
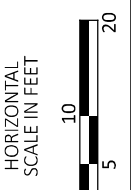
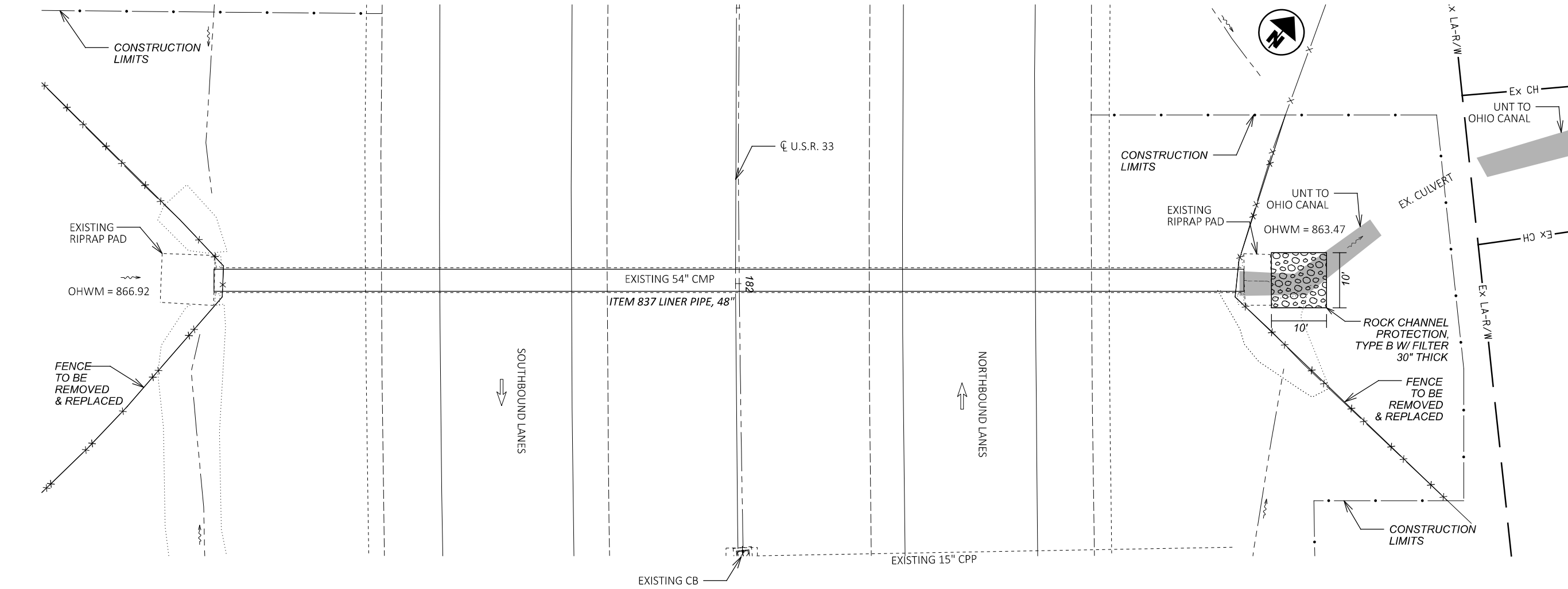




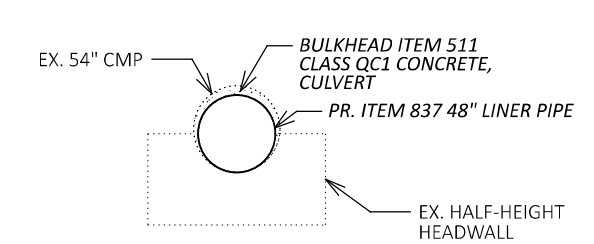
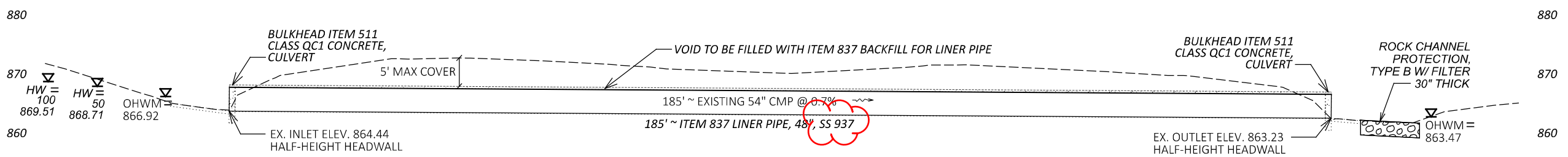
PLAN SPLIT CODE	SHEET NO.	LOCATION	202	202	202	503	509	511	601	601	601	606	607	611	611	833	833	833	837	837	837	837	837	
			GUARDRAIL REMOVED FOR REUSE FT	FENCE REMOVED FT	REMOVAL MISC.: EXISTING PIPE CLEANOUT, 18" TO 108" LS	COFFERDAMS AND EXCAVATION BRACING LS	UNCOATED STEEL REINFORCEMENT LB	CLASS QC1 CONCRETE, CULVERT CY	ROCK CHANNEL PROTECTION, TYPE A WITH FILTER CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER CY	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER CY	GUARDRAIL REBUILT, TYPE 5 FT	FENCE, TYPE 47 FT	FIELD PAVING OF EXISTING PIPE, CORRUGATED METAL SECTIONAL PLATE PIPE, 72" FT	FIELD PAVING OF EXISTING PIPE, CORRUGATED METAL SECTIONAL PLATE PIPE, 72", AS PER PLAN FT	CONDUIT RENEWAL USING SPRAY APPLIED STRUCTURAL LINER, ROUND CONDUIT, (54" DIAMETER) FT	CONDUIT RENEWAL USING SPRAY APPLIED STRUCTURAL LINER, ROUND CONDUIT, (60" DIAMETER) FT	CONDUIT RENEWAL USING SPRAY APPLIED STRUCTURAL LINER, ROUND CONDUIT, (72" DIAMETER) FT	LINER PIPE, 42", 707.35 SS 937 FT	LINER PIPE, 48", SS 937 FT	LINER PIPE, 60", 707.35, 707.35 OR SS 937 FT	LINER PIPE, 72", SS 937 FT	LINER PIPE, 96", SS 937 FT	
02/NHS/06	31	LOCATION 1: FAI-33-9.343		180	LS	LS		0.2		9			180										185	
02/NHS/06	16 & 32	LOCATION 2: FAI-33-15.271	50	120	LS	LS		0.8		29		50	120											312
03/STR/06	33	LOCATION 3: FAI-664-10.813			LS	LS		1	44															66
02/NHS/06	34	LOCATION 4: FAI-RA23016-0.049			LS	LS		0.2	30														130	
01/IMS/06	35	LOCATION 5: GUE-70-19.123			LS	LS	1753		31						420									
03/STR/06	36	LOCATION 6: GUE-285-7.886			LS	LS								214										
01/IMS/06	21 & 38	LOCATION 7: GUE-RA30039-0.019	25		LS	LS	2972					25			712			115						
01/IMS/06	39	LOCATION 8: LIC-70-17.312			LS	LS				3														
01/IMS/06	23 & 40	LOCATION 9: LIC-70-24.645	50		LS	LS						50												
01/IMS/06	24 & 41	LOCATION 10: MUS-70-4.05	50		LS	LS				8		50												
01/IMS/06	25 & 42	LOCATION 11: MUS-70-4.221	50	140	LS	LS		0.5	17			50	140						404					
01/IMS/06	26 & 43	LOCATION 12: MUS-70-7.942	25		LS	LS				6		25												
01/IMS/06	27 & 44	LOCATION 13: MUS-70-8.073	25	65	LS	LS				7		25	65											
01/IMS/06	28 & 45	LOCATION 14: MUS-70-15.934	50	45	LS	LS		0.6	27			50	45									396		
01/IMS/06	29 & 46	LOCATION 15: MUS-70-16.164	25	60	LS	LS			22			25	60		272									
03/STR/06	47	LOCATION 16: PER-13-21.64			LS	LS			27								120							
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>			350	610	LS	LS	4725	3	198	59	3	350	610	214	1132	272	120	115	404	315	396	312	66	

SUB-SUMMARY

DESIGN AGENCY  
  
 DESIGNER  
 HG  
 REVIEWER  
 XXX MM-DD-YY  
 PROJECT ID  
 107367  
 SHEET TOTAL  
 P.13 47



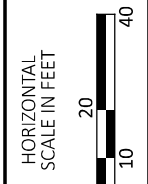
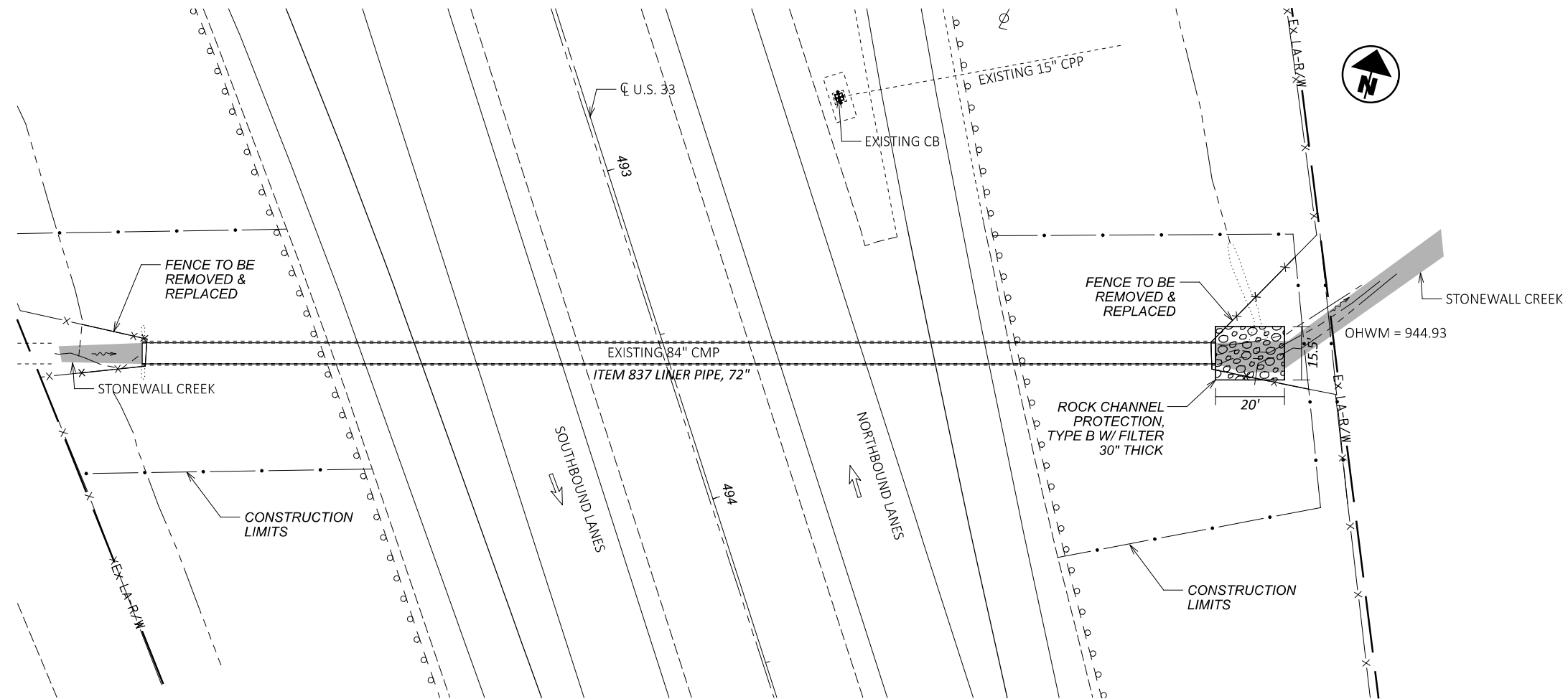
EXISTING STRUCTURE	
CFN: 1883715	DRAINAGE AREA = 37 AC
TYPE: CORRUGATED METAL PIPE	$Q_{50} = 85 \text{ CFS}$ $V_{50} = 10.7 \text{ FPS}$
DIAMETER: 54"	$Q_{100} = 106 \text{ CFS}$ $V_{100} = 11.2 \text{ FPS}$
LENGTH: 185'	
SKEW: 0°	
LAT: 39.76472	
LONG: -82.68806	



CALCULATIONS	
ITEM 511 CLASS QC1 CONCRETE, CULVERT	$15.90 \text{ SF} - 12.96 \text{ SF} = 2.94 \text{ SF} \times (2 \times 1 \text{ FT}) = 5.88 \text{ CF} / 27 \text{ CF} = 0.2 \text{ CY}$
ITEM 601 ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	$10 \text{ FT} \times 10 \text{ FT} \times 2.5 \text{ FT} = 250 \text{ CF} / 27 \text{ CF} = 9 \text{ CY}$
ITEM 837 BACKFILL FOR LINER PIPE, 48"	$15.90 \text{ SF} - 12.96 \text{ SF} = 2.94 \text{ SF} \times (185 \text{ FT} - 2 \text{ FT}) = 538.0 \text{ CF} / 27 \text{ CF} = 20 \text{ CY}$

ITEM 202 FENCE REMOVED	180 FT
REMOVAL MISC.: EXISTING PIPE CLEANOUT, 18" TO 108"	LS
ITEM 503 COFFERDAMS AND EXCAVATION BRACING	LS
ITEM 511 CLASS QC1 CONCRETE, CULVERT	0.2 CY
ITEM 601 ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	9 CY
ITEM 607 FENCE, TYPE 47	180 FT
ITEM 837 LINER PIPE, 48", SS 937	185 FT
ITEM 837 BACKFILL FOR LINER PIPE, 48"	20 CY
QUANTITIES CARRIED TO SUBSUMMARY	

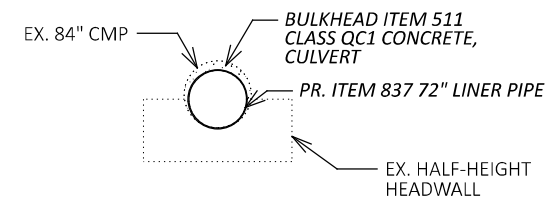
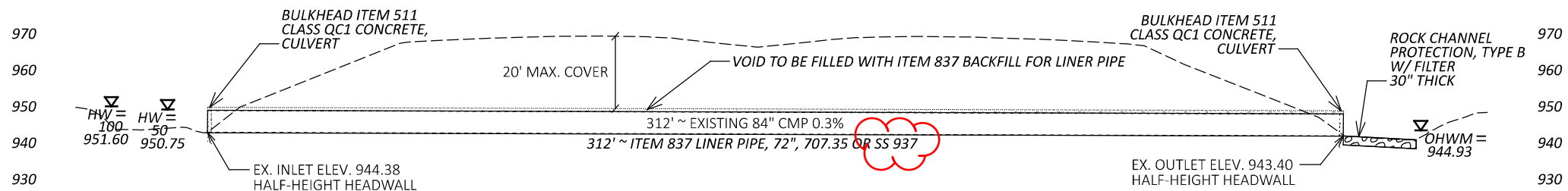
CULVERT DETAIL SHEET (LOCATION 1)  
 FAI-33-9.343 (CFN 1883715)



CULVERT DETAIL SHEET (LOCATION 2)  
 FAI-33-15-271 (CFN 1884264)

EXISTING STRUCTURE	
CFN: 1884264	
TYPE: CORRUGATED METAL PIPE	
DIAMETER: 84"	
LENGTH: 312'	
SKEW: 18°	
LAT: 39.6854	
LONG: -82.65683	

DRAINAGE AREA = 166 AC	
$Q_{50} = 209 \text{ CFS}$	$V_{50} = 10.6 \text{ FPS}$
$Q_{100} = 256 \text{ CFS}$	$V_{100} = 11.6 \text{ FPS}$



CALCULATIONS	
ITEM 511 CLASS QC1 CONCRETE, CULVERT	$38.47 \text{ SF} - 28.26 \text{ SF} = 10.21 \text{ SF} \times (2 \times 1 \text{ FT}) = 20.42 \text{ CF} / 27 \text{ CF} = 0.8 \text{ CY}$
ITEM 601 ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	$20 \text{ FT} \times 15.5 \text{ FT} \times 2.5 \text{ FT} = 775 \text{ CF} / 27 \text{ CF} = 29 \text{ CY}$
ITEM 837 BACKFILL FOR LINER PIPE, 72"	$38.47 \text{ SF} - 28.26 \text{ SF} = 10.21 \text{ SF} \times (312 \text{ FT} - 2 \text{ FT}) = 3,165.1 \text{ CF} / 27 \text{ CF} = 117 \text{ CY}$

ITEM 202 FENCE REMOVED	120 FT
REMOVAL MISC.: EXISTING PIPE CLEANOUT, 18" TO 108"	LS
ITEM 503 COFFERDAMS AND EXCAVATION BRACING	LS
ITEM 511 CLASS QC1 CONCRETE, CULVERT	0.8 CY
ITEM 601 ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	29 CY
ITEM 607 FENCE, TYPE 47	120 FT
ITEM 837 LINER PIPE, 72", SS 937	312 FT
ITEM 837 BACKFILL FOR LINER PIPE, 72"	117 CY

QUANTITIES CARRIED TO SUBSUMMARY

DESIGN AGENCY



DESIGNER  
HG

REVIEWER

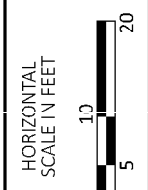
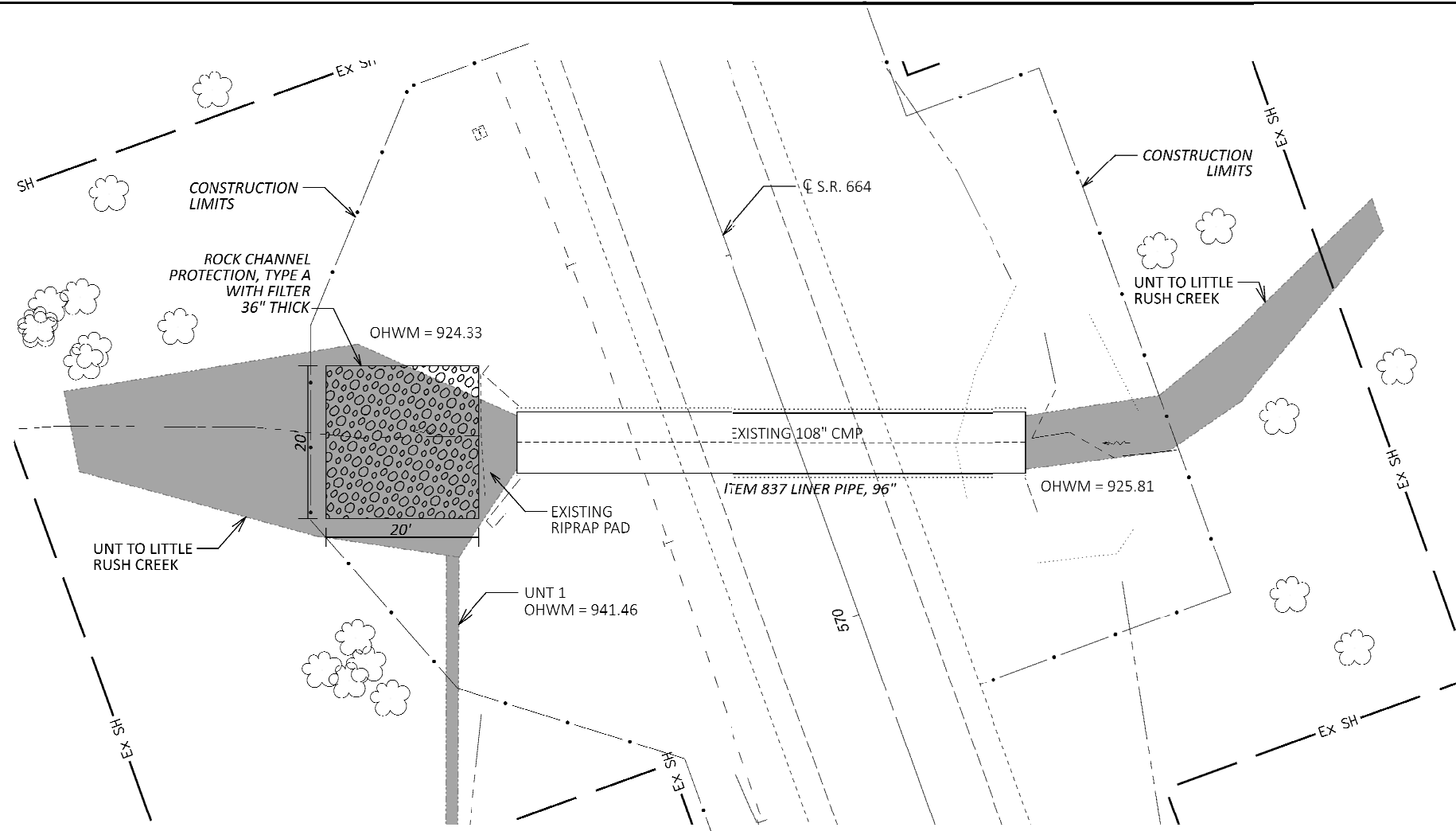
XXX MM-DD-YY

PROJECT ID

107367

SHEET TOTAL

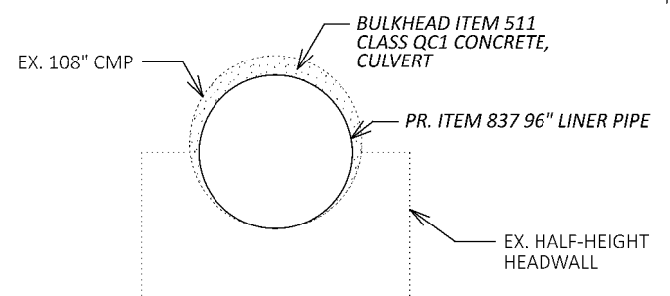
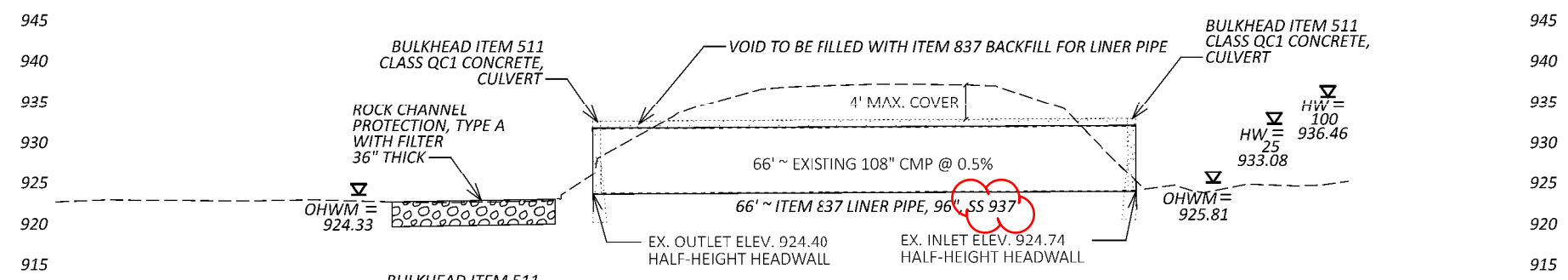
P.32 47



CULVERT DETAIL SHEET (LOCATION 3)  
 FAI-664-10.813 (CFN 1886369)

EXISTING STRUCTURE	
CFN: 1886369	
TYPE: CORRUGATED METAL PIPE	
DIAMETER: 108"	
LENGTH: 66'	
SKEW: 17°	
LAT: 39.808435	
LONG: -82.426967	

DRAINAGE AREA = 740 AC			
$Q_{25} = 471$ CFS	$V_{25} = 15.0$ FPS		
$Q_{100} = 709$ CFS	$V_{100} = 16.0$ FPS		



CALCULATIONS	
ITEM 511 CLASS QC1 CONCRETE, CULVERT	63.59 SF - 50.24 SF = 13.35 SF X (2 X 1 FT) = 26.70 CF / 27 CF = 1.0 CY
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	20 FT X 20 FT X 3 FT = 1,200 CF / 27 CF = 44 CY
ITEM 837 BACKFILL FOR LINER PIPE, 96"	63.59 SF - 50.24 SF = 13.35 SF X (66 FT - 2 FT) = 854.4 CF / 27 CF = 32 CY

REMOVAL MISC.: EXISTING PIPE CLEANOUT, 18" TO 108"	LS
ITEM 503 COFFERDAMS AND EXCAVATION BRACING	LS
ITEM 511 CLASS QC1 CONCRETE, CULVERT	1.0 CY
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	44 CY
ITEM 837 LINER PIPE, 96", SS 937	66 FT
ITEM 837 BACKFILL FOR LINER PIPE, 96"	32 CY

QUANTITIES CARRIED TO SUBSUMMARY

DESIGN AGENCY

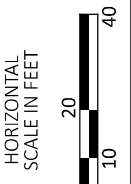
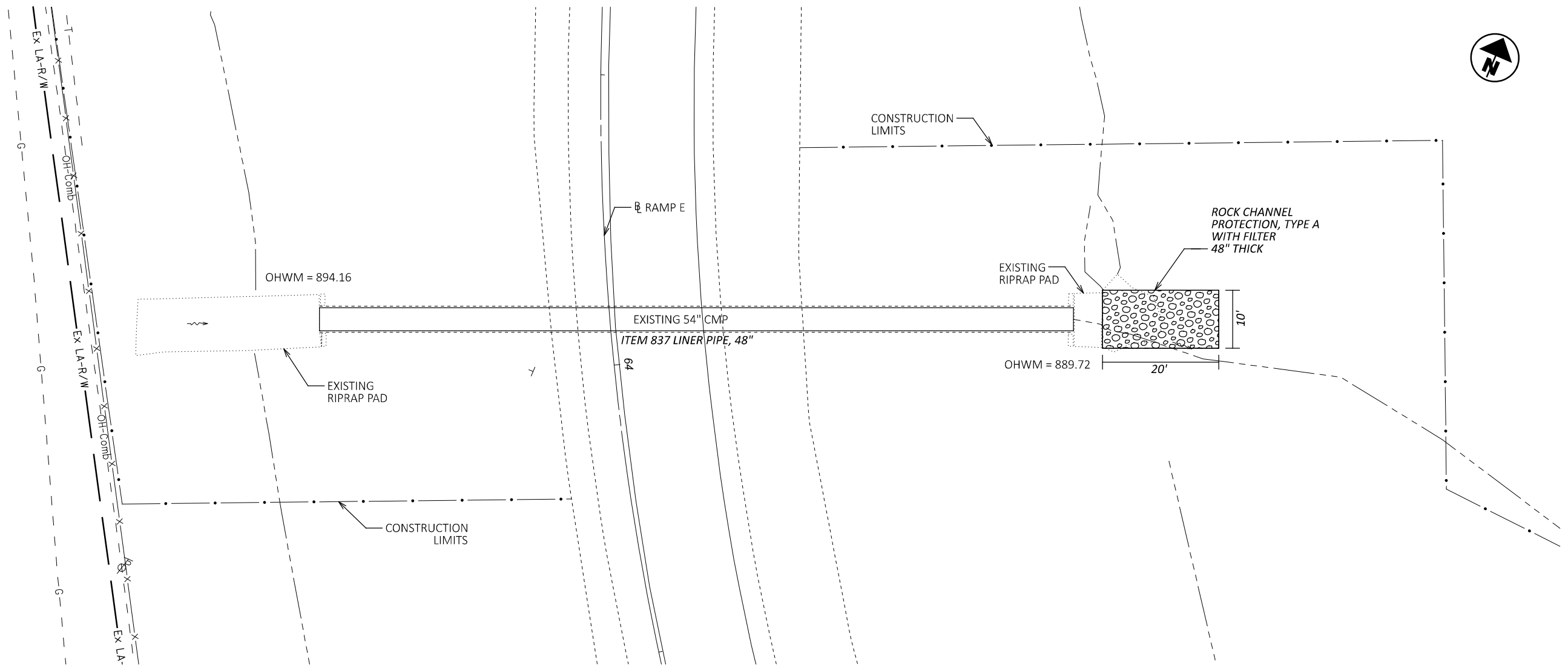


DESIGNER HG

REVIEWER XXX MM-DD-YY

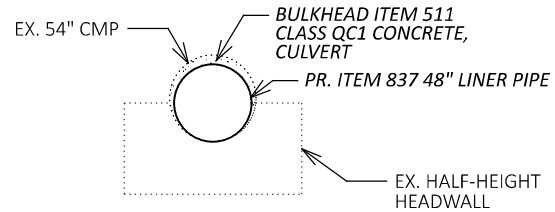
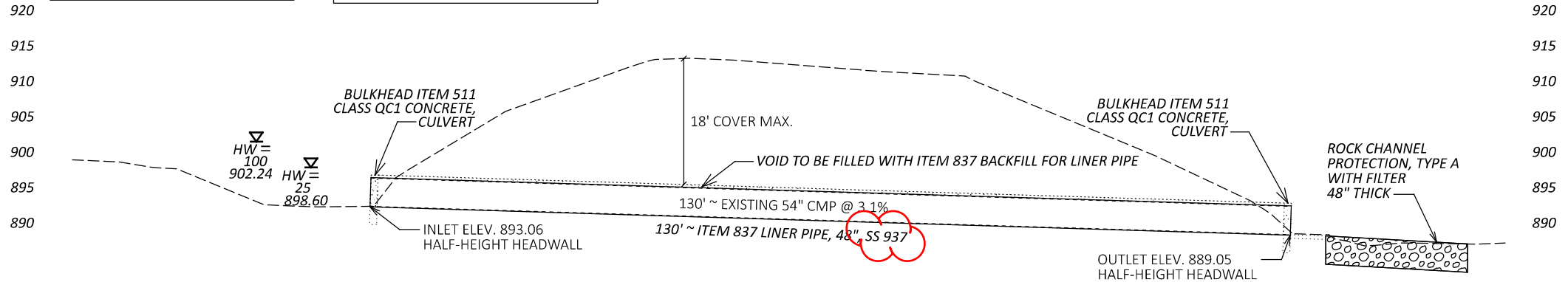
PROJECT ID 0

SHEET TOTAL P.33 47



EXISTING STRUCTURE	
CFN: 1883740	
TYPE: CORRUGATED METAL PIPE	
DIAMETER: 54"	
LENGTH: 130'	
SKREW: 0°	
LAT: 39.71769	
LONG: -82.67586	

DRAINAGE AREA = 109 AC			
$Q_{25} = 117 \text{ CFS}$	$V_{25} = 20.9 \text{ FPS}$		
$Q_{100} = 180 \text{ CFS}$	$V_{100} = 23.2 \text{ FPS}$		



CALCULATIONS	
ITEM 511 CLASS QC1 CONCRETE, CULVERT	$15.90 \text{ SF} - 12.96 \text{ SF} = 2.94 \text{ SF} \times (2 \times 1 \text{ FT}) = 5.88 \text{ CF} / 27 \text{ CF} = 0.2 \text{ CY}$
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	$20 \text{ FT} \times 10 \text{ FT} \times 4 \text{ FT} = 800 \text{ CF} / 27 \text{ CF} = 30 \text{ CY}$
ITEM 837 BACKFILL FOR LINER PIPE, 48"	$15.90 \text{ SF} - 12.96 \text{ SF} = 2.94 \text{ SF} \times (130 \text{ FT} - 2 \text{ FT}) = 376.3 \text{ CF} / 27 \text{ CF} = 14 \text{ CY}$

REMOVAL MISC.: EXISTING PIPE CLEANOUT, 18" TO 108"	LS
ITEM 503 COFFERDAMS AND EXCAVATION BRACING	LS
ITEM 511 CLASS QC1 CONCRETE, CULVERT	0.2 CY
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	30 CY
ITEM 837 LINER PIPE, 48", SS 937	130 FT
ITEM 837 BACKFILL FOR LINER PIPE, 48"	14 CY
QUANTITIES CARRIED TO SUBSUMMARY	

CULVERT DETAIL SHEET (LOCATION 4)  
 FAI-RA23016-0.049 (CFN 1883740)

DESIGN AGENCY



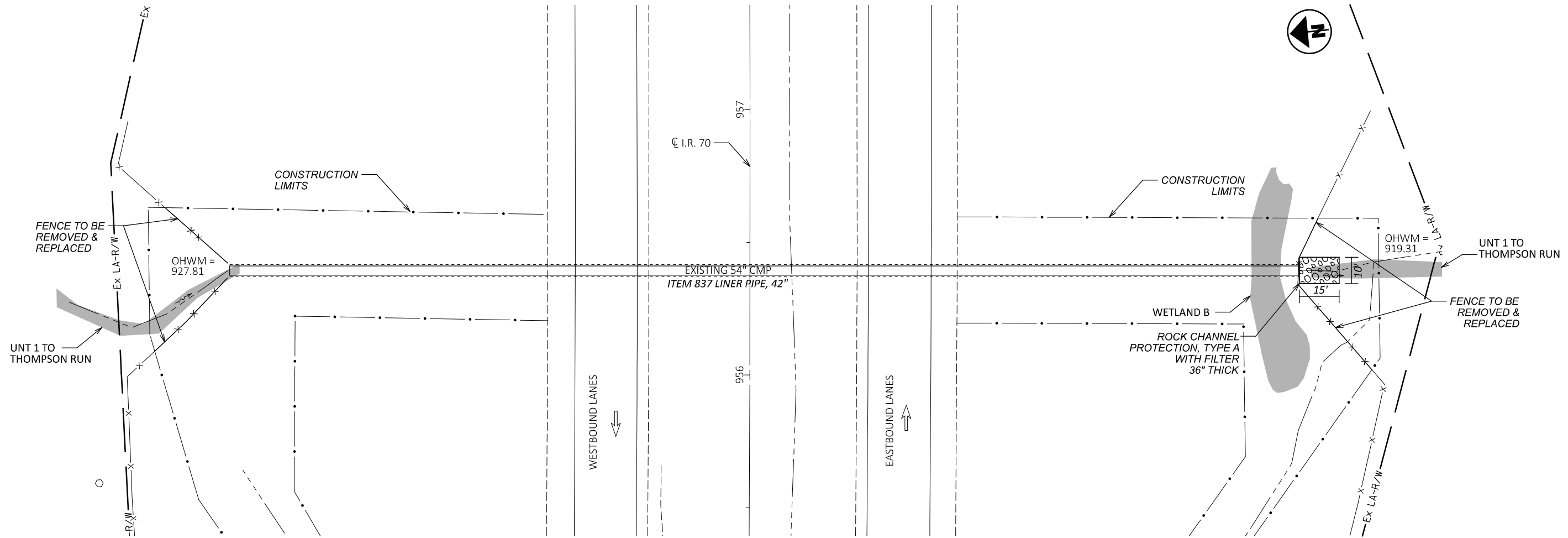
DESIGNER  
 HG

REVIEWER  
 XXX MM-DD-YY

PROJECT ID  
 107367

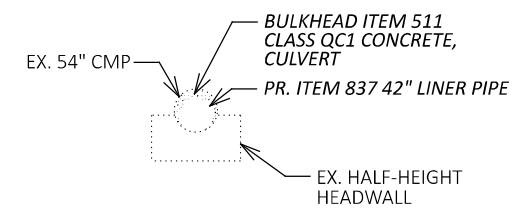
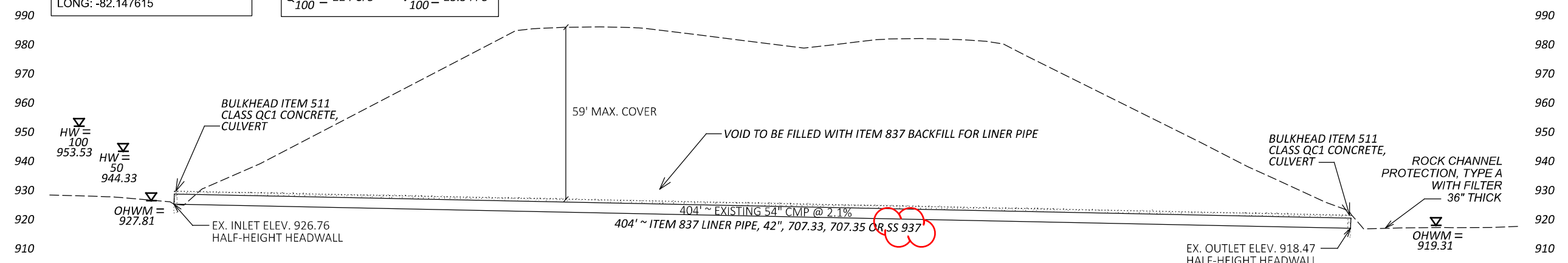
SHEET TOTAL  
 P.34 47





EXISTING STRUCTURE	
CFN: 1876224	
TYPE: CORRUGATED METAL PIPE	
DIAMETER: 54"	
LENGTH: 404'	
SKREW: 0°	
LAT: 39.947079	
LONG: -82.147615	

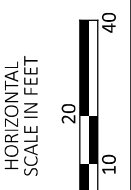
DRAINAGE AREA = 90 AC	
$Q_{50} = 180 \text{ CFS}$	$V_{50} = 18.7 \text{ FPS}$
$Q_{100} = 224 \text{ CFS}$	$V_{100} = 23.3 \text{ FPS}$



CALCULATIONS	
ITEM 511 CLASS QC1 CONCRETE, CULVERT	$15.90 \text{ SF} - 9.62 \text{ SF} = 6.28 \text{ SF} \times (2 \times 1 \text{ FT}) = 12.56 \text{ CF} / 27 \text{ CF} = 0.5 \text{ CY}$
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	$15 \text{ FT} \times 10 \text{ FT} \times 3 \text{ FT} = 450 \text{ CF} / 27 \text{ CF} = 17 \text{ CY}$
ITEM 837 BACKFILL FOR LINER PIPE, 42"	$15.90 \text{ SF} - 9.62 \text{ SF} = 6.28 \text{ SF} \times (404 \text{ FT} - 2 \text{ FT}) = 2,524.56 \text{ CF} / 27 \text{ CF} = 94 \text{ CY}$

ITEM 202 FENCE REMOVED	140 FT
REMOVAL MISC.: EXISTING PIPE CLEANOUT, 18" TO 108"	LS
ITEM 503 COFFERDAMS AND EXCAVATION BRACING	LS
ITEM 511 CLASS QC1 CONCRETE, CULVERT	0.5 CY
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	17 CY
ITEM 607 FENCE, TYPE 47	140 FT
ITEM 837 LINER PIPE, 42", 707.33, 707.35 OR SS 937	404 FT
ITEM 837 BACKFILL FOR LINER PIPE, 42"	94 CY

QUANTITIES CARRIED TO SUBSUMMARY



CULVERT DETAIL SHEET (LOCATION 11)  
 MUS-70-4.221 (CFN 1876224)

DESIGN AGENCY



DESIGNER

REVIEWER

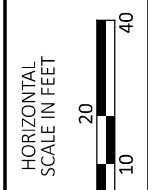
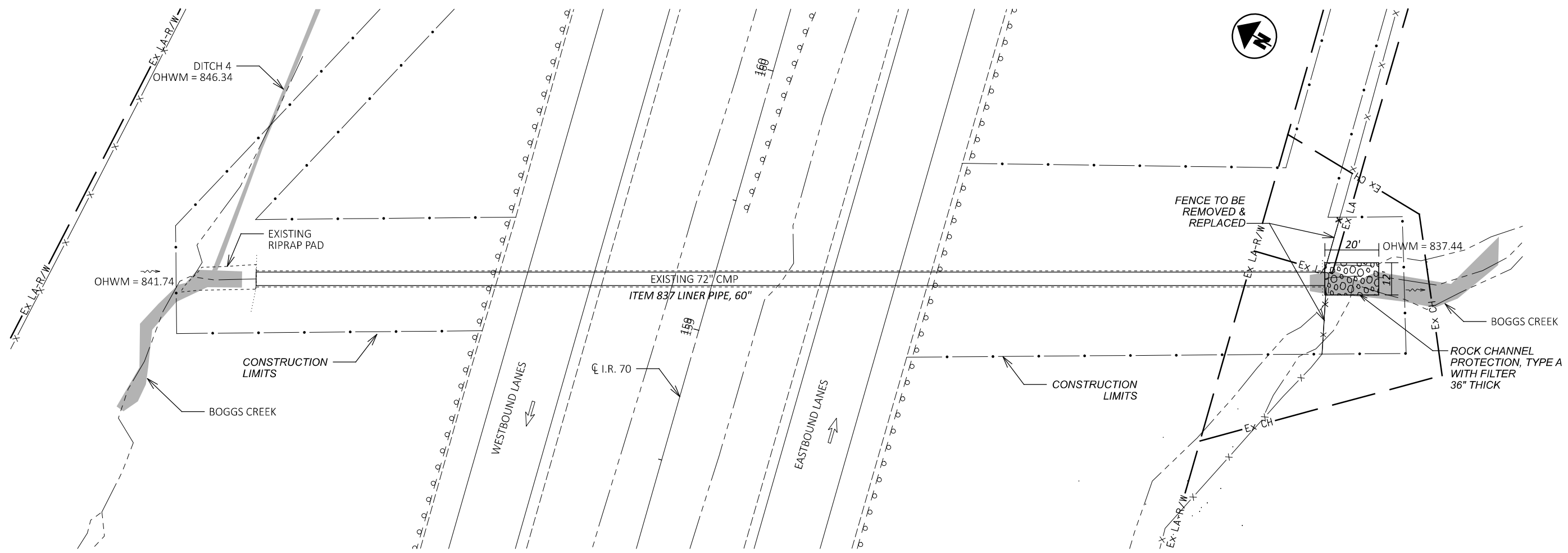
XXX MM-DD-YY

PROJECT ID

0

SHEET TOTAL

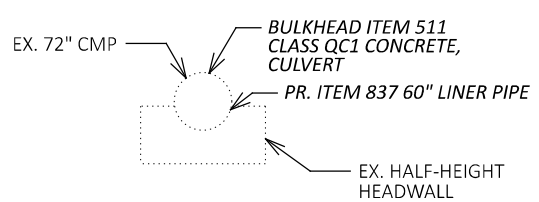
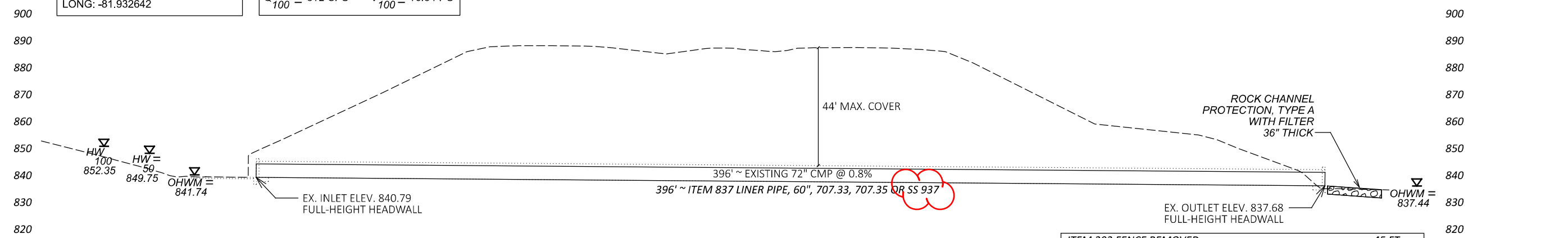
P.42 47



CULVERT DETAIL SHEET (LOCATION 14)  
 MUS-70-15.934 (CFN 1973448)

EXISTING STRUCTURE	
CFN: 1973448	
TYPE: CORRUGATED METAL PIPE	
DIAMETER: 72"	
LENGTH: 396'	
SKEW: 16°	
LAT: 39.958897	
LONG: -81.932642	

DRAINAGE AREA = 250 AC	
$Q_{50} = 257 \text{ CFS}$	$V_{50} = 14.5 \text{ FPS}$
$Q_{100} = 312 \text{ CFS}$	$V_{100} = 16.3 \text{ FPS}$



CALCULATIONS	
ITEM 511 CLASS QC1 CONCRETE, CULVERT	
$28.26 \text{ SF} - 19.63 \text{ SF} = 8.63 \text{ SF} \times (2 \times 1 \text{ FT}) = 17.26 \text{ CF} / 27 \text{ CF} = 0.6 \text{ CY}$	
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	
$20 \text{ FT} \times 12 \text{ FT} \times 3 \text{ FT} = 720 \text{ CF} / 27 \text{ CF} = 27 \text{ CY}$	
ITEM 837 BACKFILL FOR LINER PIPE, 60"	
$28.26 \text{ SF} - 19.63 \text{ SF} = 8.63 \text{ SF} \times (396 \text{ FT} - 2 \text{ FT}) = 3,400.2 \text{ CF} / 27 \text{ CF} = 126 \text{ CY}$	

ITEM 202 FENCE REMOVED	45 FT
REMOVAL MISC.: EXISTING PIPE CLEANOUT, 18" TO 108"	LS
ITEM 503 COFFERDAMS AND EXCAVATION BRACING	LS
ITEM 511 CLASS QC1 CONCRETE, CULVERT	0.6 CY
ITEM 601 ROCK CHANNEL PROTECTION, TYPE A WITH FILTER	27 CY
ITEM 607 FENCE, TYPE 47	45 FT
ITEM 837 LINER PIPE, 60", 707.33, 707.35 OR SS 937	396 FT
ITEM 837 BACKFILL FOR LINER PIPE, 60"	126 CY

QUANTITIES CARRIED TO SUBSUMMARY

DESIGN AGENCY



DESIGNER  
HG

REVIEWER  
XXX MM-DD-YY

PROJECT ID  
107367

SHEET TOTAL  
P.45 47