

RHI  
PROJECT ID: 9140-12-75  
WITH: N/A  
COUNTY: LANGLEADE

SEPT 2024

ORDER OF SHEETS

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

TOTAL SHEETS = 124



|                      |      |            |
|----------------------|------|------------|
| DESIGN DESIGNATION   |      | 9140-12-05 |
| A.A.D.T <sub>x</sub> | 2028 | 3,410      |
| A.A.D.T <sub>x</sub> | 2048 | 3,860      |
| D.H.V.               |      | 540        |
| D.D.                 |      | 61 / 39    |
| T <sub>x</sub>       |      | 11.6       |
| DESIGN SPEED         |      | 35 - 55    |
| ESALS                |      | 600,000    |

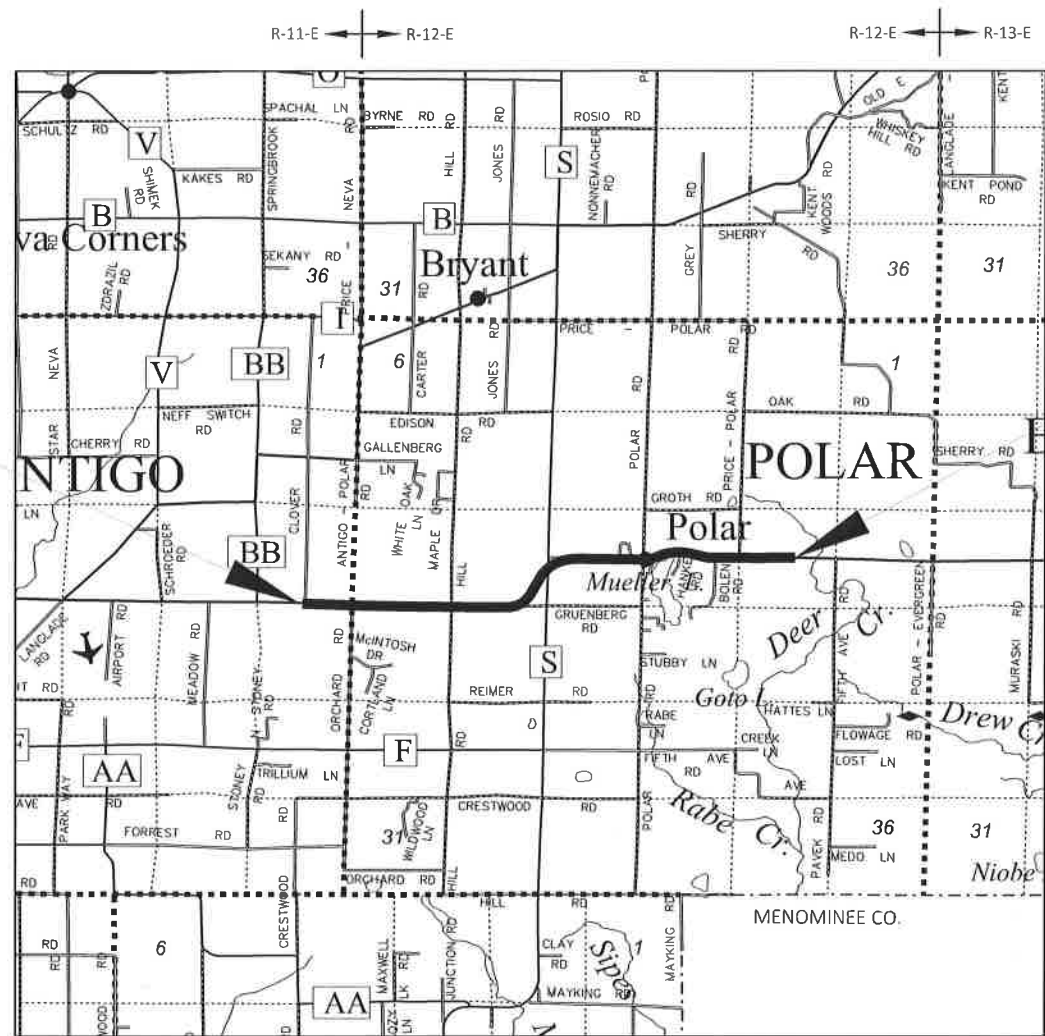
CONVENTIONAL SYMBOLS

|                                |         |
|--------------------------------|---------|
| 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             | CAUTION |
| MARSH AREA                     | ~ ~ ~   |
| WOODED OR SHRUB AREA           | ~~~~~   |

|                                             |       |
|---------------------------------------------|-------|
| PROFILE                                     |       |
| GRADE LINE                                  | ---   |
| ORIGINAL GROUND                             | - - - |
| MARSH OR ROCK PROFILE (To be noted as such) | ~ ~ ~ |
| SPECIAL DITCH                               | - - - |
| GRADE ELEVATION                             | 95.36 |
| CULVERT (Profile View)                      | [ ]   |
| UTILITIES                                   |       |
| ELECTRIC                                    | E     |
| FIBER OPTIC                                 | FO    |
| GAS                                         | G     |
| SANITARY SEWER                              | SAN   |
| STORM SEWER                                 | SS    |
| TELEPHONE                                   | T     |
| WATER                                       | W     |
| UTILITY PEDESTAL                            | ⊕     |
| POWER POLE                                  | ⊕     |
| TELEPHONE POLE                              | ⊕     |

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
PLAN OF PROPOSED IMPROVEMENT  
ANTIGO - LANGLEADE  
CLOVER ROAD TO FIFTH AVENUE ROAD  
STH 64  
LANGLADE

STATE PROJECT NUMBER  
9140-12-75



LAYOUT  
SCALE 0 2 MI  
TOTAL NET LENGTH OF CENTERLINE = 5.377 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), COUNTY NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 18.

| STATE PROJECT | FEDERAL PROJECT |          |
|---------------|-----------------|----------|
|               | PROJECT         | CONTRACT |
| 9140-12-75    |                 |          |
|               |                 |          |
|               |                 |          |
|               |                 |          |

ORIGINAL PLANS PREPARED BY:

**it ENGINEERING**

**ANDREW W. BLOCK**  
E-41224-6  
APPLETON  
WI.

DATE: 4/16/2024 *Andrew W. Block*  
(Professional Engineer Signature)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY

|                     |                      |
|---------------------|----------------------|
| Surveyor            | IT ENGINEERING, INC. |
| Designer            | IT ENGINEERING, INC. |
| Project Manager     | BRYAN LIPKE, PE      |
| Regional Examiner   | NE REGION            |
| Regional Supervisor | DAN SEGERSTROM, PE   |

APPROVED FOR THE DEPARTMENT

DATE: 4/14/24 *Bryan Lipke*  
(Signature)

E

DIGGERSHOTLINE

Dial 811 or (800)242-8511

www.DiggersHotline.com

UTILITY CONTACTS

ATC MANAGEMENT, INC.

ELECTRICITY-TRANSMISSION  
JASON HENDERSON  
801 O'KEEFE ROAD  
DE PERE, WI 54115-6113  
PHONE: 920-338-6523  
MOBILE: 920-271-0005  
EMAIL: JHENDERSON@ATCLLC.COM

WITTENBERG TELEPHONE COMPANY

COMMUNICATION LINE  
MARCUS DAVIDSON  
104 WEST WALKER ST  
WITTENBERG, WI 54499  
PHONE: 715-253-2111  
MOBILE: 715-881-1360  
EMAIL: MARCUS@WITTELCO.COM

CITY GAS COMPANY

GAS/PETROLEUM  
VINCE FEDERMAN  
809 5TH AVE  
ANTIGO, WI 54409  
PHONE: 715-627-4351  
MOBILE: 715-216-2776  
EMAIL: VFEDERMAN@CITYGASANTIGO.COM

ALLIANT ENERGY

ELECTRICITY  
STEVEN CYCHOSZ  
703 NE 7TH ST  
MARION, WI 54950  
PHONE: 715-754-4323  
MOBILE: N/A  
EMAIL: STEVENCYCHOSZ@ALLIANTENERGY.COM

FRONTIER COMMUNICATIONS OF WI LLC

COMMUNICATION LINE  
JEREMY ZEHM  
154 E 2ND ST  
NEW RICHMOND, WI 54017  
PHONE: 715-243-9243  
MOBILE: N/A  
EMAIL: JEREMY.ZEHM@FTR.COM

WISCONSIN PUBLIC SERVICE CORPORATION

ELECTRICITY  
DAN LUTZOW  
P.O. BOX 1166  
WAUSAU, WI 54402  
PHONE: 715-848-7487  
MOBILE: 507-848-4211  
EMAIL: DONALD.LUTZOW@WISCONSINPUBLICSERVICE.COM

WISCONSIN PUBLIC SERVICE CORPORATION

GAS/PETROLEUM  
SHANE SARKKINEN  
2027 NAVAJO ST.  
RHINELANDER, WI 54501  
PHONE: 715-369-7133  
MOBILE: 715-966-1040  
EMAIL: SHANE.SARKKINEN@WISCONSINPUBLICSERVICE.COM

AGENCY/PROJECT CONTACT

WISCONSIN DNR LIAISON  
MS. WENDY HENNIGES  
NORTH CENTRAL REGION  
107 SUTLIFF AVE.  
RHINELANDER, WI 54501  
TEL: (715) 365-8916  
EMAIL: WENDY.HENNIGES@WISCONSIN.GOV

SEQUENCE OF PLANS AND DETAILS IN SECTION 2

GENERAL NOTES  
PROJECT OVERVIEW  
TYPICAL SECTIONS  
CONSTRUCTION DETAILS  
PLAN DETAILS  
EROSION CONTROL  
STORM SEWER  
TRAFFIC CONTROL OVERVIEW

GENERAL NOTES

1.

THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
2.

ANY LOCAL OR MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.
3.

ALL CURB & GUTTER DIMENSIONS AND ELEVATIONS ARE PROVIDED TO THE FLAG LINE OF CURB & GUTTER.
4.

SUPER ELEVATION R.O. AND S.T. INFORMATION IN THE PLANS IS FOR INFORMATION ONLY, MATCH THE EXISTING CONDITION.

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                    | .16 | .22      | .12                    | .20 | .27      | .15                    | .24 | .33      | .19                    | .28 | .38      |
|                         | .22                    | .30 | .38      | .26                    | .34 | .44      | .30                    | .37 | .50      | .34                    | .41 | .56      |
| MEDIAN STRIP-TURF       | .19                    | .20 | .24      | .19                    | .22 | .26      | .20                    | .23 | .30      | .20                    | .25 | .30      |
|                         | .24                    | .26 | .30      | .25                    | .28 | .33      | .26                    | .30 | .37      | .27                    | .32 | .40      |
| SIDE SLOPE-TURF         |                        |     | .25      |                        |     | .27      |                        |     | .28      |                        |     | .30      |
|                         |                        |     | .32      |                        |     | .34      |                        |     | .36      |                        |     | .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 = 112 ACRES  
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.64 ACRES

PROJECT NO: 9140-12-75

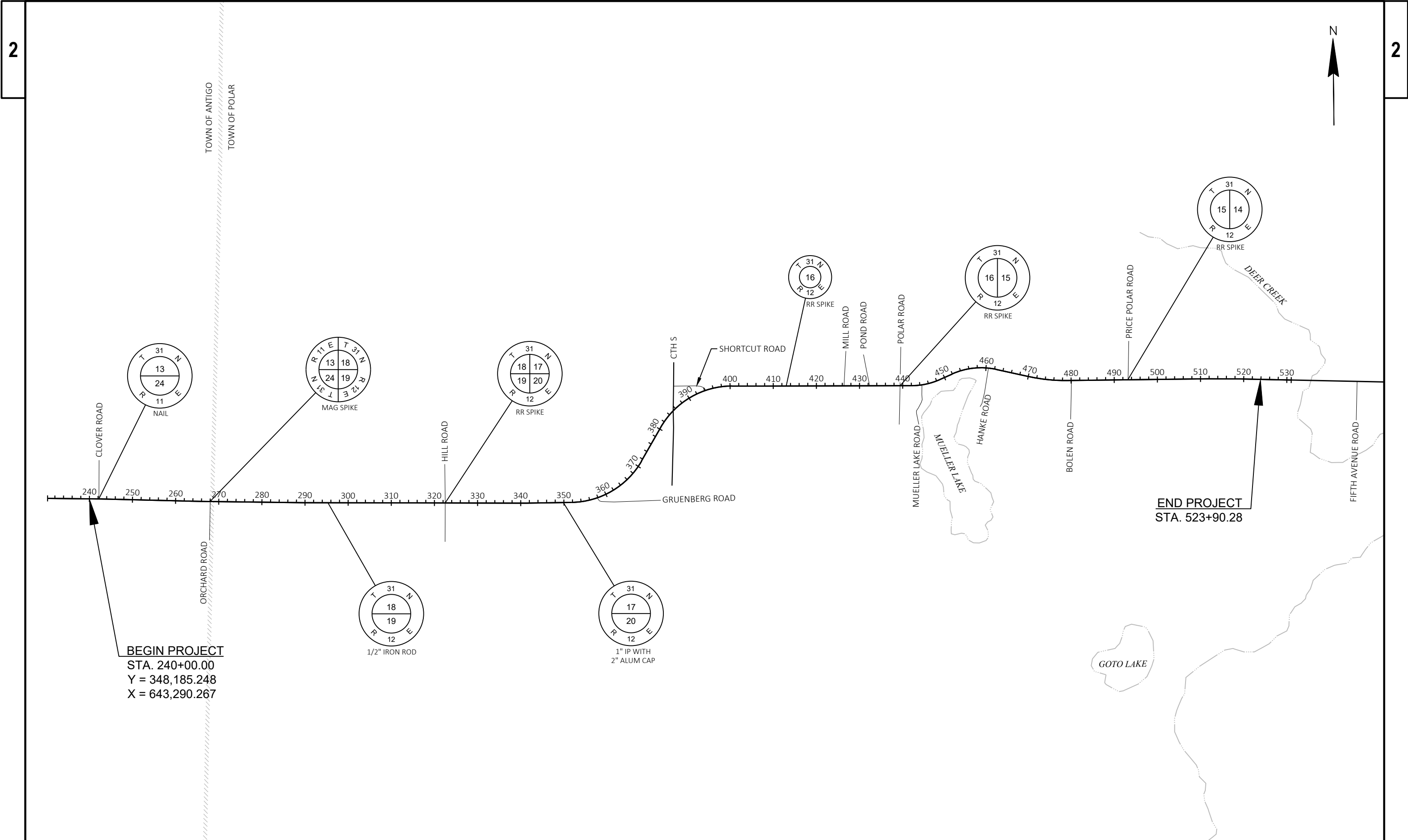
HWY: STH 64

COUNTY: LANGLADE

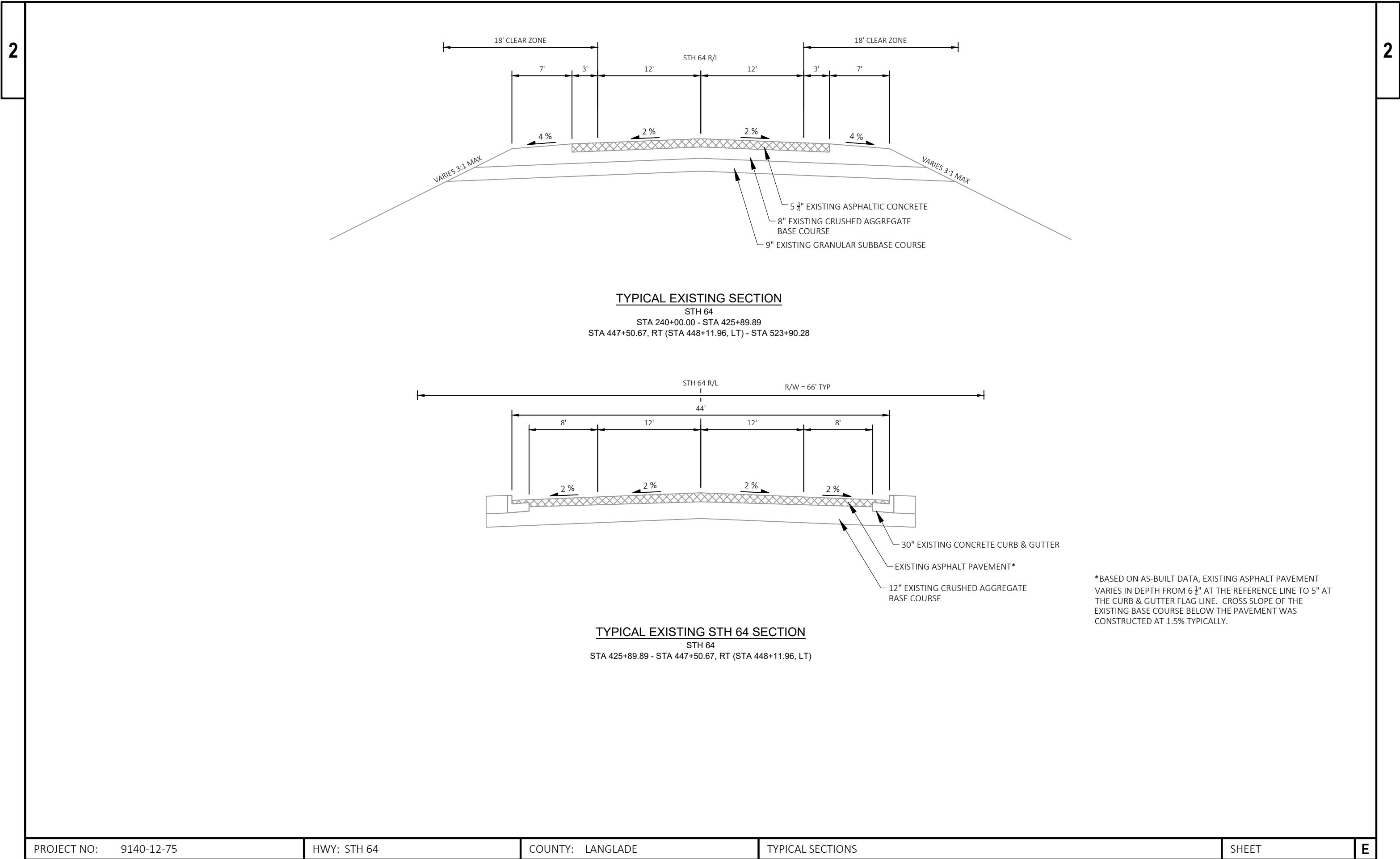
GENERAL NOTES

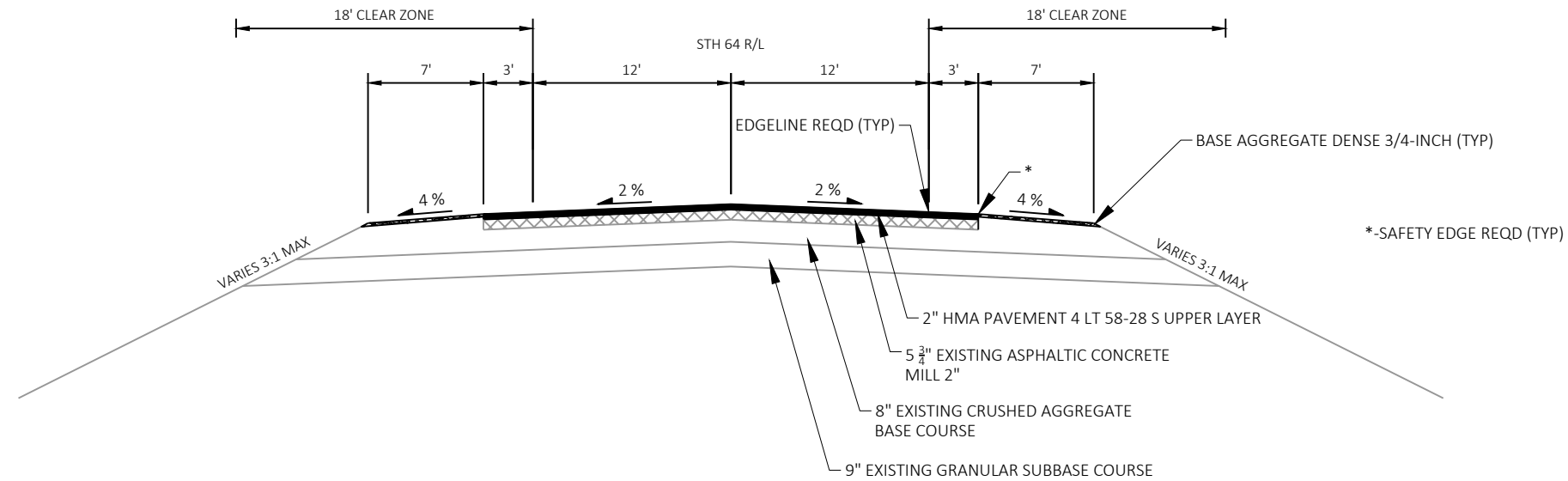
SHEET

E



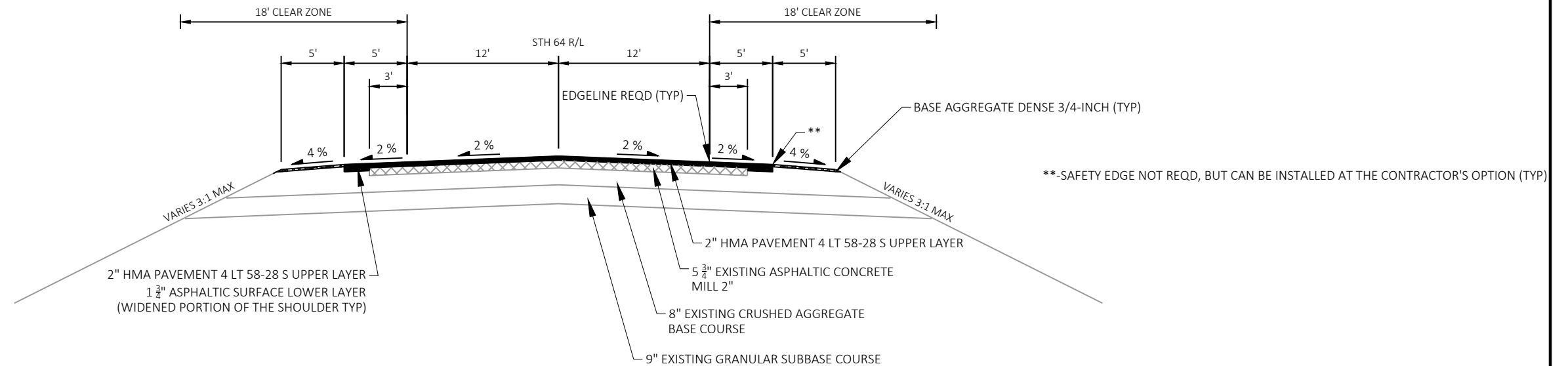
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|------------------------|-------------|------------------|------------------|-------|---|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PROJECT OVERVIEW | SHEET | E |
|------------------------|-------------|------------------|------------------|-------|---|





### TYPICAL FINISHED SECTION

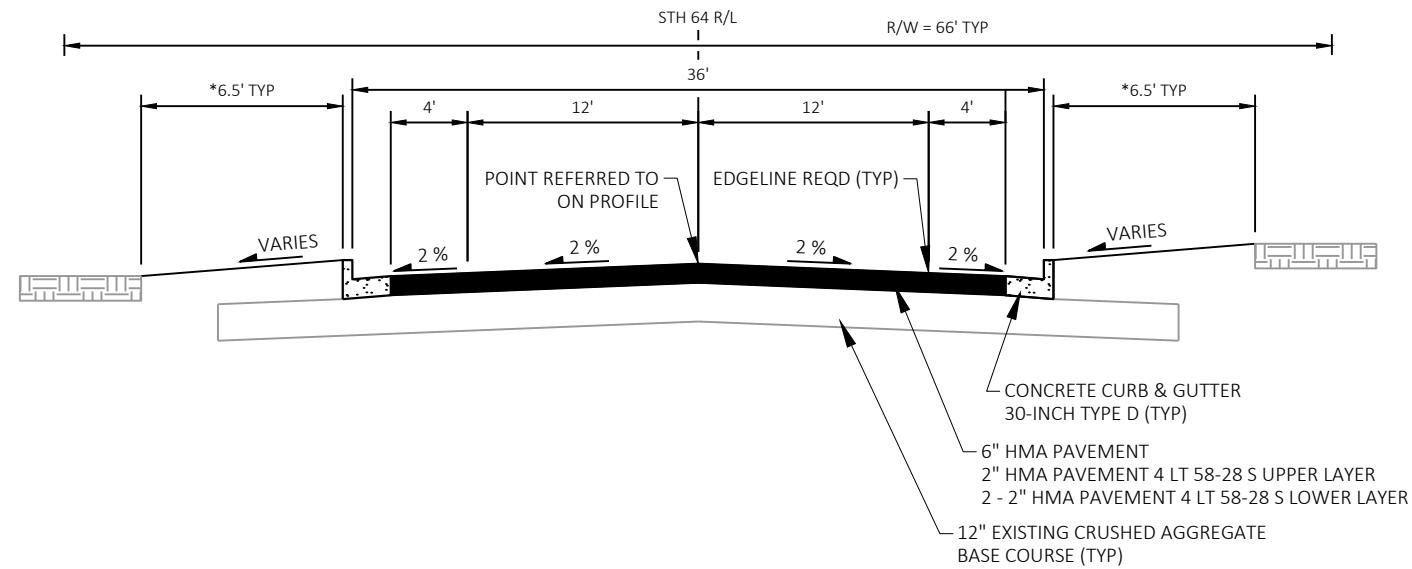
STH 64  
STA 240+00.00 - STA 385+23.58



### TYPICAL FINISHED SECTION

STH 64  
STA 385+23.58 - STA 425+89.89  
STA 447+50.67, RT (STA 448+11.96, LT) - STA 523+90.28

NOTE: MILL 2" AND PAVE 2" TYP TO RESUME AT STA 448+11.96

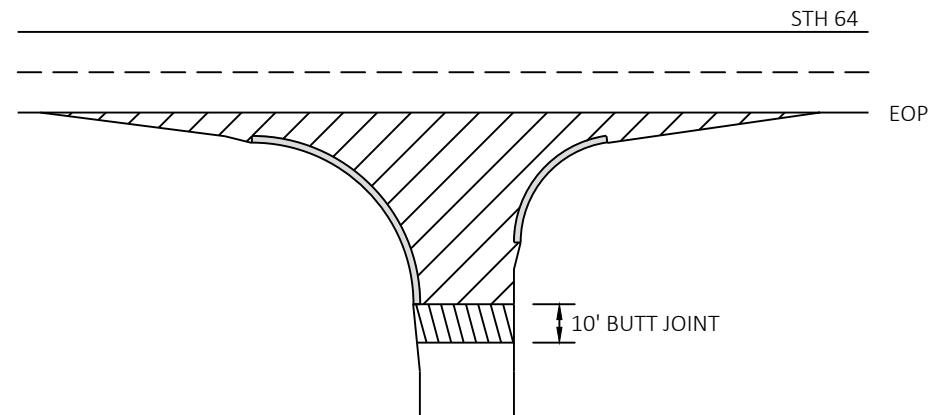


\*PLACE TOPSOIL, FERTILIZER TYPE B, SEEDING MIXTURE NO. 40 AND EROSION MAT URBAN CLASS 1 TYPE B ON DISTURBED AREAS

NOTE: CONTINUE FULL DEPTH PAVEMENT REMOVAL AND PAVE 6" TO STA 448+11.96

TYPICAL FINISHED SECTION

STH 64  
STA 425+89.89 - STA 447+50.67, RT (STA 448+11.96, LT)



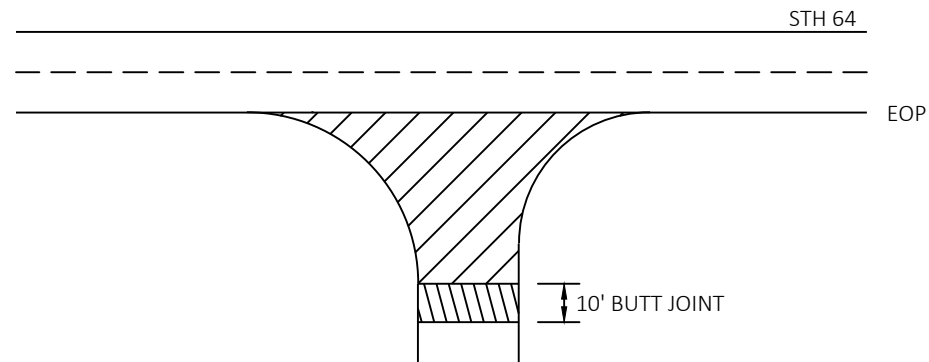
- REMOVING ASPHALTIC SURFACE MILLING
- REMOVING ASPHALTIC SURFACE BUTT JOINTS  
SEE BUTT JOINT DETAIL

NOTE: WHEN MATCHING TO AN UNPAVED SURFACE  
BUTT JOINT IS NOT REQUIRED

#### SIDE ROADS

##### WITH CURB AND GUTTER

CLOVER ROAD  
ORCHARD ROAD  
HILL ROAD  
GREUNBERG ROAD  
CTH S  
HANKE ROAD  
BOLEN ROAD  
PRICE POLAR ROAD



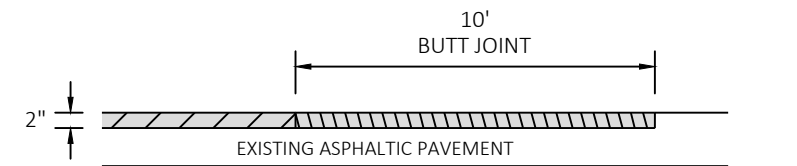
- REMOVING ASPHALTIC SURFACE MILLING
- REMOVING ASPHALTIC SURFACE BUTT JOINTS  
SEE BUTT JOINT DETAIL

NOTE: WHEN MATCHING TO AN UNPAVED SURFACE  
BUTT JOINT IS NOT REQUIRED

#### SIDE ROADS

##### WITHOUT CURB AND GUTTER

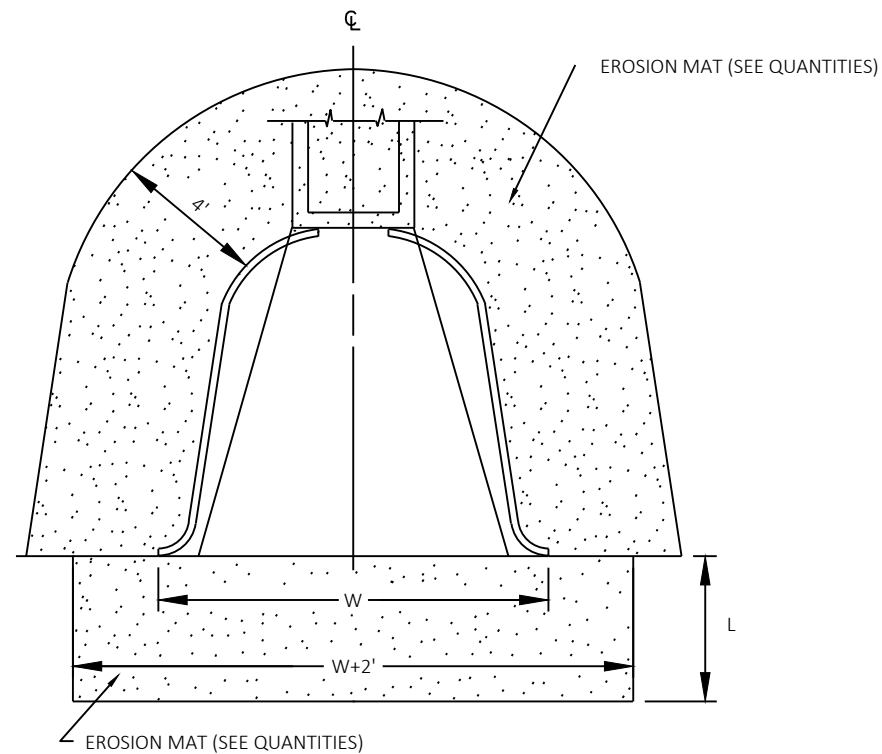
SHORT CUT ROAD



- HMA PAVEMENT
- REMOVING ASPHALTIC SURFACE MILLING
- REMOVING ASPHALTIC SURFACE BUTT JOINTS

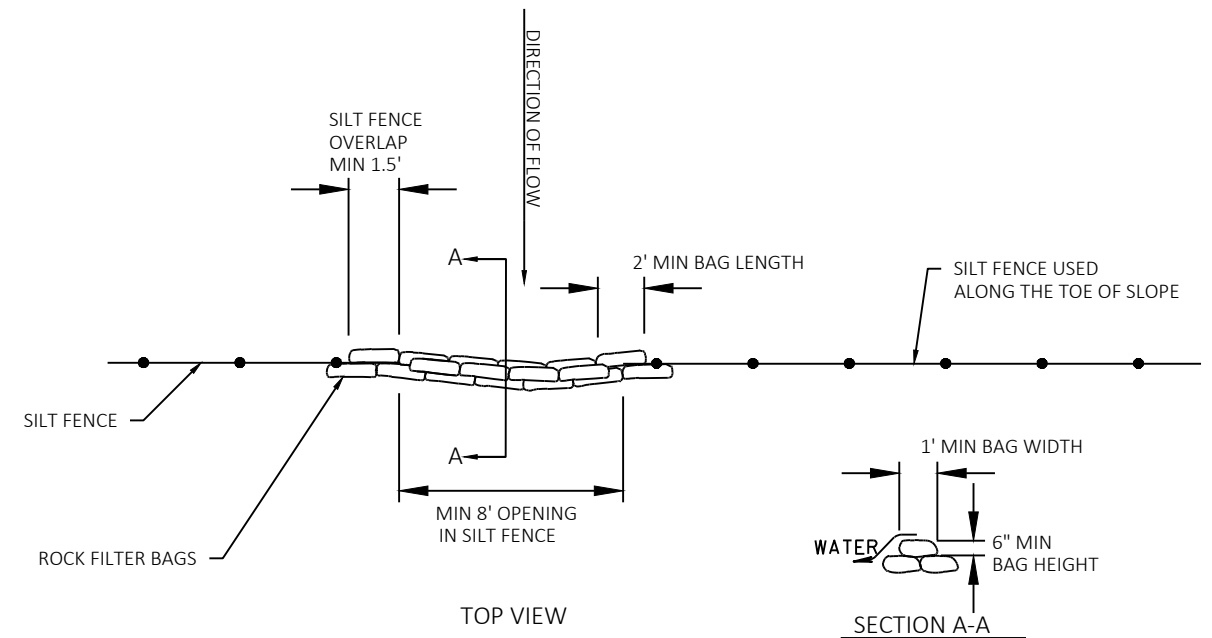
#### BUTT JOINT

##### MAINLINE AND SIDE ROADS

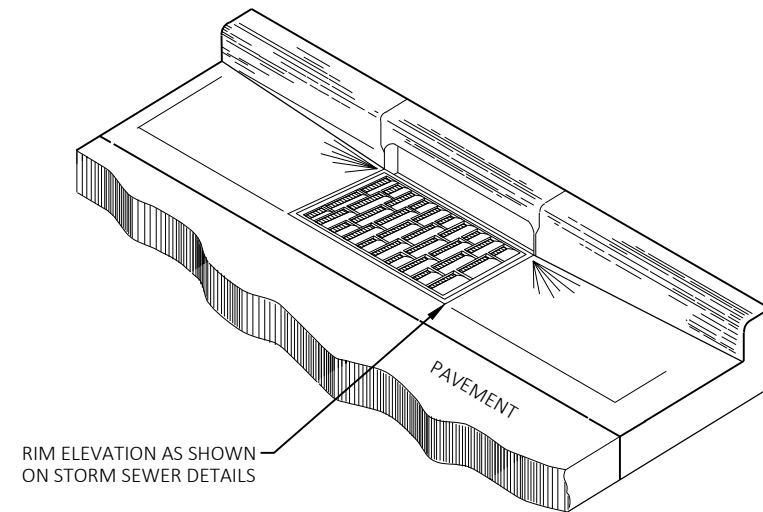


EROSION CONTROL AT PIPE ENDS

$L = 3$  TIMES DIAMETER OR 10' MIN.  
INCREASE IF WARRANTED

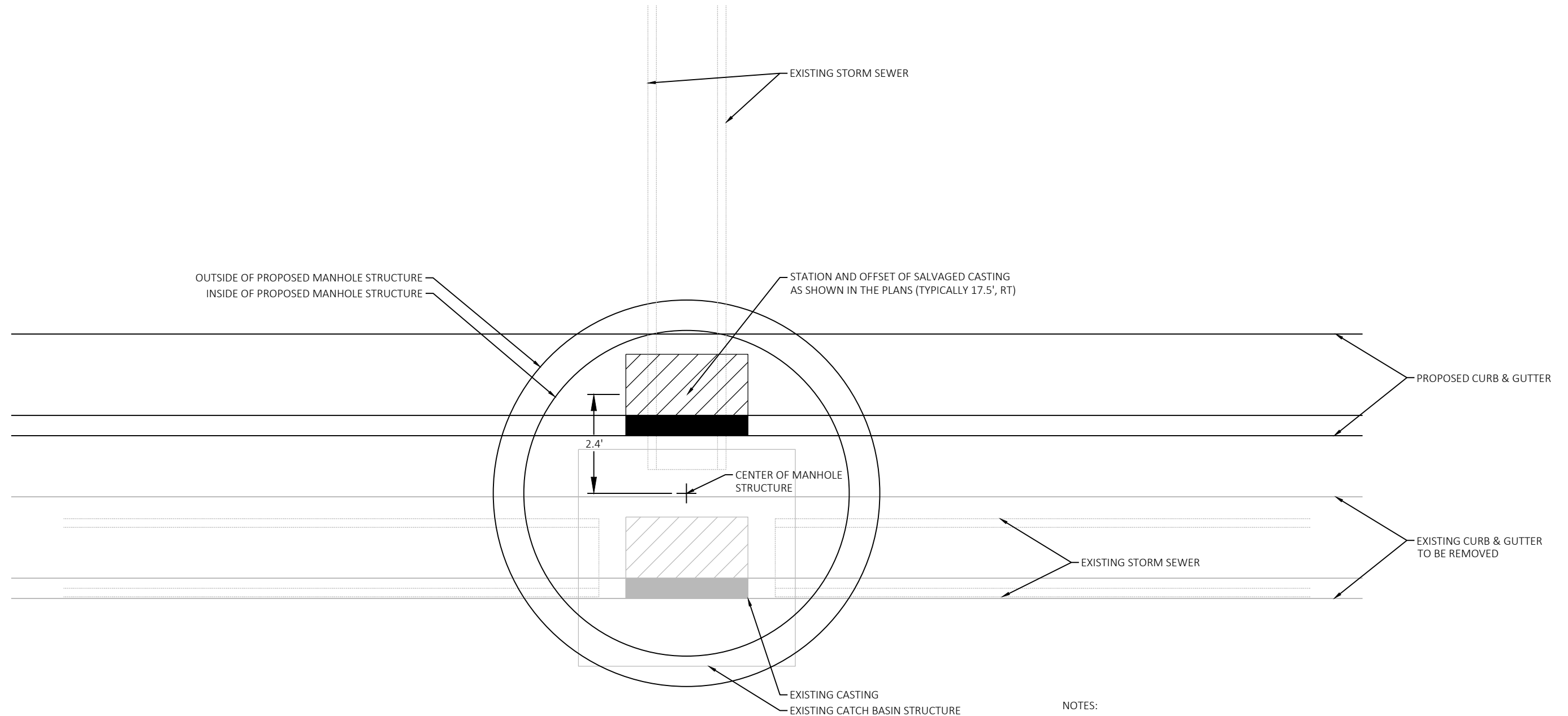


ROCK BAGS USED FOR SILT FENCE RELIEF



DETAIL OF CURB AND GUTTER AT INLETS

SEE SDD CONCRETE GUTTER, TIES AND CURB AND GUTTER APPLICATIONS FOR DETAILS NOT SHOWN



## NOTES:

REMOVE EXISTING STORM SEWER PIPE AS NECESSARY TO FIT WITHIN THE PROPOSED MANHOLE. CONCRETE COLLARS REQUIRED AT JUNCTIONS BETWEEN EXISTING PIPES AND THE PROPOSED STRUCTURE.

FIELD VERIFY PIPE LOCATIONS PRIOR TO PLACING THE PROPOSED STRUCTURE.

## DETAIL FOR 8-FT MANHOLE CONSTRUCTION

PROJECT NO: 9140-12-75

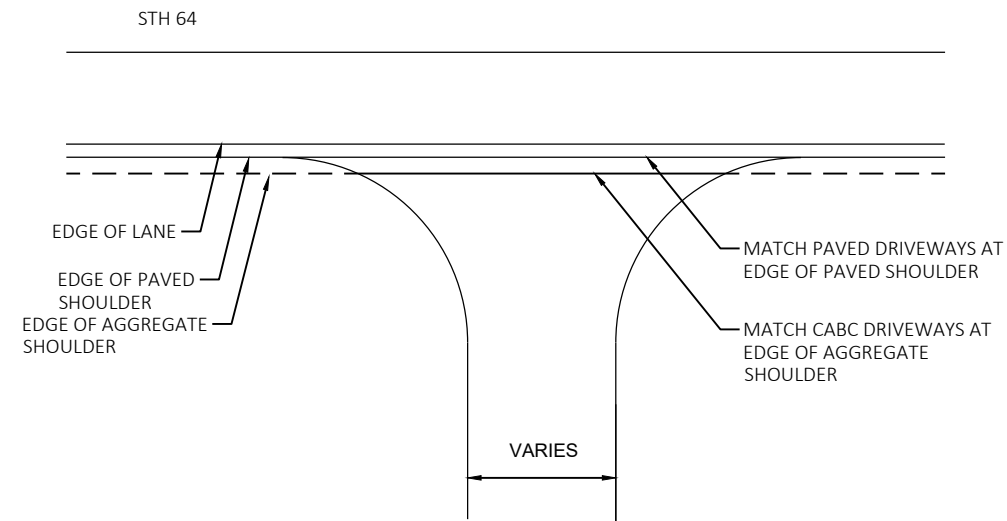
HWY: STH 64

COUNTY: LANGLADE

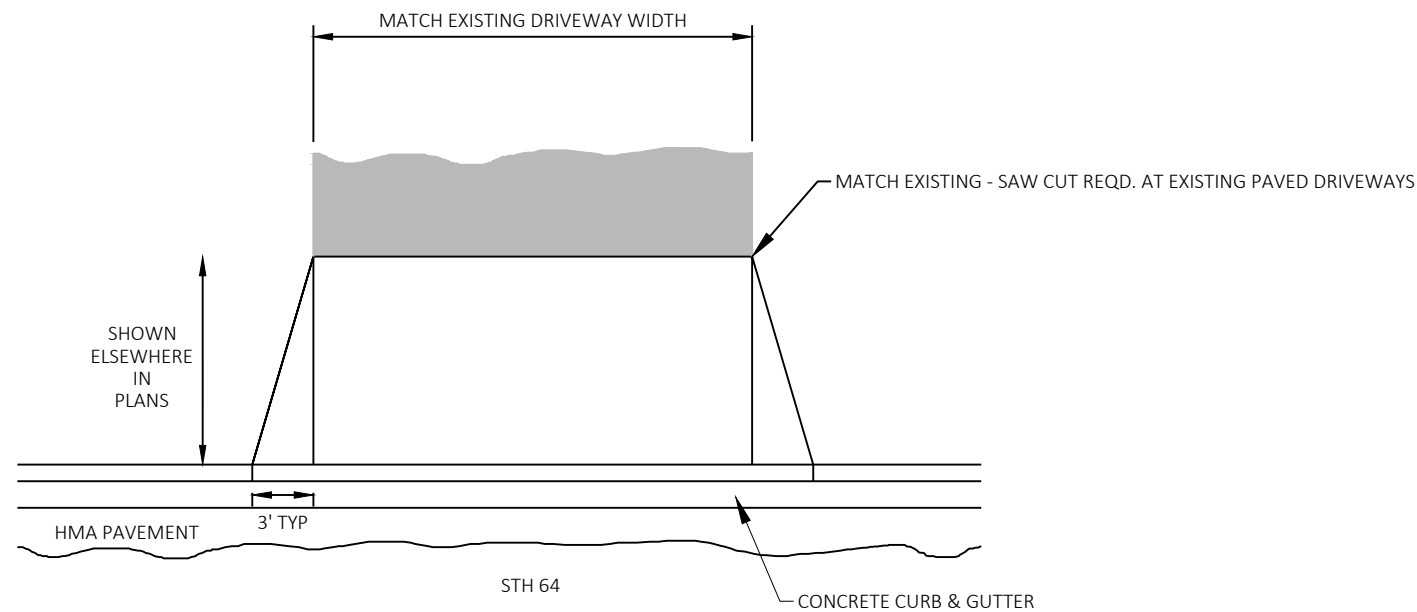
CONSTRUCTION DETAILS

SHEET

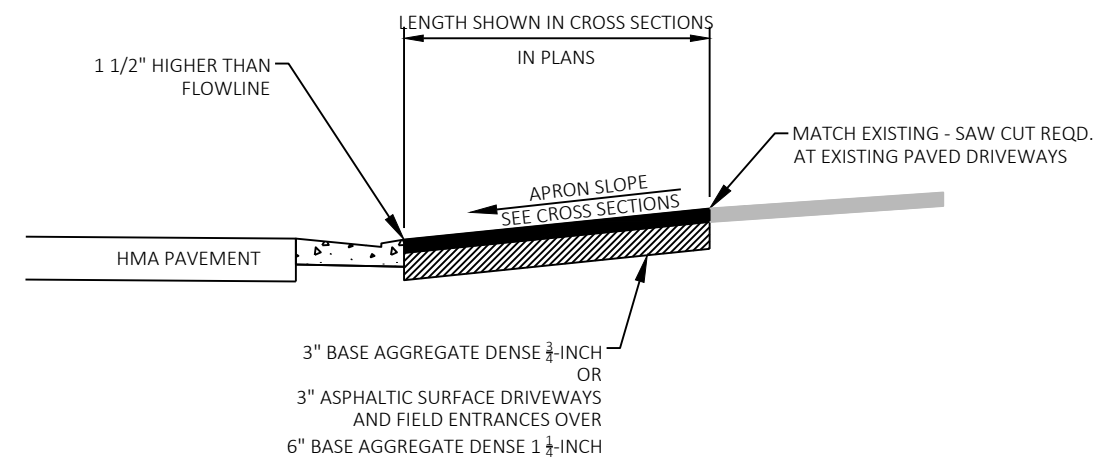
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DETAIL FOR TYPICAL DRIVEWAY CONSTRUCTION LIMITS

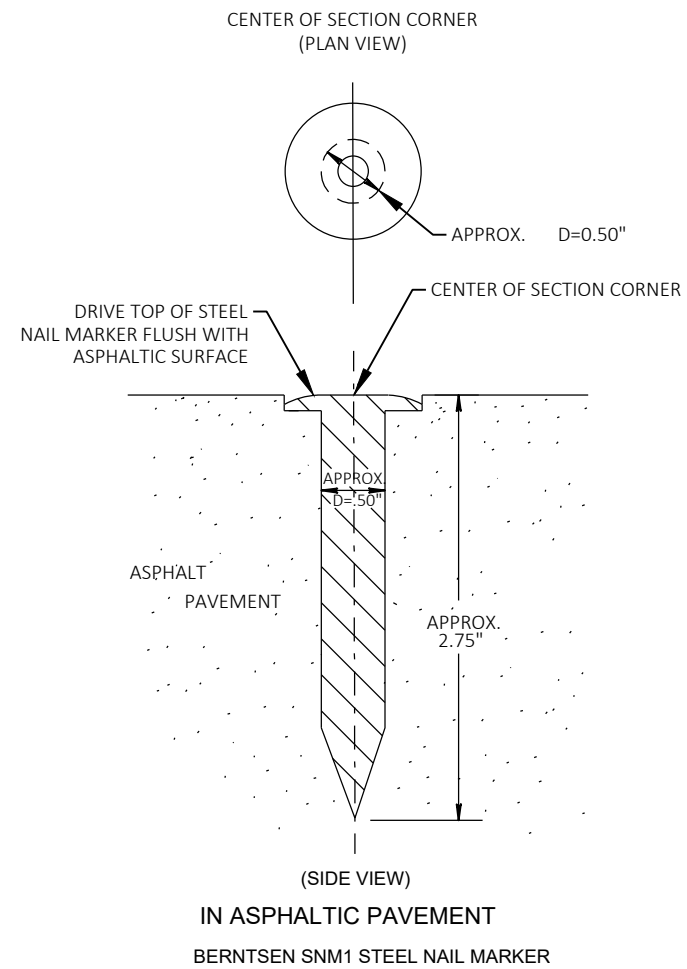


PLAN VIEW



SECTION VIEW

DETAIL FOR DRIVEWAY ENTRANCE WITH CURB & GUTTER

**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.

CONTRACTOR WILL SUPPLY ALL REQUIRED SURVEY MONUMENTS.

**DETAIL FOR SECTION CORNER MONUMENTS**

PROJECT NO: 9140-12-75

HWY: STH 64

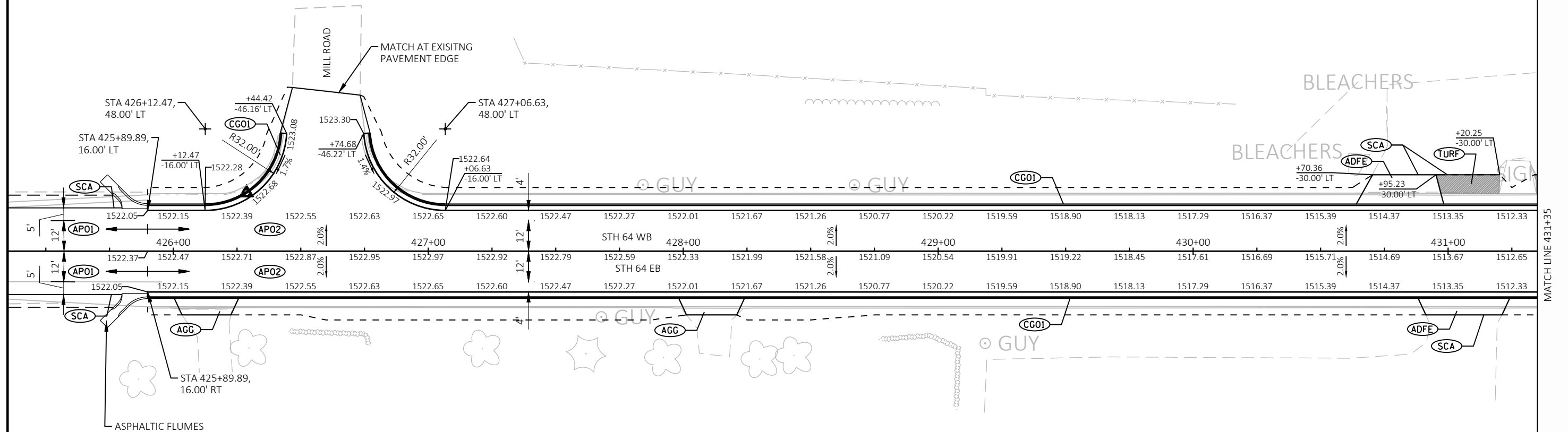
COUNTY: LANGLADE

CONSTRUCTION DETAILS

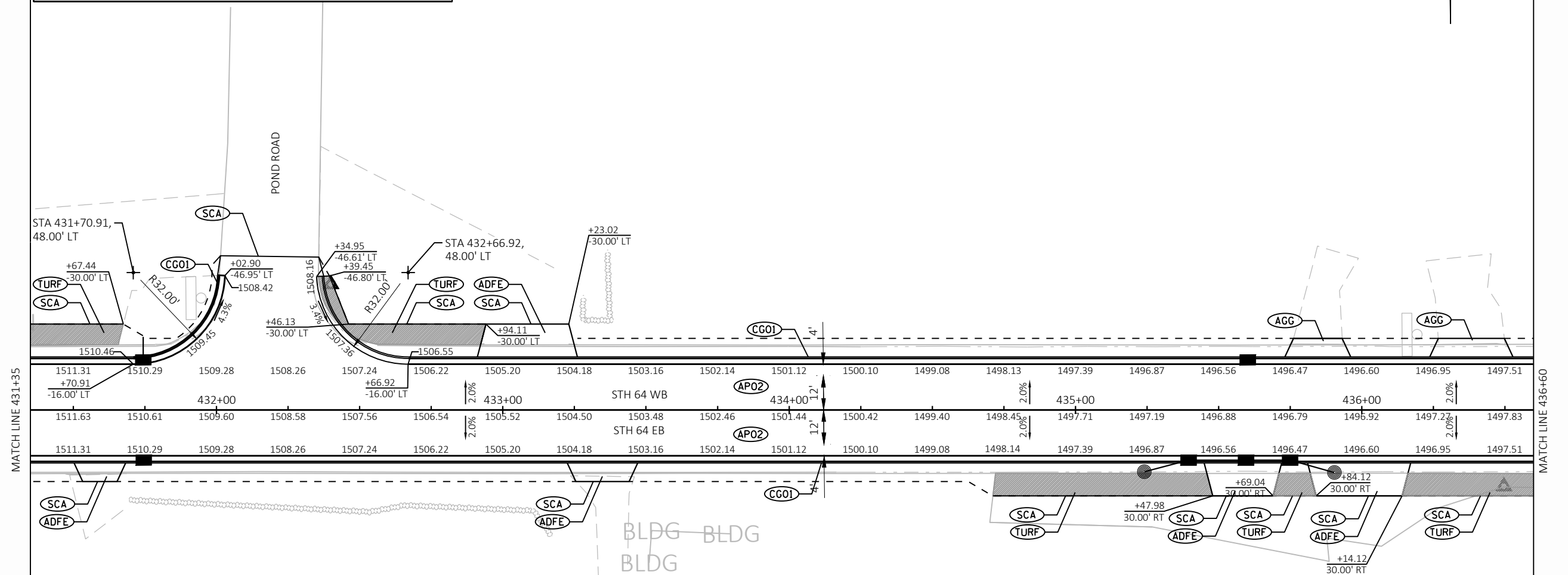
SHEET

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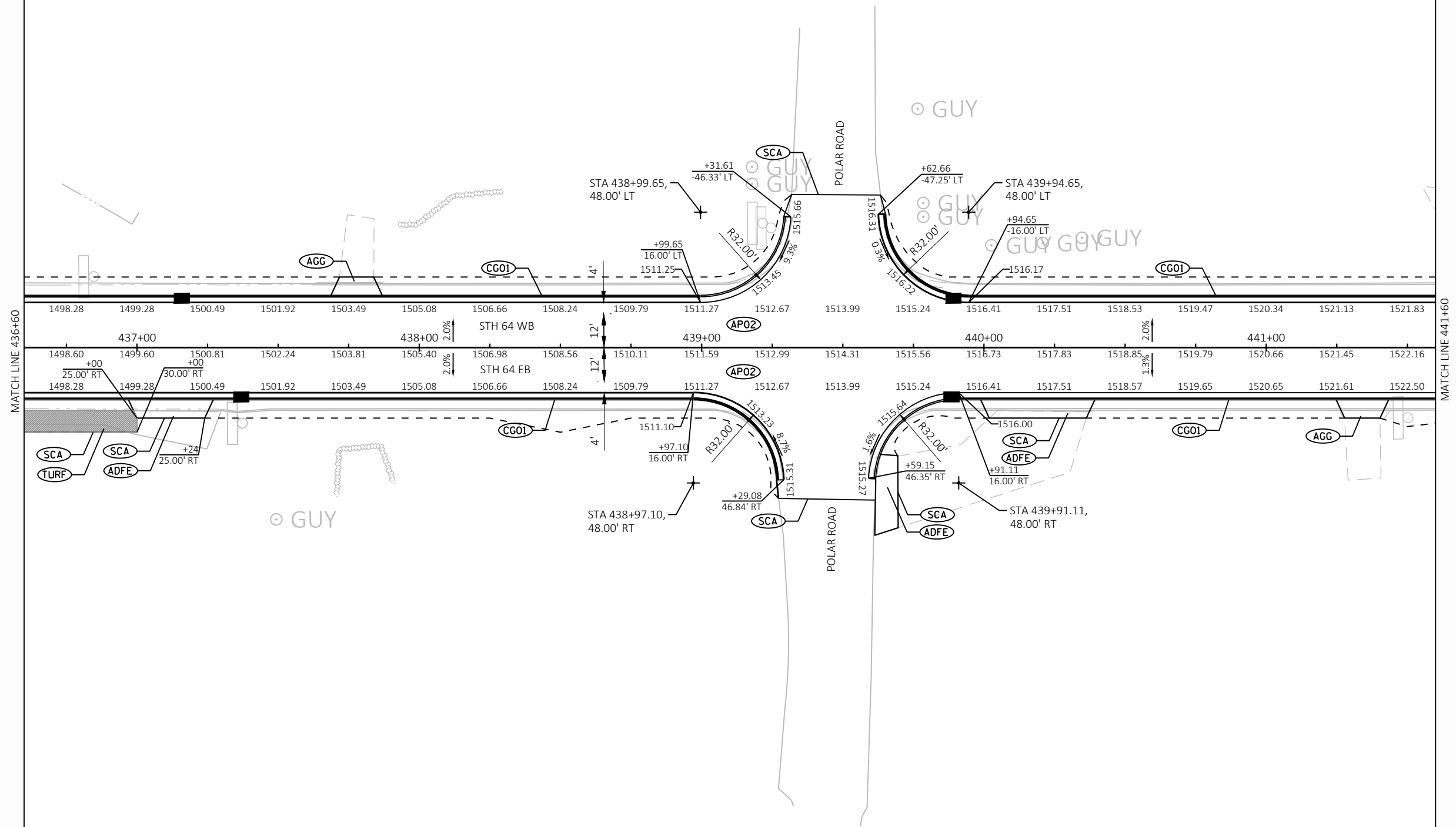
- |        |                                                           |
|--------|-----------------------------------------------------------|
| (AP01) | 2-INCH (TYP) HMA PAVEMENT 4 LT 58-28 S                    |
| (AP02) | 6-INCH HMA PAVEMENT 4 LT 58-28 S (3 X 2-INCH LAYERS)      |
| (CG01) | CONCRETE CURB & GUTTER 30-INCH TYPE D                     |
| (ADFE) | ASPHALTIC SURFACE DRIVEWAY AND FIELD ENTRANCE             |
| (AGG)  | AGGREGATE SURFACE ENTRANCE (BASE AGGREGATE DENSE 3/4-INCH |
| (SCA)  | SAWING ASPHALT                                            |
| (TURF) | REPLACE EXISTING PAVED AREA WITH TURF RESTORATION         |



- (APO1) 2-INCH (TYP) HMA PAVEMENT 4 LT 58-28 S  
(APO2) 6-INCH HMA PAVEMENT 4 LT 58-28 S (3 X 2-INCH LAYERS)  
(CGO1) CONCRETE CURB & GUTTER 30-INCH TYPE D  
(ADFE) ASPHALTIC SURFACE DRIVEWAY AND FIELD ENTRANCE  
(AGG) AGGREGATE SURFACE ENTRANCE (BASE AGGREGATE DENSE 3/4-INCH)  
(SCA) SAWING ASPHALT  
(TURF) REPLACE EXISTING PAVED AREA WITH TURF RESTORATION



- (AP01) 2-INCH (TYP) HMA PAVEMENT 4 LT 58-28 S  
(AP02) 6-INCH HMA PAVEMENT 4 LT 58-28 S (3 X 2-INCH LAYERS)  
(CG01) CONCRETE CURB & GUTTER 30-INCH TYPE D  
(ADFE) ASPHALTIC SURFACE DRIVEWAY AND FIELD ENTRANCE  
(AGG) AGGREGATE SURFACE ENTRANCE (BASE AGGREGATE DENSE 3/4-INCH)  
(SCA) SAWING ASPHALT  
(TURF) REPLACE EXISTING PAVED AREA WITH TURF RESTORATION



PROJECT NO: 9140-12-75

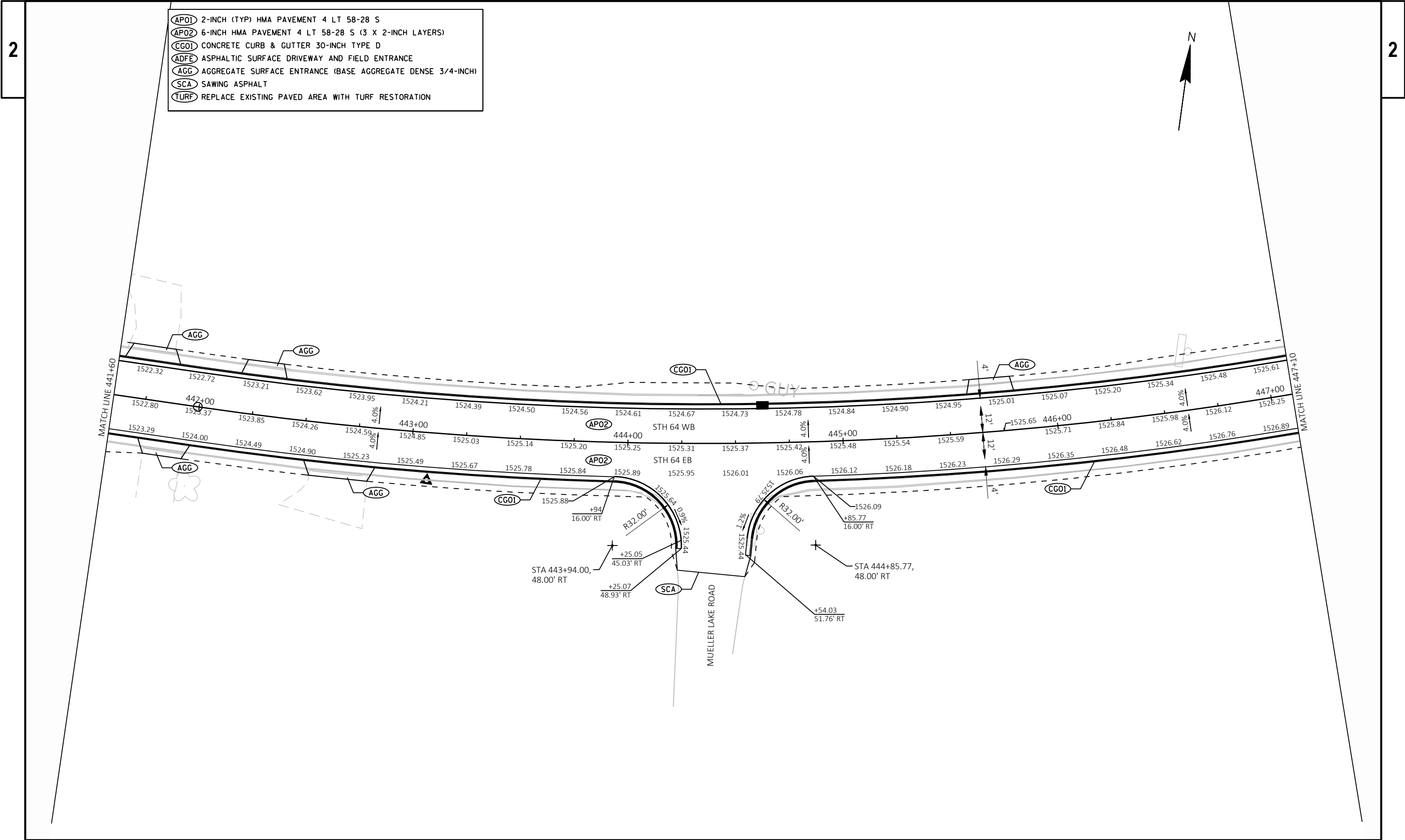
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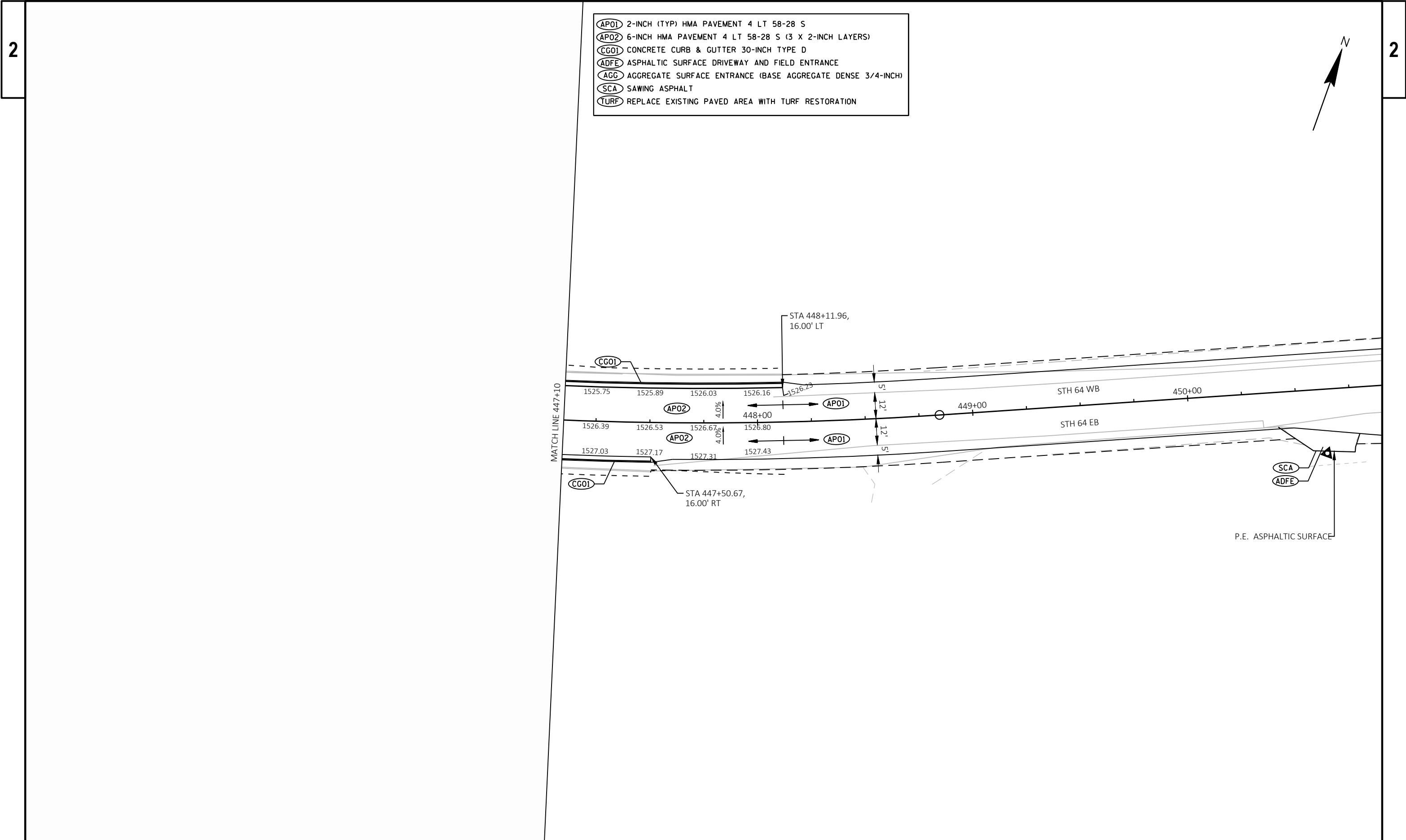
COUNTY: LANGLADE

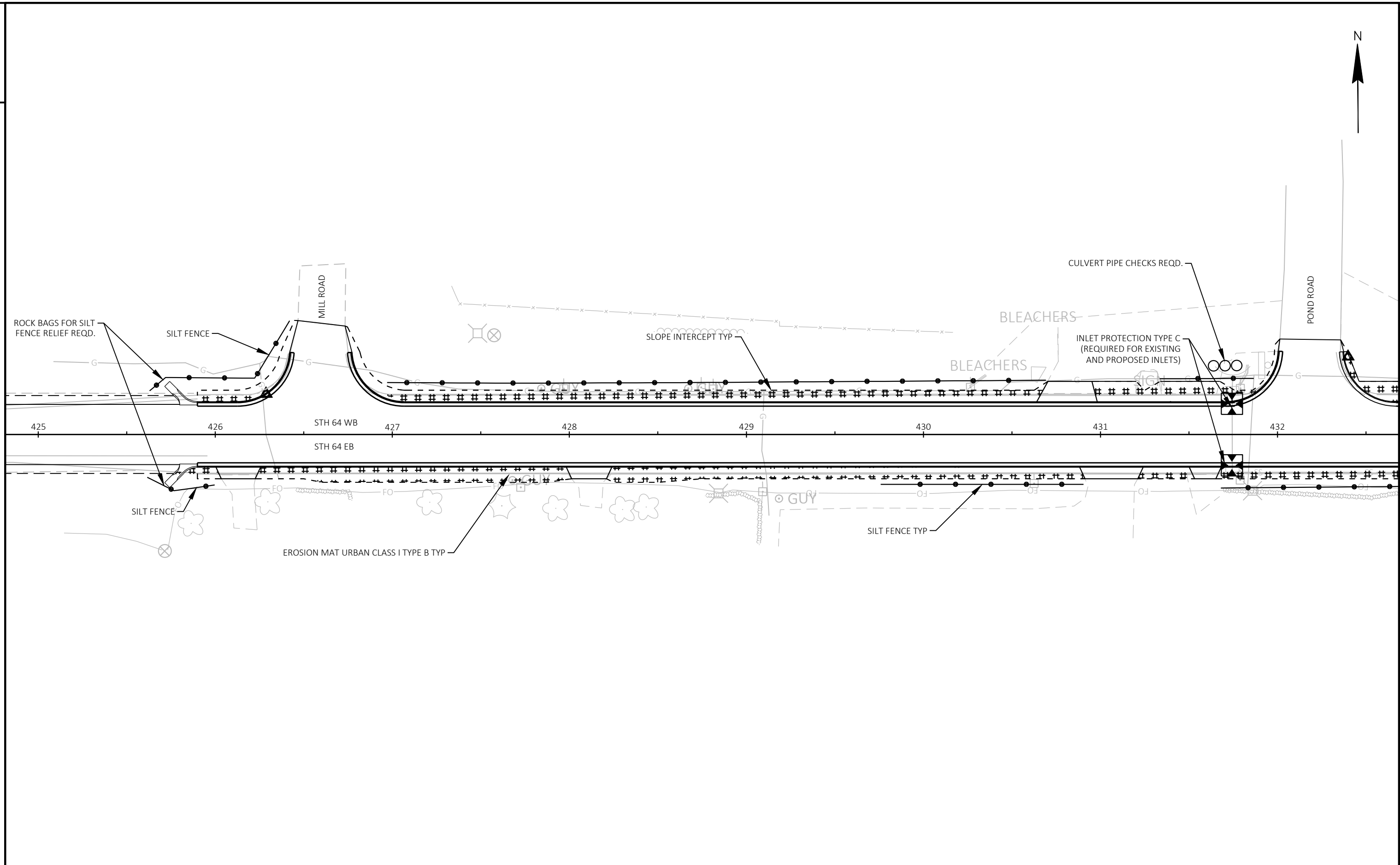
PLAN DETAILS

SHEET

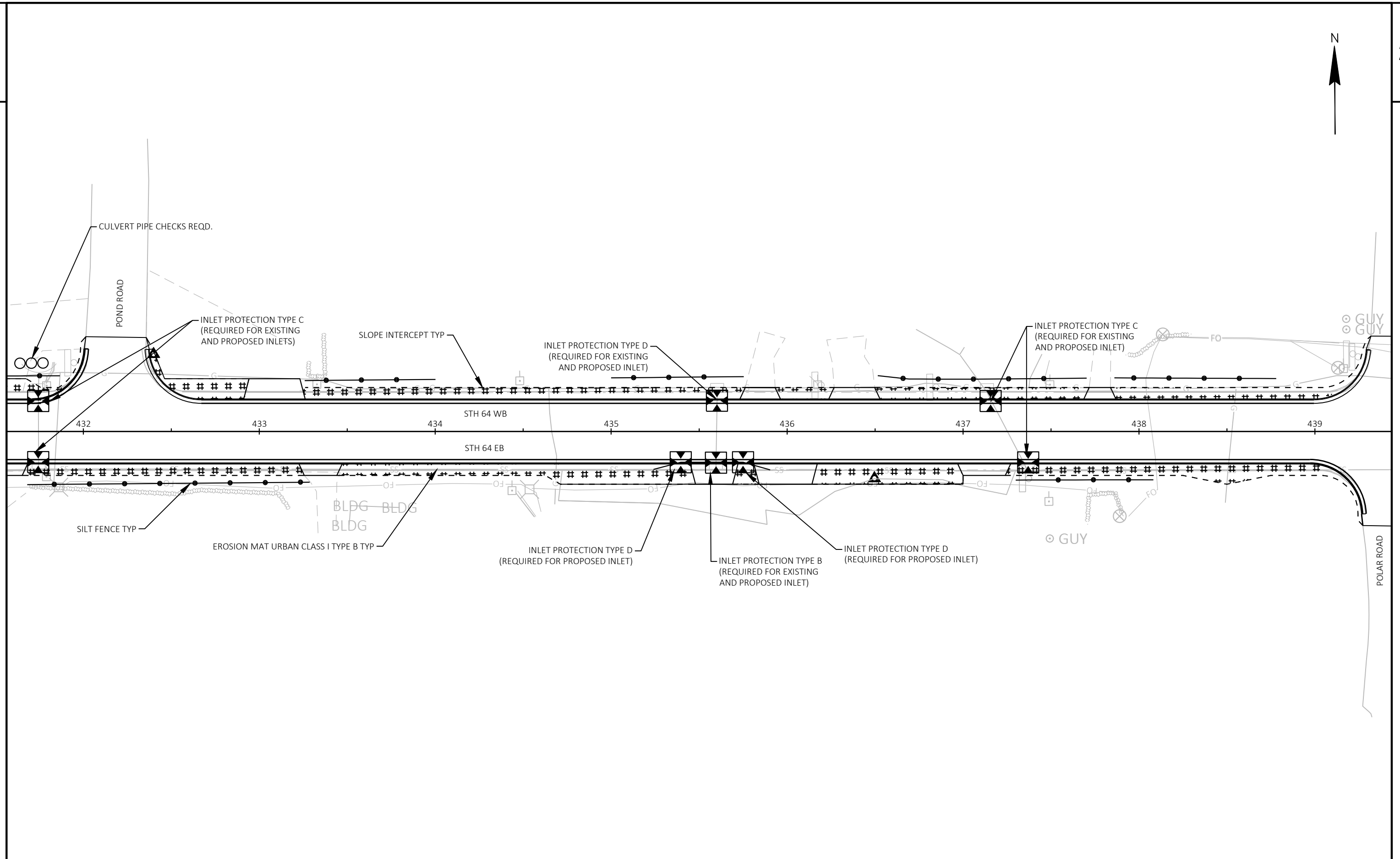
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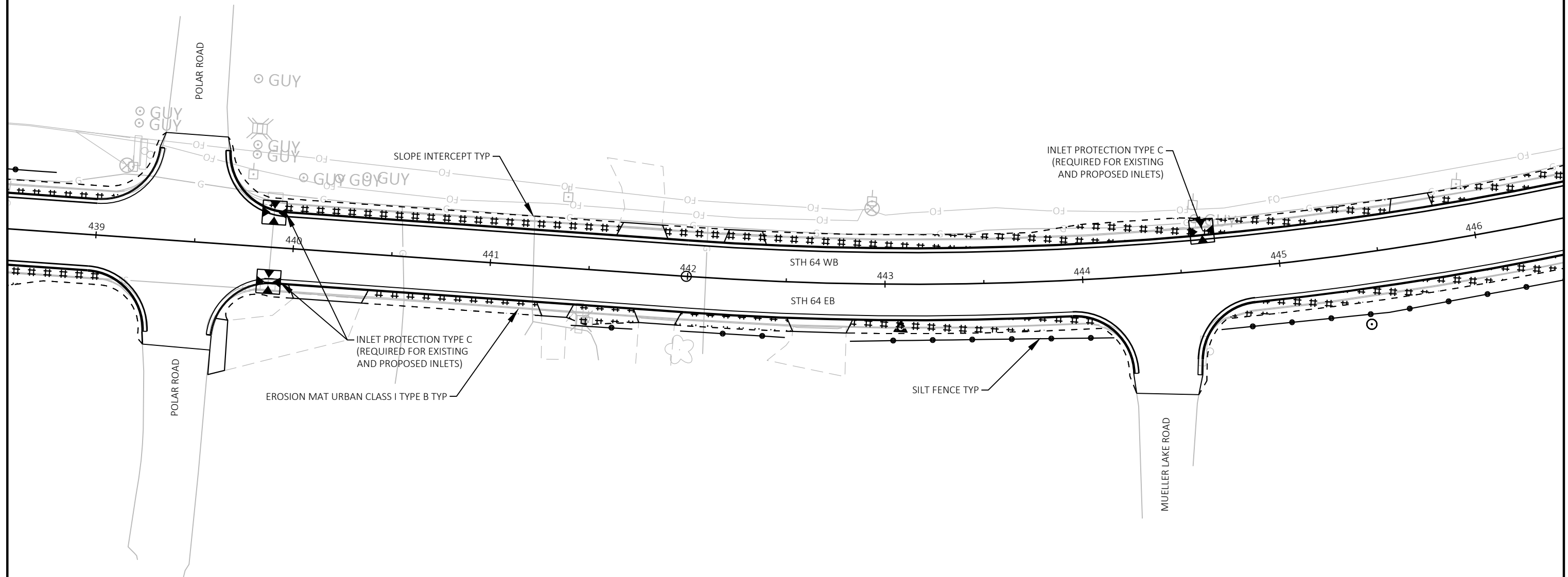




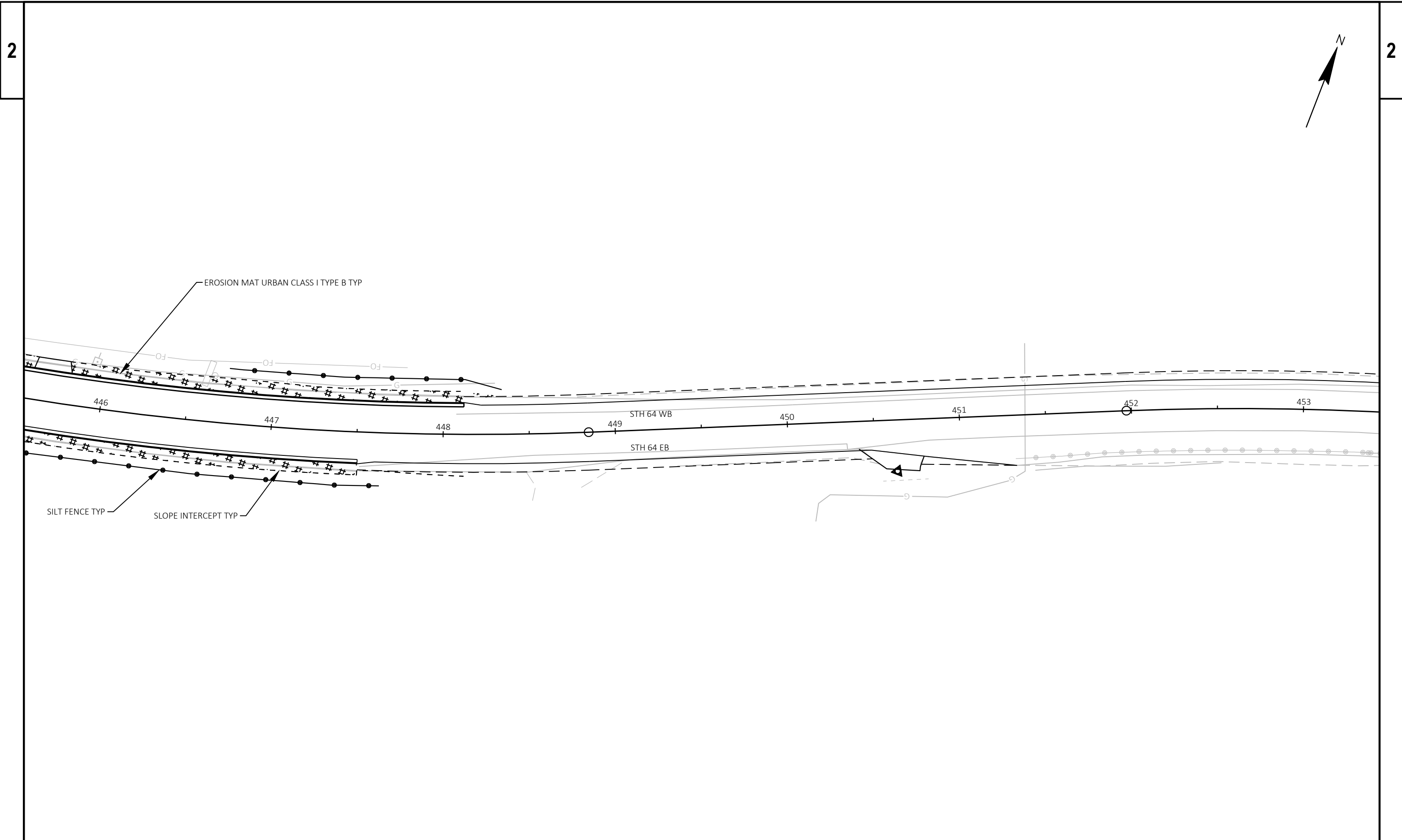
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| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | EROSION CONTROL | SHEET | E |
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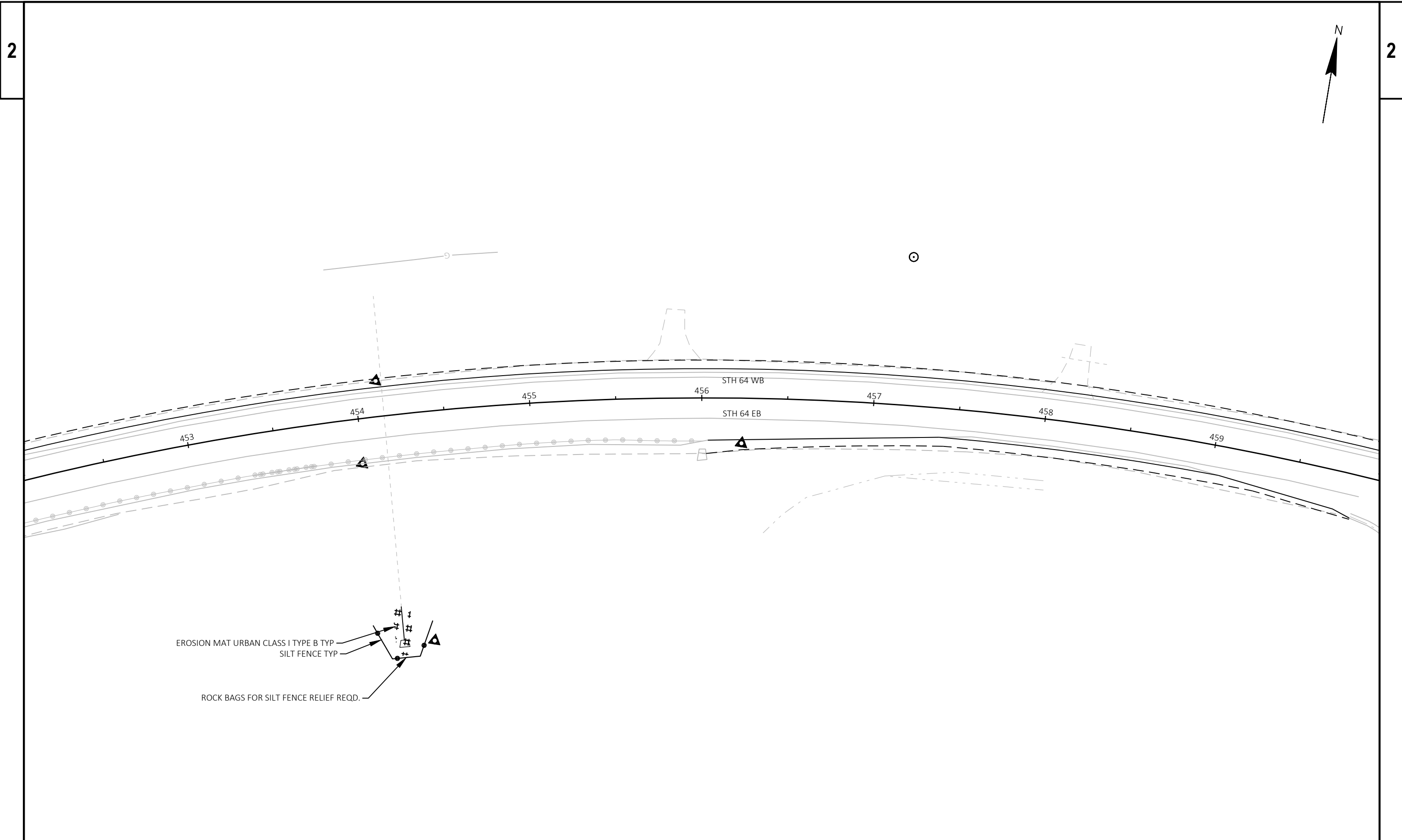
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| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | EROSION CONTROL | SHEET | E |
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| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | EROSION CONTROL | SHEET | E |
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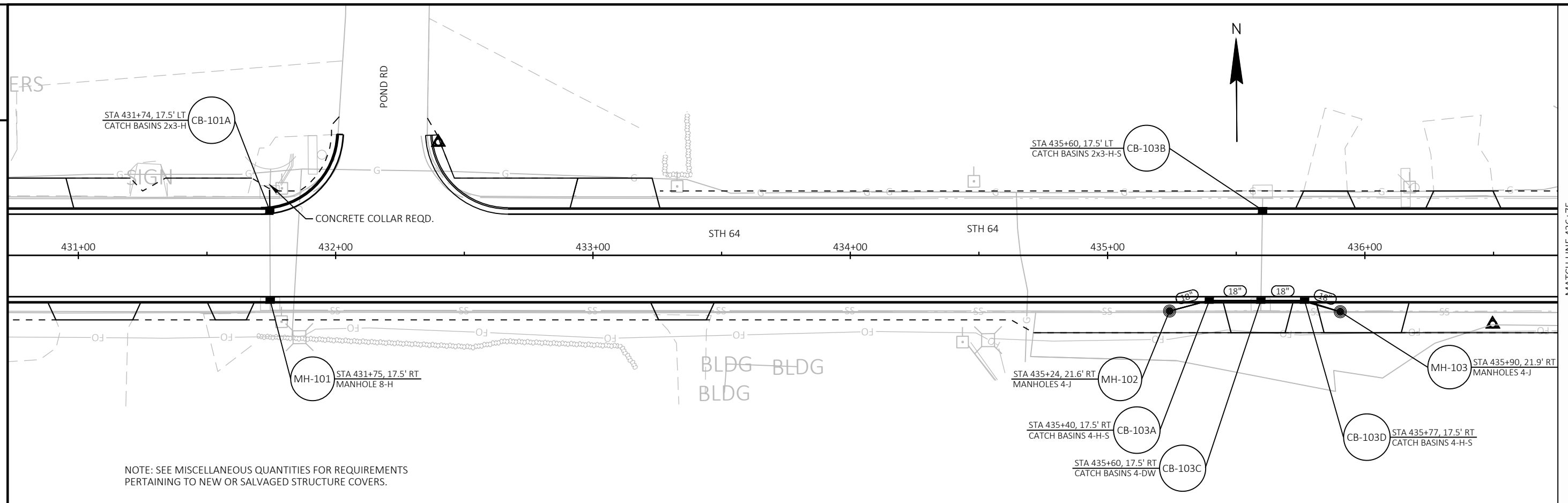


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| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | EROSION CONTROL | SHEET | E |
|------------------------|-------------|------------------|-----------------|-------|---|

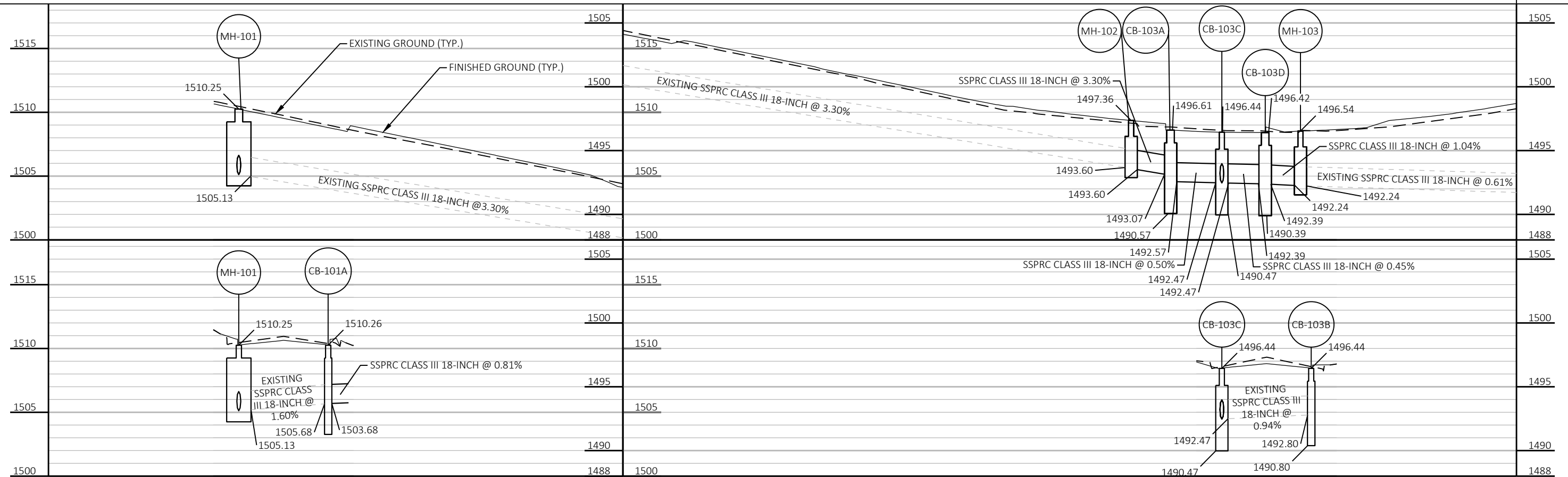


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|------------------------|-------------|------------------|-----------------|-------|---|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | EROSION CONTROL | SHEET | E |
|------------------------|-------------|------------------|-----------------|-------|---|

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|             |            |
|-------------|------------|
| PROJECT NO: | 9140-12-75 |
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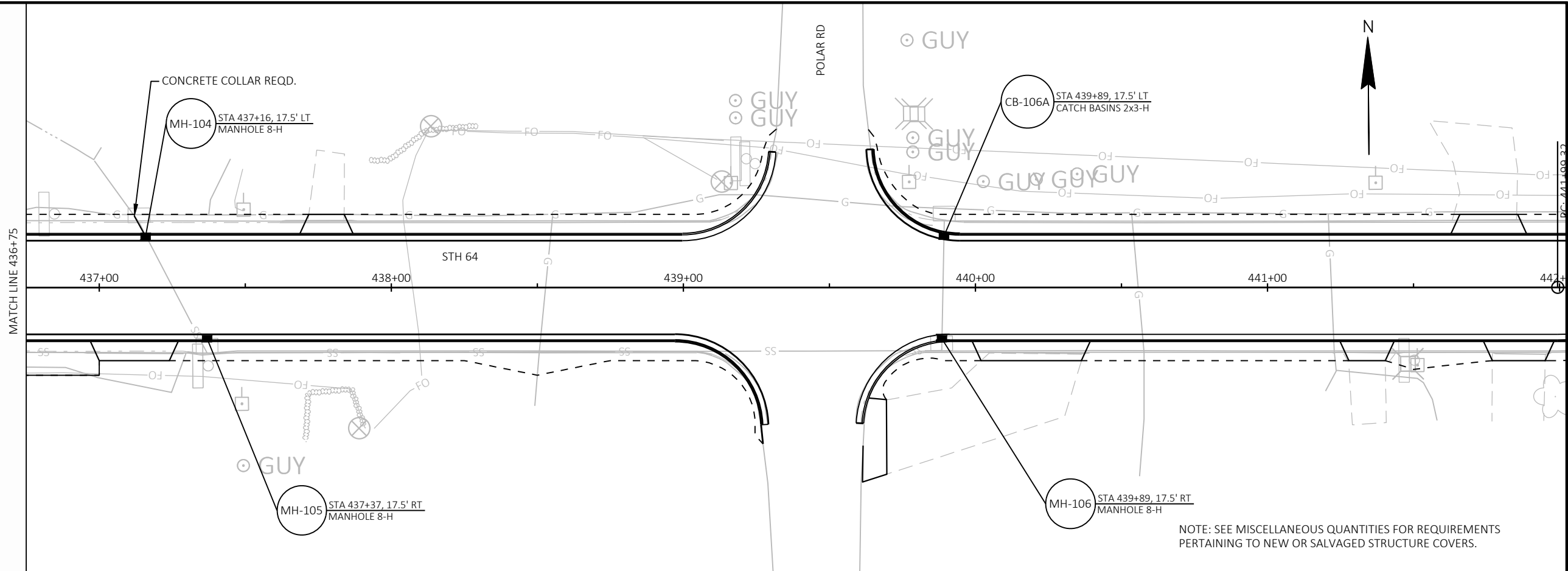
HWY: STH 64

COUNTY: LANGLADE

STORM SEWER

SHEET





TRAFFIC CONTROL NOTES:

PLACE SIGNAGE FOLLOWING S.D.D. TRAFFIC CONTROL, ADVANCED WARNING SIGNS 45 M.P.H. OR GREATER, TWO WAY UNDIVIDED ROADWAY OPEN TO TRAFFIC ON STH 64 AND INTERSECTION SIDE ROAD APPROACHES DURING CONSTRUCTION.

FOLLOW S.D.D. TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION FOR DAILY LANE CLOSURES AND S.D.D. TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY TO COMPLETE CONTRACT WORK.

PLACE SIGNAGE FOLLOWING S.D.D. ADVANCED WIDTH RESTRICTION SIGNING (13' MAX WIDTH) AT CTH S AND CTH P INTERSECTIONS DURING CURB & GUTTER REPLACEMENT AND RELATED ACTIVITIES IN POLAR.

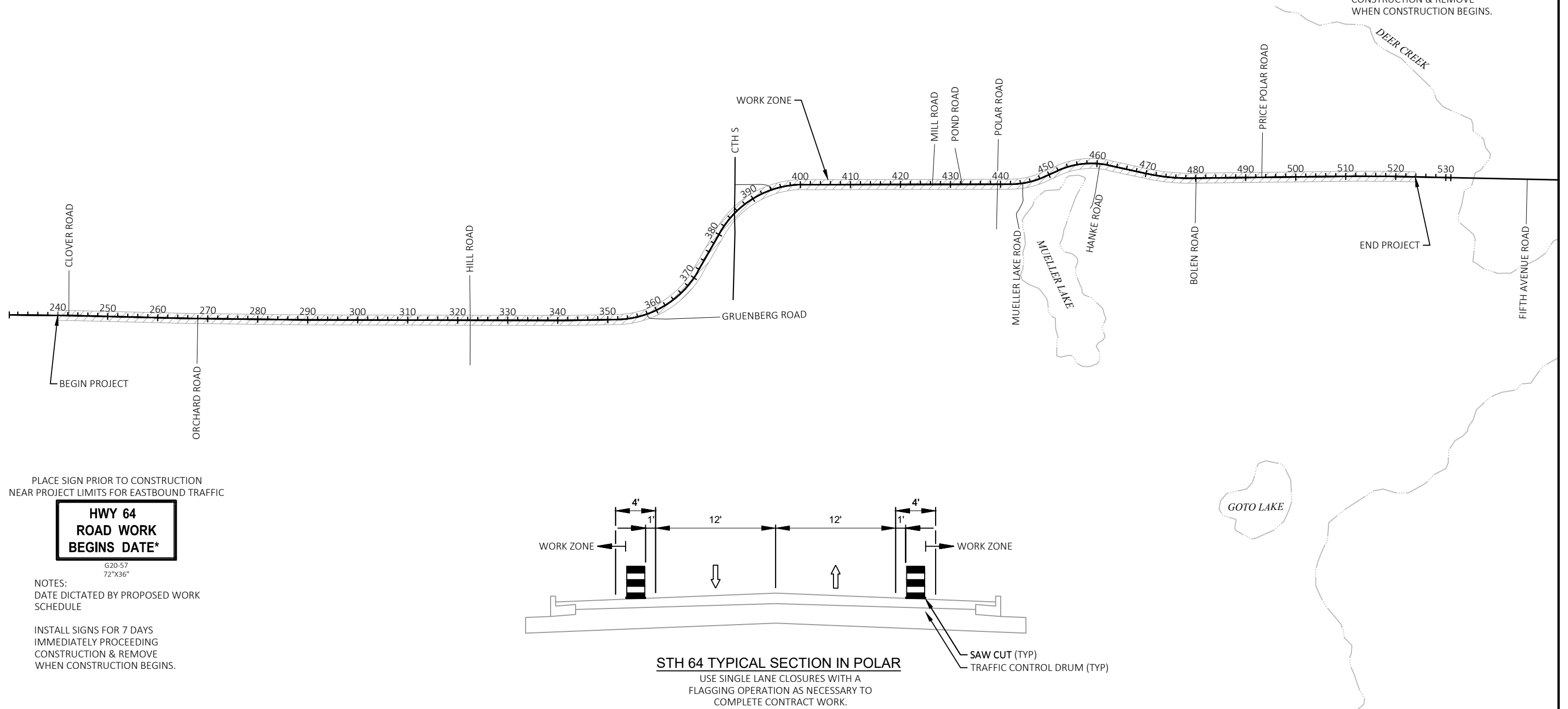
PLACE SIGN PRIOR TO CONSTRUCTION  
NEAR PROJECT LIMITS FOR WESTBOUND TRAFFIC

**HWY 64  
ROAD WORK  
BEGINS DATE\***

G20-57  
72"x36"

NOTES:  
DATE DICTATED BY PROPOSED WORK  
SCHEDULE

INSTALL SIGNS FOR 7 DAYS  
IMMEDIATELY PROCEEDING  
CONSTRUCTION & REMOVE  
WHEN CONSTRUCTION BEGINS.



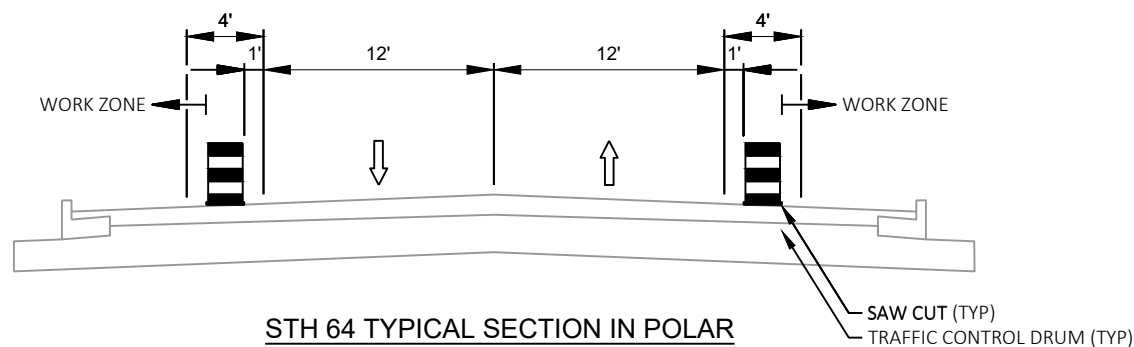
PLACE SIGN PRIOR TO CONSTRUCTION  
NEAR PROJECT LIMITS FOR EASTBOUND TRAFFIC

**HWY 64  
ROAD WORK  
BEGINS DATE\***

G20-57  
72"x36"

NOTES:  
DATE DICTATED BY PROPOSED WORK  
SCHEDULE

INSTALL SIGNS FOR 7 DAYS  
IMMEDIATELY PROCEEDING  
CONSTRUCTION & REMOVE  
WHEN CONSTRUCTION BEGINS.



**STH 64 TYPICAL SECTION IN POLAR**

USE SINGLE LANE CLOSURES WITH A  
FLAGGING OPERATION AS NECESSARY TO  
COMPLETE CONTRACT WORK.

Estimate Of Quantities

9140-12-75

| Line | Item       | Item Description                                                 | Unit | Total      | Qty        |
|------|------------|------------------------------------------------------------------|------|------------|------------|
| 0002 | 201.0105   | Clearing                                                         | STA  | 1.000      | 1.000      |
| 0004 | 201.0205   | Grubbing                                                         | STA  | 1.000      | 1.000      |
| 0006 | 203.0100   | Removing Small Pipe Culverts                                     | EACH | 1.000      | 1.000      |
| 0008 | 204.0110   | Removing Asphaltic Surface                                       | SY   | 520.000    | 520.000    |
| 0010 | 204.0115   | Removing Asphaltic Surface Butt Joints                           | SY   | 460.000    | 460.000    |
| 0012 | 204.0120   | Removing Asphaltic Surface Milling                               | SY   | 95,640.000 | 95,640.000 |
| 0014 | 204.0150   | Removing Curb & Gutter                                           | LF   | 4,360.000  | 4,360.000  |
| 0016 | 204.0215   | Removing Catch Basins                                            | EACH | 9.000      | 9.000      |
| 0018 | 204.0245   | Removing Storm Sewer (size) 01. 18-Inch                          | LF   | 160.000    | 160.000    |
| 0020 | 204.0245   | Removing Storm Sewer (size) 02. 36-Inch                          | LF   | 32.000     | 32.000     |
| 0022 | 205.0100   | Excavation Common                                                | CY   | 2,836.000  | 2,836.000  |
| 0024 | 211.0101   | Prepare Foundation for Asphaltic Paving (project) 01. 9140-12-75 | EACH | 1.000      | 1.000      |
| 0026 | 211.0400   | Prepare Foundation for Asphaltic Shoulders                       | STA  | 234.000    | 234.000    |
| 0028 | 213.0100   | Finishing Roadway (project) 01. 9140-12-75                       | EACH | 1.000      | 1.000      |
| 0030 | 305.0110   | Base Aggregate Dense 3/4-Inch                                    | TON  | 4,065.000  | 4,065.000  |
| 0032 | 305.0120   | Base Aggregate Dense 1 1/4-Inch                                  | TON  | 665.000    | 665.000    |
| 0034 | 450.4000   | HMA Cold Weather Paving                                          | TON  | 1,500.000  | 1,500.000  |
| 0036 | 455.0605   | Tack Coat                                                        | GAL  | 8,275.000  | 8,275.000  |
| 0038 | 460.0105.S | HMA Percent Within Limits (PWL) Test Strip Volumetrics           | EACH | 1.000      | 1.000      |
| 0040 | 460.0110.S | HMA Percent Within Limits (PWL) Test Strip Density               | EACH | 3.000      | 3.000      |
| 0042 | 460.2005   | Incentive Density PWL HMA Pavement                               | DOL  | 9,815.000  | 9,815.000  |
| 0044 | 460.2007   | Incentive Density HMA Pavement Longitudinal Joints               | DOL  | 6,570.000  | 6,570.000  |
| 0046 | 460.2010   | Incentive Air Voids HMA Pavement                                 | DOL  | 14,760.000 | 14,760.000 |
| 0048 | 460.5224   | HMA Pavement 4 LT 58-28 S                                        | TON  | 14,760.000 | 14,760.000 |
| 0050 | 465.0105   | Asphaltic Surface                                                | TON  | 490.000    | 490.000    |
| 0052 | 465.0110   | Asphaltic Surface Patching                                       | TON  | 100.000    | 100.000    |
| 0054 | 465.0120   | Asphaltic Surface Driveways and Field Entrances                  | TON  | 55.000     | 55.000     |
| 0056 | 465.0315   | Asphaltic Flumes                                                 | SY   | 18.000     | 18.000     |
| 0058 | 465.0520   | Asphaltic Rumble Strips, Shoulder                                | LF   | 46,335.000 | 46,335.000 |
| 0060 | 465.0560   | Asphaltic Rumble Strips, Centerline                              | LF   | 22,600.000 | 22,600.000 |
| 0062 | 520.8000   | Concrete Collars for Pipe                                        | EACH | 16.000     | 16.000     |
| 0064 | 521.1030   | Apron Endwalls for Culvert Pipe Steel 30-Inch                    | EACH | 1.000      | 1.000      |
| 0066 | 521.3130   | Culvert Pipe Corrugated Steel 30-Inch                            | LF   | 20.000     | 20.000     |
| 0068 | 601.0411   | Concrete Curb & Gutter 30-Inch Type D                            | LF   | 4,385.000  | 4,385.000  |
| 0070 | 608.0318   | Storm Sewer Pipe Reinforced Concrete Class III 18-Inch           | LF   | 152.000    | 152.000    |
| 0072 | 608.0336   | Storm Sewer Pipe Reinforced Concrete Class III 36-Inch           | LF   | 40.000     | 40.000     |
| 0074 | 611.0530   | Manhole Covers Type J                                            | EACH | 2.000      | 2.000      |
| 0076 | 611.0639   | Inlet Covers Type H-S                                            | EACH | 3.000      | 3.000      |
| 0078 | 611.1004   | Catch Basins 4-FT Diameter                                       | EACH | 3.000      | 3.000      |
| 0080 | 611.1230   | Catch Basins 2x3-FT                                              | EACH | 3.000      | 3.000      |
| 0082 | 611.2004   | Manholes 4-FT Diameter                                           | EACH | 2.000      | 2.000      |
| 0084 | 611.2008   | Manholes 8-FT Diameter                                           | EACH | 4.000      | 4.000      |
| 0086 | 611.9710   | Salvaged Inlet Covers                                            | EACH | 7.000      | 7.000      |
| 0088 | 614.0397   | Guardrail Mow Strip Emulsified Asphalt                           | SY   | 340.000    | 340.000    |
| 0090 | 618.0100   | Maintenance and Repair of Haul Roads (project) 01. 9140-12-75    | EACH | 1.000      | 1.000      |
| 0092 | 619.1000   | Mobilization                                                     | EACH | 1.000      | 1.000      |
| 0094 | 624.0100   | Water                                                            | MGAL | 70.000     | 70.000     |
| 0096 | 625.0100   | Topsoil                                                          | SY   | 3,080.000  | 3,080.000  |
| 0098 | 628.1504   | Silt Fence                                                       | LF   | 2,100.000  | 2,100.000  |

Estimate Of Quantities

9140-12-75

| Line | Item     | Item Description                                                   | Unit | Total      | Qty        |
|------|----------|--------------------------------------------------------------------|------|------------|------------|
| 0100 | 628.1520 | Silt Fence Maintenance                                             | LF   | 2,100.000  | 2,100.000  |
| 0102 | 628.1905 | Mobilizations Erosion Control                                      | EACH | 3.000      | 3.000      |
| 0104 | 628.1910 | Mobilizations Emergency Erosion Control                            | EACH | 1.000      | 1.000      |
| 0106 | 628.2008 | Erosion Mat Urban Class I Type B                                   | SY   | 3,080.000  | 3,080.000  |
| 0108 | 628.7010 | Inlet Protection Type B                                            | EACH | 2.000      | 2.000      |
| 0110 | 628.7015 | Inlet Protection Type C                                            | EACH | 14.000     | 14.000     |
| 0112 | 628.7020 | Inlet Protection Type D                                            | EACH | 4.000      | 4.000      |
| 0114 | 628.7555 | Culvert Pipe Checks                                                | EACH | 5.000      | 5.000      |
| 0116 | 628.7570 | Rock Bags                                                          | EACH | 60.000     | 60.000     |
| 0118 | 629.0210 | Fertilizer Type B                                                  | CWT  | 7.000      | 7.000      |
| 0120 | 630.0140 | Seeding Mixture No. 40                                             | LB   | 145.000    | 145.000    |
| 0122 | 630.0500 | Seed Water                                                         | MGAL | 70.000     | 70.000     |
| 0124 | 633.5200 | Markers Culvert End                                                | EACH | 1.000      | 1.000      |
| 0126 | 634.0614 | Posts Wood 4x6-Inch X 14-FT                                        | EACH | 6.000      | 6.000      |
| 0128 | 638.2102 | Moving Signs Type II                                               | EACH | 21.000     | 21.000     |
| 0130 | 638.4000 | Moving Small Sign Supports                                         | EACH | 20.000     | 20.000     |
| 0132 | 642.5001 | Field Office Type B                                                | EACH | 1.000      | 1.000      |
| 0134 | 643.0300 | Traffic Control Drums                                              | DAY  | 1,625.000  | 1,625.000  |
| 0136 | 643.0900 | Traffic Control Signs                                              | DAY  | 3,150.000  | 3,150.000  |
| 0138 | 643.1000 | Traffic Control Signs Fixed Message                                | SF   | 36.000     | 36.000     |
| 0140 | 643.3165 | Temporary Marking Line Paint 6-Inch                                | LF   | 64,005.000 | 64,005.000 |
| 0142 | 643.5000 | Traffic Control                                                    | EACH | 1.000      | 1.000      |
| 0144 | 646.2020 | Marking Line Epoxy 6-Inch                                          | LF   | 4,000.000  | 4,000.000  |
| 0146 | 646.2040 | Marking Line Grooved Wet Ref Epoxy 6-Inch                          | LF   | 81,410.000 | 81,410.000 |
| 0148 | 646.4720 | Marking Line Same Day Epoxy 6-Inch                                 | LF   | 4,220.000  | 4,220.000  |
| 0150 | 646.6466 | Cold Weather Marking Epoxy 6-Inch                                  | LF   | 9,000.000  | 9,000.000  |
| 0152 | 648.0100 | Locating No-Passing Zones                                          | MI   | 5.380      | 5.380      |
| 0154 | 650.4000 | Construction Staking Storm Sewer                                   | EACH | 12.000     | 12.000     |
| 0156 | 650.5000 | Construction Staking Base                                          | LF   | 2,222.000  | 2,222.000  |
| 0158 | 650.5500 | Construction Staking Curb Gutter and Curb & Gutter                 | LF   | 4,385.000  | 4,385.000  |
| 0160 | 650.6000 | Construction Staking Pipe Culverts                                 | EACH | 1.000      | 1.000      |
| 0162 | 650.8000 | Construction Staking Resurfacing Reference                         | LF   | 26,168.000 | 26,168.000 |
| 0164 | 650.9911 | Construction Staking Supplemental Control (project) 01. 9140-12-75 | EACH | 1.000      | 1.000      |
| 0166 | 650.9920 | Construction Staking Slope Stakes                                  | LF   | 2,222.000  | 2,222.000  |
| 0168 | 690.0150 | Sawing Asphalt                                                     | LF   | 5,930.000  | 5,930.000  |
| 0170 | 740.0440 | Incentive IRI Ride                                                 | DOL  | 21,510.000 | 21,510.000 |
| 0172 | SPV.0060 | Special 01. Reestablish Section Corner Monuments                   | EACH | 8.000      | 8.000      |

CLEARING AND GRUBBING

|            |          |            | 201.0105 | 201.0205 | REMARKS                                                                                            |
|------------|----------|------------|----------|----------|----------------------------------------------------------------------------------------------------|
| STATION TO | STATION  | LOCATION   | STA      | STA      |                                                                                                    |
| 454+00     | - 455+00 | STH 64, RT | 1        | 1        | CLEARING AND GRUBBING REQUIRED TO THE EXTENT NECESSARY TO ACCESS AND PERFORM CONTRACT CULVERT WORK |
| ITEM TOTAL |          |            | 1        | 1        |                                                                                                    |

REMOVING DRAINAGE ITEMS

|            |    |         |          | 203.0100       | 204.0215     | 204.0245.01 | 204.0245.02 |
|------------|----|---------|----------|----------------|--------------|-------------|-------------|
|            |    |         |          | REMOVING SMALL | REMOVING     | REMOVING    | REMOVING    |
|            |    |         |          | PIPE CULVERTS  | CATCH BASINS | STORM SEWER | STORM SEWER |
|            |    |         |          | EACH           | EACH         | (18-IN)     | (36-IN)     |
| STATION    | TO | STATION | LOCATION |                |              | LF          | LF          |
| 431+75     | -  | -       | LT & RT  | -              | 2            | 32          | -           |
| 435+60     | -  | -       | LT       | -              | 1            | 16          | -           |
| 435+24     | -  | 435+90  | RT       | -              | 1            | 82          | -           |
| 437+16     | -  | -       | LT       | -              | 1            | -           | 16          |
| 437+37     | -  | -       | RT       | -              | 1            | -           | 16          |
| 439+89     | -  | -       | LT & RT  | -              | 2            | 25          | -           |
| 444+63     | -  | -       | LT       | -              | 1            | 5           | -           |
| 454+15     | -  | -       | LT & RT  | 1              | -            | -           | -           |
| ITEM TOTAL |    |         |          | 1              | 9            | 160         | 32          |

CURB AND GUTTER

|            |    |         |          | 204.0150      | 601.0411              |
|------------|----|---------|----------|---------------|-----------------------|
|            |    |         |          | REMOVING      | CONCRETE CURB &       |
|            |    |         |          | CURB & GUTTER | GUTTER 30-INCH TYPE D |
|            |    |         |          | LF            | LF                    |
| STATION    | TO | STATION | LOCATION |               |                       |
| 425+90     | -  | 426+45  | LT       | 65            | 68                    |
| 426+75     | -  | 432+00  | LT       | 553           | 561                   |
| 432+37     | -  | 439+30  | LT       | 723           | 724                   |
| 439+65     | -  | 448+12  | LT       | 853           | 857                   |
| 425+90     | -  | 439+27  | RT       | 1,351         | 1,353                 |
| 439+61     | -  | 444+23  | RT       | 498           | 503                   |
| 444+55     | -  | 447+50  | RT       | 317           | 319                   |
| ITEM TOTAL |    |         |          | 4,360         | 4,385                 |

REMOVING ASPHALT

|            |          |          | 204.0110          | 204.0115          | 204.0120          |
|------------|----------|----------|-------------------|-------------------|-------------------|
|            |          |          | REMOVING          | REMOVING          | REMOVING          |
|            |          |          | ASPHALTIC SURFACE | ASPHALTIC SURFACE | ASPHALTIC SURFACE |
|            |          |          |                   | BUTT JOINTS       | MILLING           |
| STATION TO | STATION  | LOCATION | SY                | SY                | SY                |
| 240+00     | - 293+00 | STH 64   | -                 | 135               | 18,840            |
| 293+00     | - 346+00 | STH 64   | 100               | 50                | 19,210            |
| 346+00     | - 399+00 | STH 64   | -                 | 145               | 20,870            |
| 399+00     | - 425+90 | STH 64   | -                 | 15                | 9,160             |
| 425+90     | - 448+12 | STH 64   | 160               | -                 | -                 |
| 448+12     | - 501+90 | STH 64   | 260               | 80                | 20,160            |
| 501+90     | - 523+90 | STH 64   | -                 | 35                | 7,400             |
| ITEM TOTAL |          |          | 520               | 460               | 95,640            |

PREPARATION ITEMS

|            |    |         |          | 211.0101.01          | 211.0400       |
|------------|----|---------|----------|----------------------|----------------|
|            |    |         |          | PREPARE FOUNDATION   | PREPARE        |
|            |    |         |          | FOR ASPHALTIC PAVING | FOUNDATION FOR |
|            |    |         |          | (9140-12-75)         | ASPHALTIC      |
|            |    |         |          | EACH                 | SHOULDERS      |
| STATION    | TO | STATION | LOCATION |                      | STA            |
| 240+00     | -  | 385+00  | STH 64   | 1                    | -              |
| 385+00     | -  | 425+90  | STH 64   |                      | 82             |
| 425+90     | -  | 448+12  | STH 64   |                      | -              |
| 448+12     | -  | 523+90  | STH 64   |                      | 152            |
| ITEM TOTAL |    |         |          | 1                    | 234            |

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

| DIVISION            | FROM/TO<br>STATION  | LOCATION | 205.0100<br>COMMON EXCAVATION<br>(1) |                       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL<br>(4) | AVAILABLE<br>MATERIAL<br>(5) | UNEXPANDED<br>FILL | EXPANDED FILL<br>(13) | MASS ORDINATE +/-<br>(14) | WASTE | 208.0100<br>BORROW | COMMENT |
|---------------------|---------------------|----------|--------------------------------------|-----------------------|-----------------------------------------------|------------------------------|--------------------|-----------------------|---------------------------|-------|--------------------|---------|
|                     |                     |          | CUT<br>(2)                           | EBS EXCAVATION<br>(3) |                                               |                              |                    | FACTOR                |                           |       |                    |         |
|                     |                     |          |                                      |                       |                                               |                              |                    | 1.25                  |                           |       |                    |         |
| DIVISION 1          |                     |          |                                      |                       |                                               |                              |                    |                       |                           |       |                    |         |
| STH 64              | 425+89.89/448+11.96 |          | 2,702                                | 0                     | 1,513                                         | 1,189                        | 81                 | 101                   | 1,088                     | 1,088 | 0                  |         |
| MILL RD             | 10+20.00/10+62.79   |          | 21                                   | 0                     | 21                                            | 0                            | 0                  | 0                     | 0                         | 0     | 0                  |         |
| POND RD             | 10+20.00/10+53.62   |          | 24                                   | 0                     | 24                                            | 0                            | 0                  | 0                     | 0                         | 0     | 0                  |         |
| POLAR RD            | 10+09.02/11+16.99   |          | 62                                   | 0                     | 62                                            | 0                            | 0                  | 0                     | 0                         | 0     | 0                  |         |
| MUELLER LAKE RD     | 10+04.39/10+48.87   |          | 27                                   | 0                     | 27                                            | 0                            | 0                  | 0                     | 0                         | 0     | 0                  |         |
| DIVISION 1 SUBTOTAL |                     |          | 2,836                                | 0                     | 1,647                                         | 1,189                        | 81                 | 101                   | 1,088                     | 1,088 | 0                  |         |
|                     |                     |          |                                      |                       |                                               |                              |                    |                       |                           |       |                    |         |
| GRAND TOTAL         |                     |          | 2,836                                | 0                     | 1,647                                         | 1,189                        | 81                 | 101                   | 1,088                     | 1,088 | 0                  |         |
| TOTAL COMMON EXC    |                     |          | 2,836                                |                       |                                               |                              |                    |                       |                           |       |                    |         |

NOTES:

(1) COMMON EXCAVATION IS THE SUM OF THE CUT AND EBS EXCAVATION COLUMNS. ITEM NUMBER 205.0100

(2) SALVAGED/UNSUABLE PAVEMENT MATERIAL IS INCLUDED IN CUT.

(3) EBS EXCAVATION TO BE BACKFILLED WITH SELECT BORROW MATERIAL. NOTE: THIS IS DESIGNERS CHOICE, CAN BE BACKFILLED WITH BORROW, OR CUT AS WELL.

(4) SALVAGED/UNUSABLE PAVEMENT MATERIAL

5) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSUABLE PAVEMENT MATERIAL

(13) EXPANDED FILL FACTOR = 1.25

DEPENDING ON SELECTIONS: EXPANDED FILL =(UNEXPANDED FILL - EXPANDED ROCK - REDUCED MARSH - REDUCED EBS) \* FILL FACTOR

(14) THE MASS ORDINATE +OR - QTY CALCULATED FOR THE DIVISION. PLUS QUANTITY INDICATES AN EXCESS OF MATERIAL WITHIN THE DIVISION. MINUS INDICATES A SHORTAGE OF MATERIAL WITHIN THE DIVISION.

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET  
ARE FOR ENGINEER ESTIMATE CATEGORY 0010  
UNLESS OTHERWISE NOTED.

AGGREGATE

| STATION    | TO | STATION | LOCATION | 305.0110       | 305.0120         | 624.0100 |
|------------|----|---------|----------|----------------|------------------|----------|
|            |    |         |          | BASE AGGREGATE | BASE AGGREGATE   | WATER    |
|            |    |         |          | DENSE 3/4-INCH | DENSE 1 1/4-INCH | MGAL     |
| 240+00     | -  | 293+00  | STH 64   | 940            | -                | 14       |
| 293+00     | -  | 346+00  | STH 64   | 941            | -                | 14       |
| 346+00     | -  | 399+00  | STH 64   | 841            | -                | 13       |
| 399+00     | -  | 425+90  | STH 64   | 349            | -                | 5        |
| 425+90     | -  | 448+12  | STH 64   | 30             | 655              | 10       |
| 448+12     | -  | 501+90  | STH 64   | 677            | 10               | 10       |
| 501+90     | -  | 523+90  | STH 64   | 287            | -                | 4        |
| ITEM TOTAL |    |         |          | 4,065          | 665              | 70       |

RUMBLE STRIPS

| STATION    | TO | STATION | LOCATION | 465.0520         | 465.0560           |
|------------|----|---------|----------|------------------|--------------------|
|            |    |         |          | ASPHALTIC RUMBLE | ASPHALTIC RUMBLE   |
|            |    |         |          | STRIPS, SHOULDER | STRIPS, CENTERLINE |
| 240+00     | -  | 293+00  | STH 64   | 9,084            | 4,480              |
| 293+00     | -  | 346+00  | STH 64   | 9,587            | 4,900              |
| 346+00     | -  | 399+00  | STH 64   | 9,382            | 4,150              |
| 399+00     | -  | 425+90  | STH 64   | 4,970            | 2,690              |
| 448+12     | -  | 501+90  | STH 64   | 9,497            | 4,180              |
| 501+90     | -  | 523+90  | STH 64   | 3,815            | 2,200              |
| ITEM TOTAL |    |         |          | 46,335           | 22,600             |

MOW STRIP

| STATION    | TO | STATION | LOCATION | 614.0397         |
|------------|----|---------|----------|------------------|
|            |    |         |          | GUARDRAIL MOW    |
|            |    |         |          | STRIP EMULSIFIED |
| 301+38     | -  | 304+13  | RT       | 110              |
| 451+32     | -  | 456+01  | RT       | 230              |
| ITEM TOTAL |    |         |          | 340              |

HMA PAVEMENT AND ASPHALTIC SURFACE

| STATION       | TO | STATION | LOCATION | 450.4000 | 455.0605  | 460.5224     | 465.0105  | 465.0110  | 465.0120                    |
|---------------|----|---------|----------|----------|-----------|--------------|-----------|-----------|-----------------------------|
|               |    |         |          | HMA COLD | TACK COAT | HMA PAVEMENT | ASPHALTIC | ASPHALTIC | ASPHALTIC SURFACE DRIVEWAYS |
|               |    |         |          | WEATHER  |           | 4 LT 58-28 S | SURFACE   | SURFACE   | AND FIELD ENTRANCES         |
| 240+00        | -  | 293+00  | STH 64   | -        | 1,320     | 2,110        | -         | -         | -                           |
| 293+00        | -  | 346+00  | STH 64   | -        | 1,345     | 2,160        | -         | -         | -                           |
| 346+00        | -  | 399+00  | STH 64   | -        | 1,490     | 2,440        | 50        | -         | -                           |
| 399+00        | -  | 425+90  | STH 64   | -        | 710       | 1,280        | 120       | -         | -                           |
| 425+90        | -  | 448+12  | STH 64   | -        | 1,240     | 2,980        | -         | -         | 48                          |
| 448+12        | -  | 501+90  | STH 64   | -        | 1,590     | 2,800        | 220       | -         | 7                           |
| 501+90        | -  | 523+90  | STH 64   | -        | 580       | 990          | 100       | -         | -                           |
| UNDISTRIBUTED |    |         |          | 1,500    | -         | -            | -         | 100       | -                           |
| ITEM TOTAL    |    |         |          | 1,500    | 8,275     | 14,760       | 490       | 100       | 55                          |

ASPHALTIC SURFACE FLUMES

| STATION    | LOCATION | 465.0315 |
|------------|----------|----------|
|            |          | SY       |
| 425+90     | LT       | 9        |
| 425+90     | RT       | 9        |
| ITEM TOTAL |          | 18       |

MOVING SIGNS

| STATION   | TO | STATION | LOCATION      | 634.0614         | 638.2102     | 638.4000      | REMARKS                          |
|-----------|----|---------|---------------|------------------|--------------|---------------|----------------------------------|
|           |    |         |               | POSTS WOOD       | MOVING SIGNS | MOVING SMALL  |                                  |
|           |    |         |               | 4X6-INCH X 14-FT | TYPE II      | SIGN SUPPORTS |                                  |
| 426+25    | -  | -       | STH 64, LT    | -                | 1            | 1             | R1-1                             |
| 430+00    | -  | -       | STH 64, RT    | -                | 1            | 1             | R2-1 (35 MPH)                    |
| 430+00    | -  | -       | STH 64, LT    | -                | 1            | 1             | R2-1 (35 MPH)                    |
| 432+00    | -  | -       | STH 64, LT    | -                | 1            | 1             | R1-1                             |
| 436+25    | -  | -       | STH 64, LT    | 1                | 1            | -             | R2-1 (35 MPH)                    |
| 436+80    | -  | -       | STH 64, LT    | -                | 1            | 1             | W11-8                            |
| 437+30    | -  | -       | STH 64, RT    | -                | 1            | 1             | R2-1 (35 MPH)                    |
| 439+25    | -  | -       | STH 64, LT    | -                | 1            | 1             | R1-1                             |
| 439+85    | -  | -       | STH 64, RT    | -                | 1            | 1             | R1-1                             |
| 441+50    | -  | -       | STH 64, RT    | -                | 1            | 1             | R2-1 (35 MPH)                    |
| 443+50    | -  | -       | STH 64, LT    | -                | 1            | 1             | W2-1                             |
| 444+65    | -  | -       | STH 64, RT    | -                | 1            | 1             | R1-1                             |
| 446+75    | -  | -       | STH 64, LT    | -                | 1            | 1             | S3-1                             |
| 240+00    | -  | 523+90  | UNDISTRIBUTED | 5                | 8            | 8             | FOR MOVING NO-PASSING ZONE SIGNS |
| ITEM TOAL |    |         |               | 6                | 21           | 20            |                                  |

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UNLESS OTHERWISE NOTED.

PWL MIXTURE USE TABLE

| LOCATION                 | STATION               | MIXTURE USE: | UNDERLYING SURFACE                                         | BID ITEM                  | TONS  | THICKNESS | MIXTURE ACCEPTANCE                               | DENSITY ACCEPTANCE                                                   |
|--------------------------|-----------------------|--------------|------------------------------------------------------------|---------------------------|-------|-----------|--------------------------------------------------|----------------------------------------------------------------------|
| 12 FOOT DRIVING LANES    | 240+00.00 - 425+89.89 | UPPER LAYER  | MILLED EXISTING HMA SURFACE                                | HMA PAVEMENT 4 LT 58-28 S | 5,555 | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                       |
| 3 FOOT SHOULDERS         | 240+00.00 - 385+23.58 | UPPER LAYER  | MILLED EXISTING HMA SURFACE                                | HMA PAVEMENT 4 LT 58-28 S | 1,085 | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| 2 FOOT SHOULDER WIDENING | 385+23.58 - 425+89.89 | LOWER LAYER  | AGGREGATE                                                  | HMA PAVEMENT 4 LT 58-28 S | 180   | 1.75"     | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| 5 FOOT SHOULDERS         | 385+23.58 - 425+89.89 | UPPER LAYER  | HMA PAVEMENT 4 LT 58-28 S &<br>MILLED EXISTING HMA SURFACE | HMA PAVEMENT 4 LT 58-28 S | 510   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| 12 FOOT DRIVING LANES    | 425+89.89 - 448+11.96 | LOWER LAYER  | AGGREGATE                                                  | HMA PAVEMENT 4 LT 58-28 S | 665   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                       |
| 12 FOOT DRIVING LANES    | 425+89.89 - 448+11.96 | LOWER LAYER  | HMA PAVEMENT 4 LT 58-28 S                                  | HMA PAVEMENT 4 LT 58-28 S | 665   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                       |
| 12 FOOT DRIVING LANES    | 425+89.89 - 448+11.96 | UPPER LAYER  | HMA PAVEMENT 4 LT 58-28 S                                  | HMA PAVEMENT 4 LT 58-28 S | 665   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                       |
| 4 FOOT SHOULDERS         | 425+89.89 - 448+11.96 | LOWER LAYER  | AGGREGATE                                                  | HMA PAVEMENT 4 LT 58-28 S | 225   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| 4 FOOT SHOULDERS         | 425+89.89 - 448+11.96 | LOWER LAYER  | HMA PAVEMENT 4 LT 58-28 S                                  | HMA PAVEMENT 4 LT 58-28 S | 225   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| 4 FOOT SHOULDERS         | 425+89.89 - 448+11.96 | UPPER LAYER  | HMA PAVEMENT 4 LT 58-28 S                                  | HMA PAVEMENT 4 LT 58-28 S | 225   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| 12 FOOT DRIVING LANES    | 448+11.96 - 523+90.28 | UPPER LAYER  | MILLED EXISTING HMA SURFACE                                | HMA PAVEMENT 4 LT 58-28 S | 2,265 | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | INCENTIVE DENSITY PWL HMA PAVEMENT<br>460.2005                       |
| 2 FOOT SHOULDER WIDENING | 448+11.96 - 523+90.28 | LOWER LAYER  | AGGREGATE                                                  | HMA PAVEMENT 4 LT 58-28 S | 380   | 1.75"     | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| 5 FOOT SHOULDERS         | 448+11.96 - 523+90.28 | UPPER LAYER  | HMA PAVEMENT 4 LT 58-28 S                                  | HMA PAVEMENT 4 LT 58-28 S | 945   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| SIDEROADS - RURAL        | VARIES                | UPPER LAYER  | MILLED EXISTING HMA SURFACE                                | HMA PAVEMENT 4 LT 58-28 S | 1,280 | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| SIDEROADS - POLAR        | VARIES                | LOWER LAYER  | AGGREGATE                                                  | HMA PAVEMENT 4 LT 58-28 S | 110   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| SIDEROADS - POLAR        | VARIES                | LOWER LAYER  | HMA PAVEMENT 4 LT 58-28 S                                  | HMA PAVEMENT 4 LT 58-28 S | 100   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |
| SIDEROADS - POLAR        | VARIES                | UPPER LAYER  | HMA PAVEMENT 4 LT 58-28 S                                  | HMA PAVEMENT 4 LT 58-28 S | 100   | 2"        | PWL INCENTIVE AIR VOIDS<br>HMA PAVEMENT 460.2010 | ACCEPTANCE TESTING BY THE DEPARTMENT: NOT<br>ELIGIBLE FOR INCENTIVE. |

TEST STRIPS

| STATION    | TO | STATION | LOCATION | 460.0105.S<br>HMA PERCENT WITHIN<br>LIMITS (PWL) TEST STRIP<br>VOLUMETRICS<br>EACH | 460.0110.S<br>HMA PERCENT WITHIN<br>LIMITS (PWL) TEST STRIP<br>DENSITY<br>EACH |
|------------|----|---------|----------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|            |    |         |          |                                                                                    |                                                                                |
| 240+00     | -  | 523+90  | STH 64   | 1                                                                                  | 3                                                                              |
| ITEM TOTAL |    |         |          | 1                                                                                  | 3                                                                              |

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STORM SEWER

| *<br>520.8000608.0318608.0336611.0530611.0639611.1004611.1230611.2004611.2008611.9710 |         |          |            |                          |                         |                         |                       |                  |                     |                |                  |                  |                |              |                 |               |
|---------------------------------------------------------------------------------------|---------|----------|------------|--------------------------|-------------------------|-------------------------|-----------------------|------------------|---------------------|----------------|------------------|------------------|----------------|--------------|-----------------|---------------|
| STR #                                                                                 | STATION | LOCATION | SUMP DEPTH | CONCRETE                 | STORM SEWER PIPE        | STORM SEWER PIPE        | MANHOLE               | INLET COVERS     | CATCH BASINS 4-     | CATCH BASINS   | MANHOLES 4-FT    | MANHOLES 8-FT    | SALVAGED INLET | RIM<br>ELEV. | INVERT<br>ELEV. | DEPTH<br>(FT) |
|                                                                                       |         |          | FT         | COLLARS FOR PIPE<br>EACH | CLASS III 18-INCH<br>LF | CLASS III 36-INCH<br>LF | COVERS TYPE J<br>EACH | TYPE H-S<br>EACH | FT DIAMETER<br>EACH | 2X3-FT<br>EACH | DIAMETER<br>EACH | DIAMETER<br>EACH | COVERS<br>EACH |              |                 |               |
| CB-101A                                                                               | 431+74  | 17.5' LT | 2.00       | 2                        | 24                      | -                       | -                     | -                | -                   | 1              | -                | -                | 1              | 1510.26      | 1505.68         | 5.58          |
| MH-101                                                                                | 431+75  | 17.5' RT | -          | 2                        | 16                      | -                       | -                     | -                | -                   | -              | -                | 1                | 1              | 1510.25      | 1505.13         | 3.45          |
| MH-102                                                                                | 435+24  | 21.6' RT | -          | 1                        | 24                      | -                       | 1                     | -                | -                   | -              | 1                | -                | -              | 1497.36      | 1493.60         | 2.01          |
| CB-103A                                                                               | 435+40  | 17.5' RT | 2.00       | -                        | 20                      | -                       | -                     | 1                | 1                   | -              | -                | -                | -              | 1496.61      | 1492.57         | 4.54          |
| CB-103B                                                                               | 435+60  | 17.5' LT | 2.00       | 1                        | 8                       | -                       | -                     | 1                | -                   | 1              | -                | -                | -              | 1496.44      | 1492.80         | 4.64          |
| CB-103C                                                                               | 435+60  | 17.5' RT | 2.00       | -                        | 16                      | -                       | -                     | -                | 1                   | -              | -                | -                | 1              | 1496.44      | 1492.47         | 4.97          |
| CB-103D                                                                               | 435+77  | 17.5' RT | 2.00       | -                        | 16                      | -                       | -                     | 1                | 1                   | -              | -                | -                | -              | 1496.42      | 1492.39         | 4.53          |
| MH-103                                                                                | 435+90  | 21.9' RT | -          | 1                        | 8                       | -                       | 1                     | -                | -                   | -              | 1                | -                | -              | 1496.54      | 1492.24         | 2.55          |
| MH-104                                                                                | 437+16  | 17.5' LT | -          | 2                        | -                       | 16                      | -                     | -                | -                   | -              | -                | 1                | 1              | 1499.97      | 1491.37         | 6.93          |
| MH-105                                                                                | 437+37  | 17.5' RT | -          | 3                        | -                       | 24                      | -                     | -                | -                   | -              | -                | 1                | 1              | 1501.08      | 1491.34         | 8.07          |
| CB-106A                                                                               | 439+89  | 17.5' LT | 2.00       | 1                        | 8                       | -                       | -                     | -                | -                   | 1              | -                | -                | -              | 1516.44      | 1511.90         | 5.54          |
| MH-106                                                                                | 439+89  | 17.5' RT | -          | 2                        | 12                      | -                       | -                     | -                | -                   | -              | -                | 1                | 1              | 1515.91      | 1511.77         | 2.47          |
| -                                                                                     | 444+63  | 17.5' LT | 2.00       | -                        | -                       | -                       | -                     | -                | -                   | 1              | -                | -                | 1              | 1524.70      | 1520.20         | 5.50          |
| ITEM TOTAL                                                                            |         |          |            | 15                       | 152                     | 40                      | 2                     | 3                | 3                   | 3              | 2                | 4                | 7              |              |                 |               |

\* ADDITIONAL QUANTITIES LISTED ELSEWHERE

NOTES:

-STA & OFFSETS ARE SHOWN TO CENTER OF STRUCTURE FOR INLETS/MANHOLES.

-RIM ELEVATION IS FIGURED TO THE CENTER OF STRUCTURE.

-STRUCTURE DEPTH COMPUTED AS FOLLOWS: STR DEPTH = RIM ELEV - INV ELEV - CASTING DEPTH - COVER THICKNESS - 6" ADJ. + SUMP DEPTH

LANDSCAPING

| 625.0100628.1504628.1520628.2008629.0210630.0140630.0500 |    |         |          |         |            |                           |                                        |                      |                           |            |                   |  |
|----------------------------------------------------------|----|---------|----------|---------|------------|---------------------------|----------------------------------------|----------------------|---------------------------|------------|-------------------|--|
|                                                          |    |         |          | TOPSOIL | SILT FENCE | SILT FENCE<br>MAINTENANCE | EROSION MAT<br>CLASS I URBAN<br>TYPE B | FERTILIZER TYPE<br>B | SEEDING<br>MIXTURE NO. 40 | SEED WATER |                   |  |
| STATION                                                  | TO | STATION | LOCATION | SY      | LF         | LF                        | SY                                     | CWT                  | LB                        | MGAL       | REMARKS           |  |
| 425+90                                                   | -  | 430+90  | LT & RT  | 760     | 660        | 660                       | 760                                    | 1                    | 35                        | 18         |                   |  |
| 430+90                                                   | -  | 435+90  | LT & RT  | 520     | 200        | 200                       | 520                                    | 1                    | 24                        | 12         |                   |  |
| 435+90                                                   | -  | 440+90  | LT & RT  | 570     | 290        | 290                       | 570                                    | 1                    | 26                        | 13         |                   |  |
| 440+90                                                   | -  | 445+90  | LT & RT  | 690     | 220        | 220                       | 690                                    | 1                    | 32                        | 16         |                   |  |
| 445+90                                                   | -  | 448+12  | LT & RT  | 220     | 470        | 470                       | 220                                    | 1                    | 10                        | 5          |                   |  |
| 454+15                                                   | -  | -       | RT       | 40      | 70         | 70                        | 40                                     | 1                    | 3                         | 1          | CULVERT MAINTANCE |  |
| UNDISTRIBUTED                                            |    |         |          | 280     | 190        | 190                       | 280                                    | 1                    | 15                        | 5          |                   |  |
| ITEM TOTAL                                               |    |         |          | 3,080   | 2,100      | 2,100                     | 3,080                                  | 7                    | 145                       | 70         |                   |  |

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| CULVERT MAINTENANCE                                         |          |      |      |    |      |           |            |           |           |            |           |
|-------------------------------------------------------------|----------|------|------|----|------|-----------|------------|-----------|-----------|------------|-----------|
| *                                                           |          |      |      |    |      |           |            |           |           |            |           |
| 521.1030 520.8000 521.3130 633.5200                         |          |      |      |    |      |           |            |           |           |            |           |
| APRON ENDWALLS FOR CONCRETE CULVERT PIPE CORRUGATED MARKERS |          |      |      |    |      |           |            |           |           |            |           |
| 30-INCH COLLARS FOR PIPE STEEL 30-INCH CULVERT END          |          |      |      |    |      |           |            |           |           |            |           |
| UPSTREAM DOWNSTREAM                                         |          |      |      |    |      |           |            |           |           |            |           |
| STATION                                                     | LOCATION | EACH | EACH | LF | EACH | STATION   | OFFSET     | ELEVATION | STATION   | OFFSET     | ELEVATION |
| 454+12                                                      | RT       | 1    | 1    | 20 | 1    | 454+12.33 | 111.16' RT | 1483.44   | 454+11.88 | 130.77' RT | 1480.66   |
| ITEM TOTAL                                                  |          | 1    | 1    | 20 | 1    |           |            |           |           |            |           |

\* ADDITIONAL QUANTITIES LISTED ELSEWHERE  
STATION/OFFSET/ELEVATION INFORMATION PROVIDED TO THE END OF PIPE

| EROSION CONTROL                                                           |          |                |                |                |                |                   |  |
|---------------------------------------------------------------------------|----------|----------------|----------------|----------------|----------------|-------------------|--|
| 628.7010 628.7015 628.7020 628.7555 628.7570                              |          |                |                |                |                |                   |  |
| INLET PROTECTION INLET PROTECTION INLET PROTECTION CULVERT PIPE ROCK BAGS |          |                |                |                |                |                   |  |
| STATION                                                                   | LOCATION | TYPE B<br>EACH | TYPE C<br>EACH | TYPE D<br>EACH | CHECKS<br>EACH | ROCK BAGS<br>EACH |  |
| 425+90                                                                    | LT & RT  | -              | -              | -              | -              | 40                |  |
| 431+74                                                                    | LT       | -              | 2              | -              | 1              | -                 |  |
| 431+75                                                                    | RT       | -              | 2              | -              | -              | -                 |  |
| 435+40                                                                    | RT       | -              | -              | 1              | -              | -                 |  |
| 435+60                                                                    | LT       | -              | -              | 2              | -              | -                 |  |
| 435+60                                                                    | RT       | 2              | -              | -              | -              | -                 |  |
| 435+75                                                                    | RT       | -              | -              | 1              | -              | -                 |  |
| 437+16                                                                    | LT       | -              | 2              | -              | -              | -                 |  |
| 437+37                                                                    | RT       | -              | 2              | -              | -              | -                 |  |
| 439+89                                                                    | LT       | -              | 2              | -              | -              | -                 |  |
| 439+89                                                                    | RT       | -              | 2              | -              | -              | -                 |  |
| 444+63                                                                    | LT       | -              | 2              | -              | -              | -                 |  |
| 454+15                                                                    | RT       | -              | -              | -              | 4              | 20                |  |
| ITEM TOTAL                                                                |          | 2              | 14             | 4              | 5              | 60                |  |

| EROSION CONTROL MOBILIZATION          |    |         |          |      |      |
|---------------------------------------|----|---------|----------|------|------|
| 628.1905 628.1910                     |    |         |          |      |      |
| MOBILIZATIONS MOBILIZATIONS EMERGENCY |    |         |          |      |      |
| EROSION CONTROL EROSION CONTROL       |    |         |          |      |      |
| STATION                               | TO | STATION | LOCATION | EACH | EACH |
| 240+00                                | -  | 523+90  | STH 64   | 3    | 1    |
| ITEM TOTAL                            |    |         |          | 3    | 1    |

| PAVEMENT MARKINGS                                                                                         |    |         |          |        |       |       |        |        |       |
|-----------------------------------------------------------------------------------------------------------|----|---------|----------|--------|-------|-------|--------|--------|-------|
| 643.3165 646.2020 646.4720 646.2040 646.6466                                                              |    |         |          |        |       |       |        |        |       |
| TEMPORARY MARKING LINE MARKING LINE SAME DAY EPOXY MARKING LINE GROOVED MARKING LINE GROOVED COLD WEATHER |    |         |          |        |       |       |        |        |       |
| PAINT 6-INCH EPOXY 6-INCH 6-INCH WET REF EPOXY 6-INCH WET REF EPOXY 6-INCH MARKING EPOXY 6-INCH           |    |         |          |        |       |       |        |        |       |
| (YELLOW) (WHITE) (YELLOW) (YELLOW) (WHITE)                                                                |    |         |          |        |       |       |        |        |       |
| STATION                                                                                                   | TO | STATION | LOCATION | LF     | LF    | LF    | LF     | LF     | LF    |
| 240+00                                                                                                    | -  | 293+00  | STH 64   | 6,950  |       | -     | 4,310  | 10,350 | -     |
| 293+00                                                                                                    | -  | 346+00  | STH 64   | 1,250  |       | -     | 1,530  | 10,370 | -     |
| 346+00                                                                                                    | -  | 399+00  | STH 64   | 19,820 |       | -     | 10,040 | 9,960  | -     |
| 399+00                                                                                                    | -  | 425+90  | STH 64   | 4,200  |       | -     | 2,540  | 5,380  | -     |
| 425+90                                                                                                    | -  | 448+12  | STH 64   | 8,320  | 4,000 | 4,220 | -      | -      | -     |
| 448+12                                                                                                    | -  | 501+90  | STH 64   | 19,125 |       | -     | 9,750  | 10,540 | -     |
| 501+90                                                                                                    | -  | 523+90  | STH 64   | 4,340  |       | -     | 2,540  | 4,100  | -     |
| UNDISTRIBUTED                                                                                             |    |         | STH 64   | -      |       | -     | -      | -      | 9,000 |
| ITEM TOTAL                                                                                                |    |         |          | 64,005 | 4,000 | 4,220 | 30,710 | 50,700 | 9,000 |
| 81,410                                                                                                    |    |         |          |        |       |       |        |        |       |

| LOCATING NO-PASSING ZONES |    |         |          |      |
|---------------------------|----|---------|----------|------|
| 648.0100                  |    |         |          |      |
| LOCATING NO-PASSING ZONES |    |         |          |      |
| STATION                   | TO | STATION | LOCATION | MI   |
| 240+00                    | -  | 523+90  | STH 64   | 5.38 |
| ITEM TOAL                 |    |         |          | 5.38 |

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UNLESS OTHERWISE NOTED.

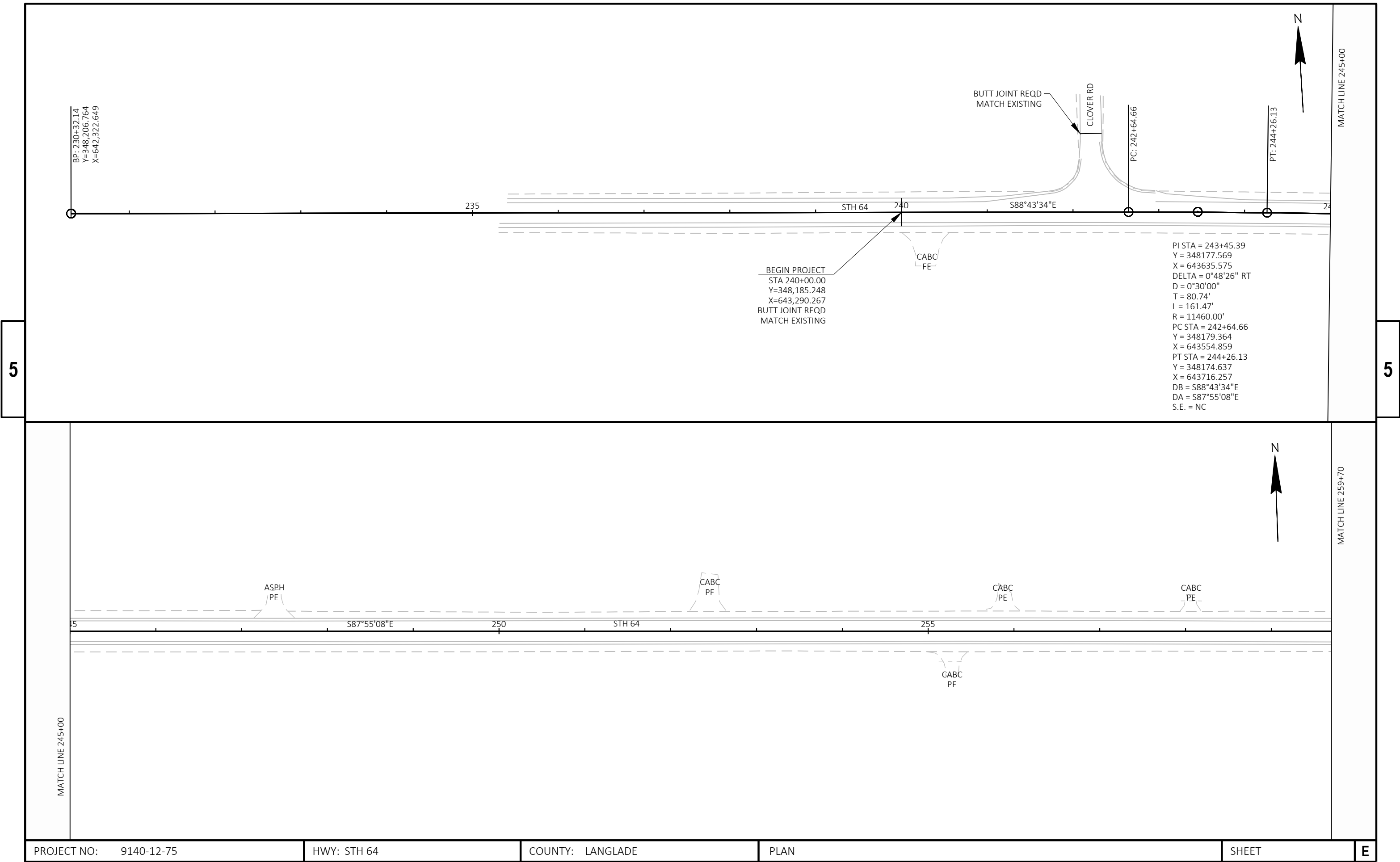
| TRAFFIC CONTROL |    |         |          |                            |                      |                                 |                            |                      |                                 |                                                 |
|-----------------|----|---------|----------|----------------------------|----------------------|---------------------------------|----------------------------|----------------------|---------------------------------|-------------------------------------------------|
| STATION         | TO | STATION | LOCATION | 643.0300                   |                      |                                 | 643.0900                   |                      |                                 | 643.1000                                        |
|                 |    |         |          | APPROX.<br>SERVICE<br>DAYS | NUMBER IN<br>SERVICE | TRAFFIC CONTROL<br>DRUMS<br>DAY | APPROX.<br>SERVICE<br>DAYS | NUMBER IN<br>SERVICE | TRAFFIC CONTROL<br>SIGNS<br>DAY | TRAFFIC CONTROL<br>SIGNS FIXED<br>MESSAGE<br>SF |
| 240+00          | -  | 523+90  | STH 64   | 25                         | 65                   | 1,625                           | 70                         | 45                   | 3,150                           | 36                                              |
| ITEM TOTAL      |    |         |          |                            |                      | 1,625                           |                            |                      | 3,150                           | 36                                              |

| STATION   | TO | STATION | LOCATION | 650.4000               | 650.5000   | 650.5500               | 650.6000                 | 650.8000                       | 650.9911.01                                  | 650.9920              |
|-----------|----|---------|----------|------------------------|------------|------------------------|--------------------------|--------------------------------|----------------------------------------------|-----------------------|
|           |    |         |          | STORM<br>SEWER<br>EACH | BASE<br>LF | CURB &<br>GUTTER<br>LF | PIPE<br>CULVERTS<br>EACH | RESURFACING<br>REFERENCE<br>LF | SUPPLEMENTAL CONTROL<br>(9140-12-75)<br>EACH | SLOPE<br>STAKES<br>LF |
| 240+00    | -  | 523+90  | STH 64   | 12                     | 2,222      | 4,385                  | 1                        | 26,168                         | 1                                            | 2,222                 |
| ITEM TOAL |    |         |          | 12                     | 2,222      | 4,385                  | 1                        | 26,168                         | 1                                            | 2,222                 |

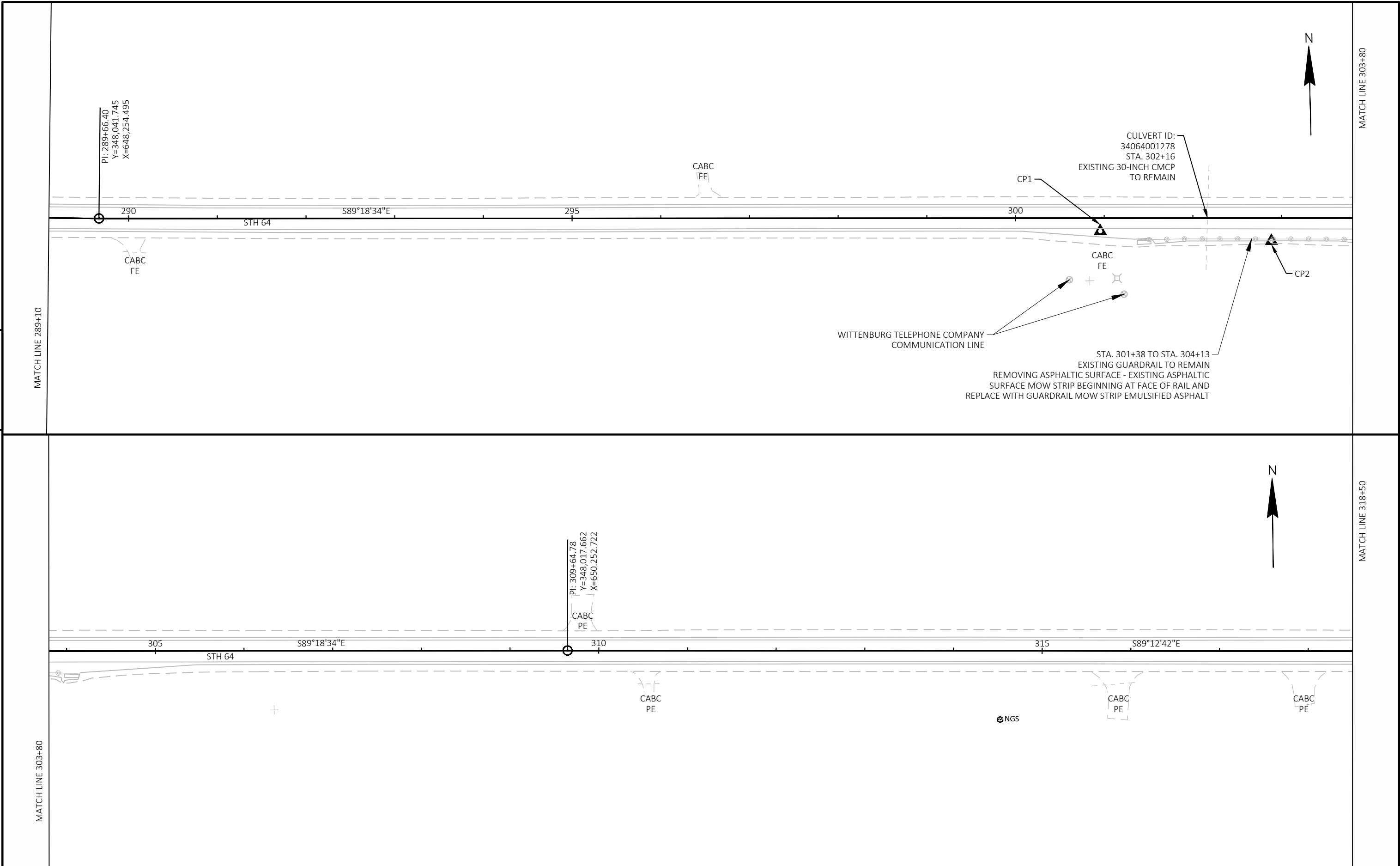
| SAWING     |    |         |          |                      |
|------------|----|---------|----------|----------------------|
| STATION    | TO | STATION | LOCATION | 690.0150             |
|            |    |         |          | SAWING ASPHALT<br>LF |
| 301+35     | -  | 304+15  | RT       | 285                  |
| 425+90     | -  | 448+12  | LT & RT  | 5,035                |
| 448+12     | -  | 449+32  | LT       | 120                  |
| 451+30     | -  | 456+00  | RT       | 490                  |
| ITEM TOTAL |    |         |          | 5,930                |

| REESTABLISH SECTION CORNER MONUMENTS     |             |                            |
|------------------------------------------|-------------|----------------------------|
| LOCATION                                 | SPV.0060.01 |                            |
|                                          | EACH        | REMARKS                    |
| NORTH 1/4 CORNER SECTION 24, T31N, R11E  | 1           | BERNTSEN STEEL NAIL MARKER |
| SE CORNER OF SECTION 13, T31N, R11E      | 1           | BERNTSEN STEEL NAIL MARKER |
| SOUTH 1/4 CORNER SECTION 18, T31N, R12E  | 1           | BERNTSEN STEEL NAIL MARKER |
| SE CORNER OF SECTION 18, T31N, R12E      | 1           | BERNTSEN STEEL NAIL MARKER |
| SOUTH 1/4 CORNER SECTION 17, T31N, R12E  | 1           | BERNTSEN STEEL NAIL MARKER |
| CENTER 1/4 CORNER SECTION 16, T31N, R12E | 1           | BERNTSEN STEEL NAIL MARKER |
| EAST 1/4 CORNER SECTION 16, T31N, R12E   | 1           | BERNTSEN STEEL NAIL MARKER |
| EAST 1/4 CORNER SECTION 15, T31N, R12E   | 1           | BERNTSEN STEEL NAIL MARKER |
| ITEM TOAL                                |             | 8                          |

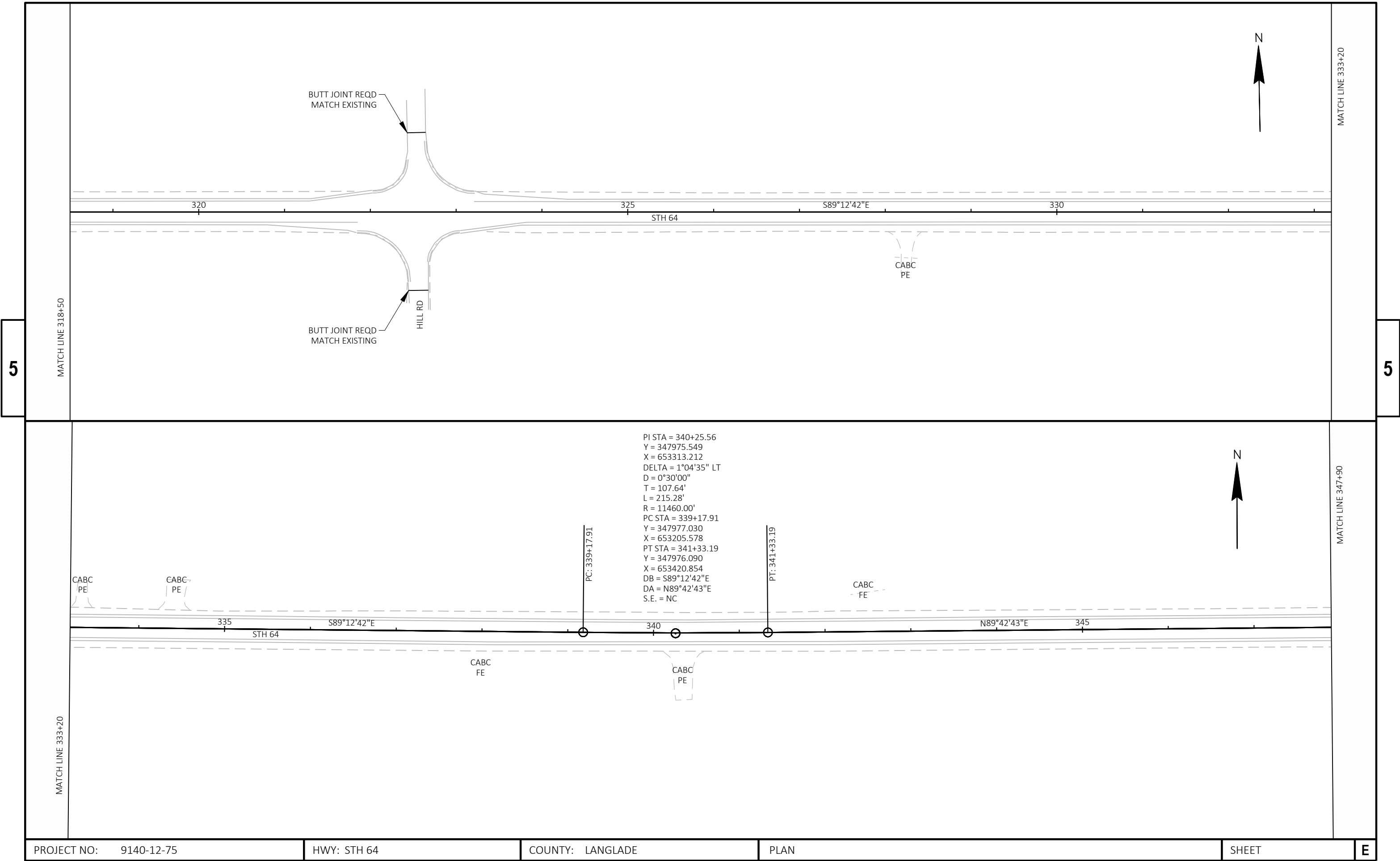
NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET  
ARE FOR ENGINEER ESTIMATE CATEGORY 0010  
UNLESS OTHERWISE NOTED.



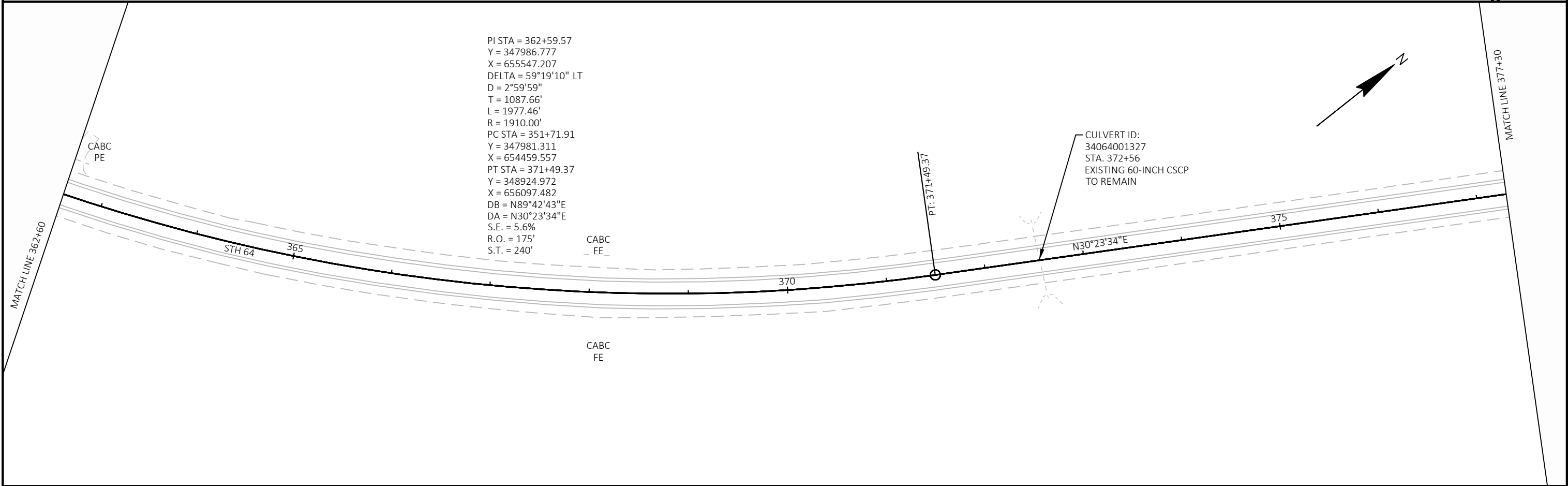
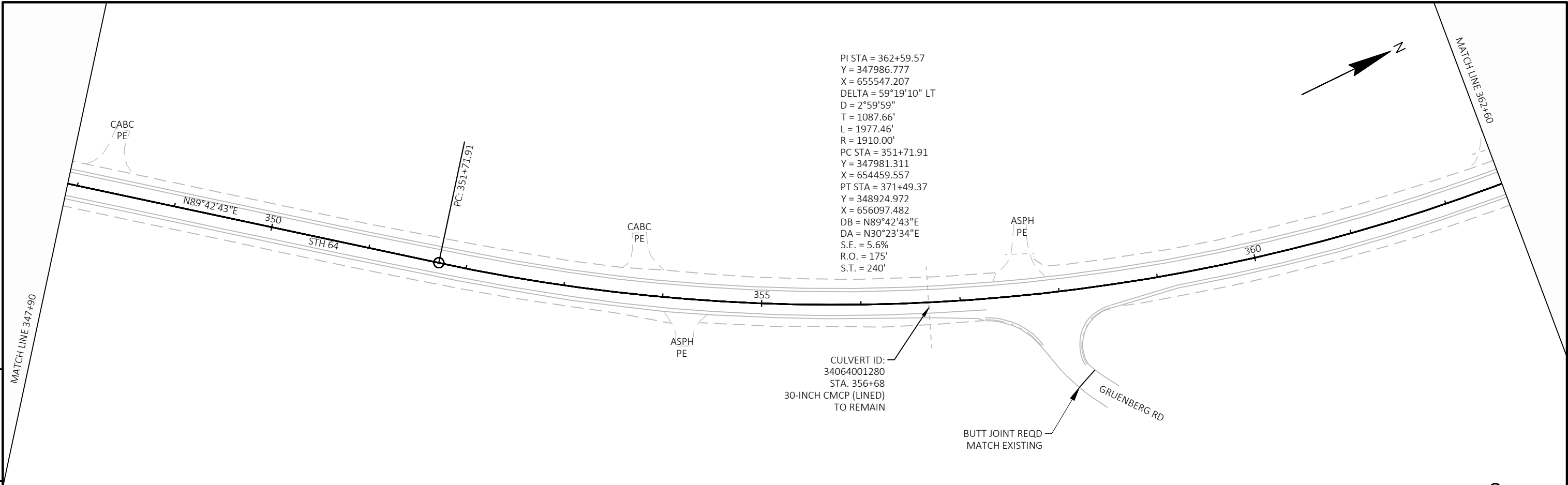




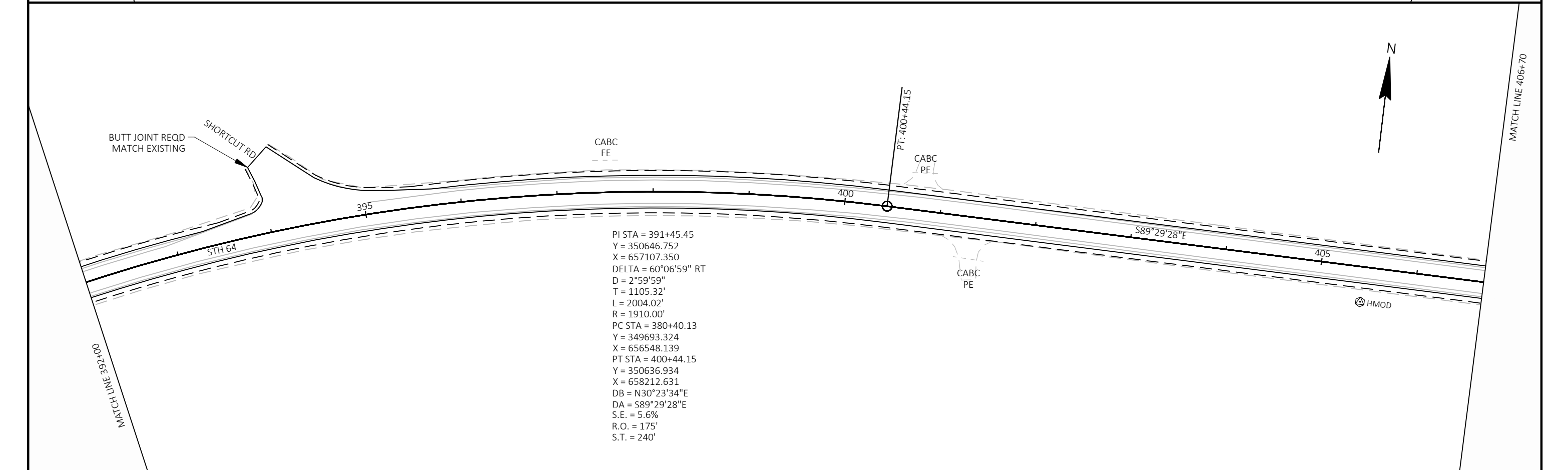
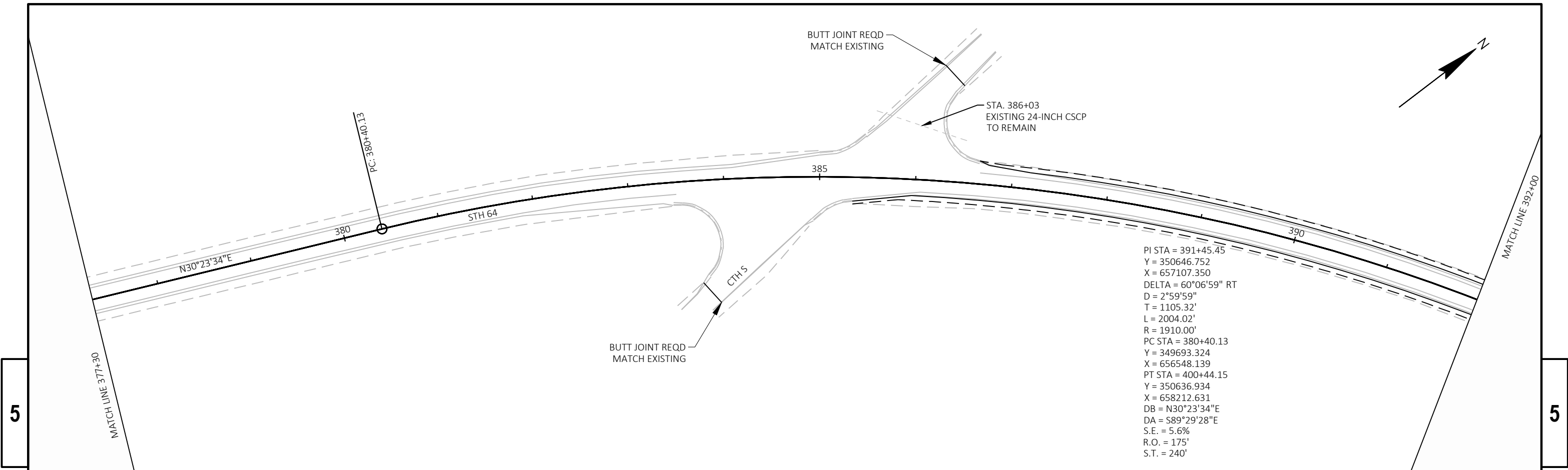
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|-------------|------------|------|--------|---------|----------|------|-------|---|
| PROJECT NO: | 9140-12-75 | HWY: | STH 64 | COUNTY: | LANGLADE | PLAN | SHEET | E |
|-------------|------------|------|--------|---------|----------|------|-------|---|



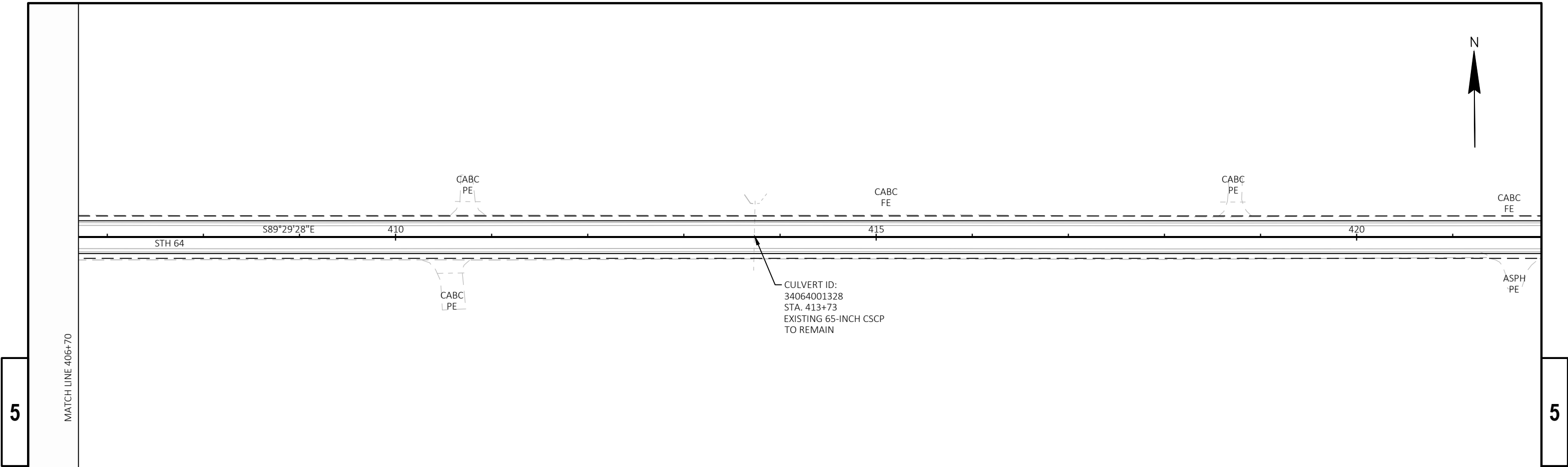
|                        |             |                  |      |       |   |
|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|



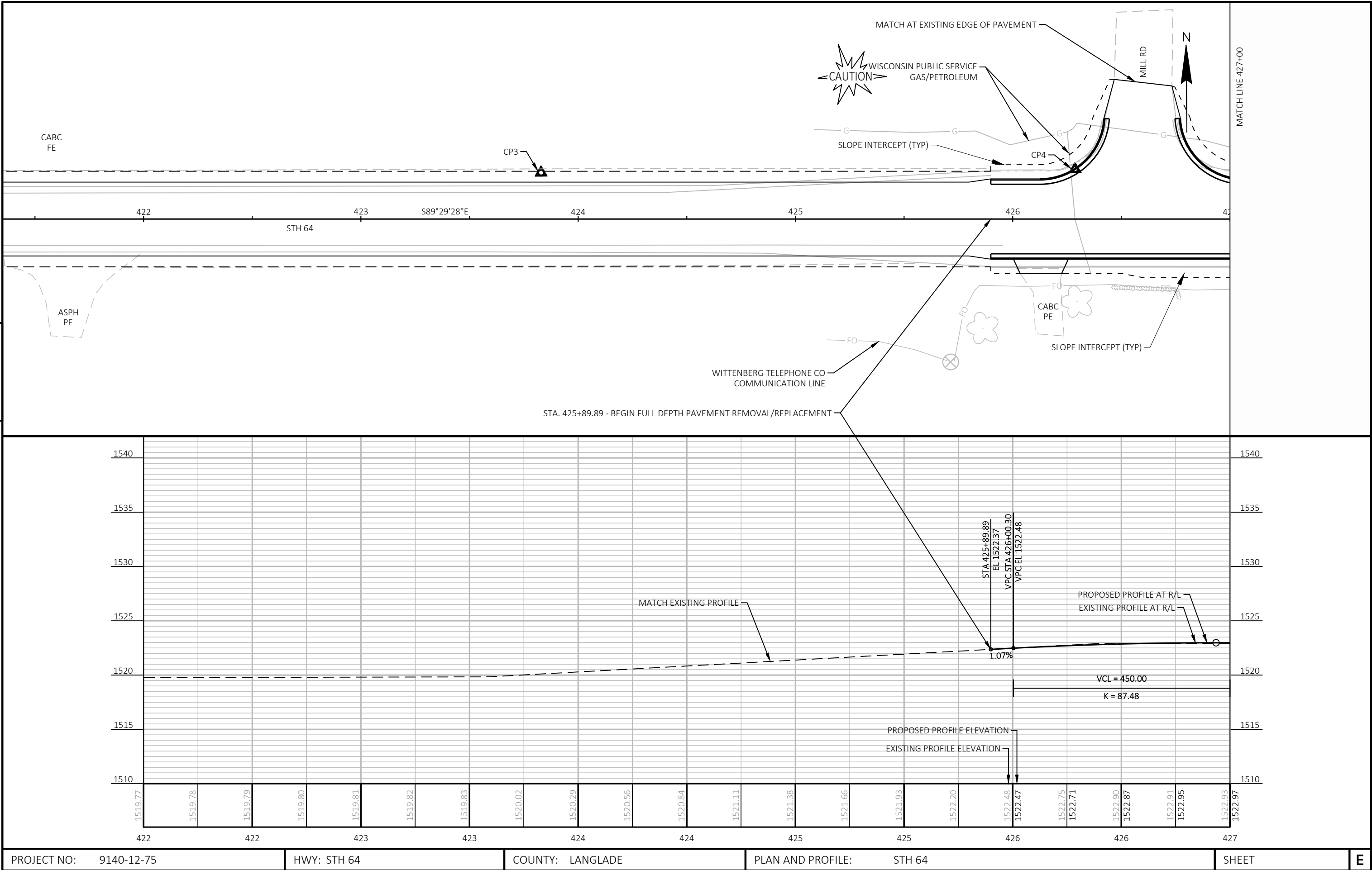
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| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|



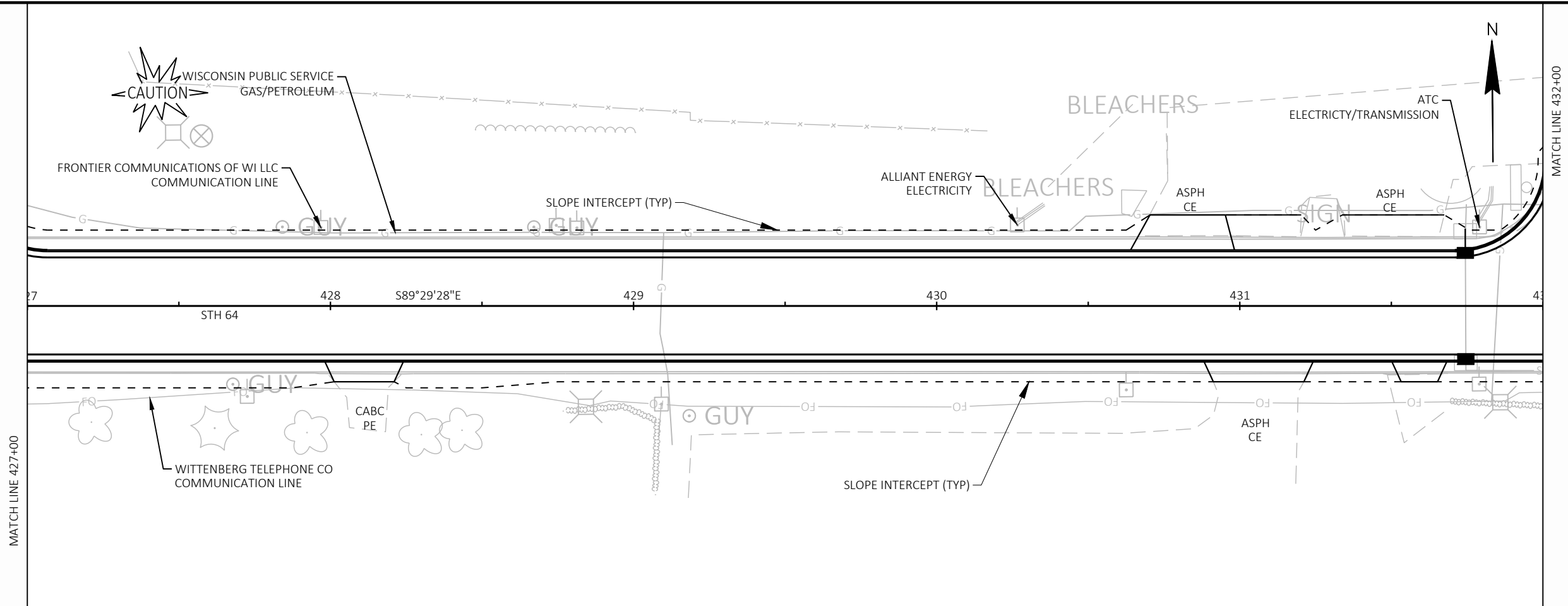
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|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|



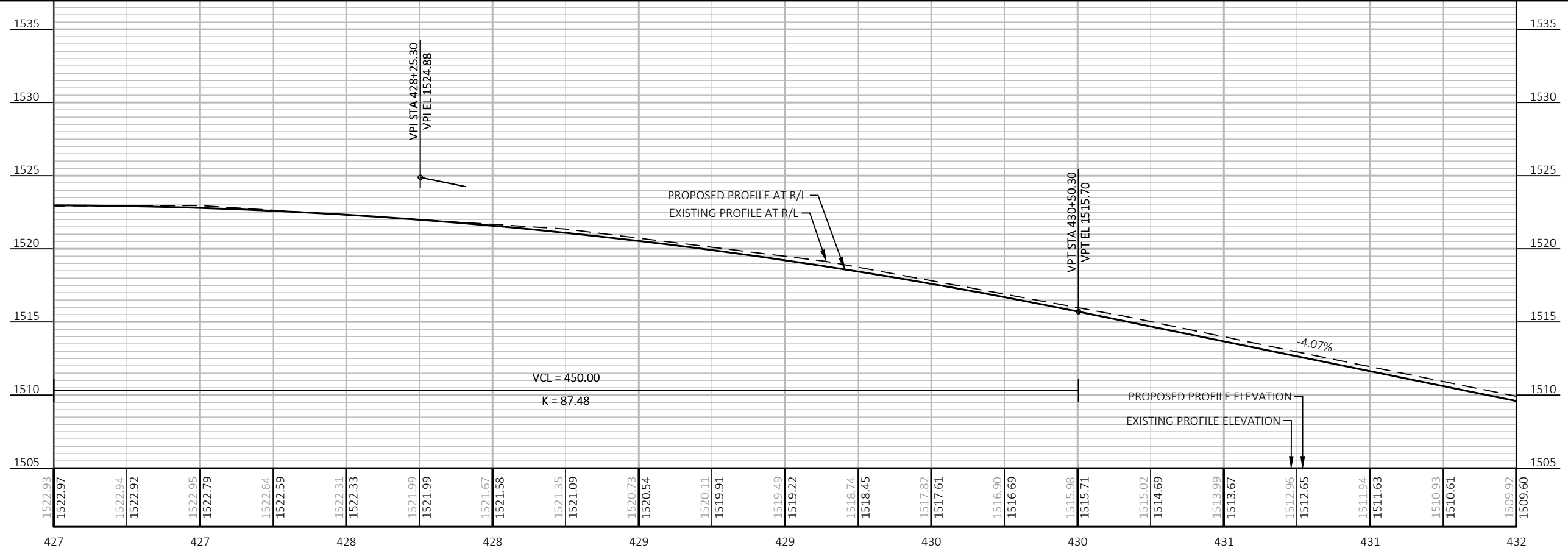
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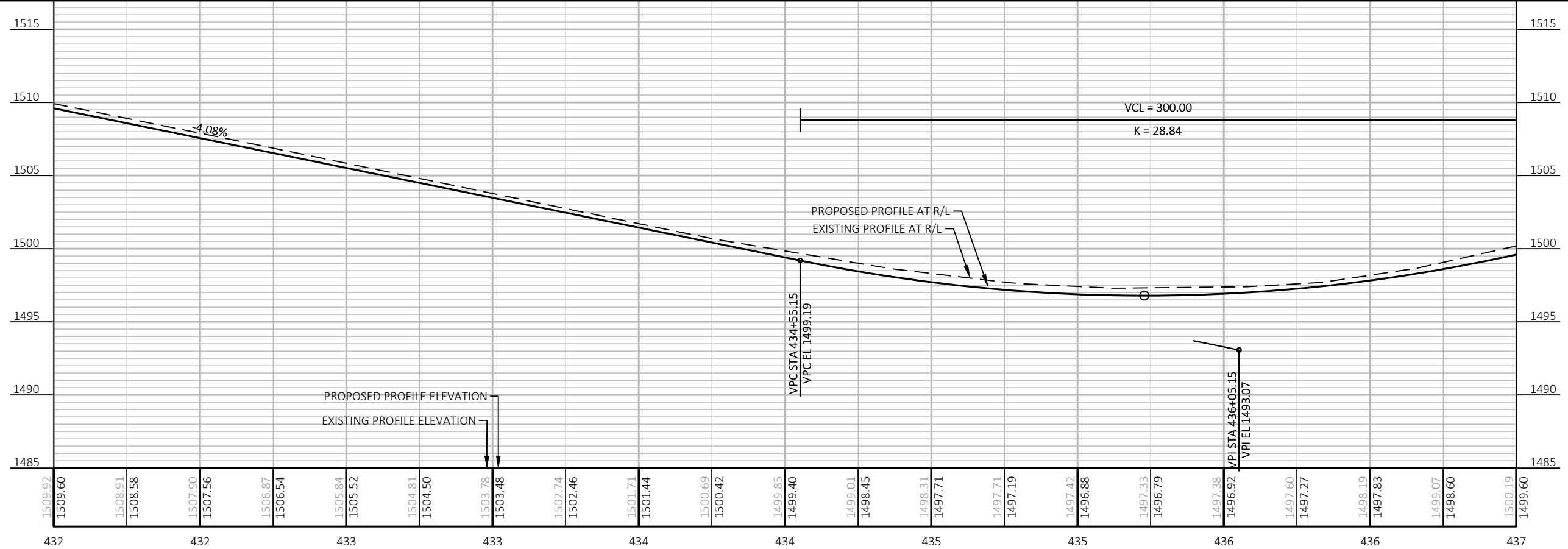
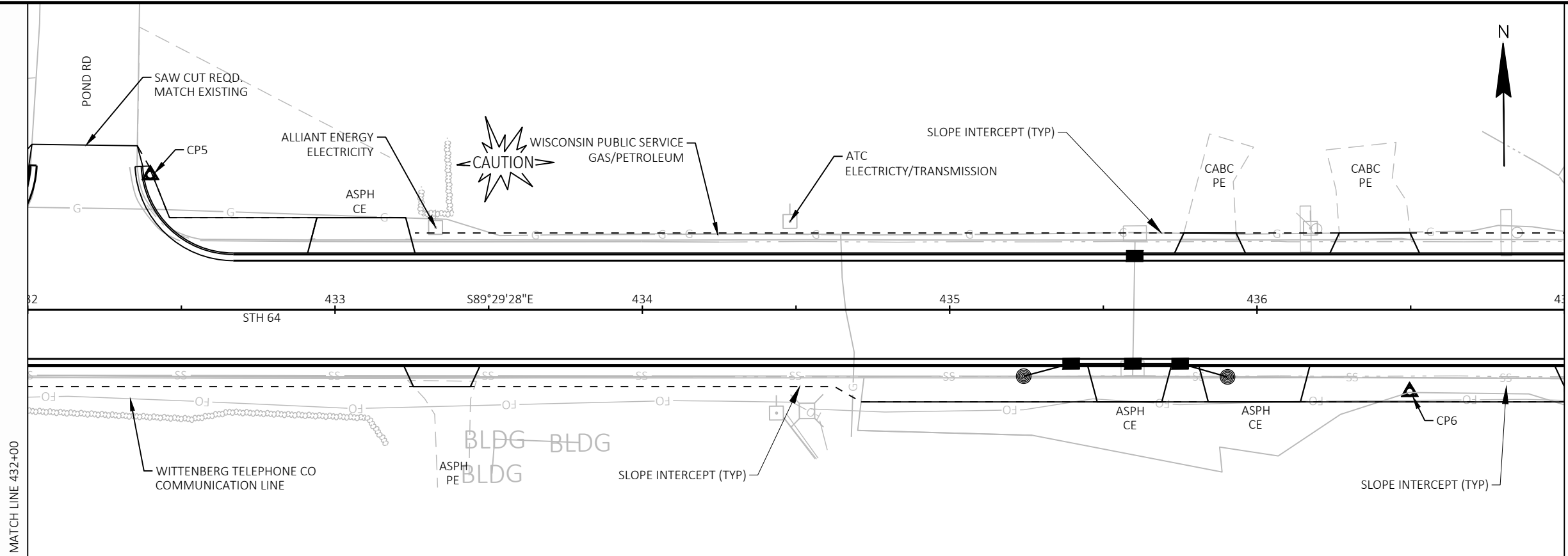
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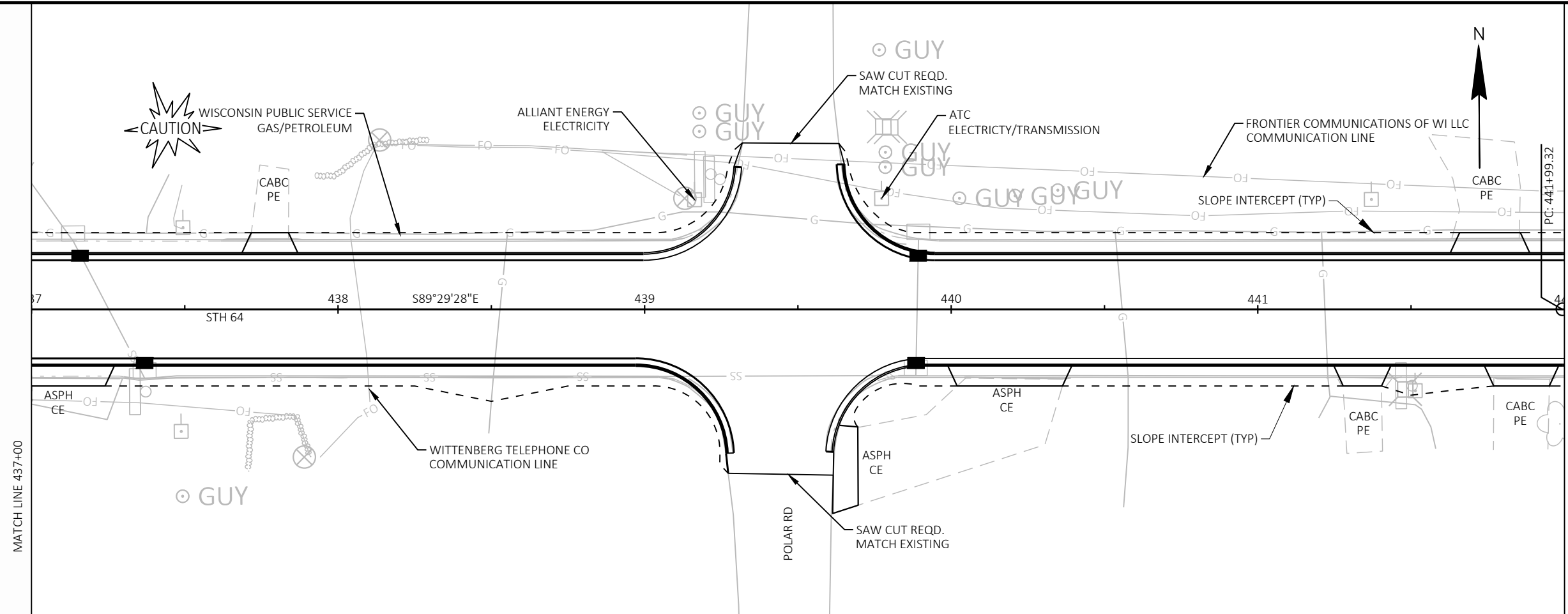
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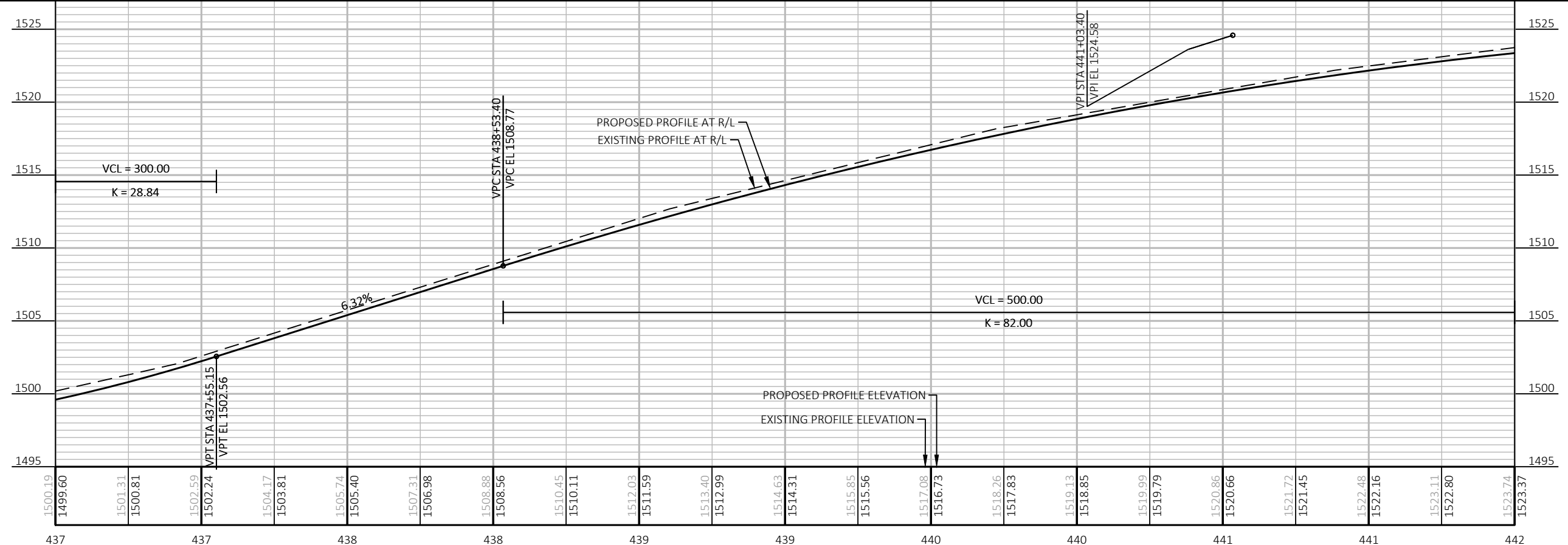
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| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN AND PROFILE: STH 64 | SHEET | E |
|------------------------|-------------|------------------|--------------------------|-------|---|



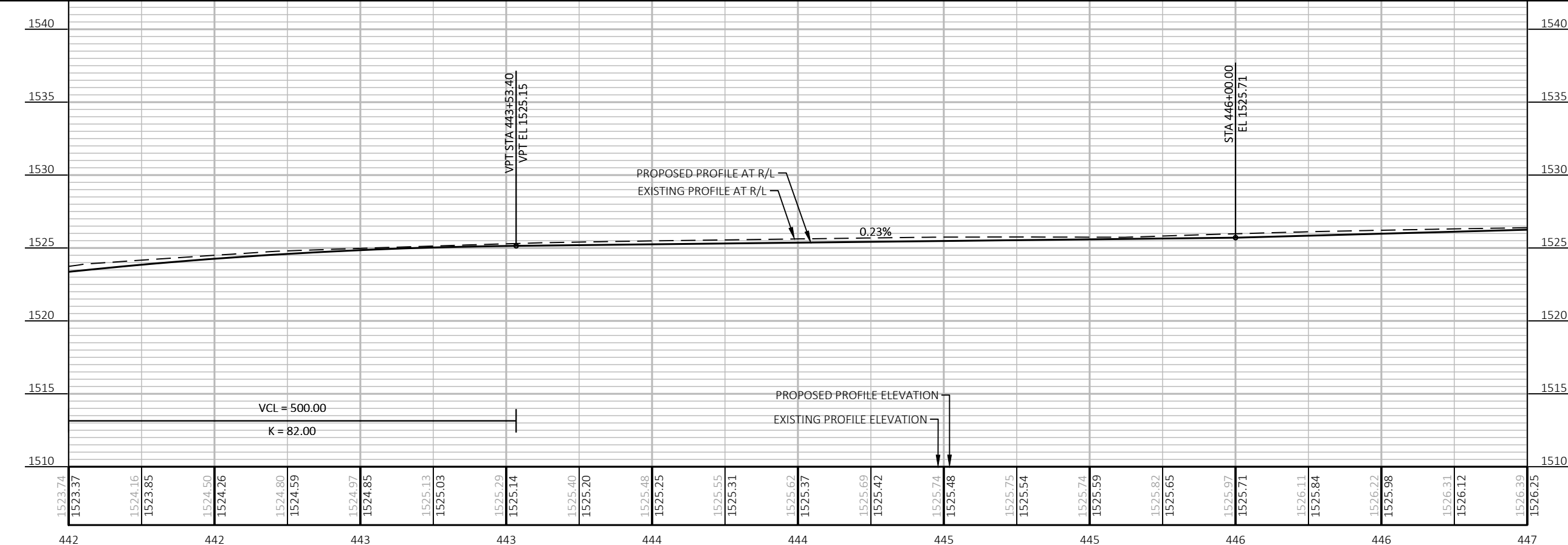
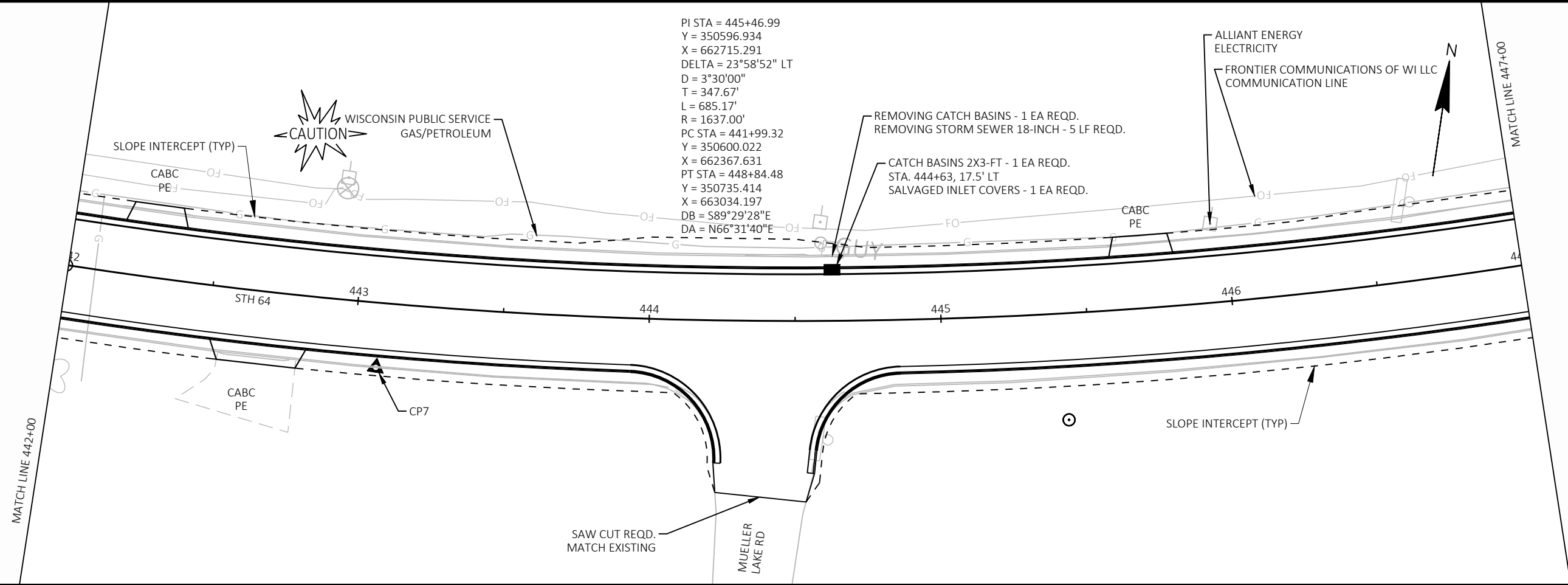
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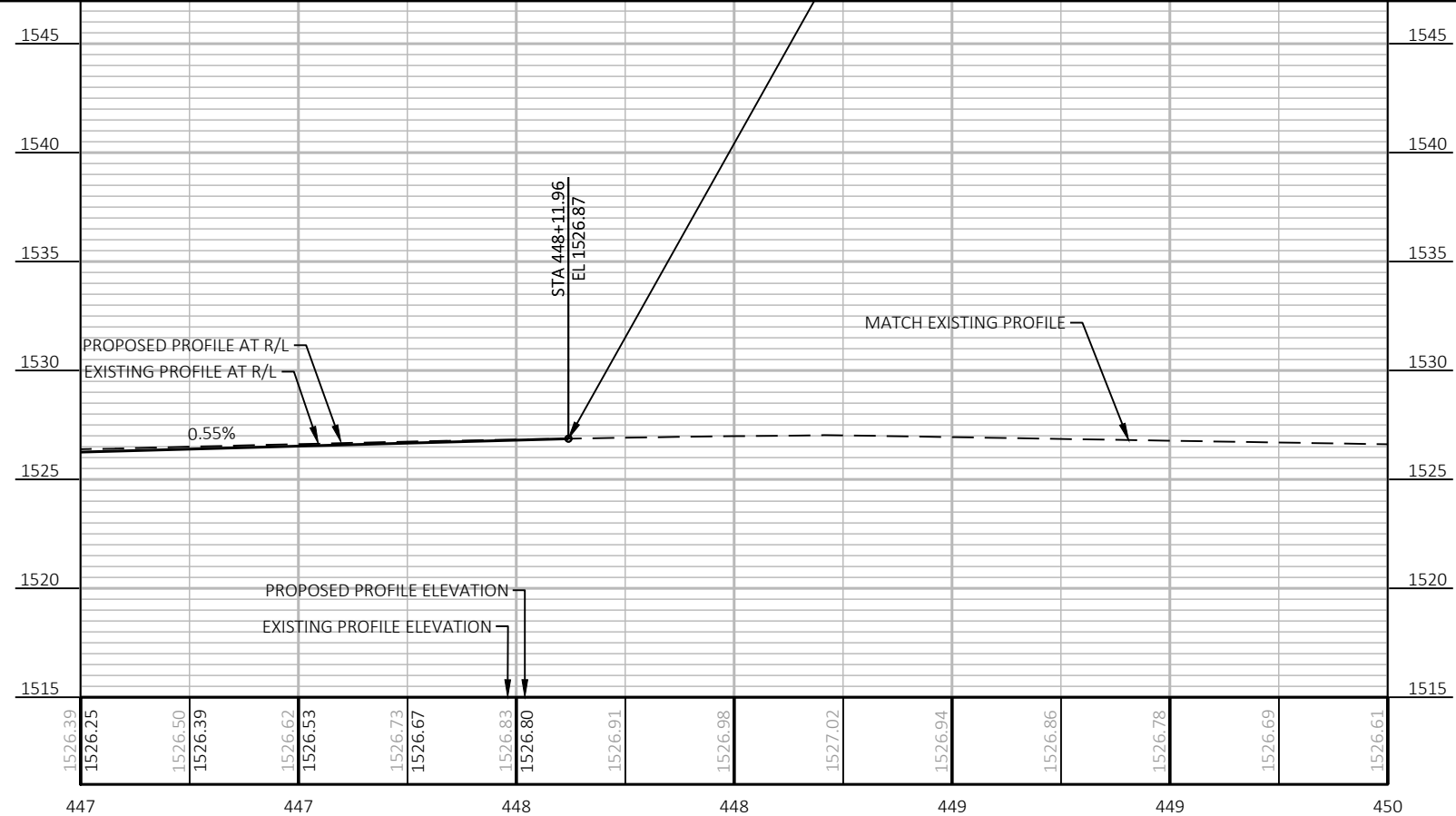
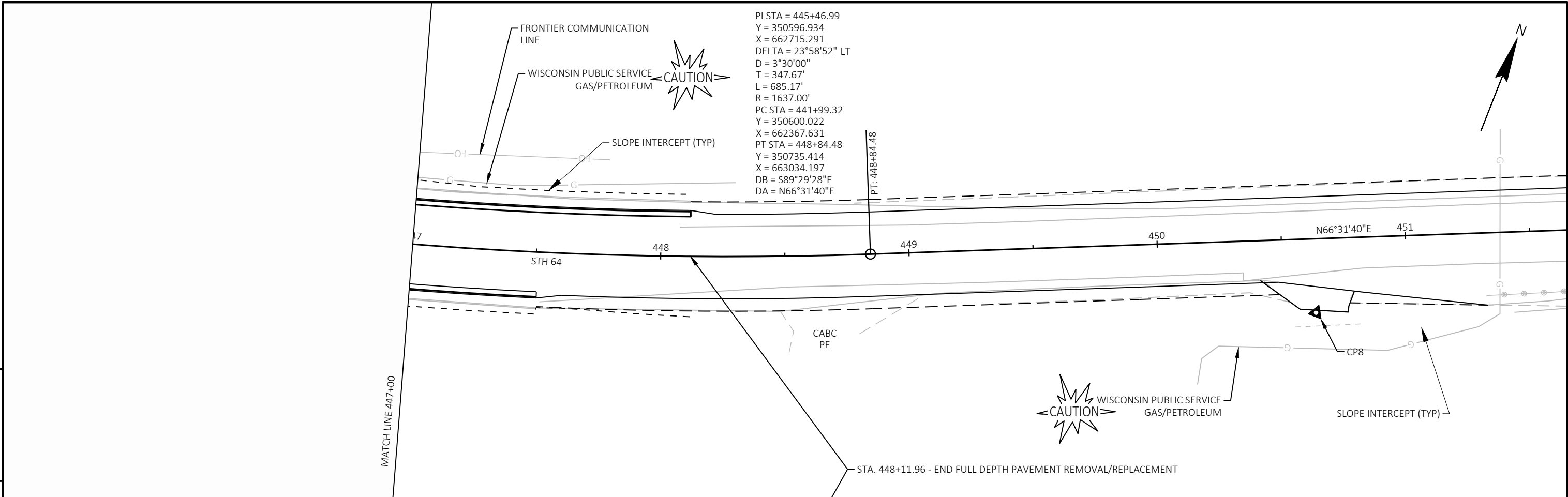
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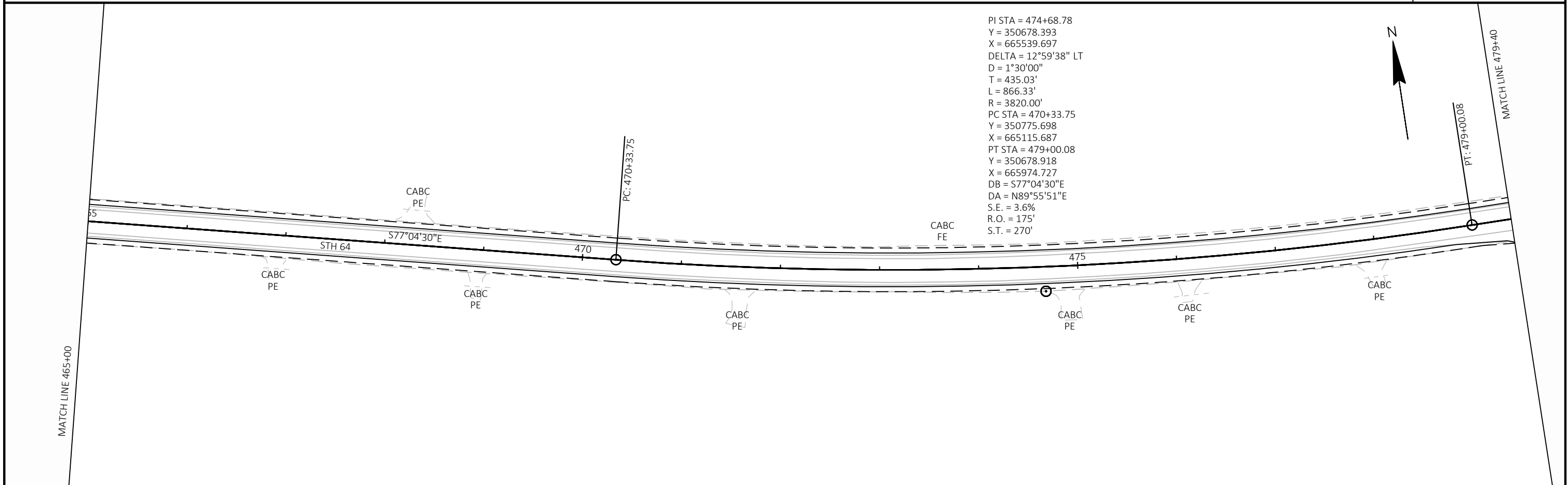
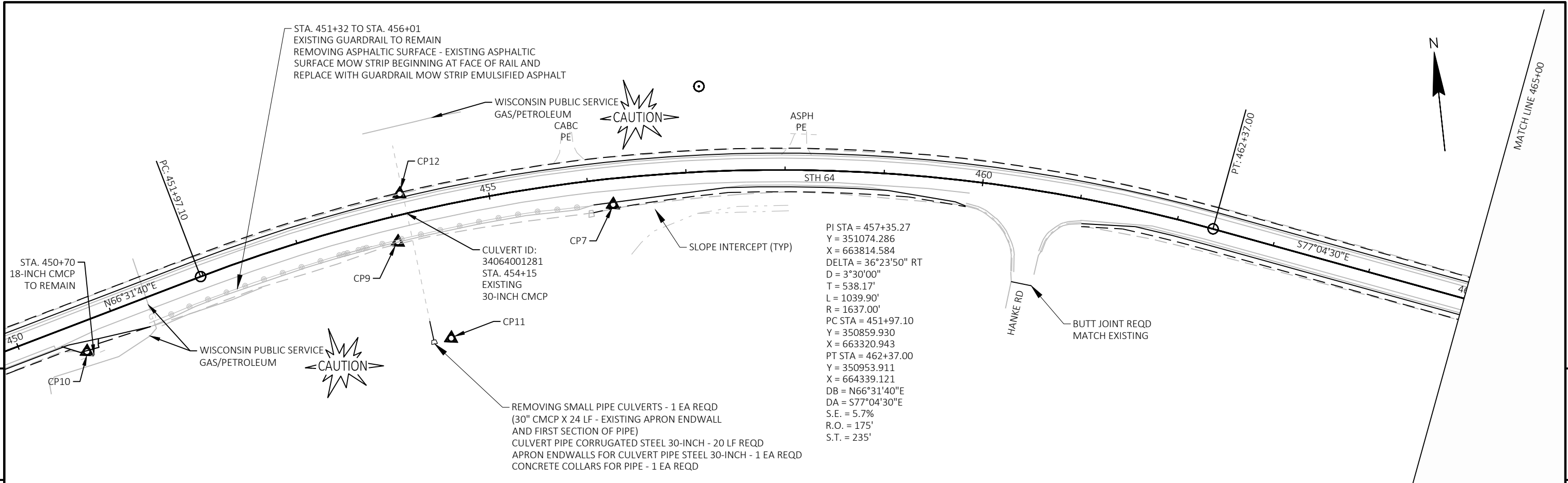


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|------------------------|-------------|------------------|--------------------------|---------|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN AND PROFILE: STH 64 | SHEET E |
|------------------------|-------------|------------------|--------------------------|---------|

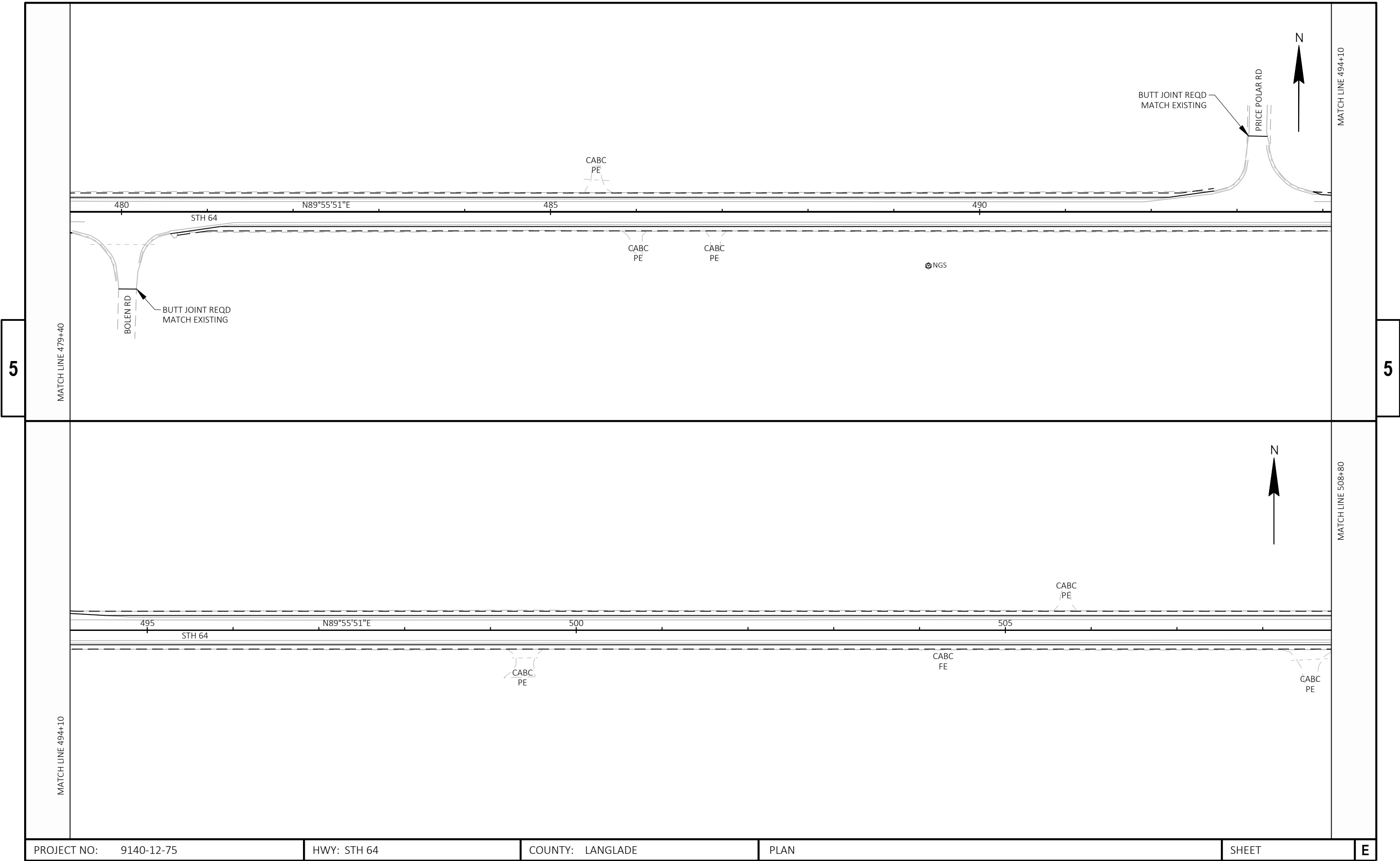


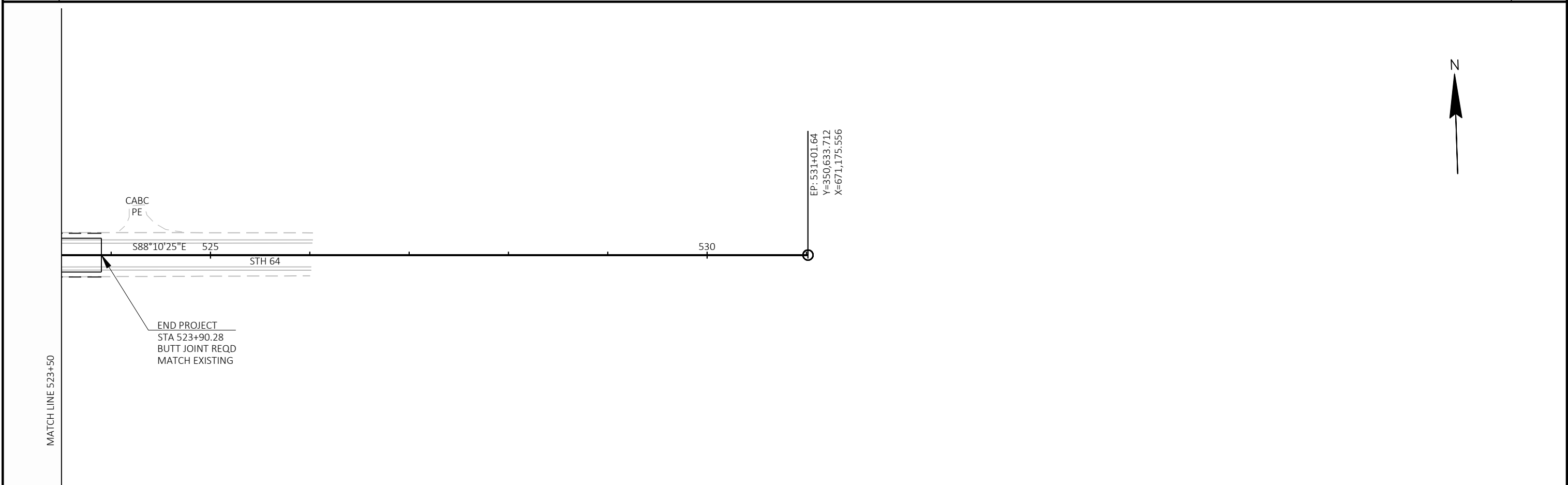
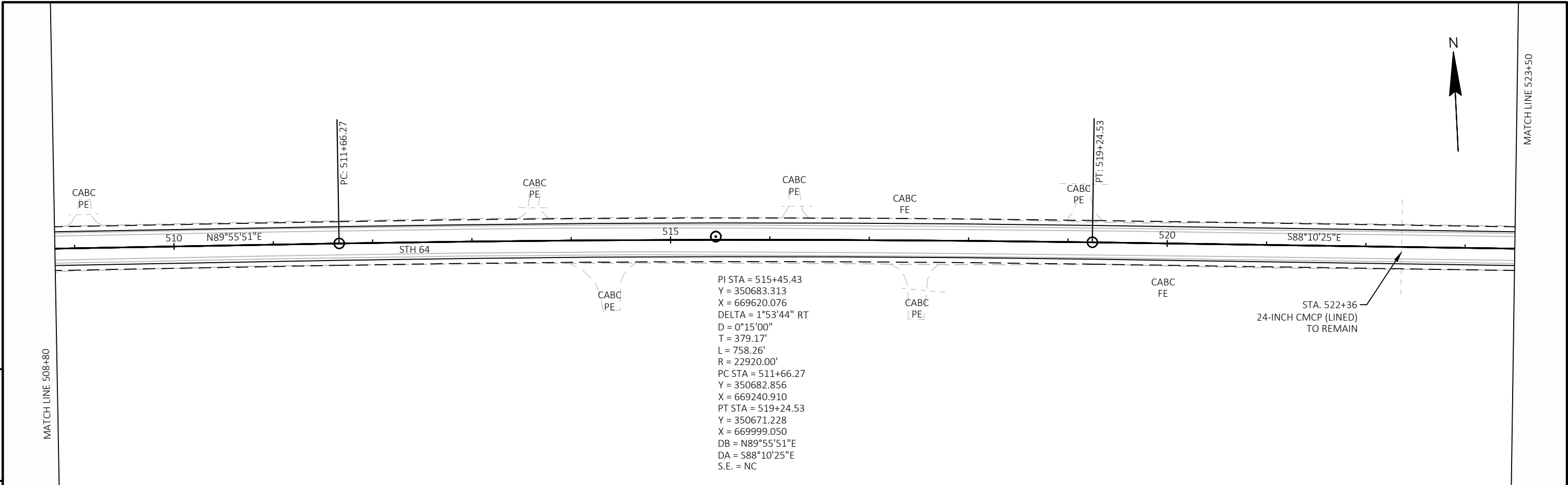
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| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN AND PROFILE: STH 64 | SHEET E |
|------------------------|-------------|------------------|--------------------------|---------|





|                        |             |                  |      |       |   |
|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN | SHEET | E |
|------------------------|-------------|------------------|------|-------|---|

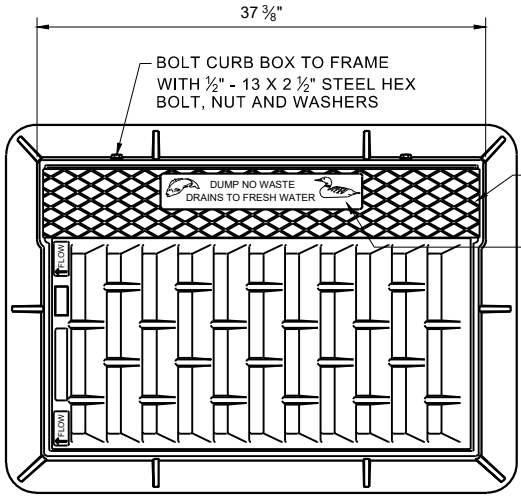




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|------------------------|-------------|------------------|------|-------|---|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | PLAN | SHEET | E |
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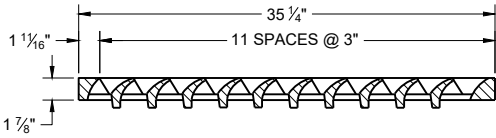
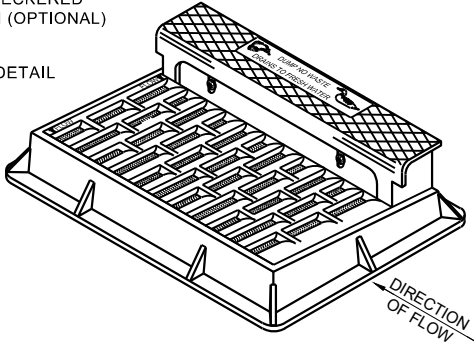
Standard Detail Drawing List

|           |                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------|
| 08A05-20A | INLET COVERS TYPE A, H, A-S, H-S & Z                                                               |
| 08A05-20D | INLET COVER TYPE BW, MANHOLE COVERS, TYPE K, J, J-S, L & M                                         |
| 08A08-03  | CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER                                                    |
| 08A09-03  | CATCH BASINS 2X3-FT AND 2.5X3-FT                                                                   |
| 08B09-04  | MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT, 8-FT, 9-FT, 10-FT DIAMETER                                  |
| 08D01-23A | CONCRETE CURB & GUTTER                                                                             |
| 08D01-23B | CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS                                               |
| 08E09-06  | SILT FENCE                                                                                         |
| 08E10-02  | INLET PROTECTION TYPE A, B, C AND D                                                                |
| 08E15-01  | CULVERT PIPE CHECK                                                                                 |
| 08F01-11  | APRON ENDWALLS FOR CULVERT PIPE                                                                    |
| 08F04-08  | JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL                                            |
| 13A10-03A | SHOULDER RUMBLE STRIPS - ASPHALT                                                                   |
| 13A10-03G | SHOULDER AND EDGE LINE RUMBLE STRIPS - CROSSINGS, INTERSECTIONS, BRIDGES, DRIVEWAYS                |
| 13A10-03H | SHOULDER AND EDGE LINE RUMBLE STRIPS - RAILROAD, PASSING, CLIMBING AND BYPASS LANES                |
| 13A11-04A | CENTERLINE RUMBLE STRIPS - ASPHALT                                                                 |
| 13A11-04D | CENTERLINE RUMBLE STRIPS - INTERSECTIONS, DRIVEWAYS, BRIDGES, RAILROADS                            |
| 13C19-03  | HMA LONGITUDINAL JOINTS                                                                            |
| 14B28-04A | GUARDRAIL MOW STRIP                                                                                |
| 14B28-04B | GUARDRAIL MOW STRIP                                                                                |
| 14B29-01  | SAFETY EDGE                                                                                        |
| 15A03-02A | FLEXIBLE MARKER POST FOR CULVERT END                                                               |
| 15A03-02B | FLEXIBLE MARKER POST FOR CULVERT END                                                               |
| 15C02-09F | ADVANCED WIDTH RESTRICTION SIGNING                                                                 |
| 15C04-05  | TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC |
| 15C08-23A | PERMANENT LONGITUDINAL PAVEMENT MARKINGS                                                           |
| 15C08-23B | TEMPORARY LONGITUDINAL PAVEMENT MARKING                                                            |
| 15C11-10B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS                                  |
| 15C12-09A | TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION                                           |
| 15C19-08A | MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY                                         |
| 15C35-06A | 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                                             |
| 15D51-01  | TRAFFIC CONTROL, MOBILE OPERATIONS ON AN UNDIVIDED ROADWAY                                         |

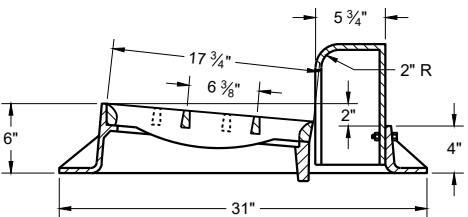
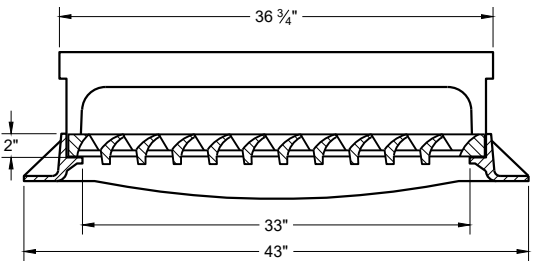
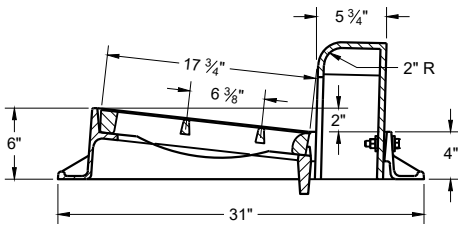
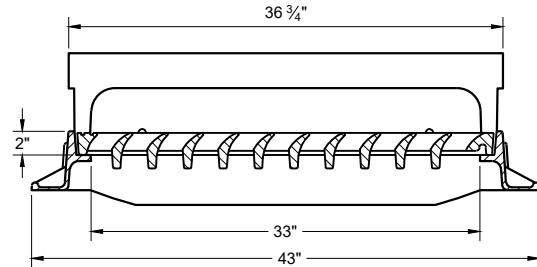


NOTE: EITHER CASTING IS ACCEPTABLE

TYPE "C" CHECKERED TOP DESIGN (OPTIONAL)  
SEE LOGO DETAIL

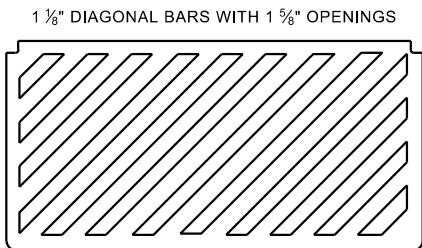


NOTE: CURB BOX HEIGHT ADJUSTABLE 6" - 9"

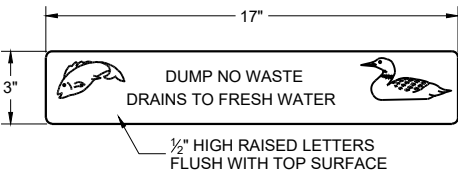


**TYPE "H"**

NOTE: EITHER CASTING IS ACCEPTABLE



**SPECIAL GRATE FOR TYPE "H" COVER**  
(MEASURES 35" X 17 3/4" X 2")  
(NOTED AS TYPE H-S ON DRAINAGE TABLE)



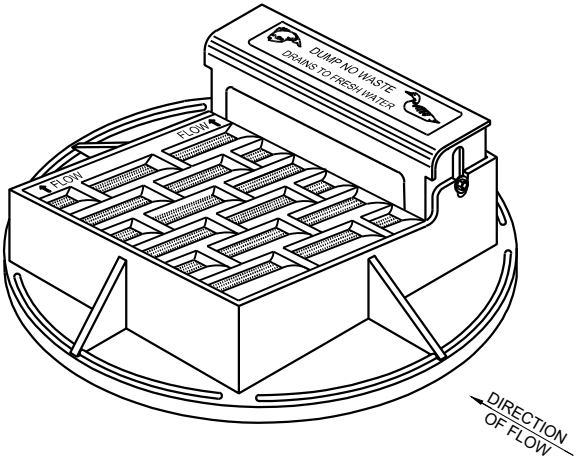
**LOGO DETAIL**

**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.

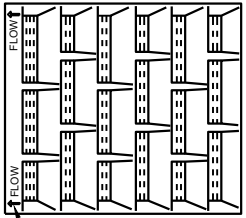
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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

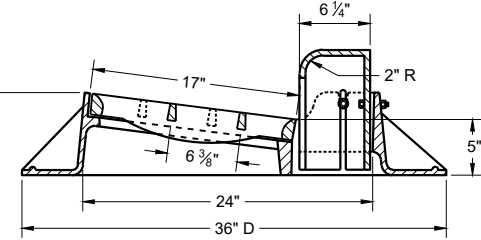
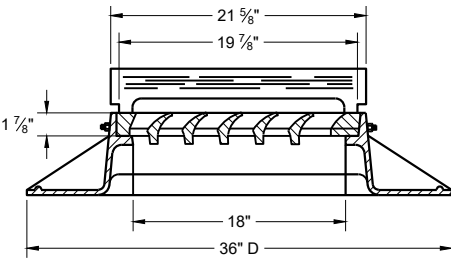
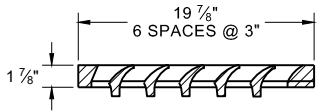


NOTE: CURB BOX HEIGHT ADJUSTABLE 6" - 9"

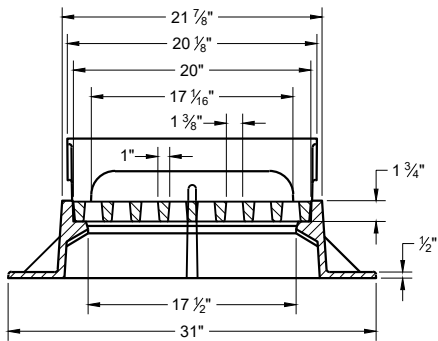
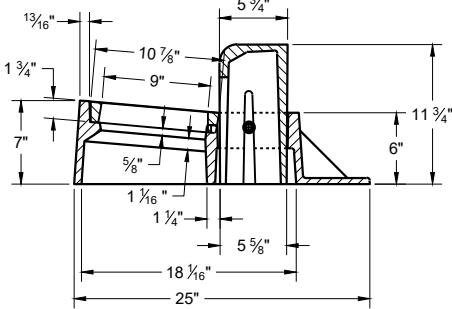
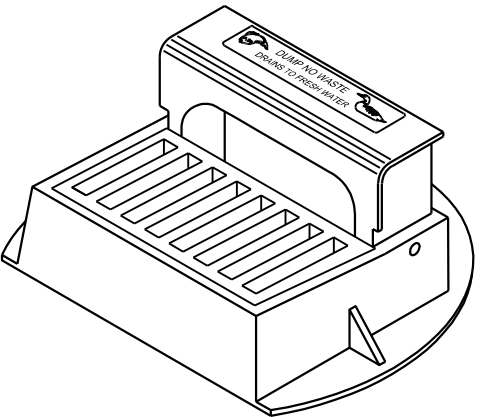
NOTE: EITHER CASTING IS ACCEPTABLE



DIRECTION OF FLOW ARROWS



**TYPE "A"**



**TYPE "Z"**

**INLET COVERS  
TYPES A, H, A-S, H-S AND Z**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

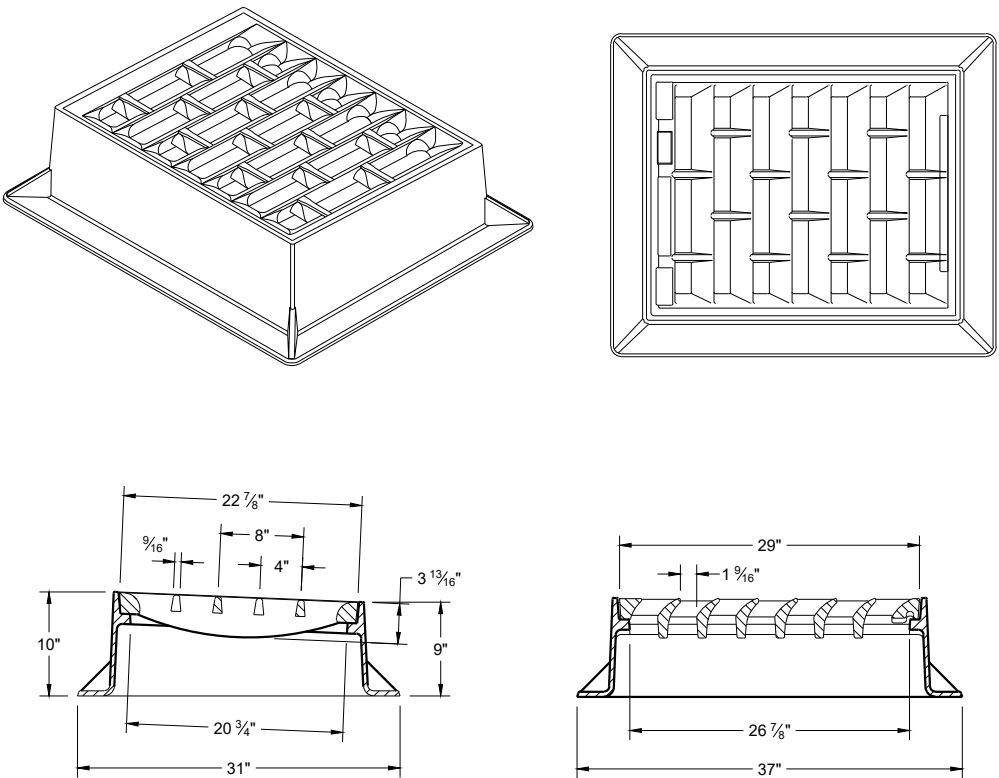
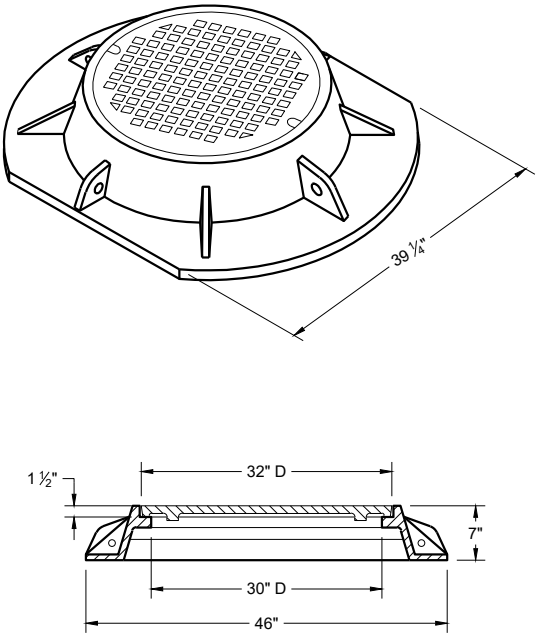
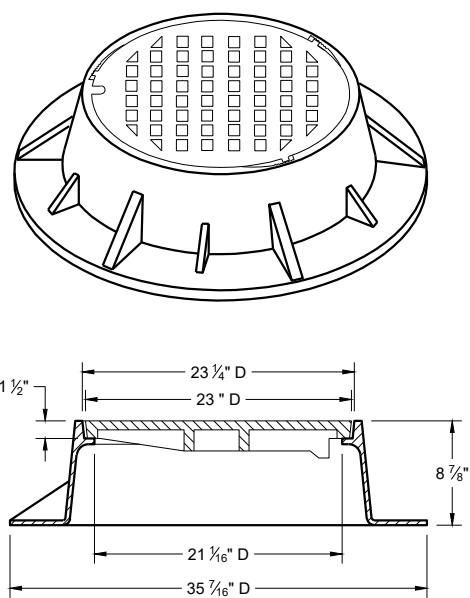
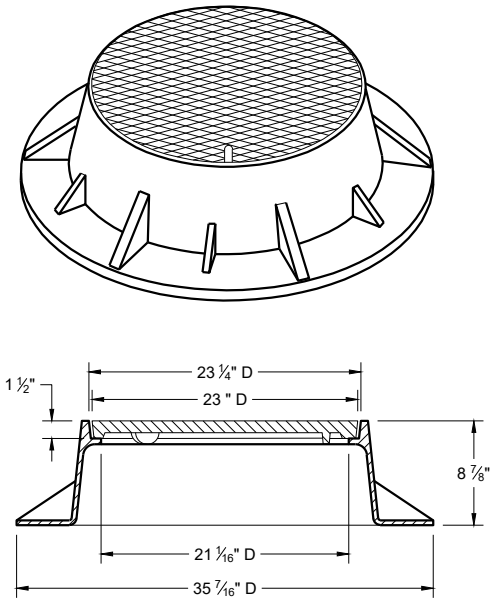
APPROVED  
July 2023 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA UNIT SUPERVISOR

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.

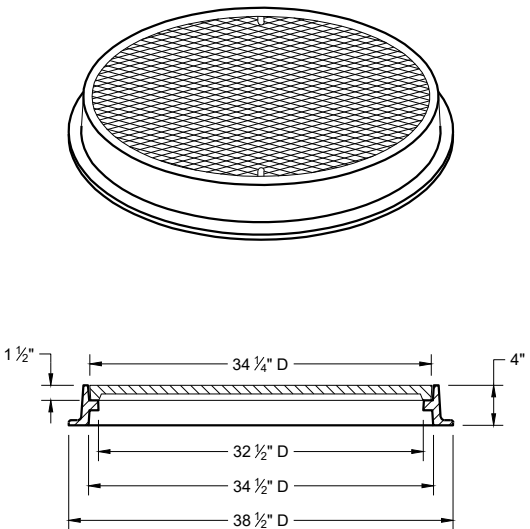
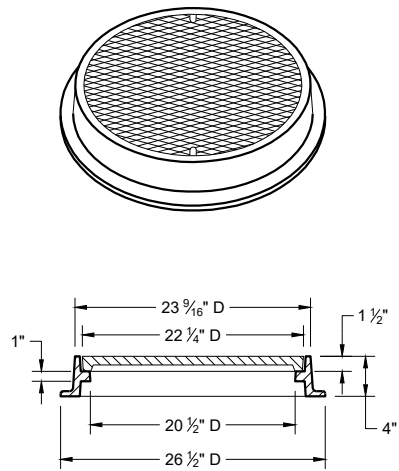
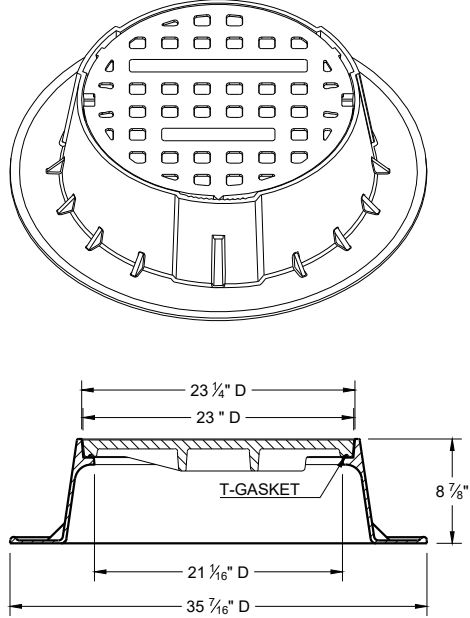
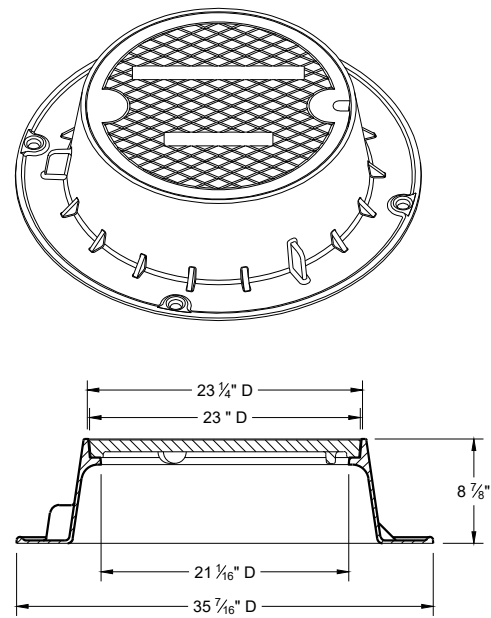
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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



TYPE "K"

INLET COVER TYPE "BW"



TYPE "J"

NOTE: EITHER CASTING IS ACCEPTABLE

TYPE "J" SPECIAL

TYPE "B" NON-ROCKING SELF-SEAL LID  
(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)

NOTE: EITHER CASTING IS ACCEPTABLE

TYPE "L"

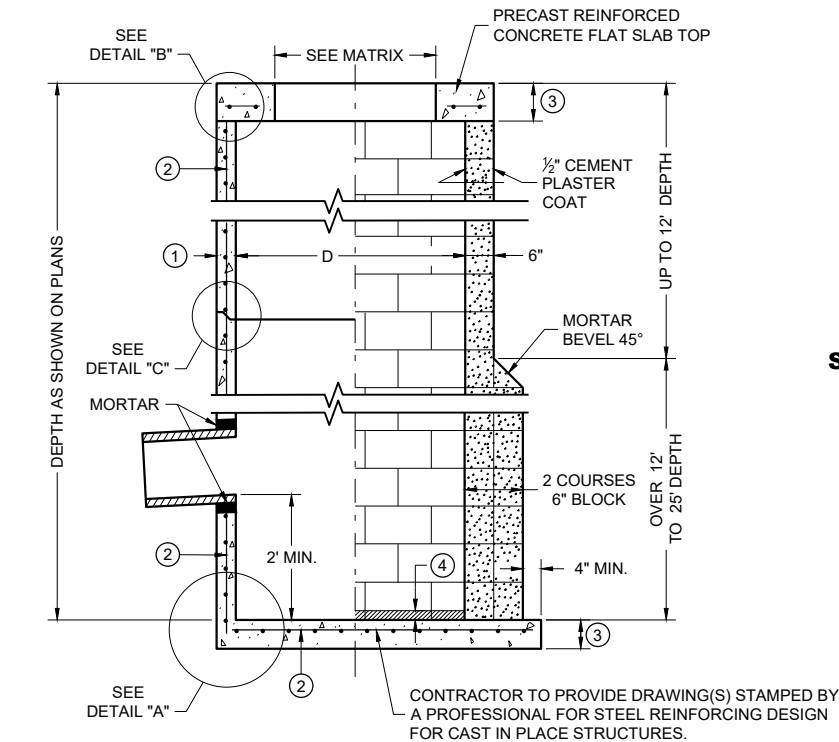
TYPE "M"

INLET COVERS TYPES BW  
MANHOLE COVERS TYPES K,  
J, J-S, L, AND M

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

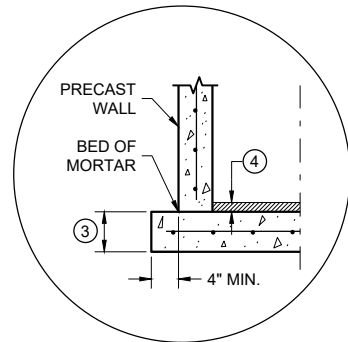
APPROVED  
July 2023  
DATE /S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR

FHWA



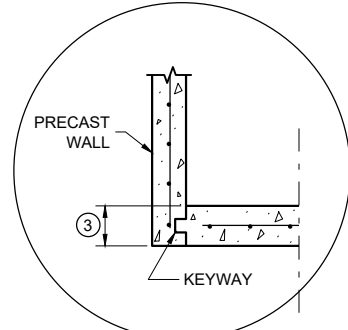
**PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE**

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

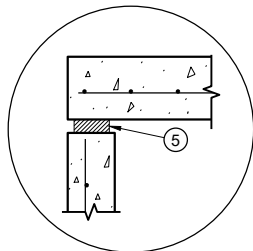


**SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION**

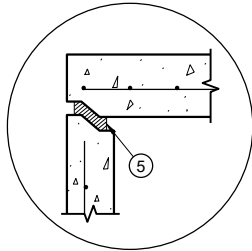
**DETAIL "A"**



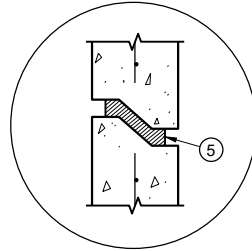
**PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION**



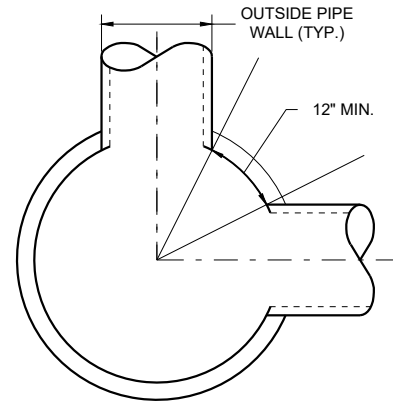
**TOP WITH PLAIN END JOINT**



**TOP WITH TONGUE AND GROOVE JOINT**

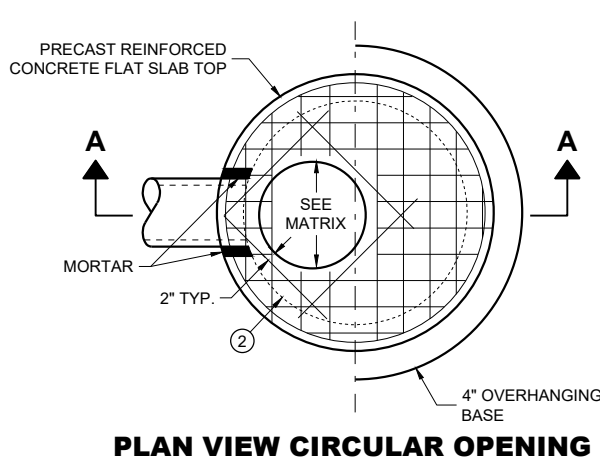


**RISER WITH TONGUE AND GROOVE JOINT**

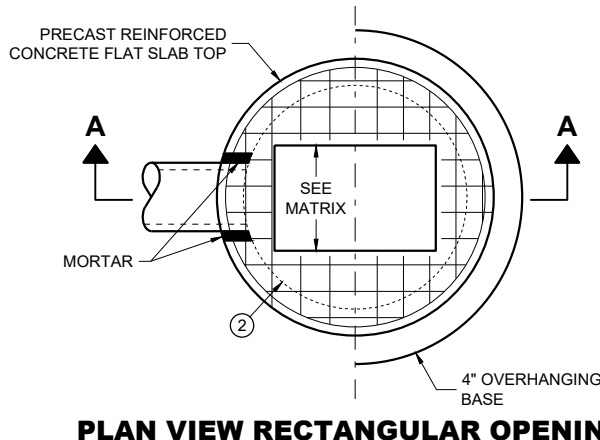


**MINIMUM HORIZONTAL PIPE SEPARATION**

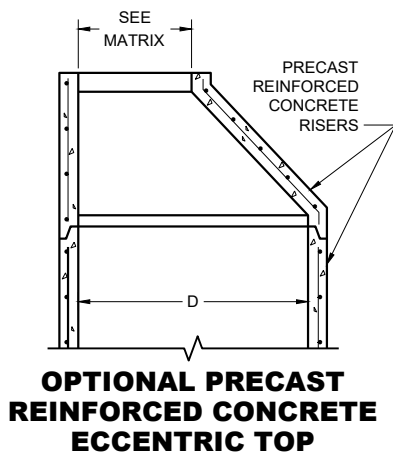
**DETAIL "D"**



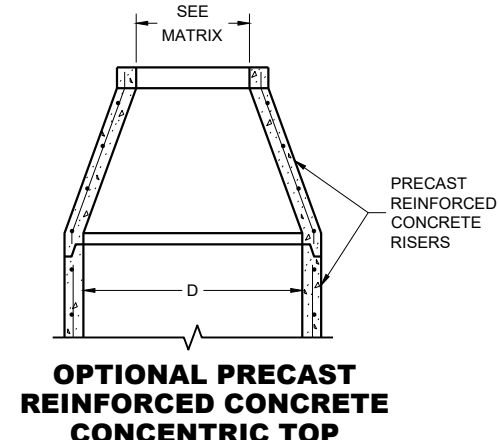
**PLAN VIEW CIRCULAR OPENING**



**PLAN VIEW RECTANGULAR OPENING**



**OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP**



**OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP**

**COVER MATRIX**

| CATCH BASIN SIZE | INLET COVER TYPE   | ALL A'S | ALL B'S | BW | C | F | ALL H'S | S | T | V V-B | VV-B | WM | Z |
|------------------|--------------------|---------|---------|----|---|---|---------|---|---|-------|------|----|---|
|                  | OPENING SIZE (FT.) |         |         |    |   |   |         |   |   |       |      |    |   |
| 3-FT             | 2 X 2              | X       | X       |    |   |   |         | X |   | X     |      |    |   |
|                  | 2 DIA.             |         |         |    | X |   |         |   |   |       |      |    | X |
| 4-FT TO 6-FT     | 2 X 2              | X       | X       |    |   |   |         | X |   | X     |      |    |   |
|                  | 2 X 2.5            |         |         | X  |   |   |         | X | X | X     |      | X  |   |
|                  | 2 DIA.             |         |         |    | X |   |         |   |   |       |      |    | X |
|                  | 2 X 3              |         |         |    |   | X |         |   |   |       |      |    |   |
|                  | 2.5 X 3            |         |         |    |   | X |         |   |   |       |      |    |   |
|                  | 2 X 3.5*           |         |         |    |   |   |         |   |   |       | X*   |    |   |

\* REQUIRES 5-FT DIAMETER OR LARGER STRUCTURE

**PIPE MATRIX**

| CATCH BASIN SIZE | MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES |                     |
|------------------|--------------------------------------------|---------------------|
|                  | 180° SEPARATION (IN)                       | 90° SEPARATION (IN) |
| 3-FT             | 15                                         | 12                  |
| 4-FT             | 24                                         | 18                  |
| 5-FT             | 36                                         | 24                  |
| 6-FT             | 42                                         | 30                  |

**CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-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 CATCH BASIN 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.

PRECAST REINFORCED CONCRETE CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED CONCRETE FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES. CONCENTRIC CONE TOPS SHALL BE USE ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF 1/2 INCH AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

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.

CONCRETE BLOCK WILL NOT BE PERMITTED FOR STRUCTURES GREATER THAN 4 FEET IN DIAMETER.

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.

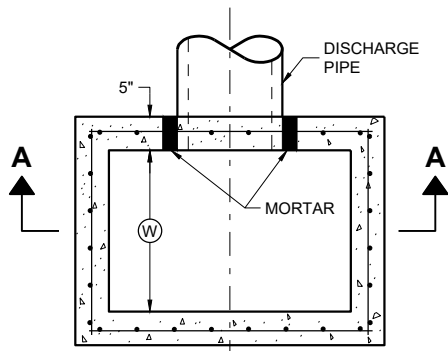
FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "D".

- ① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT AND 7 INCHES FOR 6-FT DIAMETER PRECAST CATCH BASINS.
- ② FOR PRECAST CATCH BASINS AND REINFORCED CONCRETE BASES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- ③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".
- ④ 1" CONCRETE KEY POURED AFTER INSTALLATION. 2' SUMP MEASURED FROM TOP OF KEY.
- ⑤ JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 OR RUBBER GASKETS CONFROMING TO ASTM C443.

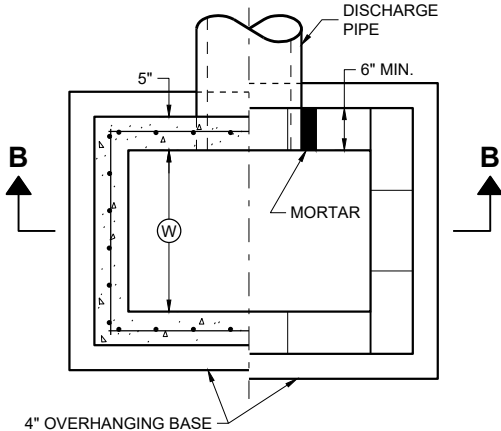
**CATCH BASINS, 3-FT.  
4-FT., 5 FT., AND  
6-FT. DIAMETER**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

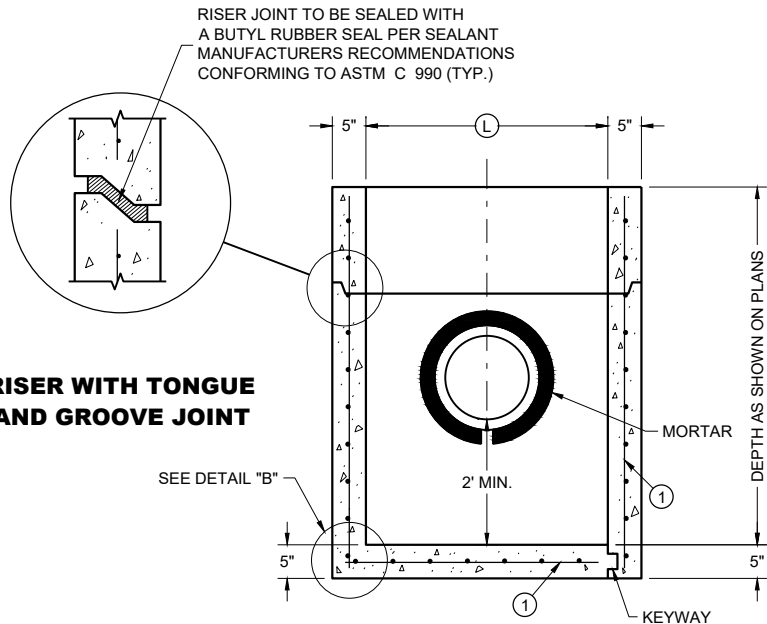
APPROVED  
December 2023 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA UNIT SUPERVISOR



PLAN VIEW



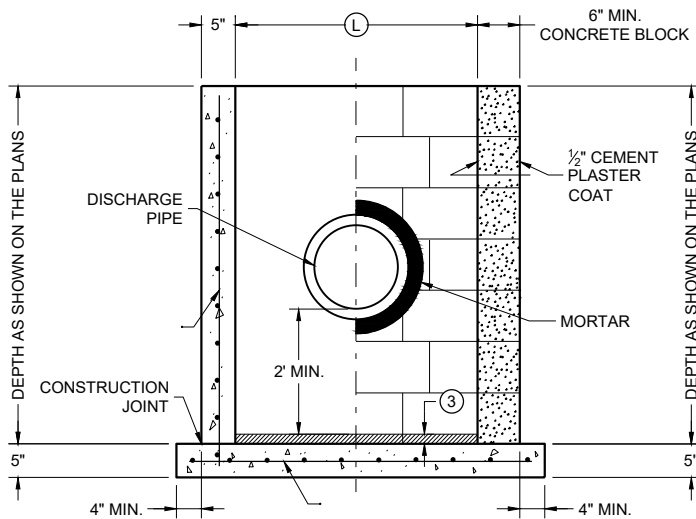
PLAN VIEW



PRECAST REINFORCED  
CONCRETE WITH  
MONOLITHIC BASE

PRECAST REINFORCED  
CONCRETE WITH  
INTEGRAL BASE

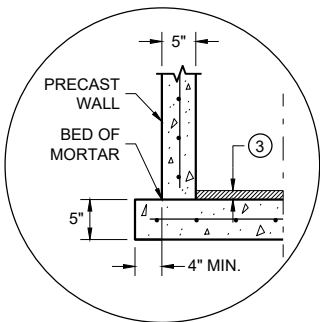
SECTION A - A



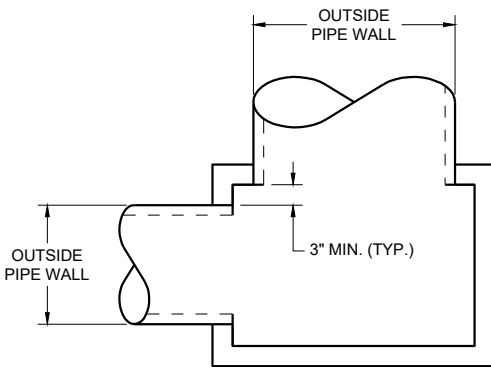
CAST IN PLACE  
REINFORCED  
CONCRETE

CONCRETE BLOCK ON  
CAST IN PLACE OR  
PRECAST REINFORCED  
CONCRETE BASE ①

SECTION B - B



SEPARATE PRECAST REINFORCED  
CONCRETE BASE OPTION  
DETAIL "B"



DETAIL "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.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST CATCH BASIN 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 CATCH BASIN 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" CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

- ① FOR PRECAST CATCH BASINS AND REINFORCED CONCRETE BASES 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.
- ③ 1" CONCRETE KEY POURED AFTER INSTALLATION. 2' SUMP MEASURED FROM TOP OF KEY.

## CATCH BASIN COVER MATRIX

| CATCH BASIN<br>SIZE | WIDTH<br>(W) (FT.) | LENGTH<br>(L) (FT.) | INLET COVER TYPE |         |
|---------------------|--------------------|---------------------|------------------|---------|
|                     |                    |                     | F                | ALL H'S |
| 2 X 3-FT            | 2                  | 3                   |                  | X       |
| 2.5 X 3-FT          | 2.5                | 3                   | X                |         |

## PIPE MATRIX

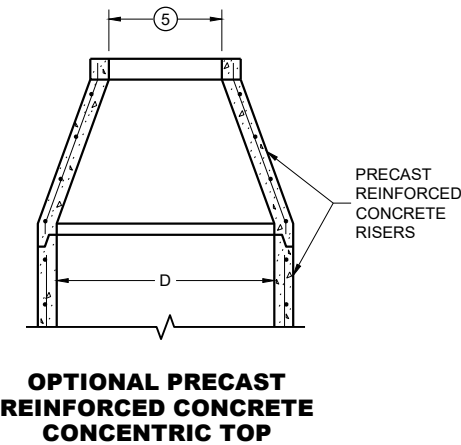
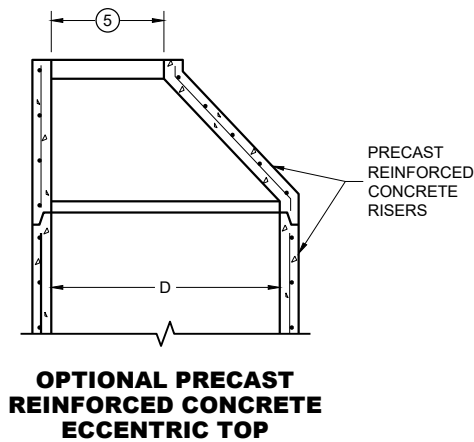
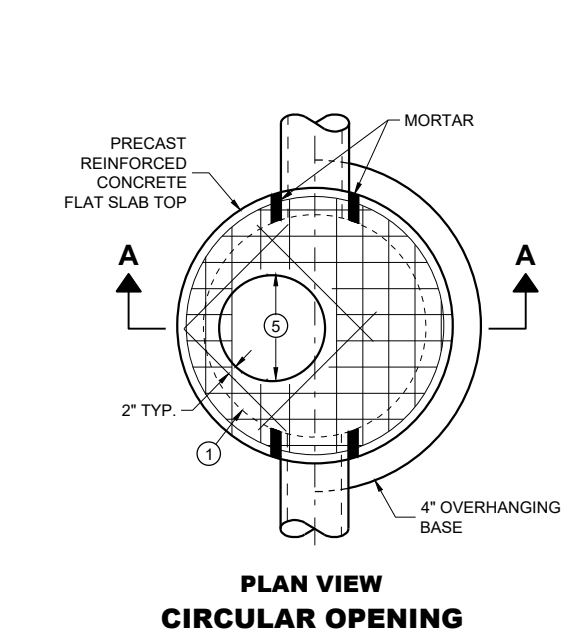
| CATCH<br>BASIN<br>SIZE | MAXIMUM INSIDE<br>PIPE DIAMETER (IN) |                 |
|------------------------|--------------------------------------|-----------------|
|                        | WIDTH (W) (IN)                       | LENGTH (L) (IN) |
| 2 X 3-FT               | 12                                   | 24              |
| 2.5 X 3-FT             | 18                                   | 24              |

## CATCH BASINS 2 X 3-FT AND 2.5 X 3-FT

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
December 2023 /S/ RODNEY TAYLOR  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA UNIT SUPERVISOR

## CATCH BASINS 2X3-FT AND 2.5X3-FT



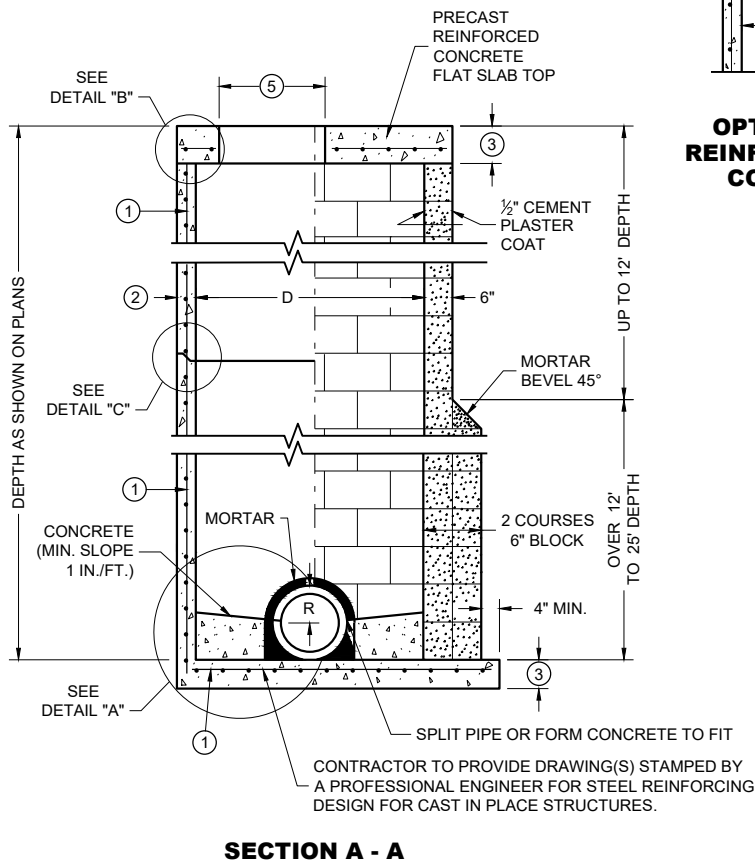
**MANHOLE COVER OPENING MATRIX**

| MANHOLE COVER<br>OPENING<br>SIZE (FT.) | MANHOLE COVER<br>TYPE | C | ALL JS | K | L | M |
|----------------------------------------|-----------------------|---|--------|---|---|---|
| 2 DIA.                                 | 5                     | X | X      |   | X |   |
| 3 DIA.                                 |                       |   |        | X |   | X |

**PIPE MATRIX**

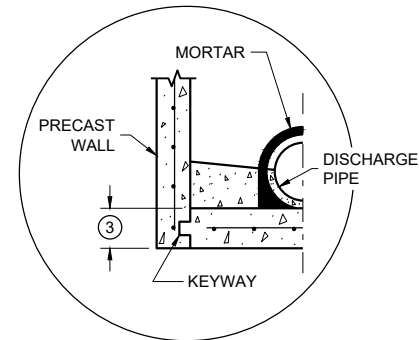
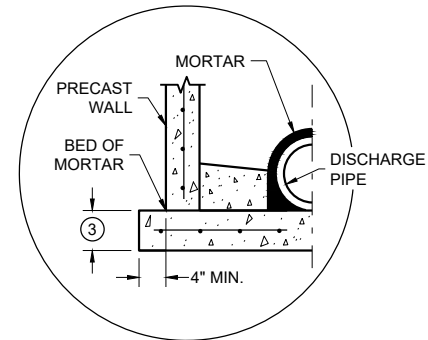
| MANHOLE<br>SIZE<br>(DIA.) | MAXIMUM INSIDE PIPE DIAMETER<br>FOR TWO PIPES |                        | MINIMUM<br>WALL<br>THICKNESS<br>(IN) | MINIMUM<br>PRECAST<br>FLAT SLAB TOP<br>AND BASE<br>THICKNESS |
|---------------------------|-----------------------------------------------|------------------------|--------------------------------------|--------------------------------------------------------------|
|                           | 180°<br>SEPARATION (IN)                       | 90°<br>SEPARATION (IN) |                                      |                                                              |
| 3-FT                      | 15                                            | 12                     | 4                                    | 6                                                            |
| 4-FT                      | 24                                            | 18                     | 4                                    | 6                                                            |
| 5-FT                      | 36                                            | 24                     | 5                                    | 8                                                            |
| 6-FT                      | 42                                            | 36                     | 6                                    | 8                                                            |
| 7-FT                      | 48                                            | 36/42 *                | 7                                    | 8                                                            |
| 8-FT                      | 60                                            | 42                     | 8                                    | 8                                                            |
| 9-FT                      | 66                                            | 54                     | 9                                    | 10                                                           |
| 10-FT                     | 72                                            | 60                     | 10                                   | 10                                                           |

\*A 36" PIPE AND A 42" PIPE CAN BE PLACED WITHIN 90 DEGREES.  
SEE MINIMUM HORIZONTAL PIPE SEPARATION DETAIL.

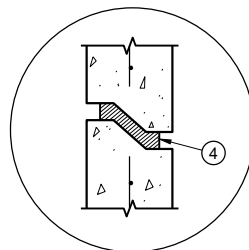
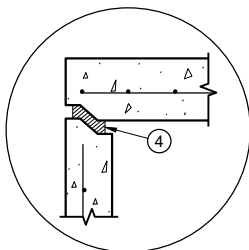
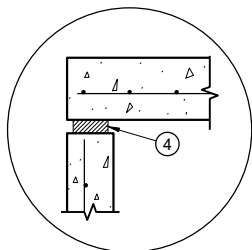


**PRECAST REINFORCED  
CONCRETE WITH  
MONOLITHIC BASE**

**CONCRETE BLOCK WITH  
CAST IN PLACE OR  
PRECAST REINFORCED  
CONCRETE BASE**

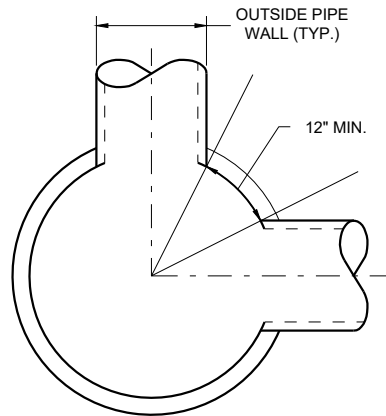


**DETAIL "A"**



**DETAIL "B"**

**DETAIL "C"**



**DETAIL "D"**

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STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL IMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF 1/2 INCH AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

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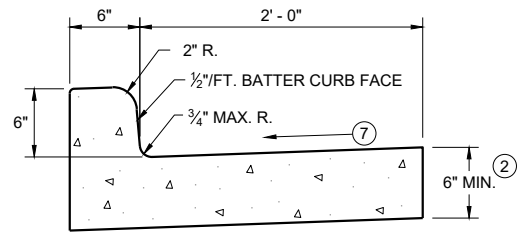
FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "D".

- 1 FOR PRECAST MANHOLES AND REINFORCED CONCRETE BASES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- 2 SEE PIPE MATRIX TABLE FOR MINIMUM WALL THICKNESS FOR PRECAST MANHOLES
- 3 SEE PIPE MATRIX TABLE FOR MINIMUM THICKNESS OF PRECAST FLAT SLAB TOPS AND BASES.
- 4 JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 OR RUBBER GASKETS CONFORMING TO ASTM C443.
- 5 SEE MANHOLE COVER OPENING MATRIX.

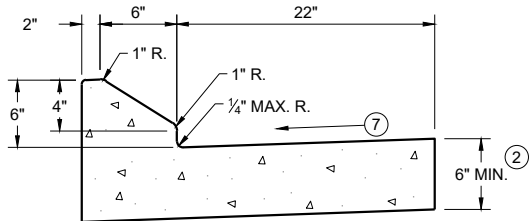
**MANHOLES, 3-FT, 4-FT  
5-FT, 6-FT, 7-FT, 8-FT, 9-FT  
AND 10-FT DIAMETER**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

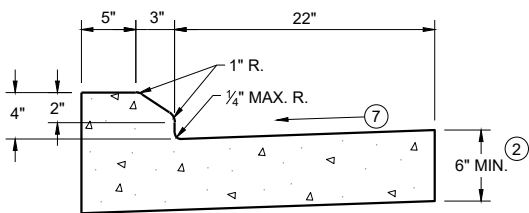
APPROVED  
December 2023 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA UNIT SUPERVISOR



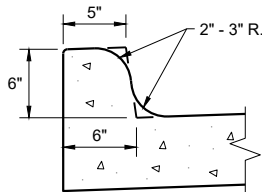
TYPES A<sup>①</sup> & D



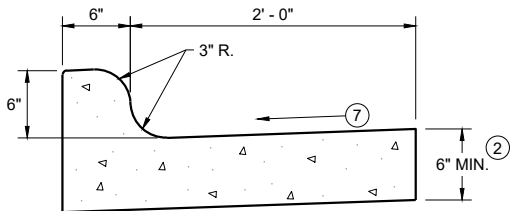
6" SLOPED CURB TYPES G<sup>①</sup> & J



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

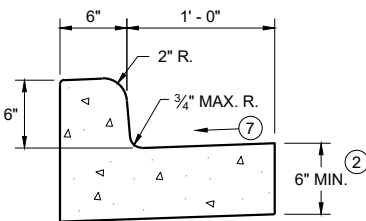


TYPES K<sup>①</sup> & L  
(OPTIONAL CURB SHAPE)



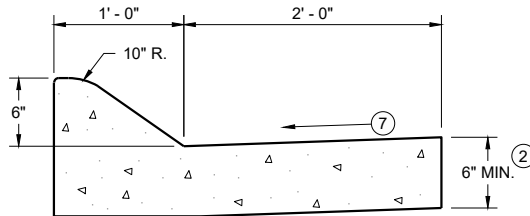
TYPES K<sup>①</sup> & L

CONCRETE CURB AND GUTTER 30"

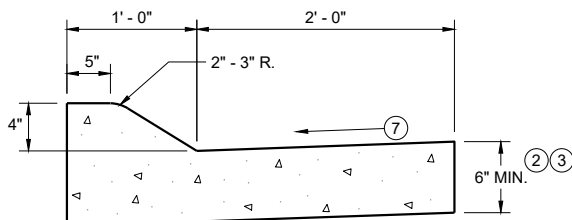


TYPES A<sup>①</sup> & D

CONCRETE CURB AND GUTTER 18"

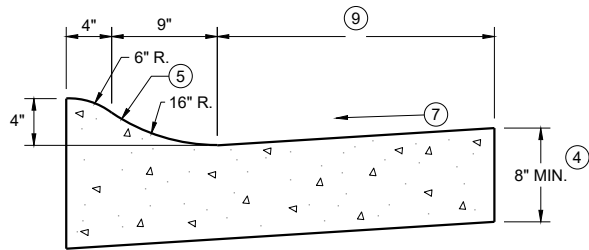


6" SLOPED CURB TYPES A<sup>①</sup> & D



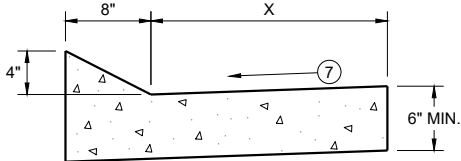
4" SLOPED CURB TYPES A<sup>①</sup> & D

CONCRETE CURB AND GUTTER 36"



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

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

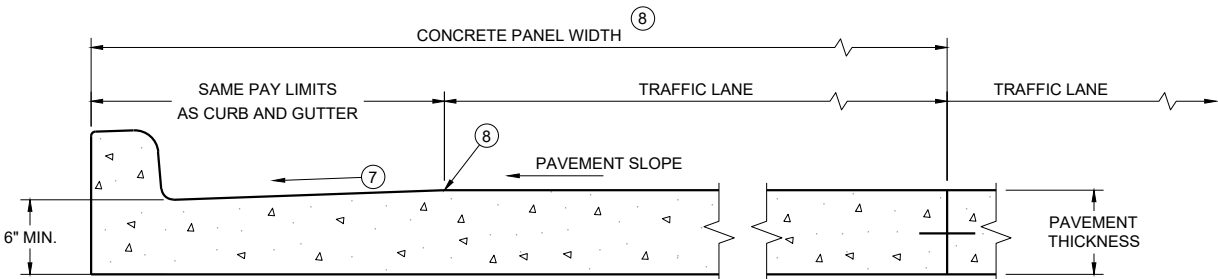


TYPES TBT & TBTT<sup>①</sup>

CONCRETE CURB AND GUTTER

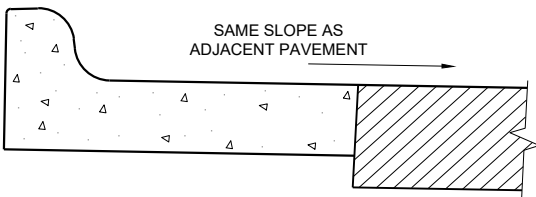
PAVEMENT THICKNESS  
AND MAXIMUM CONCRETE  
PANEL WIDTH TABLE

| 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.

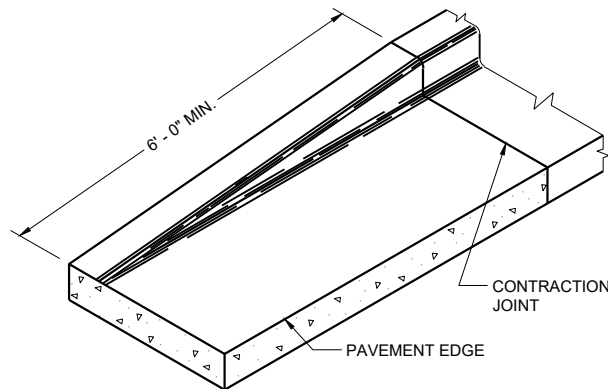
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

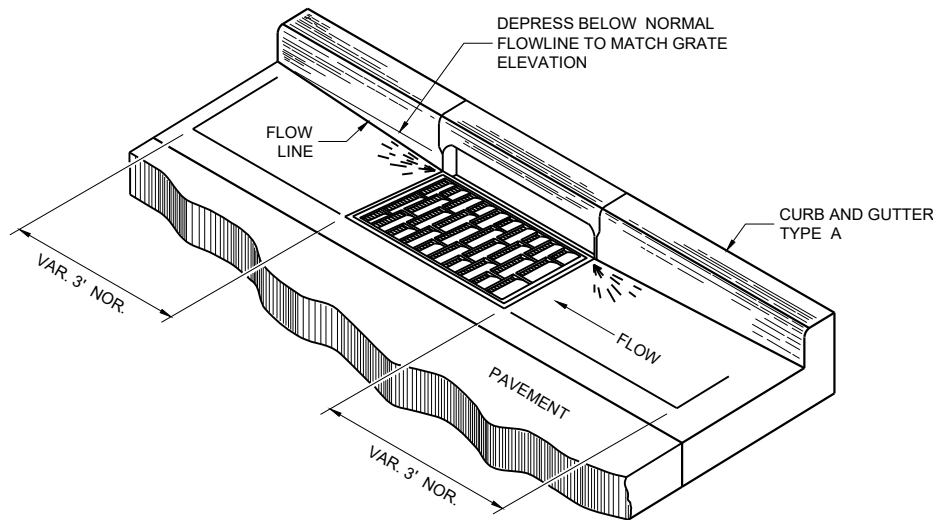
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH 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

CONCRETE CURB AND GUTTER

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

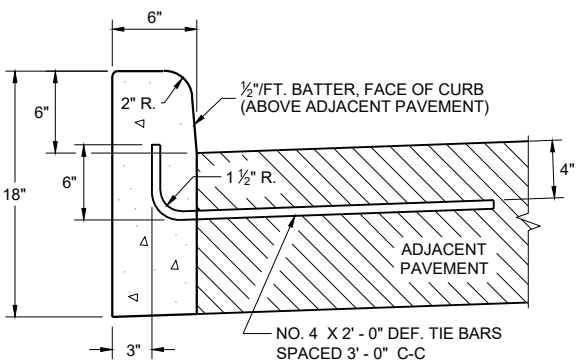


END SECTION CURB AND GUTTER

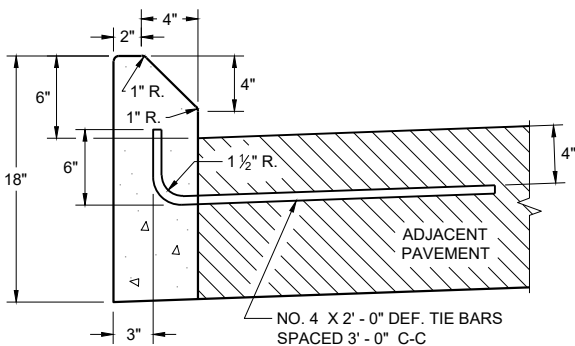


DETAIL OF CURB AND GUTTER AT INLETS

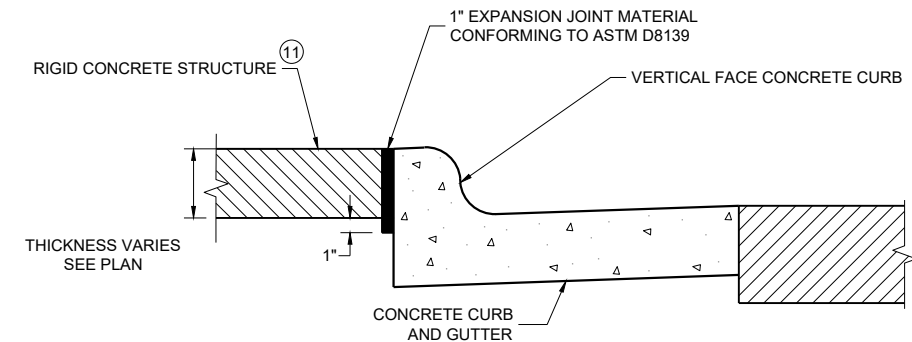
(TYPICAL H INLET COVER SHOWN)



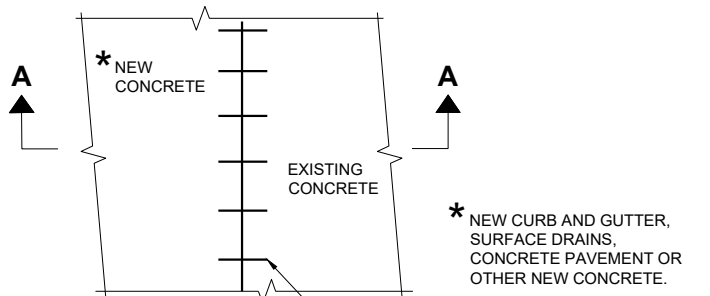
TYPES A<sup>①</sup> & D



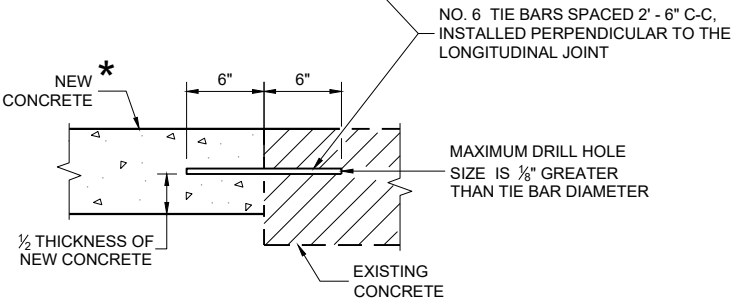
TYPES G<sup>①</sup> & J  
CONCRETE CURB



EXPANSION JOINT DETAIL FOR VERTICAL CURB ABUTTING A RIGID STRUCTURE<sup>⑪</sup>



PLAN VIEW



SECTION A - A  
TIE BARS DRILLED INTO EXISTING PAVEMENT

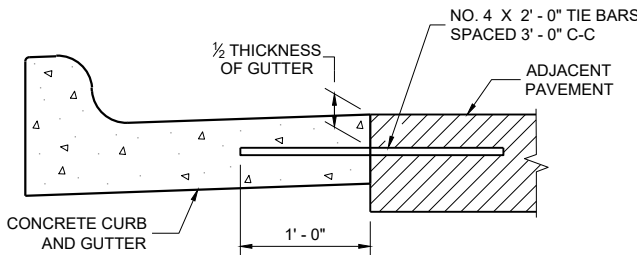
GENERAL NOTES

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

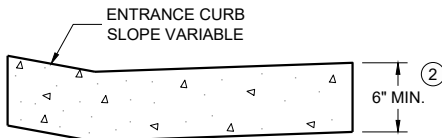
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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.
- ⑩ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.
- ⑪ PLACE 1" THICK EXPANSION JOINT MATERIAL BETWEEN VERTICAL FACE CURB TYPES EXTENDING FROM THE TOP OF CURB TO 1 INCH BELOW THE ADJOINING CONCRETE SURFACE. RIGID CONCRETE STRUCTURES INCLUDE RAISED CONCRETE MEDIANS, CONCRETE SAFETY ISLANDS, SPLITTER ISLANDS, OR LOCATIONS IDENTIFIED ON THE PLANS.



TYPICAL TIE BAR LOCATION<sup>①</sup>



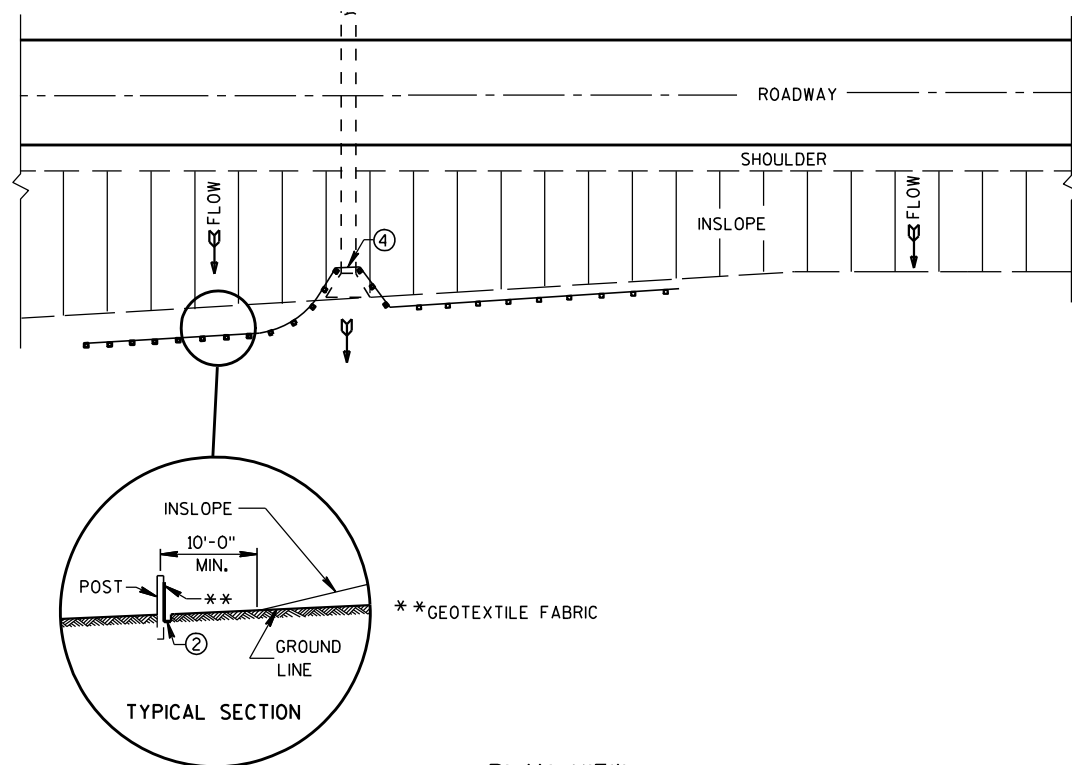
DRIVEWAY ENTRANCE CURB<sup>⑩</sup>  
(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES  
AND CURB AND GUTTER  
APPLICATIONS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

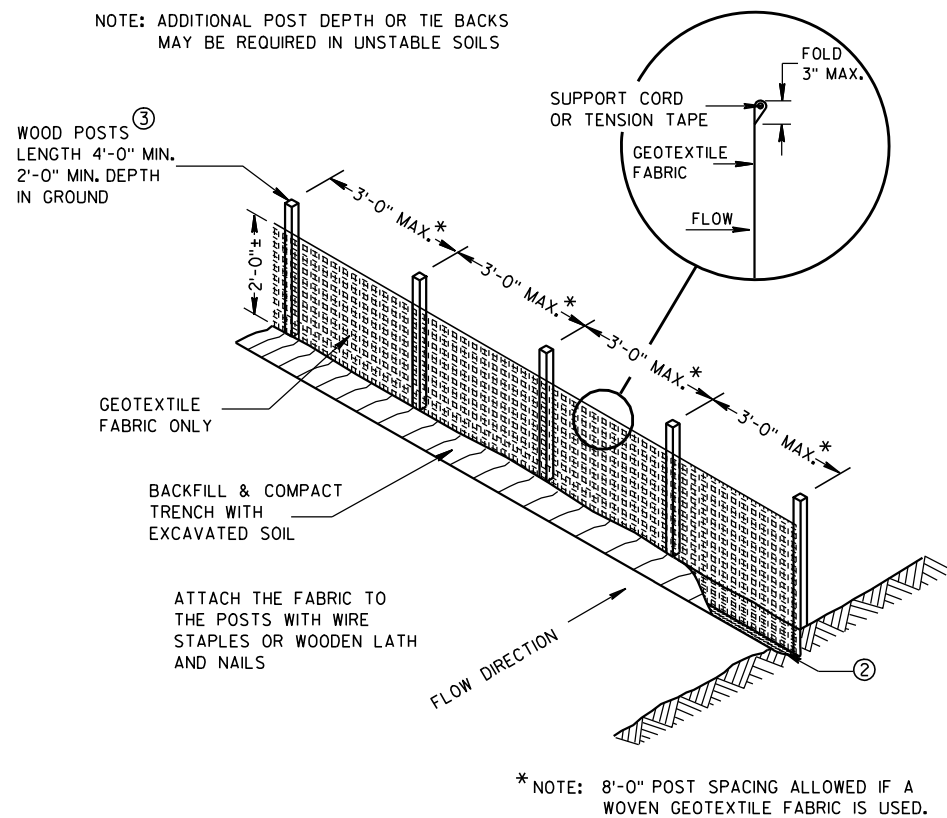
APPROVED  
May 2023  
DATE  
/S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR

FHWA

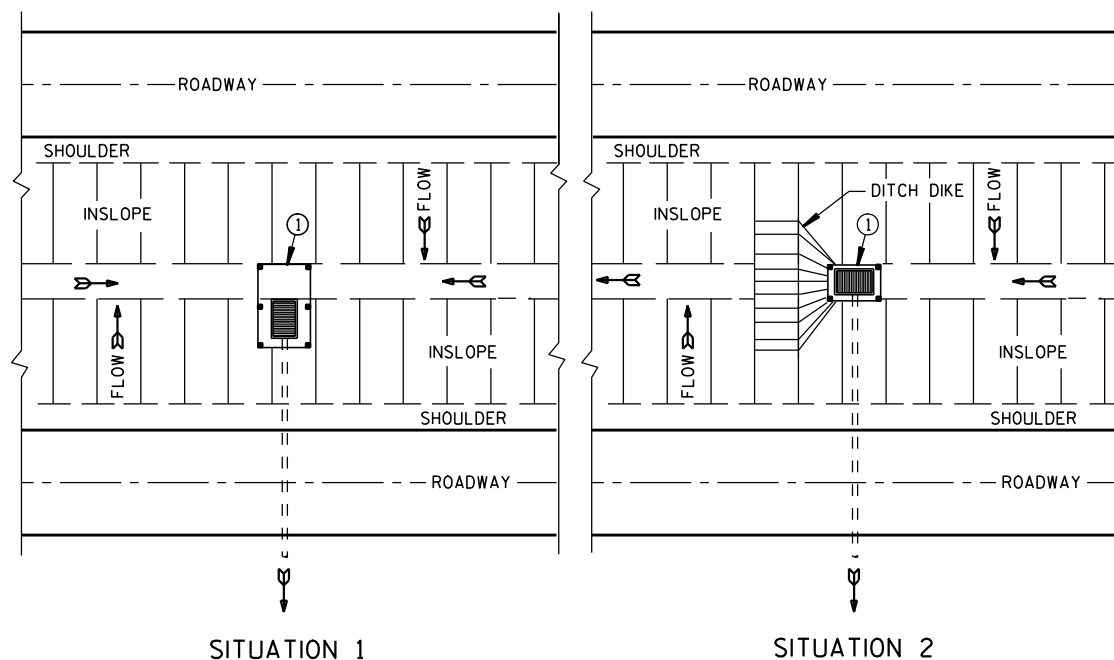


PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE

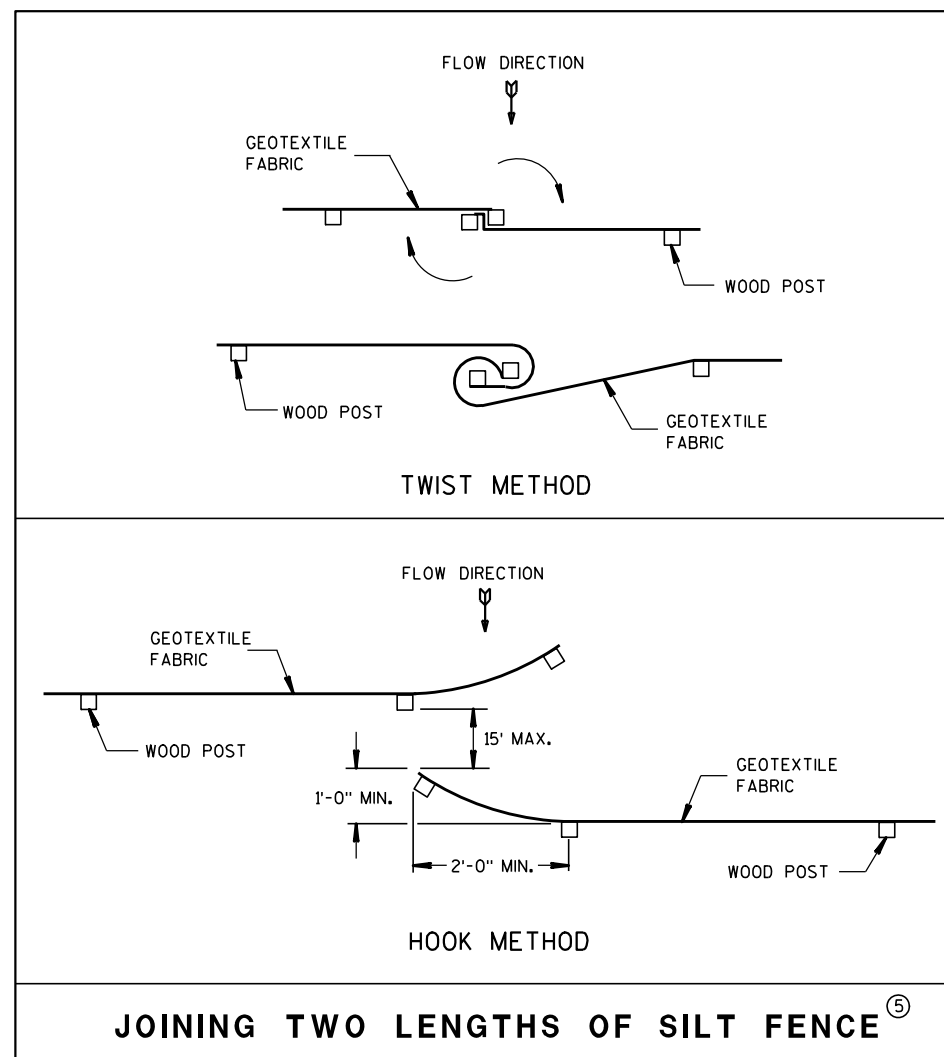
NOTE: ADDITIONAL POST DEPTH OR TIE BACKS  
MAY BE REQUIRED IN UNSTABLE SOILS



SILT FENCE



PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

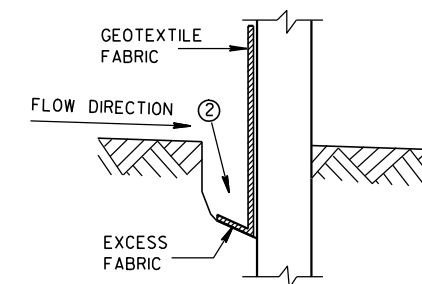


JOINING TWO LENGTHS OF SILT FENCE<sup>⑤</sup>

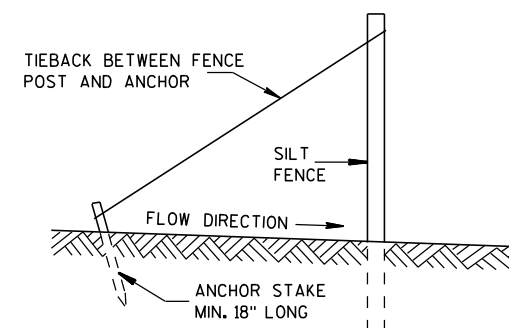
## GENERAL NOTES

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

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



TRENCH DETAIL



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

## SILT FENCE

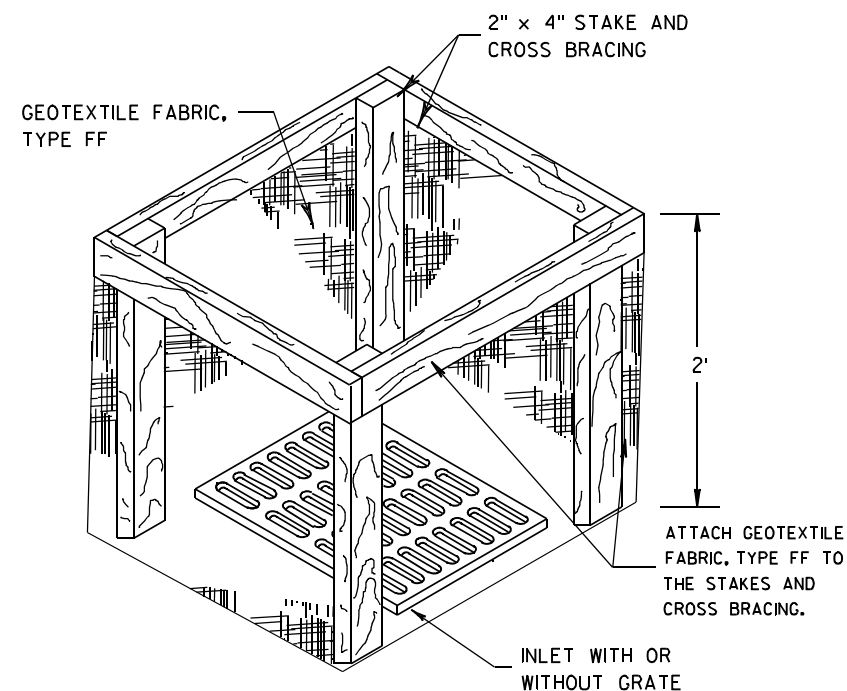
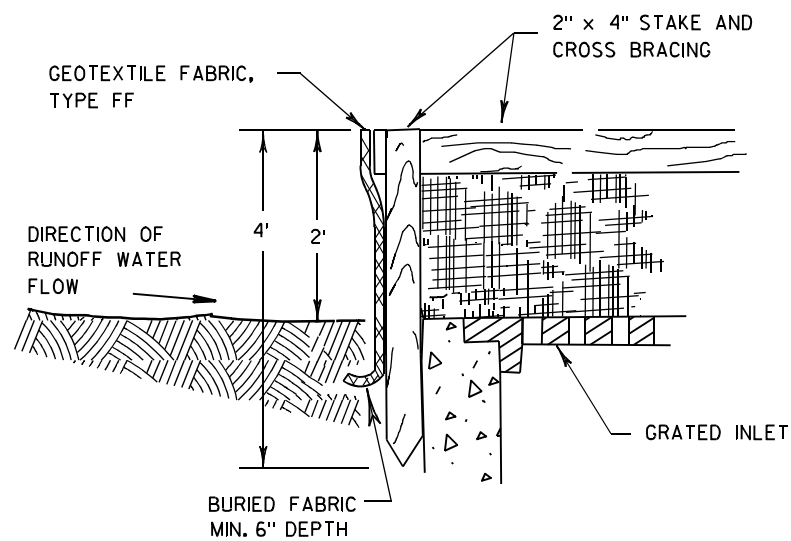
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

4-29-05  
DATE

FHWA

/S/ Beth Cannestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER



**INLET PROTECTION, TYPE A**

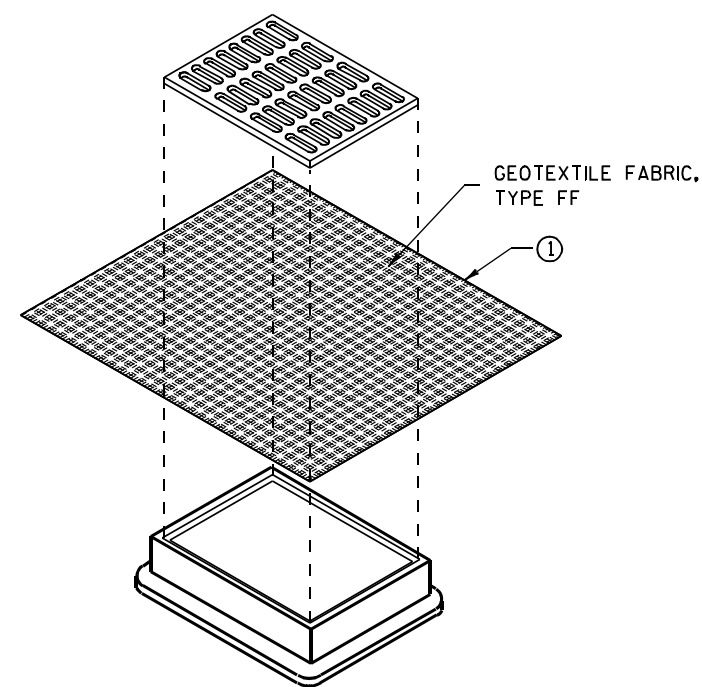
**GENERAL NOTES**

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

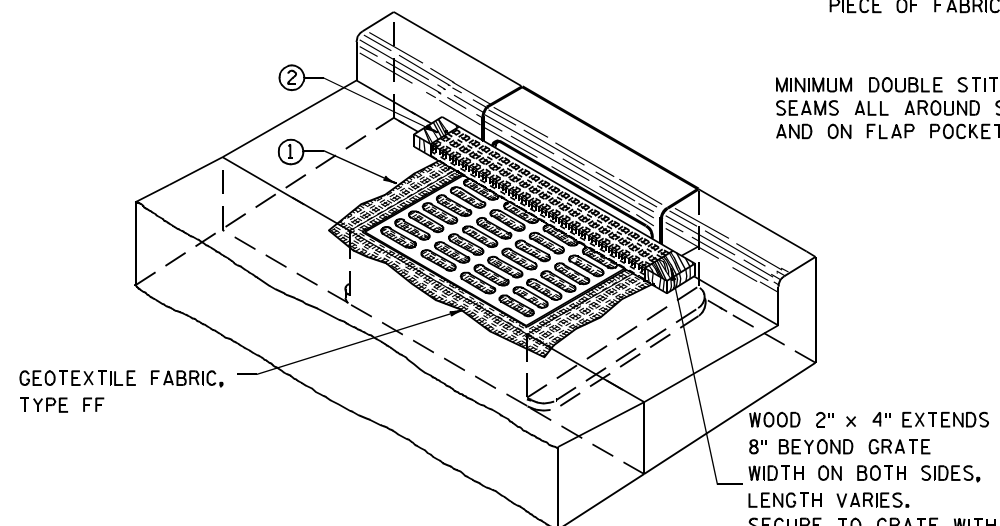
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B  
(WITHOUT CURB BOX)**

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



**INLET PROTECTION, TYPE C (WITH CURB BOX)**

**INSTALLATION NOTES**

**TYPE B & C**

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

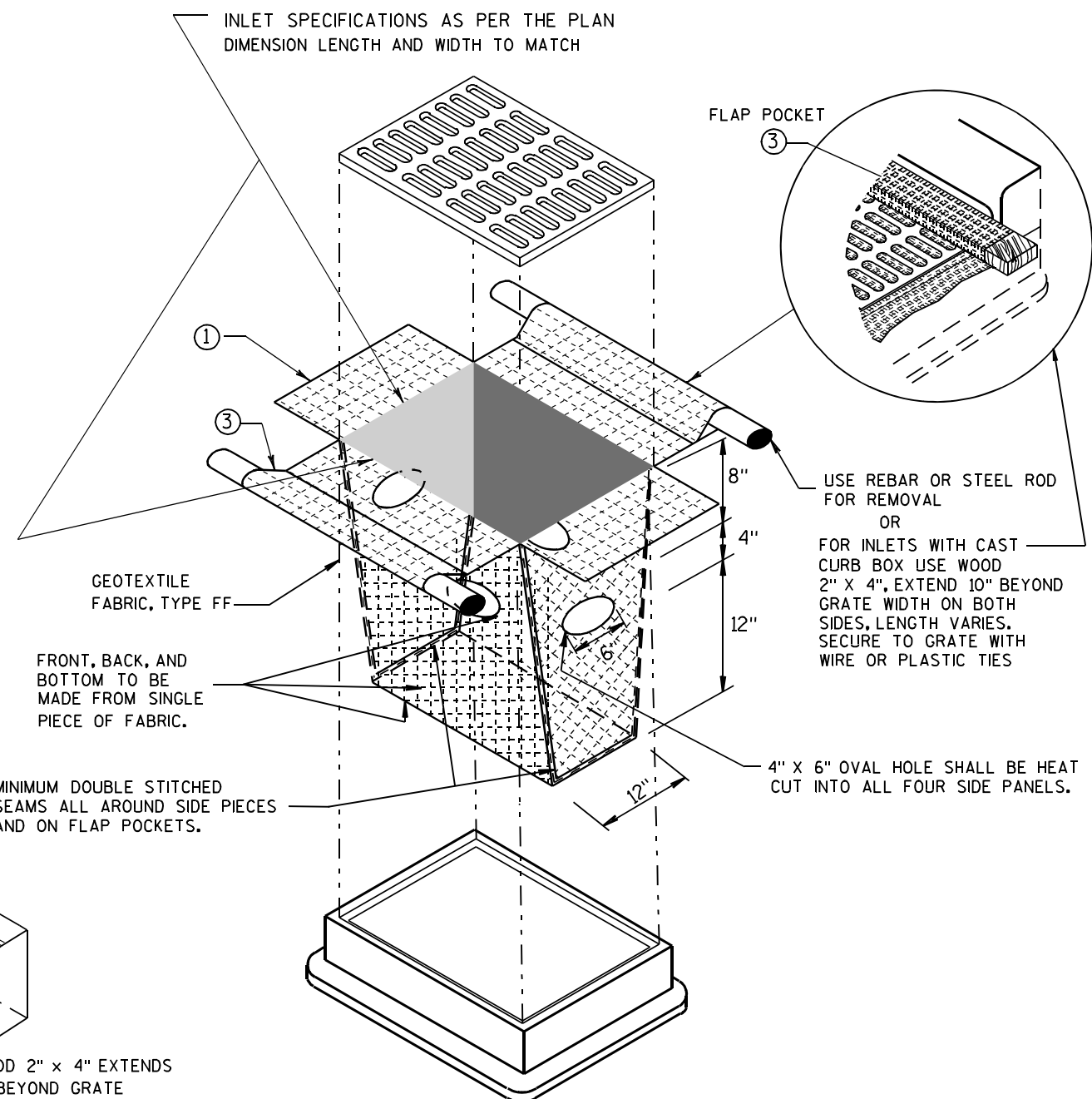
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

**TYPE D**

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

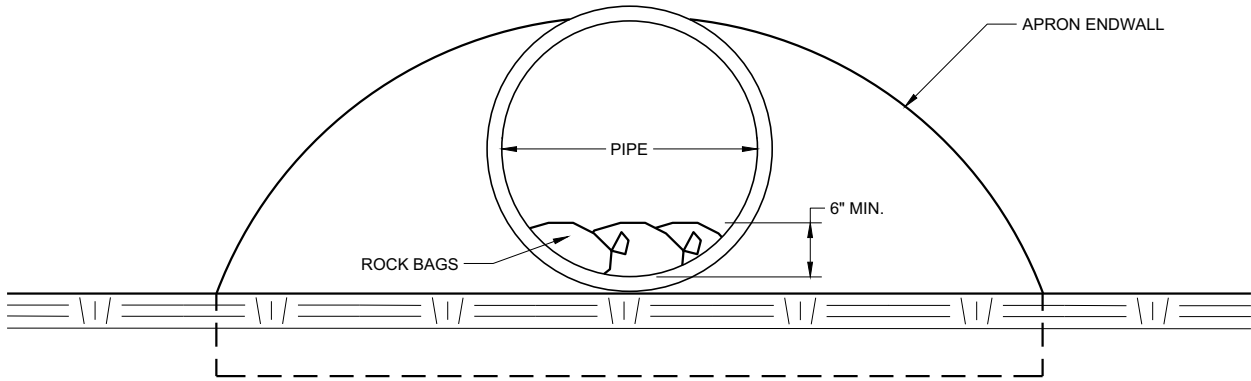
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



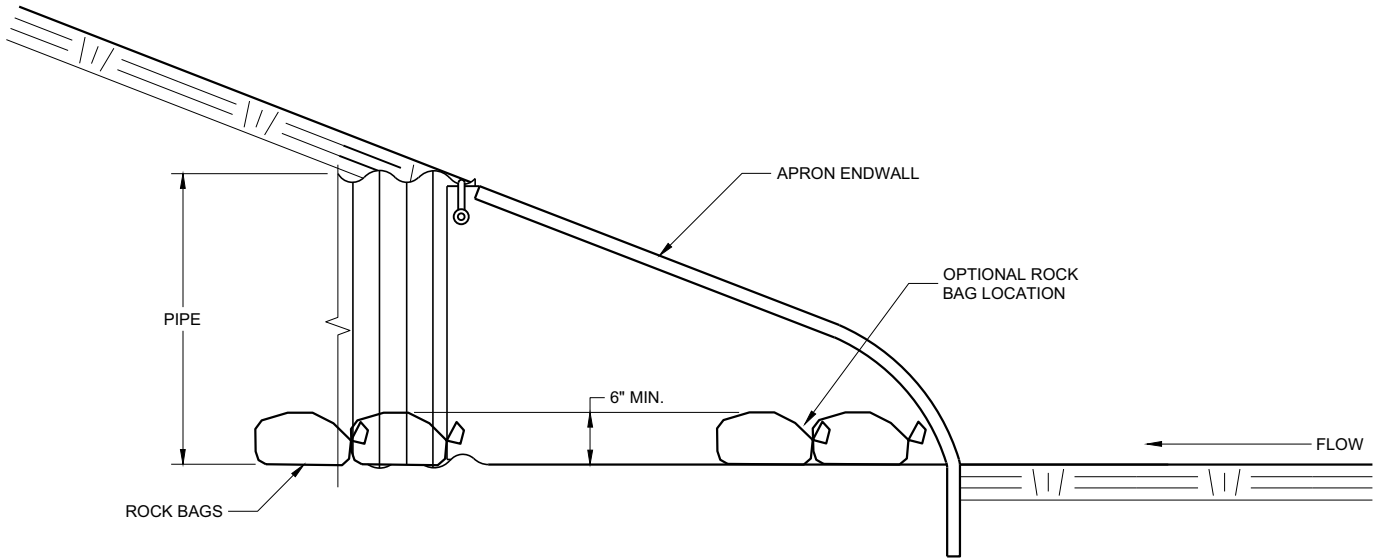
**INLET PROTECTION, TYPE D**

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ②)

|                                                            |                                                          |
|------------------------------------------------------------|----------------------------------------------------------|
| <b>INLET PROTECTION<br/>TYPE A, B, C, AND D</b>            |                                                          |
| <b>STATE OF WISCONSIN<br/>DEPARTMENT OF TRANSPORTATION</b> |                                                          |
| APPROVED<br>10/16/02<br>DATE                               | /S/ Beth Cannestra<br>CHIEF ROADWAY DEVELOPMENT ENGINEER |
| FHWA                                                       |                                                          |



END VIEW



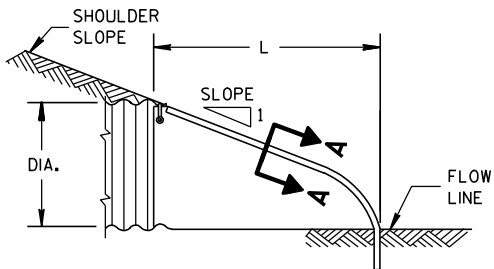
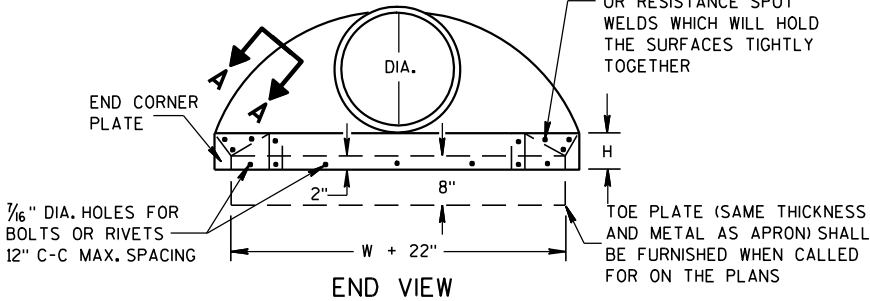
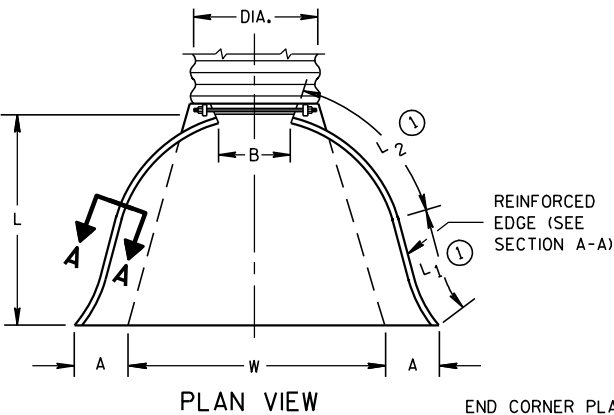
SIDE VIEW

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

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

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

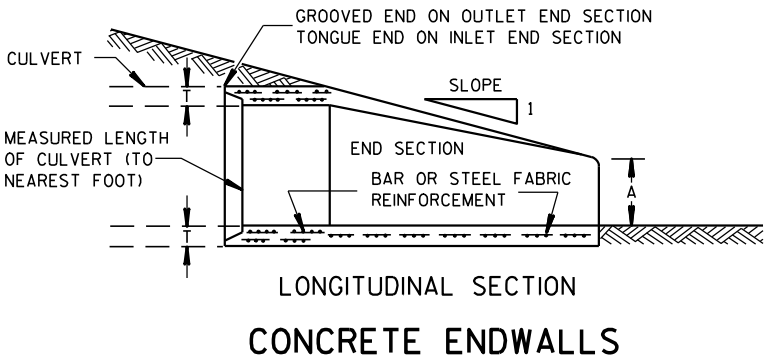
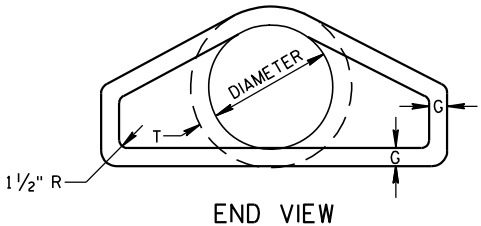
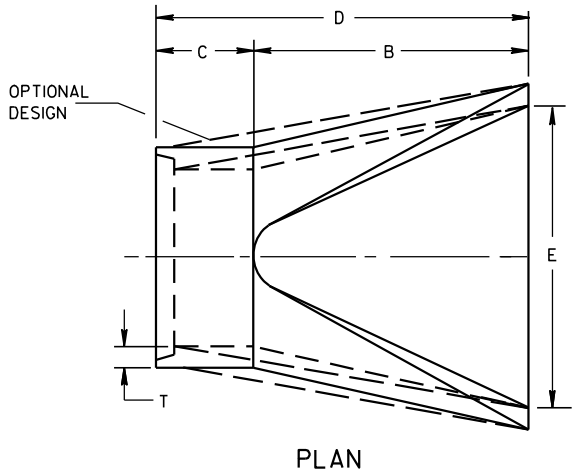
\* EXCEPT CENTER PANEL  
SEE GENERAL NOTES



SIDE ELEVATION  
METAL ENDWALLS

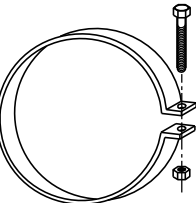
| REINFORCED CONCRETE APRON ENDWALLS |                     |        |        |           |            |     |       |                  |  |  |  |  |
|------------------------------------|---------------------|--------|--------|-----------|------------|-----|-------|------------------|--|--|--|--|
| PIPE DIA.<br>(IN.)                 | DIMENSIONS (Inches) |        |        |           |            |     |       | APPROX.<br>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

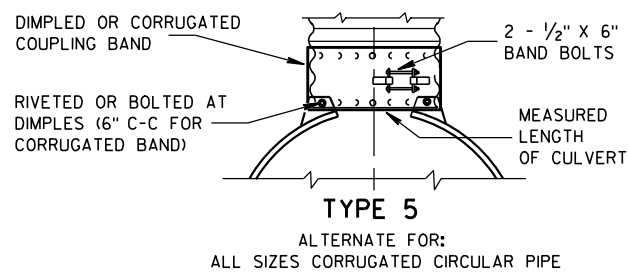
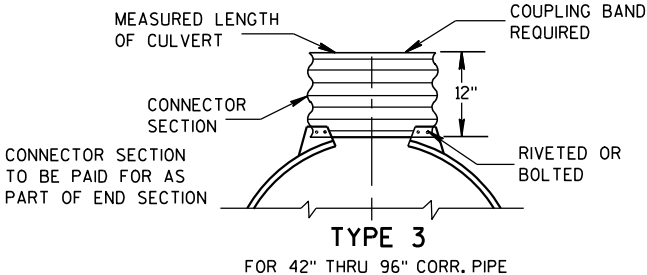
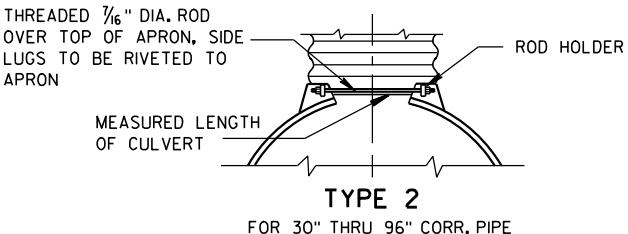
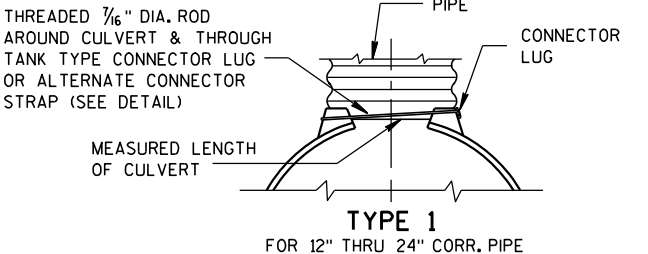


LONGITUDINAL SECTION  
CONCRETE ENDWALLS

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



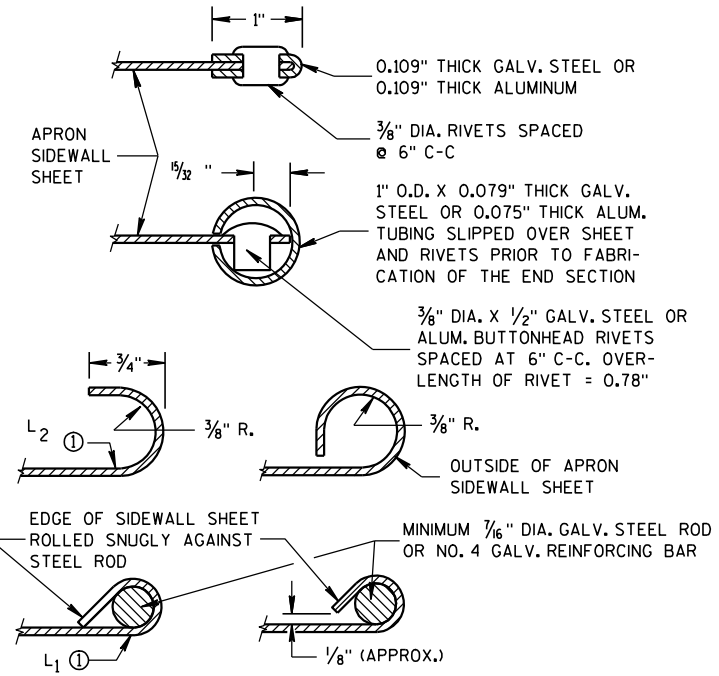
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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 VISE 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.

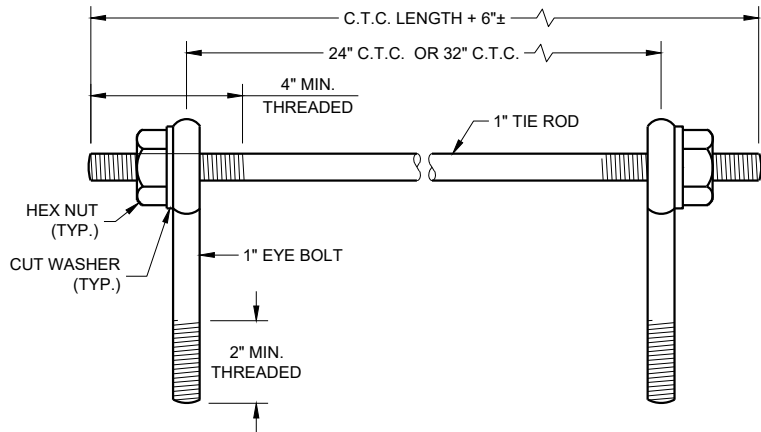
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

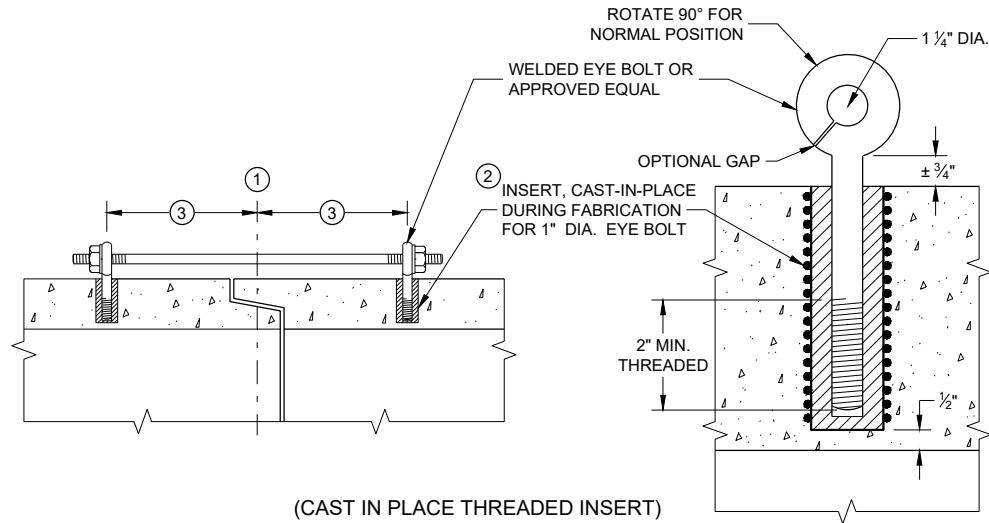
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

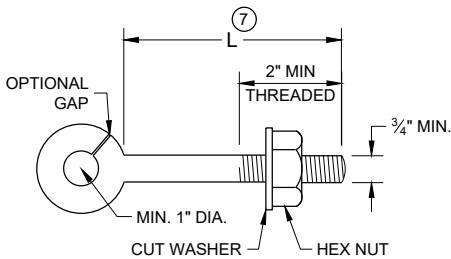
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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.

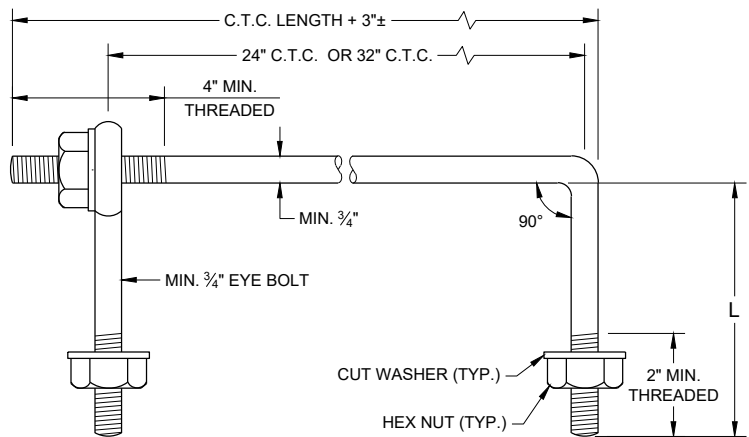
JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

- 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.

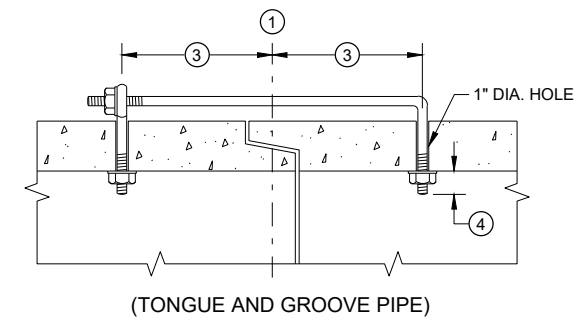


EYE BOLT 7

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" OR 38" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



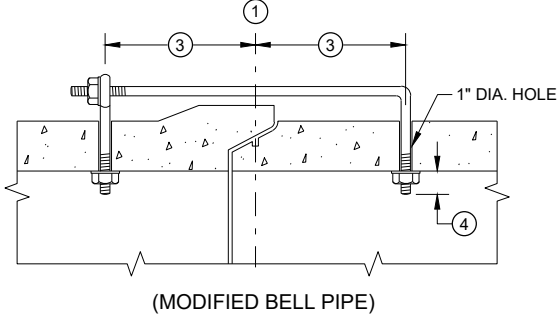
EYE BOLT AND TIE ROD



LONGITUDINAL SECTION

(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

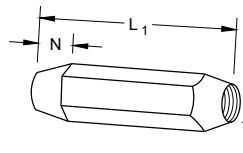


(MODIFIED BELL PIPE)

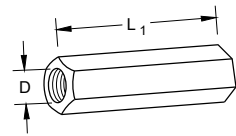
ADJUSTABLE TIE ROD TABLE

| 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 1/16 |

DIMENSIONS SHOWN ARE IN INCHES

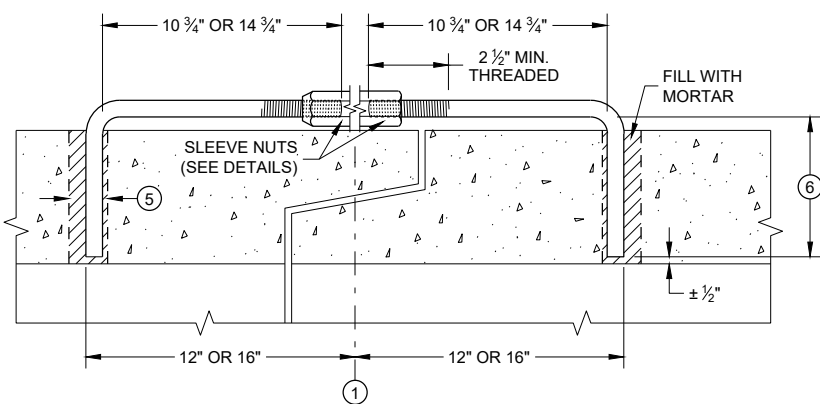


TAPERED



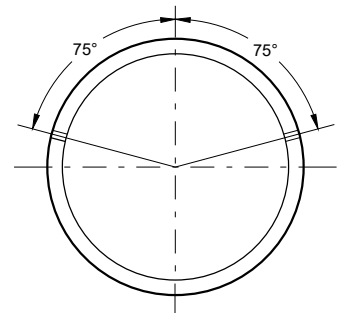
PLAIN

RIGHT AND LEFT THREADS  
SLEEVE NUTS



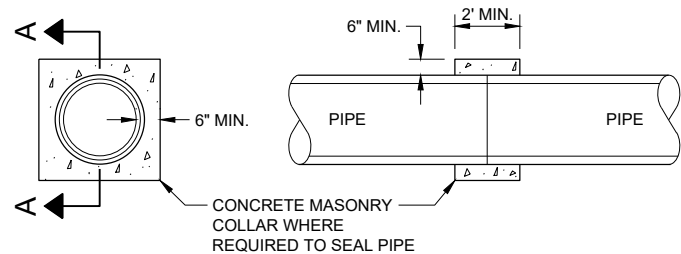
LONGITUDINAL SECTION

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



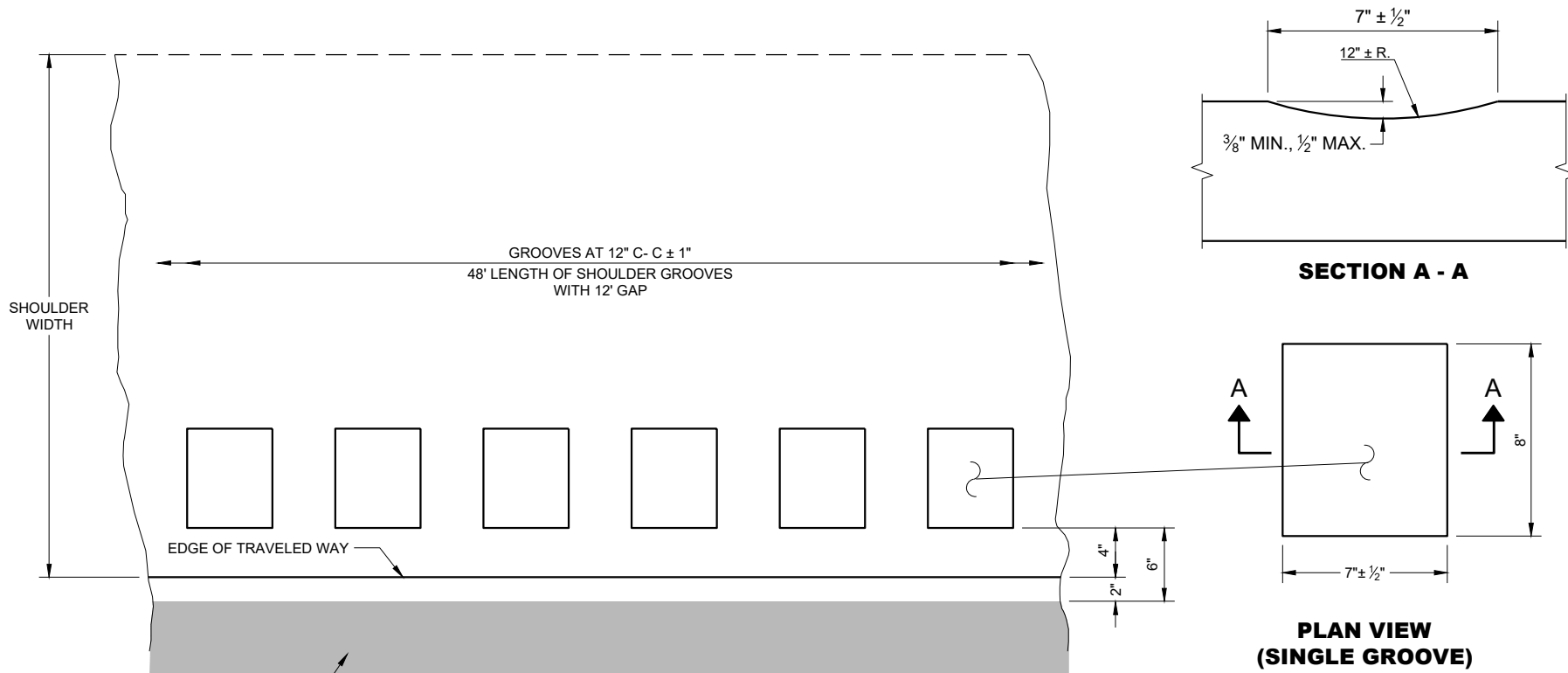
SECTION A - A

CONCRETE COLLAR DETAIL

## JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

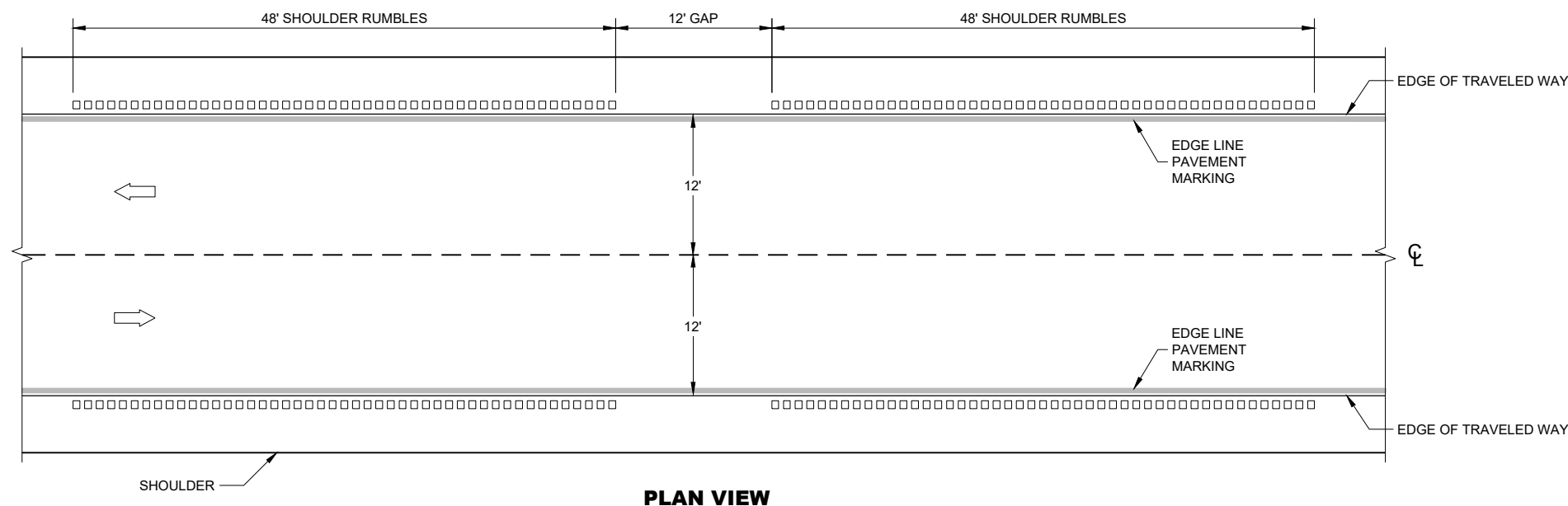
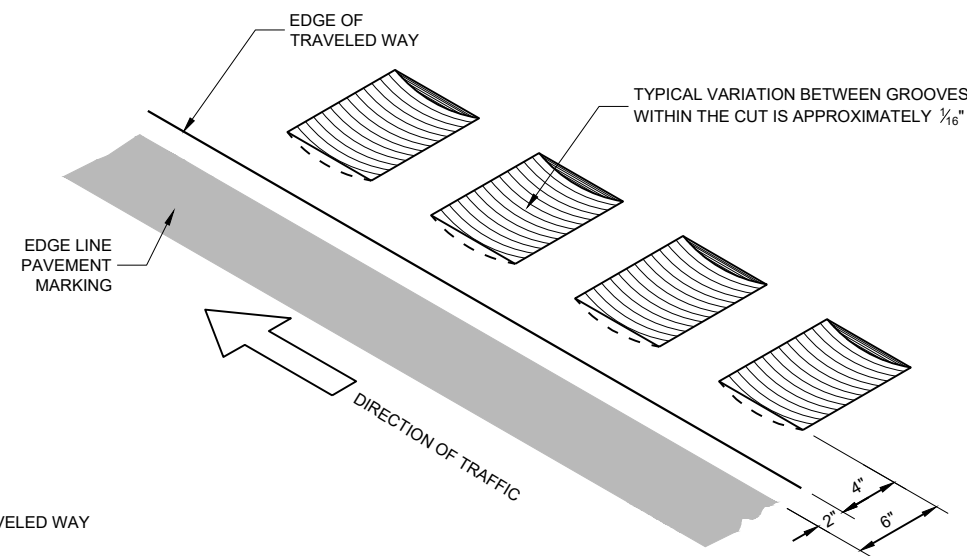
APPROVED  
November 2021 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA



**GENERAL NOTES**

DO NOT MILL SHOULDER GROOVES THROUGH INTERSECTIONS, MARKED CROSSWALKS, NON-MOTORIZED PATH CROSSINGS, ETC. REFER TO SDD 13A10 SHEETS "g" AND "h".

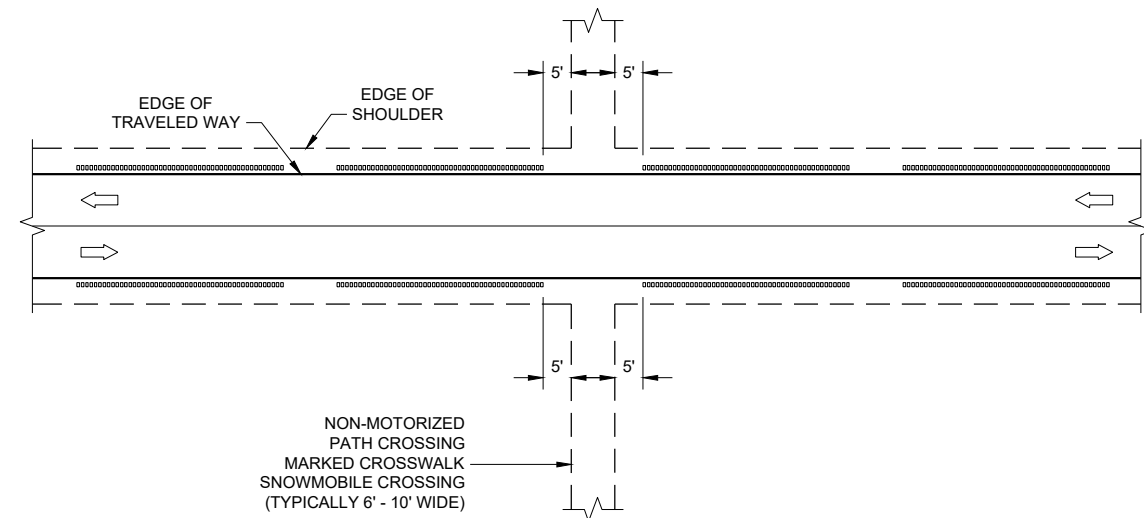
SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS WHEN DIRECTED BY THE ENGINEER.



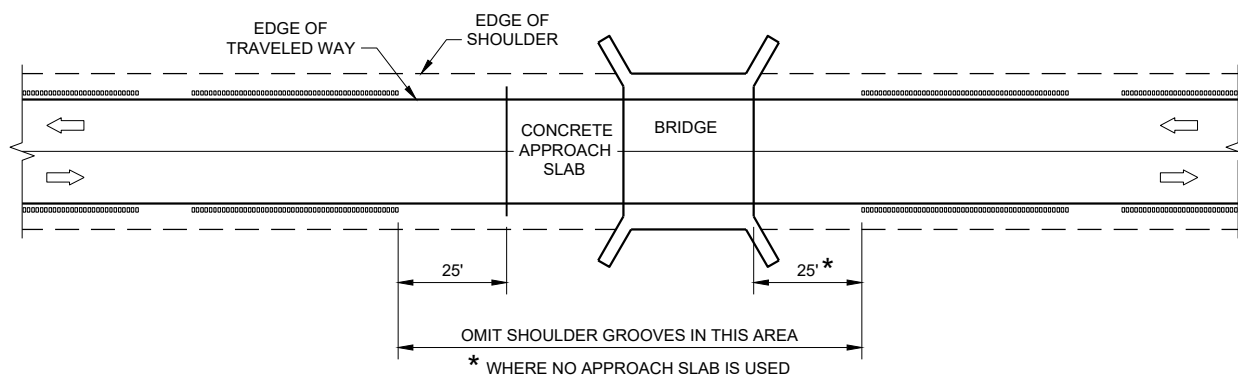
**SHOULDER RUMBLE STRIPS - ASPHALT**

**SHOULDER RUMBLE STRIPS ASPHALT**

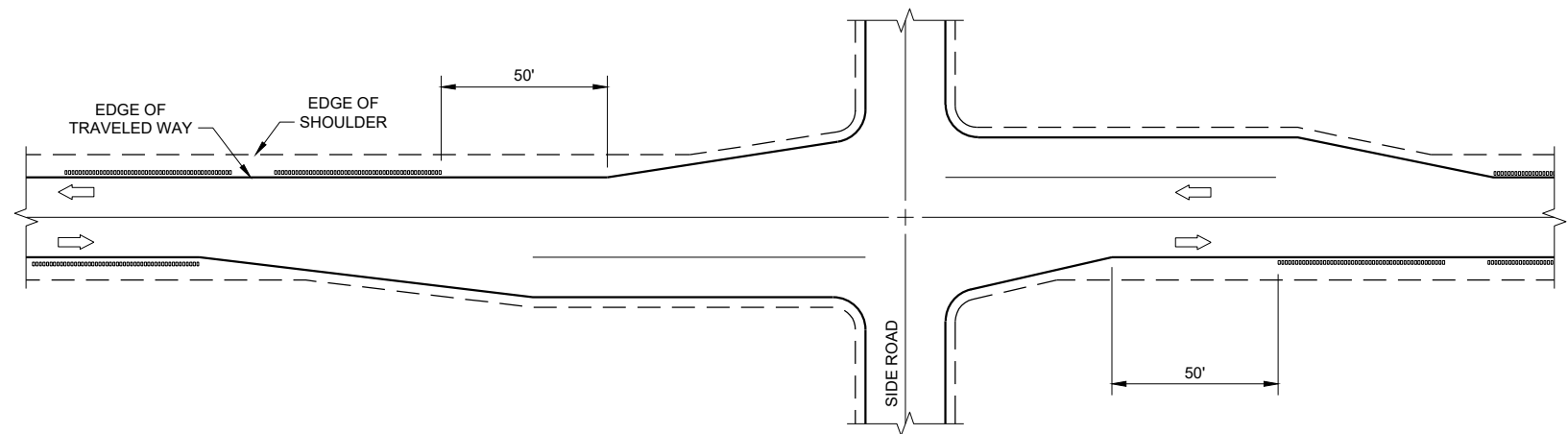
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



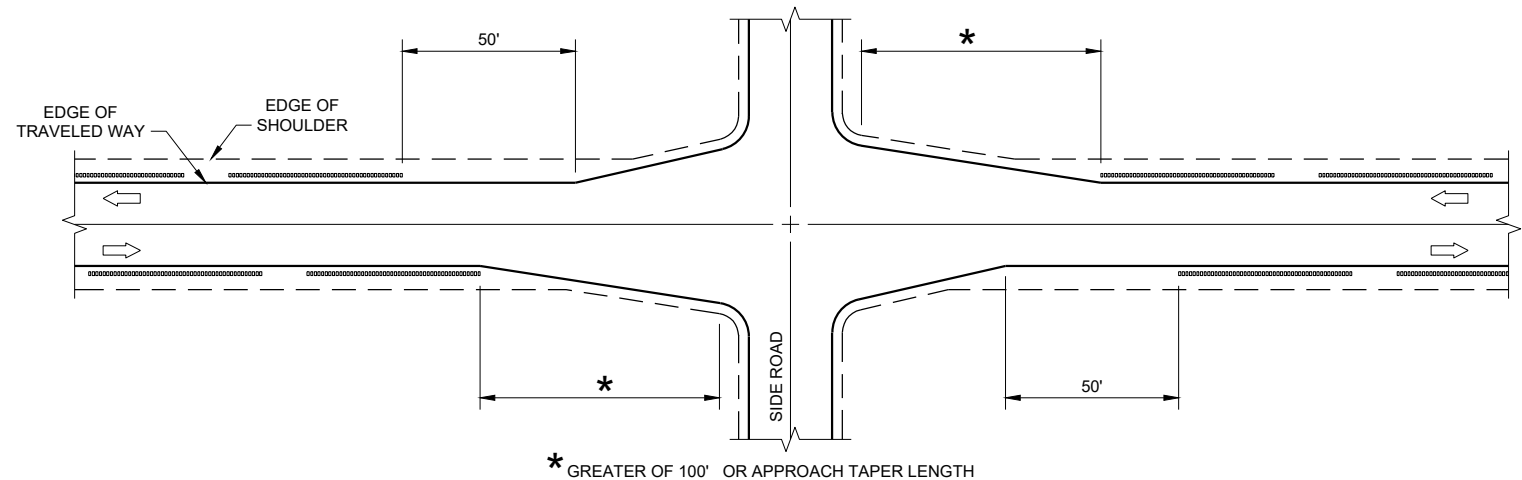
GROOVES AT MISCELLANEOUS CROSSINGS



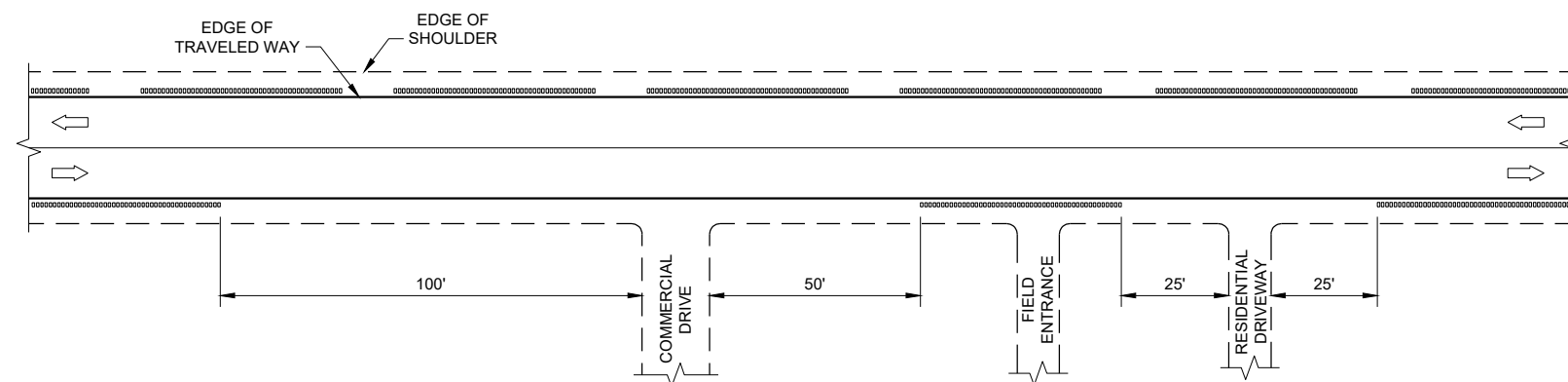
GROOVES AT BRIDGES



GROOVES AT RIGHT TURN LANE



GROOVES AT INTERSECTIONS WITH APPROACH TAPER



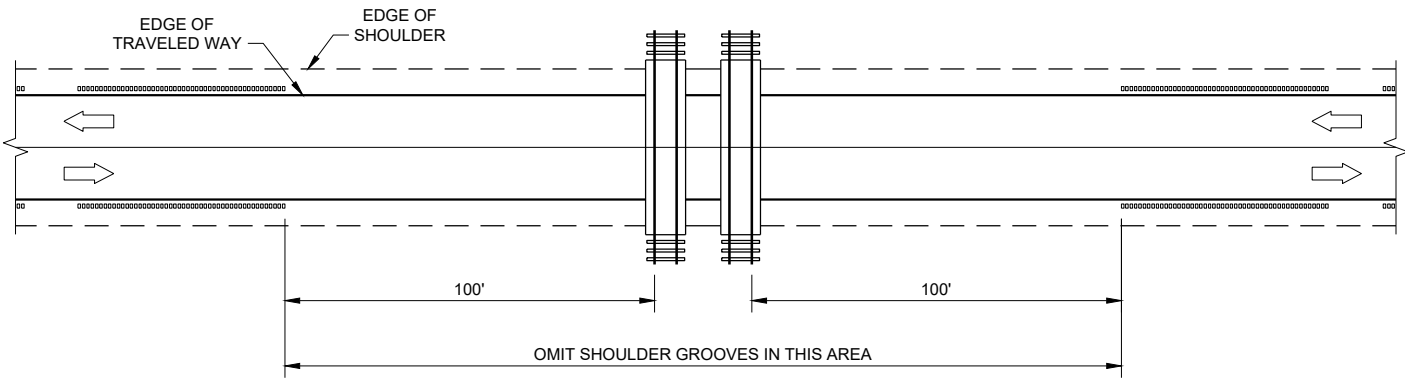
GROOVES AT DRIVEWAYS

## GENERAL NOTES

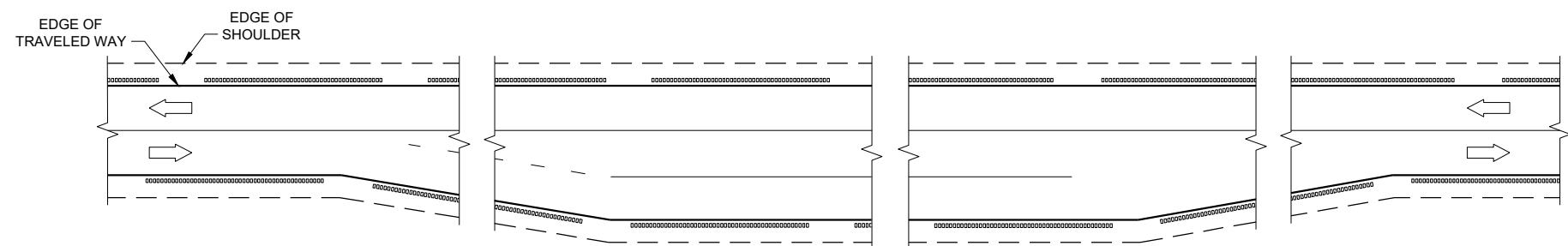
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.

**SHOULDER AND EDGE LINE  
RUMBLE STRIPS  
CROSSINGS, INTERSECTIONS,  
BRIDGES, DRIVEWAYS**

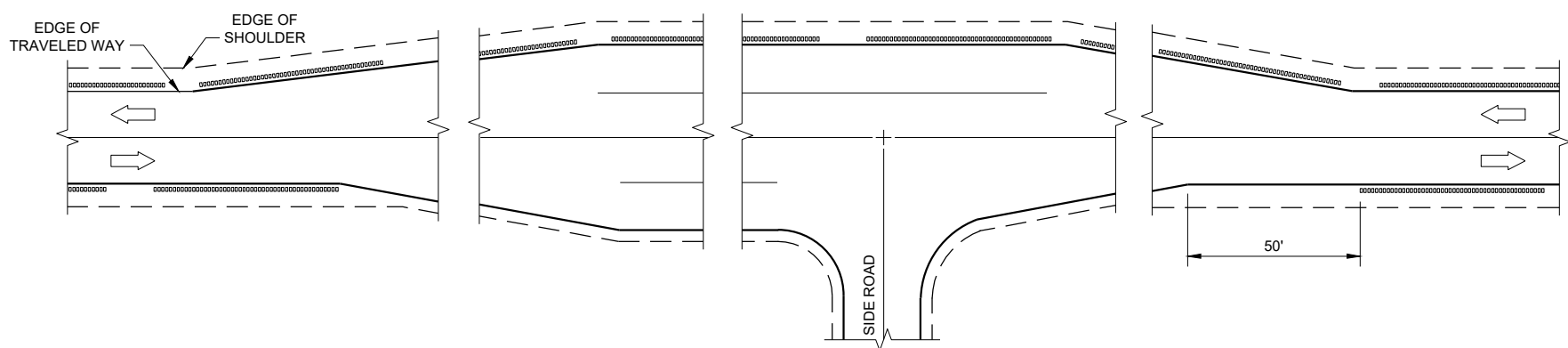
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



GROOVES AT RAILROADS



GROOVES AT PASSING AND CLIMBING LANES



GROOVES AT BYPASS LANES

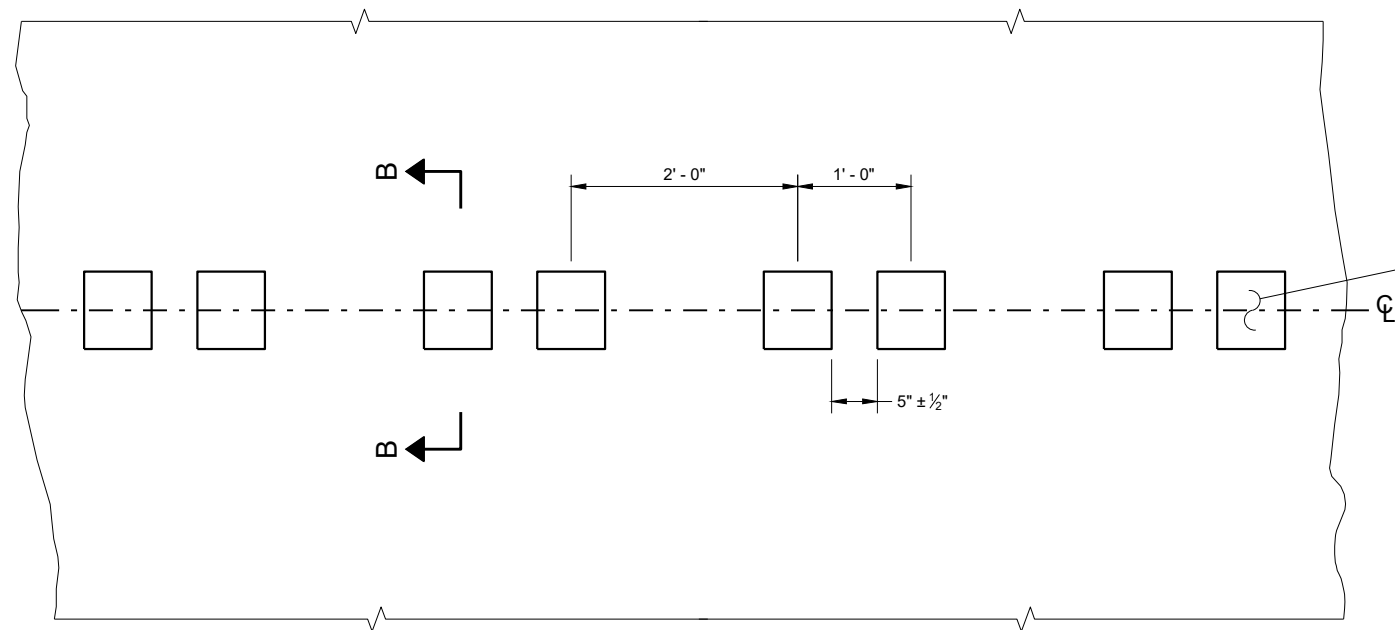
**SHOULDER AND EDGE LINE  
RUMBLE STRIPS -  
RAILROAD, PASSING,  
CLIMBING AND BYPASS LANES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

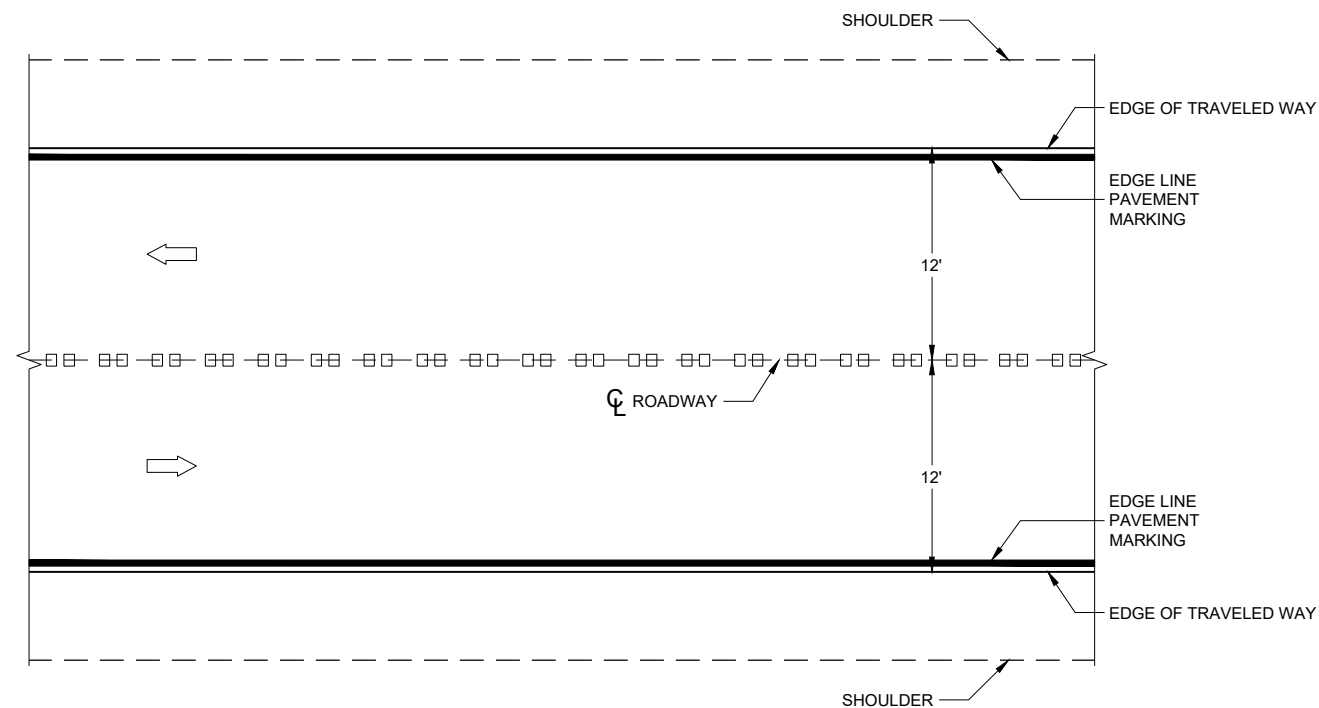
APPROVED  
May 2023  
DATE

/S/ John Jenkins  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

FHWA

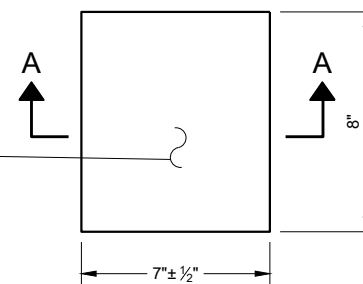


PLAN DETAIL VIEW

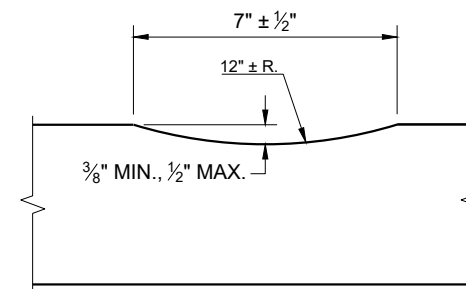


PLAN VIEW

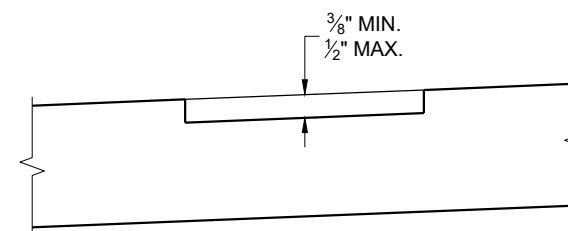
CENTERLINE RUMBLE STRIPS - ASPHALT



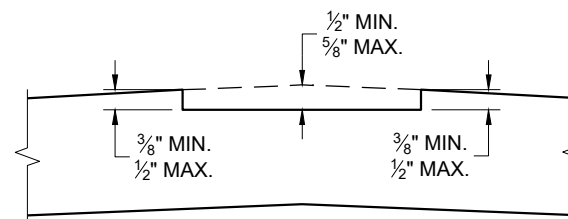
PLAN VIEW  
(SINGLE GROOVE)



SECTION A - A



SECTION B - B  
SUPERELEVATED ROADWAY

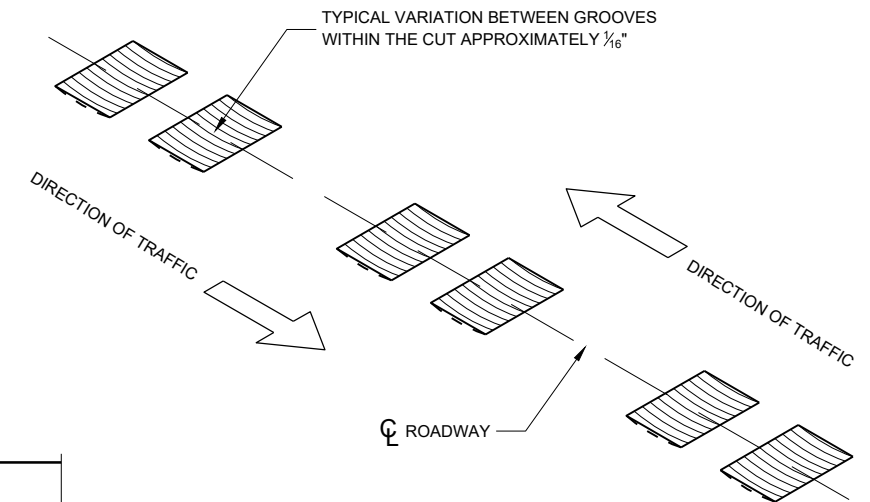


SECTION B - B  
CROWNED ROADWAY

**GENERAL NOTES**

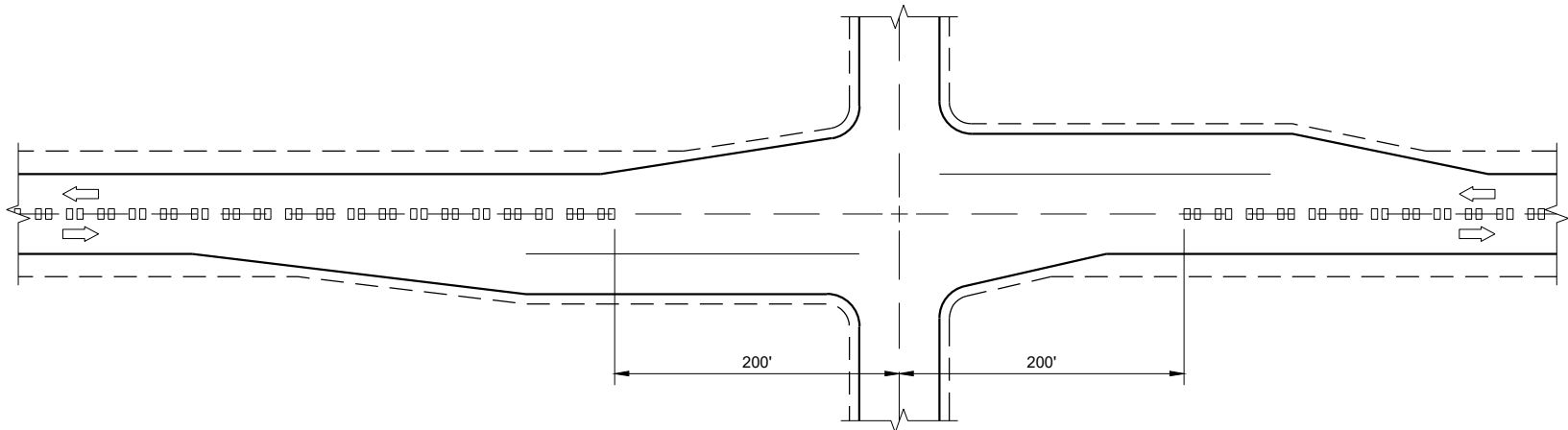
DO NOT MILL SHOULDER GROOVES THROUGH INTERSECTIONS, MARKED CROSSWALKS, NON-MOTORIZED PATH CROSSINGS, ETC. REFER TO SDD 13A11 SHEETS "d" AND "e".

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

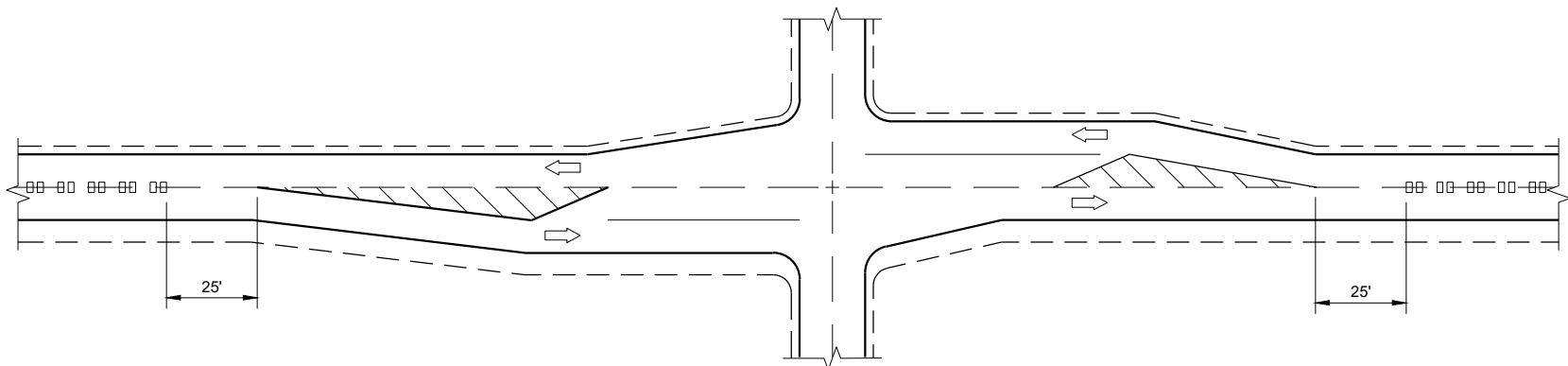


**CENTERLINE RUMBLE  
STRIPS - ASPHALT**

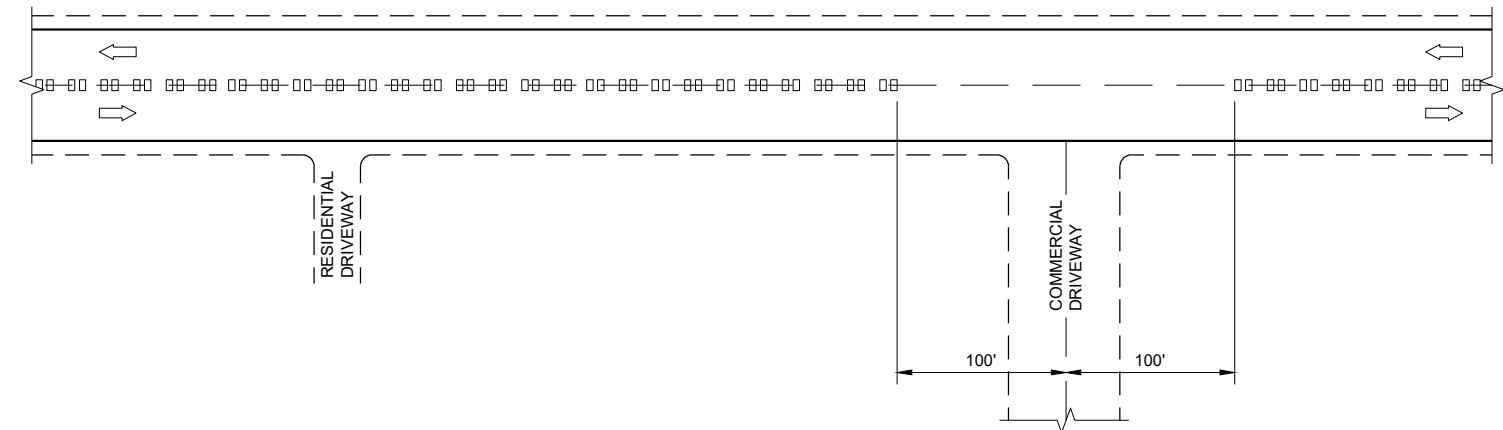
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



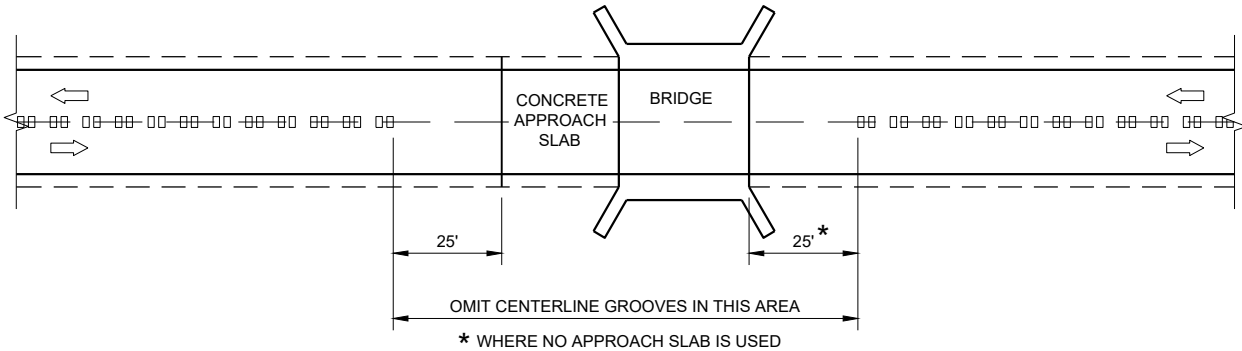
CENTERLINE GROOVES AT INTERSECTIONS  
(WITH LEFT TURN LANES)



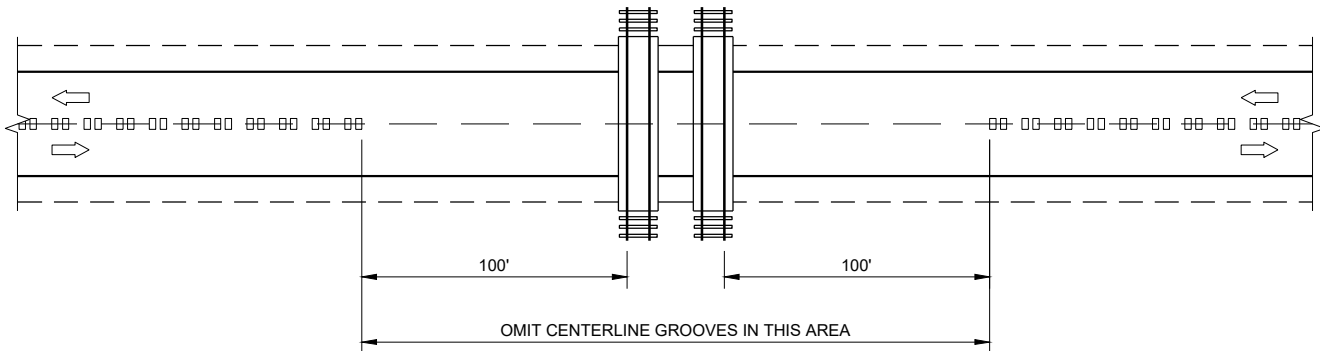
CENTERLINE GROOVES AT DRIVEWAYS<sup>①</sup>

GENERAL NOTES

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



CENTERLINE GROOVES AT BRIDGES

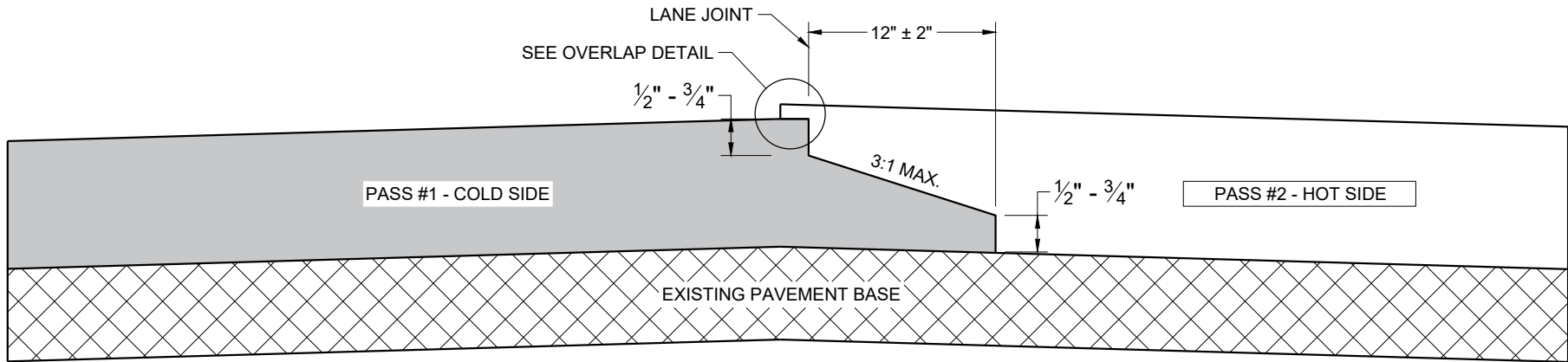


CENTERLINE GROOVES AT RAILROADS

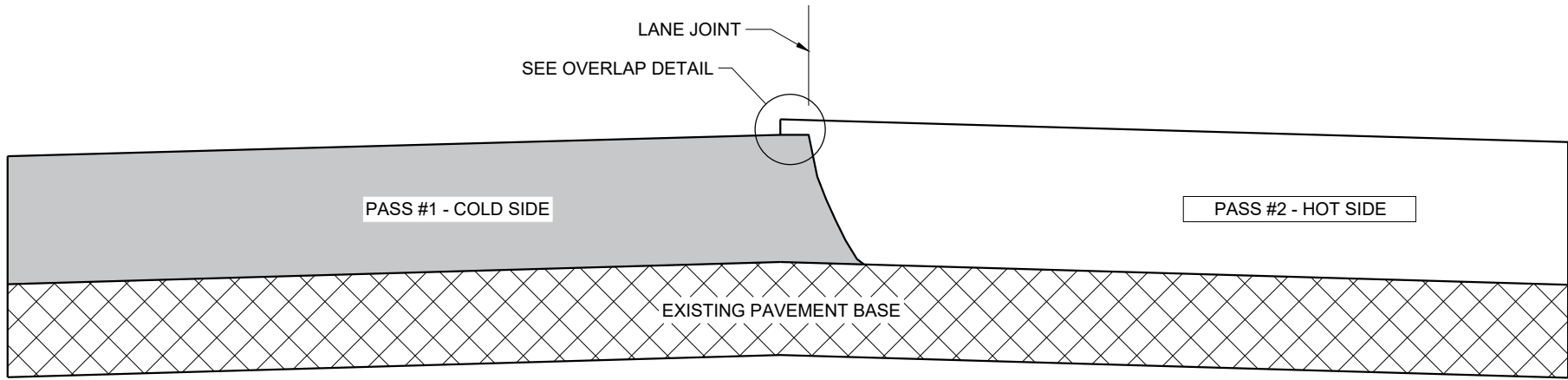
CENTER LINE  
RUMBLE STRIPS -  
INTERSECTIONS, DRIVEWAYS,  
BRIDGES, RAIL ROADS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

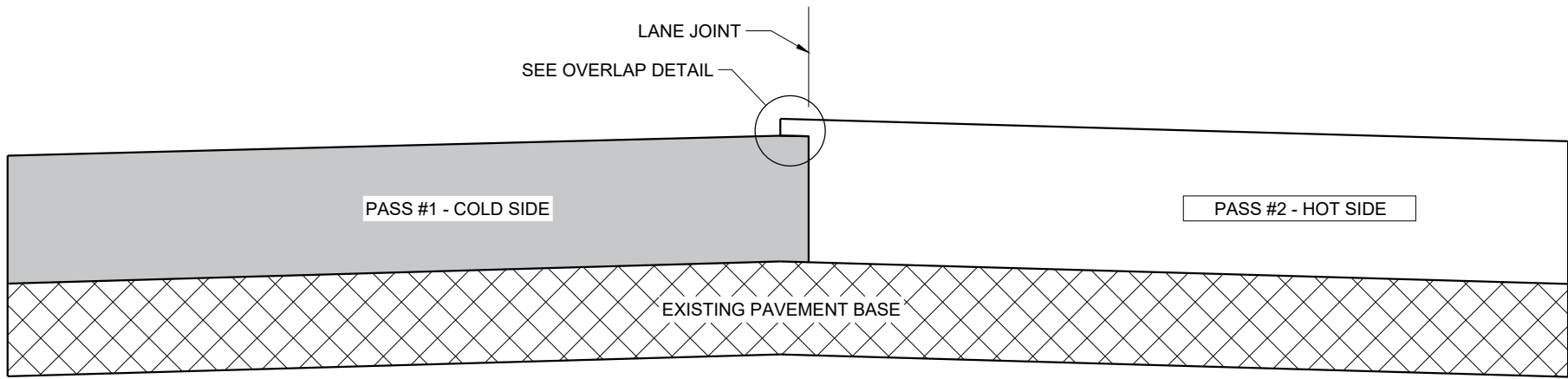
APPROVED  
May 2023  
DATE /S/ John Jenkins  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA



TYPICAL PAVEMENT CROSS SECTION  
NOTCHED WEDGE JOINT



TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT



TYPICAL PAVEMENT CROSS SECTION  
VERTICAL JOINT (MILLED)

GENERAL NOTES

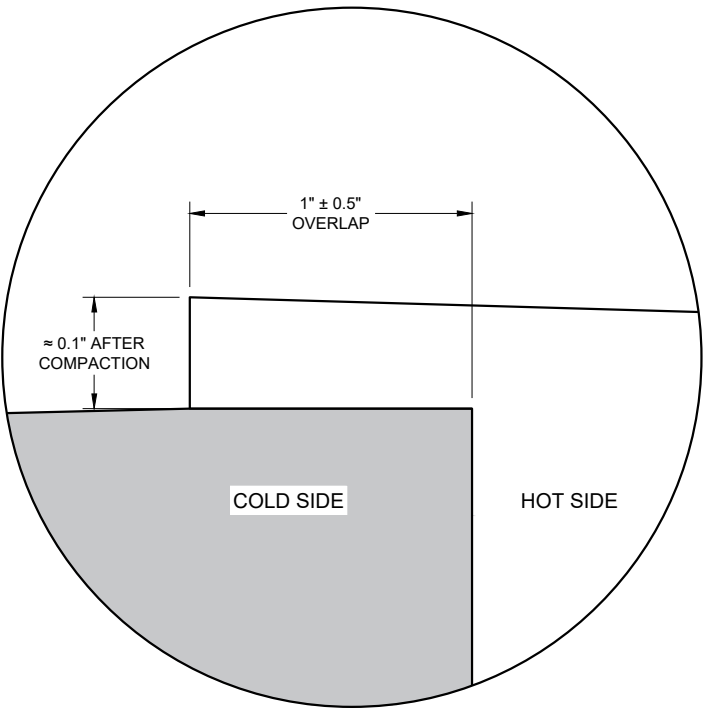
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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

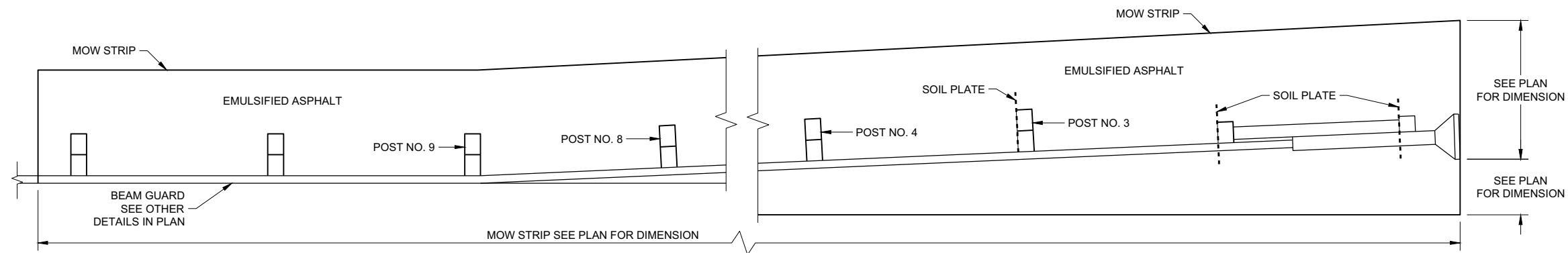


OVERLAP DETAIL (TYPICAL)

HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

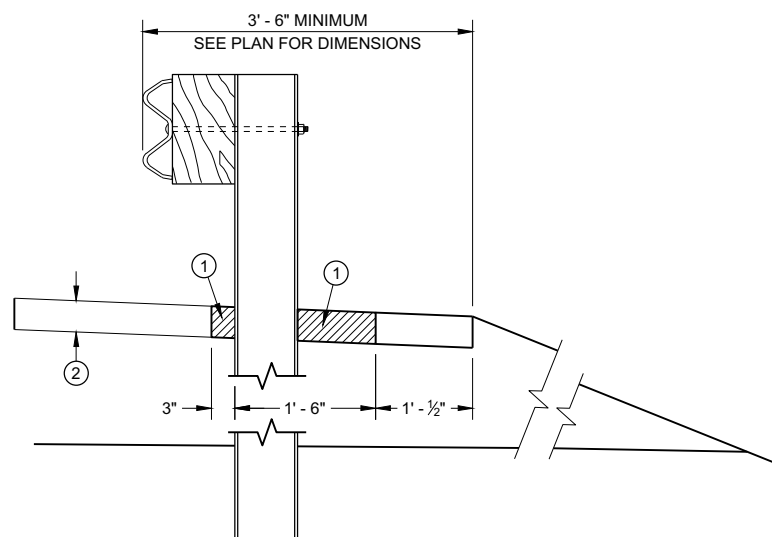


**PLAN VIEW**  
**MOW STRIP LAYOUT FOR ENERGY ABSORBING TERMINAL**

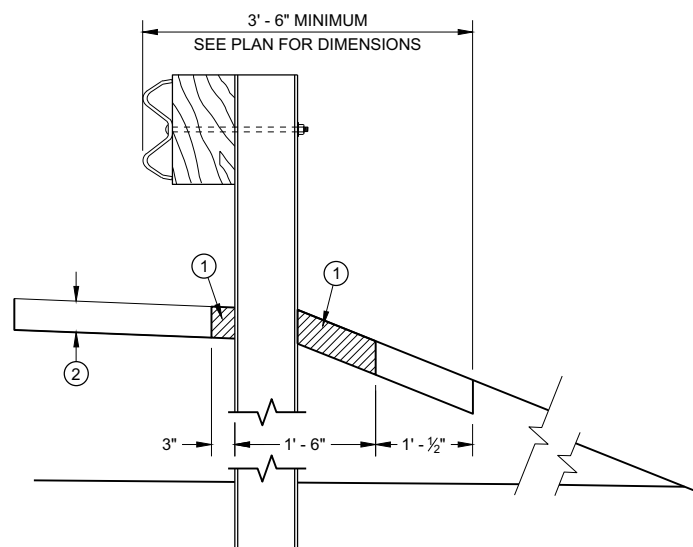
**GENERAL NOTES**

ONLY USE STEEL POSTS IN CONCRETE AND ASPHALT MOW STRIPS.

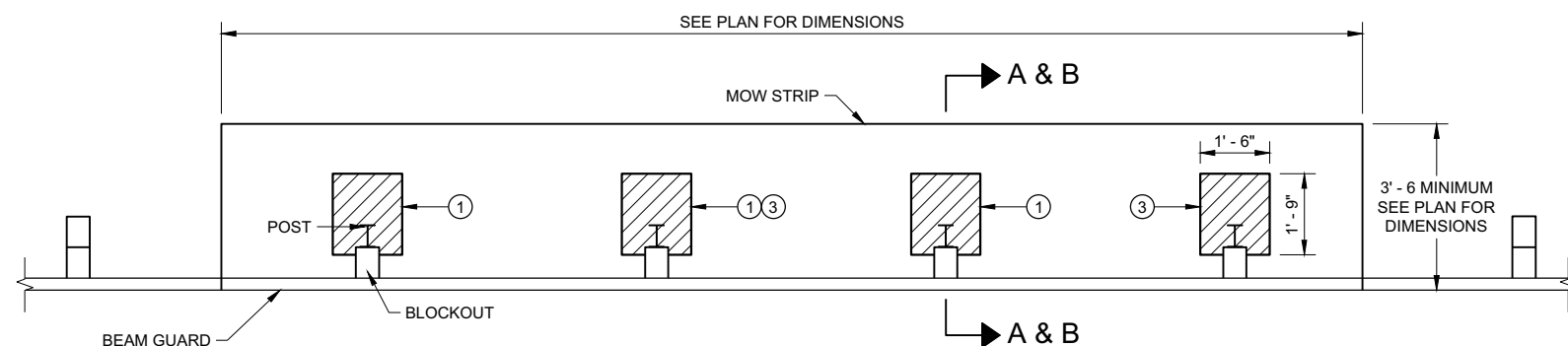
- ① CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
- ② DEPTH OF MOW STRIP:  
ASPHALT - 4"  
CONCRETE - 4"  
EMULSIFIED ASPHALT - 1" OR LESS
- ③ FOR EMULSIFIED ASPHALT, MOW STRIP STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS)



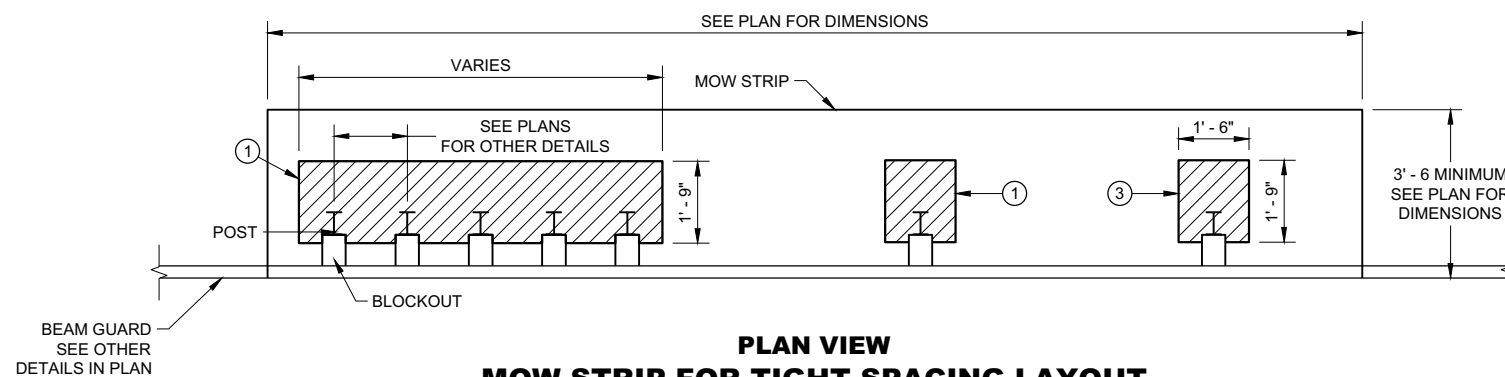
**SECTION A - A**



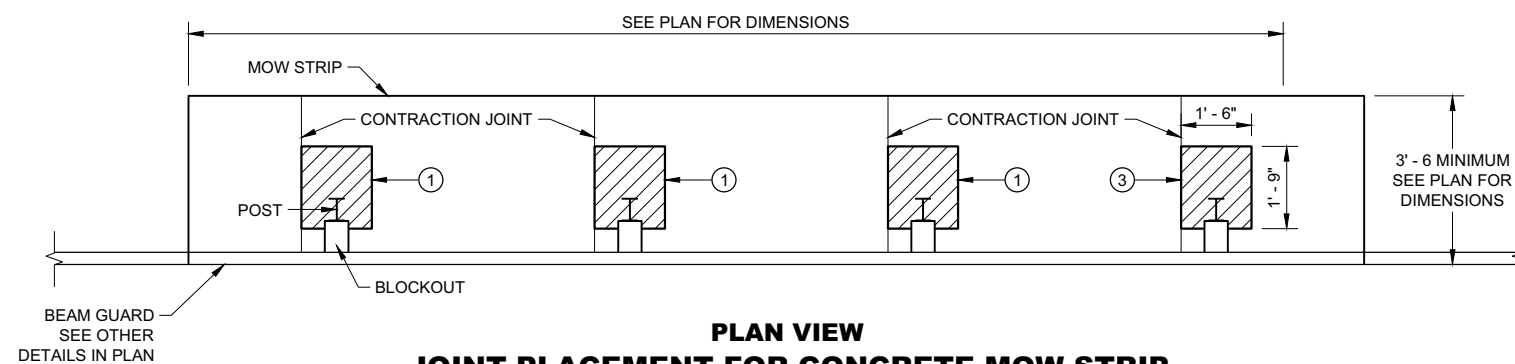
**SECTION B - B**



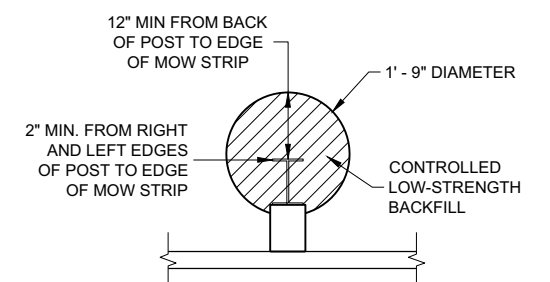
**PLAN VIEW**  
**MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT**



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



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



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

**GUARDRAIL MOW STRIP**

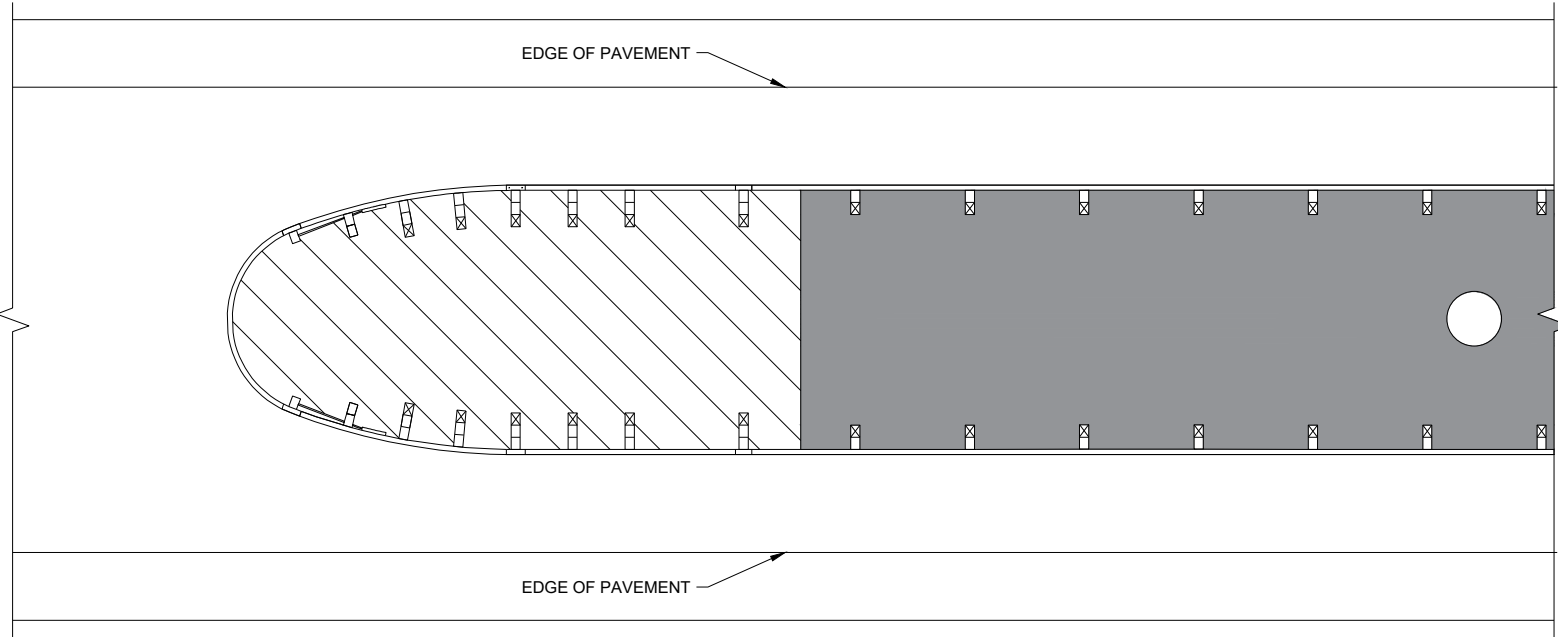
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

LEGEND

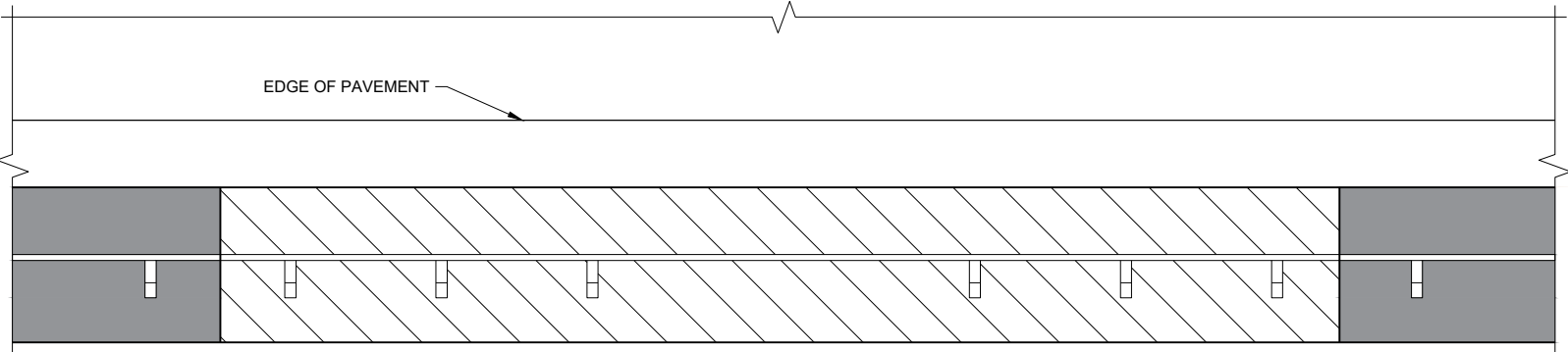
- CONCRETE, ASPHALT, OR EMULSIFIED ASPHALT MOW STRIP (SEE OTHER DETAILS)
- EMULSIFIED ASPHALT MOW STRIP (SEE OTHER DETAILS)

GENERAL NOTES

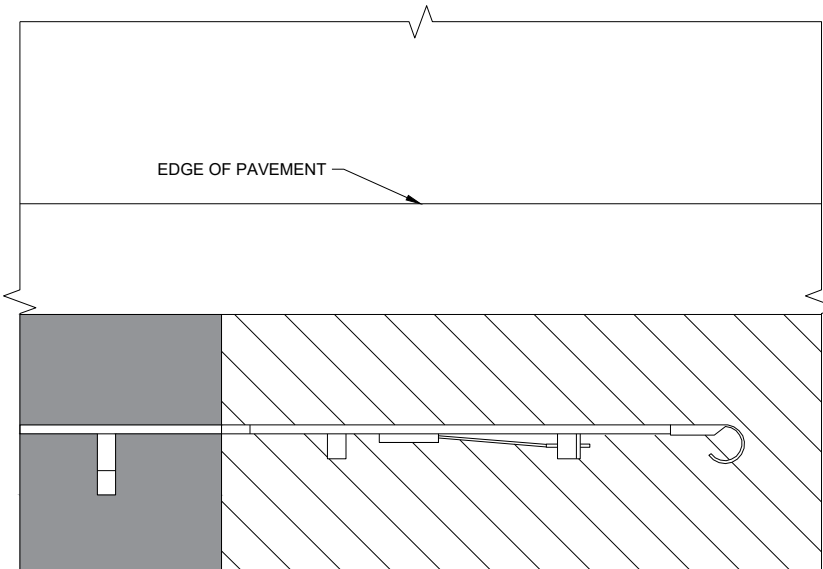
EXISTING THRIE BEAM BULLNOSES MAY HAVE WOOD POSTS. NEW THRIE BEAM BULLNOSE WILL HAVE STEEL POSTS.



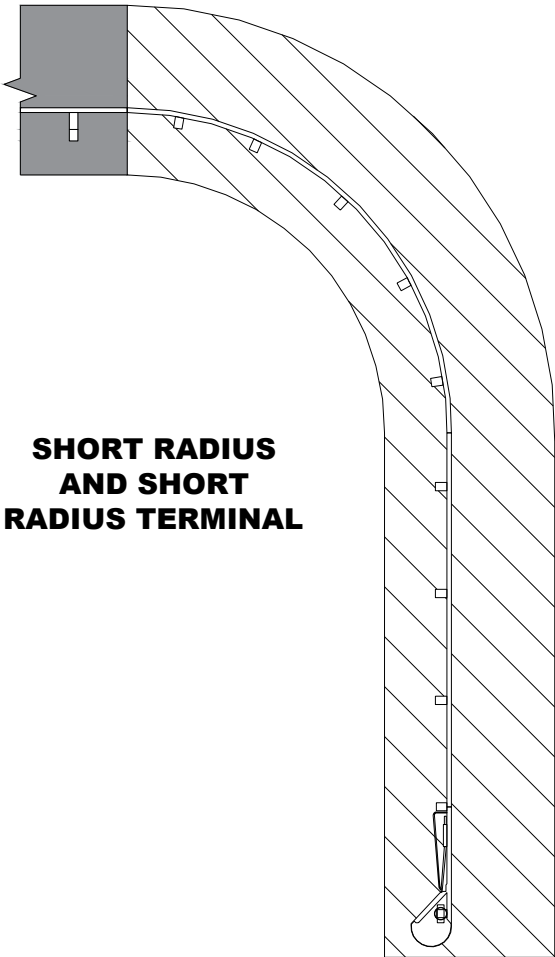
THRIE BEAM BULLNOSE



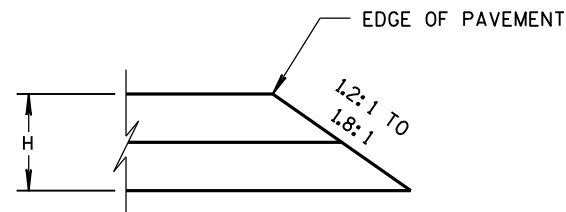
LONG - SPAN



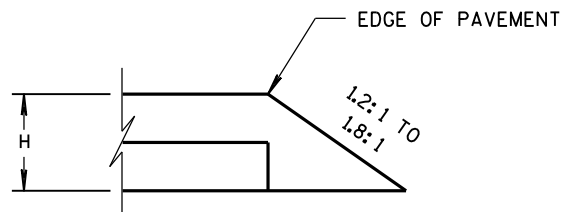
TYPE 2 TERMINAL



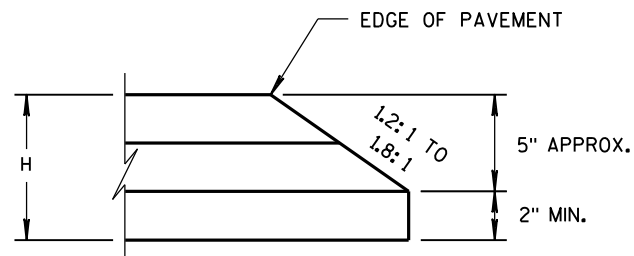
| GUARDRAIL MOW STRIP                                |                                                                |
|----------------------------------------------------|----------------------------------------------------------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |      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



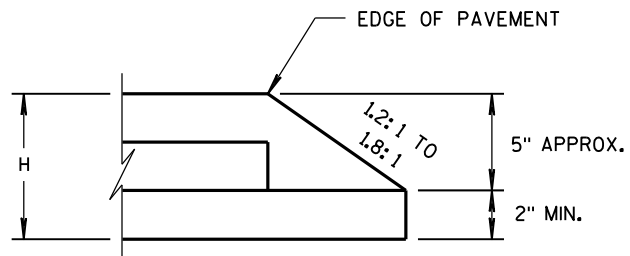
CONSTRUCTED WITH FINAL TWO LAYERS  
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER  
FOR H 5" OR LESS

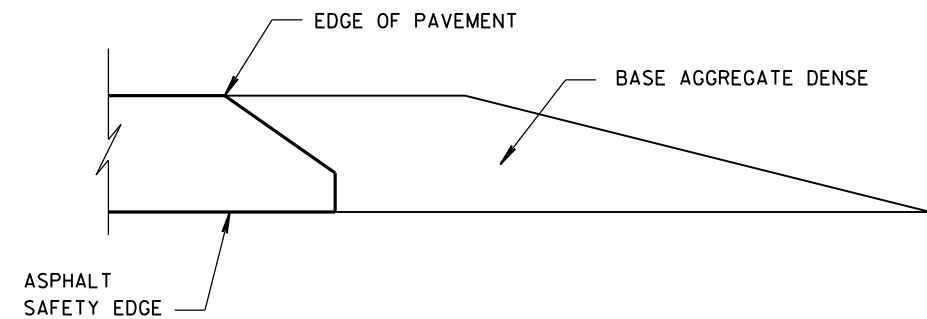


CONSTRUCTED WITH FINAL TWO LAYERS  
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER  
FOR H GREATER THAN 5"

### HMA PAVEMENT AND HMA OVERLAYS



### FINISHED SHOULDER AGGREGATE PLACEMENT

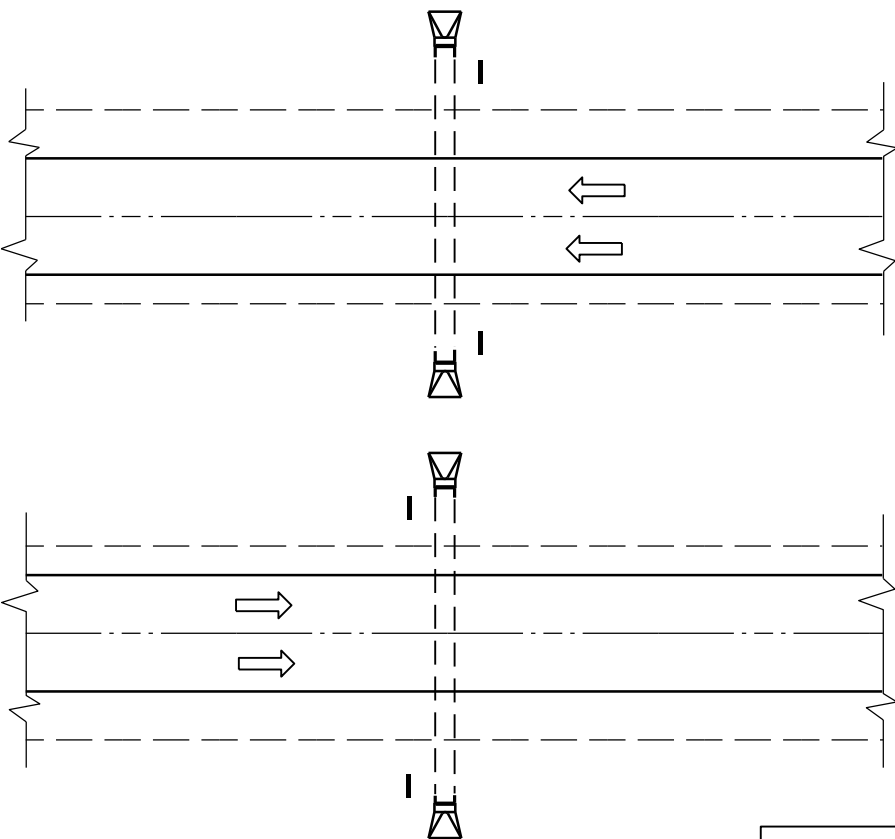
SAFETY EDGE<sub>SM</sub>

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

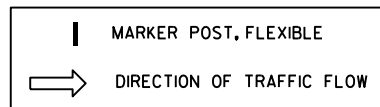
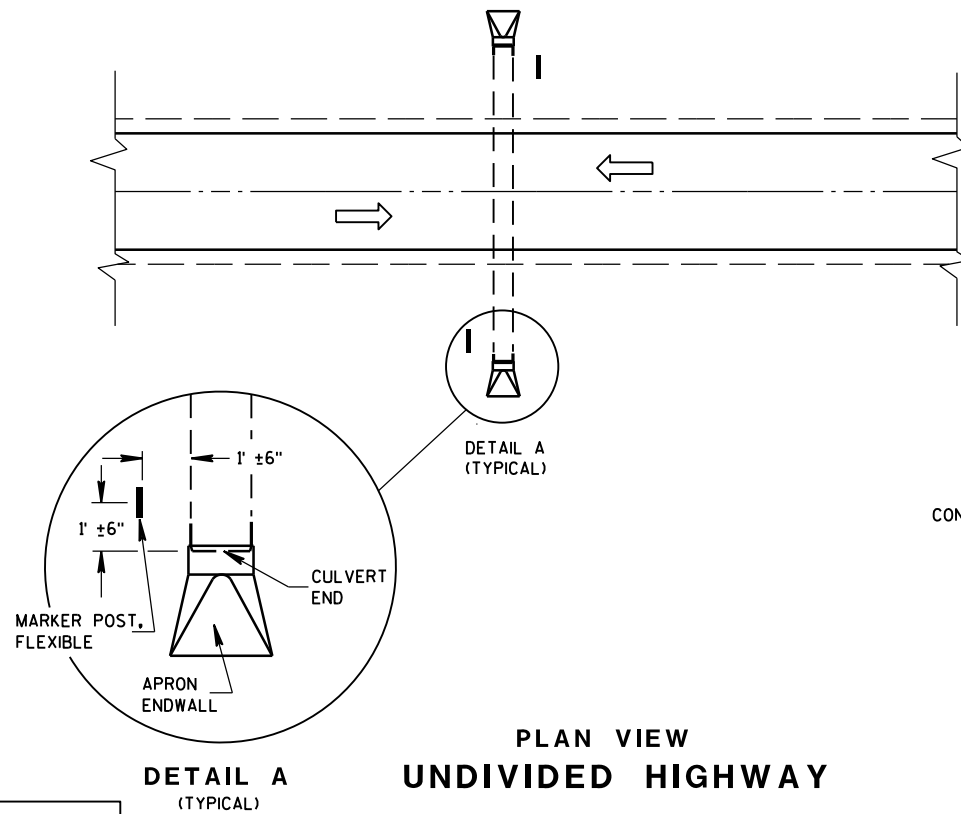
APPROVED  
11/30/2012  
DATE  
FHWA

/s/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

PLAN VIEW  
DIVIDED HIGHWAY



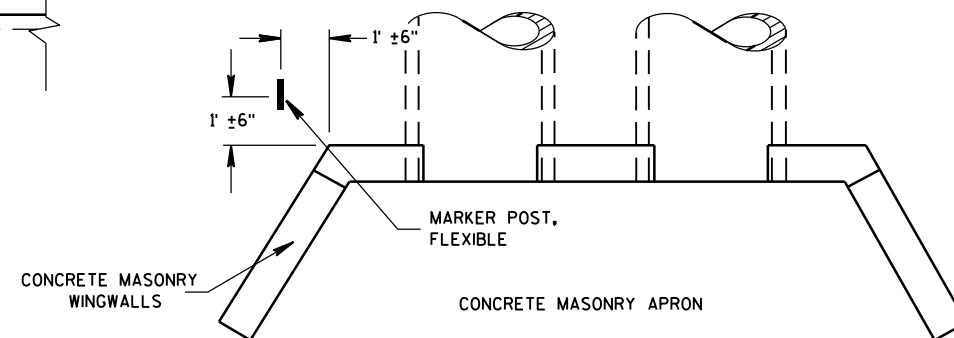
PLAN VIEW  
UNDIVIDED HIGHWAY



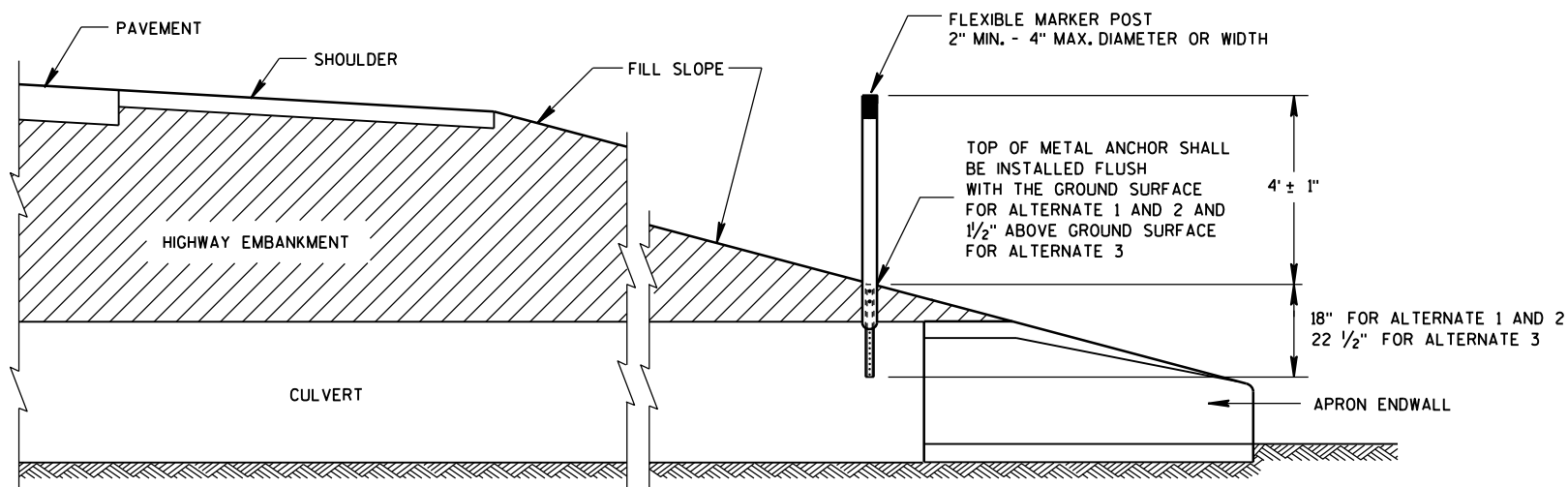
### FLEXIBLE MARKER POST LOCATION

### 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.



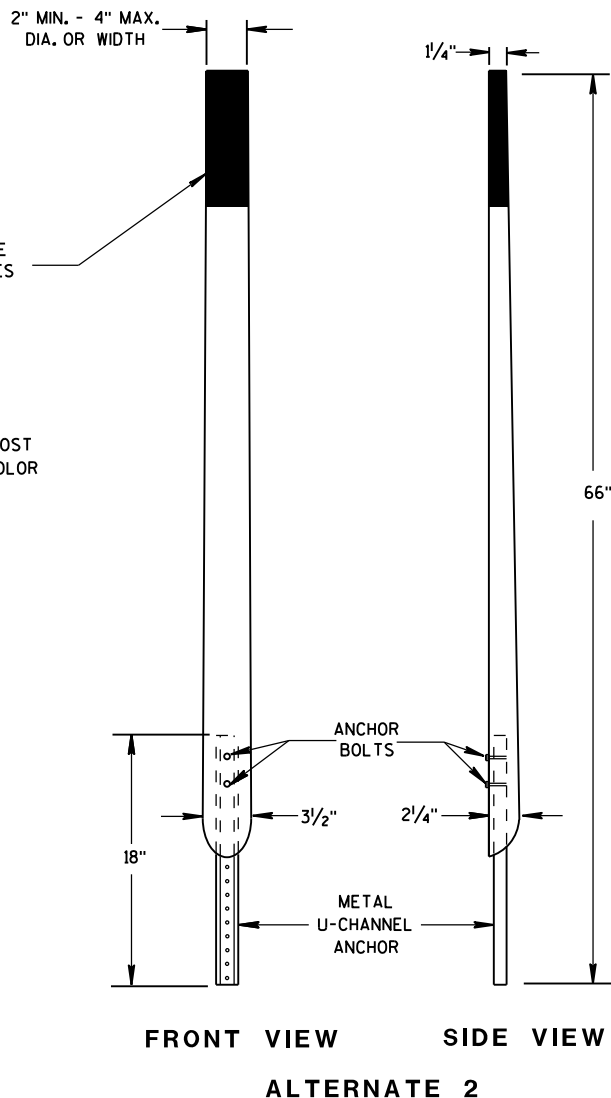
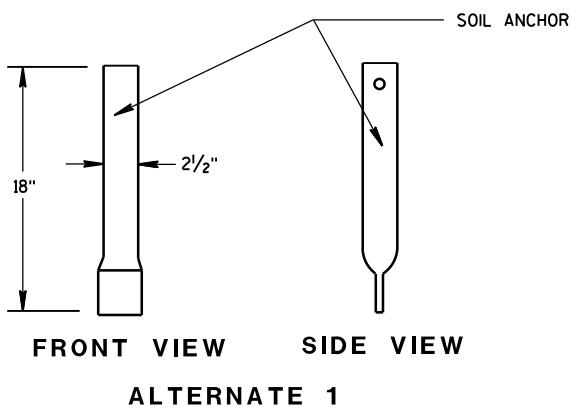
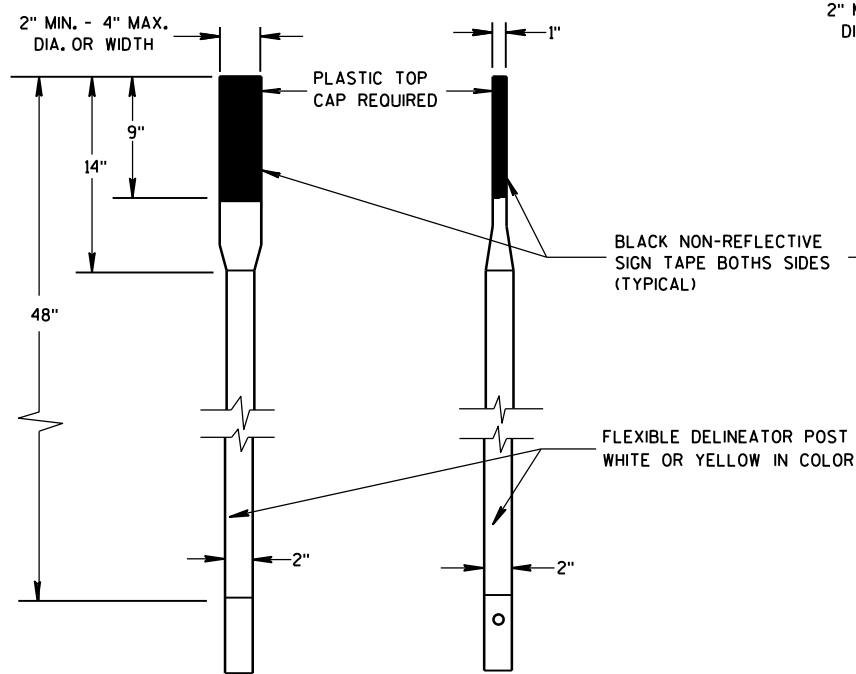
PLAN VIEW  
CONCRETE MASONRY ENDWALLS FOR  
CULVERT PIPE AND PIPE ARCH



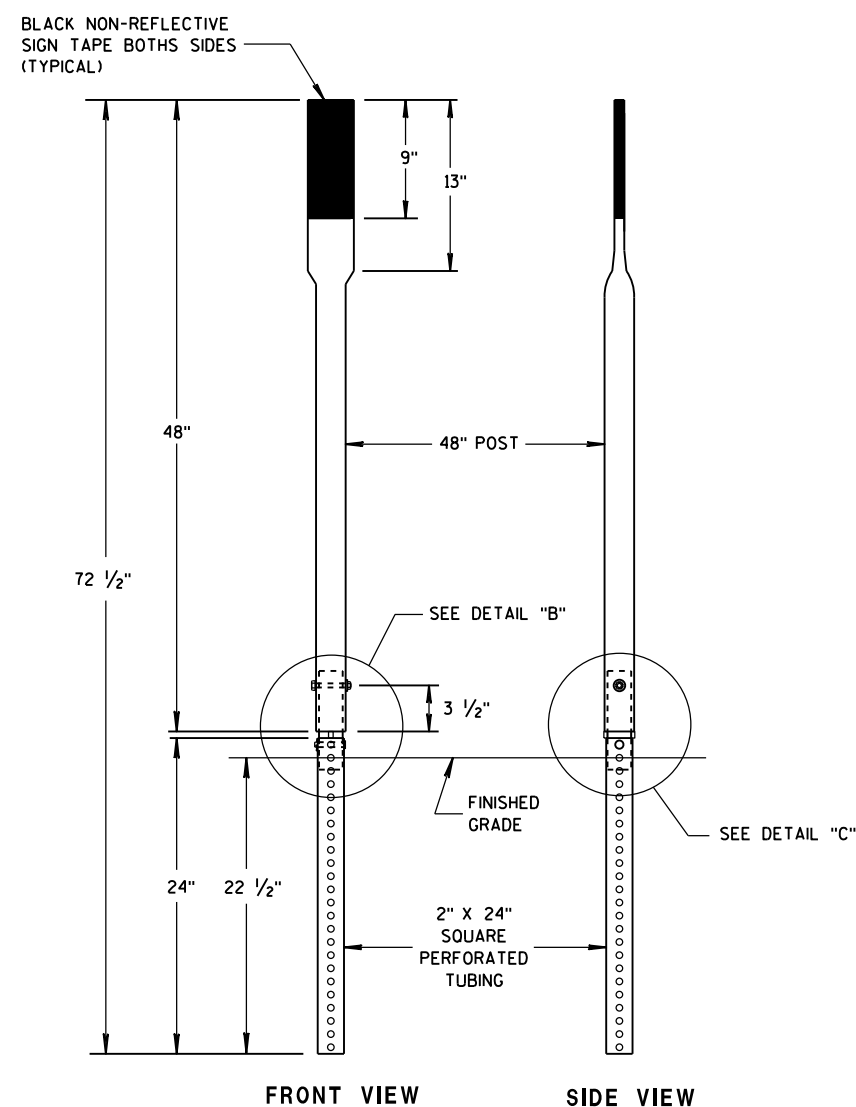
CROSS SECTION  
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST  
FOR CULVERT END

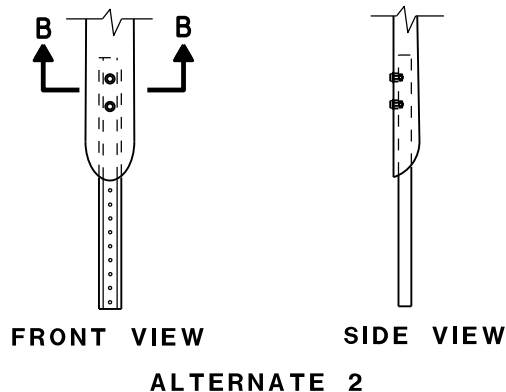
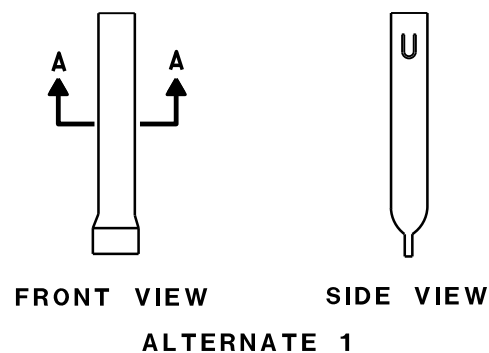
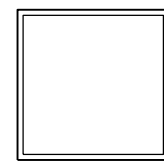
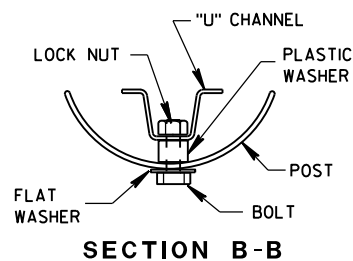
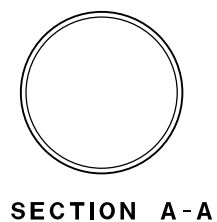
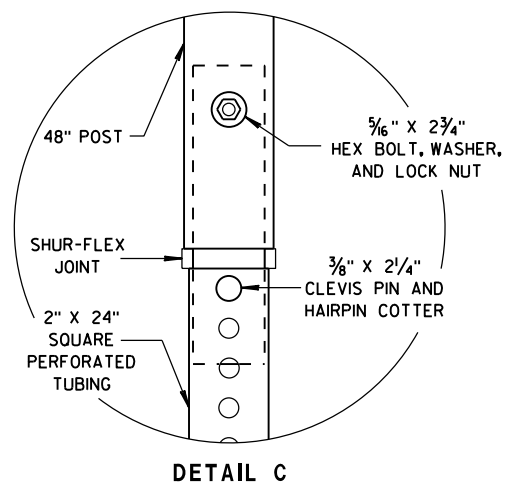
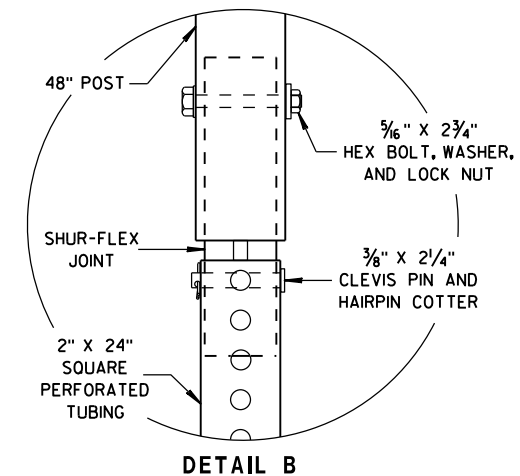
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



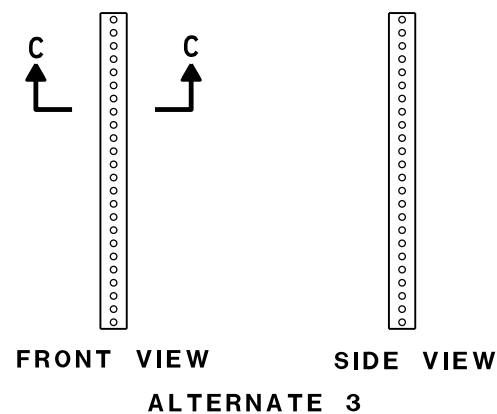
FLEXIBLE MARKER POSTS



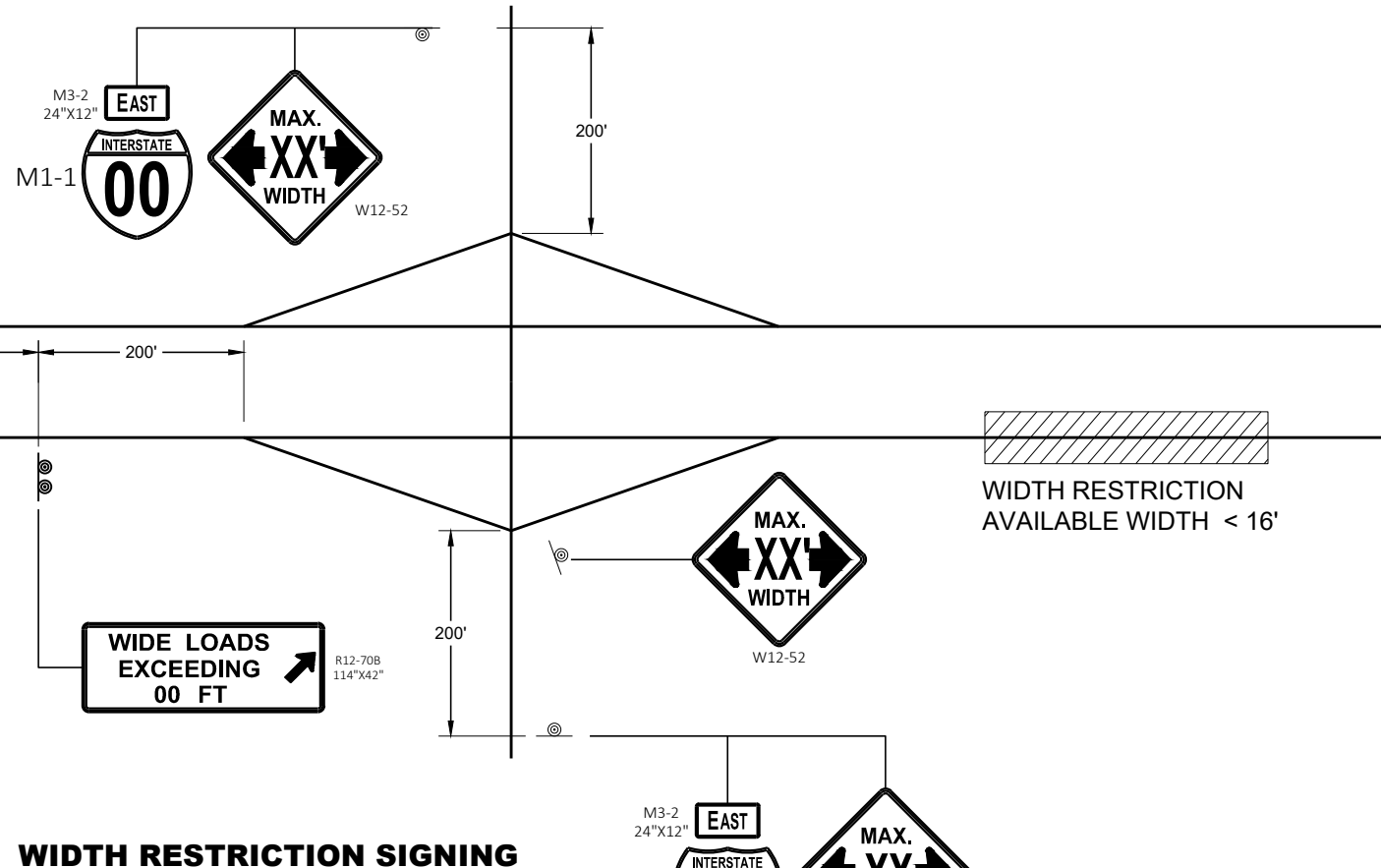
SECTION C-C



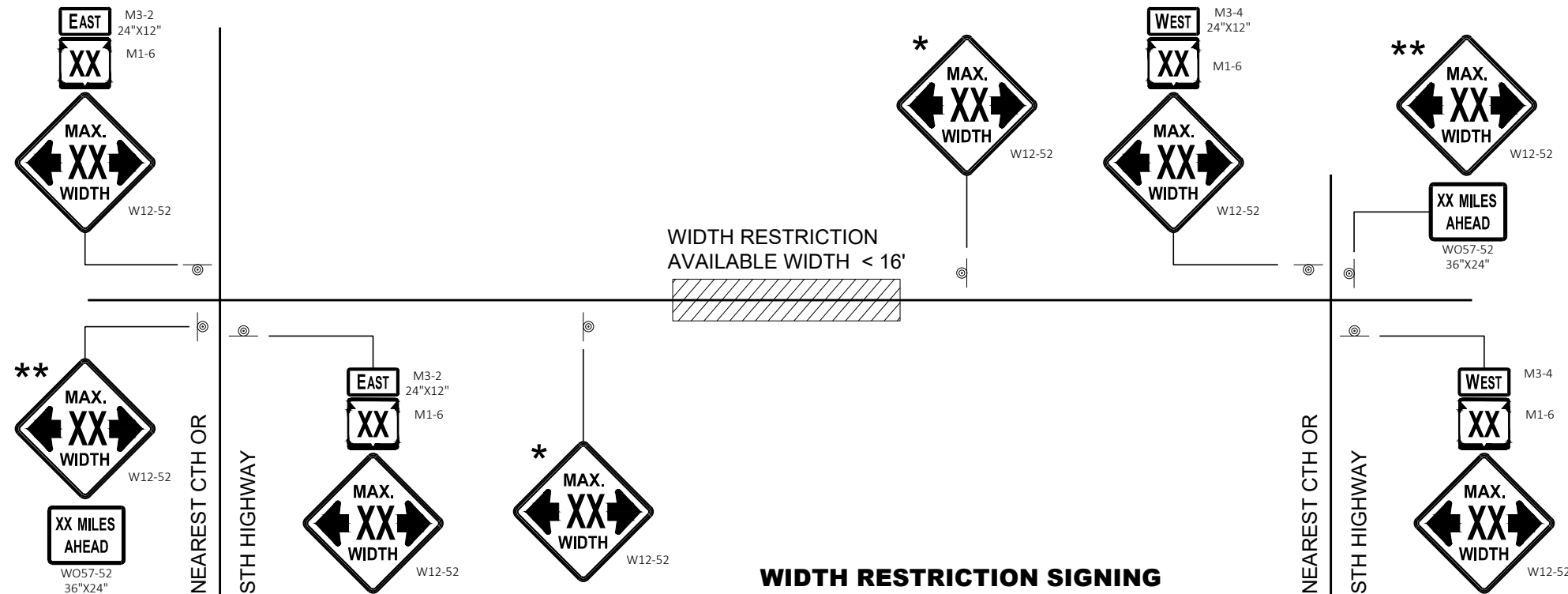
FLEXIBLE MARKER POST ANCHORS



|                                                    |                                                       |
|----------------------------------------------------|-------------------------------------------------------|
| FLEXIBLE MARKER POST<br>FOR CULVERT END            |                                                       |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                                                       |
| APPROVED<br>10/1/2012<br>DATE                      | /S/ Travis Feltes<br>STATE TRAFFIC ENGINEER OF DESIGN |
| 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  
May 2023 /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.

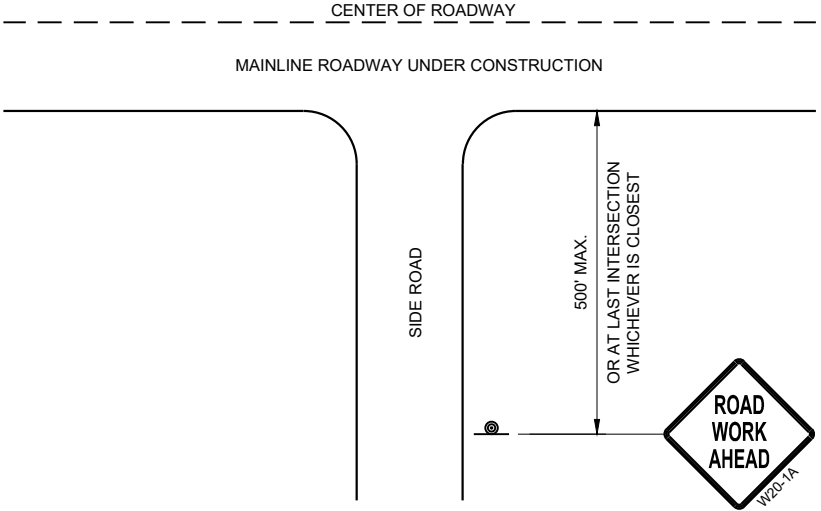
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

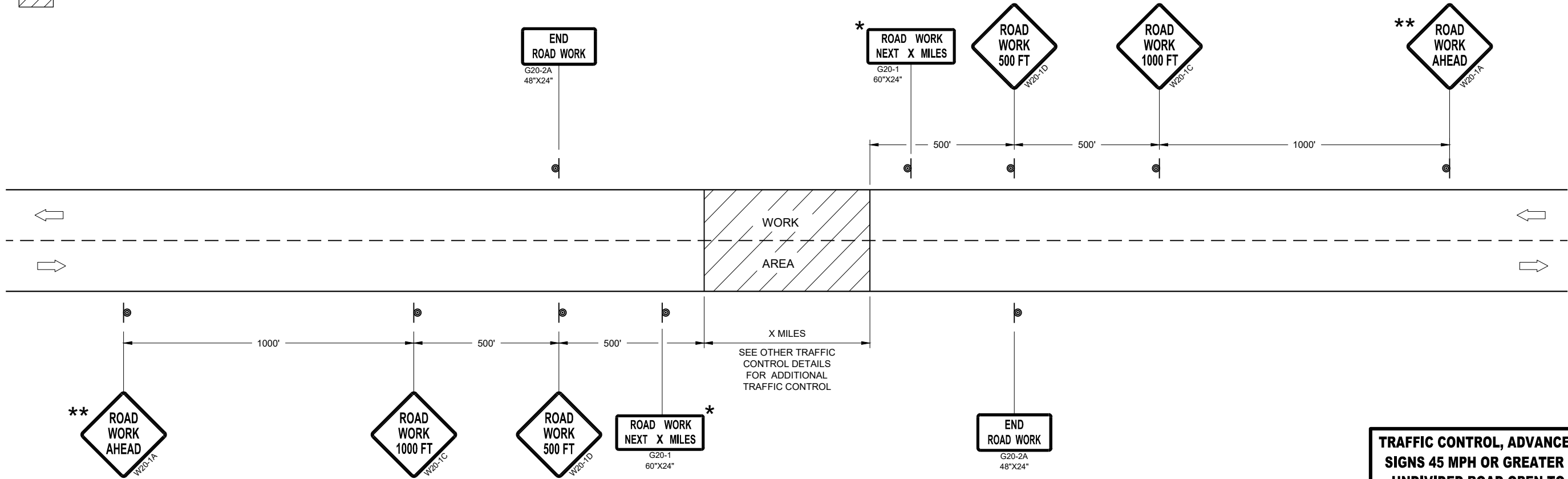
- \* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- \*\* PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

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

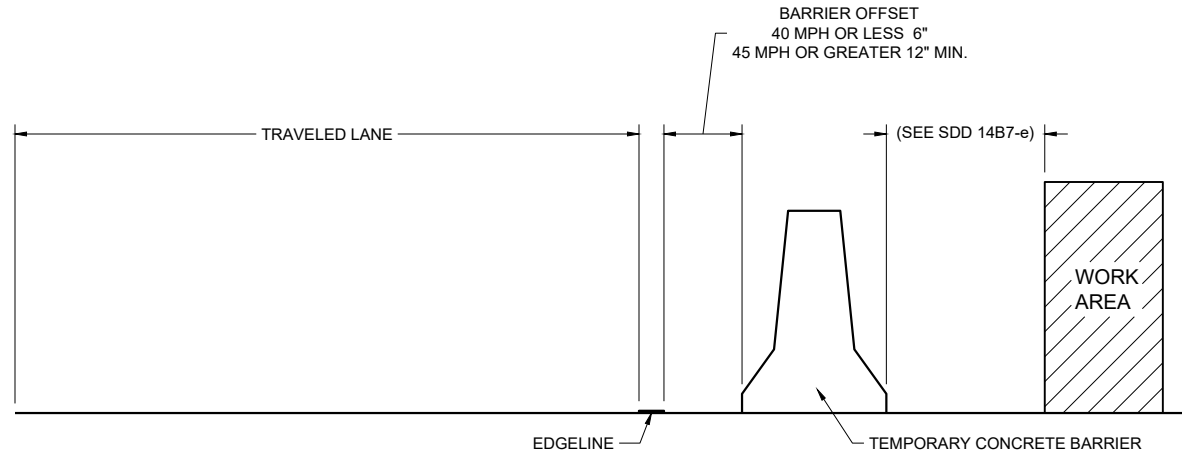
TRAFFIC CONTROL, ADVANCE WARNING  
SIGNS 45 MPH OR GREATER TWO-WAY  
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



 "T" MARKING  
 SIGN ON PERMANENT SUPPORT  
 DIRECTION OF TRAFFIC



TEMPORARY BARRIER OFFSET FROM EDGE LINE

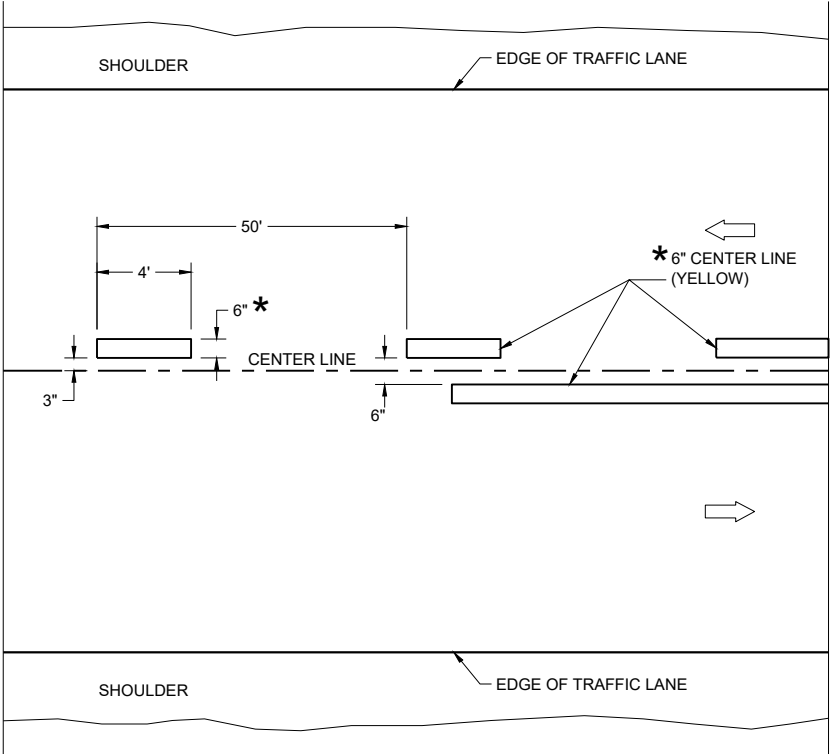
GENERAL NOTES

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

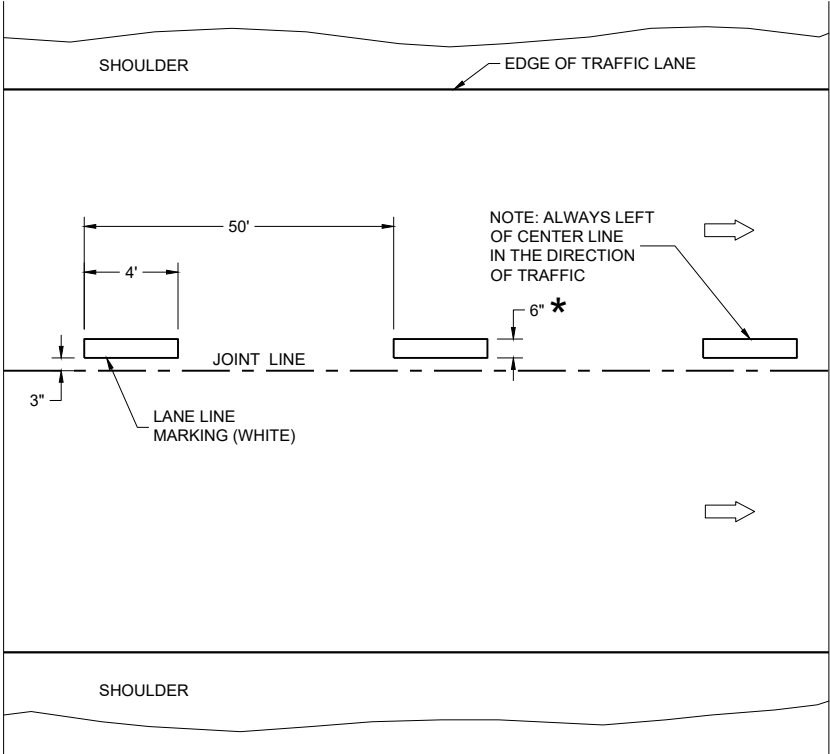
LEGEND

DIRECTION OF TRAFFIC

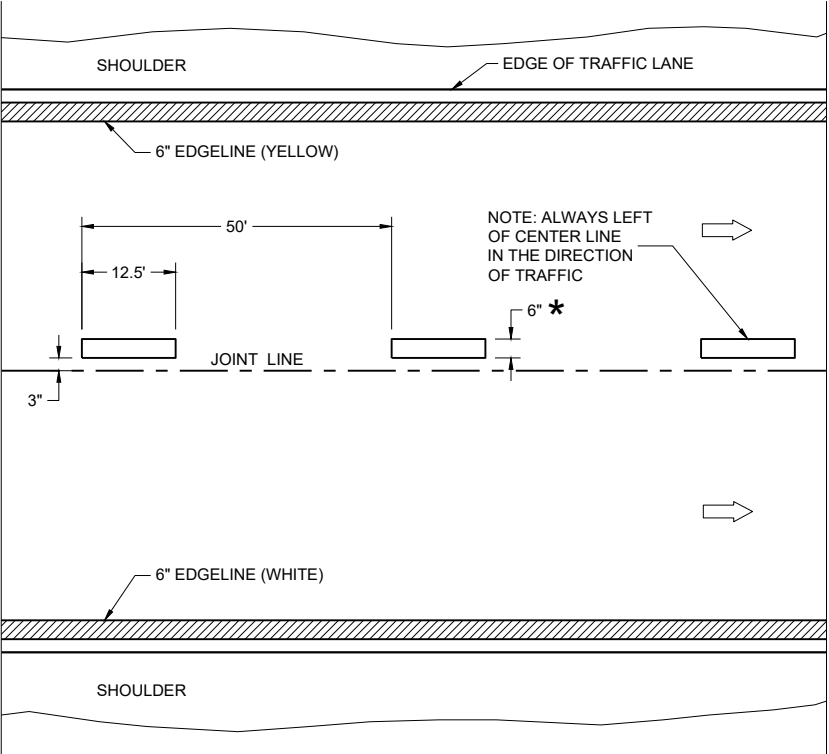
\* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES



TWO WAY TRAFFIC



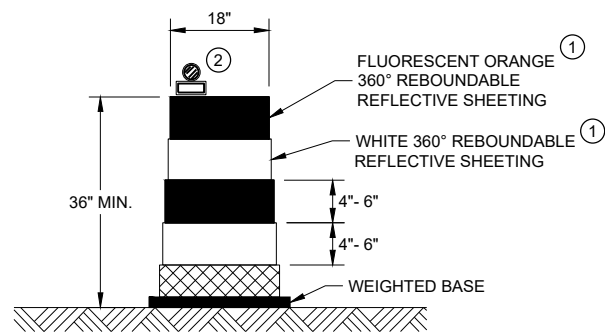
ONE WAY TRAFFIC



FREEWAYS AND EXPRESSWAYS

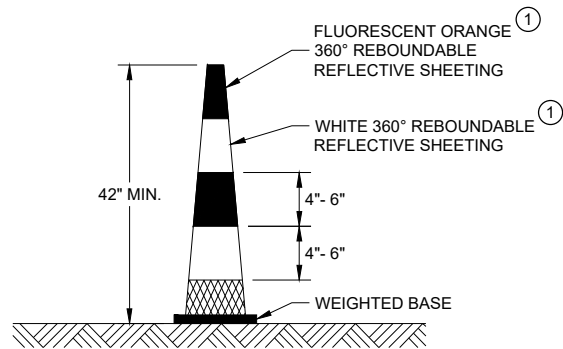
TEMPORARY PAVEMENT MARKING

| TEMPORARY LONGITUDINAL PAVEMENT MARKING            |                                                           |
|----------------------------------------------------|-----------------------------------------------------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                                                           |
| APPROVED<br>May 2023<br>DATE                       | /S/ Jeannie Silver<br>Statewide Pavement Marking Engineer |
| FHWA                                               |                                                           |



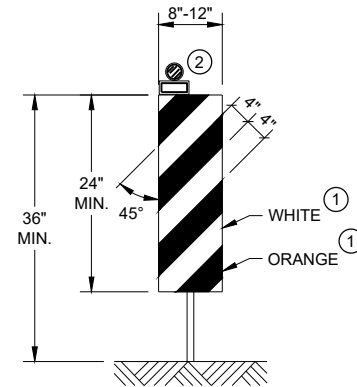
**DRUM**

BALLAST WIDTHS  
RANGE FROM 24"-36"



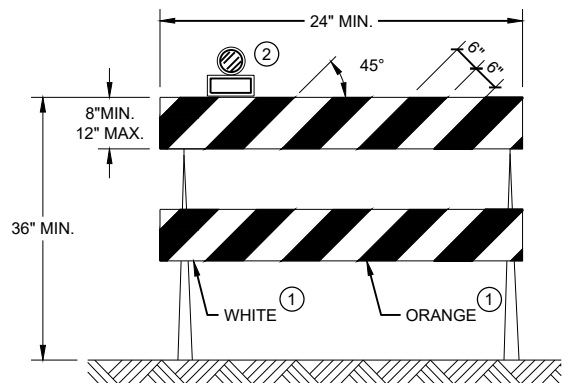
**42" CONE**

DO NOT USE IN TAPERS  
½ SPACING OF DRUMS  
BALLAST WIDTHS  
RANGE FROM 14"-20"



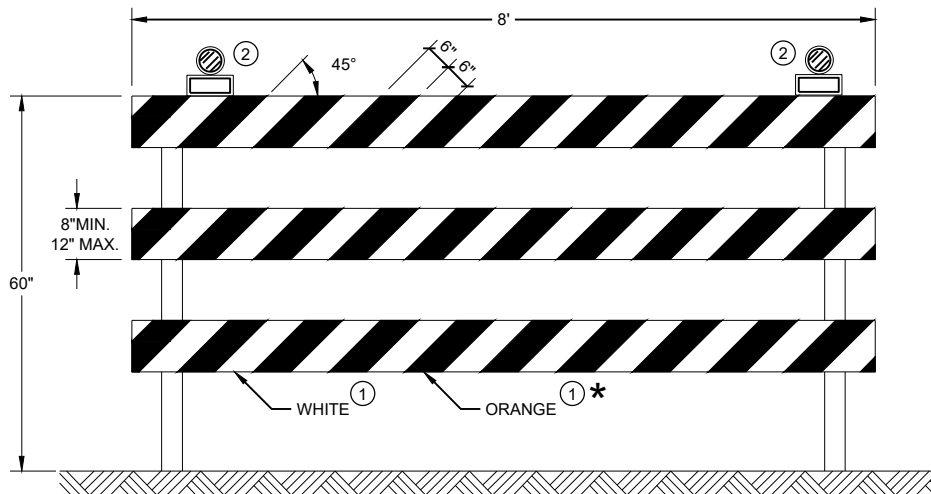
**VERTICAL PANEL**

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



**TYPE II BARRICADE**

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



**TYPE III BARRICADE**

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

\* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

**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.

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

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
November 2022 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER

FHWA

LEGEND

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

GENERAL NOTES

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

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

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

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

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

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

FLAGGING

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

TEMPORARY PORTABLE RUMBLE STRIPS

UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

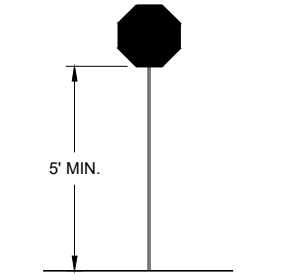
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSE ACROSS THE LANE AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER

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

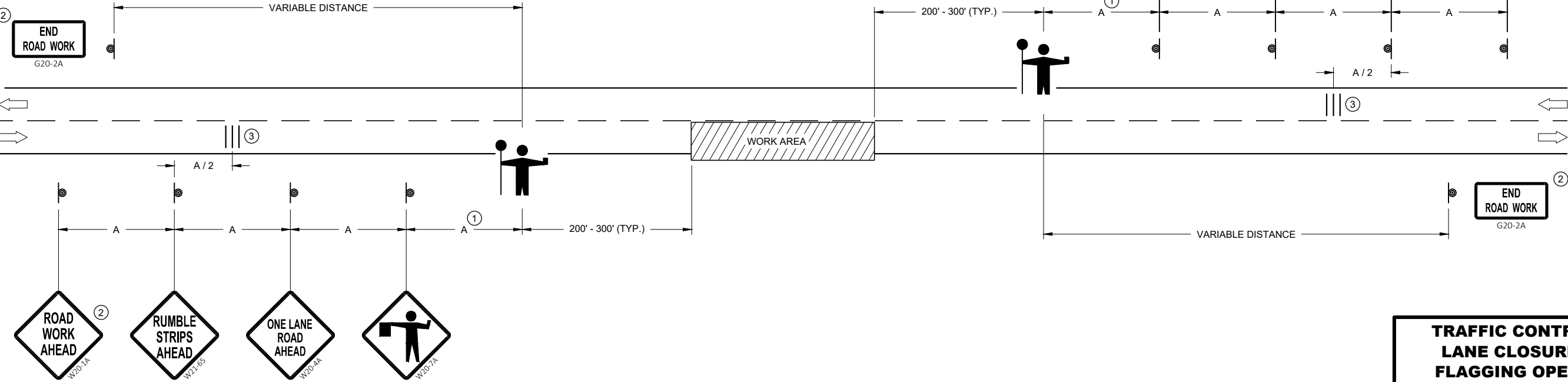
SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



W03-4

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  
May 2022 /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.

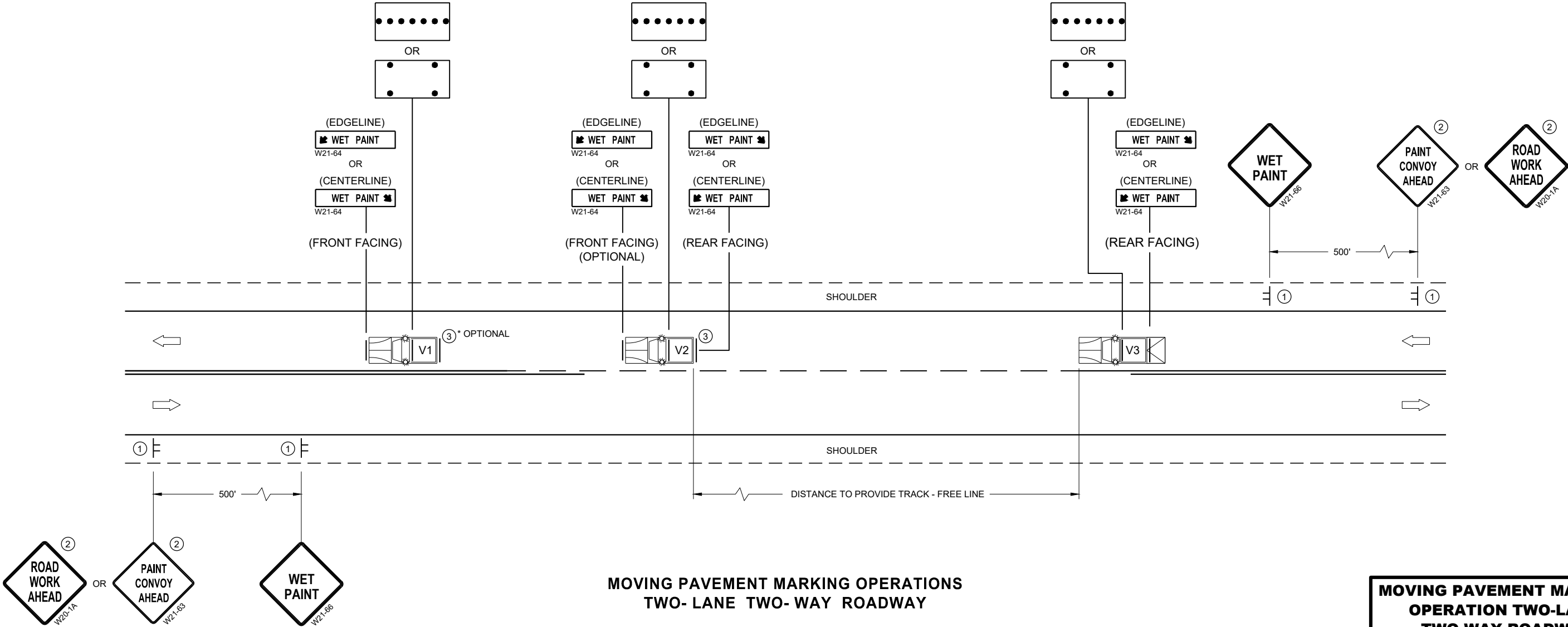
THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

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.
- ③ V1 AND V2 CAN BE SWITCHED SO THAT THE MARKER IS THE LEAD VEHICLE.

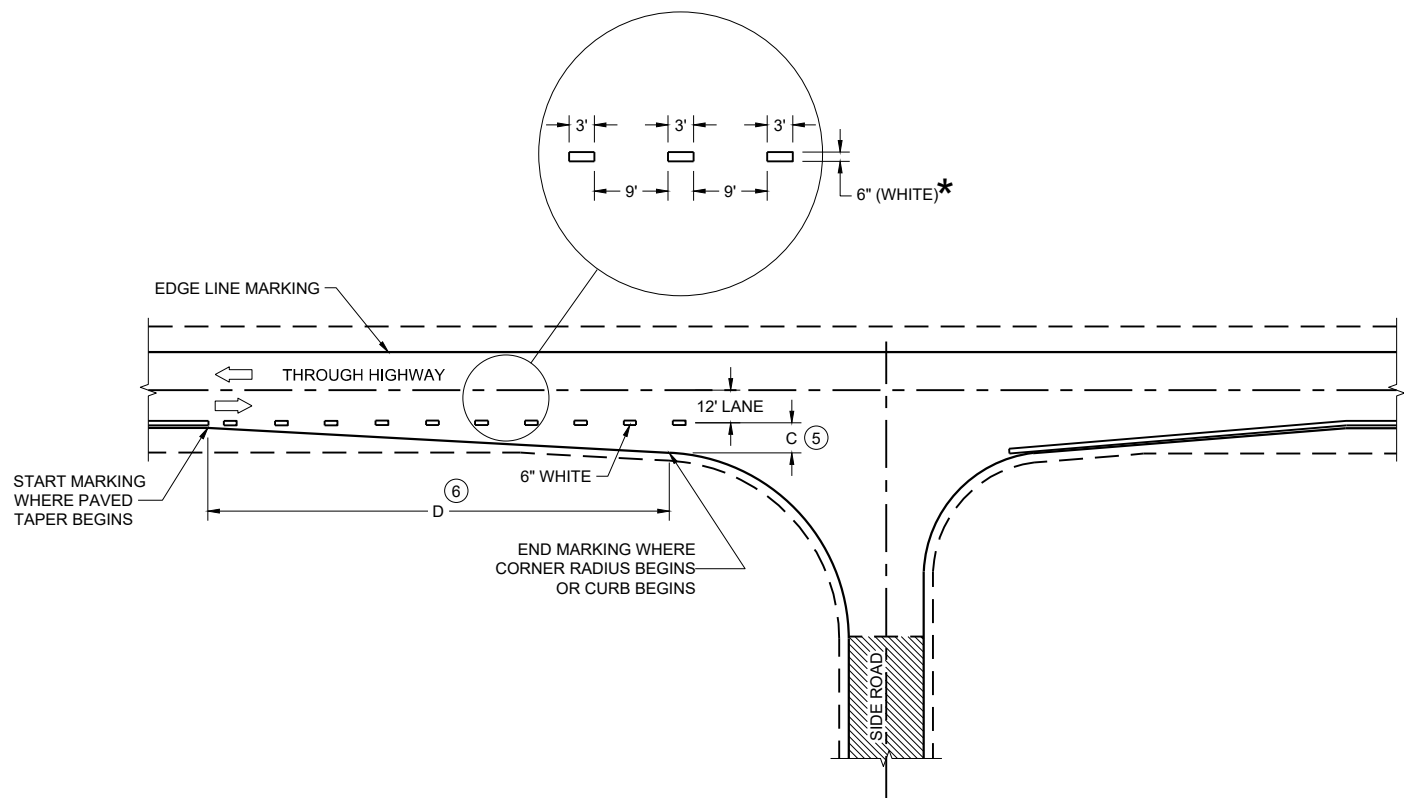


MOVING PAVEMENT MARKING OPERATIONS  
TWO-LANE TWO-WAY ROADWAY

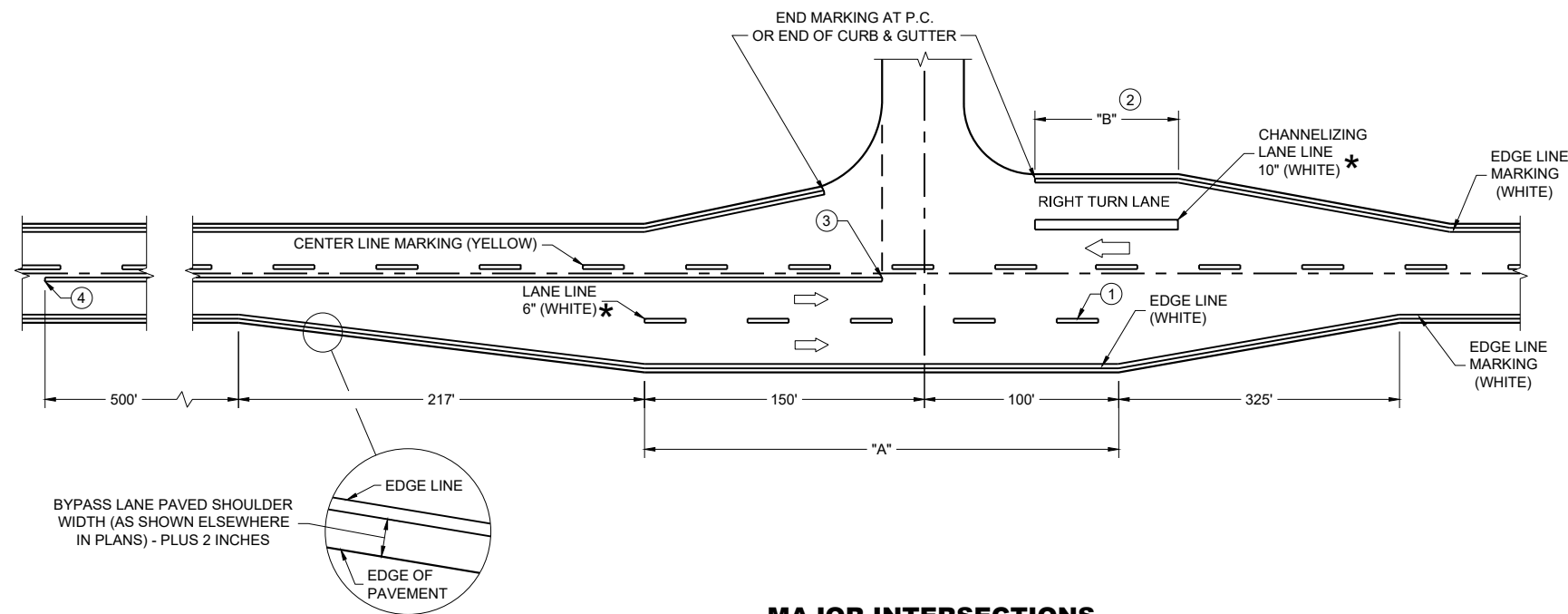
MOVING PAVEMENT MARKING  
OPERATION TWO-LANE  
TWO-WAY ROADWAY

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
February 2023 /S/ Andrew Heidtke  
DATE WORK ZONE ENGINEER  
FHWA



MINOR INTERSECTION



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

\*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

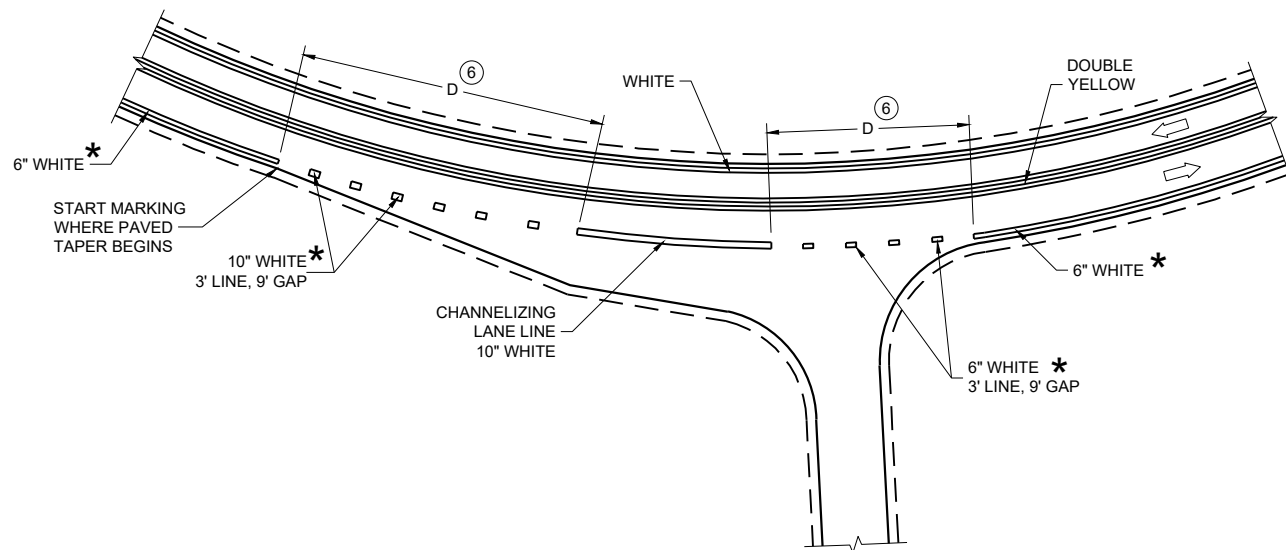
GENERAL NOTES

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



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING  
(INTERSECTIONS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

LEGEND

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

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.

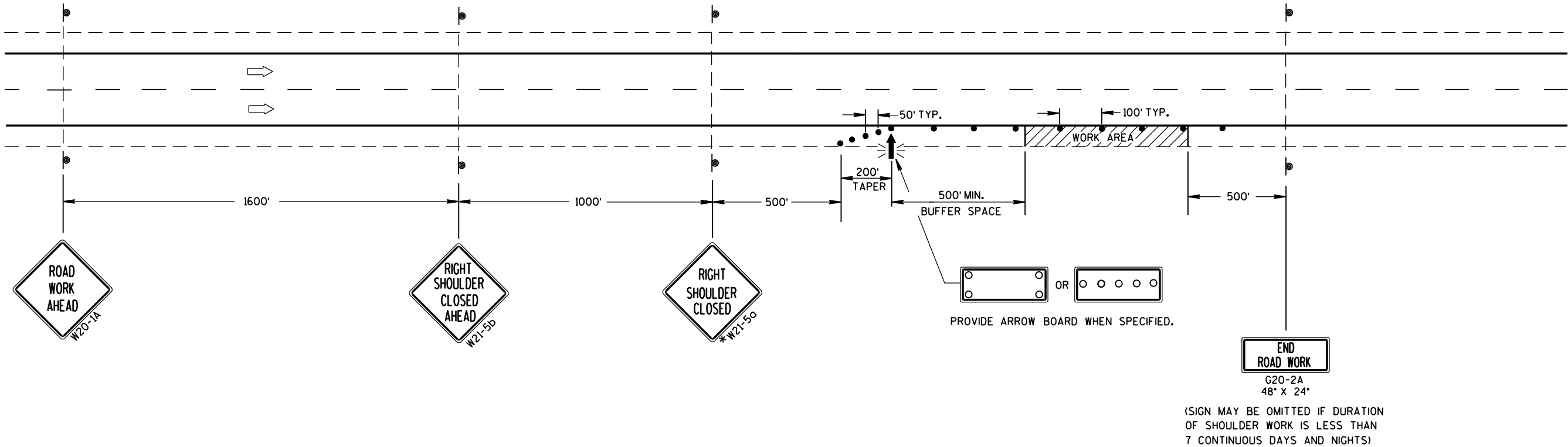
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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 W21-5a SIGN MAY BE OMITTED.



TRAFFIC CONTROL  
SHOULDER CLOSURE ON DIVIDED  
ROADWAY, SPEEDS GREATER  
THAN 40 MPH

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
June 2016 /S/ Peter Amakobe Atepe  
DATE STATEWIDE WORK ZONE TRAFFIC  
FHWA SAFETY ENGINEER

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.

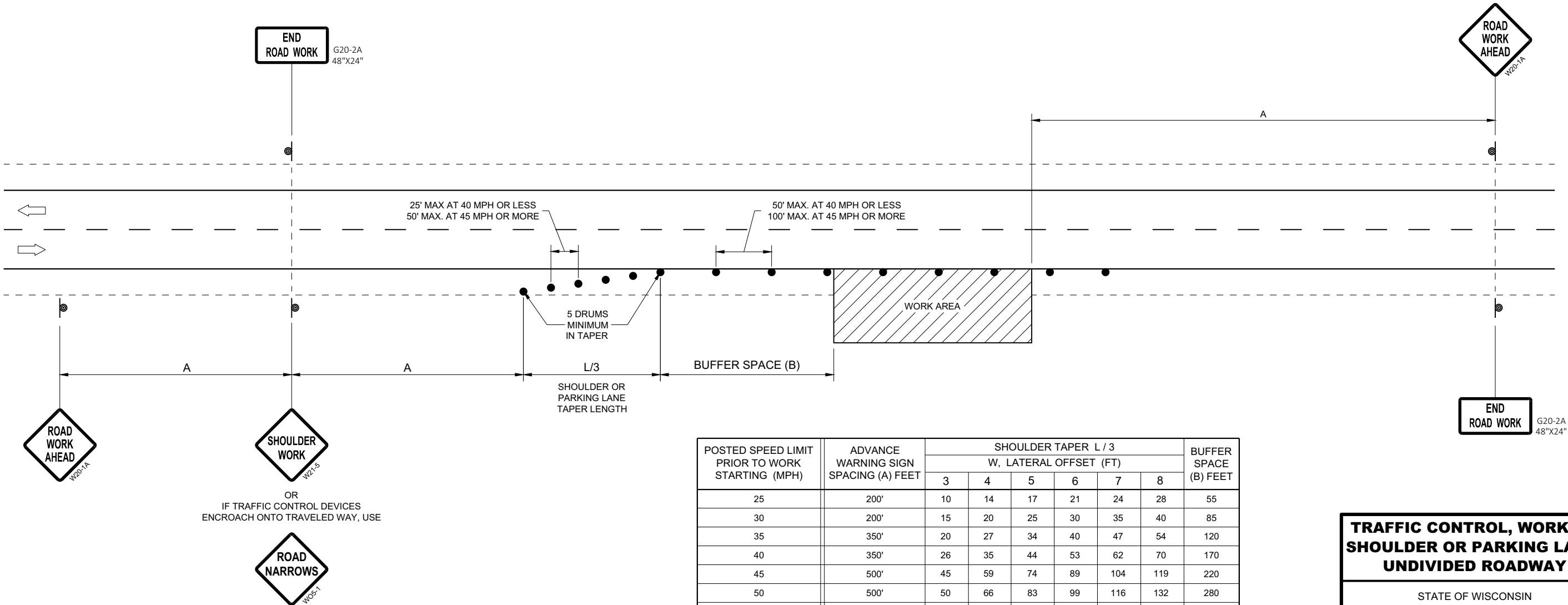
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

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.



| 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'                        |

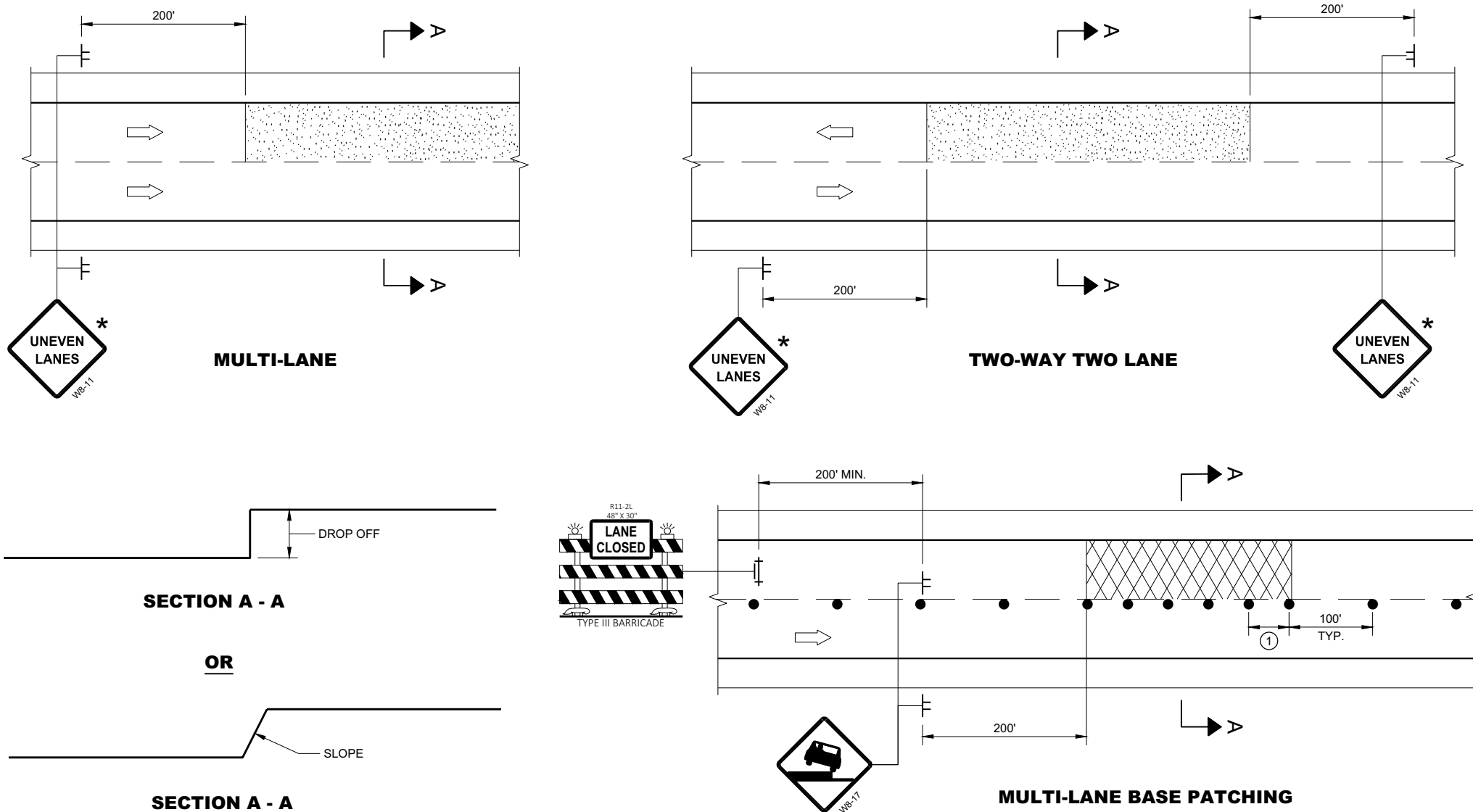
TRAFFIC CONTROL, WORK ON  
SHOULDER OR PARKING LANE,  
UNDIVIDED ROADWAY

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
May 2020  
DATE

/S/ Andrew Heidtke  
STATEWIDE WORK ZONE TRAFFIC  
SAFETY ENGINEER

FHWA



**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.

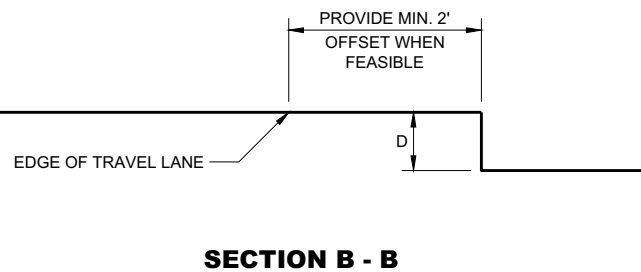
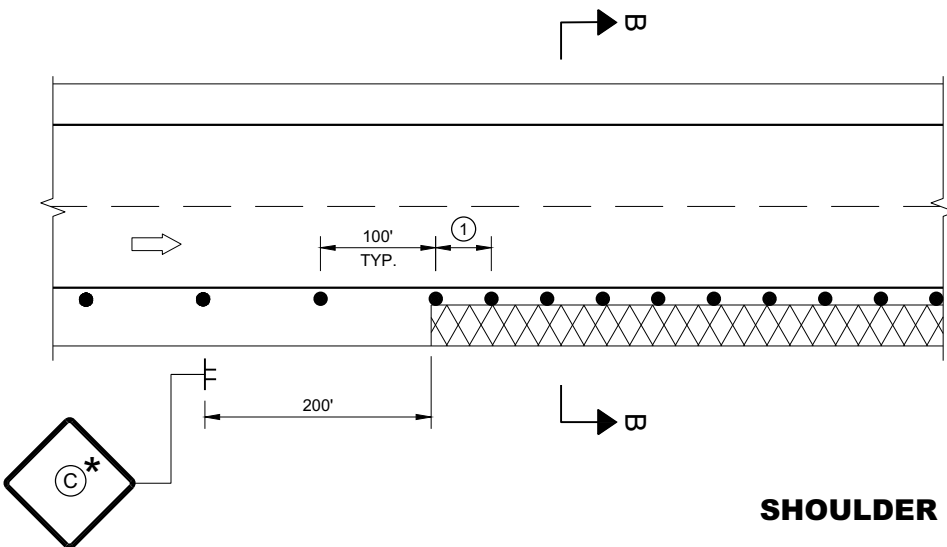
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

\* 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



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

**TRAFFIC CONTROL,  
DROP-OFF SIGNING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
March 2018  
DATE

/S/ Andrew Heidtke  
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.

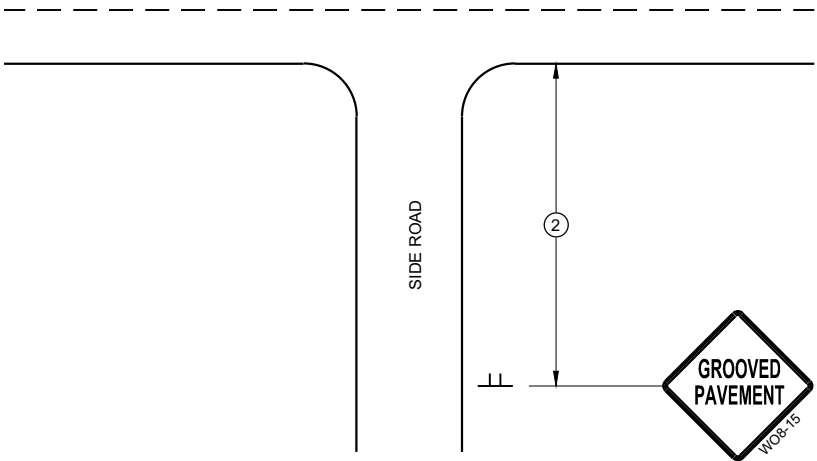
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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.

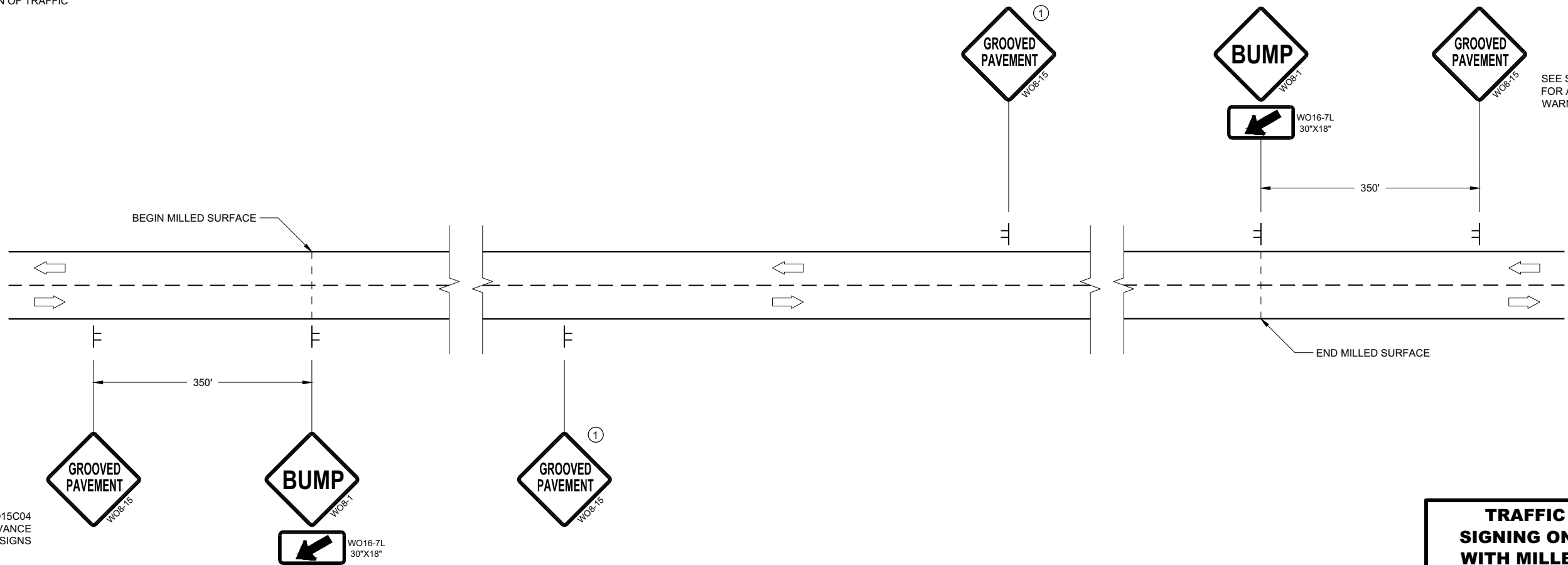
- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

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.

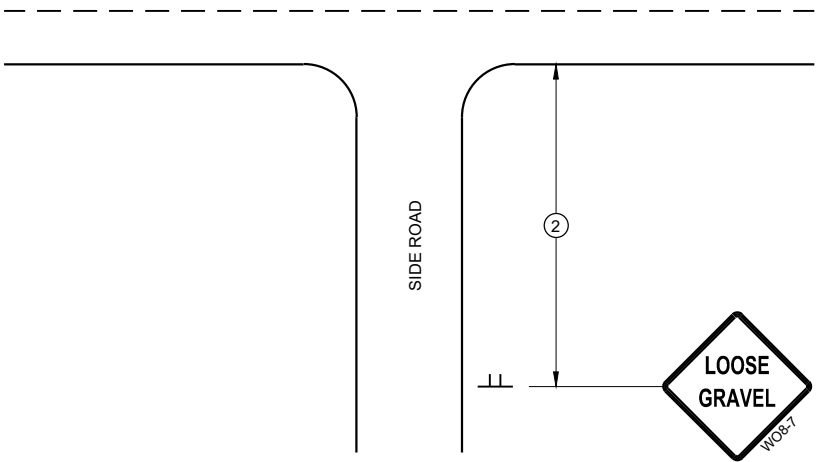
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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.

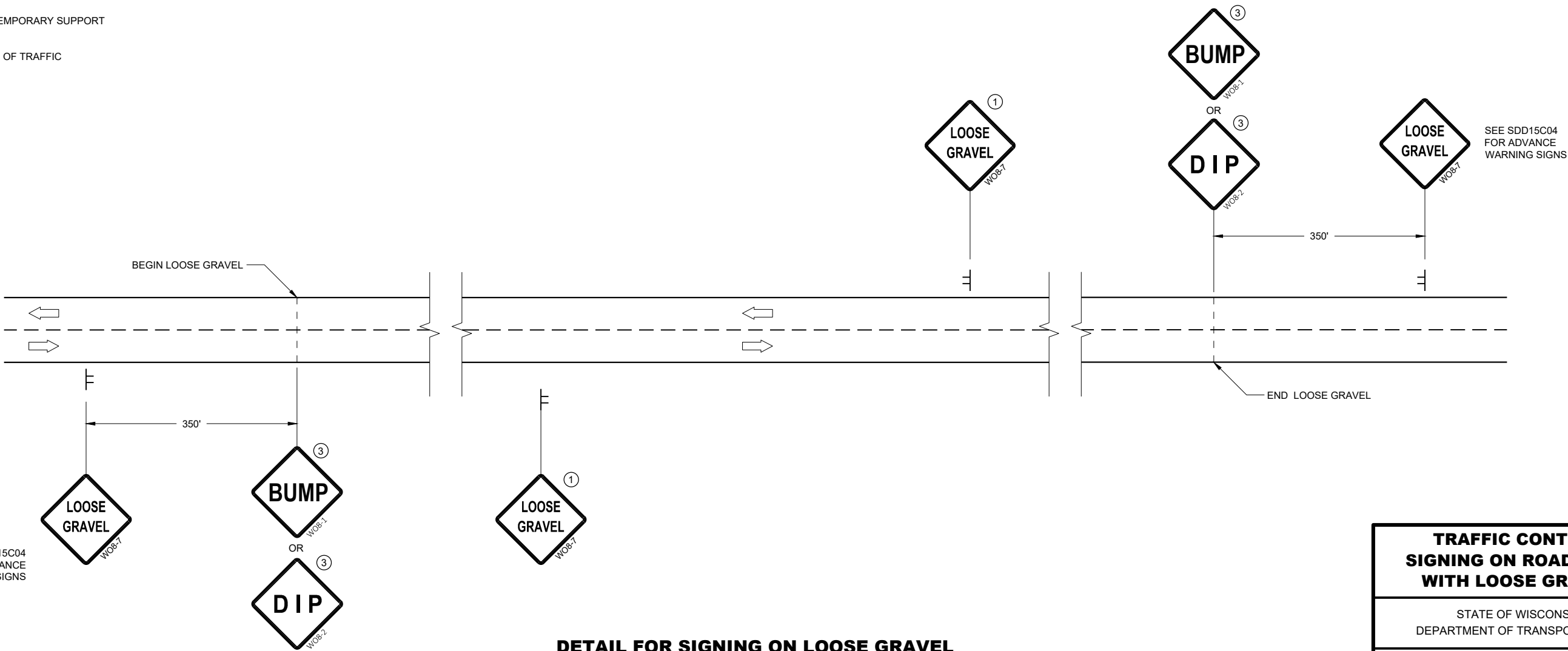
- 1 PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED OR LOOSE GRAVEL SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- 2 PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.
- 3 ADD WO8-1 OR WO8-2 SIGN WHEN THE CONDITION IS PRESENT.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH  
SIGN DETAIL



DETAIL FOR SIGNING ON LOOSE GRAVEL  
OR CHIP SEALED SURFACES

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

LEGEND

- V1

WORK VEHICLE
- V2

SHADOW VEHICLE
- 

TRUCK MOUNTED ATTENUATOR (TMA)
- 

FLASHING ARROW PANEL (CAUTION)
- 

WORK AREA
- 

DIRECTION OF TRAFFIC

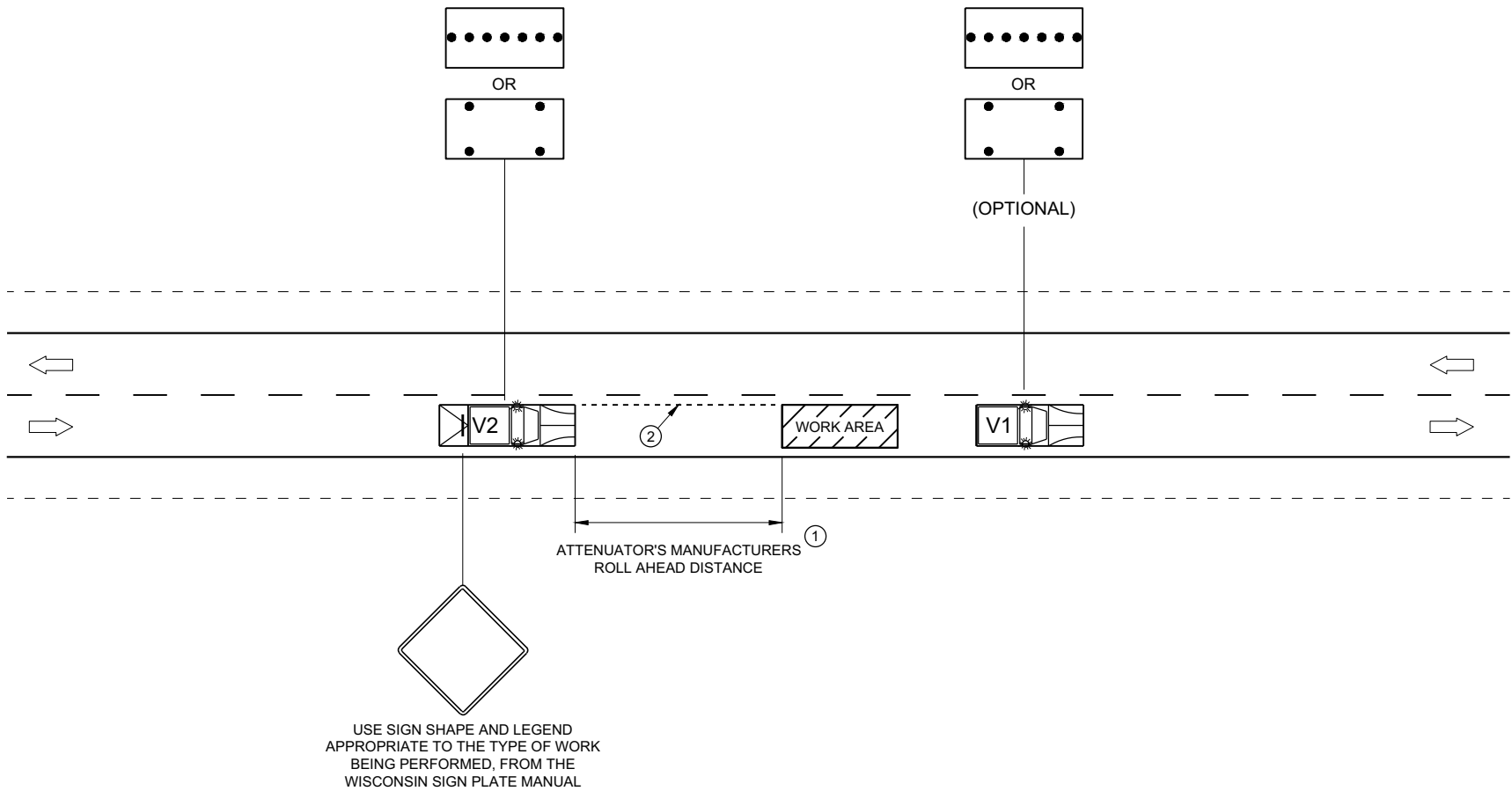
| POSTED SPEED PRIOR TO<br>WORK STARTING (MPH) | DECISION SIGHT<br>DISTANCE (D) |
|----------------------------------------------|--------------------------------|
| 0 - 25                                       | 550'                           |
| 30                                           | 550' 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

GENERAL NOTES

- ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.
- MOBILE IS WORK THAT MOVES CONTINUOUSLY OR MOVES AT LEAST THE DECISION SIGHT DISTANCE EVERY 15 MINUTES.
- ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.
- ALL ARROW PANELS SHALL BE REAR FACING, TYPE "B" OR "C", AND DISPLAYING THE FLASHING CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.
- USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.
- ①

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

ALIGN LEFT SIDE OF SHADOW VEHICLE WITH EDGE OF WORK AREA.

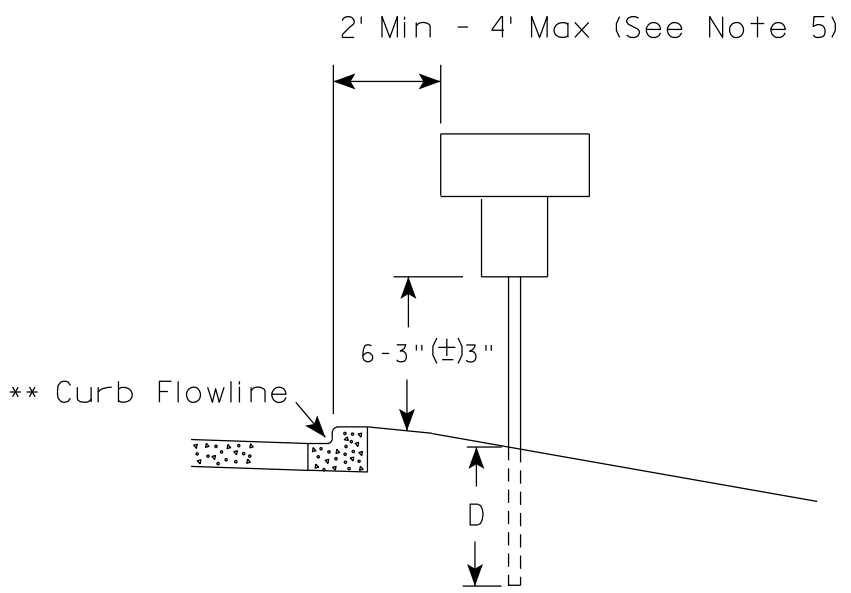
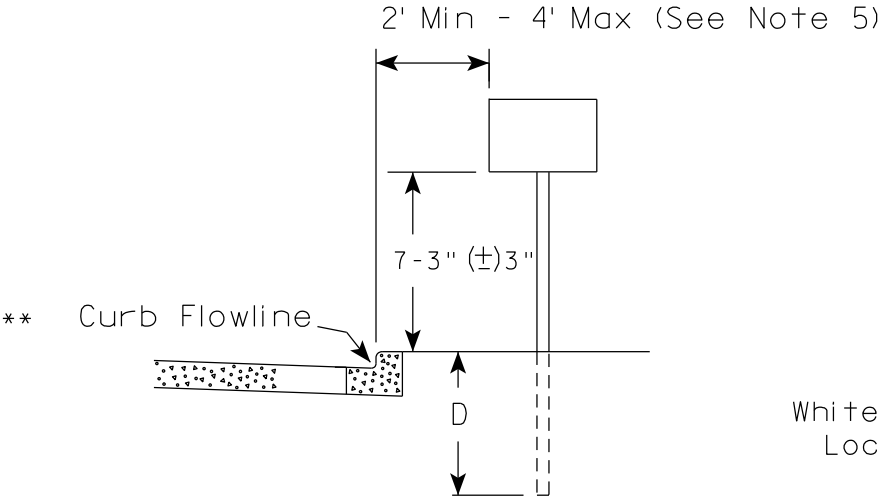


TRAFFIC CONTROL,  
MOBILE OPERATIONS ON  
AN UNDIVIDED ROADWAY

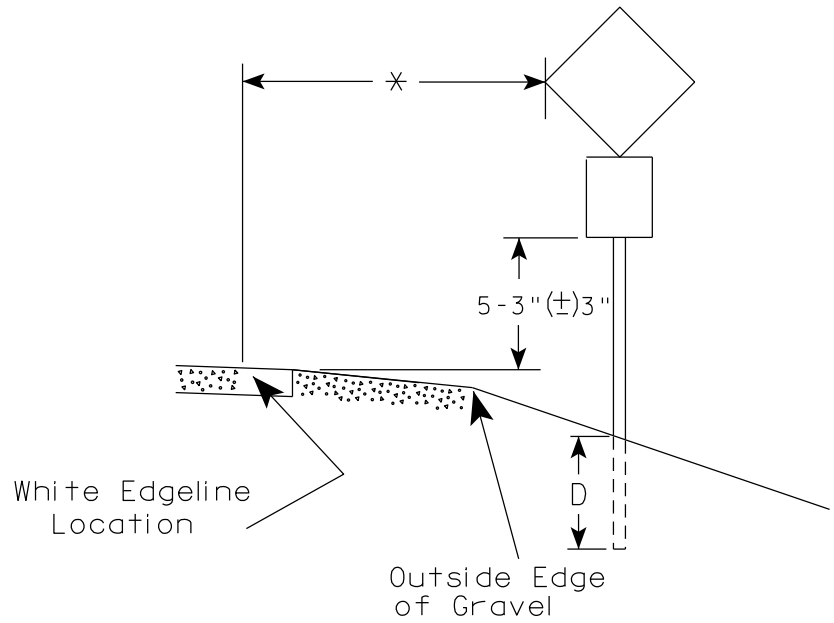
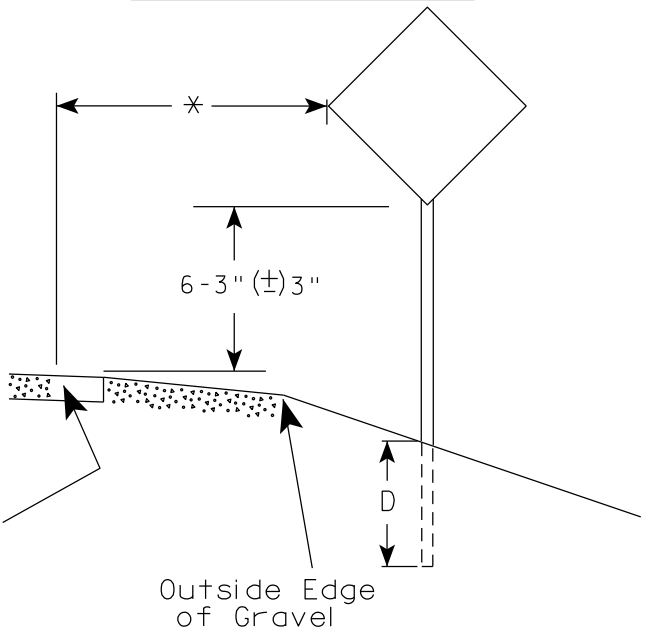
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

URBAN AREA



RURAL AREA (See Note 2)



POST EMBEDMENT DEPTH

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

GENERAL NOTES

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

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

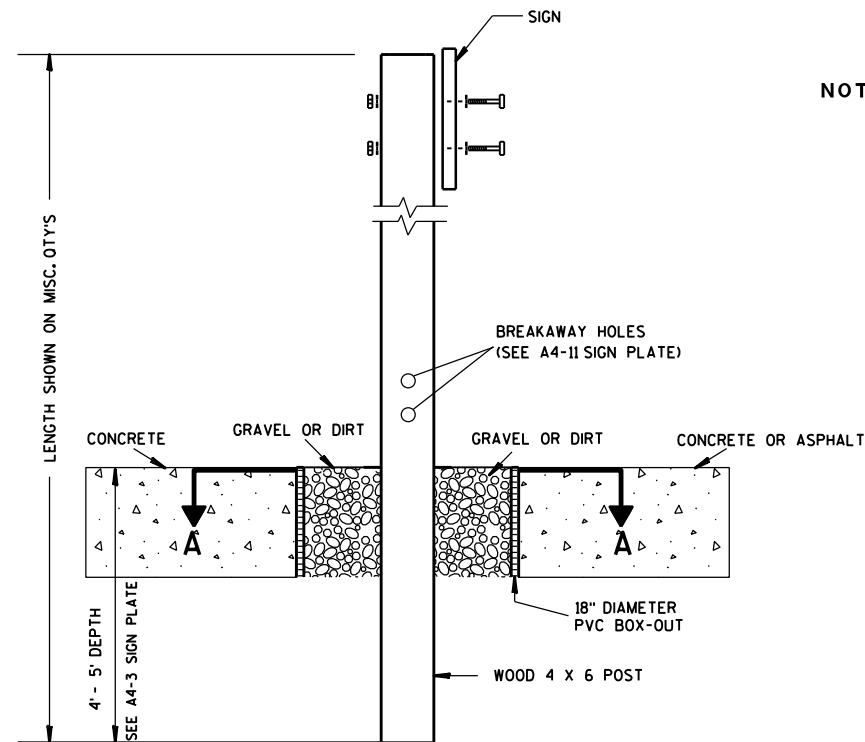
\* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION  
OF PERMANENT TYPE II  
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

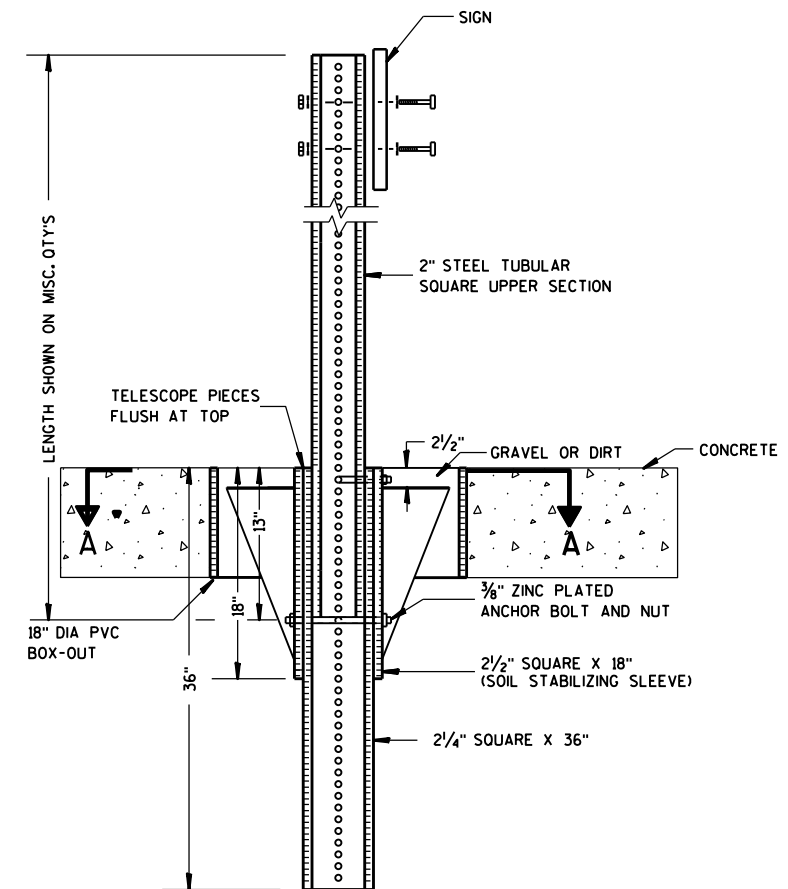
DATE 12/6/23 PLATE NO. A4-3.23



### ELEVATION VIEW

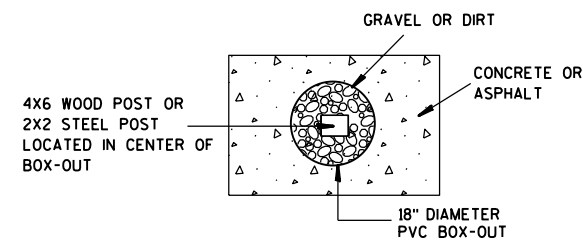
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



### ELEVATION VIEW

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



### PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST  
BOX-OUTS  
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

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

PROJECT NO:

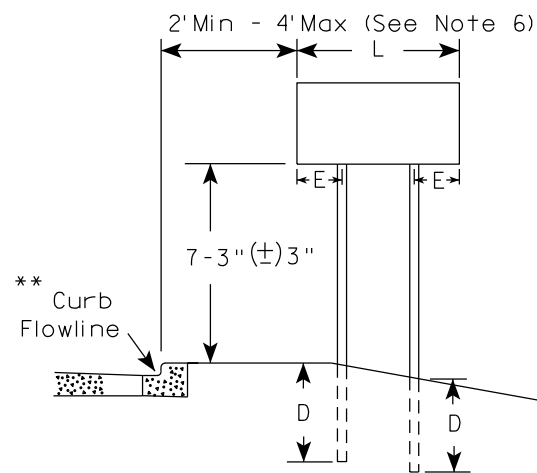
HWY:

COUNTY:

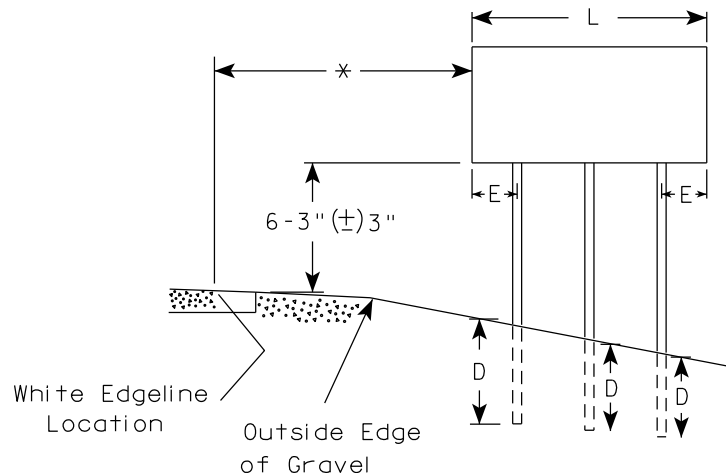
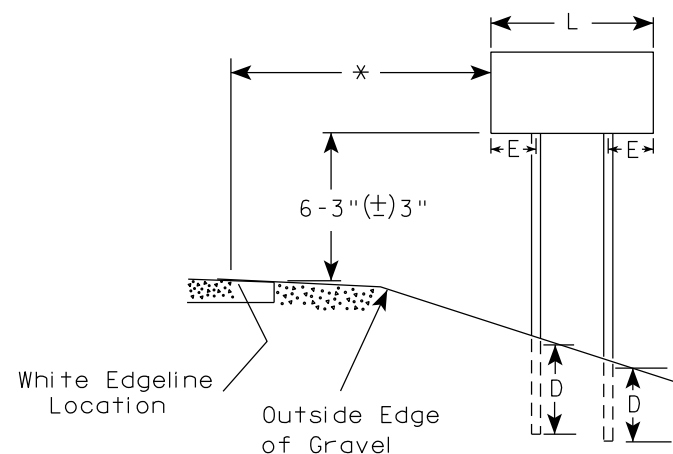
SHEET NO:

E

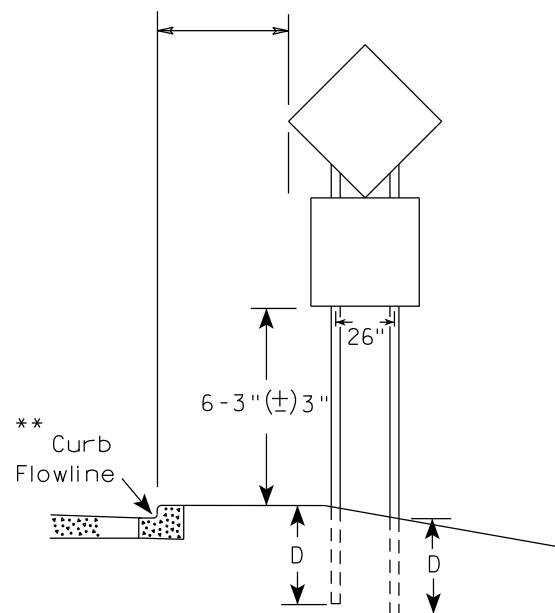
URBAN AREA



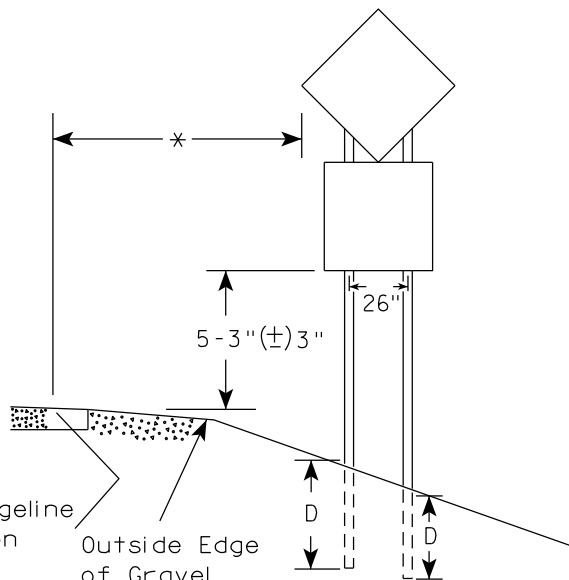
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

\*\*\*

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION  
OF TYPE II SIGNS  
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 12/6/23 PLATE NO. A4-4.16

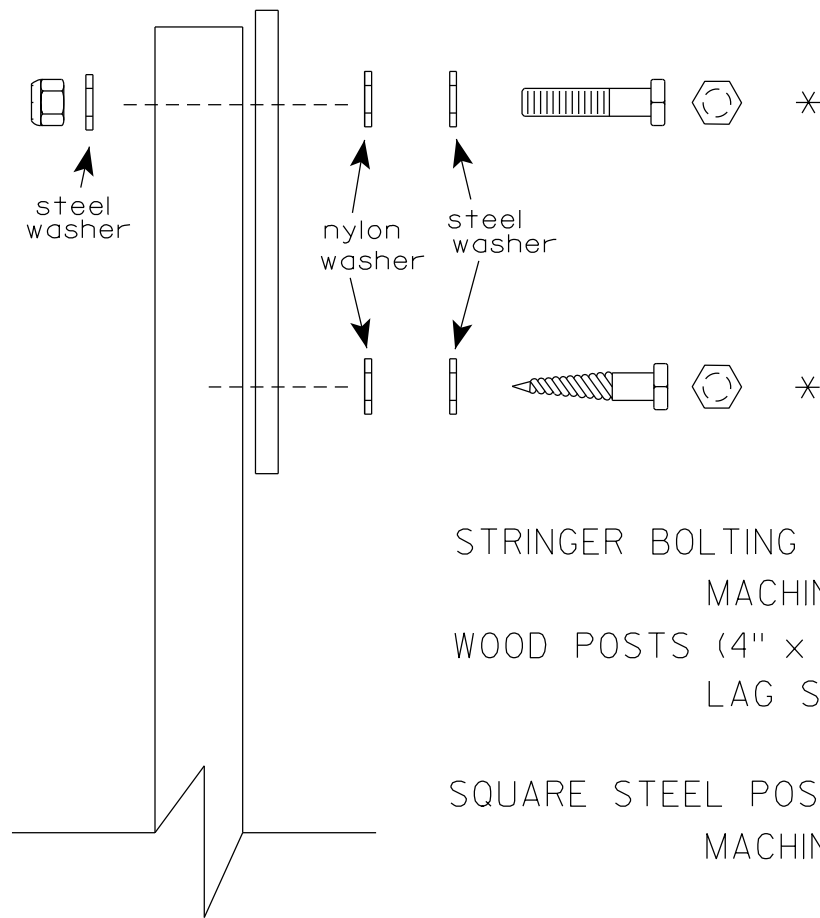
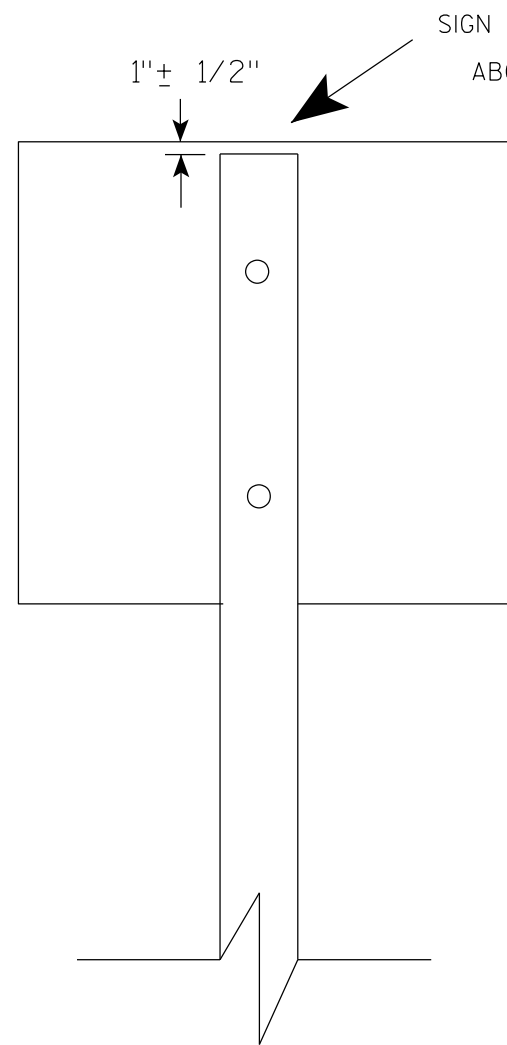
GENERAL NOTES

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

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

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

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



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

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

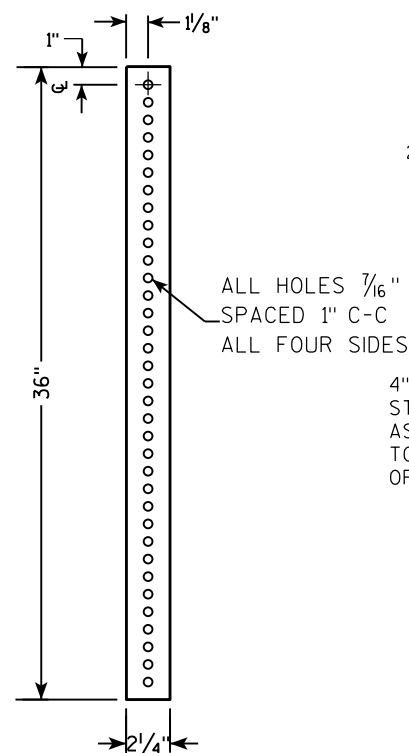
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

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

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

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

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



2 1/2" TELESPAR TUBE

4" x 10" x 10 GA. STEEL PLATE (CUT AS SHOWN) WELDED TO ALL FOUR CORNERS OF TELESPAR TUBE

4"

2 1/2"

10"

3 1/2"

18"

[illegible]

TECHNICAL DRAWING OF A SIGNPOST ASSEMBLY:

- Dimensions:**
  - Overall height: LENGTH SHOWN ON MISC. Q'TYS
  - Section A-A: 36" (total), 18" (upper), 12" (lower)
  - Section B-B: 1"
- Components:**
  - SIGN
  - SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL
  - 2" STEEL TUBULAR SQUARE UPPER SECTION
  - ALL HOLES  $\frac{7}{16}$ " SPACED 1" C-C
  - ALL FOUR SIDES
  - $\frac{3}{8}$ " ZINC PLATED CORNER ANCHOR BOLT AND NUT
  - $\frac{3}{8}$ " ZINC PLATED ANCHOR BOLT AND NUT
  - 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)
  - 2 1/4" SQUARE X 36"
  - TELESCOPE PIECES FLUSH AT TOP

A schematic diagram of a square microfluidic chip. It features a central square channel with rounded corners. This central channel is surrounded by a larger square frame, also with rounded corners. Four ports are located at the midpoints of the outer frame's sides, serving as inlets or outlets. A small rectangular component is attached to the top center of the chip, with a line extending from it into the central channel.

DIRECTION  
OF TRAFFIC

SECTION A-A

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

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

TUBULAR STEEL  
SIGN POST  
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch

for State Traffic Engineer

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

PROJECT NO:

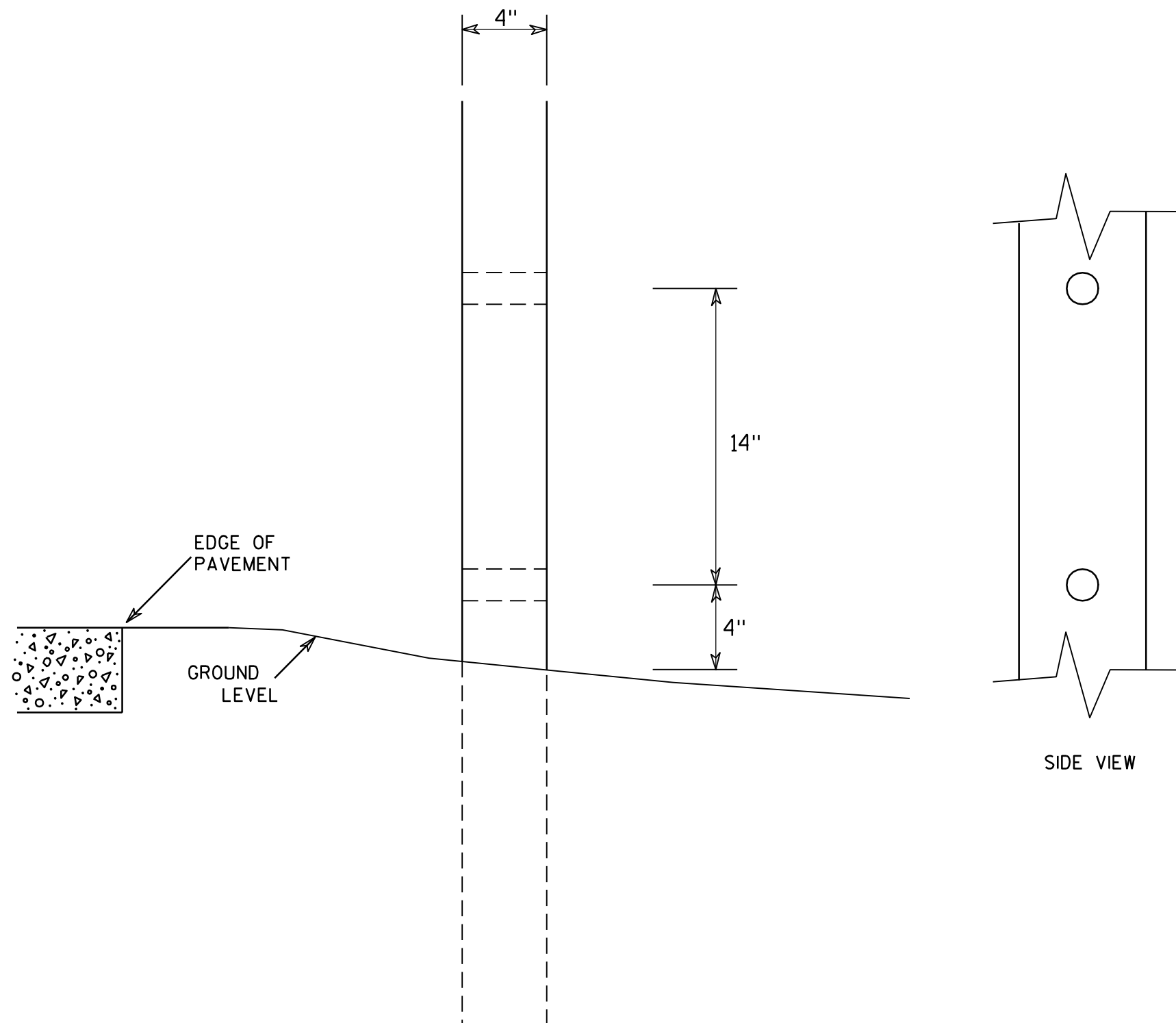
HWY:

COUNTY:

SHEET NO:

1

7



### GENERAL NOTES

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

7

## 4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Chester J. Spang*  
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

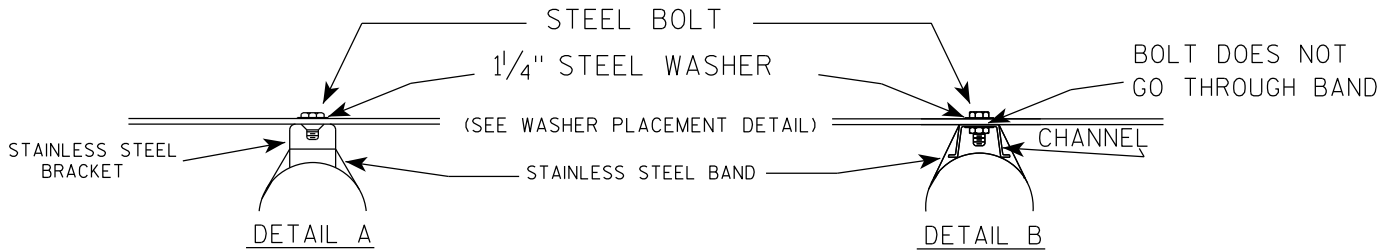
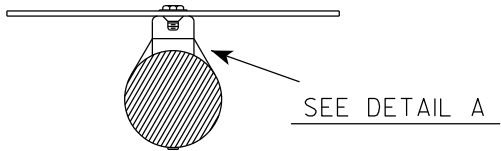
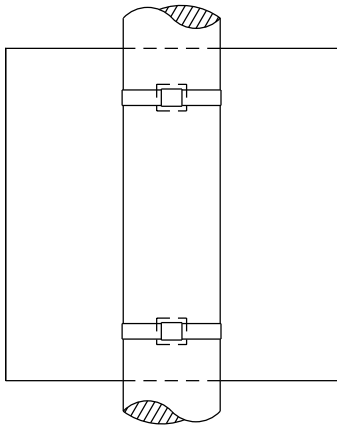
COUNTY:

SHEET NO:

E

BANDING

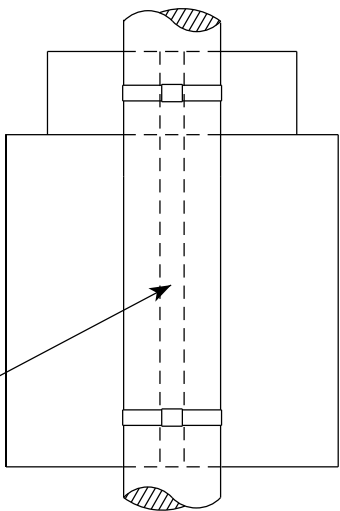
SINGLE SIGN



GENERAL NOTES

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

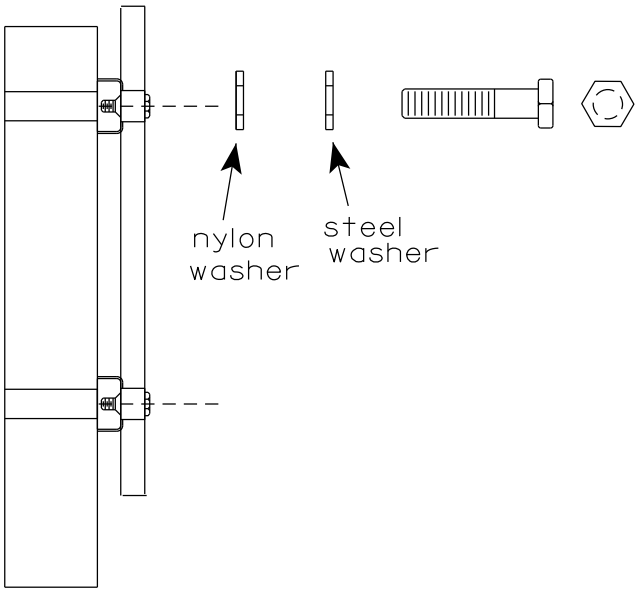
"J" ASSEMBLY



CHANNEL  
SEE TYPICAL PANEL  
INSTALLATION SHEET

SEE DETAIL B

WASHER PLACEMENT

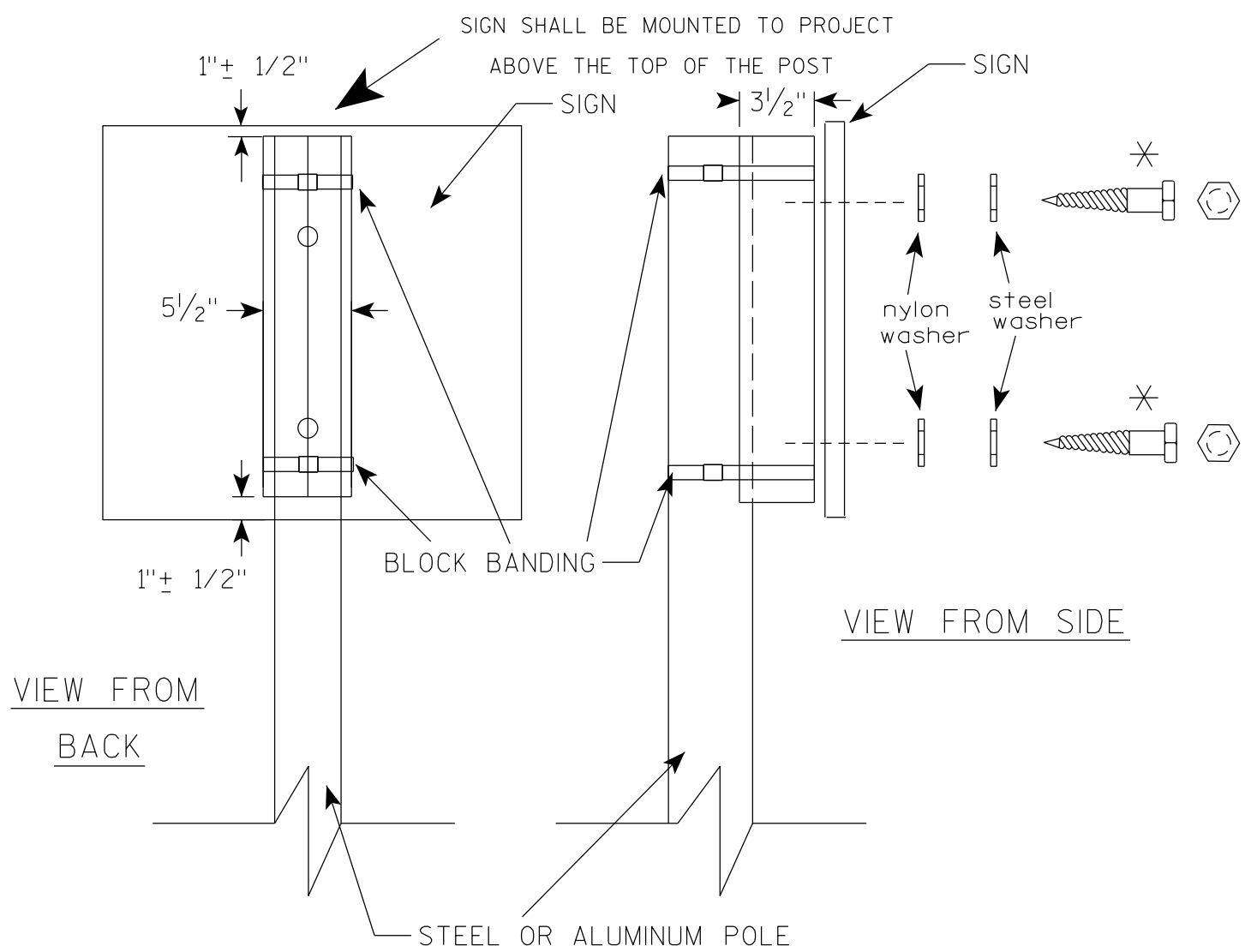


WASHERS (ALL POSTS) -  
1-1/4" O.D. X  $\frac{3}{8}$ " I.D. X  $\frac{1}{16}$ " STEEL  
1-1/4" O.D. X  $\frac{3}{8}$ " I.D. X .080 NYLON  
FOR ALL TYPE H SIGNS

STANDARD SIGN  
SIGN BANDING DETAILS

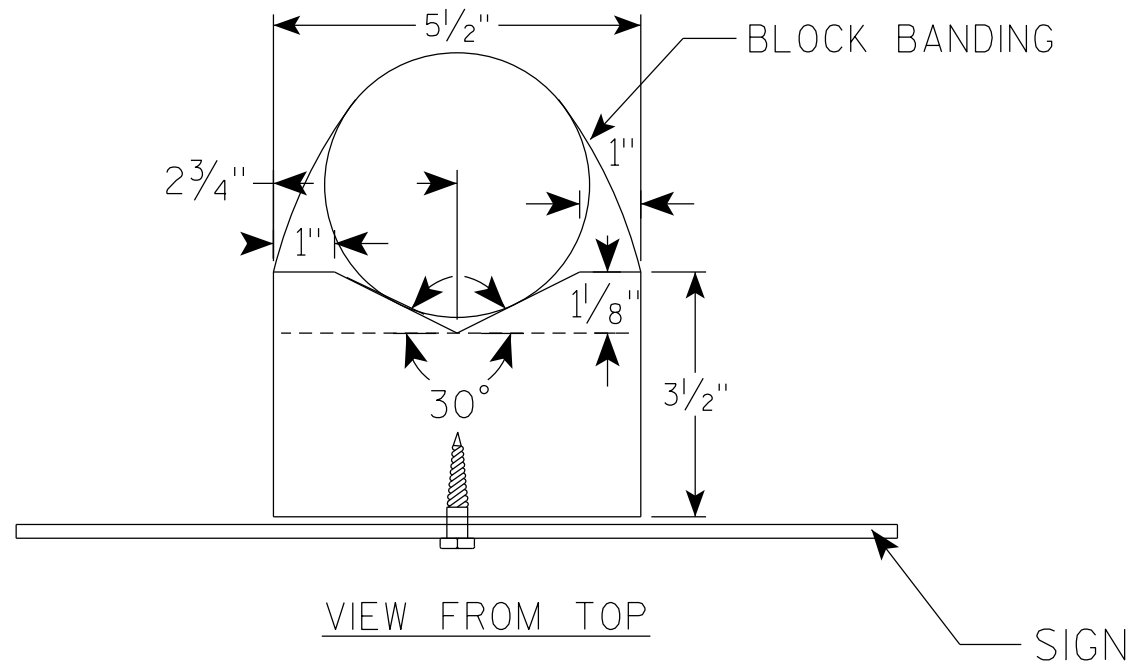
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer  
DATE 6/10/19 PLATE NO. A5-9.4



VIEW FROM  
BACK

VIEW FROM SIDE



VIEW FROM TOP

## GENERAL NOTES

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

✱ LAG BOLTS SHALL BE  $\frac{3}{8}$ " X  $2\frac{1}{2}$ "

BLOCK BANDING DETAIL  
( V-BLOCK OPTION )

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 4/19/2022 PLATE NO. A5-10.3

PROJECT NO:

SHEET NO:

E

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
  - Background - Orange
  - Message - Black
- 3. Message Series - D
- 4. Substitute appropriate numeral and adjust spacing to achieve proper balance.



G20-57

| SIZE | A  | B  | C     | D   | E   | F | G     | H     | I      | J     | K | L      | M      | N     | O     | P      | Q | R      | S     | T     | U      | V | W | X | Y | Z | Area<br>sq. ft. |
|------|----|----|-------|-----|-----|---|-------|-------|--------|-------|---|--------|--------|-------|-------|--------|---|--------|-------|-------|--------|---|---|---|---|---|-----------------|
| 1    |    |    |       |     |     |   |       |       |        |       |   |        |        |       |       |        |   |        |       |       |        |   |   |   |   |   |                 |
| 2    |    |    |       |     |     |   |       |       |        |       |   |        |        |       |       |        |   |        |       |       |        |   |   |   |   |   |                 |
| 3    | 72 | 36 | 1 1/8 | 1/2 | 5/8 | 6 | 5     | 4     | 15 5/8 | 1 5/8 | 5 | 9 1/4  | 21 1/4 | 3 1/2 | 1 1/2 | 23 1/4 |   | 29 7/8 | 1 3/4 | 3 1/4 | 28 1/2 |   |   |   |   |   | 18.0            |
| 4    | 96 | 48 | 2 1/4 | 3/4 | 1   | 8 | 6 1/2 | 5 1/2 | 20 5/8 | 2 1/4 | 6 | 12 1/4 | 28 1/4 | 4 3/8 | 1 5/8 | 31     |   | 39 1/4 | 2     | 4     | 37 7/8 |   |   |   |   |   | 32.0            |
| 5    |    |    |       |     |     |   |       |       |        |       |   |        |        |       |       |        |   |        |       |       |        |   |   |   |   |   |                 |

STANDARD SIGN  
G20-57

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
For State Traffic Engineer

DATE 1/22/19 PLATE NO. G20-57.3

PROJECT NO: HWY: COUNTY: SHEET NO: E

EARTHWORK SUMMARY

| DIVISION 1 - ALIGNMENT - STH 64 |              |          |           |                                        |      |                                   |                                        |      |                     |               |               |
|---------------------------------|--------------|----------|-----------|----------------------------------------|------|-----------------------------------|----------------------------------------|------|---------------------|---------------|---------------|
| STATION                         | REAL STATION | DISTANCE | AREA (SF) |                                        |      | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |               |
|                                 |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDINATE |
|                                 |              |          |           |                                        |      |                                   |                                        |      | 1.00                | 1.25          |               |
|                                 |              |          |           |                                        |      |                                   |                                        |      |                     |               |               |
| 425+89.89                       | 42589.89     | 0.00     | 28.17     | 18.75                                  | 0.00 | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 426+00.00                       | 42600.00     | 10.11    | 28.13     | 18.75                                  | 0.44 | 11                                | 7                                      | 0    | 11                  | 0             | 4             |
| 426+12.47                       | 42612.47     | 12.47    | 29.17     | 18.75                                  | 0.58 | 13                                | 9                                      | 0    | 24                  | 0             | 8             |
| 426+15.00                       | 42615.00     | 2.53     | 27.62     | 18.75                                  | 0.03 | 3                                 | 2                                      | 0    | 27                  | 0             | 9             |
| 426+20.00                       | 42620.00     | 5.00     | 28.55     | 18.75                                  | 0.20 | 5                                 | 3                                      | 0    | 32                  | 0             | 11            |
| 426+25.00                       | 42625.00     | 5.00     | 26.51     | 18.75                                  | 0.43 | 5                                 | 3                                      | 0    | 37                  | 0             | 13            |
| 426+30.00                       | 42630.00     | 5.00     | 29.85     | 18.75                                  | 0.49 | 5                                 | 3                                      | 0    | 42                  | 0             | 15            |
| 426+35.00                       | 42635.00     | 5.00     | 33.41     | 18.75                                  | 0.19 | 6                                 | 3                                      | 0    | 48                  | 0             | 18            |
| 426+40.00                       | 42640.00     | 5.00     | 34.54     | 18.75                                  | 0.43 | 6                                 | 3                                      | 0    | 54                  | 0             | 21            |
| 426+45.00                       | 42645.00     | 5.00     | 32.52     | 18.75                                  | 0.60 | 6                                 | 3                                      | 0    | 60                  | 0             | 24            |
| 426+50.00                       | 42650.00     | 5.00     | 29.84     | 18.75                                  | 0.83 | 6                                 | 3                                      | 0    | 66                  | 0             | 27            |
| 426+55.00                       | 42655.00     | 5.00     | 26.55     | 18.75                                  | 1.09 | 5                                 | 3                                      | 0    | 71                  | 0             | 29            |
| 426+60.00                       | 42660.00     | 5.00     | 23.50     | 18.75                                  | 1.44 | 5                                 | 3                                      | 0    | 76                  | 0             | 31            |
| 426+65.00                       | 42665.00     | 5.00     | 25.49     | 18.75                                  | 1.57 | 5                                 | 3                                      | 0    | 81                  | 0             | 33            |
| 426+70.00                       | 42670.00     | 5.00     | 27.29     | 18.75                                  | 1.82 | 5                                 | 3                                      | 0    | 86                  | 0             | 35            |
| 426+75.00                       | 42675.00     | 5.00     | 28.85     | 18.75                                  | 1.93 | 5                                 | 3                                      | 0    | 91                  | 0             | 37            |
| 426+80.00                       | 42680.00     | 5.00     | 30.44     | 18.75                                  | 1.95 | 5                                 | 3                                      | 0    | 96                  | 0             | 39            |
| 426+85.00                       | 42685.00     | 5.00     | 29.33     | 18.75                                  | 2.17 | 6                                 | 3                                      | 0    | 102                 | 0             | 42            |
| 426+90.00                       | 42690.00     | 5.00     | 26.03     | 18.75                                  | 2.07 | 5                                 | 3                                      | 0    | 107                 | 0             | 44            |
| 426+95.00                       | 42695.00     | 5.00     | 24.12     | 18.75                                  | 2.19 | 5                                 | 3                                      | 0    | 112                 | 0             | 46            |
| 427+00.00                       | 42700.00     | 5.00     | 23.37     | 18.75                                  | 2.15 | 4                                 | 3                                      | 0    | 116                 | 0             | 47            |
| 427+05.00                       | 42705.00     | 5.00     | 23.73     | 18.75                                  | 2.09 | 4                                 | 3                                      | 0    | 120                 | 0             | 48            |
| 427+06.63                       | 42706.63     | 1.63     | 25.03     | 18.75                                  | 2.51 | 1                                 | 1                                      | 0    | 121                 | 0             | 48            |
| 427+50.00                       | 42750.00     | 43.37    | 28.27     | 18.75                                  | 2.30 | 43                                | 30                                     | 4    | 164                 | 5             | 56            |
| 428+00.00                       | 42800.00     | 50.00    | 25.42     | 18.75                                  | 0.20 | 50                                | 35                                     | 2    | 214                 | 8             | 69            |
| 428+11.12                       | 42811.12     | 11.12    | 26.40     | 18.75                                  | 0.34 | 11                                | 8                                      | 0    | 225                 | 8             | 72            |
| 428+50.00                       | 42850.00     | 38.88    | 27.39     | 18.75                                  | 1.87 | 39                                | 27                                     | 2    | 264                 | 10            | 81            |
| 429+00.00                       | 42900.00     | 50.00    | 31.90     | 18.75                                  | 1.43 | 55                                | 35                                     | 3    | 319                 | 14            | 97            |
| 429+50.00                       | 42950.00     | 50.00    | 31.62     | 18.75                                  | 1.77 | 59                                | 35                                     | 3    | 378                 | 18            | 118           |
| 430+00.00                       | 43000.00     | 50.00    | 28.72     | 18.75                                  | 1.97 | 56                                | 35                                     | 3    | 434                 | 21            | 135           |
| 430+50.00                       | 43050.00     | 50.00    | 32.65     | 18.75                                  | 1.10 | 57                                | 35                                     | 3    | 491                 | 25            | 153           |
| 430+82.80                       | 43082.80     | 32.80    | 40.54     | 18.75                                  | 0.24 | 44                                | 23                                     | 1    | 535                 | 26            | 173           |
| 431+00.00                       | 43100.00     | 17.20    | 36.89     | 18.75                                  | 0.76 | 25                                | 12                                     | 0    | 560                 | 26            | 186           |
| 431+06.20                       | 43106.20     | 6.20     | 36.54     | 18.75                                  | 0.54 | 8                                 | 4                                      | 0    | 568                 | 26            | 190           |
| 431+50.00                       | 43150.00     | 43.80    | 31.22     | 18.75                                  | 0.59 | 55                                | 30                                     | 1    | 623                 | 28            | 214           |
| 431+59.24                       | 43159.24     | 9.24     | 33.13     | 18.75                                  | 0.56 | 11                                | 6                                      | 0    | 634                 | 28            | 219           |
| 431+70.91                       | 43170.91     | 11.67    | 31.41     | 18.75                                  | 1.69 | 14                                | 8                                      | 0    | 648                 | 28            | 225           |
| 431+75.00                       | 43175.00     | 4.09     | 29.90     | 18.75                                  | 1.19 | 5                                 | 3                                      | 0    | 653                 | 28            | 227           |
| 431+80.00                       | 43180.00     | 5.00     | 30.70     | 18.75                                  | 1.21 | 6                                 | 3                                      | 0    | 659                 | 28            | 230           |
| 431+85.00                       | 43185.00     | 5.00     | 32.04     | 18.75                                  | 1.09 | 6                                 | 3                                      | 0    | 665                 | 28            | 233           |
| 431+90.00                       | 43190.00     | 5.00     | 33.88     | 18.75                                  | 1.17 | 6                                 | 3                                      | 0    | 671                 | 28            | 236           |
| 431+95.00                       | 43195.00     | 5.00     | 37.09     | 18.75                                  | 1.07 | 7                                 | 3                                      | 0    | 678                 | 28            | 240           |
| 432+00.00                       | 43200.00     | 5.00     | 35.68     | 18.75                                  | 1.08 | 7                                 | 3                                      | 0    | 685                 | 28            | 244           |
| 432+05.00                       | 43205.00     | 5.00     | 33.75     | 18.75                                  | 1.42 | 6                                 | 3                                      | 0    | 691                 | 28            | 247           |
| 432+10.00                       | 43210.00     | 5.00     | 31.65     | 18.75                                  | 1.57 | 6                                 | 3                                      | 0    | 697                 | 28            | 250           |

EARTHWORK SUMMARY

| DIVISION 1 - ALIGNMENT - STH 64 CONTINUED |              |          |           |                                        |      |                                   |                                        |      |                     |               |              |
|-------------------------------------------|--------------|----------|-----------|----------------------------------------|------|-----------------------------------|----------------------------------------|------|---------------------|---------------|--------------|
| STATION                                   | REAL STATION | DISTANCE | AREA (SF) |                                        |      | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |              |
|                                           |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDNATE |
|                                           |              |          |           |                                        |      |                                   |                                        |      | 1.00                | 1.25          |              |
| 432+15.00                                 | 43215.00     | 5.00     | 29.49     | 18.75                                  | 1.61 | 6                                 | 3                                      | 0    | 703                 | 28            | 253          |
| 432+20.00                                 | 43220.00     | 5.00     | 28.32     | 18.75                                  | 1.73 | 5                                 | 3                                      | 0    | 708                 | 28            | 255          |
| 432+25.00                                 | 43225.00     | 5.00     | 31.00     | 18.75                                  | 2.03 | 5                                 | 3                                      | 0    | 713                 | 28            | 257          |
| 432+30.00                                 | 43230.00     | 5.00     | 34.21     | 18.75                                  | 1.79 | 6                                 | 3                                      | 0    | 719                 | 28            | 260          |
| 432+35.00                                 | 43235.00     | 5.00     | 38.14     | 18.75                                  | 1.61 | 7                                 | 3                                      | 0    | 726                 | 28            | 264          |
| 432+40.00                                 | 43240.00     | 5.00     | 43.38     | 18.75                                  | 1.45 | 8                                 | 3                                      | 0    | 734                 | 28            | 269          |
| 432+45.00                                 | 43245.00     | 5.00     | 44.96     | 18.75                                  | 1.24 | 8                                 | 3                                      | 0    | 742                 | 28            | 274          |
| 432+50.00                                 | 43250.00     | 5.00     | 39.52     | 18.75                                  | 1.09 | 8                                 | 3                                      | 0    | 750                 | 28            | 279          |
| 432+55.00                                 | 43255.00     | 5.00     | 36.27     | 18.75                                  | 1.08 | 7                                 | 3                                      | 0    | 757                 | 28            | 283          |
| 432+60.00                                 | 43260.00     | 5.00     | 35.30     | 18.75                                  | 1.08 | 7                                 | 3                                      | 0    | 764                 | 28            | 287          |
| 432+65.00                                 | 43265.00     | 5.00     | 34.79     | 18.75                                  | 0.95 | 6                                 | 3                                      | 0    | 770                 | 28            | 290          |
| 432+66.92                                 | 43266.92     | 1.92     | 36.21     | 18.75                                  | 1.24 | 3                                 | 1                                      | 0    | 773                 | 28            | 292          |
| 433+00.00                                 | 43300.00     | 33.08    | 40.39     | 18.75                                  | 0.46 | 47                                | 23                                     | 1    | 820                 | 29            | 314          |
| 433+08.57                                 | 43308.57     | 8.57     | 39.83     | 18.75                                  | 0.29 | 13                                | 6                                      | 0    | 833                 | 29            | 321          |
| 433+34.79                                 | 43334.79     | 26.22    | 36.07     | 18.75                                  | 0.64 | 37                                | 18                                     | 0    | 870                 | 29            | 340          |
| 433+50.00                                 | 43350.00     | 15.21    | 33.01     | 18.75                                  | 1.02 | 19                                | 11                                     | 0    | 889                 | 29            | 348          |
| 434+00.00                                 | 43400.00     | 50.00    | 34.23     | 18.75                                  | 0.79 | 62                                | 35                                     | 2    | 951                 | 31            | 373          |
| 434+50.00                                 | 43450.00     | 50.00    | 38.65     | 18.75                                  | 1.13 | 67                                | 35                                     | 2    | 1,018               | 34            | 402          |
| 435+00.00                                 | 43500.00     | 50.00    | 40.80     | 18.75                                  | 0.94 | 74                                | 35                                     | 2    | 1,092               | 36            | 439          |
| 435+50.00                                 | 43550.00     | 50.00    | 41.19     | 18.75                                  | 0.26 | 76                                | 35                                     | 1    | 1,168               | 38            | 479          |
| 435+58.51                                 | 43558.51     | 8.51     | 39.64     | 18.75                                  | 0.60 | 13                                | 6                                      | 0    | 1,181               | 38            | 486          |
| 435+84.69                                 | 43584.69     | 26.18    | 43.94     | 18.75                                  | 0.00 | 41                                | 18                                     | 0    | 1,222               | 38            | 509          |
| 436+00.00                                 | 43600.00     | 15.31    | 40.19     | 18.75                                  | 0.53 | 24                                | 11                                     | 0    | 1,246               | 38            | 522          |
| 436+38.28                                 | 43638.28     | 38.28    | 33.55     | 18.75                                  | 1.21 | 52                                | 27                                     | 1    | 1,298               | 39            | 545          |
| 436+50.00                                 | 43650.00     | 11.72    | 33.40     | 18.75                                  | 0.67 | 15                                | 8                                      | 0    | 1,313               | 39            | 552          |
| 437+00.00                                 | 43700.00     | 50.00    | 38.96     | 18.75                                  | 0.85 | 67                                | 35                                     | 1    | 1,380               | 40            | 583          |
| 437+12.00                                 | 43712.00     | 12.00    | 38.52     | 18.75                                  | 0.90 | 17                                | 8                                      | 0    | 1,397               | 40            | 592          |
| 437+50.00                                 | 43750.00     | 38.00    | 31.14     | 18.75                                  | 1.55 | 49                                | 26                                     | 2    | 1,446               | 43            | 613          |
| 437+77.78                                 | 43777.78     | 27.78    | 36.79     | 18.75                                  | 0.43 | 35                                | 19                                     | 1    | 1,481               | 44            | 627          |
| 438+00.00                                 | 43800.00     | 22.22    | 35.56     | 18.75                                  | 0.78 | 30                                | 15                                     | 0    | 1,511               | 44            | 642          |
| 438+50.00                                 | 43850.00     | 50.00    | 35.22     | 18.75                                  | 1.11 | 66                                | 35                                     | 2    | 1,577               | 46            | 671          |
| 438+97.10                                 | 43897.10     | 47.10    | 40.58     | 18.75                                  | 1.54 | 66                                | 33                                     | 2    | 1,643               | 49            | 701          |
| 439+00.00                                 | 43900.00     | 2.90     | 38.27     | 18.75                                  | 0.04 | 4                                 | 2                                      | 0    | 1,647               | 49            | 703          |
| 439+05.00                                 | 43905.00     | 5.00     | 37.84     | 18.75                                  | 0.21 | 7                                 | 3                                      | 0    | 1,654               | 49            | 707          |
| 439+10.00                                 | 43910.00     | 5.00     | 42.27     | 18.75                                  | 0.41 | 7                                 | 3                                      | 0    | 1,661               | 49            | 711          |
| 439+15.00                                 | 43915.00     | 5.00     | 51.91     | 18.75                                  | 0.13 | 9                                 | 3                                      | 0    | 1,670               | 49            | 717          |
| 439+20.00                                 | 43920.00     | 5.00     | 60.03     | 18.75                                  | 0.00 | 10                                | 3                                      | 0    | 1,680               | 49            | 724          |
| 439+25.00                                 | 43925.00     | 5.00     | 61.50     | 18.75                                  | 0.00 | 11                                | 3                                      | 0    | 1,691               | 49            | 732          |
| 439+30.00                                 | 43930.00     | 5.00     | 54.58     | 18.75                                  | 0.00 | 11                                | 3                                      | 0    | 1,702               | 49            | 740          |
| 439+35.00                                 | 43935.00     | 5.00     | 47.74     | 18.75                                  | 0.00 | 9                                 | 3                                      | 0    | 1,711               | 49            | 746          |
| 439+40.00                                 | 43940.00     | 5.00     | 41.33     | 18.75                                  | 0.00 | 8                                 | 3                                      | 0    | 1,719               | 49            | 751          |
| 439+45.00                                 | 43945.00     | 5.00     | 33.68     | 18.75                                  | 0.00 | 7                                 | 3                                      | 0    | 1,726               | 49            | 755          |
| 439+50.00                                 | 43950.00     | 5.00     | 37.74     | 18.75                                  | 0.00 | 7                                 | 3                                      | 0    | 1,733               | 49            | 759          |
| 439+55.00                                 | 43955.00     | 5.00     | 43.74     | 18.75                                  | 0.00 | 8                                 | 3                                      | 0    | 1,741               | 49            | 764          |
| 439+60.00                                 | 43960.00     | 5.00     | 49.00     | 18.75                                  | 0.00 | 9                                 | 3                                      | 0    | 1,750               | 49            | 770          |

EARTHWORK SUMMARY

| DIVISION 1 - ALIGNMENT - STH 64 CONTINUED |              |          |           |                                        |      |                                   |                                        |      |                     |               |               |
|-------------------------------------------|--------------|----------|-----------|----------------------------------------|------|-----------------------------------|----------------------------------------|------|---------------------|---------------|---------------|
| STATION                                   | REAL STATION | DISTANCE | AREA (SF) |                                        |      | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |               |
|                                           |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDINATE |
|                                           |              |          |           |                                        |      |                                   |                                        |      | 1.00                | 1.25          |               |
| 439+65.00                                 | 43965.00     | 5.00     | 53.33     | 18.75                                  | 0.00 | 9                                 | 3                                      | 0    | 1,759               | 49            | 776           |
| 439+70.00                                 | 43970.00     | 5.00     | 52.23     | 18.75                                  | 0.01 | 10                                | 3                                      | 0    | 1,769               | 49            | 783           |
| 439+75.00                                 | 43975.00     | 5.00     | 44.20     | 18.75                                  | 0.03 | 9                                 | 3                                      | 0    | 1,778               | 49            | 789           |
| 439+80.00                                 | 43980.00     | 5.00     | 39.77     | 18.75                                  | 0.47 | 8                                 | 3                                      | 0    | 1,786               | 49            | 794           |
| 439+85.00                                 | 43985.00     | 5.00     | 38.07     | 18.75                                  | 0.30 | 7                                 | 3                                      | 0    | 1,793               | 49            | 798           |
| 439+90.00                                 | 43990.00     | 5.00     | 38.50     | 18.75                                  | 0.03 | 7                                 | 3                                      | 0    | 1,800               | 49            | 802           |
| 439+94.65                                 | 43994.65     | 4.65     | 42.37     | 18.75                                  | 0.91 | 7                                 | 3                                      | 0    | 1,807               | 49            | 806           |
| 440+19.11                                 | 44019.11     | 24.46    | 41.34     | 18.75                                  | 0.98 | 38                                | 17                                     | 1    | 1,845               | 50            | 826           |
| 440+50.00                                 | 44050.00     | 30.89    | 34.01     | 18.75                                  | 2.08 | 43                                | 21                                     | 2    | 1,888               | 53            | 846           |
| 441+00.00                                 | 44100.00     | 50.00    | 29.29     | 18.75                                  | 2.25 | 59                                | 35                                     | 4    | 1,947               | 58            | 865           |
| 441+34.10                                 | 44134.10     | 34.10    | 33.58     | 18.75                                  | 1.02 | 40                                | 24                                     | 2    | 1,987               | 60            | 878           |
| 441+50.00                                 | 44150.00     | 15.90    | 31.18     | 18.75                                  | 3.44 | 19                                | 11                                     | 1    | 2,006               | 61            | 885           |
| 441+75.74                                 | 44175.74     | 25.74    | 35.53     | 18.75                                  | 0.00 | 32                                | 18                                     | 2    | 2,038               | 64            | 896           |
| 441+86.76                                 | 44186.76     | 11.02    | 36.55     | 18.75                                  | 0.00 | 15                                | 8                                      | 0    | 2,053               | 64            | 903           |
| 442+00.00                                 | 44200.00     | 13.24    | 34.81     | 18.75                                  | 0.96 | 17                                | 9                                      | 0    | 2,070               | 64            | 911           |
| 442+28.34                                 | 44228.34     | 28.34    | 37.12     | 18.75                                  | 0.00 | 38                                | 20                                     | 1    | 2,108               | 65            | 928           |
| 442+50.00                                 | 44250.00     | 21.66    | 31.20     | 18.75                                  | 0.67 | 27                                | 15                                     | 0    | 2,135               | 65            | 940           |
| 442+67.46                                 | 44267.46     | 17.46    | 31.54     | 18.75                                  | 0.75 | 20                                | 12                                     | 0    | 2,155               | 65            | 948           |
| 443+00.00                                 | 44300.00     | 32.54    | 24.39     | 18.75                                  | 1.35 | 34                                | 23                                     | 1    | 2,189               | 66            | 958           |
| 443+50.00                                 | 44350.00     | 50.00    | 24.56     | 18.75                                  | 1.37 | 45                                | 35                                     | 3    | 2,234               | 70            | 964           |
| 443+87.24                                 | 44387.24     | 37.24    | 28.70     | 18.75                                  | 1.59 | 37                                | 26                                     | 2    | 2,271               | 73            | 973           |
| 443+90.00                                 | 44390.00     | 2.76     | 28.81     | 18.75                                  | 1.74 | 3                                 | 2                                      | 0    | 2,274               | 73            | 974           |
| 443+95.00                                 | 44395.00     | 5.00     | 28.38     | 18.75                                  | 1.61 | 5                                 | 3                                      | 0    | 2,279               | 73            | 976           |
| 444+00.00                                 | 44400.00     | 5.00     | 28.47     | 18.75                                  | 1.79 | 5                                 | 3                                      | 0    | 2,284               | 73            | 978           |
| 444+05.00                                 | 44405.00     | 5.00     | 29.74     | 18.75                                  | 1.79 | 5                                 | 3                                      | 0    | 2,289               | 73            | 980           |
| 444+10.00                                 | 44410.00     | 5.00     | 31.59     | 18.75                                  | 2.02 | 6                                 | 3                                      | 0    | 2,295               | 73            | 983           |
| 444+15.00                                 | 44415.00     | 5.00     | 33.93     | 18.75                                  | 2.14 | 6                                 | 3                                      | 0    | 2,301               | 73            | 986           |
| 444+20.00                                 | 44420.00     | 5.00     | 34.84     | 18.75                                  | 1.86 | 6                                 | 3                                      | 0    | 2,307               | 73            | 989           |
| 444+25.00                                 | 44425.00     | 5.00     | 30.66     | 18.75                                  | 1.67 | 6                                 | 3                                      | 0    | 2,313               | 73            | 992           |
| 444+30.00                                 | 44430.00     | 5.00     | 28.29     | 18.75                                  | 1.73 | 5                                 | 3                                      | 0    | 2,318               | 73            | 994           |
| 444+35.00                                 | 44435.00     | 5.00     | 26.97     | 18.75                                  | 1.98 | 5                                 | 3                                      | 0    | 2,323               | 73            | 996           |
| 444+40.00                                 | 44440.00     | 5.00     | 24.59     | 18.75                                  | 2.22 | 5                                 | 3                                      | 0    | 2,328               | 73            | 998           |
| 444+45.00                                 | 44445.00     | 5.00     | 25.84     | 18.75                                  | 2.24 | 5                                 | 3                                      | 0    | 2,333               | 73            | 1,000         |
| 444+50.00                                 | 44450.00     | 5.00     | 27.97     | 18.75                                  | 2.30 | 5                                 | 3                                      | 0    | 2,338               | 73            | 1,002         |
| 444+55.00                                 | 44455.00     | 5.00     | 30.57     | 18.75                                  | 1.93 | 5                                 | 3                                      | 0    | 2,343               | 73            | 1,004         |
| 444+60.00                                 | 44460.00     | 5.00     | 34.22     | 18.75                                  | 2.18 | 6                                 | 3                                      | 0    | 2,349               | 73            | 1,007         |
| 444+65.00                                 | 44465.00     | 5.00     | 30.93     | 18.75                                  | 2.17 | 6                                 | 3                                      | 0    | 2,355               | 73            | 1,010         |
| 444+70.00                                 | 44470.00     | 5.00     | 27.48     | 18.75                                  | 1.97 | 5                                 | 3                                      | 0    | 2,360               | 73            | 1,012         |
| 444+75.00                                 | 44475.00     | 5.00     | 25.44     | 18.75                                  | 1.82 | 5                                 | 3                                      | 0    | 2,365               | 73            | 1,014         |
| 444+80.00                                 | 44480.00     | 5.00     | 25.39     | 18.75                                  | 0.42 | 5                                 | 3                                      | 0    | 2,370               | 73            | 1,016         |
| 444+85.00                                 | 44485.00     | 5.00     | 26.49     | 18.75                                  | 0.85 | 5                                 | 3                                      | 0    | 2,375               | 73            | 1,018         |
| 444+90.00                                 | 44490.00     | 5.00     | 27.78     | 18.75                                  | 1.95 | 5                                 | 3                                      | 0    | 2,380               | 73            | 1,020         |
| 444+91.78                                 | 44491.78     | 1.78     | 28.17     | 18.75                                  | 1.89 | 2                                 | 1                                      | 0    | 2,382               | 73            | 1,021         |
| 445+00.00                                 | 44500.00     | 8.22     | 30.16     | 18.75                                  | 1.70 | 9                                 | 6                                      | 1    | 2,391               | 74            | 1,022         |
| 445+50.00                                 | 44550.00     | 50.00    | 31.11     | 18.75                                  | 1.32 | 57                                | 35                                     | 3    | 2,448               | 78            | 1,041         |

EARTHWORK SUMMARY

| DIVISION 1 - ALIGNMENT - STH 64 CONTINUED |              |          |           |                                        |      |                                   |                                        |      |                     |               |               |
|-------------------------------------------|--------------|----------|-----------|----------------------------------------|------|-----------------------------------|----------------------------------------|------|---------------------|---------------|---------------|
| STATION                                   | REAL STATION | DISTANCE | AREA (SF) |                                        |      | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |               |
|                                           |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDINATE |
|                                           |              |          |           |                                        |      |                                   |                                        |      | 1.00                | 1.25          |               |
| 445+70.03                                 | 44570.03     | 20.03    | 36.08     | 18.75                                  | 0.00 | 25                                | 14                                     | 0    | 2,473               | 78            | 1,052         |
| 446+00.00                                 | 44600.00     | 29.97    | 35.60     | 18.75                                  | 0.72 | 40                                | 21                                     | 0    | 2,513               | 78            | 1,071         |
| 446+50.00                                 | 44650.00     | 50.00    | 29.80     | 18.75                                  | 2.27 | 61                                | 35                                     | 3    | 2,574               | 81            | 1,093         |
| 447+00.00                                 | 44700.00     | 50.00    | 25.37     | 18.75                                  | 2.82 | 51                                | 35                                     | 5    | 2,625               | 88            | 1,103         |
| 447+50.00                                 | 44750.00     | 50.00    | 22.55     | 18.75                                  | 1.54 | 44                                | 35                                     | 4    | 2,669               | 93            | 1,107         |
| 448+00.00                                 | 44800.00     | 50.00    | 9.20      | 18.75                                  | 3.69 | 29                                | 35                                     | 5    | 2,698               | 99            | 1,094         |
| 448+11.96                                 | 44811.96     | 11.96    | 8.85      | 18.75                                  | 3.73 | 4                                 | 8                                      | 2    | 2,702               | 101           | 1,088         |

| DIVISION 1 - MILL-RD |              |          |           |                                        |      |                                   |                                        |      |                     |               |               |
|----------------------|--------------|----------|-----------|----------------------------------------|------|-----------------------------------|----------------------------------------|------|---------------------|---------------|---------------|
| STATION              | REAL STATION | DISTANCE | AREA (SF) |                                        |      | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |               |
|                      |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDINATE |
|                      |              |          |           |                                        |      |                                   |                                        |      | 1.00                | 1.25          |               |
| 10+20.00             | 1020.00      | 0.00     | 9.65      | 9.65                                   | 0.00 | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 10+25.00             | 1025.00      | 5.00     | 17.83     | 17.83                                  | 0.00 | 3                                 | 3                                      | 0    | 3                   | 0             | 0             |
| 10+30.00             | 1030.00      | 5.00     | 22.68     | 22.68                                  | 0.00 | 4                                 | 4                                      | 0    | 7                   | 0             | 0             |
| 10+35.00             | 1035.00      | 5.00     | 23.71     | 23.71                                  | 0.25 | 4                                 | 4                                      | 0    | 11                  | 0             | 0             |
| 10+40.00             | 1040.00      | 5.00     | 21.52     | 21.52                                  | 0.20 | 4                                 | 4                                      | 0    | 15                  | 0             | 0             |
| 10+45.00             | 1045.00      | 5.00     | 19.99     | 19.99                                  | 0.21 | 4                                 | 4                                      | 0    | 19                  | 0             | 0             |
| 10+50.00             | 1050.00      | 5.00     | 1.64      | 1.64                                   | 2.42 | 2                                 | 2                                      | 0    | 21                  | 0             | 0             |
| 10+55.00             | 1055.00      | 5.00     | 0.02      | 0.02                                   | 2.05 | 0                                 | 0                                      | 0    | 21                  | 0             | 0             |
| 10+60.00             | 1060.00      | 5.00     | 0.00      | 0.00                                   | 0.73 | 0                                 | 0                                      | 0    | 21                  | 0             | 0             |
| 10+62.79             | 1062.79      | 2.79     | 0.03      | 0.03                                   | 0.07 | 0                                 | 0                                      | 0    | 21                  | 0             | 0             |

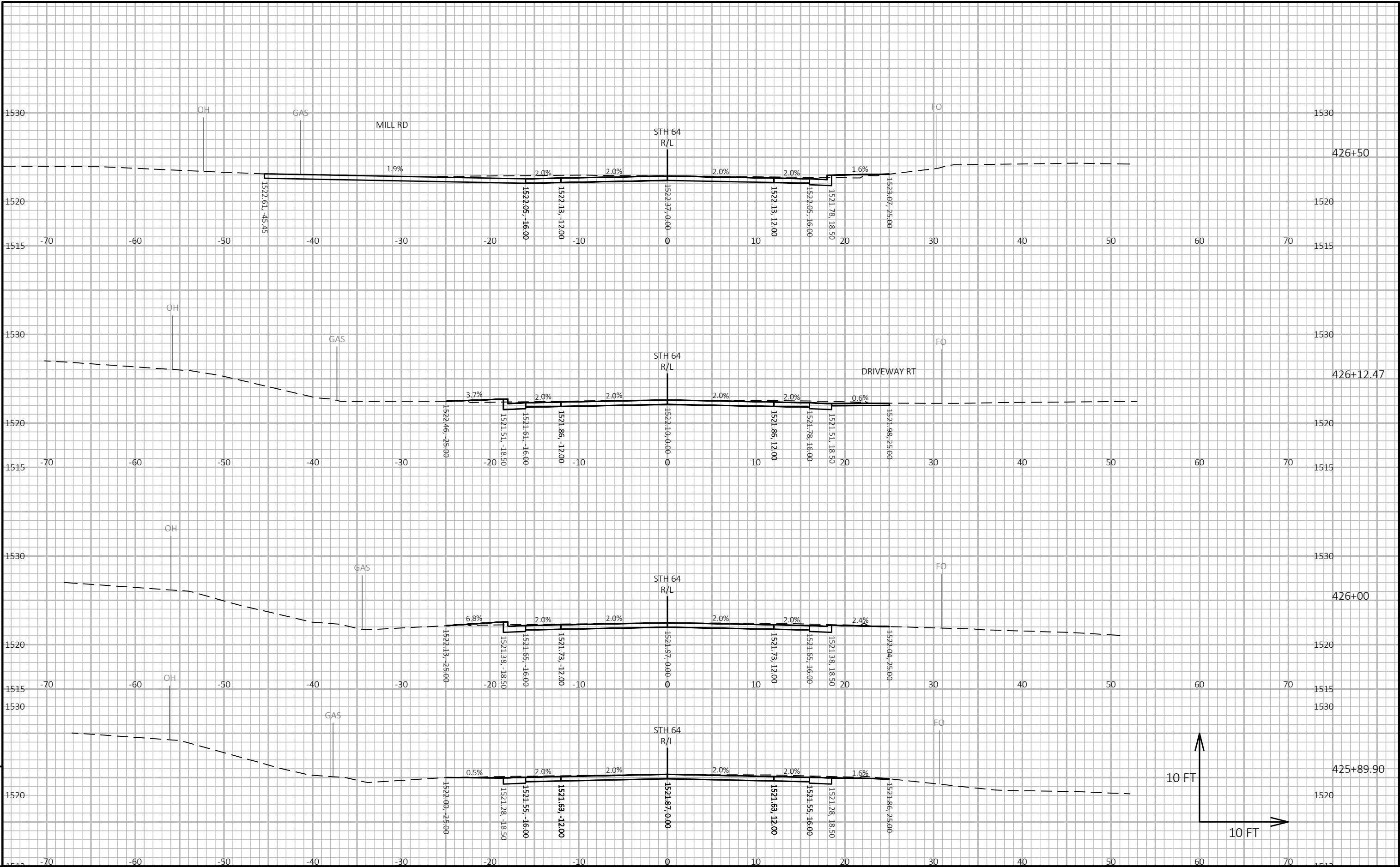
DIVISION 1 - POND-RD

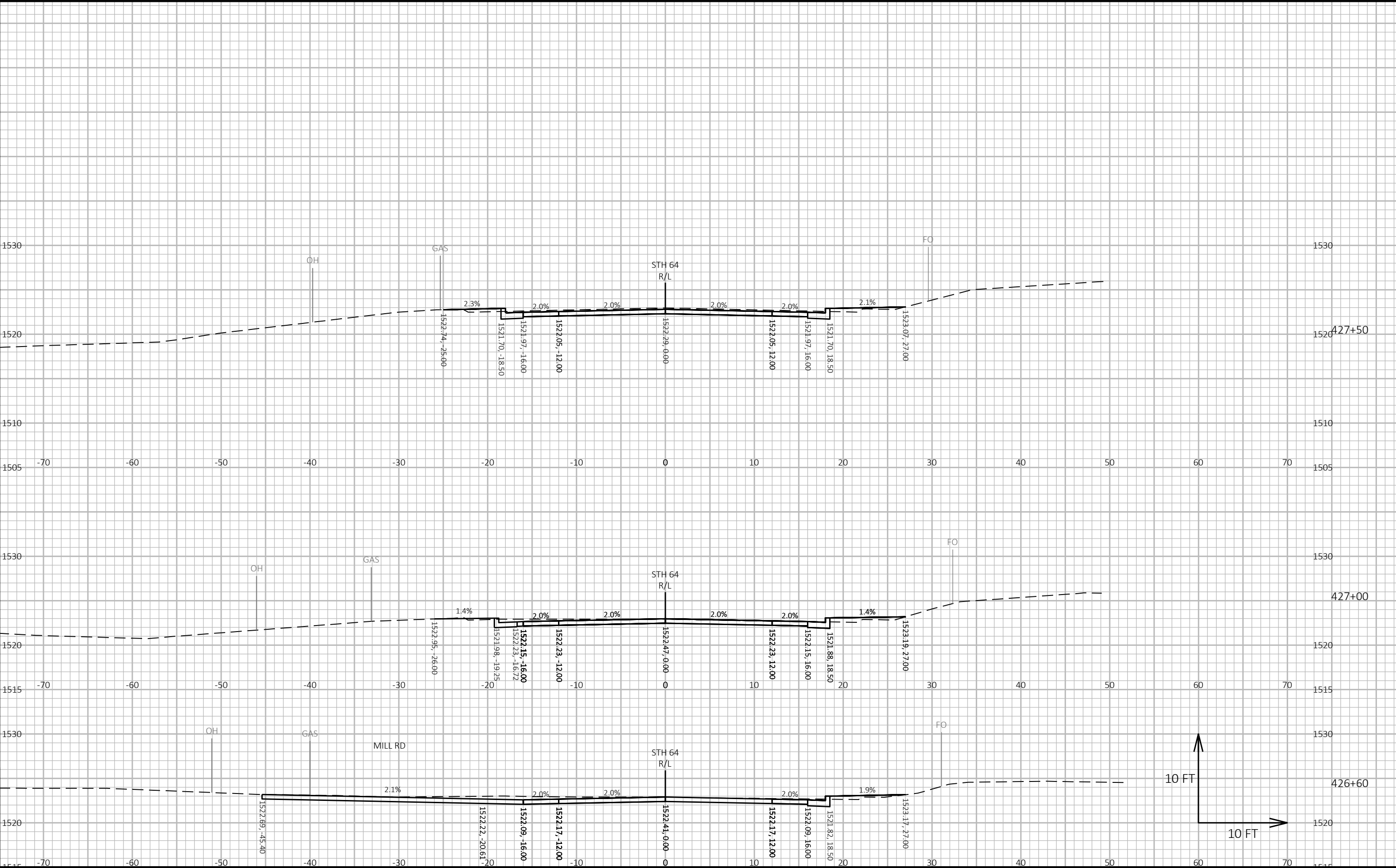
| STATION  | REAL STATION | DISTANCE | AREA (SF) |                                        | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |               |
|----------|--------------|----------|-----------|----------------------------------------|-----------------------------------|----------------------------------------|------|---------------------|---------------|---------------|
|          |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDINATE |
|          |              |          |           |                                        |                                   |                                        |      | 1.00                | 1.25          |               |
|          |              |          |           |                                        |                                   |                                        |      |                     |               |               |
| 10+20.00 | 1020.00      | 0.00     | 8.29      | 8.29                                   | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 10+25.00 | 1025.00      | 5.00     | 18.87     | 18.87                                  | 3                                 | 3                                      | 0    | 3                   | 0             | 0             |
| 10+30.00 | 1030.00      | 5.00     | 28.77     | 28.77                                  | 4                                 | 4                                      | 0    | 7                   | 0             | 0             |
| 10+35.00 | 1035.00      | 5.00     | 30.26     | 30.26                                  | 5                                 | 5                                      | 0    | 12                  | 0             | 0             |
| 10+40.00 | 1040.00      | 5.00     | 25.30     | 25.30                                  | 5                                 | 5                                      | 0    | 17                  | 0             | 0             |
| 10+45.00 | 1045.00      | 5.00     | 23.23     | 23.23                                  | 4                                 | 4                                      | 0    | 21                  | 0             | 0             |
| 10+50.00 | 1050.00      | 5.00     | 5.04      | 5.04                                   | 3                                 | 3                                      | 0    | 24                  | 0             | 0             |
| 10+53.62 | 1053.62      | 3.62     | 1.41      | 1.41                                   | 0                                 | 0                                      | 0    | 24                  | 0             | 0             |

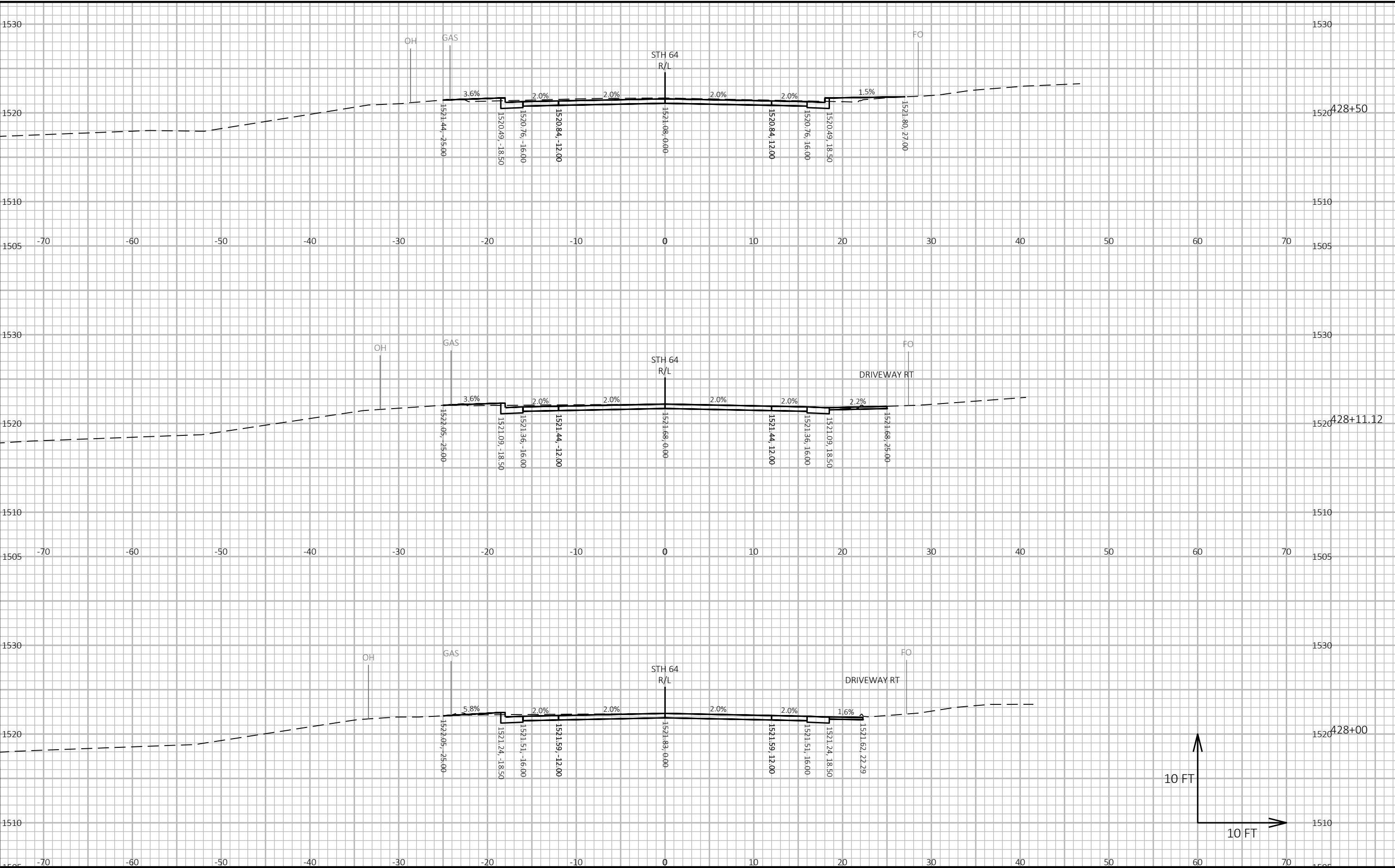
EARTHWORK SUMMARY

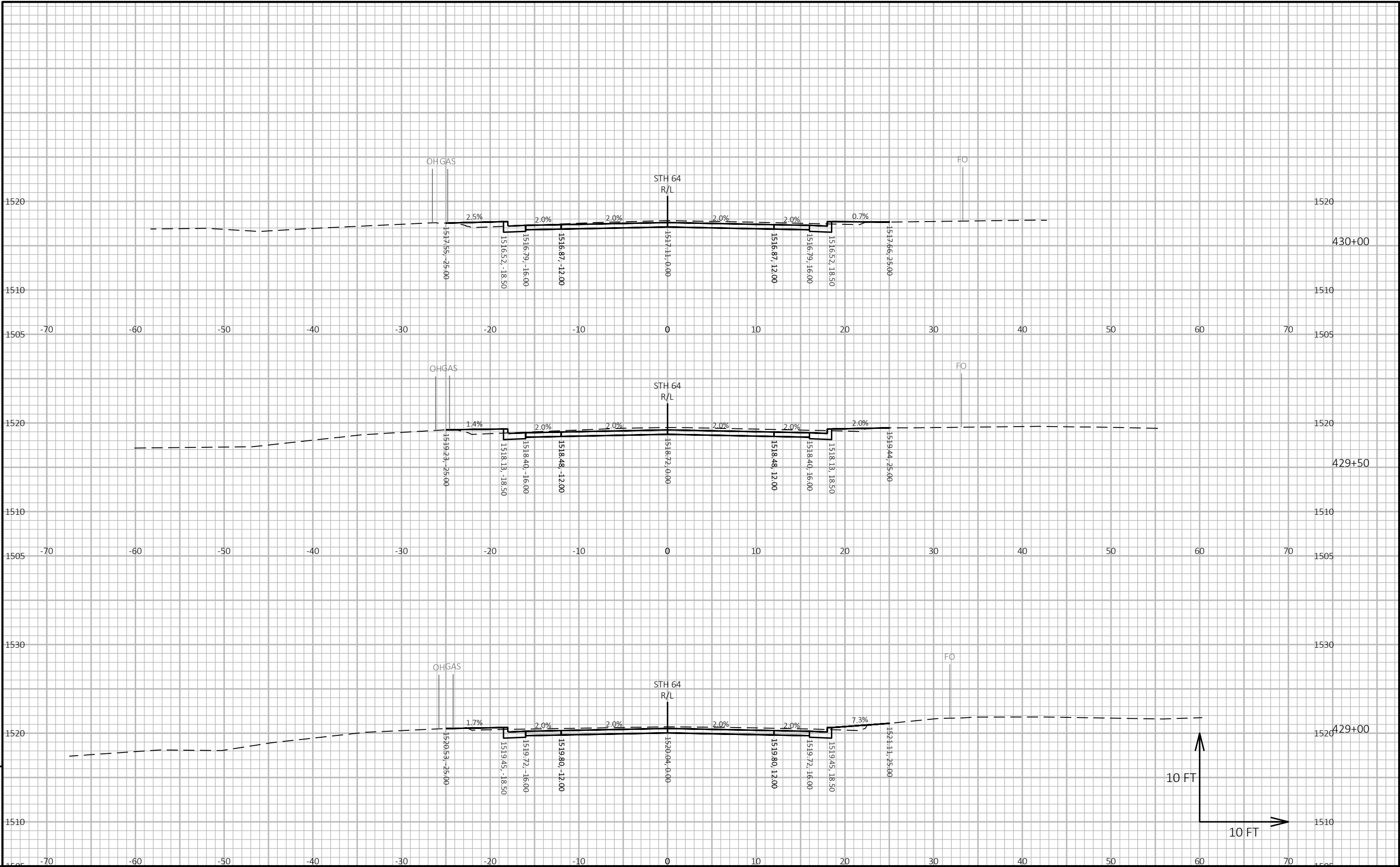
| DIVISION 1 - POLAR-RD |              |          |           |                                        |      |                                   |                                        |      |                     |               |               |
|-----------------------|--------------|----------|-----------|----------------------------------------|------|-----------------------------------|----------------------------------------|------|---------------------|---------------|---------------|
| STATION               | REAL STATION | DISTANCE | AREA (SF) |                                        |      | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |               |
|                       |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDINATE |
|                       |              |          |           |                                        |      |                                   |                                        |      | 1.00                | 1.25          |               |
| 10+09.02              | 1009.02      | 0.00     | 2.10      | 2.10                                   | 2.74 | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 10+10.00              | 1010.00      | 0.98     | 2.41      | 2.41                                   | 2.40 | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 10+15.00              | 1015.00      | 5.00     | 9.18      | 9.18                                   | 1.16 | 1                                 | 1                                      | 0    | 1                   | 0             | 0             |
| 10+20.00              | 1020.00      | 5.00     | 28.99     | 28.99                                  | 0.09 | 4                                 | 4                                      | 0    | 5                   | 0             | 0             |
| 10+25.00              | 1025.00      | 5.00     | 36.60     | 36.60                                  | 0.14 | 6                                 | 6                                      | 0    | 11                  | 0             | 0             |
| 10+30.00              | 1030.00      | 5.00     | 43.61     | 43.61                                  | 0.02 | 7                                 | 7                                      | 0    | 18                  | 0             | 0             |
| 10+35.00              | 1035.00      | 5.00     | 32.77     | 32.77                                  | 0.00 | 7                                 | 7                                      | 0    | 25                  | 0             | 0             |
| 10+40.00              | 1040.00      | 5.00     | 18.05     | 18.05                                  | 0.00 | 5                                 | 5                                      | 0    | 30                  | 0             | 0             |
| 10+45.00              | 1045.00      | 5.00     | 5.69      | 5.69                                   | 0.00 | 2                                 | 2                                      | 0    | 32                  | 0             | 0             |
| 10+46.79              | 1046.79      | 1.79     | 0.03      | 0.03                                   | 0.00 | 0                                 | 0                                      | 0    | 32                  | 0             | 0             |
| 10+78.82              | 1078.82      | 32.03    | 0.02      | 0.02                                   | 0.00 | 0                                 | 0                                      | 0    | 32                  | 0             | 0             |
| 10+80.00              | 1080.00      | 1.18     | 3.88      | 3.88                                   | 0.00 | 0                                 | 0                                      | 0    | 32                  | 0             | 0             |
| 10+85.00              | 1085.00      | 5.00     | 14.80     | 14.80                                  | 0.00 | 2                                 | 2                                      | 0    | 34                  | 0             | 0             |
| 10+90.00              | 1090.00      | 5.00     | 27.29     | 27.29                                  | 0.00 | 4                                 | 4                                      | 0    | 38                  | 0             | 0             |
| 10+95.00              | 1095.00      | 5.00     | 35.50     | 35.50                                  | 0.00 | 6                                 | 6                                      | 0    | 44                  | 0             | 0             |
| 11+00.00              | 1100.00      | 5.00     | 32.93     | 32.93                                  | 0.00 | 6                                 | 6                                      | 0    | 50                  | 0             | 0             |
| 11+05.00              | 1105.00      | 5.00     | 29.96     | 29.96                                  | 0.00 | 6                                 | 6                                      | 0    | 56                  | 0             | 0             |
| 11+10.00              | 1110.00      | 5.00     | 16.28     | 16.28                                  | 1.47 | 4                                 | 4                                      | 0    | 60                  | 0             | 0             |
| 11+15.00              | 1115.00      | 5.00     | 2.03      | 2.03                                   | 0.13 | 2                                 | 2                                      | 0    | 62                  | 0             | 0             |
| 11+16.99              | 1116.99      | 1.99     | 0.55      | 0.55                                   | 0.08 | 0                                 | 0                                      | 0    | 62                  | 0             | 0             |

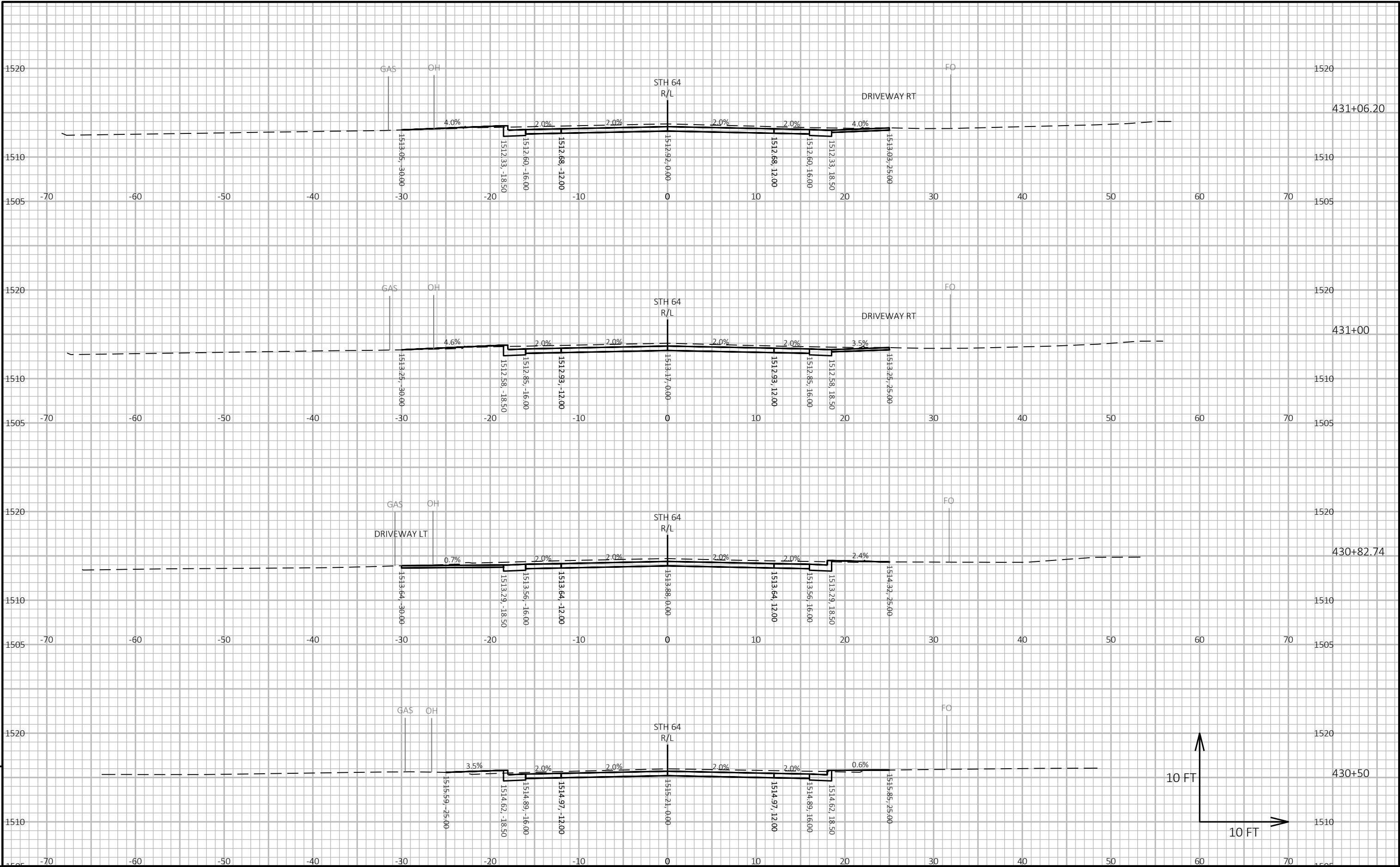
| DIVISION 1 - MUELLER-LAKE-RD |              |          |           |                                        |      |                                   |                                        |      |                     |               |               |
|------------------------------|--------------|----------|-----------|----------------------------------------|------|-----------------------------------|----------------------------------------|------|---------------------|---------------|---------------|
| STATION                      | REAL STATION | DISTANCE | AREA (SF) |                                        |      | INCREMENTAL VOL (CY) (UNADJUSTED) |                                        |      | CUMULATIVE VOL (CY) |               |               |
|                              |              |          | CUT       | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                               | SALVAGED/UNUSABLE<br>PAVEMENT MATERIAL | FILL | CUT                 | EXPANDED FILL | MASS ORDINATE |
|                              |              |          |           |                                        |      |                                   |                                        |      | 1.00                | 1.25          |               |
| 10+04.39                     | 1004.39      | 0.00     | 0.68      | 0.68                                   | 1.20 | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 10+05.00                     | 1005.00      | 0.61     | 0.72      | 0.72                                   | 1.16 | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 10+10.00                     | 1010.00      | 5.00     | 1.17      | 1.17                                   | 1.01 | 0                                 | 0                                      | 0    | 0                   | 0             | 0             |
| 10+15.00                     | 1015.00      | 5.00     | 21.27     | 21.27                                  | 0.03 | 2                                 | 2                                      | 0    | 2                   | 0             | 0             |
| 10+20.00                     | 1020.00      | 5.00     | 24.19     | 24.19                                  | 0.08 | 4                                 | 4                                      | 0    | 6                   | 0             | 0             |
| 10+25.00                     | 1025.00      | 5.00     | 27.22     | 27.22                                  | 0.03 | 5                                 | 5                                      | 0    | 11                  | 0             | 0             |
| 10+30.00                     | 1030.00      | 5.00     | 30.71     | 30.71                                  | 0.00 | 5                                 | 5                                      | 0    | 16                  | 0             | 0             |
| 10+35.00                     | 1035.00      | 5.00     | 25.15     | 25.15                                  | 0.00 | 5                                 | 5                                      | 0    | 21                  | 0             | 0             |
| 10+40.00                     | 1040.00      | 5.00     | 15.93     | 15.93                                  | 0.00 | 4                                 | 4                                      | 0    | 25                  | 0             | 0             |
| 10+45.00                     | 1045.00      | 5.00     | 5.66      | 5.66                                   | 0.00 | 2                                 | 2                                      | 0    | 27                  | 0             | 0             |
| 10+48.87                     | 1048.87      | 3.87     | 0.01      | 0.01                                   | 0.00 | 0                                 | 0                                      | 0    | 27                  | 0             | 0             |

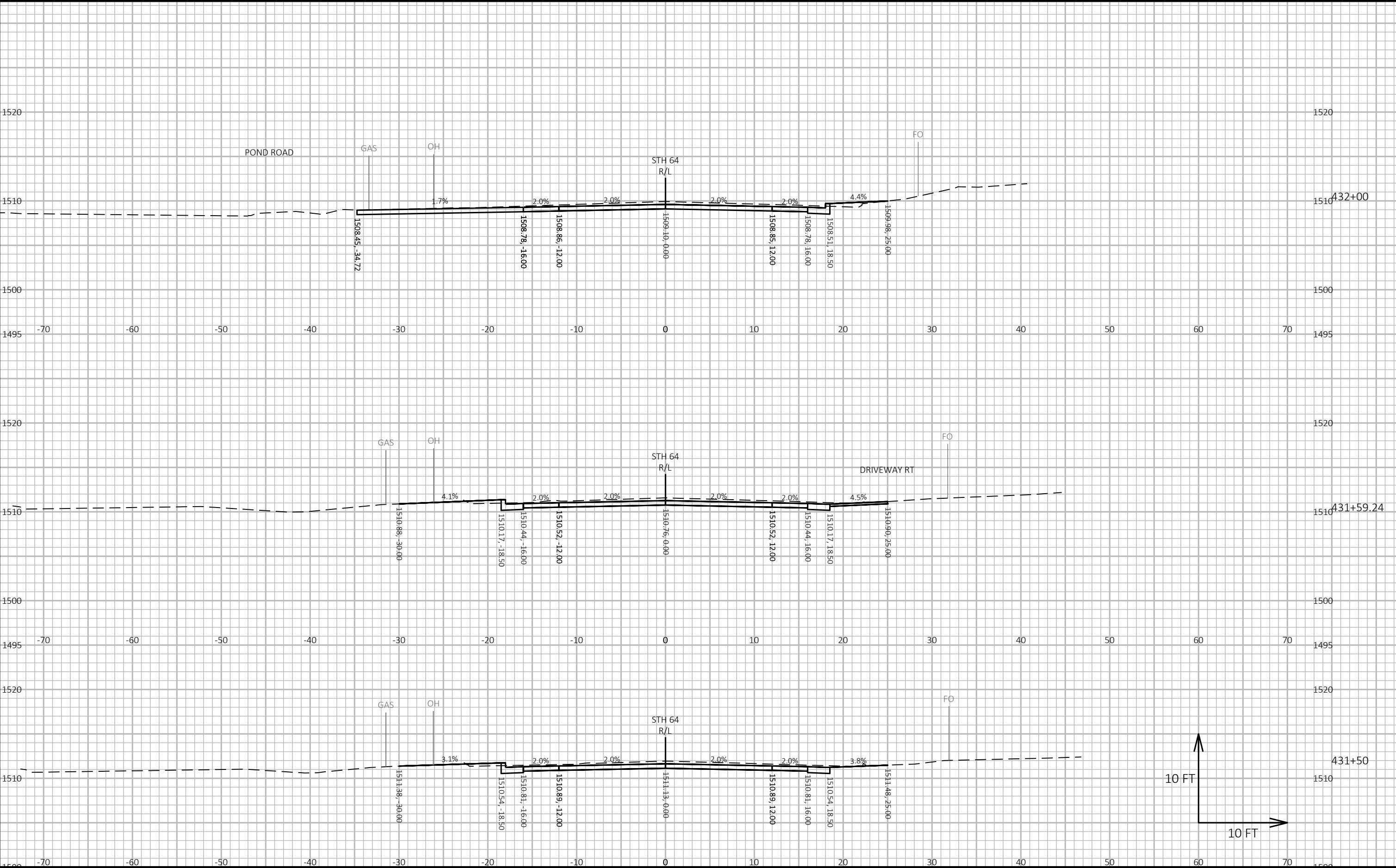


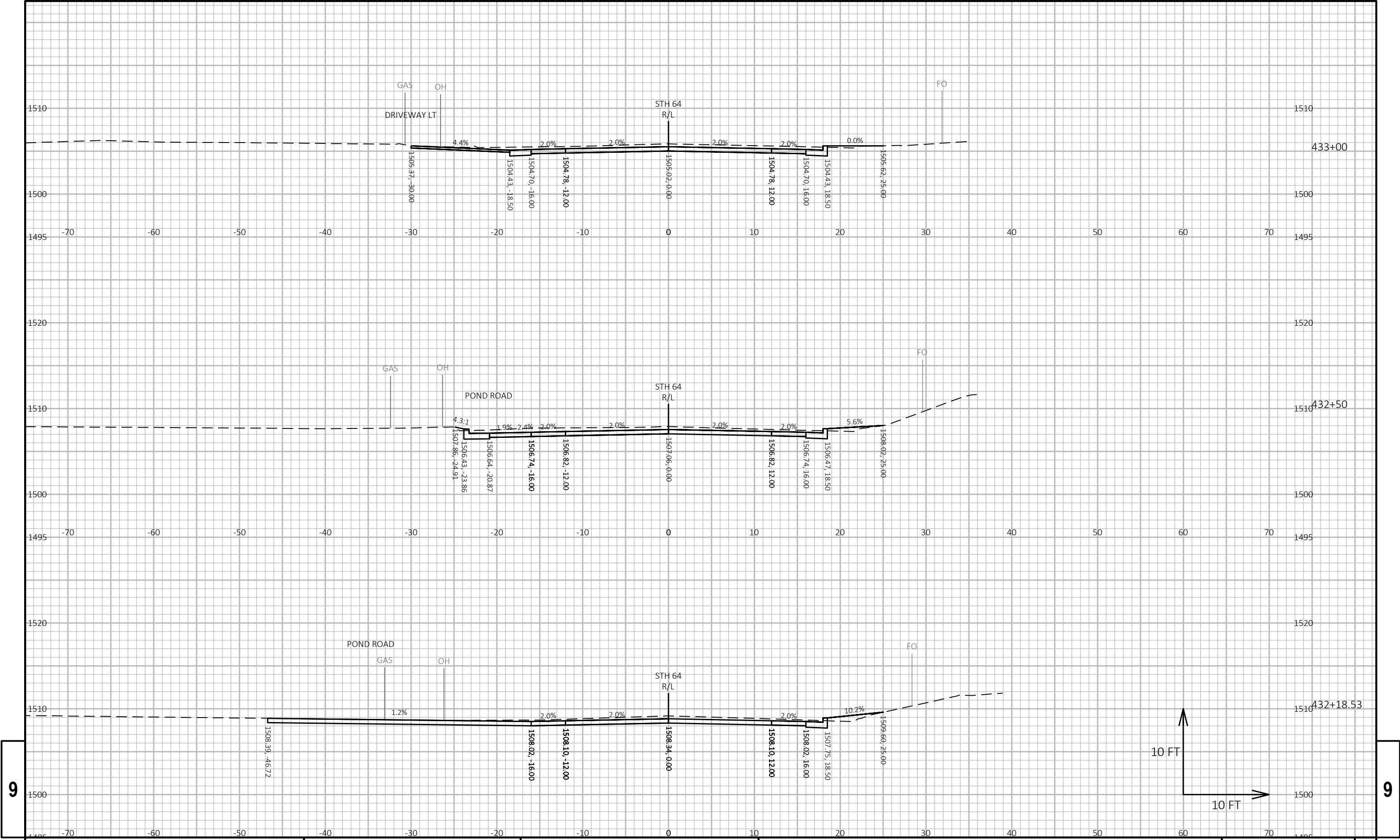


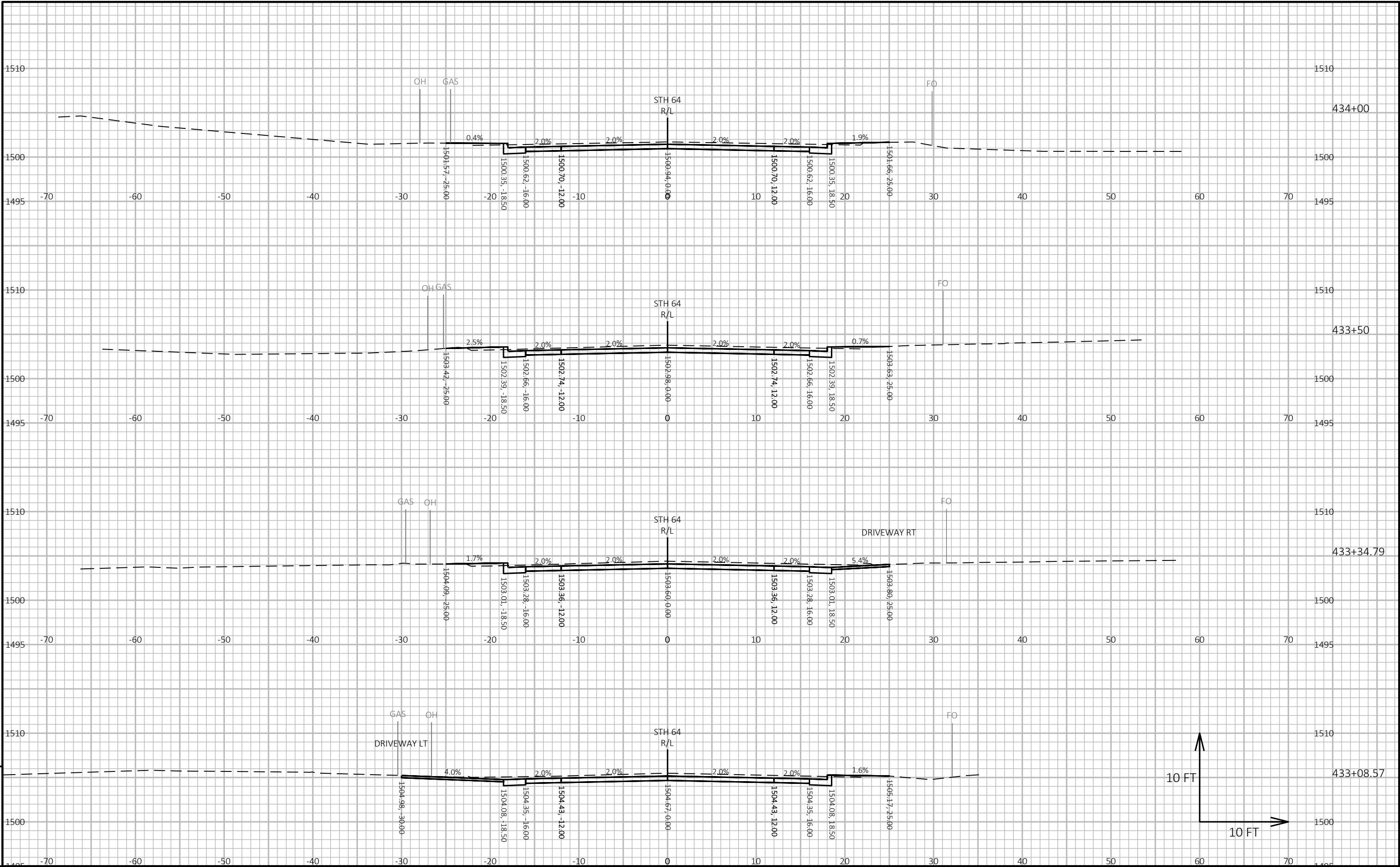


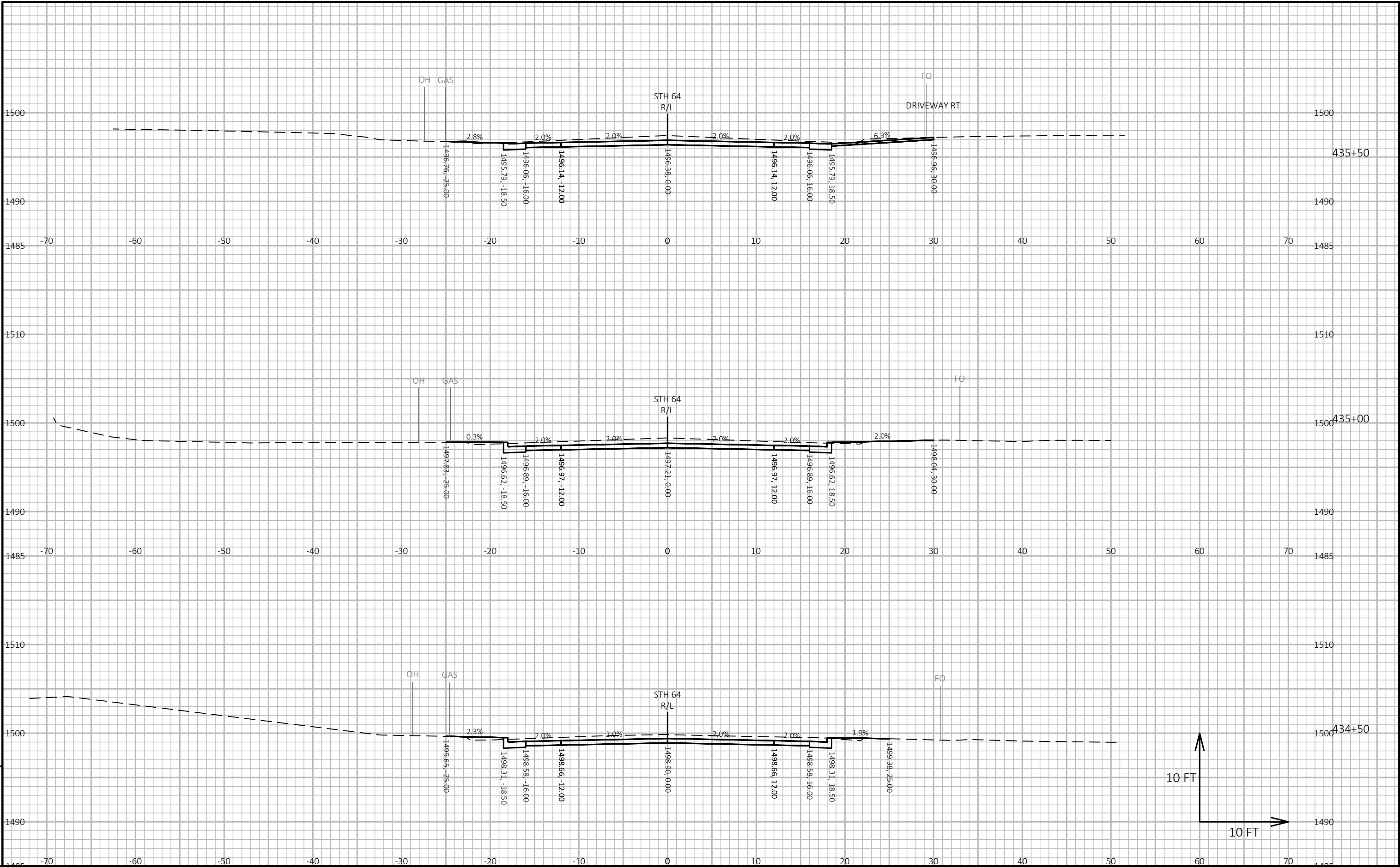


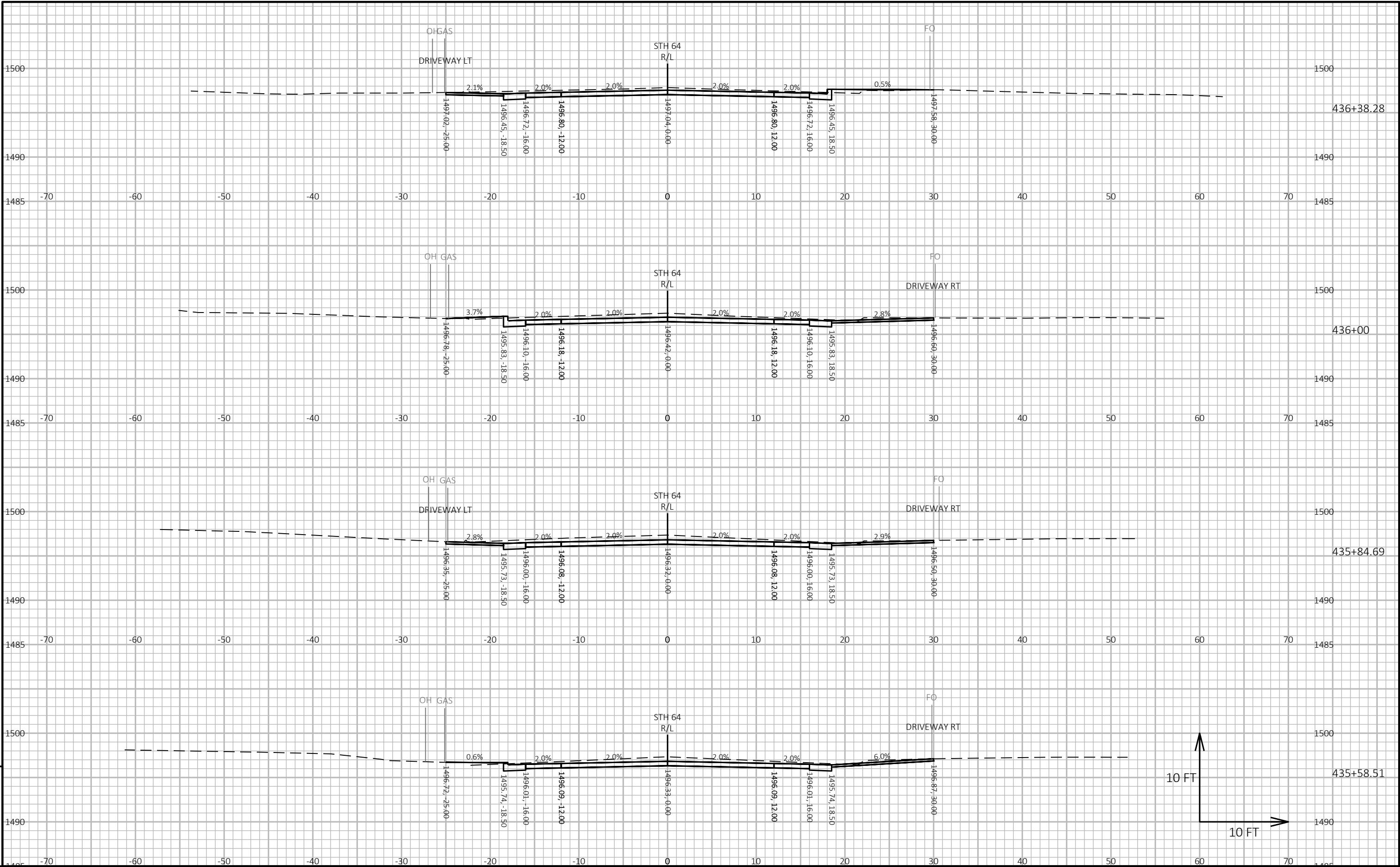








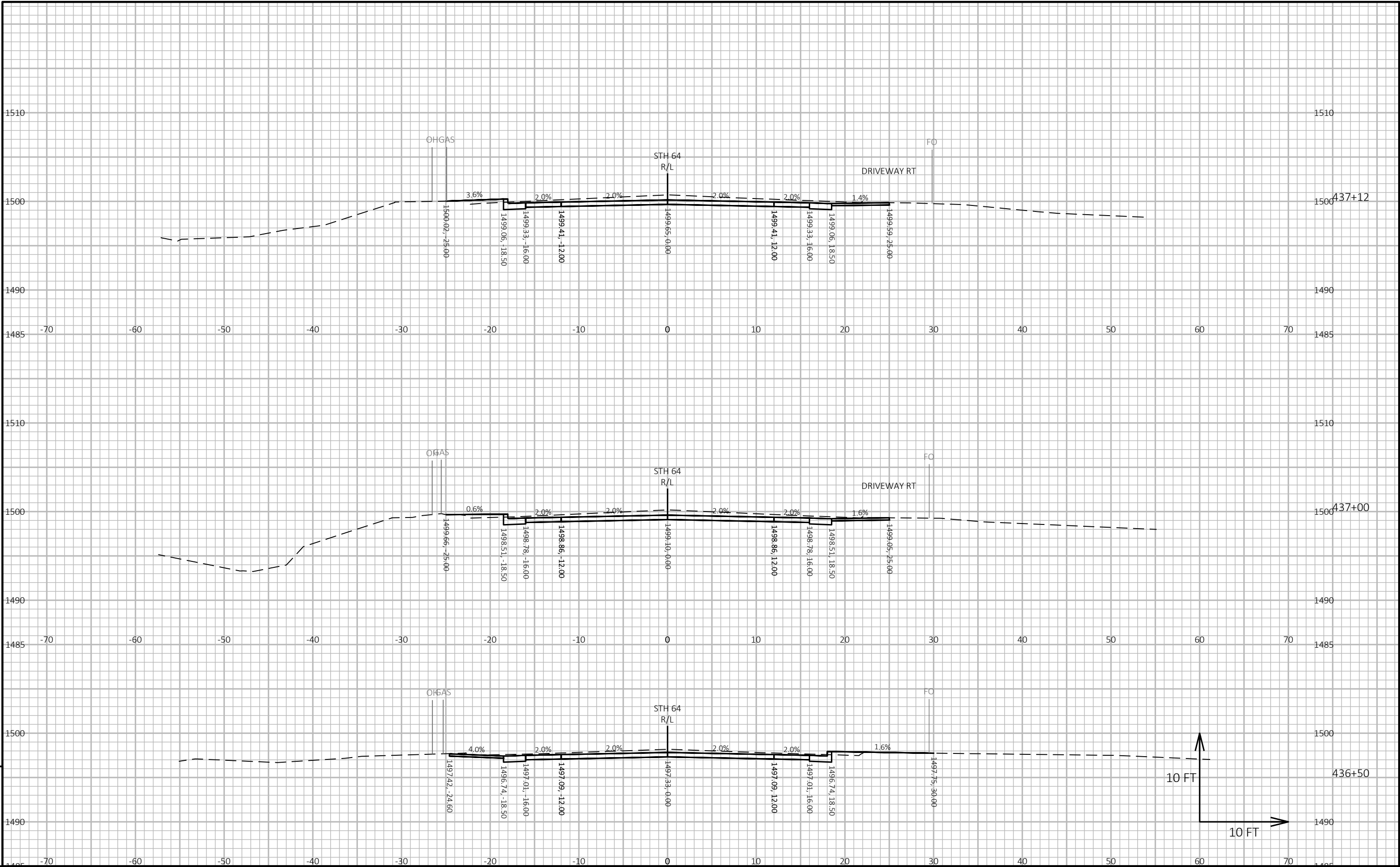


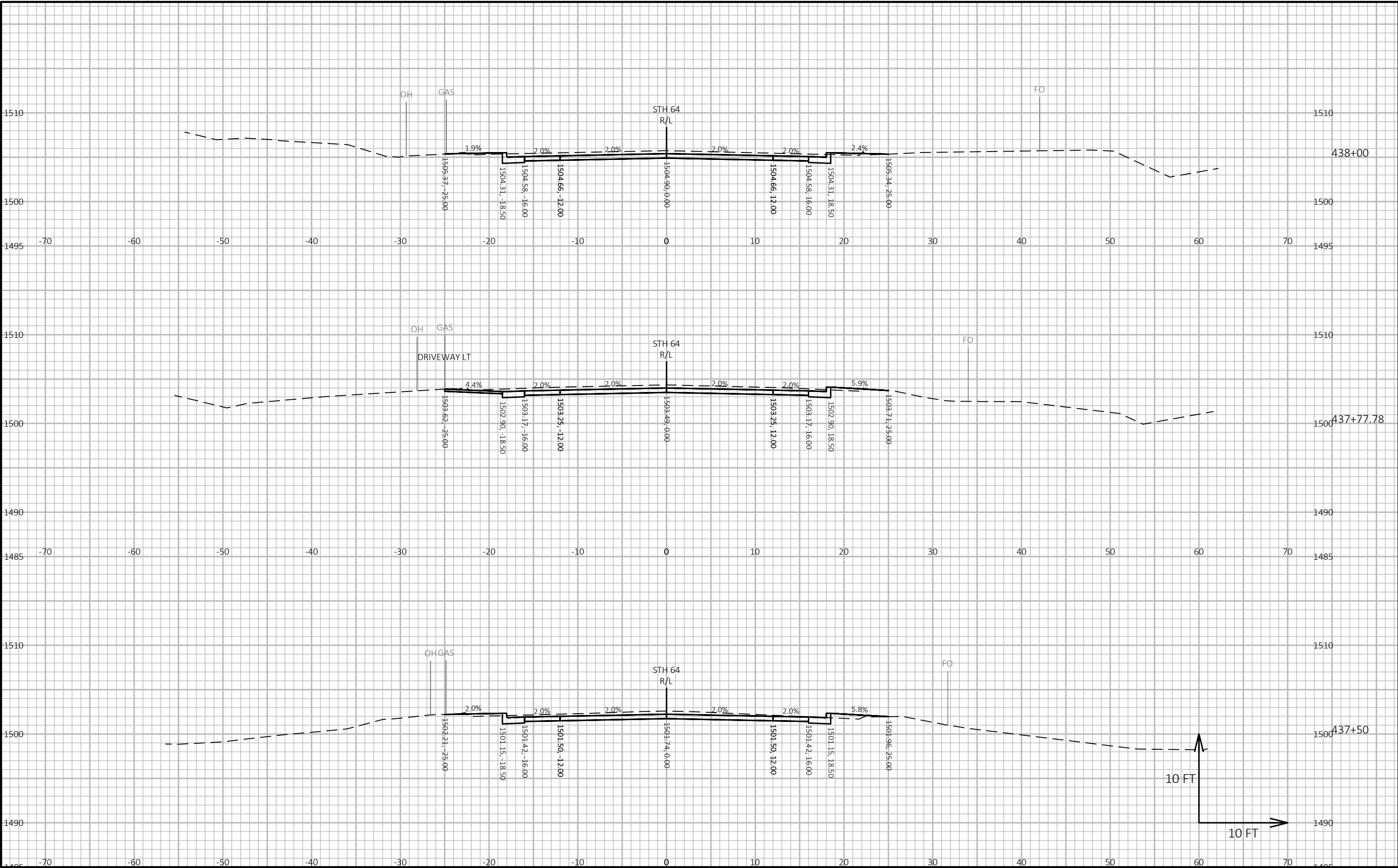


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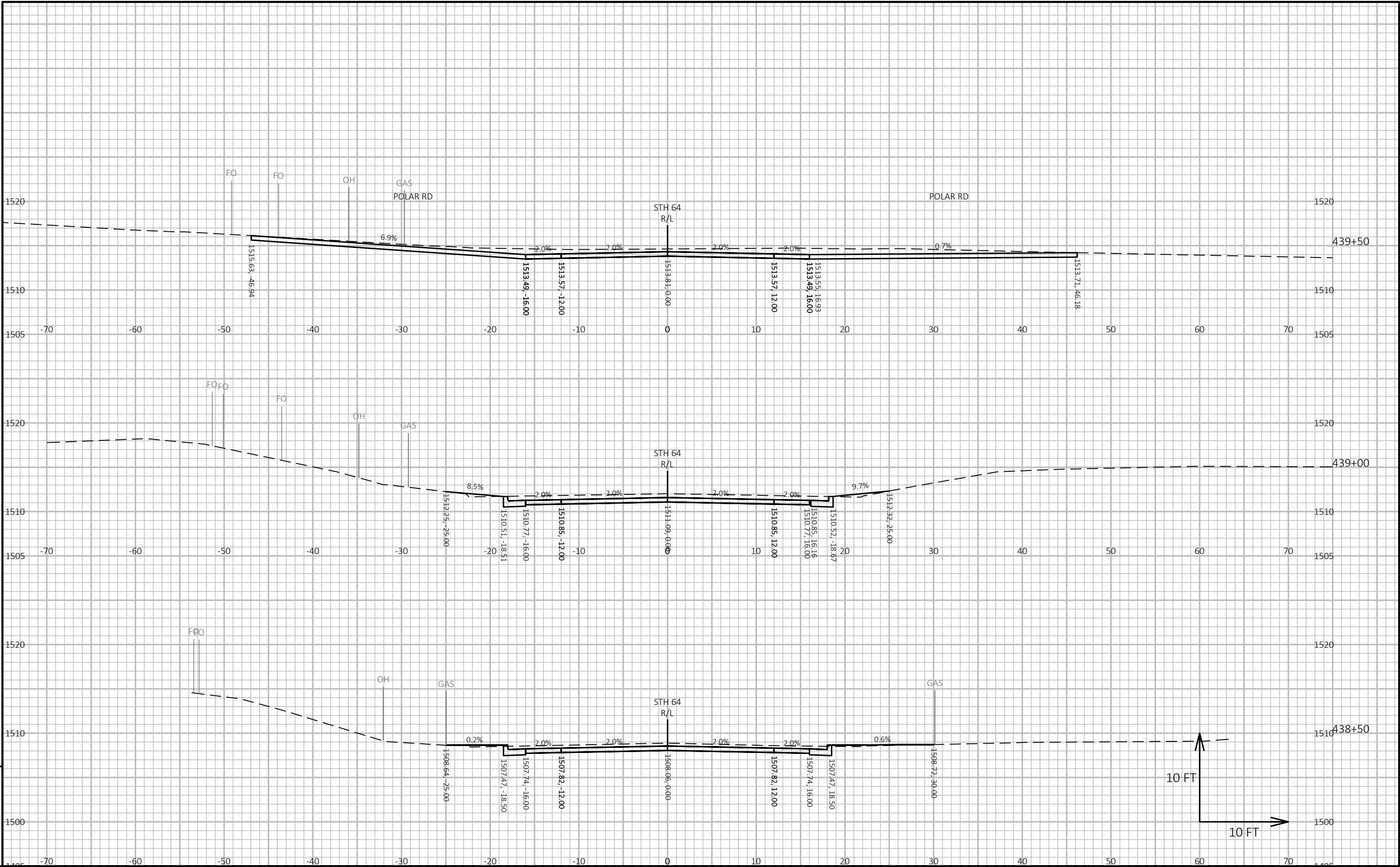
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|------------------------|--|--|-------------|--|--|------------------|--|--|------------------------|--|--|-------|--|--|---|
| PROJECT NO: 9140-12-75 |  |  | HWY: STH 64 |  |  | COUNTY: LANGLADE |  |  | CROSS SECTIONS: STH 64 |  |  | SHEET |  |  | E |
|------------------------|--|--|-------------|--|--|------------------|--|--|------------------------|--|--|-------|--|--|---|

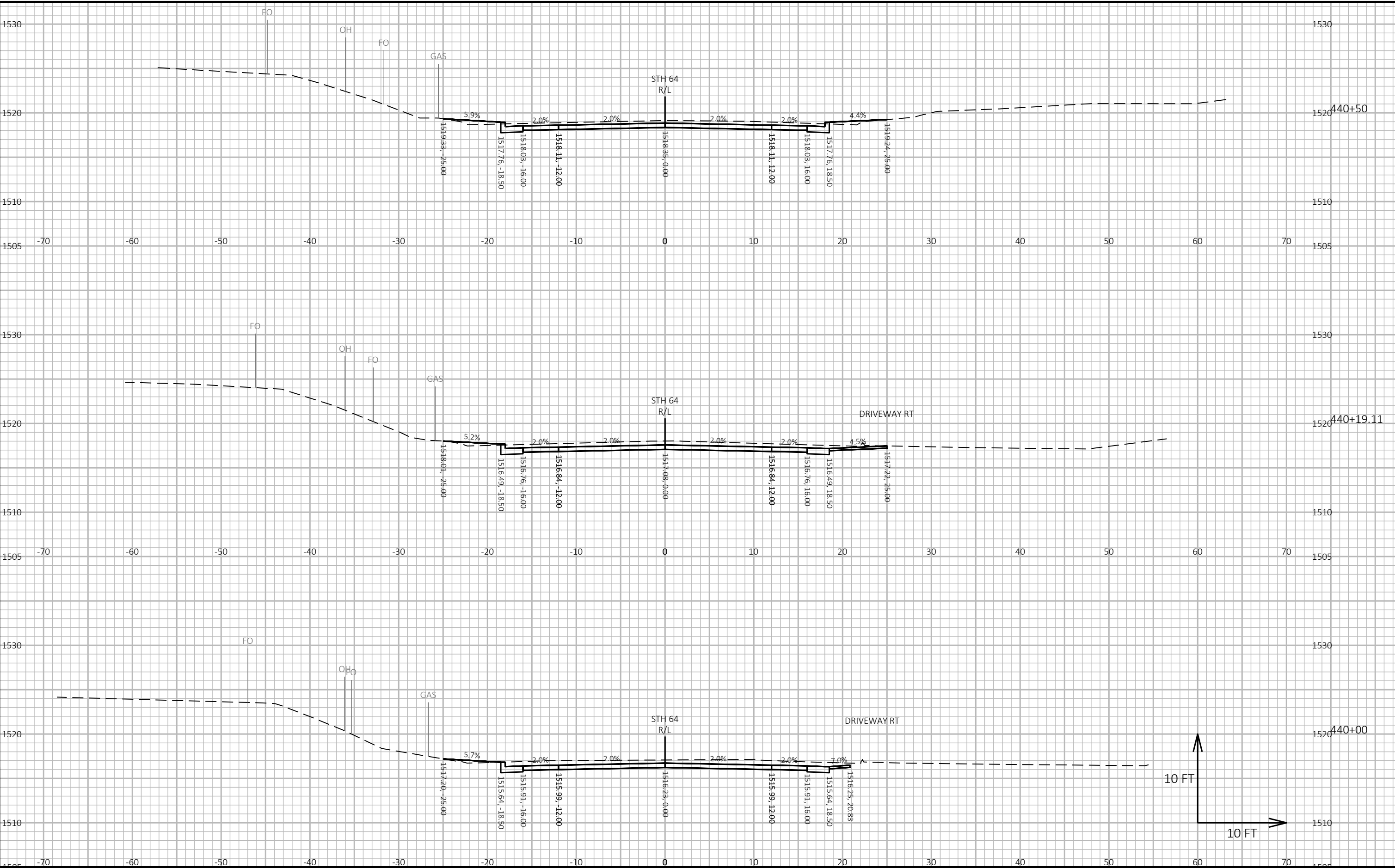


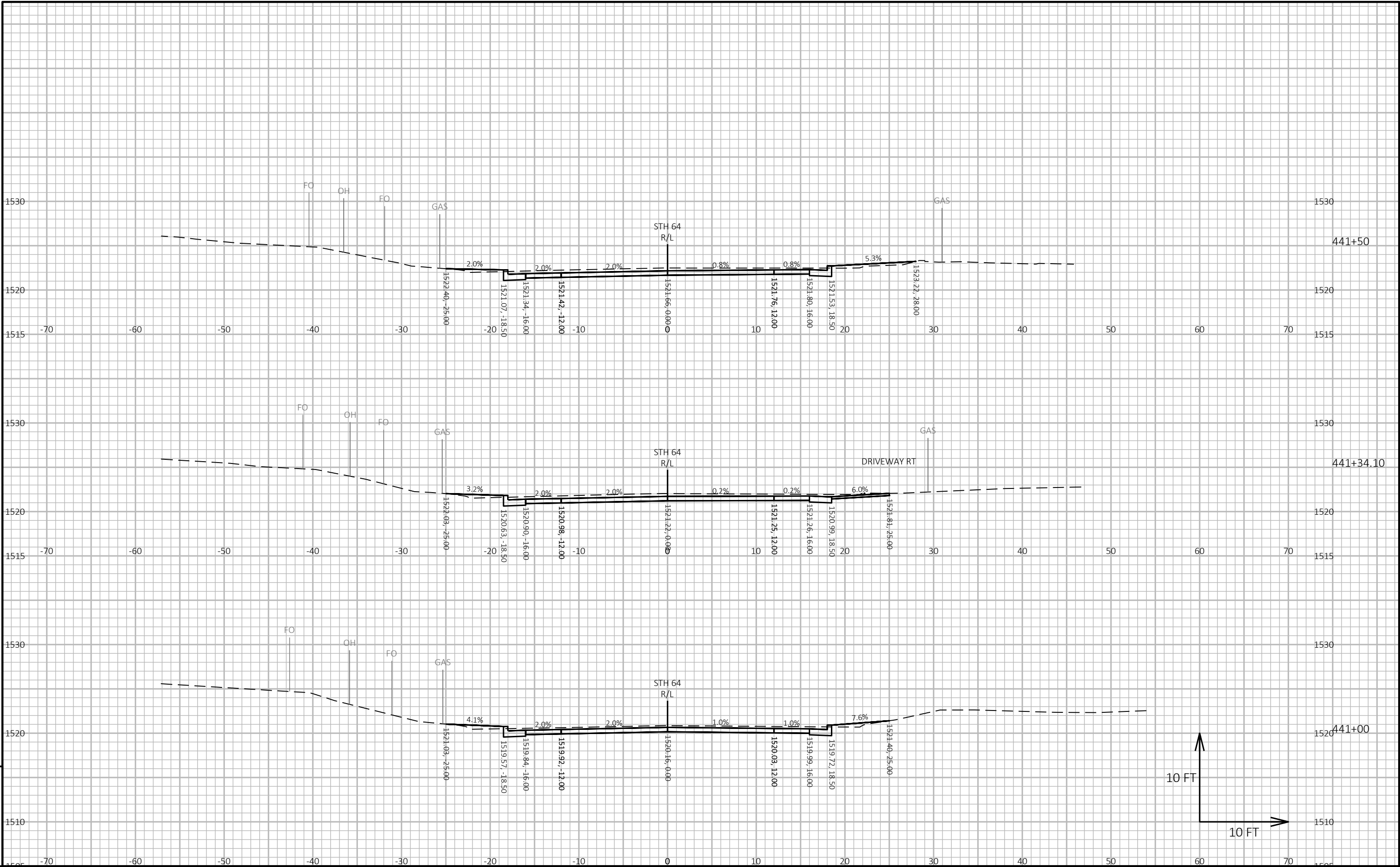


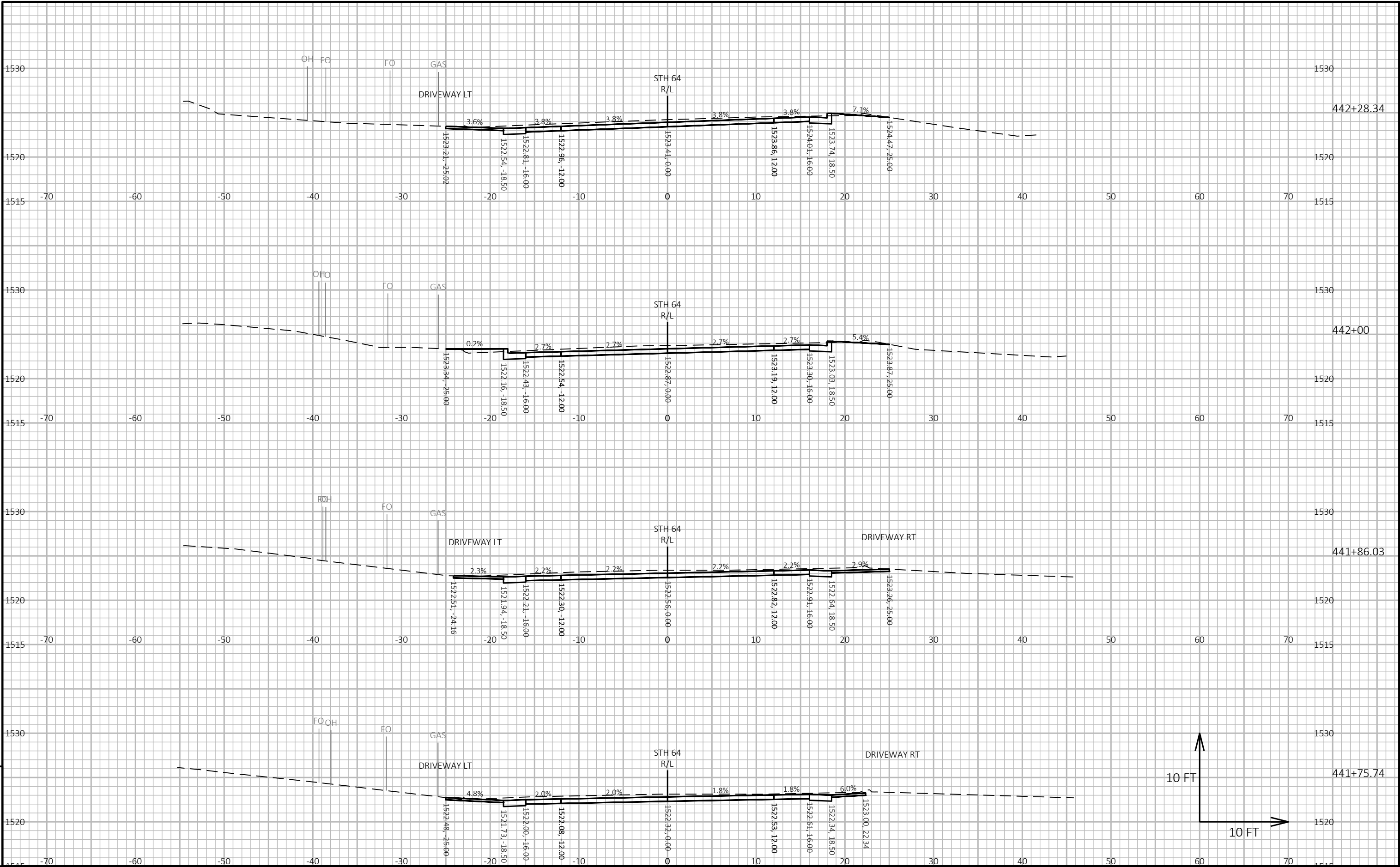
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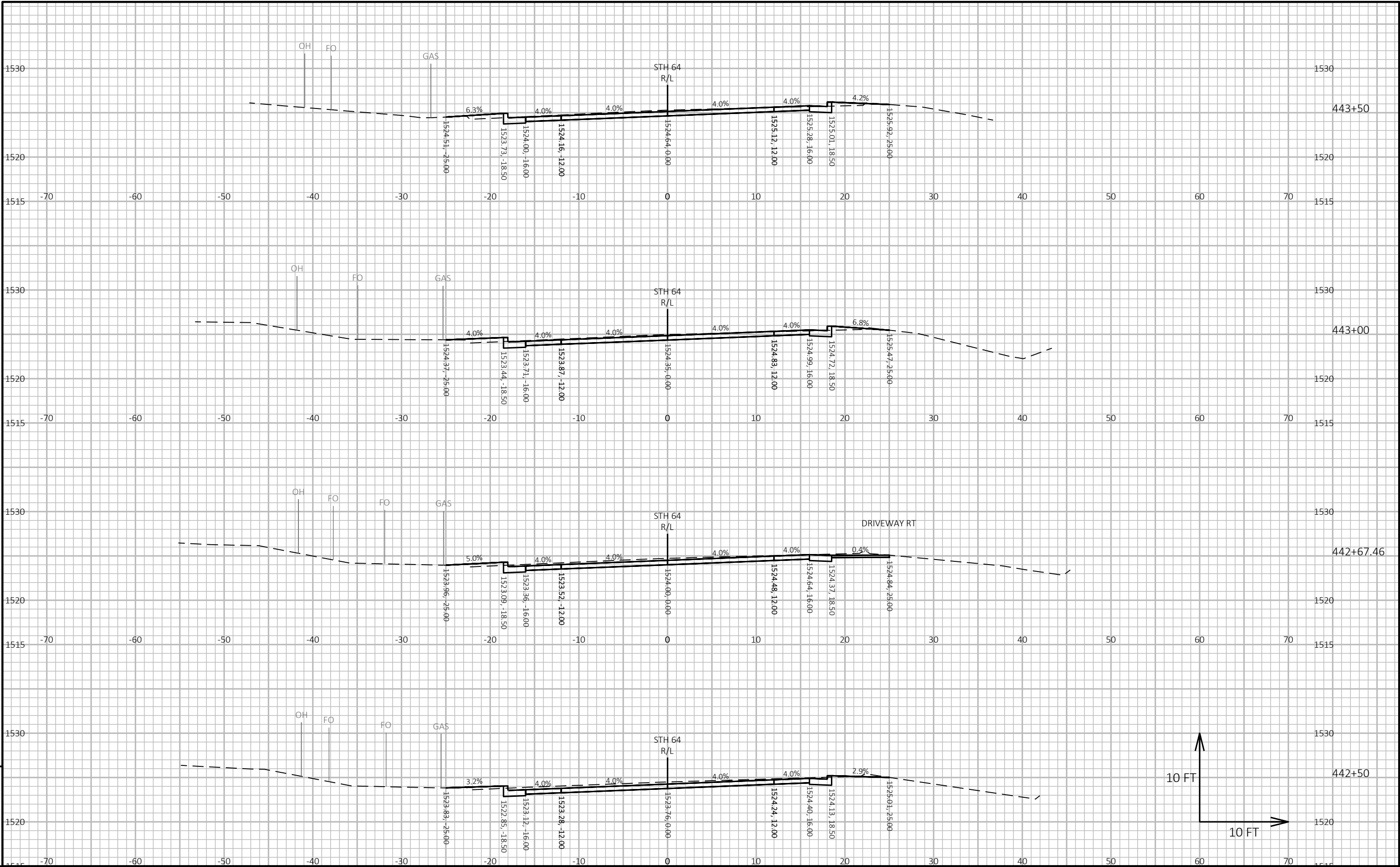
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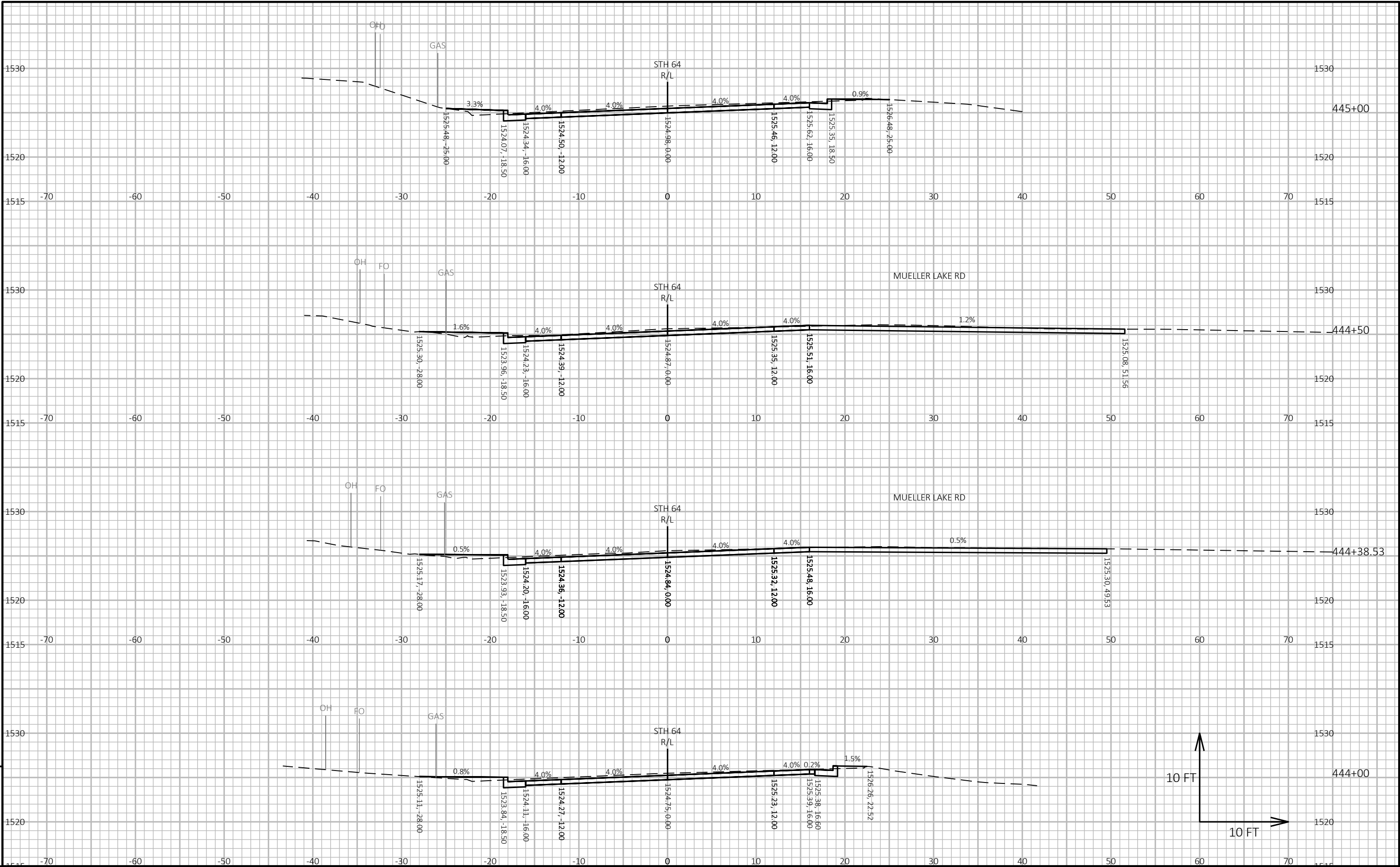


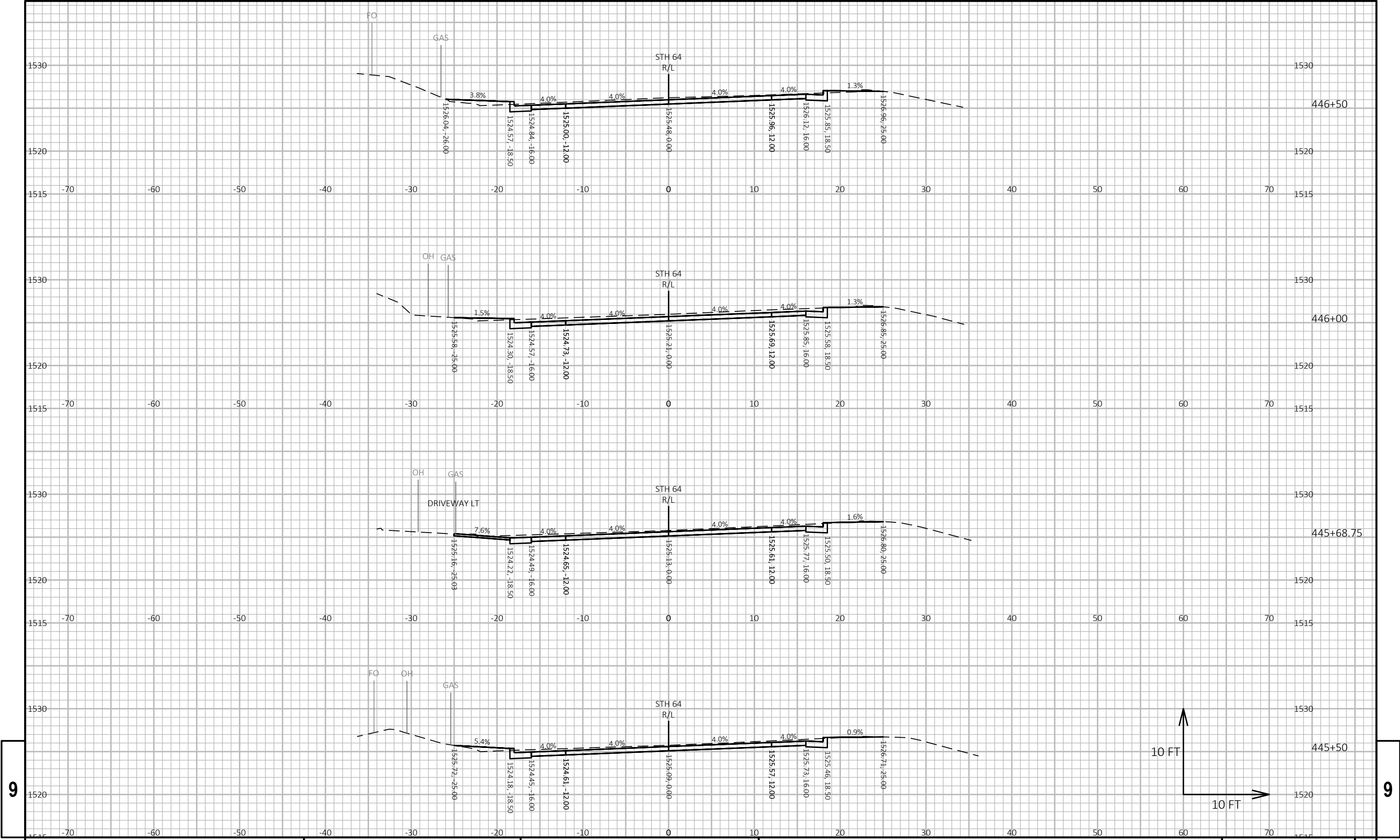








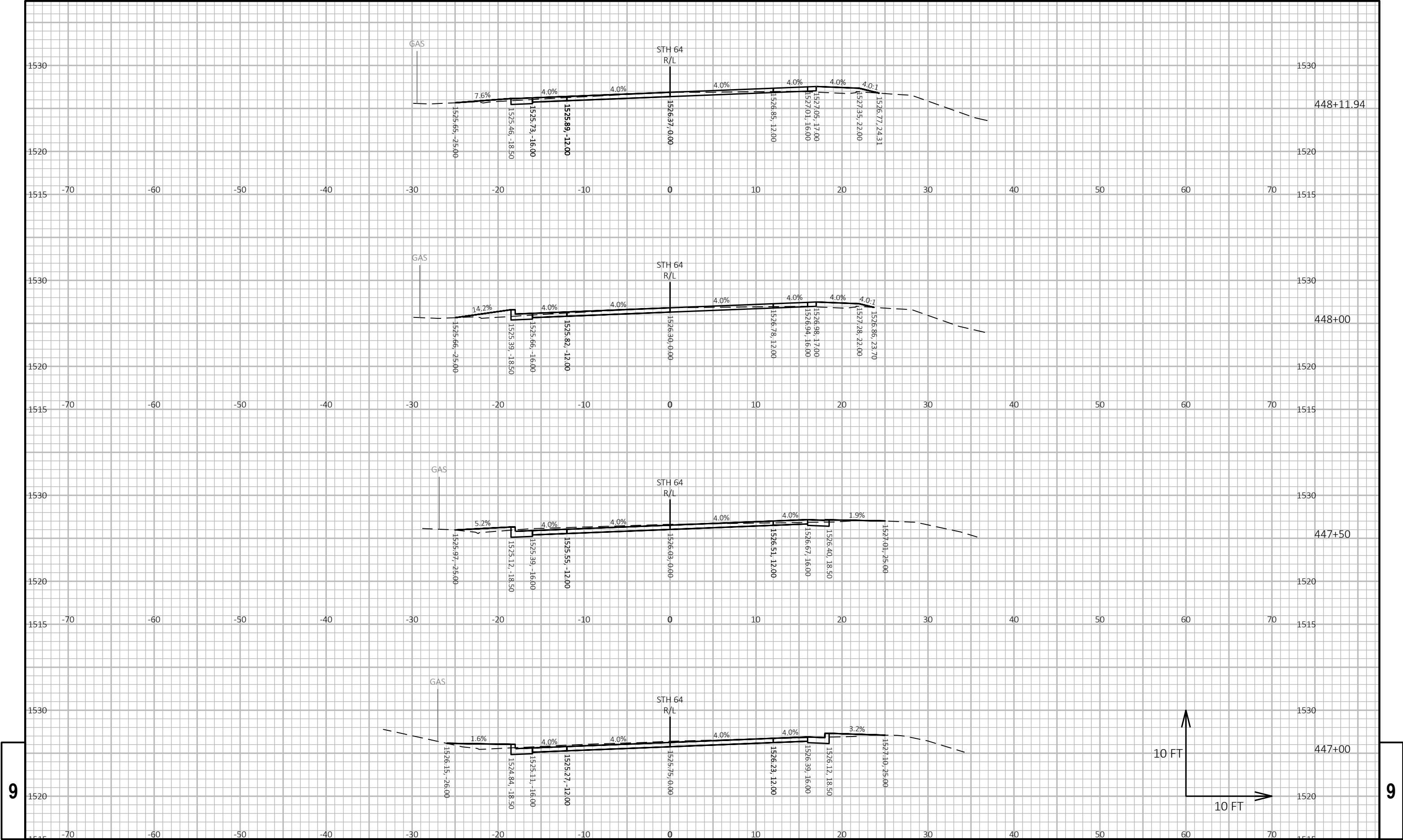




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|                        |             |                  |                        |         |
|------------------------|-------------|------------------|------------------------|---------|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | CROSS SECTIONS: STH 64 | SHEET E |
|------------------------|-------------|------------------|------------------------|---------|

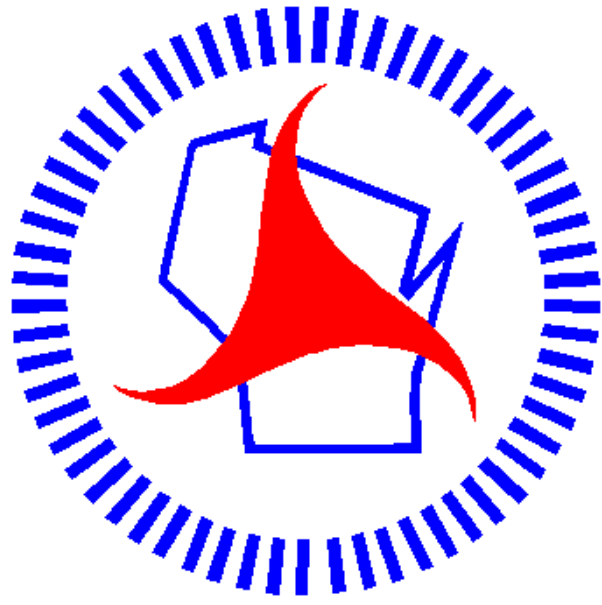


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|                        |             |                  |                        |         |
|------------------------|-------------|------------------|------------------------|---------|
| PROJECT NO: 9140-12-75 | HWY: STH 64 | COUNTY: LANGLADE | CROSS SECTIONS: STH 64 | SHEET E |
|------------------------|-------------|------------------|------------------------|---------|

## Notes



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

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