

MAD

PROJECT ID:  
WITH:

1204-08-63

COUNTY:

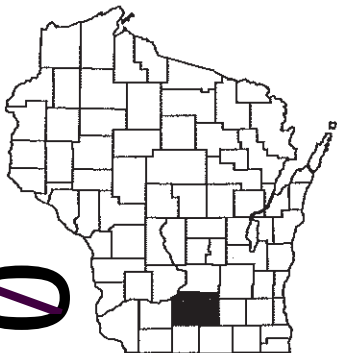
DANE

FEBRUARY 2019

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 = 94



DESIGN DESIGNATION

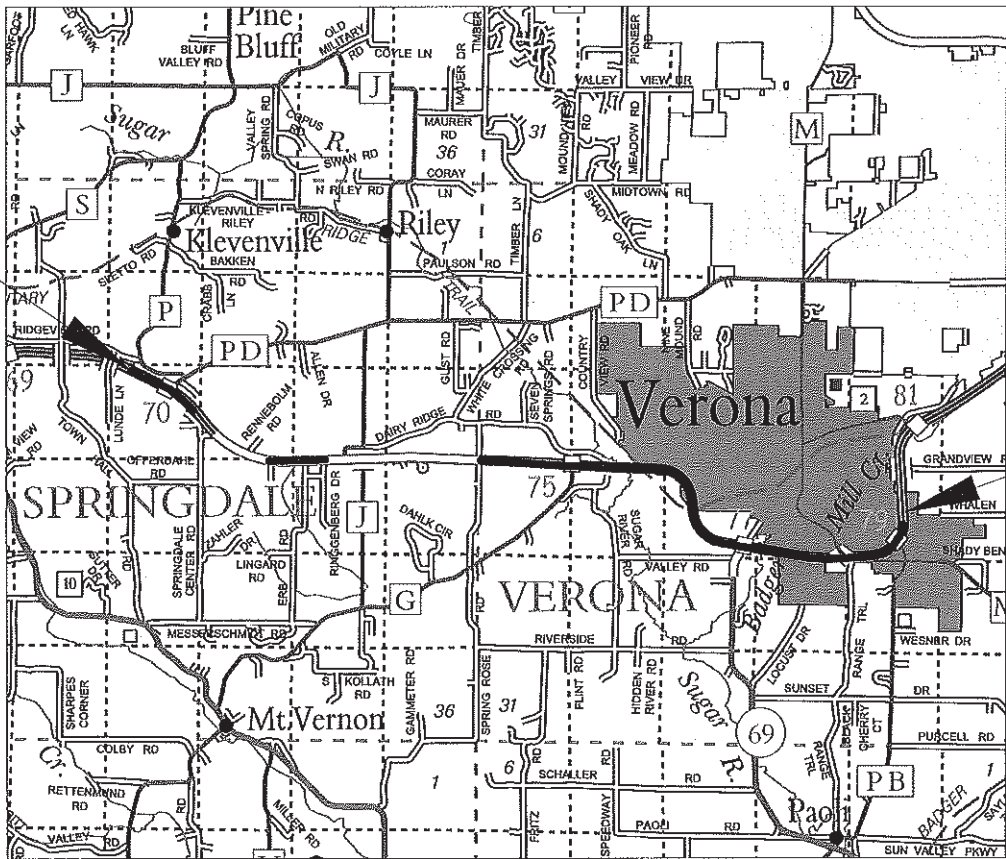
|              |      |   |           |
|--------------|------|---|-----------|
| A.A.D.T.     | 2018 | = | 26,900    |
| A.A.D.T.     |      | = | N/A       |
| D.H.V.       |      | = | 12.3      |
| D.D.         |      | = | 60/40     |
| T.           |      | = | 14.6%     |
| DESIGN SPEED |      | = | 70 M.P.H. |
| ESALS        |      | = | N/A       |

CONVENTIONAL SYMBOLS

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

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

BEGIN PROJECT  
STA 214+65  
X=741,879.72  
Y=456,955.56



R-7-E R-8-E

T-7-N  
T-6-N

END PROJECT  
STA 665+00

LAYOUT  
SCALE 0 2 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.000 MI.

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

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF NAVD 88 (2012).

| STATE PROJECT | FEDERAL PROJECT |          |
|---------------|-----------------|----------|
|               | PROJECT         | CONTRACT |
| 1204-08-63    | WISC 2018300    | 1        |
|               |                 |          |
|               |                 |          |
|               |                 |          |

| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                 |
|----------------------------------------------------|-----------------|
| PREPARED BY                                        |                 |
| Surveyor                                           | _____           |
| Designer                                           | LORRAINE BETZEL |
| Project Manager                                    | JIM SIMPSON     |
| Regional Examiner                                  | SW REGION       |
| Regional Supervisor                                | KURT JOHNSON    |
| APPROVED FOR THE DEPARTMENT                        |                 |
| DATE: 2-22-18                                      |                 |
|                                                    | E               |

GENERAL NOTES

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

A PACKERLAND BROADBAND UNDERGROUND FIBER OPTIC LINE RUNS ALONG THE RIGHT-OF-WAY ON THE NORTH SIDE OF USH 18 FOR THE ENTIRE PROJECT LENGTH. NO CONFLICTS ARE ANTICIPATED.

EXACT EROSION CONTROL DEVICE LOCATIONS WILL BE DETERMINED BY THE ENGINEER. EROSION CONTROL DEVICES SHALL BE PLACED IN SEQUENCE WITH CONSTRUCTION OPERATIONS OR AS DETERMINED BY THE ENGINEER.

INLETS SHALL BE COVERED AS NECESSARY TO PREVENT CONSTRUCTION MATERIAL FROM FALLING INTO THE INLETS.

FIELD BORING LOG SHEETS WILL BE MADE AVAILABLE UPON REQUEST.



LIST OF STANDARD ABBREVIATIONS

|        |                                 |      |                            |       |                            |
|--------|---------------------------------|------|----------------------------|-------|----------------------------|
| ABUT   | ABUTMENT                        | INL  | INLET                      | RDWY  | ROADWAY                    |
| AC     | ACRE                            | ID   | INSIDE DIAMETER            | SALV  | SALVAGED                   |
| AADT   | ANNUAL AVERAGE DAILY TRAFFIC    | INV  | INVERT                     | SSS   | SANITARY AND STORM SEWER   |
| ASPH   | ASPHALT                         | IP   | IRON PIPE                  | SAN   | SANITARY SEWER             |
| AVG    | AVERAGE                         | JT   | JOINT                      | SEC   | SECTION                    |
| BL     | BASE LINE                       | JCT  | JUNCTION                   | SHLDR | SHOULDER                   |
| BM     | BENCH MARK                      | LT   | LEFT                       | SW    | SIDEWALK                   |
| CB     | CATCH BASIN                     | L    | LENGTH OF CURVE            | S     | SOUTH                      |
| C/L    | CENTER LINE                     | LHF  | LEFT HAND FORWARD          | SB    | SOUTHBOUND                 |
| CC     | CENTER TO CENTER                | LF   | LENEAR FOOT                | SP    | SPECIAL                    |
| CE     | COMERCIAL ENTRANCE              | L    | LITER                      | SPECS | SPECIFICATIONS             |
| CONE   | CONCRETE                        | LS   | LUMP SUM                   | SQ    | SQUARE                     |
| CO     | COUNTY                          | MH   | MANHOLE                    | SF    | SQUARE FEET                |
| CTH    | COUNTY TRUNK HIGHWAY            | MB   | MESSAGE BOARD              | SY    | SQUARE YARD                |
| CY     | CUBIC YARD                      | MLB  | MAILBOX                    | STD   | STANDARD                   |
| C&G    | CURB AND GUTTER                 | ML   | MATCH LINE                 | SDD   | STANDARD DETAILS DRAWINGS  |
| CULV   | CULVERT                         | NC   | NORMAL CROWN               | STH   | STATE TRUNK HIGHWAYS       |
| CPAS   | CONCRETE PAVEMENT APPROACH SLAB | N    | NORTH                      | STA   | STATION                    |
| DHV    | DESIGN HOUR VOLUME              | Y    | NORTH GRD COORDINATE       | SS    | STORM SEWER                |
| DIA    | DIAMETER                        | NB   | NORTHBOUND                 | STR   | STRUCTURE OR STRUCTURAL    |
| DD     | DIRECTIONAL DISTRIBUTION        | NO   | NUMBER                     | SL    | SURVEY LINE                |
| E      | EAST                            | OD   | OUTSIDE DIAMETER           | TEL   | TELEPHONE                  |
| X      | EAST GRD COORDINATE             | PAVT | PAVEMENT                   | TEMP  | TEMPORARY                  |
| ELEC   | ELECTRIC                        | PERM | PERMANENT                  | TLE   | TEMPORARY LIMITED EASEMENT |
| ELEV   | ELEVATION                       | PLE  | PERMANENT LIMITED EASEMENT | T     | TON                        |
| ESALS  | EQUIVALENT SINGLE AXLE LOADS    | PT   | POINT                      | TC    | TOP OF CURB                |
| EXC    | EXCAVATION                      | PCC  | PORTLAND CEMENT CONCRETE   | T     | TRUCKS (PERCENT OF)        |
| EBS    | EXCAVATION BELOW SUBGRADE       | PCS  | PAVED CONCRETE SHOULDER    | TYP   | TYPICAL                    |
| EXIST  | EXISTING                        | PE   | PRIVATE ENTRANCE           | UG    | UNDERGROUND                |
| FE     | FIELD ENTRANCE                  | PROJ | PROJECT                    | USH   | UNITED STATES HIGHWAY      |
| FF     | FACE TO FACE                    | PL   | PROPERTY LINE              | VAR   | VARIABLE                   |
| FG     | FINISHED GRADE                  | R    | RADIUS                     | VERT  | VERTICAL                   |
| FL     | FLOW LINE                       | R/L  | REFERENCE LINE             | W     | WATER                      |
| FT     | FOOT                            | REQD | REQUIRED                   | WM    | WATER MAIN                 |
| HES    | HIGH EARLY STRENGTH             | RT   | RIGHT                      | WV    | WATER VALVE                |
| CWT    | HUNDREDWEIGHT                   | RHF  | RIGHT HAND FORWARD         | W     | WEST                       |
| HYD    | HYDRANT                         | R/W  | RIGHT-OF-WAY               | WB    | WEST BOUND                 |
| IN DIA | INCH DIAMETER                   | RD   | ROAD                       | YD    | YARD                       |

UTILITY/MUNICIPATILY

|                                  |                                                                                                                     |                          |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------|
| Alliant Energy                   | Jeff Nelson<br>2147 CTH PB<br>Verona, WI 53593-9225<br>(608) 845-1148<br>jeffnelson@alliantenergy.com               | Electricity              |
| ATC Management, Inc.             | Doug Vosberg<br>W234 N2000 Ridgeview Parkway Court<br>PO Box 47<br>(608) 877-7650<br>dvosberg@atcllc.com            | Electricity-transmission |
| Charter Communications           | Mark Gauger<br>2701 Daniels St<br>Madison, WI 53718<br>(608) 575-6415<br>mark.gauger@charter.com                    | Communication            |
| City of Verona                   | Theran Jacobson<br>410 Investment Ct<br>Verona, WI 53593-8745<br>(608) 845-6695<br>theran.jacobseon@ci.verona.wi.us | Water/Sewer              |
| Madison Gas And Electric Company | Steve Beversdorf<br>133 S Blair St<br>Madison, WI 53788<br>(608)252-1552<br>sbeversdorf@mge.com                     | Gas/Petroleum            |
| Mount Horeb Telephone Company    | Kevin Mayne<br>200 E Main St<br>PO Box 65<br>Mt Horeb, WI 53572<br>(608) 437-5551<br>kevin.mayne@mhtcinc.com        | Communication            |
| Packerland Broadband             | Andy Heigl<br>PO Box 885<br>Iron Mountain, MI 49801<br>(906)221-7536<br>andy.heigl@packerlandbroadband.com          | Communication            |
| UW-Madison Division of IT (DoIT) | Dan Parenteau<br>1210 W Dayton St<br>Madison, WI 53706<br>(608)262-9501<br>parenteau@wisc.edu                       | Communication            |

DNR CONTACT

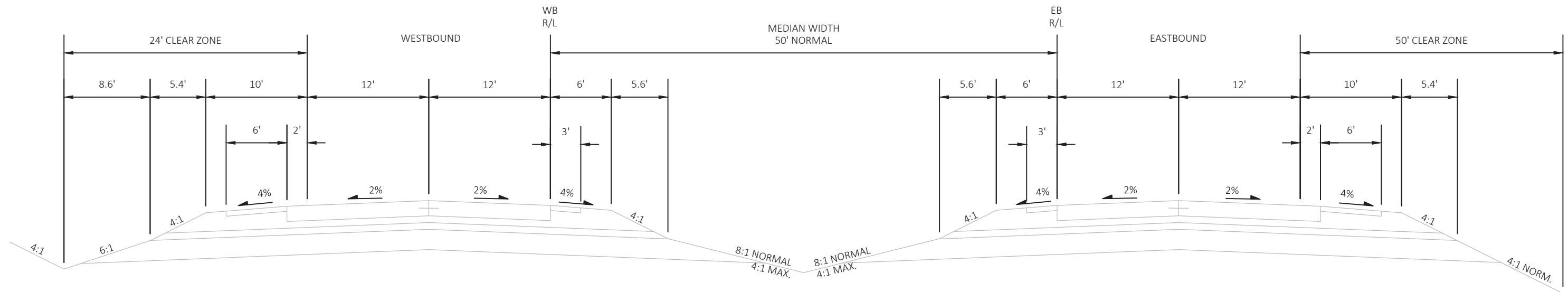
Eric Heggelund  
3911 Fish Hatchery Road  
Fitchburg, WI 53711  
(608) 275-3301  
eric.heggelund@wisconsin.gov

WISDOT CONTACT

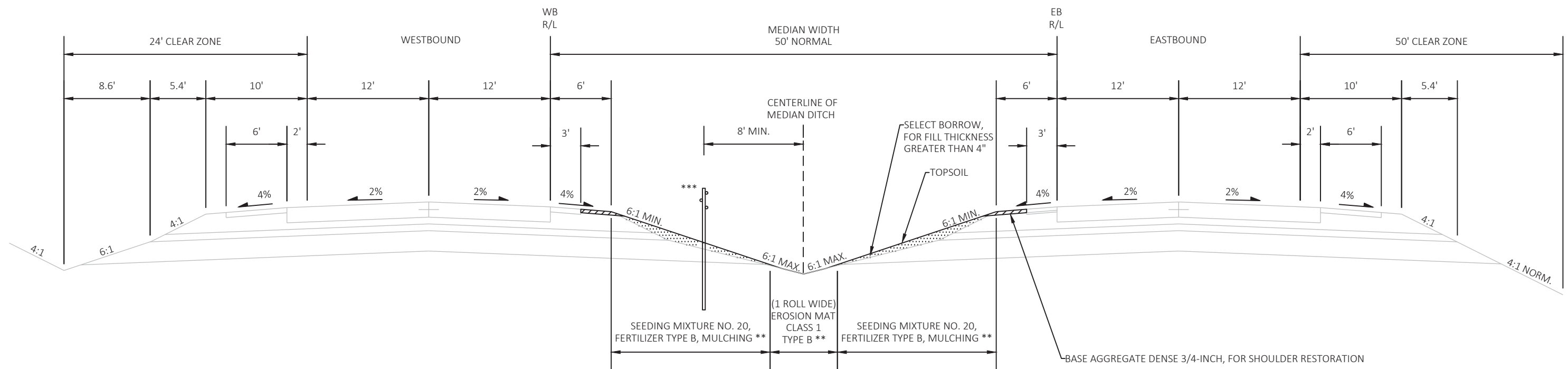
JIM SIMPSON  
WISDOT PROJECT MANAGER  
2101 WRIGHT STREET  
MADISON, WI 53704  
(608) 246-5628  
Jim.Simpson@dot.wi.gov

DESIGN CONTACT

LORRAINE BETZEL  
DESIGN ENGINEER  
2101 WRIGHT STREET  
MADISON, WI 53704  
(608) 246-3279  
Lorraine.Betzel@dot.wi.gov



TYPICAL EXISTING SECTION  
USH 18

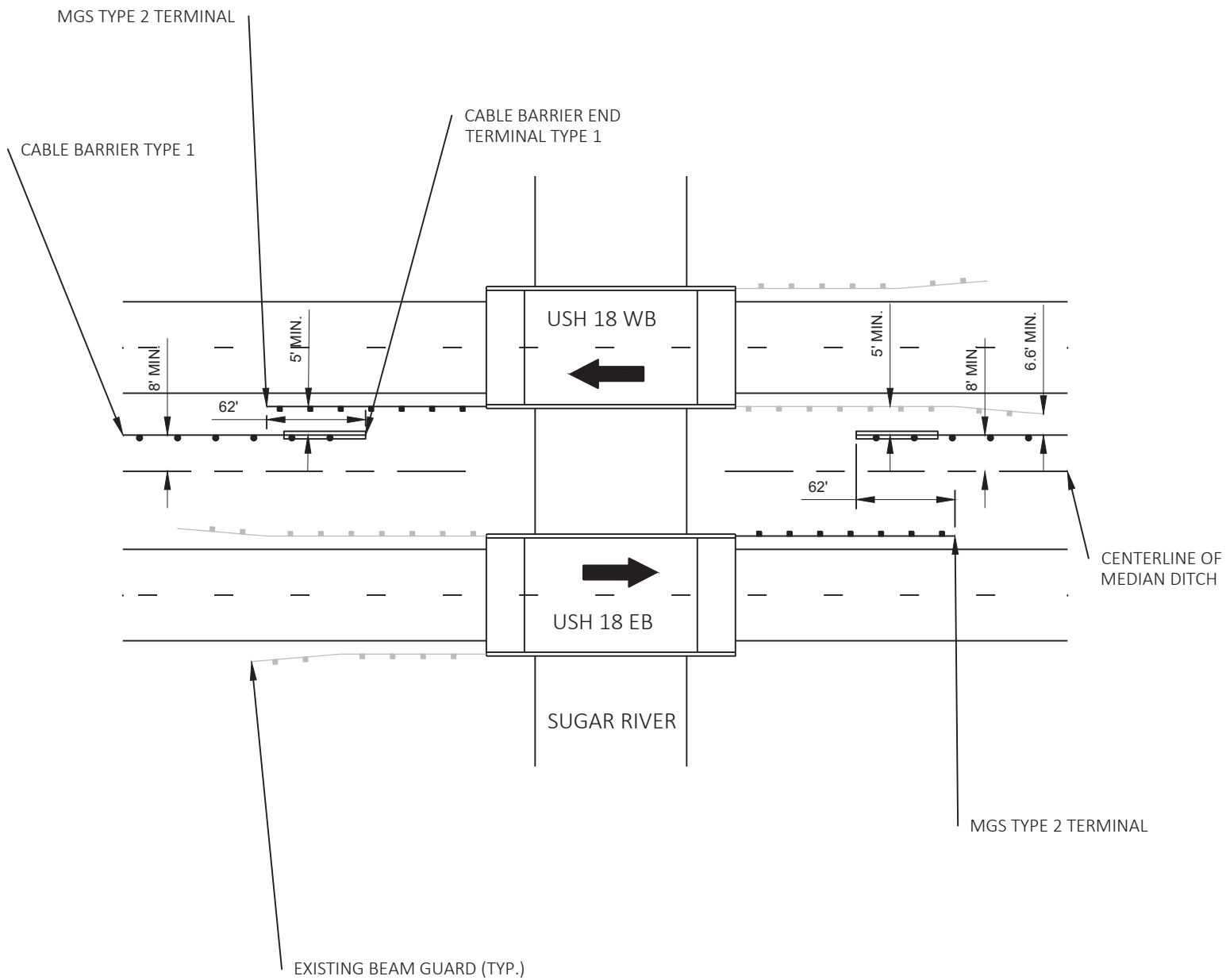


TYPICAL FINISHED SECTION  
USH 18

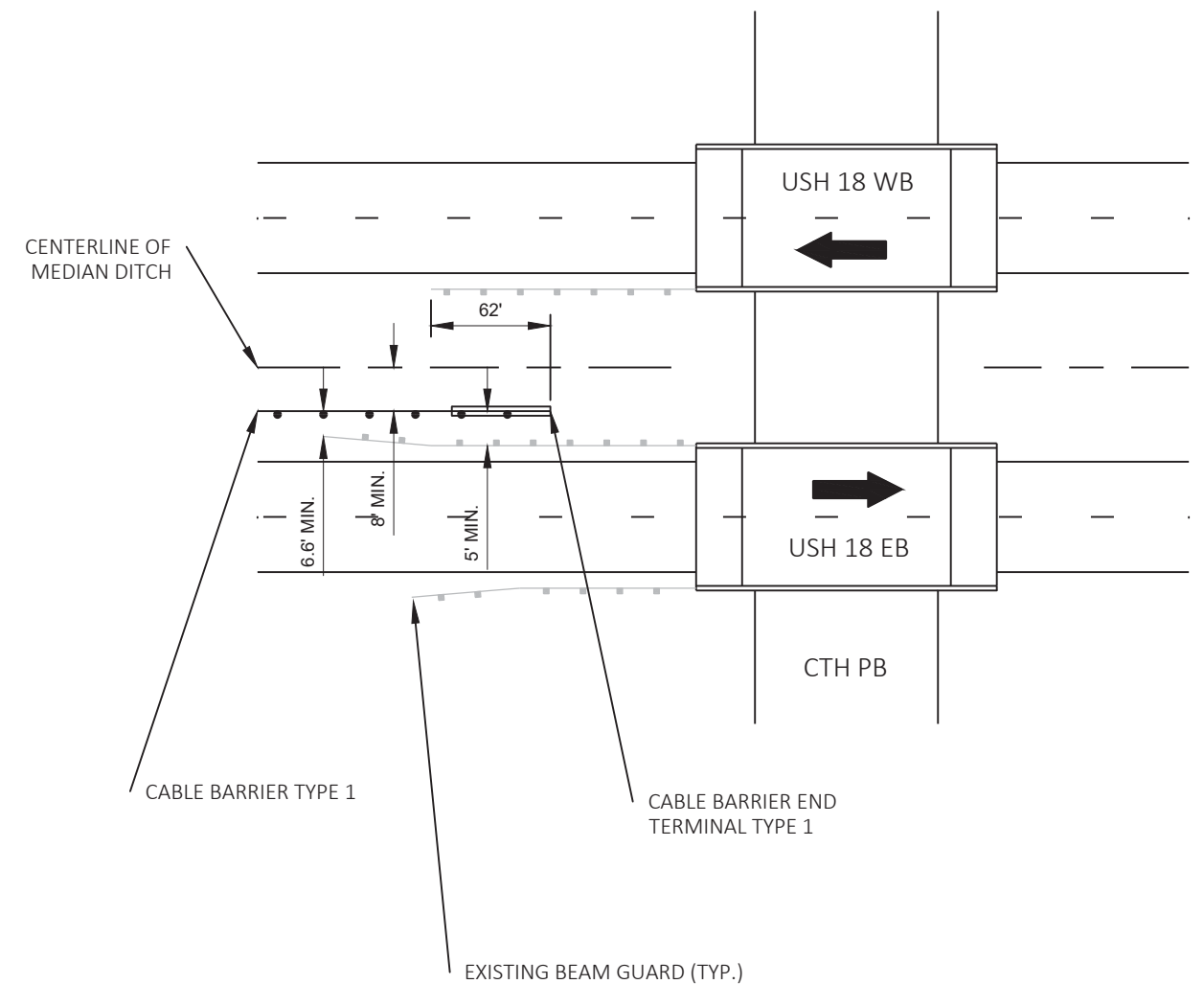
\*\*\*CABLE BARRIER TYPE 1 REQ'D. SEE MISC. QUANTITIES AND  
PLAN DETAILS FOR LOCATIONS.

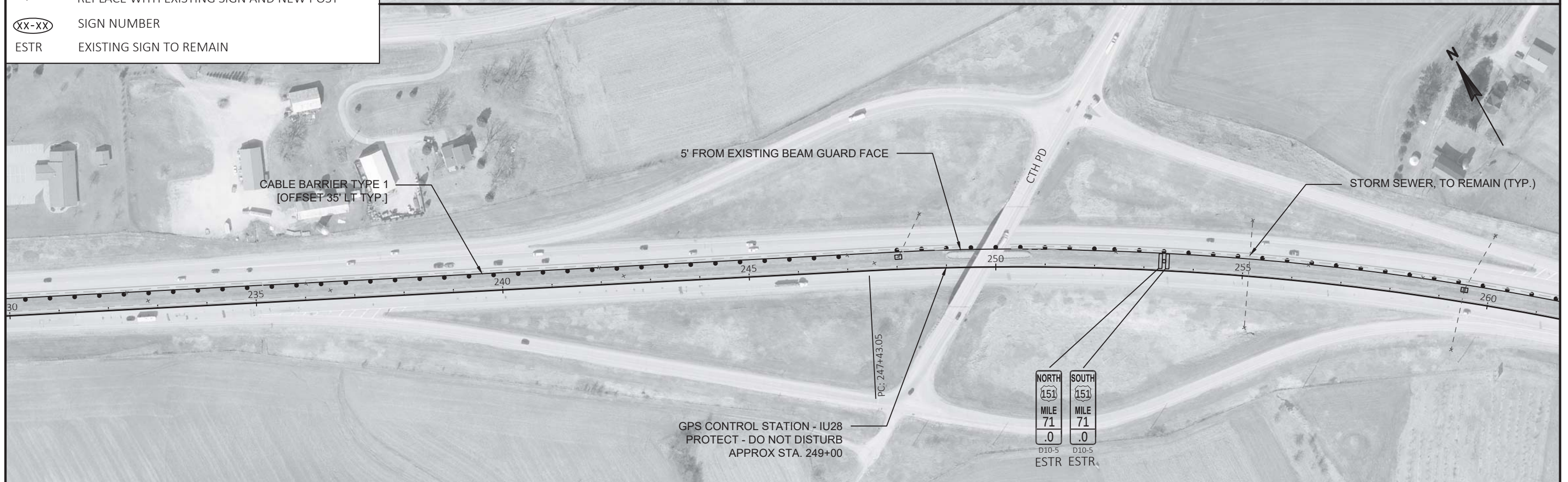
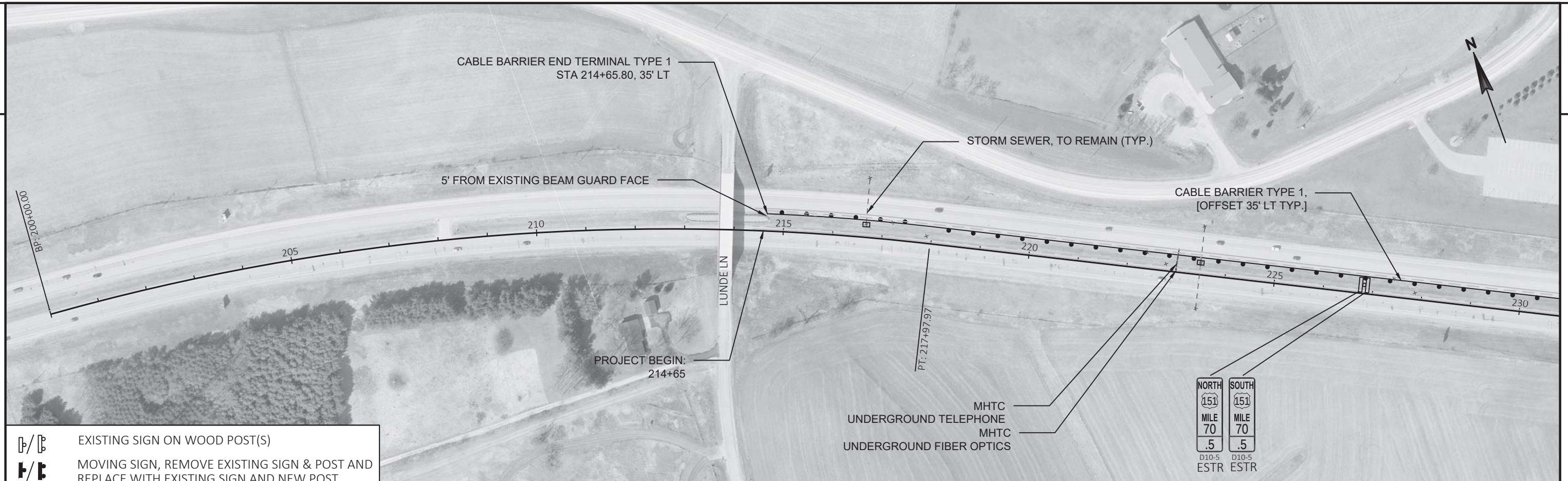
\*\*SEE GRADING LIMITS FOR LOCATIONS

## CABLE BARRIER END TERMINAL AT SUGAR RIVER BRIDGE



## CABLE BARRIER END TERMINAL AT CTH PB BRIDGE





PROJECT NO: 1204-08-63

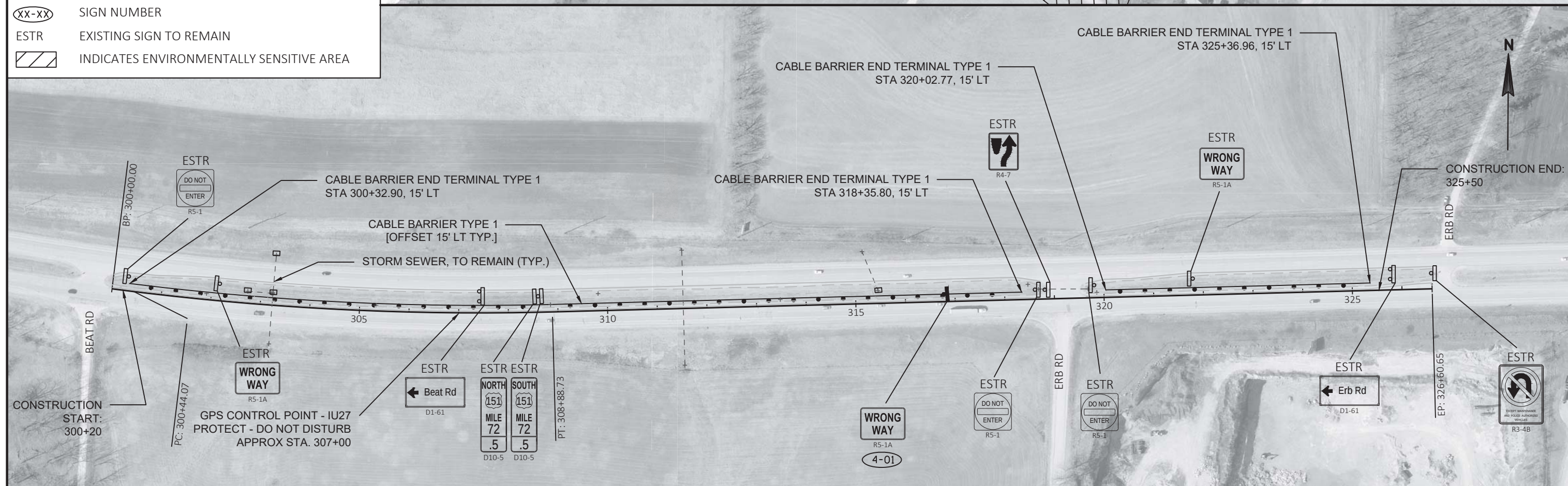
HWY: USH 18

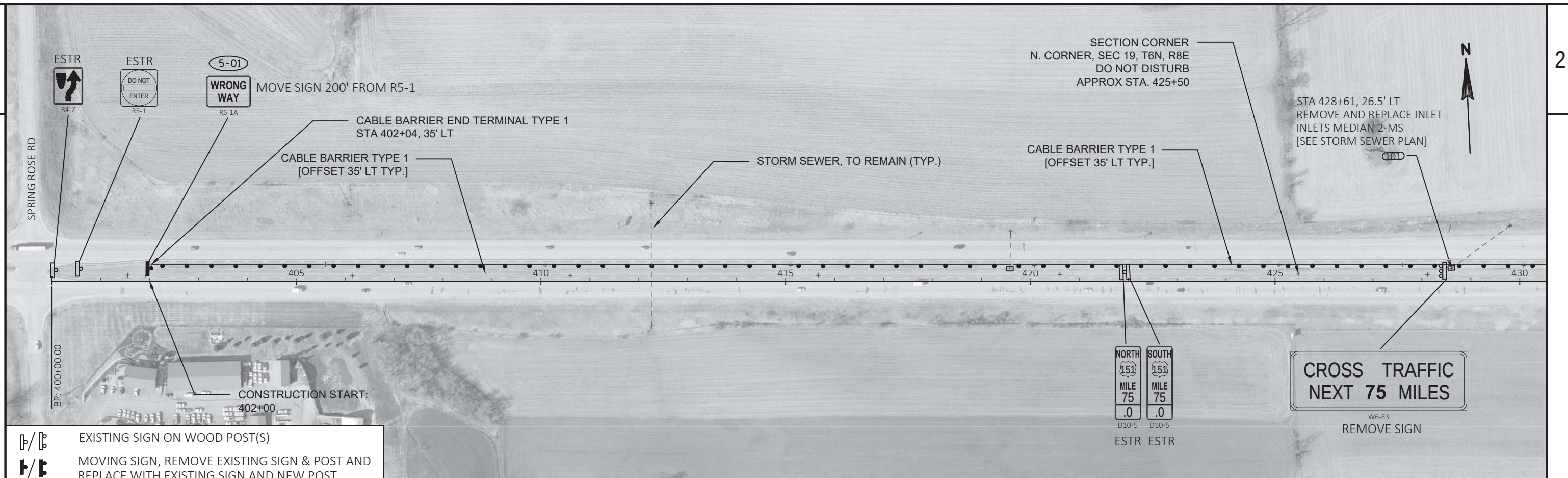
COUNTY: DANE

PLAN DETAILS

SHEET

E





EXISTING SIGN ON WOOD POST(S)



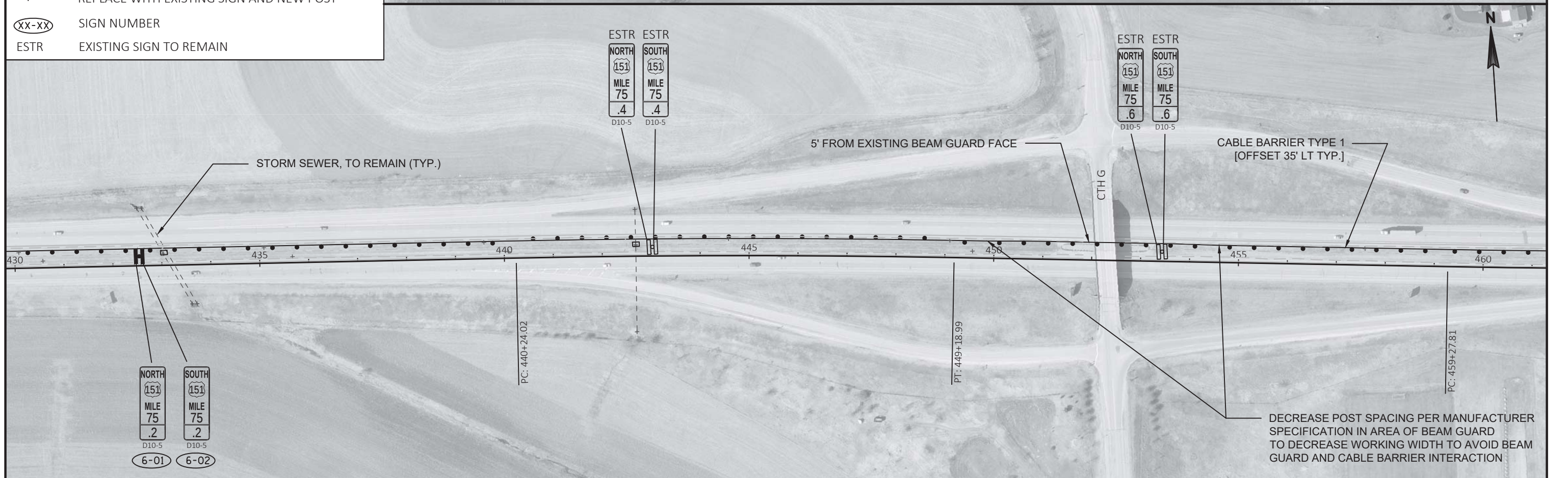
MOVING SIGN, REMOVE EXISTING SIGN &amp; POST AND REPLACE WITH EXISTING SIGN AND NEW POST



SIGN NUMBER



EXISTING SIGN TO REMAIN



PROJECT NO: 1204-08-63

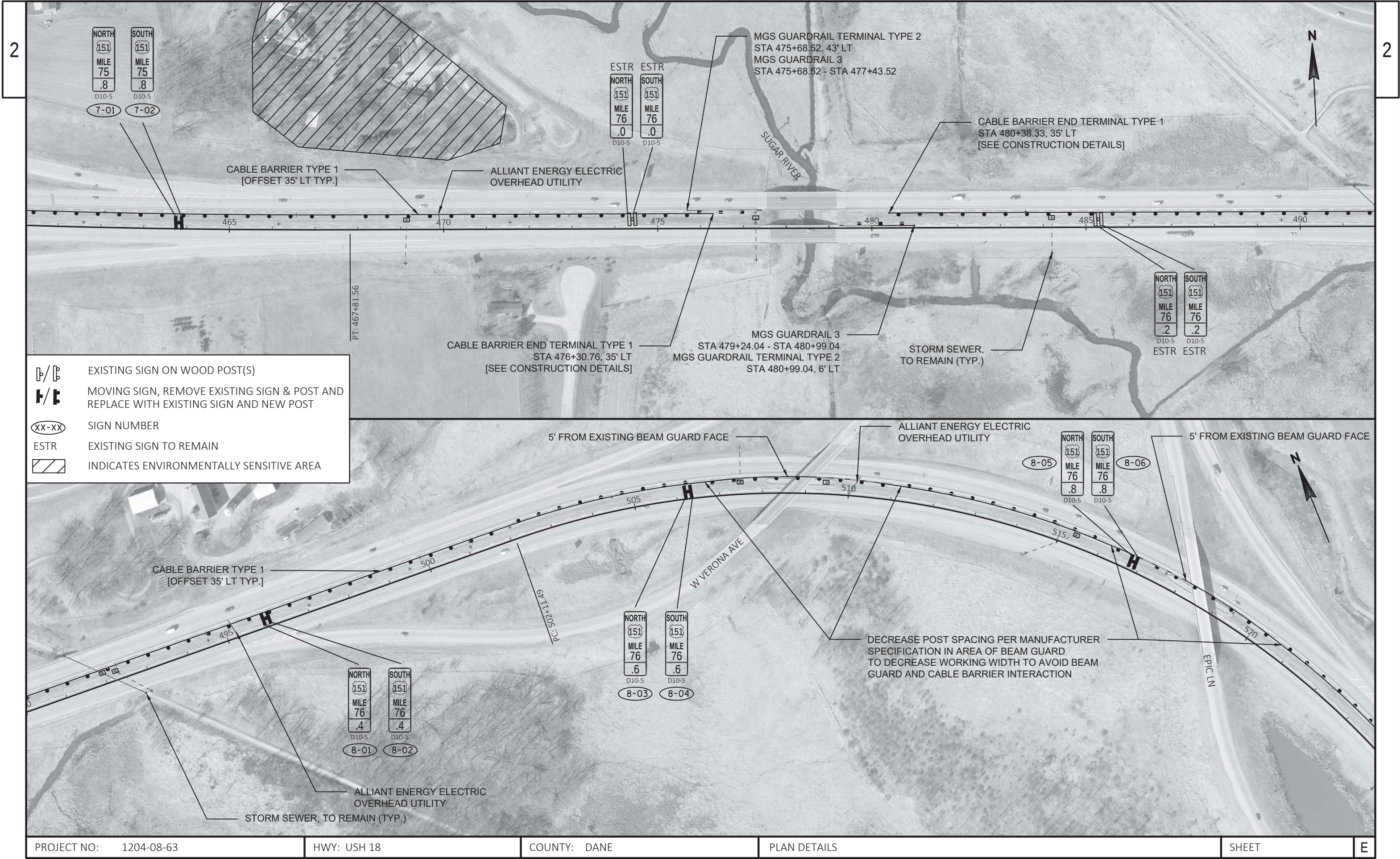
HWY: USH 18

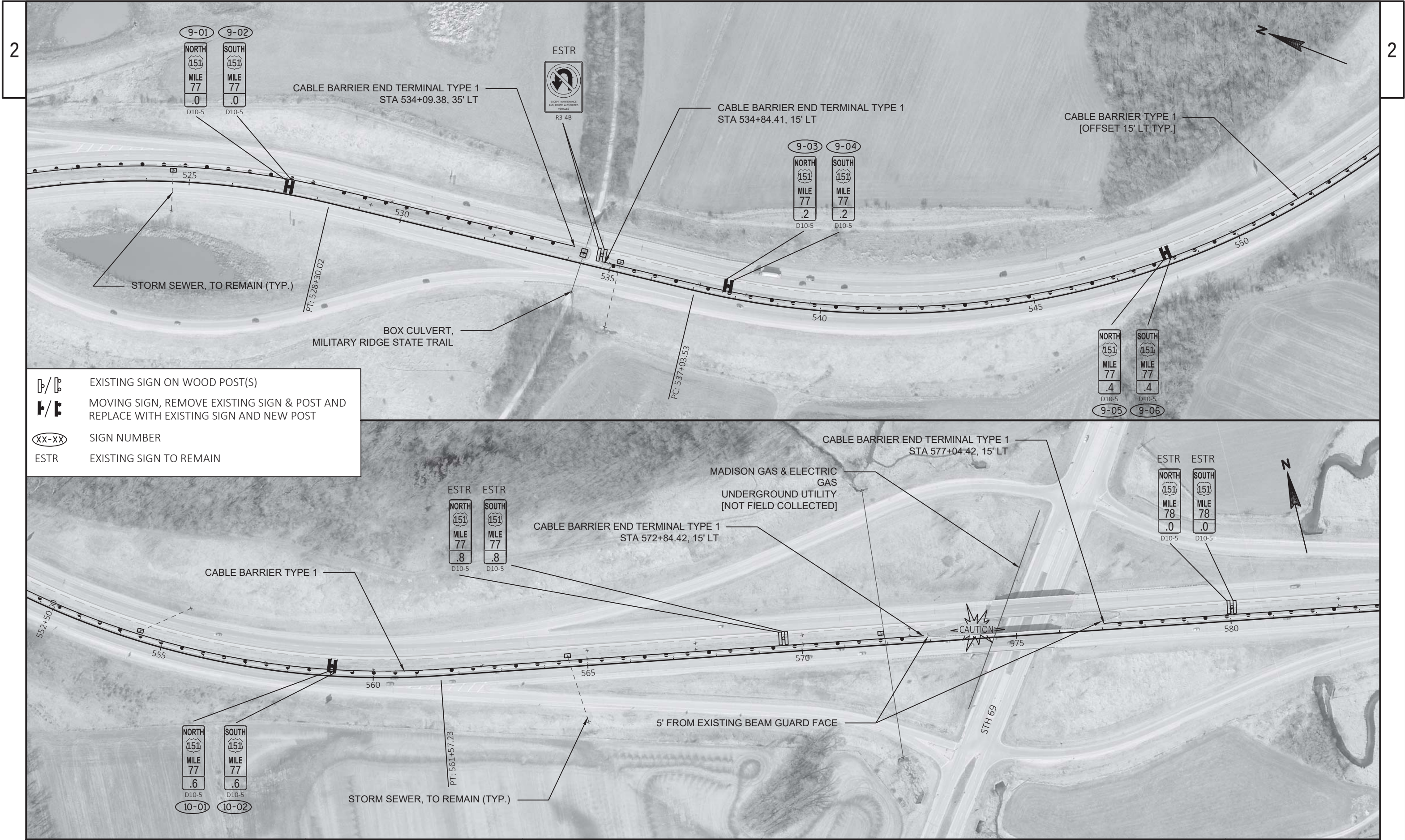
COUNTY: DANE

PLAN DETAILS

SHEET

E







EXISTING SIGN ON WOOD POST(S)



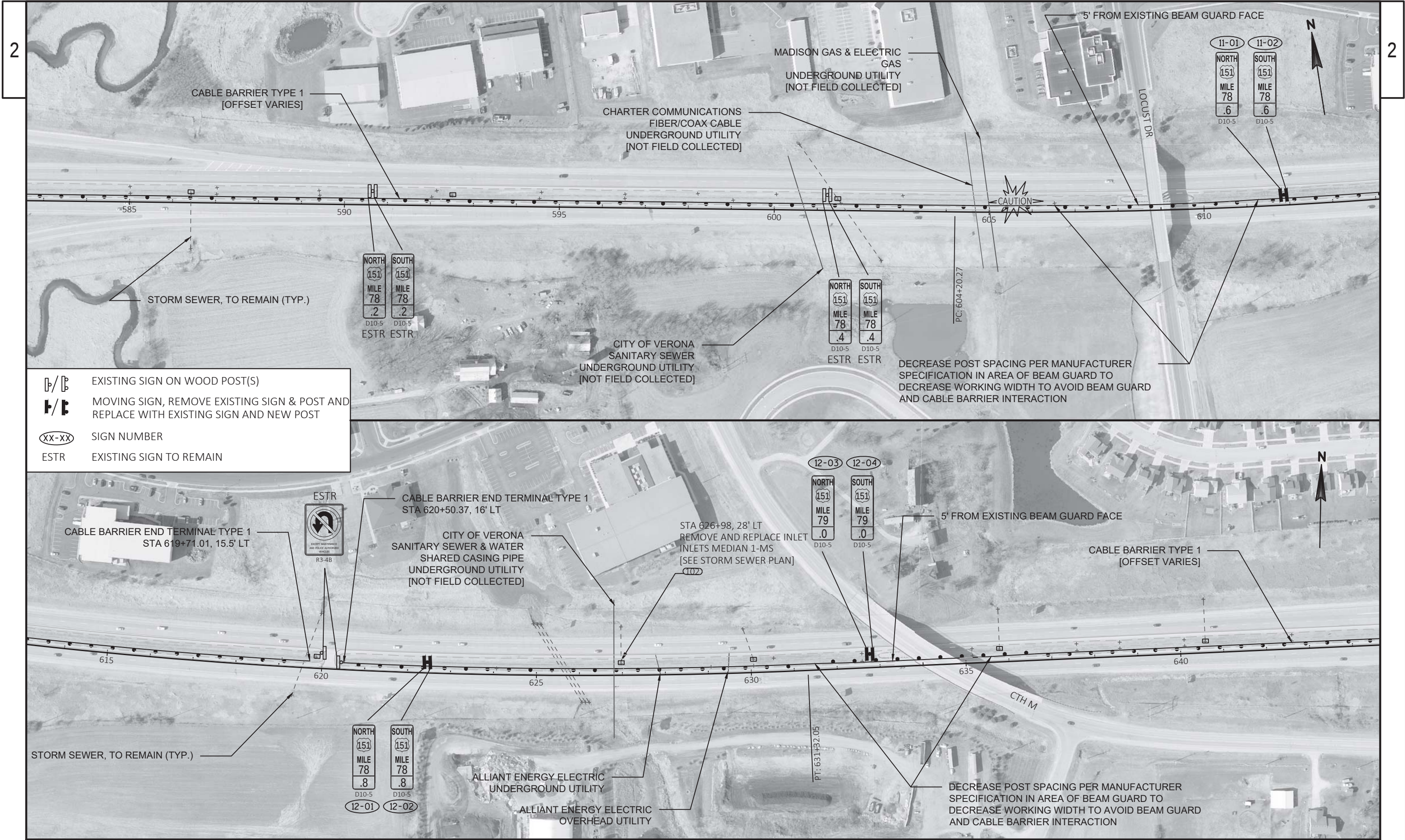
MOVING SIGN, REMOVE EXISTING SIGN & POST AND REPLACE WITH EXISTING SIGN AND NEW POST

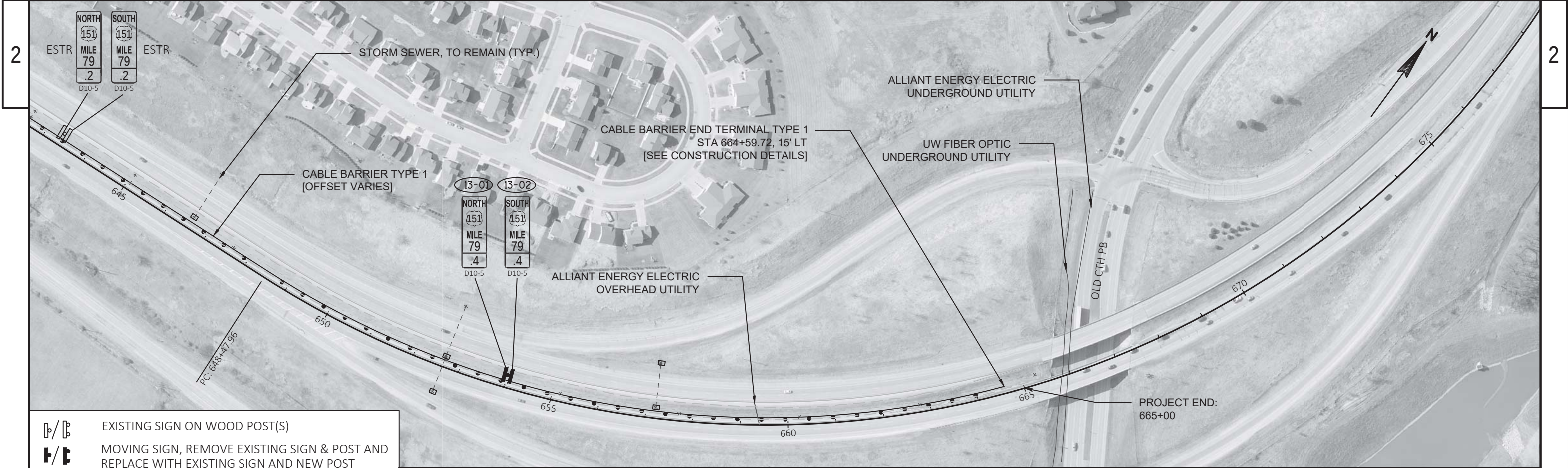


SIGN NUMBER

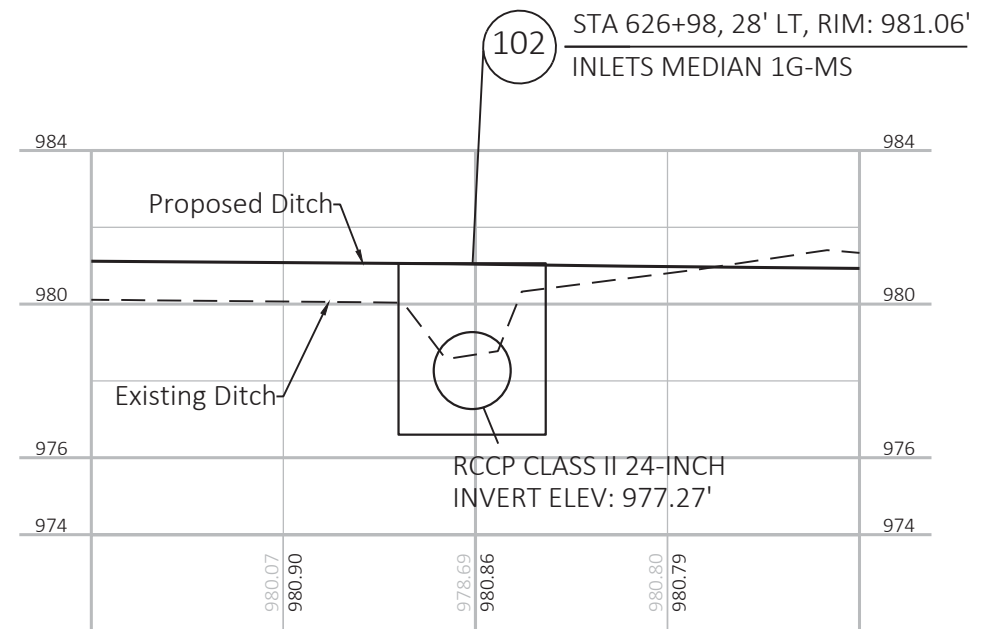
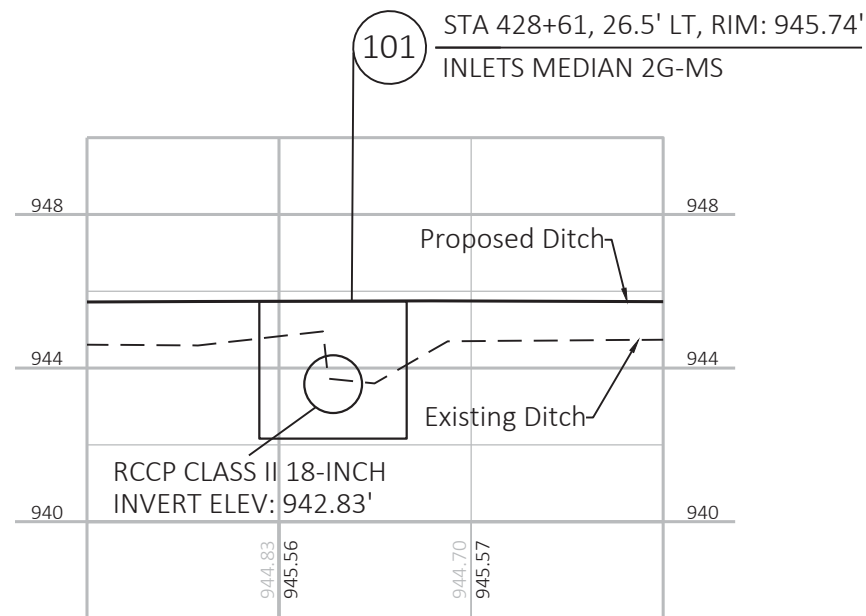


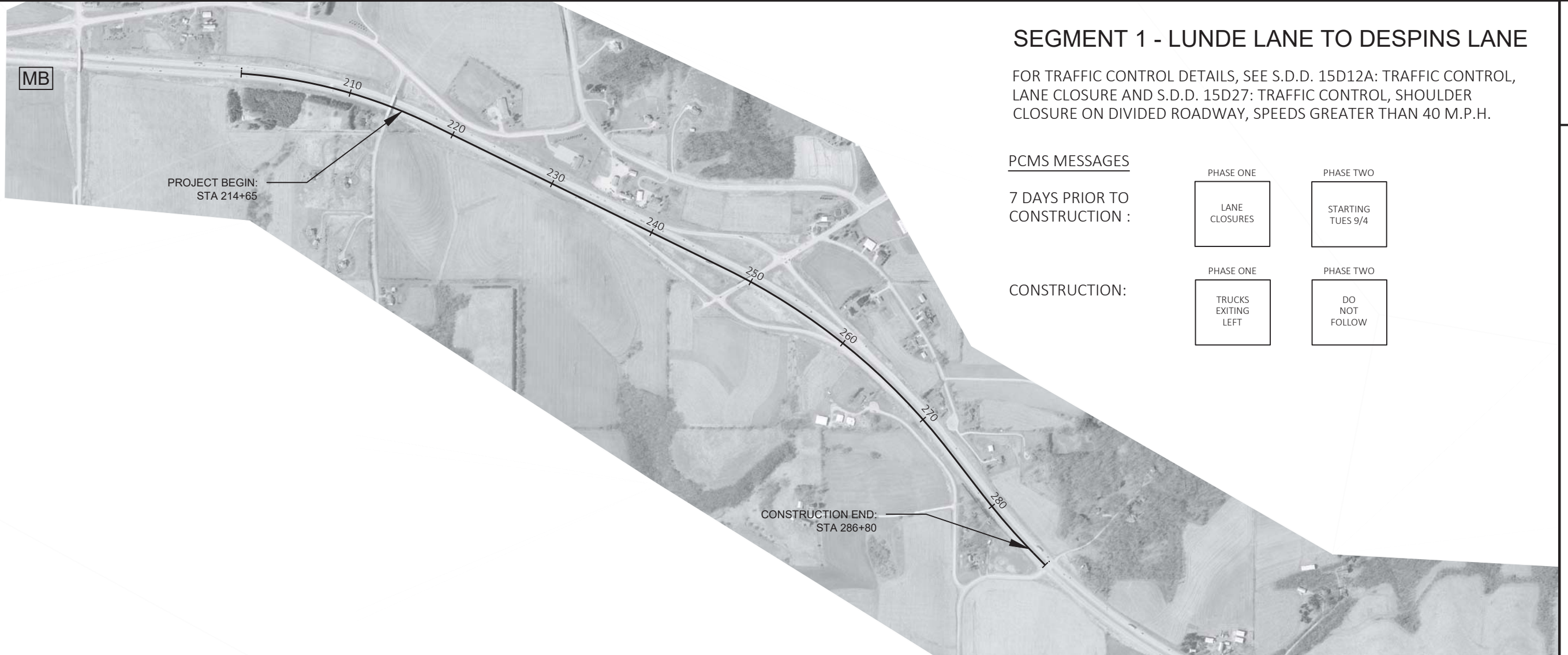
EXISTING SIGN TO REMAIN





- EXISTING SIGN ON WOOD POST(S)
- MOVING SIGN, REMOVE EXISTING SIGN & POST AND REPLACE WITH EXISTING SIGN AND NEW POST
- SIGN NUMBER
- EXISTING SIGN TO REMAIN





## 2

2

## 2

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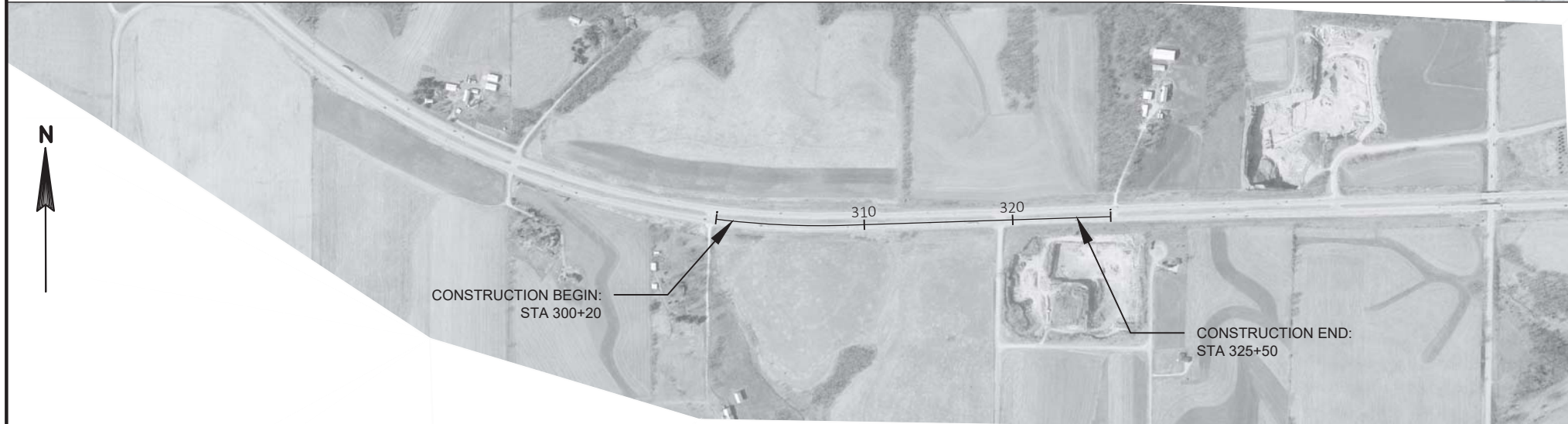
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## 2

2



## SEGMENT 3 - SPRING ROSE ROAD TO CTH PB

FOR TRAFFIC CONTROL DETAILS, SEE S.D.D. 15D12A: TRAFFIC CONTROL, LANE CLOSURE AND S.D.D. 15D27: TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 M.P.H.

### PCMS MESSAGES

7 DAYS PRIOR TO CONSTRUCTION :

PHASE ONE

LANE CLOSURES

PHASE TWO

STARTING TUES 9/4

CONSTRUCTION:

PHASE ONE

TRUCKS EXITING LEFT

PHASE TWO

DO NOT FOLLOW

Estimate Of Quantities

1204-08-63

| Line | Item       | Item Description                                              | Unit | Total      | Qty        |
|------|------------|---------------------------------------------------------------|------|------------|------------|
| 0002 | 204.0220   | Removing Inlets                                               | EACH | 2.000      | 2.000      |
| 0004 | 204.0245   | Removing Storm Sewer (size) 01. 18-Inch and 24-Inch           | LF   | 16.000     | 16.000     |
| 0006 | 205.0100   | Excavation Common                                             | CY   | 1,300.000  | 1,300.000  |
| 0008 | 208.1100   | Select Borrow                                                 | CY   | 4,100.000  | 4,100.000  |
| 0010 | 213.0100   | Finishing Roadway (project) 01. 1204-08-63                    | EACH | 1.000      | 1.000      |
| 0012 | 305.0110   | Base Aggregate Dense 3/4-Inch                                 | TON  | 1,340.000  | 1,340.000  |
| 0014 | 608.3018   | Storm Sewer Pipe Class III-A 18-Inch                          | LF   | 8.000      | 8.000      |
| 0016 | 608.3024   | Storm Sewer Pipe Class III-A 24-Inch                          | LF   | 8.000      | 8.000      |
| 0018 | 611.0642   | Inlet Covers Type MS                                          | EACH | 3.000      | 3.000      |
| 0020 | 611.3901   | Inlets Median 1 Grate                                         | EACH | 1.000      | 1.000      |
| 0022 | 611.3902   | Inlets Median 2 Grate                                         | EACH | 1.000      | 1.000      |
| 0024 | 613.1100.S | Cable Barrier Type 1                                          | LF   | 33,910.000 | 33,910.000 |
| 0026 | 613.1200.S | Cable Barrier End Terminal Type 1                             | EACH | 16.000     | 16.000     |
| 0028 | 614.2300   | MGS Guardrail 3                                               | LF   | 350.000    | 350.000    |
| 0030 | 614.2620   | MGS Guardrail Terminal Type 2                                 | EACH | 2.000      | 2.000      |
| 0032 | 618.0100   | Maintenance And Repair of Haul Roads (project) 01. 1204-08-63 | EACH | 1.000      | 1.000      |
| 0034 | 619.1000   | Mobilization                                                  | EACH | 1.000      | 1.000      |
| 0036 | 624.0100   | Water                                                         | MGAL | 570.000    | 570.000    |
| 0038 | 625.0105   | Topsoil                                                       | CY   | 6,897.000  | 6,897.000  |
| 0040 | 627.0200   | Mulching                                                      | SY   | 40,940.000 | 40,940.000 |
| 0042 | 628.1504   | Silt Fence                                                    | LF   | 50.000     | 50.000     |
| 0044 | 628.1520   | Silt Fence Maintenance                                        | LF   | 10.000     | 10.000     |
| 0046 | 628.1905   | Mobilizations Erosion Control                                 | EACH | 1.000      | 1.000      |
| 0048 | 628.1910   | Mobilizations Emergency Erosion Control                       | EACH | 1.000      | 1.000      |
| 0050 | 628.2004   | Erosion Mat Class I Type B                                    | SY   | 13,550.000 | 13,550.000 |
| 0052 | 628.7005   | Inlet Protection Type A                                       | EACH | 17.000     | 17.000     |
| 0054 | 628.7504   | Temporary Ditch Checks                                        | LF   | 1,312.000  | 1,312.000  |
| 0056 | 629.0210   | Fertilizer Type B                                             | CWT  | 36.000     | 36.000     |
| 0058 | 630.0120   | Seeding Mixture No. 20                                        | LB   | 1,504.000  | 1,504.000  |
| 0060 | 634.0614   | Posts Wood 4x6-Inch X 14-FT                                   | EACH | 2.000      | 2.000      |
| 0062 | 634.0618   | Posts Wood 4x6-Inch X 18-FT                                   | EACH | 13.000     | 13.000     |
| 0064 | 638.2102   | Moving Signs Type II                                          | EACH | 15.000     | 15.000     |
| 0066 | 638.2602   | Removing Signs Type II                                        | EACH | 1.000      | 1.000      |
| 0068 | 638.3000   | Removing Small Sign Supports                                  | EACH | 16.000     | 16.000     |
| 0070 | 642.5001   | Field Office Type B                                           | EACH | 1.000      | 1.000      |
| 0072 | 643.0300   | Traffic Control Drums                                         | DAY  | 7,867.000  | 7,867.000  |
| 0074 | 643.0420   | Traffic Control Barricades Type III                           | DAY  | 712.000    | 712.000    |
| 0076 | 643.0705   | Traffic Control Warning Lights Type A                         | DAY  | 1,424.000  | 1,424.000  |
| 0078 | 643.0715   | Traffic Control Warning Lights Type C                         | DAY  | 1,109.000  | 1,109.000  |

Estimate Of Quantities

1204-08-63

| Line | Item     | Item Description                                                      | Unit | Total      | Qty        |
|------|----------|-----------------------------------------------------------------------|------|------------|------------|
| 0080 | 643.0800 | Traffic Control Arrow Boards                                          | DAY  | 198.000    | 198.000    |
| 0082 | 643.0900 | Traffic Control Signs                                                 | DAY  | 1,840.000  | 1,840.000  |
| 0084 | 643.1050 | Traffic Control Signs PCMS                                            | DAY  | 98.000     | 98.000     |
| 0086 | 643.5000 | Traffic Control                                                       | EACH | 1.000      | 1.000      |
| 0088 | 650.9910 | Construction Staking Supplemental Control (project) 01.<br>1204-08-63 | LS   | 1.000      | 1.000      |
| 0090 | 650.9920 | Construction Staking Slope Stakes                                     | LF   | 15,362.000 | 15,362.000 |
| 0092 | ASP.1T0A | On-the-Job Training Apprentice at \$5.00/HR                           | HRS  | 264.000    | 264.000    |
| 0094 | ASP.1T0G | On-the-Job Training Graduate at \$5.00/HR                             | HRS  | 200.000    | 200.000    |

| Location         | From/To Station | 205.0100<br>Common<br>Excavation<br>(1) | Available<br>Material<br>(2) | Unexpanded<br>Fill | Expanded Fill<br>(3) | Mass Ordinate +/-<br>(4) | 208.1100<br>Select Borrow<br>(CY) | 625.0105<br>Topsoil (CY) |
|------------------|-----------------|-----------------------------------------|------------------------------|--------------------|----------------------|--------------------------|-----------------------------------|--------------------------|
|                  |                 |                                         |                              |                    | Factor<br>1.25       |                          |                                   |                          |
| USH 18<br>AREA   |                 |                                         |                              |                    |                      |                          |                                   |                          |
| 1                | 402+00 - 419+58 | 0                                       | 0                            | 958                | 1,200                | -1,200                   | -                                 | 1,200                    |
| 2                | 423+00 - 428+00 | 0                                       | 0                            | 315                | 400                  | -400                     | -                                 | 400                      |
|                  | 428+00 - 435+00 | 0                                       | 0                            | 708                | 890                  | -890                     | 890                               | 294                      |
|                  | 435+00 - 438+00 | 0                                       | 0                            | 70                 | 90                   | -90                      | -                                 | 90                       |
| 3                | 445+50 - 451+00 | 0                                       | 0                            | 315                | 400                  | -400                     | -                                 | 400                      |
| 4                | 458+00 - 465+00 | 0                                       | 0                            | 434                | 540                  | -540                     | -                                 | 540                      |
| 5                | 491+96 - 494+00 | 0                                       | 0                            | 133                | 170                  | -170                     | -                                 | 170                      |
|                  | 494+00 - 500+00 | 0                                       | 0                            | 294                | 370                  | -370                     | 370                               | 222                      |
|                  | 500+00 - 506+00 | 50                                      | 50                           | 217                | 270                  | -220                     | -                                 | 220                      |
|                  | 506+00 - 543+00 | 500                                     | 500                          | 1756               | 2,200                | -1,700                   | 1,700                             | 1,294                    |
|                  | 543+00 - 550+00 | 70                                      | 70                           | 278                | 350                  | -280                     | -                                 | 280                      |
|                  | 550+00 - 561+00 | 190                                     | 190                          | 477                | 600                  | -410                     | 410                               | 372                      |
| 6                | 610+00 - 633+00 | 130                                     | 130                          | 795                | 1,000                | -870                     | -                                 | 870                      |
| 7                | 648+50 - 650+00 | 20                                      | 20                           | 51                 | 70                   | -50                      | -                                 | 50                       |
|                  | 650+00 - 665+00 | 340                                     | 340                          | 853                | 1,070                | -730                     | 730                               | 494                      |
|                  |                 |                                         |                              |                    |                      |                          |                                   |                          |
| Grand Total      |                 | 1300                                    | 1,300                        | 7656               | 9,620                | -8,320                   | 4,100                             | 6,897                    |
| Total Common Exc |                 | 1,300                                   |                              |                    |                      |                          |                                   |                          |

Notes:

(1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100

(2) Available Material = Cut - Salvaged/Unusable Pavement Material

(3) Expanded Fill Factor = 1.25

Depending on selections:

**Expanded Fill = (Unexpanded Fill - Rock\* Rock Factor - Reduced Marsh - Reduced EBS) \* Fill Factor**

Expanded Fill = (Unexpanded Fill - Rock \* Rock Factor - Reduced EBS) \* Fill Factor

Expanded Fill = (Unexpanded Fill - Rock \* Rock Factor - Reduced Marsh) \* Fill Factor

Expanded Fill = (Unexpanded Fill - Rock \* Rock Factor) \* Fill Factor

(4) The Mass Ordinate + or - Qty calculated for the Location. Plus quantity indicates an excess of material within the Location. Minus indicates a shortage of material within the Location.

(5) Item 205.0100 Common Excavation is rounded up to the nearest 10 CY.

BASE AGGREGATE DENSE 3/4-INCH

| CATEGORY | LOCATION      | 305.0110<br>TON |
|----------|---------------|-----------------|
| 0010     | UNDISTRIBUTED | 1340            |

WATER

| CATEGORY | STATION | TO | STATION | 624.0100<br>MGAL |
|----------|---------|----|---------|------------------|
| 0010     | 402+00  | -  | 665+00  | 570              |

MGS GUARDRAIL 3

| CATEGORY | STATION | TO | STATION | 614.2300<br>LF | REMARKS                    |
|----------|---------|----|---------|----------------|----------------------------|
| 0010     | 475+68  | -  | 477+43  | 175            | SUGAR RIVER BRIDGE WB EXIT |
|          | 479+24  | -  | 480+99  | 175            | SUGAR RIVER BRIDGE EB EXIT |
| TOTAL    |         |    |         | 350            |                            |

CABLE BARRIER TYPE 1

| CATEGORY | STATION | TO | STATION | 613.1100.S<br>LF |
|----------|---------|----|---------|------------------|
| 0010     | 214+66  | -  | 286+67  | 7125             |
|          | 300+33  | -  | 318+34  | 1725             |
|          | 320+03  | -  | 325+37  | 460              |
|          | 405+00  | -  | 476+31  | 7055             |
|          | 480+38  | -  | 534+09  | 5295             |
|          | 534+84  | -  | 572+84  | 3725             |
|          | 577+04  | -  | 619+71  | 4190             |
|          | 620+50  | -  | 664+60  | 4335             |
| TOTAL    |         |    |         | 33910            |

MGS GUARDRAIL TERMINAL TYPE 2

| CATEGORY | STATION | OFFSET | 614.2620<br>EACH |
|----------|---------|--------|------------------|
| 0010     | 475+68  | 43' LT | 1                |
|          | 480+99  | 6' LT  | 1                |
| TOTAL    |         |        | 2                |

CABLE BARRIER END TERMINAL TYPE 1

| CATEGORY | STATION | OFFSET   | 613.1200.S<br>EACH |
|----------|---------|----------|--------------------|
| 0010     | 214+66  | 35' LT   | 1                  |
|          | 286+67  | 35' LT   | 1                  |
|          | 300+33  | 15' LT   | 1                  |
|          | 318+36  | 15' LT   | 1                  |
|          | 320+03  | 15' LT   | 1                  |
|          | 325+37  | 15' LT   | 1                  |
|          | 405+00  | 35' LT   | 1                  |
|          | 476+31  | 35' LT   | 1                  |
|          | 480+38  | 35' LT   | 1                  |
|          | 534+09  | 35' LT   | 1                  |
|          | 534+84  | 15' LT   | 1                  |
|          | 572+84  | 15' LT   | 1                  |
|          | 577+04  | 15' LT   | 1                  |
|          | 619+71  | 15.5' LT | 1                  |
|          | 620+50  | 16' LT   | 1                  |
|          | 664+60  | 14' LT   | 1                  |
| TOTAL    |         |          | 16                 |

STORM SEWER ITEMS

| CATEGORY | STATION | LOCATION | TOP OF<br>STRUCTURE<br>ELEVATION | BOTTOM OF<br>STRUCTURE<br>ELEVATION | DEPTH | PIPE<br>INVERT<br>ELEVATION | REMOVING | INLET    | INLETS   | INLETS   | REMOVING    |         | STORM SEWER PIPE REINFORCED |          |
|----------|---------|----------|----------------------------------|-------------------------------------|-------|-----------------------------|----------|----------|----------|----------|-------------|---------|-----------------------------|----------|
|          |         |          |                                  |                                     |       |                             | INLETS   | COVERS   | MEDIAN 1 | MEDIAN 2 | STORM SEWER |         | CONCRETE CLASS III          |          |
|          |         |          |                                  |                                     |       |                             | 204.022  | 611.0642 | 611.3901 | 611.3902 | 204.0245    | 18-INCH | 24-INCH                     |          |
|          |         |          |                                  |                                     |       |                             | EACH     | EACH     | EACH     | EACH     | 18-INCH     | 24-INCH | 608.3018                    | 608.3024 |
|          |         |          |                                  |                                     |       |                             |          |          |          |          | LF          | LF      | LF                          | LF       |
| 0010     | 428+61  | 26.5' LT | 945.74                           | 942.62                              | 3.12  | 942.83                      | 1        | 2        | -        | 1        | 8           | -       | 8                           | -        |
|          | 626+98  | 28' LT   | 981.06                           | 977.02                              | 4.04  | 977.27                      | 1        | 1        | 1        | -        | -           | 8       | -                           | 8        |
|          | TOTAL   |          |                                  |                                     |       |                             | 2        | 3        | 1        | 1        | 8           | 8       | 8                           | 8        |

| EROSION CONTROL ITEMS |               |    |         |          |          |             |            |           |            |          |
|-----------------------|---------------|----|---------|----------|----------|-------------|------------|-----------|------------|----------|
| CATEGORY              | STATION       | TO | STATION | MULCHING | SILT     | EROSION MAT | INLET      | TEMPORARY | FERTILIZER | SEEDING  |
|                       |               |    |         | 627.0200 | FENCE    | CLASS I     | PROTECTION | DITCH     | TYPE B     | MIXTURE  |
|                       |               |    |         | SY       | 628.1504 | TYPE B      | TYPE A     | CHECKS    | 629.0210   | NO. 20   |
|                       |               |    |         |          | LF       | 628.2004    | 628.7005   | 628.7504  | CWT        | 630.0120 |
|                       |               |    |         |          |          | SY          | EACH       | LF        |            | LB       |
|                       |               |    |         |          |          |             |            |           |            | REMARKS  |
| 0010                  | 402+00        | -  | 419+58  | 4950     | -        | 1600        | -          | 144       | 4.1        | 177      |
|                       | 423+00        | -  | 428+00  | 1470     | -        | 450         | -          | 48        | 1.2        | 52       |
|                       | 428+00        | -  | 435+00  | 2000     | -        | 650         | -          | 64        | 1.6        | 71       |
|                       | 435+00        | -  | 438+00  | 720      | -        | 300         | -          | 32        | 0.6        | 27       |
|                       | 445+50        | -  | 451+00  | 1400     | -        | 500         | -          | 48        | 1.2        | 51       |
|                       | 458+00        | -  | 465+00  | 1900     | -        | 650         | -          | 64        | 1.6        | 69       |
|                       | 491+96        | -  | 494+00  | 480      | -        | 200         | -          | 16        | 0.4        | 18       |
|                       | 494+00        | -  | 500+00  | 1450     | -        | 550         | -          | 48        | 1.3        | 54       |
|                       | 500+00        | -  | 506+00  | 1500     | -        | 550         | -          | 48        | 1.3        | 55       |
|                       | 506+00        | -  | 543+00  | 8700     | -        | 2950        | -          | 304       | 7.3        | 314      |
|                       | 543+00        | -  | 550+00  | 1640     | -        | 650         | -          | 64        | 1.4        | 62       |
|                       | 550+00        | -  | 561+00  | 2350     | -        | 1000        | -          | 96        | 2.1        | 90       |
|                       | 610+00        | -  | 633+00  | 5250     | -        | 2000        | -          | 192       | 4.5        | 195      |
|                       | 648+50        | -  | 650+00  | 330      | -        | 150         | -          | 16        | 0.3        | 13       |
|                       | 650+00        | -  | 665+00  | 3100     | -        | 1350        | -          | 128       | 2.8        | 120      |
|                       | 665+10        |    |         | -        | 50       | -           | -          | -         | -          | -        |
|                       | 419+58        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 428+60        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 433+04        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 491+96        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 492+27        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 507+50        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 509+48        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 515+38        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 524+62        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 534+33        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 535+21        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 554+42        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 619+85        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 626+97        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 630+05        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 646+58        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | 652+65        |    |         | -        | -        | -           | 1          | -         | -          | -        |
|                       | UNDISTRIBUTED |    |         | 3700     |          |             |            |           | 3          | 137      |
|                       | TOTALS        |    |         | 40940    | 50       | 13550       | 17         | 1312      | 36.0       | 1504     |

| SIGNING  |              |         |        |                                                       |                                                       |                                     |                                       |                                                        |                             |
|----------|--------------|---------|--------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------|---------------------------------------|--------------------------------------------------------|-----------------------------|
| CATEGORY | SIGN NO.     | STATION | OFFSET | POSTS WOOD<br>4X4-INCH X<br>14-FT<br>634.0414<br>EACH | POSTS WOOD<br>4X4-INCH X<br>18-FT<br>634.0418<br>EACH | MOVING<br>SIGNS<br>638.2102<br>EACH | REMOVING<br>SIGNS<br>638.2602<br>EACH | REMOVING<br>SMALL<br>SIGN SUPPORTS<br>638.3000<br>EACH | REMARKS                     |
| 0010     | 4-01         | 316+74  | 15' LT | 1                                                     | -                                                     | 1                                   | -                                     | 1                                                      | WRONG WAY                   |
|          | 5-01         | 402+00  | 28' LT | 1                                                     | -                                                     | 1                                   | -                                     | 1                                                      | WRONG WAY                   |
|          | -            | 428+45  | 28' LT | -                                                     | -                                                     | -                                   | 1                                     | 1                                                      | CROSS TRAFFIC NEXT 75 MILES |
|          | 6-01, 6-02   | 432+50  | 23' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 7-01, 7-02   | 463+95  | 24' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 8-01, 8-02   | 496+00  | 24' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 8-03, 8-04   | 506+25  | 26' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 8-05, 8-06   | 516+75  | 25' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 9-01, 9-02   | 527+25  | 24' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 9-03, 9-04   | 537+80  | 23' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 9-05, 9-06   | 548+30  | 20' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 10-01, 10-02 | 559+00  | 27' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 11-01, 11-02 | 611+75  | 26' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 12-01, 12-02 | 622+30  | 26' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 12-03, 12-04 | 632+85  | 26' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
|          | 13-01, 13-02 | 654+00  | 26' LT | -                                                     | 1                                                     | 1                                   | -                                     | 1                                                      | MILE MARKER                 |
| TOTALS   |              |         |        | 2                                                     | 13                                                    | 15                                  | 1                                     | 16                                                     |                             |

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT)

| CATEGORY | PROJECT    | 650.9910<br>LS |
|----------|------------|----------------|
| 0010     | 1204-08-63 | 1              |

CONSTRUCTION STAKING SLOPE STAKES

| CATEGORY | STATION | TO | STATION | 650.9920<br>LF |
|----------|---------|----|---------|----------------|
| 0010     | 402+00  | -  | 419+58  | 1758           |
|          | 423+00  | -  | 438+00  | 1500           |
|          | 445+50  | -  | 451+00  | 550            |
|          | 458+00  | -  | 465+00  | 700            |
|          | 491+96  | -  | 561+00  | 6904           |
|          | 610+00  | -  | 633+00  | 2300           |
|          | 648+50  | -  | 665+00  | 1650           |
| TOTAL    |         |    |         | 15362          |

FINISHING ROADWAY (PROJECT)

| CATEGORY | PROJECT    | 213.0100<br>EACH |
|----------|------------|------------------|
| 0010     | 1204-08-63 | 1                |

FIELD OFFICE TYPE B

| CATEGORY | PROJECT    | 642.5001<br>EACH |
|----------|------------|------------------|
| 0010     | 1204-08-63 | 1                |

TRAFFIC CONTROL

| CATEGORY | PROJECT    | 643.5000<br>EACH |
|----------|------------|------------------|
| 0010     | 1204-08-63 | 1                |

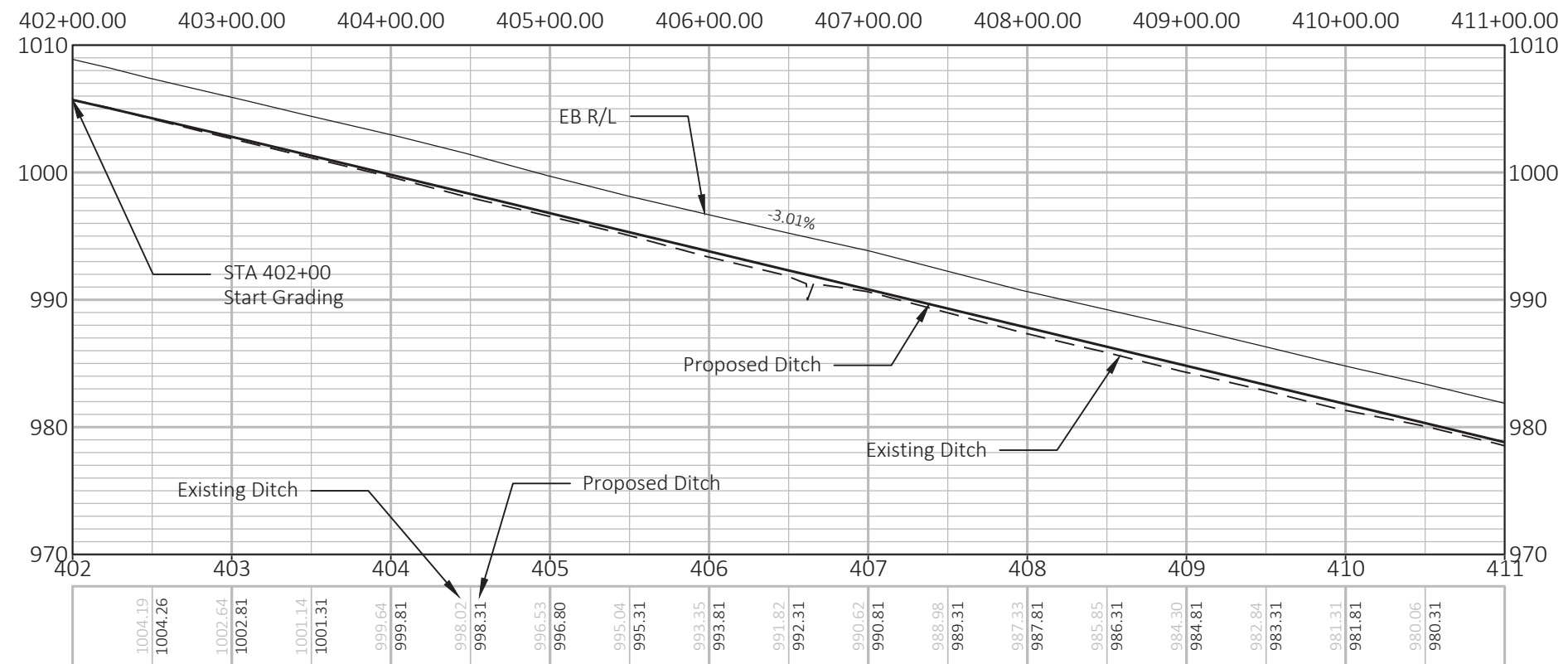
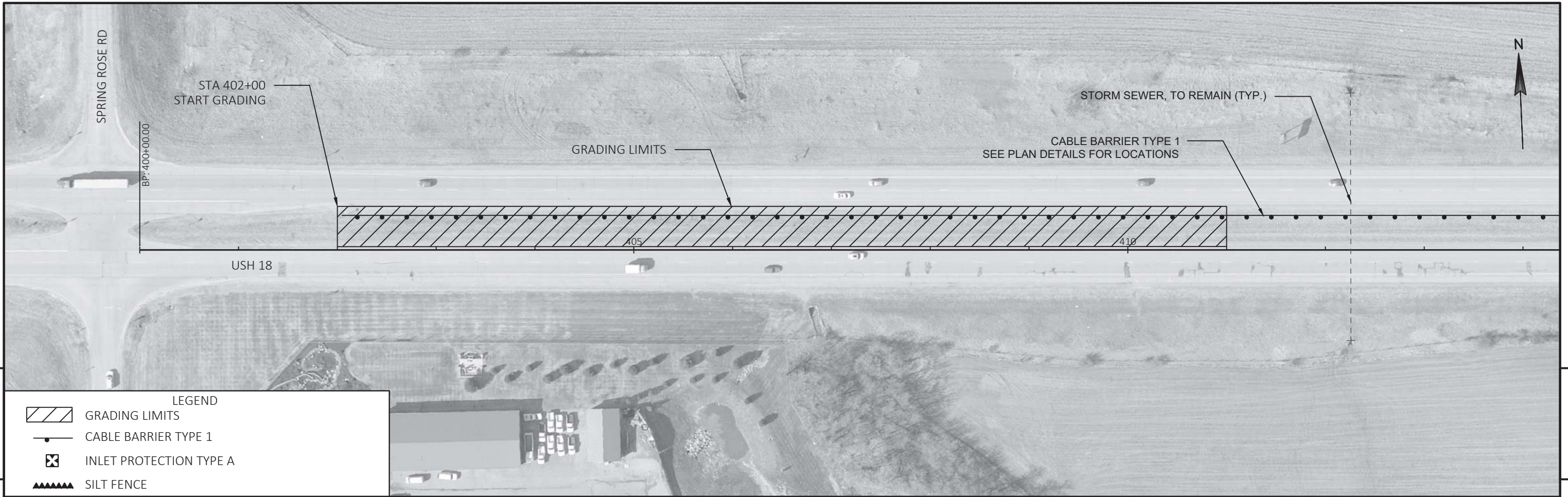
ON-THE-JOB TRAINING APPRENTICE AT \$5.00/HR

| CATEGORY | PROJECT    | ASP.1T0A<br>HRS |
|----------|------------|-----------------|
| 0010     | 1204-08-63 | 264             |

ON-THE-JOB TRAINING GRADUATE AT \$5.00/HR

| CATEGORY | PROJECT    | ASP.1T0G<br>HRS |
|----------|------------|-----------------|
| 0010     | 1204-08-63 | 200             |

| TRAFFIC CONTROL ITEMS |         |    |         |                     |      |                       |      |                            |     |                                |      |                                |      |                              |     |                       |      |                       |     |           |
|-----------------------|---------|----|---------|---------------------|------|-----------------------|------|----------------------------|-----|--------------------------------|------|--------------------------------|------|------------------------------|-----|-----------------------|------|-----------------------|-----|-----------|
| CATEGORY              | STATION | TO | STATION | STAGE               | DAYS | TRAFFIC CONTROL DRUMS |      | TRAFFIC CONTROL BARRICADES |     | TRAFFIC CONTROL WARNING LIGHTS |      | TRAFFIC CONTROL WARNING LIGHTS |      | TRAFFIC CONTROL ARROW BOARDS |     | TRAFFIC CONTROL SIGNS |      | TRAFFIC CONTROL SIGNS |     | REMARKS   |
|                       |         |    |         |                     |      | 643.0300              | DAY  | 643.0420                   | DAY | 643.0705                       | DAY  | 643.0715                       | DAY  | 643.0800                     | DAY | 643.0900              | DAY  | 643.1050              | DAY |           |
| 0010                  | 214+00  | -  | 665+00  | PRE-CONSTRUCTION    | 7    | 10                    | 70   | -                          | -   | -                              | -    | -                              | -    | -                            | -   | -                     | 2    | 14                    |     |           |
|                       | 214+00  | -  | 665+00  | DURATION OF PROJECT | 42   | 10                    | 420  | -                          | -   | -                              | -    | -                              | -    | -                            | 8   | 336                   | 2    | 84                    |     |           |
|                       | 214+00  | -  | 287+00  | INSTALL TERMINALS   | 1    | 75                    | 75   | 9                          | 9   | 18                             | 18   | 17                             | 17   | 3                            | 3   | 21                    | 21   | -                     | -   | Segment 1 |
|                       | 214+00  | -  | 287+00  | INSTALL POSTS       | 4    | 91                    | 363  | 10                         | 40  | 20                             | 80   | 17                             | 67   | 3                            | 12  | 22                    | 88   | -                     | -   | Segment 1 |
|                       | 214+00  | -  | 287+00  | INSTALL CABLE       | 2    | 127                   | 254  | 11                         | 22  | 22                             | 44   | 17                             | 34   | 3                            | 6   | 23                    | 46   | -                     | -   | Segment 1 |
|                       | 300+00  | -  | 326+00  | INSTALL TERMINALS   | 2    | 75                    | 150  | 9                          | 18  | 18                             | 36   | 17                             | 34   | 3                            | 6   | 21                    | 42   | -                     | -   | Segment 2 |
|                       | 300+00  | -  | 326+00  | INSTALL POSTS       | 1    | 107                   | 107  | 10                         | 10  | 20                             | 20   | 17                             | 17   | 3                            | 3   | 22                    | 22   | -                     | -   | Segment 2 |
|                       | 300+00  | -  | 326+00  | INSTALL CABLE       | 1    | 107                   | 107  | 10                         | 10  | 20                             | 20   | 17                             | 17   | 3                            | 3   | 22                    | 22   | -                     | -   | Segment 2 |
|                       | 402+00  | -  | 419+56  | GRADING & FINISHING | 4    | 91                    | 363  | 10                         | 40  | 20                             | 80   | 17                             | 67   | 3                            | 12  | 22                    | 88   | -                     | -   | Segment 3 |
|                       | 423+00  | -  | 438+00  | GRADING & FINISHING | 5    | 85                    | 424  | 10                         | 50  | 20                             | 100  | 17                             | 84   | 3                            | 15  | 22                    | 110  | -                     | -   | Segment 3 |
|                       | 445+50  | -  | 451+00  | GRADING & FINISHING | 1    | 67                    | 67   | 9                          | 9   | 18                             | 18   | 17                             | 17   | 3                            | 3   | 21                    | 21   | -                     | -   | Segment 3 |
|                       | 458+00  | -  | 465+00  | GRADING & FINISHING | 2    | 69                    | 138  | 9                          | 18  | 18                             | 36   | 17                             | 34   | 3                            | 6   | 21                    | 42   | -                     | -   | Segment 3 |
|                       | 491+96  | -  | 561+00  | GRADING & FINISHING | 11   | 193                   | 2121 | 14                         | 154 | 28                             | 308  | 17                             | 185  | 3                            | 33  | 26                    | 286  | -                     | -   | Segment 3 |
|                       | 610+00  | -  | 633+00  | GRADING & FINISHING | 4    | 101                   | 403  | 10                         | 40  | 20                             | 80   | 17                             | 67   | 3                            | 12  | 22                    | 88   | -                     | -   | Segment 3 |
|                       | 648+50  | -  | 665+00  | GRADING & FINISHING | 4    | 88                    | 351  | 10                         | 40  | 20                             | 80   | 17                             | 67   | 3                            | 12  | 22                    | 88   | -                     | -   | Segment 3 |
|                       | 405+00  | -  | 665+00  | INSTALL POSTS       | 18   | 85                    | 1526 | 10                         | 180 | 20                             | 360  | 17                             | 302  | 3                            | 54  | 22                    | 396  | -                     | -   | Segment 3 |
|                       | 405+00  | -  | 665+00  | INSTALL CABLE       | 6    | 155                   | 929  | 12                         | 72  | 24                             | 144  | 17                             | 101  | 3                            | 18  | 24                    | 144  | -                     | -   | Segment 3 |
| TOTALS                |         |    |         |                     |      |                       | 7867 |                            | 712 |                                | 1424 |                                | 1109 |                              | 198 |                       | 1840 |                       | 98  |           |



PROJECT NO: 1204-08-63

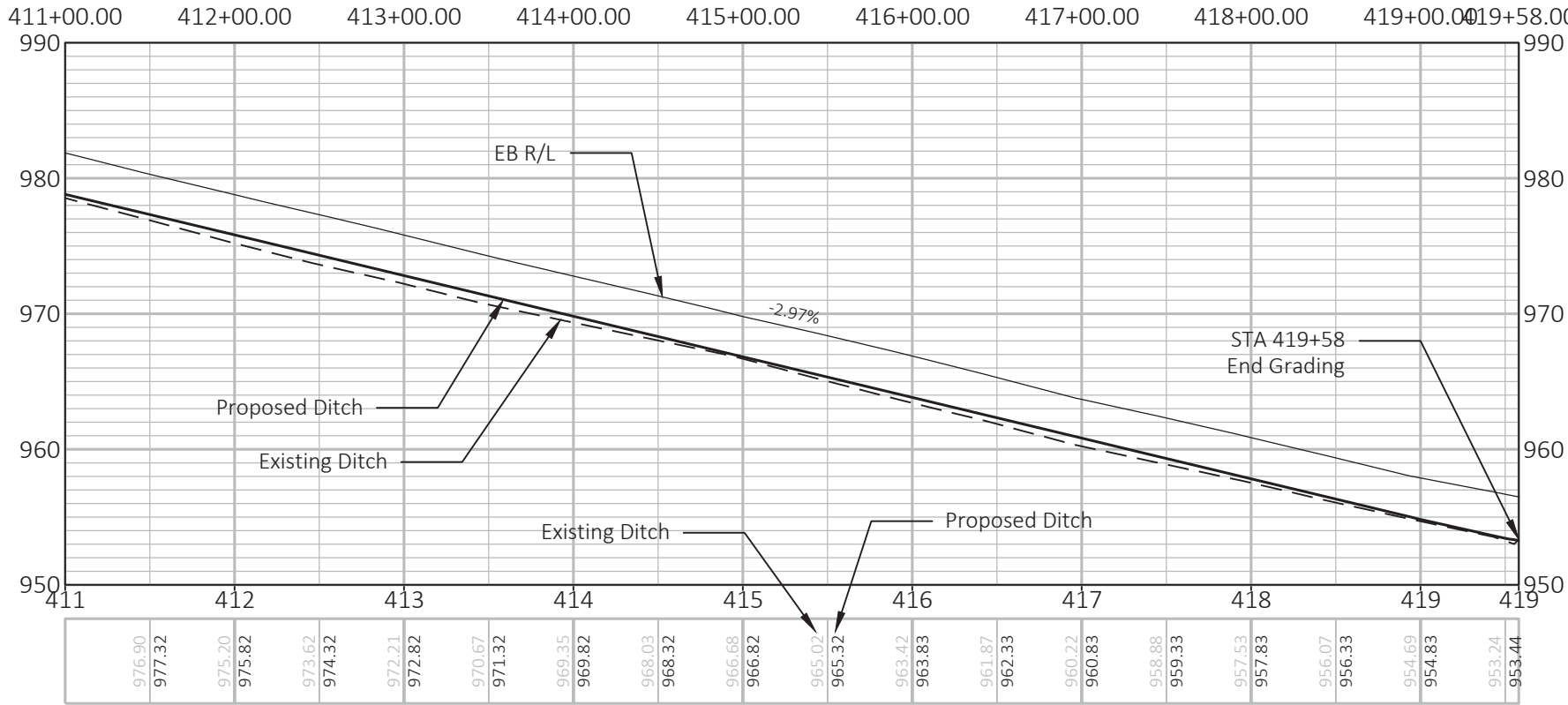
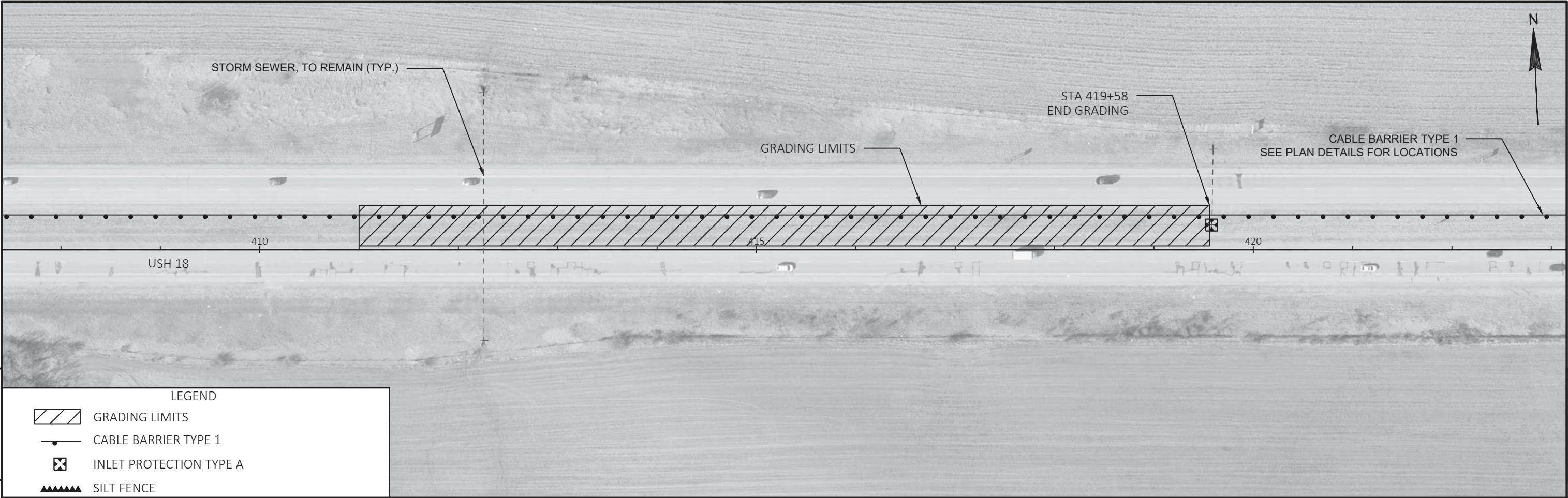
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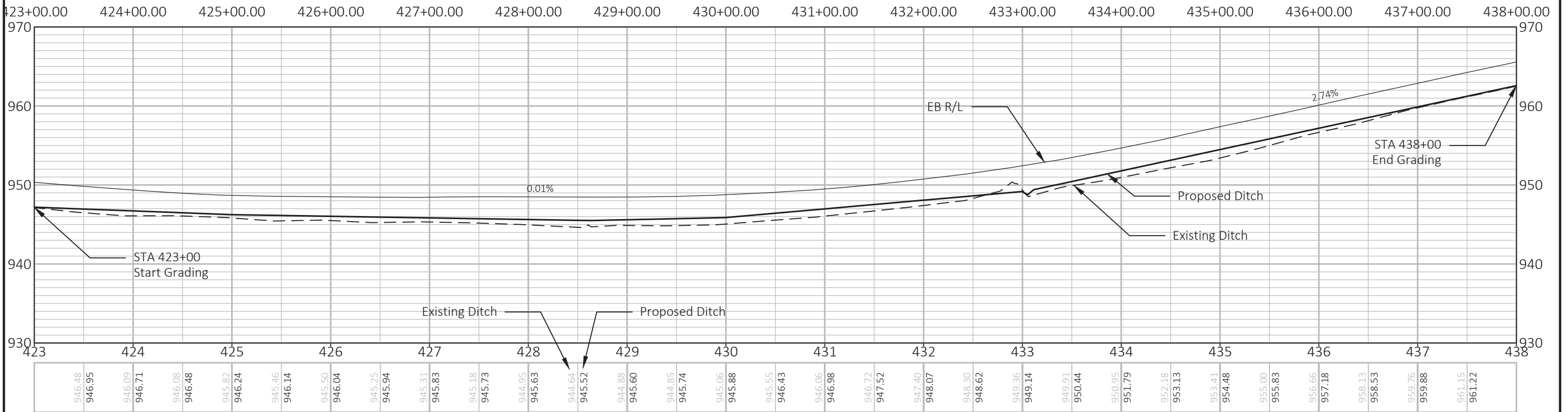
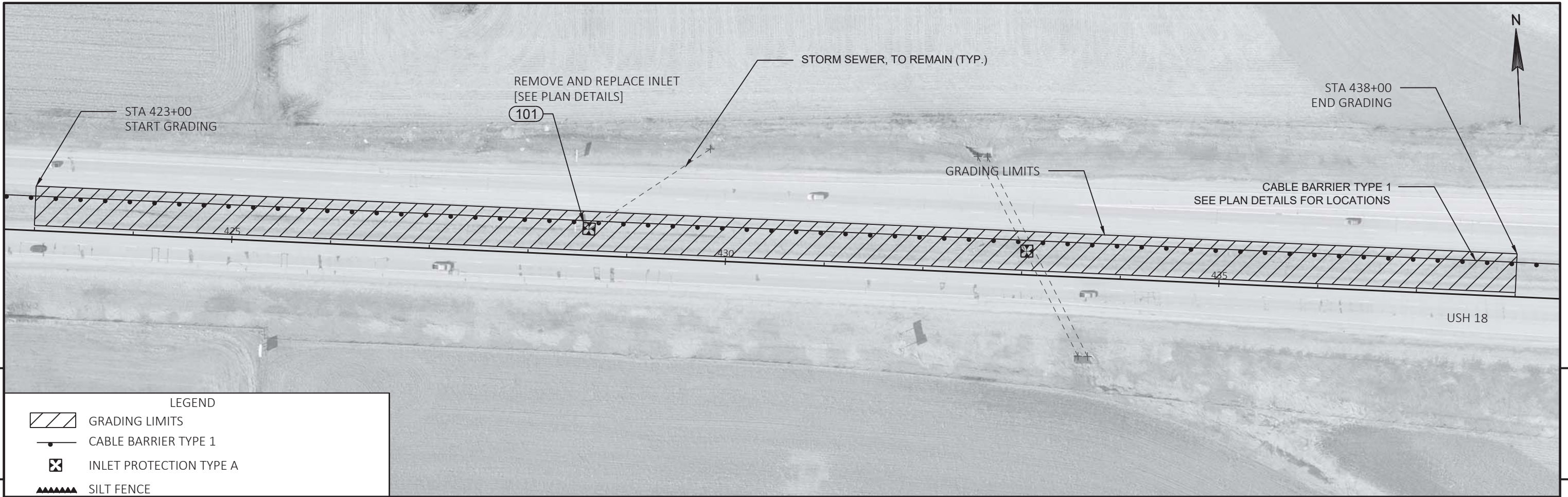
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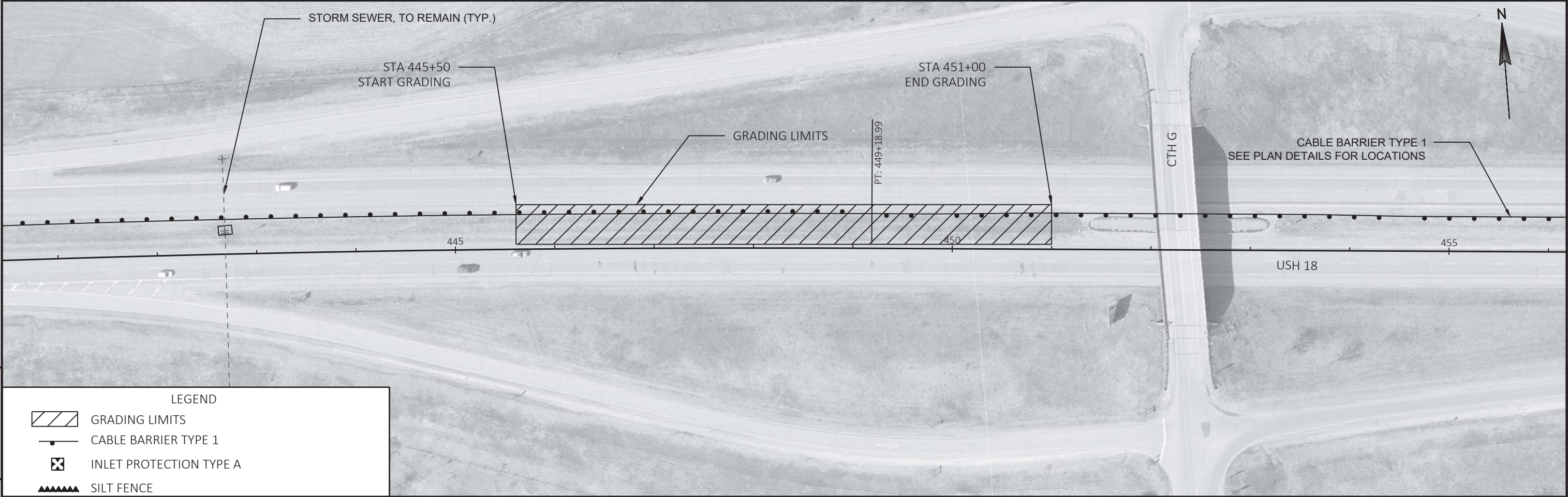
PLAN AND PROFILE:

SHEET

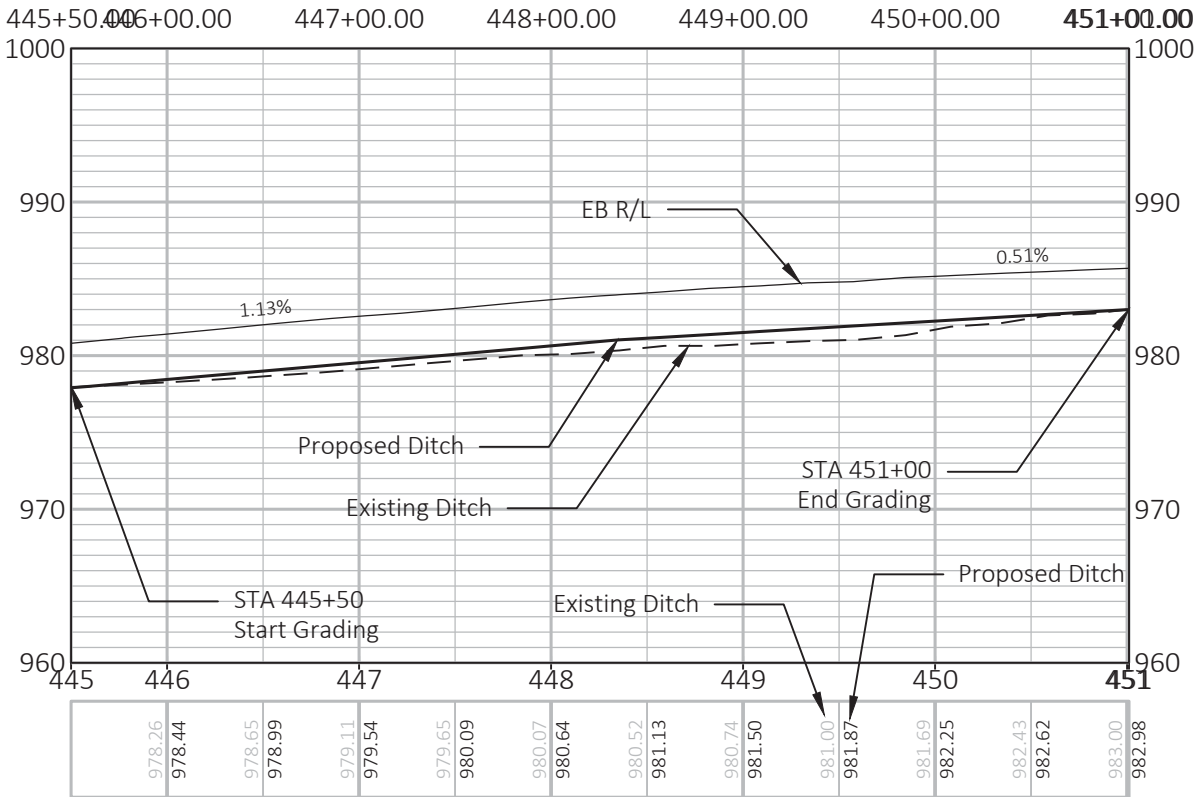
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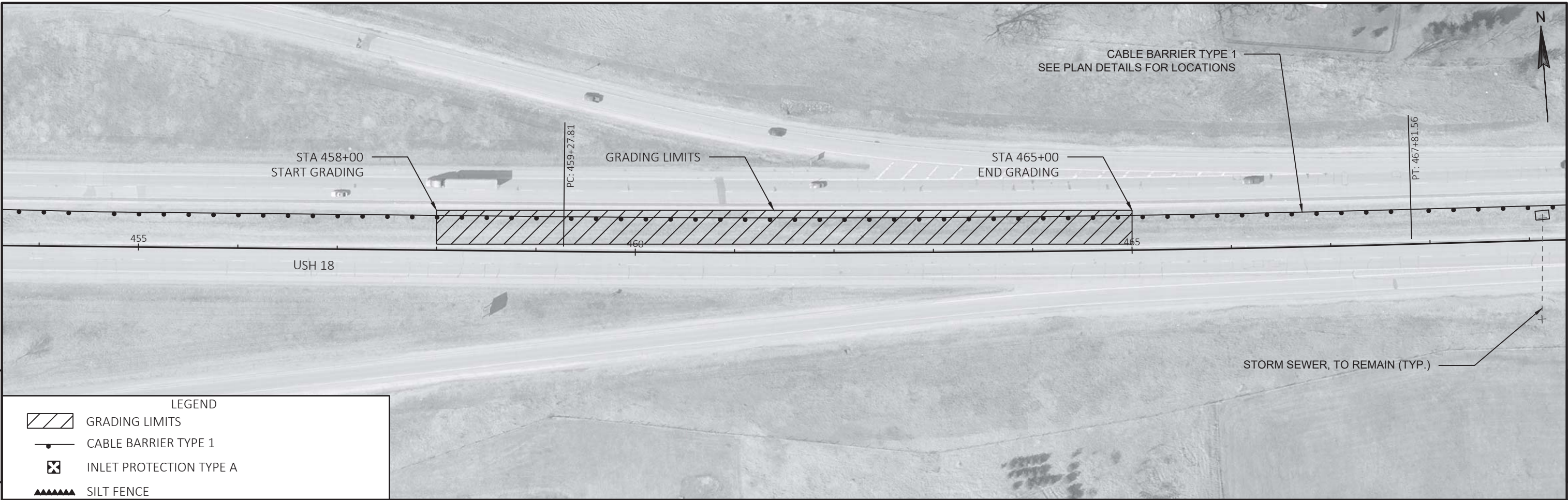




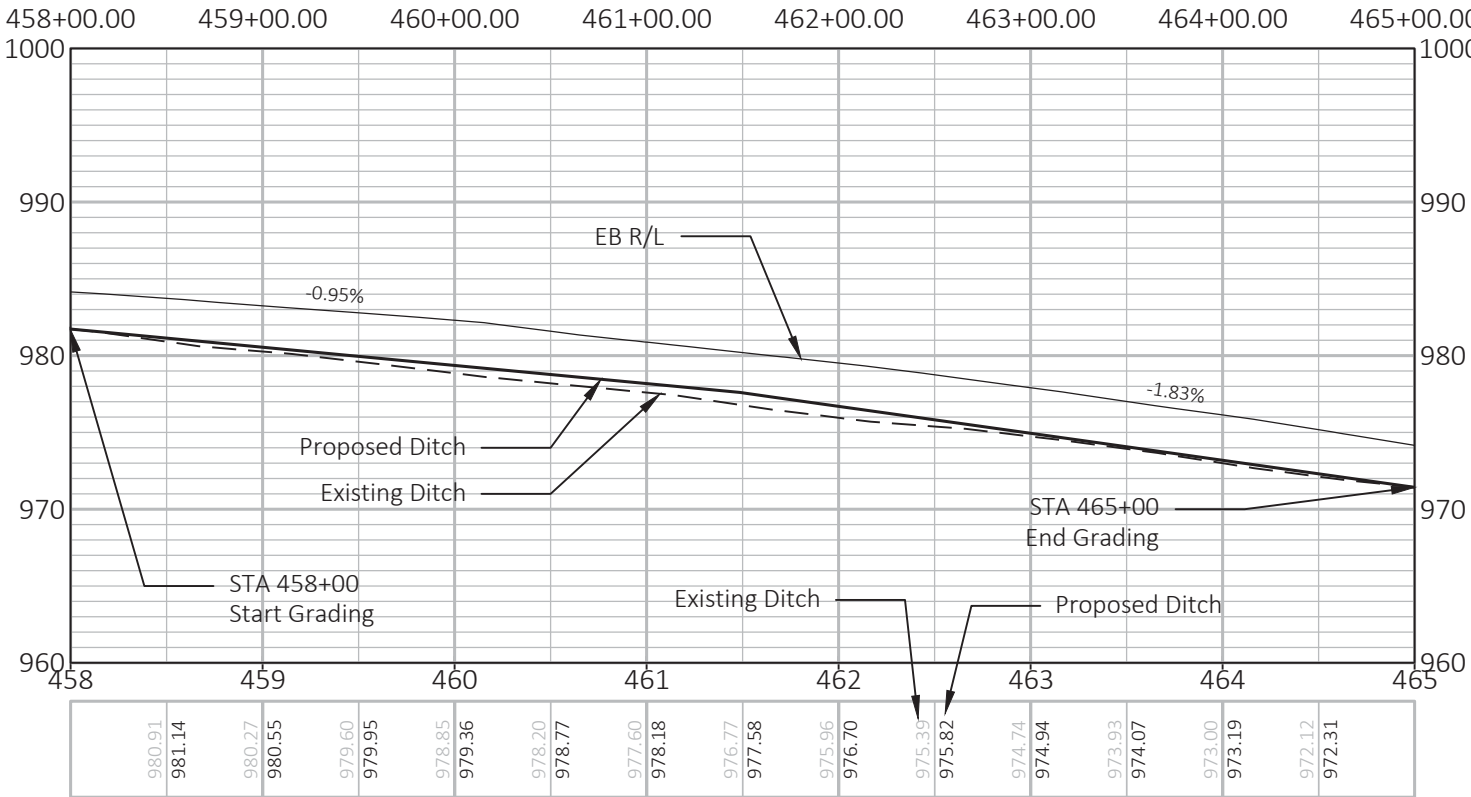
- LEGEND
- GRADING LIMITS
  - CABLE BARRIER TYPE 1
  - INLET PROTECTION TYPE A
  - SILT FENCE

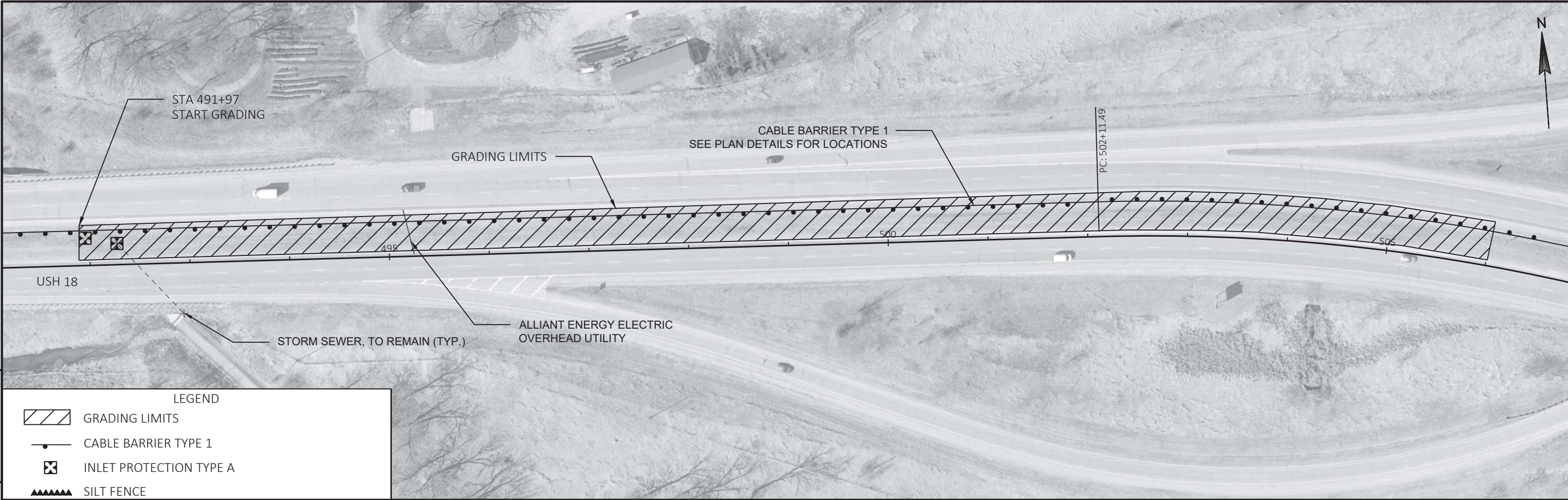


5



5





5

LEGEND

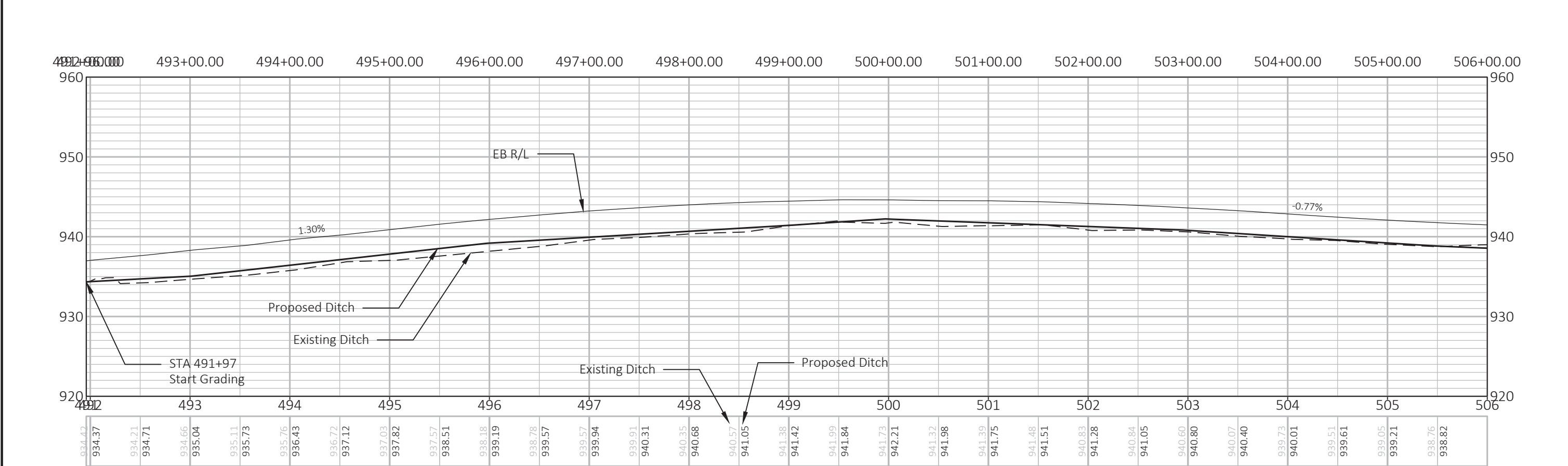
GRADING LIMITS

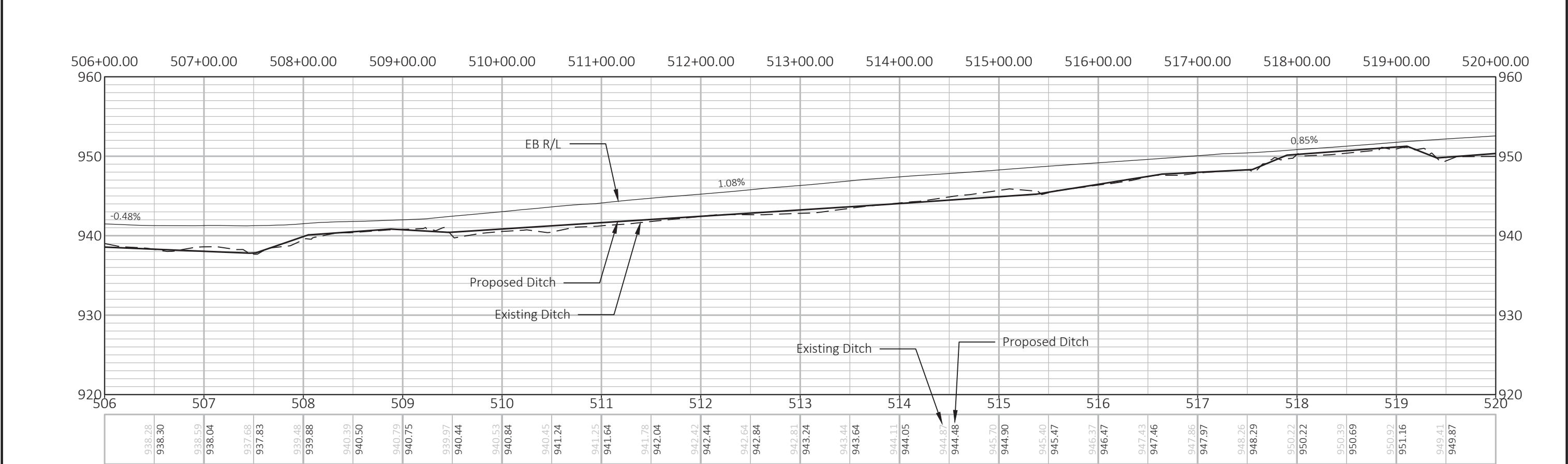
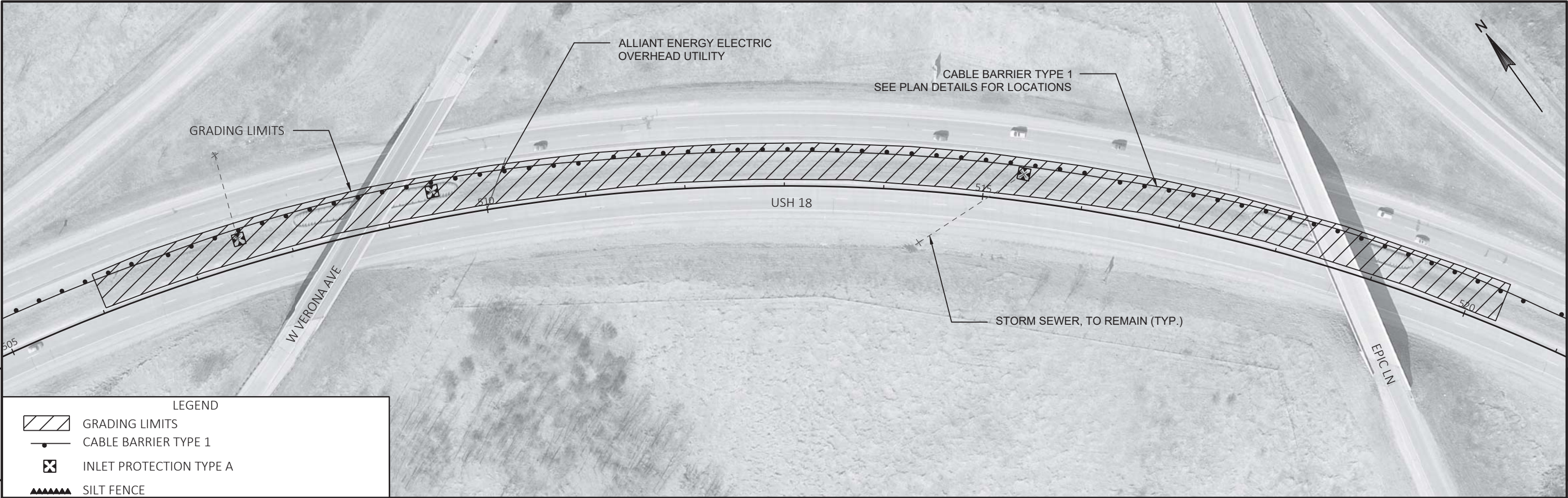
CABLE BARRIER TYPE 1

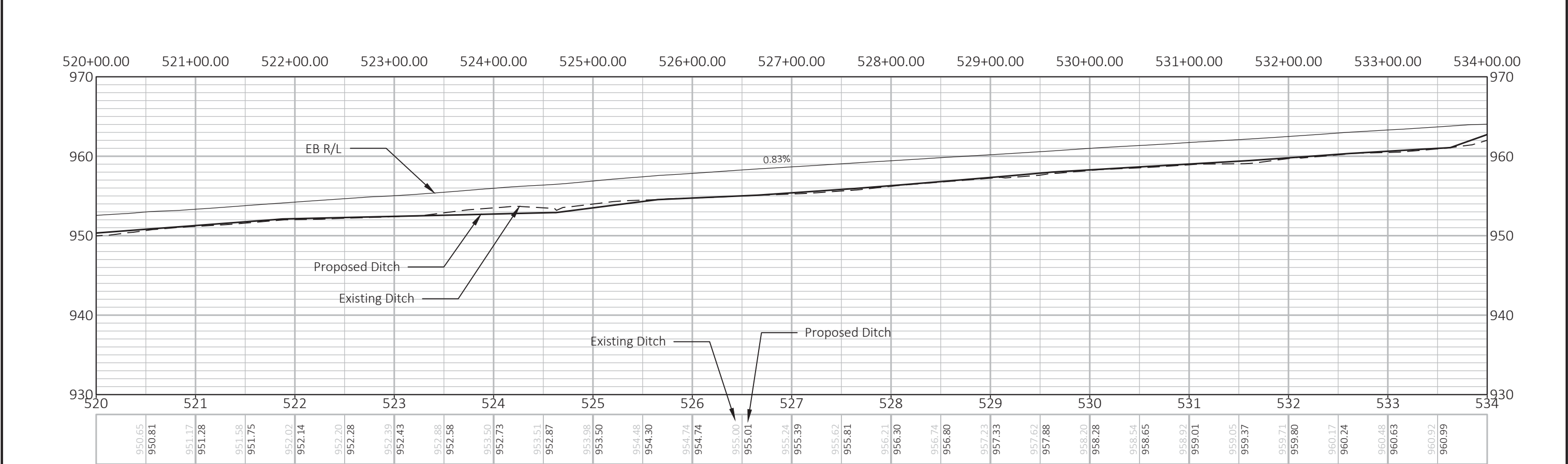
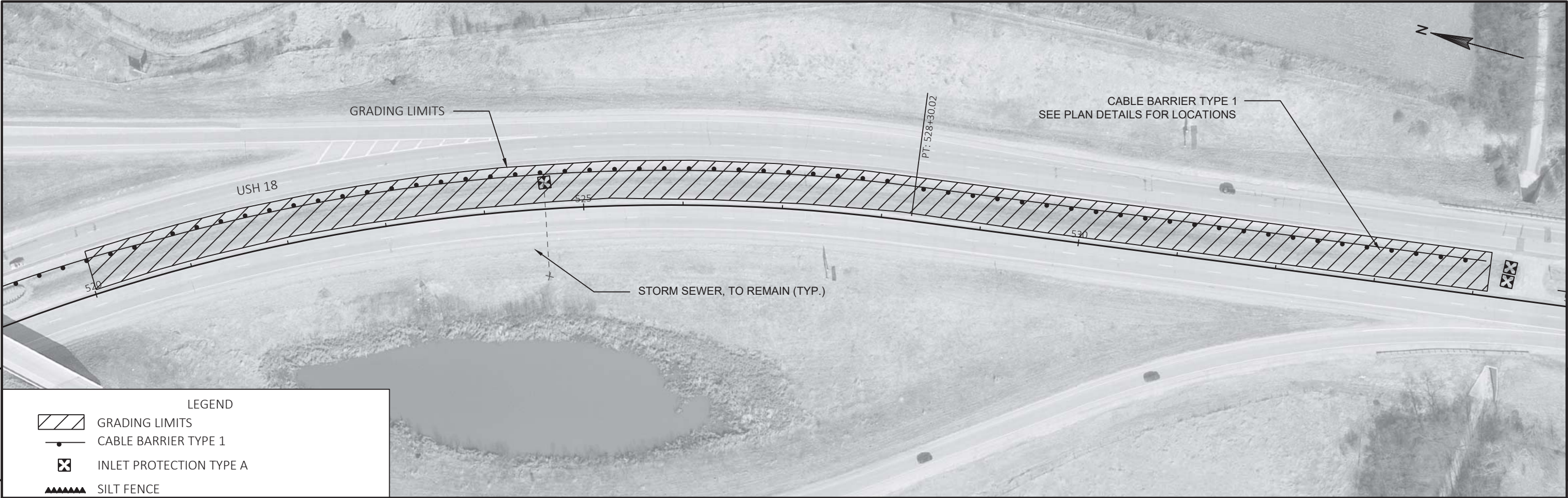
INLET PROTECTION TYPE A

SILT FENCE

5

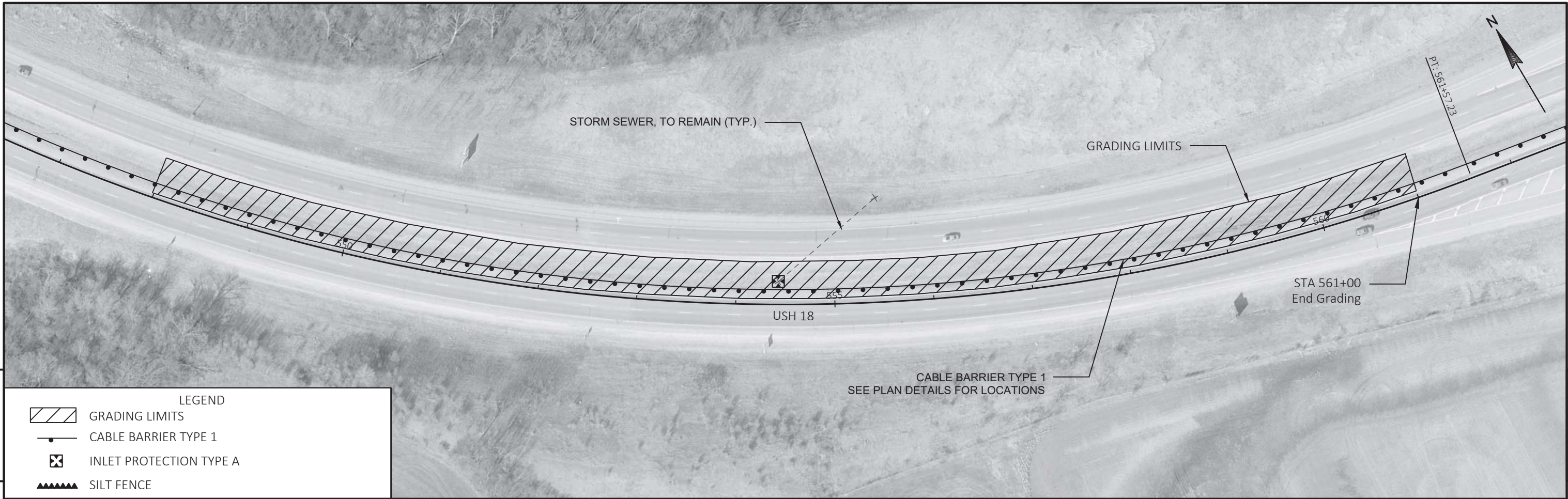




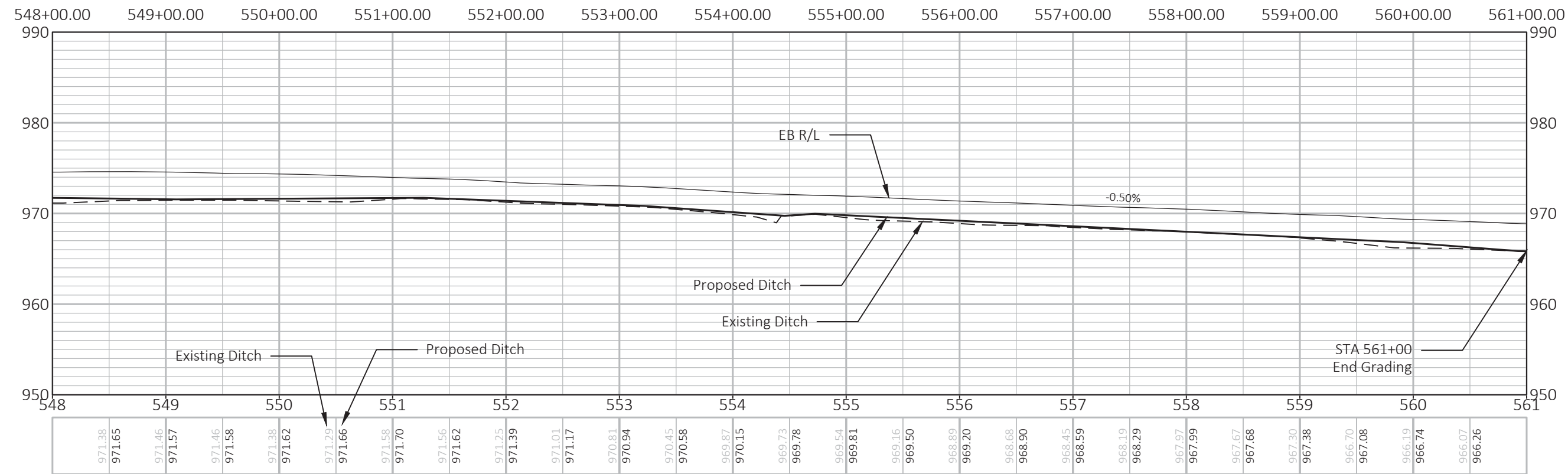


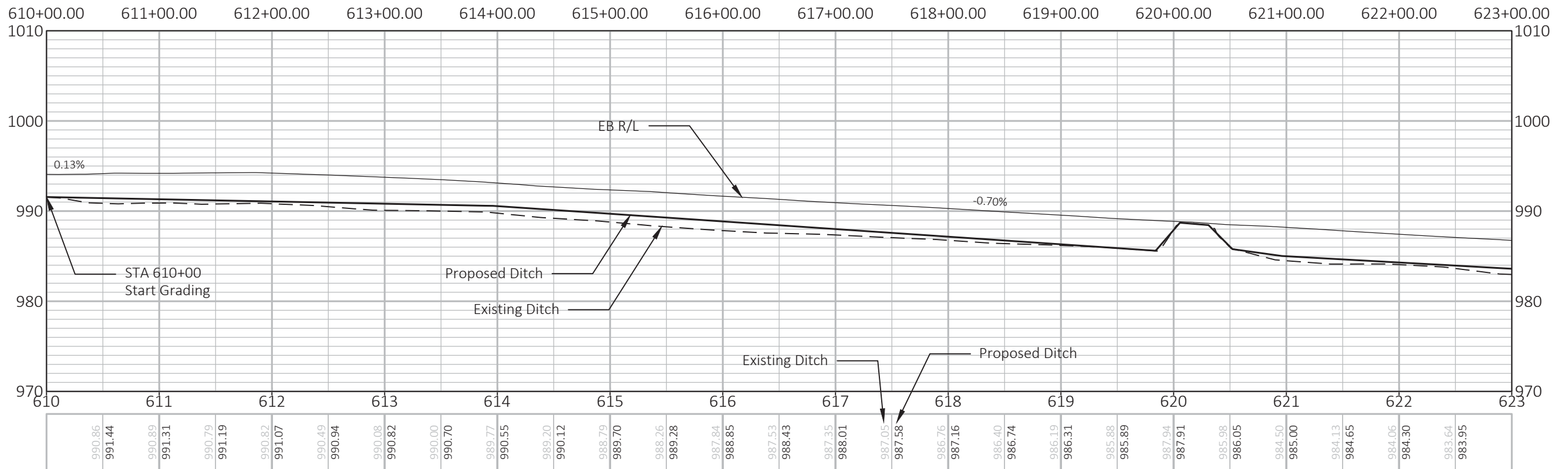
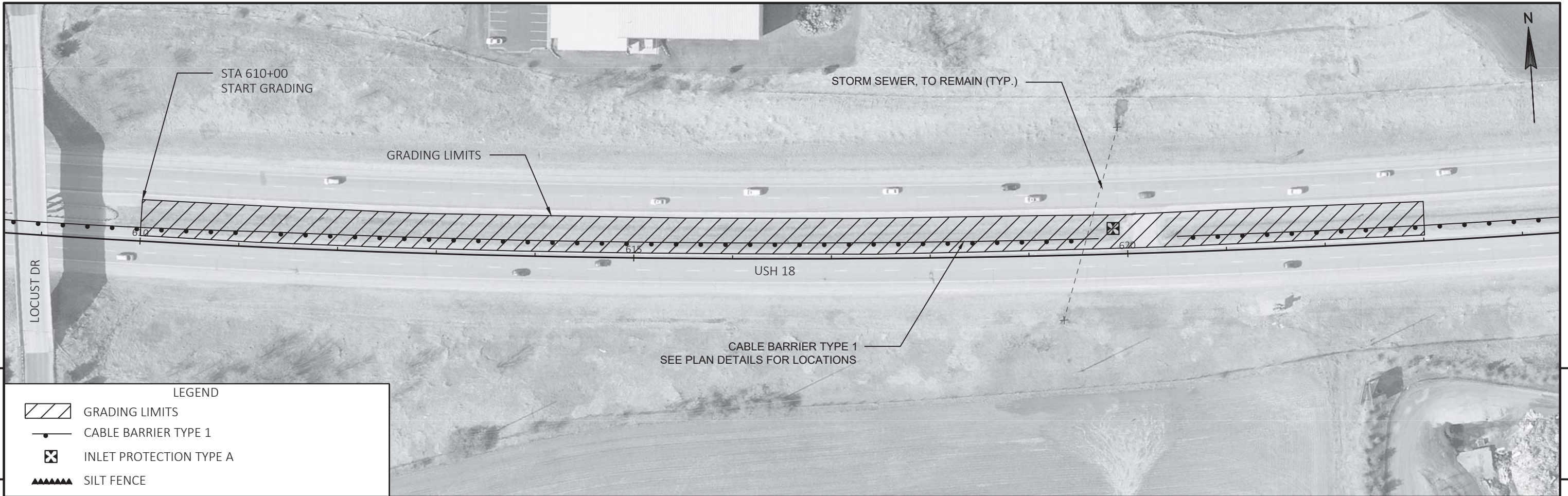


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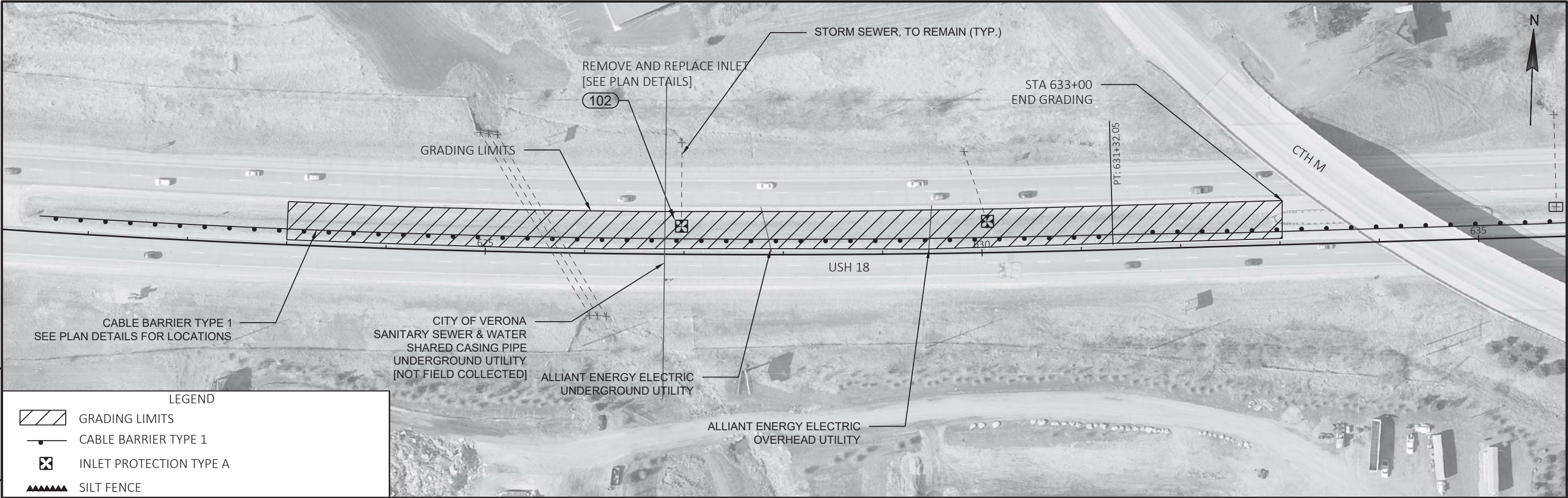


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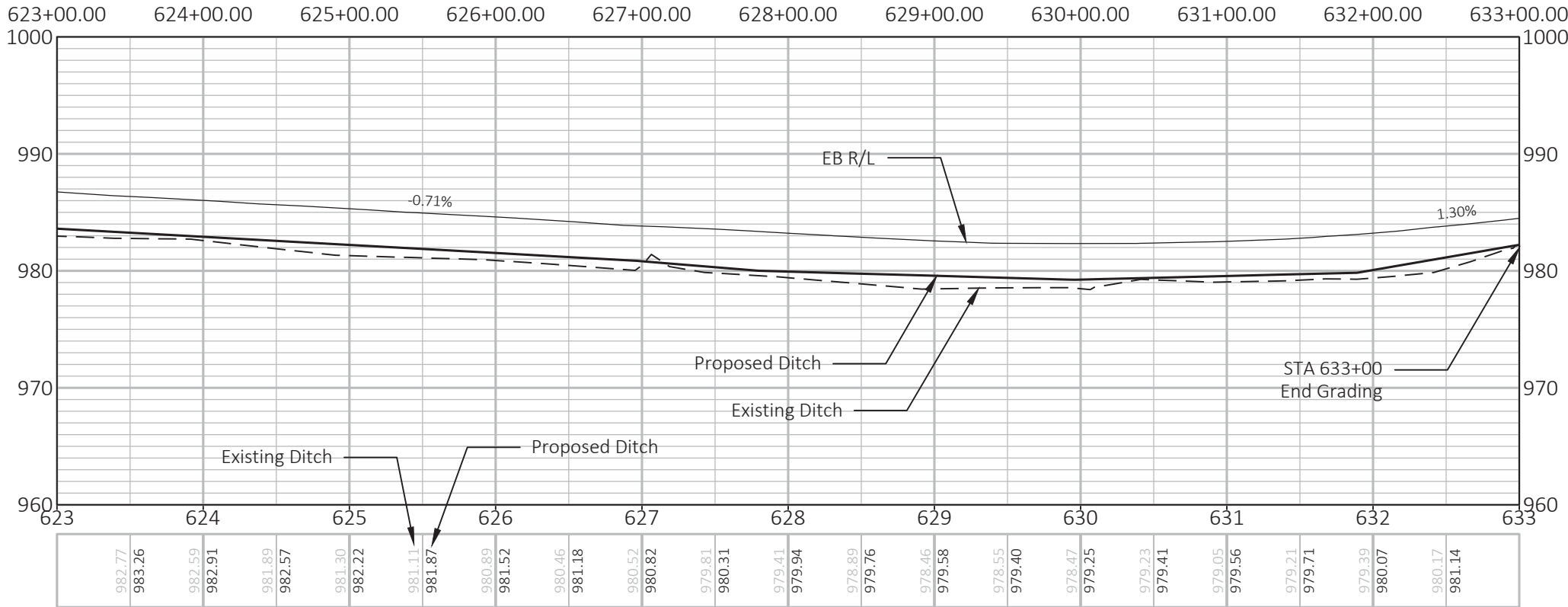




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5



PROJECT NO: 1204-08-63

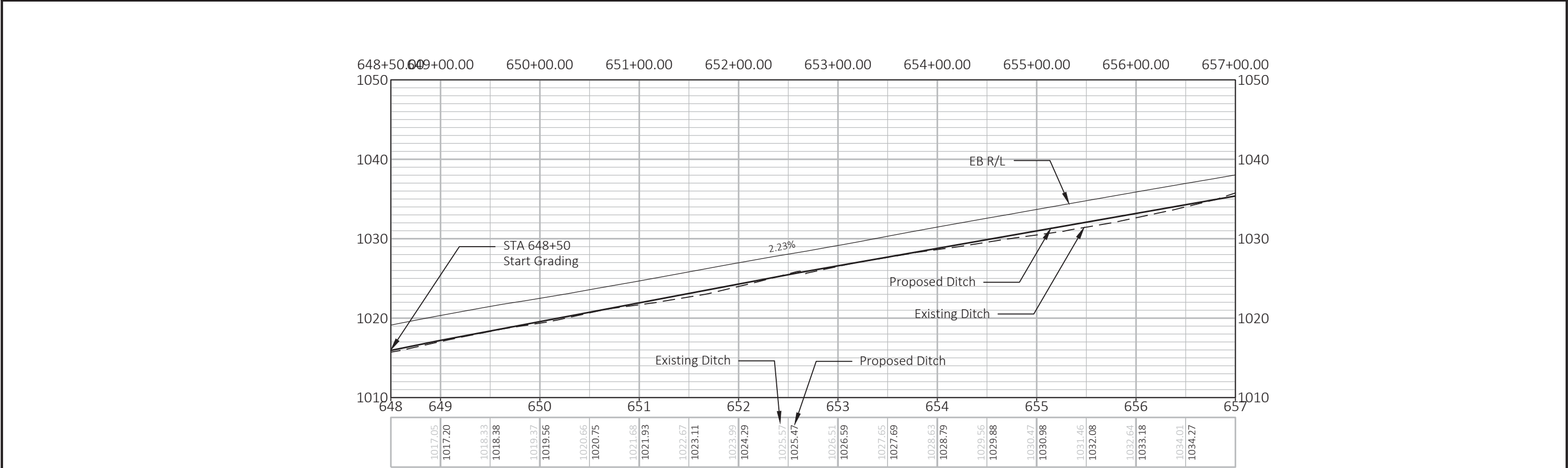
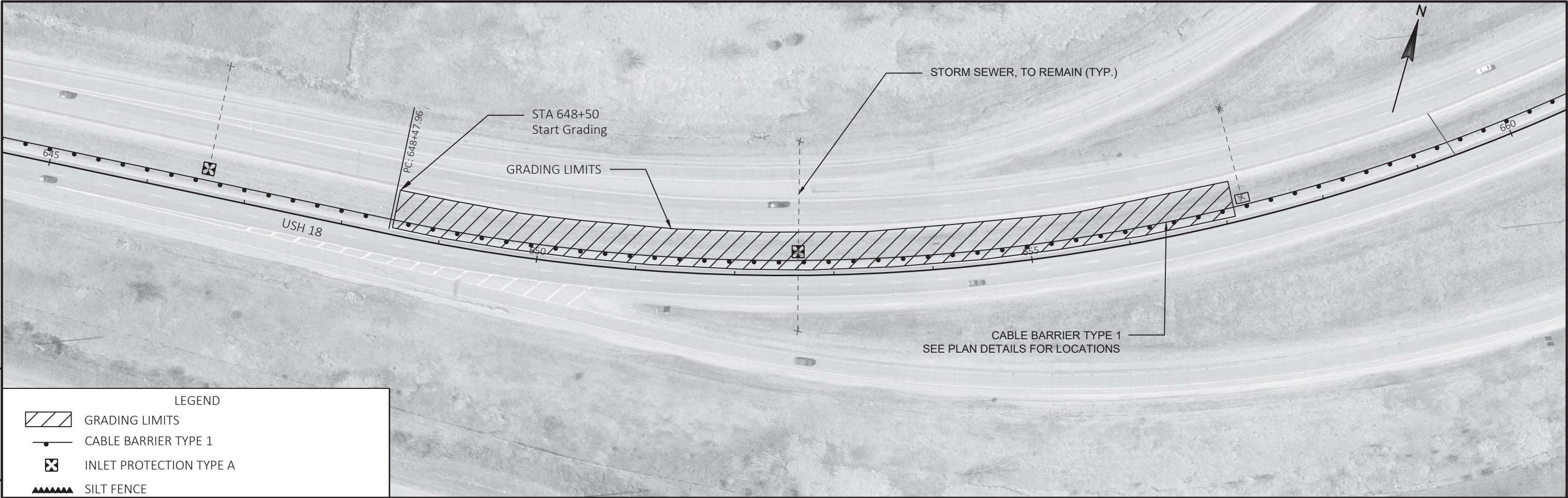
HWY: USH 18

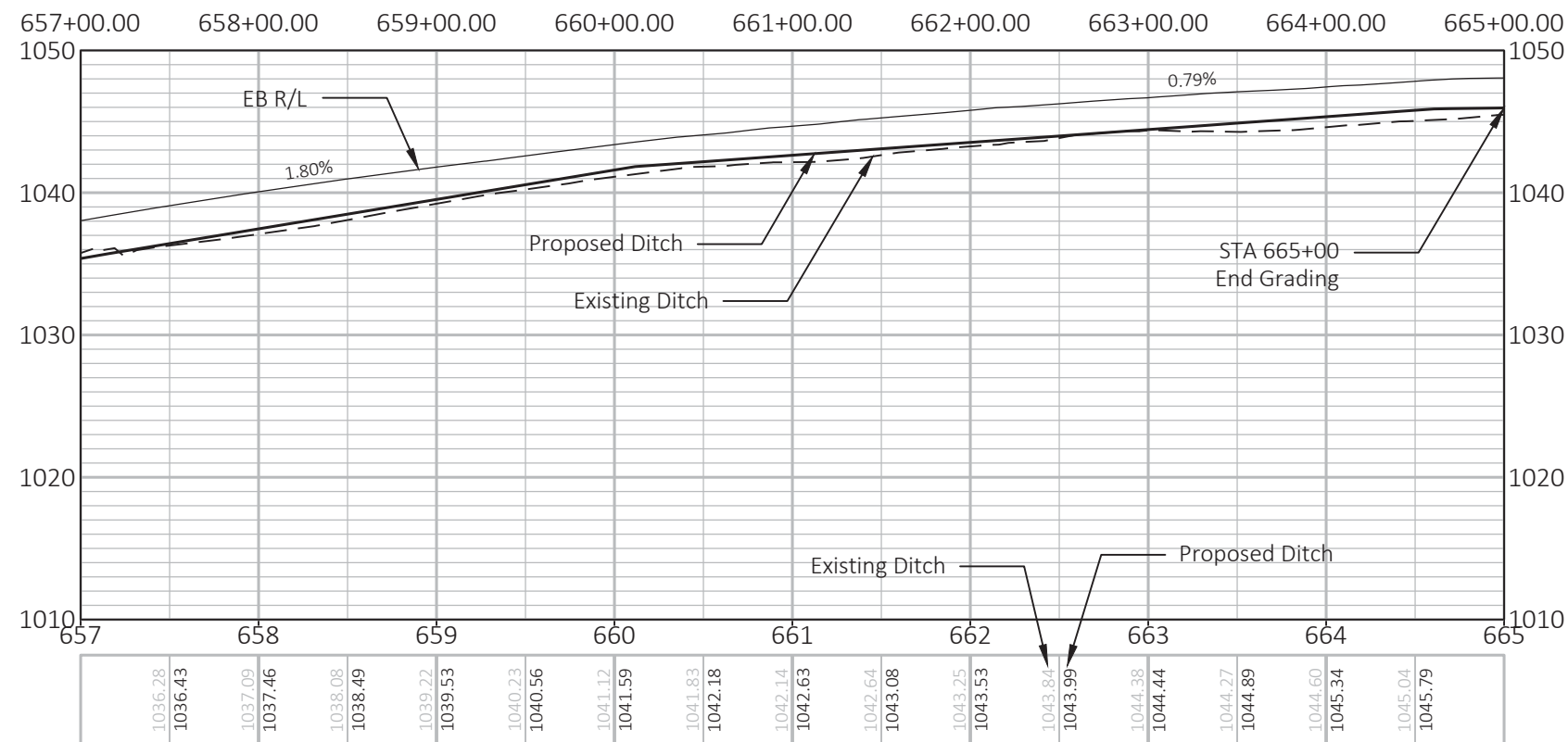
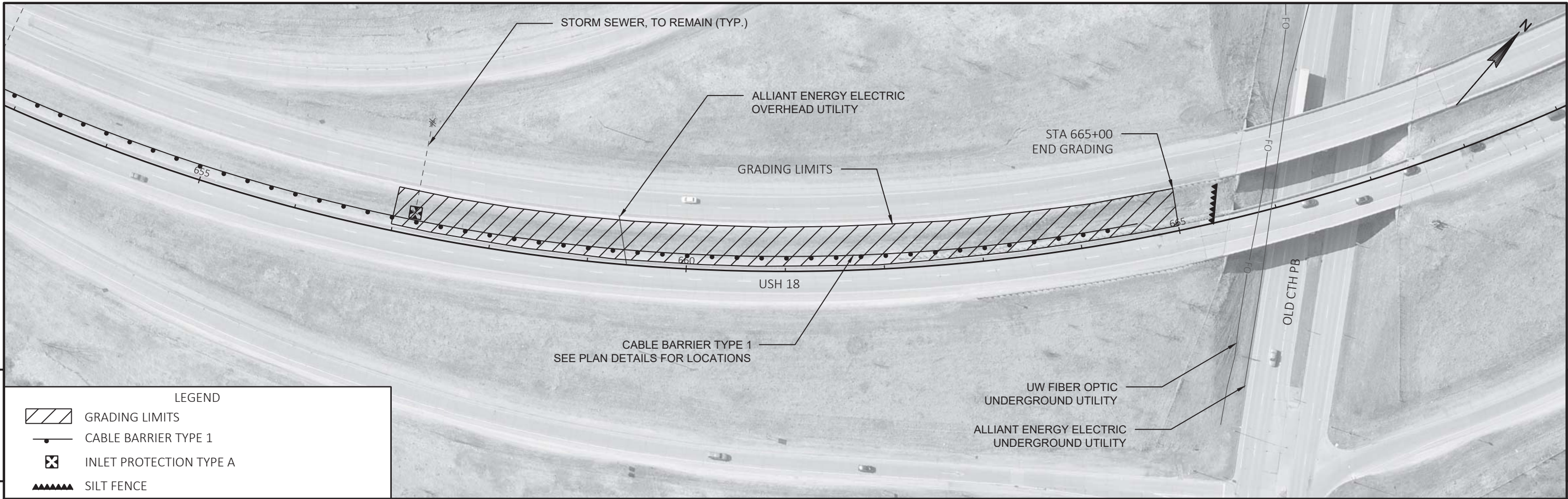
COUNTY: DANE

PLAN AND PROFILE:

SHEET

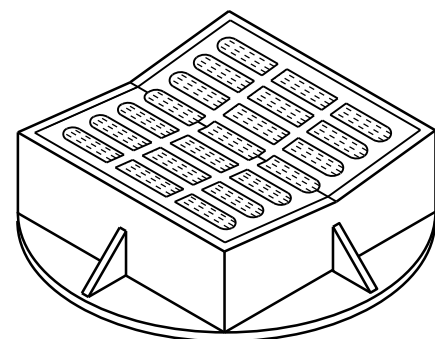
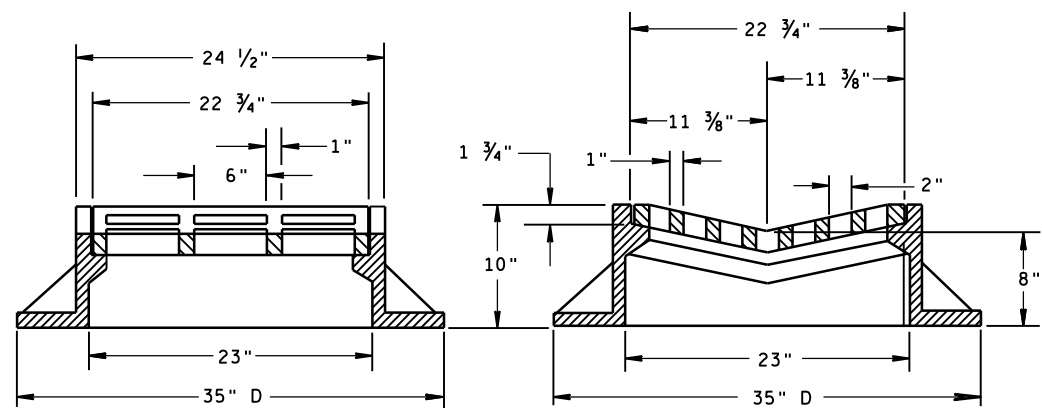
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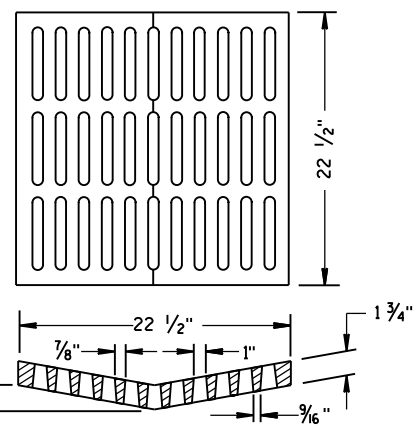


Standard Detail Drawing List

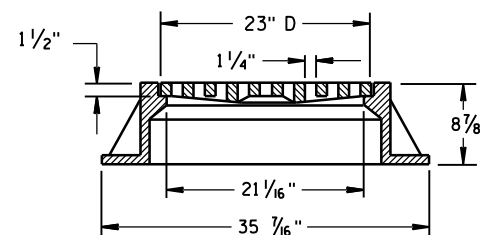
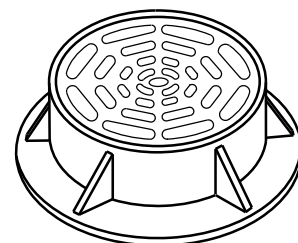
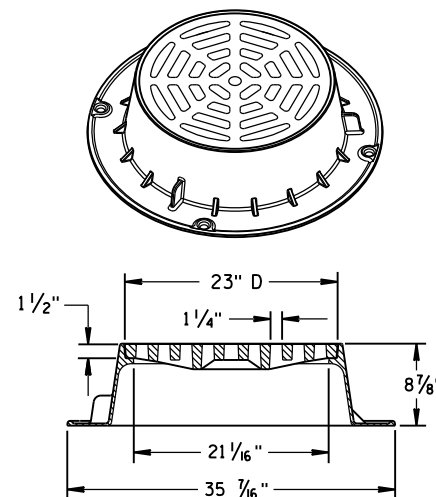
|           |                                                                                  |
|-----------|----------------------------------------------------------------------------------|
| 08A05-19B | INLET COVERS TYPE B, B-A, C, MS, MS-A, & WM                                      |
| 08C08-02  | INLETS MEDIAN 1 AND 2 GRATE                                                      |
| 08E08-03  | TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS                  |
| 08E09-06  | SILT FENCE                                                                       |
| 08E10-02  | INLET PROTECTION TYPE A, B, C AND D                                              |
| 14B42-06A | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                         |
| 14B42-06B | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                         |
| 14B42-06C | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                         |
| 14B42-06D | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                         |
| 14B47-02A | MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL                                   |
| 14B47-02B | MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL                                   |
| 14B47-02C | MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL                                   |
| 14B52-01A | CABLE BARRIER TYPE 1 LAYOUT                                                      |
| 14B52-01B | CABLE BARRIER TYPE 1 LAYOUT                                                      |
| 15D12-06A | TRAFFIC CONTROL, LANE CLOSURE                                                    |
| 15D27-03  | TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH |
| 15D38-02A | TEMPORARY TRAFFIC CONTROL SIGN MOUNTING                                          |
| 15D38-02B | ATTACHMENT OF SIGNS TO POSTS                                                     |



TYPE "B"

ALTERNATIVE GRATE FOR  
TYPE "B" COVER

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



TYPE "C"

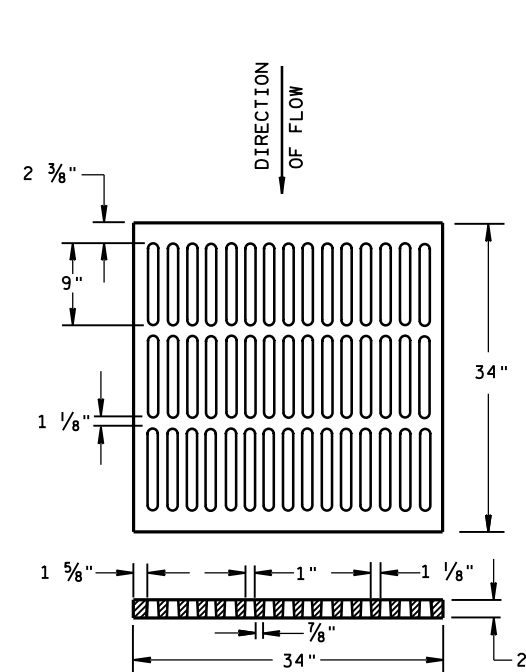
NOTE: EITHER CASTING IS ACCEPTABLE

## GENERAL NOTES

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

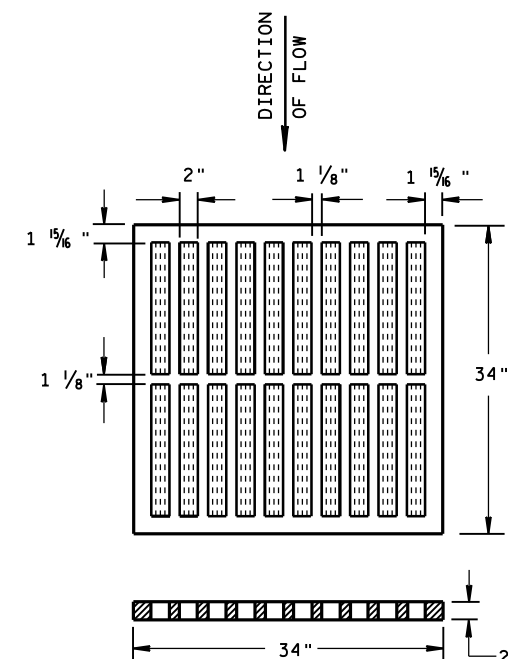
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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



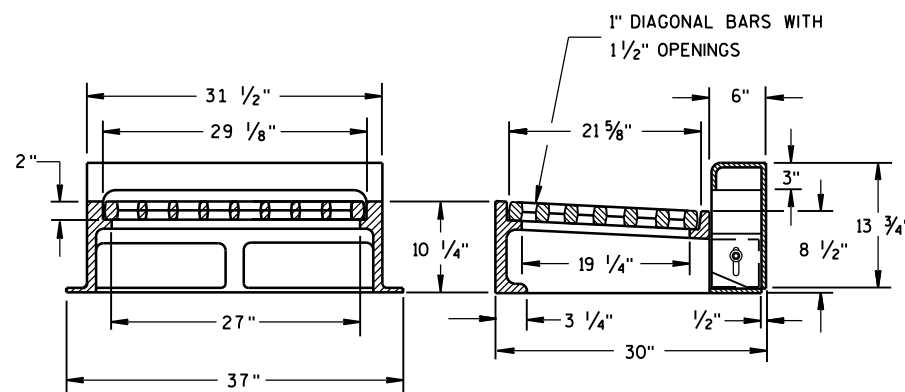
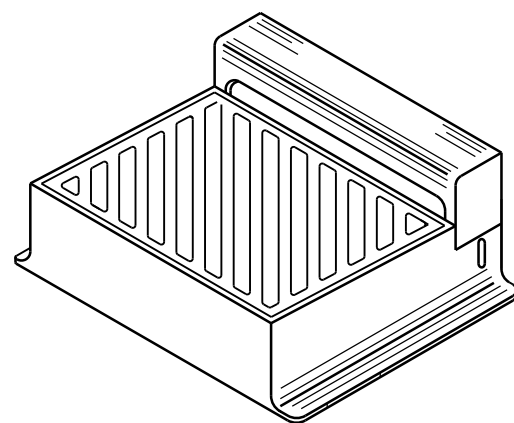
ALTERNATIVE TYPE "MS"

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



TYPE "MS"

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



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"

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

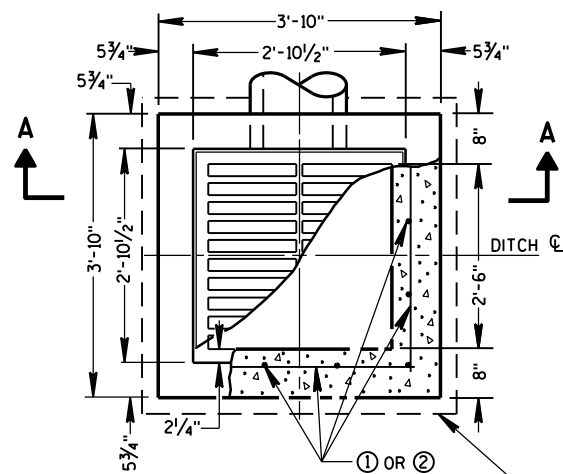
DIRECTION  
OF FLOW

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

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

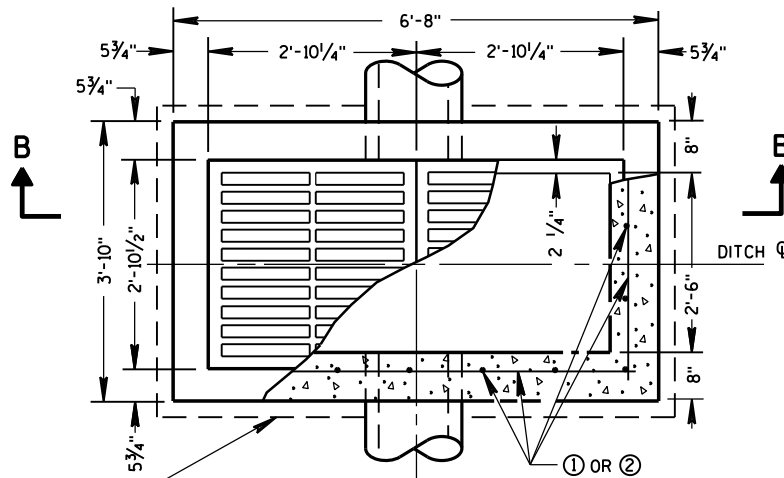
APPROVED  
 11/27/2013  
 DATE  
 FHWA

/S/ Jerry H. Zogg  
 ROADWAY STANDARDS DEVELOPMENT  
 ENGINEER

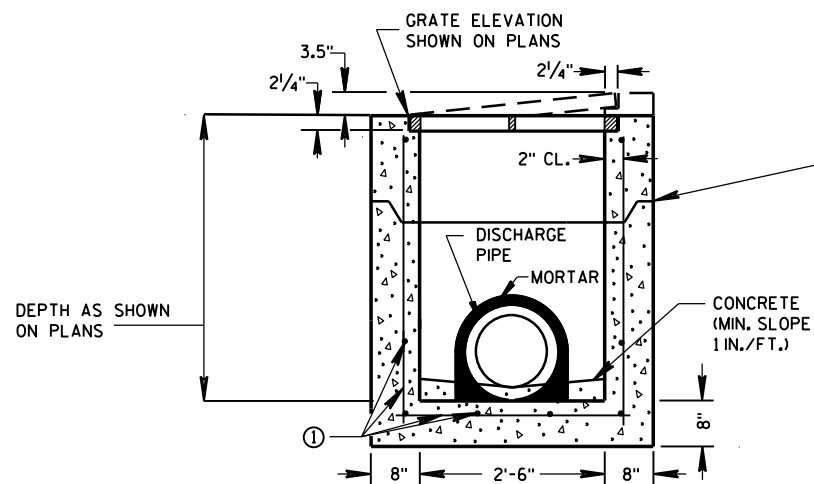


PLAN VIEW

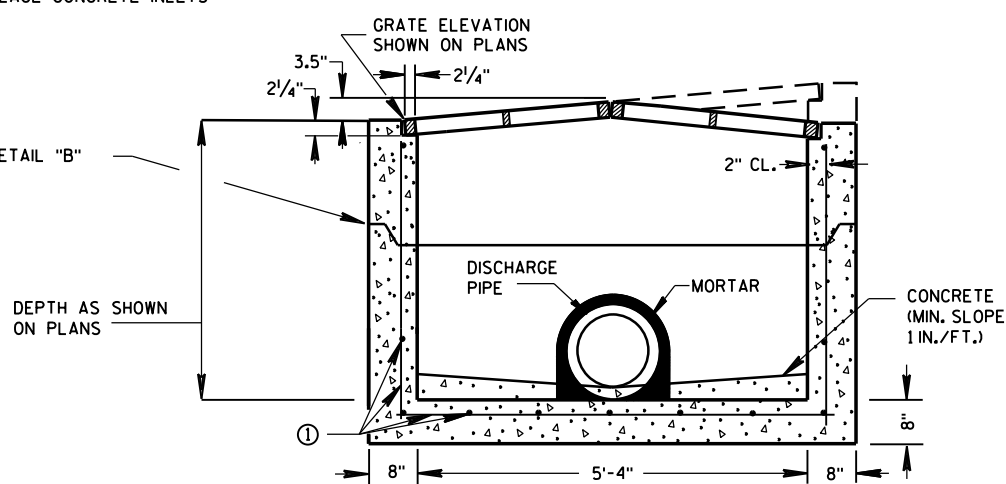
4" OVERHANGING BASE ON REINFORCED  
CAST-IN-PLACE CONCRETE INLETS



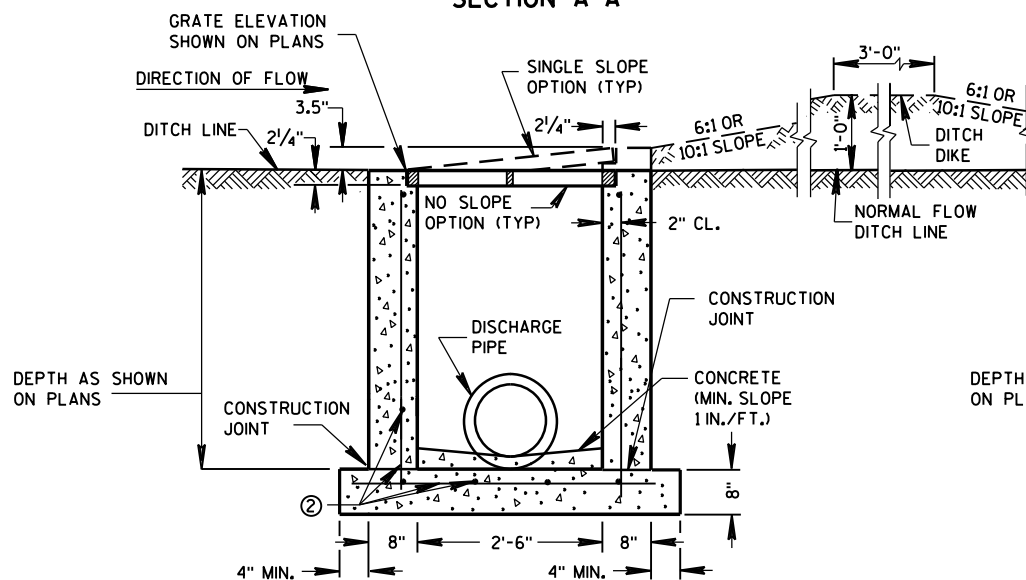
PLAN VIEW



PRECAST REINFORCED CONCRETE  
SECTION A-A

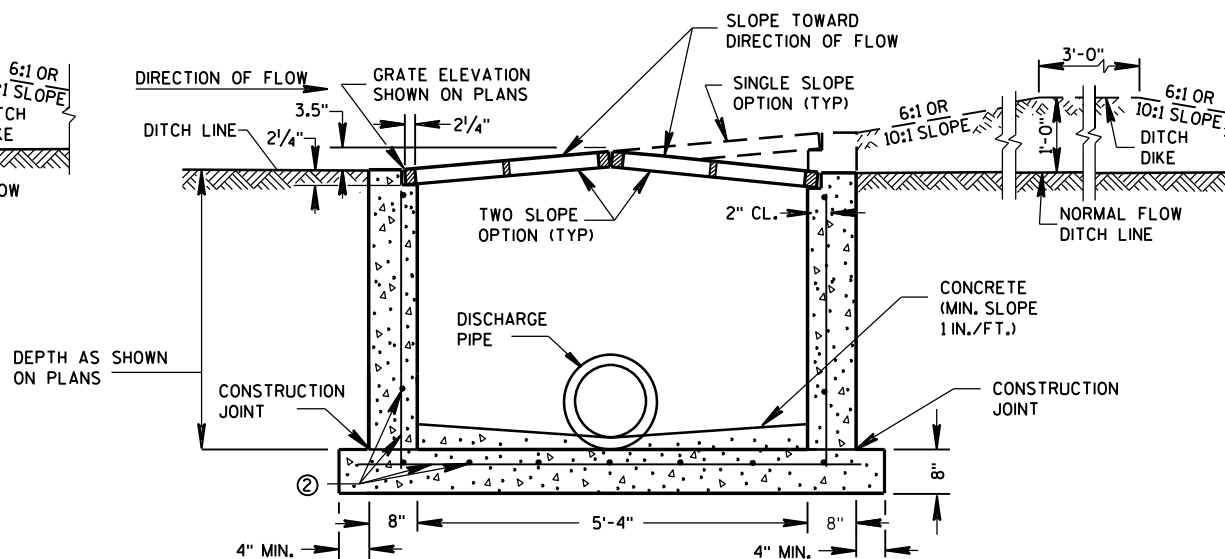


PRECAST REINFORCED CONCRETE  
SECTION B-B



REINFORCED CAST-IN-PLACE CONCRETE  
SECTION A-A

INLETS MEDIAN 1 GRATE



REINFORCED CAST-IN-PLACE CONCRETE  
SECTION B-B

INLETS MEDIAN 2 GRATE

## GENERAL NOTES

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

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

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLETS WHICH MAY INCLUDE PRECAST REINFORCED CONCRETE INLETS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL MEDIAN INLETS ARE DESIGNATED ON THE PLANS AS "INLETS, IG-MS", ETC. THE FIRST NUMBER AND LETTER DESIGNATE THE TYPE OF STRUCTURE, AND THE FOLLOWING LETTERS DESIGNATE 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.

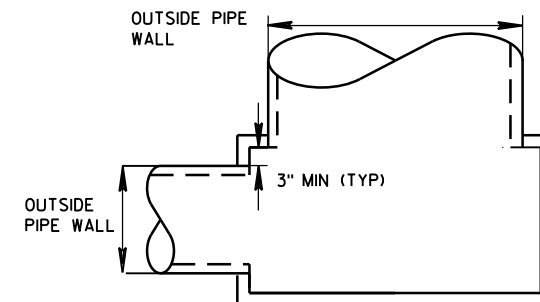
ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

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 INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.
- ② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

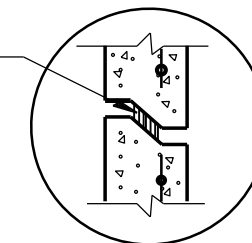
## PIPE MATRIX

| INLET SIZE | MAXIMUM INSIDE PIPE DIAMETER |             |
|------------|------------------------------|-------------|
|            | WIDTH (IN)                   | LENGTH (IN) |
| 1 GRATE    | 18                           | 18          |
| 2 GRATE    | 18                           | 42          |



DETAIL "A"

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



DETAIL "B"

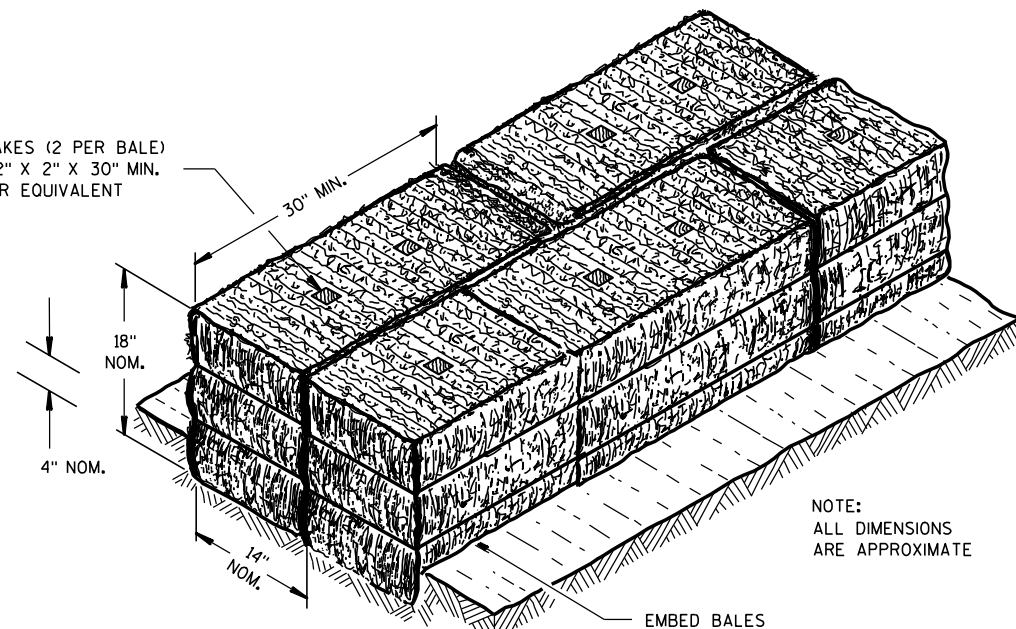
## INLETS MEDIAN 1 AND 2 GRATE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
Sept., 2016  
DATE  
FHWA

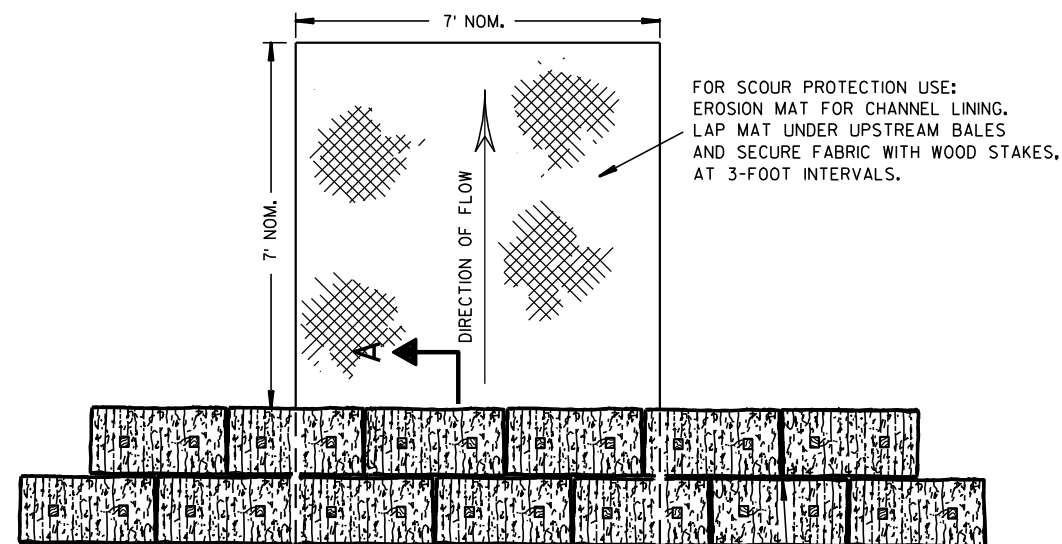
/S/ Rodney Taylor  
ROADWAY STANDARDS DEVELOPMENT  
UNIT SUPERVISOR

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



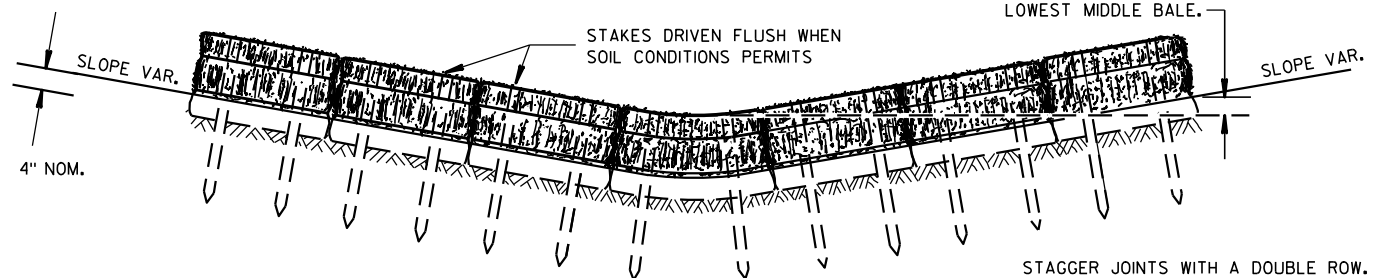
NOTE:  
ALL DIMENSIONS  
ARE APPROXIMATE

SECTION A-A



FOR SCOUR PROTECTION USE:  
EROSION MAT FOR CHANNEL LINING.  
LAP MAT UNDER UPSTREAM BALES  
AND SECURE FABRIC WITH WOOD STAKES,  
AT 3-FOOT INTERVALS.

PLAN VIEW



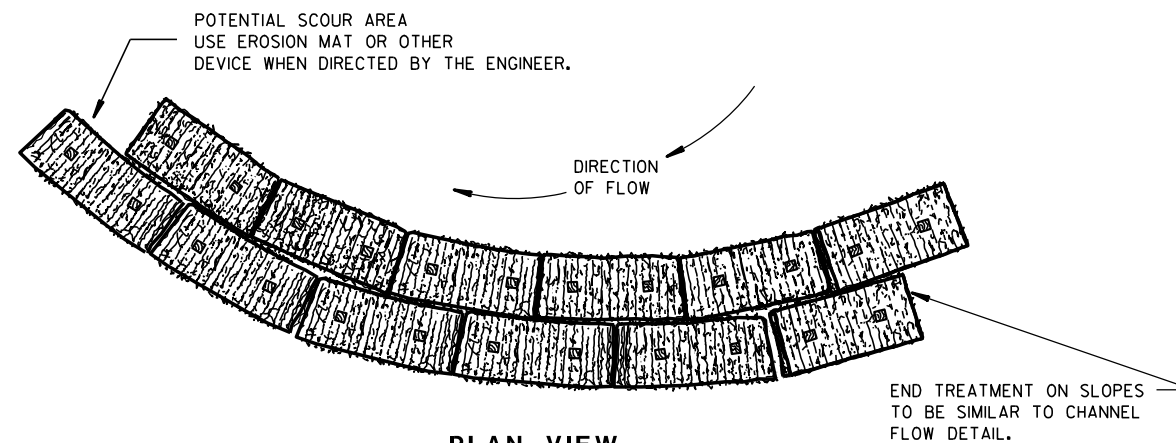
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

## GENERAL NOTES

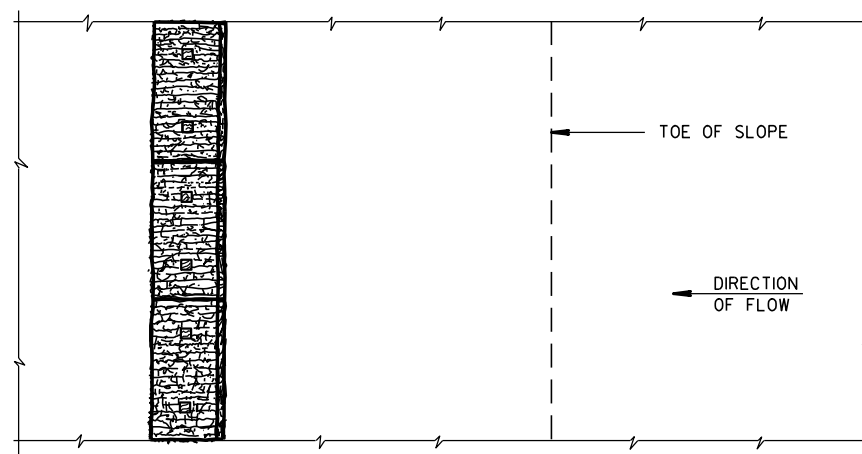
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

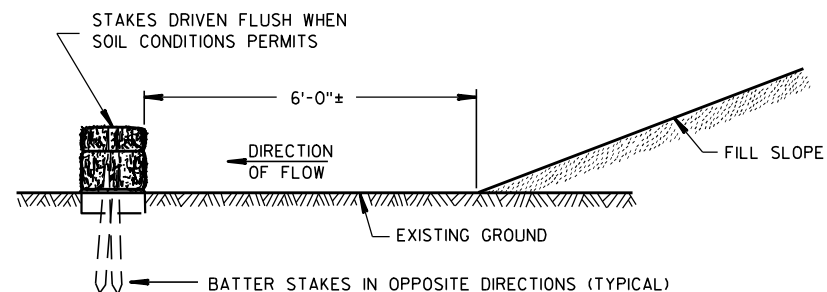


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF  
EROSION BALES / TEMPORARY  
DITCH CHECKS

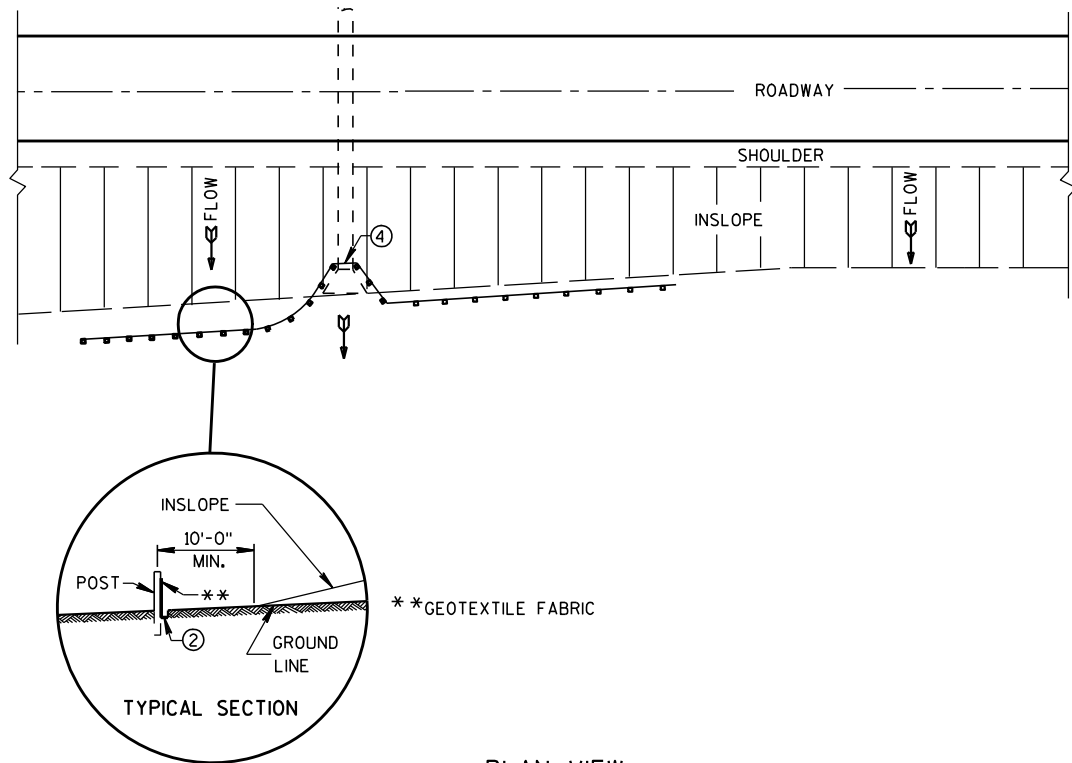
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

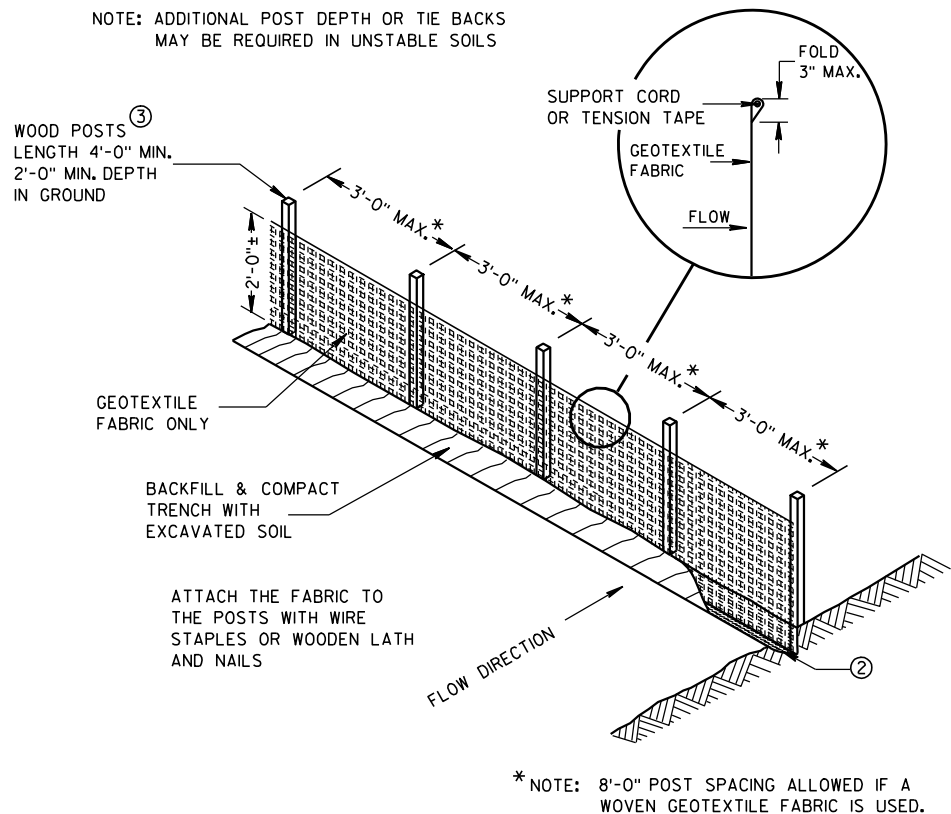
6/04/02  
DATE

FHWA

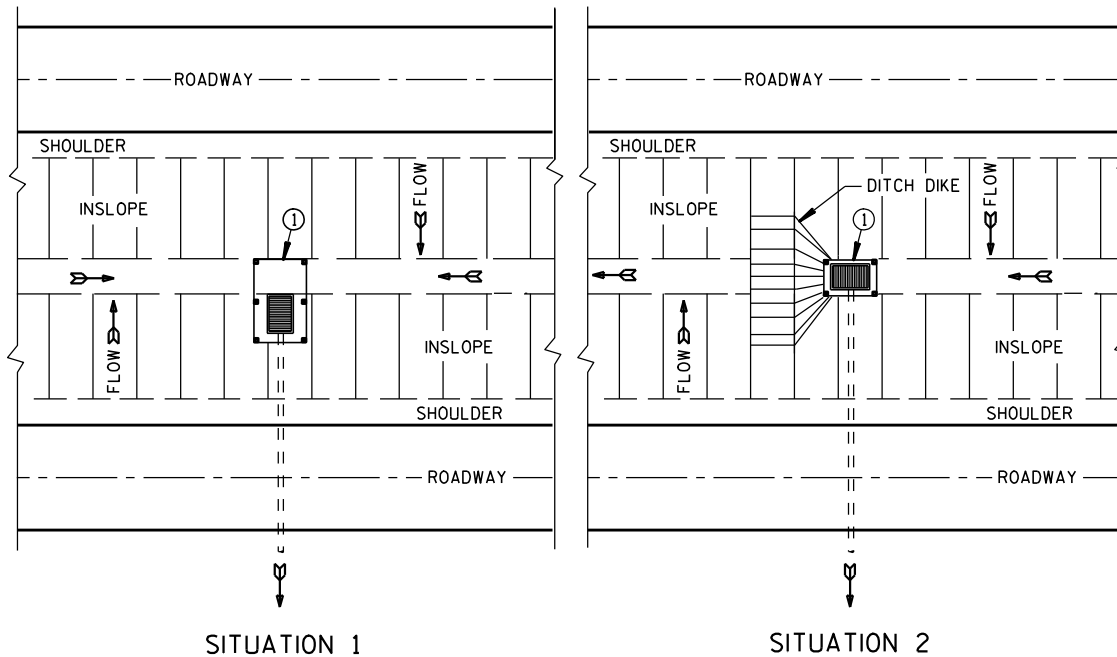
/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER



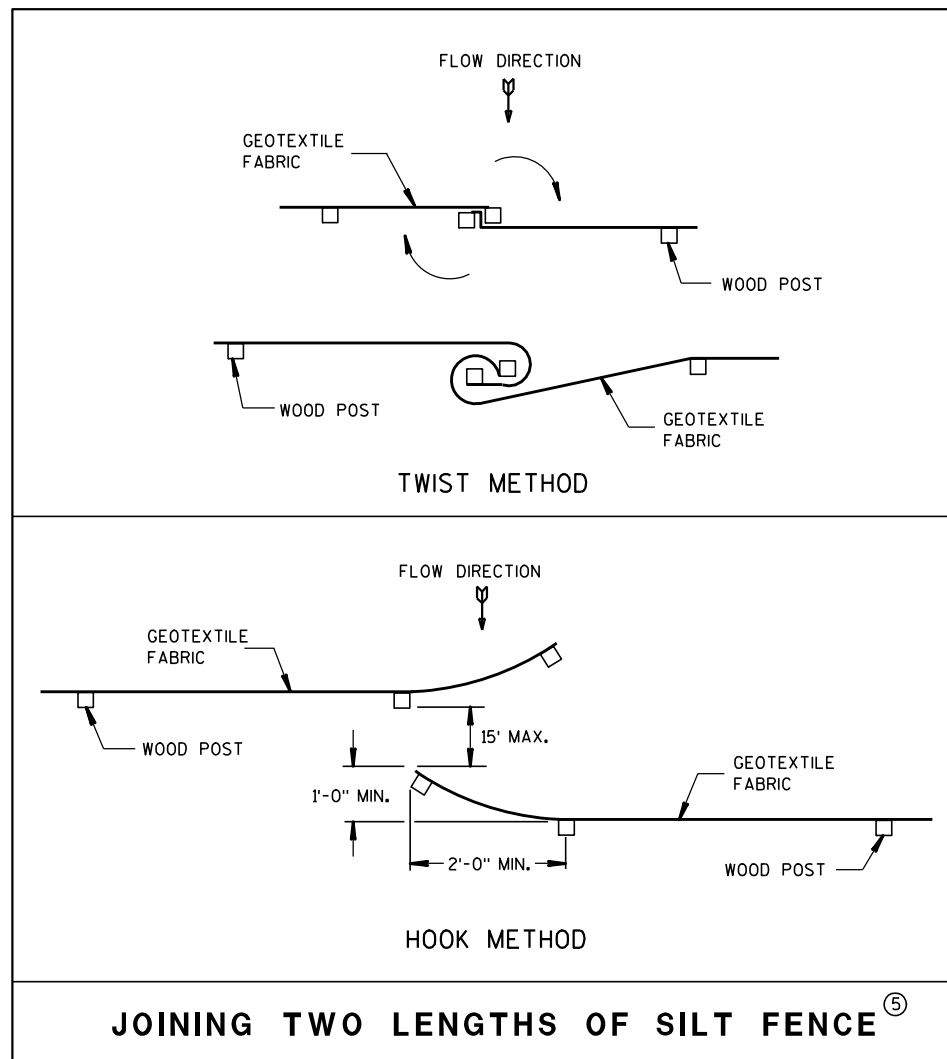
PLAN VIEW  
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

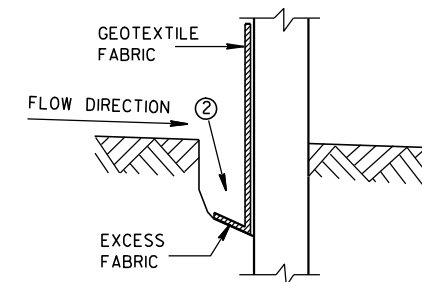


JOINING TWO LENGTHS OF SILT FENCE (5)

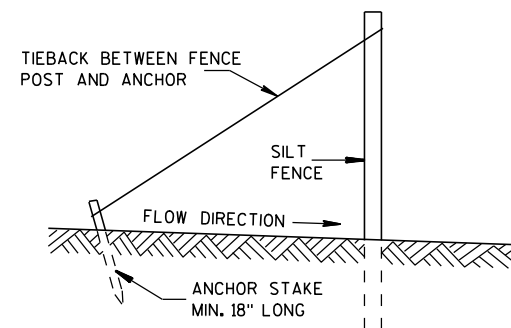
GENERAL NOTES

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.

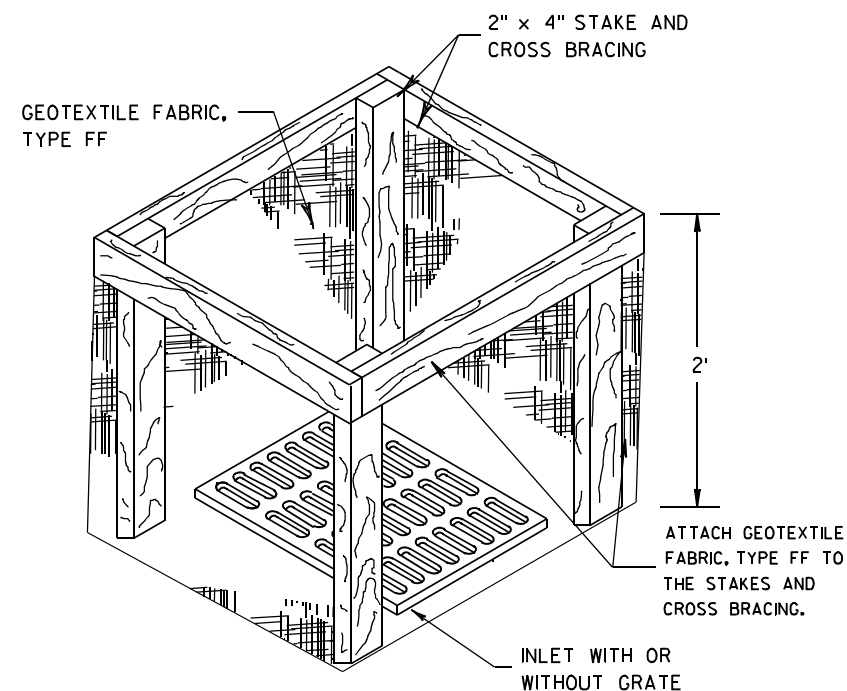
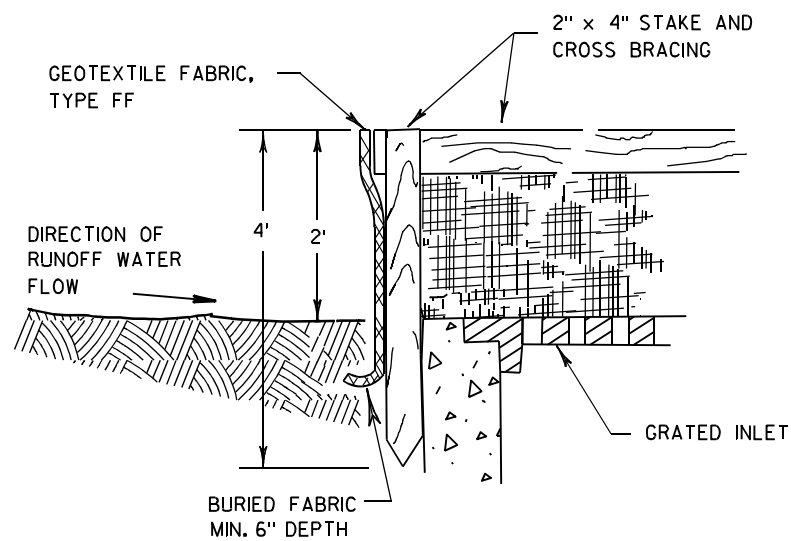


TRENCH DETAIL



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

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



**INLET PROTECTION, TYPE A**

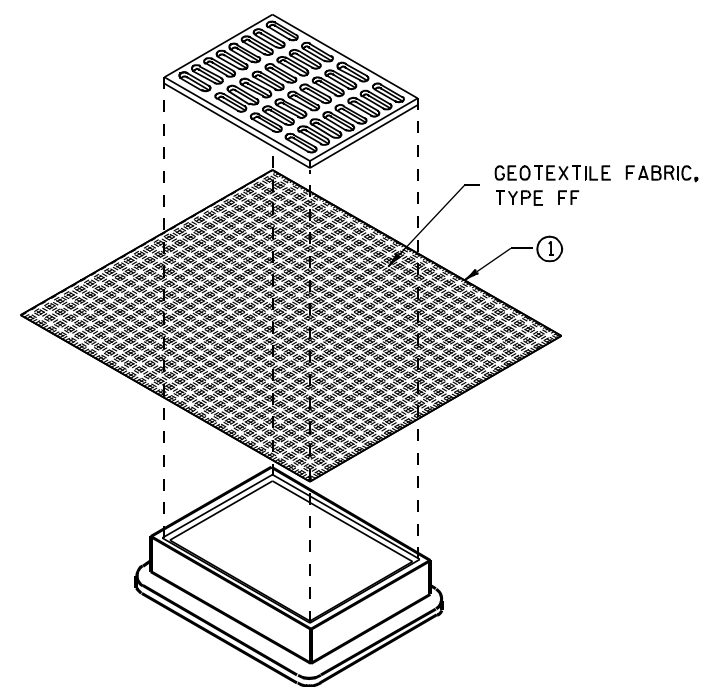
**GENERAL NOTES**

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.

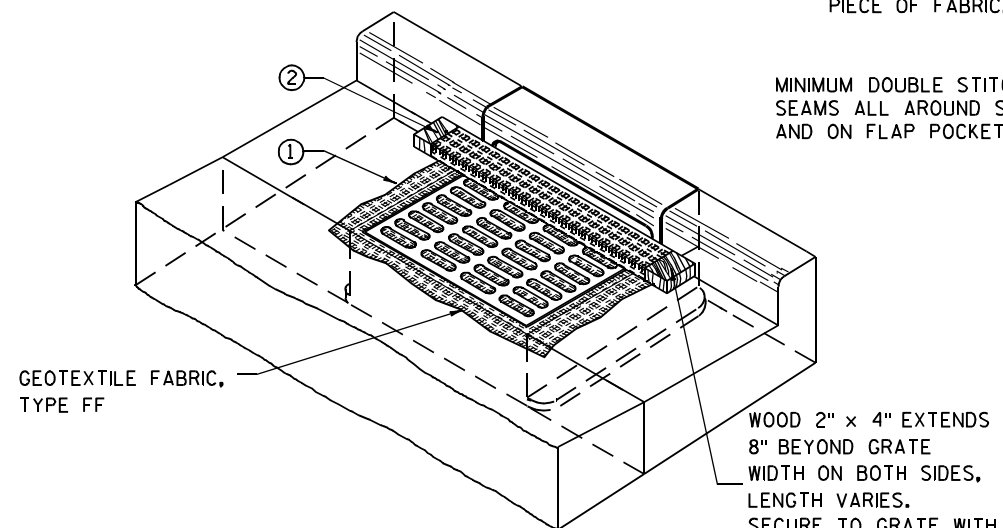
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- 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.

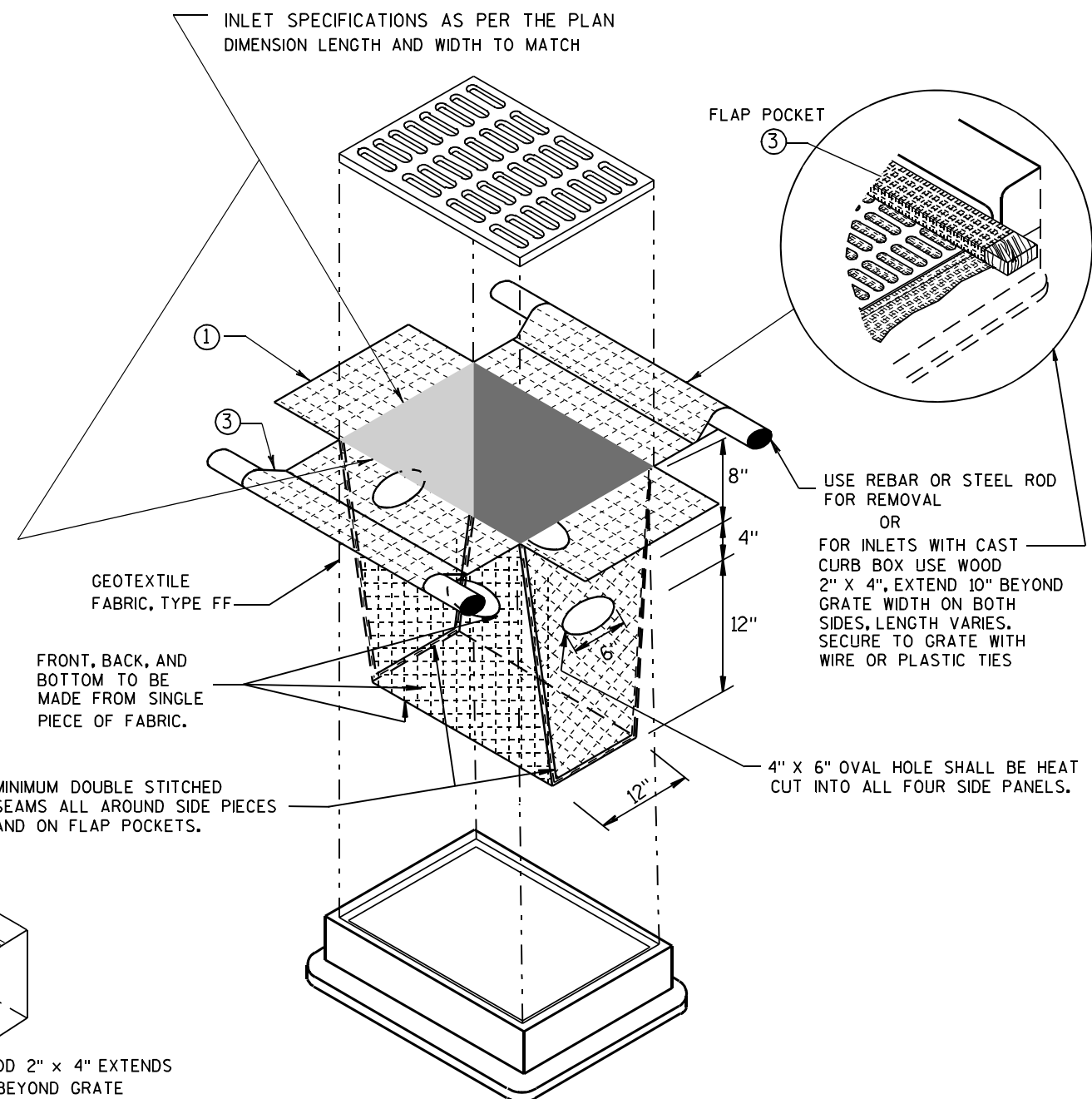
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

**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.

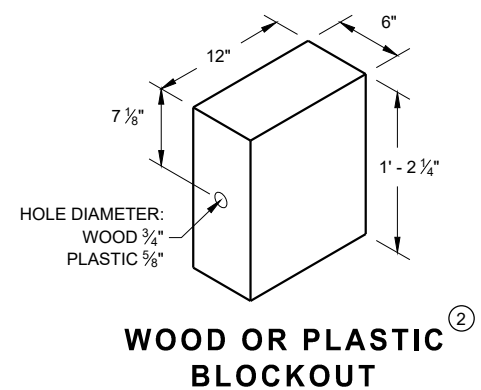
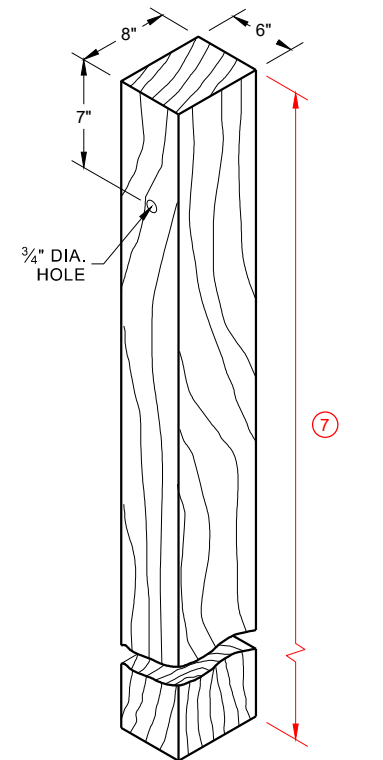
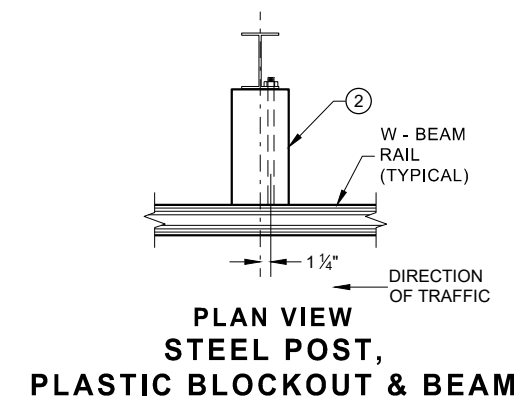
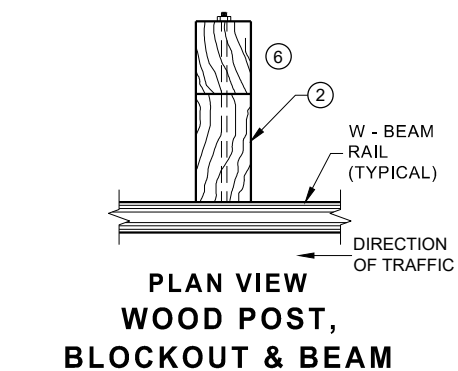
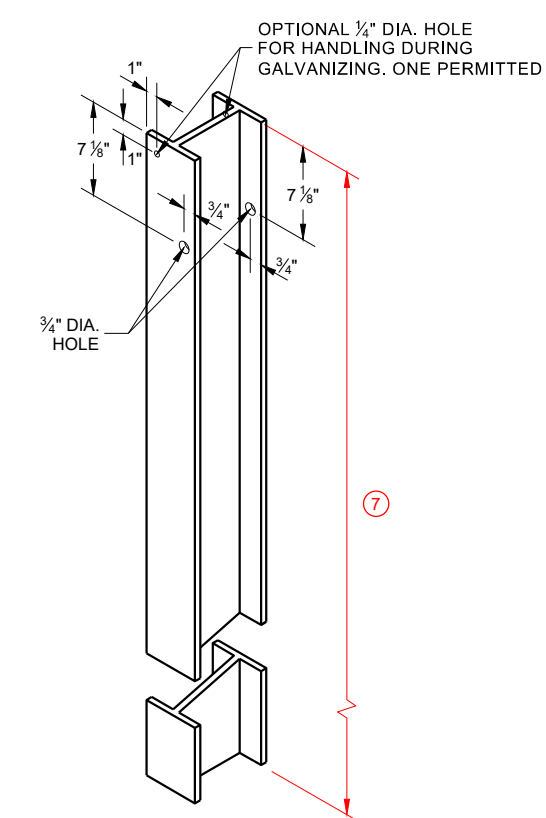
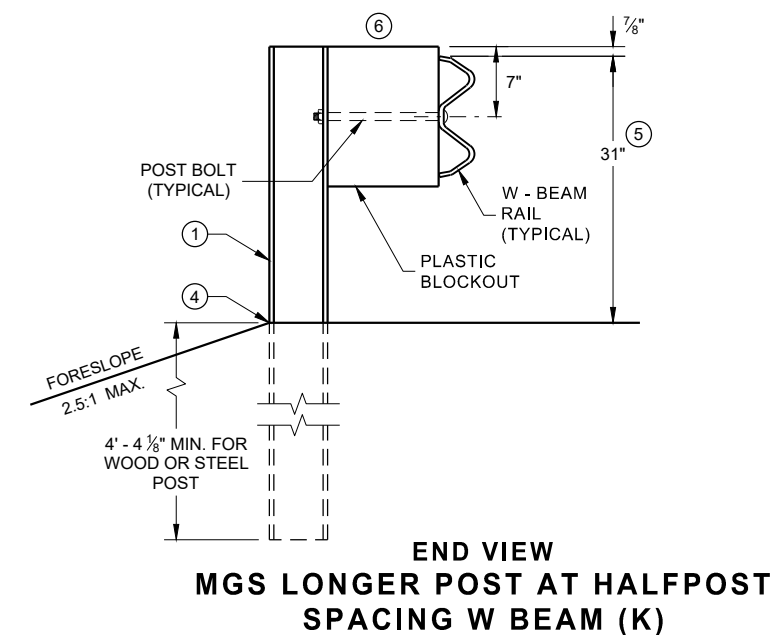
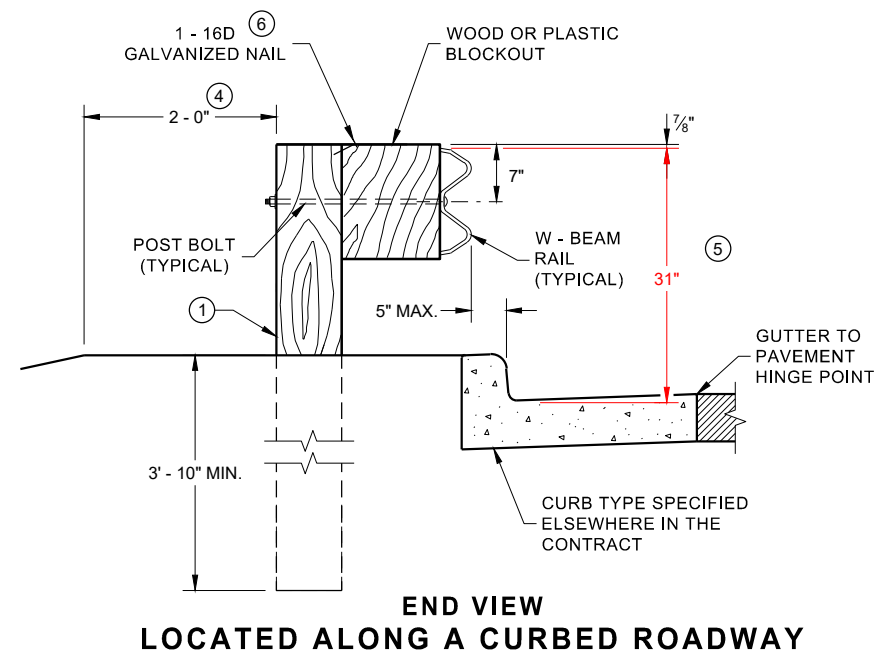
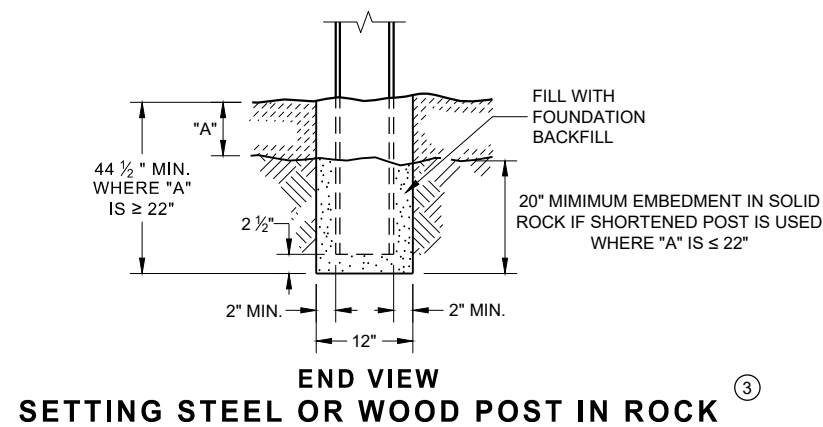


**INLET PROTECTION, TYPE D**

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

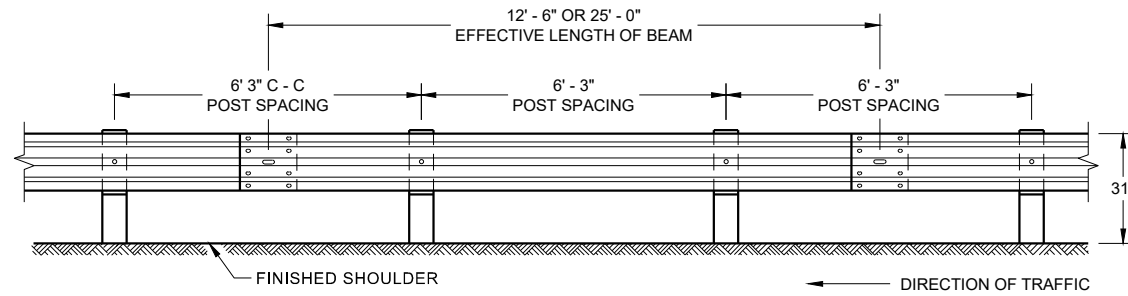
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|------------------------------------------------------------|----------------------------------------------------------|
| <b>INLET PROTECTION<br/>TYPE A, B, C, AND D</b>            |                                                          |
| <b>STATE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

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

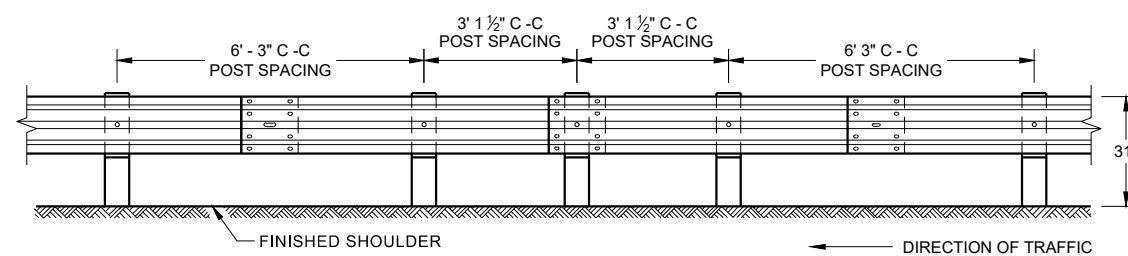


MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

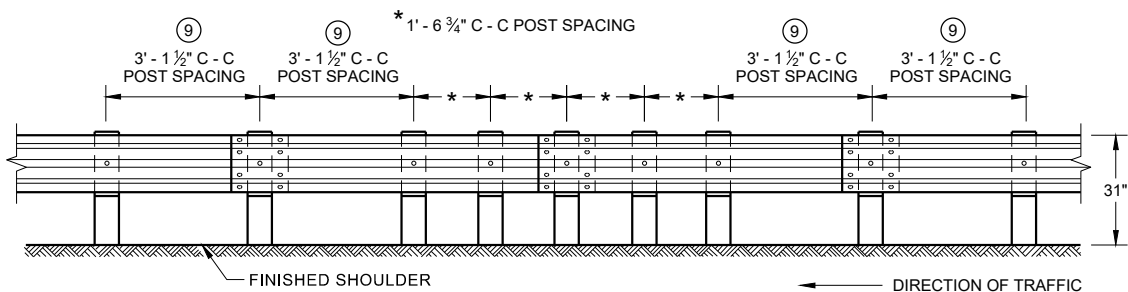
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



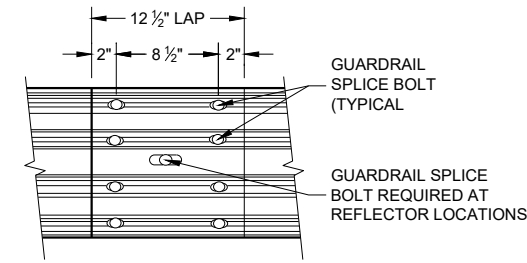
**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



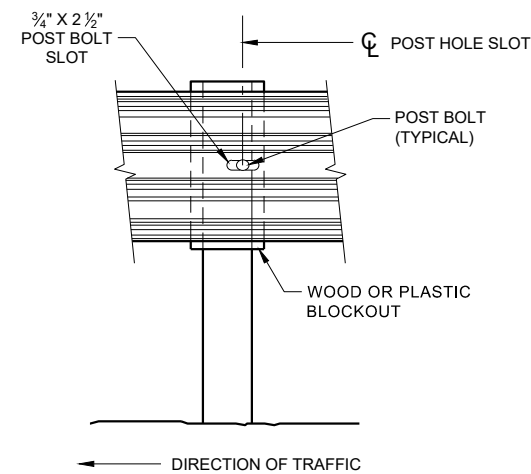
**FRONT VIEW  
HALF POST SPACING (HS) AND  
HALF POST SPACING WITH LONGER POSTS (K)**



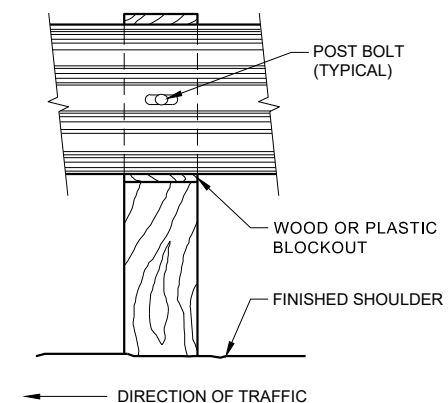
**FRONT VIEW  
QUARTER POST SPACING (QS)**



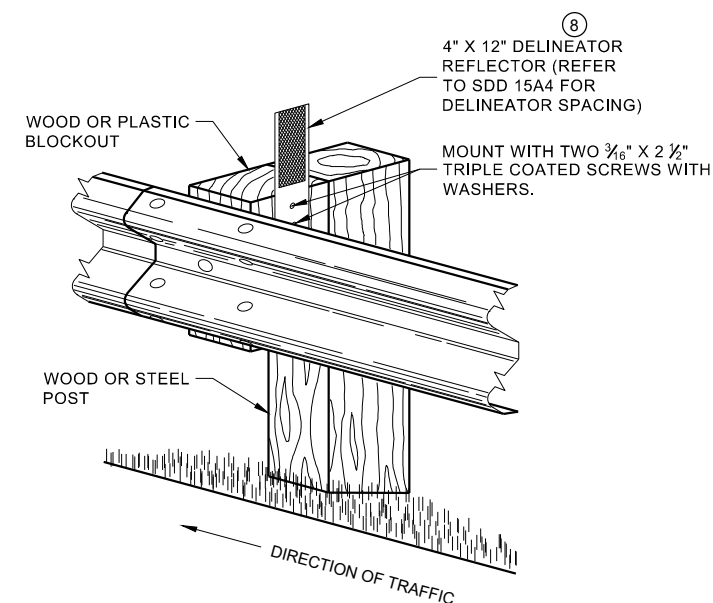
**FRONT VIEW  
MID-SPAN BEAM SPLICE**



**FRONT VIEW AT STEEL POST**



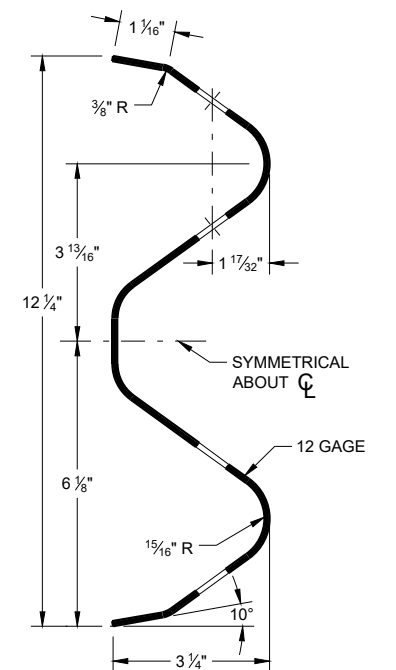
**FRONT VIEW AT WOOD POST**



**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**

**GENERAL NOTES**

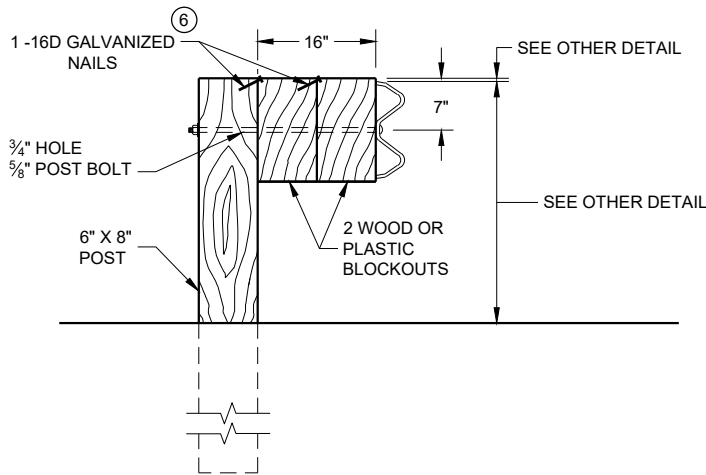
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
  - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8"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



**SECTION THRU W-BEAM RAIL**

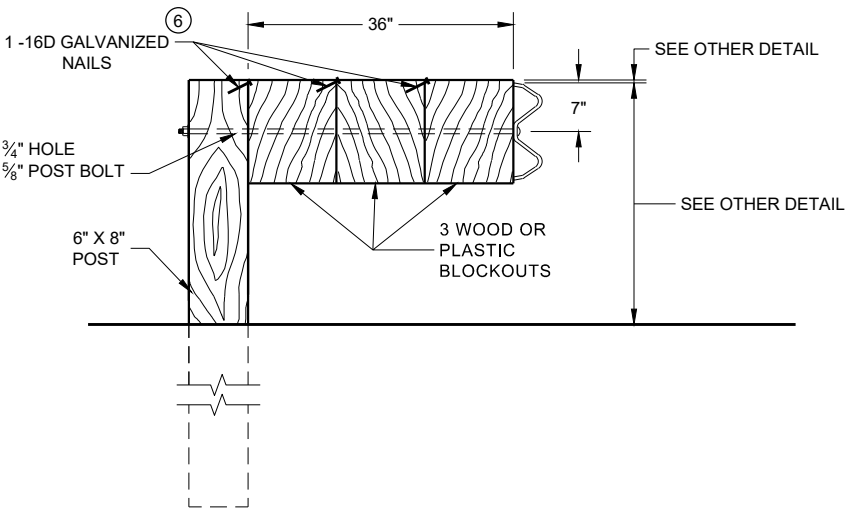
**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

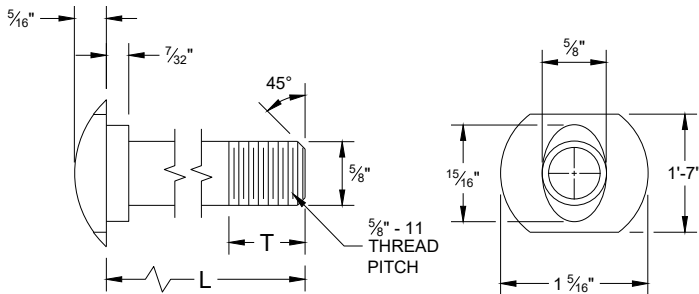
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

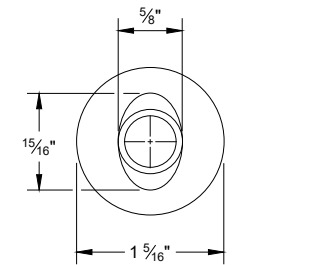
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.  
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE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

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

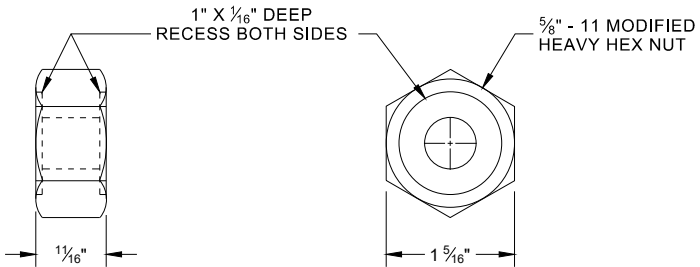


POST BOLT TABLE

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

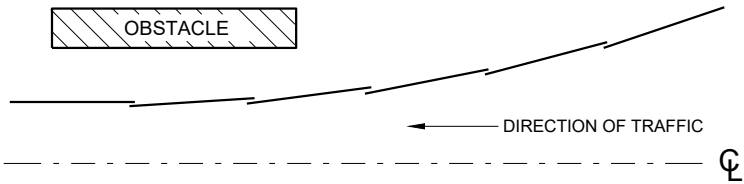


ALTERNATE BOLT HEAD

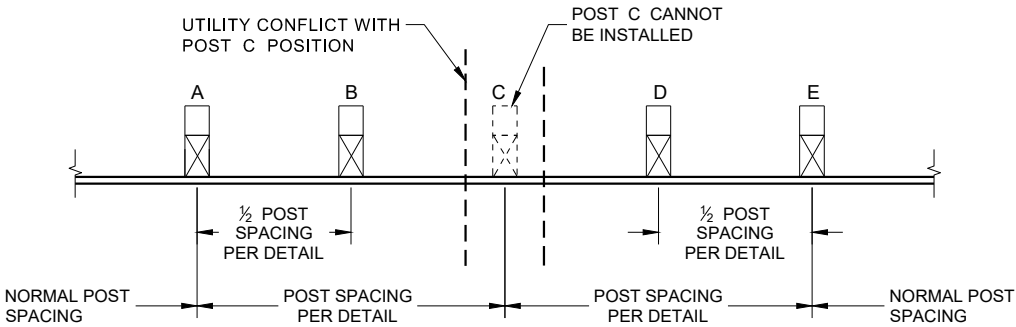


POST BOLT, SPLICE BOLT AND RECESS NUT

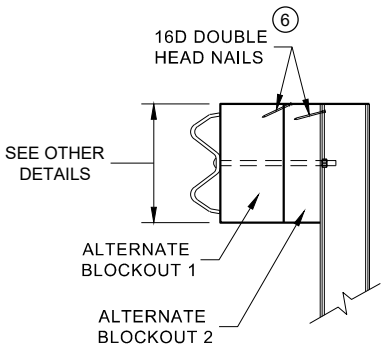
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



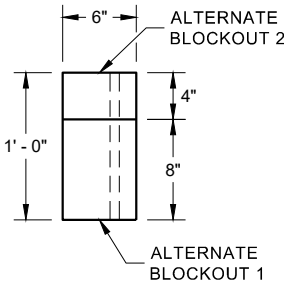
PLAN VIEW  
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS  
UNDERGROUND OBSTRUCTION



SIDE VIEW

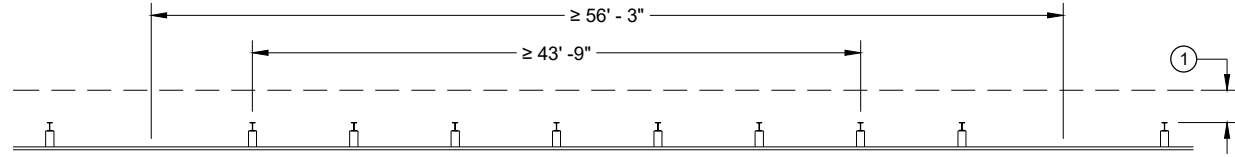


PLAN VIEW

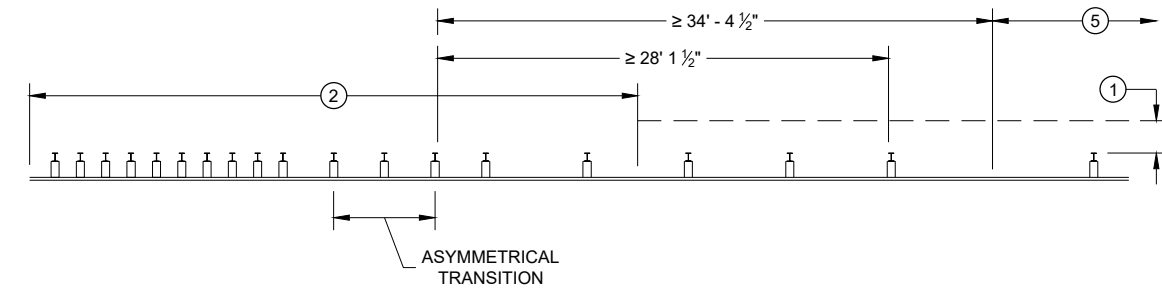
ALTERNATE WOOD  
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

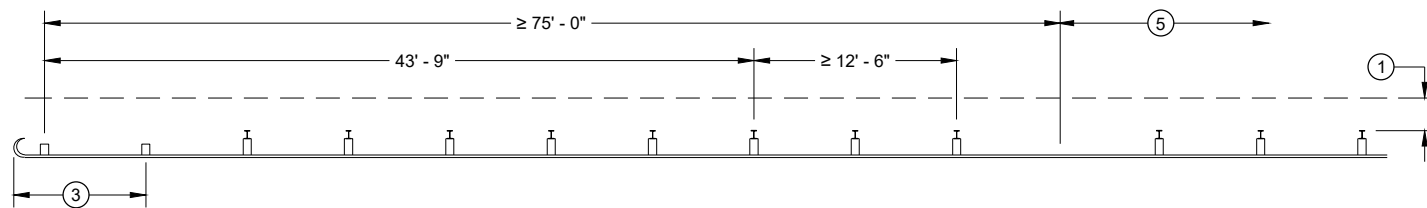
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



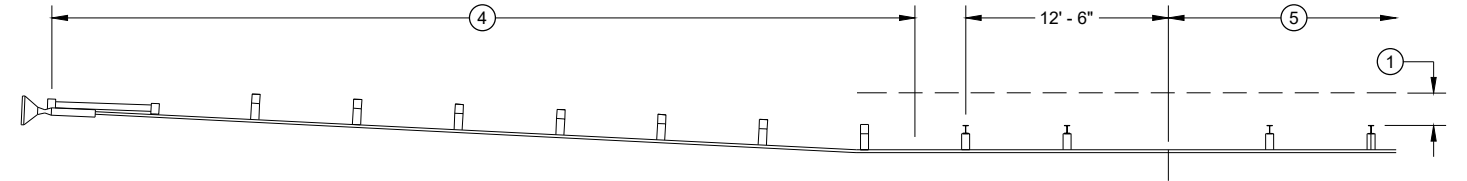
MISSING POST IN NORMAL BEAM GUARD RUN



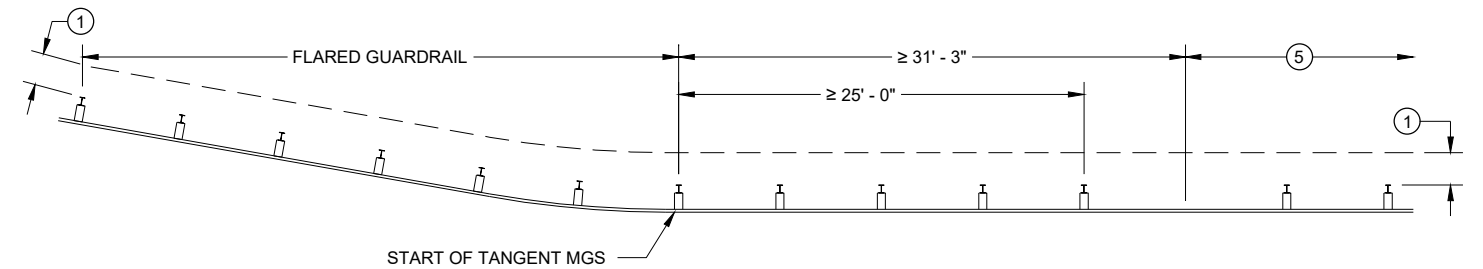
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



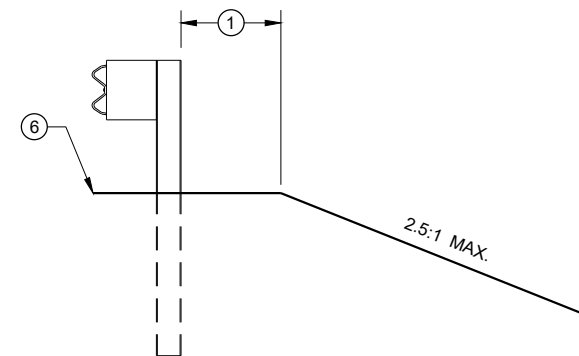
MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR TYPE 2 TERMINAL



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR FLARED BEAM GUARD



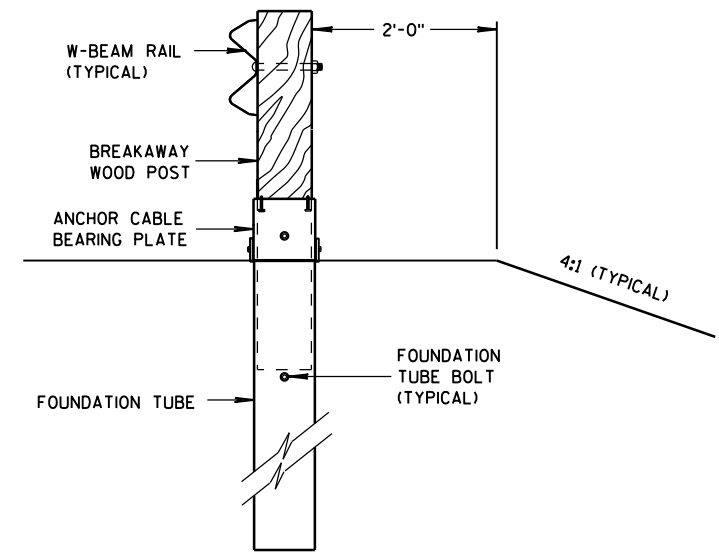
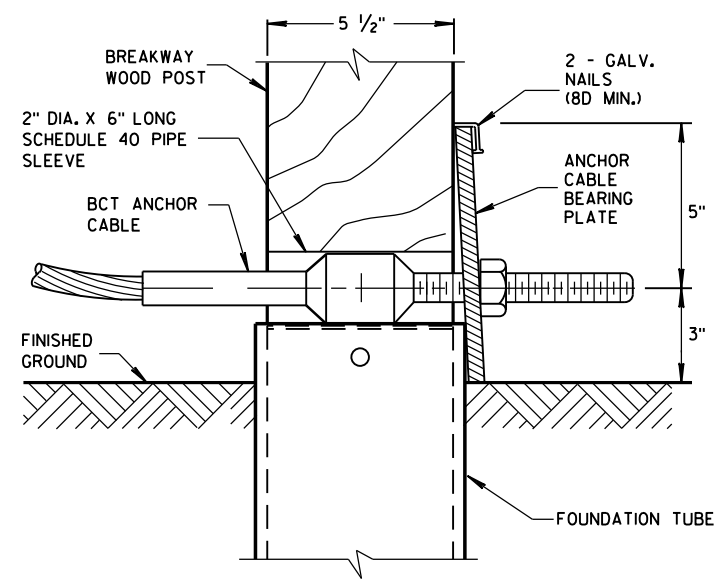
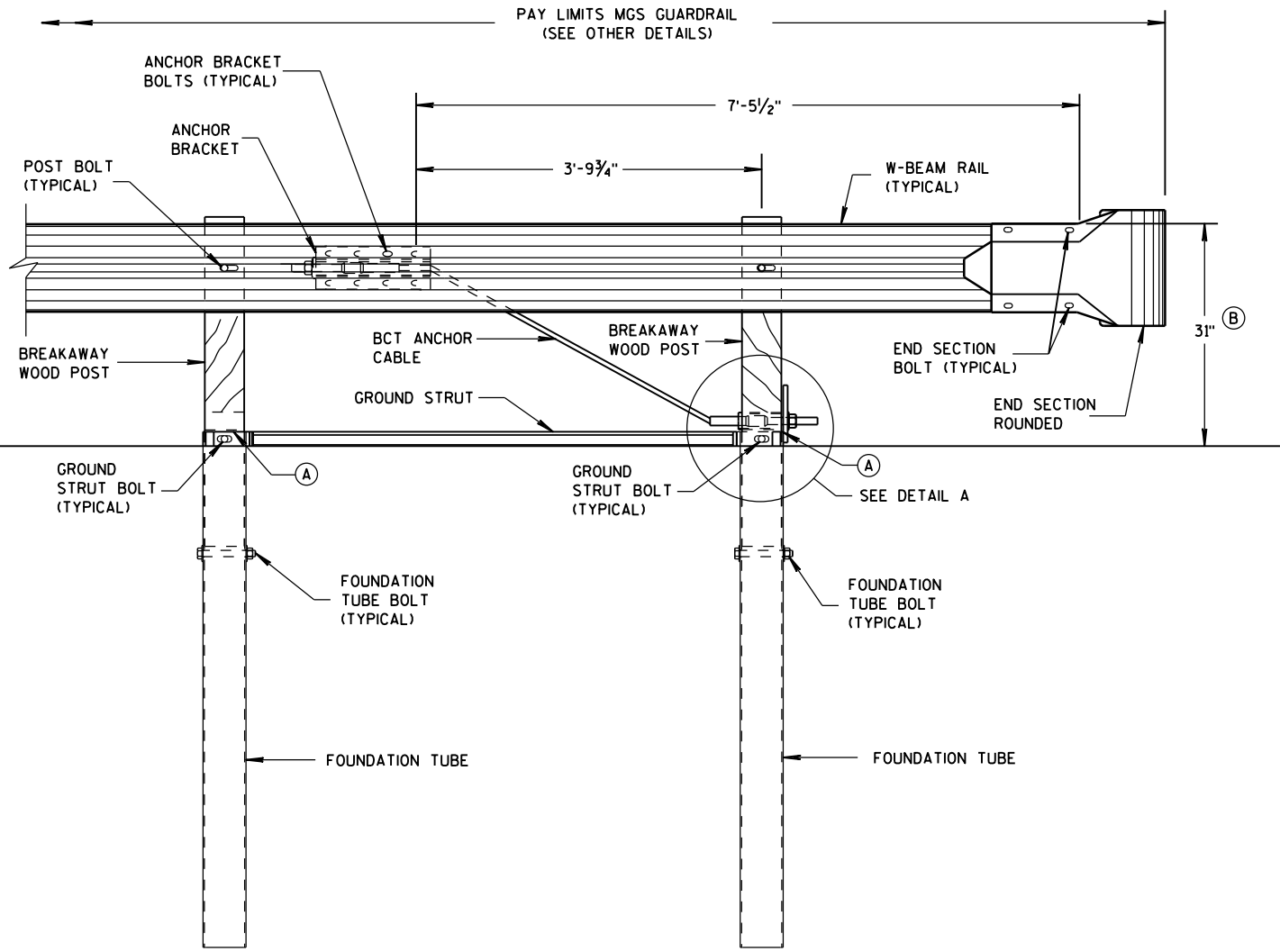
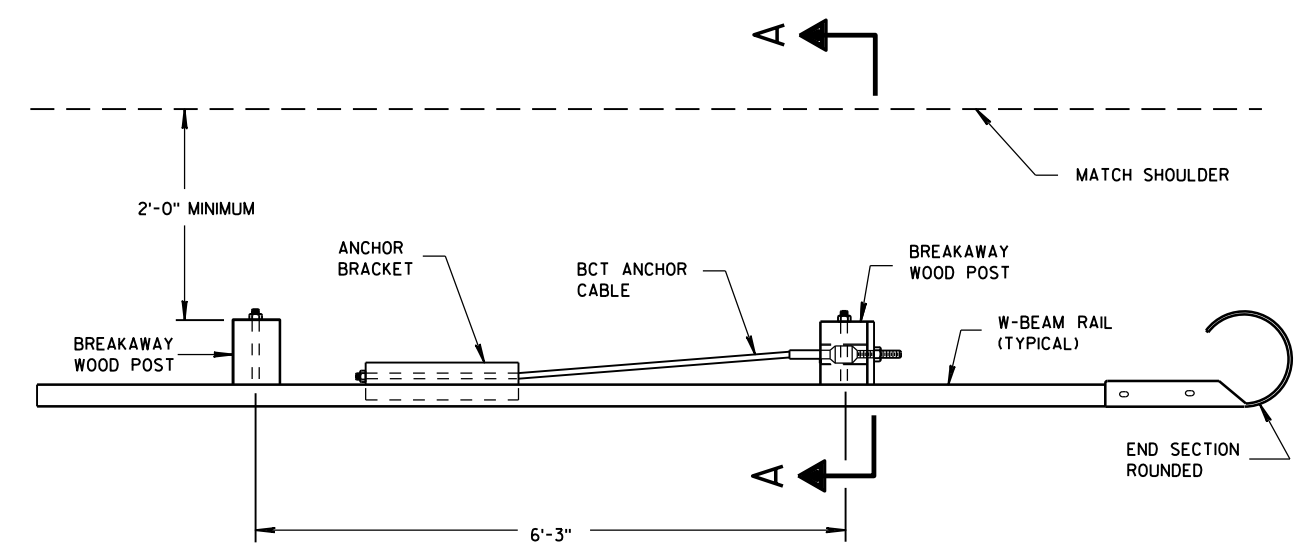
CROSS SECTION VIEW

- (1) MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- (2) SEE SDD 14B45 FOR MORE DETAILS.
- (3) SEE SDD 14B47 FOR MORE DETAILS.
- (4) SEE SDD 14B44 FOR MORE DETAILS.
- (5) SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- (6) SEE PLAN FOR SHOULDER DESIGN.

**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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



## GENERAL NOTES

SEE SDD 14 B 42 FOR MORE INFORMATION.

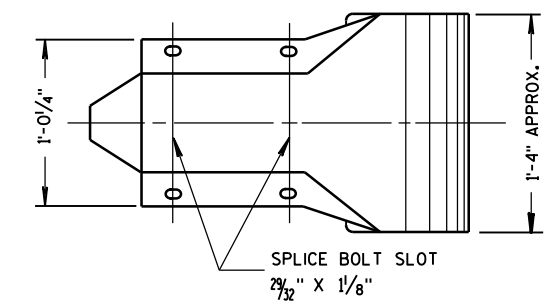
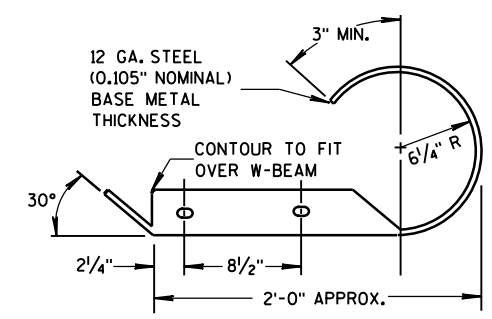
END SECTION BOLTS AND NUTS HAVE THE SAME MATERIAL REQUIREMENTS AS SPLICE BOLTS.

FOUNDATION TUBE BOLTS ARE 7/8" DIAMETER ASTM A307 HEX HEAD BOLT. FOUNDATION TUBE BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 7/8" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

ANCHOR BRACKET AND GROUND STRUT BOLTS ARE A 5/8" DIAMETER ASTM A307 HEX HEAD BOLT. ANCHOR BRACKET BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 5/8" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

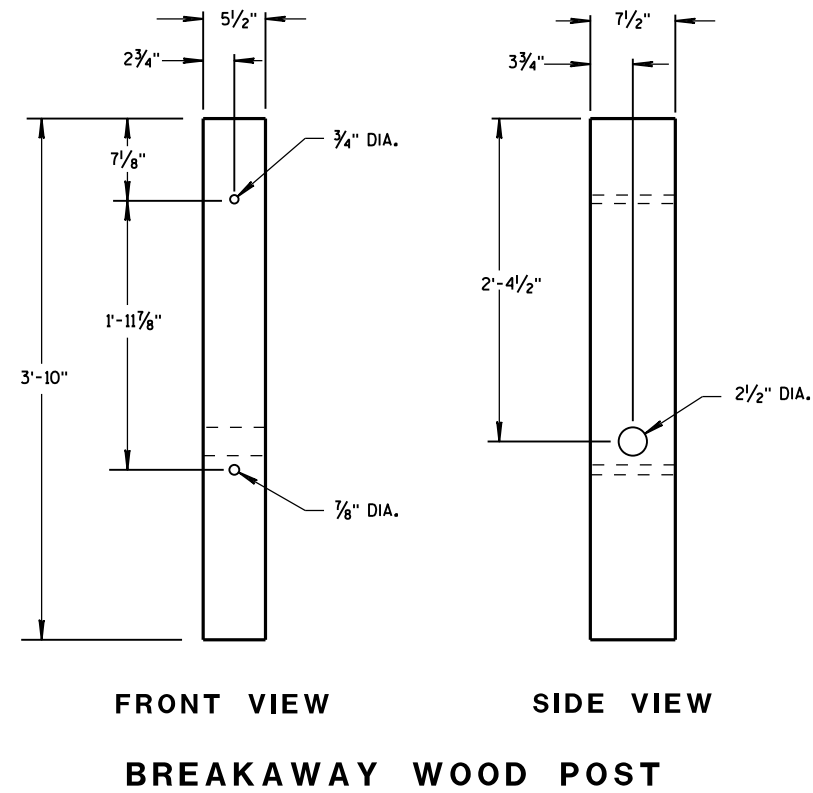
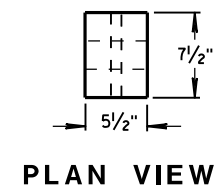
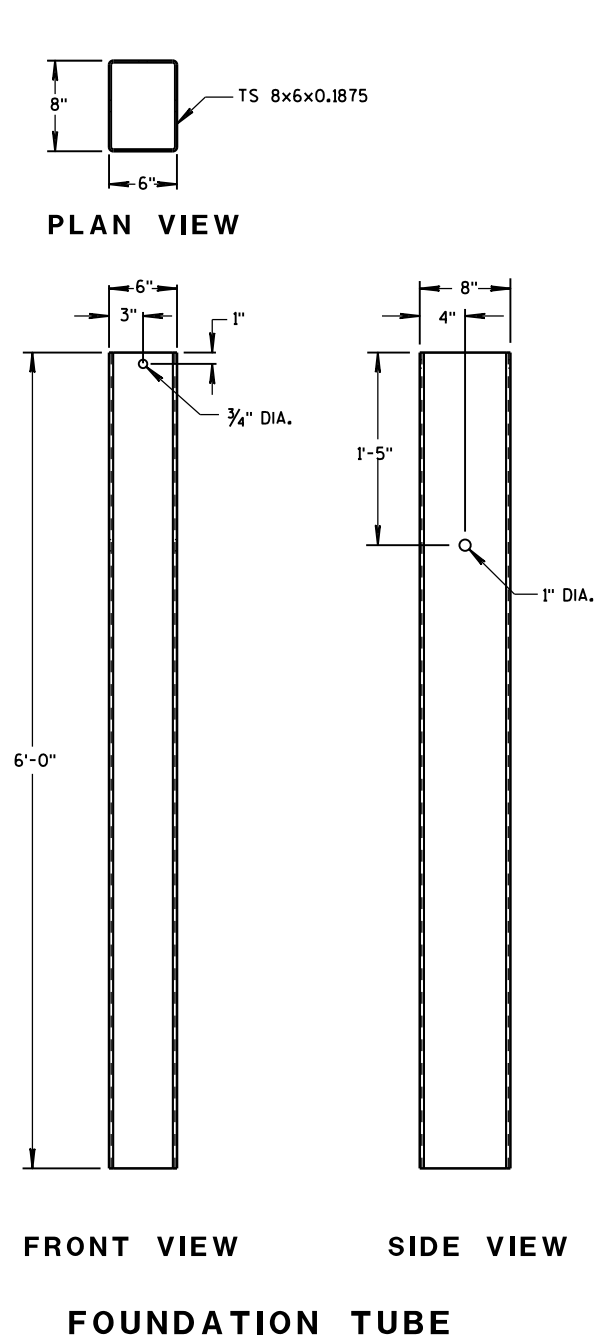
W-BEAM END SECTION ROUNDED HAS THE SAME MATERIAL PROPERTIES AS STANDARD STEEL RAIL.

- (A) TOP OF FOUNDATION TUBE SHALL BE NO MORE THAN 3" ABOVE FINISHED GROUND.
- (B) FOR NEW CONSTRUCTION TOP OF RAIL IS 31" ± 1". FOR EXISTING INSTALLATIONS TOP OF RAIL IS BETWEEN 27 3/4" TO 32" ± 1".



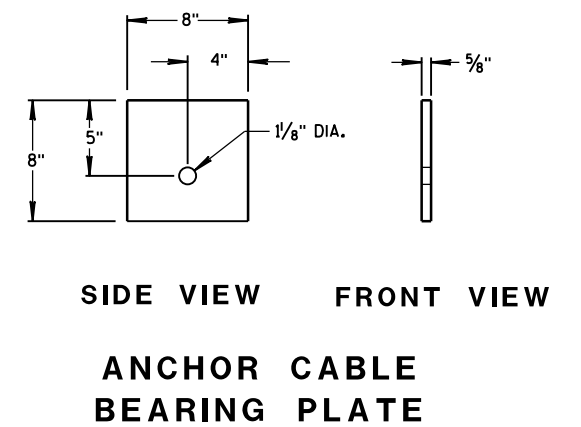
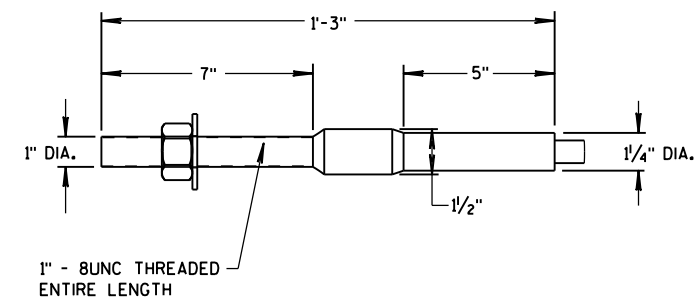
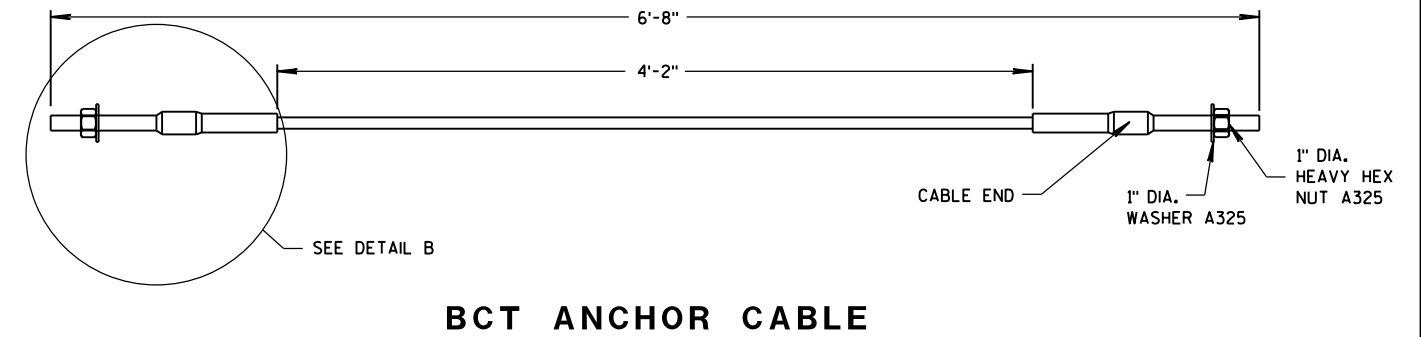
MIDWEST GUARDRAIL  
SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



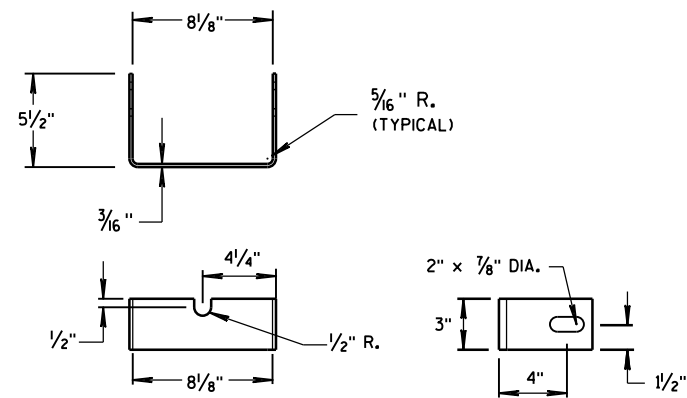
## GENERAL NOTES

BCT ANCHOR CABLE IS A 3/4" DIAMETER 6X19 IWRC IPS GALVANIZED WIRE ROPE. THE SWAGED FITTINGS AND STUD ARE REQUIRED. END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED ACCORDING TO ASTM A123. TREADED STUD SHALL CONFORM TO ASTM A325 OR SAE GRADE 5. MINIMUM BREAKING STRENGTH OF WIRE ROPE IS 43,000 LB. WIRE ROPE IS TO BE TAUT.

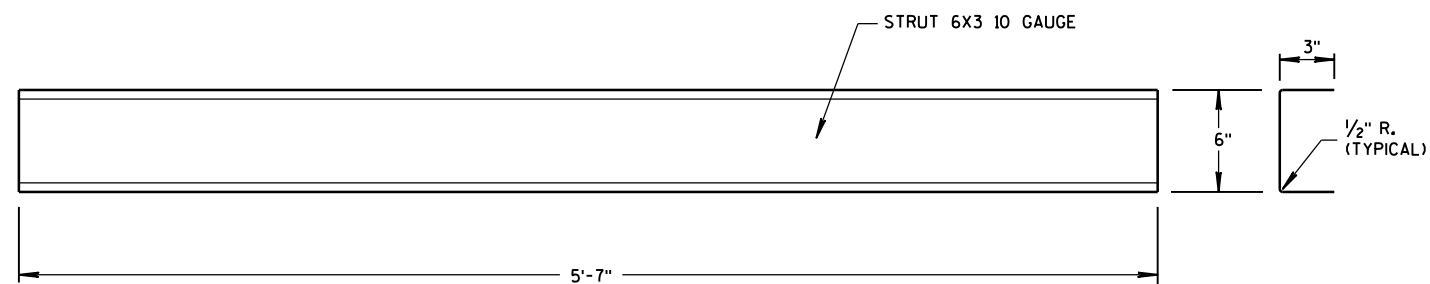


MIDWEST GUARDRAIL  
SYSTEM (MGS) TYPE 2 TERMINAL

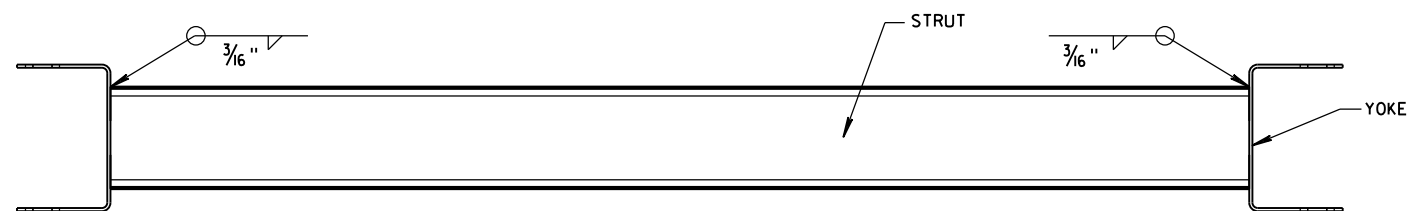
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



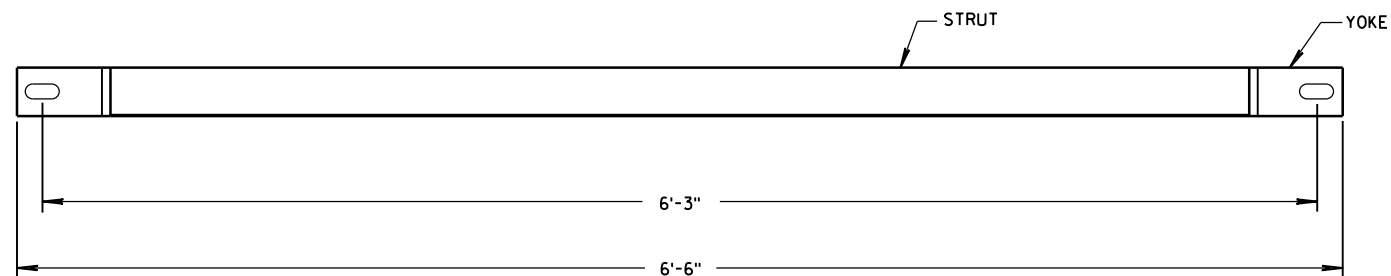
YOKE DETAIL



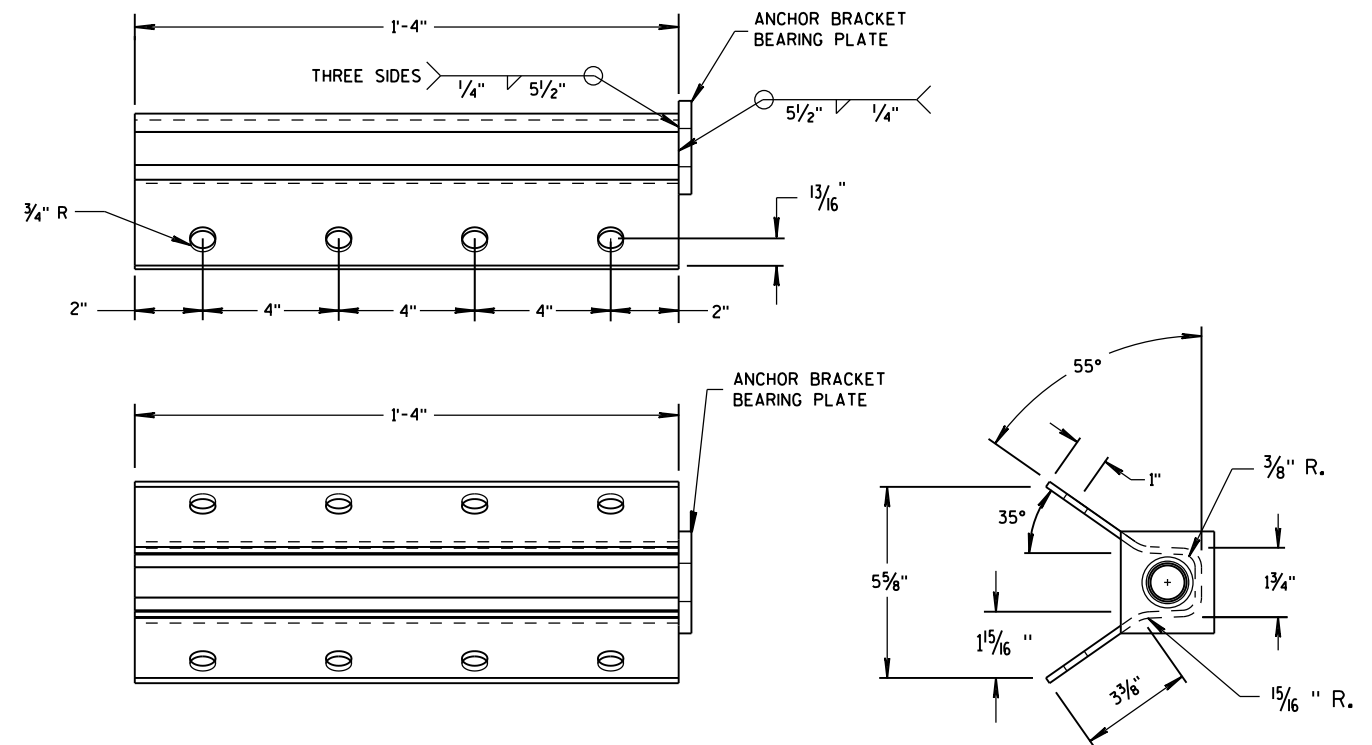
STRUT DETAIL



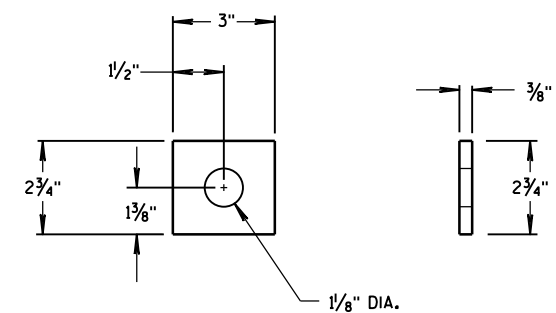
PLAN VIEW



FRONT VIEW  
GROUND STRUT DETAIL



ANCHOR BRACKET

ANCHOR BRACKET  
BEARING PLATE

MIDWEST GUARDRAIL  
SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

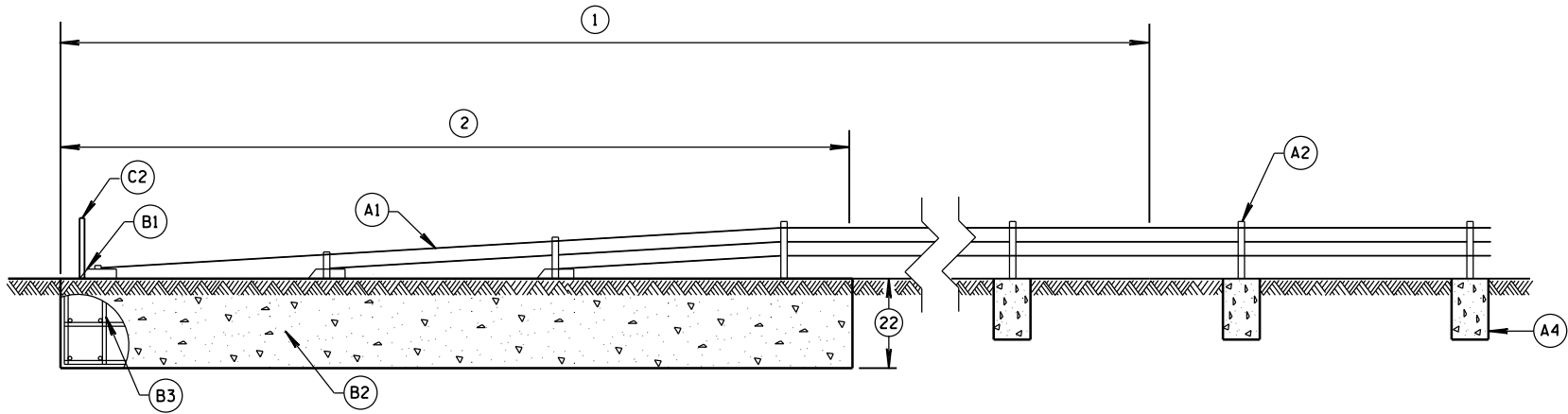
June 2014

DATE

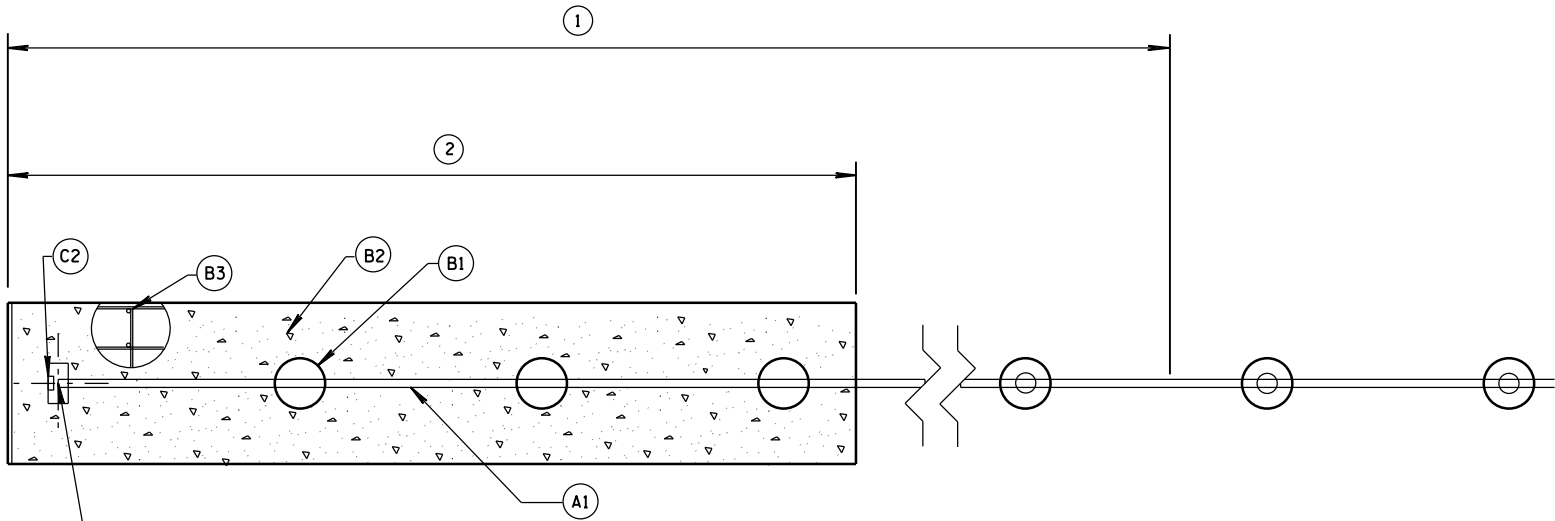
FHWA

/S/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT  
ENGINEER

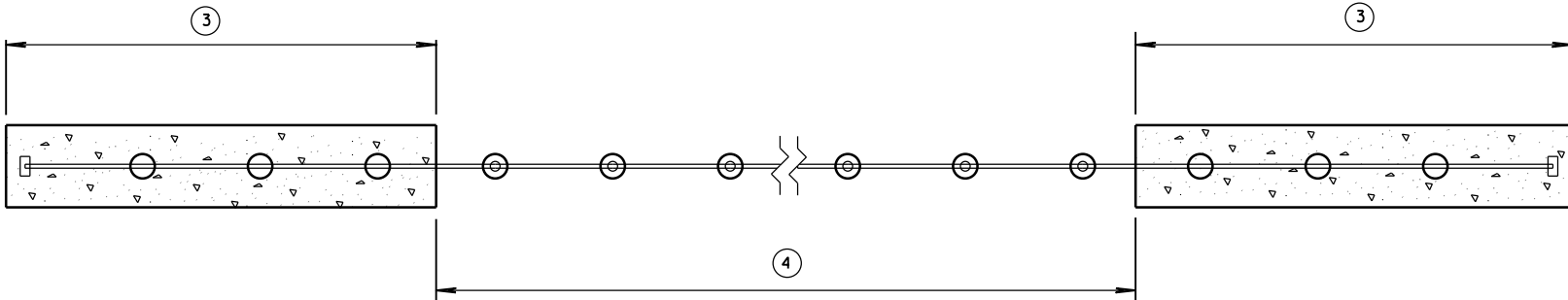


PROFILE VIEW



PLAN VIEW

TRANSITION FROM CABLE BARRIER  
TERMINAL TO CABLE BARRIER LINE POSTS



TYPICAL PLAN VIEW

GENERAL NOTES

- DRAWINGS ARE GENERAL IN NATURE. SEE MANUFACTURER'S INFORMATION FOR MORE DETAIL.
- PROVIDE 2 INCH CLEAR COVER FROM OUTER EDGE OF CONCRETE FOOTINGS TO REINFORCEMENT.
- INSTALL LINE POST PLUMB. LINE POSTS ARE TO BE EASILY REMOVED BY HAND AND HOLD CABLES AT THE PROPER ELEVATION.
- PROVIDE CABLE BARRIER SYSTEM FROM APPROVED PRODUCT LIST.
- PROVIDE A SYSTEM TO HAVE THE WORKING WIDTH INDICTED IN PLAN.
- PROVIDE DOCUMENTATION HOW POST SPACING, RADIUS OF CURVE AND ANCHOR SPACING INFLUENCES WORKING WIDTH TO CONSTRUCTION STAFF.
- PROVIDE A WISCONSIN PROFESSIONAL ENGINEERS STAMPED ANALYSIS THAT THE LINE POST AND CABLE BARRIER END TERMINAL FOOTINGS ARE DESIGNED FOR THE SOIL CONDITIONS PRESENT. THE WISCONSIN P.E. STAMP ANALYSIS IS TO INCLUDE, BUT IS NOT LIMITED TO: DESIGN IMPACT LOADS, FOUNDATION DEISGN METHODOLOGY USED, FACTORS OF SAFETY, SOIL TYPE, SOIL CONDITIONS, AND TEMPERATURE RANGES.
- DESIGN LINE POST FOOTINGS SO THAT LINE POST FOOTING MOVE LESS THAN 1 INCH WHEN LINE POST IS IMPACTED BY A TL-3 SMALL CAR.

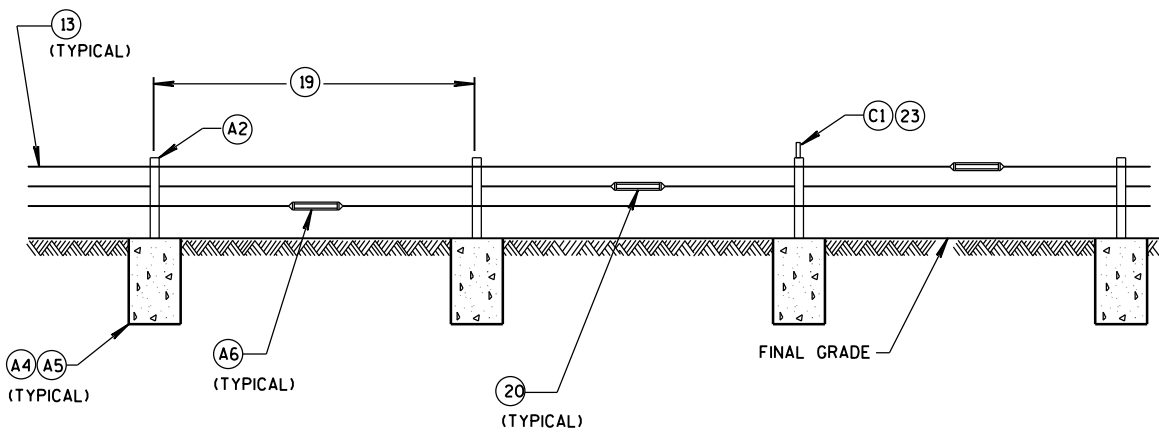
BILL OF MATERIALS

| PART NUMBER | QTY.            | DESCRIPTION                                     | MATERIALS SPECIFICATIONS                                                                                                                                                                                            |
|-------------|-----------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A1          | 3 OR 4          | 3/4" 3x7 PRESTRECHED GALVANIZED STEEL WIRE ROPE | ASTM A741 MIN. BREAKING STRENGTH 39,000 LBS.                                                                                                                                                                        |
|             |                 |                                                 | AASHTO M30 TYPE 1 CLASS A (GALVANATION).                                                                                                                                                                            |
| A2          | 1 PER LINE POST | GALVANIZED REMOVABLE STEEL LINE POST            | MINIMUM WIRE ROPE MODULUS OF ELASTICITY OF 19,000 PSI ACCORDING TO ISO 12067-202 WIRE ROPE MODULUS OF ELASTICITY "INITIAL" (AS MANUFACTURED), WITH NO BEDDING OR PRESTRECHING OF THE ROPE PERMITTED DURING TESTING. |
|             |                 |                                                 | SEE MANUFACTURER'S INFORMATION ON DIMENSIONS AND MATERIAL REQUIREMENTS.                                                                                                                                             |
| A3          | 1 PER LINE POST | GALVANIZED METAL SLEEVE                         | ASTM A123 (GALVANIZATION).                                                                                                                                                                                          |
|             |                 |                                                 | SEE MANUFACTURER'S INFORMATION ON DIMENSIONS AND MATERIAL REQUIREMENTS.                                                                                                                                             |
| A4          | VARIES          | CONCRETE FOR LINE POST FOOTING                  | A, A-FA.A-T, OR A-IP OF STANDARD SPECIFICATION 501.2 OR AS MANUFACTURER SPECIFIES.                                                                                                                                  |
|             |                 |                                                 | STANDARD SPECIFICATION 716 OMP FOR CLASS II ANCILLARY CONCRETE.                                                                                                                                                     |
| A5          | VARIES          | EPOXY COATED STEEL REINFORCEMENT                | SEE MANUFACTURER'S INFORMATION ON DIMENSIONS.                                                                                                                                                                       |
|             |                 |                                                 | STANDARD SPECIFICATION 505.                                                                                                                                                                                         |
| A6          | VARIES          | TURNBUCKLES AND OTHER CABLE CONNECTING HARDWARE | SEE MANUFACTURER'S INFORMATION ON DIMENSIONS.                                                                                                                                                                       |
|             |                 |                                                 | MINIMUM BREAKING STRENGTH OF TURNBUCKLES AND CONNECTION HARDWARE IS EQUAL TO CABLE.                                                                                                                                 |
| B1          | VARIES          | CABLE CONNECTION TO CABLE BARRIER END TERMINAL  | TURNBUCKLES AND OTHER CABLE CONNECTION HARDWARE IS FIELD SWAGED PER MANUFACTURER'S RECOMMENDATIONS AND DETAILS.                                                                                                     |
|             |                 |                                                 | SEE MANUFACTURER'S INFORMATION ON DIMENSIONS AND MATERIAL REQUIREMENTS.                                                                                                                                             |
| B2          | VARIES          | CONCRETE FOR CABLE BARRIER END TERMINAL         | A, A-FA.A-T, OR A-IP OF STANDARD SPECIFICATION 501.2.                                                                                                                                                               |
|             |                 |                                                 | STANDARD SPECIFICATION 716 OMP FOR CLASS II ANCILLARY CONCRETE.                                                                                                                                                     |
| B3          | VARIES          | EPOXY COATED STEEL REINFORCEMENT                | SEE MANUFACTURER'S INFORMATION ON DIMENSIONS.                                                                                                                                                                       |
|             |                 |                                                 | STANDARD SPECIFICATION 505.                                                                                                                                                                                         |
| C1          | VARIES          | LINE POST DELINEATOR                            | REFLECTIVE SHEETING TYPE SH.                                                                                                                                                                                        |
|             |                 |                                                 | SEE APPROVE PRODUCT LIST YELLOW.                                                                                                                                                                                    |
| C2          | VARIES          | CABLE BARRIER END TERMINAL DELINEATOR           | REFLECTIVE SHEETING TYPE SH.                                                                                                                                                                                        |
|             |                 |                                                 | SEE APPROVE PRODUCT LIST OBJECT MARKER TYPE 3 PATTERN.                                                                                                                                                              |

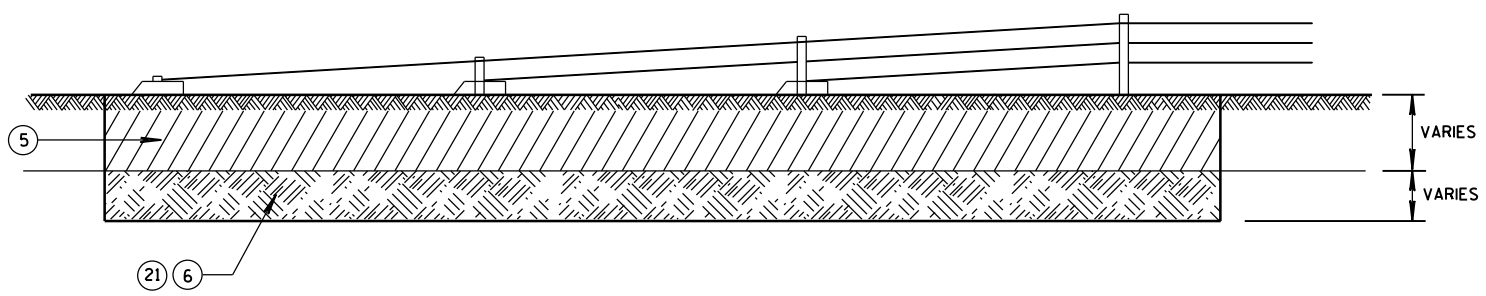
- 1 LOCATION OF LENGTH OF NEED POINT FOR CABLE BARRIER END TERMINAL VARIES. (SEE MANUFACTURER'S INFORMATION)
- 2 PAY LIMIT FOR CABLE BARRIER END TERMINAL. LENGTH OF CABLE BARRIER END TERMINAL VARIES. (SEE MANUFACTURER'S INFORMATION)
- 3 CABLE BARRIER END TERMINAL
- 4 CABLE BARRIER AND LINE POSTS

CABLE BARRIER TYPE 1  
LAYOUT

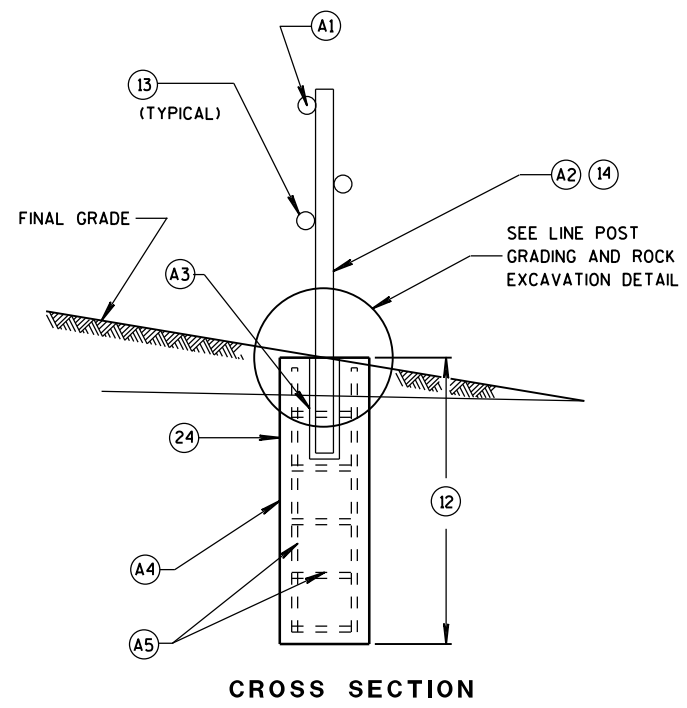
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



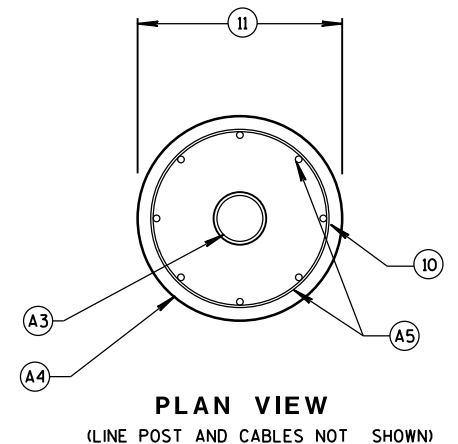
PROFILE VIEW  
LINE POST INSTALLATION



CABLE BARRIER END  
TERMINAL ROCK EXCAVATION DETAIL



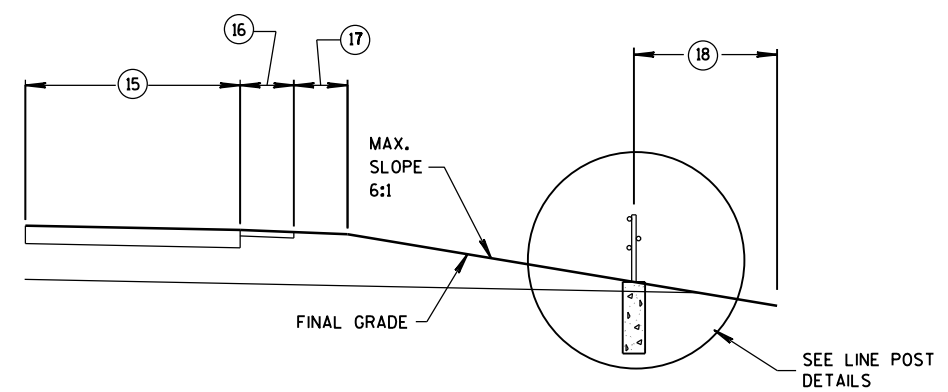
CROSS SECTION



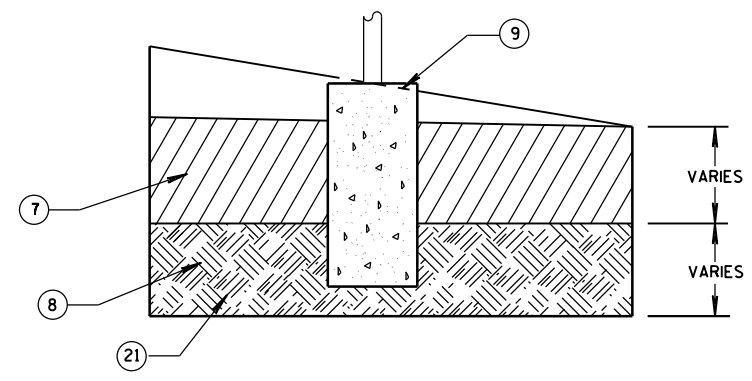
PLAN VIEW  
(LINE POST AND CABLES NOT SHOWN)

LINE POST DETAILS

- (5) SOIL TO BE EXCAVATED FOR CABLE BARRIER END TERMINAL (VARIES).
- (6) ROCK TO BE EXCAVATED FOR CABLE BARRIER END TERMINAL (VARIES).
- (7) SOIL TO BE EXCAVATED FOR LINE POST (VARIES).
- (8) ROCK TO BE EXCAVATED FOR LINE POST (VARIES).
- (9) EXCAVATE AND GRADE LINE FOR LINE POST FOOTINGS. INSTALL LINE POST FOOTING TO MINIMIZE 4 INCH TALL OBJECT ON 5' FOOT CHORD.
- (10) 2 INCHES OF CLEAR COVER FROM EDGE OF CONCRETE TO REINFORCEMENT.
- (11) DIAMETER OF LINE POST FOOTING VARIES. SEE MANUFACTURER'S INFORMATION.
- (12) MINIMUM DEPTH OF LINE POST FOOTING IS 48 INCHES IN SOIL. DEEPER FOOTINGS PER MANUFACTURER'S RECOMMENDATION ARE ACCEPTABLE.
- (13) NUMBER AND LOCATION OF CABLES VARY. SEE MANUFACTURER'S INFORMATION.
- (14) LINE POST DIMENSIONS AND CONNECTION HARDWARE VARY. SEE MANUFACTURER'S INFORMATION.
- (15) LANE OF ROADWAY (VARIES). SEE PLAN FOR MORE INFORMATION.
- (16) PAVED SHOULDER (VARIES). SEE PLAN FOR MORE INFORMATION.
- (17) GRAVEL SHOULDER (VARIES). SEE PLAN FOR MORE INFORMATION.
- (18) CABLE BARRIER OFFSET FROM CENTERLINE OF MEDIAN DITCH (8 FOOT MINIMUM). SEE PLAN FOR MORE INFORMATION.
- (19) MAXIMUM POST SPACING IS 15 FEET.
- (20) STAGGER TURNBUCKLES (TYPICAL).
- (21) SEE MANUFACTURER'S DESIGN WHEN ROCK IS ENCOUNTERED.
- (22) IN SOIL MINIMUM DEPTH OF CABLE BARRIER END TERMINAL FOOTING IS 60 INCHES. DEEPER FOOTINGS PER MANUFACTURER'S RECOMMENDATION ARE ACCEPTABLE.
- (23) LINE POST DELINEATOR SPACING IS 100 FEET.
- (24) LINE POST FOOTINGS ARE REQUIRED TO HAVE LESS THAN 1 INCH OF MOVEMENT WHEN LINE POST IS IMPACTED BY A NCHRP 350 SMALL CAR UNDER TL-3 TEST CONDITIONS.



CABLE BARRIER OFFSET FROM DITCH LINE



LINE POST GRADING  
AND ROCK EXCAVATION DETAIL

|                                                    |                                                                |
|----------------------------------------------------|----------------------------------------------------------------|
| CABLE BARRIER TYPE 1<br>LAYOUT                     |                                                                |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                                                                |
| APPROVED<br>June, 2015<br>DATE                     | /S/ Jerry H. Zogg<br>ROADWAY STANDARDS DEVELOPMENT<br>ENGINEER |
| FHWA                                               |                                                                |

LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMENENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLASHING ARROW BOARD
- TYPE "A" WARNING LIGHT (FLASHING)
- REMOVING PAVEMENT MARKING
- DIRECTION OF TRAFFIC
- WORK AREA

GENERAL NOTES

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

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET, (500 FEET DESIREABLE) DISTANCE TO EXISTING SIGNS.

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

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

"W0" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER. NO WARNING LIGHTS SHALL BE WORKING ON "COVERED" OR "DOWNED" SIGNS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS FOR A MINIMUM 1500 FEET IN FRONT OF DRUMS.

FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

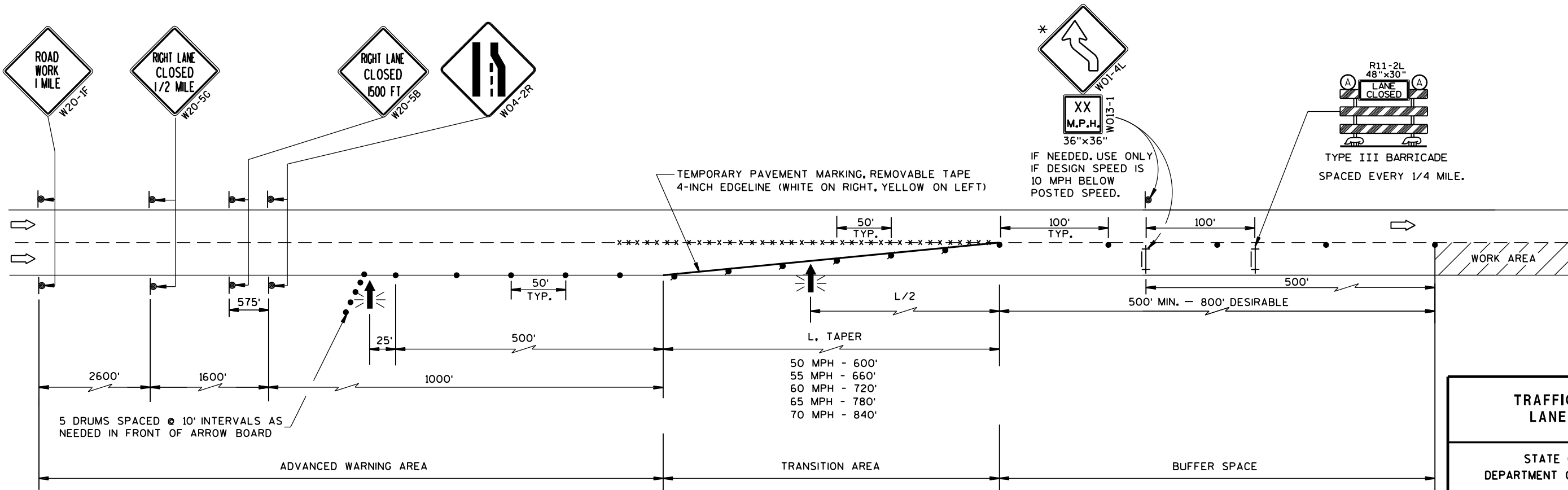
REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR LONGER THAN 4 OR MORE DAYS AND NIGHTS.

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

IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP. THE LANE CLOSURE MUST MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE 1/2 THE LENGTH OF THE TRANSITION AREA. THE ENTRANCE RAMP SHOULD BE FOLLOWED BY THE ORIGINAL BUFFER SPACE LENGTH OF 800 FEET DESIRABLE PRIOR TO ANOTHER TRAFFIC CONTROL CHANGE SUCH AS A CROSSOVER MANEUVER.

\* THE LEFT REVERSE CURVE SIGN (W01-4L) IS ONLY REQUIRED WHEN THIS DETAIL IS USED IN COMBINATION WITH "SINGLE LANE CROSSOVER" DETAIL.



|                                                    |                                                                           |
|----------------------------------------------------|---------------------------------------------------------------------------|
| TRAFFIC CONTROL,<br>LANE CLOSURE                   |                                                                           |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                                                                           |
| APPROVED<br>March 2016<br>DATE                     | /S/ Peter Amakobe Atepe<br>STATEWIDE WORK ZONE TRAFFIC<br>SAFETY ENGINEER |
| FHWA                                               |                                                                           |

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.

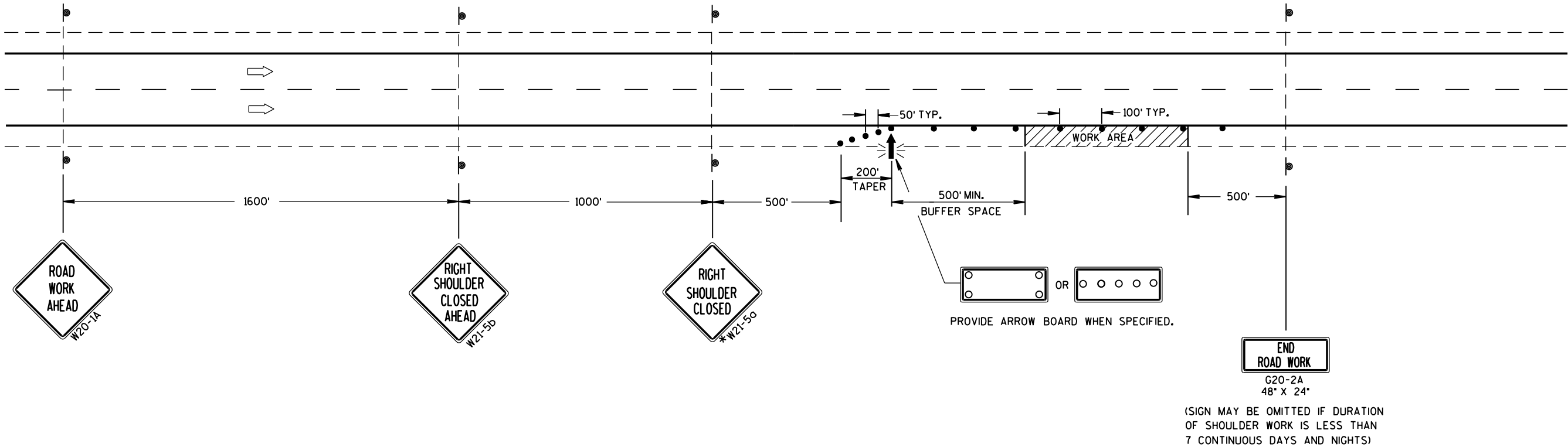
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

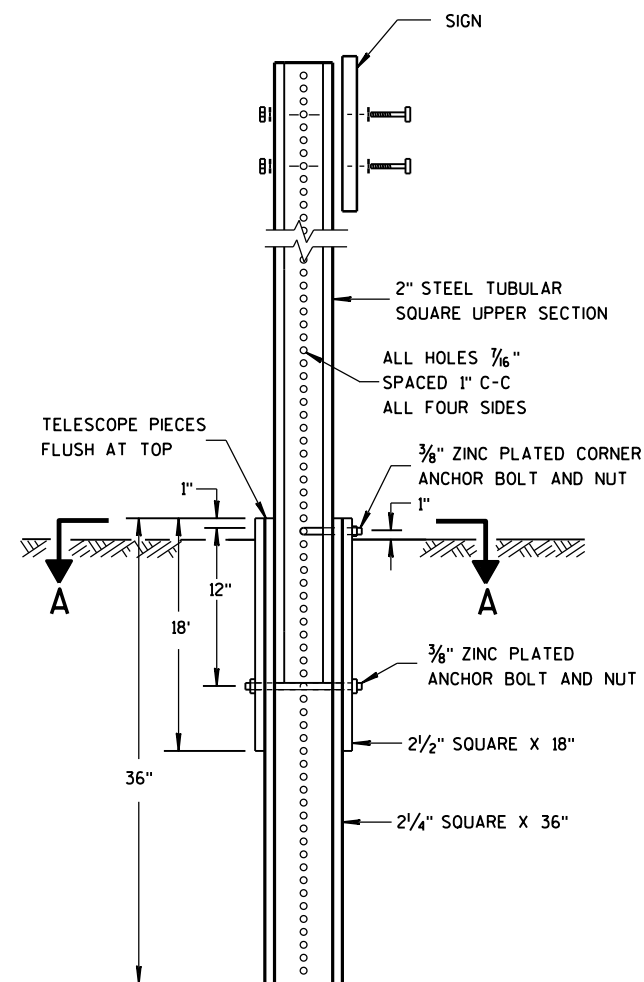
\*FOR SHORT DURATION SHOULDER WORK OF LESS THAN ONE HOUR, THE W21-5a SIGN MAY BE OMITTED.



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

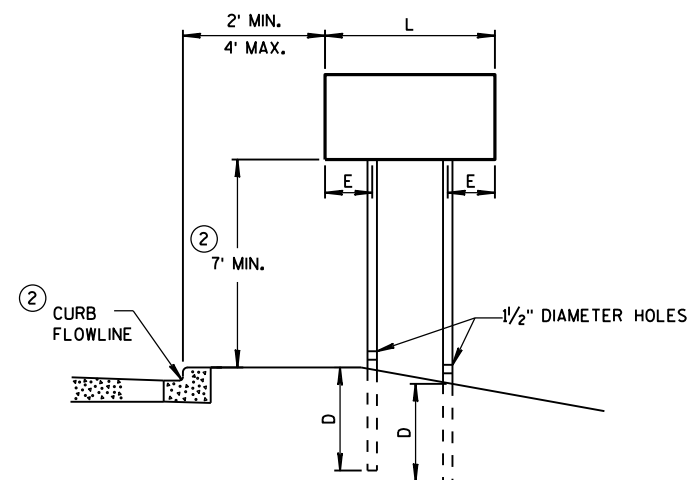
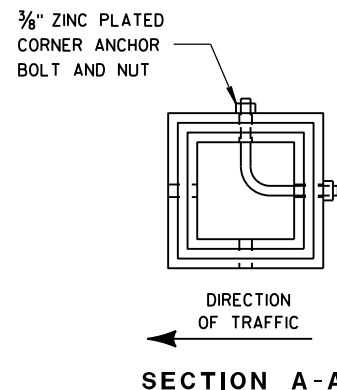


DETAIL OF TUBULAR  
STEEL SIGN POST

TUBULAR STEEL POSTS

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

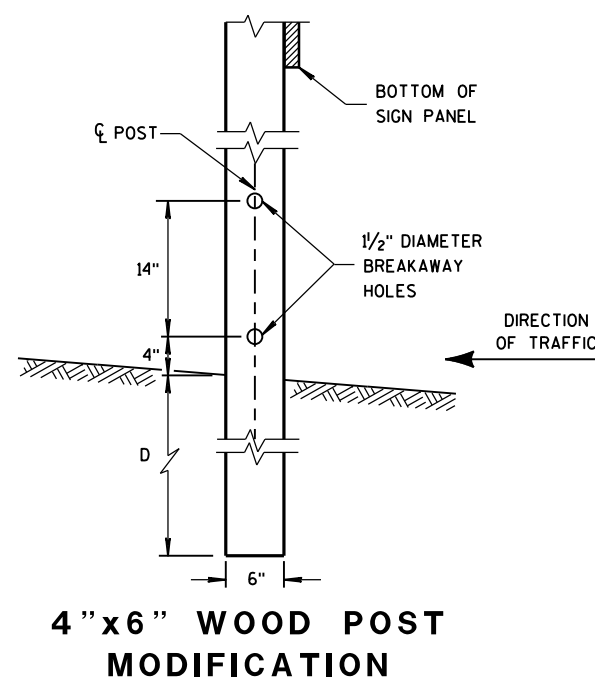
SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL  
BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).  
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED  
ON TUBULAR STEEL POSTS.



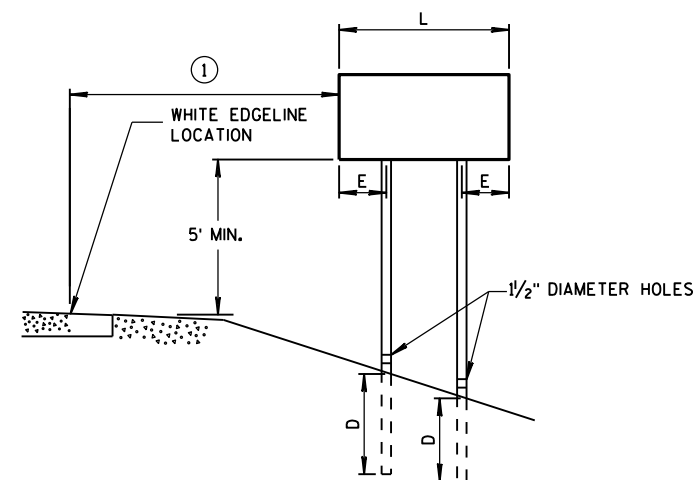
URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

| WOOD POST<br>EMBEDMENT DEPTH              |            |
|-------------------------------------------|------------|
| AREA OF SIGN<br>INSTALLATION<br>(SQ. FT.) | D<br>(MIN) |
| 20 OR LESS                                | 4'         |
| GREATER THAN 20                           | 5'         |



4 "x6 " WOOD POST  
MODIFICATION



RURAL AREA

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

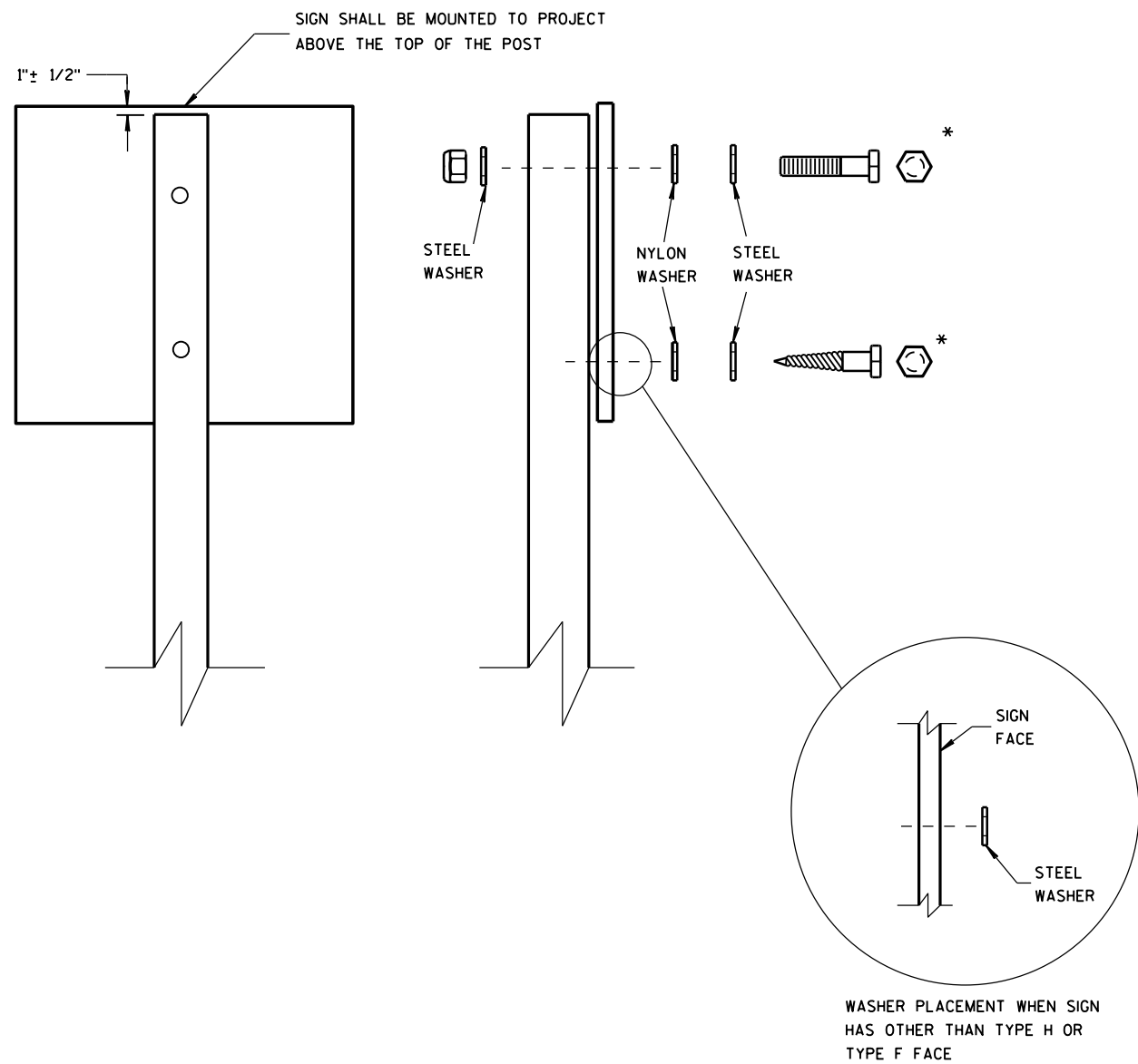
SEE NOTE ③

GENERAL NOTES

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

TEMPORARY TRAFFIC CONTROL  
SIGN MOUNTING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



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

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

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

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

- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS
  - RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

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

\* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

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

| STATION  | AREA (SF) |                                        |        | Incremental Vol (CY) (Unadjusted) |                                        |        | Cumulative Vol (CY) |                          |               |
|----------|-----------|----------------------------------------|--------|-----------------------------------|----------------------------------------|--------|---------------------|--------------------------|---------------|
|          | Cut       | Salvaged/Unusable<br>Pavement Material | Fill   | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill   | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|          |           |                                        |        |                                   |                                        |        |                     |                          |               |
|          |           |                                        |        |                                   |                                        |        |                     |                          |               |
|          | Note 1    | Note 2                                 | Note 3 | Note 1                            | Note 2                                 | Note 3 | Note 1              | Note 8                   |               |
| 402+00   | 0.00      | 0.00                                   | 7.07   | 0                                 | 0                                      | 0      | 0                   | 0                        | 0             |
| 403+00   | 0.00      | 0.00                                   | 8.67   | 0                                 | 0                                      | 29     | 0                   | 36                       | -36           |
| 404+00   | 0.00      | 0.00                                   | 9.67   | 0                                 | 0                                      | 34     | 0                   | 79                       | -79           |
| 405+00   | 0.00      | 0.00                                   | 11.92  | 0                                 | 0                                      | 40     | 0                   | 129                      | -129          |
| 406+00   | 0.00      | 0.00                                   | 17.32  | 0                                 | 0                                      | 54     | 0                   | 197                      | -197          |
| 407+00   | 0.00      | 0.00                                   | 10.46  | 0                                 | 0                                      | 51     | 0                   | 261                      | -261          |
| 408+00   | 0.01      | 0.00                                   | 16.04  | 0                                 | 0                                      | 49     | 0                   | 322                      | -322          |
| 409+00   | 0.00      | 0.00                                   | 19.37  | 0                                 | 0                                      | 66     | 0                   | 404                      | -404          |
| 410+00   | 0.00      | 0.00                                   | 20.59  | 0                                 | 0                                      | 74     | 0                   | 497                      | -497          |
| 411+00   | 0.00      | 0.00                                   | 11.49  | 0                                 | 0                                      | 59     | 0                   | 571                      | -571          |
| 412+00   | 0.00      | 0.00                                   | 19.50  | 0                                 | 0                                      | 57     | 0                   | 643                      | -643          |
| 413+00   | 0.00      | 0.00                                   | 20.74  | 0                                 | 0                                      | 75     | 0                   | 736                      | -736          |
| 414+00   | 0.00      | 0.00                                   | 17.37  | 0                                 | 0                                      | 71     | 0                   | 824                      | -824          |
| 415+00   | 0.00      | 0.00                                   | 14.35  | 0                                 | 0                                      | 59     | 0                   | 897                      | -897          |
| 416+00   | 0.00      | 0.00                                   | 13.20  | 0                                 | 0                                      | 51     | 0                   | 961                      | -961          |
| 417+00   | 0.01      | 0.00                                   | 16.27  | 0                                 | 0                                      | 55     | 0                   | 1,029                    | -1,029        |
| 418+00   | 0.00      | 0.00                                   | 12.75  | 0                                 | 0                                      | 54     | 0                   | 1,097                    | -1,096        |
| 419+00   | 0.01      | 0.00                                   | 9.85   | 0                                 | 0                                      | 42     | 0                   | 1,149                    | -1,149        |
| 419+58.2 | 0.00      | 0.00                                   | 26.28  | 0                                 | 0                                      | 39     | 0                   | 1,198                    | -1,197        |

| STATION   | AREA (SF) |                                        |        | Incremental Vol (CY) (Unadjusted) |                                        |        | Cumulative Vol (CY) |                          |               |
|-----------|-----------|----------------------------------------|--------|-----------------------------------|----------------------------------------|--------|---------------------|--------------------------|---------------|
|           | Cut       | Salvaged/Unusable<br>Pavement Material | Fill   | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill   | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|           |           |                                        |        |                                   |                                        |        |                     |                          |               |
|           |           |                                        |        |                                   |                                        |        |                     |                          |               |
|           | Note 1    | Note 2                                 | Note 3 | Note 1                            | Note 2                                 | Note 3 | Note 1              | Note 8                   |               |
| 423+00    | 0.00      | 0.00                                   | 7.62   | 0                                 | 0                                      | 0      | 0                   | 0                        | 0             |
| 424+00    | 0.00      | 0.00                                   | 19.41  | 0                                 | 0                                      | 50     | 0                   | 63                       | -63           |
| 425+00    | 0.00      | 0.00                                   | 17.87  | 0                                 | 0                                      | 69     | 0                   | 149                      | -149          |
| 426+00    | 0.00      | 0.00                                   | 15.86  | 0                                 | 0                                      | 62     | 0                   | 227                      | -227          |
| 427+00    | 0.00      | 0.00                                   | 16.94  | 0                                 | 0                                      | 61     | 0                   | 303                      | -303          |
| 428+00    | 0.00      | 0.00                                   | 22.35  | 0                                 | 0                                      | 73     | 0                   | 394                      | -394          |
| 428+60.7  | 0.00      | 0.00                                   | 26.22  | 0                                 | 0                                      | 55     | 0                   | 462                      | -462          |
| 429+00    | 0.00      | 0.00                                   | 20.44  | 0                                 | 0                                      | 34     | 0                   | 504                      | -504          |
| 430+00    | 0.00      | 0.00                                   | 26.72  | 0                                 | 0                                      | 87     | 0                   | 614                      | -614          |
| 431+00    | 0.00      | 0.00                                   | 25.45  | 0                                 | 0                                      | 97     | 0                   | 734                      | -734          |
| 432+00    | 0.00      | 0.00                                   | 20.86  | 0                                 | 0                                      | 86     | 0                   | 842                      | -842          |
| 433+00    | 0.00      | 0.00                                   | 17.06  | 0                                 | 0                                      | 70     | 0                   | 929                      | -929          |
| 433+09.56 | 0.00      | 0.00                                   | 24.08  | 0                                 | 0                                      | 7      | 0                   | 939                      | -939          |
| 434+00    | 0.00      | 0.00                                   | 23.27  | 0                                 | 0                                      | 79     | 0                   | 1,038                    | -1,038        |
| 435+00    | 0.00      | 0.00                                   | 31.50  | 0                                 | 0                                      | 101    | 0                   | 1,164                    | -1,164        |
| 436+00    | 0.00      | 0.00                                   | 17.98  | 0                                 | 0                                      | 92     | 0                   | 1,279                    | -1,279        |
| 437+00    | 0.00      | 0.00                                   | 6.89   | 0                                 | 0                                      | 46     | 0                   | 1,337                    | -1,337        |
| 438+00    | 0.00      | 0.00                                   | 6.23   | 0                                 | 0                                      | 24     | 0                   | 1,367                    | -1,367        |

| STATION | AREA (SF) |                                        |       | Incremental Vol (CY) (Unadjusted) |                                        |      | Cumulative Vol (CY) |                          |               |
|---------|-----------|----------------------------------------|-------|-----------------------------------|----------------------------------------|------|---------------------|--------------------------|---------------|
|         | Cut       | Salvaged/Unusable<br>Pavement Material | Fill  | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|         |           |                                        |       |                                   |                                        |      |                     |                          |               |
|         |           |                                        |       |                                   |                                        |      |                     |                          |               |
| 445+50  | 0.19      | 0.00                                   | 5.09  | 0                                 | 0                                      | 0    | 0                   | 0                        | 0             |
| 446+00  | 0.00      | 0.00                                   | 9.63  | 0                                 | 0                                      | 14   | 0                   | 17                       | -17           |
| 447+00  | 0.00      | 0.00                                   | 13.48 | 0                                 | 0                                      | 43   | 0                   | 71                       | -70           |
| 448+00  | 0.00      | 0.00                                   | 15.39 | 0                                 | 0                                      | 53   | 0                   | 137                      | -137          |
| 449+00  | 0.00      | 0.00                                   | 24.78 | 0                                 | 0                                      | 74   | 0                   | 230                      | -230          |
| 450+00  | 0.00      | 0.00                                   | 19.43 | 0                                 | 0                                      | 82   | 0                   | 333                      | -333          |
| 451+00  | 0.01      | 0.00                                   | 7.09  | 0                                 | 0                                      | 49   | 0                   | 394                      | -394          |

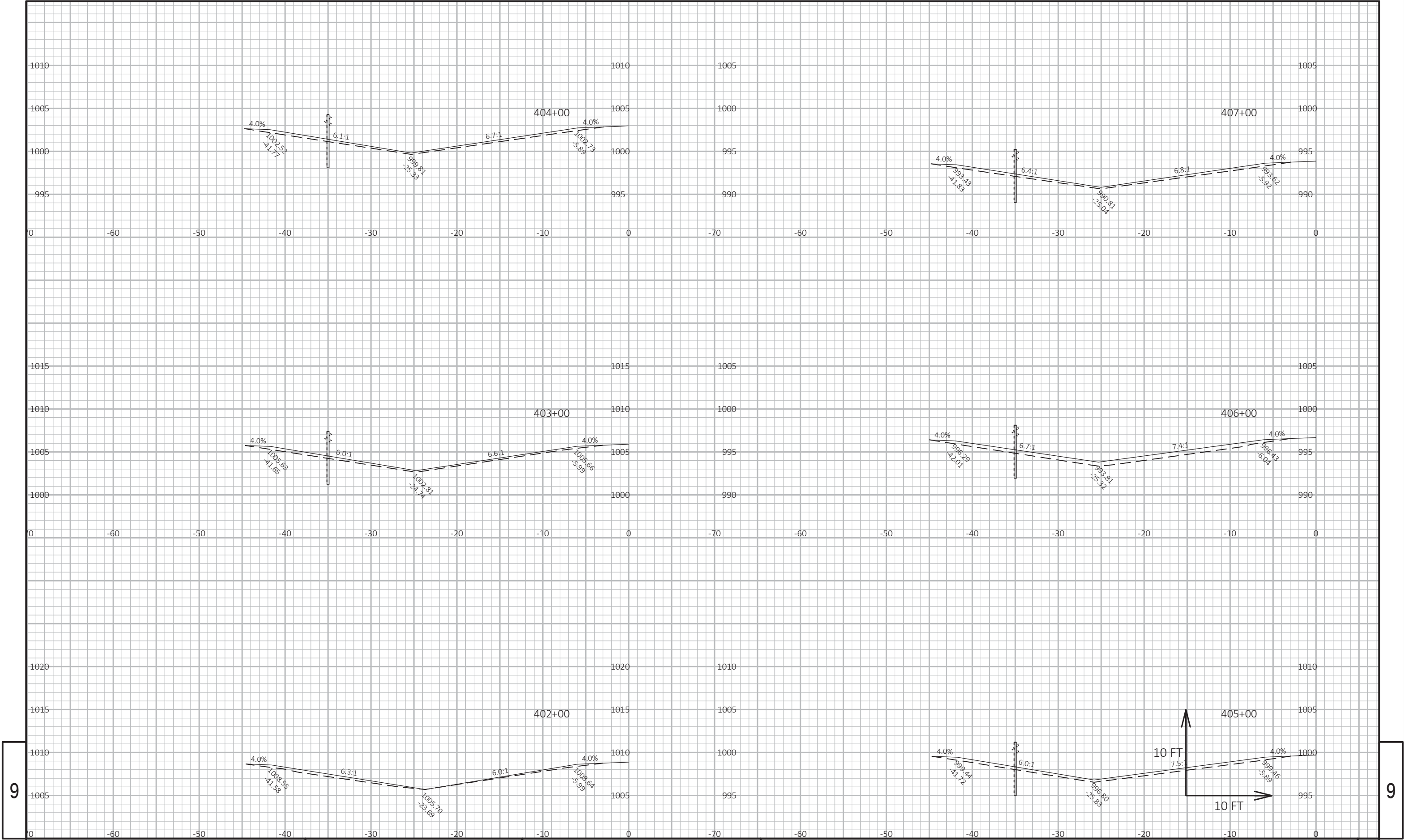
| STATION | AREA (SF) |                                        |       | Incremental Vol (CY) (Unadjusted) |                                        |      | Cumulative Vol (CY) |                          |               |
|---------|-----------|----------------------------------------|-------|-----------------------------------|----------------------------------------|------|---------------------|--------------------------|---------------|
|         | Cut       | Salvaged/Unusable<br>Pavement Material | Fill  | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|         |           |                                        |       |                                   |                                        |      |                     |                          |               |
|         |           |                                        |       |                                   |                                        |      |                     |                          |               |
| 458+00  | 0.00      | 0.00                                   | 7.74  | 0                                 | 0                                      | 0    | 0                   | 0                        | 0             |
| 459+00  | 0.00      | 0.00                                   | 13.49 | 0                                 | 0                                      | 39   | 0                   | 49                       | -49           |
| 460+00  | 0.00      | 0.00                                   | 19.29 | 0                                 | 0                                      | 61   | 0                   | 125                      | -125          |
| 461+00  | 0.00      | 0.00                                   | 20.69 | 0                                 | 0                                      | 74   | 0                   | 218                      | -218          |
| 462+00  | 0.00      | 0.00                                   | 29.64 | 0                                 | 0                                      | 93   | 0                   | 334                      | -334          |
| 463+00  | 0.00      | 0.00                                   | 13.84 | 0                                 | 0                                      | 81   | 0                   | 435                      | -435          |
| 464+00  | 0.00      | 0.00                                   | 11.94 | 0                                 | 0                                      | 48   | 0                   | 494                      | -494          |
| 465+00  | 0.01      | 0.00                                   | 8.61  | 0                                 | 0                                      | 38   | 0                   | 542                      | -542          |

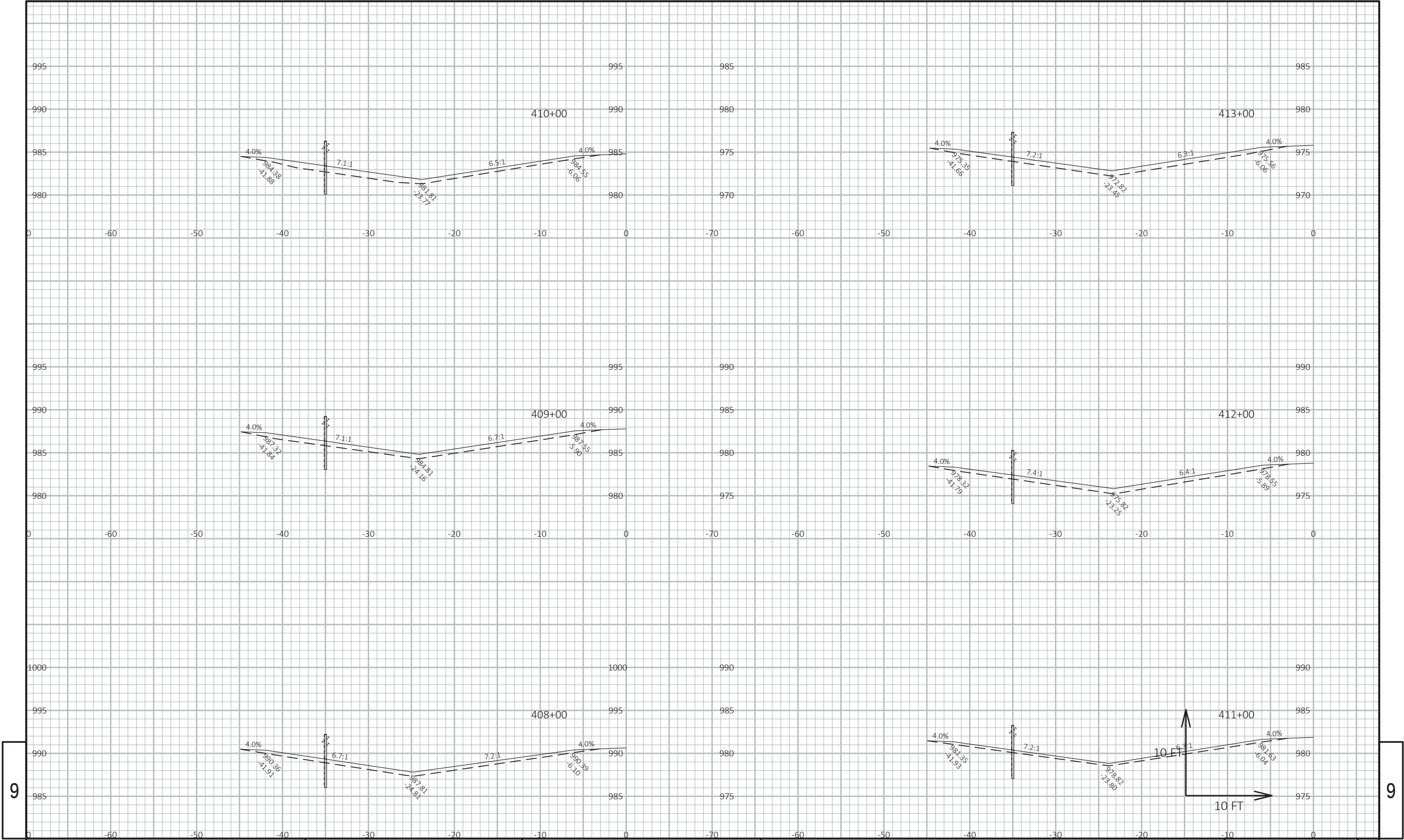
| STATION   | AREA (SF) |                                        |       | Incremental Vol (CY) (Unadjusted) |                                        |        | Cumulative Vol (CY) |                          |               |
|-----------|-----------|----------------------------------------|-------|-----------------------------------|----------------------------------------|--------|---------------------|--------------------------|---------------|
|           | Cut       | Salvaged/Unusable<br>Pavement Material | Fill  | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill   | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|           |           |                                        |       |                                   |                                        |        |                     |                          |               |
|           |           |                                        |       | Note 1                            | Note 2                                 | Note 3 | Note 1              |                          | Note 8        |
| 491+96.84 | 0.12      | 0.00                                   | 28.74 | 0                                 | 0                                      | 0      | 0                   | 0                        | 0             |
| 492+00    | 0.05      | 0.00                                   | 7.44  | 0                                 | 0                                      | 2      | 0                   | 3                        | -3            |
| 492+27.39 | 0.00      | 0.00                                   | 46.50 | 0                                 | 0                                      | 27     | 0                   | 37                       | -37           |
| 493+00    | 0.14      | 0.00                                   | 6.52  | 0                                 | 0                                      | 71     | 0                   | 126                      | -126          |
| 494+00    | 0.18      | 0.00                                   | 11.07 | 0                                 | 0                                      | 33     | 0                   | 167                      | -166          |
| 495+00    | 0.01      | 0.00                                   | 16.29 | 0                                 | 0                                      | 51     | 1                   | 230                      | -229          |
| 496+00    | 0.00      | 0.00                                   | 20.43 | 0                                 | 0                                      | 68     | 1                   | 315                      | -314          |
| 497+00    | 0.02      | 0.00                                   | 12.75 | 0                                 | 0                                      | 61     | 1                   | 392                      | -391          |
| 498+00    | 0.45      | 0.00                                   | 8.46  | 0                                 | 0                                      | 39     | 1                   | 441                      | -440          |
| 499+00    | 0.01      | 0.00                                   | 7.72  | 0                                 | 0                                      | 30     | 1                   | 478                      | -478          |
| 500+00    | 0.00      | 0.00                                   | 16.59 | 0                                 | 0                                      | 45     | 1                   | 535                      | -534          |
| 501+00    | 0.53      | 0.00                                   | 7.67  | 1                                 | 0                                      | 45     | 2                   | 591                      | -589          |
| 502+00    | 1.68      | 0.00                                   | 7.29  | 4                                 | 0                                      | 28     | 6                   | 625                      | -620          |
| 503+00    | 3.32      | 0.00                                   | 8.58  | 9                                 | 0                                      | 29     | 15                  | 662                      | -647          |
| 504+00    | 2.30      | 0.00                                   | 11.90 | 10                                | 0                                      | 38     | 25                  | 710                      | -684          |
| 505+00    | 0.47      | 0.00                                   | 9.16  | 5                                 | 0                                      | 39     | 31                  | 758                      | -728          |
| 506+00    | 7.90      | 0.00                                   | 11.36 | 15                                | 0                                      | 38     | 46                  | 806                      | -760          |
| 507+00    | 12.84     | 0.00                                   | 10.70 | 38                                | 0                                      | 41     | 84                  | 857                      | -773          |
| 507+48.65 | 10.19     | 0.00                                   | 18.57 | 21                                | 0                                      | 26     | 105                 | 890                      | -785          |
| 508+00    | 0.95      | 0.00                                   | 17.22 | 11                                | 0                                      | 34     | 116                 | 932                      | -817          |
| 509+48.63 | 0.41      | 0.00                                   | 56.36 | 4                                 | 0                                      | 203    | 119                 | 1,186                    | -1,066        |
| 510+00    | 1.22      | 0.00                                   | 14.65 | 2                                 | 0                                      | 68     | 121                 | 1,270                    | -1,149        |
| 511+00    | 3.23      | 0.00                                   | 15.25 | 8                                 | 0                                      | 55     | 129                 | 1,339                    | -1,210        |
| 512+00    | 4.74      | 0.00                                   | 9.46  | 15                                | 0                                      | 46     | 144                 | 1,396                    | -1,252        |
| 513+00    | 1.98      | 0.00                                   | 9.78  | 12                                | 0                                      | 36     | 156                 | 1,441                    | -1,285        |
| 514+00    | 4.86      | 0.00                                   | 9.48  | 13                                | 0                                      | 36     | 169                 | 1,486                    | -1,316        |
| 515+00    | 11.63     | 0.00                                   | 8.12  | 31                                | 0                                      | 33     | 200                 | 1,526                    | -1,327        |
| 515+38.07 | 8.19      | 0.00                                   | 17.34 | 14                                | 0                                      | 18     | 214                 | 1,549                    | -1,335        |
| 516+00    | 4.28      | 0.00                                   | 10.07 | 14                                | 0                                      | 31     | 228                 | 1,588                    | -1,360        |
| 517+00    | 0.99      | 0.00                                   | 10.46 | 10                                | 0                                      | 38     | 238                 | 1,636                    | -1,398        |
| 520+00    | 2.93      | 0.00                                   | 14.39 | 22                                | 0                                      | 138    | 259                 | 1,808                    | -1,549        |
| 521+00    | 3.15      | 0.00                                   | 13.10 | 11                                | 0                                      | 51     | 271                 | 1,872                    | -1,601        |
| 522+00    | 3.07      | 0.00                                   | 11.88 | 12                                | 0                                      | 46     | 282                 | 1,930                    | -1,647        |
| 523+00    | 3.48      | 0.00                                   | 8.94  | 12                                | 0                                      | 39     | 294                 | 1,978                    | -1,683        |
| 524+00    | 12.46     | 0.00                                   | 5.33  | 30                                | 0                                      | 26     | 324                 | 2,011                    | -1,687        |
| 524+59.81 | 11.71     | 0.00                                   | 6.50  | 27                                | 0                                      | 13     | 351                 | 2,027                    | -1,676        |

| STATION   | AREA (SF) |                                        |        | Incremental Vol (CY) (Unadjusted) |                                        |        | Cumulative Vol (CY) |                          |               |
|-----------|-----------|----------------------------------------|--------|-----------------------------------|----------------------------------------|--------|---------------------|--------------------------|---------------|
|           | Cut       | Salvaged/Unusable<br>Pavement Material | Fill   | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill   | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|           |           |                                        |        |                                   |                                        |        |                     |                          |               |
|           |           |                                        |        |                                   |                                        |        |                     |                          |               |
|           | Note 1    | Note 2                                 | Note 3 | Note 1                            | Note 2                                 | Note 3 | Note 1              | Note 8                   |               |
| 525+00    | 10.58     | 0.00                                   | 12.20  | 17                                | 0                                      | 14     | 367                 | 2,045                    | -1,677        |
| 526+00    | 7.25      | 0.00                                   | 11.21  | 33                                | 0                                      | 43     | 400                 | 2,099                    | -1,698        |
| 527+00    | 2.71      | 0.00                                   | 8.58   | 18                                | 0                                      | 37     | 419                 | 2,145                    | -1,726        |
| 528+00    | 1.99      | 0.00                                   | 4.41   | 9                                 | 0                                      | 24     | 427                 | 2,175                    | -1,747        |
| 529+00    | 1.31      | 0.00                                   | 7.23   | 6                                 | 0                                      | 22     | 434                 | 2,202                    | -1,768        |
| 530+00    | 0.41      | 0.00                                   | 12.79  | 3                                 | 0                                      | 37     | 437                 | 2,248                    | -1,811        |
| 531+00    | 0.00      | 0.00                                   | 11.62  | 1                                 | 0                                      | 45     | 438                 | 2,304                    | -1,867        |
| 532+00    | 0.14      | 0.00                                   | 5.74   | 0                                 | 0                                      | 32     | 438                 | 2,345                    | -1,907        |
| 533+00    | 0.00      | 0.00                                   | 4.75   | 0                                 | 0                                      | 19     | 438                 | 2,369                    | -1,931        |
| 534+00    | 0.00      | 0.00                                   | 22.96  | 0                                 | 0                                      | 51     | 438                 | 2,433                    | -1,995        |
| 534+26.44 | 0.06      | 0.00                                   | 8.69   | 0                                 | 0                                      | 15     | 438                 | 2,452                    | -2,014        |
| 534+37.32 | 0.07      | 0.00                                   | 50.15  | 0                                 | 0                                      | 12     | 438                 | 2,467                    | -2,029        |
| 535+00    | 0.00      | 0.00                                   | 18.82  | 0                                 | 0                                      | 80     | 438                 | 2,567                    | -2,129        |
| 535+18.98 | 0.00      | 0.00                                   | 17.53  | 0                                 | 0                                      | 13     | 438                 | 2,583                    | -2,145        |
| 536+00    | 3.48      | 0.00                                   | 3.88   | 5                                 | 0                                      | 32     | 443                 | 2,623                    | -2,180        |
| 537+00    | 2.08      | 0.00                                   | 13.22  | 10                                | 0                                      | 32     | 454                 | 2,663                    | -2,209        |
| 538+00    | 3.00      | 0.00                                   | 12.75  | 9                                 | 0                                      | 48     | 463                 | 2,723                    | -2,260        |
| 539+00    | 4.48      | 0.00                                   | 9.49   | 14                                | 0                                      | 41     | 477                 | 2,775                    | -2,298        |
| 540+00    | 4.42      | 0.00                                   | 11.57  | 16                                | 0                                      | 39     | 493                 | 2,823                    | -2,330        |
| 541+00    | 2.68      | 0.00                                   | 16.34  | 13                                | 0                                      | 52     | 507                 | 2,888                    | -2,381        |
| 542+00    | 5.59      | 0.00                                   | 11.16  | 15                                | 0                                      | 51     | 522                 | 2,952                    | -2,430        |
| 543+00    | 3.73      | 0.00                                   | 10.11  | 17                                | 0                                      | 39     | 539                 | 3,001                    | -2,462        |
| 544+00    | 2.93      | 0.00                                   | 9.77   | 12                                | 0                                      | 37     | 552                 | 3,047                    | -2,495        |
| 545+00    | 3.44      | 0.00                                   | 10.19  | 12                                | 0                                      | 37     | 563                 | 3,093                    | -2,530        |
| 546+00    | 1.15      | 0.00                                   | 12.21  | 8                                 | 0                                      | 41     | 572                 | 3,145                    | -2,573        |
| 547+00    | 1.18      | 0.00                                   | 12.36  | 4                                 | 0                                      | 46     | 576                 | 3,202                    | -2,626        |
| 548+00    | 2.04      | 0.00                                   | 12.18  | 6                                 | 0                                      | 45     | 582                 | 3,259                    | -2,677        |
| 549+00    | 2.68      | 0.00                                   | 7.17   | 9                                 | 0                                      | 36     | 591                 | 3,303                    | -2,713        |
| 550+00    | 3.09      | 0.00                                   | 12.47  | 11                                | 0                                      | 36     | 601                 | 3,349                    | -2,747        |
| 551+00    | 4.70      | 0.00                                   | 10.67  | 14                                | 0                                      | 43     | 616                 | 3,402                    | -2,787        |
| 552+00    | 4.34      | 0.00                                   | 9.73   | 17                                | 0                                      | 38     | 633                 | 3,450                    | -2,817        |
| 553+00    | 4.26      | 0.00                                   | 11.77  | 16                                | 0                                      | 40     | 649                 | 3,499                    | -2,851        |
| 554+00    | 3.90      | 0.00                                   | 13.98  | 15                                | 0                                      | 48     | 664                 | 3,559                    | -2,895        |
| 554+42.01 | 3.77      | 0.00                                   | 19.19  | 6                                 | 0                                      | 26     | 670                 | 3,591                    | -2,922        |
| 555+00    | 2.31      | 0.00                                   | 18.70  | 7                                 | 0                                      | 41     | 676                 | 3,642                    | -2,966        |
| 556+00    | 2.06      | 0.00                                   | 11.72  | 8                                 | 0                                      | 56     | 684                 | 3,713                    | -3,028        |
| 557+00    | 5.09      | 0.00                                   | 11.68  | 13                                | 0                                      | 43     | 698                 | 3,767                    | -3,069        |
| 558+00    | 6.81      | 0.00                                   | 9.17   | 22                                | 0                                      | 39     | 720                 | 3,815                    | -3,095        |
| 559+00    | 6.83      | 0.00                                   | 8.03   | 25                                | 0                                      | 32     | 745                 | 3,855                    | -3,110        |
| 560+00    | 4.88      | 0.00                                   | 14.57  | 22                                | 0                                      | 42     | 767                 | 3,907                    | -3,141        |
| 561+00    | 7.98      | 0.00                                   | 2.06   | 24                                | 0                                      | 31     | 790                 | 3,946                    | -3,155        |

| STATION   | AREA (SF) |                                        |       | Incremental Vol (CY) (Unadjusted) |                                        |        | Cumulative Vol (CY) |                          |               |
|-----------|-----------|----------------------------------------|-------|-----------------------------------|----------------------------------------|--------|---------------------|--------------------------|---------------|
|           | Cut       | Salvaged/Unusable<br>Pavement Material | Fill  | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill   | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|           |           |                                        |       |                                   |                                        |        |                     |                          |               |
|           |           |                                        |       | Note 1                            | Note 2                                 | Note 3 | Note 1              |                          | Note 8        |
| 610+00    | 0.06      | 0.00                                   | 3.91  | 0                                 | 0                                      | 0      | 0                   | 0                        | 0             |
| 611+00    | 1.73      | 0.00                                   | 7.35  | 3                                 | 0                                      | 21     | 3                   | 26                       | -23           |
| 612+00    | 0.78      | 0.00                                   | 3.76  | 5                                 | 0                                      | 21     | 8                   | 52                       | -44           |
| 613+00    | 0.02      | 0.00                                   | 12.37 | 1                                 | 0                                      | 30     | 9                   | 89                       | -80           |
| 614+00    | 0.40      | 0.00                                   | 11.08 | 1                                 | 0                                      | 43     | 10                  | 143                      | -133          |
| 615+00    | 1.46      | 0.00                                   | 12.15 | 3                                 | 0                                      | 43     | 14                  | 197                      | -183          |
| 616+00    | 1.49      | 0.00                                   | 13.25 | 5                                 | 0                                      | 47     | 19                  | 256                      | -237          |
| 617+00    | 2.19      | 0.00                                   | 7.95  | 7                                 | 0                                      | 39     | 26                  | 305                      | -279          |
| 618+00    | 1.86      | 0.00                                   | 4.58  | 7                                 | 0                                      | 23     | 33                  | 334                      | -301          |
| 619+00    | 3.08      | 0.00                                   | 4.72  | 9                                 | 0                                      | 17     | 43                  | 355                      | -313          |
| 619+88.19 | 3.42      | 0.00                                   | 15.71 | 11                                | 0                                      | 33     | 53                  | 397                      | -344          |
| 620+00    | 3.96      | 0.00                                   | 0.32  | 2                                 | 0                                      | 4      | 55                  | 402                      | -347          |
| 621+00    | 2.03      | 0.00                                   | 6.05  | 11                                | 0                                      | 12     | 66                  | 416                      | -350          |
| 622+00    | 3.51      | 0.00                                   | 3.64  | 10                                | 0                                      | 18     | 76                  | 439                      | -363          |
| 623+00    | 2.11      | 0.00                                   | 6.96  | 10                                | 0                                      | 20     | 87                  | 463                      | -377          |
| 624+00    | 3.41      | 0.00                                   | 4.90  | 10                                | 0                                      | 22     | 97                  | 491                      | -394          |
| 625+00    | 0.97      | 0.00                                   | 12.80 | 8                                 | 0                                      | 33     | 105                 | 532                      | -427          |
| 626+00    | 1.35      | 0.00                                   | 7.05  | 4                                 | 0                                      | 37     | 109                 | 578                      | -468          |
| 626+97.22 | 1.31      | 0.00                                   | 18.27 | 5                                 | 0                                      | 46     | 114                 | 635                      | -521          |
| 627+00    | 1.56      | 0.00                                   | 10.57 | 0                                 | 0                                      | 1      | 114                 | 636                      | -522          |
| 628+00    | 0.79      | 0.00                                   | 8.17  | 4                                 | 0                                      | 35     | 119                 | 680                      | -561          |
| 629+00    | 0.32      | 0.00                                   | 18.39 | 2                                 | 0                                      | 49     | 121                 | 741                      | -621          |
| 630+00    | 1.29      | 0.00                                   | 12.24 | 3                                 | 0                                      | 57     | 124                 | 812                      | -689          |
| 630+06.48 | 1.14      | 0.00                                   | 23.17 | 0                                 | 0                                      | 4      | 124                 | 818                      | -694          |
| 631+00    | 0.84      | 0.00                                   | 8.10  | 3                                 | 0                                      | 54     | 127                 | 885                      | -758          |
| 632+00    | 0.02      | 0.00                                   | 11.90 | 2                                 | 0                                      | 37     | 129                 | 932                      | -803          |
| 633+00    | 0.00      | 0.00                                   | 15.05 | 0                                 | 0                                      | 50     | 129                 | 994                      | -865          |

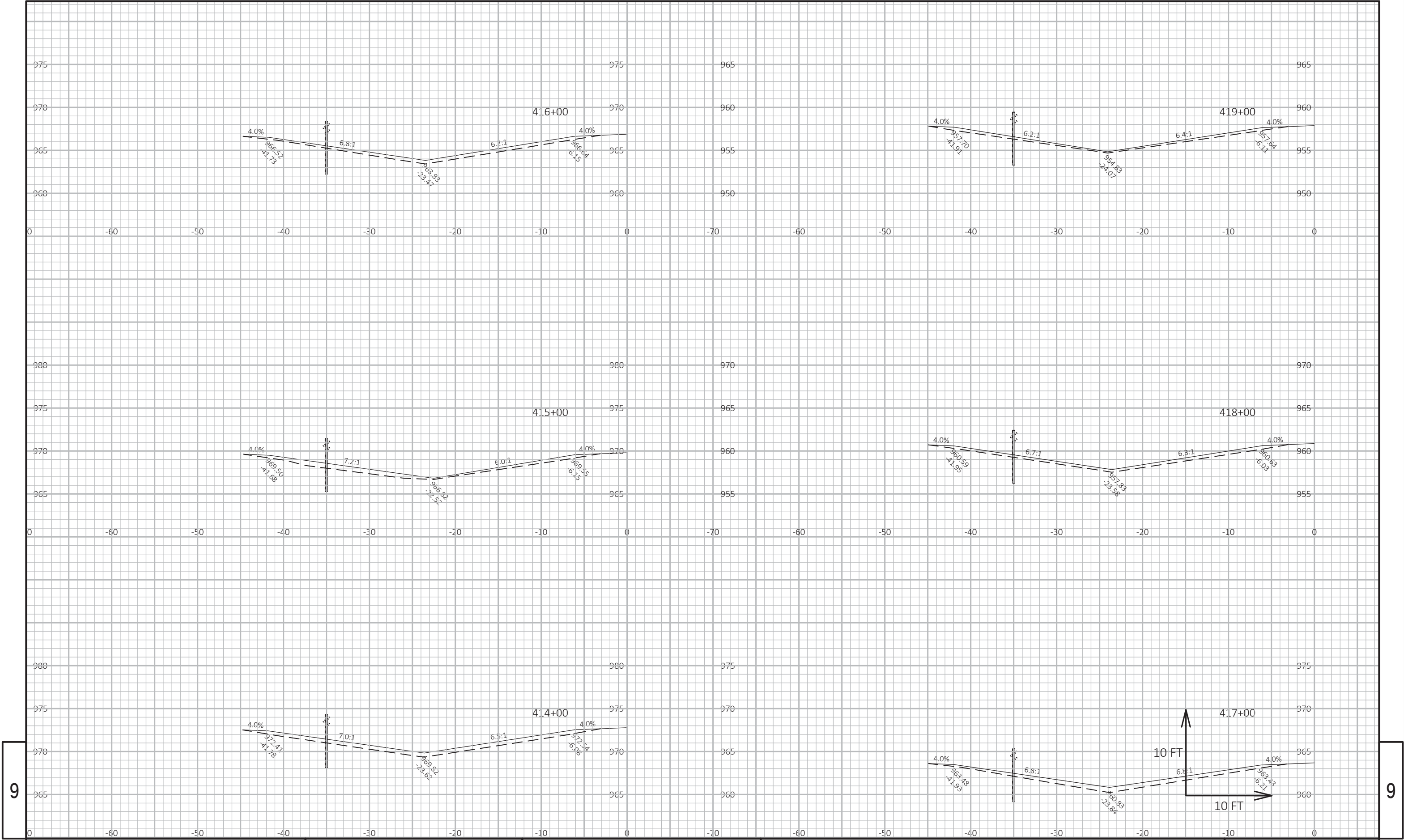
| STATION   | AREA (SF) |                                        |       | Incremental Vol (CY) (Unadjusted) |                                        |        | Cumulative Vol (CY) |                          |               |
|-----------|-----------|----------------------------------------|-------|-----------------------------------|----------------------------------------|--------|---------------------|--------------------------|---------------|
|           | Cut       | Salvaged/Unusable<br>Pavement Material | Fill  | Cut                               | Salvaged/Unusable<br>Pavement Material | Fill   | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|           |           |                                        |       |                                   |                                        |        |                     |                          |               |
|           |           |                                        |       | Note 1                            | Note 2                                 | Note 3 | Note 1              |                          | Note 8        |
| 648+50    | 1.05      | 0.00                                   | 6.32  | 0                                 | 0                                      | 0      | 0                   | 0                        | 0             |
| 649+00    | 3.08      | 0.00                                   | 7.94  | 4                                 | 0                                      | 13     | 4                   | 16                       | -13           |
| 650+00    | 6.65      | 0.00                                   | 12.23 | 18                                | 0                                      | 37     | 22                  | 63                       | -41           |
| 651+00    | 6.54      | 0.00                                   | 11.43 | 24                                | 0                                      | 44     | 46                  | 118                      | -72           |
| 652+00    | 6.81      | 0.00                                   | 8.80  | 25                                | 0                                      | 37     | 71                  | 165                      | -94           |
| 652+64.68 | 7.54      | 0.00                                   | 36.81 | 17                                | 0                                      | 55     | 88                  | 233                      | -145          |
| 653+00    | 7.52      | 0.00                                   | 13.16 | 10                                | 0                                      | 33     | 98                  | 274                      | -176          |
| 654+00    | 6.28      | 0.00                                   | 6.24  | 26                                | 0                                      | 36     | 124                 | 319                      | -195          |
| 655+00    | 2.61      | 0.00                                   | 22.19 | 16                                | 0                                      | 53     | 140                 | 385                      | -245          |
| 656+00    | 3.97      | 0.00                                   | 17.93 | 12                                | 0                                      | 74     | 152                 | 478                      | -325          |
| 657+00    | 10.12     | 0.00                                   | 10.03 | 26                                | 0                                      | 52     | 178                 | 542                      | -364          |
| 657+21.68 | 8.30      | 0.00                                   | 29.68 | 7                                 | 0                                      | 16     | 186                 | 562                      | -376          |
| 658+00    | 4.39      | 0.00                                   | 13.87 | 18                                | 0                                      | 63     | 204                 | 641                      | -437          |
| 659+00    | 5.40      | 0.00                                   | 13.20 | 18                                | 0                                      | 50     | 222                 | 704                      | -482          |
| 660+00    | 5.26      | 0.00                                   | 22.41 | 20                                | 0                                      | 66     | 242                 | 786                      | -544          |
| 661+00    | 6.65      | 0.00                                   | 18.24 | 22                                | 0                                      | 75     | 264                 | 880                      | -616          |
| 662+00    | 7.33      | 0.00                                   | 10.49 | 26                                | 0                                      | 53     | 290                 | 947                      | -657          |
| 663+00    | 8.36      | 0.00                                   | 10.72 | 29                                | 0                                      | 39     | 319                 | 996                      | -677          |
| 664+00    | 7.15      | 0.00                                   | 17.41 | 29                                | 0                                      | 52     | 348                 | 1,061                    | -713          |
| 665+00    | 1.28      | 0.00                                   | 12.15 | 16                                | 0                                      | 55     | 363                 | 1,129                    | -766          |





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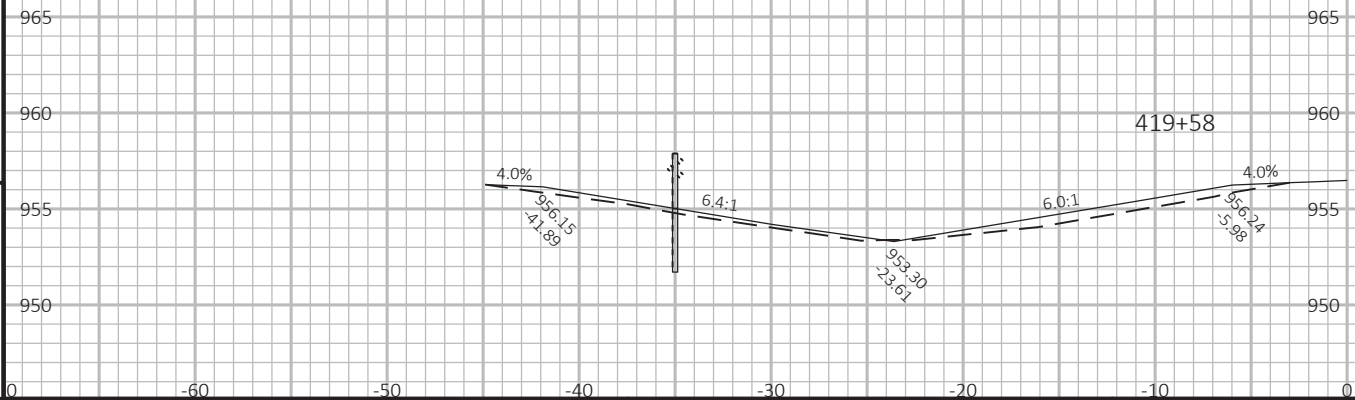
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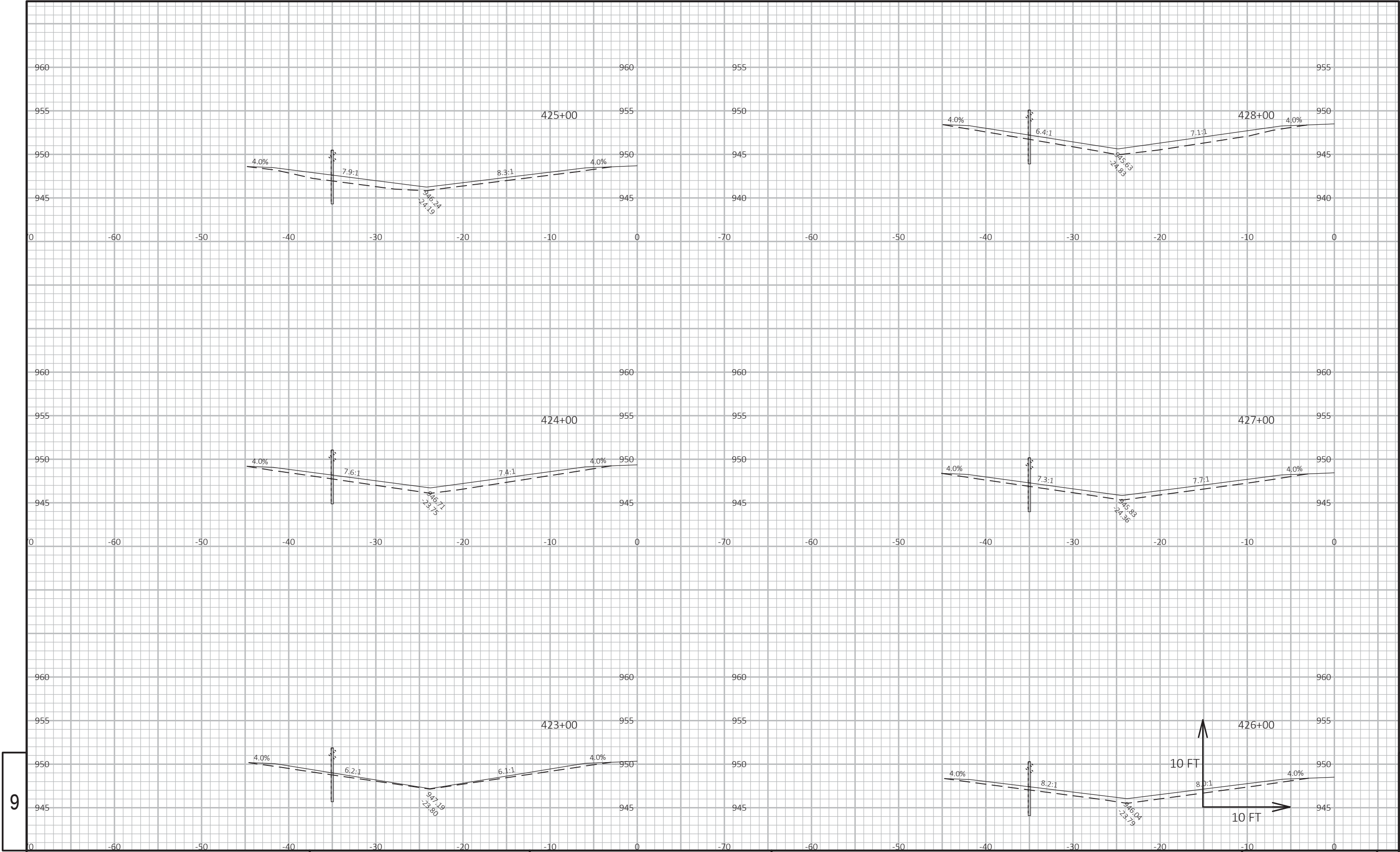
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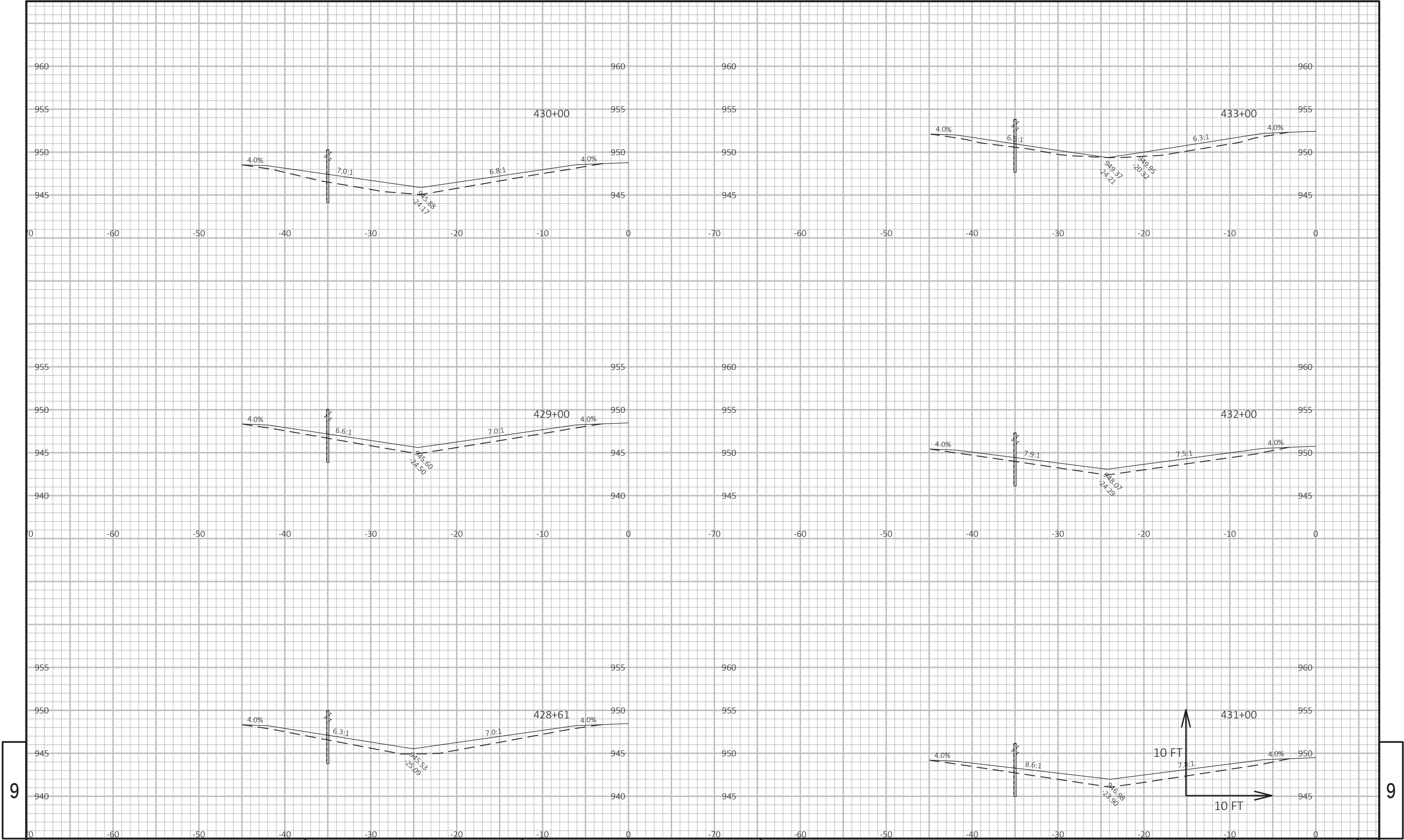
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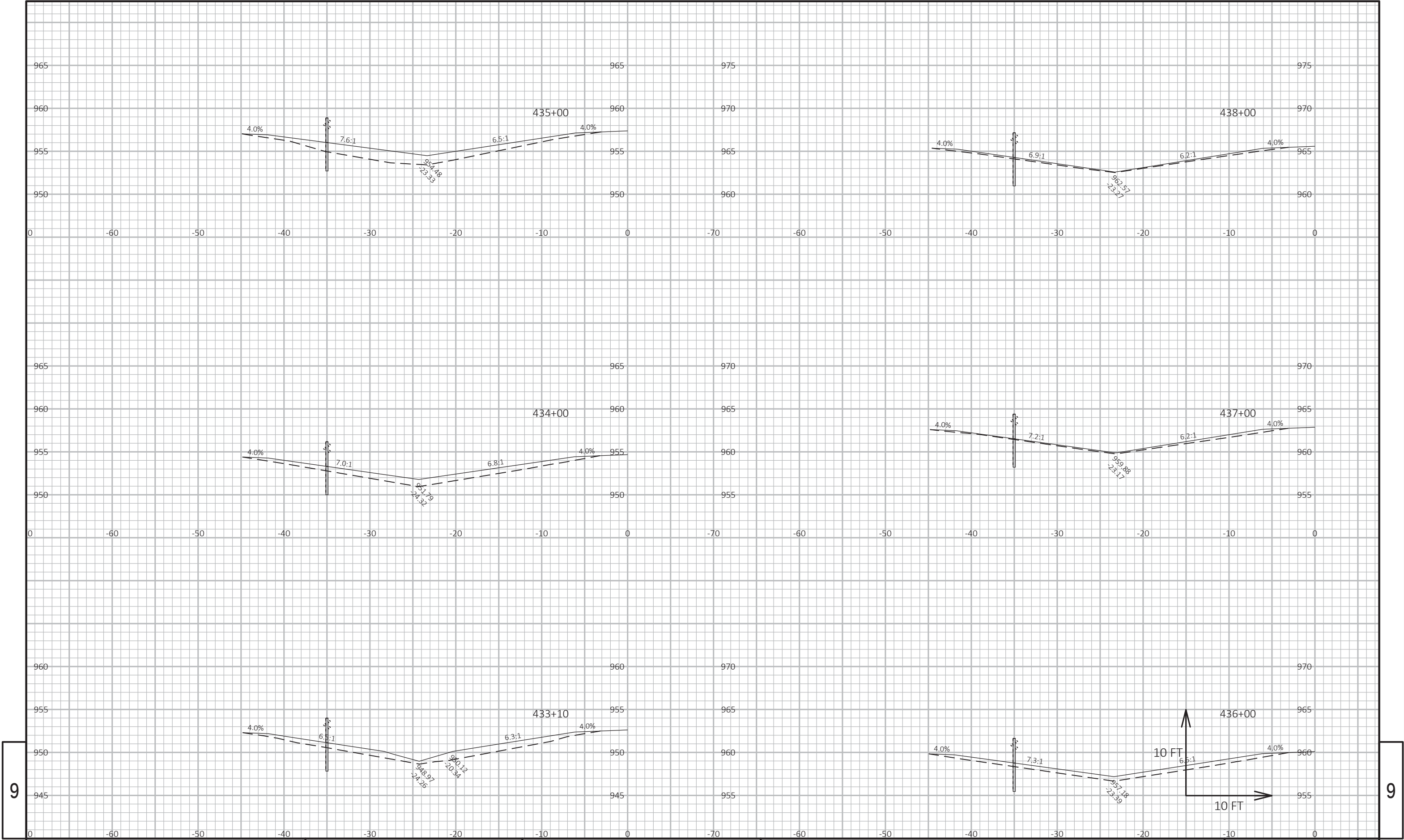
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
|------------------------|-------------|--------------|-----------------|-------|---|

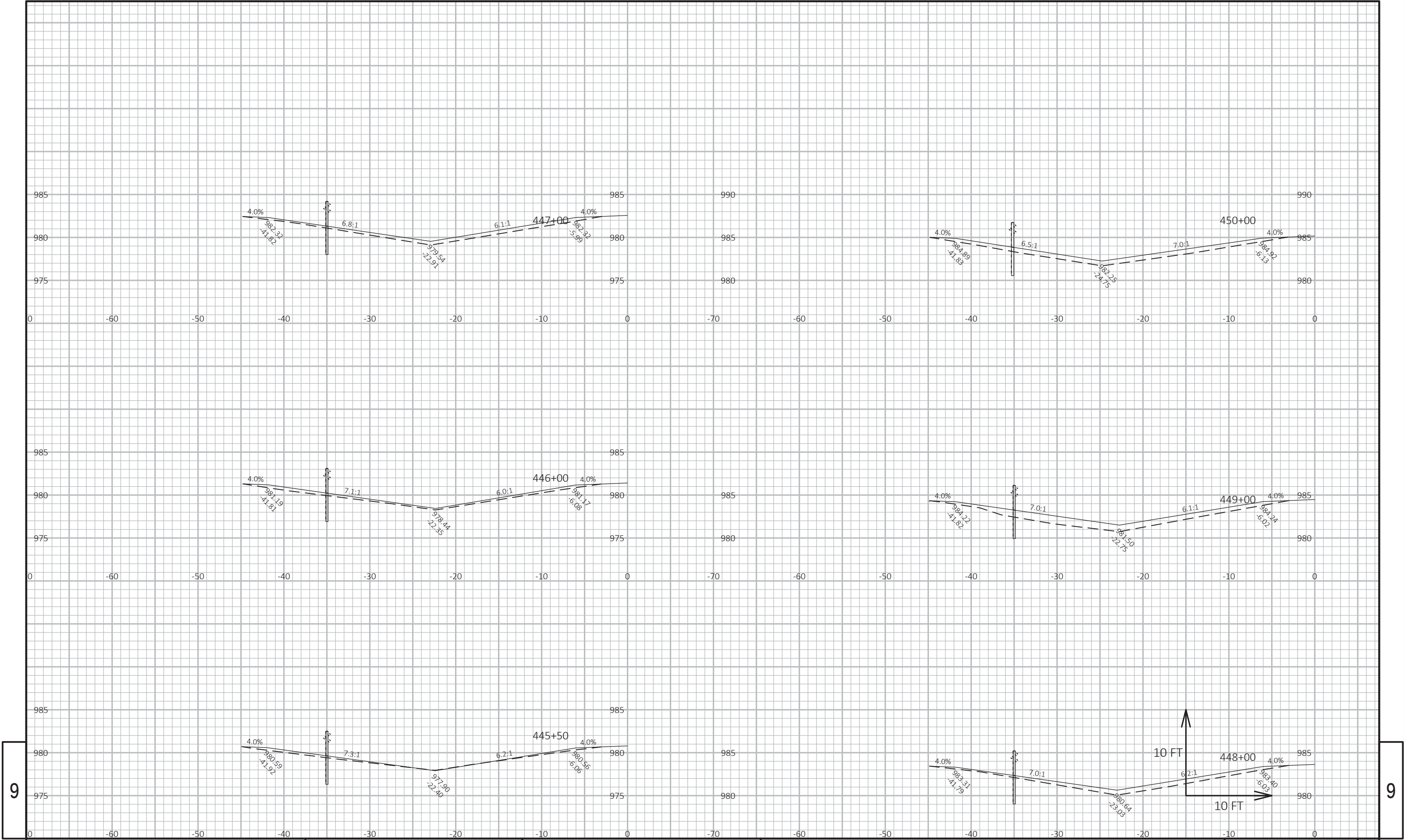


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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
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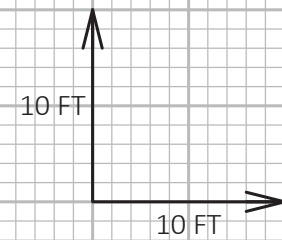
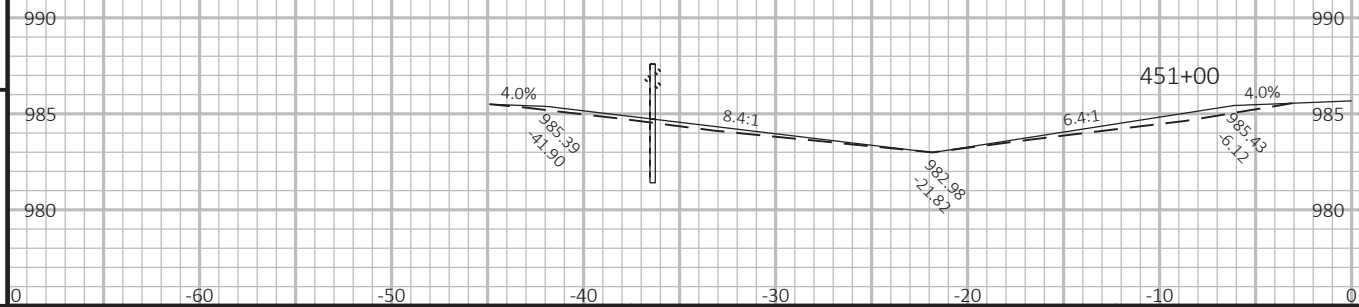




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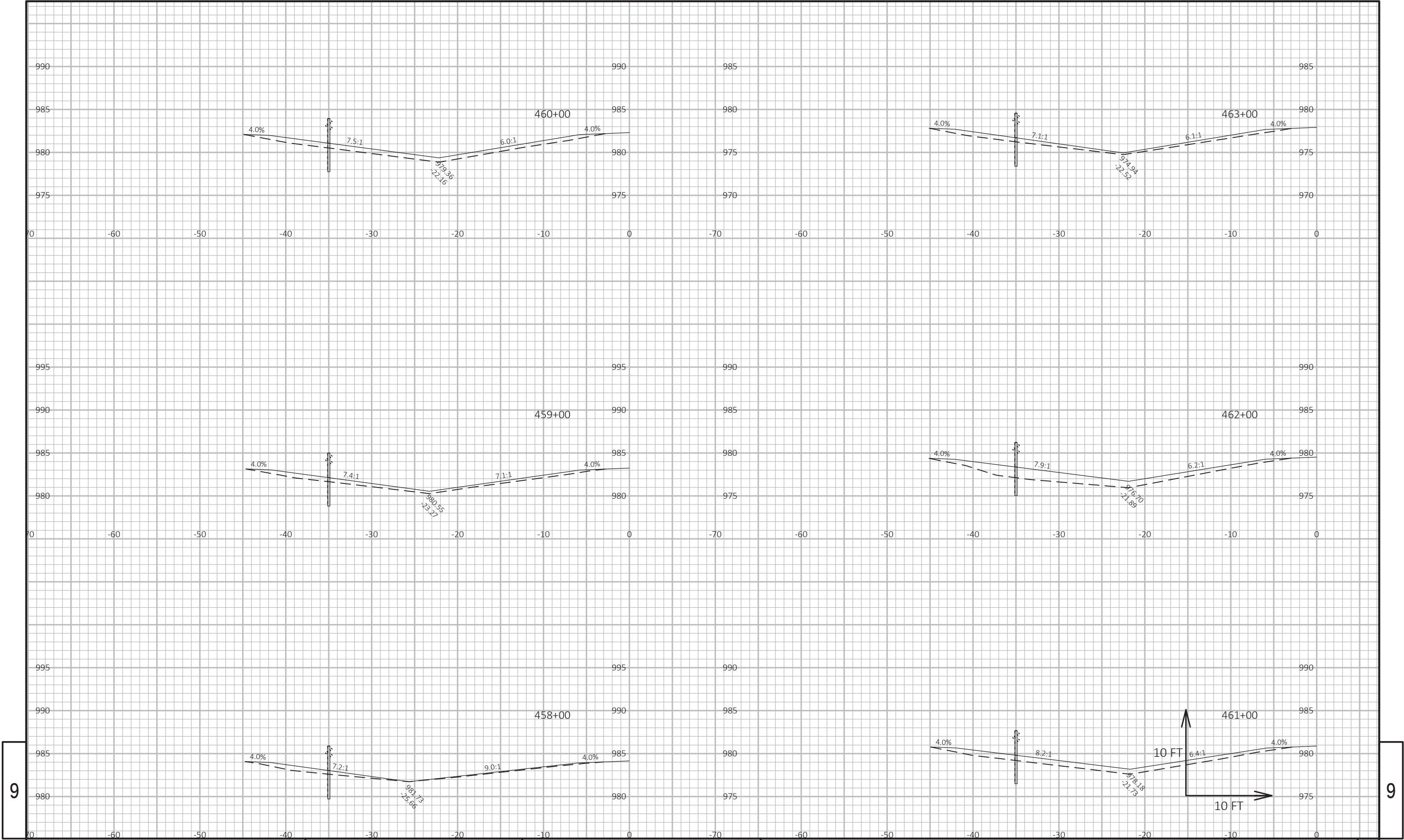
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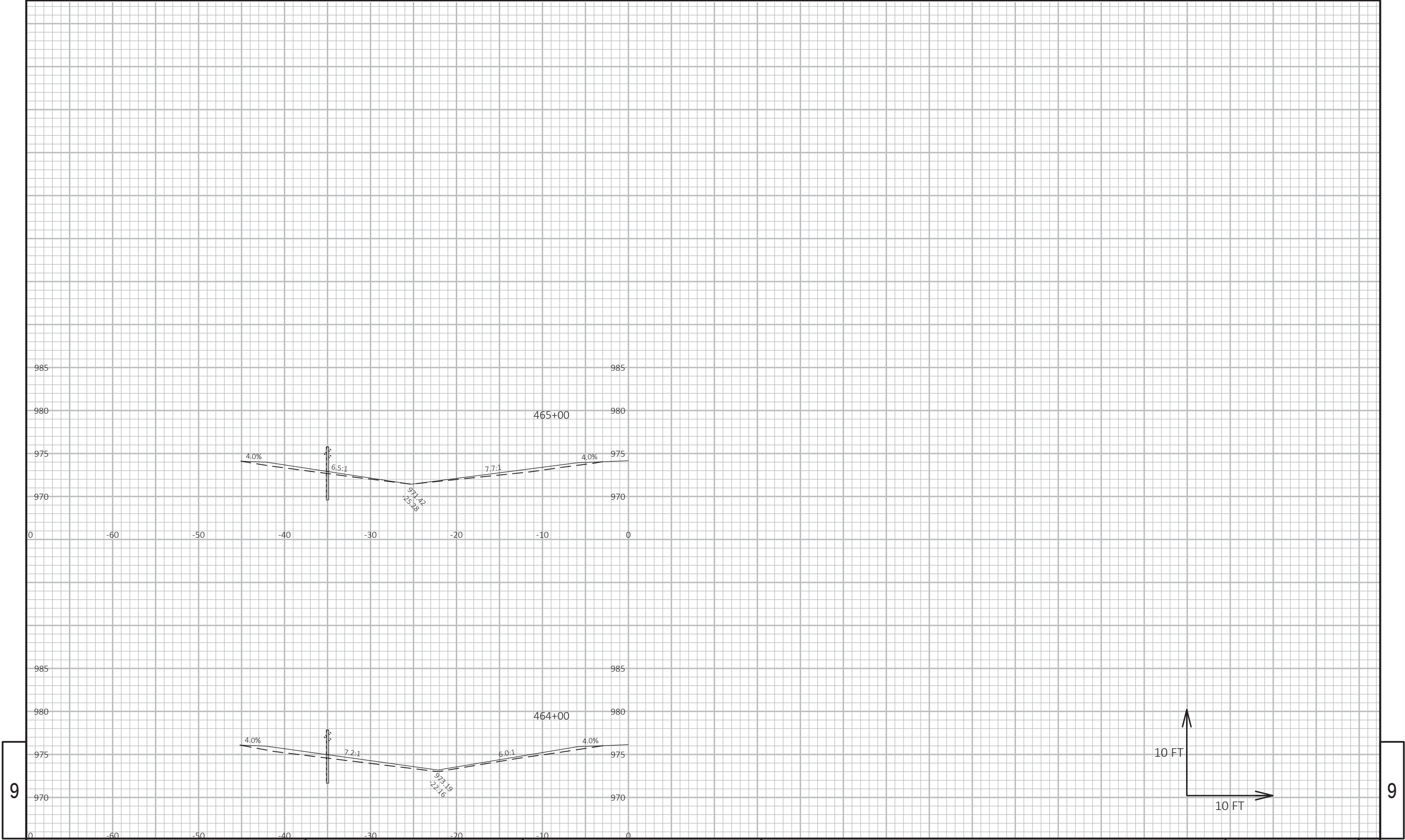
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
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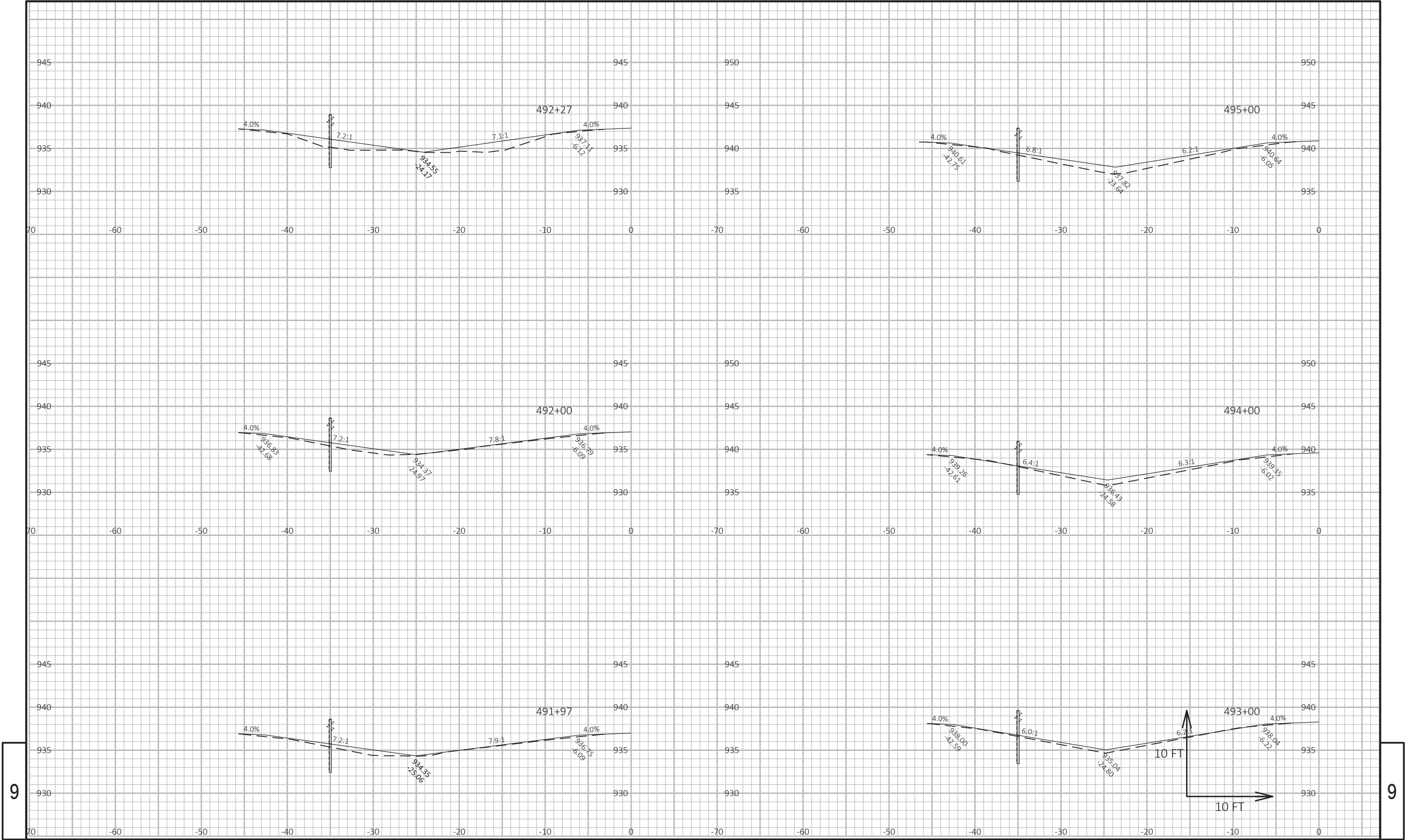
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
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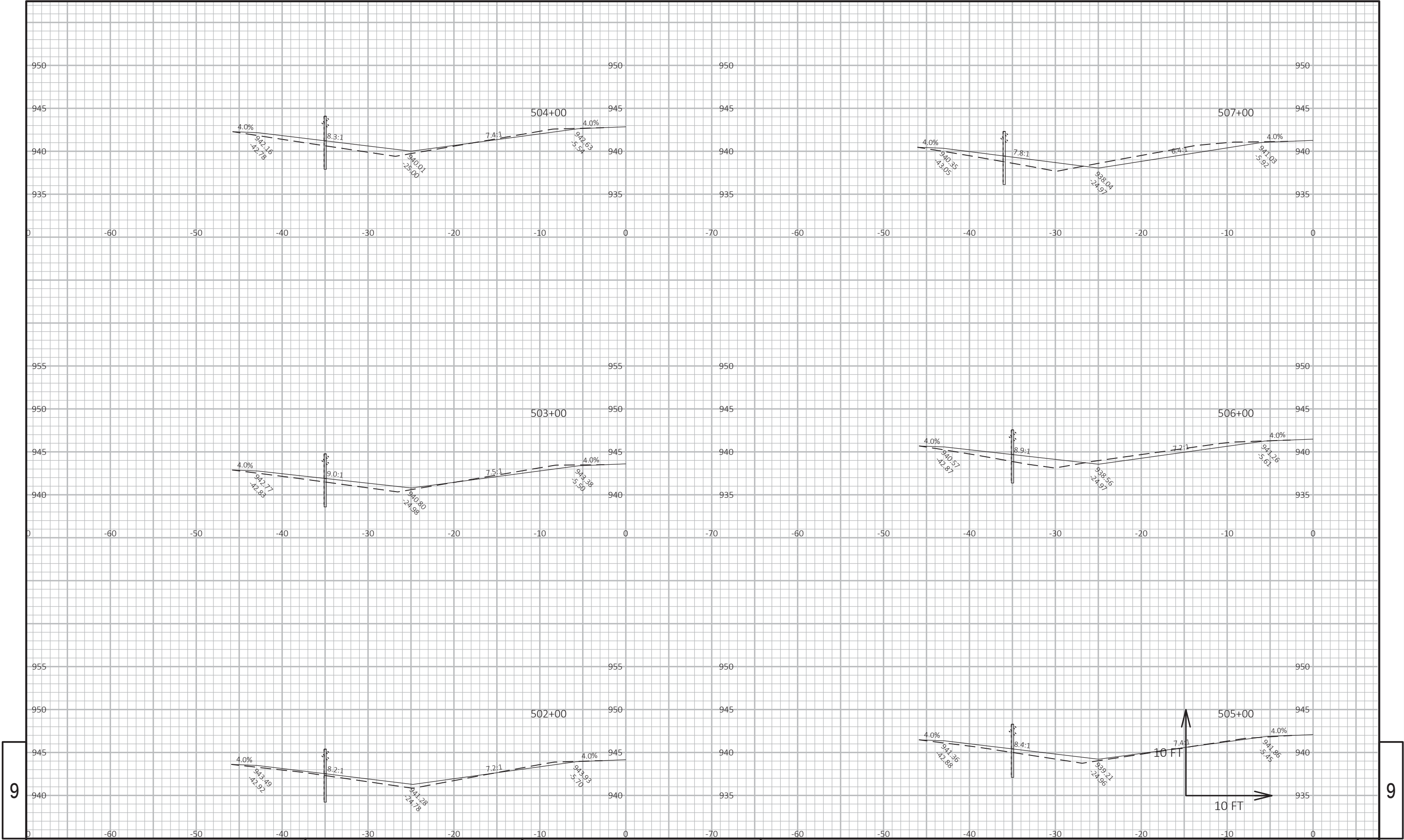


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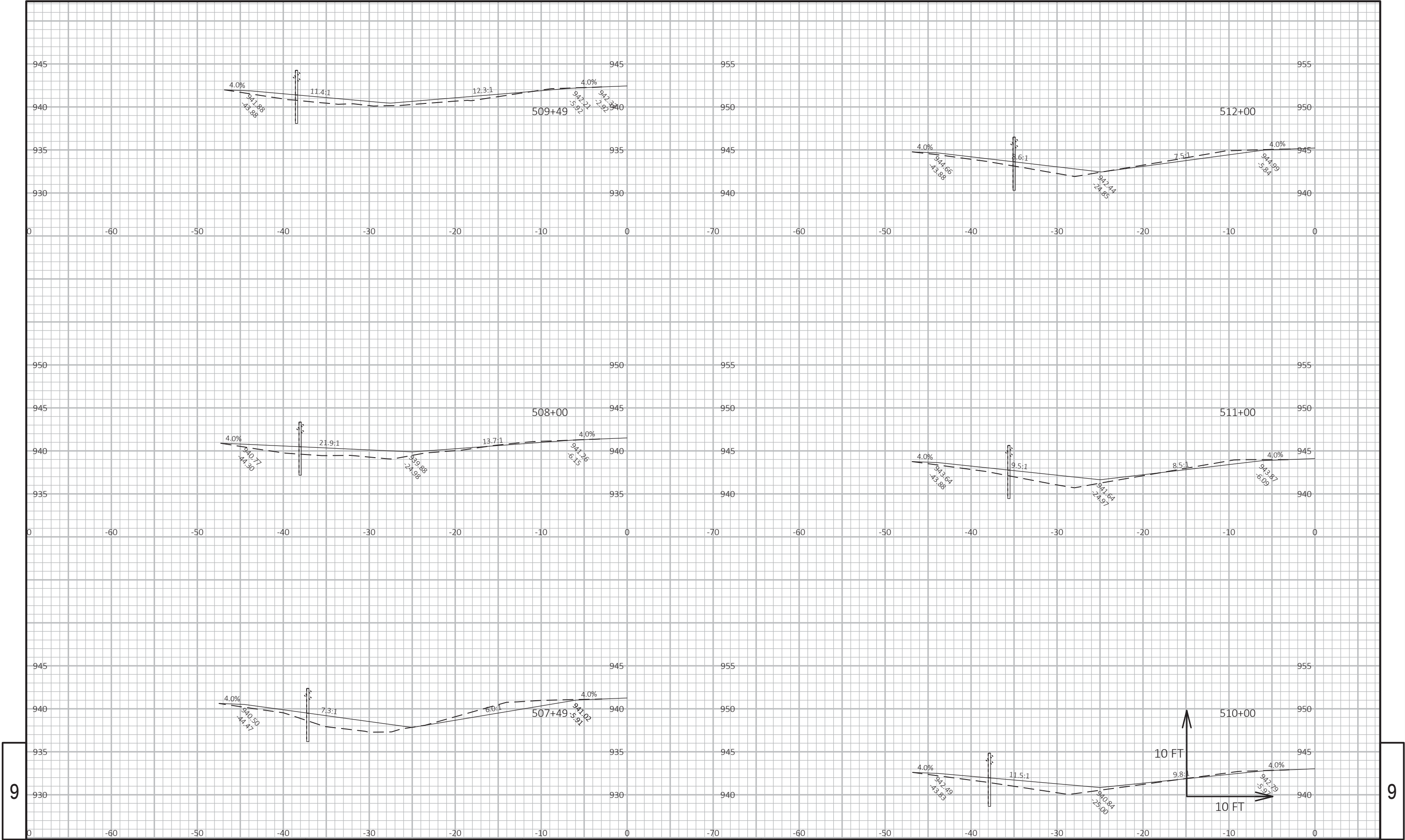
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
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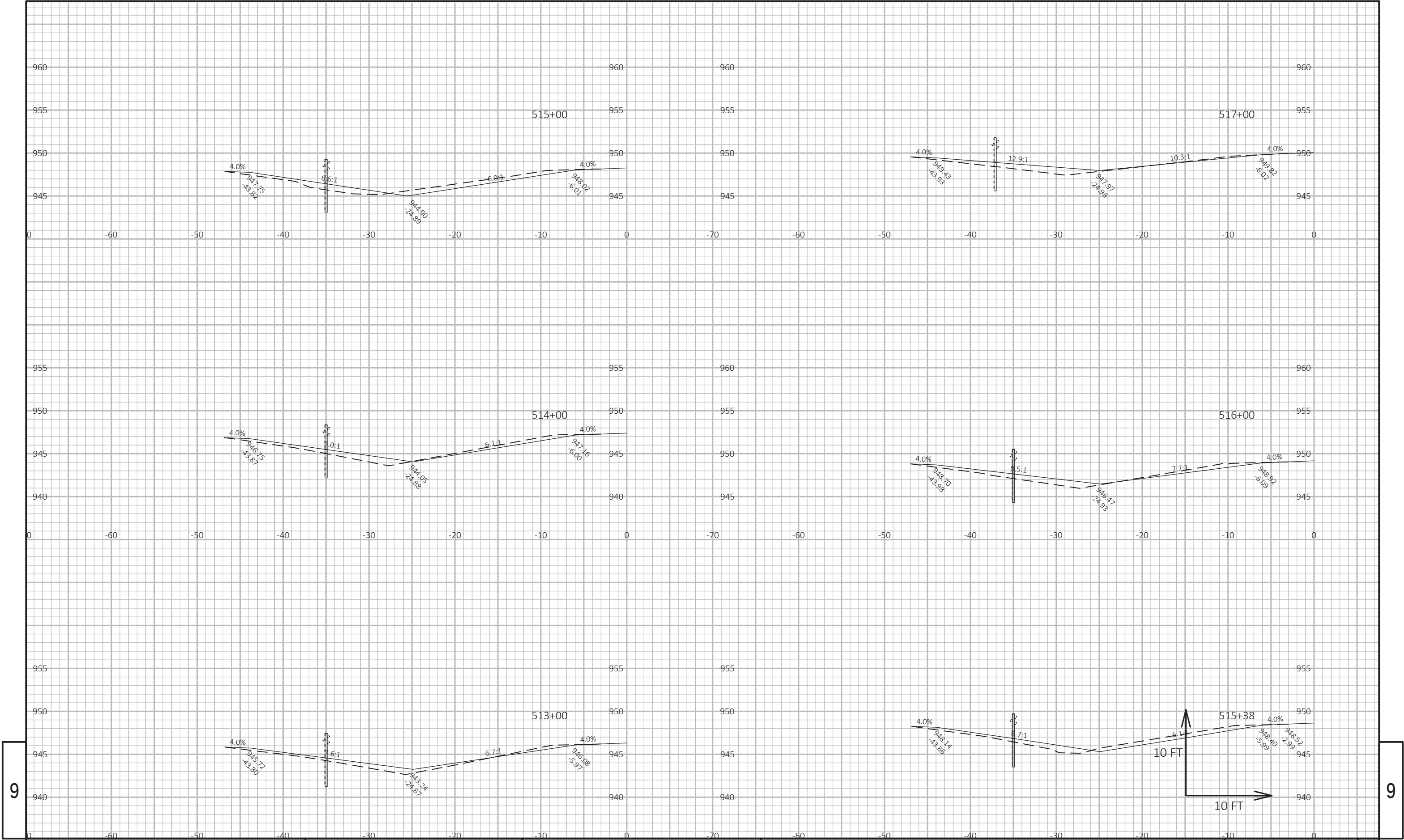
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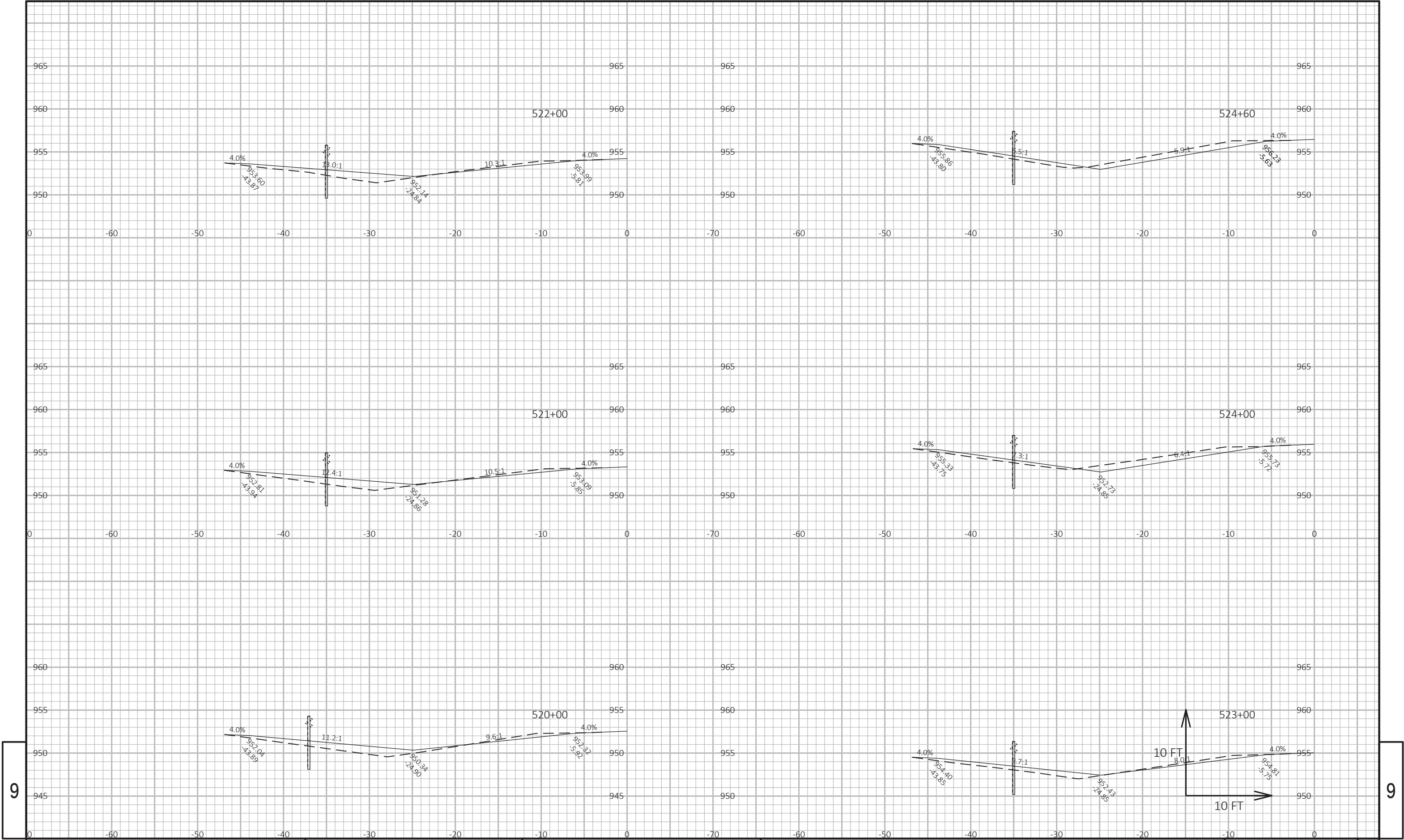
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| PROJECT NO: 1204-08-63 |  | HWY: USH 18 |  | COUNTY: DANE |  | CROSS SECTIONS: |  | SHEET |  | E |
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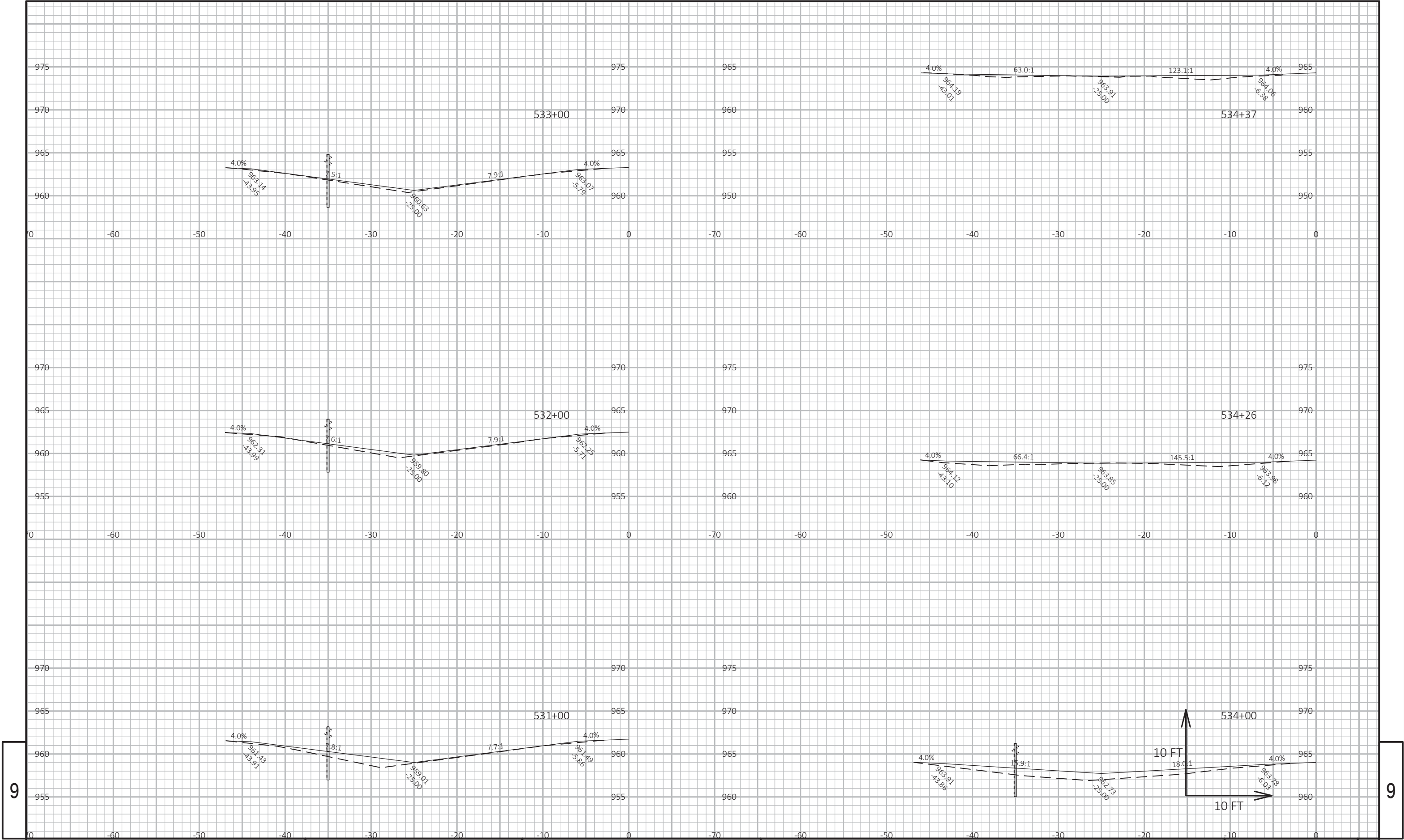
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
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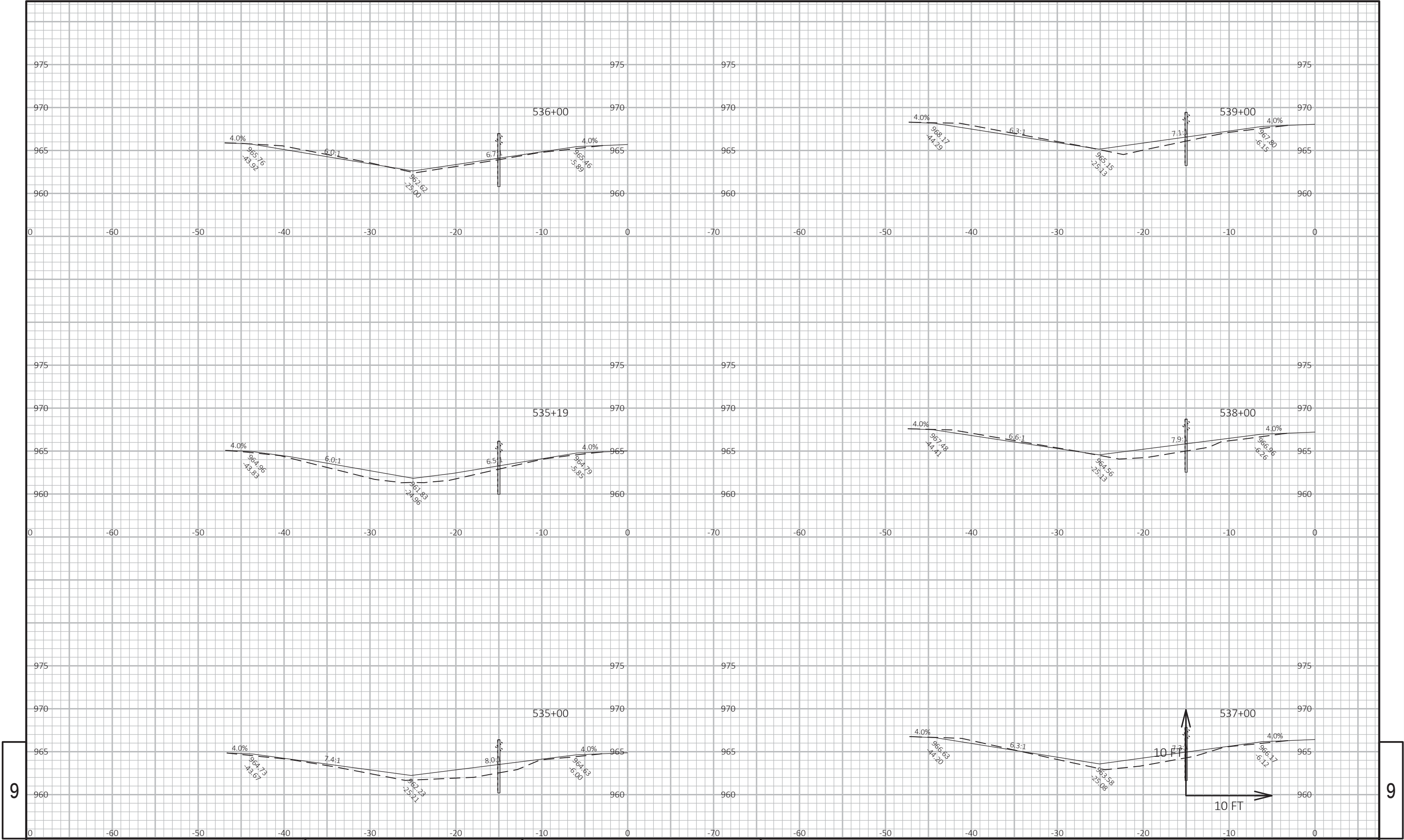


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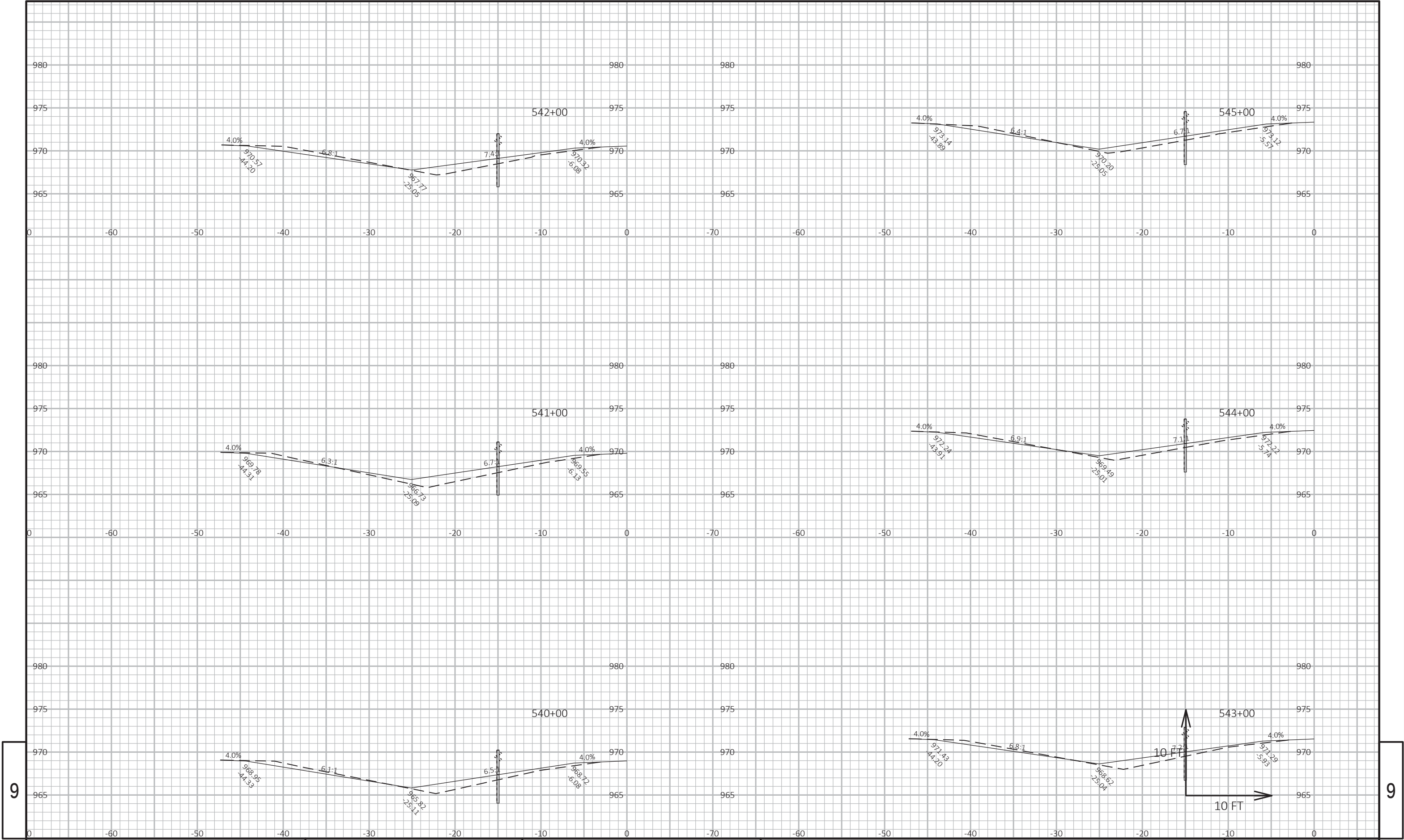




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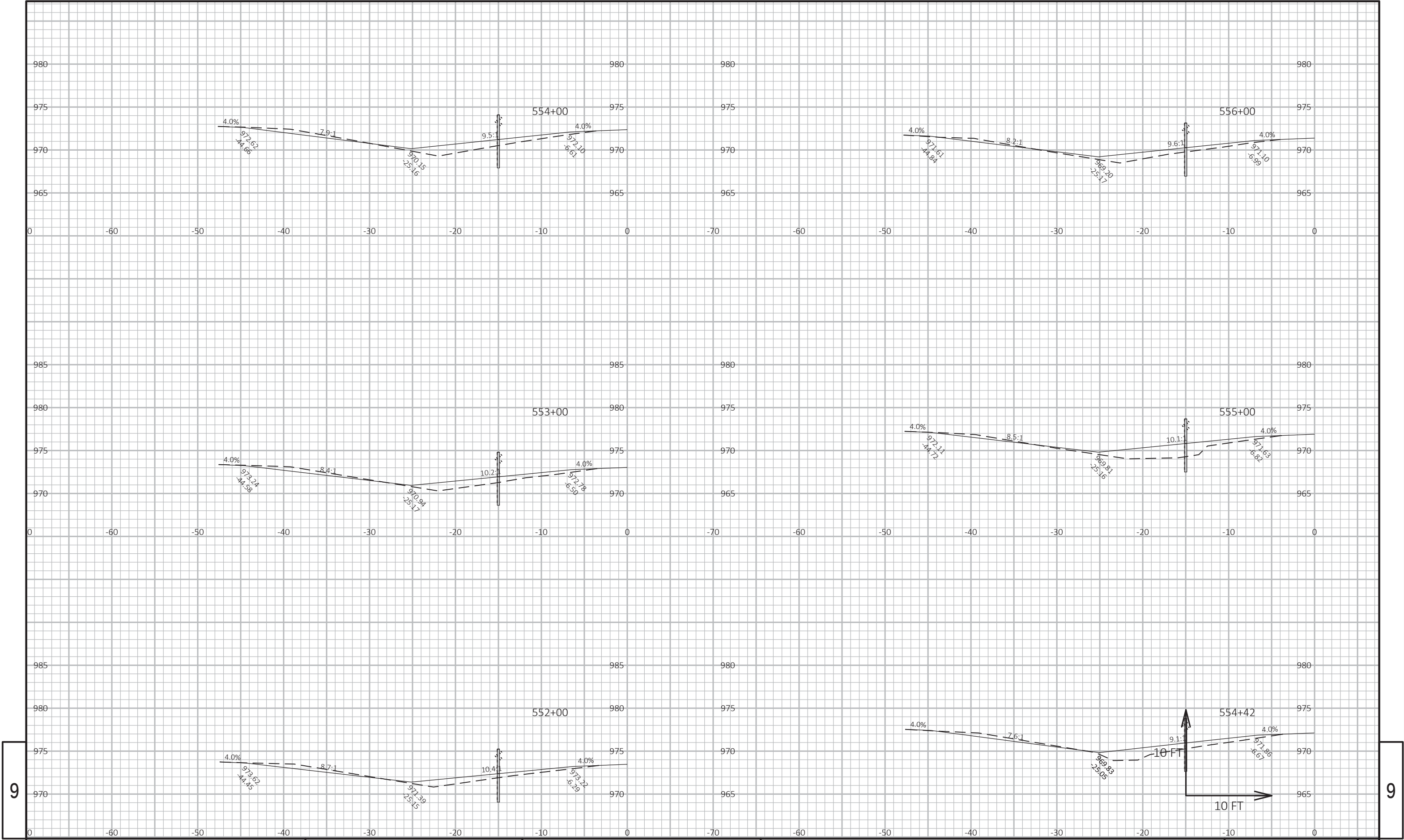
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
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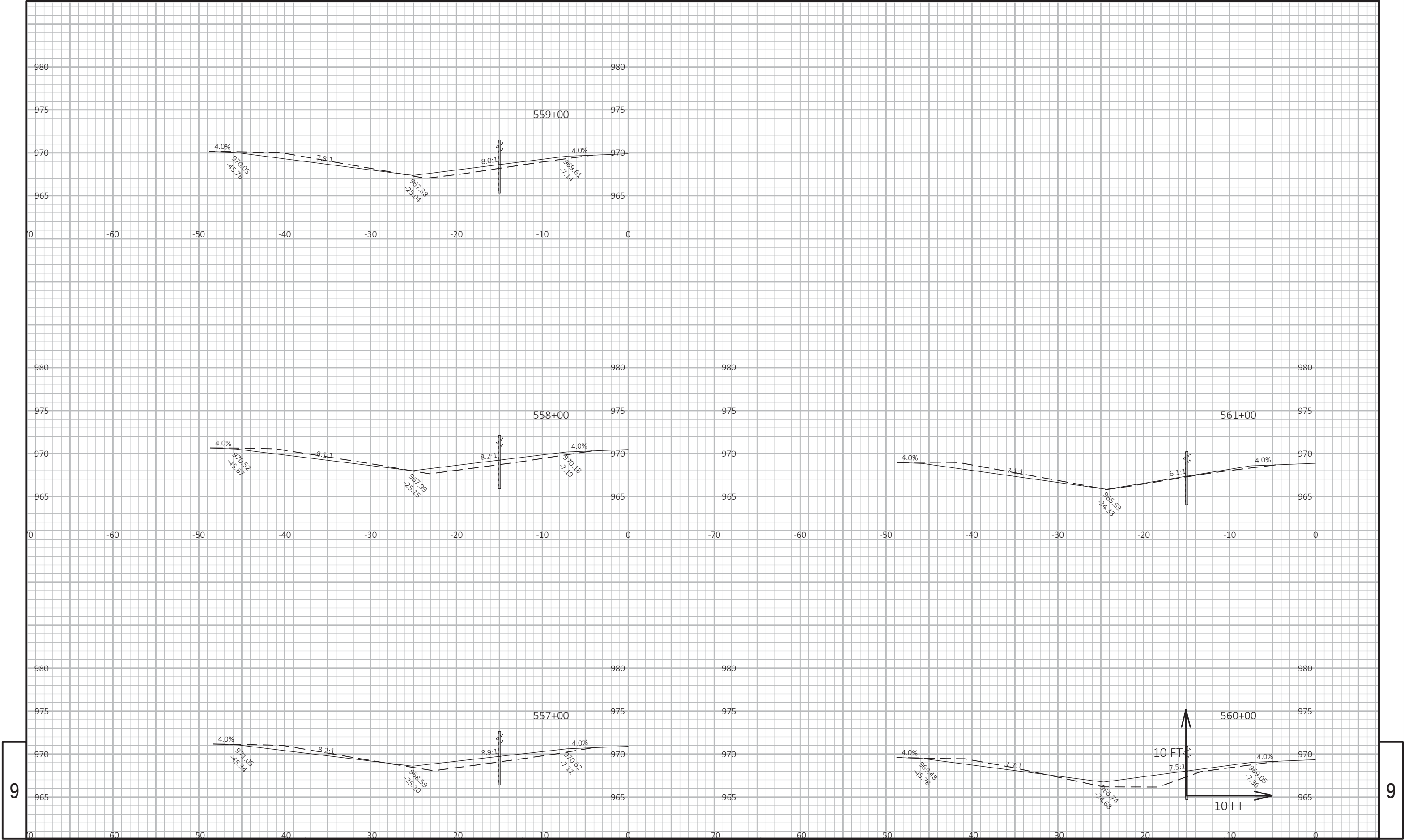
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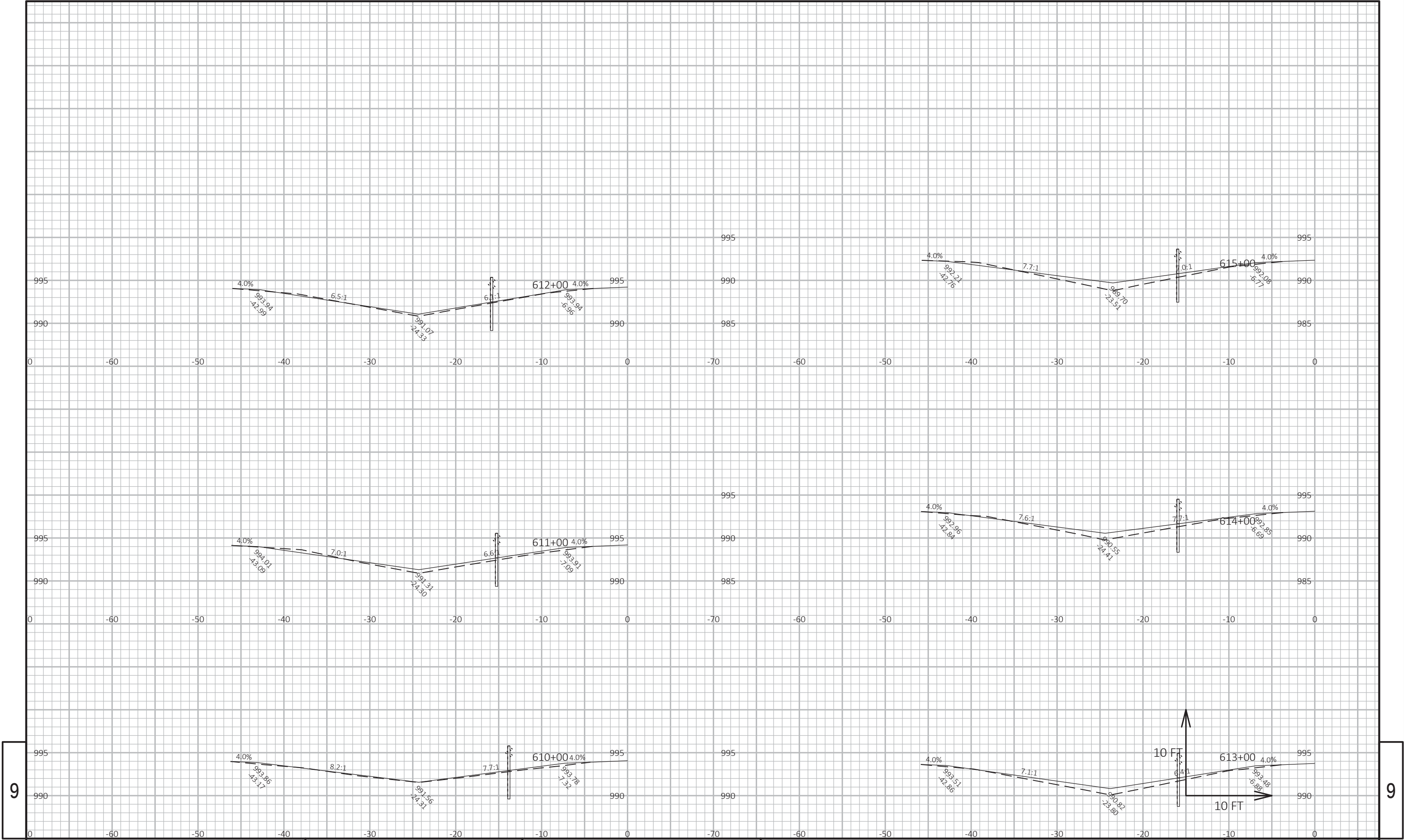
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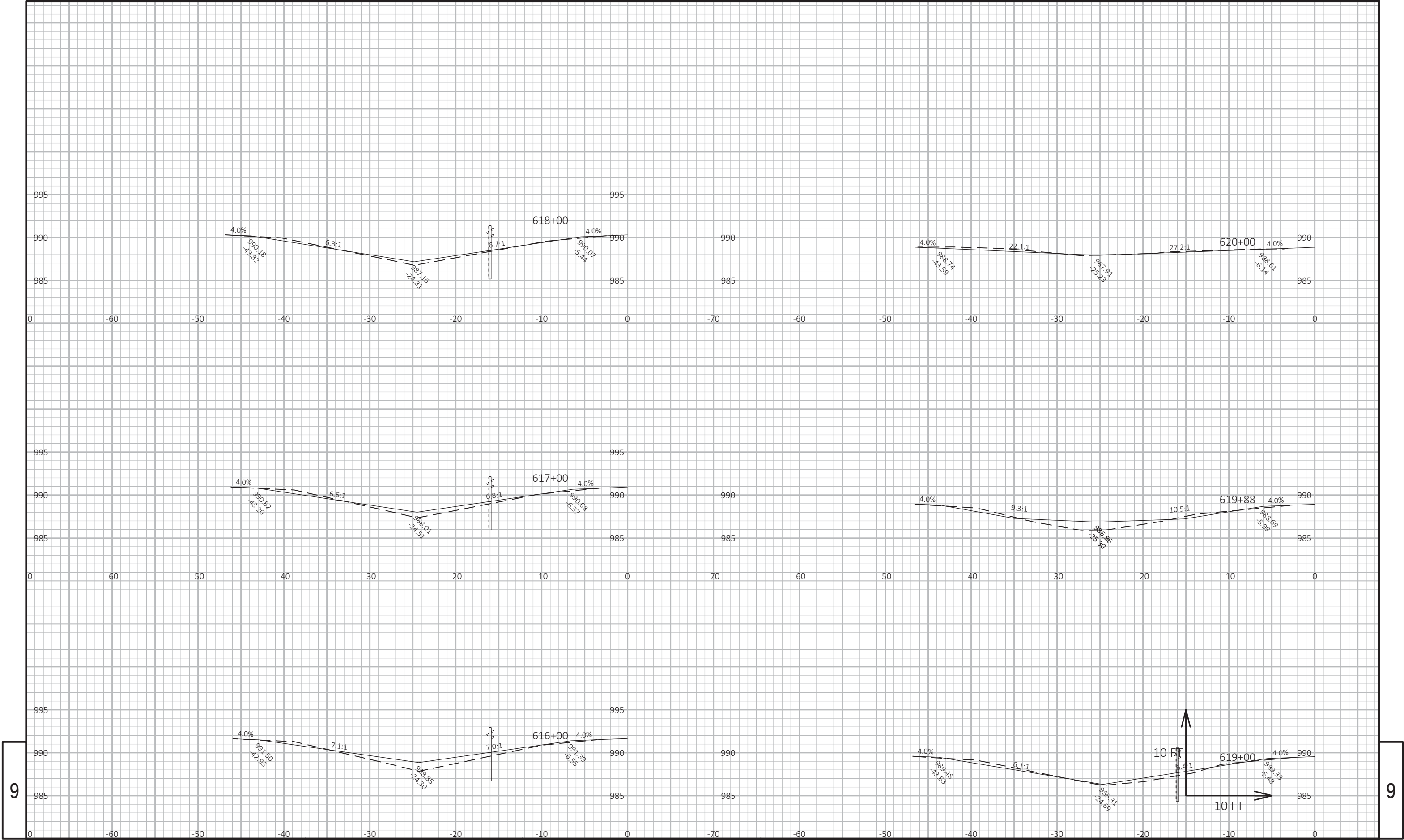
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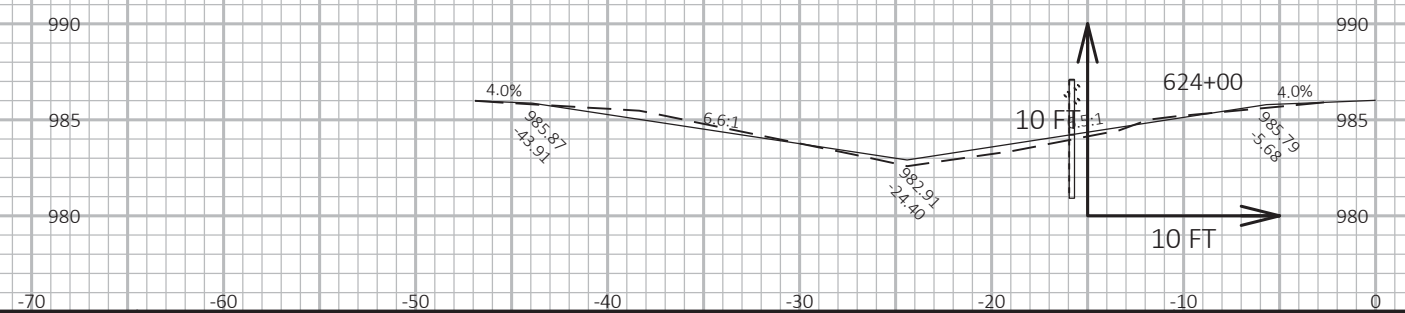
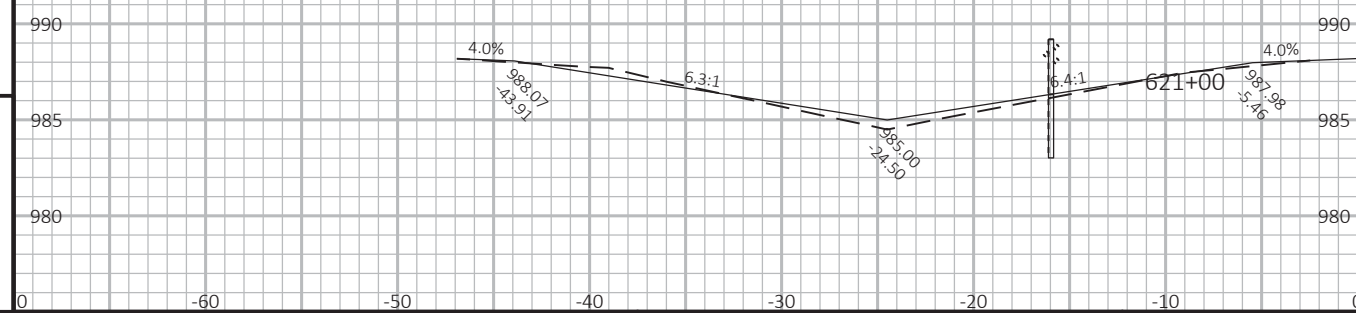
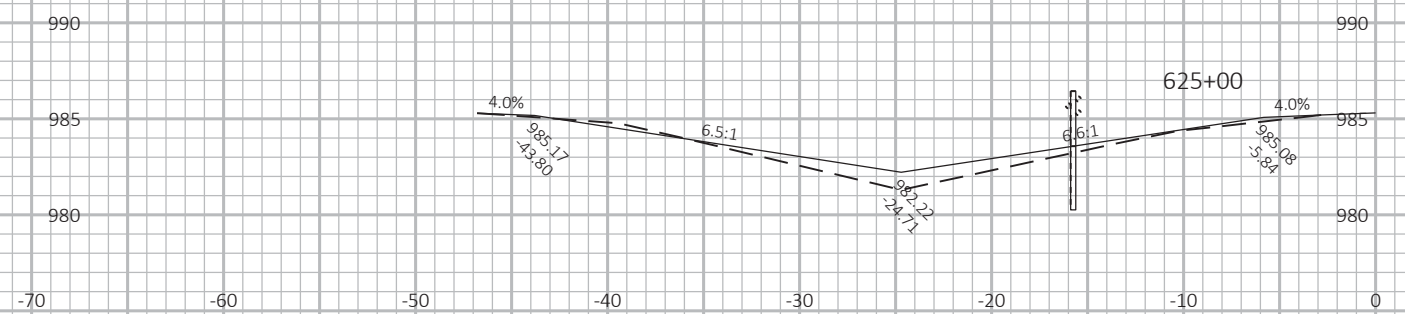
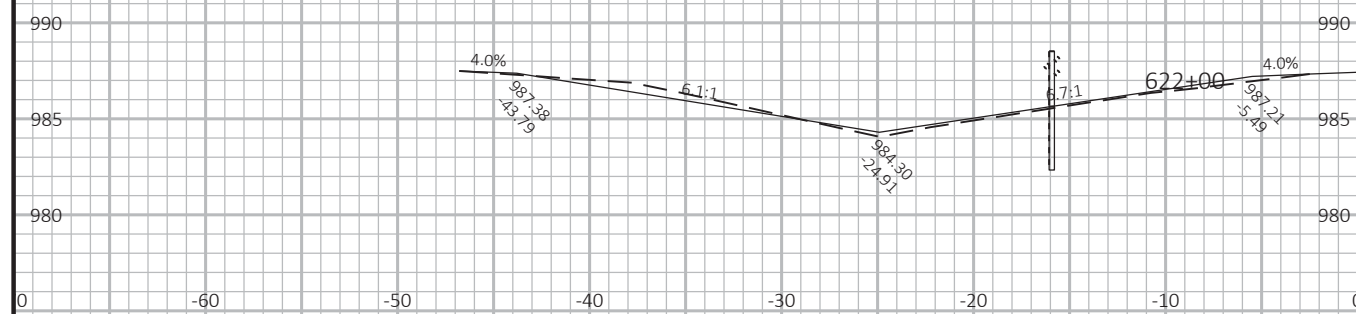
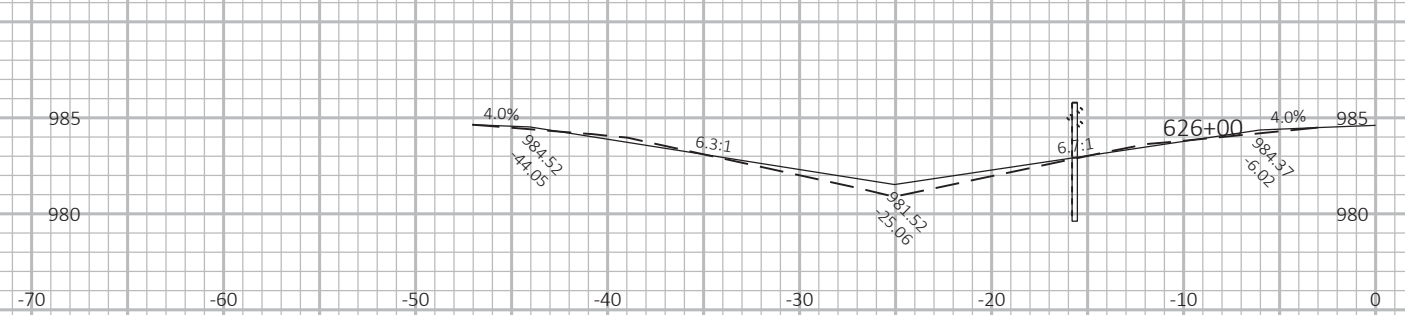
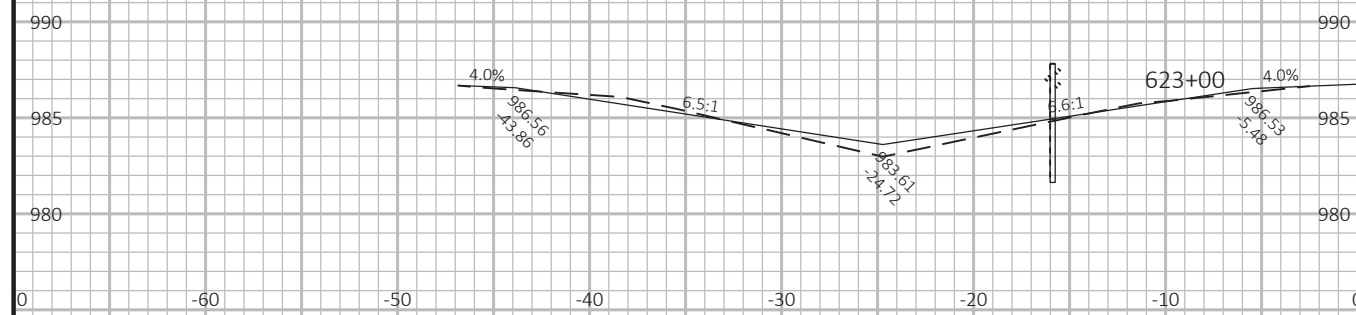
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
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| PROJECT NO: | 1204-08-63 |
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HWY: USH 18

COUNTY: DANE

CROSS SECTIONS:

SHEET

- 
- 
- 

FILE NAME : N:\PDS\C3D\12040833\SHEETSPLAN\090201\_XS.DWG  
LAYOUT NAME - Bypass 090201 (23)

PLOT DATE : 8/7/2018 11:25 AM

PLOT BY : BETZEL, LORRAINE L

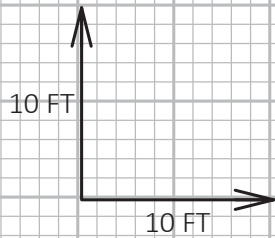
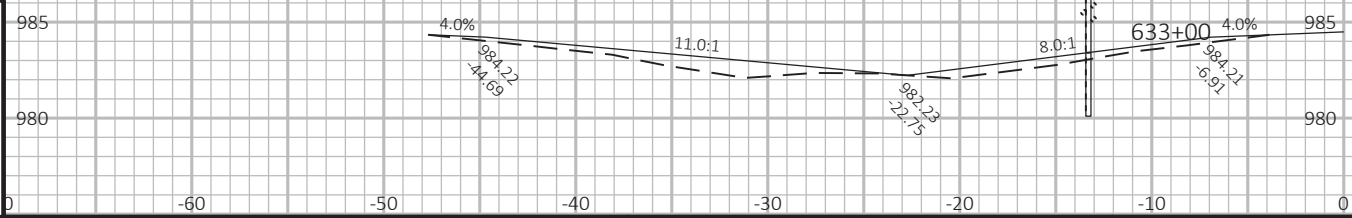
PLOT NAME :

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

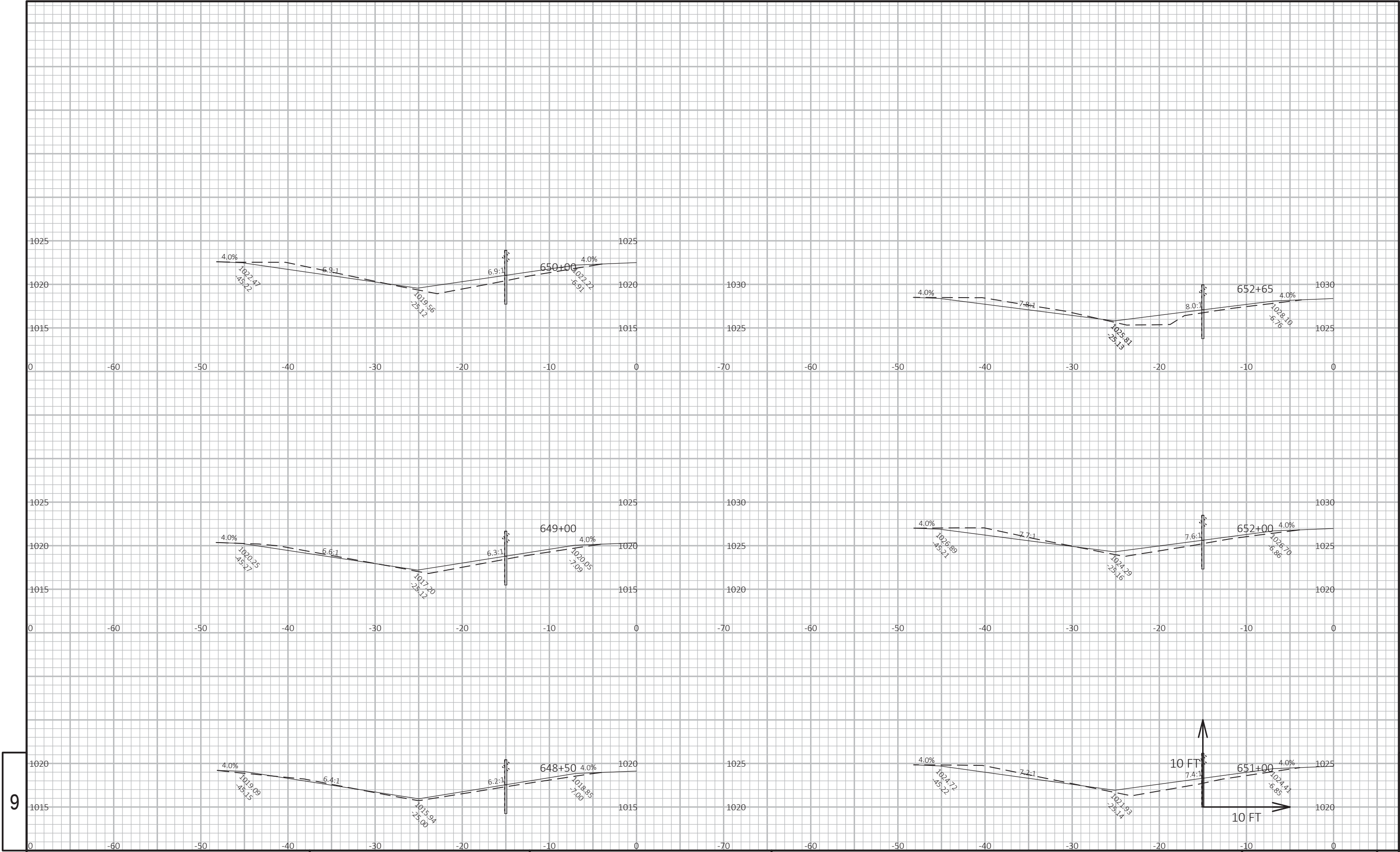
WISDOT/CADDS SHEET 49



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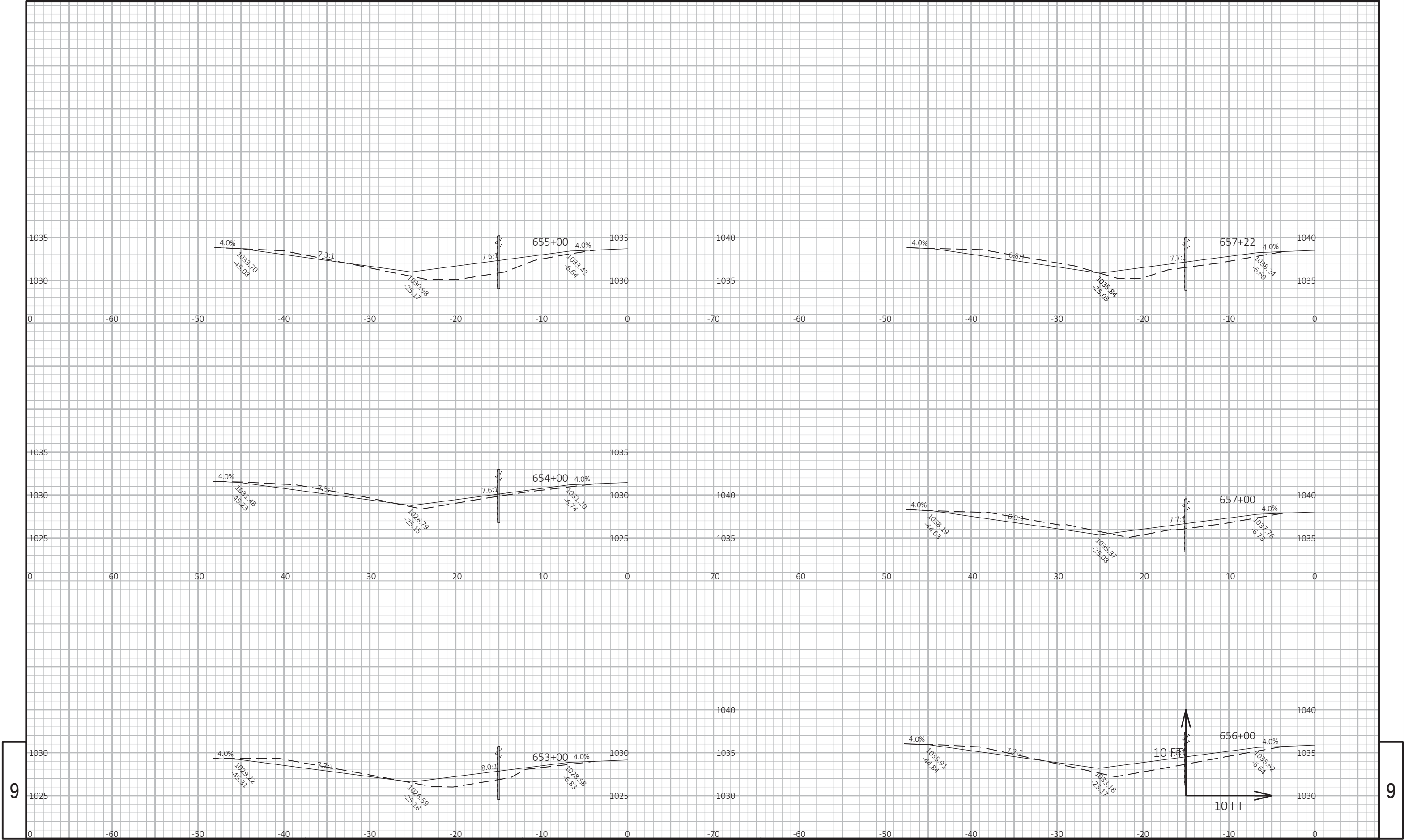


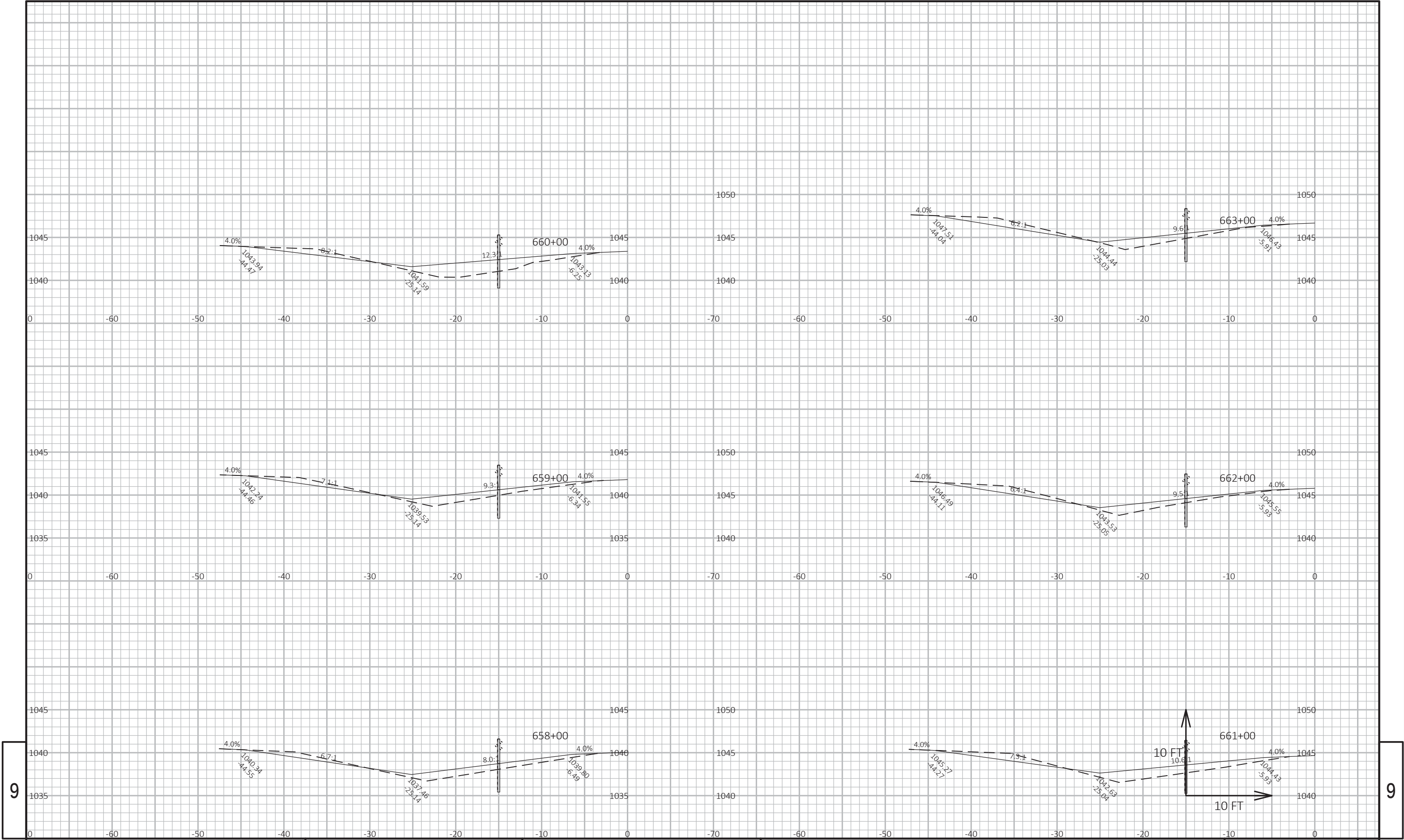
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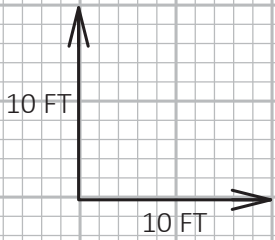
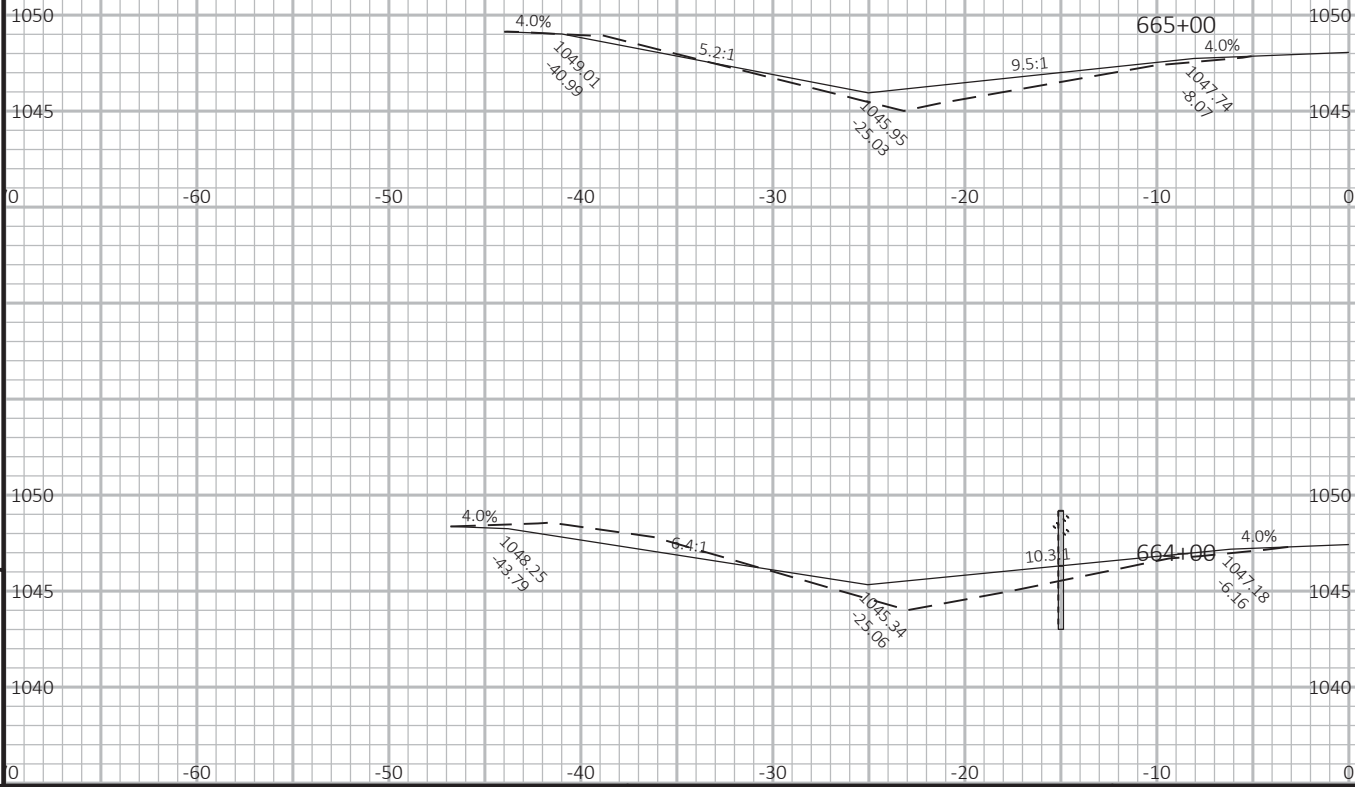


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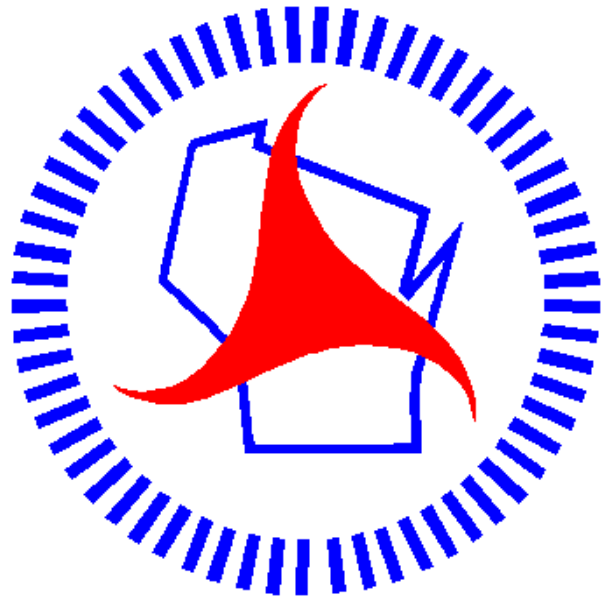
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| PROJECT NO: 1204-08-63 |  |  | HWY: USH 18 |  |  | COUNTY: DANE |  |  | CROSS SECTIONS: |  |  | SHEET |  |  | E |
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| PROJECT NO: 1204-08-63 | HWY: USH 18 | COUNTY: DANE | CROSS SECTIONS: | SHEET | E |
|------------------------|-------------|--------------|-----------------|-------|---|



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

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through innovation and exceptional service.

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