



# Wisconsin Department of Transportation

## Division of Transportation Systems Development

Bureau of Project Development  
4822 Madison Yards Way, 4<sup>th</sup> Floor South  
Madison, WI 53705

February 3, 2022

Telephone: (608) 266-1631  
Facsimile (FAX): (608) 266-8459

### NOTICE TO ALL CONTRACTORS:

**Proposal #10: 1228-09-73**  
**IH 43 North South Freeway**  
**Mitchell I/C to Marquette I/C**  
**IH 43**  
**Milwaukee County**

### Letting of February 8, 2022

This is Addendum No. 02, which provides for the following:

#### Special Provisions:

Revised Special Provisions	
Article No.	Description
3	Prosecution and Progress

Added Special Provisions	
Article No.	Description
73	Utility Line Opening (ULO), Item SPV.0060.0009
74	Concrete Barrier Transition Special, Item SPV.0060.0010
75	Sawing Concrete Curb Head, Item SPV.0090.0004

#### Schedule of Items:

Revised Bid Item Quantities					
Bid Item	Item Description	Unit	Old Quantity	Revised Quantity	Proposal Total
204.0150	Removing Curb and Gutter	LF	273	232	505
416.0610	Drilled Tie Bars	EA	7,019	97	7,116
509.2100.S	Concrete Masonry Deck Repair	CY	7	-4	3
625.0100	Topsoil	SY	315	867	1,182
627.0200	Mulching	SY	242	867	1,109
630.0130	Seeding Mixture No. 30	LB	4	16	20
690.0250	Sawing Concrete	LF	54,380	236	54,616
SPV.0180.0001	Resin Binder High Friction Surface Treatment	SY	25,456	-3,895	21,561

<b>Added Bid Item Quantities</b>					
Bid Item	Item Description	Unit	Old Quantity	Revised Quantity	Proposal Total
205.0100	Excavation Common	CY	0	150	150
208.0100	Borrow	CY	0	150	150
415.0090	Concrete Pavement 9-Inch	SY	0	157	157
614.0010	Barrier System Grading Shaping Finishing	EA	0	1	1
614.0805	Crash Cushions Permanent Low Maintenance	EA	0	1	1
614.2300	MGS Guardrail 3	LF	0	288	288
614.2500	MGS Thrie Beam Transition	LF	0	40	40
614.2620	MGS Guardrail Terminal Type 2	EA	0	1	1
628.1504	Silt Fence	LF	0	350	350
628.1520	Silt Fence Maintenance	LF	0	350	350
SPV.0035.0001	Rapid Set Deck Repair	CY	0	5	5
SPV.0060.0009	Utility Line Opening (ULO)	EA	0	3	3
SPV.0060.0010	Concrete Barrier Transition Special	EA	0	1	1
SPV.0090.0004	Fence Chain Link 6-FT. B-40-286-24B	LF	0	375	375
SPV.0090.0005	Sawing Concrete Curb Head	LF	0	326	326

**Plan Sheets:**

<b>Revised Plan Sheets</b>	
Plan Sheet	Plan Sheet Title (brief description of changes to sheet)
17	Construction Detail - Revised to clarify scope
18	Construction Detail - Revised to clarify scope
37	Construction Detail - Revised to clarify scope
38	Construction Detail - Revised to clarify scope
362	Miscellaneous Quantities - Revisions
374A	Miscellaneous Quantities – Additional bid items

<b>Added Plan Sheets</b>	
Plan Sheet	Plan Sheet Title (brief description of why sheet was added)
18A	Construction Detail – Added barrier at National Avenue SB off ramp
18B	Construction Detail – Added barrier at National Avenue SB off ramp
411A	SDD 14B32-a Concrete Barrier Single Slope (CBSS)
411B	SDD 14B32-b Concrete Barrier Single Slope (CBSS)
411C	SDD 14B32-c Concrete Barrier Single Slope (CBSS)
411D	SDD 14B32-d Concrete Barrier Single Slope (CBSS)
411E	SDD 14B32-e Concrete Barrier Single Slope (CBSS)
411F	SDD 14B32-f Concrete Barrier Single Slope (CBSS)
411G	SDD 14B32-g Concrete Barrier Single Slope (CBSS)
411H	SDD 14B32-h Concrete Barrier Single Slope (CBSS)
411I	SDD 14B33-g Concrete Barrier Single Slope 42" Thrie Beam Anchor – Barrier Layout
411J	SDD 14B33-h Concrete Barrier Single Slope 42" Thrie Beam Anchor – Barrier Layout
411K	SDD 14B42-a Midwest Guardrail System (MGS) Guardrail
411L	SDD 14B42-b Midwest Guardrail System (MGS) Guardrail
411M	SDD 14B42-c Midwest Guardrail System (MGS) Guardrail
411N	SDD 14B42-d Midwest Guardrail System (MGS) Guardrail
411O	SDD 14B45-5a Midwest Guardrail System Thrie Beam Transition (MGS)
411P	SDD 14B45-5b Midwest Guardrail System Thrie Beam Transition (MGS)

411Q	SDD 14B45-5c Midwest Guardrail System Thrie Beam Transition (MGS)
411R	SDD 14B45-5d Midwest Guardrail System Thrie Beam Transition (MGS)
411S	SDD 14B45-5e Midwest Guardrail System Thrie Beam Transition (MGS)
411T	SDD 14B45-5f Midwest Guardrail System Thrie Beam Transition (MGS)
411U	SDD 14B45-5g Midwest Guardrail System Thrie Beam Transition (MGS)
411V	SDD 14B45-5h Midwest Guardrail System Thrie Beam Transition (MGS)
411W	SDD 14B45-5i Midwest Guardrail System Thrie Beam Transition (MGS)
411X	SDD 14B45-5j Midwest Guardrail System Thrie Beam Transition (MGS)
411Y	SDD 14B45-5k Midwest Guardrail System Thrie Beam Transition (MGS)
411Z	SDD 14B45-5l Midwest Guardrail System Thrie Beam Transition (MGS)
411AA	SDD 14B47-a Midwest Guardrail System Type 2 Terminal
411AB	SDD 14B47-b Midwest Guardrail System Type 2 Terminal
411AC	SDD 14B47-c Midwest Guardrail System Type 2 Terminal
411AD	SDD 14B47-d Midwest Guardrail System Type 2 Terminal
411AE	SDD 14B47-e Midwest Guardrail System Type 2 Terminal
411AF	SDD 14B47-f Midwest Guardrail System Type 2 Terminal
411AG	SDD 14B47-g Midwest Guardrail System Type 2 Terminal

The responsibility for notifying potential subcontractors and suppliers of these changes remains with the prime contractor.

Sincerely,

*Mike Coleman*

Proposal Development Specialist  
Proposal Management Section

**ADDENDUM NO. 02**

**1228-09-73**

**February 3, 2022**

**Special Provisions**

**3. Prosecution and Progress**

*Add the following:*

**Freeway Work Restrictions - General**

Do not close freeway lanes or shoulders (including auxiliary lanes, system ramps, service ramps and CD roadway system) and ensure the roadway is entirely clear for traffic during Weekday Peak Hours and Weekend Peak Hours.

**3 Lane Segments**

One freeway lane and/or shoulder may be closed on the freeway and system ramps, during Weekday Off-Peak hours and Weekend Off-Peak Hours but it must be approved by the engineer.

Two freeway lanes or shoulders (including auxiliary lanes, system ramps, service ramps and CD roadway system) may be closed only during Night Time Hours but it must be approved by the engineer.

**4 Lane Segments**

Two freeway lanes and/or shoulder may be closed on the freeway and system ramps, during Weekday Off-Peak hours and Weekend Off-Peak Hours but it must be approved by the engineer.

Three freeway lanes or shoulders (including auxiliary lanes, system ramps, service ramps and CD roadway system) may be closed only during Night Time Hours but it must be approved by the engineer.

**73. Utility Line Opening (ULO), Item SPV.0060.0009.**

**A Description**

This work consists of excavating to uncover utilities for the purpose of determining elevation and potential conflicts as shown on the plans or as directed by the engineer.

**B (Vacant)**

**C Construction**

Perform the excavation in such a manner that the utility in question is not damaged.

Perform the utility line openings as soon as possible and at least 10 days in advance of proposed utility construction to allow any conflicts to be resolved with minimal disruption. Where utilities are within 6 feet of each other at a potential conflict location, only one utility line opening will be called for. In these cases, a single utility line opening will be considered full payment to locate multiple utilities. Provide utility line openings with a trench up to 10 feet long as measured at the trench bottom, and of any depth required to locate the intended utility.

Notify the utility engineers or their agents of this work a minimum of 3 working days prior to the work so they may be present when the work is completed. Do not perform utility line openings without the approval of the engineer.

**D Measurement**

The department will measure Utility Line Opening (ULO) as each individual ULO, acceptably completed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:



ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0009	Utility Line Opening (ULO)	EACH

Payment is full compensation for the excavation required to expose the utility line, backfilling with existing material removed from the excavation, compacting the backfill material, restoring the site, and for cleanup.

Existing pavement removal necessary to facilitate utility line openings will be considered part of or paid for under Utility Line Openings. Replacement pavement, concrete curb, gutter, and sidewalk items will be considered separate from Utility Line Openings and will be measured and paid for separately.

**74. Concrete Barrier Transition Special, Item SPV.0060.0010.**

**A Description**

This special provision describes constructing Concrete Barrier Transition (Type) according to standard spec 603, details shown in the plans, and as hereinafter provided.

**B (Vacant)**

**C (Vacant)**

**D Measurement**

The department will measure Concrete Barrier Transition (Type) by each individual unit, acceptably placed according to the contract.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0010	Concrete Barrier Transition Special	EACH

**75. Sawing Concrete Curb Head, Item SPV.0090.0005.**

**A Description**

This special provision describes sawing concrete curb head as shown on the plans and as hereinafter provided.

**B (Vacant)**

**C Construction**

Saw concrete curb head according to the applicable portions of standard spec 690. Remove and dispose of concrete curb head according to the applicable portions of standard spec 204.

**D Measurement**

The department will measure Sawing Concrete Curb Head by the linear foot, acceptably completed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.0005	Sawing Concrete Curb Head	LF

Payment is full compensation for furnishing all sawing; sludge removal; disposal of the concrete curb head; and restoring the work site. The department will pay separately for excavation and restoration items.

**Schedule of Items**

Attached, dated February 3, 2022, are the revised Schedule of Items Pages 1 – 12.

**Plan Sheets**

The following 8½ x 11-inch sheets are attached and made part of the plans for this proposal:

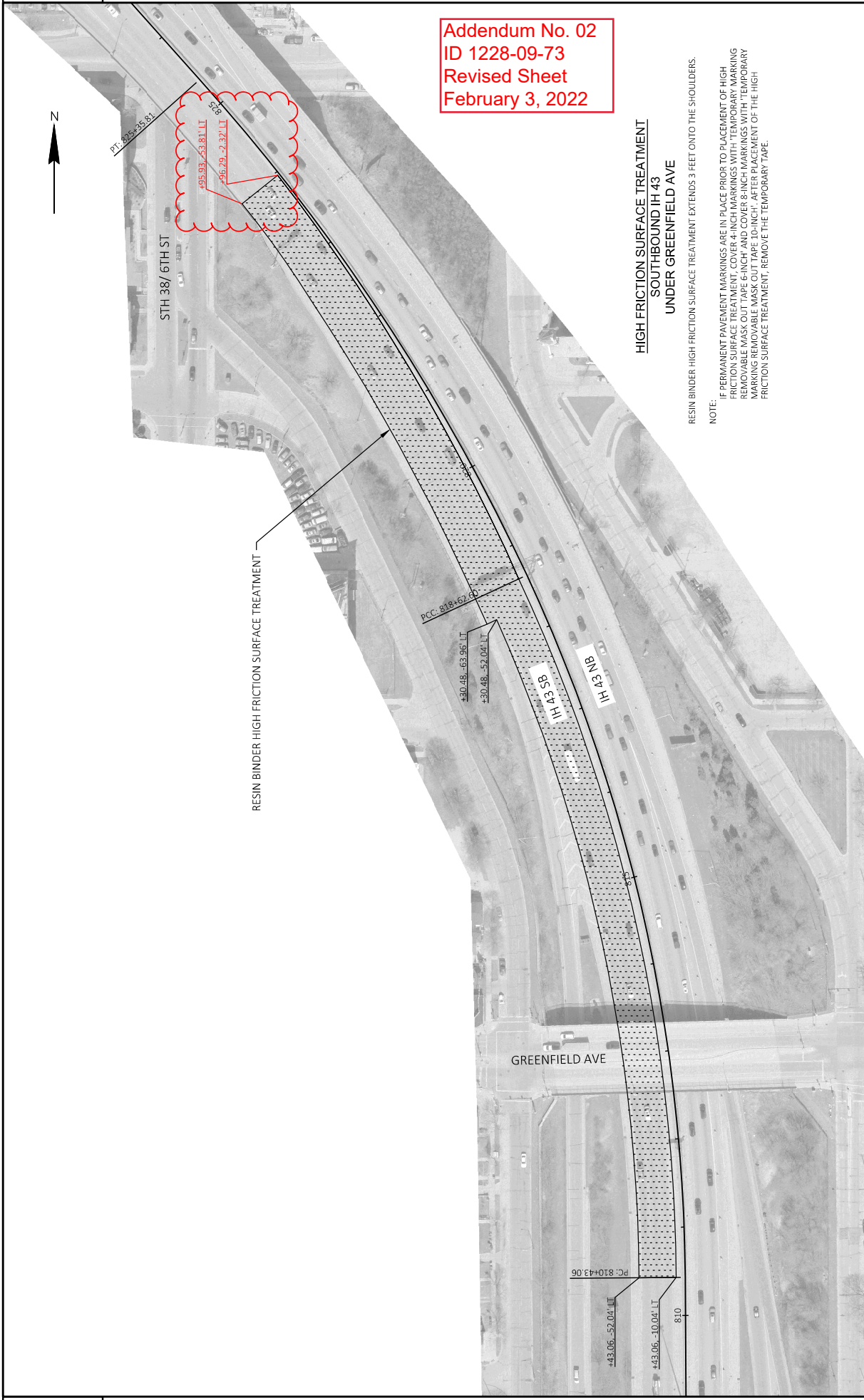
Revised: 17, 18, 37, 38, 362, 374A

Added: 18A, 18B, and 411A – 411AG

END OF ADDENDUM



Addendum No. 02  
ID 1228-09-73  
Revised Sheet  
February 3, 2022

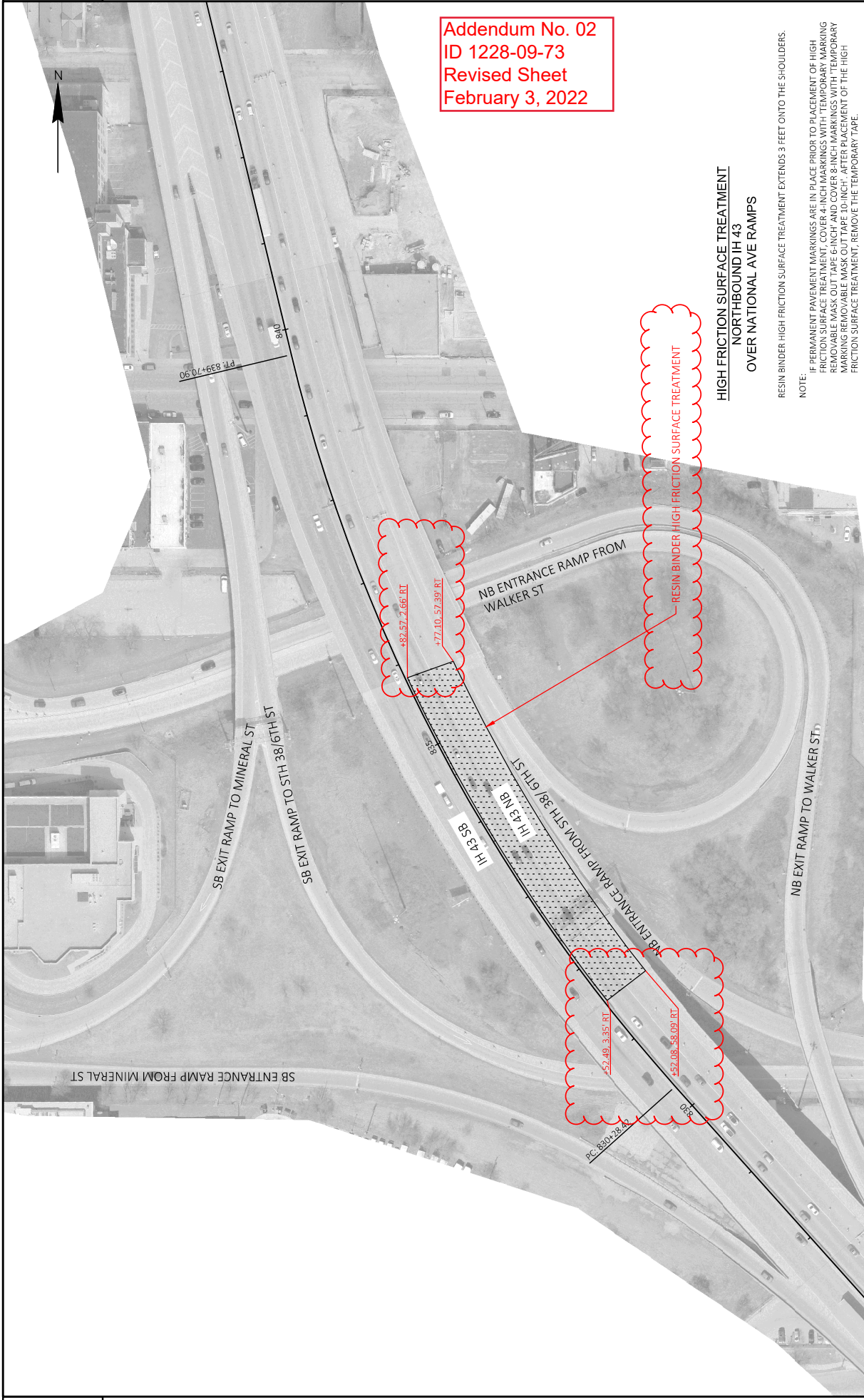


RESIN BINDER HIGH FRICTION SURFACE TREATMENT

HIGH FRICTION SURFACE TREATMENT  
SOUTHBOUND IH 43  
UNDER GREENFIELD AVE

NOTE:  
IF PERMANENT PAVEMENT MARKINGS ARE IN PLACE PRIOR TO PLACEMENT OF HIGH FRICTION SURFACE TREATMENT, COVER 4-INCH MARKINGS WITH "TEMPORARY MARKING REMOVABLE MASK OUT TAPE 6-INCH AND COVER 8-INCH MARKINGS WITH "TEMPORARY MARKING REMOVABLE MASK OUT TAPE 8-INCH". AFTER PLACEMENT OF THE HIGH FRICTION SURFACE TREATMENT, REMOVE THE TEMPORARY TAPE.

PROJECT NO: 1228-09-73	COUNTY: MILWAUKEE	CONSTRUCTION DETAIL	SHEET 17	E
FILE NAME: I:\PDS\CD\12280903\5SHEETS\PLAN\021001_CD.DWG	FLY BY: SPAETH, MICHELE L	PLOT NAME:	PLOT SCALE: 1 IN=100 FT	WISDOT/CADDS SHEET 42
LAYOUT NAME: 021002_04	PLT DATE: 2/1/2022 9:38 AM			



Addendum No. 02  
 ID 1228-09-73  
 Revised Sheet  
 February 3, 2022

**HIGH FRICTION SURFACE TREATMENT  
 NORTHBOUND IH 43  
 OVER NATIONAL AVE RAMP**

RESIN BINDER HIGH FRICTION SURFACE TREATMENT EXTENDS 3 FEET ONTO THE SHOULDERS.  
 NOTE: IF PERMANENT PAVEMENT MARKINGS ARE IN PLACE PRIOR TO PLACEMENT OF HIGH FRICTION SURFACE TREATMENT, COVER 4 INCH MARKINGS WITH TEMPORARY MARKING REMOVABLE MASK OUT TAPE 10 INCH AFTER PLACEMENT OF THE HIGH FRICTION SURFACE TREATMENT, REMOVE THE TEMPORARY TAPE.

PROJECT NO: 1228-09-73	COUNTY: MILWAUKEE	CONSTRUCTION DETAIL	SHEET 18
FILE NAME: N:\PDS\CD\12280903\SHEETS\PLAN\021001_CD.DWG	PLLOT BY: SPAETH, MICHELE L	PLLOT NAME:	WISDOT\CADDS SHEET 42
LAYOUT NAME: 021003_04	PLLOT DATE: 2/1/2022 9:41 AM	PLLOT SCALE: 1 IN=100 FT	

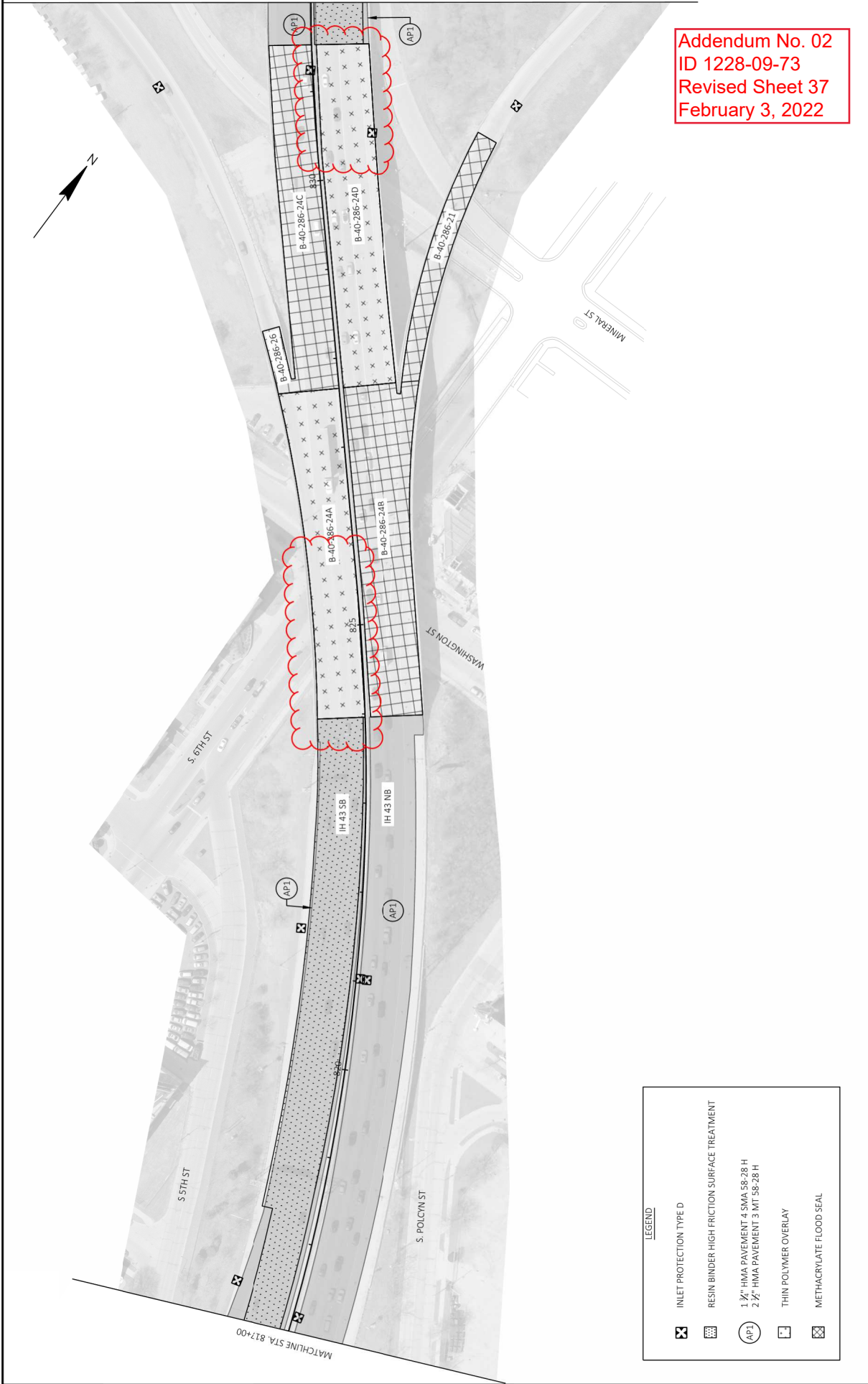
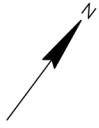






MATCHLINE STA. 832+00

MATCHLINE STA. 817+00



LEGEND

	INLET PROTECTION TYPE D
	RESIN BINDER HIGH FRICTION SURFACE TREATMENT
	1 3/4" HMA PAVEMENT 4 SMA 58-28 H
	2 1/2" HMA PAVEMENT 3 MT 58-28 H
	THIN POLYMER OVERLAY
	METHACRYLATE FLOOD SEAL

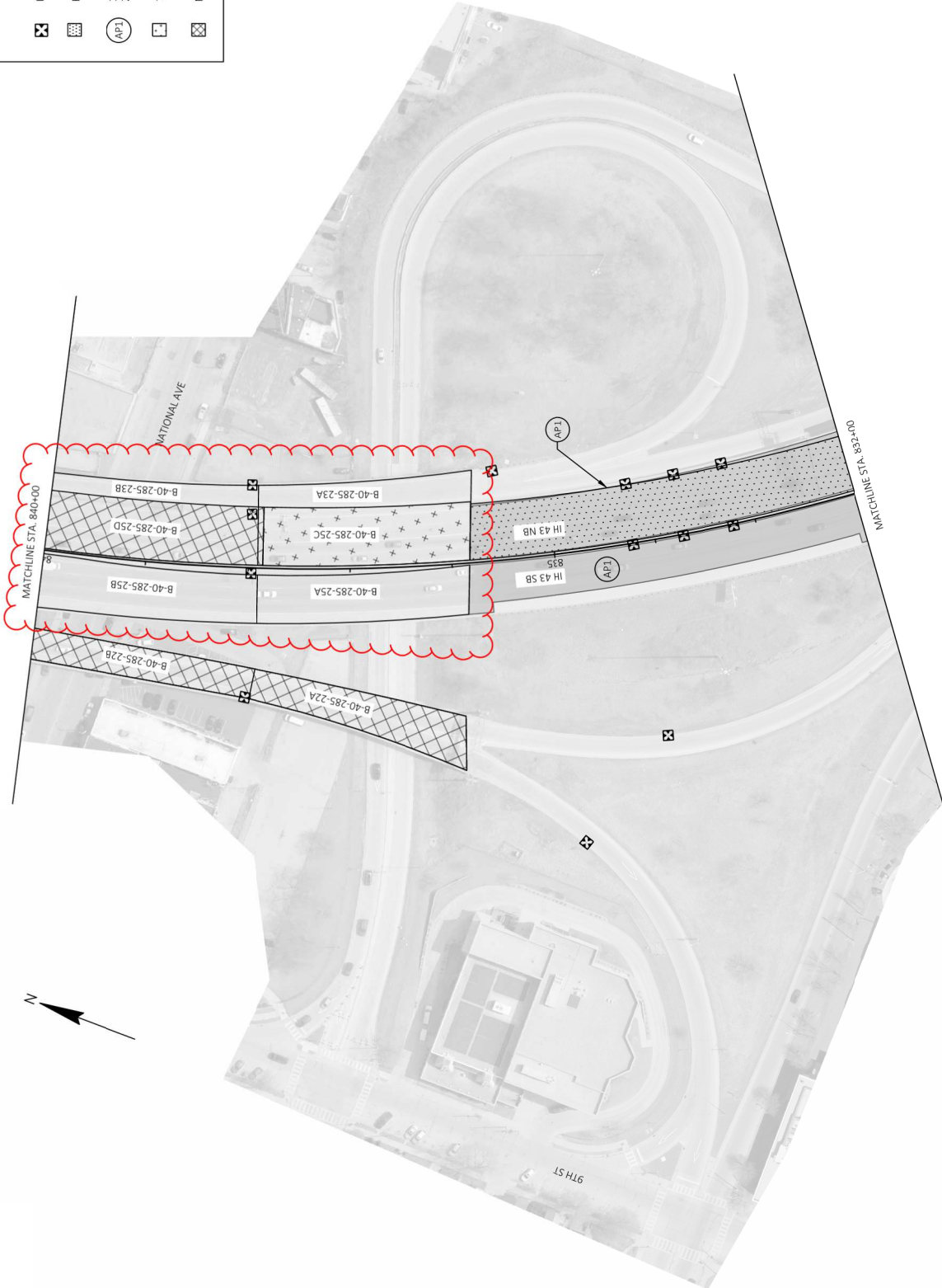
Addendum No. 02  
 ID 1228-09-73  
 Revised Sheet 37  
 February 3, 2022



**LEGEND**

	INLET PROTECTION TYPE
	RESIN BINDER HIGH FRICTION SURFACE TREATMENT
	1 3/4" HMA PAVEMENT 4 SMA 56-28 H
	2 1/2" HMA PAVEMENT 3 MIT 56-26 H
	THIN POLYMER OVERLAY
	METHACRYLATE FLOOD SEAL

Addendum No. 02  
 ID 1228-09-73  
 Revised Sheet 38  
 February 3, 2022





BASE PATCHING CONCRETE

CATEGORY	LOCATION	SY	DRILLED CONCRETE SHES	DRILLED DOWEL BARS	DRILLED TIE BARS	SAWING CONCRETE	LF
1000	UNDISTRIBUTED - IH 43	15,900	22,760	6,828	51,210		
TOTAL:		15,900	22,760	6,828	51,210		

1

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE IN PLAN.

HOLT AVE PARK & RIDE - CONCRETE BASE

CATEGORY	LOCATION	SY	CONCRETE BASE 6-INCH	CONCRETE BASE 7-INCH	CONCRETE BASE 7-INCH	SY
1010	HOLT AVE PARK & RIDE	1227	1127	557	100	
TOTAL:		1227	1127	557	100	

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE IN PLAN.

HIGH FRICTION SURFACE TREATMENT

CATEGORY	STAGE	LOCATION	STATION TO	AREA (SF)	SY
1000	NB	677+24.71	690+28.53	54279	6031
	NB	831+52.49	835+82.57	23034	2559
	SB	677+24.71	690+28.53	54572	6064
	SB	810+43.06	823+96.29	62162	6907
TOTALS:					21,561

2

SAWING CONCRETE

CATEGORY	LOCATION	STATION, OFFSET	LF
1010	HOLT AVE PARK & RIDE	96+34.30, 60, 16' LT	98
	HOLT AVE PARK & RIDE	97+50.70, 216, 34' LT	58
	HOLT AVE PARK & RIDE	97+74.64, 222, 53' LT	42
	HOLT AVE PARK & RIDE	98+07.37, 65, 27' LT	116
	HOLT AVE PARK & RIDE	98+12.94, 80, 56' LT	414
	HOLT AVE PARK & RIDE	98+33.87, 72, 88' LT	340
	HOLT AVE PARK & RIDE	99+50.44, 79, 61' LT	174
	HOLT AVE PARK & RIDE	99+99.90, 63, 03' LT	214
	HOLT AVE PARK & RIDE	100+99.77, 98, 85' LT	96
	HOLT AVE PARK & RIDE	100+96.43, 127, 95' LT	193
TOTAL:			1746

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE IN PLAN.

MOBILIZATIONS EMERGENCY PAVEMENT REPAIR

CATEGORY	STAGE	LOCATION	EACH
1000	ALL	PROJECT	4
TOTAL:			4

MOBILIZATION

CATEGORY	STAGE	LOCATION	EACH
1000	ALL	PROJECT	1
TOTAL:			1

Addendum No. 02  
 ID 1228-09-73  
 Revised Sheet 362  
 February 3, 2022

HOLT AVE PARK & RIDE - FENCING

204.0170	616.0206		
FENCE			
REMOVING CHAINLINK			
FENCE			
6-FT			
LF	LF	LF	LF
306	260		
TOTAL:			260

NATIONAL AVE RAMP - MGS GUARDRAIL ITEMS

EXCAVATION COMMON	BORROW	MGS GUARDRAIL	MGS THRE BEAM TRANSITION	MGS GUARDRAIL TERMINAL TYPE2	BARRIERSYSTEM GRADING SHAPING FINISHING	TOPSOIL MIXTURE NO.30	SEEDING	MULCHING	SILT FENCE MAINTENANCE
CY	CY	LF	LF	EA	EA	SY	LB	SY	LF
205.0100	208.0100	614.2300	614.2500	614.2620	614.0010	625.0100	630.0130	627.0200	628.1504
150	150	287.5	39.5	1	1	867	16	867	350
TOTAL: 150 150 288 40 1 1 867 16 867 350									

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE IN PLAN

NATIONAL AVE RAMP - CONCRETE BARRIER ITEMS

REMOVING CURB & GUTTER	CONCRETE DRILLED CONCRETE	CONCRETE BARRIER TYPE S42	LOW MAINTENANCE	SAVING CONCRETE	UTILITY LINE OPENING	CONCRETE BARRIER TRANSITION SPECIAL
LF	SY	EA	EA	LF	EA	EA
204.0150	415.0090	416.0610	603.1142	614.0805	690.0250	SPV.00660.0010
232	157	97	150	1	3	1
TOTAL: 232 157 97 150 1 3 1						

\* ADDITIONAL QUANTITIES SHOWN ELSEWHERE IN PLAN

Addendum No. 02  
 ID 1228-09-73  
 Revised Sheet 374A  
 February 3, 2022

**GENERAL NOTES**

WHERE THE CONCRETE BARRIER IS ADDED TO THE FACE OF EXISTING CONCRETE STRUCTURE, MATCH EXISTING WEEP HOLES.  
 LOCATE EXPANSION JOINTS IN CONCRETE BARRIER SHALL AT ALL DECK AND PRINCIPAL WALL JOINTS. FILL EXPANSION JOINT WITH EXPANSION JOINT MATERIAL. SEAL THE EXPANSION JOINT CONFORMING TO STANDARD SPECIFICATION 415.2.6.  
 PLACE BARRIER PERPENDICULAR TO SHOULDER GRADE, UNLESS INDICATED IN PLAN.  
 4000 PSI CONCRETE AIR ENTRAINMENT PER STANDARD SPECIFICATION 501.  
 2" CLEAR COVER TYPICAL.

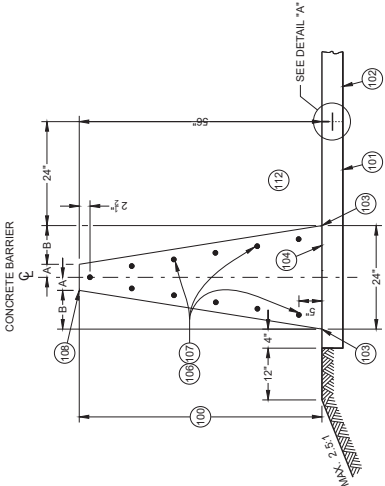
ANCHORS ARE REQUIRED AT CONCRETE BARRIER ENDS AND AT INTERRUPTIONS IN CONCRETE BARRIER. ANCHOR MAY BE AS SHOWN IN THIS SDD OR DETAIL SHOWN ON SDD 14B33. ANCHORS INCIDENTAL TO CBS.

PROVIDE A 1" DEEP CONTRACTION JOINT IN BARRIER PAD AND BARRIER. JOINT IS TO MATCH ADJACENT CONCRETE JOINTS. NO DOVEL BARS ARE REQUIRED FOR BARRIER PAD. IF ADJACENT TO ASPHALT, CONTRACTION JOINT IS REQUIRED EVERY 15'.

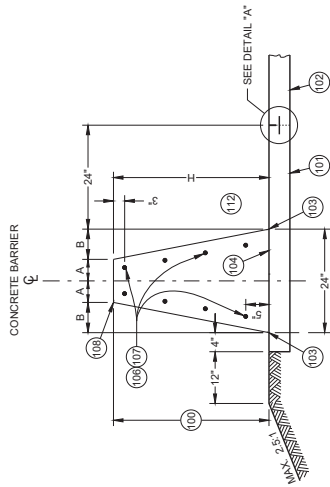
ALL REBAR SHALL BE EPOXY COATED M31 TYPE S. SEE STANDARD SPECIFICATION 505.

CONCRETE BARRIER, UPPER CONCRETE BARRIER, LOWER CONCRETE BARRIER, CONCRETE BARRIER PAD AND FOOTINGS ARE TERMS USED TO DESCRIBE PARTS OF SINGLE SLOPE CONCRETE BARRIER BID ITEMS. THESE PARTS ARE INCIDENTAL TO THE SINGLE SLOPE CONCRETE BARRIER BID ITEMS.

(100) CONCRETE BARRIER  
 (101) CONCRETE BARRIER PAD  
 (102) PAVEMENT  
 (103) WHERE VERTICAL ROADWAY OFFSET IS GREATER THAN 1 1/2", USE TYPE A. SINGLE SLOPE BARRIER.  
 (104) OPTIONAL CONSTRUCTION JOINT.  
 (105) CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10'.  
 (106) STAGGER LAPPING OF LONGITUDINAL STEEL. MINIMUM OVERLAP OF STEEL IS 2' BARS AT LAPS TO BE FIRMLY TIED OR CONNECTED.  
 (107) NO. 5 CONTINUOUS BARS EVENLY SPACED (SEE TABLE "A")  
 (108) USE 3/4" BEVEL OR 1" RADIUS ON ALL EXPOSED SHARP EDGES UNLESS OTHERWISE NOTED.  
 (109) CONCRETE BARRIER PAD UNDER CBS MAY BE PLACED SEPARATELY OR PLACED WITH CONCRETE SHOULDER AND SAWED 1/2" DEPTH. CONCRETE BARRIER PAD AND SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER BID ITEM. CONCRETE BARRIER PAD MINIMUM DEPTH IS 6". OR EQUAL TO THE DEPTH OF THE CONCRETE SHOULDER.  
 (110) SEE SDD 15A04 FOR DELINEATOR DETAILS AND SPACING.  
 (111) SEE SDD 13001 FOR DETAILS TYPING CONCRETE BARRIER TO ADJACENT CONCRETE  
 (112) TRAFFIC SIDE



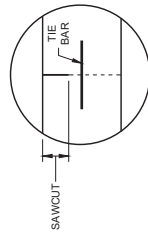
**56 - INCH SINGLE SLOPE CONCRETE BARRIER (TYPE S56)**



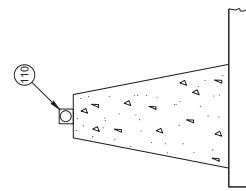
**32 - INCH, 36 - INCH OR 42 - INCH SINGLE SLOPE CONCRETE BARRIER (TYPE S32, TYPE S36, TYPE S42)**

**TABLE "A"**

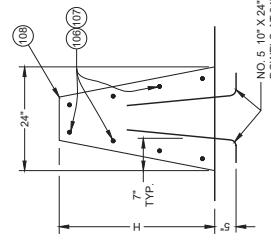
BARRIER HEIGHT H INCHES	A INCHES	B INCHES	NUMBER OF NO. 5 BARS EACH
32	7	5	8
36	6 1/2	5 1/2	8
42	5 1/2	6 1/2	10
56	3	9	11



**DETAIL "A"**



**DELINEATION**



**SINGLE SLOPE CONCRETE BARRIER ON BRIDGE (NON OUTER PARAPET APPLICATION)**

Addendum No. 02  
 ID 1228-09-73  
 Added Sheet 411A  
 February 3, 2022

**CONCRETE BARRIER  
 SINGLE SLOPE (CBSS)**

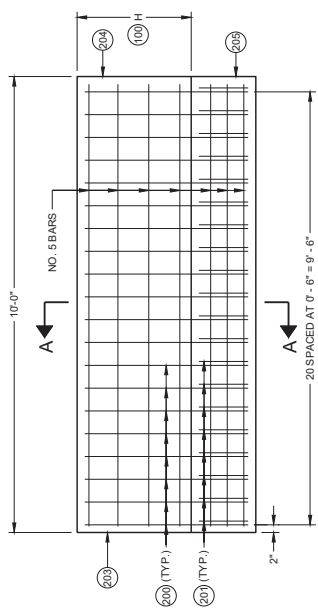
STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

411A

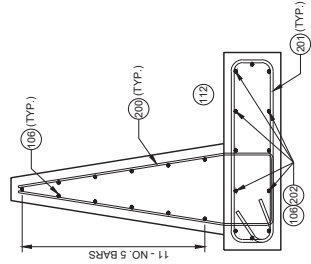
**CONCRETE BARRIER  
SINGLE SLOPE (CBSS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

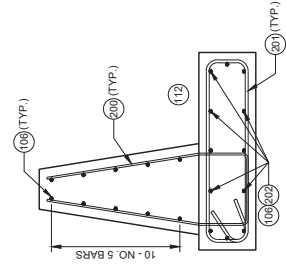
411B



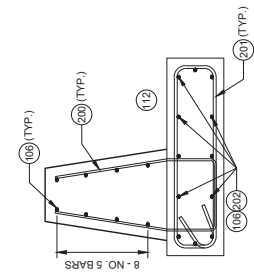
**END ANCHOR SINGLE  
SLOPE CONCRETE BARRIER**



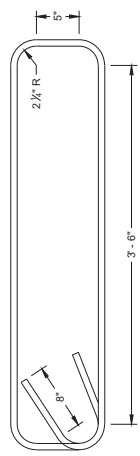
**56" CBSS**



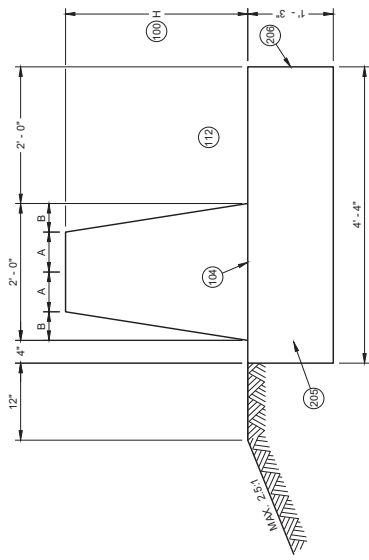
**42" CBSS**



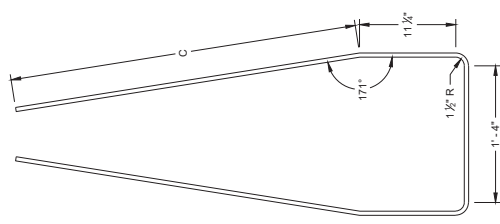
**32" AND 36" CBSS**



**STIRRUP BAR  
BENDING DETAIL**



**SECTION A - A**



**V1 BAR  
BENDING DETAIL**

**TABLE "B"**

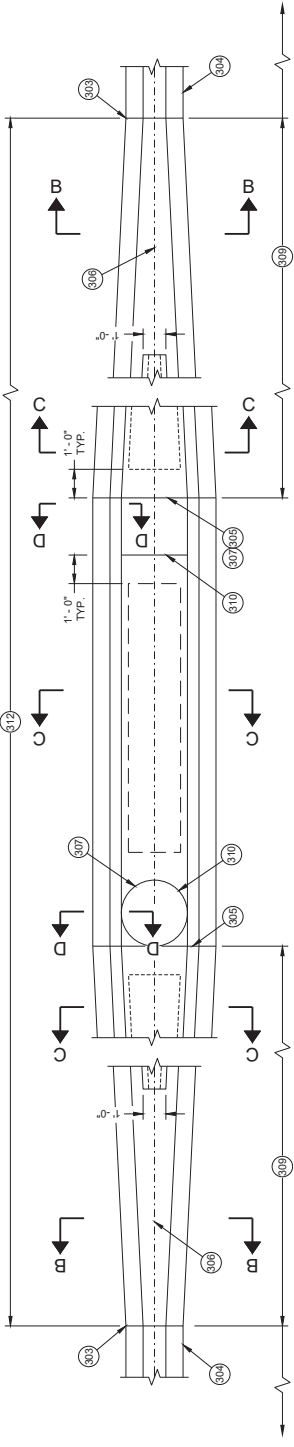
BARRIER HEIGHT INCHES	C INCHES
32	2'-6"
36	2'-11"
42	3'-4"
56	4'-6 1/2"

- GENERAL NOTES**
- 200 V1 BARS ARE NO. 5 BARS. (SEE BAR BENDING DETAIL)
  - 201 STIRRUPS ARE NO. 6 BARS. (SEE BAR BENDING DETAIL)
  - 202 TWELVE (12) NO. 5 BARS EVENLY SPACED
  - 203 END OF INSTALLATION OR EXPANSION JOINT.
  - 204 SEE COLD JOINT DETAIL TO CONNECT END ANCHOR SINGLE SLOPE CONCRETE BARRIER TO SINGLE SLOPE CONCRETE BARRIER.
  - 205 FOOTING
  - 206 DO NOT TIE TO FOOTING TO ADJACENT PAVEMENT.

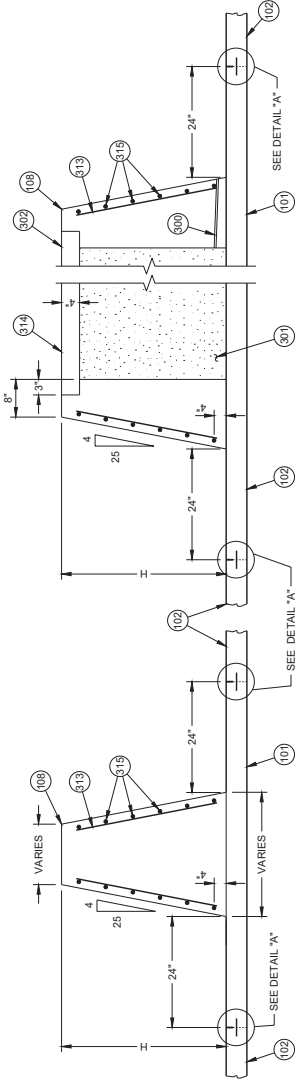
Addendum No. 02  
ID 1228-09-73  
Added Sheet 411B  
February 3, 2022

**TABLE "C"**

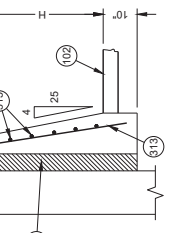
BARRIER HEIGHT H INCHES	BAR SIZE	NUMBER OF BARS EACH
32	4	6
36	4	6
42	5	6
56	5	6



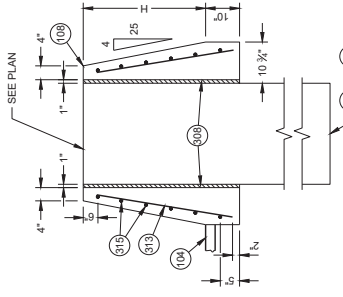
**LARGE FIXED OBJECTS PROTECTION**  
(TYPE S32, TYPE S36, TYPE S42, TYPE S56)



**SECTION B - B**



**SECTION D - D**

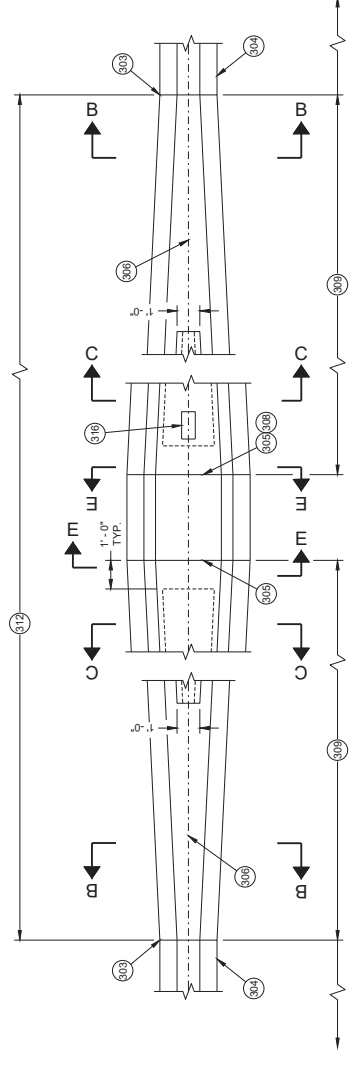


**SECTION E - E**

**GENERAL NOTES**

- 500 INSTALL 1 INCH DIAMETER DRAIN PIPE EVERY 20 FEET OF CROSS SECTION B-B. MINIMUM ONE DRAIN CAVITY.
- 501 BETWEEN CONCRETE BARRIER WALLS FILL WITH FOUNDATION BACKFILL.
- 502 LEVEL THE TOP OF CONCRETE BARRIER CAP ACROSS TOP OF BARRIER. ADJUST HEIGHT OF CONCRETE BARRIER WALL ON LOW SIDE OF OFFSET OR SUPERELEVATED ROADWAYS TO PROVIDE LEVEL GRADE ACROSS TOP OF CONCRETE CAP.
- 503 USE COLD JOINTS BETWEEN FIXED OBJECT PROTECTION AND CONCRETE BARRIER ANCHOR.
- 504 INSTALL END ANCHOR SINGLE SLOPE CONCRETE BARRIER.
- 505 SEE COLD JOINT DETAIL
- 506 CENTERLINE OF CONCRETE BARRIER.
- 507 INSTALL 4" EXPANDED POLYSTYRENE BETWEEN COLUMN AND CONCRETE BARRIER.
- 508 INSTALL 1" EXPANDED POLYSTYRENE BETWEEN PEDESTAL AND CONCRETE BARRIER.
- 509 20:1 MIN. TRANSITION.
- 510 COLUMN
- 511 PEDESTAL
- 512 LIMITS OF PAYMENT FOR LARGE FIXED OBJECT PROTECTION (SEE PLAN)
- 513 NO. 4 BARS SPACED 12" CENTER TO CENTER (TYP.)
- 514 USE NO. 3 BAR SPACED 12 INCHES CENTER TO CENTER (PLACED IN EACH DIRECTION) OR EQUIVALENT WIRE MESH.
- 515 SEE TABLE "C" FOR BAR INFORMATION
- 516 ELECTRICAL PULL BOX FOR SIGN FLUSH WITH TOP OF CONCRETE BARRIER.

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411C  
February 3, 2022



**SMALL FIXED OBJECTS PROTECTION**  
(TYPE S32, TYPE S36, TYPE S42, TYPE S56)

**CONCRETE BARRIER**  
**SINGLE SLOPE (CBSS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

**CONCRETE BARRIER  
SINGLE SLOPE (CBSS)**

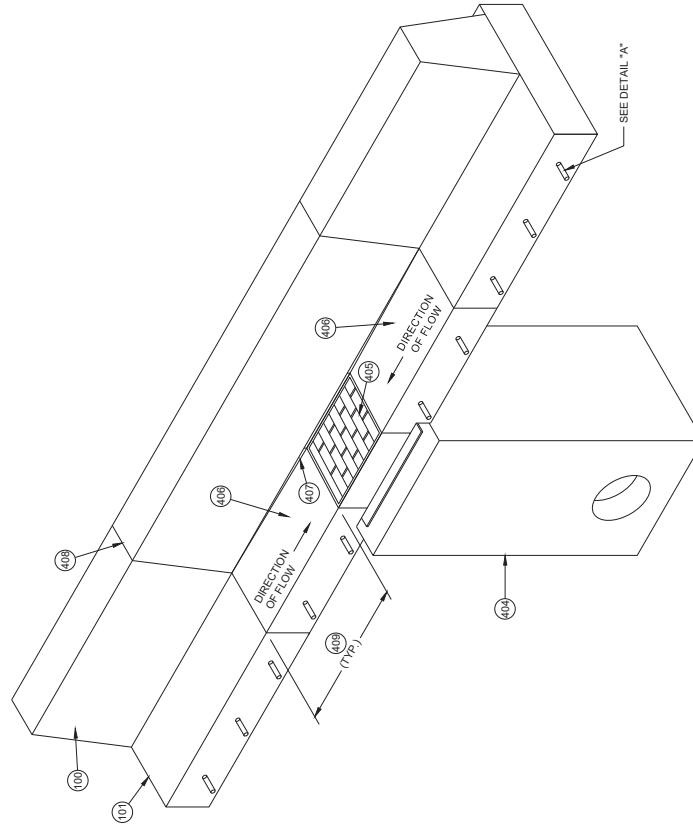
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

411D

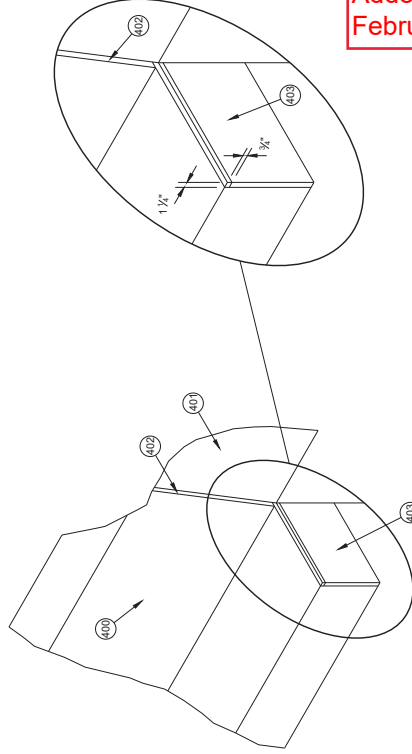
Addendum No. 02  
ID 1228-09-73  
Added Sheet 411D  
February 3, 2022

**GENERAL NOTES**

- (400) END ANCHOR SINGLE SLOPE CONCRETE BARRIER.
- (401) PARAPET, SIGN BRIDGE BASE, LIGHT POLE BASE OR OTHER OBJECT SINGLE SLOPE CONCRETE BARRIER CANNOT TIE INTO.
- (402) JOINT SEAL CONFORMING TO STANDARD SPECIFICATION 415.2.6
- (403) EXPANSION JOINT MATERIAL.
- (404) INLET (SEE PLAN)
- (405) INLET COVER BW (SEE PLAN)
- (406) WARP PAN TO MATCH INLET COVER.
- (407) EXTEND BARRIER SLOPE TO INLET. SEE PLAN FOR THE LENGTH OF EXTENSION.
- (408) CONTRACTION JOINT.
- (409) 3 (TYP.)



**DRAINAGE DETAIL**

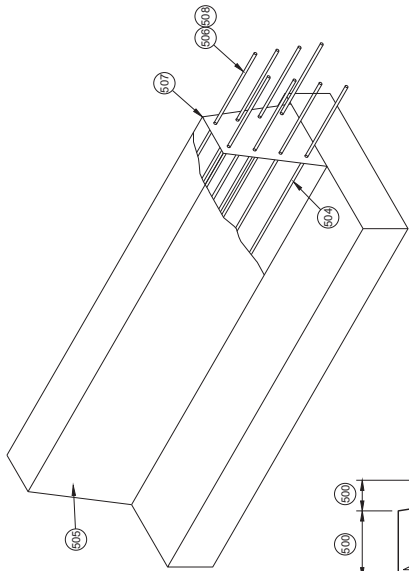
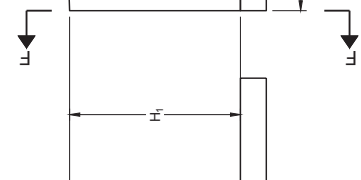
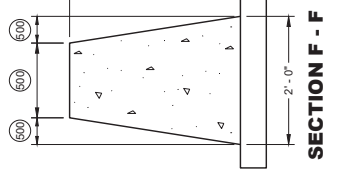


**EXPANSION JOINT DETAIL**

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 ID 1228-09-73  
 Added Sheet 411E  
 February 3, 2022

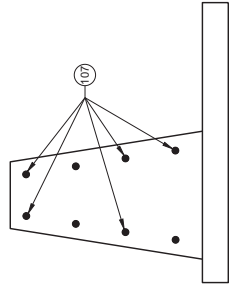
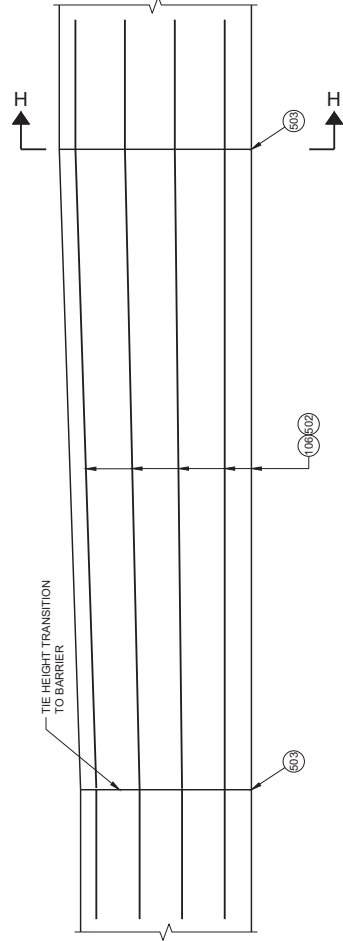
**GENERAL NOTES**

- USE COLD JOINT TO CONNECT MULTIPLE HEIGHT TRANSITIONS.
- 603 SEE TABLE "A" FOR DIMENSIONS
- 604 SEE TABLE "D"
- 605 MULTIPLE HEIGHT TRANSITION MAY BE USED IN SEQUENCE TO GET APPROPRIATE HEIGHT.
- 606 COLD JOINT
- 607 BARRIER REBAR (SEE OTHER DETAILS FOR BAR SIZE, QUANTITY AND LOCATION).
- 608 SINGLE SLOPE BARRIER SHOWN. SIMILAR DETAIL CAN BE USED FOR COLD JOINT IN END ANCHORS AND TRANSITIONS.
- 609 NO. 5 REBAR FOR SPLICE. 4" OF SPLICE REBAR IS LAPPED AND TIED TO BARRIER REBAR. EXTEND 3" OF SPLICE REBAR BEYOND END OF POUR. ALL BARS ARE FIRMLY TIED OR CONNECTED. EVERY REBAR IN THE BARRIER SECTION REQUIRES A SPLICE BAR.
- 607 END OF POUR.
- 608 LAP AND TIE 3 OF NEXT POURS REBAR TO SPLICE REBAR.



**COLD JOINT DETAIL**

**DOUBLE COLD JOINT HEIGHT TRANSITION**



**SECTION H - H**

**TABLE "D"**

H <sub>1</sub>	H <sub>2</sub>	L	NUMBER OF NO. 5 BARS
32"	36"	10'-0"	8
36"	42"	10'-6"	10
42"	56"	24'-6"	11

**STEEL REINFORCEMENT DETAIL**

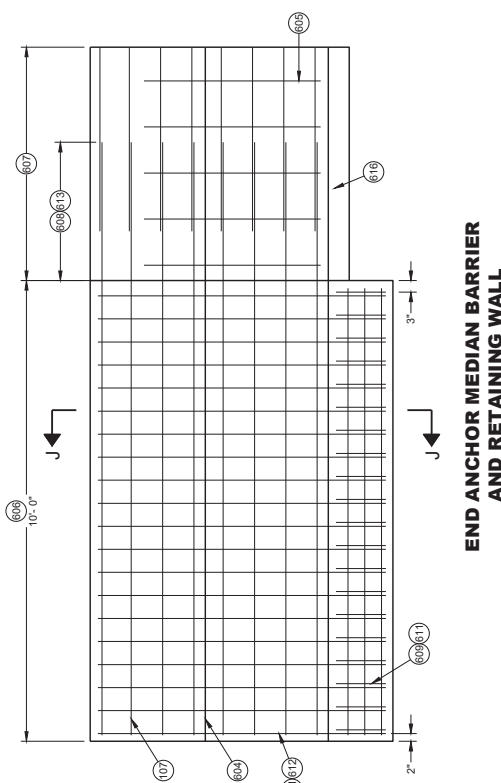
**CONCRETE BARRIER  
 SINGLE SLOPE (CBSS)**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

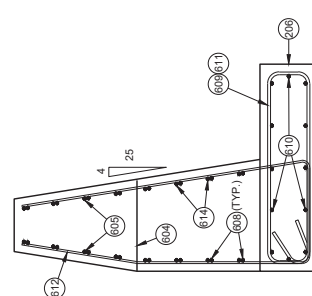
411E

**GENERAL NOTES**

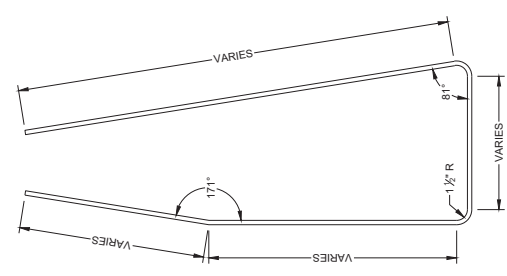
- 600 UPPER CONCRETE BARRIER
- 601 LOWER CONCRETE BARRIER
- 602 MAX HEIGHT 36"
- 603 VERTICAL OFFSET FROM TOP ROADWAY SURFACES
- 604 OPTIONAL CONSTRUCTION JOINT WHEN HEIGHT IS GREATER THAN 1 1/2'
- 605 NO. 4 BARRIER LOOP BARS ARE NOT REQUIRED FOR ROADWAY OFFSETS ARE LESS THAN 1', 0" EXCEPT WHEN USED IN ANCHORS. BARRIER LOOP BARS ARE SPACED 12" CENTER TO CENTER OUTSIDE OF MEDIAN BARRIER AND RETAINING WALL END ANCHOR.
- 606 SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL ANCHOR
- 607 SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL (SEE OTHER DETAILS)
- 608 NO. 5 REBAR 3' OF LAP OF LONGITUDINAL STEEL.
- 609 NO. 6 REBAR END ANCHOR FOOTING LOOP
- 610 TWELVE (12) NO. 5 BARS EVENLY SPACED.
- 611 SS ANCHOR END LOOP AND END ANCHOR FOOTING LOOP ARE SPACED 6" CENTER TO CENTER.
- 612 END ANCHOR LOOP BAR IS NO. 5 REBAR.
- 613 SEE COLD JOINT DETAIL.
- 614 SEE TABLE "E" FOR REQUIRED REBAR
- 615 TOTAL BARRIER HEIGHT (SEE PLAN FOR HEIGHT)
- 616 FOR SOME LOCATIONS, NO PAN IS NEEDED. SEE OTHER DETAILS.
- 617 SEE TABLE "A" FOR DIMENSIONS



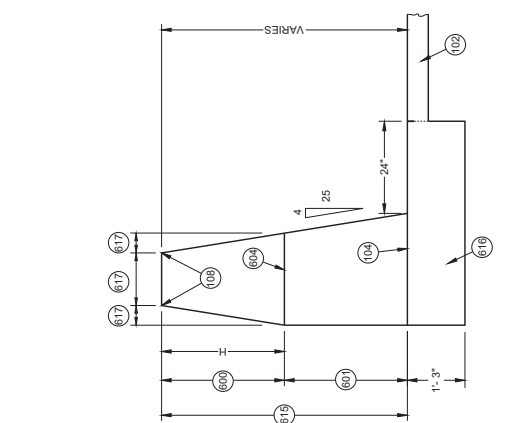
**SECTION J - J  
END ANCHOR AND MEDIAN WALL END ANCHOR REINFORCEMENT DETAIL**



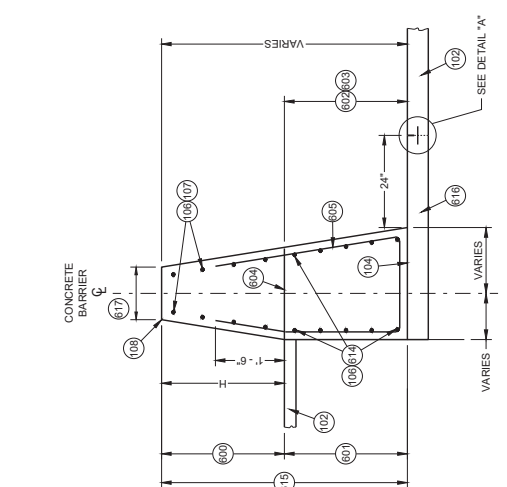
**END ANCHOR MEDIAN BARRIER AND RETAINING WALL**



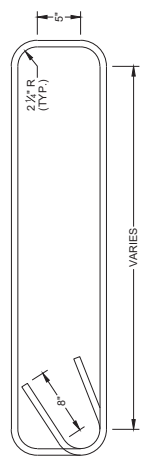
**LOOP BAR BENDING DETAIL**



**SECTION J - J  
MEDIAN BARRIER AND RETAINING WALL END ANCHOR DIMENSIONS**



**SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL (TYPE S32A, TYPE S36A, TYPE S42A, TYPE S56A) (BETWEEN ADJACENT ROADWAYS)**



**END ANCHOR STIRRUP BAR BENDING DETAIL**

**TABLE "E"**

HEIGHT BETWEEN ROADWAY	QUANTITY OF NO. 6 BARS
0 TO 3'	0
GREATER THAN 3' TO 8'	2
GREATER THAN 8' TO 12'	4
GREATER THAN 12' TO 36'	8

**CONCRETE BARRIER SINGLE SLOPE (CBSS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

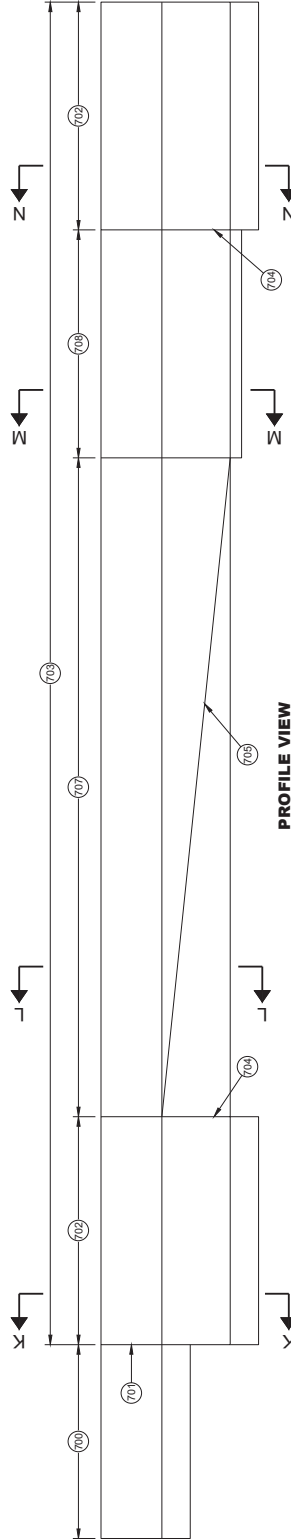
Addendum No. 02  
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February 3, 2022

411F

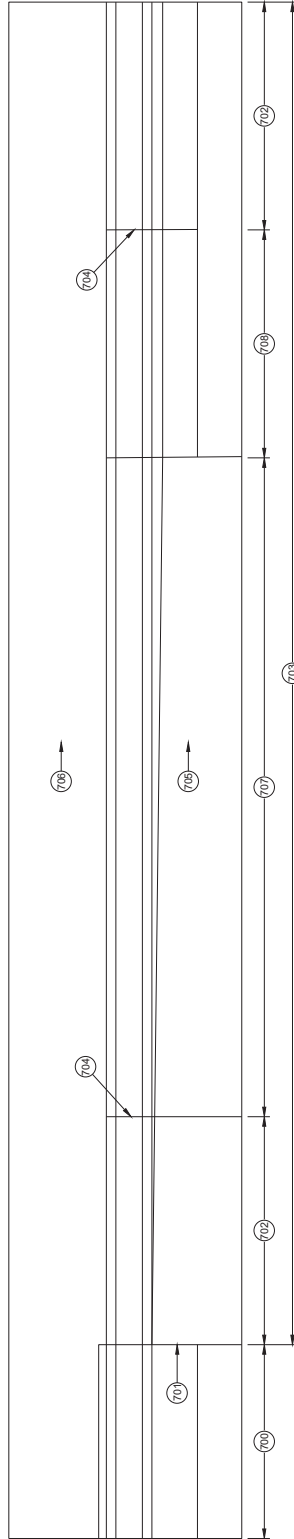


**GENERAL NOTES**

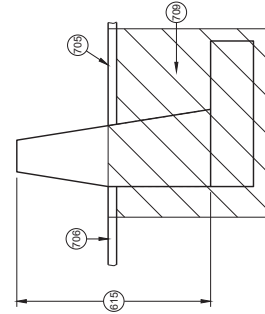
- (700) END ANCHOR SINGLE SLOPE CONCRETE BARRIER
- (701) SEE EXPANSION JOINT DETAIL
- (702) END ANCHOR SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL
- (703) PAV. LIMIT FOR SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL
- (704) SEE COLD JOINT DETAIL
- (705) LOW SIDE SHOULDER
- (706) HIGH SIDE SHOULDER
- (707) SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL INSTALLED WITHOUT A PAN.
- (708) SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL INSTALLED WITH A PAN.
- (709) EXCAVATION AND COMPACTION



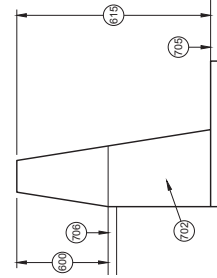
**PROFILE VIEW  
SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL**



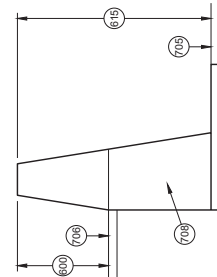
**PLAN VIEW  
SINGLE SLOPE CONCRETE BARRIER AND RETAINING WALL**



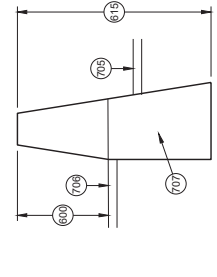
**SECTION K - K**



**SECTION M - M**



**SECTION L - L**



**SECTION N - N**

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 February 3, 2022

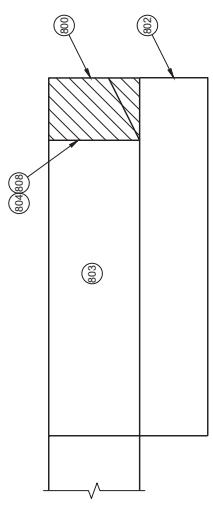
**CONCRETE BARRIER  
SINGLE SLOPE (CBSS)**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

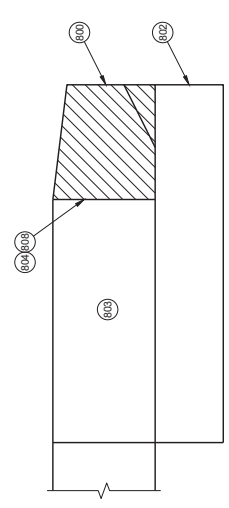
411G

**GENERAL NOTES**

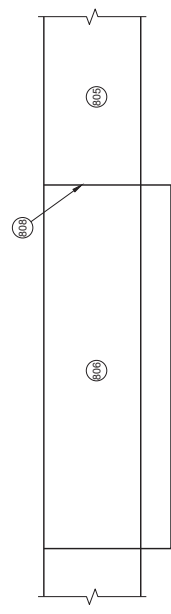
- END ANCHORAGE MAY OR MAY NOT BE PRESENT ON EXISTING BARRIER.
- REMOVE THRIE BEAM ANCHORAGE AS SHOWN.
- AREA OF BARRIER REMOVAL AND NEW CONCRETE AND STEEL IS INSTALLED.
- MINIMUM LENGTH OF REMOVAL IS 15'
- FOOTING BELOW GROUND MAY REMAIN IN PLACE.
- CONCRETE BARRIER SINGLE SLOPE THRIE BEAM ANCHOR TO REMAIN.
- SAW CUT
- NEW SINGLE SLOPE CONCRETE BARRIER
- CONCRETE BARRIE SINGLE SLOPE TO REMAIN.
- SINGLE SLOPE CONCRETE BARRIER OR CONCRETE BARRIER SINGLE SLOPE THRIE BEAM ANCHOR TO REMAIN.
- SEE CONNECTION DETAIL.
- NO. 5 CONTINUOUS BAR.
- 3" MIN. DRILL HOLES. USES NO. 5 ADHESIVE ANCHORS.
- THE NUMBER OF DRILL HOLES IS EQUAL TO THE NUMBER OF HORIZONTAL REBAR IN BARRIER. DRILL HOLES ARE TO BE A MINIMUM OF 4" FROM EDGE OF CONCRETE.
- EXISTING REBAR IN EXISTING BARRIER OR END ANCHOR.
- 3" BAR OVERLAP
- EXISTING REINFORCEMENT



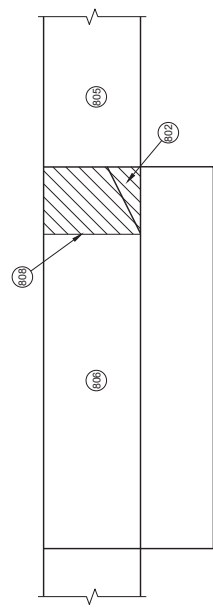
**REMOVAL AREA OF CONCRETE THRIE BEAM ANCHORAGE**



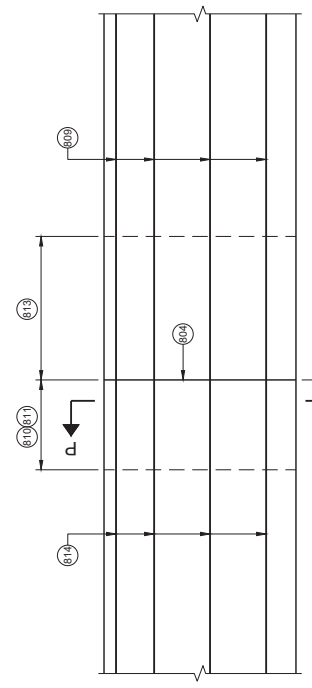
**REMOVAL AREA OF CONCRETE THRIE BEAM ANCHORAGE WITH HEIGHT GREATER THAN 32"**



**CONCRETE BARRIER EXTENSION NEAR END ANCHORAGE**

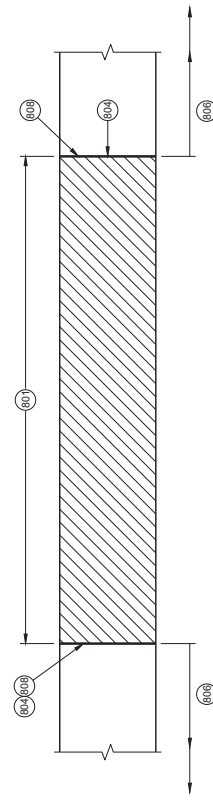
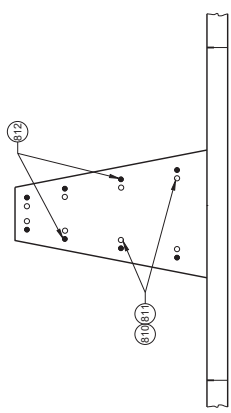


**CONCRETE BARRIER EXTENSION NEAR THRIE BEAM TERMINAL**



**CONNECTION DETAIL  
SINGLE SLOPE CONCRETE BARRIER TO  
NEW SINGLE SLOPE CONCRETE BARRIER**

**SECTION P - P**



**BARRIER REMOVAL AND REPLACEMENT**

Addendum No. 02  
 ID 1228-09-73  
 Added Sheet 411H  
 February 3, 2022

<b>CONCRETE BARRIER SINGLE SLOPE (CBSS)</b>
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED November 2021 DATE ROADWAY DEVELOPMENT UNITS SUPERVISOR

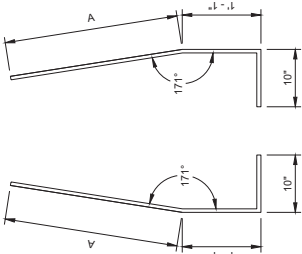
**RETROFIT OR REPAIR SINGLE SLOPE CONCRETE BARRIER**

411H



**BAR CHART  
BAR POSITIONS  
1 - 11**

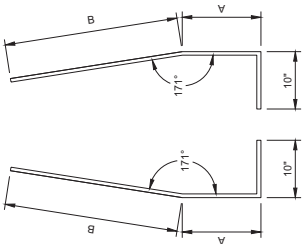
BAR	A
V1	3'-4 1/2"
V2	3'-4 1/2"
V3	3'-2 1/2"
V4	3'-1"
V5	2'-11 1/2"
V6	2'-11"
V7	2'-10 1/2"
V8	2'-9 1/2"
V9	2'-9"
V10	2'-8 1/2"
V11	2'-8"



**BAR BENDING DETAIL  
SECTIONS V1 - V4**

**BAR CHART  
BAR POSITIONS  
12 - 13**

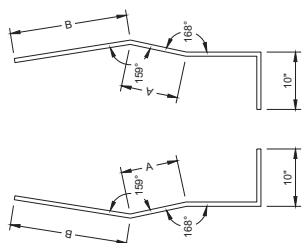
BAR	A	B
V12	1'-3"	2'-6"
V13	1'-8"	2'-17 1/2"



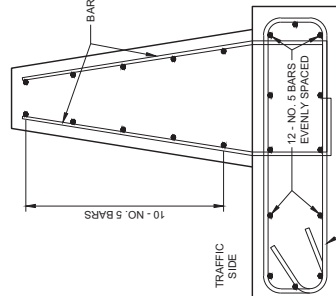
**BAR BENDING DETAIL  
SECTIONS V12 - V13**

**BAR CHART  
BAR POSITIONS  
14 - 16**

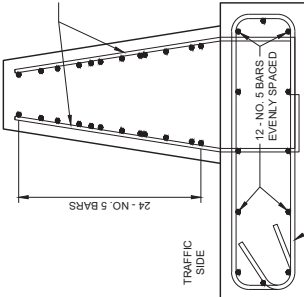
BAR	A	B
V14	6"	2'-1"
V15	8"	1'-11"
V16	10"	1'-9 1/2"



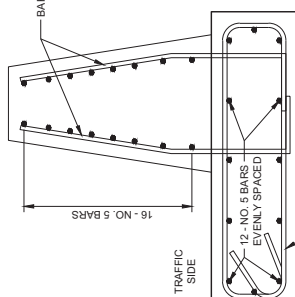
**BAR BENDING DETAIL  
SECTIONS V14 - V16**



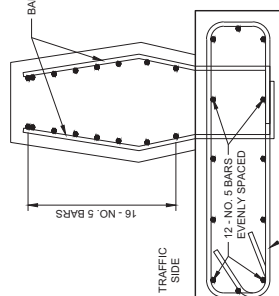
**BAR DETAIL  
SECTIONS 1 - 4**



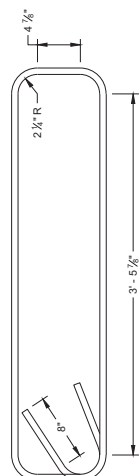
**BAR DETAIL  
SECTIONS 5 - 7**



**BAR DETAIL  
SECTIONS 8 - 13**



**BAR DETAIL  
SECTIONS 14 - 16**



**STIRRUP BAR  
BENDING DETAIL**

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411J  
February 3, 2022

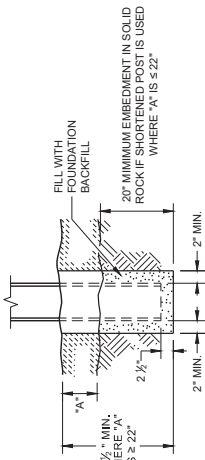
**CONCRETE BARRIER  
SINGLE SLOPE 42"  
THREE BEAM ANCHOR**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

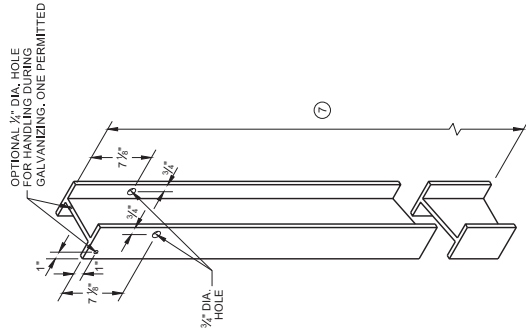
APPROVED  
February 2022  
DATE  
/S/ Rodney Taylor  
ROADWAY STRUCTURE DEVELOPMENT  
ENGINEER

411J

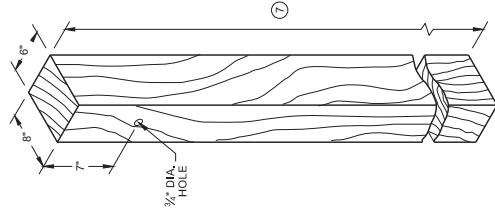
- ① WOOD OR STEEL POSTS (6X8 OR 6X6S) MAY BE USED. DO NOT INTERNALLY WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO THE 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 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7'-0". TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6'-0".



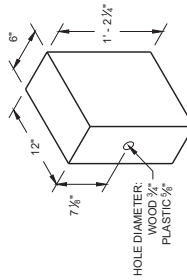
**SETTING STEEL OR WOOD POST IN ROCK**  
END VIEW



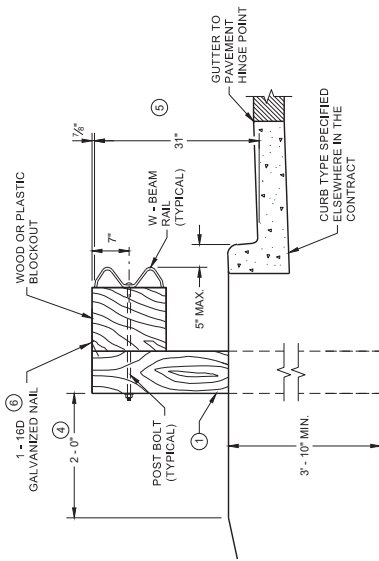
**STEEL POST & HOLE PUNCHING DETAIL**  
(W 6 X 9)



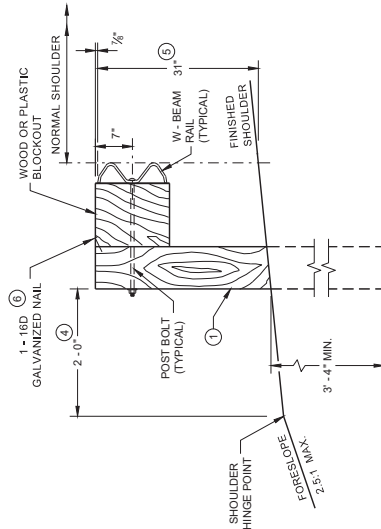
**WOOD POST**  
(6" X 8") NOMINAL



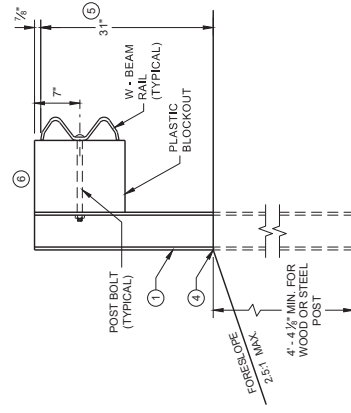
**WOOD OR PLASTIC BLOCKOUT**



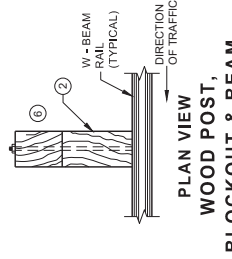
**LOCATED ALONG A CURBED ROADWAY**  
END VIEW



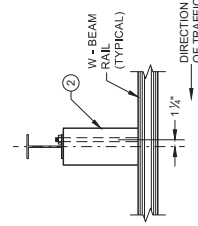
**LOCATED ALONG A ROADWAY SHOULDER**  
STANDARD INSTALLATION



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



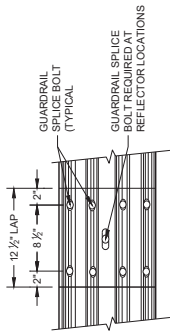
**PLAN VIEW**  
**WOOD POST,**  
**BLOCKOUT & BEAM**



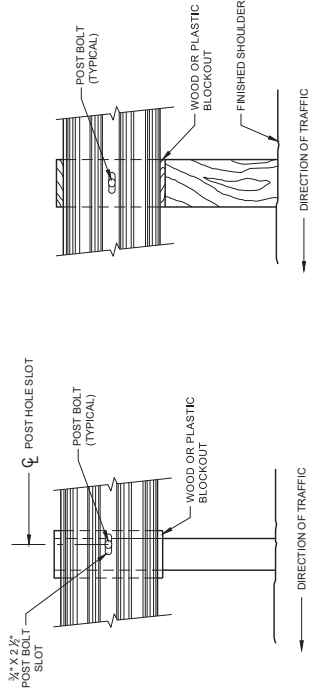
**PLAN VIEW**  
**STEEL POST,**  
**PLASTIC BLOCKOUT & BEAM**

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411K  
February 3, 2022

- GENERAL NOTES**
- DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
  - 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
  - POST BOLTS ARE A 1/2" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REFLECTOR IS REQUIRED AT THE END OF EACH QUARTER POST SPACING. QUARTER DIAMETER FPM FLAT WASHERS, POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
  - GUARD RAIL SPLICE BOLTS ARE A 1/2" DIAMETER ASTM A307 GUARDRAIL BOLT. SPLICE BOLTS REQUIRE 1/2" DIAMETER A307A DOUBLE RECESSED (DR) HEAVY HEX NUT.

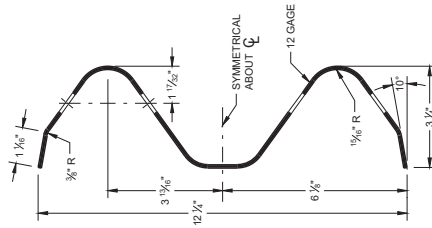


**FRONT VIEW  
MID-SPAN BEAM SPLICE**

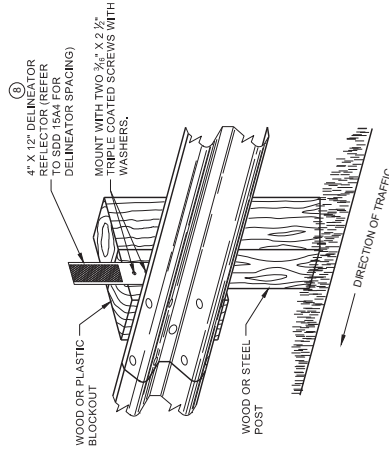


**FRONT VIEW AT STEEL POST**

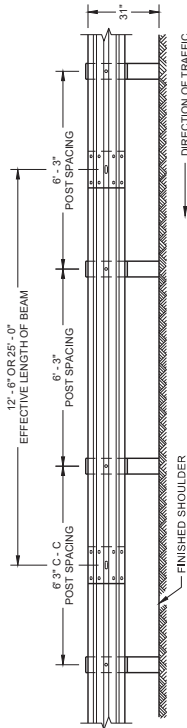
**FRONT VIEW AT WOOD POST**



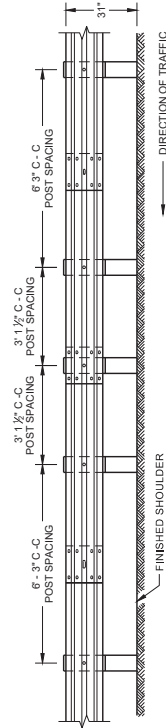
**SECTION THRU W-BEAM RAIL**



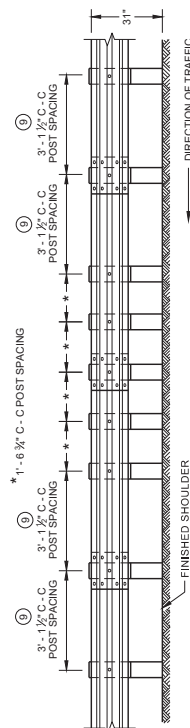
**ONE SIDED REFLECTOR DETAIL  
AND TYPICAL INSTALLATION**



**FRONT VIEW  
POST SPACING STANDARD INSTALLATION**



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



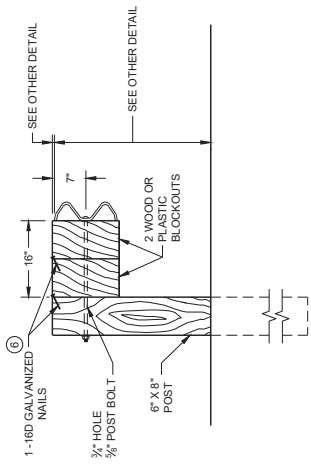
**FRONT VIEW  
QUARTER POST SPACING (QS)**

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411L  
February 3, 2022

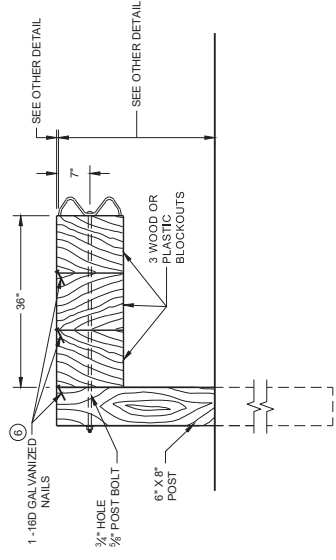
**MIDWEST GUARDRAIL SYSTEM  
(MGS) GUARDRAIL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

411L

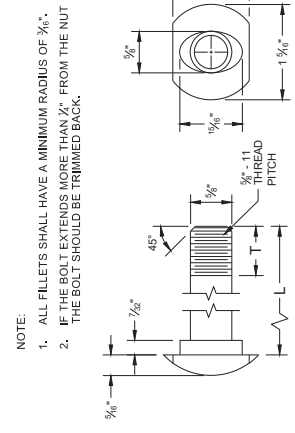


**DETAIL FOR 16" BLOCKOUT DEPTH**  
 IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



**DETAIL FOR 36" BLOCKOUT DEPTH**

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

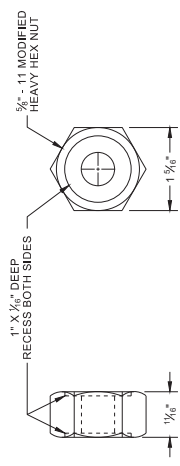
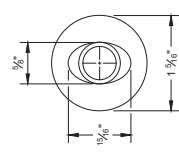


NOTE:  
 1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".  
 2. IF THE BOLT EXTENDS MORE THAN 1/2" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

**POST BOLT TABLE**

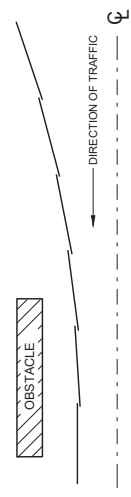
L	T (MIN.)
1 1/2"	1 1/2"
2"	1 1/2"
10"	4"
14"	4 1/2"
18"	4"
21"	4 1/2"
25"	4"

**ALTERNATE BOLT HEAD**

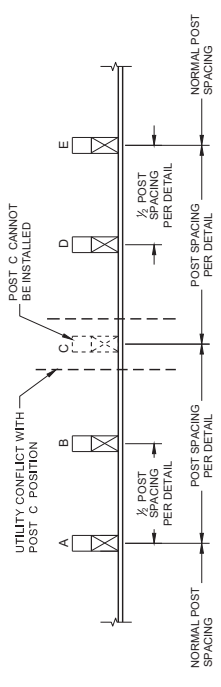


**POST BOLT, SPLICE BOLT AND RECESS NUT**

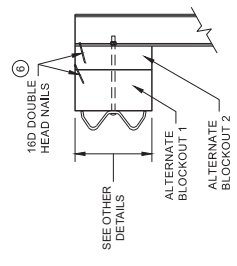
WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



**PLAN VIEW BEAM LAPPING DETAIL**



**POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION**



**PLAN VIEW ALTERNATE WOOD BLOCKOUT DETAIL**

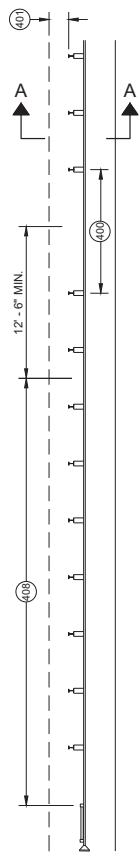
**SIDE VIEW ALTERNATE WOOD BLOCKOUT DETAIL**

**Addendum No. 02**  
**ID 1228-09-73**  
**Added Sheet 411M**  
**February 3, 2022**

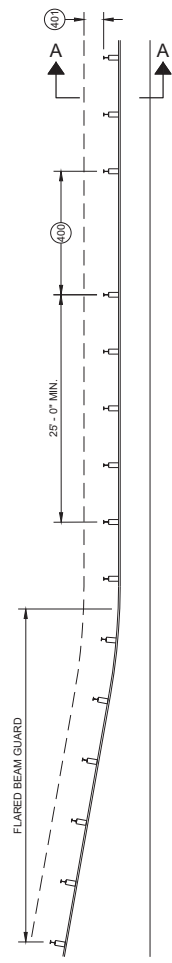
Addendum No. 02  
ID 1228-09-73  
Added Sheet 411N  
February 3, 2022

<b>MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL</b>
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED _____ DATE: _____ BY: _____ UNIT SUPERVISOR
APPROVED _____ DATE: _____ BY: _____ UNIT SUPERVISOR

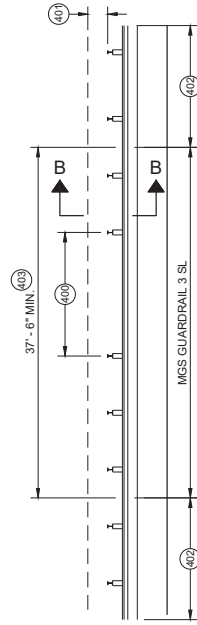
411N



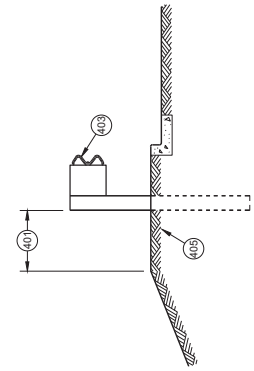
MISSING POST IN MGS GUARDRAIL NEAR EAT



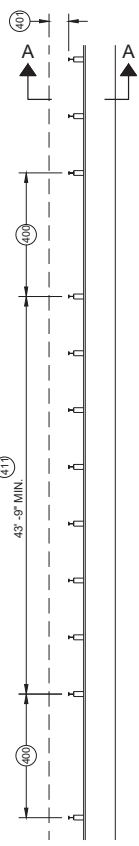
MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD



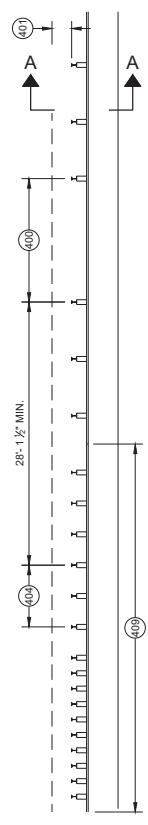
MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)



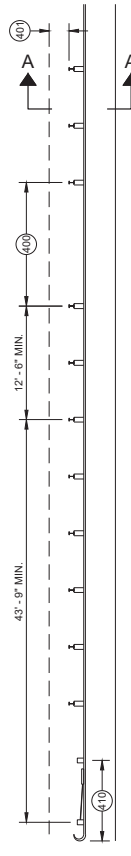
SECTION B - B



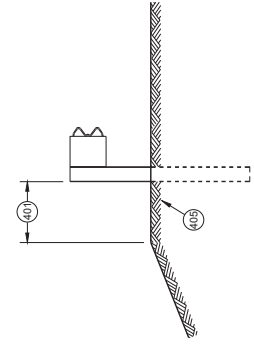
MISSING POST IN MGS GUARDRAIL



MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



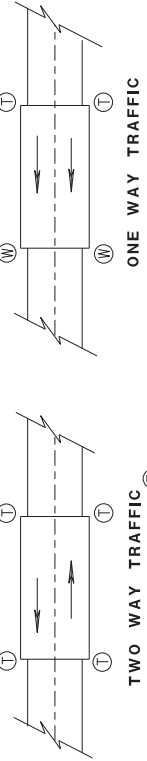
MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL



SECTION A - A

- 400 MAX SPAN 12' - 6"
- 401 2' MIN.
- 402 MGS GUARDRAIL 3
- 403 NESTING BEAM GUARD
- 404 ASYMMETRIC TRANSITION
- 405 SOIL WELL DRAINED AND COMPACTED
- 406 SEE OTHER DRAWINGS IN THIS SDD
- 407 SEE OTHER DRAWINGS FOR MIN. SPACING BETWEEN SPANS
- 408 SEE SDD 14B44
- 409 SEE SDD 14B45
- 410 SEE SDD 14B47
- 411 MINIMUM DISTANCE BETWEEN MISSING POST SPANS.

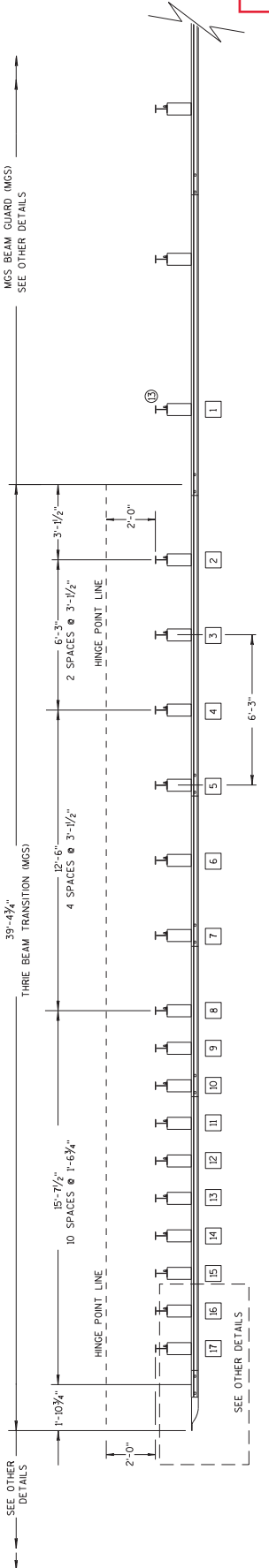




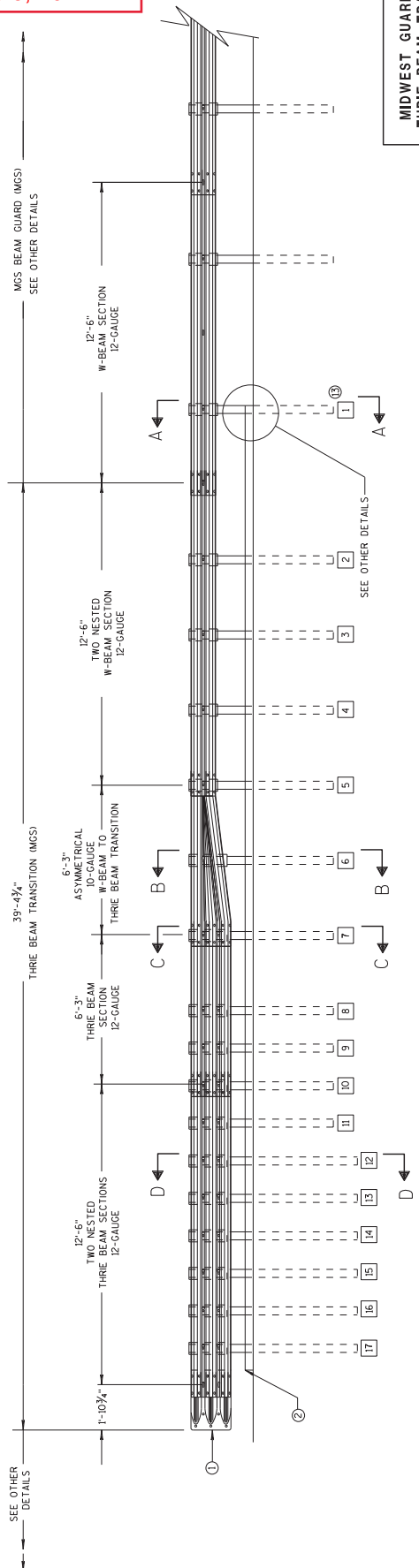
**GENERAL NOTES**  
 IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.  
 TRANSITION USES STEEL POSTS ONLY.  
 SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.  
 POST 2 THROUGH 17 USES STEEL POST ONLY

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② OPTIONAL CURB AND CUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42

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



**PLAN VIEW**



**ELEVATION VIEW**

Addendum No. 02  
 ID 1228-09-73  
 Added Sheet 4110  
 February 3, 2022

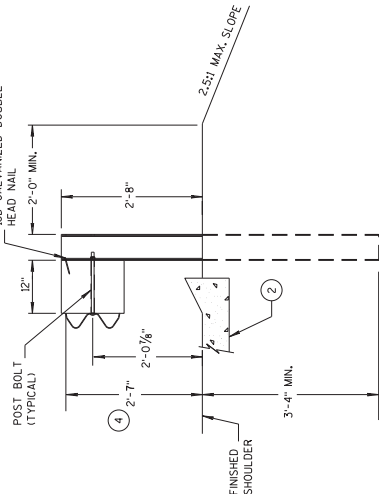
**MIDWEST GUARDRAIL SYSTEM  
 THREE BEAM TRANSITION (MGS)**  
 STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

4110

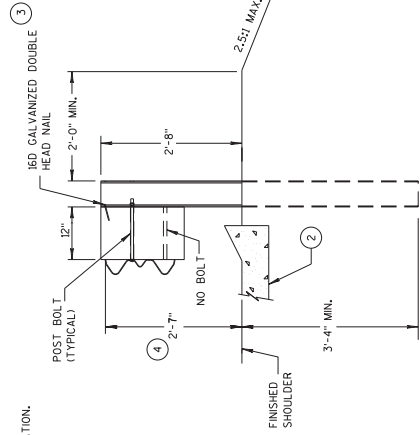
**MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION**

**GENERAL NOTES**

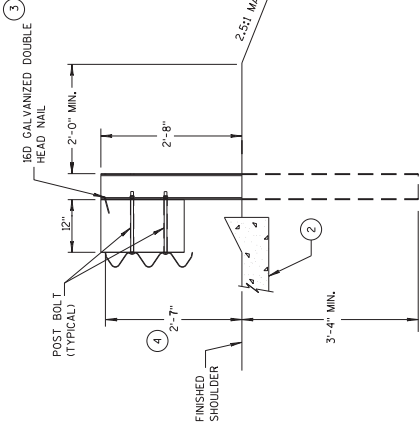
- (2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- (3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- (4) TOLERANCE FOR TOP OF W-BEAM RAIL IS  $\pm 1"$ .
-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



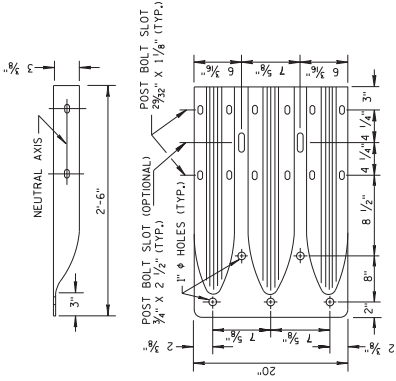
**SECTION A-A  
POSTS 1-5**



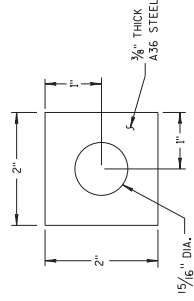
**SECTION B-B  
POST 6**



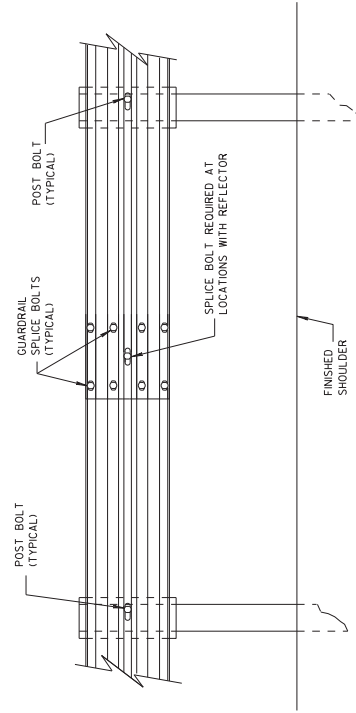
**SECTION C-C  
POSTS 7-11**



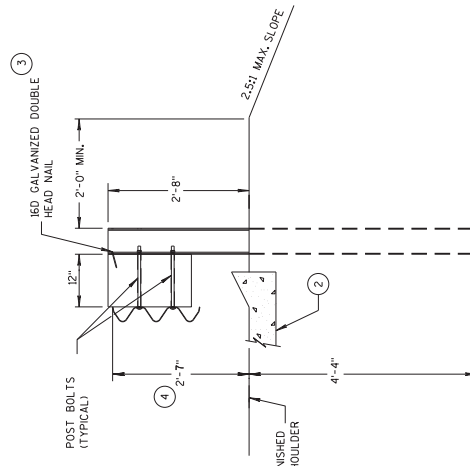
**THRIE BEAM  
TERMINAL CONNECTOR**



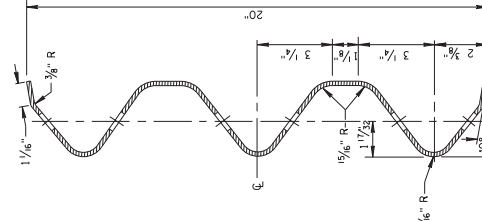
**PLATE WASHER DETAIL**



**SPLICE DETAIL**



**SECTION D-D  
POSTS 12-17**



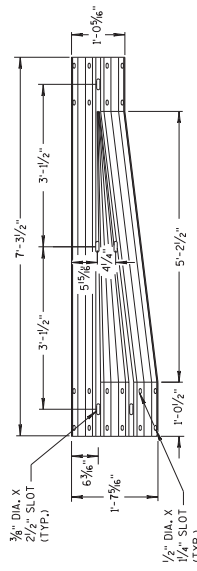
**SECTION THRU THRIE  
BEAM RAIL ELEMENT**

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411P  
February 3, 2022

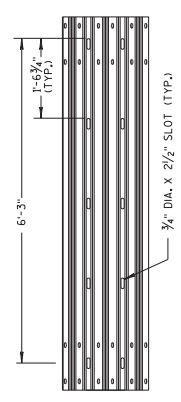
MIDWEST GUARDRAIL SYSTEM  
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

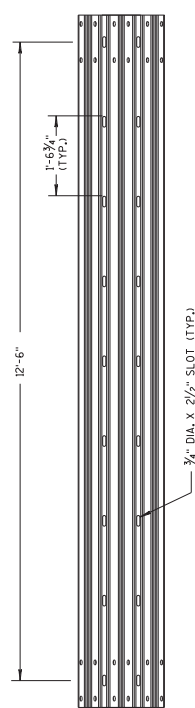
411P



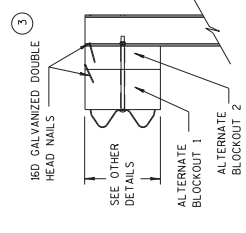
**W-BEAM TO THRIE BEAM TRANSITION SECTION**



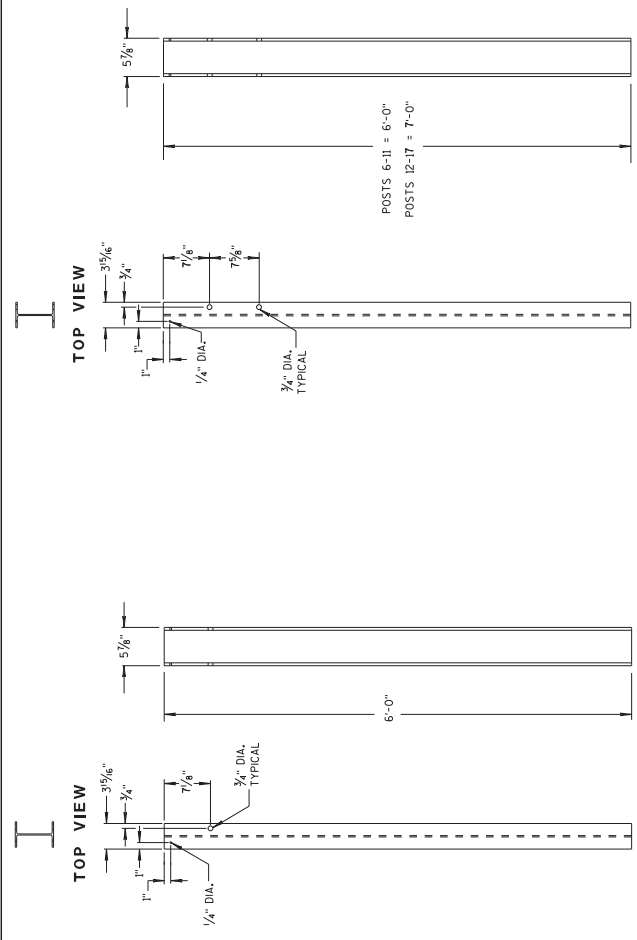
**6'-3" THRIE BEAM SECTION**



**12'-6" THRIE BEAM SECTION**



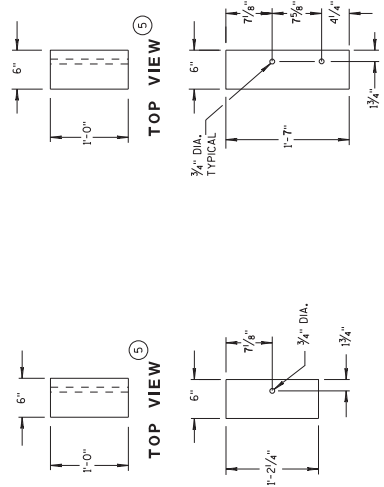
**ALTERNATE WOOD BLOCKOUT DETAIL**



**STEEL POSTS 1-5**

**STEEL POSTS 6-17**

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411Q  
February 3, 2022



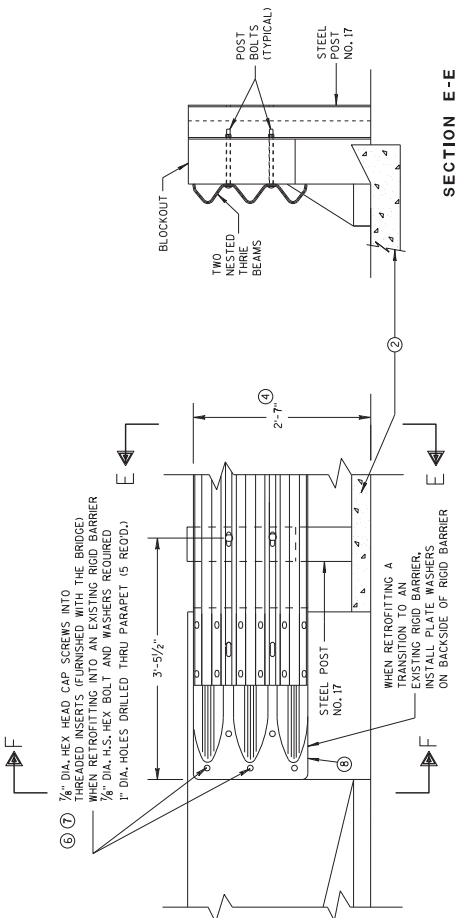
**ALTERNATE WOOD BLOCKOUT 1**

**GENERAL NOTES**

- STEEL POSTS ARE W6X9 OR W6X8.5.
- BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.
- 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.
- WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.
- STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 4B42.

**MIDWEST GUARDRAIL SYSTEM**  
**THRIE BEAM TRANSITION (MGS)**  
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

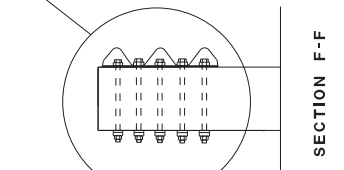
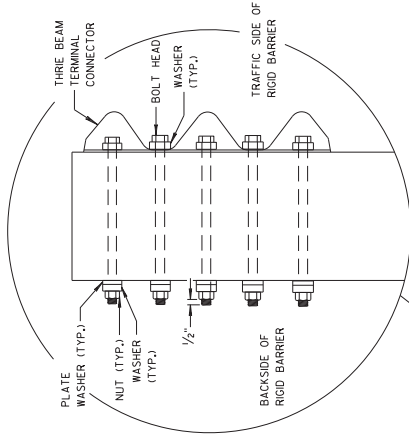
411Q



SECTION E-E

### FRONT VIEW THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

- GENERAL NOTES**
- 1 THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION 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.
  - 3 TOLERANCE FOR TOP OF BEAM IS ± 1".
  - 4 DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
  - 5 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. CONNECTION IS TO FIELD OF RIGID BARRIER AND PARAPET. ONE RIGID BARRIER END AND ONE PARAPET END ARE REQUIRED BETWEEN BEAM CONNECTION PLATE AND BOLT HEAD EXTENDING THROUGH PARAPET AND OUT OF BEAM CONNECTION PLATE. BOLT HEAD EXTENDING THROUGH PARAPET MUST BE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X .630" THICK AND ONE PLATE WASHER, REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
  - 6 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".



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

6

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411R  
February 3, 2022

6

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

6

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

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

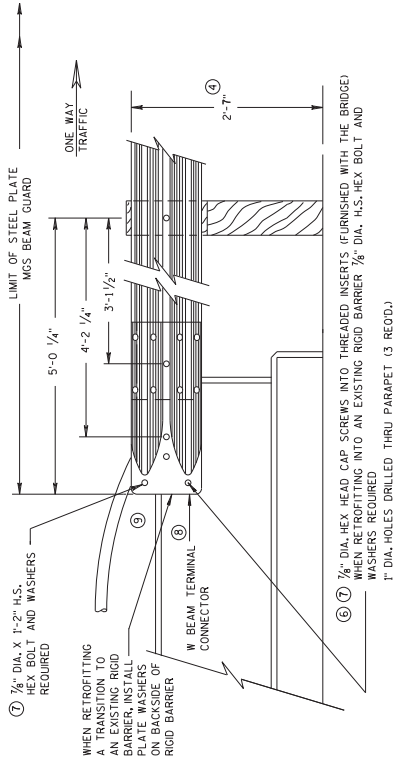
DRILL HOLE LOCATION

411R

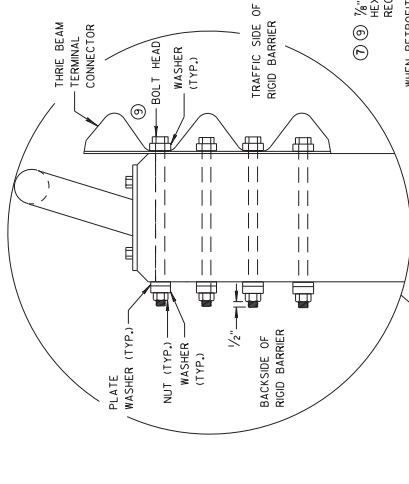
**GENERAL NOTES**

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

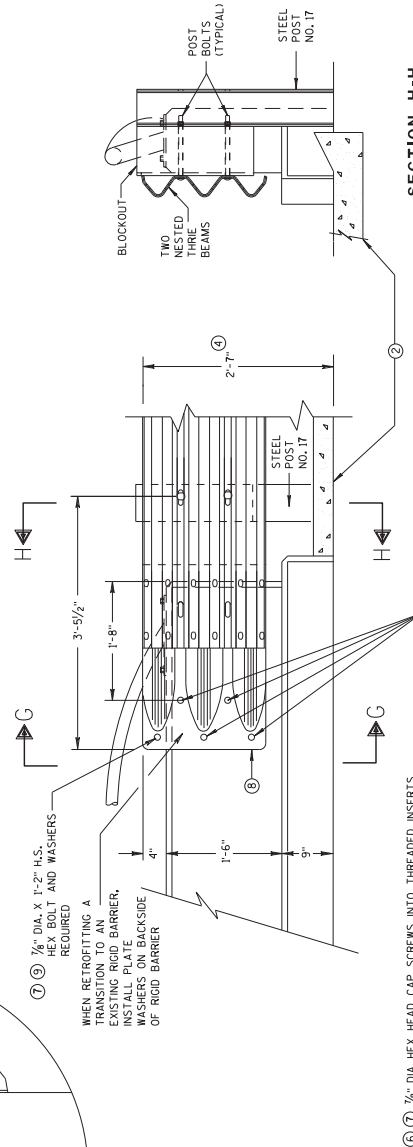
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A309 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THREE BEAM CONNECTION PLATE. CONTRACTOR IS TO VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THREE 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 5/32" 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 PARAPET 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**



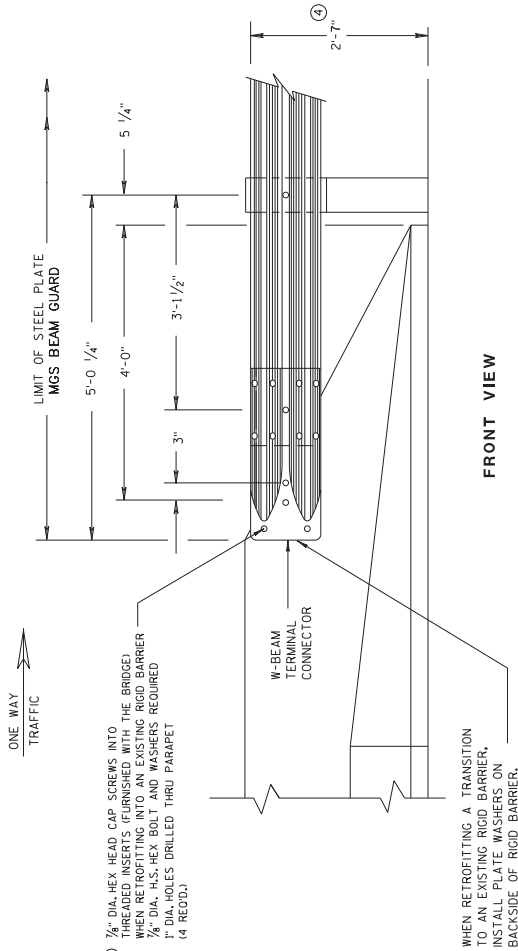
**FRONT VIEW**  
**SECTION H-H**  
**THREE BEAM CONNECTION TO VERTICAL FACED PARAPETS**

Addendum No. 02  
 ID 1228-09-73  
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 February 3, 2022

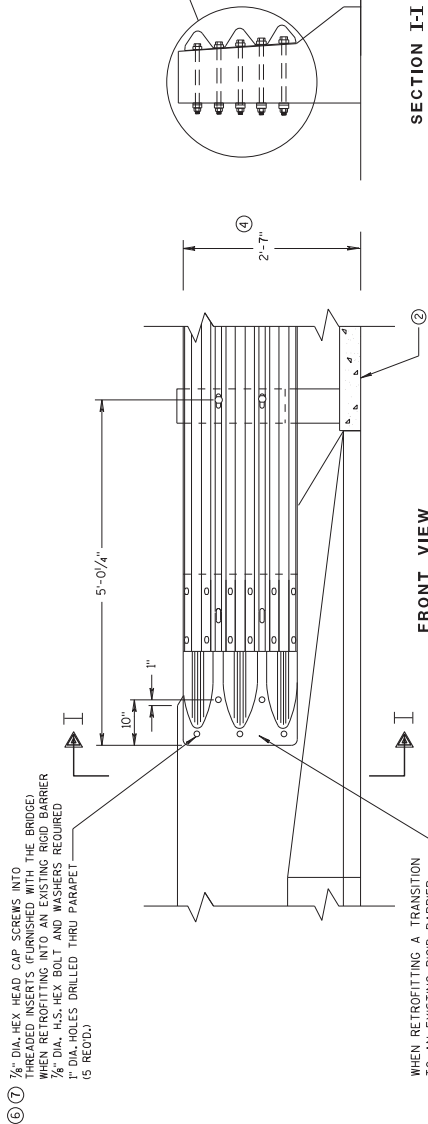
<b>MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	/s/ Rodney Taylor
DATE	ROADWAY DEVELOPMENT
PIWA	UNIT SUPERVISOR

**GENERAL NOTES**

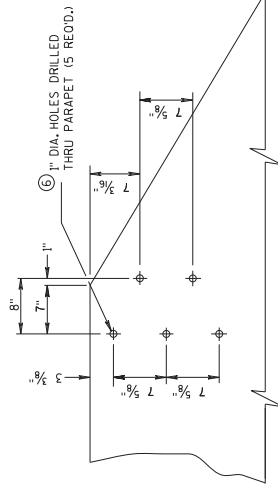
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THREE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THREE 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 5/32" THICK AND ONE PLATE WASHER, REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



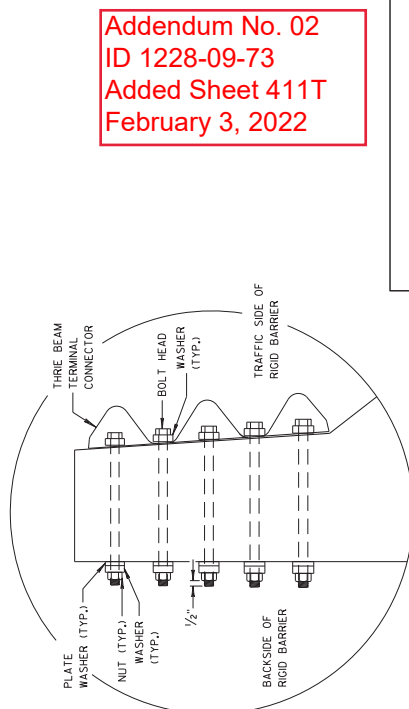
**FRONT VIEW**  
**W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS**  
 (USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)



**FRONT VIEW**  
**THREE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS**

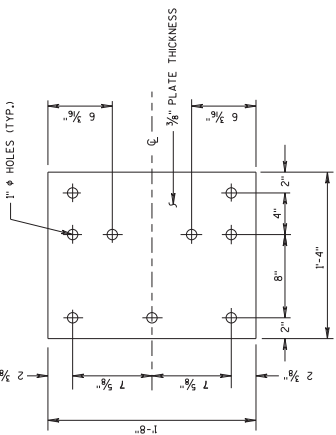


**DRILL HOLE LOCATION AND PATTERN FOR THREE BEAM CONNECTION**

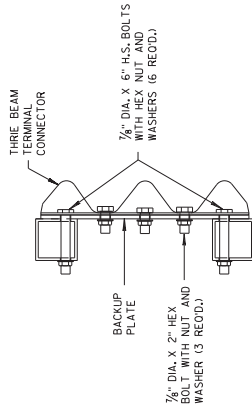


**Addendum No. 02**  
**ID 1228-09-73**  
**Added Sheet 411T**  
**February 3, 2022**

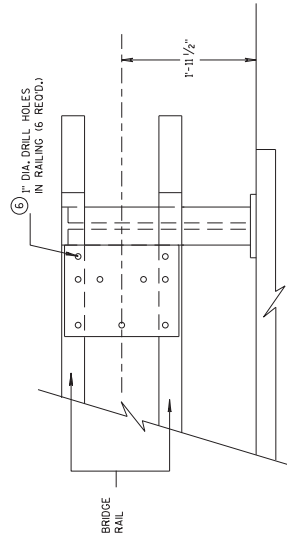
<b>MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	/s/ Rodney Taylor ROADWAY SAFETY DEVELOPMENT UNIT SUPERVISOR
DATE	07/2018
FHWA	



**BACK-UP PLATE DETAIL**

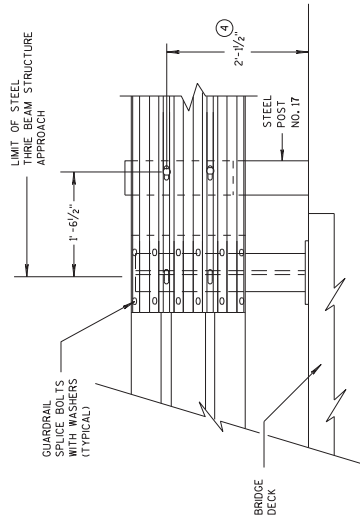


**SECTION J-J**

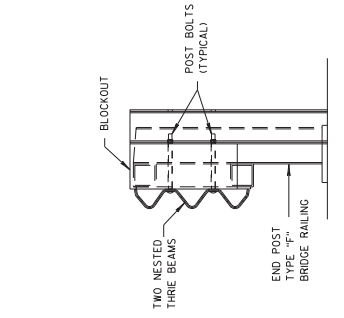


**BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING**

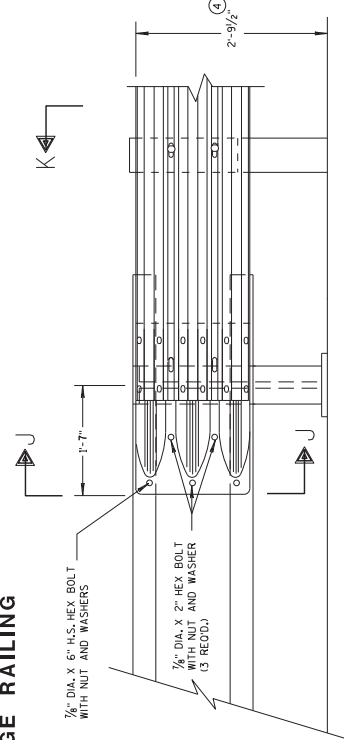
- GENERAL NOTES**
- ④ TOLERANCE FOR TOP OF BEAM IS ± 1".
  - ⑥ DRILLING HOLES THROUGH THE PAPERPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.



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



**SECTION K-K**



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

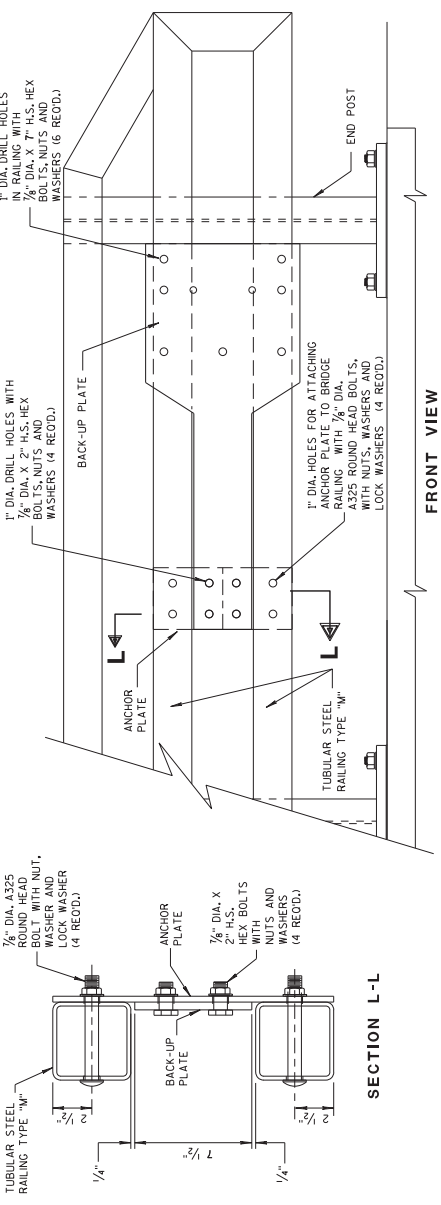
Addendum No. 02  
ID 1228-09-73  
Added Sheet 411U  
February 3, 2022

<b>MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018	/s/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

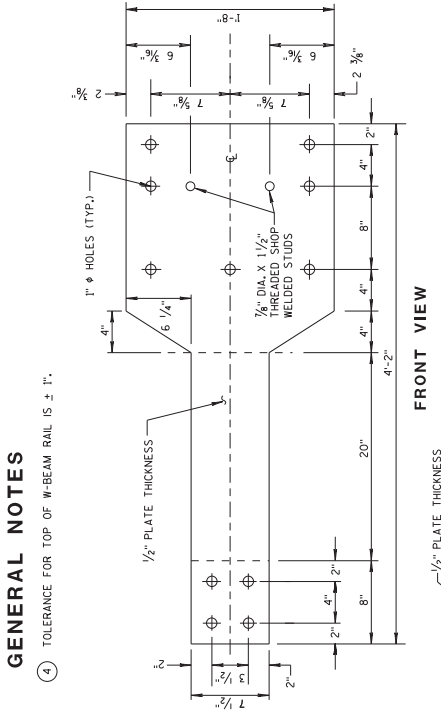
Addendum No. 02  
ID 1228-09-73  
Added Sheet 411V  
February 3, 2022

**GENERAL NOTES**

④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



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



**THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"**

**BACK-UP PLATE DETAIL, TYPE "M"**



**ANCHOR PLATE DETAIL, TYPE "M"**



**SECTION M-M**



**SECTION L-L**



**SECTION M-M**



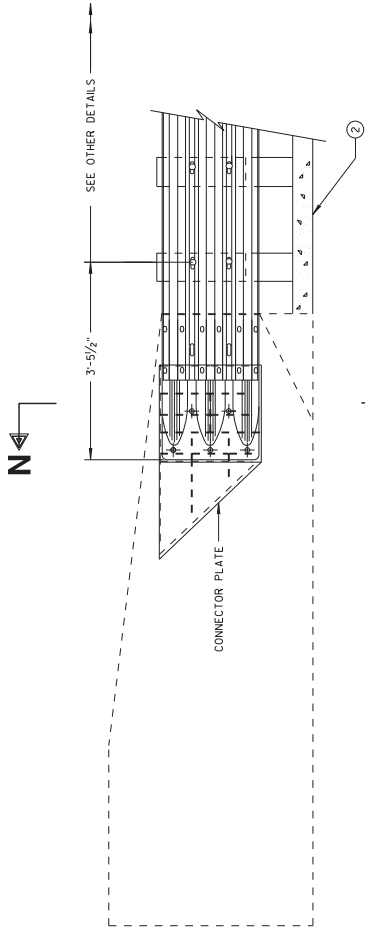


**GENERAL NOTES**

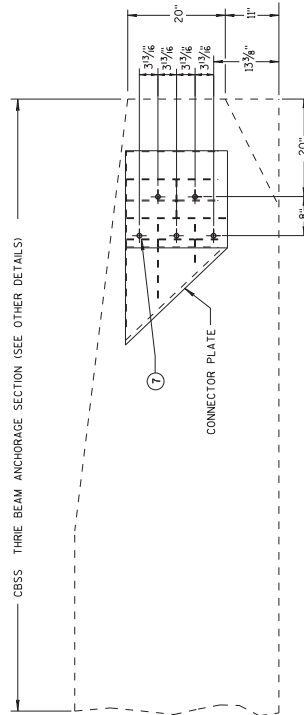
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

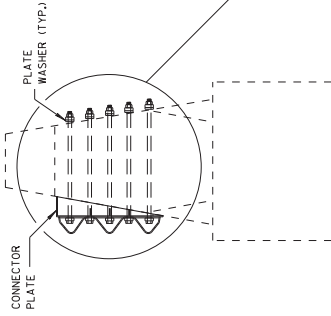
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THREE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THREE BEAM CONNECTION PLATE. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THREE BEAM CONNECTION PLATE. BOLT NUTS SHALL BE HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X .502" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



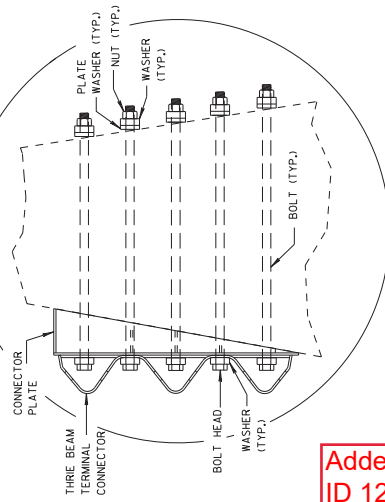
**THREE BEAM CONNECTION TO SINGLE SLOPE BARRIER**



**SINGLE SLOPE CONNECTION PLATE PLACEMENT**



**SECTION N-N**



Addendum No. 02  
ID 1228-09-73  
Added Sheet 411X  
February 3, 2022

MIDWEST GUARDRAIL SYSTEM  
THREE BEAM TRANSITION (MGS)

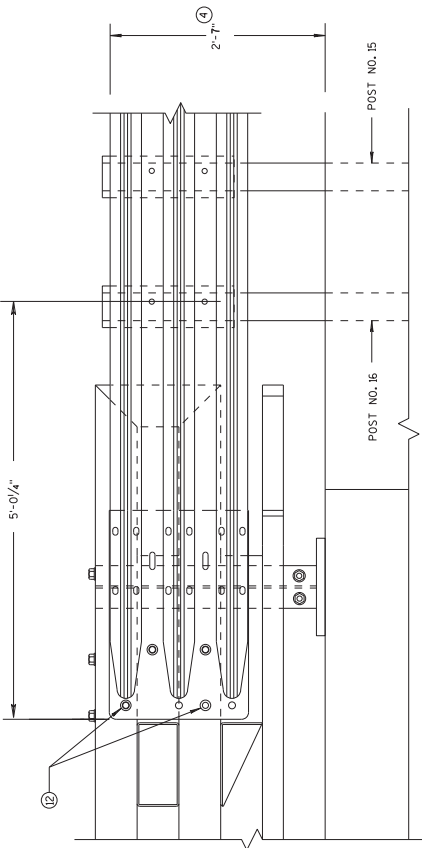
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED \_\_\_\_\_  
DATE 7/20/08  
PROJECT SUPERVISOR  
ROADWAY DEVELOPMENT  
UNIT SUPERVISOR

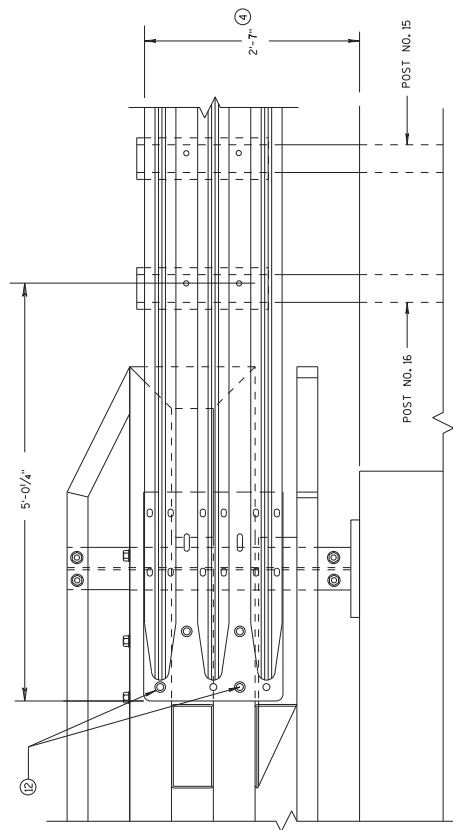
411X

**GENERAL NOTES**

- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THREE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THREE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND  $\frac{1}{2}$ -INCH BEYOND NUT.



**ELEVATION OF DETAIL AT NY3 END POST**  
THREE BEAM RAIL ATTACHMENT

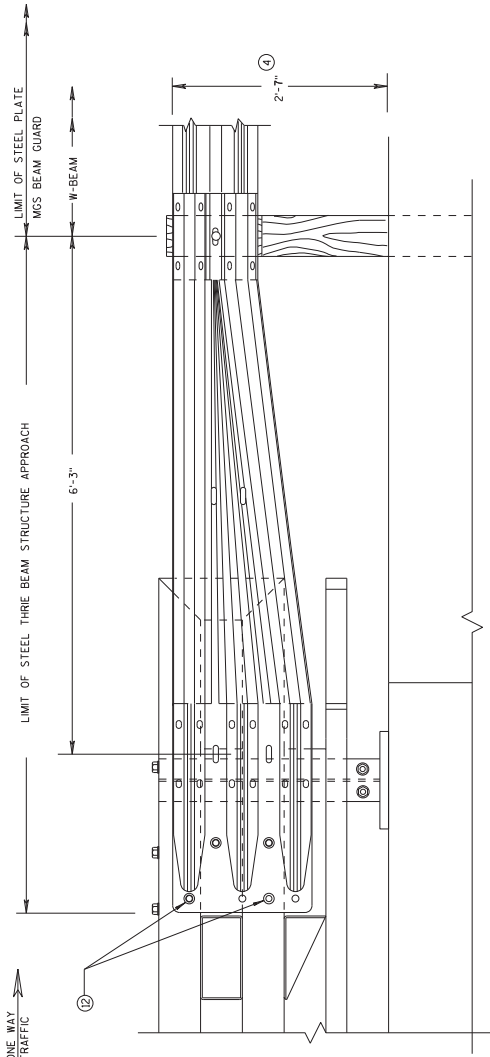


**ELEVATION OF DETAIL AT NY4 END POST**  
THREE BEAM RAIL ATTACHMENT

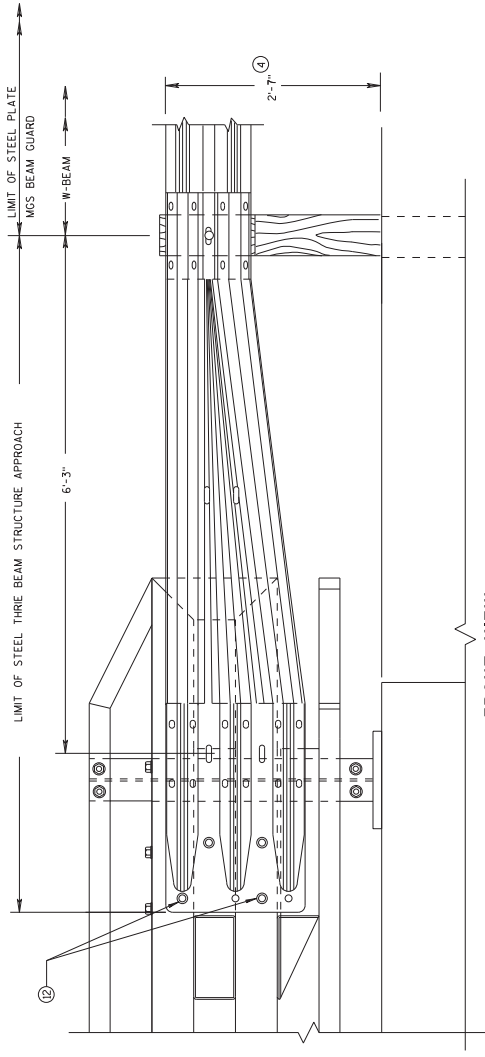
Addendum No. 02  
ID 1228-09-73  
Added Sheet 411Y  
February 3, 2022

<b>MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
DATE	7/20/08
FHWA	

411Y



**FRONT VIEW**  
**W BEAM TRANSITION AND**  
**CONNECTION TO BRIDGE RAILING TYPE "NY3"**  
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



**FRONT VIEW**  
**W BEAM TRANSITION AND**  
**CONNECTION TO BRIDGE RAILING TYPE "NY4"**  
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

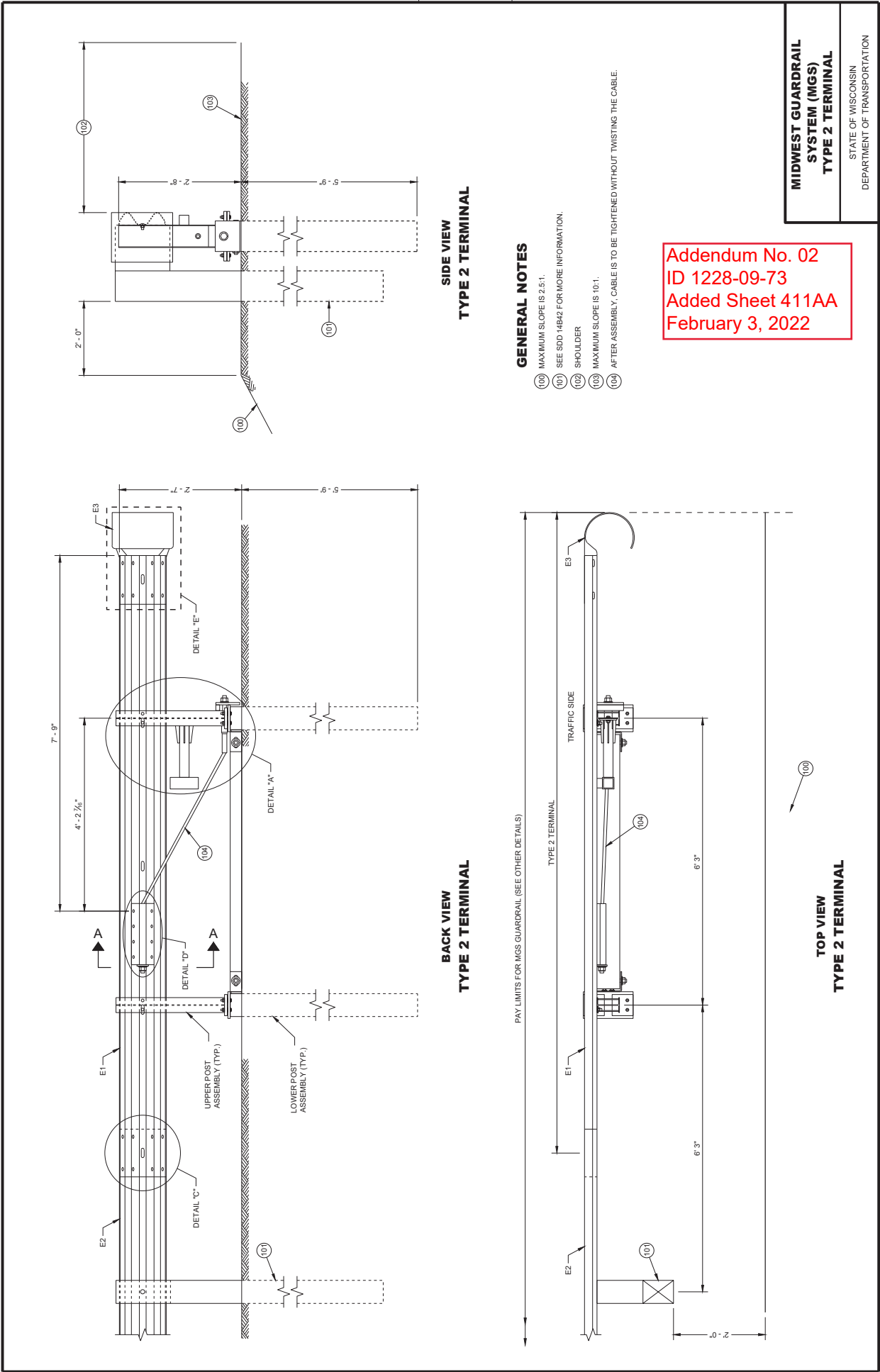
**GENERAL NOTES**

- ④ TOLERANCE FOR TOP OF BEAM IS  $\pm 1"$ .
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN BARRIER AND THREE BEAM CONNECTOR PLATE. CONTACT WITH FIELD AND FIELD VENEY CONNECTOR PLATE, ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND  $1/2$ -INCH BEYOND NUT.

Addendum No. 02  
 ID 1228-09-73  
 Added Sheet 411Z  
 February 3, 2022

<b>MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	/s/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
DATE	7/2018
PIWA	

411Z



BACK VIEW  
TYPE 2 TERMINAL

SIDE VIEW  
TYPE 2 TERMINAL

TOP VIEW  
TYPE 2 TERMINAL

PAY LIMITS FOR MGS GUARDRAIL (SEE OTHER DETAILS)

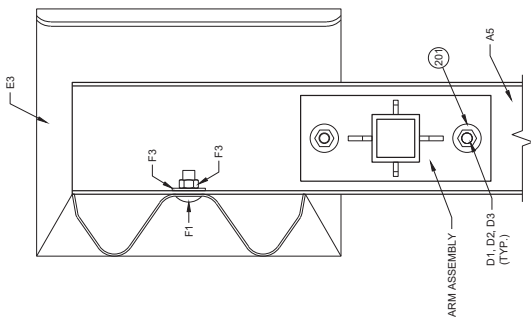
- GENERAL NOTES**
- 100 MAXIMUM SLOPE IS 2.5:1.
  - 101 SEE SDD 14B42 FOR MORE INFORMATION.
  - 102 SHOULDER
  - 103 MAXIMUM SLOPE IS 10:1.
  - 104 AFTER ASSEMBLY, CABLE IS TO BE TIGHTENED WITHOUT TWISTING THE CABLE.

Addendum No. 02  
 ID 1228-09-73  
 Added Sheet 411AA  
 February 3, 2022

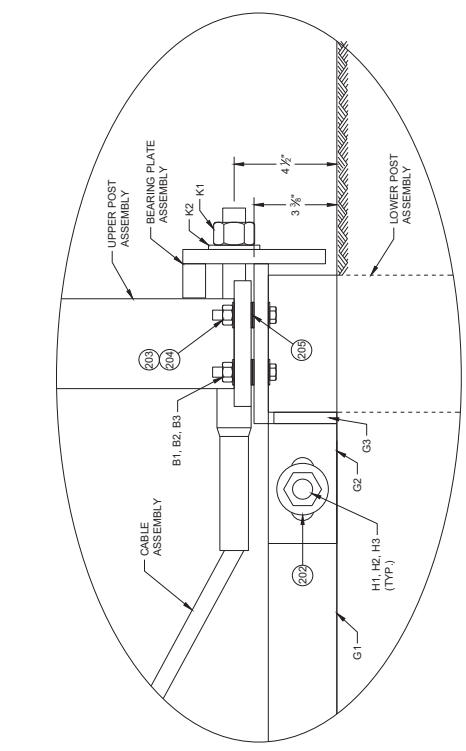
**MIDWEST GUARDRAIL  
 SYSTEM (MGS)  
 TYPE 2 TERMINAL**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

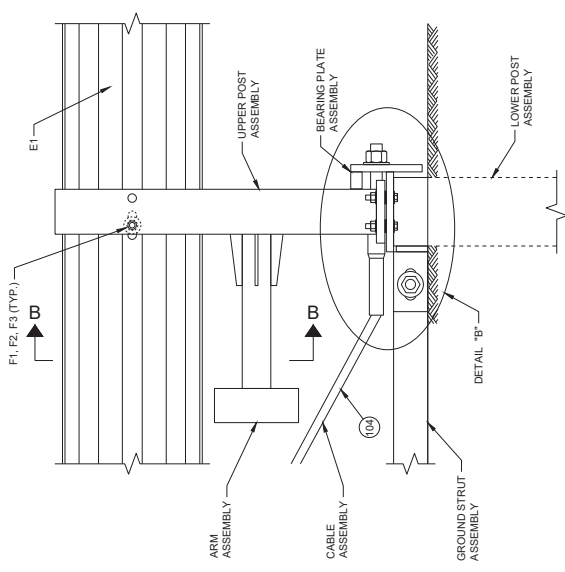
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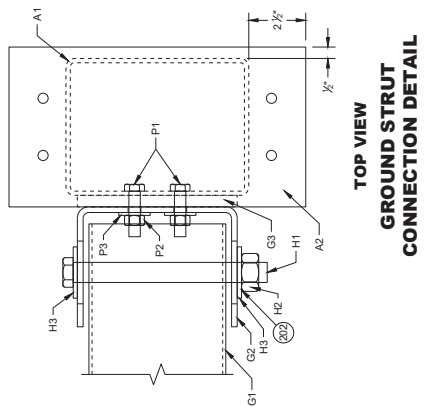
SECTION B - B



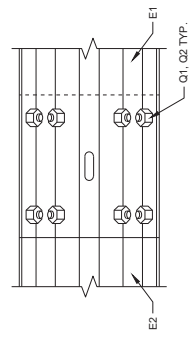
DETAIL "B"



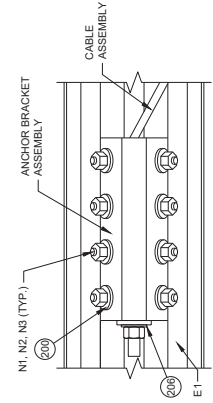
DETAIL "A"



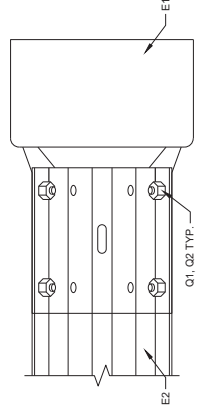
TOP VIEW  
GROUND STRUT  
CONNECTION DETAIL



DETAIL "C"



DETAIL "D"



DETAIL "E"

- GENERAL NOTES**
- 200 INSTALL ONE WASHER UNDER BOLT HEAD AND ON WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.
  - 201 INSTALL ONE WASHER UNDER BOLT HEAD AND UPPER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND ARM PLATE.
  - 202 INSTALL ONE WASHER UNDER BOLT HEAD AND GROUND STRUT CONNECTOR AND ONE WASHER BETWEEN NUT AND GROUND STRUT CONNECTOR.
  - 203 INSTALL ONE WASHER UNDER BOLT HEAD AND LOWER POST ASSEMBLY AND ONE WASHER BETWEEN NUT AND UPPER POST ASSEMBLY.
  - 204 TORQUE VALUE IS BETWEEN 60 - 75 FT-LB.
  - 205 TWO WASHERS BETWEEN UPPER AND LOWER POST ASSEMBLY.
  - 206 INSTALL ONE WASHER BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.

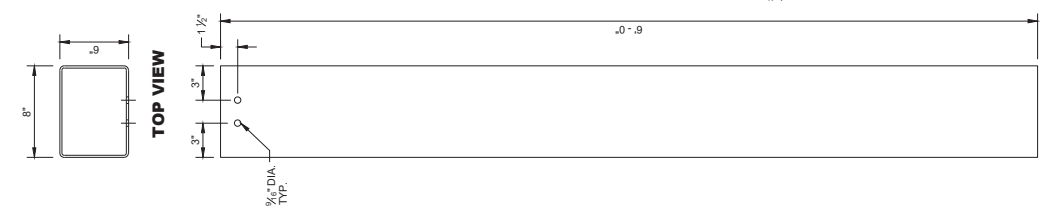
Addendum No. 02  
ID 1228-09-73  
Added Sheet 411AB  
February 3, 2022

**MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL**

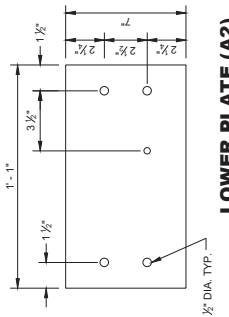
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

411AB

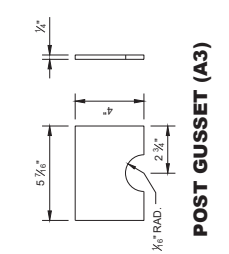
Addendum No. 02  
 ID 1228-09-73  
 Added Sheet 411AC  
 February 3, 2022



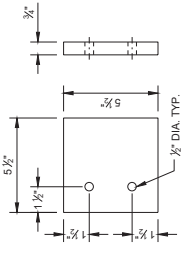
**FOUNDATIONS TUBE (A1)**



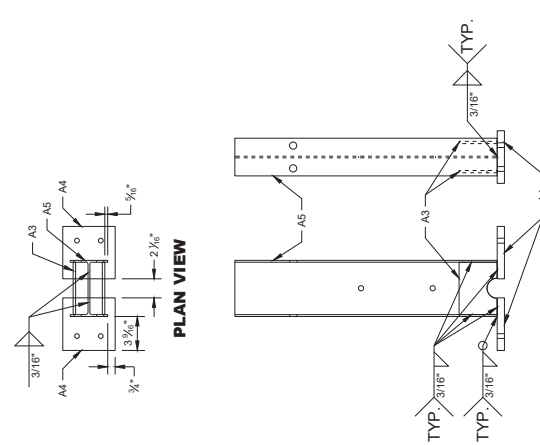
**LOWER PLATE (A2)**



**POST GUSSET (A3)**



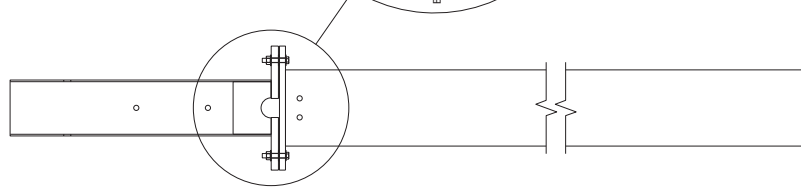
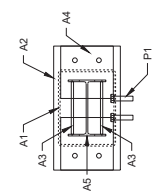
**UPPER PLATE (A4)**



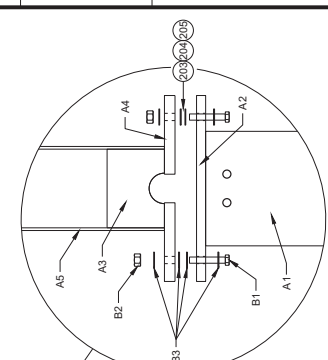
**UPPER POST ASSEMBLY**



**LOWER POST ASSEMBLY**



**ASSEMBLED POST**

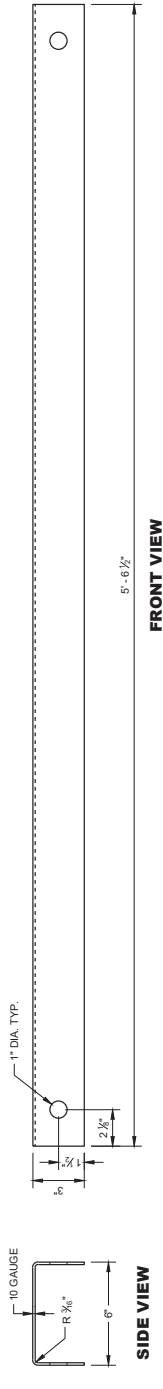


**POST CONNECTION DETAIL**

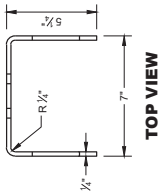
**MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL**  
 STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

411AC

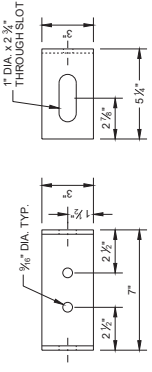
Addendum No. 02  
 ID 1228-09-73  
 Added Sheet 411AD  
 February 3, 2022



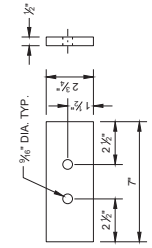
**GROUND STRUT CHANNEL (G1)**



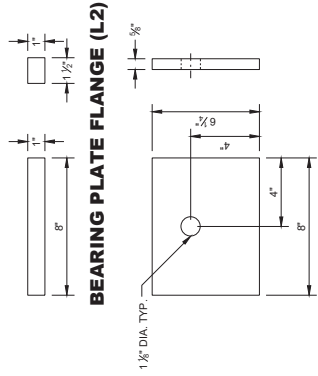
**TOP VIEW**



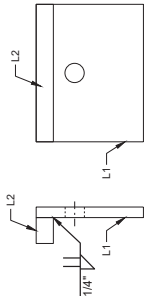
**FRONT VIEW**



**SIDE VIEW**



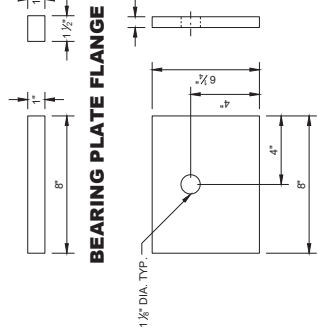
**BEARING PLATE FLANGE (L2)**



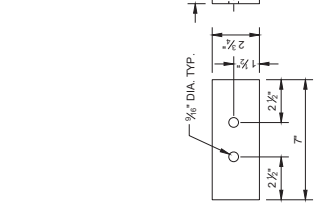
**FRONT VIEW**

**SIDE VIEW**

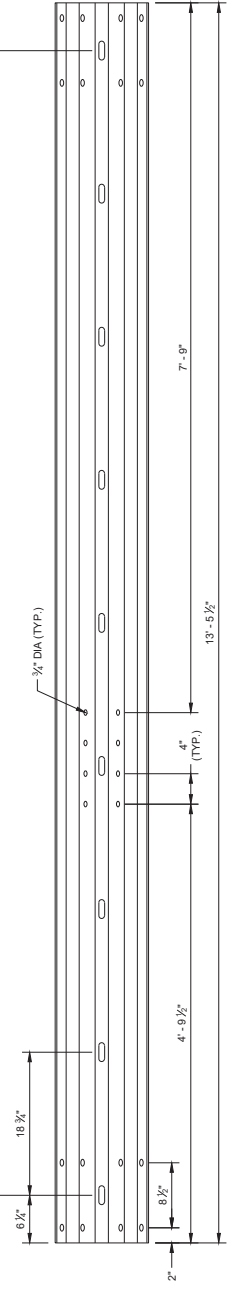
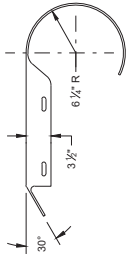
**BEARING PLATE ASSEMBLY**



**BEARING PLATE (L1)**



**GROUND STRUT PLATE (G3)**

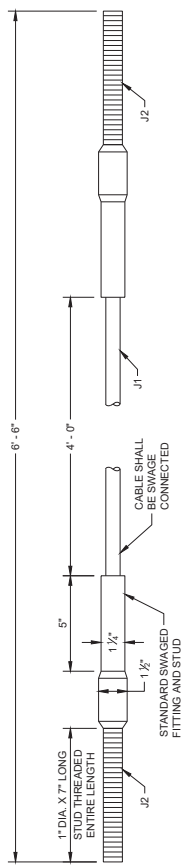


**PLAN VIEW**

**ELEVATION VIEW**

**ROUNDED BUFFER END (E3)**

**TYPE 2 GUARDRAIL (E1)**



**CABLE ASSEMBLY**

**MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

411AD

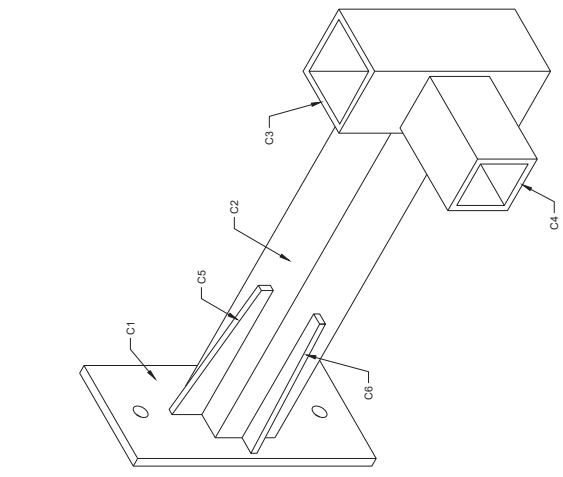


Addendum No. 02  
ID 1228-09-73  
Added Sheet 411AE  
February 3, 2022

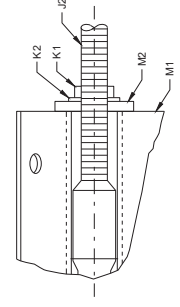
MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

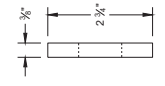
411AE



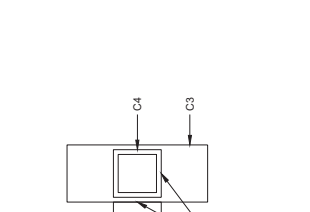
ISOMETRIC VIEW  
ARM ASSEMBLY



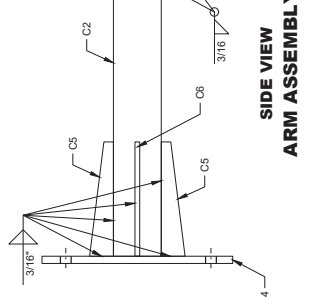
SECTION A - A



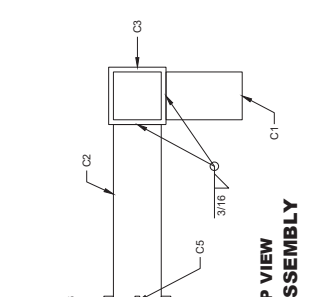
ANCHOR BRACKET BEARING PLATE (M2)



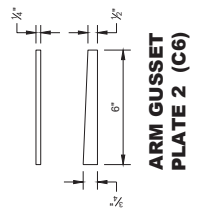
SIDE VIEW  
ARM ASSEMBLY



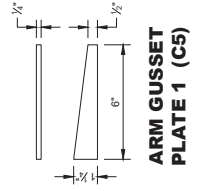
TOP VIEW  
ARM ASSEMBLY



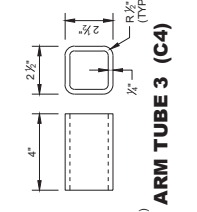
ARM PLATE (C1)



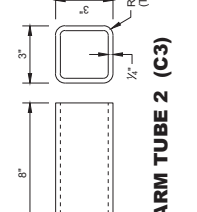
ARM GUSSET  
PLATE 2 (C6)



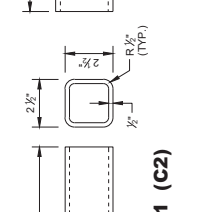
ARM GUSSET  
PLATE 1 (C5)



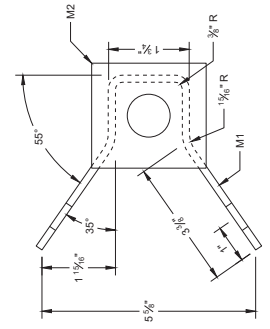
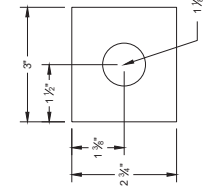
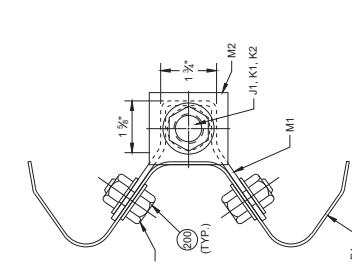
ARM TUBE 3 (C4)



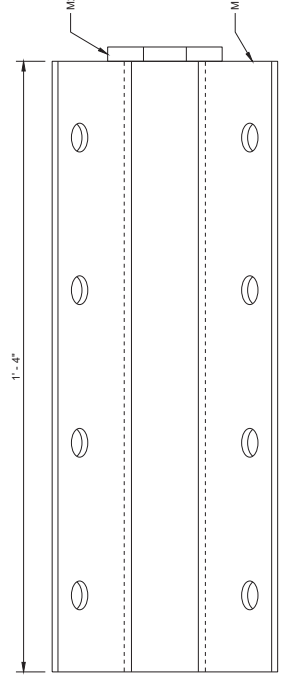
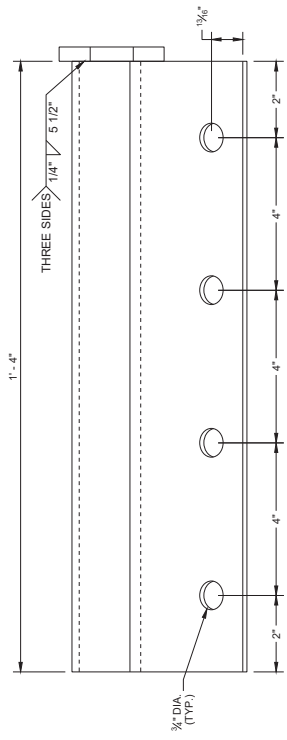
ARM TUBE 2 (C3)



ARM TUBE 1 (C2)



ANCHOR BRACKET (M1, M2)



**BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)**

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	TYPE 2 FOUNDATION TUBE	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3/16"
A2	LOWER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	3/8" THICKNESS
A3	POST GUSSET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" THICKNESS
A4	UPPER PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" THICKNESS
A5	TYPE 2 POST	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" THICKNESS
B1	BREAKAWAY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD / ASTM F1925 GRADE A325 TYPE 1 HEAVY HEX HEAD OR SAE J429 GRADE 5 HEAVY HEX HEAD / ASTM A448 TYPE 1 HEAVY HEX HEAD. BOLTS MAY BE FULLY THREADED. PROVIDE ENOUGH THREADING FOR PROPER TIGHTENING OF BOLT.	1/4" DIA.
B2	BREAKAWAY BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F438 TYPE 1 (HARDEN WASHER ONLY)	3/8" DIA.
B3	BREAKAWAY BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J985 GRADE 5	3/8" THICKNESS
C1	ARM ASSEMBLY PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	3/8" THICKNESS
C2	ARM ASSEMBLY TUBE 1	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 8" x 6" x 3/16"
C3	ARM ASSEMBLY TUBE 2	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 3" x 3" x 1/4"
C4	ARM ASSEMBLY TUBE 3	AASHTO M111 / ASTM A123 ASTM A500 GRADE B OR ASTM A-501	TS 2 1/2" x 2 1/2" x 1/4"
C5	ARM ASSEMBLY GUSSET PLATE 1	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" THICKNESS
C6	ARM ASSEMBLY GUSSET PLATE 2	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" THICKNESS
D1	ARM ASSEMBLY BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F 1654 GRADE 36	1/2" DIA.
D2	ARM ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F438 TYPE 1 (HARDEN WASHER ONLY)	1/2" DIA.
D3	ARM ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J985 GRADE 5	1/2" DIA.
E1	TYPE 2 GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E2	BEAM GUARD RAIL	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
E3	BEAM GUARD ROUNDED BUFFER END	AASHTO M180 CLASS A TYPE 2 12 GAUGE APPROVED PRODUCER	
F1	POST BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	3/8" DIA.
F2	POST BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F438 TYPE 1 (HARDEN WASHER ONLY)	3/8" DIA.
F3	POST BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M236 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J985 GRADE 5	
G1	GROUND STRUT CHANNEL	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" x 1 1/2" x 10 GAUGE
G2	GROUND STRUT CONNECTOR	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" THICKNESS
G3	GROUND STRUT PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI	1/2" THICKNESS

Addendum No. 02  
ID 1228-09-73  
Added Sheet 411AF  
February 3, 2022

**MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

411AF

**BILL OF MATERIALS - TYPE 2 TERMINAL (MGS)**

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
H1	GROUND STRUT BOLT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	½" DIA.
H2	GROUND STRUT BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	½" DIA.
H3	GROUND STRUT BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ½" ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	½" DIA.
J1	BCT CABLE	AASHTO M30 / ASTM A741 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED FLOW STEEL (IPS), 6 x 19 INDEPENDENT WIRE CORE (IWRC) IMPROVED FLOW STEEL (IPS) TYPE 1 OR IIC, CLASS C ZINC COATED MIN. BREAKING STRENGTH OF 427 KIPS	¾" DIA.
J2	BCT CABLE	UNC. 1" ASTM A576 GRADE 1025 SWAGE FITTINGS ARE TO BE FACTORY SWAGED. MIN. BREAKING STRENGTH OF .457 KIPS. ASME B30.26. *FORGED, CAST OR DIE STAMPED WITH THE FOLLOWING IN TO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE FOR ALLOY EYEBOLTS.*	
K1	CABLE ASSEMBLY NUT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	1" DIA.
K2	CABLE ASSEMBLY WASHER	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1	1" DIA.
L1	BEARING PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI. OR ASTM A529 MAX. STRENGTH 50 KSI. OR ASTM A572 MAX. STRENGTH 50 KSI. OR ASTM A709 MAX. STRENGTH 50 KSI. OR ASTM A992 MAX. STRENGTH 50 KSI	¾" THICKNESS
L2	BEARING PLATE FLANGE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI. OR ASTM A529 MAX. STRENGTH 50 KSI. OR ASTM A572 MAX. STRENGTH 50 KSI. OR ASTM A709 MAX. STRENGTH 50 KSI. OR ASTM A992 MAX. STRENGTH 50 KSI	1" THICKNESS
M1	BEAM GUARD ANCHOR BRACKET	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI. OR ASTM A529 MAX. STRENGTH 50 KSI. OR ASTM A572 MAX. STRENGTH 50 KSI. OR ASTM A709 MAX. STRENGTH 50 KSI. OR ASTM A992 MAX. STRENGTH 50 KSI	¾" THICKNESS
M2	BEAM GUARD ANCHOR END PLATE	AASHTO M111 / ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI. OR ASTM A529 MAX. STRENGTH 50 KSI. OR ASTM A572 MAX. STRENGTH 50 KSI. OR ASTM A709 MAX. STRENGTH 50 KSI. OR ASTM A992 MAX. STRENGTH 50 KSI	¾" THICKNESS
N1	ANCHOR BRACKET BOLT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	½" DIA.
N2	ANCHOR BRACKET BOLT WASHER	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	½" DIA.
N3	ANCHOR BRACKET BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	½" DIA.
P1	FOUNDATION TUBE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	½" DIA.
P2	FOUNDATION TUBE WASHER	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)	½" DIA.
P3	FOUNDATION TUBE NUT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	½" DIA.
Q1	SPLICE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36	½" DIA.
Q2	SPLICE NUT	HOT DIP AASHTO M232 CLASS / ASTM A193 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5	½" DIA.

**Addendum No. 02  
ID 1228-09-73  
Added Sheet 411AG  
February 3, 2022**

**MIDWEST GUARDRAIL  
SYSTEM (MGS)  
TYPE 2 TERMINAL**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED \_\_\_\_\_  
AUGUST 2021  
DATE  
ROADWAY STRATEGIC DEVELOPMENT  
ENGINEER  
R. J. ROEHLER

**411AG**



## Proposal Schedule of Items

Proposal ID: 20220208010 Project(s): 1228-09-73

Federal ID(s): WISC 2022200

SECTION: 0001

ROADWAY ITEMS

Alt Set ID:

Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0002	202.0110 Roadside Clearing	4,017.000 SY	_____.	_____.
0004	204.0100 Removing Concrete Pavement	1,646.000 SY	_____.	_____.
0006	204.0110 Removing Asphaltic Surface	109.000 SY	_____.	_____.
0008	204.0120 Removing Asphaltic Surface Milling	199,646.000 SY	_____.	_____.
0010	204.0125 Removing Asphaltic Surface Milling	1,919.000 TON	_____.	_____.
0012	204.0126.S Removing Asphaltic Longitudinal Notched Wedge Joint Milling	29,341.000 LF	_____.	_____.
0014	204.0150 Removing Curb & Gutter	505.000 LF	_____.	_____.
0016	204.0155 Removing Concrete Sidewalk	160.000 SY	_____.	_____.
0018	204.0157 Removing Concrete Barrier	150.000 LF	_____.	_____.
0020	204.9060.S Removing (item description) 2001. Removing Overhead Freeway DMS	1.000 EACH	_____.	_____.
0022	213.0100 Finishing Roadway (project) 0001. 1228-09-73	1.000 EACH	_____.	_____.
0024	305.0120 Base Aggregate Dense 1 1/4-Inch	187.000 TON	_____.	_____.
0026	320.0125 Concrete Base 6-Inch	1,391.000 SY	_____.	_____.
0028	320.0135 Concrete Base 7-Inch	557.000 SY	_____.	_____.
0030	320.0155 Concrete Base 9-Inch	42.000 SY	_____.	_____.
0032	320.0335 Concrete Base HES 7-Inch	100.000 SY	_____.	_____.



Proposal Schedule of Items

Proposal ID: 20220208010 Project(s): 1228-09-73

Federal ID(s): WISC 2022200

SECTION: 0001

ROADWAY ITEMS

Alt Set ID:

Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0034	390.0403 Base Patching Concrete Shes	15,998.000 SY	_____.	_____.
0036	416.0610 Drilled Tie Bars	7,116.000 EACH	_____.	_____.
0038	416.0620 Drilled Dowel Bars	23,012.000 EACH	_____.	_____.
0040	450.4000 HMA Cold Weather Paving	2,750.000 TON	_____.	_____.
0042	455.0605 Tack Coat	30,702.000 GAL	_____.	_____.
0044	460.0105.S HMA Percent Within Limits (PWL) Test Strip Volumetrics	1.000 EACH	_____.	_____.
0046	460.0110.S HMA Percent Within Limits (PWL) Test Strip Density	1.000 EACH	_____.	_____.
0048	460.0115.S HMA Pavement Test Strips Volumetrics	1.000 EACH	_____.	_____.
0050	460.0120.S HMA Pavement Test Strips Density	1.000 EACH	_____.	_____.
0052	460.2000 Incentive Density HMA Pavement	13,330.000 DOL	1.00000	13,330.00
0054	460.2005 Incentive Density PWL HMA Pavement	18,033.000 DOL	1.00000	18,033.00
0056	460.2007 Incentive Density HMA Pavement Longitudinal Joints	28,335.000 DOL	1.00000	28,335.00
0058	460.2010 Incentive Air Voids HMA Pavement	18,033.000 DOL	1.00000	18,033.00
0060	460.6224 HMA Pavement 4 MT 58-28 S	1,855.000 TON	_____.	_____.
0062	460.7423 HMA Pavement 3 HT 58-28 H	28,132.000 TON	_____.	_____.
0064	460.7424 HMA Pavement 4 HT 58-28 H	10.000 TON	_____.	_____.



Proposal Schedule of Items

Proposal ID: 20220208010 Project(s): 1228-09-73  
Federal ID(s): WISC 2022200

SECTION: 0001 ROADWAY ITEMS

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0066	460.8424 HMA Pavement 4 SMA 58-28 H	19,940.000 TON	_____.	_____.
0068	460.9000.S Material Transfer Vehicle (project) 0001. 1228-09-73	1.000 EACH	_____.	_____.
0070	465.0110 Asphaltic Surface Patching	100.000 TON	_____.	_____.
0072	502.3205 Pigmented Surface Sealer Reseal	16,515.000 SY	_____.	_____.
0074	502.3215 Protective Surface Treatment Reseal	2,174.000 SY	_____.	_____.
0076	509.0301 Preparation Decks Type 1	6.000 SY	_____.	_____.
0078	509.0310.S Sawing Pavement Deck Preparation Areas	24.000 LF	_____.	_____.
0080	509.1200 Curb Repair	4.000 LF	_____.	_____.
0082	509.1500 Concrete Surface Repair	2,322.000 SF	_____.	_____.
0084	509.2100.S Concrete Masonry Deck Repair	3.000 CY	_____.	_____.
0086	509.5100.S Polymer Overlay	27,619.000 SY	_____.	_____.
0088	509.9015.S Removing Polymer Overlay (structure) 0001. B-40-181	2,039.000 SY	_____.	_____.
0090	509.9015.S Removing Polymer Overlay (structure) 0002. B-40-182	2,039.000 SY	_____.	_____.
0092	509.9025.S Epoxy Injection Crack Repair	175.000 LF	_____.	_____.
0094	509.9026.S Cored Holes 2-Inch Diameter	15.000 EACH	_____.	_____.
0096	601.0331 Concrete Curb & Gutter 31-Inch	272.000 LF	_____.	_____.



Proposal Schedule of Items

Proposal ID: 20220208010 Project(s): 1228-09-73

Federal ID(s): WISC 2022200

SECTION: 0001

ROADWAY ITEMS

Alt Set ID:

Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0098	601.0600 Concrete Curb Pedestrian	28.000 LF	_____.	_____.
0100	602.0410 Concrete Sidewalk 5-Inch	1,438.000 SF	_____.	_____.
0102	602.0505 Curb Ramp Detectable Warning Field Yellow	122.000 SF	_____.	_____.
0104	603.0105 Concrete Barrier Single-Faced 32-Inch	150.000 LF	_____.	_____.
0106	603.8000 Concrete Barrier Temporary Precast Delivered	4,500.000 LF	_____.	_____.
0108	603.8125 Concrete Barrier Temporary Precast Installed	4,500.000 LF	_____.	_____.
0110	611.0430 Reconstructing Inlets	20.000 EACH	_____.	_____.
0112	611.8115 Adjusting Inlet Covers	25.000 EACH	_____.	_____.
0114	611.9710 Salvaged Inlet Covers	39.000 EACH	_____.	_____.
0116	614.0905 Crash Cushions Temporary	30.000 EACH	_____.	_____.
0118	616.0206 Fence Chain Link 6-FT	635.000 LF	_____.	_____.
0120	619.1000 Mobilization	1.000 EACH	_____.	_____.
0122	625.0100 Topsoil	1,182.000 SY	_____.	_____.
0124	627.0200 Mulching	1,109.000 SY	_____.	_____.
0126	628.7020 Inlet Protection Type D	460.000 EACH	_____.	_____.
0128	629.0210 Fertilizer Type B	0.060 CWT	_____.	_____.



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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0130	630.0130 Seeding Mixture No. 30	20.000 LB	_____.	_____.
0134	631.0300 Sod Water	1.800 MGAL	_____.	_____.
0136	631.1000 Sod Lawn	73.000 SY	_____.	_____.
0138	634.0618 Posts Wood 4x6-Inch X 18-FT	53.000 EACH	_____.	_____.
0140	634.0814 Posts Tubular Steel 2x2-Inch X 14-FT	8.000 EACH	_____.	_____.
0142	635.9020.S Sign Supports Replacing Base Connection Bolts Legacy System	12.000 EACH	_____.	_____.
0144	637.1220 Signs Type I Reflective SH	6,037.500 SF	_____.	_____.
0146	637.2210 Signs Type II Reflective H	152.750 SF	_____.	_____.
0148	638.2102 Moving Signs Type II	79.000 EACH	_____.	_____.
0150	638.2601 Removing Signs Type I	34.000 EACH	_____.	_____.
0152	638.3000 Removing Small Sign Supports	33.000 EACH	_____.	_____.
0154	638.3210 Revising Signs Type I Demountable	1.000 EACH	_____.	_____.
0156	643.0300 Traffic Control Drums	143,599.000 DAY	_____.	_____.
0158	643.0410 Traffic Control Barricades Type II	49.000 DAY	_____.	_____.
0160	643.0420 Traffic Control Barricades Type III	15,574.000 DAY	_____.	_____.
0162	643.0500 Traffic Control Flexible Tubular Marker Posts	10.000 EACH	_____.	_____.





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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0164	643.0600 Traffic Control Flexible Tubular Marker Bases	10.000 EACH	_____.	_____.
0166	643.0705 Traffic Control Warning Lights Type A	31,198.000 DAY	_____.	_____.
0168	643.0715 Traffic Control Warning Lights Type C	22,318.000 DAY	_____.	_____.
0170	643.0800 Traffic Control Arrow Boards	1,839.000 DAY	_____.	_____.
0172	643.0900 Traffic Control Signs	56,215.000 DAY	_____.	_____.
0174	643.0920 Traffic Control Covering Signs Type II	2,135.000 EACH	_____.	_____.
0176	643.1000 Traffic Control Signs Fixed Message	880.000 SF	_____.	_____.
0178	643.1050 Traffic Control Signs PCMS	6,045.000 DAY	_____.	_____.
0180	643.4100.S Traffic Control Interim Lane Closure	931.000 EACH	_____.	_____.
0182	643.5000 Traffic Control	1.000 EACH	_____.	_____.
0184	644.1601 Temporary Pedestrian Curb Ramp	14.000 DAY	_____.	_____.
0186	644.1810 Temporary Pedestrian Barricade	601.000 LF	_____.	_____.
0188	646.1020 Marking Line Epoxy 4-Inch	74,261.000 LF	_____.	_____.
0190	646.1040 Marking Line Grooved Wet Ref Epoxy 4-Inch	83,372.000 LF	_____.	_____.
0192	646.1555 Marking Line Grooved Contrast Permanent Tape 4-Inch	15,514.000 LF	_____.	_____.
0194	646.3020 Marking Line Epoxy 8-Inch	567.000 LF	_____.	_____.



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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0196	646.3555 Marking Line Grooved Contrast Permanent Tape 8-Inch	12,968.000 LF	_____.	_____.
0198	646.5020 Marking Arrow Epoxy	32.000 EACH	_____.	_____.
0200	646.5120 Marking Word Epoxy	3.000 EACH	_____.	_____.
0202	646.5220 Marking Symbol Epoxy	15.000 EACH	_____.	_____.
0204	646.6120 Marking Stop Line Epoxy 18-Inch	353.000 LF	_____.	_____.
0206	646.7120 Marking Diagonal Epoxy 12-Inch	5,209.000 LF	_____.	_____.
0208	646.7220 Marking Chevron Epoxy 24-Inch	4,153.000 LF	_____.	_____.
0210	646.8320 Marking Parking Stall Epoxy	5,952.000 LF	_____.	_____.
0212	649.0105 Temporary Marking Line Paint 4-Inch	174,615.000 LF	_____.	_____.
0214	649.0150 Temporary Marking Line Removable Tape 4-Inch	50,377.000 LF	_____.	_____.
0216	649.0205 Temporary Marking Line Paint 8-Inch	25,924.000 LF	_____.	_____.
0218	649.0250 Temporary Marking Line Removable Tape 8-Inch	11,446.000 LF	_____.	_____.
0220	649.0960 Temporary Marking Removable Mask Out Tape 6-Inch	9,449.000 LF	_____.	_____.
0222	649.0970 Temporary Marking Removable Mask Out Tape 10-Inch	586.000 LF	_____.	_____.
0224	670.0100 Field System Integrator	LS	LUMP SUM	_____.



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Alt Set ID:

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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0226	690.0150 Sawing Asphalt	1,883.000 LF	_____.	_____.
0228	690.0250 Sawing Concrete	54,616.000 LF	_____.	_____.
0230	740.0440 Incentive IRI Ride	40,083.000 DOL	1.00000	40,083.00
0232	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0001. 101+32	1.000 EACH	_____.	_____.
0234	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0002. 301+34	1.000 EACH	_____.	_____.
0236	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0003. 401+52	1.000 EACH	_____.	_____.
0238	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0004. 1191+80	1.000 EACH	_____.	_____.
0240	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0005. 777+00	1.000 EACH	_____.	_____.
0242	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0006. 777+00	1.000 EACH	_____.	_____.
0244	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0007. 1192+65	1.000 EACH	_____.	_____.
0246	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0008. 501+16	1.000 EACH	_____.	_____.
0248	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0009. 601+63	1.000 EACH	_____.	_____.
0250	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0010. 246+85	1.000 EACH	_____.	_____.
0252	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0011. 246+85	1.000 EACH	_____.	_____.



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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0254	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0012. 705+00	1.000 EACH	_____.	_____.
0256	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0013. 705+00	1.000 EACH	_____.	_____.
0258	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0014. 97+02	1.000 EACH	_____.	_____.
0260	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0015. 198+10	1.000 EACH	_____.	_____.
0262	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0016. 198+10	1.000 EACH	_____.	_____.
0264	999.2000.S Installing and Maintaining Bird Deterrent System (station) 0017. 48+29	1.000 EACH	_____.	_____.
0266	ASP.1T0A On-the-Job Training Apprentice at \$5.00/HR	1,800.000 HRS	5.00000	9,000.00
0268	ASP.1T0G On-the-Job Training Graduate at \$5.00/HR	14,400.000 HRS	5.00000	72,000.00
0270	SPV.0060 Special 0001. Mobilizations Emergency Pavement Repair	4.000 EACH	_____.	_____.
0272	SPV.0060 Special 0002. Traffic Control Close-Open Freeway Entrance Ramp	563.000 EACH	_____.	_____.
0274	SPV.0060 Special 0003. Traffic Control Close-Open Freeway to Freeway System Ramp	226.000 EACH	_____.	_____.
0276	SPV.0060 Special 0004. Traffic Control Full Freeway Closure	2.000 EACH	_____.	_____.
0278	SPV.0060 Special 0005. Field Facilities Office Space	1.000 EACH	_____.	_____.



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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0280	SPV.0060 Special 0006. Traffic Control Local Road Lane Closures	306.000 EACH	_____.	_____.
0282	SPV.0060 Special 0007. Fastening Sewer Access Covers	14.000 EACH	_____.	_____.
0284	SPV.0060 Special 0008. Survey Project 1228-09-73	1.000 EACH	_____.	_____.
0286	SPV.0060 Special 2001. Install Overhead Freeway DMS	1.000 EACH	_____.	_____.
0288	SPV.0060 Special 2002. Refocus Vehicle Detector Assembly	20.000 EACH	_____.	_____.
0290	SPV.0060 Special 4001. Cleaning and Sealing Concrete Girder Ends	24.000 EACH	_____.	_____.
0292	SPV.0060 Special 4002. Embedded Galvanic Anodes	434.000 EACH	_____.	_____.
0294	SPV.0075 Special 0001. Pavement Cleanup Project 1228-09-73	100.000 HRS	_____.	_____.
0296	SPV.0090 Special 0001. Marking Line Contrast Epoxy 4-Inch	9,025.000 LF	_____.	_____.
0298	SPV.0090 Special 0002. Marking Line Contrast Epoxy 8-Inch	11,251.000 LF	_____.	_____.
0300	SPV.0090 Special 0003. Marking Crosswalk Epoxy 12-Inch	58.000 LF	_____.	_____.
0302	SPV.0165 Special 4003. Removing Loose Concrete	240.000 SF	_____.	_____.
0304	SPV.0180 Special 0001. Resin Binder High Friction Surface Treatment	21,561.000 SY	_____.	_____.
0306	SPV.0180 Special 0002. Base Patch For Inlets	123.000 SY	_____.	_____.



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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0308	SPV.0180 Special 4005. Concrete Bridge Deck Methacrylate Flood Seal	102,142.000 SY	_____.	_____.
0310	201.0110 Clearing	242.000 SY	_____.	_____.
0312	201.0120 Clearing	126.000 ID	_____.	_____.
0314	201.0210 Grubbing	242.000 SY	_____.	_____.
0316	204.0170 Removing Fence	306.000 LF	_____.	_____.
0318	205.0100 Excavation Common	150.000 CY	_____.	_____.
0320	208.0100 Borrow	150.000 CY	_____.	_____.
0322	415.0090 Concrete Pavement 9-Inch	157.000 SY	_____.	_____.
0324	614.0010 Barrier System Grading Shaping Finishing	1.000 EACH	_____.	_____.
0326	614.0805 Crash Cushions Permanent Low Maintenance	1.000 EACH	_____.	_____.
0328	614.2300 MGS Guardrail 3	288.000 LF	_____.	_____.
0330	614.2500 MGS Thrie Beam Transition	40.000 LF	_____.	_____.
0332	614.2620 MGS Guardrail Terminal Type 2	1.000 EACH	_____.	_____.
0334	628.1504 Silt Fence	350.000 LF	_____.	_____.
0336	628.1520 Silt Fence Maintenance	350.000 LF	_____.	_____.
0338	SPV.0035 Special 0001. Rapid Set Deck Repair	5.000 CY	_____.	_____.



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Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0340	SPV.0060 Special 0009. Utility Line Opening (ULO)	3.000 EACH	_____.	_____.
0342	SPV.0060 Special 0010. Concrete Barrier Transition Special	1.000 EACH	_____.	_____.
0344	SPV.0090 Special 0004. Fence Chain Link 6-FT B-40-286-24B	375.000 LF	_____.	_____.
0346	SPV.0090 Special 0005. Sawing Concrete Curb Head	326.000 LF	_____.	_____.
Section: 0001			Total:	_____.
			Total Bid:	_____.

