

GUARDRAIL TYPE 5 PLAN INSERT SHEETS/ARCHIVED STANDARD DRAWINGS:

THIS PROJECT WILL INVOLVE REPAIRING TYPE 5 GUARDRAIL. ARCHIVED STANDARD DRAWINGS OF TYPE 5 GUARDRAIL ARE PROVIDED AS PLAN INSERT SHEETS ON ROADWAY ENGINEERING'S PLAN INSERT SHEETS WEB PAGE:

<http://www.dot.state.oh.us/Divisions/Engineering/Roadway/DesignStandards/roadway/Pages>

P.I.S.	ARCH. DATE	P.I.S.	ARCH. DATE
GR-1.1	7/20/12	GR-3.6	7/20/12
GR-2.1	7/20/12	GR-4.1	7/20/12
GR-2.2	7/20/12	GR-4.2	7/20/12
GR-2.3	7/20/12	GR-4.5	1/20/12
GR-2.4	7/20/12	GR-5.1	4/16/10
GR-3.1	7/20/12	GR-5.2	4/16/10
GR-3.2	7/20/12	GR-5.3	4/16/10
GR-3.3	7/20/12	GR-6.1	4/16/10
GR-3.4	7/20/12	GR-6.2	4/16/10
GR-3.5	7/20/12		

ITEM 606 - GUARDRAIL, (VARIOUS TYPE), AS PER PLAN:

THESE ITEMS SHALL INCLUDE THE REMOVAL AND ALL WORK NECESSARY TO REPLACE SECTIONS OF DAMAGED GUARDRAIL WITH THE TYPE SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THESE ITEMS SHALL INCLUDE REPLACING GUARDRAIL, POST AND/OR ASSOCIATED HARDWARE WITHIN THE LENGTH DESIGNATED FOR REPAIR AND ALL WORK NECESSARY TO RESET AND ALIGN POST AND GUARDRAIL FOR RE-USE AS DIRECTED BY THE ENGINEER.

ADJUSTMENT OF ADJACENT RAIL OUTSIDE THE LIMITS DESIGNATED FOR REPLACEMENT, IF NECESSARY, IN ORDER TO REESTABLISH SPACING, WILL BE CONSIDERED INCIDENTAL TO THIS ITEM. SECTIONS TO BE REPLACED WILL BE DESIGNATED BY THE ENGINEER FROM CENTER OF POST TO CENTER OF POST. MATERIALS SHALL BE NEW ITEMS UNDER THIS CONTRACT. POST AND BLOCKS SHALL BE OF THE SAME TYPE AS THE EXISTING RUN. ADDITIONAL QUANTITIES HAVE BEEN PROVIDED TO BE USED WHERE DIRECTED. PAYMENT SHALL BE AT THE UNIT PRICE BID FOR:

ITEM	DESCRIPTION	TOTAL	UNIT
606	GUARDRAIL,TYPE 5, AS PER PLAN	5,650	FT
606	GUARDRAIL,TYPE 5 WITH TUBULAR BACKUP, AS PER PLAN	12.5	FT
606	GUARDRAIL,TYPE 5A, AS PER PLAN	50	FT
606	GUARDRAIL, TYPE MGS	1,800	FT
606	GUARDRAIL, TYPE MGS, AS PER PLAN	11,000	FT
606	GUARDRAIL, TYPE MGS WITH LONG POSTS	200	FT
606	GUARDRAIL, TYPE MGS HALF POST SPACING	50	FT
606	GUARDRAIL, TYPE MGS HALF POST SPACING, AS PER PLAN	50	FT
606	GUARDRAIL, TYPE MGS QUARTER POST SPACING	25	FT
606	GUARDRAIL, TYPE MGS QUARTER POST SPACING, AS PER PLAN	25	FT

ITEM 606 - GUARDRAIL REBUILT, (VARIOUS TYPE), APP:

THIS ITEM INCLUDES ALL LABOR EQUIPMENT AND MATERIAL NECESSARY TO REMOVE AND REPLACE ANY AND ALL EXISTING DAMAGED COMPONENTS INCLUDING POSTS, BLOCKS, AND HARDWARE IN ACCORDANCE WITH PLAN INSERT SHEET:

GR-2.1

SECTIONS TO BE REBUILT SHALL BE DESIGNATED BY THE ENGINEER FROM CENTER OF POSTS. PAYMENT SHALL BE AT THE UNIT BID PRICE.

ITEM	DESCRIPTION	TOTAL	UNIT
606	GUARDRAIL REBUILT, TYPE MGS, AS PER PLAN	650	FT
606	GUARDRAIL REBUILT, BARRIER DESIGN, TYPE 5, AS PER PLAN	75	FT

ITEM 606 - GUARDRAIL POST, 9 FT., AS PER PLAN:

AN ESTIMATED NUMBER OF 9 FT. LONG GUARDRAIL POSTS HAVE BEEN LISTED TO BE USED AS DIRECTED BY THE ENGINEER TO OBTAIN A REASONABLE LINE AND ELEVATION OF GUARDRAIL ELEMENTS. EXCEPT FOR LENGTH, THE POST SHALL MEET THE APPLICABLE REQUIREMENTS NOTED IN ITEM 710. THE UNIT BID PRICE FOR THIS ITEM SHALL BE THE DIFFERENCE FOR SUPPLYING THE 9 FT. LONG POST IN LIEU OF THE STANDARD LENGTH GUARDRAIL POSTS INCLUDED IN THE 606 GUARDRAIL BID ITEMS, AND SHALL BE PAID AS EACH. STANDARD LENGTH POSTS REQUIRED TO COMPLETE THE VARIOUS RUNS SHALL BE INCLUDED IN THE 606 GUARDRAIL BID ITEMS. PAYMENT SHALL BE AT THE UNIT BID PRICE.

ITEM	DESCRIPTION	TOTAL	UNIT
606	GUARDRAIL POST, 9 FT., AS PER PLAN	6	EACH

ITEM 606 - CURVED RAIL ELEMENTS:

ALL RADII OF CURVED RAIL ARE ESTIMATED AND ACTUAL RADII OF PROPOSED RAIL SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING. LENGTH OF CURVED RAIL ELEMENTS, WHERE CALLED FOR IN A RUN, SHALL NOT BE INCLUDED IN THE TOTAL LENGTH OF RUN SHOWN IN THE GUARDRAIL COLUMN, HOWEVER, THE CURVED RAIL ELEMENT TOTAL SHALL BE INCLUDED WITH THE GUARDRAIL TOTALS ON THE GENERAL SUMMARY SHEET.

ITEM 606 - ANCHOR ASSEMBLY, (MGS), TYPE B (MASH 2016):

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. 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.

GENERAL NOTES

DESIGN AGENCY



DESIGNER
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PROJECT ID
117450

SHEET TOTAL
P.4 22

THE FACE OF THE TYPE B IMPACT HEAD SHALL BE COVERED WITH TYPE J, ASTM D4956 TYPE XI REFLECTIVE SHEETING, PER CMS 730.193.

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.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE ESTIMATED GENERAL SUMMARY:

ITEM	DESCRIPTION	TOTAL	UNIT
606	ANCHOR ASSEMBLY, MGS TYPE B (MASH 2016)	6	EACH

ITEM 606 - ANCHOR ASSEMBLY, (MGS), TYPE E (MASH 2016):

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 B IMPACT HEAD SHALL BE COVERED WITH TYPE J, ASTM D4956 TYPE XI REFLECTIVE SHEETING, PER CMS 730.193.

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 REFLECTIVE SHEETING AND ALL RELATED HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

THE FOLLOWING QUANTITIES HAS BEEN CARRIED TO THE ESTIMATED GENERAL SUMMARY:

ITEM	DESCRIPTION	TOTAL	UNIT
606	ANCHOR ASSEMBLY, MGS TYPE E (MASH 2016)	68	EACH

ITEM 606 - ANCHOR ASSEMBLY, TYPE T, AS PER PLAN:

THIS ITEM INCLUDES THE REMOVAL AND ALL WORK AND EQUIPMENT NECESSARY TO REPLACE THE EXISTING ANCHOR ASSEMBLY. THIS ITEM SHALL INCLUDE ALL WORK, EQUIPMENT AND MATERIALS NECESSARY TO REPLACE THE EXISTING ASSEMBLY IN ACCORDANCE WITH PLAN INSERT SHEETS:

GR-4.2

ADDITIONAL QUANTITIES HAVE BEEN PROVIDED TO BE USED WHERE DIRECTED. PAYMENT SHALL BE AT THE UNIT PRICE BID FOR:

ITEM	DESCRIPTION	TOTAL	UNIT
606	ANCHOR ASSEMBLY, TYPE T, AS PER PLAN	3	EACH
606	ANCHOR ASSEMBLY, MGS TYPE T	10	EACH

ITEM 606 - BRIDGE TERMINAL ASSEMBLY, AS PER PLAN:

THIS ITEM INCLUDES THE REMOVAL AND ALL WORK AND EQUIPMENT NECESSARY TO REPLACE ANY AND ALL DAMAGED COMPONENTS OF THE EXISTING BRIDGE TERMINAL ASSEMBLY. THIS ITEM SHALL INCLUDE ALL WORK, EQUIPMENT AND MATERIALS NECESSARY TO REPLACE DAMAGED COMPONENTS OF THE EXISTING ASSEMBLY.

THE FOLLOWING BRIDGE TERMINAL ITEMS WILL BE USED WHEN THE MAJORITY OF THE TERMINAL ASSEMBLY IS DAMAGED AND CANNOT BE REPAIRED WITH THE APPROPRIATE TYPE 5 GUARDRAIL ITEMS. QUANTITIES PAID FOR A REPAIR ARE INCLUDED ONLY FROM THE BRIDGE CONNECTION THROUGH THRIE- BEAM TRANSITION SECTION CONNECTION AND WILL NOT INCLUDE THE QUANTITIES FOR TYPE 5 GUARDRAIL OR TYPE 5 GUARDRAIL, APP.

ITEM	DESCRIPTION	TOTAL	UNIT
606	GUARDRAIL, THRIE BEAM RAIL AND TRANSITION SECTION, AS PER PLAN	25	FT
606	THRIE BEAM GUARDRAIL	56	FT
606	BRIDGE TERMINAL ASSEMBLY, TYPE 4	1	EACH
606	BRIDGE TERMINAL ASSEMBLY, TYPE 4, AS PER PLAN	1	EACH

THE FOLLOWING BRIDGE TERMINAL ITEMS WILL BE USED TO EITHER REPLACE OR UPGRADE THE DAMAGED BRIDGE TERMINAL ASSEMBLY WITH TYPE MGS.

ITEM	DESCRIPTION	TOTAL	UNIT
606	MGS BRIDGE TERMINAL ASSEMBLY,TYPE 1, AS PER PLAN	6	EACH
606	MGS BRIDGE TERMINAL ASSEMBLY,TYPE 2, AS PER PLAN	2	EACH

ITEM SPECIAL - 606 - RESHAPING BERM:

BERMS AT LOCATIONS WHERE EXISTING GUARDRAIL IS REMOVED OR WHERE NEW GUARDRAIL IS TO BE ERECTED SHALL BE RESHAPED AS DIRECTED BY THE ENGINEER TO INSURE A SMOOTH SURFACE FREE OF ALL IRREGULARITIES. EXCESS EXCAVATION RESULTING FROM RESHAPING BERMS SHALL BE DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE AT THE UNIT BID PRICE.

ITEM	DESCRIPTION	TOTAL	UNIT
606	SPECIAL - RESHAPING BERM	20	FT

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PROJECT ID
117450

SHEET TOTAL
P.5 22

3)THE TRINITY INDUSTRIES, INC. TRINITY ATTENUATING CRASH CUSHION DISTRIBUTED BY TRINITY INDUSTRIES, INC 1170 N. STATE ST., GIRARD, OHIO 44420, TELEPHONE:(330)-545-4373. REPAIR SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING SHOP DRAWINGS:

DWG#	DRAWING NAME	DWG/REV DATE	ODOT APPROVAL DATE
SS455	TRACC TRANS TO W-BEAM MEDIAN BARRIER	11/2/99	
SS456	TRACC TRANSITION TO VERTICAL CONCRETE WALL	9/7/00	
SS497	WIDE TRACC-DOUBLE FLARE WING EXTENSIONS	11/22/02	
SS699	WIDE TRACC-ASSEMBLED MODULAR BASE	4/2/03	
SS1000	CRASH CUSHION ATTENUATING TERMINAL PLAN	3/30/05	
SS1001	CRASH CUSHION ATTENUATING TERMINAL BASE UNIT	4/22/05	
SS1002	CRASH CUSHION ATTENUATING TERMINAL ASSEMBLY DETAILS	5/11/05	
SS1003	CRASH CUSHION ATTENUATING TERMINAL ATTACHMENTS	4/25/05	
SS1004	SHOR-TRACC CRASH CUSHION ATTENUATING TERMINAL BASE	5/16/05	
SS1005	SHOR-TRACC CRASH CUSHION ATT TERMINAL ASSMBLY	5/24/05	
SS1006	SHOR-TRACC CRASH CUSHION ATTENUATING ATTACHMENTS	5/24/05	
SS1007	FAS-TRACC CRASH CUSHION ATTENUATING TERMINAL BASE	6/8/05	
SS1008	FAS-TRACC CRASH CUSHION ATT TERMINAL ASSMBLY	6/9/05	
SS1009	FAS-TRACC CRASH CUSHION ATTENUATING ATTACHMENTS	6/10/05	
SS1010	TRACC CRASH CUSHION ATTEN TERMINAL 22" FOUNDATION	4/4/05	
SS1013	SHOR-TRACC CRASH CUSHION TERMINAL 15" FOUNDATION	4/4/05	
SS1018	58" WIDE TRAC DOUBLE FLAIR ASSEMBLY DETAILS	8/8/05	
SS1019	58" WIDE TRAC DOUBLE FLAIR ATTACHMENT	8/12/05	
QGMTSCVR -24U	QUADGUARD M10 SYSTEM 24" WIDE SYSTEM WITH TENSION STRUT BACKUP	10/2/17	

IMPACT ATTENUATOR, TYPE 2 INSTALLATION:

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.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, IMPACT ATTENUATOR, TYPE 2 ((62.1 MPH), HAZARD WIDTH (36 INCHES)), (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, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

A TRUCK MOUNTED ATTENUATOR IS TO BE USED AT ALL THESE LOCATIONS TO PROTECT THE WORK ZONE AND IS TO BE PAID FOR UNDER THE LUMP SUM BID PRICE FOR ITEM 614, MAINTAINING TRAFFIC.

ITEM	DESCRIPTION	TOTAL	UNIT
606	IMPACT ATTENUATOR, TYPE 2, AS PER PLAN	1	EACH

IMPACT ATTENUATOR, TYPE 2 REPAIR:

ALL INDIVIDUAL ITEMS OF THE IMPACT ATTENUATOR ASSEMBLY SHALL BE BID TO INCLUDE LABOR, TOOLS, EQUIPMENT AND HARDWARE NECESSARY FOR REMOVAL OF DAMAGED ITEMS AND INSTALLATION OF THE INDIVIDUAL ITEMS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR. ALL ITEMS UNDER THIS HEADING SHALL BE ACCOMPLISHED WITHIN 72 HOURS AND WILL NOT BE PAID UNDER THE EMERGENCY CLAUSE OF THIS CONTRACT. THIS 72 HOURS WILL BE CONSIDERED AN INTERIM COMPLETION DATE SUBJECT TO LIQUIDATED DAMAGES AS PER 108.07. THE FOLLOWING ITEMS HAVE BEEN PROVIDED TO REPAIR DAMAGED IMPACT ATTENUATOR, TYPE 2 (QUADGUARD):

ITEM	DESCRIPTION	TOTAL	UNIT
606	IMPACT ATTENUATOR, MISC.: 9 BAY MONORAIL ANCHOR PLATE	1	EACH
606	IMPACT ATTENUATOR, MISC.: CLAMP ASSEMBLY	1	EACH
606	IMPACT ATTENUATOR, MISC.: DIAPHRAGM (24"-36")	3	EACH
606	IMPACT ATTENUATOR, MISC.: DIAPHRAGM (69"-90")	1	EACH
606	IMPACT ATTENUATOR, MISC.: FENDER PANEL, QUAD	3	EACH
606	IMPACT ATTENUATOR, MISC.: MONORAIL (1 BAY)	1	EACH
606	IMPACT ATTENUATOR, MISC.: MONORAIL (2 BAY)	1	EACH
606	IMPACT ATTENUATOR, MISC.: MONORAIL (3 BAY)	1	EACH
606	IMPACT ATTENUATOR, MISC.: MONORAIL END CAP	1	EACH
606	IMPACT ATTENUATOR, MISC.: NOSE ASSEMBLY	3	EACH
606	IMPACT ATTENUATOR, MISC.: SIDE PANEL	1	EACH
606	IMPACT ATTENUATOR, MISC.: TYPE 1 CARTRIDGE	14	EACH
606	IMPACT ATTENUATOR, MISC.: TYPE 2 CARTRIDGE	11	EACH

GENERAL NOTES

DESIGN AGENCY



DESIGNER
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PROJECT ID
117450

SHEET TOTAL
P.8 | 22

ITEM 606 - GUARDRAIL MISC.: BULLNOSE TERMINAL:

THE FOLLOWING ITEMS HAVE BEEN PROVIDED TO REPAIR DAMAGED THRIE BEAM BULL NOSE TERMINALS PER SCD GR-6.3:

ITEM	DESCRIPTION	TOTAL	UNIT
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, CABLE ANCHOR ASSEMBLY	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, NOSE CABLE ANCHOR AND BRACKET ASSEMBLY	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, NOSE CABLE ASSEMBLY	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, SLOTTED THRIE BEAM RAIL NO.1	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, SLOTTED THRIE BEAM RAIL NO.2A	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, SLOTTED THRIE BEAM RAIL NO.3	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, THRIE BEAM LONG POST	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, THRIE BEAM STANDARD POST	1	EACH
606	GUARDRAIL, MISC.: BULLNOSE TERMINAL, UNBENT THRIE BEAM RAIL NO.4	1	EACH

ALL INDIVIDUAL ITEMS OF THE BULLNOSE REPAIR, SHALL BE BID TO INCLUDE LABOR, TOOLS, EQUIPMENT AND HARDWARE NECESSARY FOR REMOVAL OF DAMAGED ITEMS AND INSTALLATION OF THE INDIVIDUAL ITEMS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL BULLNOSE TERMINAL.

ITEM 606 - GUARDRAIL MISC.: CABLE RAIL TENSIONING

THIS ITEM SHALL CONSIST OF TENSIONING AN EXISTING CABLE GUARDRAIL SYSTEM TO MEET NCHRP REPORT 350 TEST LEVEL-3 REQUIREMENTS FOR EACH CONTINUOUS CABLE GUARDRAIL RUNS (TWICE PER YEAR AT EQUAL INTERVALS) WITHIN THIS PROJECT.

A LIST OF THESE RUNS ALONG WITH THE LOCATION MAP CAN BE FOUND ON PLAN SHEETS **21 & 22**.

THE BID ITEM SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO CERTIFY A PROPER TENSION AT INTERVALS AS DIRECTED BY THE ENGINEER. THE FOLLOWING ESTIMATE HAS BEEN PROVIDED AND CARRIED TO THE ESTIMATED GENERAL SUMMARY.

ITEM	DESCRIPTION	TOTAL	UNIT
606	GUARDRAIL, MISC.: CABLE RAIL TENSIONING	188	EACH

TENSIONED CABLE GUARDRAIL REPAIR:

TORPEDO OR BULLET SPLICES ARE NOT ALLOWED. ALL CABLE SPLICES SHALL BE SWAGED OR OPEN BODY DESIGN THAT ALLOWS FOR ANNUAL INSPECTION BETWEEN THE WEDGE AND STRANDS OF CABLE. CABLE RAIL HANGARS FOR THE POSTS, WHETHER BOLTED OR HUNG ARE INCIDENTAL TO CABLE RAIL REPAIR. ALL INDIVIDUAL ITEMS OF THE TENSIONED CABLE GUARDRAIL (INCLUDING END TERMINALS) SHALL BE BID TO INCLUDE LABOR, TOOLS, EQUIPMENT AND HARDWARE NECESSARY FOR REMOVAL OF DAMAGED ITEMS AND INSTALLATION OF THE INDIVIDUAL ITEMS NEEDED TO PROVIDE A PROPERLY TENSIONED COMPLETE AND FUNCTIONAL CABLE GUARDRAIL RUN. TENSIONING THE CABLE GUARDRAIL SYSTEM TO MEET NCHRP REPORT 350 TEST LEVEL 3 AFTER THE REPAIR WILL BE CONSIDERED INCIDENTAL TO ANY OF THE REPAIR ITEMS LISTED BELOW AND SHALL BE DOCUMENTED AS MEETING THE ANNUAL TENSIONING REQUIREMENTS. THE FOLLOWING ITEMS HAVE BEEN PROVIDED TO REPAIR DAMAGED CABLE GUARDRAIL:

ITEM	DESCRIPTION	TOTAL	UNIT
606	GUARDRAIL, MISC.: REPLACEMENT CABLE	113	FT
606	GUARDRAIL, MISC.: ANCHOR POST	14	EACH
606	GUARDRAIL, MISC.: ANCHOR POST RESET	90	EACH
606	GUARDRAIL, MISC.: ANCHOR TRIGGER POST ASSEMBLY	2	EACH
606	GUARDRAIL, MISC.: ANCHOR TRIGGER POST RESET	14	EACH
606	GUARDRAIL, MISC.: CABLE SPLICE	18	EACH
606	GUARDRAIL, MISC.: CABLE TURNBUCKLE	23	EACH
606	GUARDRAIL, MISC.: CONCRETE ANCHOR FOUNDATION WITH SLEEVE	2	EACH
606	GUARDRAIL, MISC.: CONCRETE LINE POST FOUNDATION WITH SLEEVE	171	EACH
606	GUARDRAIL, MISC.: LINE POST	2,625	EACH
606	GUARDRAIL, MISC.: POST REFLECTOR	6	EACH

ANCHOR ASSEMBLY REPAIR:

ALL INDIVIDUAL ITEMS OF THE TYPE B & E ASSEMBLIES SHALL BE BID TO INCLUDE LABOR, TOOLS, EQUIPMENT AND HARDWARE NECESSARY FOR REMOVAL OF DAMAGED ITEMS AND INSTALLATION OF THE INDIVIDUAL ITEMS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY. SOME OF THE MISC. ITEMS BELOW ARE INTERCHANGEABLE WITH CERTAIN TYPE I IMPACT ATTENUATORS. SUCH ITEMS ARE INDICATED IN THE GENERAL SUMMARY DESCRIPTION. THE FOLLOWING ITEMS HAVE BEEN PROVIDED TO REPAIR DAMAGED TYPE E AND TYPE B ANCHOR ASSEMBLIES:

ITEM	DESCRIPTION	TOTAL	UNIT
606	ANCHOR ASSEMBLY, MISC.: #1 & #2 HBA BOTTOM POST	6	EACH
606	ANCHOR ASSEMBLY, MISC.: #1 & #2 HBA TOP POST	110	EACH
606	ANCHOR ASSEMBLY, MISC.: #2 THRU #8 SYT POST	122	EACH
606	ANCHOR ASSEMBLY, MISC.: CABLE ANCHOR BRACKET(ET)	8	EACH
606	ANCHOR ASSEMBLY, MISC.: DEEP BEAM GUARDRAIL, 12 GAUGE, END ANC	75	EACH
606	ANCHOR ASSEMBLY, MISC.: STEEL FOUNDATION TUBE, 4'-6"	3	EACH
606	ANCHOR ASSEMBLY, MISC.: DEEP BEAM GUARDRAIL, 12 GAUGE	30	EACH
606	ANCHOR ASSEMBLY, MISC.: BEARING PLATE 8" x 8" x 5/8	8	EACH
606	ANCHOR ASSEMBLY, MISC.: GROUNDSTRUT, OFFSET/STRAIGHT	3	EACH
606	ANCHOR ASSEMBLY, MISC.: CABLE ASSEMBLY	15	EACH
606	ANCHOR ASSEMBLY, MISC.: STEEL FOUNDATION TUBE 6' (SRT,ET)	3	EACH

GENERAL NOTES

DESIGN AGENCY



DESIGNER

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PROJECT ID

117450

SHEET TOTAL

P.11 22

606	ANCHOR ASSEMBLY, MISC.: WOOD POST (3.75' LONG)	135	EACH
606	ANCHOR ASSEMBLY, MISC.: WOOD POST (6.0' LONG)	45	EACH
606	ANCHOR ASSEMBLY, MISC.: GROUND STRUT (ET,SRT,CAT)	3	EACH
606	ANCHOR ASSEMBLY, MISC.: 2"X5-1/2" PIPE SLEEVE	5	EACH
606	ANCHOR ASSEMBLY, MISC.: WOOD BLOCKS (ANCHOR ASSEMBLY)	45	EACH
606	ANCHOR ASSEMBLY, MISC.: #2 DEEP BEAM GUARDRAIL, 12 GAUGE	79	EACH
606	ANCHOR ASSEMBLY, MISC.: #1 DEEP BEAM GUARDRAIL, 12 GAUGE	111	EACH
606	ANCHOR ASSEMBLY, MISC.: BCT ANCHOR CABLE	1	EACH
606	ANCHOR ASSEMBLY, MISC.: CABLE ANCHOR BOX	6	EACH
606	ANCHOR ASSEMBLY, MISC.: IMPACT HEAD	33	EACH
606	ANCHOR ASSEMBLY, MISC.: STEEL FOUNDATION TUBE 6'-0" (FLEAT,SKT)	1	EACH
606	ANCHOR ASSEMBLY, MISC.: 12 GAUGE, BUFFERED, ROLLED END TERMINAL	11	EACH
606	ANCHOR ASSEMBLY, MISC.: BEARING PLATE 8" x 6" x 5/8	1	EACH
606	ANCHOR ASSEMBLY, MISC.: CABLE ANCHOR BRACKET (SRT)	1	EACH
606	ANCHOR ASSEMBLY, MISC.: DEEP BEAM GUARDRAIL, 12 GAUGE - SLOT 1	12	EACH
606	ANCHOR ASSEMBLY, MISC.: DEEP BEAM GUARDRAIL, 12 GAUGE - SLOT 2	6	EACH
606	ANCHOR ASSEMBLY, MISC.: SLOT GUARD	3	EACH
606	ANCHOR ASSEMBLY, MISC.: STEEL FOUNDATION TUBE 5'-0"	1	EACH
606	ANCHOR ASSEMBLY, MISC.: SOIL PLATE	1	EACH
606	ANCHOR ASSEMBLY, MISC.: GUARDRAIL EXTRUDER, 2000	1	EACH
606	ANCHOR ASSEMBLY, MISC.: GUARDRAIL EXTRUDER, PLUS	5	EACH

ITEM 617 - COMPACTED AGGREGATE:

AN ESTIMATED QUANTITY OF COMPACTED AGGREGATE HAS BEEN PROVIDED TO PLACE IN AREAS WHERE A LOW SHOULDER IS PRESENTED. THIS ITEM SHALL BE USED AS DIRECTED BY THE ENGINEER.

ITEM	DESCRIPTION	TOTAL	UNIT
617	COMPACTED AGGREGATE	2	CU YD
617	WATER	1	MGAL

ITEM 625 - LIGHT POLE FOUNDATION REPAIR:

AN ESTIMATED QUANTITY OF LIGHT POLE FOUNDATION REPAIR HAS BEEN PROVIDED. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE ESTIMATED GENERAL SUMMARY.

ITEM	DESCRIPTION	TOTAL	UNIT
625	LIGHT POLE FOUNDATION REPAIR	1	EACH

ITEM 626 - BARRIER REFLECTOR:

AN ESTIMATED QUANTITY OF BARRIER REFLECTORS HAVE BEEN PROVIDED FOR LOCATIONS THAT ARE RECEIVING NEW GUARDRAIL. AN ESTIMATED QUANTITY OF GROUND MOUNTED DELINEATORS HAVE BEEN PROVIDED TO BE INSTALLED AT THE HEAD OF REPAIRED TYPE E UNITS, AS DIRECTED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE ESTIMATED GENERAL SUMMARY.

ITEM	DESCRIPTION	TOTAL	UNIT
620	DELINEATOR, POST GROUND MOUNTED	1	EACH
626	BARRIER REFLECTOR, TYPE 2, 1-WAY	20	EACH

ITEM 659 - SEEDING AND MULCHING:

AREAS DISTURBED BY GUARDRAIL ACTIVITIES AND AREAS WHERE EMBANKMENT HAVE BEEN PLACED SHALL BE SEEDED AND MULCHED. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN PROVIDED:

ITEM	DESCRIPTION	TOTAL	UNIT
659	TOPSOIL	6.0	CU YD
659	SEEDING AND MULCHING, CLASS 2	375	SQ YD
659	COMMERCIAL FERTILIZER	0.01	TON
659	LIME	0.02	ACRE
659	WATER	1	MGAL

ITEM SPECIAL - 690 - MISC.:CONCRETE REPAIR:

THIS ITEM SHALL BE AS SPECIFIED IN 622.01 THROUGH 622.07 OF THE CMS AND SHALL INCLUDE THE REMOVAL AND ALL WORK NECESSARY TO REPAIR OR REPLACE SECTIONS OF CONCRETE BARRIER WALL, BARRIER END SECTIONS, NOISE WALLS AND CONCRETE SUPERSTRUCTURE PARAPETS. THE PROPOSED TYPE OF CONCRETE BARRIER WILL MATCH THE EXISTING DESIGN BUT NOT LIMITED TO THE FOLLOWING STANDARD DRAWINGS:
 RM-4.3, RM-4.4, RM-4.5, RM-4.6, BR-1

IN THE EVENT THAT A UTILITY WITHIN THE BARRIER HAS BEEN DAMAGED, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO ADVISE THE DEPARTMENT OF THE NEEDED UTILITY REPAIR. IN THE EVENT THAT THIS IS AN EMERGENCY REPAIR ITEM, THE CONTRACTOR SHALL HAVE THE GIVEN 72 HOURS TO BEGIN WORK. THIS TIME SHALL BEGIN ONCE NOTIFIED OF THE UTILITY REPAIR COMPLETED.

THE DEPARTMENT WILL MEASURE CONCRETE BARRIER AND CONCRETE SUPERSTRUCTURE PARAPET BY THE AMOUNT OF CUBIC YARD COMPLETED AND ACCEPTED AND CONCRETE BARRIER END SECTIONS BY EACH. THIS ITEM SHALL BE BID TO INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND HARDWARE NECESSARY FOR THE REMOVAL OF DAMAGED BARRIER AND INSTALLATION. INSTALLATION AND REPAIR SHALL INCLUDE ALL INCIDENTALS SUCH AS DOWELED REINFORCING STEEL AND AS SPECIFIED IN 622.09. THE FOLLOWING HAS BEEN PROVIDED AND CARRIED TO THE ESTIMATED GENERAL SUMMARY:

ITEM	DESCRIPTION	TOTAL	UNIT
690	SPECIAL-MISC.: CONCRETE BARRIER END SECTION	1	EACH
690	SPECIAL-MISC.: CLASS QC1, CONCRETE BARRIER REPAIR	23	CU YD
690	SPECIAL-MISC.: CLASS QC2, SUPERSTRUCTURE PARAPET REPAIR	3	CU YD

GENERAL NOTES

DESIGN AGENCY



DESIGNER
DKR
REVIEWER

PROJECT ID
117450

SHEET TOTAL
P.12 22