

BOX CULVERT DATA TABLES

BOX, HEADWALL AND CUTOFF WALL DATA TABLE (inches unless shown otherwise)																			Table Date 03-22-24	
LOCATION	STRUCTURE /BRIDGE NUMBER	BOX									HEADWALL AND CUTOFF WALL									
		Wc(ft)	Hc(ft)	Tt	Tw	Tb	Ti	#cells	Lc(ft)	Cover	Blhw	Hlhw	Brhw	Hrhw	Blcw	Hlcw	Brcw	Hrcw	SL(deg)	SR(deg)
BULLFROG CRK	CULVERT	6	7	8	10	8	8	3	16.7	2	14	18	14	18	12	24	12	24	0	0

LEFT SIDE WINGWALLS DATA TABLE (inches unless shown otherwise)																		Table Date 03-22-24
STRUCTURE /BRIDGE NUMBER	LEFT END WINGWALL									LEFT BEGIN WINGWALL								
	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)
CULVERT	14	14	48	12	180	0	8.5	8.5	10	14	14	48	12	180	0	8.5	8.5	10

RIGHT SIDE WINGWALLS DATA TABLE (inches unless shown otherwise)																		Table Date 03-22-24
STRUCTURE /BRIDGE NUMBER	RIGHT END WINGWALL									RIGHT BEGIN WINGWALL								
	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)
CULVERT	14	14	48	12	180	0	8.5	8.5	10	14	14	48	12	180	0	8.5	8.5	10

ESTIMATED CONCRETE QUANTITIES (CY)																				Table Date 03-22-24
STRUCTURE /BRIDGE NUMBER	BOX								LEFT END WINGWALL			LEFT BEGIN WINGWALL			RIGHT END WINGWALL			RIGHT BEGIN WINGWALL		
	Left Cutoff Wall	Right Cutoff Wall	Bottom Slab	Walls	Top Slab	Left Head Wall	Right Head Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total
CULVERT	1.04	1.04	10.2	13	8.64	0.756	0.756	35.5	2.72	3.67	6.39	2.72	3.67	6.39	2.72	3.67	6.39	2.72	3.67	6.39

MAIN STEEL REINFORCEMENT SPACING (inches)																		Table Date 03-22-24	
STRUCTURE /BRIDGE NUMBER	BOX															HEADWALLS		CUTOFF WALLS	
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115, 116...	803	806	809	812
CULVERT	8	8	8	8	8	8	8	8	12	12	12	12	12	12	12	10	10	12	12

WINGWALL STEEL REINFORCEMENT SPACING (inches)																												Table Date 03-22-24
STRUCTURE /BRIDGE NUMBER	LEFT END WINGWALL							LEFT BEGIN WINGWALL							RIGHT END WINGWALL							RIGHT BEGIN WINGWALL						
	401 (407(8)	402 (403)	404 (405)	406	409	410	411	501 507(8)	502 (503)	504 (505)	506	509	510	511	601 607(8)	602 (603)	604 (605)	606	609	610	611	701 707(8)	702 (703)	704 (705)	706	709	710	711
CULVERT	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12

WINGWALL NOTE: Bar designations in "()" are only required for variable height wingwalls.

NOTES [Notes Date 3-22-24]:

- Environmental Class Moderately Aggressive
- Reinforcing Steel, Grade 60
- Concrete Class IV $f'c = 5.5 \text{ ksi}$
- Soil Properties:
Friction Angle 30 degrees
Modulus of Subgrade Reaction 23 PCF
Nominal Bearing Resistance 6974 PSF
- Consolidate the soil under the proposed culvert and wingwalls in accordance with FDOT Standard Specification 120-9.
- Work this Drawing with Standard Plans Index 400-289 and Sheets B-1 through B-5.
- Settlement criteria for Precast Box Culvert option (Index 400-291):
Long Term Differential Settlement (Δ) = 0.03 ft.
Effective Length for Settlement (L) = 15 ft.

MARK		LENGTH		NO	TYP		STY		B			C			D			E			F			H			J			K			N	φ
SIZE	DES	FT	IN	BARS	BAR	A	G	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	NO	ANG	
Box Culvert																																		
LOCATION Main Box										NO. REQUIRED = 1																								
6	101	20- 9		26	1			20- 8																										
6	102	20- 9		26	1			20- 8																										
6	103	20- 9		31	1			20- 8																										
6	104	20- 9		31	1			20- 8																										
6	105	7- 2		50	10			2- 0 $\frac{3}{4}$			5- 0 $\frac{1}{4}$																							
6	106	7- 2		50	10			2- 0 $\frac{3}{4}$			5- 0 $\frac{1}{4}$																							
6	107	6- 1		200	10			1- 0			5- 0 $\frac{1}{4}$																							
6	108	8- 0		50	1			8- 0																										
4	109	19- 5		22	1			19- 4																										
4	110	16- 5		22	1			16- 4																										
4	111	15- 9		22	1			15- 8 $\frac{1}{4}$																										
4	112	19- 5		22	1			19- 4																										
4	113	16- 5		16	1			16- 4																										
4	114	16- 5		16	1			16- 4																										
4	115	15- 9		32	1			15- 8 $\frac{1}{4}$																										
LOCATION Left End Wingwall										NO. REQUIRED = 1																								
5	401	8- 3		16	1			8- 3																										
4	402	9 - 9		10	1			9 - 8																										
4	404	9 - 9		10	1			9 - 8																										
4	406	8- 3		11	1			8- 3																										
5	407	4- 7		16	10			2- 0			2- 7 $\frac{3}{4}$																							
5	409	6- 0		16	1			6- 0																										
3	410	6- 0		16	1			6- 0																										
4	411	9 - 9		14	1			9 - 8																										
5	412	2- 0		14	1			2- 0																										
LOCATION Left Begin Wingwall										NO. REQUIRED = 1																								
5	501	8- 3		16	1			8- 3																										
4	502	9 - 9		10	1			9 - 8																										
4	504	9 - 9		10	1			9 - 8																										
4	506	8- 3		11	1			8- 3																										
5	507	4- 7		16	10			2- 0			2- 7 $\frac{3}{4}$																							
5	509	6- 0		16	1			6- 0																										
3	510	6- 0		16	1			6- 0																										
4	511	9 - 9		14	1			9 - 8																										
5	512	2- 0		14	1			2- 0																										
LOCATION Right End Wingwall										NO. REQUIRED = 1																								
5	601	8- 3		16	1			8- 3																										
4	602	9 - 9		10	1			9 - 8																										
4	604	9 - 9		10	1			9 - 8																										
4	606	8- 3		11	1			8- 3																										
5	607	4- 7		16	10			2- 0			2- 7 $\frac{3}{4}$																							
5	609	6- 0		16	1			6- 0																										
3	610	6- 0		16	1			6- 0																										
4	611	9 - 9		14	1			9 - 8																										
5	612	2- 0		14	1			2- 0																										
LOCATION Right Begin Wingwall										NO. REQUIRED = 1																								
5	701	8- 3		16	1			8- 3																										
4	702	9 - 9		10	1			9 - 8																										
4	704	9 - 9		10	1			9 - 8																										
4	706	8- 3		11	1			8- 3																										
5	707	4- 7		16	10			2- 0			2- 7 $\frac{3}{4}$																							
5	709	6- 0		16	1			6- 0																										
3	710	6- 0		16	1			6- 0																										
4	711	9 - 9		14	1			9 - 8																										
5	712	2- 0		14	1			2- 0																										

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
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INITIAL ISSUE DATE		5/2/24	
SYMBOL	REVISION		DATE

DESIGNER :
F. HAUNSTETTER

DRAWN BY:
N. KOPP

COMP. FILE No.
23-0611

STATE PROJECT No.

PROFESSIONAL REGISTRATION
FRANCIS X. HAUNSTETTER
P.E. LICENSE NUMBER 56872
AYRES ASSOCIATES
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TAMPA, FL 33637
CERTIFICATE OF AUTHORIZATION 4356

BULLFROG CREEK WILDLIFE AND ENVIRONMENTAL AREA

SHEET TITLE	REINFORCING BAR SCHEDULE (1 OF 2)
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PROJECT TITLE
BULLFROG CREEK WILDLIFE & ENVIRONMENTAL AREA CULVERT REPLACEMENT

SHEET NO.
B-2

MARK		LENGTH		NO		TYP	STY	B			C			D			E			F			H			J			K			N	φ
SIZE	DES	FT	IN	BARS	BAR	A	G	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	NO	ANG
Box Culvert																																	
LOCATION Left Headwall								NO. REQUIRED = 1																									
6	801	20- 9		2	1			20- 8																									
6	802	20- 9		2	1			20- 8																									
4	803	4- 1		26	27			1- 1 ¼			0-10			0- 0			0- 5			0- 8 ¼			0- 8			0- 8							
LOCATION Right Headwall								NO. REQUIRED = 1																									
6	804	20- 9		2	1			20- 8																									
6	805	20- 9		2	1			20- 8																									
4	806	4- 1		26	27			1- 1 ¼			0-10			0- 0			0- 5			0- 8 ¼			0- 8			0- 8							
LOCATION Left Cutoff Wall								NO. REQUIRED = 1																									
4	807	20- 9		2	1			20- 8																									
4	808	20- 9		2	1			20- 8																									
4	809	4- 11		21	7			1- 7 ¼			0- 8			0- 6			0- 6																
LOCATION Left Cutoff Wall								NO. REQUIRED = 1																									
4	810	20- 9		2	1			20- 8																									
4	811	20- 9		2	1			20- 8																									
4	812	4- 11		21	7			1- 7 ¼			0- 8			0- 6			0- 6																

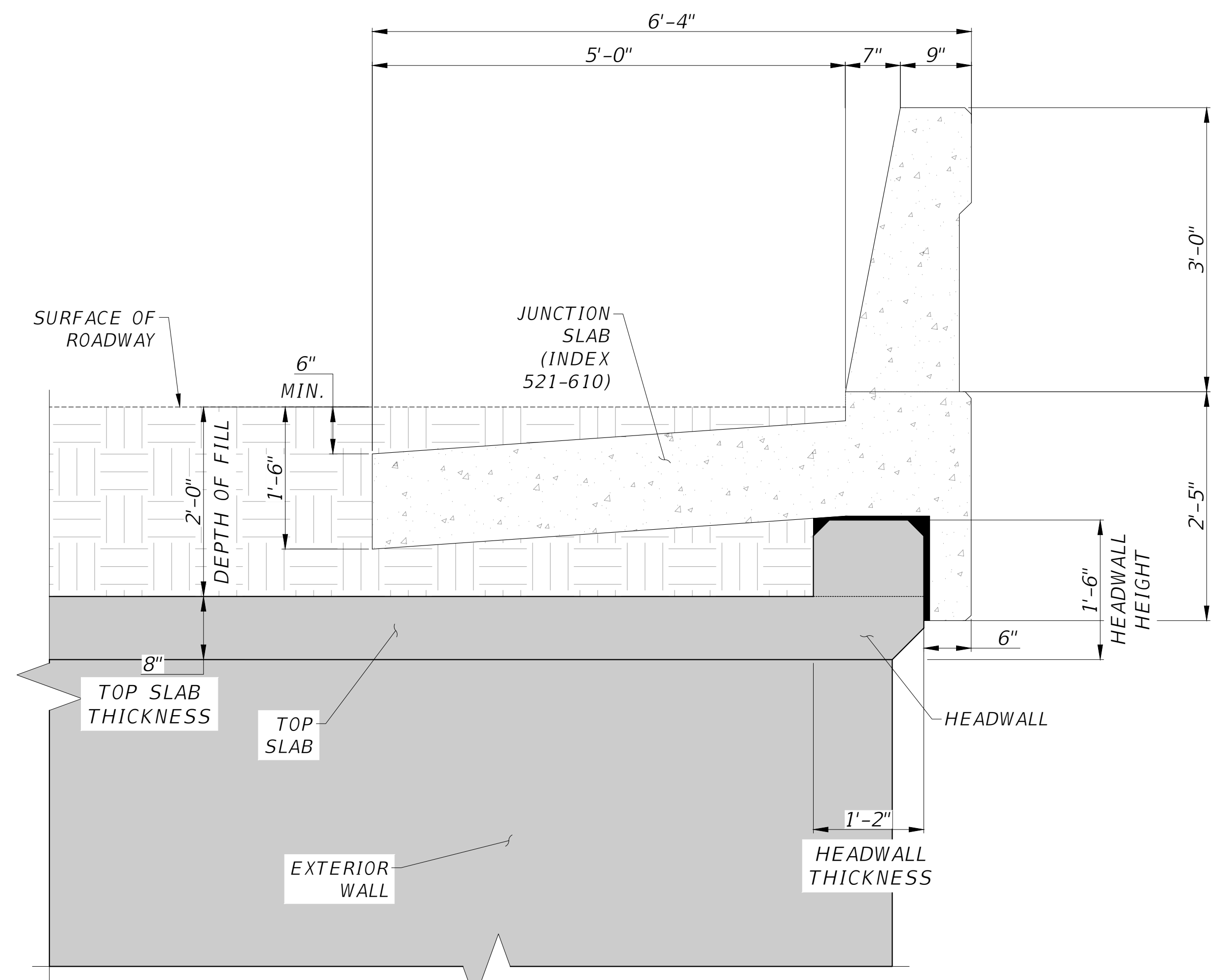
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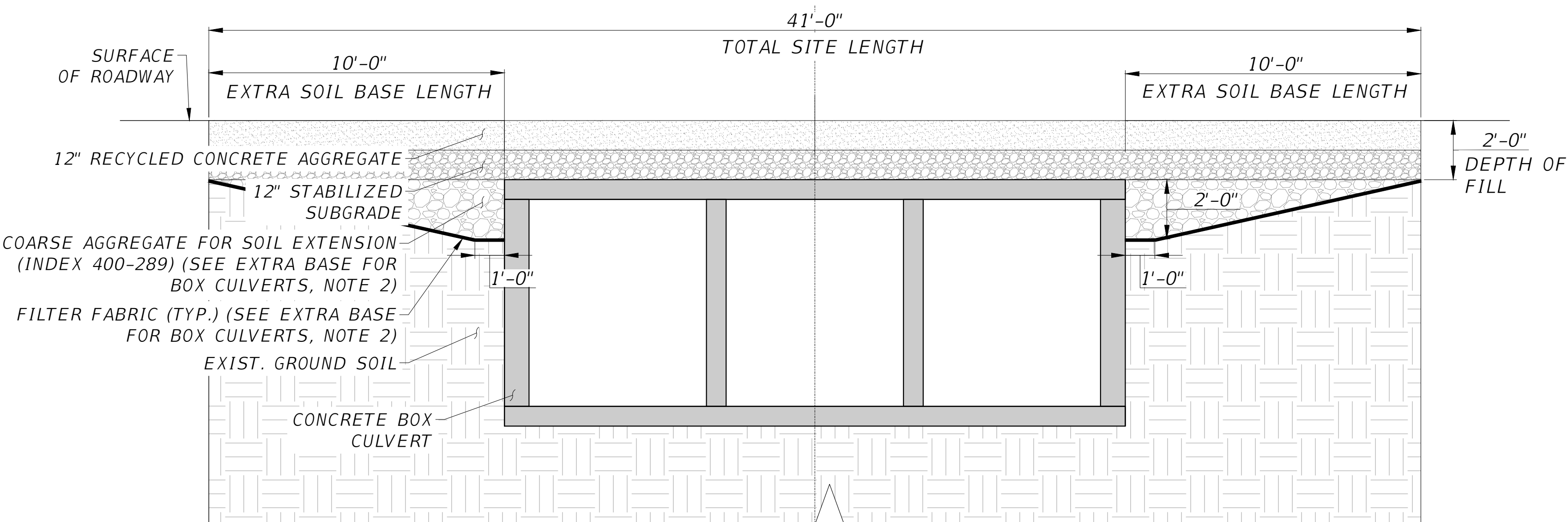
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BULLFROG CREEK WILDLIFE AND ENVIRONMENTAL AREA	
SHEET TITLE	REINFORCING BAR SCHEDULE (2 OF 2)
PROJECT TITLE	BULLFROG CREEK WILDLIFE & ENVIRONMENTAL AREA CULVERT REPLACEMENT
SHEET NO.	B-3



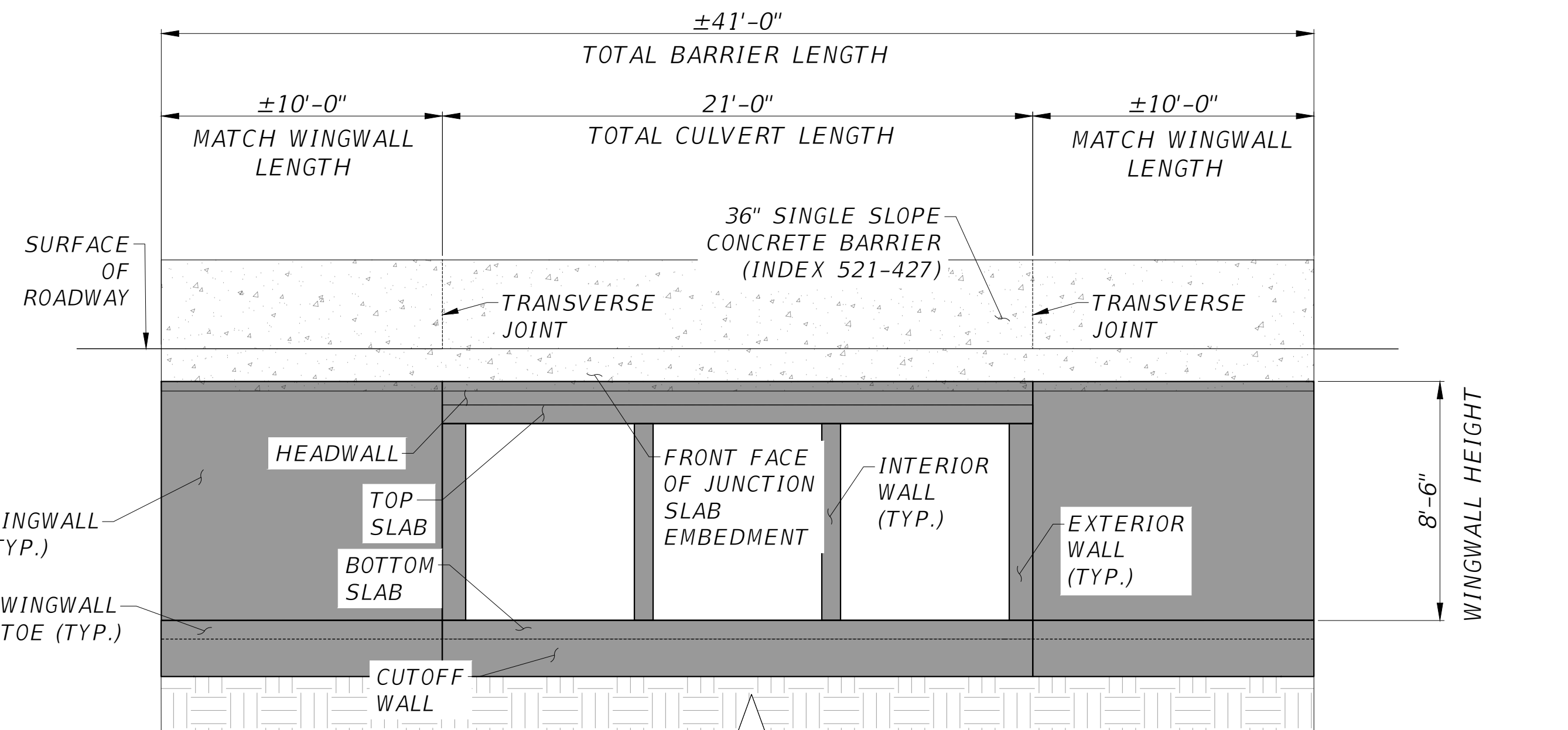
CIP CONCRETE BARRIER WITH JUNCTION SLAB

SCALE 1" = 1'



SECTION THROUGH CULVERT

SCALE 1" = 3'



CULVERT ELEVATION VIEW

SCALE 1" = 4'

BARRIER NOTES

1. INSTALL 36" SINGLE SLOPE CONCRETE BARRIERS WITH JUNCTION SLABS IN COORDINATION WITH FDOT STANDARD INDICES 521-427 & 521-610.
2. VARY THE JUNCTION SLAB SLOPE BASED ON THE ROADWAY CROSS SLOPE TO MAINTAIN A MINIMUM 6" FILL DEPTH AT THE EDGE OF THE SLAB.
3. IF SLIP FORMING IS USED, SUBMIT SHOP DRAWINGS FOR APPROVAL SHOWING 2½" SIDE COVER WITH THE TYPICAL SECTION DIMENSIONS ADJUSTED.
4. INSTALL OBJECTS MARKERS AT THE FAR ENDS OF THE TAPERED END BARRIERS. INSTALL "ONE LANE BRIDGE" SIGNS 100'-0" FROM THE ENDS OF THE BARRIERS.

EXTRA BASE FOR BOX CULVERTS NOTES

1. WORK THESE DETAILS IN COORDINATION WITH FDOT STANDARD INDEX 400-289.
2. PLACE COARSE AGGREGATE IN 6 INCH LIFTS AND COMPACT SUFFICIENTLY AS TO BE FIRM AND UNYIELDING. PROVIDE COARSE AGGREGATE GRAVEL OR STONE MEETING THE REQUIREMENTS OF FDOT SPECIFICATION SECTION 901-2 OR 901-3 RESPECTIVELY. MEET THE GRADATION REQUIREMENTS OF FDOT SPECIFICATION SECTION 901-6, GRADES 4, 467, 5, 56 OR 57 UNLESS RESTRICTED IN THE PLANS. PROVIDE TYPE 0-3 FILTER FABRIC (SEE FDOT SPECIFICATION SECTION 985). THE COST OF FURNISHING AND INSTALLING THE COARSE AGGREGATE AND FILTER FABRIC SHALL BE INCLUDED IN THE COST OF THE BOX CULVERT.

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INITIAL ISSUE DATE		5/2/24
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BULLFROG CREEK WILDLIFE AND ENVIRONMENTAL AREA

SHEET TITLE
MISCELLANEOUS DETAILS

PROJECT TITLE
BULLFROG CREEK WILDLIFE & ENVIRONMENTAL AREA CULVERT REPLACEMENT

SHEET NO.
B-4

Load Rating Summary Details for Reinforced Concrete Bridge Culverts (Box and Three-Sided Culvert)																	Table Date 03-22-24	
Table 2 - LRFR																		
Level	Limit State	Vehicle	Weight (tons)	Load Factors			Moment (Strength)						Shear (Strength)					Comments:
				LL	DC	DW	Unfactored Ratio	LL Permanent Loads	Rating Factor	Tons	Location	Dimension	Unfactored Ratio	LL Permanent Loads	Rating Factor	Tons	Location	
Design Load Rating	Strength I (Inv)	HL-93	N/A	1.75	1.25	1.50	2.23	1.51	N/A	13	0.83'	4.21	1.31	N/A	18	6.19'		
	Strength I (Op)	HL-93	N/A	1.35	1.25	1.50	1.89	2.31	N/A	13	0.83'	3.51	2.14	N/A	18	6.19'		
Permit Load Rating	Strength II	FL120	60	1.35	1.25	1.50	3.03	1.44	86.26	13	0.83'	5.34	1.32	79.04	18	6.19'		

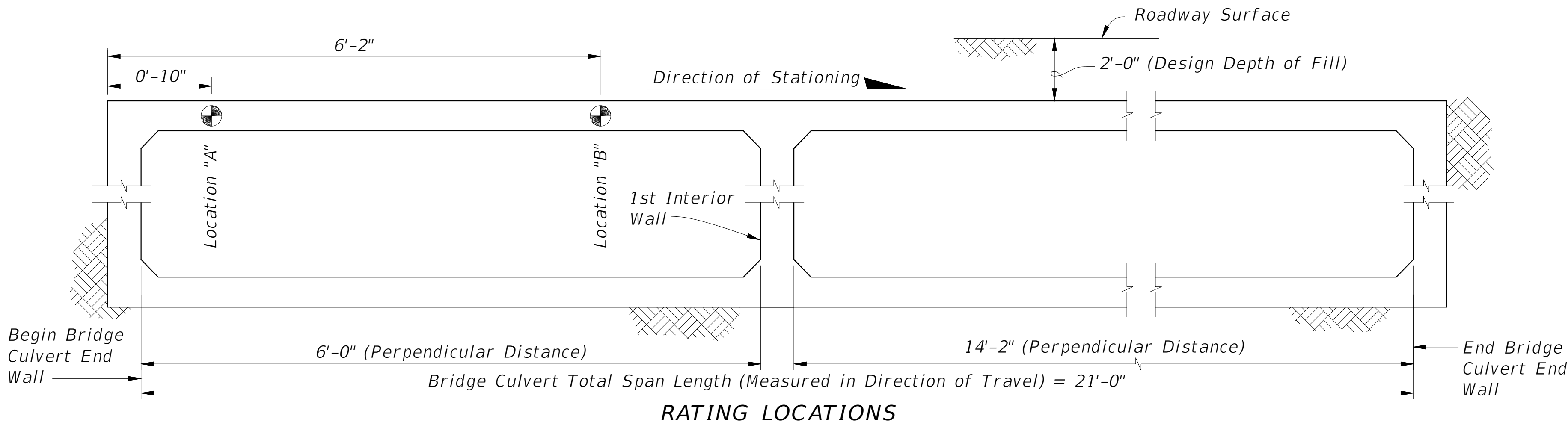
General Notes:
1. This table is based on the requirements established in the January 2023 "Structures Manual".

Table 2 Notes:
1. Permit capacity is determined by using the permit vehicle in all lanes.
2. Does the depth of fill above the top slab exceed the span length between the inside faces of the end walls (Bridge Culvert Total Span Length)? ☐ Yes ☒ No

If Yes then the live load may be neglected per LRFD 3.6.1.2.6.

Abbreviations:

- DL - Dead Load (LFR)
DC - Component Dead Load (LRFR)
DW - Wearing Surface & Utility Dead Load (LRFR)
LL - Live Load
Inv - Inventory
Op - Operating



INITIAL ISSUE DATE		5/2/24
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BULLFROG CREEK WILDLIFE AND ENVIRONMENTAL AREA	
SHEET TITLE	BOX CULVERT LOAD RATING DATA
PROJECT TITLE	BULLFROG CREEK WILDLIFE & ENVIRONMENTAL AREA CULVERT REPLACEMENT
SHEET NO.	B-5