

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.

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

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A MASH 2016 APPROVED TYPE 1 IMPACT ATTENUATOR 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.

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.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A MASH 2016 APPROVED GUARDRAIL END TERMINAL 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.

PAVING UNDER GUARDRAIL

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 (449), UNDER GUARDRAIL.

SPRING DRAINS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR DRAINING ANY SPRINGS SHOWN IN THE PLAN OR ENCOUNTERED DURING CONSTRUCTION. THE FOLLOWING PIPE MATERIALS ARE PERMITTED: 707.33, 707.41, 707.42 or 707.45 PERFORATED PER 707.31.

CONSTRUCT SPRING DRAINS PER STANDARD CONSTRUCTION DRAWING DM-1.1 AND PAID FOR AT THE CONTRACT PRICE FOR:

ITEM 605 - 6" UNCLASSIFIED PIPE UNDERDRAINS FOR SPRINGS ----- 2400 FT.
ITEM 605 - AGGREGATE DRAINS FOR SPRINGS ----- 400 FT.
ITEM 611 - PRECAST REINFORCED CONCRETE OUTLET ----- 20 EACH

ITEM 611 - CONDUIT BORED OR JACKED

WHERE IT IS SPECIFIED THAT A CONDUIT BE INSTALLED BY THE METHOD OF BORING OR JACKING, NO TRENCH EXCAVATION SHALL BE CLOSER THAN 30 FEET TO THE EDGE OF PAVEMENT (NEAREST RAIL). PROVIDE A STEEL CASING PIPE CONFORMING TO 748.06. JOINTS WITH A CIRCUMFERENTIAL FULLY PENETRATING B-U4B WELD THAT IS PERFORMED BY A CERTIFIED WELDER FOR WELDING CODE AMERICAN WELDING SOCIETY (AWS) D1.1 OR MACHINED INTERLOCKING JOINTS ARE PERMITTED.THE INSTALLED CASING PIPE IS THE STORM WATER CONVEYANCE CARRIER UNLESS OTHERWISE SPECIFIED IN THE PLANS. HYDROSTATIC TESTING IS NOT REQUIRED FOR THE CASING PIPE.

PAVEMENT REMOVED

WHERE THE TYPICAL SECTIONS AND CROSS SECTIONS FOR US 33 SHOW PAVEMENT TO BE REMOVED, THE CONTRACTOR SHALL REMOVE THE EXISTING CONCRETE PAVEMENT ONLY. THE EXISTING AGGREGATE BASE SHALL REMAIN IN PLACE TO ALLOW FOR CONTINUED SUBSURFACE DRAINAGE.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BACKFILL THE VOIDS CREATED BY THE REMOVAL OF THE CONCRETE.

ITEM 203 - EMBANKMENT ----- 10675 CY

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, NOTIFY THE ENGINEER BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, NOTIFY THE ENGINEER BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE IS INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

REVIEW OF DRAINAGE FACILITIES

PRIOR TO THE START OF WORK AND AGAIN BEFORE FINAL ACCEPTANCE, PERFORM AN INSPECTION WITH REPRESENTATIVES OF THE DEPARTMENT, CONTRACTOR AND LOCALS OF ALL EXISTING DRAINAGE FACILITIES THAT ARE TO REMAIN IN SERVICE WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES IS DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION ARE MAINTAINED BY THE DEPARTMENT.

CONFIRM ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE-MENTIONED PARTIES ARE MAINTAINED AND LEFT IN A CONDITION COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. THE CONTRACTOR IS RESPONSIBLE TO CORRECT ANY CHANGE IN THE CONDITION RESULTING FROM THEIR OPERATIONS AS DIRECTED AND APPROVED BY THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE IS INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEMS.

DRAINAGE TRENCH (WITHIN CLEAR ZONE)

THE TRENCH FOR DRAINAGE STRUCTURES AND CONDUITS SHALL BE BACKFILLED OR COVERED WITH A STEEL PLATE AT THE END OF EACH WORK DAY. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT.

IN CEASE WORK MUST BE SUSPENDED BECAUSE OF INCLEMENT WEATHER OR OTHER REASONS, THE EXCAVATION FOR THE UNCOMPLETED WORK SHALL BE BACKFILLED OR COVERED AT THE DIRECTION OF THE ENGINEER.

PAYMENT FOR THIS WORK IS INCLUDED IN THE VARIOUS DRAINAGE ITEMS AND SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

EXISTING UNDERDRAINS

UNLESS SPECIFICALLY CALLED OUT TO BE REMOVED, EXISTING UNDERDRAINS SHALL REMAIN IN PLACE AND UNDISTURBED. IF EXISTING UNDERDRAINS ARE ENCOUNTERED DURING EXCAVATION, POSITIVE DRAINAGE SHALL BE MAINTAINED. THE FOLLOWING QUANTITY IS PROVIDED IN THE GENERAL SUMMARY TO BE USED TO REPAIR OR EXTEND EXISTING UNDERDRAINS AT THE DIRECTION OF THE ENGINEER.

ITEM 611 - 4" CONDUIT, TYPE F ----- 500 FT

SHOULDER RUMBLE STRIPS

THE CONTRACTOR SHALL INSTALL RUMBLE STRIPS ON THE OUTSIDE AND MEDIAN SHOULDERS ALONG THE LENGTH OF THE PROJECT PER SCD BP-9.1.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THIS WORK.

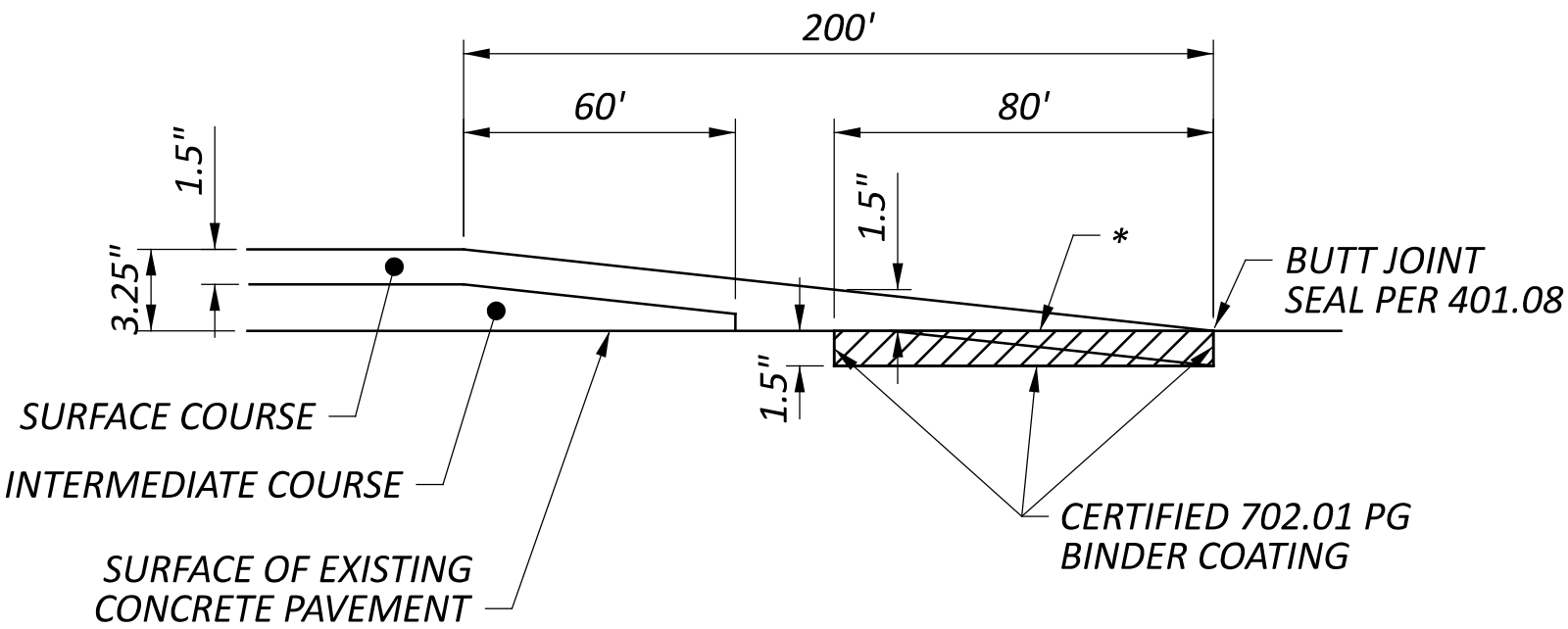
ITEM 618 - RUMBLE STRIPS, SHOULDER (ASPHALT CONCRETE) ----- 37 MILE

ODOT EXCESS LAND

SHEETS SHOWING EXCESS LAND PARCELS OWNED BY THE STATE OF OHIO HAVE BEEN INCLUDED IN THE REFERENCE DOCUMENTS. THE CONTRACTOR HAS THE OPTION TO USE THESE PARCELS FOR WASTE OR BORROW OPERATIONS. THE CONTRACTOR SHALL FOLLOW C&MS 107.11 FOR REQUESTING THE USE OF STATE OF OHIO PROPERTY. ENVIRONMENTAL CLEARANCES HAVE NOT BEEN OBTAINED AND WOULD BE THE RESPONSIBILITY OF THE CONTRACTOR.

THE \$0.50 PER CUBIC YARD FEE ASSOCIATED WITH WASTE AND BORROW ON ODOT RIGHT OF WAY PER C&MS 107.11 SHALL BE WAIVED. ALL OTHER C&MS REQUIREMENTS APPLY.

BUTT JOINT AT BRIDGES



* REMOVE ACCORDING TO ITEM 202 WEARING COURSE REMOVED. REPLACE WITH THE PLAN-SPECIFIED SURFACE COURSE ASPHALT ITEM. PAYMENT FOR REMOVAL IS INCLUDED WITH THE SURFACE COURSE ITEMS UNLESS OTHERWISE DESIGNED ON THE PLANS.

BUTT JOINT AT BRIDGES
N.T.S.

GUARDRAIL ALONG T.R. 134

THE CONTRACTOR SHALL INSTALL GUARDRAIL ALONG THE WEST SIDE OF T.R. 134 ALONG THE EXISTING BRIDGE PIERS AND SHALL INCLUDE TWO 25 FOOT RADII AT THE ENDS AND IS TO BE LOCATED AS DIRECTED BY THE ENGINEER.

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY TO COMPLETE THIS WORK:

ITEM 606 - GUARDRAIL, TYPE MGS ----- 150 FT

DESIGN AGENCY



1500 LAKE SHORE DRIVE,
SUITE 100
COLUMBUS, OH 43204
(614) 486-4383

DESIGNER

SLP

REVIEWER

ALB 11/22/24

PROJECT ID

119144

SHEET

P.20

TOTAL

940

SHEET NUM.														PART.		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
P.5	P.19	P.20	P.21	P.21A	P.74	P.75	P.77	P.79	P.81	P.326	P.680	P.684	P.867	01/NHS/03	02/NHS/04						
																				ROADWAY	
	LS					8		42,725 2,347						LS 8	42,725 2,347	201 202	11001 23000 23500	LS 42,733 2,347		CLEARING AND GRUBBING, AS PER PLAN PAVEMENT REMOVED WEARING COURSE REMOVED	P.19
											673 1,331			673 1,331		202 202	35100 35101	673 1,331	FT FT	PIPE REMOVED, 24" DIAMETER AND UNDER PIPE REMOVED, 24" DIAMETER AND UNDER, AS PER PLAN	P.21
											26			26 32	29,780	202 202	35200 38000	26 29,812	FT FT	PIPE REMOVED, OVER 24" DIAMETER GUARDRAIL REMOVED	
					29,812 2									2 13 80		202 202 SPECIAL	42000 58100 20270000	2 13 80	EACH EACH FT	ANCHOR ASSEMBLY REMOVED, TYPE A CATCH BASIN REMOVED FILL AND PLUG EXISTING CONDUIT, 15"	P.21
											109			109		SPECIAL	20270000	109	FT	FILL AND PLUG EXISTING CONDUIT, 24"	P.21
					5,569									5,569 LS 1		202 202 SPECIAL	75000 98000 20307510	5,569 LS 1	FT FT EACH	FENCE REMOVED REMOVAL MISC.: CROSSOVER REMOVAL PIEZOMETER	P.21 P.21
			LS 1		2,144,170	1,306								2,145,476		203	10000	2,145,476	CY	EXCAVATION	
		10,675			576,664	773								588,112 9		203 SPECIAL	20000 20365000	588,112 9	CY EACH	EMBANKMENT SETTLEMENT PLATFORM	P.21A
	63,363 10,901 10,901			9		2,487	224,757							290,607 10,901 10,901		204 204 204	10000 13000 30010	290,607 10,901 10,901	SY CY CY	SUBGRADE COMPACTION EXCAVATION OF SUBGRADE GRANULAR MATERIAL, TYPE B	
					1,073									1,073 97		204 204	30040 45000	1,073 97	CY HOUR	GRANULAR MATERIAL, TYPE E (NO. 2 STONE) PROOF ROLLING	
	97 1,732				532									2,264 LS LS		204 208 208	50000 10000 12000	2,264 LS LS	SY	GEOTEXTILE FABRIC PRE-BLAST CONDITION SURVEY BLASTING CONSULTANT	
										373				LS LS 373 LS		208 208 208 208	13000 14000 15000 16000	LS LS 373 LS		AIR BLAST AND NOISE CONTROL VIBRATION CONTROL AND MONITORING PRESPLITTING HYDROLOGIST	
					228										228	209	15000	228	STA	RESHAPING UNDER GUARDRAIL	
					569 30,762.5 200 3,162.5 20									10,337.5 200 1,787.5 10	569 20,575 1,375 10	209 606 606 606	70000 15050 15100 15400 17500	569 30,912.5 200 3,162.5 20	CY FT FT FT EACH	BORROW GUARDRAIL, TYPE MGS GUARDRAIL, TYPE MGS WITH LONG POSTS MGS GUARDRAIL, TYPE 8 POST END ANCHOR (OR CONCRETE BLOCK END ANCHOR)	
		150			12 30 15 2 6									4 13 6 2 3	8 17 9 9 3	606 606 606 606 606	26150 26500 35002 35102 60002	12 30 15 2 6	EACH EACH EACH EACH EACH	ANCHOR ASSEMBLY, MGS TYPE E (MASH 2016) ANCHOR ASSEMBLY, TYPE T MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1 MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2 IMPACT ATTENUATOR, TYPE 1 (UNIDIRECTIONAL) (MASH 2016)	
104													5,438	5,438 104		607 623	15000 40500	5,438 104	FT EACH	FENCE, TYPE 47 REFERENCE MONUMENT, TYPE A, DESIGN CAP 6	
					423									423		601	21100	423	SY	EROSION CONTROL SLOPE PROTECTION, MISC.: SEEDING AND EROSION CONTROL WITH TURF REINFORCING MAT, TYPE 3 AND PERCUSSION DRIVEN EARTH ANCHORS	P.21
											24	1,373		1,397 12		601 659	32200 00100	1,397 12	CY EACH	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER SOIL ANALYSIS TEST	
			11			1			14,647					14,647 728,240		659 659	00300 10000	14,647 728,240	CY SY	TOPSOIL SEEDING AND MULCHING	
					185,647									185,647 45,694 45,694		659 659 659	10001 14000 15000	185,647 45,694 45,694	SY SY SY	SEEDING AND MULCHING, AS PER PLAN REPAIR SEEDING AND MULCHING INTER-SEEDING	P.21
				45,643 45,643 128 189		51 51 2 1								130 190		659 659	20000 31000	130 190	TON ACRE	COMMERCIAL FERTILIZER LIME	
				5,053 2,054		8 1								5,061 2,055 131,824		659 659 670	35000 40000 00500	5,061 2,055 131,824	MGAL MSF SY	WATER MOWING SLOPE EROSION PROTECTION	

GENERAL SUMMARY

DESIGN AGENCY



Stantec

1500 LAKE SHORE DRIVE,
SUITE 100
COLUMBUS, OH 43204
(614) 486-4383

DESIGNER

SLP

REVIEWER

ALB 11/22/24

PROJECT ID

119144

SHEET

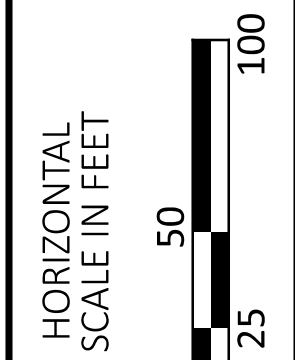
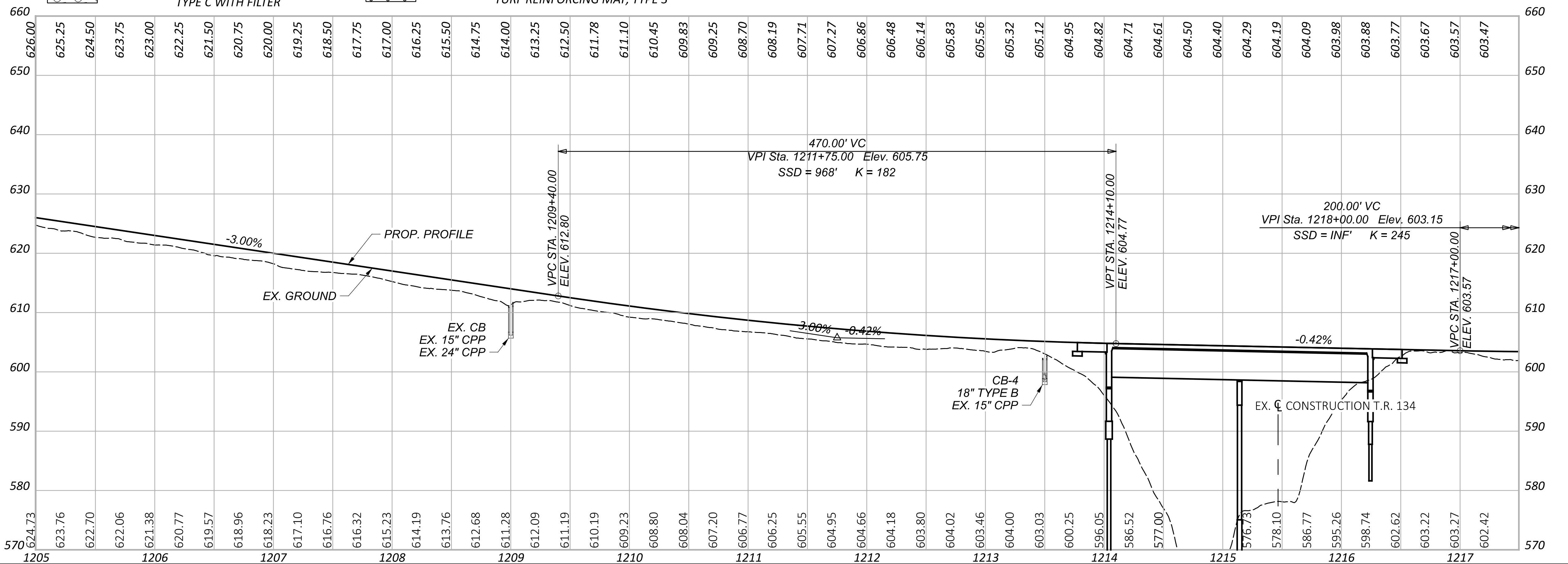
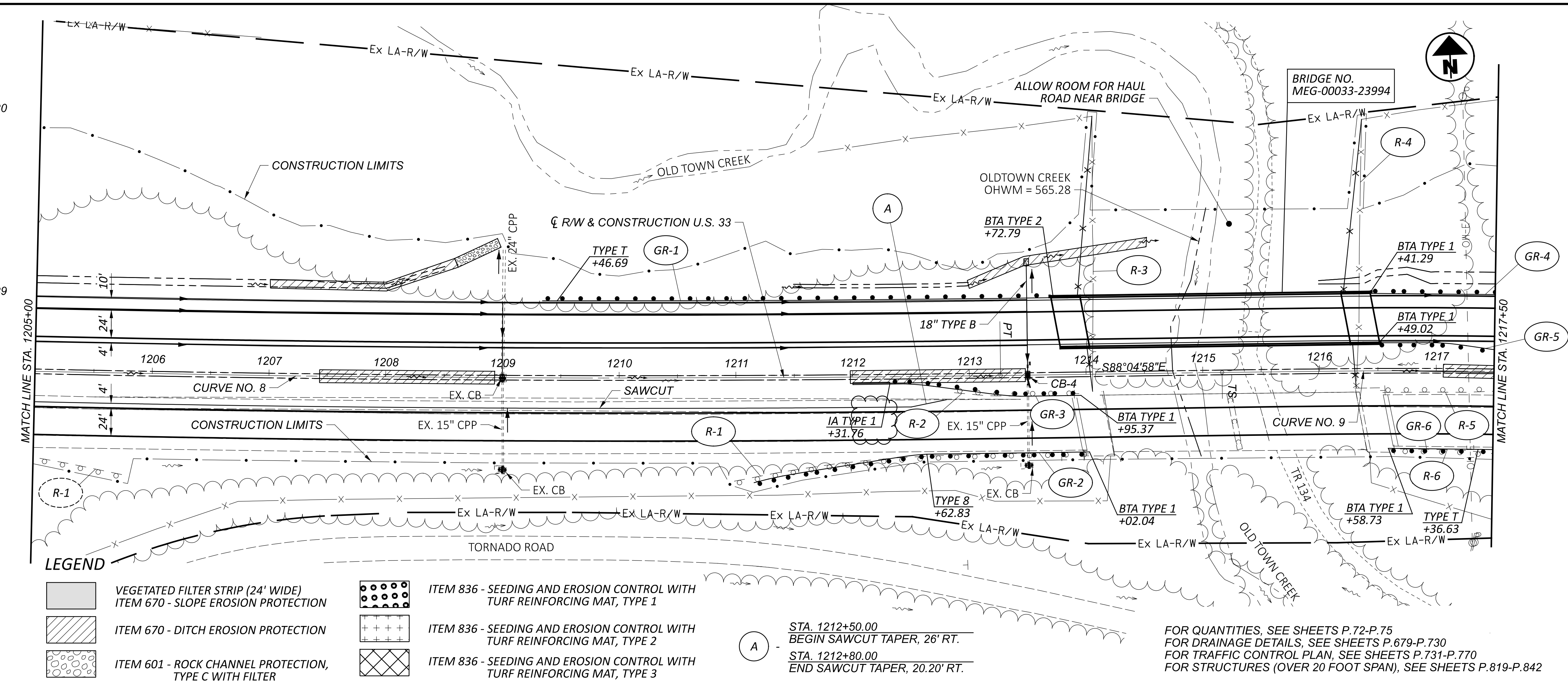
P.66

TOTAL

940

CURVE DATA
U.S. 33
CURVE NO. 8
P.I. = STA. 1208+22.30
 $\Delta = 02^{\circ}31'23''$ LT
 $D_c = 00^{\circ}15'00''$
 $R = 22,917.13'$
 $T = 504.67'$
 $L = 1,009.17'$
 $E = 5.56'$
PC STA. 1203+17.63
PT STA. 1213+26.80

CURVE DATA
U.S. 33
CURVE NO. 9
P.I. = STA. 1236+85.39
 $\Delta = 75^{\circ}51'53''$ RT
 $D_c = 02^{\circ}15'00''$
 $R = 2,546.48'$
 $L_s = 365.00'$
 $\Theta_s = 04^{\circ}06'22''$
 $LT = 243.40'$
 $L_c = 3,006.77'$
 $T_s = 2,168.86'$
 $E_s = 684.84'$
 $E_{max} = 0.063$
TS STA. 1215+16.52
SC STA. 1218+81.52
CS STA. 1248+88.29
ST STA. 1252+53.29



PLAN AND PROFILE - U.S. 33
STA. 1205+00.00 TO STA. 1217+50.00

DESIGN AGENCY



1500 LAKE SHORE DRIVE,
SUITE 100
COLUMBUS, OH 43204
(614) 486-4383

DESIGNER

SLP

REVIEWER

ALB 11/22/24

PROJECT ID

119144

SHEET

P.122

TOTAL

940