

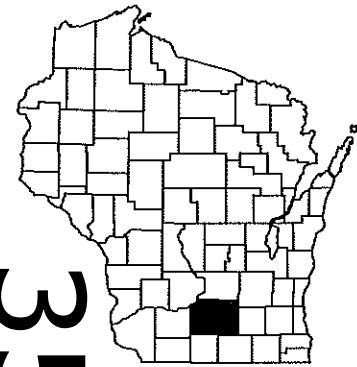
MAD WITH: PROJECT ID: 5490-00-60 COUNTY: DANE

DECEMBER 2018

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 = 98



DESIGN DESIGNATION

|              |      |   |        |
|--------------|------|---|--------|
| A.A.D.T.     | 2018 | = | 42,500 |
| A.A.D.T.     | 2038 | = | 54,600 |
| D.H.V.       |      | = | N/A    |
| D.D.         |      | = | N/A    |
| T.           |      | = | N/A    |
| DESIGN SPEED |      | = | 50 MPH |
| 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                              |  |

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

C MADISON, STH 30

FAIR OAKS AVENUE TO THOMPSON DRIVE

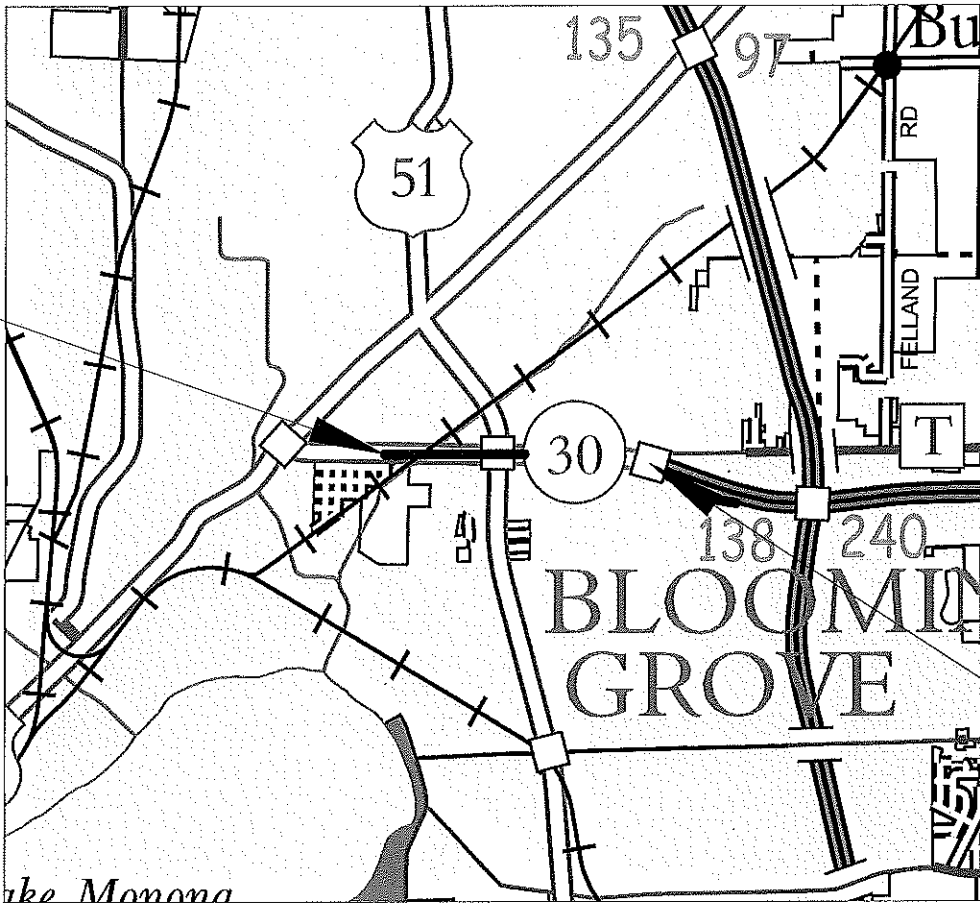
STH 30  
DANE COUNTY

STATE PROJECT NUMBER

5490-00-60

R-10-E R-11-E

BEGIN PROJECT  
STA 200+00  
X=834,565.99  
Y=494,480.81



T-8-N  
T-7-N

END PROJECT  
STA 288+52.33

LAYOUT  
SCALE 0 1 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 |
| 5490-00-60    | WISC 2018304    | 1        |
|               |                 |          |
|               |                 |          |
|               |                 |          |

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY

|                     |                |
|---------------------|----------------|
| Surveyor            | SHAUN ANDERSON |
| Designer            | JIM SIMPSON    |
| Project Manager     | SW REGION      |
| Regional Examiner   | KURT JOHNSON   |
| Regional Supervisor |                |

APPROVED FOR THE DEPARTMENT

DATE: 8-22-18

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.

COMMON EXCAVATION AND TOPSOIL QUANTITIES ARE BASED ON THE REMOVAL AND REPLACEMENT OF 3" OF MATERIAL.

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.

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

PRIOR TO PLACEMENT OF THRIE BEAM THE SHOULDERS SHALL BE IN PLACE, SHAPED, AND COMPACTED.

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  
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Lorraine.Betzel@dot.wi.gov



LIST OF STANDARD ABBREVIATIONS

|        |                                 |      |                                   |       |                            |
|--------|---------------------------------|------|-----------------------------------|-------|----------------------------|
| ABUT   | ABUTMENT                        | ID   | INSIDE DIAMETER                   | SALV  | SALVAGED                   |
| AC     | ACRE                            | INV  | INVERT                            | SSS   | SANITARY AND STORM SEWER   |
| AADT   | ANNUAL AVERAGE DAILY TRAFFIC    | IP   | IRON PIPE                         | SAN   | SANITARY SEWER             |
| ASPH   | ASPHALT                         | JT   | JOINT                             | SEC   | SECTION                    |
| AVG    | AVERAGE                         | JCT  | JUNCTION                          | SHLDR | SHOULDER                   |
| BL     | BASE LINE                       | LT   | LEFT                              | SW    | SIDEWALK                   |
| BM     | BENCH MARK                      | L    | LENGTH OF CURVE                   | S     | SOUTH                      |
| CB     | CATCH BASIN                     | LHF  | LEFT HAND FORWARD                 | SB    | SOUTHBOUND                 |
| C/L    | CENTER LINE                     | LF   | LENEAR FOOT                       | SP    | SPECIAL                    |
| CC     | CENTER TO CENTER                | L    | LITER                             | SPECS | SPECIFICATIONS             |
| CE     | COMERCIAL ENTRANCE              | LS   | LUMP SUM                          | SO    | SQUARE                     |
| CONE   | CONCRETE                        | MH   | MANHOLE                           | SF    | SQUARE FEET                |
| CO     | COUNTY                          | MB   | MESSAGE BOARD                     | SY    | SQUARE YARD                |
| CTH    | COUNTY TRUNK HIGHWAY            | MLB  | MAILBOX                           | STD   | STANDARD                   |
| CY     | CUBIC YARD                      | ML   | MATCH LINE                        | SDD   | STANDARD DETAILS DRAWINGS  |
| C&G    | CURB AND GUTTER                 | NC   | NORMAL CROWN                      | STH   | STATE TRUNK HIGHWAYS       |
| CULV   | CULVERT                         | N    | NORTH                             | STA   | STATION                    |
| CPAS   | CONCRETE PAVEMENT APPROACH SLAB | Y    | NORTH GRD COORDINATE              | SS    | STORM SEWER                |
| DHV    | DESIGN HOUR VOLUME              | NB   | NORTHBOUND                        | STR   | STRUCTURE OR STRUCTURAL    |
| DIA    | DIAMETER                        | NO   | NUMBER                            | SL    | SURVEY LINE                |
| DF     | DOUBLE FACED                    | OD   | OUTSIDE DIAMETER                  | TEL   | TELEPHONE                  |
| DW     | DUAL WALL                       | 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                           | UNDDR | UNDERDRAIN                 |
| FF     | FACE TO FACE                    | PL   | PROPERTY LINE                     | USH   | UNITED STATES HIGHWAY      |
| FG     | FINISHED GRADE                  | R    | RADIUS                            | VAR   | VARIABLE                   |
| FL     | FLOW LINE                       | R/L  | REFERENCE LINE                    | VERT  | VERTICAL                   |
| FT     | FOOT                            | REOD | REQUIRED                          | W     | WATER                      |
| HDPE   | HIGH DENSITY POLYETHYLENE       | RT   | RIGHT                             | WM    | WATER MAIN                 |
| CWT    | HUNDREDWEIGHT                   | RCAE | REINFORCED CONCRETE APRON ENDWALL | WV    | WATER VALVE                |
| HYD    | HYDRANT                         | R/W  | RIGHT-OF-WAY                      | W     | WEST                       |
| IN DIA | INCH DIAMETER                   | RD   | ROAD                              | WB    | WEST BOUND                 |
| INL    | INLET                           | RDWY | ROADWAY                           | YD    | YARD                       |

UTILITY/ MUNICIPALITY

AT&T Legacy

CONTACT/ADDRESS

Kenneth Nine  
110 N. Main St  
Culver, IN 46511  
Work (574) 842-8830 Cell (574) 904-6336  
kc1298@att.com

UTILITY TYPE

Communication

ATC Management, Inc.

Anthony Marciniak  
W 234 N Ridgeview Parkway Ct  
PO Box 47  
Waukesha, WI 53187-0047  
Work (262) 506-6814  
amarciniak@atcllc.com

Electricity-transmission

Charter Communications

Brandon Storm  
2701 Daniels St  
Madison, WI 53718  
(608) 274-3822  
brandon.storm@charter.com

Communication

City of Madison Engineering

Greg Fries  
210 Martin Luther King Jr Blvd, Rm 115  
Madison, WI 53703  
(608) 266-4751  
gfries@cityofmadison.com

Sewer

Kochs Telecommunications Service Inc

Mike Koch  
P.O. Box 365  
Hustiford, WI 53034  
Work (920) 349-3839 Cell (414) 791-5528  
mlkoch@kochtelecom.com

Communication

Madison Gas and Electric Company

John Wichern  
133 S. Blair St  
Madison, WI 53788  
Work (608) 252-1563 Cell (608) 535-7408  
jwichern@mge.com

Electricity

Madison Gas and Electric Company

John Wichern  
133 S. Blair St  
Madison, WI 53788  
Work (608) 252-1563 Cell (608) 535-7408  
jwichern@mge.com

Gas/Petroleum

Madison Metropolitan Sewerage District

Ray Schneider  
1610 Moorland Rd  
Madison, WI 53713  
Work (608)222-1202 ext 259 Cell (608) 347-3628  
erich@madsewer.org

Sewer

Madison Water Utility

Adam Wiederhoeft  
119 E Olin Ave

Water

53713-1431

(608)266-9121  
awiederhoeft@madisonwater.org

Madison, WI

Rogers Telecom

Vickie Moran  
4804 N 40th St  
Sheboygan, WI 53083  
(920)395-7125  
vmoran@gabes.com

Communication

Windstream KD, LLC

Kevin Parris  
1858 Wright St  
Madison, WI 53704  
Work (608) 819-5016 Cell (608) 416-3291  
kevin.j.parris@windstream.com

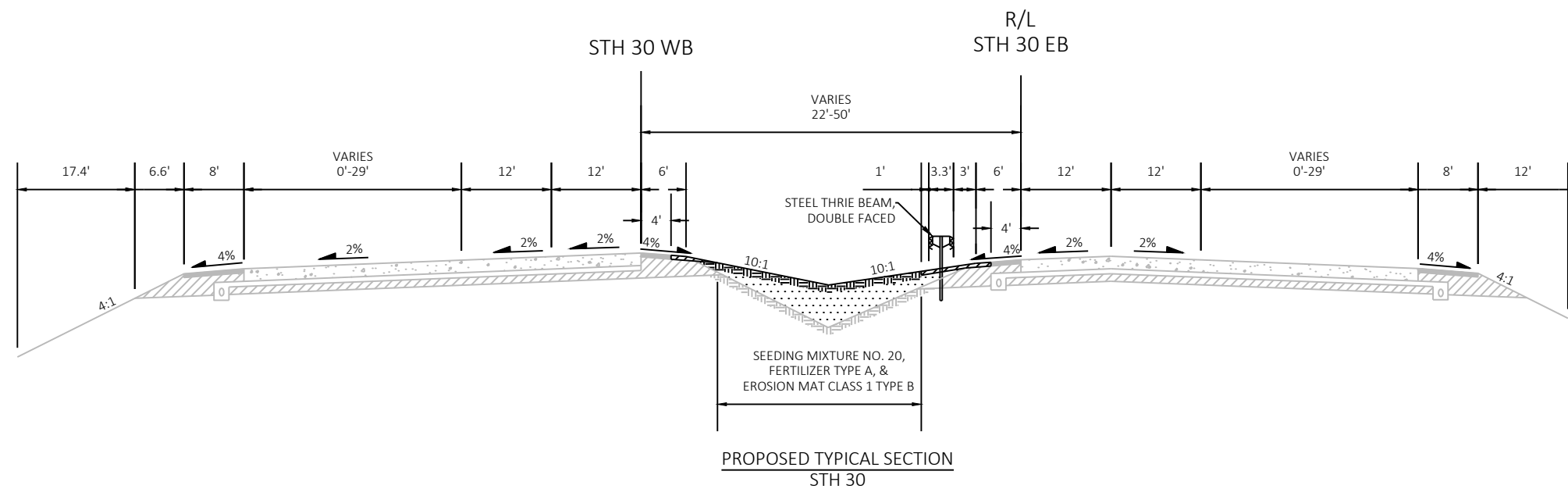
Communication

Wisconsin Department of Transportation

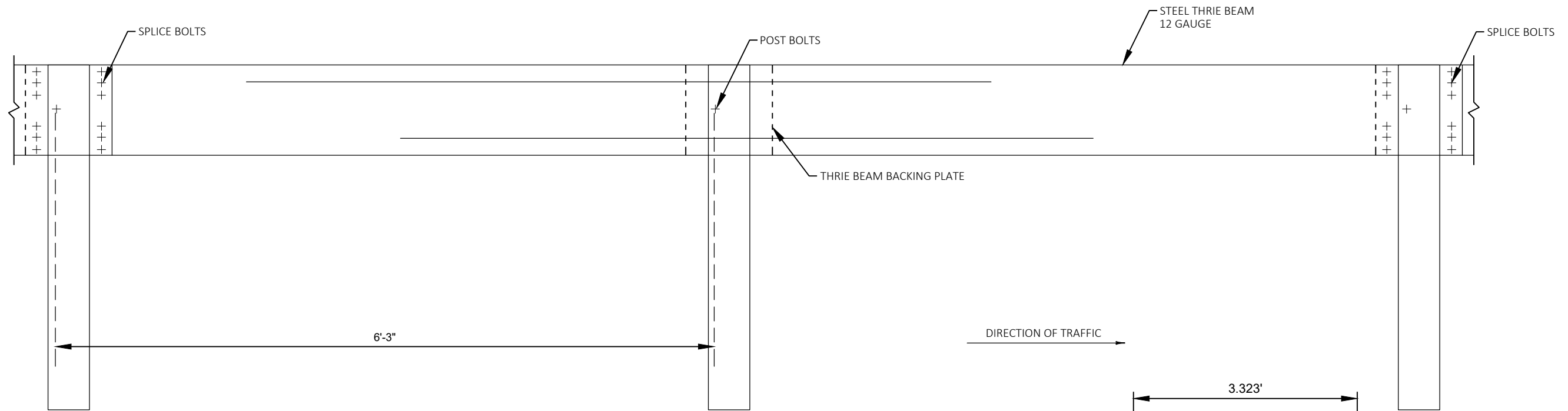
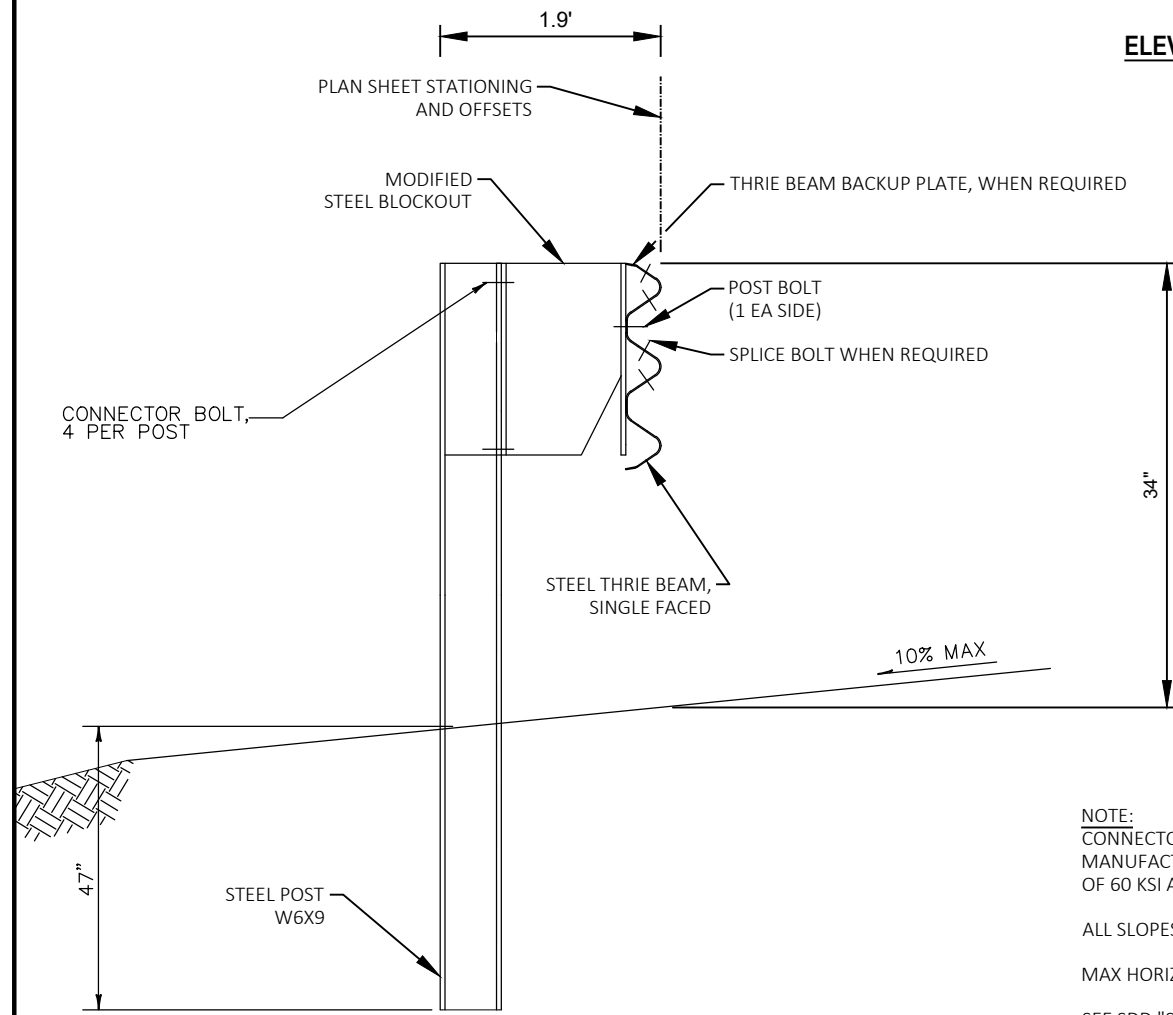
Jeff Madson  
Ste 300  
433 W St Paul Ave  
Milwaukee, WI 53203-3007  
(414)225-3723  
jeffrey.madson@dot.wi.gov

Communication





|                                                                                       |                                          |
|---------------------------------------------------------------------------------------|------------------------------------------|
|  | EXISTING BASE AGGREGATE DENSE            |
|  | EXISTING HMA PAVEMENT                    |
|  | EXISTING CONCRETE PAVEMENT               |
|  | EXISTING TOPSOIL, REMOVE APPROX 3-INCHES |
|  | 3" TOPSOIL                               |
|  | BASE AGGREGATE DENSE 3/4-INCH            |
|  | BORROW                                   |

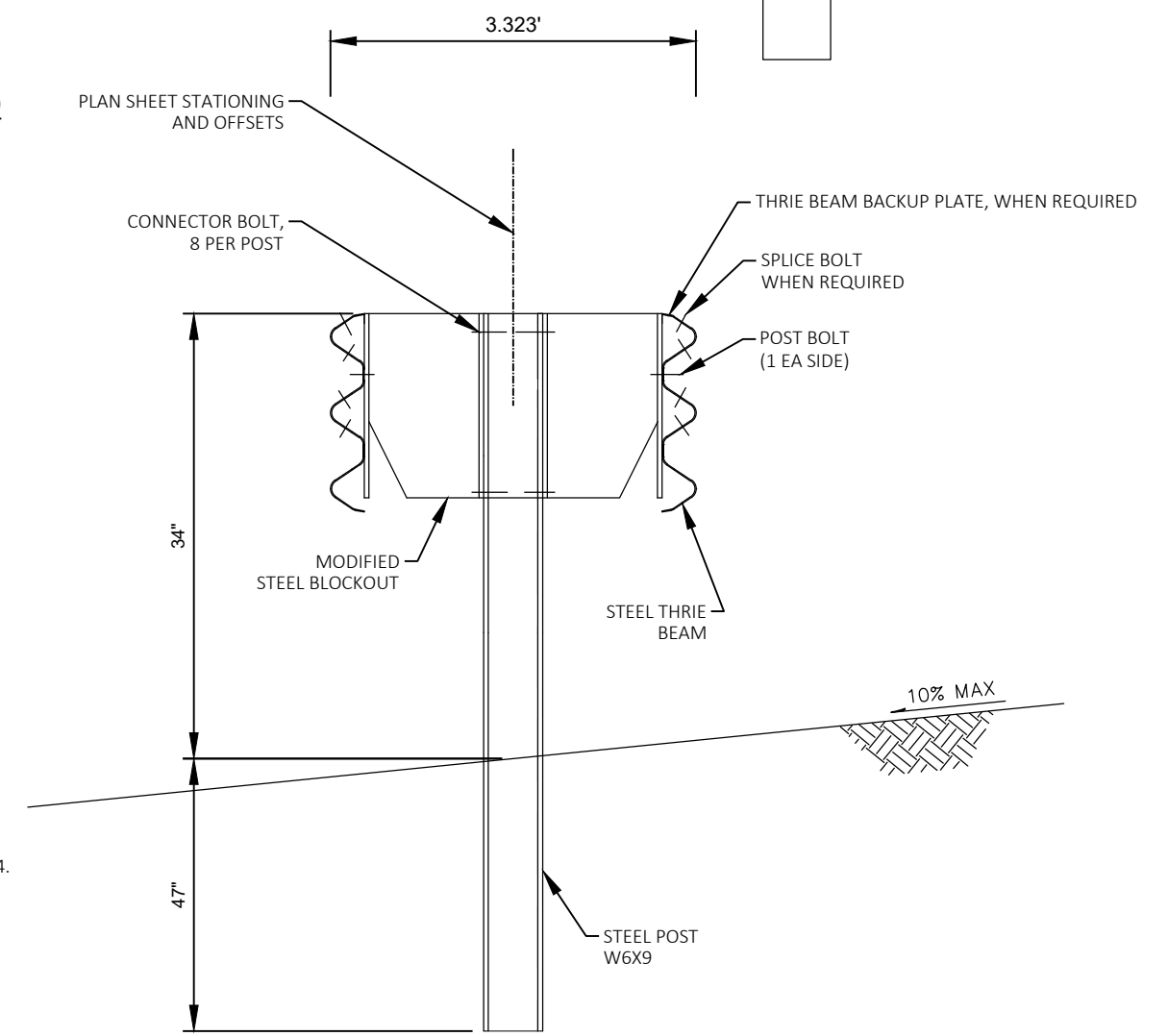
**ELEVATION - STEEL THRIE BEAM, DOUBLE AND SINGLE FACED****CROSS SECTION (SINGLE FACED)**

NOTE:  
CONNECTOR BOLT 5/8" DIAMETER BOLT, ASTM A307, NUT ASTM A563, WASHER F844.  
MANUFACTURE TO REQUIREMENTS OF ANSI B18.2.1 AND HAVE TENSILE STRENGTH  
OF 60 KSI AND MINIMUM YIELD STRENGTH OF 36 KSI

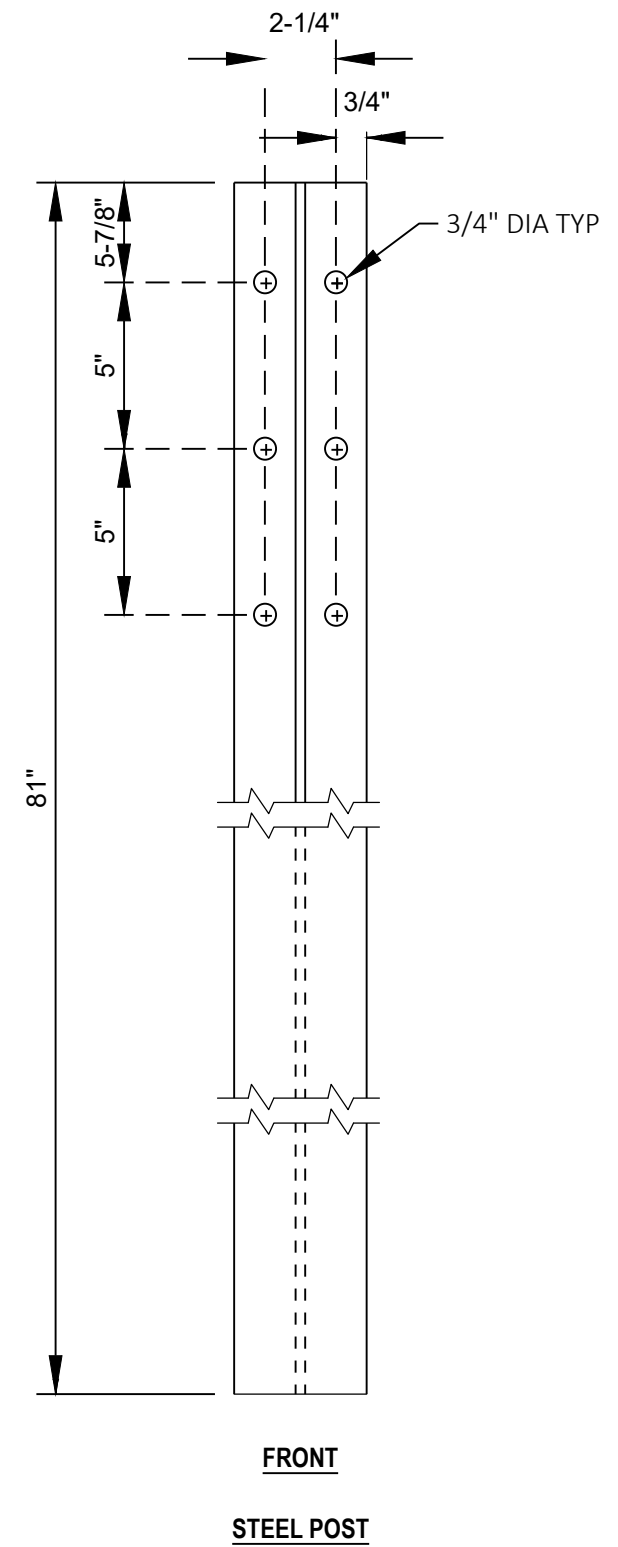
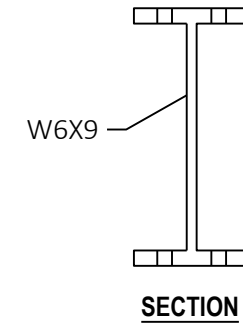
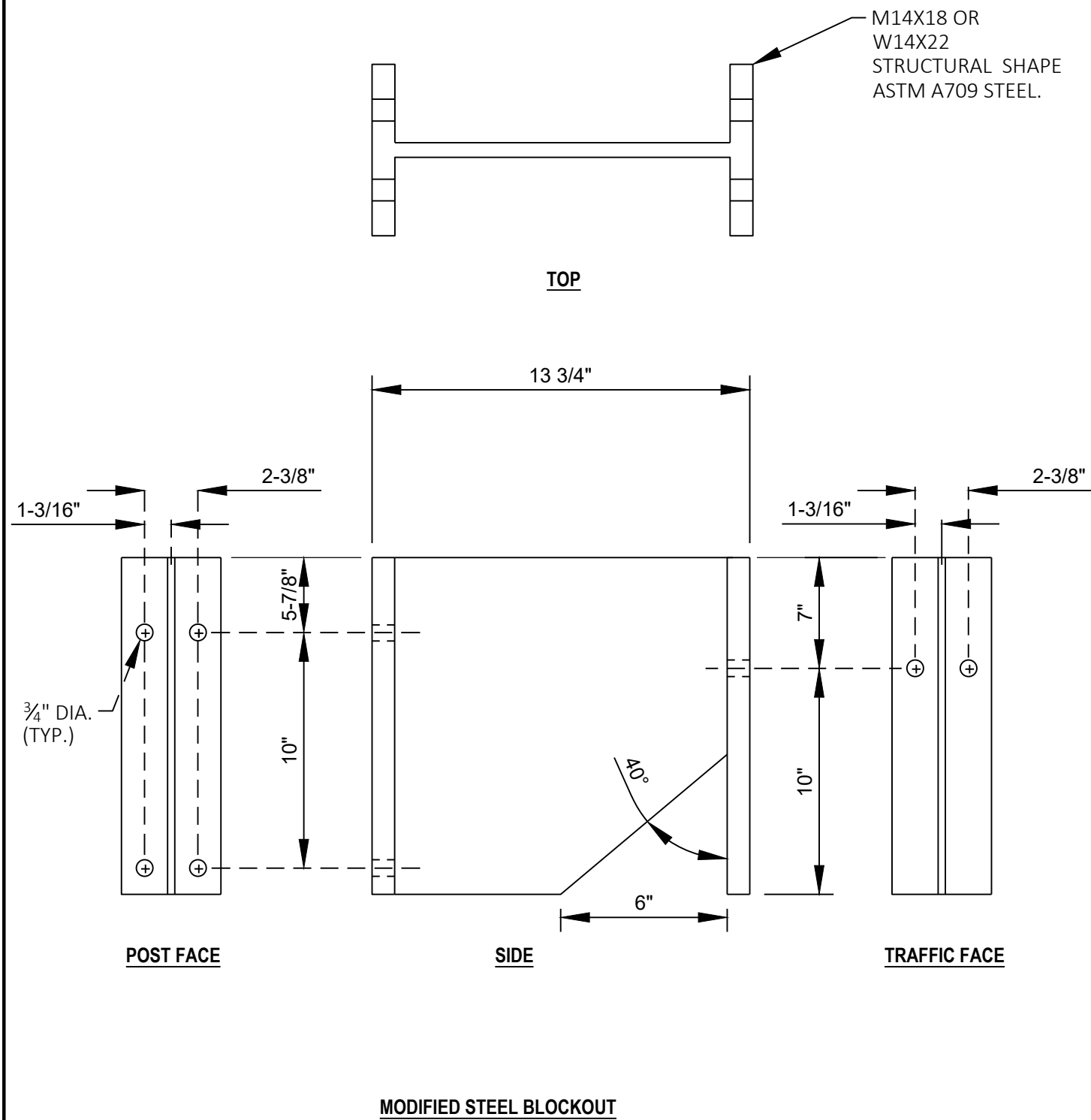
ALL SLOPES FROM EDGE OF TO FACE OF BARRIER ARE 10:1 OR FLATTER.

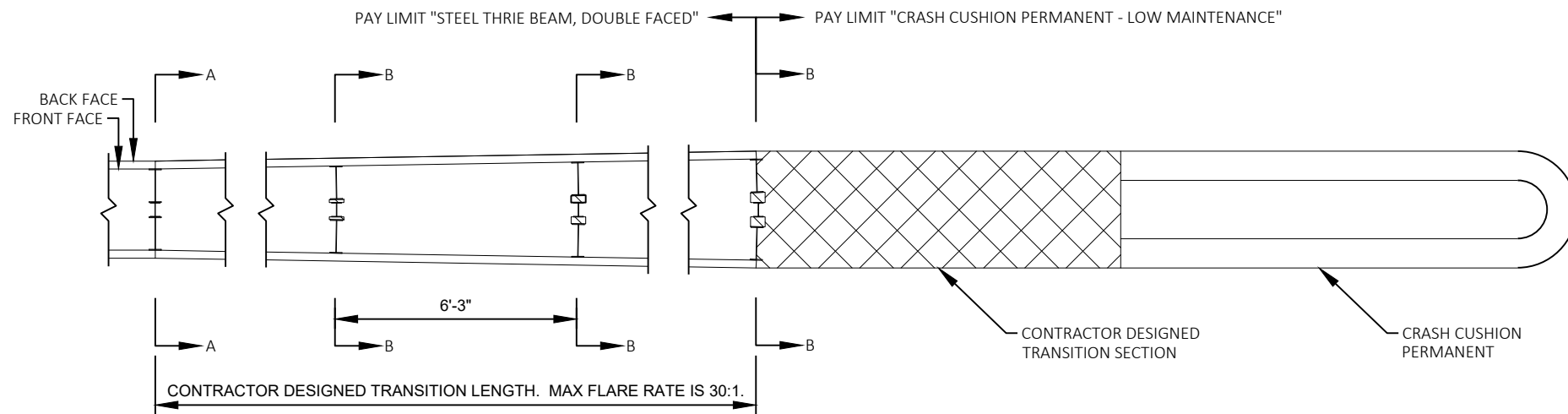
MAX HORIZONTAL FLARE IS 30:1, UNLESS NOTED OTHERWISE.

SEE SDD "STEEL PLATE BEAM GUARD, CLASS A", "STEEL THRIE BEAM STRUCTURE  
APPROACH" AND "STEEL PLATE BEAM GUARD, CLASS A, OVER LOW FILL CULVERTS"  
FOR MORE INFORMATION

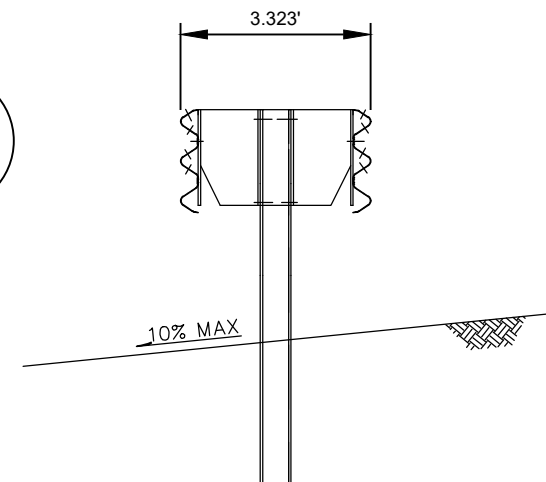
**CROSS SECTION (DOUBLE FACED)**



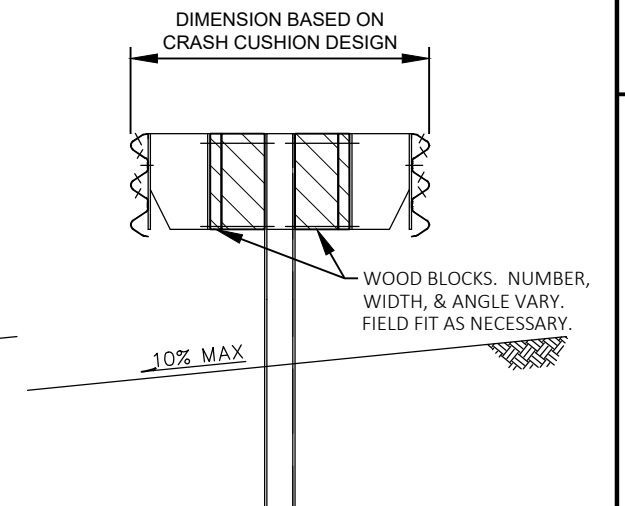




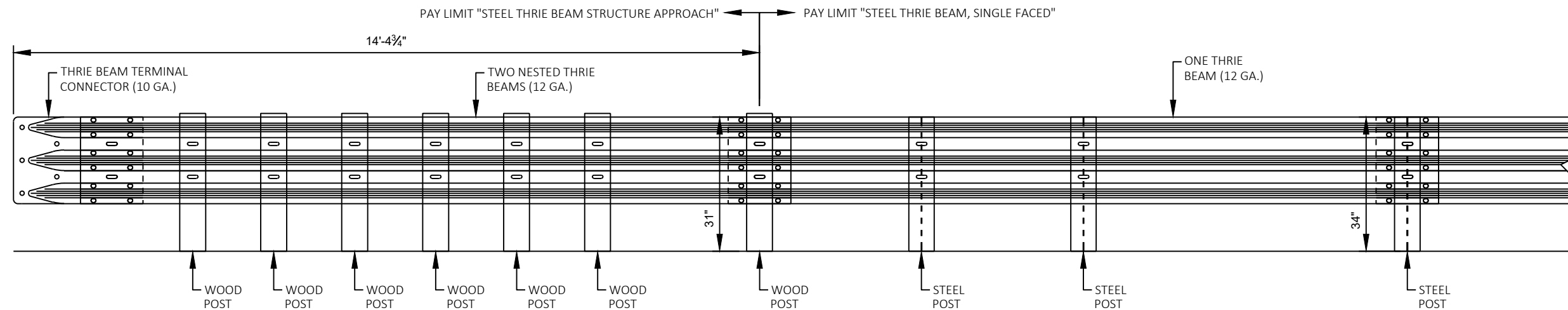
PLAN - STEEL THRIE BEAM, DOUBLE FACED TRANSITION TO CRASH CUSHION PERMANENT  
(TRANSITIONS AND CONNECTION TO CONFORM TO CRASH CUSHIONS MANUFACTURES SPECIFICATIONS)



SECTION A-A

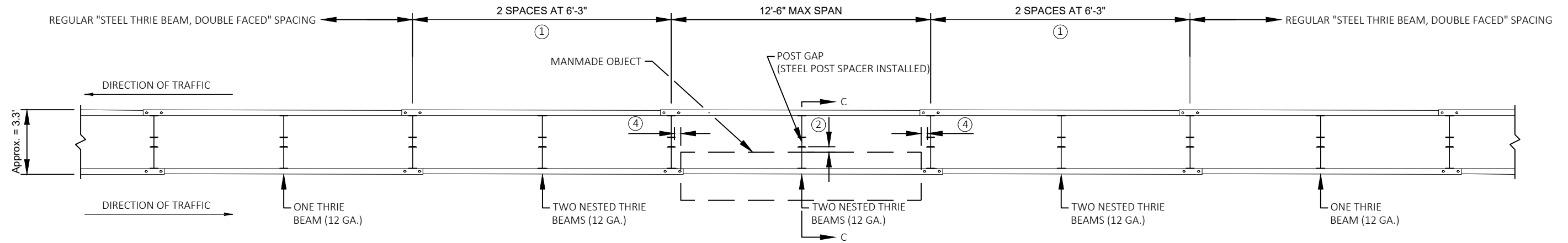


SECTION B-B



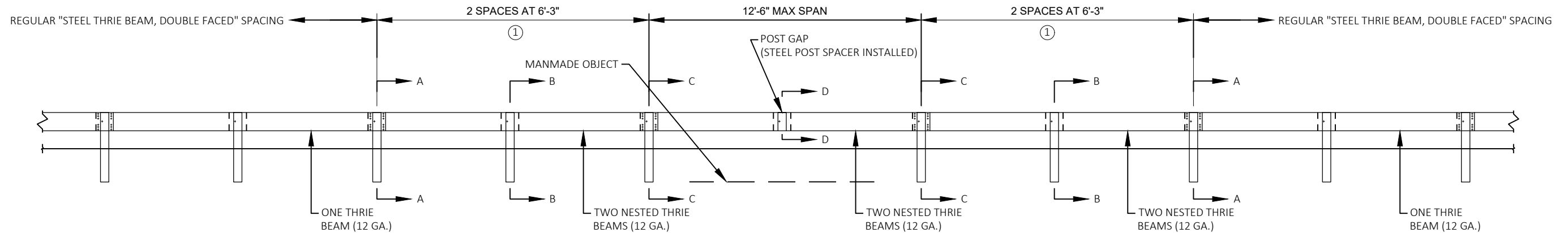
ELEVATION - STEEL THRIE BEAM STRUCTURE APPROACH MODIFICATION  
("W" TO THRIE BEAM TRANSITION SECTION OMITTED)





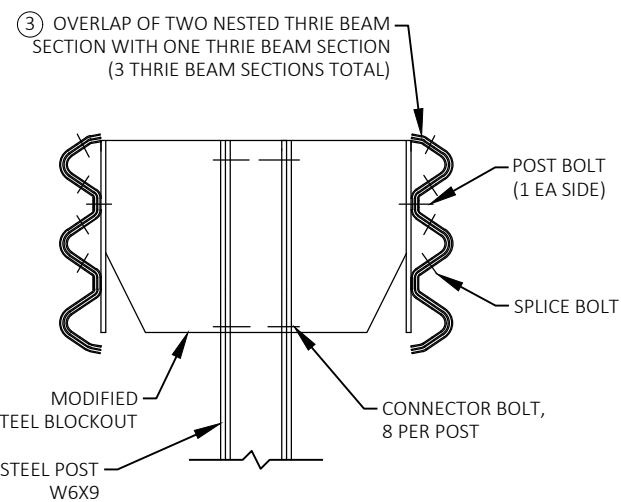
**PLAN - STEEL THRIE BEAM, DOUBLE FACED POST GAP (LONG SPAN)**

STEEL THRIE BEAM, SINGLE FACED POST GAP SIMILAR  
(SINGLE FACED POST GAP DOES NOT REQUIRE STEEL POST SPACER)

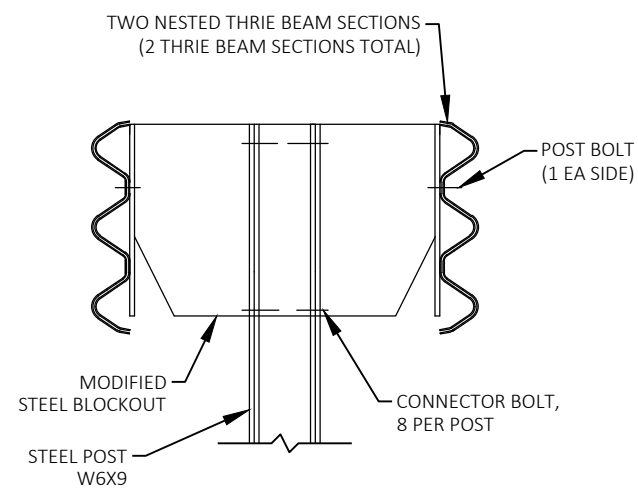


**ELEVATION - STEEL THRIE BEAM, DOUBLE FACED POST GAP (LONG SPAN)**

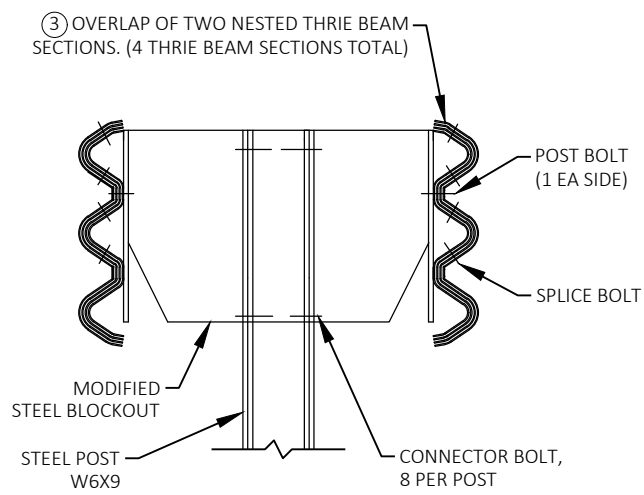
STEEL THRIE BEAM, SINGLE FACED POST GAP SIMILAR  
(SINGLE FACED POST GAP DOES NOT REQUIRE STEEL POST SPACER)



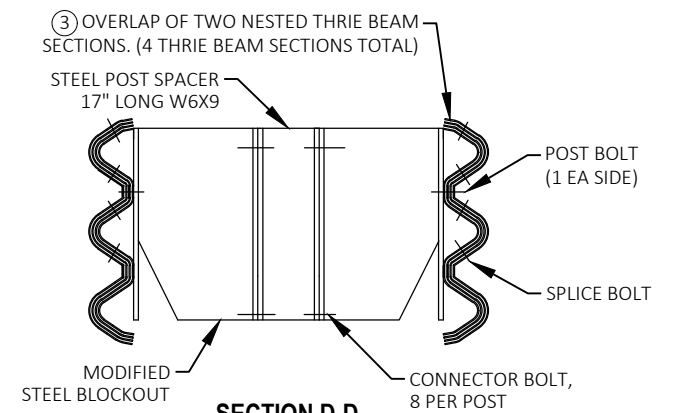
**SECTION A-A**



**SECTION B-B**

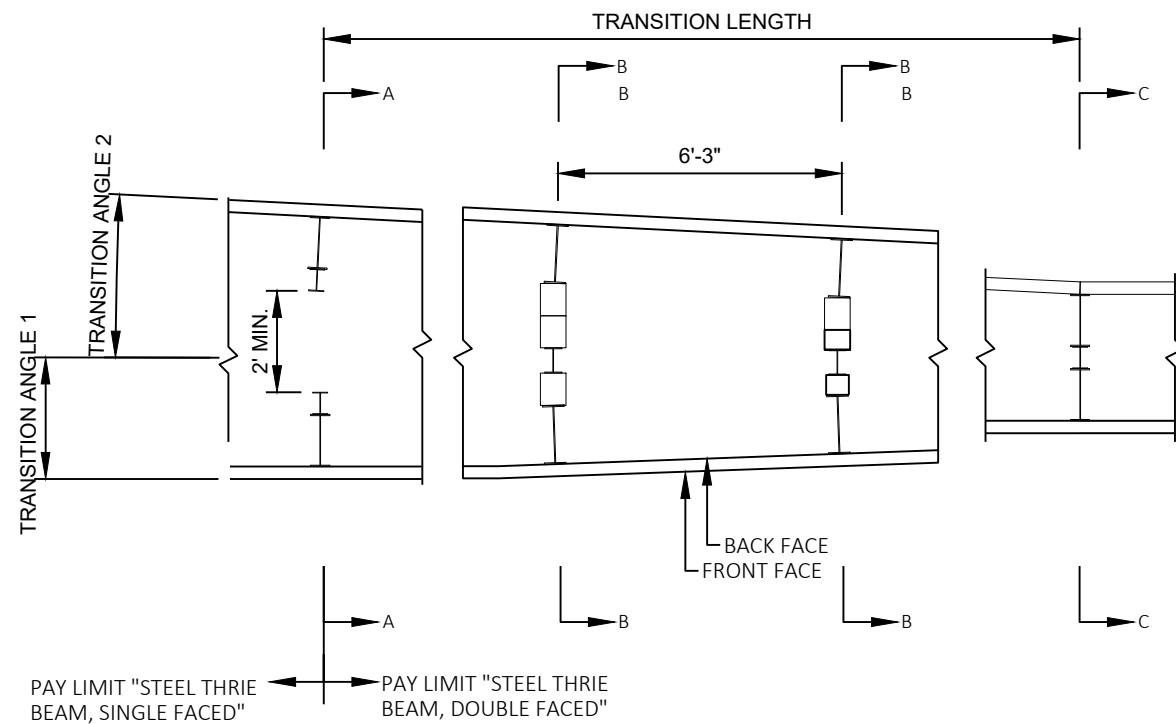


**SECTION C-C**



**SECTION D-D**

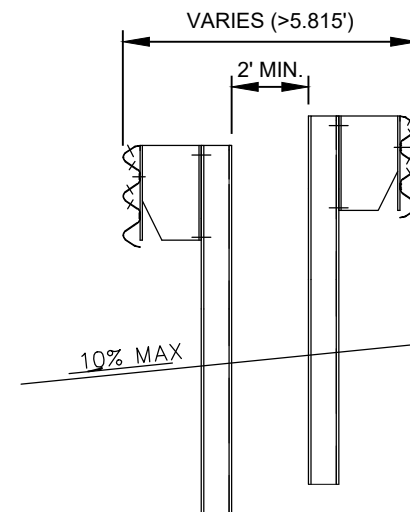
- ① ONE 12'-6" SECTION OF TWO NESTED THRIE BEAM (12 GA.) REQUIRED ON BOTH SIDES OF POST GAP. POST GAP SHALL NOT FALL WITHIN THIS 12'-6" SECTION.
- ② POST GAP REQUIRED WHEN DISTANCE FROM EDGE OF POST TO MANMADE OBJECT IS LESS THAN 2'-0".
- ③ MAINTAIN THE NESTING OF EACH NESTED PAIR OF THRIE BEAM SECTIONS THROUGH SPLICES. ORIENTATE NESTED THRIE BEAM SPLICES IN THE DIRECTION OF TRAFFIC AS THE PLAN VIEW SHOWS. SEE SDD "STEEL PLATE BEAM GUARD, CLASS A" FOR FURTHER DETAIL.
- ④ POST GAP REQUIRED WHEN DISTANCE FROM EDGE OF POST TO MANMADE OBJECT IS LESS THAN 1'-0".



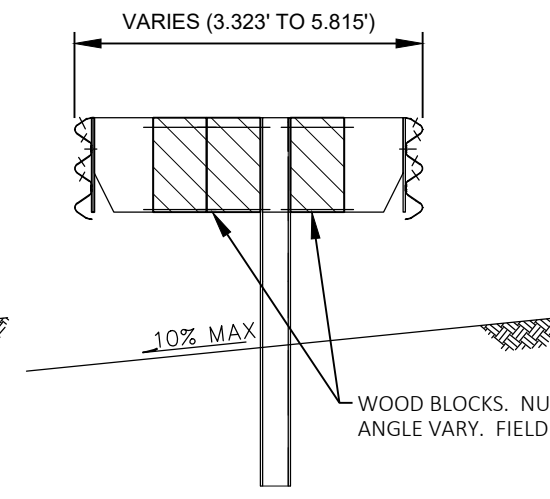
**STEEL THRIE BEAM, SINGLE TO DOUBLE FACED TRANSITION**

**STEEL THRIE BEAM, DOUBLE TO SINGLE FACE TRANSITION DETAILS**

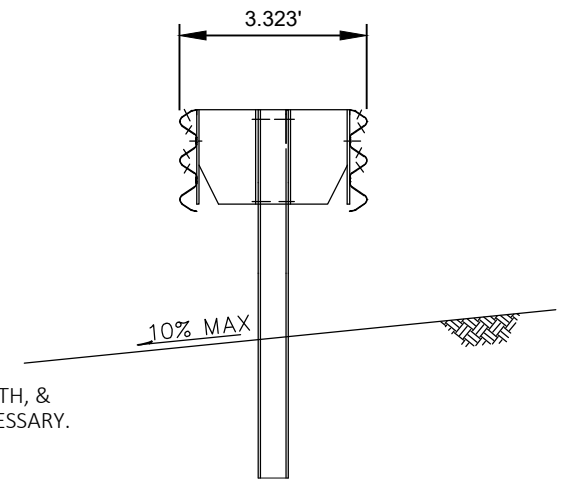
| TRANSITION NUMBER SHOWN ON PLAN SHEETS | TRANSITION LENGTH | TRANSITION ANGLE 1 AND 2 |
|----------------------------------------|-------------------|--------------------------|
| 1                                      | 30'-0"            | 2.08° AND 2.85°          |



**SECTION A-A**

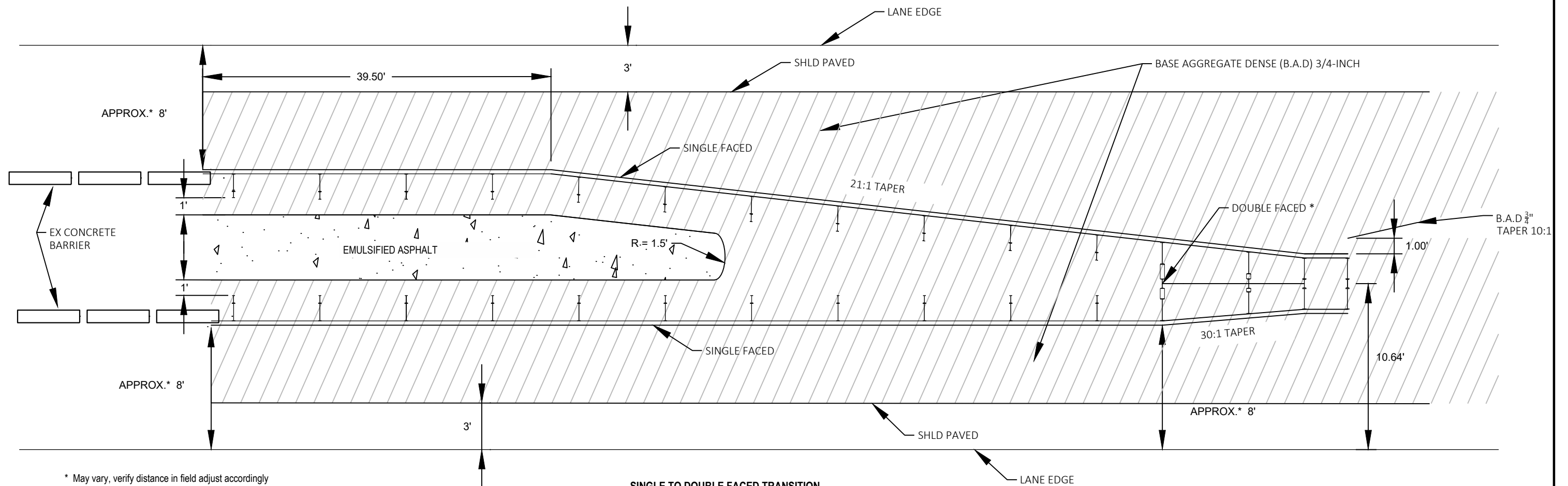


**SECTION B-B**

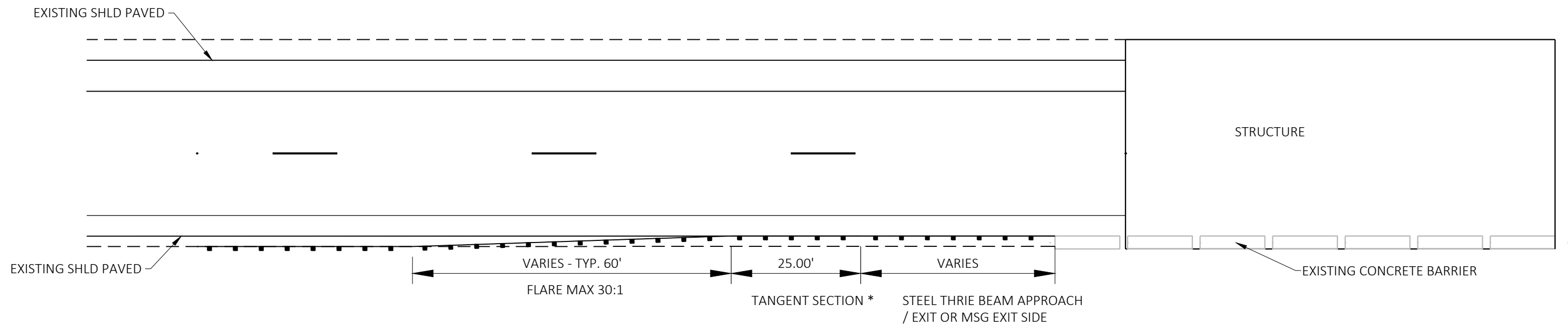


**SECTION C-C**

WOOD BLOCKS. NUMBER, WIDTH, & ANGLE VARY. FIELD FIT AS NECESSARY.

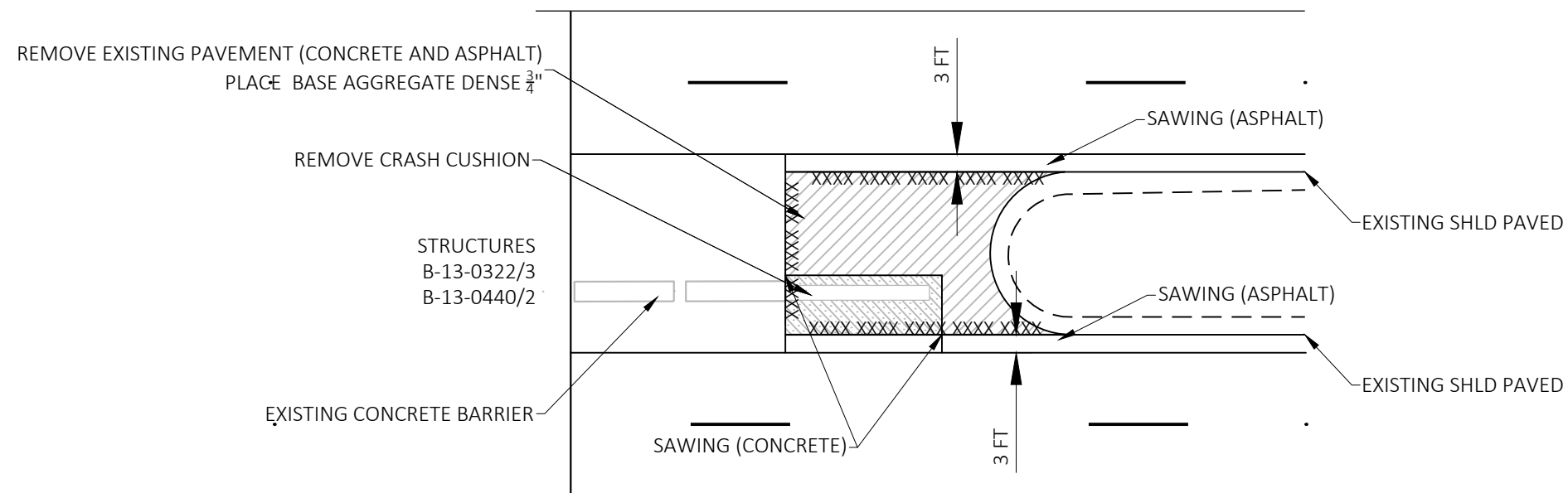


**SINGLE TO DOUBLE FACED TRANSITION**  
STA 200+00 - 201+58



APPROACH AND EXIT SIDE BEAM GUARD TRANSITIONS

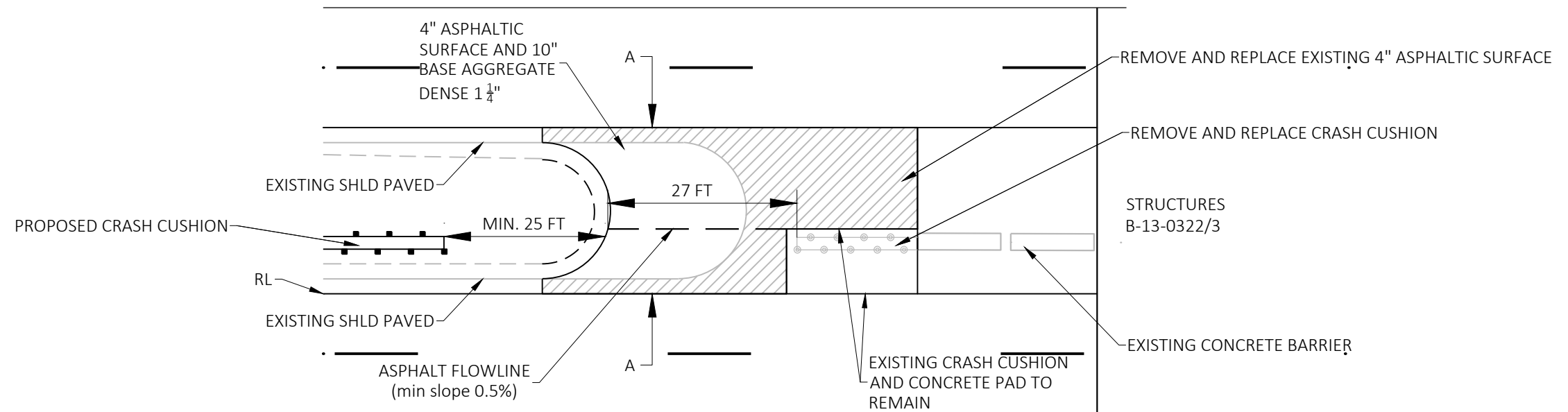
\* Do not flare thrie beam structure approach section. Install 25 feet of thrie or w beam beyond the approach section. After the 25 feet of tangent section, thrie or w beam may be flared. Max horizontal flare is 30:1. Existing thrie beam and posts may be used with field engineers approval.



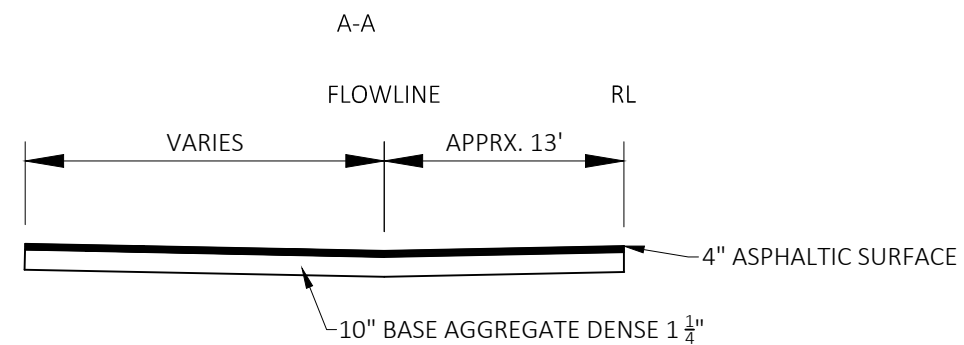
PAVEMENT REMOVAL AT STRUCTURES

229+11 - 229+51  
244+75 - 245+25  
248+01 - 248+38





MAINTENANCE CROSSOVERS AT STRUCTURES  
223+73 - 224+37





① REMOVE PAVEMENT, SEE PAVEMENT REMOVAL AT STRUCTURES CONSTRUCTION DETAIL

\* BEAM GUARD APPROACH SECTION, SEE APPROACH AND EXIT SIDE BEAM GUARD TRANSITIONS CONSTRUCTION DETAIL. EXISTING THRIE BEAM APPROACH RAILS AND POSTS MAY BE USED WITH FIELD ENGINEERS APPROVAL

SF THRIE BEAM = STEEL THRIE BEAM, SINGLE FACED

DF THRIE BEAM = STEEL THRIE BEAM, DOUBLE FACED

MGS TYPE 2 = MSG GUARDRAIL TERMINAL TYPE 2

SHLD AGG = BASE AGGREGATE DENSE, 3/4" - INCH





① REMOVE PAVEMENT, SEE PAVEMENT REMOVAL AT STRUCTURES CONSTRUCTION DETAIL

\* BEAM GUARD APPROACH SECTION, SEE APPROACH AND EXIT SIDE BEAM GUARD TRANSITIONS CONSTRUCTION DETAIL. EXISTING THRIE BEAM APPROACH RAILS and POSTS MAY BE USED WITH FIELD ENGINEERS APPROVAL

SF THRIE BEAM = STEEL THRIE BEAM, SINGLE FACED

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① REMOVE PAVEMENT, SEE PAVEMENT REMOVAL AT STRUCTURES CONSTRUCTION DETAIL

\* BEAM GUARD APPROACH SECTION, SEE APPROACH AND EXIT SIDE BEAM GUARD TRANSITIONS CONSTRUCTION DETAIL. EXISTING THRIE BEAM APPROACH RAILS and POSTS MAY BE USED WITH FIELD ENGINEERS APPROVAL

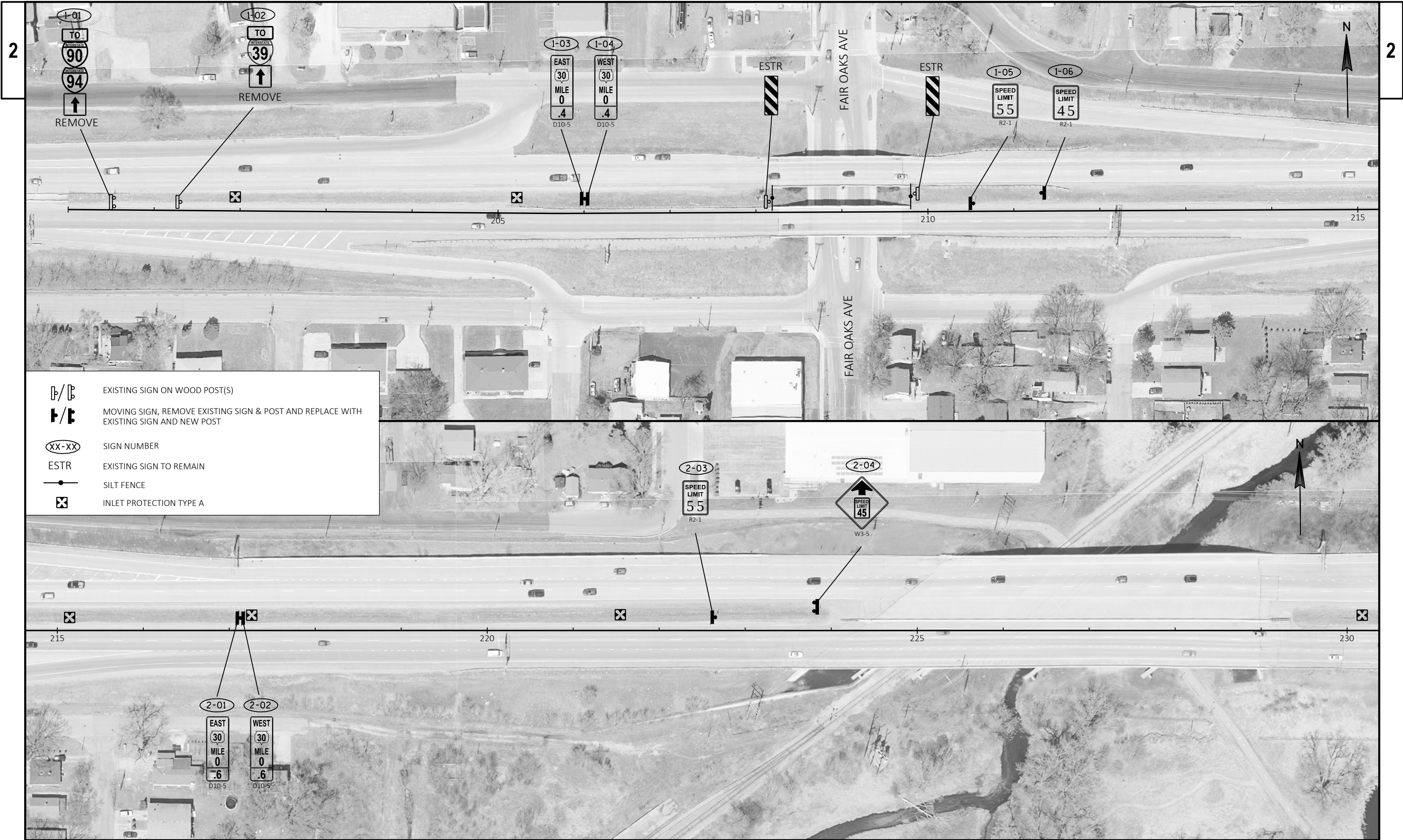
SF THRIE BEAM = STEEL THRIE BEAM, SINGLE FACED

DF THRIE BEAM = STEEL THRIE BEAM, DOUBLE FACED

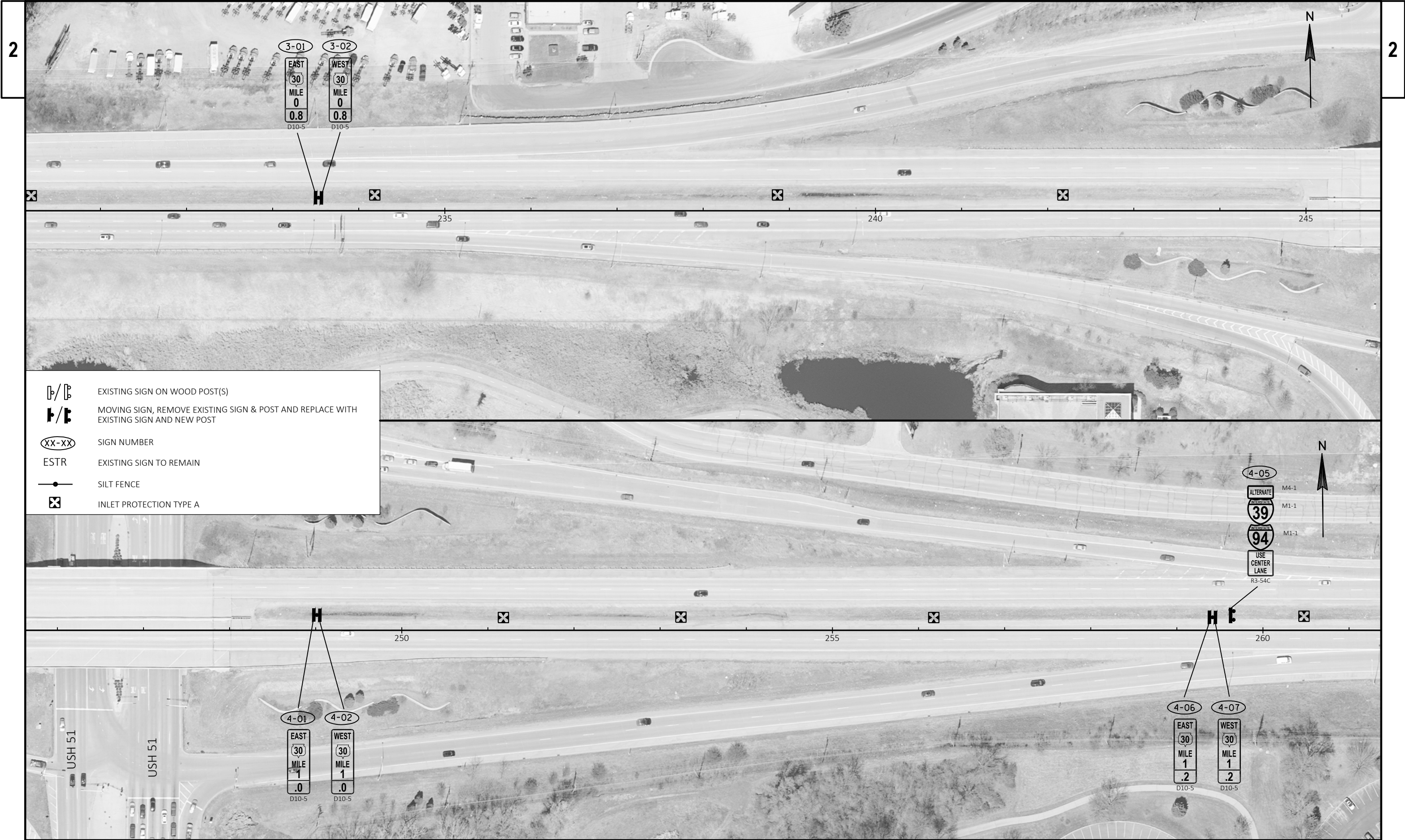
MGS TYPE 2 = MSG GUARDRAIL TERMINAL TYPE 2

SHLD AGG = BASE AGGREGATE DENSE, 3/4"- INCH













PCMS MESSAGES

7 DAYS PRIOR TO CONSTRUCTION:

PHASE ONE

LANE CLOSURES

PHASE TWO

STARTING XX/XX

CONSTRUCTION:

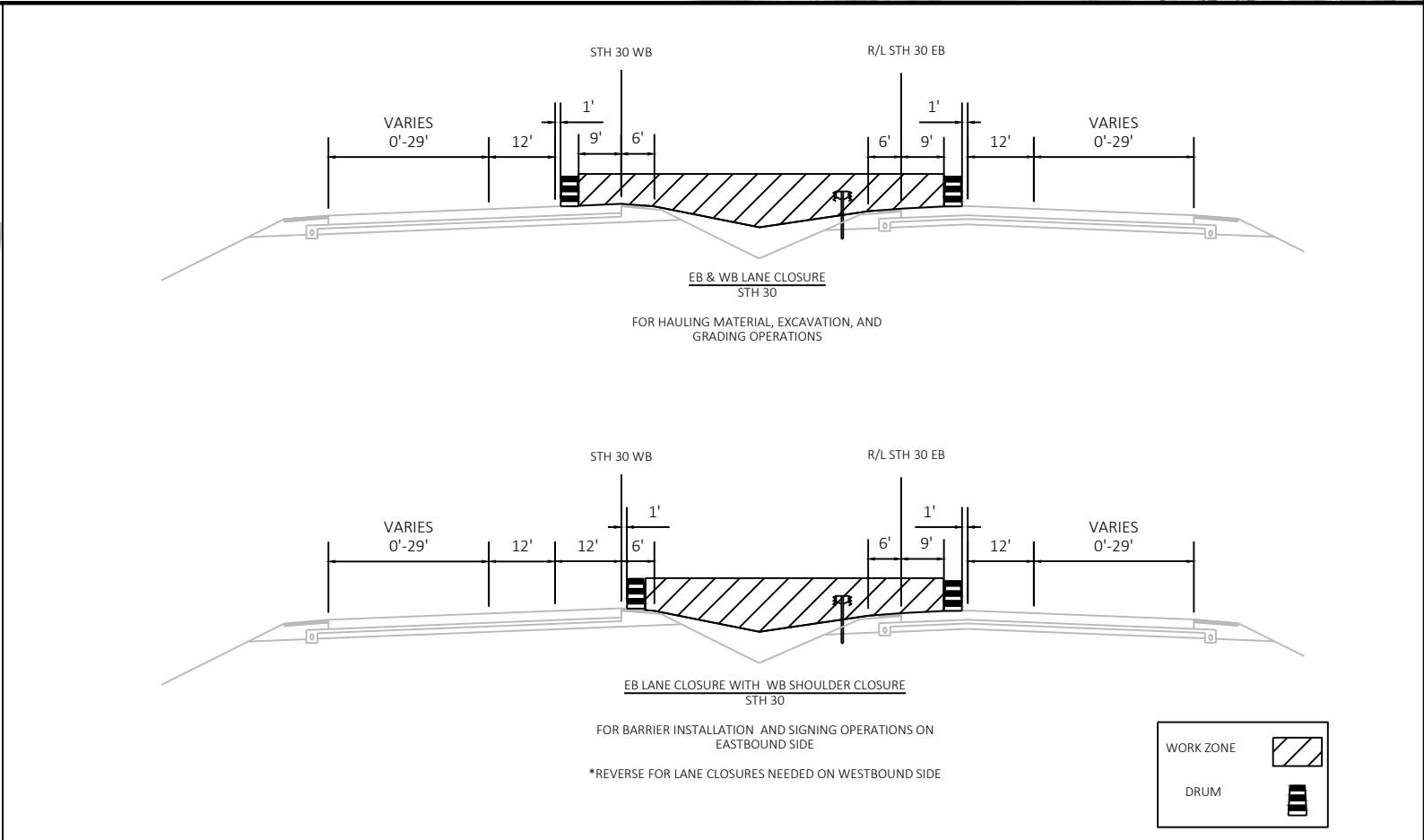
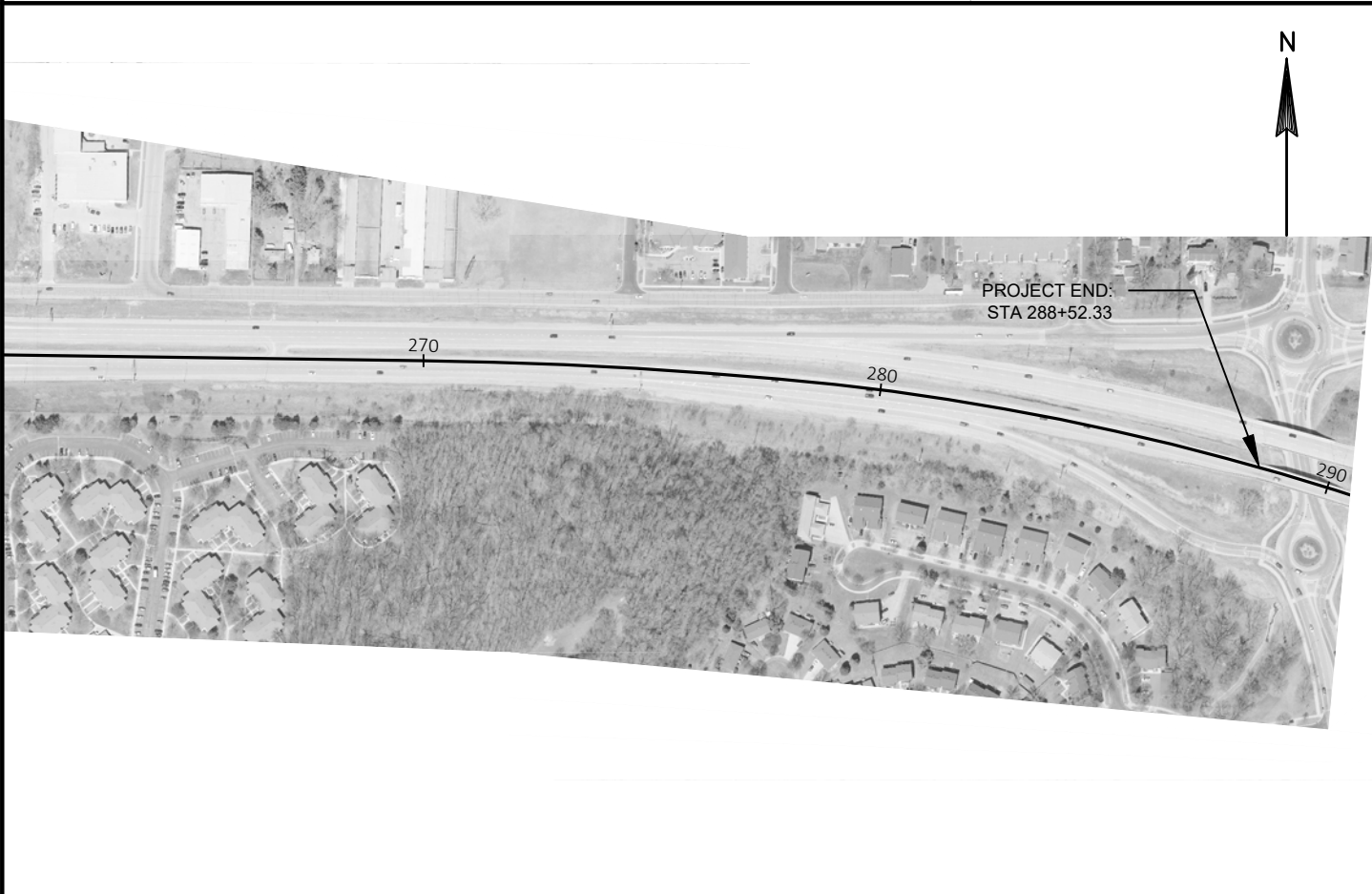
PHASE ONE

TRUCKS EXITING LEFT

PHASE TWO

DO NOT FOLLOW

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.





Estimate Of Quantities

5490-00-60

| Line | Item       | Item Description                                                     | Unit | Total      | Qty        |
|------|------------|----------------------------------------------------------------------|------|------------|------------|
| 0002 | 204.0100   | Removing Pavement                                                    | SY   | 95.000     | 95.000     |
| 0004 | 204.0110   | Removing Asphaltic Surface                                           | SY   | 308.000    | 308.000    |
| 0006 | 204.0165   | Removing Guardrail                                                   | LF   | 485.000    | 485.000    |
| 0008 | 204.0220   | Removing Inlets                                                      | EACH | 18.000     | 18.000     |
| 0010 | 204.0245   | Removing Storm Sewer (size) 01. 12,15,18, and 24 Inch                | LF   | 128.000    | 128.000    |
| 0012 | 204.9060.S | Removing (item description) 01. Crash Cushion                        | EACH | 3.000      | 3.000      |
| 0014 | 204.9090.S | Removing (item description) 01. Pipe Underdrain Unperforated 15-Inch | LF   | 24.000     | 24.000     |
| 0016 | 204.9180.S | Removing (item description) 01. Concrete Surface Drain               | SY   | 12.000     | 12.000     |
| 0018 | 205.0100   | Excavation Common **P**                                              | CY   | 1,840.000  | 1,840.000  |
| 0020 | 208.0100   | Borrow **P**                                                         | CY   | 4,820.000  | 4,820.000  |
| 0022 | 211.0500   | Prepare Foundation for Base Aggregate                                | STA  | 0.500      | 0.500      |
| 0024 | 213.0100   | Finishing Roadway (project) 01. 5490-00-60                           | EACH | 1.000      | 1.000      |
| 0026 | 305.0110   | Base Aggregate Dense 3/4-Inch                                        | TON  | 2,000.000  | 2,000.000  |
| 0028 | 305.0120   | Base Aggregate Dense 1 1/4-Inch                                      | TON  | 110.000    | 110.000    |
| 0030 | 416.0610   | Drilled Tie Bars                                                     | EACH | 6.000      | 6.000      |
| 0032 | 416.1015   | Concrete Surface Drains HES                                          | CY   | 8.000      | 8.000      |
| 0034 | 465.0105   | Asphaltic Surface                                                    | TON  | 40.000     | 40.000     |
| 0036 | 606.0100   | Riprap Light                                                         | CY   | 2.000      | 2.000      |
| 0038 | 608.3012   | Storm Sewer Pipe Class III-A 12-Inch                                 | LF   | 24.000     | 24.000     |
| 0040 | 608.3015   | Storm Sewer Pipe Class III-A 15-Inch                                 | LF   | 8.000      | 8.000      |
| 0042 | 608.3018   | Storm Sewer Pipe Class III-A 18-Inch                                 | LF   | 88.000     | 88.000     |
| 0044 | 608.3024   | Storm Sewer Pipe Class III-A 24-Inch                                 | LF   | 16.000     | 16.000     |
| 0046 | 611.0642   | Inlet Covers Type MS                                                 | EACH | 24.000     | 24.000     |
| 0048 | 611.3901   | Inlets Median 1 Grate                                                | EACH | 14.000     | 14.000     |
| 0050 | 611.3902   | Inlets Median 2 Grate                                                | EACH | 5.000      | 5.000      |
| 0052 | 612.0215   | Pipe Underdrain Unperforated 15-Inch                                 | LF   | 24.000     | 24.000     |
| 0054 | 614.0200   | Steel Thrie Beam Structure Approach                                  | LF   | 28.800     | 28.800     |
| 0056 | 614.0805   | Crash Cushions Permanent Low Maintenance                             | EACH | 3.000      | 3.000      |
| 0058 | 614.2300   | MGS Guardrail 3                                                      | LF   | 330.000    | 330.000    |
| 0060 | 614.2500   | MGS Thrie Beam Transition                                            | LF   | 20.000     | 20.000     |
| 0062 | 614.2620   | MGS Guardrail Terminal Type 2                                        | EACH | 2.000      | 2.000      |
| 0064 | 618.0100   | Maintenance And Repair of Haul Roads (project) 01. 5490-00-60        | EACH | 1.000      | 1.000      |
| 0066 | 619.1000   | Mobilization                                                         | EACH | 1.000      | 1.000      |
| 0068 | 624.0100   | Water                                                                | MGAL | 28.000     | 28.000     |
| 0070 | 625.0100   | Topsoil                                                              | SY   | 14,180.000 | 14,180.000 |
| 0072 | 628.1504   | Silt Fence                                                           | LF   | 85.000     | 85.000     |
| 0074 | 628.1905   | Mobilizations Erosion Control                                        | EACH | 1.000      | 1.000      |
| 0076 | 628.1910   | Mobilizations Emergency Erosion Control                              | EACH | 1.000      | 1.000      |



Estimate Of Quantities

5490-00-60

| Line | Item     | Item Description                                                      | Unit | Total      | Qty        |
|------|----------|-----------------------------------------------------------------------|------|------------|------------|
| 0078 | 628.2004 | Erosion Mat Class I Type B                                            | SY   | 14,737.000 | 14,737.000 |
| 0080 | 628.7005 | Inlet Protection Type A                                               | EACH | 20.000     | 20.000     |
| 0082 | 628.7504 | Temporary Ditch Checks                                                | LF   | 372.000    | 372.000    |
| 0084 | 629.0205 | Fertilizer Type A                                                     | CWT  | 9.300      | 9.300      |
| 0086 | 630.0120 | Seeding Mixture No. 20                                                | LB   | 398.000    | 398.000    |
| 0088 | 634.0614 | Posts Wood 4x6-Inch X 14-FT                                           | EACH | 5.000      | 5.000      |
| 0090 | 634.0616 | Posts Wood 4x6-Inch X 16-FT                                           | EACH | 11.000     | 11.000     |
| 0092 | 634.0618 | Posts Wood 4x6-Inch X 18-FT                                           | EACH | 2.000      | 2.000      |
| 0094 | 638.2102 | Moving Signs Type II                                                  | EACH | 16.000     | 16.000     |
| 0096 | 638.2602 | Removing Signs Type II                                                | EACH | 2.000      | 2.000      |
| 0098 | 638.3000 | Removing Small Sign Supports                                          | EACH | 21.000     | 21.000     |
| 0100 | 643.0300 | Traffic Control Drums                                                 | DAY  | 5,942.000  | 5,942.000  |
| 0102 | 643.0420 | Traffic Control Barricades Type III                                   | DAY  | 126.000    | 126.000    |
| 0104 | 643.0705 | Traffic Control Warning Lights Type A                                 | DAY  | 252.000    | 252.000    |
| 0106 | 643.0715 | Traffic Control Warning Lights Type C                                 | DAY  | 504.000    | 504.000    |
| 0108 | 643.0800 | Traffic Control Arrow Boards                                          | DAY  | 122.000    | 122.000    |
| 0110 | 643.0900 | Traffic Control Signs                                                 | DAY  | 1,102.000  | 1,102.000  |
| 0112 | 643.1050 | Traffic Control Signs PCMS                                            | DAY  | 136.000    | 136.000    |
| 0114 | 643.5000 | Traffic Control                                                       | EACH | 1.000      | 1.000      |
| 0116 | 645.0130 | Geotextile Type R                                                     | SY   | 2.000      | 2.000      |
| 0118 | 650.4000 | Construction Staking Storm Sewer                                      | EACH | 19.000     | 19.000     |
| 0120 | 650.9910 | Construction Staking Supplemental Control (project) 01.<br>5490-00-60 | LS   | 1.000      | 1.000      |
| 0122 | 650.9920 | Construction Staking Slope Stakes                                     | LF   | 7,252.000  | 7,252.000  |
| 0124 | 690.0150 | Sawing Asphalt                                                        | LF   | 222.000    | 222.000    |
| 0126 | 690.0250 | Sawing Concrete                                                       | LF   | 113.000    | 113.000    |
| 0128 | ASP.1T0A | On-the-Job Training Apprentice at \$5.00/HR                           | HRS  | 325.000    | 325.000    |
| 0130 | ASP.1T0G | On-the-Job Training Graduate at \$5.00/HR                             | HRS  | 250.000    | 250.000    |
| 0132 | SPV.0060 | Special 01. Reestablish Landmark Reference<br>Monuments               | EACH | 1.000      | 1.000      |
| 0134 | SPV.0090 | Special 01. Pipe Underdrain Unperforated 6-Inch                       | LF   | 2,763.000  | 2,763.000  |
| 0136 | SPV.0090 | Special 02. Steel Thrie Beam Single Face                              | LF   | 581.000    | 581.000    |
| 0138 | SPV.0090 | Special 03. Steel Thrie Beam Double Faced                             | LF   | 7,197.000  | 7,197.000  |
| 0140 | SPV.0090 | Special 04. Steel Thrie Beam Structure Approach<br>Double Faced       | LF   | 57.400     | 57.400     |
| 0142 | SPV.0180 | Special 01. Emulsified Asphalt Median Treatment                       | SY   | 32.000     | 32.000     |

| Location         | From/To Station | 205.0100<br>Common<br>Excavation<br>(CY)<br>(1),(6) | Unusable<br>Material (2) | Available<br>Material<br>(3) | Unexpanded<br>Fill | Expanded Fill<br>(4) | Mass Ordinate<br>+/-<br>(5) | 208.0100<br>Borrow (CY)<br>(6) | 625.0100<br>Topsoil (SY) |
|------------------|-----------------|-----------------------------------------------------|--------------------------|------------------------------|--------------------|----------------------|-----------------------------|--------------------------------|--------------------------|
|                  |                 | Cut                                                 |                          |                              |                    | Factor<br>1.25       |                             |                                |                          |
| STH 30 Median    | 200+10 - 207+84 | 190                                                 | 190                      | 0                            | 141                | 177                  | -177                        | 180                            | 960                      |
|                  | 210+72 - 223+70 | 320                                                 | 320                      | 0                            | 504                | 630                  | -630                        | 630                            | 2,090                    |
|                  | 229+55 - 244+70 | 380                                                 | 380                      | 0                            | 1,021              | 1,276                | -1,276                      | 1,280                          | 2,460                    |
|                  | 248+40 - 267+15 | 460                                                 | 460                      | 0                            | 800                | 1,000                | -1,000                      | 1,000                          | 2,970                    |
|                  | 268+00 - 286+50 | 490                                                 | 490                      | 0                            | 1,380              | 1,725                | -1,725                      | 1,730                          | 5,700                    |
|                  |                 |                                                     |                          |                              |                    |                      |                             |                                |                          |
| Grand Total      |                 | 1,840                                               | 1,840                    | 0                            | 3,847              | 4,808                | -4,808                      | 4,820                          | 14,180                   |
| Total Common Exc |                 | 1,840                                               |                          |                              |                    |                      |                             |                                |                          |

Notes:

(1) Common Excavation is based the on removal and disposal material plus 3 inches of sod or other perishable or unsuitable materials. Item number 205.0100

(2) Unusable Material is based the on removal and disposal material plus 3 inches of sod or other perishable or unsuitable materials

(3) Available Material = Cut - Unusuable Material

(4) Expanded Fill Factor = 1.25

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

(6) Items 205.0100 Common Excavation and 208.0100 Borrow are rounded up to the nearest 10 CY.

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| PAVEMENT REMOVAL |         |    |         |          |                            |                                        |                         |                          |
|------------------|---------|----|---------|----------|----------------------------|----------------------------------------|-------------------------|--------------------------|
| CATEGORY         | STATION | TO | STATION | LOCATION | 204.0100                   | 204.0110                               | 690.0150                | 690.0250                 |
|                  |         |    |         |          | REMOVING<br>PAVEMENT<br>SY | REMOVING<br>ASPHALTIC<br>SURFACE<br>SY | SAWING<br>ASPHALT<br>LF | SAWING<br>CONCRETE<br>LF |
| 0010             | 208+05  | -  | 208+17  | 29' LT   | 0                          | 8                                      | 6                       | 0                        |
| 0010             | 223+73  | -  | 224+37  | LT       | 0                          | 120                                    | 8                       | 0                        |
| 0010             | 229+11  | -  | 229+51  | LT       | 29                         | 65                                     | 71                      | 34                       |
| 0010             | 244+87  | -  | 245+26  | LT       | 34                         | 60                                     | 74                      | 37                       |
| 0010             | 248+01  | -  | 248+38  | LT       | 32                         | 55                                     | 63                      | 36                       |
| 0010             | 288+34  |    |         | 50' LT   |                            |                                        |                         | 6                        |
| TOTAL            |         |    |         |          | 95                         | 308                                    | 222                     | 113                      |

| REMOVING STORM SEWER AND DRAINAGE PIPE |         |          |                                        |                                         |         |         |         |                                                                                  |
|----------------------------------------|---------|----------|----------------------------------------|-----------------------------------------|---------|---------|---------|----------------------------------------------------------------------------------|
| CATEGORY                               | STATION | LOCATION | 204.0220<br>REMOVING<br>INLETS<br>EACH | 204.0245<br>REMOVING STORM SEWER (SIZE) |         |         |         | 204.9090.S.01<br>REMOVING<br>PIPE<br>UNDERDRAIN<br>UNPERFORATED<br>15-INCH<br>LF |
|                                        |         |          |                                        | 12-INCH                                 | 15-INCH | 18-INCH | 24-INCH | LF                                                                               |
|                                        |         |          |                                        | LF                                      | LF      | LF      | LF      |                                                                                  |
| 0010                                   | 201+94  | LT       | 1                                      | 8                                       | -       | -       | -       | -                                                                                |
|                                        | 205+21  | LT       | 1                                      | 8                                       | -       | -       | -       | -                                                                                |
|                                        | 215+14  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 217+26  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 221+54  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 230+18  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 234+18  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 238+84  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 242+18  | LT       | 1                                      | -                                       | -       | -       | -       | 8                                                                                |
|                                        | 251+17  | LT       | 1                                      | -                                       | -       | -       | -       | 8                                                                                |
|                                        | 253+24  | LT       | 1                                      | -                                       | -       | -       | -       | 8                                                                                |
|                                        | 256+17  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 260+48  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 263+18  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 267+18  | LT       | 1                                      | -                                       | -       | 8       | -       | -                                                                                |
|                                        | 271+15  | LT       | 1                                      | -                                       | -       | 8       |         | -                                                                                |
|                                        | 276+35  | LT       | 1                                      | -                                       | -       | -       | 16      | -                                                                                |
|                                        | 285+05  | LT       | 1                                      | -                                       | 8       | -       | -       | -                                                                                |
| SUBTOTAL                               |         |          |                                        | 16                                      | 8       | 88      | 16      | 24                                                                               |
| TOTAL                                  |         |          | 18                                     |                                         |         | 128     |         | 24                                                                               |

| REMOVING (CONCRETE SURFACE DRAIN) |         |          |                     |
|-----------------------------------|---------|----------|---------------------|
| CATEGORY                          | STATION | LOCATION | 204.9180.S.01<br>SY |
| 0010                              | 288+30  | 50' LT   | 12                  |
| TOTAL                             |         |          | 12                  |

| BASE AGGREGATE DENSE |               |    |         |          |                                                           |                                                             |
|----------------------|---------------|----|---------|----------|-----------------------------------------------------------|-------------------------------------------------------------|
| CATEGORY             | STATION       | TO | STATION | LOCATION | 305.0110<br>BASE<br>AGGREGATE<br>DENSE<br>3/4-INCH<br>TON | 305.0120<br>BASE<br>AGGREGATE<br>DENSE<br>1 1/4-INCH<br>TON |
|                      |               |    |         |          |                                                           |                                                             |
| 0010                 | 200+10        | -  | 207+84  | EB       | 160                                                       |                                                             |
|                      | 200+10        | -  | 207+84  | WB       | 90                                                        |                                                             |
|                      | 209+92        | -  | 223+96  | EB       | 260                                                       |                                                             |
|                      | 209+92        | -  | 223+73  | WB       | 30                                                        |                                                             |
|                      | 223+73        | -  | 224+37  |          | 0                                                         | 110                                                         |
|                      | 229+11        | -  | 229+41  |          | 50                                                        |                                                             |
|                      | 229+41        | -  | 244+70  | EB       | 290                                                       |                                                             |
|                      | 229+41        | -  | 244+87  | WB       | 40                                                        |                                                             |
|                      | 244+87        | -  | 245+26  |          | 50                                                        |                                                             |
|                      | 248+01        | -  | 248+38  |          | 50                                                        |                                                             |
|                      | 248+38        | -  | 266+45  | EB       | 360                                                       |                                                             |
|                      | 248+38        | -  | 266+45  | WB       | 40                                                        |                                                             |
|                      | 267+15        | -  | 288+03  | EB       | 370                                                       |                                                             |
|                      | 267+15        | -  | 288+03  | WB       | 40                                                        |                                                             |
|                      | UNDISTRIBUTED |    |         |          | 170                                                       |                                                             |
|                      | TOTAL         |    |         |          | 2000                                                      | 110                                                         |

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| DRAINAGE STRUCTURES   |     |         |          |                                  |                                     |       |                                        |                                         |                                         |
|-----------------------|-----|---------|----------|----------------------------------|-------------------------------------|-------|----------------------------------------|-----------------------------------------|-----------------------------------------|
|                       |     |         |          |                                  |                                     |       | 611.0642<br>INLET<br>COVERS<br>TYPE MS | 611.3901<br>INLETS<br>MEDIAN 1<br>GRATE | 611.3902<br>INLETS<br>MEDIAN 2<br>GRATE |
| STRUCTURE<br>CATEGORY | ID  | STATION | LOCATION | TOP OF<br>STRUCTURE<br>ELEVATION | BOTTOM OF<br>STRUCTURE<br>ELEVATION | DEPTH | EACH                                   | EACH                                    | EACH                                    |
| 0010                  | 101 | 201+86  | LT       | 864.73                           | 861.69                              | 3.04  | 1                                      | 1                                       | -                                       |
|                       | 102 | 201+94  | LT       | 864.76                           | 861.28                              | 3.48  | 2                                      | -                                       | 1                                       |
|                       | 103 | 205+21  | LT       | 869.76                           | 866.21                              | 3.55  | 2                                      | -                                       | 1                                       |
|                       | 104 | 215+14  | LT       | 866.54                           | 859.62                              | 6.92  | 2                                      | -                                       | 1                                       |
|                       | 105 | 217+26  | LT       | 868.58                           | 862.53                              | 6.05  | 1                                      | 1                                       | -                                       |
|                       | 106 | 221+54  | LT       | 876.96                           | 870.14                              | 6.82  | 1                                      | 1                                       | -                                       |
|                       | 107 | 230+18  | LT       | 876.14                           | 870.86                              | 5.28  | 1                                      | 1                                       | -                                       |
|                       | 108 | 234+18  | LT       | 870.96                           | 865.48                              | 5.48  | 1                                      | 1                                       | -                                       |
|                       | 109 | 238+84  | LT       | 865.97                           | 860.98                              | 4.99  | 2                                      | -                                       | 1                                       |
|                       | 110 | 242+18  | LT       | 870.22                           | 864.98                              | 5.24  | 1                                      | 1                                       | -                                       |
|                       | 111 | 251+17  | LT       | 878.76                           | 873.11                              | 5.65  | 1                                      | 1                                       | -                                       |
|                       | 112 | 253+24  | LT       | 878.23                           | 872.20                              | 6.03  | 2                                      | -                                       | 1                                       |
|                       | 113 | 256+17  | LT       | 880.91                           | 875.72                              | 5.19  | 1                                      | 1                                       | -                                       |
|                       | 114 | 260+48  | LT       | 892.85                           | 888.27                              | 4.58  | 1                                      | 1                                       | -                                       |
|                       | 115 | 263+18  | LT       | 901.06                           | 897.12                              | 3.94  | 1                                      | 1                                       | -                                       |
|                       | 116 | 267+18  | LT       | 912.74                           | 909.22                              | 3.52  | 1                                      | 1                                       | -                                       |
|                       | 117 | 271+15  | LT       | 924.40                           | 919.34                              | 5.06  | 1                                      | 1                                       | -                                       |
|                       | 118 | 276+35  | LT       | 932.10                           | 927.28                              | 4.82  | 1                                      | 1                                       | -                                       |
|                       | 119 | 285+05  | LT       | 933.56                           | 927.26                              | 6.30  | 1                                      | 1                                       | -                                       |
| TOTAL                 |     |         |          |                                  |                                     |       | 24                                     | 14                                      | 5                                       |

| STORM SEWER PIPE |           |        |           |        |          |                                                |            |            |            |                 |                              |
|------------------|-----------|--------|-----------|--------|----------|------------------------------------------------|------------|------------|------------|-----------------|------------------------------|
| CATEGORY         | INLET     |        | OUTLET    |        | LOCATION | STORM SEWER PIPE REINFORCED CONCRETE CLASS III |            |            |            | PIPE UNDERDRAIN | REMARKS                      |
|                  |           |        |           |        |          | 608.3012                                       | 608.3015   | 608.3018   | 608.3024   | UNPERFORATED    |                              |
|                  | STRUCTURE | ELEV   | STRUCTURE | ELEV   |          | 12-INCH LF                                     | 15-INCH LF | 18-INCH LF | 24-INCH LF | 15-INCH LF      |                              |
| 0010             | 102       | 861.70 | 101       | 861.86 | MEDIAN   | 8                                              | -          | -          | -          | -               |                              |
|                  |           |        | 102       | 861.45 | MEDIAN   | 8                                              | -          | -          | -          | -               |                              |
|                  |           |        | 103       | 866.38 | MEDIAN   | 8                                              | -          | -          | -          | -               |                              |
|                  |           |        | 104       | 859.83 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 105       | 862.74 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 106       | 870.35 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 107       | 871.07 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 108       | 865.69 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 109       | 861.19 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 110       | 865.02 | MEDIAN   | -                                              | -          | -          | -          | 8               |                              |
|                  |           |        | 111       | 873.15 | MEDIAN   | -                                              | -          | -          | -          | 8               |                              |
|                  |           |        | 112       | 872.24 | MEDIAN   | -                                              | -          | -          | -          | 8               |                              |
|                  |           |        | 113       | 875.93 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 114       | 888.48 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 115       | 897.33 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 116       | 909.43 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  |           |        | 117       | 919.55 | MEDIAN   | -                                              | -          | 8          | -          | -               |                              |
|                  | 118       |        |           | 927.53 | MEDIAN   | -                                              | -          | -          | 8          | -               | FROM APRON ENDWALL WB STH 30 |
|                  |           |        |           | 118    | 927.53   | MEDIAN                                         | -          | -          | -          | 8               | -                            |
|                  |           |        |           | 119    | 927.45   | MEDIAN                                         | -          | 8          | -          | -               | -                            |
| TOTAL            |           |        |           |        |          | 24                                             | 8          | 88         | 16         | 24              |                              |

| PIPE UNDERDRAIN 6-INCH |    |         |            |           |        |          |             |                    |
|------------------------|----|---------|------------|-----------|--------|----------|-------------|--------------------|
| STATION                | TO | STATION | UNDERDRAIN | STRUCTURE | INVERT | LOCATION | SPV.0090.01 | REMARKS            |
|                        |    |         |            |           |        |          | LF          |                    |
| PXX                    |    |         |            |           |        |          |             |                    |
| 217+19                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 217+19                 | -  | 217+26  | 1          | -         | 105    | 865.70   | MEDIAN      | 7                  |
| 217+26                 | -  | 219+66  | 2          | -         | 105    | 865.70   | MEDIAN      | 240                |
| 219+66                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 221+54                 | -  | 222+14  | 3          | -         | 106    | 874.70   | MEDIAN      | 60                 |
| 222+14                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 232+17                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 232+17                 | -  | 234+18  | 4          | -         | 108    | 868.10   | MEDIAN      | 201                |
| 233+66                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 236+18                 | -  | 238+86  |            |           |        | 862.90   | MEDIAN      | NOT FIELD VERIFIED |
| 238+86                 | -  | 241+19  | 5          | -         | 109    | 862.90   | MEDIAN      | 232                |
| 241+19                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 242+18                 | -  | 243+68  |            |           | 110    | 867.00   | MEDIAN      | NOT FIELD VERIFIED |
| 250+16                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 250+16                 | -  | 251+17  | 6          | -         | 111    | 875.20   | MEDIAN      | 101                |
| 253+24                 |    |         | 7          | -         | 112    | 874.90   | MEDIAN      | 8                  |
| 253+24                 | -  | 255+18  | 8          | -         | 112    | 874.90   | MEDIAN      | 194                |
| 255+18                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 256+17                 | -  | 257+67  | 9          | -         | 113    | 878.40   | MEDIAN      | 150                |
| 257+67                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 260+48                 | -  | 261+68  | 10         | -         | 114    | 890.10   | MEDIAN      | 120                |
| 261+68                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 263+18                 |    |         | 11         | -         | 115    | 898.80   | MEDIAN      | 8                  |
| 263+18                 | -  | 265+18  |            |           | 115    | 898.80   | MEDIAN      | NOT FIELD VERIFIED |
| 267+18                 |    |         | 12         | -         | 116    | 910.40   | MEDIAN      | 8                  |
| 267+18                 | -  | 269+05  | 13         | -         | 116    | 910.40   | MEDIAN      | 187                |
| 269+05                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 271+15                 |    |         | 14         | -         | 117    | 922.20   | MEDIAN      | 8                  |
| 271+15                 | -  | 275+05  | 15         | -         | 117    | 922.20   | MEDIAN      | 390                |
| 275+05                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 276+35                 | -  | 277+54  | 16         | -         | 118    | 929.70   | MEDIAN      | 119                |
| 277+54                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 282+59                 | -  | 284+95  |            |           |        | MEDIAN   |             | NOT FIELD VERIFIED |
| 284+95                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| 284+95                 | -  | 285+05  | 17         | -         | 119    | 930.40   | MEDIAN      | 10                 |
| 287+42                 |    |         |            |           |        | MEDIAN   | 8           | LATERAL            |
| UNDISTRIBUTED          |    |         |            |           |        |          | 600         |                    |
| TOTAL                  |    |         |            |           |        |          | 2763        |                    |

| Beam Guard Items |    |         |          |           |                 |            |                |                 |             |            |           |              |               |
|------------------|----|---------|----------|-----------|-----------------|------------|----------------|-----------------|-------------|------------|-----------|--------------|---------------|
|                  |    |         |          | 204.0165  | 204.9060.S.01   | 614.0200   | SPV.0090.04    | 614.0805        | 614.2300    | 614.2500   | 614.2620  | SPV.0090.02  | SPV.0090.03   |
|                  |    |         |          |           |                 | STEEL      | STEEL THRIE    | CRASH           |             |            | MGS       | SPECIAL      | SPECIAL       |
|                  |    |         |          | REMOVING  | REMOVING        | THRIE BEAM | BEAM STRUCTURE | CUSHIONS        |             | MGS        | GUARDRAIL | (STEEL       | (STEEL        |
|                  |    |         |          | GUARDRAIL | (CRASH CUSHION) | STRUCTURE  | APPROACH       | PERMANENT       | MGS         | THRIE BEAM | TERMINAL  | THRIE BEAM   | THRIE BEAM    |
| STATION          | TO | STATION | LOCATION | LF        | EACH            | APPROACH   | DOUBLE FACED   | LOW MAINTENANCE | GUARDRAIL 3 | TRANSITION | TYPE 2    | SINGLE FACE) | DOUBLE FACED) |
|                  |    |         |          |           |                 |            |                | EACH            | LF          | LF         | EACH      | LF           | LF            |
| 200+00           | -  | 201+34  | EB       | -         | -               | -          | -              | -               | -           | -          | -         | 135          | -             |
| 200+00           | -  | 201+34  | WB       | -         | -               | -          | -              | -               | -           | -          | -         | 136          | -             |
| 201+34           | -  | 206+65  | EB       | -         | -               | -          | -              | -               | -           | -          | -         | -            | 531           |
| 205+25           | -  | 208+17  | EB       | 292       | -               | -          | -              | -               | -           | -          | -         | -            | -             |
| 206+43           |    |         | WB       | -         | -               | -          | -              | -               | -           | -          | 1         | -            | -             |
| 206+53           | -  | 208+08  | WB       | -         | -               | -          | -              | -               | 165         | -          | -         | -            | -             |
| 206+65           | -  | 208+05  | EB       | -         | -               | -          | -              | -               | -           | -          | -         | 140          | -             |
| 208+08           | -  | 208+18  | WB       | -         | -               | -          | -              | -               | -           | 10         | -         | -            | -             |
| 208+05           | -  | 208+19  | EB       | -         | -               | 14.4       | -              | -               | -           | -          | -         | -            | -             |
| 209+78           | -  | 209+92  | EB       | -         | -               | -          | 14.4           | -               |             |            |           |              |               |
| 209+92           | -  | 223+38  | EB       | -         | -               | -          |                | 1               | -           | -          | -         | -            | 1346          |
| 229+10           | -  | 229+24  | EB       | -         | 1               | -          | 14.4           | -               | -           | -          | -         | -            | -             |
| 229+24           | -  | 245+11  | EB       | -         | -               | -          | -              | -               | -           | -          | -         | -            | 1587          |
| 245+11           | -  | 245+25  | EB       | -         | 1               | -          | 14.4           | -               | -           | -          | -         | -            | -             |
| 248+02           | -  | 248+16  | EB       | -         | 1               | -          | 14.4           | -               | -           | -          | -         | -            | -             |
| 248+16           | -  | 266+13  | EB       | -         | -               | -          | -              | -               | -           | -          | -         | -            | 1797          |
| 266+13           |    |         |          | -         | -               | -          | -              | 1               | -           | -          | -         | -            | -             |
| 267+20           |    |         |          | -         | -               | -          | -              | 1               | -           | -          | -         | -            | -             |
| 267+48           | -  | 286+70  | EB       | -         | -               | -          | -              | -               | -           | -          | -         | -            | 1937          |
| 286+59           | -  | 288+52  | EB       | 193       | -               | -          | -              | -               | -           | -          | -         | -            | -             |
| 286+61           |    |         | WB       | -         | -               | -          | -              | -               | -           | -          | 1         | -            | -             |
| 286+61           | -  | 288+26  | WB       | -         | -               | -          | -              | -               | 165         | -          | -         | -            | -             |
| 286+70           | -  | 288+40  | EB       | -         | -               | -          | -              | -               | -           | -          | -         | 170          | -             |
| 288+26           | -  | 288+36  | WB       | -         | -               | -          | -              | -               | -           | 10         | -         | -            | -             |
| 288+40           | -  | 288+54  | EB       | -         | -               | 14.4       | -              | -               | -           | -          | -         | -            | -             |
| UNDISTRIBUTED    |    |         |          |           |                 |            |                |                 |             |            |           |              |               |
| TOTAL            |    |         |          | 485       | 3               | 28.8       | 57.6           | 3               | 330         | 20         | 2         | 581          | 7197          |



| CONCRETE SURFACE DRAINS FLUME |         |    |         |          |                             |                                         |                       |                            |
|-------------------------------|---------|----|---------|----------|-----------------------------|-----------------------------------------|-----------------------|----------------------------|
| CATEGORY                      | STATION | TO | STATION | LOCATION | 416.0610                    | 416.1015                                | 606.0100              | 645.0130                   |
|                               |         |    |         |          | DRILLED<br>TIE BARS<br>EACH | CONCRETE<br>SURFACE<br>DRAINS HES<br>CY | RIPRAP<br>LIGHT<br>CY | GEOTEXTILE<br>TYPE R<br>SY |
| 0010                          | 208+05  | -  | 208+17  | 29' LT   | 3                           | 4                                       | 1                     | 1                          |
|                               | 288+22  | -  | 288+34  | 50' LT   | 3                           | 4                                       | 1                     | 1                          |
|                               | TOTAL   |    |         |          | 6                           | 8                                       | 2                     | 2                          |

| WATER    |         |    |         |          |                  |
|----------|---------|----|---------|----------|------------------|
| CATEGORY | STATION | TO | STATION | LOCATION | 624.0100<br>MGAL |
| 0010     | 200+00  | -  | 207+84  | MEDIAN   | 4                |
|          | 209+92  | -  | 224+18  | MEDIAN   | 5                |
|          | 229+24  | -  | 245+11  | MEDIAN   | 6                |
|          | 248+16  | -  | 266+13  | MEDIAN   | 7                |
|          | 267+48  | -  | 288+40  | MEDIAN   | 6                |
| TOTAL    |         |    |         |          | 28               |

| PREPARE FOUNDATION FOR BASE AGGREGATE |         |    |         |          |                 |
|---------------------------------------|---------|----|---------|----------|-----------------|
| CATEGORY                              | STATION | TO | STATION | LOCATION | 211.0500<br>STA |
| 0010                                  | 223+73  | -  | 224+37  | LT       | 1               |
| TOTAL                                 |         |    |         |          | 1               |

| ASPHALTIC SURFACE |         |    |         |          |                 |                        |
|-------------------|---------|----|---------|----------|-----------------|------------------------|
| CATEGORY          | STATION | TO | STATION | LOCATION | 465.0105<br>TON | REMARKS                |
| 0010              | 223+73  | -  | 224+37  | LT       | 40              | MAINTENANCE CROSS OVER |
| TOTAL             |         |    |         |          | 40              |                        |

SPECIAL (EMULSIFIED ASPHALT MEDIAN TREATMENT)

| CATEGORY | STATION | TO | STATION | SPV.0180.01<br>SY |
|----------|---------|----|---------|-------------------|
| 0010     | 200+00  | -  | 200+73  | 32                |
| TOTAL    |         |    |         | 32                |

| EROSION CONTROL ITEMS |         |    |         |                              |                                                    |                                                   |                                                |                                         |                                                |
|-----------------------|---------|----|---------|------------------------------|----------------------------------------------------|---------------------------------------------------|------------------------------------------------|-----------------------------------------|------------------------------------------------|
| CATEGORY              | STATION | TO | STATION | 628.1504<br>SILT FENCE<br>LF | 628.2004<br>EROSION MAT<br>CLASS I<br>TYPE B<br>SY | 628.7005<br>INLET<br>PROTECTION<br>TYPE A<br>EACH | 628.7504<br>TEMPORARY<br>DITCH<br>CHECKS<br>LF | 629.0205<br>FERTILIZER<br>TYPE A<br>CWT | 630.0120<br>SEEDING<br>MIXTURE<br>NO. 20<br>LB |
| 0010                  | 200+70  | -  | 207+84  | -                            | 957                                                | -                                                 | 36                                             | 0.6                                     | 26                                             |
|                       | 208+20  |    |         | 20                           | -                                                  | -                                                 | -                                              | -                                       | -                                              |
|                       | 209+80  |    |         | 20                           | -                                                  | -                                                 | -                                              | -                                       | -                                              |
|                       | 210+72  | -  | 223+70  | -                            | 2090                                               | -                                                 | 65                                             | 1.3                                     | 56                                             |
|                       | 229+55  | -  | 244+70  | -                            | 2460                                               | -                                                 | 76                                             | 1.5                                     | 66                                             |
|                       | 248+40  | -  | 267+15  | -                            | 2970                                               | -                                                 | 94                                             | 1.9                                     | 80                                             |
|                       | 268+00  | -  | 288+03  | -                            | 6260                                               | -                                                 | 101                                            | 3.9                                     | 169                                            |
|                       | 201+86  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 201+94  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 205+21  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 215+14  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 217+26  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 221+54  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 230+18  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 234+18  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 238+84  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 242+18  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 251+17  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 253+24  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 256+17  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 260+48  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 263+18  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 267+18  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 271+15  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 276+35  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 285+05  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 288+03  |    |         | -                            | -                                                  | 1                                                 | -                                              | -                                       | -                                              |
|                       | 288+40  |    |         | 45                           | -                                                  | -                                                 | -                                              | -                                       | -                                              |
| TOTAL                 |         |    |         | 85                           | 14737                                              | 20                                                | 372                                            | 9.3                                     | 398                                            |

| PERMANENT SIGNING |         |        |            |            |            |          |          |            |                                           |  |
|-------------------|---------|--------|------------|------------|------------|----------|----------|------------|-------------------------------------------|--|
| CATEGORY          | STATION | OFFSET | 634.0614   | 634.0616   | 634.0618   | 638.2102 | 638.2602 | 638.3000   | REMARKS                                   |  |
|                   |         |        | POSTS WOOD | POSTS WOOD | POSTS WOOD | MOVING   | REMOVING | REMOVING   |                                           |  |
|                   |         |        | 4X6-INCH X | 4X6-INCH X | 4X6-INCH X | SIGNS    | SIGNS    | SMALL SIGN |                                           |  |
|                   |         |        | 14-FT      | 16-FT      | 18-FT      | TYPE II  | TYPE II  | SUPPORTS   |                                           |  |
|                   |         |        | EACH       | EACH       | EACH       | EACH     | EACH     | EACH       |                                           |  |
| 0010              | 200+50  | 13' LT | -          | -          | -          | -        | 1        | 2          | TO 90/94                                  |  |
|                   | 201+25  | 14' LT | -          | -          | -          | -        | 1        | 1          | TO 39                                     |  |
|                   | 206+00  | 15' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKERS                              |  |
|                   | 210+55  | 10' LT | 1          | -          | -          | 1        | -        | 1          | SPEED LIMIT 55                            |  |
|                   | 211+34  | 23' LT | 1          | -          | -          | 1        | -        | 1          | SPEED LIMIT 45                            |  |
|                   | 217+10  | 14' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKERS                              |  |
|                   | 222+66  | 17' LT | 1          | -          | -          | 1        | -        | 1          | SPEED LIMIT 55                            |  |
|                   | 223+87  | 28' LT | -          | 2          | -          | 1        | -        | 2          | SPEED LIMIT AHEAD 45 (2 posts)            |  |
|                   | 233+50  | 15' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKERS                              |  |
|                   | 249+00  | 16' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKERS                              |  |
|                   | 259+40  | 19' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKERS                              |  |
|                   | 259+59  | 18' LT | -          | -          | 2          | 1        | -        | 2          | ALTERNATE 39/94 USE CENTER LANE (2 posts) |  |
|                   | 265+74  | 23' LT | -          | 1          | -          | 1        | -        | 1          | DANE COUNTY AIRPORT                       |  |
|                   | 266+40  | 19' LT | 1          | -          | -          | 1        | -        | 1          | U TURN PROHIBITED                         |  |
|                   | 270+00  | 16' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKERS                              |  |
|                   | 280+00  | 13' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKER                               |  |
|                   | 280+00  | 36' LT | -          | 1          | -          | 1        | -        | 1          | MILE MARKER                               |  |
|                   | 280+99  | 38' LT | 1          | -          | -          | 1        | -        | 1          | SPEED LIMIT 55                            |  |
| TOTAL             |         |        | 5          | 11         | 2          | 16       | 2        | 21         |                                           |  |

| TRAFFIC CONTROL ITEMS |            |         |      |                       |      |                                     |                                       |                                       |                              |                       |                            |     |
|-----------------------|------------|---------|------|-----------------------|------|-------------------------------------|---------------------------------------|---------------------------------------|------------------------------|-----------------------|----------------------------|-----|
|                       |            |         |      | 643.0300              |      | 643.0420                            | 643.0705                              | 643.0715                              | 643.0800                     | 643.0900              | 643.1050                   |     |
|                       |            |         |      | TRAFFIC CONTROL DRUMS |      | TRAFFIC CONTROL BARRICADES TYPE III | TRAFFIC CONTROL WARNING LIGHTS TYPE A | TRAFFIC CONTROL WARNING LIGHTS TYPE C | TRAFFIC CONTROL ARROW BOARDS | TRAFFIC CONTROL SIGNS | TRAFFIC CONTROL SIGNS PCMS |     |
| CATEGORY              | STATION TO | STATION | DAYS | DRUMS                 | DAY  | DAY                                 | DAY                                   | DAY                                   | DAY                          | DAY                   | DAY                        | DAY |
| 0010                  | 200+00 -   | 208+20  | 8    | 80                    | 640  | 11                                  | 22                                    | 66                                    | 16                           | 139                   | -                          |     |
|                       | 209+70 -   | 224+80  | 10   | 91                    | 910  | 13                                  | 26                                    | 78                                    | 20                           | 173                   | -                          |     |
|                       | 228+90 -   | 245+25  | 13   | 96                    | 1248 | 18                                  | 36                                    | 108                                   | 26                           | 226                   | -                          |     |
|                       | 248+00 -   | 266+65  | 13   | 98                    | 1274 | 34                                  | 68                                    | 102                                   | 26                           | 242                   | -                          |     |
|                       | 267+00 -   | 288+50  | 17   | 110                   | 1870 | 50                                  | 100                                   | 150                                   | 34                           | 322                   | -                          |     |
|                       | PROJECT    |         | 68   | -                     | -    | -                                   | -                                     | -                                     | -                            | -                     | -                          | 136 |
|                       |            |         |      | TOTAL                 | 5942 | 126                                 | 252                                   | 504                                   | 122                          | 1102                  | 136                        |     |

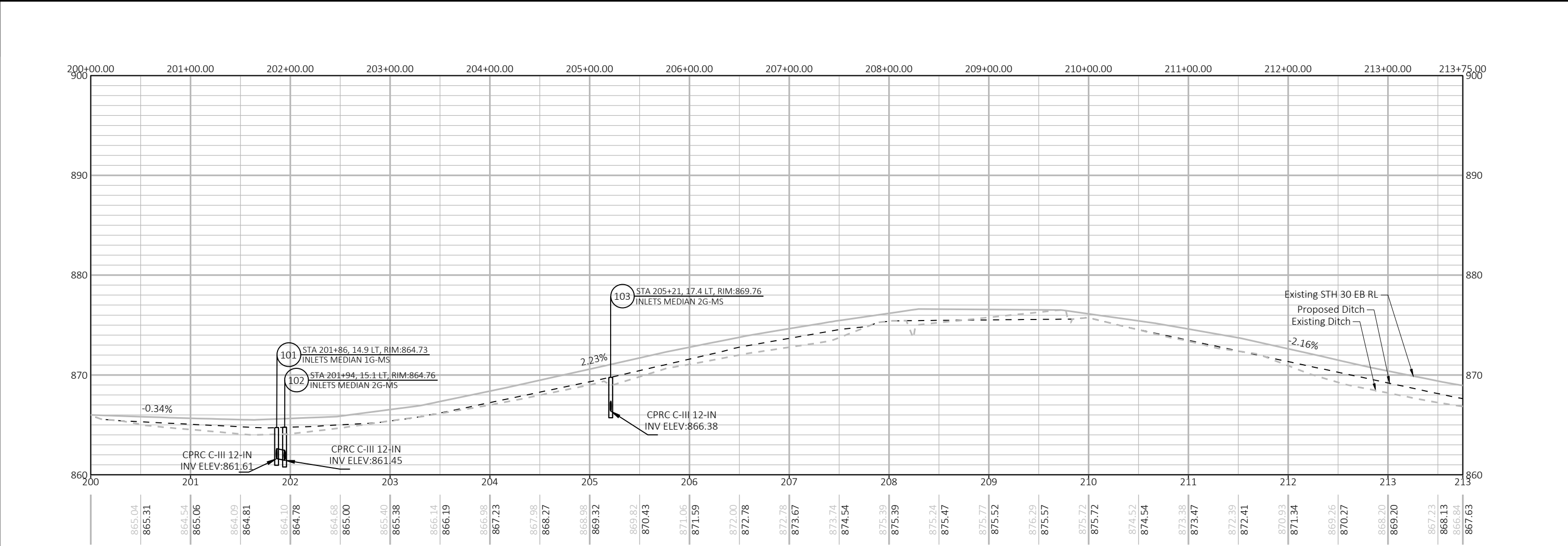
| CONSTRUCTION STAKING STORM SEWER |           |         |          |                  |
|----------------------------------|-----------|---------|----------|------------------|
| CATEGORY                         | STRUCTURE | STATION | LOCATION | 650.4000<br>EACH |
| 0010                             | 101       | 201+86  | MEDIAN   | 1                |
|                                  | 102       | 201+94  | MEDIAN   | 1                |
|                                  | 103       | 205+21  | MEDIAN   | 1                |
|                                  | 104       | 215+14  | MEDIAN   | 1                |
|                                  | 105       | 217+26  | MEDIAN   | 1                |
|                                  | 106       | 221+54  | MEDIAN   | 1                |
|                                  | 107       | 230+18  | MEDIAN   | 1                |
|                                  | 108       | 234+18  | MEDIAN   | 1                |
|                                  | 109       | 238+84  | MEDIAN   | 1                |
|                                  | 110       | 242+18  | MEDIAN   | 1                |
|                                  | 111       | 251+17  | MEDIAN   | 1                |
|                                  | 112       | 253+24  | MEDIAN   | 1                |
|                                  | 113       | 256+17  | MEDIAN   | 1                |
|                                  | 114       | 260+48  | MEDIAN   | 1                |
|                                  | 115       | 263+18  | MEDIAN   | 1                |
|                                  | 116       | 267+18  | MEDIAN   | 1                |
|                                  | 117       | 271+15  | MEDIAN   | 1                |
|                                  | 118       | 276+35  | MEDIAN   | 1                |
|                                  | 119       | 285+05  | MEDIAN   | 1                |
| TOTAL                            |           |         |          | 19               |

| FINISHING ROADWAY (PROJECT) |            |                  |
|-----------------------------|------------|------------------|
| CATEGORY                    | PROJECT    | 213.0100<br>EACH |
| 0010                        | 5490-00-60 | 1                |
| TOTAL                       |            | 1                |

| CONSTRUCTION STAKING SLOPE STAKES |         |    |         |          |                |
|-----------------------------------|---------|----|---------|----------|----------------|
| CATEGORY                          | STATION | TO | STATION | LOCATION | 650.9920<br>LF |
| 0010                              | 200+70  | -  | 207+84  | MEDIAN   | 714            |
|                                   | 210+72  | -  | 223+70  | MEDIAN   | 1298           |
|                                   | 229+55  | -  | 244+70  | MEDIAN   | 1515           |
|                                   | 248+40  | -  | 267+15  | MEDIAN   | 1875           |
|                                   | 268+00  | -  | 286+50  | MEDIAN   | 1850           |
| TOTAL                             |         |    |         |          | 7252           |

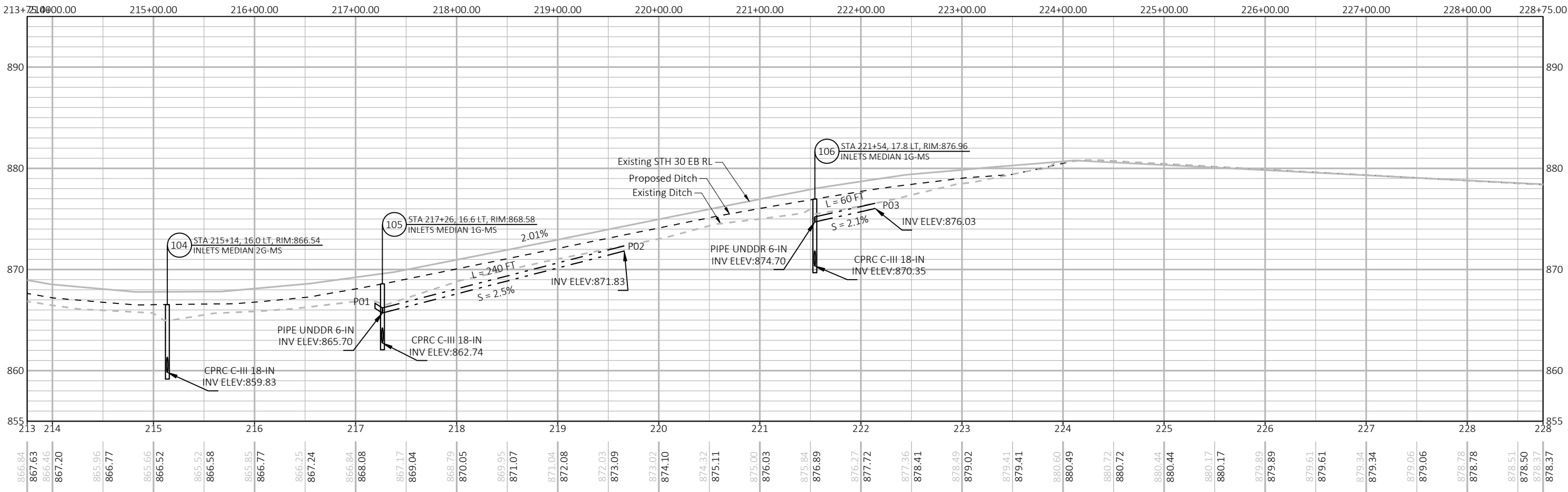
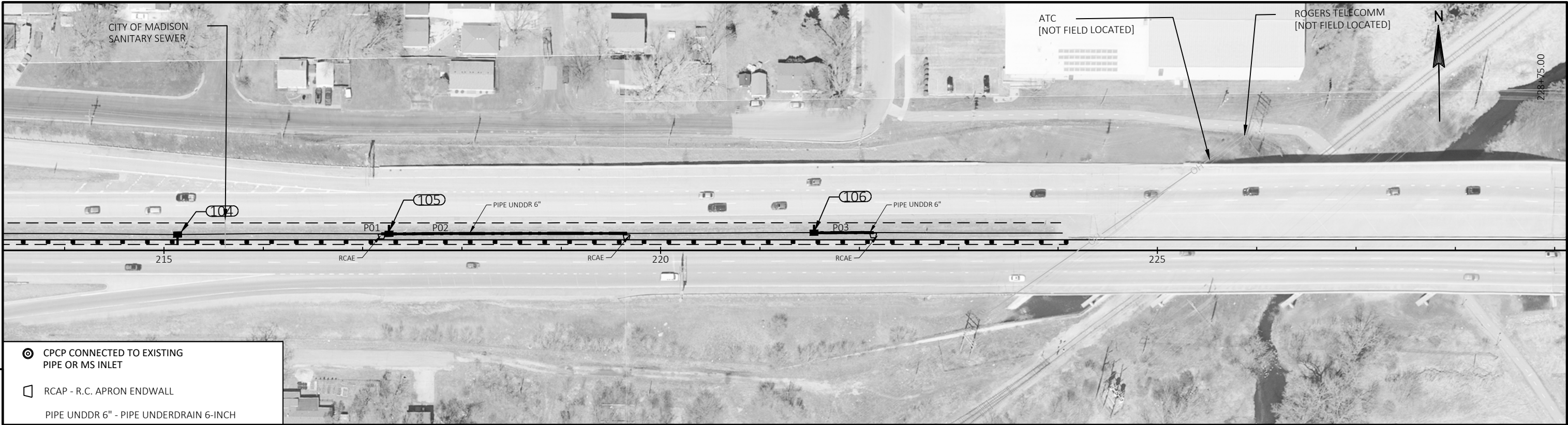
| CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) |            |                |
|-----------------------------------------------------|------------|----------------|
| CATEGORY                                            | PROJECT    | 650.9910<br>LS |
| 0010                                                | 5490-00-60 | 1              |
| TOTAL                                               |            | 1              |

| SPECIAL (REESTABLISH LANDMARK REFERENCE MONUMENT) |         |          |                     |
|---------------------------------------------------|---------|----------|---------------------|
| CATEGORY                                          | STATION | LOCATION | SPV.0060.02<br>EACH |
| 0010                                              | 248+70  | 20' LT   | 1                   |
| TOTAL                                             |         |          | 1                   |

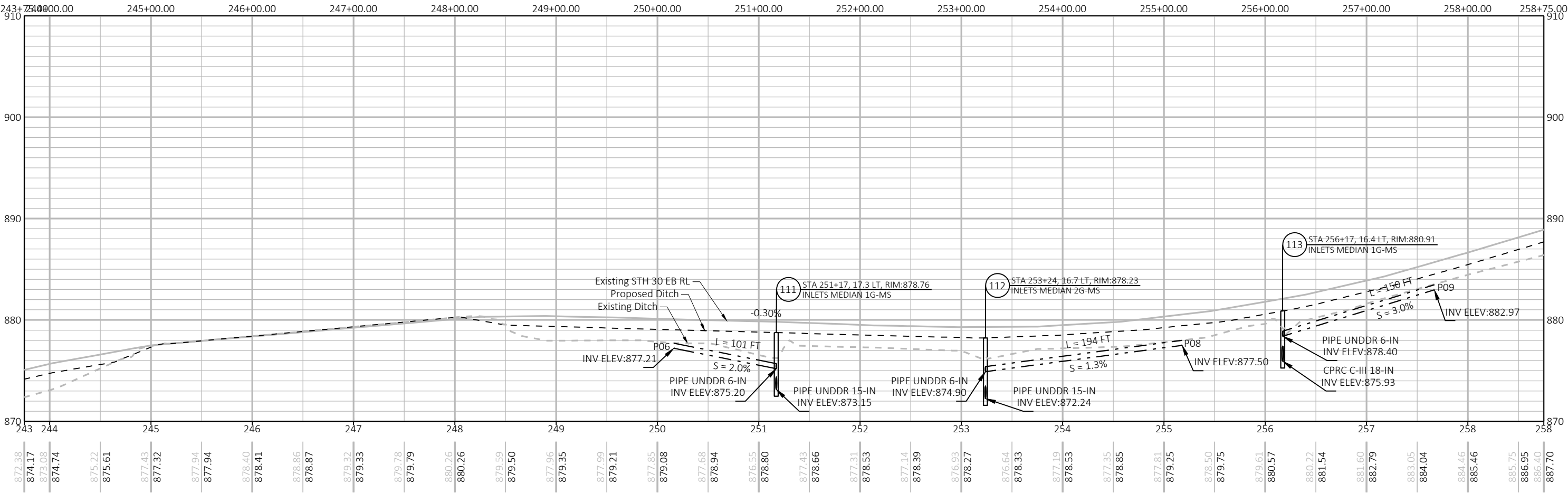
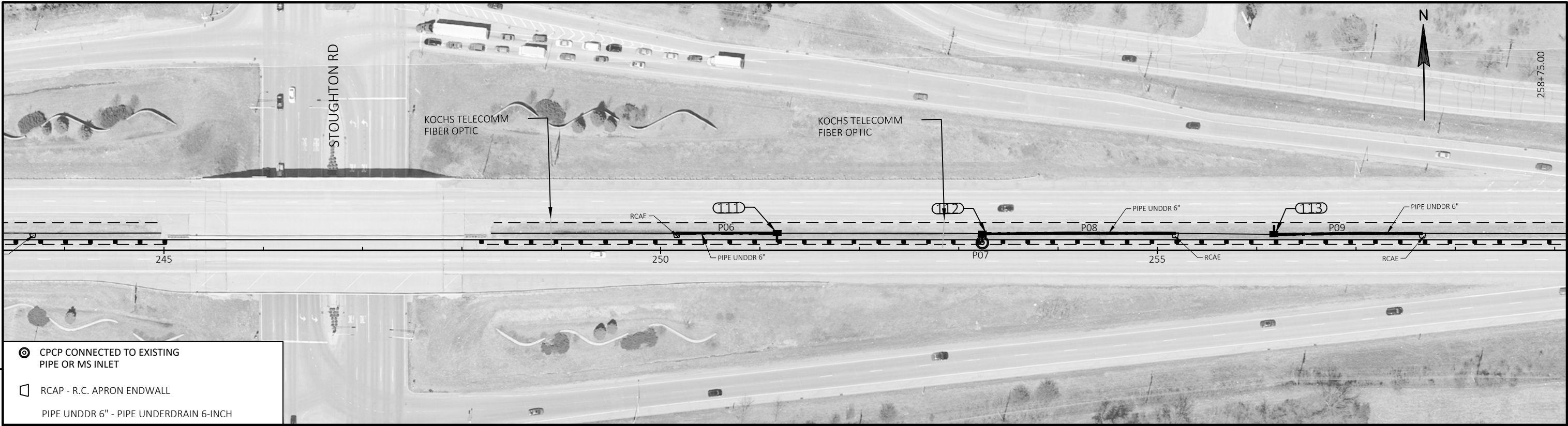


|                        |             |              |                   |          |   |
|------------------------|-------------|--------------|-------------------|----------|---|
| PROJECT NO: 5490-00-60 | HWY: STH 30 | COUNTY: DANE | PLAN AND PROFILE: | SHEET 30 | E |
|------------------------|-------------|--------------|-------------------|----------|---|

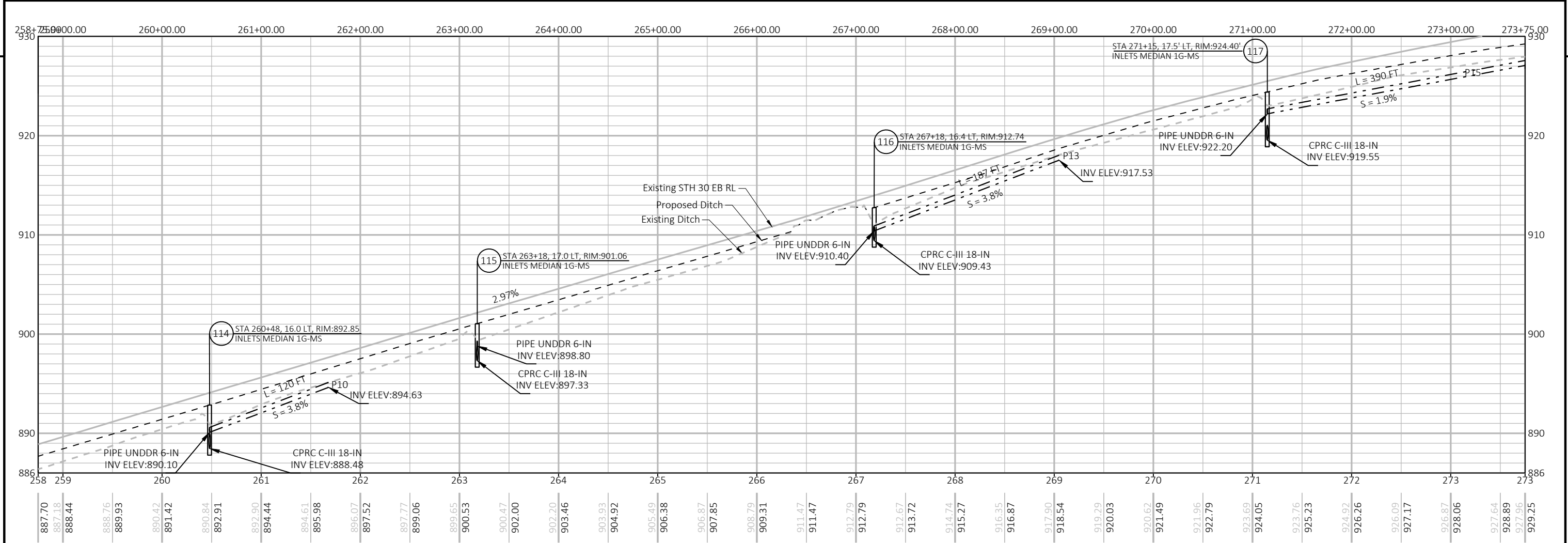
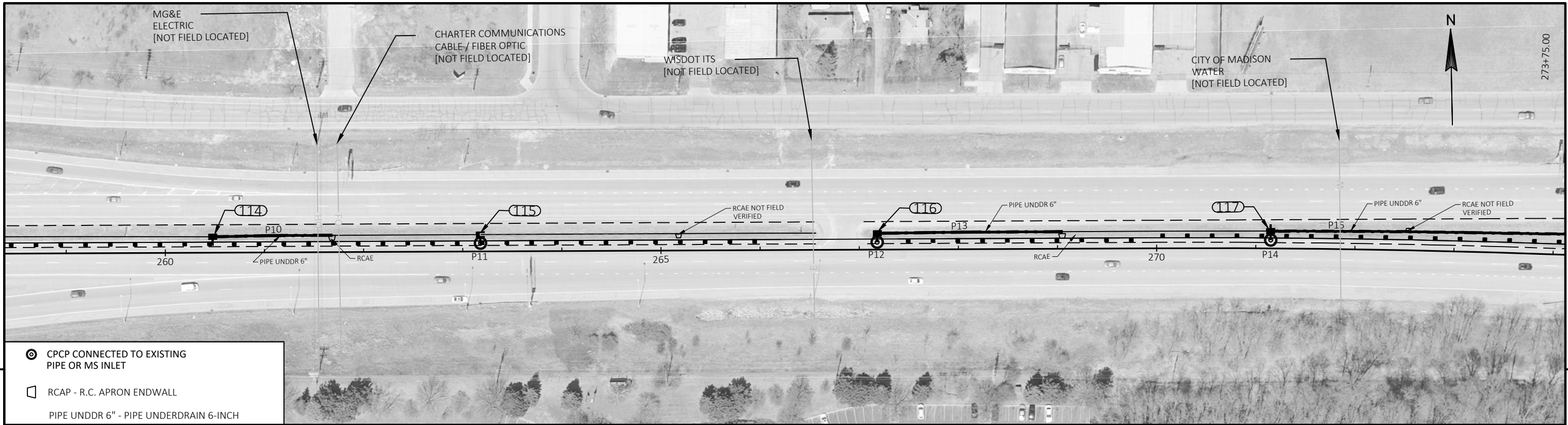






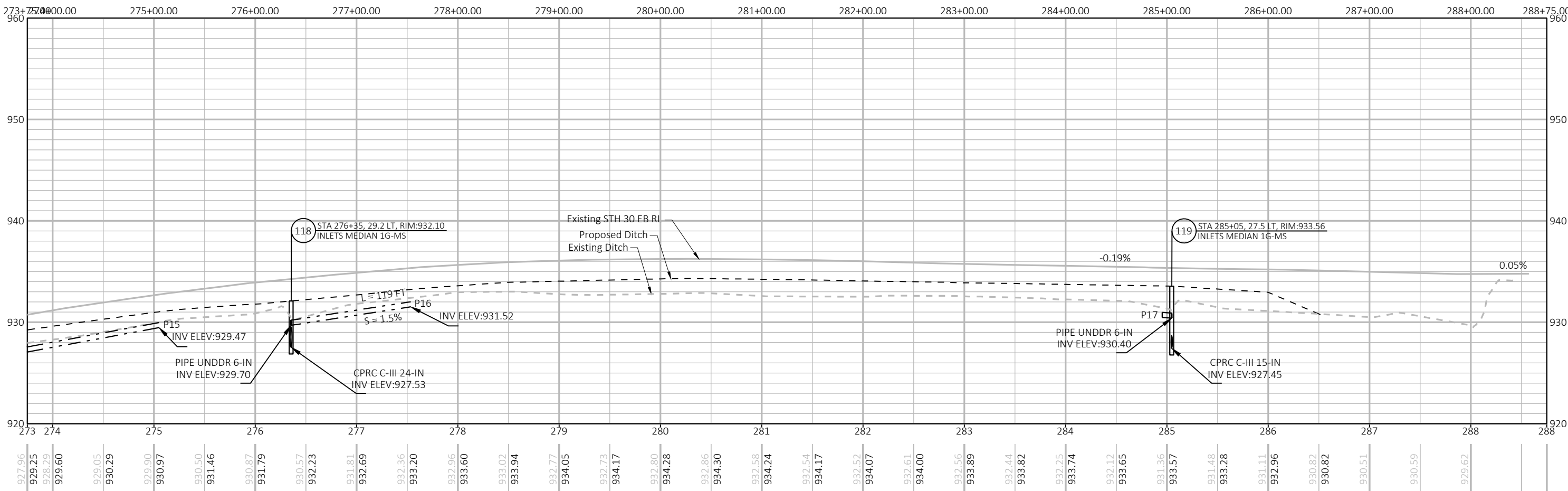








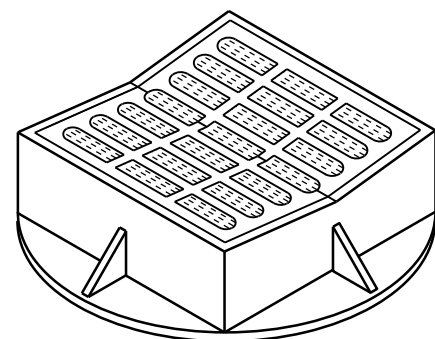
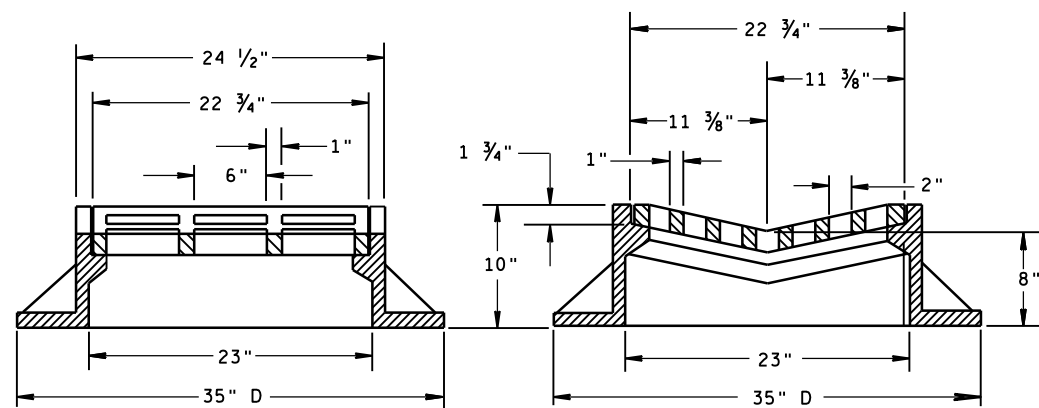
- CSCP CONNECTED TO EXISTING PIPE OR MS INLET
- RCAP - R.C. APRON ENDWALL
- PIPE UNDDR 6" - PIPE UNDERDRAIN 6-INCH



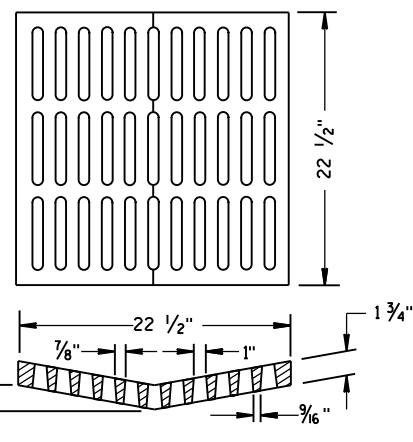


Standard Detail Drawing List

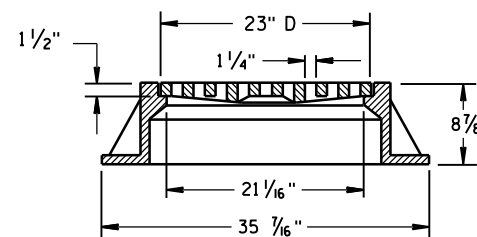
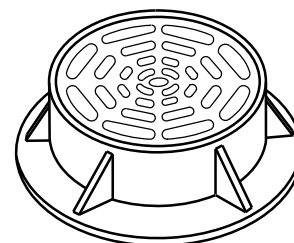
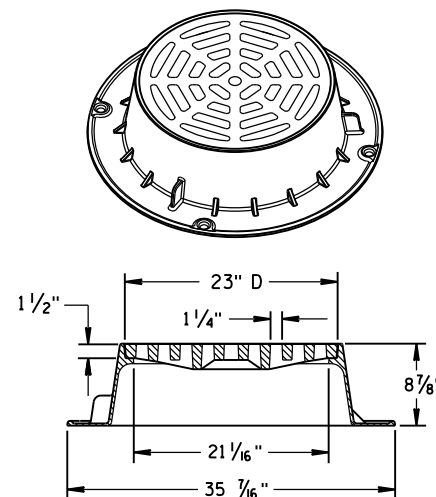
|           |                                                                                   |
|-----------|-----------------------------------------------------------------------------------|
| 08A05-19B | INLET COVERS TYPE B, B-A, C, MS, MS-A, & WM                                       |
| 08C08-02  | INLETS MEDIAN 1 AND 2 GRATE                                                       |
| 08D02-06  | CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES                                  |
| 08D04-05  | CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES                                        |
| 08E08-03  | TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS                   |
| 08E09-06  | SILT FENCE                                                                        |
| 08E10-02  | INLET PROTECTION TYPE A, B, C AND D                                               |
| 14B18-06A | STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS) |
| 14B18-06B | STEEL PLATE BEAM GUARD, CLASS "A" AT MEDIAN APPROACH TO BRIDGES                   |
| 14B20-11A | STEEL THRIE BEAM STRUCTURE APPROACH                                               |
| 14B20-11B | STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS            |
| 14B20-11H | STEEL THRIE BEAM STRUCTURE APPROACH, SINGLE SLOPE ATTACHMENT                      |
| 14B25-01  | STEEL PLATE BEAM GUARD, CLASS "A", OVER LOW FILL CULVERTS                         |
| 14B42-05A | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B42-05B | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B42-05C | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B42-05D | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL                                          |
| 14B45-05A | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05B | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05C | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05D | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05E | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05F | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05G | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05H | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05I | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 14B45-05J | MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)                              |
| 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                                    |
| 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"

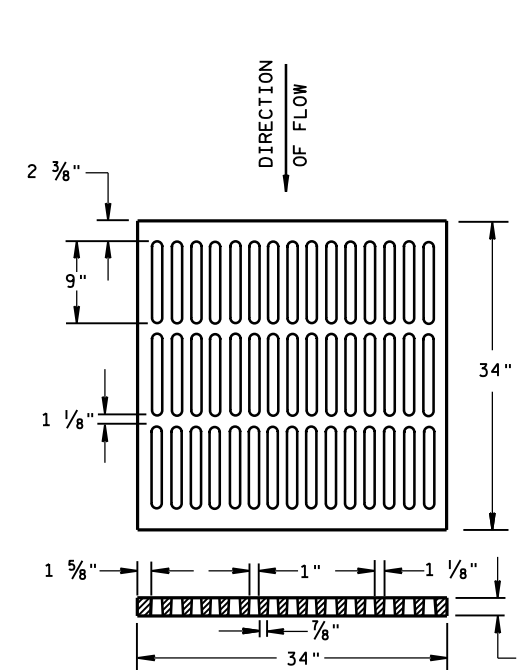
NOTE: EITHER CASTING IS ACCEPTABLE

## 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.

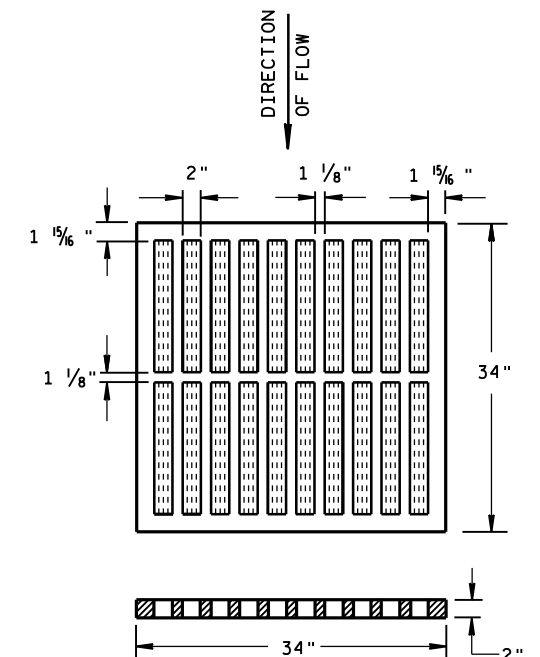
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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



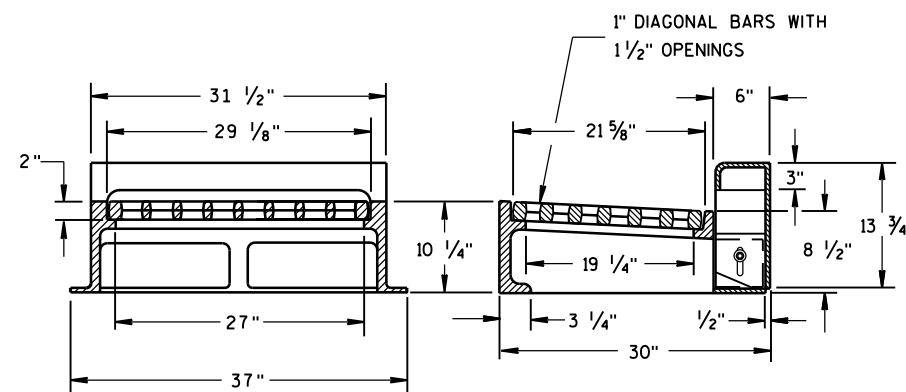
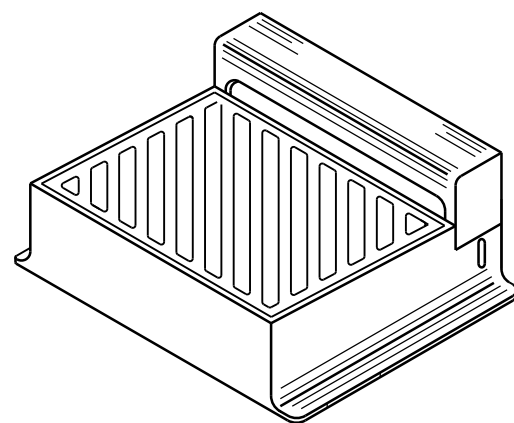
ALTERNATIVE TYPE "MS"

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

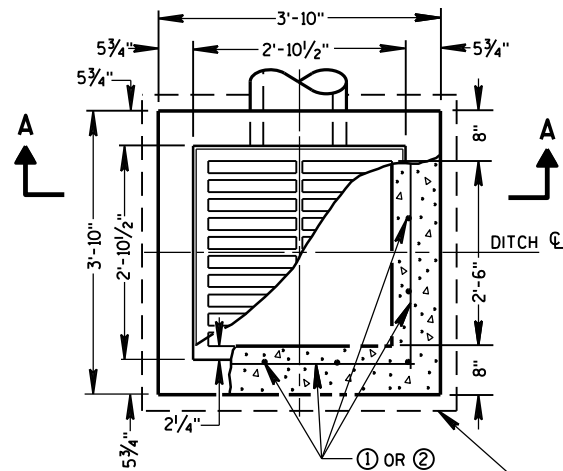
DATE 11/27/2013

FHWA

/S/ Jerry H. Zogg

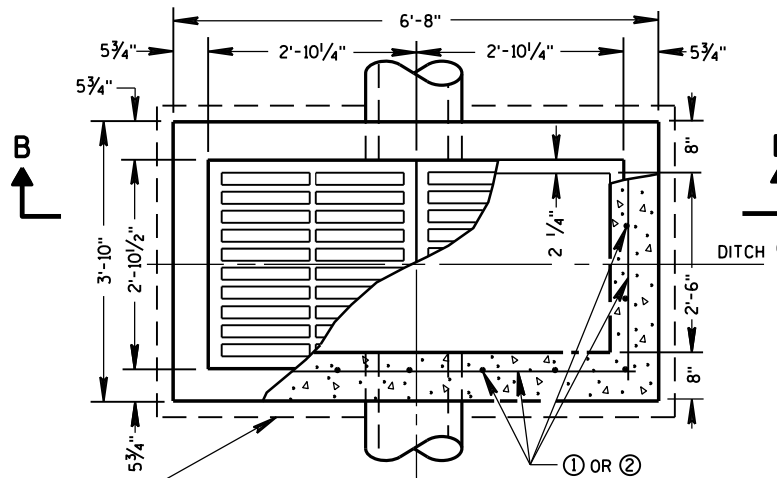
ROADWAY STANDARDS ENGINEER

NT

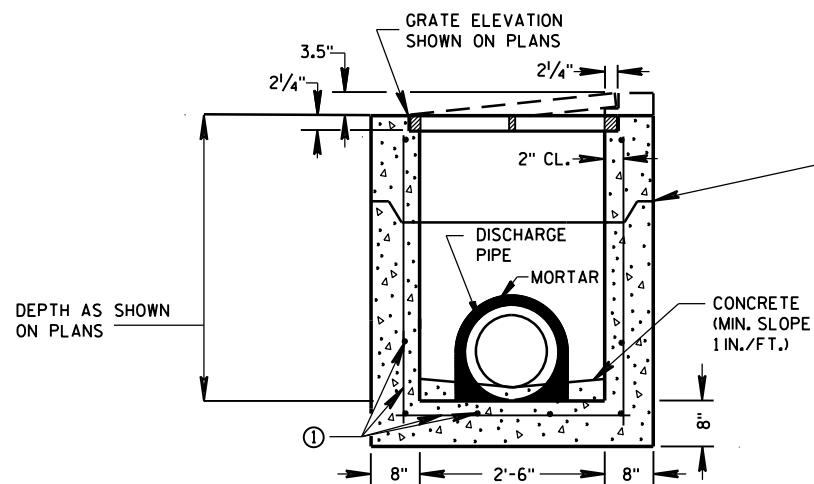


PLAN VIEW

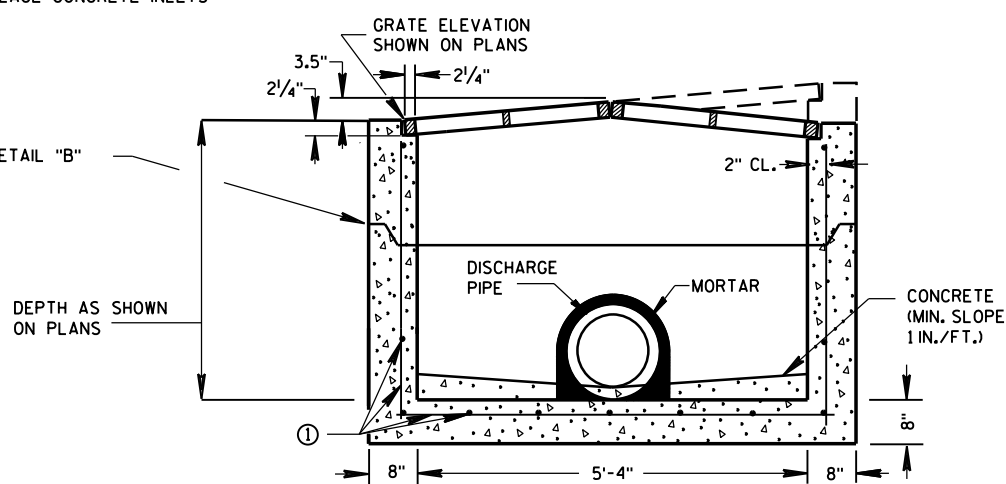
4" OVERHANGING BASE ON REINFORCED  
CAST-IN-PLACE CONCRETE INLETS



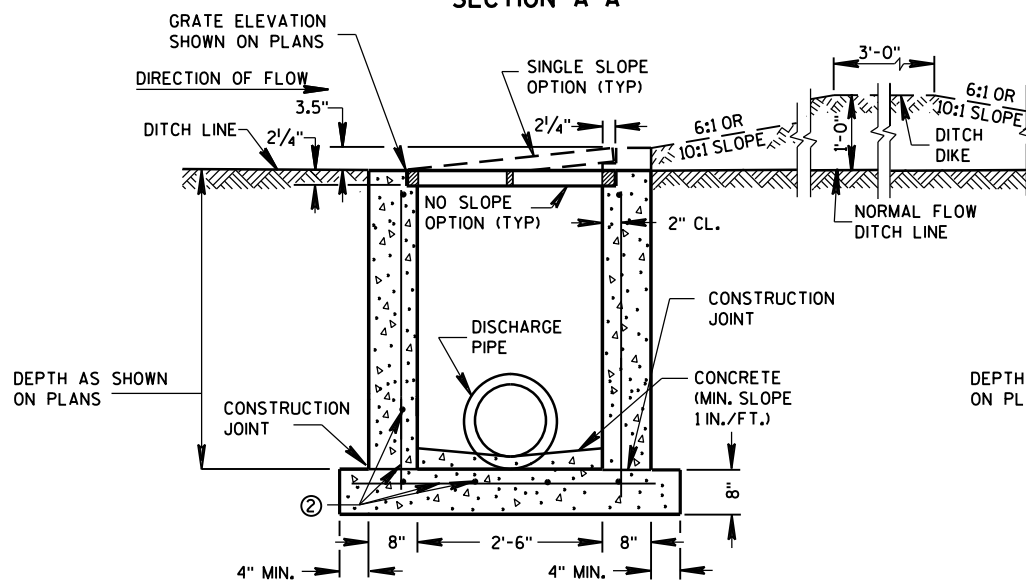
PLAN VIEW



PRECAST REINFORCED CONCRETE  
SECTION A-A

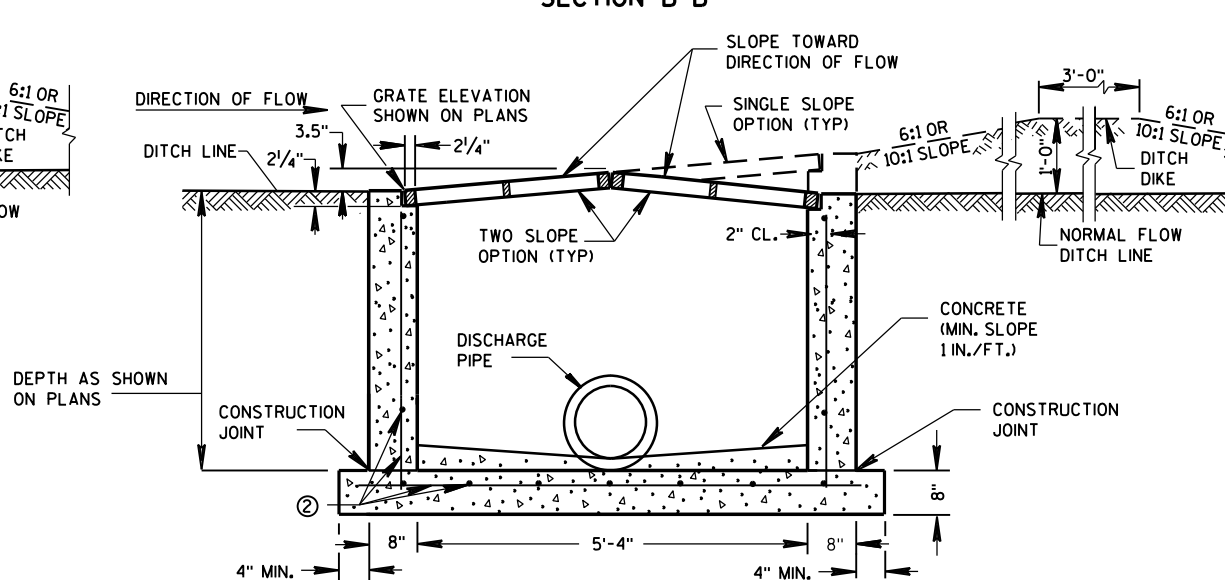


PRECAST REINFORCED CONCRETE  
SECTION B-B



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.

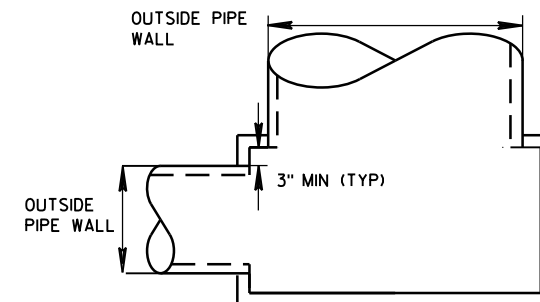
ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

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.

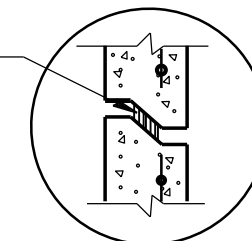
## PIPE MATRIX

| 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)

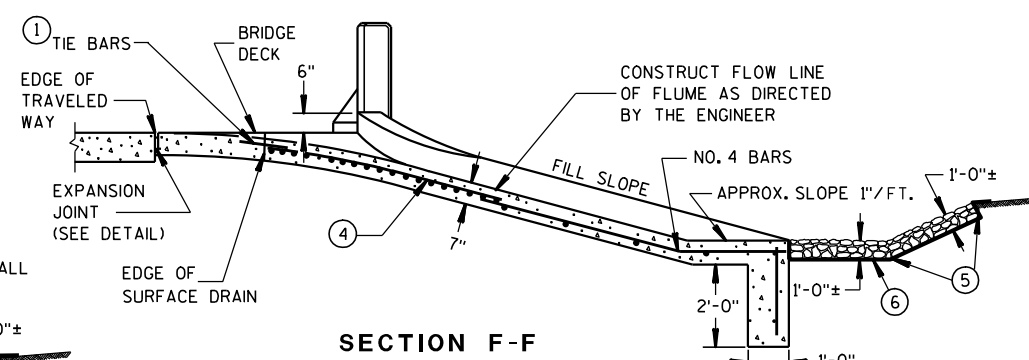


DETAIL "B"

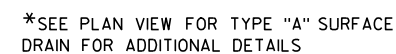
INLETS MEDIAN 1 AND 2 GRATE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
Sept., 2016 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS UNIT SUPERVISOR  
FHWA 38 ENT



**SECTION F-F**



\* PARTIAL PLAN VIEW  
SURFACE DRAIN WITHOUT PIPE  
TYPE "B"

⑧ THIS DIMENSION MAY VARY DEPENDING ON THE SPACING OF POSTS FOR THE STEEL PLATE BEAM GUARD. THE TYPICAL LOCATION FOR THE SURFACE DRAIN IS WHERE THE POST SPACING WIDENS TO 3'-1/2".

## CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
9/4/08 /S/ Jerry H. Zogg  
DATE ROADWAY STANDARDS 39 'MENT  
ENGINEER



## 6



## 6

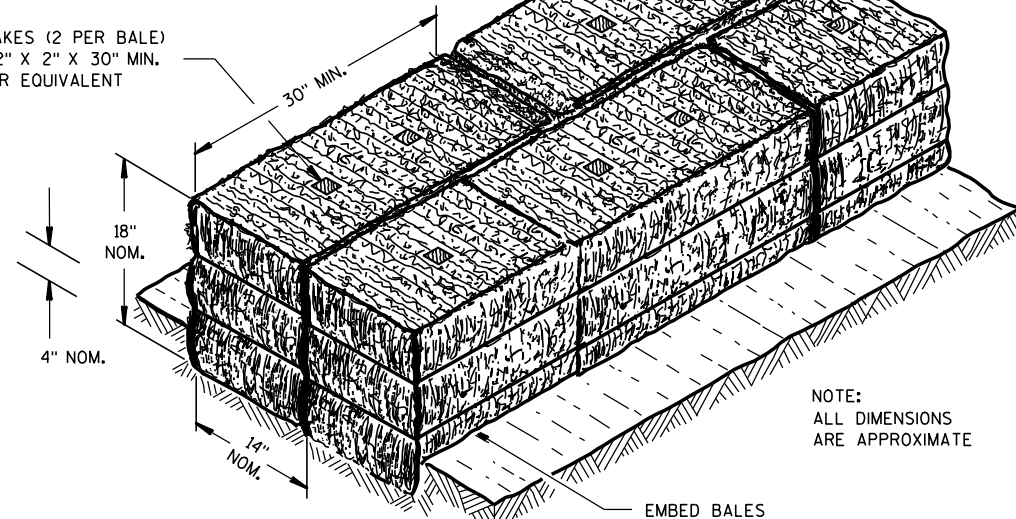
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- ### ③ CONCRETE SURFACE DRAIN



APPROVED  
9-4-08 /S/ Jerry H. Zogg  
DATE ROADWAY STANDARDS 40  
ENGINEER

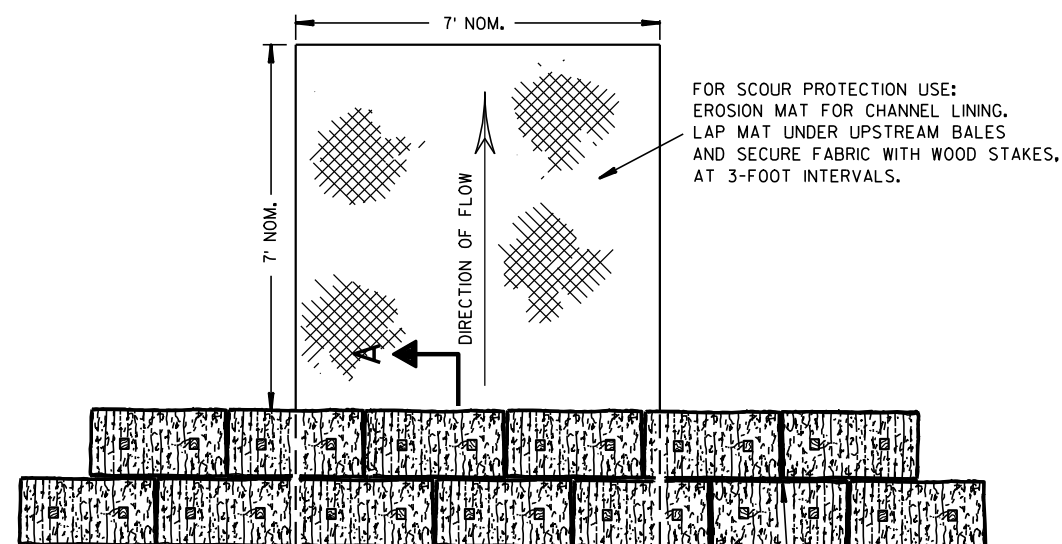
WOOD STAKES (2 PER BALE)  
NOMINAL 2" X 2" X 30" MIN.  
LENGTH OR EQUIVALENT



NOTE:  
ALL DIMENSIONS  
ARE APPROXIMATE

EMBED BALES

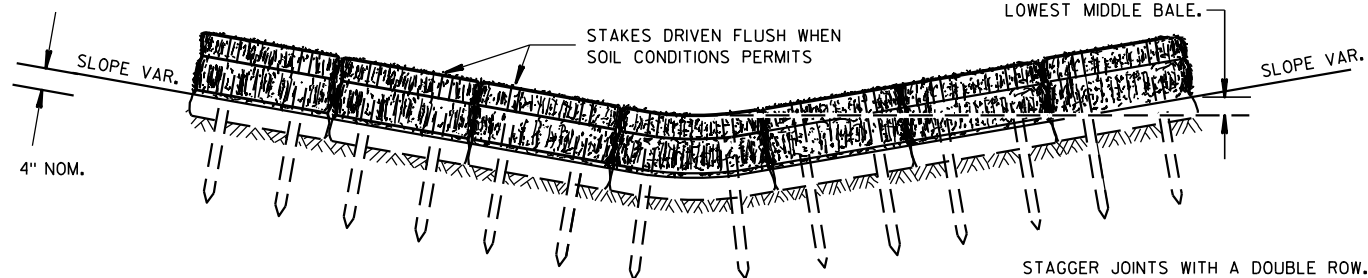
SECTION A-A



PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT  
ROWS OF BALES.

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



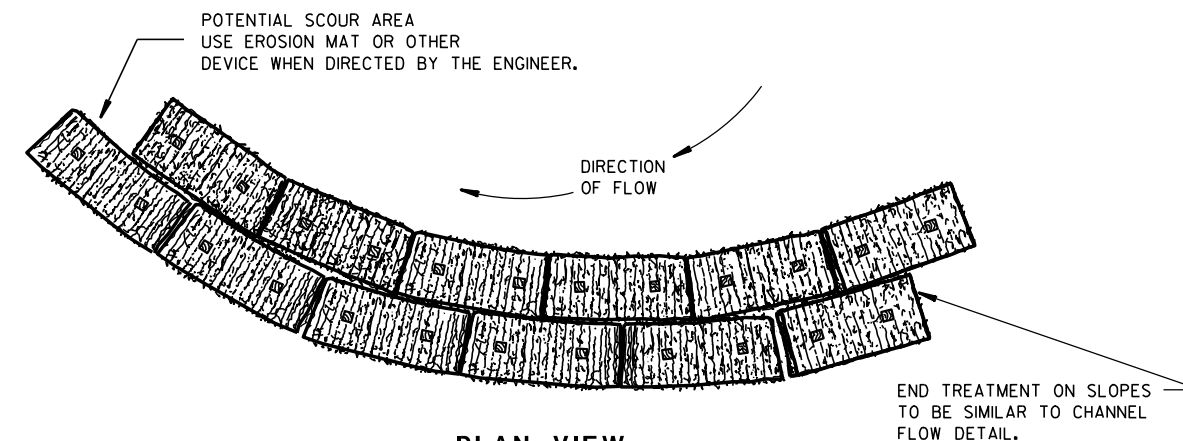
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

## GENERAL NOTES

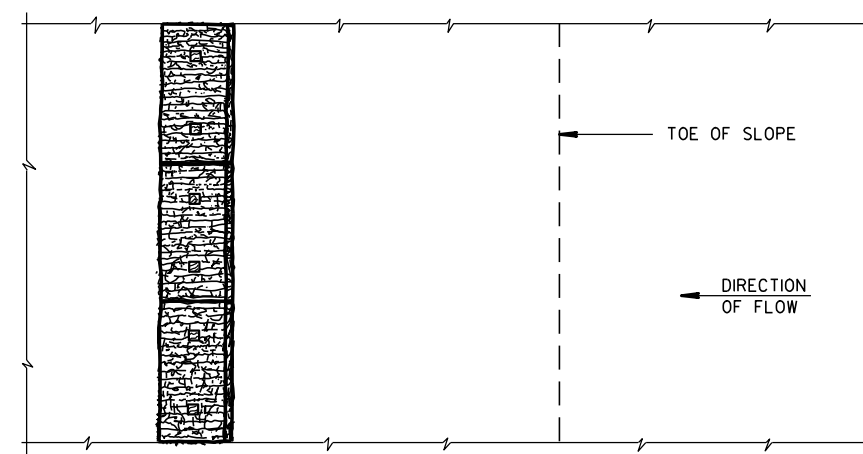
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

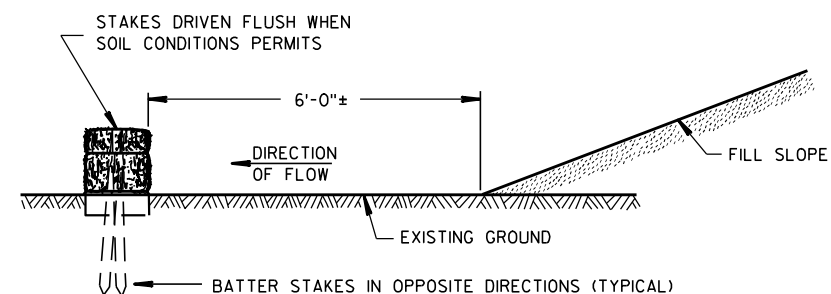


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

## TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02  
DATE

/S/ Beth Conn  
CHIEF ROADWAY DEVELOPER

ENGINEER

FHWA



- 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 1½" X 1½" 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.



**SILT FENCE**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

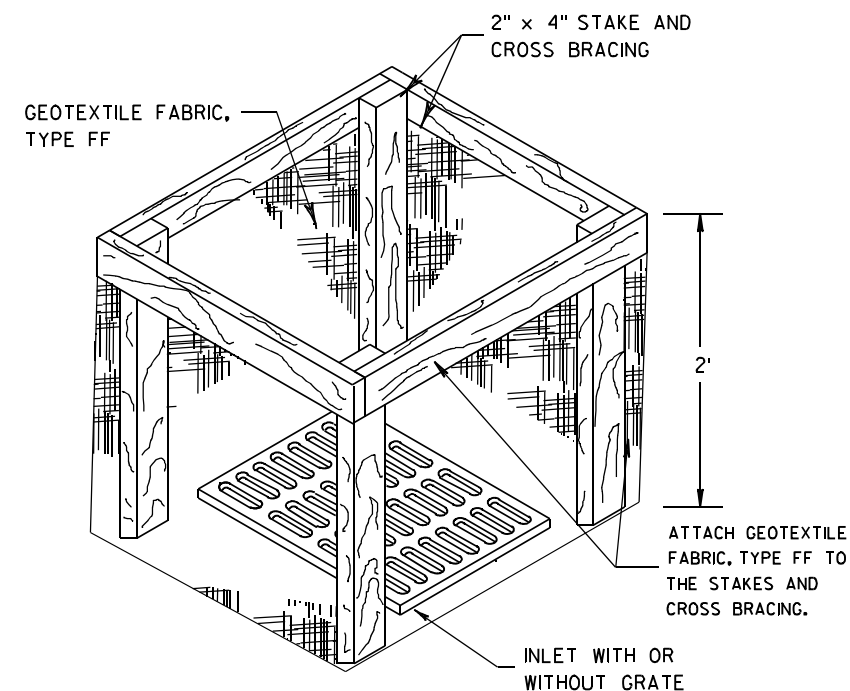
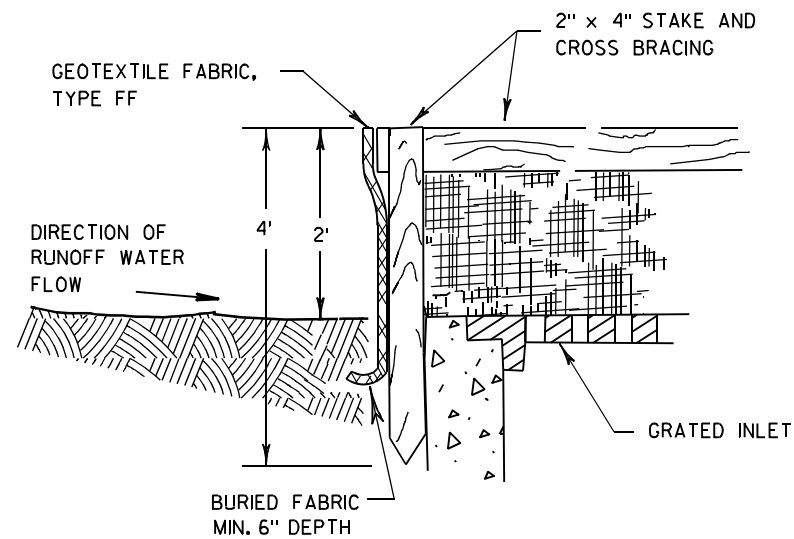
APPROVED  
4-29-05  
DATE

/S/ Beth Connolly  
CHIEF ROADWAY DEVELOPMENT

42

ENGINEER

FHWA



## INLET PROTECTION, TYPE A

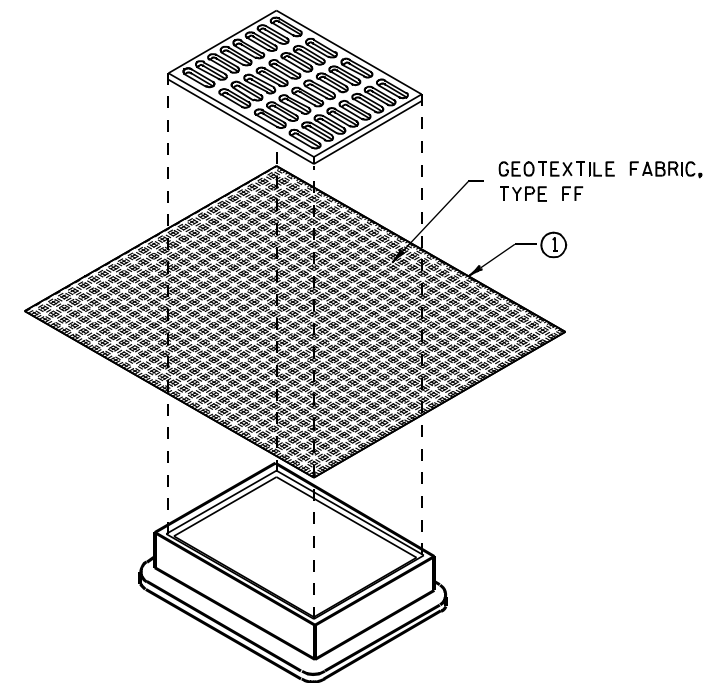
## GENERAL NOTES

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.

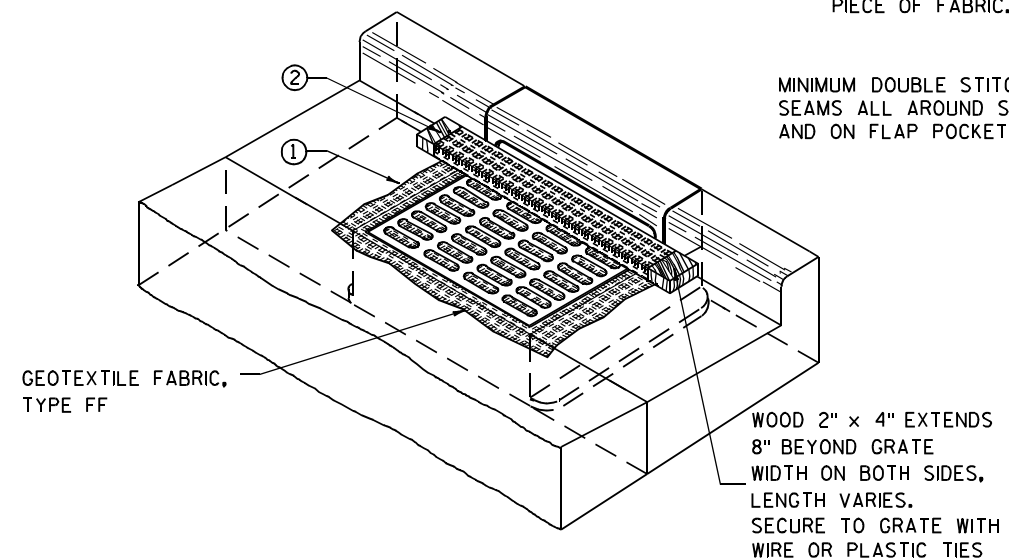
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- 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.

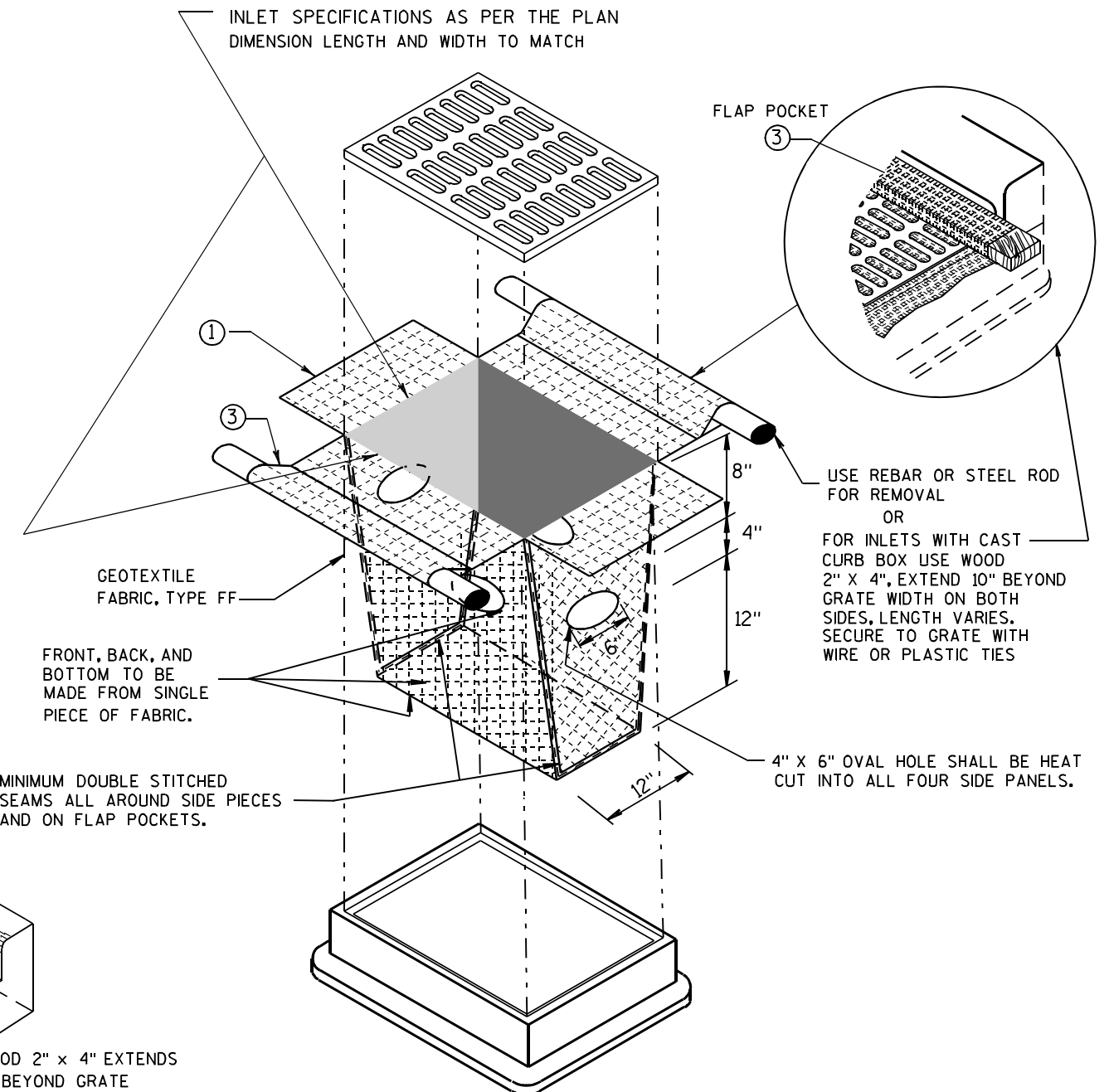
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

## 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.

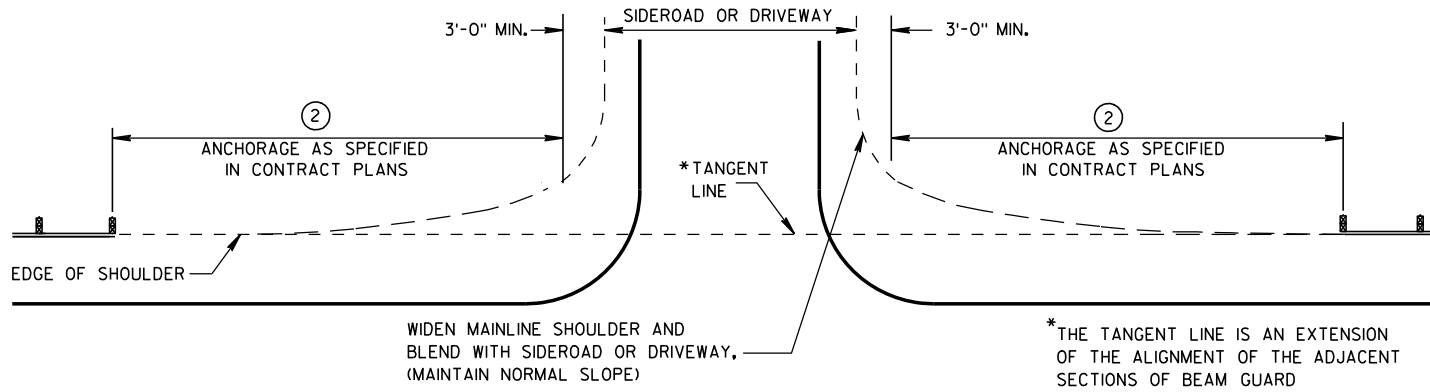
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE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



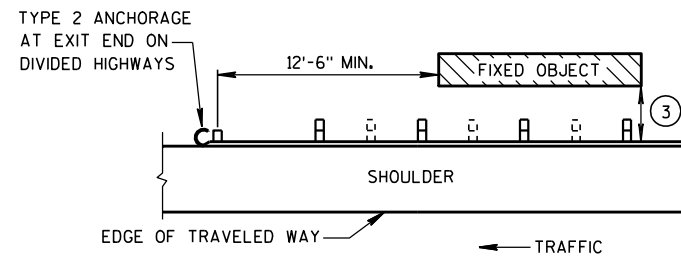
## INLET PROTECTION, TYPE D

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

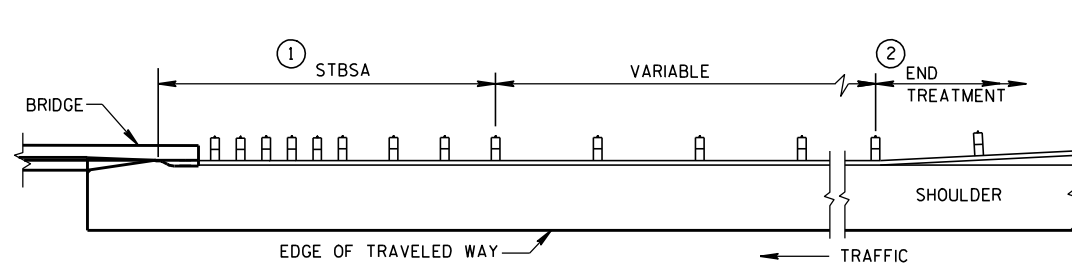
|                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <h1 style="margin: 0;">INLET PROTECTION</h1> <h1 style="margin: 0;">TYPE A, B, C, AND D</h1>                                                                                                                    |
| <h2 style="margin: 0;">STATE OF WISCONSIN</h2> <h2 style="margin: 0;">DEPARTMENT OF TRANSPORTATION</h2>                                                                                                         |
| <p><b>APPROVED</b></p> <p><u>10/16/02</u>      <u>/S/ Beth Connolly</u></p> <p><b>DATE</b>                      <b>43</b></p> <p><b>FHWA</b>                      <b>CHIEF ROADWAY DEVELOPMENT ENGINEER</b></p> |



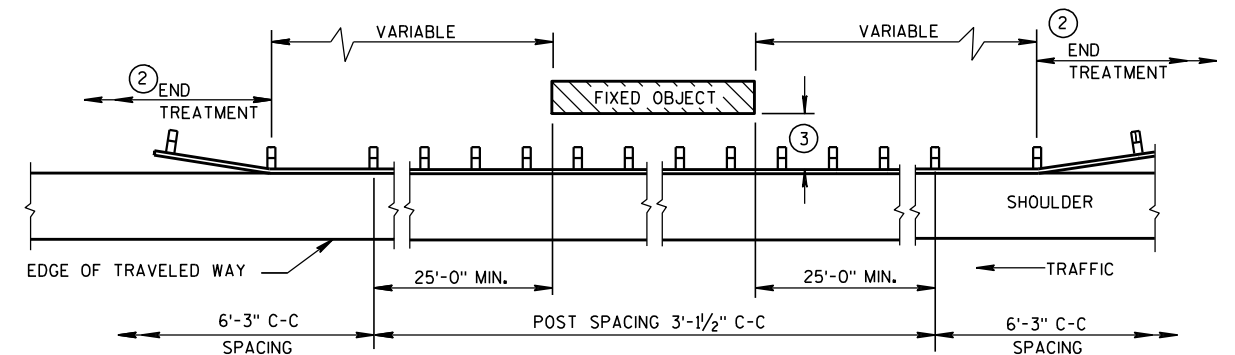
### BEAM GUARD AT SIDEROADS OR DRIVEWAYS



### BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC



### BEAM GUARD AT FULL WIDTH BRIDGES

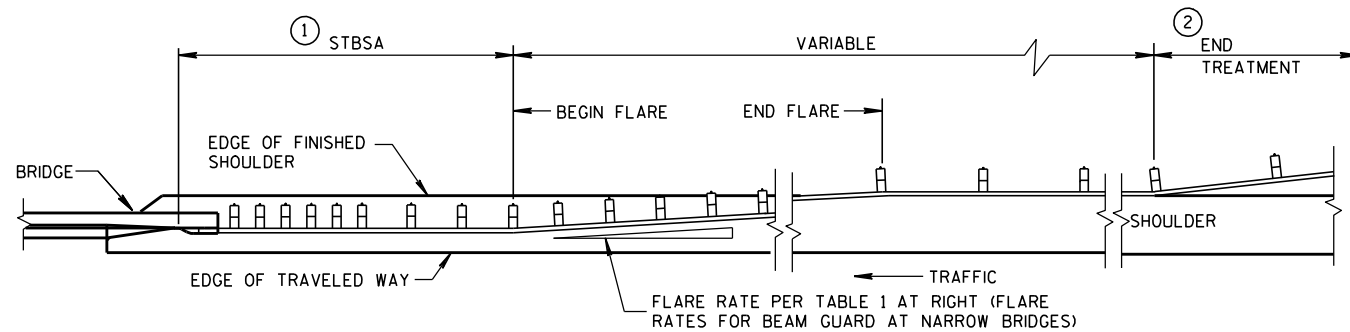


### BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")

TABLE 1  
FLARE RATES FOR BEAM  
GUARD AT NARROW BRIDGES

| POSTED SPEED (MPH) | FLARE RATE |
|--------------------|------------|
| 25                 | 13:1       |
| 30                 | 15:1       |
| 35                 | 16:1       |
| 40                 | 18:1       |
| 45                 | 21:1       |
| 50                 | 24:1       |
| 55                 | 26:1       |
| 65                 | 30:1       |



### BEAM GUARD AT NARROW BRIDGES (FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

### GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

- STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.
- USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

| MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT | POST SPACING |
|------------------------------------------------------------------|--------------|
| 3'-6"                                                            | 3' - 1 1/2"  |
| 4'-6"                                                            | 6' - 3"      |

STEEL PLATE BEAM GUARD  
CLASS "A"  
AT BRIDGES, OBSTACLES  
AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

8-21-07

DATE

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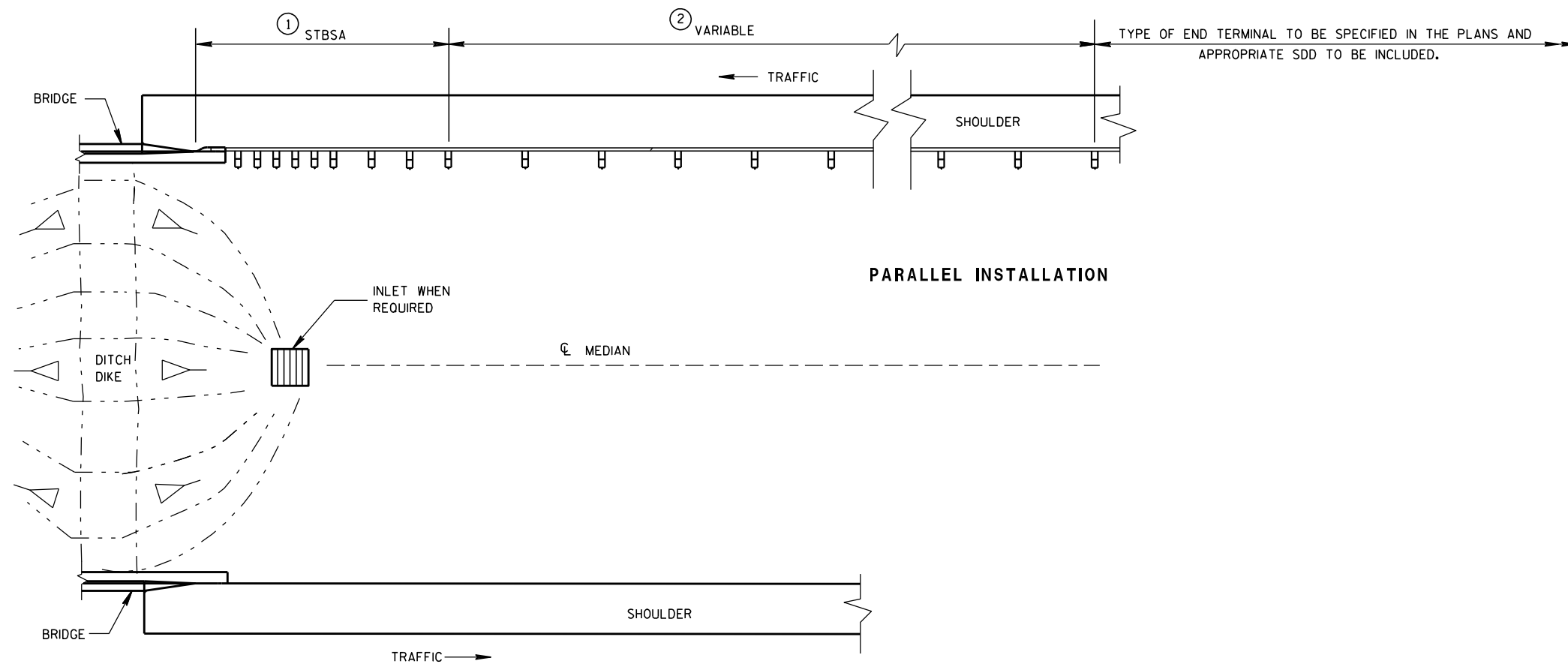
/s/ Jerry H. Zoon

ROADWAY STANDARDS

ENGINEER

INT





PARALLEL INSTALLATION

BEAM GUARD AT MEDIAN APPROACH TO BRIDGES

## GENERAL NOTES

- ① STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.
- ② LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

STEEL PLATE BEAM GUARD  
CLASS "A" AT  
MEDIAN APPROACH TO BRIDGES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

8-21-07

DATE

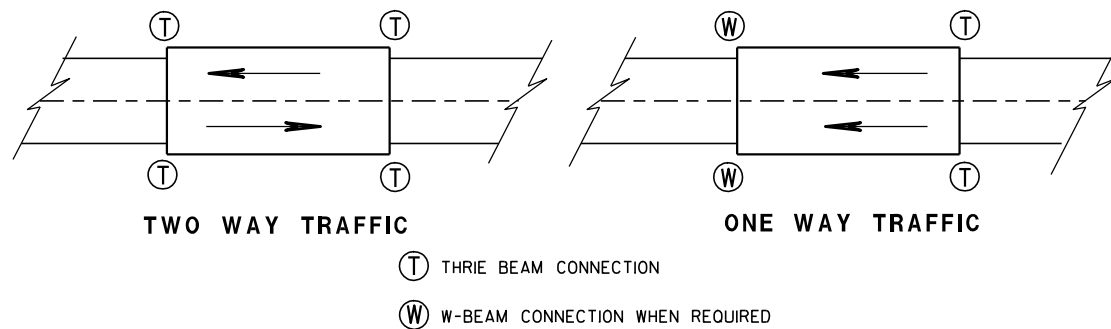
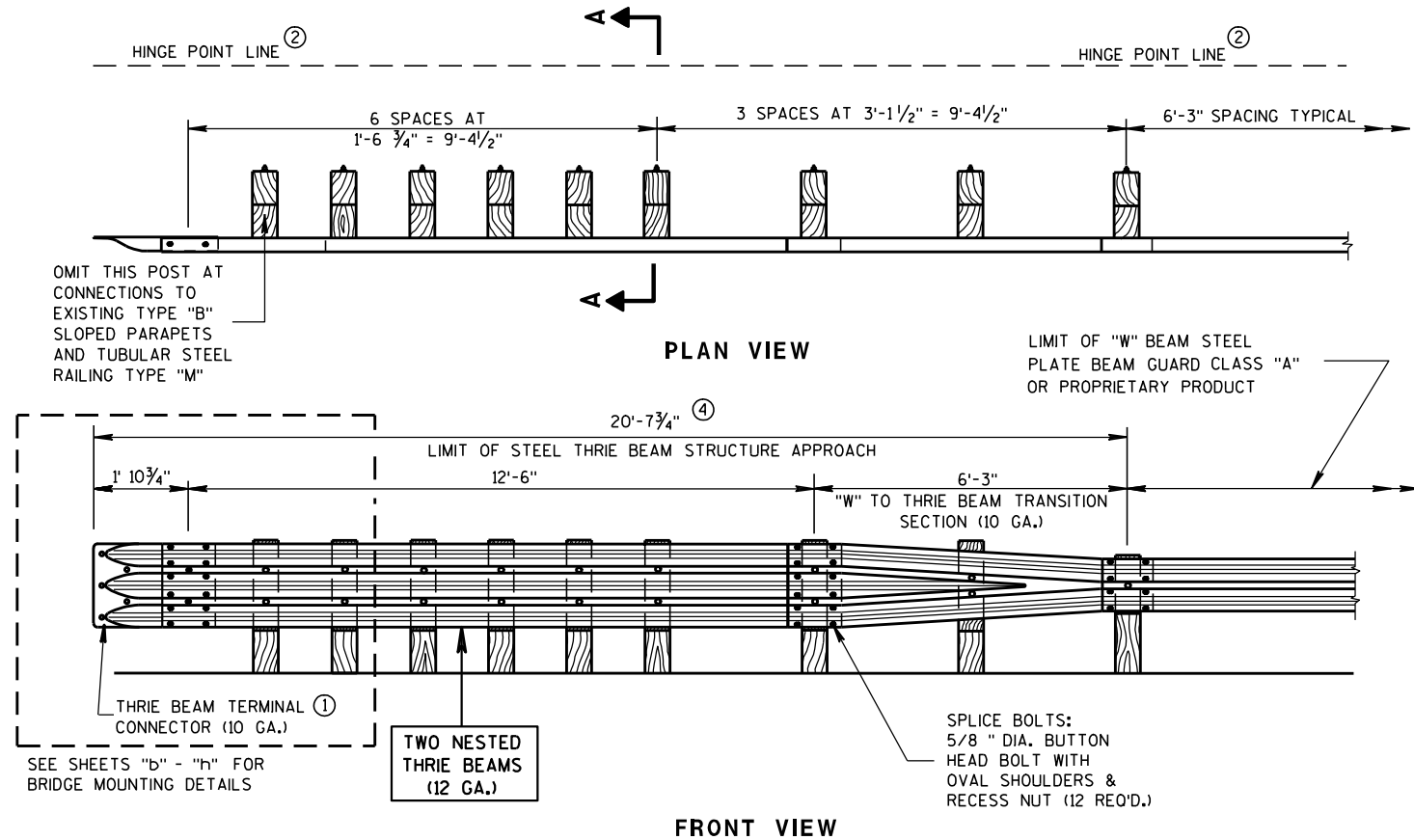
FHWA

/S/ Jerry H. Zopp

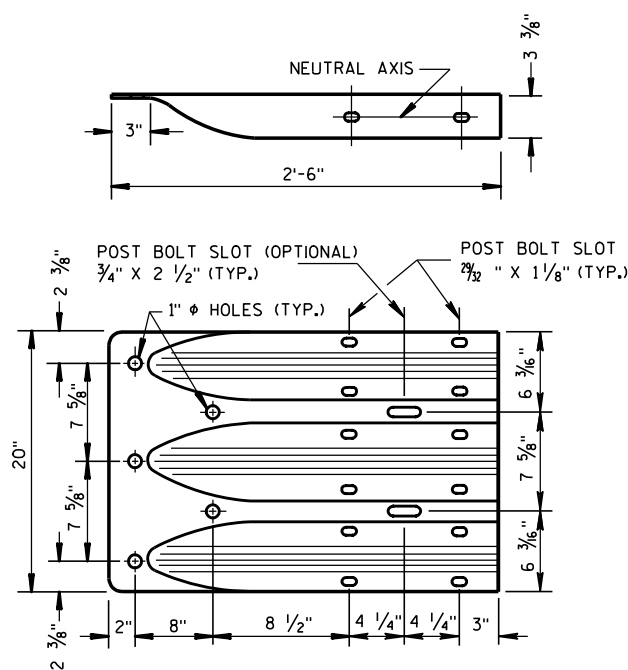
ROADWAY STANDARDS 145

ENGINEER

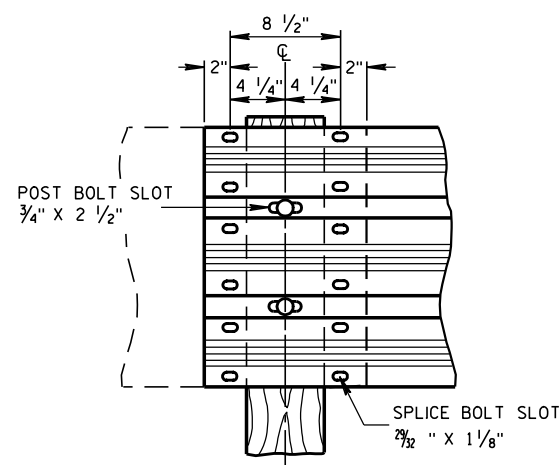
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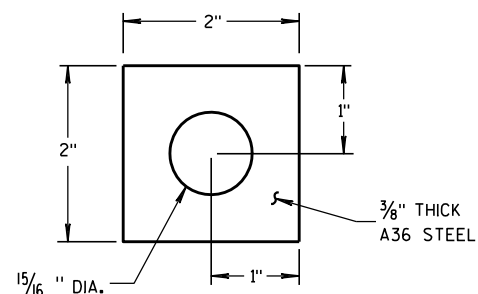
**TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE**



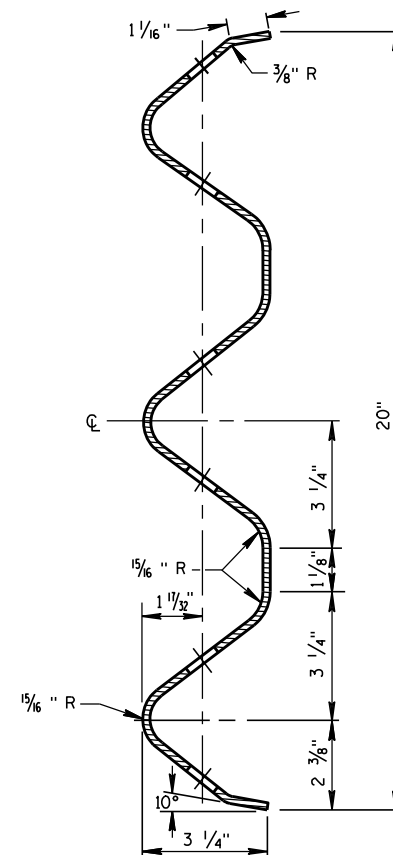
**THRIE BEAM TERMINAL CONNECTOR**



**THRIE BEAM SPLICE**



**PLATE WASHER DETAIL**



**SECTION THRU THRIE BEAM RAIL ELEMENT**

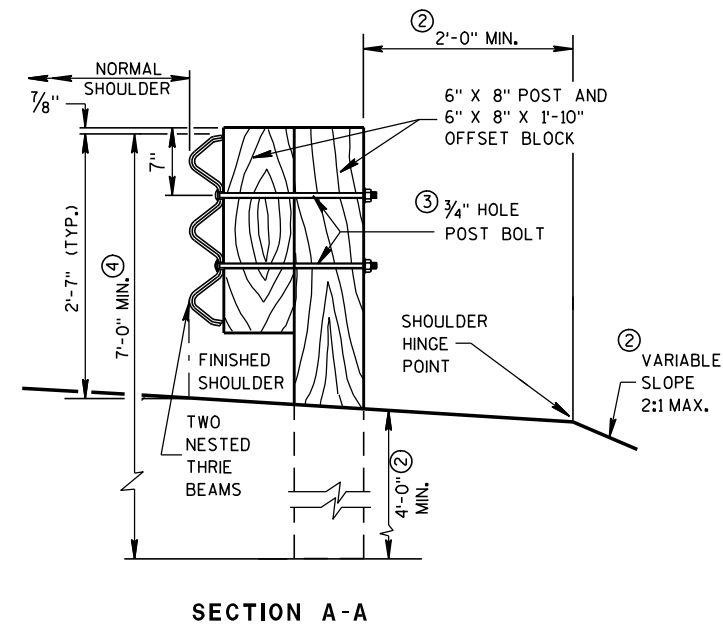
## GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.
- ③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.
- ④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



## STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012

DATE

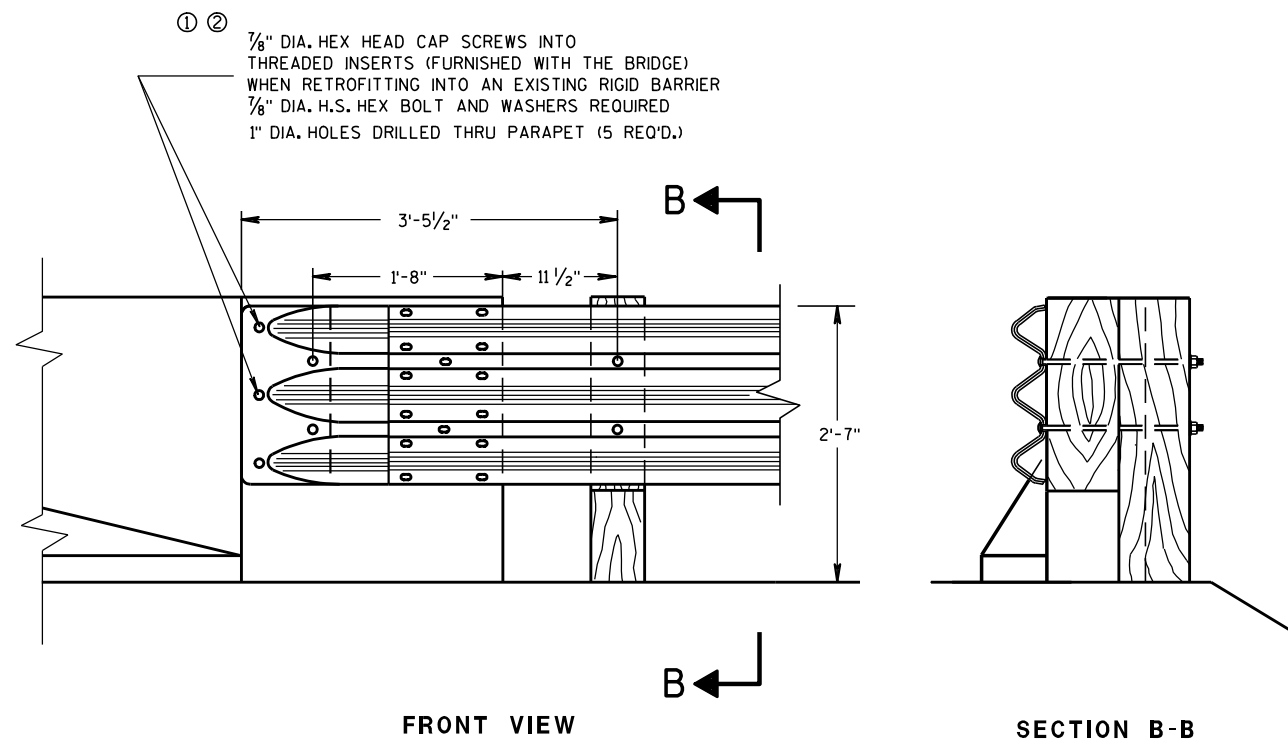
FHWA

/s/ Jerry H. Zoon

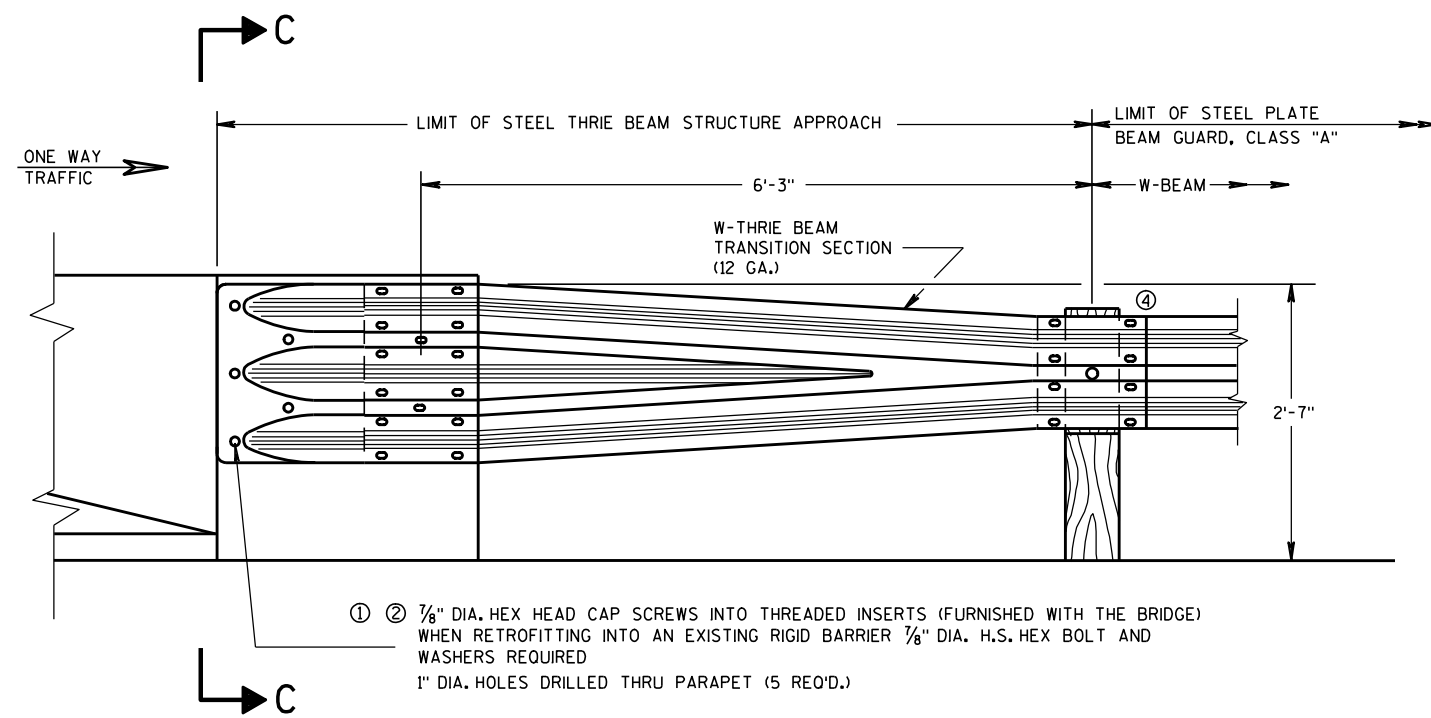
ROADWAY STANDARDS 146

ENGINEER

INT



THRIE BEAM CONNECTION TO BRIDGE  
PARAPET WITH SQUARE ENDS



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

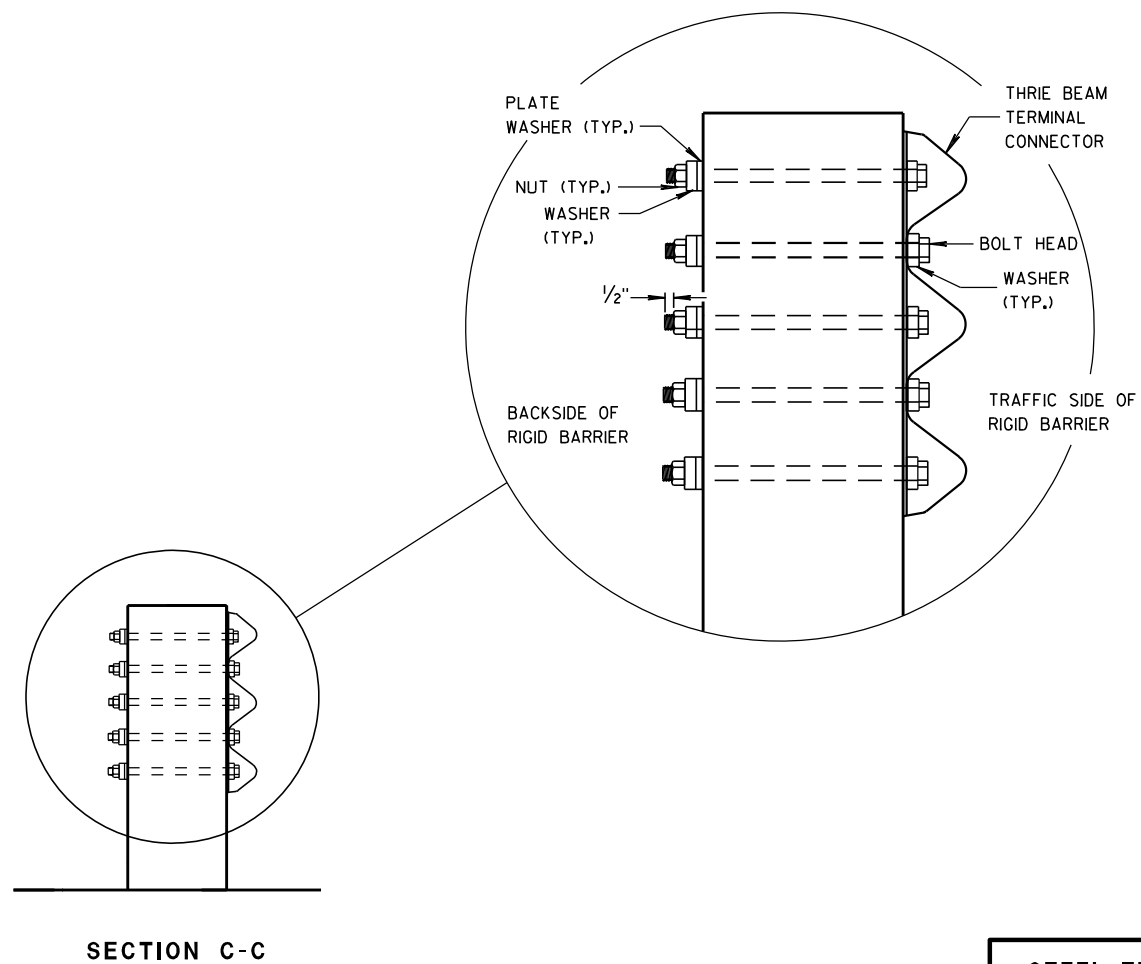
### GENERAL NOTES

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

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- ④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.



### STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS

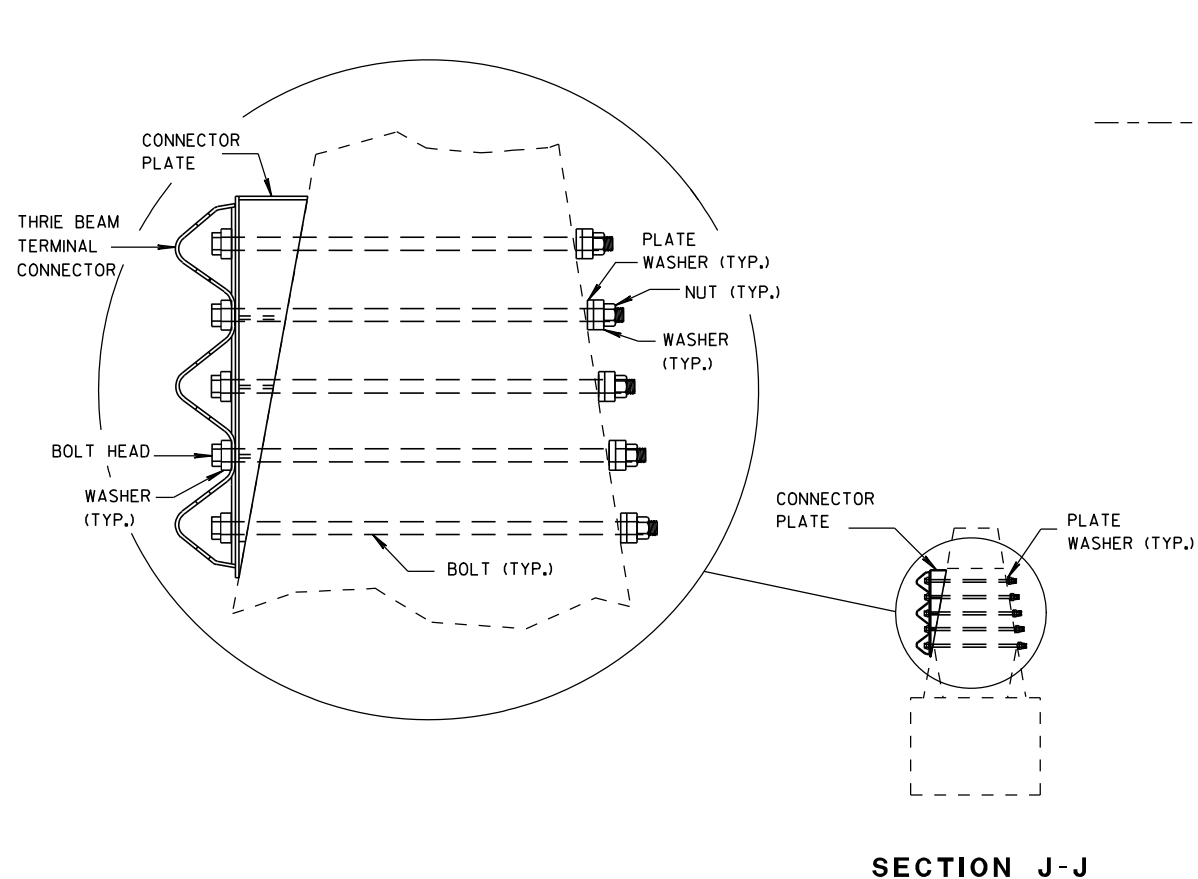
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012  
DATE

FHWA

/S/ Jerry H. Zapp  
ROADWAY STANDARDS (47) ENT  
ENGINEER



SECTION J-J

PLAN VIEW

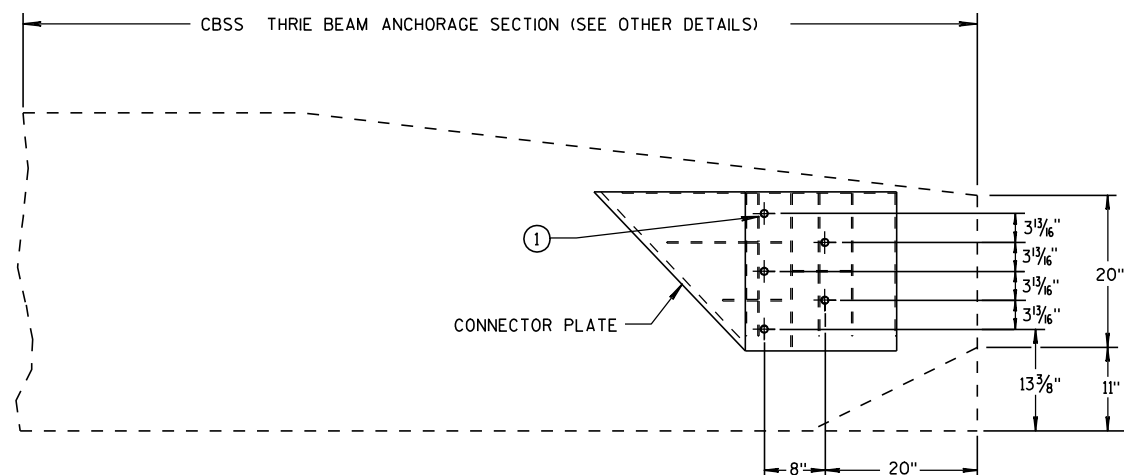
FRONT VIEW

## GENERAL NOTES

CONSTRUCT PER STANDARD SPECIFICATION 614.

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

- ① BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



CONNECTOR PLATE LOCATION

## STEEL THRIE BEAM STRUCTURE APPROACH

STEEL THRIE BEAM  
STRUCTURE APPROACH,  
SINGLE SLOPE ATTACHMENT

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012

DATE

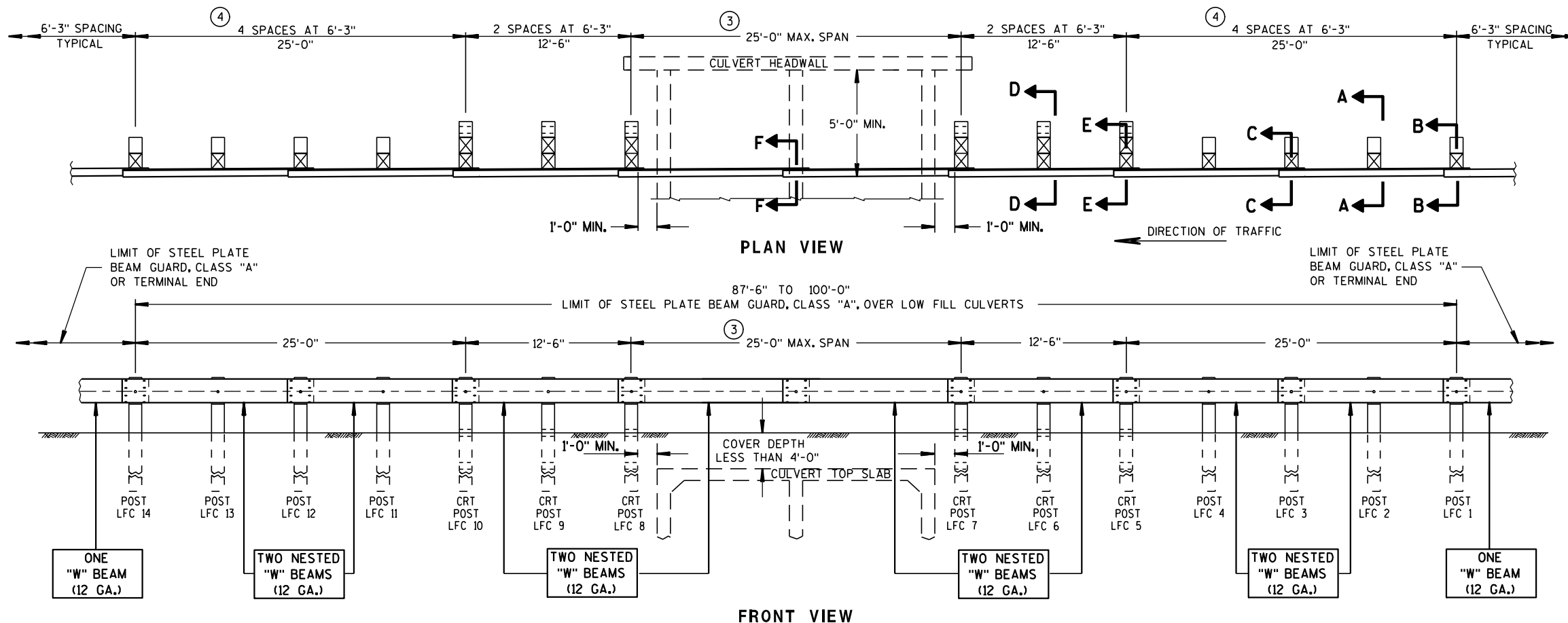
FHWA

/S/ Jerry H. Zacc

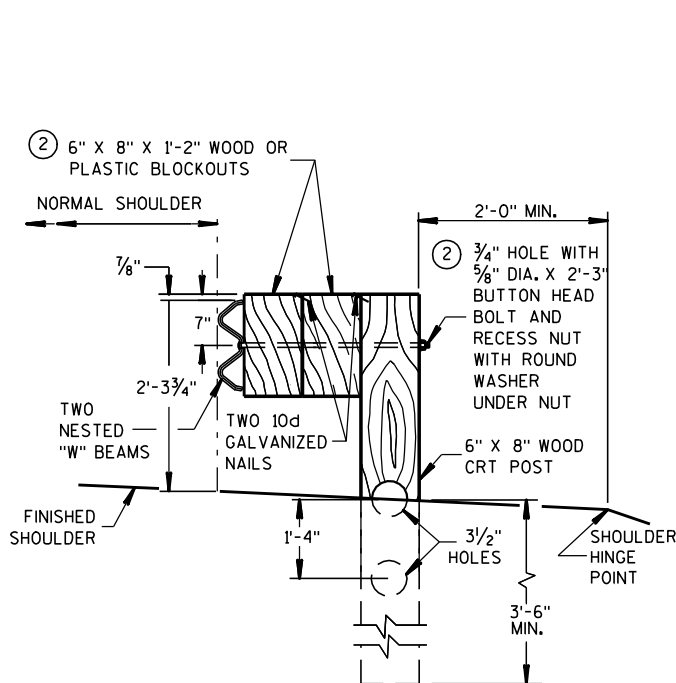
ROADWAY STANDARDS 48

ENGINEER

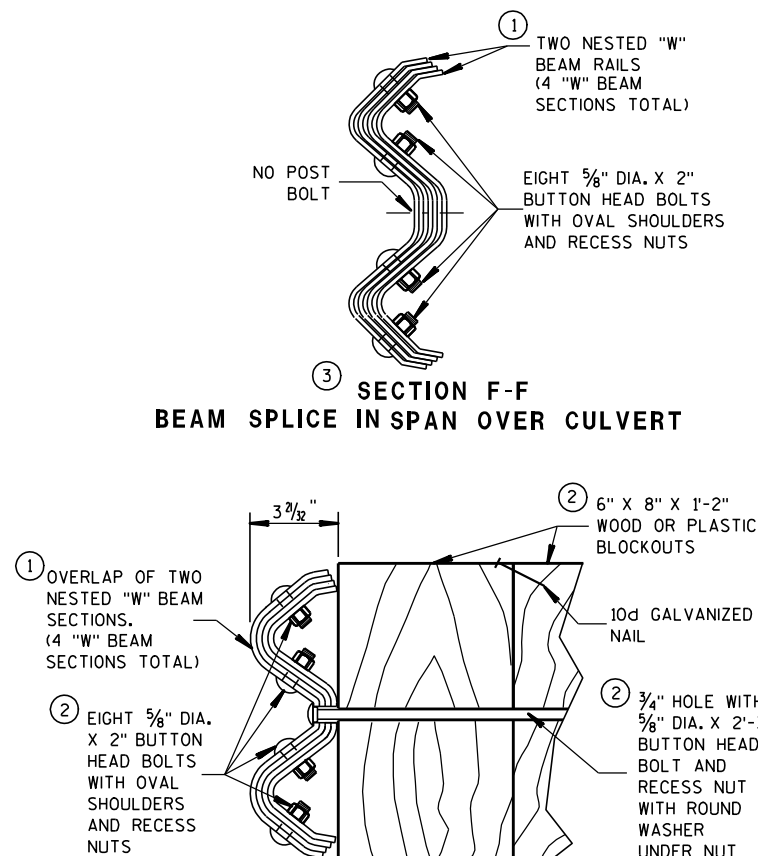
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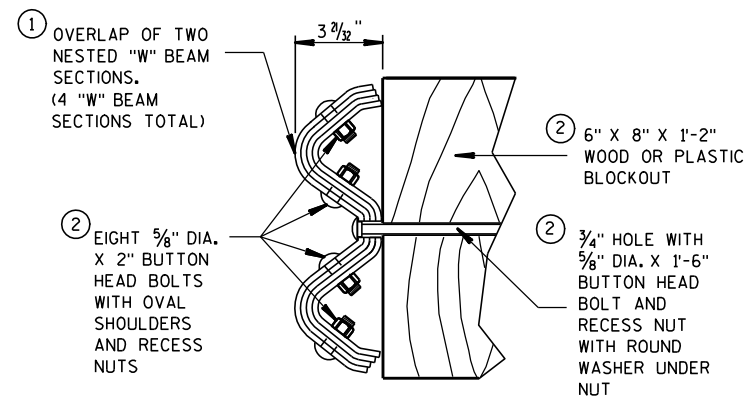
**TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD OVER LOW FILL CULVERTS**



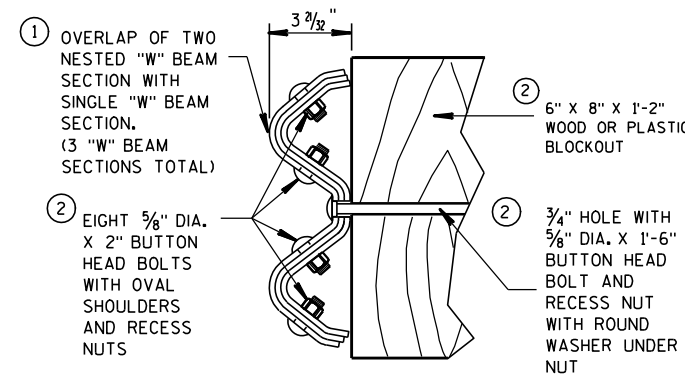
**SECTION D-D  
TYPICAL CRT POST LFC 6 AND 9**



**SECTION E-E  
TYPICAL CRT POST LFC 5, 7, 8 AND 10**



**SECTION C-C  
TYPICAL AT POSTS LFC 3 AND 12**

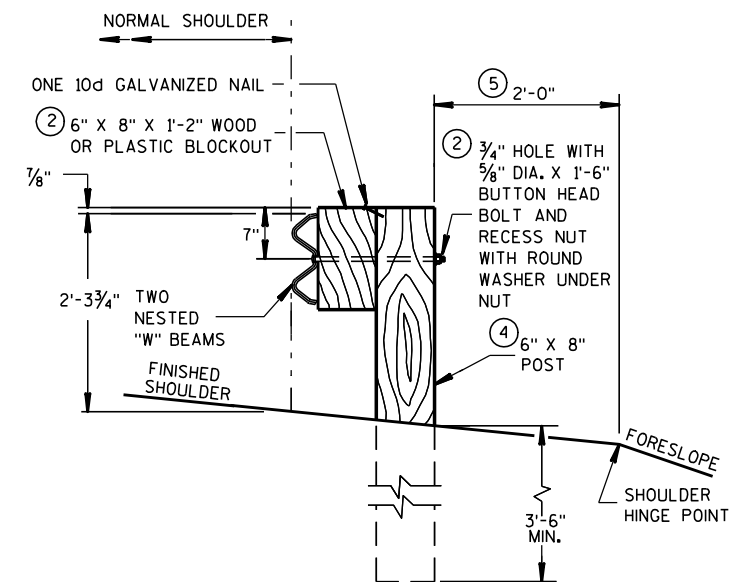


**SECTION B-B  
TYPICAL AT POSTS LFC 1 AND 14**

## 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.

- MAINTAIN THE NESTING OF EACH NESTED PAIR OF "W" BEAM SECTIONS THROUGH SPLICES. ORIENTATE NESTED "W" BEAM SPLICES IN THE DIRECTION OF TRAFFIC AS THE PLAN VIEW SHOWS. SEE S.D.D. 14 B 15 FOR SPLICE INSTALLATION.
- THE CONTRACTOR MAY USE APPROVED PLASTIC BLOCKOUTS IN LIEU OF WOOD BLOCKOUTS. SEE S.D.D. 14 B 15 FOR TYPICAL BLOCKOUT, SPLICE AND REFLECTOR INSTALLATIONS. USE BOLT SIZES AND LENGTHS AS SHOWN ON THIS DETAIL.
- PROVIDE 12'-6", 18'-9" AND 25'-0" SPANS ONLY. USE A MAXIMUM OF ONE SPLICE LOCATED ANYWHERE WITHIN THE SPAN SECTION. LOCATE ALL OTHER SPLICES AT BEAM GUARD POSTS.
- IN THE FIRST AND LAST 25 FOOT SECTIONS (POSTS LFC 1-4 & LFC 11-14), THE CONTRACTOR MAY USE W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS OR 6" X 8" WOOD POSTS WITH EITHER WOOD OR PLASTIC BLOCKOUTS. DO NOT MIX STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS AND WOOD POSTS WITH EITHER WOOD OR PLASTIC BLOCKOUTS IN THE SAME INSTALLATION.
- WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK, THE PLAN TYPICAL SECTIONS OR DETAILS MAY SHOW, OR THE ENGINEER MAY ALLOW, THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. BUILD AS THE PLAN SHOWS OR ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST SOIL DEPTH TO 4'-6" OR MORE.



**SECTION A-A  
TYPICAL AT POST LFC 2, 4, 11, 13**

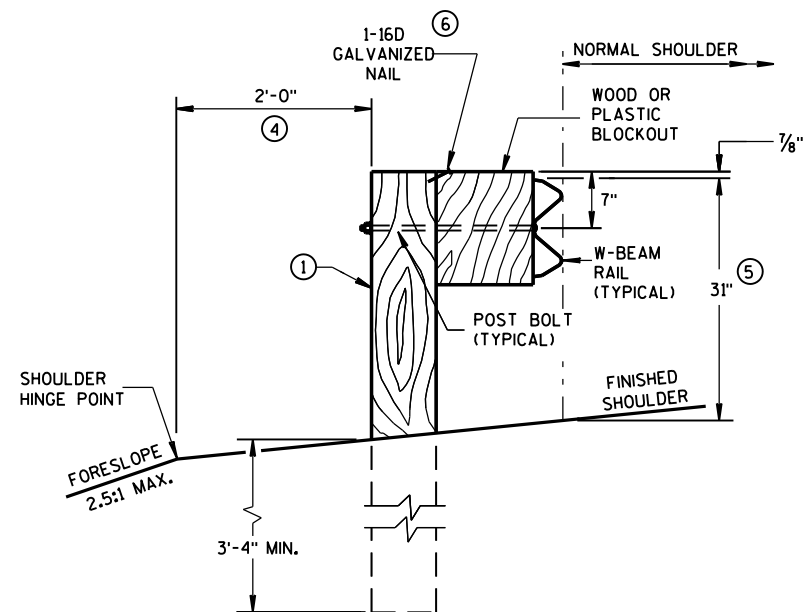
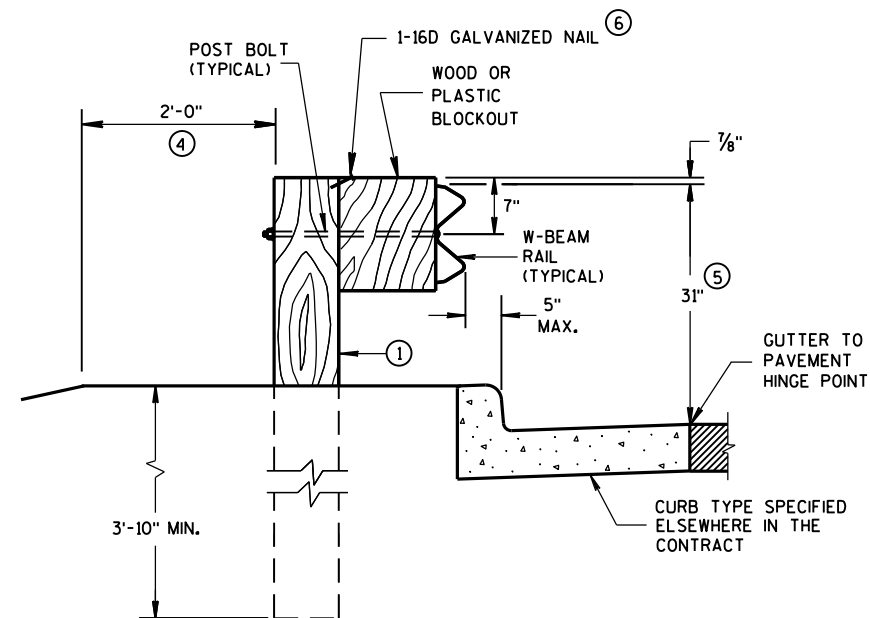
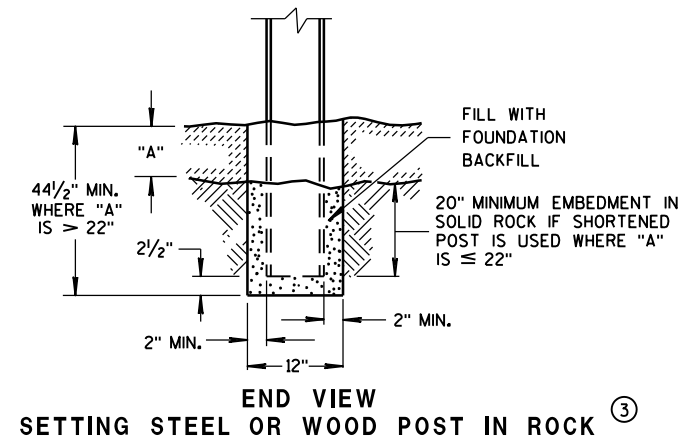
**STEEL PLATE BEAM GUARD,  
CLASS "A", OVER LOW  
FILL CULVERTS**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
12/8/00 /S/ John Have-  
DATE CHIEF ROADWAY DEVELOP 49 GINEER  
FHWA

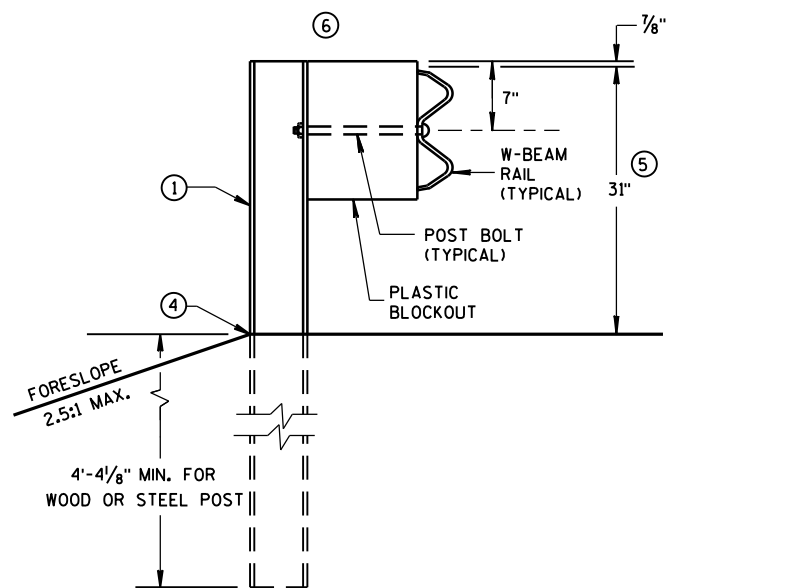


- ① WOOD OR STEEL POSTS (W6X9 OR W6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. 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 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" 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.

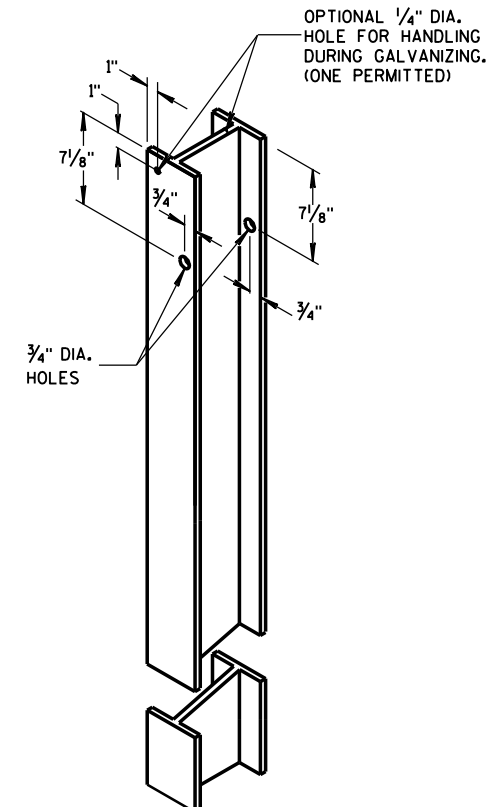


END VIEW

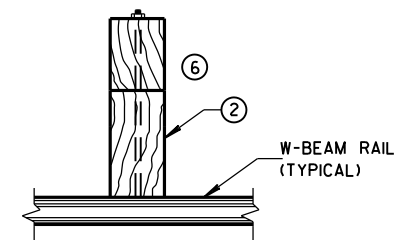
LOCATED ALONG A ROADWAY SHOULDER  
STANDARD INSTALLATION



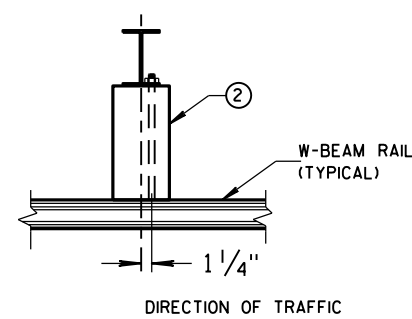
**MGS LONGER POST AT HALFPOST SPACING W BEAM (K)**



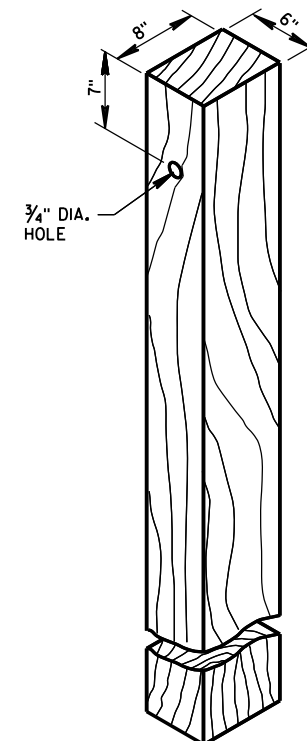
**STEEL POST &  
HOLE PUNCHING DETAIL  
(w6X9)<sup>①</sup>**



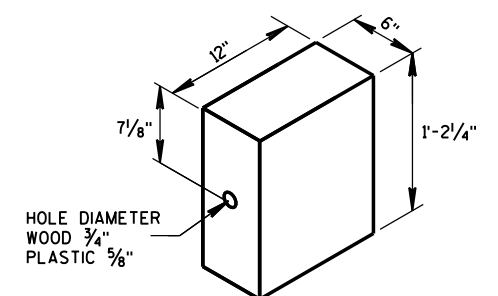
**PLAN VIEW  
WOOD POST,  
BLOCKOUT & BEAM**



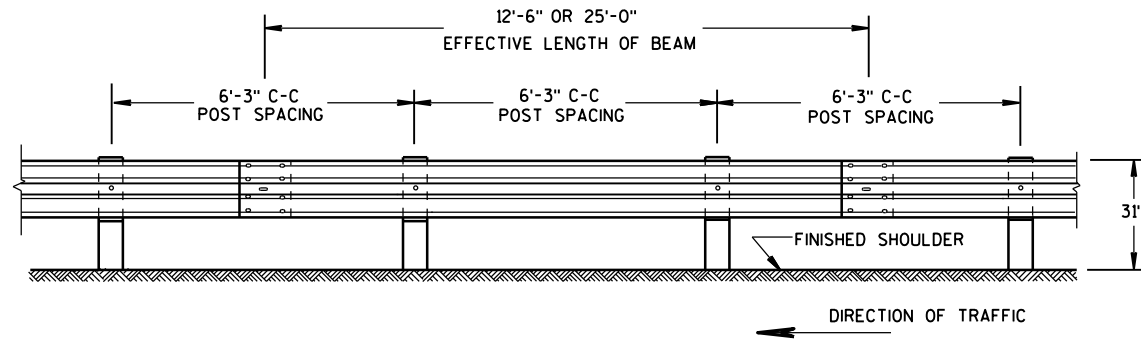
PLAN VIEW  
STEEL POST,  
PLASTIC BLOCKOUT & BEAM



**WOOD POST**  
**(6" X 8") NOMINAL** <sup>①</sup>

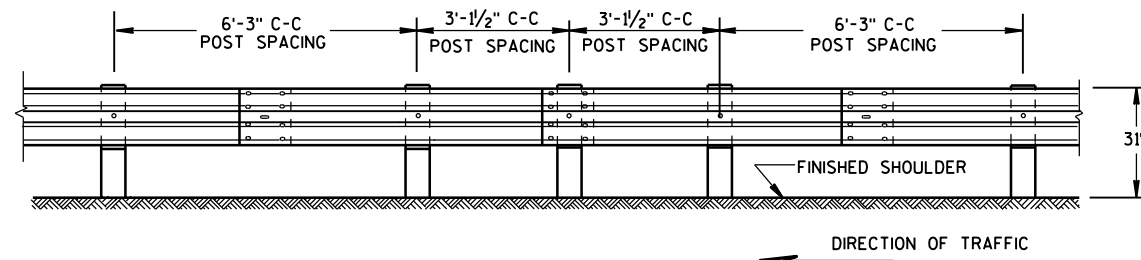


**WOOD OR  
PLASTIC BLOCKOUT** <sup>(2)</sup>



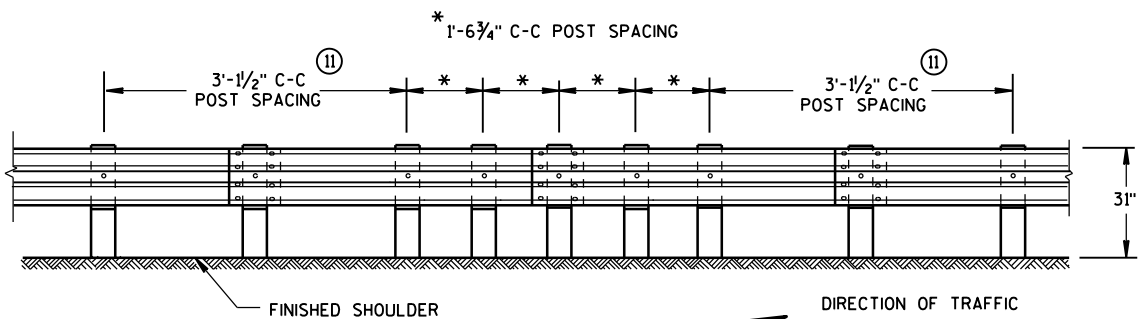
FRONT VIEW

## POST SPACING STANDARD INSTALLATION



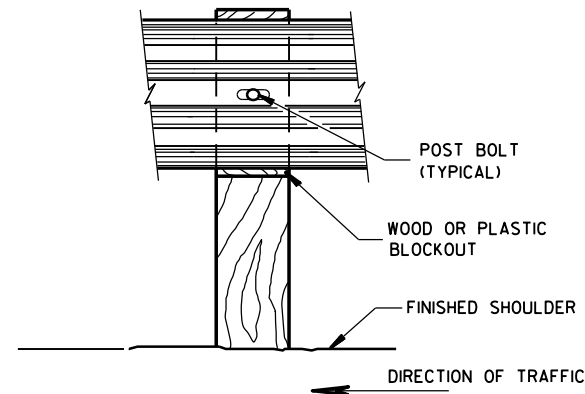
FRONT VIEW

## HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)

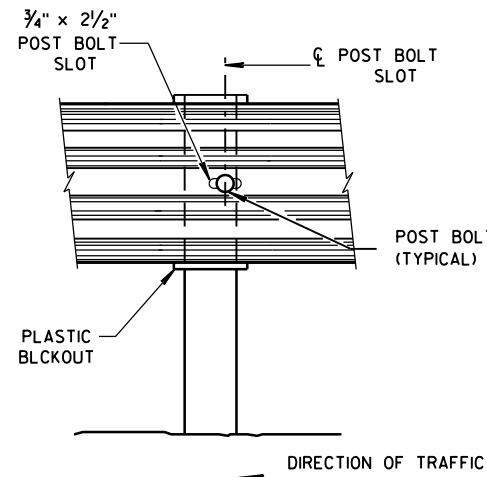


FRONT VIEW

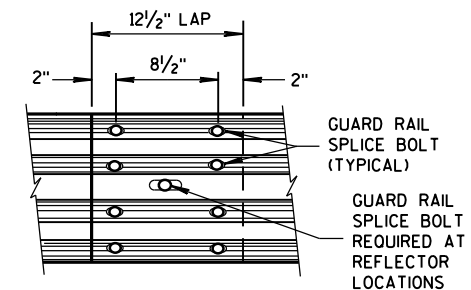
## QUARTER POST SPACING (QS)



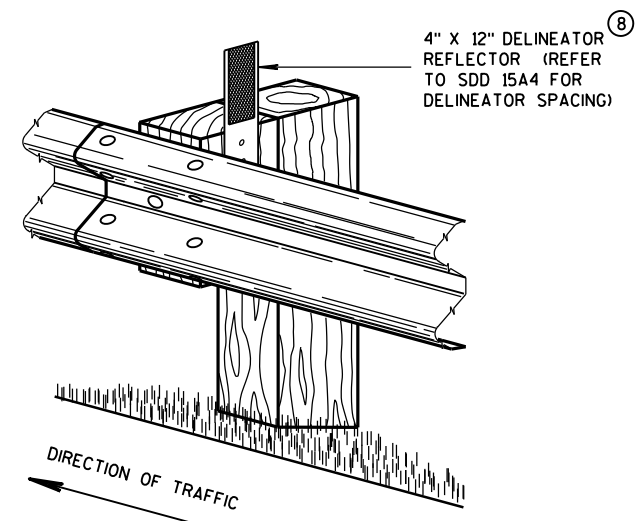
FRONT VIEW AT WOOD POST



FRONT VIEW AT STEEL POST



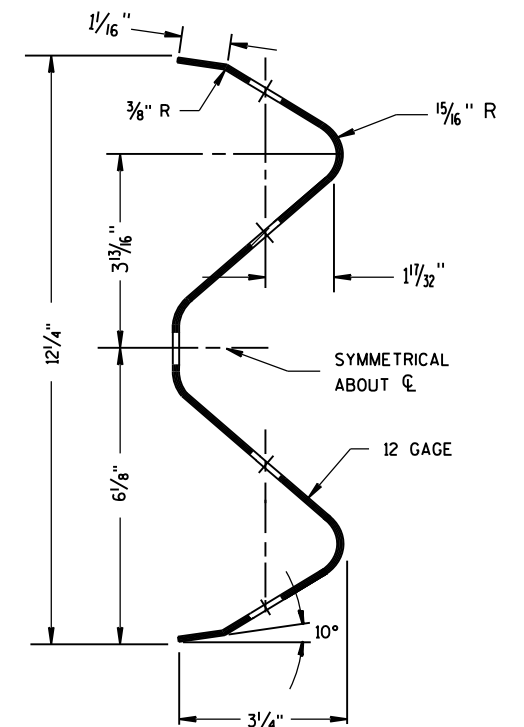
FRONT VIEW  
MID-SPAN BEAM SPLICE



## ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

## GENERAL NOTES

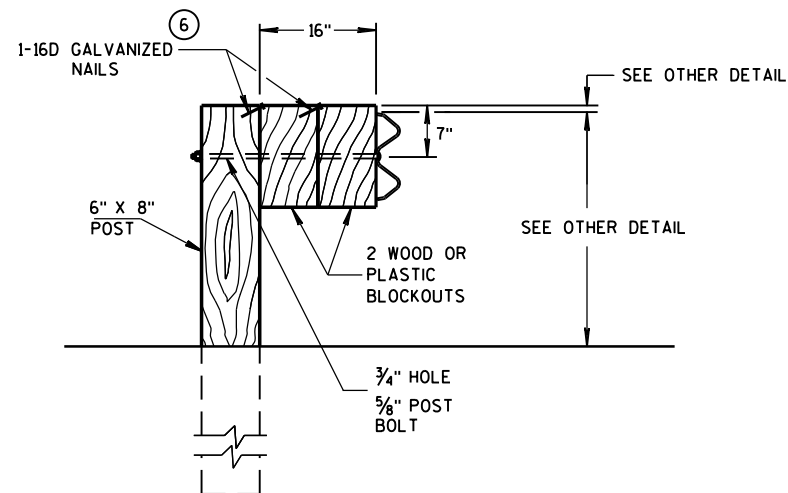
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
  - ⑪ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

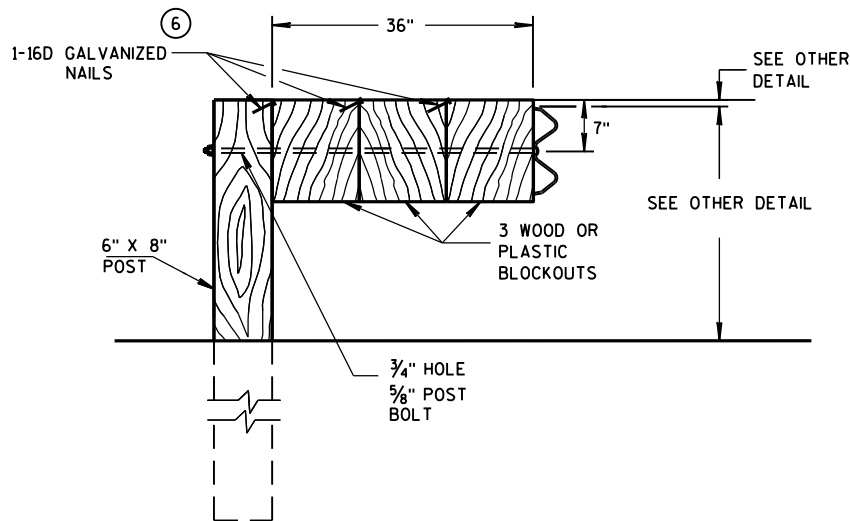
MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



### DETAIL FOR 16" BLOCKOUT DEPTH

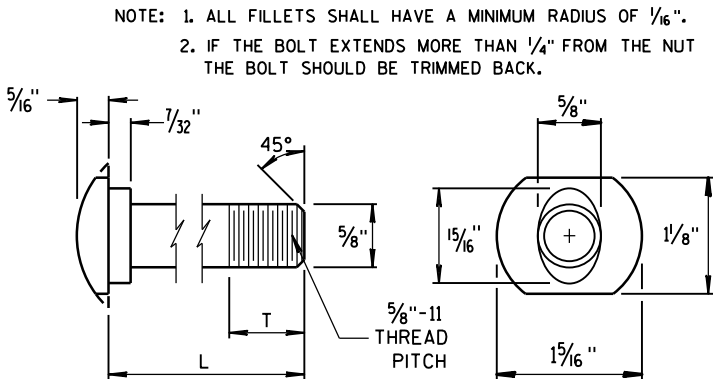
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



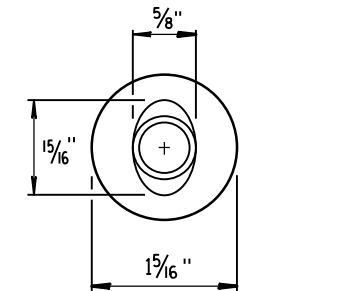
### DETAIL FOR 36" BLOCKOUT DEPTH

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.

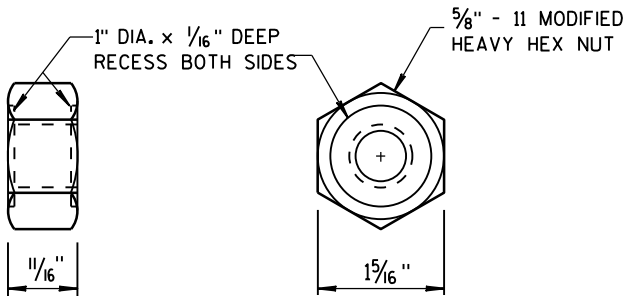
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



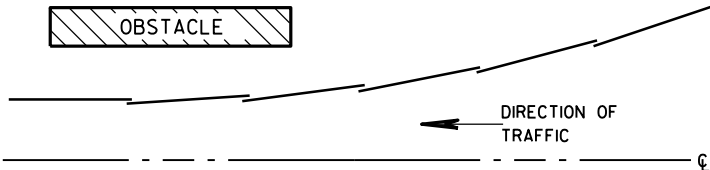
POST BOLT TABLE



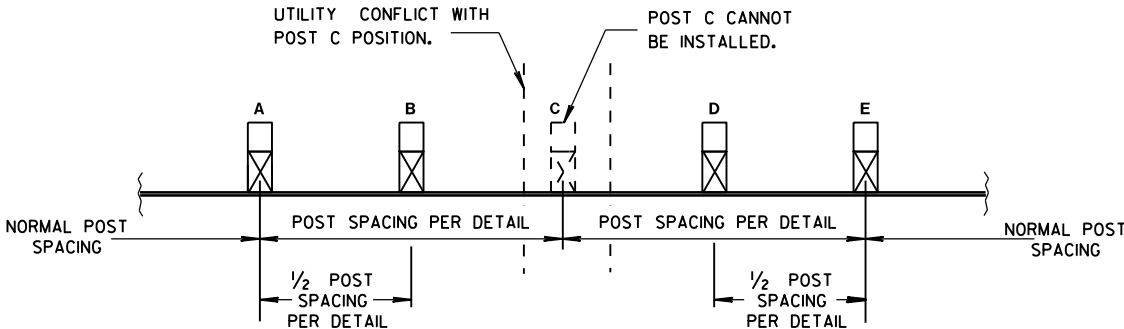
ALTERNATE BOLT HEAD



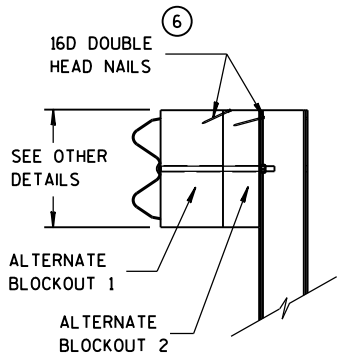
### POST BOLT, SPLICE BOLT AND RECESS NUT



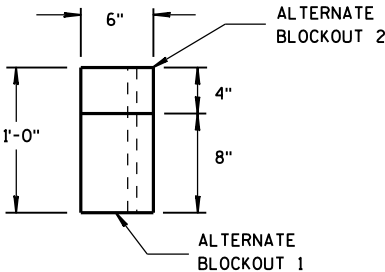
### PLAN VIEW BEAM LAPPING DETAIL



### POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW

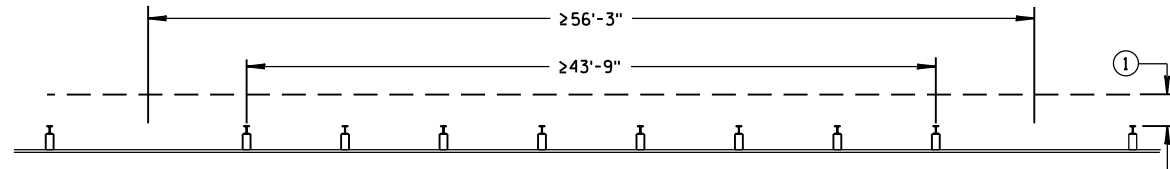


TOP VIEW

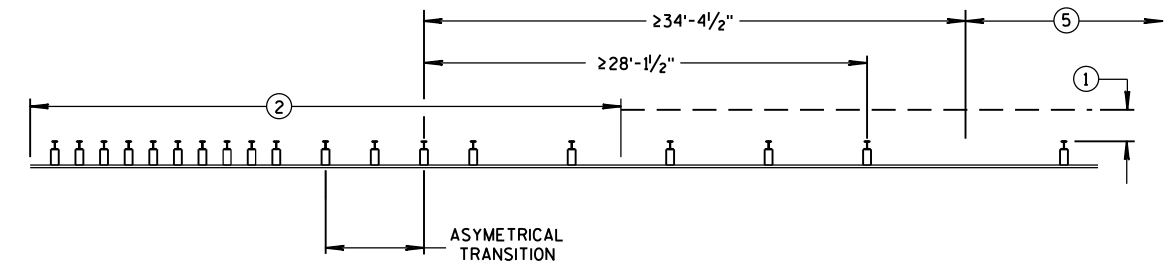
### ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL

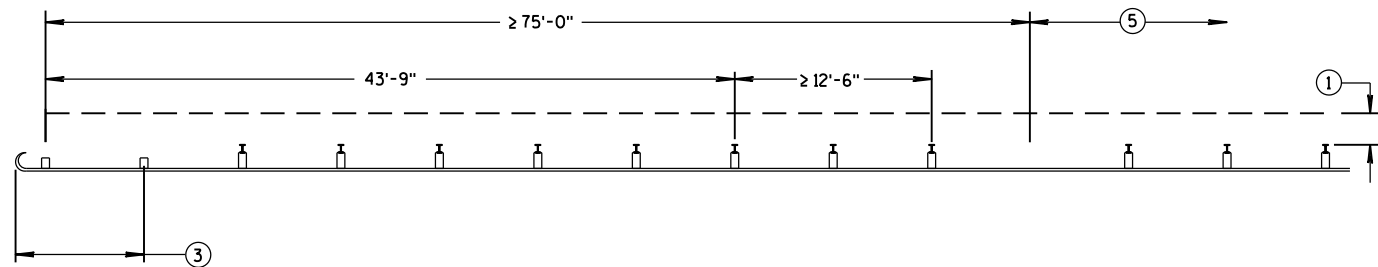
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



MISSING POST IN NORMAL BEAM GUARD RUN

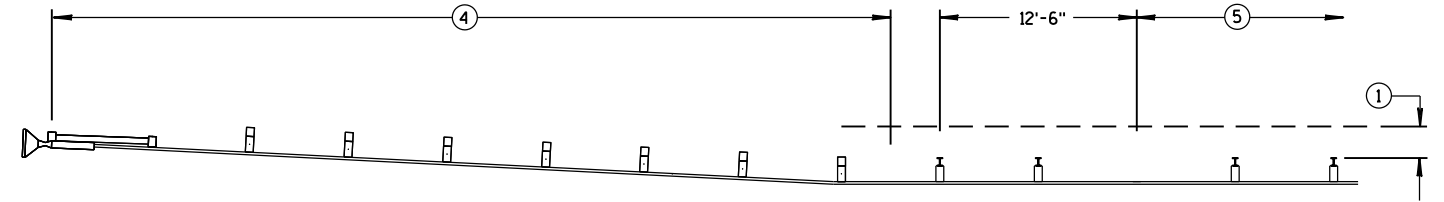


MISSING POST NEAR APPROACH THRIE BEAM TRANSITION

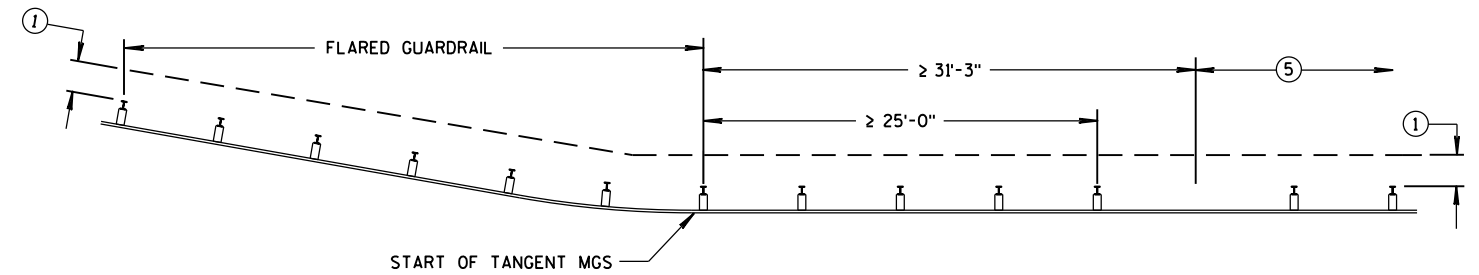


MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR TYPE 2 TERMINAL

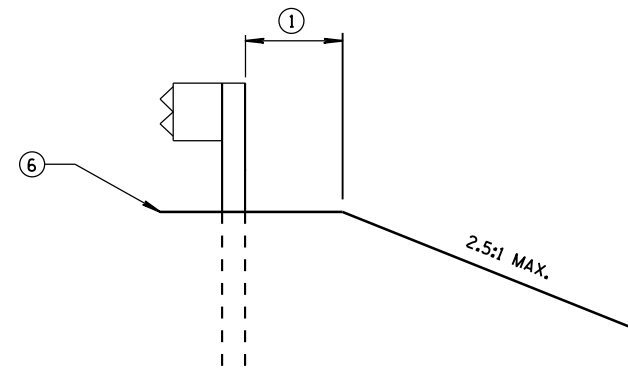
- ① MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- ② SEE SDD 14B45 FOR MORE DETAILS.
- ③ SEE SDD 14B47 FOR MORE DETAILS.
- ④ SEE SDD 14B44 FOR MORE DETAILS.
- ⑤ SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- ⑥ SEE PLAN FOR SHOULDER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



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT

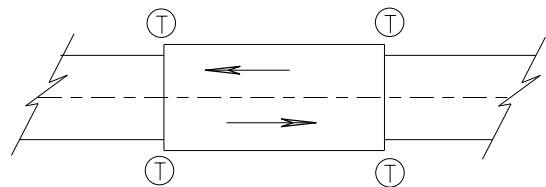


MISSING POST IN NORMAL BEAM GUARD RUN  
NEAR FLARED BEAM GUARD

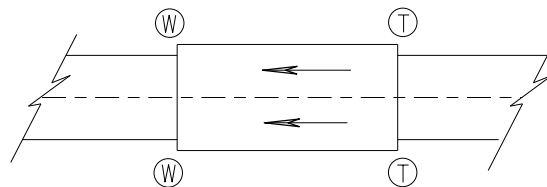


CROSS SECTION VIEW

| MIDWEST GUARDRAIL SYSTEM<br>(MGS) GUARDRAIL        |                   |    |     |
|----------------------------------------------------|-------------------|----|-----|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                   |    |     |
| APPROVED                                           |                   |    |     |
| June 2017                                          | /S/ Rodney Taylor |    |     |
| DATE                                               | ROADWAY STANDARDS | 53 | ENT |
| FHWA                                               | UNIT SUPERVISOR   |    |     |



**TWO WAY TRAFFIC**



**ONE WAY TRAFFIC**

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

**GENERAL NOTES**

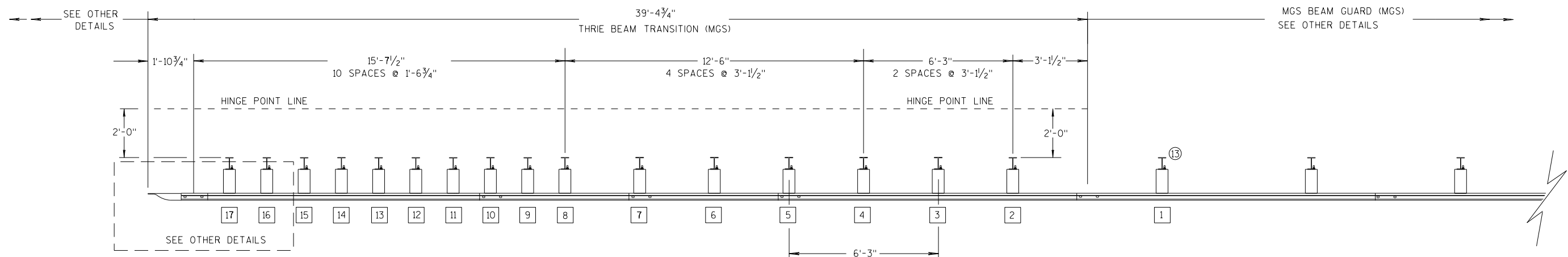
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

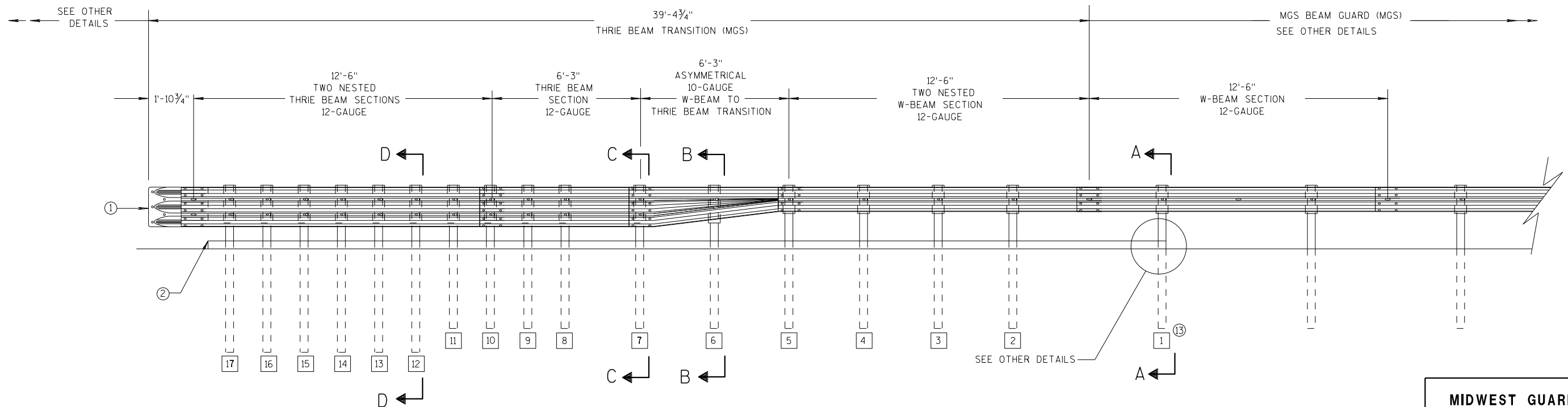
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



**PLAN VIEW**



**ELEVATION VIEW**

**MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION**

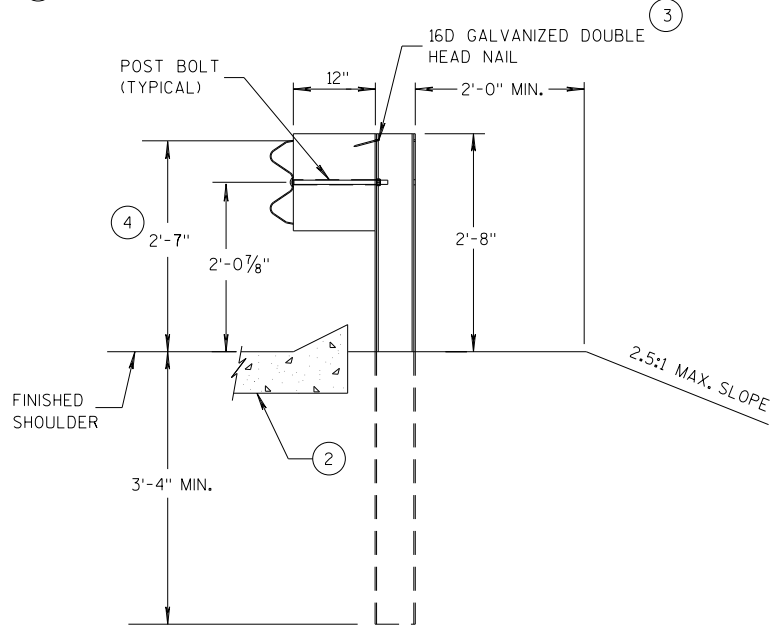
**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

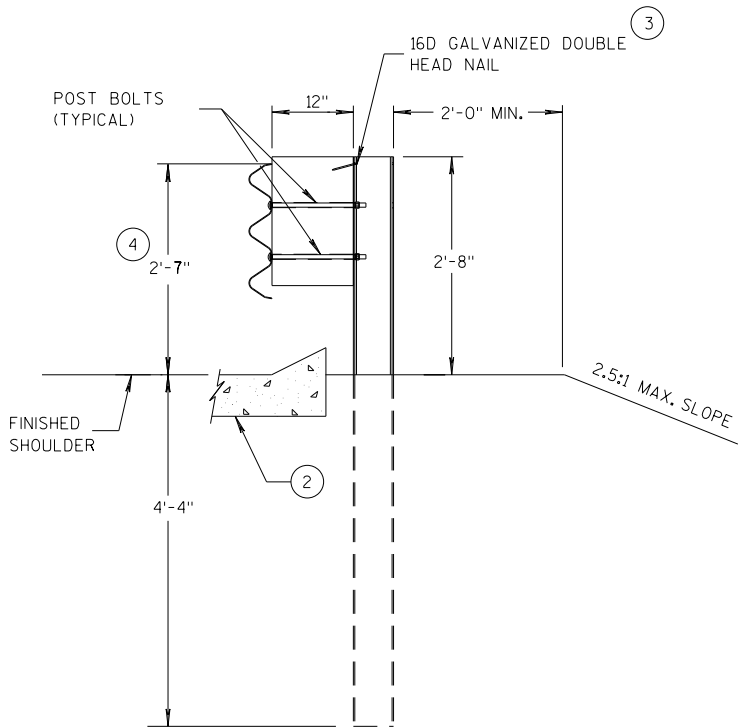


GENERAL NOTES

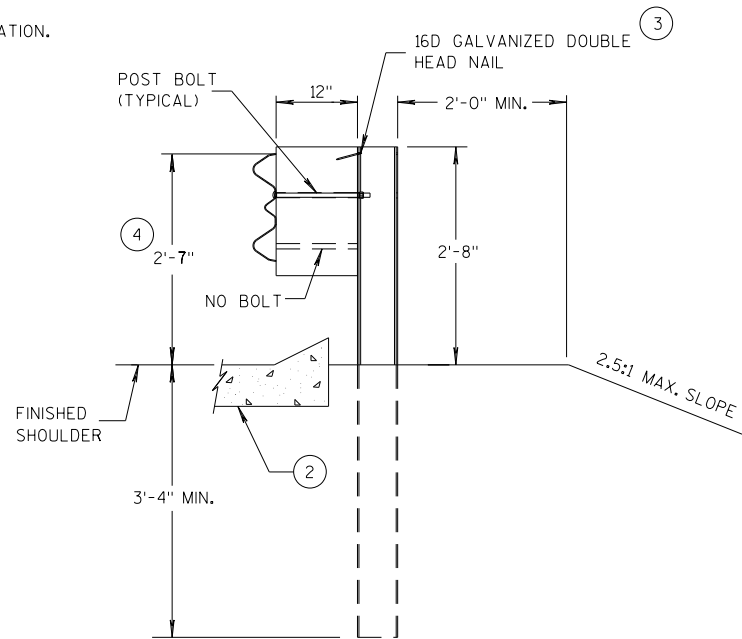
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



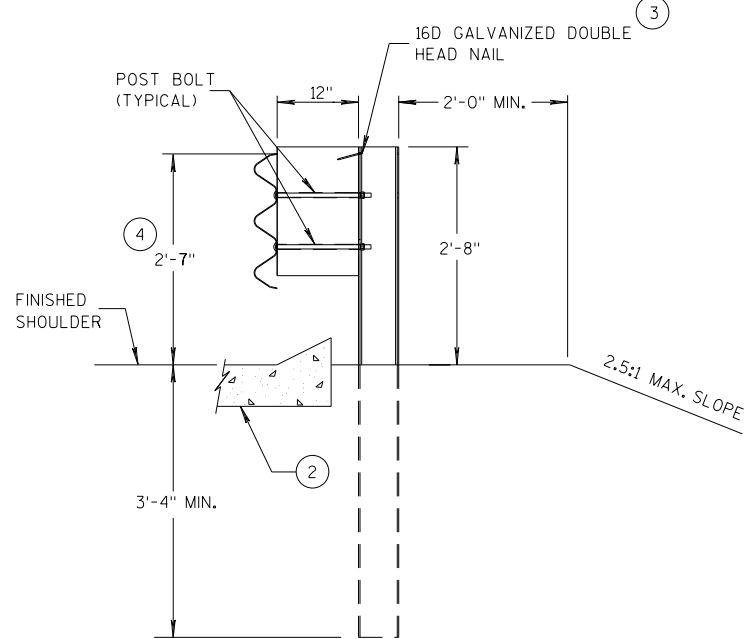
SECTION A-A  
POSTS 1-5



SECTION D-D  
POSTS 12-17



SECTION B-B  
POST 6



SECTION C-C  
POSTS 7-11

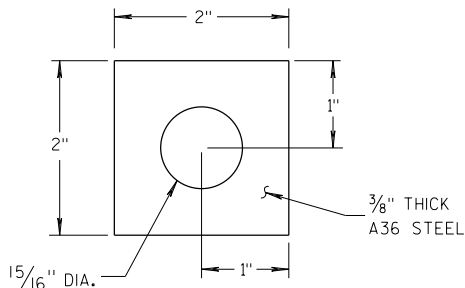
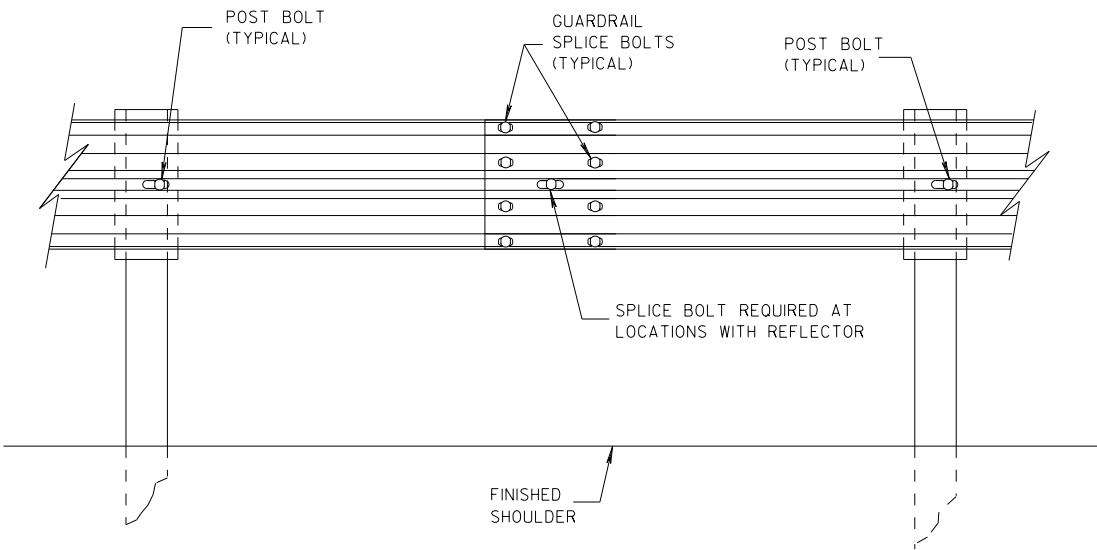
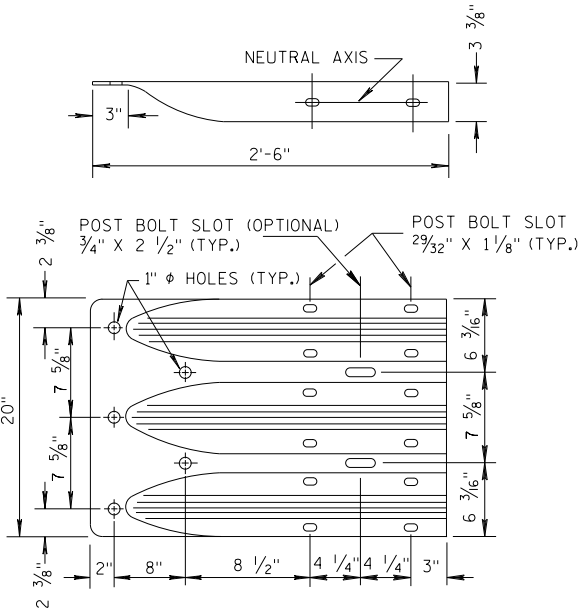


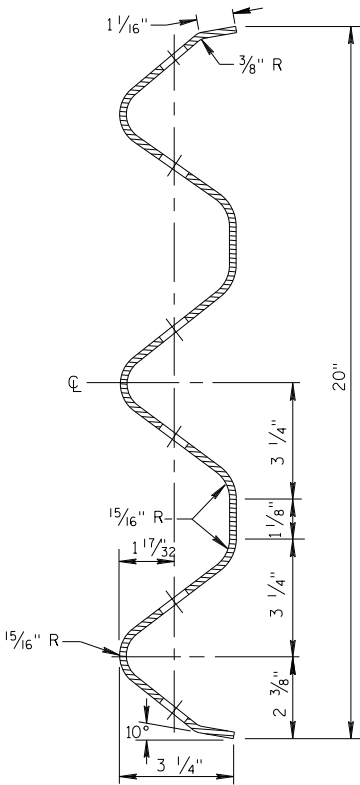
PLATE WASHER DETAIL



SPlice DETAIL



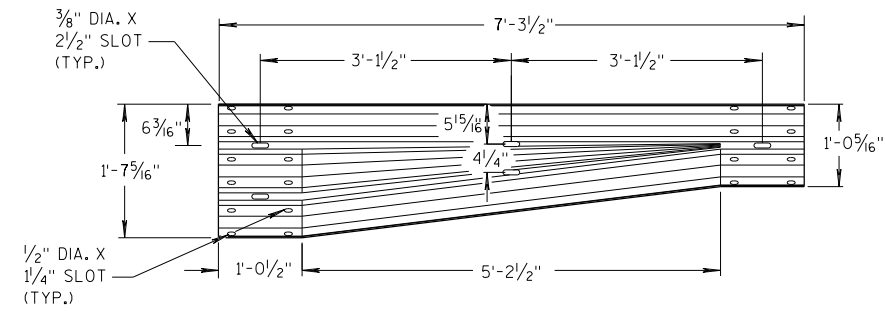
THRIE BEAM  
TERMINAL CONNECTOR



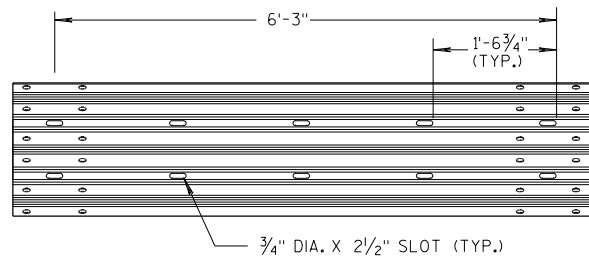
SECTION THRU THRIE  
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

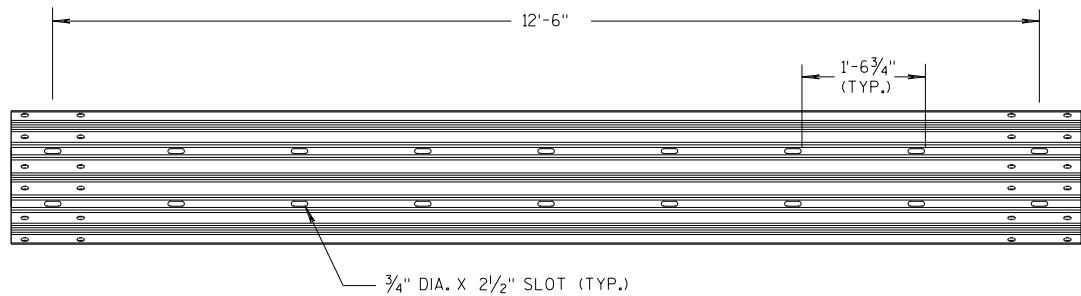
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



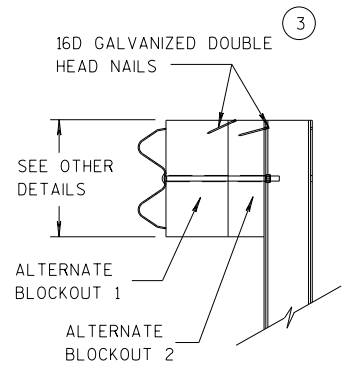
W-BEAM TO THRIE BEAM TRANSITION SECTION



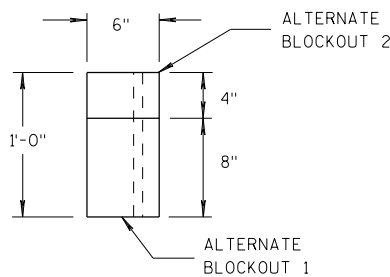
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

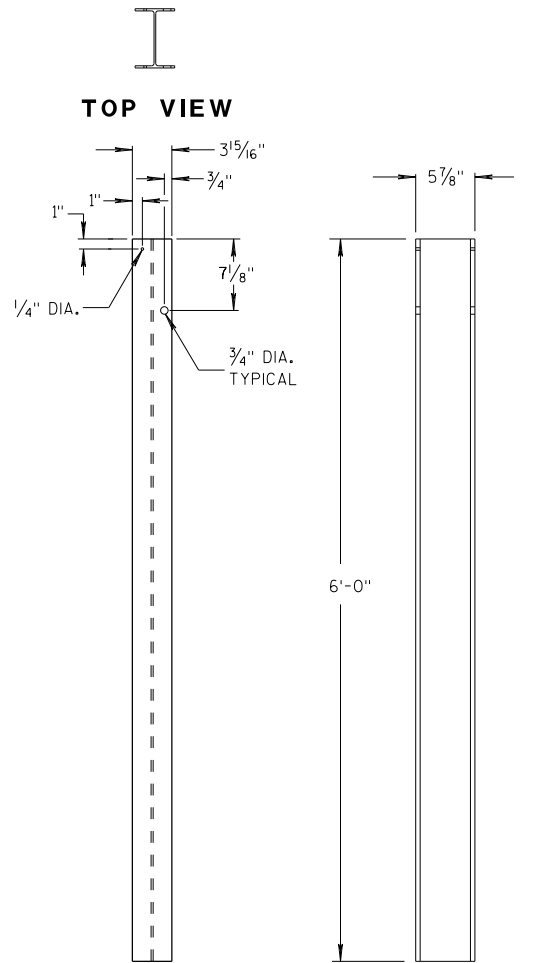


SIDE VIEW



TOP VIEW

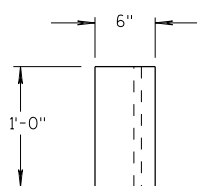
ALTERNATE WOOD BLOCKOUT DETAIL



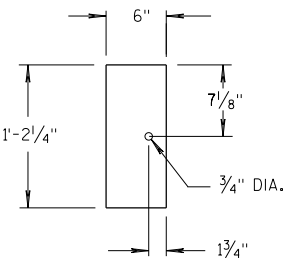
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

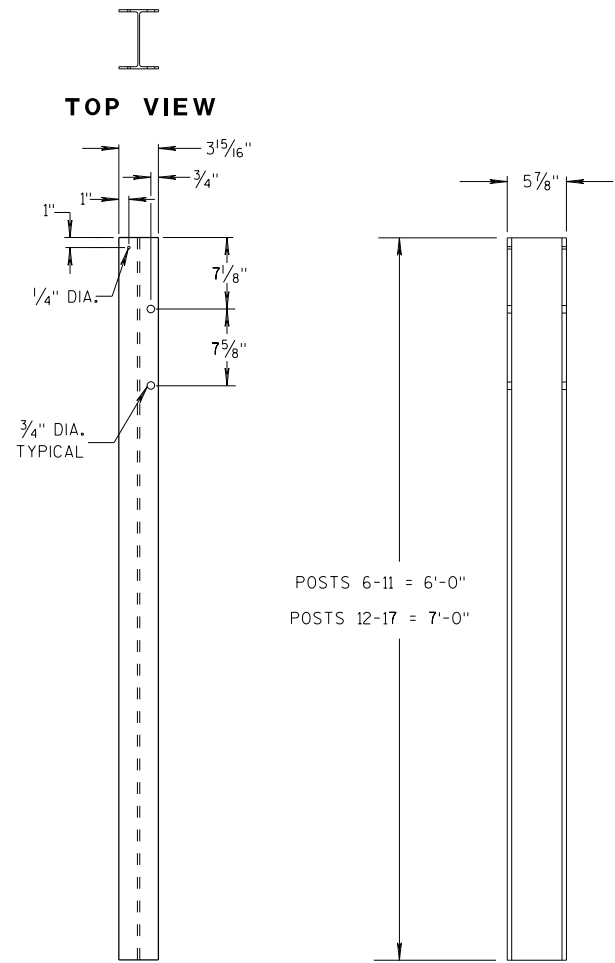


TOP VIEW



FRONT VIEW

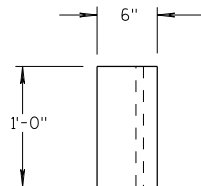
BLOCKOUT POSTS 1-5



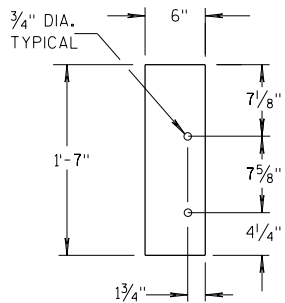
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

### GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

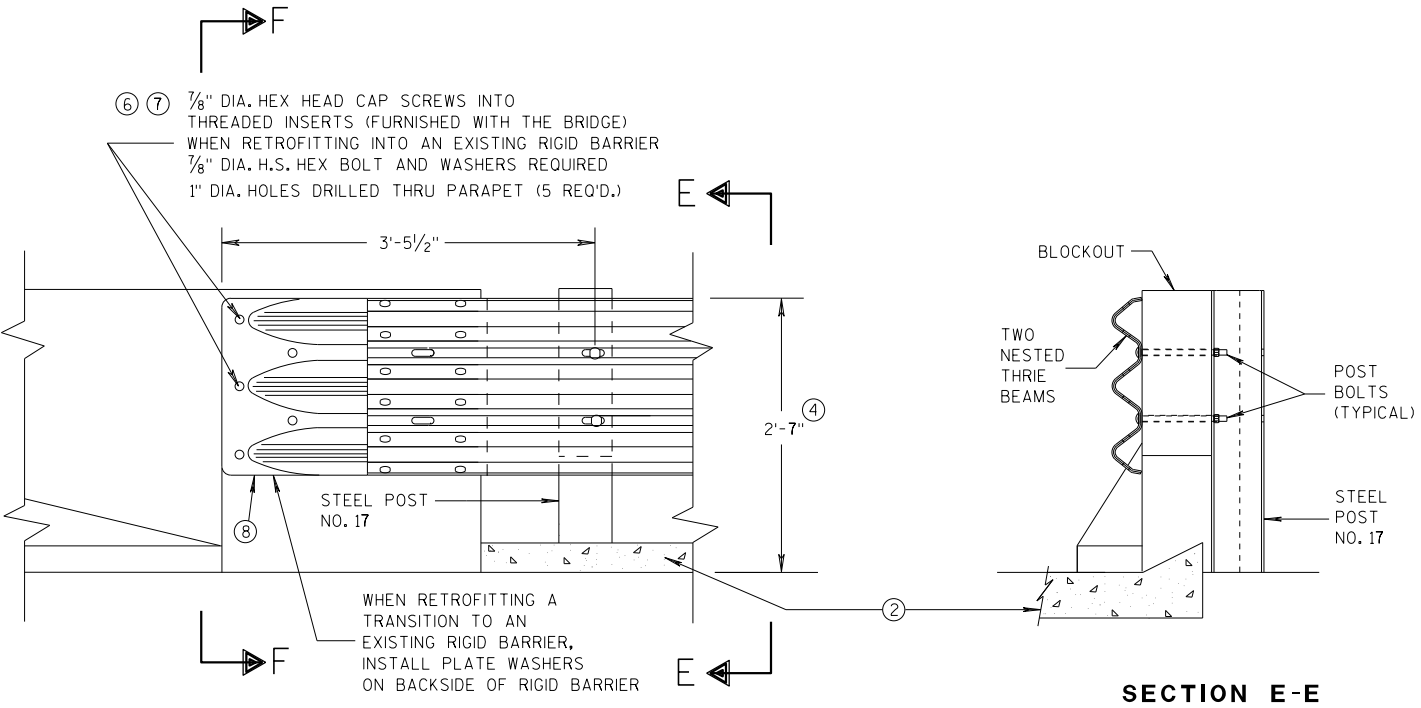
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

⑤ WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

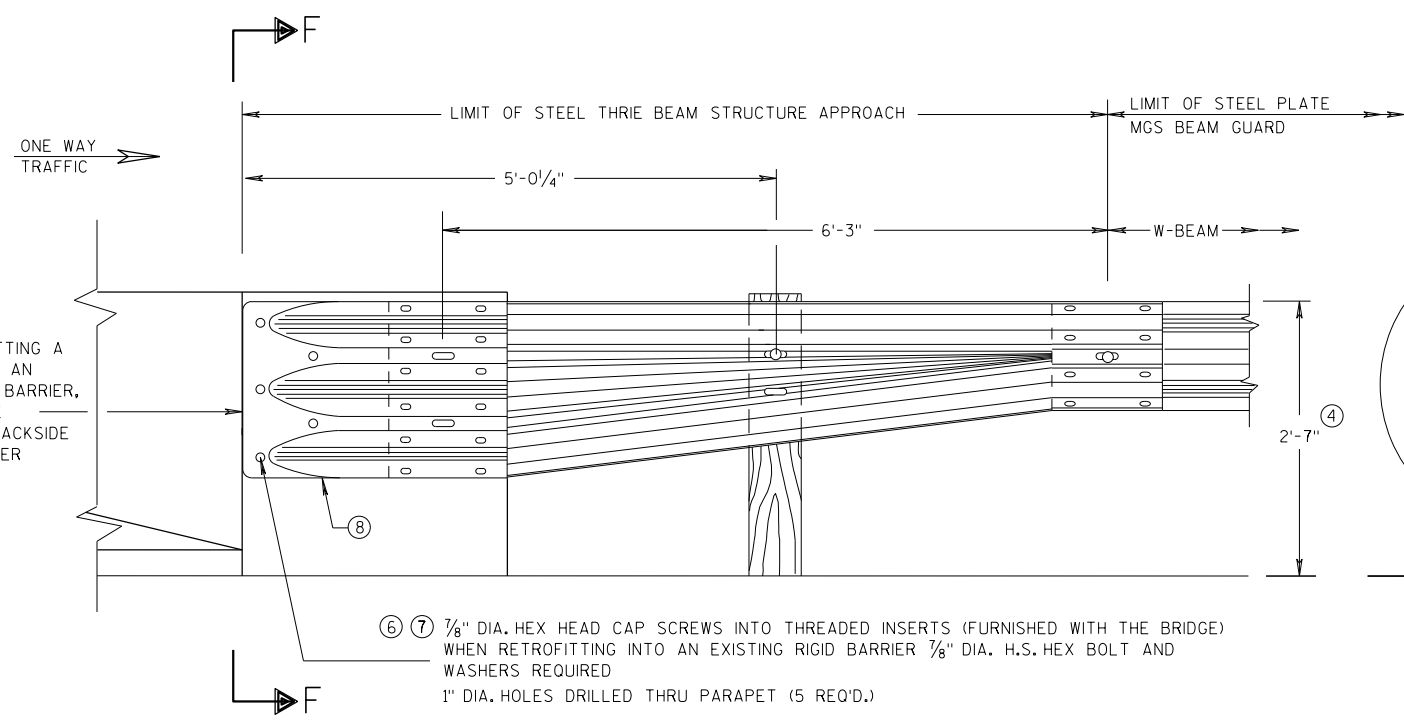
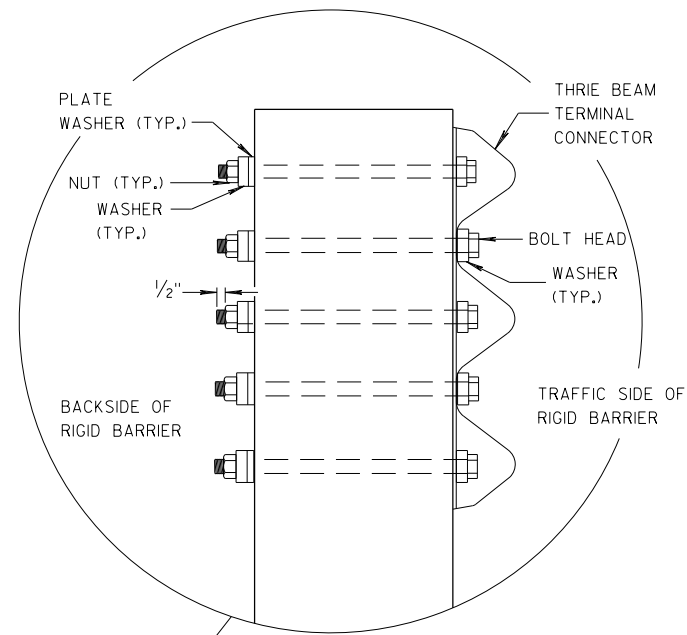
MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

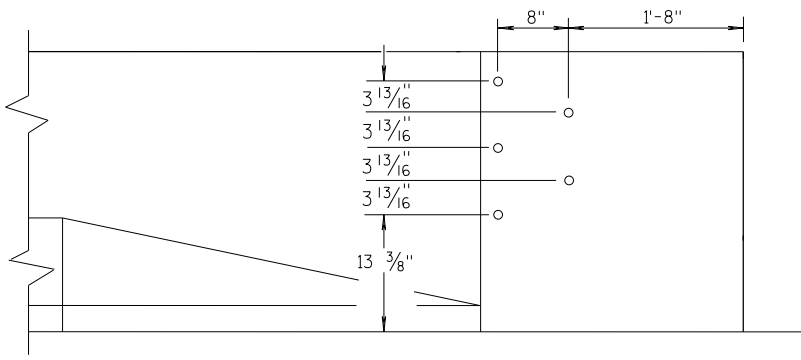


**GENERAL NOTES**

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



**SECTION F-F**



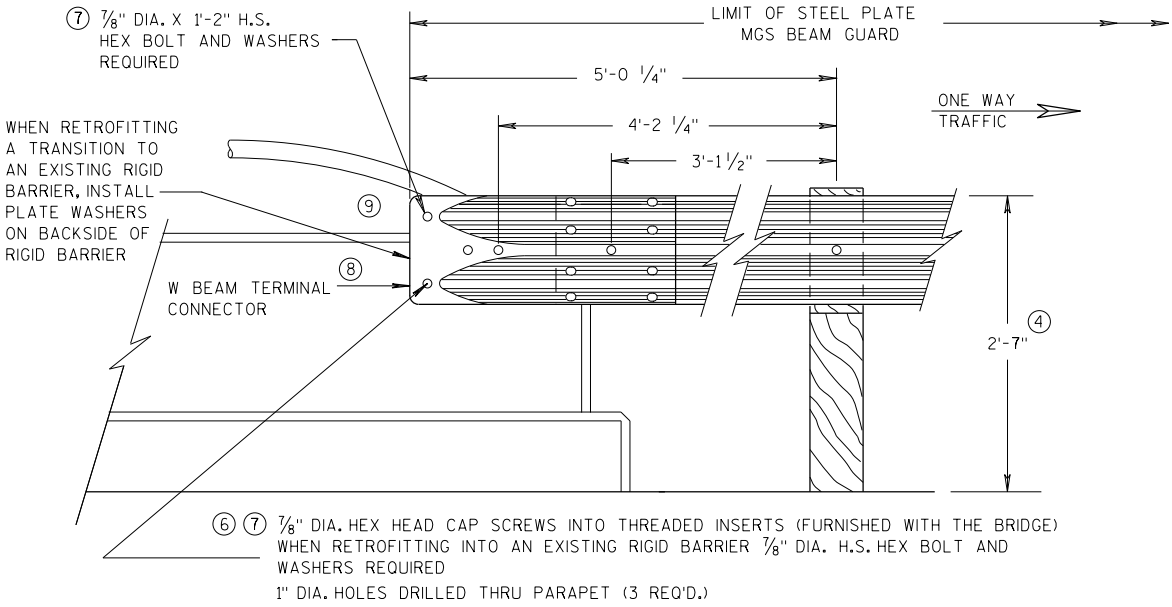
**DRILL HOLE LOCATION**

| MIDWEST GUARDRAIL SYSTEM<br>THRIE BEAM TRANSITION (MGS) |                                                        |    |  |
|---------------------------------------------------------|--------------------------------------------------------|----|--|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION      |                                                        |    |  |
| APPROVED<br>07/2018<br>DATE                             | /S/ Rodney Taylor<br>ROADWAY STANDARDS UNIT SUPERVISOR |    |  |
| FHWA                                                    | 57                                                     | NT |  |

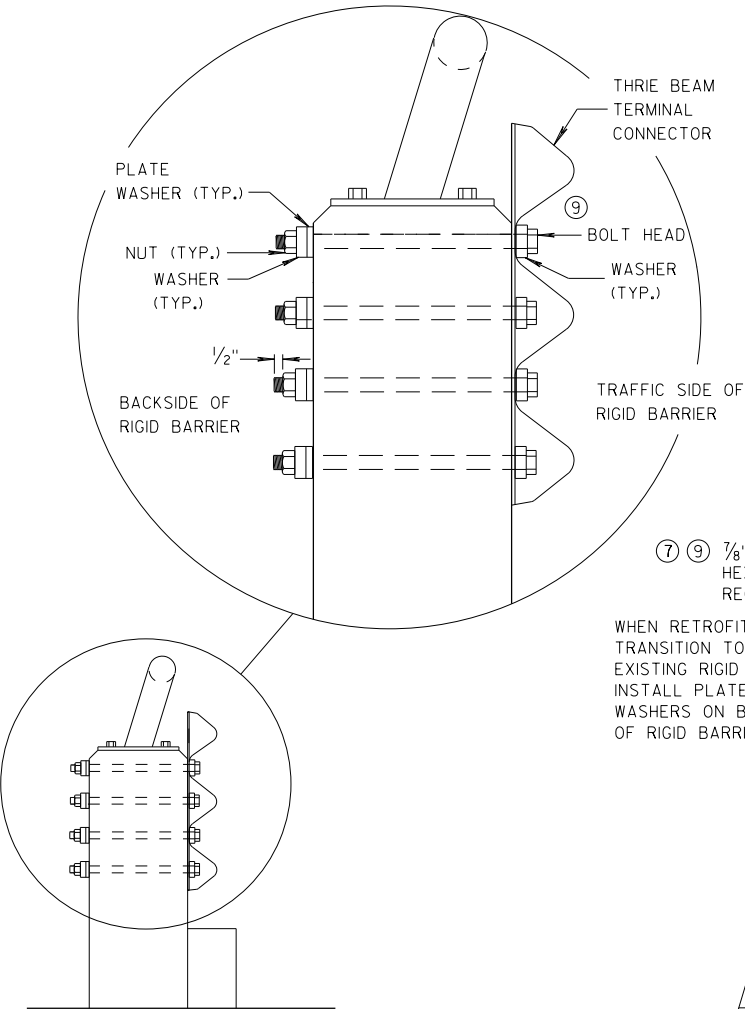
GENERAL NOTES

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

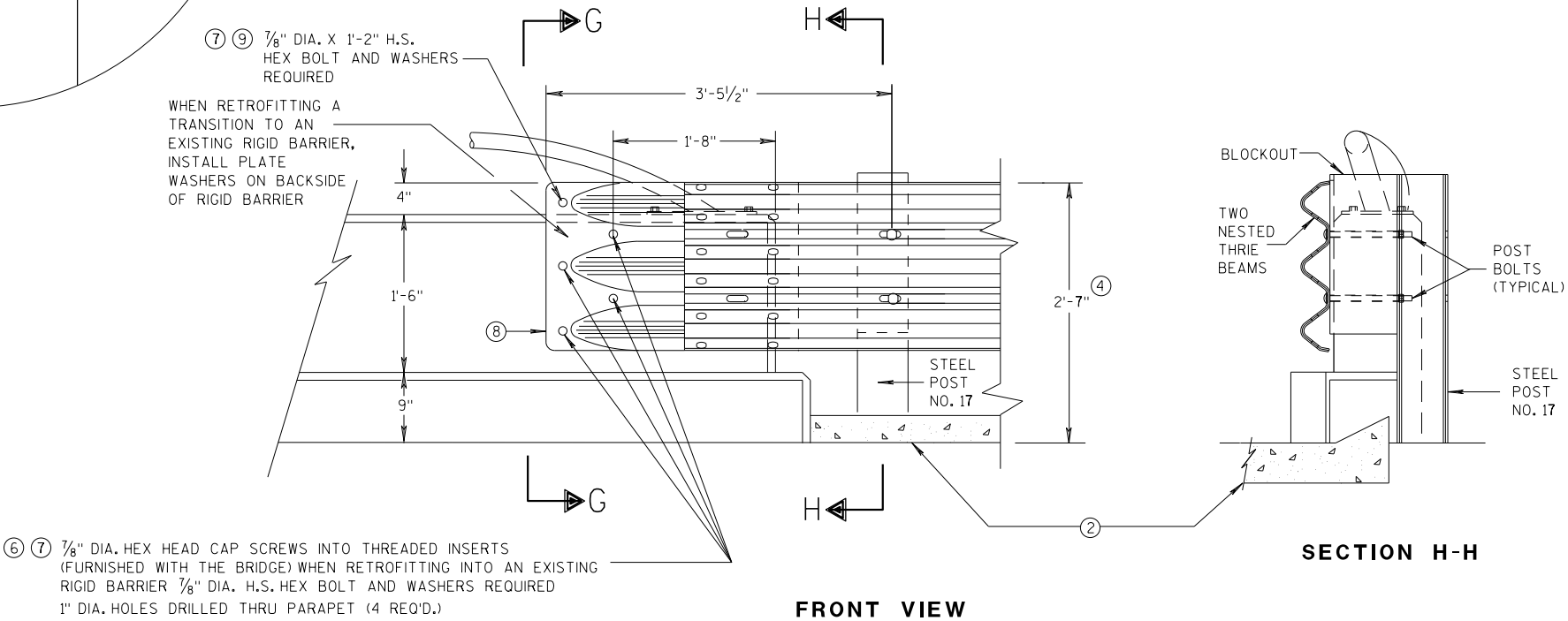
- ②
- OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④
- TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑥
- DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦
- BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH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



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



SECTION G-G



FRONT VIEW

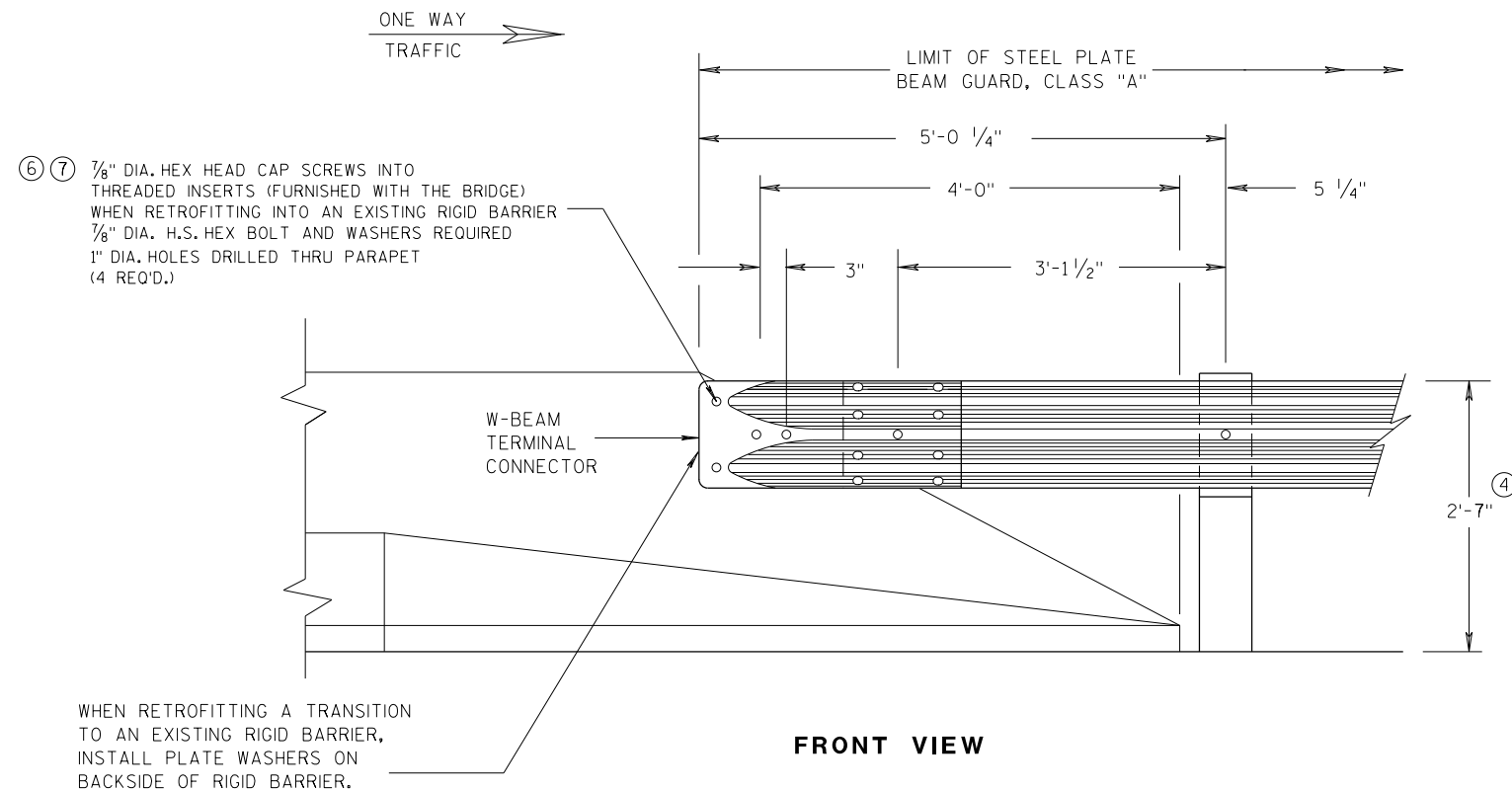
SECTION H-H

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

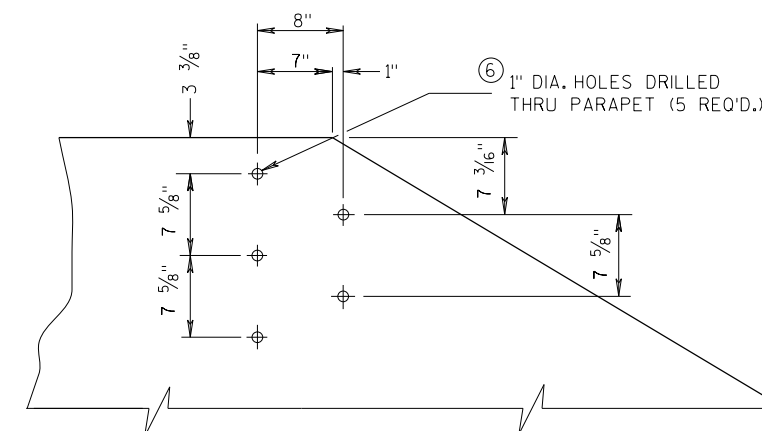
APPROVED  
07/2018 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS UNIT SUPERVISOR  
FHWA 58



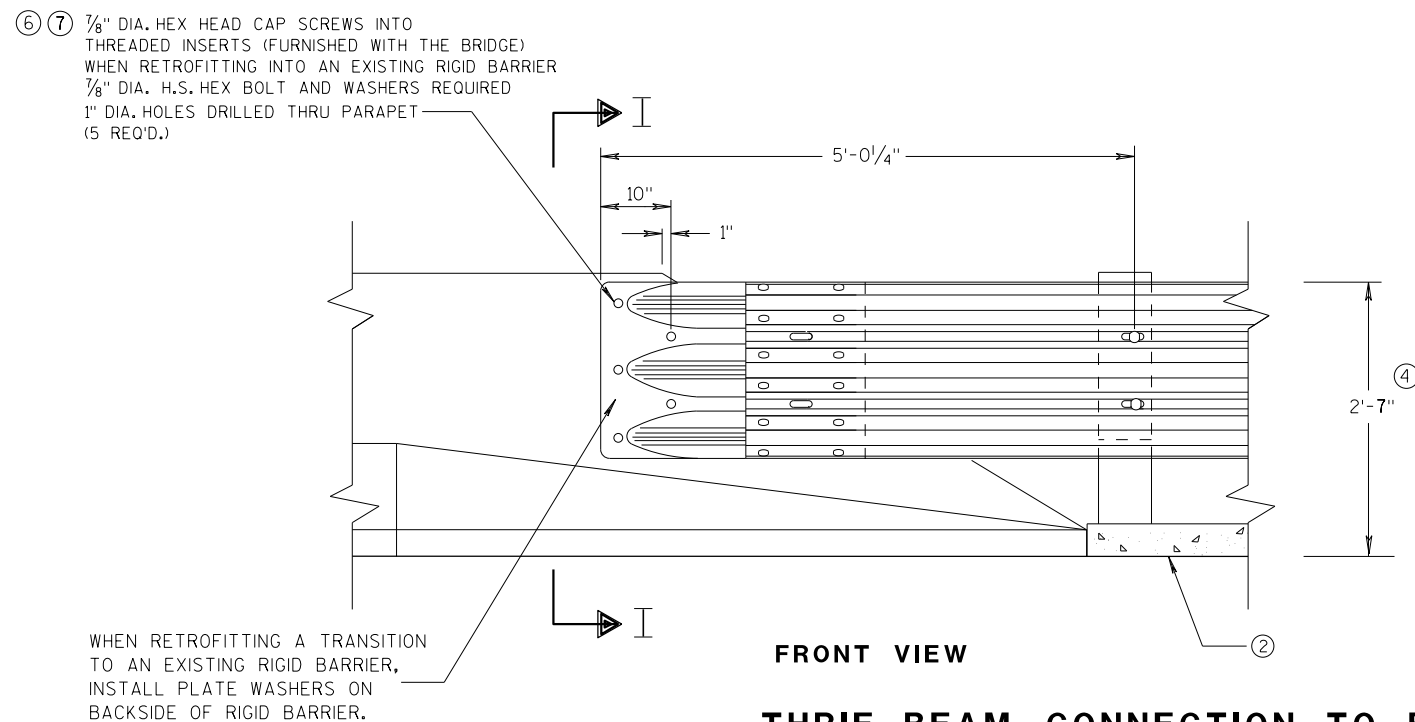
**W BEAM CONNECTION TO  
PARAPETS WITH SLOPED ENDS**  
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

## GENERAL NOTES

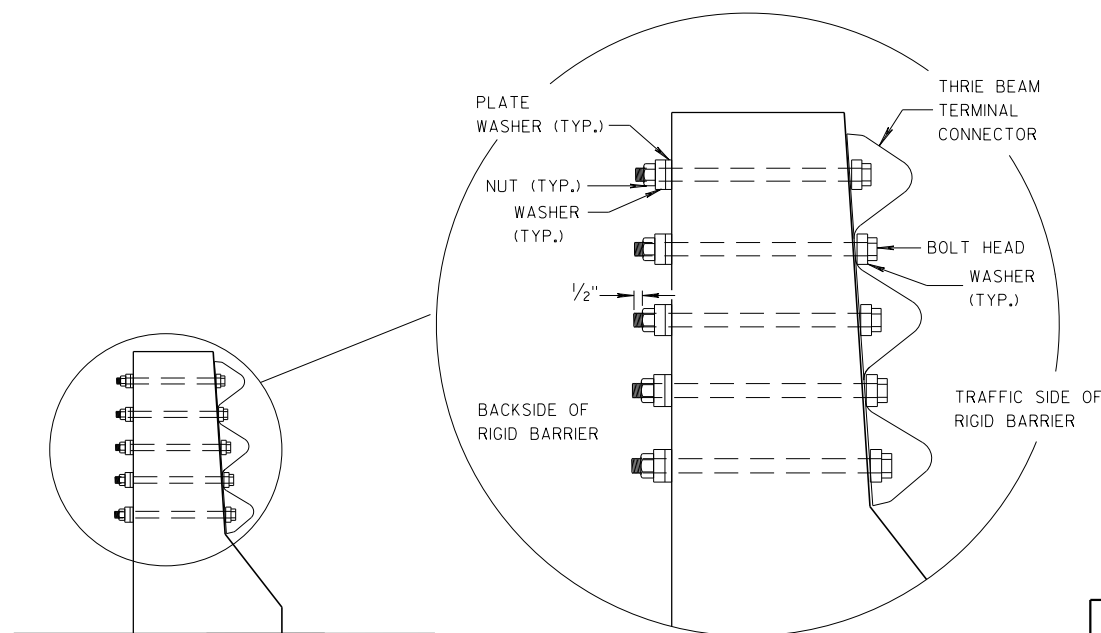
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



**DRILL HOLE LOCATION AND PATTERN  
FOR THRIE BEAM CONNECTION**



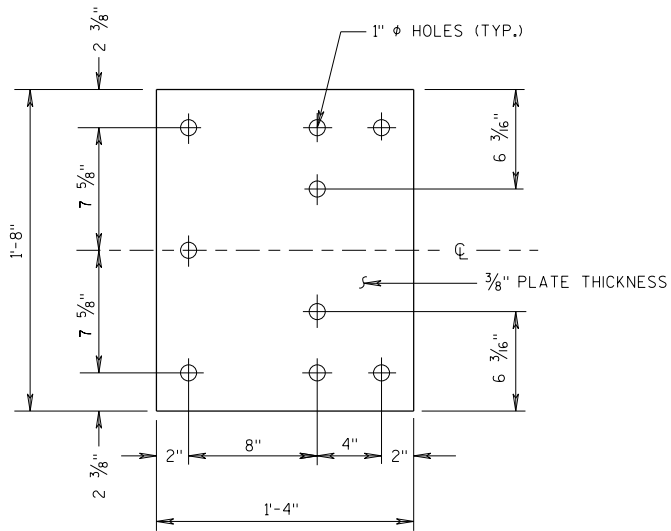
**THRIE BEAM CONNECTION TO BRIDGE  
PARAPETS WITH SLOPED ENDS**



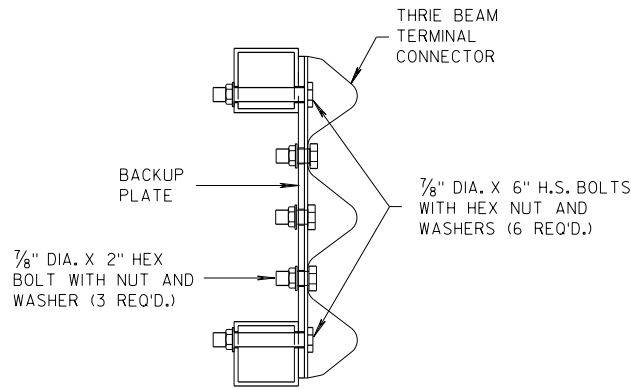
**MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

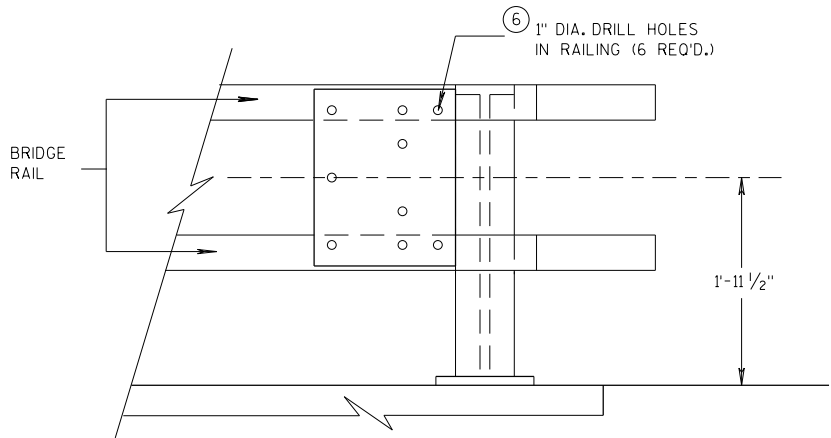
APPROVED  
DATE 07/2018 /S/ Rodney Taylor  
ROADWAY STANDARDS UNIT SUPERVISOR 59  
FHWA



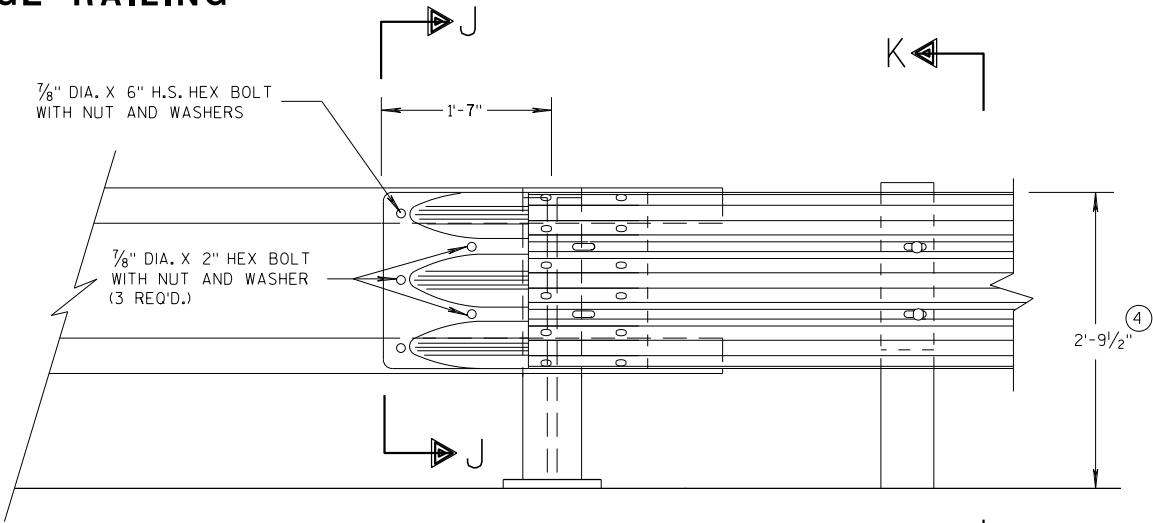
BACK-UP PLATE DETAIL



SECTION J-J

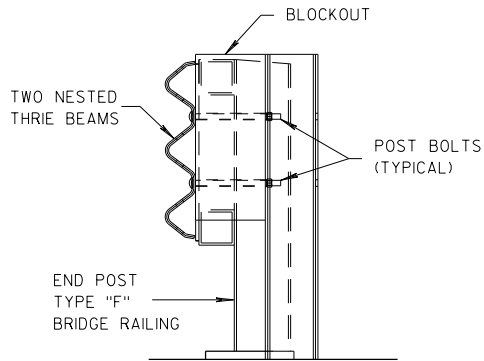


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

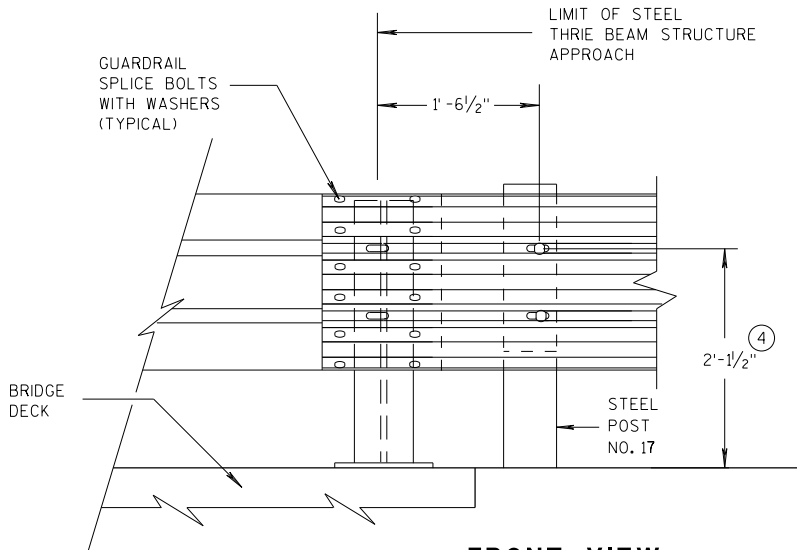
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

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



FRONT VIEW

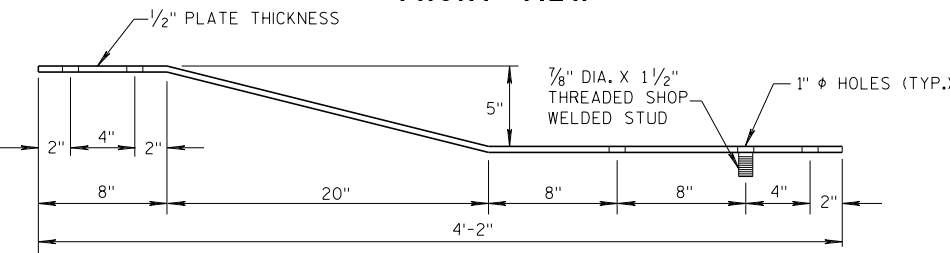
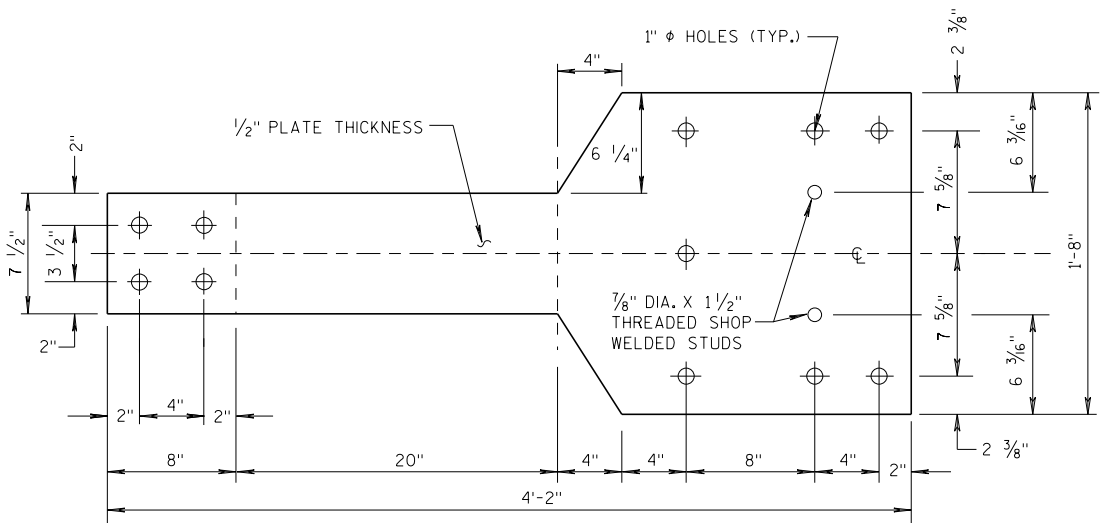
THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

|                                                         |                               |                 |
|---------------------------------------------------------|-------------------------------|-----------------|
| MIDWEST GUARDRAIL SYSTEM<br>THRIE BEAM TRANSITION (MGS) |                               |                 |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION      |                               |                 |
| APPROVED<br>07/2018                                     | /S/ Rodney Taylor             | 60              |
| DATE                                                    | ROADWAY STANDARDS DEVELOPMENT | UNIT SUPERVISOR |
| FHWA                                                    |                               |                 |

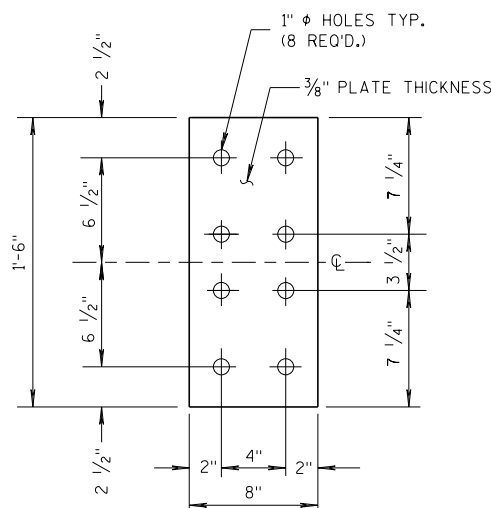


GENERAL NOTES

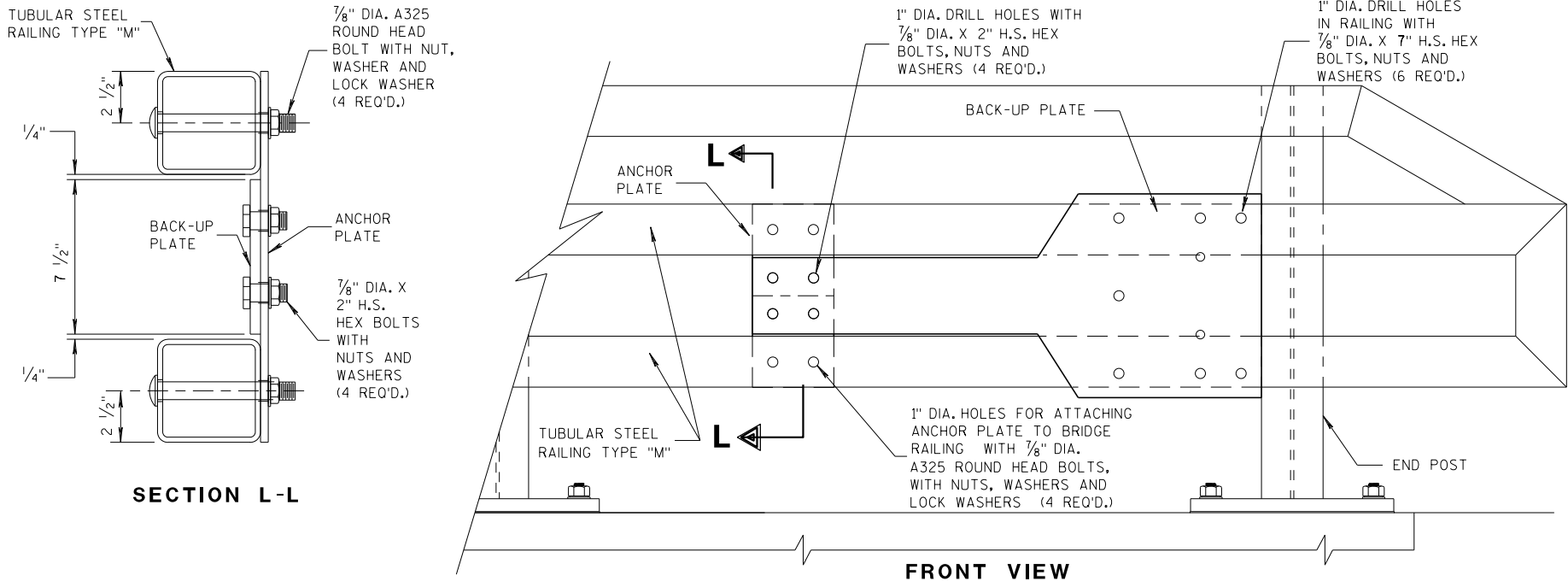
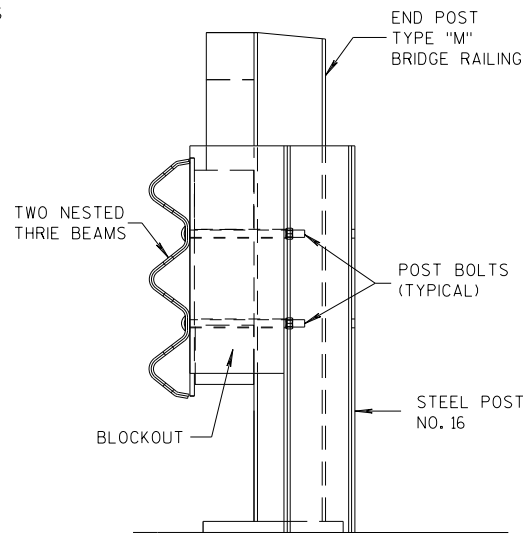
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm 1"$ .



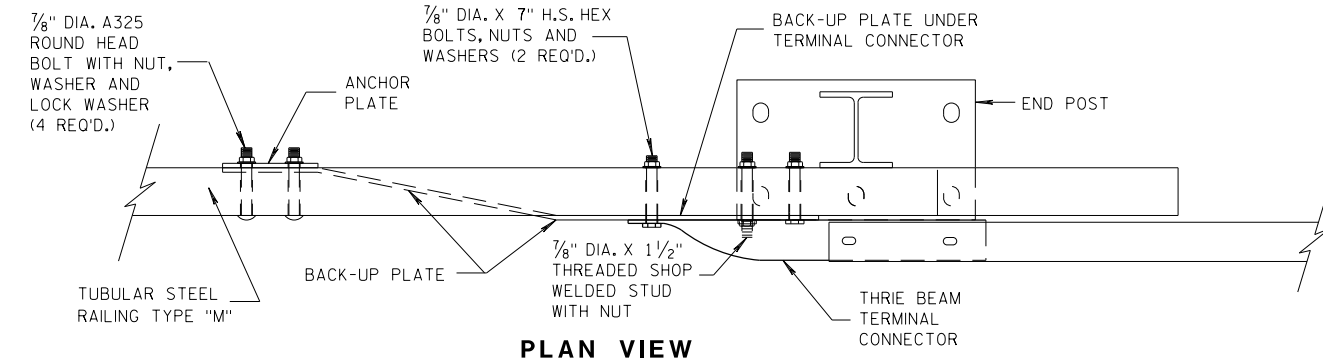
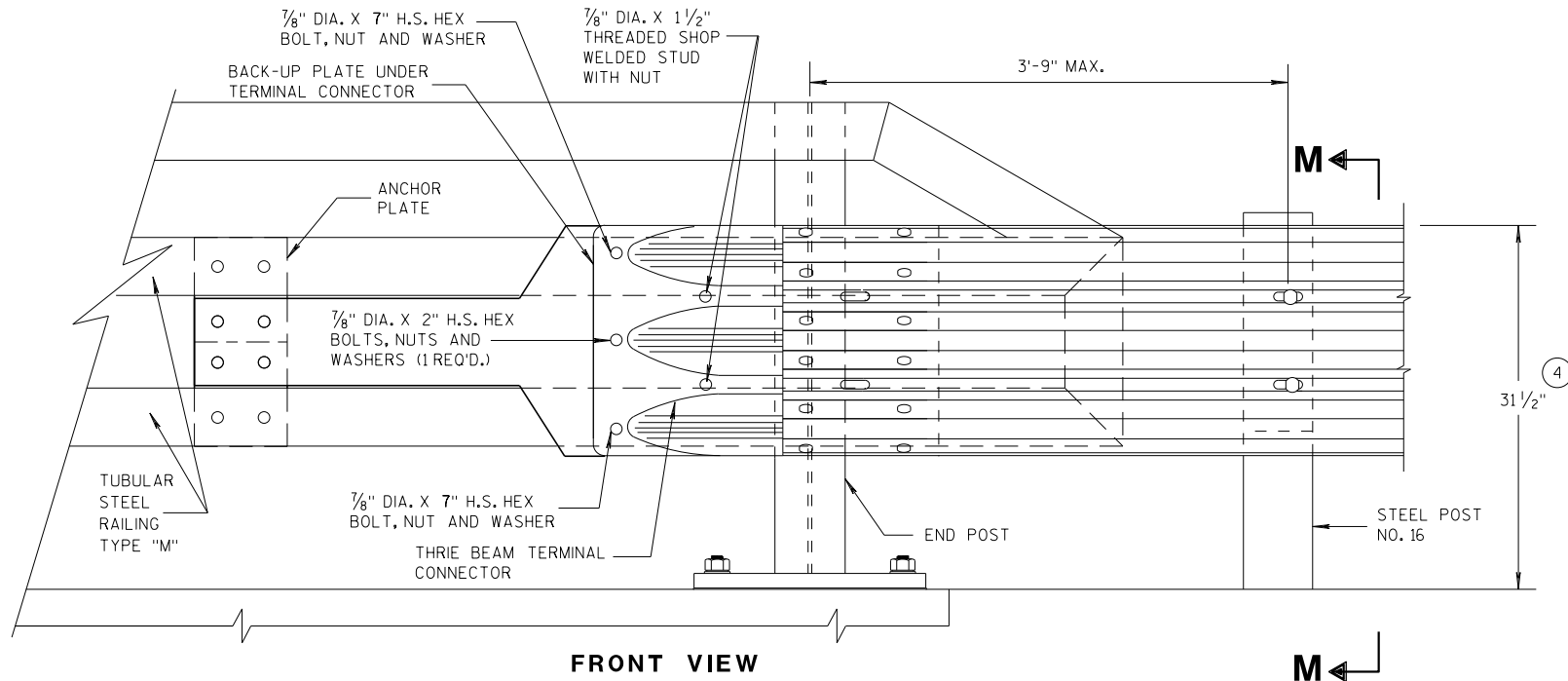
BACK-UP PLATE DETAIL, TYPE "M"



ANCHOR PLATE DETAIL, TYPE "M"



ANCHOR AND BACK-UP PLATE MOUNTING TO BRIDGE RAILING, TYPE "M"

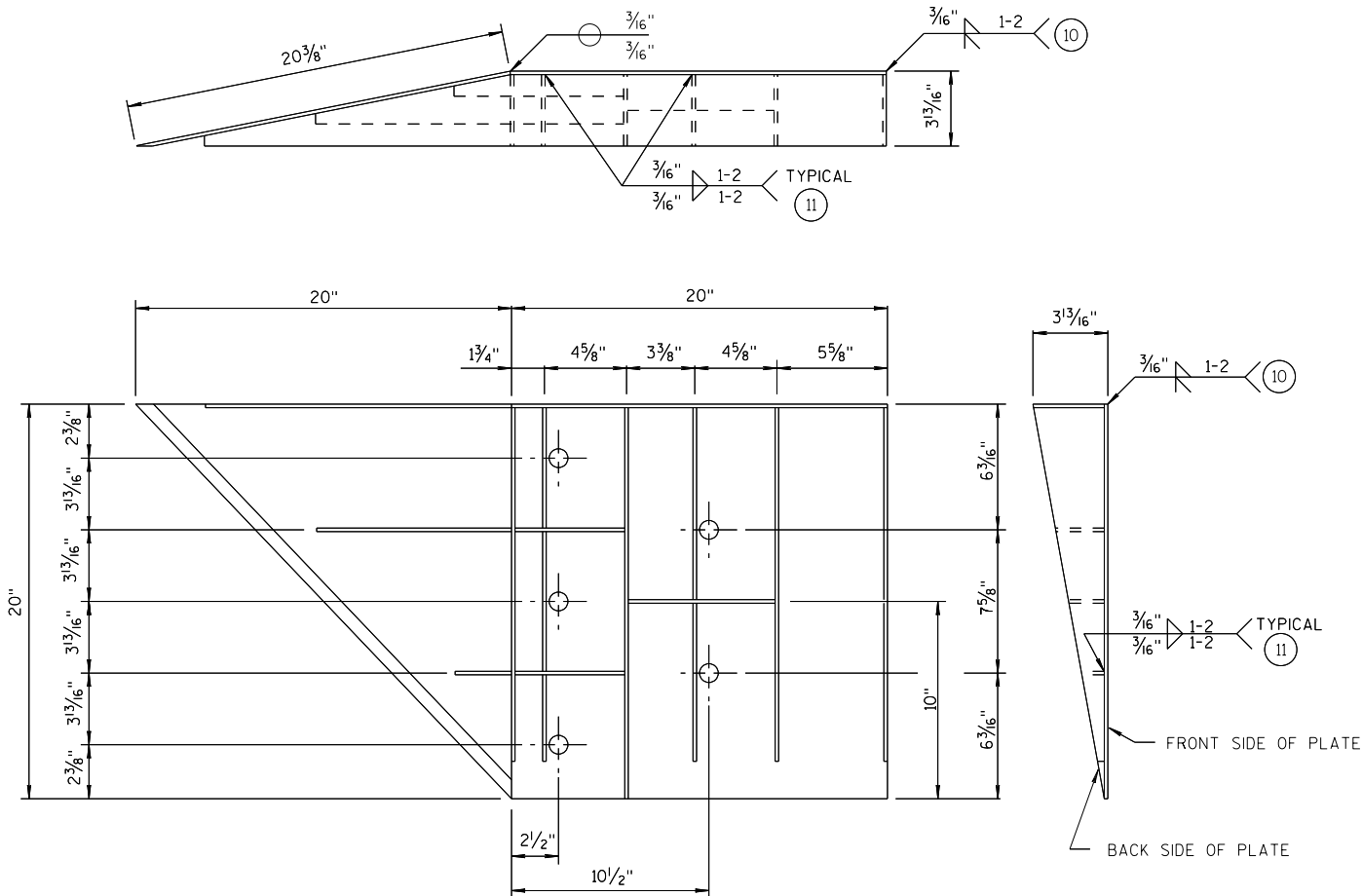


THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
07/2018 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS UNIT SUPERVISOR  
FHWA 61 ENT

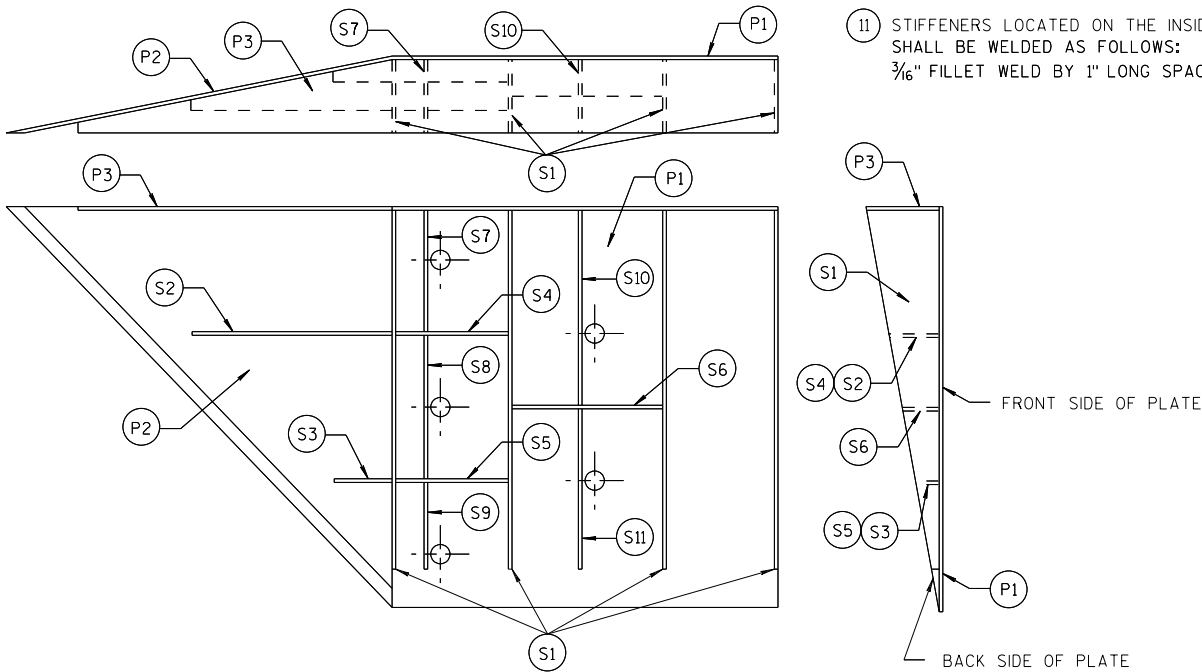


WELDING INSTRUCTION  
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION PLATE

| CONNECTOR PLATE DIMENSION<br>(PER ASSEMBLY) |          |       |                                     |           |
|---------------------------------------------|----------|-------|-------------------------------------|-----------|
| PLATE                                       | QUANTITY | SHAPE | SIZE (A x B x C x D)                | THICKNESS |
| P1                                          | 1        |       | 20" x 20"                           | 3/16"     |
| P2                                          | 1        |       | 20" x 20" x 28 3/16"                | 3/16"     |
| P3                                          | 1        |       | 39" x 3 5/8" x 20" x 19 5/16"       | 3/16"     |
| S1                                          | 4        |       | 18 7/16" x 3 5/8" x 18 3/4"         | 1/4"      |
| S2                                          | 1        |       | 10 1/4" x 2 1/16" x 10 3/8" x 1/2"  | 1/4"      |
| S3                                          | 1        |       | 3" x 1 1/16" x 3 3/8" x 1/2"        | 1/4"      |
| S4                                          | 1        |       | 6 1/8" x 2 7/16"                    | 1/4"      |
| S5                                          | 1        |       | 6 1/8" x 1 1/16"                    | 1/4"      |
| S6                                          | 1        |       | 7 3/4" x 1 3/4"                     | 1/4"      |
| S7                                          | 1        |       | 2 3/16" x 6" x 3 5/8" x 5 7/8"      | 1/4"      |
| S8                                          | 1        |       | 1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"  | 1/4"      |
| S9                                          | 1        |       | 6 1/16" x 6 3/16" x 1 3/32"         | 1/4"      |
| S10                                         | 1        |       | 1 7/8" x 9 7/8" x 3 5/8" x 9 11/16" | 1/4"      |
| S11                                         | 1        |       | 8 1/2" x 8 3/4" x 1 3/16"           | 1/4"      |

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



GENERAL NOTES

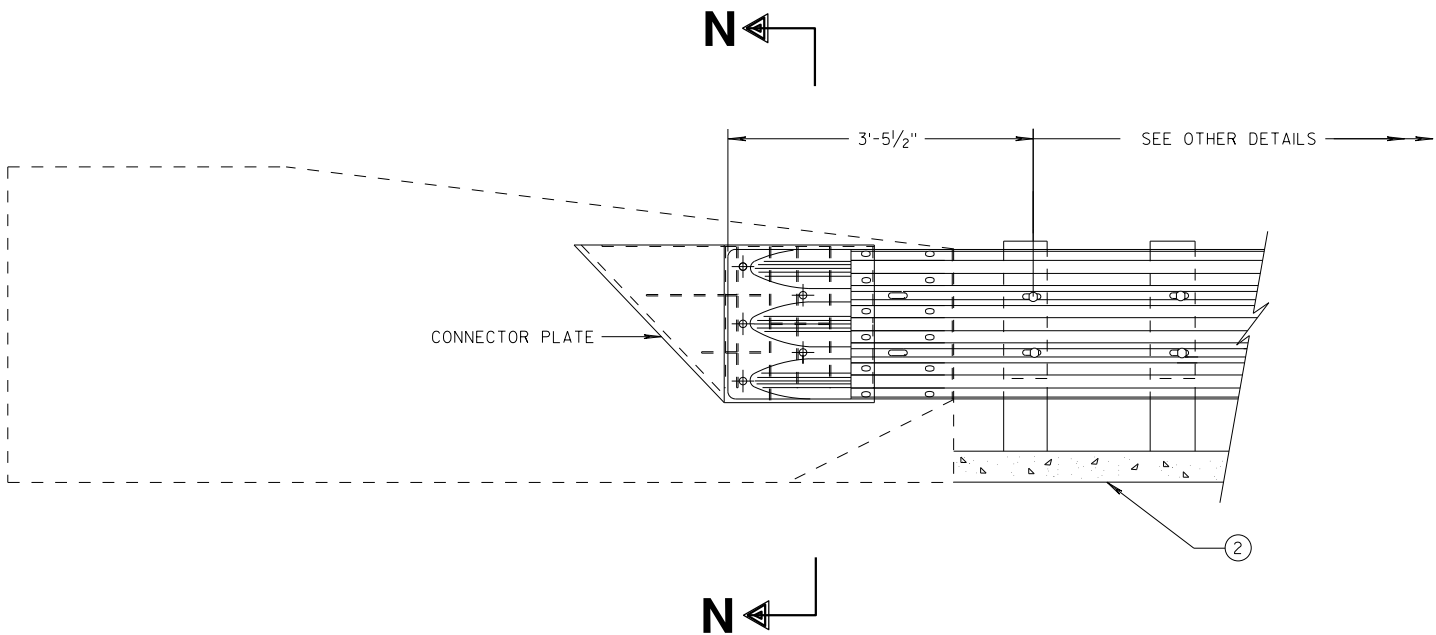
- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR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

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

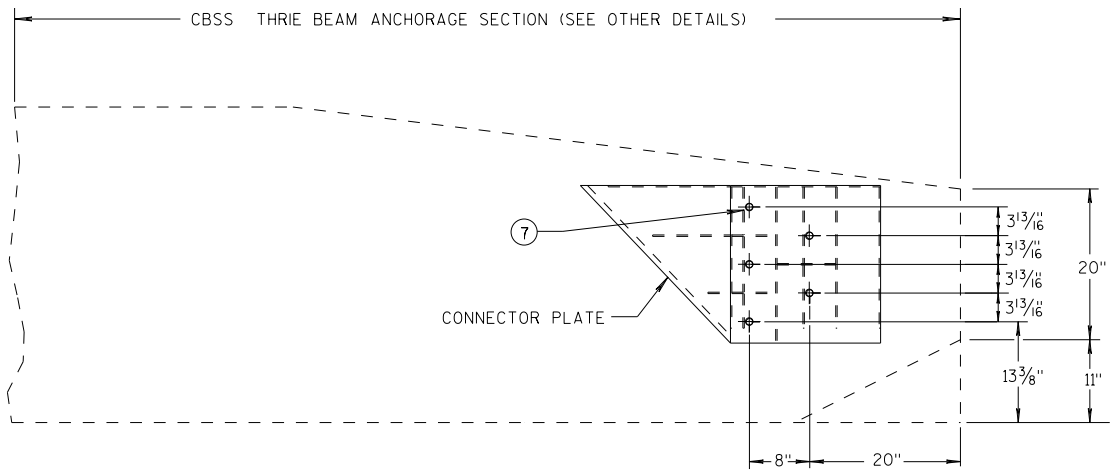
MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
7/2018 /S/ Rodney Taylor  
DATE ROADWAY STANDARDS UNIT SUPERVISOR  
FHWA 62 ENT



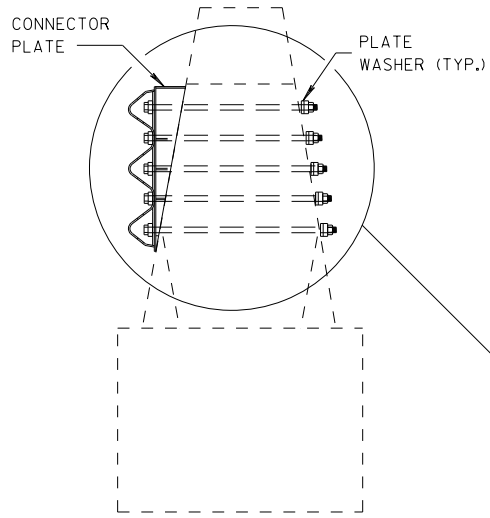
THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



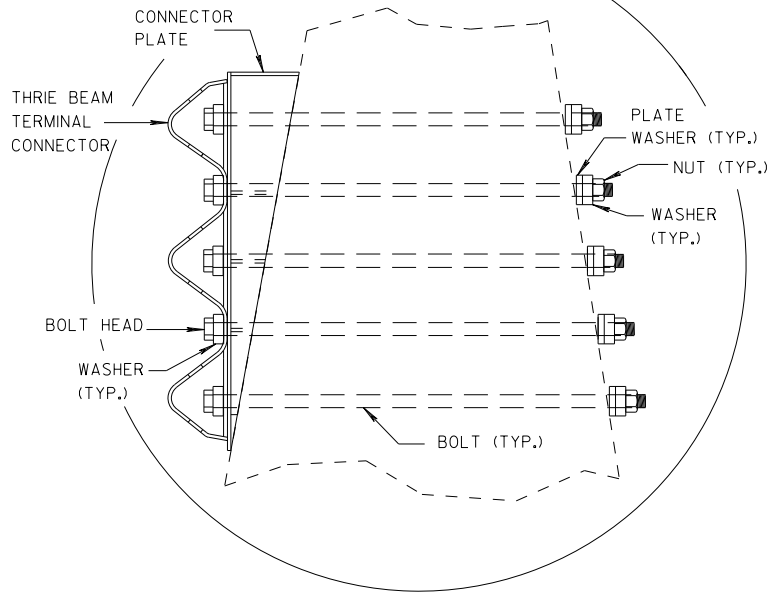
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

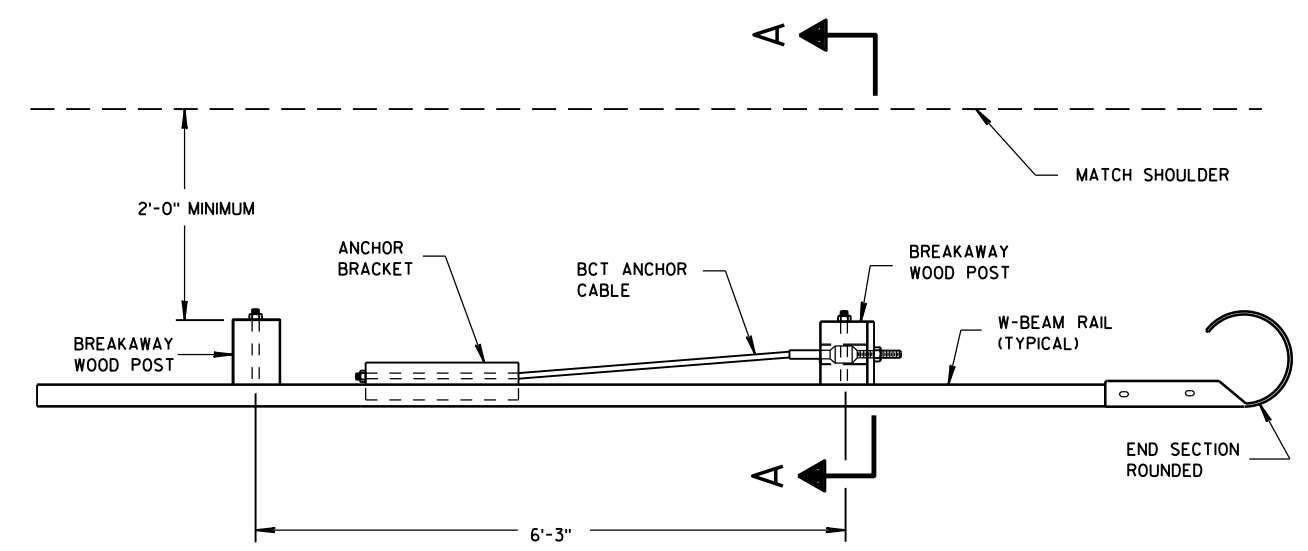
- CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTION PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



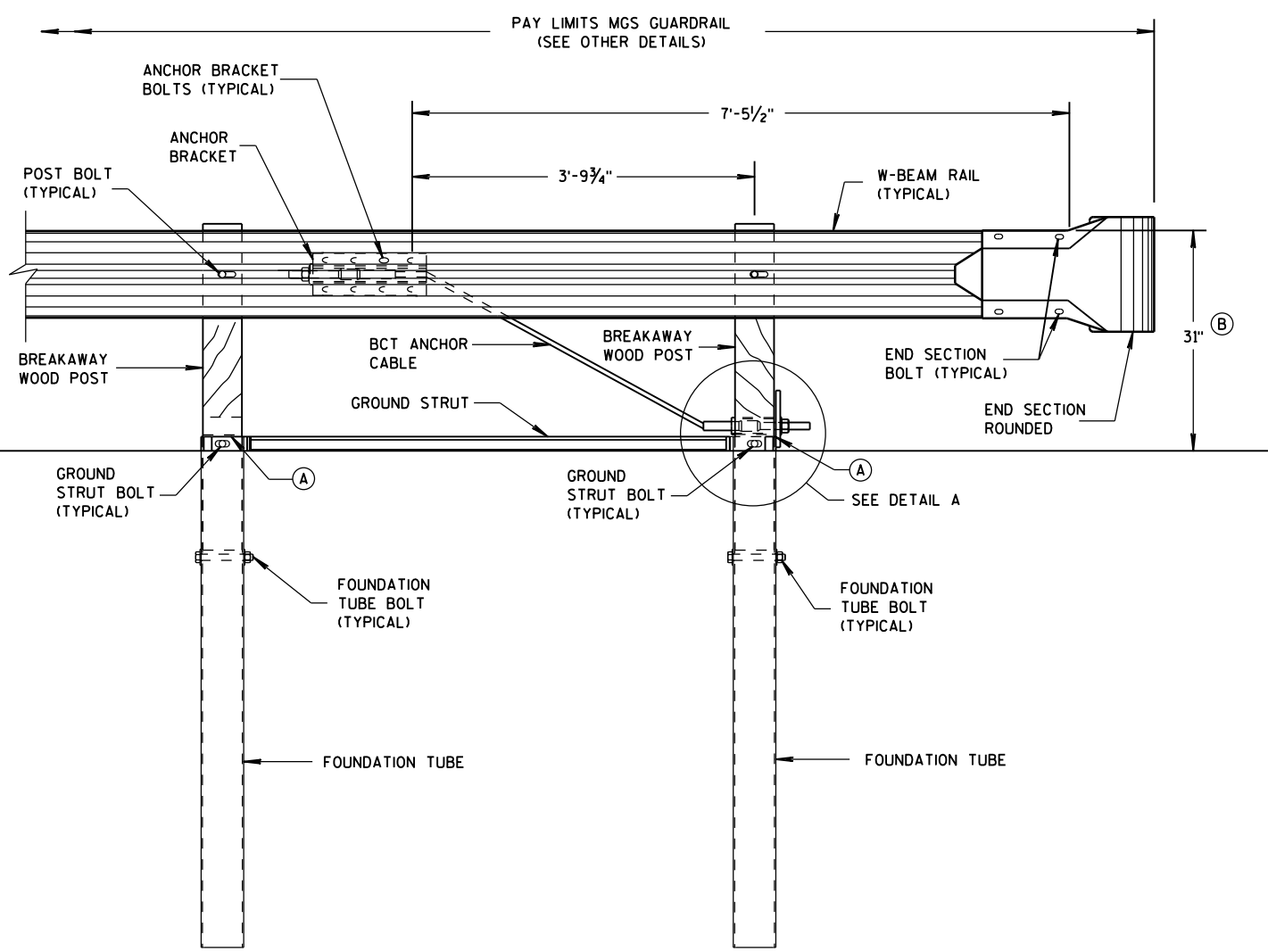
SECTION N-N



| MIDWEST GUARDRAIL SYSTEM<br>THRIE BEAM TRANSITION (MGS) |                            |                 |    |
|---------------------------------------------------------|----------------------------|-----------------|----|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION      |                            |                 |    |
| APPROVED<br>7/2018                                      | /S/ Rodney Taylor          |                 |    |
| DATE                                                    | ROADWAY STANDARDS DIVISION | UNIT SUPERVISOR | 63 |
| FHWA                                                    |                            |                 |    |

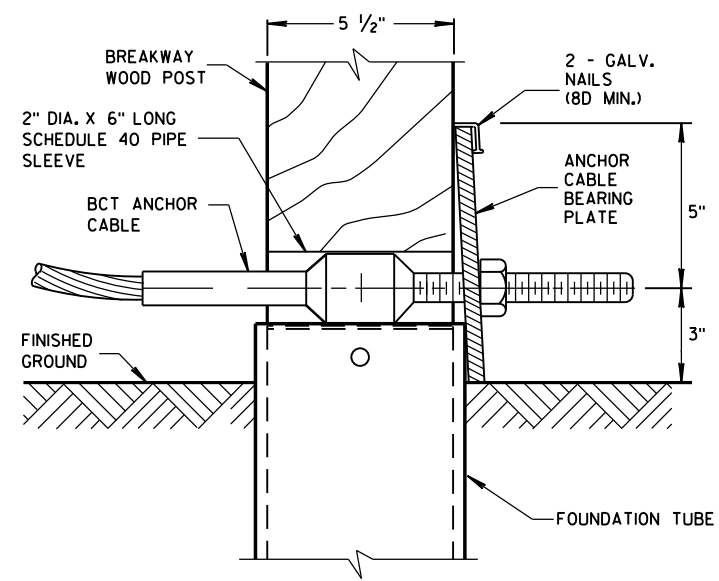


PLAN VIEW



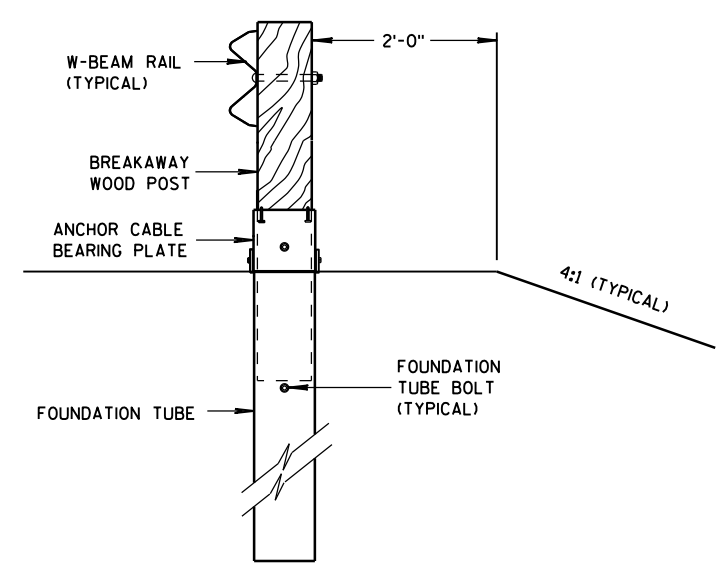
FRONT VIEW

END RAIL DETAIL



DETAIL A

POST NO. 1  
GROUND STRUT NOT SHOWN FOR CLARITY.



SECTION A-A

GENERAL NOTES

SEE SDD 14 B 42 FOR MORE INFORMATION.

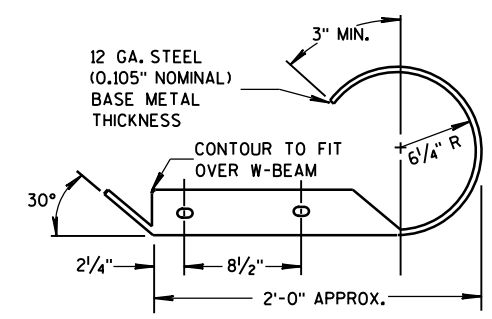
END SECTION BOLTS AND NUTS HAVE THE SAME MATERIAL REQUIREMENTS AS SPLICE BOLTS.

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.

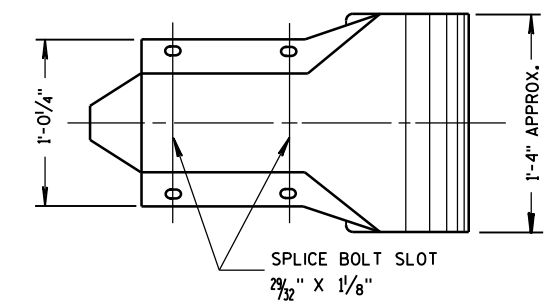
ANCHOR BRACKET AND GROUND STRUT BOLTS ARE A 5/8" DIAMETER ASTM A307 HEX HEAD BOLT. ANCHOR BRACKET BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 5/8" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

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".



PLAN VIEW

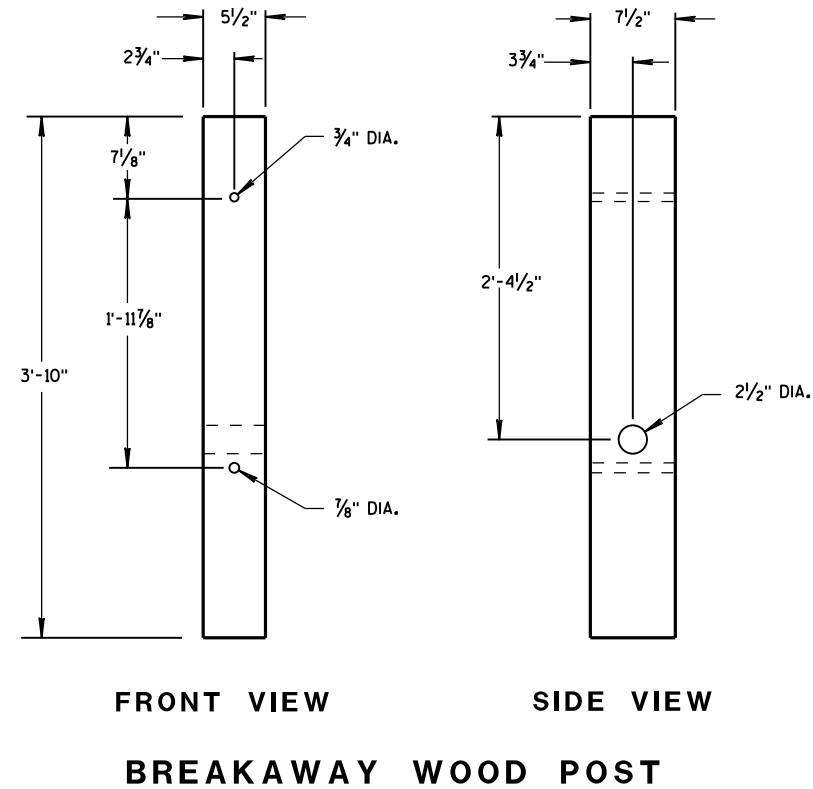
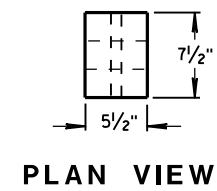
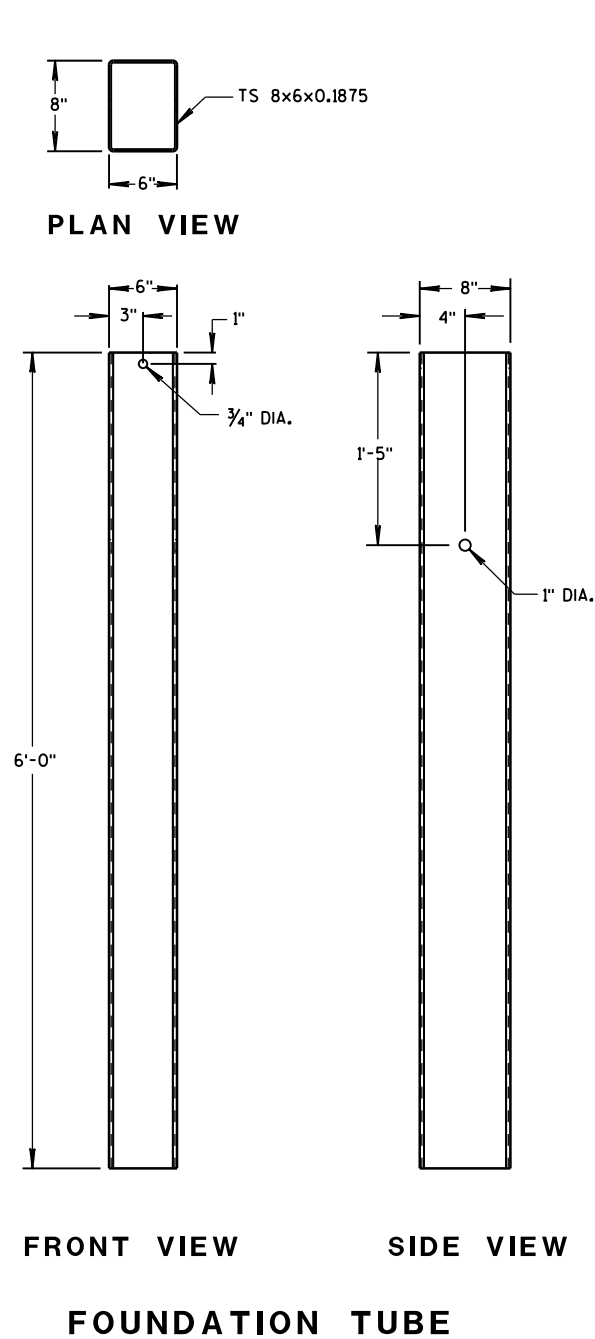


FRONT VIEW

W BEAM END SECTION ROUNDED

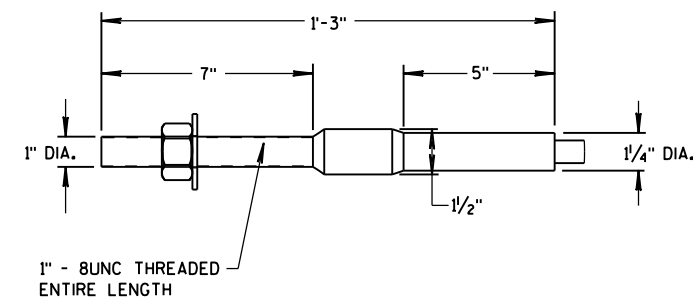
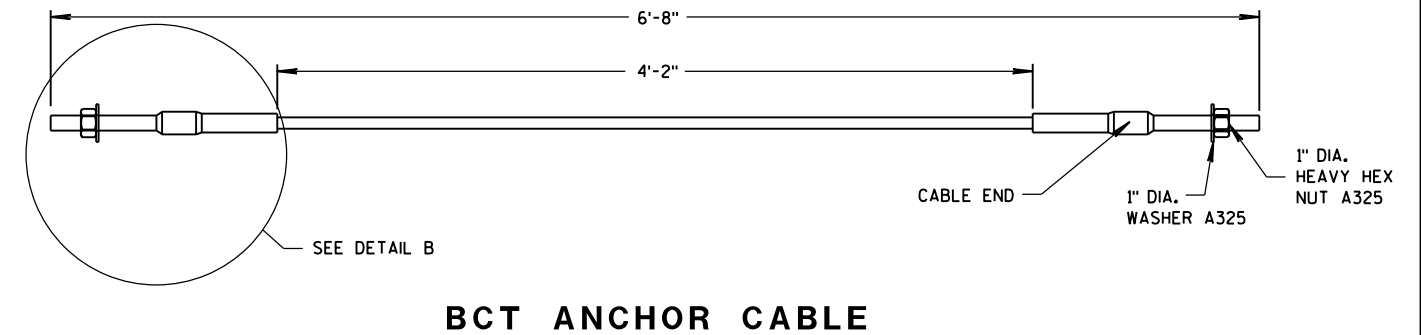
MIDWEST GUARDRAIL  
SYSTEM (MGS) TYPE 2 TERMINAL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

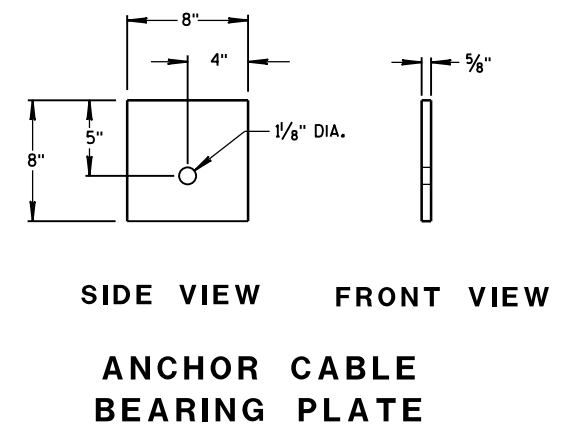


## GENERAL NOTES

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.

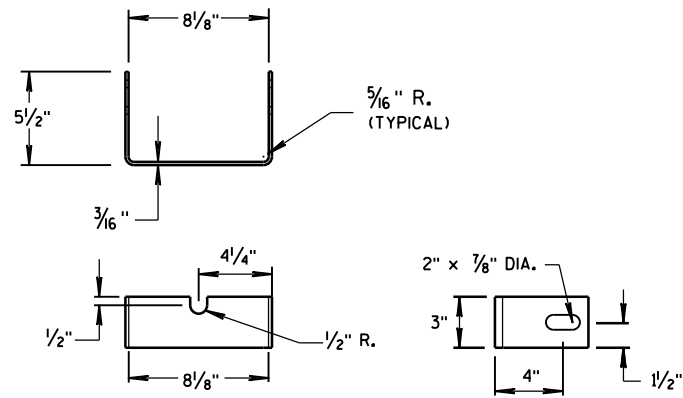


DETAIL B

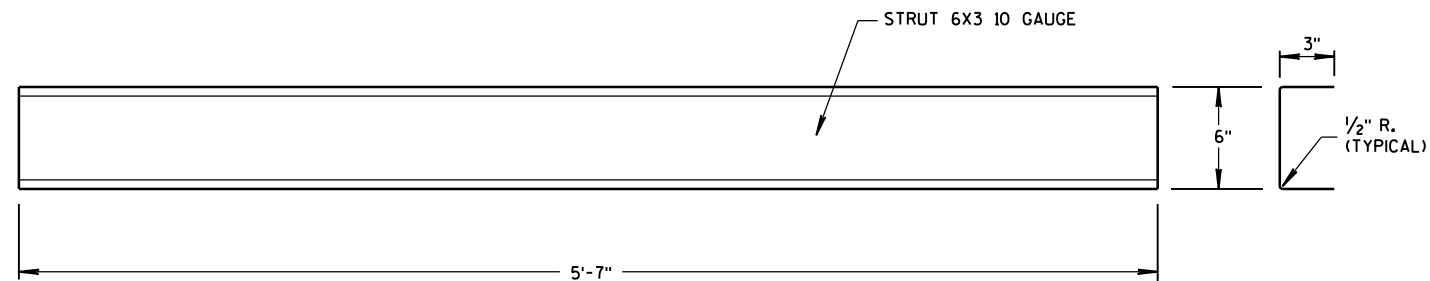


MIDWEST GUARDRAIL  
SYSTEM (MGS) TYPE 2 TERMINAL

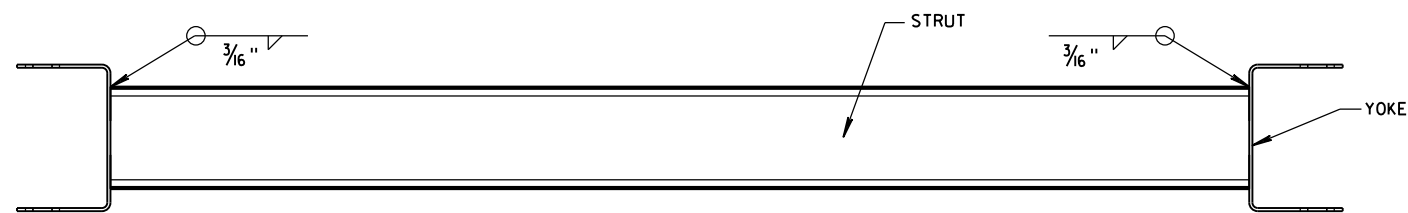
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



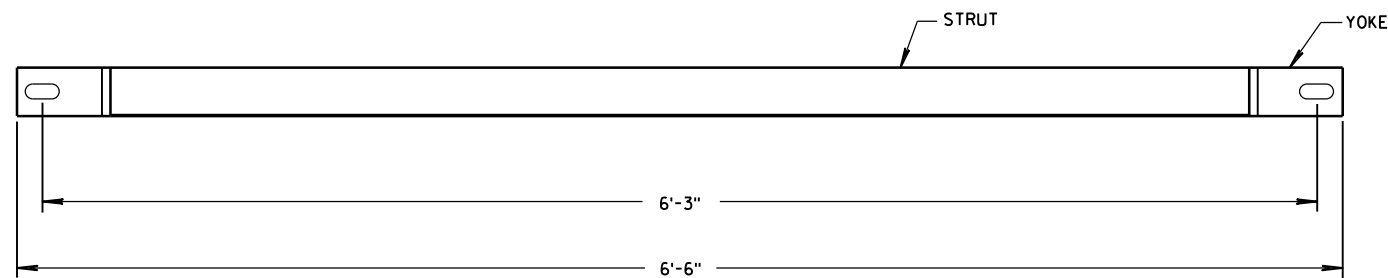
YOKE DETAIL



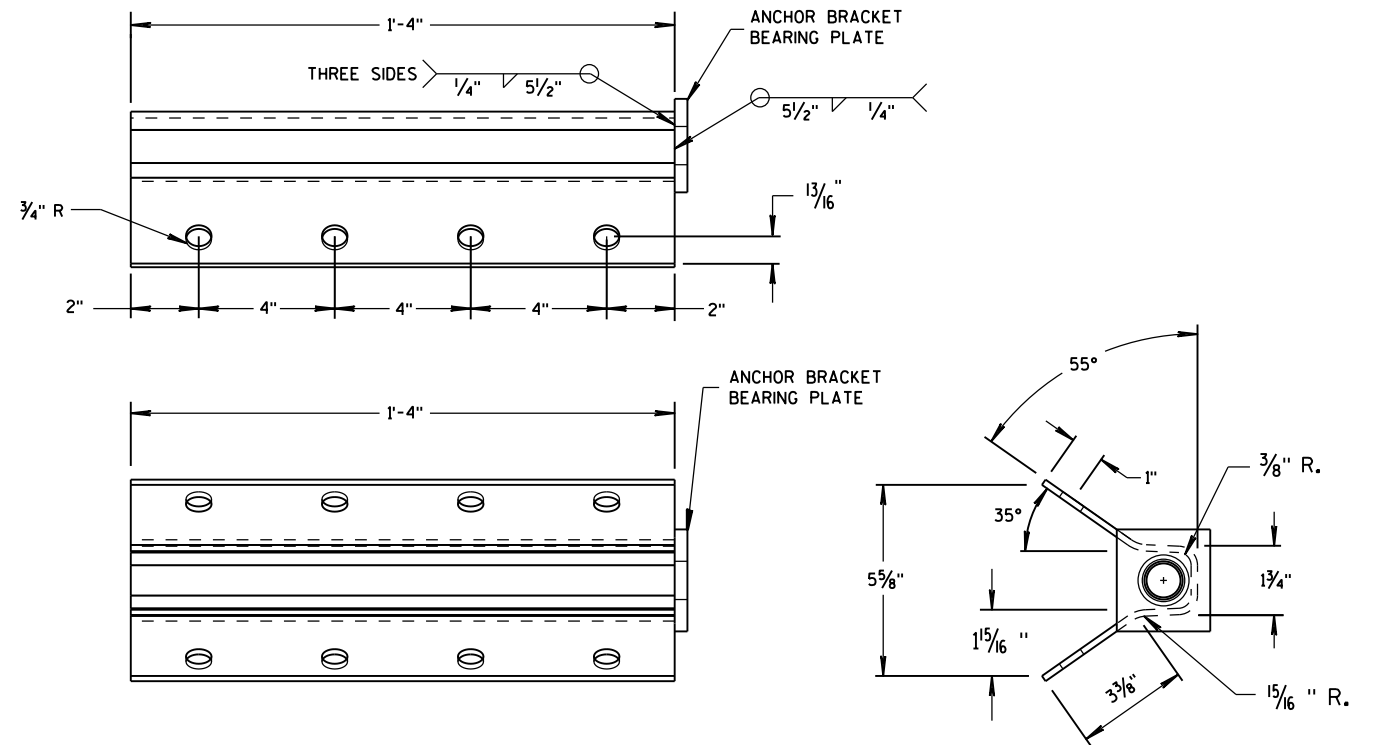
STRUT DETAIL



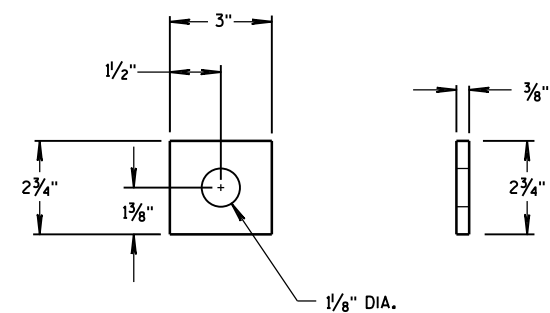
PLAN VIEW



FRONT VIEW  
GROUND STRUT DETAIL



ANCHOR BRACKET



ANCHOR BRACKET  
BEARING PLATE

|                                                    |                   |                            |        |
|----------------------------------------------------|-------------------|----------------------------|--------|
| MIDWEST GUARDRAIL<br>SYSTEM (MGS) TYPE 2 TERMINAL  |                   |                            |        |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                   |                            |        |
| APPROVED                                           | /S/ Jerry H. Zogg |                            |        |
| June 2014                                          | DATE              | ROADWAY STANDARDS ENGINEER | 66 ENT |
| 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.

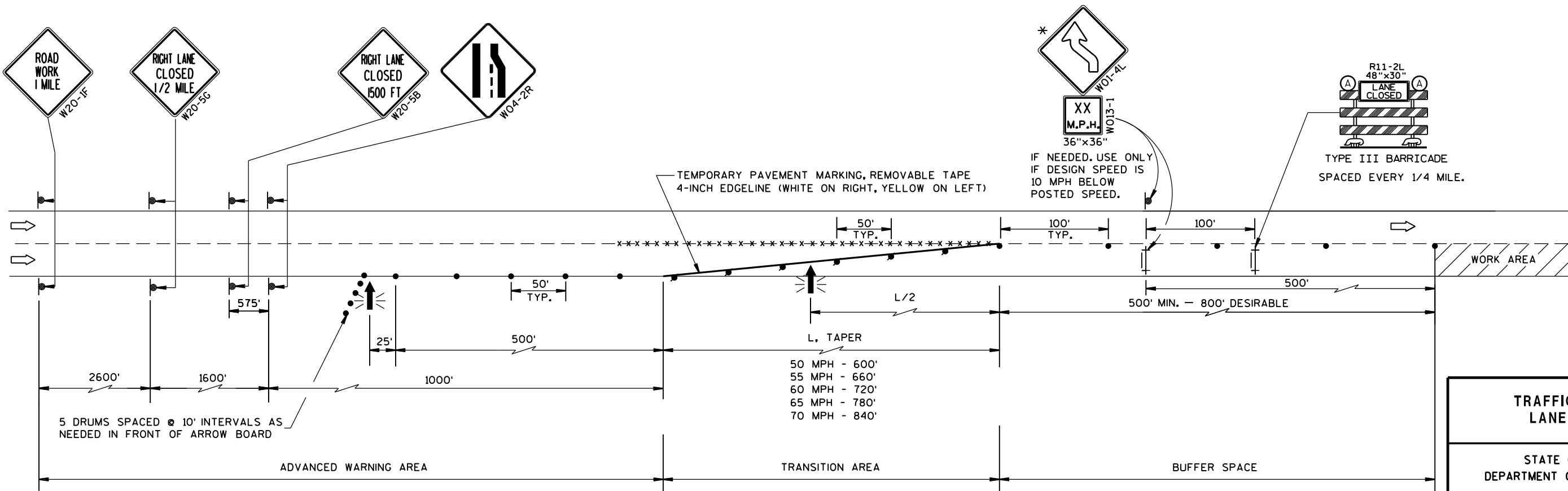
REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR LONGER THAN 4 OR MORE DAYS AND NIGHTS.

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<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.

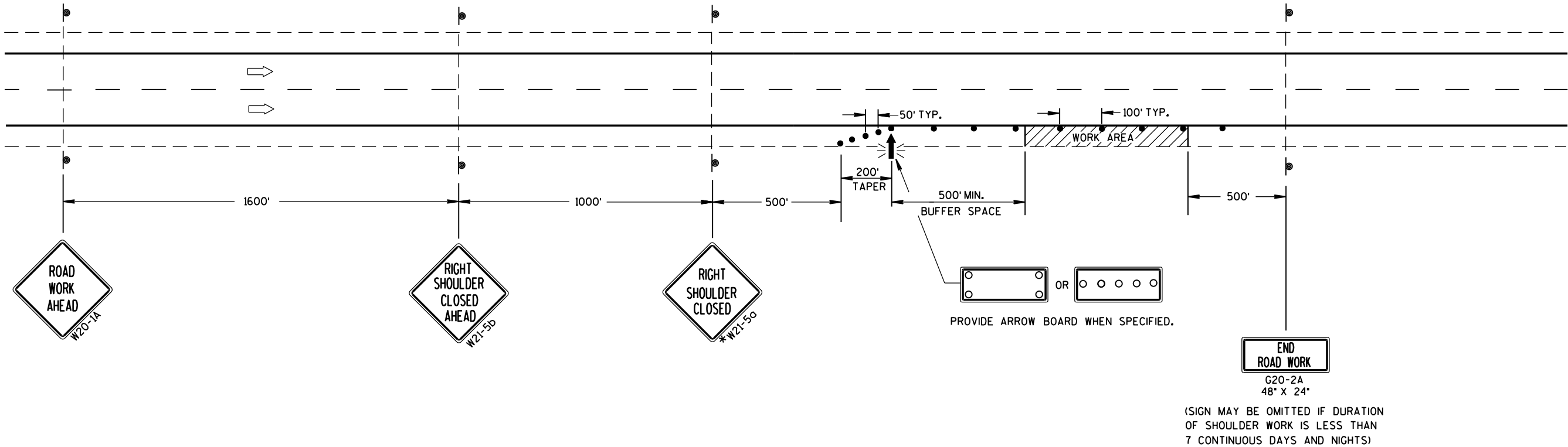
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

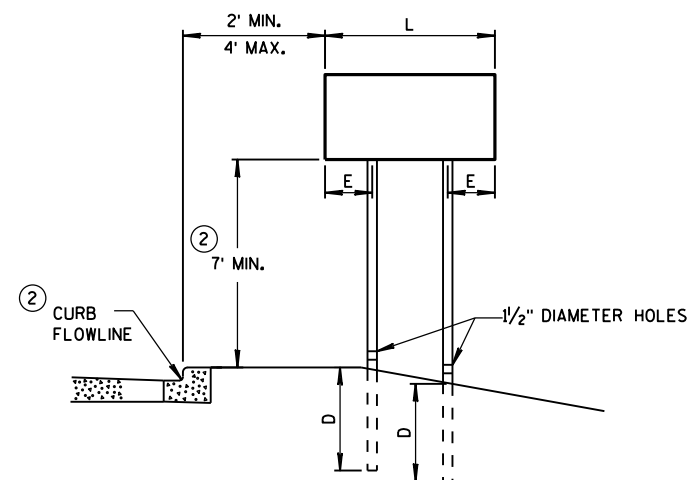
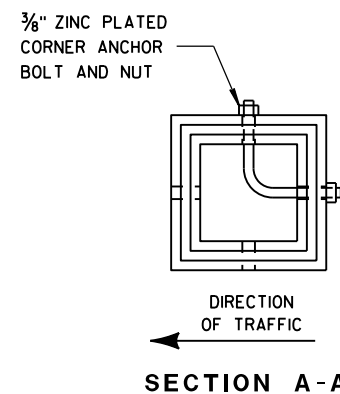
APPROVED  
June 2016 /S/ Peter Amakobe Atepe  
DATE STATEWIDE WORK ZONE SAFETY ENGINEER  
FHWA



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

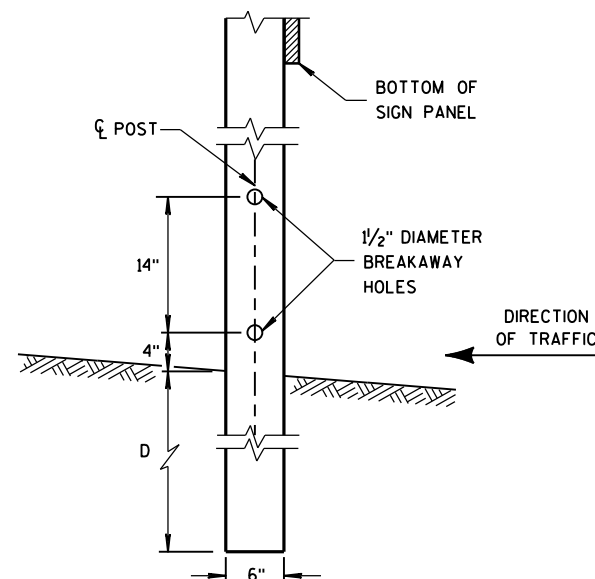


**URBAN AREA**

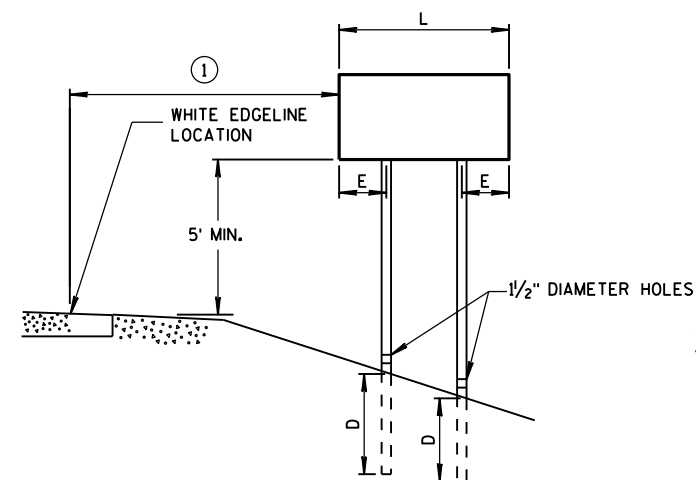
## POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST  
EMBEDMENT DEPTH

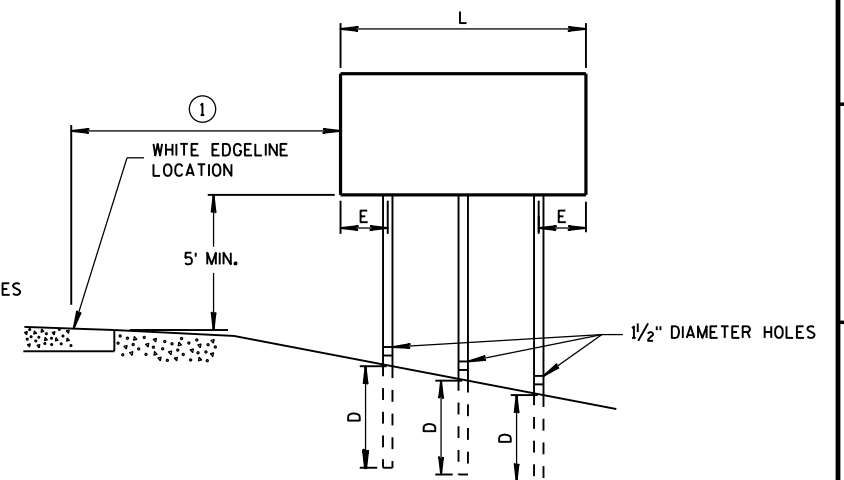
|                                           |            |
|-------------------------------------------|------------|
| AREA OF SIGN<br>INSTALLATION<br>(SQ. FT.) | D<br>(MIN) |
| 20 OR LESS                                | 4'         |
| GREATER THAN 20                           | 5'         |



## 4"x6" WOOD POST MODIFICATION



## RURAL AREA



## 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.

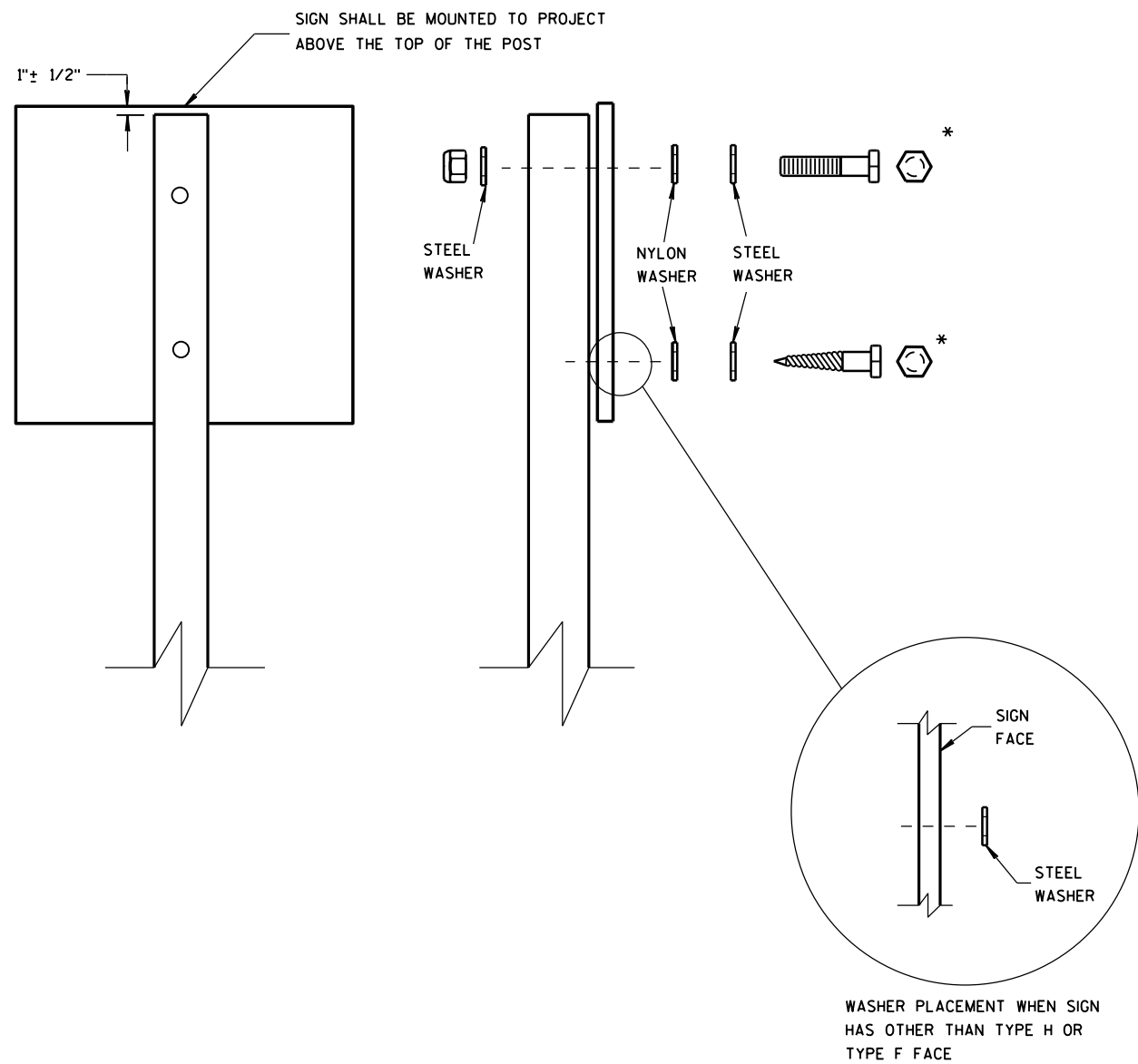
4" X 6" WOOD POST

| 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)

## TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION 69



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

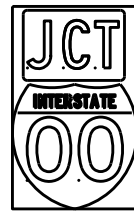
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS
  - RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

- 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

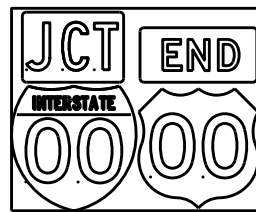
\* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

|                                                    |                                        |
|----------------------------------------------------|----------------------------------------|
| 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 ENC 70 |
| FHWA                                               |                                        |

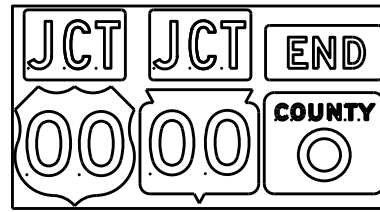
TYPICAL ASSEMBLIES



J1-1



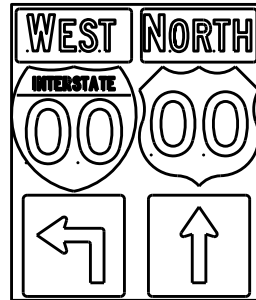
J1-2



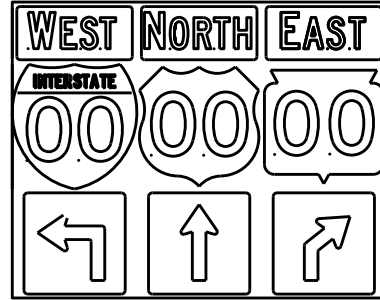
J1-3



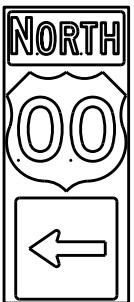
J2-1



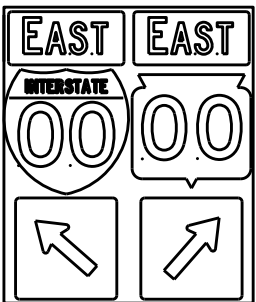
J2-2



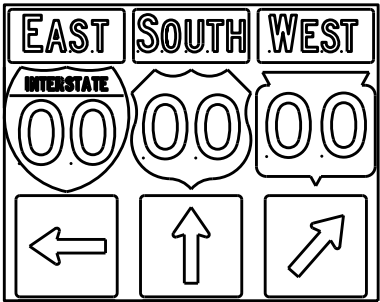
J2-3



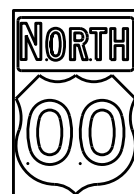
J3-1



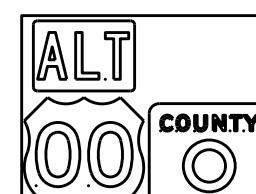
J3-2



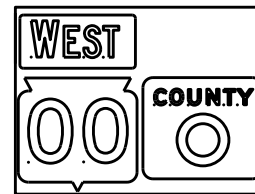
J3-3



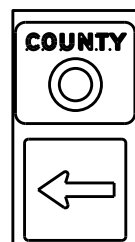
J4-1



J4-2



J4-2



J13-1



J12-1



J32-1



J33-1



J23-1

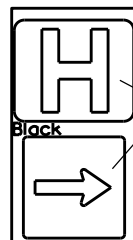


J22-1



JV

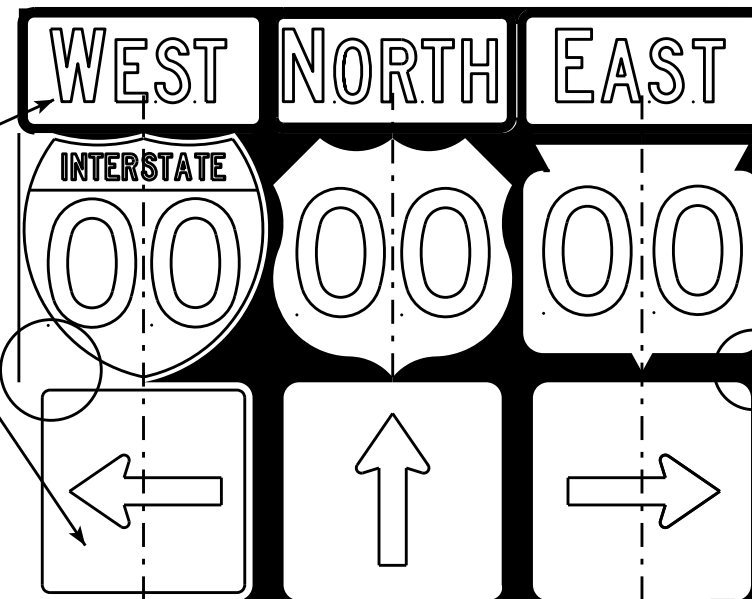
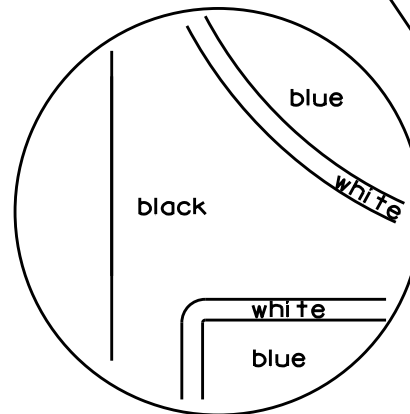
( Typical Vertical J-Assembly  
See Note 10 and 11)



JH-1

Blue Background

[blue background  
with interstate]



[black background]

ROUTE MARKERS & COMPONENTS  
IN TYPICAL ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
For State Traffic Engineer

DATE 2/06/14 PL 71 A2-1S.8

SHEET NO: E

NOTES

1. Signs are Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - Black Non-reflective  
Message - see Note 5
3. Message Series - See Note 5
4. Corners shall be square or rounded if base material is plywood. If base material is metal the corners shall be rounded.
5. The colors and message spacing on each marker shall be according to the applicable route marker panel specifications.
6. Certain marker heads require the component pieces to be the same color. As an example, all the components used with an M1-1 Interstate marker shall be blue.
7. Single panel j-assemblies shall only be used with route marker shields that are same size. If the route marker shields are different size use multiple piece component.
8. Route assemblies that have 24 inch route shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have one horizontal splice between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 inches or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
9. Route assemblies that have 36 inch shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have two horizontal splices. One horizontal splice shall be between the cardinal direction and route shields and the other horizontal splice shall be between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
10. All Vertical J Assemblies are given a Sign Code of JV
11. For JV Assemblies that have a mixture of Interstate and non Interstate shields, arrows and cardinals shall be white on blue.

PROJECT NO:

FILE NAME : C:\CAEFiles\Projects\tr\_stdplate\A21S.DGN

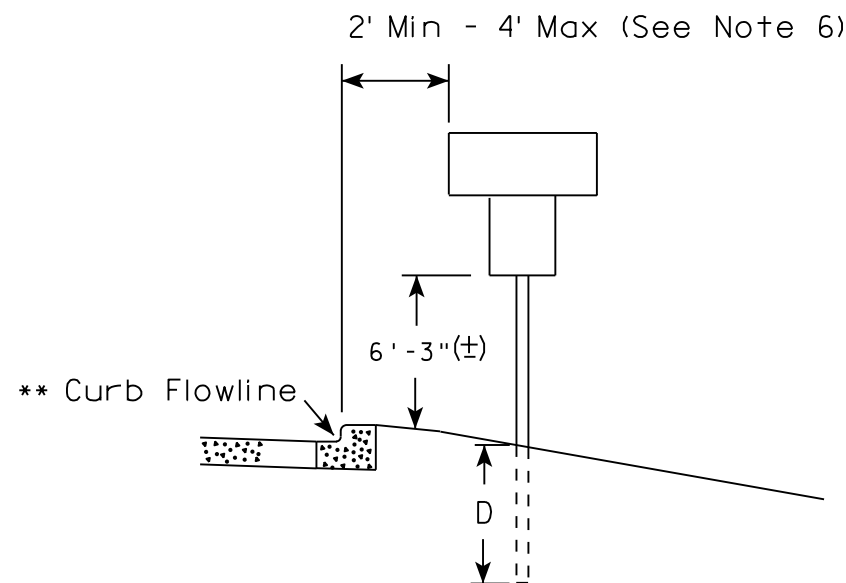
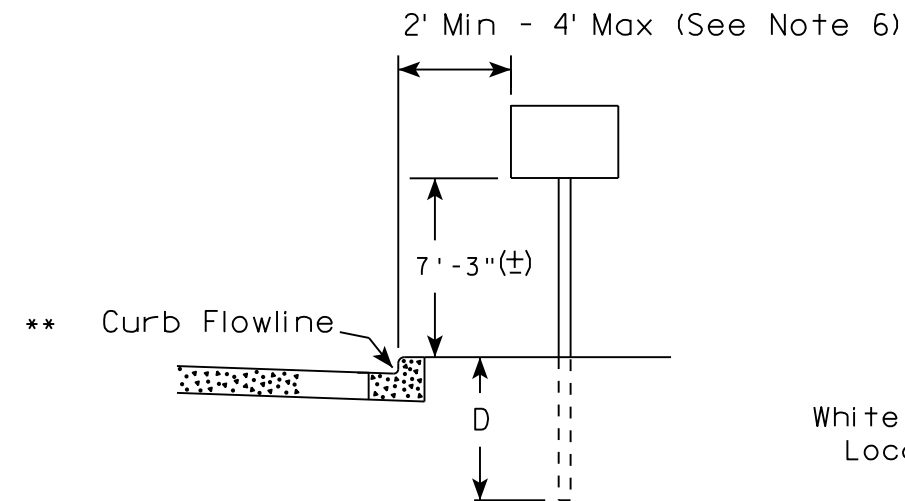
PLOT DATE : 06-FEB-2014 14:10

PLOT BY : mscs.ja

PLOT NAME :

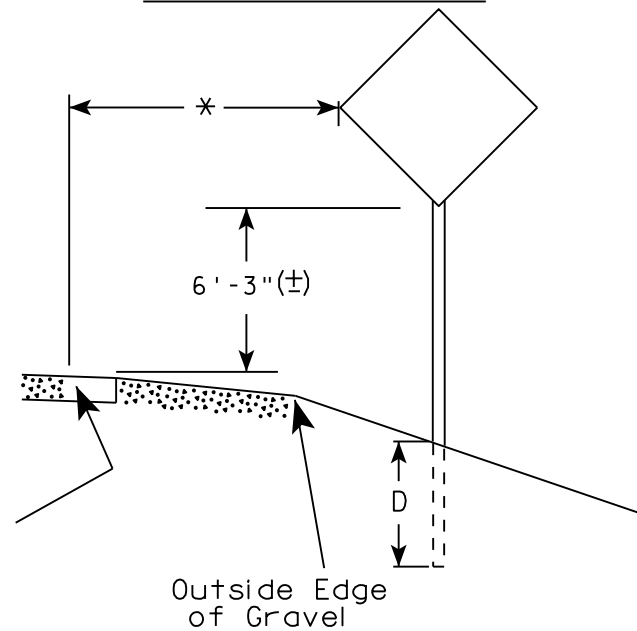
WISDOT/CADDs SHEET 42

## URBAN AREA

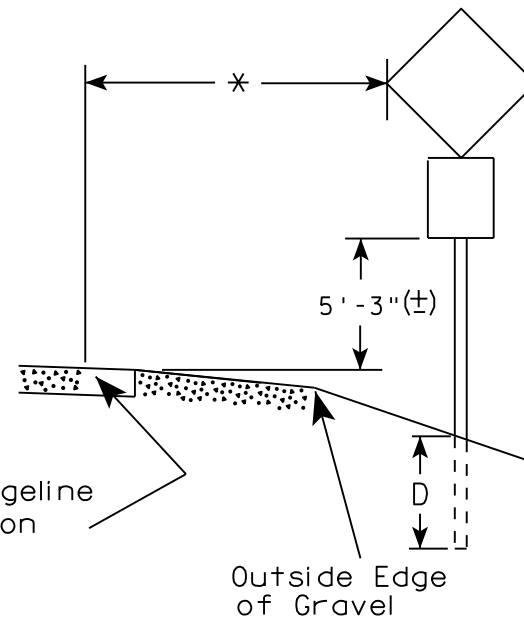


White Edgeline  
Location

## RURAL AREA (See Note 2)



White Edgeline  
Location



Outside Edge  
of Gravel

### POST EMBEDMENT DEPTH

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

### GENERAL NOTES

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

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

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

TYPICAL INSTALLATION  
OF PERMANENT TYPE II  
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Matthew R. Rauch*  
for State Traffic Engineer

DATE 8/21/17

PLATE NO. A4-3.21

PROJECT NO:

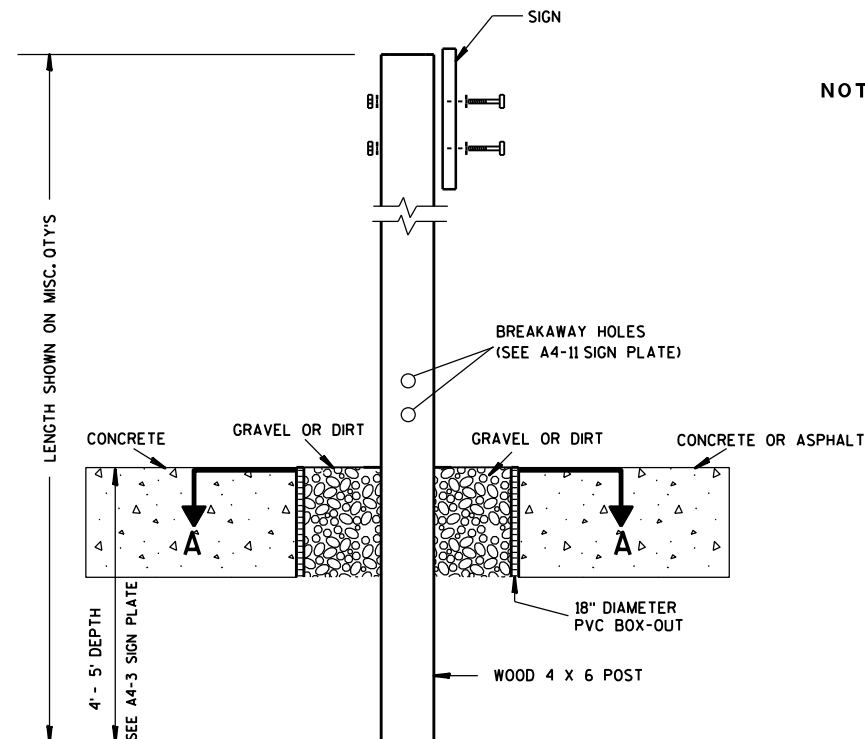
HWY:

COUNTY:

SHEET NO: 72

E

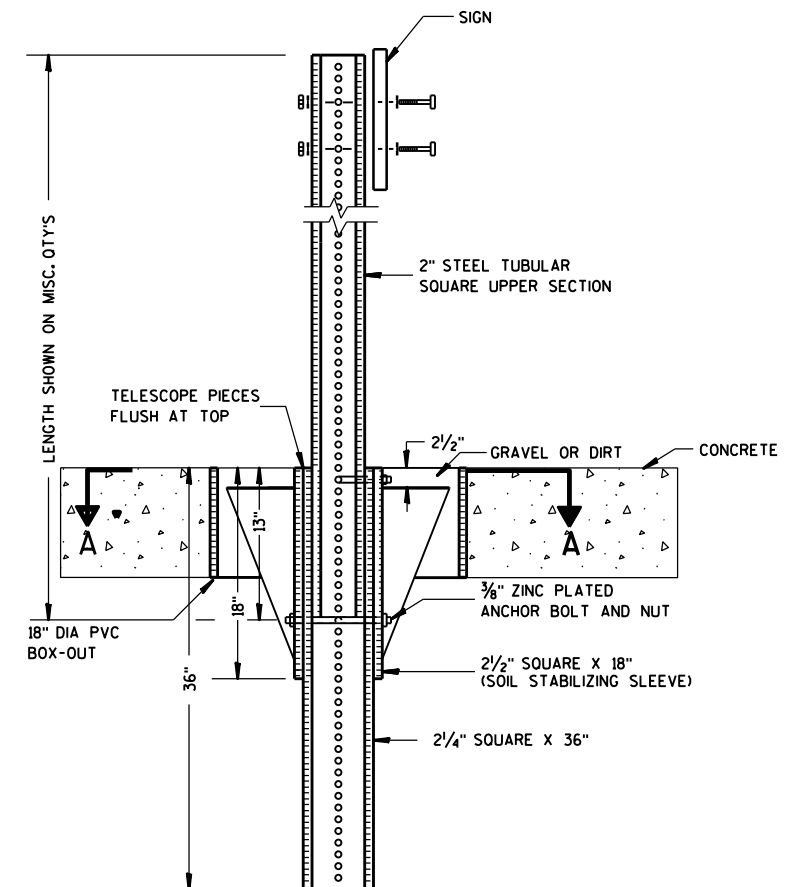




### ELEVATION VIEW

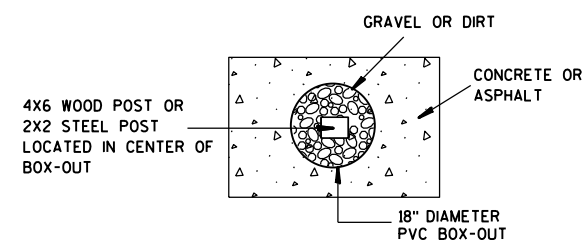
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



### ELEVATION VIEW

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



### PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST  
BOX-OUTS  
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 1/27/14 PLAT 73 A4-3B.1

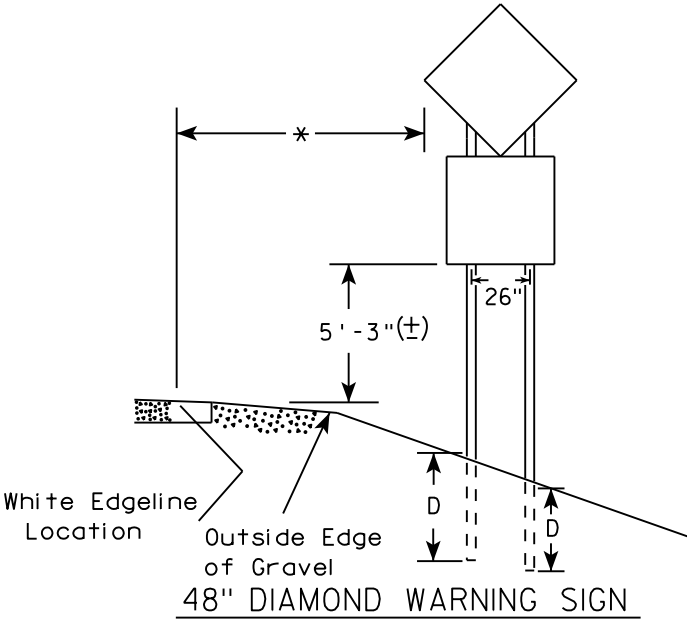
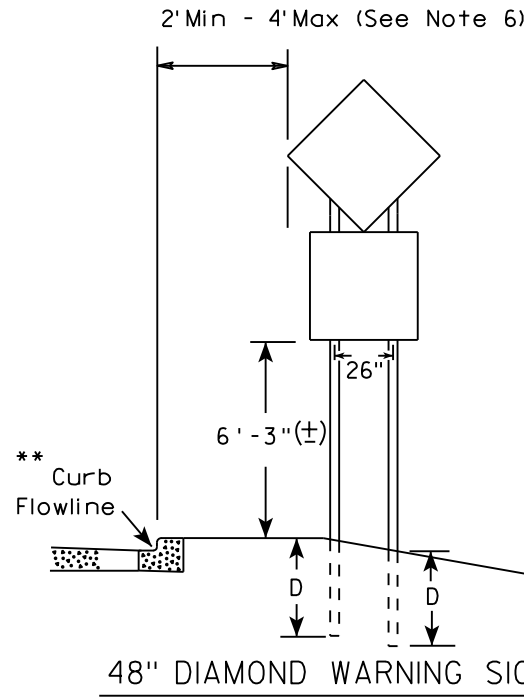
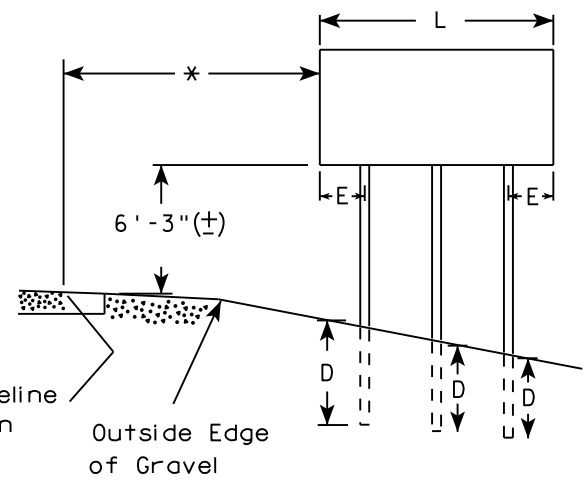
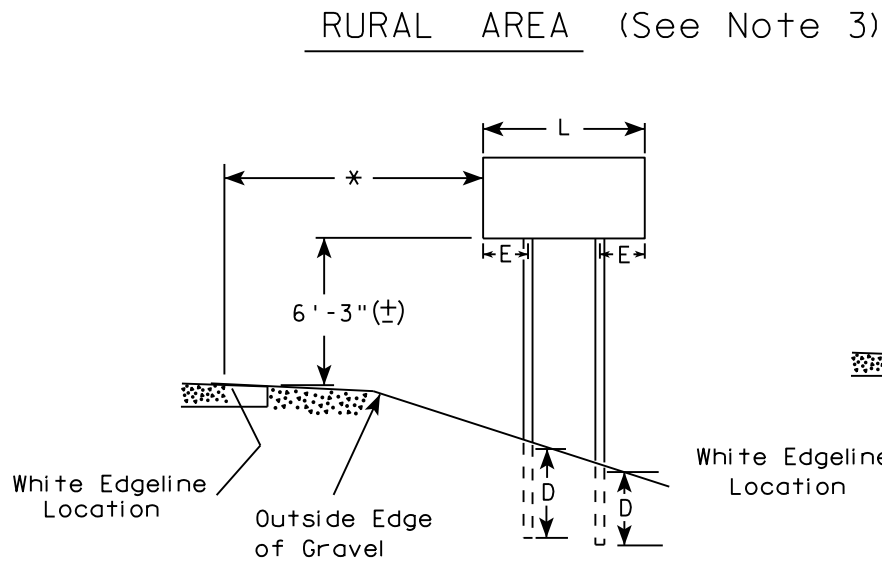
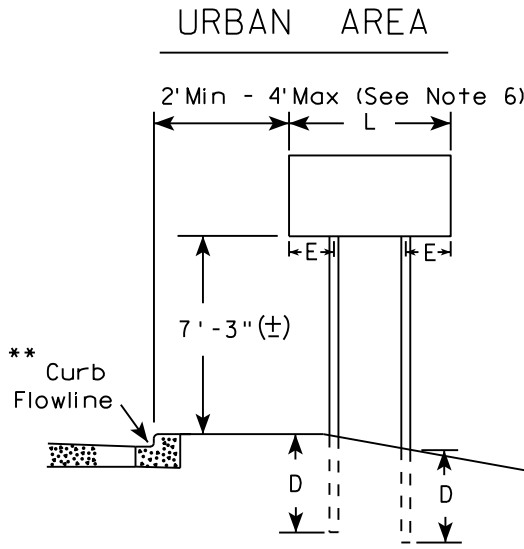
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



\*\*\*

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION  
OF TYPE II SIGNS  
ON MULTIPLE POSTS

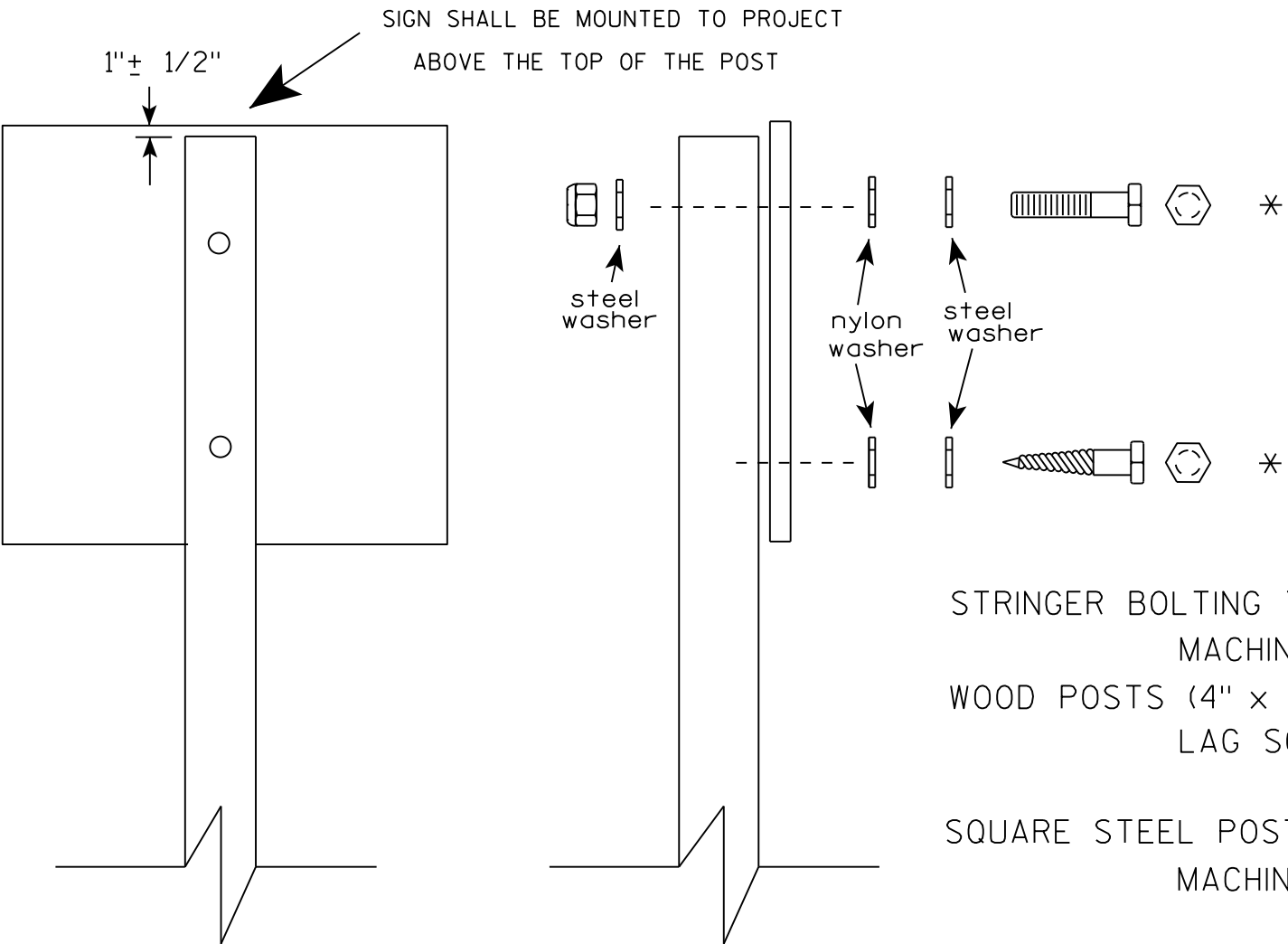
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-4.15

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

- \* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.
- \*\* The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.
- \*\*\* See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.



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

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

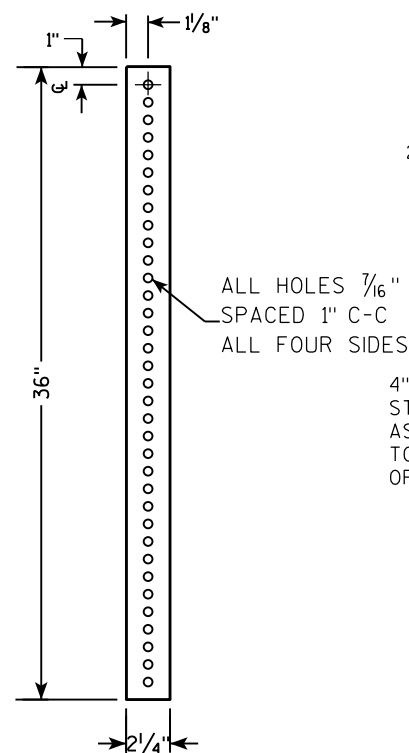
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

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

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

|                                  |                                                       |
|----------------------------------|-------------------------------------------------------|
| ATTACHMENT OF SIGNS<br>TO POSTS  |                                                       |
| WISCONSIN DEPT OF TRANSPORTATION |                                                       |
| APPROVED                         | <i>Matthew R. Rauch</i><br>For State Traffic Engineer |
| DATE 8/11/16                     | PLATE NO. A4-8.8<br>75                                |

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



2 1/2" TELES PAR TUBE

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

4"

2 1/2"

10"

3 1/2"

18"

TELESCOPE PIECES  
FLUSH AT TOP

18" DIA SCHEDULE  
40 PVC  
BOX-OUT

36"

18"

13"

2 1/2" GRAVEL OR DIRT

3/8" ZINC PLATED CORNER  
ANCHOR BOLT AND NUT

3/16" ZINC PLATED  
ANCHOR BOLT AND NUT

2 1/2" SQUARE X 18"  
(SOIL STABILIZING SLEEVE)

2 1/4" SQUARE X 36"

2" STEEL TUBULAR  
SQUARE UPPER SECTION

ALL HOLES 7/16"  
SPACED 1" C-C  
ALL FOUR SIDES

SIGN

SEE SIGN PLATE  
A4-8 FOR BOLT  
WASHER, & NUT  
MATERIAL

[illegible]

A schematic diagram of a square microfluidic chip. It features a central square channel with rounded corners. This central channel is surrounded by a thin, uniform border. The entire structure is enclosed within a larger square frame. Four ports are located on the outer frame: one at the top center, one at the bottom center, and one on each of the left and right sides. Each port is represented by a small rectangle with a central line extending into the channel area.

DIRECTION  
OF TRAFFIC

SECTION A-A

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

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

TUBULAR STEEL  
SIGN POST  
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch

for State Traffic Engineer

DATE 2/05/15 PLATI 76 14-9.9

SHEET NO: 70

PROJECT NO:

HWY:

COUNTY:

FILE NAME : C:\CAEFiles\Projects\tr\_stdplate\A49.DGN

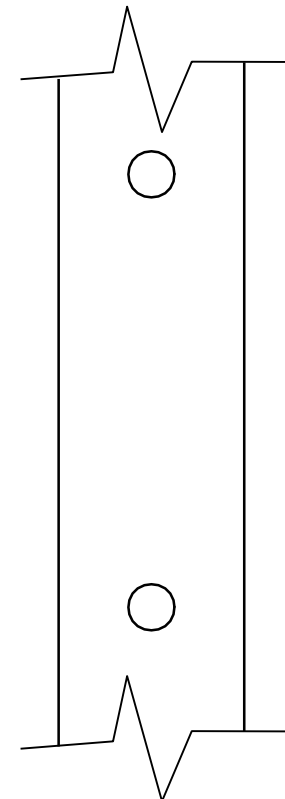
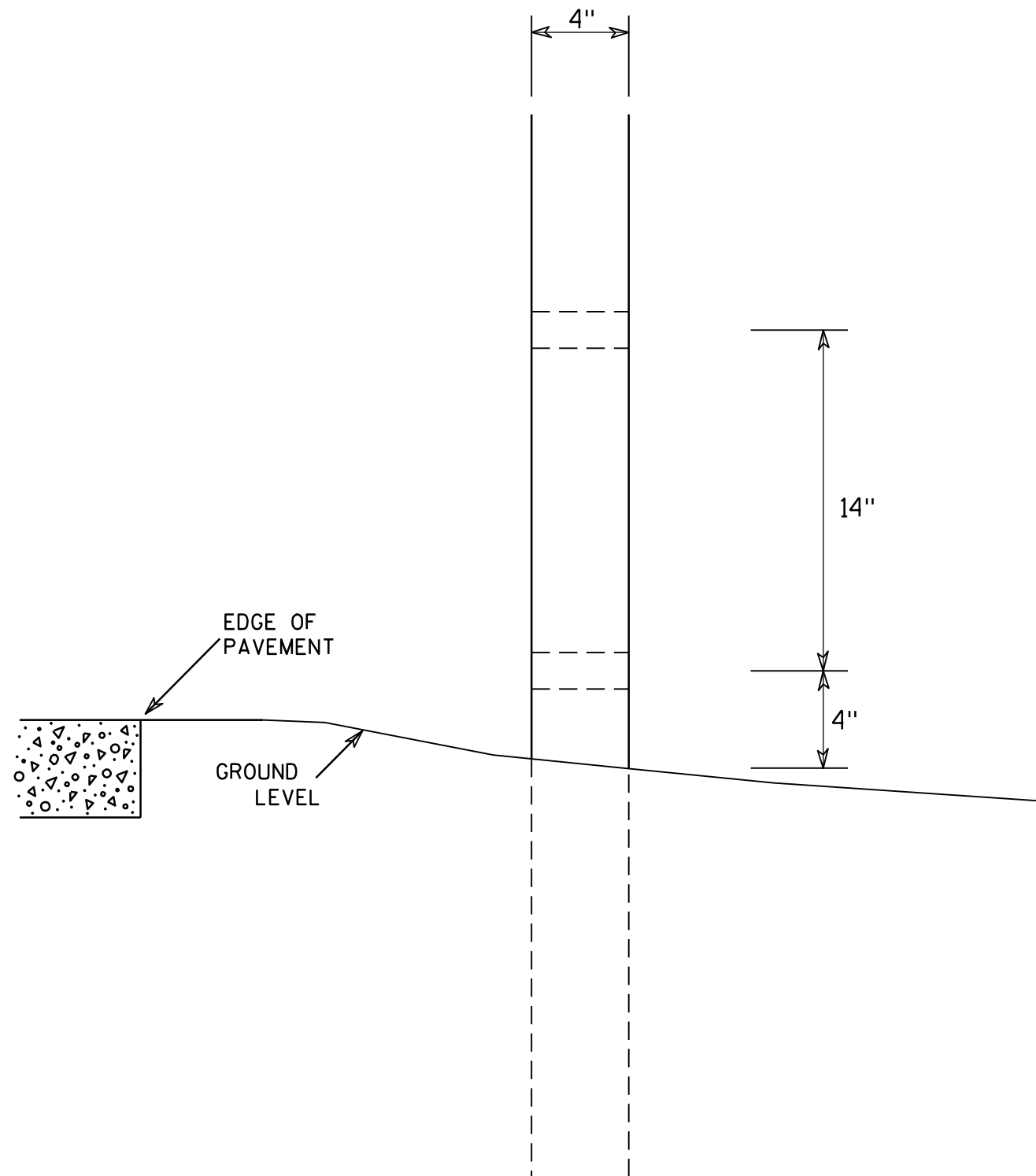
PLOT DATE : 05-FEB-2015 17:09

PLOT BY : mscs\_ja

PLOT NAME :

PLOT SCALE : 13.659812:1.000000

WISDOT/CADDS SHEET 42



SIDE VIEW

# GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1 1/2" diameter holes drilled perpendicular to the roadway centerline.

## 4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Chester J. Spang*  
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

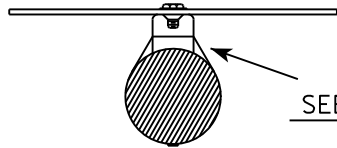
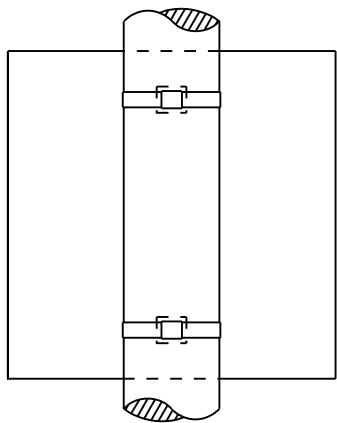
COUNTY:

SHEET NO: 77

E

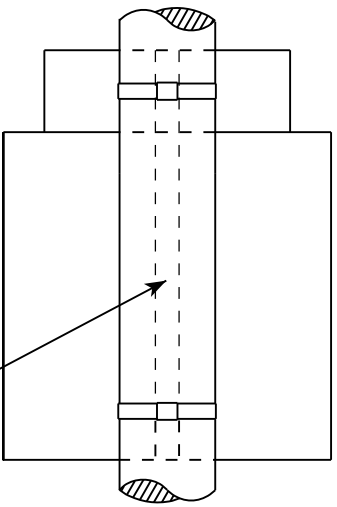
BANDING

SINGLE SIGN

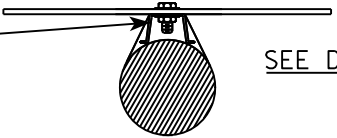


SEE DETAIL A

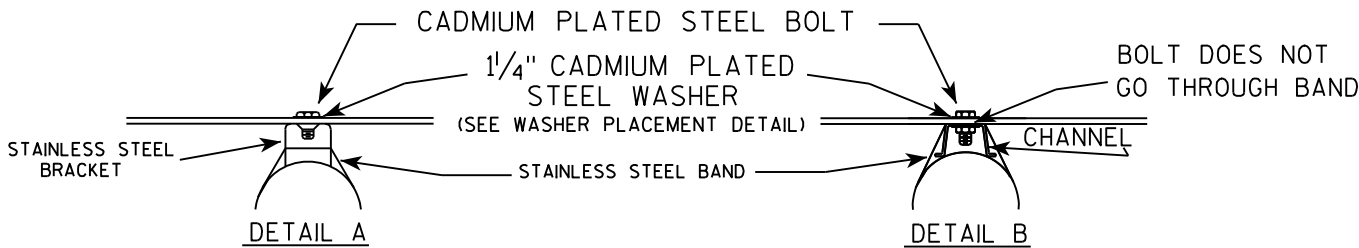
"J" ASSEMBLY



CHANNEL  
SEE TYPICAL PANEL  
INSTALLATION SHEET



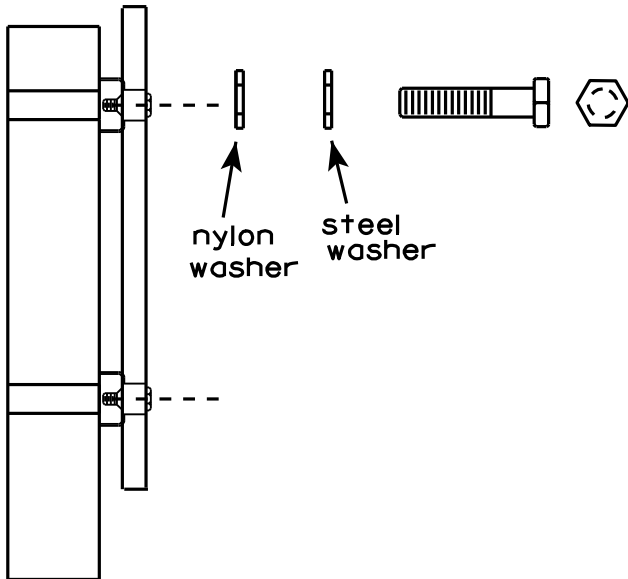
SEE DETAIL B



GENERAL NOTES

1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be  $\frac{3}{4}$ " in width and 0.025" thickness.

WASHER PLACEMENT



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

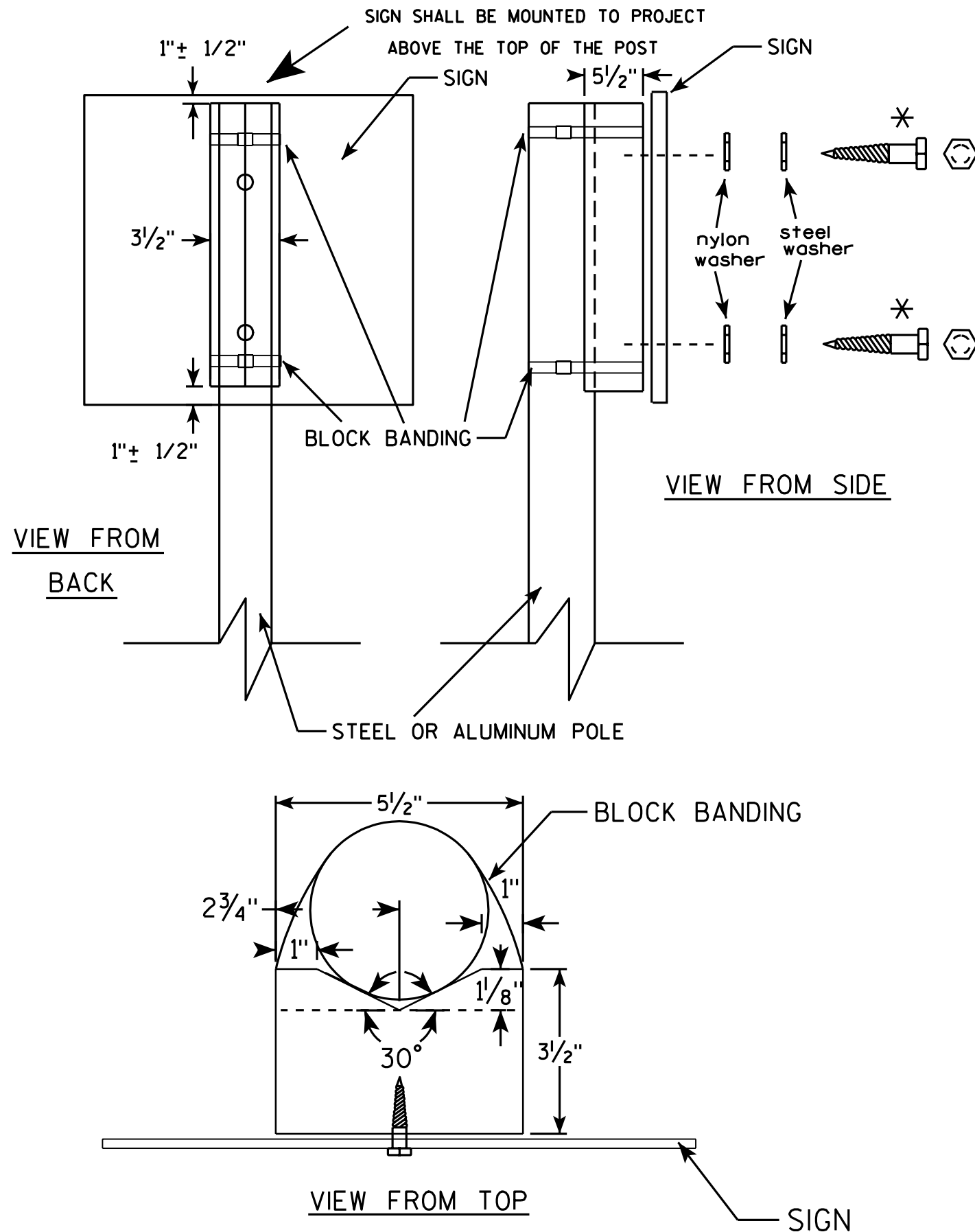
STANDARD SIGN  
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 8/16/13 PLATE NO. A5-9.3





## GENERAL NOTES

1. WOOD 4"x6" POST MATERIAL SHALL CONFORM TO 507.2.2 OF THE WISDOT STANDARD SPECIFICATIONS
2. BLOCK BANDING AND CLIPS SHALL BE STAINLESS STEEL,  $\frac{3}{4}$ " WIDTH AND 0.025" THICKNESS
3. SIGNS 3' OR GREATER IN HEIGHT SHALL UTILIZE 3 BLOCK BANDS. SIGNS UNDER 3' IN HEIGHT SHALL UTILIZE 2 BLOCK BANDS
4. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA, BUT NORMALLY THERE ARE TWO. FOR SIGNS GREATER THAN 9 S.F. 3 FASTENERS SHALL BE USED.
5. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
  - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D, or
  - b. Cadmium plated in accordance with ASTM Designation : B 766 TYPE 3, Class 12, or
  - c. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.
6. ALL BOLTS SHALL HAVE HEXAGONAL HEADS.
7. STEEL WASHERS SHALL BE  $\frac{1}{4}$ " O.D. X  $\frac{3}{8}$ " I.D. X  $\frac{1}{16}$ "
8. NYLON WASHERS SHALL BE  $\frac{1}{4}$ " O.D. X  $\frac{3}{8}$ " I.D. X .080 FOR TYPE H OR TYPE F FACE SIGN

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

## BLOCK BANDING DETAIL ( V-BLOCK OPTION )

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 7/12/07 PLATE NO. A5-10.1

PROJECT NO:

SHEET NO: 79

E

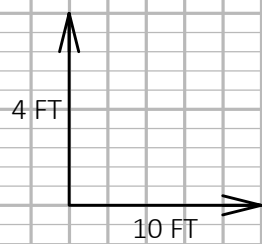
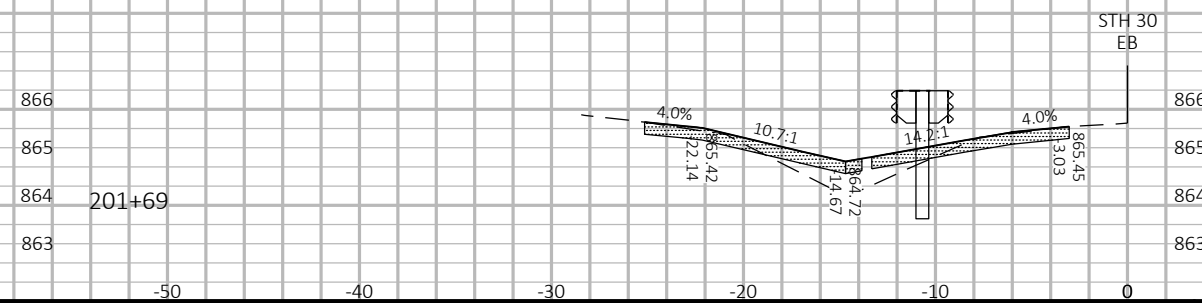
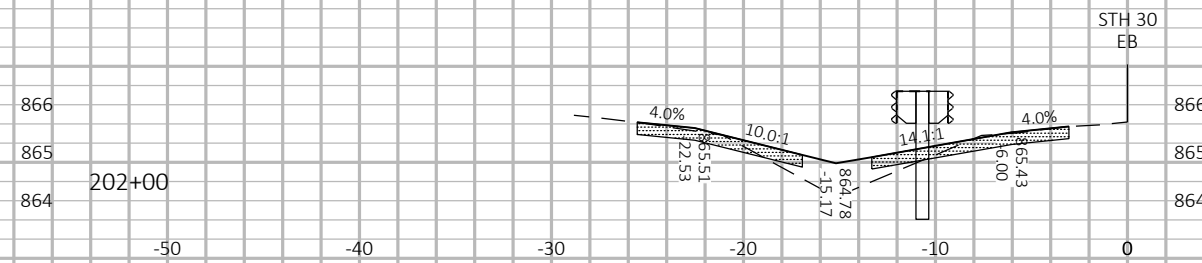
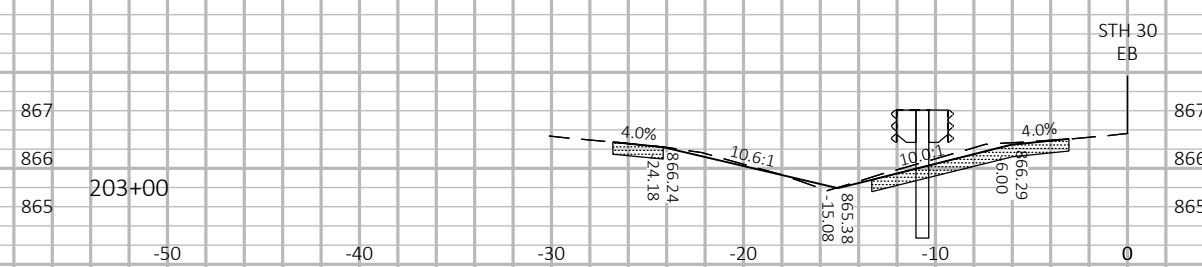
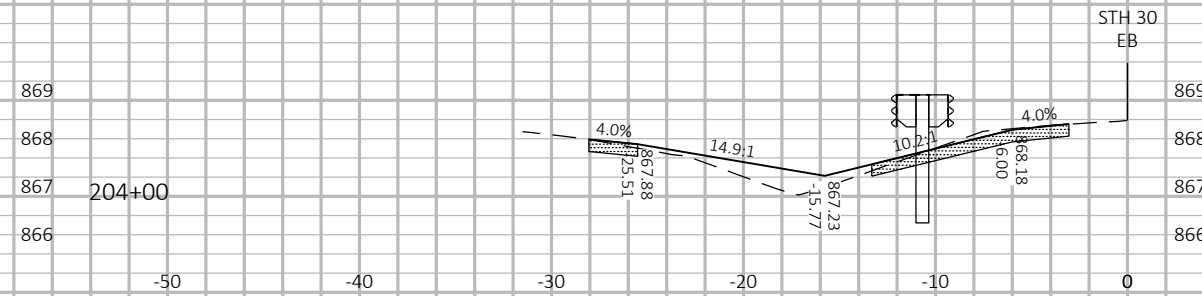
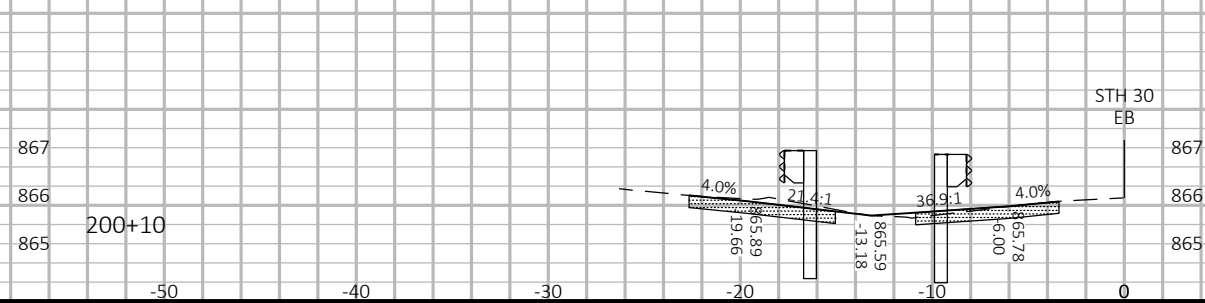
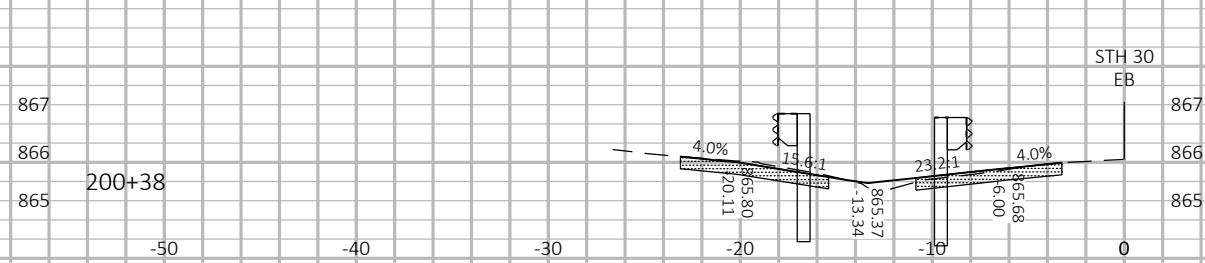
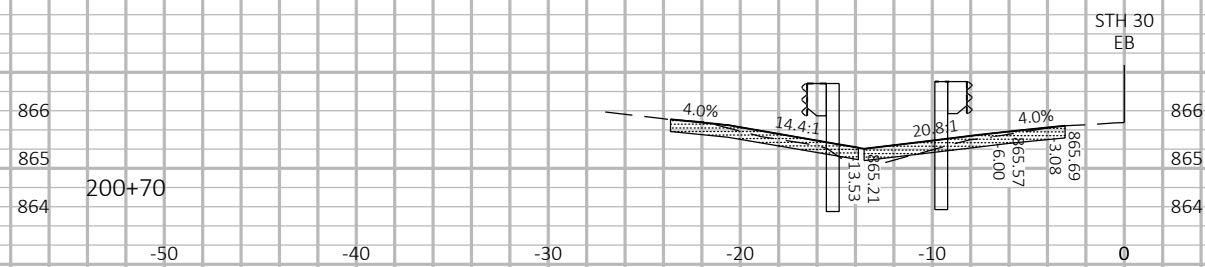
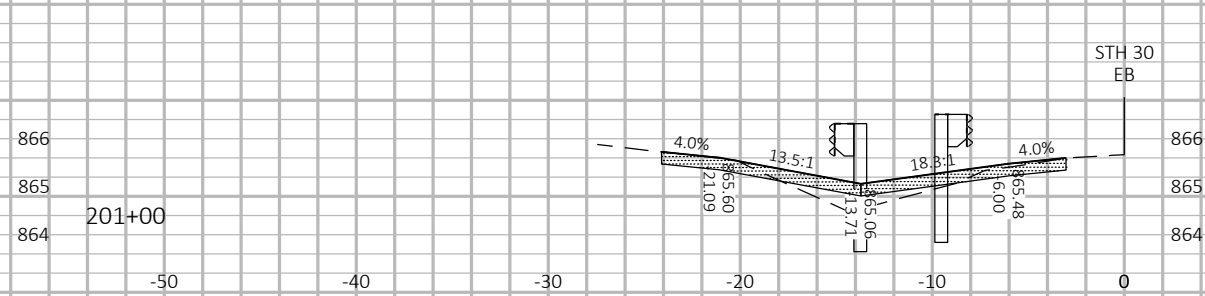


| DIVISIONS | STATION   | Real Station | Distance | AREA (SF) |                      |       | Incremental Vol (CY) (Unadjusted) |                      |        | Cumulative Vol (CY) |                          |               |
|-----------|-----------|--------------|----------|-----------|----------------------|-------|-----------------------------------|----------------------|--------|---------------------|--------------------------|---------------|
|           |           |              |          | Cut       | Unusable<br>Material | Fill  | Cut                               | Unusable<br>Material | Fill   | Cut<br>1.00         | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|           |           |              |          |           |                      |       |                                   |                      |        |                     |                          |               |
|           |           |              |          |           |                      |       | Note 1                            | Note 2               | Note 3 | Note 1              |                          | Note 8        |
| 1         | 200+10    | 20010.00     | 0.00     | 4.85      | 0.00                 | 0.64  | 0                                 | 0                    | 0      | 0                   | 0                        | 0             |
|           | 200+37.96 | 20037.96     | 27.96    | 4.97      | 0.00                 | 0.93  | 5                                 | 0                    | 1      | 5                   | 1                        | -1            |
|           | 200+69.82 | 20069.82     | 31.86    | 5.13      | 0.00                 | 3.21  | 6                                 | 0                    | 2      | 11                  | 4                        | -4            |
|           | 201+00    | 20100.00     | 30.18    | 5.27      | 0.00                 | 4.78  | 6                                 | 0                    | 4      | 17                  | 10                       | -10           |
|           | 201+63    | 20163.00     | 63.00    | 5.51      | 0.00                 | 5.49  | 13                                | 0                    | 12     | 29                  | 25                       | -25           |
|           | 201+69    | 20169.00     | 6.00     | 5.53      | 0.00                 | 4.84  | 1                                 | 0                    | 1      | 31                  | 26                       | -26           |
|           | 202+00    | 20200.00     | 31.00    | 5.70      | 0.00                 | 4.95  | 6                                 | 0                    | 6      | 37                  | 33                       | -33           |
|           | 203+00    | 20300.00     | 100.00   | 7.83      | 0.00                 | 0.14  | 25                                | 0                    | 9      | 62                  | 45                       | -45           |
|           | 204+00    | 20400.00     | 100.00   | 6.84      | 0.00                 | 3.37  | 27                                | 0                    | 6      | 89                  | 53                       | -53           |
|           | 205+00    | 20500.00     | 100.00   | 6.63      | 0.00                 | 4.26  | 25                                | 0                    | 14     | 114                 | 71                       | -71           |
|           | 205+21    | 20521.00     | 21.00    | 6.73      | 0.00                 | 7.57  | 5                                 | 0                    | 5      | 119                 | 76                       | -76           |
|           | 206+00    | 20600.00     | 79.00    | 6.86      | 0.00                 | 7.50  | 20                                | 0                    | 22     | 139                 | 104                      | -104          |
|           | 206+43    | 20643.00     | 43.00    | 6.87      | 0.00                 | 9.81  | 11                                | 0                    | 14     | 150                 | 121                      | -121          |
|           | 207+00    | 20700.00     | 57.00    | 6.77      | 0.00                 | 10.74 | 14                                | 0                    | 22     | 165                 | 148                      | -148          |
|           | 207+84    | 20784.00     | 84.00    | 6.78      | 0.00                 | 3.85  | 21                                | 0                    | 23     | 186                 | 177                      | -177          |
| 2         | 210+72    | 21072.00     | 0.00     | 6.61      | 6.61                 | 1.95  | 0                                 | 0                    | 0      | 0                   | 0                        | 0             |
|           | 211+00    | 21100.00     | 28.00    | 6.62      | 6.62                 | 1.77  | 7                                 | 7                    | 2      | 7                   | 2                        | -2            |
|           | 212+00    | 21200.00     | 100.00   | 6.13      | 6.13                 | 3.99  | 24                                | 24                   | 11     | 30                  | 16                       | -16           |
|           | 213+00    | 21300.00     | 100.00   | 6.72      | 6.72                 | 11.90 | 24                                | 24                   | 29     | 54                  | 53                       | -53           |
|           | 214+00    | 21400.00     | 100.00   | 6.75      | 6.75                 | 8.98  | 25                                | 25                   | 39     | 79                  | 101                      | -101          |
|           | 215+00    | 21500.00     | 100.00   | 6.76      | 6.76                 | 12.59 | 25                                | 25                   | 40     | 104                 | 151                      | -151          |
|           | 216+00    | 21600.00     | 100.00   | 6.75      | 6.75                 | 10.08 | 25                                | 25                   | 42     | 129                 | 203                      | -203          |
|           | 217+00    | 21700.00     | 100.00   | 6.73      | 6.73                 | 16.68 | 25                                | 25                   | 50     | 154                 | 265                      | -265          |
|           | 218+00    | 21800.00     | 100.00   | 6.68      | 6.68                 | 14.36 | 25                                | 25                   | 57     | 179                 | 337                      | -337          |
|           | 219+00    | 21900.00     | 100.00   | 6.65      | 6.65                 | 11.79 | 25                                | 25                   | 48     | 204                 | 398                      | -398          |
|           | 220+00    | 22000.00     | 100.00   | 6.77      | 6.77                 | 11.11 | 25                                | 25                   | 42     | 229                 | 451                      | -451          |
|           | 221+00    | 22100.00     | 100.00   | 6.69      | 6.69                 | 11.54 | 25                                | 25                   | 42     | 254                 | 503                      | -503          |
|           | 222+00    | 22200.00     | 100.00   | 6.66      | 6.66                 | 14.53 | 25                                | 25                   | 48     | 278                 | 563                      | -563          |
|           | 223+00    | 22300.00     | 100.00   | 6.71      | 6.71                 | 7.59  | 25                                | 25                   | 41     | 303                 | 615                      | -615          |
|           | 223+70    | 22370.00     | 70.00    | 4.27      | 4.27                 | 2.17  | 14                                | 14                   | 13     | 317                 | 630                      | -630          |
| 3         | 229+55    | 22955.00     | 0.00     | 5.98      | 5.98                 | 1.54  | 0                                 | 0                    | 0      | 0                   | 0                        | 0             |
|           | 230+00    | 23000.00     | 45.00    | 6.71      | 6.71                 | 12.80 | 11                                | 11                   | 12     | 11                  | 15                       | -15           |
|           | 231+00    | 23100.00     | 100.00   | 6.70      | 6.70                 | 18.13 | 25                                | 25                   | 57     | 35                  | 87                       | -87           |
|           | 232+00    | 23200.00     | 100.00   | 6.69      | 6.69                 | 19.09 | 25                                | 25                   | 69     | 60                  | 173                      | -173          |
|           | 233+00    | 23300.00     | 100.00   | 6.72      | 6.72                 | 15.26 | 25                                | 25                   | 64     | 85                  | 252                      | -252          |
|           | 234+00    | 23400.00     | 100.00   | 6.74      | 6.74                 | 20.54 | 25                                | 25                   | 66     | 110                 | 335                      | -335          |
|           | 235+00    | 23500.00     | 100.00   | 6.71      | 6.71                 | 19.04 | 25                                | 25                   | 73     | 135                 | 427                      | -427          |
|           | 236+00    | 23600.00     | 100.00   | 6.66      | 6.66                 | 20.21 | 25                                | 25                   | 73     | 160                 | 518                      | -518          |
|           | 237+00    | 23700.00     | 100.00   | 6.64      | 6.64                 | 21.70 | 25                                | 25                   | 78     | 184                 | 615                      | -615          |
|           | 238+00    | 23800.00     | 100.00   | 6.66      | 6.66                 | 18.64 | 25                                | 25                   | 75     | 209                 | 708                      | -708          |
|           | 239+00    | 23900.00     | 100.00   | 6.66      | 6.66                 | 17.37 | 25                                | 25                   | 67     | 234                 | 791                      | -791          |
|           | 240+00    | 24000.00     | 100.00   | 6.72      | 6.72                 | 17.59 | 25                                | 25                   | 65     | 258                 | 872                      | -872          |
|           | 241+00    | 24100.00     | 100.00   | 6.78      | 6.78                 | 19.41 | 25                                | 25                   | 69     | 283                 | 958                      | -958          |
|           | 242+00    | 24200.00     | 100.00   | 6.77      | 6.77                 | 19.72 | 25                                | 25                   | 72     | 308                 | 1,048                    | -1,048        |
|           | 243+00    | 24300.00     | 100.00   | 6.78      | 6.78                 | 21.99 | 25                                | 25                   | 77     | 334                 | 1,145                    | -1,145        |
|           | 244+00    | 24400.00     | 100.00   | 6.79      | 6.79                 | 19.91 | 25                                | 25                   | 78     | 359                 | 1,242                    | -1,242        |
|           | 244+70    | 24470.00     | 70.00    | 6.77      | 6.77                 | 1.20  | 18                                | 18                   | 27     | 376                 | 1,276                    | -1,276        |

| DIVISIONS | STATION   | Real Station | Distance | AREA (SF) |                   |       | Incremental Vol (CY) (Unadjusted) |                   |        | Cumulative Vol (CY)   |                          |               |
|-----------|-----------|--------------|----------|-----------|-------------------|-------|-----------------------------------|-------------------|--------|-----------------------|--------------------------|---------------|
|           |           |              |          | Cut       | Unusable Material | Fill  | Cut                               | Unusable Material | Fill   | Cut<br>1.00<br>Note 1 | Expanded<br>Fill<br>1.25 | Mass Ordinate |
|           |           |              |          |           |                   |       |                                   |                   |        |                       |                          |               |
|           |           |              |          |           |                   |       | Note 1                            | Note 2            | Note 3 |                       |                          | Note 8        |
| 4         | 248+40    | 24840.00     | 0.00     | 6.02      | 6.02              | 0.66  | 0                                 | 0                 | 0      | 0                     | 0                        | 0             |
|           | 249+00    | 24900.00     | 60.00    | 6.76      | 6.76              | 13.17 | 14                                | 14                | 15     | 14                    | 19                       | -19           |
|           | 250+00    | 25000.00     | 100.00   | 6.76      | 6.76              | 10.91 | 25                                | 25                | 45     | 39                    | 75                       | -75           |
|           | 251+00    | 25100.00     | 100.00   | 6.75      | 6.75              | 23.41 | 25                                | 25                | 64     | 64                    | 154                      | -154          |
|           | 252+00    | 25200.00     | 100.00   | 6.71      | 6.71              | 11.33 | 25                                | 25                | 64     | 89                    | 235                      | -235          |
|           | 253+00    | 25300.00     | 100.00   | 6.69      | 6.69              | 13.49 | 25                                | 25                | 46     | 114                   | 292                      | -292          |
|           | 254+00    | 25400.00     | 100.00   | 6.64      | 6.64              | 11.33 | 25                                | 25                | 46     | 139                   | 350                      | -350          |
|           | 255+00    | 25500.00     | 100.00   | 6.60      | 6.60              | 15.16 | 25                                | 25                | 49     | 163                   | 411                      | -411          |
|           | 256+00    | 25600.00     | 100.00   | 6.64      | 6.64              | 15.34 | 25                                | 25                | 56     | 188                   | 482                      | -482          |
|           | 257+00    | 25700.00     | 100.00   | 6.65      | 6.65              | 10.90 | 25                                | 25                | 49     | 212                   | 542                      | -542          |
|           | 258+00    | 25800.00     | 100.00   | 6.57      | 6.57              | 8.39  | 24                                | 24                | 36     | 237                   | 587                      | -587          |
|           | 259+00    | 25900.00     | 100.00   | 6.53      | 6.53              | 10.76 | 24                                | 24                | 35     | 261                   | 631                      | -631          |
|           | 260+00    | 26000.00     | 100.00   | 6.55      | 6.55              | 8.76  | 24                                | 24                | 36     | 285                   | 677                      | -677          |
|           | 261+00    | 26100.00     | 100.00   | 6.51      | 6.51              | 14.63 | 24                                | 24                | 43     | 309                   | 731                      | -731          |
|           | 262+00    | 26200.00     | 100.00   | 6.04      | 6.04              | 13.36 | 23                                | 23                | 52     | 333                   | 796                      | -796          |
|           | 263+00    | 26300.00     | 100.00   | 6.52      | 6.52              | 9.62  | 23                                | 23                | 43     | 356                   | 849                      | -849          |
|           | 264+00    | 26400.00     | 100.00   | 6.50      | 6.50              | 11.65 | 24                                | 24                | 39     | 380                   | 898                      | -898          |
|           | 265+00    | 26500.00     | 100.00   | 6.51      | 6.51              | 8.55  | 24                                | 24                | 37     | 404                   | 945                      | -945          |
|           | 266+00    | 26600.00     | 100.00   | 6.52      | 6.52              | 4.63  | 24                                | 24                | 24     | 428                   | 975                      | -975          |
|           | 266+45    | 26645.00     | 45.00    | 6.53      | 6.53              | 1.76  | 11                                | 11                | 5      | 439                   | 982                      | -982          |
|           | 267+15    | 26715.00     | 70.00    | 6.40      | 6.40              | 9.58  | 17                                | 17                | 15     | 456                   | 1,000                    | -1,000        |
| 5         | 268+00    | 26800.00     | 0.00     | 6.53      | 6.53              | 4.29  | 0                                 | 0                 | 0      | 0                     | 0                        | 0             |
|           | 269+00    | 26900.00     | 100.00   | 6.54      | 6.54              | 7.75  | 24                                | 24                | 22     | 24                    | 28                       | -28           |
|           | 269+93.62 | 26993.62     | 93.62    | 6.54      | 6.54              | 7.43  | 23                                | 23                | 26     | 47                    | 61                       | -61           |
|           | 270+00    | 27000.00     | 6.38     | 6.55      | 6.55              | 7.53  | 2                                 | 2                 | 2      | 48                    | 63                       | -63           |
|           | 271+00    | 27100.00     | 100.00   | 6.71      | 6.71              | 5.22  | 25                                | 25                | 24     | 73                    | 93                       | -93           |
|           | 272+00    | 27200.00     | 100.00   | 7.07      | 7.07              | 12.77 | 26                                | 26                | 33     | 98                    | 134                      | -134          |
|           | 273+00    | 27300.00     | 100.00   | 7.71      | 7.71              | 13.22 | 27                                | 27                | 48     | 126                   | 194                      | -194          |
|           | 274+00    | 27400.00     | 100.00   | 8.51      | 8.51              | 17.46 | 30                                | 30                | 57     | 156                   | 265                      | -265          |
|           | 275+00    | 27500.00     | 100.00   | 9.48      | 9.48              | 25.23 | 33                                | 33                | 79     | 189                   | 364                      | -364          |
|           | 276+00    | 27600.00     | 100.00   | 7.90      | 7.90              | 13.59 | 32                                | 32                | 72     | 221                   | 454                      | -454          |
|           | 277+00    | 27700.00     | 100.00   | 8.90      | 8.90              | 19.12 | 31                                | 31                | 61     | 253                   | 530                      | -530          |
|           | 277+76.6  | 27776.60     | 76.60    | 9.43      | 9.43              | 21.51 | 26                                | 26                | 58     | 279                   | 602                      | -602          |
|           | 278+00    | 27800.00     | 23.40    | 9.84      | 9.84              | 22.44 | 8                                 | 8                 | 19     | 287                   | 626                      | -626          |
|           | 279+00    | 27900.00     | 100.00   | 7.04      | 7.04              | 29.39 | 26                                | 26                | 97     | 313                   | 747                      | -747          |
|           | 280+00    | 28000.00     | 100.00   | 5.46      | 5.46              | 30.41 | 23                                | 23                | 111    | 336                   | 886                      | -886          |
|           | 281+00    | 28100.00     | 100.00   | 5.89      | 5.89              | 28.41 | 21                                | 21                | 109    | 357                   | 1,022                    | -1,022        |
|           | 282+00    | 28200.00     | 100.00   | 6.30      | 6.30              | 30.10 | 23                                | 23                | 108    | 380                   | 1,157                    | -1,157        |
|           | 283+00    | 28300.00     | 100.00   | 7.10      | 7.10              | 28.76 | 25                                | 25                | 109    | 405                   | 1,294                    | -1,294        |
|           | 284+00    | 28400.00     | 100.00   | 6.72      | 6.72              | 25.03 | 26                                | 26                | 100    | 430                   | 1,418                    | -1,418        |
|           | 285+00    | 28500.00     | 100.00   | 6.12      | 6.12              | 33.87 | 24                                | 24                | 109    | 454                   | 1,554                    | -1,554        |
|           | 285+05    | 28505.00     | 5.00     | 5.90      | 5.90              | 32.81 | 1                                 | 1                 | 6      | 455                   | 1,562                    | -1,562        |
|           | 286+00    | 28600.00     | 95.00    | 5.61      | 5.61              | 26.14 | 20                                | 20                | 104    | 475                   | 1,692                    | -1,692        |
|           | 286+50    | 28650.00     | 50.00    | 4.35      | 4.35              | 2.72  | 9                                 | 9                 | 27     | 484                   | 1,725                    | -1,725        |



3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET

82

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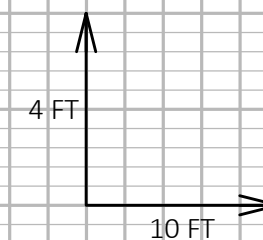
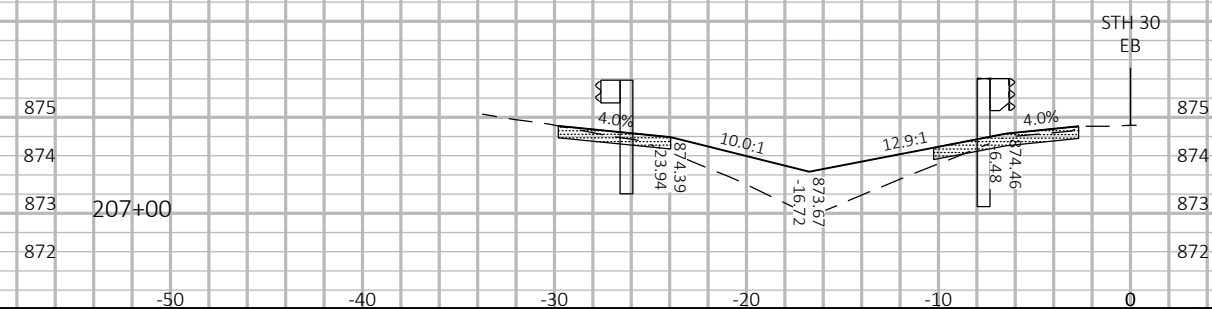
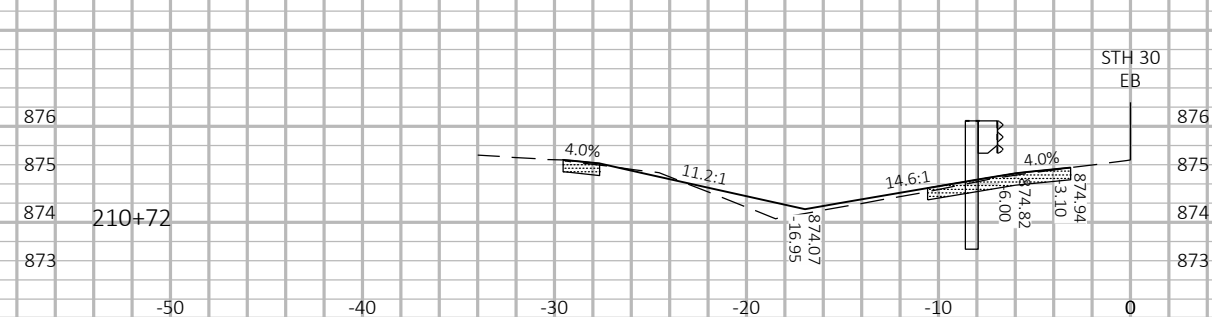
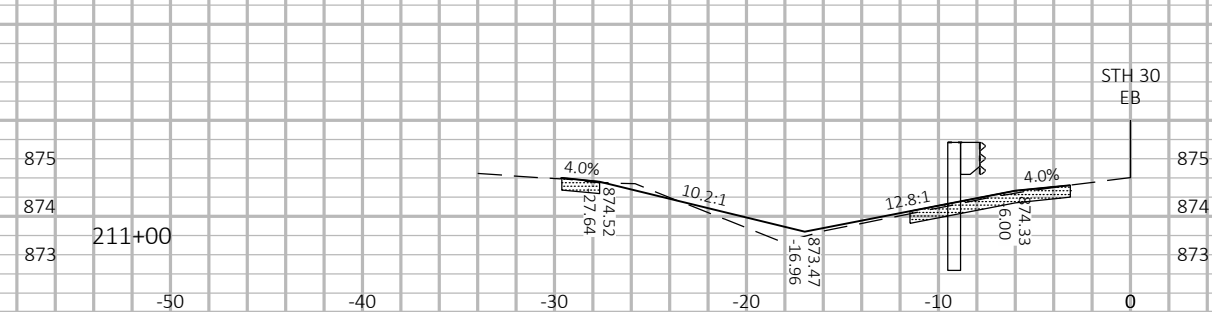
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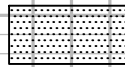
PLOT BY : ANDERSON, SHAUN M

PLOT NAME :

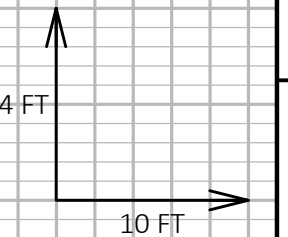
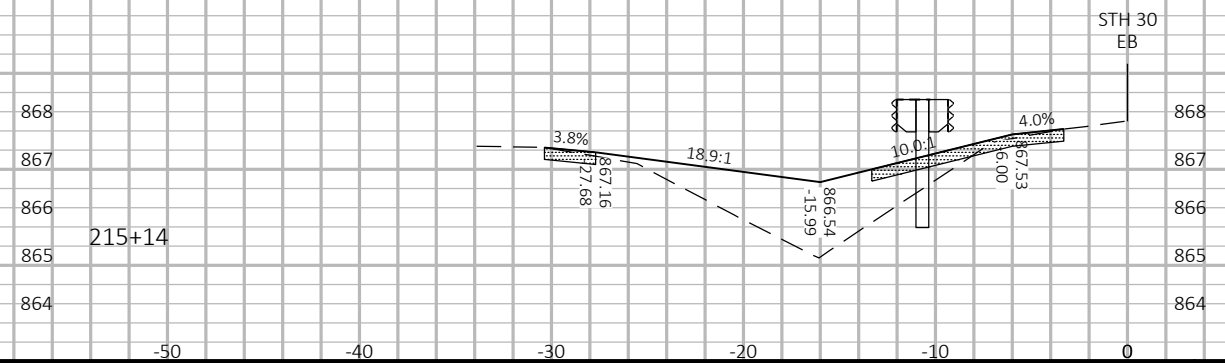
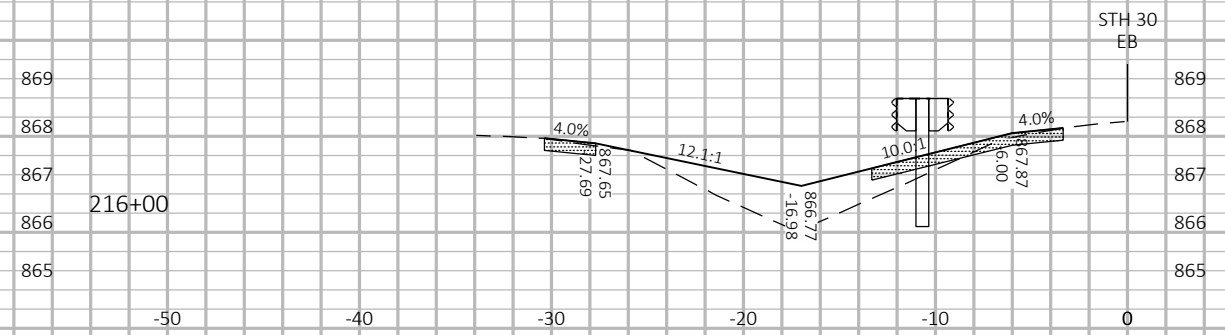
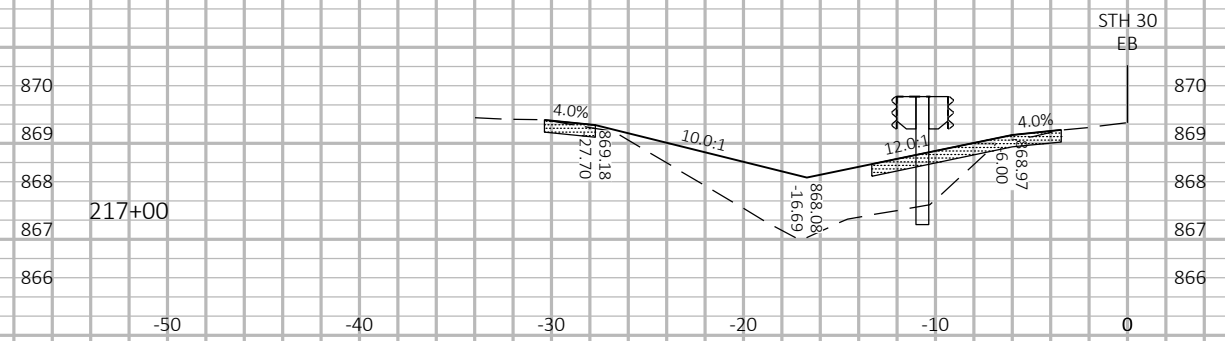
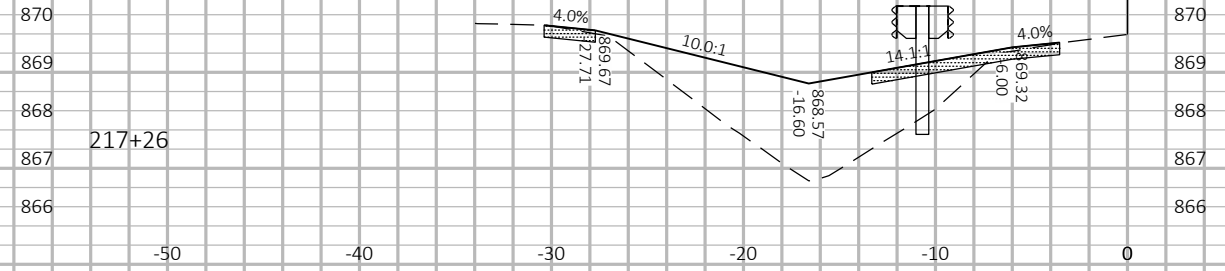
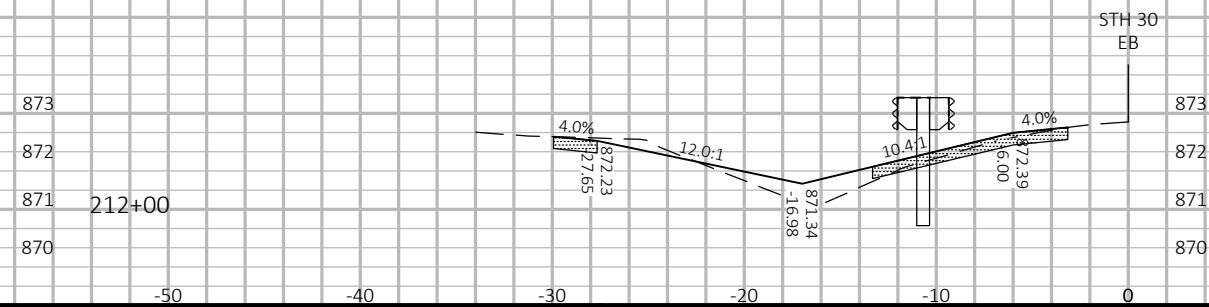
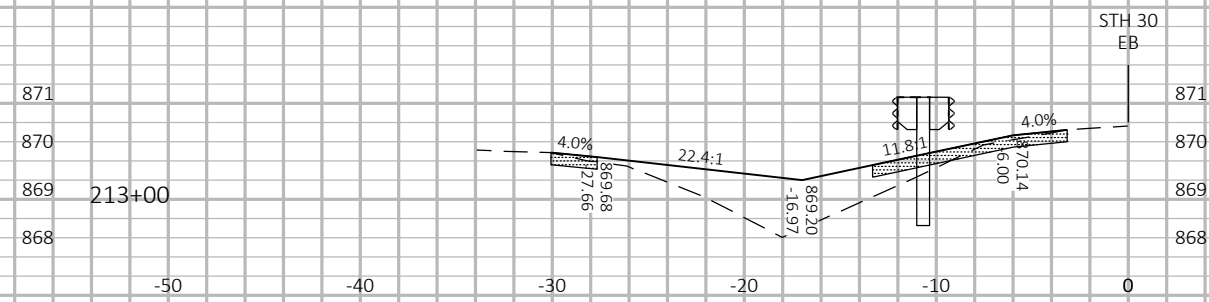
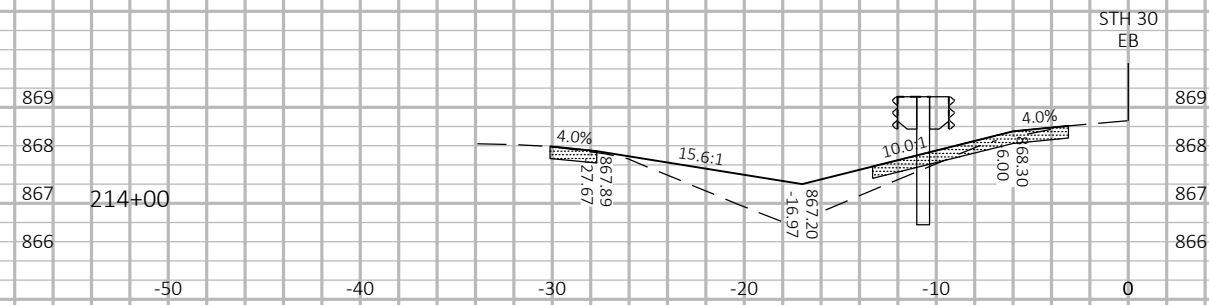
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WISDOT/CADDs SHEET 49





3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET

84

E

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LAYOUT NAME - 090203

PLOT DATE : 1/16/2018 1:25 PM

PLOT BY : ANDERSON, SHAUN M

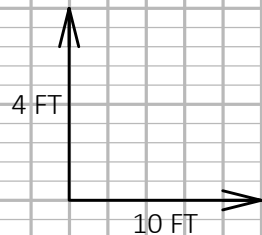
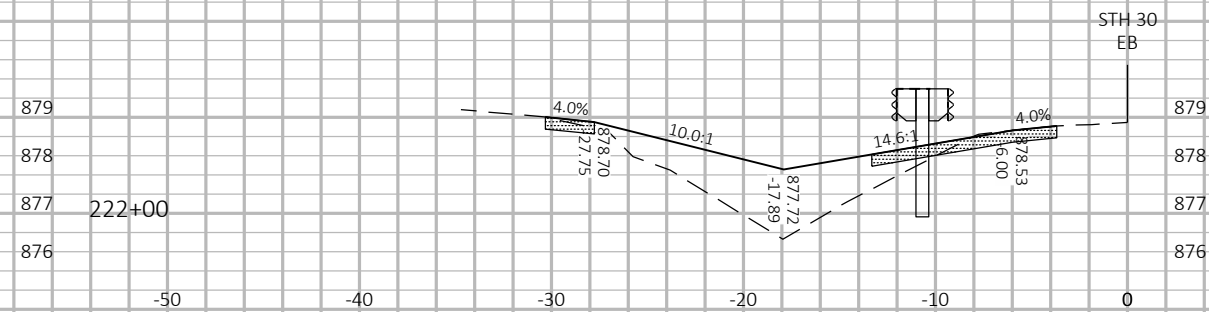
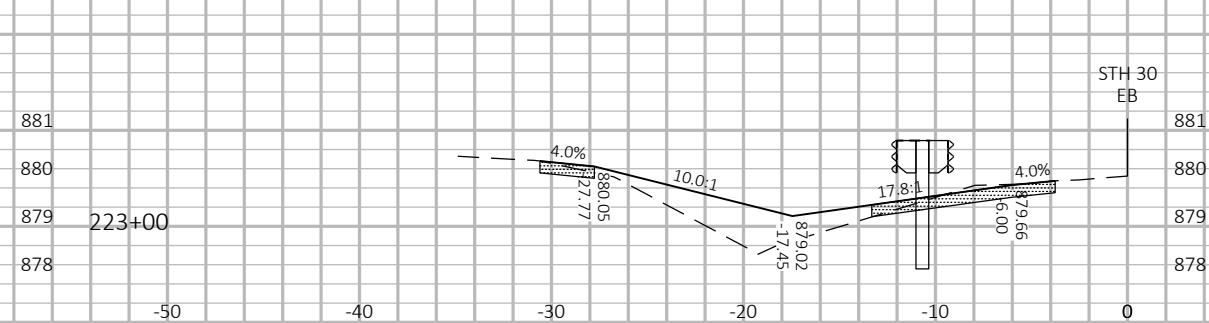
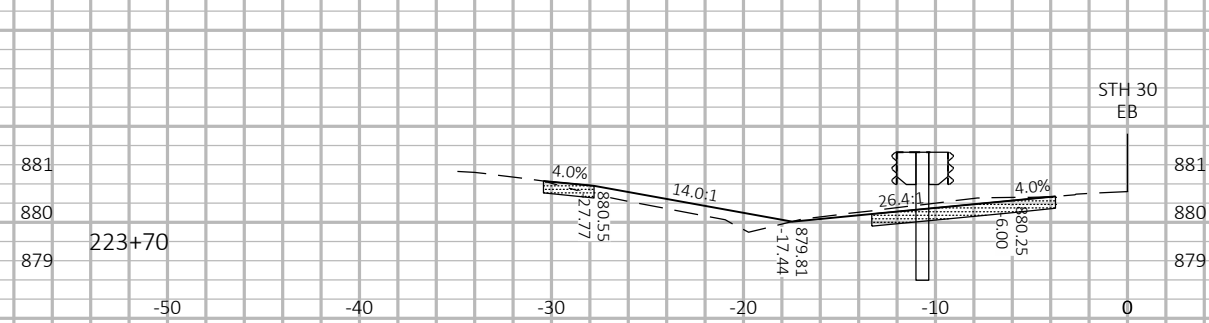
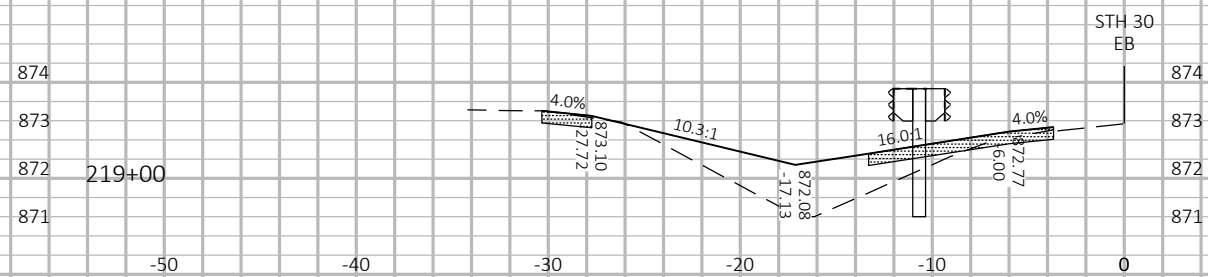
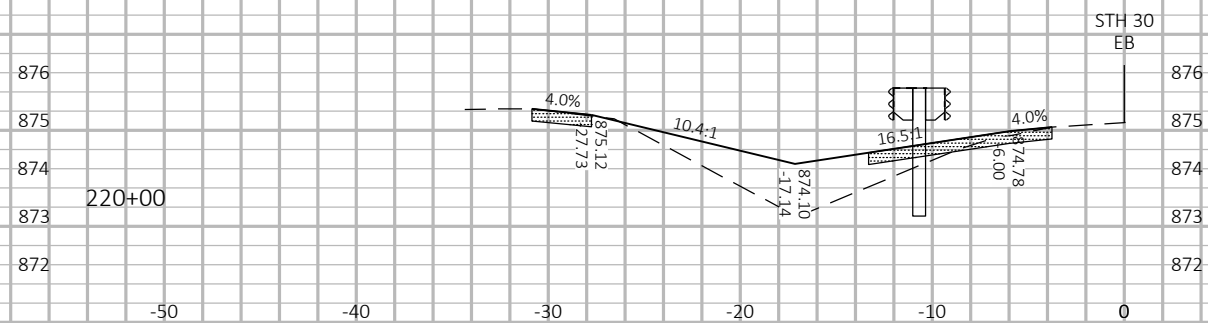
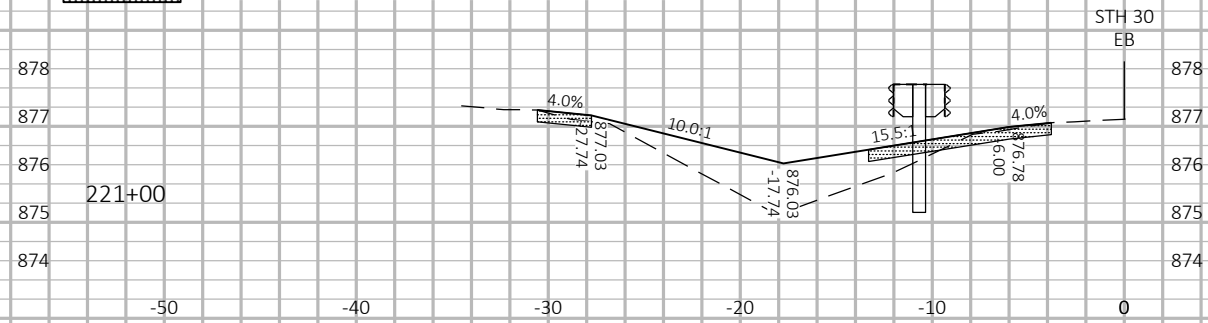
PLOT NAME :

PLOT SCALE : 1 IN=10 FT HORZ. / 1 IN=4 FT VERT.

WISDOT/CADDs SHEET 49



3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET

85

E

FILE NAME : N:\PDS\C3D\54900030\SHETSPLAN\090201-XS.DWG  
LAYOUT NAME - 090204

PLOT DATE : 1/16/2018 1:25 PM

PLOT BY : ANDERSON, SHAUN M

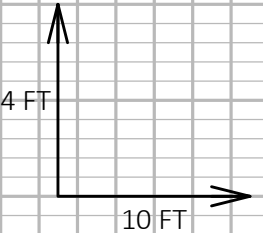
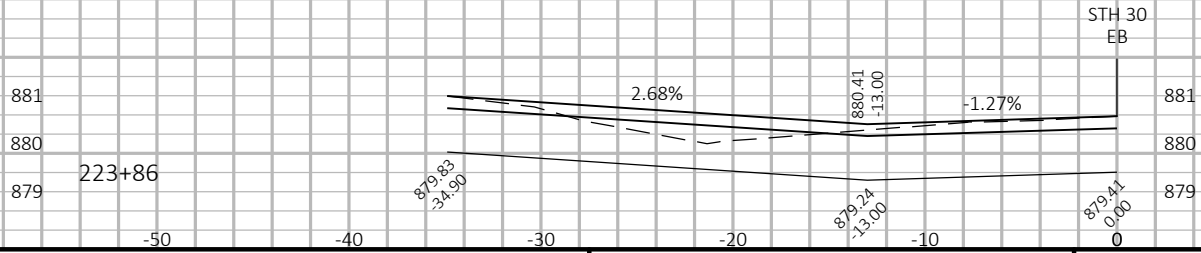
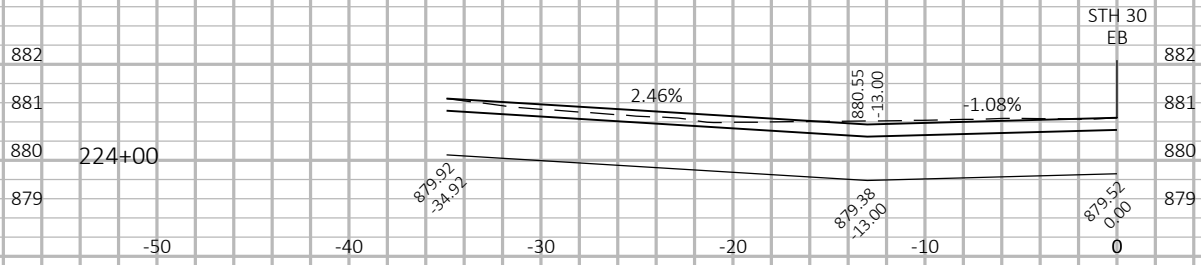
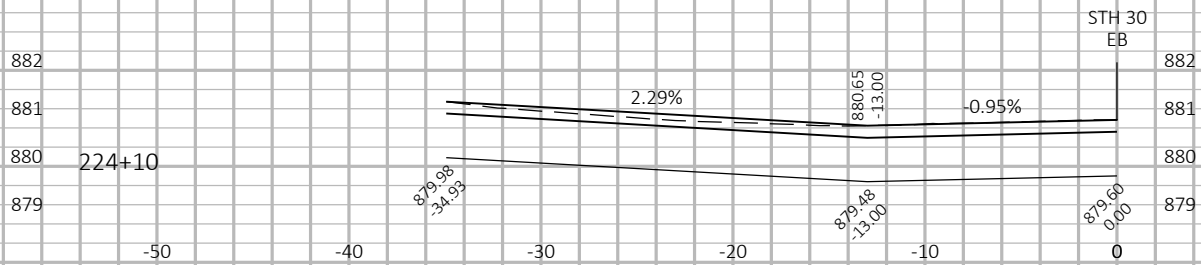
PLOT NAME :

PLOT SCALE : 1 IN=10 FT HORIZ. / 1 IN=4 FT VERT.

WISDOT/CADDs SHEET 49



9

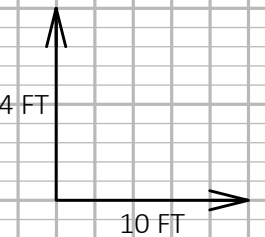
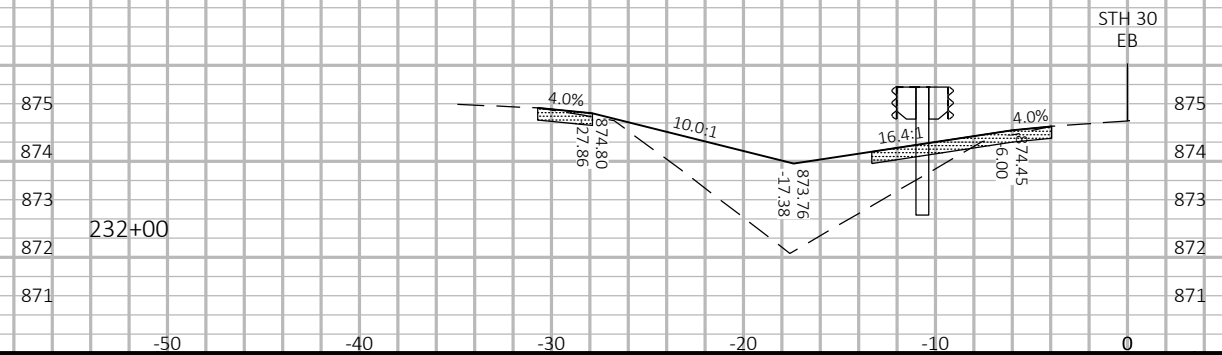
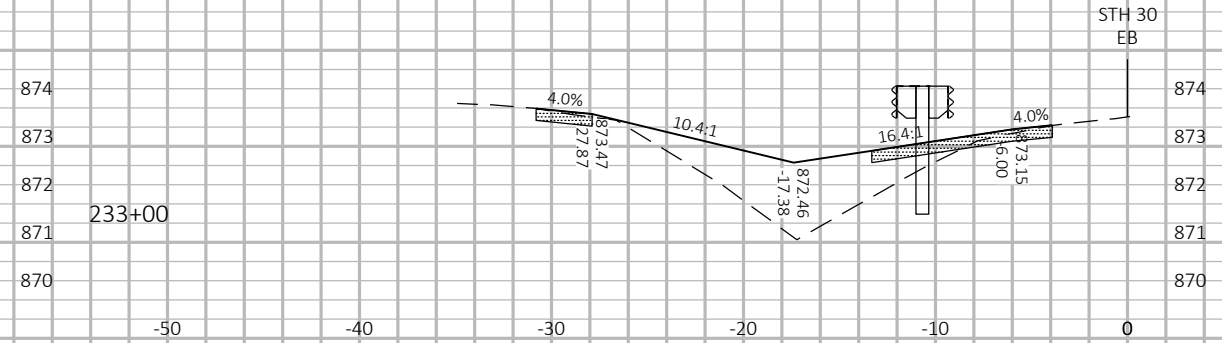
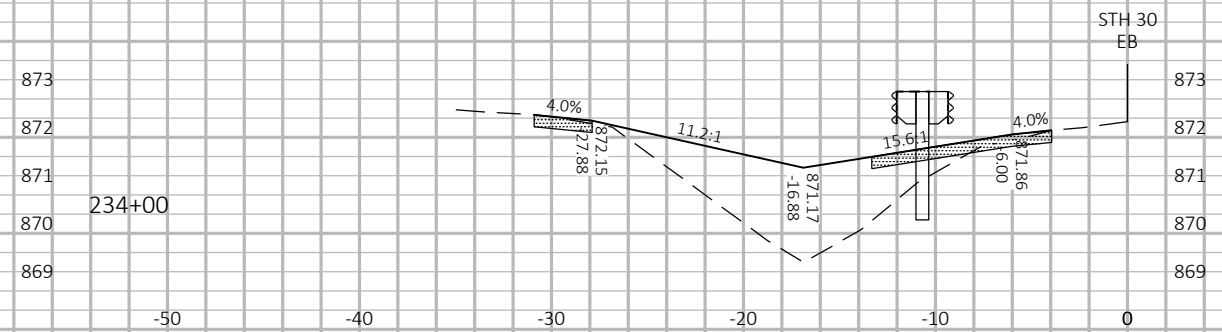
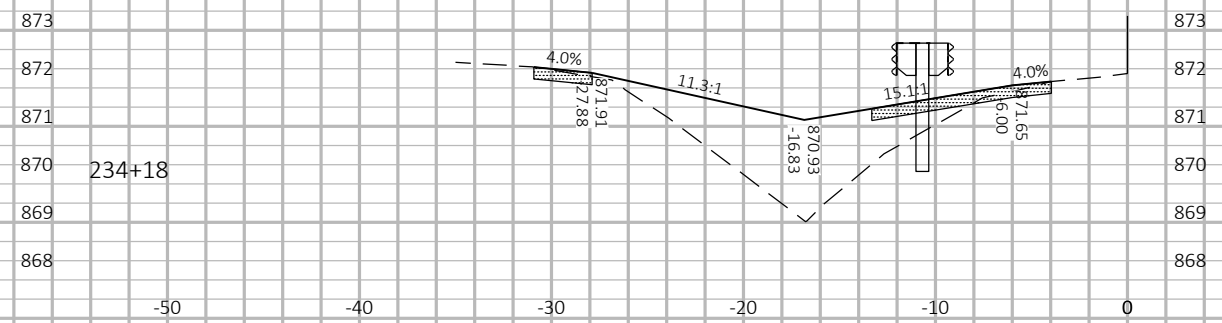
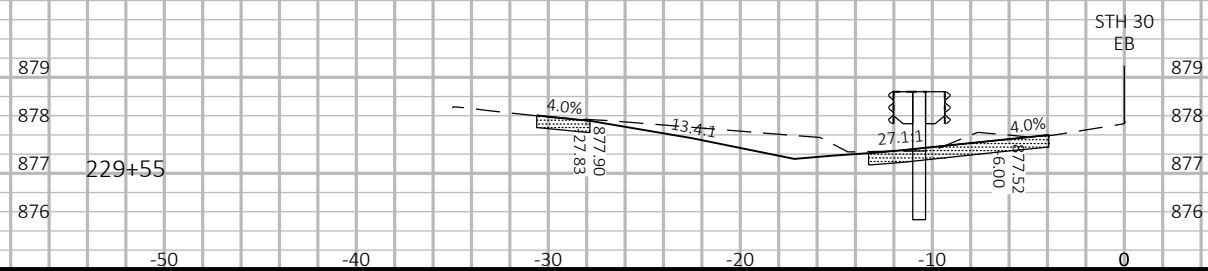
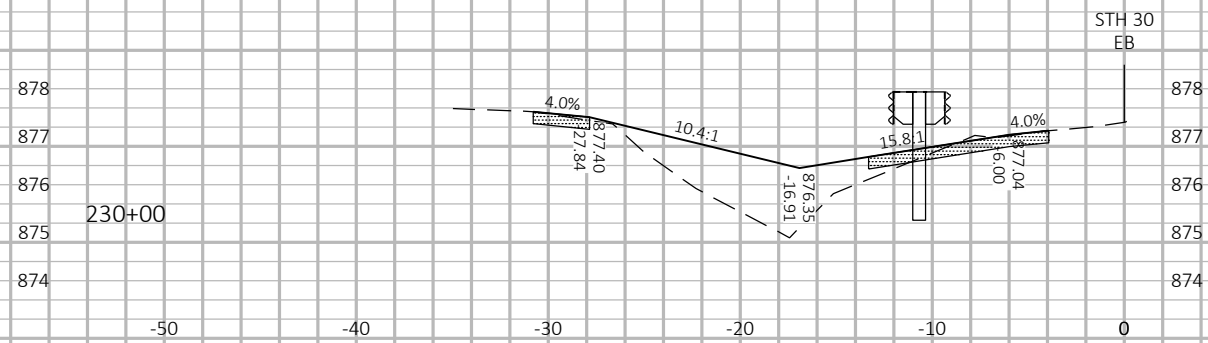
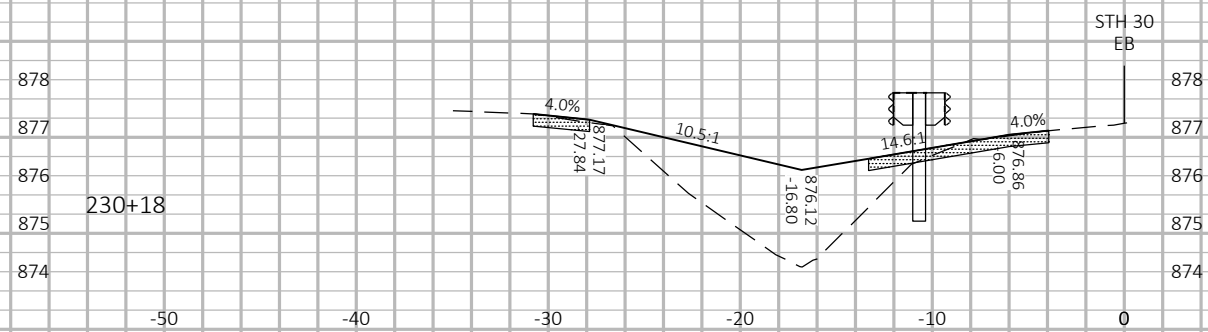
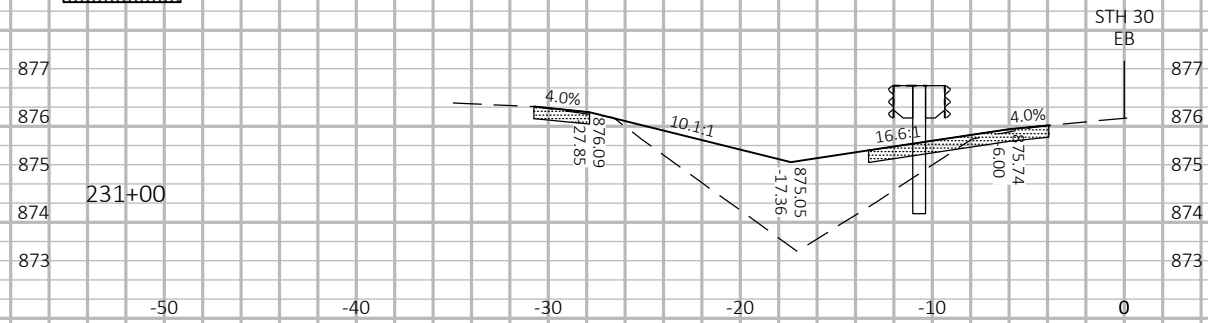


9





3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET

87

FILE NAME : N:\PDS\C3D\54900030\SHEETSPLAN\090201-XS.DWG  
LAYOUT NAME - 090205

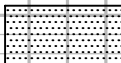
PLOT DATE : 1/16/2018 1:25 PM

PLOT BY : ANDERSON, SHAUN M

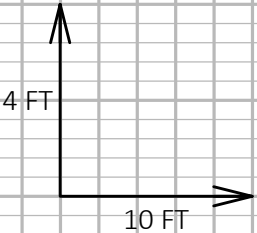
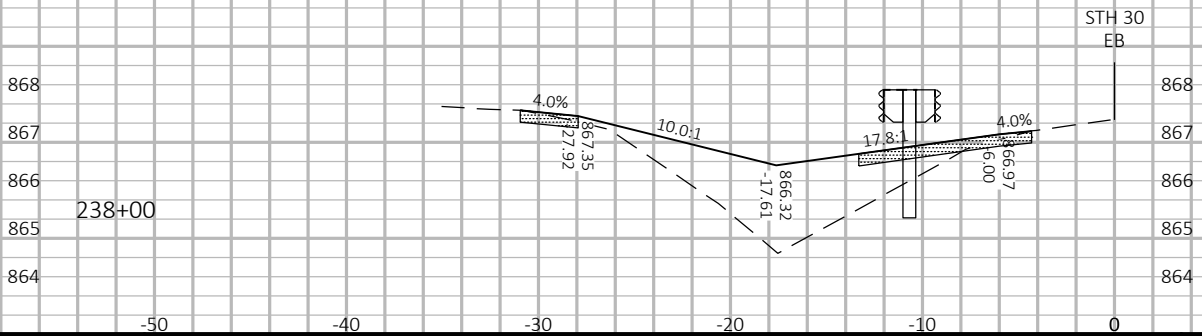
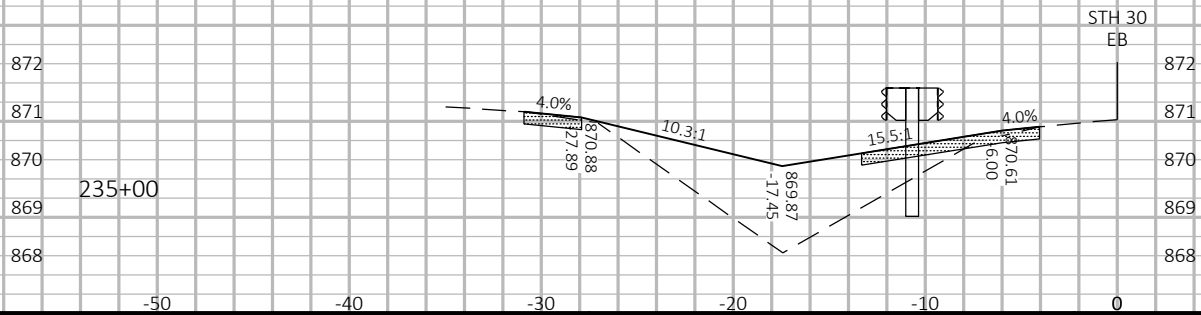
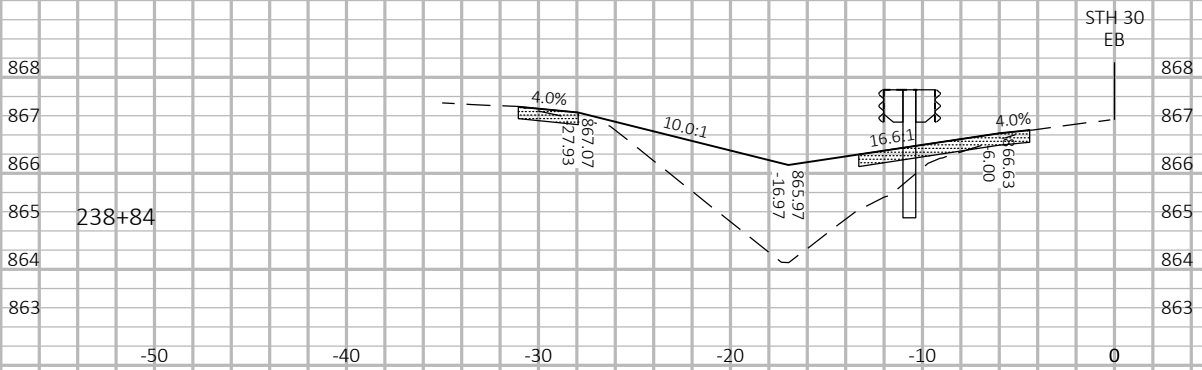
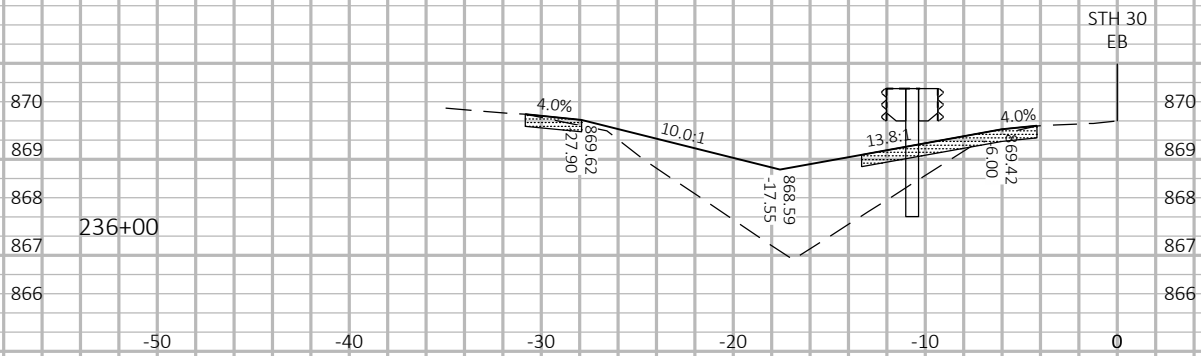
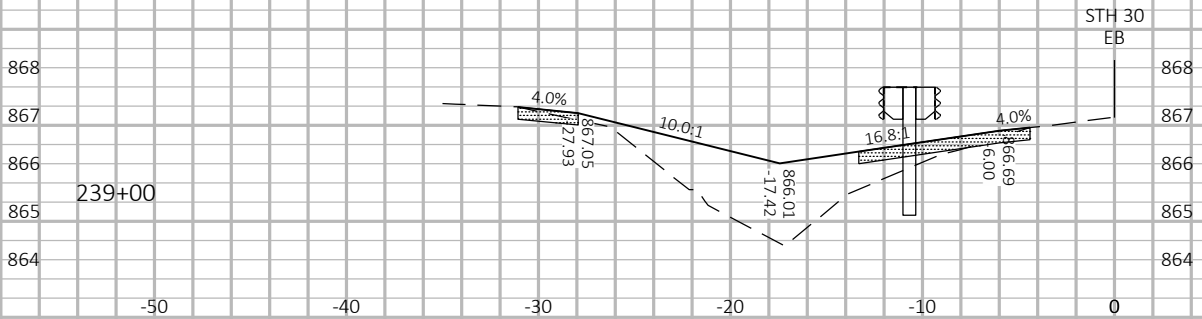
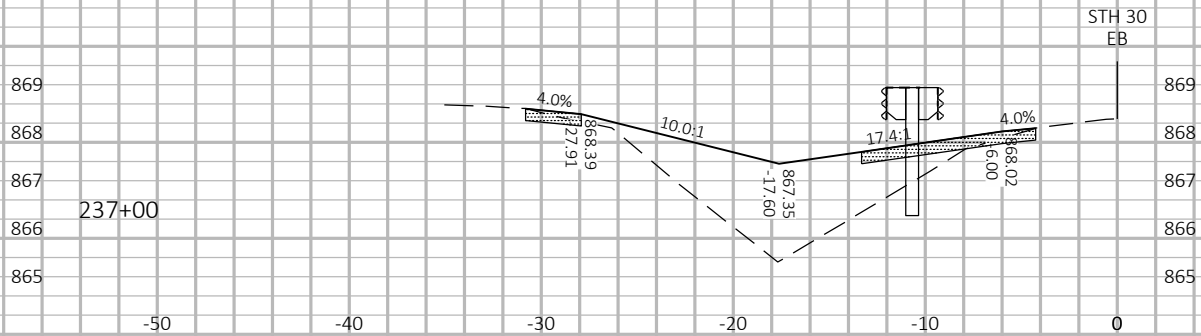
PLOT NAME :

PLOT SCALE : 1 IN=10 FT HORZ. / 1 IN=4 FT VERT.

WISDOT/CADDs SHEET 49

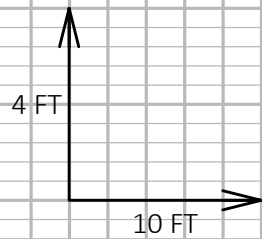
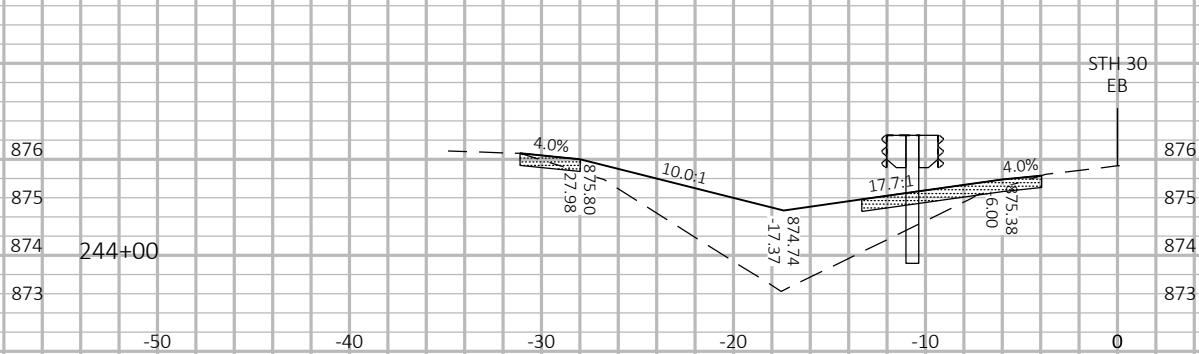
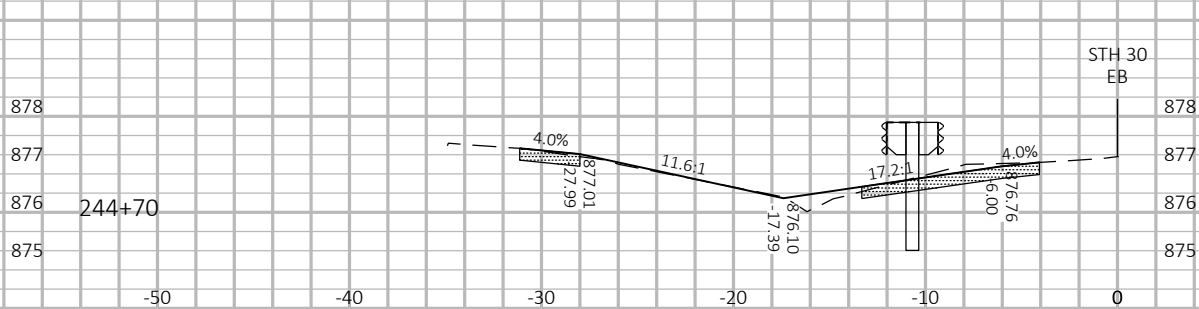
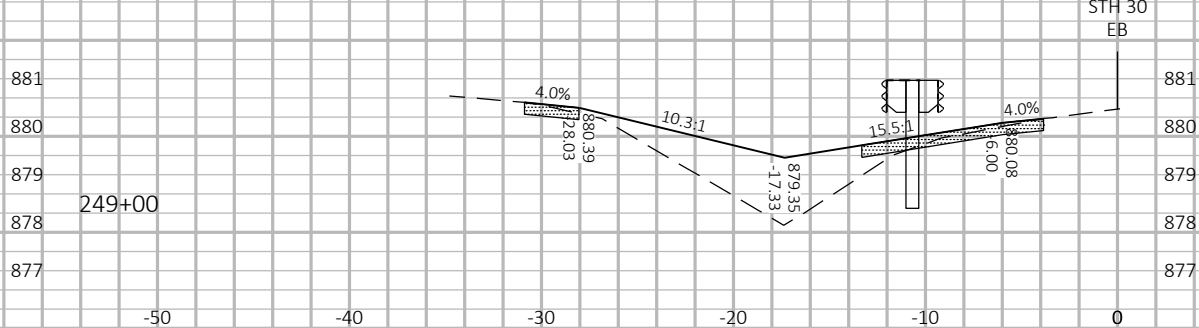
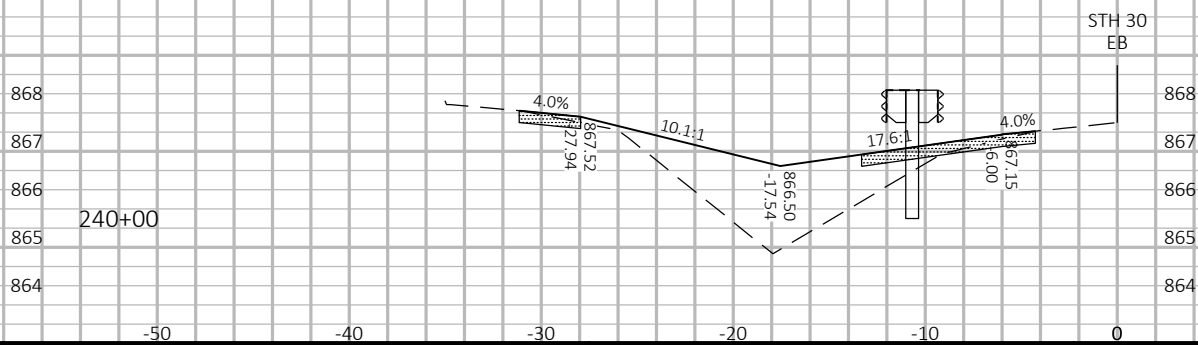
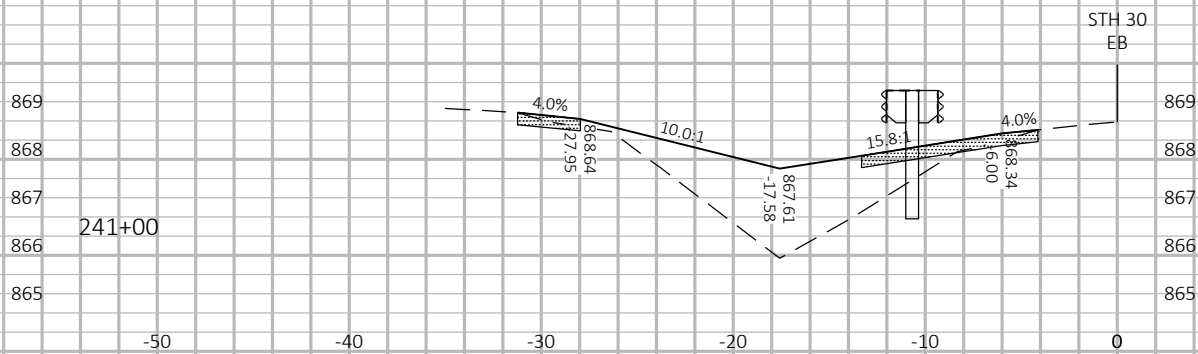
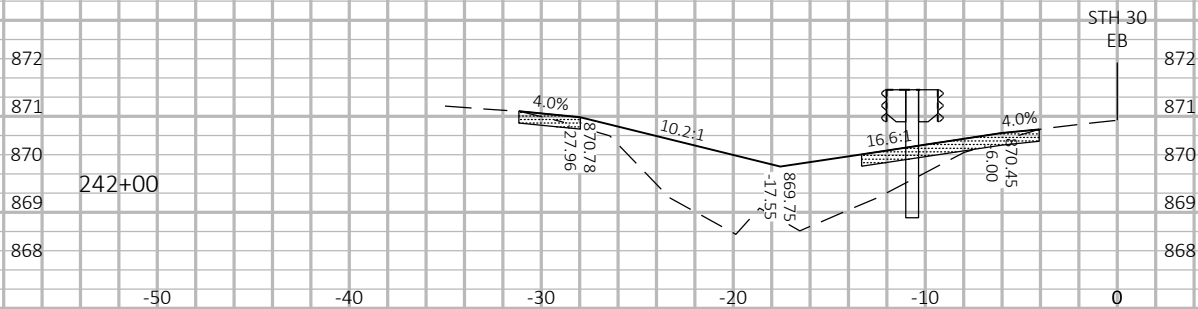
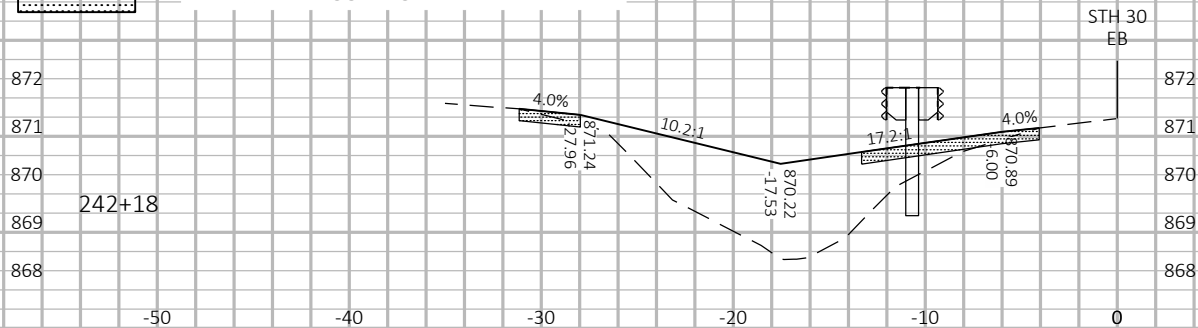


3/4" Base Aggeragate





3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET

89

E

FILE NAME : N:\PDS\C3D\54900030\SHEETSPLAN\090201-XS.DWG  
LAYOUT NAME - 090207

PLOT DATE : 1/16/2018 1:25 PM

PLOT BY : ANDERSON, SHAUN M

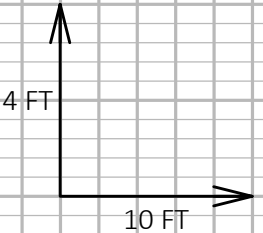
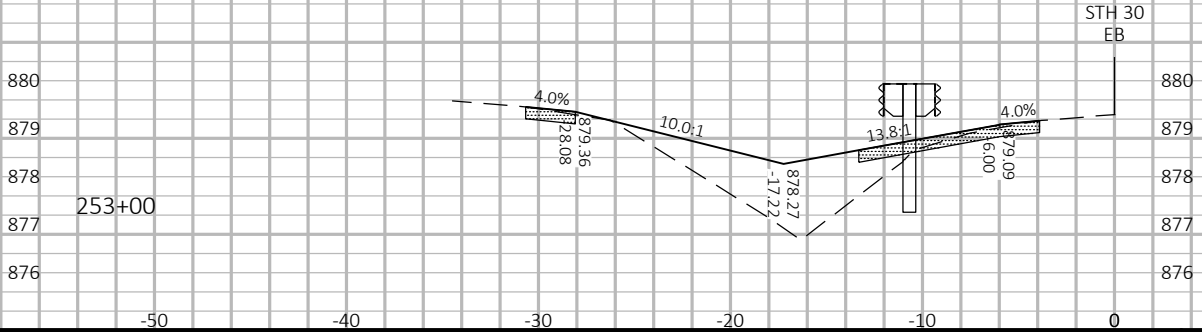
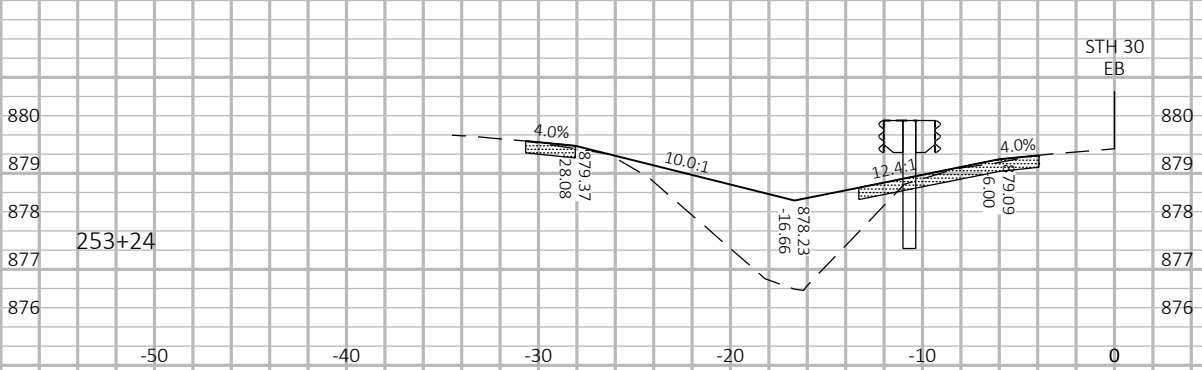
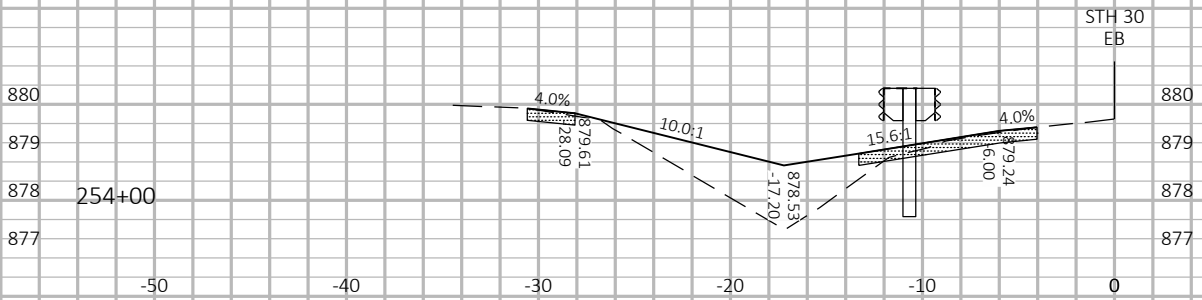
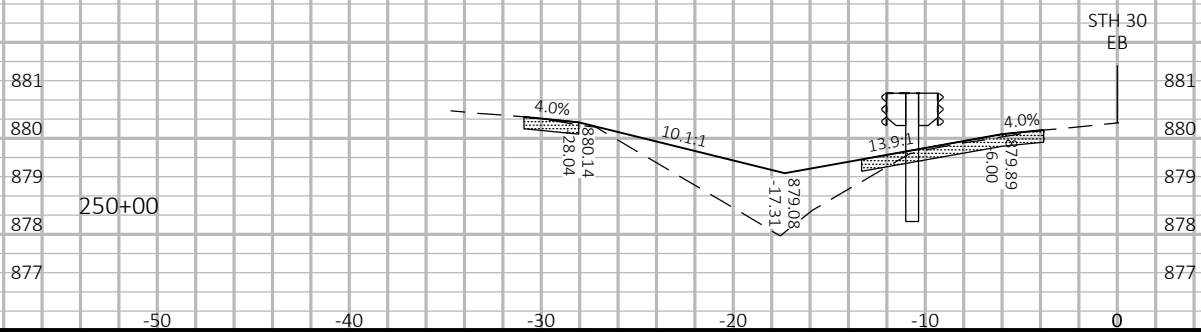
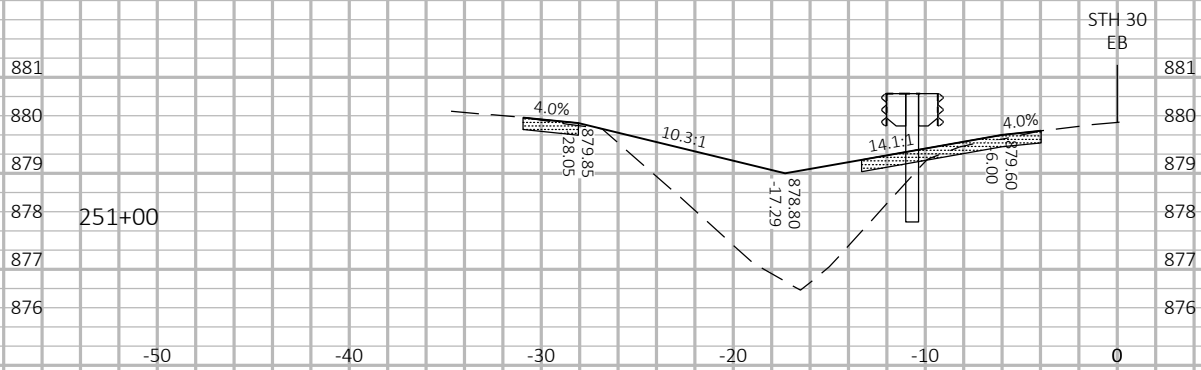
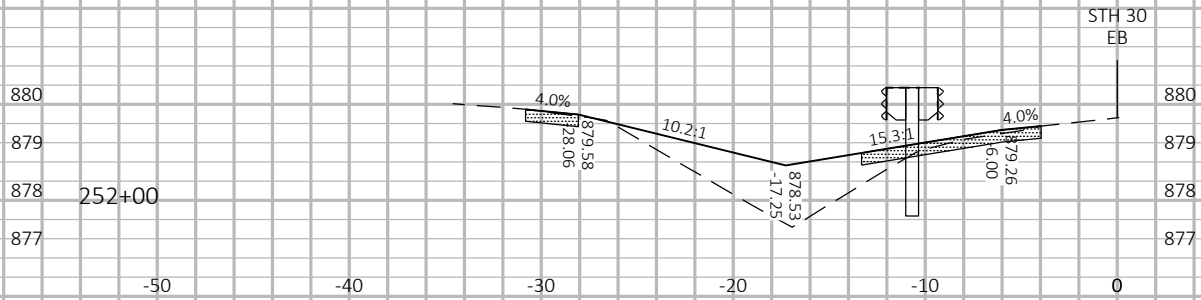
PLOT NAME :

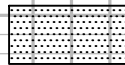
PLOT SCALE : 1 IN=10 FT HORIZ. / 1 IN=4 FT VERT.

WISDOT/CADDs SHEET 49

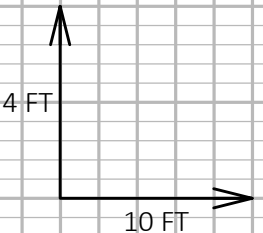
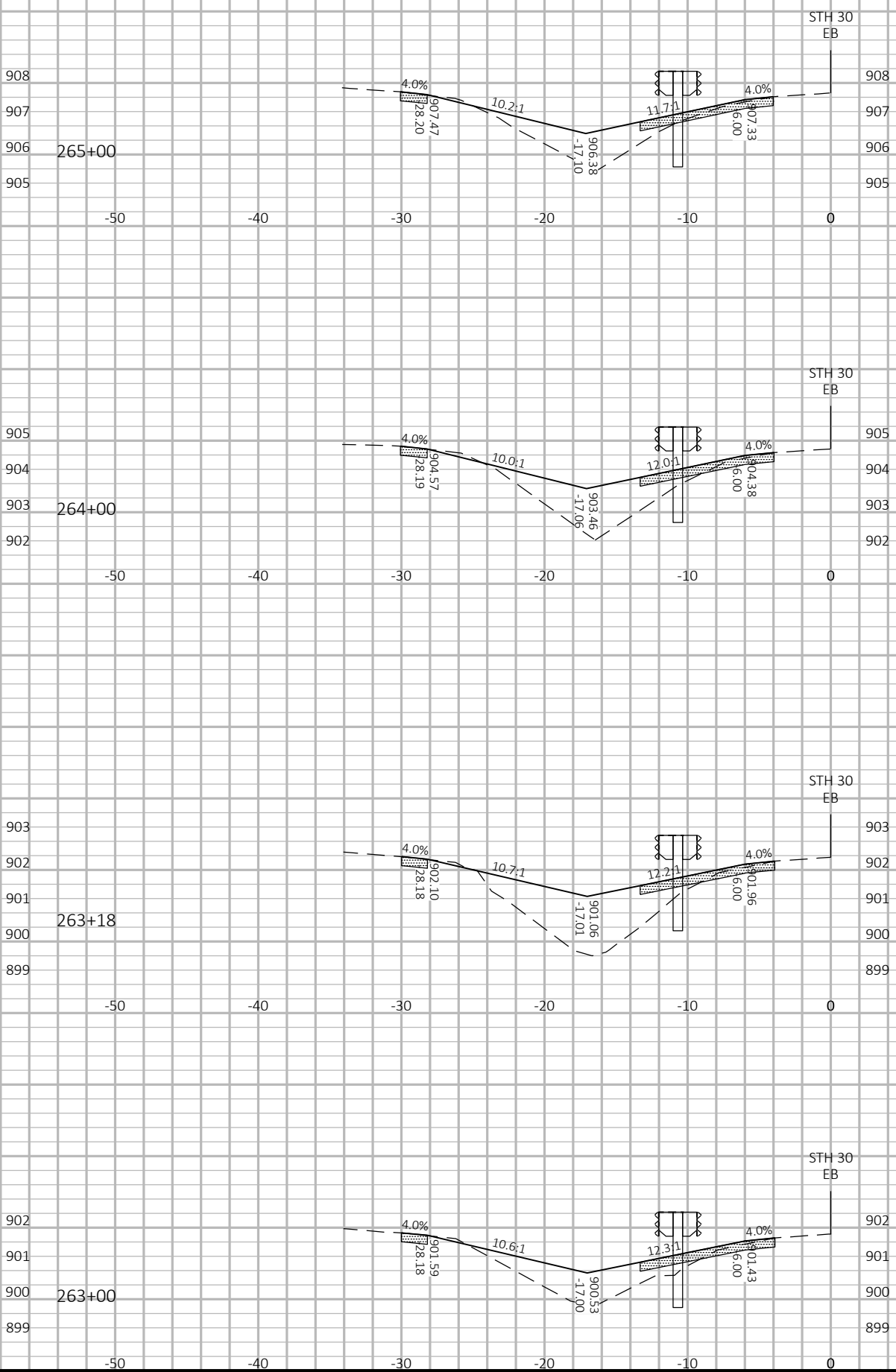
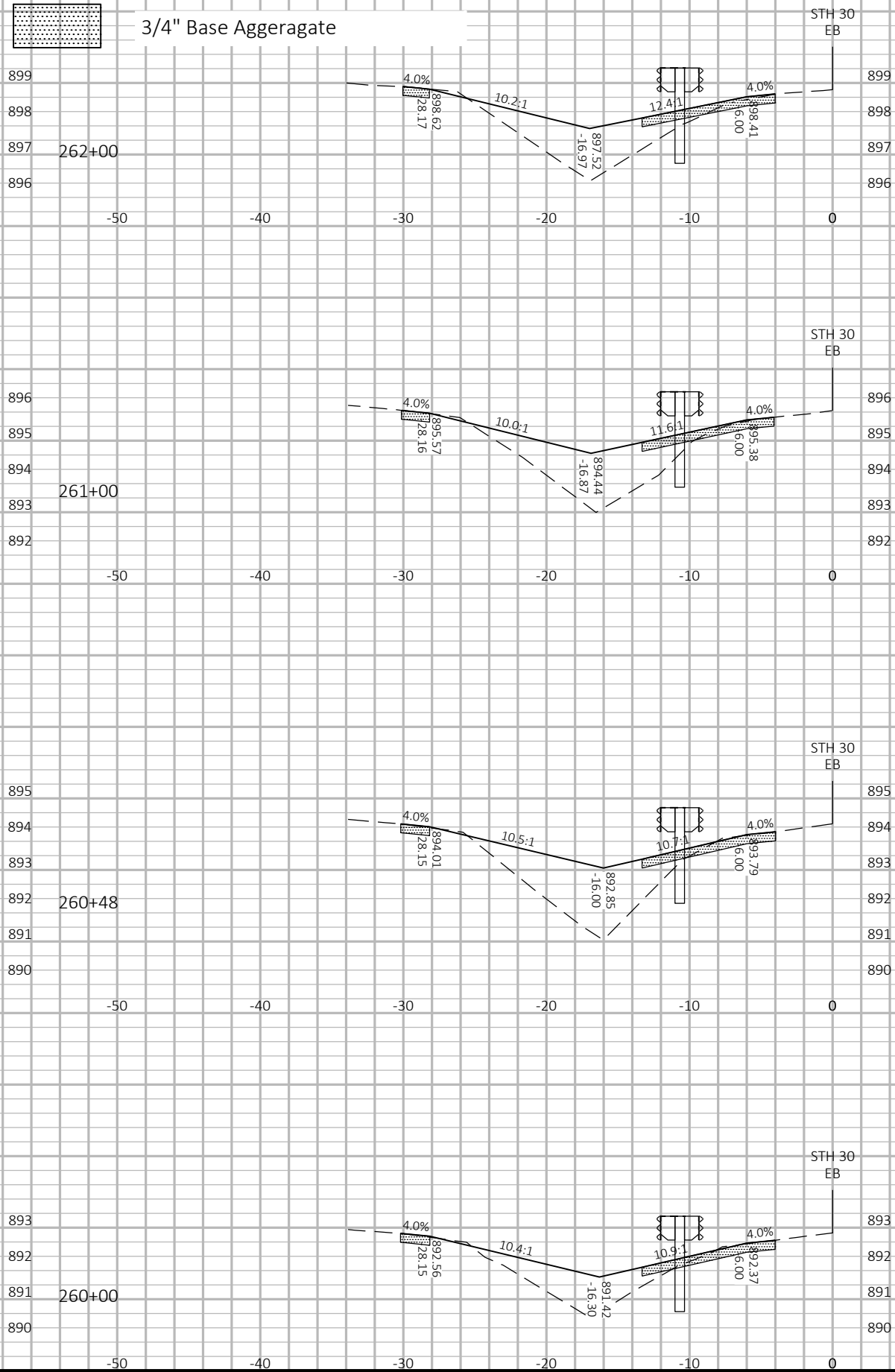


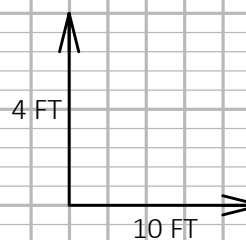
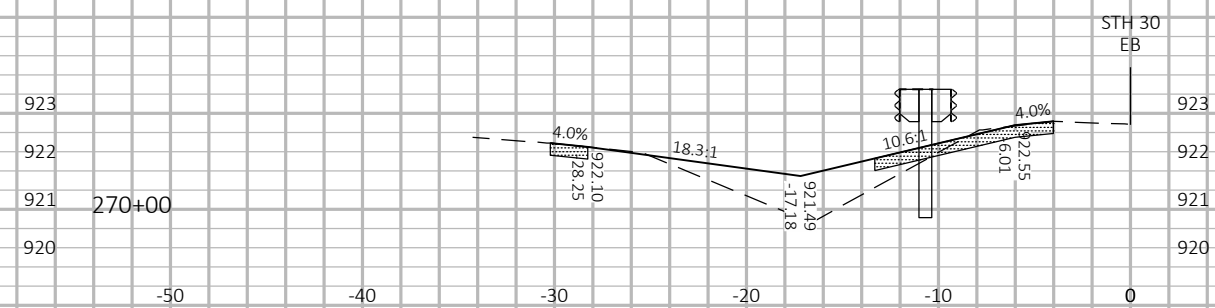
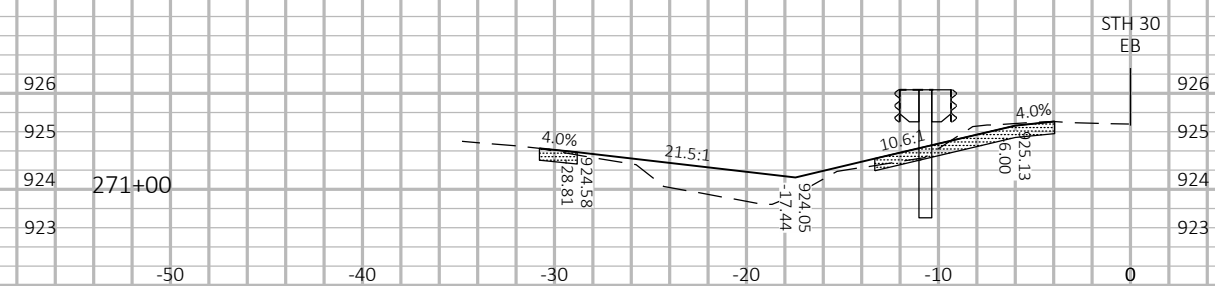
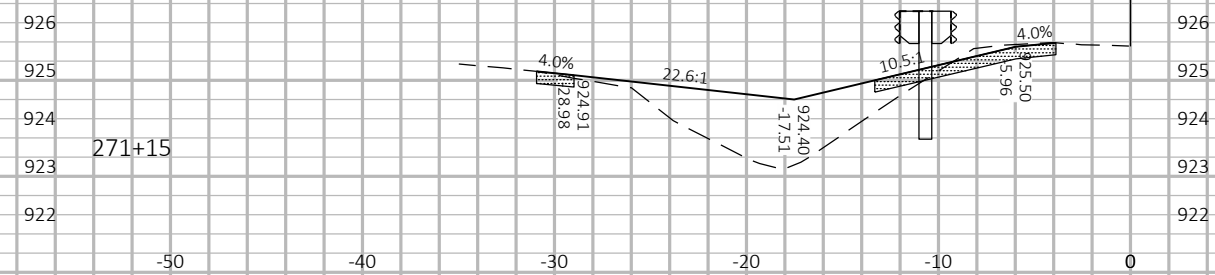
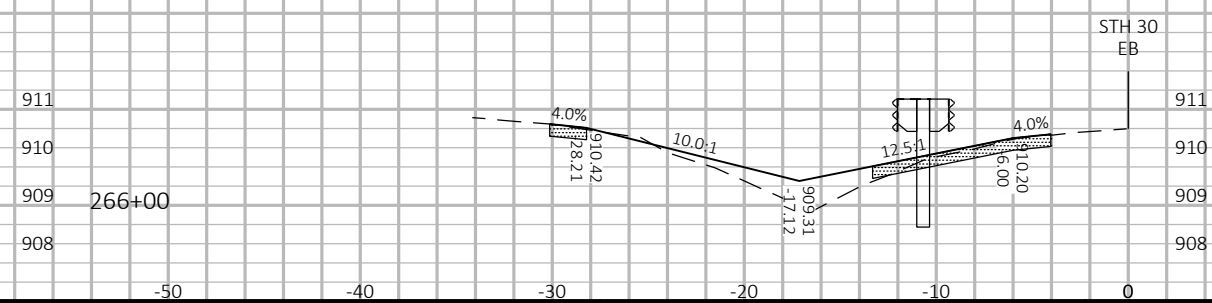
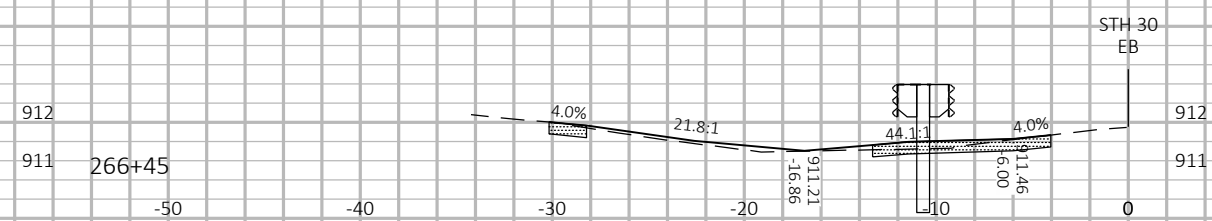
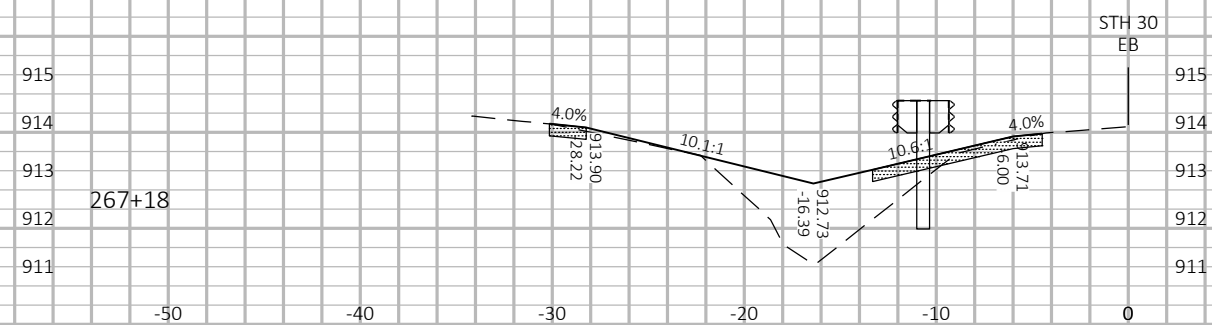
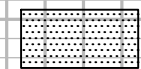
3/4" Base Aggeragate



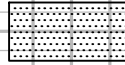


3/4" Base Aggeragate

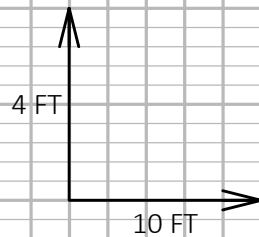
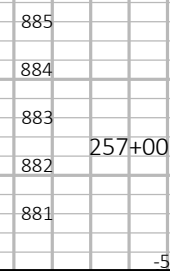
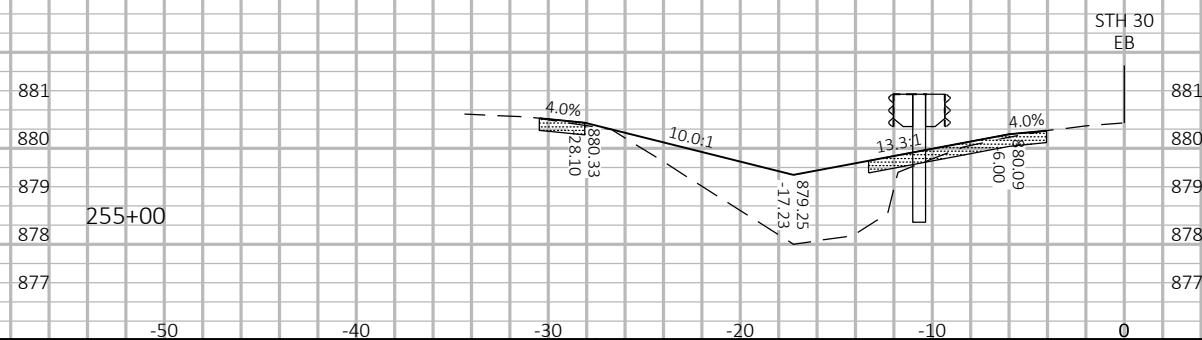
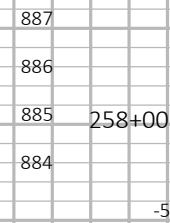
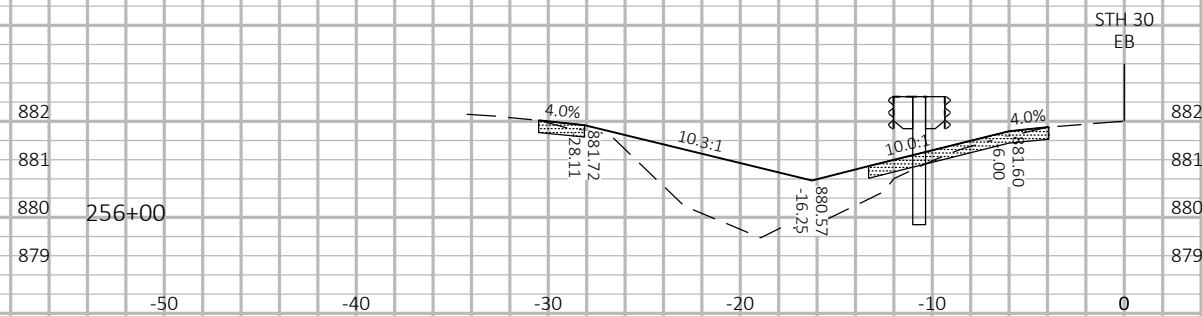
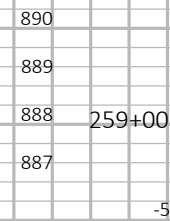








3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET

93

E

FILE NAME : N:\PDS\C3D\54900030\SHETSPLAN\090201-XS.DWG  
LAYOUT NAME - 090209

PLOT DATE : 1/16/2018 1:25 PM

PLOT BY : ANDERSON, SHAUN M

PLOT NAME :

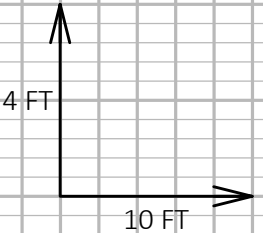
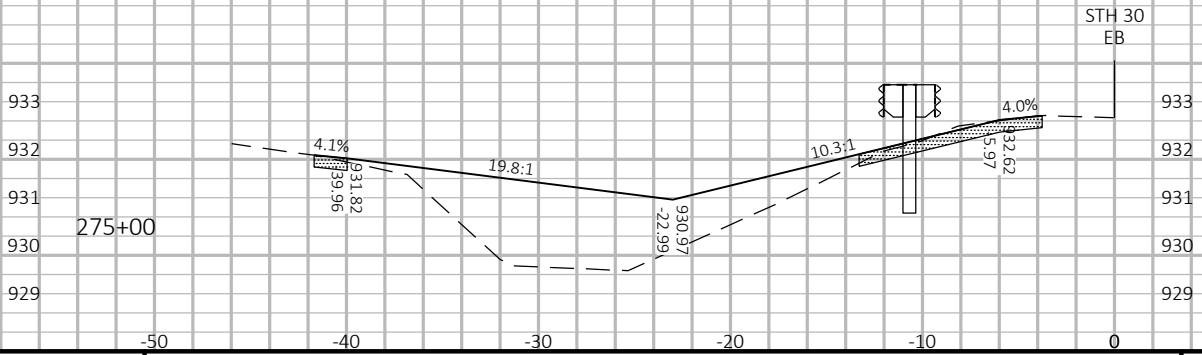
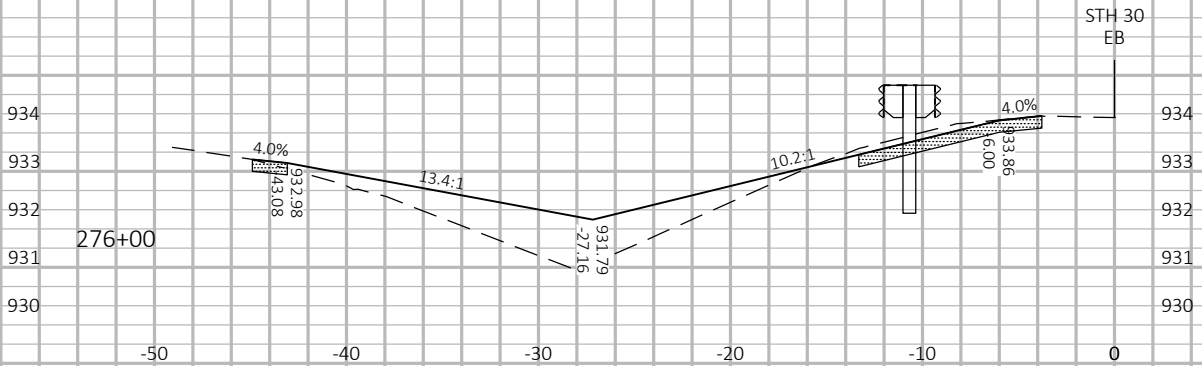
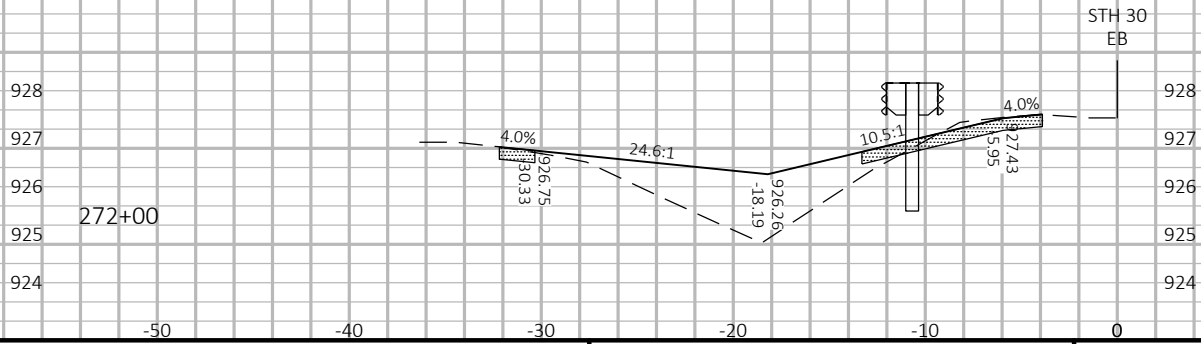
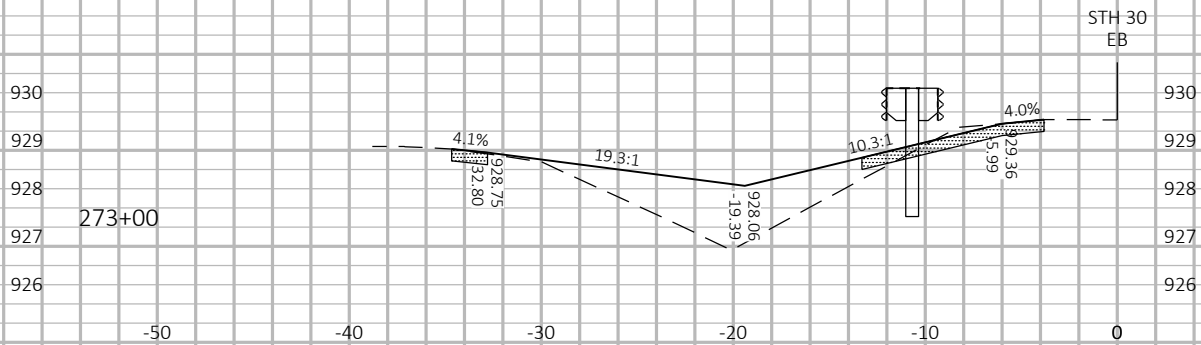
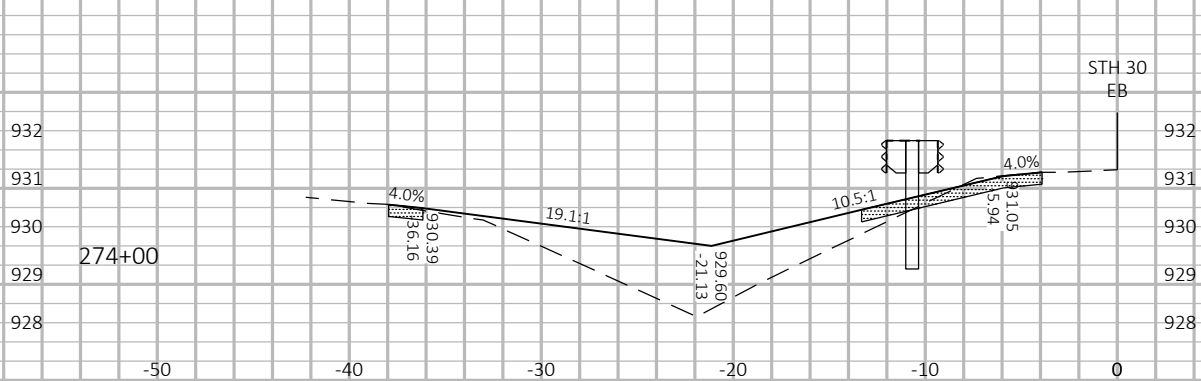
PLOT SCALE : 1 IN=10 FT HORZ. / 1 IN=4 FT VERT.

WISDOT/CADDs SHEET 49





3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET

94

E

FILE NAME : N:\PDS\C3D\54900030\SHEETS\PLAN\090201-XS.DWG  
LAYOUT NAME - 090212

PLOT DATE : 1/16/2018 1:25 PM

PLOT BY : ANDERSON, SHAUN M

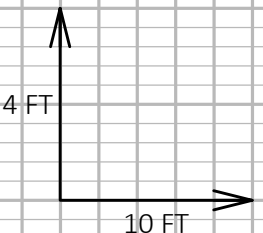
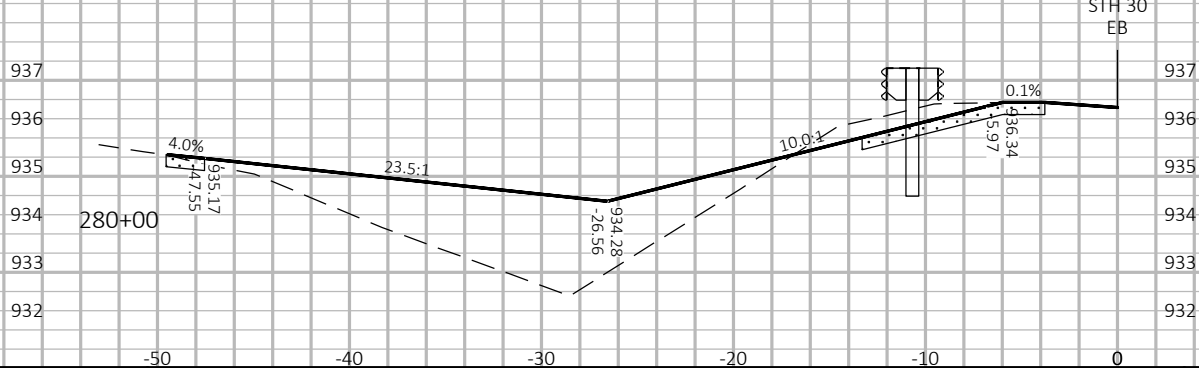
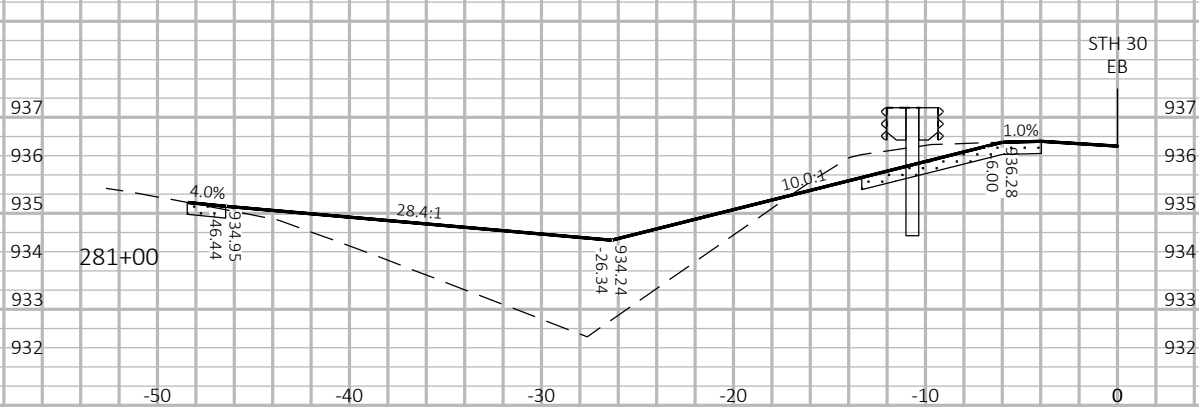
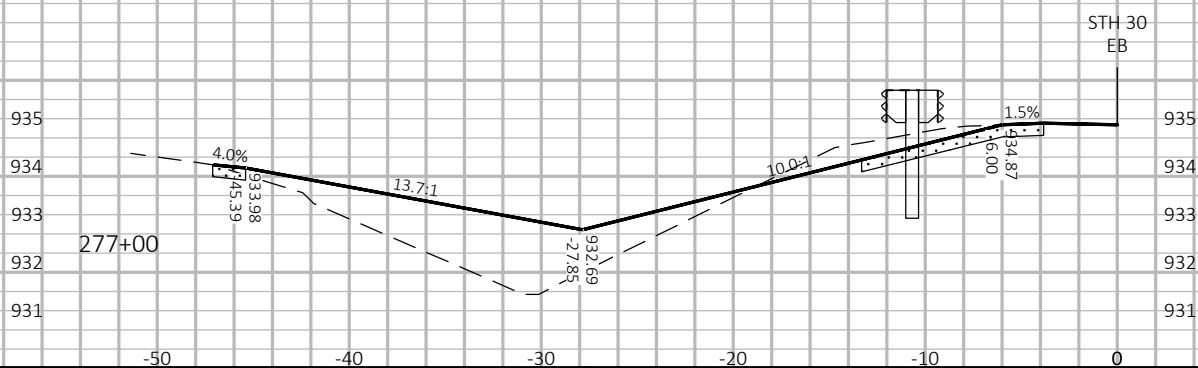
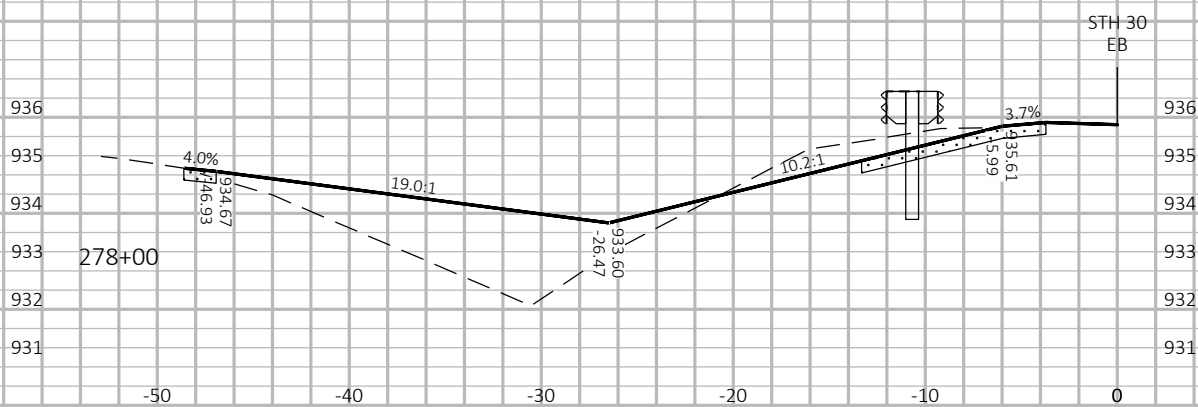
PLOT NAME :

PLOT SCALE : 1 IN=10 FT HORZ. / 1 IN=4 FT VERT.

WISDOT/CADDs SHEET 49



3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET 95

E

FILE NAME : N:\PDS\C3D\54900030\SHEETPLAN\090201-XS\_20180504.DWG  
LAYOUT NAME - 090213

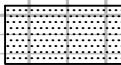
PLOT DATE : 5/4/2018 1:36 PM

PLOT BY : ANDERSON, SHAUN M

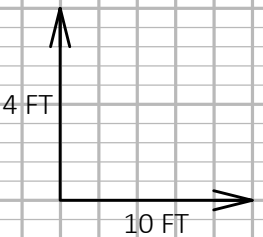
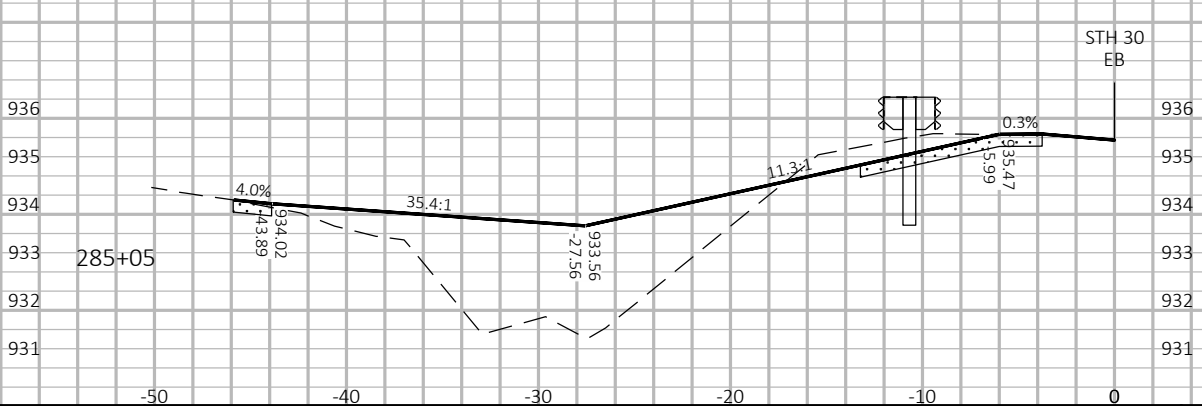
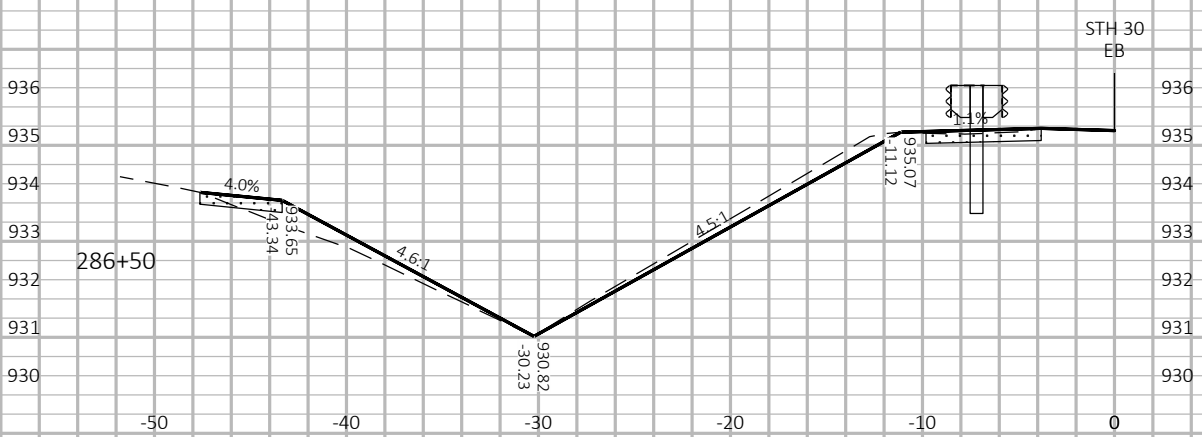
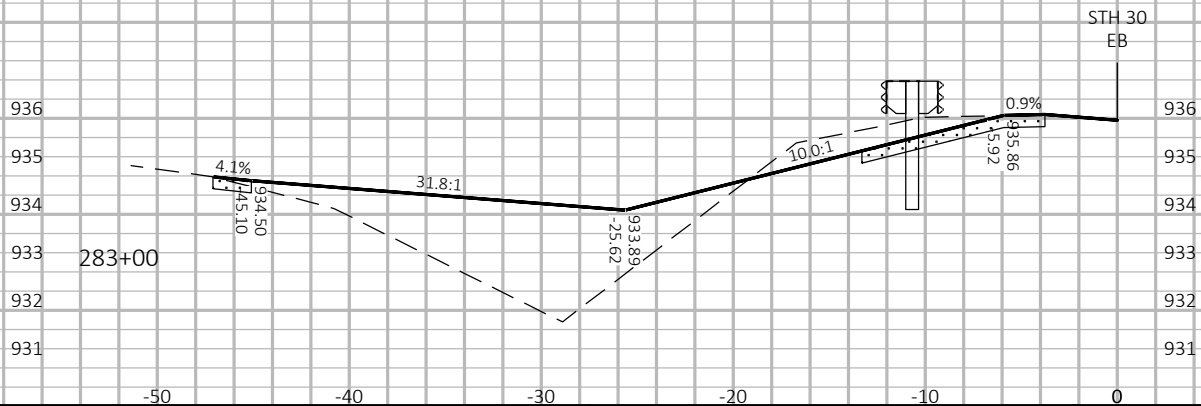
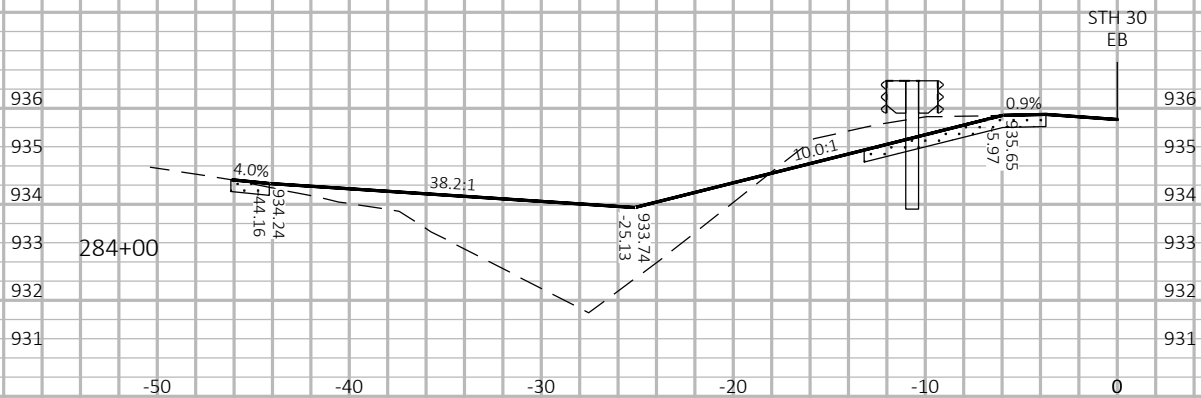
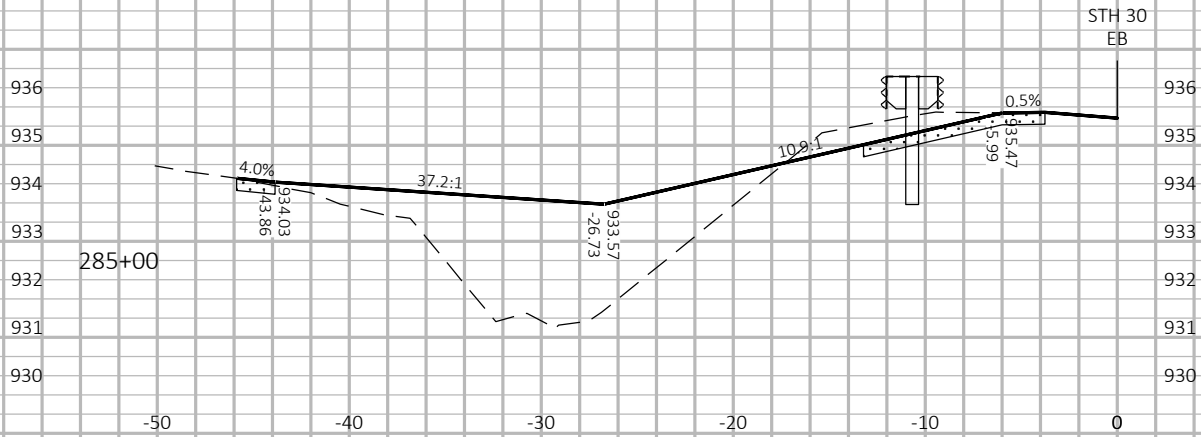
PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:4 FT VERT.

WISDOT/CADDs SHEET 49



3/4" Base Aggeragate



PROJECT NO: 5490-00-60

HWY: STH 30

COUNTY: DANE

CROSS SECTIONS: STH 30

SHEET 96

E

FILE NAME : N:\PDS\C3D\54900030\SHEETPLAN\090201-XS\_20180504.DWG  
LAYOUT NAME - 090214

PLOT DATE : 5/4/2018 1:37 PM

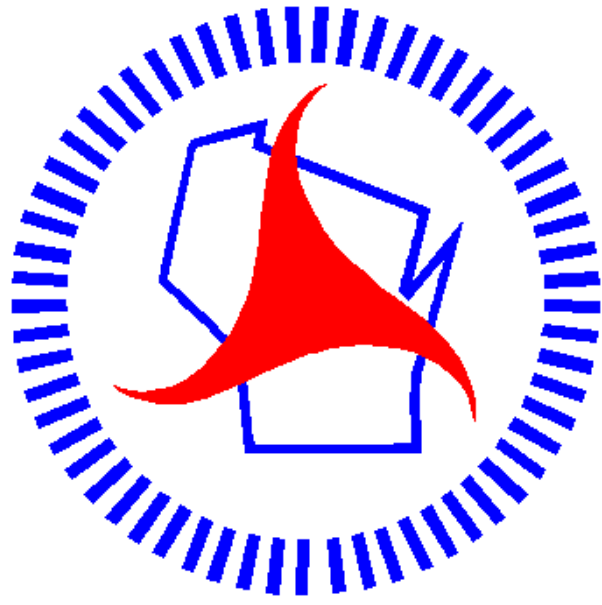
PLOT BY : ANDERSON, SHAUN M

PLOT NAME :

PLOT SCALE : 1 IN=10 FT HORZ. / 1 IN=4 FT VERT.

WISDOT/CADDs SHEET 49

## Notes



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

Dedicated people creating transportation solutions through innovation and exceptional service.

<http://www.dot.wisconsin.gov>