

ON CALL
GUARDRAIL WORK
REGIONS 1 - 5
2023

Updated 05/15/2020

STATE PROJECT

MAINTENANCE & OPERATIONS

BIDDING INSTRUCTIONS

1. Use pen and ink to complete all paper Bids. Signatures shall be original. Stamped and copied signatures will not be accepted. Bids are not accepted by email or FAX.

NOTE: Electronic Bids will not be accepted for this bid.

2. As a minimum, the following should be received prior to the time of Bid opening: a) a copy of the Notice to Contractors, b) the completed Acknowledgement of Bid Amendments form, c) the completed Schedule of Items, d) two copies of the completed and signed Contract Agreement, Offer & Award form, e) the completed Contractor Information Sheet, and f) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.
3. Include prices for items Contractor is bidding in the Schedule of Items.
4. All Bid Packages which are mailed or sent express, shall be provided in double (one envelope inside the other) envelopes, for security and other reasons. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open

Title: On Call Guardrail Work

Location: Regions 1 - 5

Date of Bid Opening: _____

Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed

Title: On Call Guardrail Work

Location: Regions 1 - 5

Date of Bid Opening: _____

Name of Contractor:

If a paper Bid is to be sent express, please take note that overnight services do not always arrive in time and that delivery may be affected by carrier volume, weather and other factors. Packages using express services should be sent directly to the DOT Headquarters Building, Maine Department of Transportation, 24 Child Street, Augusta. "FedEx First Overnight" delivery is suggested as the package is delivered directly to the DOT Headquarters Building, Mailroom, 24 Child Street, Augusta. Allow extra days for U.S. Postal Service Express Mail which has proven not to be reliable and sometimes does not deliver directly to the DOT Headquarters Building but instead delivers to the State of Maine Mail Distribution Center.

If a paper bid is to be mailed, the mailing address is Maine Department of Transportation, 16 State House Station, Augusta, ME 04333-0016. Allow additional working days for this mail to pass through the state mail system in addition to the US Postal Service as this mail is not delivered directly to the Department of Transportation.

If a paper Bid is to be hand carried, deliver directly to the "Public Entrance" which is located on the Capitol Street side of the DOT Headquarters Building in Augusta. <http://www.maine.gov/mdot/contact>. Hand-carried Bids may be in one envelope, and should be marked with the following information:

Bid Enclosed: Do Not Open

Title: On Call Guardrail Work

Location: Regions 1 - 5

Date of Bid Opening: _____

Name of Contractor:

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207) 624-3410.

For complete bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, March 2020 Edition.

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled, and allow for an electronic downloading of bid packages from our website, while continuing to maintain an optional plan holders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments must fill out the on-line plan holder registration form and provide an email address to the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

NOTICE

Bidders:

Please use the attached “Request for Information” form when submitting questions concerning specific Contracts that have been advertised for Bid, include additional numbered pages as required. RFI’s may be faxed to 207-624-3431, submitted electronically through the Departments web page of advertised projects by selecting the RFI tab on the project details page or via e-mail to RFI-Contracts.MDOT@maine.gov.

These are the only allowable mechanisms for answering Project specific questions. Maine DOT will not be bound to any answers to Project specific questions received during the Bidding phase through other processes.

When submitting RFIs by Email please follow the same guidelines as stated on the “Request for Information” form and include the word “RFI” along with the Project name and Identification number in the subject line.

Vendor Registration

Prospective Bidders must register as a vendor with the Department of Administrative & Financial Services if the vendor is awarded a contract. Vendors will not be able to receive payment without first being registered. Vendors/Contractors will find information and register through the following link –

<http://www.maine.gov/purchases/venbid/index.shtml>

CONTRACTOR INFORMATION

Contractor Name: _____

Mailing Address: _____

Vendor Customer Number: _____

Contact Information (Primary Contact): _____

Phone: _____ **Cell Phone:** _____

Fax: _____

Email: _____

Mailing Address (if different from above): _____

The company has the following organizational structure:

Sole Proprietorship

Limited Liability Company

Partnership

Joint Venture

Corporation

Other: _____

(Date)

(Signature)

(Name and Title Printed)

**STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS**

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper “Bids for **On Call Guardrail Work** in **REGIONS 1-5**” will be received from contractors at the Reception Desk, MaineDOT Building, Capitol Street, Augusta, Maine, until 11:00 o’clock A.M. (prevailing time) on **April 5, 2023**, and at that time and place, publicly opened and read. Bids will be accepted from all bidders. The lowest responsive bidder must demonstrate successful completion of projects of similar size and scope to be considered for the award of this contract. **Electronic Bidding will not be available for this bid.**

Description: On Call Guardrail Work (No WIN)

Location: Regions 1 thru 5

Outline of Work: On Call Guardrail Installation and Repair, and other incidental work.

Contractors may bid on one or more Regions.

Contracts may be awarded to each responsive, responsible bidder that meets the requirements and specifications.

For general information regarding Bidding and Contracting procedures, contact George Macdougall at (207) 624-3410. Our webpage at <http://www.maine.gov/mdot/contractors/> contains a copy of the Schedule of Items, Plan Holders List, written portions of bid amendments, bid results and an electronic form for RFI submittal. For Project-specific information fax all questions to **Gail Iler** at (207) 624-3431, use electronic RFI form or email questions to RFI-Contracts.MDOT@maine.gov, project name and identification number should be in the subject line. Questions received after 12:00 noon of Friday prior to bid date will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. TTY users call Maine Relay 711.

Bid Documents, specifications and bid forms can be viewed and obtained digitally at no cost at <http://www.maine.gov/mdot/contractors/>. All publications and project specific documents may be obtained from the Maine Department of Transportation, Attn.: Mailroom, 24 Child Street, Augusta, Maine 04333-0016 or purchased by telephone at (207) 624-3536. All work shall be governed by *State of Maine, Department of Transportation, Standard Specifications, March 2020 Edition*, price \$10 [\$15 by mail], and *Standard Details, March 2020 Edition*, price \$10 [\$15 by mail]. *Standard Detail* updates can be found at <http://www.maine.gov/mdot/contractors/publications/>.

There will be no bid bond, performance bond or payment bond required.

Each Bid must be made upon blank forms provided by the Department.

This Contract is subject to all applicable State Laws.

The right is hereby reserved to the MaineDOT to reject any or all bids.

Augusta, Maine
March 15, 2023



KYLE A. HALL
DIRECTOR
BUREAU OF MAINTENANCE & OPERATIONS

**SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS**

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at <http://www.maine.gov/mdot/contractors/> . It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The Maine DOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

Maine Department of Transportation
 On Call Guardrail Work 2022
 Schedule of Items

Indicate the region in which the guardrail services are offered:

- Region 1 (Southern Region)
- Region 2 (Mid-Coast Region)
- Region 3 (Western Region)
- Region 4 (Eastern Region)
- Region 5 (Northern Region)

Notes (for pages 1 and 2):

1. This work consists of supplying all materials, equipment and labor to install guardrail and components at locations and quantities as directed by the Regions.
2. For each day that the contractor provides guardrail services for the Department, they will be paid mobilization in accordance with Special Provision (Mobilization). See Special Provision for exact intent and usage of Mobilization.
3. MaineDOT will provide all signs and traffic control.

Mobilization

Bid Item	Pay Unit	Unit Price
659.11 MOBILIZATION - HOURLY	CALENDAR DAY	
659.12 MOBILIZATION - OVERNIGHT	HOUR	
659.13 MOBILIZATION – NIGHT WORK	CALENDAR DAY	

Guardrail Related Services

Bid Item	Pay Unit	Unit Price
GUARDRAIL REMOVE AND DISPOSE	LINEAR FOOT	
GUARDRAIL, ADJUST	LINEAR FOOT	
DOWN HOLE HAMMER ROCKDRILLING 12"DIA X UP TO 8' DEEP	PER HOUR	
DOWN HOLE HAMMER ROCKDRILLING 18"DIA X UP TO 8' DEEP	PER HOUR	
DOWNHOLE HAMMER ROCKDRILLING 18" DIA METER BIT SETUP	EACH	
EARTH AUGERING 8" TO 36" UP YO 7' DEEP	PER HOUR	
GUARDRAIL BEAM STRAIGHTENING/RE-ROLLING	PER HOUR	

Maine Department of Transportation
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 Schedule of Items

Guardrail and Fencing

Bid Item	Pay Unit	Unit Price
GUARDRAIL TYPE 3C SINGLE RAIL 0-100'	LINEAR FOOT	
GUARDRAIL TYPE 3C SINGLE RAIL 100'-250'	LINEAR FOOT	
GUARDRAIL TYPE 3C SINGLE RAIL OVER 250'	LINEAR FOOT	
GUARDRAIL TYPE 3C 15' RADIUS AND LESS	LINEAR FOOT	
GUARDRAIL TYPE 3C OVER 15' RADIUS	LINEAR FOOT	
GUARDRAIL TYPE 3C THRIE BEAM SINGLE RAIL	LINEAR FOOT	
GUARDRAIL TYPE 3AA SINGLE RAIL OVER 250'	LINEAR FOOT	
606.1311 31" W-BEAM GUARDRAIL – MID-WAY SPLICE, POWDER COATED	LINEAR FOOT	
606.1313 31" W-BEAM GUARDRAIL – MID-WAY SPLICE, POWDER COATED 15' RADIUS & LESS	LINEAR FOOT	
606.1314 31" W-BEAM GUARDRAIL – MID-WAY SPLICE, POWDER COATED OVER 15' RADIUS	LINEAR FOOT	
606.2650 TERMINAL END – SINGLE RAIL – POWDER COATED	EACH	
607.15 DRIVE GATEWAY 16 FOOT - METAL	EACH	
607.165 CHAIN LINK FENCE – 4 FOOT WITHOUT TOP RAIL	LINEAR FOOT	
607.16 CHAIN LINK FENCE - 4 FOOT	LINEAR FOOT	
607.163 CHAIN LINK FENCE - 4 FOOT - PVC COATED	LINEAR FOOT	
607.17 CHAIN LINK FENCE 6 FOOT	LINEAR FOOT	
ALUMINUM SLIDE GATES INCLUDING SUPPORT POSTS	LINEAR FOOT	
GALVANIZED STEEL SWING GATES INCLUDING SUPPORT POSTS	LINEAR FOOT	
GUARDRAIL 31" MID-WAY SPLICE W-BEAM, SINGLE RAIL 7' POSTS	LINEAR FOOT	
GUARDRAIL 31" MID-WAY SPLICE W-BEAM, RADIUS	LINEAR FOOT	

Maine Department of Transportation
 On Call Guardrail Work 2022
 Schedule of Items

Notes (for pages 3 through 11):

1. When practical, the Department will direct that existing damaged guardrail be repaired by installing new or used guardrail components. The repair will be accomplished by the Contractor as directed by the MaineDOT.
 - Prices when bid as new parts supplied and installed by Contractor shall include supplying the new guardrail components, removing damaged components, installing the new components and disposing of the damaged components.
 - Prices when bid as new or used parts supplied by MaineDOT and installed by the Contractor shall include supplying the labor and equipment to load guardrail components, removing damaged components, installing the new or used components and disposing of the damaged components.
2. All prices shall be for either galvanized or weathering (COR-TEN) steel (if applicable)
3. Hardware packages shall include anchor brackets, pipe sleeve, bearing plate bolts, nuts, and washers.
4. All screws, nails, nuts, bolts, and washers are incidental to the work.
5. Radius beam shall be paid for as regular straight beam.
6. For each day that the contractor provides guardrail services for the Department, they will be paid mobilization in accordance with Special Provision (Mobilization). See Special Provision for exact intent and usage of Mobilization.
7. The MaineDOT will provide all signs and traffic control.

Repair – General

Contract Ref. #	Trinity Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
1	9G	RWM02A	W-BEAM RAIL STANDARD PUNCH 6'-3", 12 GA	EA		
2	11G	N/A	W-BEAM RAIL PUNCHED 3' 1" 12 GA	EA		
3	1010G-1060G	RWM02A	W-BEAM RADIUS (5' INCR.) 12 GA	EA		
4	545G	PWE01	6' W6 X 8.5 STEEL POST	EA		
5	24501G	PWE03	6'-6" W6 X 8.5 STEEL POST	EA		
6	26924G	N/A	7' W6 X 8.5 STEEL POST	EA		
7	142682G	N/A	8' W6 X 8.5 STEEL POST	EA		
8	6955B	N/A	14" PLASTIC BLOCK INCLUDING HARDWARE	SET		
9	441G	PWB01	14" STEEL BLOCK INCLUDING HARDWARE	SET		
10	4076B	PDB01	14" ROUTERED WOOD BLOCK INCLUDING HARDWARE	SET		

Maine Department of Transportation
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11	3G	RWB01A	BACK UP PLATE W-BEAM 12GA	EA		
12	907G	RWE03A	BUFFER END SINGLE 12GA	EA		
13	326G	RWE02A	W-BEAM MICHIGAN SHOE 10 GA	EA		
14	9264G	N/A	W-BEAM BRIDGE BACKING PLATE 5/8"	EA		
15	19582G	RTB01A	THRIE BEAM BRIDGE BACKING PLATE 5/8"	EA		
16	975G	RWE05A	MICHIGAN SHOE THRIE BEAM 10GA	EA		
17	6901B	N/A	22" PLASTIC BLOCK INCLUDING HARDWARE	SET		
18	437G	PWB02	22" STEEL BLOCK INCLUDING HARDWARE	SET		
19	60631B	PDB02	22" ROUTERED WOOD BLOCK INCLUDING HARDWARE	SET		
20	209G	RTM02A	THRIE BEAM RAIL STANDARD PUNCH 12GA	EA		
21	12513G	RTM08A	THRIE BEAM RAIL PUNCHED 1'-6"	EA		
22	1178G	RTM02A	THRIE BEAM RADIUS (5' INCR.) 12 GA	EA		
23	977G	RWT01A	TRANSITION PANEL W-THRIE BEAM 10 GA	EA		
23R	N/A	N/A	THRIE BEAM TRANSITIONAL PANEL ASYMETRICAL 10 GAUGE (RIGHT)	EA		
23L	N/A	N/A	THRIE BEAM TRANSITIONAL PANEL ASYMETRICAL 10 GAUGE (LEFT)	EA		
24	957G	RWE05A	BUFFER END THRIE BEAM 12 GA	EA		
25	4063B	PDE09	6"X8" 6' CRT WOOD POST	EA		
26	4064B	PDE02	6"X8" 6' SOLID WOOD POST	EA		
27	927G	RWE02A	BENT LIP MICHIGAN SHOE W-BEAM	EA		
28	N/A	N/A	BRIDGE ANCHOR PLATE W/ 7/8"X8" BOLTS WELDED	EA		
29	N/A	N/A	BRIDGE BOLTS 7/8"X20" W/ NUT&WASHER	EA		
30	SH242G RS	N/A	SAFEHIT FLEX GUARDRAIL MARKER 42"	EA		

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31	SH254G RS	N/A	SAFEHIT FLEXIBLE GUARDRAIL MARKER 54" W/SOIL ANCHOR	EA		
32	N/A	N/A	REFLECTIVE SHEETING 3"X8" (SPECIFY COLOR)	EA		
33	6665B	N/A	REFLECTIVE SHEETING 14"X14" CHEVRON PATTERN	EA		
34	800BTB0 170	N/A	BEAM REFLECTORS (SPECIFY WHITE/YELLOW) BOX 200CT	BOX		
34A	N/A	N/A	BEAM REFLECTOR (WHITE/YELLOW)	EA		
34B	N/A	N/A	3M LINEAR DELINEATOR 11" LONG	EA		
35	N/A	N/A	U-CHANNEL 2.5LBX8' DELINEATOR POST	EA		
36	3300G	FBC16A	5/8" ROUND WASHER KEG (1000PCS)	KEG		
37	3320G	FWR03	5/8" RECTANGLE WASHER KEG (1000PCS)	KEG		
38	3360	FBB01	SPLICE BOLT KEG (1000PCS) 5/8"X1 1/4"	KEG		
39	3340G	FBB01- 05	DR NUT KEG 5/8" (1000PCS)	KEG		
40	3400G	FBB02	CENTER BOLT KEG 5/8"X2" BUTTON HEAD (1000PCS)	KEG		
41	3380G	FBX16A	BRACKET BOLT KEG 5/8"X1 1/2" HEX HEAD (1000PCS)	KEG		
42	3495G	FBB03	CENTER BOLT BOX BUTTON HEAD 5/8"X9.5" (200PCS)	KEG		

CAT-350

Contract Ref. #	Trinity Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
43	N/A	N/A	CAT-350 COMPLETE	SYSTEM		
44	33794A	N/A	CAT-350 HARDWARE PACKAGE (SEE NOTE 2)	PKG		
45	31G	N/A	12-12.5' CAT (GUARDRAIL)	EA		
46	21G	RWM14A	CAT TAIL ANCHOR GUARDRAIL 12'-6"	EA		
47	130A	N/A	10/12.5"/5'10:6'8/SP CAT (GUARDRAIL)	EA		
48	782G	N/A	CAT 8"X8"X5/8" BEARING PLATE	EA		
49	983G	N/A	10/NOSE PLATE/CAT/ROLLED	EA		
50	984G	N/A	10/SIDE PLATE CAT	EA		

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51	3012G	N/A	CAT CABLE ASSEMBLY ¾"X8' DBL SWG	EA		
52	3074B	N/A	WD 3'6" POST #2-6 CAT	EA		
53	3075B	N/A	WD3'6" POST #1 CAT	EA		
54	3100B	N/A	WD BLOCK 1'2" #1 CAT	EA		
55	3101B	N/A	WD BLOCK 1'2" #2-6 CAT	EA		
56	9852A	N/A	CAT CHANNEL STRUT X 6'6" (1980)	EA		
57	9915A	N/A	SPACER CHANNEL CAT	EA		
58	33875G	N/A	CAT 6'6" ANGLE STRUT	EA		

FLEAT-350

Contract Ref. #	Trinity Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
59	N/A	N/A	FLEAT 350 SYSTEM (COMPLETE WITH ALL HARDWARE)	SYSTEM		
60	N/A	N/A	FLEAT-350 HARDWARE PACKAGE (SEE NOTE 2)	PKG		
61	F1303	N/A	FLT-350 W-BEAM GUARDRAIL END SECTION 12GA. 12'-6"	EA		
62	F1304	N/A	FLT-350 W-BEAM G.R. CENTER SECT. (4'2" SPACING) 12'6"	EA		
63	S760	N/A	FLT-350 CABLE ANCHOR BRACKET	EA		
64	E780	N/A	FLT-350 GROUND STRUT	EA		

MASH MFLEAT

Contract Ref. #	Trinity Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
65	N/A	N/A	MASH MFLEAT COMPLETE	SYSTEM		
66	N/A	N/A	MASH MFLEAT HARDWARE PACKAGE	PKG		
67	N/A	N/A	MF 3000 FLEAT IMPACT HEAD	EA		
68	N/A	N/A	SF1303 FLEAT ANCHOR RAIL	EA		
69	N/A	N/A	F1324 FLEAT SECOND RAIL	EA		

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70	N/A	N/A	F1334 FLEAT THIRD RAIL	EA		
71	N/A	N/A	MP1A FIRST POST TOP	EA		
72	N/A	N/A	MP1B FIRST POST BOTTOM	EA		
73	N/A	N/A	MHP2A HINGE POST UPPER	EA		
74	N/A	N/A	HP2B HINGED POST LOWER	EA		
75	N/A	N/A	MS785 GROUND STRUT	EA		

FLEAT-SP

Contract Ref. #	Road Systems Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
76	N/A	N/A	FLEAT-SP COMPLETE	SYSTEM		
77	N/A	N/A	FLEAT-SP HARDWARE PACKAGE	PKG		
78	F3000	N/A	FLEAT IMPACT HEAD	EA		
79	SF1303	N/A	W-BEAM GUARDRAIL END SECTION 12GA	EA		
80	TPHP1A	N/A	FIRST POST TOP (6"X6 1/8")	EA		
81	TPHP1B	N/A	FIRST POST BOTTOM (6"W6X15)	EA		
82	UHP2A	N/A	SECOND POST ASSEMBLY TOP	EA		
83	HP-B	N/A	SECOND POST ASSEMBLY BOTTOM	EA		
84	E750	N/A	BEARING PLATE	EA		
85	S760	N/A	CABLE ANCHOR BOX	EA		
86	E770	N/A	BCT CABLE ANCHOR ASSEMBLY	EA		
87	N/A	N/A	BEARING PLATE RETAINER TIE	EA		

SRT-350, BCT, MELT

Contract Ref. #	Trinity Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
88	19818A	N/A	STEEL SOIL TUBE W/2"X2"X8" TUBE WELDED	EA		

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89	3003G	FCA02	CABEL34"X10"W/NUTS&WASHERS	SET		
90	919G	RWE05A	BCT DOUBLE BUFFER	EA		
91	987G	RWE04A	MELT DOUBLE BUFFER	EA		
92	986G	REE01	DOUBLE BUFFER DIAPHRAM PLATE	EA		
93	9716A	PFP01	MELT STRUT	EA		
94	3010G	FCC20	¾" CABLE CLAMPS FORGED	EA		
95	23200G	N/A	W-BEAM MELT CABLE PANEL 12 GA	EA		
96	N/A	N/A	SRT-350 8-POST COMPLETE	SYSTEM		
97	992G	N/A	SRT HARDWARE PACKAGE (SEE NOTE 2)	PKG		
98	4075B	PDB01	WOOD BLOCK 6" x 8" x 14" DR	SET		
99	21G	RWM14A	W-BEAM BCT CABLE PANEL 12 GA	EA		
100	740G	PTE05	6" x 8" x 4' 6" x 3/16" TUBE SLEEVE	EA		
101	742G	PTE06	6" x 8" x 6' 0" x 3/16" TUBE SLEEVE	EA		
102	766G	N/A	18" x 24" x 1/4" SOIL PLATE	EA		
103	700A	FPA01	CABLE ANCHOR BRACKET BCT/MELT/SRT	EA		
104	775G	FPB01	6" x 8" x 5/8" BEARING PLATE	EA		
105	3000G	FCA01	CABLE ASSEMBLY ¾"X6'6"W/NUTS&WASHERS	SET		
106	705G	FMM02	PIPE SLEEVE - 2" STD PIPE x 5.5"	EA		
107	3580G	FBC16	5/8" DIA. x 18" HGR POST BOLT	EA		
108	6058B	N/A	WOOD POST 5.5" x 7.5" x 3' 9"	EA		
109	N/A	N/A	SRT-27 COMPLETE	SYSTEM		
110	N/A	N/A	SRT-27 HARDWARE PACKAGE	PKG		
111	14578G	N/A	6' SYT POST	EA		
112	34050G	N/A	SRT/CRP/SYTP STRUT	EA		

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113	34056A	N/A	CR POST 1 TOP	EA		
114	N/A	N/A	SRT-31 COMPLETE	SYSTEM		
115	N/A	N/A	SRT-31 HARDWARE PACKAGE	PKG		
116	15000G	N/A	6' SYT POST	EA		
117	20442G	N/A	SRT-3 GUARDRAIL 15'-7 1/2"	EA		
118	34052A	N/A	CR POST 1 BOTTOM	EA		
119	34053A	N/A	CR POST 1 TOP	EA		
120	33875G	N/A	ANGLE STRUT 3" X 3" X 1/4"	EA		
121	33795G	N/A	6'6" (1980) ANGLE STRUT	EA		
122	30G	N/A	12/12.5/6'3"/S SRT-1 ANC (GUARDRAIL)	EA		
123	39G	N/A	12/12.5/6'3"/S SRT-2 (GUARDRAIL)	EA		
124	775G	N/A	SRT 6"X8"X5/8" BEARING PLATE	EA		
125	9852A	N/A	SRT STRUT	EA		

SOFTSTOP

Contract Ref. #	Trinity Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
126	N/A	N/A	SOFTSTOP SYSTEM COMPLETE	SYSTEM		
127	N/A	N/A	SOFTSTOP HARDWARE PACKAGE	PKG		
128	15208A	N/A	SOFTSTOP IMPACT HEAD	EA		
129	N/A	N/A	SOFTSTOP ANCHOR RAIL 12'6"	EA		
130	N/A	N/A	SYSTEM RAIL 12'6"	EA		
131	15205A	N/A	SOFTSTOP ANCHOR POST (POST 0)	EA		
132	15203G	N/A	SOFTSTOP SYTP 4'-9.5"	EA		
133	15000G	N/A	SOFTSTOP SYTP 6'	EA		

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134	N/A	N/A	SOFTSTOP SYSTEM LINE POST 6'	EA		
135	N/A	N/A	SOFTSTOP ANCHOR PADDLE	EA		
136	15207G	N/A	SOFTSTOP KEEPER PLATE	EA		
137	15201G	N/A	SOFTSTOP ANCHOR ANGLE	EA		
138	15202G	N/A	SOFTSTOP ANGLE STRUT	EA		
139	N/A	N/A	PEDISTAL POST	EA		

MASH MSKT

Contract Ref. #	Road Systems Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
140	N/A	N/A	MSKT MASH COMPLIANT SYSTEM (COMPLETE W/ HARDWARE)	SYSTEM		
141	N/A	N/A	MSKT MASH COMPLIANT HARDWARE PACKAGE (SEE NOTE 2)	PKG		
142	MS3000	N/A	MSKT MASH COMPLIANT IMPACT HEAD	EA		
143	MTPHP1A	N/A	MSKT FIRST POST TOP	EA		
144	MTPHP1B	N/A	MSKT FIRST POST BOTTOM	EA		
145	UHP2A	N/A	MSKT SECOND POST ASSEMBLY TOP	EA		
146	HP2B	N/A	MSKT SECOND POST ASSEMBLY BOTTOM	EA		
147	G12025	N/A	W-BEAM MGS RAIL SECTION, 9'-4.5"	EA		
148	G1203A	N/A	W-BEAM MGS RAIL SECTION, 12'-6"	EA		

NUCOR, NU-GUARD27, and NU-GUARD 31

Contract Ref. #	NUCOR Part #	AASHTO Std. Comp. #	Item Description	Unit	New Parts	MaineDOT supplied parts
149	N/A	M-180	RWM02a W-BEAM RAIL, 12 GA, TYPE II - 12'6"	EA		
150	N/A	N/A	NU-GUARD LINE POST GR SP-80	EA		
151	N/A	N/A	OFFSET BLOCK	EA		

**Maine Department of Transportation
On Call Guardrail Work 2022
Schedule of Items**

152	N/A	N/A	GUARDRAIL POST BOLT 5/8" x 12" & 5/8" NUT FBB01	EA		
153	N/A	N/A	SPLICE BOLT 5/8" X 1 1/4", 5/8" NUT AND WASHER - FBB01	EA		
154	N/A	N/A	NU-GUARD 3 1/2" x 1/4" WASHER	EA		
155	N/A	N/A	GUARDRAIL POST BOLT 5/8" x 3 1/2" & 5/8" NUT FBB01	EA		

Maintenance and Repair - CASS Cable System

Contract Ref. #	Item Description	Pay Unit	Unit Price
156	LINE POST WITH HARDWARE REPLACEMENT	EACH	
157	CABLE TENSION CHECK AND ADJUSTMENT	PER CABLE	
158	CABLE FIELD SPLICE	PER CABLE	
159	ANCHOR CRP POST TOP REPLACEMENT #1X THRU 3	EACH	
160	ANCHOR TERMINAL POST #4 THRU 9	EACH	

By signing below, the Bidder (1) represents that the Bidder has examined the Contract Agreement contained in the Bid Documents, the Contract, all documents referenced in said Contract, and the site and scope of work, (2) does hereby bid and offer to enter into this contract to construct and/or perform the Work in strict accordance with the terms and conditions of this Contract at the unit prices bid in the attached "Schedule of Items", (3) represents that the Bidder has given the Department notice of any errors or ambiguities related to the documents or the work that have been discovered by the Bidder, (4) represents that the above-named organization is the legal entity entering into the resulting contract with the Department if they are awarded the contract and, (5) represents that the undersigned is authorized to enter contractual obligations on behalf of the above-named organization.

Bidder acknowledges that the properly completed and signed Schedule of Items provided with the Bid constitutes the Bidder's offer and that this offer shall remain open for 30 calendar days after the date of opening of bids.

The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

Use pen and ink to complete paper bids. Signatures shall be original. Stamped and copied signatures will not be accepted.

Signature

Date

(Print Bidder's Name and Title)

**Electronic bidding will NOT be available
for this bid.**

**Bids will NOT be accepted
by email or fax.**

**SIGNED PAPER BIDS ARE REQUIRED
and may be
mailed, sent express or hand delivered.**

For further information, see “BIDDING INSTRUCTIONS”
which are located near the front of the bid book.

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____ (Contractor)
a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

_____ .
The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **On Call Guardrail**, in the Regions awarded in Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

This Contract commences on **April 1, 2023**, or when executed whichever is later and expires on **March 31, 2024**. The Contractor agrees to complete all Work, except warranty work, on or before **March 31, 2024**.

C. Price.

The regions in which Bids are received and accepted, and Special Provision Section 103 Basis of Award, will be used as the basis for determining the original Contract amount. The Department does not guarantee the use of any or all of the Contract amount. The final Contract amount will be determined by the actual work authorized and performed at bid prices.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, and Contract Agreement. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, *Standard Specifications March 2020 Edition*, *Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, and Contract Agreement; contained herein for:

On Call Guardrail Work, in the Regions awarded,

in the State of Maine, on which bids will be received until the time specified in the “Notice to Contractors” do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached “Schedule of Items.”

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached “Schedule of Items” in strict accordance with the terms of this solicitation, and to provide the appropriate insurance if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached “Schedule of Items,” which may be ordered by the Resident, and to accept as full compensation the amount determined upon a “Force Account” basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: To complete work as given in assignments.

Third: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Fourth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted for (see checked boxes):

Region 1 _____

Region 2 _____

Region 3 _____

Region 4 _____

Region 5 _____

The original contract amount is: \$ _____

_____.

This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Kyle A. Hall, Director
Bureau of Maintenance & Operations

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____ (Contractor)
a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **On Call Guardrail**, in the Regions awarded in Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

This Contract commences on **April 1, 2023**, or when executed whichever is later and expires on **March 31, 2024**. The Contractor agrees to complete all Work, except warranty work, on or before **March 31, 2024**.

C. Price.

The regions in which Bids are received and accepted, and Special Provision Section 103 Basis of Award, will be used as the basis for determining the original Contract amount. The Department does not guarantee the use of any or all of the Contract amount. The final Contract amount will be determined by the actual work authorized and performed at bid prices.

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This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, and Contract Agreement. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, *Standard Specifications March 2020 Edition*, *Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, and Contract Agreement; contained herein for:

On Call Guardrail Work, in the Regions awarded,

in the State of Maine, on which bids will be received until the time specified in the “Notice to Contractors” do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached “Schedule of Items.”

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached “Schedule of Items” in strict accordance with the terms of this solicitation, and to provide the appropriate insurance if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached “Schedule of Items,” which may be ordered by the Resident, and to accept as full compensation the amount determined upon a “Force Account” basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: To complete work as given in assignments.

Third: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Fourth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted for (see checked boxes):

Region 1 _____

Region 2 _____

Region 3 _____

Region 4 _____

Region 5 _____

The original contract amount is: \$ _____

_____.

This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Kyle A. Hall, Director
Bureau of Maintenance & Operations

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and _____ **(Name of the firm bidding the job)** _____ (Contractor) a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at _____ **(address of the firm bidding the job)** _____.

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **On Call Guardrail**, in the Regions awarded in Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

This Contract commences on **April 1, 2022** or when executed whichever is later and expires on **March 31, 2023**. The Contractor agrees to complete all Work, except warranty work, on or before **March 31, 2023**.

C. Price.

The regions in which Bids are received and accepted, and Special Provision Section 103 Basis of Award, will be used as the basis for determining the original Contract amount. The Department does not guarantee the use of any or all of the Contract amount. The final Contract amount will be determined by the actual work authorized and performed at bid prices.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, and Contract Agreement. It is agreed and understood that this Contract will be governed by the documents listed above.

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By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, *Standard Specifications March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, and Contract Agreement; contained herein for:

On Call Guardrail Work, in the Regions awarded,

in the State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items," which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: To complete work as given in assignments.

Third: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Fourth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

(Print Date here)
Date

(Sign Here)
(Signature of Legally Authorized Representative
of the Contractor)

(Witness Sign Here)
Witness

(Print Name Here)
(Name and Title Printed)

G. Award.

Your offer is hereby accepted for (see checked boxes):

- Region 1
- Region 2
- Region 3
- Region 4
- Region 5

The original contract amount is: \$ _____
_____.

This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David Bernhardt, Director
Bureau of Maintenance & Operations

State of Maine
 Department of Labor
 Bureau of Labor Standards
 Augusta, Maine 04333-0045
 Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRS §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid to laborers and workers employed on the below titled project.

**2023 Fair Minimum Wage Rates
 Highway & Earth Statewide**

Occupational Title	Minimum Wage	Minimum Benefit	Total
Bulldozer Operator	\$28.86	\$6.68	\$35.54
Carpenter	\$28.12	\$8.94	\$37.06
Cement Masons And Concrete Finisher	\$24.00	\$3.34	\$27.34
Coating Painting And Spraying Machine Operators	\$22.43	\$0.00	\$22.43
Construction And Maintenance Painters	\$23.00	\$1.02	\$24.02
Construction Laborer	\$22.90	\$1.52	\$24.42
Control And Valve Installers And Repairers - Except Mechanical Door	\$31.00	\$9.86	\$40.86
Crane And Tower Operators	\$32.63	\$8.06	\$40.69
Crushing Grinding And Polishing Machine Operators	\$25.51	\$7.55	\$33.06
Electrical Power - Line Installer And Repairers	\$40.16	\$10.82	\$50.98
Electricians	\$41.00	\$16.50	\$57.50
Excavating And Loading Machine And Dragline Operators	\$28.10	\$4.57	\$32.67
Excavator Operator	\$32.00	\$5.01	\$37.01
Fence Erectors	\$19.50	\$1.45	\$20.95
Flaggers	\$19.00	\$0.00	\$19.00
Grader/Scraper Operator	\$24.76	\$3.96	\$28.72
Heavy And Tractor - Trailer Truck Drivers	\$23.47	\$3.75	\$27.22
Highway Maintenance Workers	\$25.43	\$2.37	\$27.80
Industrial Machinery Mechanics	\$33.43	\$2.38	\$35.81
Industrial Truck And Tractor Operators	\$21.00	\$3.08	\$24.08
Light Truck Or Delivery Services Drivers	\$22.00	\$3.17	\$25.17
Millwrights	\$32.00	\$8.71	\$40.71
Mixing And Blending Machine Operators	\$25.51	\$13.80	\$39.31
Mobile Heavy Equipment Mechanics - Except Engines	\$26.01	\$4.23	\$30.24
Operating Engineers And Other Equipment Operators	\$25.48	\$7.17	\$32.65
Paver Operator	\$25.51	\$7.24	\$32.75
Pile-Driver Operators	\$30.96	\$6.86	\$37.82
Pipelayers	\$23.45	\$3.54	\$26.99
Plumbers Pipe Fitters And Steamfitters	\$31.97	\$3.93	\$35.90
Reclaimer Operator	\$25.51	\$10.78	\$36.29
Reinforcing Iron And Rebar Workers	\$29.75	\$10.87	\$40.62
Screed/Wheelman	\$26.69	\$3.97	\$30.66
Structural Iron And Steel Workers	\$26.93	\$8.12	\$35.05

Welders are classified as the trade to which welding is incidental (e.g. welding structural steel is Structural Iron and Steel Worker)

Apprentices – The minimum wage rates for registered apprentices are the rates recognized in the sponsorship agreement for registered apprentices working in the pertinent classification.

For any other specific trade on this project not listed above, contact the Bureau of Labor Standards for further clarification.

Title 26 §1310 requires that a clearly legible statement of all fair minimum wage and benefits rates to be paid the several classes of laborers, workers and mechanics employed on the construction on the public work must be kept posted in a prominent and easily accessible place at the site by each contractor and subcontractor subject to sections 1304 to 1313.

Appeal – Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates.

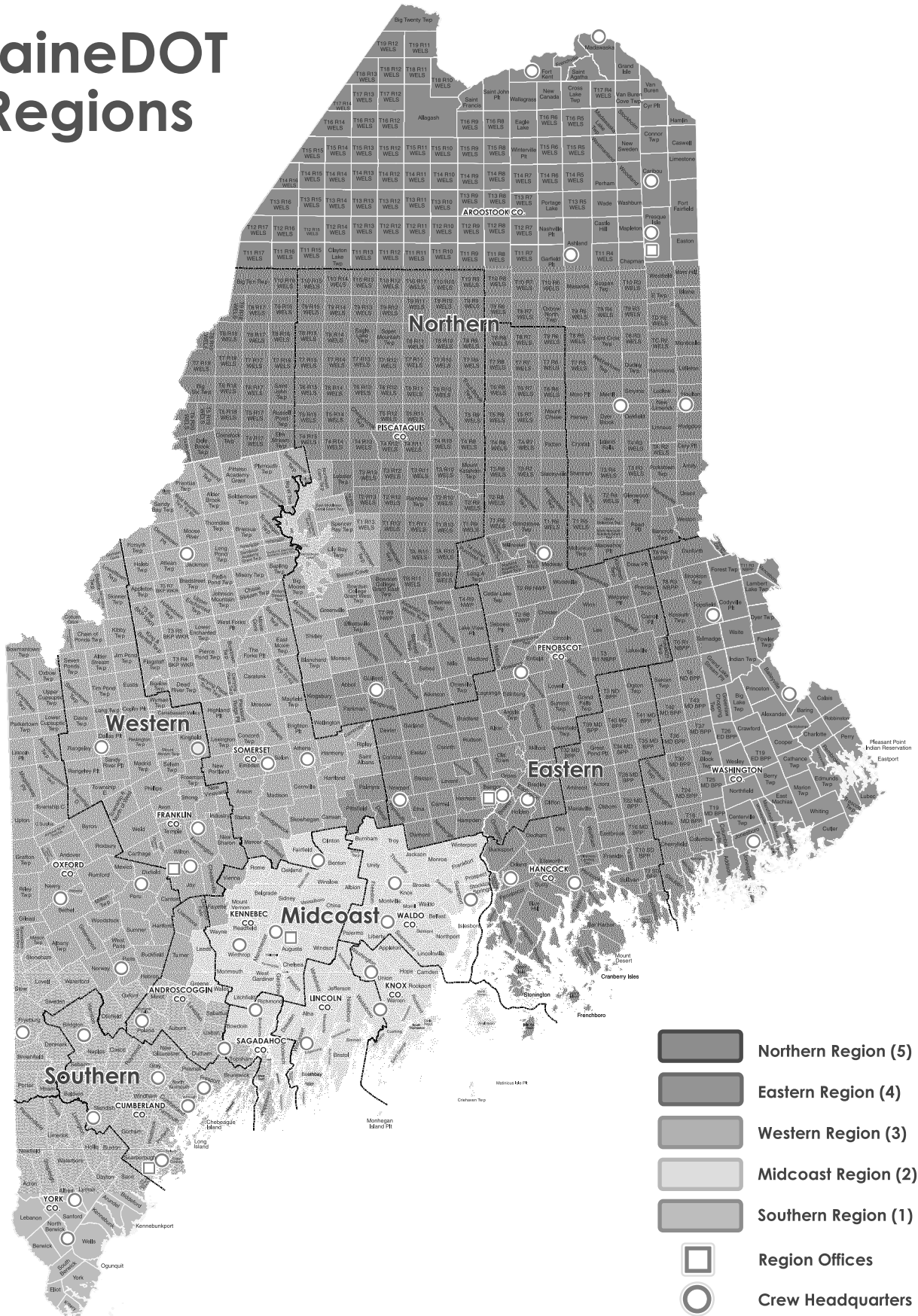
A true copy

Attest: Scott R. Cotnoir

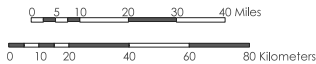
**Scott R. Cotnoir
 Wage & Hour Director
 Bureau of Labor Standards**

Expiration Date: 12-31-2023

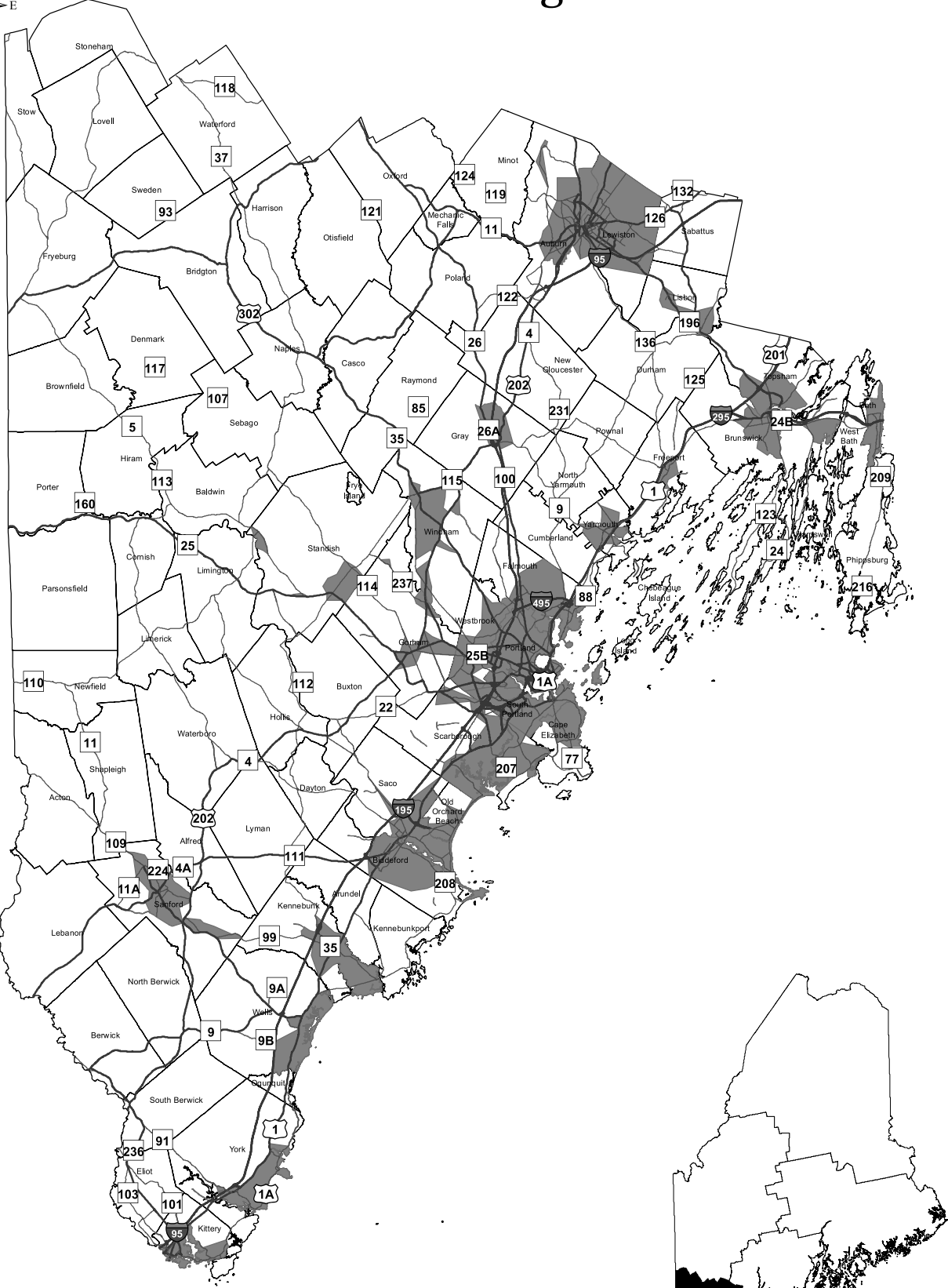
MaineDOT Regions



Revised Sept. 2020



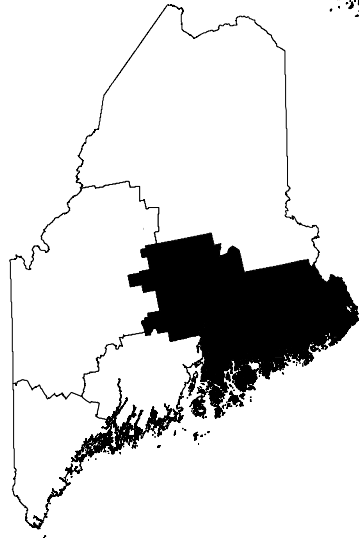
Region 1 - Southern



- Arterials
- Major Collectors
- State Urban Areas

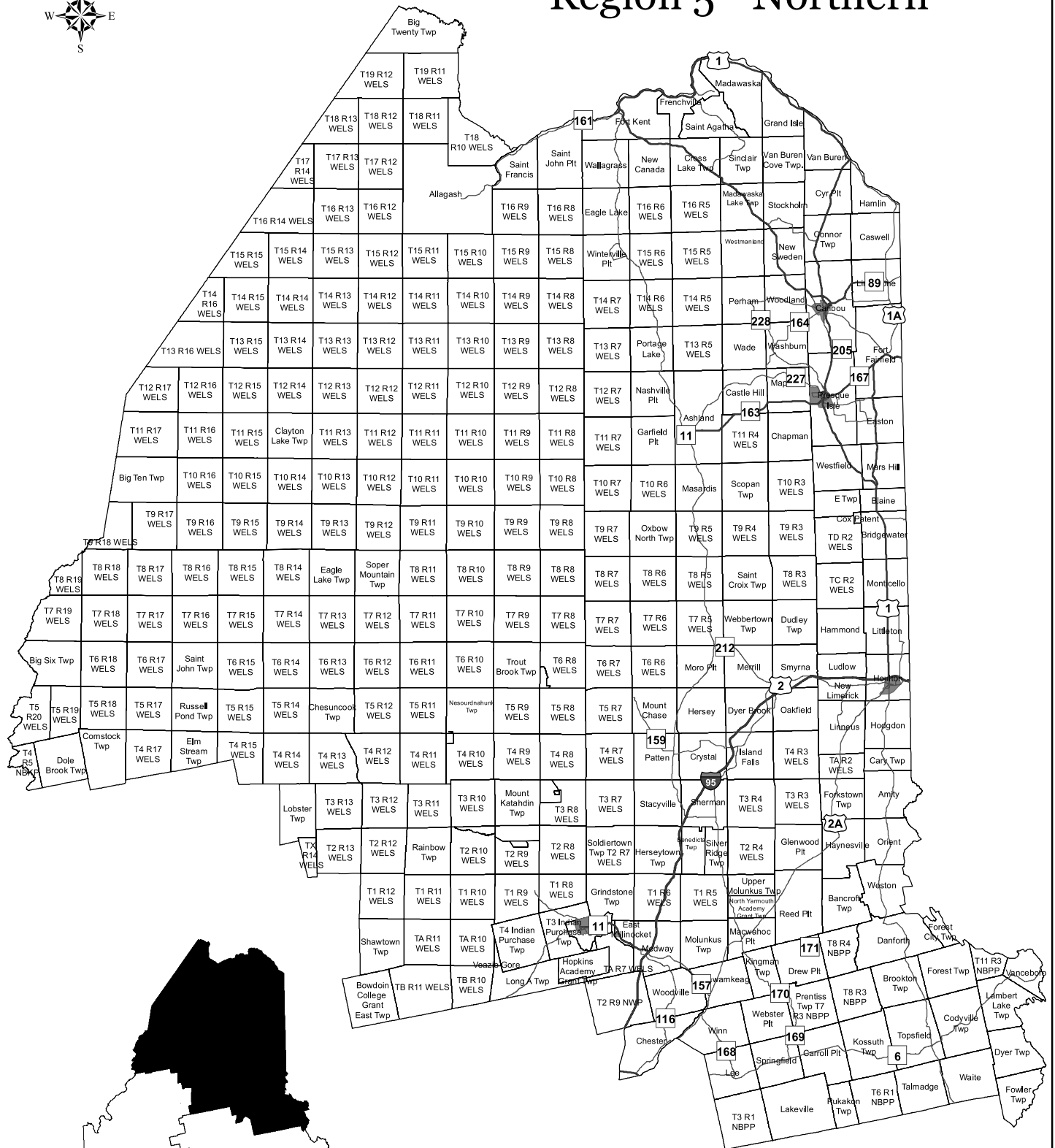


Region 4 - Eastern



- Arterials
- Major Collectors
- State Urban Areas

Region 5 - Northern



- Arterials
- Major Collectors
- State Urban Areas

NOTICE TO CONTRACTORS - PREFERRED EMPLOYEES

Sec. 1303. Public Works; minimum wage

In the employment of laborers in the construction of public works, including state highways, by the State or by persons contracting for the construction, preference must first be given to citizens of the State who are qualified to perform the work to which the employment relates and, if they can not be obtained in sufficient numbers, then to citizens of the United States. Every contract for public works construction must contain a provision for employing citizens of this State or the United States. The hourly wage and benefit rate paid to laborers employed in the construction of public works, including state highways, may not be less than the fair minimum rate as determined in accordance with section 1308. Any contractor who knowingly and willfully violates this section is subject to a fine of not less than \$250 per employee violation. Each day that any contractor employs a laborer at less than the wage and benefit minimum stipulated in this section constitutes a separate violation of this section. [1997, c. 757, §1 (amd).]

SPECIAL PROVISION
SECTION 103
AWARD AND CONTRACTING
(Basis of Award)

Bidders are not required to bid all regions and may bid on one or more regions.

Bidders are not required to bid all items.

The Department and each responsive bidder may enter into a Contract that will obligate each bidder to perform work pursuant to Assignments at prices listed by the bidder in the Schedule of Items depending upon the needs of the Department and according to the following terms. Work will be assigned under these contracts according to the following process. The Department will estimate the Contractor with the lowest cost for the particular Work (the "Assignment") based on the unit prices bid for the total quantity of estimated work in that Assignment.

The Department will offer to assign the Work to the Contractor with the lowest estimated cost for the particular the Assignment, that indicated willingness to work in the assignment location, with the ability to perform the Assignment, and that Contractor will have first option to perform the Work within the schedule specified in the offer of the Assignment. The Contractor shall have two (2) business days to accept an Assignment unless otherwise stated in the offer to assign work. Contractors are not required to accept Assignments offered. If Contractors do not respond to requests for assignments in the allotted time, The Department shall proceed as if the Contractor has declined the assignment.

If this Contractor does not accept the Assignment, then the Department will contact the Contractor that is estimated to have the next lowest Assignment cost to see if that Contractor will accept the Assignment and subsequent Contractors in ascending order of the amount of their bids, until a Contractor accepts the Assignment.

If this Contractor does not accept the Assignment, is unable to accept the Assignment, respond in the necessary and appropriate time for the Assignment, complete the Assignment in the allotted time, or does not have the equipment, experience or ability to complete the Assignment, then the Contract Administrator will contact an adequately qualified firm that is estimated to have the next lowest assignment cost to see if that Contractor will accept the Assignment and subsequent Contractors in ascending order of the amount of their bids, until a Contractor accepts the Assignment.

Upon mutual agreement, an Assignment stating the quantities and schedules will then be sent to the successful Contractor. The Work described in this letter will become part of the Contract.

If, a Contractor fails to work when required or performs it in an unsatisfactory manner, or fails to meet other contractual requirements, the Department may issue a written warning. If the Contractor subsequently fails to work when required or performs it in an unsatisfactory manner, or fails to meet other contractual requirements, the Department reserves the right to immediately terminate the Contract by written Notice of Termination. In this event, the Department may complete the work with its own forces or enter into an Assignment with another entity for the completion of the work, or use such other methods as in the opinion of the Department are required for to complete the Assignment. If a party under an assignment letter contract with the Department continually refuses Assignment Letter work, their contract shall be subject to termination.

The accepted quantities will be paid for in accordance with Special Provisions. The dollar amount of this Contract does not guarantee that the Department will assign Work for any or all of the total amount. The regions in which bids are received and accepted and the following estimates will be used to determine the original contract amount. The following estimates are based on previously contracted expenditures.

Region 1 - \$250,000
Region 2 - \$325,000
Region 3 - \$400,000
Region 4 - \$350,000
Region 5 - \$150,000

Not all guardrail work will be done under these contracts. These Contracts will not include Work that falls under Work Plan or Program projects, and separately advertised projects. Work may also be done by the Department. Emergency Work may be done by other means not associated with this solicitation.

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Wage Rates)

104.3.8A. Federal Wage Rates and Labor Laws Delete the entire section 104.3.8A.

104.3.8B State Wage Rates and Labor Laws The State Wage Rates enclosed apply to this work. Federal Wage Rates do not apply to this work.

SPECIAL PROVISION
SECTION 107
TIME
(Contract Time)

Work will be assigned under this contract beginning after contract execution or April 1, 2023 whichever is latest and may be assigned until March 31, 2024.

The specified Contract Completion Date is March 31, 2024.

SPECIAL PROVISION
SECTION 107
TIME
(Project Closeout)

Delete the entire Section 107.9 Project Closeout and replace with the following:

107.9.4 Closeout Documentation. Upon receipt and approval of the itemized invoice submitted by the Contractor as specified in Special Provision Section 108, Payment, Invoices and Payment, the Assignment will be considered Physically Complete. The Project will be Finally Accepted when a Materials Certification letter is received from the Contractor.

107.9.5 Final Acceptance. Within 30 days of the acceptance of the invoice, the Contractor shall provide the All Bills Paid Letter and Certified Payroll Reports confirming compliance to Section 104.3.8 Wage Rates and Labor Laws.

If the Contractor fails to resolve issues and deliver Closeout Documentation within the 30 Days provided in Section 107.9.5, the Department may provide a final notice informing the Contractor in writing that unless the Contractor Delivers all Closeout Documentation within 30 Days of the date of Receipt of final notice, the Contractor shall be in Default under the Contract. The Contractor may be refused the opportunity to accept the next assignment under the Contract. The Department may then pursue all remedies provided by the Contract or by law, including withholding payment on future assignments within the Contract. For a related provision, see Section 102.1.1 - Eligibility to Bid - Basic Requirements.

SPECIAL PROVISION SECTION 108
(Invoices and Payment)

The Contractor shall submit an itemized invoice to the Department for services monthly and at the completion of the Work or as otherwise noted in the Contract documents for approval and payment.

At a minimum, invoices shall include the following information:

- Contractor name, address & Contract Number
- Invoice Date & Number
- Dates of Service
- Description and Location of Service
- Quantities at the Prices contained in the Contractor's Bid
- Extra Work agreed to by written Contract Modification
- Total amount due

The Department will make payments based upon approved complete and correct invoices for accepted Work invoiced at bid prices. No such payment will be made if, in the judgment of the Department, the Work is not in accordance with the provisions of the Contract.

Payments to the Contractor shall be full compensation for furnishing all labor, equipment, materials, services, and incidentals used to perform all Work under the Contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of any kind arising from the nature or execution of the Work. The Contractor shall pay all taxes, charges, fees, and allowances. Except as expressly provided otherwise in this Contract, all such taxes, charges, fees, and allowances are Incidental to the Contract. Most items are exempt from Maine sales tax. The Contractor shall Bid in accordance with the Maine statutory exemption from sales tax. No payments due the Contractor will be adjusted for inflation. No interest shall be due and payable on any payment due the Contractor. The Department may require that the Contractor submit backup documentation including copies of receipts, invoices, and itemized payments to Subcontractors.

The Department may withhold payments claimed by the Contractor on account of:

- A. Incomplete, Inaccurate or Incorrect Invoices,
- B. Defective Work or non-conforming Work,
- C. Damages for Non-conforming, Defective or Unauthorized Work or Equipment,
- D. Damage to a third party,
- E. Claims filed or reasonable evidence indicating probable filing of claims,

- F. Failure of the Contractor to make payments to Subcontractors or for Materials or labor,
- G. Regulatory non-compliance or enforcement,
- H. Failure to submit Documentation
- I. Repetitive Breakdowns
- J. Equipment rejected due to condition
- K. All other causes that the Department reasonably determines negatively affect the State's interest

The Acceptance by the Contractor of the final payment, as evidenced by cashing of the final payment check, constitutes a release to the Department from all claims and liability under the Contract. Upon Final Acceptance, the Contractor is released from further obligation, except for warranty obligations provided for in this Contract.

SPECIAL PROVISION
GUARDRAIL

Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. The types of guardrail are designated as follows:

Type 3-Galvanized steel "w" beam, wood posts or galvanized steel posts.

Type 3a-Galvanized steel "w" beam, wood posts, wood or composite offset blocks.

Type 3aa-Corrosion resistant steel "w" beam, wood posts, wood or composite offset blocks.

Type 3b-Galvanized steel "w" beam, galvanized steel posts, galvanized steel offset blocks.

Type 3c-Galvanized steel "w" beam, wood posts or galvanized steel posts, wood or composite offset blocks.

Type 3d-Galvanized steel "w" beam, galvanized steel posts, wood or composite offset blocks.

Thrie Beam-Galvanized steel thrie beam, wood posts or galvanized steel posts, wood or composite offset blocks.

Median barriers shall consist of two beams of the above types, mounted on single posts. Except for thrie beam, median barriers may include rub rails when called for.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, Adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing end post as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be “U” channel steel, 8 ft long, 2 ½ lb/ft minimum and have 3/8-inch round holes, 1 inch center to center for a minimum distance of 2 ft from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared end treatment’s terminal and its tangent point, both at the leading and trailing ends of each run of guardrail. The marker’s flexible posts shall be grey with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the end treatment is not flared, markers will only be required at the end treatment’s terminal. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the MaineDOT’s Qualified Products List of Guardrail Material. The marker shall be grey, flexible, durable, and of a non-discoloring material to which 3 inch by 9 inch reflectors shall be applied, and capable of recovering from repeated impacts. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail (“butterfly”-type) delineators shall be mounted on all “w”-beam guardrail. The delineators shall be mounted within the guardrail beam at guardrail posts. Delineators shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Reflectorized beam guardrail delineators shall be placed at approximately 62.5 ft intervals or every tenth post on tangents and at approximately 31.25 ft intervals or every fifth post on curves. Exact locations of the delineators shall be as directed by the Resident. On divided highways, the left-side delineators shall be yellow, and the right-side delineators shall be silver/white. On two directional highways, the right side shall be silver/white, and no reflectorized delineator used on the left. All reflectors shall have reflective sheeting applied to only one side of the delineator facing the direction of traffic as shown in the Standard Detail 606(07). Reflectorized sheeting for guardrail delineators shall meet the requirements of Section 719.01.

Single wood post shall be of cedar, white oak, or tamarack, well-seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department's Qualified Products List and shall be NCHRP 350 tested and approved.

The Guardrail 350 Flared Terminal shall be a terminal with a 4 ft offset as shown in the Manufacturer's installation instructions.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than ½ inch. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

Method of Measurement Guardrail will be measured by the linear foot from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans.

Terminal section, low volume end, NCHRP 350 end treatments, reflectorized flexible guardrail marker, terminal end, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Excavation in solid rock for placement of posts will be paid under force account unless otherwise indicated in the Bid Documents.

Guardrail parts, systems and cable work will be measured as shown in Schedule of Items.

Hourly work items will be measured by the hour to the nearest ¼ hour.

Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly, but will be considered incidental to guardrail items. Terminal section, buffer end, NCHRP 350 end treatment, bridge connection, single post and reflectorized flexible guardrail markers will be paid for at the contract unit price each for the kind specified complete in place.

NCHRP 350 end treatments and low volume guardrail ends will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer’s installation instructions. Each end treatment will be clearly marked with the manufacturers name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail 350 flared terminal shall also include a set of installation drawings supplied to the Resident.

Anchorage to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 150 ft or less will be paid for under the designated radius pay item for the type guardrail being placed.

Adjust guardrail will be paid for at the contract unit price per foot and will be full compensation for adjusting to grade. Payment shall also include adjusting terminal end treatments where required.

Remove and dispose guardrail will be paid for at the contract unit price per foot and will be full compensation for removing, transporting, disposal, and all other incidentals necessary to complete the work.

Guardrail parts, systems and cable work will be paid for at the contract unit price for the designated item and will be full compensation for furnishing and installing and all incidentals necessary to complete the work.

Hourly work items will be paid for at the contract unit price per hour for each type of work. Payment shall include operators, fuel, and all other incidentals necessary to operate the equipment and complete the work.

Modify guardrail will be paid for at the contract unit price per foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting terminal ends where required.

Remove and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting terminal ends when required. No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

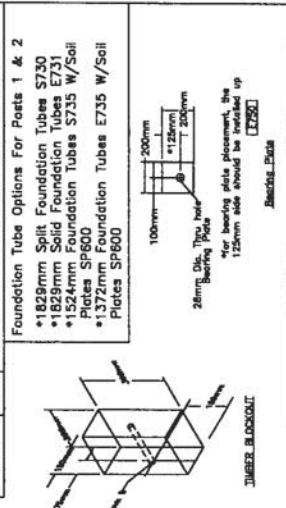
Remove, Modify, and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

RE: Standard Specification March 2020 Edition

ITEM #	QTY	BILL OF MATERIALS
F3000	1	IMPACT HEAD
F1303	1	W-BEAM GUARDRAIL END SECTION, 12 GA.
F1304	1	W-BEAM GUARDRAIL CENTER SECTION, 12 GA.
G1203	1	W-BEAM GUARDRAIL, 12 GA.
S730	2	*FOUNDATION SOIL TUBE, 152mm x 203mm x 1830mm
E740	1	PIPE SLEEVE
E750	1	BEARING PLATE, 200mm x 200mm x 16mm
S760	1	CABLE ANCHOR BOX
E770	1	BCT CABLE ANCHOR ASSEMBLY
E780	1	GROUND STRUT
P650	2	140mm x 190mm x WOOD POSTS
P671	5	150mm x 200mm x WOOD CRT POST
P675	5	150mm x 200mm x WOOD CRT POST
		TIMBER BLOCKOUT
		HARDWARE
B560122	24	16mm Dia. x 32mm SPLICE BOLT
B580754	2	16mm Dia. x 191mm HEX BOLT
B581004	2	16mm Dia. x 254mm HEX BOLT
B581002	1	16mm Dia. x 254mm H.G.R. BOLT (POST 2 ONLY)
B581802	5	16mm Dia. x 457mm H.G.R. BOLT (POST 3 THRU 7)
N050	34	16mm Dia. H.G.R. NUT (SPLICE 24, SOIL TUBES 2, STRUT 2, POST 2, 1; POST 3 THRU 7, 5.)
W050	10	H.G.R. WASHER
N100	2	25mm ANCHOR CABLE HEX NUT
W100	2	25mm ANCHOR CABLE WASHER
E350	2	10mm x 76mm LAG SCREW
S658A	8	CABLE ANCHOR BOX SHOULDER BOLTS
N055A	8	13mm A325 STRUCTURAL NUT
W050A	16	27mm OD X 14mm ID A325 STR. WASHER



Flared Energy Absorbing Terminal
(FLEAT - 350) Assembly
762 to 1219mm Offset

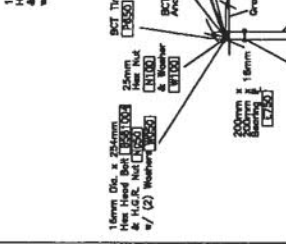
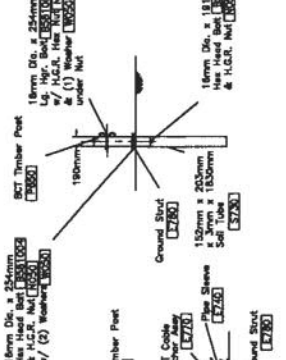
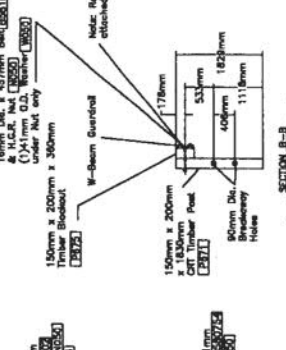
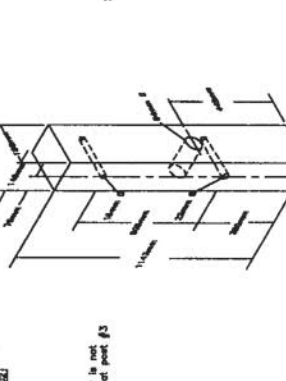
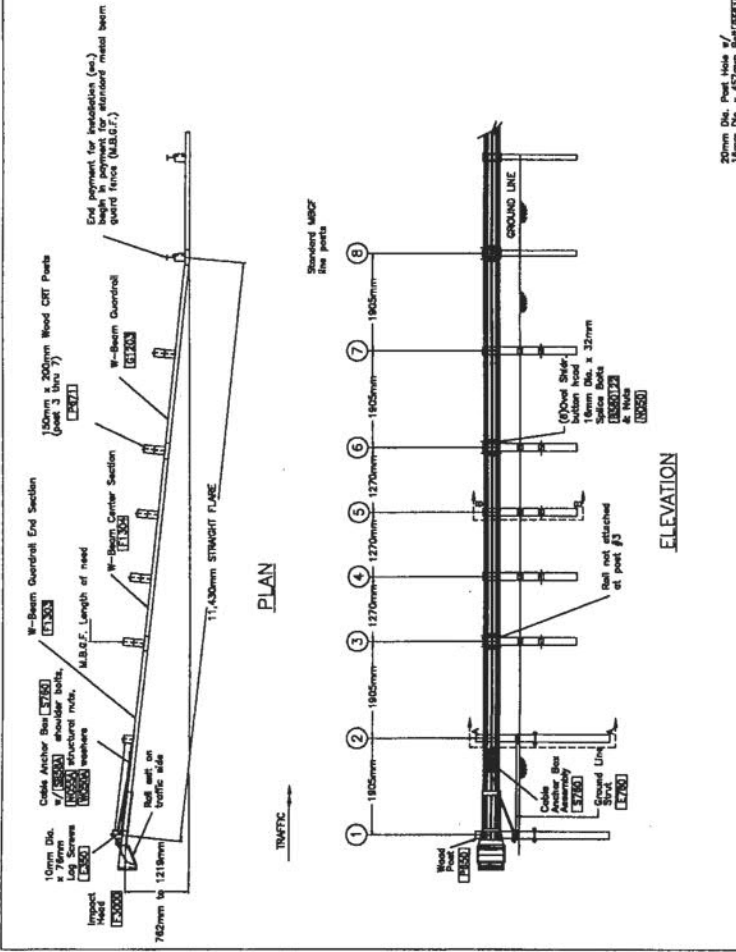
DATE REVISED 9/03/98
JRR/SML

FIG. NO. FLT-M 1 1

ROAD SYSTEMS INC.
BIG SPRING, TX
(915)-263-2435 or (815)-464-5917

GENERAL NOTES

- Wood posts are required with the FLEAT.
- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The soil tubes shall not protrude more than 100mm above ground (measured along a 1500mm cord). Site preparation shall be completed prior to installation.
- The soil tubes may be driven with an approved driving head. Soil tubes should not be driven with the wood post in the tube. If the tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent settlement.
- For posts 1 and 2, a 300mm dia. post hole, 500mm deep may be used if approved by the engineer. Granular material will be placed in the bottom of the hole approx. 65mm deep to provide drainage. The soil tubes will be field cut to length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
- The bearing cable assembly shall be installed in a lock-in device (i.e. approved lock-in) should be used to prevent the cable from twisting when tightening nuts.
- The wood blockouts should be "lag nailed" to the rectangular wood posts to prevent them from turning when the wood shrinks.
- For curb installations, the soil tubes and posts shall be installed at the proper ground elevation behind the curb. The posts shall be installed in a manner that accommodates the rail to the post connecting bolt to maintain the proper height of the rail above the gutter pan. The excess post length above the rail will be removed if directed by the engineer.



TIMBER BLOCKOUT

SECTION A-A at Post #3

SECTION A-A at Post #1

SECTION A-A at Post #2

TRAFFIC

PLAN

ELEVATION

Flared Energy Absorbing Terminal
(FLEAT - 350) Assembly
762 to 1219mm Offset

DATE REVISED 9/03/98
JRR/SML

FIG. NO. FLT-M 1 1

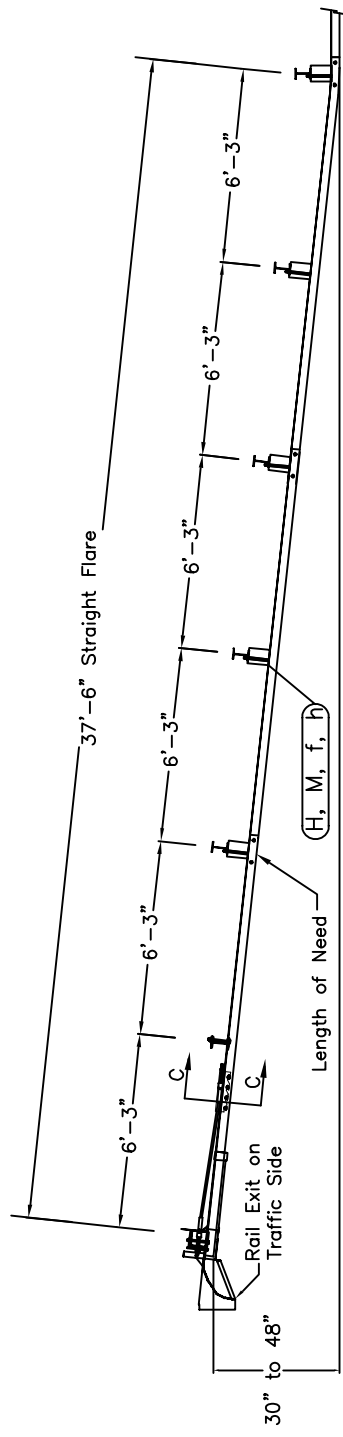
ROAD SYSTEMS INC.
BIG SPRING, TX
(915)-263-2435 or (815)-464-5917

ITEM QTY	BILL OF MATERIALS	ITEM NO.
A	1 FLEAT IMPACT HEAD	F3000
B	1 FLEAT ANCHOR RAIL 12'-6"	SF1303
C	2 W-BEAM GUARDRAIL 12'-6"	G1203
D	1 FIRST POST TOP (6x6x8" Tube)	TFHP1A
E	1 FIRST POST BOTTOM (6" W6X15)	TFHP1B
F	1 UNIVERSAL HINGE POST #2 UPPER	UHP2A
G	1 HINGED POST LOWER	HP-B
H	5 STEEL LINE POST (6" W6x9)	P621
J	1 BEARING PLATE	E750
K	1 CABLE ANCHOR BOX	S760
L	1 BCT CABLE ANCHOR ASSEMBLY	E770
M	5 RECYCLED PLASTIC BLOCK OR EQUIV.	CBSP-14

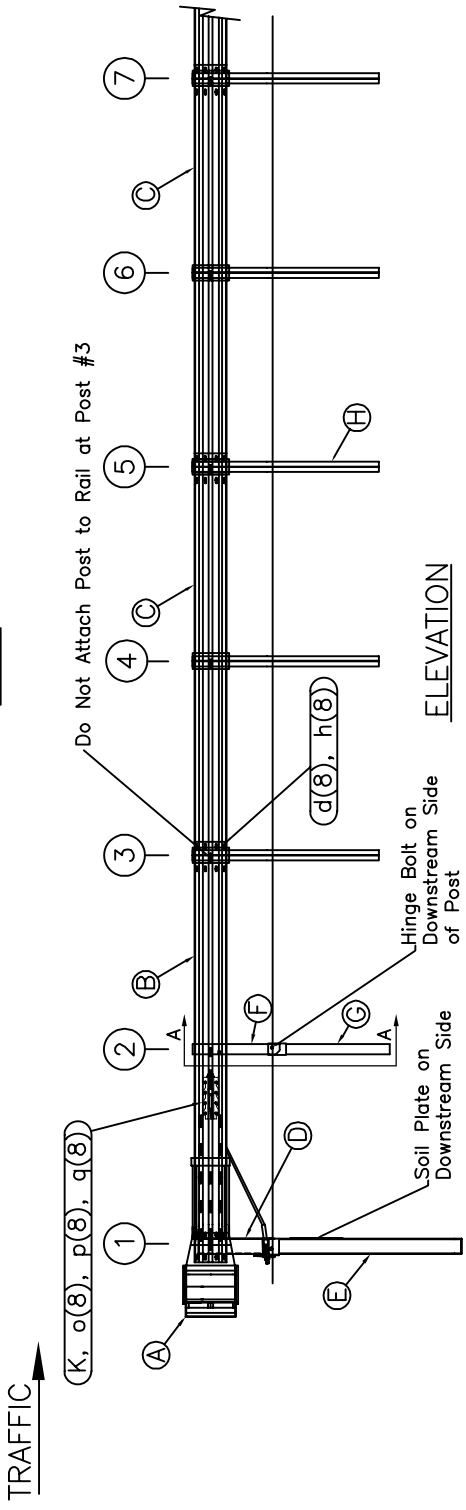
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	17	5/8 x 1 1/4 SPLICE BOLT	B560122
e	1	5/8 x 9 HEX BOLT GRD 5	B560904A
f	5	5/8 x 10 H.G.R. BOLT	B581002
g	3	5/8 WASHER	W050
h	22	5/8 H.G.R. NUT	N050
j	1	5/8 NUT	N055
k	1	3/4 x 8 1/2 HEX BOLT GRD A449	B340854A
l	1	3/4 HEX NUT	N030
m	2	1" ANCHOR CABLE HEX NUT	N100
n	2	1" ANCHOR CABLE WASHER	W100
o	8	1/2 RSI SHOULDER BOLT W/WASHER	S812A
p	8	1/2 STRUCTURAL NUT	N012A
q	8	1/2 STRUCTURAL WASHER	W012A
r	1	BEARING PLATE RETAINER TIE	CT-100ST

GENERAL NOTES:

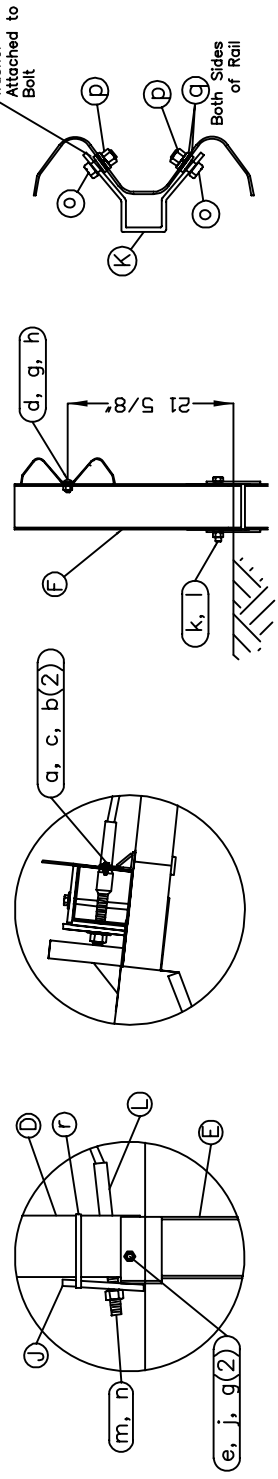
- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The lower sections of the Posts 1&2 shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
- The lower sections of the hinged posts should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
- When competent rock is encountered, a 12" Ø post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for post 1. Granular material will be placed in the bottom of the hole, approximately 2.5' deep to provide drainage. The first post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
- The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.



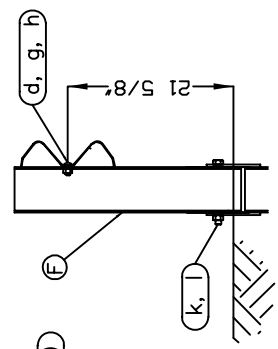
PLAN



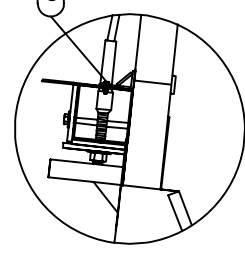
ELEVATION



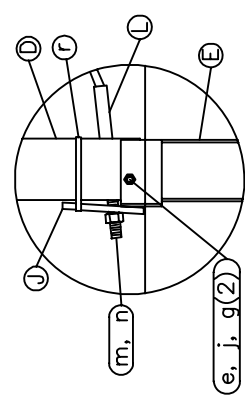
SECTION C-C
Anchor Bracket



SECTION A-A
Post #2



Impact Head Connection Detail



Post #1 Connection Detail



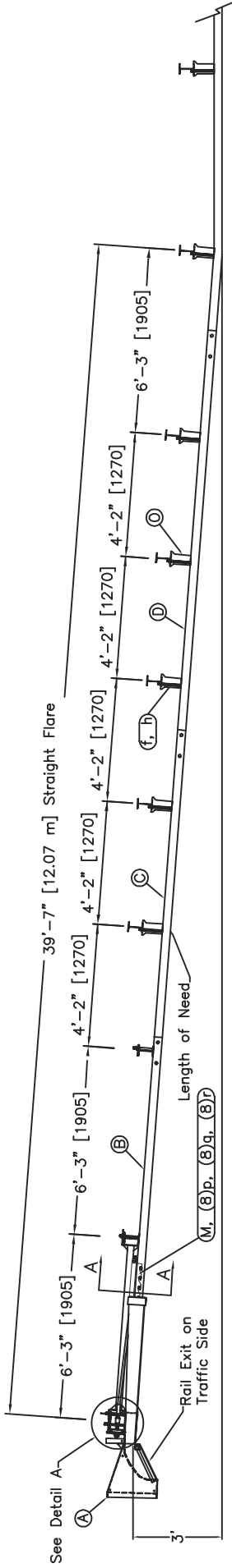
Road Systems, Inc.
Rte. 1, Spring, VT
Phone: 432-263-2495
or Phone: 330-346-0721

2 Post System

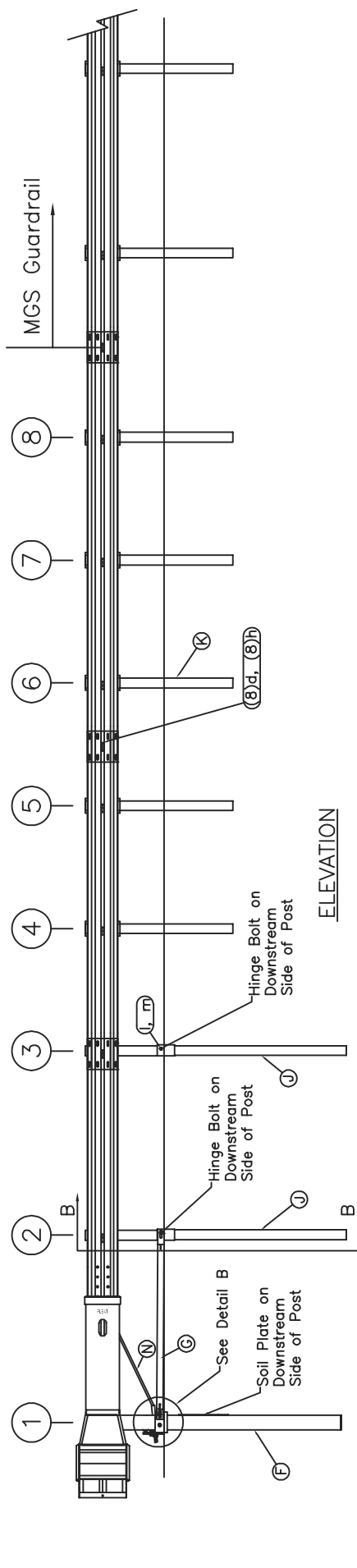
Sheet: 1
Date: 01/06/13
By: JRR
Rev: 0

FLEAT-SP Terminal
TL-3 Standard Post System

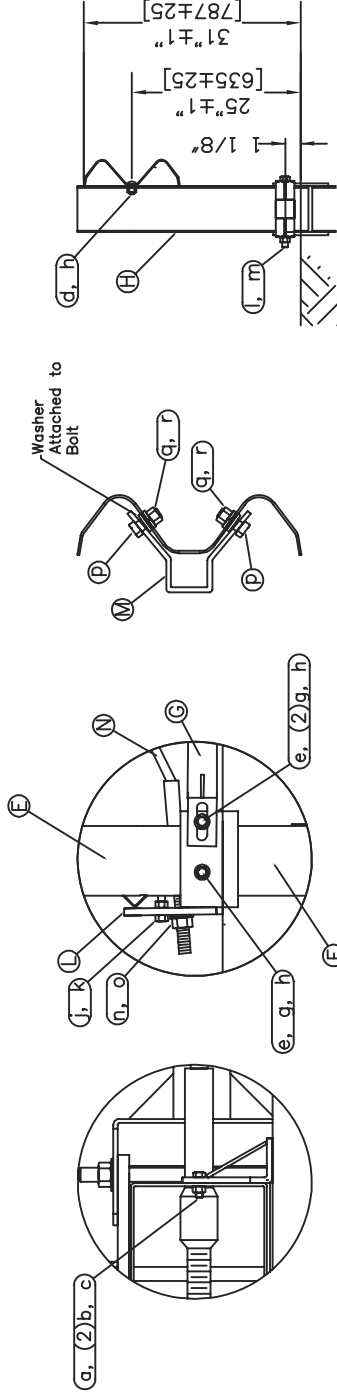
Drawing Name: FLT-SP-37 Scale: None



PLAN



ELEVATION



SECTION A-A
Anchor Bracket

SECTION B-B
Post #2

Detail B
Post #1 Connection

Detail A
Impact Head Connection

GENERAL NOTES:

- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The lower sections of the Posts 1, 2 & 3 shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
- The lower sections of the hinged posts should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
- When competent rock is encountered, a 12" Ø post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first and/or second post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
- The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	FLEAT IMPACT HEAD	MF3000
B	1	FLEAT ANCHOR RAIL 12'-6"	SFT1303
C	1	FLEAT SECOND RAIL 10'-5"	F1324
D	1	FLEAT THIRD RAIL 13'-6 1/2"	F1334
E	1	FIRST POST TOP (6X6X8" Tube)	MP1A
F	1	FIRST POST BOTTOM (6' W6X15)	MP1B
G	1	GROUND STRUT	MS785
H	2	HINGE POST UPPER	MHP2A
J	2	HINGED POST LOWER	HP2B
K	5	STEEL LINE POST 6'	P621
L	1	MASH BEARING PLATE	ME750
M	1	CABLE ANCHOR BOX	S760
N	1	BCT CABLE ANCHOR ASSEMBLY	E770
O	5	RECYCLED PLASTIC BLOCK OR EQUIV. HARDWARE (ALL DIMENSIONS IN INCHES)	CBSP-14
g	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	18	5/8 x 1 1/4 SPLICE BOLT	B580122
e	2	5/8 x 9 HEX BOLT GRD 5	B580904A
f	5	5/8 x 10 H.G.R. BOLT	B581002
g	3	5/8 WASHER	W050
h	25	5/8 H.G.R NUT	N050
i	6	5/8 x 5" BOLT FULL THREAD GRD A449	B580504A
k	1	5/8 HEX NUT	N055
l	2	3/4 x 8 1/2 HEX BOLT GRD A449	B340854A
m	2	3/4 HEX NUT	N030
n	2	1 ANCHOR CABLE HEX NUT	W100
o	2	1 ANCHOR CABLE WASHER	W100
p	8	1/2 SHOULDER BOLT W/WASHER	SB12A
q	8	1/2 STRUCTURAL NUT	NO12A
r	8	1/2 STRUCTURAL WASHER	WO12A

RSI
Road Systems, Inc.
Big Spring, TX
Phone: 432-263-2435
or Phone: 330-340-0721

MASH FLEAT Terminal
TL-3 Standard Post System

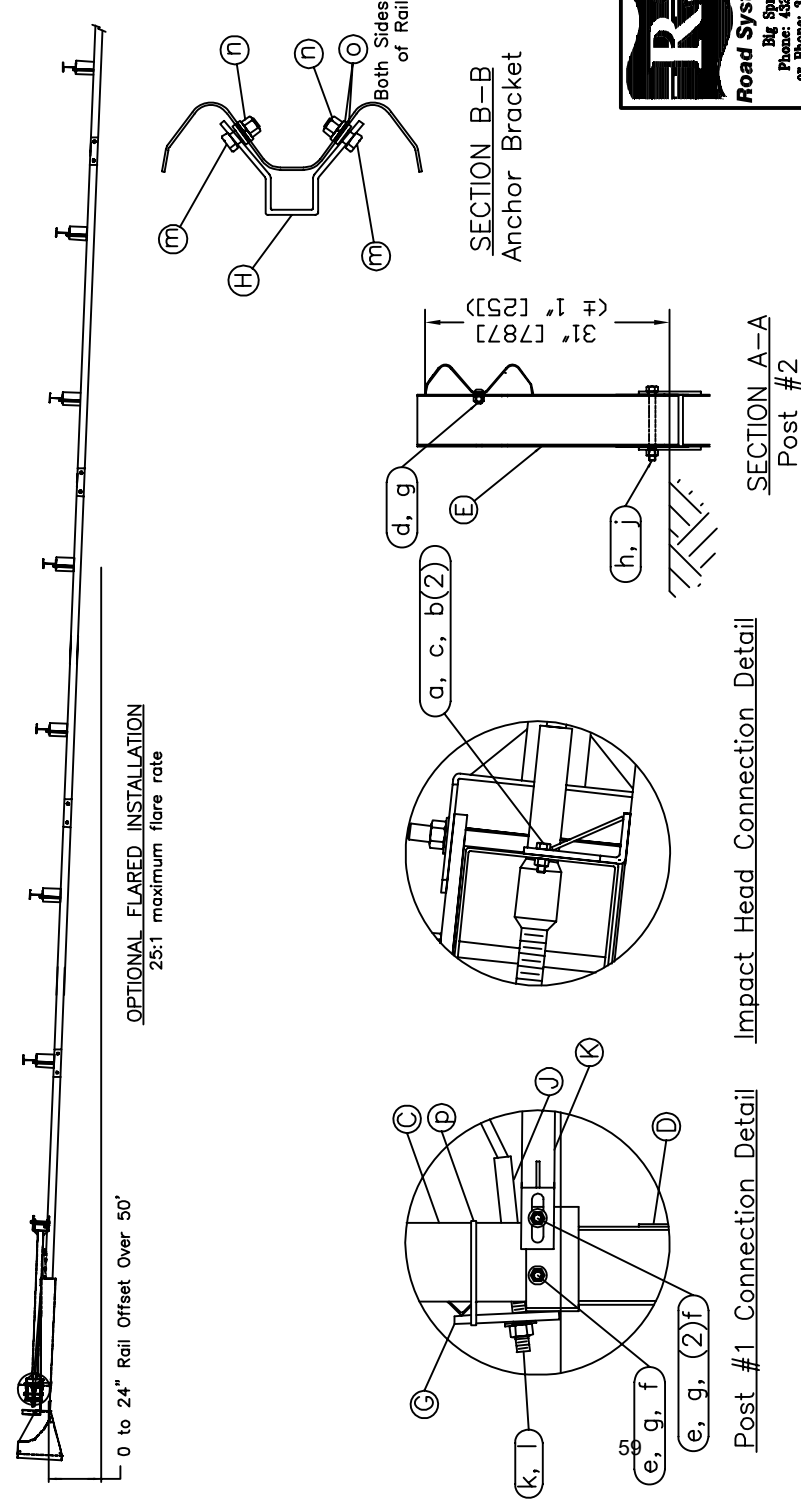
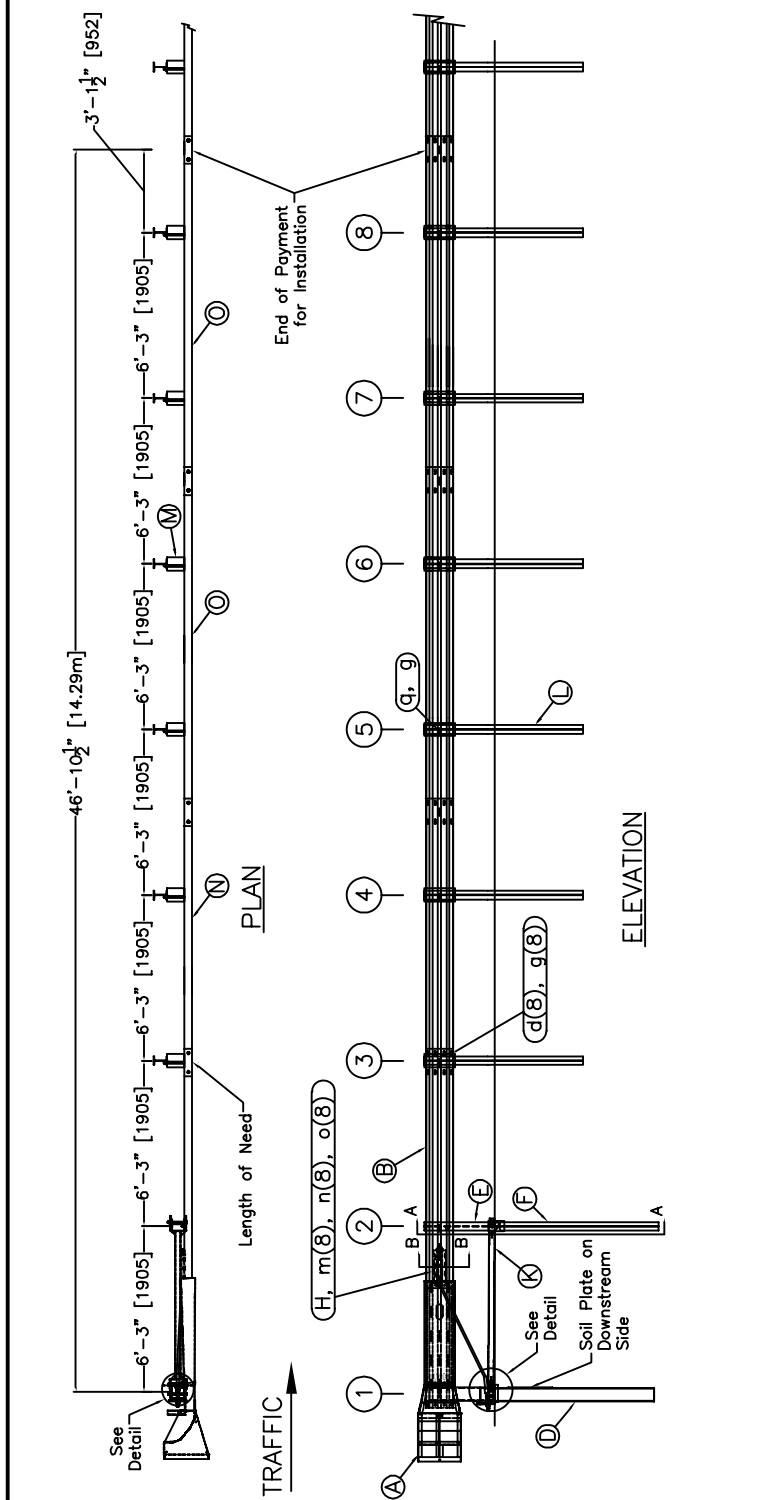
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Date: 04/10/19
By: JRR
Rev: 0

Drawing Name: MFL/T
Scale: None

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	FIRST POST TOP (6x6x $\frac{1}{2}$ " Tube)	MTPHP1A
D	1	FIRST POST BOTTOM (6" W6X15)	MTPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	STRUT	MS785
L	6	6x9 (6x8.5) STEEL POST	P621
M	6	RECYCLED PLASTIC BLOCK OR EQUIV.	CBS-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	25	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	2	5/8 Dia. x 9 HEX BOLT A449	B580904A
f	3	5/8 WASHER	W050
g	33	5/8 Dia. H.G.R. NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD A449	E340854A
i	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
n	8	1/2 STRUCTURAL NUT	N012A
o	8	1/2 STRUCTURAL WASHER	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002

GENERAL NOTES:

- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The lower sections of the Posts 1&2 shall not protrude more than 4 in [100] above the ground (measured along a 5' [1.5m] cord longitudinal to the system). Site grading may be necessary to meet this requirement.
- The lower section of the hinged post should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
- When competent rock is encountered, a 12" [300] Ø post hole, 20 in. [500] deep cored into the rock surface may be used if approved by the engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5" [60] deep to provide drainage. The first and/or second post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
- The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.



MSKT-SP-MGS Terminal (8" Blocks) Test Level 3

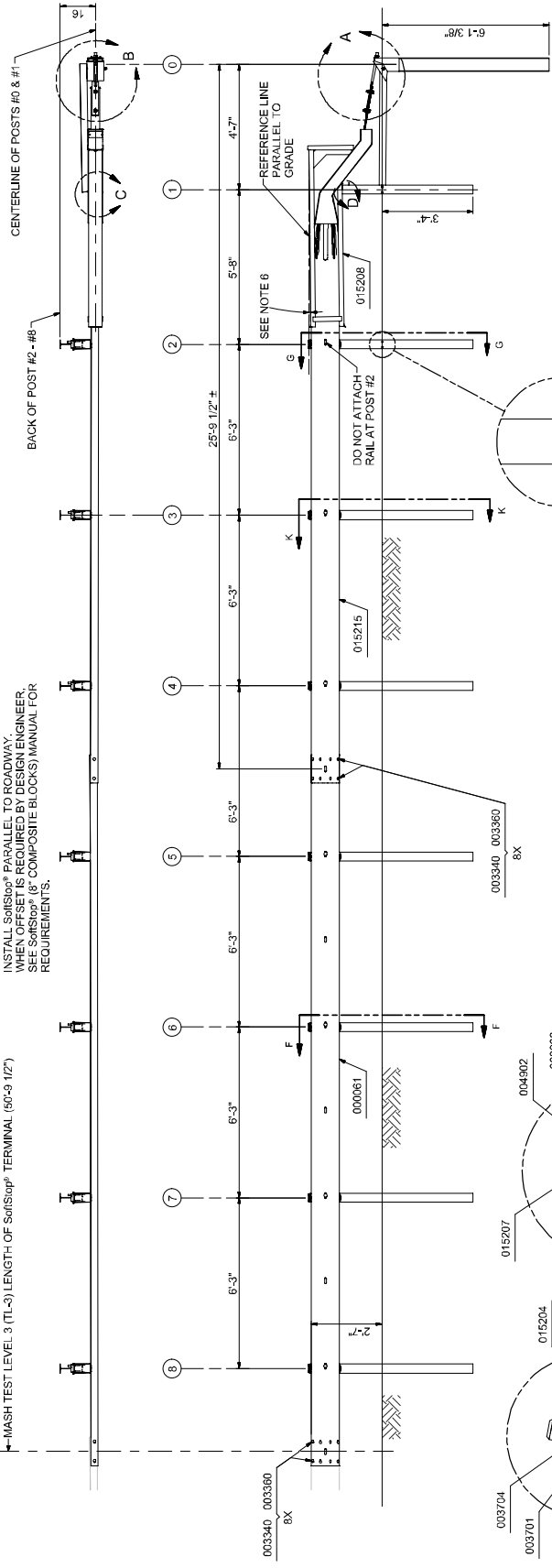
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 By: JRR
 Rev: 0

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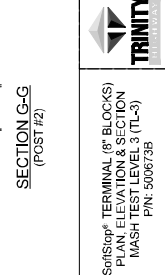
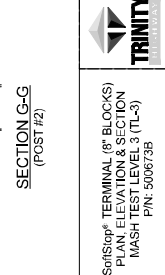
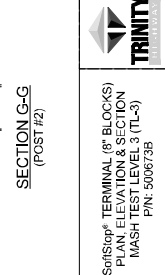
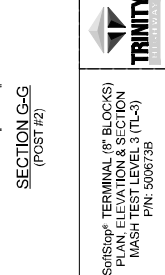
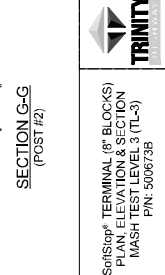
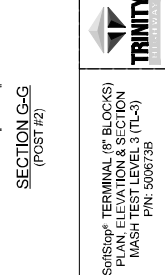
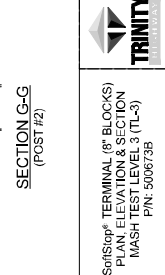
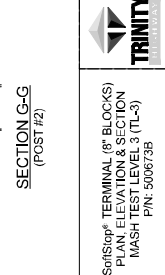
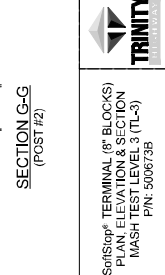
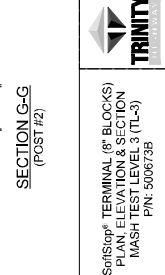
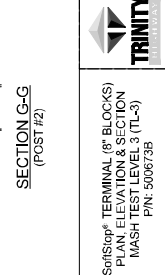
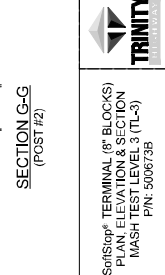
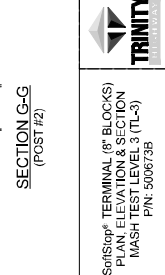
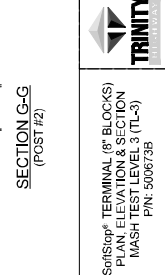
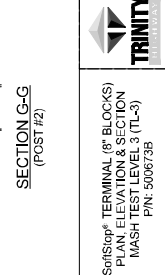
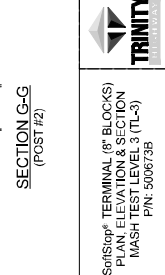
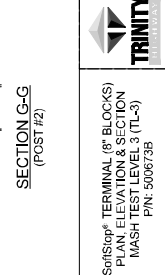
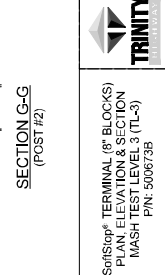
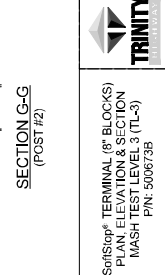
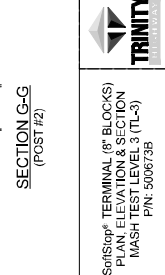
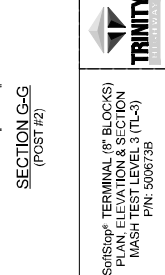
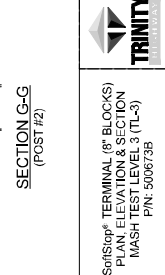
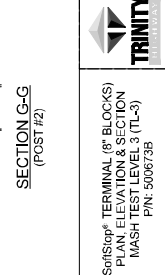
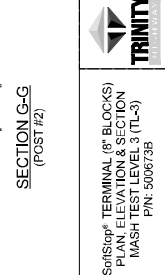
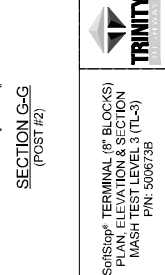
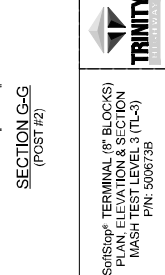
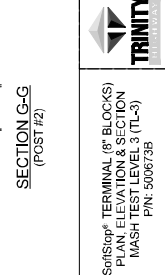
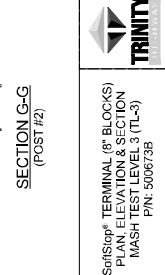
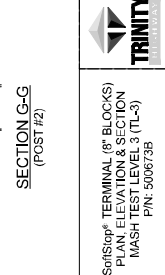
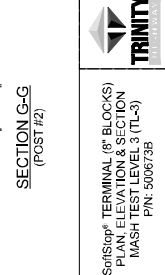
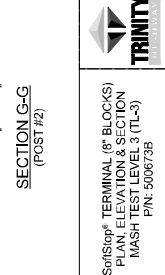
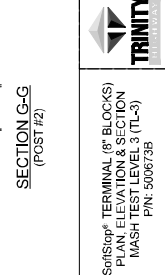
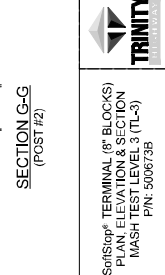
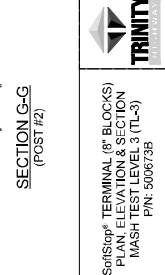
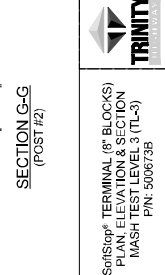
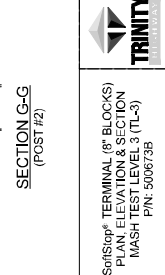
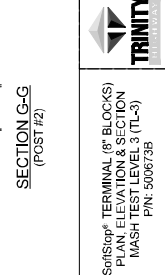
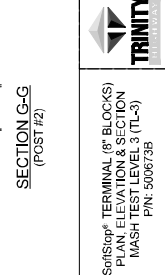
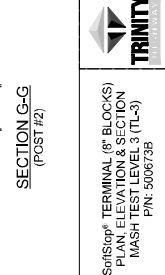
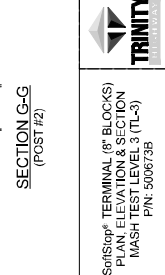
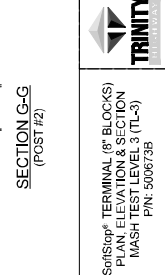
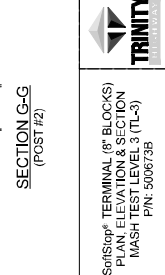
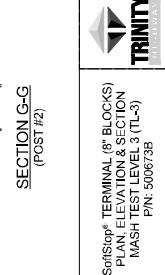
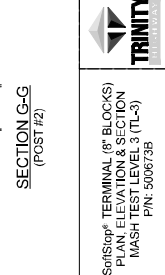
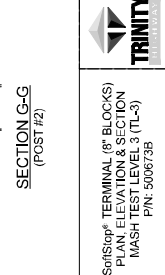
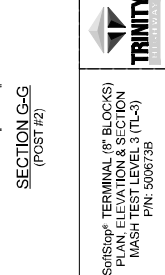
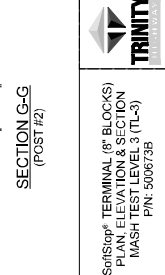
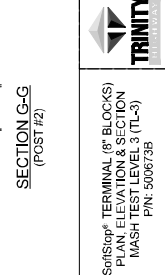
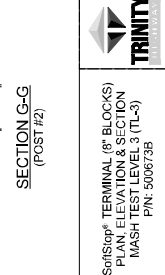
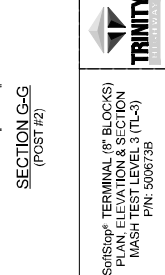
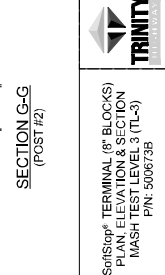
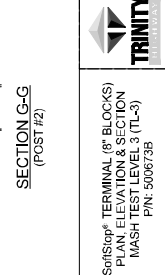
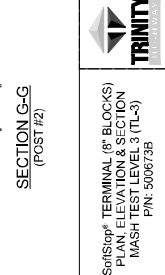
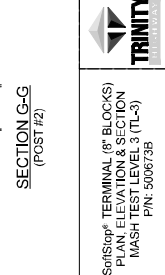
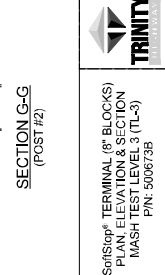
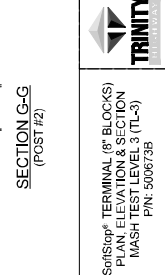
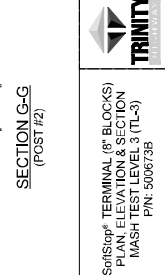
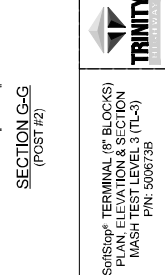
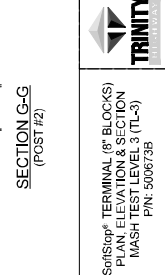
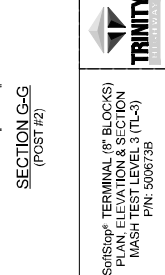
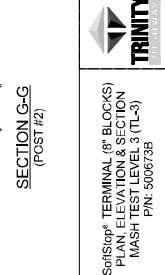
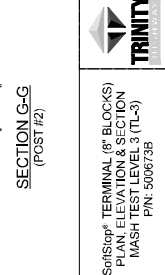
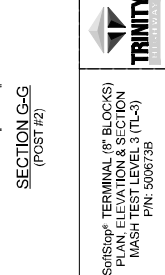
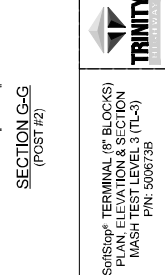
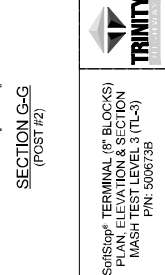
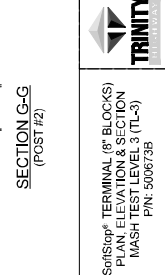
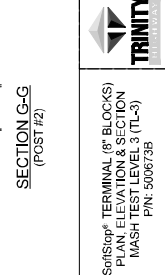
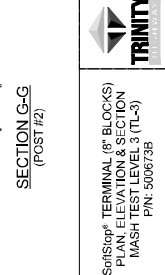
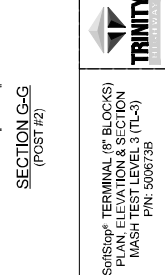
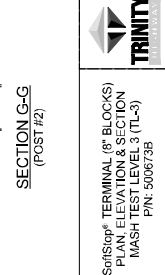
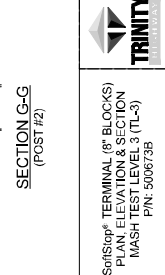
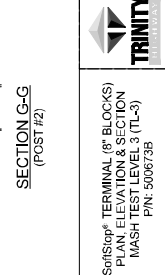
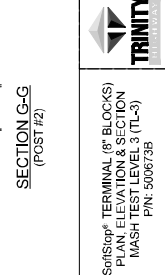
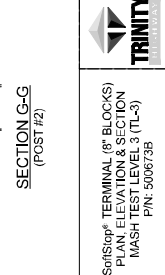
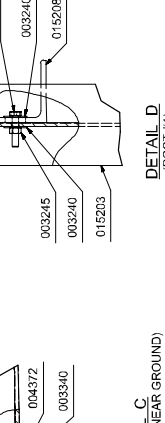
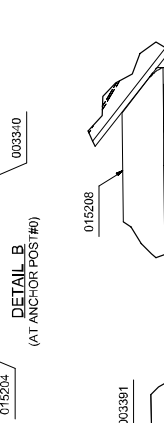
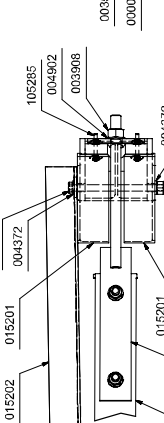
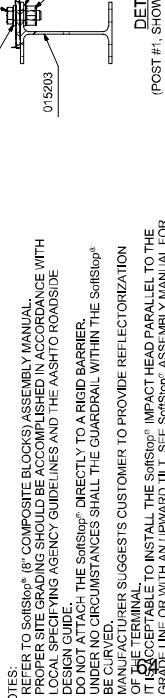
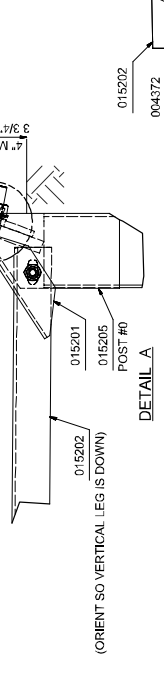
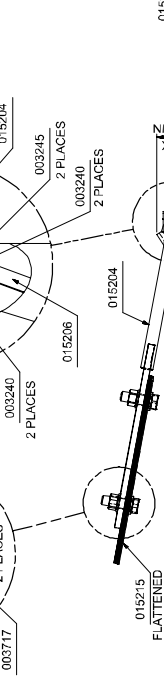
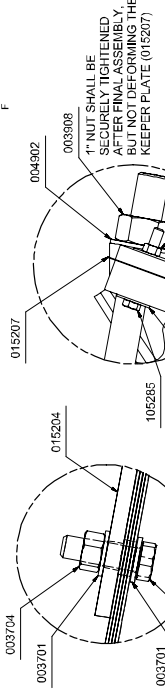
Post #1 Connection Detail Impact Head Connection Detail SECTION A-A Post #2

MASH TEST LEVEL 3 (TL-3) LENGTH OF SoftStop® TERMINAL (50'-3 1/2')

NOTE:
INSTALL SoftStop® PARALLEL TO ROADWAY.
CHECK OFFSET IS REQUIRED BY DESIGN ENGINEERS
SPECIFICATIONS (8" COMPOSITE BLOCKS) MANUAL FOR
REQUIREMENTS.



PART NO.	QTY.	DESCRIPTION
000061	1	1/2" X 25' X 3/4" S/S
000533	6	18" X 4" POST, 1/16" X 3/8"
VARIOUS	7	8" COMPOSITE BLOCK
015000	1	8" X 1/2" X 1/2" X 3/4" GR HT
015022	1	SFS-ANGLE STRUT
015203	1	SFS-POST #1 STIP
015204	1	SFS-POST #2 STIP
015205	1	SFS-POST #3 STIP
015206	1	SFS-ANCHOR HEAD
015208	1	SFS-ANCHOR G. RAIL 25'-0"
015215	1	HARDWARE KIT 034429
003240	6	5/16" ROUND WASHER WIDE
003245	3	5/16" HEX NUT
003340	25	NUT, 1/2" X 5/8" G. RAIL
003360	16	5/8" X 1.25" GR BOLT
003391	1	5/8" X 1.25" HEX BOLT A325
003701	4	3/4" ROUND WASHER F436
003704	2	3/4" HVY HEX NUT A563 DH
003717	2	3/4" X 2.5" HEX BOLT A325
003908	1	1" HVY HEX NUT A953 DH
004372	4	5/8" WASHER F436
004489	1	5/8" X 3" HEX BOLT A325
004602	1	1" ROUND WASHER F436
105285	2	5/16" X 2.5" HEX BOLT GRD 5
105286	1	5/16" X 1.5" HEX BOLT GRD 5
015201	2	SFS-ANCHOR ANGLE
015206	1	SFS-PLATE WASHER
015207	1	SFS-KEEPER PLATE



SPECIAL PROVISION
SECTION 606
GUARDRAIL
(Powder Coated Galvanized Guardrail)

Description This work shall consist of furnishing and installing Mid-Way Splice Guardrail as noted in the contract documents. Posts shall be minimum seven-foot posts at all locations.

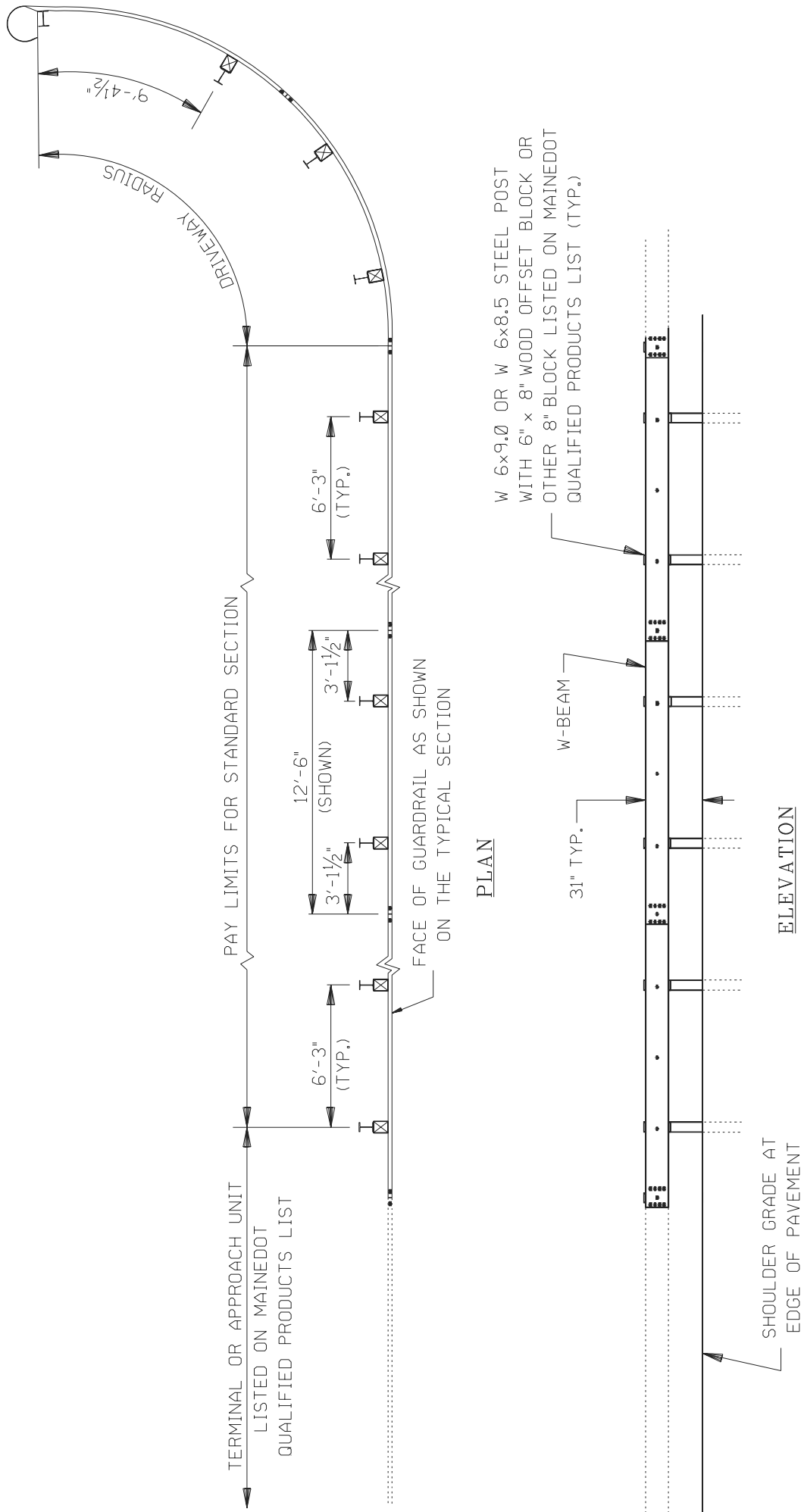
A powder coating shall be applied to all guardrail components. Work shall be completed according to manufacturer's details and specifications, including those set forth in Appendix A. Powder coating shall be a medium brown color, Federal Standard # 30117, or RAL # 8024, in matte finish.

Method of Measurement Powder coated Mid-Way Splice Guardrail shall be measured by the linear foot and will include all guardrail components and powder coating within the limits as directed. Terminals will be measured by the unit, complete, in place, and accepted.

Basis of Payment The accepted quantity of all guardrail items will be paid for at the contract unit price complete in place, including powder coating requirements.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
606.1311 31" W-Beam Guardrail - Mid-Way Splice, Powder Coated (Steel Post, 8" Offset Blocks, Single Faced)	Linear Foot
606.1313 31" W-Beam Guardrail - Mid-Way Splice, Powder Coated (Steel Post, 8" Offset Blocks, 15' Radius and Less)	Linear Foot
606.1314 31" W-Beam Guardrail - Mid-Way Splice, Powder Coated (Steel Post, 8" Offset Blocks, Over 15' Radius)	Linear Foot
606.2650 Terminal End – Single Rail – Powder Coated	Each



31" W-BEAM GUARDRAIL - MID-WAY SPLICE

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

Important:

Apply galvanizing and powder coating within the same facility (see 1.2);

Apply first powder coating over galvanizing within a maximum 12-hour window (see 3.4.1).

DESCRIPTION

1.1 General. This work shall be a duplex coating, consisting of hot dip galvanizing and high-performance, shop-applied, thermosetting-based, super-durable powder coating, for fabricated steel products for exterior use, as shown on the plans or as directed.

1.2 Duplex Coating Facility. The galvanizer shall be qualified and have demonstrated a minimum of ten years experience in the successful application of hot dip galvanizing using the dry kettle process, and a minimum of five years experience in the successful application of powder coatings over galvanizing within the same facility.

1.3 Scope of Work. All fabricated products and components, as shown on the plans or as directed, shall be furnished with a duplex coating as described. The duplex coating system shall consist of Hot Dip Galvanizing, Durable powder primer, Super durable powder topcoat, and powder clear coat.

MATERIALS

2.1 Galvanizing. Hot dip galvanizing shall conform to AASHTO M111 (ASTM A123) and Maine DOT Standard Specifications, Section 506.20, and utilize the dry kettle process in a bath of molten zinc. The galvanizing kettle shall contain special high grade zinc, nickel, and other earthy materials. Quenching with water or treatment with a chromate conversion coating is prohibited. Provide the thickness of galvanizing specified in the reference standards. Hardware shall be hot dip galvanized in conformance with AASHTO M232 (ASTM A153). Repairs to the galvanizing shall be in conformance with ASTM A-780 and Section 506.22.

2.2 Abrasives. Provide abrasives that are dry and free of oil, grease, and corrosion-producing, or other deleterious contaminants. Provide an abrasive that is sized to produce a dense, consistent, sharp, angular, uniform anchor pattern with a profile height of 1.0-1.5 mils, unless the requirements of the coating manufacturer are more restrictive. The use of iron shot, steel shot, aluminum oxide grit, sand, or coal slag products as blast abrasives, and power wire brushes are NOT permitted. Use approved abrasives [e.g. garnet, stainless steel grit, DuPont StarBlast® XL (fractured), etc.] that will not leave a residue on the galvanized surface after blowing down with compressed air.

2.3 Powder Coating. The duplex coating shall be a two-coat shop-applied, oven-cured, high performance, exterior thermosetting powder coating consisting of a durable zinc-rich powder coating primer, and a super-durable powder coating topcoat applied over hot dipped galvanized (HDG) steel substrates. For extra protection a third coat consisting of a powder clearcoat shall be applied. Fasteners exposed to view after installation shall receive duplex coating per section 3.4.4 and 3.7.4.

2.3.1 Furnish powder coating materials from one of the following approved suppliers:

1. AkzoNobel
2. PPG
3. Sherwin Williams
4. TIGER Drylac

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

2.3.2 The powder coating manufacturer shall certify in writing that:

1. The duplex coating facility applying the powder coating is certified to apply the powder by the coating manufacturer;
2. The powder coating meets or exceeds the following minimum performance requirements for use over hot dip galvanized surfaces:

Powder Coating - Minimum Performance Requirements

Test	Powder Primer	Powder Topcoat
Thickness (SSPC PA2)	3 mils (min.)	5 mils (min.)
Adhesion (ASTM D4541)	1050 psi (min)	1050 psi (min)
Impact Resistance (ASTM D2794 Direct)	160 in. lbs.	160 in. lbs.
Flexibility (ASTM D522,	pass	pass
Pencil Hardness (ASTM D3363)	3B	2H
Humidity (ASTM D4585) 100° F, 2000 hrs	Pass, no cracking or delamination	Pass, no cracking or delamination
Corrosion Weathering (ASTM D5894, 13 cycles, 4000 hours)	blister rating: 10 rust rating: 7	
Dry Heat Resistance (ASTM D2485)	250° F	
Abrasion Resistance (ASTM D4060)	200 mg loss (max)	
Salt Spray (ASTM B117) 2000 hrs		pass
Color Retention (ASTM D2244) 10 years		3ΔE (based on inorganic resins)
Chalk Resistance (ASTM D4214)		none
Gloss Retention (ASTM D523) 10 years		45% loss (max)
Xenon Arc Test (ASTM D 4798) 400 hrs		pass

2.3.3 Provide each coat of powder coating in sufficiently contrasting color to facilitate proper coverage and to distinguish it from previously applied coatings. The previous coat shall be hidden by application of each coat at the specified minimum thickness.

2.3.4 Provide all powder coating materials in sealed, original, containers that are properly marked to allow verification, with applicable material safety data sheets, application instructions and precautions, including the manufacturer's name, type of material, brand name, color, shelf life, purchase order number, lot and batch numbers, and quantity.

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

2.3.5 The final color of the painted product shall be a medium brown, Federal Standard #30117 or RAL #8024, with a matte finish.

2.3.6 Repair and touch-up materials shall be supplied by the powder coating applicator and applied in accordance with the powder coating manufacturer's recommendations.

DUPLEX COATINGS

3.1 General

3.1.1 Provide all materials, equipment, and labor necessary to perform the scope of work whether or not the material or equipment is specifically identified in this Item. Conduct all galvanizing, surface preparation, powder coating operations, handling, shipment, and installation in a workmanlike manner in conformance with SSPC-PA1, these requirements, and to the reasonable satisfaction of the Department.

3.1.2 Basis of Design. This specification is based on the standard of quality and performance of the powder coating duplex system provided by Duncan Galvanizing.

3.1.3 Specifications. Perform the work in conformance to the Contract requirements, the reference standards, and the coating manufacturer's instructions, respectively.

3.1.4 Reference Standards. The latest edition of the standards and regulations in effect at the time of the Bid, form a part of this Specification. A copy of the reference standards applicable to the work shall be available at the Department's request.

- a. **American Society for Testing and Materials (ASTM)**
 - 1. ASTM A123, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
 - 2. ASTM A153, Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware
 - 3. ASTM A385, Standard Practice for Providing High-Quality Zinc Coatings (Hot Dip)
 - 4. ASTM A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings
 - 5. ASTM D610, Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces
 - 6. ASTM D6386, Standard Practice for Preparation of Zinc (Hot Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.
- b. **American Association of State Highway & Transportation Officials (AASHTO)**
 - 1. AASHTO M111, Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
 - 2. AASHTO M232, Zinc Coating (Hot Dip) on Iron and Steel Hardware
- c. **American Galvanizers Association (AGA)**
 - 1. The Inspection of Products Hot Dip Galvanized After Fabrication
 - 2. *Powder Coating over Hot Dip Galvanized Steel*, Powder Coating Journal, Feb 2004, Philip Rahrig, AGA Executive Director
 - 3. *Powder Coating over Galvanized Steel*, Tom Langill, AGA Technical Director, Feb 2010.
- d. **Society for Protective Coatings (SSPC)**
 - 1. SSPC-SP 1, Solvent Cleaning

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

2. SSPC-SP 7 / NACE No. 4, Brush Off Blast Cleaning
3. SSPC-PA 1, Shop, Field, and Maintenance Painting
4. SSPC-PA 2, Measurement of Dry Film Thickness with Magnetic Gages

3.1.5 Submittals.

3.1.5.1 Surface Preparation and Powder Coating Plan.

1. Provide a written plan to the Department for applying duplex coatings. Identify the manner of surface preparation, the powder coat system to be applied, film thickness, cure time between coats, repair materials and procedures of typical damage and defects in the duplex coating, and other information needed to successfully apply all coats of the duplex system.
2. Provide material product literature and MSD sheets for the coatings specified, along with test data indicating conformance to the performance criteria required.
3. Submit six - 3-inch by 6-inch samples of shop-applied duplex coatings and colors proposed for use for approval to the Department a minimum four weeks prior to coating application. Samples shall be made of the same or comparable material and thickness as production pieces.
4. Submit a Certificate of Compliance stating that the requirements of the contract specifications have been met, in conformance to 106.04.

3.1.5.2 Substitutions or Approved Equals.

1. Substitutions or 'Approved Equals' are defined as meeting the aesthetic, durability, and all other performance criteria described in this specification, and shall be accompanied by proof that the Substitution or 'Approved Equal' meets or exceeds these criteria. Approval is the discretion of the Department. Coatings or processes not matching or exceeding the approved specified process and aesthetic, durability, and performance criteria shall be removed and replaced at the expense of the Contractor and all Subcontractors that were involved with the supply of and application of the non-conforming product.

3.1.6 Supplier Coordination.

1. **Fabricator-Galvanizer Coordination.** Prior to fabrication and final submittal of shop drawings to the Department, fabricators shall submit shop drawings to the galvanizer for all metal fabrications to receive shop- applied duplex coatings, to review fabricator's shop drawings for suitability of materials for galvanizing and coatings, and to coordinate any required modifications to fabrications required to be performed by the fabricator.
2. The supplier of steel products shall notify the galvanizer if the chemical composition of the steel to be galvanized exceeds the following limits in order to determine its suitability for processing: 0.25% carbon, 0.22% silicon, 0.04% phosphorous, and 1.3% manganese.

3.2 Hot Dip Galvanizing (HDG)

3.2.1 Fabricated products shall meet the requirements of ASTM A385 (for material composition, cleanliness, drainage vents, etc.) prior to galvanizing, and galvanized surfaces shall meet the requirements of ASTM D6386 (preparing zinc surfaces for painting), as applicable and as stated herein.

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

1. Galvanizing: Galvanize materials in accordance with specified standards and this specification. Galvanizing shall provide an acceptable substrate for applied coatings. The dry kettle process shall be used to eliminate any flux inclusions on the surface of the galvanized material.
2. Prior to galvanizing, the steel shall be immersed in a preflux solution (zinc ammonium chloride). The wet kettle process is prohibited.
3. Implement the following procedures to provide the appropriate surface for the material to be galvanized:
 - a) Utilize and regularly inspect a monitoring recorder to observe any variances in the galvanizing bath temperature.
 - b) The pickling tanks shall contain hydrochloric acid. Titrations shall be taken weekly at a minimum.
 - c) All chemicals and zinc content will be tested at least once a week to determine compliance with ASTM standards. All testing will be done using atomic absorption spectrometry or x-ray fluorescence (XRF) equipment at a lab in the galvanizing plant.

3.2.2 Surface Preparation of Hot Dip Galvanizing (HDG)

1. Prepare all surfaces in conformance to the requirements of this Item, and the applicable Surface Preparation/Powder coating Plan provided under MaineDOT Standard Specifications, Section 506.13, Submittals.
2. Prior to powder coating, clean and prepare galvanized surfaces as necessary to remove detrimental contaminants. (See *Powder Coating over Galvanized Steel*, Feb 2010 Tom Langill for cautions regarding cleaning.) If applicable apply cleaning materials with clean lint-free rags or soft bristle brushes frequently changed to prevent reapplying contaminants. After cleaning, rinse thoroughly with hot water and allow the part to dry completely.
3. Prepare galvanized surfaces with SSPC, SP 16 Brush-Off Blast Cleaning, using non-metallic abrasives at a reduced nozzle pressure as recommended by the equipment manufacturer, or abraded by approved mechanical means using sanding disks with appropriate abrasive, to thoroughly roughen the entire surface and produce a dense, consistent, sharp, angular, uniform anchor pattern with a profile height of 1.0-1.5 mils, exhibiting a uniform gray color free of any bright, shiny spangles and to an appearance and feel similar to sandpaper.
4. The required thickness of the zinc coating shall be maintained and checked prior to powder coating. Surface preparation shall be acceptable to the powder coating manufacturer's requirements. Additional surface preparation or a tie coat may be considered if required by the powder coating manufacturer and approved by the Department.
5. The substrate surface shall be dry and free from dust, dirt, oil, grease or other contaminants.

3.2.3. Discontinuities. All visually evident detrimental surface imperfections (e.g. flux inclusions, dross inclusions, oil) that are present on galvanized surfaces shall be cleaned, and any high spots, rough areas and edges, spikes, and sharp protrusions shall be removed by grinding to produce a smooth surface. Disbondment (peeling) of galvanizing is not acceptable and the piece shall be

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

regalvanized, or investigated for extent and severity and a repair solution proposed to the Department for approval before corrective action is taken.

3.2.4 Surface profiling shall be performed prior to the formation of "white rust" on the galvanized surface. If any "white rust" is detected by visual means, the galvanizing shall be stripped off and the steel re-galvanized in conformance with these specifications. "White rust" shall be as defined in the Inspection of Products Hot Dip Galvanized After Fabrication, Table IV, by the American Galvanizers Association.

3.2.5 Prior to powder coating galvanized products shall not be nested, stacked or stored with adjacent surfaces touching but shall be kept separated to remain dry and permit the circulation of air between products.

3.3 Galvanized Steel Outgassing.

3.3.1 The galvanized parts shall be subjected to a thermal cycle (i.e. outgassing) after surface profiling and before powder coating application. The thermal cycle should be set at the appropriate temperature and duration for the thickness of the product recommended by the powder coating manufacturer.

3.4 Powder Coat Application.

3.4.1 Time limits. The first coat of powder coating shall be applied within twelve (12) hours of galvanizing and within one hour of surface preparation of the galvanized surface and outgassing, at the galvanizer's facility, and in a controlled environment meeting applicable atmospheric requirements, as recommended by the coating manufacturer.

3.4.2 Powder coating application. Pretreatment and powder coating application and curing shall be performed after galvanizing in conformance with the powder coating manufacturer's recommendations and shall consist of the following, unless approved otherwise:

1. Verify that the galvanized surface exhibits the specified degree of cleaning immediately prior to powder coating.
2. The coating and curing facility shall be maintained free of airborne dust and dirt until coatings are completely cured.
3. The powder coating shall be electrostatically applied according to the coating manufacturer's written specifications, maintaining even coverage on all parts. The powder shall only be applied when both the ambient temperature is 65° F. or above, and the part surface temperature is between 60° and 95° F., and is (min.) 5° F. higher than the dew point. Relative humidity shall be less than 85 percent (max.).
4. After applying the powder, all parts shall be placed in an oven, cured and bonded at the manufacturer's recommended levels (e.g. approximately 392° F. for 25 minutes). The Contractor shall ensure that a stable transfer exists between the powder application system and the curing oven to prevent the loss of powder from the parts.
5. The powder coating shall be applied to a minimum dry film thickness of 3 mils primer and 5 mils topcoat, and in a manner that will ensure a uniform coating without holidays, runs, or detrimental build at edges. A clear coat shall be applied at the manufacturer's recommended thickness.

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

6. Each coated part shall be visually inspected. Measure the coating thickness with a thickness gauge. Any part that does not meet the specified coating thickness may be recoated immediately after lightly abrading (sanding) the surface. Once cured, all parts shall be allowed to cool sufficiently before further handling.

3.4.3 Surface smoothness - Duplex coatings shall exhibit a smoothness (i.e. rugosity) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1-inch straight line on the surface of metal products less than 24 lbs/ linear foot. The profilometer shall be capable of operating in 1 micron increments.

3.4.4 Hardware shall be galvanized and powder coated as follows. Furnish an application procedure to the Department. Coating procedures for fasteners are not restricted to the same-facility (1.2) and 12-hour maximum window (3.3.1) restrictions, due to the different nature of fastener supply.

1. Bolts - Powder coat bolt heads. Minor overspray is permitted on the threads.
2. Nuts - Powder coat exterior nut surfaces and mask off interior surfaces.
3. Washers - Powder coat all washer surfaces.

3.5 Inspection.

3.5.1 Quality Control (QC). The applicator is required to conduct and document quality control inspection of the cleaning and powder coating operations including at a minimum, measurements of surface profile, surface cleanliness, dry film coating thickness, and visual inspection for coating defects. The data shall be recorded in a log maintained at the site and available for the Department's review during working hours.

3.5.2 Quality Assurance (QA). The work is subject to QA inspection by the Department.

1. Facilitate QA inspection as required, including proper notification, allowing adequate time for inspections, and providing access to the work. Furnish, until final acceptance of the coating system, all equipment, reference documents, and instrumentation needed to inspect all phases of the work.
2. Measure the thickness of each coat using nondestructive magnetic dry film thickness gages. Comply with SSPC- PA2 for the calibration and use of gages and the minimum frequency of thickness measurements. QA Inspectors will not be limited by the frequency of thickness measurements of PA2 but will take measurements sufficient to assure that proper thickness is achieved on all surfaces as specified.
3. The presence or activity of Department QA inspections in no way relieves the Contractor of the responsibility to comply with all requirements of this Item, and to provide adequate inspections of its own to assure compliance with the requirements of this Item.
4. Finished products will be stamped "Approved" only after the loading has been completed and approved. No material shall be shipped without the prior approval of the Department.

3.6 Handling / Shipping / Installation.

3.6.1. Duplex-coated materials shall not be lifted, placed on supports, or loaded for shipment until the shop coating has been adequately cured and inspected.

3.6.2. Protective measures. Exercise care in handling shop-coated materials in the shop, and during

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

storage, shipping, field installation, and subsequent construction to protect the coating from any scraping, marring, or other damage to the surface finish. Coated material shall be insulated from lifting devices and from the scraping and rubbing of parts that would damage the coating, by the use of lifting softeners, nylon slings, padded cables, storage pallets, separators, cushioners, tie-downs, and other approved supports. Individual parts shall be wrapped or padded with effective protective material (e.g. foam, not paper or cardboard).

3.6.3. Installation. Comply with fabricator's and galvanizer's requirements for installation of materials and fabrications, including use of nylon slings or padded cables for handling shop-coated materials.

3.7 Touch-Up And Repairs.

3.7.1 The total repair area shall be less than one quarter of one percent (0.25%) of the area of an individual member, or the member shall be rejected and regalvanized and recoated with the duplex coating. [The repair area definition is comparable to Rust Grade 7 in ASTM D610, *Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces.*]

3.7.2 HDG- Repair damaged galvanizing and bare steel surfaces in accordance with ASTM A780, Standard Practice for Repair of Damaged Hot Dipped Galvanized Coatings, Annex A2. Thoroughly clean damaged areas to produce a clean, bare and dry bright metal surface with a roughened profile and feather into the edges of adjacent undamaged galvanizing. Use a power sanding disk per SSPC-SP3. For bolts use a thorough hand wire brushing and SP1 cleaning as a minimum.

3.7.3 Apply an approved organic zinc-rich repair paint containing 92 percent (min.) zinc by weight in the dry film, according to the manufacturer's recommendations, in two to four coats to a thickness equivalent to the surrounding galvanizing. Silver paint, brite paint, or aluminum paint is not acceptable.

3.7.4 Powder coating - The repair to the powder coat may be a liquid and brushed on or an aerosol and sprayed, whichever is appropriate to achieve an aesthetic finish and as long as the coats, cure, and minimum thickness of the original system are achieved. The Contractor shall provide a dry film thickness gage and check the thickness of the repair areas. Touch-ups shall be such that the repair is not noticeably visible from a distance of six feet.

1. The field-touch-up of shop-applied finish coatings shall be performed or supervised by personnel from the duplex coating facility for the warranty to apply.
2. Touch up fasteners in the field after installation, assuming there may be mechanical damage to nuts during tensioning fasteners.
3. Touch-up repair kits in sufficient quantity and touchup instructions shall be provided to the field for each type of shop-applied finish. Additional touchup repair kits and instructions shall be furnished to the Department for use after project acceptance for maintenance repairs.

3.8 Final Acceptance.

Although the Department's QA Inspector may accept the finished duplex coated fabricated products before shipment to the jobsite, final acceptance of the duplex coat system by the Department will occur at the jobsite after installation of the product, and after all coats and repairs have been completed.

APPENDIX A – DUPLEX COATING – POWDER COATING OVER GALVANIZING

3.9 Maintenance.

The Contractor shall provide an additional quantity of duplex coated material to the Department. Specific quantities of each particular pay item to be provided will be discussed at the Preconstruction Meeting. At a minimum, 10% of the original contract amount for items paid by the linear foot shall be provided. Additional material will be delivered to a location to be determined by the Resident. The Department will pay the invoice unit price, plus 10%, for the additional material delivered.

SPECIAL PROVISION
SECTION 607
FENCES

607.01 Description Construct fence and gates.

607.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Chain Link Fabric	710.03
Fence Posts and Braces	710.06

Metal gates shall be of galvanized steel.

Staples shall be of galvanized or aluminum coated steel.

Concrete for anchoring metal posts, metal braces and wooden gate posts shall meet the requirements of Section 502 - Structural Concrete, except air entraining will not be required. The class of concrete shall be optional.

Drive anchors shall be an approved anchorage consisting of two steel angles driven diagonally into the ground through metal clamps bolted to the post. All parts shall be galvanized.

607.03 General The Contractor shall perform clearing and grubbing necessary to construct the fence to the required grade and alignment.

Posts shall be spaced as specified by the Department except that a variation of 2 feet back or ahead on line may be allowed at approved locations. The tops of posts shall be set to the required grade and alignment. Cutting off the posts may be allowed with approval.

When the plans require posts or braces to be anchored into the soil, concrete anchors or metal drive anchors shall be used. If concrete is used, temporary guys to hold the posts in position shall be installed until the concrete has set. Unless otherwise permitted, no material shall be installed on posts or strain placed on guys and bracing set in concrete until 48 hours after the concrete has been placed.

If metal drive anchors are used, they shall be installed according to the manufacturer's instructions so all parts will be below the ground surface. One drive anchor shall be used on line posts; two drive anchors shall be used on bracing assemblies. Where two drive anchors are used, they shall be placed perpendicular to each other.

Backfill with earth placed in 8 inch layers, loose measure, and each layer thoroughly tamped.

Metal posts to be set in solid rock shall be placed in drilled holes and grouted with a cement grout composed of 1 part Portland cement and two parts sand mixed with water.

All surplus material and other debris shall be removed and disposed of.

607.05 Chain Link Fence Foundations for posts for chain link fence shall be cast-in-place Portland cement concrete placed in approved forms or shall be approved metal drive anchors. If wood forms are used, they shall be removed before backfilling. If fiber forms are used, they need not be removed.

a. Braces Fences less than 6 feet in height that are installed with a top rail shall not require any brace rails. Fences less than 6 feet in height installed without a top rail and all fences with heights of 6 feet or more shall have brace rails installed midway between the top and bottom of the fabric as shown on the plans. Braces shall be securely fastened to the posts then trussed from the line post to the base of the end, intermediate or corner post with a $\frac{3}{8}$ inch diameter truss rod and tightened. At changes in horizontal alignment of less than 15°, bracing will not be required except at intervals of 330 feet. At changes in alignment of 15° to 30°, bracing may be required as called for on the plans or requested. At changes in alignment in excess of 30°, bracing will be required. One brace assembly shall be furnished with each end or gate post and two assemblies with each corner or intermediate post and at grade changes specified above.

b. Gates Where gates are required for chain link fence, they shall be constructed of metal.

c. Erection of Chain Link Fabric The grade of fence shall be approximately parallel with the grade of the ground. When directed, abrupt depressions shall be filled.

Top rails when required, shall pass through post caps and be securely fastened to end, corner, brace and gate posts. Joints in top rails shall be made with expansion sleeve couplings. On curves with a radius of less than 500 feet, the top rail shall be bent to the arc.

The fabric shall be pulled taut, the ends attached to the posts with stretcher bars, and bands or other approved devices. When required, wire fabric shall be joined by weaving a single strand of mesh wire into the ends of the rolls to form a continuous mesh.

d. Tension Wire When called for on the plans, a tension wire of seven gage galvanized wire shall be used in place of the top rail.

607.06 Method of Measurement Fence will be measured by the linear foot accepted in place. Measurement will be along the gradient of the fence from outside to outside of end posts for each continuous run of fence and shall include fence at bracing assemblies but shall not include space at gates and barways. Gates, barways, and bracing assemblies will be measured by the unit of the size and type specified. Excavation in rock for placement of fence posts in drilled holes will be measured by the cubic yard determined from the actual depth of the drilled hole in the rock and a hypothetical circle diameter of 2 feet.

607.07 Basis of Payment The accepted quantities of fence will be paid for at the contract unit price per linear foot of the type and size specified complete in place. Payment shall be full compensation for furnishing and assembling all materials, for excavating and backfilling holes, and for all incidentals necessary to complete the work except that in rock, payment for drilled holes will be made under 109.7.5 – Force Account. Excavation of earth to exposed rock shall be incidental to the several items for erection of the fence. Clearing or removal of trees, stumps or boulders, required to install the fence shall be included in the work of the respective pay items.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
607.16	Chain Link Fence – 4 foot	Linear Foot
607.163	Chain Link Fence – 4 foot – PVC Coated	Linear Foot
607.17	Chain Link Fence – 6 foot	Linear Foot

SPECIAL PROVISION
SECTION 607
FENCES

607.01 Description This work shall consist of furnishing and installing a four (4) foot chain link fence, buried one (1) foot deep in the substrate, and furnishing and installing a lining of ¼” galvanized hardware cloth installed on the outside of the fence.

607.02 Materials Materials shall meet the requirements specified in the following sections of Division 700 – Materials:

Chain Link Fabric	710.03
Fence Posts and Braces	710.06

Metal gates shall be of galvanized steel.

Staples shall be of galvanized or aluminum coated steel.

Concrete for anchoring metal end posts, metal braces and wooden gate posts shall meet the requirements of Section 502 - Structural Concrete, except air entraining will not be required. The class of concrete shall be optional.

Drive anchors shall be an approved anchorage consisting of two steel angles driven diagonally into the ground through metal clamps bolted to the post. All parts shall be galvanized.

607.03 General The Contractor shall perform clearing and grubbing necessary to construct the fence to the required grade and alignment. The Contractor shall excavate one (1) foot into the substrate. Excavated material shall be retained for backfill.

Posts shall be spaced as called for on the plans except that a variation of 2 feet back or ahead on line may be allowed at approved locations. The tops of posts shall be set to the required grade and alignment. Cutting off the posts may be allowed with approval. All posts shall be capped.

Posts for woven wire fence shall be braced with Type I or Type II bracing at designated location as hereafter specified. Type I bracing shall include diagonal brace and one post of the designated size. Type II bracing shall include two diagonal braces and one post of the designated size.

Except for the end anchor posts and gateway posts, the fence posts do not have to be set in concrete. End and gateway posts or braces shall be anchored into the soil, concrete anchors or metal drive anchors shall be used. If concrete is used, temporary guys to hold the posts in position shall be installed until the concrete has set. Unless otherwise permitted, no material shall be installed on posts or strain placed on guys and bracing set in concrete until 48 hours after the concrete has been placed.

If metal drive anchors are used, they shall be installed according to the manufacturer's instructions so all parts will be below the ground surface. One drive anchor shall be used on line posts; two drive anchors shall be used on bracing assemblies. Where two drive anchors are used, they shall be placed perpendicular to each other.

Backfill with earth placed in 8 inch layers, loose measure, and each layer thoroughly tamped.

Metal posts to be set in solid rock shall be placed in drilled holes and grouted with a cement grout composed of 1 part Portland cement and two parts sand mixed with water.

All surplus material and other debris shall be removed and properly disposed.

607.04 Chain Link Fence

Foundations Foundations for chain link fence end posts and gateway posts shall be cast-in-place Portland cement concrete placed in approved forms or shall be approved metal drive anchors. If wood forms are used, they shall be removed before backfilling. If fiber forms are used, they need not be removed.

Braces Fences less than 6 feet in height that are installed with a top rail shall not require any brace rails. Fences less than 6 feet in height installed without a top rail and all fences with heights of 6 feet or more shall have brace rails installed midway between the top and bottom of the fabric as shown on the plans. Braces shall be securely fastened to the posts then trussed from the line post to the base of the end, intermediate or corner post with a 3/8" diameter truss rod and tightened. At changes in horizontal alignment of less than 15°, bracing will not be required except at intervals of 330 feet. At changes in alignment of 15° to 30°, bracing may be required as called for on the standard details or as requested. At changes in alignment in excess of 30°, bracing will be required. One brace assembly shall be furnished with each end or gate post and two assemblies with each corner or intermediate post and at grade changes specified above.

Gates Where gates are required for chain link fence, they shall be constructed of metal.

Erection of Chain Link Fabric The grade of fence shall be approximately parallel with the grade of the ground. When directed, abrupt depressions shall be filled.

Top rails when required, shall pass through post caps and be securely fastened to end, corner, brace and gate posts. Joints in top rails shall be made with expansion sleeve couplings. On curves with a radius of less than 500 feet, the top rail shall be bent to the arc.

The fabric shall be pulled taut, the ends attached to the posts with stretcher bars, and bands or other approved devices. When required, wire fabric shall be joined by weaving a single strand of mesh wire into the ends of the rolls to form a continuous mesh.

Tension Wire When called for on the Standard details, a tension wire of seven gage galvanized wire shall be used in place of the top rail.

607.05 Method of Measurement Fence will be measured by the linear foot accepted in place. Measurement will be along the gradient of the fence from outside to outside of end posts for each continuous run of fence and shall include fence at bracing assemblies but shall not include space at gates. Gates will be measured by the unit of the size and type specified. Excavation in rock for placement of fence posts in drilled holes will be measured by the cubic yard determined from the actual depth of the drilled hole in the rock and a hypothetical circle diameter of 2 feet.

607.06 Basis of Payment The accepted quantities of fence will be paid for at the contract unit price per linear foot of the type and size specified complete in place. Gates will be paid for at the contract unit price for each type specified complete in place. Payment shall be full compensation for furnishing and assembling all materials, for furnishing and installing the galvanized hardware cloth, for excavating and backfilling trenches and holes, for Mulch and Seed and for all incidentals necessary to complete the work except that in rock, payment for drilled holes will be made under 109.7.5 – Force Account. Excavation of earth to exposed rock shall be incidental to the erection of the fence.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
607.15	Drive Gateway 16 Foot - Metal	Each
607.165	Chain Link Fence – 4 Foot Without Top Rail	Linear Foot

SPECIAL PROVISION
SECTION 659
MOBILIZATION

NOTE: The Contractor and the Department (Region Engineer or their designee) shall agree upon the type of Mobilization prior to the commencement of any work.

Mobilization - Hourly

The Contractor shall be paid for mobilization by the hour for time they travel to or from the project site to provide guardrail services to the MaineDOT. The Contractor will be paid by the hour for the following:

1. Travel time between work sites if multiple sites exist.
2. Time it takes to travel to and from the work site. This time will be measured to and from the work site to the company's closest base of operations and/or the crew's overnight location.

The total amount of hours will be rounded off to the nearest ¼ hour. This may involve work at multiple sites within the specified area on the same day.

Mobilization - Overnight

The Contractor shall be paid for one calendar day of Item 659.12 Mobilization – Overnight for each night (or day for nightwork) they provide guardrail services to the MaineDOT where the work requires more than one day to complete **and** requires the crew to spend the night following that workday away from home. Item 659.12 includes all expenses related to overnight stays. Travel time between work sites, travel from the work site to the crew's overnight location and travel from the crew's overnight location to the work site will be paid for under Item 659.11 Mobilization - Hourly.

Mobilization - Night Work

In addition to 659.11 Mobilization – Hourly and 659.12 Mobilization – Overnight, the Contractor shall be paid for one calendar day of night time mobilization for each night they provide guardrail services to the MaineDOT when the work or any portion thereof is conducted between sunset and ½ hour before sunrise according to the Sunrise/Sunset Table at <http://www.sunrisesunset.com/usa/Maine.asp>. If the project town is not listed, the closest town on the list will be used as agreed.

Cold Weather Work

All Work assigned from December 15th through March 15th will be eligible for an adjustment in the price of Mobilization, if executed within 14 Calendar Days of the assignment date. The adjusted Mobilization price shall be equal to the original bid amount plus an additional 75%.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
659.11 Mobilization – Hourly	Hour
659.12 Mobilization – Overnight	Calendar Day
659.13 Mobilization – Night Work	Calendar Day

SPECIAL PROVISIONS
ADDITIONS AND REVISIONS TO STANDARD SPECIFICATIONS

SPECIAL PROVISION SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions Add the following:

“MaineDOT The Department of Transportation of the State of Maine, as established by 23 MRSA §4205 et seq. for the administration of Highway, Bridge, and other public Works; acting through the Commissioner and his/her duly authorized representatives.”

101.2 Definitions Apparent Successful Bidder Delete the section in its entirety and replace with the following:

“All Bidders with the responsive responsible Bids as determined by the Department. A responsive responsible Bidder that is Awarded the Contract. The Department may not execute the Contract with the Apparent Successful Bidders if a) the Apparent Successful Bidder fails to comply with all applicable pre-Award conditions or other pre-execution requirements of the Contract or b) if the Department chooses not to Award a Contract.”

101.2 Definitions Add the following:

“Contract Agreement form The Contract Agreement, Offer and Award, the Maine Department of Transportation Contract Agreement Transportation Related Maintenance Work, the Maine Department of Transportation Contract Agreement to Purchase Supplies, Materials and/or Equipment for a Specific Project, Contract Agreement to Purchase Materials and/or Equipment for a Project and Related Work, the Maine Department of Transportation Private Equipment Rental Agreement – with an Operator, the Maine Department of Transportation Private Equipment Rental Agreement – without an Operator, or other contract agreement contained in the bid documents.”

101.2 Definitions Successful Bidder Delete the section in its entirety and replace with the following:

“All responsive, responsible bidders to whom the Department intends to award the Contract. This status is evidenced by a “Notice of Intent to Award” Letter sent to the Successful Bidders.”

SPECIAL PROVISION SECTION 102
BIDDING

102.6 Bid Guaranty Delete the entire section 102.6.

102.7.1 Location and Time Delete the entire section and replace with the following:

“The Bidder must Deliver its Bid and Bid Guaranty in a sealed envelope to the exact location and before the precise time (as determined by the Department) specified in the Notice to Contractors or any applicable Bid Amendment. The sealed envelope must be labeled with the Bidder's name, the Title, the Location, and the words “Bid Enclosed”. As a minimum, the Bidder will submit a Bid Package consisting of the Notice to Contractors, the completed Acknowledgement of Bid Amendments form, the completed Schedule of Items, 2 copies of the completed Contract form, and any other Certifications or Bid Requirements listed in the Bid Book. For a related provision, see Section 102.11 - "Bid Responsiveness".

102.9 Bid Opening Delete the section in its entirety and replace with the following:

“Bids will be opened and publicly read at the time and place specified in the Notice to Contractors or any applicable Bid Amendments. The Department will read only the names of the Bidders. No other information will be made available prior to evaluation and award notification. Unit and lump sum prices are available for inspection by the Bidders immediately after Award. All Bids shall be sequestered until notification of award by the contracting agency after which time they become public record.

If, after the scheduled opening, the Department determines that there is not sufficient coverage of On-Call Services of the entire area being bid on, the Department may schedule a second bid opening date which extends the advertisement period of this Contract. Contractors will be notified of the new opening date by the normal Bid Amendment process. If the Bid Opening date is extended, any Bidders that have previously submitted Bids may choose **to** revise or **not to** revise their Bids. If the Bidder chooses to revise their Bid, they must resubmit a complete Bid Package which shall include a Bid and all other documents required in the Bid Documents and the original Bid will be returned to the Bidder. The Bid Package with the latest (newest) date shall replace all previously submitted packages.

The public reading of a Bid does not constitute a determination by the Department of whether the Bid is responsive or of whether the Bidder is responsible, though the Department may refuse to read Bids that are obviously non-responsive. Accordingly, the Department may reject a Bid as non-responsive and/or determine a Bidder is not responsible or ineligible to Bid even if that Bidder's Bid is read at Bid Opening.”

102.11.1 Non-curable Bid Defects Revise the item on the list of non-curable Bid Defects for which the Department will reject Bids as non-responsive that reads “The Bid is not signed by a duly authorized representative of the Bidder.” by replacing it with the following:

“The Bid is not signed by a duly authorized representative of the Bidder.

- Properly submitted electronic bids meet this requirement.
- Paper bids must include either (1) one or more signed copies of the Contract Agreement form or (2) a signed copy of the Schedule of Items.”

102.11.2 Curable Bid Defects Revise the section by replacing it with the following:

“Unless the Department waives a curable Bid defect, the Bidder must cure, within the time stated in the written notice by the Department, but not less than 24 hours, all other Bid Defects not listed in Section 102.11.1 - Non-curable Bid Defects that are identified by the Department. Failure to cure such Defects within said time may result in forfeiture of the Bidder’s Bid Guaranty. Upon such failure, the Department may take any action in the best interests of the Department, including those set forth in Section 103.6 - Failure to Fulfill Award Conditions.

Such curable Bid Defects include, but are not limited to, the following.

The Bidder signs only one of the Contract Agreement Offer & Award forms.

Missing total sum of the items provided in the Schedule of Items.

The prices or signatures on the Bid or Bid Guaranty are not in ink or other non-erasable substance.

Failure to acknowledge Receipt and consideration of all Bid Amendments.

The Bid includes only one signed Contract Agreement form.

The Bid does not include a signed Contract Agreement form but does include a signed Schedule of Items.

If a submitted bid contains any additional conditions or alternate bidding language, the Bidder may cure the defect by removing all conditions and alternate language or the Department will reject the bid as non-responsive.

All other Defects that do not create a significant question as to the Bidder’s total Bid amount or the Bidder’s ability to complete the Work within the Contract Time or by the Contract Completion Date as determined by the Department.”

SPECIAL PROVISION SECTION 103
AWARD AND CONTRACTING

103.4 Notice of Award Delete the section in its entirety and replace with the following:

“The Department has 30 Days following Bid Opening to Deliver a written Notice of Intent to Award and request a payment bond, performance bond, insurance bond, special certifications, and other information from the Apparent Successful Bidders. If prequalification is required and an Apparent Successful Bidder is not prequalified at the time of Bid Opening, the Department shall have 15 days from the successful completion of the Prequalification process or 30 days following Bid Opening; whichever is longer. Once these pre-execution conditions are met, the Department will execute the Contract and notify the Contractor of the award with a written Notice of Award. If a Notice of Award is not sent within 30 days of receipt of the proper bonds, insurance, and other pre-award requirements, an Apparent Successful Bidder may withdraw its Bid without forfeiture of its Bid Guaranty or Bidding eligibility. The Notice of Intent to Award will set forth and/or reference the conditions that the Bidder must fulfill before Contract Execution. If the Department and an Apparent Successful Bidder agree, an extension beyond the 30 days of the Bid and Bid prices may occur and the Bid remains viable. For a related provision, see Section 103.5.”

103.5 Award Conditions Replace the first paragraph with the following:

“The Apparent Successful Bidder must provide and/or perform all of the items listed in this Section 103.5 within 14 Days of Receipt of the Notice of Intent to Award. Unless indicated otherwise, all items must be Delivered to the Department’s Bureau of Maintenance & Operations.”

103.5.1 Performance and Payment Bonds Delete the entire section 103.5.1.

103.5.4 Execution of Contract By Bidder Delete the entire section and replace with the following:

“The properly completed and signed Contract form provided with the Bid constitutes the Bidder’s offer. Once the Department has received the insurance, and any other pre-award items required, the Department will sign and execute the Contract. The point of Contract execution is when the Contractor receives written notice that the contract has been signed by the Department and executed.”

2020 STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:
<http://maine.gov/mdot/contractors/publications/standarddetail/>

<u>Detail #</u>	<u>Description</u>	<u>Revision Date</u>
502(19)	Bridge Drains	12/08/2021
507(20)	Steel Approach Railing 3-Bar	2/11/2021
507(21)	Steel Approach Railing 3-Bar	2/11/2021
507(22)	Steel Approach Railing 3-Bar	2/11/2021
507(23)	Steel Approach Railing 3-Bar	2/11/2021
507(27)	Steel Approach Railing	2/11/2021
526(01)	Portable Concrete Barrier	1/14/2021
526(01A)	Portable Concrete Barrier	1/14/2021
526(01B)	Portable Concrete Barrier	1/14/2021
526(02)	Portable Concrete Barrier	1/14/2021
526(02A)	Portable Concrete Barrier	1/14/2021
526(03)	Portable Concrete Barrier	1/14/2021
526(04)	Portable Concrete Barrier	1/14/2021
526(04A)	Portable Concrete Barrier	1/14/2021
526(04B)	Portable Concrete Barrier	1/14/2021
603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	7/8/2022
605(01)	Underdrain Notes	7/8/2022
606(17)	Midway Splice Guardrail Transition	6/10/2022
606(23)	Standard Bridge Transition – Type “1”	2/11/2021
606(24)	Standard Bridge Transition – Type “1A”	2/11/2021
608(02)	Detectable Warnings	6/10/2021
609(09)	Precast Concrete Vertical Curb	2/11/2021
627(07)	Crosswalk	2/22/2022
627(08)	Crosswalk	2/22/2022
643(11)	ATCC Cabinet	12/14/2020
801(11)	Pedestrian Ramp Notes	6/10/2021
801(12)	Pedestrian Ramp Requirements	8/13/2021
801(13)	Ramp Length Table	6/10/2021

801(14)	Parallel Pedestrian Ramp	6/10/2021
801(15)	Perpendicular Pedestrian Ramp – Option 1	6/10/2021
801(16)	Parallel Pedestrian Ramp – Option 2A	6/10/2021
801(17)	Perpendicular Pedestrian Ramp – Option 2A	6/10/2021
801(18)	Parallel Pedestrian Ramp – Option 2B	6/10/2021
801(19)	Perpendicular Pedestrian Ramp – Option 2B	6/10/2021
801(20)	Parallel Pedestrian Ramp – Option 3	6/10/2021
801(21)	Perpendicular Pedestrian Ramp – Option 3	6/10/2021
801(22)	Side Street Pedestrian Ramp	6/10/2021
801(23)	Parallel Pedestrian Ramp – Esplanade	6/10/2021
801(24)	Perpendicular Pedestrian Ramp – Esplanade	6/10/2021
801(25)	Island Crossings	6/10/2021
801(26)	Blended Transition	6/10/2021
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	6/10/2021
802(05)	Roadway Culvert End Slope Treatment	1/03/2017

SUPPLEMENTAL SPECIFICATIONS
(Corrections, Additions, & Revisions to Standard Specifications – March 2020)

SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions

Holidays Amend this paragraph by adding “**Juneteenth**” between ‘Memorial Day’ and ‘Independence Day’.

Plans Revise this paragraph by removing “**Standard Details, Supplemental Standard Details**” from the first sentence.

SECTION 102
BIDDING

102.11 Bid Responsiveness Revise the paragraph that states “The Bid is not signed by a duly authorized representative of the Bidder.” So that it reads:

“The Bid is not signed by a duly authorized representative of the Bidder.

- **Properly submitted electronic bids meet this requirement.**
- **Paper bids must include at least one signed copy of the Contract Agreement Offer & Award form.”**

SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES

104.2.1 Furnishing of Right-of-Way Revise the last sentence in the first paragraph by removing “105.4.5 – Special Detours” and replacing it with “**105.4.5 – Maintenance of Existing Structures.**”.

SECTION 105
GENERAL SCOPE OF WORK

105.10.2 Requirements Applicable to All Contracts Under section A, number 2, in the first sentence of the first paragraph, revise this Section by replacing the word “handicap” in two places with the word “disability” so it now reads:

“2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, State that all qualified applicants will receive consideration for employment without regard to race, color, sexual orientation, religious creed, sex, national origin, ancestry, age, physical disability, or mental disability.”

SECTION 106
QUALITY

106.6 Acceptance Revise this Subsection by replacing the paragraph beginning with “Acceptance of Hot Mix Asphalt Pavement will be based” with:

“Acceptance of Hot Mix Asphalt Pavement will be based on Method A or C Statistical Acceptance, or Method B or D Acceptance as specified. The method of acceptance for each item is defined in Special Provision, Section 403, Hot Mix Asphalt Pavement. When items of Hot Mix Asphalt Pavement are not so designated, Method A will be utilized whenever there are more than 1000 tons per Hot Mix Asphalt Pavement item, and Method B will be utilized when there are less than or equal to 1000 tons per Hot Mix Asphalt Pavement item.”

Revise Subsection “B” by removing it and replacing it with:

“B. Items not designated for Statistical Acceptance will utilize Method B or D Acceptance testing to validate the quality of the material incorporated into the Project. For material paid under Item 403.209 – Method D, or designated to be visually accepted, the Contractor shall provide the Department with a Certification Letter that indicates that the material supplied complies with the Specifications. Test results representative of the certified material shall be attached to the letter.

The Department will randomly sample and test the certified Material for properties noted in Table 1 of Section 502 - Structural Concrete or Table 14 of Section –401.21 Acceptance Method B & D. Material will be subject to rejection as noted in Structural Concrete Section 502.195 - Quality Assurance Method C Concrete or Hot Mix Asphalt, Section 401.2022 Pay Adjustment – Method B & D.”

106.7.1 Standard Deviation Method Revise 106.7.1, subsection H by removing the following from the first paragraph:

“Method B: $PF = [70 + (Quality\ Level * 0.33)] * 0.01$ ”

SECTION 107
TIME

107.3.1 General Amend this paragraph by adding “**Juneteenth**” between ‘Patriot’s Day’ and ‘the Friday after Thanksgiving’.

SECTION 108 PAYMENT

108.3 Retainage Revise the third paragraph of this section so that it reads:

“Upon Final Acceptance, and determination by the department that there are no claims either by or on the Contractor or Subcontractors; no over payments by the department; no LDs due; and no disincentives due, the Department will reduce Retent to 1% of the original Contract Award amount, or \$100,000, whichever is less, as it deems desirable and prudent.”

108.4.1 Price Adjustment for Hot Mix Asphalt Revise the first paragraph of this section by replacing the first sentence with the following:

“For each Contract, a price adjustment for performance graded binder will be made for the following pay items, when the total quantity of Hot Mix Asphalt included in these items is in excess of 500 tons, based on the estimated quantities of these items at the time of bid.”

Amend this section by adding “**Item 461.2101 Polymer Modified 9.5 mm**” to the list of Pay Items that are eligible for a price adjustment. Also add “**Item 461.2101 - 6.4%**” to the list of Asphalt percentages.

SECTION 110 INDEMNIFICATION, BONDING, AND INSURANCE

110.3.9 Administrative & General Provisions Amend this subsection by adding “**Automobile Liability**” under letter A) Additional Insured to the list of exceptions.

SECTION 206 STRUCTURAL EXCAVATION

206.01 Description – *Structural Earth Excavation, Below Grade* delete the entire sentence and replace with “**shall consist of the removal of excavation required for unknown or unanticipated subsurface condition. See 206.04 – Method of Measurement for pay limits.**”

206.04 Method of Measurement – Drainage and Minor Structures Paragraph 1, sentence 2, delete the remainder of the sentence beginning with “...provided the maximum allowable...”

And replace with: “**...in accordance with the following limits:**”

- **Vertical pay limits:**
 - o **Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or**

- **Below the excavation limits shown in the Bid Documents; whichever is greater.**
- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

SECTION 401 HOT MIX ASPHALT PAVEMENT

401.19 Contractor Quality Control Amend this Section by adding the following to the end:
“Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all items covered by the QCP as identified in Special Provision 403.”

SECTION 501 FOUNDATION PILES

501.05 Method of Measurement

c. Piles in Place Revise the third paragraph by replacing the “10” with “20” so that it reads:

Unused pile cutoffs **20** feet or more in length, except those required to accommodate the Contractor’s construction method, as discussed herein, will remain the property of the Department and will be stored at a bridge maintenance yard nearest the project. Hauling and unloading of piles will be done by the Contractor or by the Department, depending upon availability of services.

SECTION 502 STRUCTURAL CONCRETE

502.09 Forms and Falsework Amend this subsection by adding the subsection title “**502.10 Placing Concrete**” after section “D” Removal of Forms and False work” and after the paragraph beginning with “2. Forms and False work, including blocking...”. So that a new subsection starts and reads:

502.10 Placing Concrete

A. **General Concrete shall not be placed until forms”**

502.1701 Quality Control, Method A and B Revise this Section so that the first paragraph and the first sentence of the second paragraph read:

502.17 Quality Control The Contractor shall control the quality of the concrete through testing, inspection, and practices which shall be described in the QCP, sufficient to assure a product meeting the Contract requirements. The QCP shall meet the requirements of Section 106, Quality, and this specification. No work under this item shall proceed until the QCP is

submitted to and approved by the Department. Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all cast-in-place items covered by the QCP, using the P value listed in Special Provision 502. If no P value is listed, a value of \$350, or bid value per cubic yard, whichever is less, shall be used.

502.1701 Quality Control, Method A and B The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following: “

Section 502.1701, Quality Control, Revise Table 4 of this Subsection by removing it in its entirety and replacing it with:

TABLE 4
METHOD A & B MINIMUM QUALITY CONTROL TESTING REQUIREMENTS *

TEST	TEST METHOD	SAMPLING LOCATION	FREQUENCY
Gradation	AASHTO T-27 & T-11	Stockpile	One set per proposed grading before production. One set every 100 yd ³ (Min. 1 set per month)
Organic Impurities	AASHTO T-21	Stockpile	Once per fine aggregate per year **
% Absorption	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Specific Gravity	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Total Moisture in Aggregate	AASHTO T-255	Stockpile	One set per day's production
Free Water and Aggregate Wt.	N/A		One per day's production
% Entrained Air	AASHTO T-152	On Project	On first two loads and every third load thereafter provided consistent results are achieved
Compressive Strength	AASHTO T-22	On Project	One set per subplot
Compressive Strength	AASHTO T-22 @ 7days	On Project	One set per subplot

* Additional QC testing will be required any time a process change occurs during a placement, including changes in type or dosage of admixture. Additional testing shall include, but is not limited to, entrained air testing.

** **If the color produced is a laboratory designation Plate III, then the fine aggregate shall be tested once per month.**

502.18, Method of Measurement, Revise Subsection ‘F’ by removing the word ‘transverse’ so that it reads: **“Saw cut grooving of concrete wearing surfaces, complete and accepted, will be measured for payment as one lump sum.”**

502.19, Basis of Payment, Revise the third paragraph by removing the word ‘transverse’ so that it reads: **“Saw cut grooving of concrete wearing surfaces will be paid for at the Contract Lump Sum Price, which shall be payment for furnishing all materials, labor, and equipment, including depth gauges and all incidentals, to satisfactorily complete the work.”**
(Also see 535.24 and 535.25 for related changes)

SECTION 503 REINFORCING STEEL

Section 503.07 Splicing Revise this section by removing the table and following footnote and replacing them with:

Minimum Lap Splice Length (inches)									
Bar Type	Bar Size								
	#3	#4	#5	#6	#7	#8	#9	#10	#11
Plain or Galvanized	16	20	24	29	38	47	59	72	85
Epoxy or Dual Coated	17	24	36	43	56	71	88	107	128
Stainless	19	24	30	36	47	59	73	89	107
Low-carbon Chromium	24	32	39	47	63	78	97	119	142

“The minimum lap splice lengths in the table above are based on the parameters below. When any of these parameters are altered, appropriate minimum lap splice lengths will be as shown on the Plans.

- Normal weight concrete
- Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi
- Class B tension lap splice
- Minimum center-to-center spacing between bars of 6 inches
- Minimum clear cover of 2 inches
- Nominal reinforcing steel yield strengths
 - Low-carbon Chromium = 100 ksi
 - Stainless = 75 ksi
 - All others = 60 ksi
- Reinforcement with yield strengths greater than 75 ksi shall have beam transverse reinforcement and column ties provided over the required lap splice length in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications

When lap splices are placed horizontally in an element where the concrete depth below the splice will be 12 inches, or more, the indicated lap splice lengths shall be multiplied by a factor of 1.3.”

SECTION 506
SHOP APPLIED PROTECTIVE COATING – STEEL

506.13 Surface Preparation Amend this section by adding this paragraph to the end:

“Steel shall meet the requirements of SSPC SP8 Pickling prior to being immersed in the zinc tanks. Verification of the surface preparation shall be included in the QC documentation.”

SECTION 523
BEARINGS

523.051 Protective Coating Revise this subsection by removing the paragraph beginning with “Anchor rods shall be galvanized...” and replacing with:

“Anchor rods shall be galvanized. When anchor rods are designated to secure bare unpainted steel or painted steel, a dielectric coating (epoxy or bituminous type coatings are acceptable) shall be applied to the anchor rod and/or adjacent steel to prevent contact between galvanized surfaces and painted or unpainted steel.”

523.22 Fabrication Amend this subsection by adding the following: “Elastomeric Bearings shall be fabricated in accordance with AASHTO M251.”

SECTION 526
CONCRETE BARRIER

Amend this section by deleting it in its entirety and replacing it with:

526.01 Description This work shall consist of the furnishing, constructing, erecting, setting, resetting, and removal of concrete barrier and associated elements in accordance with these specifications, the Standard Details, and the lines and grades shown on the Plans or established by the Resident.

The types of concrete barrier are designated as follows:

Portable Concrete Barrier Type I Double faced removable barrier in accordance with the Standard Details.

Permanent Concrete Barrier Type II Double faced barrier as shown on the Plans.

Permanent Concrete Barrier Type IIIa Single faced barrier 32 inches high in accordance with the Standard Details or as shown on the Plans.

Permanent Concrete Barrier Type IIIb Single faced barrier 42 inches high in accordance with the Standard Details or as shown on the Plans.

Permanent Concrete Transition Barrier Barrier of various heights joining steel bridge rail to steel guardrail in accordance with the Standard Details or as shown on the Plans.

Permanent Texas Classic Rail Barrier Traffic rail or sidewalk rail, in accordance with the Standard Details or as shown on the Plans.

526.02 Materials

a. **Concrete** Concrete for barriers, both permanent and portable, shall have a design strength of 5,000 psi.

For cast-in-place barrier: The concrete shall be Class LP, in accordance with Standard Specification Section 502, Structural Concrete.

For precast barrier: The concrete shall meet the requirements of Standard Specification 712.061, Structural Precast Concrete Units, except that the stripping strength for precast barriers is 4,000 psi.

b. **Reinforcing Steel** Reinforcing steel shall meet the requirements of Section 503, Reinforcing Steel.

c. **Structural Steel** Plates and barrier connections shall meet the requirements specified in Standard Specification 504 - Structural Steel and shall be hot dip galvanized after fabrication in accordance with Standard Specification 506, Shop Applied Protective Coating – Steel

d. **Bolts** Bolts shall meet the requirements specified in Section 713.02, High Strength Bolts.

e. **Connecting Pins for Portable Concrete Barrier** Portable concrete barriers must be connected using a 1- inch diameter pin. The connecting pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A449 steel. Materials with greater strength may be used with the approval of the Department.

f. **Anchor Pins for Portable Concrete Barrier** Anchoring to concrete or asphalt will be required when specified on the Plans. When required, portable concrete barriers must be anchored using a 1 ½ - inch diameter anchor pin. The anchor pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A36 steel. Materials with greater strength may be used with the approval of the Department.

g. **Device Crashworthiness** MaineDOT is transitioning to MASH2016 criteria for Portable Concrete Barrier on the following schedule:

New Portable Concrete Barrier shall be crash tested and/or evaluated to MASH2016 criteria.

Current Portable Concrete Barrier in useful serviceable condition that is successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Other current Portable Concrete Barrier that is deemed acceptable by the Department may be utilized on projects off the National Highway System through December 31, 2024.

526.03 Construction Requirements

Cast-in-place barriers shall be fabricated in accordance with Standard Specification Section 502, Structural Concrete. Precast barriers shall be fabricated in accordance with Standard Specification 534, Precast Structural Concrete.

Concrete finish for permanent barrier shall be rubbed as defined in Standard Specification Section 502, Structural Concrete, 502.13 D2 or an approved equal.

Portable concrete barrier shall be generally free from fins and porous areas and shall present a neat and uniform appearance.

Permanent barrier shall have a protective coating applied in accordance with Standard Specification Section 515, Protective Coating for Concrete Surfaces.

Reflective delineators for concrete median barrier shall meet the requirements of Special Provision 645, Highway Signing.

Preformed Joint Filler shall meet the requirements specified in Subsection 705.01, Preformed Expansion Joint Filler.

Permissible dimensional tolerances for all concrete barriers shall be as follows:

- a. Cross-sectional dimensions shall not vary from design dimensions by more than ¼ inch. The vertical centerline shall not be out of plumb by more than ¼ inch.**
- b. Longitudinal dimensions shall not vary from the design dimensions by more than ¼ inch per 10 feet of barrier section and shall not exceed ¾ inches per section.**
- c. Location of anchoring holes shall not vary by more than ½ inch from the dimensions shown in the concrete barrier details on the Plans.**
- d. Surface straightness shall not vary more than ¼ inch under a 10-foot straightedge.**
- e. The barrier shall have no significant cracking. Significant cracking is defined as fractures or cracks passing through the section, or any continuous crack extending for a length of 12 inches or more, regardless of position in the section.**

526.04 Method of Measurement Permanent Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be measured for payment by lump sum, complete in place.

Portable concrete barrier, both anchored and unanchored will be measured for payment by lump sum. Lump sum measurement will include verification of the installation and removal of all portable concrete at the completion of the Contractor's operations.

The Contractor shall replace sections of portable concrete barrier, including anchored barrier damaged by the traveling public when directed by the Resident. Replacement sections will be measured for payment in accordance with Standard Specification 109.7, Equitable Adjustments to Compensation and Time.

Transition barrier will be measured by each, complete in place.

526.05 Basis of Payment The accepted quantities of Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be paid for at the Contract lump sum price for the type specified, complete in place.

The accepted quantities of Portable Concrete Barrier Type I, both anchored and unanchored will be paid for at the Contract lump sum price. Such payment shall be full compensation for furnishing all materials, assembling, moving, resetting, transporting, temporarily storing, removing barrier, furnishing new parts as necessary, and all incidentals necessary to complete the work.

Portable barrier shall become the property of the Contractor upon completion of the use of the barrier on the project and shall be removed from the project site by the Contractor.

Transition barrier will be paid for at the Contract price each, complete in place.

The accepted quantity of all types of concrete barrier, whether portable or permanent, will be paid for at the lump sum or per each price, as applicable, which payment shall be full compensation for all materials, including reinforcing steel, protective coating, reflective delineators, steel plates and hardware, equipment, labor and incidentals required, as necessary, to complete the work.

Payment will be made under:

	<u>Pay Item</u>	<u>Pay Unit</u>
526.301	Portable Concrete Barrier, Type I	Lump Sum
526.304	Portable Concrete Barrier, Anchored Type I	Lump Sum
526.312	Permanent Concrete Barrier Type II	Lump Sum
526.321	Permanent Concrete Barrier Type IIIa	Lump Sum
526.323	Texas Classic Rail	Lump Sum

526.331	Permanent Concrete Barrier Type IIIb	Lump Sum
526.34	Permanent Concrete Transition Barrier	Each
526.502	Precast Concrete Median Barrier	Lump Sum”

SECTION 527
ENERGY ABSORBING UNIT

527.02 Materials Amend this section by deleting it in its entirety and replacing it with:

“MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:

Portable Crash Cushions will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Work Zone Crash Cushions shall be selected from the Department’s Qualified Products List of Crash Cushions/Impact Attenuators or approved equal.”

SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.24, Installation of Slabs, Beams, and Girders Revise the 5th paragraph by replacing “6.0 and 9.0” to “5.0 and 8.0” so it reads: **“Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements.”**

535.25, Installation of Precast/Prestressed Deck Panels Revise the 2nd paragraph by replacing “6.0 and 9.0” to “5.0 and 8.0” so it reads: **“Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements.”**

SECTION 606
GUARDRAIL

Amend this section by replacing it with the following:

606.01 Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. Guardrail is designated as:

31" W-Beam Guardrail - Mid-Way Splice

Galvanized steel w-beam, 8" wood or composite offset blocks, galvanized steel posts

Thrie Beam

Galvanized steel thrie beam, 8" wood or composite offset blocks, galvanized steel posts

Median guardrail shall consist of two beams of the above types, mounted on single posts.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing end post as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

606.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be "U" channel steel, 8 ft long, 2 ½ lb/ft minimum and have 3/8-inch round holes, 1-inch center to center for a minimum distance of 2 ft from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared guardrail terminal end point and tangent point, both at the leading and trailing ends of each run of guardrail. The marker's flexible posts shall be gray with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the guardrail terminal is not flared, markers will only be required at the terminal end point. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the Department's Qualified Products List of Delineators. The marker shall be gray, flexible, durable, and of a non-discoloring material to which 3-inch by 9-inch reflectors shall be applied, and capable of recovering from repeated impacts and meeting MASH 16 requirements. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail reflectors shall be mounted on all "w" beam guardrail and shall be either the "butterfly" type or linear delineation system panels. "Butterfly" or linear delineation panels shall be installed at approximately 62.5 foot intervals on tangents (after every tenth post) and 31.25 feet on curves (after every fifth post), and shall be centered on the guardrail beam. On Divided highways, the left-hand delineators shall be yellow and the right-hand delineators shall be silver/ white. On two-way directional highways, the right-hand side will have silver / white reflectors and no reflectorized delineator used on the left. Delineators shall have reflective sheeting that meets or exceeds the requirements of Section 719.01.

"Butterfly" reflectors shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Aluminum, galvanized metal or other materials shall not be used. Reflective sheeting will be applied to only one side of the delineator facing the direction of traffic and shall be centered vertically on the guardrail beam as shown in the Standard Detail 606(7).

Linear delineation system panels shall be 1.5 inches wide by approximately 11 inches nominal length, with a minimum of 5 raised lateral ridges spaced at approximately 2.25 inches. The height of each ridge shall be 0.34 inches with a 45 degree profile and a 0.28 inches radius at the top. Sheeting shall be laminated to thin gauge aluminum with a pre-applied adhesive tape on the back. Panels shall not be installed over seams or bolt heads and shall be centered horizontally on the guardrail beam; linear delineation panels shall be attached to only one guardrail beam. The guardrail beam surface shall be cleaned and prepared according to the manufacturer's instructions. Air temperature and guardrail surface temperature must be a minimum of 50 degrees F (10 C) with rising temperature at the time of installation.

Exact locations of the either the “butterfly” type or the linear delineation panels shall be approved by the Resident prior to installation.

Single wood post shall be of cedar, white oak, or tamarack, well-seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed, and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department’s Qualified Products List and shall be MASH 16 tested and approved.

Flared and Tangent w-beam guardrail terminals and guardrail offset blocks shall be from the Department’s Qualified Products List. Flared terminals shall be installed with a 4 ft offset as shown in the Manufacturer’s installation instructions.

Anchorage assemblies used to anchor trailing ends, radius guardrail, or other ends not exposed to traffic shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report, Drawing SEW02a.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.04 Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than ½ inch. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.045 Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

606.05 Shoulder Widening At designated locations the existing shoulder of the roadway shall be widened as shown on the plans. All grading, paving, seeding, and other necessary work shall be in accordance with the Specifications for the type work being done.

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

606.07 Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

606.08 Method of Measurement Guardrail will be measured by the linear foot from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans. When connected to radius rail, measurement will be to the end of the last tangent beam.

Guardrail terminal, reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Widened shoulder will be measured as a unit of grading within the limits shown on the plans.

Excavation in solid rock for placement of posts will be paid under force account unless otherwise indicated in the Bid Documents.

Reflectorized beam guardrail reflectors (“butterfly” type or linear delineation system panels) when identified by pay item, will be measured for payment by each.

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly but will be considered incidental to guardrail items. Reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be paid for at the contract unit price each for the kind specified complete in place.

Guardrail terminals will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer’s installation instructions. Pay limits for a flared terminal will be 37.5 feet. Pay limits for a tangent terminal will be 50 feet. Each guardrail terminal will be clearly marked with the Manufacturer’s name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail terminals shall also include a set of installation drawings supplied to the Resident.

Anchorage to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 150 ft or less will be paid for under the designated radius pay item for the type guardrail being placed.

Widened shoulder will be paid for at the contract unit price each complete in place and will be full compensation for furnishing and placing, grading and compaction of aggregate subbase and any required fill material.

Adjust guardrail will be paid for at the contract unit price per linear foot and will be full compensation for adjusting to grade. Payment shall also include adjusting guardrail terminals where required.

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams;

removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

Remove and Reset guardrail will be paid for at the contract unit price per linear foot and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals when required.

Remove, Modify, and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

Reflectorized beam guardrail reflectors (“butterfly” type and the linear delineation panels) will not be paid for directly but will be considered incidental to all new guardrail items. The Contractor shall furnish and install either the “butterfly” type or linear delineation panels, at its discretion, for new guardrail items.

Reflectorized beam guardrail reflectors (either “butterfly” type or linear delineation system panels) will be paid for under the applicable pay items for installation in conjunction with Adjust, Modify, Remove and Reset, Remove Modify and Reset guardrail items. The accepted quantity of “butterfly” type or linear delineation system panels will be paid for at the contract unit price each for all work and materials furnished to install, complete in place, including all incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
606.1301 31” W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302 31” W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303 31” W-Beam Guardrail - Mid-Way Splice, 15’ Radius and Less	Linear Foot
606.1304 31” W-Beam Guardrail - Mid-Way Splice, Over 15’ Radius	Linear Foot
606.1305 31” W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306 31” W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each

606.1307	Bridge Transition (Asymmetrical) – Type IA	Each
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	Linear Foot
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.259	Anchorage Assembly	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.352	Reflectorized Beam Guardrail Delineators (“Butterfly” type)	Each
606.3521	Linear Delineation System Panel	Each
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356	Underdrain Delineator Post	Each
606.358	Guardrail, Modify	Linear Foot
606.362	Guardrail, Adjust	Linear Foot
606.365	Guardrail, Remove, Modify, and Reset	Linear Foot
606.366	Guardrail, Remove and Reset	Linear Foot
606.367	Replace Unusable Existing Guardrail Posts	Each
606.3671	Replace Unusable Offset Blocks	Each
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each
606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.568	Guardrail, Modify - Double Rail	Linear Foot
606.63	Thrie Beam Rail Beam	Linear Foot
606.64	Guardrail Thrie Beam - Double Rail	Linear Foot
606.65	Guardrail Thrie Beam - Single Rail	Linear Foot
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72	Guardrail Thrie Beam - over 15 ft radius	Linear Foot
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

SECTION 608
SIDEWALKS

Section 608.022 Detectable Warning Materials Standard Revise this section by removing the last sentence of this section beginning with “Concrete...” and replacing it with “**Concrete shall meet the requirements of Section 608.021, Sidewalk Materials, of this specification or may be a prepackaged concrete mix from the Department’s Qualified Products List (QPL).**”

SECTION 609
CURB

609.02 Materials Revise the paragraph beginning “The Contractor shall submit a concrete mix...” so that it reads:

“The Contractor shall submit a concrete mix design for the Portland Cement Concrete to the Resident, with a minimum designed compressive strength of 3000 psi concrete fill.”

609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections Revise this section by underlining the section number and title so that it reads in the spec book as:

“609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections”

Revise the last paragraph beginning with “The Contractor may elect...” so that it reads:

“The Contractor may elect to substitute concrete to backfill Stone Curbing or Stone Edging at their option. If the concrete backfill option is elected, the Concrete Fill shall meet the requirements of 609.02. The Contractor shall submit a concrete design for the Portland Cement Concrete, with a minimum designated compressive strength of 3000 PSI meeting the requirements of Class S or Class Fill Concrete. The Contractor may elect to choose a Prepackaged Concrete Mix from the Department’s Qualified Products list (QPL). Concrete backfill shall be completed in conformance with a Department supplied concrete backfill detail.”

SECTION 610
STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

610.02 Materials Amend this subsection by adding the following to the end of the material list:
“Stone Ditch Protection 703.29”

SECTION 618
SEEDING

618.08 Mulching Revise this Section so that the third sentence reads: “Mulch for Seeding Method Number 1 shall only be cellulosic fiber mulch Section 619.04 (b) or straw mulch Section 619.04 (a).”

SECTION 619
MULCH

619.03 General Amend this Section by adding the following sentence to the end: “**Straw mulch shall be used in all wetland areas.**”

SECTION 626
FOUNDATIONS, CONDUIT, AND JUNCTION BOXES FOR HIGHWAY
SIGNING, LIGHTING, AND SIGNALS

Section 626.021 Miscellaneous Materials Revise this section by removing the fourth paragraph beginning with “ All Concrete for concrete encasement...” and replace it with “**All concrete for concrete encasement of conduit shall be Class S or Class Fill concrete in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department’s Qualified Products List (QPL).**”

Section 626.031 Conduit Revise the fifth paragraph beginning with “After the trench has been...” by removing the last sentence beginning with “Where concrete encasement...” and replacing it with “**Where concrete encasement is required around the conduit, the concrete shall meet Class S, Class Fill in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department’s Qualified Products List (QPL).**”

626.034 Concrete Foundations Revise this Section by changing ‘626.037’ to ‘**626.036**’ in the Second Paragraph which begins with “Foundations shall consist of cast-in-place...”.

Revise the 10th paragraph beginning with “Before placing concrete, the required elbows...” by removing “...in accordance with **Standard Specification 633.**”

626.036 Precast Foundations Revise the last sentence of paragraph one so that it reads: “**Construction of precast foundations shall conform to the Standard Details and all requirements of 712.061.**”

SECTION 627
PAVEMENT MARKINGS

627.06 Application Revise this subsection by replacing the paragraph beginning with “ On other final pavement markings...” with the following:

“On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be one uniform covering coat at least 16 mils thick. Before the paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.

Painted lines and markings shall be applied in accordance with the manufacturer’s published recommendations. These recommendations will be supplied to the Resident prior to installation.”

Revise this subsection by replacing the paragraph beginning with “ If the final reflectivity values are less...” with the following:

The final reflectivity will be acceptable if 90 percent or more of the painted pavement lines and markings meet the specified minimum value. If less than 90 percent of the painted pavement lines and markings meet the specified minimum final reflectivity values, the Contractor shall repaint those areas not meeting required reflectivity at no cost to the Department.

If, after repainting, analysis of the final reflectivity values results in the need for a second repainting, the Contractor will submit in writing a plan of action to meet the reflectivity minimums prior to continuing any work. Once the plan has been reviewed and approved by the Department, the Contractor shall reapply at no cost to the Department.

SECTION 637
DUST CONTROL

Revise this section by removing it in its entirety.

SECTION 643
TRAFFIC SIGNALS

643.021 Materials Amend this subsection by adding the following at the end:

“MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:

Temporary Traffic Control Signals will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.”

643.023 Traffic Signal Structures Remove the third paragraph and replace it with the following:

“Traffic signal support structures shall be classified as Fatigue Category III if they are located on roads with a speed limit of 35 mph or less, Fatigue Category II if they are located on roads with a speed limit of greater than 35 mph, and Fatigue Category I if noted on the Contract Plans. Fatigue Importance Factors shall be as specified in Table 11.6-1 (Fatigue Importance Factors). Fatigue analyses are not required for span-wire (strain) pole traffic signal support structures with heights of 55 feet or less unless required by the current edition of AASHTO “LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals”.

643.09 Service Connection Revise this subsection by removing the paragraph that begins with “Traffic signal services shall have...”.

And by removing the paragraphs beginning with “ A service ground rod shall be installed...” and “A total of 4, 10’ service...” and replace them with **“A total of 4, 10’ service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet”.**

SECTION 645 HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter “c.”, revise the fifth paragraph beginning with “In addition to the required details...” by removing the words **”and foundation”** from the 5th sentence.

Section 645.08 Method of Measurement. Revise the second paragraph beginning with “Bridge-type, cantilever and...” by removing the words **”including the foundation”** .

Section 645.09 Basis of Payment. Revise the third paragraph beginning with “The accepted bridge-type, cantilever and...” by removing the word **”foundation”** from the second sentence. Add the following sentence to the end of the paragraph **“Conduits, Junction Boxes, and Foundations will be paid for under Section 626.”**

SECTION 652 MAINTENANCE OF TRAFFIC

Amend this Section by adding the following new subsection:

“652.2.6 Device Crashworthiness MainedOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:

Category 1 (Cones, Drums, Tubular Markers, Flexible Delineators, and similar devices that have little chance if causing windshield penetration, tire damage, or other significant effect on the control or trajectory of a vehicle) – All Category 1 devices will be manufacturer self-certified as MASH2016 by January 1, 2025. Current Category 1 devices in useful serviceable condition that are not self-certified as MASH2016 compliant may be utilized through December 31, 2024.

Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.

Category 3 (Portable Concrete Barrier, Portable Crash Cushions, Truck Mounted Attenuators, Category 2 devices weighing more than 100 pounds, and similar devices that are expected to produce significant vehicular velocity change or other harmful reactions) – All Category 3 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029. (See Standard Specification 526 for additional Portable Concrete Barrier information).

Category 4 (Trailer Mounted Devices: Arrow Boards, Temporary Traffic Control Signals, Area Lighting, Portable Changeable Message Sign, and other similar devices.) – All Category 4 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.”

652.4 Flaggers Revise the first paragraph of this section so that it reads:

“The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer.”

SECTION 681 PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL

681.08 Basis of Payment Amend this section by adding the Item Number “**681.10**” in front of the item “Precast Aggregate-Filled Concrete Block Gravity Wall” at the end of the section.

SECTION 701
STRUCTURAL CONCRETE RELATED MATERIAL

701.01 Portland Cement and Portland Pozzolan Cement Amend the first sentence of Paragraph 3 by adding “**or Type 1L Portland Limestone cement**” so that it reads:
“**A Type IP (MS) Portland-pozzolan cement (blended hydraulic cement with moderate sulfate resistance) or Type 1L Portland Limestone cement meeting the requirements of AASHTO M 240, may be used instead of Type II or where Type I Portland cement, meeting the requirements of AASHTO M 85, is allowed.**”

SECTION 703
AGGREGATES

Add the following to Section 703 - Aggregates

703.01 Fine Aggregate for Concrete Fine aggregate for concrete shall consist of natural sand or, when approved by the Resident, other inert materials with similar characteristics or combinations thereof, having strong, durable particles. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix without permission of the Resident.

All fine aggregate shall be free from injurious amounts of organic impurities. Should the fine aggregate, when subjected to the colorimetric test for organic impurities, AASHTO T 21, produce a color darker than the reference standard color solution (laboratory designation Plate III), the fine aggregate shall be rejected.

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.

Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

The fineness modulus shall not be less than 2.26 or more than 3.14. If this value is exceeded, the fine aggregate will be rejected unless suitable adjustments are made in proportions of coarse and fine aggregate. The fineness modulus of fine aggregate shall be determined by adding the cumulative percentages of material by weight retained on the following sieves: Nos. 4, 8, 16, 30, 50, 100 and dividing by 100.

Fine aggregate, from an individual source when tested for absorption as specified in AASHTO T 84, shall show an absorption of not more than 2.3 percent.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
3/8 inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0

703.02 Coarse Aggregate for Concrete Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the 3/8 inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

The coarse aggregate from an individual source shall have an absorption no greater than 2.0 percent by weight determined in accordance with AASHTO T 85 modified for weight of sample.

The composite blend shall have a Micro-Deval value of 18.0 percent or less as determined by AASHTO T 327 or not exceed 40 percent loss as determined by AASHTO T 96.

Coarse aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

Coarse aggregate shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves			
	Grading A	Grading AA	Grading S	Grading LATEX
Aggregate Size	1 inch	3/4 inch	1 1/2 inch	1/2 inch
2 inch			100	
1 1/2 inch	100		95-100	
1 inch	95-100	100	-	
3/4 inch	-	90-100	35-70	100
1/2 inch	25-60	-	-	90-100
3/8 inch	-	20-55	10-30	40-70
No. 4	0-10	0-10	0-5	0-15
No. 8	0-5	0-5	-	0-5
No. 16	-	-	-	-
No. 50	-	-	-	-
No. 200	0 - 1.5	0 - 1.5	0 - 1.5	0 - 1.5

703.0201 Alkali Silica Reactive Aggregates All coarse and fine aggregates proposed for use in concrete shall be tested for Alkali Silica Reactivity (ASR) potential under AASHTO T 303 (ASTM C 1260), Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction, prior to being accepted for use. Acceptance will be based on testing performed by an accredited independent lab submitted to the Department. Aggregate submittals will be required on a 5-year cycle, unless the source or character of the aggregate in question has changed within 5 years from the last test date.

As per AASHTO T 303 (ASTM C 1260): Use of a particular coarse or fine aggregate will be allowed with no restrictions when the mortar bars made with this aggregate expand less than or equal to 0.10 percent at 30 days from casting. Use of a particular coarse or fine aggregate will be classified as potentially reactive when the mortar bars made with this aggregate expand greater than 0.10 percent at 30 days from casting. Use of this aggregate will only be allowed with the use of cement-pozzolan blends and/or chemical admixtures that result in mortar bar expansion of less than 0.10 percent at 30 days from casting as tested under ASTM C 1567.

Acceptable pozzolans and chemical admixtures that may be used when an aggregate is classified as potentially reactive include, but are not limited to the following:

- a. Class F Coal Fly Ash meeting the requirements of AASHTO M 295
- b. Ground Granulated Blast Furnace Slag (Grade 100 or 120) meeting the requirements of AASHTO M 302
- c. Densified Silica Fume meeting the requirements of AASHTO M 307
- d. Lithium-based admixtures
- e. Metakaolin

Pozzolans or chemical admixtures required to offset the effects of potentially reactive aggregates will be incorporated into the concrete at no additional cost to the Department.

703.05 Aggregate for Sand Leveling Aggregate for sand leveling shall be sand of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The aggregate shall meet the grading requirements of the following table.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
$\frac{3}{8}$ inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the $\frac{1}{2}$ in sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected.

The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

Recycled Asphalt Pavement (RAP) shall not be used for or blended with aggregate base or subbase.

- a. Aggregate for base, Type A and B shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type A	Type B
½ inch	45-70	35-75
¼ inch	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

At least 50 percent by weight of the material retained on the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

Type A aggregate for base shall only contain particles of rock that will pass the 2 inch square mesh sieve.

Type B aggregate for base shall only contain particles of rock that will pass the 4 inch square mesh sieve.

- b. Aggregate for base, Type C shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
	Type C
4 inches	100
3 inches	90-100
2 inches	75-100
1 inch	50-80
½ inch	30-60
No. 4	15-40
No. 200	0-6.0

At least 50 percent by weight of the material coarser than the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

c. Aggregate for subbase shall be sand or gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type D	Type E
½ in	35-80	
¼ inch	25-65	25-100
No. 40	0-30	0-50
No. 200	0-7.0	0-7.0

Type D aggregate for subbase gravel may contain up to 50 percent by weight Recycled Concrete Aggregate (RCA). When RCA is used, the portion of the resulting blend of gravel and RCA retained on a ½” square mesh sieve shall contain a total of no more than 5 percent by weight of other recycled materials such as brick, concrete masonry block, or asphalt pavement as determined by visual inspection.

RCA shall be substantially free of wood, metal, plaster, and gypsum board as defined in Note 9 in Section 7.4 of AASHTO M 319. RCA shall also be free of all substances that fall under the category of solid waste or hazardous materials.

Aggregate for subbase shall not contain particles of rock which will not pass the 6 inch square mesh sieve.

703.08 Recycled Asphalt Pavement Recycled asphalt pavement shall consist of salvaged asphalt materials from milled pavements or production waste that has been processed before use to meet the requirements of the job mix formula. It shall be free of winter sand, granular fill, construction debris, or other materials not generally considered asphalt pavement.

703.081 RAP for Asphalt Pavement Recycled Asphalt Pavement (RAP) may be introduced into hot-mix asphalt pavement at percentages approved by the Department according to the MaineDOT Policies and Procedures for HMA Sampling and Testing.

If approved by the Department, the Contractor shall provide documentation stating the source, test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Department will obtain samples for verification and approval prior to its use.

The maximum allowable percent of RAP shall be determined by the asphalt content, the percent passing the 0.075 mm sieve, the ratio between the percent passing the 0.075 mm sieve and the asphalt content, and Coarse Micro-Deval loss values as tested by the Department.

The maximum percentage of RAP allowable shall be the lowest percentage as determined according to Table 4 below:

Classification	Maximum RAP Percentage Allowed	Asphalt content standard deviation	Percent passing 0.075 mm sieve standard deviation	Percent passing 0.075 mm sieve / asphalt content ratio	Residual aggregate M-D loss value
Class III	10%	≤ 1.0	N/A	≤ 4.0	≤ 18
Class II	20%	≤ 0.5	≤ 1.0	≤ 2.8	
Class I	30%	≤ 0.3	≤ 0.5	≤ 1.8	

Table 4: Maximum Percent RAP According to Test Results

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage and are shown below in Table 5.

Table 5: RAP Verification Limits

Classification	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)
Class III	± 1.5	± 2.0
Class II	± 1.0	± 1.5
Class I	± 0.5	± 0.7

For specification purposes, RAP will be categorized as follows:

Class III – A maximum of 10.0 percent of Class III RAP may be used in any base, intermediate base, surface, or shim mixture. A maximum of 20.0 percent of Class III RAP may be used in hand-placed mixes for item 403.209.

Class II – A maximum of 20.0 percent Class II RAP in any base, binder, surface, or shim course.

Class I – A maximum of 20.0 percent Class I RAP may be used in any base, intermediate base, surface, or shim mixture without requiring a change to the specified asphalt binder. A maximum of 30.0 percent Class I RAP may be used in any base or intermediate base mixture provided that a PG 58-28 or PG 58-34 asphalt binder is used. A maximum of 30.0 percent Class I RAP may be used in any surface or shim mixture provided that PG 58-34 asphalt binder is used. Mixtures exceeding 20.0 percent Class I RAP must be evaluated and approved by the Department.

The Contractor may use up to two different RAP sources in any one mix design. The total RAP percentage of the mix shall not exceed the maximum allowed for the highest classification RAP source used (i.e. if a Class I & Class III used, total RAP must not exceed 30.0%). The blended RAP material must meet all the requirements of the classification for which the RAP is entered (i.e. 10% Class III with 20% Class I, blend must meet Class I criteria). The Department may take belt cuts of the blended RAP to verify the material meets these requirements. If the Contractor elects to use more than one RAP source in a design, the Contractor shall provide an acceptable point of sampling blended RAP material from the feed belt.

In the event that RAP source or properties change, the Contractor shall notify the Department of the change and submit new documentation stating the new source or properties a minimum of 72 hours prior to the change to allow for obtaining new samples and approval.

SECTION 709 REINFORCING STEEL AND WELDED STEEL WIRE FABRIC

709.01 Reinforcing Steel Remove the second paragraph of Section 709.01 of the standard specification beginning with “Low-Carbon, Chromium,...” and replace with the following:

“ Low-carbon, chromium, reinforcing steel shall be deformed bars conforming to the requirements of ASTM A1035. Bars shall be Grade 100 and alloy Type CS unless otherwise specified on the Plans. “

SECTION 710 FENCE AND GUARDRAIL

710.06 Fence Posts and Braces Revise the first Paragraph so that it reads:

“Wood posts shall be of cedar, white oak, or tamarack or other AWPAs approved species, of the diameter or section and length shown on the plans.”

Remove the fourth paragraph which starts “ That portion of wood posts...”.

Revise the paragraph beginning with “Braces shall be of spruce, eastern hemlock ... so that it now reads:

“Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPAs approved species, or spruce, cedar, tamarack or other AWPAs approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces shall be pressure-treated in accordance with AASHTO M 133 and AWPAs U1, UC4A Commodity Specification B: Posts. “

710.07 Guardrail Posts Revise this section so that the first sentence of section a. reads:

“a. Wood posts shall be of Norway pine, southern yellow pine, pitch pine, Douglas fir, red pine, white pine, or eastern hemlock or other AWPAs approved species.”

Revise the next paragraph so that it reads:

Wood posts and offset brackets shall be preservative treated in accordance with the requirements of AASHTO M 133 and AWPAs U1, UC4A Commodity Specification B: Posts.

710.08 Guardrail Hardware Revise this subsection by replacing “AASHTO M 298” with “ASTM B695”

SECTION 712 MISCELLANEOUS HIGHWAY MATERIAL

712.061 Structural Precast Units Amend this section by adding the following sentence to the end of the first paragraph of the Construction subsection:

“Facilities certified by NPCA or PCI shall provide to the Fabrication Engineer a copy of their annual audit to include deficiency reports and corrective actions.”

Revise this section by changing the letter “b” of ASTM C1611 of the Concrete Testing subsection so that it reads:

“b. Air content shall be 5.0% to 8.0%.”

SECTION 713
STRUCTURAL STEEL AND RELATED MATERIAL

Section 713.02 High Strength Bolts

Revise the second sentence of this subsection so that it reads “**Nuts shall meet the requirement of ASTM A563**”. Revise the third sentence of this subsection so that it reads “**Circular and beveled washers shall conform to the requirement of ASTM F436**”.

SECTION 718
TRAFFIC SIGNALS MATERIAL

718.03 Signal Mounting Amend the paragraph beginning with “All trunions, brackets and...” by adding “**For polycarbonate signal heads with more than 3 sections or requiring mounting extensions greater than 12 inches in length, reinforcing plates shall be used to reinforce the housings at the point of attachment.**” to the end of the paragraph.

718.08 Controller Cabinet Revise this subsection by replacing the paragraph beginning with “The cabinet shall be supplied with LED light panels...” on or about page 7-66 with “**The cabinet shall be supplied with white LED light panels which shall automatically illuminate via a door open switch whenever one of the four main cabinet doors are opened for the ground mount cabinet or two main doors for the side of pole cabinet. The ground mounted cabinet shall contain four LED light panels per side totaling eight panels for the cabinet; one panel each at the top and bottom portion of the front side and back side on the Control side and Power/Auxiliary side of the cabinet. Each light panel shall produce a minimum of 250 lumens for a total minimum lumen output of 2000 lumens with all eight panels illuminated. The minimum output per side would be 1000 lumens. The LED panels shall be protected by a clear shatterproof shield. The side of pole mounted cabinet shall contain four light panels; one at the top of the rack assembly and one at the bottom rack assembly on each side of the cabinet. A second door open status switch per door shall activate a controller input to log a report event that one of the doors was opened. All door open status switches shall be connected to the same controller input. For the ground mount cabinet, there shall be two switches on each of the four main doors. For the side-of-pole mount cabinet, there shall be two switches on each of the two main doors.**”

Revise this subsection by replacing the paragraph beginning with “The cabinet shall be supplied with a generator panel ...” on or about page 7-68 with:

“The cabinet shall be supplied with a generator panel. The generator panel shall consist of a manual transfer switch and a twist-lock connector for generator hookup. The transfer switch knob and twist-lock connector shall be located inside a stainless steel enclosure with a separate lockable door accessed with a Corbin #2 key. The unit shall be mounted on the left, exterior of the control side wall of the ground mount cabinet a minimum of 36” above the surrounding grade and on the lower left side of the pole mounted cabinet. The generator transfer switch shall be a Reliance C30A1N Signa Series or approved equal. “

Revise this subsection by removing the following from the paragraph beginning with “The ground mounted cabinet shall be supplied and installed with an electric service meter socket trim and

electrical service disconnect switch ...” on or about page 7-69: **“(removed: thus preventing that space from being used either by equipment supplied as part of the project, or future equipment that would be installed in the rack system. Joe indicated that he would add this language to the detail so it is covered.)”**.

Revise this subsection by replacing the following in the paragraph beginning with “The Contractor shall reconfigure the default user name...” on or around page 7-70; “MaineDOT IT” with **“MaineDOT Traffic Division”**.

In the paragraph beginning with “Tests shall be conducted by the contractor...” on or around page 7-73, amend this subsection by removing **“in the state of Maine and”** after “The facility shall be”.

Amend this Section by adding the following subsection:

718.13 Field Monitoring Unit (FMU) This item of work shall conform to this specification. This item shall consist of furnishing and installing a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

Where applicable, communications from MaineDOT’s cloud-based Central Management System (CMS) to the on-street traffic signal controllers shall be made through fiber optic interconnect cable connected back to existing internet connections and/or the Field Monitoring Unit (FMU). The Contractor shall furnish and install all materials necessary for a complete and operational fiber optic interconnection to all project intersections as shown on the plans. All connections to the CMS cloud-based system shall be via a secure VPN network.

The FMU shall be the only remote connection device used by isolated intersections to connect to the cloud-based system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT IT and the Engineer.

The FMU central web based interface shall be a separate element from the CMS.

MATERIALS: The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the ATC traffic cabinet.
2. The FMU shall conform to the following requirements:
 - 2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
 - 2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
 - 2.3 The FMU shall monitor and log all ATC Controller and ATC cabinet faults and or alarms.
 - 2.4 The FMU shall be wired directly to the ATC cabinet.

- 2.5 The FMU shall have an internal cellular modem running at 4G LTE.
- 2.5.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.
- 2.6 The FMU shall incorporate an integrated GPS and cell modem.
- 2.7 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.
- 2.8 The FMU shall be powered via a standard 120V input power.
- 2.9 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.
- 2.10 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.
- 2.11 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.
- 2.12 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.
- 2.13 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.
- 2.14 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.
- 2.15 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.
- 2.16 The FMU shall include weather proof antennas.

3. Map Display FMU Management Software

- 3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.
- 3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.
- 3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top of the list, followed by medium priority, low priority and then finally by intersections not in alarm.
- 3.4 The icons shall change to be able to clearly indicate if an intersection is offline.
- 3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.
- 3.6 The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.
- 3.7 The map view shall have the ability to show Google traffic overlays on the map.

4. Intersection Detail Display FMU Management Software

- 4.1 It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:
 - 4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).
 - 4.1.2 The time since the last communication with the device
 - 4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)
 - 4.1.3.1 The AC mains voltage (value)
 - 4.1.3.2 The battery back-up voltage (value)
 - 4.1.3.3 The cabinet temperature (value)
 - 4.1.3.4 The cabinet humidity (value)
 - 4.1.3.5 The presence of AC power (OK or Fail)
 - 4.1.3.6 The flashing status of the intersection (OK or Flashing)

- 4.1.3.7 Stop Time status (OK or Stop Time Active)
- 4.1.3.8 The cabinet door status (Open or Closed)
- 4.1.3.9 The intersection fan status (Fan On or Fan off)
- 4.1.4 It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two-week period. This includes real time graphs of:
 - 4.1.4.1 The AC mains voltage
 - 4.1.4.2 The battery back-up voltage
 - 4.1.4.3 The cabinet temperature
 - 4.1.4.4 The cabinet humidity

5. Diagnostics and Log Display FMU Management Software

- 5.1 From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.
- 5.2 It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.
- 5.3 It shall be possible to print these selected logs to a local printer or a PDF file.
- 5.4 It shall be possible to export these logs to Excel on the local computer for further analysis.

6. Alarms FMU Management Software

- 6.1 The FMU management software shall have a comprehensive alarm generation capability
- 6.2 It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.
- 6.3 Alarms shall be configurable to be of Low, High or Critical Priority.
- 6.4 The alarm priority shall be displayed throughout the FMU management software, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.
- 6.5 The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

7. Alerts FMU Management Software

- 7.1 The FMU management software shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.

- 7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.
- 7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.
- 7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

8. Hosting and Connectivity and Service FMU / FMU Management Software

- 8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:
 - 8.1.1 Cellular Connectivity
 - 8.1.2 No cellular overage charges
 - 8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement
 - 8.1.4 Over-the-air software updates
 - 8.1.5 Over-the-air security updates
 - 8.1.6 Future Connected Vehicles Service

SECTION 720 STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

720.12 Wood Sign Posts Revise the first sentence so that it reads:

Wood sign posts shall be rectangular, straight and sound timber, cut from live growing native spruce, red pine, hemlock, cedar trees or other AWPAs approved species, free from loose knots or other structurally weakening defects of importance, such as shake or holes or heart rot.

Revise the third paragraph that starts with “When pressure treated...” so that it reads:

All sign posts shall be pressure-treated in accordance with AASHTO M 133 and AWPAs Standard U1, UC4A, Commodity Specification A: Sawn Products.