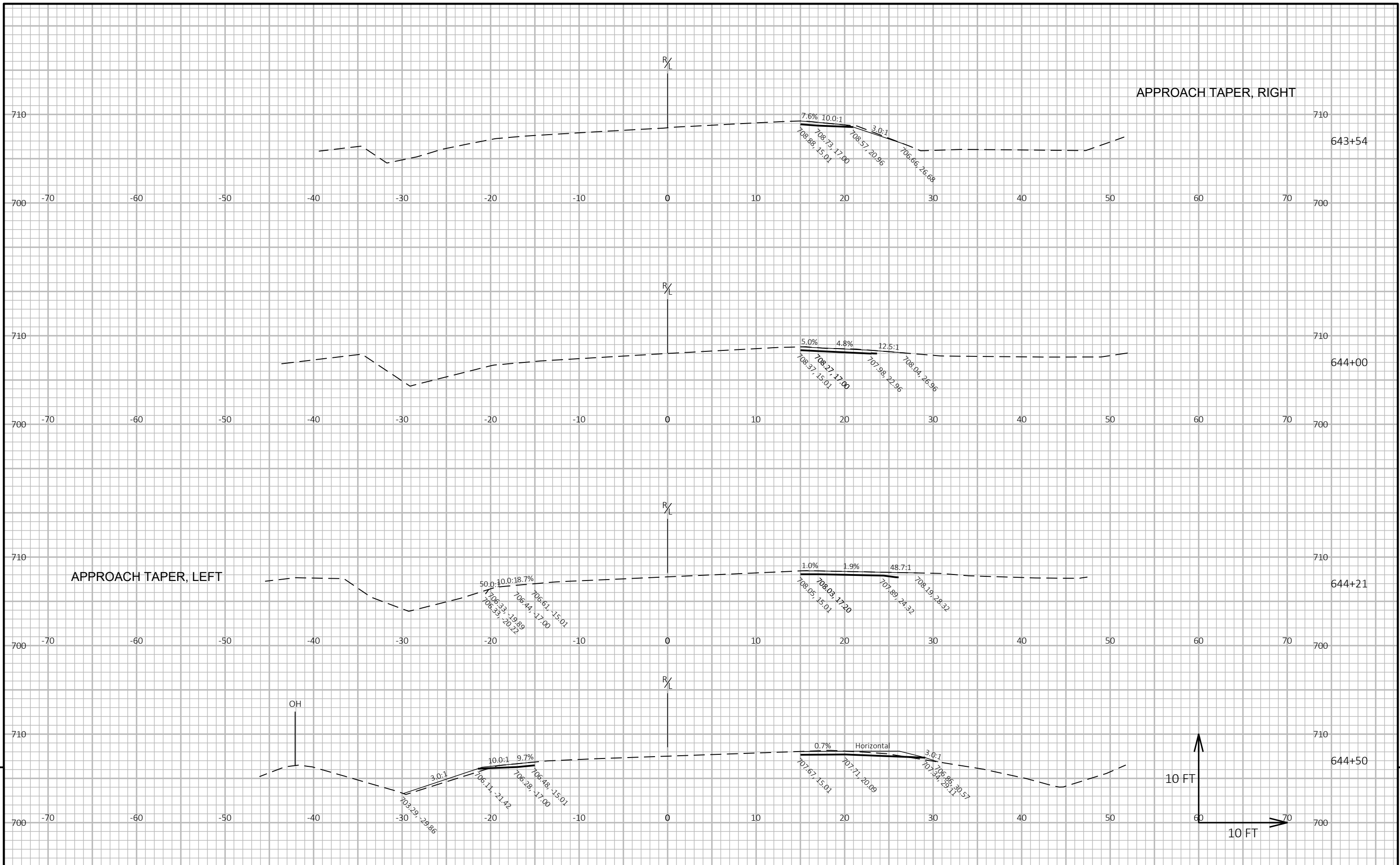


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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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PROJECT NO: 4125-14-60

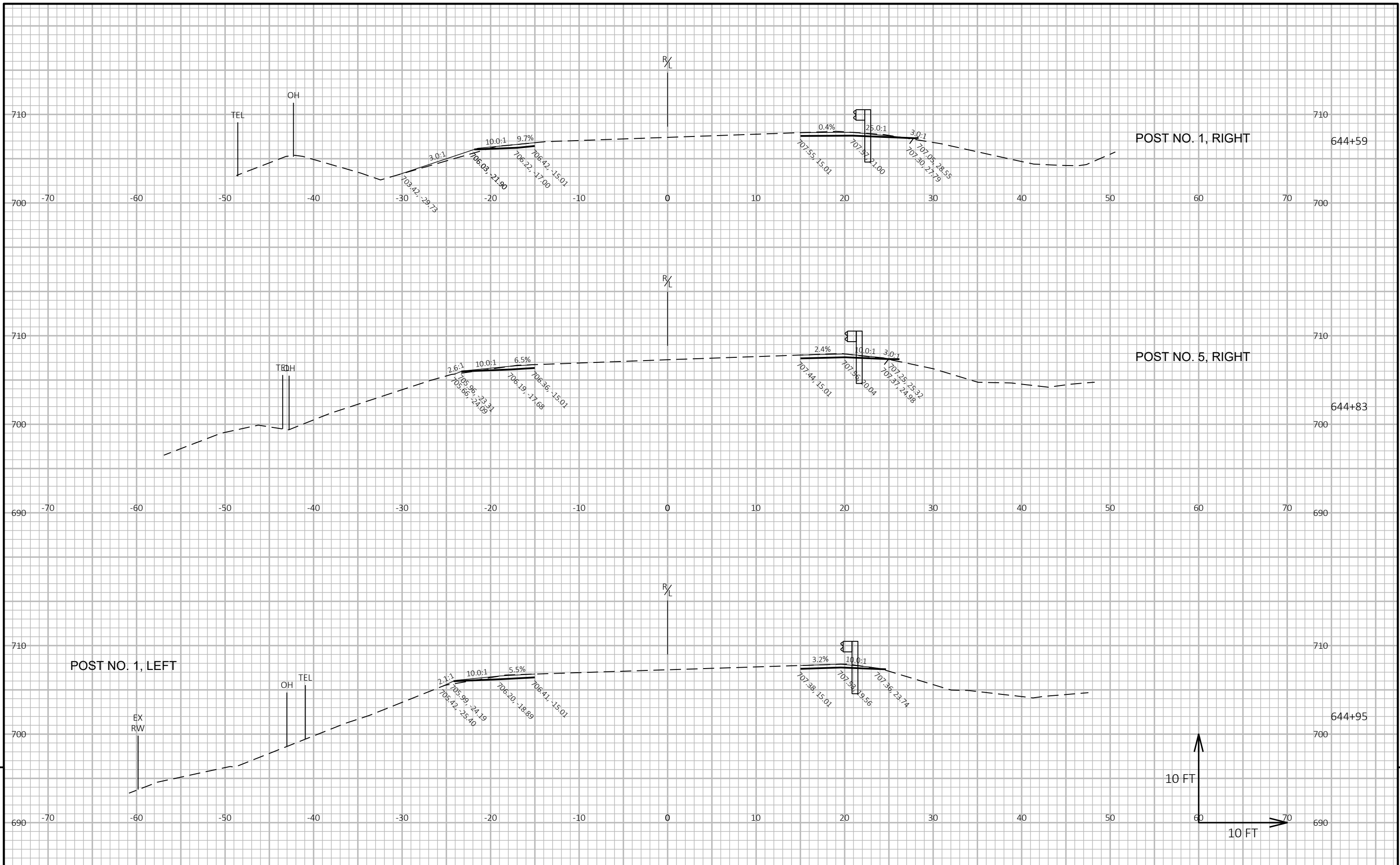
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COUNTY: KEWAUNEE

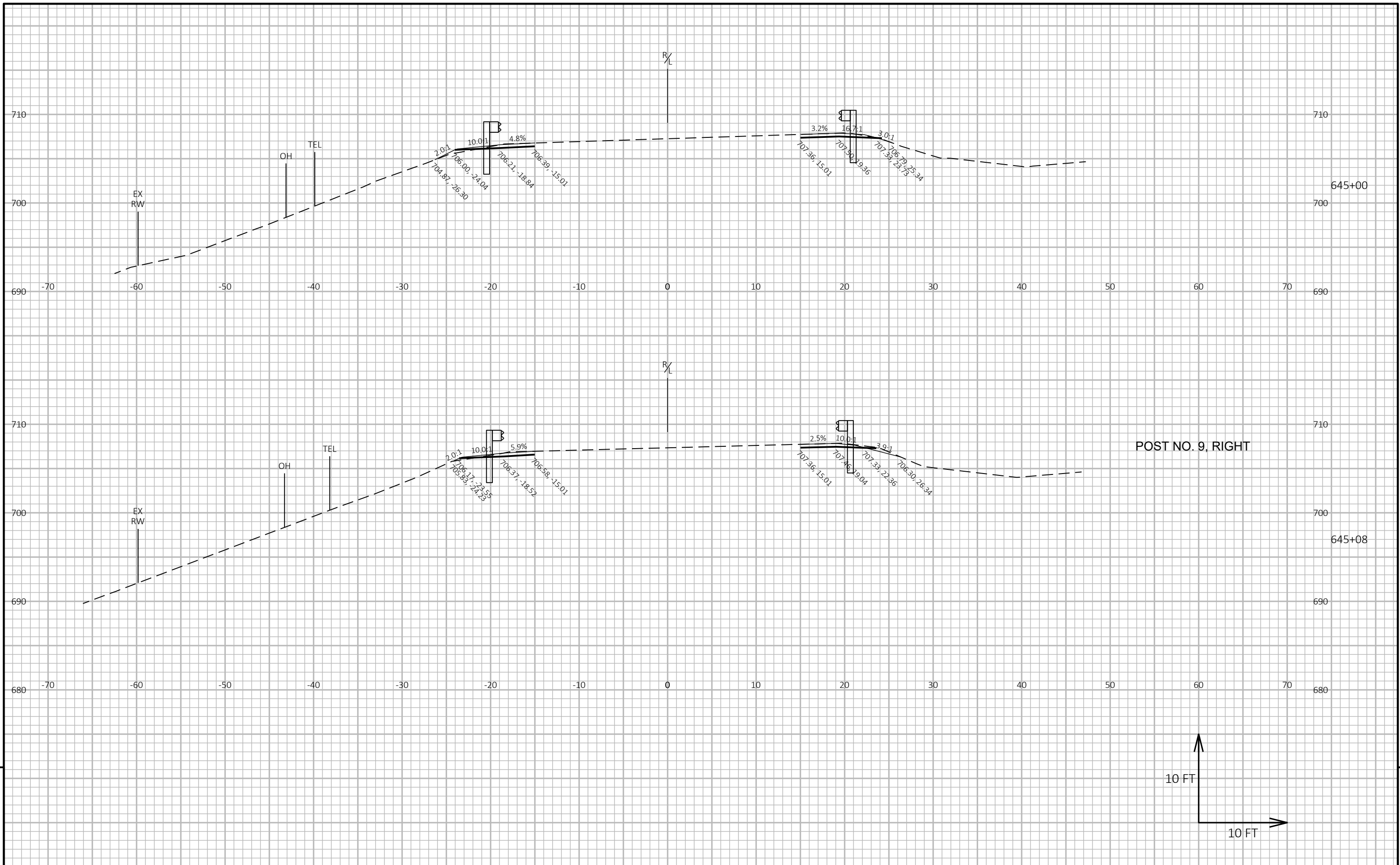
CROSS SECTIONS: GUARDRAIL REPLACEMENT

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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET E

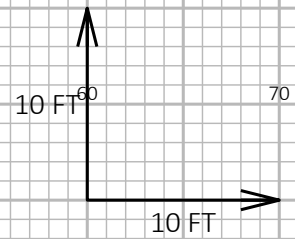
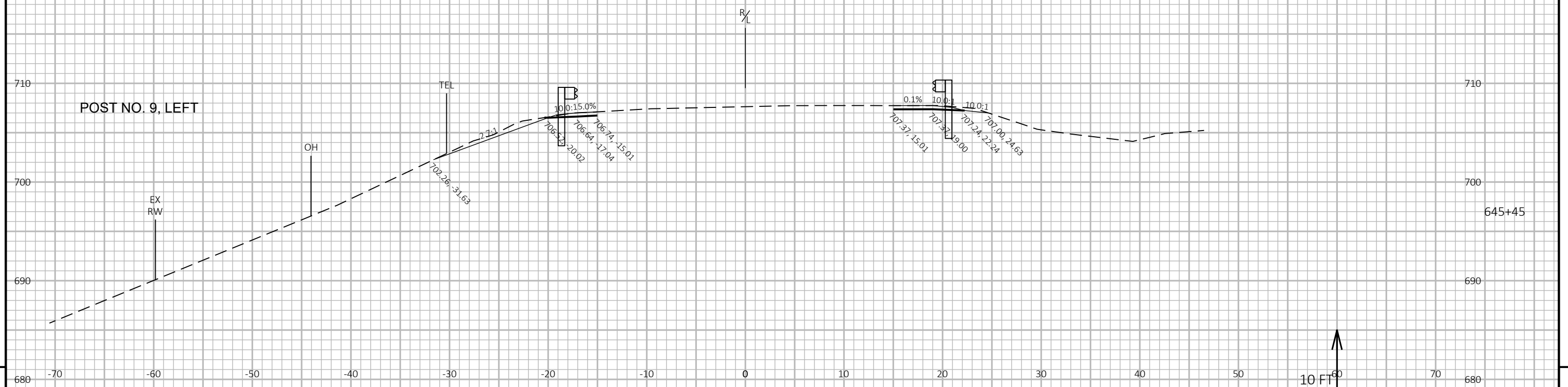
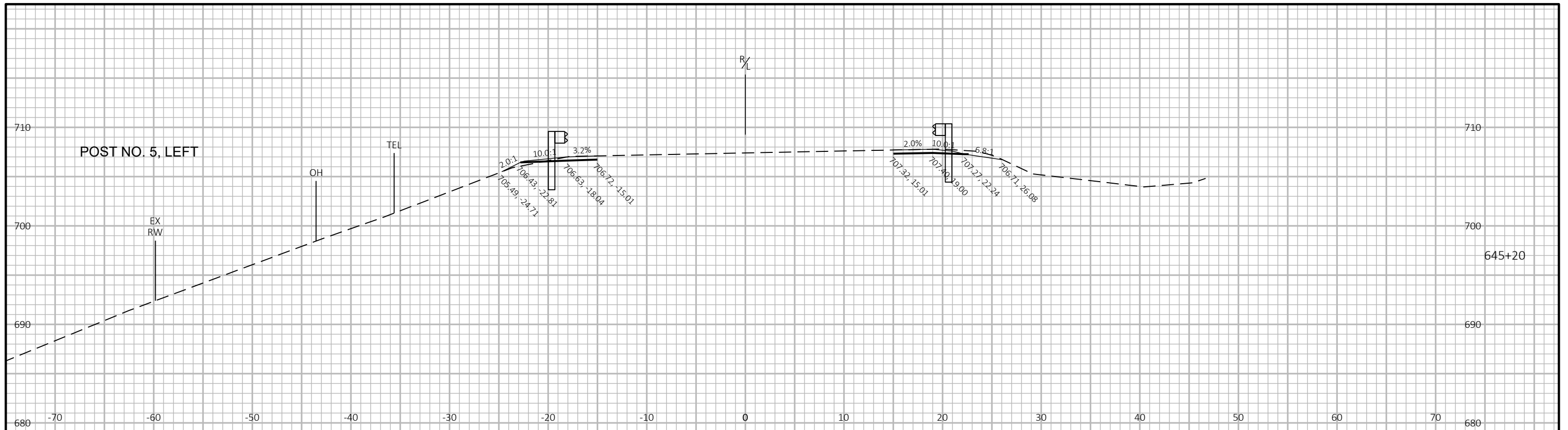


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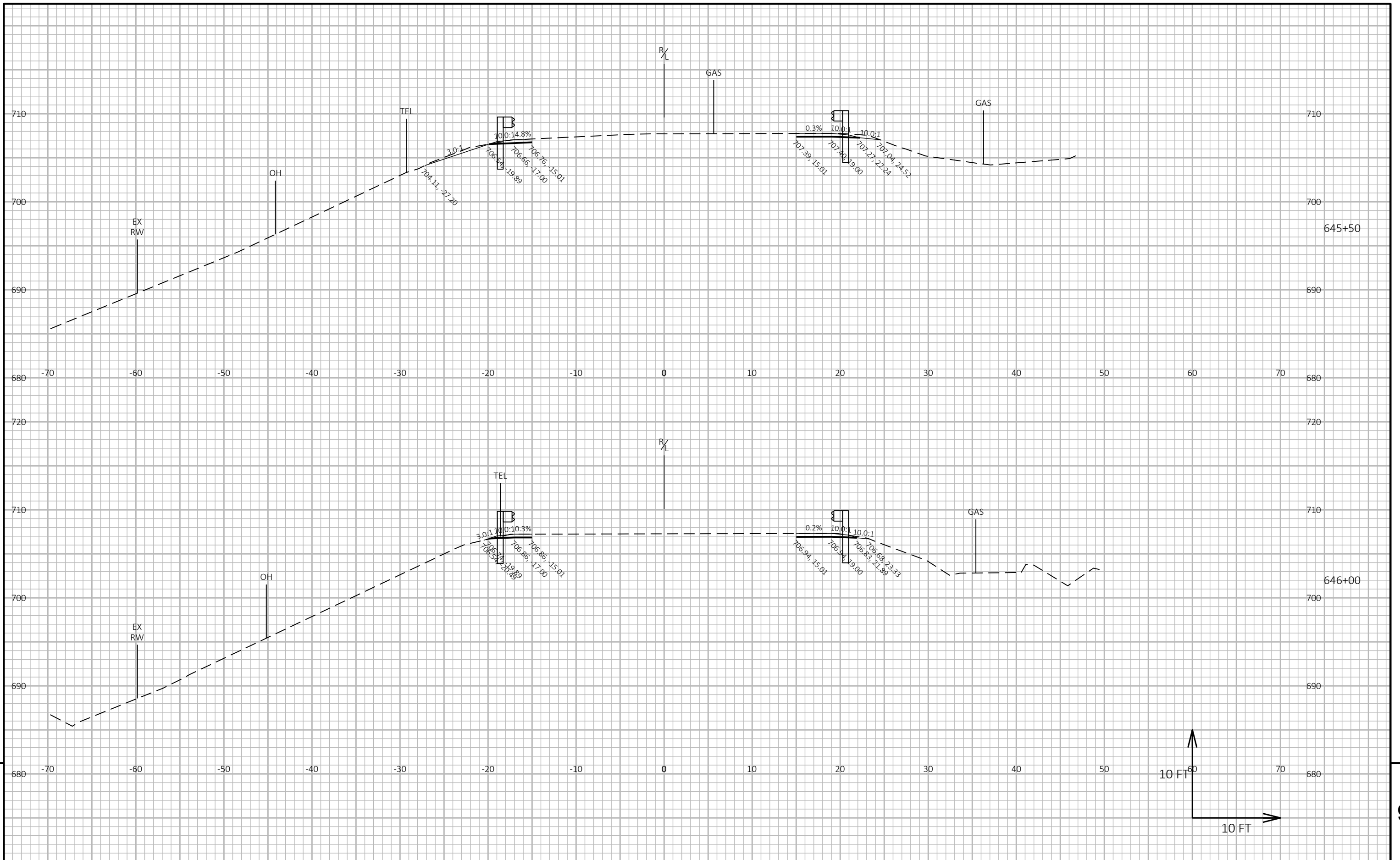
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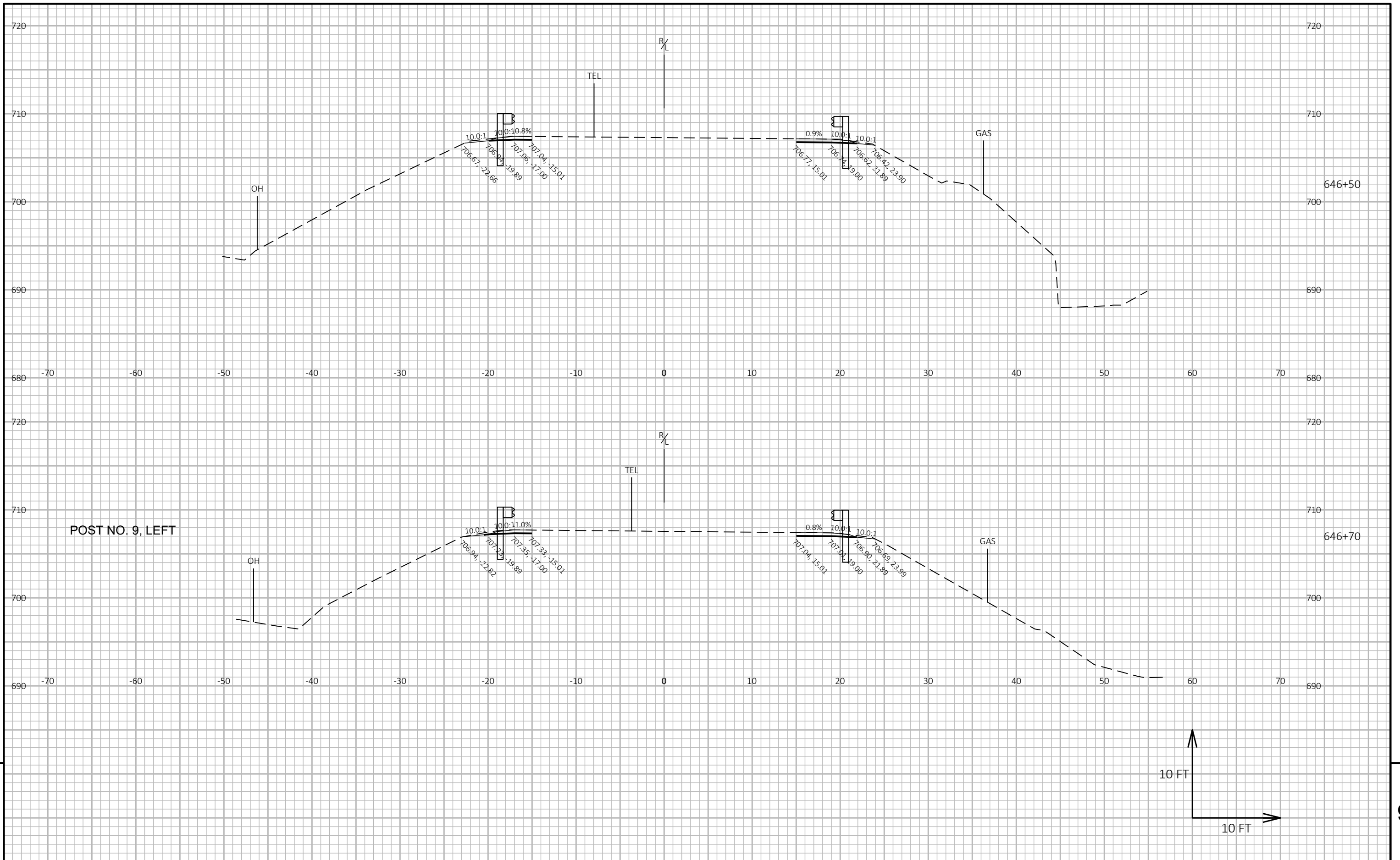
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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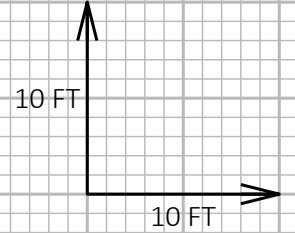




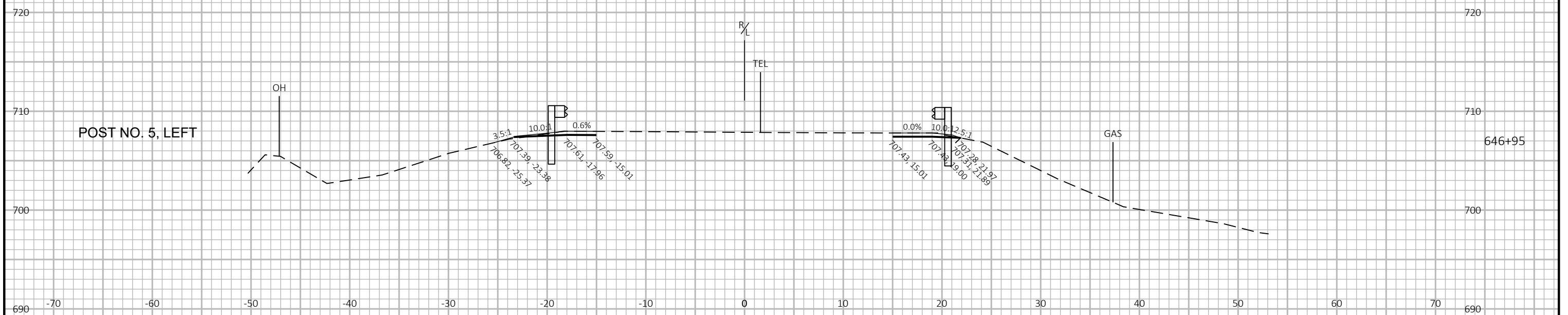
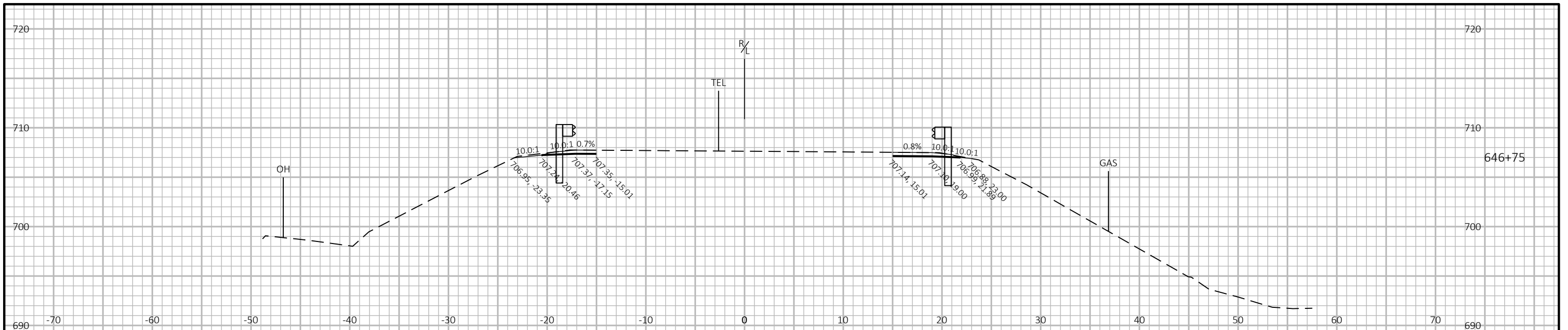
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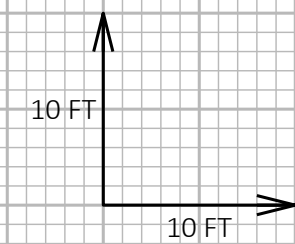
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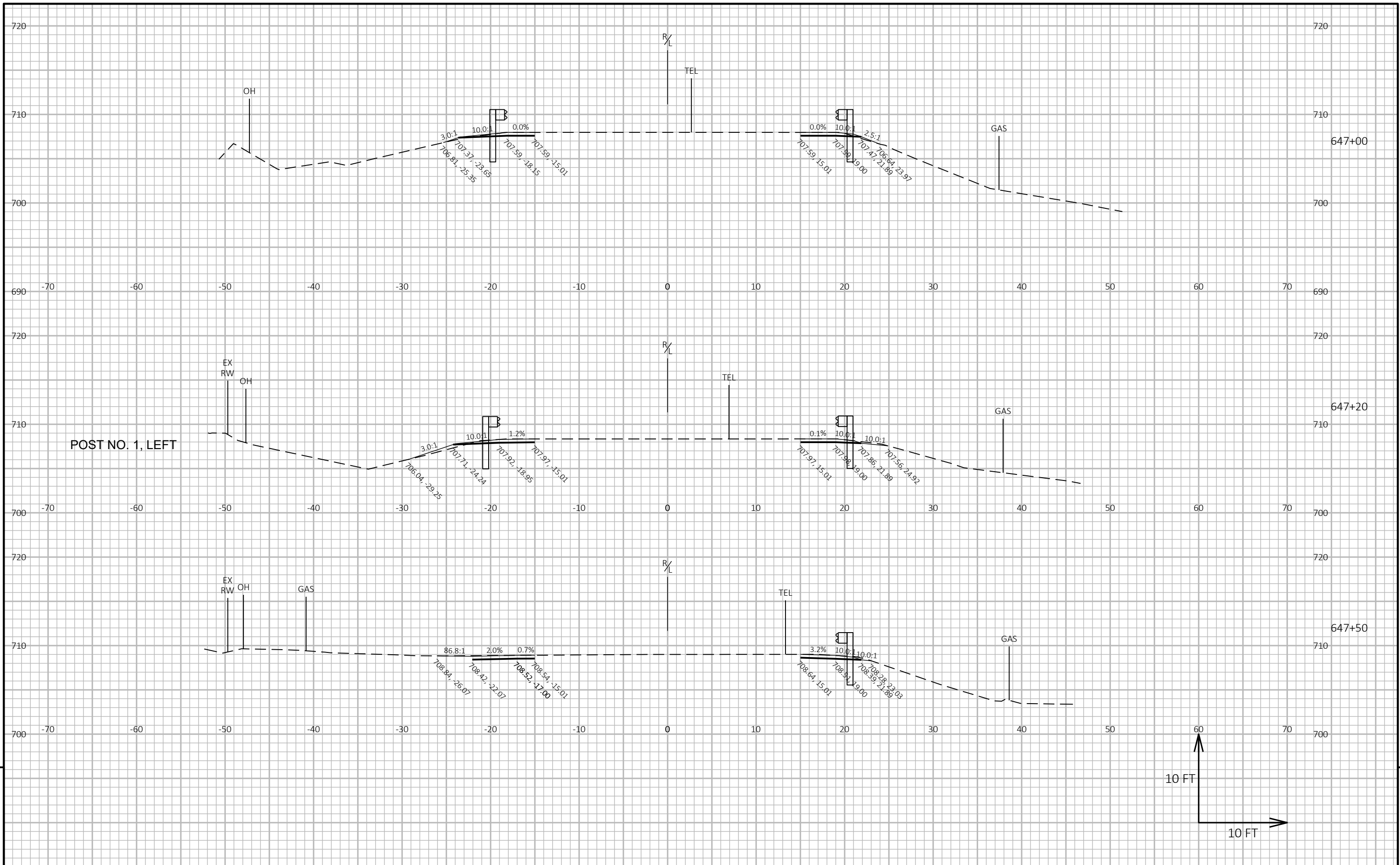
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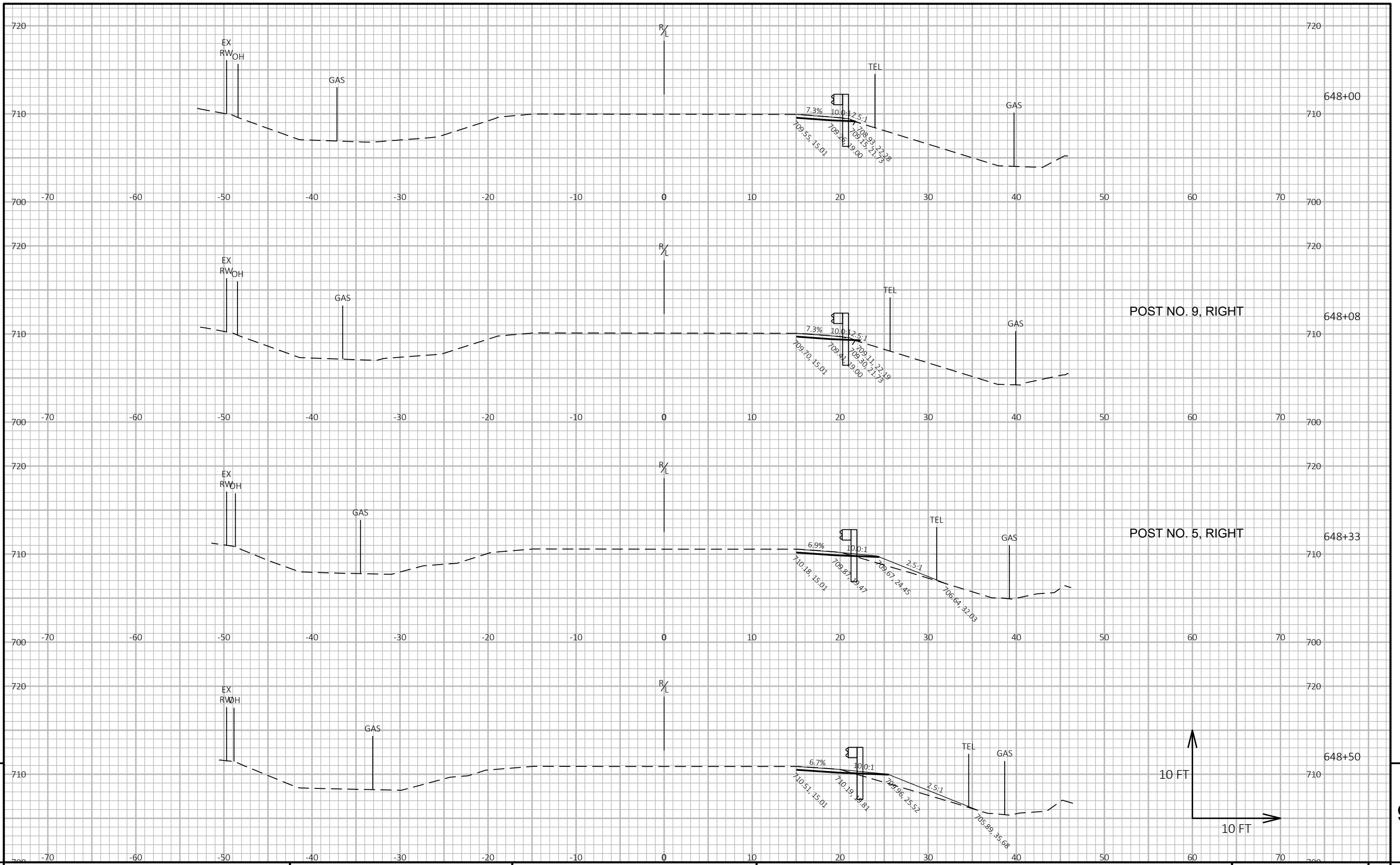
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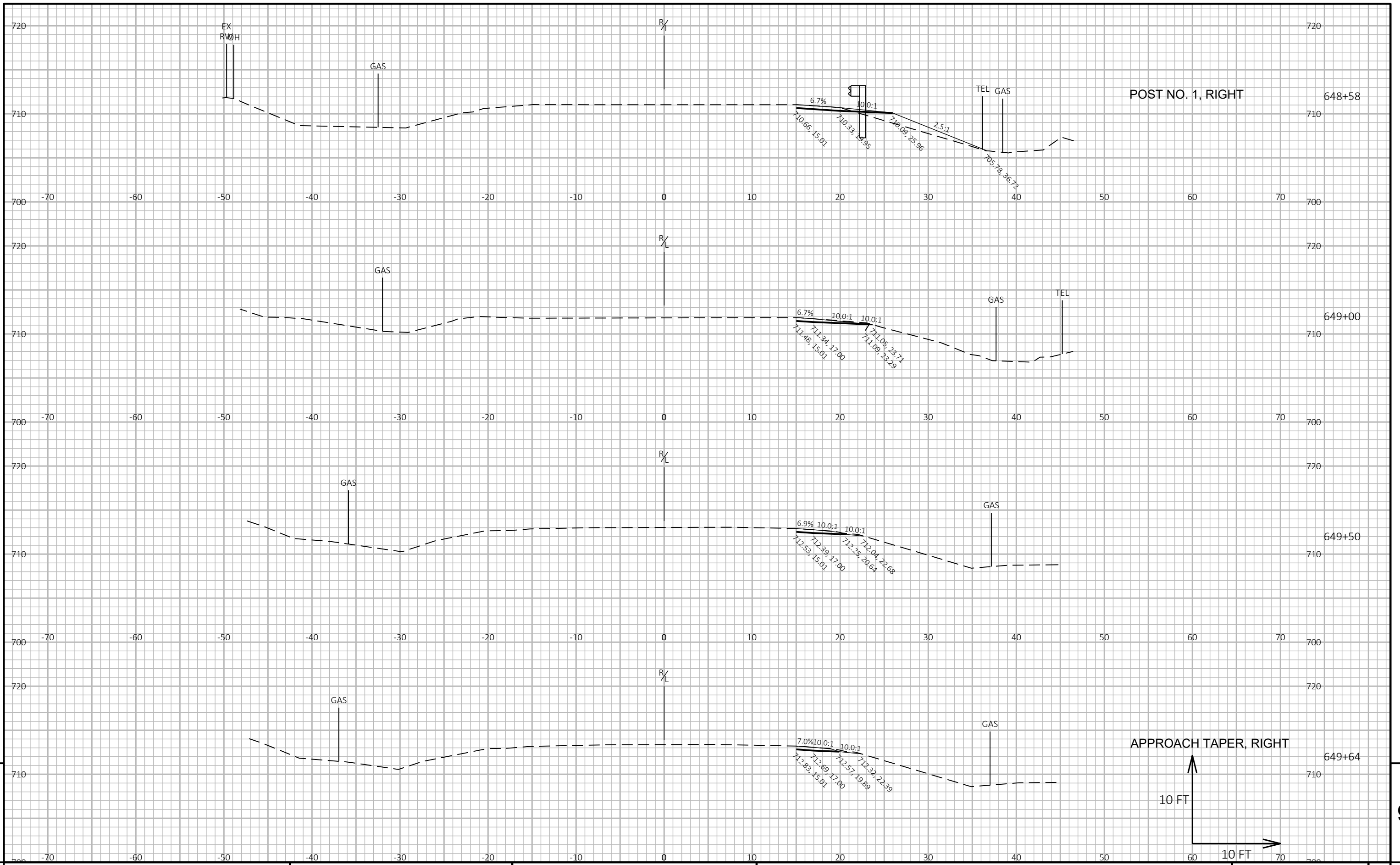
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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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PROJECT NO: 4125-14-60 HWY: STH 29 COUNTY: KEWAUNEE CROSS SECTIONS: GUARDRAIL REPLACEMENT SHEET 9



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| PROJECT NO: 4125-14-60 | HWY: STH 29 | COUNTY: KEWAUNEE | CROSS SECTIONS: GUARDRAIL REPLACEMENT | SHEET | E |
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Notes



Wisconsin Department of Transportation

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