

## Appendix B: Roadway Sample Plan Notes

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*(APPENDIX A & C HAVE BEEN REMOVED)*

### **APPENDIX B: ROADWAY SAMPLE PLAN NOTES**

<b>NUMBER</b>	<b>DATE</b>	<b>NAME</b>	<b>REFERENCED SECTION</b>
R111	07/2013	Connection Between Existing and Proposed Guardrail	n/a
R112a	07/2013	Item 606 - Anchor Assembly, MGS Type B	603.3.2
R113a	07/2013	Item 606 - Anchor Assembly, MGS Type E	603.3.3
R116	07/2014	Paving Under Guardrail	n/a
R118	10/2009	Item Special - Mailbox Support	n/a
R123	04/2011	Item 606 - Impact Attenuator, Type 1 (Unidirectional or Bidirectional)	603.4.1
R124	04/2011	Item 606 - Impact Attenuator, Type 2 (Unidirectional or Bidirectional)	603.4.2
R125	04/2011	Item 606 - Impact Attenuator, Type 3 (Unidirectional or Bidirectional)	603.4.3
R127	04/2011	Item 606 - Cable Guardrail	602.2.2.2

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### R111 - CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A W-BEAM, BEAM SPLICE AS SHOWN IN AASHTO M 180-12, EXCEPT THE BEAM WASHERS ARE NOT TO BE USED. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

Designer Notes: Use this note when connections are required between existing and proposed guardrail runs. Locations shall be noted on the plans.

Use Standard Drawing MGS-4.3 Guardrail Transitions when connecting MGS to Type 5 Guardrail.

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### R112a - ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE B

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS FOR TYPE MGS GUARDRAIL AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND, THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

THE FACE OF THE TYPE B IMPACT HEAD SHALL BE COVERED WITH TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE B, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING REFLECTIVE SHEETING AND ALL RELATED HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

#### Designer Notes:

1. The length of need (LON) point is at post number 3; therefore, after calculating the required LON for the guardrail, deduct the last 25'-0" of the unit (from post #3 to post #9) from the length of need for the guardrail. The designer should show the LON point on all guardrail runs in the plans.
2. Pre-approved shop drawings are reviewed and are on the Office of Roadway Engineering's web page under Roadside Safety Devices.
3. These end treatments are gating systems.
4. The standard offset at post #1 for the B is 4'-0". This offset can be reduced to a minimum of 3'-0" at locations where the 4'-0" offset is impractical.
5. Use this plan note in conjunction with Type MGS Guardrail.

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### R113a - ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS FOR TYPE MGS GUARDRAIL AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE E, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

#### Designer Notes:

1. The length of need (LON) point for both systems is at post number 3; therefore, after calculating the required LON for the guardrail, deduct the last 37'-6" of the unit (from post #3 to post #9) from the length of need for the guardrail. The designer should show the LON point on all guardrail runs in the plans.
2. Pre-approved shop drawings are reviewed and are on the Office of Roadway Engineering's web page under Roadside Safety Devices.
3. These end treatments are gating systems.
4. A Type C delineator should be installed on a flexible post at the head of all Type E units located on the right side of the through roadway in areas that have known snowdrift/piling problems, or per District policy. A Type D delineator should be installed on a flexible post at the head of all Type E units located on the left side of the through roadway. Delineators shall be itemized separately and shall comply with Standard Construction Drawing TC-61.10 and CMS 620.
5. Use this plan note in conjunction with Type MGS Guardrail.

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### R116-PAVING UNDER GUARDRAIL

THIS OPERATION SHALL INCLUDE PREPARATION OF THE GRADED SHOULDER USING ITEM 209, LINEAR GRADING, AS PER PLAN AND PAVING UNDER THE GUARDRAIL USING 411 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), UNDER GUARDRAIL, AS PER PLAN.

ITEM 209, LINEAR GRADING, AS PER PLAN SHALL CONSIST OF EXCAVATING TOPSOIL, AND PLACING GRANULAR MATERIAL.

ALL COLLECTED DEBRIS AND TOPSOIL, INCLUDING RHIZOMES, ROOTS AND OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN 105.17.

THE REMOVED MATERIAL SHALL BE REPLACED WITH COMPACTABLE GRANULAR MATERIAL CONFORMING TO 703.16 PLACED TO GRADE AS DETAILED ON THE TYPICAL SECTION OR AS APPROVED BY THE ENGINEER.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 209, LINEAR GRADING, AS PER PLAN.

PAVING UNDER GUARDRAIL SHALL CONSIST OF PLACING ITEM 441 TO THE DEPTH SPECIFIED USING ONE OF THE FOLLOWING METHODS:

#### METHOD A:

1. SET GUARDRAIL POSTS
2. PLACE ITEM 441

#### METHOD B:

1. PLACE ITEM 441
2. BORE ASPHALT AT POST LOCATIONS (MAY BE OMITTED IF STEEL POSTS ARE USED)
3. SET GUARDRAIL POSTS
4. PATCH AROUND POSTS. THE MATERIALS USED FOR PATCHING SHALL BE AN ASPHALT CONCRETE APPROVED BY THE ENGINEER. PATCHED AREAS SHALL BE COMPACTED USING EITHER HAND OR MECHANICAL METHODS. FINISHED SURFACES SHALL BE SMOOTH AND SLOPED TO DRAIN AWAY FROM THE POSTS.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE, WITH THE EXCEPTION OF SETTING GUARDRAIL POSTS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 441, ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 1(448), UNDER GUARDRAIL, AS PER PLAN.

Designer Notes: Quantities for Item 441 should be calculated in Cubic Yards. The asphalt concrete thickness should be shown on the typical sections. The depth may vary according to project requirements, but shall be a maximum of 3 inches. The area to be paved shall be from the edge of the paved shoulder to the break point between the graded shoulder and the foreslope. The slope shall be the same as the graded shoulder slope. The designer may specify either paving Method A or B, or leave the option to the contractor. Guardrail shall be paid for under Item 606.

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### R118 - ITEM SPECIAL - MAILBOX SUPPORT

THIS WORK SHALL CONSIST OF FURNISHING AND ERECTING MAILBOX SUPPORTS AND ANY ASSOCIATED MOUNTING HARDWARE IN ACCORDANCE WITH PLAN DETAILS, AND ATTACHING AN OWNER-SUPPLIED MAILBOX AT LOCATIONS SPECIFIED IN THE PLAN, OR OTHERWISE ESTABLISHED BY THE ENGINEER.

WOOD POSTS SHALL BE NOMINAL 4 INCHES BY 4 INCHES SQUARE OR 4.5 INCHES DIAMETER ROUND, AND CONFORM TO 710.14.

STEEL POSTS SHALL BE NOMINAL PIPE SIZE 2 INCHES I.D., AND CONFORM TO AASHTO M 181.

ALL HARDWARE INCLUDING BUT NOT LIMITED TO PLATES, SCREWS, BOLTS, AND ETC. SHALL BE COMMERCIAL-GRADE GALVANIZED STEEL.

POSTS SHALL BE SET PER THE FIRST PARAGRAPH OF 606.03, AND SHALL IN NO INSTANCE BE ENCASED IN CONCRETE.

SUPPORT HARDWARE SHALL ACCOMMODATE EITHER A SINGLE OR A DOUBLE MAILBOX INSTALLATION, AND NO MORE THAN TWO BOXES MAY BE MOUNTED ON A SINGLE POST.

THE MAILBOX SHALL BE SECURELY AND NEATLY ATTACHED BY THE CONTRACTOR TO THE NEW SUPPORT. THE CONTRACTOR SHALL FURNISH ALL NECESSARY ATTACHMENT HARDWARE (NUTS, BOLTS, PLATES, SPACERS, AND WASHERS) AS NECESSARY TO ACCOMMODATE THE COMPLETE INSTALLATION.

IN THE ABSENCE OF A NEW BOX SUPPLIED BY THE OWNER, THE CONTRACTOR SHALL SALVAGE THE EXISTING BOX AND PLACE IT ON THE NEW SUPPORT. DUE CARE SHALL BE EXERCISED IN SUCH AN OPERATION, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ANY BOX DAMAGED BY IMPROPER HANDLING ON HIS PART, AS JUDGED AND DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL POST MASTER REGARDING THE TIMING OF THE MOVEMENT OF ANY MAILBOX TO A NEW LOCATION.

PAYMENT UNDER THIS ITEM SHALL BE LIMITED TO FINAL PERMANENT INSTALLATIONS, TEMPORARY INSTALLATIONS SHALL BE IN ACCORDANCE WITH 107.10. HOWEVER, THE SAME MATERIAL AND SIZE LIMITATIONS AS FOR PERMANENT INSTALLATIONS SHALL APPLY.

MAILBOX SUPPORTS, COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH, FOR ITEM SPECIAL MAILBOX SUPPORT SYSTEM, (SINGLE) (DOUBLE).

Designer Notes: The above note should be used for the replacement of existing mailbox supports constructed of materials which may be considered "hazardous" because they exceed the size stated with the note. See Figure 803-1 in Volume One (Roadway Design) of the Location and Design manual for more information.

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### R123 - ITEM 606 - IMPACT ATTENUATOR, TYPE 1 (UNIDIRECTIONAL OR BIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY ONE OF THE TYPE 1 IMPACT ATTENUATORS AS LISTED ON THE OFFICE OF ROADWAY ENGINEERING'S WEB PAGE. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE 1 IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19. PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, IMPACT ATTENUATOR, TYPE 1 (UNIDIRECTIONAL OR BIDIRECTIONAL), EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED TRANSITIONS, HARDWARE, REFLECTIVE SHEETING AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

#### Designer Notes:

1. After calculating the required Length of Need for the guardrail, deduct the last 12'-6" of the unit from the length of need for the guardrail. The designer should show the LON point on all guardrail runs in the plans. Refer to the approved products listed on the Office of Roadway Engineering's Web Page.
2. The 6'-3" section directly behind the Type 1 shall be parallel to the centerline of the unit. A maximum flare of 3 degrees (20:1) is permissible. A cross slope of no more than 8% (5 degrees) is recommended.
3. Bidirectional should be specified for locations where traffic is expected to be in opposing directions on either side of the barrier. Unidirectional shall be specified when traffic is expected to move in the same direction on both sides of the barrier.
4. All curbs and islands should be removed for optimum impact performance.
5. More information is located in Section 600 of the Location and Design Manual Volume 1.

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### R124 - ITEM 606 - IMPACT ATTENUATOR, TYPE 2 (UNIDIRECTIONAL OR BIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE TYPE 2 IMPACT ATTENUATORS AS LISTED ON THE OFFICE OF ROADWAY ENGINEERING'S WEB PAGE (REFER TO THE POSTED SHOP DRAWINGS FOR THE MOST CURRENT APPROVED PRODUCT MODELS). WHEN BI-DIRECTIONAL DESIGNS ARE SPECIFIED, THE CONTRACTOR SHALL SUPPLY APPROPRIATE TRANSITIONS. THE FACE OF THE IMPACT HEAD SHALL BE COVERED WITH TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, IMPACT ATTENUATOR, TYPE 2 [(SPEED (IN MPH), HAZARD WIDTH (IN INCHES)), (UNIDIRECTIONAL OR BIDIRECTIONAL)], EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS/BACKSTOPS, TRANSITIONS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

#### Designer Notes:

These systems are non-gating and redirective therefore the entire length of the unit can be included as part of the calculated length of need.

The most current approved products and models are updated regularly online, as such, individual products should generally not be listed on the plans.

This note should be used for the protection of Type 5 Barrier Design Guardrail, concrete median barrier and other fixed objects.

If cross slopes are steeper than 8% (12:1) or if the cross slope varies by more than 2% over the length of the unit, a leveling pad may be used.

Rear fender panels may slide 60 inches rearward upon impact, so ensure the specified width is adequate.

Bidirectional should be specified for locations where traffic is expected to be in opposing directions on either side of the barrier. Unidirectional shall be specified when traffic is expected to move in the same direction on both sides of the barrier.

Each of the Type 2 products have a wide variety of related units (families), typically covering various design speeds (number of bays) and protected widths. The designer should also identify on the project plans for each unit specified on the plan any contingencies needed to construct a complete device. They include:

- Design speed (The designer must specify Test level 3 (TL-3) configurations for installations on the NHS)
- Width of hazard
- Available foot print area for the product
- Foundation type (asphalt, concrete, bridge deck)
- Transition type (concrete barrier or guardrail)
- Backup support (A standard concrete backup is detailed on SCD RM-4.6. Otherwise, specify an independent stand-alone anchorage like the product's own concrete backup, or its tension strut backup)
- Any unique characteristics of the site (curb, expansion joints, etc.)



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### R125 - ITEM 606 - IMPACT ATTENUATOR, TYPE 3 (UNIDIRECTIONAL OR BIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE TYPE 3 IMPACT ATTENUATORS AS LISTED ON THE OFFICE OF ROADWAY ENGINEERING'S WEB PAGE (REFER TO THE POSTED SHOP DRAWINGS FOR THE MOST CURRENT APPROVED PRODUCT MODELS). WHEN BI-DIRECTIONAL DESIGNS ARE SPECIFIED, THE CONTRACTOR SHALL SUPPLY APPROPRIATE TRANSITIONS. THE FACE OF THE IMPACT HEAD SHALL BE COVERED WITH TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, IMPACT ATTENUATOR, TYPE 3 [(SPEED (IN MPH), HAZARD WIDTH (IN INCHES)), (UNIDIRECTIONAL OR BIDIRECTIONAL)], EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS/BACKSTOPS, TRANSITIONS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

Designer Notes: These systems are non-gating and redirective therefore the entire length of the unit can be included as part of the calculated length of need.

The most current approved products and models are updated regularly online, as such, individual products should generally not be listed on the plans.

This note should be used for the protection of Type 5 Barrier Design Guardrail, concrete median barrier and other fixed objects.

If cross slopes are steeper than 8% (12:1) or if the cross slope varies by more than 2% over the length of the unit, a leveling pad may be used.

Rear fender panels may slide 60 inches rearward upon impact, so ensure the specified width is adequate.

Bidirectional should be specified for locations where traffic is expected to be in opposing directions on either side of the barrier. Unidirectional shall be specified when traffic is expected to move in the same direction on both sides of the barrier.

Each of the Type 3 products have a wide variety of related units (families), typically covering various design speeds (number of bays) and protected widths. The designer should also identify on the project plans for each unit specified on the plan any contingencies needed to construct a complete device. They include:

- Design speed (The designer must specify Test level 3 (TL-3) configurations for installations on the NHS)
- Width of hazard & available footprint area for the product
- Foundation type (asphalt, concrete, bridge deck)
- Transition type (concrete barrier or guardrail)
- Backup support (A standard concrete backup is detailed on SCD RM-4.6. Otherwise, specify an independent stand-alone anchorage like the product's own concrete backup, or its tension strut backup)
- Any unique characteristics of the site (curb, expansion joints, etc.)

The REACT 350 is 48 inches tall, if sight distance is needed where the attenuator will be installed the designer shall note the REACT 350 is not allowed at that location.

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### R127 - ITEM 606 - CABLE GUARDRAIL

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY ONE OF THE HIGH TENSION FOUR CABLE GUARDRAIL SYSTEMS AS LISTED ON THE OFFICE OF ROADWAY ENGINEERING'S WEB PAGE. PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, GUARDRAIL, MISC., TENSIONED CABLE WITH CONCRETE FOUNDATION LINE POSTS (SOCKETED), AND ITEM 606, GUARDRAIL, MISC. TENSIONED CABLE ANCHOR TERMINAL AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL HIGH TENSION CABLE GUARDRAIL SYSTEM NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

SYSTEMS SHALL HAVE A MAXIMUM DEFLECTION OF 8 FEET AND THE MAXIMUM LONGITUDINAL DISTANCE BETWEEN POSTS SHALL BE 15 FEET.

INSTALLATION WILL BE A FOUR CABLE HIGH TENSION SYSTEM INSTALLED IN SOCKETED POSTS FOUNDATION WITH A FOUR FOOT WIDE "NO MOW STRIP".

CONTRACTOR SHALL PROVIDE DELINEATORS ON THE POSTS AT A MINIMUM INTERVAL OF 100 FEET AND ON ALL ANCHOR TERMINALS.

TRANSITIONS TO W-BEAM GUARDRAIL ARE NOT ALLOWED.

REFER TO MANUFACTURER FOR MAXIMUM OFFSET FROM BREAK POINT.

TORPEDO OR BULLET SPLICES ARE NOT ALLOWED. ALL CABLE SPLICES SHALL BE A SWAGED OR OPEN BODY DESIGN THAT ALLOWS FOR ANNUAL INSPECTION BETWEEN THE WEDGE AND STRANDS OF CABLE.

POSTS ARE SET IN SOCKETED CONCRETE FOUNDATIONS AND SHALL NOT BE PERMANENTLY INSTALLED UNTIL THEIR RESPECTIVE RUNS OF TENSIONED CABLE GUARDRAIL ARE READY FOR FINAL CONNECTION TO THE END TERMINAL ASSEMBLY. THE CONTRACTOR SHALL REPLACE ANY POSTS DAMAGED DURING INSTALLATION AS DETERMINED BY THE ENGINEER AT NO ADDITIONAL COST TO THE STATE.

#### Designer Notes:

High tension cable barrier systems shall only be installed to meet the requirements of Location and Design Manual Section 601.2 Median Barrier Warrants.

The most current approved products and models are updated regularly online, as such, individual products should generally not be listed on the plans.

Designer should look at the entire corridor before selecting which side of the median the cable will be installed on. At breaks in the runs of cable such as turnarounds the layout of the cable should limit the gating potential of the cable end treatments. Installing the end treatments behind the trailing bridge parapets can eliminate the gating part of the end treatments. When overlapping cable runs eliminate all of the gating part of the end treatments. Review Figure 602-3 and 602-4 of L&D Vol. 1 for appropriate layouts. Additional information is provided in Location and Design Manual Volume 1 Section 600 and the manufacturer.

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