

LAX

Dec 13, 2022

|               |                 |          |
|---------------|-----------------|----------|
| STATE PROJECT | FEDERAL PROJECT |          |
|               | PROJECT         | CONTRACT |
| 5540-02-70    | WISC 2023090    | 1        |
|               |                 |          |
|               |                 |          |

# STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

## MT STERLING - VIROQUA

.49 MI S CTH C TO N BROOKVILLE RD

STH 27

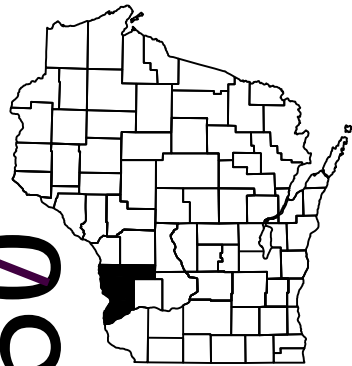
CRAWFORD AND VERNON COUNTIES

|                      |
|----------------------|
| STATE PROJECT NUMBER |
| <b>5540-02-70</b>    |

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           |
| <del>Section No.</del> | <del>4</del> | <del>Right-of-Way Plat</del>       |
| Section No.            | 5            | Plan and Profile                   |
| Section No.            | 6            | Standard Detail Drawings           |
| <del>Section No.</del> | <del>7</del> | <del>Sign Plates</del>             |
| <del>Section No.</del> | <del>8</del> | <del>Structure Plans</del>         |
| <del>Section No.</del> | <del>9</del> | <del>Computer Earthwork Data</del> |
| Section No.            | 9            | Cross Sections                     |

TOTAL SHEETS = 208



09

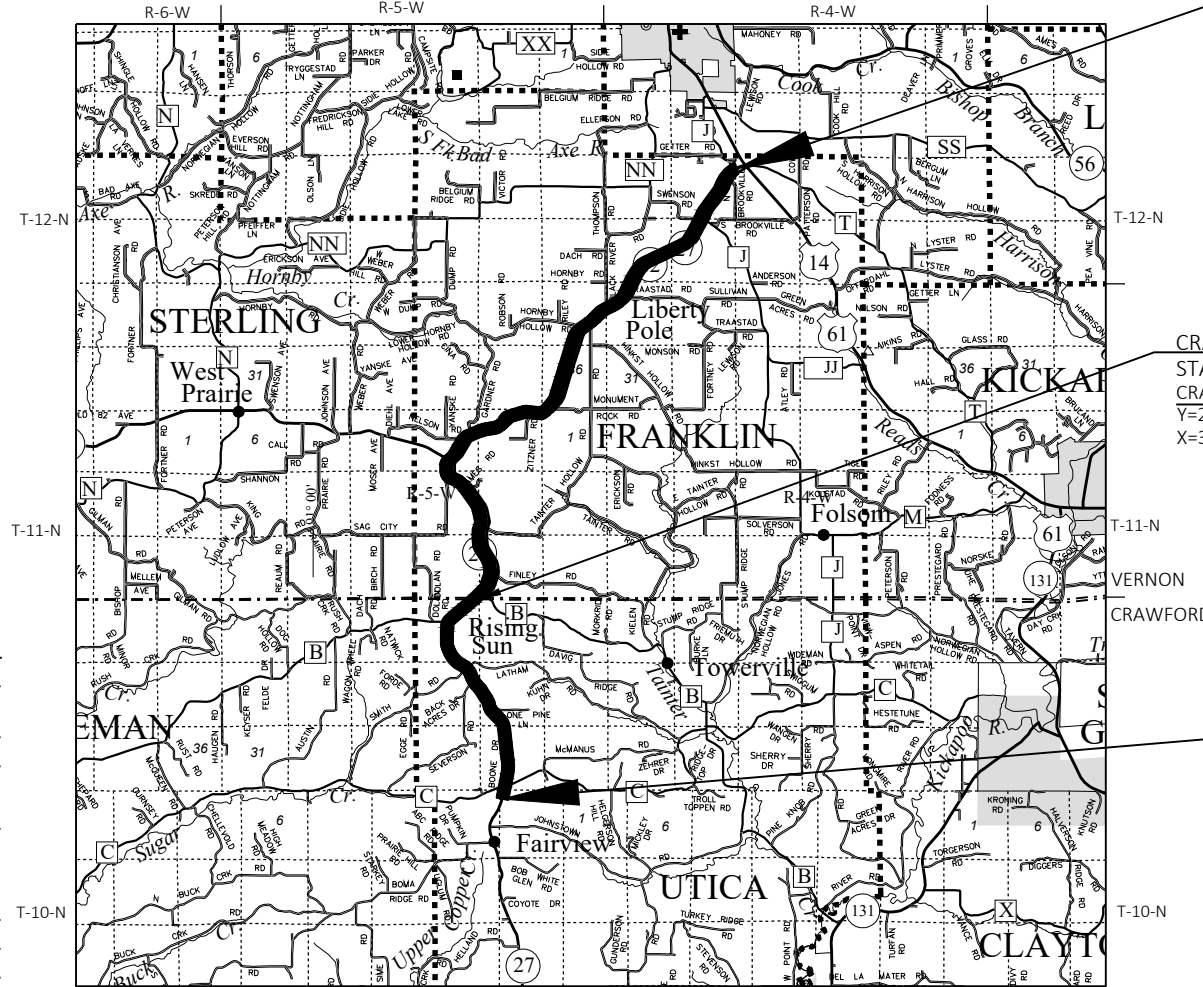
DESIGN DESIGNATION

|              |      |   |             |
|--------------|------|---|-------------|
| A.A.D.T.     | 2024 | = | 2600        |
| A.A.D.T.     | 2044 | = | 2600        |
| D.H.V.       |      | = | 170         |
| D.D.         |      | = | 60/40       |
| T.           |      | = | 19.3%       |
| DESIGN SPEED |      | = | 45 - 60 MPH |
| ESALS        |      | = | 810,000     |

CONVENTIONAL SYMBOLS

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

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



LAYOUT  
SCALE 0 3 MI  
TOTAL NET LENGTH OF CENTERLINE = 13.238 MILES

END PROJECT  
STA 2122+20.13  
VERNON COUNTY  
Y=136200.023  
X=707195.693

CRAWFORD & VERNON COUNTY LINE  
STA 1631+02.10  
CRAWFORD COUNTY Y=257767.571 X=370213.830  
VERNON COUNTY Y=100879.921 X=685884.706

BEGIN PROJECT  
STA 1423+25.00  
CRAWFORD COUNTY  
Y=239808.794  
X=371921.600

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

ORIGINAL PLANS PREPARED BY

DATE: 7/7/2022  
(Professional Engineer Signature)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY: \_\_\_\_\_ WISDOT & JT ENGINEERING  
Designer: \_\_\_\_\_ JT ENGINEERING, INC  
Project Manager: \_\_\_\_\_ VALERIE GUIDER  
Regional Examiner: \_\_\_\_\_ SW REGION  
Regional Supervisor: \_\_\_\_\_ REINY YAHNKE

APPROVED FOR THE DEPARTMENT  
DATE: 7/15/2022  
(Signature)

PROJECT ID: 5540-02-70

COUNTY: CRAWFORD & VERNON

CRAWFORD & VERNON

### RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA = 52.930 ACRES  
 TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 3.760 ACRES

**ORDER OF SECTION 2 SHEETS**

- PROJECT OVERVIEW
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- PLAN DETAILS
- INTERSECTION DETAILS
- PAVEMENT MARKING
- DETOUR ROUTE
- TRAFFIC CONTROL

**GENERAL NOTES**

THERE MAY BE UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE THEIR CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGER'S HOTLINE AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THE AREA.

APPLY TACK COAT AT A RATE OF 0.07 GAL/SY TO MILLED PAVEMENT SURFACES AND 0.05 GAL/SY BETWEEN LAYERS OF HMA PAVEMENT.

HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 112 LB/SY/IN.

THE CONTRACTORS PAVING OPERATIONS SHALL BE CONSISTENT WITH THE PLAN TYPICAL SECTIONS AND BE CONSTRUCTED TO PREVENT HMA LONGITUDINAL JOINTS FROM BEING LOCATED WITHIN A DRIVING, TURNING, PASSING, OR PARKING LANE.

PRIOR TO THE PLACEMENT OF MGS GUARDRAIL, THE SHOULDERS SHALL BE IN PLACE, SHAPED, AND COMPACTED UNLESS SHOWN OTHERWISE.

THE CONTRACTOR WILL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY THEIR OPERATION OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS.

3.5 INCH REMOVING ASPHALTIC SURFACE MILLING OPERATIONS ARE EXPECTED TO ENCOUNTER UNDERLYING BASE COURSE MATERIAL

**TRAFFIC CONTROL GENERAL NOTES**

PLACE ADVANCED SIGNING IN ACCORDANCE WITH SDD "TRAFFIC CONTROL, ADVANCED WARNING SIGNS 45 MPH OR GREATER IN TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC".

ALL SIDE ROADS TO FOLLOW THE "TYPICAL SIDE ROAD APPROACH WARNING SIGN DETAIL".

ALL CONSTRUCTION WITHIN THE PROJECT LIMITS AS WELL AS ALL CULVERTS DESIGNATED FOR FULL REPLACEMENT, SHALL FOLLOW SDD "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION". ALL CULVERTS DESIGNATED FOR FULL REPLACEMENT TO BE CONSTRUCTED 1/2 AT A TIME UTILIZING THE SDD.

USE "TRAFFIC CONTROL, WORKING ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY" SDD FOR THE FOLLOWING:

- IN ALL BEAM GUARD AREAS
- WIDENING PAVED SHOULDER (STA 1760+10.5 TO STA 1770+63.5)
- NEW CURB & GUTTER AT RISING SUN ROAD (STA STA 1593+89.0 TO STA 1594+46.5)

**UTILITY CONTACTS**

ALLIANT ENERGY - ELECTRICITY  
 JAY RUNDE  
 490 SHAKERAG ST  
 MINERAL POINT, WI 53565  
 PHONE: 608-458-4224  
 EMAIL: JAYRUNDE@ALLIANTENERGY.COM

CENTURYLINK/LUMEN - COMMUNICATION LINE  
 DOUG MCGOWAN  
 135 N BONSON ST  
 PLATTEVILLE, WI 43818  
 PHONE: 608-482-5377  
 EMAIL: DOUG.MCGOWAN1@LUMEN.COM

DAIRYLAND POWER COOPERATIVE - ELECTRICITY  
 MICHAEL LYDON  
 3200 EAST AVE S  
 PO BOX 817  
 LA CROSSE, WI 54602  
 PHONE: 608-787-1381  
 EMAIL: MICHAEL.LYDON@DAIRYLANDPOWER.COM

FRONTIER COMMUNICATION OF WI - COMMUNICATION LINE  
 JEREMY ZELLER  
 1851 N 14TH AVE  
 WAUSAU, WI 54401  
 PHONE: 715-243-9243

MADISON GAS AND ELECTRIC COMPANY - GAS / PETROLEUM  
 SHAUN ENDRES  
 133 S BLAIR ST  
 MADISON, WI 53788  
 PHONE: 608-252-7224  
 EMAIL: SENDRES@MGE.COM

MEDIACOM WISCONSIN LLC - COMMUNICATION LINE  
 CRAIG EGGERT  
 1240 HIGHWAY 52  
 CHATFIELD, MN 55923  
 PHONE: 563-419-5160  
 EMAIL: CEGGERT@MEDIACOMCC.COM

SCENIC RIVERS ENERGY COOPERATIVE - ELECTRICITY  
 PHIL SCHNEIDER  
 231 N SHERIDAN ST  
 LANCASTER, WI 53813  
 PHONE: 608-723-2121 EXT 505  
 EMAIL: PSCHNEIDER@SREC.NET

VERNON COMMUNICATIONS COOPERATIVE - COMMUNICATION LINE  
 SCOTT FREDERICK  
 103 N MAIN ST  
 WESTBY, WI 54667  
 PHONE: 608-634-3136 Ext. 234  
 EMAIL: SFREDRICK@VERNONCOM.COOP

VERNON ELECTRIC COOPERATIVE - ELECTRICITY  
 MARK SEE  
 110 SAUGSTAD RD  
 WESTBY, WI 54667  
 PHONE: 608-634-3121  
 EMAIL: MSEE@VERNONELECTRIC.ORG

**WISCONSIN DNR LIAISON**

KAREN KALVELAGE  
 DNR SOUTHWEST CENTRAL  
 3550 MORMON COULEE RD  
 LA CROSSE, WI 54601  
 PHONE: 608-785-9115  
 CELL: 608-406-7880  
 EMAIL: KAREN.KALVELAGE@WISCONSIN.GOV

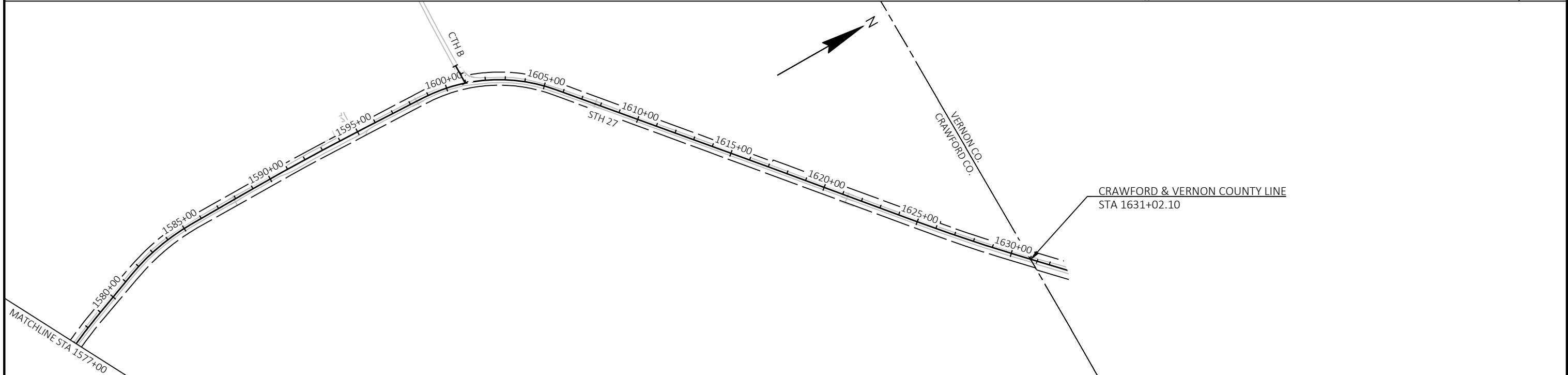
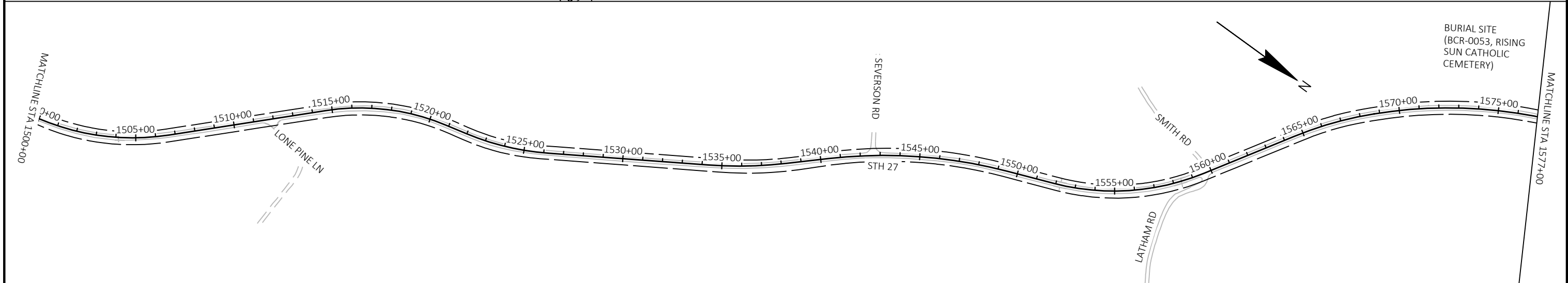
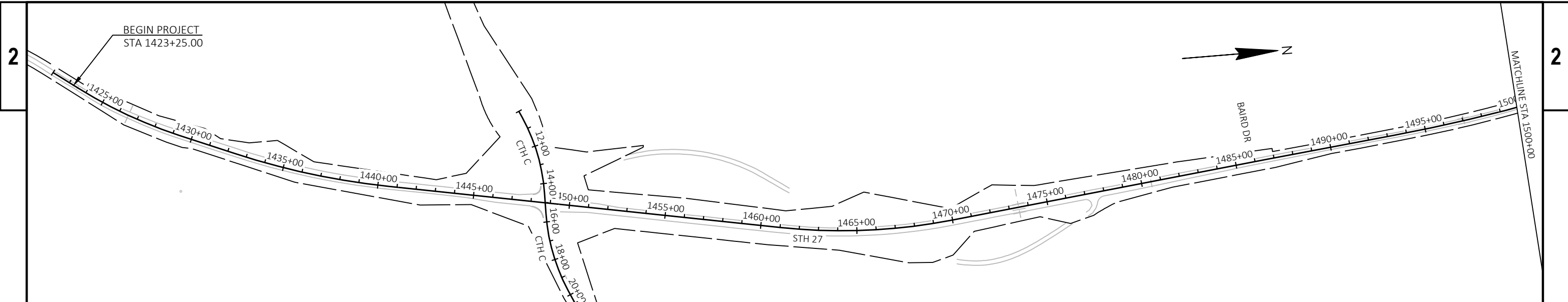
**WISDOT CONTACT**

VALERIE GUIDER, PE  
 WISDOT SOUTHWEST PROJECT MANAGER  
 2101 WRIGHT STREET  
 MADISON, WI 53704  
 PHONE: 608-789-6303  
 EMAIL: VALERIE.GUIDER@DOT.WI.GOV

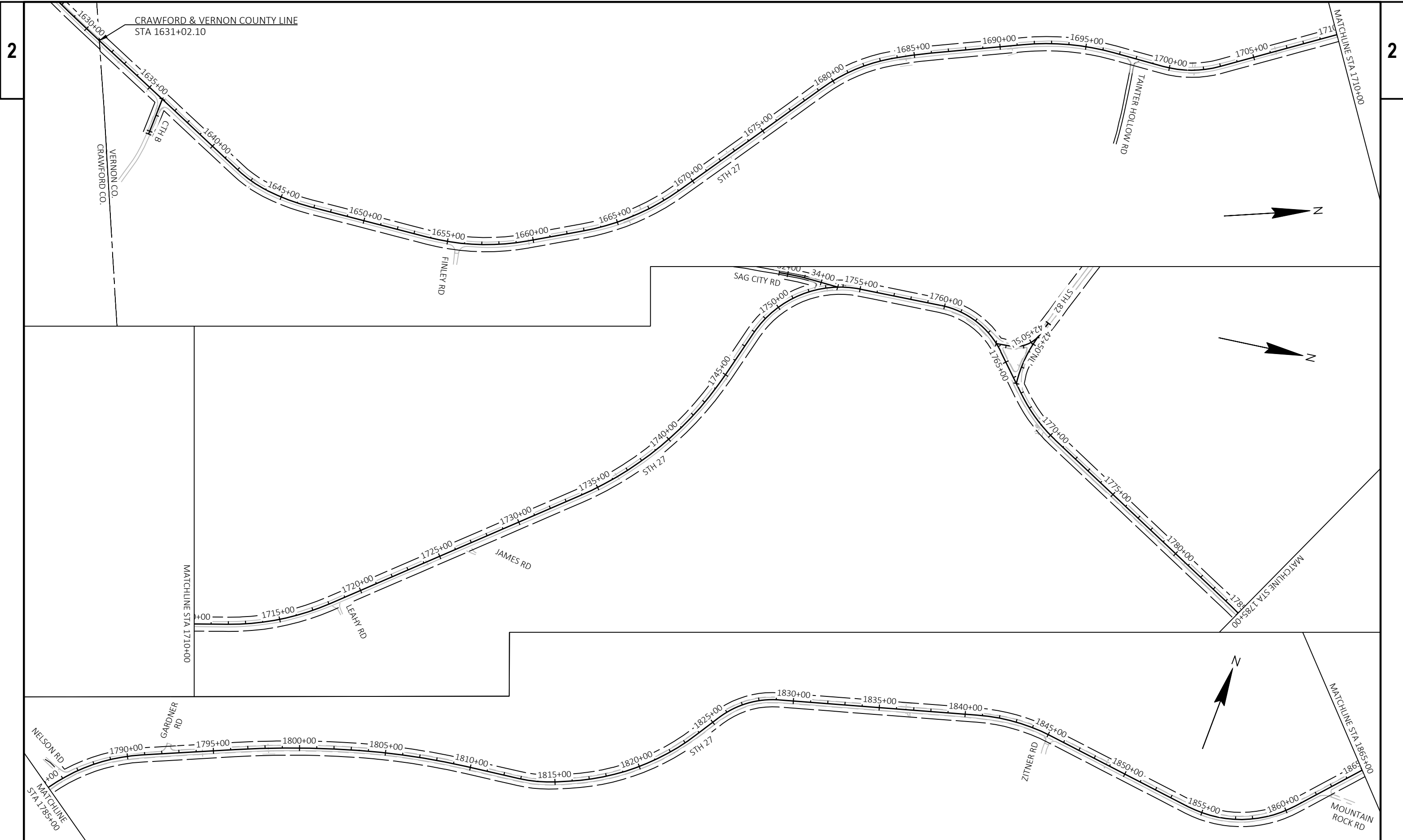
**CONSULTANT CONTACT**

BRAD GROH  
 CONSULTANT PROJECT MANAGER  
 281 W NETHERWOOD ROAD, SUITE 1  
 OREGON, WI 53575  
 PHONE: 608-216-8546  
 EMAIL: BRADG@JT-ENGINEERING.COM



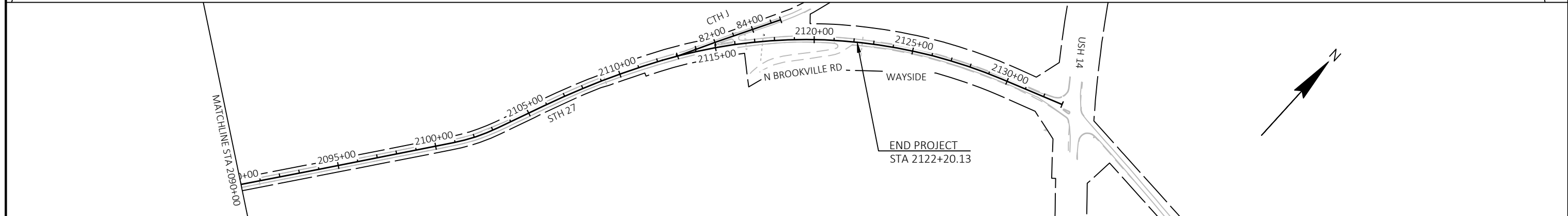
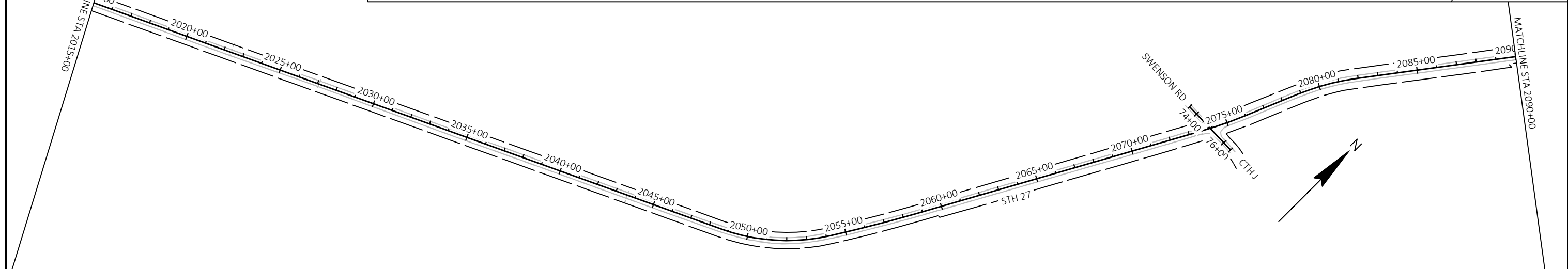
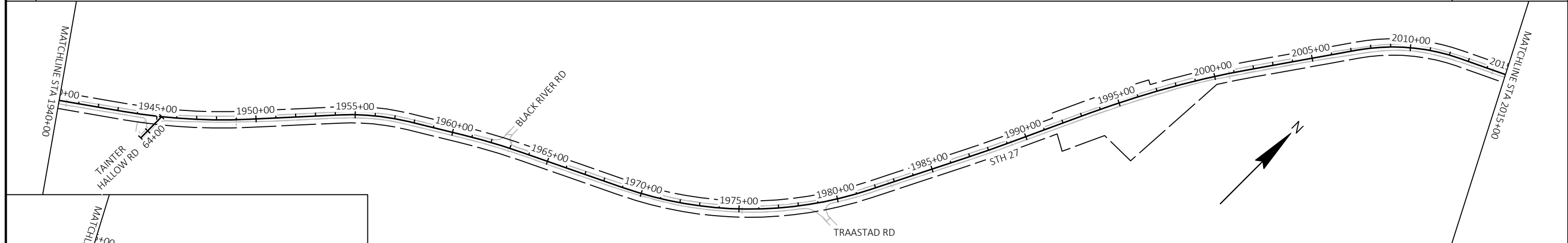
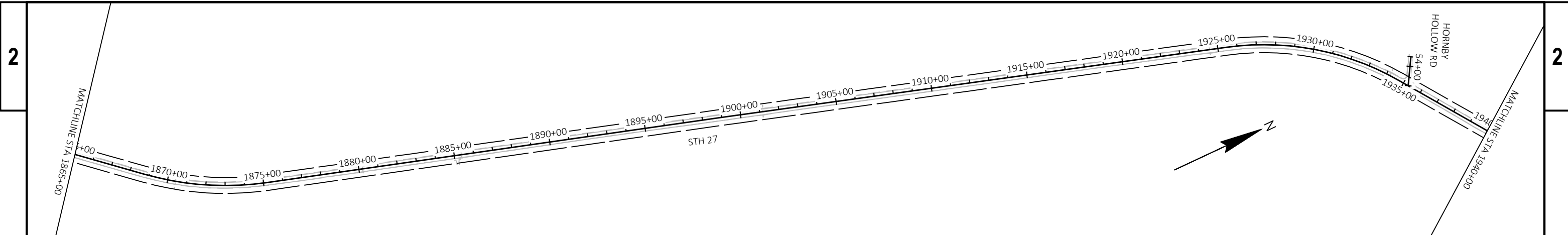


|                        |             |                  |                  |       |          |
|------------------------|-------------|------------------|------------------|-------|----------|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: CRAWFORD | PROJECT OVERVIEW | SHEET | <b>E</b> |
|------------------------|-------------|------------------|------------------|-------|----------|

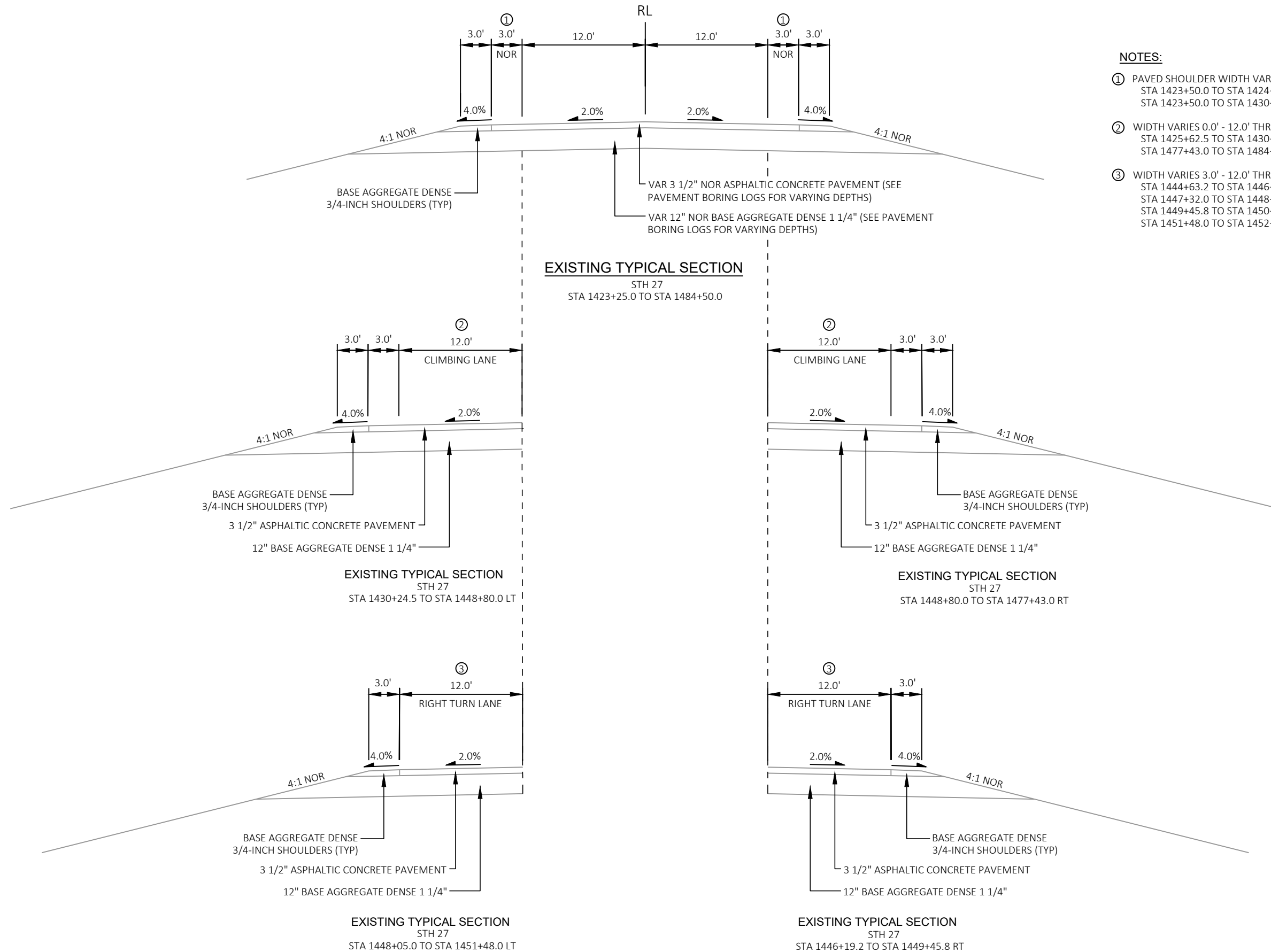


|                        |             |                |                  |       |   |
|------------------------|-------------|----------------|------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PROJECT OVERVIEW | SHEET | E |
|------------------------|-------------|----------------|------------------|-------|---|





|                        |             |                |                  |       |          |
|------------------------|-------------|----------------|------------------|-------|----------|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PROJECT OVERVIEW | SHEET | <b>E</b> |
|------------------------|-------------|----------------|------------------|-------|----------|



**NOTES:**

- ① PAVED SHOULDER WIDTH VARIES 0' - 2'  
STA 1423+50.0 TO STA 1424+47.5, RT  
STA 1423+50.0 TO STA 1430+87.0, LT
- ② WIDTH VARIES 0.0' - 12.0' THROUGH CLIMBING LANE TAPERS.  
STA 1425+62.5 TO STA 1430+24.5, RT  
STA 1477+43.0 TO STA 1484+50.0, RT
- ③ WIDTH VARIES 3.0' - 12.0' THROUGH RIGHT TURN LANE TAPERS.  
STA 1444+63.2 TO STA 1446+19.2, RT  
STA 1447+32.0 TO STA 1448+05.0, LT  
STA 1449+45.8 TO STA 1450+96.8, RT  
STA 1451+48.0 TO STA 1452+54.8, LT

**EXISTING TYPICAL SECTION**

STH 27  
STA 1423+25.0 TO STA 1484+50.0

**EXISTING TYPICAL SECTION**

STH 27  
STA 1430+24.5 TO STA 1448+80.0 LT

**EXISTING TYPICAL SECTION**

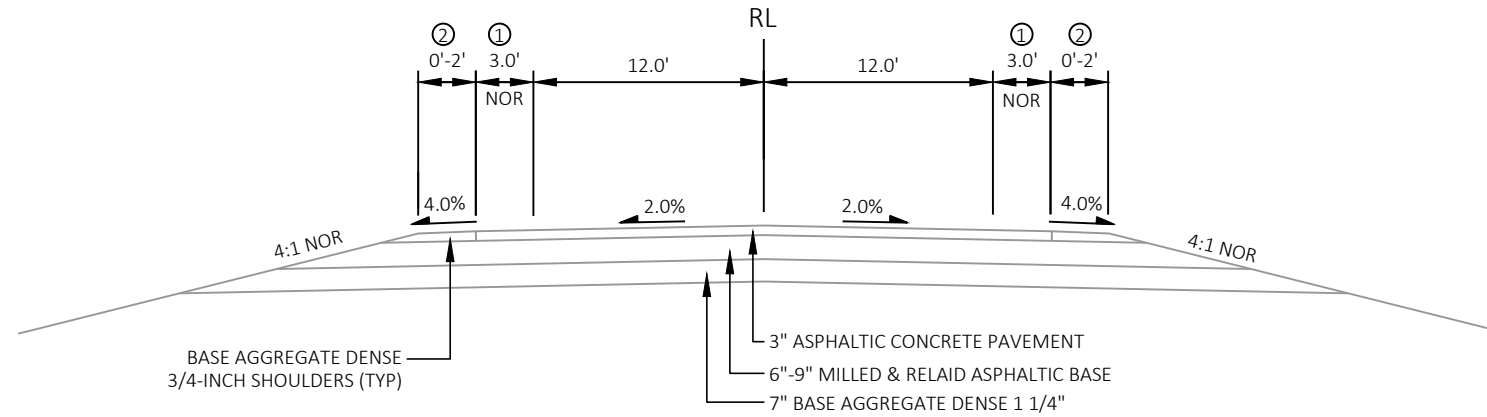
STH 27  
STA 1448+80.0 TO STA 1477+43.0 RT

**EXISTING TYPICAL SECTION**

STH 27  
STA 1448+05.0 TO STA 1451+48.0 LT

**EXISTING TYPICAL SECTION**

STH 27  
STA 1446+19.2 TO STA 1449+45.8 RT

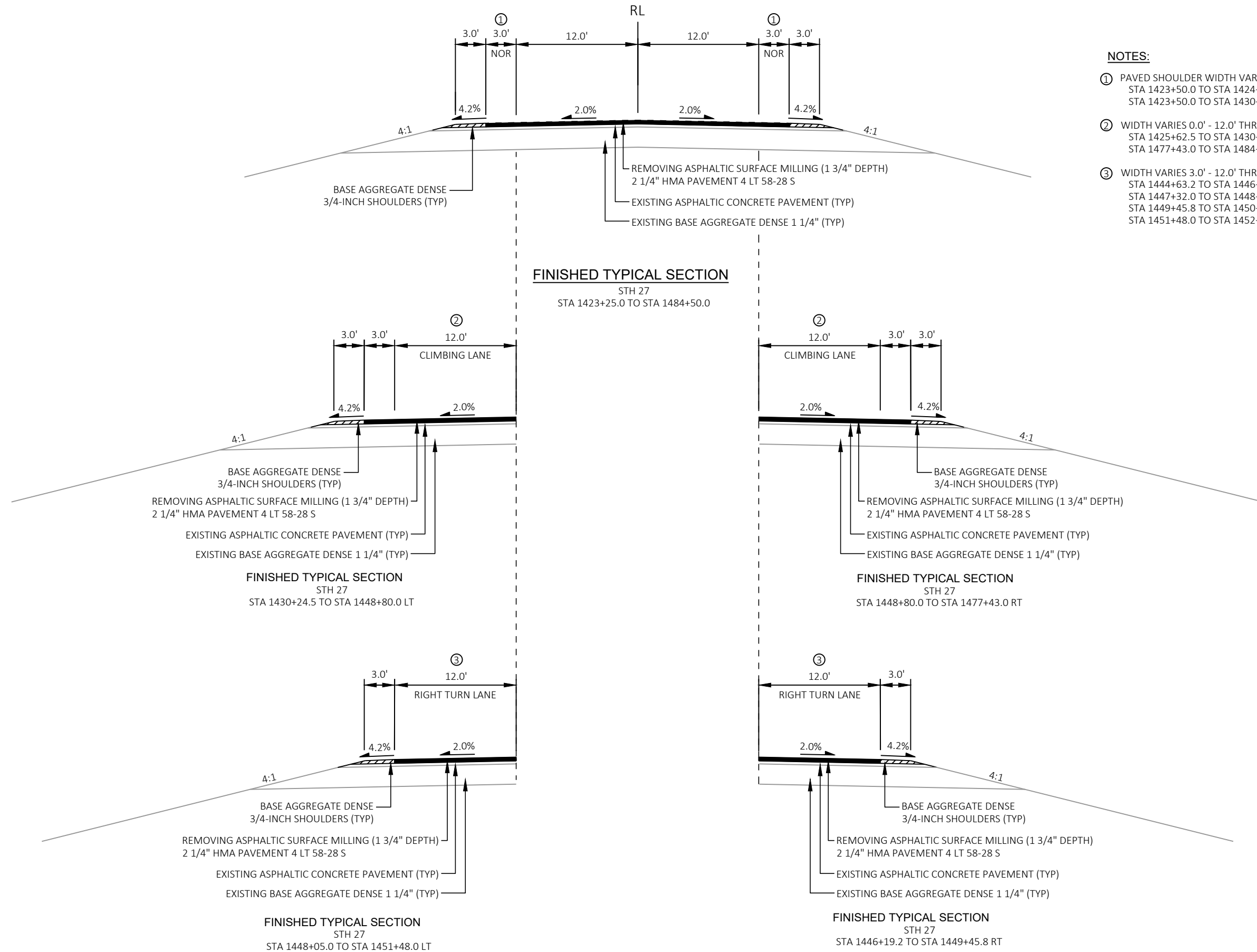


**NOTES:**

- ① PAVED SHOULDER WIDTH VARIES 0' - 2'  
STA 1489+75.0 TO STA 1590+48.5  
STA 1595+84.0 TO STA 1631+02.1
- PAVED SHOULDER WIDTH VARIES 0' - 8'  
STA 1590+48.5 TO STA 1595+84.0
- ② AGGREGATE SHOULDER WIDTH = 3'  
STA 1484+50.0 TO STA 1489+75.0

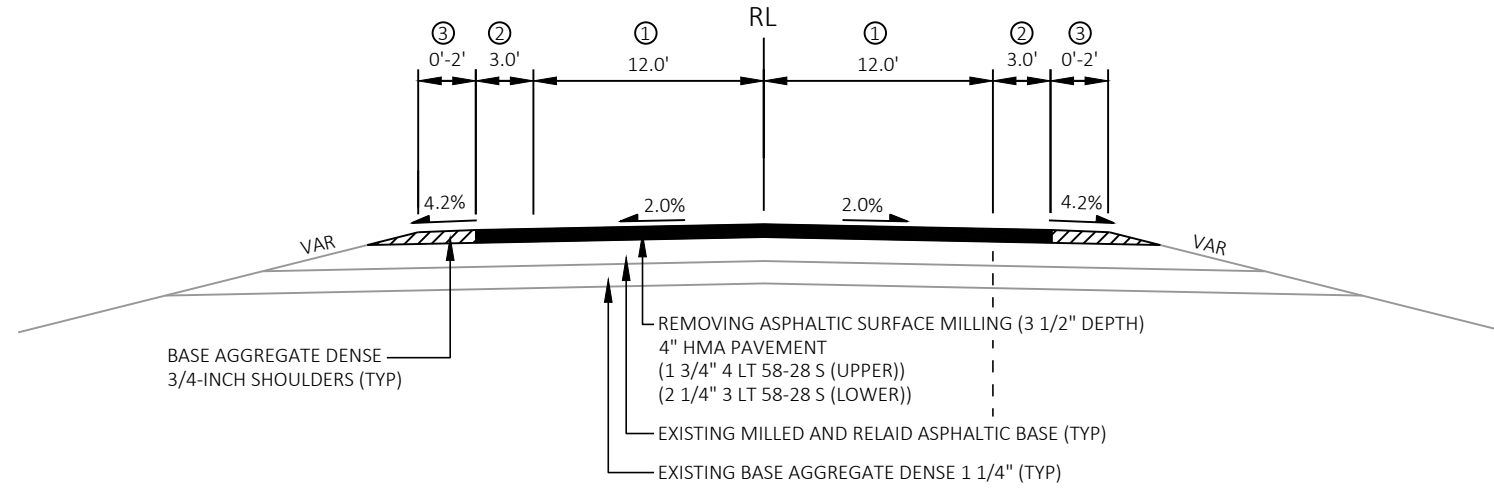
**EXISTING TYPICAL SECTION**

STH 27  
STA 1484+50.0 TO STA 2122+20.1



**NOTES:**

- ① PAVED SHOULDER WIDTH VARIES 0' - 2'  
STA 1423+50.0 TO STA 1424+47.5, RT  
STA 1423+50.0 TO STA 1430+87.0, LT
- ② WIDTH VARIES 0.0' - 12.0' THROUGH CLIMBING LANE TAPERS.  
STA 1425+62.5 TO STA 1430+24.5, LT  
STA 1477+43.0 TO STA 1484+50.0, RT
- ③ WIDTH VARIES 3.0' - 12.0' THROUGH RIGHT TURN LANE TAPERS.  
STA 1444+63.2 TO STA 1446+19.2, RT  
STA 1447+32.0 TO STA 1448+05.0, LT  
STA 1449+45.8 TO STA 1450+96.8, RT  
STA 1451+48.0 TO STA 1452+54.8, LT

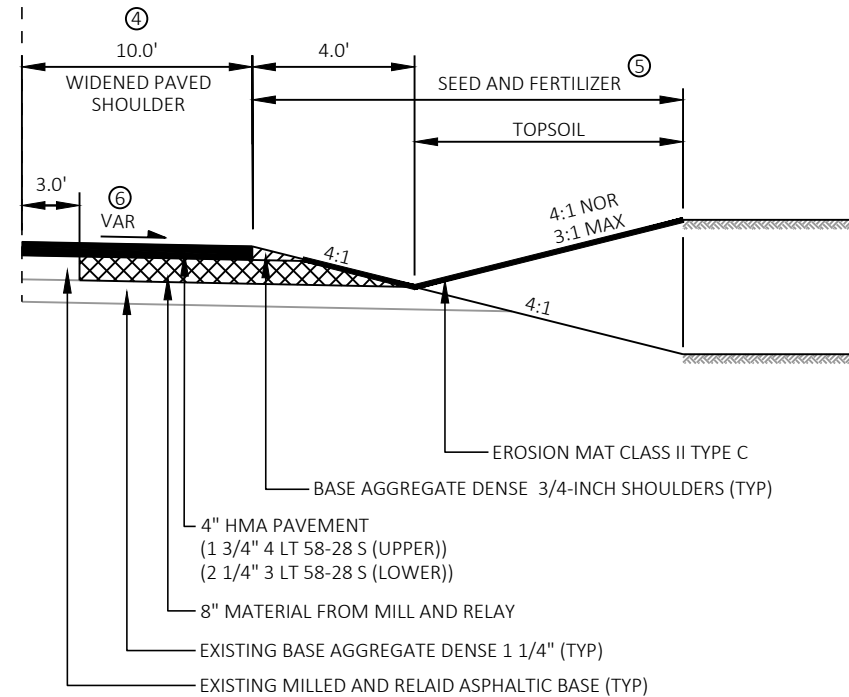


**FINISHED TYPICAL SECTION**

STH 27  
STA 1484+50.0 TO STA 1593+89.0  
STA 1594+46.5 TO STA 2122+20.1

**NOTES:**

- ① WIDTH = 11'  
STA 1489+75.0 TO STA 1631+02.1
- ② PAVED SHOULDER WIDTH = 2'  
STA 1489+75.0 TO STA 1590+48.5  
STA 1595+84.0 TO STA 1631+02.1
- PAVED SHOULDER WIDTH = 2' - 9'  
STA 1590+48.5 TO STA 1595+84.0
- ③ AGGREGATE SHOULDER WIDTH = 3'  
STA 1484+50.0 TO STA 1489+75.0
- ④ WIDTH VARIES 0' - 10' THROUGH PAVED SHOULDER TAPERS  
STA 1760+10.5 TO STA 1762+27.5  
STA 1767+38.5 TO STA 1770+63.5
- ⑤ EXTEND SEED, FERTILIZER 5' BEYOND THE SLOPE INTERCEPTS.
- ⑥ MATCH CROSS SLOPE OF ADJACENT LANE

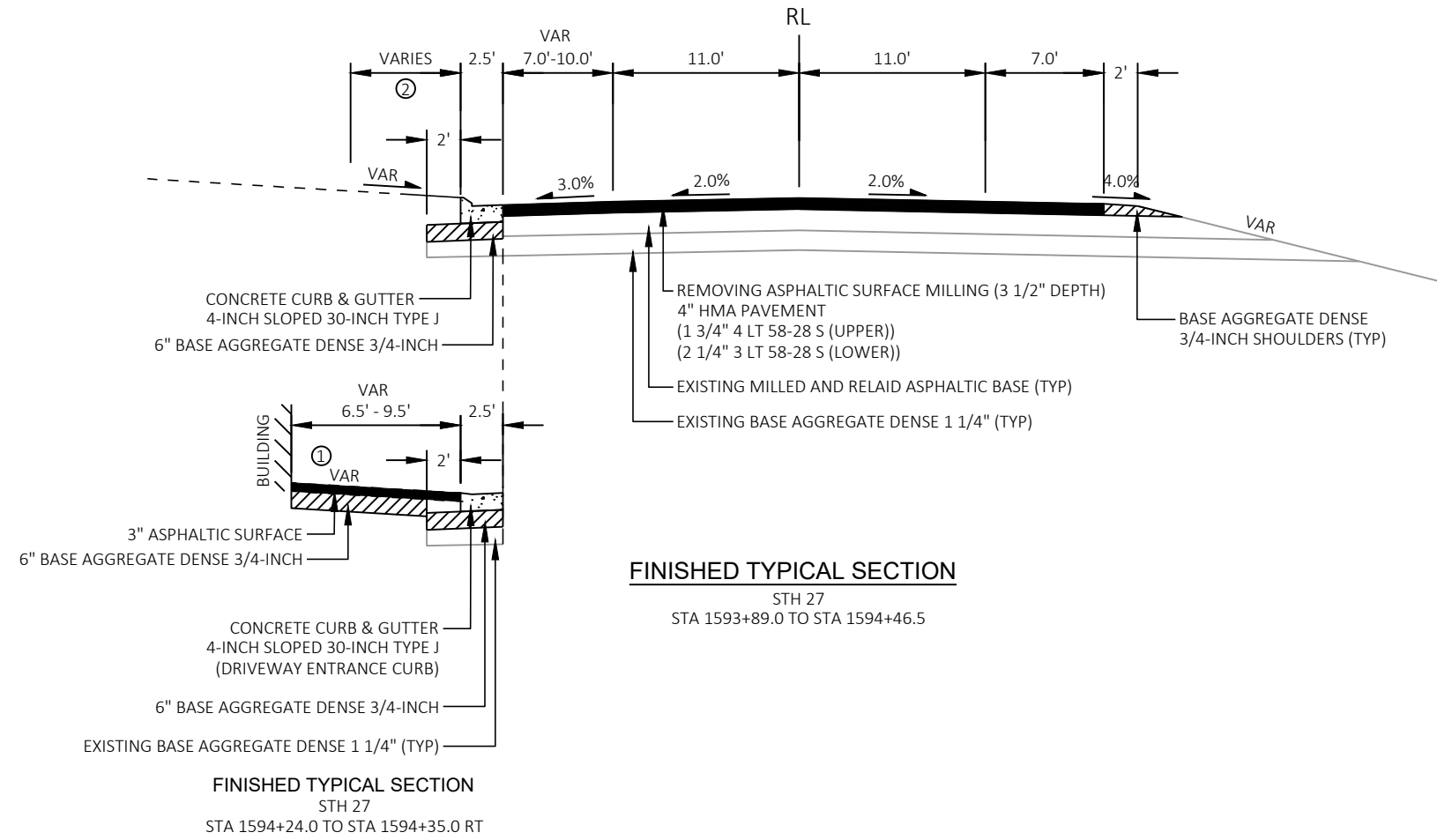


**FINISHED TYPICAL SECTION**

STH 27  
STA 1762+27.5 TO STA 1767+38.5 RT

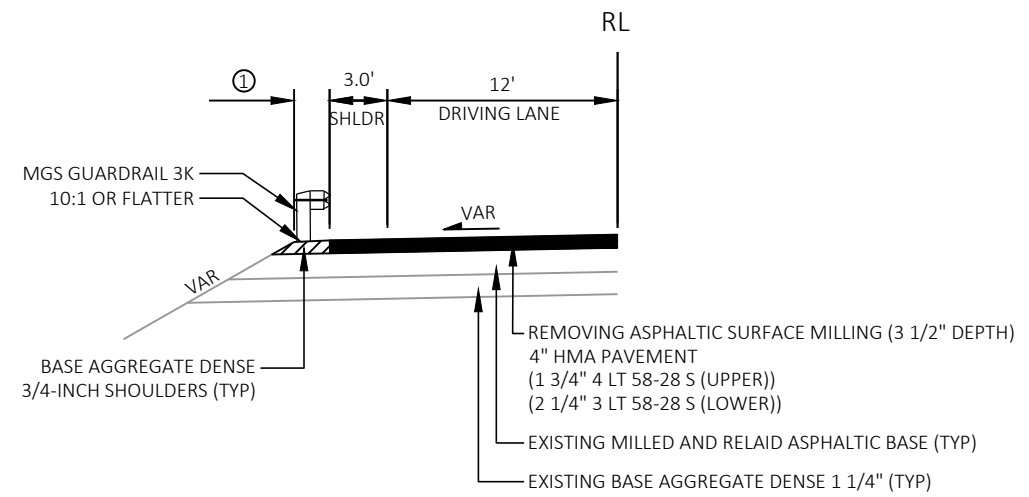
NOTES:

- ① 2.5% SLOPE AT BUILDING ENTRANCE.
- ② TOPSOIL, SEED, FERTILIZER, AND EROSION MAT URBAN CLASS 1 TYPE B

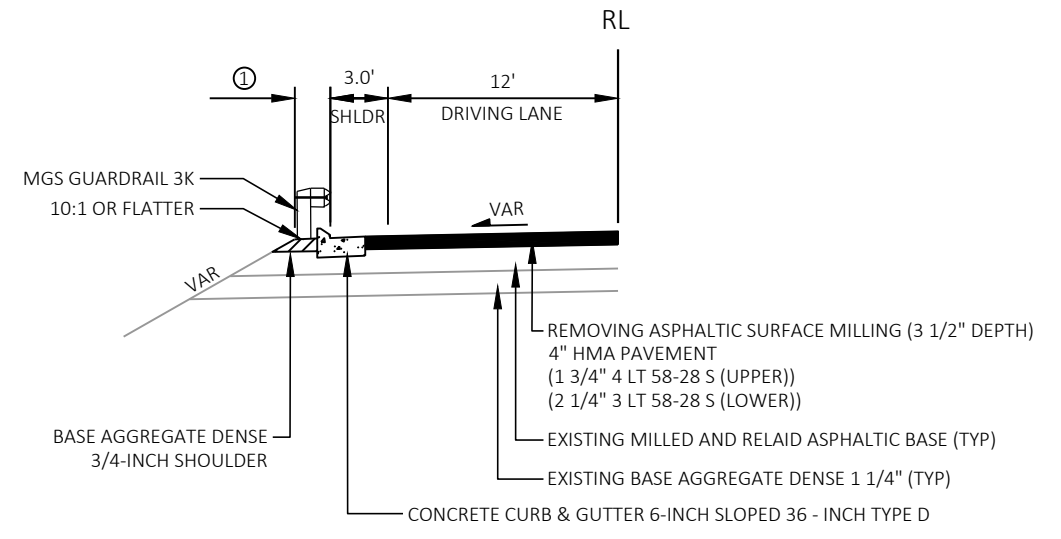




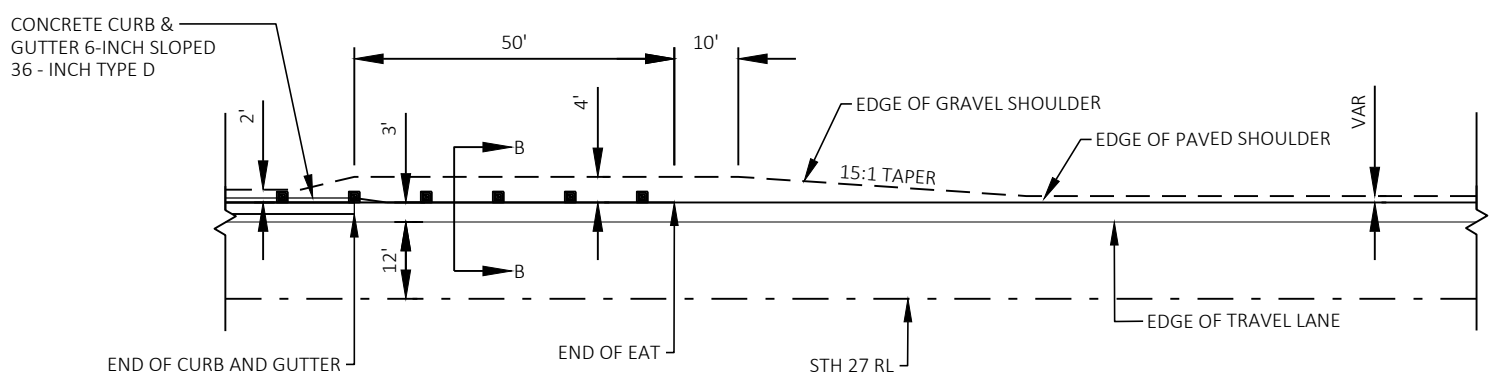
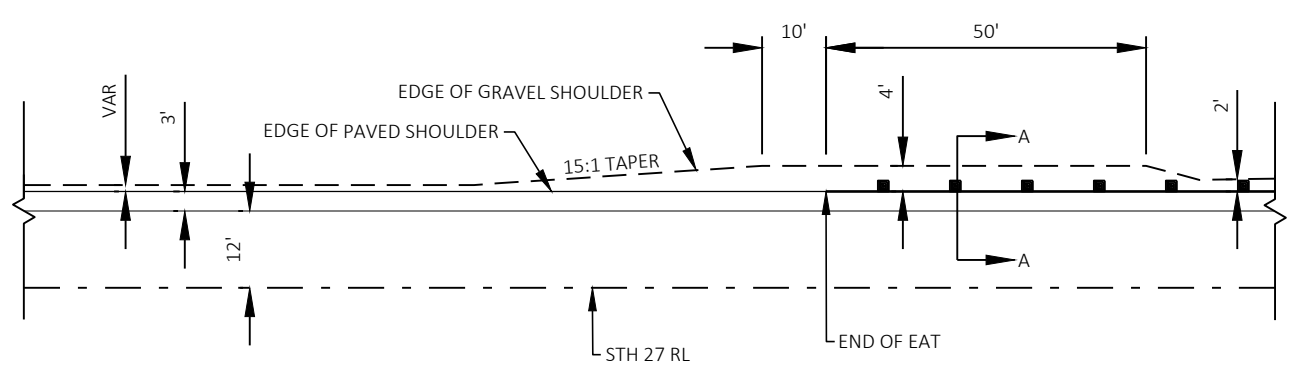
**NOTES:**  
 ① 4' IN MGS GUARDRAIL TERMINAL EAT AREAS  
 2' IN NON-EAT AREAS



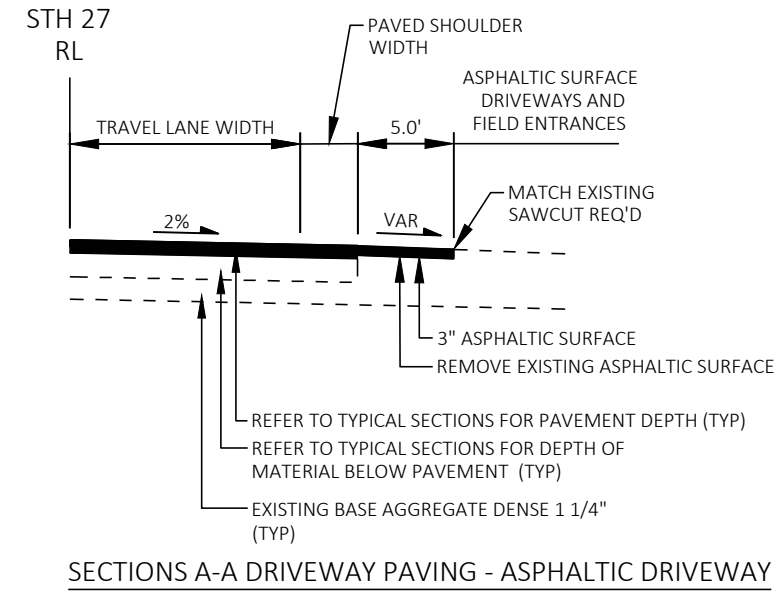
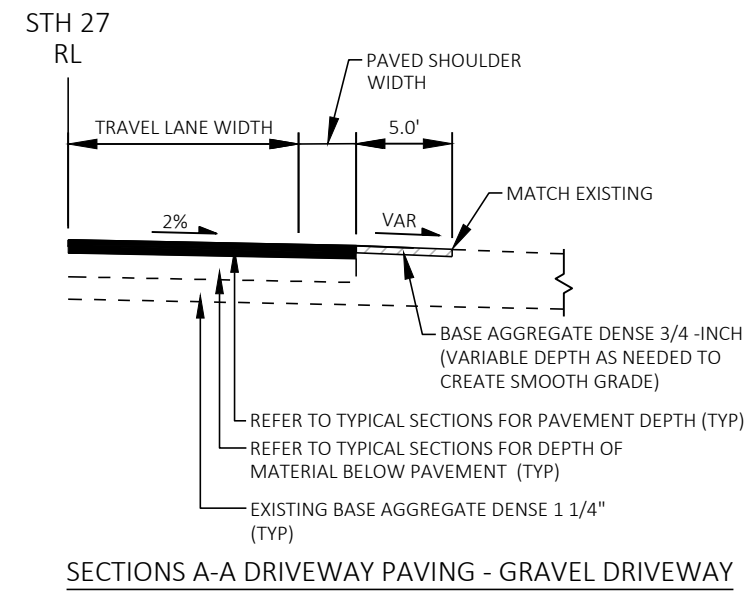
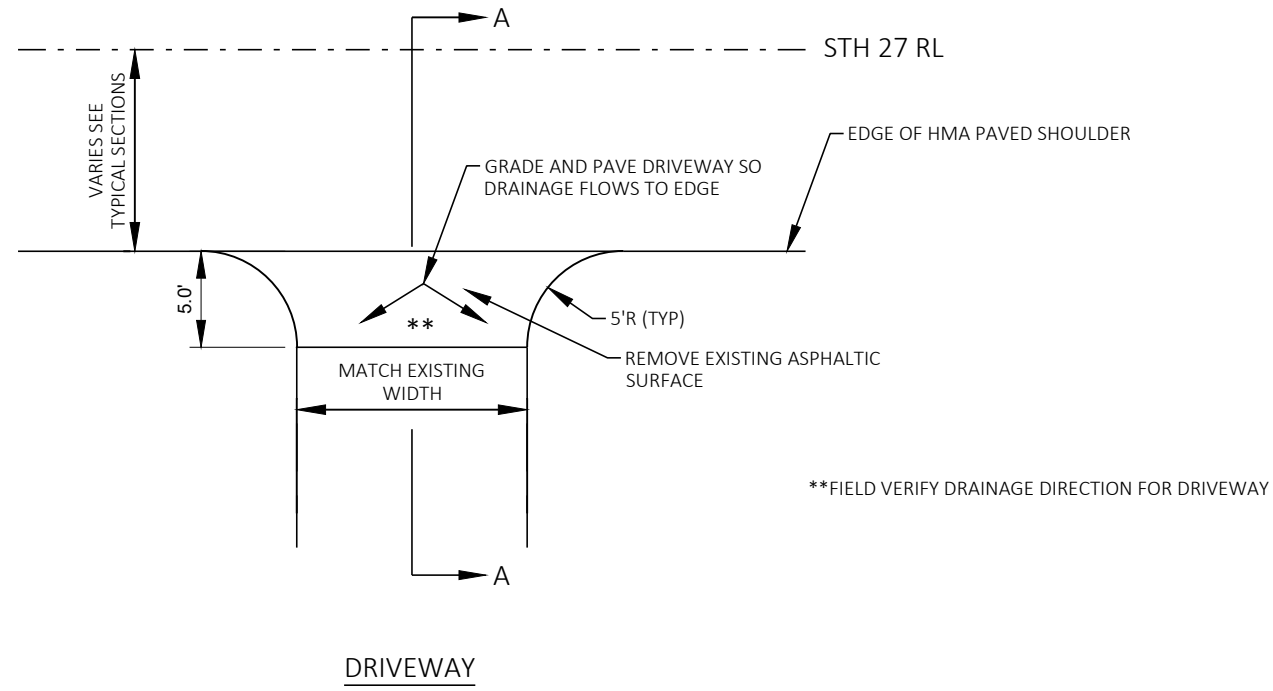
**SECTION A-A**

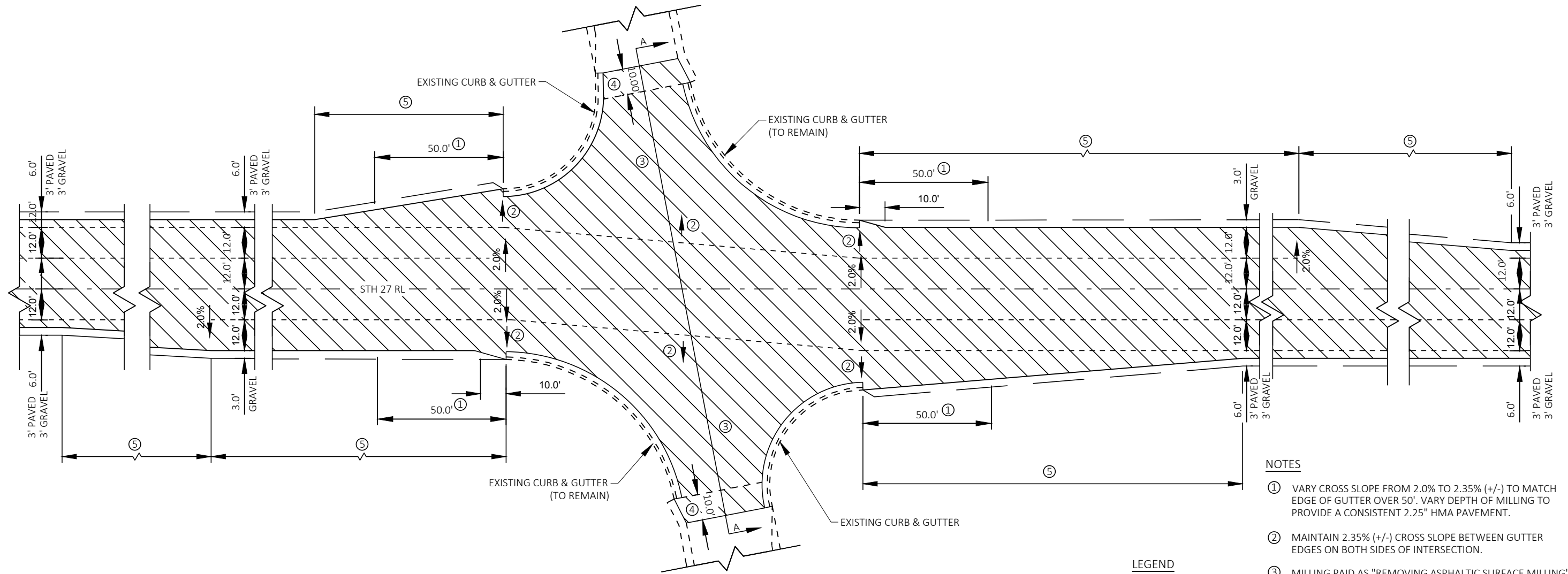


**SECTION B-B**



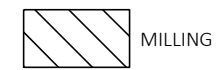
**ASPHALTIC SHOULDER AT BEAM GUARD**





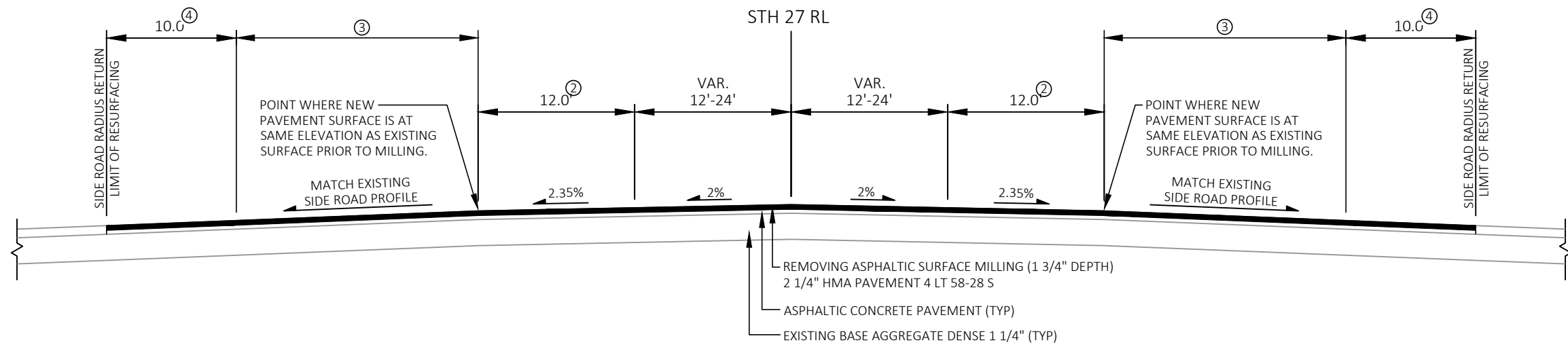
**CTH C - INTERSECTION MILLING AND PAVING**  
WITH CURB AND GUTTER AROUND RADII

**LEGEND**

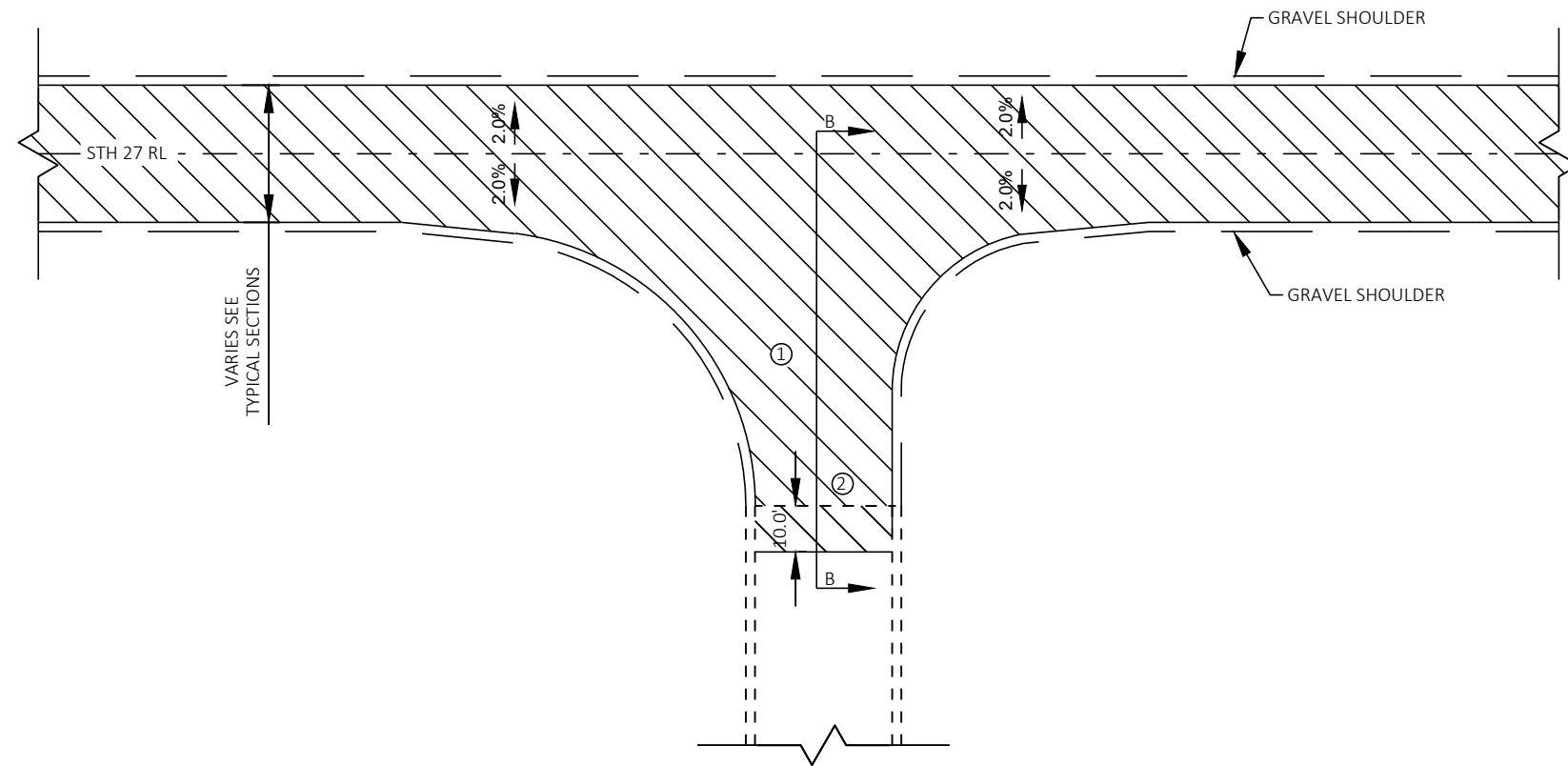


**NOTES**

- ① VARY CROSS SLOPE FROM 2.0% TO 2.35% (+/-) TO MATCH EDGE OF GUTTER OVER 50'. VARY DEPTH OF MILLING TO PROVIDE A CONSISTENT 2.25" HMA PAVEMENT.
- ② MAINTAIN 2.35% (+/-) CROSS SLOPE BETWEEN GUTTER EDGES ON BOTH SIDES OF INTERSECTION.
- ③ MILLING PAID AS "REMOVING ASPHALTIC SURFACE MILLING"
- ④ MILLING LAST 10' PAID AS "REMOVING ASPHALTIC SURFACE BUTT JOINTS"
- ⑤ MATCH EXISTING LENGTH AND TAPER RATE.



**SECTION A-A**



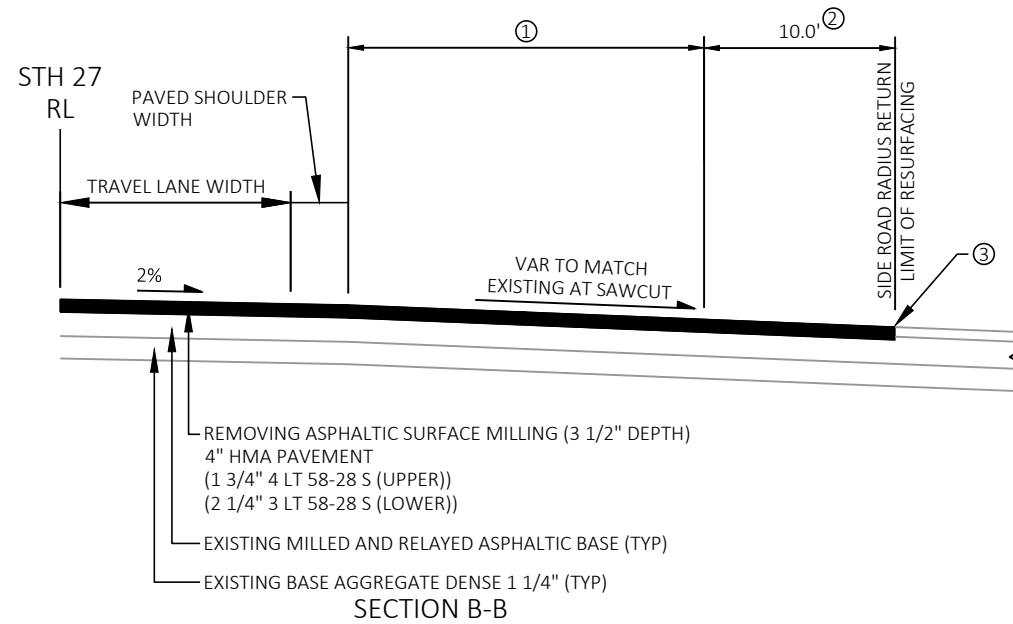
NOTES

- ① MILLING PAID AS "REMOVING ASPHALTIC SURFACE MILLING"
- ② MILLING LAST 10' PAID AS "REMOVING ASPHALTIC SURFACE BUTT JOINTS"
- ③ SAWCUT REQ'D TO 3.5" DEPTH ON CONTINUOUS ASPHALTIC PAVEMENT SIDE ROADS. RESURFACE TO ASPHALTIC LIMITS ON GRAVEL SIDE ROADS.

LEGEND



**INTERSECTION MILLING AND PAVING**  
WITH NO CURB AND GUTTER AROUND RADII

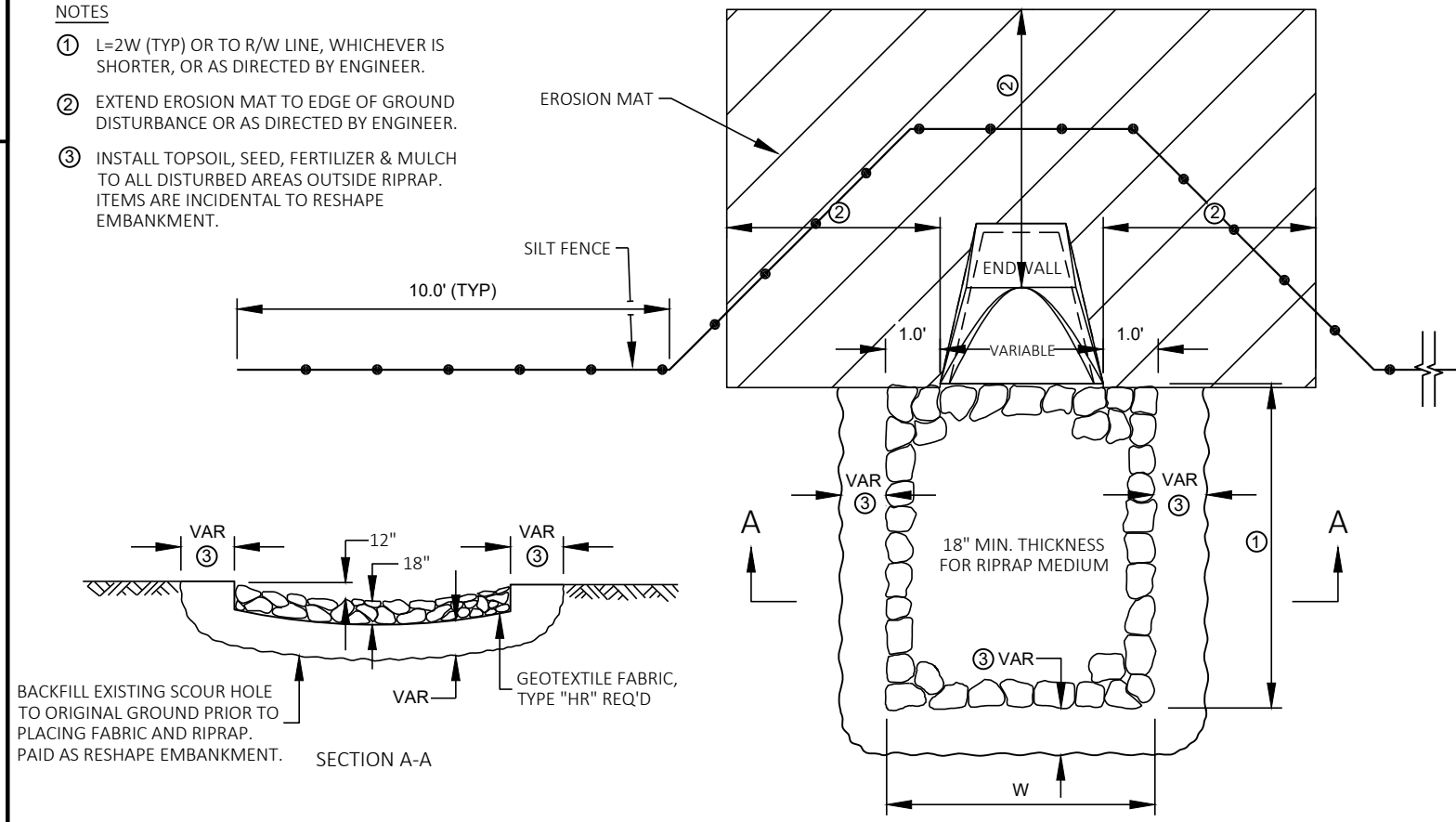


- REMOVING ASPHALTIC SURFACE MILLING (3 1/2" DEPTH)
- 4" HMA PAVEMENT  
(1 3/4" 4 LT 58-28 S (UPPER))  
(2 1/4" 3 LT 58-28 S (LOWER))
- EXISTING MILLED AND RELAYED ASPHALTIC BASE (TYP)
- EXISTING BASE AGGREGATE DENSE 1 1/4" (TYP)

SECTION B-B

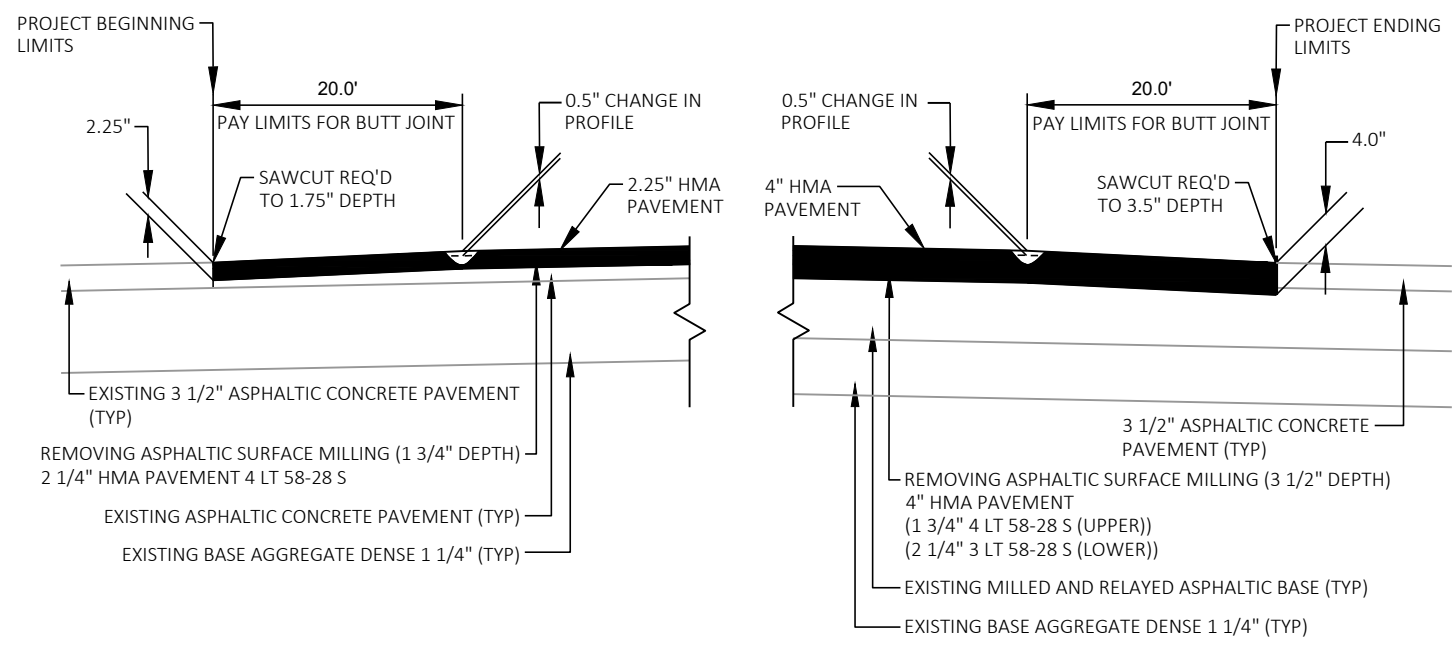
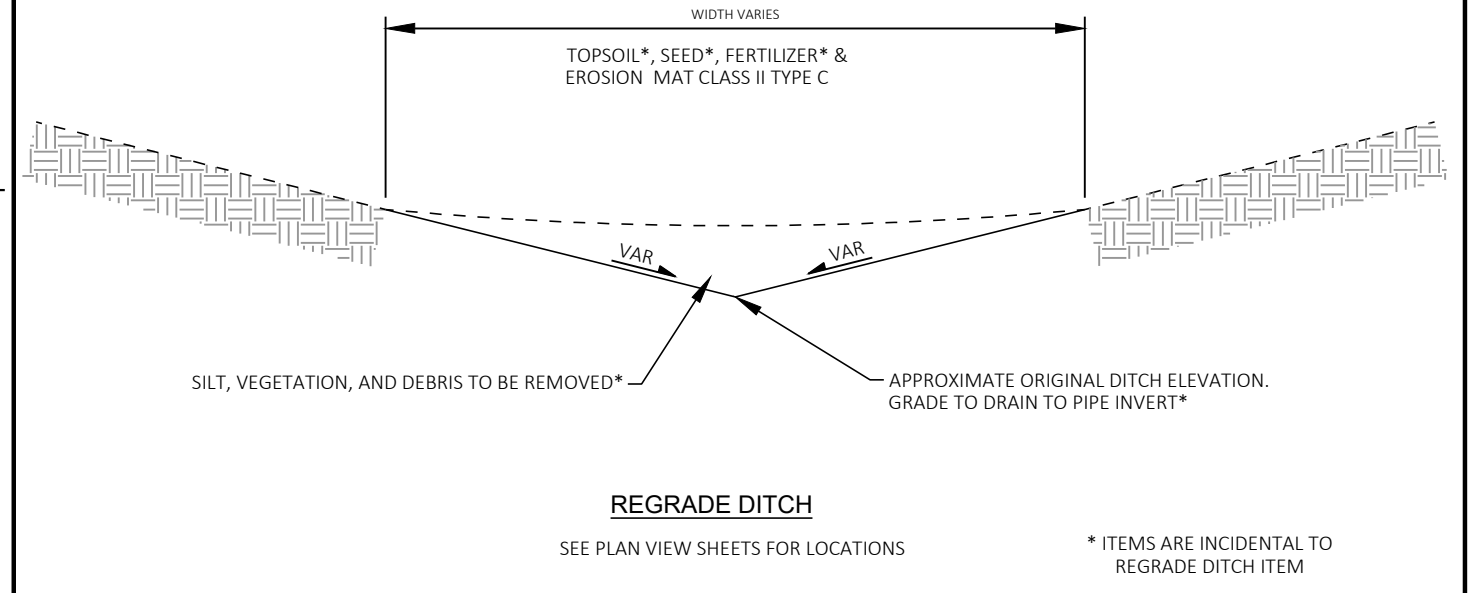
NOTES

- ① L=2W (TYP) OR TO R/W LINE, WHICHEVER IS SHORTER, OR AS DIRECTED BY ENGINEER.
- ② EXTEND EROSION MAT TO EDGE OF GROUND DISTURBANCE OR AS DIRECTED BY ENGINEER.
- ③ INSTALL TOPSOIL, SEED, FERTILIZER & MULCH TO ALL DISTURBED AREAS OUTSIDE RIPRAP. ITEMS ARE INCIDENTAL TO RESHAPE EMBANKMENT.

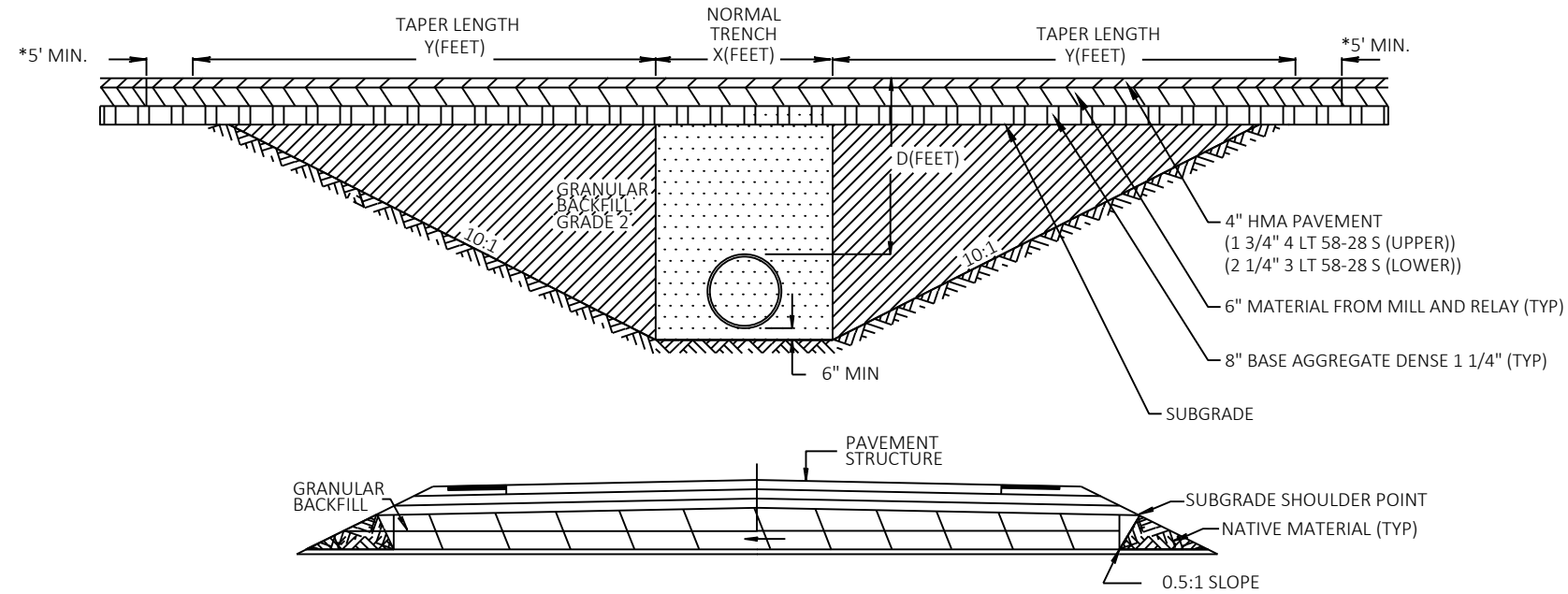


**RIPRAP AND EROSION MAT TREATMENT AT CULVERT ENDWALLS**

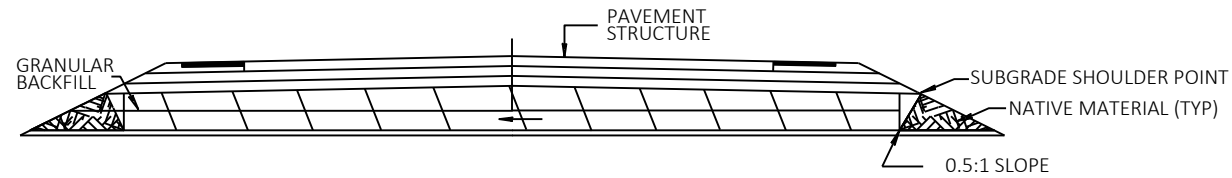
SEE PLAN VIEW SHEETS FOR LOCATIONS



**STH 27 BUTT JOINT**



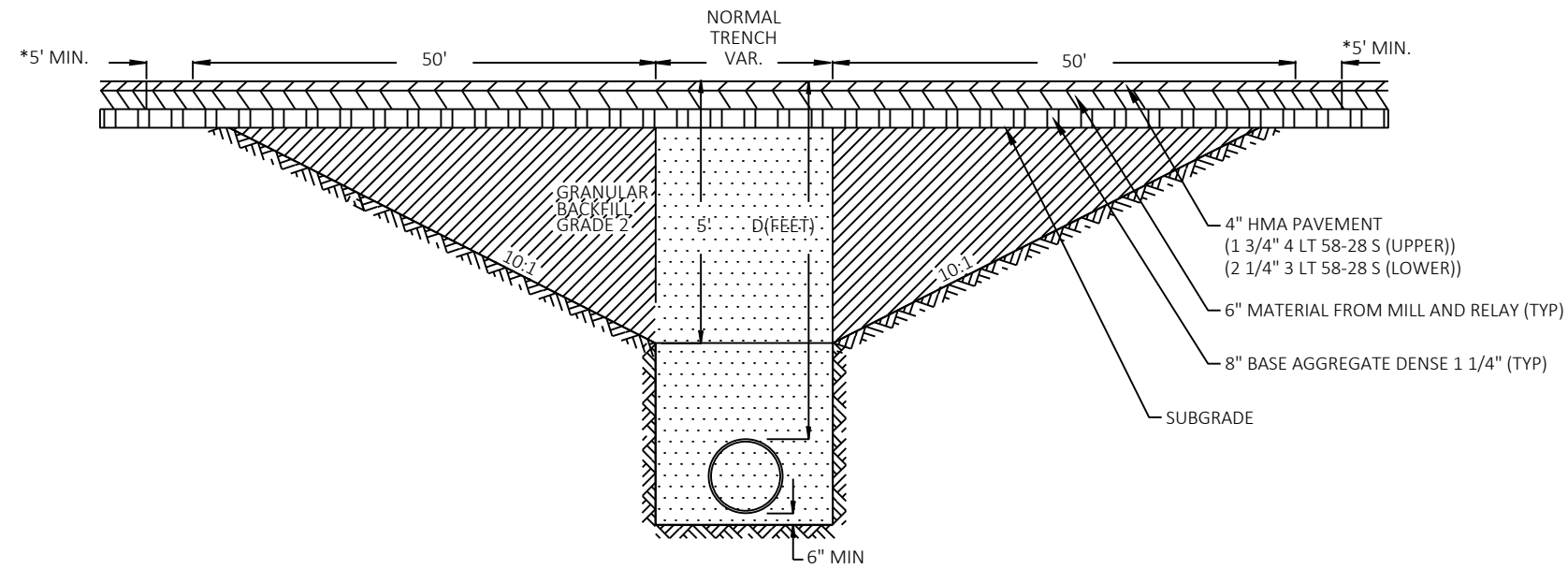
**CROSS DRAIN INSTALLATION DETAIL**  
FOR  $D \leq 5'$



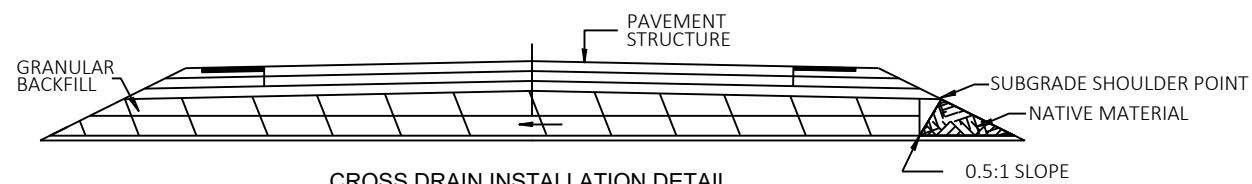
| STATION | DIAMETER | X(FT) MIN. | D(FT) | Y(FT)  |
|---------|----------|------------|-------|--------|
| 1552+24 | 24"      | 4.00'      | 4.56' | 70.60' |
| 1769+19 | 24"      | 4.00'      | 4.85' | 73.50' |
| 1836+55 | 24"      | 4.00'      | 3.77' | 62.70' |
| 1885+36 | 24"      | 4.00'      | 1.86' | 43.60' |
| 1948+99 | 24"      | 4.00'      | 4.16' | 66.60' |

**LEGEND**

- COMMON EXCAVATION & BACKFILL GRANULAR GRADE 2 PAID SEPARATELY
- EXCAVATION & BACKFILL GRANULAR GRADE 2 INCIDENTAL TO REMOVING SMALL PIPE CULVERT



**CROSS DRAIN INSTALLATION DETAIL**  
FOR  $D \geq 5'$

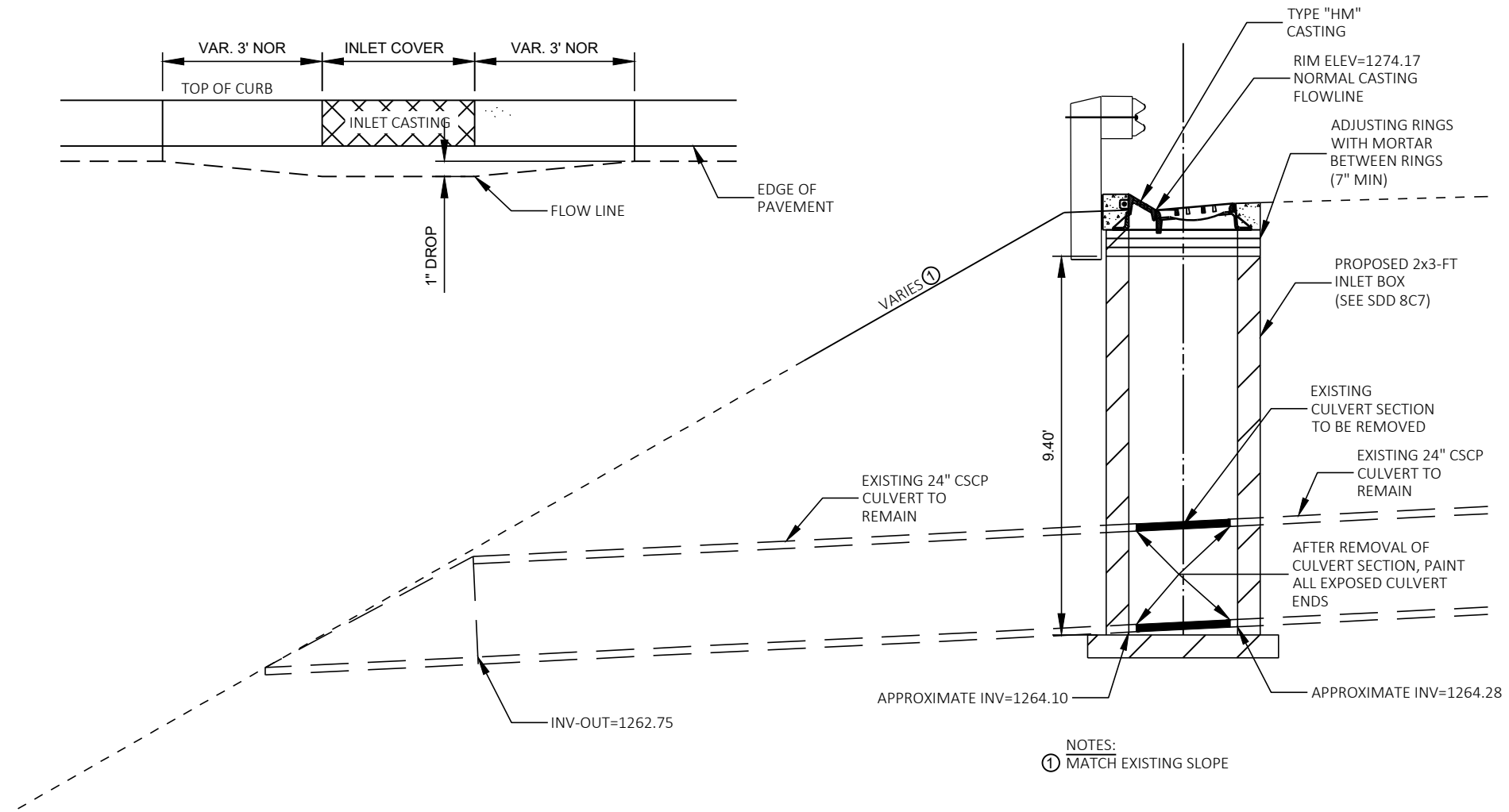


| STATION | DIAMETER | D(FT) |
|---------|----------|-------|
| 1558+41 | 24"      | 5.41' |
| 1701+46 | 24"      | 5.61' |

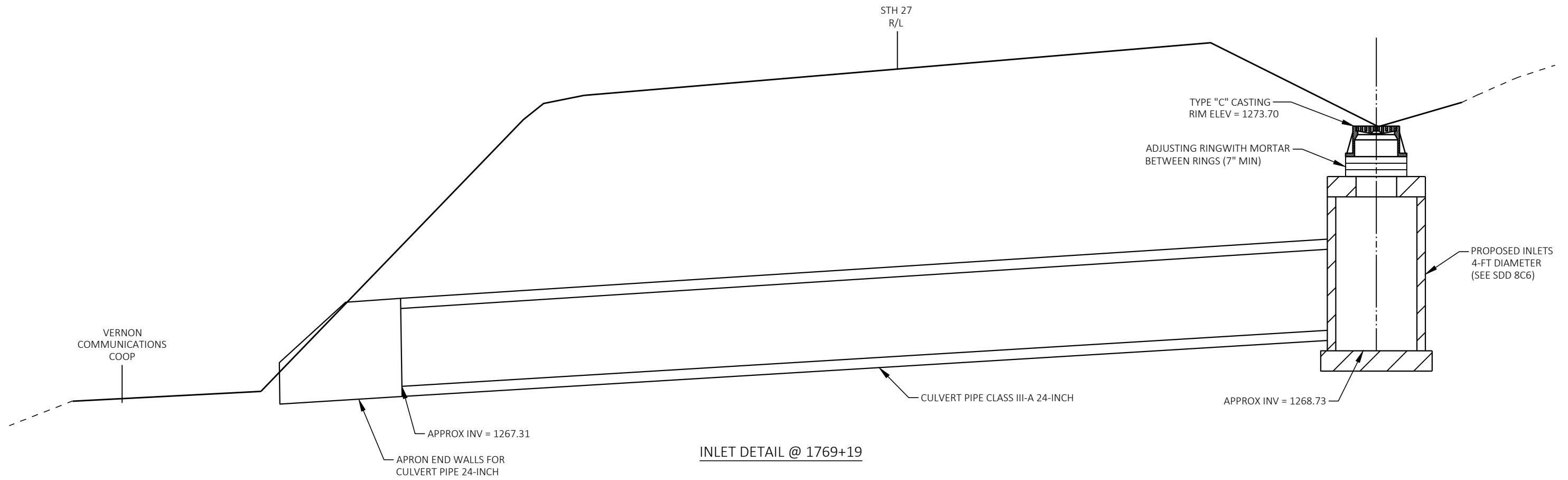
\* PAVEMENT REMOVAL LIMITS (TYPICAL)

\*\* IF MATERIAL FROM MILL AND RELAY IS NOT AVAILABLE DUE TO SEQUENCING OF OPERATIONS, A 16" BASE AGGREGATE DENSE 1 1/4" SECTION IS STRUCTURALLY EQUIVALENT TO THE 6" MILLED AND RELAIAD ASPHALTIC BASE OVER 8" BASE AGGREGATE DENSE 1 1/4" SECTION AND IS ACCEPTABLE.

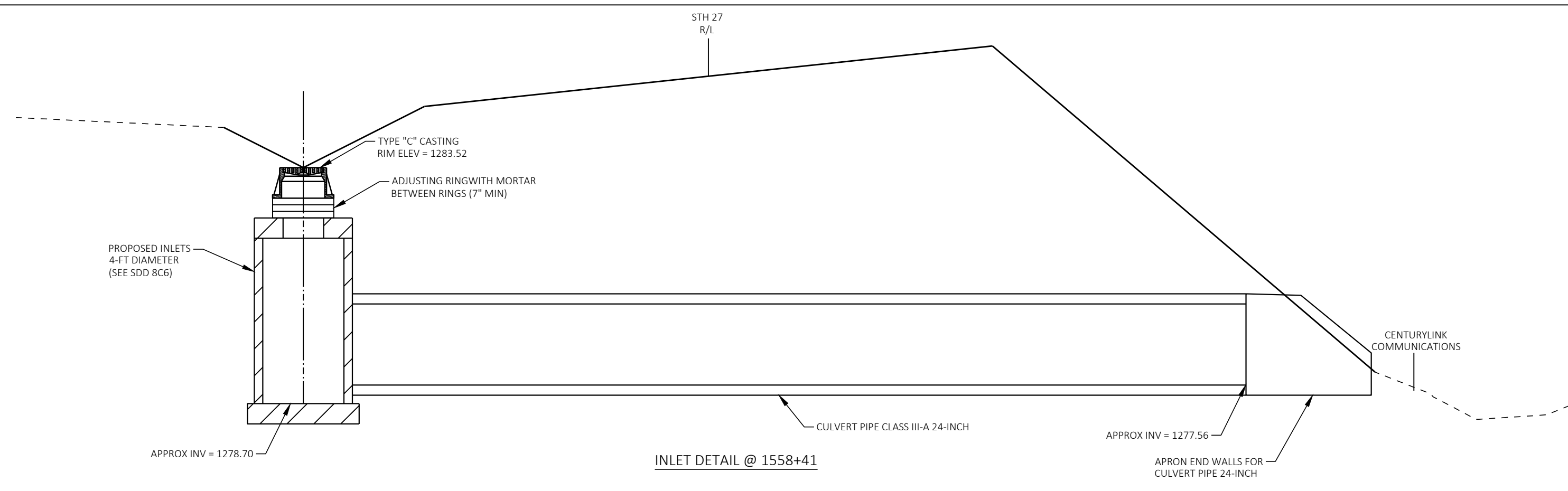




DROP INLET DETAIL @ 1665+61.7 - LT

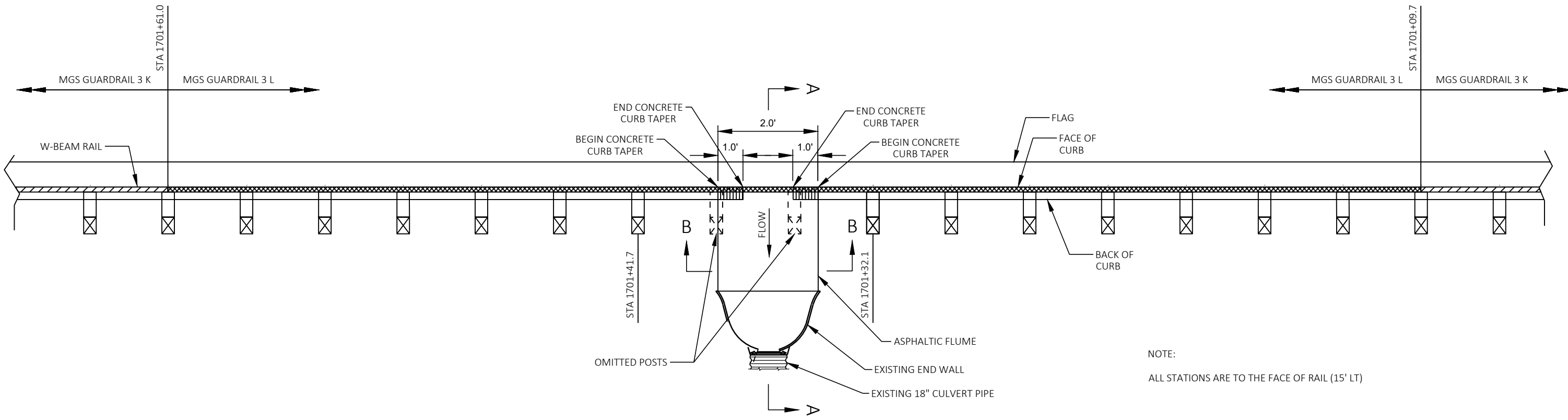


INLET DETAIL @ 1769+19

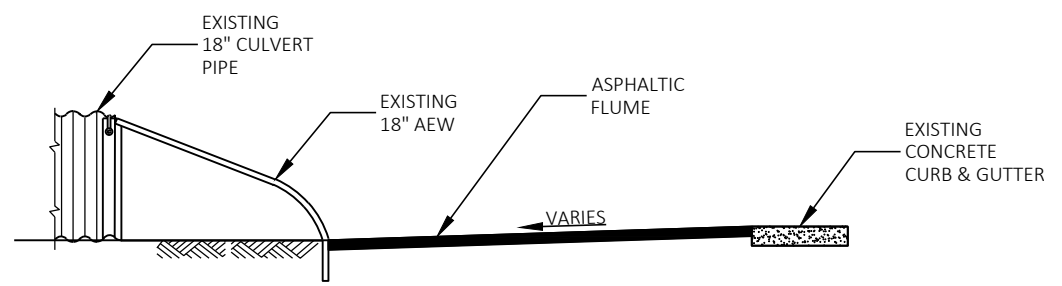


INLET DETAIL @ 1558+41

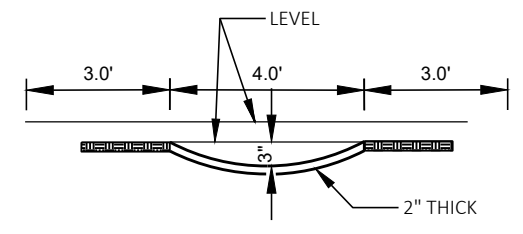
|                        |             |                           |                      |       |          |
|------------------------|-------------|---------------------------|----------------------|-------|----------|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: CRAWFORD & VERNON | CONSTRUCTION DETAILS | SHEET | <b>E</b> |
|------------------------|-------------|---------------------------|----------------------|-------|----------|



NOTE:  
ALL STATIONS ARE TO THE FACE OF RAIL (15' LT)

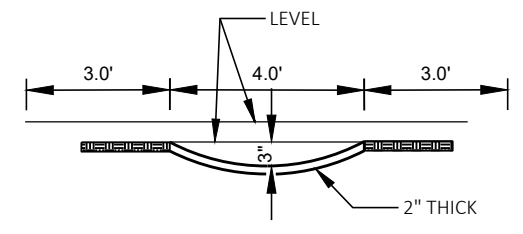
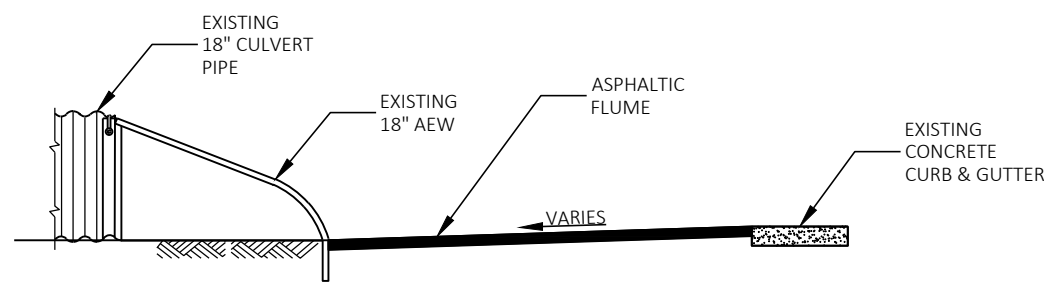
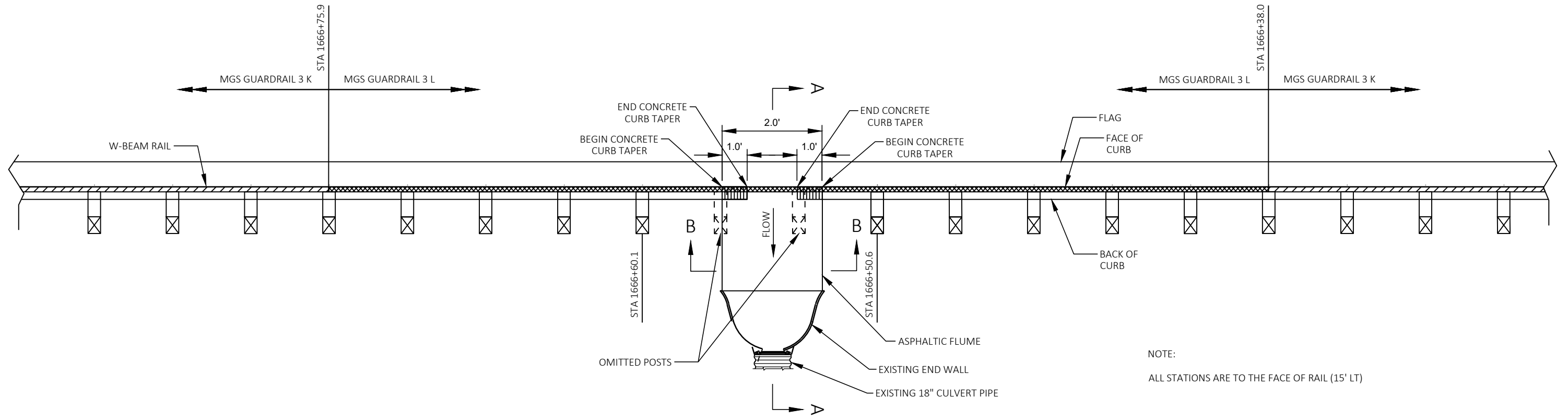


SECTION A-A



SECTION B-B

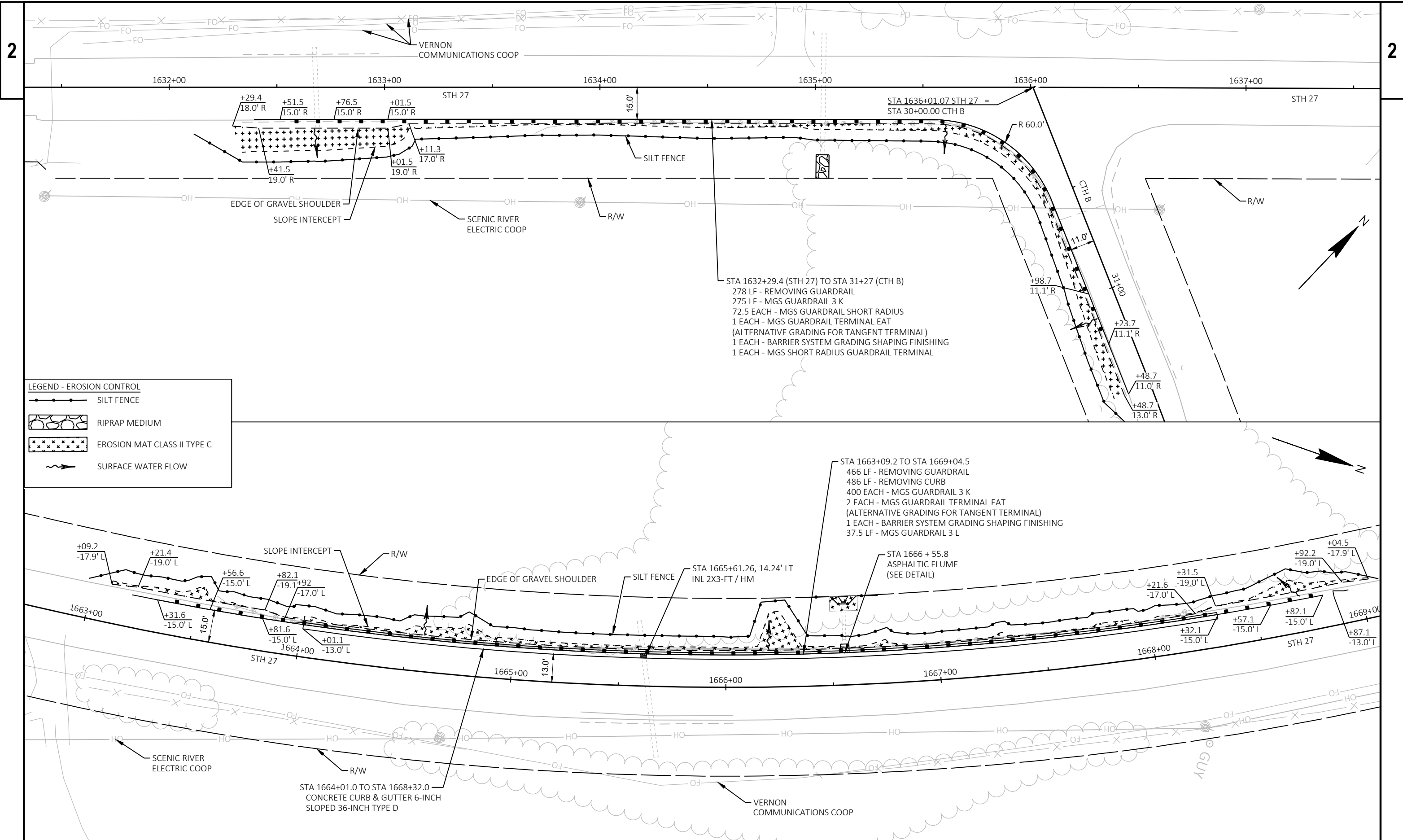
ASPHALTIC FLUME @ 1701 + 36.4 - LT



SECTION A-A

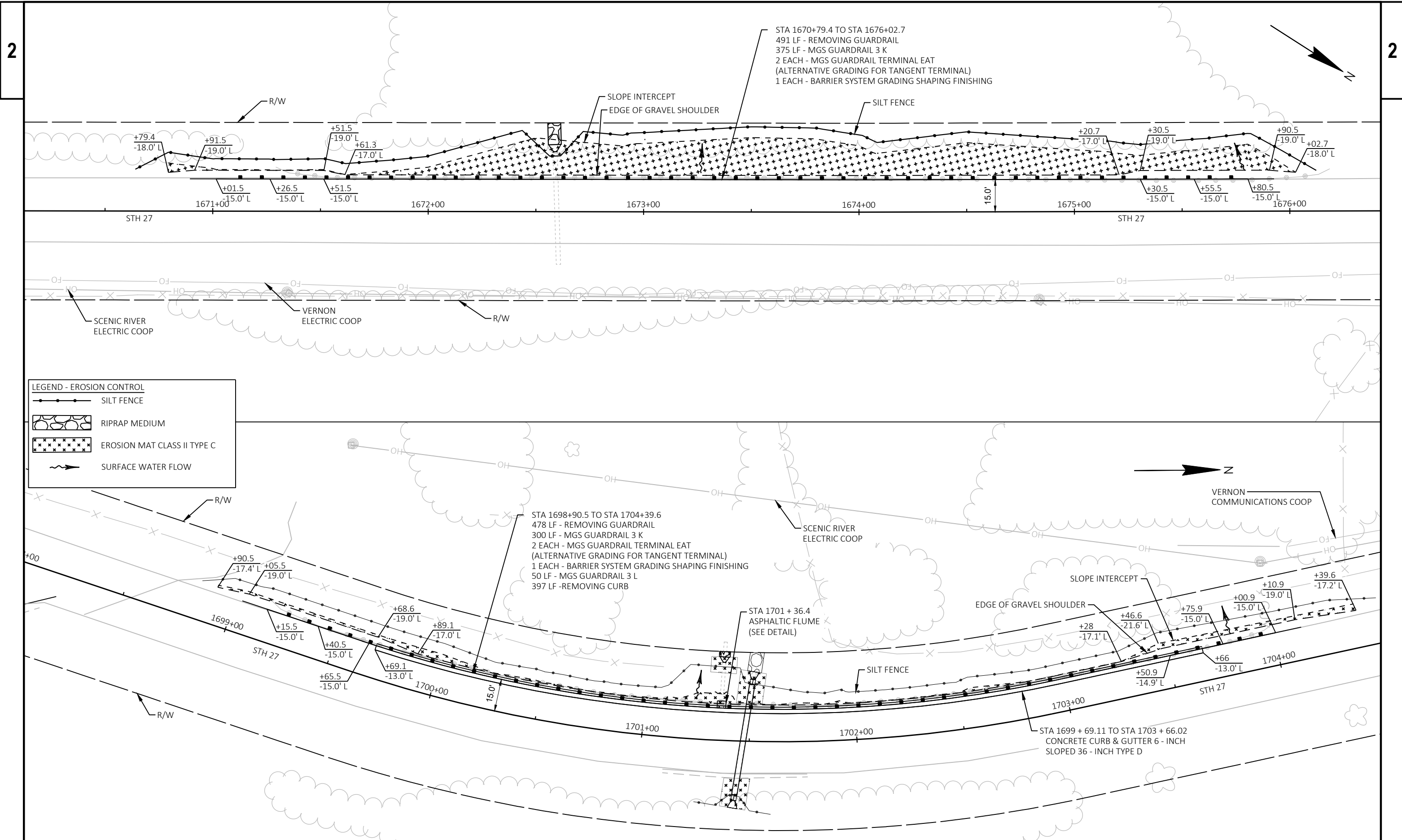
SECTION B-B

ASPHALTIC FLUME @ 1666+55.8 LT

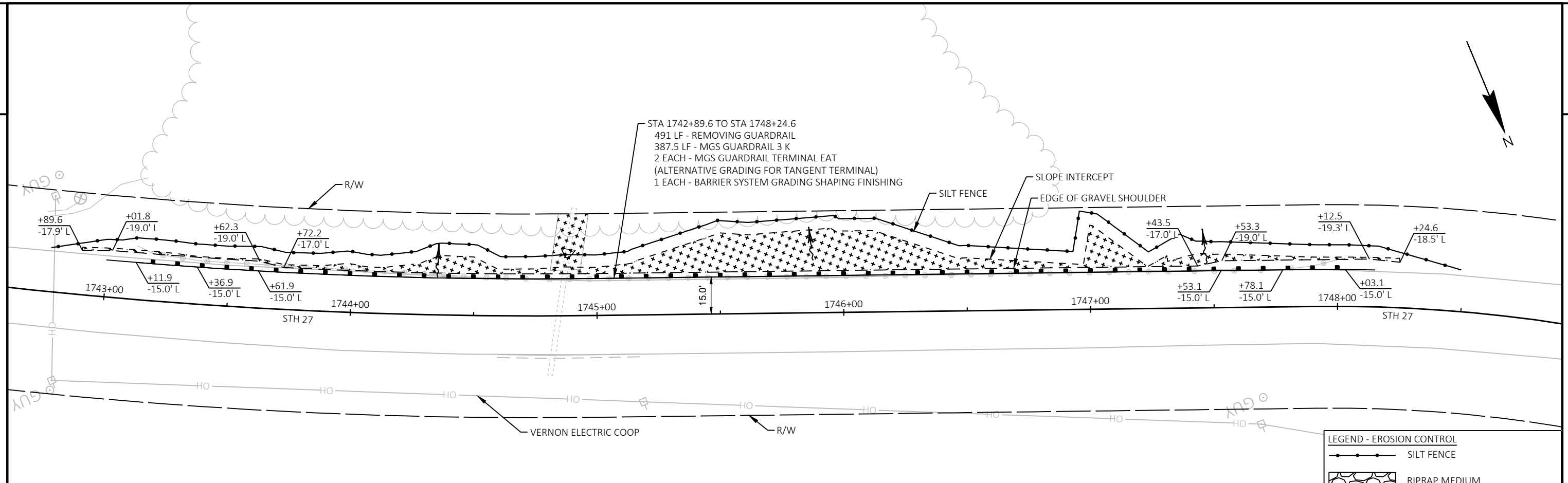


**LEGEND - EROSION CONTROL**

- SILT FENCE
- RIPRAP MEDIUM
- EROSION MAT CLASS II TYPE C
- SURFACE WATER FLOW

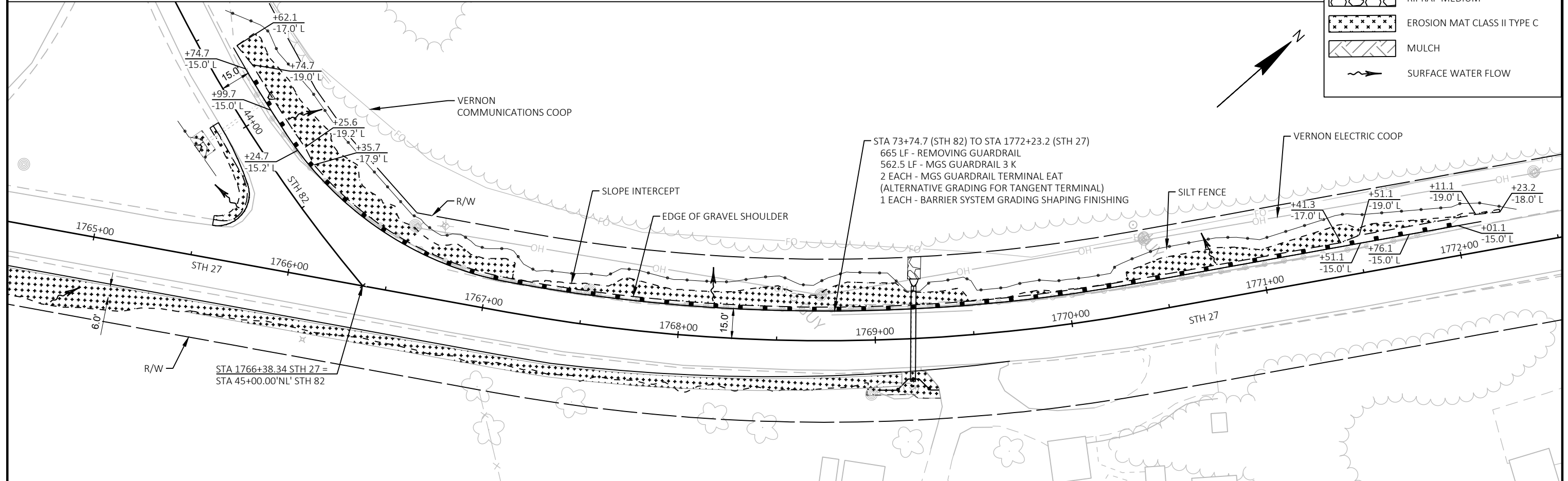


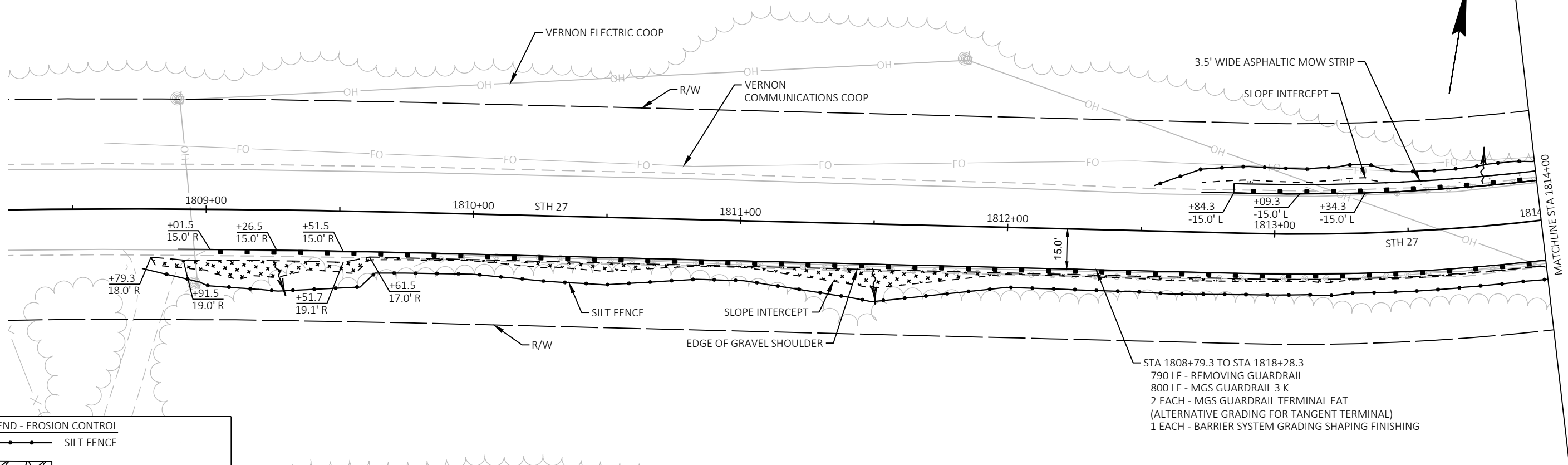




LEGEND - EROSION CONTROL

- SILT FENCE
- RIPRAP MEDIUM
- EROSION MAT CLASS II TYPE C
- MULCH
- SURFACE WATER FLOW



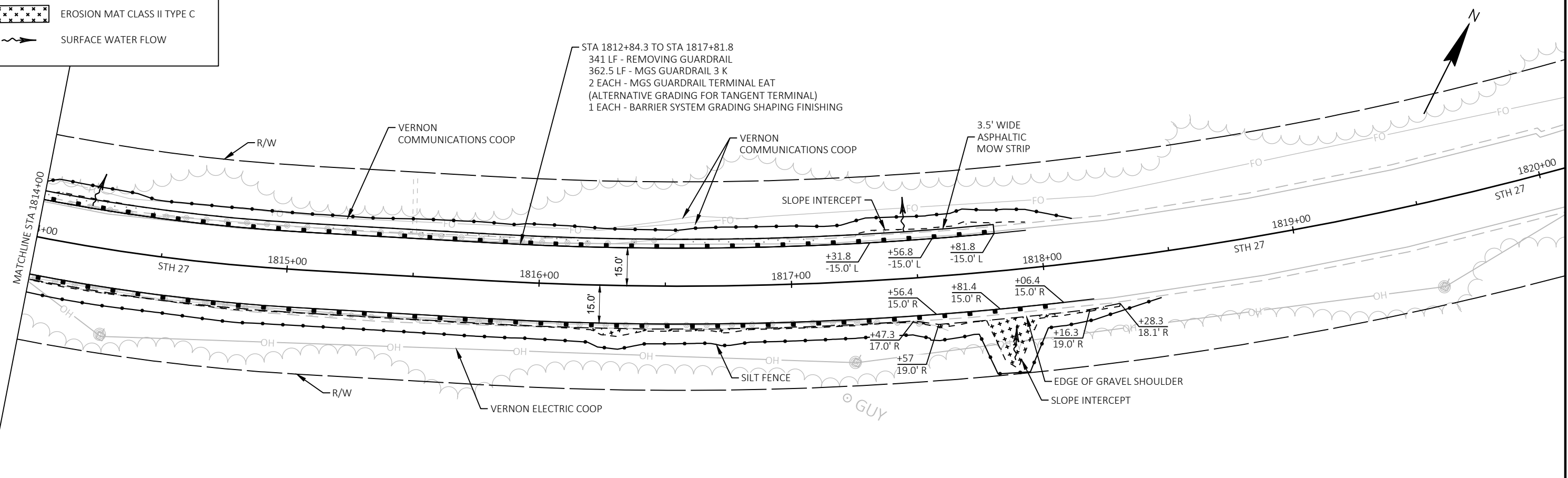


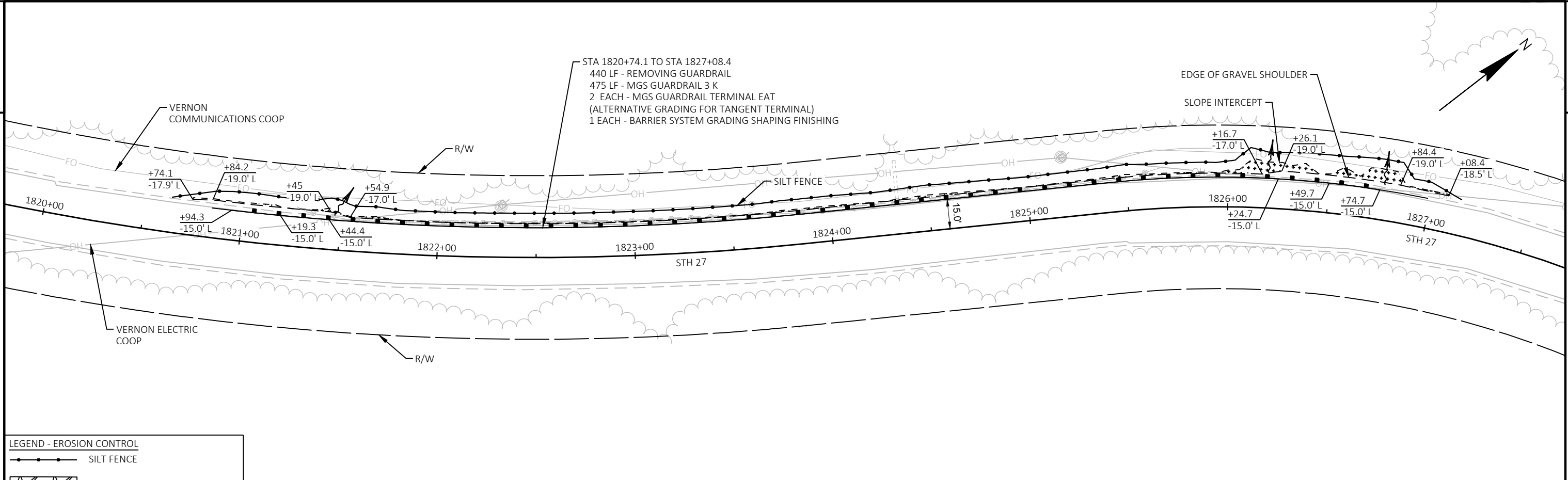
**LEGEND - EROSION CONTROL**

- SILT FENCE
- RIPRAP MEDIUM
- EROSION MAT CLASS II TYPE C
- SURFACE WATER FLOW

STA 1808+79.3 TO STA 1818+28.3  
 790 LF - REMOVING GUARDRAIL  
 800 LF - MGS GUARDRAIL 3 K  
 2 EACH - MGS GUARDRAIL TERMINAL EAT  
 (ALTERNATIVE GRADING FOR TANGENT TERMINAL)  
 1 EACH - BARRIER SYSTEM GRADING SHAPING FINISHING

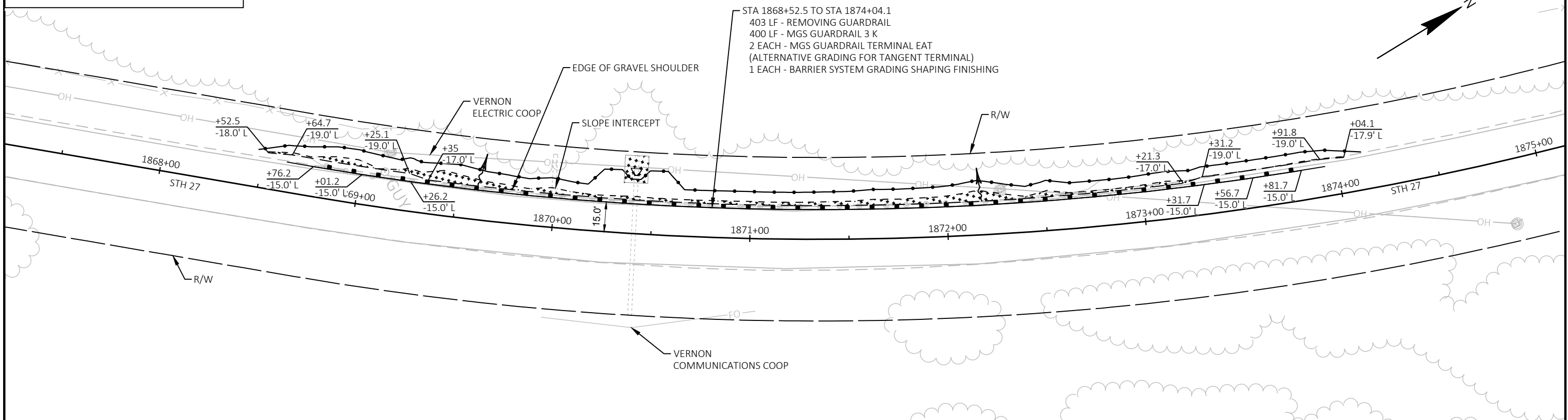
STA 1812+84.3 TO STA 1817+81.8  
 341 LF - REMOVING GUARDRAIL  
 362.5 LF - MGS GUARDRAIL 3 K  
 2 EACH - MGS GUARDRAIL TERMINAL EAT  
 (ALTERNATIVE GRADING FOR TANGENT TERMINAL)  
 1 EACH - BARRIER SYSTEM GRADING SHAPING FINISHING



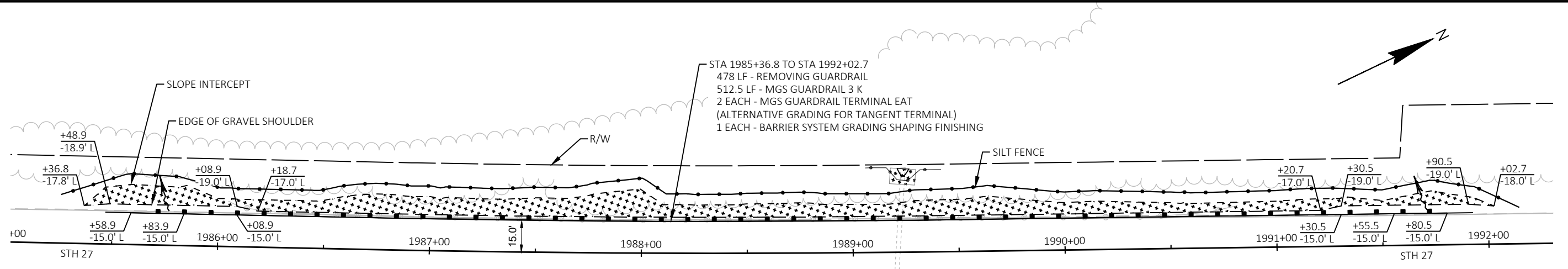


**LEGEND - EROSION CONTROL**

- SILT FENCE
- RIPRAP MEDIUM
- EROSION MAT CLASS II TYPE C
- SURFACE WATER FLOW



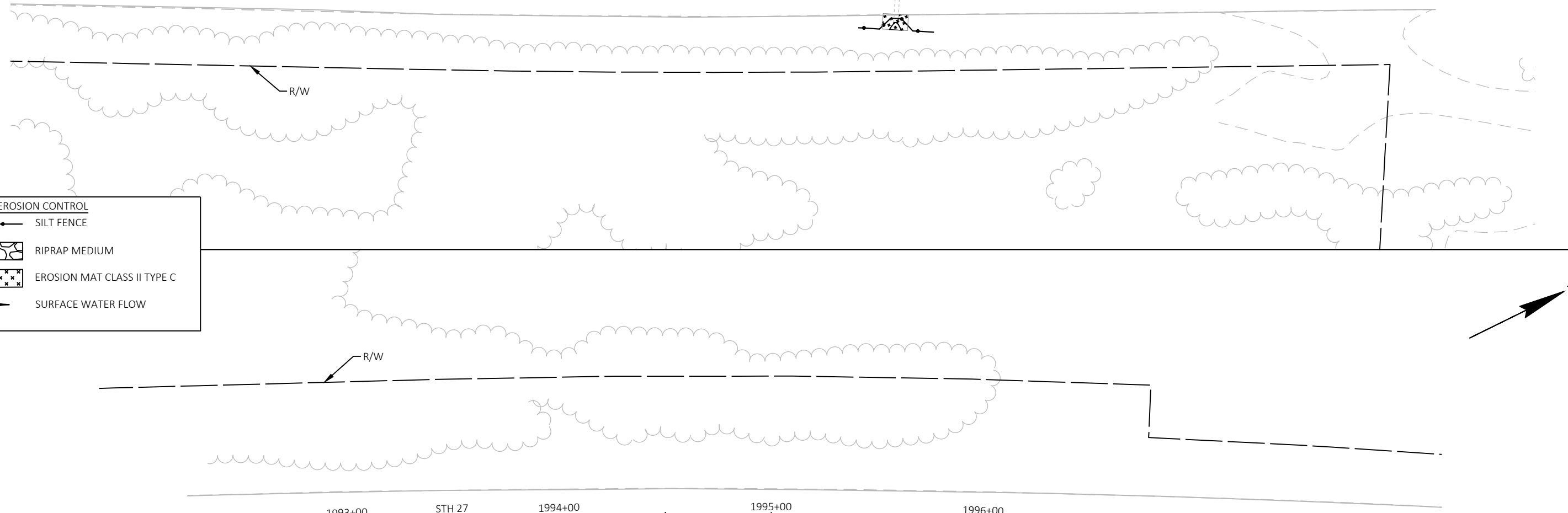
|                        |             |                |                          |       |          |
|------------------------|-------------|----------------|--------------------------|-------|----------|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN DETAILS - GUARDRAIL | SHEET | <b>E</b> |
|------------------------|-------------|----------------|--------------------------|-------|----------|



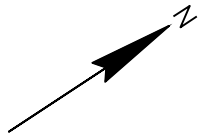
STA 1985+36.8 TO STA 1992+02.7  
 478 LF - REMOVING GUARDRAIL  
 512.5 LF - MGS GUARDRAIL 3 K  
 2 EACH - MGS GUARDRAIL TERMINAL EAT  
 (ALTERNATIVE GRADING FOR TANGENT TERMINAL)  
 1 EACH - BARRIER SYSTEM GRADING SHAPING FINISHING

**LEGEND - EROSION CONTROL**

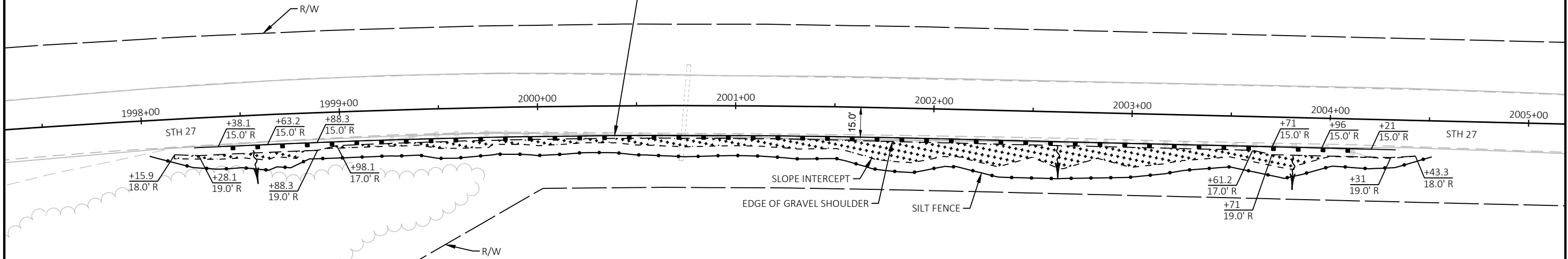
- SILT FENCE
- RIPRAP MEDIUM
- EROSION MAT CLASS II TYPE C
- SURFACE WATER FLOW





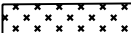
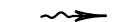
STA 1991+90.3 TO STA 1996+75.4  
 441 LF - REMOVING GUARDRAIL  
 337.5 LF - MGS GUARDRAIL 3 K  
 2 EACH - MGS GUARDRAIL TERMINAL EAT  
 (ALTERNATIVE GRADING FOR TANGENT TERMINAL)  
 1 EACH - BARRIER SYSTEM GRADING SHAPING FINISHING

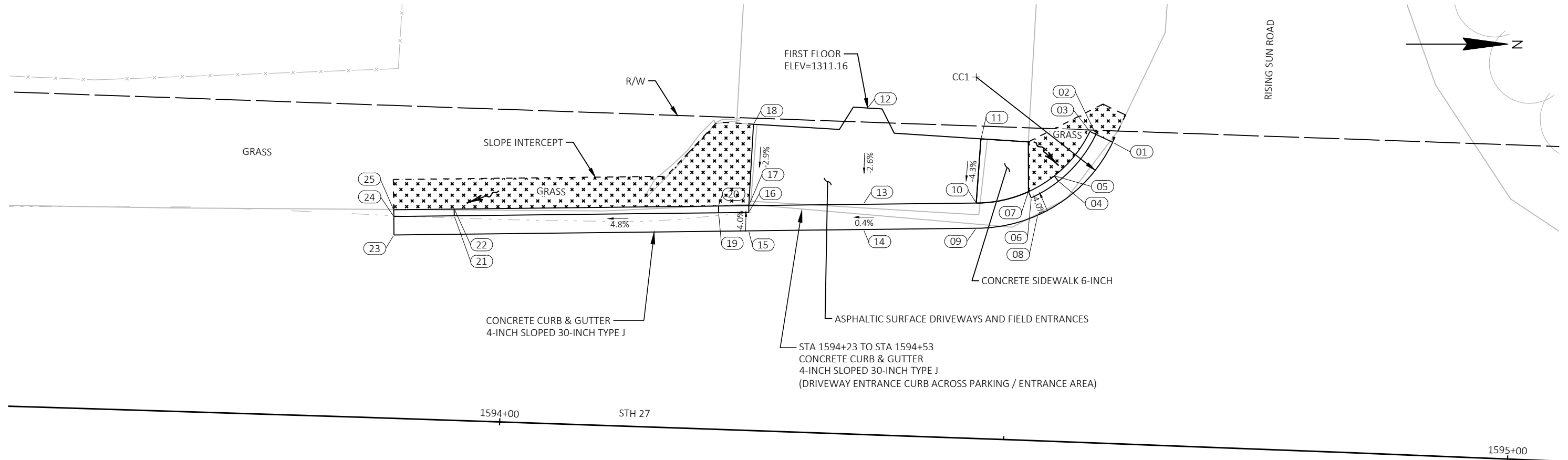


STA 1998+15.9 TO STA 2004+43.3  
 504 LF - REMOVING GUARDRAIL  
 475 LF - MGS GUARDRAIL 3 K  
 2 EACH - MGS GUARDRAIL TERMINAL EAT  
 (ALTERNATIVE GRADING FOR TANGENT TERMINAL)  
 1 EACH - BARRIER SYSTEM GRADING SHAPING FINISHING



**LEGEND - EROSION CONTROL**

-  SILT FENCE
-  RIPRAP MEDIUM
-  EROSION MAT CLASS II TYPE C
-  SURFACE WATER FLOW



LEGEND - EROSION CONTROL

- EROSION MAT CLASS II TYPE C
- SURFACE WATER FLOW

RADIUS POINT TABLE

| POINT | STATION             | OFFSET   | RADIUS | COORDINATES                    |
|-------|---------------------|----------|--------|--------------------------------|
| CC1   | 1594+45.96 - STH 27 | 35.8' LT | 15.0'  | Y = 255087.64<br>X = 367937.39 |

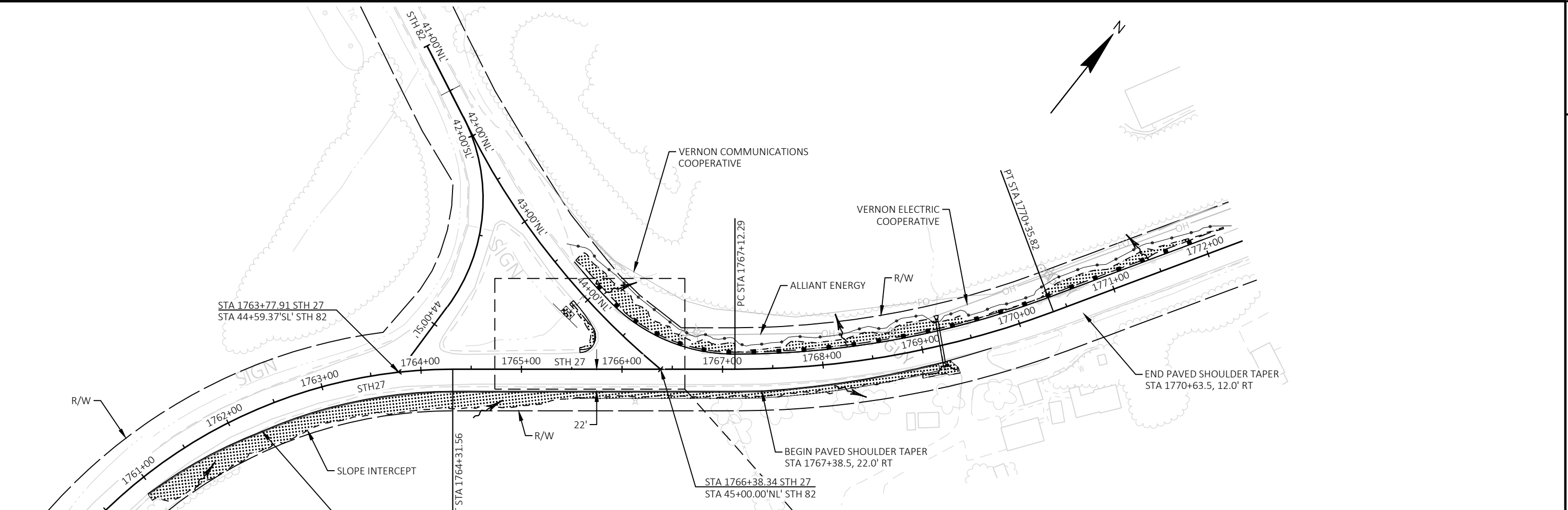
Curb & Gutter\_1594+00

| POINT NUMBER | STATION    | OFFSET   | ELEVATION | NORTHING  | EASTING   |
|--------------|------------|----------|-----------|-----------|-----------|
| 01           | 1594+59.69 | 29.87' L | 1312.64   | 255101.17 | 367943.86 |
| 02           | 1594+58.01 | 30.59' L | 1312.58   | 255099.52 | 367943.07 |
| 03           | 1594+57.40 | 30.86' L | 1312.92   | 255098.91 | 367942.78 |
| 04           | 1594+54.48 | 25.81' L | 1311.61   | 255095.80 | 367947.72 |
| 05           | 1594+54.05 | 26.32' L | 1311.95   | 255095.38 | 367947.20 |
| 06           | 1594+51.85 | 24.06' L | 1311.02   | 255093.10 | 367949.37 |
| 07           | 1594+51.55 | 24.66' L | 1311.18   | 255092.82 | 367948.76 |
| 08           | 1594+52.55 | 22.37' L | 1311.07   | 255093.74 | 367951.09 |
| 09           | 1594+46.53 | 20.85' L | 1310.98   | 255087.66 | 367952.39 |
| 10           | 1594+46.43 | 23.35' L | 1311.09   | 255087.65 | 367949.89 |
| 11           | 1594+46.66 | 29.70' L | 1311.17   | 255088.12 | 367943.54 |
| 12           | 1594+35.35 | 32.38' L | 1310.98   | 255076.89 | 367940.46 |
| 13           | 1594+35.25 | 22.81' L | 1310.73   | 255076.44 | 367950.01 |
| 14           | 1594+35.36 | 20.32' L | 1310.73   | 255076.47 | 367952.51 |
| 15           | 1594+24.00 | 19.78' L | 1310.62   | 255065.08 | 367952.65 |

Curb & Gutter\_1594+00

| POINT NUMBER | STATION    | OFFSET   | ELEVATION | NORTHING  | EASTING   |
|--------------|------------|----------|-----------|-----------|-----------|
| 16           | 1594+23.96 | 21.61' L | 1310.43   | 255065.10 | 367950.82 |
| 17           | 1594+23.93 | 22.28' L | 1310.50   | 255065.10 | 367950.15 |
| 18           | 1594+24.12 | 30.37' L | 1311.55   | 255065.57 | 367942.07 |
| 19           | 1594+20.97 | 21.47' L | 1310.34   | 255062.10 | 367950.85 |
| 20           | 1594+20.94 | 22.14' L | 1310.68   | 255062.10 | 367950.18 |
| 21           | 1593+94.82 | 20.27' L | 1309.09   | 255035.90 | 367951.15 |
| 22           | 1593+94.79 | 20.94' L | 1309.45   | 255035.89 | 367950.48 |
| 23           | 1593+88.92 | 18.18' L | 1308.88   | 255029.92 | 367953.05 |
| 24           | 1593+88.84 | 20.01' L | 1308.85   | 255029.90 | 367951.22 |
| 25           | 1593+88.81 | 20.68' L | 1308.91   | 255029.89 | 367950.55 |



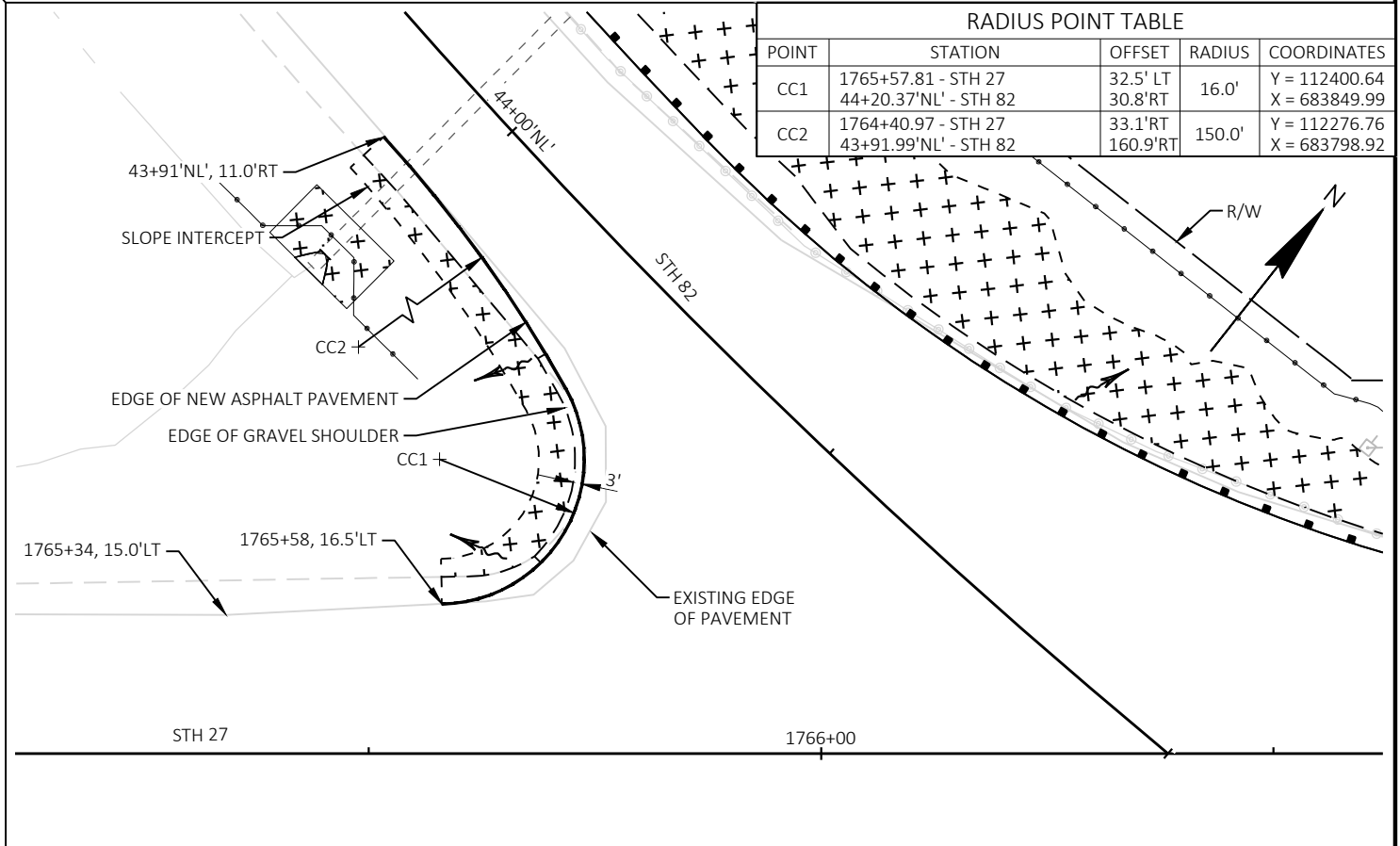


**LEGEND - EROSION CONTROL**

- SILT FENCE
- EROSION MAT CLASS II, TYPE C
- SURFACE WATER FLOW

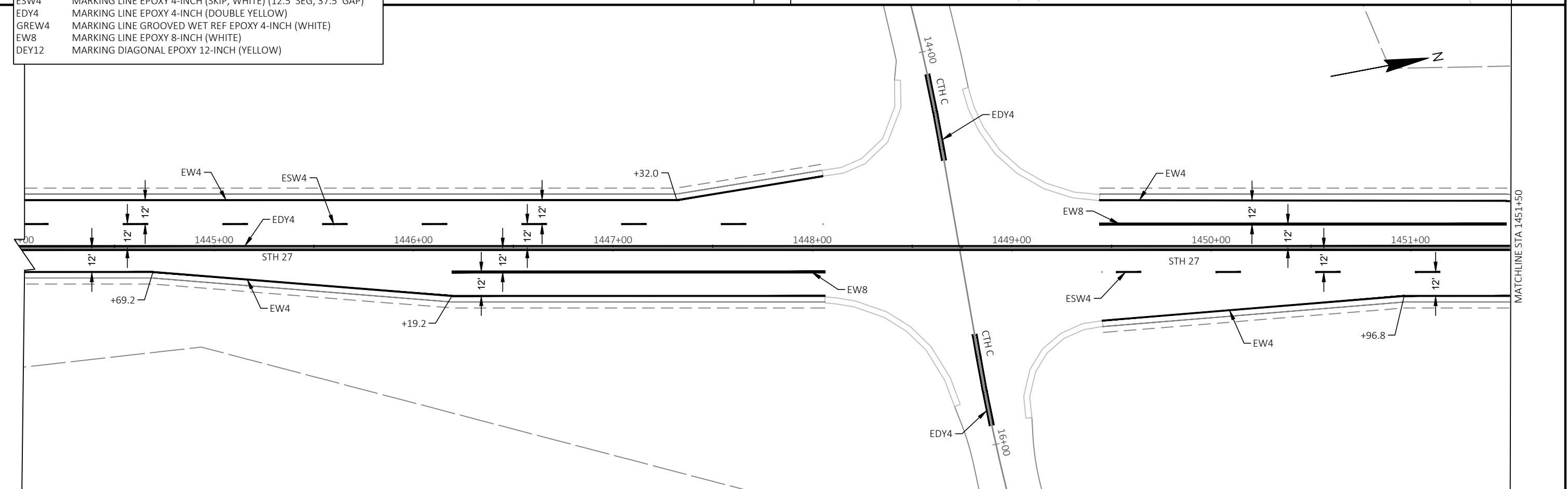
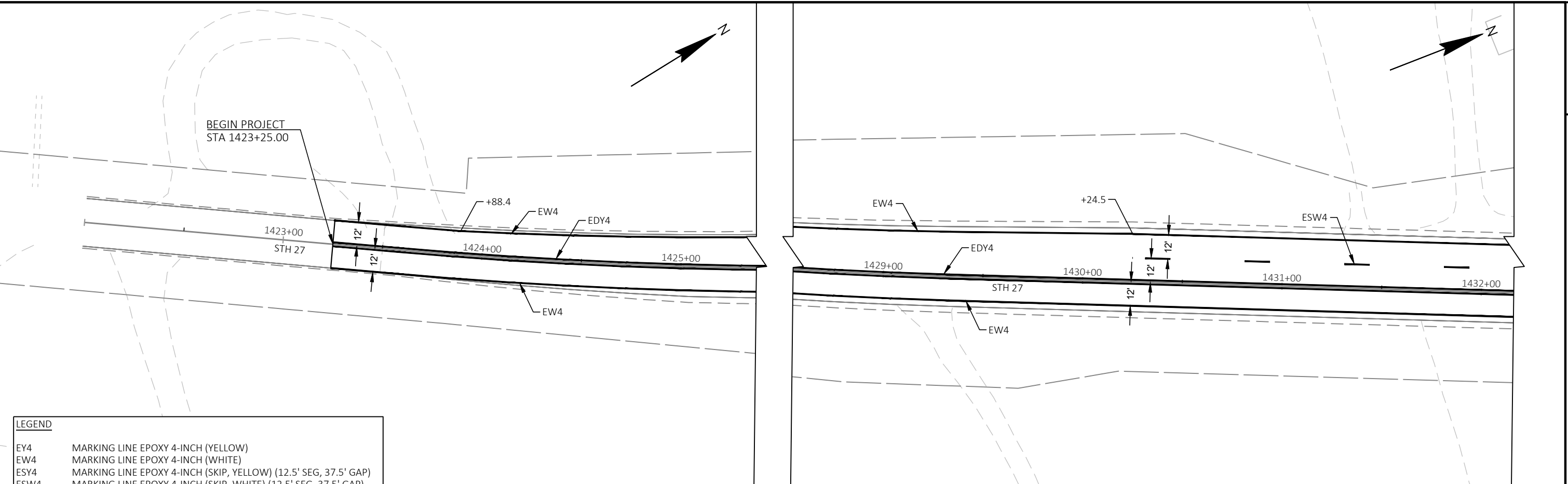
**RADIUS POINT TABLE**

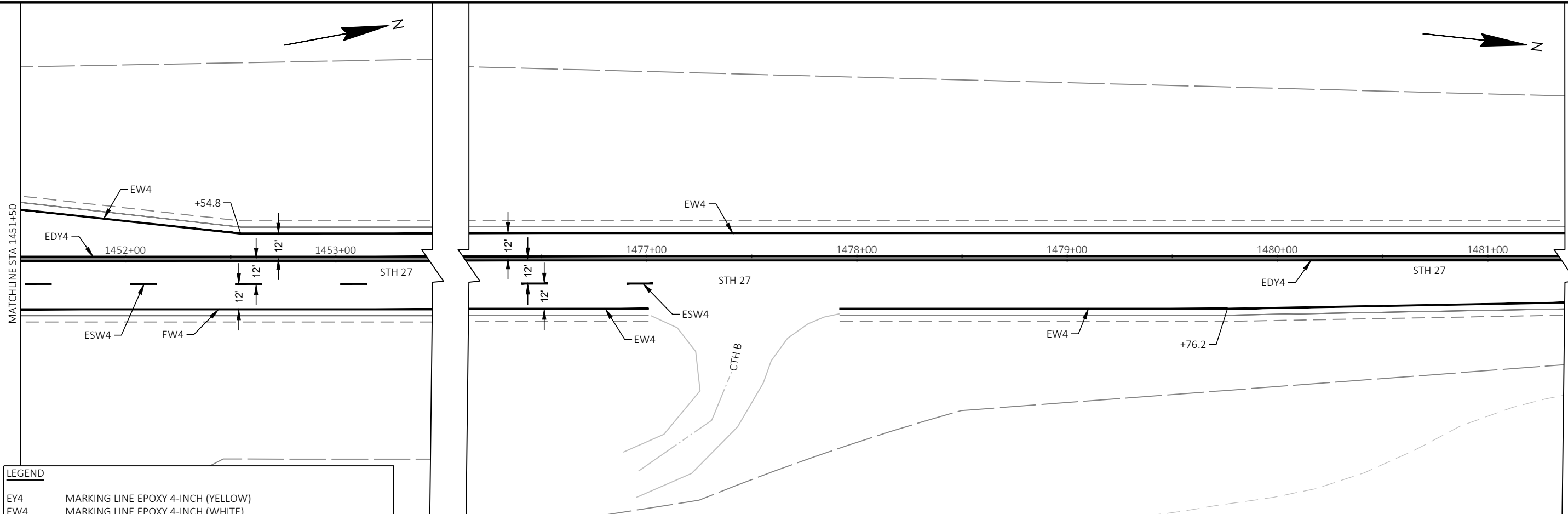
| POINT | STATION                                      | OFFSET                | RADIUS | COORDINATES                    |
|-------|--|-----------------------|--------|--------------------------------|
| CC1   | 1765+57.81 - STH 27<br>44+20.37'NL' - STH 82 | 32.5' LT<br>30.8' RT  | 16.0'  | Y = 112400.64<br>X = 683849.99 |
| CC2   | 1764+40.97 - STH 27<br>43+91.99'NL' - STH 82 | 33.1' RT<br>160.9' RT | 150.0' | Y = 112276.76<br>X = 683798.92 |



BEGIN PROJECT  
STA 1423+25.00

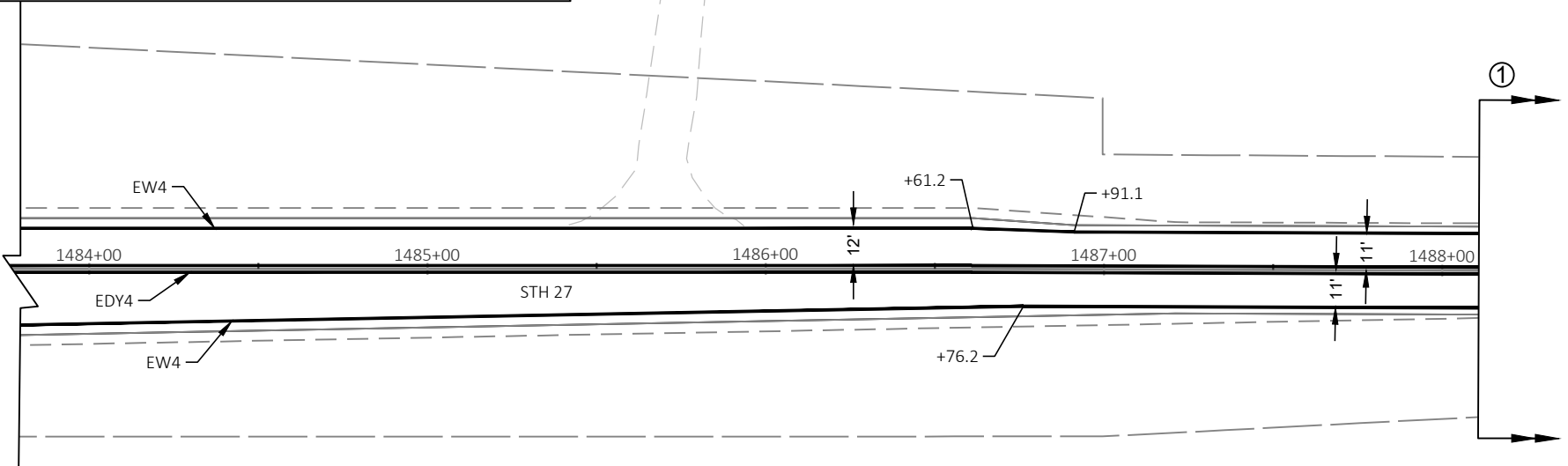
| LEGEND |   |
|--------|---|
| EY4    | MARKING LINE EPOXY 4-INCH (YELLOW)                              |
| EW4    | MARKING LINE EPOXY 4-INCH (WHITE)                               |
| ESY4   | MARKING LINE EPOXY 4-INCH (SKIP, YELLOW) (12.5' SEG, 37.5' GAP) |
| ESW4   | MARKING LINE EPOXY 4-INCH (SKIP, WHITE) (12.5' SEG, 37.5' GAP)  |
| EDY4   | MARKING LINE EPOXY 4-INCH (DOUBLE YELLOW)                       |
| GREW4  | MARKING LINE GROOVED WET REF EPOXY 4-INCH (WHITE)               |
| EW8    | MARKING LINE EPOXY 8-INCH (WHITE)                               |
| DEY12  | MARKING DIAGONAL EPOXY 12-INCH (YELLOW)                         |





**LEGEND**

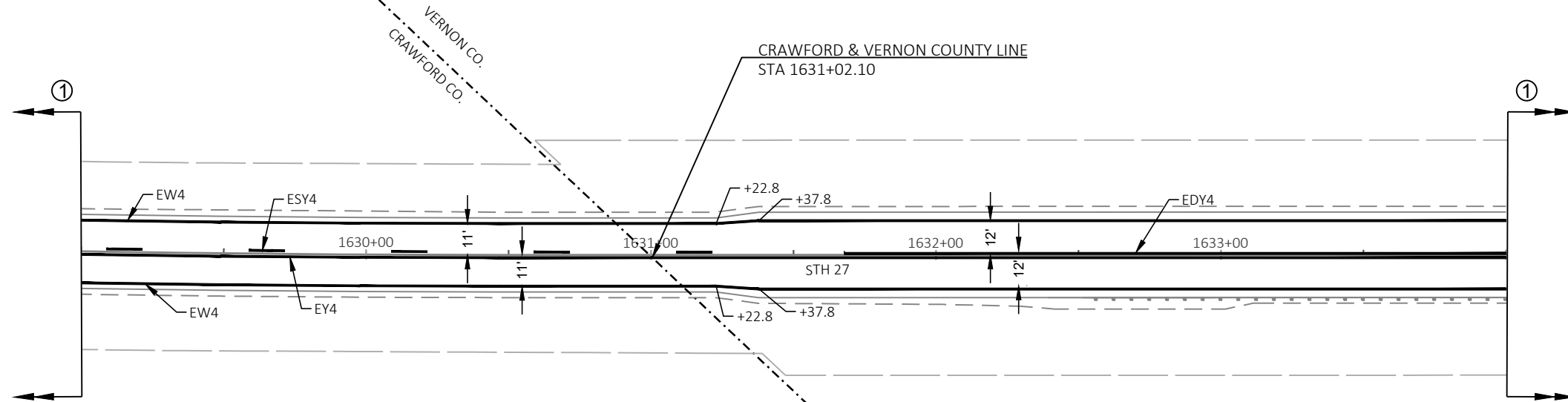
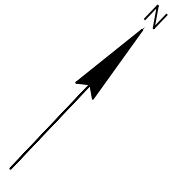
|       |   |
|-------|---|
| EY4   | MARKING LINE EPOXY 4-INCH (YELLOW)                              |
| EW4   | MARKING LINE EPOXY 4-INCH (WHITE)                               |
| ESY4  | MARKING LINE EPOXY 4-INCH (SKIP, YELLOW) (12.5' SEG, 37.5' GAP) |
| ESW4  | MARKING LINE EPOXY 4-INCH (SKIP, WHITE) (12.5' SEG, 37.5' GAP)  |
| EDY4  | MARKING LINE EPOXY 4-INCH (DOUBLE YELLOW)                       |
| GREW4 | MARKING LINE GROOVED WET REF EPOXY 4-INCH (WHITE)               |
| EW8   | MARKING LINE EPOXY 8-INCH (WHITE)                               |
| DEY12 | MARKING DIAGONAL EPOXY 12-INCH (YELLOW)                         |



**PAVEMENT MARKING NOTES**

REPLACE THE PASSING AND NO PASSING ZONES AT THEIR EXISTING LOCATIONS.

① FOLLOW SDD "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGELINE MARKINGS.



**LEGEND**

|       |   |
|-------|---|
| EY4   | MARKING LINE EPOXY 4-INCH (YELLOW)                              |
| EW4   | MARKING LINE EPOXY 4-INCH (WHITE)                               |
| ESY4  | MARKING LINE EPOXY 4-INCH (SKIP, YELLOW) (12.5' SEG, 37.5' GAP) |
| ESW4  | MARKING LINE EPOXY 4-INCH (SKIP, WHITE) (12.5' SEG, 37.5' GAP)  |
| EDY4  | MARKING LINE EPOXY 4-INCH (DOUBLE YELLOW)                       |
| GREW4 | MARKING LINE GROOVED WET REF EPOXY 4-INCH (WHITE)               |
| EW8   | MARKING LINE EPOXY 8-INCH (WHITE)                               |
| DEY12 | MARKING DIAGONAL EPOXY 12-INCH (YELLOW)                         |

**PAVEMENT MARKING NOTES**

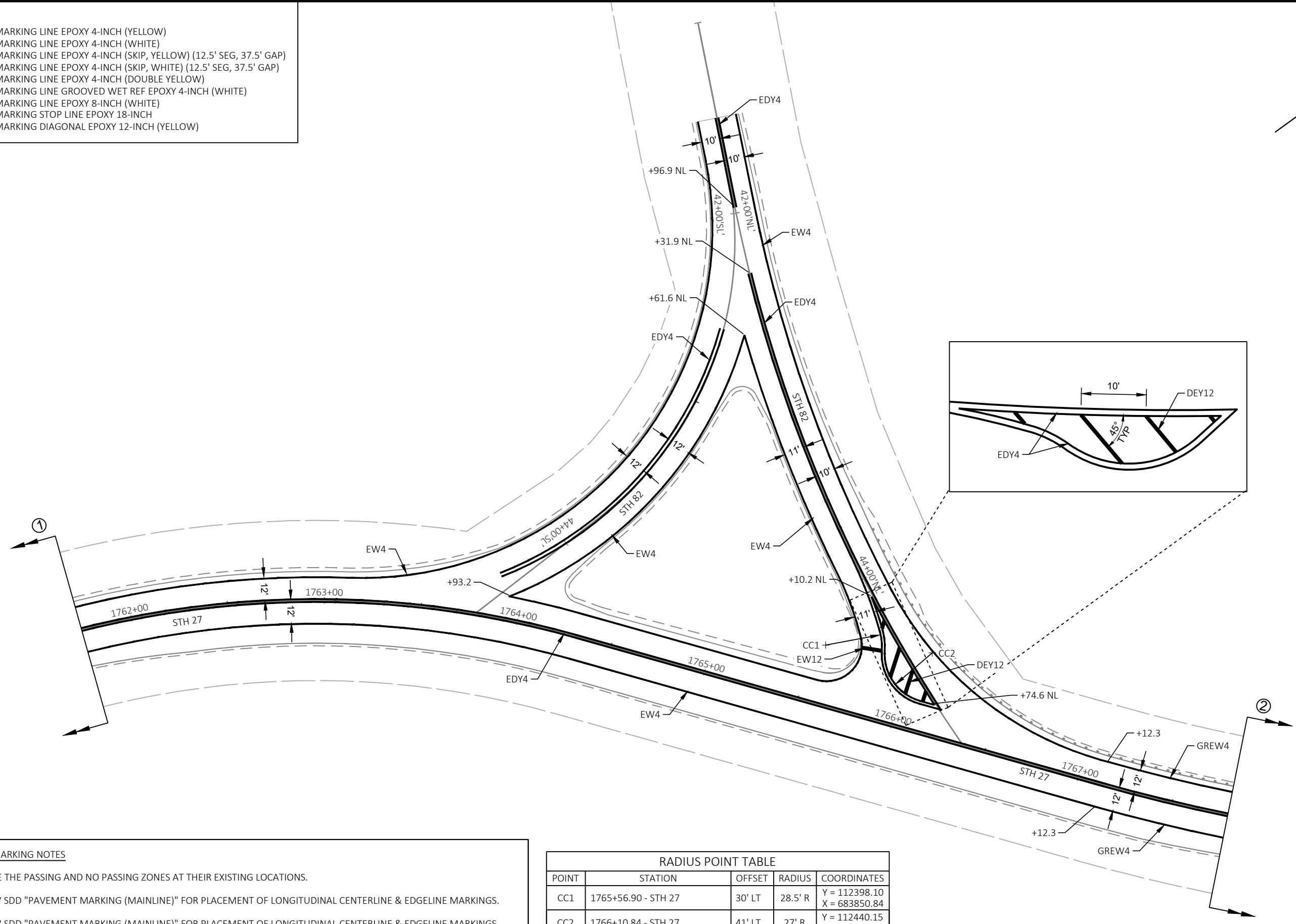
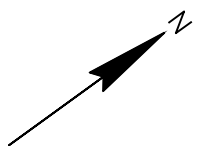
REPLACE THE PASSING AND NO PASSING ZONES AT THEIR EXISTING LOCATIONS.

① FOLLOW SDD "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGELINE MARKINGS.

| LEGEND |   |
|--------|---|
| EY4    | MARKING LINE EPOXY 4-INCH (YELLOW)                              |
| EW4    | MARKING LINE EPOXY 4-INCH (WHITE)                               |
| ESY4   | MARKING LINE EPOXY 4-INCH (SKIP, YELLOW) (12.5' SEG, 37.5' GAP) |
| ESW4   | MARKING LINE EPOXY 4-INCH (SKIP, WHITE) (12.5' SEG, 37.5' GAP)  |
| EDY4   | MARKING LINE EPOXY 4-INCH (DOUBLE YELLOW)                       |
| GREW4  | MARKING LINE GROOVED WET REF EPOXY 4-INCH (WHITE)               |
| EW8    | MARKING LINE EPOXY 8-INCH (WHITE)                               |
| EW12   | MARKING STOP LINE EPOXY 18-INCH                                 |
| DEY12  | MARKING DIAGONAL EPOXY 12-INCH (YELLOW)                         |

2

2



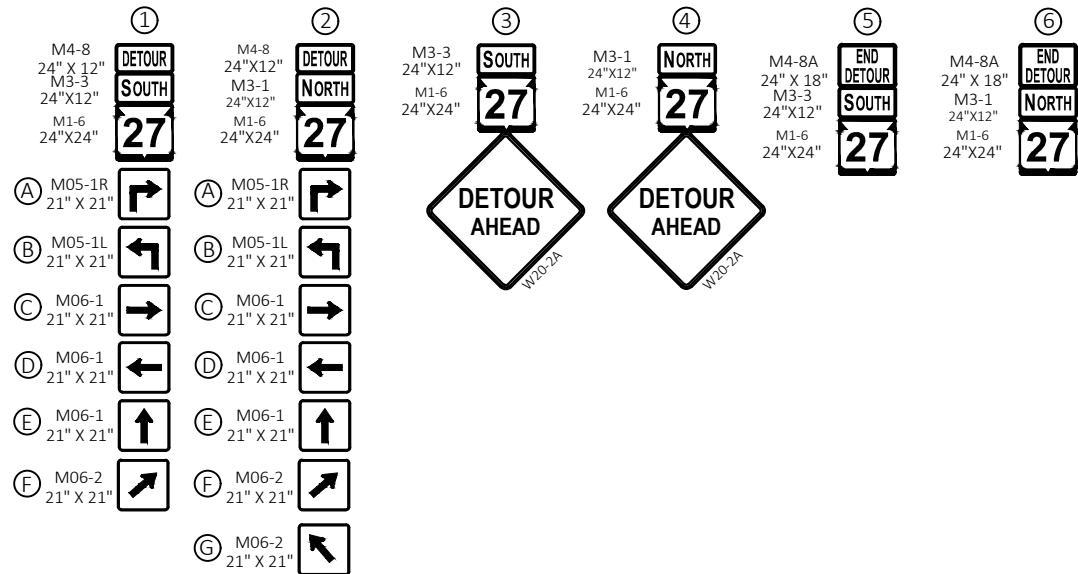
**PAVEMENT MARKING NOTES**

REPLACE THE PASSING AND NO PASSING ZONES AT THEIR EXISTING LOCATIONS.

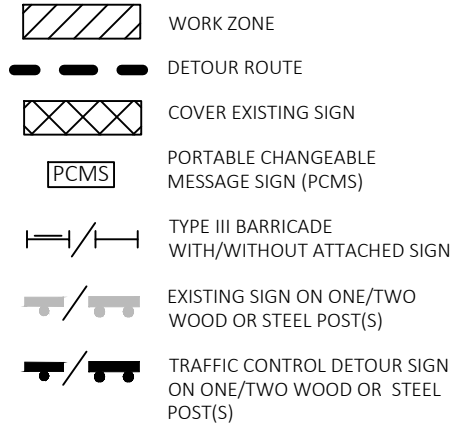
① FOLLOW SDD "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGELINE MARKINGS.

② FOLLOW SDD "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGELINE MARKINGS TO PROJECT END.

| RADIUS POINT TABLE |                     |        |         |                                |
|--------------------|---------------------|--------|---------|--------------------------------|
| POINT              | STATION             | OFFSET | RADIUS  | COORDINATES                    |
| CC1                | 1765+56.90 - STH 27 | 30' LT | 28.5' R | Y = 112398.10<br>X = 683850.84 |
| CC2                | 1766+10.84 - STH 27 | 41' LT | 27' R   | Y = 112440.15<br>X = 683886.37 |



LEGEND:



TRAFFIC CONTROL GENERAL NOTES

DRAWING IS NOT TO SCALE.

ALL TRAFFIC CONTROL SIGNS AND DEVICES AND THEIR LOCATIONS SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD), THE PLANS, STANDARD SPECIFICATIONS AND APPLICABLE STANDARD DETAIL DRAWINGS.

ALL SIDEROADS WITHIN STAGING LIMITS SHALL BE BARRICADED AND SIGNING IN ACCORDANCE WITH DETAIL 4 OF THE STANDARD DETAIL 15CO3 BARRICADES AND SIGNS FOR SIDEROAD CLOSURES.

ALL SIGNS INAPPROPRIATE TO THE WORK ZONE, INCLUDING PRE-EXISTING SIGNS, SHALL BE COVERED, REMOVED, OR ALTERED AS SPECIFIED IN THE PLANS AND/OR SPECIALS PROVISIONS OR AS DIRECTED BY THE ENGINEER.

COVER DIRECTIONAL ARROWS ON DESTINATION SIGNS IN PLANS PER SIGN PLATE A4-12.

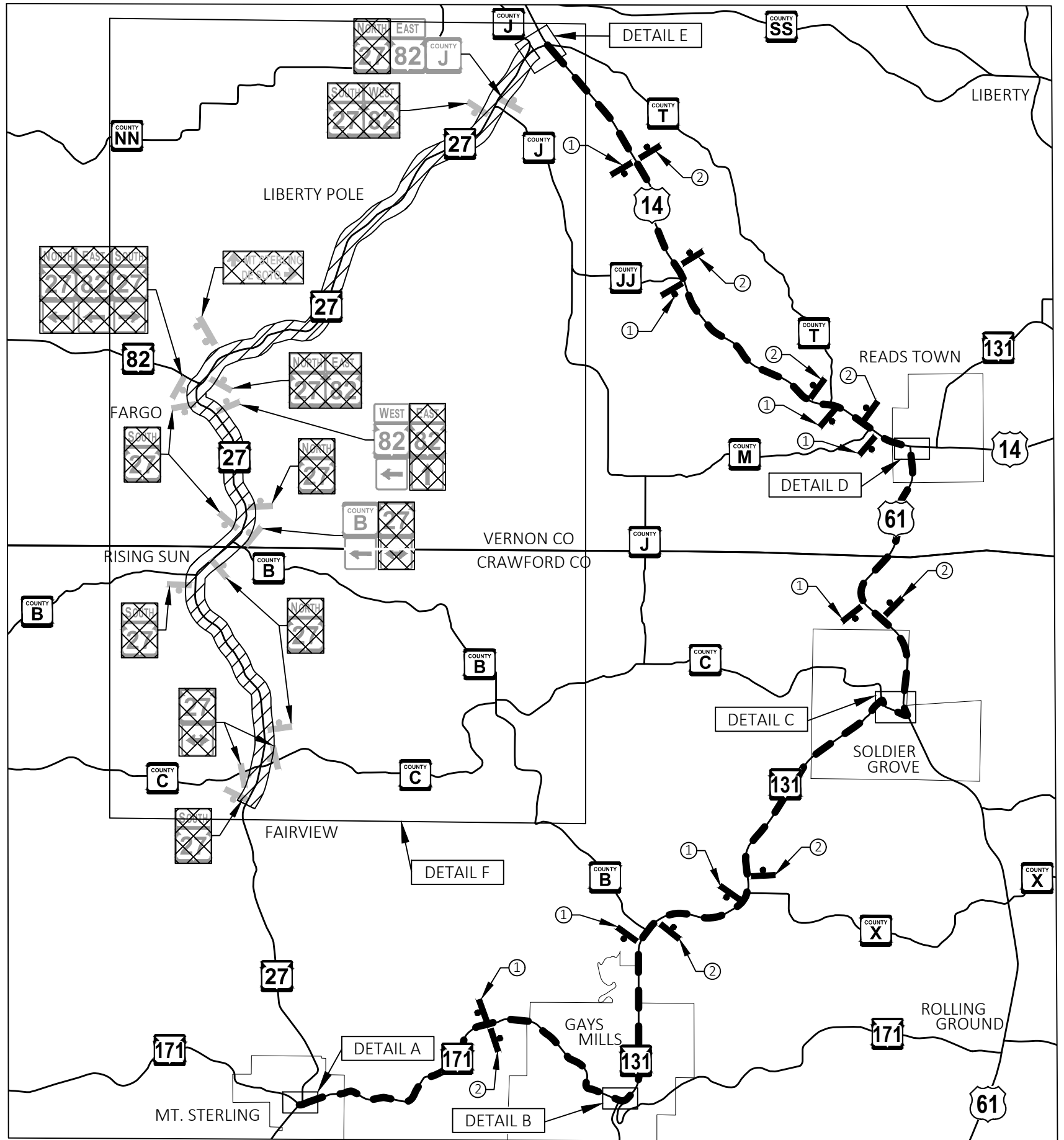
THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

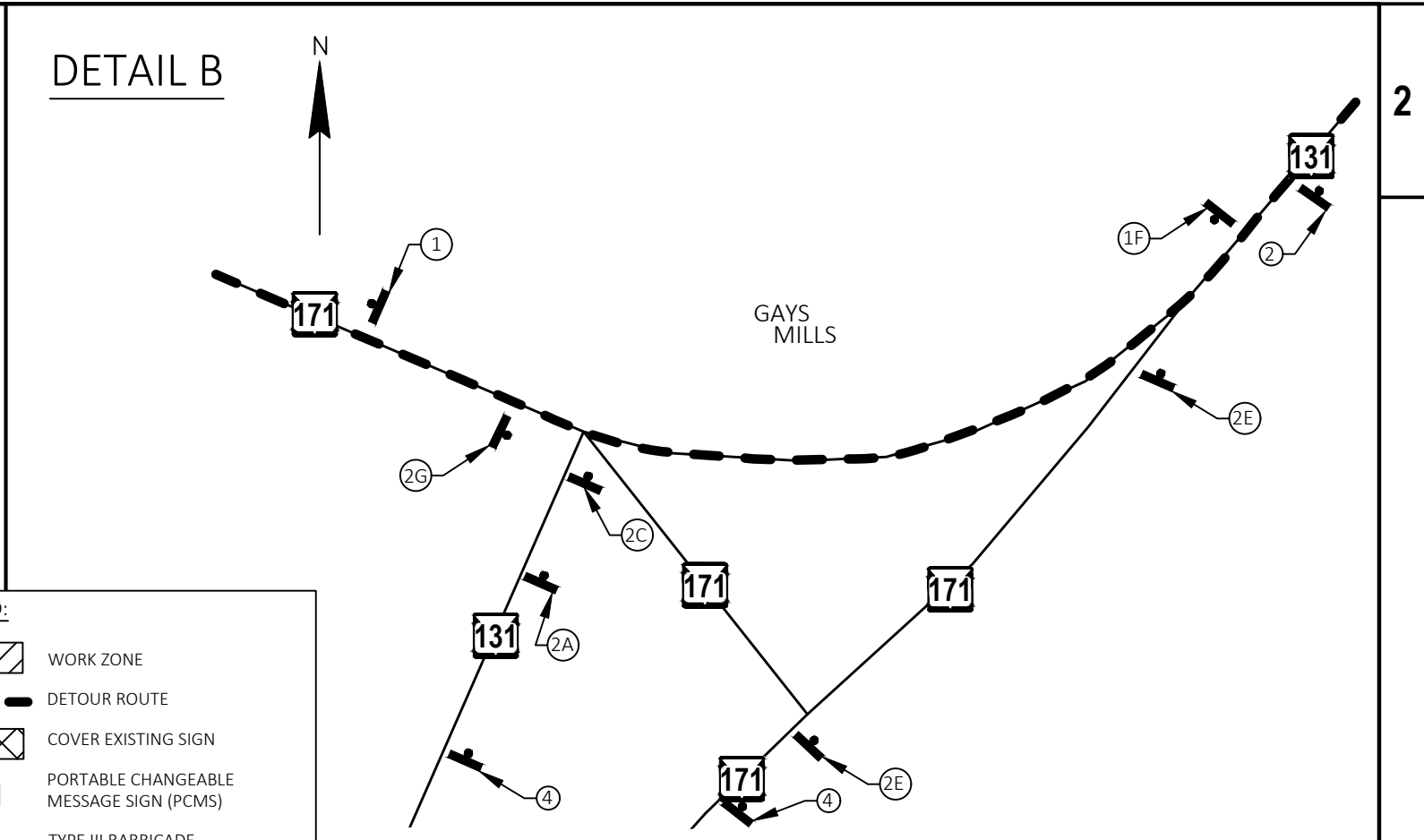
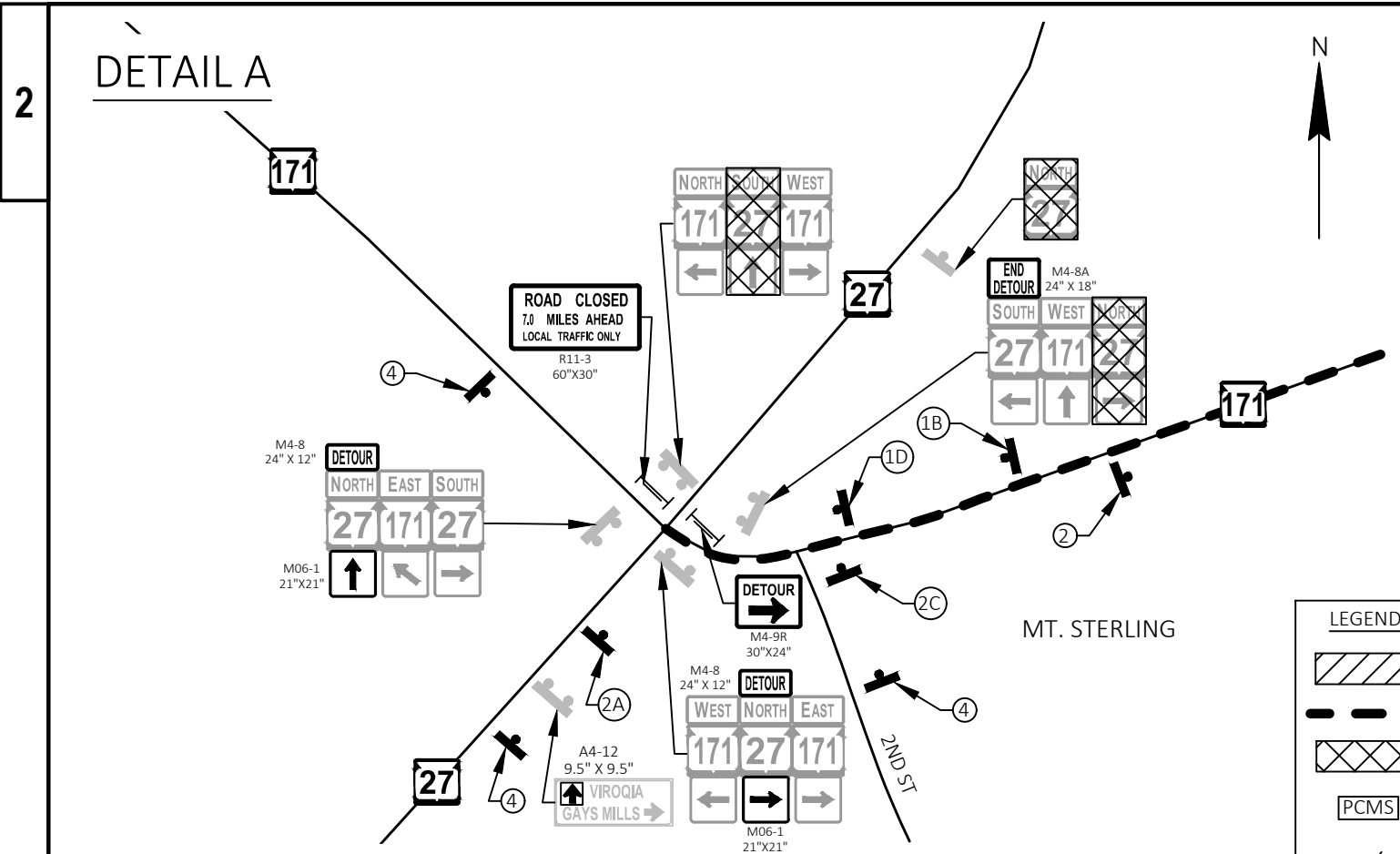
ALL W20 SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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

"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACK GROUND IS ORANGE.

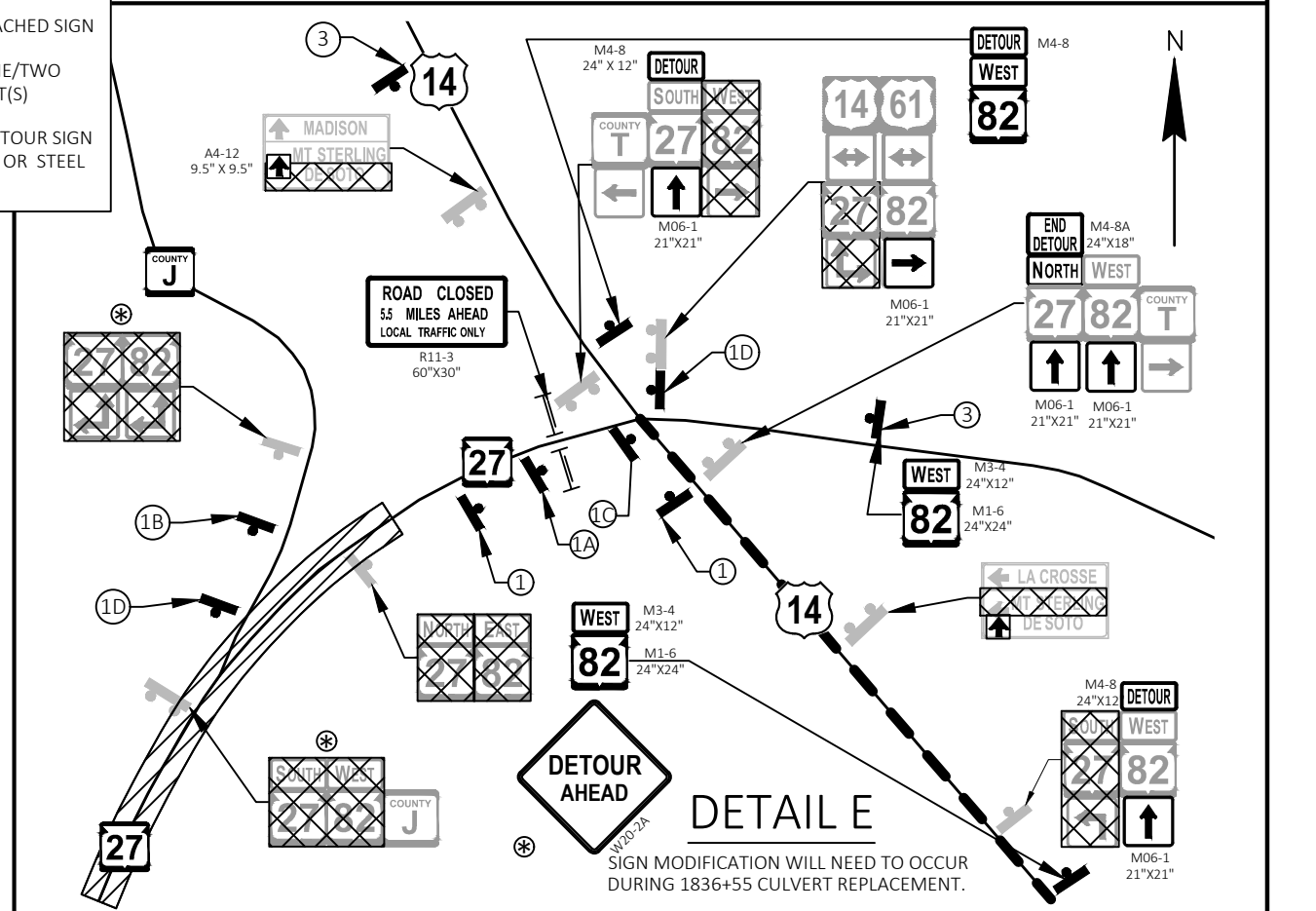
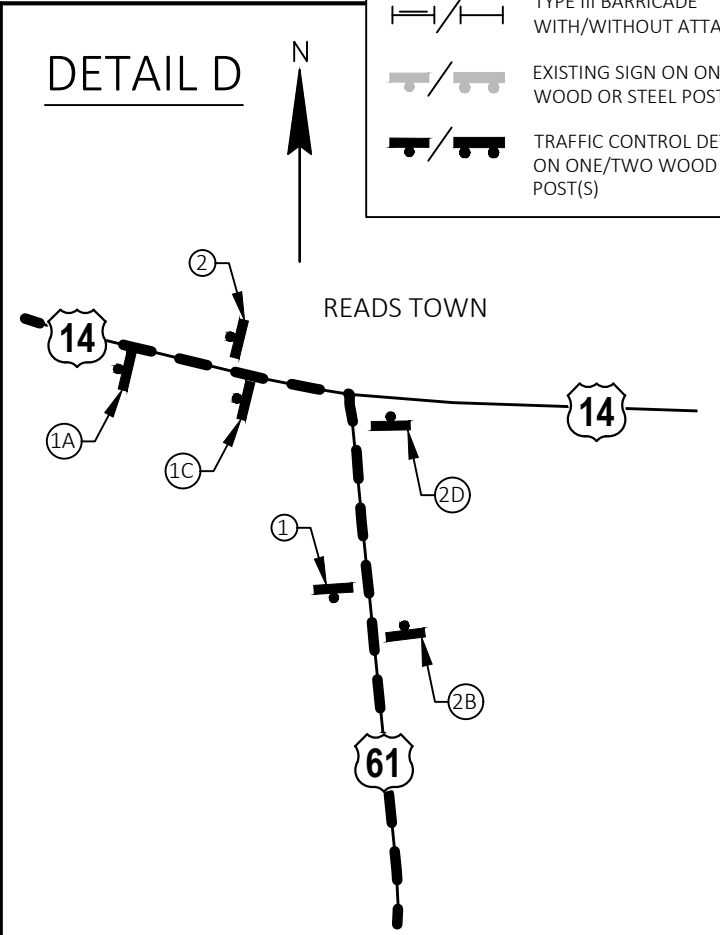
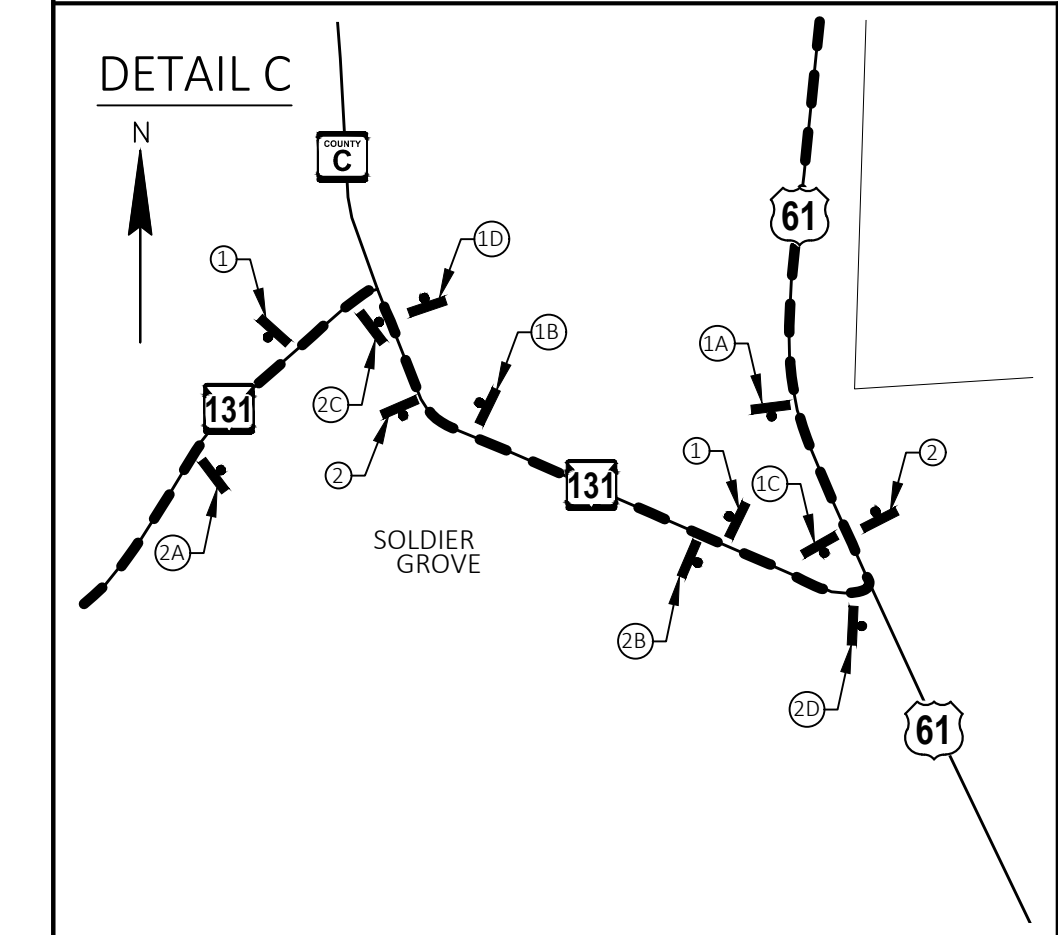
INSTALL PCMS'S WHERE NOTED ON PLANS ONE WEEK PRIOR TO HIGHWAY CLOSURE FOR STAGE 2.

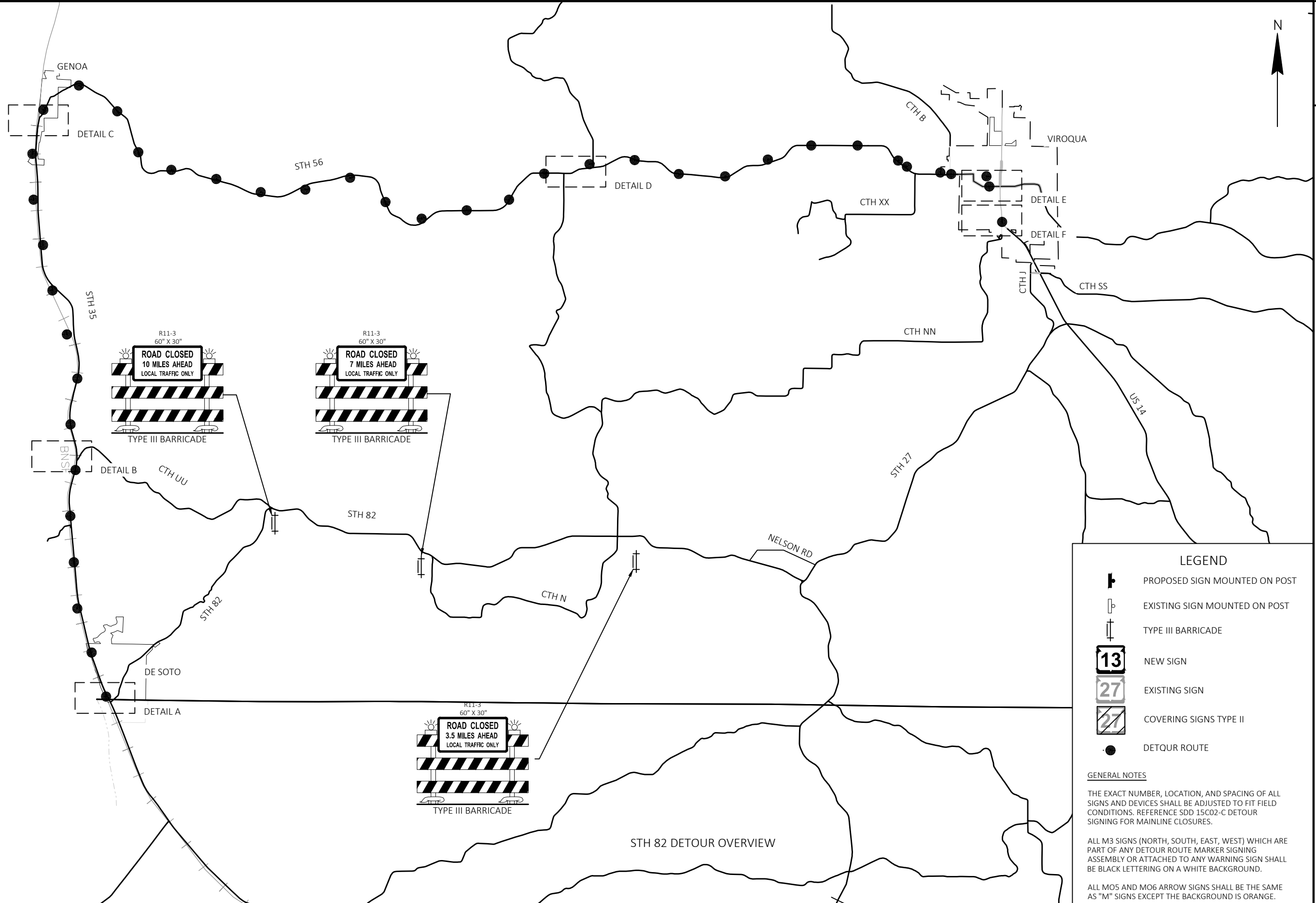




**LEGEND:**

- WORK ZONE
- DETOUR ROUTE
- COVER EXISTING SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
- TYPE III BARRICADE WITH/WITHOUT ATTACHED SIGN
- EXISTING SIGN ON ONE/TWO WOOD OR STEEL POST(S)
- TRAFFIC CONTROL DETOUR SIGN ON ONE/TWO WOOD OR STEEL POST(S)





**LEGEND**

- PROPOSED SIGN MOUNTED ON POST
- EXISTING SIGN MOUNTED ON POST
- TYPE III BARRICADE
- NEW SIGN
- EXISTING SIGN
- COVERING SIGNS TYPE II
- DETOUR ROUTE

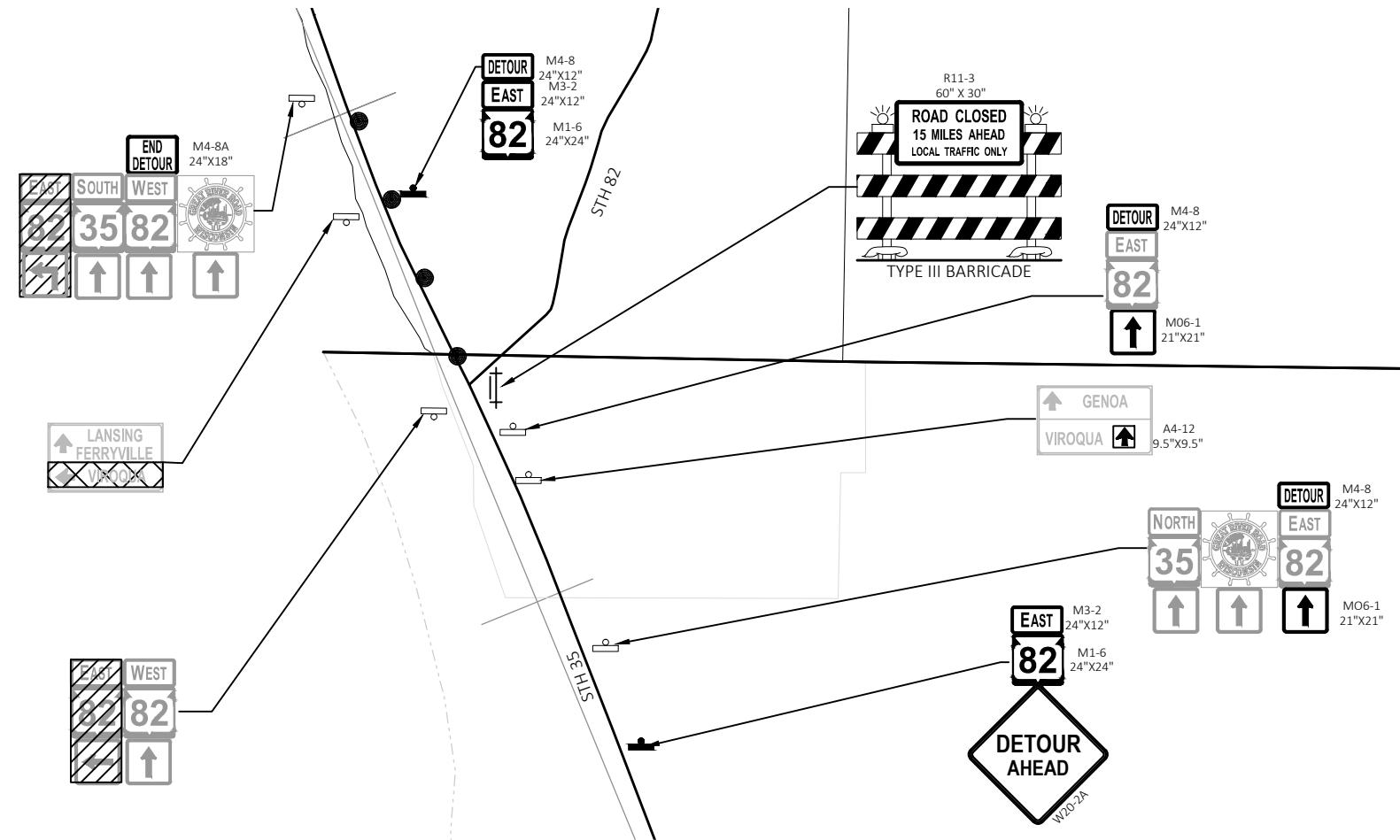
**GENERAL NOTES**

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS. REFERENCE SDD 15C02-C DETOUR SIGNING FOR MAINLINE CLOSURES.

ALL M3 SIGNS (NORTH, SOUTH, EAST, WEST) WHICH ARE PART OF ANY DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.








ALL M05 AND M06 ARROW SIGNS SHALL BE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.





DETAIL A

**LEGEND**

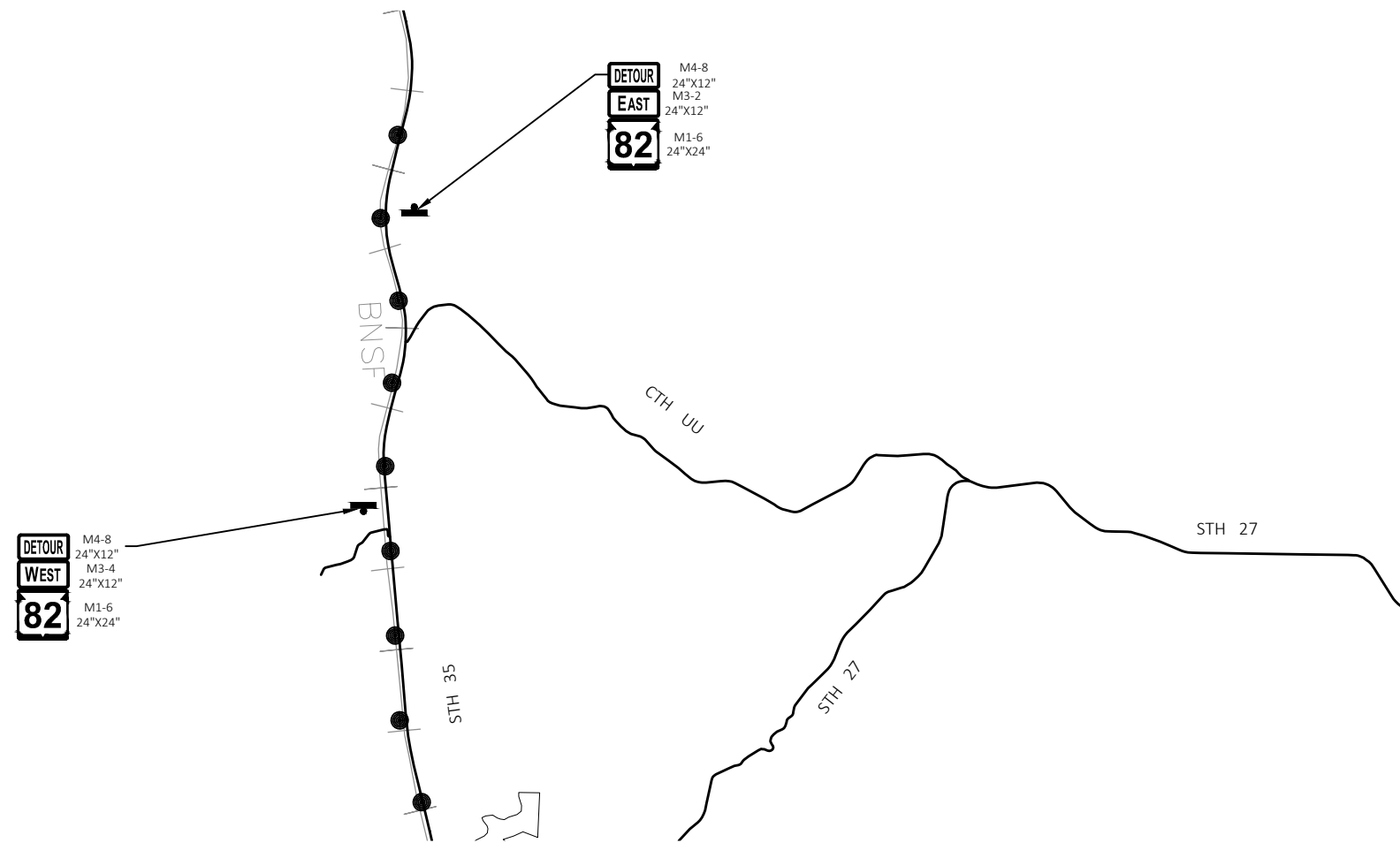
-  PROPOSED SIGN MOUNTED ON POST
-  EXISTING SIGN MOUNTED ON POST
-  TYPE III BARRICADE
-  NEW SIGN
-  EXISTING SIGN
-  COVERING SIGNS TYPE II
-  DETOUR ROUTE

**GENERAL NOTES**

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS. REFERENCE SDD 15C02-C DETOUR SIGNING FOR MAINLINE CLOSURES.

ALL M3 SIGNS (NORTH, SOUTH, EAST, WEST) WHICH ARE PART OF ANY DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.

ALL M05 AND M06 ARROW SIGNS SHALL BE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.



DETAIL B

**LEGEND**

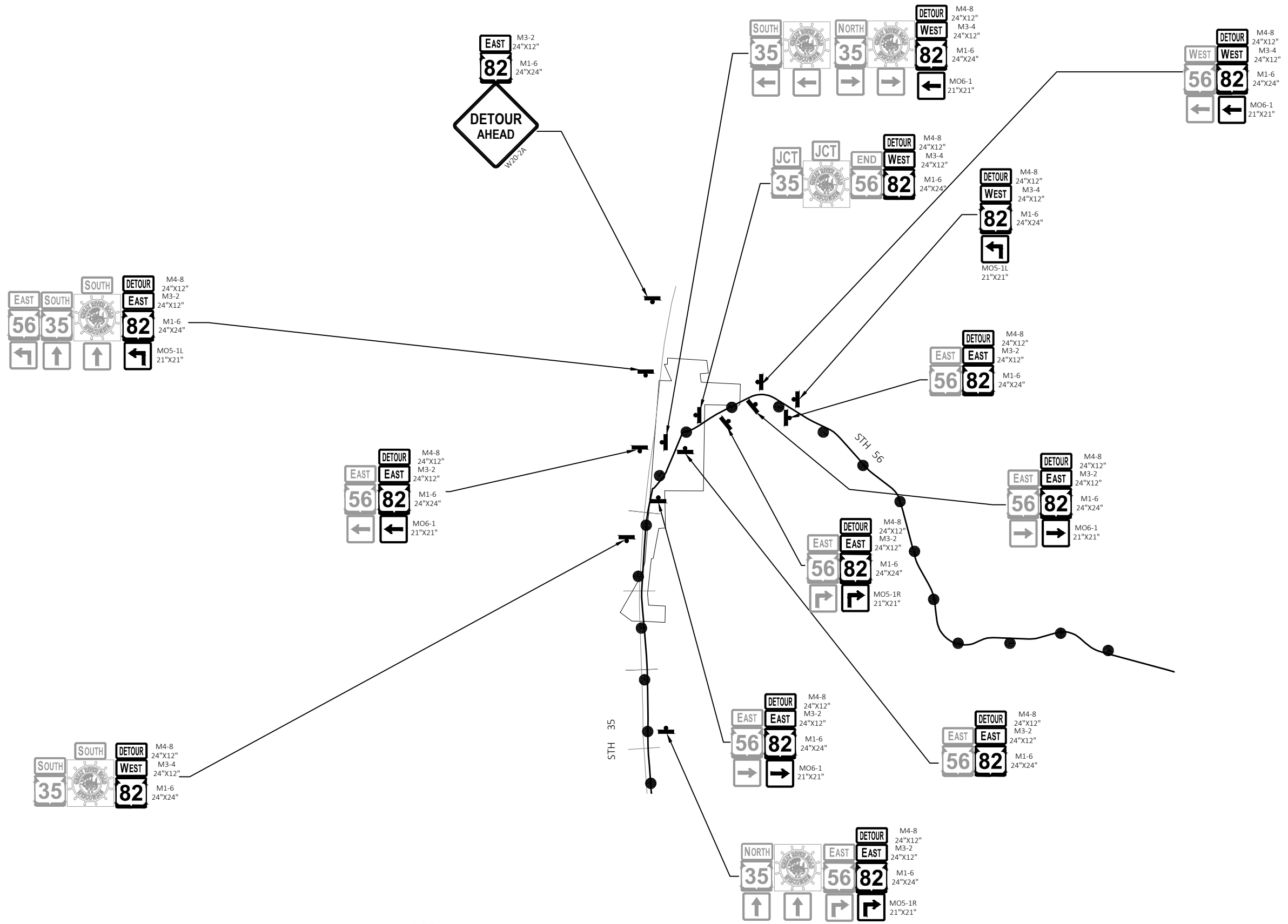
- PROPOSED SIGN MOUNTED ON POST
- EXISTING SIGN MOUNTED ON POST
- TYPE III BARRICADE
- NEW SIGN
- EXISTING SIGN
- COVERING SIGNS TYPE II
- DETOUR ROUTE

**GENERAL NOTES**

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS. REFERENCE SDD 15C02-C DETOUR SIGNING FOR MAINLINE CLOSURES.

ALL M3 SIGNS (NORTH, SOUTH, EAST, WEST) WHICH ARE PART OF ANY DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.

ALL M05 AND M06 ARROW SIGNS SHALL BE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.



DETAIL C

**LEGEND**

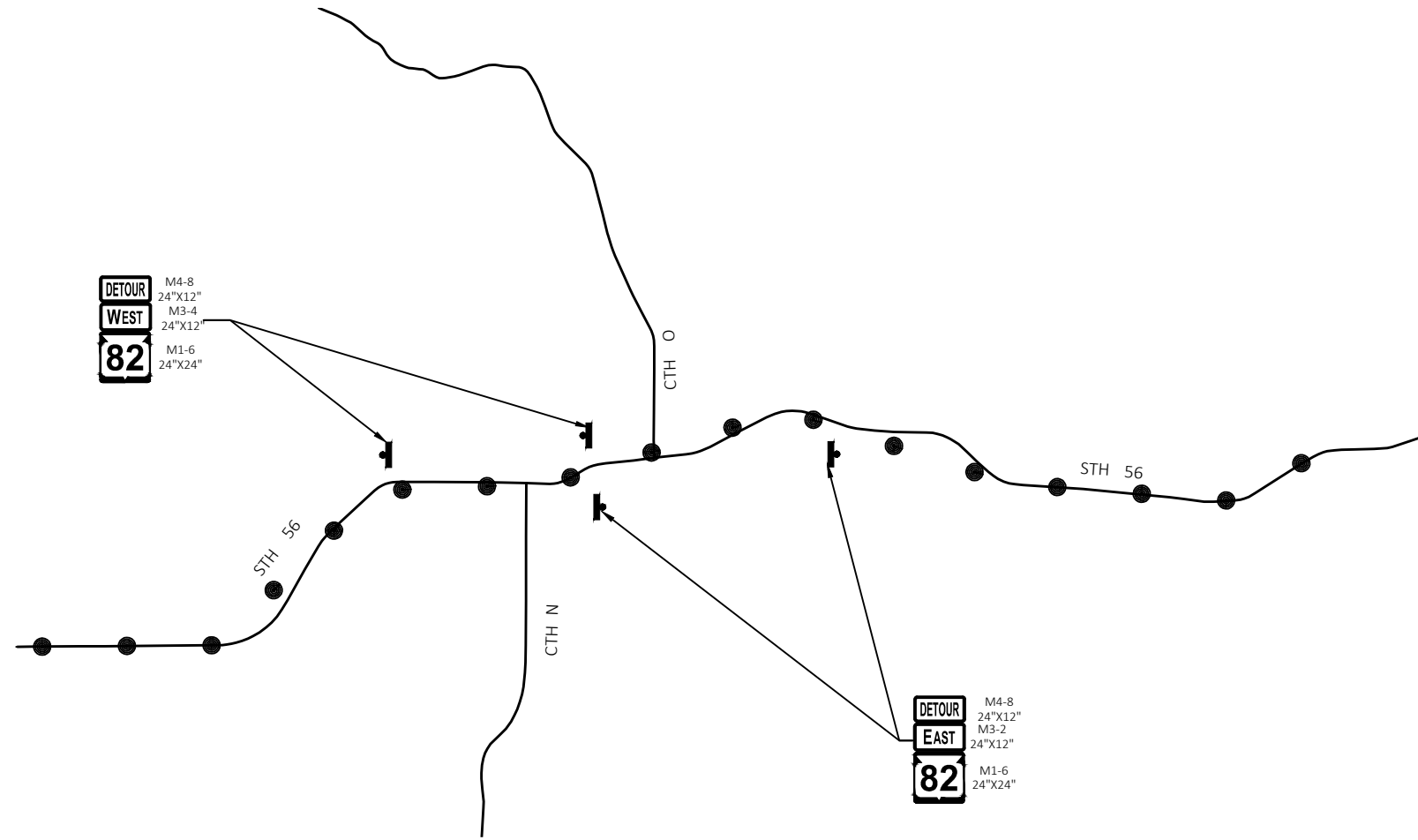
- PROPOSED SIGN MOUNTED ON POST
- EXISTING SIGN MOUNTED ON POST
- TYPE III BARRICADE
- NEW SIGN
- EXISTING SIGN
- COVERING SIGNS TYPE II
- DETOUR ROUTE

**GENERAL NOTES**

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS. REFERENCE SDD 15C02-C DETOUR SIGNING FOR MAINLINE CLOSURES.

ALL M3 SIGNS (NORTH, SOUTH, EAST, WEST) WHICH ARE PART OF ANY DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.

ALL MO5 AND MO6 ARROW SIGNS SHALL BE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.



DETOUR M4-8  
 WEST 24"x12"  
 M3-4 24"x12"  
 82 M1-6 24"x24"

DETOUR M4-8  
 EAST 24"x12"  
 M3-2 24"x12"  
 82 M1-6 24"x24"

**LEGEND**

- PROPOSED SIGN MOUNTED ON POST
- EXISTING SIGN MOUNTED ON POST
- TYPE III BARRICADE
- NEW SIGN
- EXISTING SIGN
- COVERING SIGNS TYPE II
- DETOUR ROUTE

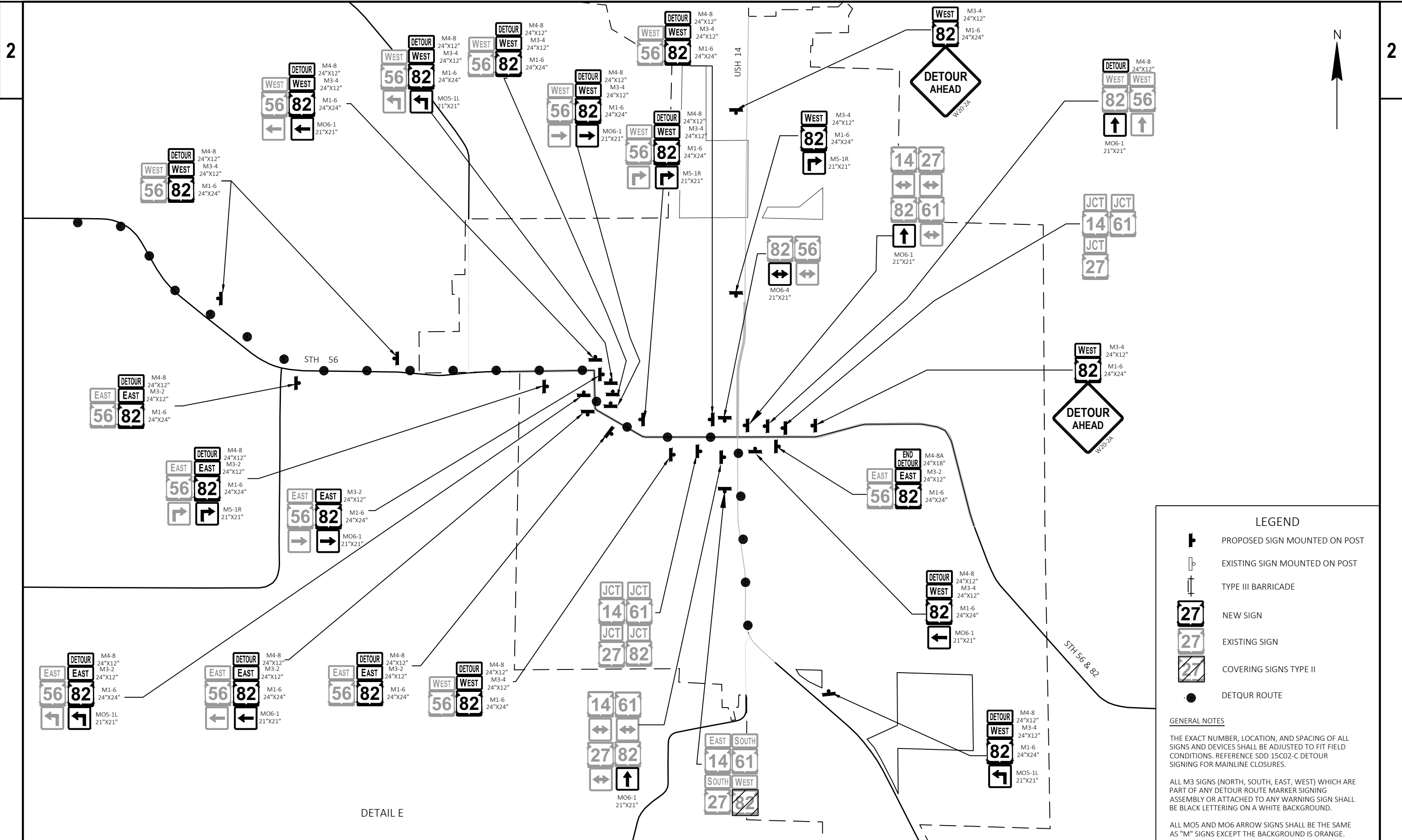
**GENERAL NOTES**

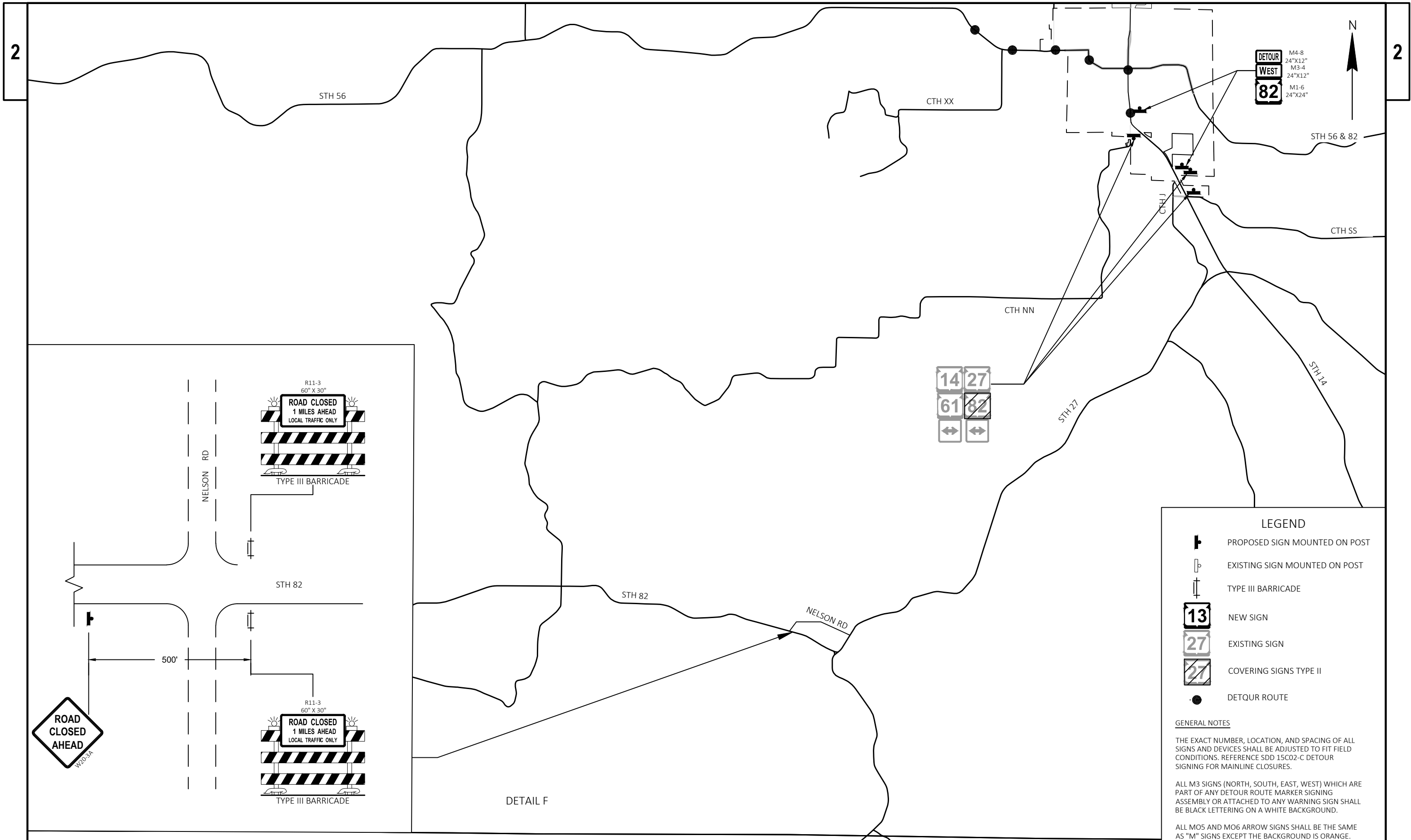
THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS. REFERENCE SDD 15C02-C DETOUR SIGNING FOR MAINLINE CLOSURES.

ALL M3 SIGNS (NORTH, SOUTH, EAST, WEST) WHICH ARE PART OF ANY DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.

ALL M05 AND M06 ARROW SIGNS SHALL BE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.








DETAIL D





**DETOUR** M4-8  
**WEST** 24"x12"  
**82** M3-4  
 24"x12"  
 M1-6  
 24"x24"

**LEGEND**

-  PROPOSED SIGN MOUNTED ON POST
-  EXISTING SIGN MOUNTED ON POST
-  TYPE III BARRICADE
-  NEW SIGN
-  EXISTING SIGN
-  COVERING SIGNS TYPE II
-  DETOUR ROUTE

**GENERAL NOTES**

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS. REFERENCE SDD 15C02-C DETOUR SIGNING FOR MAINLINE CLOSURES.

ALL M3 SIGNS (NORTH, SOUTH, EAST, WEST) WHICH ARE PART OF ANY DETOUR ROUTE MARKER SIGNING ASSEMBLY OR ATTACHED TO ANY WARNING SIGN SHALL BE BLACK LETTERING ON A WHITE BACKGROUND.

ALL MO5 AND MO6 ARROW SIGNS SHALL BE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

Estimate Of Quantities

5540-02-70

| Line | Item       | Item Description   | Unit | Total       | Qty         |
|------|------------|--|------|-------------|-------------|
| 0002 | 201.0105   | Clearing   | STA  | 8.000       | 8.000       |
| 0004 | 201.0205   | Grubbing   | STA  | 8.000       | 8.000       |
| 0006 | 203.0100   | Removing Small Pipe Culverts   | EACH | 28.000      | 28.000      |
| 0008 | 204.0110   | Removing Asphaltic Surface   | SY   | 1,180.000   | 1,180.000   |
| 0010 | 204.0115   | Removing Asphaltic Surface Butt Joints                                       | SY   | 1,330.000   | 1,330.000   |
| 0012 | 204.0120   | Removing Asphaltic Surface Milling   | SY   | 236,765.000 | 236,765.000 |
| 0014 | 204.0130   | Removing Curb  | LF   | 883.000     | 883.000     |
| 0016 | 204.0155   | Removing Concrete Sidewalk   | SY   | 4.000       | 4.000       |
| 0018 | 204.0165   | Removing Guardrail   | LF   | 6,266.000   | 6,266.000   |
| 0020 | 205.0100   | Excavation Common  | CY   | 5,018.000   | 5,018.000   |
| 0022 | 205.9016.S | Grading Shaping and Finishing Intersection (location) 01. STH 27 & R.S. Road | EACH | 1.000       | 1.000       |
| 0024 | 205.9016.S | Grading Shaping and Finishing Intersection (location) 02. STH 27 & STH 82    | EACH | 1.000       | 1.000       |
| 0026 | 209.2500   | Backfill Granular Grade 2  | TON  | 10,036.000  | 10,036.000  |
| 0028 | 211.0101   | Prepare Foundation for Asphaltic Paving (project) 01. 5540-02-70             | EACH | 1.000       | 1.000       |
| 0030 | 213.0100   | Finishing Roadway (project) 01. 5540-02-70                                   | EACH | 1.000       | 1.000       |
| 0032 | 305.0110   | Base Aggregate Dense 3/4-Inch  | TON  | 6,400.000   | 6,400.000   |
| 0034 | 305.0120   | Base Aggregate Dense 1 1/4-Inch  | TON  | 3,356.000   | 3,356.000   |
| 0036 | 330.0100   | Mill and Relay   | SY   | 2,922.000   | 2,922.000   |
| 0038 | 455.0605   | Tack Coat  | GAL  | 27,420.000  | 27,420.000  |
| 0040 | 460.0105.S | HMA Percent Within Limits (PWL) Test Strip Volumetrics                       | EACH | 2.000       | 2.000       |
| 0042 | 460.0110.S | HMA Percent Within Limits (PWL) Test Strip Density                           | EACH | 2.000       | 2.000       |
| 0044 | 460.2005   | Incentive Density PWL HMA Pavement   | DOL  | 40,250.000  | 40,250.000  |
| 0046 | 460.2007   | Incentive Density HMA Pavement Longitudinal Joints                           | DOL  | 74,620.000  | 74,620.000  |
| 0048 | 460.2010   | Incentive Air Voids HMA Pavement   | DOL  | 52,270.000  | 52,270.000  |
| 0050 | 460.5223   | HMA Pavement 3 LT 58-28 S  | TON  | 26,520.000  | 26,520.000  |
| 0052 | 460.5224   | HMA Pavement 4 LT 58-28 S  | TON  | 25,750.000  | 25,750.000  |
| 0054 | 465.0105   | Asphaltic Surface  | TON  | 165.000     | 165.000     |
| 0056 | 465.0120   | Asphaltic Surface Driveways and Field Entrances                              | TON  | 189.000     | 189.000     |
| 0058 | 465.0315   | Asphaltic Flumes   | SY   | 4.000       | 4.000       |
| 0060 | 465.0475   | Asphalt Centerline Rumble Strips 2-Lane Rural                                | LF   | 55,800.000  | 55,800.000  |
| 0062 | 520.1024   | Apron Endwalls for Culvert Pipe 24-Inch                                      | EACH | 13.000      | 13.000      |
| 0064 | 520.3324   | Culvert Pipe Class III-A 24-Inch   | LF   | 308.000     | 308.000     |
| 0066 | 520.8000   | Concrete Collars for Pipe  | EACH | 1.000       | 1.000       |
| 0068 | 520.8700   | Cleaning Culvert Pipes   | EACH | 1.000       | 1.000       |
| 0070 | 520.9700.S | Culvert Pipe Liners (size) 01. 24-Inch                                       | LF   | 381.000     | 381.000     |
| 0072 | 520.9750.S | Cleaning Culvert Pipes for Liner Verification                                | EACH | 9.000       | 9.000       |
| 0074 | 521.1018   | Apron Endwalls for Culvert Pipe Steel 18-Inch                                | EACH | 2.000       | 2.000       |
| 0076 | 521.1024   | Apron Endwalls for Culvert Pipe Steel 24-Inch                                | EACH | 33.000      | 33.000      |
| 0078 | 521.3124   | Culvert Pipe Corrugated Steel 24-Inch  | LF   | 75.000      | 75.000      |
| 0080 | 601.0557   | Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type D                          | LF   | 870.000     | 870.000     |
| 0082 | 601.0576   | Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type J                          | LF   | 73.000      | 73.000      |
| 0084 | 602.0415   | Concrete Sidewalk 6-Inch   | SF   | 29.000      | 29.000      |
| 0086 | 606.0200   | Riprap Medium  | CY   | 40.000      | 40.000      |
| 0088 | 611.0612   | Inlet Covers Type C  | EACH | 2.000       | 2.000       |
| 0090 | 611.0627   | Inlet Covers Type HM   | EACH | 1.000       | 1.000       |
| 0092 | 611.3004   | Inlets 4-FT Diameter   | EACH | 2.000       | 2.000       |
| 0094 | 611.3230   | Inlets 2x3-FT  | EACH | 1.000       | 1.000       |
| 0096 | 614.0010   | Barrier System Grading Shaping Finishing                                     | EACH | 13.000      | 13.000      |
| 0098 | 614.0396   | Guardrail Mow Strip Asphalt  | SY   | 191.000     | 191.000     |

Estimate Of Quantities

5540-02-70

| Line | Item     | Item Description   | Unit | Total       | Qty         |
|------|----------|--|------|-------------|-------------|
| 0100 | 614.2330 | MGS Guardrail 3 K  | LF   | 5,662.500   | 5,662.500   |
| 0102 | 614.2340 | MGS Guardrail 3 L  | LF   | 87.500      | 87.500      |
| 0104 | 614.2350 | MGS Guardrail Short Radius   | LF   | 72.500      | 72.500      |
| 0106 | 614.2610 | MGS Guardrail Terminal EAT   | EACH | 25.000      | 25.000      |
| 0108 | 614.2630 | MGS Guardrail Short Radius Terminal                                | EACH | 1.000       | 1.000       |
| 0110 | 618.0100 | Maintenance And Repair of Haul Roads (project) 01. 5540-02-70      | EACH | 1.000       | 1.000       |
| 0112 | 619.1000 | Mobilization   | EACH | 1.000       | 1.000       |
| 0114 | 624.0100 | Water  | MGAL | 152.000     | 152.000     |
| 0116 | 625.0500 | Salvaged Topsoil   | SY   | 2,500.000   | 2,500.000   |
| 0118 | 627.0200 | Mulching   | SY   | 575.000     | 575.000     |
| 0120 | 628.1504 | Silt Fence   | LF   | 11,900.000  | 11,900.000  |
| 0122 | 628.1520 | Silt Fence Maintenance   | LF   | 11,900.000  | 11,900.000  |
| 0124 | 628.1905 | Mobilizations Erosion Control                                      | EACH | 3.000       | 3.000       |
| 0126 | 628.1910 | Mobilizations Emergency Erosion Control                            | EACH | 1.000       | 1.000       |
| 0128 | 628.2027 | Erosion Mat Class II Type C  | SY   | 1,930.000   | 1,930.000   |
| 0130 | 628.7555 | Culvert Pipe Checks  | EACH | 154.000     | 154.000     |
| 0132 | 629.0210 | Fertilizer Type B  | CWT  | 2.100       | 2.100       |
| 0134 | 630.0130 | Seeding Mixture No. 30   | LB   | 29.000      | 29.000      |
| 0136 | 630.0140 | Seeding Mixture No. 40   | LB   | 18.000      | 18.000      |
| 0138 | 630.0500 | Seed Water   | MGAL | 50.000      | 50.000      |
| 0140 | 633.5200 | Markers Culvert End  | EACH | 1.000       | 1.000       |
| 0142 | 642.5201 | Field Office Type C  | EACH | 1.000       | 1.000       |
| 0144 | 643.0300 | Traffic Control Drums  | DAY  | 1,085.000   | 1,085.000   |
| 0146 | 643.0420 | Traffic Control Barricades Type III                                | DAY  | 846.000     | 846.000     |
| 0148 | 643.0705 | Traffic Control Warning Lights Type A                              | DAY  | 1,452.000   | 1,452.000   |
| 0150 | 643.0900 | Traffic Control Signs  | DAY  | 11,027.000  | 11,027.000  |
| 0152 | 643.0920 | Traffic Control Covering Signs Type II                             | EACH | 22.000      | 22.000      |
| 0154 | 643.1050 | Traffic Control Signs PCMS   | DAY  | 21.000      | 21.000      |
| 0156 | 643.3120 | Temporary Marking Line Epoxy 4-Inch                                | LF   | 106,290.000 | 106,290.000 |
| 0158 | 643.5000 | Traffic Control  | EACH | 1.000       | 1.000       |
| 0160 | 645.0120 | Geotextile Type HR   | SY   | 75.000      | 75.000      |
| 0162 | 646.1020 | Marking Line Epoxy 4-Inch  | LF   | 176,660.000 | 176,660.000 |
| 0164 | 646.1040 | Marking Line Grooved Wet Ref Epoxy 4-Inch                          | LF   | 70,137.000  | 70,137.000  |
| 0166 | 646.3020 | Marking Line Epoxy 8-Inch  | LF   | 395.000     | 395.000     |
| 0168 | 646.4520 | Marking Line Same Day Epoxy 4-Inch                                 | LF   | 26,860.000  | 26,860.000  |
| 0170 | 646.6120 | Marking Stop Line Epoxy 18-Inch                                    | LF   | 24.000      | 24.000      |
| 0172 | 646.7120 | Marking Diagonal Epoxy 12-Inch                                     | LF   | 35.000      | 35.000      |
| 0174 | 648.0100 | Locating No-Passing Zones  | MI   | 13.240      | 13.240      |
| 0176 | 650.4000 | Construction Staking Storm Sewer                                   | EACH | 5.000       | 5.000       |
| 0178 | 650.5500 | Construction Staking Curb Gutter and Curb & Gutter                 | LF   | 943.000     | 943.000     |
| 0180 | 650.6000 | Construction Staking Pipe Culverts                                 | EACH | 15.000      | 15.000      |
| 0182 | 650.8000 | Construction Staking Resurfacing Reference                         | LF   | 69,895.000  | 69,895.000  |
| 0184 | 650.9500 | Construction Staking Sidewalk (project) 01. 5540-02-70             | EACH | 1.000       | 1.000       |
| 0186 | 650.9911 | Construction Staking Supplemental Control (project) 01. 5540-02-70 | EACH | 1.000       | 1.000       |
| 0188 | 650.9920 | Construction Staking Slope Stakes                                  | LF   | 445.000     | 445.000     |
| 0190 | 690.0250 | Sawing Concrete  | LF   | 4.000       | 4.000       |
| 0192 | 740.0440 | Incentive IRI Ride   | DOL  | 52,960.000  | 52,960.000  |
| 0194 | ASP.1T0A | On-the-Job Training Apprentice at \$5.00/HR                        | HRS  | 1,600.000   | 1,600.000   |
| 0196 | ASP.1T0G | On-the-Job Training Graduate at \$5.00/HR                          | HRS  | 1,320.000   | 1,320.000   |



Estimate Of Quantities

5540-02-70

| Line | Item     | Item Description                                 | Unit | Total     | Qty       |
|------|----------|--|------|-----------|-----------|
| 0198 | SPV.0060 | Special 01. Reshape Embankment                   | EACH | 4.000     | 4.000     |
| 0200 | SPV.0060 | Special 02. Landmark Reference Monuments Special | EACH | 2.000     | 2.000     |
| 0202 | SPV.0090 | Special 01. Regrade Ditch                        | LF   | 365.000   | 365.000   |
| 0204 | SPV.0180 | Special 01. Removing Distressed Pavement Milling | SY   | 1,470.000 | 1,470.000 |

3

3

CLEARING AND GRUBBING ITEMS

| STATION           | TO | STATION | LOCATION | 201.0105<br>CLEARING<br>STA | 201.0205<br>GRUBBING<br>STA |
|-------------------|----|---------|----------|-----------------------------|-----------------------------|
| CRAWFORD COUNTY   |    |         |          |                             |                             |
| 1587+75           | -  | 1588+25 | RT       | 1                           | 1                           |
| VERNON COUNTY     |    |         |          |                             |                             |
| 1664+50           | -  | 1665+50 | LT       | 1                           | 1                           |
| 1672+50           | -  | 1674+50 | LT       | 2                           | 2                           |
| 1675+50           | -  | 1676+00 | LT       | 1                           | 1                           |
| 1761+00           | -  | 1762+00 | RT       | 1                           | 1                           |
| 1810+00           | -  | 1811+00 | RT       | 1                           | 1                           |
| 1817+75           | -  | 1818+00 | RT       | 1                           | 1                           |
| <b>ITEM TOTAL</b> |    |         |          | <b>8</b>                    | <b>8</b>                    |

SIDEWALK REMOVAL ITEMS

| STATION           | TO | STATION | LOCATION | 204.0155<br>REMOVING<br>SIDEWALK<br>SY | 690.0250<br>SAWING<br>CONCRETE<br>LF |
|-------------------|----|---------|----------|--|--------------------------------------|
| CRAWFORD COUNTY   |    |         |          |  |                                      |
| 1594+46           | -  | 1594+50 | LT       | 4                                      | 4                                    |
| <b>ITEM TOTAL</b> |    |         |          | <b>4</b>                               | <b>4</b>                             |

REMOVING SMALL PIPE CULVERTS

| STATION           | LOCATION | 203.0100<br>REMOVING<br>SMALL PIPE<br>CULVERTS<br>EACH | 205.0100<br>EXCAVATION<br>COMMON<br>CY | 209.2500<br>BACKFILL<br>GRANULAR<br>GRADE 2<br>TON | REMARKS                              |
|-------------------|----------|--|--|--|--------------------------------------|
| CRAWFORD COUNTY   |          |  |  |  |                                      |
| 1473+50           | LT       | 1  | -                                      | -  | 24" x 30 LF LT - CPCS                |
| 1504+12           | LT       | 1  | -                                      | -  | 24" x 5 LF LT - CPCS                 |
| 1552+24           | LT & RT  | 1  | 1,034                                  | 2,068  | 24" x 56 LF - CPCS                   |
| 1558+41           | LT & RT  | 1  | 426                                    | 852  | 24" x 46 LF - CPCS                   |
| 1587+92           | RT       | 1  | -                                      | -  | 24" x 50 LF RT - CPCS                |
| 1607+73           | RT       | 1  | -                                      | -  | 24" x 3 LF RT - CPCS                 |
| 1621+26           | LT & RT  | 1  | -                                      | -  | 24" x 2 LF LT & 24" x 4 LF RT - CPCS |
| VERNON COUNTY     |          |  |  |  |                                      |
| 1643+15           | RT       | 1  | -                                      | -  | 24" x 8 LF RT - CPCS                 |
| 1684+49           | RT       | 1  | -                                      | -  | 24" x 2 LF RT - CPCS                 |
| 1690+60           | LT       | 1  | -                                      | -  | 24" x 6 LF LT - CPCS                 |
| 1701+36           | LT       | 1  | -                                      | -  | 18" x 12 LF LT - CPCS                |
| 1701+46           | LT & RT  | 1  | 556                                    | 1,111  | 24" x 50 LF - CPCS                   |
| 1706+31           | LT & RT  | 1  | -                                      | -  | 24" x 2 LF LT & 24" x 2 LF RT - CPCS |
| 1724+16           | LT & RT  | 1  | -                                      | -  | 24" x 4 LF LT & 24" x 4 LF RT - CPCS |
| 1744+83           | LT       | 1  | -                                      | -  | 24" x 20 LF LT - CPCS                |
| 1753+06           | LT & RT  | 1  | -                                      | -  | 24" x 7 LF LT & 24" x 7 LF RT - CPCS |
| 1765+63           | LT & RT  | 1  | -                                      | -  | 18" x 1 LF LT & 18" x 2 LF RT - CPCS |
| 1769+19           | LT & RT  | 1  | 1,040                                  | 2,081  | 24" x 52 LF - CPCS                   |
| 1794+36           | LT & RT  | 1  | -                                      | -  | 24" x 2 LF LT & 24" x 2 LF RT - CPCS |
| 1798+18           | LT & RT  | 1  | -                                      | -  | 24" x 7 LF LT & 24" x 7 LF RT - CPCS |
| 1836+55           | LT & RT  | 1  | 728                                    | 1,456  | 24" x 50 LF - CPCS                   |
| 1870+41           | LT       | 1  | -                                      | -  | 24" x 10 LF LT - CPCS                |
| 1885+36           | LT & RT  | 1  | 282                                    | 563  | 24" x 40 LF - CPCS                   |
| 1948+99           | LT & RT  | 1  | 953                                    | 1,906  | 24" x 58 LF - SPS                    |
| 1975+15           | LT & RT  | 1  | -                                      | -  | 24" x 5 LF LT & 24" x 2 LF RT - CPCS |
| 1982+73           | LT & RT  | 1  | -                                      | -  | 24" x 2 LF LT & 24" x 2 LF RT - CPCS |
| 1989+20           | LT       | 1  | -                                      | -  | 24" x 4 LF LT - CPCS                 |
| 2014+32           | LT       | 1  | -                                      | -  | 24" x 8 LF LT - CPCS                 |
| <b>ITEM TOTAL</b> |          | <b>28</b>  | <b>5,018</b>                           | <b>10,036</b>                                      |                                      |

REMOVING CURB

| STATION           | TO | STATION | LOCATION | 204.0130<br>LF |
|-------------------|----|---------|----------|----------------|
| VERNON COUNTY     |    |         |          |                |
| 1664+01           | -  | 1668+87 | LT       | 486            |
| 1699+69           | -  | 1703+66 | LT       | 397            |
| <b>ITEM TOTAL</b> |    |         |          | <b>883</b>     |

REMOVING ASPHALTIC SURFACE ITEMS

| STATION           | TO | STATION | 204.0110<br>SY | 204.0115<br>BUTT JOINTS<br>SY | 204.0120<br>MILLING<br>SY | SPV.0180.01<br>REMOVING<br>DISTRESSED<br>PAVEMENT<br>MILLING<br>SY |
|-------------------|----|---------|----------------|-------------------------------|---------------------------|--|
| CRAWFORD COUNTY   |    |         |                |                               |                           |  |
| 1423+25           | -  | 1476+00 | 48             | 230                           | 25,570                    | -  |
| 1476+00           | -  | 1529+00 | -              | 66                            | 16,185                    | -  |
| 1529+00           | -  | 1582+00 | 48             | 85                            | 13,680                    | -  |
| 1582+00           | -  | 1631+02 | 236            | 67                            | 14,495                    | -  |
| UNDISTRIBUTED     |    |         | -              | -                             | -                         | 1,470  |
| VERNON COUNTY     |    |         |                |                               |                           |  |
| 1631+02           | -  | 1684+00 | -              | 62                            | 18,025                    | -  |
| 1684+00           | -  | 1737+00 | -              | 24                            | 17,420                    | -  |
| 1737+00           | -  | 1790+00 | 142            | 85                            | 19,300                    | -  |
| 1790+00           | -  | 1843+00 | -              | 28                            | 17,410                    | -  |
| 1843+00           | -  | 1896+00 | 95             | 53                            | 17,565                    | -  |
| 1896+00           | -  | 1950+00 | 189            | 77                            | 17,875                    | -  |
| 1950+00           | -  | 2005+00 | 326            | 62                            | 19,035                    | -  |
| 2005+00           | -  | 2058+00 | 48             | -                             | 17,675                    | -  |
| 2058+00           | -  | 2122+20 | 48             | 491                           | 22,530                    | -  |
| <b>ITEM TOTAL</b> |    |         | <b>1,180</b>   | <b>1,330</b>                  | <b>236,765</b>            | <b>1,470</b>   |

REMOVING GUARDRAIL

| STATION           | TO | STATION   | LOCATION | 204.0165<br>LF |
|-------------------|----|-----------|----------|----------------|
| VERNON COUNTY     |    |           |          |                |
| 1632+51.5         | -  | 1636+17.4 | RT       | 278            |
| 1663+31.5         | -  | 1668+82   | LT       | 466            |
| 1670+89.4         | -  | 1675+92.7 | LT       | 491            |
| 1699+03.4         | -  | 1704+12.4 | LT       | 478            |
| 1743+11.9         | -  | 1748+03.1 | LT       | 491            |
| 1765+61.1         | -  | 1772+01.1 | LT       | 665            |
| 1809+01.5         | -  | 1818+06.4 | RT       | 790            |
| 1812.84.4         | -  | 1817+81.8 | LT       | 341            |
| 1820+94.4         | -  | 1826+74.7 | LT       | 440            |
| 1868.74.7         | -  | 1873+81.7 | LT       | 403            |
| 1985.58.9         | -  | 1991+80.5 | LT       | 478            |
| 1992+12.5         | -  | 1996+53   | RT       | 441            |
| 1998+38.1         | -  | 2004+21   | RT       | 504            |
| <b>ITEM TOTAL</b> |    |           |          | <b>6,266</b>   |

PROJECT NO: 5540-02-70

HWY: STH 27

COUNTY: CRAWFORD & VERNON

MISCELLANEOUS QUANTITIES

SHEET

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**ASPHALT CENTERLINE RUMBLE STRIPS 2-LANE RURAL**

| STATION           | TO | STATION | 465.0475<br>LF |
|-------------------|----|---------|----------------|
| CRAWFORD COUNTY   |    |         |                |
| 1423+25           | -  | 1476+00 | 5,275          |
| 1476+00           | -  | 1529+00 | 1,407          |
| 1529+00           | -  | 1582+00 | -              |
| 1582+00           | -  | 1631+02 | -              |
| VERNON COUNTY     |    |         |                |
| 1631+02           | -  | 1684+00 | 5,298          |
| 1684+00           | -  | 1737+00 | 5,300          |
| 1737+00           | -  | 1790+00 | 5,300          |
| 1790+00           | -  | 1843+00 | 5,300          |
| 1843+00           | -  | 1896+00 | 5,300          |
| 1896+00           | -  | 1950+00 | 5,400          |
| 1950+00           | -  | 2005+00 | 5,500          |
| 2005+00           | -  | 2058+00 | 5,300          |
| 2058+00           | -  | 2122+20 | 6,420          |
| <b>ITEM TOTAL</b> |    |         | <b>55,800</b>  |

**GRADING SHAPING FINISHING INTERSECTION**

|                   |    | 205.9016.S.01      |          | 205.9016.S.02   |          |                   |     |                    |    | EROSION                 |     |                         |    |             |  |                              |  |         |  |         |  |  |
|-------------------|----|--------------------|----------|-----------------|----------|-------------------|-----|--------------------|----|-------------------------|-----|-------------------------|----|-------------|--|------------------------------|--|---------|--|---------|--|--|
|                   |    | STH 27 & R.S. ROAD |          | STH 27 & STH 82 |          | SALVAGED TOPSOIL* |     | FERTILIZER TYPE B* |    | SEEDING MIXTURE NO. 30* |     | SEEDING MIXTURE NO. 40* |    | SEED WATER* |  | EROSION MAT CLASS II TYPE C* |  | BORROW* |  | COMMON* |  |  |
| STATION           | TO | STATION            | LOCATION | EACH            | EACH     | SY                | CWT | LB                 | LB | MGAL                    | SY  | CY                      | CY |             |  |                              |  |         |  |         |  |  |
| CRAWFORD COUNTY   |    |                    |          |                 |          |                   |     |                    |    |                         |     |                         |    |             |  |                              |  |         |  |         |  |  |
| 1593+88.8         | -  | 1594+60.9          | LT       | 1               | -        | 20                | 0.1 | -                  | 1  | 1                       | 20  | -                       | 7  |             |  |                              |  |         |  |         |  |  |
| VERNON COUNTY     |    |                    |          |                 |          |                   |     |                    |    |                         |     |                         |    |             |  |                              |  |         |  |         |  |  |
| 1760+10.5         | -  | 1770+63.5          | RT       | -               | 1        | 500               | 0.4 | 9                  | -  | 12                      | 545 | 488                     | 3  |             |  |                              |  |         |  |         |  |  |
| <b>ITEM TOTAL</b> |    |                    |          | <b>1</b>        | <b>1</b> |                   |     |                    |    |                         |     |                         |    |             |  |                              |  |         |  |         |  |  |

\*ITEMS SHOWN FOR REFERENCE ONLY. ITEMS INCIDENTAL TO THE ITEM BARRIER SYSTEM GRADING SHAPING FINISHING.

**PWL TEST STRIPS**

|                   |    | 460.0105.S   |          | 460.0110.S   |      |
|-------------------|----|--|----------|--|------|
|                   |    | HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP VOLUMETRICS |          | HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP DENSITY |      |
| STATION           | TO | STATION  | EACH     | EACH   | EACH |
| 1423+25           | -  | 2122+20  | 2        | 2  |      |
| <b>ITEM TOTAL</b> |    |  | <b>2</b> | <b>2</b>   |      |

**PREPARE FOUNDATION FOR ASPHALTIC PAVING**

| STATION           | TO | STATION | 211.0101<br>EACH |
|-------------------|----|---------|------------------|
| 1423+25           | -  | 2122+20 | 1                |
| <b>ITEM TOTAL</b> |    |         | <b>1</b>         |

**AGGREGATE ITEMS**

|                   |    | 305.0110                      |              | 305.0120                        |            | 624.0100 |  |
|-------------------|----|-------------------------------|--------------|---------------------------------|------------|----------|--|
|                   |    | BASE AGGREGATE DENSE 3/4-INCH |              | BASE AGGREGATE DENSE 1 1/4-INCH |            | WATER    |  |
| STATION           | TO | STATION                       | TON          | TON                             | MGAL       |          |  |
| CRAWFORD COUNTY   |    |                               |              |                                 |            |          |  |
| 1423+25           | -  | 1476+00                       | 396          | -                               | 6          |          |  |
| 1476+00           | -  | 1529+00                       | 466          | -                               | 7          |          |  |
| 1529+00           | -  | 1582+00                       | 486          | 419                             | 14         |          |  |
| 1582+00           | -  | 1631+02                       | 491          | -                               | 8          |          |  |
| UNDISTRIBUTED     |    |                               | -            | 397                             | 6          |          |  |
| VERNON COUNTY     |    |                               |              |                                 |            |          |  |
| 1631+02           | -  | 1684+00                       | 488          | -                               | 8          |          |  |
| 1684+00           | -  | 1737+00                       | 483          | 225                             | 11         |          |  |
| 1737+00           | -  | 1790+00                       | 520          | 317                             | 13         |          |  |
| 1790+00           | -  | 1843+00                       | 490          | 274                             | 12         |          |  |
| 1843+00           | -  | 1896+00                       | 493          | 199                             | 11         |          |  |
| 1896+00           | -  | 1950+00                       | 495          | 288                             | 12         |          |  |
| 1950+00           | -  | 2005+00                       | 513          | -                               | 8          |          |  |
| 2005+00           | -  | 2058+00                       | 485          | -                               | 8          |          |  |
| 2058+00           | -  | 2122+20                       | 594          | -                               | 9          |          |  |
| UNDISTRIBUTED     |    |                               | -            | 1,237                           | 19         |          |  |
| <b>ITEM TOTAL</b> |    |                               | <b>6,400</b> | <b>3,356</b>                    | <b>152</b> |          |  |

**ASPHALTIC ITEMS**

|                   |    | 455.0605  |               | 460.5223         |                  | 460.5224     |            | 465.0105          |     | 465.0120                      |     |
|-------------------|----|-----------|---------------|------------------|------------------|--------------|------------|-------------------|-----|-------------------------------|-----|
|                   |    | TACK COAT |               | HMA PAVEMENT     |                  | HMA PAVEMENT |            | ASPHALTIC SURFACE |     | DRIVEWAYS AND FIELD ENTRANCES |     |
| STATION           | TO | STATION   | GAL           | 3 LT 58-28 S TON | 4 LT 58-28 S TON | TON          | TON        | TON               | TON | TON                           | TON |
| CRAWFORD COUNTY   |    |           |               |                  |                  |              |            |                   |     |                               |     |
| 1423+25           | -  | 1476+00   | 1,792         | -                | 3,225            | -            | 9          |                   |     |                               |     |
| 1476+00           | -  | 1529+00   | 1,752         | 1,560            | 1,693            | -            | -          |                   |     |                               |     |
| 1529+00           | -  | 1582+00   | 1,732         | 1,818            | 2,830            | -            | 9          |                   |     |                               |     |
| 1582+00           | -  | 1631+02   | 1,738         | 1,825            | 1,420            | -            | 42         |                   |     |                               |     |
| UNDISTRIBUTED     |    |           | 104           | -                | -                | 165          | -          |                   |     |                               |     |
| VERNON COUNTY     |    |           |               |                  |                  |              |            |                   |     |                               |     |
| 1631+02           | -  | 1684+00   | 2,136         | 2,243            | 1,744            | -            | -          |                   |     |                               |     |
| 1684+00           | -  | 1737+00   | 2,115         | 2,220            | 1,727            | -            | -          |                   |     |                               |     |
| 1737+00           | -  | 1790+00   | 2,447         | 2,570            | 1,999            | -            | 26         |                   |     |                               |     |
| 1790+00           | -  | 1843+00   | 2,145         | 2,253            | 1,752            | -            | -          |                   |     |                               |     |
| 1843+00           | -  | 1896+00   | 2,149         | 2,256            | 1,755            | -            | 17         |                   |     |                               |     |
| 1896+00           | -  | 1950+00   | 2,202         | 2,312            | 1,798            | -            | 34         |                   |     |                               |     |
| 1950+00           | -  | 2005+00   | 2,284         | 2,398            | 1,865            | -            | 34         |                   |     |                               |     |
| 2005+00           | -  | 2058+00   | 2,121         | 2,227            | 1,732            | -            | 9          |                   |     |                               |     |
| 2058+00           | -  | 2122+20   | 2,703         | 2,838            | 2,210            | -            | 9          |                   |     |                               |     |
| <b>ITEM TOTAL</b> |    |           | <b>27,420</b> | <b>26,520</b>    | <b>25,750</b>    | <b>165</b>   | <b>189</b> |                   |     |                               |     |

**ASPHALTIC FLUMES**

| STATION           | LOCATION | 465.0315<br>SY |
|-------------------|----------|----------------|
| VERNON COUNTY     |          |                |
| 1666+56           | LT       | 2              |
| 1701+36           | LT       | 2              |
| <b>ITEM TOTAL</b> |          | <b>4</b>       |

PROJECT NO: 5540-02-70

HWY: STH 27

COUNTY: CRAWFORD & VERNON

MISCELLANEOUS QUANTITIES

SHEET

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| PWL TABLE                     |         |            |             |                           |                           |       |           |  |   |
|-------------------------------|---------|------------|-------------|---------------------------|---------------------------|-------|-----------|--|---|
| LOCATION                      | STATION | TO STATION | MIXTURE USE | UNDERLYING SURFACE        | BID ITEM                  | TONS  | THICKNESS | MIXTURE ACCEPTANCE                               | DENSITY ACCEPTANCE  |
| DRIVING LANES 2-12 FOOT LANES | 1423+25 | 1484+50    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 2060  | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| MAINLINE 3 FOOT SHOULDER      | 1423+25 | 1484+50    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 320   | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| CLIMBING LANE 1- 12 FOOT LANE | 1430+24 | 1448+80    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 630   | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| CLIMBING LANE 3 FOOT SHOULDER | 1430+24 | 1448+80    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 80    | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| CLIMBING LANE 1- 12 FOOT LANE | 1448+80 | 1477+43    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 970   | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| CLIMBING LANE 3 FOOT SHOULDER | 1448+80 | 1477+43    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 120   | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| RIGHT TURN LANE 12 FOOT       | 1448+05 | 1451+48    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 60    | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| RIGHT TURN LANE 12 FOOT       | 1446+19 | 1449+45    | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 60    | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| DRIVING LANES 2-12 FOOT LANES | 1484+50 | 1593+89    | UPPER LAYER | HMA PAVEMENT 3 LT 58-28 S | HMA PAVEMENT 4 LT 58-28 S | 2860  | 1.75      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| MAINLINE 3 FOOT SHOULDER      | 1484+50 | 1593+89    | UPPER LAYER | HMA PAVEMENT 3 LT 58-28 S | HMA PAVEMENT 4 LT 58-28 S | 720   | 1.75      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| DRIVING LANES 2-12 FOOT LANES | 1484+50 | 1593+89    | LOWER LAYER | MILLED SURFACE            | HMA PAVEMENT 3 LT 58-28 S | 3680  | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| MAINLINE 3 FOOT SHOULDER      | 1484+50 | 1593+89    | LOWER LAYER | MILLED SURFACE            | HMA PAVEMENT 3 LT 58-28 S | 920   | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| DRIVING LANES 2-12 FOOT LANES | 1594+46 | 2122+20    | UPPER LAYER | HMA PAVEMENT 3 LT 58-28 S | HMA PAVEMENT 4 LT 58-28 S | 13800 | 1.75      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| MAINLINE 3 FOOT SHOULDER      | 1594+46 | 2122+20    | UPPER LAYER | HMA PAVEMENT 3 LT 58-28 S | HMA PAVEMENT 4 LT 58-28 S | 3450  | 1.75      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| DRIVING LANES 2-12 FOOT LANES | 1594+46 | 2122+20    | LOWER LAYER | MILLED SURFACE            | HMA PAVEMENT 3 LT 58-28 S | 17740 | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| MAINLINE 3 FOOT SHOULDER      | 1594+46 | 2122+20    | LOWER LAYER | MILLED SURFACE            | HMA PAVEMENT 3 LT 58-28 S | 4440  | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| WIDENED 10 FOOT SHOULDER      | 1762+27 | 1767+38    | UPPER LAYER | HMA PAVEMENT 3 LT 58-28 S | HMA PAVEMENT 4 LT 58-28 S | 60    | 1.75      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| WIDENED 10 FOOT SHOULDER      | 1762+27 | 1767+38    | LOWER LAYER | MILLED SURFACE            | HMA PAVEMENT 3 LT 58-28 S | 80    | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| DRIVING LANES 2-11 FOOT LANES | 1593+89 | 1594+46    | UPPER LAYER | HMA PAVEMENT 3 LT 58-28 S | HMA PAVEMENT 4 LT 58-28 S | 20    | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| MAINLINE 7 FOOT SHOULDER      | 1593+89 | 1594+46    | UPPER LAYER | HMA PAVEMENT 3 LT 58-28 S | HMA PAVEMENT 4 LT 58-28 S | 10    | 2.25      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| DRIVING LANES 2-11 FOOT LANES | 1593+89 | 1594+46    | LOWER LAYER | MILLED SURFACE            | HMA PAVEMENT 3 LT 58-28 S | 20    | 1.75      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                      |
| MAINLINE 7 FOOT SHOULDER      | 1593+89 | 1594+46    | LOWER LAYER | MILLED SURFACE            | HMA PAVEMENT 3 LT 58-28 S | 10    | 1.75      | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |
| UNDISTRIBUTED                 | -       | -          | UPPER LAYER | MILLED SURFACE            | HMA PAVEMENT 4 LT 58-28 S | 190   | 3         | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT;<br>NOT ELIGIBLE FOR INCENTIVE |

PROJECT NO: 5540-02-70

HWY: STH 27

COUNTY: CRAWFORD &amp; VERNON

MISCELLANEOUS QUANTITIES

SHEET

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## CULVERT PIPE ITEMS

| STATION         | LOCATION | 520.1024  | 520.3324                                     | 520.8000                                | 520.8700                             | 520.9700.S                              | 520.9750.S  | 521.1018  | 521.1024        | 521.3124  | 628.7555                          | 633.5200                             | SPV.0060.01     | ALUMINUM<br>THICKNESS<br>(INCHES) | STEEL<br>THICKNESS<br>(INCHES) |
|-----------------|----------|---|--|---|--------------------------------------|---|---|---|-----------------|---|-----------------------------------|--------------------------------------|-----------------|-----------------------------------|--------------------------------|
|                 |          | APRON ENDWALLS<br>FOR CULVERT PIPE<br>24-INCH<br>EACH | CULVERT PIPE<br>CLASS III-A<br>24-INCH<br>LF | CONCRETE<br>COLLARS<br>FOR PIPE<br>EACH | CLEANING<br>CULVERT<br>PIPES<br>EACH | CULVERT<br>PIPE LINERS<br>24-INCH<br>LF | CLEANING CULVERT<br>PIPES FOR LINER<br>VERIFICATION<br>EACH | APRON ENDWALLS FOR<br>CULVERT PIPE STEEL<br>18-INCH<br>EACH | 24-INCH<br>EACH | CULVERT PIPE<br>CORRUGATED<br>STEEL 24-INCH<br>LF | CULVERT<br>PIPE<br>CHECKS<br>EACH | CULVERT<br>END<br>EMBANKMENT<br>EACH | RESHAPE<br>EACH |                                   |                                |
| CRAWFORD COUNTY |          |   |  |   |                                      |   |   |   |                 |   |                                   |                                      |                 |                                   |                                |
| 1473+50         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | 22  | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 1504+12         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1552+24         | LT & RT  | 2   | 42   | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | 0.075                             | 0.064                          |
| 1558+41         | LT & RT  | 1   | 46   | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | 0.075                             | 0.064                          |
| 1587+92         | RT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1598+35         | LT & RT  | -   | -  | -                                       | 1                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1607+73         | LT & RT  | -   | -  | -                                       | -                                    | 39                                      | -   | -   | -               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1621+26         | LT & RT  | -   | -  | -                                       | -                                    | 44                                      | -   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| VERNON COUNTY   |          |   |  |   |                                      |   |   |   |                 |   |                                   |                                      |                 |                                   |                                |
| 1635+03         | RT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | 1               | -                                 | -                              |
| 1643+15         | RT       | -   | -  | -                                       | -                                    | 52                                      | -   | -   | 1               | 4   | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 1666+55         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | 1   | -               | -   | 3                                 | 1                                    | -               | -                                 | -                              |
| 1672+59         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1684+49         | RT       | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 1               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1690+60         | LT & RT  | -   | -  | -                                       | -                                    | 44                                      | -   | -   | 2               | 2   | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 1701+36         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | 1   | -               | -   | 3                                 | -                                    | -               | -                                 | -                              |
| 1701+46         | LT & RT  | 2   | 52   | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | 0.075                             | 0.064                          |
| 1706+31         | LT & RT  | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 2               | 4   | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 1724+16         | LT & RT  | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 2               | 8   | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 1744+83         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | 20  | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 1753+06         | LT & RT  | -   | -  | -                                       | -                                    | 68                                      | -   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1765+63         | LT & RT  | -   | -  | -                                       | -                                    | 46                                      | -   | -   | 1               | 3   | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 1769+19         | LT & RT  | 2   | 42   | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | 0.075                             | 0.064                          |
| 1794+36         | LT & RT  | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1798+18         | LT & RT  | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1836+55         | LT & RT  | 2   | 44   | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | 0.075                             | 0.064                          |
| 1848+77         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | 1               | -                                 | -                              |
| 1870+41         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1880+19         | LT & RT  | -   | -  | 1                                       | -                                    | 42                                      | -   | -   | -               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1885+36         | LT & RT  | 2   | 38   | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | 0.075                             | 0.064                          |
| 1901+16         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | 1               | -                                 | -                              |
| 1924+56         | LT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | 1               | -                                 | -                              |
| 1940+38         | RT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1948+99         | LT & RT  | 2   | 44   | -                                       | -                                    | -                                       | -   | -   | -               | -   | 4                                 | -                                    | -               | 0.075                             | 0.064                          |
| 1975+15         | LT & RT  | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1982+73         | LT & RT  | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 1989+20         | LT & RT  | -   | -  | -                                       | -                                    | 46                                      | -   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| 2014+32         | LT       | -   | -  | -                                       | -                                    | -                                       | 1   | -   | -               | 8   | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 2022+37         | RT       | -   | -  | -                                       | -                                    | -                                       | -   | -   | 1               | 4   | 4                                 | -                                    | -               | -                                 | 0.064                          |
| 2027+09         | LT & RT  | -   | -  | -                                       | -                                    | -                                       | 1   | -   | 2               | -   | 4                                 | -                                    | -               | -                                 | -                              |
| ITEM TOTAL      |          | 13  | 308  | 1                                       | 1                                    | 381                                     | 9   | 2   | 33              | 75  | 154                               | 1                                    | 4               |                                   |                                |

PROJECT NO: 5540-02-70

HWY: STH 27

COUNTY: CRAWFORD &amp; VERNON

MISCELLANEOUS QUANTITIES

SHEET

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**ANCILLARY CONCRETE ITEMS**

| STATION           | TO | STATION | LOCATION | 601.0557                        | 601.0576                        | 602.0415                    |
|-------------------|----|---------|----------|---------------------------------|---------------------------------|-----------------------------|
|                   |    |         |          | 6-INCH SLOPED 36-INCH TYPE D LF | 4-INCH SLOPED 30-INCH TYPE J LF | CONCRETE SIDEWALK 6-INCH SF |
| CRAWFORD COUNTY   |    |         |          |                                 |                                 |                             |
| 1593+89           | -  | 1594+60 | LT       | -                               | 73                              | 29                          |
| VERNON COUNTY     |    |         |          |                                 |                                 |                             |
| 1664+01           | -  | 1668+87 | LT       | 481                             | -                               | -                           |
| 1699+69           | -  | 1703+66 | LT       | 389                             | -                               | -                           |
| <b>ITEM TOTAL</b> |    |         |          | 870                             | 73                              | 29                          |

**INLET ITEMS**

| STATION           | LOCATION | 611.0612                 | 611.0627                  | 611.3004                  | 611.3230           |
|-------------------|----------|--------------------------|---------------------------|---------------------------|--------------------|
|                   |          | INLET COVERS TYPE C EACH | INLET COVERS TYPE HM EACH | INLETS 4-FT DIAMETER EACH | INLETS 2X3-FT EACH |
| CRAWFORD COUNTY   |          |                          |                           |                           |                    |
| 1558+41           | LT       | 1                        | -                         | 1                         | -                  |
| VERNON COUNTY     |          |                          |                           |                           |                    |
| 1769+19           | RT       | 1                        | -                         | 1                         | -                  |
| 1665+61           | LT       | -                        | 1                         | -                         | 1                  |
| <b>ITEM TOTAL</b> |          | 2                        | 1                         | 2                         | 1                  |

**BARRIER SYSTEM GRADING SHAPING FINISHING**

| STATION           | TO | STATION   | LOCATION | 614.0010<br>EACH | SALVAGED<br>TOPSOIL*<br>SY | FERTILIZER<br>TYPE B*<br>CMT | SEEDING MIXTURE<br>NO. 30*<br>LB | SEED<br>WATER*<br>MGAL | EROSION MAT<br>CLASS II TYPE C*<br>SY | BORROW*<br>CY | COMMON*<br>CY |
|-------------------|----|-----------|----------|------------------|----------------------------|------------------------------|----------------------------------|------------------------|---------------------------------------|---------------|---------------|
| VERNON COUNTY     |    |           |          |                  |                            |                              |                                  |                        |                                       |               |               |
| 1632+29.4         | -  | 1636+17.4 | RT       | 1                | 188                        | 0.2                          | 4                                | 4.3                    | 190                                   | 4             | -             |
| 1663+09.2         | -  | 1669+04.5 | LT       | 1                | 116                        | 0.1                          | 3                                | 2.6                    | 120                                   | -             | 92            |
| 1670+79.4         | -  | 1676+02.7 | LT       | 1                | 579                        | 0.4                          | 11                               | 13                     | 580                                   | -             | 203           |
| 1698+90.5         | -  | 1704+39.6 | LT       | 1                | 70                         | 0.1                          | 2                                | 1.6                    | 75                                    | -             | 96            |
| 1742+89.6         | -  | 1748+24.6 | LT       | 1                | 312                        | 0.2                          | 6                                | 7.0                    | 315                                   | -             | 173           |
| 1765+61.1         | -  | 1772+23.2 | LT       | 1                | 680                        | 0.5                          | 13                               | 16                     | 685                                   | -             | 139           |
| 1808+79.3         | -  | 1818+28.3 | RT       | 1                | 162                        | 0.2                          | 3                                | 3.7                    | 165                                   | -             | 137           |
| 1812+84.3         | -  | 1817+81.8 | LT       | 1                | 23                         | 0.1                          | 1                                | 0.5                    | 25                                    | -             | 94            |
| 1820+74.1         | -  | 1827+08.4 | LT       | 1                | 70                         | 0.1                          | 2                                | 1.6                    | 75                                    | -             | 96            |
| 1868+52.5         | -  | 1874+04.1 | LT       | 1                | 113                        | 0.1                          | 3                                | 2.6                    | 115                                   | -             | 70            |
| 1985+36.8         | -  | 1992+02.7 | LT       | 1                | 484                        | 0.4                          | 9                                | 11                     | 485                                   | 7             | -             |
| 1991+90.3         | -  | 1996+75.4 | RT       | 1                | 78                         | 0.1                          | 2                                | 1.8                    | 80                                    | -             | 132           |
| 1998+15.9         | -  | 2004+43.3 | RT       | 1                | 312                        | 0.2                          | 6                                | 7.0                    | 315                                   | -             | 32            |
| <b>ITEM TOTAL</b> |    |           |          | <b>13</b>        |                            |                              |                                  |                        |                                       |               |               |

\* ITEMS SHOWN FOR REFERENCE ONLY. ITEMS INCIDENTAL TO THE ITEM BARRIER SYSTEM GRADING SHAPING FINISHING.

**GUARDRAIL ITEMS**

| STATION           | TO | STATION   | LOCATION | 614.0396                             | 614.2330       | 614.2340    | 614.2350           | 614.2610             | 614.2630                      | REMARKS                    |
|-------------------|----|-----------|----------|--------------------------------------|----------------|-------------|--------------------|----------------------|-------------------------------|----------------------------|
|                   |    |           |          | GUARDRAIL MOW STRIP<br>ASPHALT<br>SY | 3 K<br>LF      | 3 L<br>LF   | SHORT RADIUS<br>LF | TERMINAL EAT<br>EACH | SHORT RADIUS TERMINAL<br>EACH |                            |
| VERNON COUNTY     |    |           |          |                                      |                |             |                    |                      |                               |                            |
| 1632+29.4         | -  | 1636+17.4 | RT       | -                                    | 275.0          | -           | 72.5               | 1                    | 1                             | 60' RADIUS TO FACE OF RAIL |
| 1663+09.2         | -  | 1669+04.5 | LT       | -                                    | 400.0          | 37.5        | -                  | 2                    | -                             | -                          |
| 1670+79.4         | -  | 1676+02.7 | LT       | -                                    | 375.0          | -           | -                  | 2                    | -                             | -                          |
| 1698+90.5         | -  | 1704+40   | LT       | -                                    | 300.0          | 50          | -                  | 2                    | -                             | -                          |
| 1742+89.6         | -  | 1748+24.6 | LT       | -                                    | 387.5          | -           | -                  | 2                    | -                             | -                          |
| 1765+61.1         | -  | 1772+23.2 | LT       | -                                    | 562.5          | -           | -                  | 2                    | -                             | -                          |
| 1808+79.3         | -  | 1818+28.3 | RT       | -                                    | 800.0          | -           | -                  | 2                    | -                             | -                          |
| 1812+84.3         | -  | 1817+81.8 | LT       | 191                                  | 362.5          | -           | -                  | 2                    | -                             | -                          |
| 1820+74.1         | -  | 1827+08.4 | LT       | -                                    | 475.0          | -           | -                  | 2                    | -                             | -                          |
| 1868+52.5         | -  | 1874+04.1 | LT       | -                                    | 400.0          | -           | -                  | 2                    | -                             | -                          |
| 1985+36.8         | -  | 1992+02.7 | LT       | -                                    | 512.5          | -           | -                  | 2                    | -                             | -                          |
| 1991+90.3         | -  | 1996+75.4 | RT       | -                                    | 337.5          | -           | -                  | 2                    | -                             | -                          |
| 1998+15.9         | -  | 2004+43.3 | RT       | -                                    | 475.0          | -           | -                  | 2                    | -                             | -                          |
| <b>ITEM TOTAL</b> |    |           |          | <b>191</b>                           | <b>5,662.5</b> | <b>87.5</b> | <b>72.5</b>        | <b>25</b>            | <b>1</b>                      |                            |

**EROSION CONTROL ITEMS**

| STATION           | TO | STATION | 625.0500                  | 627.0200       | 628.1504                        | 628.1520      | 628.2027                             | 629.0210                    | 630.0130                        | 630.0140  | 630.0500     | SPV.0090.01        |
|-------------------|----|---------|---------------------------|----------------|---------------------------------|---------------|--------------------------------------|-----------------------------|---------------------------------|-----------|--------------|--------------------|
|                   |    |         | SALVAGED<br>TOPSOIL<br>SY | MULCHING<br>SY | SILT FENCE<br>MAINTENANCE<br>LF |               | EROSION MAT<br>CLASS II TYPE C<br>SY | FERTILIZER<br>TYPE B<br>CWT | SEEDING MIXTURE<br>NO. 30<br>LB |           | NO. 40<br>LB | SEED WATER<br>MGAL |
| CRAWFORD COUNTY   |    |         |                           |                |                                 |               |                                      |                             |                                 |           |              |                    |
| 1423+25           | -  | 1476+00 | 34                        | -              | 45                              | 45            | 34                                   | 0.1                         | 1                               | -         | 1            | -                  |
| 1476+00           | -  | 1529+00 | 10                        | -              | 45                              | 45            | 10                                   | 0.1                         | 1                               | -         | 1            | -                  |
| 1529+00           | -  | 1582+00 | 106                       | -              | 170                             | 170           | 106                                  | 0.1                         | 2                               | 1         | 3            | 50                 |
| 1582+00           | -  | 1631+02 | 66                        | -              | 170                             | 170           | 66                                   | 0.1                         | 1                               | 1         | 2            | -                  |
| VERNON COUNTY     |    |         |                           |                |                                 |               |                                      |                             |                                 |           |              |                    |
| 1631+02           | -  | 1684+00 | 26                        | -              | 1,795                           | 1,795         | 26                                   | 0.1                         | 1                               | -         | 1            | -                  |
| 1684+00           | -  | 1737+00 | 120                       | -              | 865                             | 865           | 120                                  | 0.1                         | 3                               | -         | 3            | 20                 |
| 1737+00           | -  | 1790+00 | 1,109                     | 460            | 1,465                           | 1,465         | 649                                  | 0.5                         | 9                               | 4         | 15           | -                  |
| 1790+00           | -  | 1843+00 | 134                       | -              | 2,085                           | 2,085         | 134                                  | 0.1                         | 1                               | 2         | 3            | 30                 |
| 1843+00           | -  | 1896+00 | 168                       | -              | 575                             | 575           | 168                                  | 0.2                         | 2                               | 2         | 4            | 90                 |
| 1896+00           | -  | 1950+00 | 145                       | -              | 125                             | 125           | 145                                  | 0.1                         | 1                               | 3         | 4            | 75                 |
| 1950+00           | -  | 2005+00 | 52                        | -              | 2,075                           | 2,075         | 52                                   | 0.1                         | 1                               | -         | 2            | 100                |
| 2005+00           | -  | 2058+00 | 30                        | -              | 125                             | 125           | 30                                   | 0.1                         | -                               | 1         | 1            | -                  |
| 2058+00           | -  | 2122+20 | -                         | -              | -                               | -             | -                                    | -                           | -                               | -         | -            | -                  |
| UNDISTRIBUTED     |    |         | 500                       | 115            | 2360                            | 2360          | 390                                  | 0.4                         | 6                               | 4         | 10           | -                  |
| <b>ITEM TOTAL</b> |    |         | <b>2,500</b>              | <b>575</b>     | <b>11,900</b>                   | <b>11,900</b> | <b>1,930</b>                         | <b>2.1</b>                  | <b>29</b>                       | <b>18</b> | <b>50</b>    | <b>365</b>         |

**EROSION CONTROL MOBILIZATION**

| STATION           | TO | STATION | 628.1905                                 | 628.1910   |
|-------------------|----|---------|--|--|
|                   |    |         | MOBILIZATIONS<br>EROSION CONTROL<br>EACH | MOBILIZATIONS EMERGENCY<br>EROSION CONTROL<br>EACH |
| 1423+25           | -  | 2122+20 | 3  | 1  |
| <b>ITEM TOTAL</b> |    |         | <b>3</b>                                 | <b>1</b>   |

**MOBILIZATION**

| STATION           | TO | STATION | 619.1000 |
|-------------------|----|---------|----------|
|                   |    |         | EACH     |
| 1423+25           | -  | 2122+20 | 1        |
| <b>ITEM TOTAL</b> |    |         | <b>1</b> |

**RIP RAP**

| STATION           | LOCATION | 606.0200            | 645.0120                 |
|-------------------|----------|---------------------|--------------------------|
|                   |          | RIPRAP MEDIUM<br>CY | GEOTEXTILE TYPE HR<br>SY |
| CRAWFORD COUNTY   |          |                     |                          |
| 1473+50           | LT       | 8                   | 14                       |
| 1504+12           | LT       | 3                   | 6                        |
| VERNON COUNTY     |          |                     |                          |
| 1635+03           | RT       | 4                   | 8                        |
| 1672+59           | LT       | 2                   | 4                        |
| 1701+36           | LT       | 1                   | 2                        |
| 1701+46           | LT       | 4                   | 7                        |
| 1769+19           | LT       | 5                   | 9                        |
| 1836+55           | LT       | 4                   | 7                        |
| 1848+77           | LT       | 3                   | 6                        |
| 1901+16           | LT       | 2                   | 4                        |
| 1924+56           | LT       | 1                   | 2                        |
| 1948+99           | RT       | 3                   | 6                        |
| <b>ITEM TOTAL</b> |          | <b>40</b>           | <b>75</b>                |



**PAVEMENT MARKING ITEMS**

| STATION           | TO | STATION | 643.3120  | 646.1020                              | 646.1040                             | 646.3020   | 646.4520                             | 646.6120                                       | 646.7120                                   |  |
|-------------------|----|---------|---|---------------------------------------|--------------------------------------|--|--------------------------------------|--|--|--|
|                   |    |         | TEMPORARY MARKING LINE EPOXY 4-INCH (YELLOW) LF | MARKING LINE EPOXY 4-INCH (YELLOW) LF | MARKING LINE EPOXY 4-INCH (WHITE) LF | MARKING LINE GROOVED WET REF EPOXY 4-INCH (WHITE) LF | MARKING LINE EPOXY 8-INCH (WHITE) LF | MARKING LINE SAME DAY EPOXY 4-INCH (YELLOW) LF | MARKING STOP LINE EPOXY 18-INCH (WHITE) LF | MARKING DIAGONAL EPOXY 12-INCH (YELLOW) LF |
| CRAWFORD COUNTY   |    |         |   |                                       |                                      |  |                                      |  |  |  |
| 1423+25           | -  | 1476+00 | 10,580  | 10,580                                | 11,390                               | -  | 395                                  | -  | -  | -  |
| 1476+00           | -  | 1529+00 | 2,750   | 2,750                                 | 10,275                               | -  | -                                    | 7,850  | -  | -  |
| 1529+00           | -  | 1582+00 | -   | -                                     | 10,430                               | -  | -                                    | 10,600   | -  | -  |
| 1582+00           | -  | 1631+02 | -   | -                                     | 9,865                                | -  | -                                    | 8,410  | -  | -  |
| VERNON COUNTY     |    |         |   |                                       |                                      |  |                                      |  |  |  |
| 1631+02           | -  | 1684+00 | 10,550  | 10,550                                | 11,100                               | -  | -                                    | -  | -  | -  |
| 1684+00           | -  | 1737+00 | 10,600  | 10,600                                | 10,540                               | -  | -                                    | -  | -  | -  |
| 1737+00           | -  | 1790+00 | 11,670  | 11,670                                | 6,770                                | 4,485  | -                                    | -  | 24   | 35   |
| 1790+00           | -  | 1843+00 | 10,600  | 10,600                                | -                                    | 10,500   | -                                    | -  | -  | -  |
| 1843+00           | -  | 1896+00 | 10,600  | 10,600                                | -                                    | 10,455   | -                                    | -  | -  | -  |
| 1896+00           | -  | 1950+00 | 9,075   | 9,075                                 | -                                    | 10,646   | -                                    | -  | -  | -  |
| 1950+00           | -  | 2005+00 | 9,840   | 9,840                                 | -                                    | 10,805   | -                                    | -  | -  | -  |
| 2005+00           | -  | 2058+00 | 8,425   | 8,425                                 | -                                    | 10,600   | -                                    | -  | -  | -  |
| 2058+00           | -  | 2122+20 | 11,600  | 11,600                                | -                                    | 12,646   | -                                    | -  | -  | -  |
| <b>SUBTOTAL</b>   |    |         | 106,290   | 106,290                               | 70,370                               | 70,137   | 395                                  | 26,860   | 24   | 35   |
| <b>ITEM TOTAL</b> |    |         | 106,290   | 176,660                               |                                      | 70,137   | 395                                  | 26,860   | 24   | 35   |

**MILL AND RELAY**

| STATION           | TO | STATION | 330.0100          |
|-------------------|----|---------|-------------------|
|                   |    |         | MILL AND RELAY SY |
| CRAWFORD COUNTY   |    |         |                   |
| 1423+25           | -  | 1476+00 | -                 |
| 1476+00           | -  | 1529+00 | -                 |
| 1529+00           | -  | 1582+00 | 747               |
| 1582+00           | -  | 1631+02 | -                 |
| VERNON COUNTY     |    |         |                   |
| 1631+02           | -  | 1684+00 | -                 |
| 1684+00           | -  | 1737+00 | 352               |
| 1737+00           | -  | 1790+00 | 542               |
| 1790+00           | -  | 1843+00 | 467               |
| 1843+00           | -  | 1896+00 | 339               |
| 1896+00           | -  | 1950+00 | 475               |
| 1950+00           | -  | 2005+00 | -                 |
| 2005+00           | -  | 2058+00 | -                 |
| 2058+00           | -  | 2122+20 | -                 |
| <b>ITEM TOTAL</b> |    |         | 2,922             |

**LOCATING NO-PASSING ZONES**

| STATION           | TO | STATION | 648.0100 |
|-------------------|----|---------|----------|
|                   |    |         | MI       |
| 1423+25           | -  | 2122+20 | 13.24    |
| <b>ITEM TOTAL</b> |    |         | 13.24    |

**TRAFFIC CONTROL ITEMS**

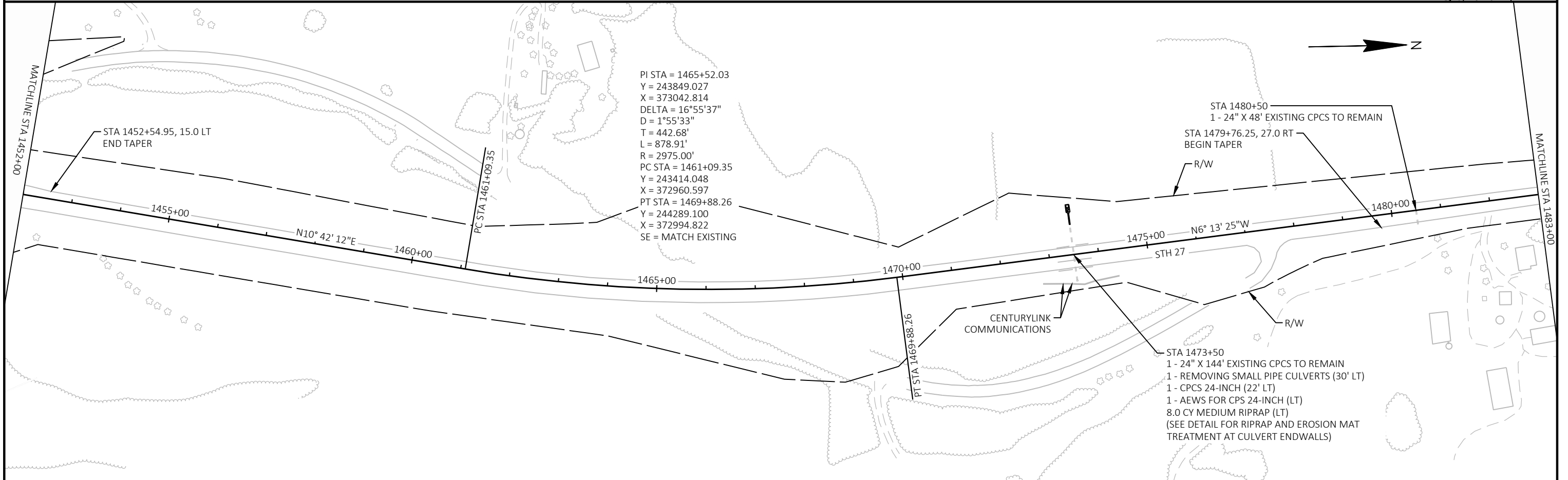
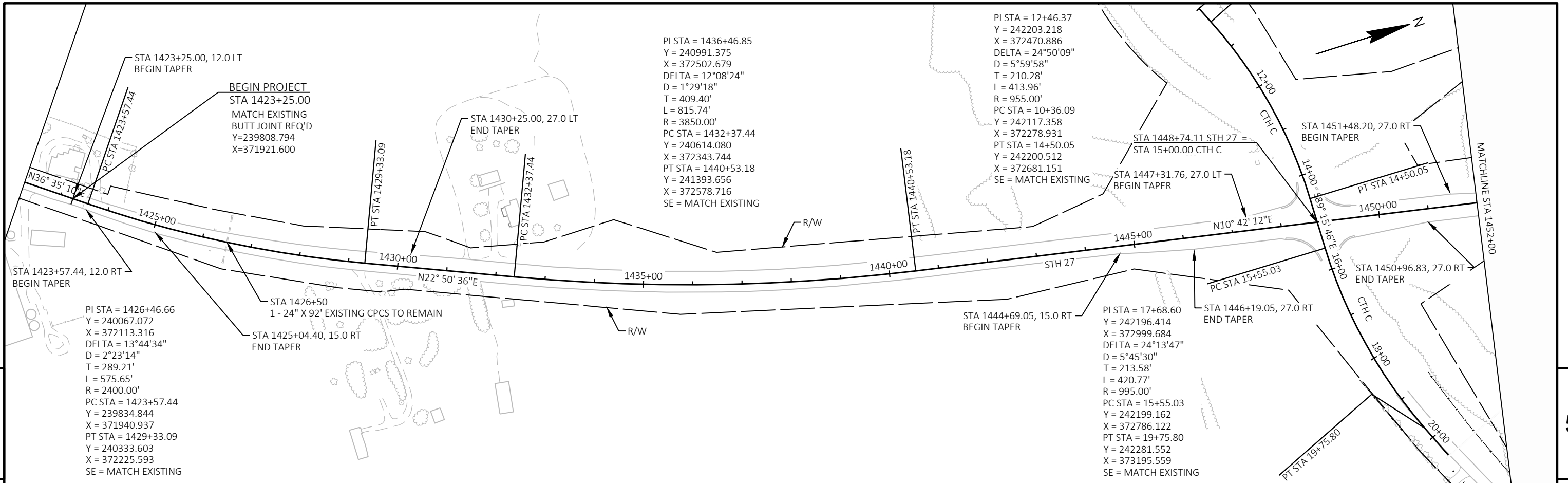
| DESCRIPTION            | 643.0300<br>TRAFFIC CONTROL |              | 643.0420<br>BARRICADES                |                               | 643.0705<br>WARNING LIGHTS              |                                 | 643.0900<br>SIGNS    |               | 643.0920<br>COVERING SIGNS        |                | 643.1050<br>TRAFFIC CONTROL          |   | DURATION |
|------------------------|-----------------------------|--------------|---------------------------------------|-------------------------------|---|---------------------------------|----------------------|---------------|-----------------------------------|----------------|--------------------------------------|---|----------|
|                        | DRUMS<br>NO. DEVICES        | DRUMS<br>DAY | BARRICADES<br>TYPE III<br>NO. DEVICES | BARRICADES<br>TYPE III<br>DAY | WARNING LIGHTS<br>TYPE A<br>NO. DEVICES | WARNING LIGHTS<br>TYPE A<br>DAY | SIGNS<br>NO. DEVICES | SIGNS<br>DAY  | COVERING SIGNS<br>TYPE II<br>EACH | # OF<br>CYCLES | TRAFFIC CONTROL<br>SIGNS PCMS<br>DAY |   |          |
| <b>CRAWFORD COUNTY</b> |                             |              |                                       |                               |   |                                 |                      |               |                                   |                |                                      |   |          |
| ADVANCED WARNING       | -                           | -            | -                                     | -                             | -                                       | -                               | 11                   | 264           | -                                 | -              | 7                                    | - | 24 DAYS  |
| CULVERT CLOSURE        | -                           | -            | 36                                    | 180                           | 72                                      | 360                             | 32                   | 160           | -                                 | -              | -                                    | - | 5 DAYS   |
| DETAIL A               | -                           | -            | 2                                     | 48                            | 4                                       | 96                              | 36                   | 864           | 3                                 | 1              | -                                    | - | 24 DAYS  |
| DETAIL B               | -                           | -            | -                                     | -                             | -                                       | -                               | 36                   | 864           | -                                 | -              | -                                    | - | 24 DAYS  |
| DETAIL C               | -                           | -            | -                                     | -                             | -                                       | -                               | 44                   | 1056          | -                                 | -              | -                                    | - | 24 DAYS  |
| 27 DETOUR OVERVIEW     | -                           | -            | -                                     | -                             | -                                       | -                               | 24                   | 576           | 6                                 | 1              | -                                    | - | 24 DAYS  |
| MILL AND OVERLAY       | -                           | -            | -                                     | -                             | -                                       | -                               | 18                   | 180           | -                                 | -              | -                                    | - | 10 DAYS  |
| <b>VERNON COUNTY</b>   |                             |              |                                       |                               |   |                                 |                      |               |                                   |                |                                      |   |          |
| ADVANCED WARNING       | -                           | -            | -                                     | -                             | -                                       | -                               | 21                   | 504           | -                                 | -              | 14                                   | - | 24 DAYS  |
| CULVERT CLOSURE        | -                           | -            | 90                                    | 450                           | 180                                     | 900                             | 75                   | 375           | -                                 | -              | -                                    | - | 5 DAYS   |
| DETAIL D               | -                           | -            | -                                     | -                             | -                                       | -                               | 22                   | 528           | -                                 | -              | -                                    | - | 24 DAYS  |
| DETAIL E               | -                           | -            | 2                                     | 48                            | 4                                       | 96                              | 40                   | 960           | 8                                 | 1              | -                                    | - | 24 DAYS  |
| 82 DETOUR OVERVIEW     | -                           | -            | 3                                     | 72                            | -                                       | -                               | 3                    | 72            | 3                                 | 1              | -                                    | - | 24 DAYS  |
| DETAIL F               | -                           | -            | 1                                     | 24                            | -                                       | -                               | 15                   | 360           | -                                 | 1              | -                                    | - | 24 DAYS  |
| DETAIL G               | -                           | -            | -                                     | -                             | -                                       | -                               | 6                    | 144           | -                                 | 1              | -                                    | - | 24 DAYS  |
| DETAIL H               | -                           | -            | -                                     | -                             | -                                       | -                               | 51                   | 1224          | -                                 | 1              | -                                    | - | 24 DAYS  |
| DETAIL I               | -                           | -            | -                                     | -                             | -                                       | -                               | 12                   | 288           | -                                 | 1              | -                                    | - | 24 DAYS  |
| DETAIL J               | -                           | -            | -                                     | -                             | -                                       | -                               | 75                   | 1800          | 1                                 | 1              | -                                    | - | 24 DAYS  |
| DETAIL K               | -                           | -            | 1                                     | 24                            | -                                       | -                               | 8                    | 192           | 1                                 | 1              | -                                    | - | 24 DAYS  |
| MILL AND OVERLAY       | -                           | -            | -                                     | -                             | -                                       | -                               | 18                   | 486           | -                                 | -              | -                                    | - | 27 DAYS  |
| GUARDRAIL              | 217                         | 1085         | -                                     | -                             | -                                       | -                               | 26                   | 130           | -                                 | -              | -                                    | - | 5 DAYS   |
| <b>ITEM TOTAL</b>      | <b>217</b>                  | <b>1,085</b> | <b>135</b>                            | <b>846</b>                    | <b>260</b>                              | <b>1,452</b>                    | <b>573</b>           | <b>11,027</b> | <b>22</b>                         |                | <b>21</b>                            |   |          |

**CONSTRUCTION STAKING**

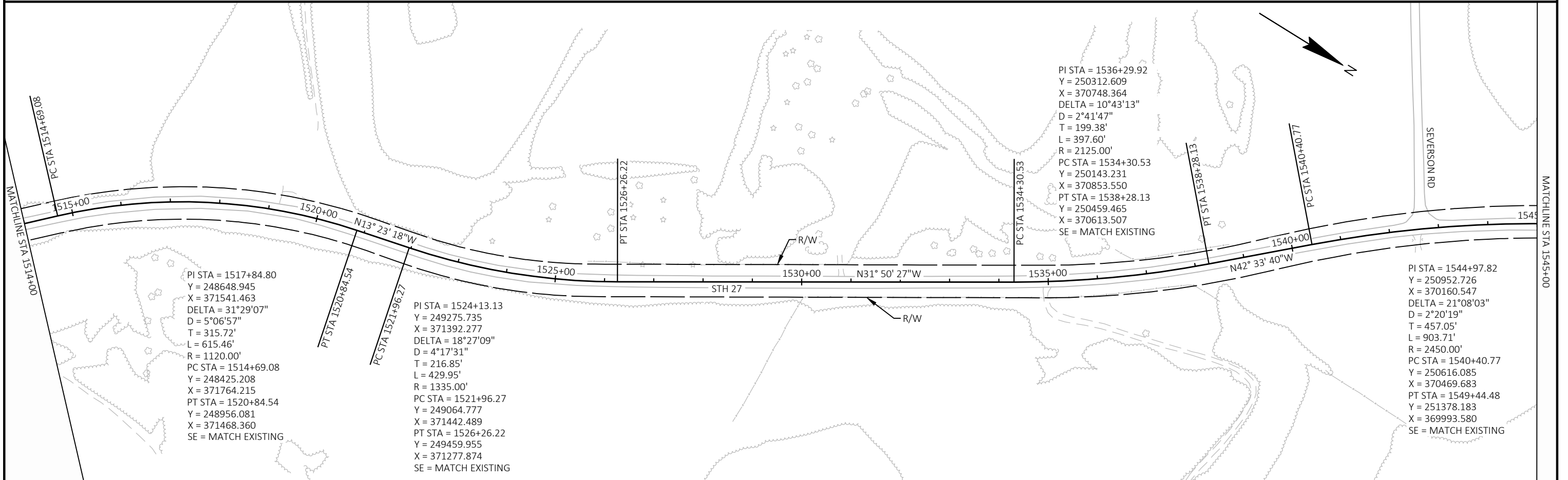
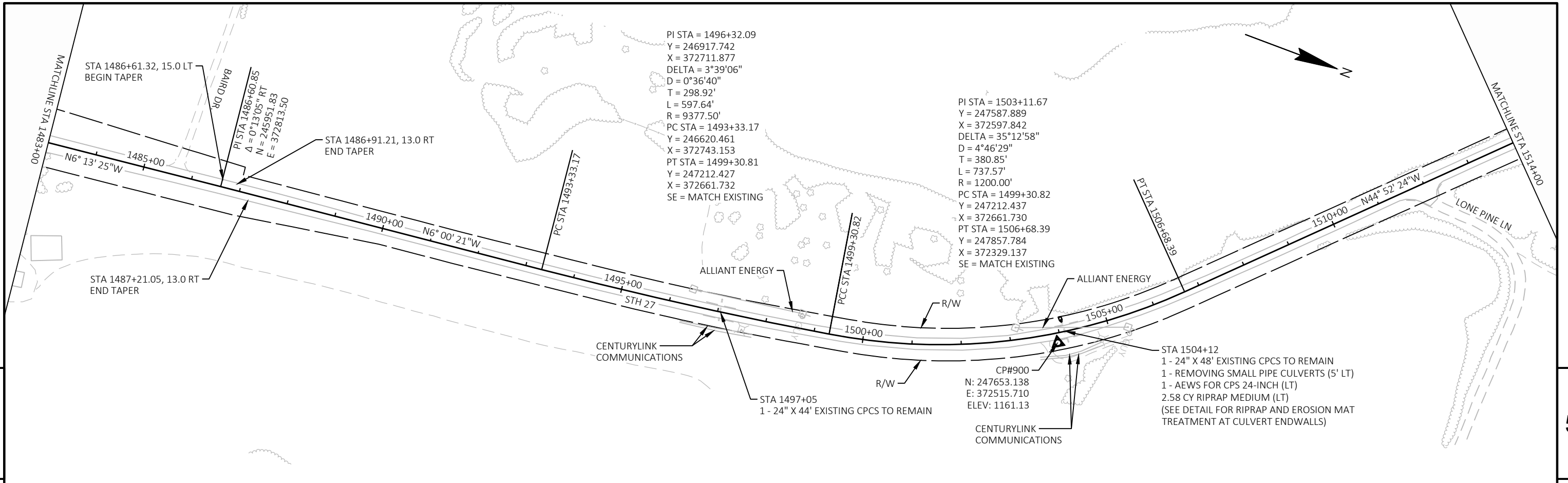
| STATION           | TO | STATION | 650.4000<br>STORM SEWER<br>EACH | 650.5500<br>CURB & GUTTER<br>LF | 650.6000<br>PIPE CULVERTS<br>EACH | 650.8000<br>RESURFACING<br>REFERENCE<br>LF | 650.9500.01<br>SIDEWALK<br>EACH | 650.9911.01<br>SUPPLEMENTAL<br>CONTROL<br>EACH | 650.9920<br>CONSTRUCTION<br>STAKING SLOPE<br>LF |
|-------------------|----|---------|---------------------------------|---------------------------------|-----------------------------------|--|---------------------------------|--|---|
| 1423+25           | -  | 2122+20 | 5                               | 943                             | 15                                | 69,895                                     | 1                               | 1  | 445   |
| <b>ITEM TOTAL</b> |    |         | <b>5</b>                        | <b>943</b>                      | <b>15</b>                         | <b>69,895</b>                              | <b>1</b>                        | <b>1</b>                                       | <b>445</b>                                      |

**LANDMARK REFERENCE MOMUMENTS SPECIAL**

| STATION                     | OFFSET    | SPV.0060.02<br>EACH |
|-----------------------------|-----------|---------------------|
| VERNON COUNTY<br>1690+73.34 | 12.28' RT | 1                   |
| 1755+41.65                  | 12.45' LT | 1                   |
| <b>ITEM TOTAL</b>           |           | <b>2</b>            |



|                        |             |                  |      |       |   |
|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: CRAWFORD | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|



|                        |             |                  |      |       |   |
|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: CRAWFORD | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|

PI STA = 1555+88.53  
 Y = 251977.722  
 X = 369758.296  
 DELTA = 36°50'51"  
 D = 4°46'29"  
 T = 399.74'  
 L = 771.73'  
 R = 1200.00'  
 PC STA = 1551+88.79  
 Y = 251605.610  
 X = 369904.328  
 PT STA = 1559+60.53  
 Y = 252187.925  
 X = 369418.285  
 SE = MATCH EXISTING

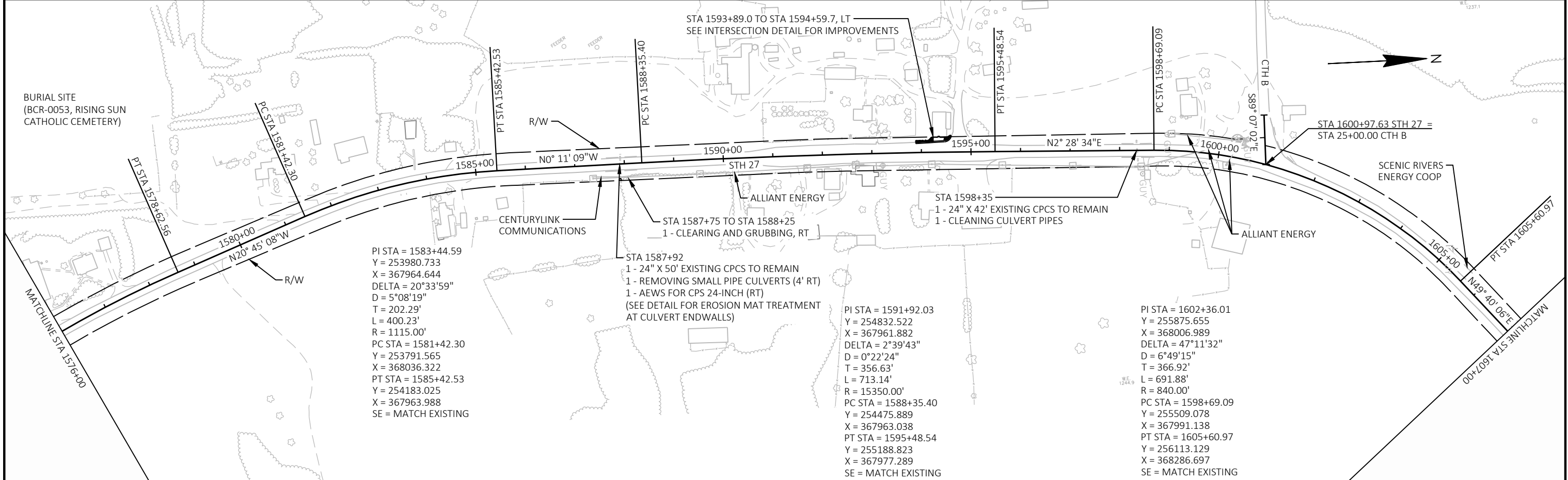
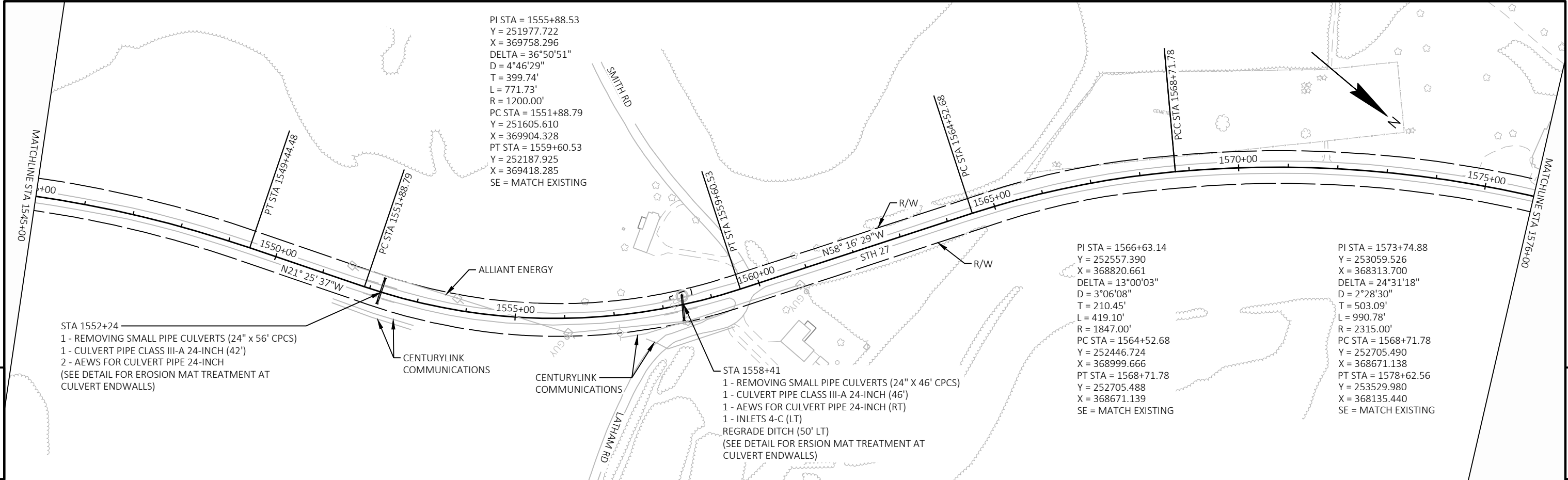
PI STA = 1566+63.14  
 Y = 252557.390  
 X = 368820.661  
 DELTA = 13°00'03"  
 D = 3°06'08"  
 T = 210.45'  
 L = 419.10'  
 R = 1847.00'  
 PC STA = 1564+52.68  
 Y = 252446.724  
 X = 368999.666  
 PT STA = 1568+71.78  
 Y = 252705.488  
 X = 368671.139  
 SE = MATCH EXISTING

PI STA = 1573+74.88  
 Y = 253059.526  
 X = 368313.700  
 DELTA = 24°31'18"  
 D = 2°28'30"  
 T = 503.09'  
 L = 990.78'  
 R = 2315.00'  
 PC STA = 1568+71.78  
 Y = 252705.490  
 X = 368671.138  
 PT STA = 1578+62.56  
 Y = 253529.980  
 X = 368135.440  
 SE = MATCH EXISTING

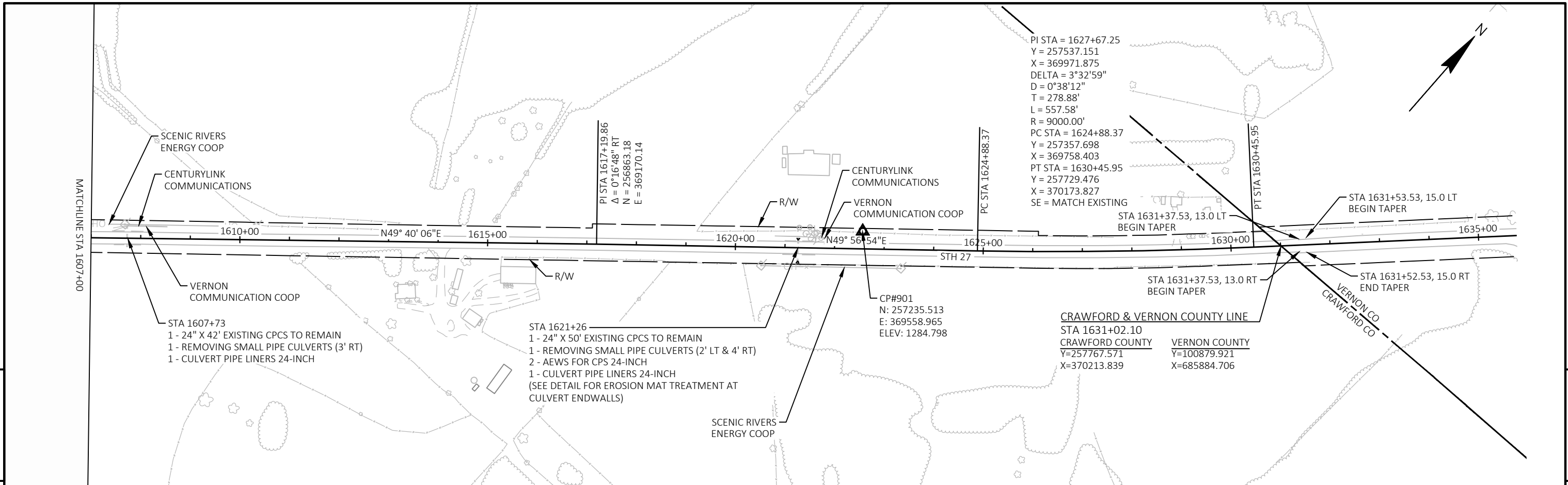
PI STA = 1583+44.59  
 Y = 253980.733  
 X = 367964.644  
 DELTA = 20°33'59"  
 D = 5°08'19"  
 T = 202.29'  
 L = 400.23'  
 R = 1115.00'  
 PC STA = 1581+42.30  
 Y = 253791.565  
 X = 368036.322  
 PT STA = 1585+42.53  
 Y = 254183.025  
 X = 367963.988  
 SE = MATCH EXISTING

PI STA = 1591+92.03  
 Y = 254832.522  
 X = 367961.882  
 DELTA = 2°39'43"  
 D = 0°22'24"  
 T = 356.63'  
 L = 713.14'  
 R = 15350.00'  
 PC STA = 1588+35.40  
 Y = 254475.889  
 X = 367963.038  
 PT STA = 1595+48.54  
 Y = 255188.823  
 X = 367977.289  
 SE = MATCH EXISTING

PI STA = 1602+36.01  
 Y = 255875.655  
 X = 368006.989  
 DELTA = 47°11'32"  
 D = 6°49'15"  
 T = 366.92'  
 L = 691.88'  
 R = 840.00'  
 PC STA = 1598+69.09  
 Y = 255509.078  
 X = 367991.138  
 PT STA = 1605+60.97  
 Y = 256113.129  
 X = 368286.697  
 SE = MATCH EXISTING



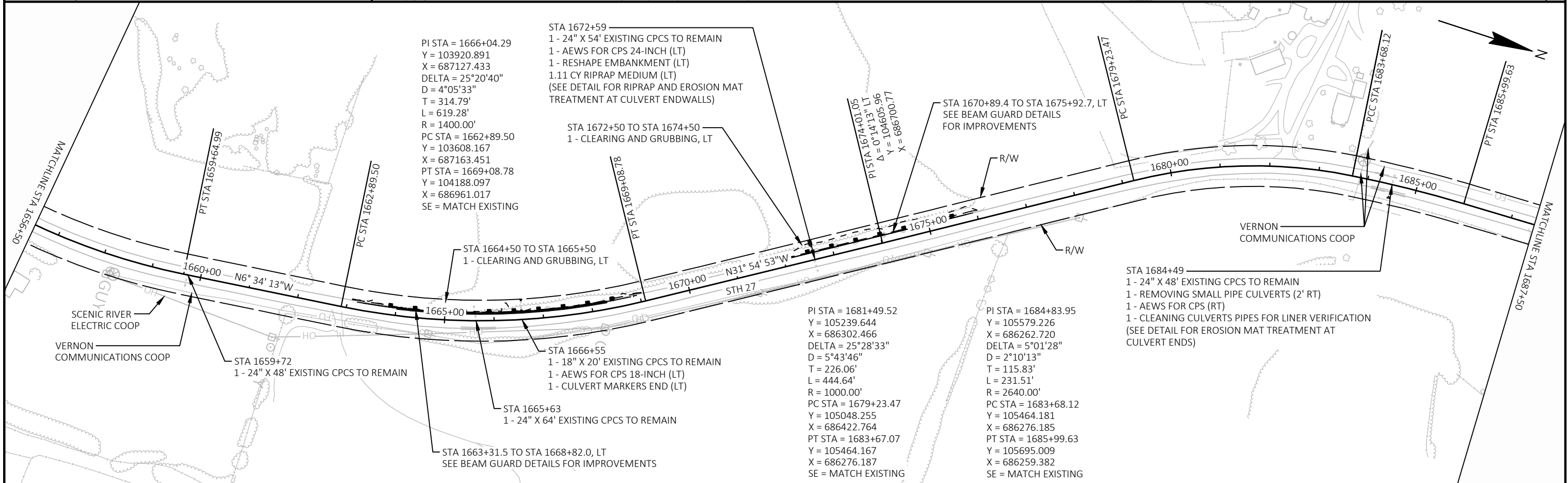
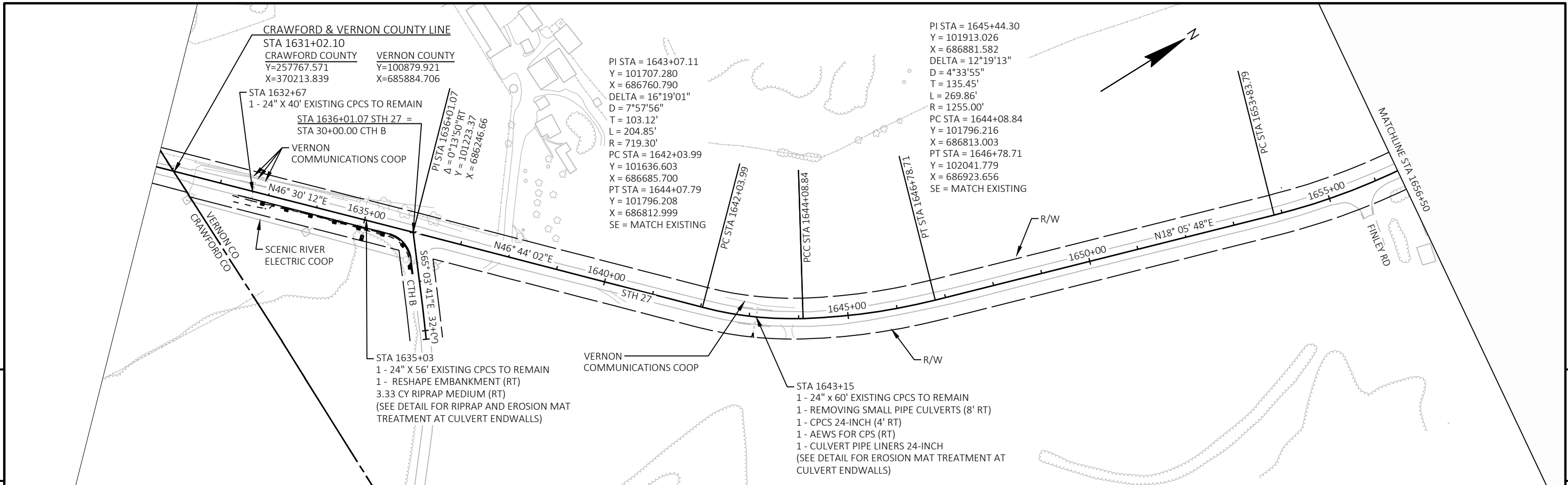
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|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: CRAWFORD | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|



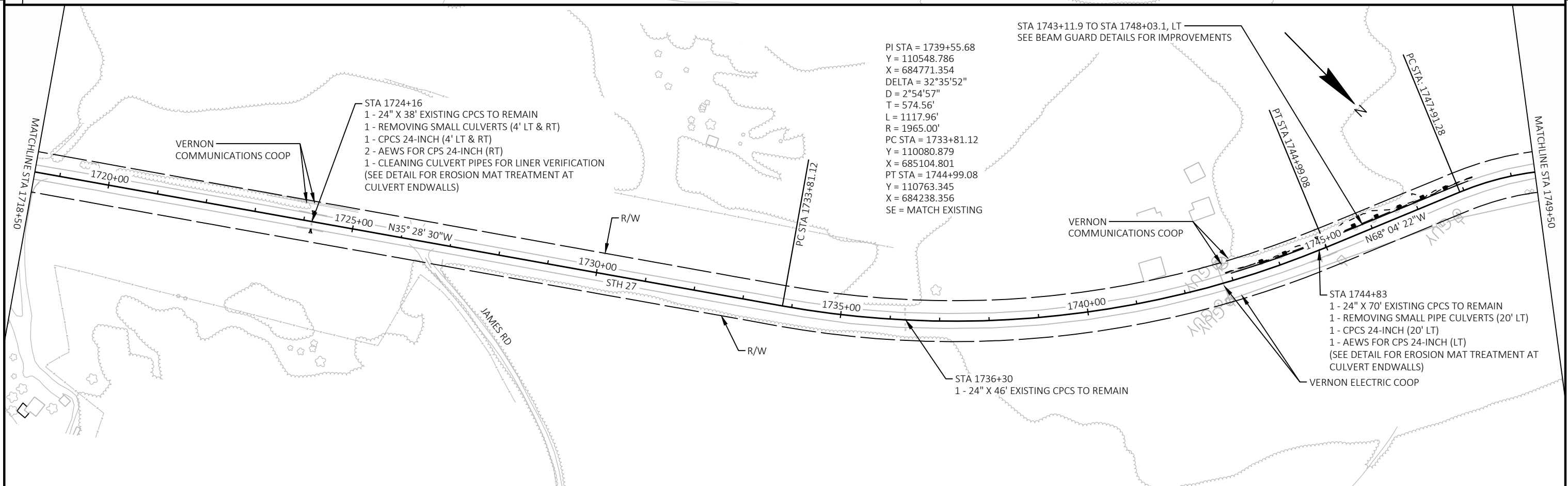
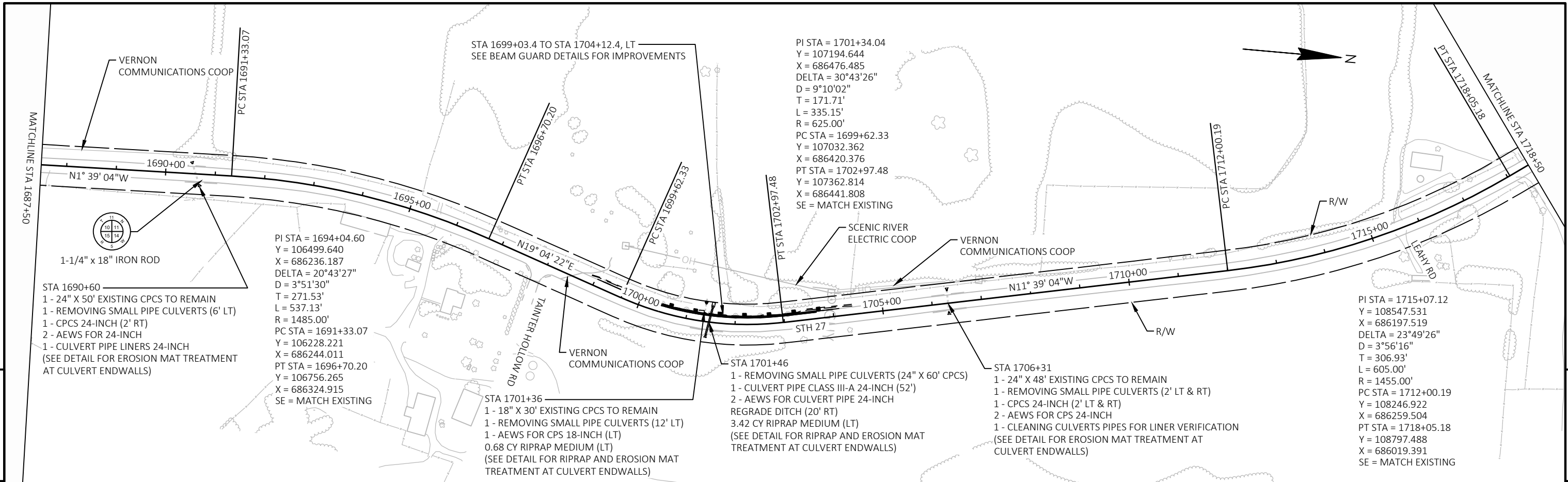
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|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: CRAWFORD | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|

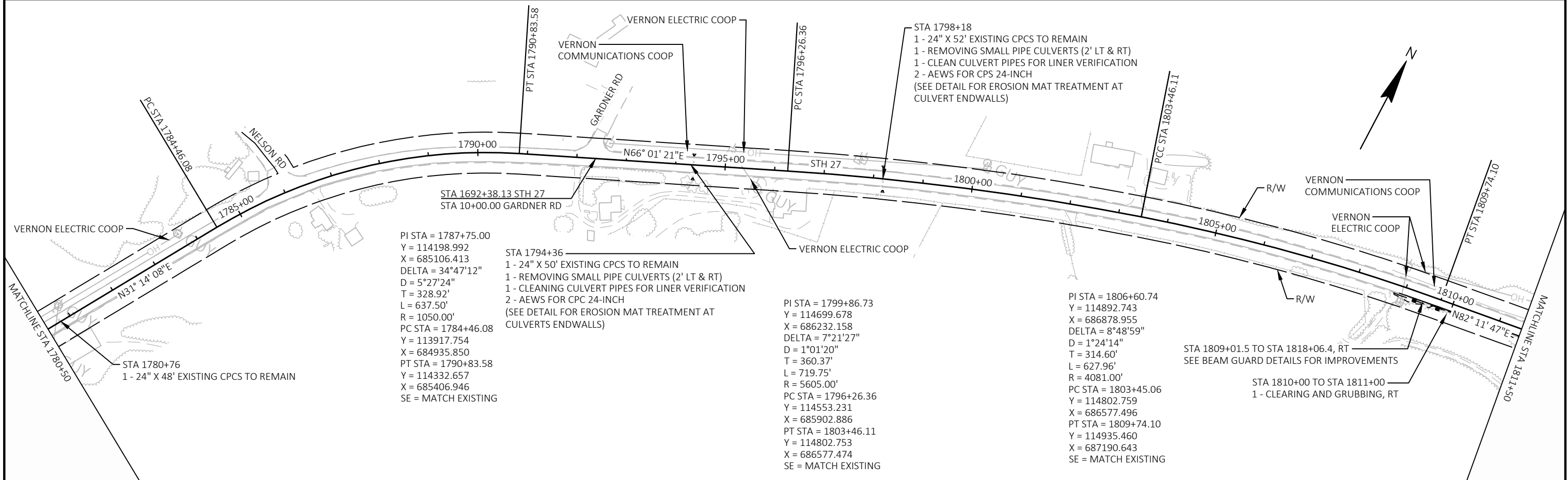
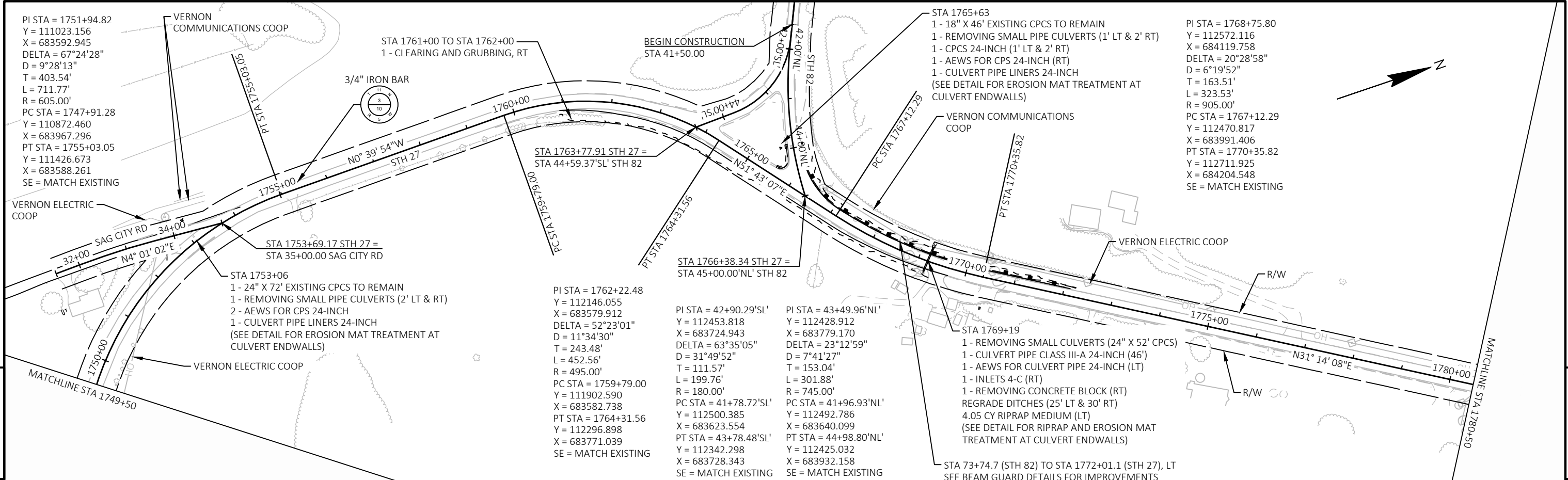


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|------------------------|-------------|----------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | E |
|------------------------|-------------|----------------|------|-------|---|

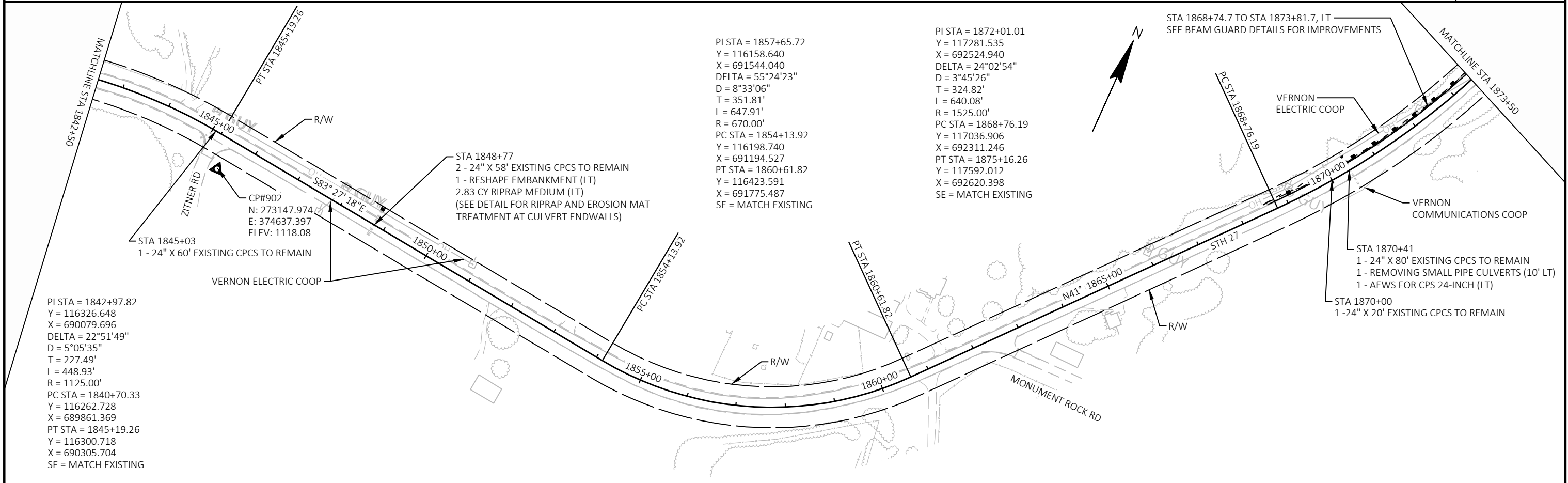
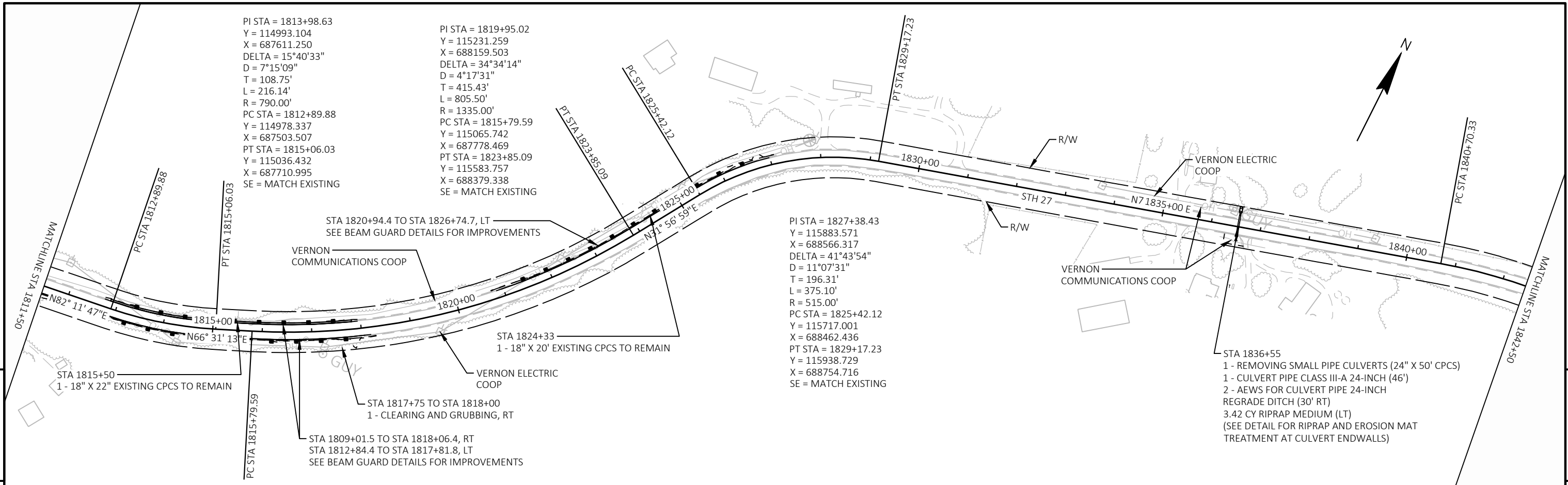


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|------------------------|-------------|----------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | E |
|------------------------|-------------|----------------|------|-------|---|

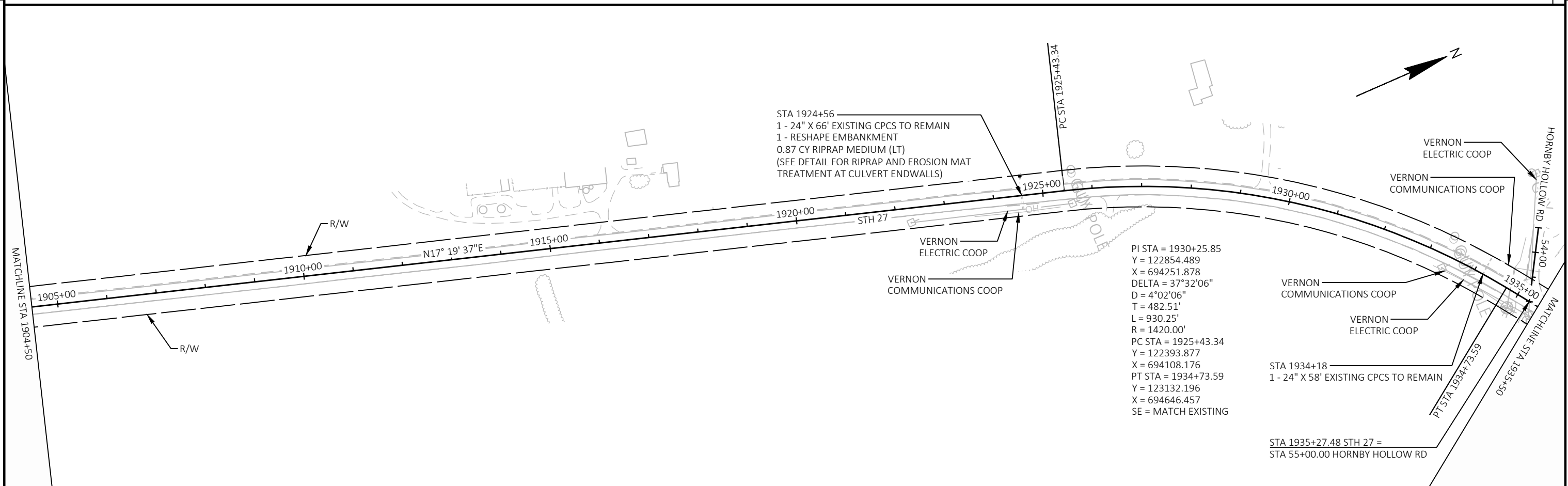
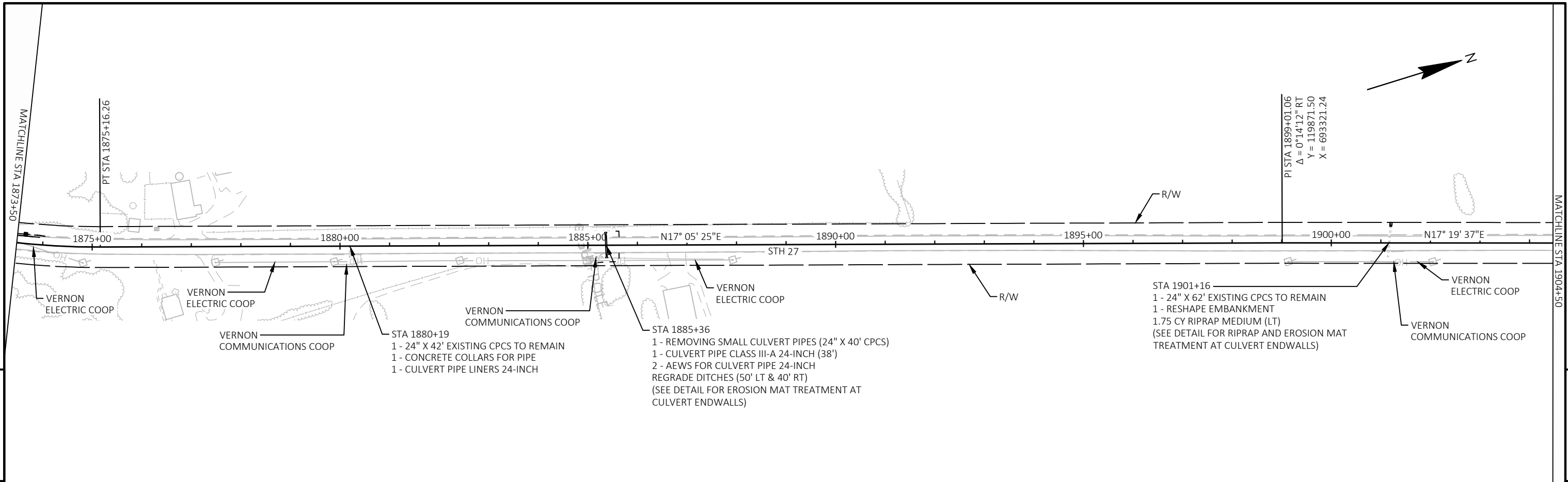




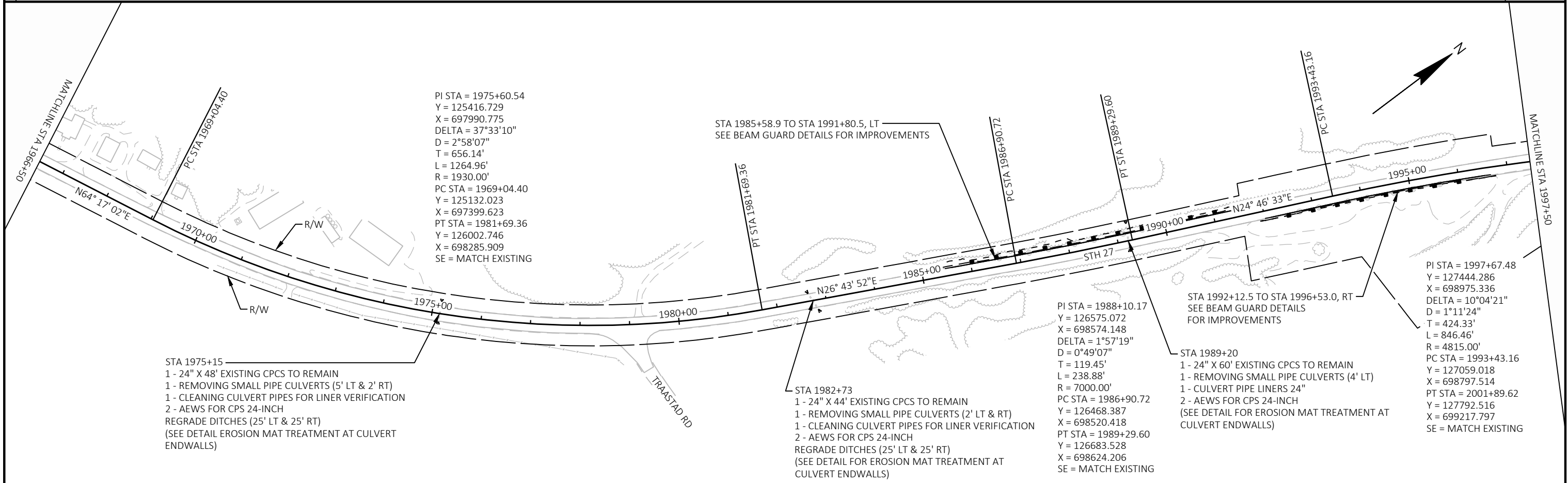
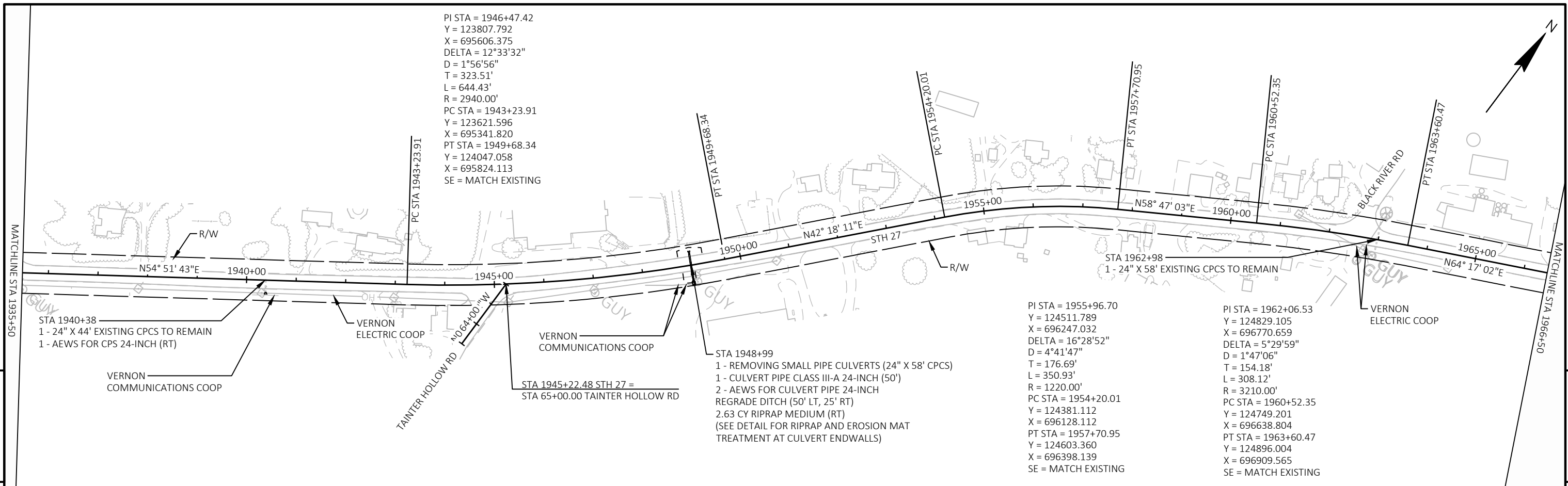
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|------------------------|-------------|----------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | E |
|------------------------|-------------|----------------|------|-------|---|



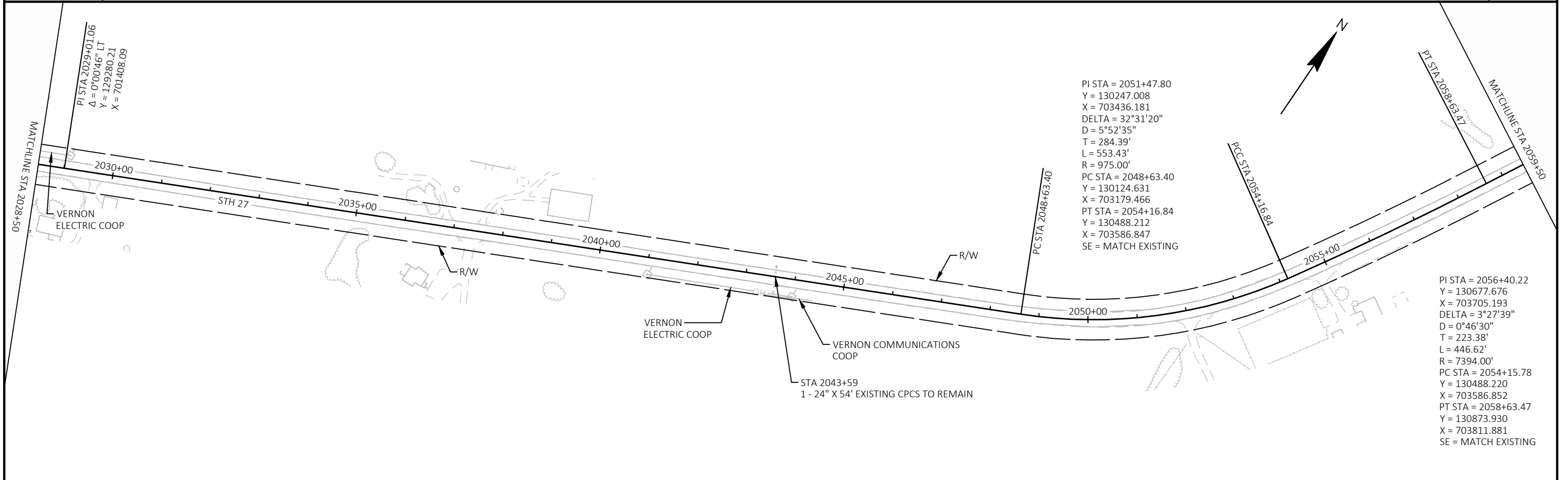
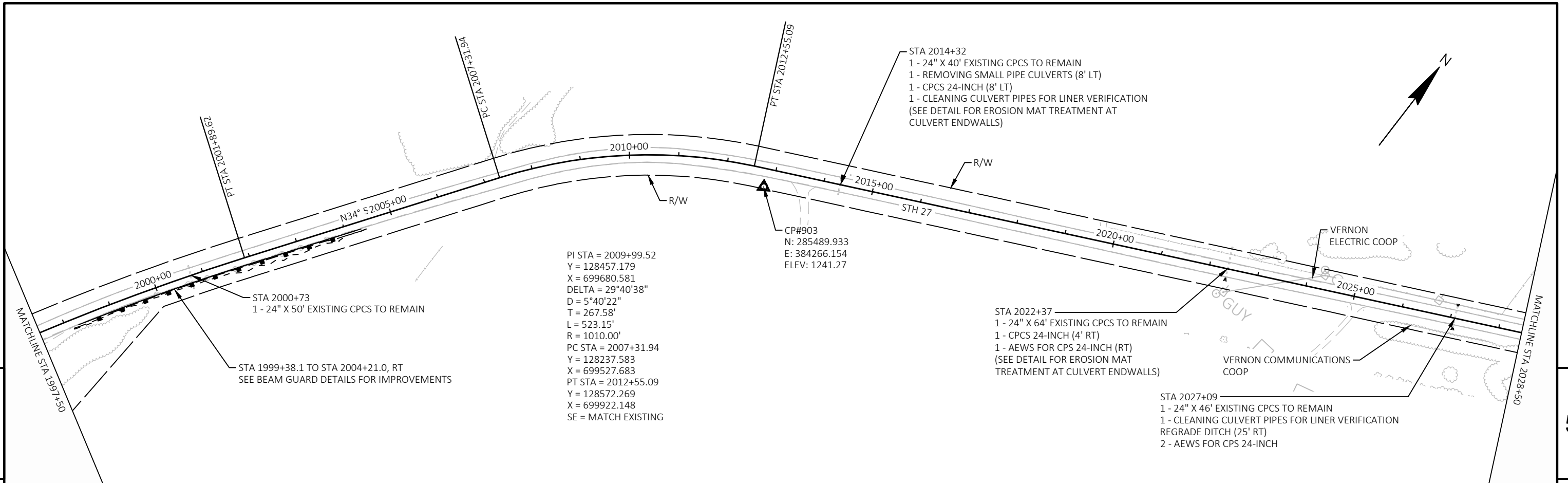
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|------------------------|-------------|----------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | E |
|------------------------|-------------|----------------|------|-------|---|



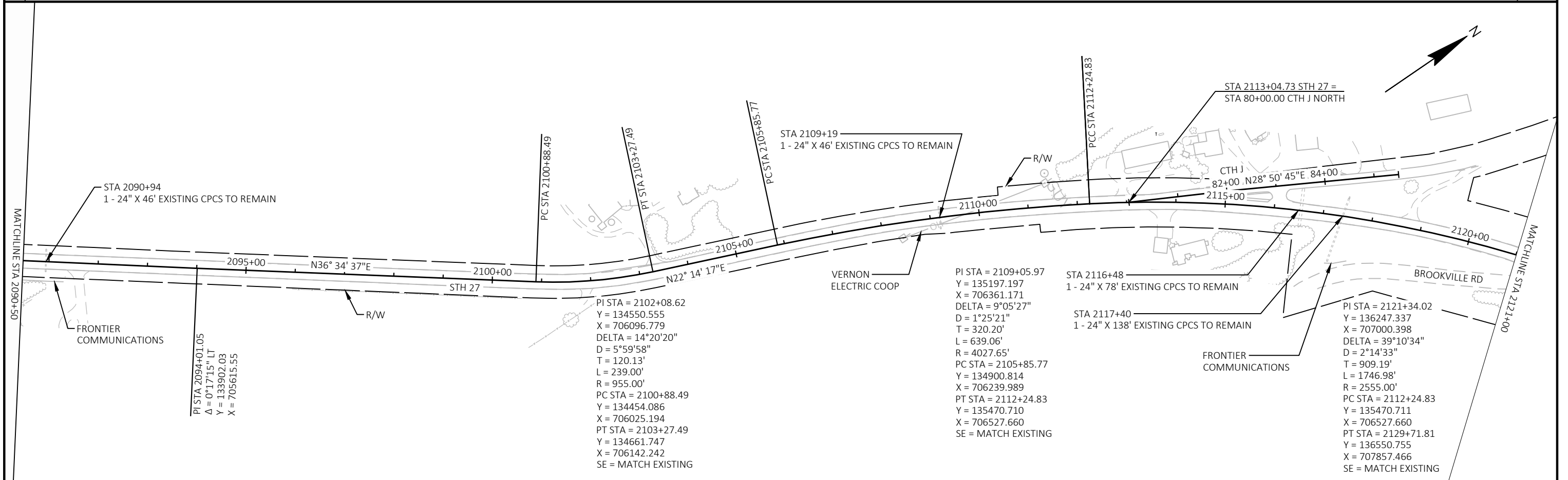
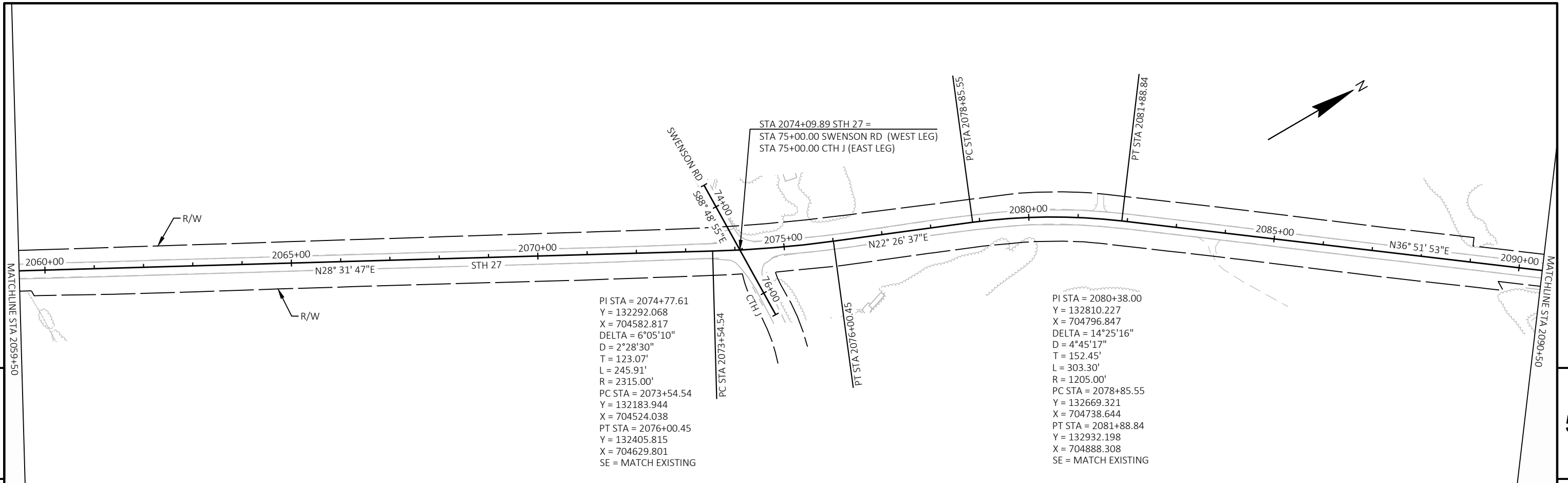
|                        |             |                |      |       |   |
|------------------------|-------------|----------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | E |
|------------------------|-------------|----------------|------|-------|---|



|                        |             |                |      |       |   |
|------------------------|-------------|----------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | E |
|------------------------|-------------|----------------|------|-------|---|



|                        |             |                |      |       |   |
|------------------------|-------------|----------------|------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | E |
|------------------------|-------------|----------------|------|-------|---|



|                        |             |                |      |       |          |
|------------------------|-------------|----------------|------|-------|----------|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | <b>E</b> |
|------------------------|-------------|----------------|------|-------|----------|

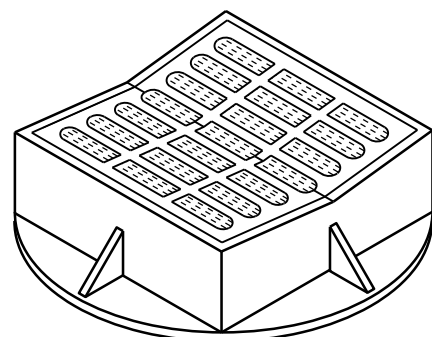
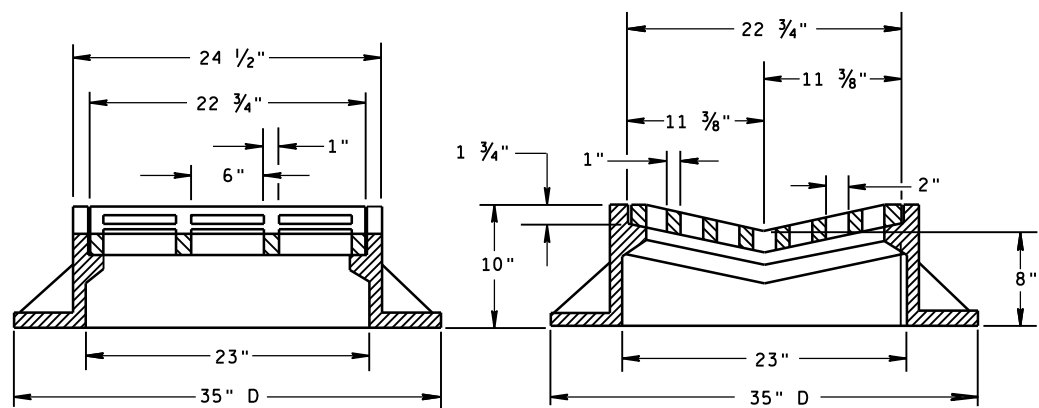


|                        |             |                |      |       |          |
|------------------------|-------------|----------------|------|-------|----------|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | PLAN | SHEET | <b>E</b> |
|------------------------|-------------|----------------|------|-------|----------|

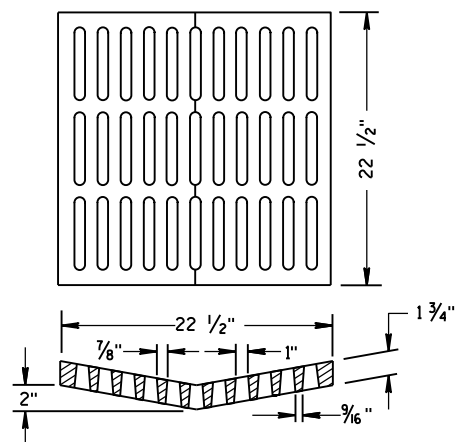
## Standard Detail Drawing List

|           |  |
|-----------|--|
| 08A05-19B | INLET COVERS TYPE B, B-A, C, MS, MS-A, & WM  |
| 08A05-19C | INLET COVERS TYPE F, HM, HM-S, S, T, V, HM-GJ, & HM-GJ-S   |
| 08C06-02  | INLETS 3-FT AND 4-FT DIAMETER  |
| 08C07-02  | INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT   |
| 08D01-22A | CONCRETE CURB & GUTTER   |
| 08D01-22B | CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS   |
| 08D04-06  | CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES   |
| 08E09-06  | SILT FENCE   |
| 08E15-01  | CULVERT PIPE CHECK   |
| 08F01-11  | APRON ENDWALLS FOR CULVERT PIPE  |
| 08F04-08  | JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL  |
| 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  |
| 14B28-04A | GUARDRAIL MOW STRIP  |
| 14B28-04B | GUARDRAIL MOW STRIP  |
| 14B29-01  | SAFETY EDGE  |
| 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)   |
| 14B53-02A | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02B | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02C | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02D | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02E | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02F | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02G | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02H | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 14B53-02I | SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)  |
| 15A03-02A | FLEXIBLE MARKER POST FOR CULVERT END   |
| 15A03-02B | FLEXIBLE MARKER POST FOR CULVERT END   |
| 15C02-08A | BARRICADES AND SIGNS FOR MAINLINE CLOSURES   |
| 15C02-08B | BARRICADES AND SIGNS FOR VARIOUS CLOSURES  |
| 15C02-08C | DETOUR SIGNING FOR MAINLINE CLOSURES   |
| 15C02-08F | ADVANCED WIDTH RESTRICTION SIGNING   |
| 15C03-05  | BARRICADES AND SIGNS FOR SIDEROAD CLOSURES   |
| 15C04-05  | TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC |
| 15C08-21A | LONGITUDINAL MARKING (MAINLINE)  |
| 15C08-21B | TEMPORARY LONGITUDINAL PAVEMENT MARKING  |
| 15C08-21D | PAVEMENT MARKING (TURN LANES)  |
| 15C11-09B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS                                  |
| 15C12-08  | 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   |
| 15C35-05A | PAVEMENT MARKING (INTERSECTIONS)   |
| 15D27-03  | TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH                   |
| 15D28-04  | TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY                               |
| 15D39-02  | TRAFFIC CONTROL, DROP-OFF SIGNING  |
| 15D44-02  | TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES  |
| 15D45-03  | TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL   |
| 15D48-01  | TRAFFIC CONTROL, LANE SHIFT IN FLAGGING OPERATION  |



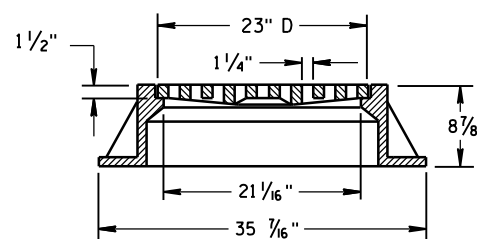
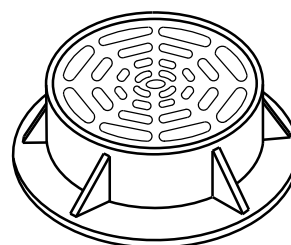
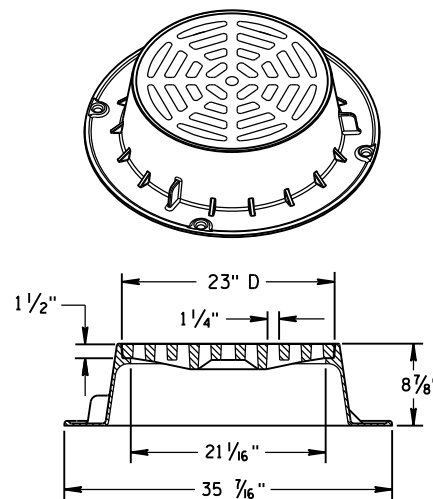


TYPE "B"



ALTERNATIVE GRATE FOR TYPE "B" COVER

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.  
NOTED AS TYPE B-A ON THE DRAINAGE TABLE



TYPE "C"

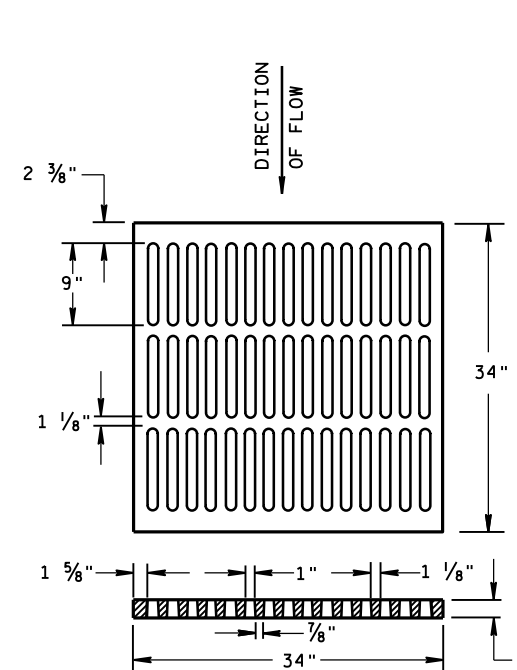
NOTE: EITHER CASTING IS ACCEPTABLE

**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.

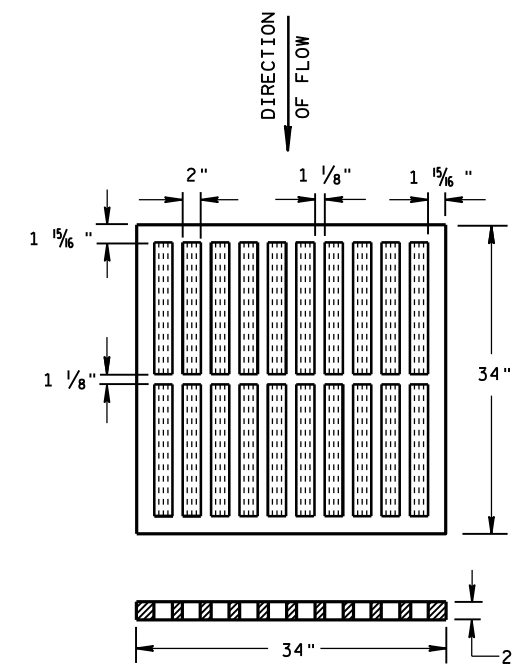
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.



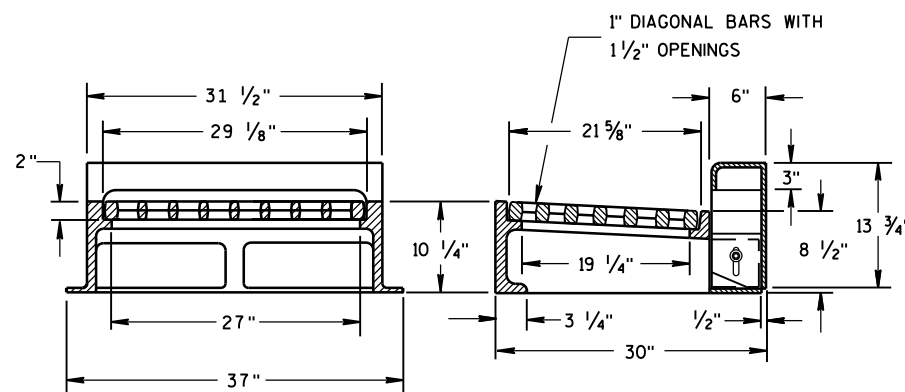
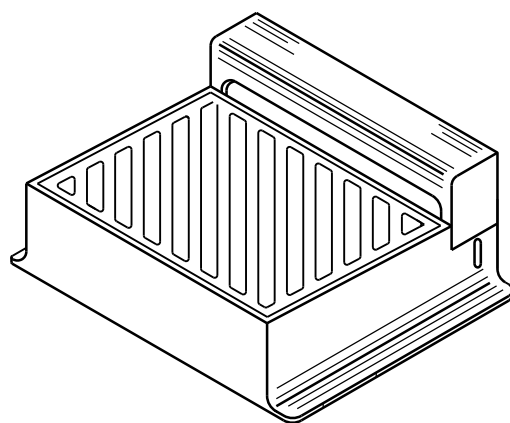
ALTERNATIVE TYPE "MS"

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED  
NOTED AS TYPE MS-A ON THE DRAINAGE TABLE



TYPE "MS"

USE ON FREEWAYS AND EXPRESSWAYS  
NOTED AS TYPE MS ON DRAINAGE TABLE



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"

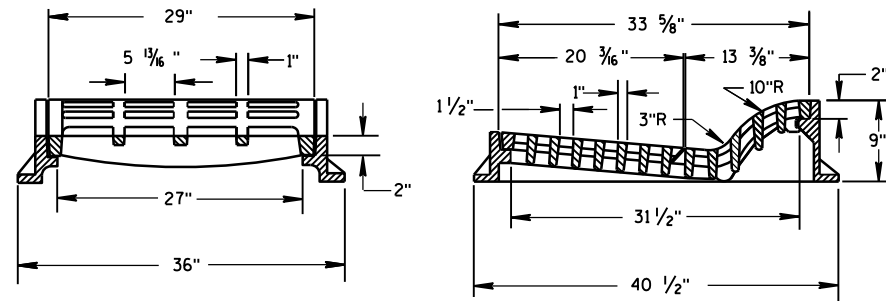
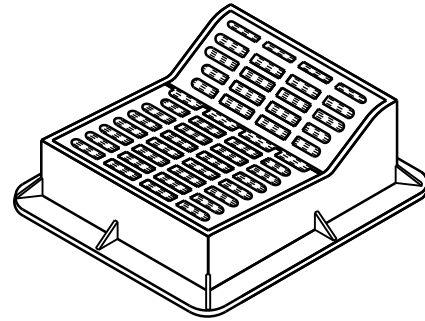
DIAGONAL SLOTS, SHALL BE ORIENTED TO THE DIRECTION OF FLOW AS ILLUSTRATED. GRATES ARE MANUFACTURED TO BE REVERSIBLE.

DIRECTION OF FLOW

INLET COVERS  
TYPE B, B-A, C,  
MS, MS-A, & WM

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE 11/27/2013 /S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT ENGINEER  
FHWA



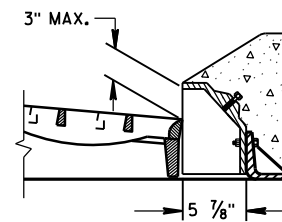
**TYPE "F"**

USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.

**GENERAL NOTES**

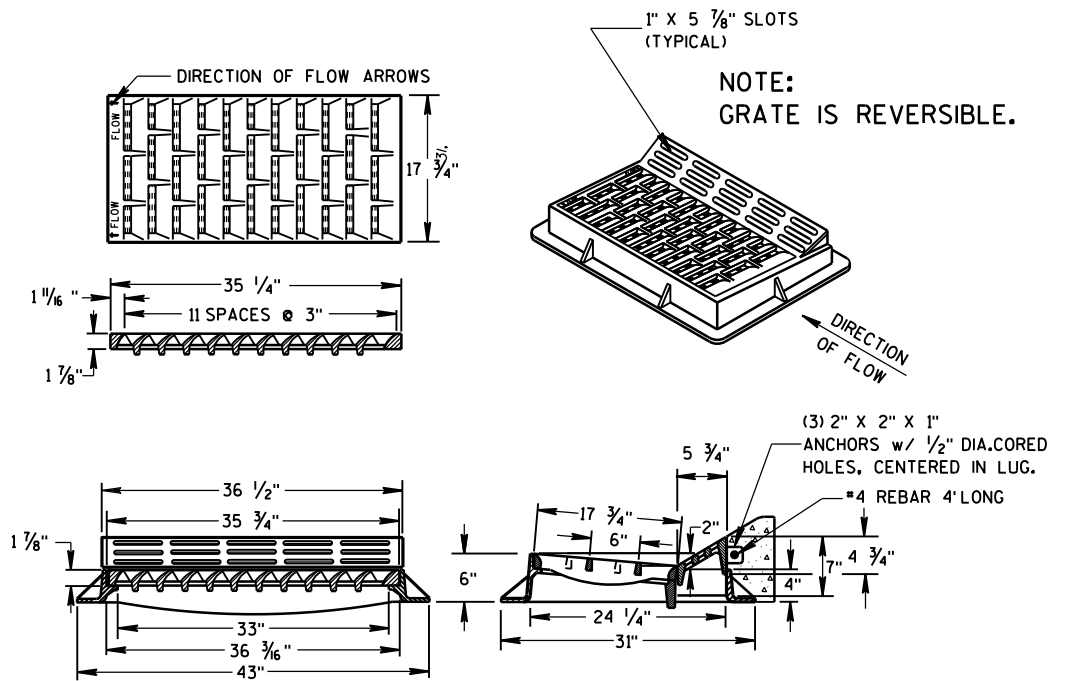
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.



**ALTERNATIVE CURB BOX FOR TYPE "HM" COVER**

USE WITH TYPES G & J CONCRETE CURB & GUTTER, 30 INCH NOTED AS TYPE HM-GJ ON DRAINAGE TABLE



**TYPE "HM"**

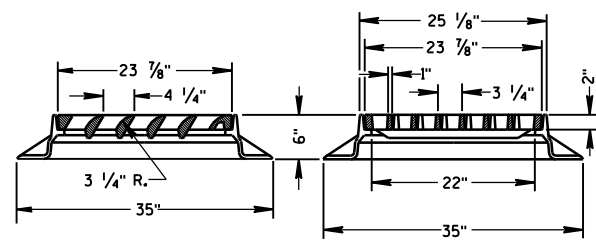
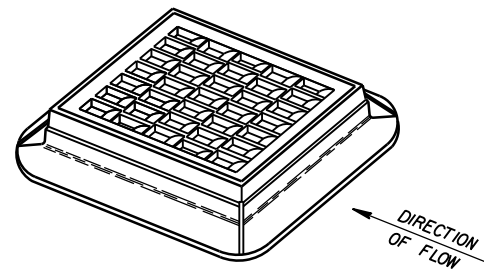
USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.

NOTE: SPECIAL GRATE FOR THE TYPE "H" COVER MAY ALSO BE USED FOR THE TYPE "HM" COVER NOTED AS TYPE HM-S ON DRAINAGE TABLE

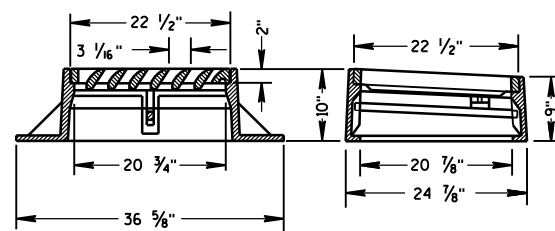
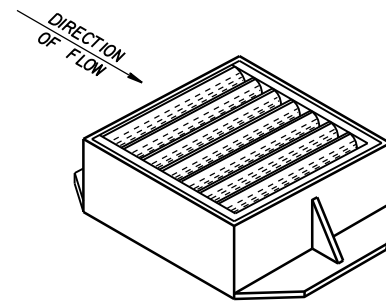
NOTE: SPECIAL GRATE FOR THE TYPE "H" COVER MAY ALSO BE USED FOR THE TYPE "HM-GJ" COVER NOTED AS TYPE HM-GJ-S ON DRAINAGE TABLE

6

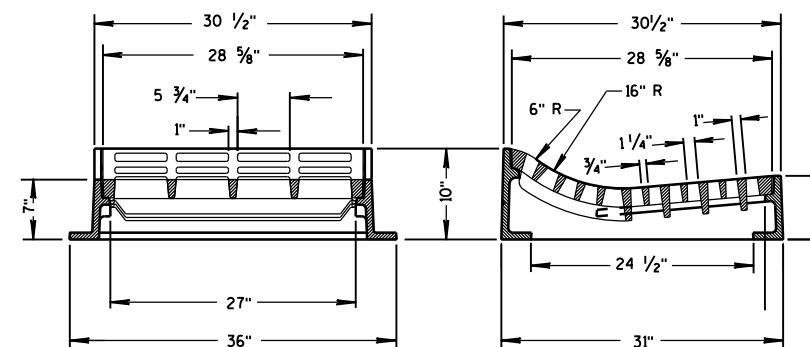
6



**TYPE "S"**

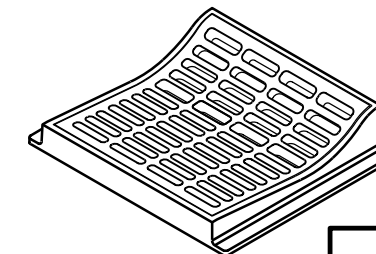


**TYPE "V"**



**TYPE "T"**

USE WITH TYPES R & T CONCRETE CURB & GUTTER, 36 INCH.



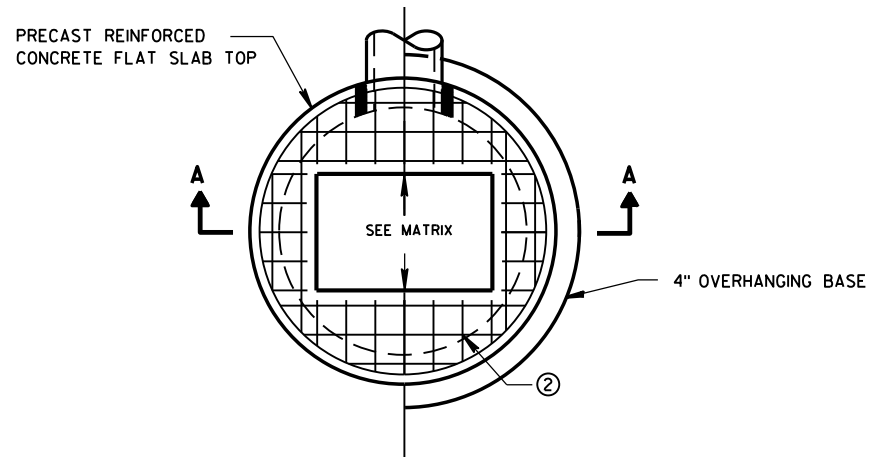
**INLET COVERS**  
TYPE F, HM, HM-S, S, T, V,  
HM-GJ, & HM-GJ-S

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

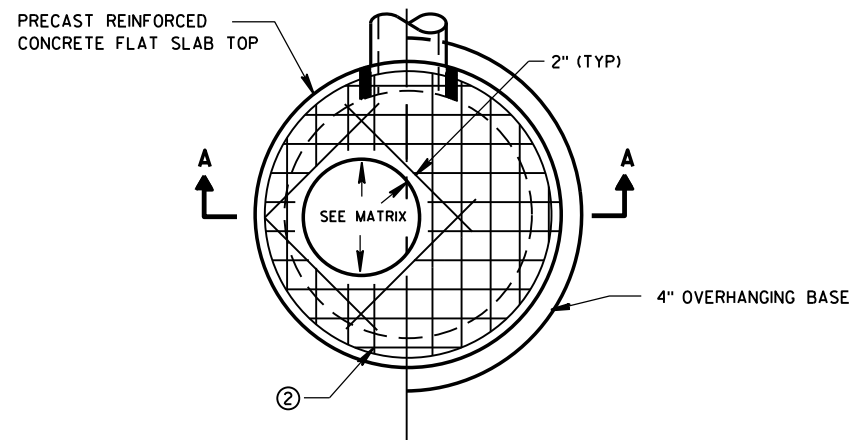
APPROVED  
11/27/2013 DATE /s/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT ENGINEER  
FHWA

S.D.D. 8 A 5-19C

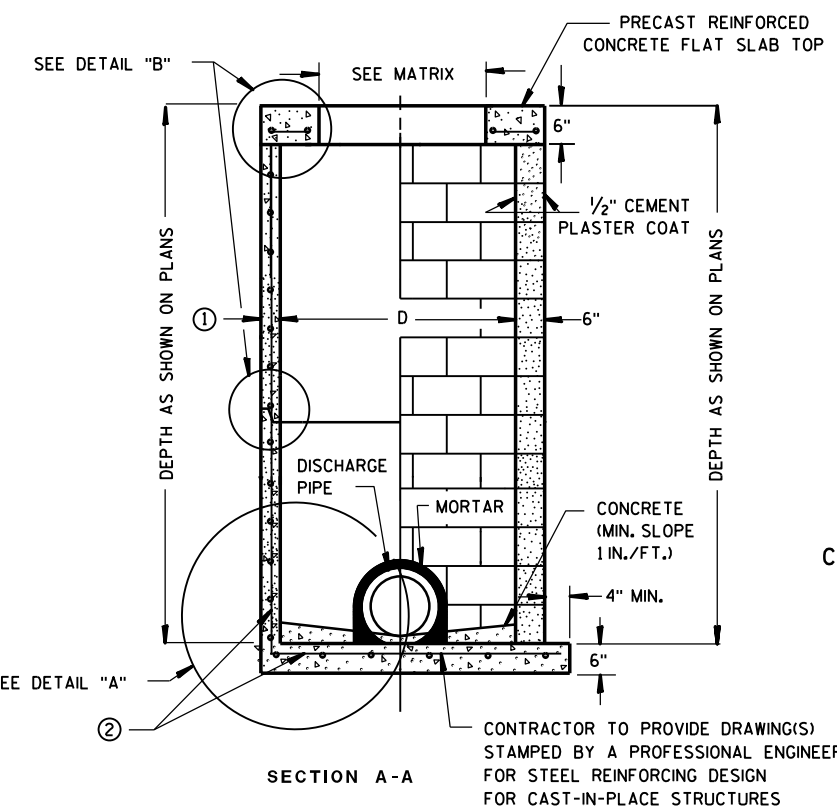
S.D.D. 8 A 5-19C



PLAN VIEW RECTANGULAR OPENING



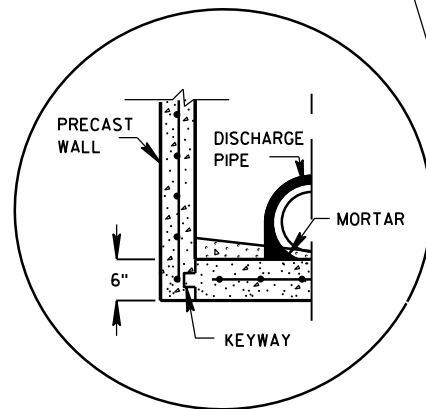
PLAN VIEW CIRCULAR OPENING



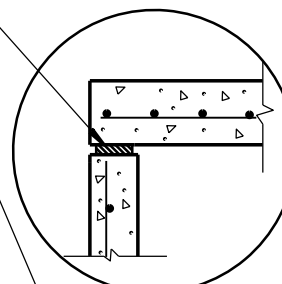
**PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE**      **CONCRETE BLOCK WITH CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②**

CIRCULAR INLETS W/ FLAT TOP

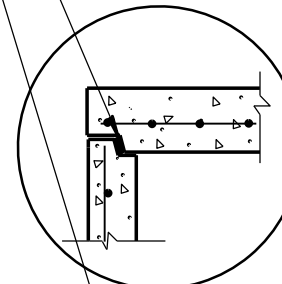
JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)



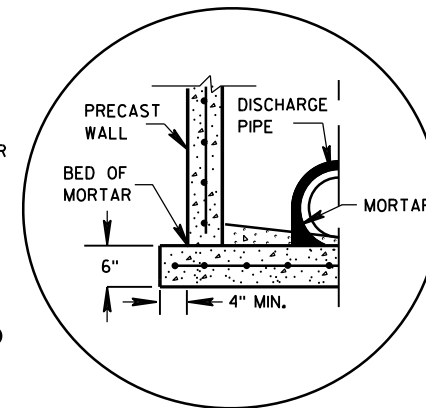
PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



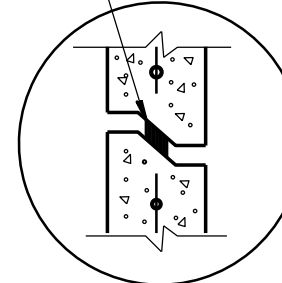
TOP WITH TONGUE AND GROOVE JOINT



TOP WITH TONGUE AND GROOVE JOINT



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION



RISER WITH TONGUE AND GROOVE JOINT

DETAIL "A"

DETAIL "B"

INLETS 3-FT AND 4-FT DIAMETER

**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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

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

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

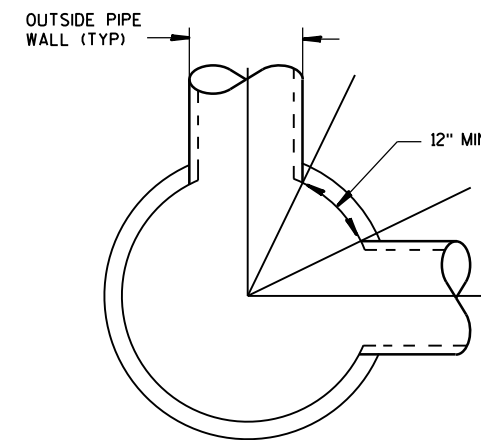
4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

- ① MINIMUM WALL THICKNESS SHALL BE 4-IN FOR 3-FT DIAMETER AND 5-IN FOR 4-FT DIAMETER PRECAST INLETS.
- ② FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.

**INLET COVER OPENING MATRIX**

|      | INLET COVER TYPE | ALL A'S | ALL B'S | BW | C | F | ALL H'S | S | T | V | WM | Z |
|------|------------------|---------|---------|----|---|---|---------|---|---|---|----|---|
| 3-FT | 2 DIA.           |         |         |    | X |   |         |   |   |   |    | X |
|      | 2X2              | X       | X       |    |   |   |         | X |   | X |    |   |
| 4-FT | 2 DIA.           |         |         |    | X |   |         |   |   |   |    | X |
|      | 2X2              | X       | X       |    |   |   |         | X |   | X | X  |   |
|      | 2X2.5            |         |         | X  |   |   |         |   |   |   |    |   |
|      | 2X3              |         |         |    |   |   | X       |   |   |   |    |   |
|      | 2.5X3            |         |         |    |   | X |         |   |   |   |    |   |



DETAIL "C"

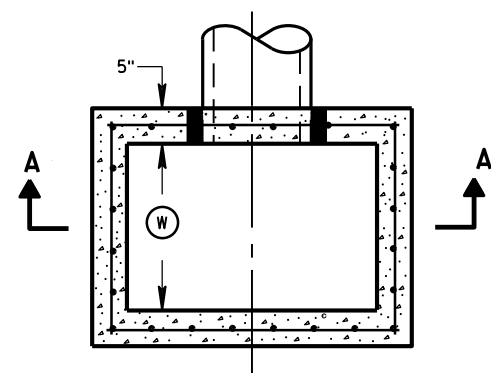
**PIPE MATRIX**

| INLET SIZE | MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES |                     |
|------------|--|---------------------|
|            | 180° SEPARATION (IN)                       | 90° SEPARATION (IN) |
| 3-FT       | 15   | 12                  |
| 4-FT       | 24   | 18                  |

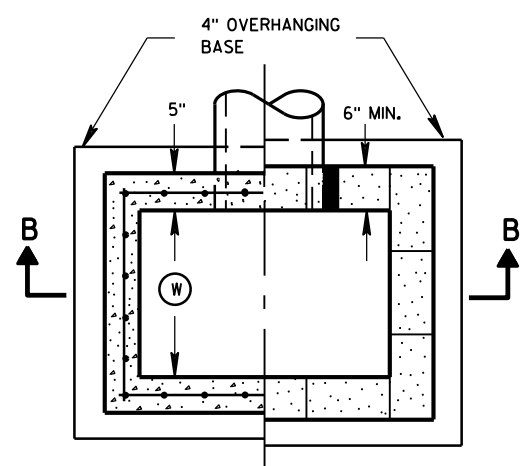
INLETS 3-FT AND 4-FT DIAMETER

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

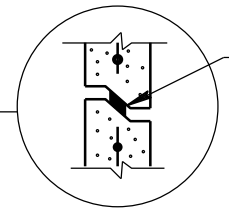
APPROVED  
 Sept., 2016 /S/ Rodney Taylor  
 DATE ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR  
 FHWA



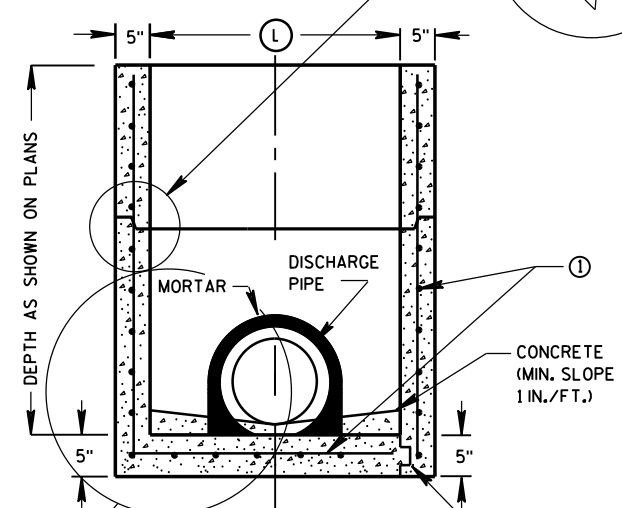
PLAN VIEW



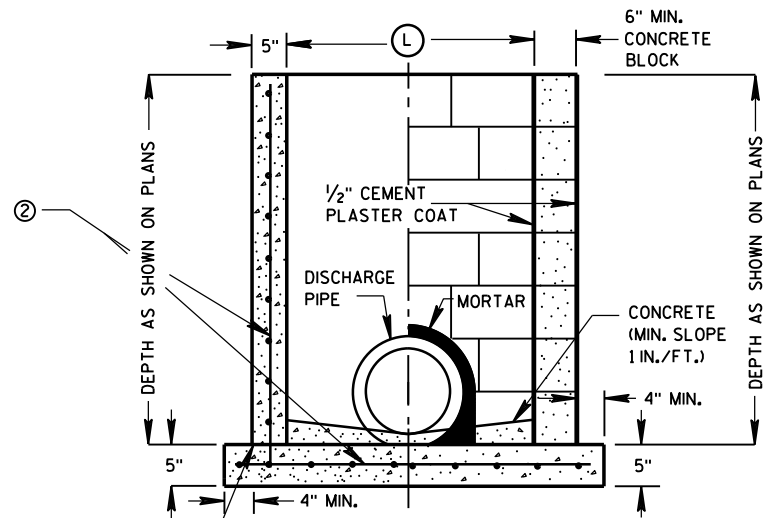
PLAN VIEW



RISER JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP)



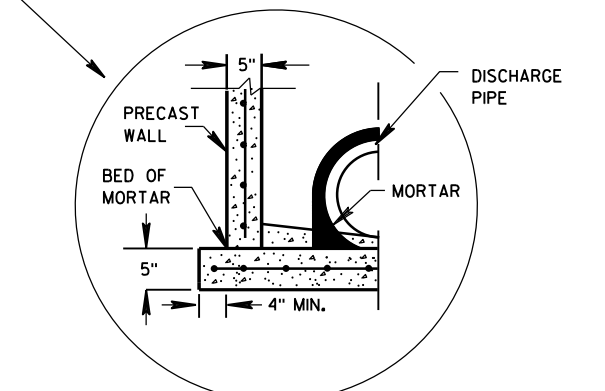
SECTION A-A



SECTION B-B

PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE  
 PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE  
 KEYWAY  
 CONCRETE (MIN. SLOPE 1 IN./FT.)

CONSTRUCTION JOINT  
 CAST-IN-PLACE REINFORCED CONCRETE  
 CONCRETE BLOCK WITH CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ①



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

**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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATES THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

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

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3 INCH CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

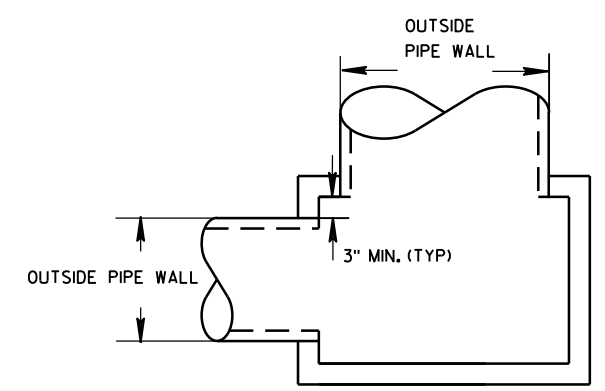
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

**INLET COVER MATRIX**

| INLET SIZE | INLET COVER TYPE |                 | ALL A'S | ALL B'S | BW | F | ALL H'S | S | T | V | WM |
|------------|------------------|-----------------|---------|---------|----|---|---------|---|---|---|----|
|            | WIDTH (W) (FT)   | LENGTH (L) (FT) |         |         |    |   |         |   |   |   |    |
| 2X2-FT     | 2                | 2               | X       | X       |    |   |         | X |   | X |    |
| 2X2.5-FT   | 2                | 2.5             |         |         | X  |   |         | X | X | X | X  |
| 2X3-FT     | 2                | 3               |         |         |    |   | X       |   |   |   |    |
| 2.5X3-FT   | 2.5              | 3               |         |         |    | X |         |   |   |   |    |

**PIPE MATRIX**

| INLET SIZE | MAXIMUM INSIDE PIPE DIAMETER |             |
|------------|------------------------------|-------------|
|            | WIDTH (IN)                   | LENGTH (IN) |
| 2X2-FT     | 12                           | 12          |
| 2X2.5-FT   | 12                           | 18          |
| 2X3-FT     | 12                           | 24          |
| 2.5X3-FT   | 18                           | 24          |



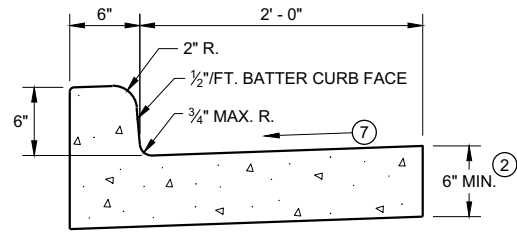
DETAIL "A"

**INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT**

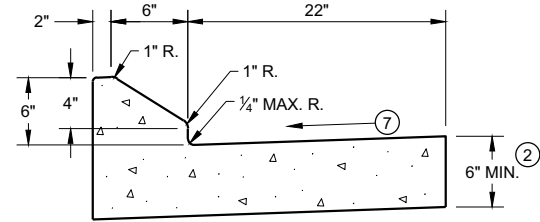
**INLETS 2X2-FT, 2X2.5-FT,  
2X3-FT AND 2.5X3-FT**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

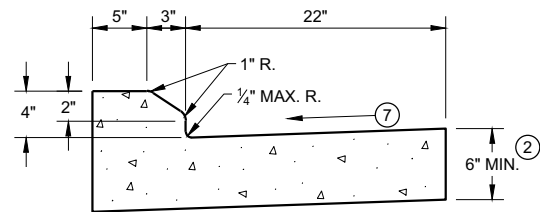
APPROVED  
 Sep 1, 2016 /S/ Rodney Taylor  
 DATE ROADWAY STANDARDS DEVELOPMENT  
 FHWA UNIT SUPERVISOR



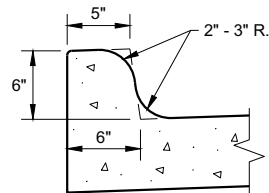
TYPES A<sup>1</sup> & D



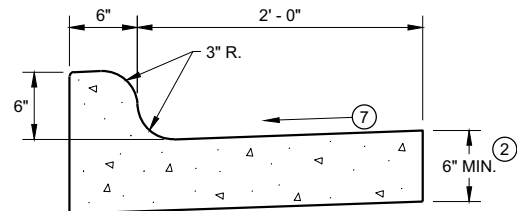
6" SLOPED CURB TYPES G<sup>1</sup> & J



4" SLOPED CURB TYPES G<sup>1</sup> & J

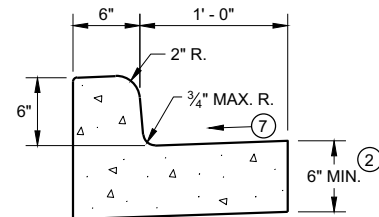


TYPES K<sup>1</sup> & L  
(OPTIONAL CURB SHAPE)



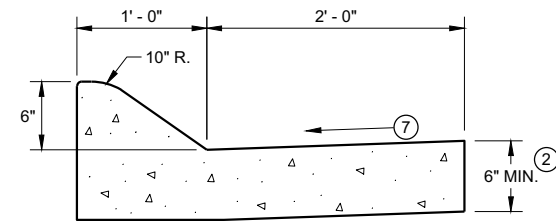
TYPES K<sup>1</sup> & L

CONCRETE CURB AND GUTTER 30"

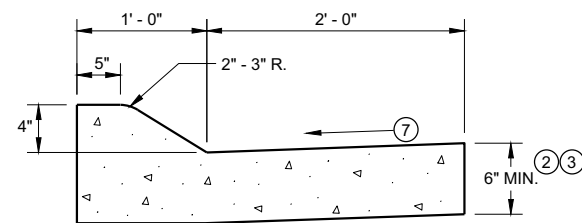


TYPES A<sup>1</sup> & D

CONCRETE CURB AND GUTTER 18"

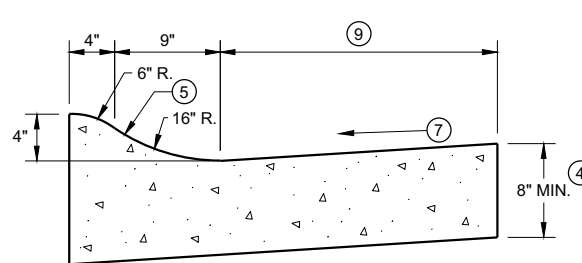


6" SLOPED CURB TYPES A<sup>1</sup> & D



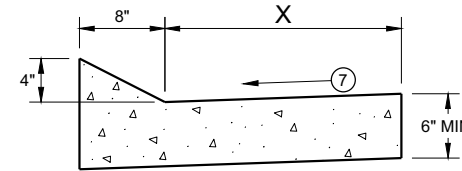
4" SLOPED CURB TYPES A<sup>1</sup> & D

CONCRETE CURB AND GUTTER 36"



4" SLOPED CURB TYPES R<sup>1</sup> & T

|            |     |
|------------|-----|
| TBT & TBTT | X   |
| 30"        | 22" |
| 36"        | 28" |

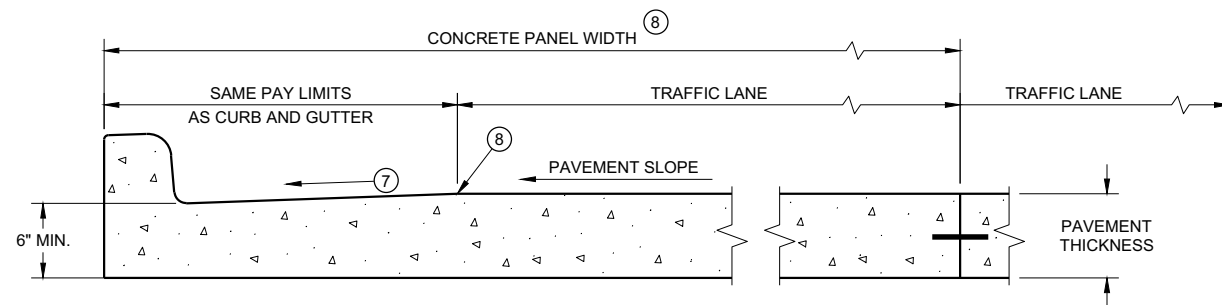


TYPES TBT & TBTT<sup>1</sup>

CONCRETE CURB AND GUTTER

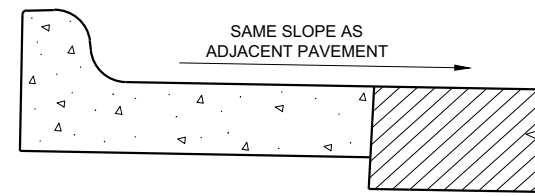
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

| PAVEMENT THICKNESS | MAXIMUM PANEL WIDTH |
|--------------------|---------------------|
| LESS THAN 10"      | 12'                 |
| 10" & ABOVE        | 15'                 |



PARTIAL SECTION OF PAVEMENT \*  
WITH INTEGRAL CURB AND GUTTER

\* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER<sup>6</sup>  
(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

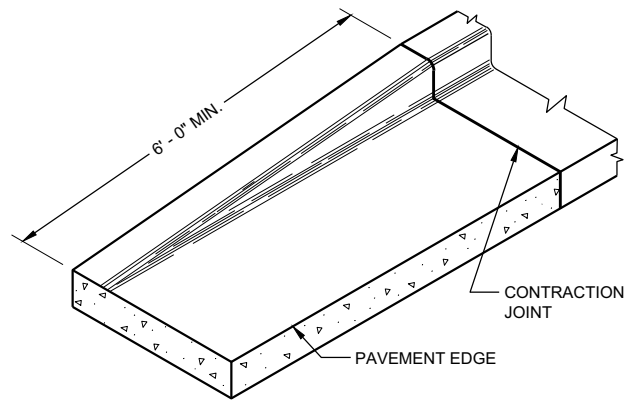
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

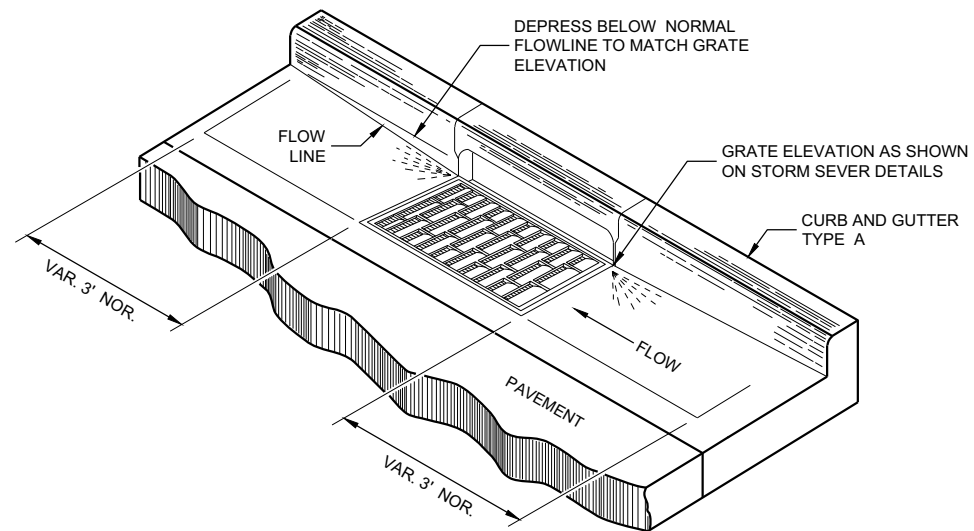
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ UNLESS OTHERWISE NOTED, FOR STAKING PURPOSES THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.
- ⑨ CONCRETE CURB AND GUTTER 4-INCH SLOPED 30-INCH TYPE "R" AND "T" = 17 INCHES  
CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE "R" AND "T" = 23 INCHES



**END SECTION CURB AND GUTTER**



**DETAIL OF CURB AND GUTTER AT INLETS**  
(TYPICAL H INLET COVER SHOWN)

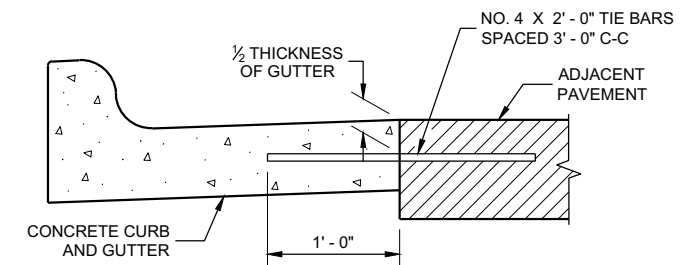
**GENERAL NOTES**

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

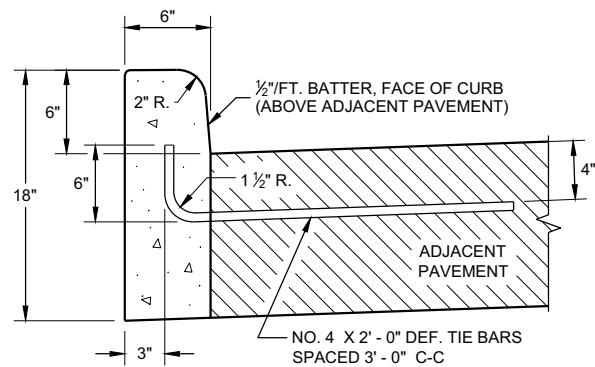
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2'-0" BEHIND THE BACK OF CURBS.

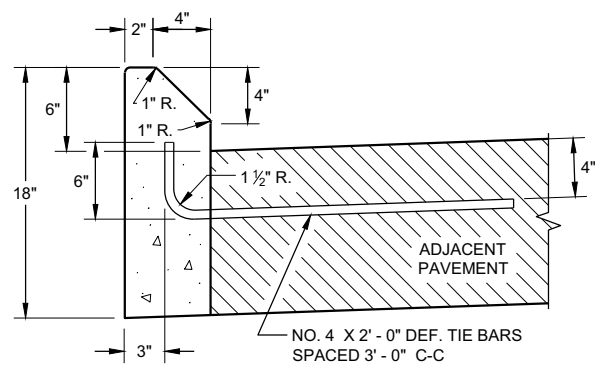
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑨ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.



**TYPICAL TIE BAR LOCATION** ①

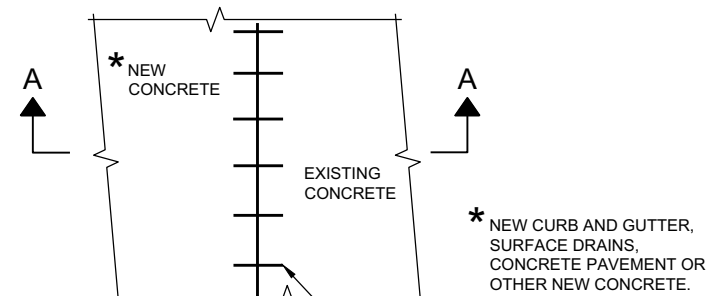


**TYPES A ① & D**

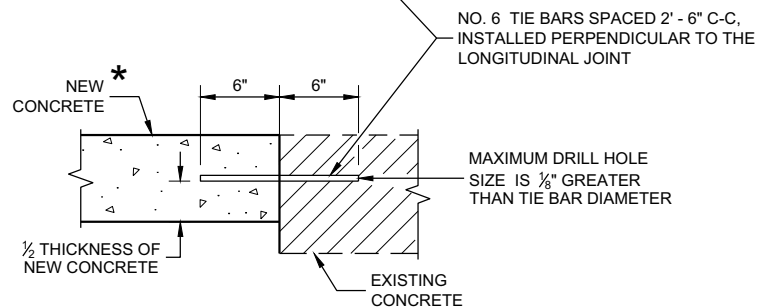


**TYPES G ① & J**

**CONCRETE CURB**

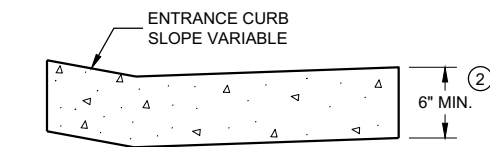


**PLAN VIEW**



**SECTION A - A**

**TIE BARS DRILLED INTO EXISTING PAVEMENT**



**DRIVEWAY ENTRANCE CURB** ⑨  
(WHEN DIRECTED BY THE ENGINEER)

**CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS**

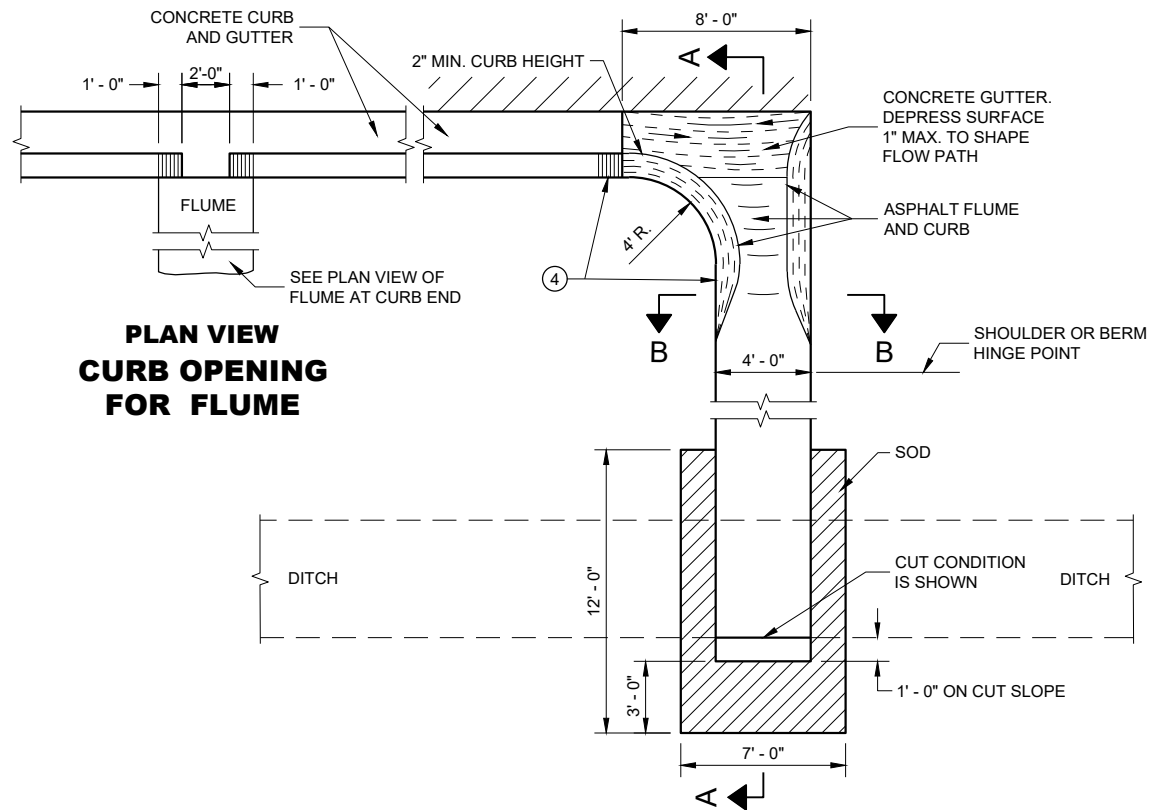
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2021 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

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

### ASPHALTIC FLUME



**PLAN VIEW  
CURB OPENING  
FOR FLUME**

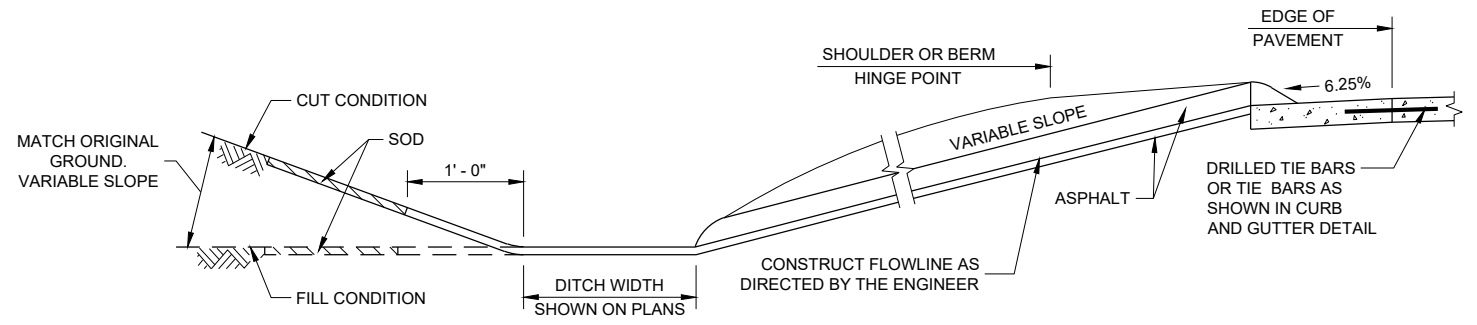
**PLAN VIEW  
FLUME AT CURB END**

### GENERAL NOTES

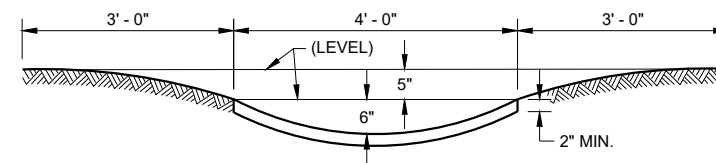
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

4" X 4" - W3.0 X W3.0 CONCRETE REINFORCEMENT SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

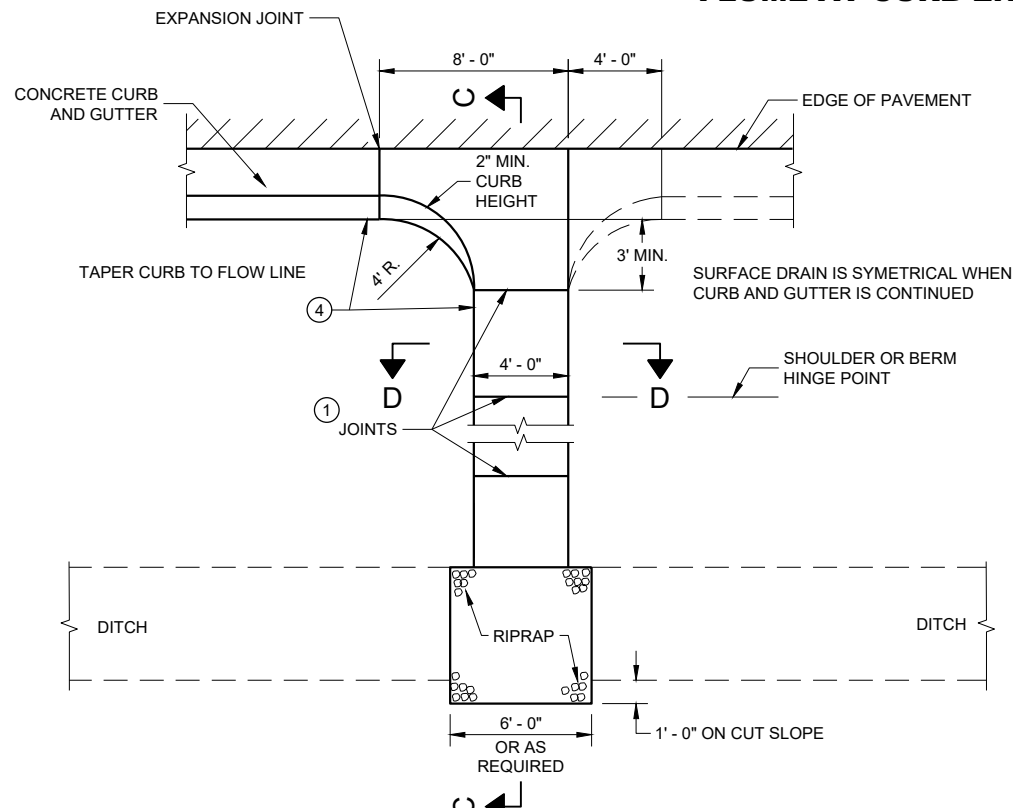
- ① JOINTS SHALL BE 1/8" TO 1/4" WIDE BY 1 1/2" DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED.
- ④ ANGLE OF FLUME IN RELATION TO BACK OF CURB TO BE CONSTRUCTED PER THE PLAN DETAILS OR AS DIRECTED BY THE ENGINEER. ANGLE OF FLUME MAY BE OTHER THAN 90 DEGREES AS SHOWN.



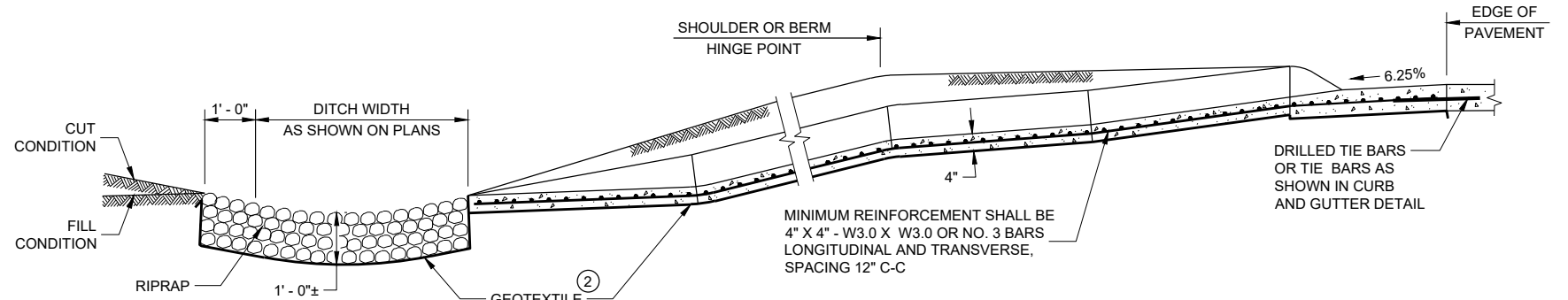
**SECTION A - A**



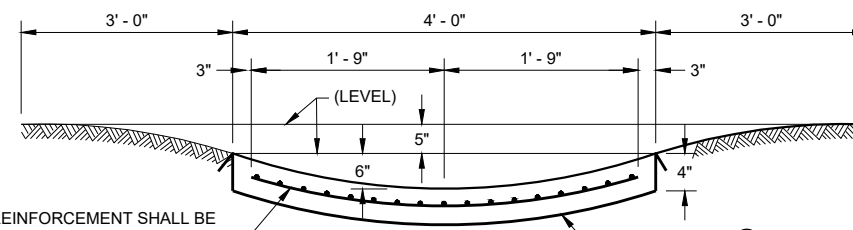
**SECTION B - B**



**PLAN VIEW  
CONCRETE SURFACE DRAIN**



**SECTION C - C**



**SECTION D - D**

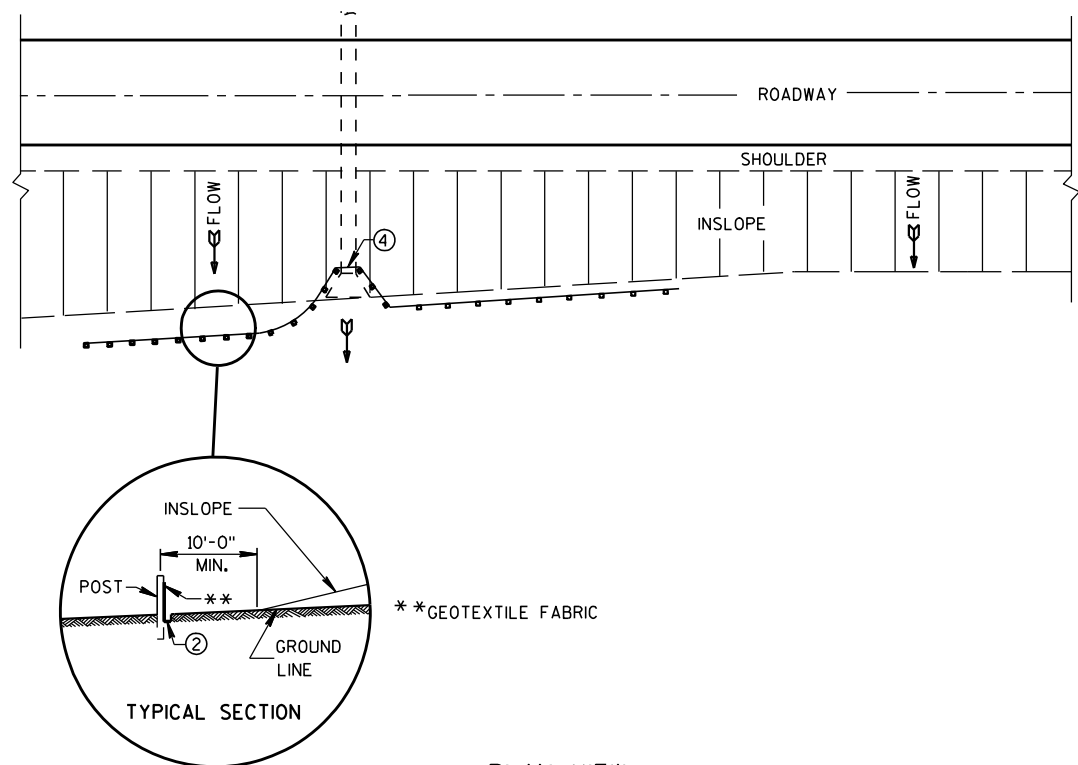
MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE, SPACING 12" C-C

### CONCRETE SURFACE DRAINS AND ASPHALTIC FLUMES

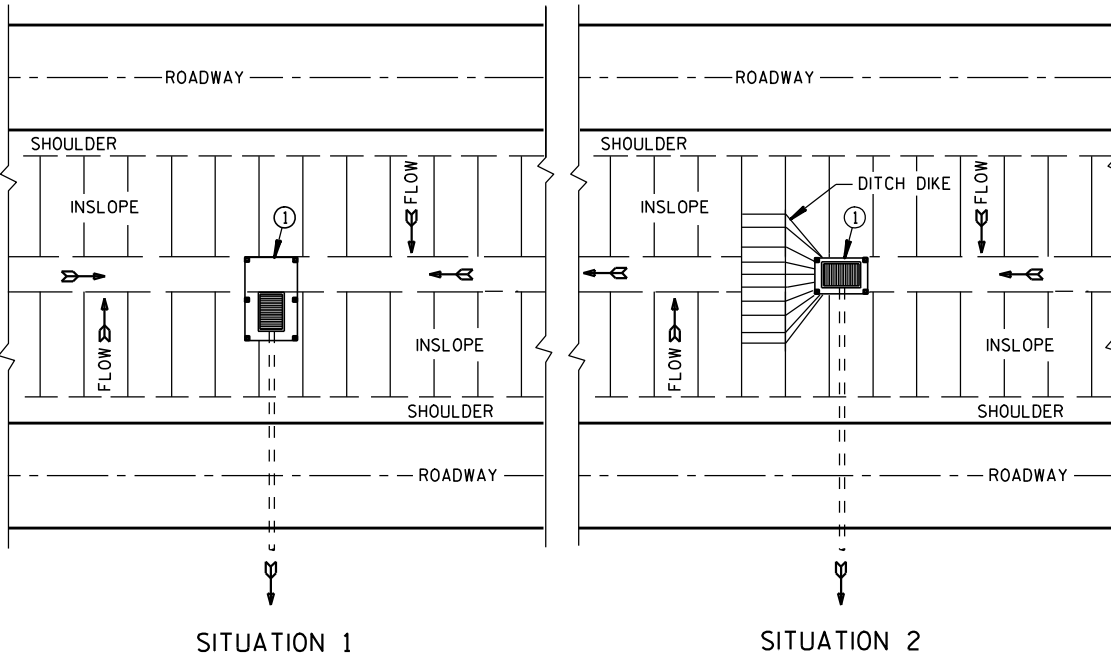
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2021 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

FHWA



PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE

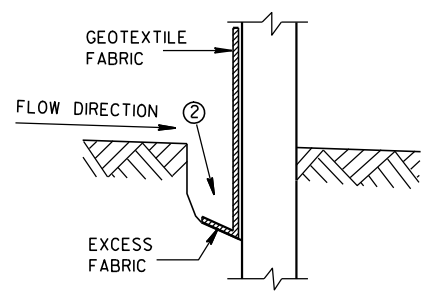


SITUATION 1 SITUATION 2  
PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

**GENERAL NOTES**

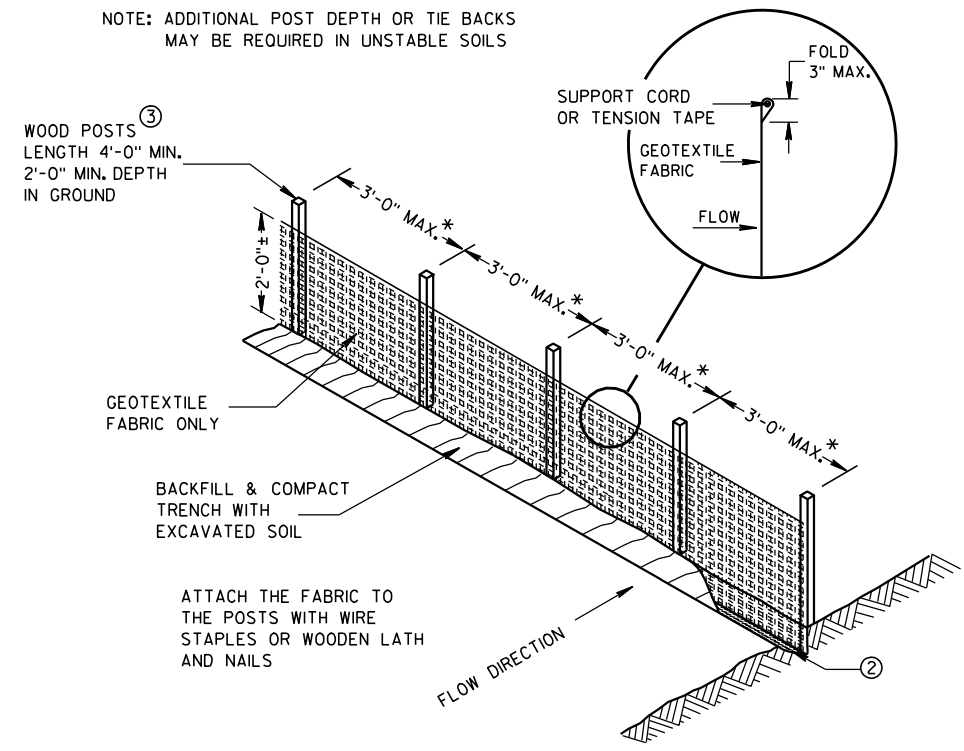
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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



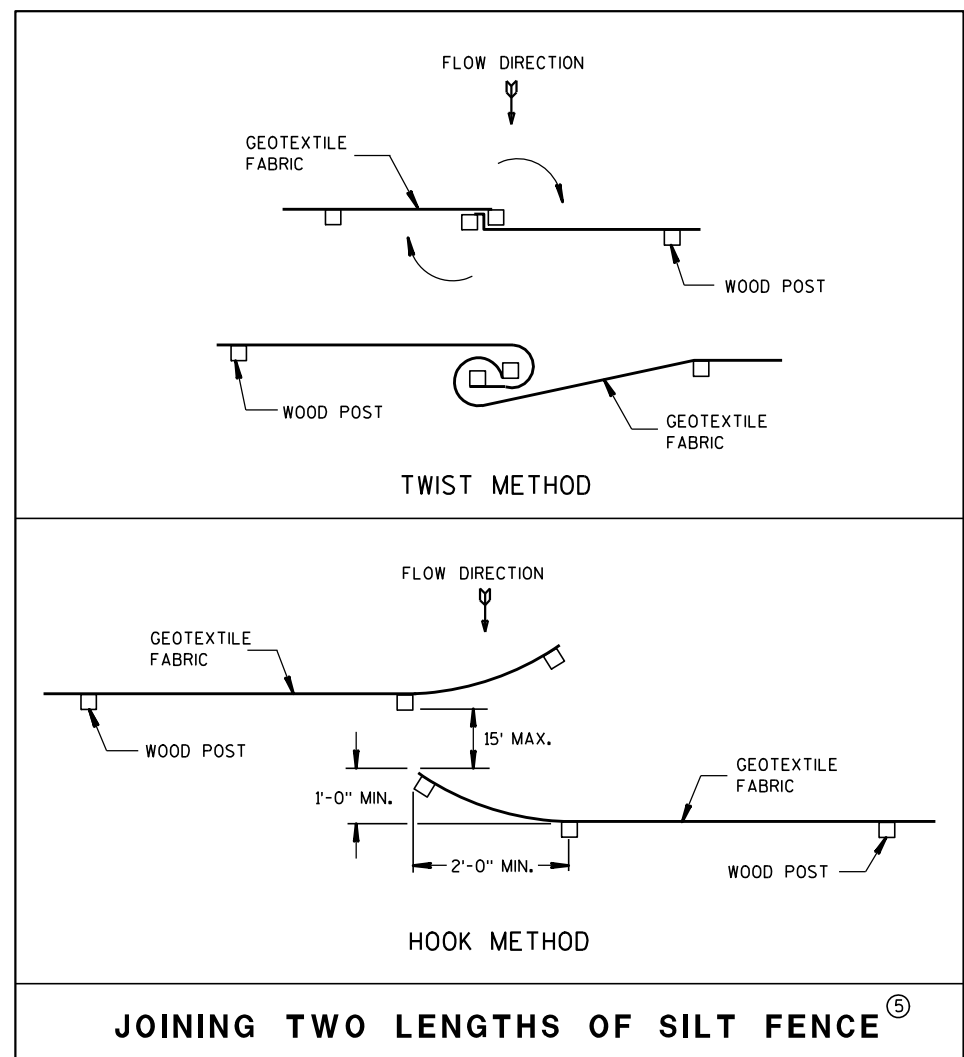
TRENCH DETAIL

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

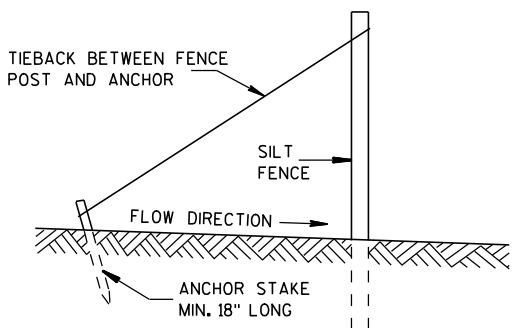


SILT FENCE

\* NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.



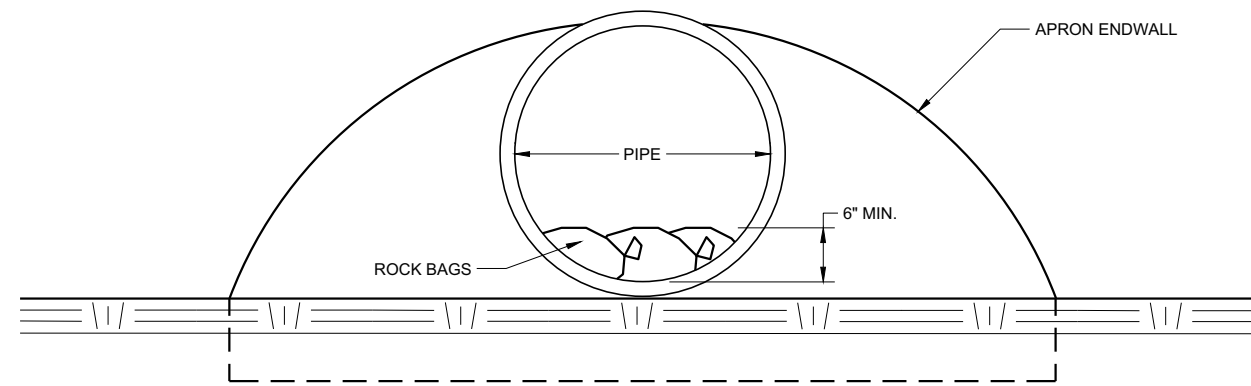
JOINING TWO LENGTHS OF SILT FENCE



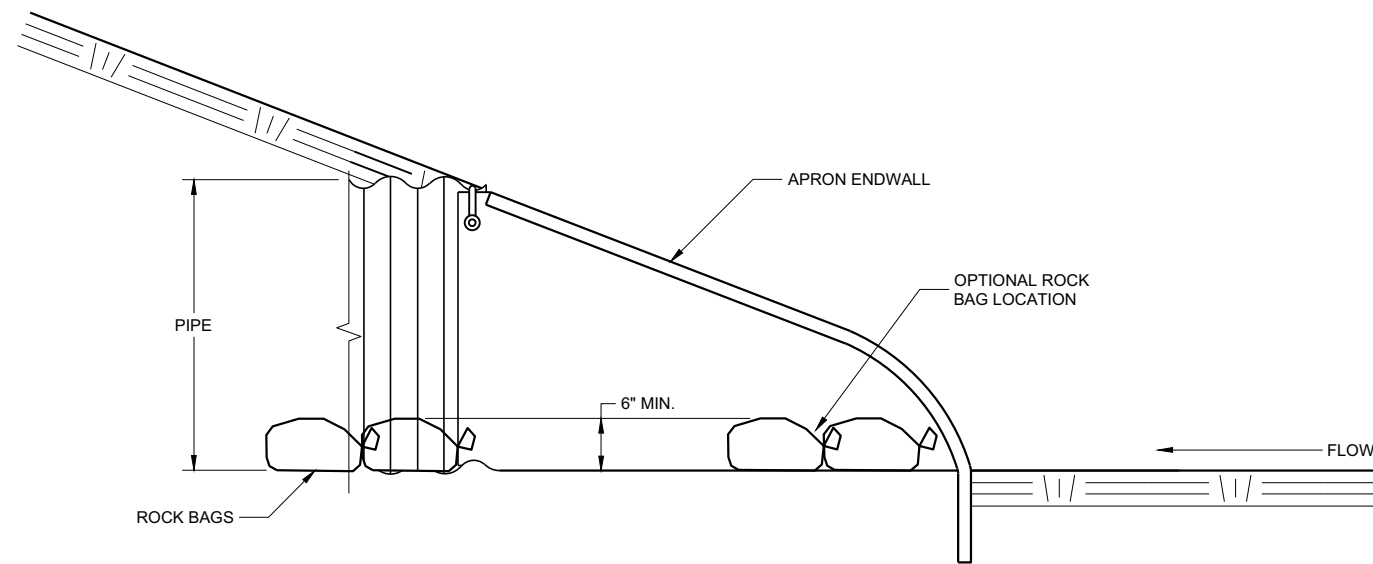
SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

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





**END VIEW**



**SIDE VIEW**

**CULVERT PIPE CHECK**  
(INSTALL ON INLET END ONLY)

6

6

SDD 08E15 - 01

SDD 08E15 - 01

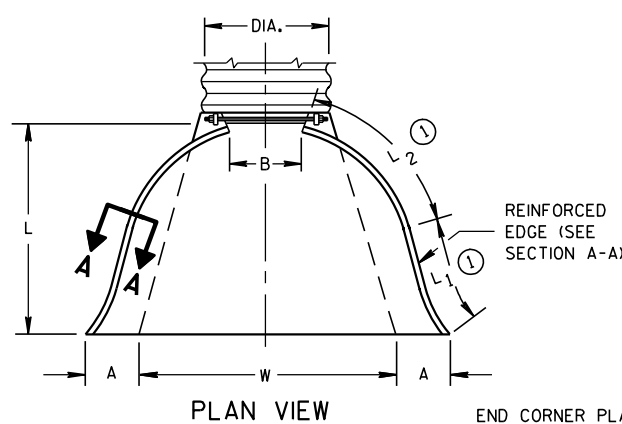
|  |   |
|--|---|
| <b>CULVERT PIPE CHECK</b>                          |   |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |   |
| APPROVED<br>May 2019<br>DATE                       | /S/ Daniel Schave<br>EROSION CONTROL ENGINEER |
| <small>FHWA</small>                                |   |

| 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. |

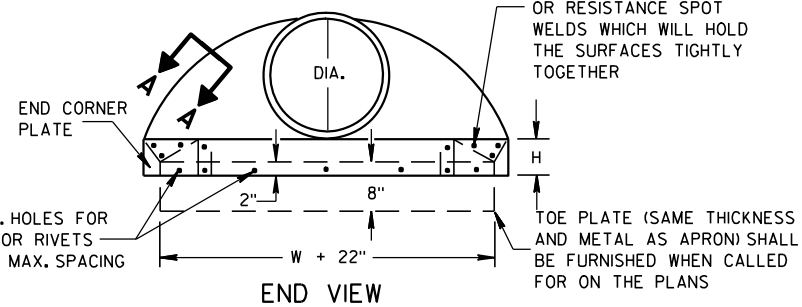
\* EXCEPT CENTER PANEL SEE GENERAL NOTES

| 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    |  |

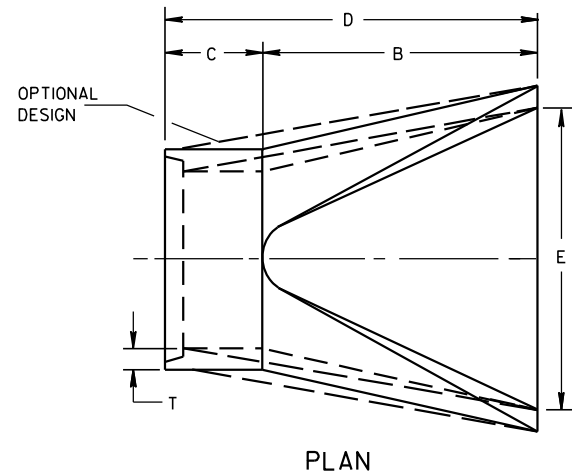
\* MINIMUM  
\*\* MAXIMUM



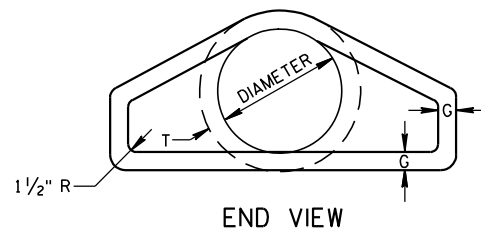
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



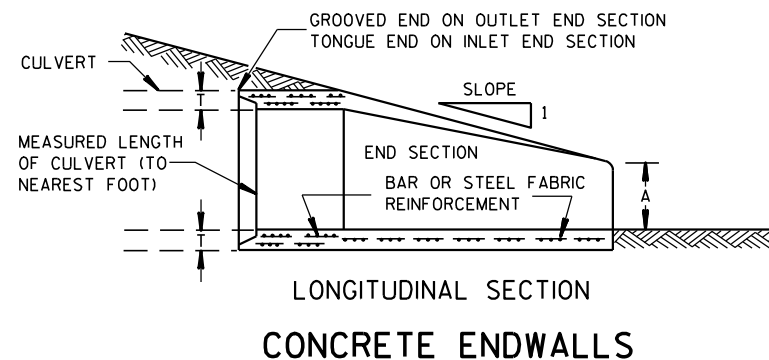
SIDE ELEVATION  
METAL ENDWALLS



PLAN

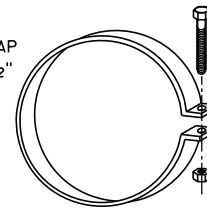


END VIEW

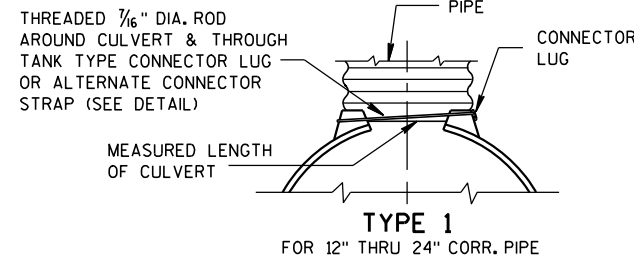


LONGITUDINAL SECTION  
CONCRETE ENDWALLS

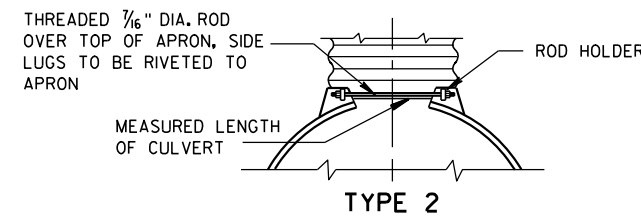
1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



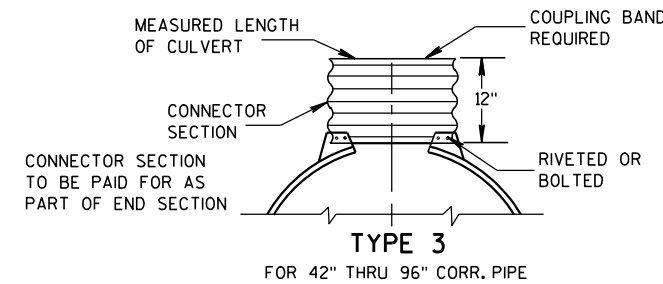
ALTERNATE FOR TYPE 1 CONNECTION  
END SECTION CONNECTOR STRAP



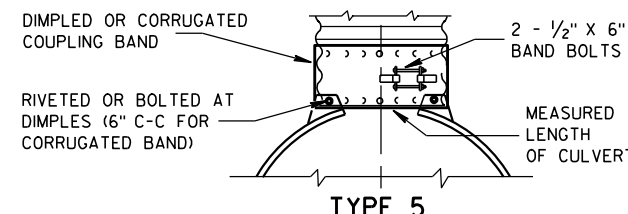
TYPE 1  
FOR 12" THRU 24" CORR. PIPE



TYPE 2  
FOR 30" THRU 96" CORR. PIPE



TYPE 3  
FOR 42" THRU 96" CORR. PIPE



TYPE 5  
ALTERNATE FOR:  
ALL SIZES CORRUGATED CIRCULAR PIPE

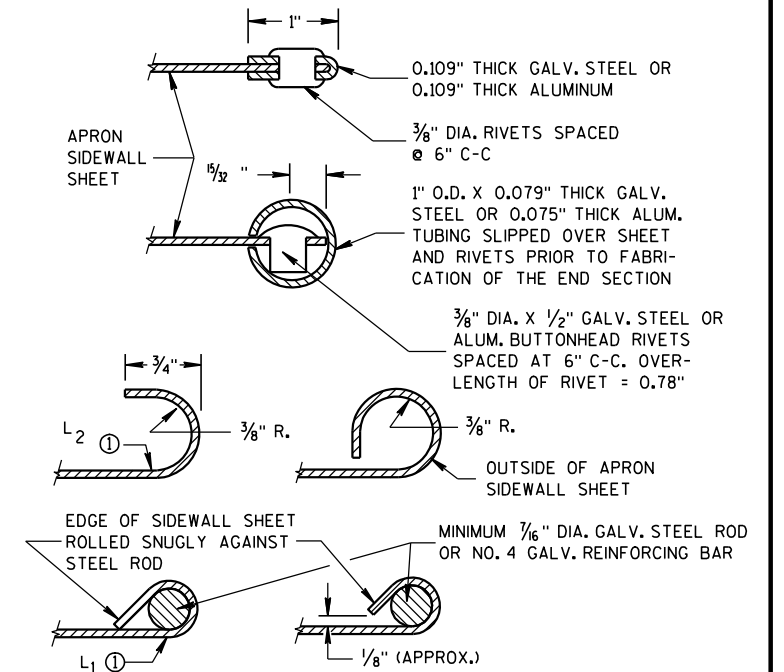
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

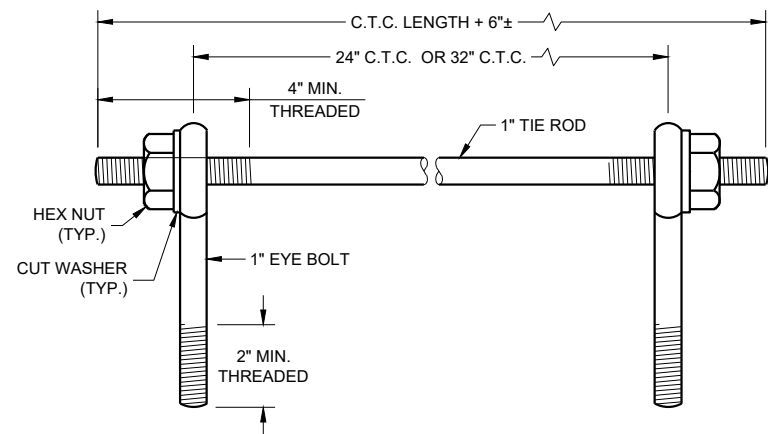
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

APRON ENDWALLS FOR  
CULVERT PIPE

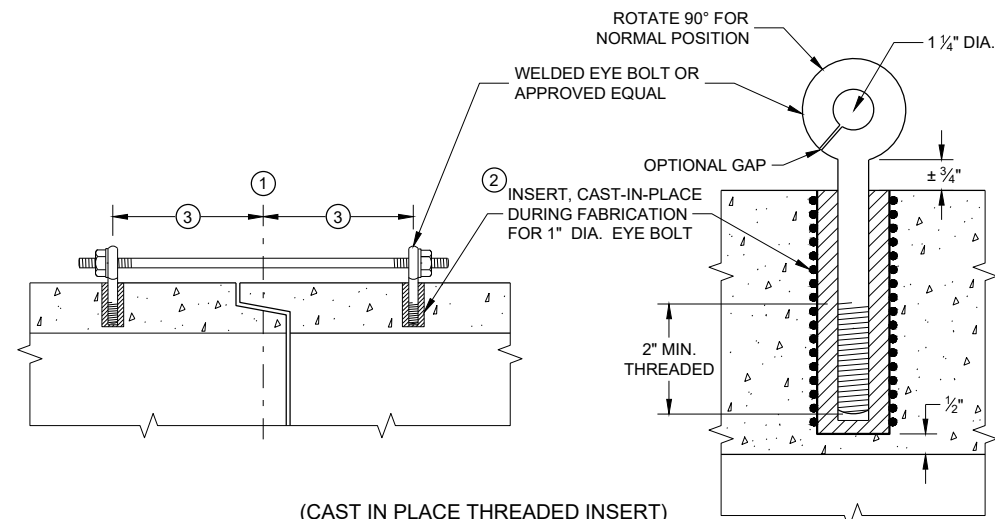
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
11/30/94 DATE /S/ Rory L. Rhinesmith  
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**

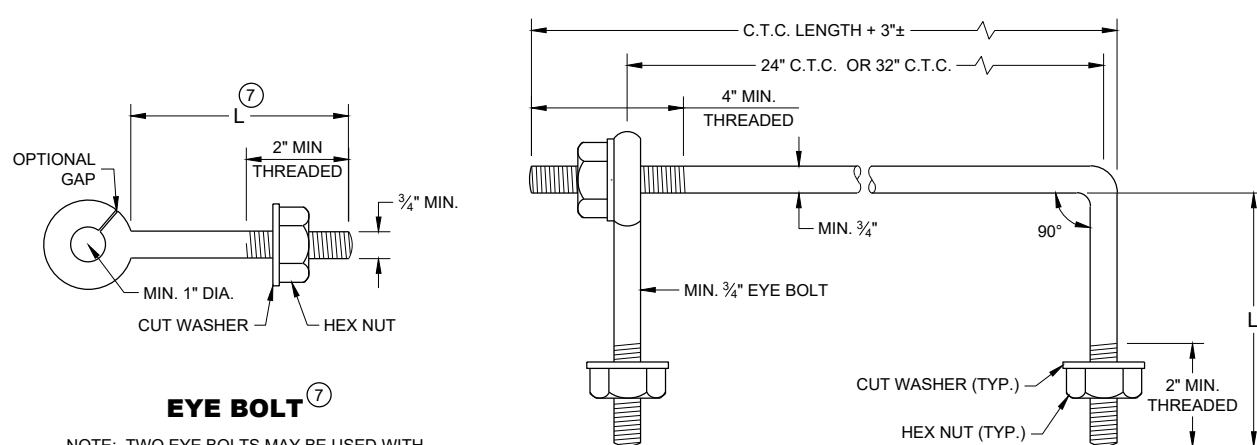
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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.

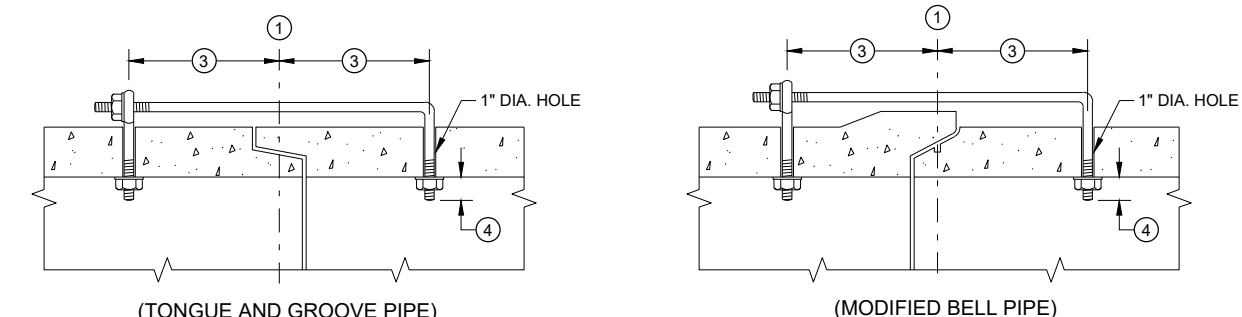
- ① CENTER LINE OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- ② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- ③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED PER THE APPLICABLE DETAIL, AND EQUAL DISTANCE FROM THE CENTERLINE OF THE JOINT.
- ④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.
- ⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.
- ⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.
- ⑦ EYE BOLT LENGTH DETERMINED BY WALL THICKNESS, BELL THICKNESS AND BOLT PROJECTION INSIDE PIPE.



**EYE BOLT** ⑦

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30\"/>

**EYE BOLT AND TIE ROD**



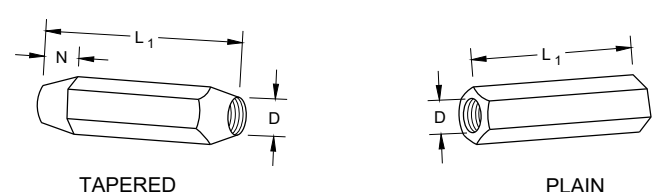
**LONGITUDINAL SECTION**  
(JOINT TIES FOR 18\"/>

**EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)**

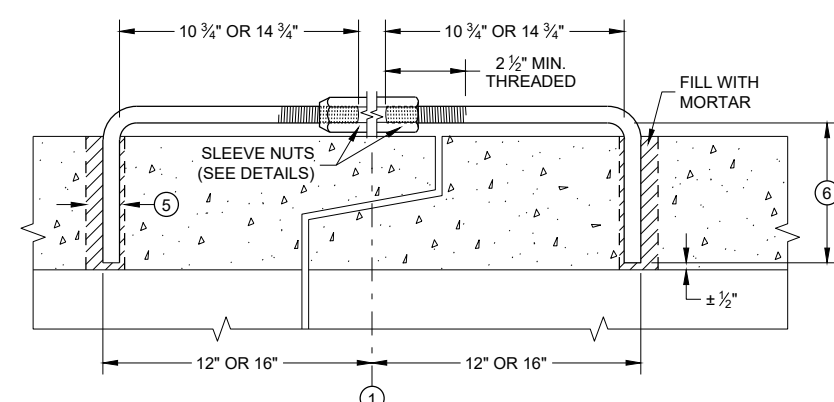
**ADJUSTABLE TIE ROD TABLE**

| PIPE DIAMETER | TIE ROD DIAMETER | D   | L <sub>1</sub> | N      |
|---------------|------------------|-----|----------------|--------|
| 12 - 60       | 5/8              | 5/8 | 5              | 1/2    |
| 66 - 84       | 3/4              | 3/4 | 5              | 1/2    |
| 90 - 144      | 1                | 1   | 7              | 1 7/16 |

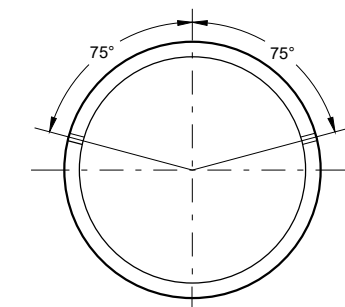
DIMENSIONS SHOWN ARE IN INCHES



**RIGHT AND LEFT THREADS SLEEVE NUTS**

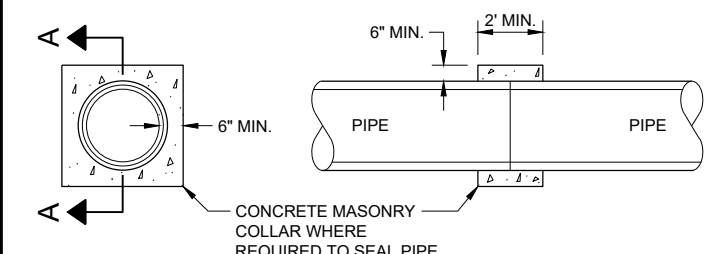


**LONGITUDINAL SECTION**  
**ADJUSTABLE TIE ROD (ALTERNATE NO. 3)**



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

**TRANSVERSE SECTION**



**SECTION A - A**  
**CONCRETE COLLAR DETAIL**

**JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2021 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

**GENERAL NOTES**

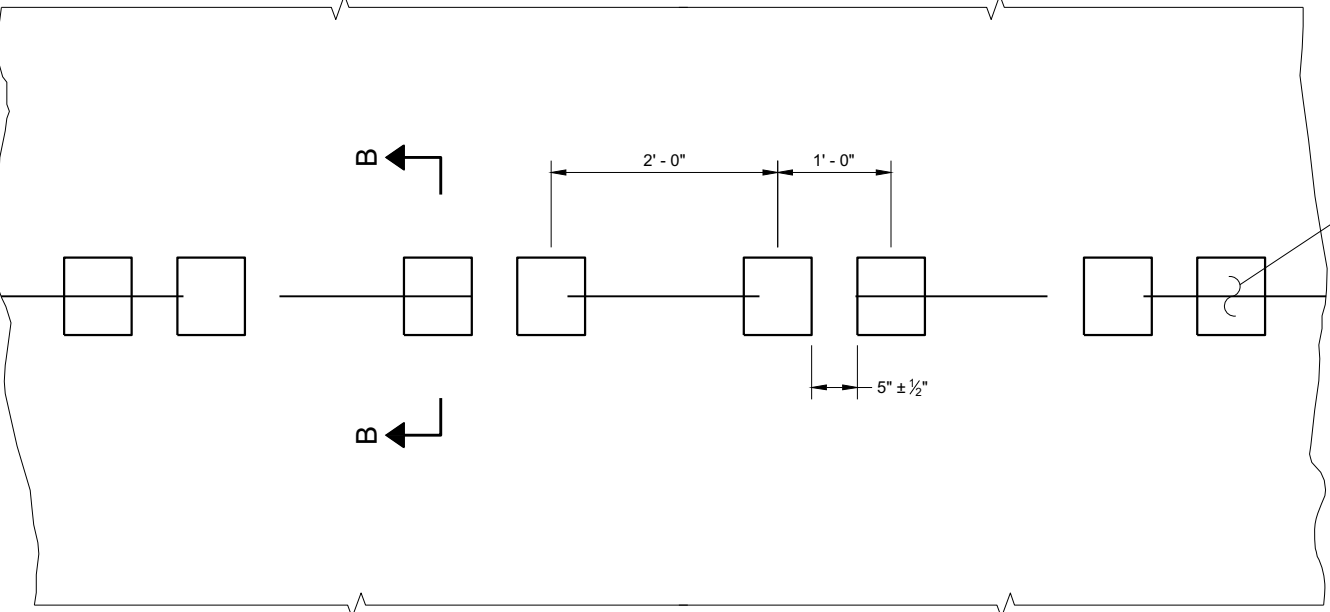
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

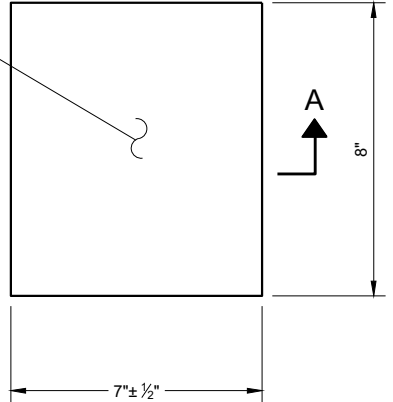
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

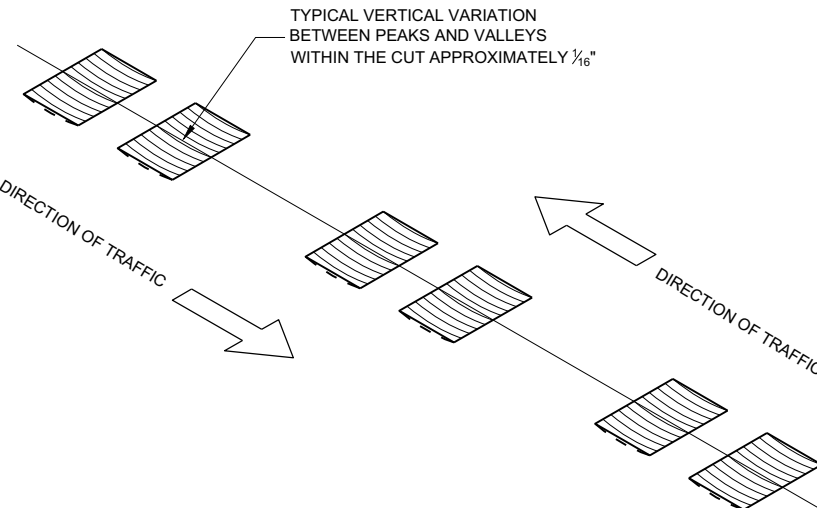
- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



**PLAN VIEW  
SHOULDER WITH GROOVES**

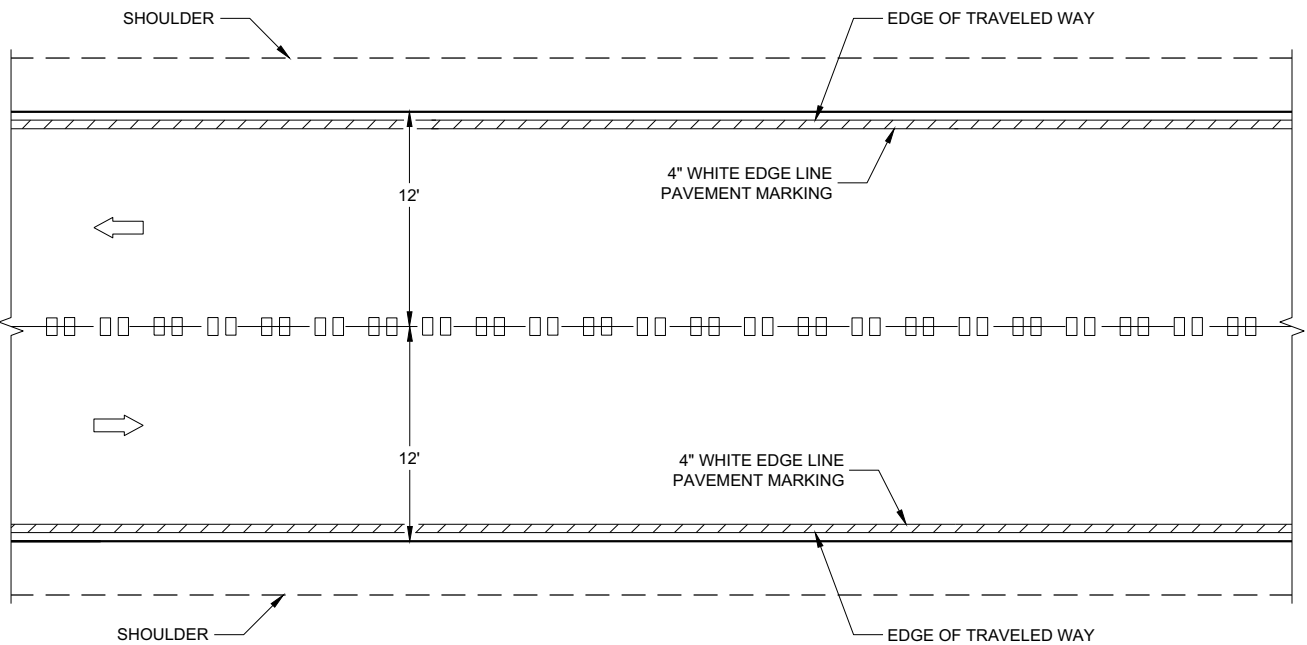


**PLAN VIEW  
(SINGLE GROOVE)**

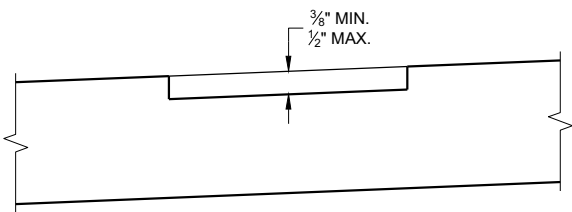


**ISOMETRIC**

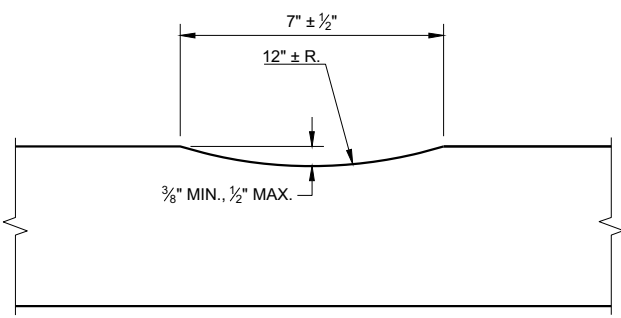
**PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP**



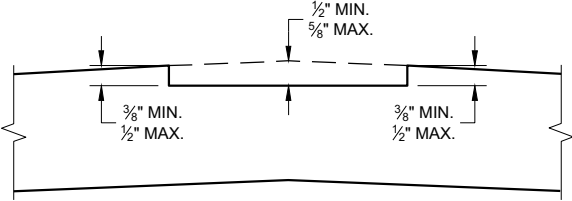
**CENTERLINE GROOVES ON TWO-WAY ROADWAYS**



**SECTION B - B  
SUPERELEVATED ROADWAY**



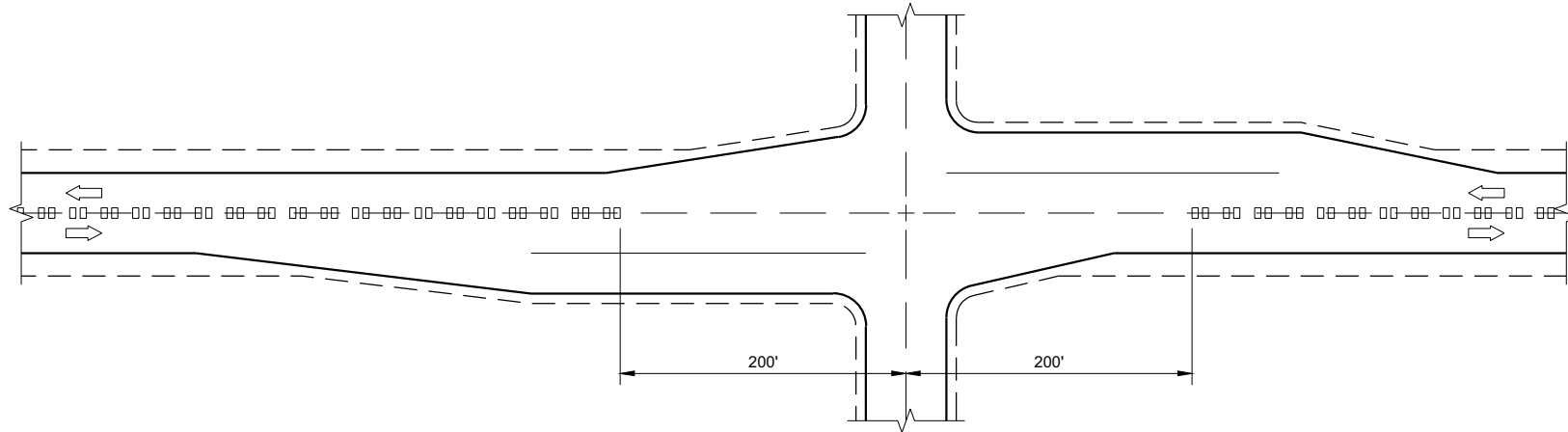
**SECTION A - A**



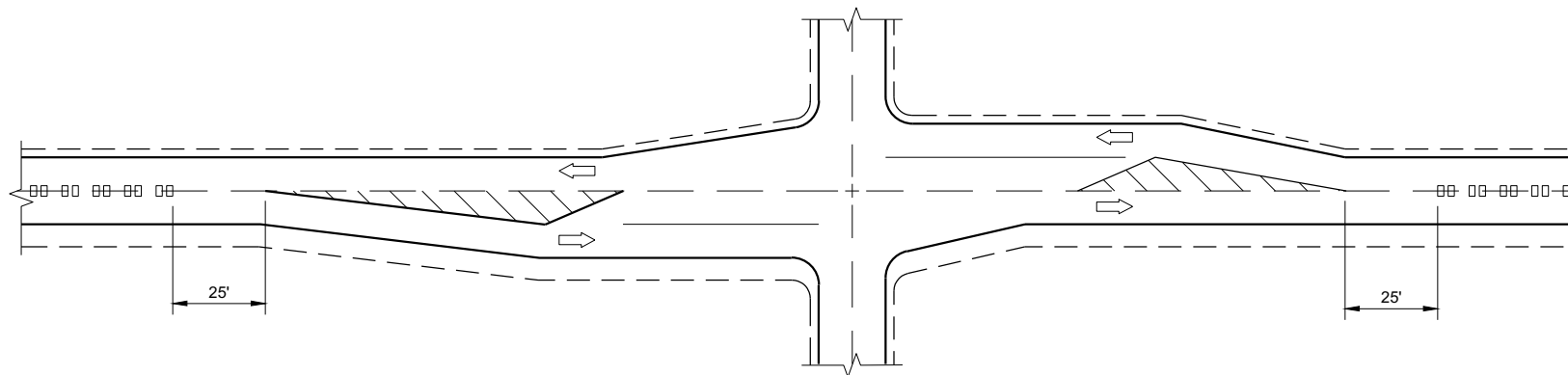
**SECTION B - B  
CROWNED ROADWAY**

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

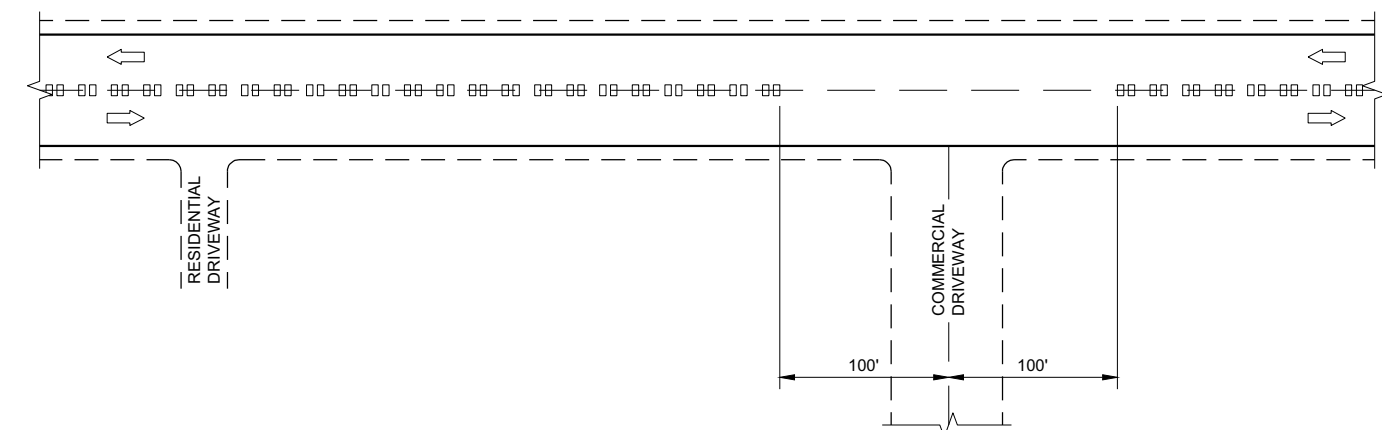
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



**CENTERLINE GROOVES AT INTERSECTIONS**



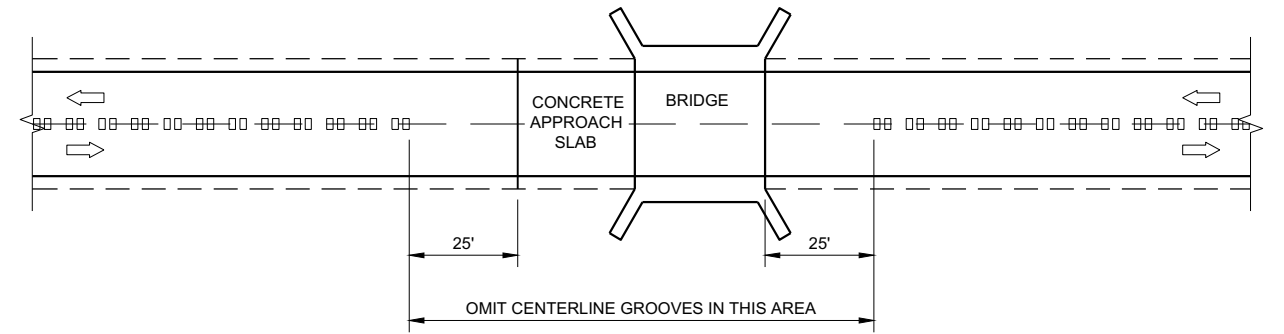
**CENTERLINE GROOVES AT INTERSECTIONS  
(WITH LEFT TURN LANES)**



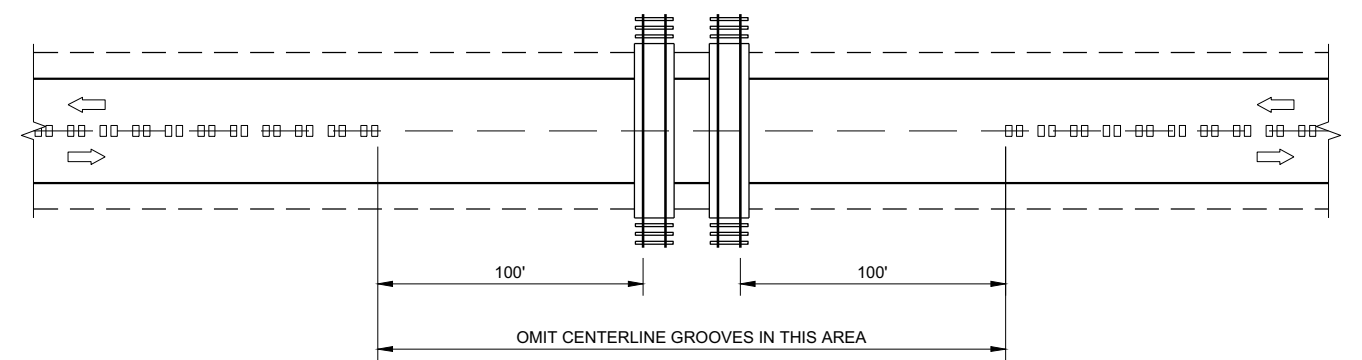
**CENTERLINE GROOVES AT DRIVEWAYS** ①

**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**

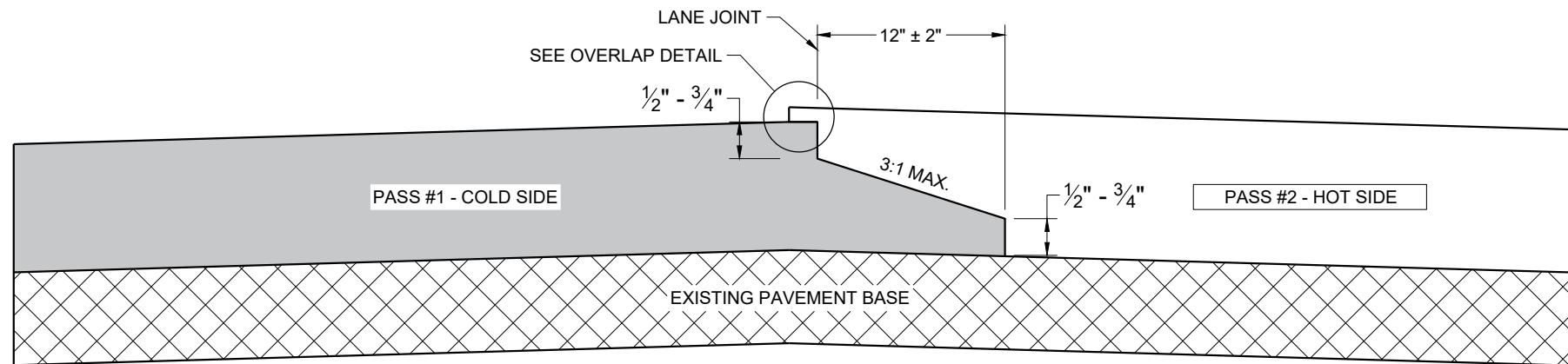
6

6

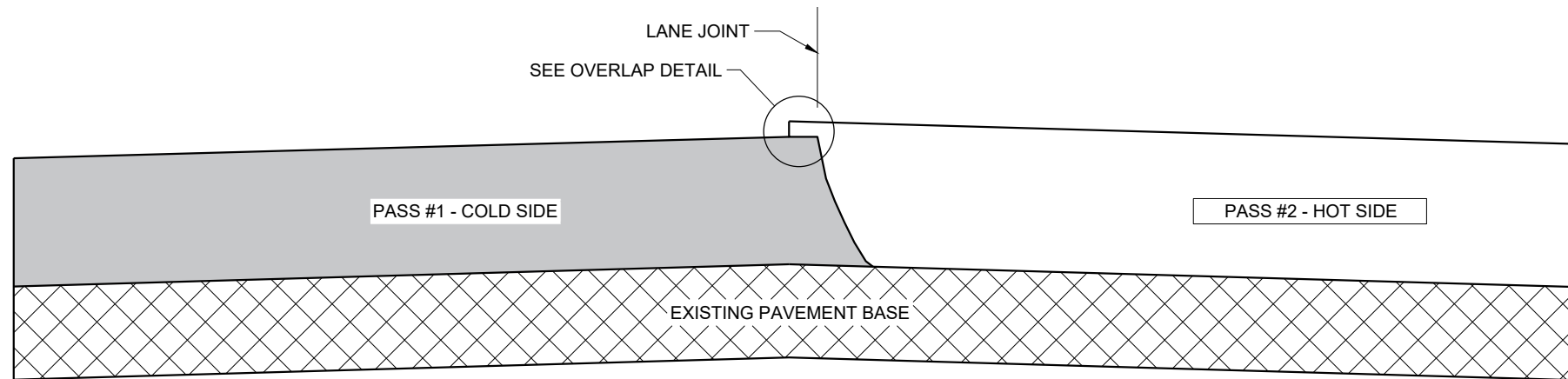
SDD 13A11 - 03b

SDD 13A11 - 03b

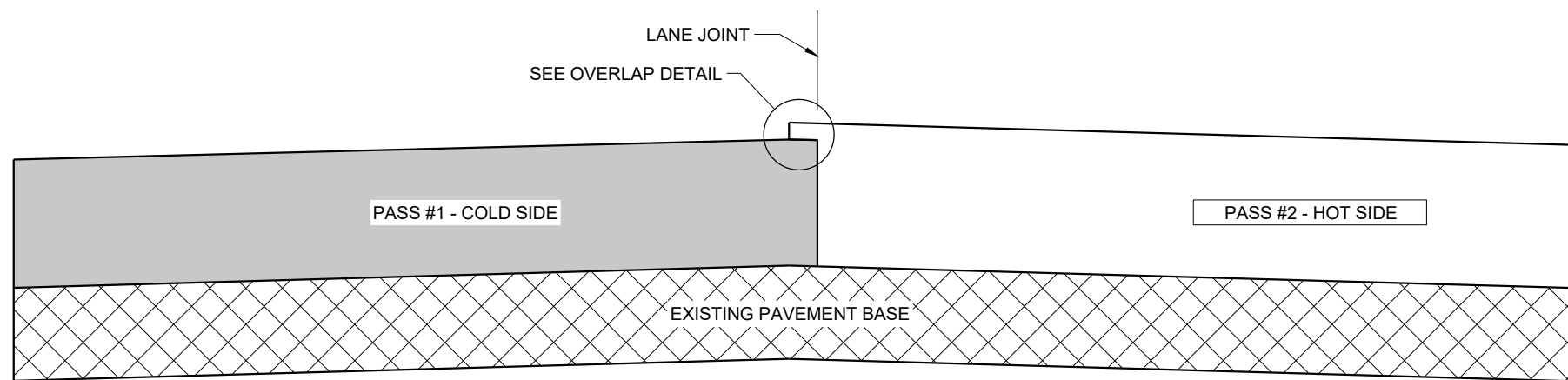
|  |  |
|--|--|
| <b>2-LANE RURAL<br/>CENTERLINE RUMBLE STRIP,<br/>MILLING</b> |  |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION           |  |
| APPROVED<br>DATE<br>7/2018                                   | /S/ Rodney Taylor<br>ROADWAY STANDARDS DEVELOPMENT<br>ENGINEER |
| FHWA   |  |



**TYPICAL PAVEMENT CROSS SECTION  
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT**



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

**GENERAL NOTES**

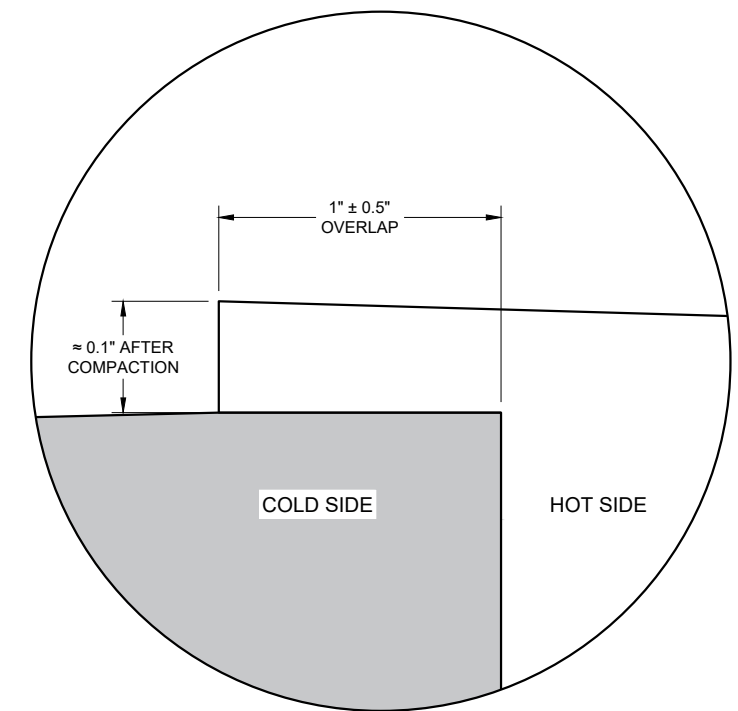
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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)**

6

6

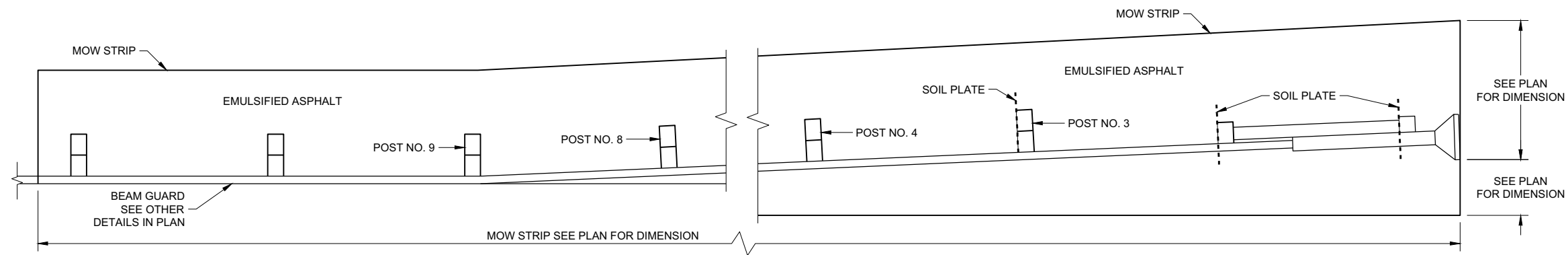
SDD 13C19 - 03

SDD 13C19 - 03

**HMA LONGITUDINAL JOINTS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

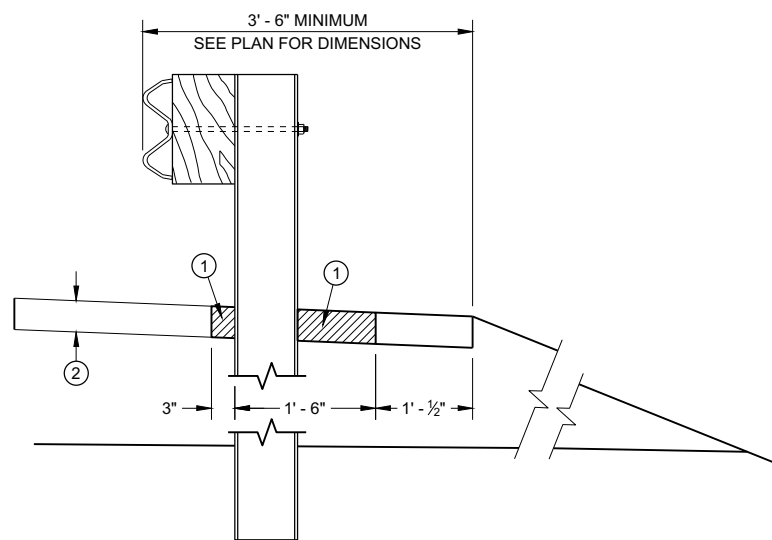


**PLAN VIEW**  
**MOW STRIP LAYOUT FOR ENERGY ABSORBING TERMINAL**

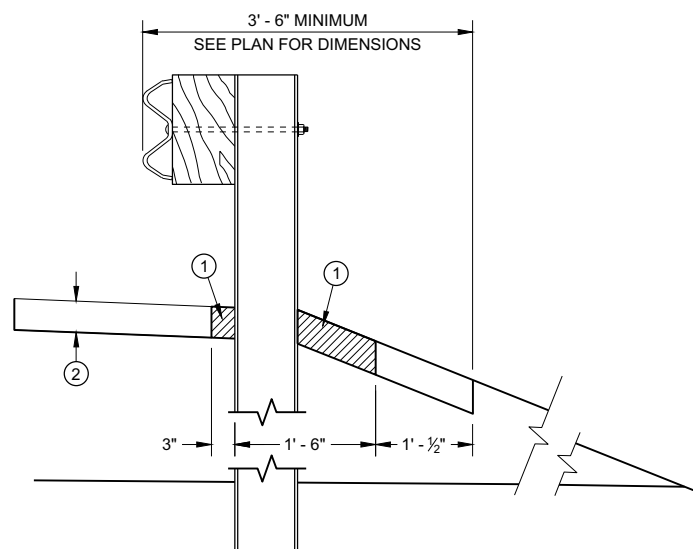
**GENERAL NOTES**

ONLY USE STEEL POSTS IN CONCRETE AND ASPHALT MOW STRIPS.

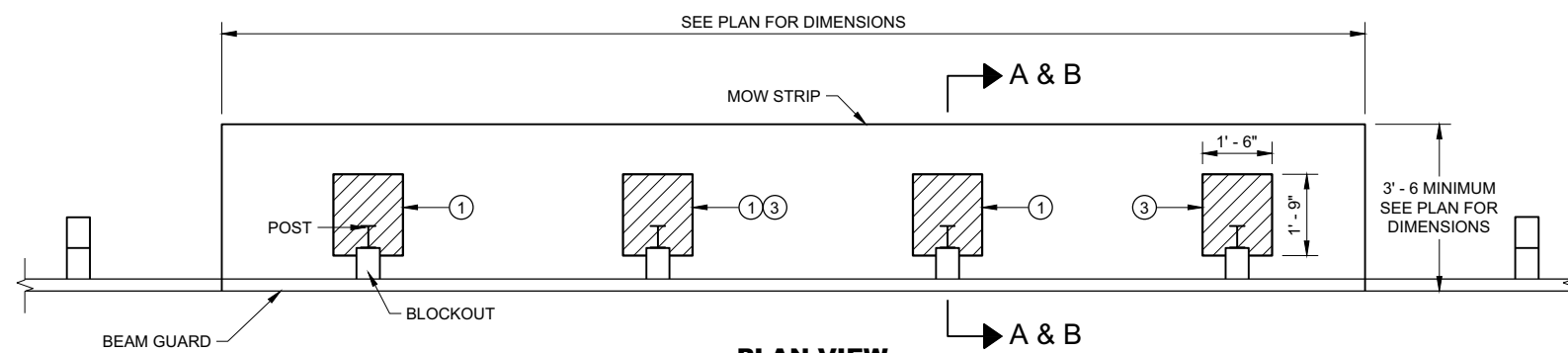
- ① CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
- ② DEPTH OF MOW STRIP:  
ASPHALT - 4"  
CONCRETE - 4"  
EMULSIFIED ASPHALT - 1" OR LESS
- ③ FOR EMULSIFIED ASPHALT, MOW STRIP STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS)



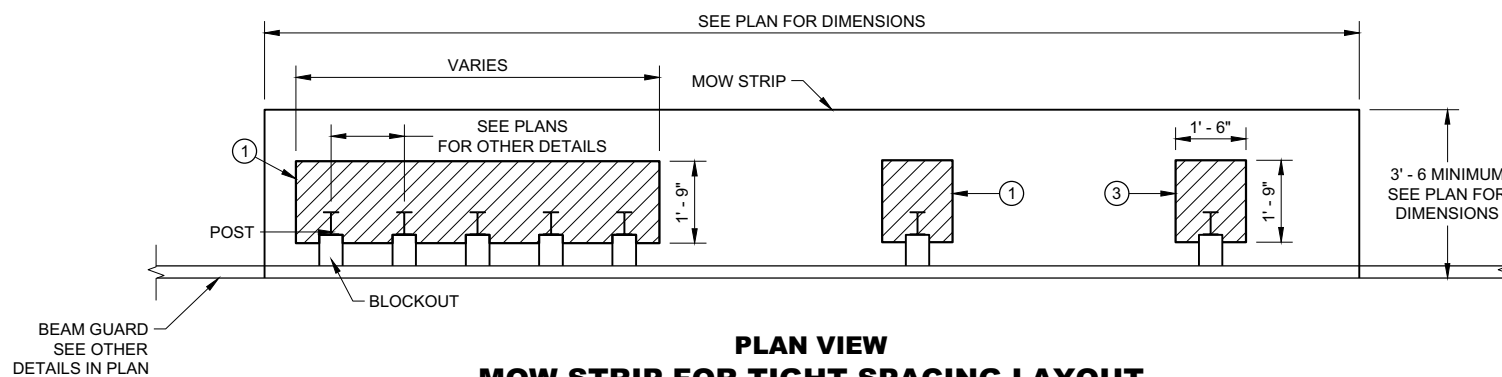
**SECTION A - A**



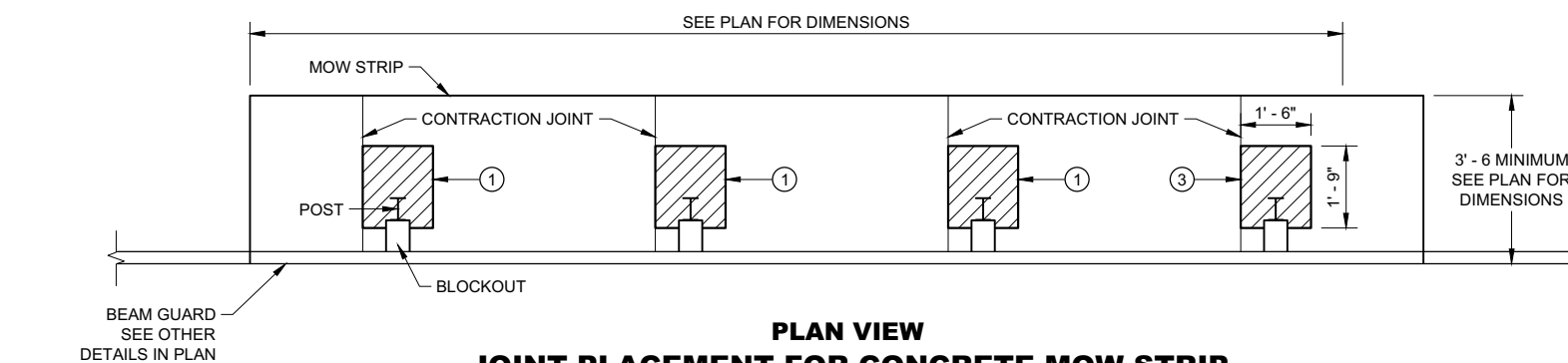
**SECTION B - B**



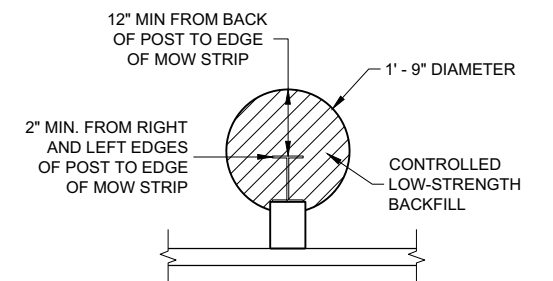
**PLAN VIEW**  
**MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT**



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



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



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

**GUARDRAIL MOW STRIP**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

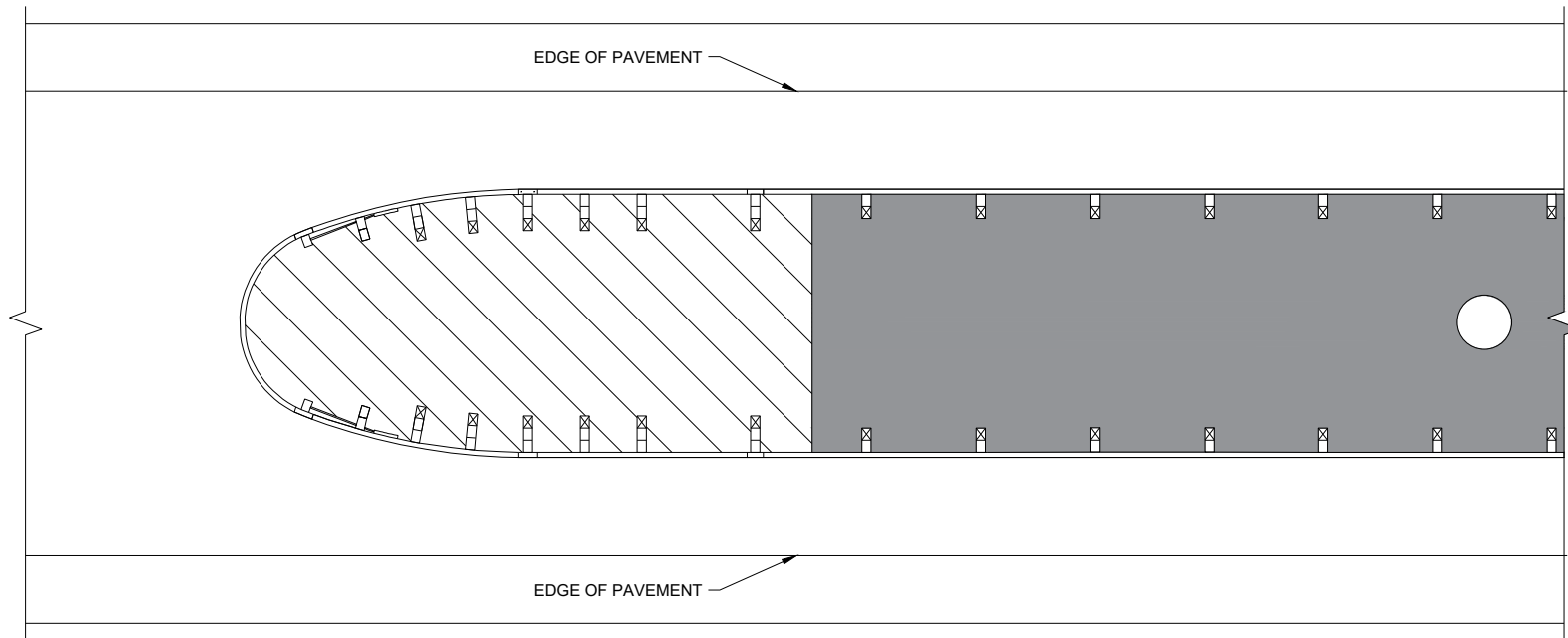
**LEGEND**

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

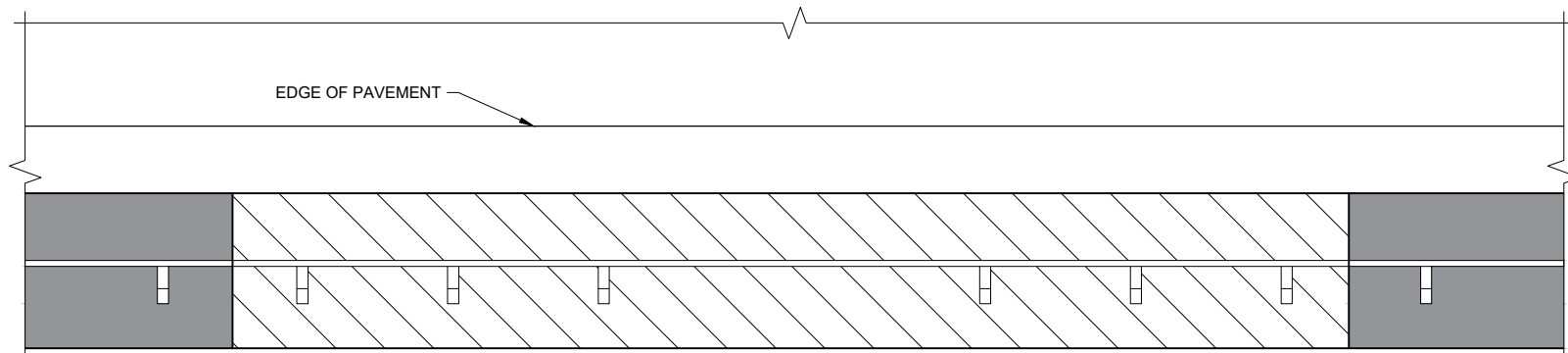
 EMULSIFIED ASPHALT MOW STRIP (SEE OTHER DETAILS)

**GENERAL NOTES**

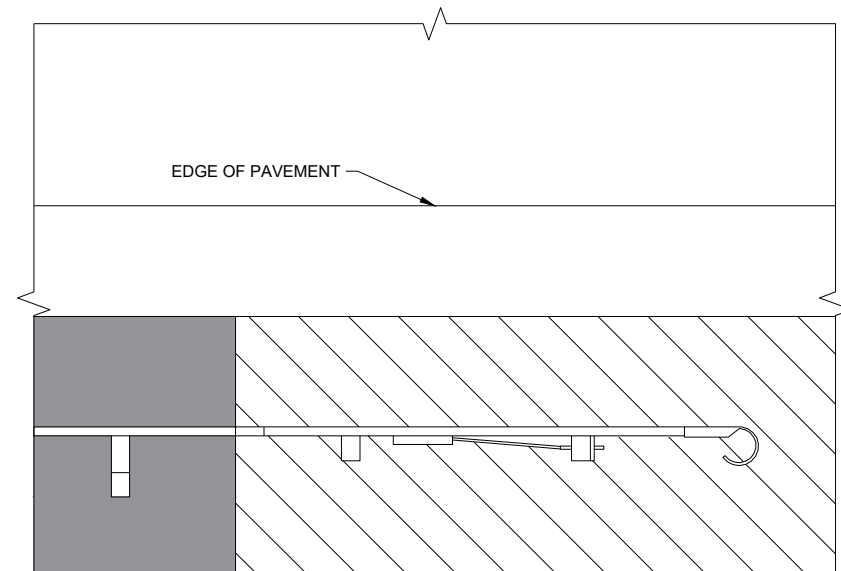
EXISTING THRIE BEAM BULLNOSES MAY HAVE WOOD POSTS. NEW THRIE BEAM BULLNOSE WILL HAVE STEEL POSTS.



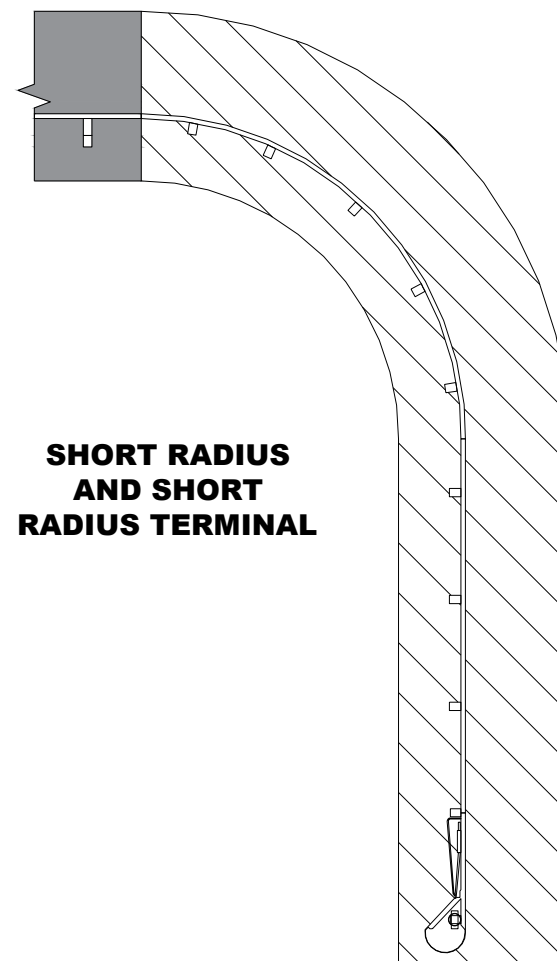
**THRIE BEAM BULLNOSE**



**LONG - SPAN**



**TYPE 2 TERMINAL**



**SHORT RADIUS  
AND SHORT  
RADIUS TERMINAL**

6

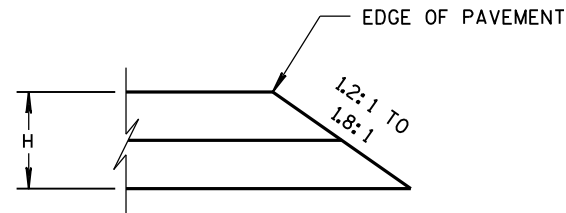
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SDD 14B28 - 04b

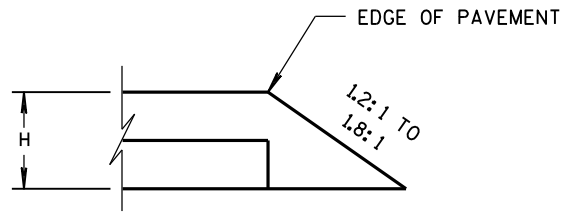
SDD 14B28 - 04b

|  |  |
|--|--|
| <b>GUARDRAIL MOW STRIP</b>                         |  |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |  |
| APPROVED<br>August 2020<br>DATE                    | /S/ Rodney Taylor<br>ROADWAY STANDARDS DEVELOPMENT<br>ENGINEER |
| FHWA   |  |

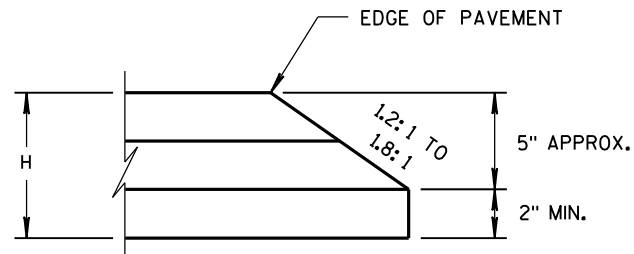




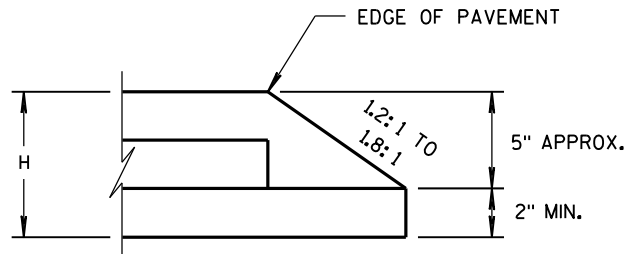
CONSTRUCTED WITH FINAL TWO LAYERS  
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER  
FOR H 5" OR LESS

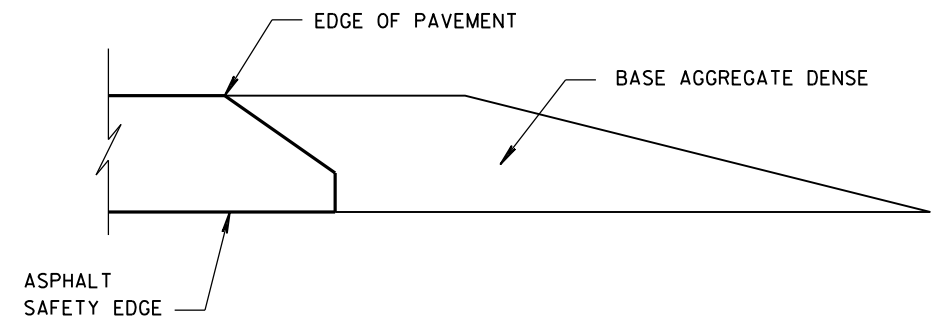


CONSTRUCTED WITH FINAL TWO LAYERS  
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER  
FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

6

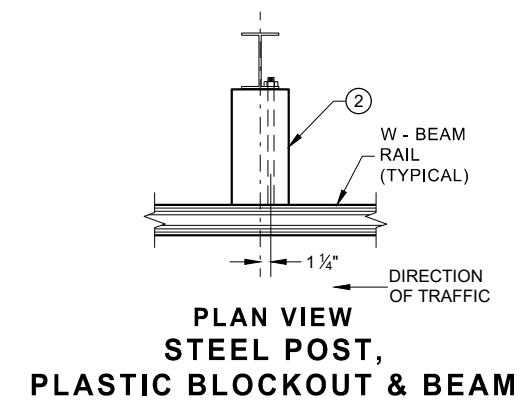
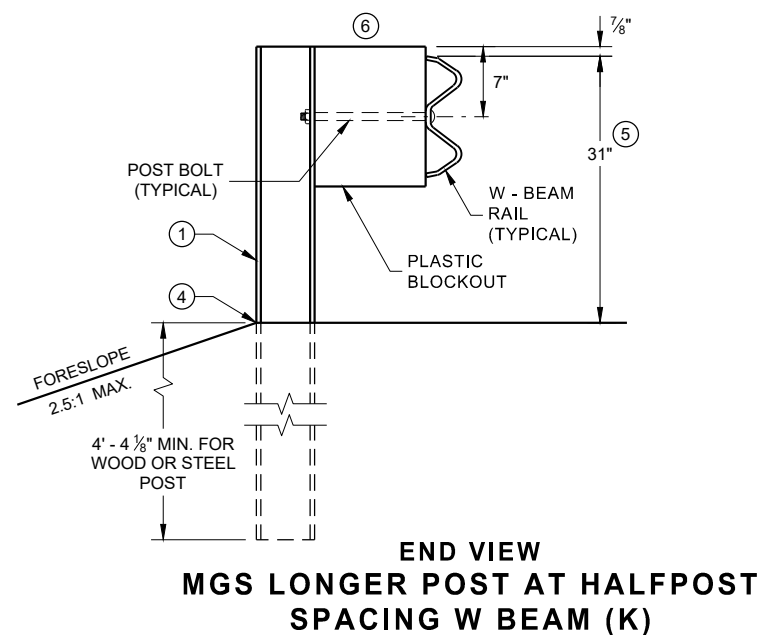
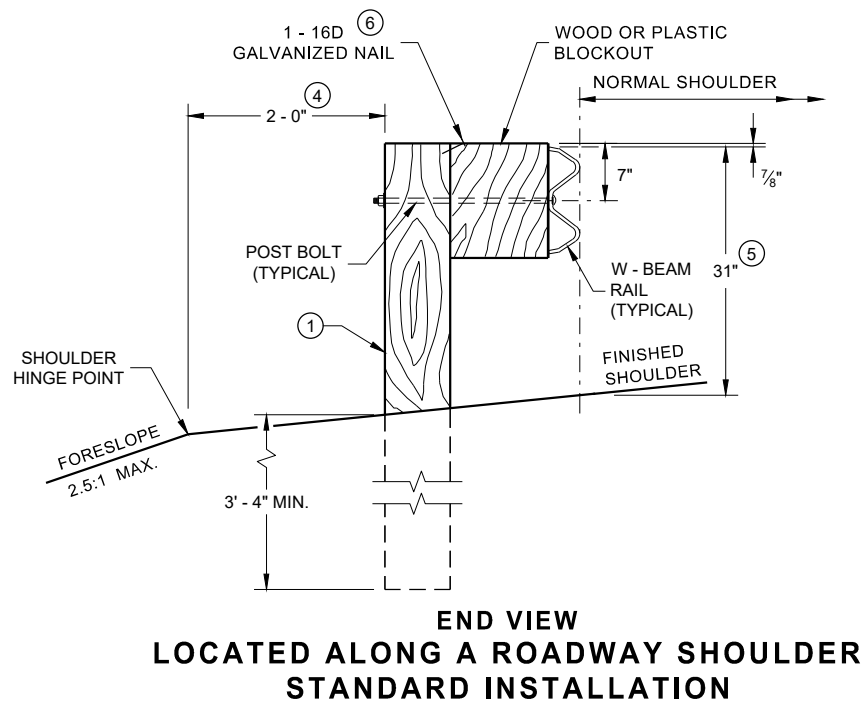
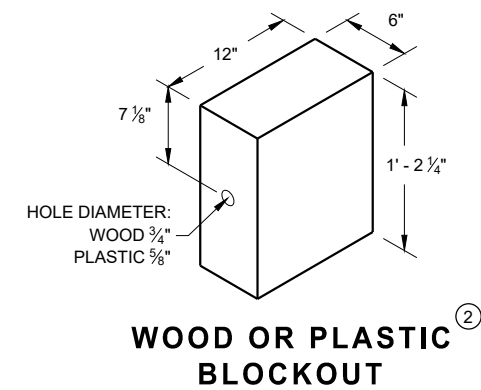
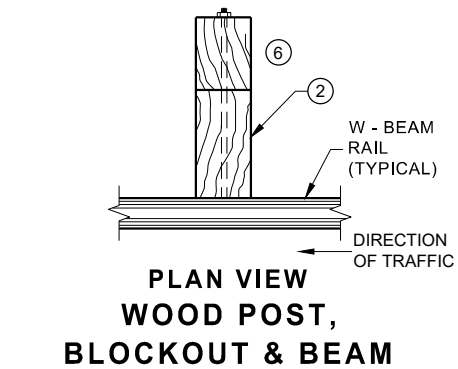
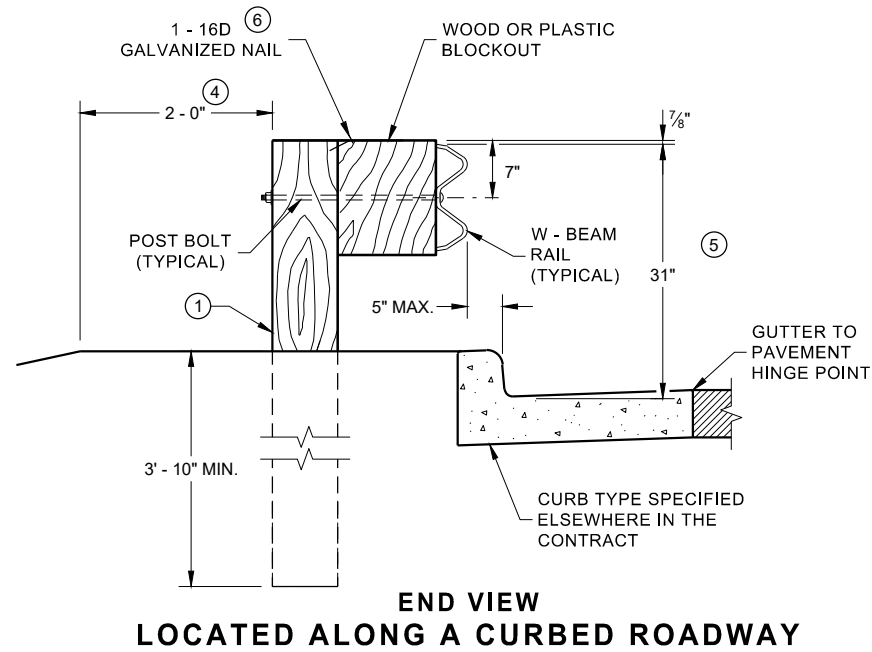
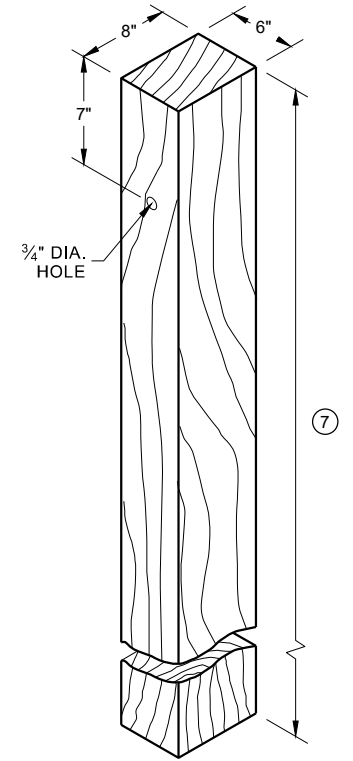
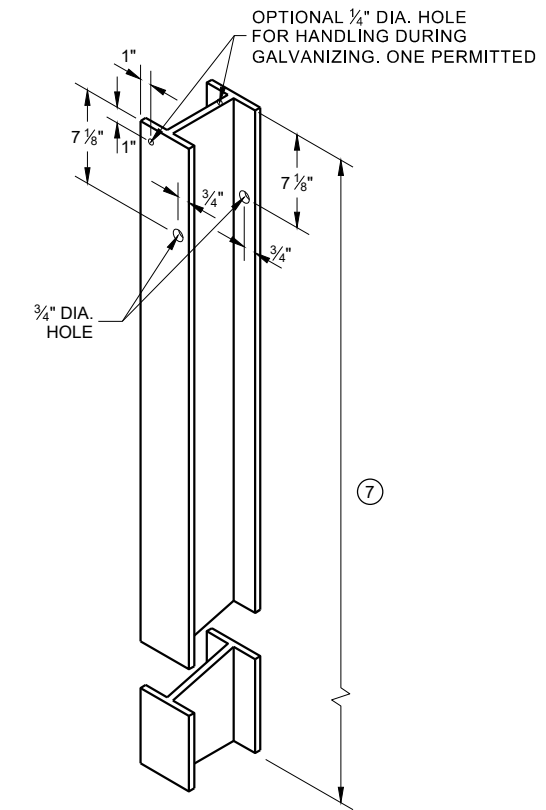
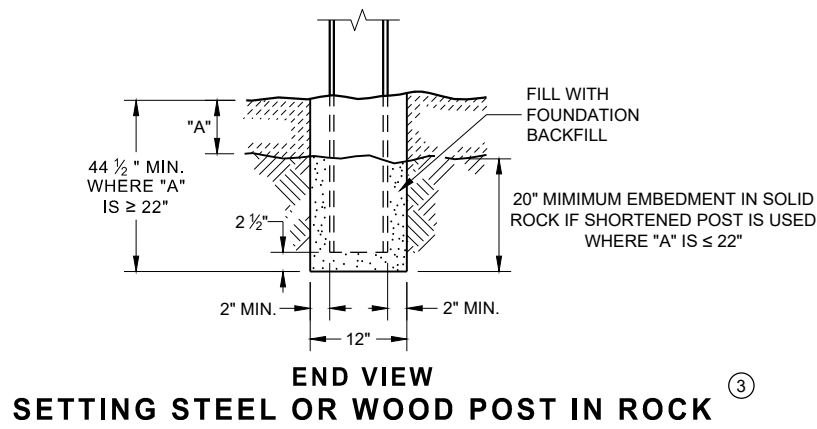
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S.D.D. 14 B 29-1

S.D.D. 14 B 29-1

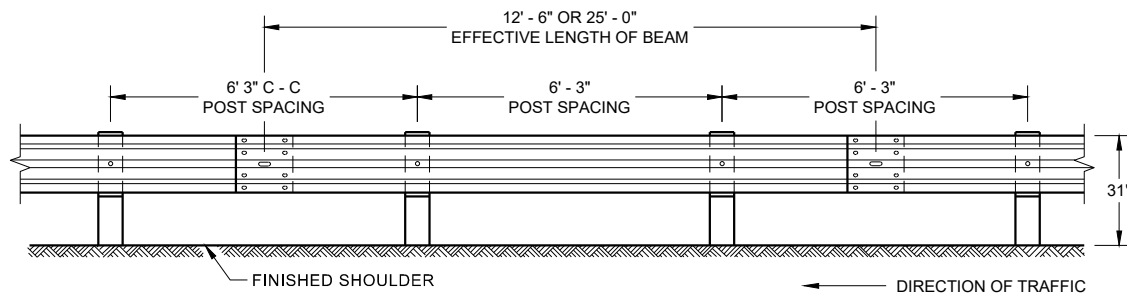
|  |  |
|--|--|
| SAFETY EDGE <sub>SM</sub>                          |  |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |  |
| APPROVED<br>DATE                                   | /s/ Jerry H. Zogg<br>ROADWAY STANDARDS DEVELOPMENT<br>ENGINEER |
| FHWA   |  |

- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS  $\pm 1"$ . FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN  $27 \frac{3}{4}"$  TO  $32"$ .
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS  $7' - 0"$ . TOTAL POST LENGTH FOR OTHER MGS TYPES IS  $6' - 0"$ .

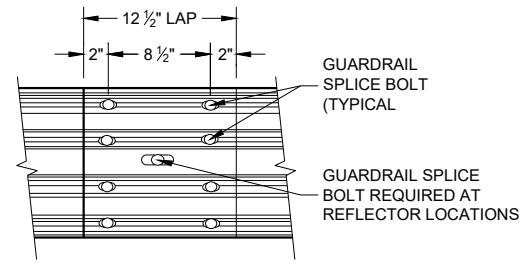


**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



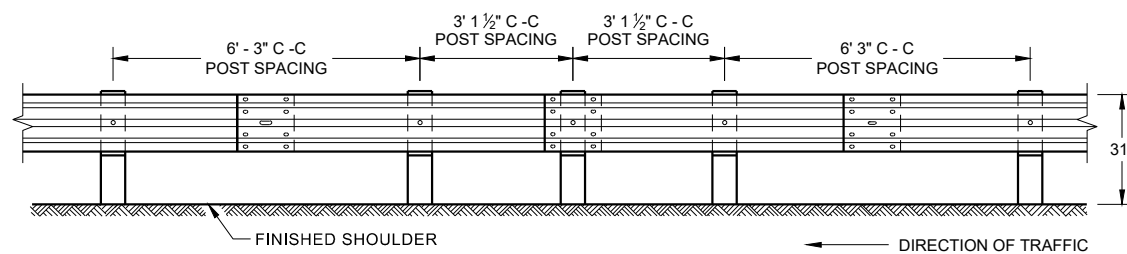
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



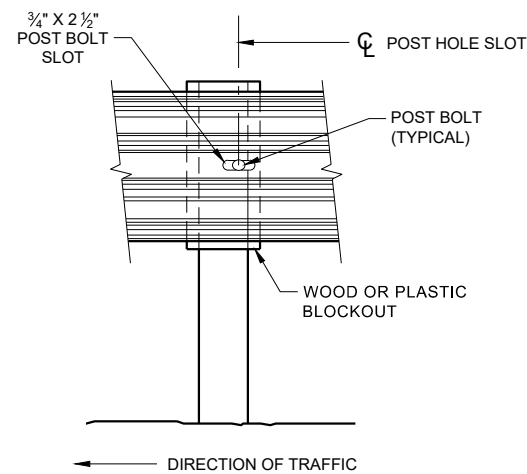
**FRONT VIEW  
MID-SPAN BEAM SPLICE**

**GENERAL NOTES**

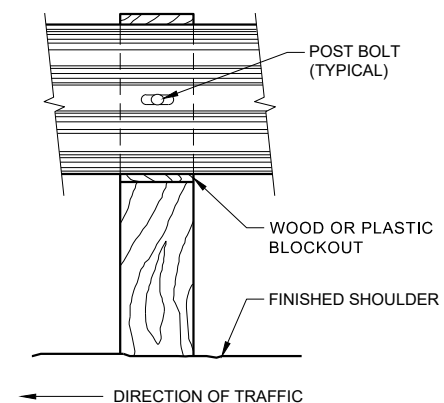
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
  - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER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



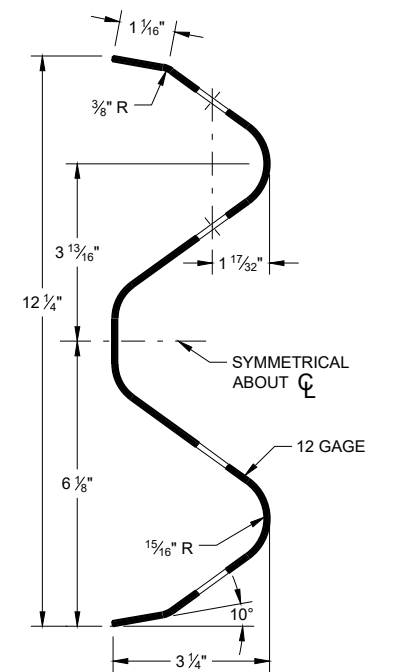
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



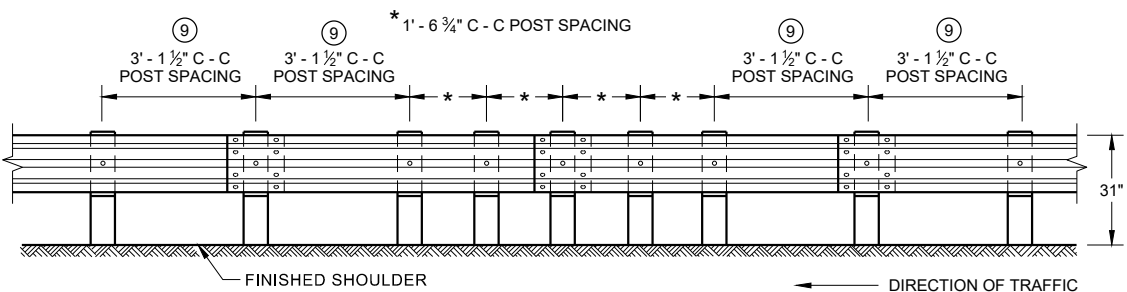
**FRONT VIEW AT STEEL POST**



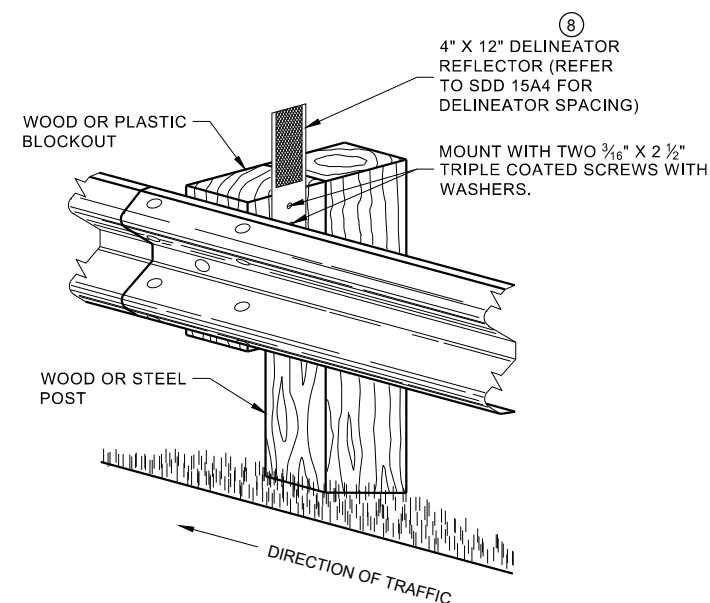
**FRONT VIEW AT WOOD POST**



**SECTION THRU W-BEAM RAIL**



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



**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

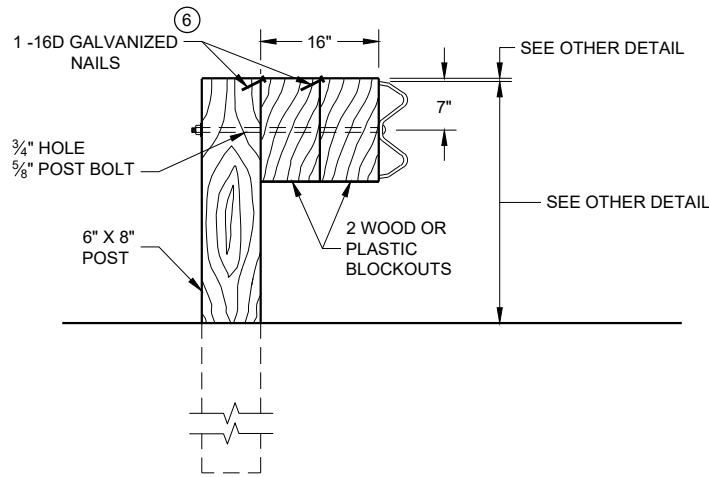
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

6

6

SDD 14B42 - 07b

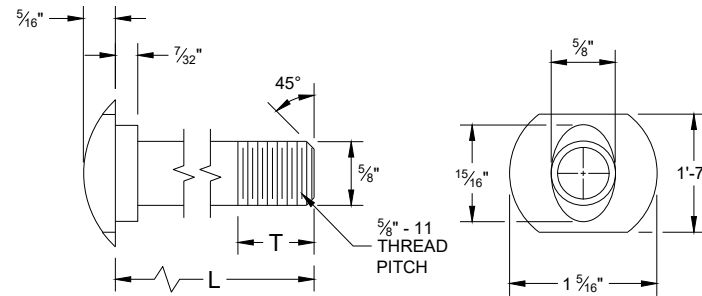
SDD 14B42 - 07b



**DETAIL FOR 16" BLOCKOUT DEPTH**

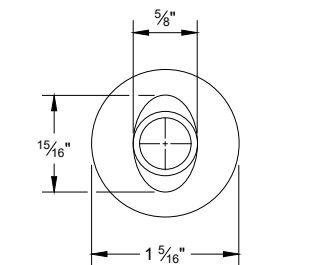
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

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

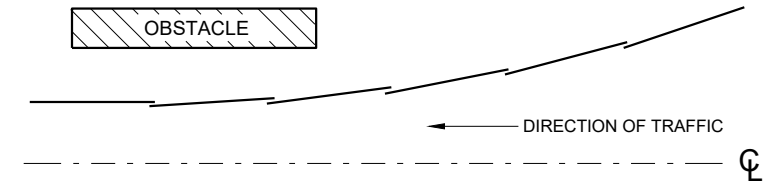


**POST BOLT TABLE**

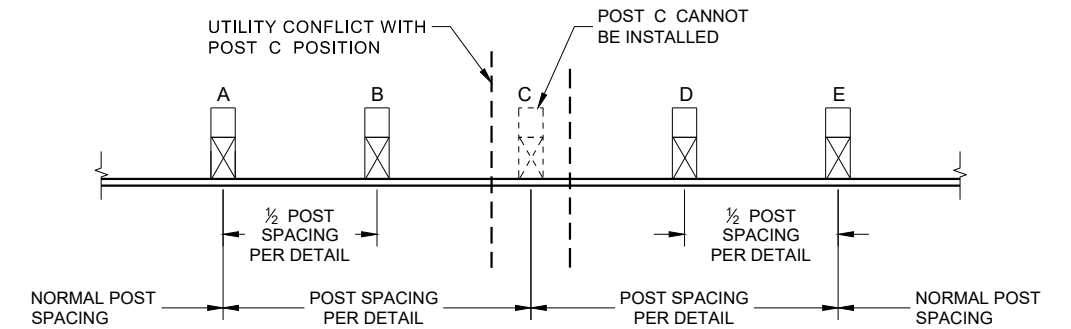
| L      | T (MIN.) |
|--------|----------|
| 1 1/4" | 1 1/8"   |
| 2"     | 1 3/4"   |
| 10"    | 4"       |
| 14"    | 4 1/16"  |
| 18"    | 4"       |
| 21"    | 4 1/16"  |
| 25"    | 4"       |



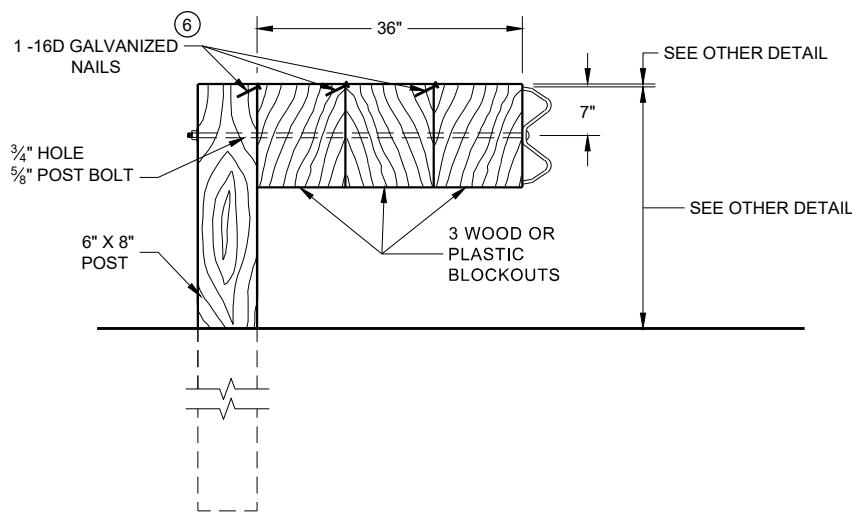
**ALTERNATE BOLT HEAD**



**PLAN VIEW  
BEAM LAPPING DETAIL**

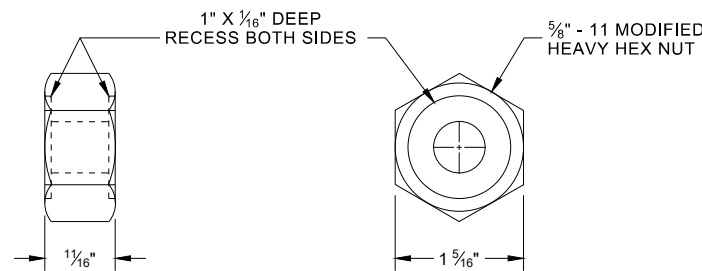


**POST DRIVING FOR CONTINUOUS  
UNDERGROUND OBSTRUCTION**

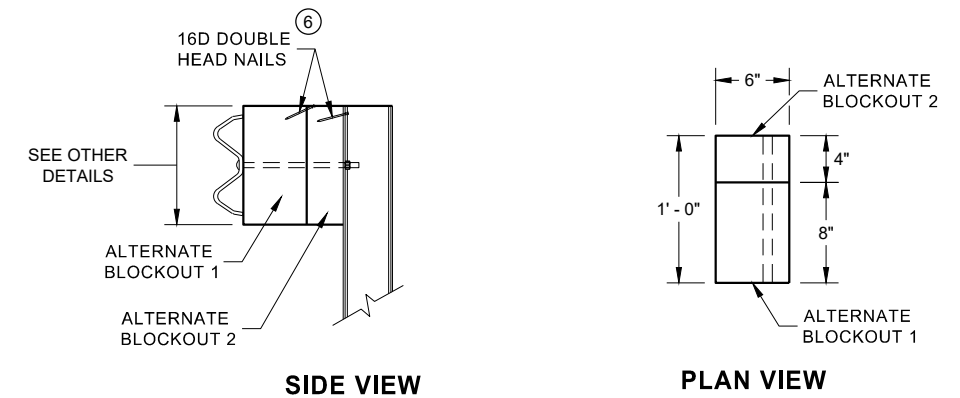


**DETAIL FOR 36" BLOCKOUT DEPTH**

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**

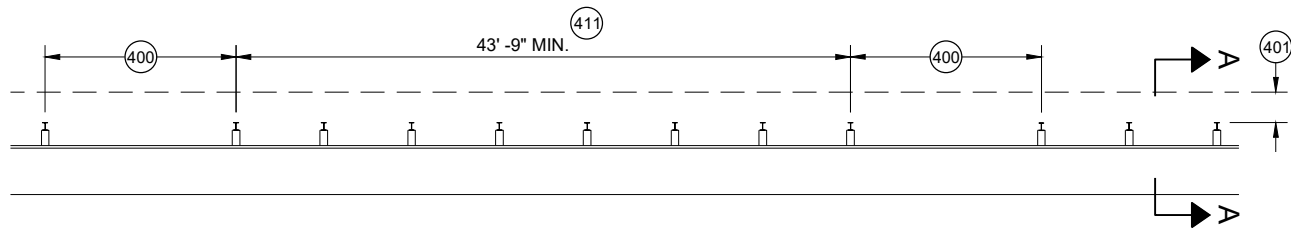


**ALTERNATE WOOD  
BLOCKOUT DETAIL**

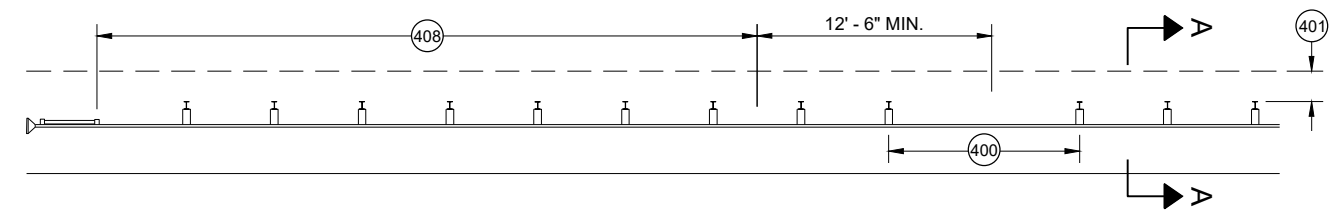
⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

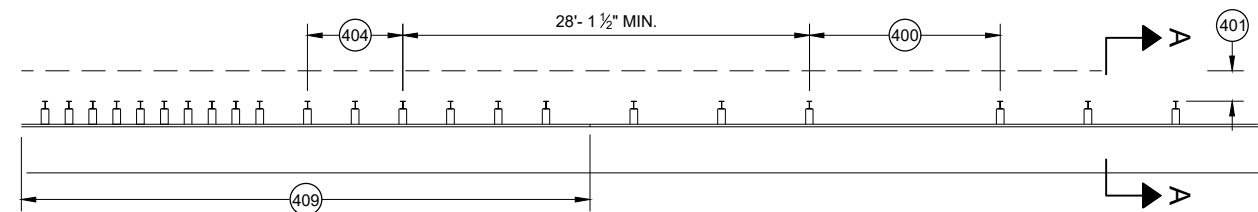
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



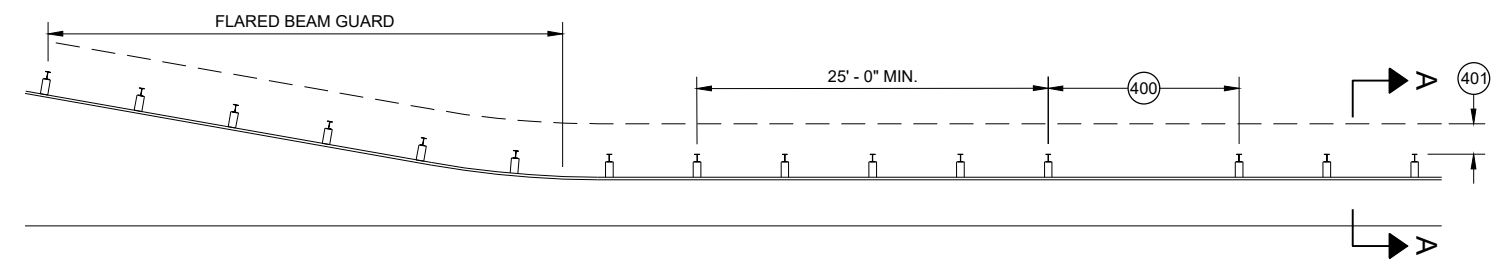
**MISSING POST IN MGS GUARDRAIL**



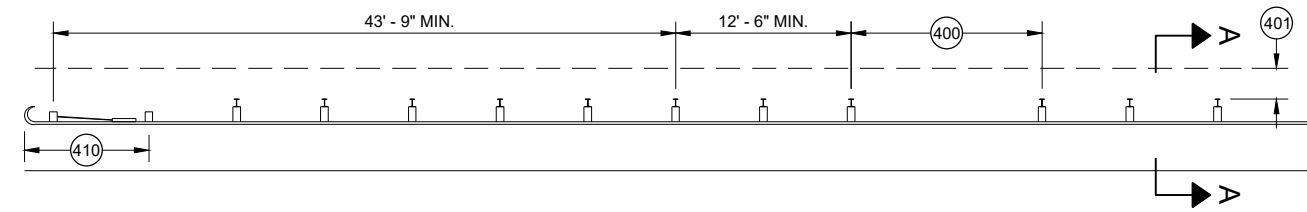
**MISSING POST IN MGS GUARDRAIL NEAR EAT**



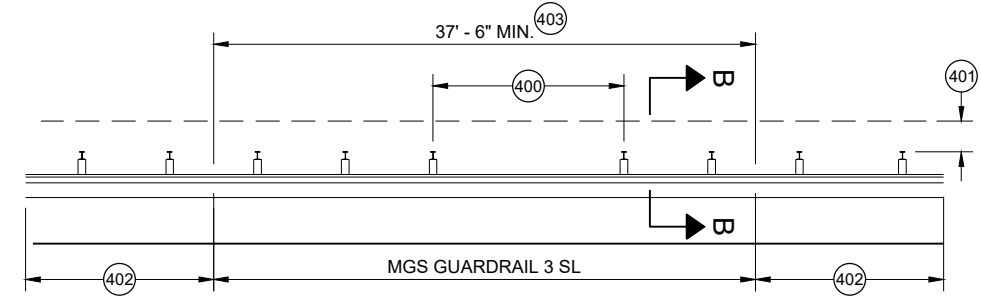
**MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION**



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

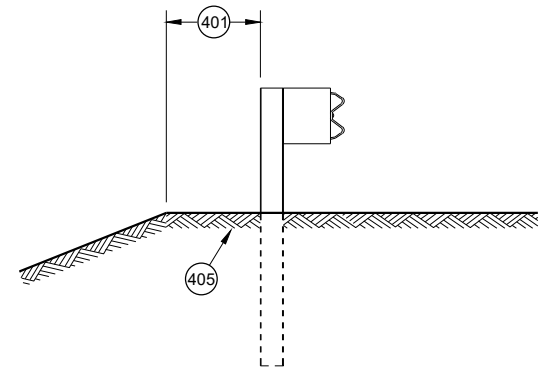


**MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL**

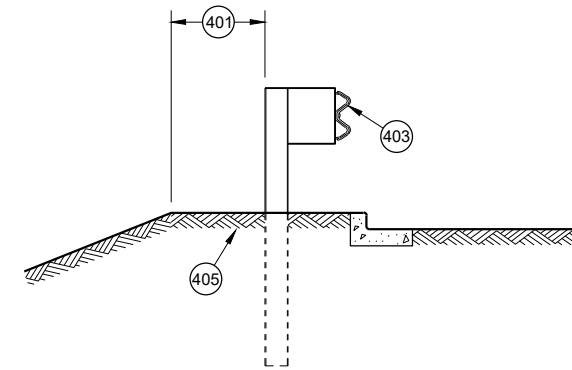


**MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)**

- 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**

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

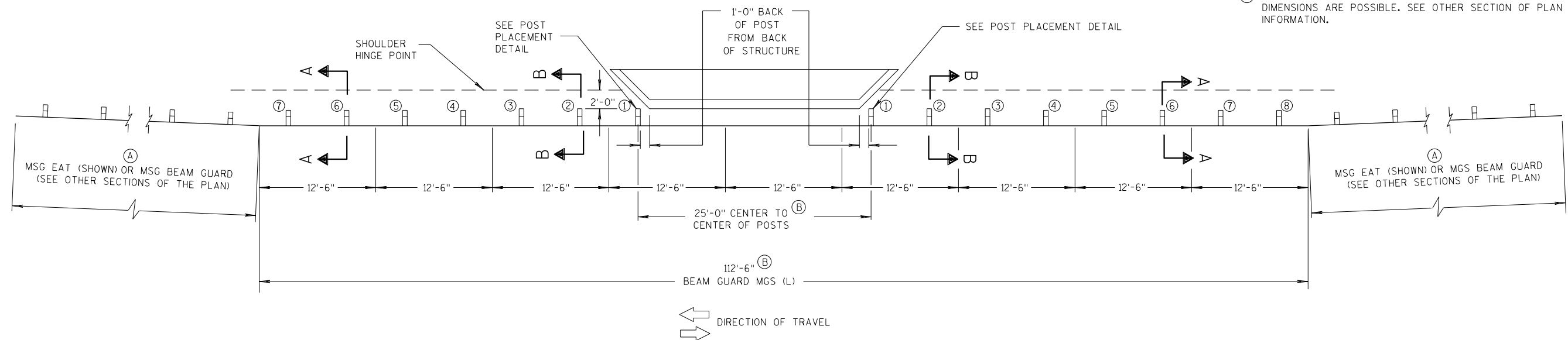
**GENERAL NOTES**

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

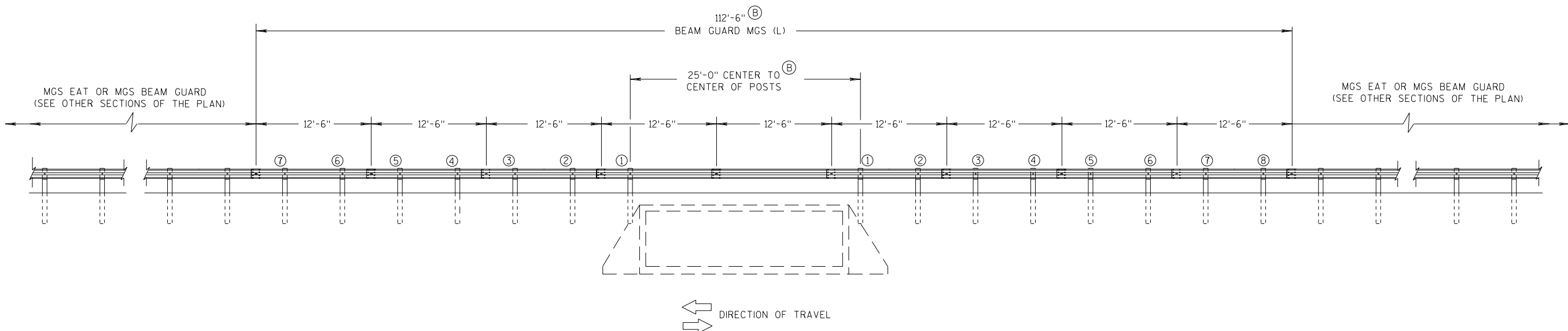
SEE SDD 14 B 42 FOR MORE DETAILS.

(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**

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

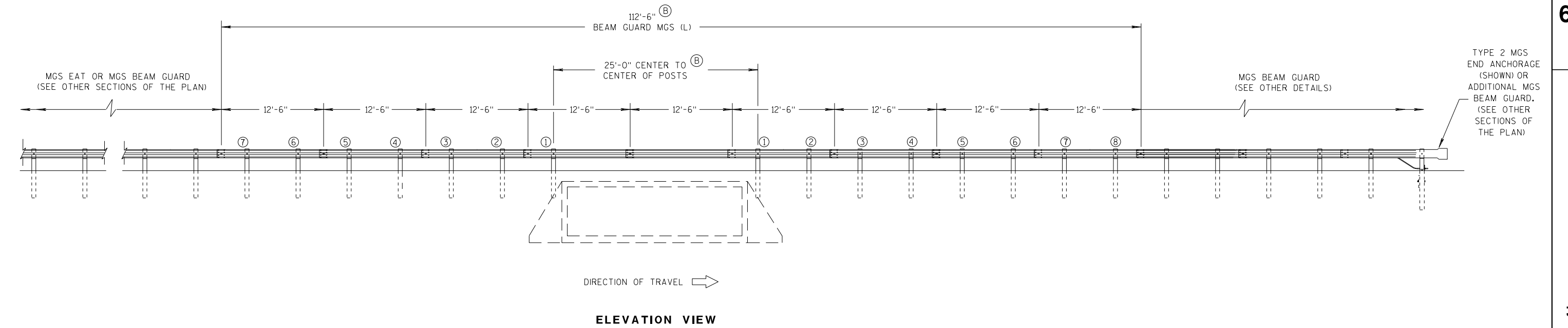
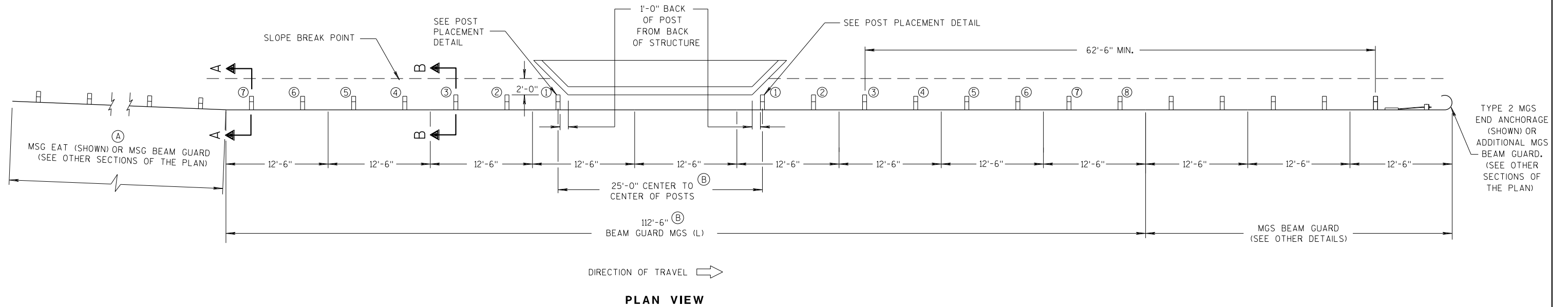
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**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.

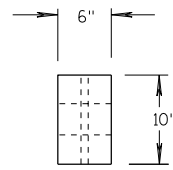
- (A) FLARE FOR MGS EAT SHOWN. IF INSTALLING MGS NO FLARE NEEDED.
- (B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



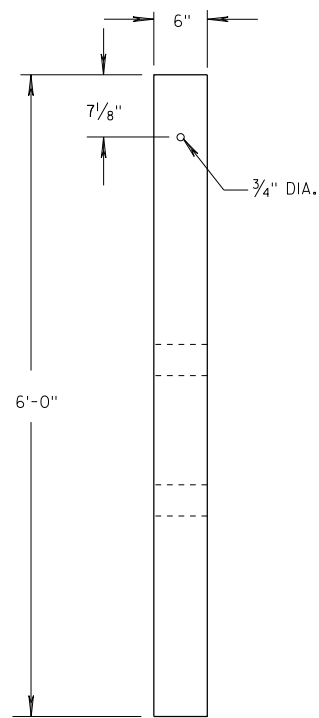
**MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) ONE-WAY TRAFFIC**

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

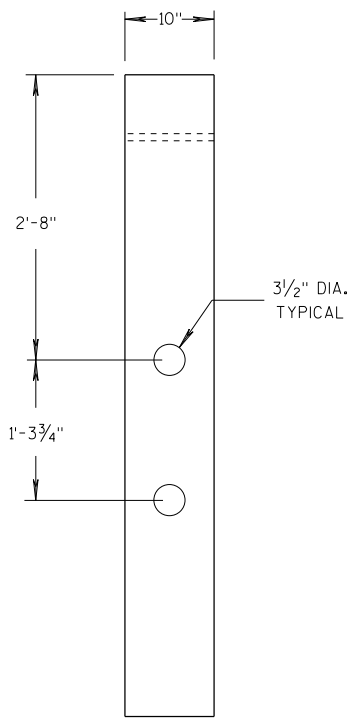
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



PLAN VIEW

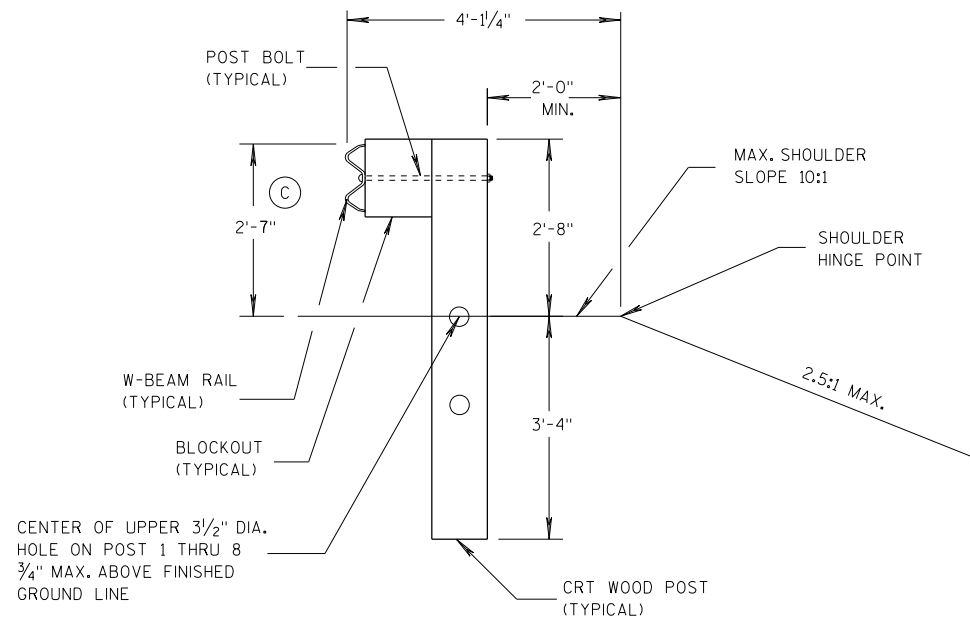


FRONT VIEW



SIDE VIEW

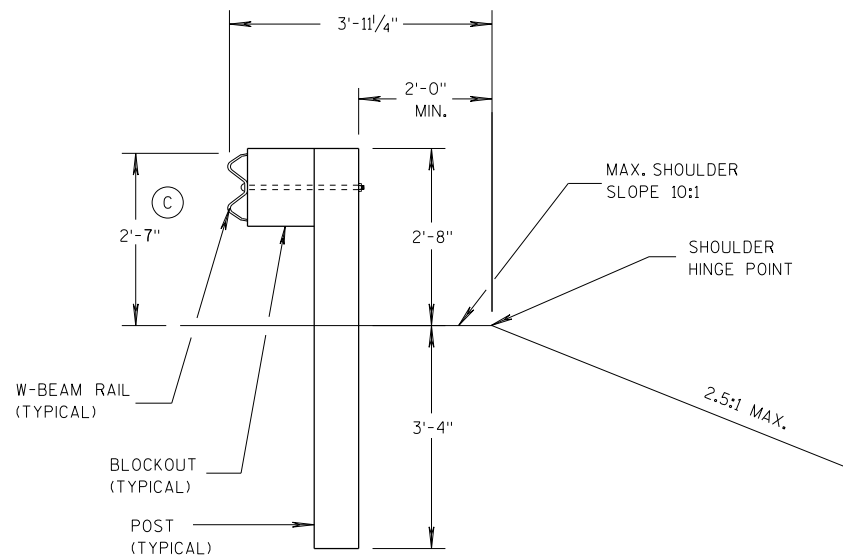
CRT WOOD POST



SECTION B-B  
POSTS NO. 1-3

SEE OTHER DETAILS

CENTER OF UPPER 3/2" DIA. HOLE ON POST 1 THRU 8 3/4" MAX. ABOVE FINISHED GROUND LINE

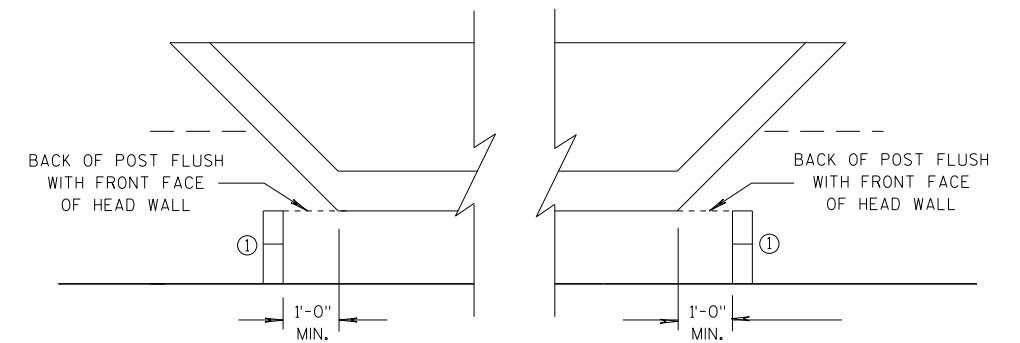


SECTION A-A  
POSTS NO. 4-8

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



**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.

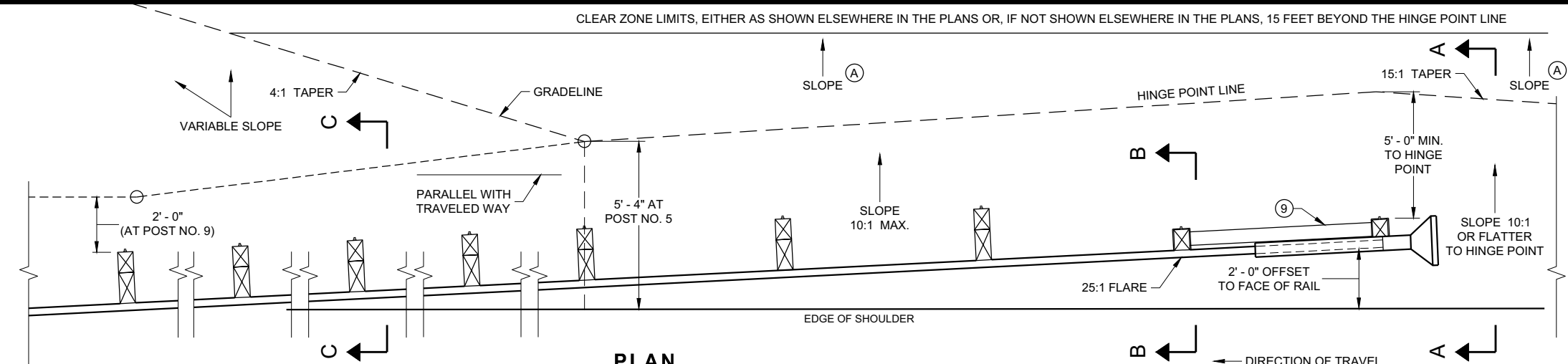
SEE SDD 14B42 FOR MORE INFORMATION.

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

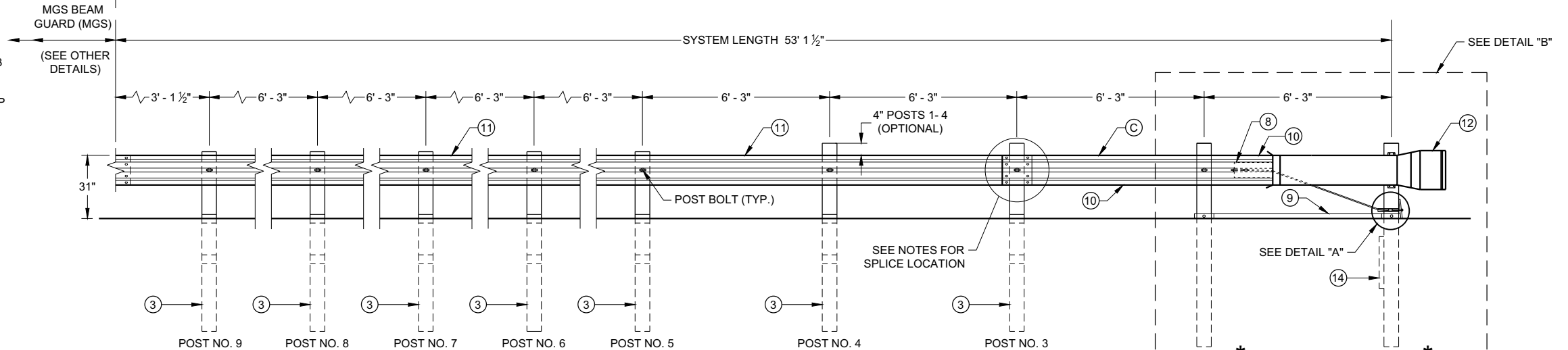
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

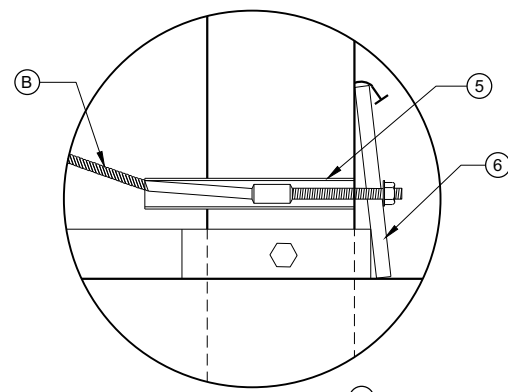
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



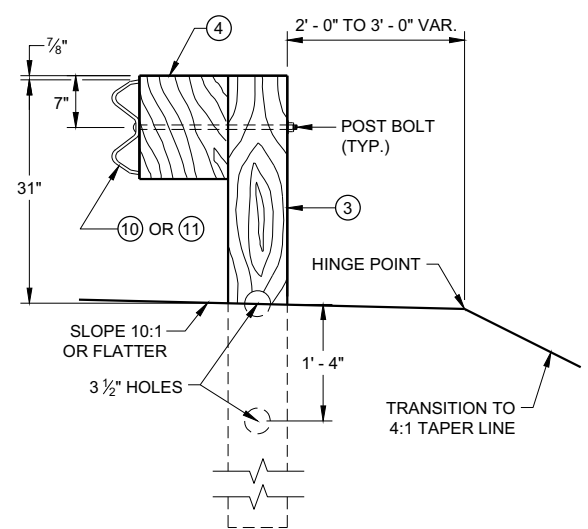
**PLAN**



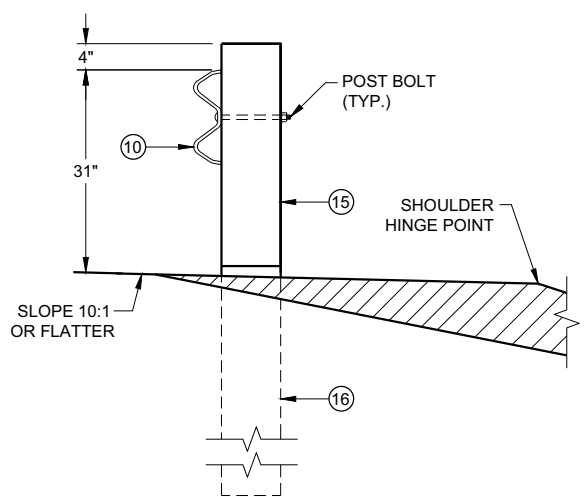
**ELEVATION**



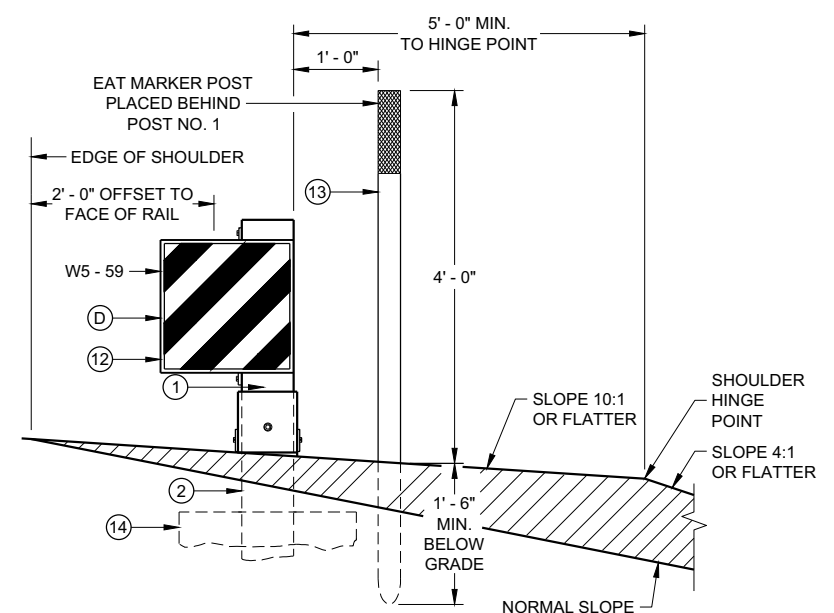
**DETAIL "A"**



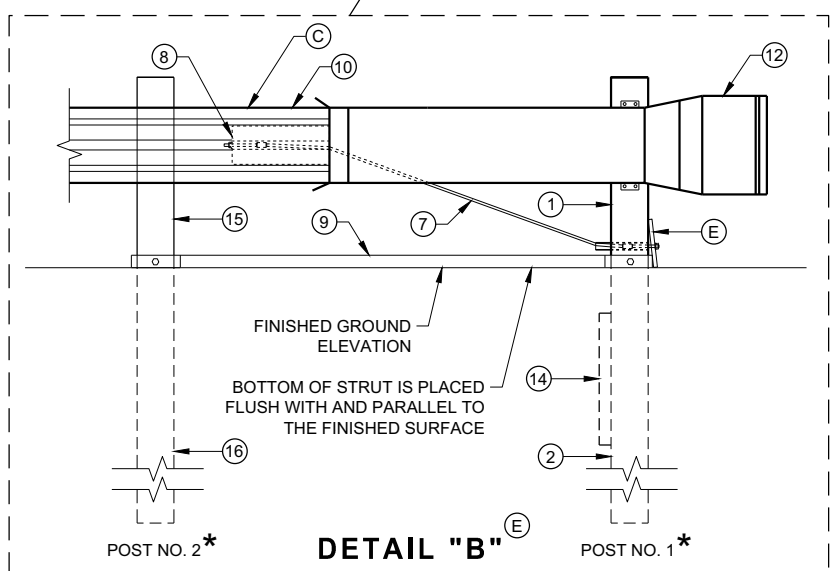
**SECTION C - C  
TYPICAL AT POST NOS. 3 - 9**



**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

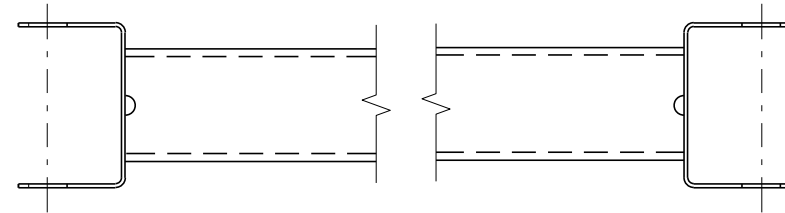
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SDD 14B44 - 04a

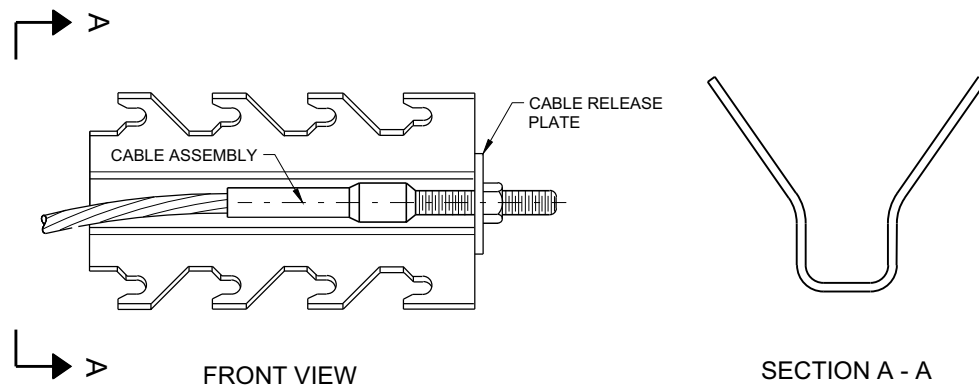
SDD 14B44 - 04a

**BILL OF MATERIALS**

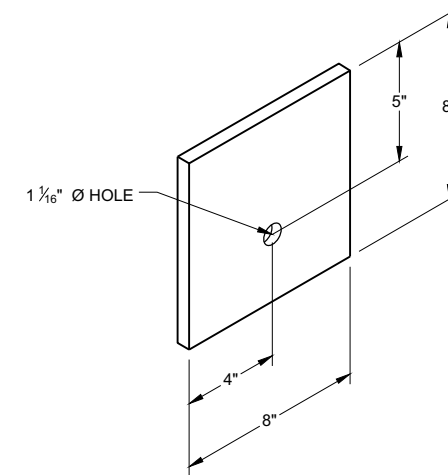
| PART NO. | DESCRIPTION<br>MATERIALS PROVIDED BY MGS EAT MANUFACTURER.<br>SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION. |
|----------|--|
| ①        | UPPER POST NO. 1 6" X 6" TUBE  |
| ②        | LOWER POST NO. 1   |
| ③        | WOOD CRT   |
| ④        | WOOD BLOCKOUT  |
| ⑤        | PIPE SLEEVE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



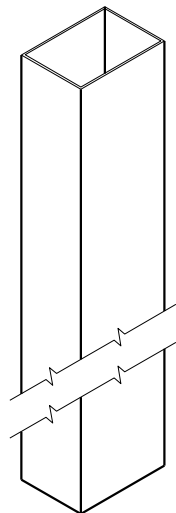
**GENERIC GROUND STRUT** ⑨ ⑤



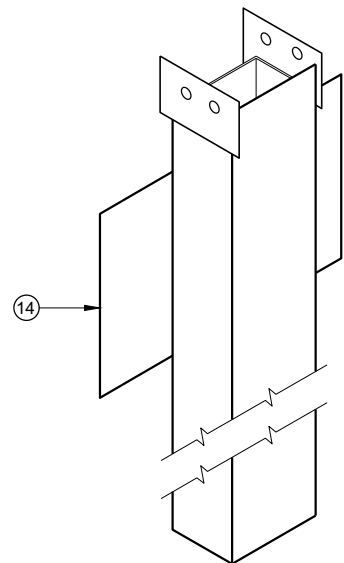
**GENERIC ANCHOR CABLE BOX** ⑨ ⑤



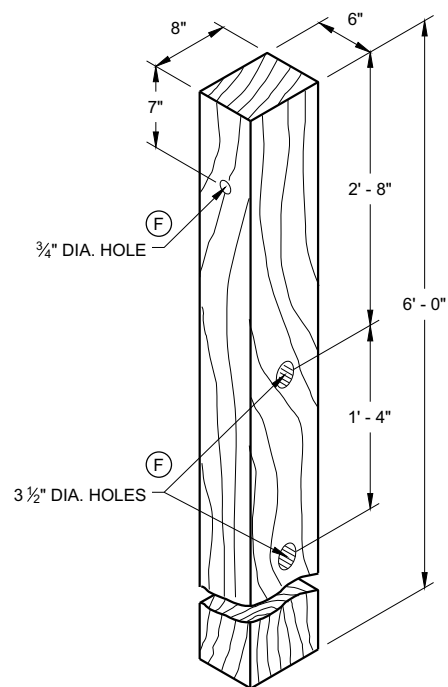
**BEARING PLATE** ⑥ ⑤



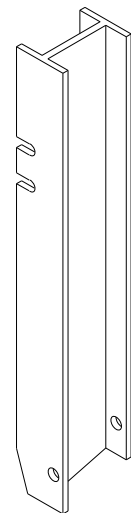
UPPER POST NO. 1 <sup>(1)</sup> (E)



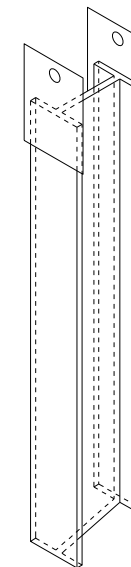
LOWER POST NO. 1 <sup>(2)</sup> (E)



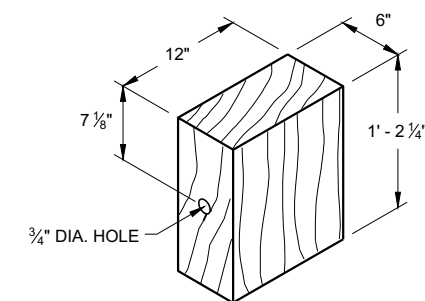
WOOD CRT POST <sup>(3)</sup> (E)  
POSTS NUMBER 3-9



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

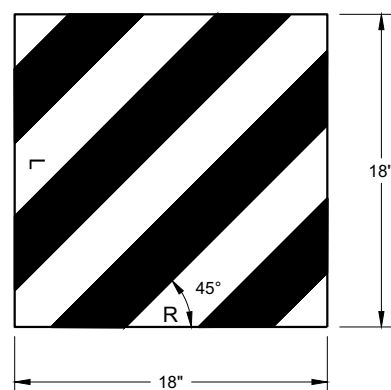


LOWER POST NO. 2 <sup>(16)</sup> (E)



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

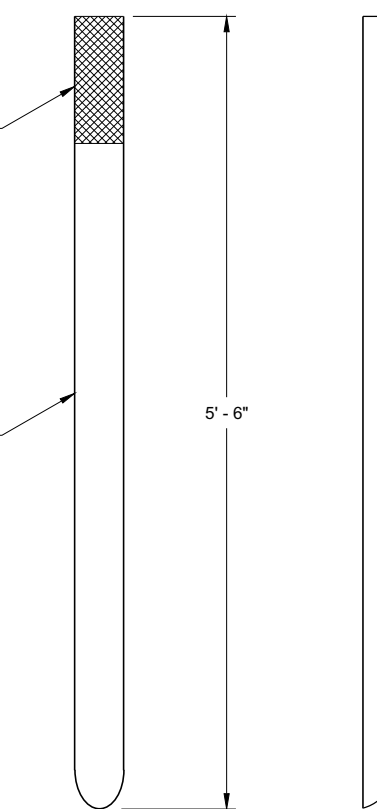
6



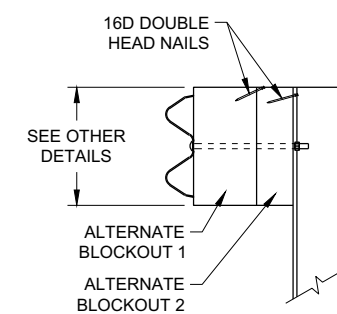
W5 - 59  
REFLECTIVE SHEETING DETAIL <sup>(E)</sup>

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

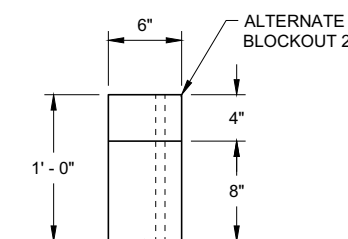
E.A.T. MARKER  
POST (YELLOW)



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



SIDE VIEW



TOP VIEW

ALTERNATE WOOD  
BLOCKOUT DETAIL

6

SDD 14B44 - 04c

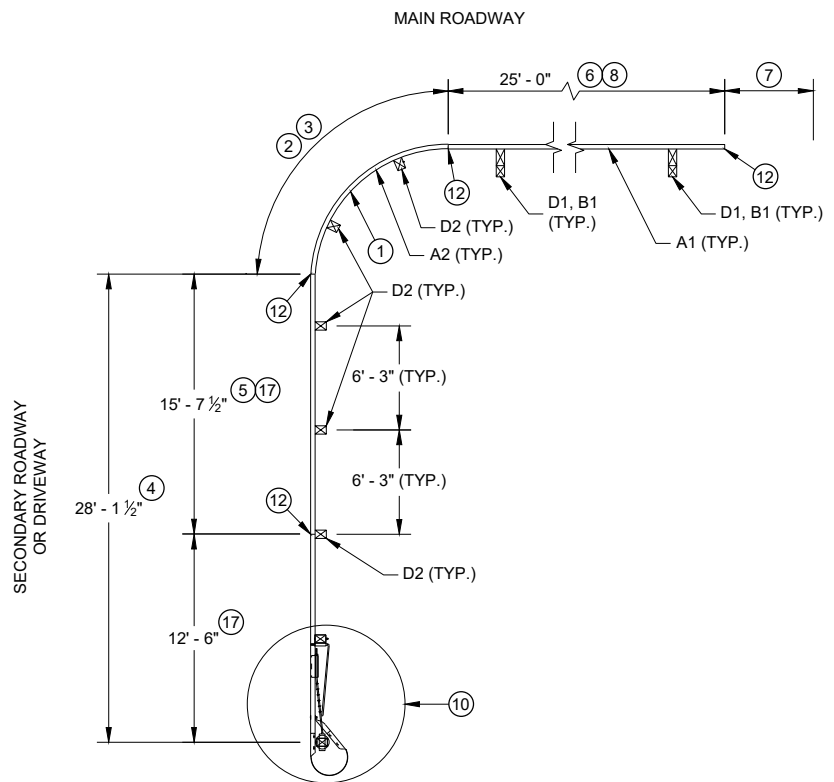
SDD 14B44 - 04c

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

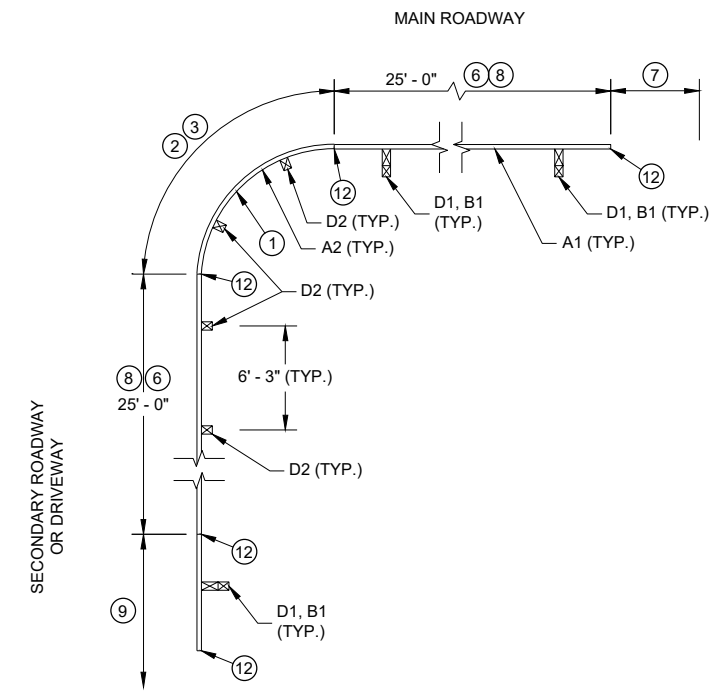
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

FHWA



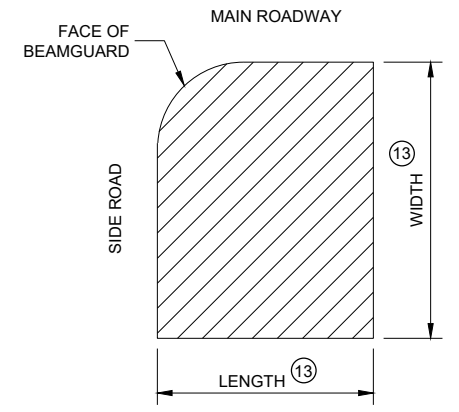
**PLAN VIEW**  
**SHORT RADIUS BEAM GUARD WITH**  
**SHORT RADIUS TERMINAL ON**  
**SECONDARY ROAD OR DRIVEWAY**



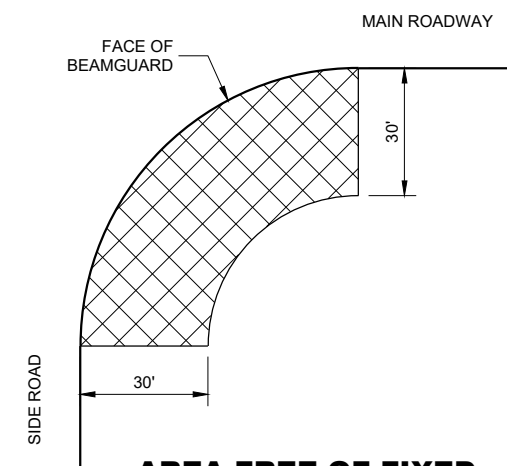
**PLAN VIEW**  
**SHORT RADIUS BEAM GUARD WITH**  
**EAT, ADDITIONAL BEAM GUARD**  
**OR**  
**TRANSITION TO RIGID BARRIER ON**  
**SECONDARY ROAD OR DRIVEWAY**

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

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



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

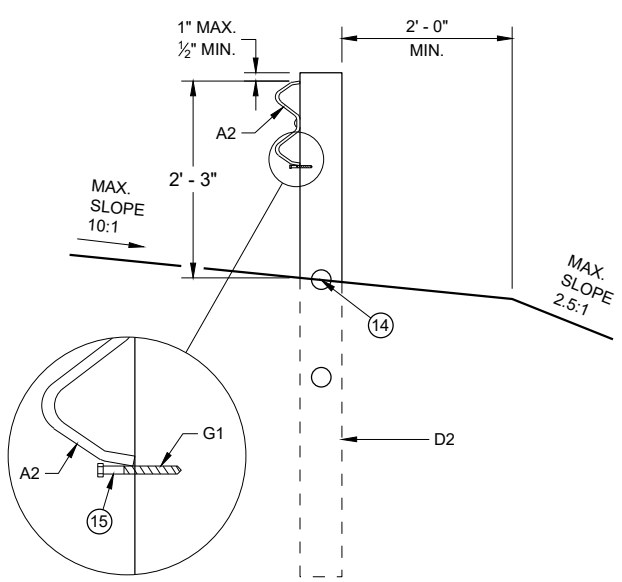


**AREA FREE OF FIXED**  
**OBJECTS FOR RADIUS**  
**GREATER THAN 32'**

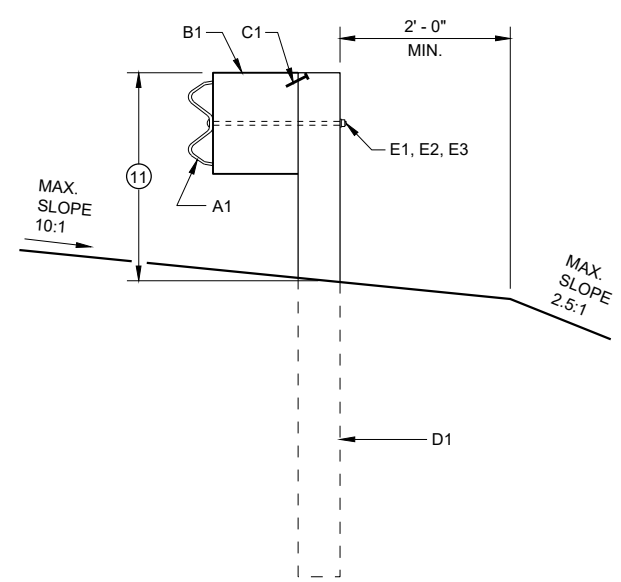
**GENERAL NOTES**

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

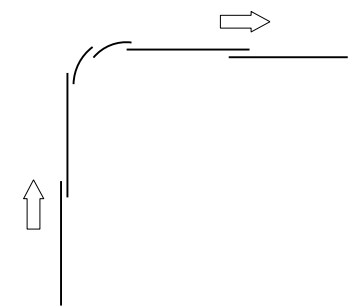
- ① RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- ② CONTROLLED RELEASE TERMINAL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



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



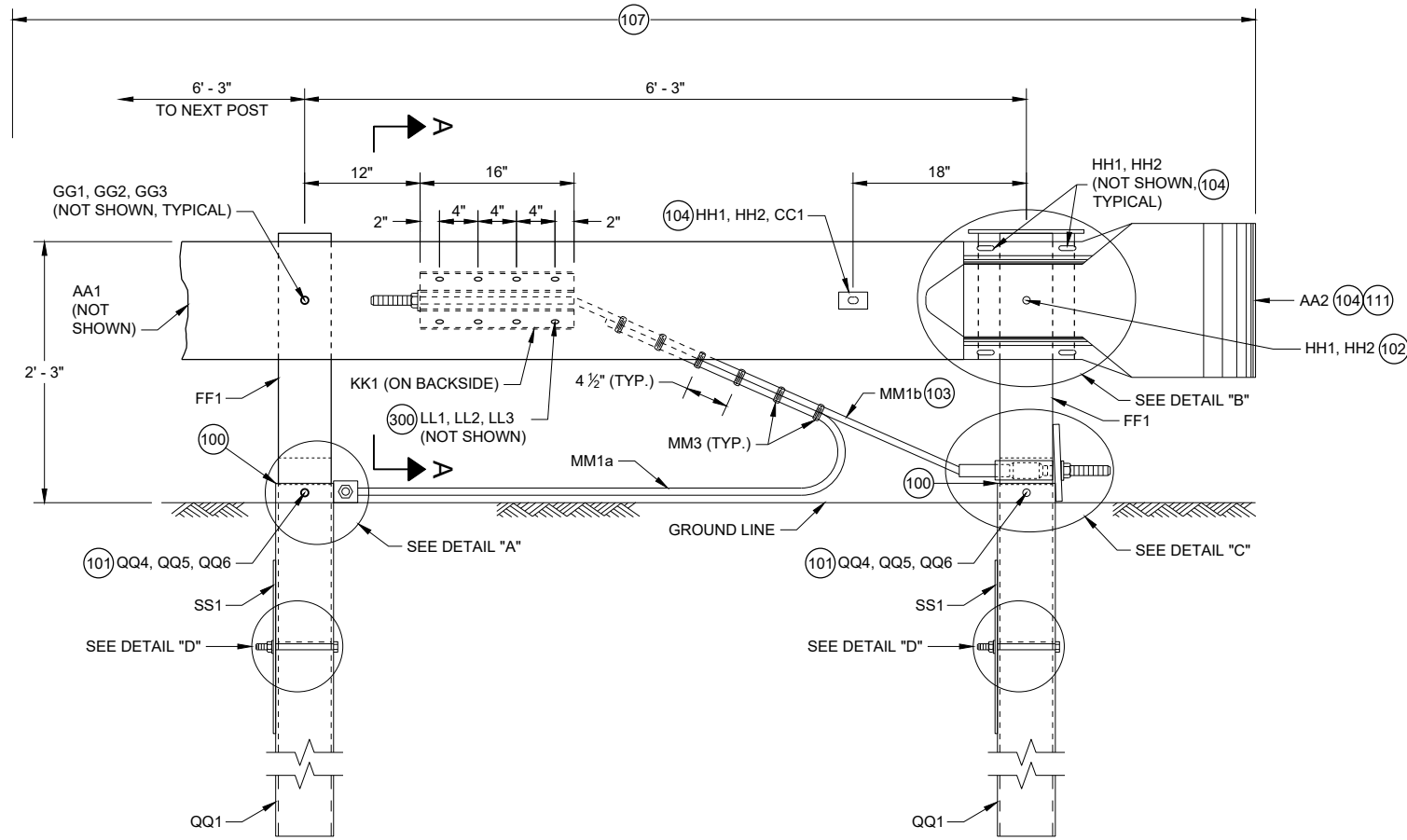
**BEAM GUARD POSTS**  
**IN HEIGHT TRANSITION**



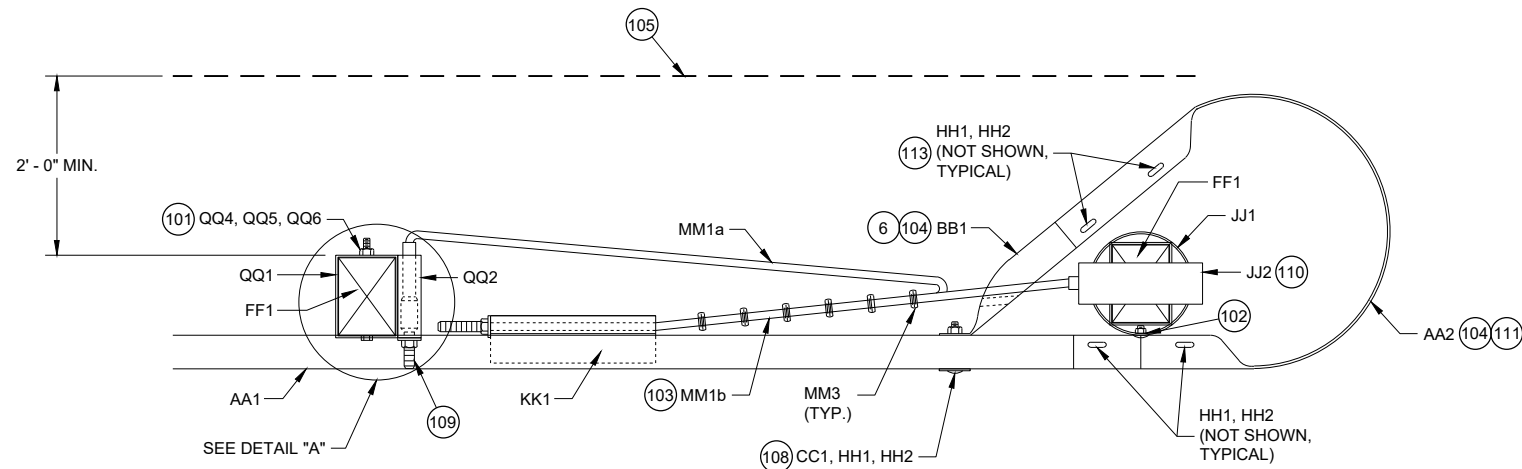
**LAP SPLICE DETAIL**

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

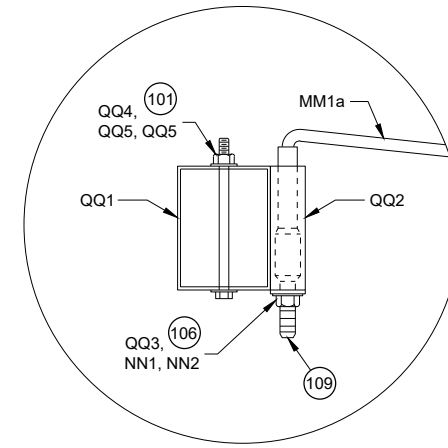
STATE OF WISCONSIN  
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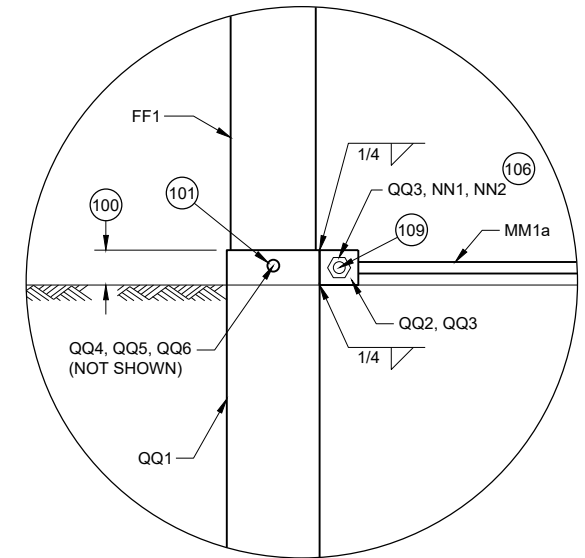
**PROFILE VIEW  
SHORT RADIUS TERMINAL**



**TOP VIEW  
SHORT RADIUS TERMINAL**



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



**PROFILE VIEW  
DETAIL "A"**

**GENERAL NOTES**

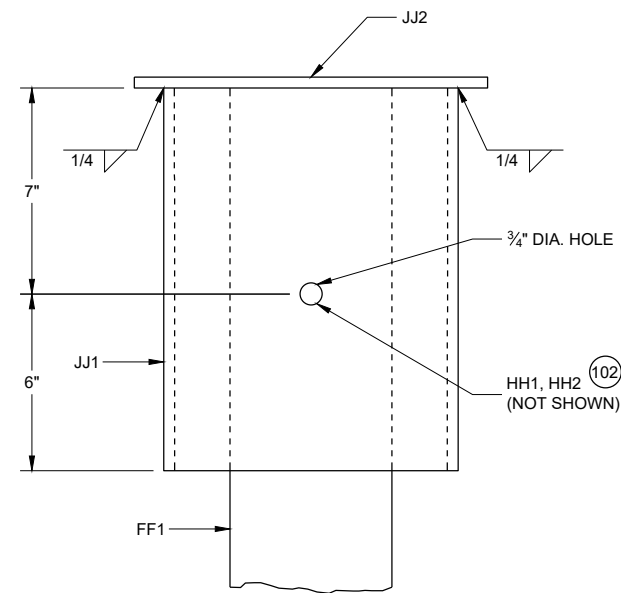
- (100) TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- (101) WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- (102) SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL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

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

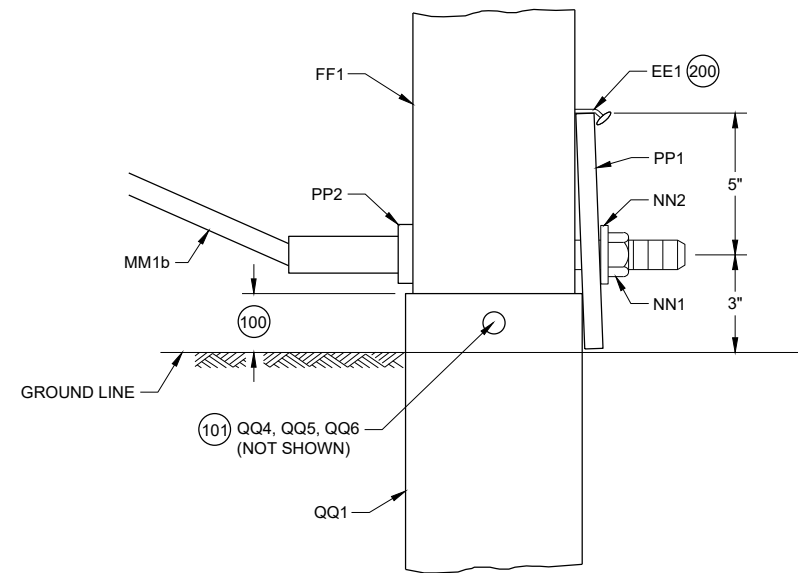
STATE OF WISCONSIN  
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**GENERAL NOTES**

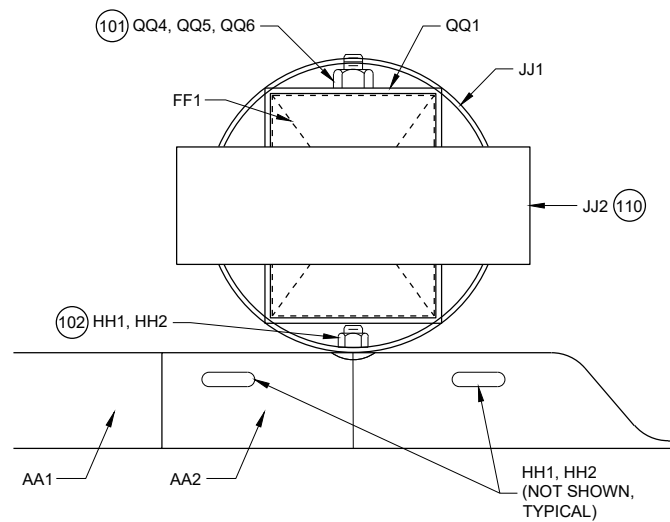
(200) TWO (2) NAILS SPACED 4 INCHES CENTER TO CENTER.



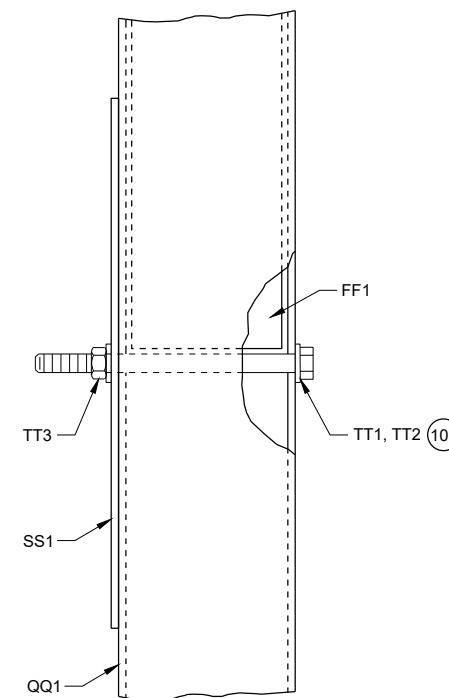
**PROFILE VIEW  
DETAIL "B"  
STEEL PIPE ASSEMBLY  
(BEAM GUARD AND W BEAM  
END SECTION NOT SHOWN)**



**PROFILE VIEW  
DETAIL "C"**



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



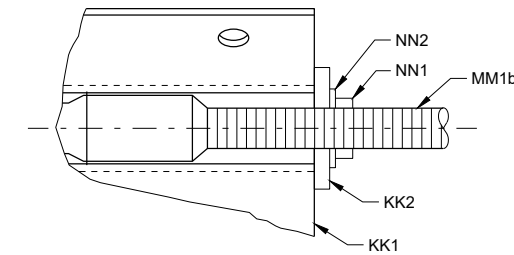
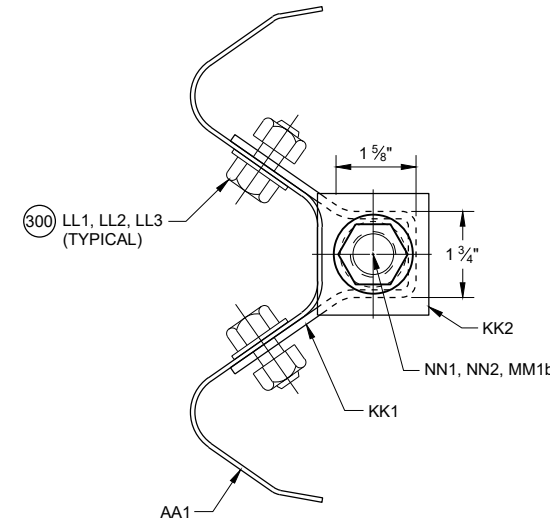
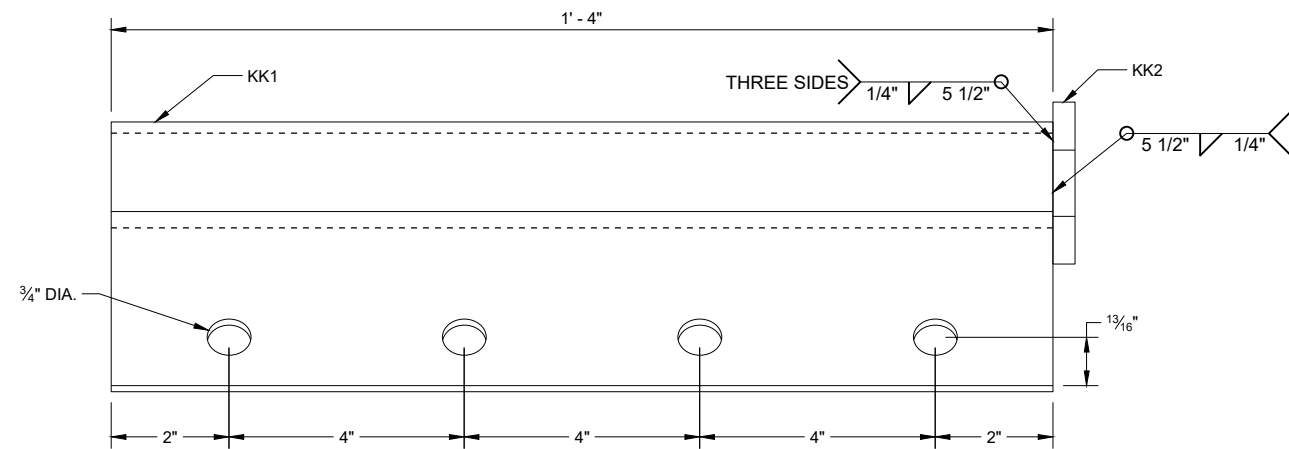
**PROFILE VIEW  
DETAIL "D"**

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

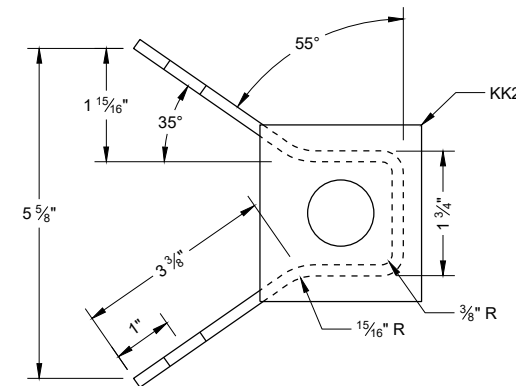
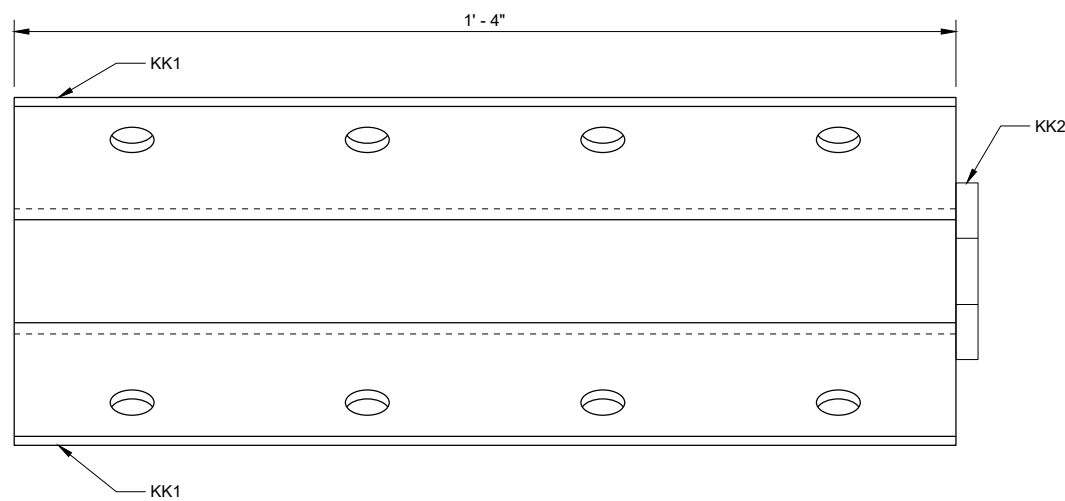
STATE OF WISCONSIN  
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**GENERAL NOTES**

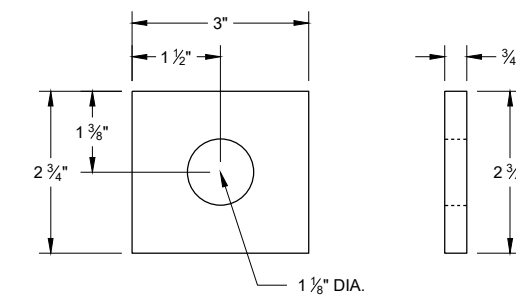
300 WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT (8) LL1 AND LL3 REQUIRED. SIXTEEN (16) LL2 REQUIRED.



**SECTION A - A**



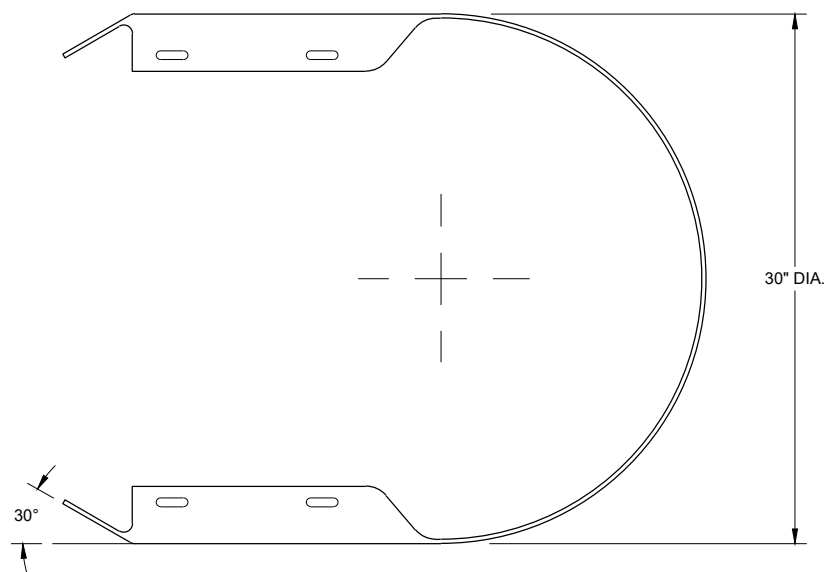
**ANCHOR BRACKET BEARING PLATE (KK2)**



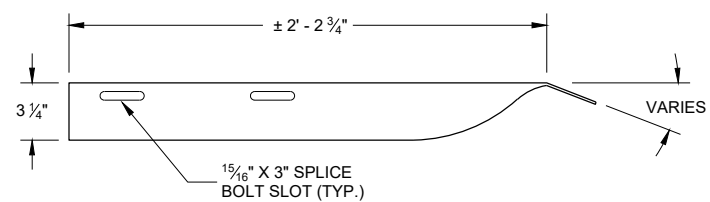
**ANCHOR BRACKET (KK1, KK2)**

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

STATE OF WISCONSIN  
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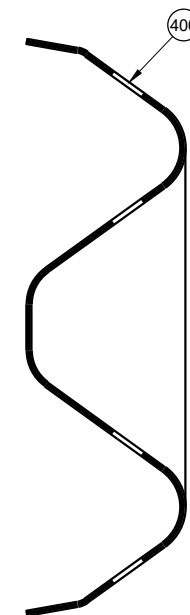
**TOP VIEW**



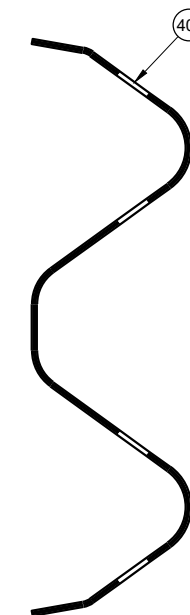
**TOP VIEW**

**GENERAL NOTES**

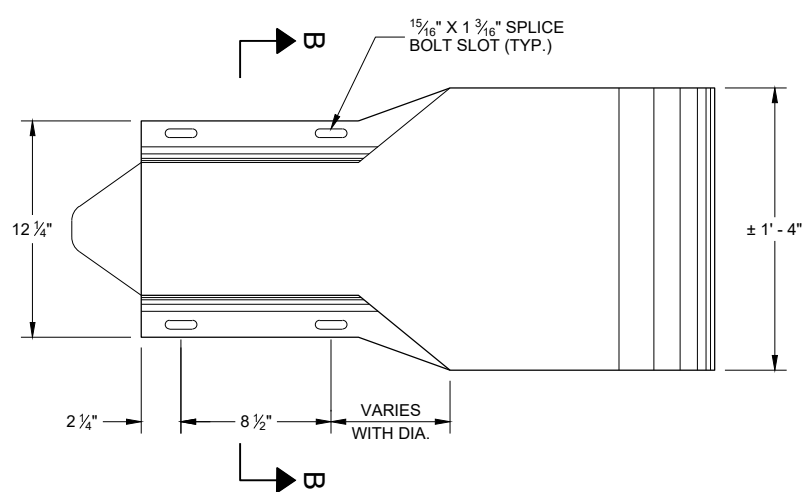
- (400) CROSS SECTION OF PART IS TO FIT OVER AA1 .
- (401) CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1 .



**SECTION B - B**

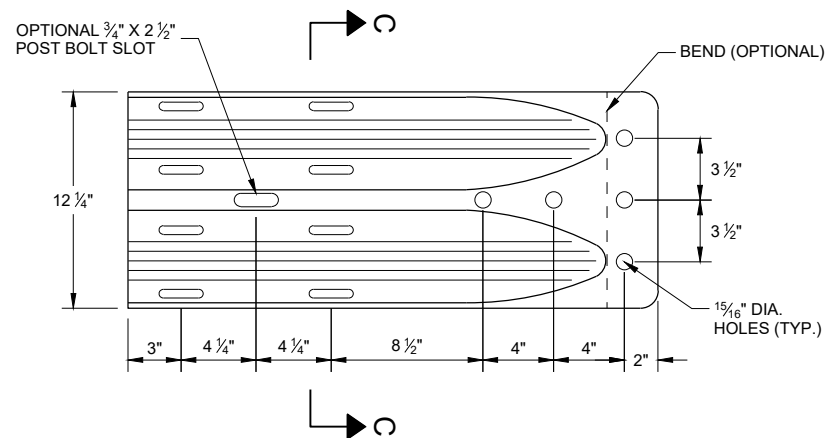


**SECTION C - C**



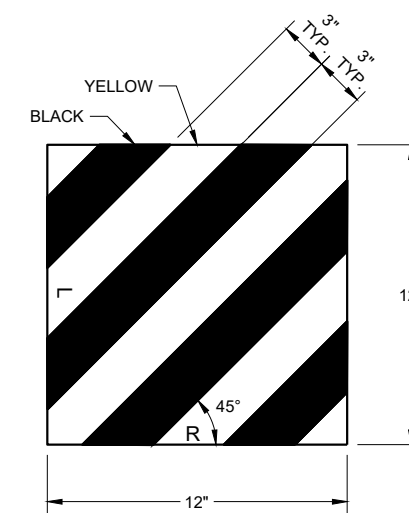
**PROFILE VIEW**

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



**PROFILE VIEW**

**W BEAM  
TERMINAL CONNECTOR (BB1)**

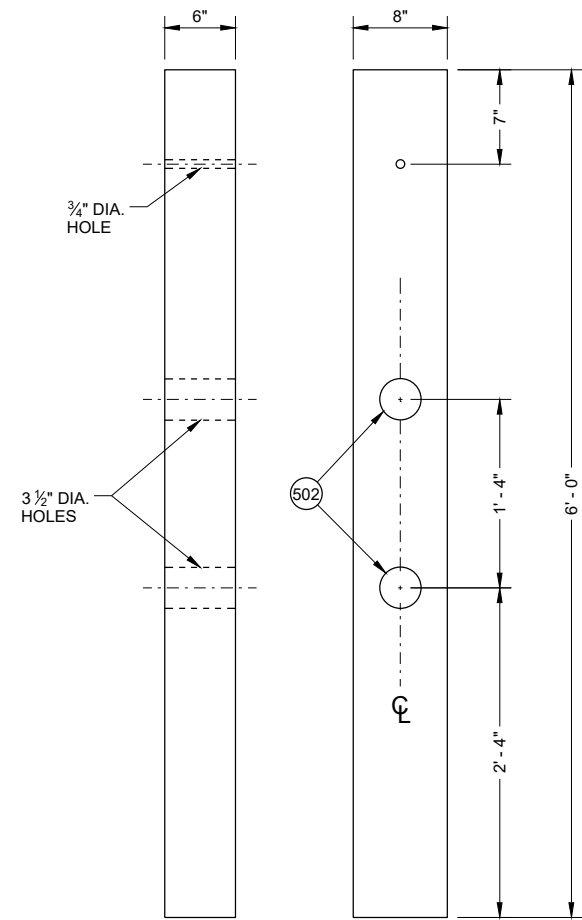


**REFLECTIVE SHEETING (UU1, UU2)**

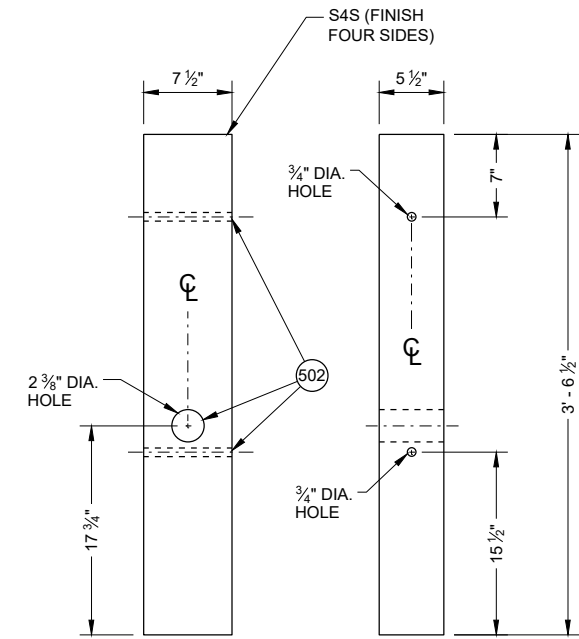
**SHORT RADIUS BEAM  
GUARD (MGS) SHORT  
RADIUS TERMINAL (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

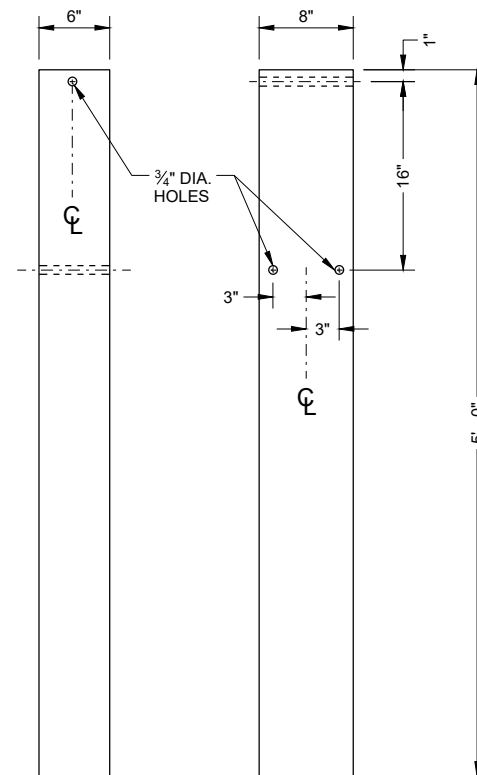




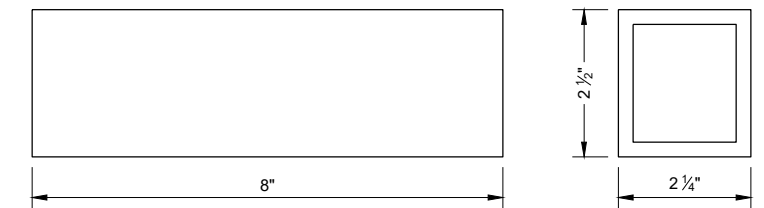
**FRONT VIEW SIDE VIEW  
CONTROLLED RELEASE  
POST (CRT) (DD2)**



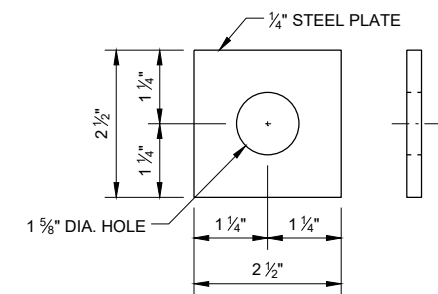
**FRONT VIEW SIDE VIEW  
WOOD BREAKAWAY POST (FF1)**



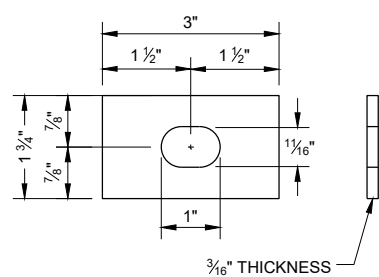
**FRONT VIEW SIDE VIEW  
FOUNDATION TUBE (QQ1)**



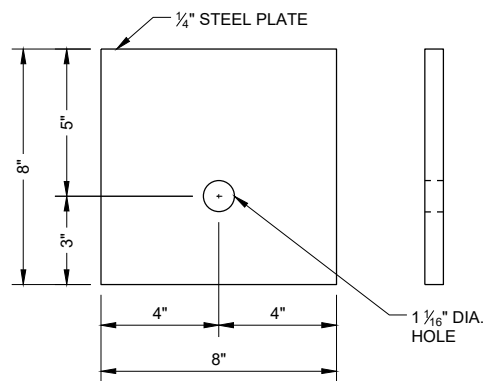
**FOUNDATION TUBE -  
ANCHOR CABLE TUBE (QQ2)**



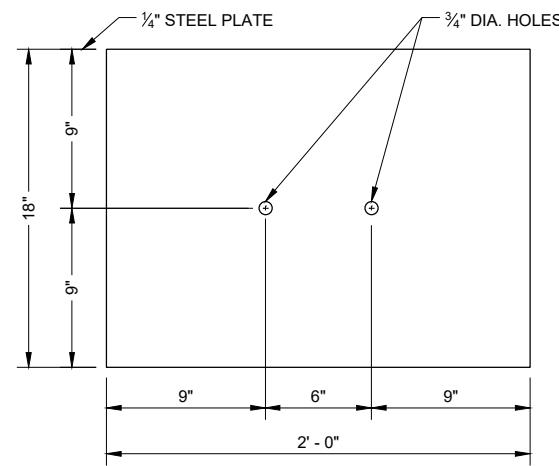
**ANCHOR CABLE TUBE  
END PLATE (QQ3)**



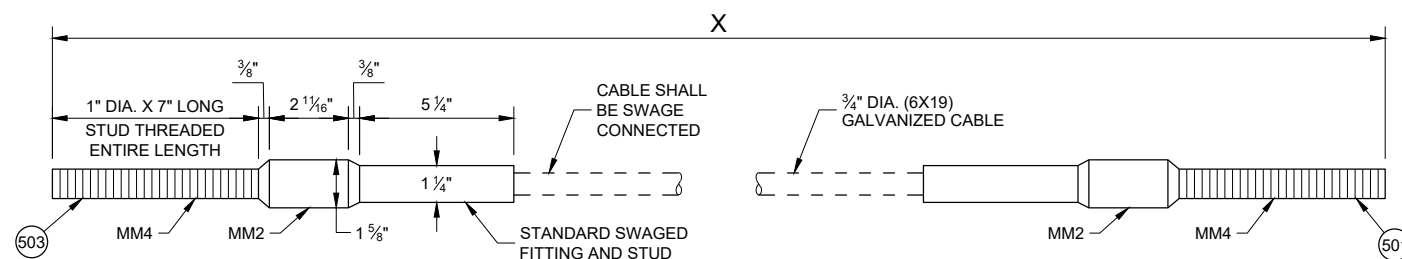
**RECTANGULAR PLATE  
WASHER (CC1)**



**BEARING PLATE (PP1)**



**SOIL PLATE (SS1)**



**CABLE ASSEMBLY (MM1a, MM1b)**

**"X" LENGTH**

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

**GENERAL NOTES**

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

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

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**BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)**

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

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

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SDD 14B53 - 02g

SDD 14B53 - 02g

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)**

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

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

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SDD 14B53 - 02h

SDD 14B53 - 02h

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)**

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

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

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SDD 14B53 - 02i

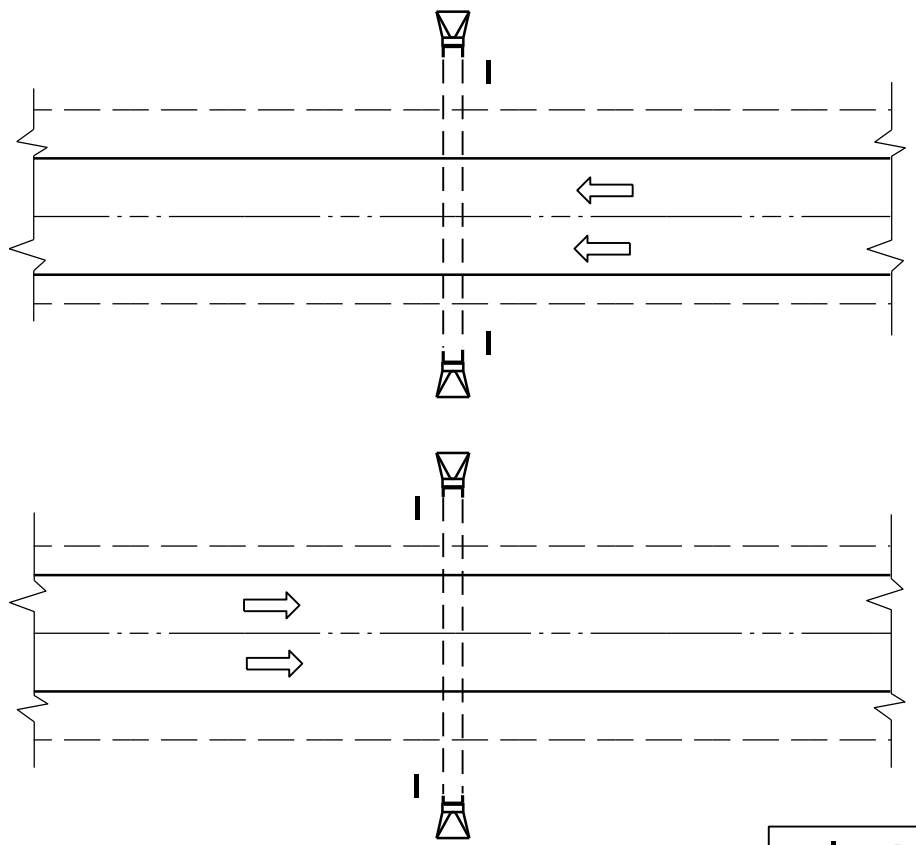
SDD 14B53 - 02i

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

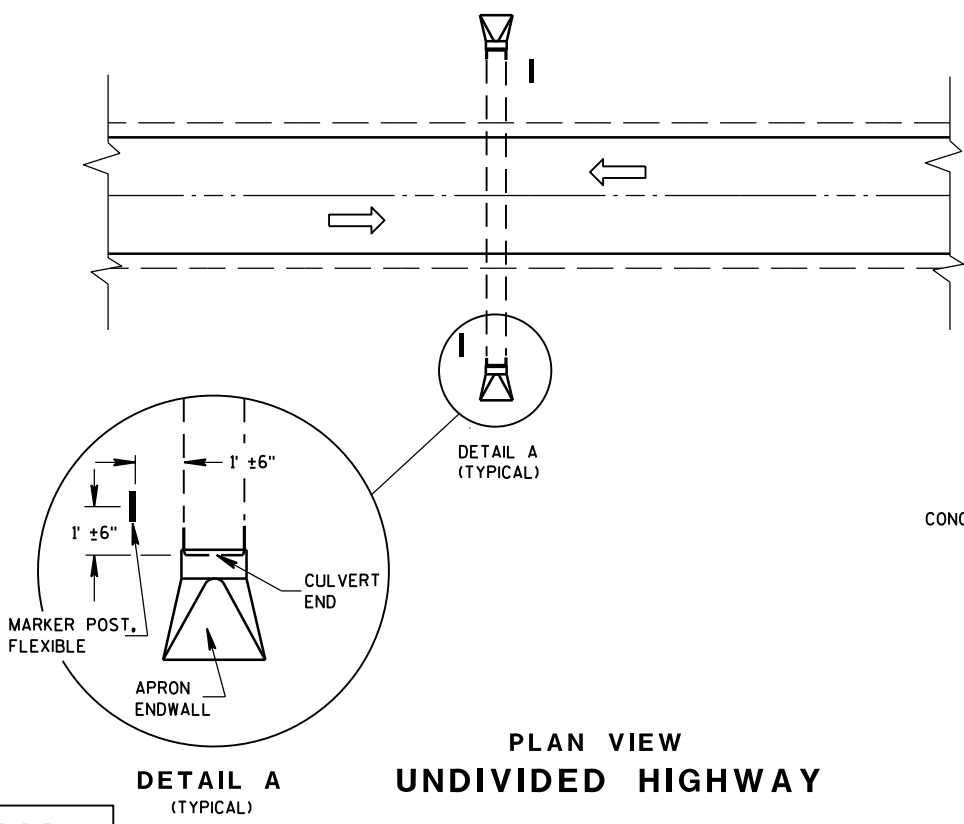
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2022 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

FHWA

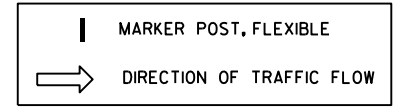


PLAN VIEW  
DIVIDED HIGHWAY



PLAN VIEW  
UNDIVIDED HIGHWAY

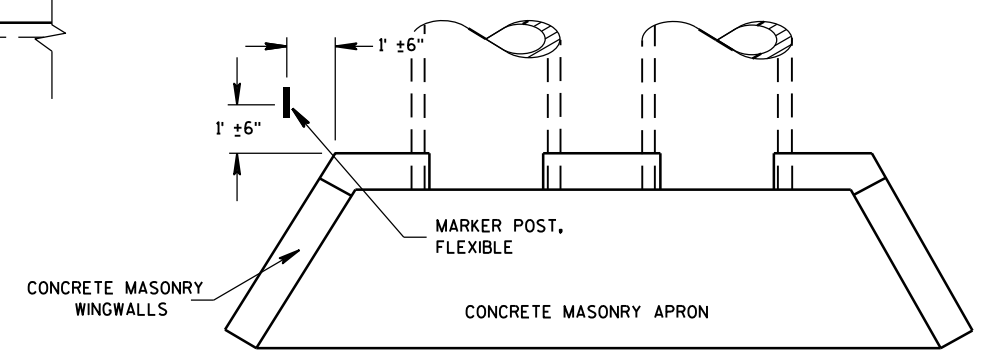
DETAIL A  
(TYPICAL)



FLEXIBLE MARKER POST LOCATION

GENERAL NOTES

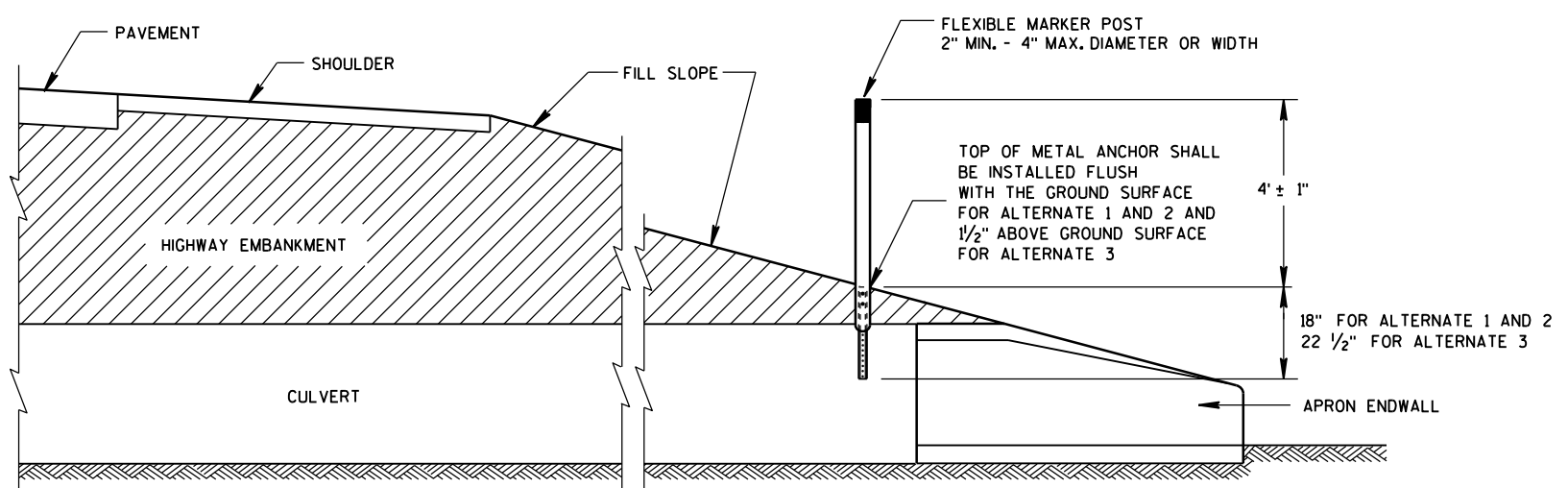
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW  
CONCRETE MASONRY ENDWALLS FOR  
CULVERT PIPE AND PIPE ARCH

6

6



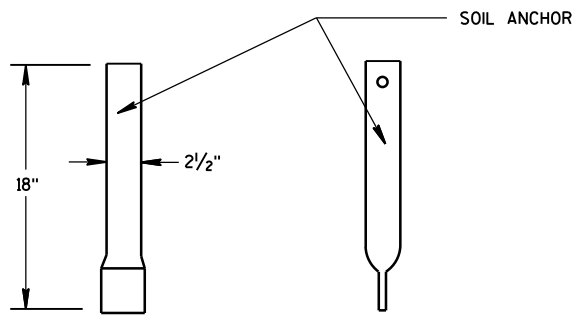
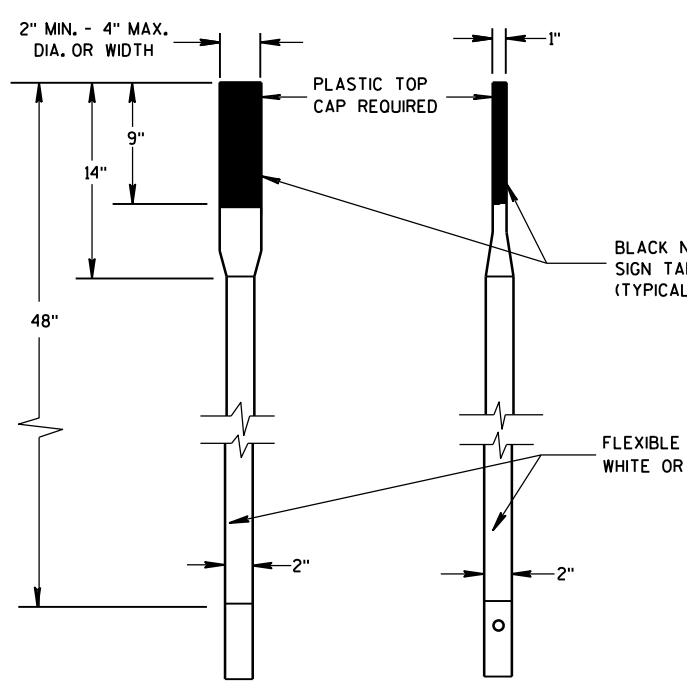
CROSS SECTION  
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST  
FOR CULVERT END

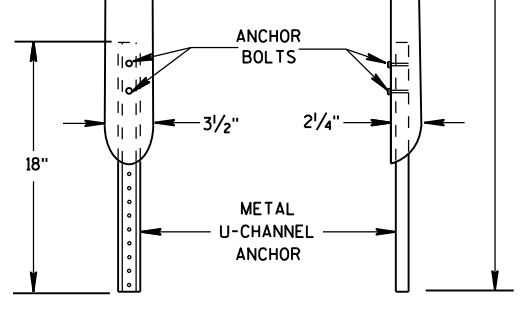
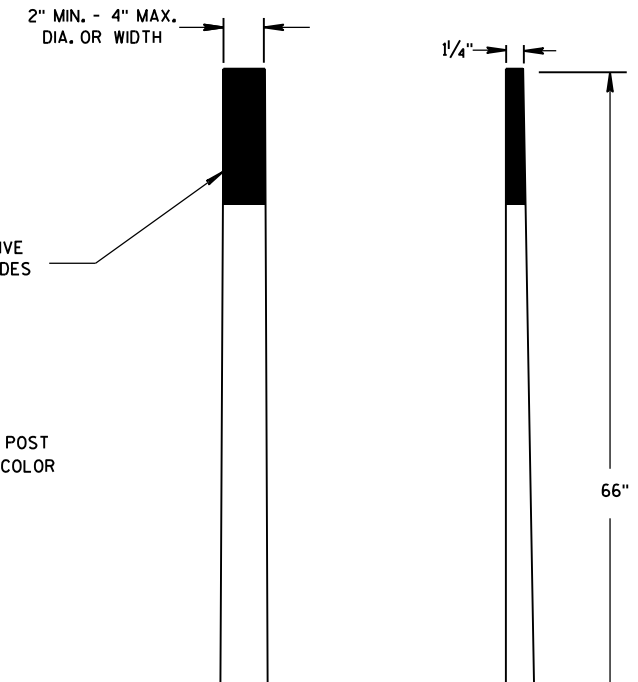
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

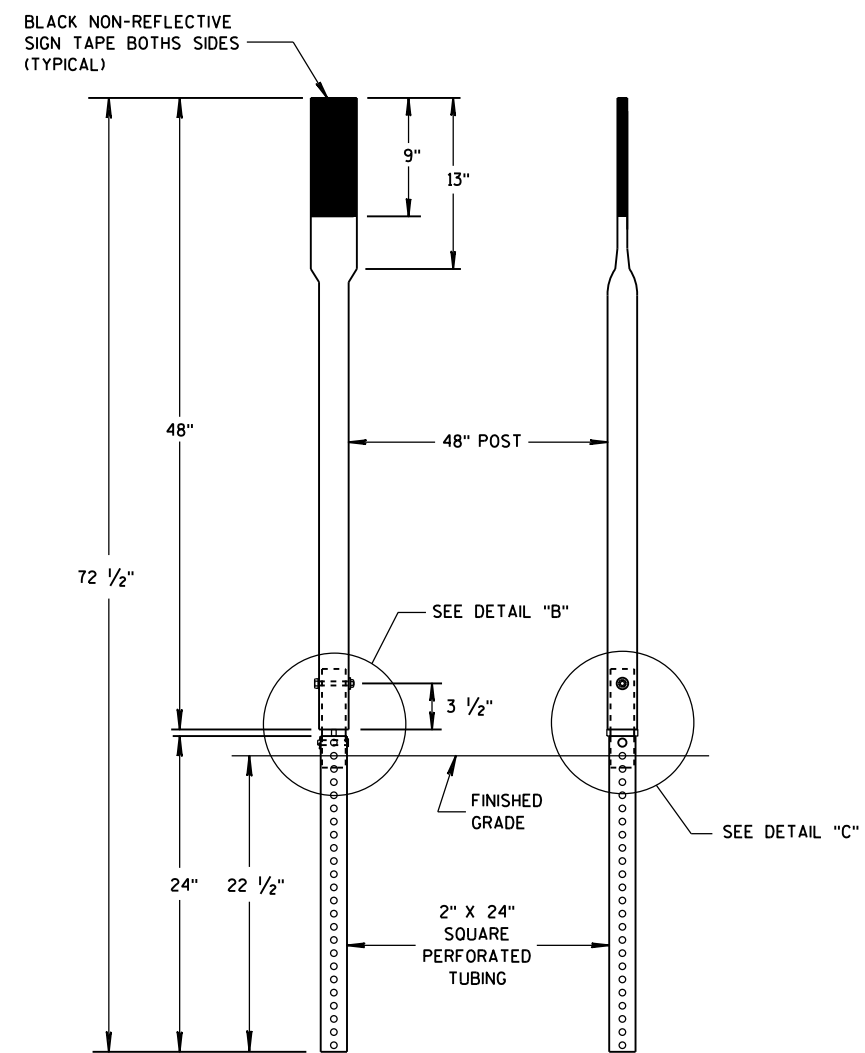
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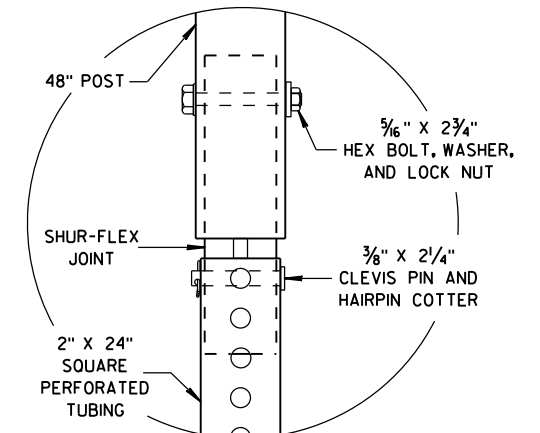
FRONT VIEW SIDE VIEW  
ALTERNATE 1



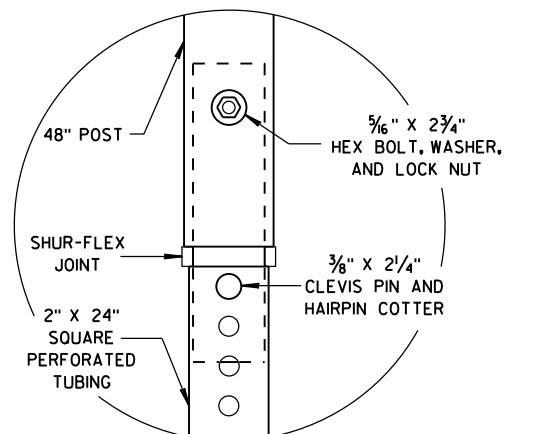
FRONT VIEW SIDE VIEW  
ALTERNATE 2



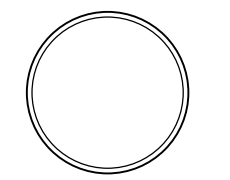
FRONT VIEW SIDE VIEW  
ALTERNATE 3



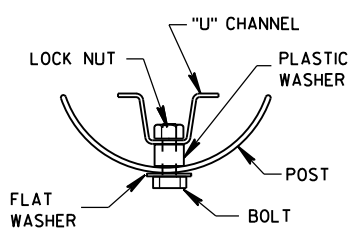
DETAIL B



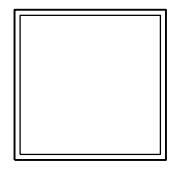
DETAIL C



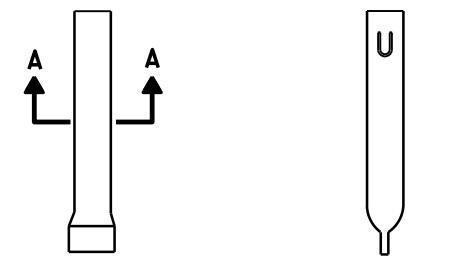
SECTION A-A



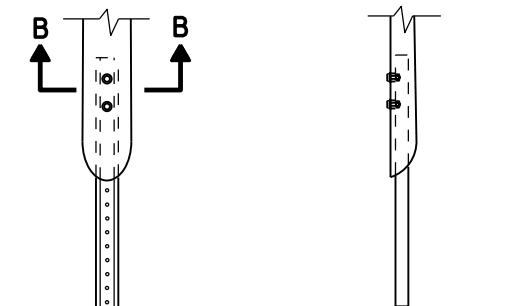
SECTION B-B



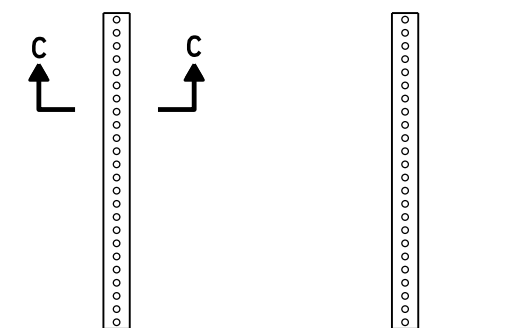
SECTION C-C



FRONT VIEW SIDE VIEW  
ALTERNATE 1



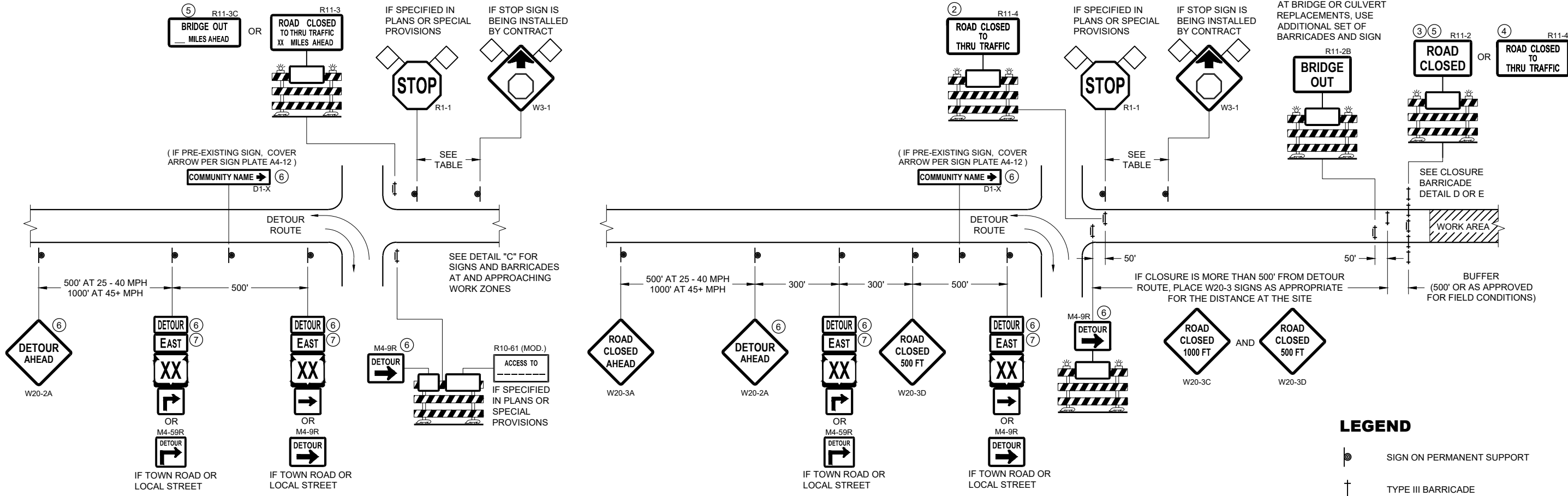
FRONT VIEW SIDE VIEW  
ALTERNATE 2



FRONT VIEW SIDE VIEW  
ALTERNATE 3

**FLEXIBLE MARKER POST ANCHORS**

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



**DETAIL A  
MAINLINE CLOSURE WITH POSTED DETOUR**

WORK ZONE GREATER THAN OR EQUAL TO 1/2 MILE FROM  
DETOUR ROUTE ( 1000 FEET IF URBAN )

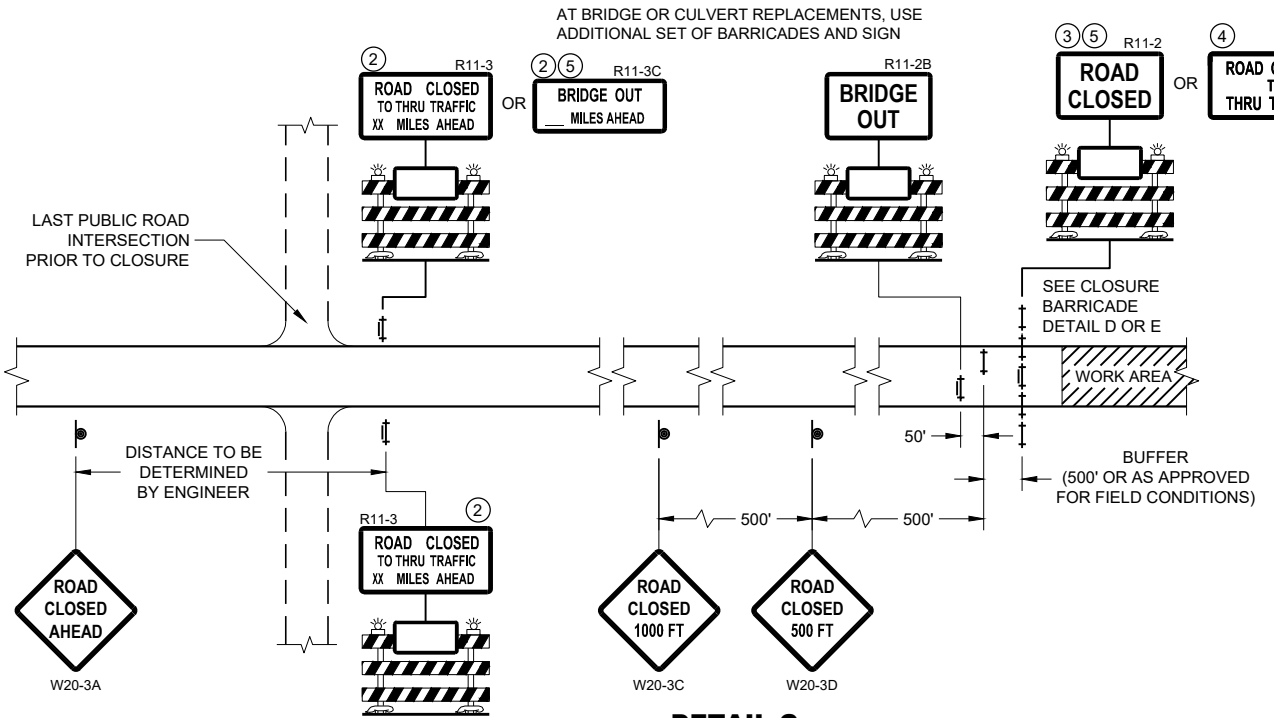
**DETAIL B  
MAINLINE CLOSURE WITH POSTED DETOUR**

WORK ZONE LESS THAN 1/2 MILE FROM  
DETOUR ROUTE ( 1000 FEET IF URBAN )

**LEGEND**

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- FLAGS, 16" X 16" MIN. (ORANGE)
- M4 - 8
- M3 - X
- M1 - 4 OR M1 - 6 OR M1 - 5A
- M05 - 1 OR M06 - 1

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



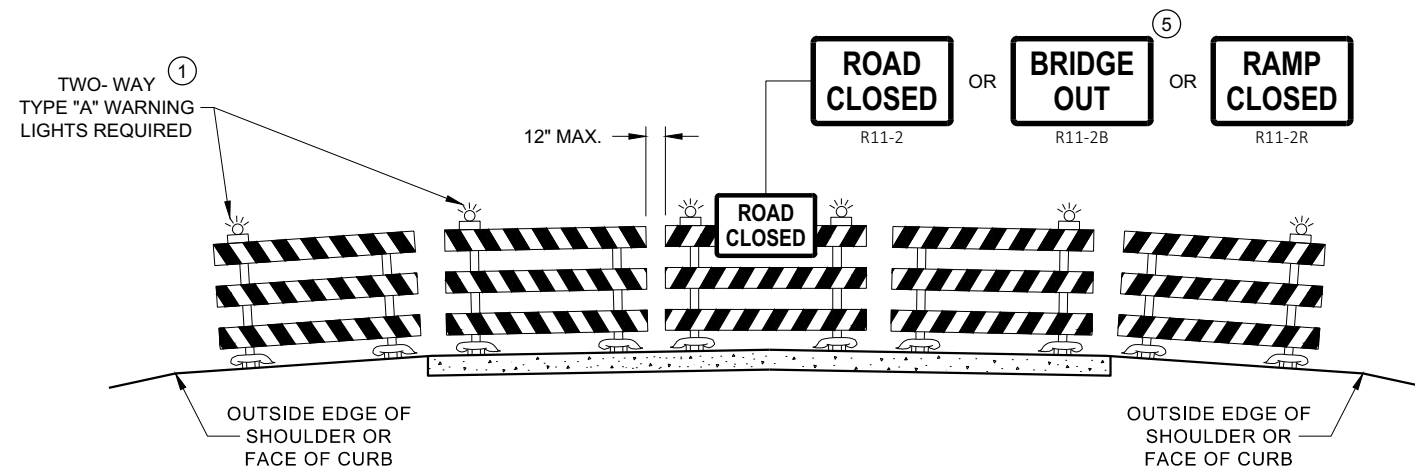
**DETAIL C  
MAINLINE CLOSURE, NO POSTED DETOUR**

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

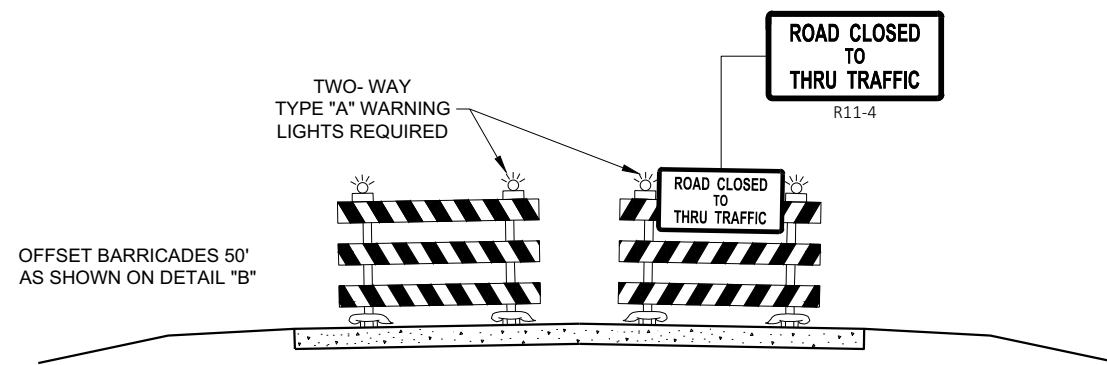
**BARRICADES AND SIGNS  
FOR MAINLINE CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



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



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

SEE SDD 15C2 - SHEET "a" FOR LEGEND

**GENERAL NOTES**

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

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

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

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

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

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

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

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

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

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

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

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

**BARRICADES AND SIGNS  
FOR  
VARIOUS CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



**LEGEND**

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- M4 - 8
- M3 - X
- M1 - 4
- M1 - 6
- M1 - 5A
- M05 - 1
- M06 - 1
- M06 - 1

**GENERAL NOTES**

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

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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

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

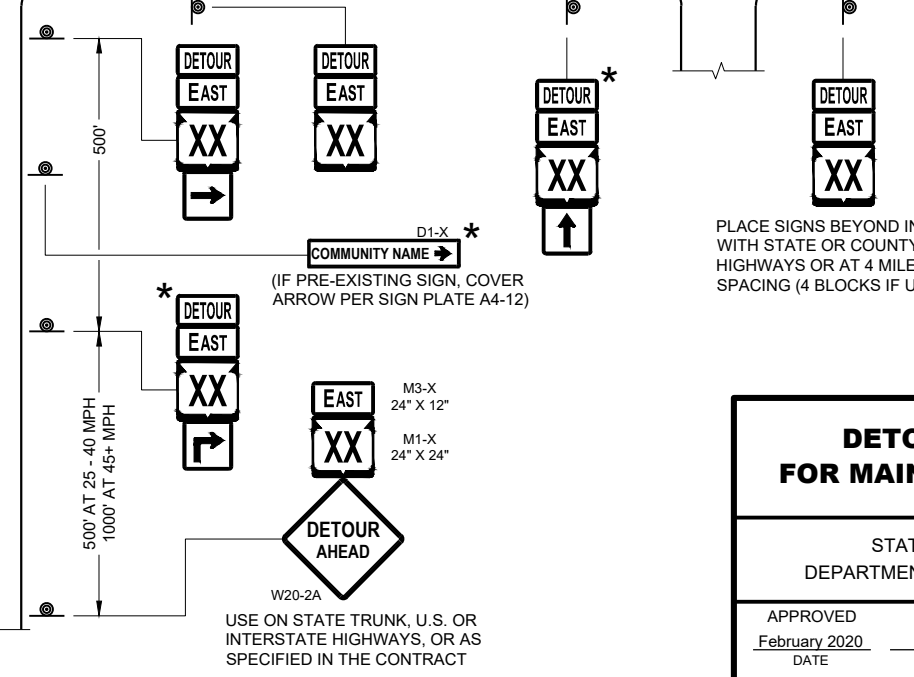
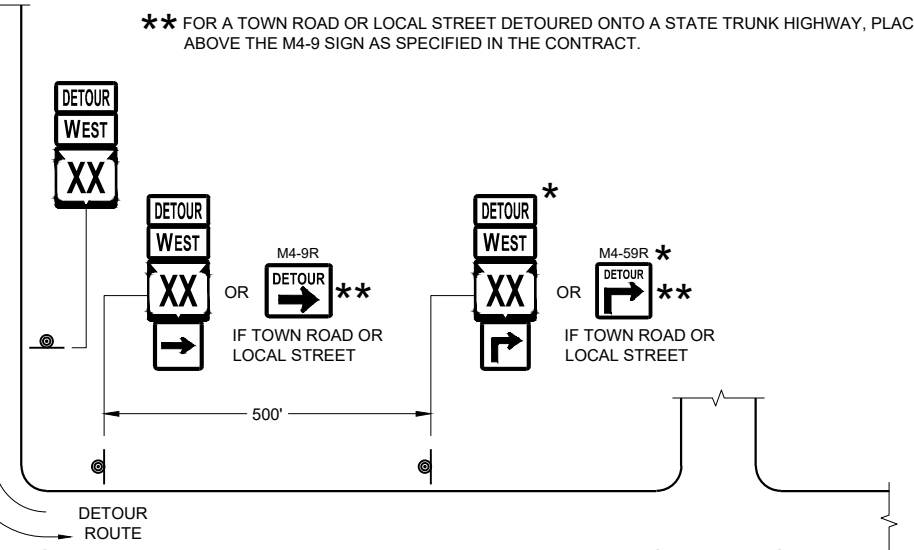
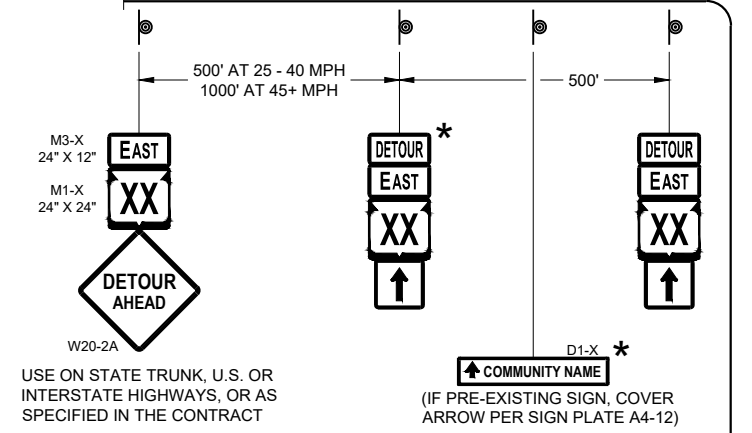
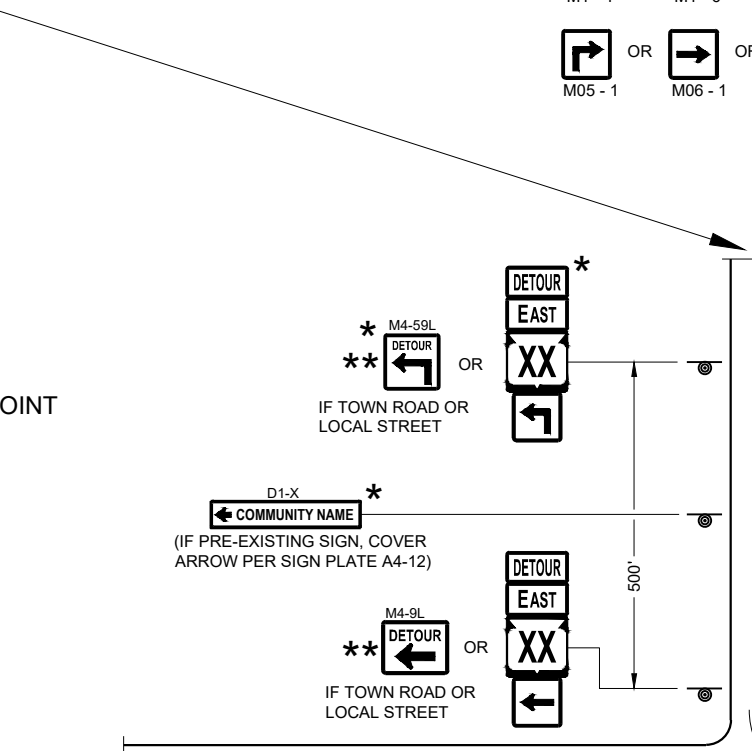
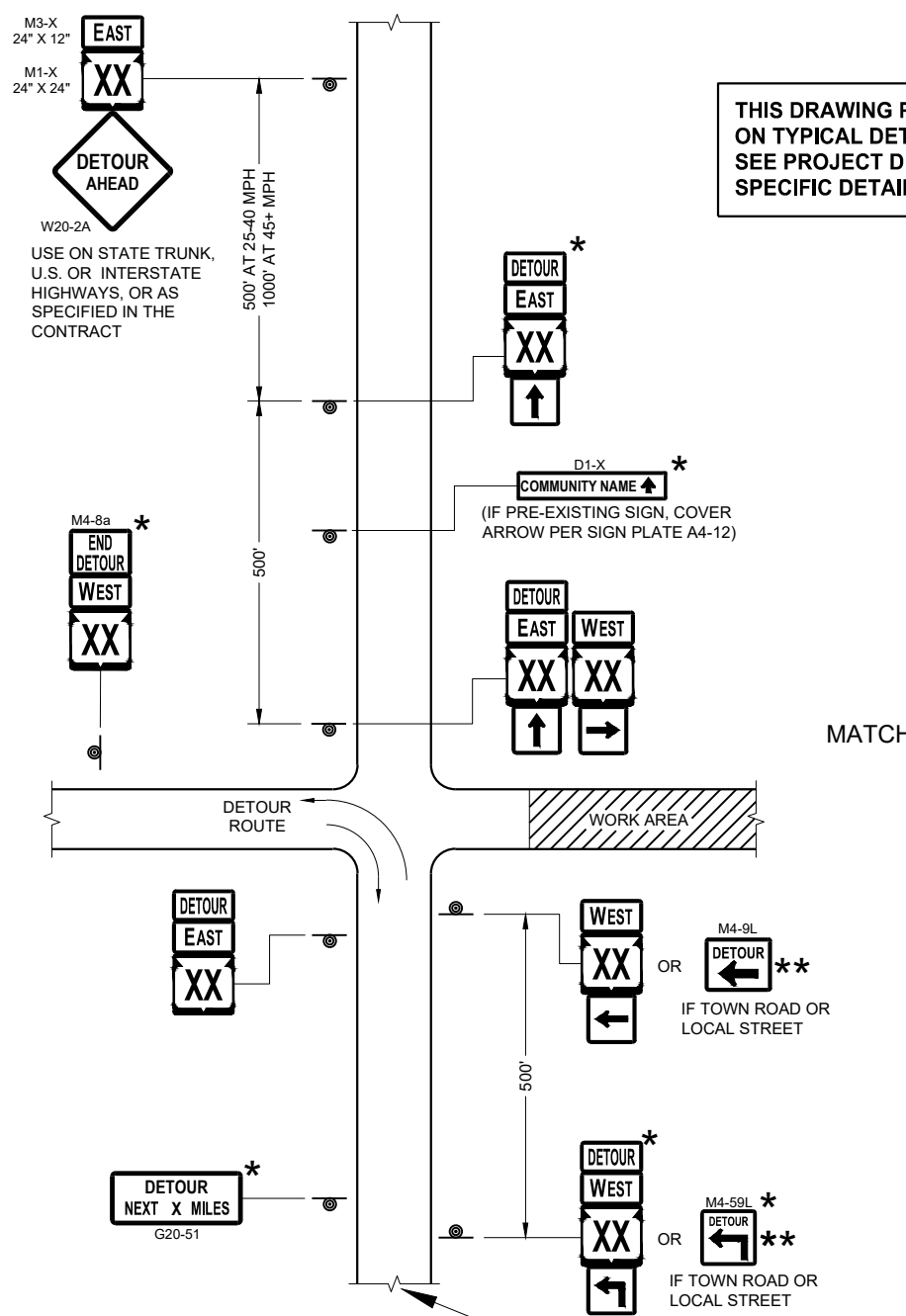
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-9 AND M4-59 SHALL BE 30" X 24"
- M4-8a SHALL BE 24" X 18"
- G20-51 SHALL BE 60" X 24"
- W20-2A SHALL BE 48" X 48"
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

- \* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.
- \*\* FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.

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

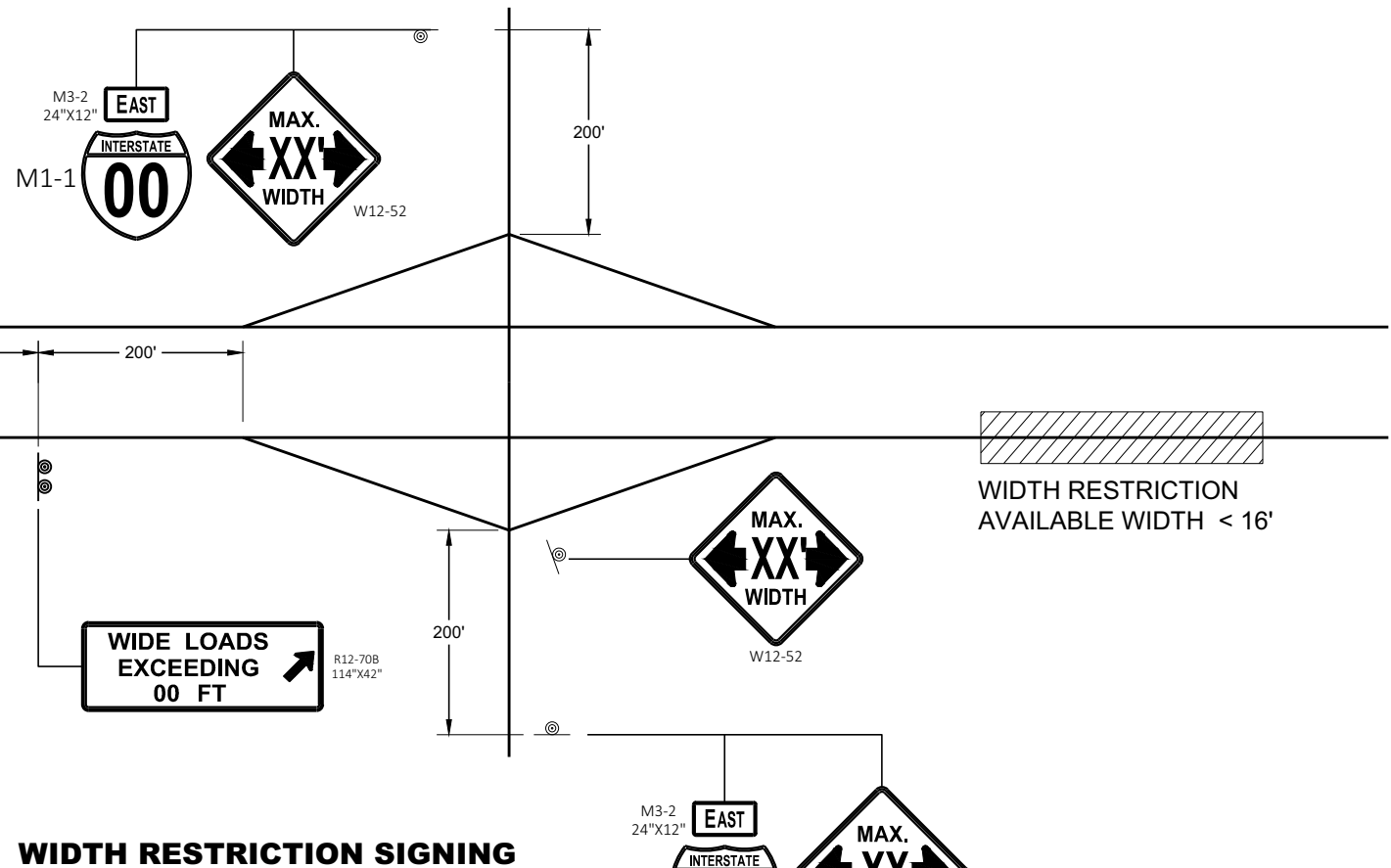


PLACE SIGNS BEYOND INTERSECTIONS WITH STATE OR COUNTY TRUNK HIGHWAYS OR AT 4 MILE MAXIMUM SPACING (4 BLOCKS IF URBAN AREA)

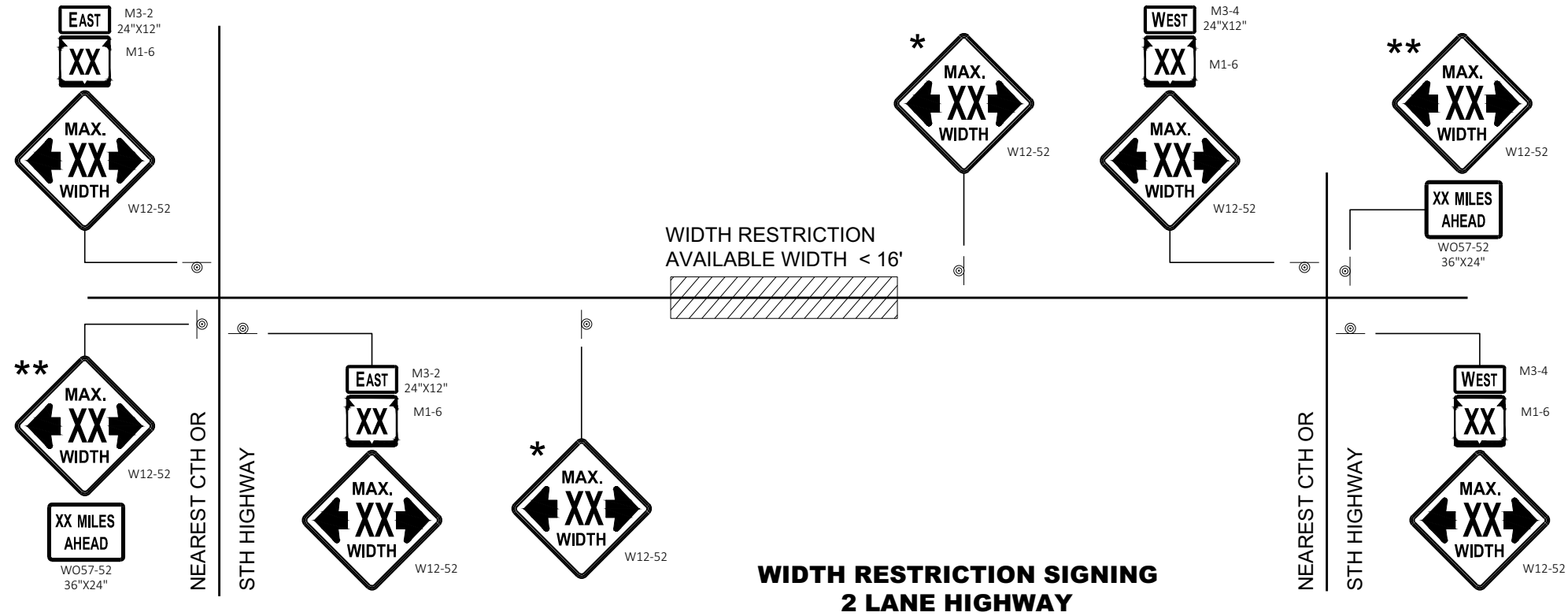
**DETAIL F  
DETOUR SIGNING**

SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS AND DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

| <b>DETOUR SIGNING FOR MAINLINE CLOSURES</b>        |  |
|--|--|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |  |
| APPROVED<br>February 2020<br>DATE                  | /S/ Andrew Heidtke<br>WORK ZONE ENGINEER |
| FHWA   |  |



**WIDTH RESTRICTION SIGNING**



**WIDTH RESTRICTION SIGNING  
2 LANE HIGHWAY**

**LEGEND**

⊙ SIGN ON PERMANENT SUPPORT

**GENERAL NOTES**

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

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

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

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

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

WIDTH ON SIGN TO BE APPROXIMATELY ONE FOOT LESS THAN AVAILABLE WIDTH.

\* PLACE 500 FEET AFTER THE W20 - 1A AND 500 FEET BEFORE ADDITIONAL SIGNS FOR ROADWAYS WITH A PRE - CONSTRUCTION SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200 FOOT TYPICAL SPACING.

\*\* SIGN SHALL BE VISIBLE FROM ROADWAY.

\*\*\* ADDITIONAL SIGNS NEEDED IF THERE IS AN ON RAMP BETWEEN SIGNS.

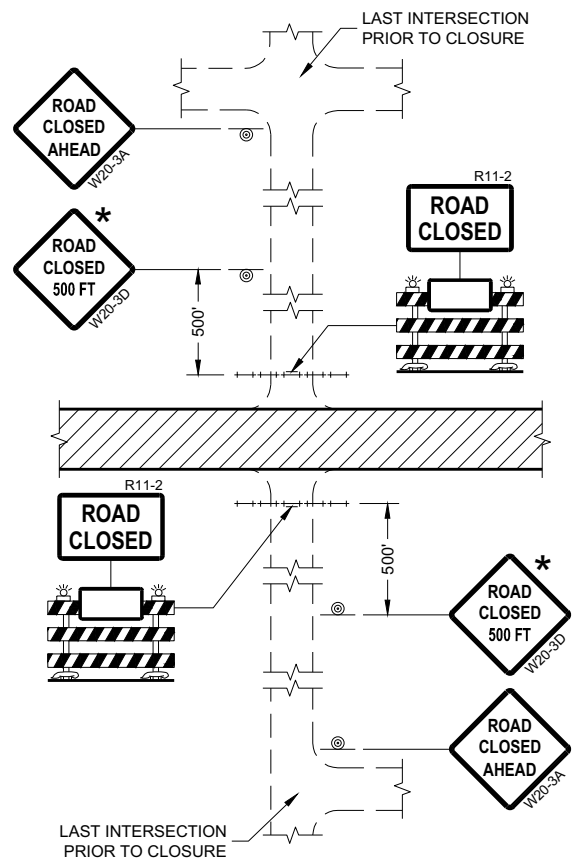


WIDTH ON SIGN TO BE APPROX. 1 - FOOT LESS THAN AVAILABLE WIDTH

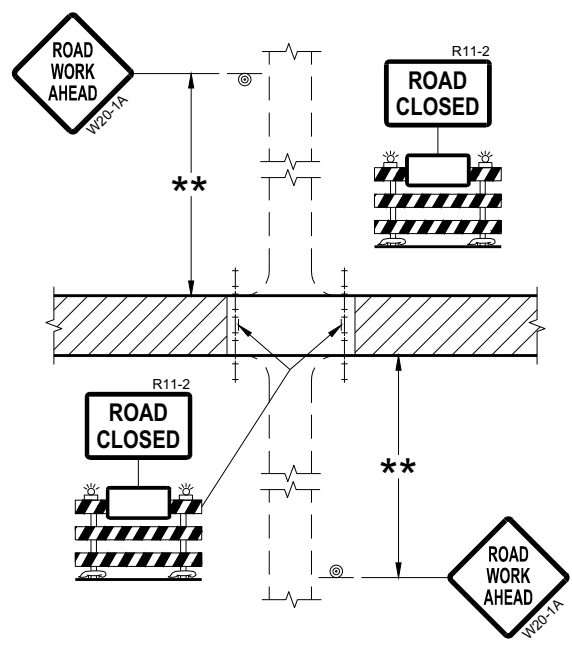
**ADVANCED WIDTH RESTRICTION SIGNING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

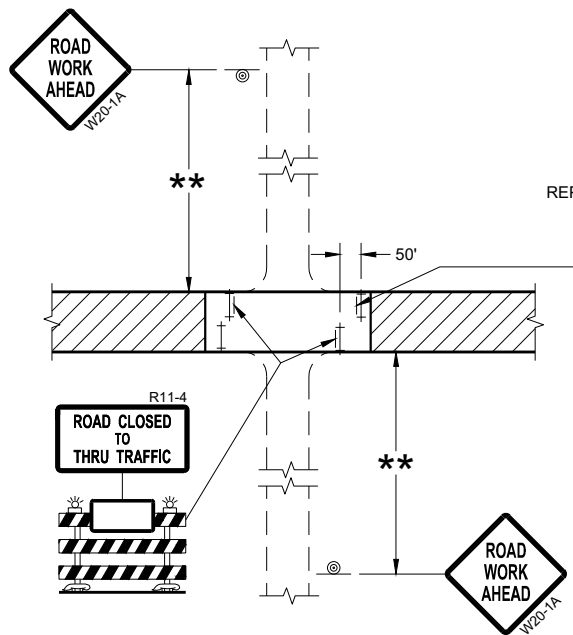
APPROVED  
February 2020 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER  
FHWA



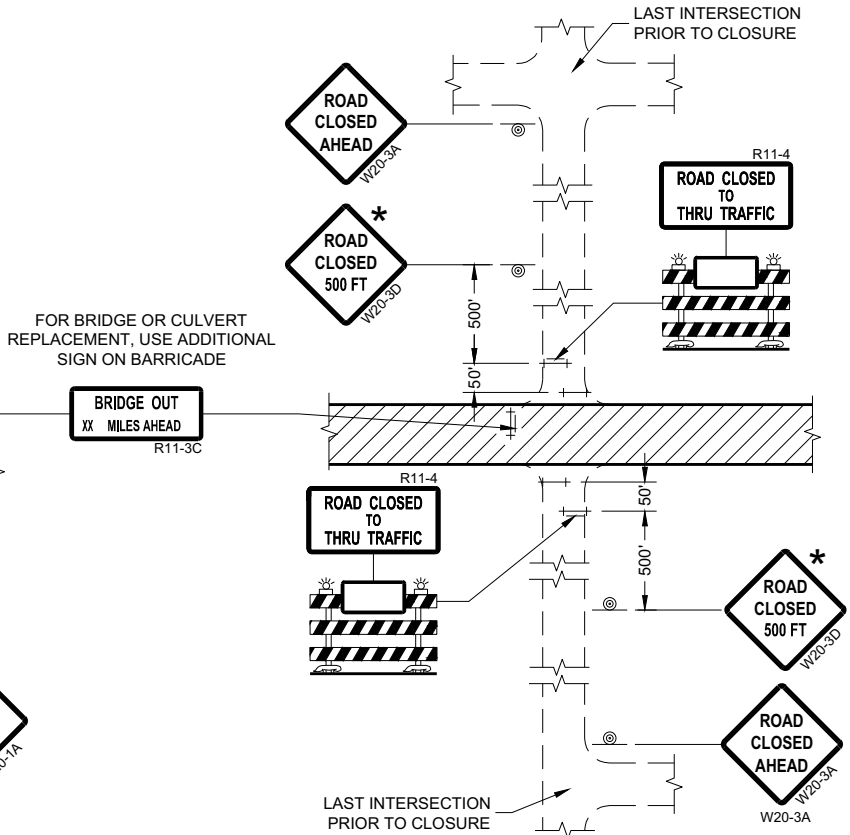
**DETAIL 1**  
(NO ACCESS TO PROJECT)



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



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



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

**GENERAL NOTES**

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

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

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

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

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

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

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

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

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

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

- \* OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FEET OR LESS FROM THE WORK ZONE.
- \*\* 500' MAX. OR AT LAST INTERSECTION, WHICHEVER IS CLOSEST.

**LEGEND**

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

**BARRICADES AND SIGNS  
FOR  
SIDEROAD CLOSURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

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.

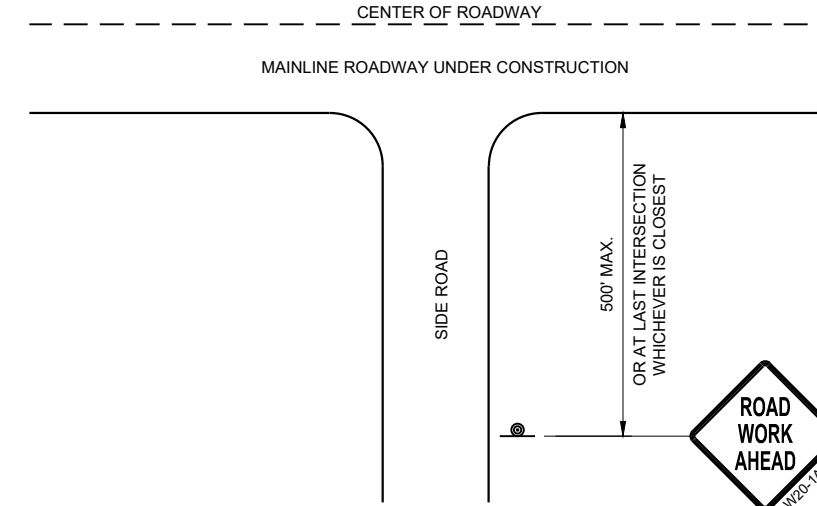
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

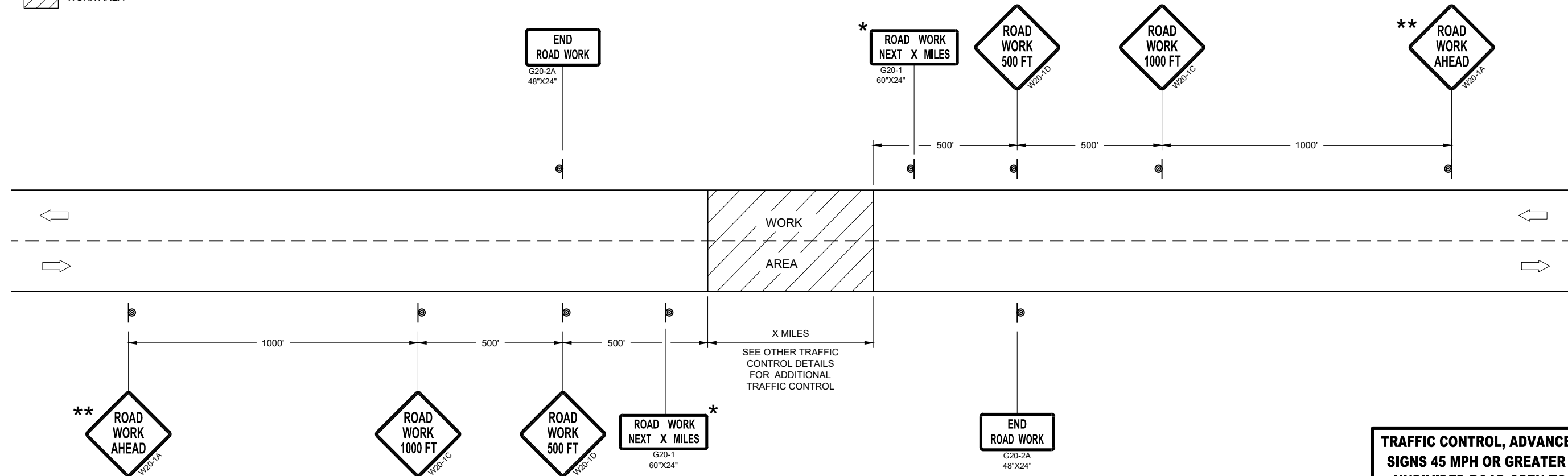
- \* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- \*\* PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

**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 \_\_\_\_\_ /S/ Andrew Heidtke  
DATE July 2018 WORK ZONE ENGINEER




FHWA

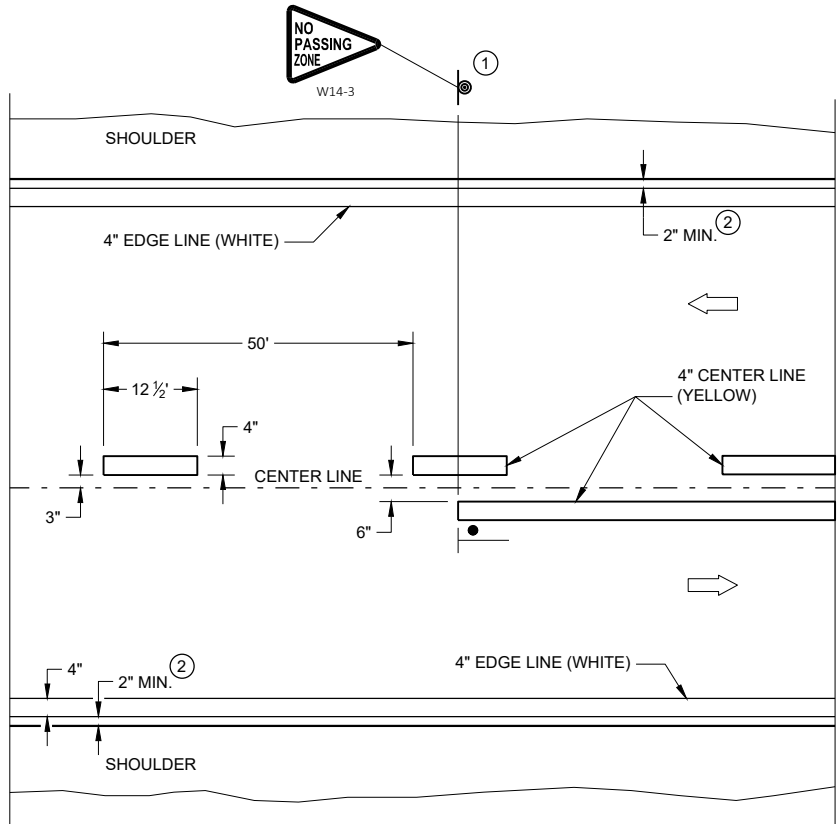
**GENERAL NOTES**

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

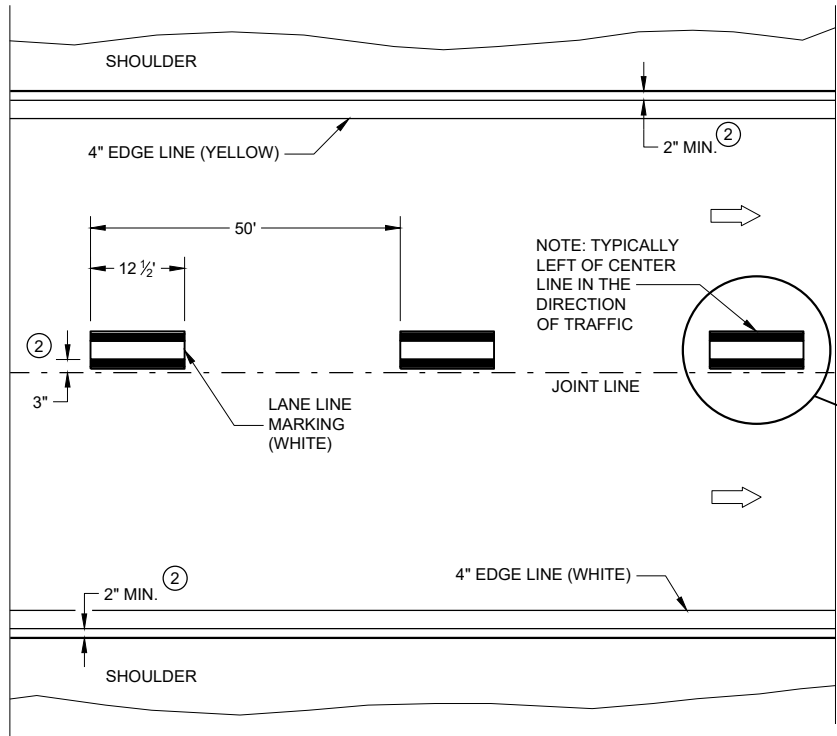
- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

**LEGEND**

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

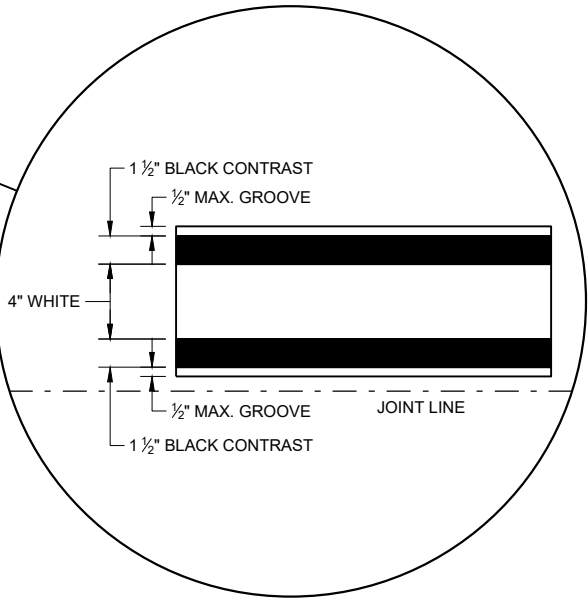


**TWO WAY TRAFFIC**



**ONE WAY TRAFFIC**

**PERMANENT PAVEMENT MARKING**



6

6

SDD 15C08 - 21a

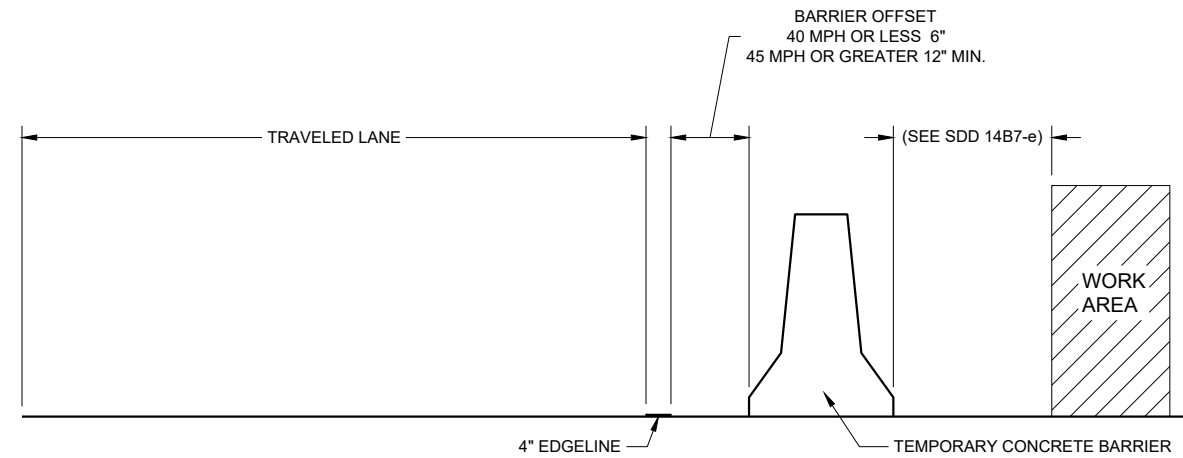
SDD 15C08 - 21a

**PERMANENT LONGITUDINAL PAVEMENT MARKINGS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE: May 2022 /S/ Jeannie Silver  
STATEWIDE SIGNING AND MARKING ENGINEER

FHWA



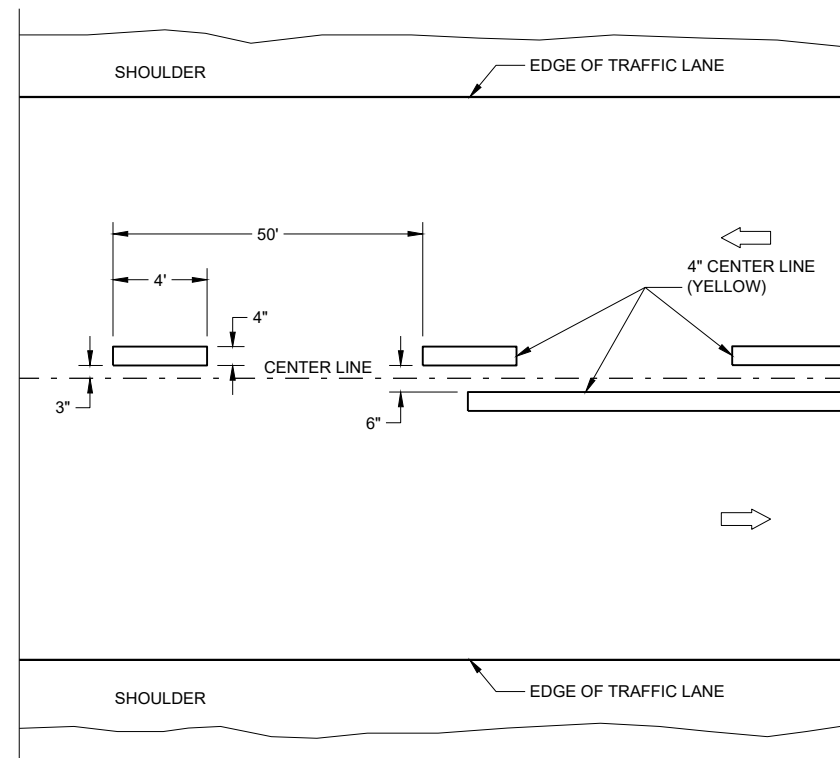
**TEMPORARY BARRIER OFFSET FROM EDGELINE**

**GENERAL NOTES**

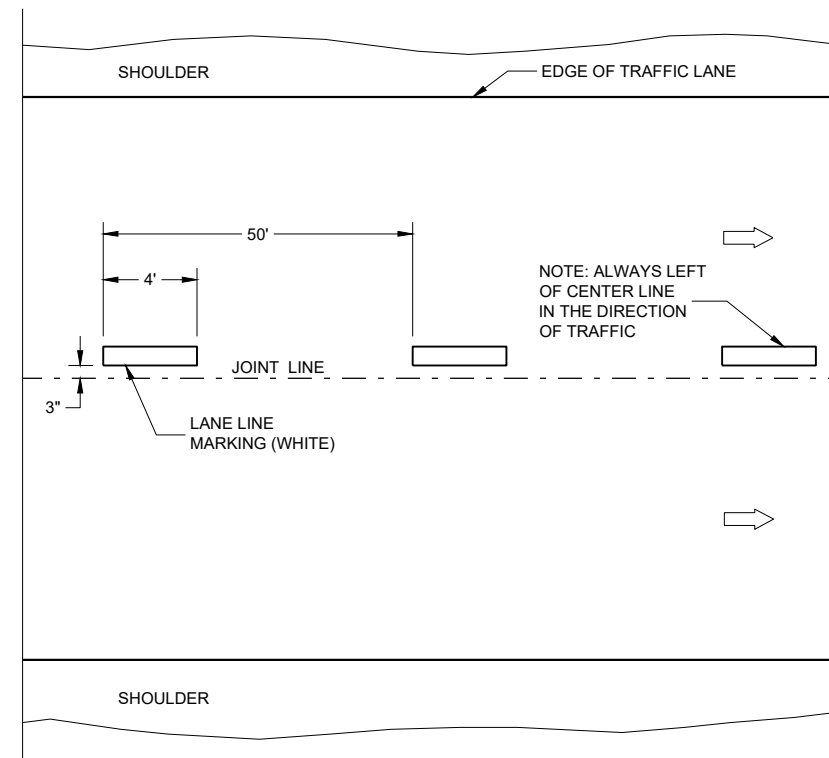
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

**LEGEND**

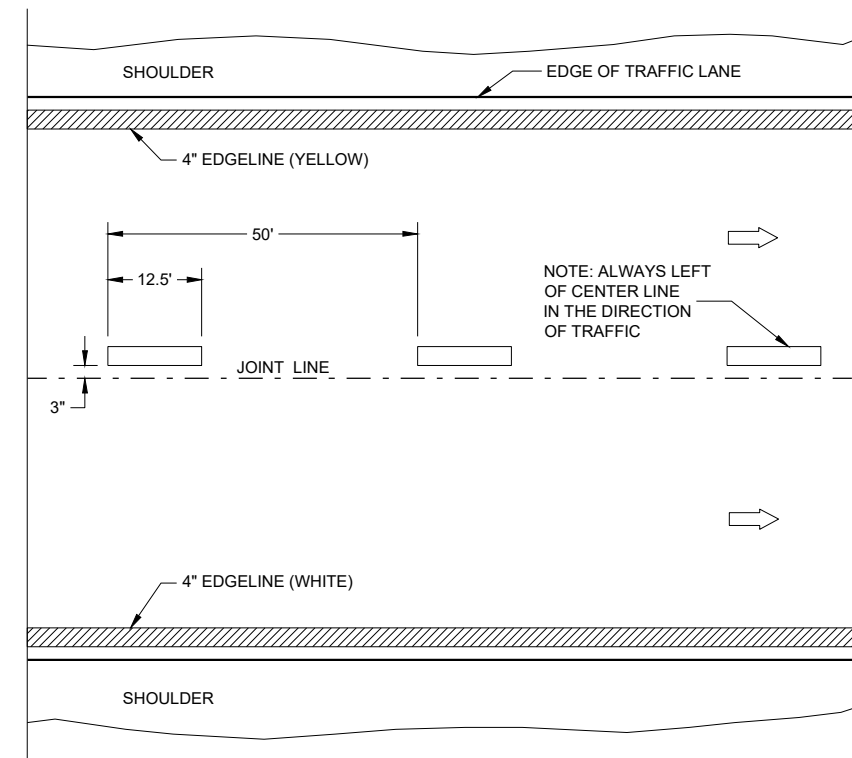
➡ DIRECTION OF TRAFFIC



**TWO WAY TRAFFIC**



**ONE WAY TRAFFIC**



**FREEWAYS AND EXPRESSWAYS**

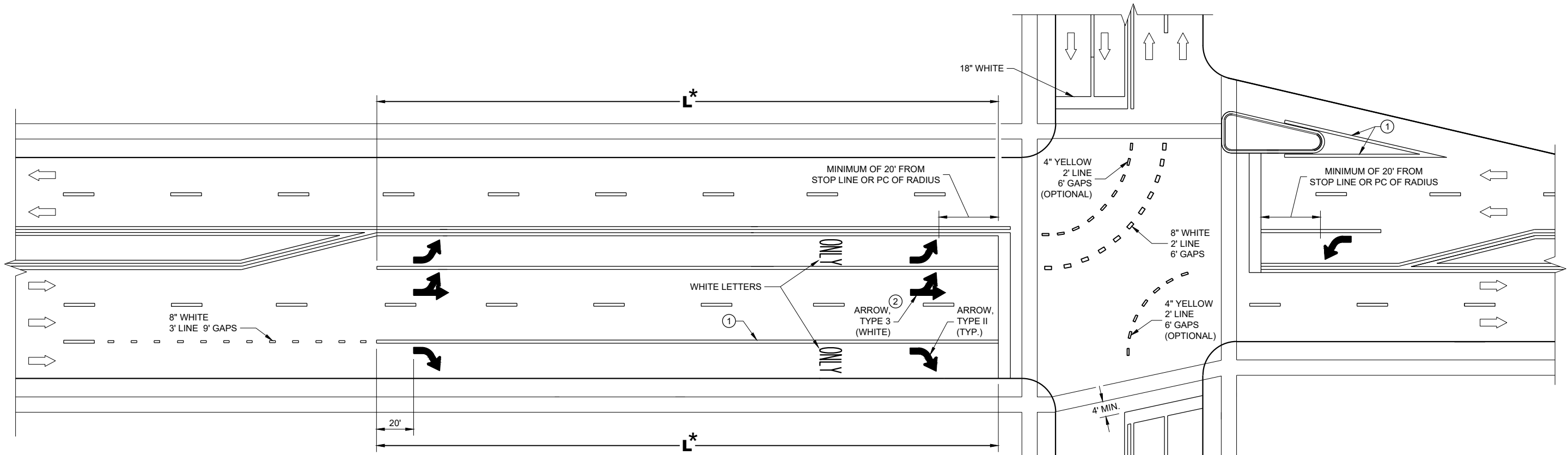
**TEMPORARY PAVEMENT MARKING**

**TEMPORARY LONGITUDINAL PAVEMENT MARKING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2022 DATE /S/ Jeannie Silver  
STATEWIDE SIGNING AND MARKING ENGINEER

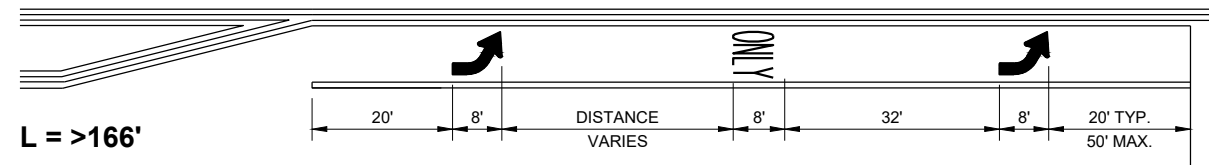
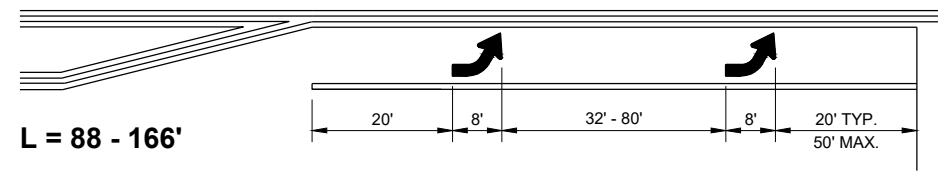
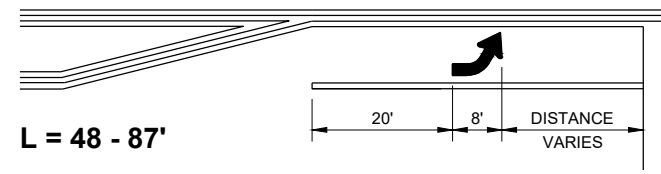
FHWA



\*(SEE TURN LANE OPTIONS FOR PLACEMENT OF PAVEMENT MARKING ARROWS AND WORDS)

**TURN LANE OPTIONS**

LENGTH OF TURN BAY ( L ) OF 0 - 47' DOES NOT REQUIRE PAVEMENT MARKING ARROWS OR WORDS



**GENERAL NOTES**

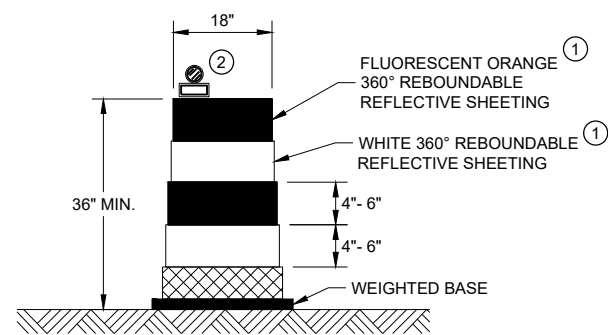
- ① 8" WHITE
- ② QUANTITY AND LOCATION OF TYPE 3 ARROWS ARE THE SAME AS THE TYPE II ARROWS IN THE ADJACENT TURN LANE. FOR TURN LANES WITH A PHYSICAL SEPARATION IN THE SAME DIRECTION OF TRAVEL, THE ARROWS AND "ONLY" MARKING MAY BE ELIMINATED.

➡ DIRECTION OF TRAFFIC

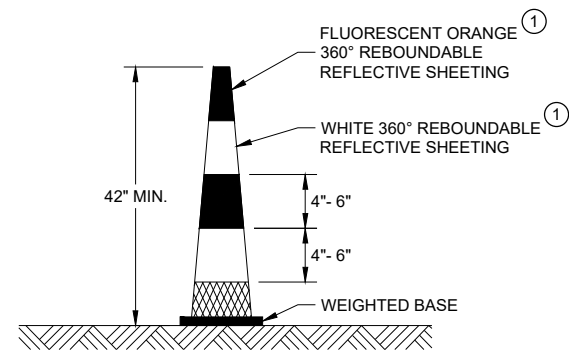
**L** = LENGTH OF TURN BAY

**PAVEMENT MARKING (TURN LANES)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

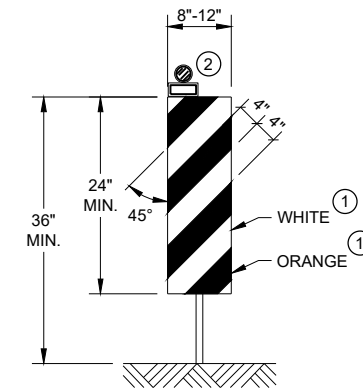


**DRUM**



**42" CONE**

DO NOT USE IN TAPERS  
 1/2 SPACING OF DRUMS

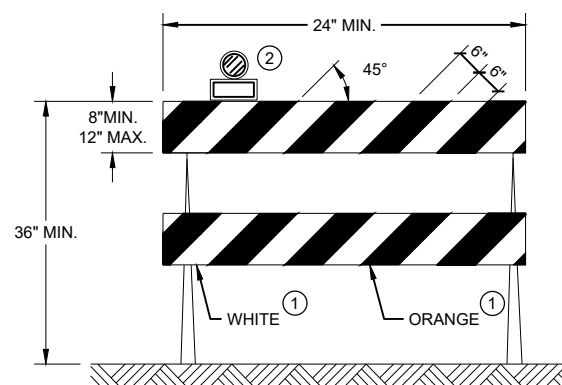


**VERTICAL PANEL**

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

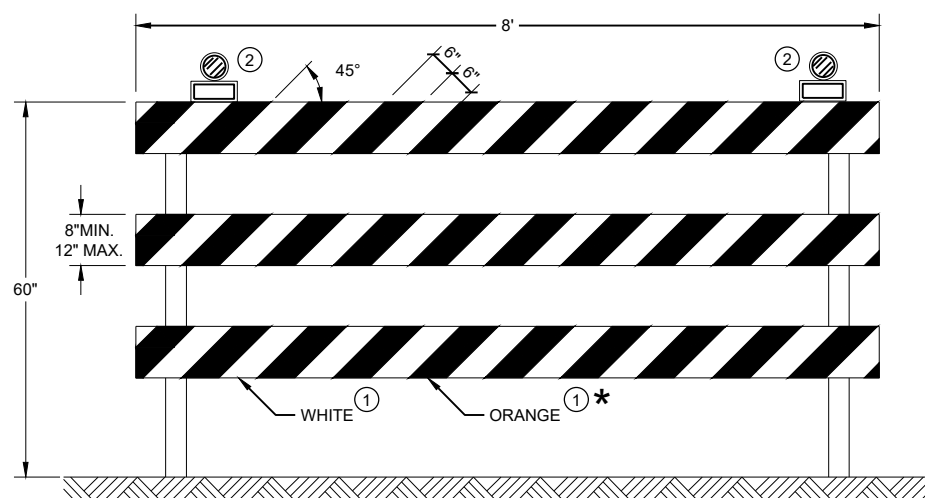
**GENERAL NOTES**

- 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.

|  |  |
|--|--|
| <b>CHANNELIZING DEVICES<br/>DRUMS, CONES, BARRICADES<br/>AND VERTICAL PANELS</b> |  |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION                               |  |
| APPROVED<br>May 2021<br>DATE   | /S/ Andrew Heidtke<br>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.

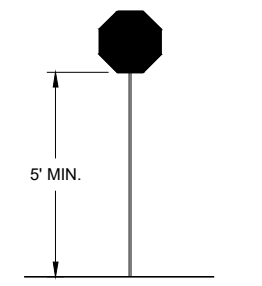
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSE ACROSS THE LANE AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.



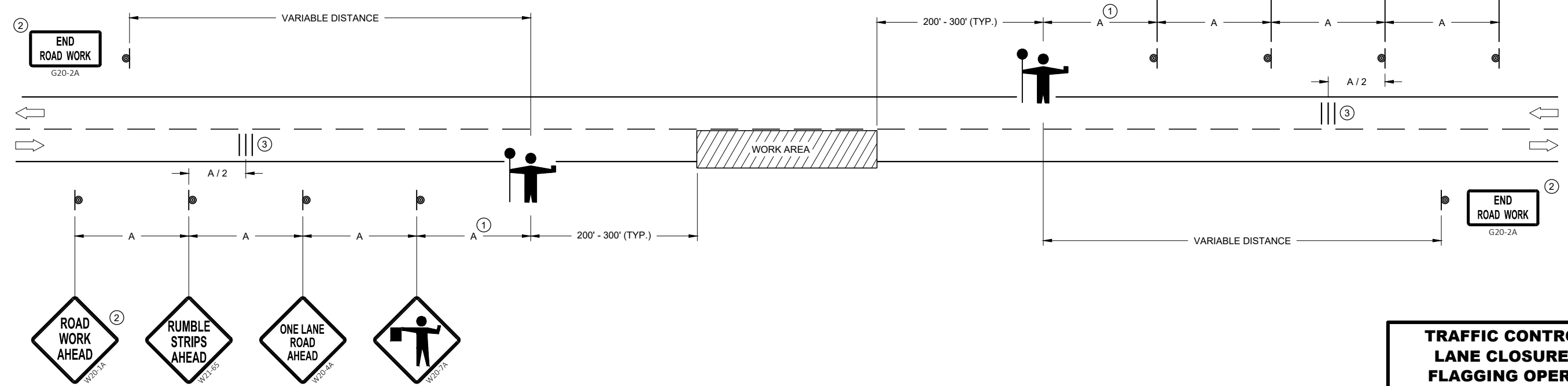
**STOP/SLOW PADDLE ON SUPPORT STAFF**

**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**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2021 /S/ Andrew Heidtke  
DATE 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.

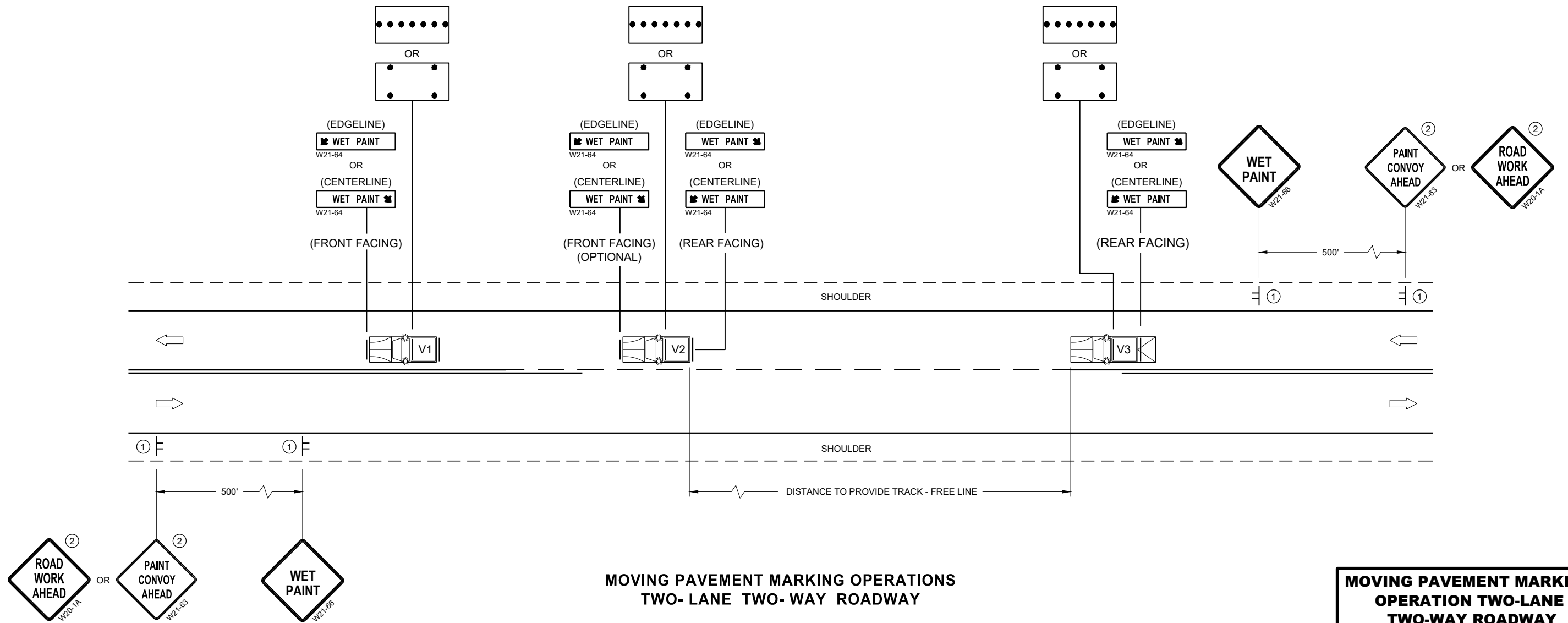
CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLE AT 100 FOOT SPACING. CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

CONES SHALL BE A MINIMUM OF 28" 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.

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

SDD 15C19 - 06a

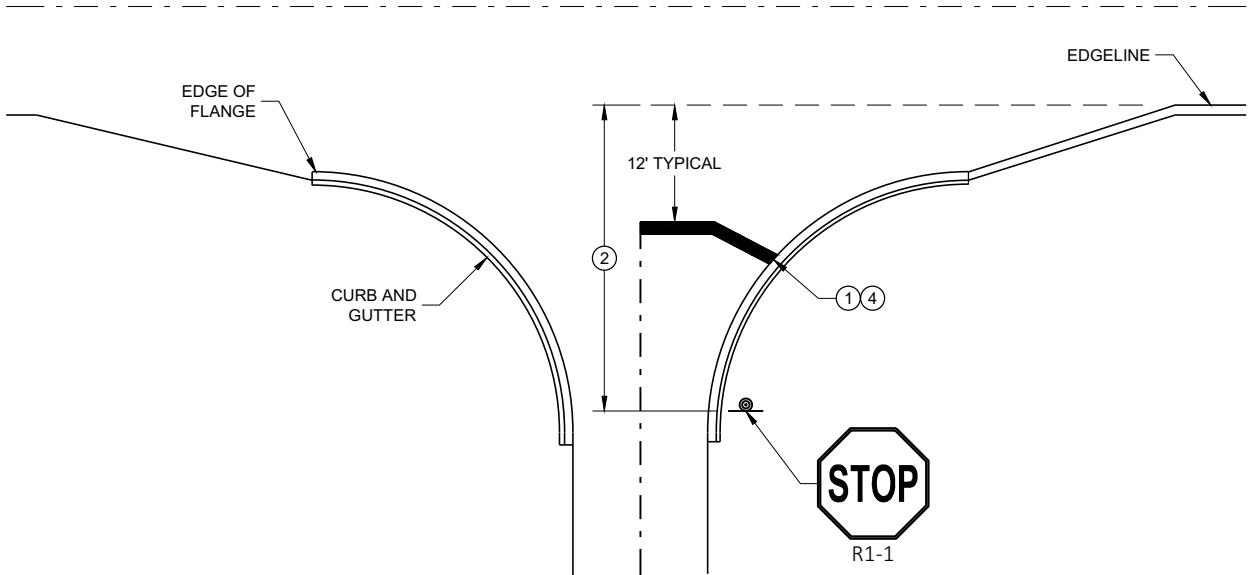
SDD 15C19 - 06a

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

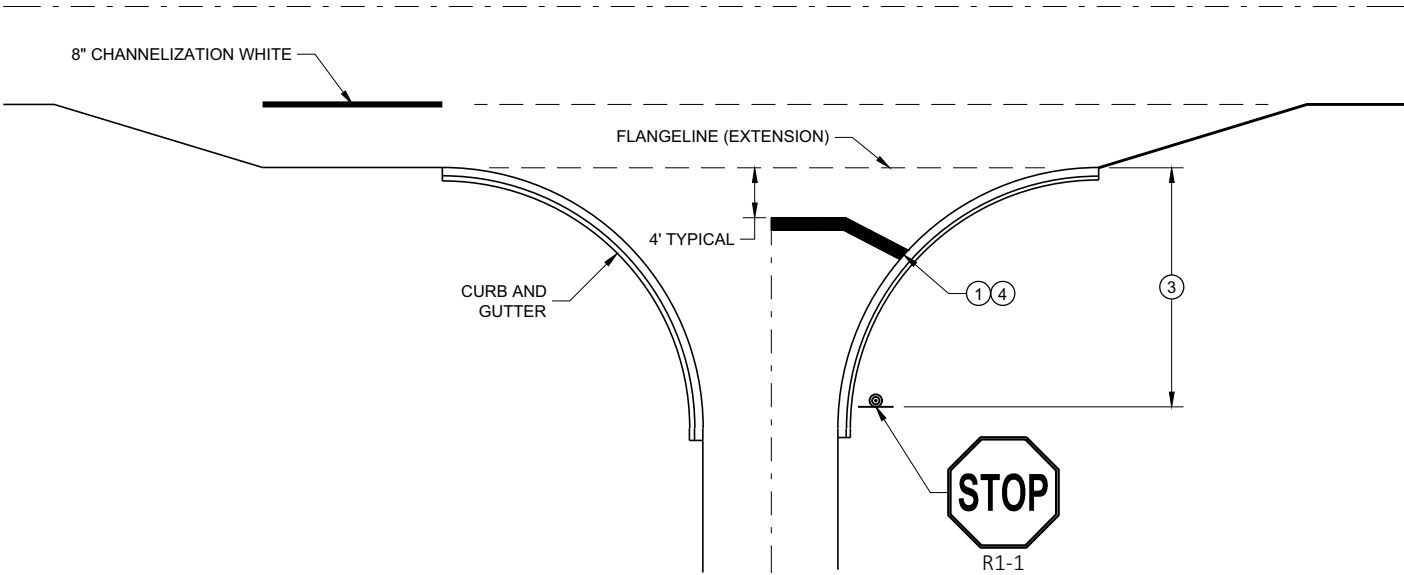
**GENERAL NOTES**

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

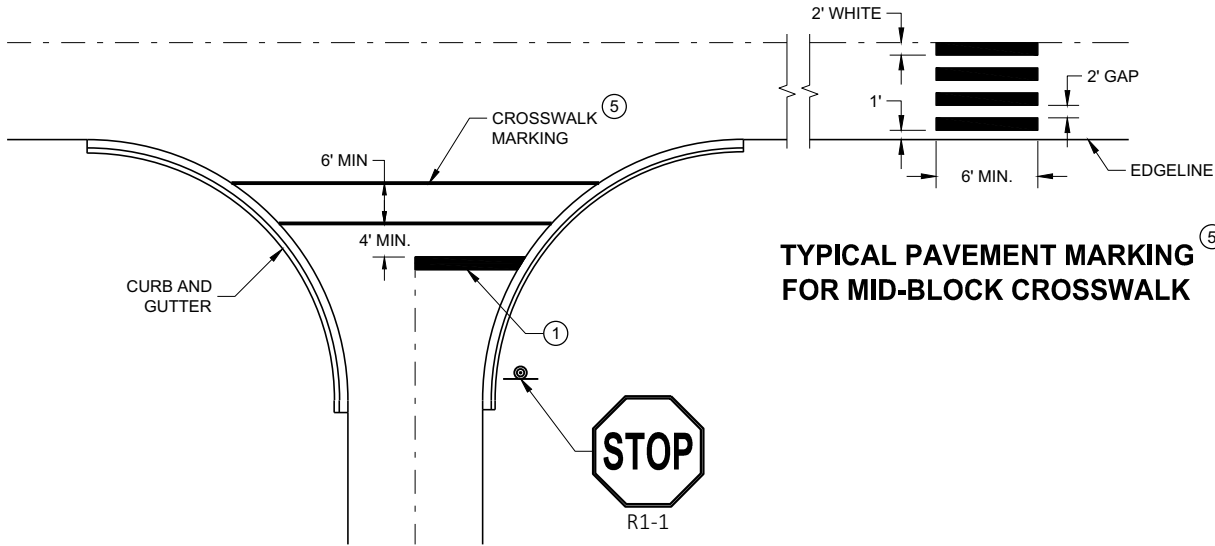
- ① 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE REGION MARKING ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- ② NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGELINE.
- ③ NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE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

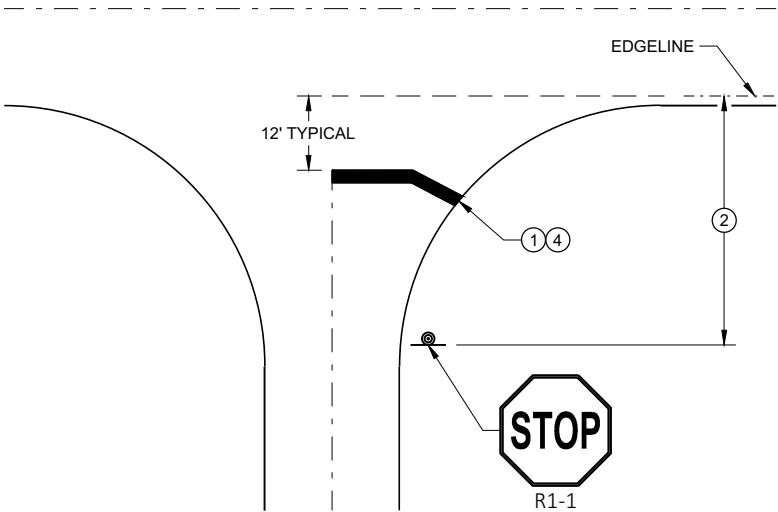


**TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH RIGHT TURN LANE**



**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

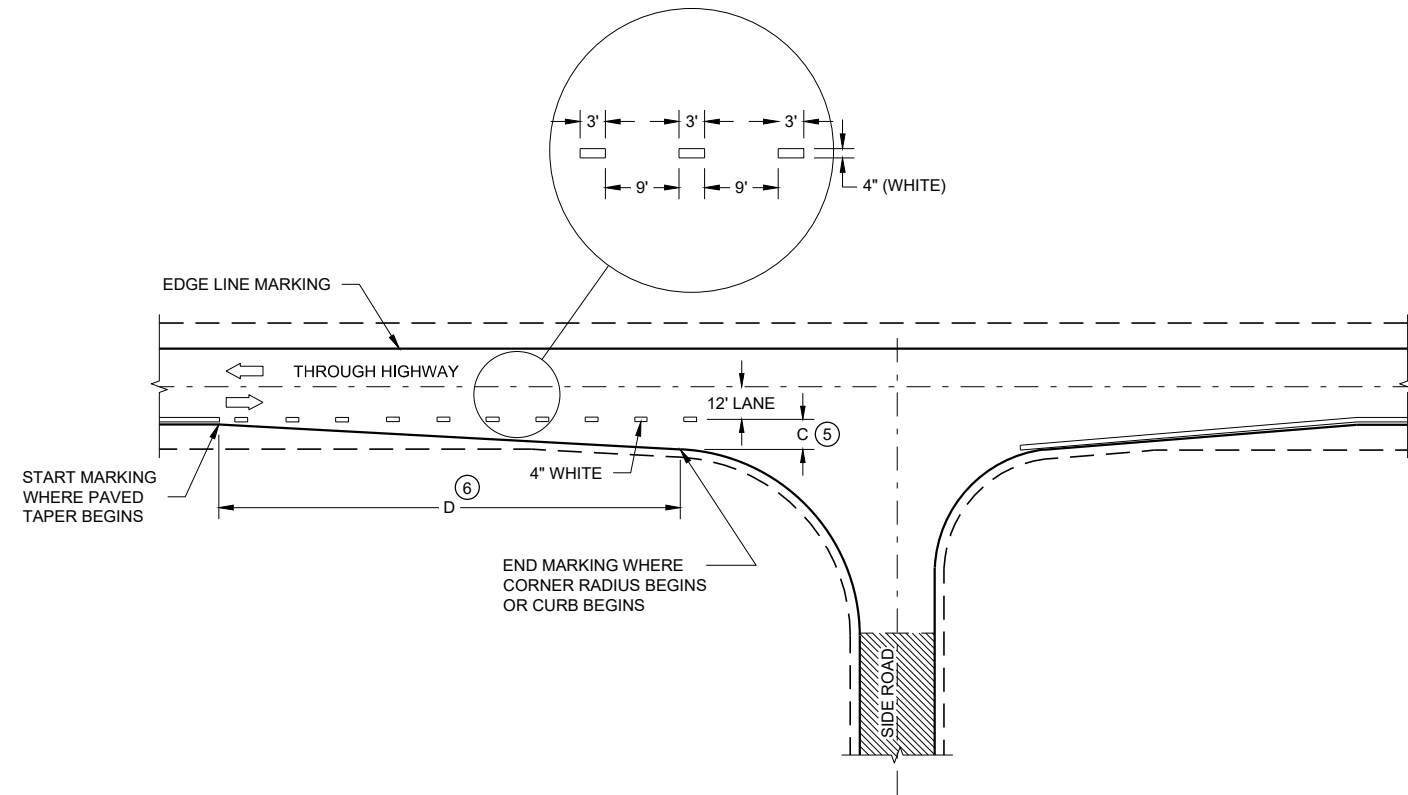
**GENERAL NOTES**

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

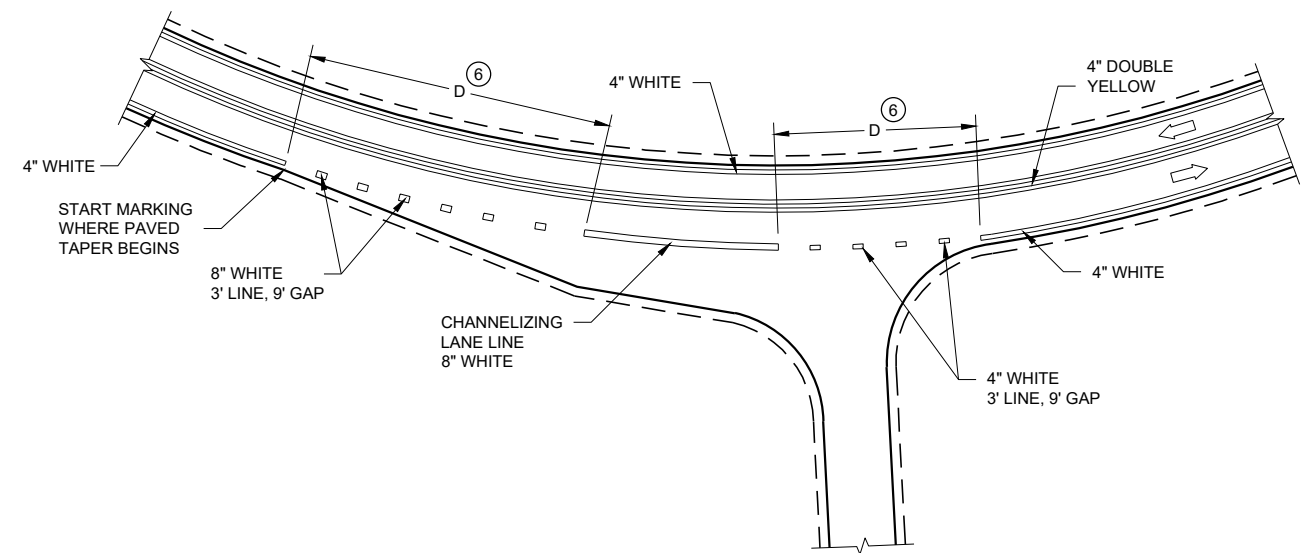
- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT / SURFACE EDGE EXTENSION.
- ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.
- ⑤ WHEN DISTANCE "C" IS LESS THAN 4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

**LEGEND**

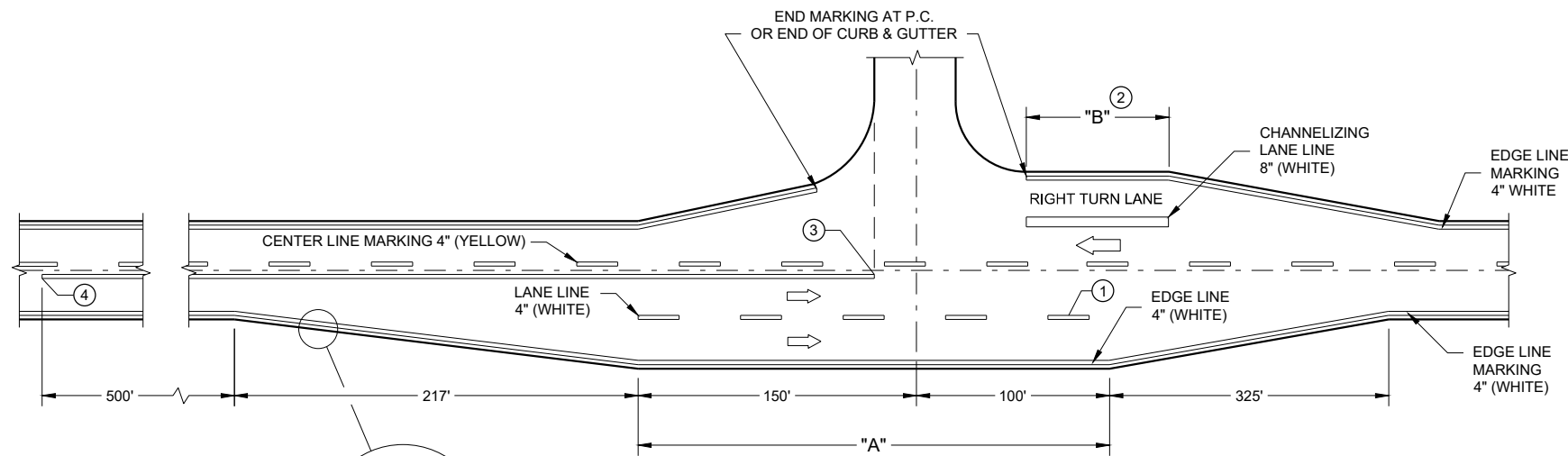
➔ DIRECTION OF TRAVEL



**MINOR INTERSECTION**

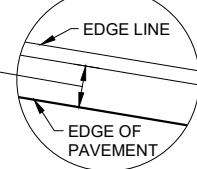


**INTERSECTION ON OUTSIDE OF CURVE**



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

BYPASS LANE PAVED SHOULDER WIDTH (AS SHOWN ELSEWHERE IN PLANS) - PLUS 2 INCHES



**PAVEMENT MARKING  
(INTERSECTIONS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

### GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT SHOULDER. FOR CLOSING THE LEFT SHOULDER, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR DIVIDED ROADWAYS WITH ANY NUMBER OF TRAVEL LANES.

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

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

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

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

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

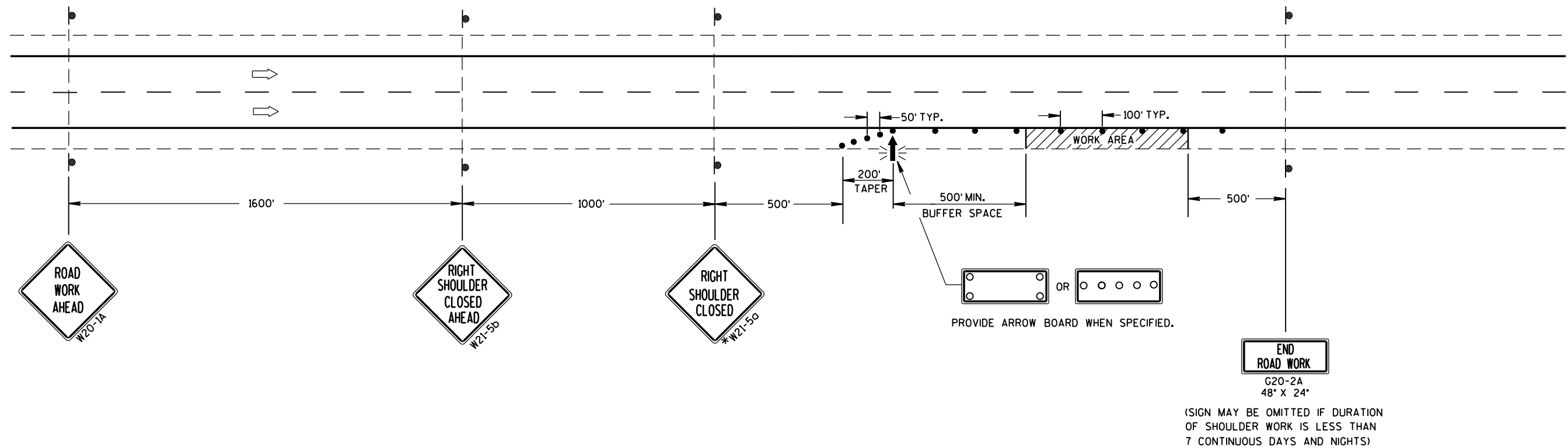
CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

WHEN A 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.

\*FOR SHORT DURATION SHOULDER WORK OF LESS THAN ONE HOUR, THE W21-50 SIGN MAY BE OMITTED.





### LEGEND

- TRAFFIC CONTROL DRUM
- ⊙ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ⚡ FLASHING ARROW BOARD
- ▨ WORK AREA



|  |   |
|--|---|
| <b>TRAFFIC CONTROL<br/>SHOULDER CLOSURE ON DIVIDED<br/>ROADWAY, SPEEDS GREATER<br/>THAN 40 MPH</b> |   |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION   |   |
| APPROVED<br>June 2016<br>DATE  | /s/ Peter Amakobe Atepe<br>STATEWIDE WORK ZONE TRAFFIC<br>SAFETY ENGINEER |
| FHWA   |   |

**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.

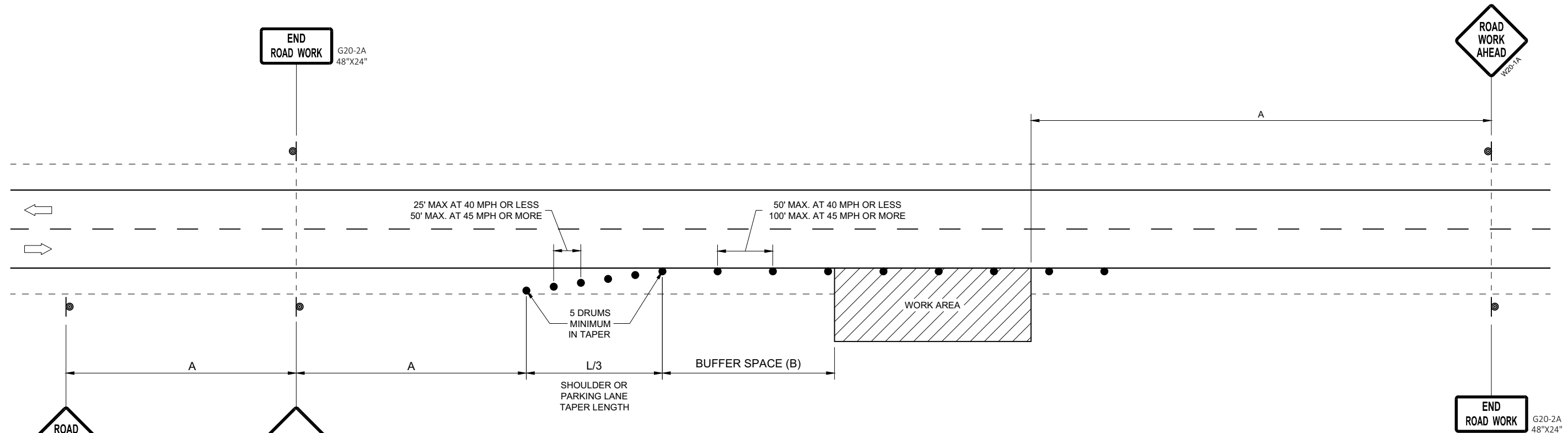
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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.

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OR  
IF TRAFFIC CONTROL DEVICES  
ENCROACH ONTO TRAVELED WAY, USE

| POSTED SPEED LIMIT<br>PRIOR TO WORK<br>STARTING (MPH) | ADVANCE<br>WARNING SIGN<br>SPACING (A) FEET | SHOULDER TAPER L / 3<br>W, LATERAL OFFSET (FT) |    |    |     |     |     | BUFFER<br>SPACE<br>(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'                        |

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

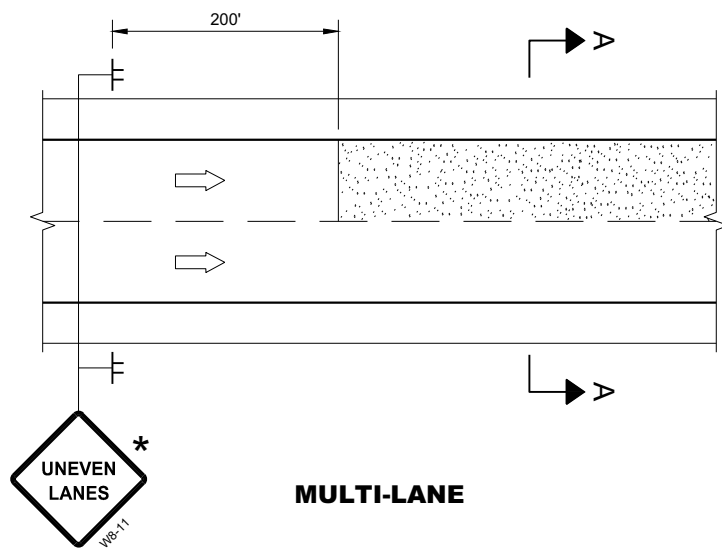
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

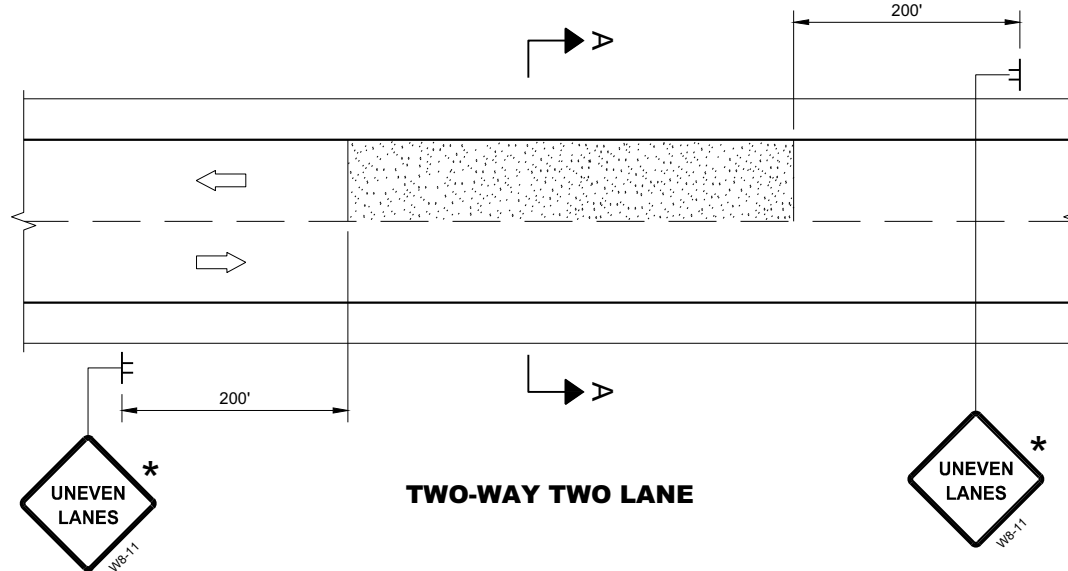
FHWA

SDD 15D28 - 04

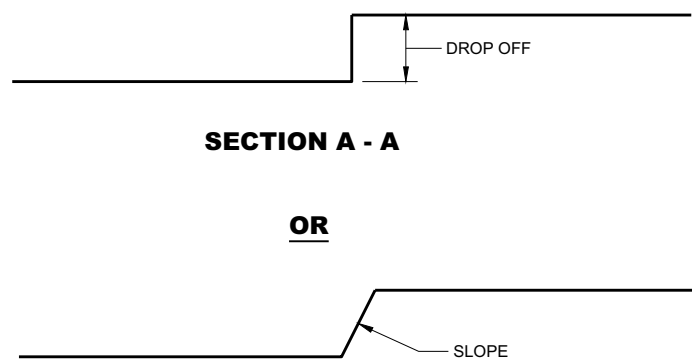
SDD 15D28 - 04



**MULTI-LANE**



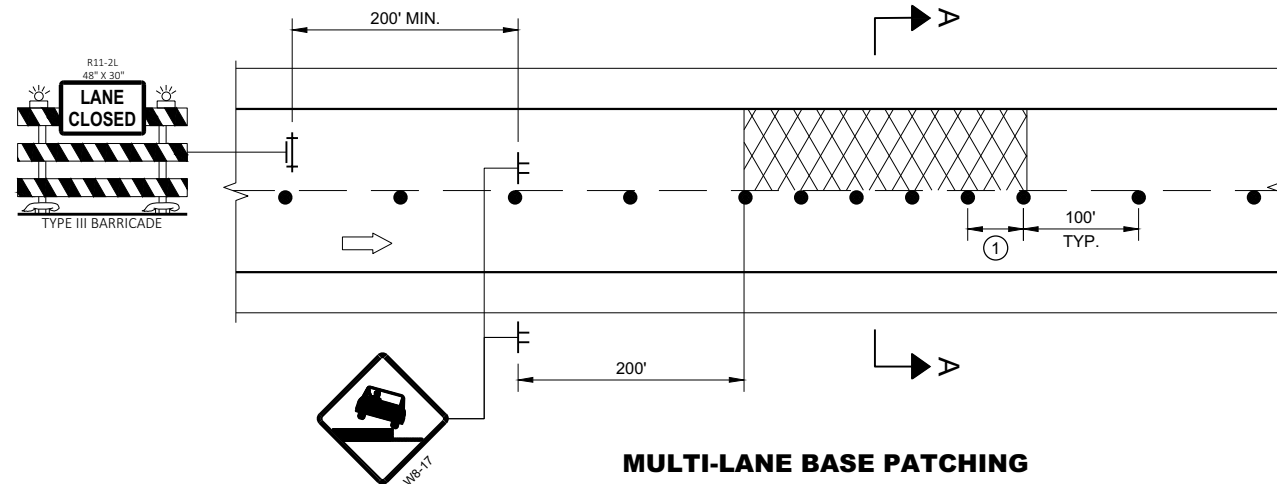
**TWO-WAY TWO LANE**



**SECTION A - A**

**OR**

**SECTION A - A**



**MULTI-LANE BASE PATCHING**

**ADJACENT LANE DROP-OFFS**

**GENERAL NOTES**

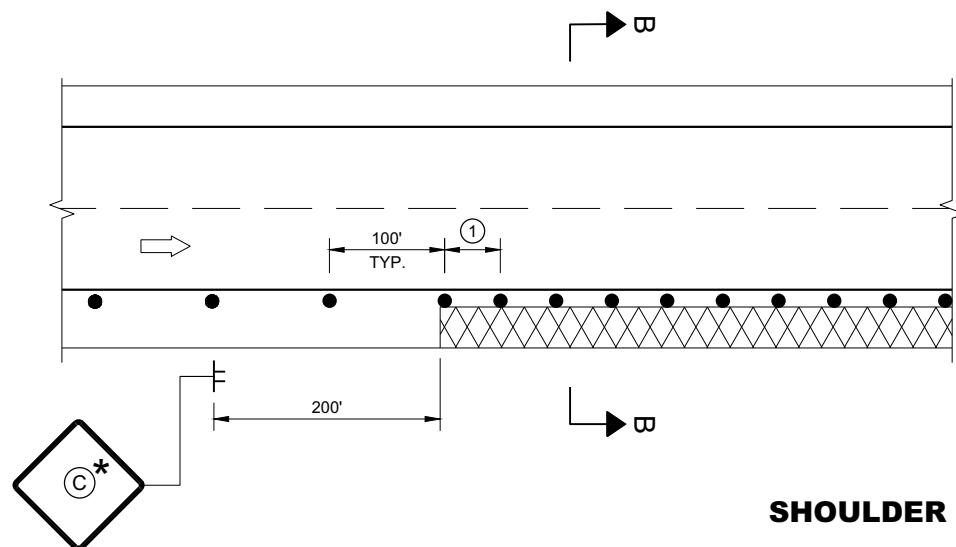
- FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.
- \* IF THE DROP-OFF 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**

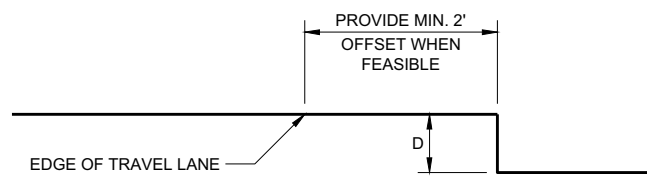
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE

6

6



**SHOULDER DROP-OFFS**



**SECTION B - B**

| D                                     | SIGN (C)  |
|---------------------------------------|---|
| < 2" WITH A SLOPE STEEPER THAN 3:1    | <br>LOW SHOULDER<br>WO8-9   |
| 2" < 6" WITH A SLOPE STEEPER THAN 3:1 | <br>SHOULDER DROP - OFF<br>W8-9A<br>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.

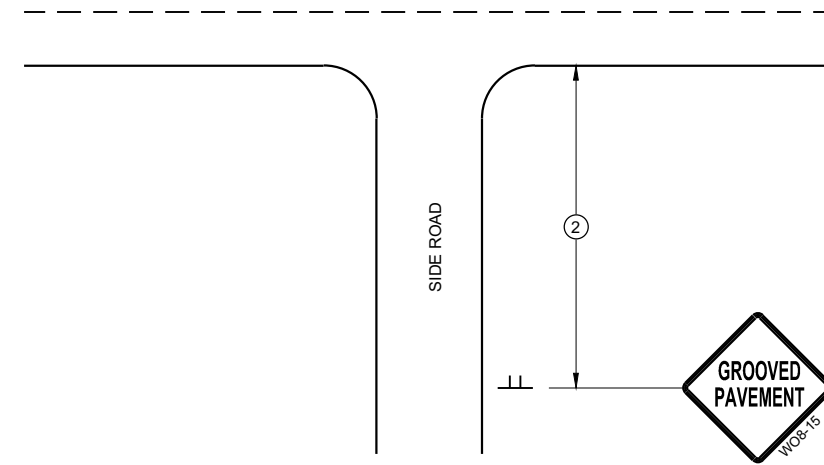
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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.

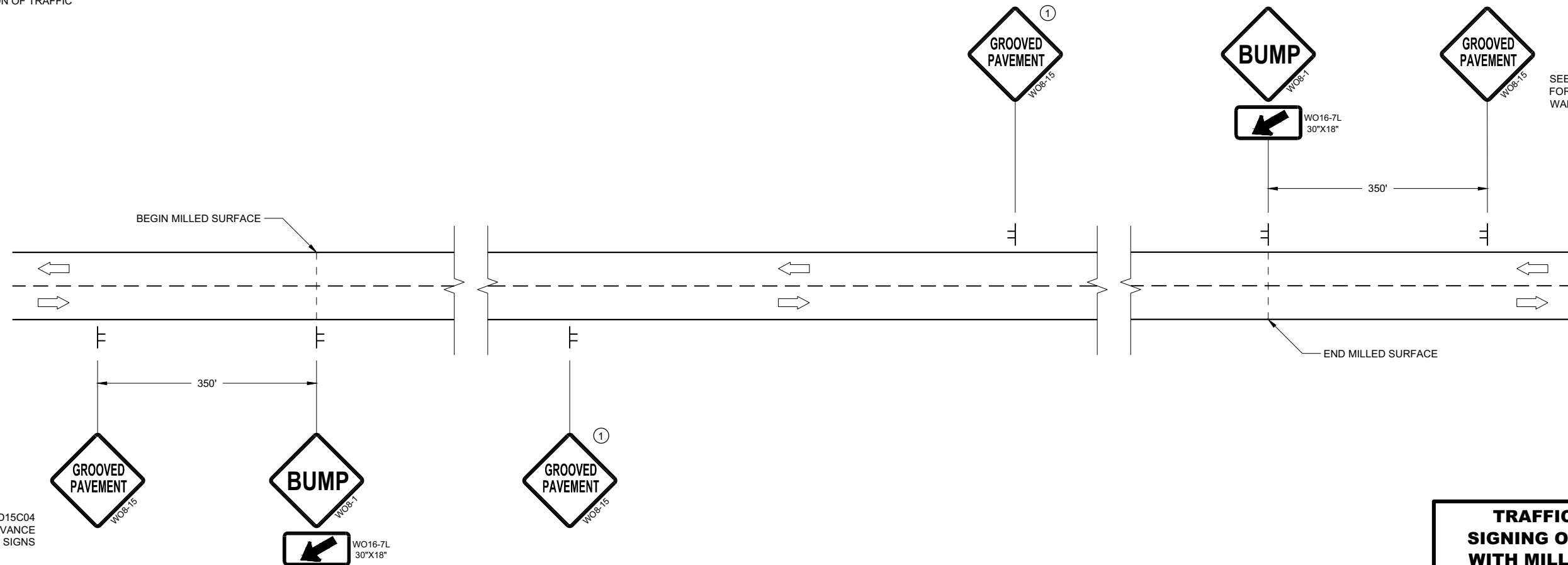
- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

**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



**GENERAL NOTES**

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

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

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

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

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

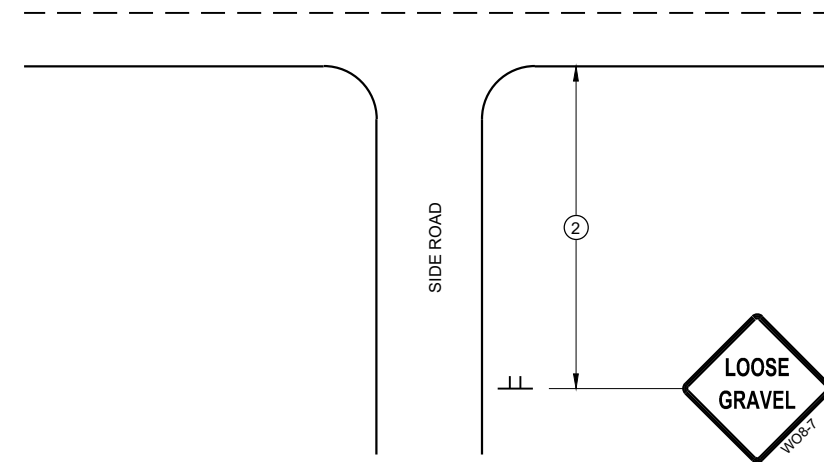
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

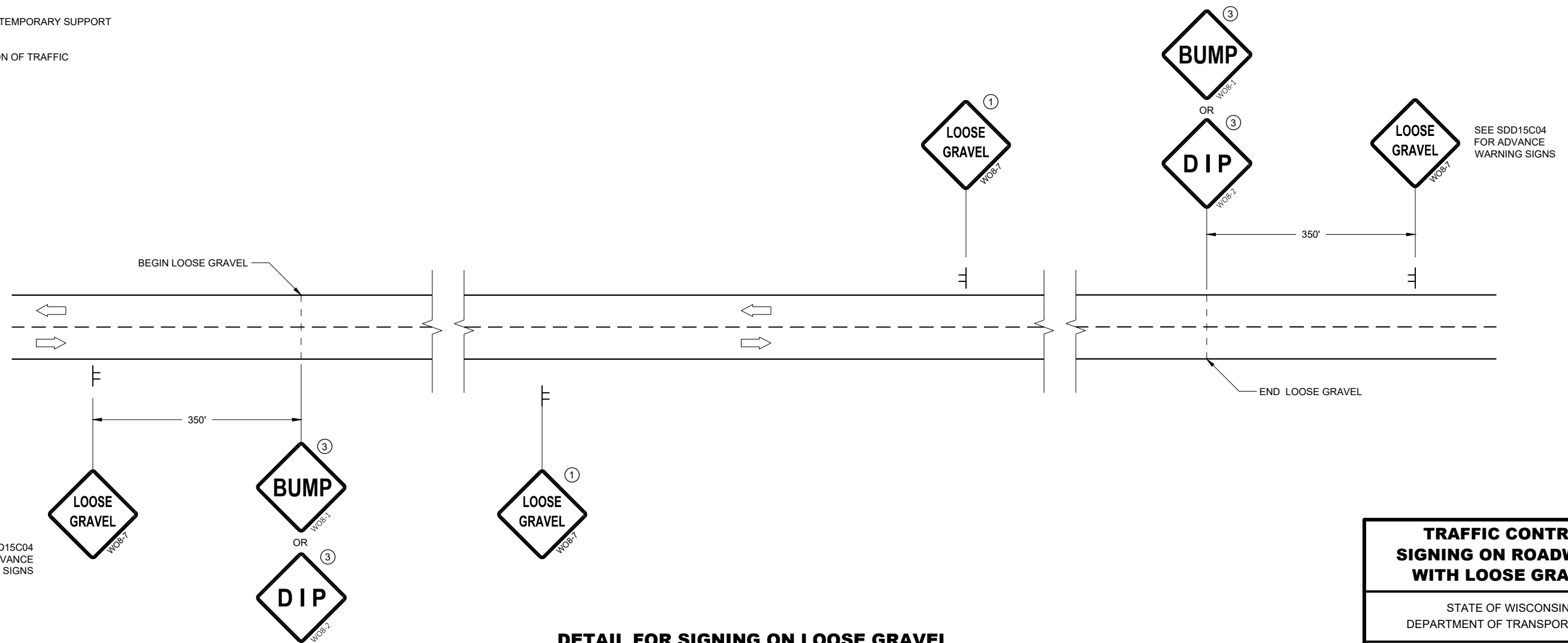
- ① PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED OR LOOSE GRAVEL SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.
- ③ ADD WO8-1 OR WO8-2 SIGN WHEN THE CONDITION IS PRESENT.

**LEGEND**

- ⊥ SIGN ON TEMPORARY SUPPORT
- ➡ DIRECTION OF TRAFFIC



**TYPICAL SIDE ROAD APPROACH SIGN DETAIL**



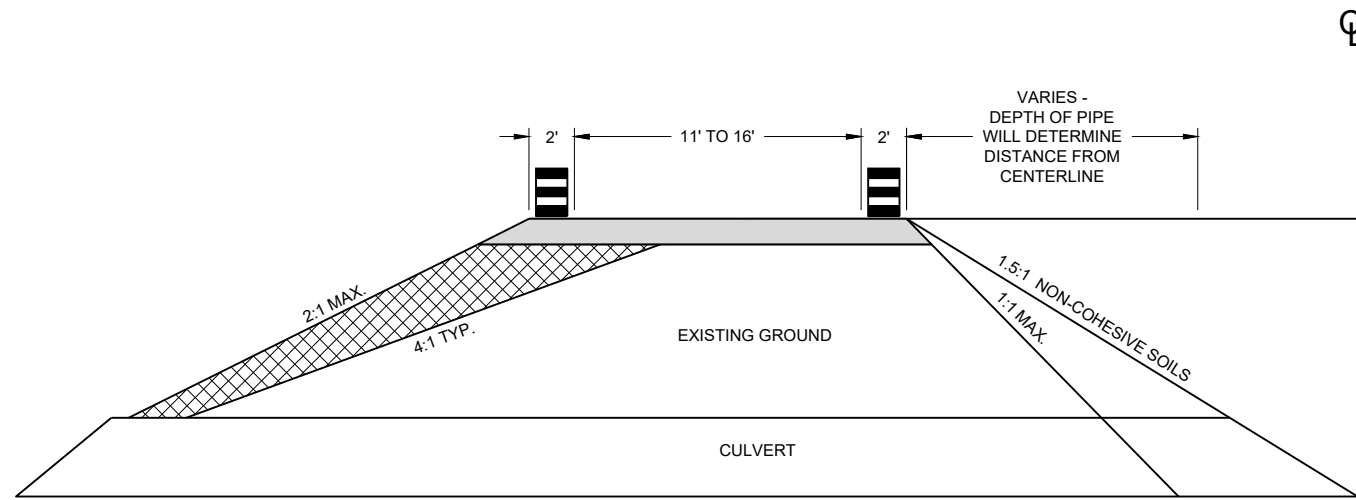
**DETAIL FOR SIGNING ON LOOSE GRAVEL OR CHIP SEALED SURFACES**

SEE SDD15C04 FOR ADVANCE WARNING SIGNS

**TRAFFIC CONTROL SIGNING ON ROADWAYS WITH LOOSE GRAVEL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



**CROSS SECTION**

**GENERAL NOTES**

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

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






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

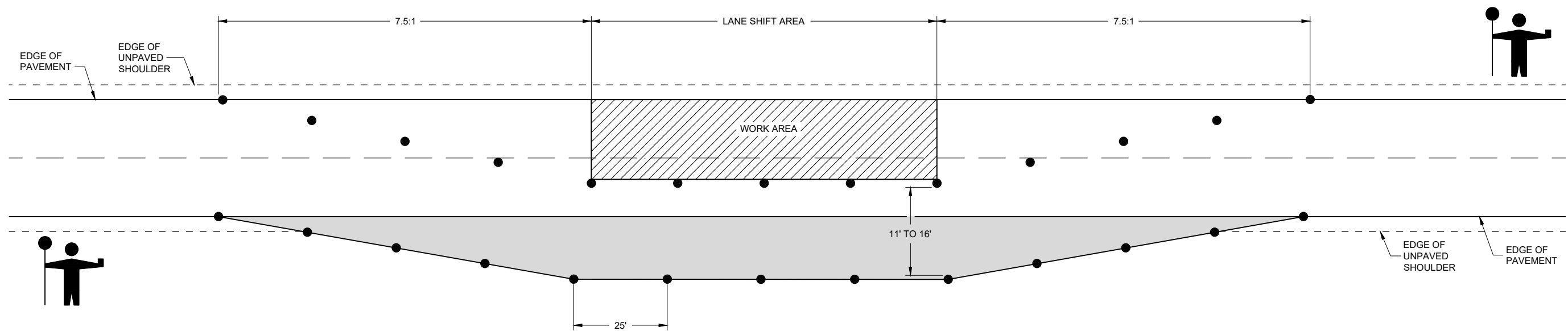
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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

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

**LEGEND**

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



**LANE SHIFT IN FLAGGING OPERATION**

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

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

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

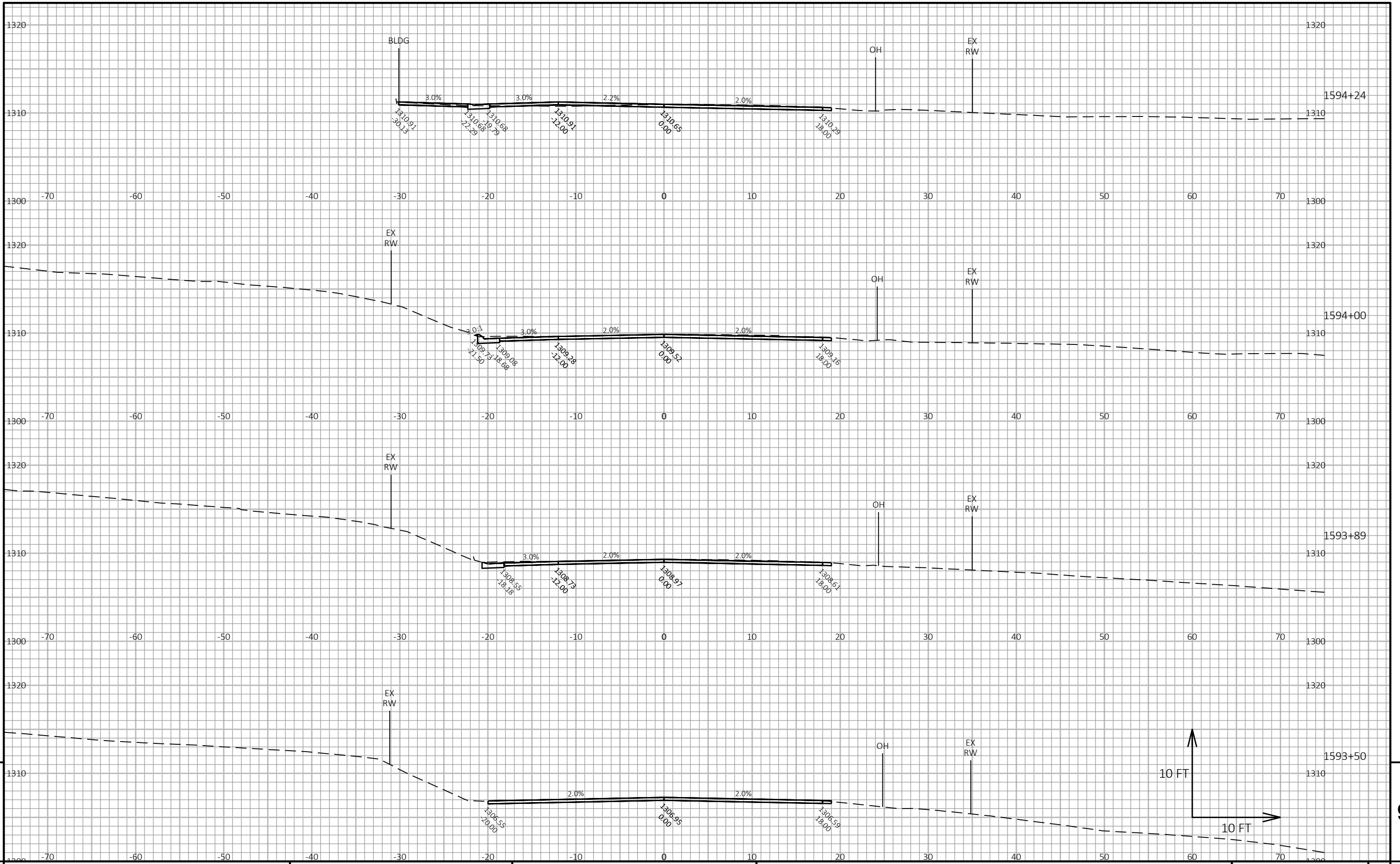
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SDD 15D48 - 01

SDD 15D48 - 01



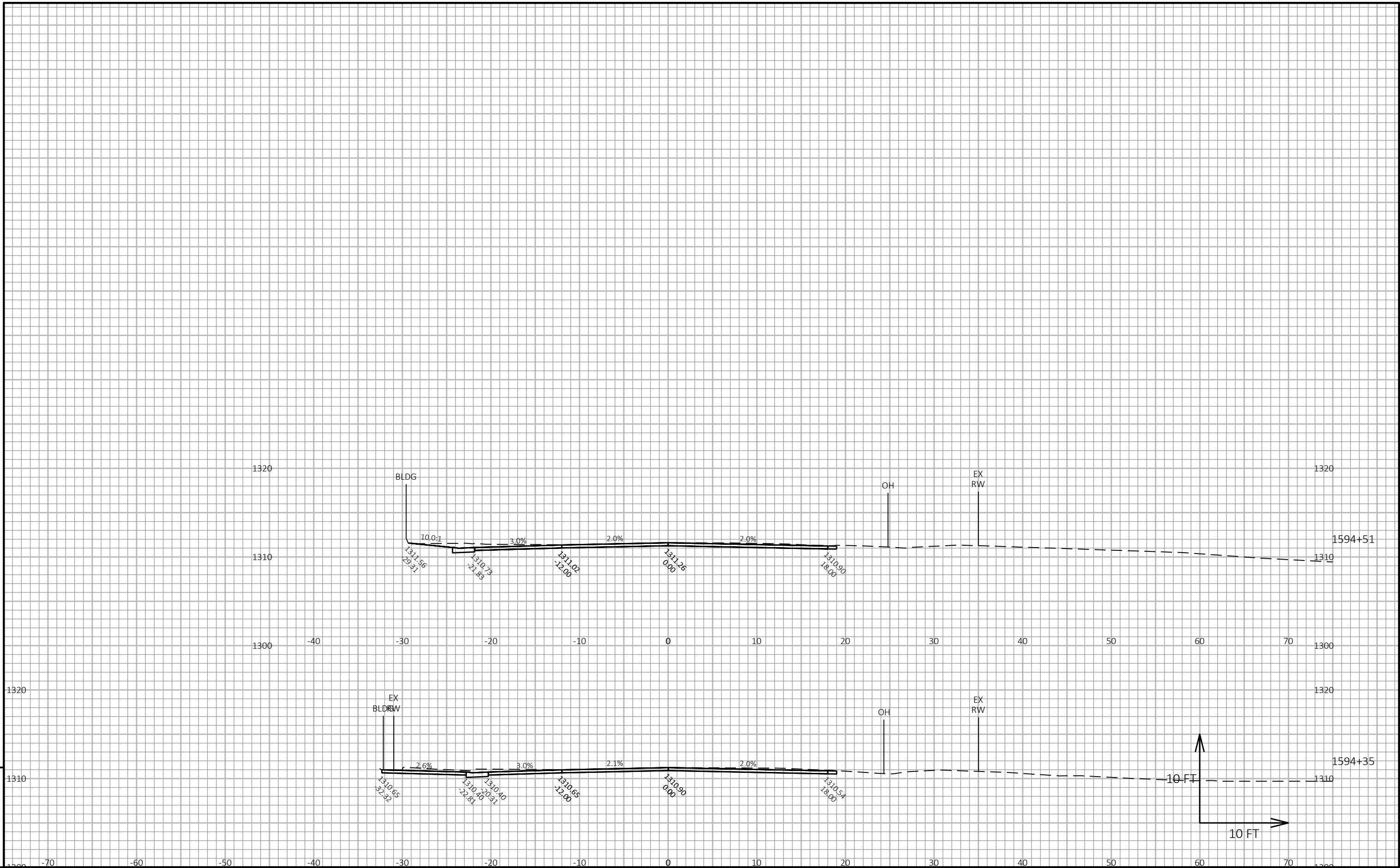
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: CRAWFORD      CROSS SECTIONS: STH 27      SHEET      E

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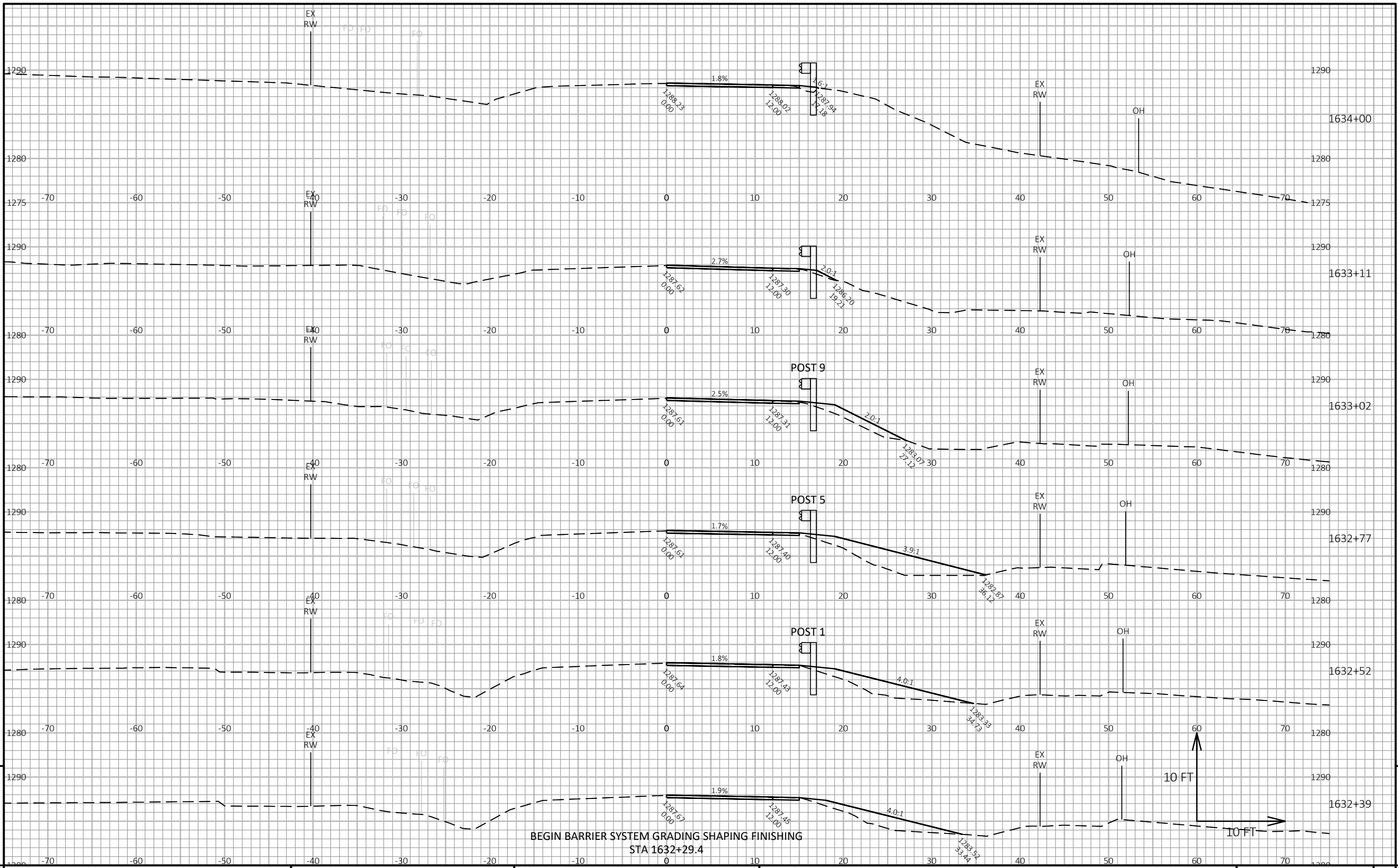
LAYOUT NAME - Rising Sun1



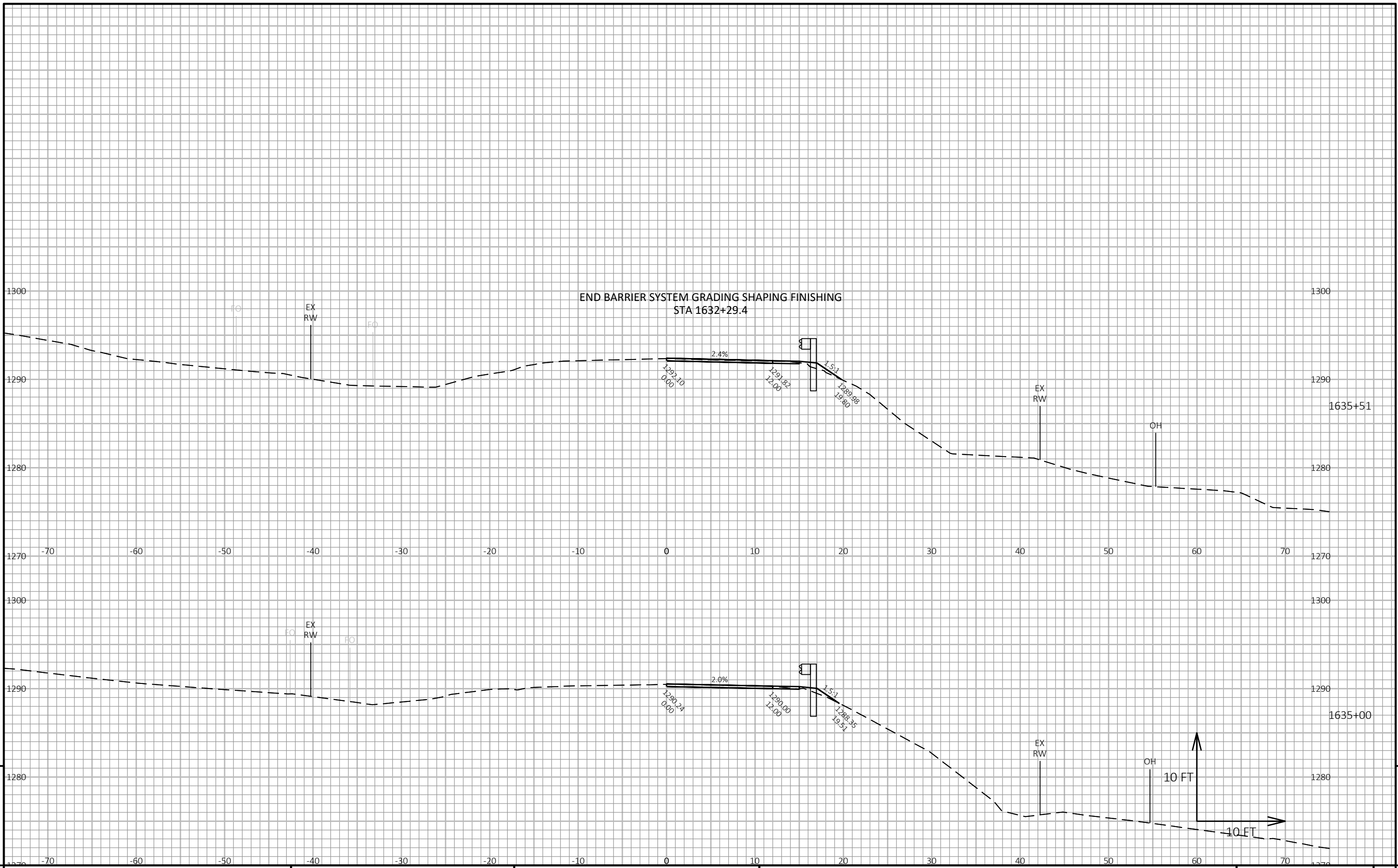
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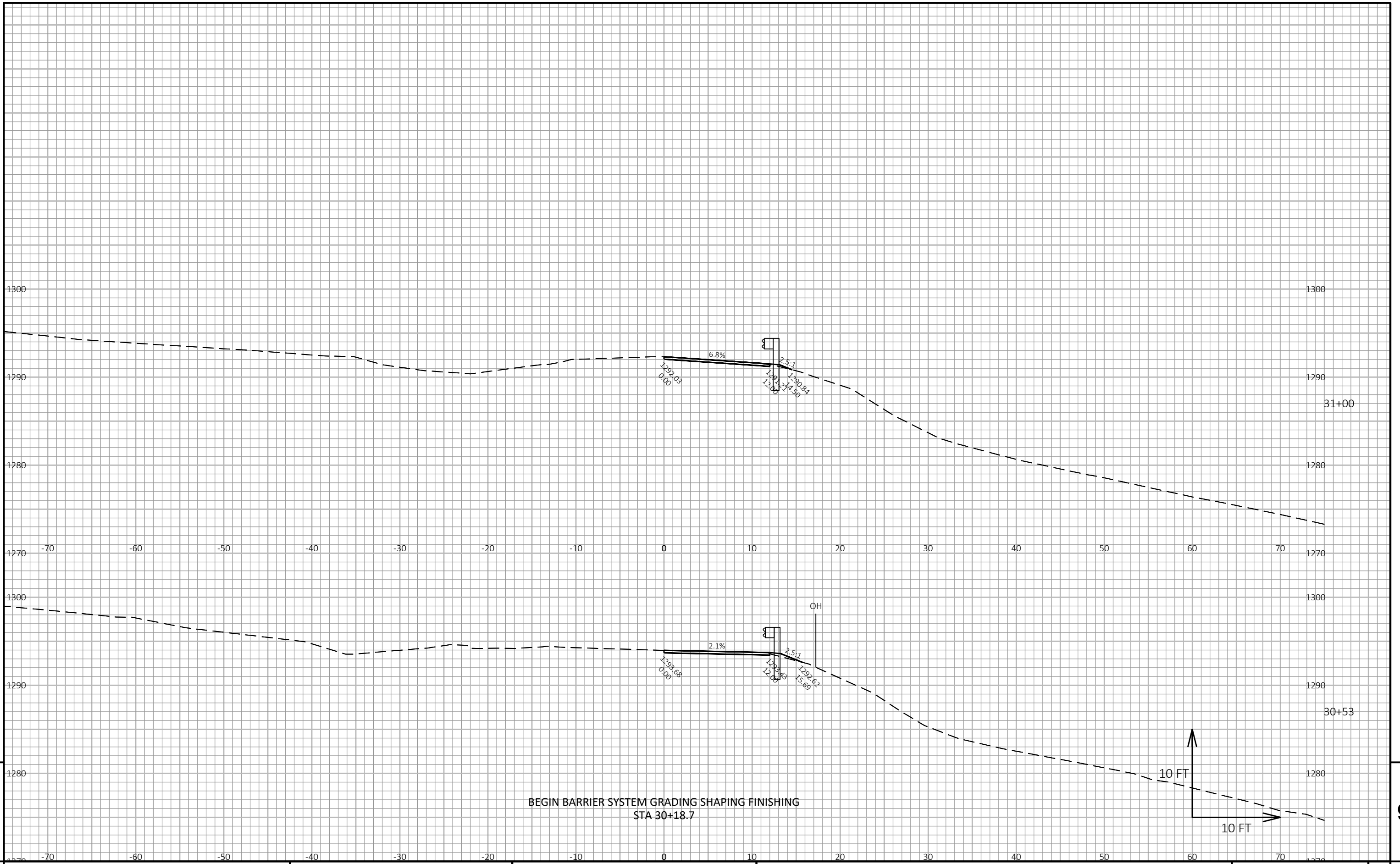
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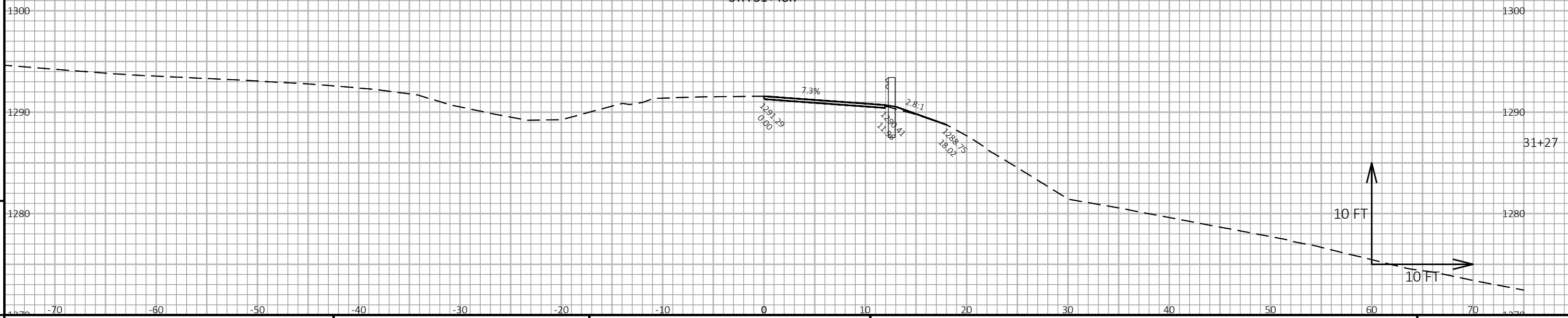


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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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BEGIN BARRIER SYSTEM GRADING SHAPING FINISHING  
STA 31+48.7



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PROJECT NO: 5540-02-70

HWY: STH 27

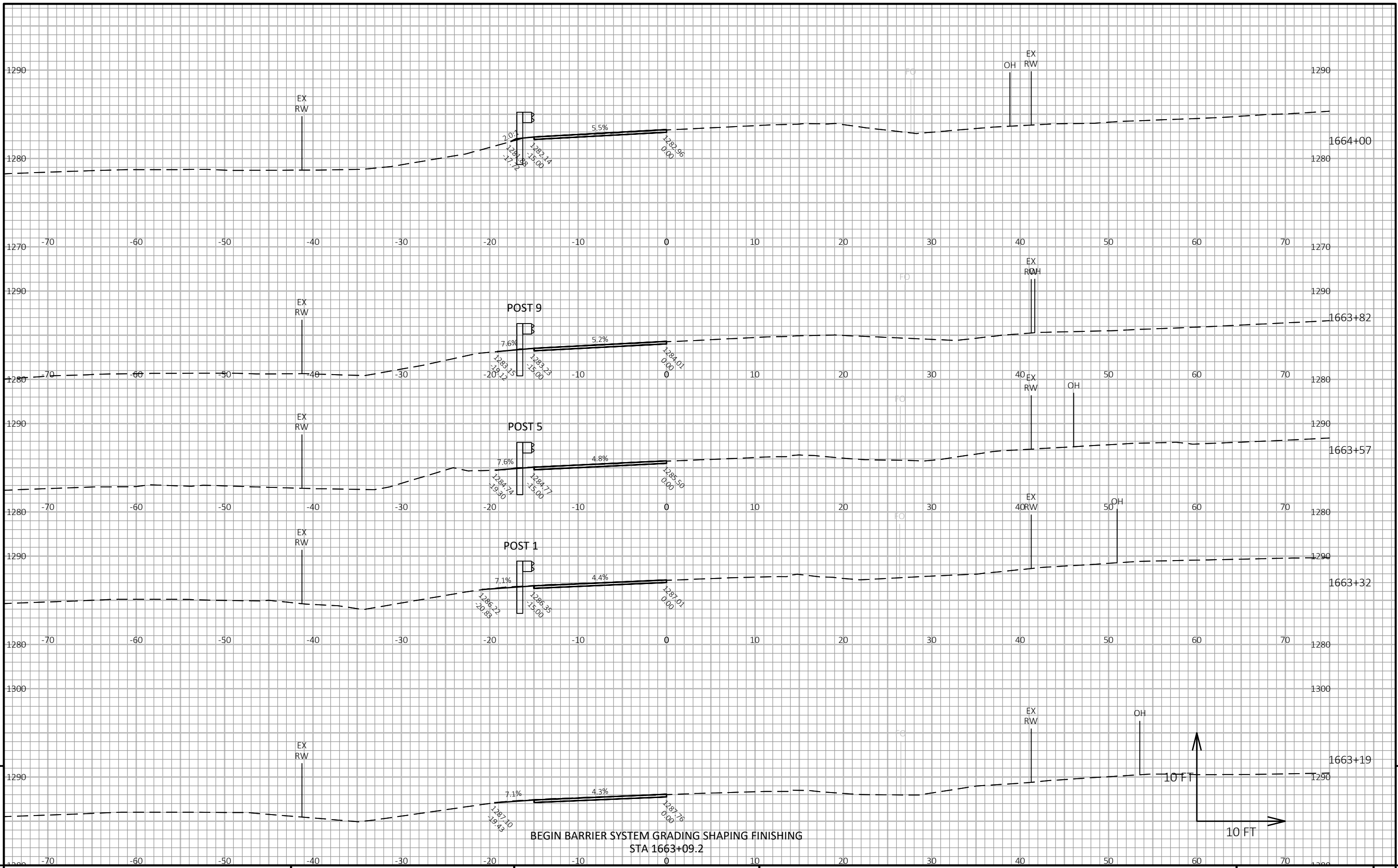
COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E





PROJECT NO: 5540-02-70

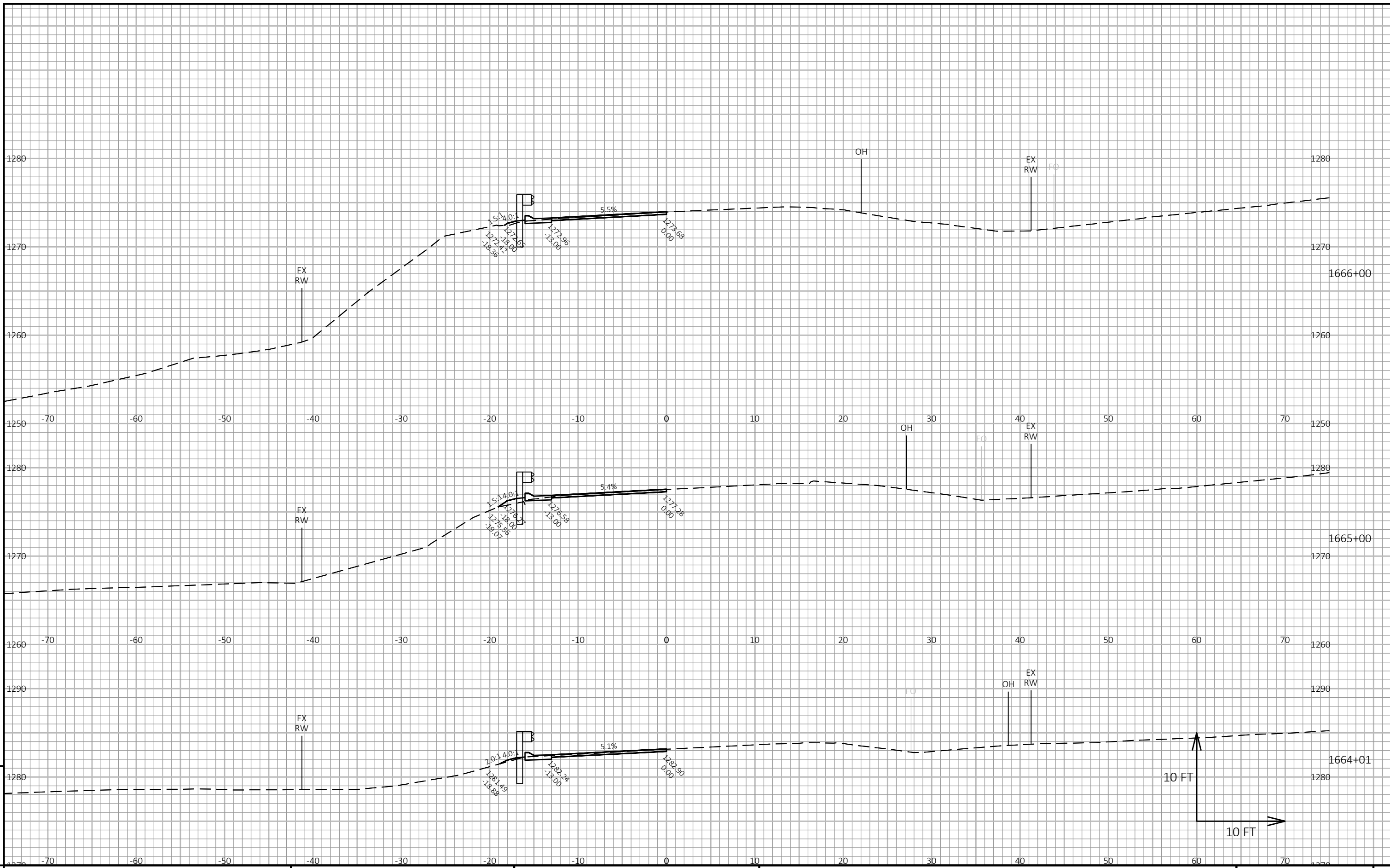
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COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



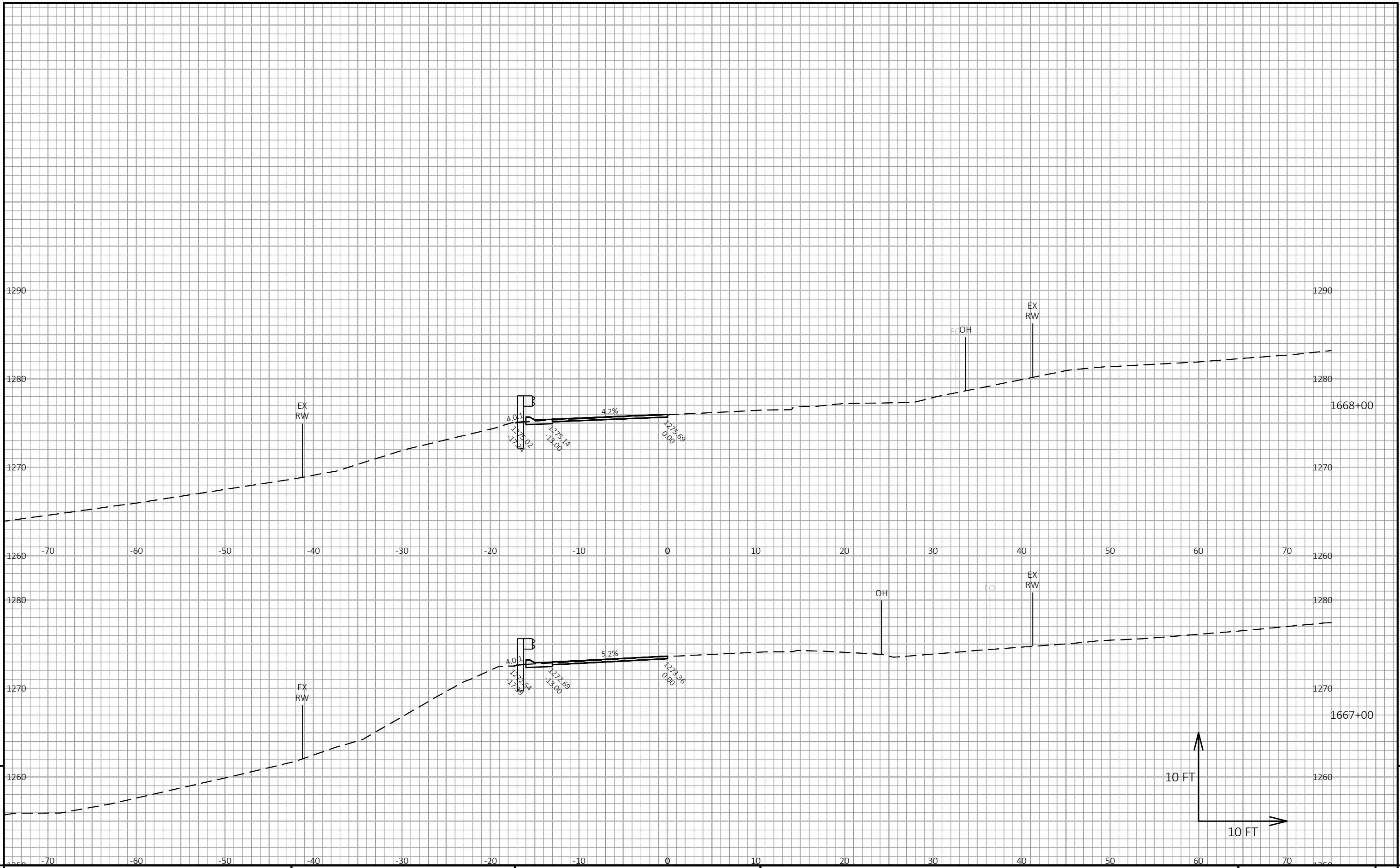
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LAYOUT NAME - STH 27 4



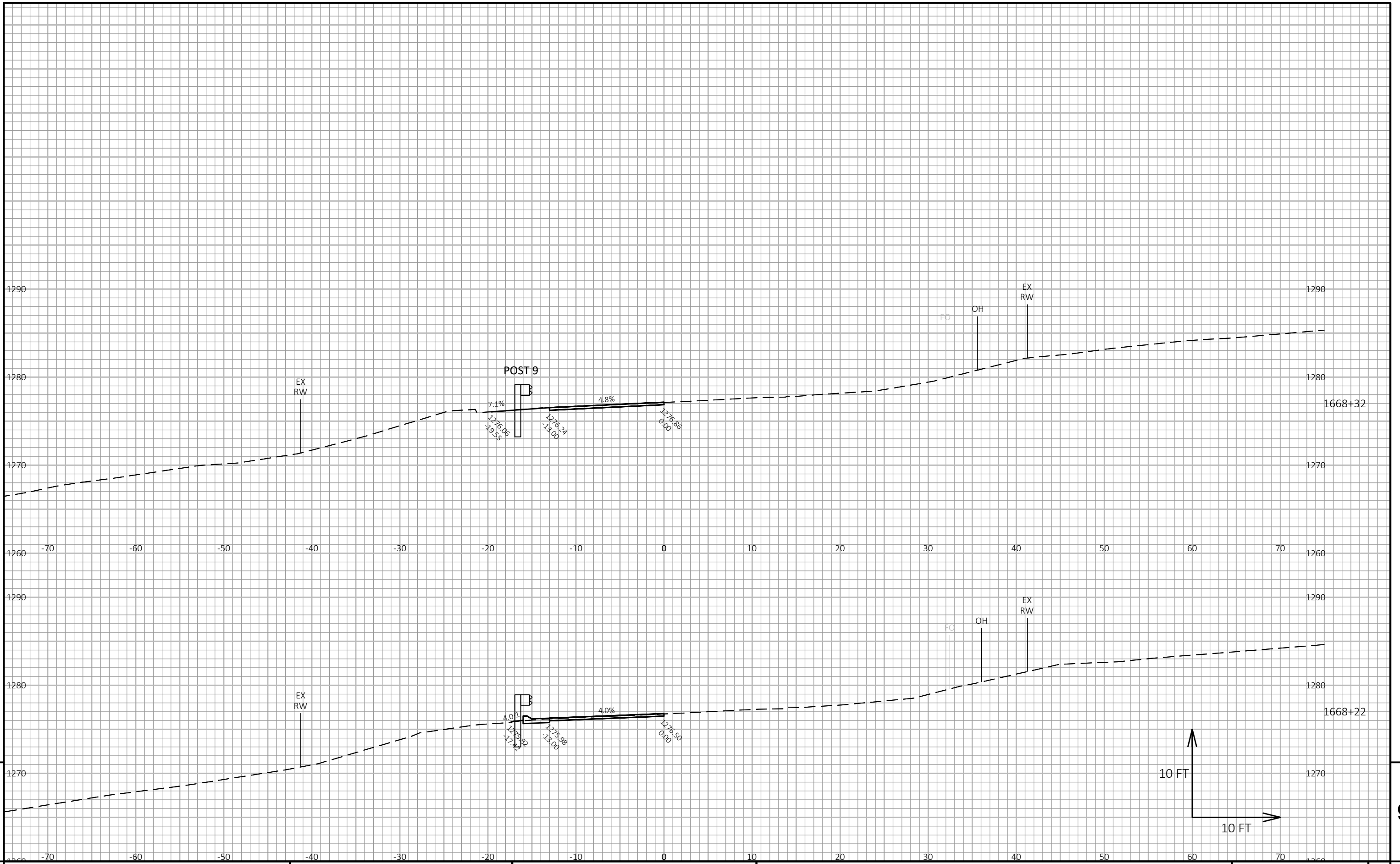
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

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LAYOUT NAME - STH 27 5



PROJECT NO: 5540-02-70

HWY: STH 27

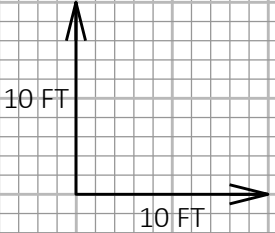
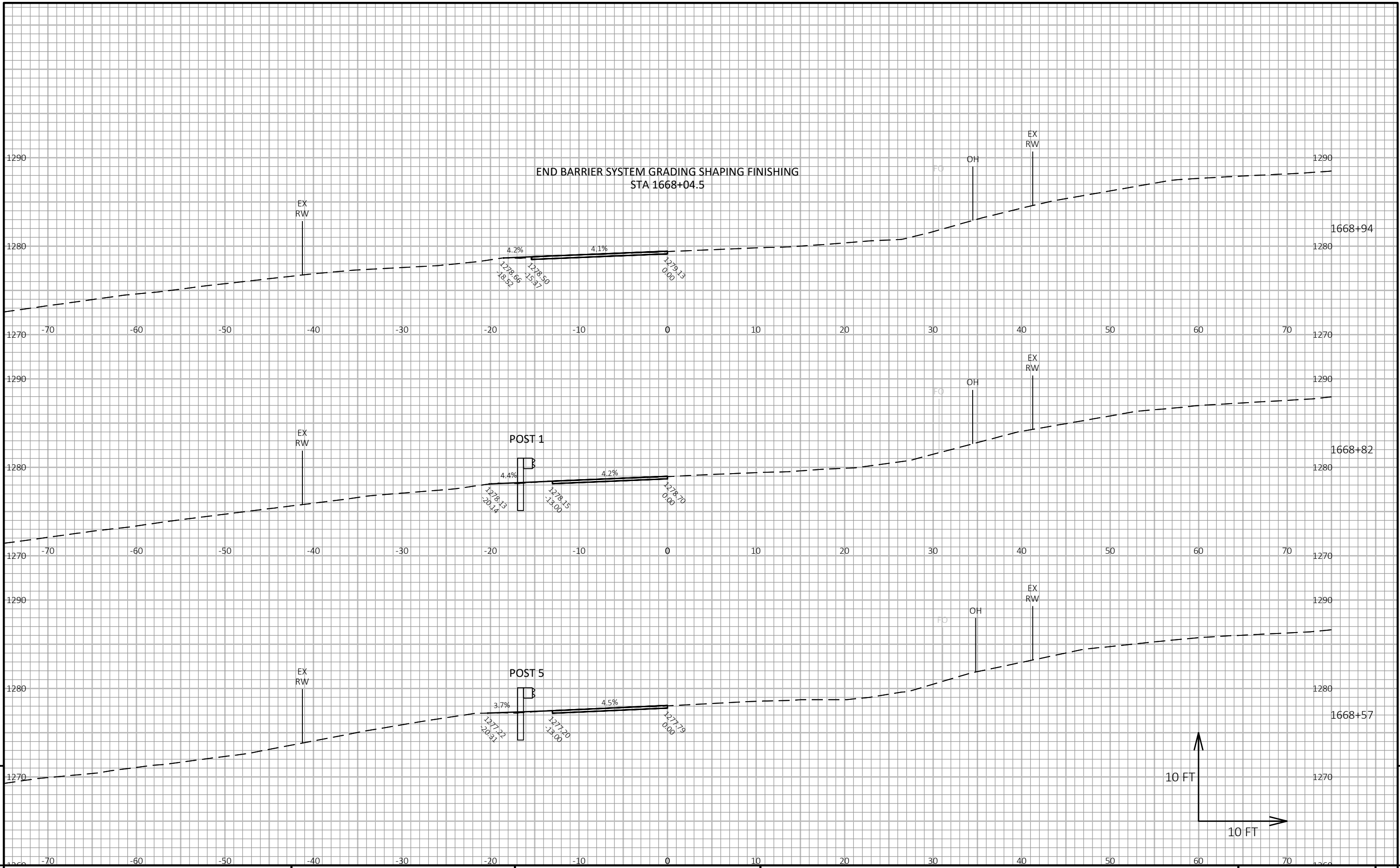
COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

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END BARRIER SYSTEM GRADING SHAPING FINISHING  
STA 1668+04.5



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PROJECT NO: 5540-02-70

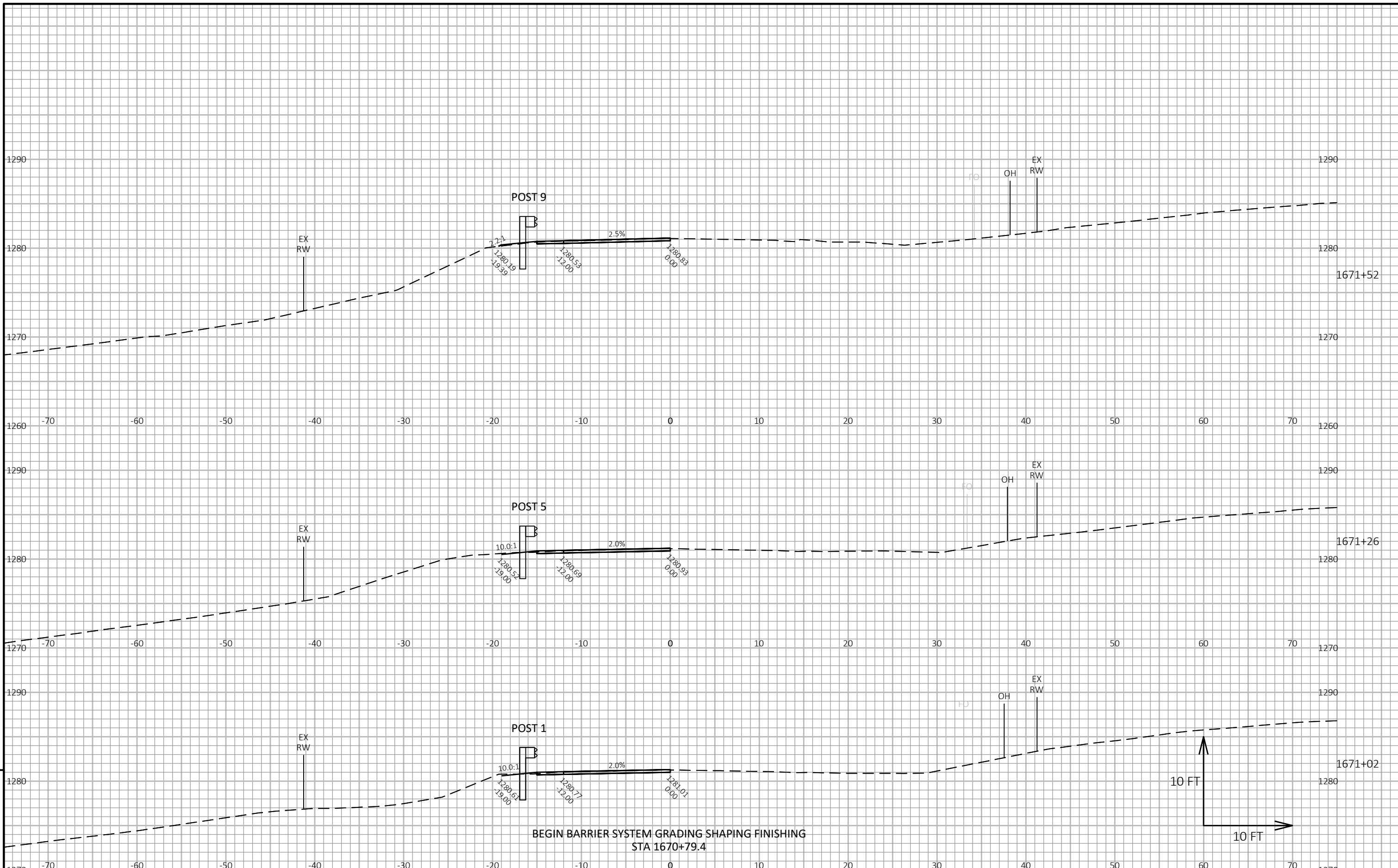
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COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

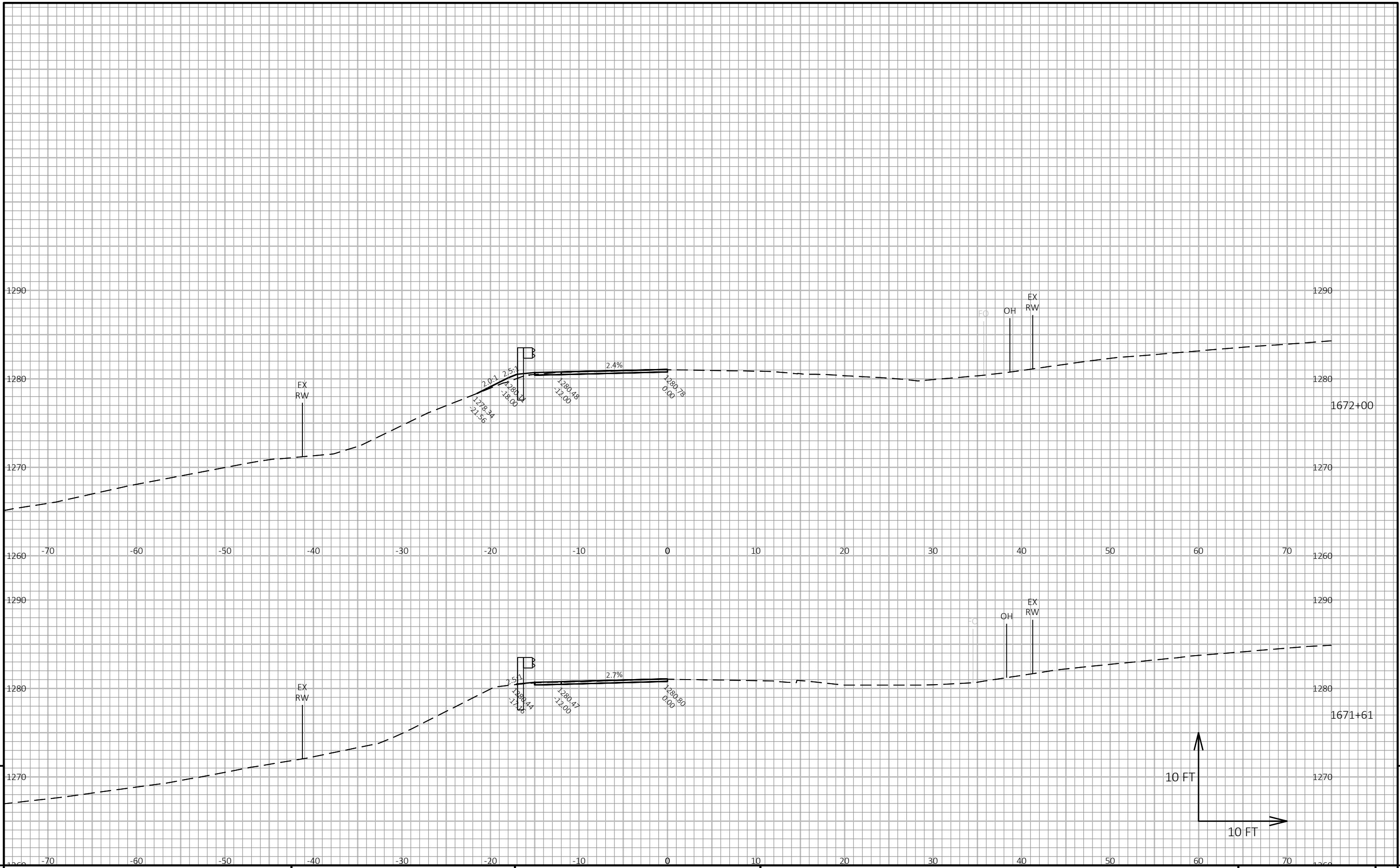
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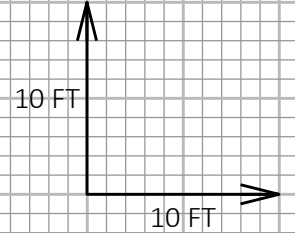


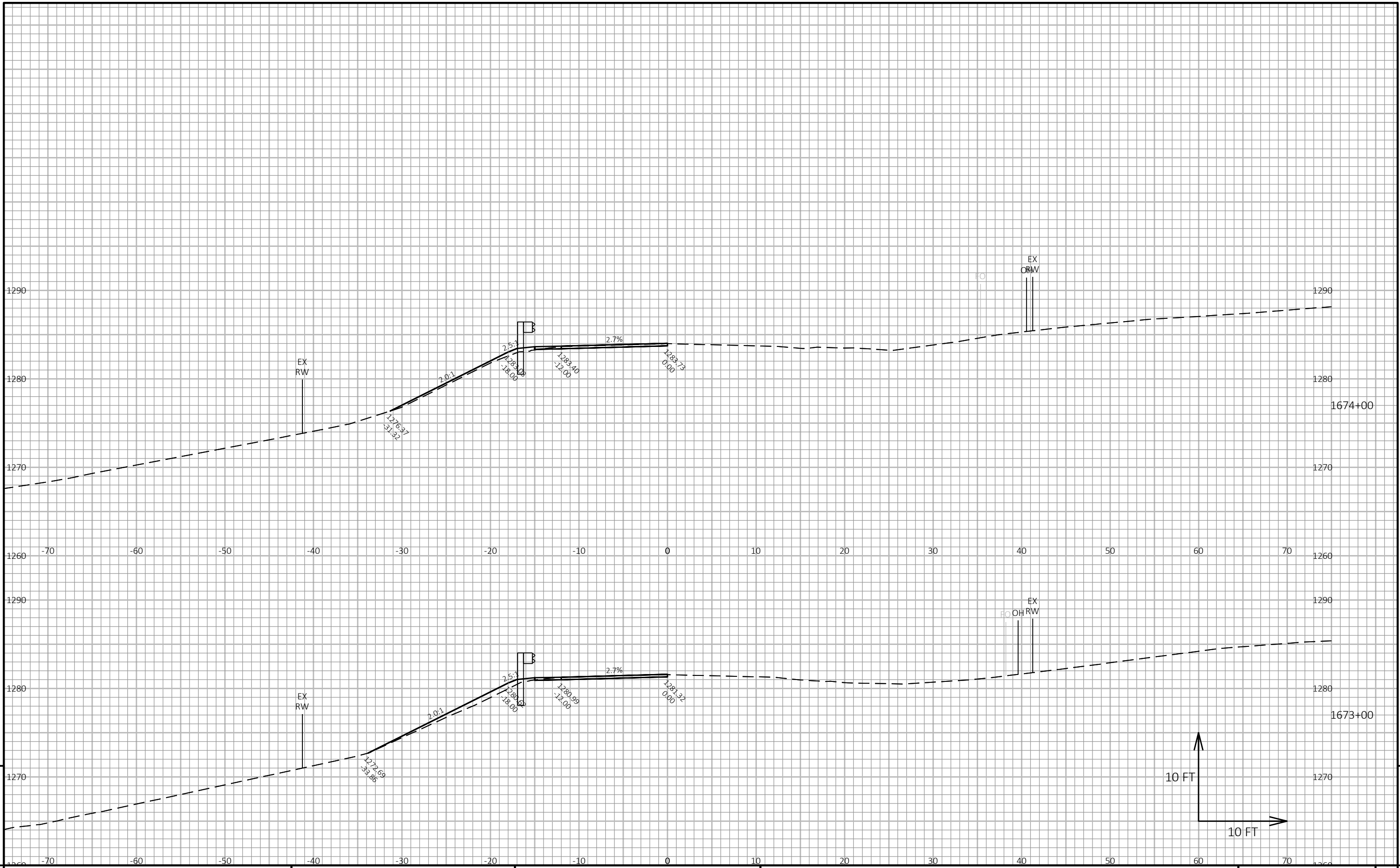
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

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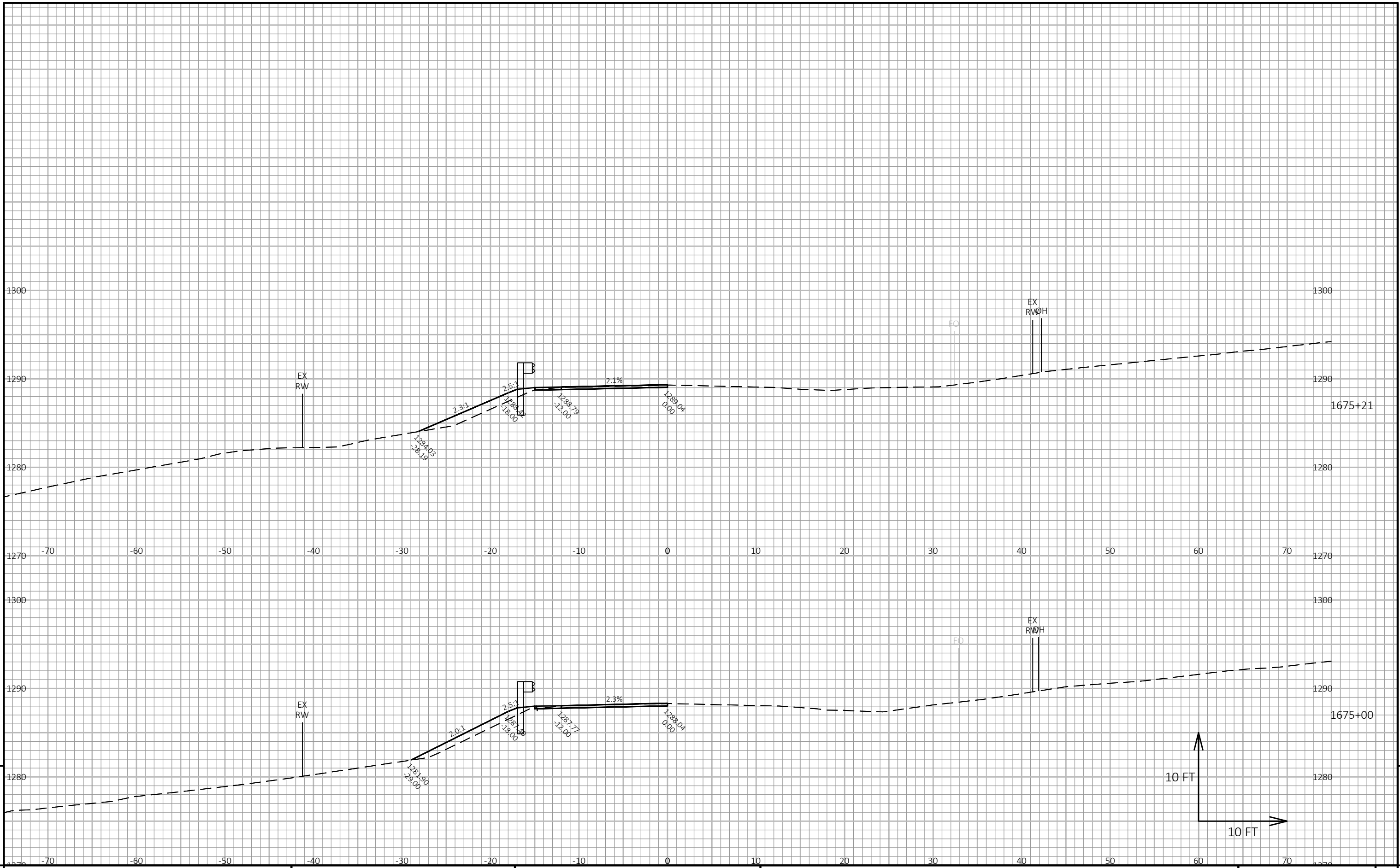
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LAYOUT NAME - STH 27 10





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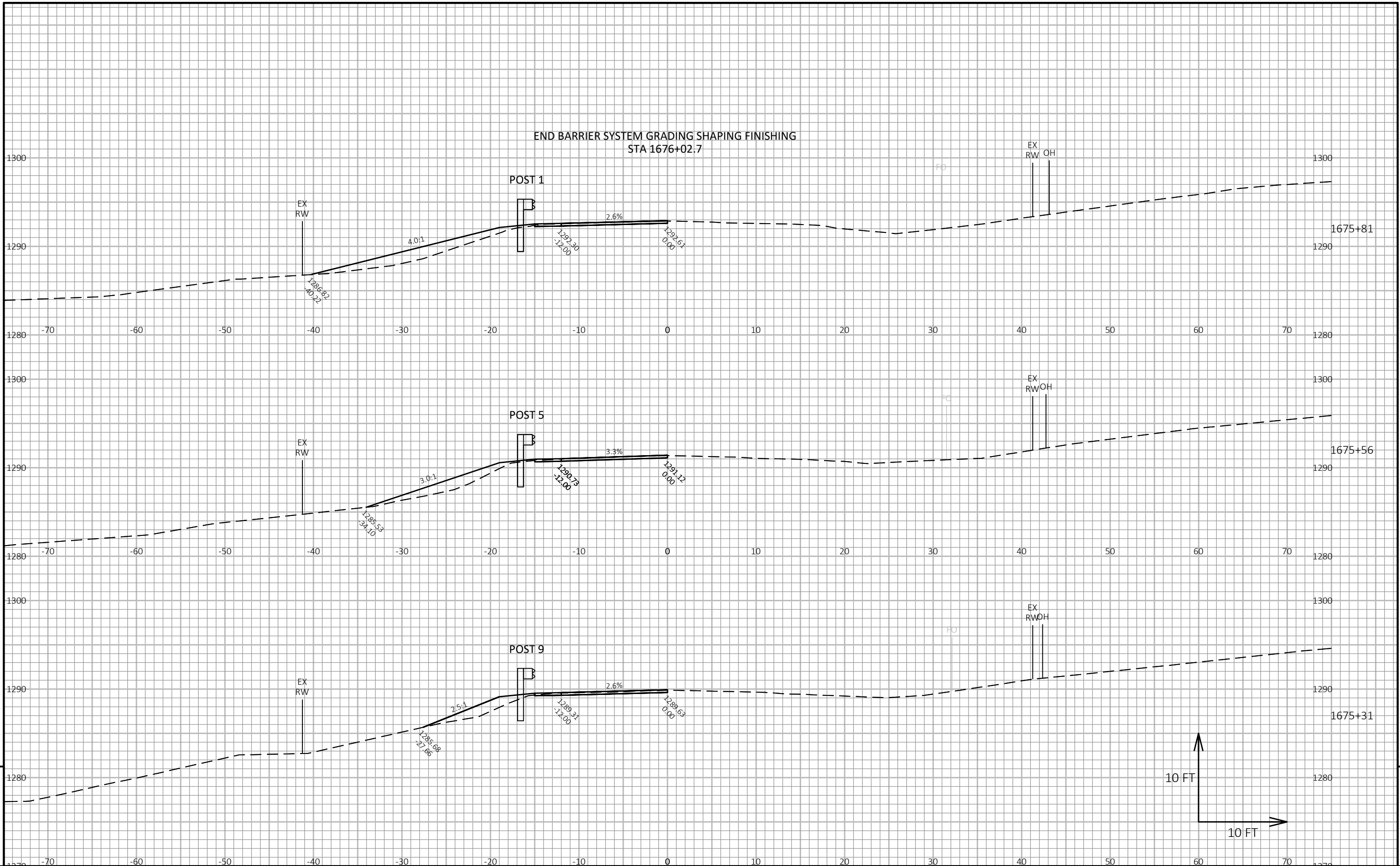
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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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LAYOUT NAME - STH 27 11

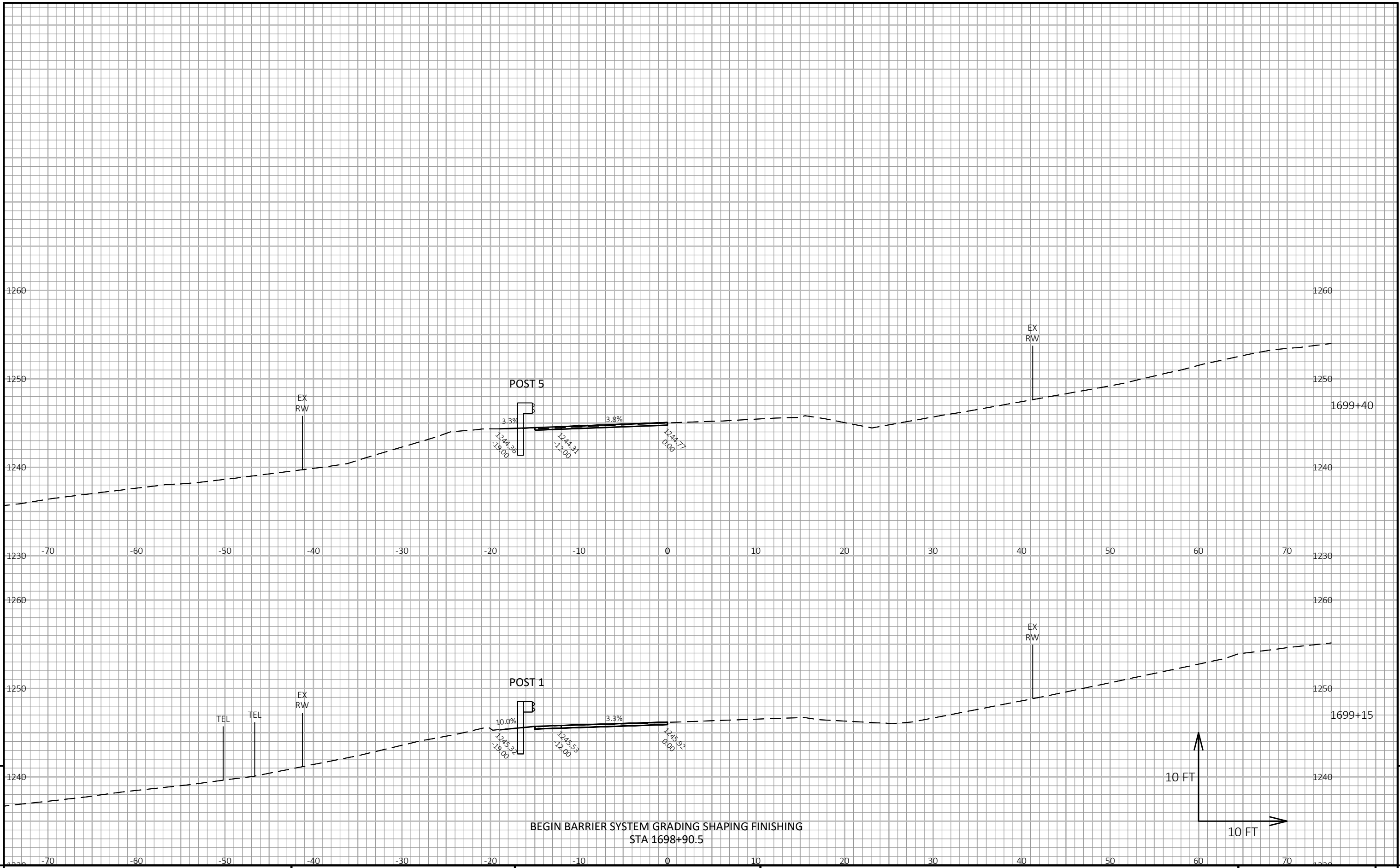
END BARRIER SYSTEM GRADING SHAPING FINISHING  
STA 1676+02.7



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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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PROJECT NO: 5540-02-70

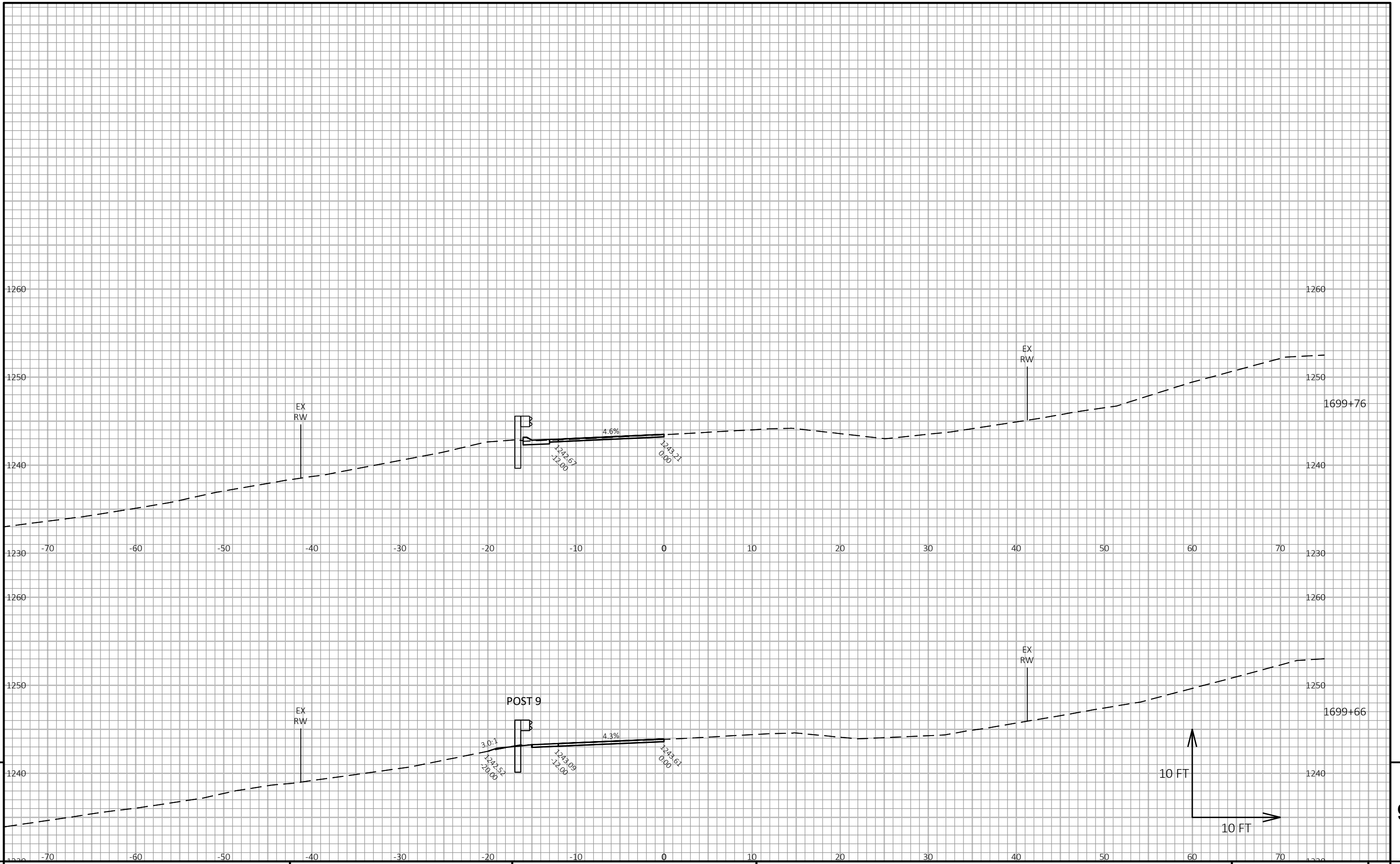
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COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

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PROJECT NO: 5540-02-70

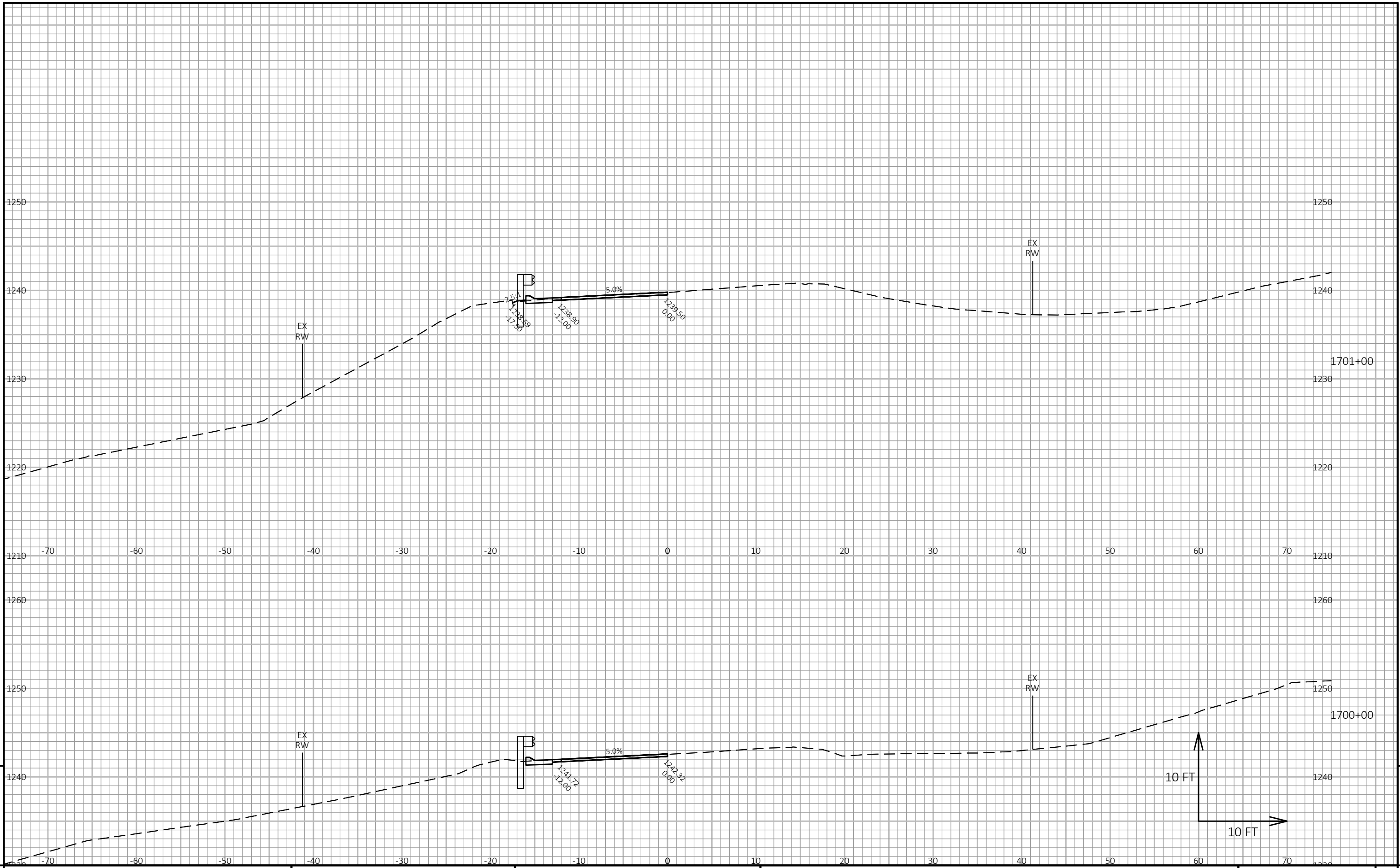
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COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

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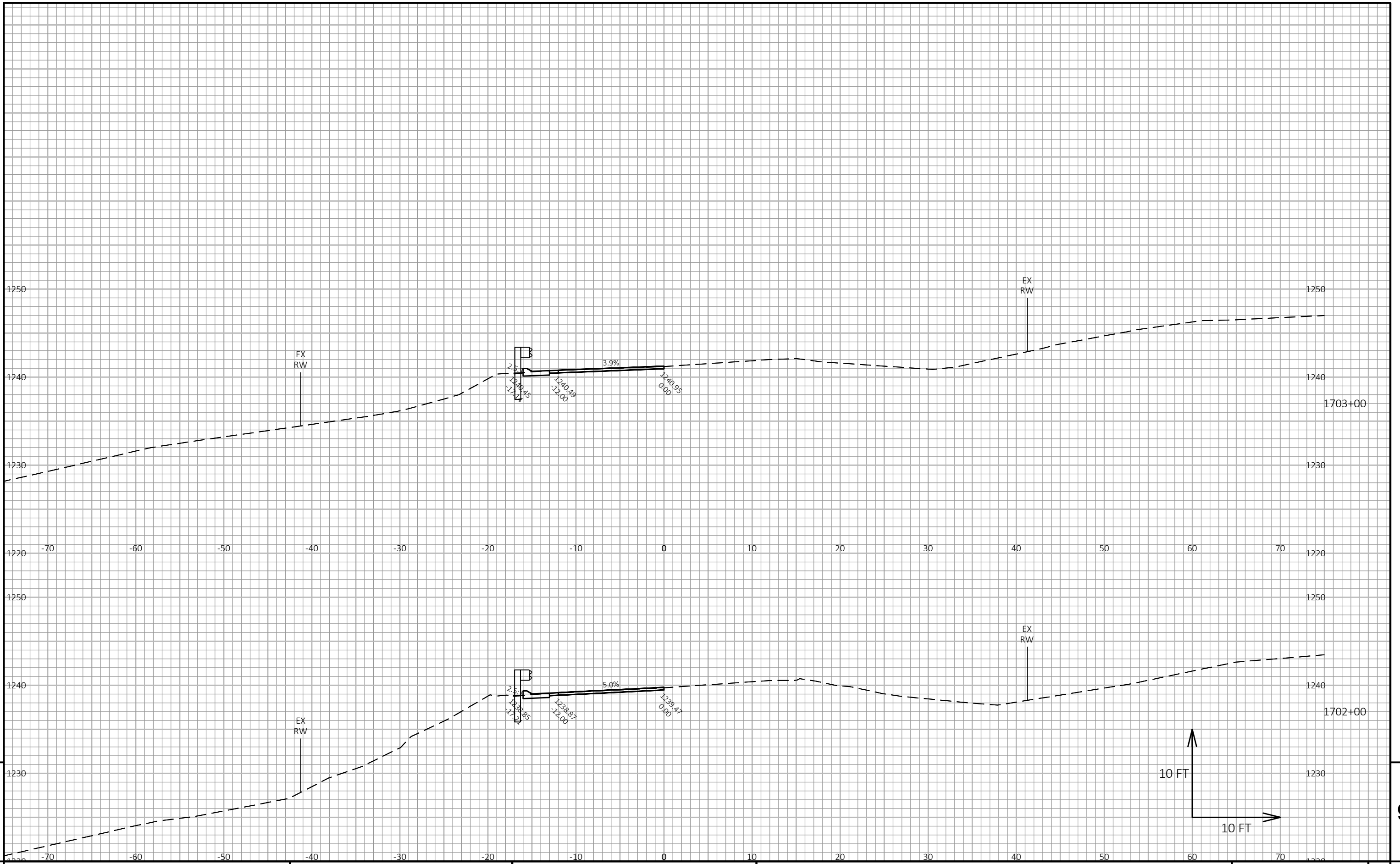
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

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LAYOUT NAME - STH 27 15

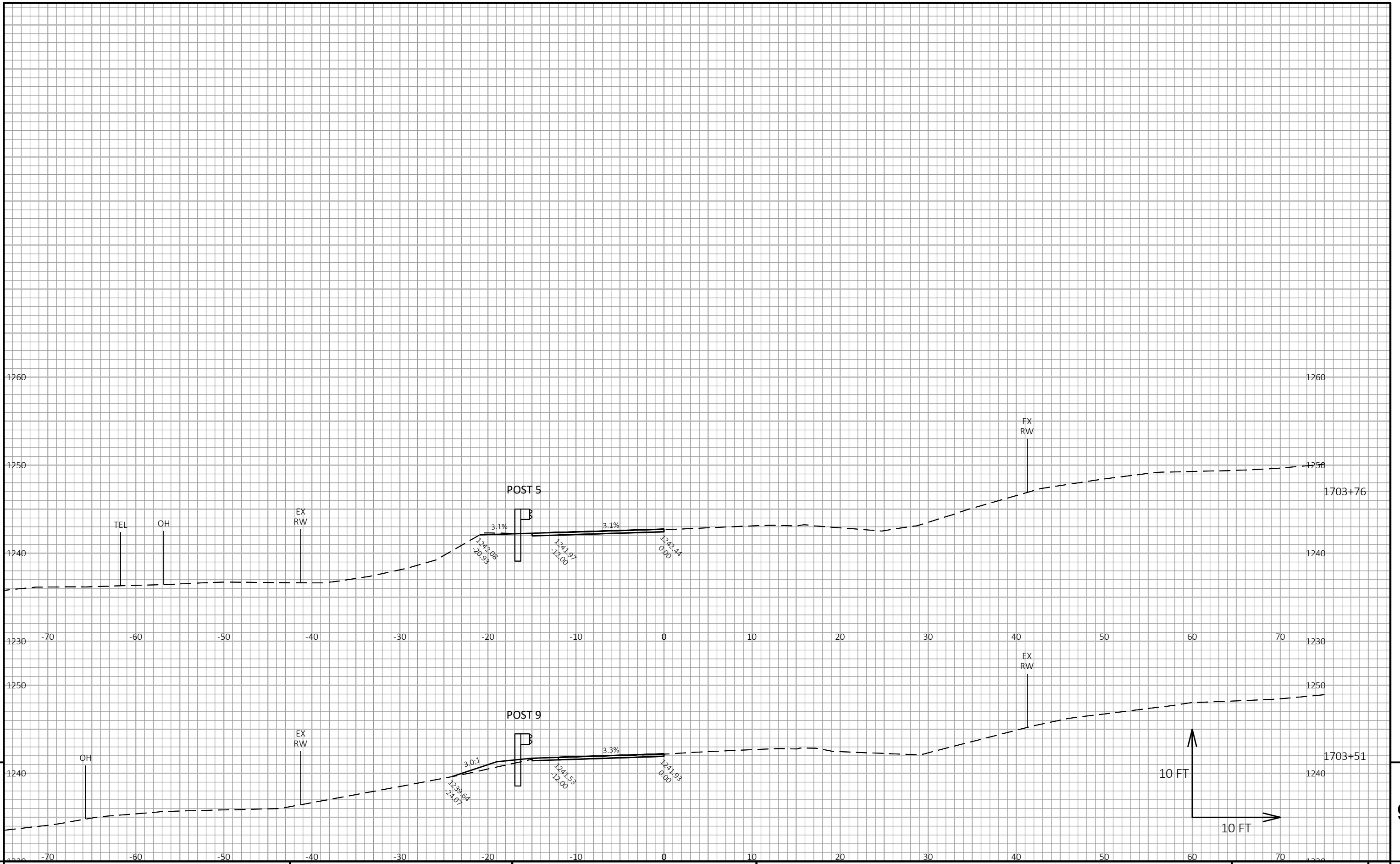


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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

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PROJECT NO: 5540-02-70

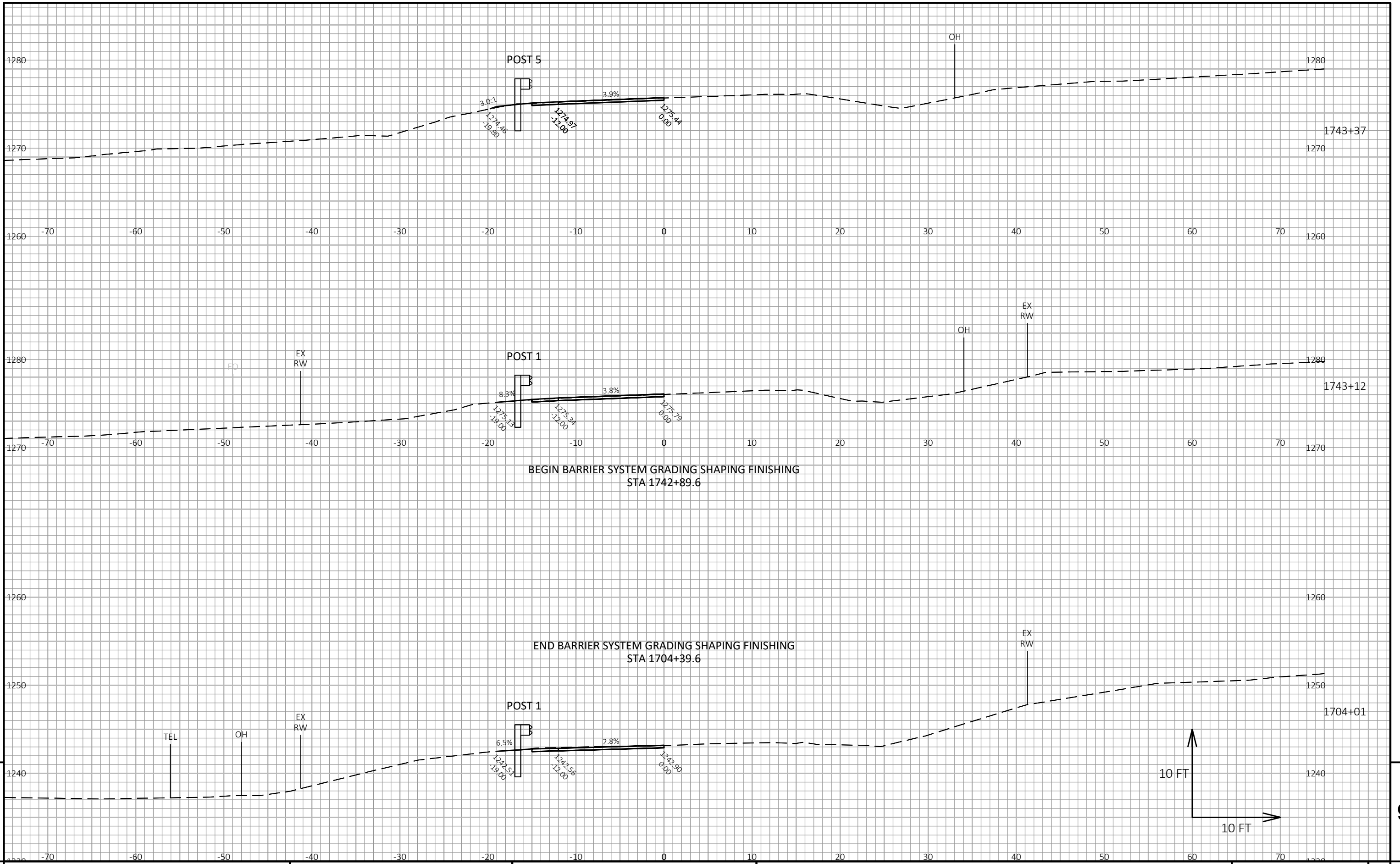
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COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

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PROJECT NO: 5540-02-70

HWY: STH 27

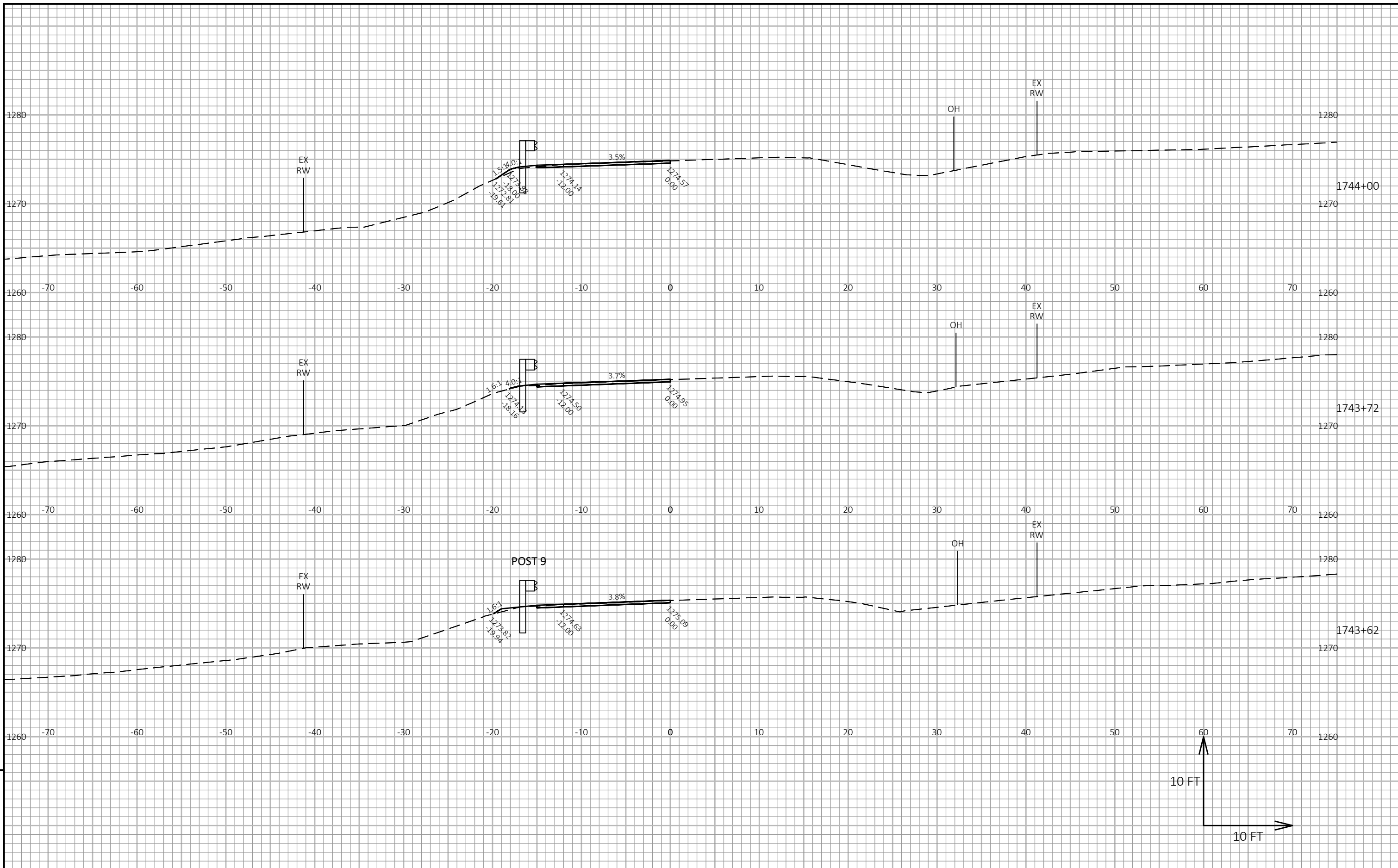
COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

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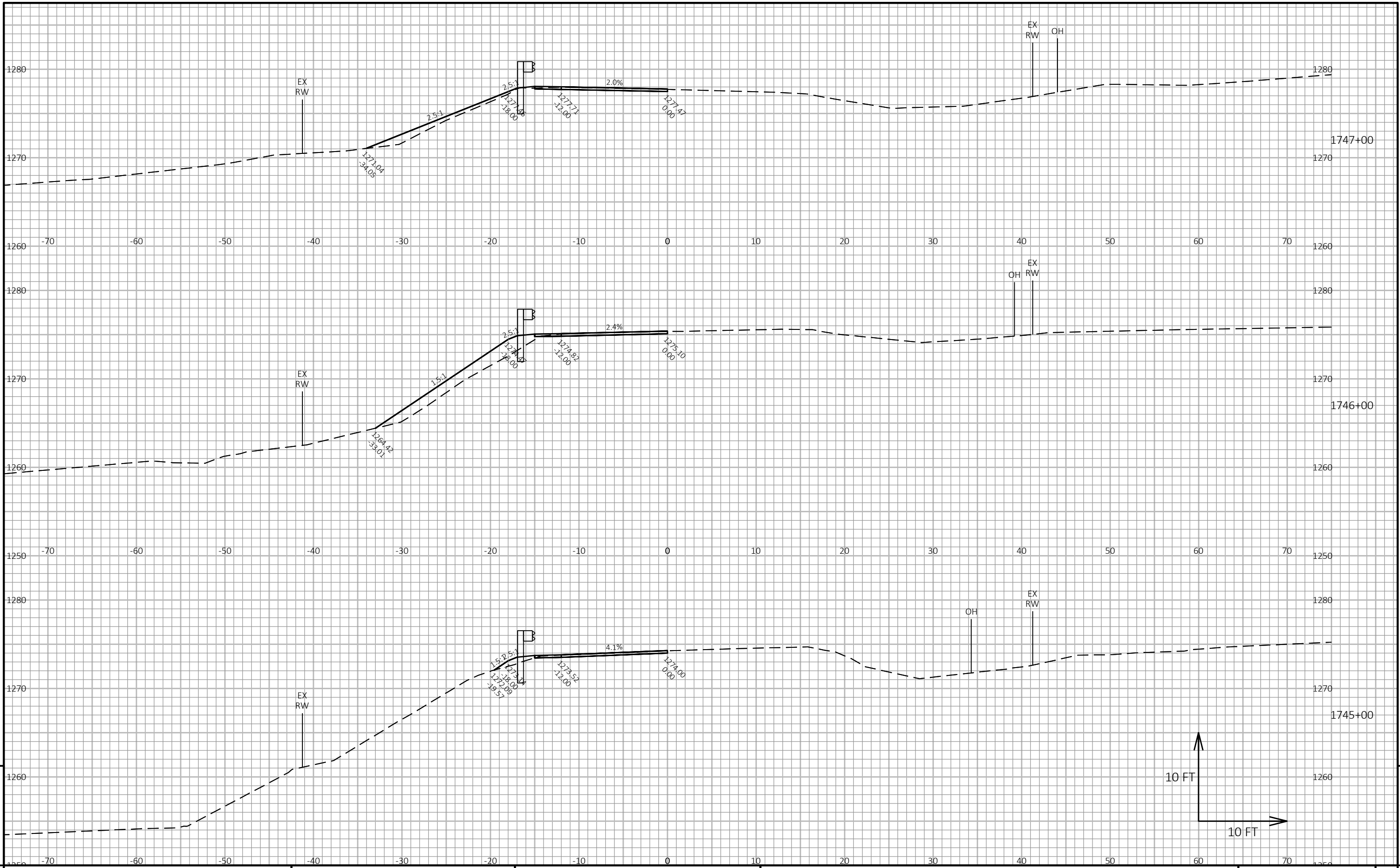




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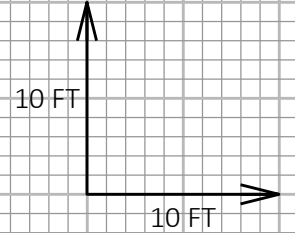


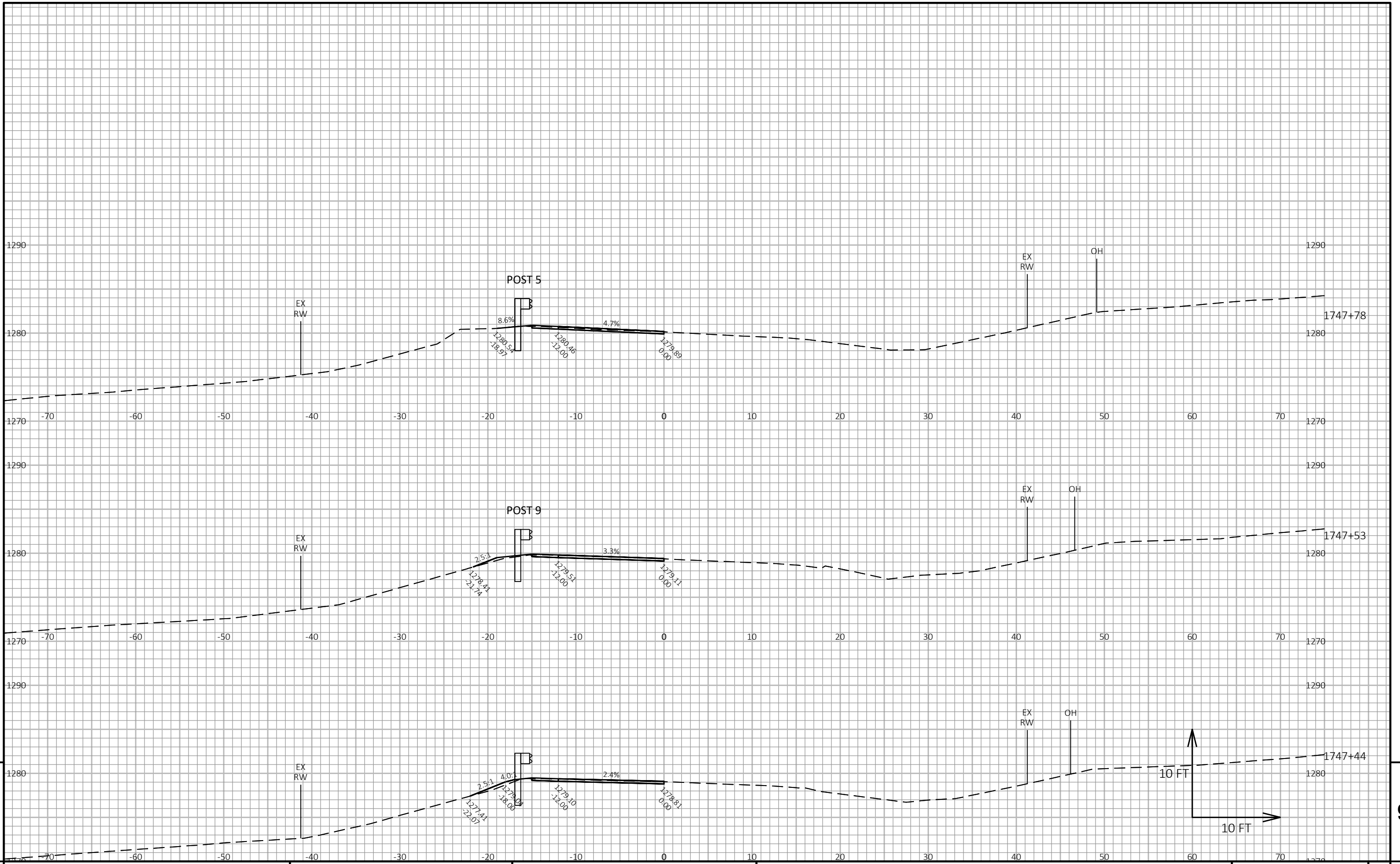
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

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PROJECT NO: 5540-02-70

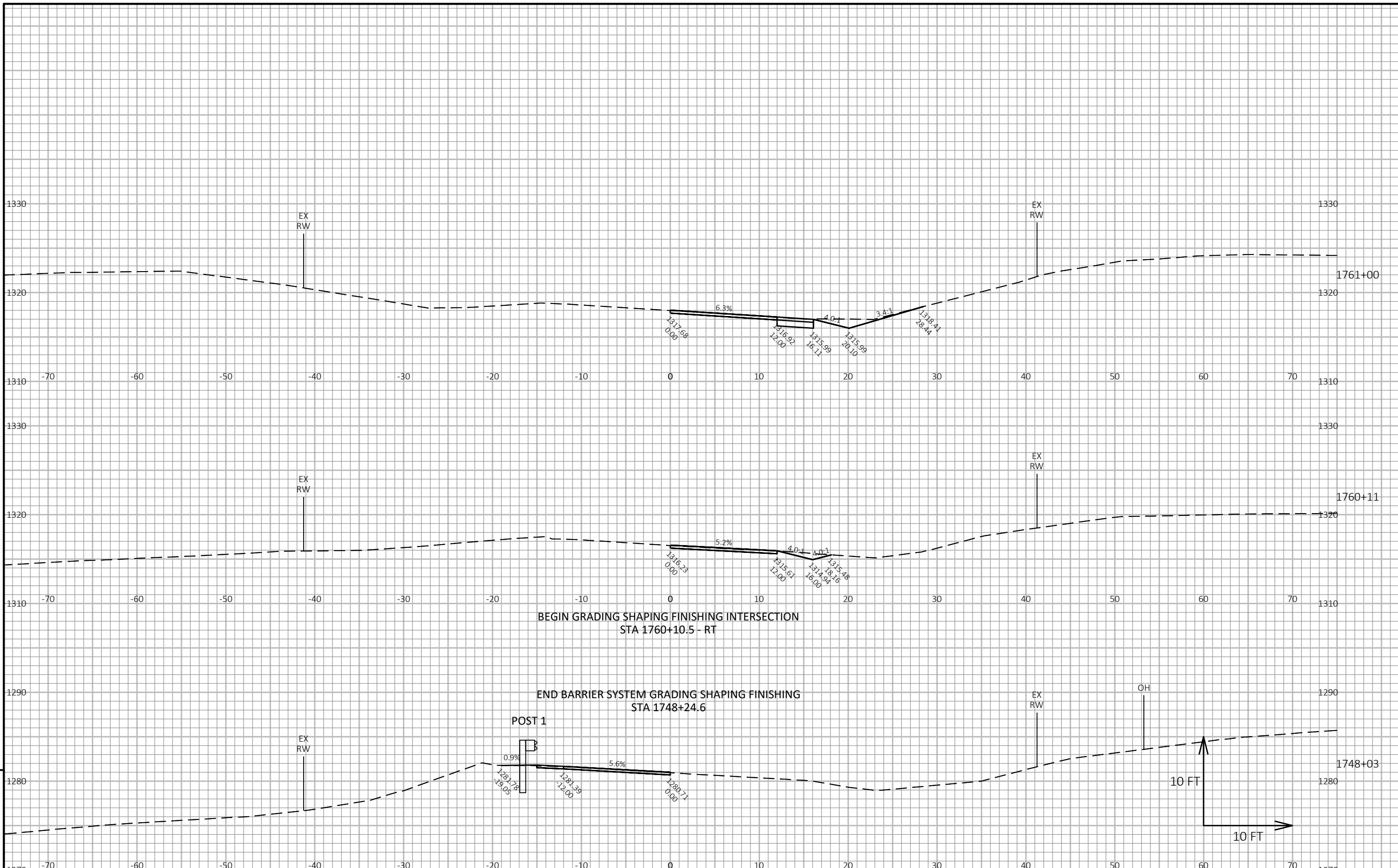
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COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

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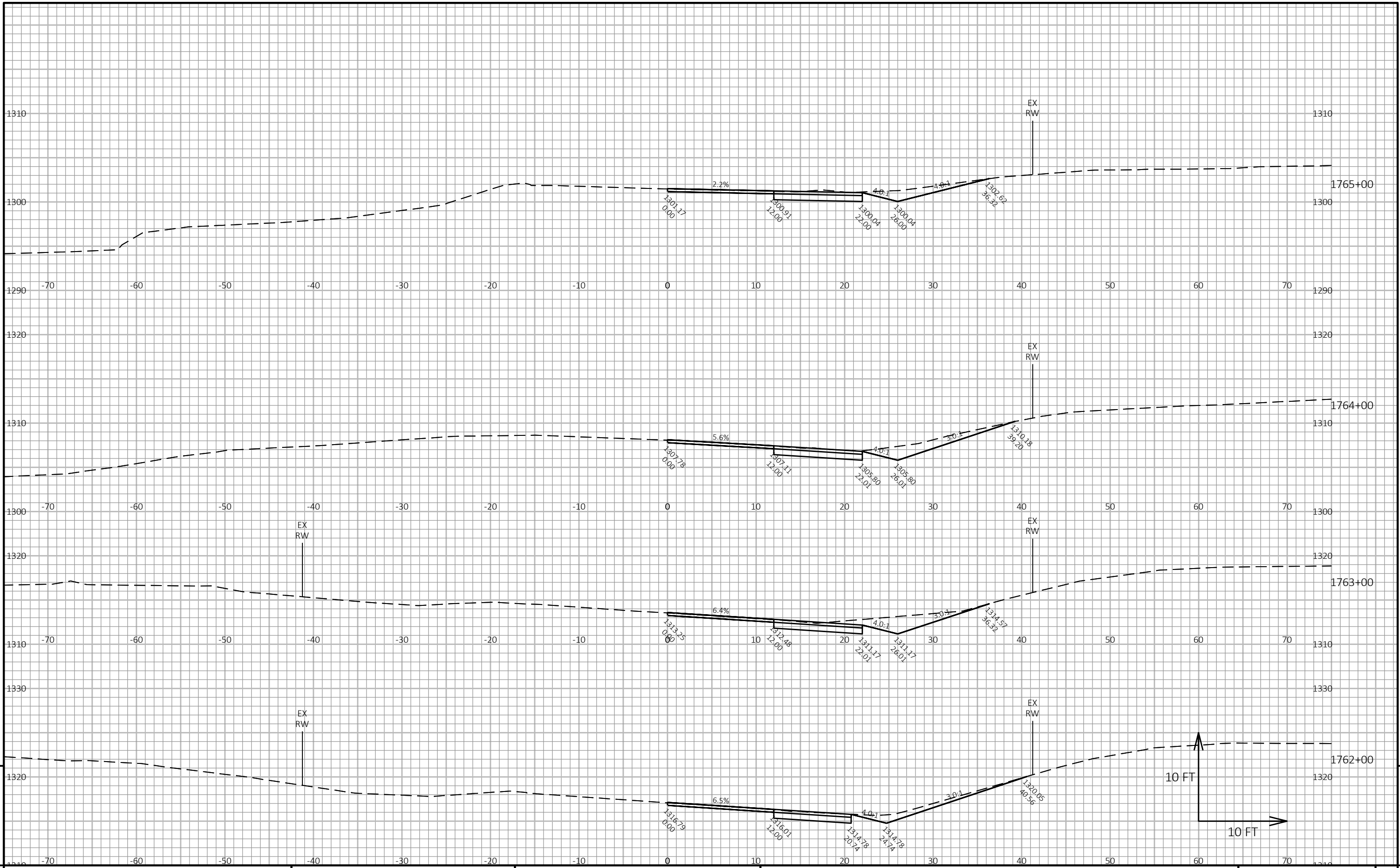
BEGIN GRADING SHAPING FINISHING INTERSECTION  
STA 1760+10.5 - RT

END BARRIER SYSTEM GRADING SHAPING FINISHING  
STA 1748+24.6

POST 1

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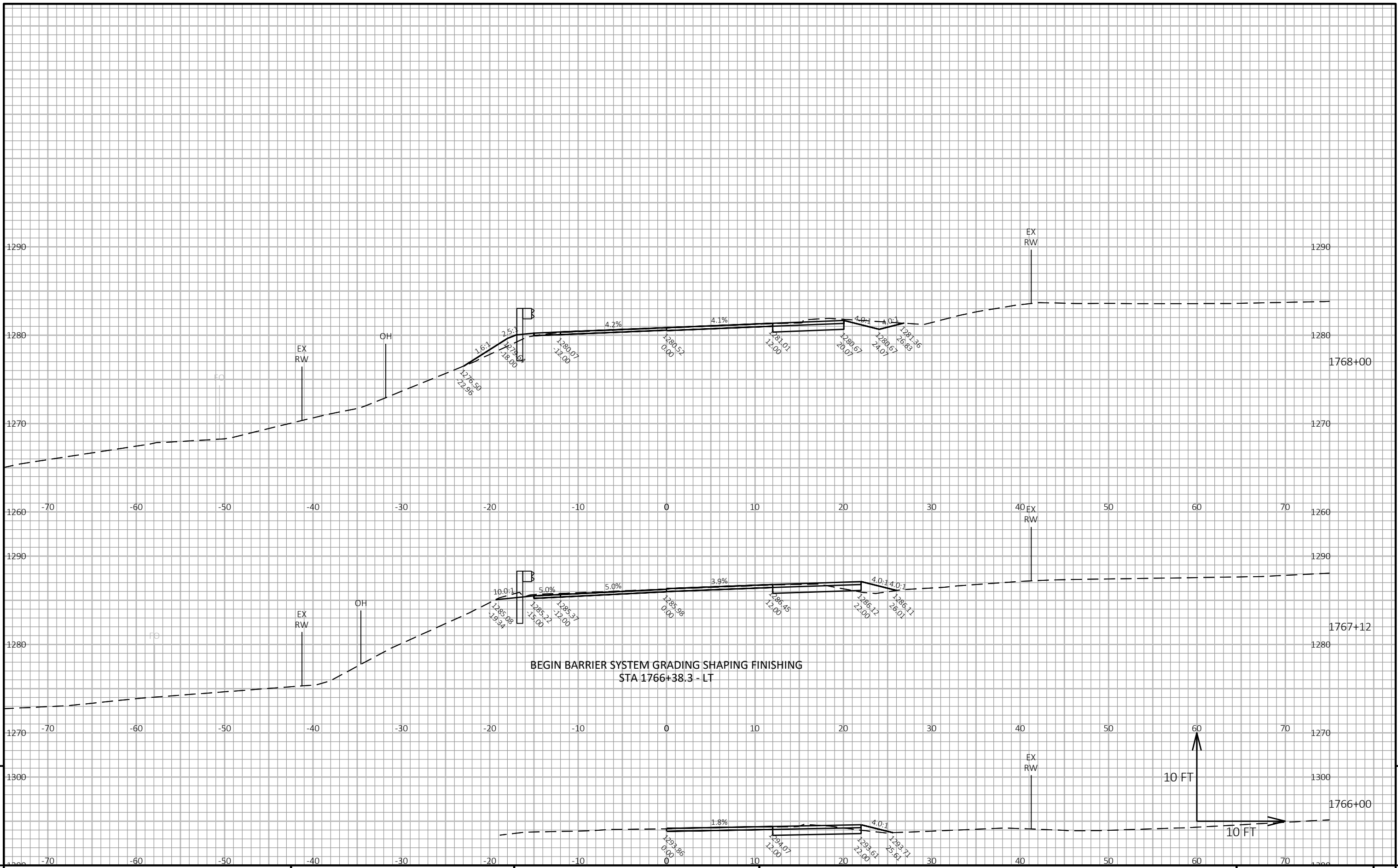
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

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LAYOUT NAME - STH 27 23



PROJECT NO: 5540-02-70

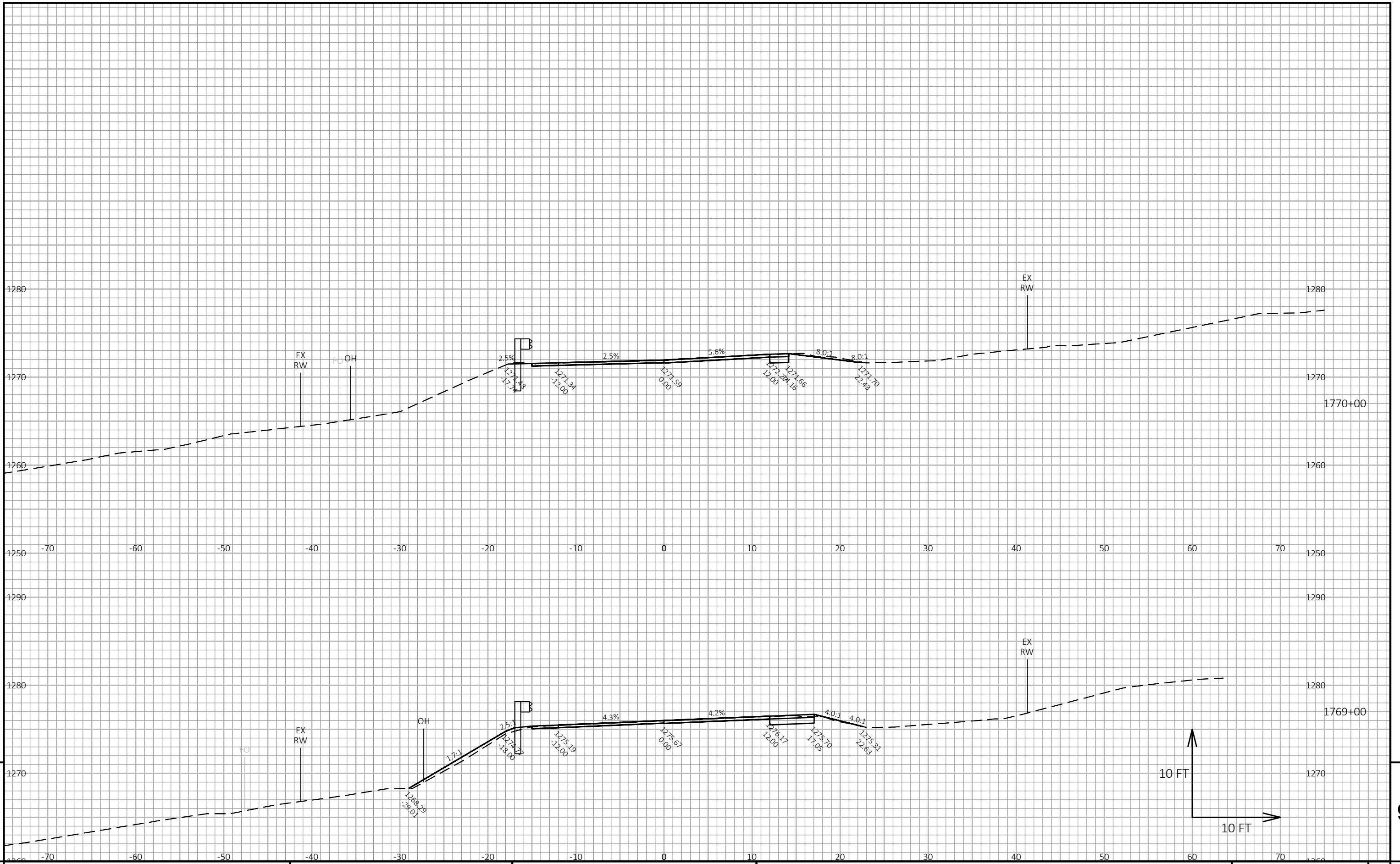
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



PROJECT NO: 5540-02-70

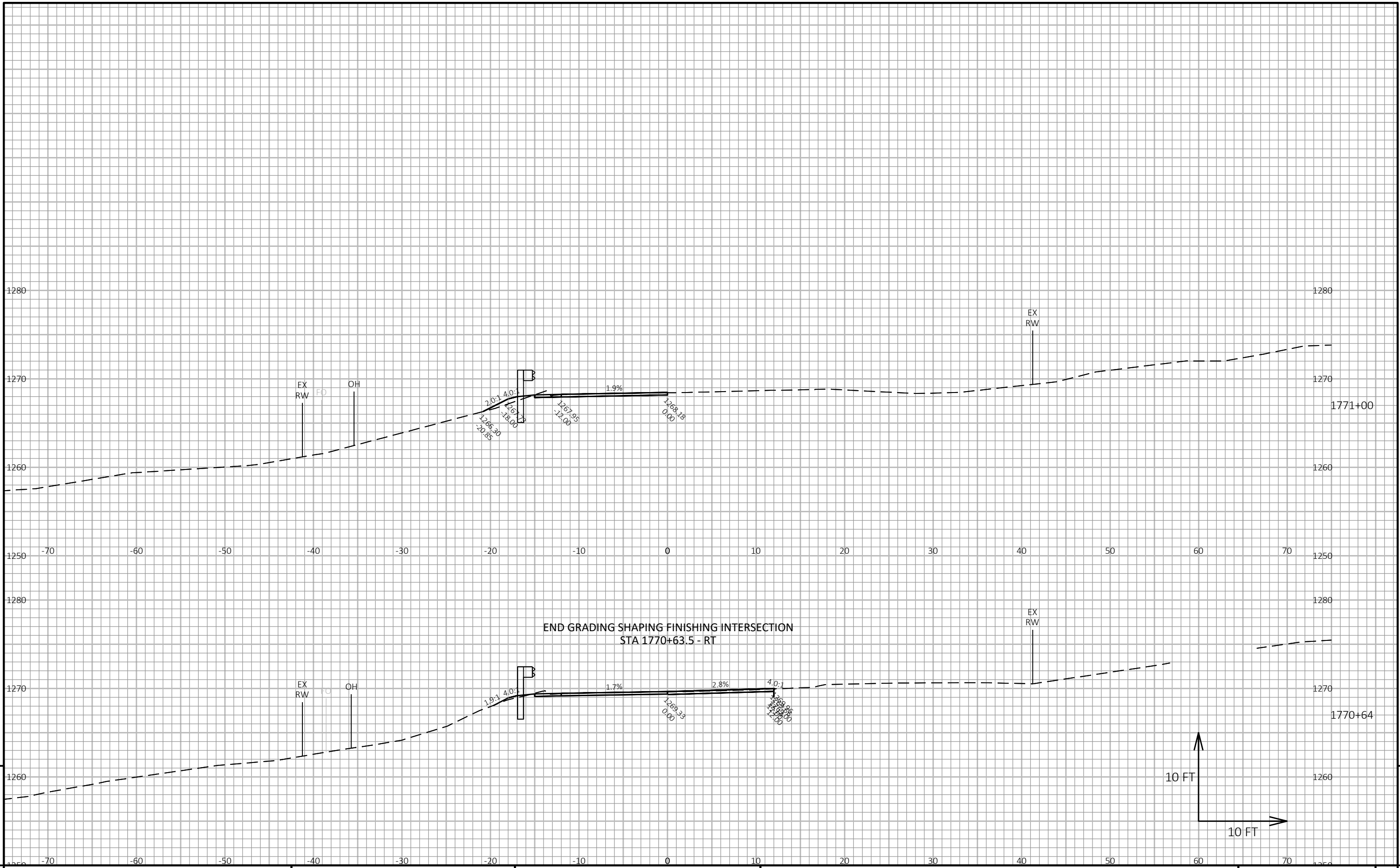
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COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



PROJECT NO: 5540-02-70

HWY: STH 27

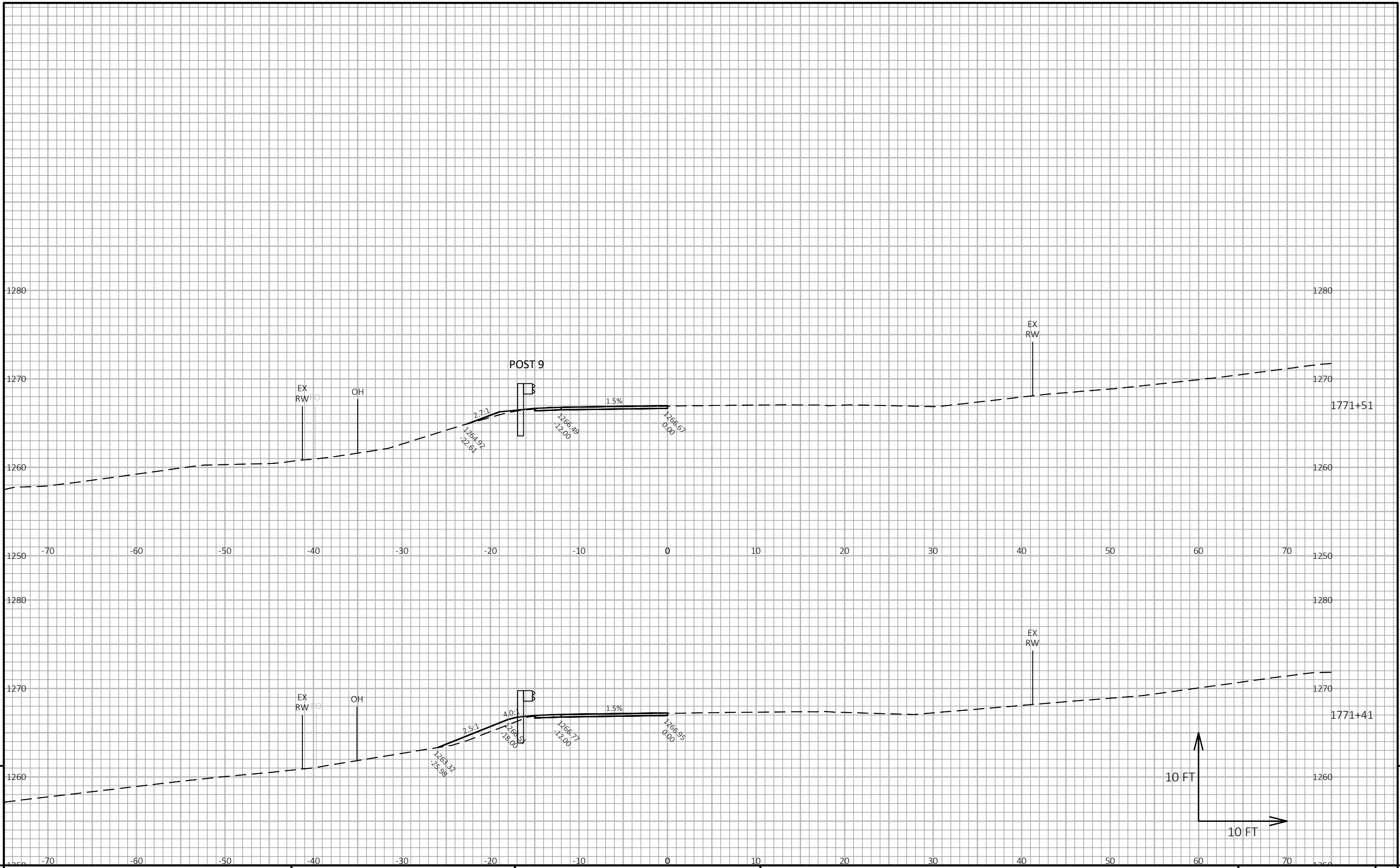
COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

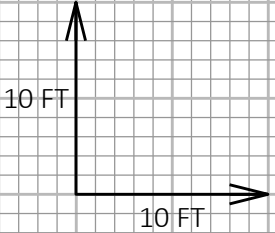
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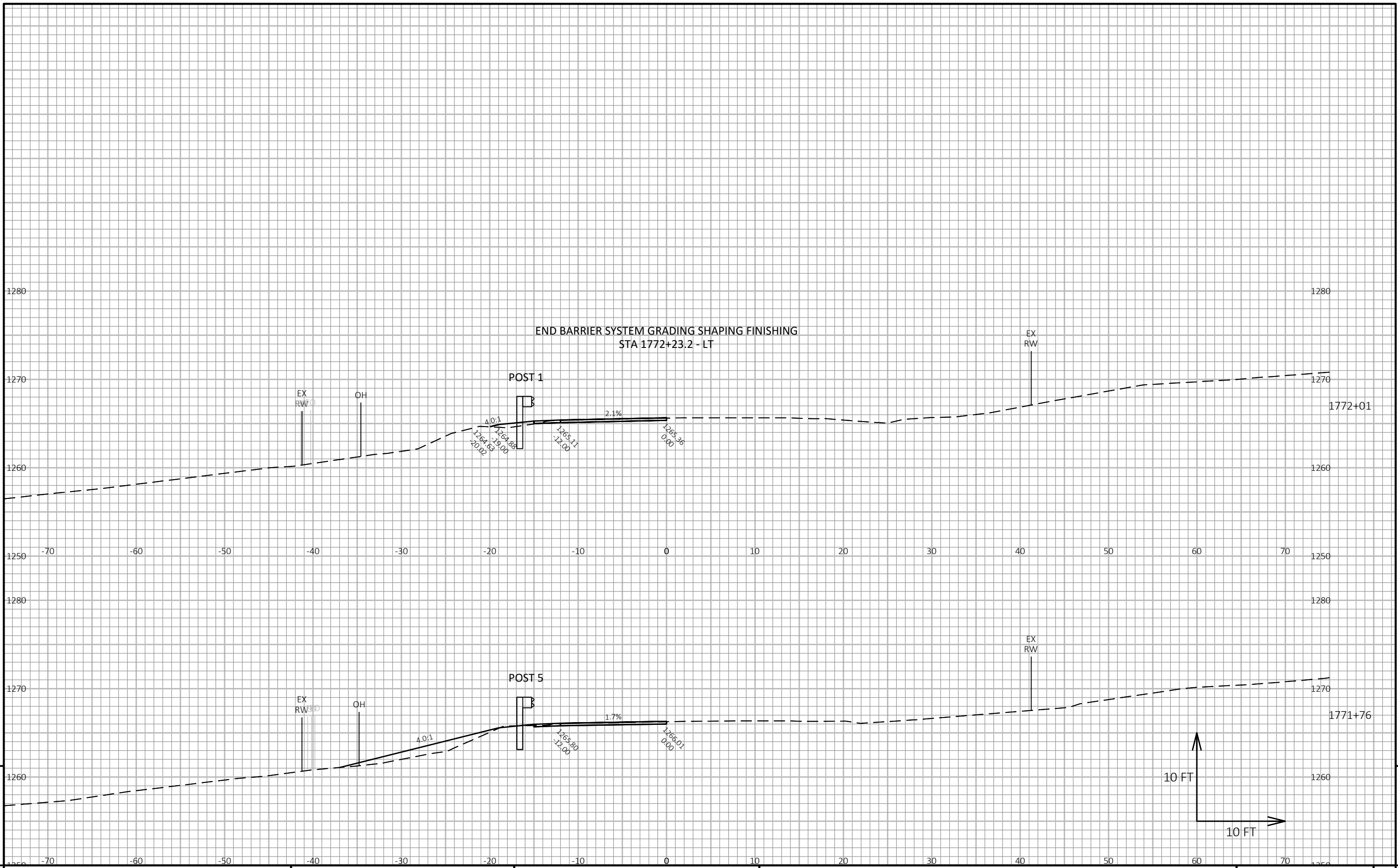


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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 1:42 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 27

END BARRIER SYSTEM GRADING SHAPING FINISHING  
STA 1772+23.2 - LT



PROJECT NO: 5540-02-70

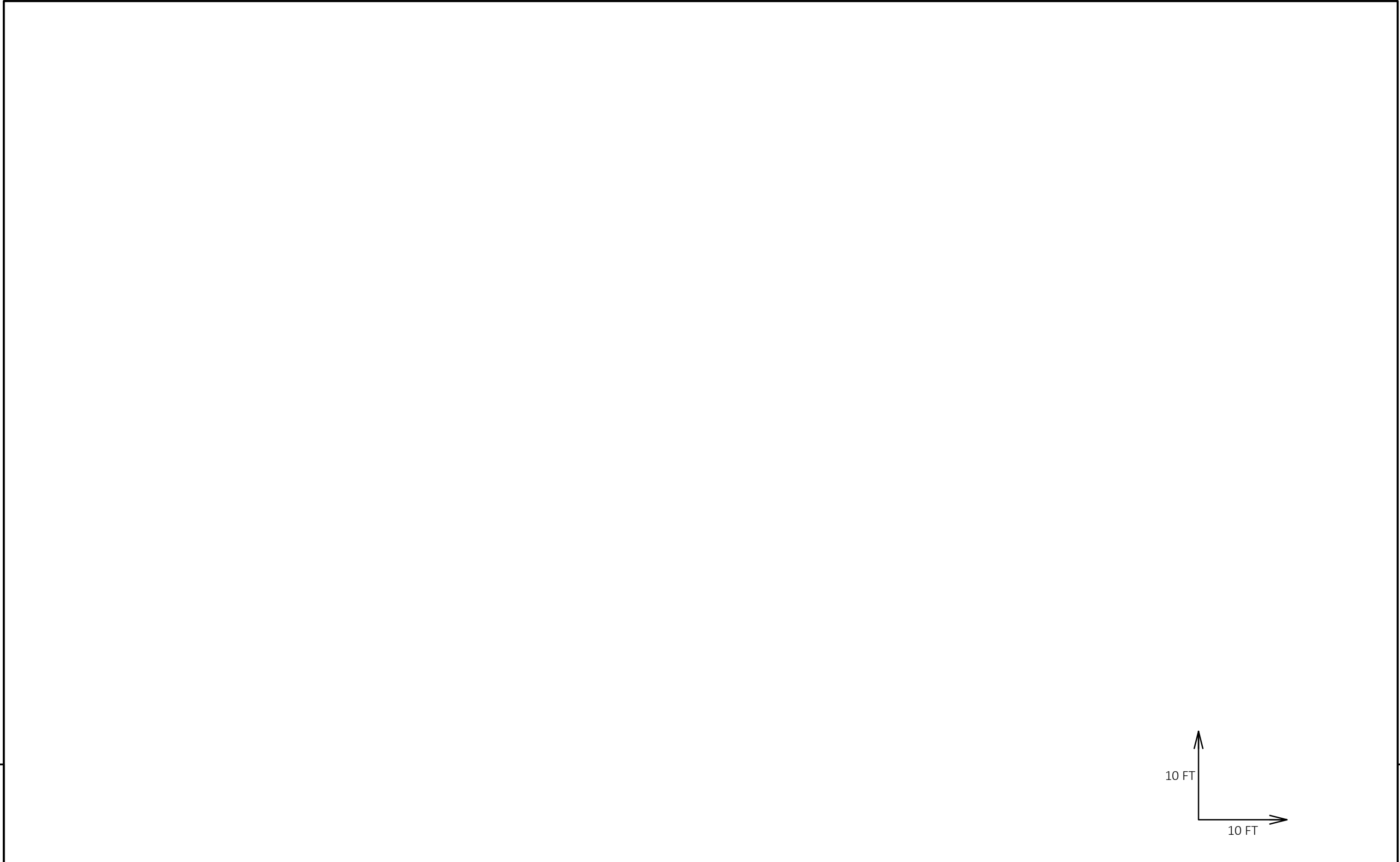
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

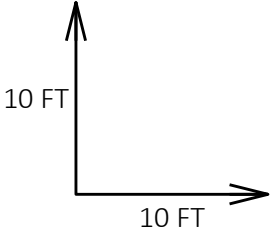
SHEET

E



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PROJECT NO: 5540-02-70

HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

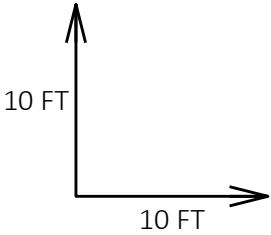
SHEET

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PROJECT NO: 5540-02-70

HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

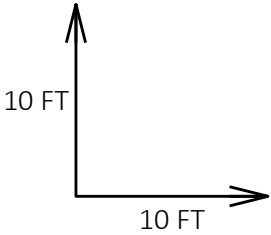
SHEET

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PROJECT NO: 5540-02-70

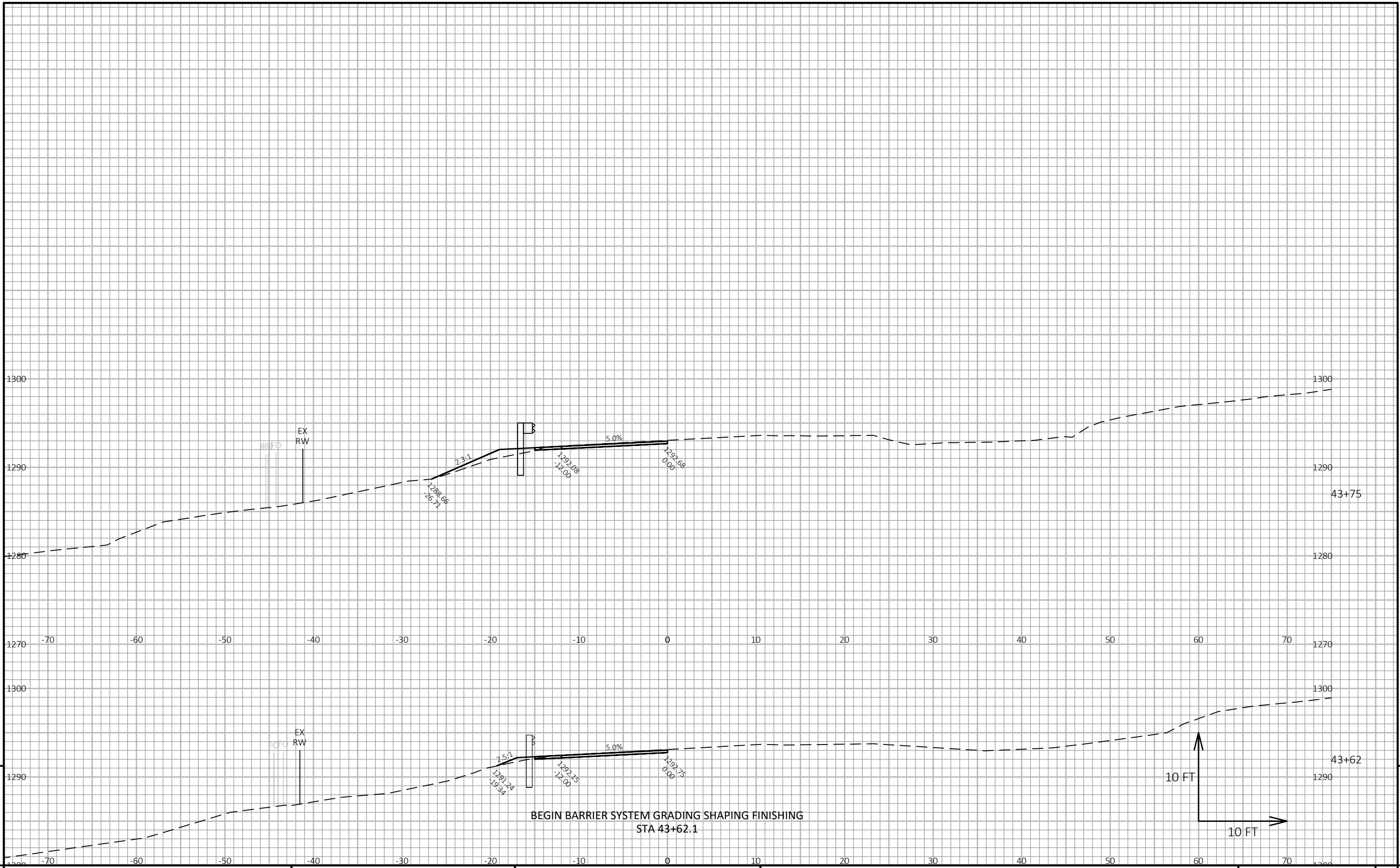
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



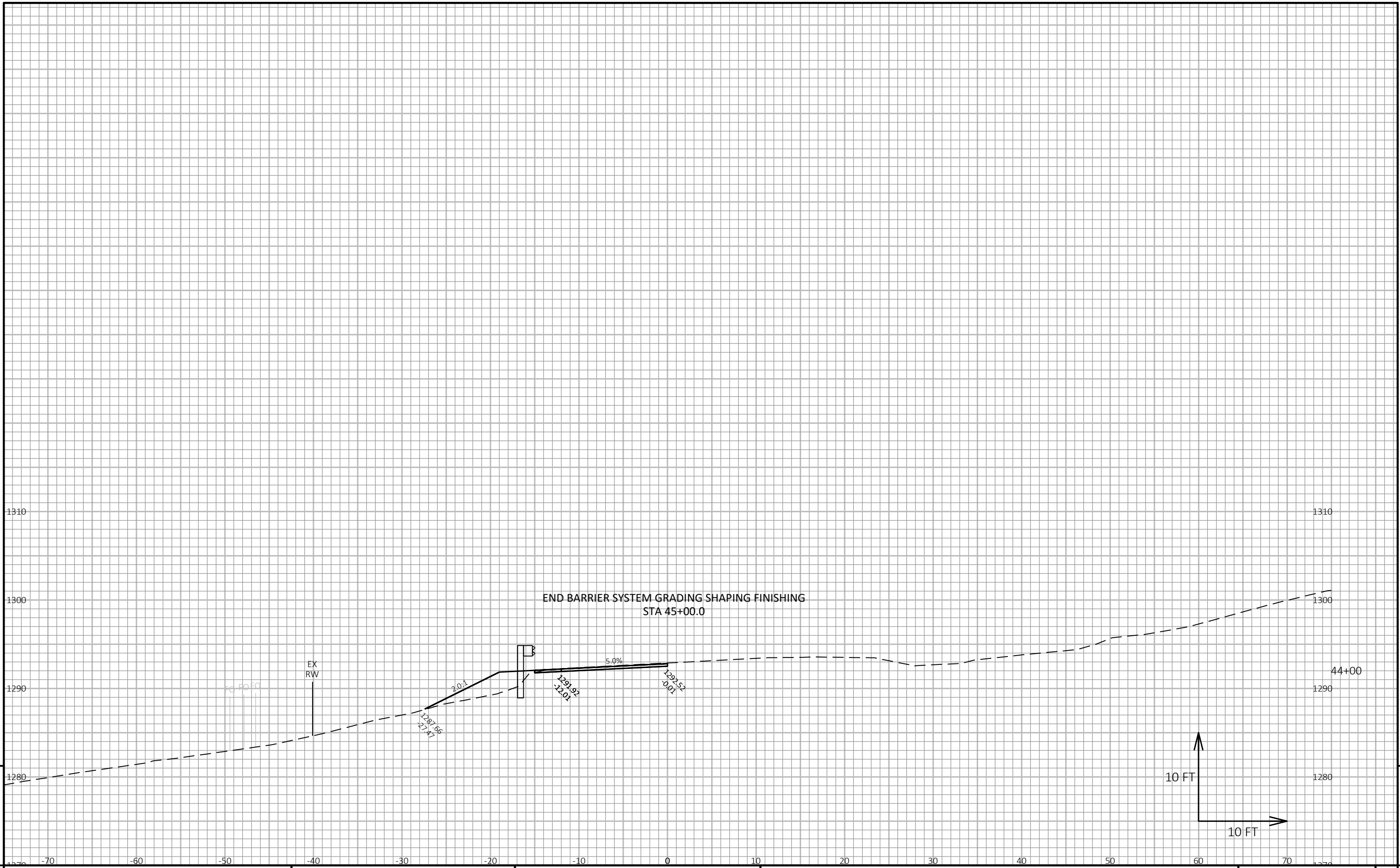
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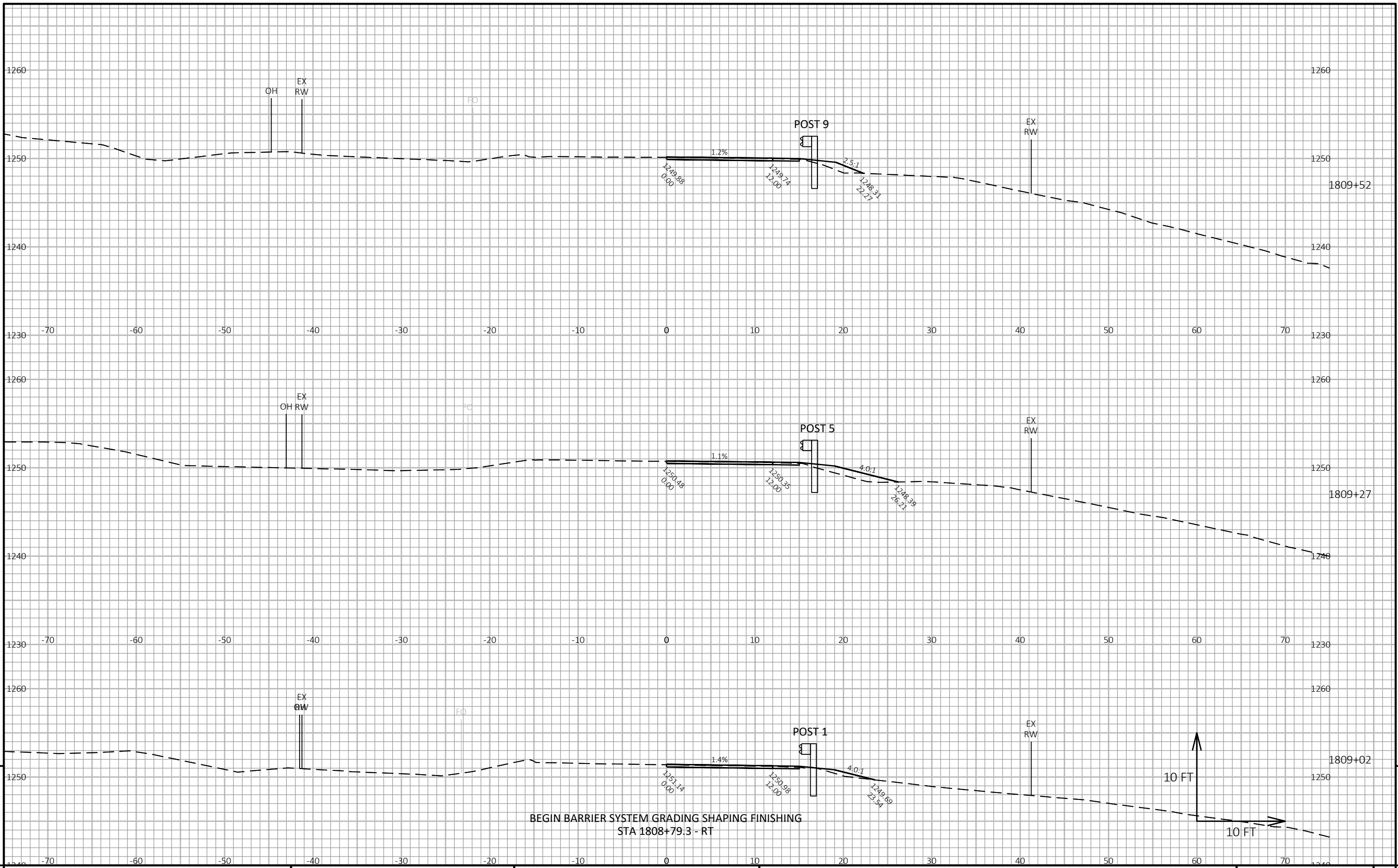
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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 1:47 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - STH 82 1



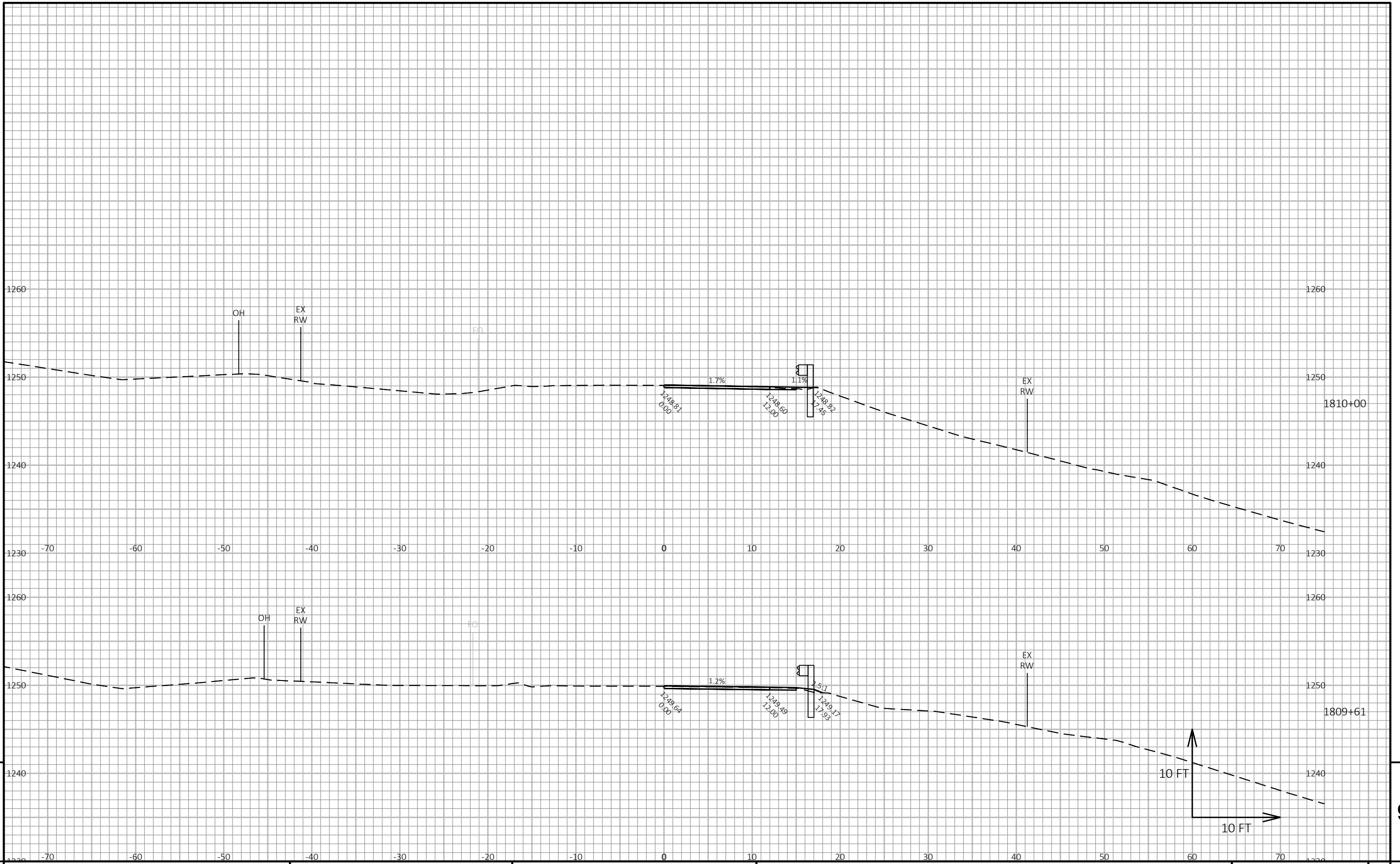
|                        |             |                |                        |       |   |
|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|



BEGIN BARRIER SYSTEM GRADING SHAPING FINISHING  
 STA 1808+79.3 - RT

|                        |             |                |                        |       |   |
|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|





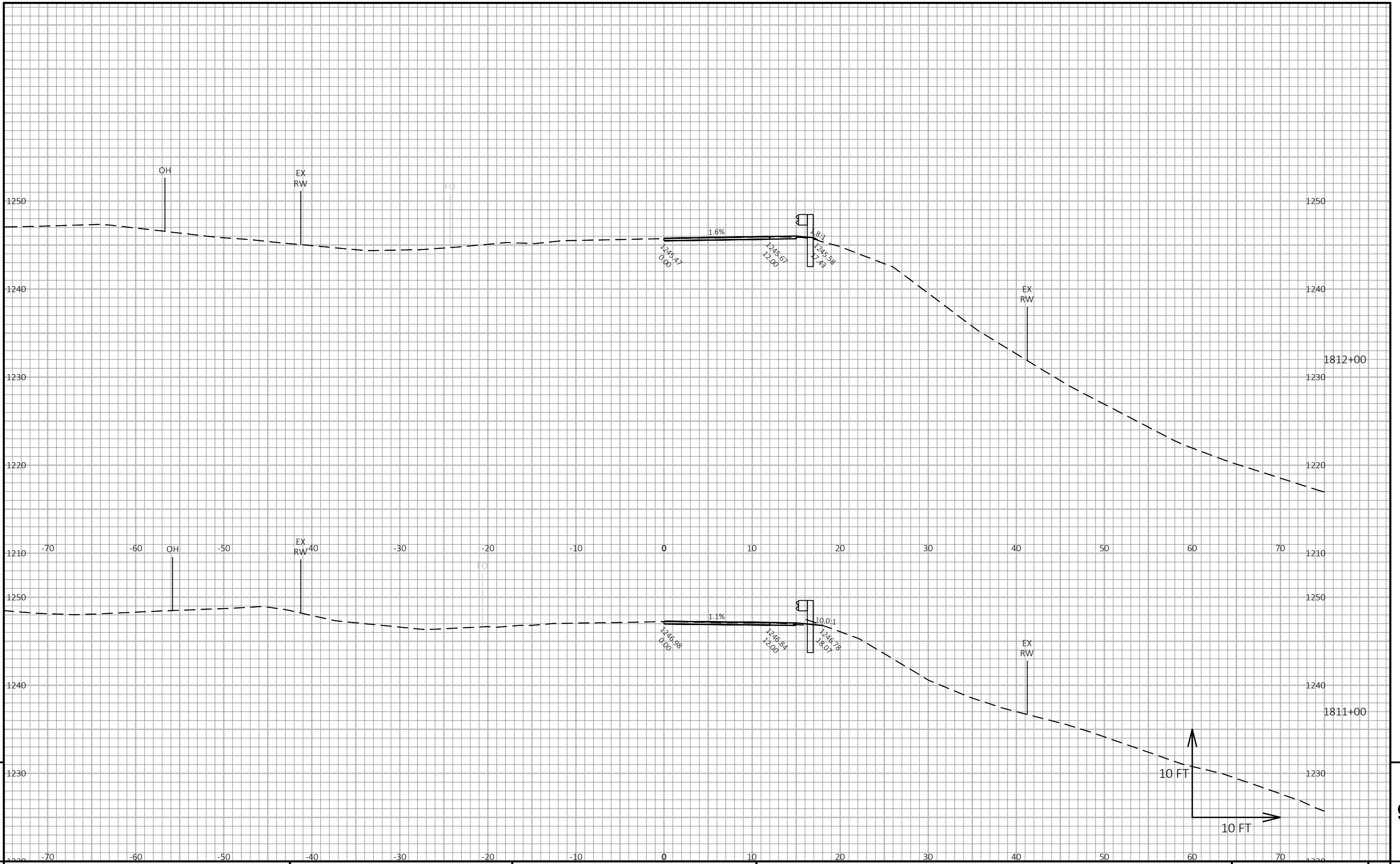
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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 1:50 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADDs SHEET 49

LAYOUT NAME - STH 27 33

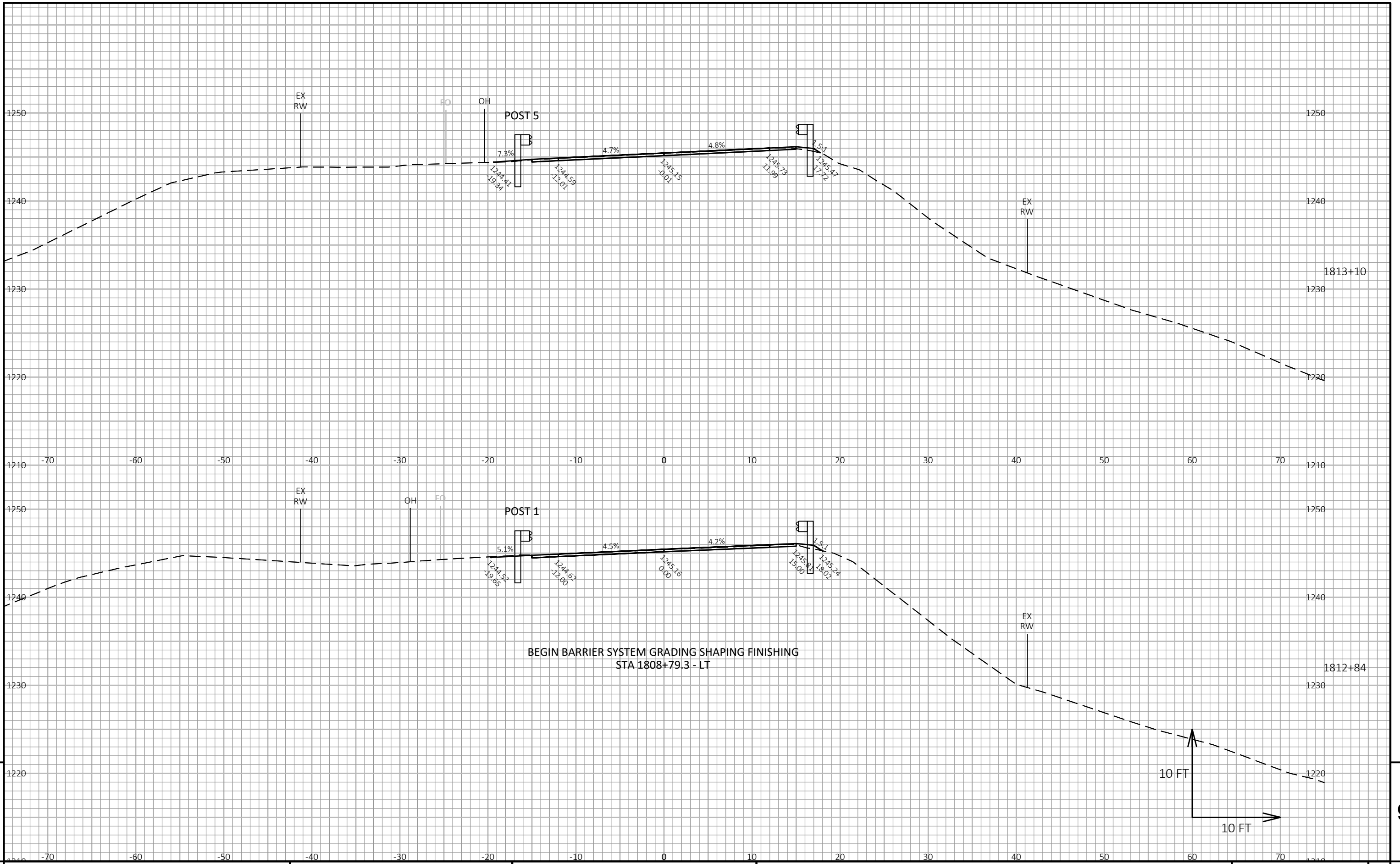


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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 1:51 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49



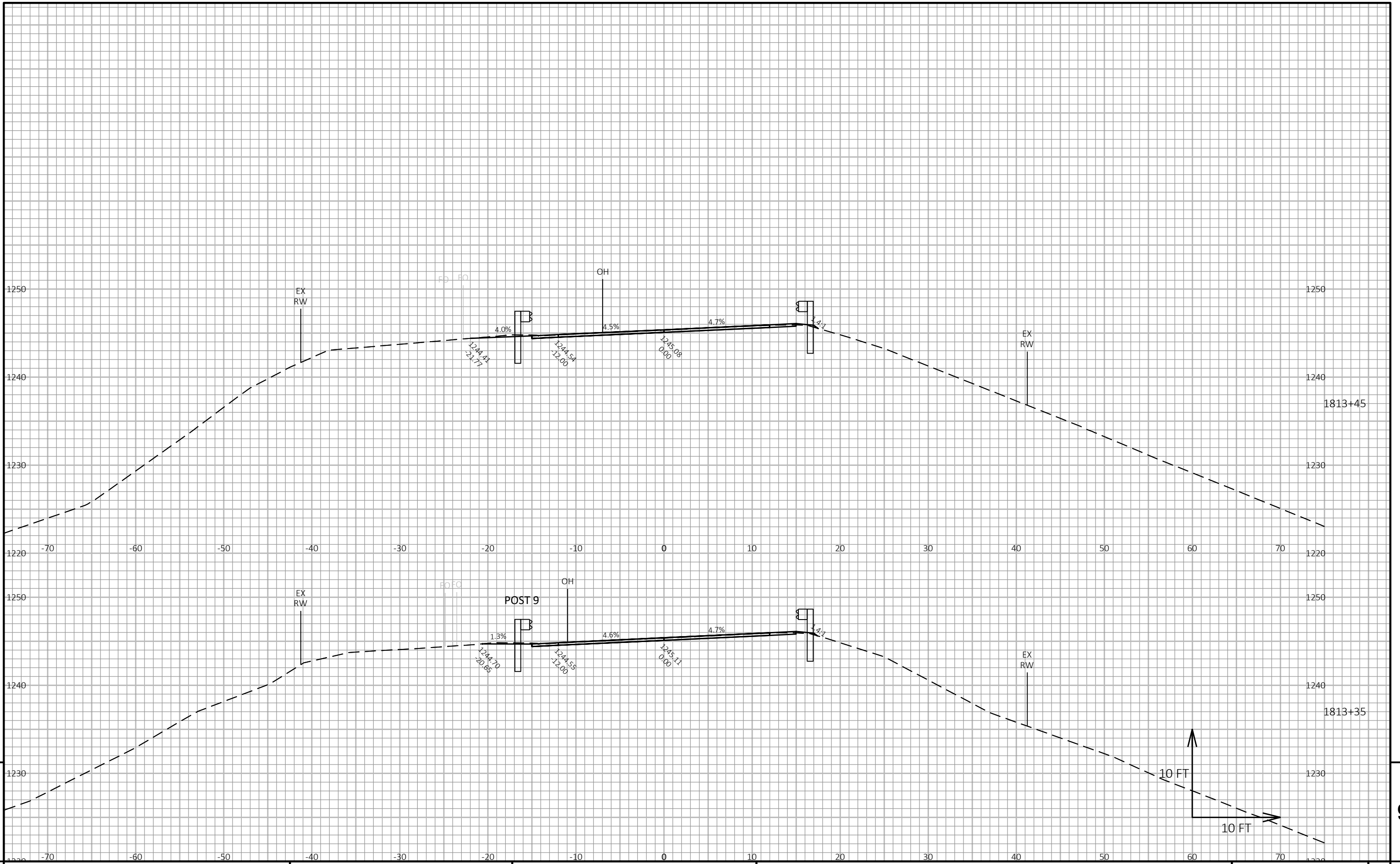
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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 1:52 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 35



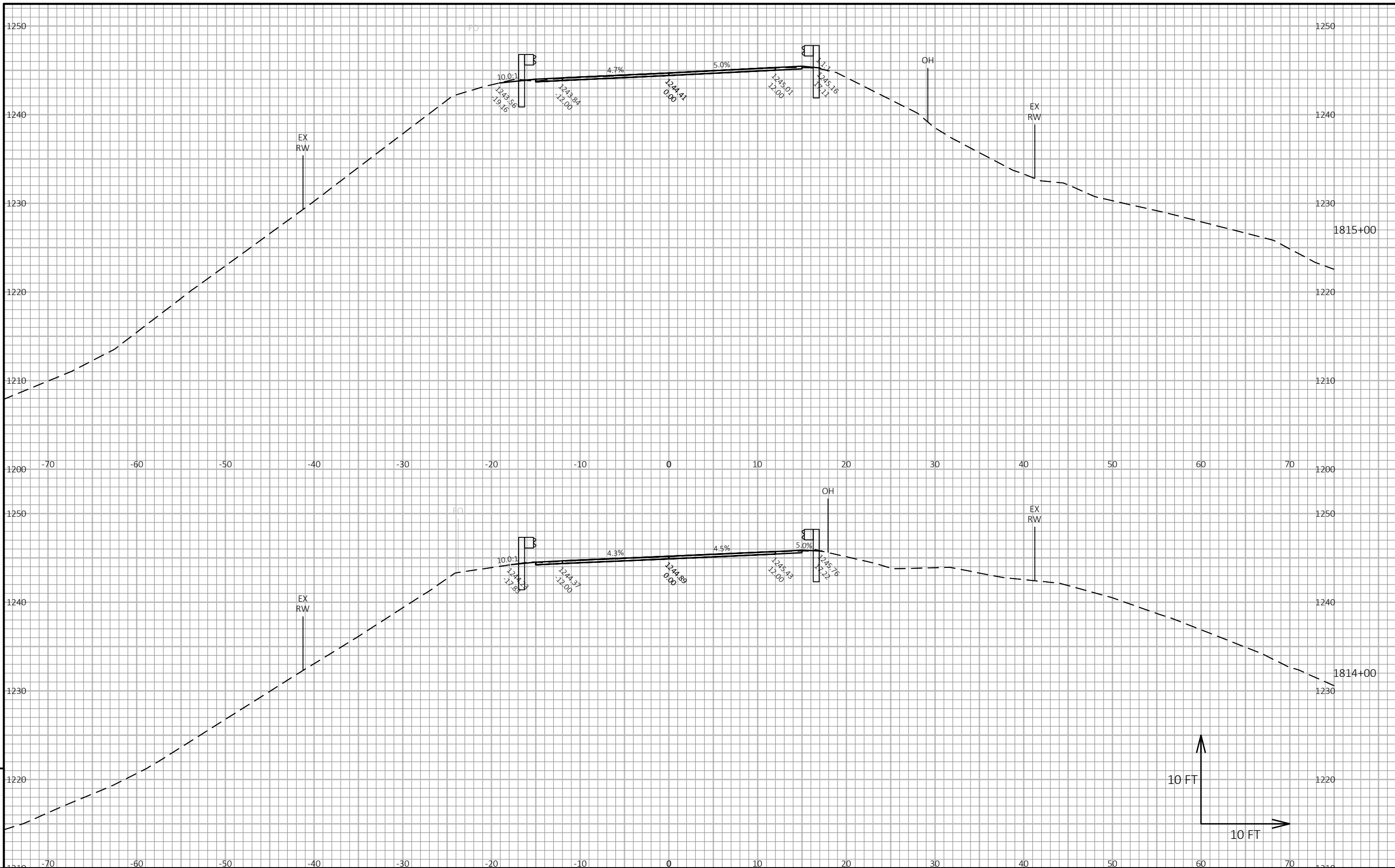
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

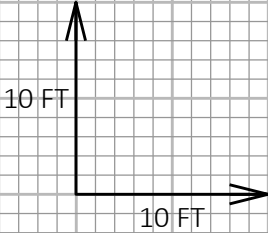
FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE : 7/14/2022 1:53 PM      PLOT BY : STEVE LIPPERT      PLOT NAME :      PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 36

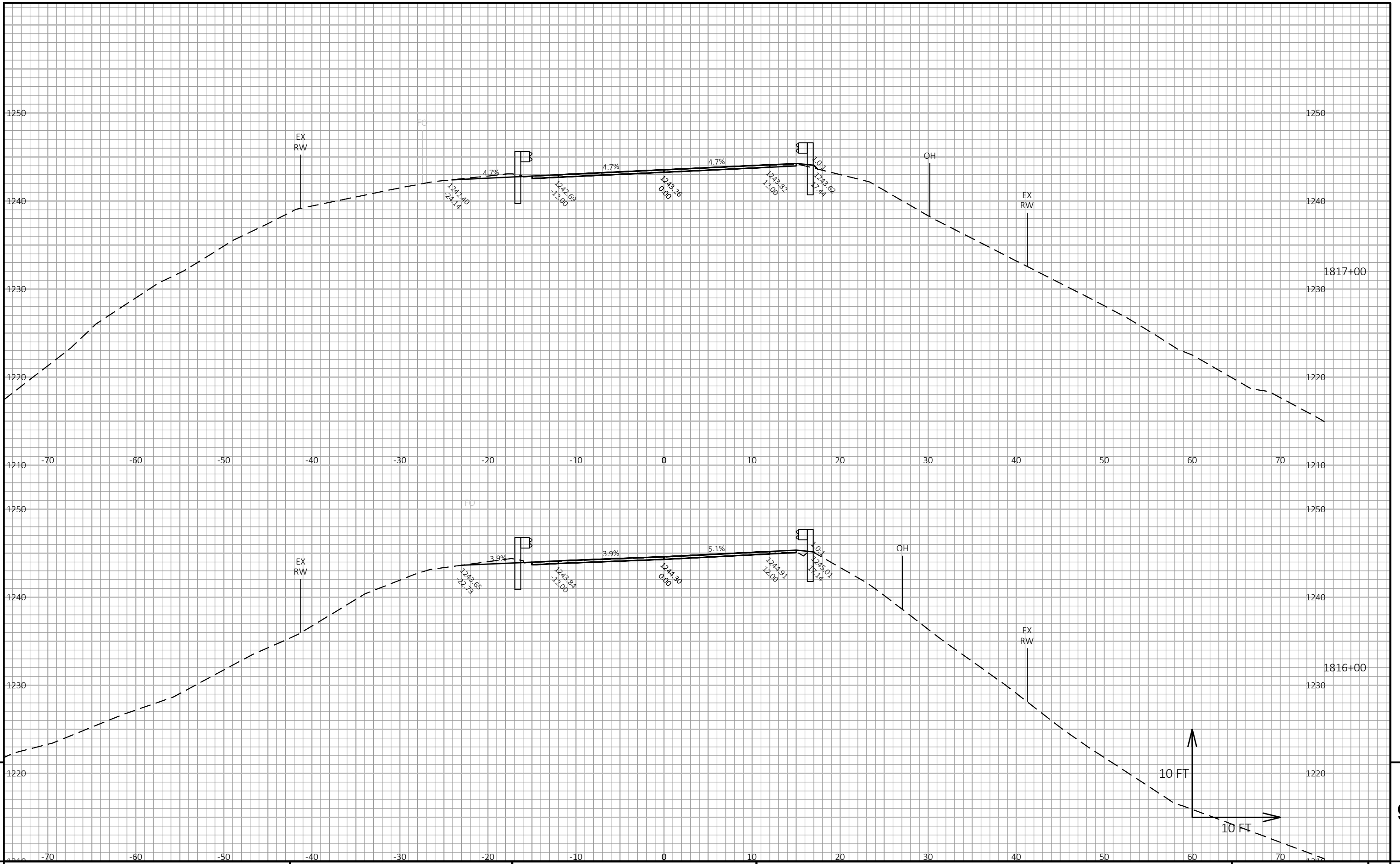


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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|



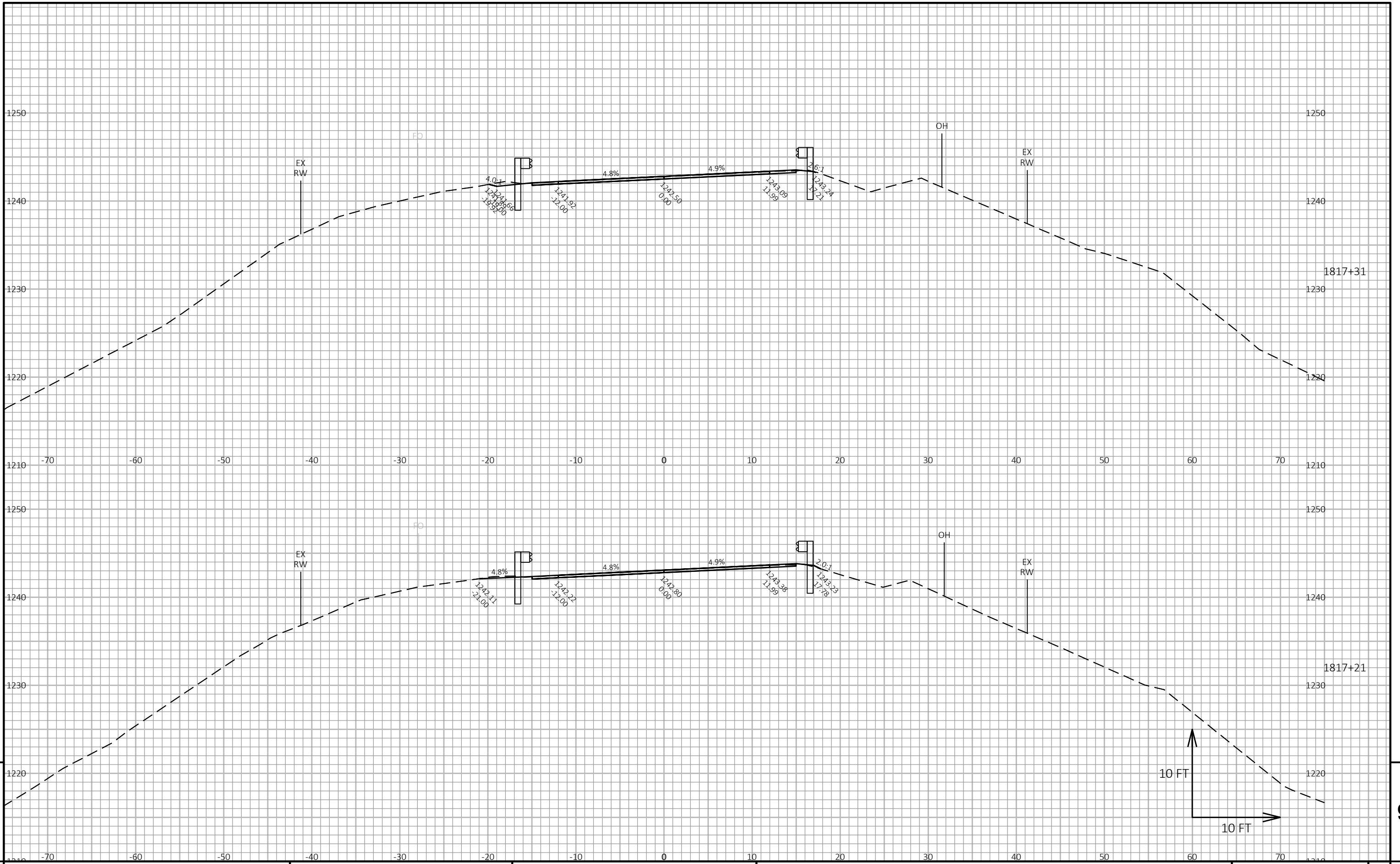
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME: X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE: 7/14/2022 1:55 PM      PLOT BY: STEVE LIPPERT      PLOT NAME:      PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 38



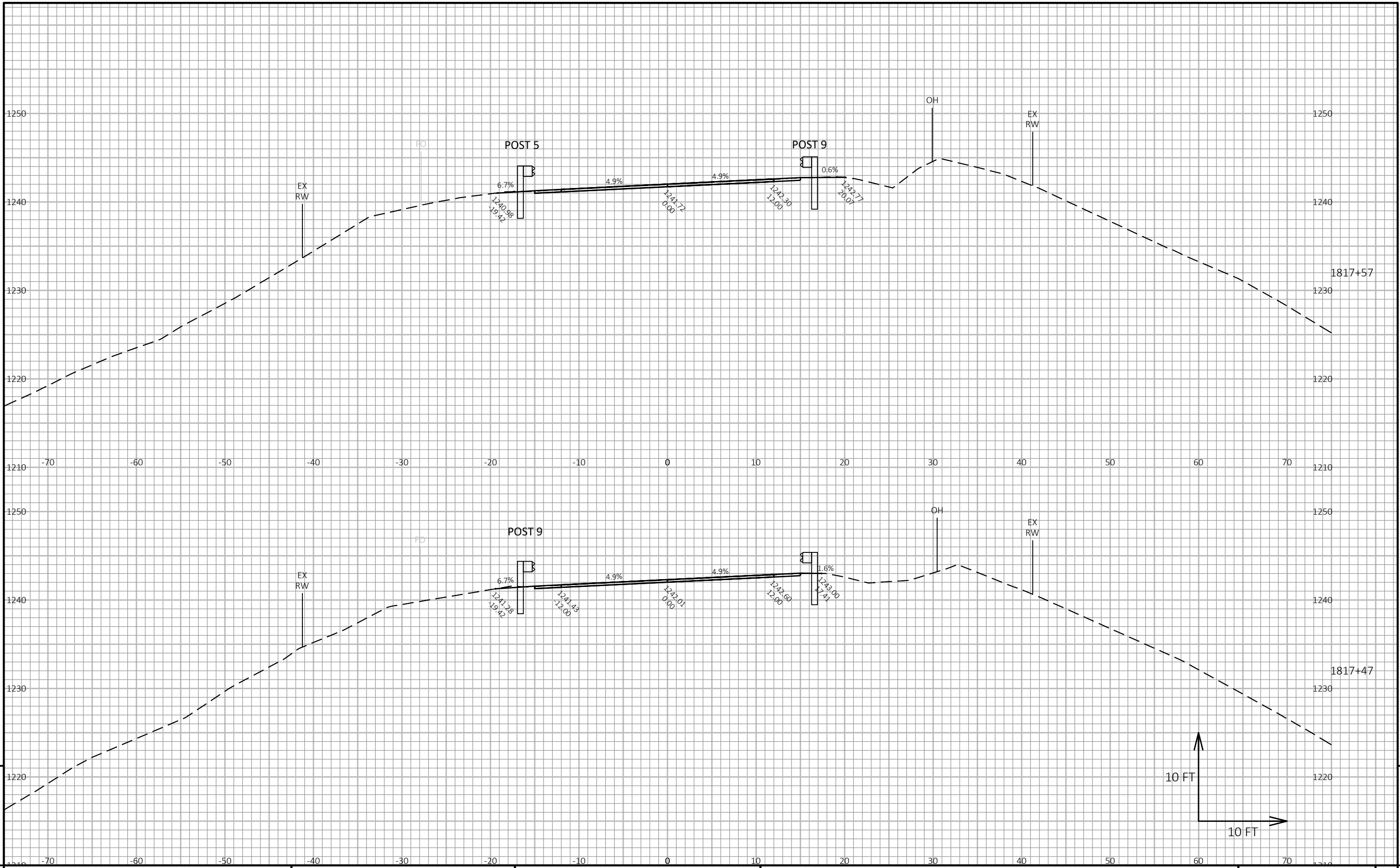
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME: X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE: 7/14/2022 1:56 PM      PLOT BY: STEVE LIPPERT      PLOT NAME:      PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 39

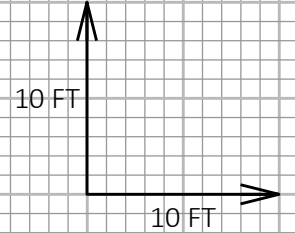


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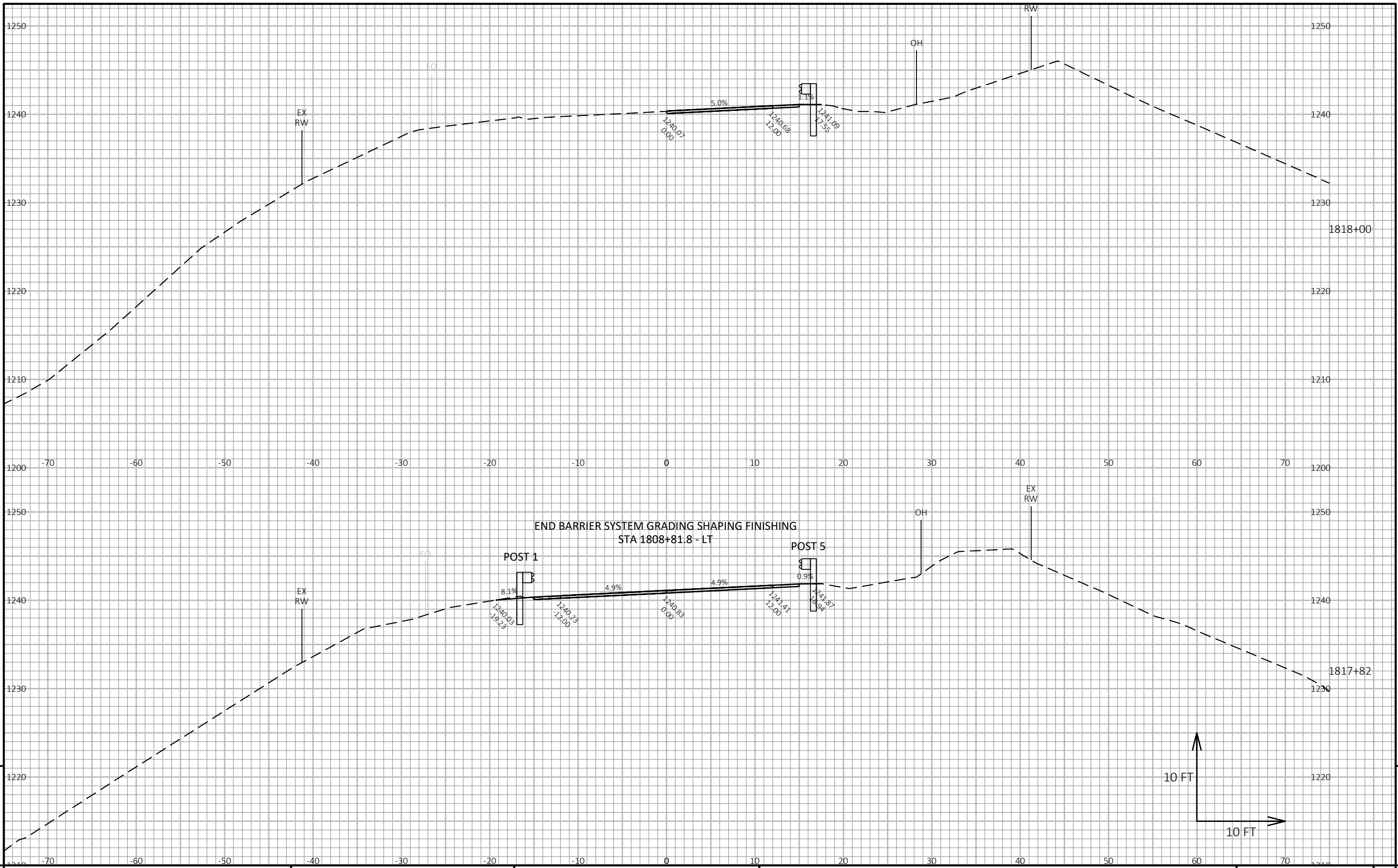
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|                        |             |                |                        |       |   |
|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 1:57 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49





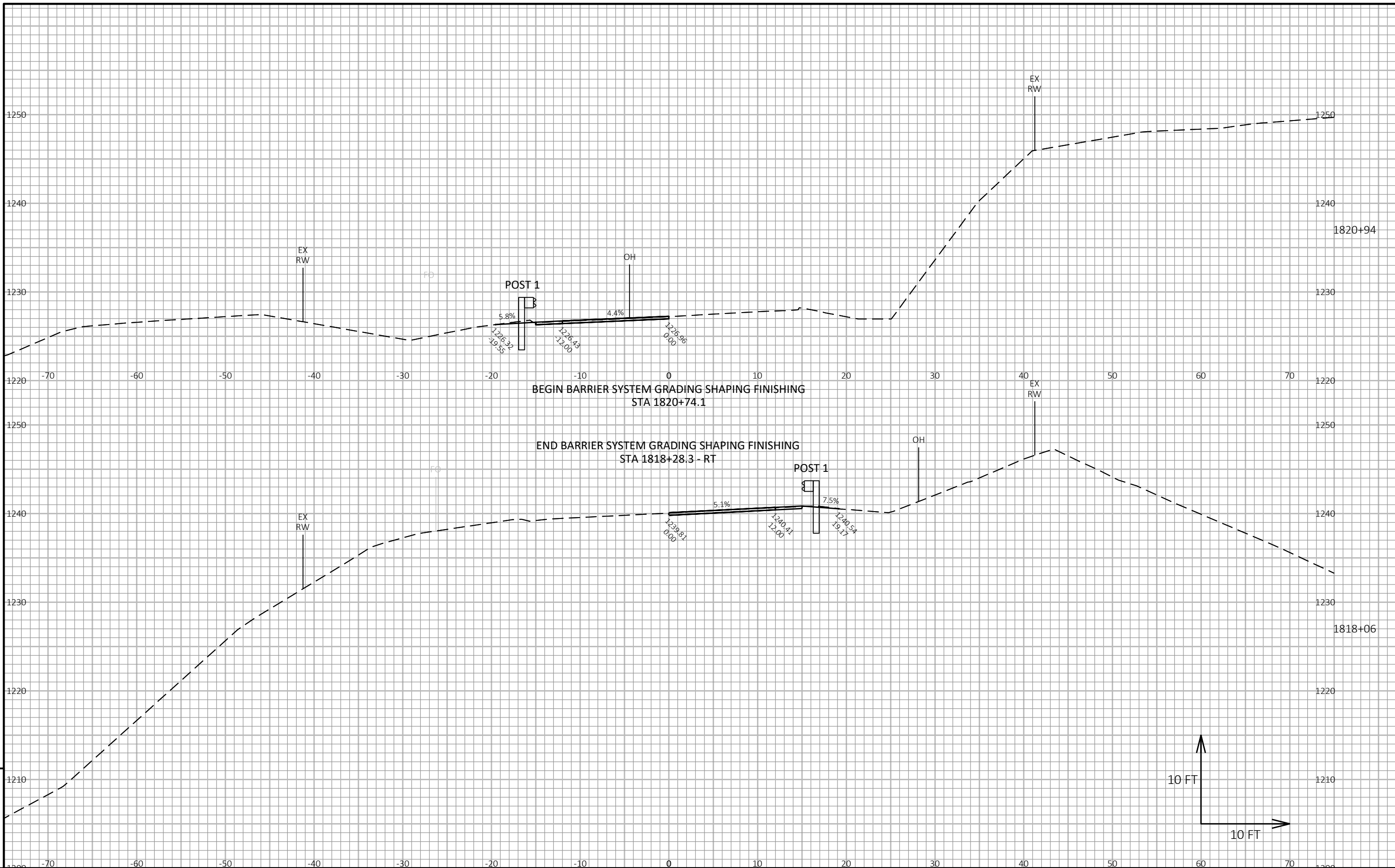


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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME: X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE: 7/14/2022 1:58 PM      PLOT BY: STEVE LIPPERT      PLOT NAME:      PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49



PROJECT NO: 5540-02-70

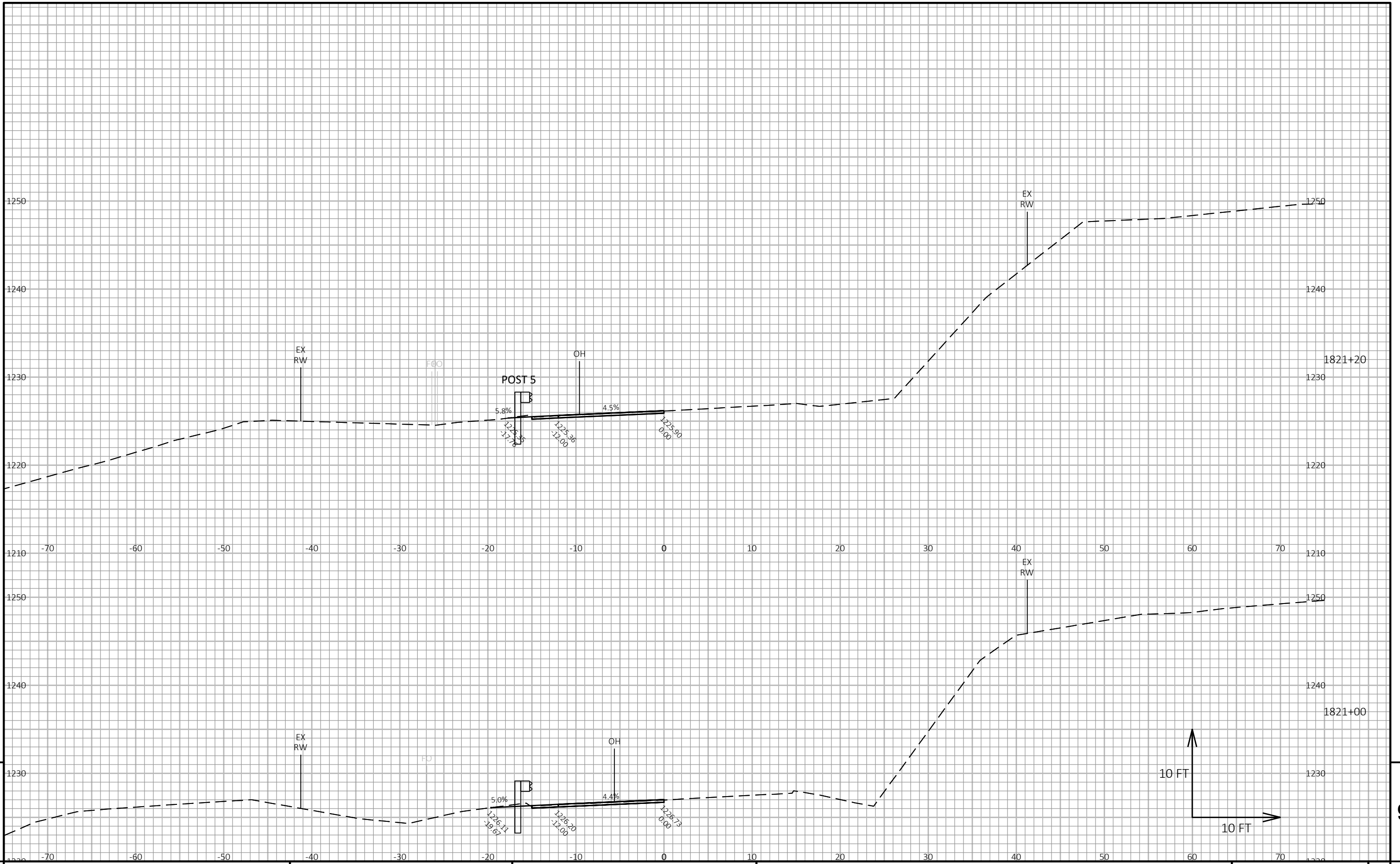
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



PROJECT NO: 5540-02-70

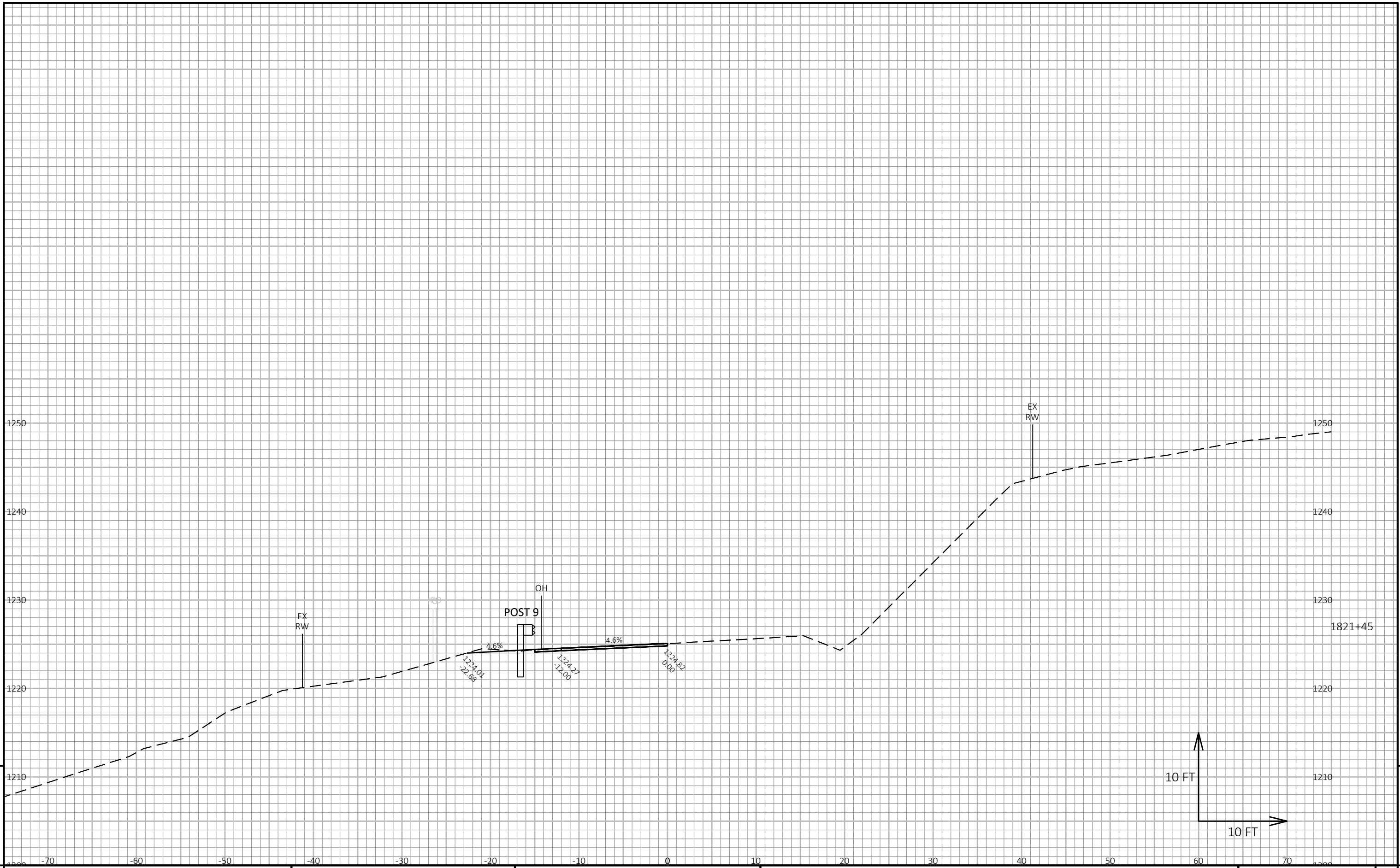
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

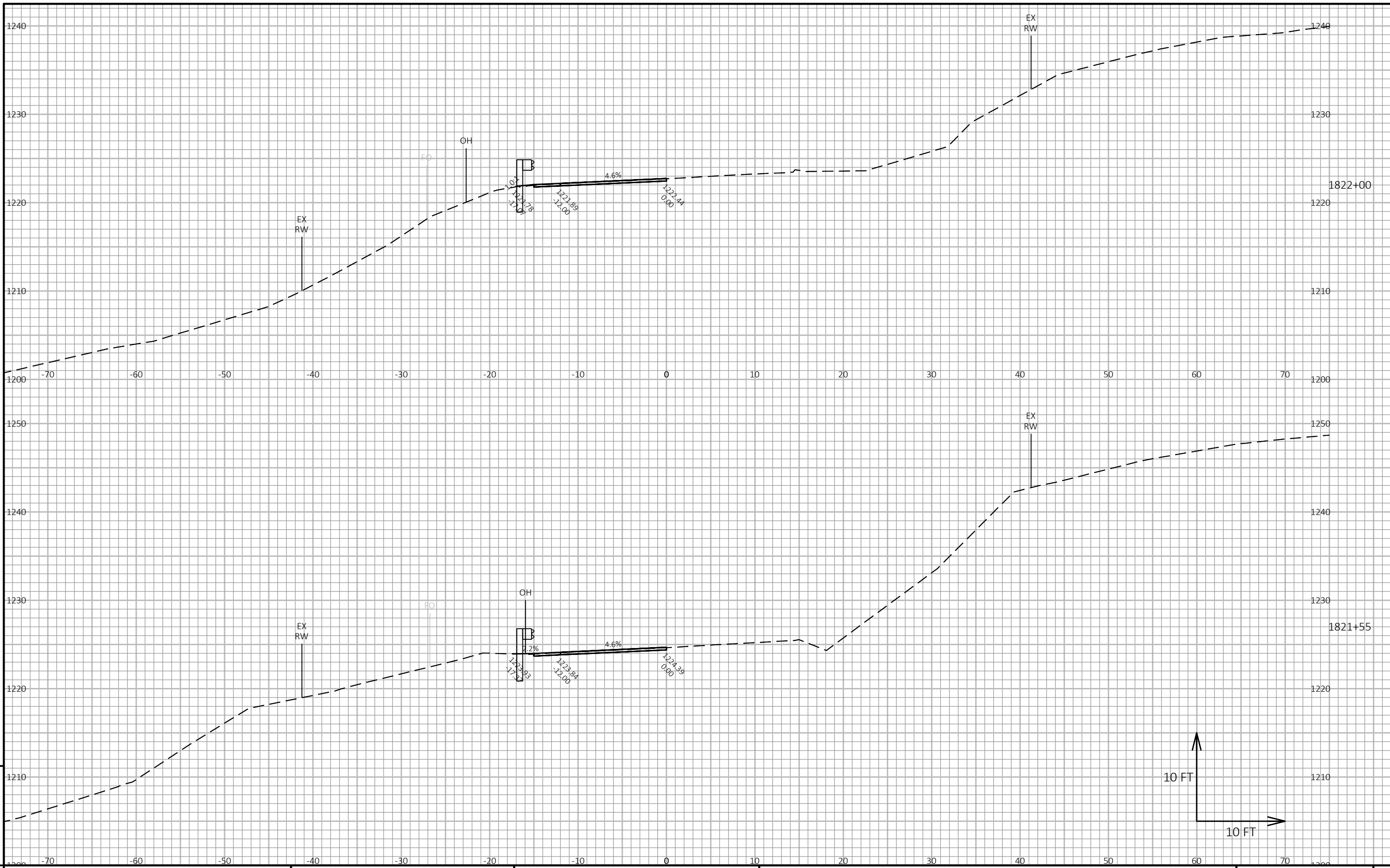
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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|



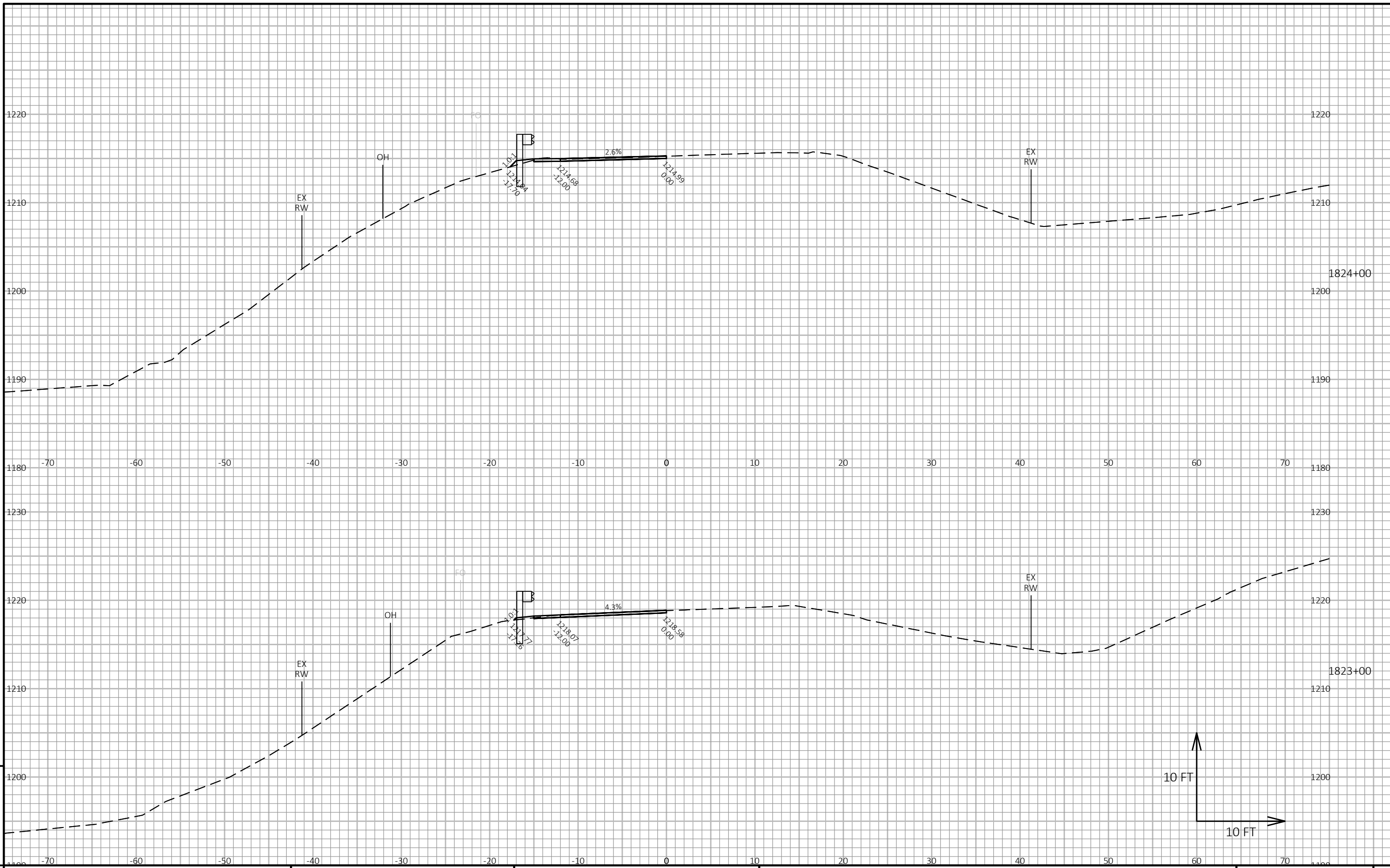
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME: X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE: 7/14/2022 2:02 PM      PLOT BY: STEVE LIPPERT      PLOT NAME:      PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 45



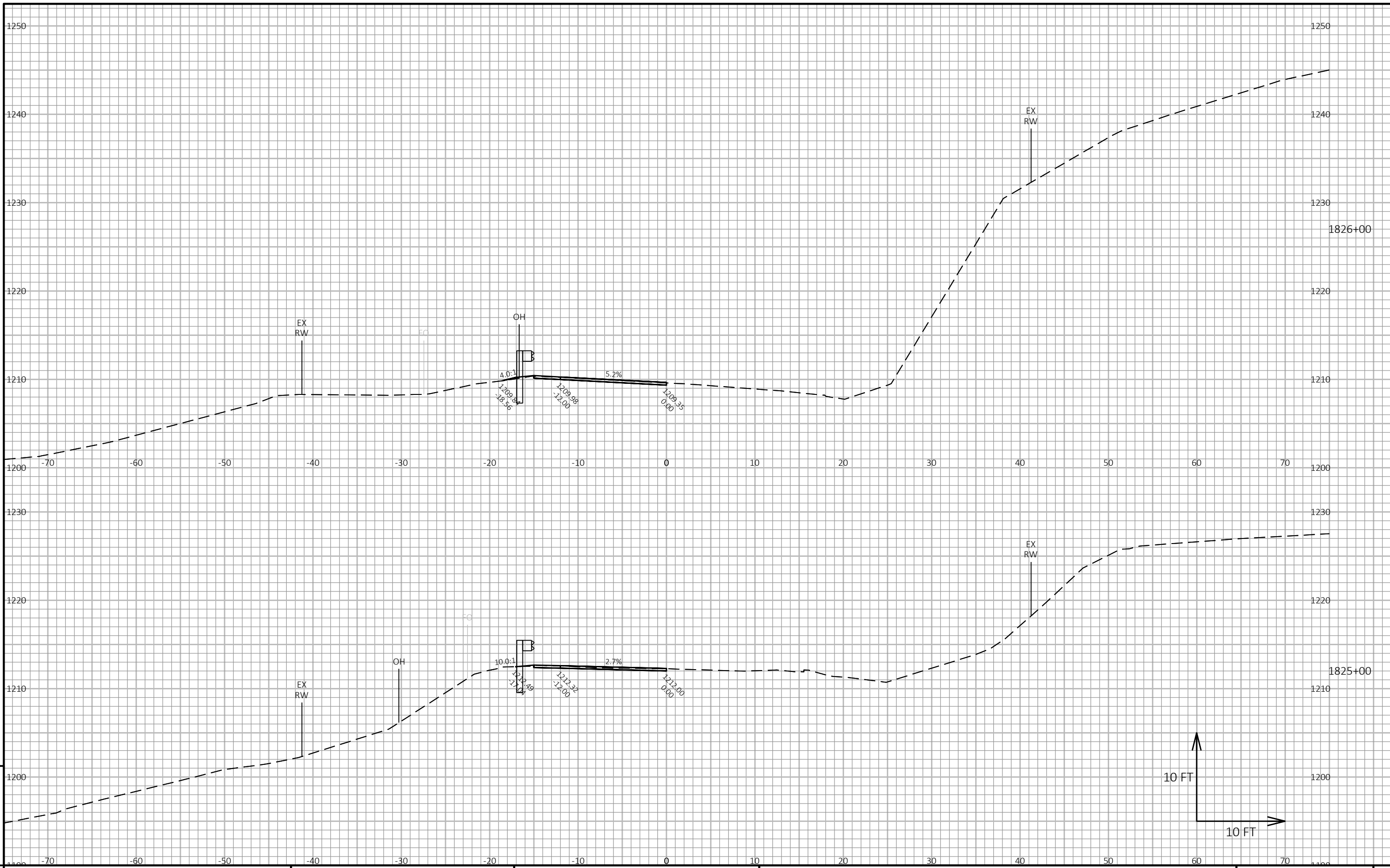
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME: X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE: 7/14/2022 2:04 PM      PLOT BY: STEVE LIPPERT      PLOT NAME:      PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 46



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PROJECT NO: 5540-02-70

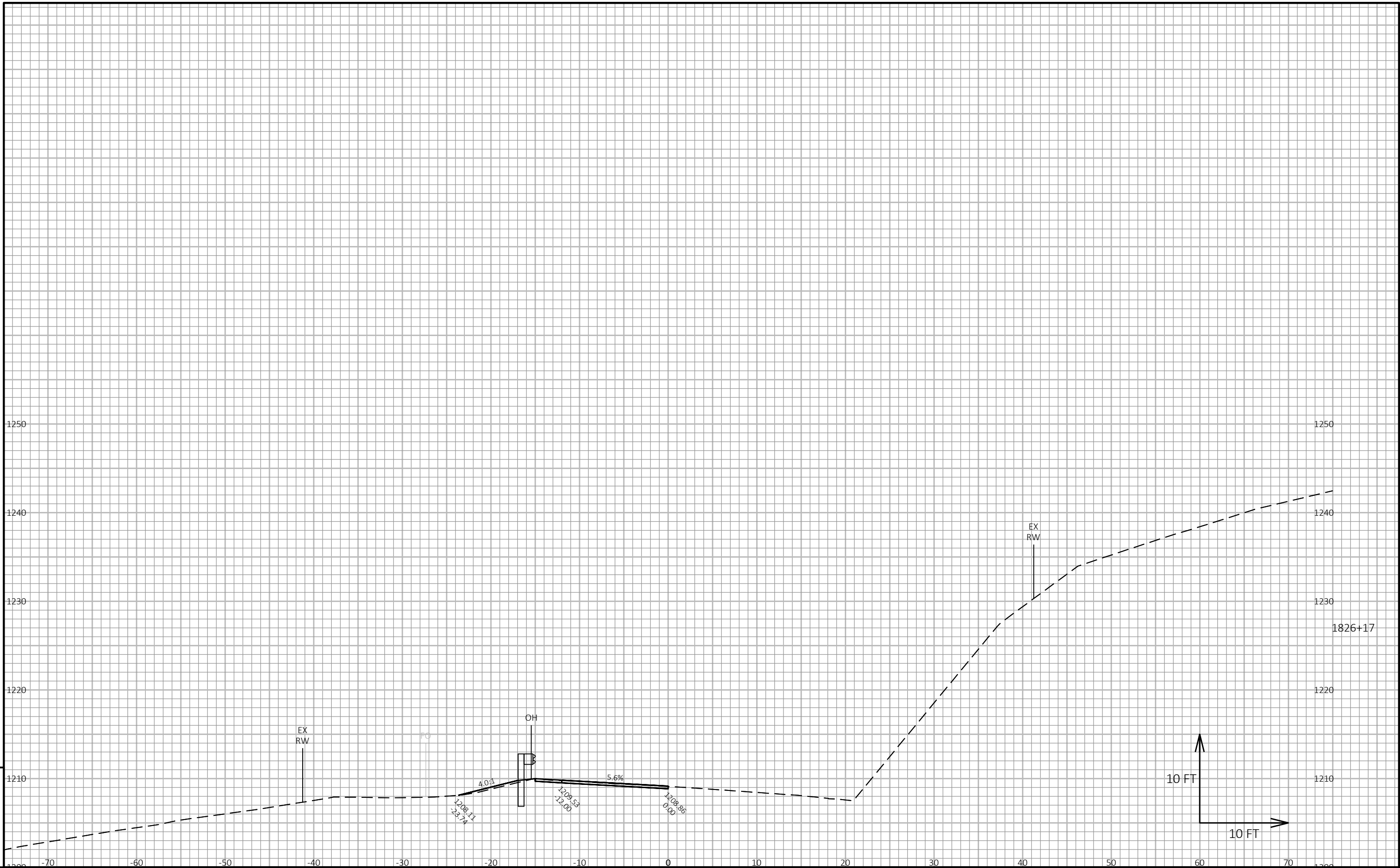
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



PROJECT NO: 5540-02-70

HWY: STH 27

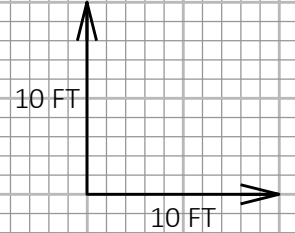
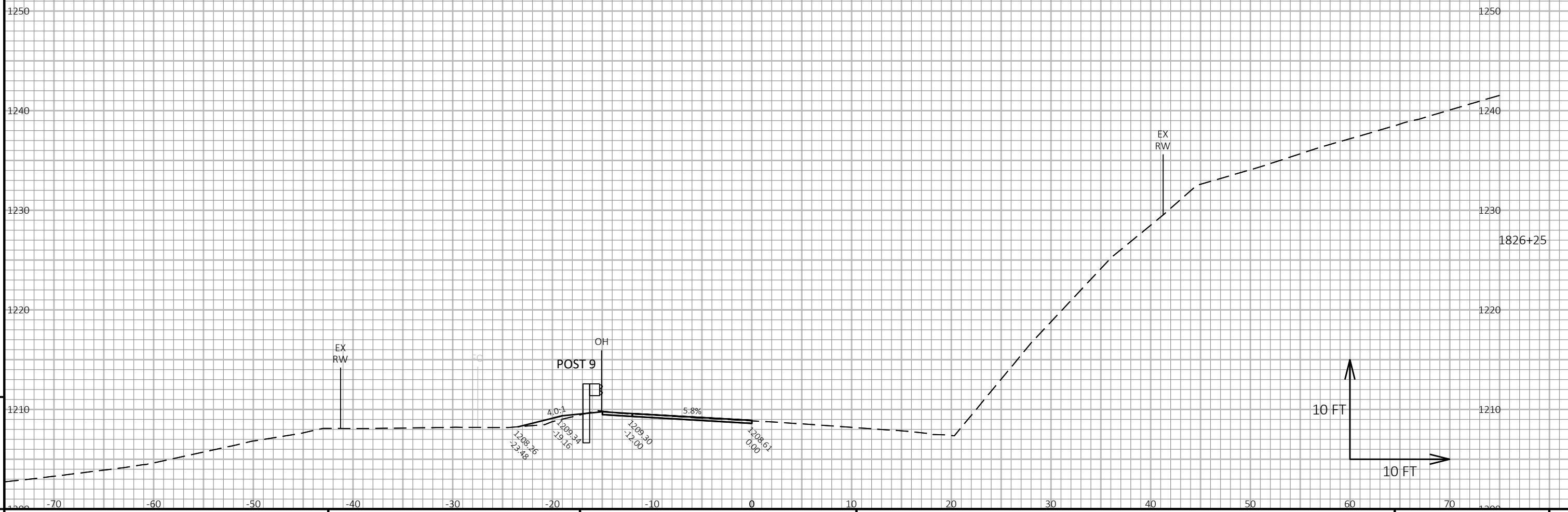
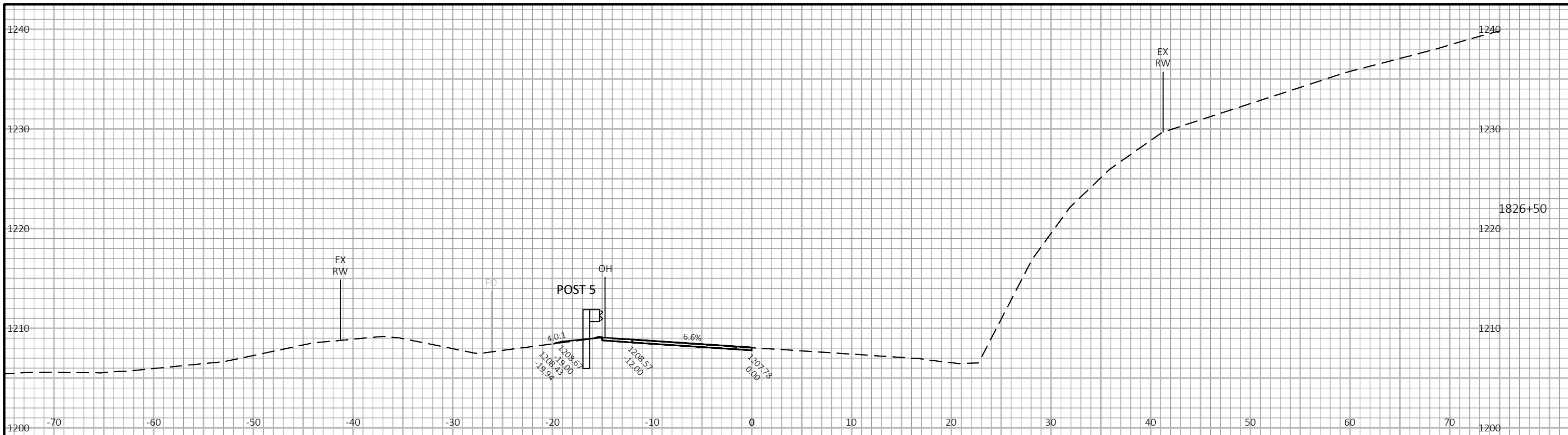
COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E





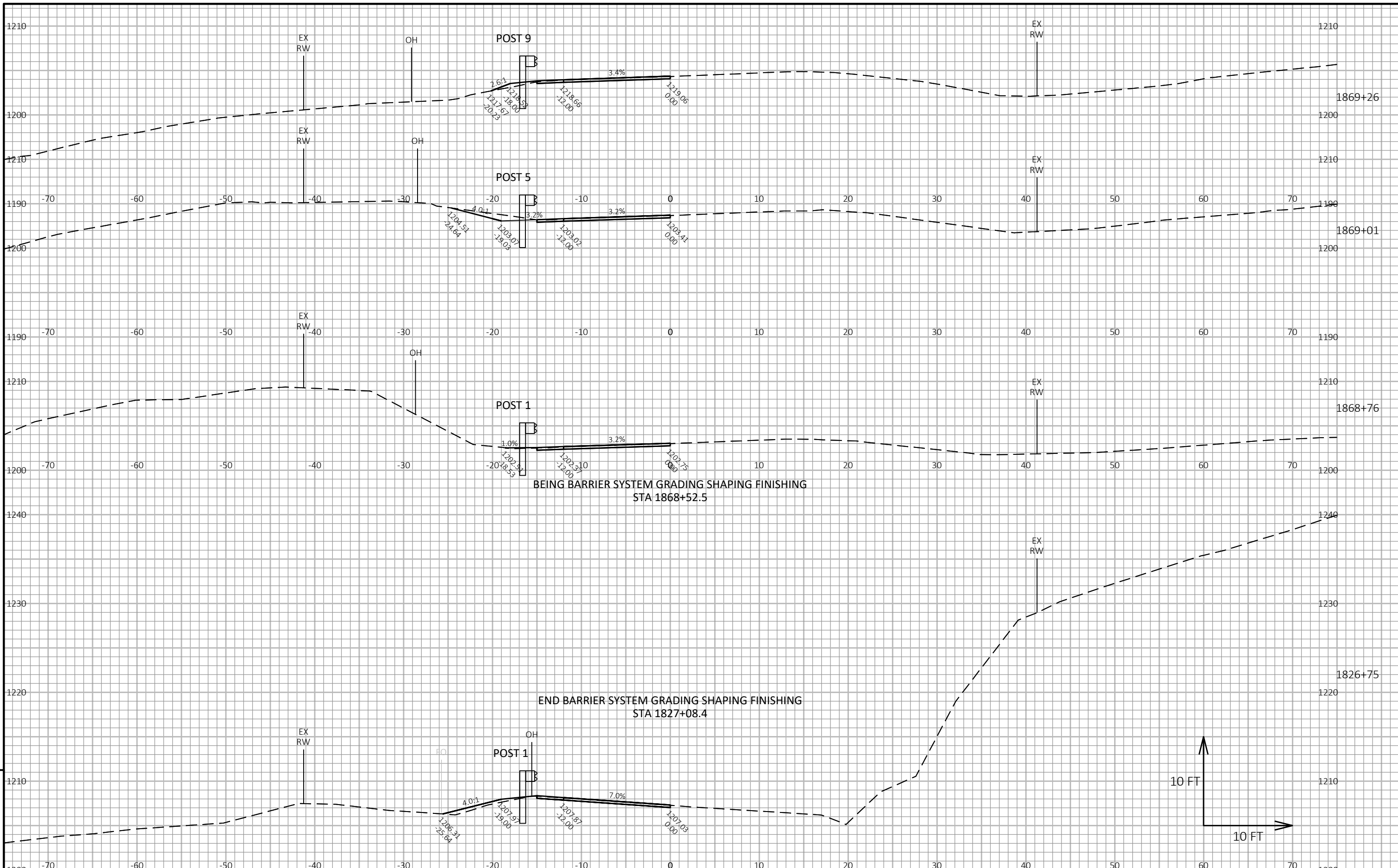
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE : 7/14/2022 2:07 PM      PLOT BY : STEVE LIPPERT      PLOT NAME :      PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 49



PROJECT NO: 5540-02-70

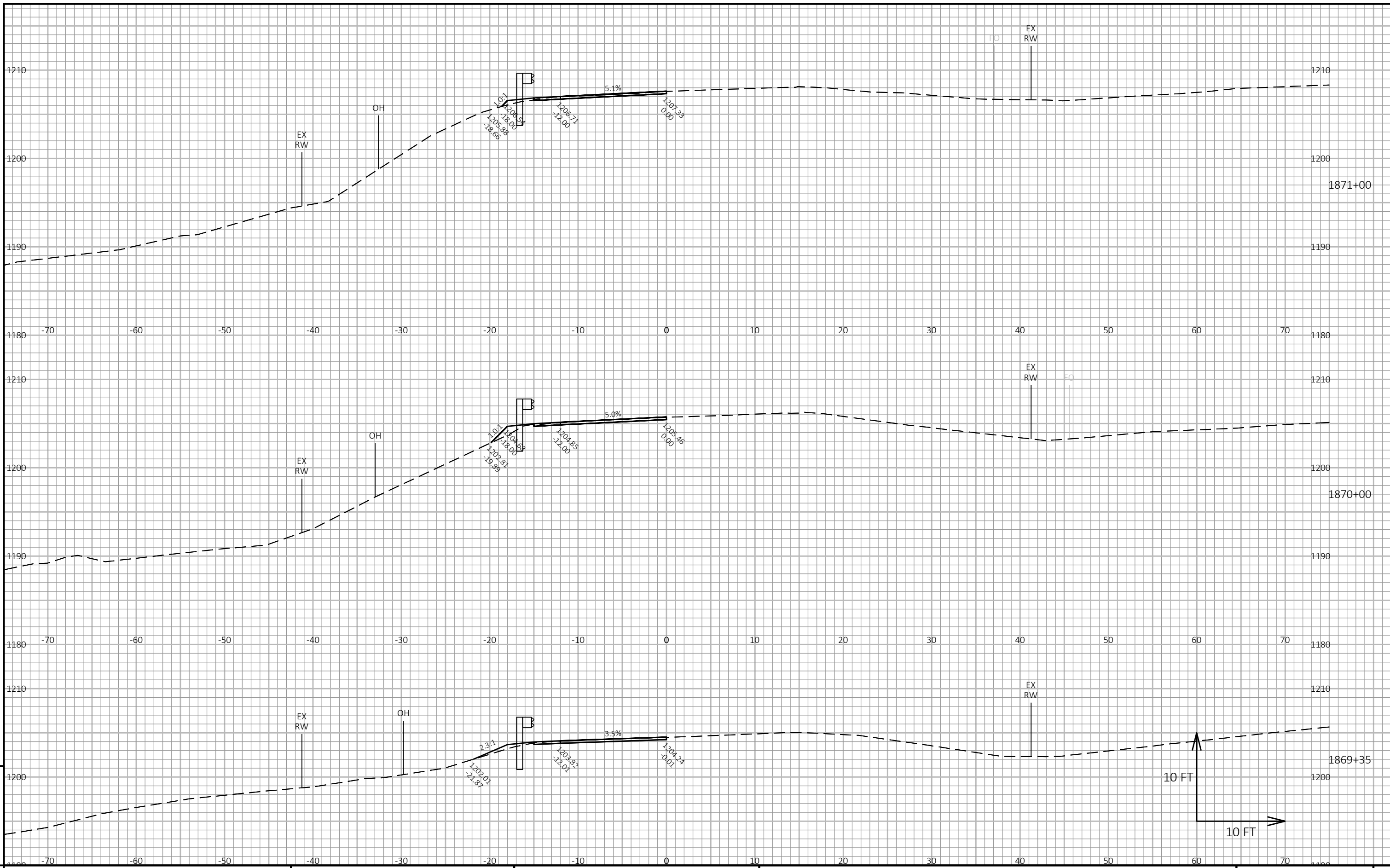
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



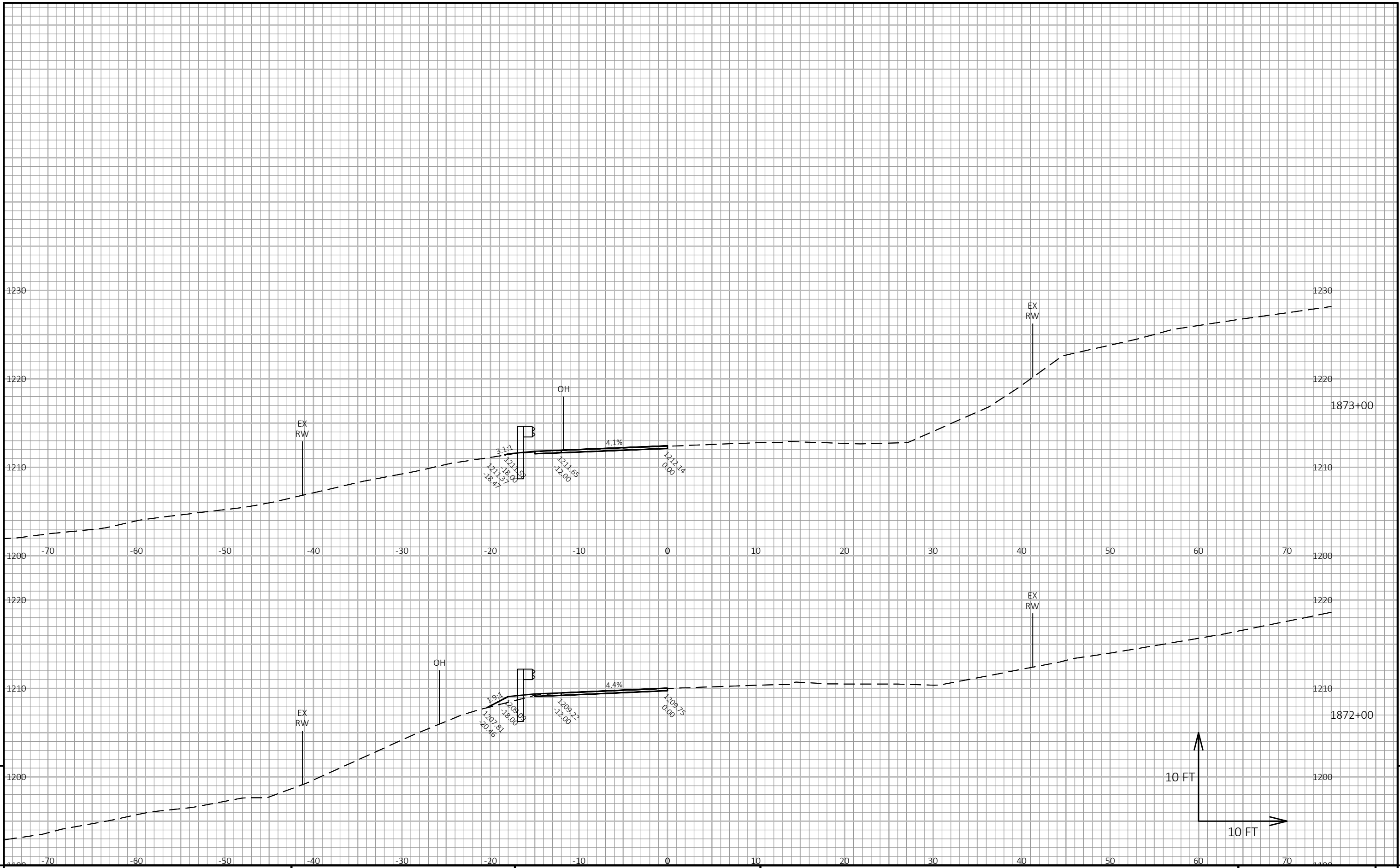
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE : 7/14/2022 2:09 PM      PLOT BY : STEVE LIPPERT      PLOT NAME :      PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 51



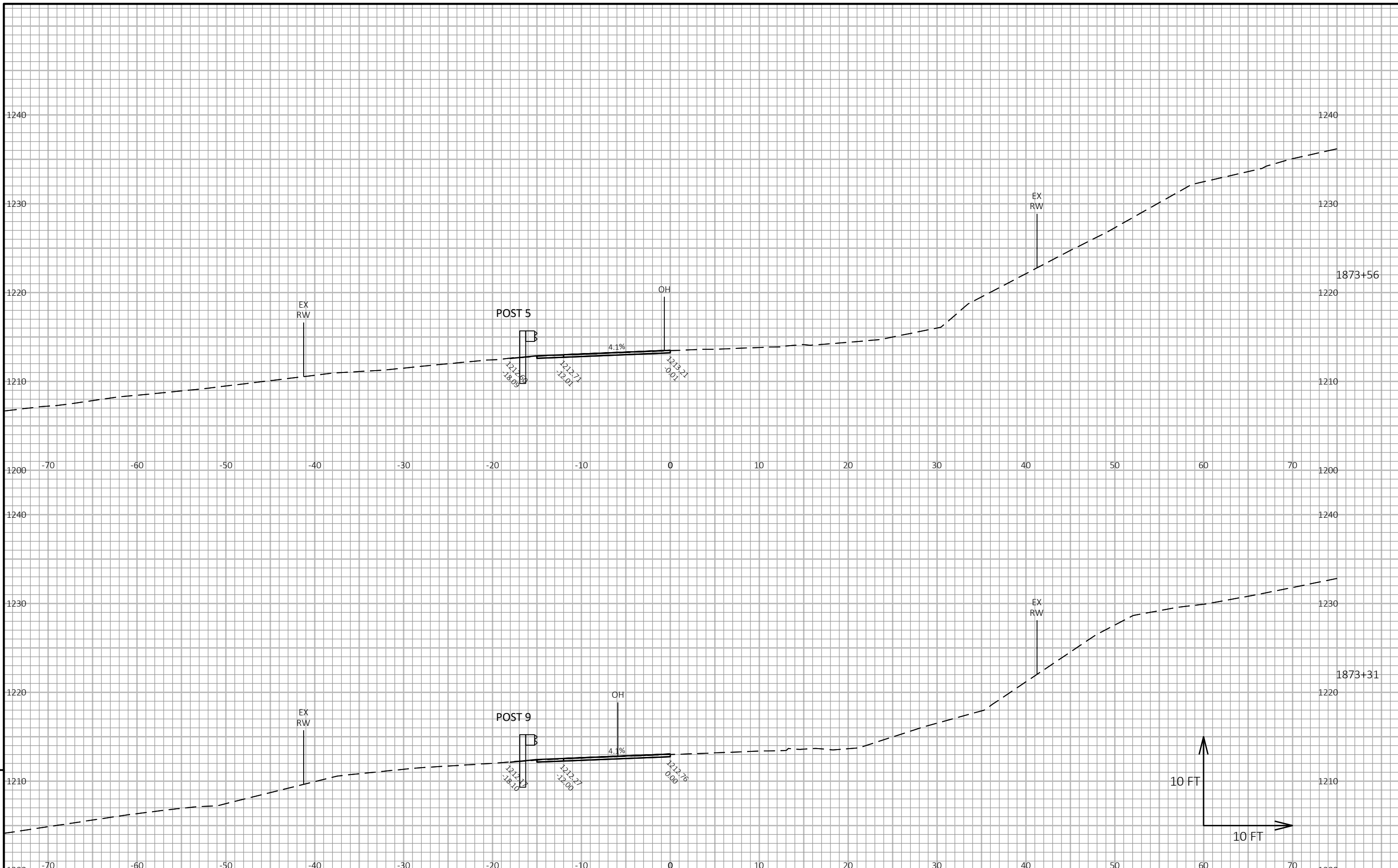
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PROJECT NO: 5540-02-70 HWY: STH 27 COUNTY: VERNON CROSS SECTIONS: STH 27 SHEET E

FILE NAME: X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE: 7/14/2022 2:10 PM PLOT BY: STEVE LIPPERT PLOT NAME: PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

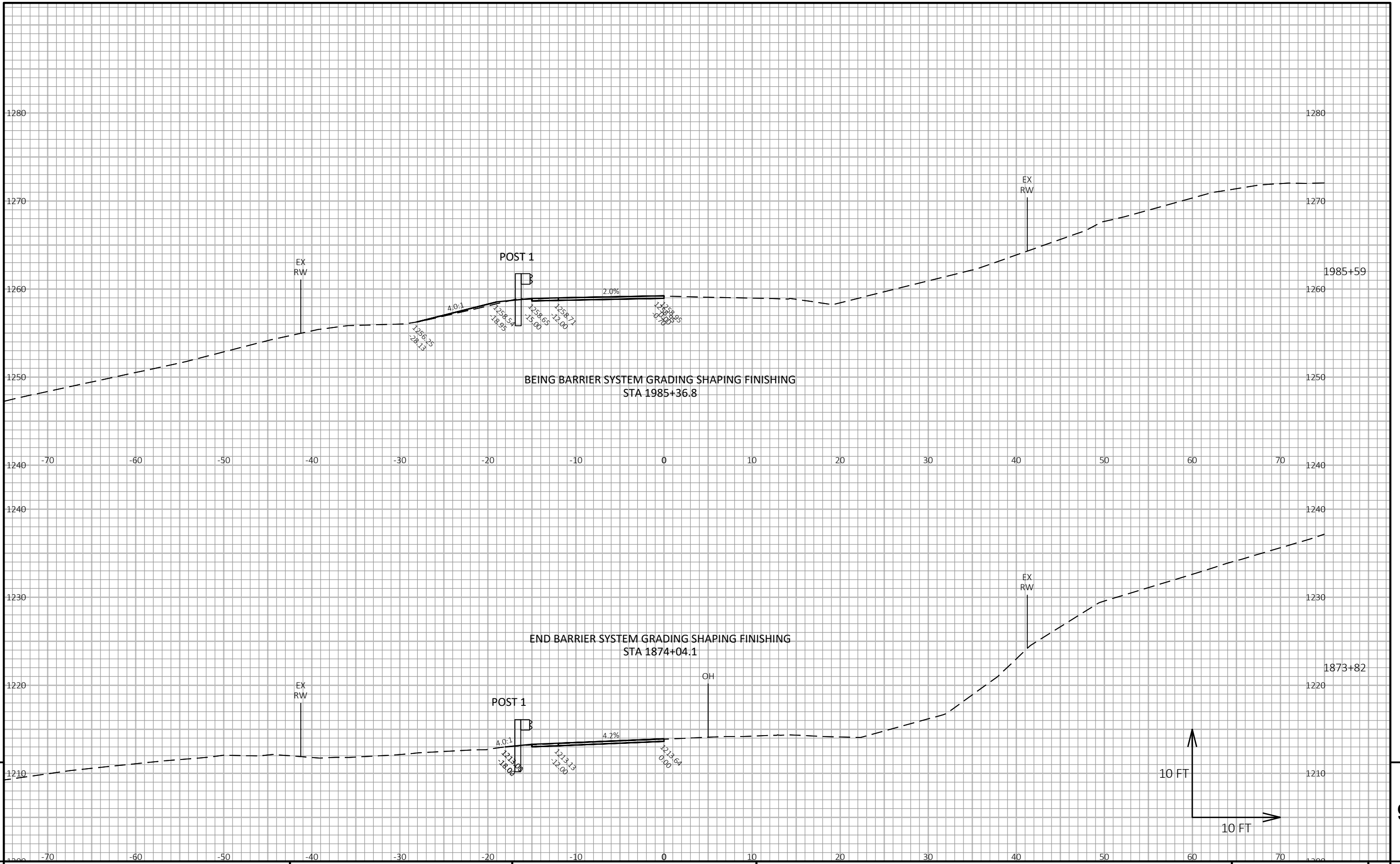
LAYOUT NAME - STH 27 52



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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

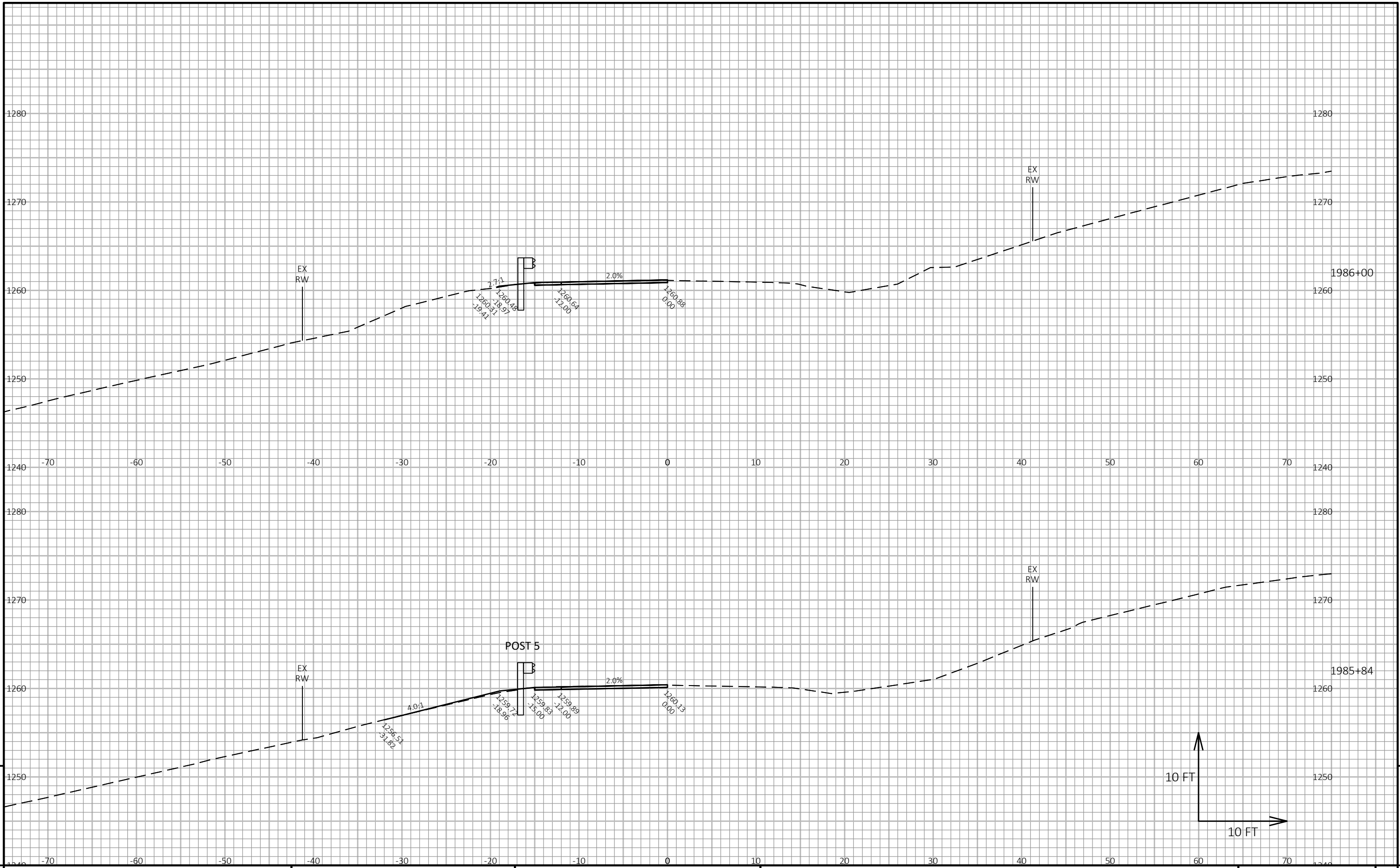


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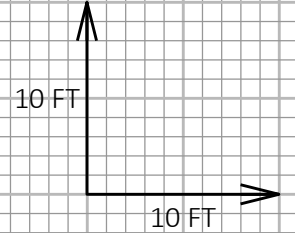
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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 2:12 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

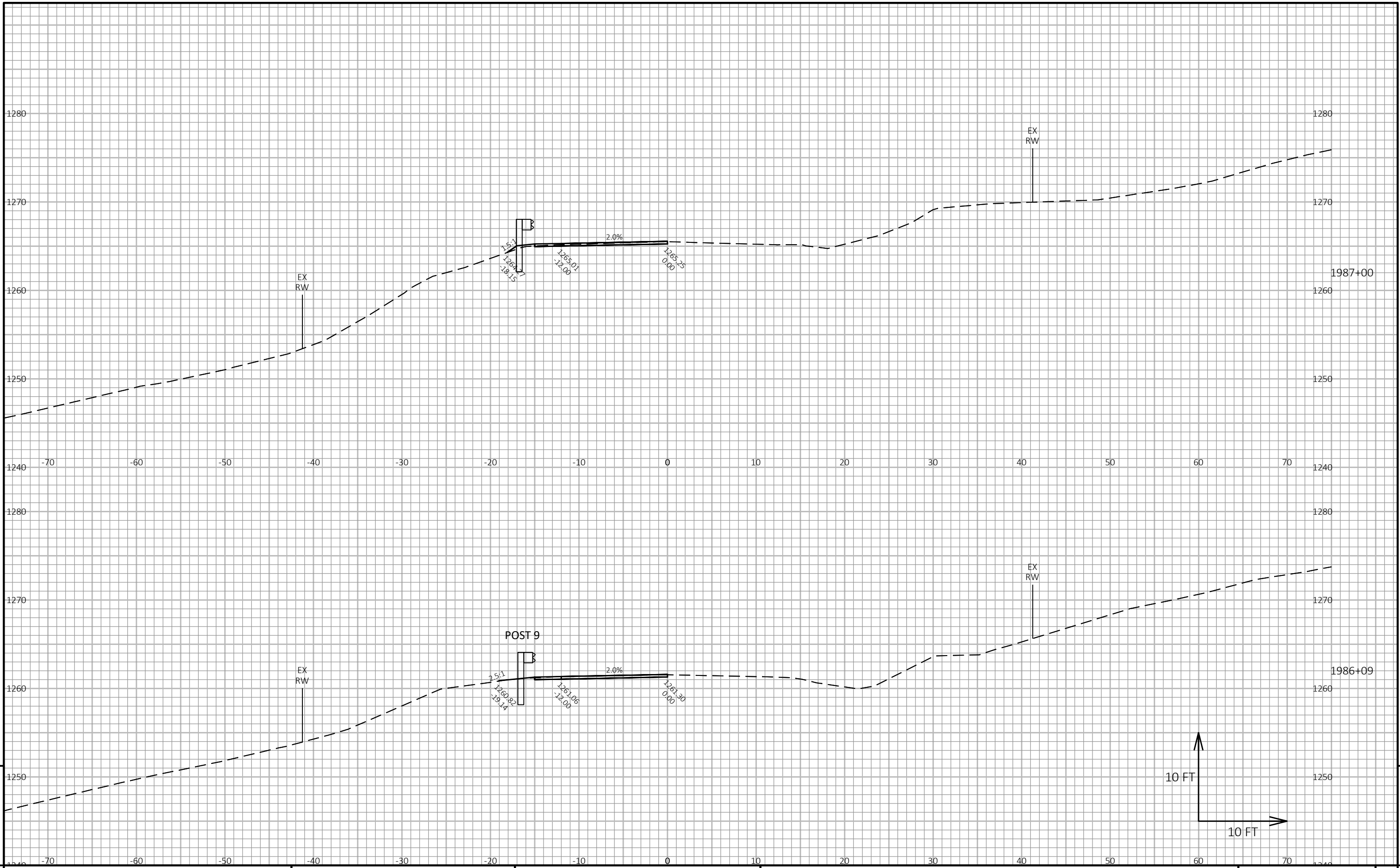


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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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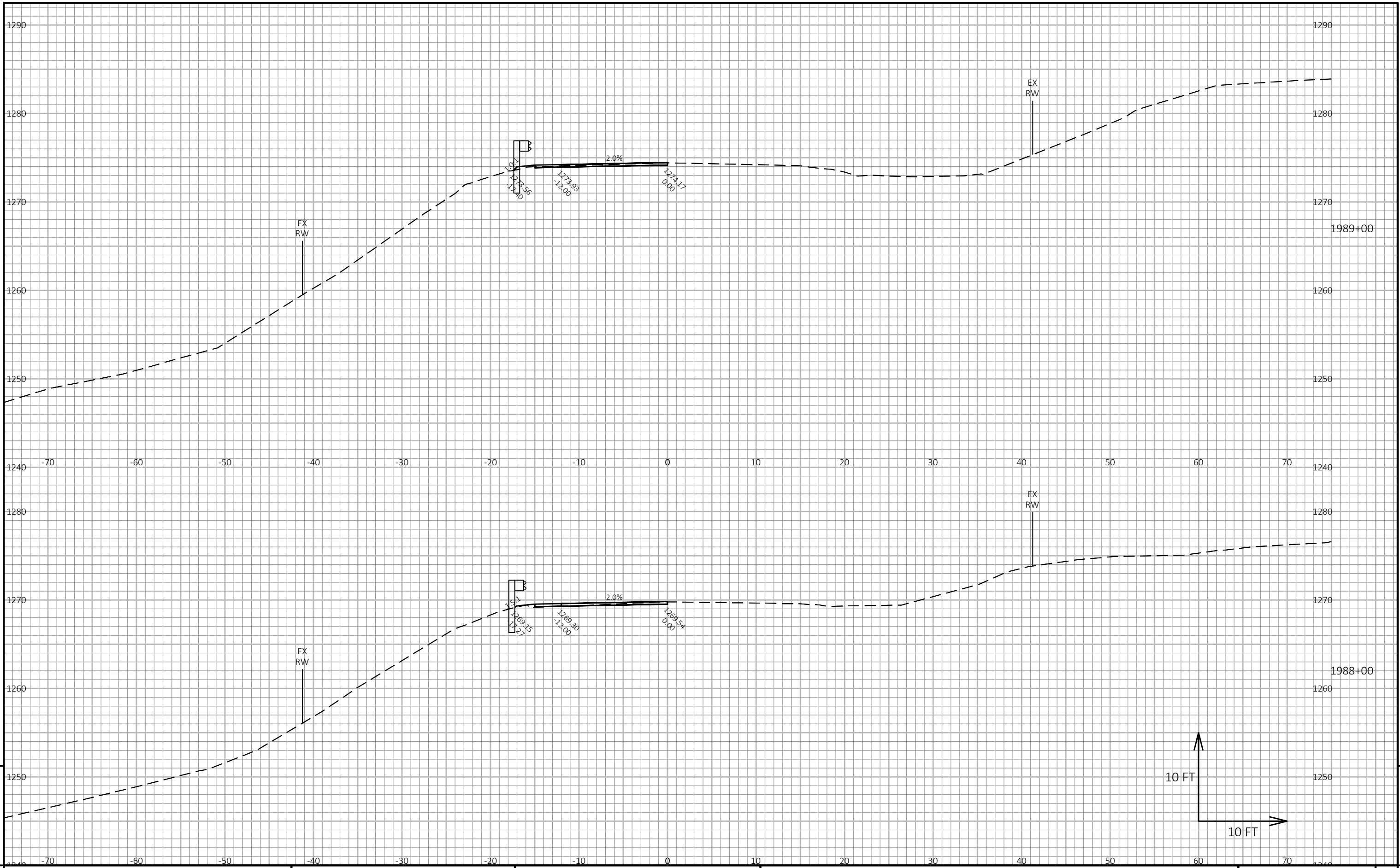
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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 2:14 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

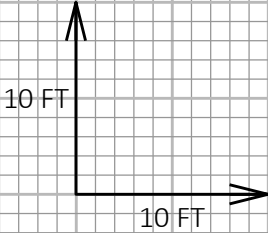
LAYOUT NAME - STH 27 56



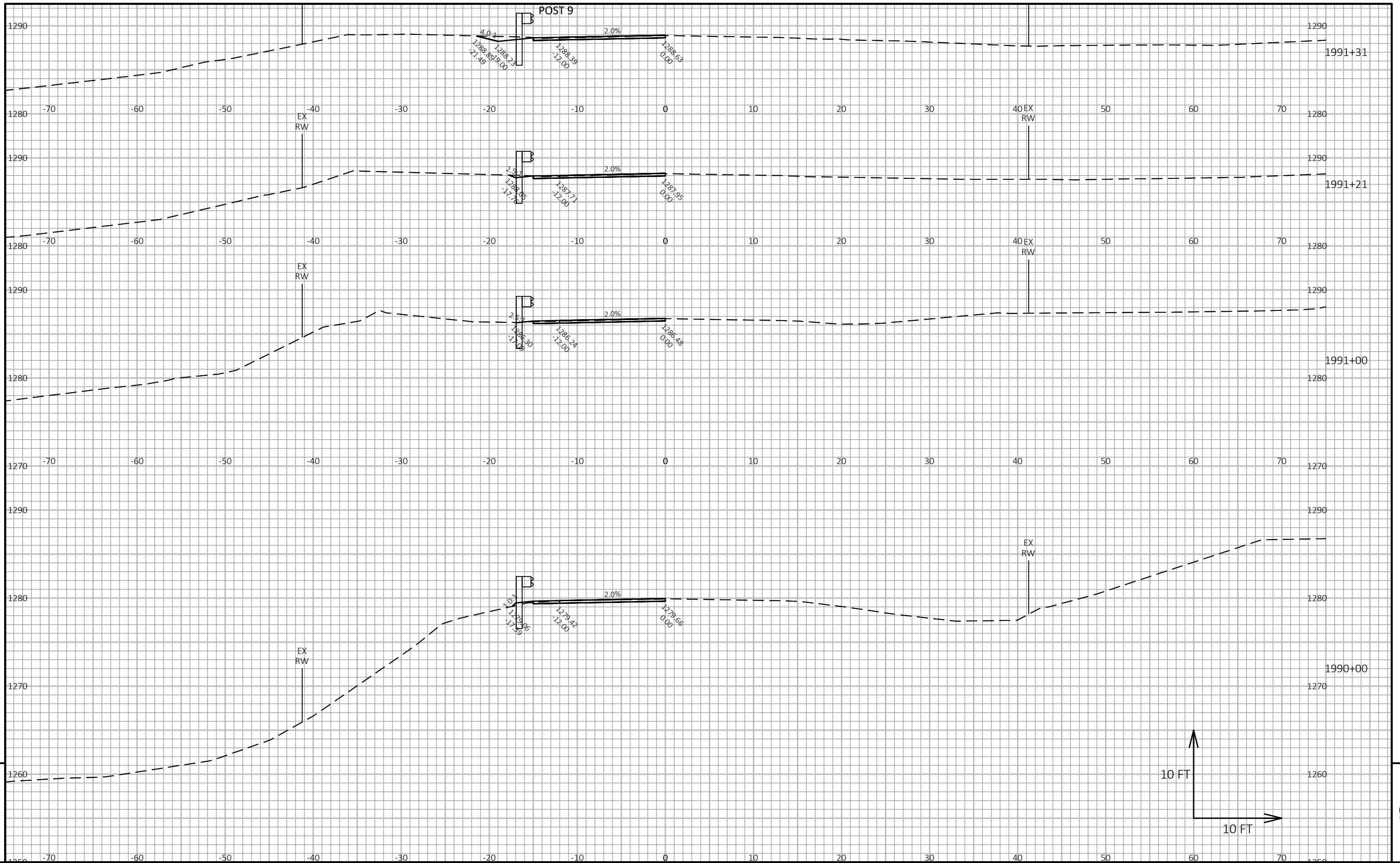


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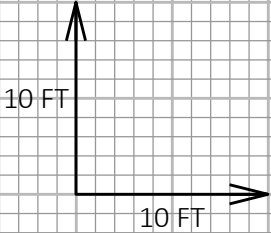


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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

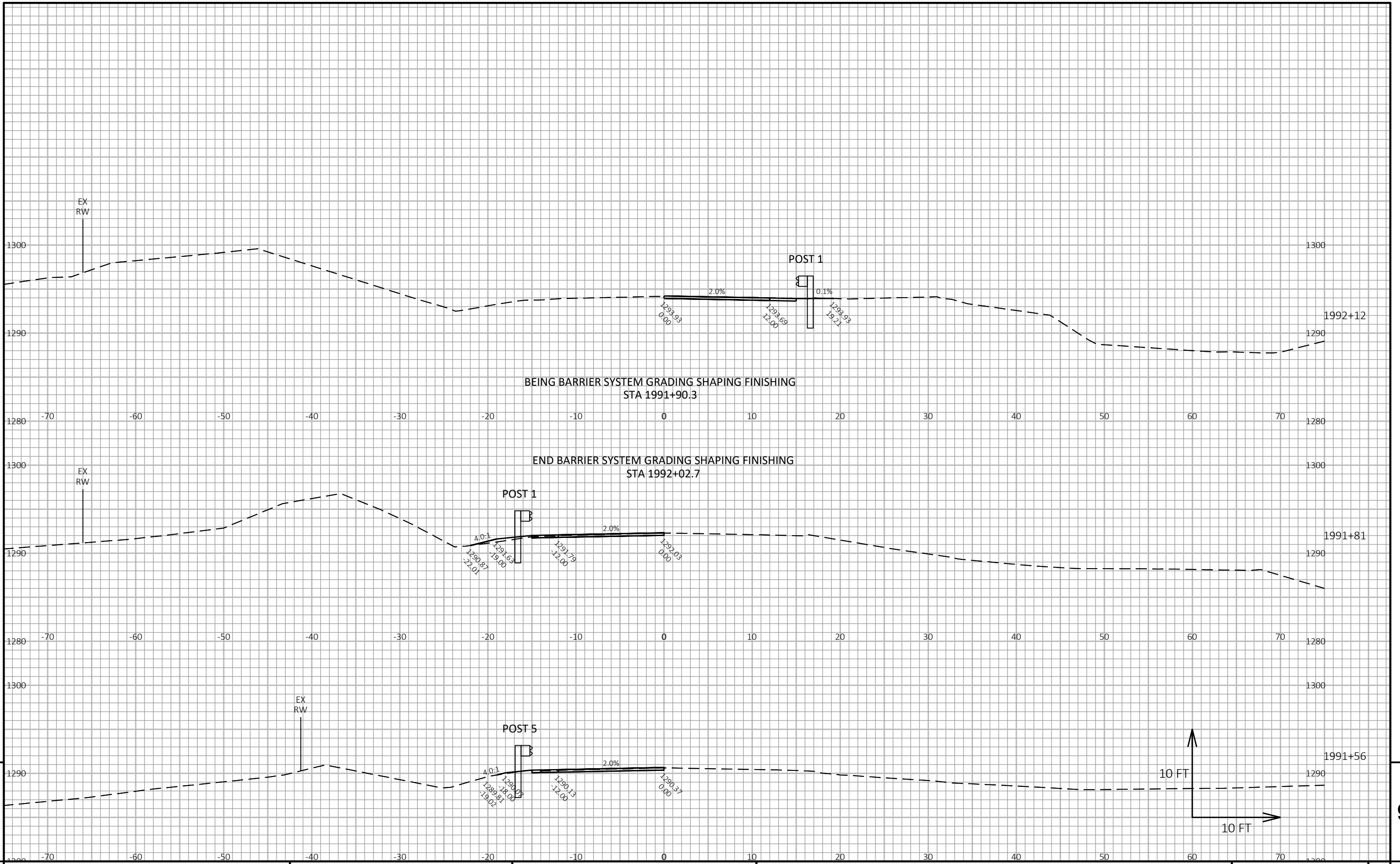


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|------------------------|-------------|----------------|------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|



PROJECT NO: 5540-02-70

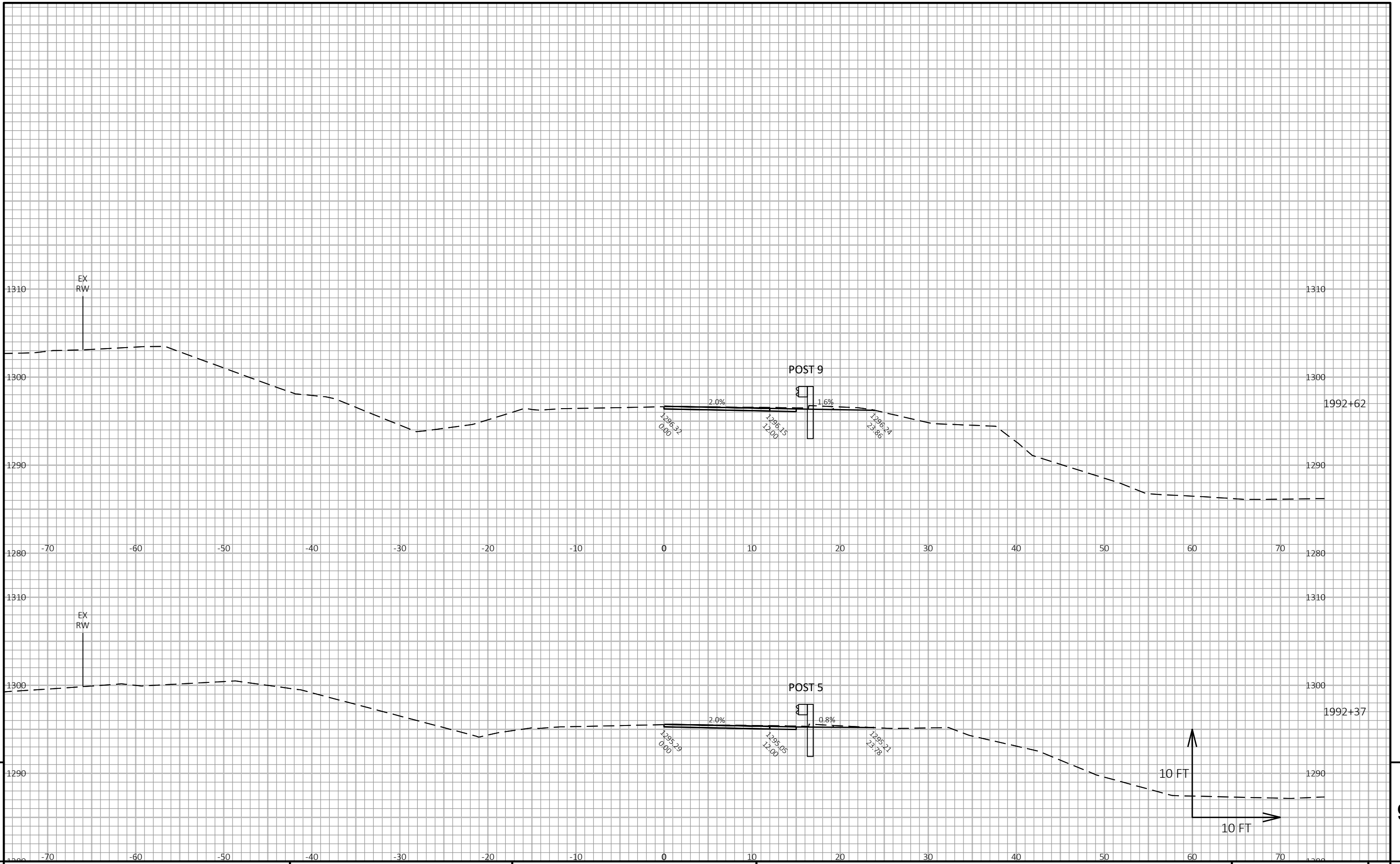
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



PROJECT NO: 5540-02-70

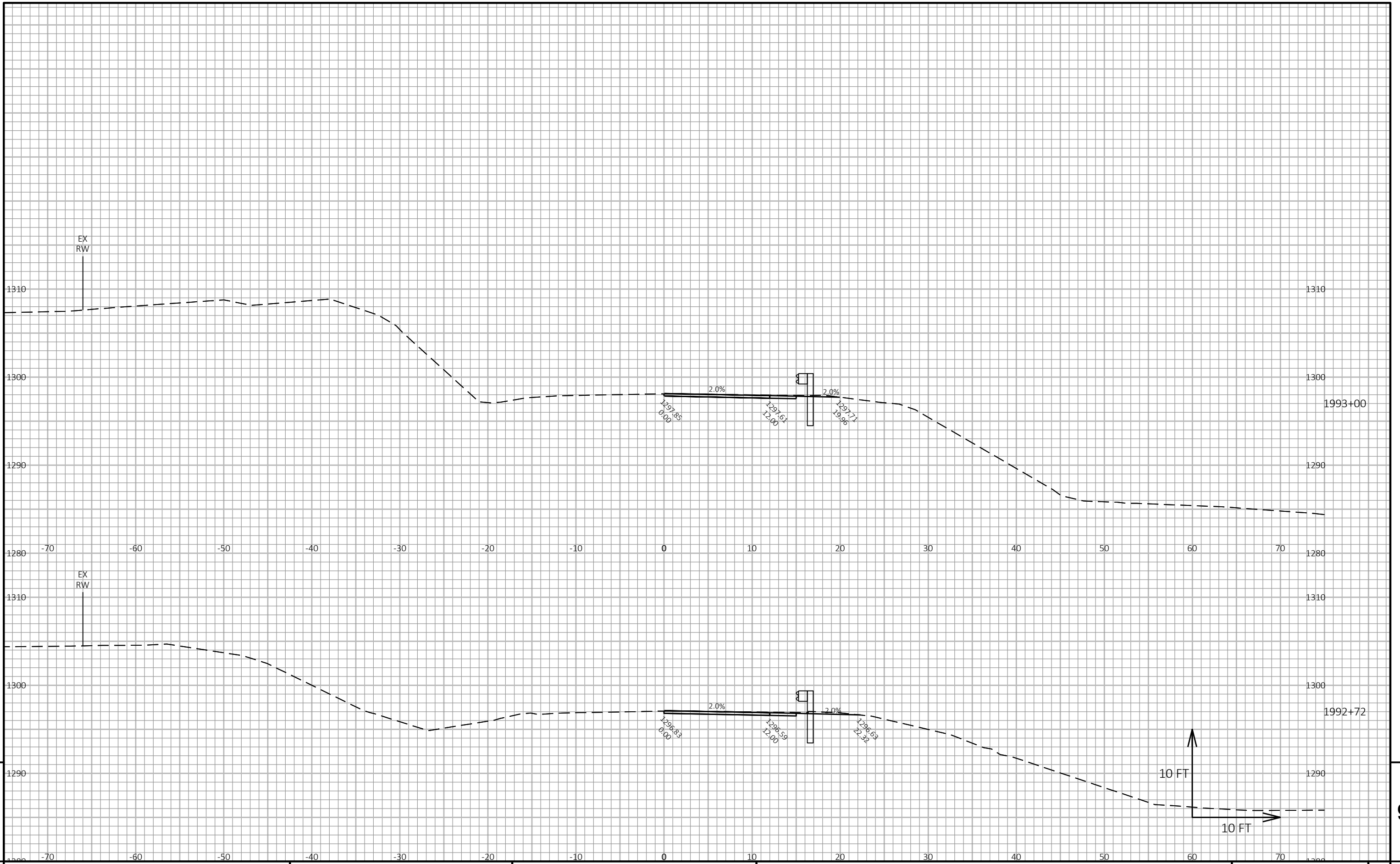
HWY: STH 27

COUNTY: VERNON

CROSS SECTIONS: STH 27

SHEET

E



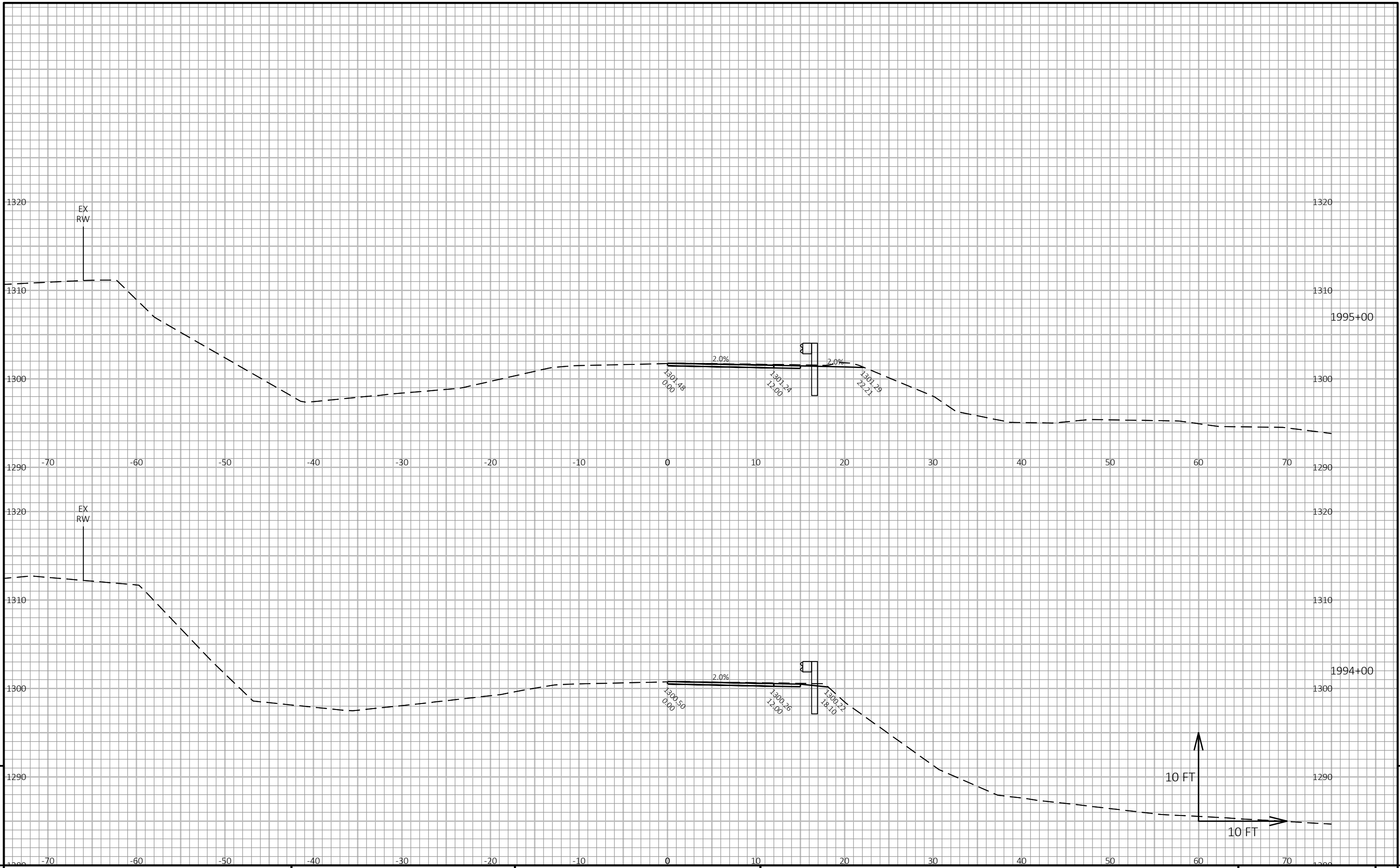
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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
|------------------------|-------------|----------------|------------------------|-------|---|

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 2:20 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 61



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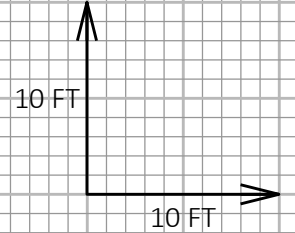
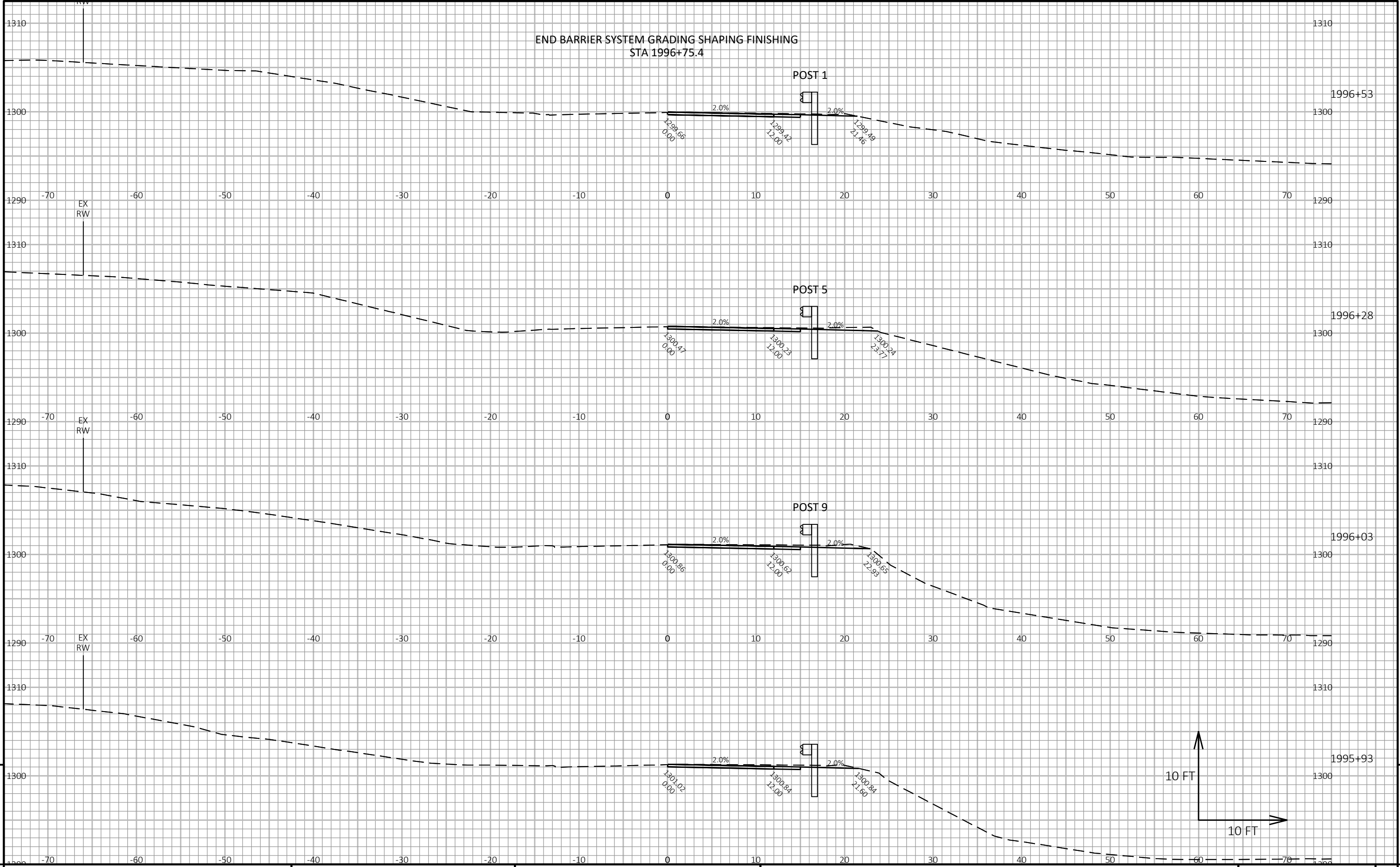
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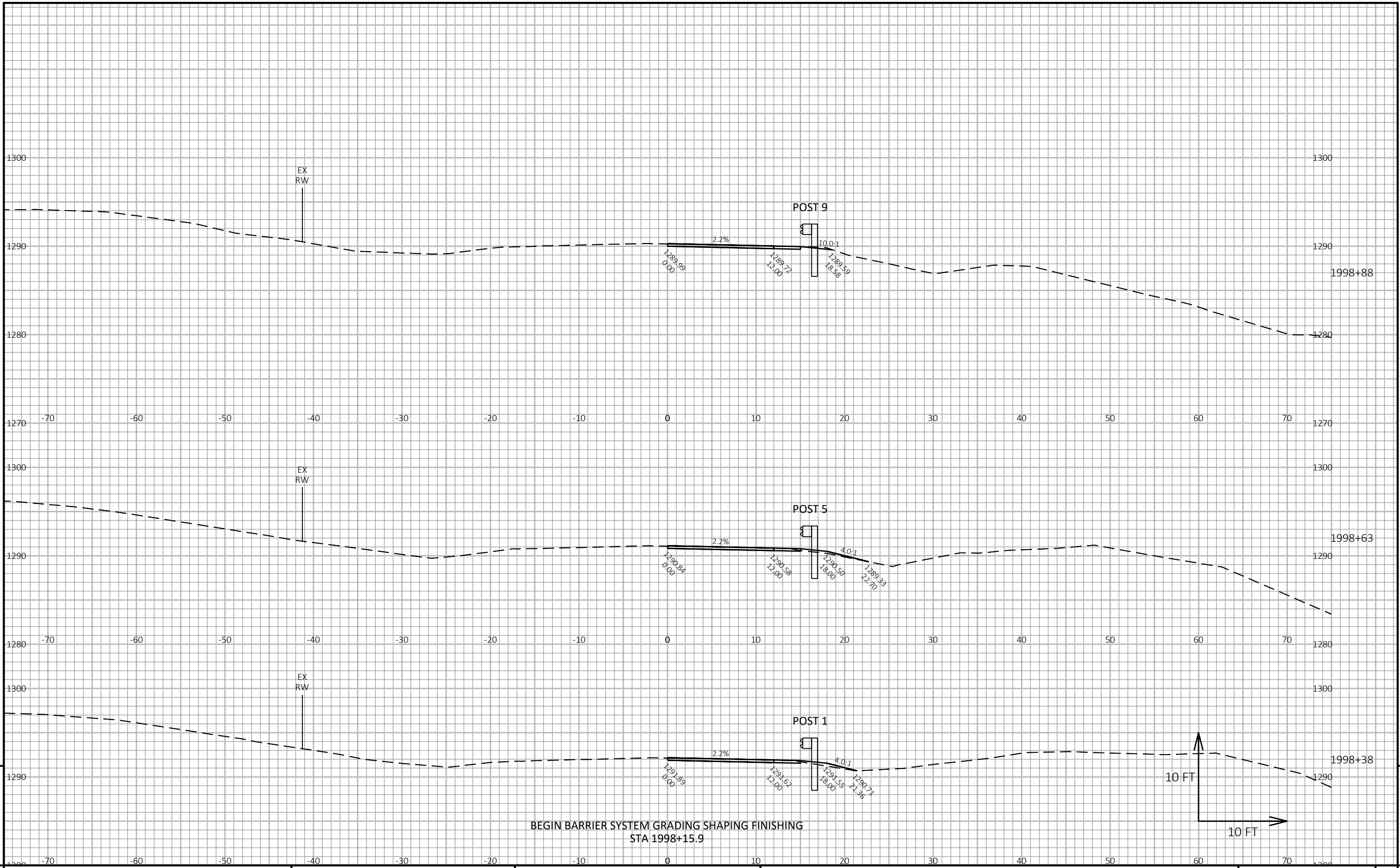
PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE : 7/14/2022 2:21 PM      PLOT BY : STEVE LIPPERT      PLOT NAME :      PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 62

END BARRIER SYSTEM GRADING SHAPING FINISHING  
STA 1996+75.4



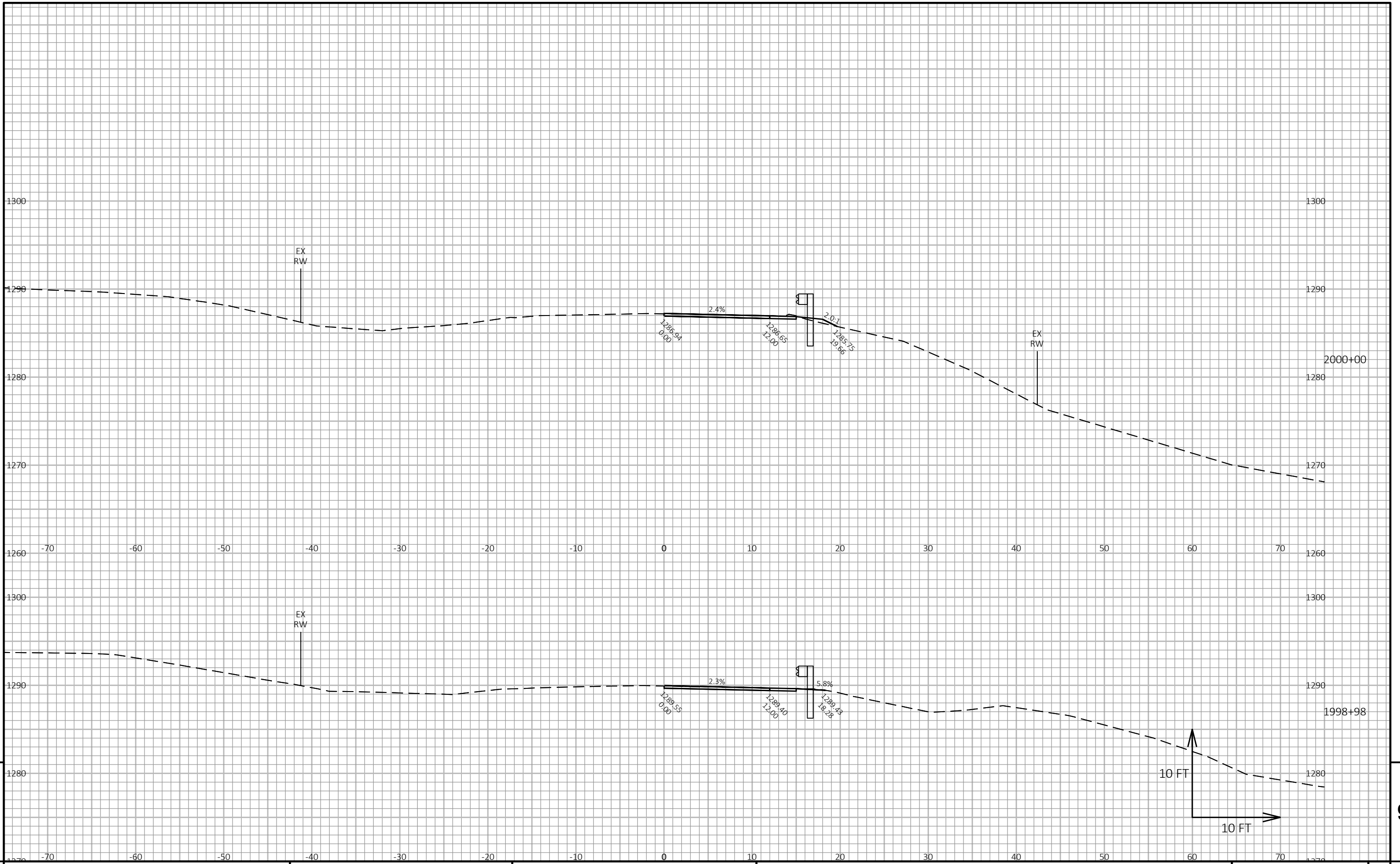


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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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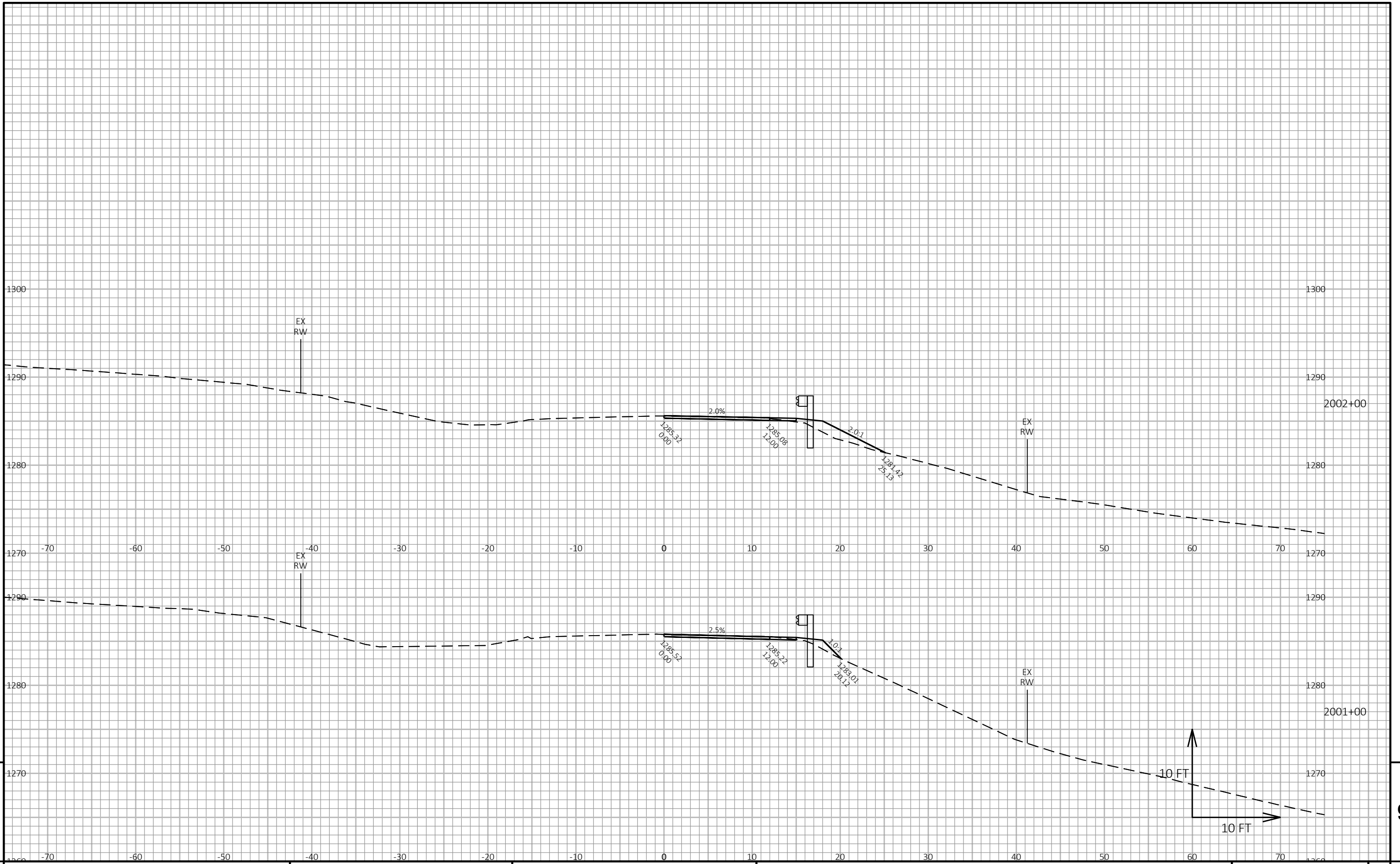
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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 2:25 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 65



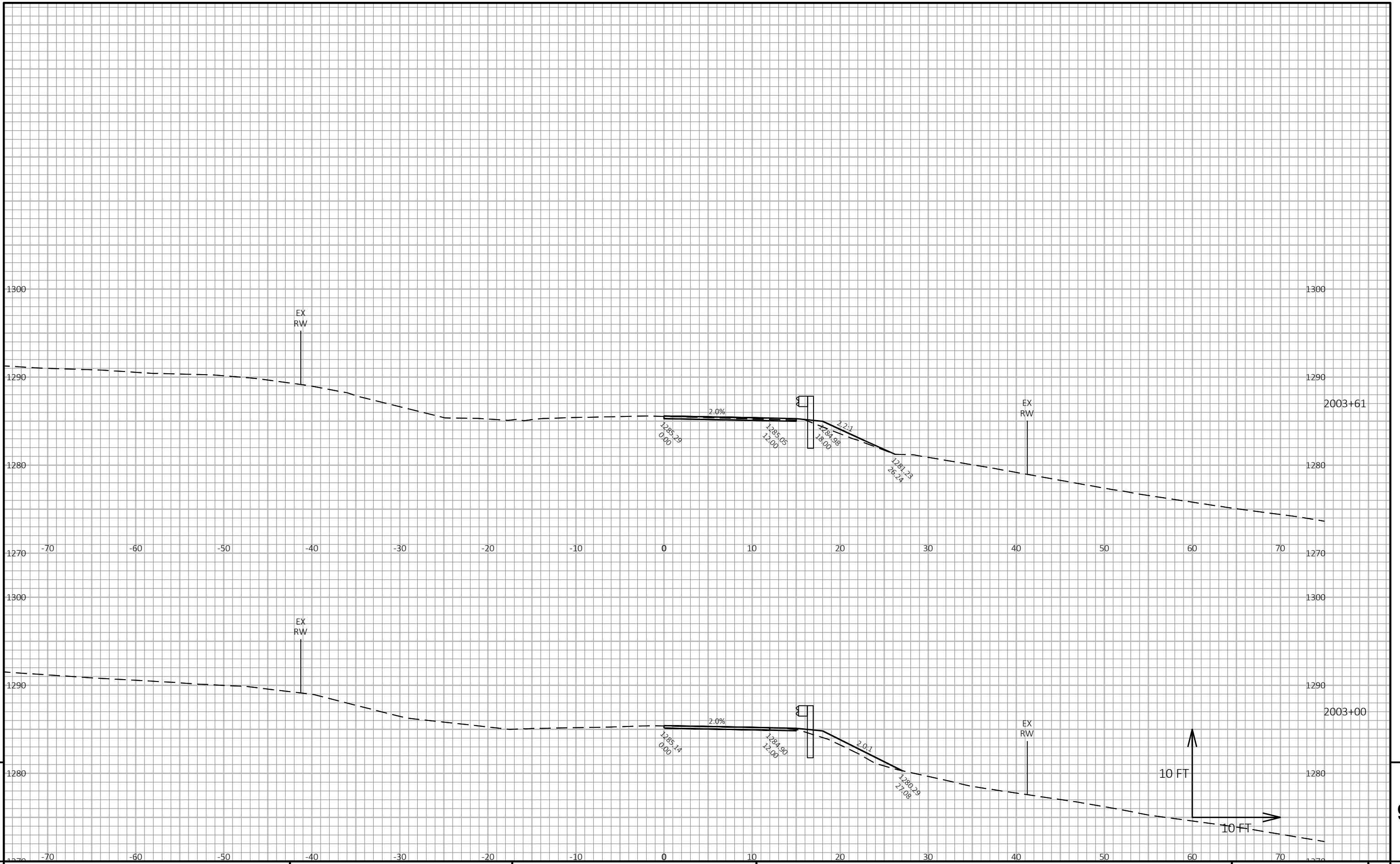
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE : 7/14/2022 2:26 PM      PLOT BY : STEVE LIPPERT      PLOT NAME :      PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 66



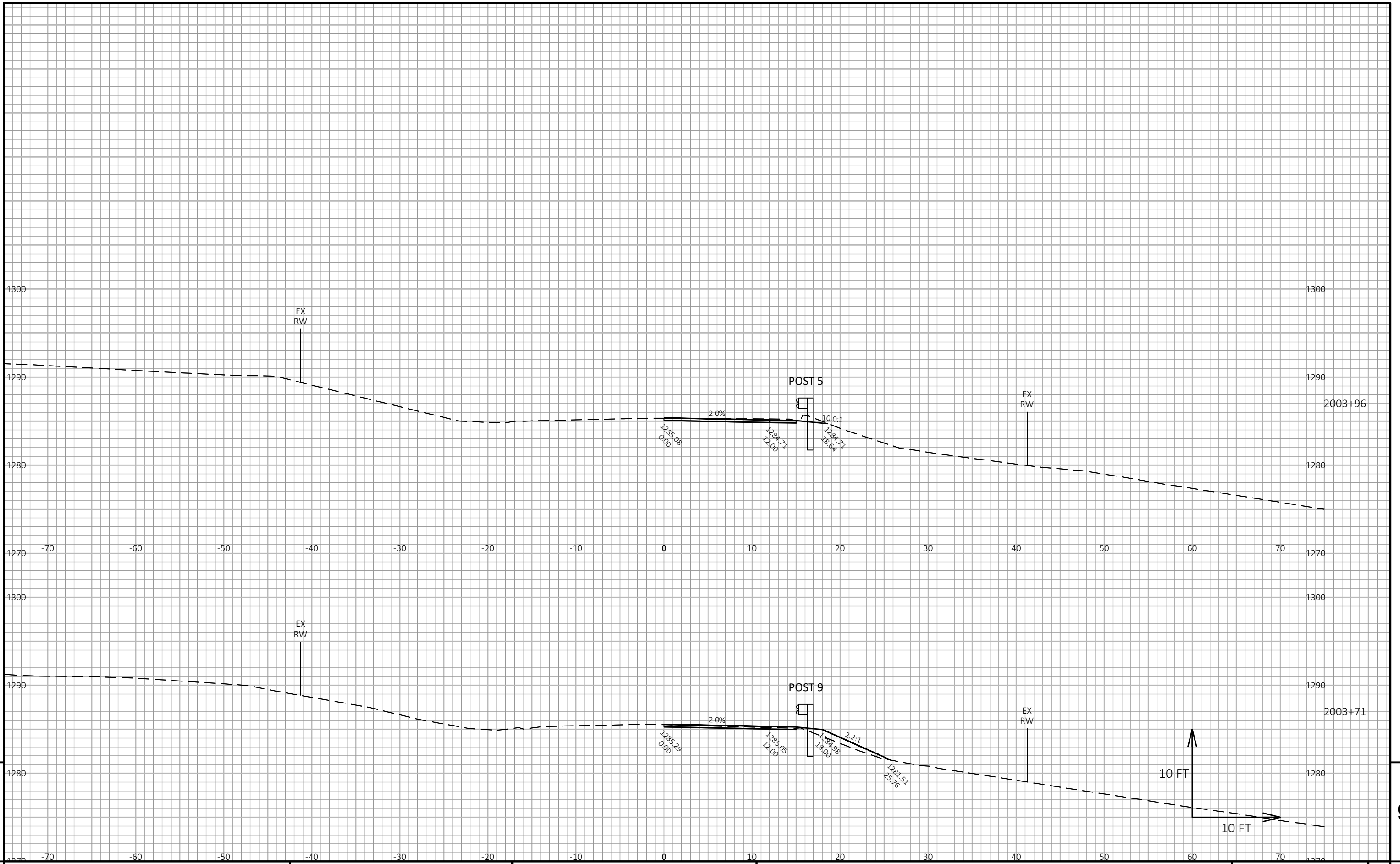
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27      SHEET      E

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG      PLOT DATE : 7/14/2022 2:27 PM      PLOT BY : STEVE LIPPERT      PLOT NAME :      PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - STH 27 67



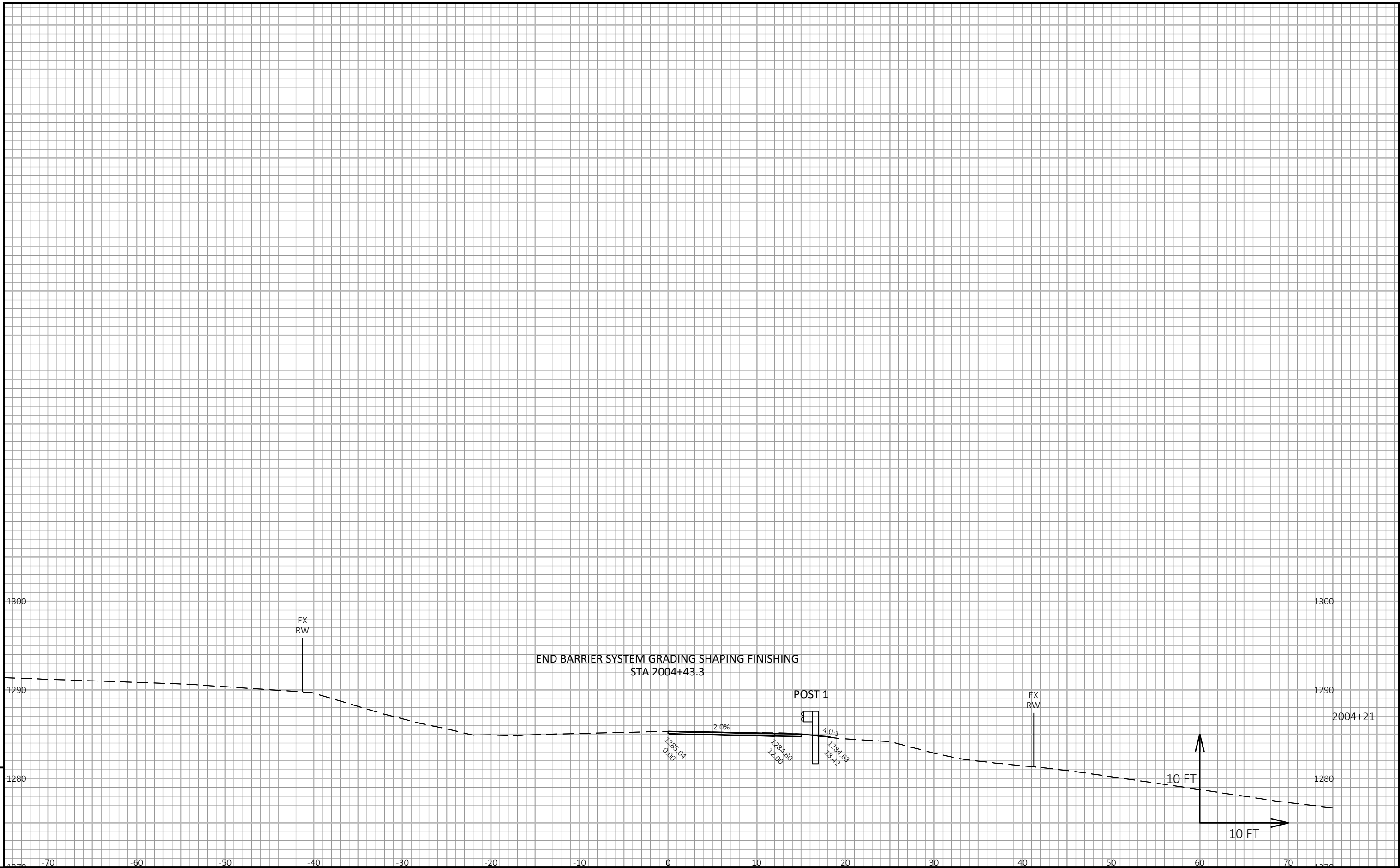
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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON.DWG PLOT DATE : 7/14/2022 2:28 PM PLOT BY : STEVE LIPPERT PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

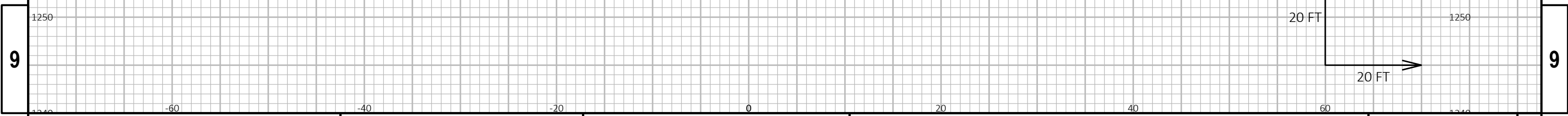
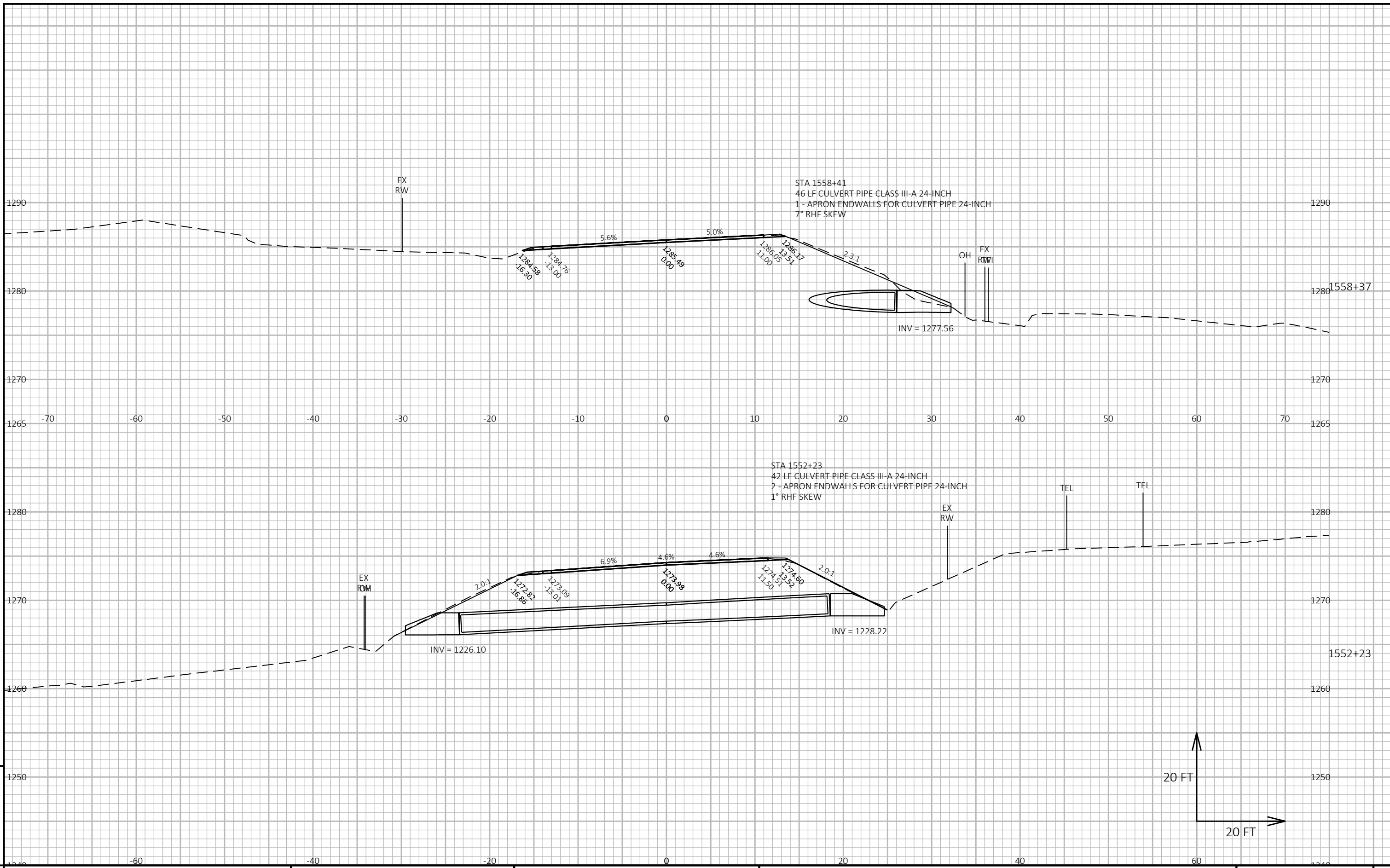
LAYOUT NAME - STH 27 68

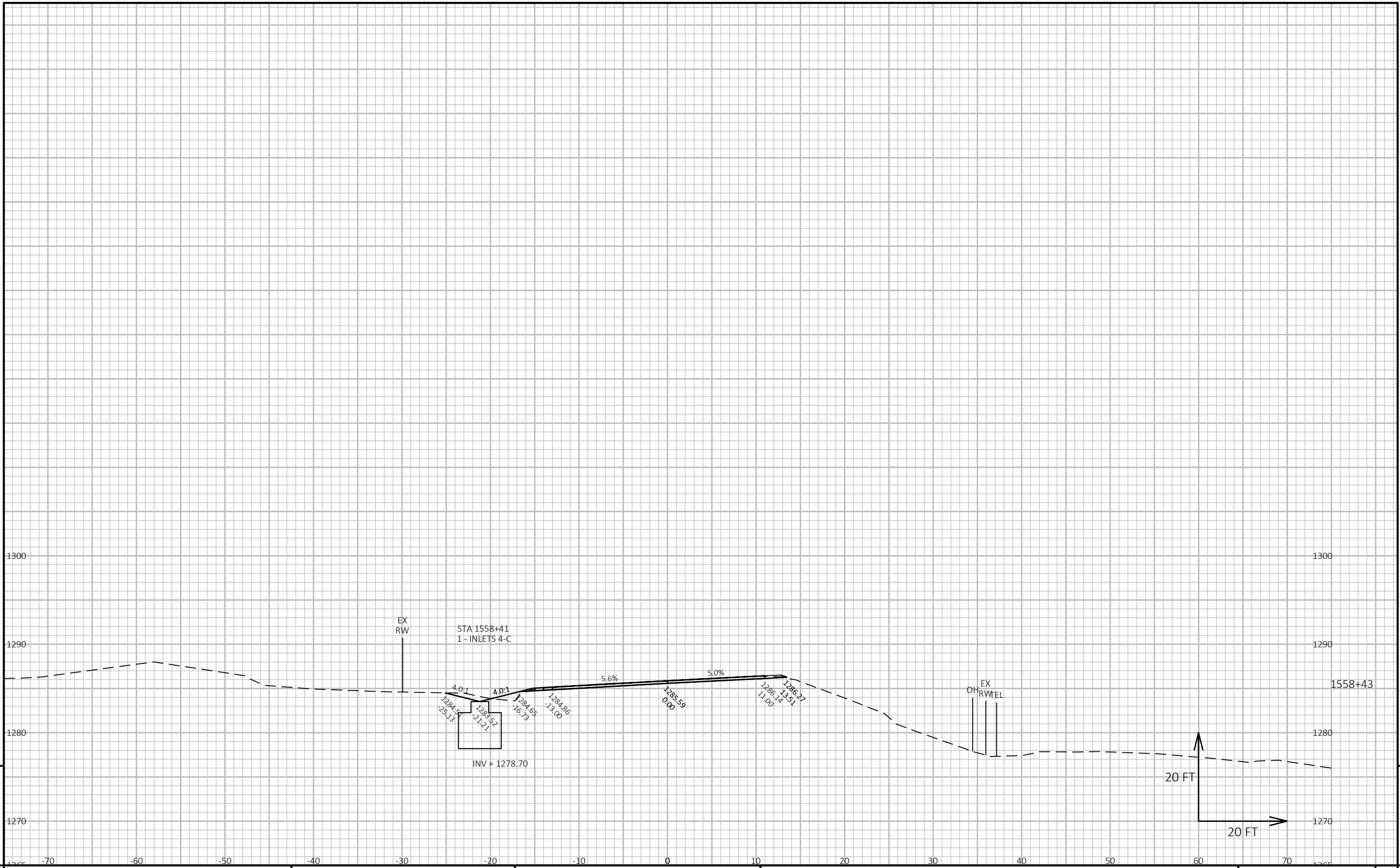


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| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 | SHEET | E |
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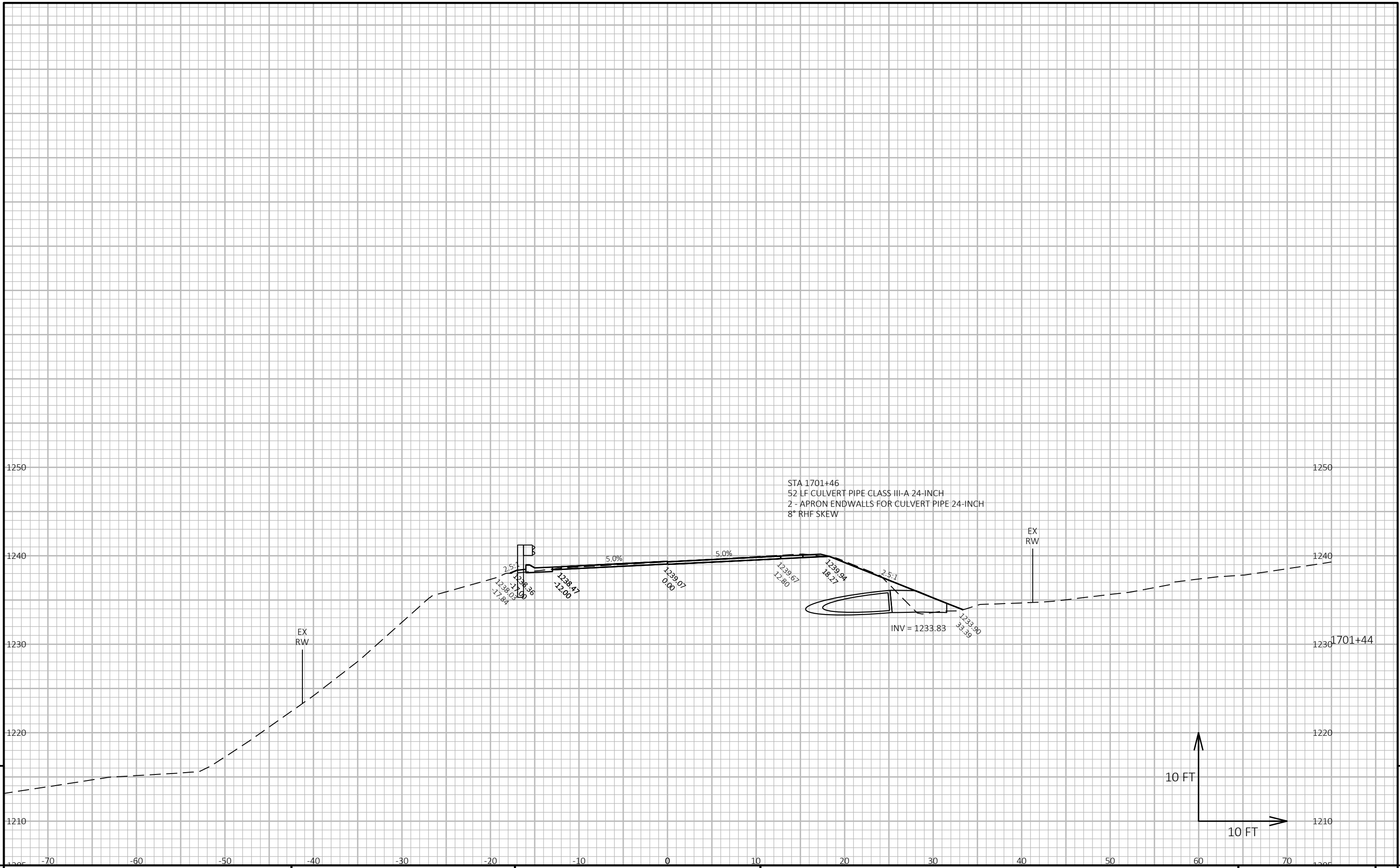




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|------------------------|-------------|------------------|-----------------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: CRAWFORD | CROSS SECTIONS: STH 27 - CULVERTS | SHEET | E |
|------------------------|-------------|------------------|-----------------------------------|-------|---|



PROJECT NO: 5540-02-70

HWY: STH 27

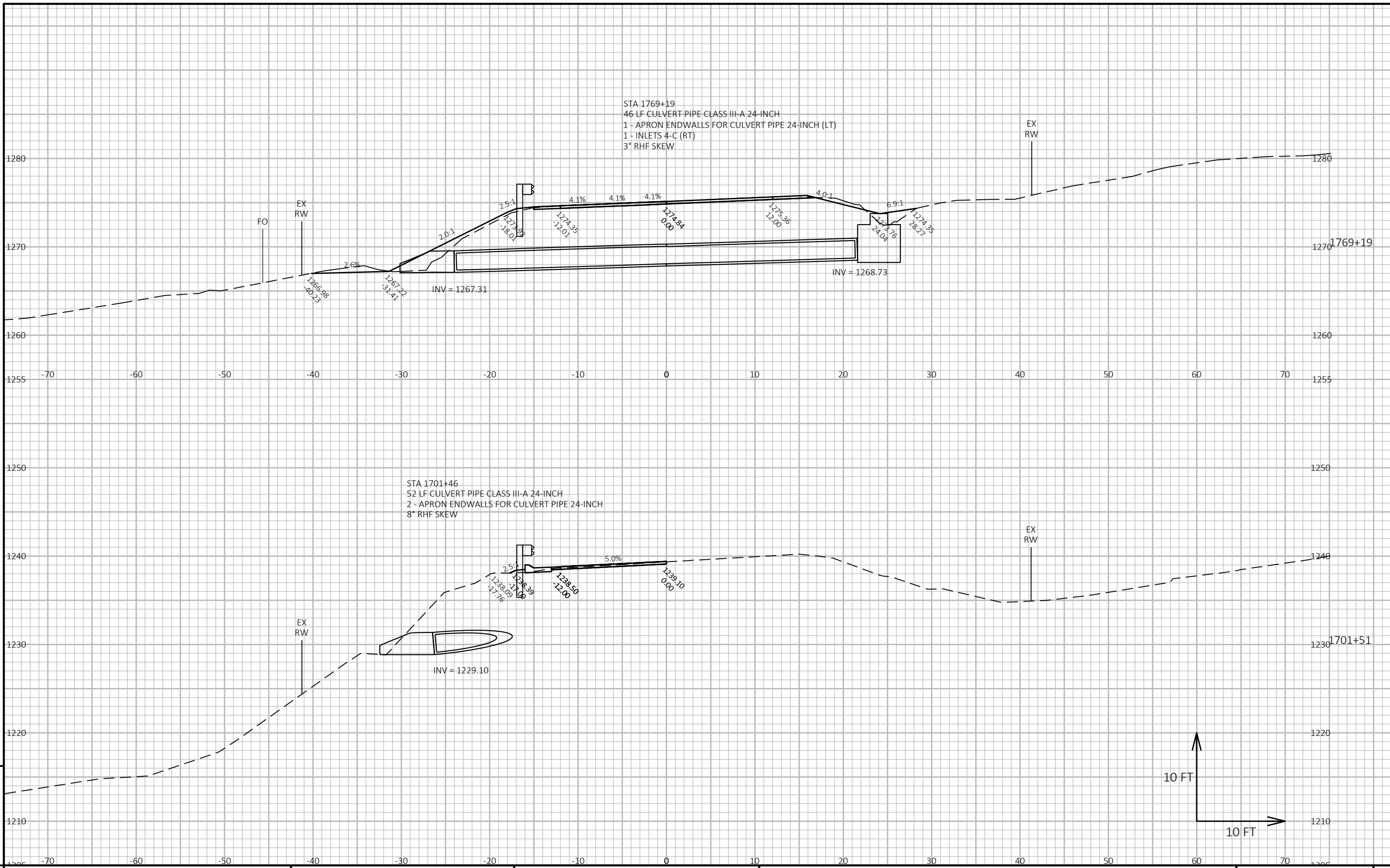
COUNTY: VERNON

CROSS SECTIONS: STH 27 - CULVERTS

SHEET

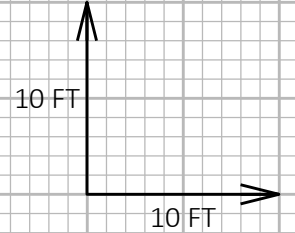
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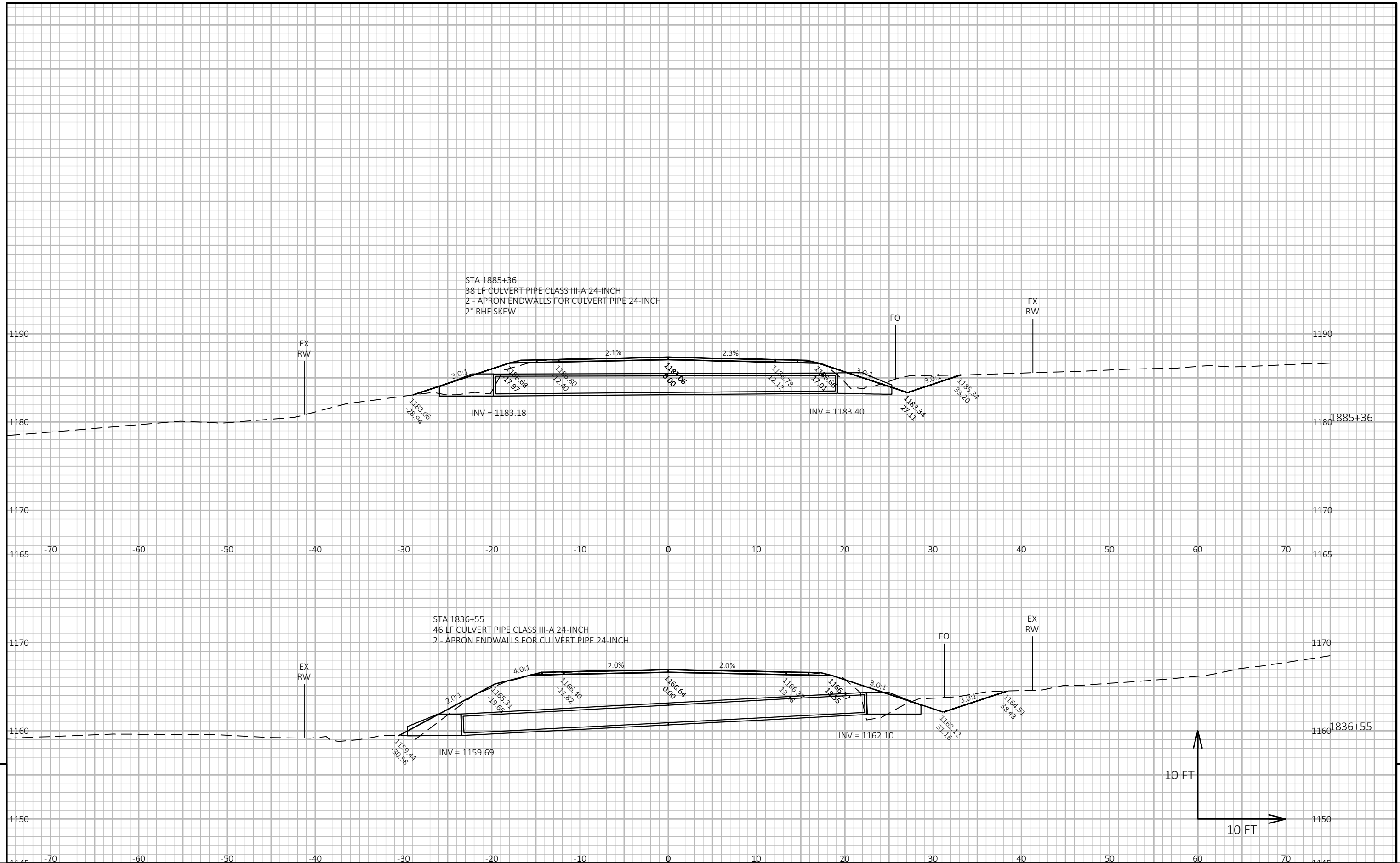


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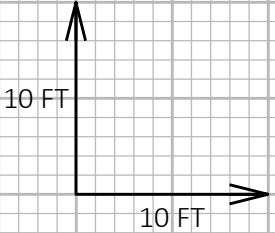


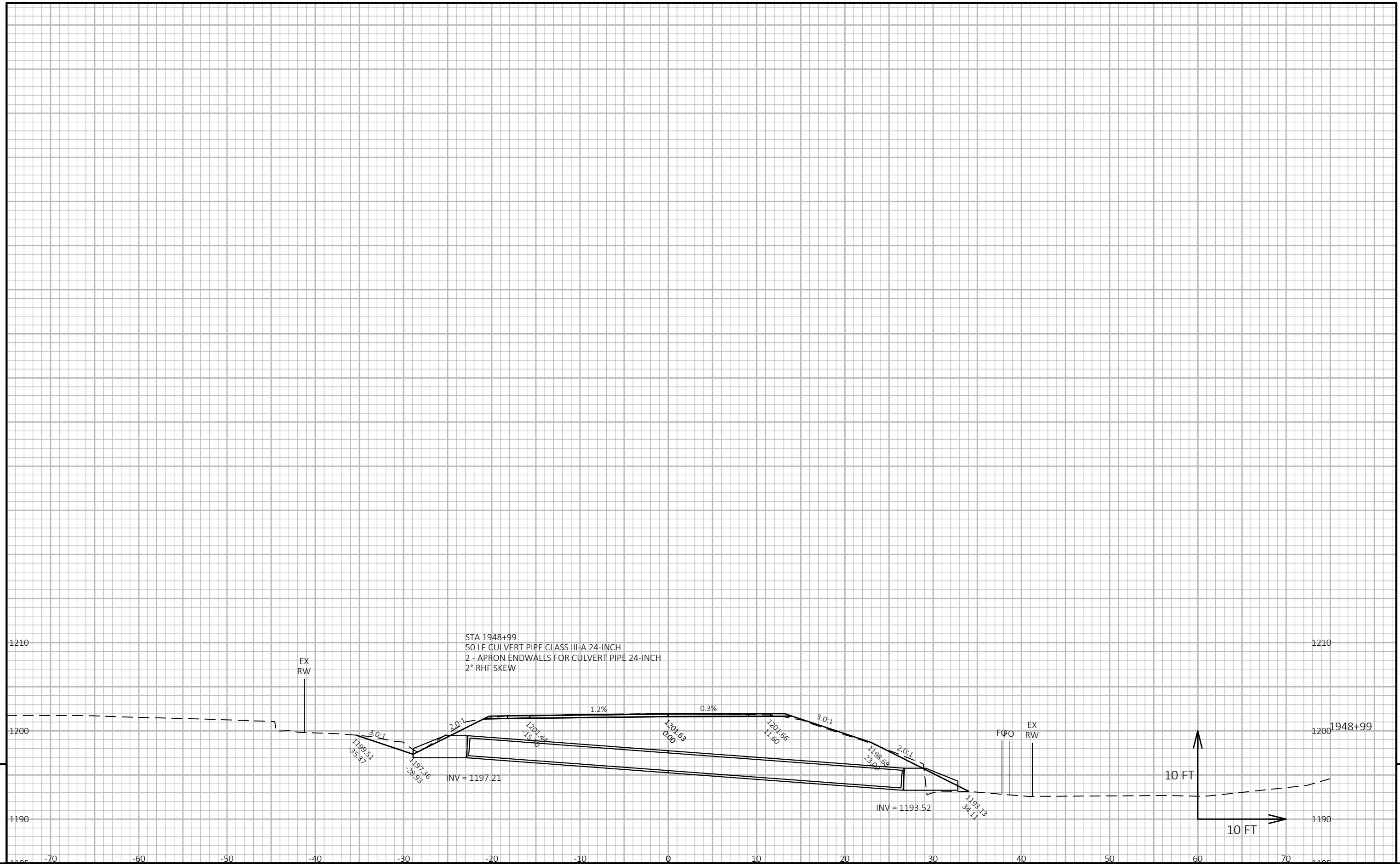
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|------------------------|-------------|----------------|-----------------------------------|-------|---|
| PROJECT NO: 5540-02-70 | HWY: STH 27 | COUNTY: VERNON | CROSS SECTIONS: STH 27 - CULVERTS | SHEET | E |
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PROJECT NO: 5540-02-70      HWY: STH 27      COUNTY: VERNON      CROSS SECTIONS: STH 27 - CULVERTS      SHEET      E

FILE NAME : X:\PROJECTS\CRAWFORD\5540-02-00\_STH 27\_CTH C TO USH 14\DESIGN\C3D\SHEETSPLAN\090202-XS\_VERNON\_CULVERTS.DWG      PLOT DATE : 7/14/2022 2:52 PM      PLOT BY : STEVE LIPPERT      PLOT NAME :      PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.      WISDOT/CADD SHEET 49

LAYOUT NAME - XS4



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

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