

I:\ProjectData\CLE\05333\_CLE\_WAR-CULVERTS-FY2021\Design\Drainage\Sheets\05333\_GG001.dgn Sheet 3/5/2021 10:04:02 AM mbailey5

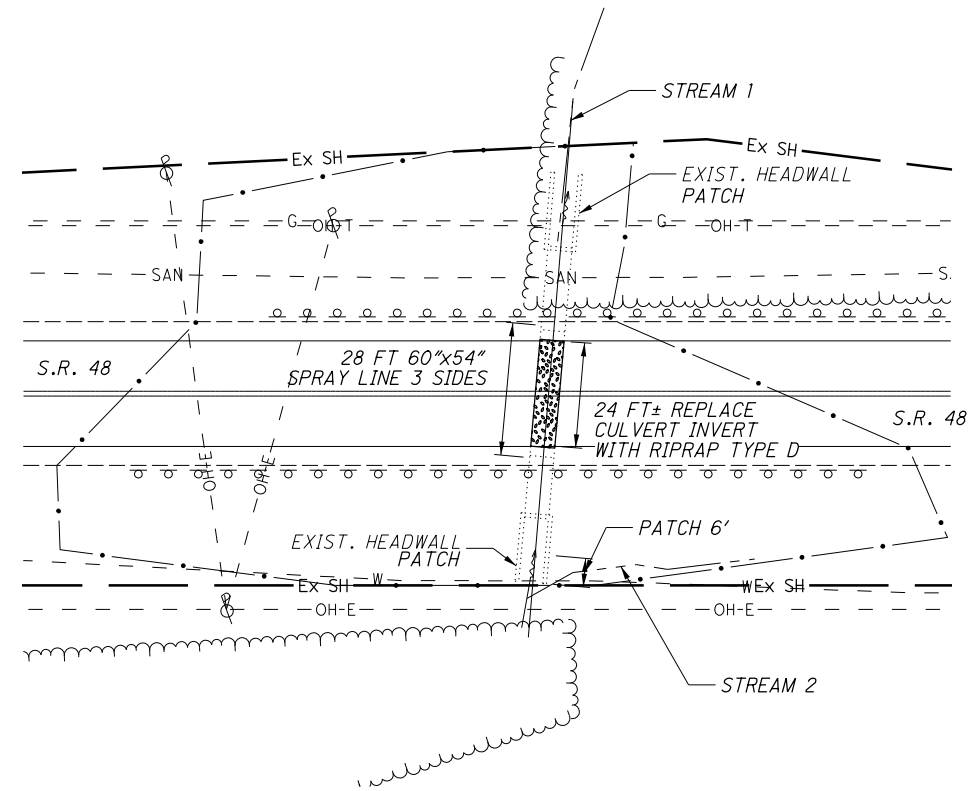
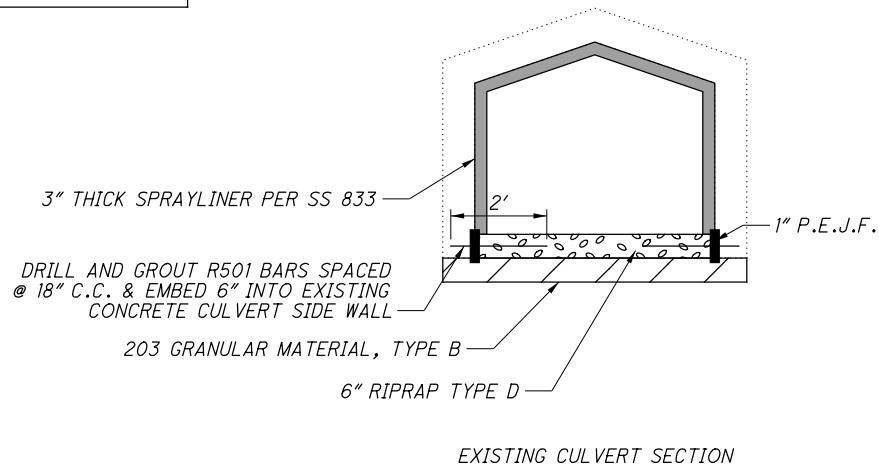
SHEET NUM.												PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
4	5	9	10	11	12	13	14	15	16	18	19	01/SK2/C V	02/NHS/C V	03/NFA/C V						
												LUMP	LUMP	LUMP	201	11000	LS		<b>ROADWAY</b>	
												LUMP			202	11000	LS		CLEARING AND GRUBBING	
													LUMP		202	11000	LS		STRUCTURE REMOVED	
															SPECIAL	20270130	94	FT	PIPE CLEANOUT OVER 48"	10
															SPECIAL	20270120	102	FT	PIPE CLEANOUT, 27" TO 48"	12,15,19
															202	35100	52	FT	PIPE REMOVED, 24" AND UNDER	
															202	20010	3	EACH	HEADWALL REMOVED	
															202	38000	162	FT	GUARDRAIL REMOVED	
															202	42010	4	EACH	ANCHOR ASSEMBLY REMOVED, TYPE E	
															203	20000	44	CY	EMBANKMENT	
															203	35110	2.8	CY	GRANULAR MATERIAL, TYPE B	
															606	15100	375	FT	GUARDRAIL, TYPE MGS WITH LONG POSTS	
															606	26150	3	EACH	ANCHOR ASSEMBLY, MGS TYPE E, NCHRP 350 OR MASH 2016	
															606	26550	1	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
															623	40520	16	EACH	RIGHT-OF-WAY MONUMENT	
												LUMP	LUMP	LUMP	503	11101	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	4
																			<b>EROSION CONTROL</b>	
												2,000	2,000	2,000	832	30000	6,000	EACH	EROSION CONTROL	
															601	11000	13.3	SY	RIPRAP, TYPE D	
															601	32200	3.5	CY	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
															601	32100	82.4	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	
															659	00300	414	CY	TOPSOIL	
															659	10000	3,730	SY	SEEDING AND MULCHING	
															659	14000	24	SY	REPAIR SEEDING AND MULCHING	
															659	20000	0.51	TON	COMMERCIAL FERTILIZER	
															659	31000	0.77	ACRE	LIME	
															659	35000	20.1	MGAL	WATER	
																			<b>DRAINAGE</b>	
															602	20000	35.29	CY	CONCRETE MASONRY	
															602	20001	0.3	CY	CONCRETE MASONRY, AS PER PLAN	19
															611	04600	11	FT	12" CONDUIT, TYPE C	
															611	07400	28	FT	18" CONDUIT, TYPE B	
															611	08200	22	FT	18" CONDUIT, TYPE F, 707.05 TYPE C OR 707.21	
															SPECIAL	61196650	5	CY	GROUTING VOIDS AROUND CORRUGATED METAL PIPES	11
															611	96550	102	FT	FIELD PAVING OF EXISTING PIPE, 42" ROUND CMP	
															611	98510	1	EACH	CATCH BASIN, NO. 2-3	
															611	23600	47	FT	60" CONDUIT, TYPE A, 707.01 ALUMINIZED, 706.02, 707.33	
															611	99920	LS		DRAINAGE STRUCTURE, MISC.; 2"x3/8" STEEL STRAPS	19
															833	12000	28	FT	CONDUIT RENEWAL USING SPRAY APPLIED STRUCTURAL LINER, ARCH, 60"x54" THREE SIDED	
															843	50000	30	SF	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR	
															899	10000	46	FT	CURED-IN-PLACE PIPE LINER 15" CMP	
															899	10000	118	FT	CURED-IN-PLACE PIPE LINER, 36" CMP	
																			<b>PAVEMENT</b>	
															202	23000	155	SY	PAVEMENT REMOVED	
															204	10000	155	SY	SUBGRADE COMPACTION	
															254	01000	136	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 1.25" DEPTH	
															301	46000	34	CY	ASPHALT CONCRETE BASE, PG64-22	
															304	20000	26	CY	AGGREGATE BASE	
															407	10000	30	GAL	TACK COAT	
															441	50000	18	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
																			<b>TRAFFIC CONTROL</b>	
															614	11110	40	HR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
															621	00100	1	EACH	RPM	
															621	54000	1	EACH	RAISED PAVEMENT MARKER REMOVED	
															626	00110	4	EACH	BARRIER REFLECTOR, TYPE 2 BIDIRECTIONAL	
															642	00104	0.04	MILE	EDGE LINE, 6", TYPE 1	
															642	00300	0.02	MILE	CENTER LINE, TYPE 1	
																			<b>STRUCTURE 20 FOOT SPAN AND UNDER (WAR-48-1682)</b>	
															509	10000	82	LB	EPOXY COATED REINFORCING STEEL	
															510	10000	39	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
															516	13600	29	SF	1" PREFORMED EXPANSION JOINT FILLER	
																			<b>INCIDENTALS</b>	
												LUMP	LUMP	LUMP	624	10000	LS		MOBILIZATION	
												LUMP	LUMP	LUMP	614	11000	LS		MAINTAINING TRAFFIC	
												LUMP	LUMP	LUMP	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	

**GENERAL SUMMARY**

**CLE / WAR CULVERTS  
FY21**

PROJECT EARTH DISTURBED AREA: 0.20 ACRES  
 ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.0 ACRES  
 NOTICE OF INTENT EARTH DISTURBED AREA: NO NOI REQUIRED (ROUTINE MAINTENANCE)

EXISTING STRUCTURE	
CFN	1856021
TYPE:	ARCH
SIZE:	60" x 54", 61' LONG
SKEW:	0°
ALIGNMENT:	TANGENT
DATE BUILT:	1917
CONDITION:	POOR
LATITUDE:	N 39° 27' 49.16"
LONGITUDE:	W 84° 12' 11.46"
STREAM:	STREAM 1 & STREAM 2
OHWM:	STREAM 1 - 873.07 STREAM 2 - 873.50



**REHABILITATE CULVERT WAR-48-1682 BY PERFORMING THE FOLLOWING WORK:**

1. REMOVE ALL LOOSE CONCRETE AND SANDBLAST EXPOSED REINFORCING REBAR PRIOR TO CONCRETE PLACEMENT.
2. PROVIDE RIPRAP TYPE D WITH WIRE MESH ALONG DETERIORATED CULVERT INVERT.
3. PROVIDE A STRUCTURAL SPRAYLINER WITH A MINIMUM THICKNESS OF 3" ON SIDES AND TOP IN THE MIDDLE SECTION OF CULVERT PER SUPPLEMENTAL SPECIFICATION 833 AND WITH WELDED WIRE FABRIC.
4. REPAIR ALL DETERIORATED WINGWALLS USING TROWELABLE MORTAR PER SUPPLEMENTAL SPECIFICATION 843.

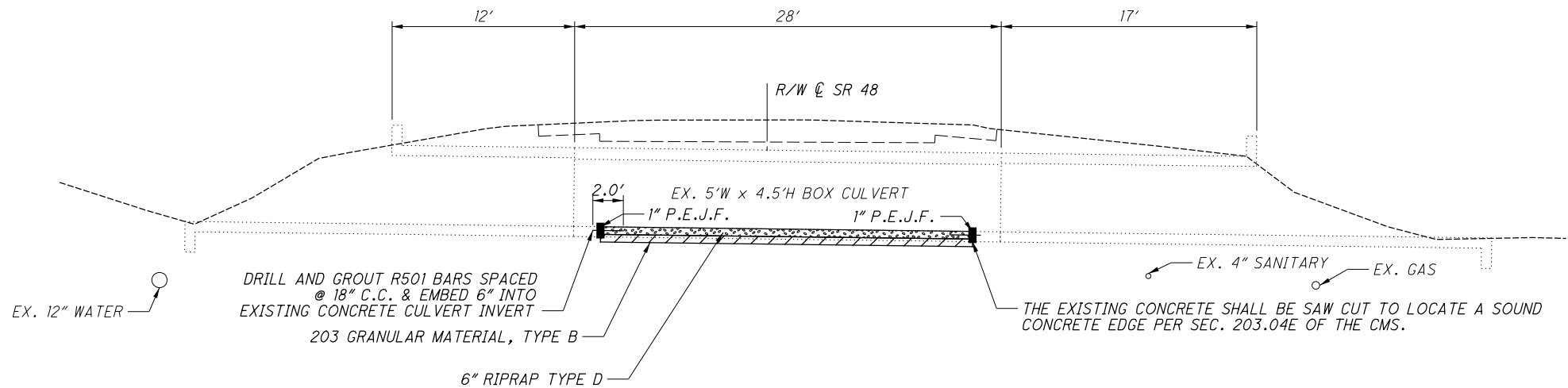
**ITEM SPECIAL - PIPE CLEANOUT**

THIS ITEM SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

**EXISTING STRUCTURE VERIFICATION**

DETAILS AND DIMENSIONS SHOWN ON THESE PROPOSED PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, SUCH DETAILS AND DIMENSIONS ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.04. BASE THE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.



ESTIMATED QUANTITIES (WAR-48-1682)			
ITEM	GRAND TOTAL	UNIT	DESCRIPTION
202	61	FT	SPECIAL - PIPE CLEANOUT, 48" AND OVER
203	2.8	CY	GRANULAR MATERIAL, TYPE B
503	LUMP	LS	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN
509	82	LB	EPOXY COATED REINFORCING STEEL
510	39	EA	DOWEL HOLES WITH NONSHRINK NONMETALLIC GROUT
516	27	SF	1" PREFORMED EXPANSION JOINT FILLER
611	13.3	SY	RIPRAP, TYPE D
833	28	FT	CONDUIT RENEWAL USING SPRAY APPLIED LINER, 60" X 54" THREE SIDED CONCRETE STRUCTURE
843	15	SF	PATCHING CONC. STRUCTURES WITH TROWABLE MORTOR



CALCULATED  
MLB  
CHECKED  
TRB

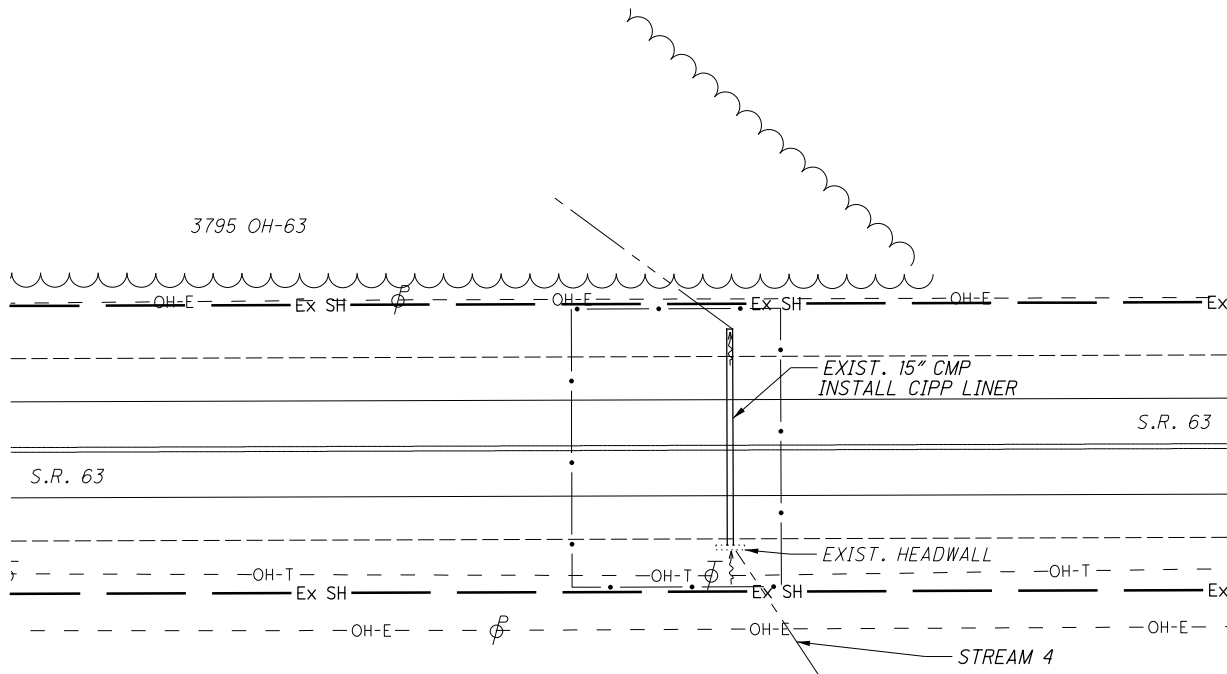
WAR-48-1682  
CULVERT PLAN AND DETAILS

CLE / WAR CULVERTS  
FY21

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PROJECT EARTH DISTURBED AREA: 0.06 ACRES  
 ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.0 ACRES  
 NOTICE OF INTENT EARTH DISTURBED AREA: NO NOI REQUIRED  
 (ROUTINE MAINTENANCE)

EXISTING STRUCTURE	
CFN	1856048
TYPE:	ROUND CMP
SIZE:	15", 46' LONG
SKEW:	0°
ALIGNMENT:	TANGENT
DATE BUILT:	1939
CONDITION:	CRITICAL
LATITUDE:	N 39° 26' 21.48"
LONGITUDE:	W 84° 18' 5.68"
STREAM:	STREAM 4
OHWM:	757.83 (INVERT ELEVATION)



**ITEM SPECIAL - GROUTING VOIDS AROUND CORRUGATED METAL PIPES**

FILL VOIDS AROUND THE EXTERIOR OF THE EXISTING CORRUGATED METAL PIPE WITH GROUT.

USE SOUNDING (TAPPING METAL WITH HAMMER) OR OTHER APPROVED METHOD TO DETERMINE THE PROPER LOCATION OF 6"x6" CUT-OUTS ON THE CIRCUMFERENCE. BEFORE BEGINNING CUTTING OPERATIONS, FINAL LOCATIONS OF THE CUT-OUTS SHALL BE APPROVED BY THE ENGINEER. INSTALL GROUT PLUGS IN ALL CUT-OUTS. POUR OR PUMP LEAN GROUT PER ITEM 613 LOW STRENGTH MORTOR BACKFILL, TYPE 1 INTO THE CUT-OUT TO FILL ANY VOIDS. MONITOR THE EXISTING CONDUIT TO ENSURE THAT EXCESSIVE PRESSURE DOES NOT CAUSE DEFORMATION TO THE PIPE. IN AREAS OF SEVERE SECTION LOSS OF THE EXISTING INVERT, PROVIDE BRACING AS NECESSARY TO PREVENT DEFORMATION OF THE EXISTING PIPE. REPAIR ANY DAMAGES TO THE EXISTING PIPE AT NO ADDITIONAL COST.

REUSE AND WELD BACK THE CUT-OUTS AFTER GROUTING OPERATIONS HAVE BEEN COMPLETED. BUTT WELD ALL AROUND THE PERIMETER OF THE 6"x6" CUT-OUT.

PAYMENT FOR THE GROUT/LSM, REMOVAL OF 6"x6" SECTIONS OF EXISTING PIPE, BRACING, REATTACHING CUT-OUTS BY WELDING AND ALL OTHER LABOR, EQUIPMENT AND MATERIALS REQUIRED TO COMPLETE THE WORK SHALL BE INCLUDED IN UNIT PRICE BID FOR ITEM SPECIAL - GROUTING VOIDS AROUND CORRUGATED METAL PIPES.

**EXISTING STRUCTURE VERIFICATION**

DETAILS AND DIMENSIONS SHOWN ON THESE PROPOSED PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, SUCH DETAILS AND DIMENSIONS ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.04. BASE THE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

**REHABILITATE CULVERT WAR-63-0199 BY PERFORMING THE FOLLOWING WORK:**

- CLEAN CULVERT INTERIOR OF SEDIMENT AND DEBRIS.
- FILL INVERT HOLES AT OUTLET AND INLET WITH MORTAR PRIOR TO LINING.
- INSTALL CURED IN PLACE LINER (CIPP).

ESTIMATED QUANTITIES (WAR-63-0199)			
ITEM	GRAND TOTAL	UNIT	DESCRIPTION
503	1	LS	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN
611	5	CY	SPECIAL-GROUTING VOIDS AROUND CORRUGATED METAL PIPES
899	46	FT	CURED IN PLACE PIPE LINER, 15" CMP



CALCULATED  
MLB  
CHECKED  
TRB

WAR-63-0199  
CULVERT PLAN AND DETAILS

CLE / WAR CULVERTS  
FY21

PROJECT EARTH DISTURBED AREA: 0.06 ACRES  
 ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.0 ACRES  
 NOTICE OF INTENT EARTH DISTURBED AREA: NO NOI REQUIRED

EXISTING STRUCTURE		PROPOSED STRUCTURE	
CFN:	1834566	TYPE:	1985923
TYPE:	ROUND CMP	TYPE:	CMP
SIZE:	24", 52' LONG	SIZE:	18", 52' LONG
SKEW:	45° LF	SKEW:	22° LF
ALIGNMENT:	TANGENT	ALIGNMENT:	BROKEN BACK
DATE BUILT:	1995	STREAM PH:	7
CONDITION:	SERIOUS	DESIGN SERVICE LIFE:	75 YEARS
LATITUDE:	N 38° 54' 8.25"	ABRASION LEVEL:	2
LONGITUDE:	W 84° 12' 13.32"		
STREAM:	STREAM 8		
OHWM:	713.88 (INVERT ELEVATION)		

HYDRAULIC DESIGN DATA	
DRAINAGE AREA:	= 7.3 ACRES
Q <sub>10</sub>	= 8.0 CFS
Q <sub>100</sub>	= 10.8 CFS
HW <sub>10</sub>	= 710.58 FT
HW <sub>100</sub>	= 711.7 FT
ROADWAY	= 713.2 FT
V <sub>25</sub>	= 16.7 FPS
V <sub>100</sub>	= 17.9 FPS

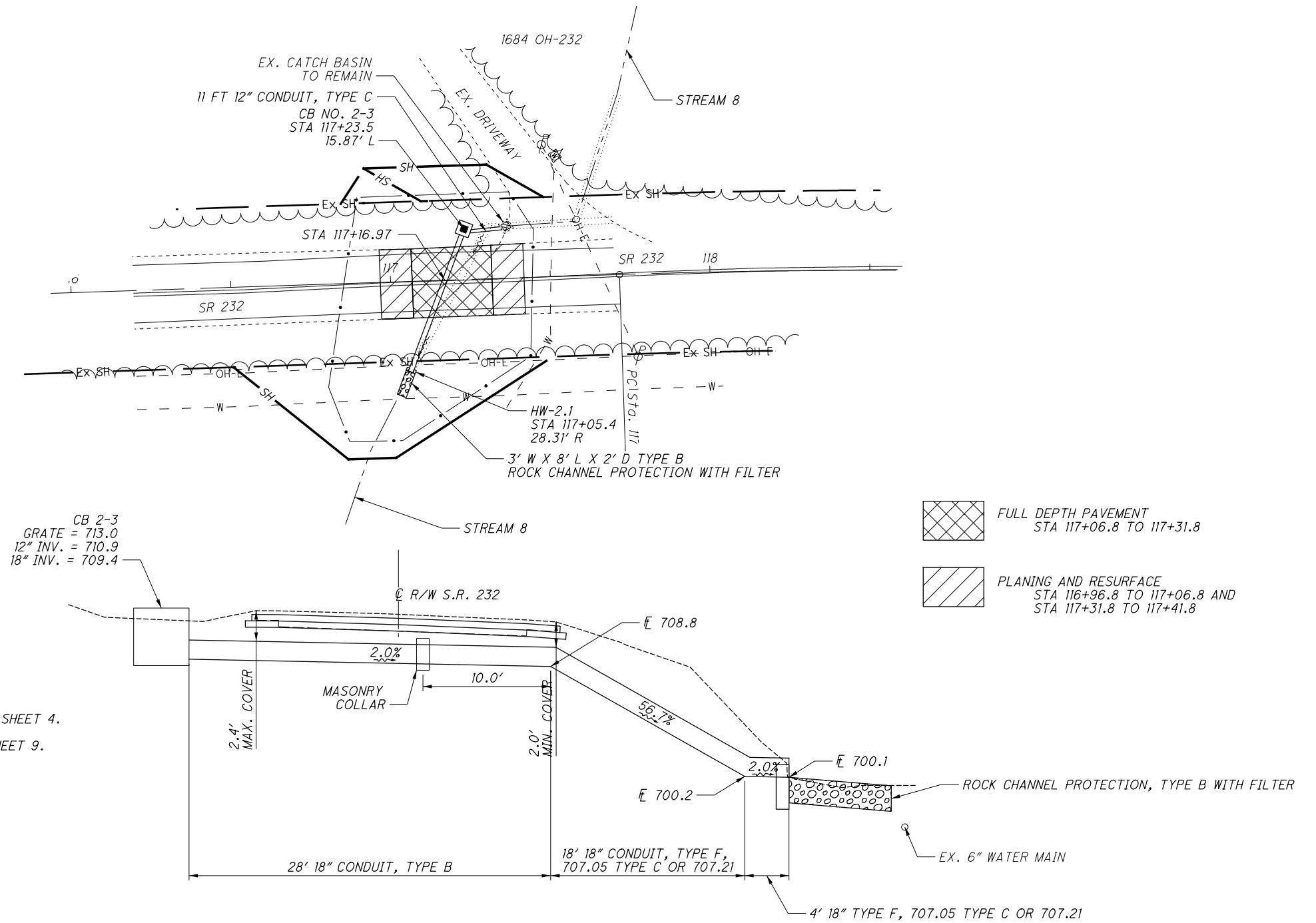
- NOTES:
- FOR SURVEY CONTROL POINTS SEE SHEET 4.
  - FOR PAVEMENT QUANTITIES SEE SHEET 9.

**REHABILITATE CULVERT CLE-232-0222 BY PERFORMING THE FOLLOWING WORK:**

- REMOVE EXISTING 24" CONDUIT.
- INSTALL CB 2-3 AT INLET AND CONNECT 12" CONDUIT TO EXISTING CB AT PRIVATE DRIVEWAY.
- INSTALL 18" BROKEN BACK CULVERT, HALF-HEIGHT HEADWALL AND RCP AT OUTLET.

**EXISTING STRUCTURE VERIFICATION**

DETAILS AND DIMENSIONS SHOWN ON THESE PROPOSED PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, SUCH DETAILS AND DIMENSIONS ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.04. BASE THE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.



ESTIMATED QUANTITIES (CLE-232-0219)			
ITEM	GRAND TOTAL	UNIT	DESCRIPTION
202	52	FT	PIPE REMOVED, 24" AND UNDER
503	1	LS	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN
601	1.8	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER
602	0.33	CY	CONCRETE MASONRY
611	11	FT	12" CONDUIT, TYPE C
611	28	FT	18" CONDUIT, TYPE B
611	22	FT	18" CONDUIT, TYPE F, 707.05 TYPE C OR 707.21
611	1	EA	CATCH BASIN, NO. 2-3
642	0.02	MI	EDGE LINE, 6", TYPE 1
642	0.01	MI	CENTER LINE, TYPE 1



CALCULATED  
MLB  
CHECKED  
TRB

**CLE-232-0219  
CULVERT PLAN AND DETAILS**

**CLE / WAR CULVERTS  
FY21**

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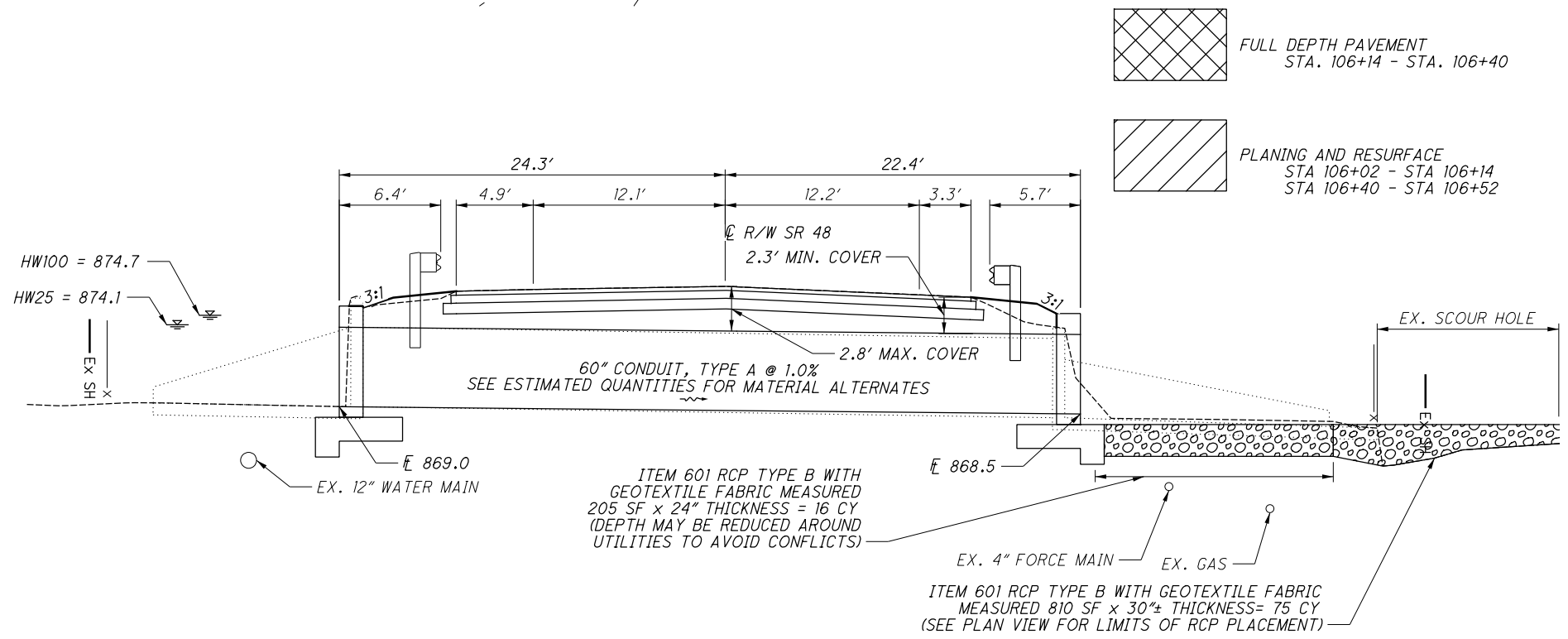
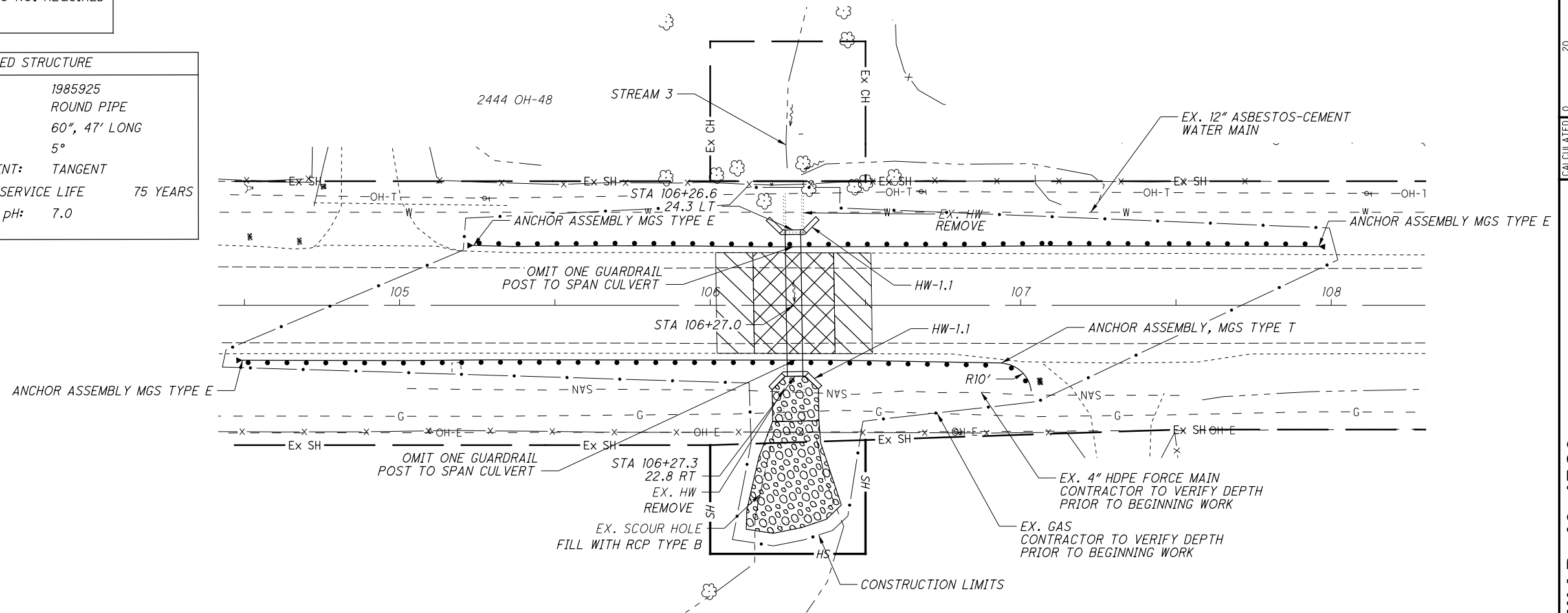
PROJECT EARTH DISTURBED AREA: 0.41 ACRES  
 ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.0 ACRES  
 NOTICE OF INTENT EARTH DISTURBED AREA: NO NOI REQUIRED

EXISTING STRUCTURE		PROPOSED STRUCTURE	
CFN	1857083	CFN	1985925
TYPE:	SLAB TOP	TYPE:	ROUND PIPE
SIZE:	60"x60", 50' LONG	SIZE:	60", 47' LONG
SKEW:	5°	SKEW:	5°
ALIGNMENT:	TANGENT	ALIGNMENT:	TANGENT
DATE BUILT:	1994	DESIGN SERVICE LIFE	75 YEARS
CONDITION:	POOR	STREAM pH:	7.0
LATITUDE:	N 39° 28' 17.81"		
LONGITUDE:	W 84° 12' 8.62"		
STREAM:	STREAM 3		
OHWM:	873.95 (INVERT ELEVATION)		

HYDRAULIC DESIGN DATA	
DRAINAGE AREA:	= 138.9 ACRES
Q <sub>25</sub>	= 106.7 CFS
Q <sub>100</sub>	= 129.5 CFS
HW <sub>25</sub>	= 874.1 FT
HW <sub>100</sub>	= 874.7 FT
ROADWAY	= 876.5 FT
V <sub>25</sub>	= 8.9 FPS
V <sub>100</sub>	= 9.6 FPS
OHWM	= 869.9

- NOTES:
- FOR SURVEY CONTROL POINTS SEE SHEET 4.
  - FOR PAVEMENT QUANTITIES SEE SHEET 9.

ESTIMATED QUANTITIES (WAR-48-1738)			
ITEM	GRAND TOTAL	UNIT	DESCRIPTION
201	LS	LUMP	CLEARING AND GRUBBING
202	2	EA	HEADWALL REMOVED
202	1	EA	STRUCTURE REMOVED
202	162	FT	GUARDRAIL REMOVED
202	4	EA	ANCHOR ASSEMBLY REMOVED, TYPE E
503	LS	LS	COFFERDAMS AND EXCAVATION BRACING, AS PE PLAN
601	75	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER FABRIC
602	31	CY	CONCRETE MASONARY
606	369	FT	GUARDRAIL, TYPE MGS WITH LONG POSTS
606	3	EA	ANCHOR ASSEMBLY, MGS TYPE E
606	1	EA	ANCHOR ASSEMBLY, TYPE T
611	47	FT	60" CONDUIT TYPE A, 707.01 ALUMINIZED, 706.02, OR 707.33
621	1	EA	RPM
621	1	EA	RAISED PAVEMENT MARKER REMOVED
642	0.02	MILE	EDGE LINE
642	0.01	MILE	CENTER LINE



WAR-48-1738  
 PLAN & PROFILE

CLE / WAR CULVERTS  
 FY21

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