

CITY OF GRIFFIN
GRIFFIN GOLF COURSE BRIDGE REPLACEMENTS
BID # 24-007

FROM: PARAGON CONSULTING GROUP, INC.
350 AIRPORT ROAD
GRIFFIN, GA 30224

TO: ALL BIDDERS OF RECORD

RE: Addendum No. 3, dated March 14, 2024

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated February 2024.

This Addendum consists of two (2) pages, a revised Bid Tabulation consisting of four (4) pages, Contech Contract Drawings titled "Griffin Golf Course Bridge A" consisting of sixteen (16) pages, Contech Contract Drawings titled "Griffin Golf Course Bridge B" consisting of sixteen (16) pages, contact information for Adam Pierce, CPESC from Solmax consisting of one (1) page, and a revised plan sheet No. 20 consisting of one (1) page.

CONTRACT DOCUMENTS AND SPECIFICATIONS

- Add. 1.1 Modification: A revised Bid Tabulation dated March 14, 2024, is attached to this Addendum and becomes a part of the Contract Documents. All Bidders should use the revised Bid Tabulation when submitting a bid.
- Add. 1.2 Modification: The quantity of line item 'G.A.B. IN PLACE FOR BACKFILL OF CULVERT & WINGWALLS' has been changed to 591 TN. This change applies to the Bid Tabulation for Bridge A.
- Add. 1.3 Modification: The quantity of line item 'G.A.B. IN PLACE FOR BACKFILL OF CULVERT & WINGWALLS' has been changed to 618 TN. This change applies to the Bid Tabulation for Bridge B.
- Add. 1.4 Modification: The line item 'TRENCH ROCK' has been added to the Bid Tabulation with a quantity of 10 CY. This change applies to the Bid Tabulation for both Bridge A and Bridge B.
- Add. 1.5 Modification: The line item 'G.D.O.T. STANDARE W BEAM GUARD RAIL & SUPPORTS WITH REFLECTROS COMPLETE' has been removed from the Bid Tabulation for Bridge B.

- Add. 1.6 Modification: Contech Contract Drawings titled 'Griffin Golf Course Bridge A' are attached to this Addendum and becomes a part of the Contract Documents.
- Add. 1.7 Modification: Contech Contract Drawings titled 'Griffin Golf Course Bridge B' are attached to this Addendum and becomes a part of the Contract Documents.
- Add. 1.8 Modification: Contact information for Adam Pierce, CPESC from Solmax is attached to this Addendum. Solmax will be providing the Gabions for both Bridge A and Bridge B.
- Add. 1.9 Modification: Plan sheet No. 20 has been revised and is attached to this Addendum and becomes part of the Contract Documents.

End of Addendum No. 3

**CITY OF GRIFFIN
GRIFFIN GOLF COURSE BRIDGE REPLACEMENTS
BID TABULATION**

Item	Description	Unit	Quantity	Unit Price	Item Total
BRIDGE A					
GENERAL					
1.	PAYMENT & PERFORMANCE BONDS	LS	1		
2.	GENERAL CONDITIONS	LS	1		
3.	CONSTRUCTION STAKING BY REGSITERED SURVEYOR	LS	1		
4.	AS-BUILT SURVEY BY REGISTERED SURVEYOR	LS	1		
<i>General Subtotal =</i>					
DEMOLITION/REMOVAL					
5.	COMPLETE DEMOLITION OF EXISTING CONCRETE BRIDGE INCLUDING OFFSITE DISPOSAL	LS	1		
6.	SAW CUT ASPHALT (VARIOUS DEPTHS)	LF	130		
7.	REMOVAL OF ASPHALT PAVING COMPLETE INCLUDING OFFSITE DISPOSAL (VARIOUS THICKNESSES)	SY	163		
8.	REMOVAL OF DEBRIS AND CONCRETE IN STREAM	LS	1		
9.	REMOVAL OF EXISTING GATES & POSTS	LS	1		
10.	REMOVAL & DISPOSAL OF CONCRETE POURED WALL SECTION (VERTICAL SAW CUT INCLUDED)	LS	1		
11.	REMOVAL & DISPOSAL OF STACKED CONCRETE WALL SECTION	LS	1		
<i>Demolition/Removal Subtotal =</i>					
NEW STRUCTURE - CONTECH ALUMINUM BOX CULVERT #51					
12.	ALUMINUM BOX CULVERT ASSEMBLY & INSTALLATION INCLUDING ALUMINUM WING WALLS COMPLETE	LS	1		
13.	ALUMINUM BOX CULVERT FOUNDATION SYSTEM COMPLETE PER PLANS	LS	1		
14.	PREPARATION FOR INSTALLATION OF CONTECH STRUCTURE, WING WALL EMBEDMENT & TIE BACKS	LS	1		
15.	#4 STONE FOR FOUNDATION BASE	TN	35		
16.	G.A.B. IN PLACE FOR BACKFILL OF CULVERT & WINGWALLS	TN	591		
17.	ASPHALT PAVING (6 : 2 : 1 1/2) SECTION)	SY	163		
18.	GRADING COMPLETE (TOPSOIL & FINE GRADING)	LS	1		
<i>New Struction - Contech Aluminum Box Culvert #51 Subtotal =</i>					
ASPHALT PAVING & CONCRETE FLATWORK					
19.	8" REINFORCED CONCRETE BRIDGE SLAB INCLUDING REINFORCING PER DETAIL	SF	540		
20.	32" TALL CONCRETE BARRIER	LF	56		
21.	CONCRETE CURB AT BASE OF BARRIER ON BRIDGE	LF	56		
22.	CONCRETE AT CART PATH - 5" THICK	SF	245		
<i>Paving & Concrete Flatwork Subtotal =</i>					
EROSION CONTROL & DIVERSION					
23.	TYPE 'C' SILT FENCE INLCUDING MAINTENANCE & REMOVAL	LF	525		
24.	SAND BAGS FOR FLOW DIVERSION, INCLUDING MAINTENANCE & REMOVAL	LF	140		
25.	FLOW DIVERSION & FOUNDATION EXCAVATION WATER CONTROL BY CONTRACTOR MEANS	LS	1		
26.	HAY BALES, INCLUDING MAINTENANCE & REMOVAL	LF	100		
27.	BERMUDA SOD	SF	550		
28.	STRAW/COCONUT MATTING	SF	600		
29.	GABION EROSION SYSTEM - SCOURLOK	LF	44		
30.	REINFORCED SLOPE STABILIZATION - ARMORMAX	SY	42		
30.	TEMPORARY GRASSING, INCLUDING MULCH	SF	650		
31.	PERMANENT GRASSING, INCLUDING MULCH	SF	2,000		
32.	TYPE III RIP RAP	TN	50		

Item	Description	Unit	Quantity	Unit Price	Item Total
33.	CONCRETE WASHOUT PER PLANS	EA	2		
<i>Erosion Control & Diversion Subtotal =</i>					
MISCELLANEOUS					
34.	ONE WAY SIGNS INCLUDING INSTALLATION	EA	3		
35.	SINGLE SWING GATE - 18' LONG	EA	1		
36.	BARRIER REFLECTORS - SHUR-TITE 3" WHITE	EA	14		
37.	4-INCH WHITE STRIPING (PARKING SPACES) THERMOPLASTIC	LF	34		
38.	ROAD BARRICADES FOR TRAFFIC CONTROL	LF	146		
39.	ORANGE BARRIER FENCE - 4' HIGH	LF	130		
39.	WING WALL TO EXISTING CONCRETE WALL DETAIL	LS	1		
40.	WING WALL TO EXISTING STACKED CONCRETE WALL DETAIL	LS	1		
41.	36-INCH DIAMETER TREE REMOVAL AND DISPOSAL	LS	1		
42.	TRENCH ROCK	CY	10		
<i>Miscellaneous Subtotal =</i>					
			TOTAL CONSTRUCTION		

**CITY OF GRIFFIN
GRIFFIN GOLF COURSE BRIDGE REPLACEMENTS
BID TABULATION**

Item	Description	Unit	Quantity	Unit Price	Item Total
BRIDGE B					
GENERAL					
1.	PAYMENT & PERFORMANCE BONDS	LS	1		
2.	GENERAL CONDITIONS	LS	1		
3.	CONSTRUCTION STAKING BY REGISTERED SURVEYOR	LS	1		
4.	AS-BUILT SURVEY BY REGISTERED SURVEYOR	LS	1		
<i>General Subtotal =</i>					
DEMOLITION/REMOVAL					
5.	COMPLETE DEMOLITION OF EXISTING CONCRETE BRIDGE INCLUDING OFFSITE DISPOSAL	LS	1		
6.	SAW CUT ASPHALT (VARIOUS DEPTHS)	LF	79		
7.	REMOVAL OF ASPHALT PAVING COMPLETE INCLUDING OFFSITE DISPOSAL (VARIOUS THICKNESSES)	SY	162		
8.	REMOVAL OF DEBRIS AND CONCRETE IN STREAM	LS	1		
9.	REMOVAL OF EXISTING GATE & POSTS	LS	1		
10.	REMOVAL OF CONCRETE FLUME NOTED ON DEMO PLAN	LS	1		
<i>Demolition/Removal Subtotal =</i>					
NEW STRUCTURE - CONTECH ALUMINUM BOX CULVERT #52					
11.	ALUMINUM BOX CULVERT ASSEMBLY & INSTALLATION INCLUDING ALUMINUM WING WALLS COMPLETE	LS	1		
12.	ALUMINUM BOX CULVERT FOUNDATION SYSTEM COMPLETE PER PLANS	LS	1		
13.	PREPARATION FOR INSTALLATION OF CONTECH STRUCTURE, WING WALL EMBEDMENT & TIE BACKS	LS	1		
14.	#4 STONE FOR FOUNDATION BASE	TN	35		
15.	G.A.B. IN PLACE FOR BACKFILL OF CULVERT & WINGWALLS	TN	618		
16.	ASPHALT PAVING (6 : 2 : 1 1/2) SECTION)	SY	162		
17.	GRADING COMPLETE (TOPSOIL, FINE GRADING, & REPLACEMENT OF EXISTING FILL EXCAVATED)	LS	1		
<i>New Structure - Contech Aluminum Box Culvert #52 Subtotal =</i>					
PAVING & CONCRETE FLATWORK					
18.	8" REINFORCED CONCRETE BRIDGE SLAB INCLUDING REINFORCING PER DETAIL	SF	540		
19.	32" TALL CONCRETE BARRIER	LF	56		
20.	CONCRETE CURB AT BASE OF BARRIER ON BRIDGE	LF	56		
21.	CONCRETE FLUME	LS	1		
<i>Paving & Concrete Flatwork Subtotal =</i>					
STORM DRAINAGE					
22.	18" CLASS III RCP	LF	14		
23.	4' DIAMETER MANHOLE	VF	7		
24.	4' FLAT LID WITH SQUARE OPENING	EA	1		
25.	4X4 RAISED LID WITH PEDESTALS	EA	1		
30.	CONCRETE FILL AT GABION	EA	1		
31.	CONCRETE HEADWALL	EA	1		
<i>Storm Drainage Subtotal =</i>					
EROSION CONTROL					
32.	TYPE 'C' SILT FENCE INCLUDING MAINTENANCE & REMOVAL	LF	640		
33.	SAND BAGS FOR FLOW DIVERSION, INCLUDING MAINTENANCE & REMOVAL	LF	140		

Item	Description	Unit	Quantity	Unit Price	Item Total
34.	FLOW DIVERSION & FOUNDATION EXCAVATION WATER CONTROL BY CONTRACTOR MEANS	LS	1		
35.	HAY BALES, INCLUDING MAINTENANCE & REMOVAL	LF	100		
36.	BERMUDA SOD	SF	600		
37.	STRAW/COCONUT MATTING	SF	1,000		
38.	GABION EROSION SYSTEM - SCOURLOK	LF	100		
39.	REINFORCED SLOPE STABILIZATION - ARMORMAX	SY	56		
40.	TEMPORARY GRASSING, INCLUDING MULCH	SF	500		
41.	ROAD BARRICADES FOR TRAFFIC CONTROL	SF	2,000		
42.	TYPE III RIP RAP	TN	50		
43.	CONCRETE WASHOUT PER PLANS	EA	2		
Erosion Control Subtotal =					
MISCELLANEOUS					
1.	TRENCH ROCK	CY	10		
44.	STOP SIGN WITH POST COMPLETE	EA	1		
45.	ONE WAY SIGNS INCLUDING INSTALLATION	EA	2		
46.	12-INCH WHITE STOP BAR - 12' IN LENGTH	EA	1		
47.	DOUBLE SWING GATE - 10' LONG	EA	2		
48.	BARRIER REFLECTORS - SHUR-TITE 3" WHITE	EA	14		
49.	4-INCH WHITE STRIPING (PARKING SPACES) THERMOPLASTIC	LF	40		
50.	CONCRETE DUMPSTER PAD - 10'X10'X8"	LS	1		
51.	ROAD BARRICADES FOR TRAFFIC CONTROL	LF	100		
52.	ORANGE BARRIER FENCE - 4' HIGH	LF	146		
52.	45-INCH DIAMETER TREE REMOVAL AND DISPOSAL	LS	1		
53.	TRENCH ROCK	CY	10		
Miscellaneous Subtotal =					
TOTAL CONSTRUCTION					

TOTAL CONSTRUCTION FOR BRIDGE A _____

TOTAL CONSTRUCTION FOR BRIDGE B _____

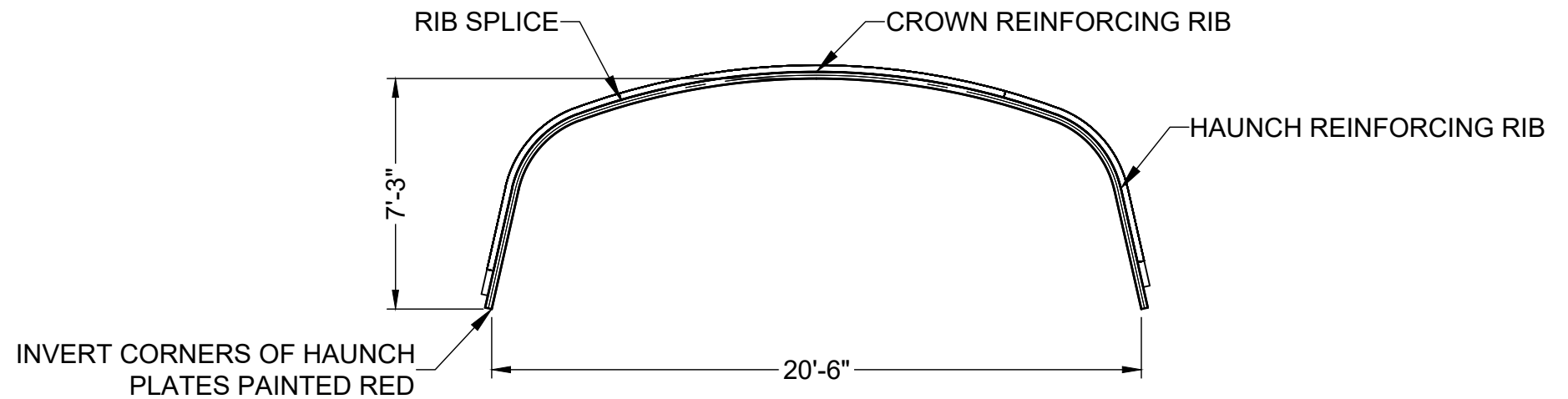
TOTAL CONSTRUCTION FOR BRIDGE A & BRIDGE B _____

GENERAL NOTES:

1. THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE ALUMINUM BOX CULVERT (ALBC) STRUCTURE AS DETAILED IN THE PLANS. ANY INSTALLATION INFORMATION PROVIDED HEREIN SHALL BE REVIEWED AND APPROVED BY THE ENGINEER. CHANGES AND DISCREPANCIES MUST BE FORWARDED TO THE MANUFACTURER TO BE INCORPORATED IN A REVISED DRAWING SET.
2. THE ENGINEER SHALL VERIFY THAT THE PROPOSED STRUCTURE IS APPROPRIATE FOR THE SITE CONDITIONS AND THE DESIGN PARAMETERS ARE CONSISTENT WITH THE PROJECT REQUIREMENTS. ALL ASPECTS OF THE STRUCTURE DESIGN AND SITE LAYOUT NOT EXPLICITLY INCLUDED IN THESE DRAWINGS SHALL BE PROVIDED OR COORDINATED BY THE ENGINEER. THIS MAY INCLUDE BUT IS NOT LIMITED TO: FOUNDATIONS, BACKFILL, END TREATMENTS, HYDRAULIC ANALYSIS AND SCOUR ANALYSIS AS REQUIRED.
3. CONTECH PRODUCT DRAWINGS MAY NOT BE USED, REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY WITHOUT THE PRIOR WRITTEN PERMISSION OF CONTECH ENGINEERED SOLUTIONS.
4. ALL DIMENSIONS ARE TO THE INSIDE CREST OF THE CORRUGATION PROFILE UNLESS NOTED OTHERWISE AND ARE SUBJECT TO MANUFACTURING TOLERANCES.
5. THE STRUCTURE GEOMETRY, DESIGN, AND MATERIALS AS SHOWN IN THESE DRAWINGS ONLY APPLY TO THE ALBC, DESIGNED AND FABRICATED BY CONTECH ENGINEERED SOLUTIONS (CONTECH). ALTERNATIVE SYSTEMS SHALL BE FULLY DESIGNED AND APPROVED PRIOR TO BIDDING, WITH SEALED DRAWINGS AND CALCULATIONS PROVIDED TO DEMONSTRATE COMPLIANCE WITH THE SAME GEOMETRY, DESIGN, AND MATERIAL REQUIREMENTS AS SHOWN HEREIN.
6. CIRCUMFERENTIAL PLATE LENGTHS ARE IN TERMS OF N = 9.625 INCHES.
7. FOR WATER CONVEYANCE APPLICATIONS THE STRUCTURE MUST MEET HYDRAULIC REQUIREMENTS OF THE SITE AS DETERMINED BY THE ENGINEER. SHEET PILING, INLET AND OUTLET APRONS, CUTOFF WALLS, RIP RAP, AND/OR OTHER MEASURES SHALL BE INSTALLED AS NECESSARY TO PREVENT LOSS OF ENGINEERED BACKFILL AND/OR FOUNDATION SOILS DUE TO SCOUR. THE EXTENT, SIZE, AND LOCATION OF SCOUR PROTECTION SHALL BE DETERMINED BY THE ENGINEER.
8. PERIMETER DRAINAGE, SURFACE DRAINAGE, AND GRADING AROUND THE STRUCTURE SHALL BE DESIGNED, SPECIFIED, SUPPLIED, AND INSTALLED BY OTHERS.

DESIGN PARAMETERS

1. DESIGN BY CONTECH ENGINEERED SOLUTIONS IS BASED ON THE FOLLOWING DESIGN CRITERIA:
 VEHICLE LIVE LOAD: HL-93
 MINIMUM COVER: 2.5
 MAXIMUM COVER: 4.0
 UNIT WEIGHT OF ENGINEERED BACKFILL = 120 LBS/FT³
2. ENGINEERED BACKFILL MATERIAL SHALL COMPLY WITH THE ENGINEERED BACKFILL MATERIAL REQUIREMENTS SHOWN IN THESE DRAWINGS.
3. DESIGN COVER AND LATERAL EXTENT OF ENGINEERED BACKFILL ZONE SHALL BE AS SHOWN IN THESE DRAWINGS AND REQUIRED BY THE DESIGN STANDARDS REFERENCED IN THESE NOTES.
4. REFERENCE AASHTO LRFD SECTION 12.6.1 FOR SEISMIC DESIGN CONSIDERATIONS.
5. STRUCTURE DESIGN BASED ON SITE SOIL INFORMATION PROVIDED IN CONTRACT DOCUMENTS. IF UNEXPECTED SITE SOIL CONDITIONS ARE ENCOUNTERED, CONTECH MUST BE NOTIFIED TO DETERMINE IF DESIGN CHANGES ARE NEEDED.
6. TEMPORARY CONSTRUCTION VEHICLE LOADING HEAVIER THAN THE DESIGN VEHICLE LIVE LOAD SHALL NOT BE PERMITTED TO CROSS OVER THE STRUCTURE WITHOUT THE APPROVAL OF CONTECH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY CONTECH OF THE SIZE, TYPE AND WEIGHT OF ANY CONSTRUCTION VEHICLES INTENDED TO CROSS OVER THE STRUCTURE.
7. STANDARD HIGHWAY LOADS THAT MEET PERMISSIBLE DESIGN LOAD LIMITS FOR AN ALBC ARE NOT ALLOWED ON THE STRUCTURE UNTIL IT IS BACKFILLED COMPLETELY AND PAVEMENT IS IN PLACE.
8. IT IS RECOMMENDED THAT UNPAVED ROADS INCORPORATE AT LEAST 6" MORE THAN MINIMUM ALLOWABLE COVER DEPTH TO ALLOW FOR RUTTING.



ALBC - END VIEW

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1': 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

FOR APPROVAL



GRIFFIN GOLF COURSE
BRIDGE A

GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.:	1 OF 16	

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- 1. DESIGN AND MANUFACTURING STANDARDS**
- 1.1 STANDARDS - ALL STANDARDS REFER TO THE CURRENT ASTM / AASHTO EDITION UNLESS OTHERWISE NOTED.
 - 1.2 AASHTO M219 - STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM ALLOY STRUCTURAL PLATE FOR FIELD-BOLTED PIPE, PIPE-ARCHES AND ARCHES
 - 1.3 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.
 - 1.4 AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS - SECTION 26.
 - 1.5 ASTM B864 - STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM BOX CULVERTS.

- 2. DEFINITIONS**
- 2.1 ENGINEER - IN THESE NOTES THE WORD "ENGINEER" SHALL MEAN THE ENGINEER OF RECORD OR OWNER'S DESIGNATED ENGINEERING REPRESENTATIVE.
 - 2.2 MANUFACTURER - IN THESE NOTES THE WORD "MANUFACTURER" SHALL MEAN THE MANUFACTURER OF THE ALBC, CONTECH ENGINEERED SOLUTIONS @ PHONE 800/338-1122.
 - 2.3 CONTRACTOR - IN THESE NOTES THE WORD "CONTRACTOR" SHALL MEAN THE FIRM OR CORPORATION UNDERTAKING THE EXECUTION OF ANY INSTALLATION WORK UNDER THE TERMS OF THESE SPECIFICATIONS.

- 3. ALUMINUM BOX CULVERT (ALBC) STRUCTURE ASSEMBLY**
- 3.1 ASSEMBLY OF THE ALBC SHALL BE IN ACCORDANCE WITH SECTION 26 OF AASHTO LRFD CONSTRUCTION SPECIFICATIONS (LATEST EDITION, WITH INTERIMS) AND ANY SUPPLEMENTAL RECOMMENDATIONS PROVIDED BY THE MANUFACTURER.
 - 3.2 ALL PLATES AND ACCESSORIES SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE. PLATES SHALL NOT BE ROLLED OR DRAGGED OVER GRAVEL ROCK AND SHALL BE PREVENTED FROM STRIKING ROCK OR OTHER HARD OBJECTS DURING PLACEMENT IN TRENCH OR ON BEDDING.
 - 3.3 FOR STRUCTURES SET ON CONCRETE FOOTINGS, PLATE ASSEMBLY CAN BEGIN AFTER PLACEMENT OF STRUCTURE FOOTINGS HAS BEEN APPROVED BY THE ENGINEER. VERIFICATION OF PROPER SPACING, ALIGNMENT, AND ORIENTATION OF THE FOUNDATIONS IS STRONGLY RECOMMENDED PRIOR TO BEGINNING PLATE ASSEMBLY. ANY MODIFICATIONS TO THE FOUNDATIONS SHALL BE MADE PRIOR TO BEGINNING PLATE ASSEMBLY.
 - 3.4 WHEN A METAL FOUNDATION IS USED, THE SOIL BEDDING REQUIRES A MINIMUM OF 6 INCHES OF LOOSE GRANULAR MATERIAL WITH A MAXIMUM PARTICLE SIZE OF ONE HALF THE CORRUGATION DEPTH. THE PROPER WIDTH OF THE BEDDING MATERIAL REQUIRED SHALL CONFORM TO THE PROJECT PLANS AND SPECIFICATIONS.
BEDDING PREPARATION SHOULD BE APPROVED BY THE ENGINEER PRIOR TO ASSEMBLY. THE BED SHOULD BE CONSTRUCTED TO UNIFORM LINE AND GRADE. IT SHOULD BE FREE OF ROCK FORMATIONS, PROTRUDING STONES, FROZEN LUMPS, ROOTS AND OTHER FOREIGN MATTER.
 - 3.5 THE SPAN AND RISE OF THE STRUCTURE SHOULD BE CHECKED FREQUENTLY DURING THE EARLY STAGES OF ASSEMBLY TO VERIFY THAT ASSEMBLY TOLERANCES ARE BEING ACHIEVED AND TO ALLOW FOR ADJUSTMENTS TO PROCEDURES, IF NECESSARY, BEFORE ASSEMBLY IS COMPLETE.
 - 3.6 CUT PLATES FOR SKEWED ENDS SHOULD BE ATTACHED AFTER THE MAIN BARREL OF A STRUCTURE HAS BEEN ASSEMBLED. WHEN CAST-IN-PLACE CONCRETE COLLARS OR HEADWALLS ARE TO BE CONSTRUCTED, THE CONTRACTOR MUST ALLOW FOR FORMWORK TO BE ERECTED ON THE END OF THE STRUCTURE. FORMING AGAINST A SKEWED CORRUGATION PROFILE IS COMPLEX AND SHOULD BE ACCOUNTED FOR BY THE FORMING CONTRACTOR WHEN PLANNING PROCEDURES AND METHODS FOR FORMWORK CONSTRUCTION. IN SOME CASES, FIELD TRIMMING OF THE STRUCTURE MAY BE NECESSARY. SPECIAL BRACING AND/OR SCAFFOLDING (DESIGN BY OTHERS) IS REQUIRED TO SUPPORT SKEWED ENDS UNTIL ADEQUATE COMPRESSIVE STRENGTH IS ACHIEVED AS REQUIRED BY THE COLLAR/HEADWALL DESIGNER.
 - 3.7 NUTS SHALL BE PLACED WITH THE ROUNDED FACE IN CONTACT WITH THE PLATES UNLESS NOTED OTHERWISE. NUTS CAN BE ON EITHER THE INSIDE OR OUTSIDE OF THE STRUCTURE TO FACILITATE ASSEMBLY.
 - 3.8 BOLTS AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-307 and/or ASTM A-449. RECOMMENDED TORQUE RANGE ON THE BOLTS IS 100 TO 150 FT-LBS.
 - 3.9 INSIDE SPAN AND RISE OF THE ASSEMBLED STRUCTURE AFTER BOLTING SHALL BE WITHIN 2% OF THE PLAN DIMENSIONS. THE STRUCTURE LENGTH SHALL BE WITHIN 1%.

- 4. ENGINEERED BACKFILL ENVELOPE**
- 4.1 ENGINEERED BACKFILL MATERIAL SHALL BE PLACED WITHIN THE ENGINEERED BACKFILL ENVELOPE TO THE MINIMUM WIDTH AND WITHIN THE COVER LIMITS SHOWN ON THESE DRAWINGS. THE ENGINEERED BACKFILL ENVELOPE SHALL NOT BE ALTERED WITHOUT WRITTEN APPROVAL FROM CONTECH.
 - 4.2. IN-SITU SOILS BELOW AND ADJACENT TO THE ENGINEERED BACKFILL ENVELOPE SHALL PROVIDE A FIRM SURFACE AGAINST WHICH TO COMPACT THE ENGINEERED BACKFILL MATERIAL. THE GEOTECHNICAL ENGINEER SHALL EVALUATE THE IN-SITU SOILS AND DETERMINE THE TYPE AND DEGREE OF ANY SOIL IMPROVEMENTS REQUIRED. THESE MAY INCLUDE BENCHING OR SLOPING OF THE SIDE SOILS. BACKFILL PLACEMENT MAY NOT BEGIN UNTIL THE GEOTECHNICAL ENGINEER HAS APPROVED THE IN-SITU SOILS AND ANY REQUIRED IMPROVEMENTS.
 - 4.3. A DRAINED CONDITION WAS ASSUMED FOR THE ENGINEERED BACKFILL ENVELOPE. DESIGN AND SUPPLY OF A SUBSURFACE DRAINAGE SYSTEM (IF NEEDED) SHALL BE PROVIDED BY OTHERS.
 - 4.4. IF REQUIRED BY THE GEOTECHNICAL ENGINEER, A GEOTEXTILE OR GRADED SOIL FILTER MAY BE USED BETWEEN THE ENGINEERED BACKFILL AND IN-SITU SOIL TO PREVENT MIGRATION OF FINES AND POSSIBLE INTERNAL EROSION OF THE SOIL.

- 5. ENGINEERED BACKFILL MATERIAL REQUIREMENTS**
- 5.1 THE DESIGN OF ALBC STRUCTURES RELIES ON COMPACTED SOIL PROPERTIES PROVIDED BY THE ENGINEERED BACKFILL MATERIALS. THE CORRECT SELECTION AND PLACEMENT OF COMPACTED ENGINEERED BACKFILL MATERIAL IS CRITICAL TO THE PERFORMANCE OF ALBC STRUCTURES.
 - 5.2 THE ENGINEERED BACKFILL MATERIAL SHALL NOT BE ADVERSELY AFFECTED BY WETTING, DRYING, SATURATION, FREEZE/THAW, VIBRATIONS, OR FLOWING WATER.
 - 5.3 BACKFILL MATERIALS SHALL CONFORM TO PROPERTIES REFERENCED IN THE PROJECT SPECIFICATIONS OR THE PROPERTIES DESCRIBED HEREIN, WHICHEVER IS MORE STRINGENT.
 - 5.4 ALBC NUMBERS 1 THROUGH 87 SHALL BE BACKFILLED USING CLEAN WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5, OR A-3 MODIFIED PER AASHTO M-145.
A-3 MATERIAL MAY NOT CONTAIN FINE BEACH SANDS, WINDBLOWN SANDS, STREAM DEPOSITED SAND, ETC. EXHIBITING FINE, ROUNDED PARTICLES.
ALBC NUMBERS 88 THROUGH 143 SHALL BE BACKFILLED USING CLEAN WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS FOR SOIL CLASSIFICATIONS A-1, A-2-4 OR A-2-5 PER AASHTO M-145.
REFER TO BACKFILL DETAILS FOR SOIL CLASSIFICATION TABLE. OPEN GRADED OR GAP GRADED MATERIALS ARE NOT PREFERRED. THE BACKFILL MATERIAL SHOULD BE FREE OF FROZEN LUMPS, FOREIGN MATERIAL OR ORGANIC DECOMPOSABLE MATERIALS. WHEN USING A-2 MATERIALS, MOISTURE CONTENT MUST BE BETWEEN -3% AND +2% OPTIMUM AS DEFINED BY AASHTO T 180.
 - 5.5 GRAIN SIZE DISTRIBUTION (GRADATION) OF THE ENGINEERED BACKFILL MATERIAL SHALL SATISFY: Cu GREATER THAN OR EQUAL TO 3 AND Cc BETWEEN 0.7 AND 3, WHERE Cu = COEFFICIENT OF UNIFORMITY = D60/D10 AND Cc = COEFFICIENT OF CURVATURE = (D30)²/(D60XD10). DXX IS THE PARTICLE SIZE CORRESPONDING TO XX% FINER ON THE CUMULATIVE PARTICLE SIZE DISTRIBUTION CURVE (ASTM D2487).
Cu REQUIREMENTS ARE WAIVED FOR CRUSHER RUN SCREENED AGGREGATES. Cc REQUIREMENTS ARE WAIVED FOR BACKFILL MATERIAL CONTAINING MORE THAN 60% GRAVEL (> #4 SIEVE).
 - 5.6 ABRASION LOSS SHALL NOT EXCEED 45% AS DETERMINED BY THE LOS ANGELES ABRASION TEST (ASTM C131).
 - 5.7 HUMIC (DECAYING) ORGANIC MATTER SHALL NOT EXCEED 1.0% (DRY WEIGHT BASIS).
 - 5.8 ELECTROCHEMICAL REQUIREMENTS FOR SOIL AND WATER IN CONTACT WITH BOTH THE INSIDE AND OUTSIDE OF THE ALBC STRUCTURE ARE AS FOLLOWS:
- PH = 4 TO 9
- RESISTIVITY > 500 OHM-CM
 - 5.9 IF THE ELECTROCHEMICAL PROPERTIES OF THE BACKFILL OR WATER FALL OUTSIDE OF THE RECOMMENDED RANGE, A SECONDARY PROTECTION SYSTEM MAY BE NEEDED TO ACHIEVE THE DESIGN SERVICE LIFE. SECONDARY PROTECTION SYSTEMS (IF REQUIRED) SHALL BE DESIGNED AND PROVIDED BY OTHERS.
 - 5.10 THE SELECTION AND EVALUATION OF PROPOSED ENGINEERED BACKFILL MATERIAL IS THE RESPONSIBILITY OF THE CONTRACTOR. THE PROPOSED ENGINEERED BACKFILL MATERIAL SHALL MEET OR EXCEED THE REQUIREMENTS OF THESE SPECIFICATIONS.

- 6. ENGINEERED BACKFILL PLACEMENT PROCEDURE**
- 6.1 CONTECH RECOMMENDS THAT A PRECONSTRUCTION CONFERENCE IS HELD PRIOR TO COMMENCEMENT OF WORK TO REVIEW AND DISCUSS THE RECOMMENDED PROCEDURES FOR BACKFILLING, AND STRUCTURE SHAPE MEASUREMENTS. ANY CONTRACTOR WITH RESPONSIBILITY FOR BACKFILLING OR CONSTRUCTION OF END TREATMENTS MUST BE REPRESENTED AT THIS MEETING. IT IS RECOMMENDED THAT THE ENGINEER AND ANY THIRD PARTY INVOLVED IN COMPACTION TESTING OR OTHER QUALITY CONTROL MEASURES ALSO ATTEND.
 - 6.2 ANY IMPROVEMENT OF THE SUBGRADE AND EMBANKMENT SOILS REQUIRED BY THE GEOTECHNICAL ENGINEER SHALL BE COMPLETED AND APPROVED PRIOR TO BEGINNING PLACEMENT OF ENGINEERED BACKFILL MATERIAL.
 - 6.3 THE ENGINEERED BACKFILL MATERIAL SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE STRUCTURE IN LAYERS OF 8 INCHES OR LESS (BEFORE COMPACTION).
 - 6.4 BACKFILL SHALL BE COMPACTED TO THE MINIMUM DENSITY INDICATED IN THESE DRAWINGS. DEPENDING ON THE COMPACTION EQUIPMENT AND ENGINEERED BACKFILL MATERIAL USED, IT MAY BE NECESSARY TO DECREASE THE LIFT THICKNESS AND/OR MOISTURE CONDITION THE LOOSE SOIL TO ACHIEVE THE SPECIFIED MINIMUM LEVEL OF COMPACTION.
 - 6.5 IF THE ENGINEERED BACKFILL MATERIAL DOES NOT PRODUCE A PROCTOR CURVE AND/OR IS NOT CONDUCTIVE TO TRADITIONAL FIELD-TESTING METHODS, QUALITATIVE METHODS OF EVALUATING COMPACTION MAY BE USED. SUCH METHODS SHALL BE EVALUATED AND APPROVED BY THE GEOTECHNICAL ENGINEER AND A COPY OF THE METHOD BE PROVIDED TO THE DESIGNER.
 - 6.6 THE DIFFERENCE IN BACKFILL LEVELS ON THE TWO SIDES OF THE STRUCTURE AT ANY TRANSVERSE SECTION SHALL NOT EXCEED 24 INCHES WITHOUT PRIOR APPROVAL FROM CONTECH.
 - 6.7 CONSTRUCTION EQUIPMENT USED WITHIN 5 FEET LATERALLY OF THE WIDEST PART OF THE STRUCTURE, UP TO THE MINIMUM DESIGN COVER HEIGHT ABOVE THE STRUCTURE, SHALL HAVE A STATIC MASS OF 10 TONS OR LESS. IT MAY BE POSSIBLE TO USE HEAVIER EQUIPMENT IF IT CAN BE DEMONSTRATED THAT THE STRUCTURE SHAPE IS NOT ADVERSELY AFFECTED. ENGINEERED BACKFILL MATERIAL PLACED WITHIN 1 FOOT LATERALLY OF THE WIDEST PART OF THE STRUCTURE SHALL BE COMPACTED USING HAND OPERATED EQUIPMENT UNTIL THE MINIMUM COVER HEIGHT IS REACHED. OVER-COMPACTION OF ENGINEERED BACKFILL IN THIS ZONE SHOULD BE AVOIDED, AS THIS CAN CONTRIBUTE TO EXCESSIVE DEFLECTION OF SOME STRUCTURES. AREAS CLOSEST TO THE STRUCTURE SHALL BE COMPACTED RUNNING PARALLEL TO THE LENGTH OF THE STRUCTURE.

- 6.8 ONCE THE BACKFILL ELEVATION REACHES THE MIDDLE OF THE HAUNCH CURVE (DEPENDING ON RELATIVE MOVEMENT DURING THE BACKFILL PROCESS), PLACE AND COMPACT ENGINEERED BACKFILL MATERIAL IN RADIAL LIFTS OVER THE TOP OF THE STRUCTURE USING EQUIPMENT AS DESCRIBED ABOVE. THE FIRST RADIAL LIFT SHOULD BE THICKER AND PROVIDE A MINIMUM 12 INCHES OF COVER BETWEEN THE STRUCTURE AND COMPACTION EQUIPMENT. EQUIPMENT SHOULD RUN PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE STRUCTURE. NO EQUIPMENT SHALL BE ALLOWED OVER THE STRUCTURE THAT WOULD EXCEED THE DESIGN LOAD AT THE MINIMUM DESIGN HEIGHT OF COVER. NO CONSTRUCTION EQUIPMENT SHALL BE ALLOWED TO PARK ON TOP OF A PARTIALLY BACKFILLED STRUCTURE.
- 6.9 AT NO TIME SHALL THE ENGINEERED BACKFILL MATERIAL BE DUMPED OR PUSHED AGAINST THE STRUCTURE WALL(S) SO AS TO CHANGE THE SHAPE OR ALIGNMENT OF THE STRUCTURE. MATERIAL SHALL NOT BE DUMPED ON TOP OF THE STRUCTURE AT ANY TIME. TRUCKS MAY UNLOAD IN ROUGH LAYERS NO CLOSER THAN 5 FEET FROM THE WIDEST PART OF THE STRUCTURE.
- 6.10 THE STRUCTURE SHALL BE CHECKED PERIODICALLY DURING BACKFILLING TO ENSURE THE FINAL SHAPE OF THE STRUCTURE MEETS DESIGN REQUIREMENTS AND IS CONSISTENT WITH THE ASSEMBLY TOLERANCES AS STATED IN THESE NOTES. IF DEFLECTION OF THE STRUCTURE IS GREATER THAN EXPECTED, BACKFILLING SHALL BE HALTED AND BACKFILL PLACEMENT AND COMPACTION PROCEDURES MODIFIED TO CORRECT THE STRUCTURE SHAPE. IT MAY BE NECESSARY TO REMOVE SOME OF THE BACKFILL TO CORRECT EXCESSIVE DEFLECTION.

- 7. CONSTRUCTION OBSERVATIONS AND TESTING**
- 7.1 OBSERVATION AND TESTING SHALL BE PERFORMED DURING CONSTRUCTION TO VERIFY COMPLIANCE WITH THESE DRAWINGS, APPLICABLE PROJECT DOCUMENTS, AND STANDARDS REFERENCED IN THESE NOTES.
 - 7.2 THE CONTRACTOR IS RESPONSIBLE FOR QUALITY CONTROL PROCEDURES, VERIFICATION MEASUREMENTS, ADEQUATE SUPERVISION, PROGRESS TESTING, EVALUATION OF PROPOSED ENGINEERED BACKFILL MATERIALS, AND/OR OTHER MEASURES AS NEEDED TO ENSURE THAT THE COMPLETED PROJECT COMPLIES WITH THESE DRAWINGS AND NOTES.
 - 7.3 THE PROJECT OWNER (OR THEIR DESIGNATED REPRESENTATIVE) IS RESPONSIBLE FOR PROJECT OVERSIGHT AND FINAL ACCEPTANCE OF THE CONSTRUCTED STRUCTURE. THE OWNER MAY ACCEPT THE CONTRACTOR'S QUALITY CONTROL PROGRAM OR ADOPT AN INDEPENDENT QUALITY ASSURANCE PROGRAM TO VERIFY COMPLIANCE.
 - 7.4 OBSERVATIONS AND TESTING PRIOR TO STRUCTURE ASSEMBLY & BACKFILL SHALL INCLUDE BUT NOT BE LIMITED TO:
 - EVALUATION OF FOUNDATION SOILS BELOW FOOTINGS AND THE ENGINEERED BACKFILL ENVELOPE
 - VERIFICATION OF PROPER ALIGNMENT, DIMENSIONS, AND PLACEMENT OF FOUNDATIONS
 - VERIFICATION OF PROPER SHAPING, PLACEMENT, AND PREPARATION OF BEDDING SOILS (STRUCTURES WITH INVERTS)
 - VERIFICATION OF PROPER PREPARATION OF EMBANKMENT SOILS ADJACENT TO THE ENGINEERED BACKFILL ENVELOPE
 - EVALUATION AND APPROVAL OF ENGINEERED BACKFILL MATERIALS
 - VERIFICATION OF PROPER PLACEMENT OF GEOTEXTILES (WHEN REQUIRED)
 - 7.5 OBSERVATIONS AND TESTING DURING ASSEMBLY & BACKFILLING SHALL INCLUDE BUT NOT BE LIMITED TO:
 - STRUCTURE ALIGNMENT
 - PLATE TIGHTNESS OBSERVATIONS
 - BOLT TORQUE MEASUREMENTS
 - INITIAL STRUCTURE SHAPE MEASUREMENTS (PRIOR TO STARTING BACKFILLING)
 - PERIODIC STRUCTURE SHAPE MEASUREMENTS (DURING BACKFILLING)
 - ENGINEERED BACKFILL MATERIAL SAMPLING AND TESTING
 - OBSERVATIONS OF PROPER FILL PLACEMENT AND COMPACTION PROCEDURES.
 - 7.6 CONTECH MAY REQUIRE ADDITIONAL OBSERVATIONS AND/OR TESTING WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, FULL TIME SHAPE MONITORING, ADDITIONAL SOIL TESTING, AND SITE EVALUATIONS DEPENDING ON THE STRUCTURE GEOMETRY, DESIGN, AND/OR OTHER PROJECT SPECIFIC FACTORS.

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ ɛ: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
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	BEVEL	0	0	

FOR APPROVAL



GRIFFIN GOLF COURSE
BRIDGE A

GRIFFIN, GA

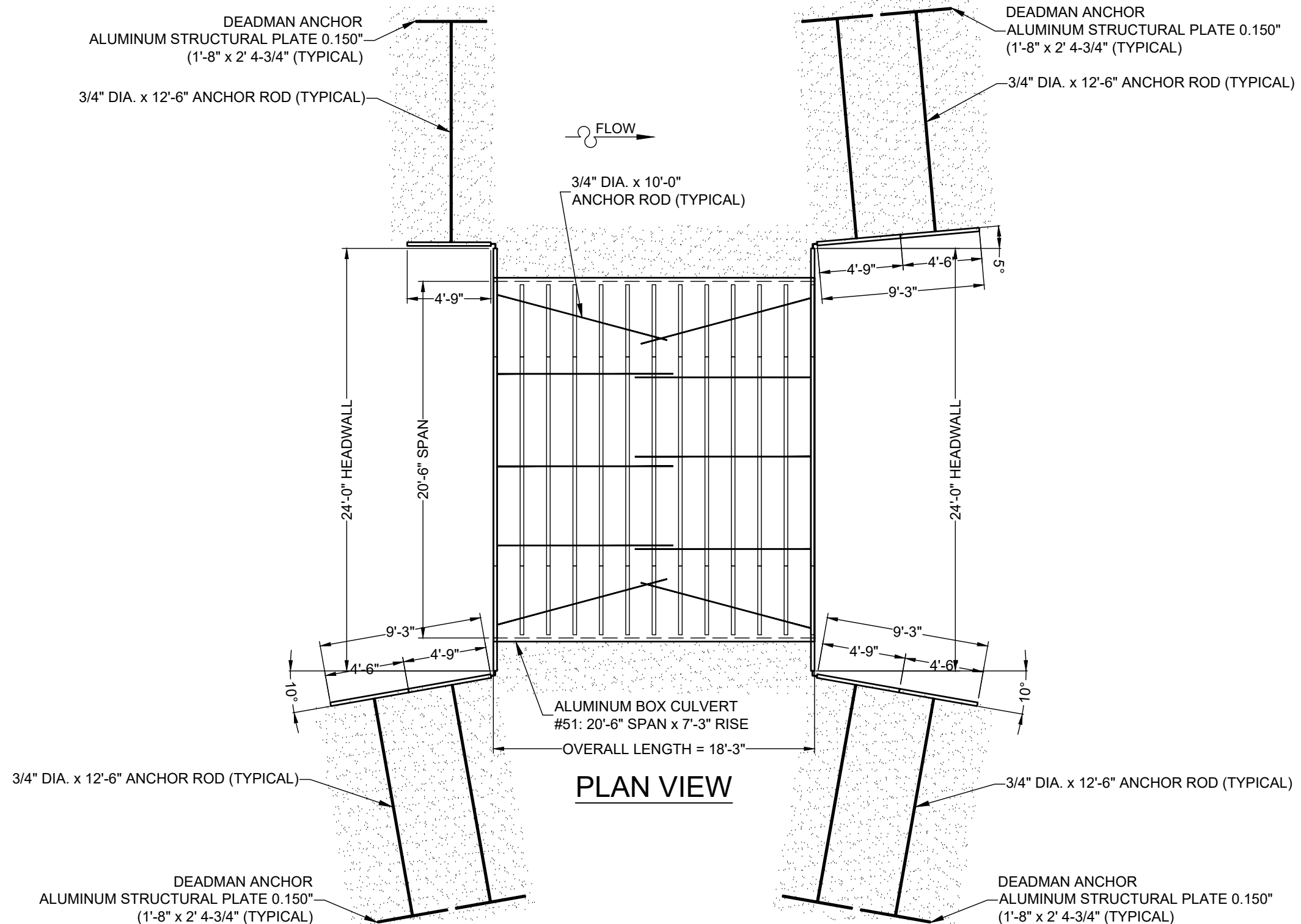
PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.: 2 OF 16		

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NOTE:
SHADED AREA REPRESENTS CRITICAL BACKFILL ZONES.



TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
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GRIFFIN GOLF COURSE
BRIDGE A
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.:	3 OF 16	

MARK	DATE	REVISION DESCRIPTION	BY

I:\MERLIN\PROJECTS\ACT\17163001\16372\16372-10-ALUMINUM BOX CULVERT\DRAWINGS\CONTRACT\16372-010-ALBCC-CON-A.DWG 3/5/2024 12:30 PM

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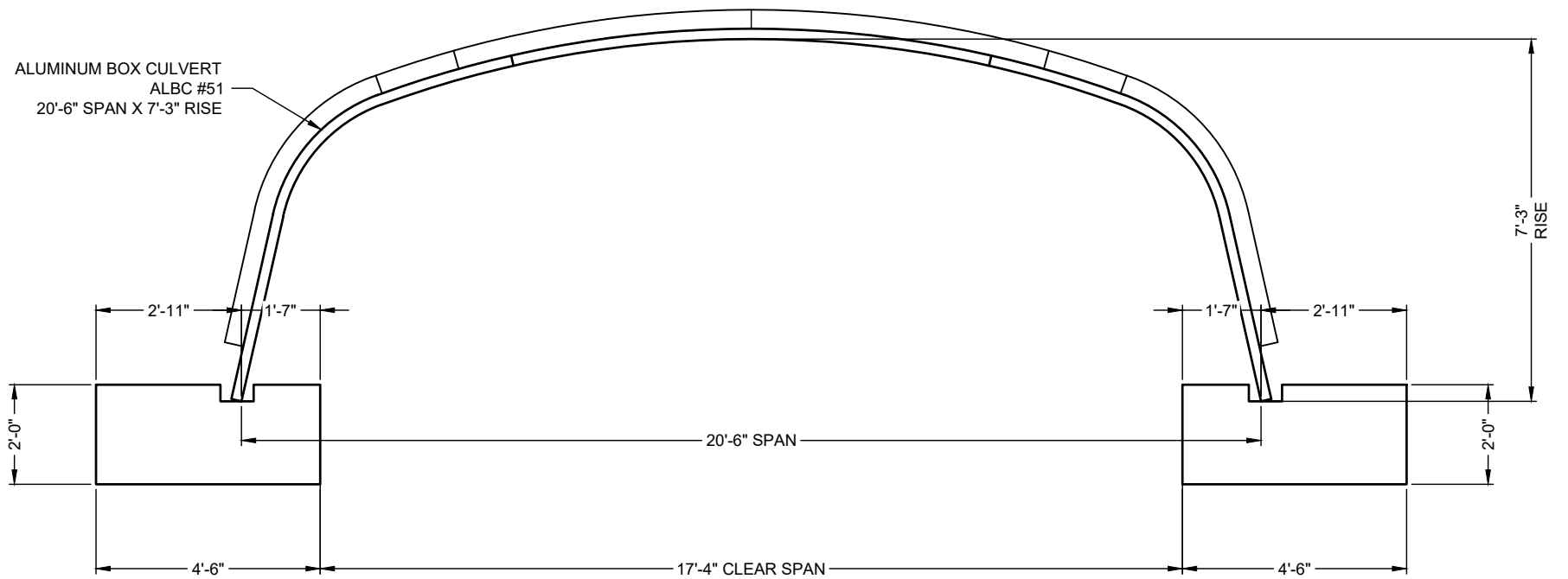
FOUNDATION NOTES:

1. THE ENGINEER SHALL VERIFY THAT THE PROPOSED FOUNDATION IS APPROPRIATE FOR THE SITE CONDITIONS AND THE DESIGN PARAMETERS ARE CONSISTENT WITH THE PROJECT REQUIREMENTS. THE FOUNDATION DESIGN CONSIDERS STRUCTURAL REQUIREMENTS OF THE FOUNDATION ONLY. HYDRAULIC ANALYSIS AND SCOUR ANALYSIS, AS REQUIRED, SHALL BE PERFORMED OR COORDINATED BY THE ENGINEER.
2. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL ELEVATIONS SHOWN WITH THE ENGINEER.
3. FOUNDATION DESIGN IS BASED ON SITE SOIL INFORMATION PROVIDED TO CONTECH AND DESCRIBED IN THE DESIGN PARAMETERS BELOW. FOUNDATION BEARING SOILS, INCLUDING ANY SOIL IMPROVEMENTS REQUIRED, SHALL BE EVALUATED AND APPROVED BY OTHERS PRIOR TO FOUNDATION CONSTRUCTION. IF UNEXPECTED SOIL CONDITIONS ARE ENCOUNTERED, OR THE BEARING REQUIREMENTS CANNOT BE ACHIEVED, CONTECH MUST BE NOTIFIED TO DETERMINE IF FOOTING DESIGN CHANGES ARE NEEDED.
4. REINFORCED CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 8, REINFORCED CONCRETE, FOR CLASS A CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.
5. REINFORCING STEEL FOR FOUNDATIONS SHALL CONFORM TO ASTM A615, GRADE 60 (Fy=60 ksi).
6. KEYWAY TO BE FILLED WITH NON-METALLIC, NON-SHRINK GROUT, WITH A MINIMUM 4,000 PSI COMPRESSIVE STRENGTH (ASTM C1107). GROUT AND SHIMMING MATERIAL SHOULD NOT CONTAIN ANY CORROSION-PROMOTING AGENTS.

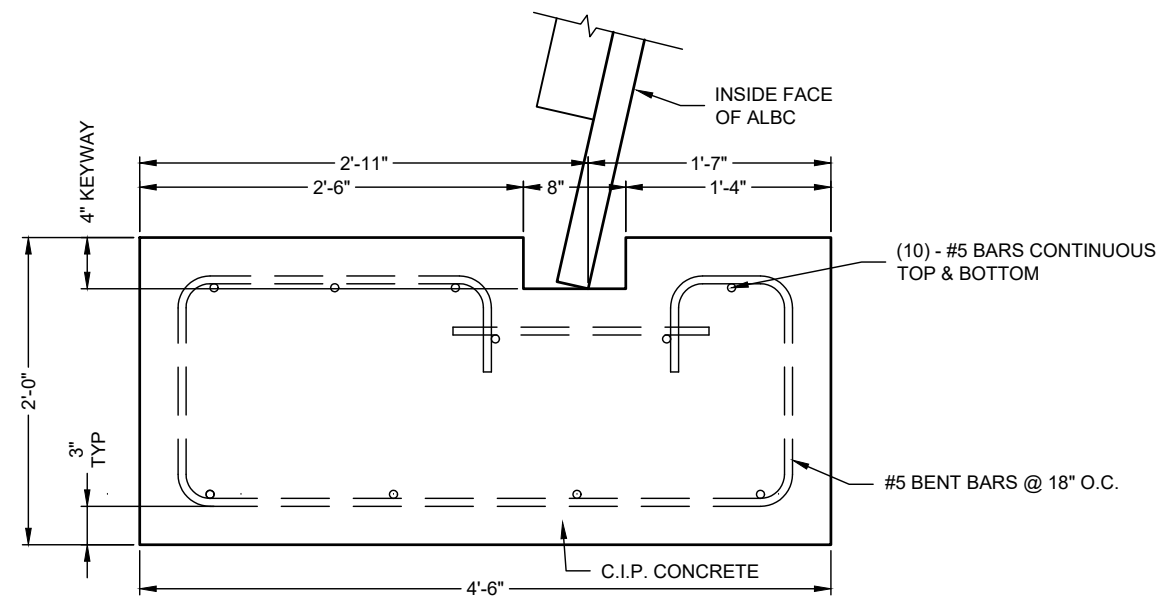
DESIGN PARAMETERS:

DESIGN LIVE LOAD: HL-93
 DESIGN MAXIMUM FILL HEIGHT: 4'
 DESIGN METHOD: LOAD FACTOR DESIGN PER AASHTO SPECIFICATION
 DESIGN MINIMUM NET ALLOWABLE BEARING CAPACITY: 3,000 PSF*

*BEARING CAPACITY PROVIDED IN GEOTECHNICAL REPORT PREPARED BY ATLAS TECHNICAL CONSULTANTS, LLC DATED APRIL 26, 2023.



CROSS SECTION



FOR APPROVAL FOOTING DETAIL

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
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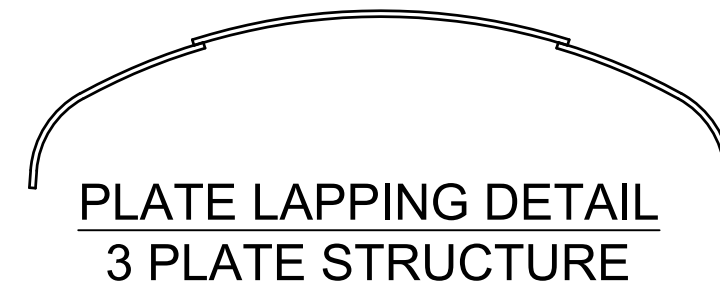
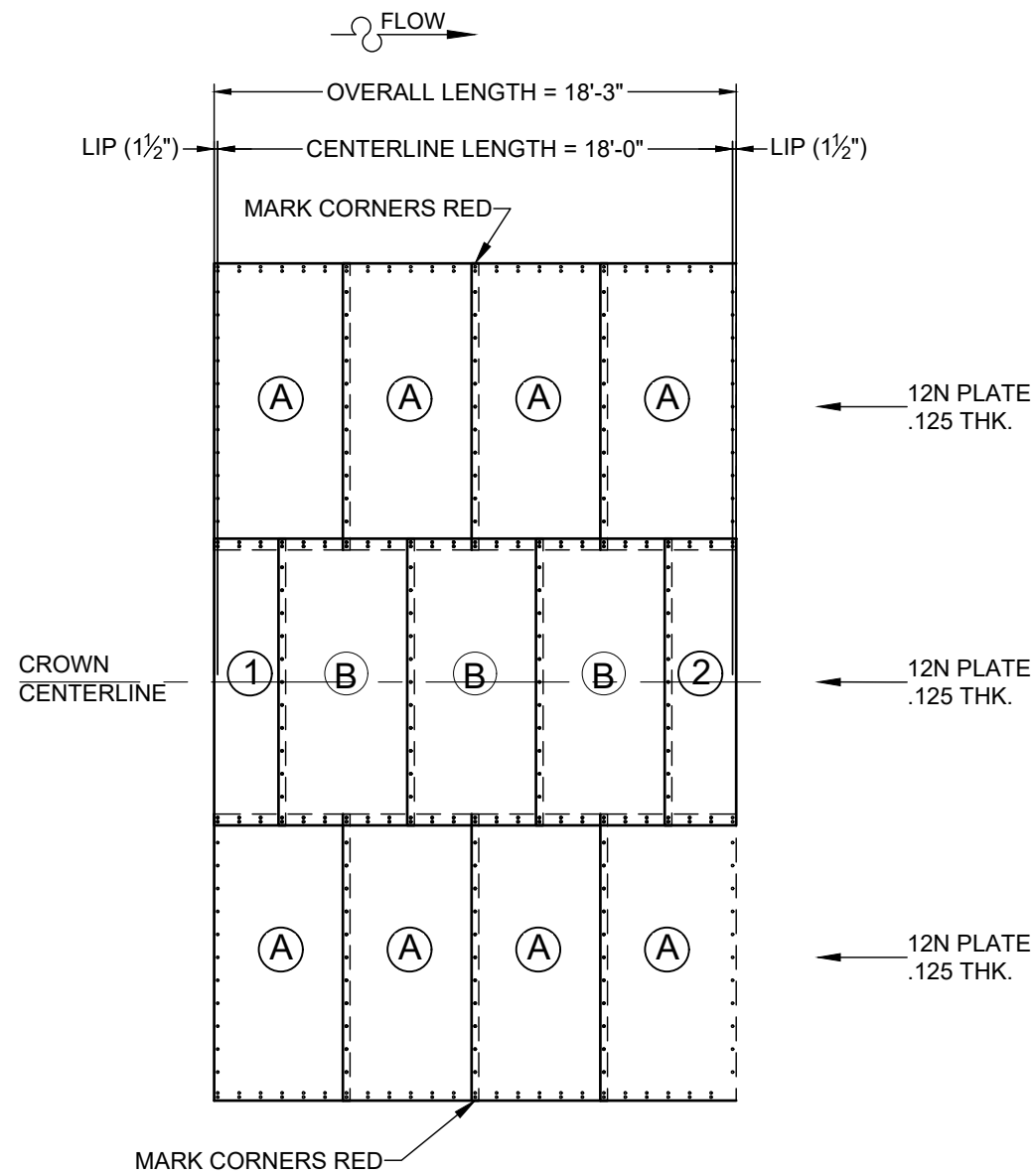
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GRIFFIN GOLF COURSE
 BRIDGE A
 GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.:	4 OF 16	

NOTE:
 BEGIN SHELL ASSEMBLY AT INLET END. SEE
 ASSEMBLY GUIDE INCLUDED WITH THE MATERIAL
 SHIPMENT FOR FURTHER INSTRUCTIONS.



ALBC - DEVELOPED PLAN (OUTSIDE VIEW)

20'-6" SPAN x 7'-3" RISE

PLATES ONLY - (REINFORCING RIBS NOT SHOWN FOR CLARITY)

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
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	BEVEL	0	0	

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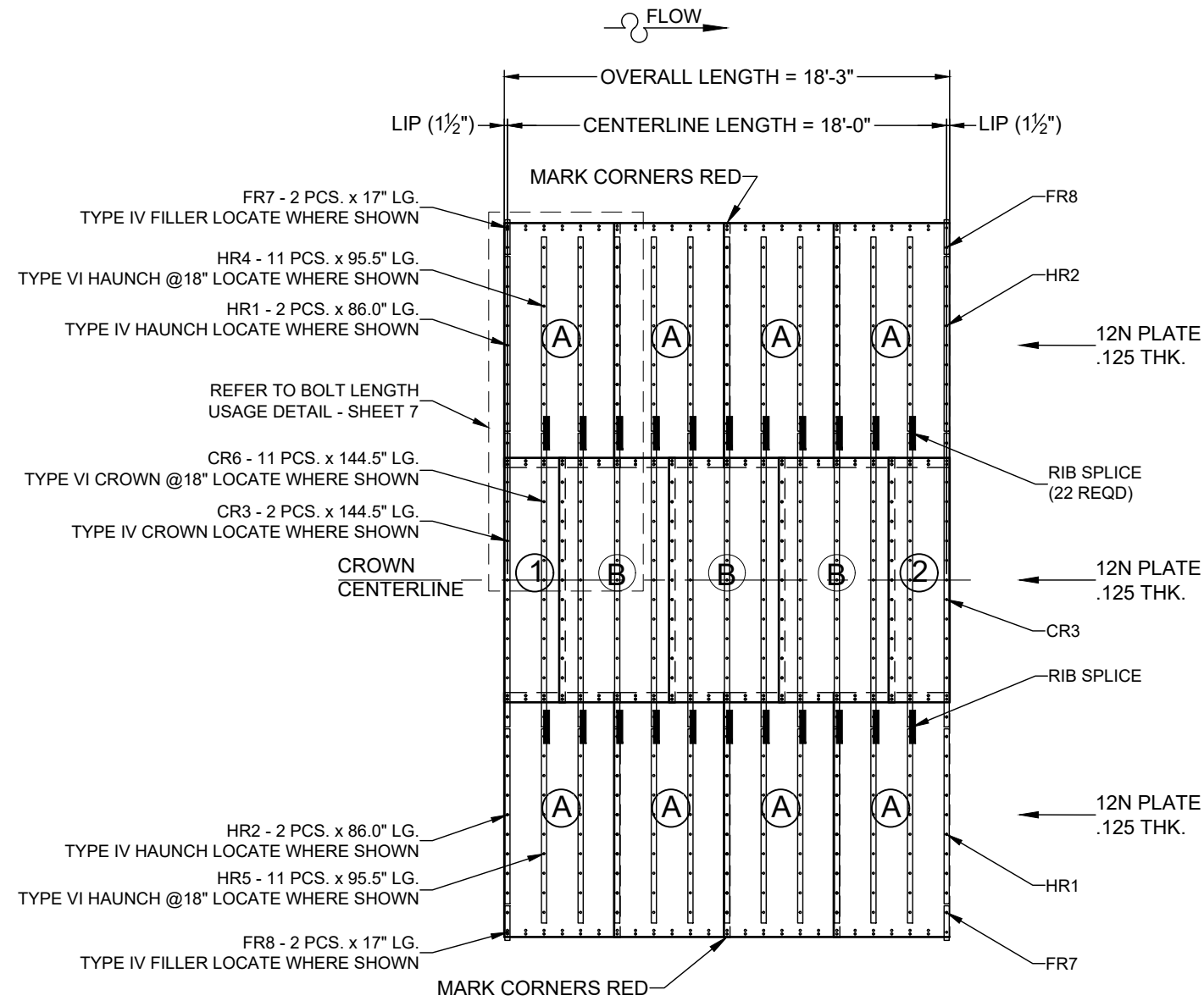
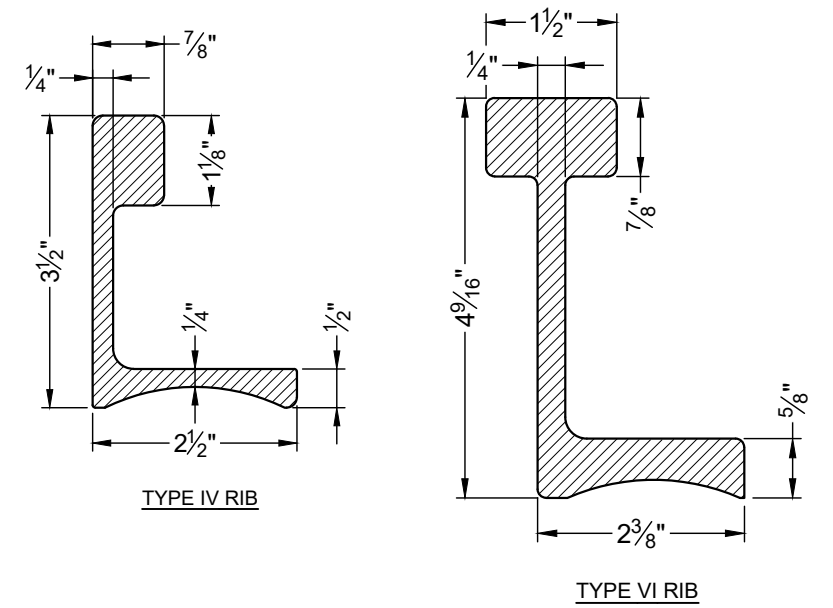
PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.: 5 OF 16		

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NOTES:

1. PLATE ONLY LAPS AT CORRUGATION VALLEYS NOT SHOWN FOR CLARITY.
2. REFER TO SHEET 7 FOR ADDITIONAL DETAIL.



ALBC - DEVELOPED PLAN (OUTSIDE VIEW)
20'-6\"/>

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
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BRIDGE A
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.:	6 OF 16	

NOTES:

1. FOR PROPER BOLT SIZE USAGE, REFER TO THE FOLLOWING:

PLATE ONLY

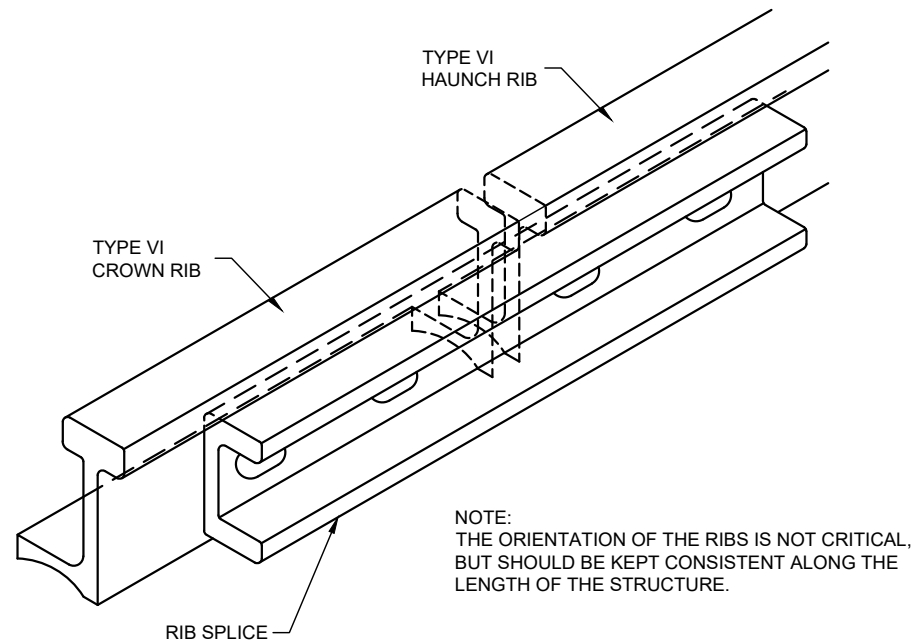
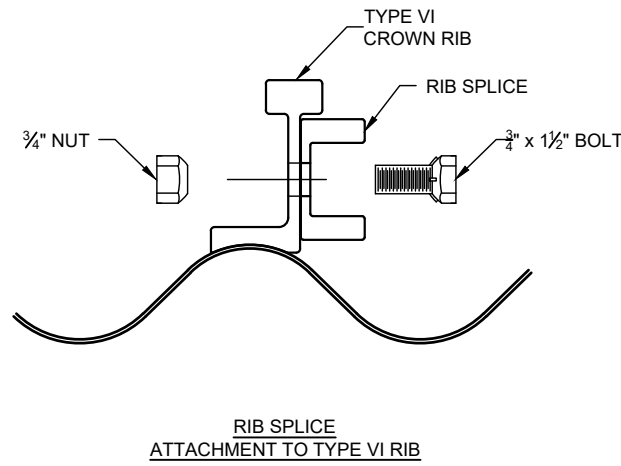
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0.125" THK. PLATE	1 1/4"	1 1/4"

PLATE W/ TYPE IV REINFORCING RIB

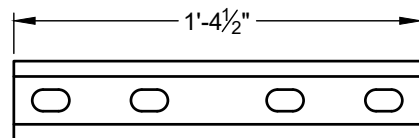
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0.125" THK. PLATE	1 1/4"	1 1/2"

PLATE W/ TYPE VI REINFORCING RIB

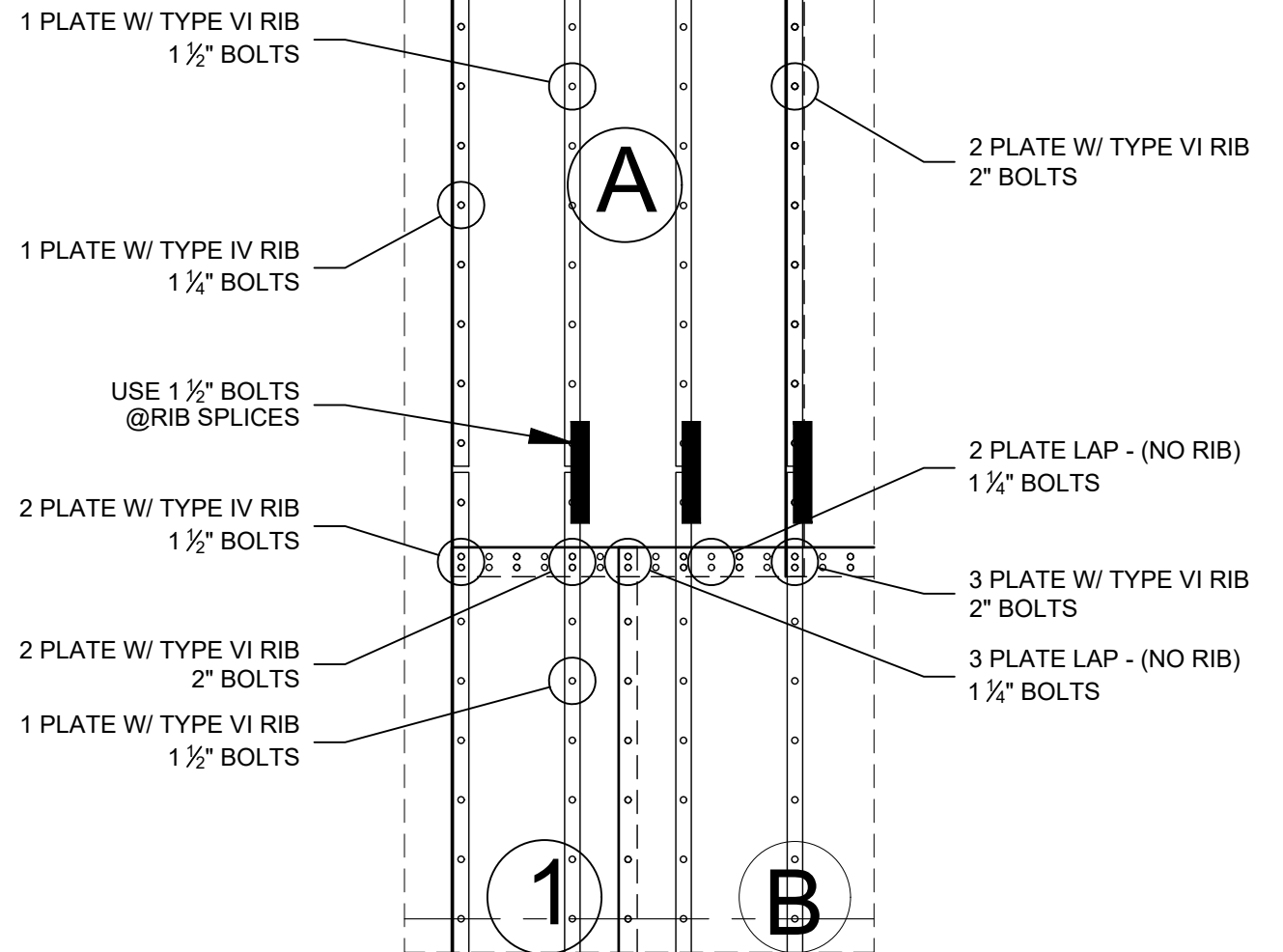
	1 PLATE	2 PLATE	3 PLATE
0.125" THK. PLATE	1 1/2"	2"	2"



RIB SPLICE ISOMETRIC VIEW



RIB SPLICE



BOLT LENGTH USAGE DETAIL

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"	INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	
	BEVEL	0	0

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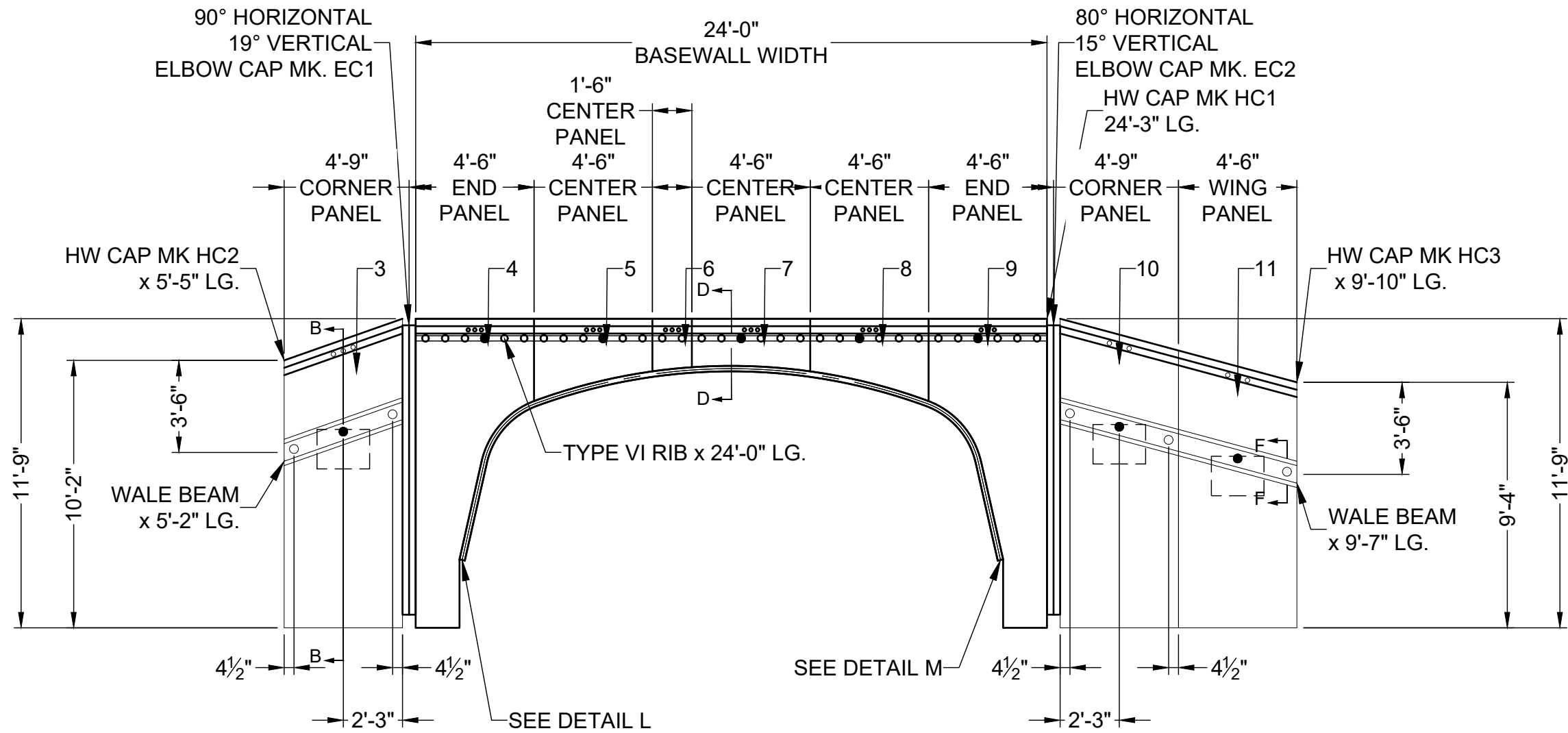
PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.: 7 OF 16		

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ALBC - INLET EXPANDED END VIEW

NOTES:

1. WALL PANEL NUMBERS ARE MARKED ON THE SOIL SIDE.
2. BOLT HEADWALL TO REINFORCING RIB AT END OF STRUCTURE.
3. SEE SHEETS 10-14 FOR REFERENCED SECTIONS AND ADDITIONAL DETAILS.
4. ALL 2'-3" DIMENSIONS ARE RELATIVE TO SECTION B-B.
5. ALL 4 1/2" DIMENSIONS ARE RELATIVE TO SECTION F-F.
6. ○ DENOTES BOLTS CONNECTION
7. ● DENOTES ANCHOR ROD CONNECTION

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
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	BEVEL	0	0	

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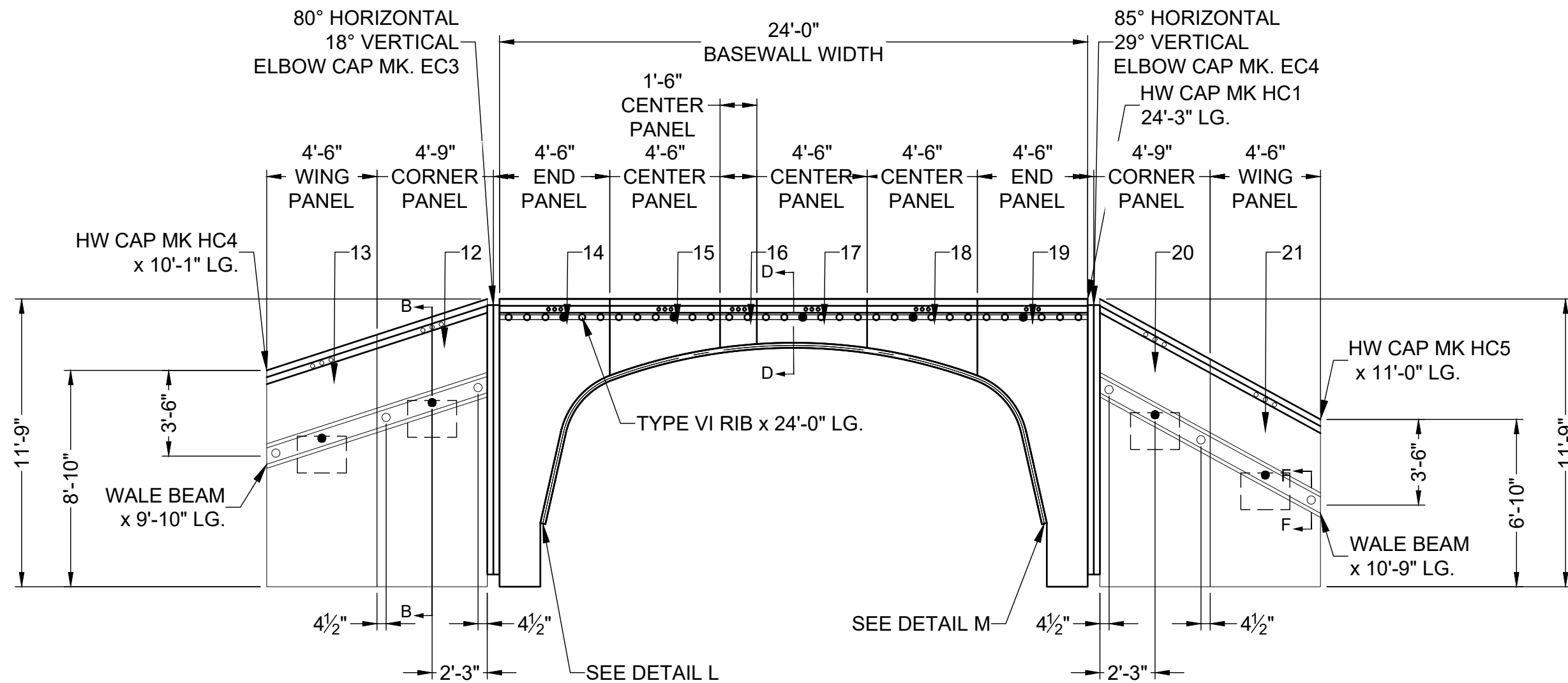
PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.: 8 OF 16		

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ALBC - OUTLET EXPANDED END VIEW

NOTES:

1. WALL PANEL NUMBERS ARE MARKED ON THE SOIL SIDE.
2. BOLT HEADWALL TO REINFORCING RIB AT END OF STRUCTURE.
3. SEE SHEETS 10-14 FOR REFERENCED SECTIONS AND ADDITIONAL DETAILS.
4. ALL 2'-3" DIMENSIONS ARE RELATIVE TO SECTION B-B.
5. ALL 4 1/2" DIMENSIONS ARE RELATIVE TO SECTION F-F.
6. ○ DENOTES BOLTS CONNECTION
7. ● DENOTES ANCHOR ROD CONNECTION

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN GOLF COURSE
BRIDGE A
GRIFFIN, GA

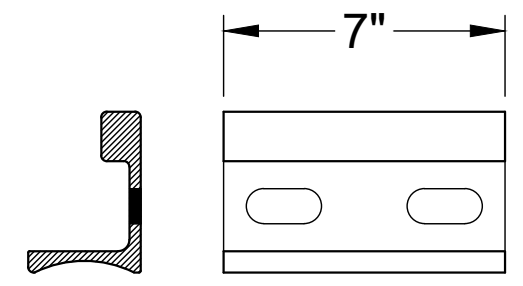
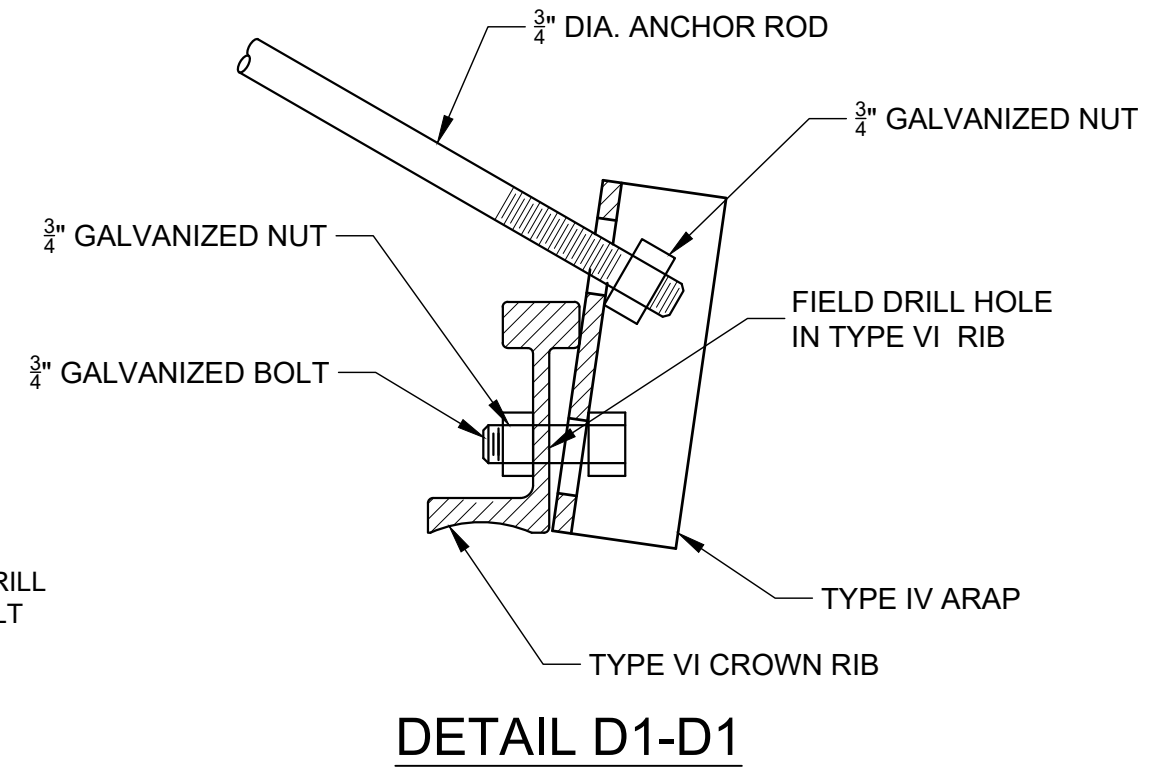
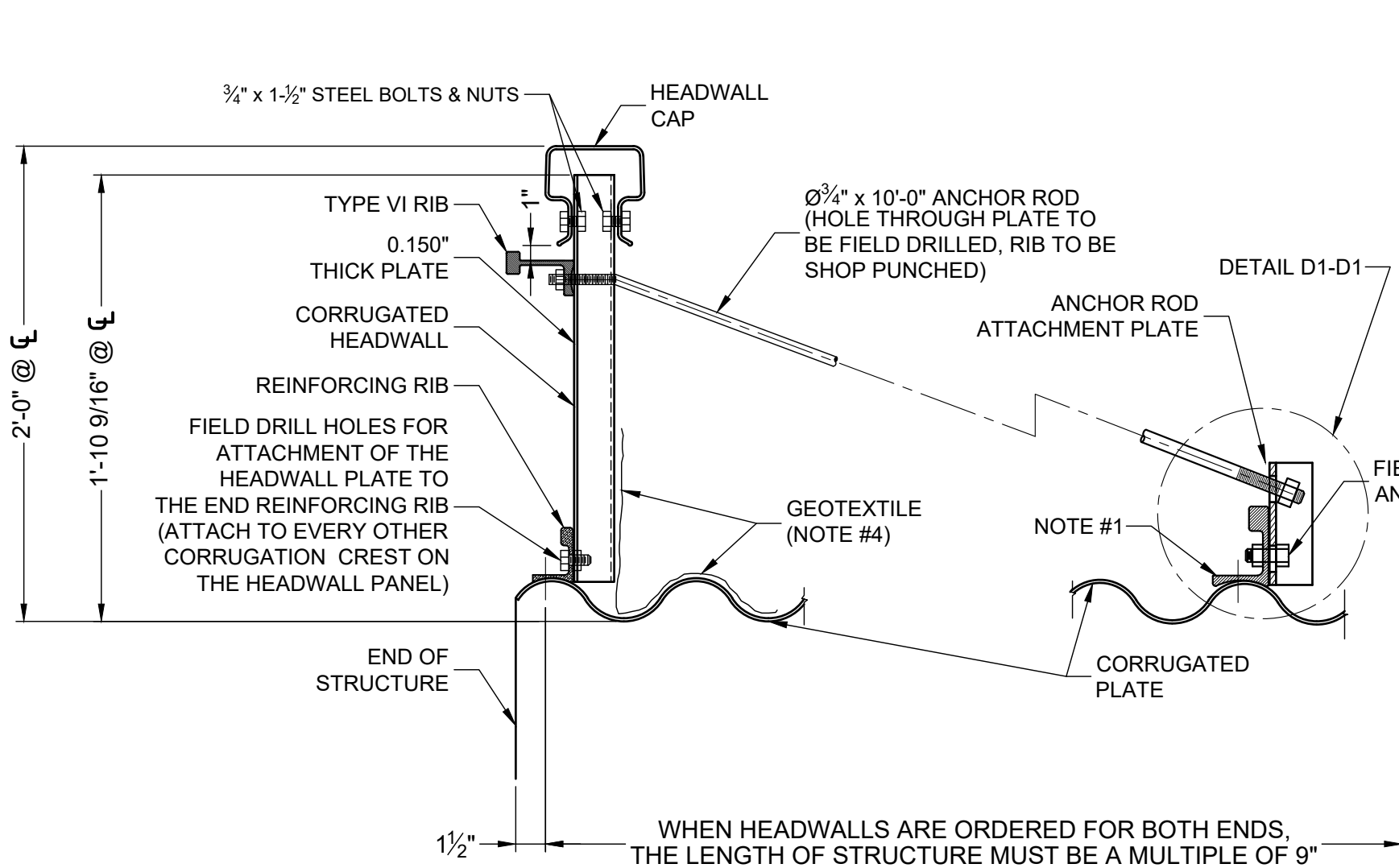
PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
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WHEN HEADWALLS ARE ORDERED FOR BOTH ENDS, THE LENGTH OF STRUCTURE MUST BE A MULTIPLE OF 9"

SECTION D-D HEADWALL ATTACHMENT TO CROWN OF STRUCTURE

NOTES:

- 1) REVERSE CROWN RIBS AT THIS CORRUGATION IF NECESSARY FOR PROPER ANCHOR ROD ATTACHMENT PLATE ORIENTATION.
- 2) NO SPLICE PLATES ARE USED FOR THE TYPE IV REINFORCING RIBS ATTACHED TO THE CORRUGATED HEADWALL.
- 3) REINFORCING RIBS AT EACH END OF STRUCTURE MUST BE ORIENTED SUCH THAT THE HEADWALL CAN BE PLACED BEHIND THEM AS SHOWN.
- 4) GEOTEXTILE PREVENTS INFILTRATION OF THE BACKFILL BETWEEN THE HEADWALL AND STRUCTURE. A ROLL OF GEOTEXTILE IS PROVIDED FOR THIS PURPOSE.

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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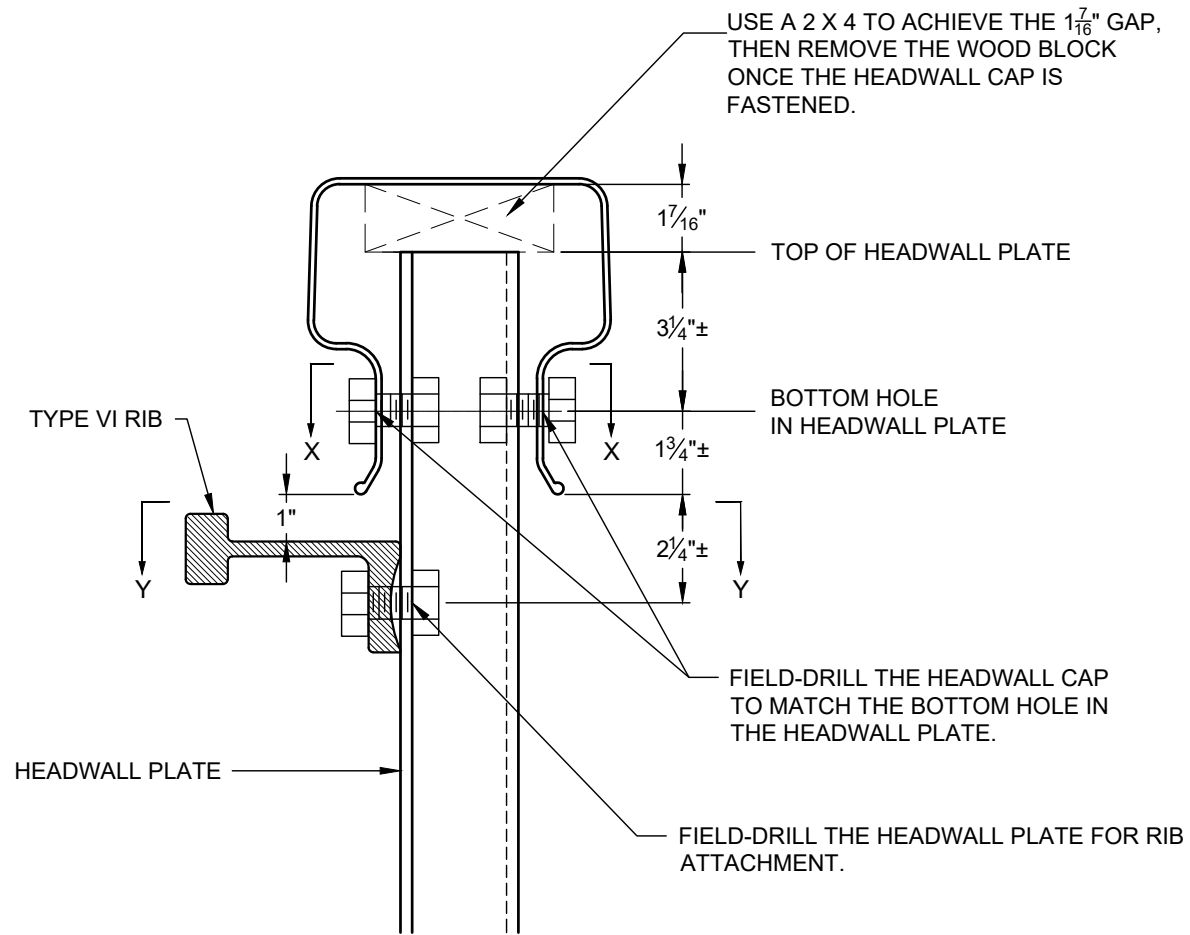
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GRIFFIN GOLF COURSE
BRIDGE A

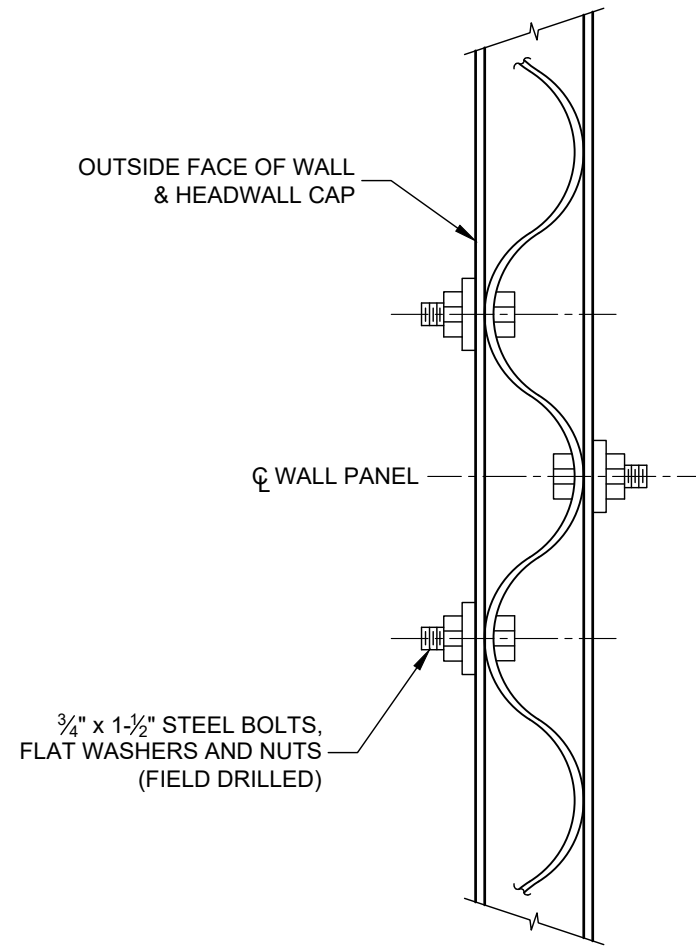
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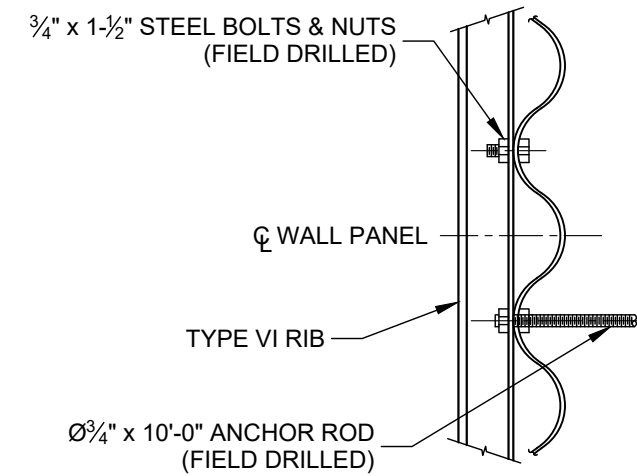
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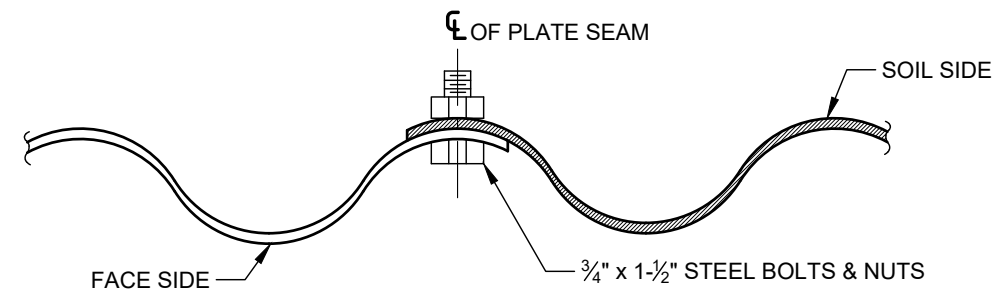
**HEADWALL
(CAP AND RIB ATTACHMENT)**



**HEADWALL/WINGWALL CAP
AT ATTACHMENT TO PANEL
DETAIL SECTION X-X**



**TYPICAL ANCHOR ROD ATTACHMENT
AT HEADWALL SECTION Y-Y**



TYPICAL PANEL LAP DETAIL

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ ϵ : 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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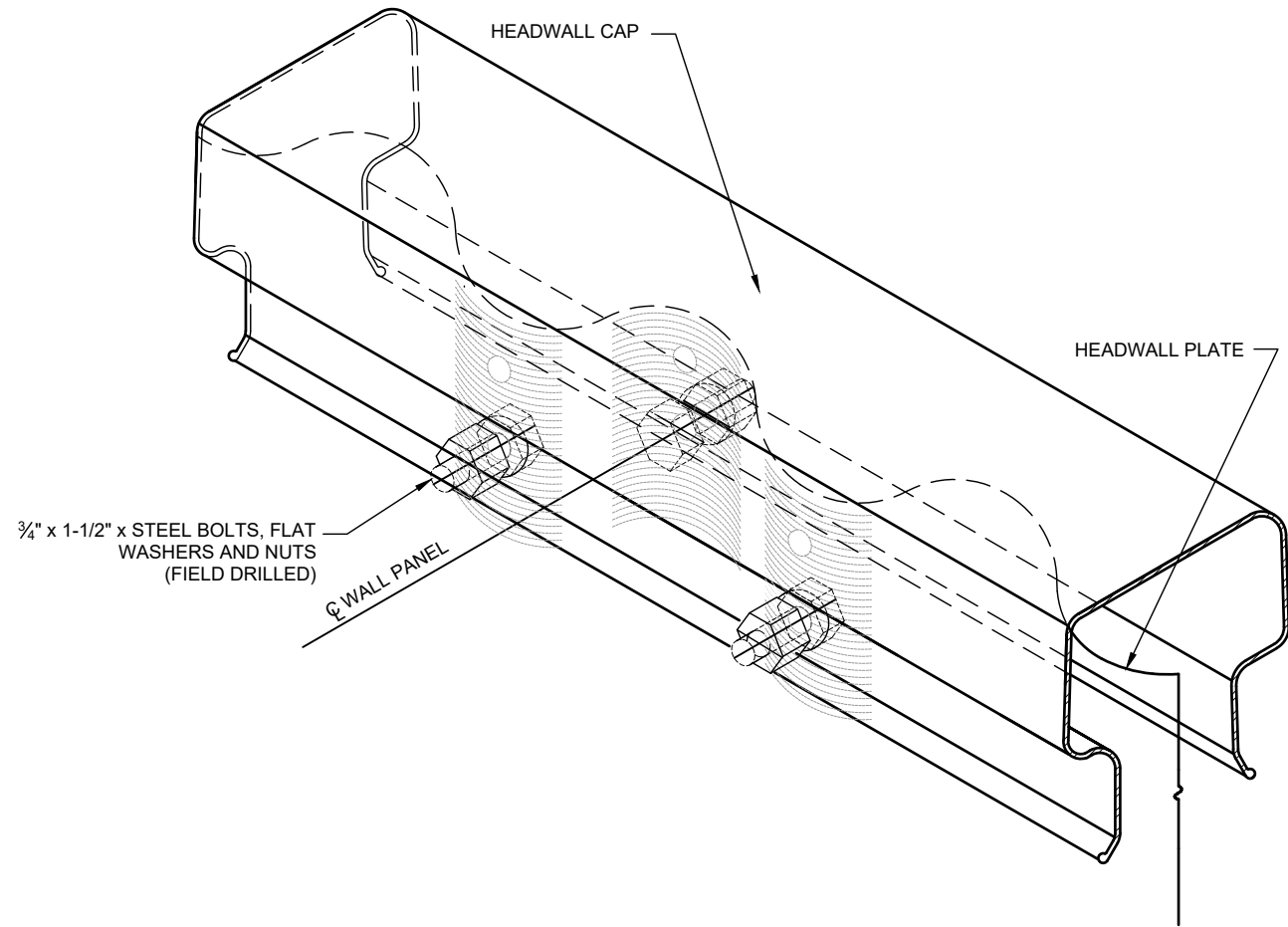
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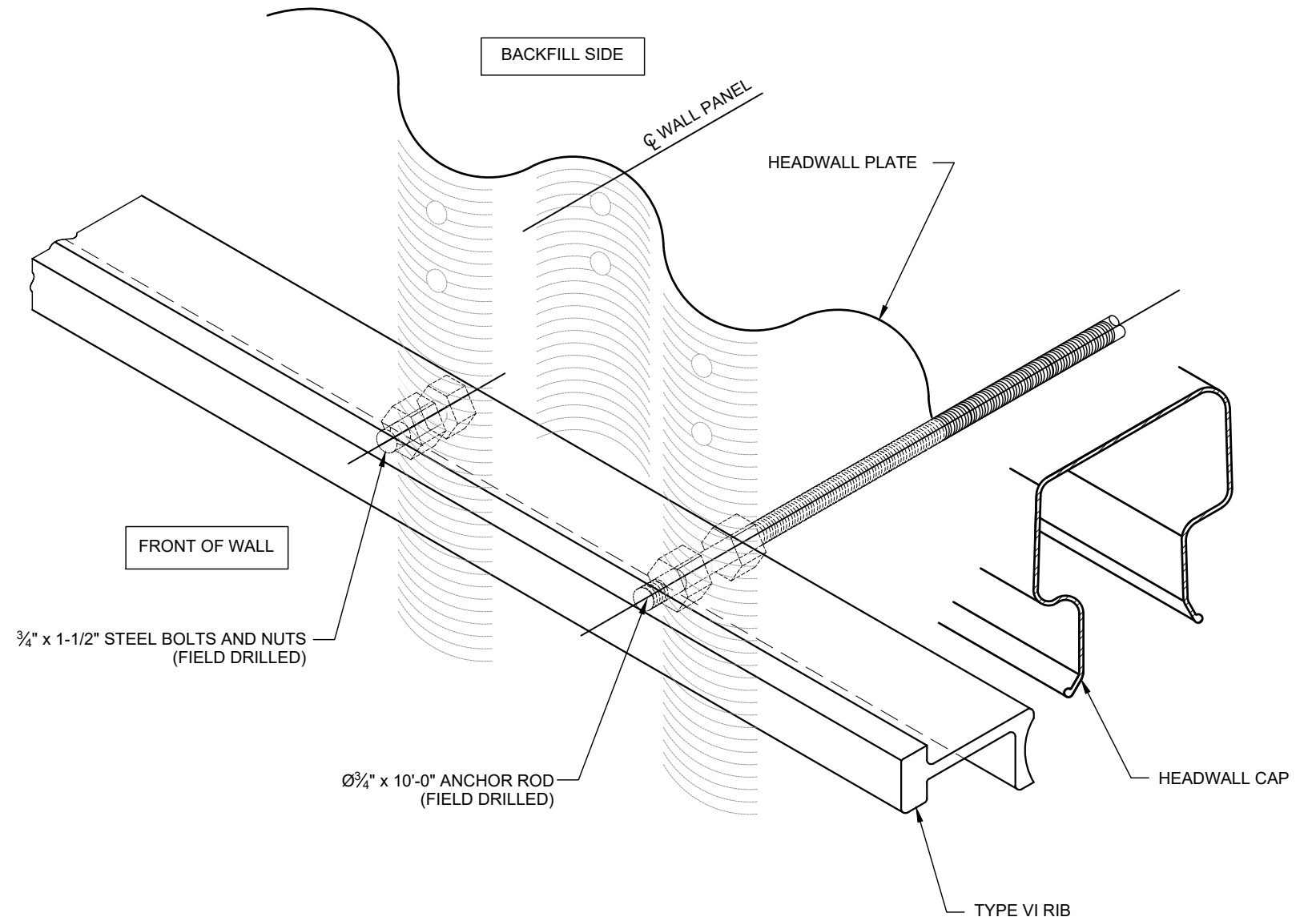
GRIFFIN GOLF COURSE
BRIDGE A
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
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**HEADWALL / WINGWALL CAP AT ATTACHMENT TO PANEL DETAIL
SECTION X-X (ISOMETRIC VIEW)**



**TYPICAL ANCHOR ROD ATTACHMENT AT HEADWALL
SECTION Y-Y (ISOMETRIC VIEW)**

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ ϵ : 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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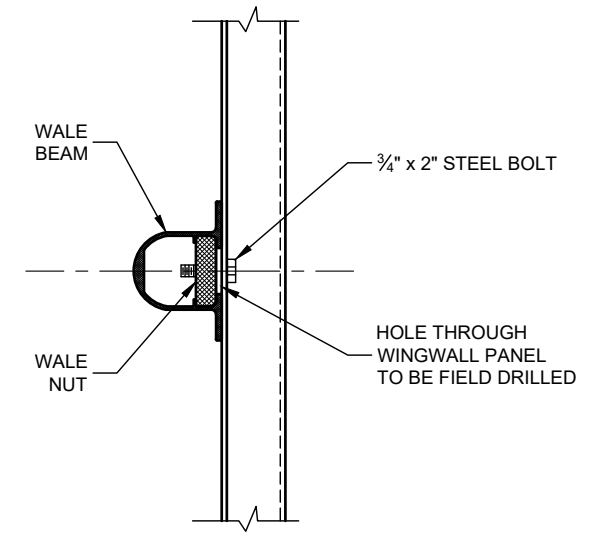
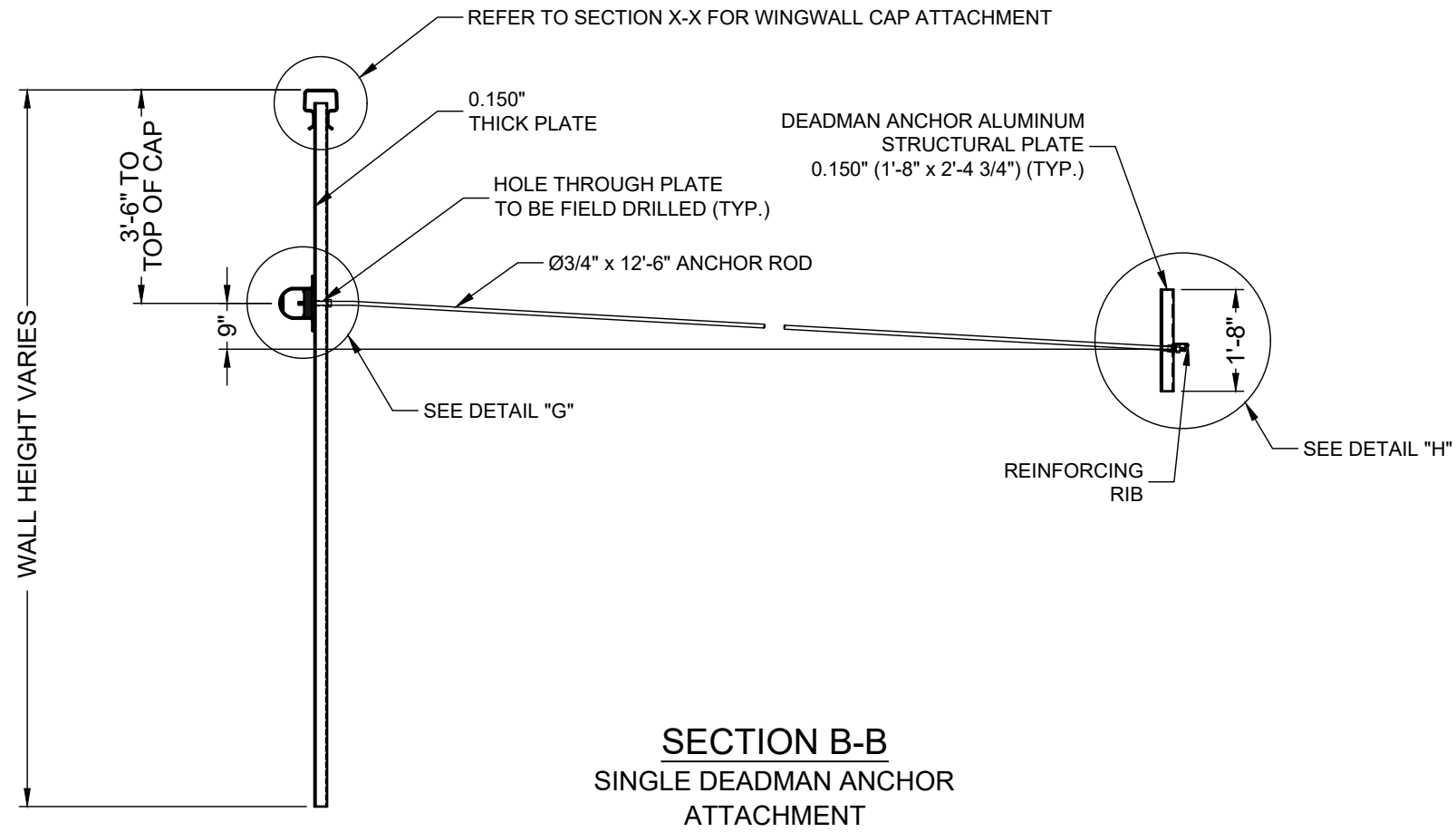
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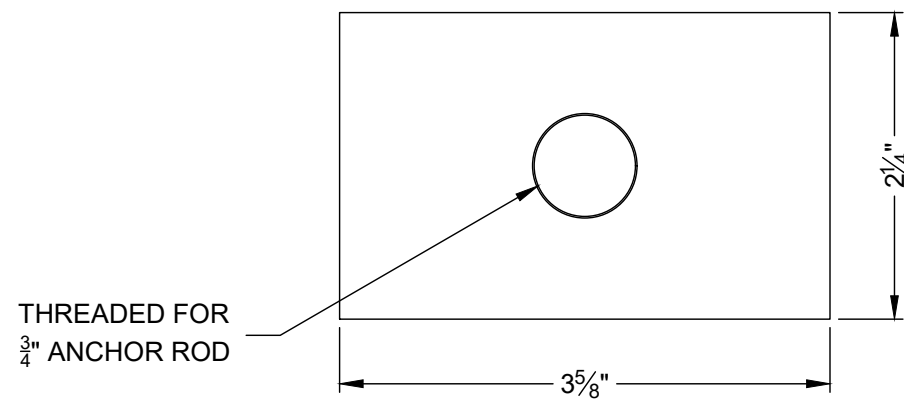
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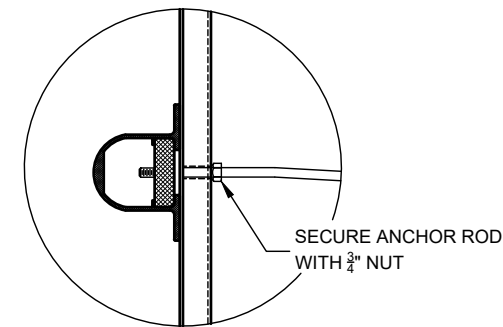


SECTION F-F
WALE BEAM ATTACHMENT

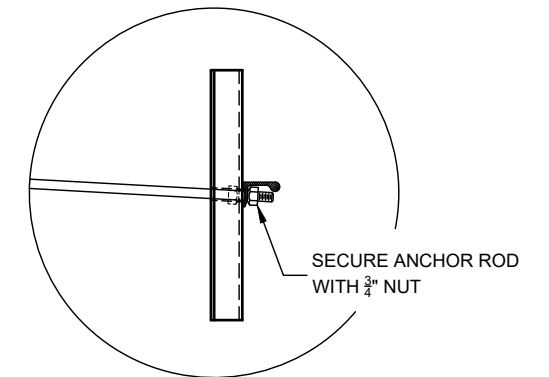
SECTION B-B
SINGLE DEADMAN ANCHOR
ATTACHMENT



WALE NUT



DETAIL G



DETAIL H

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1': 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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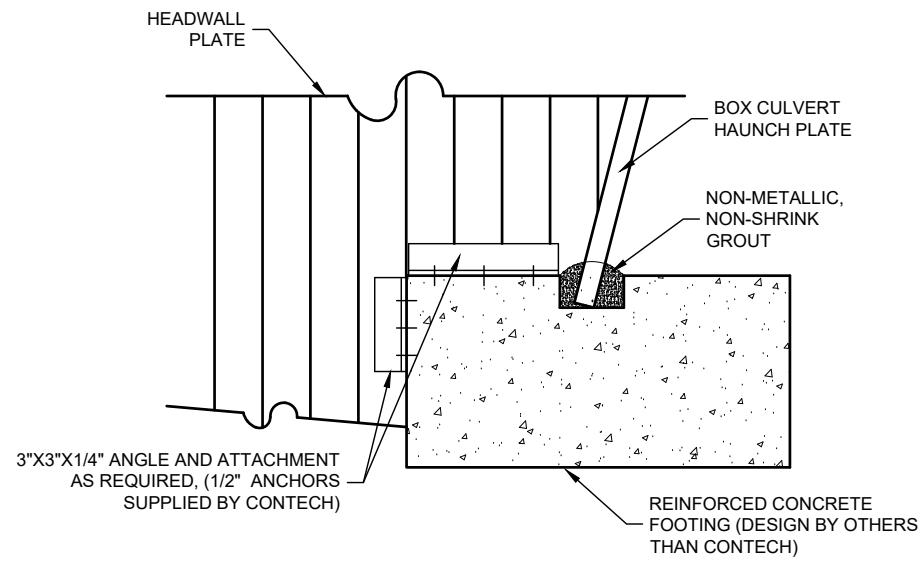
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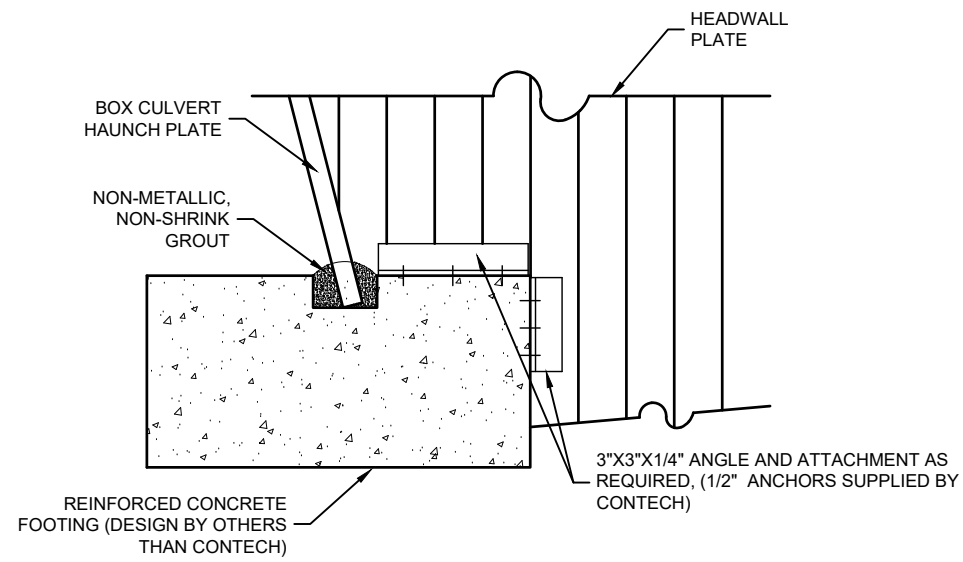
PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
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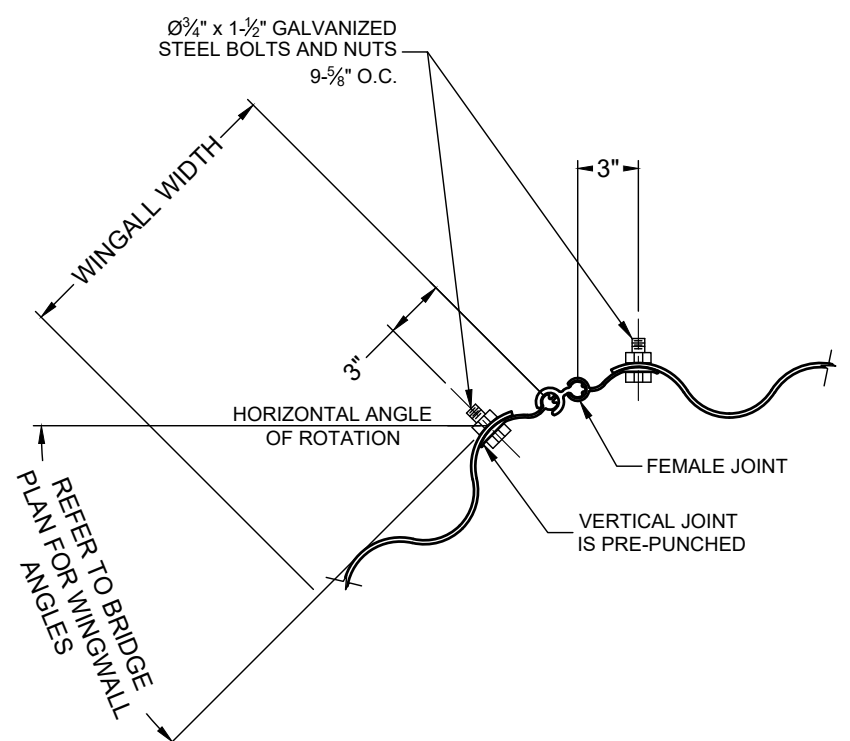
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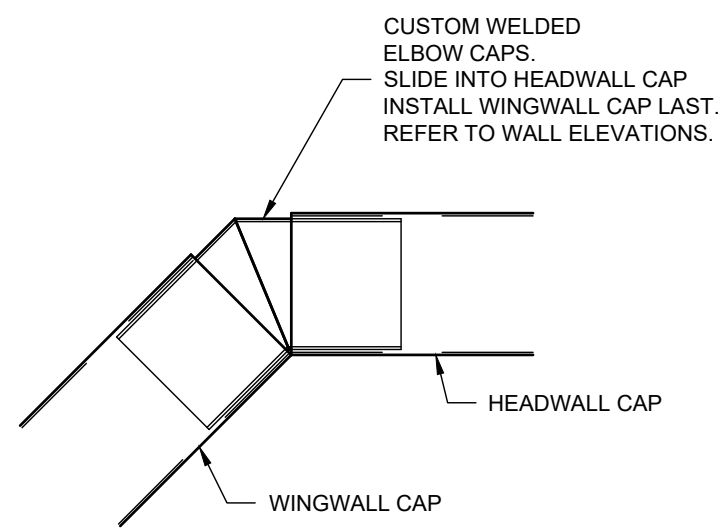
DETAIL "L"
NOTE: FIELD CUT HEADWALL TO MATCH FOOTING.



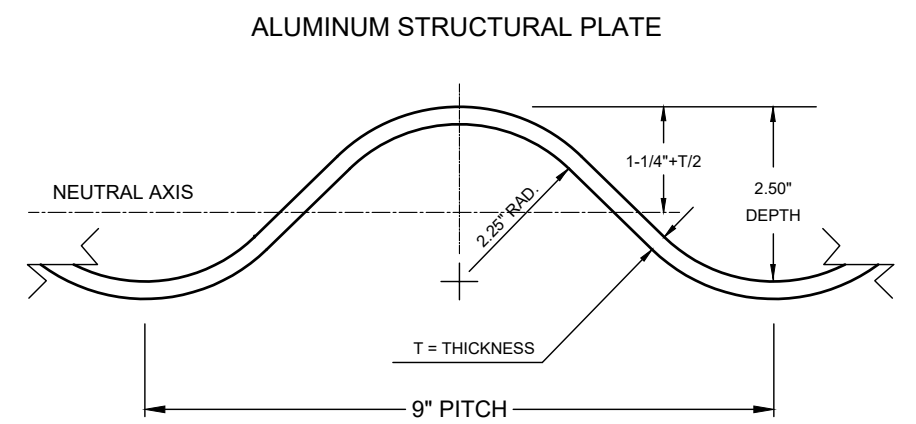
DETAIL "M"
NOTE: FIELD CUT HEADWALL TO MATCH FOOTING.



TYPICAL HEADWALL PANEL TO WING PANEL JOINTS DETAIL



ELBOW CAP DETAIL



CORRUGATION PROFILE

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ ϵ : 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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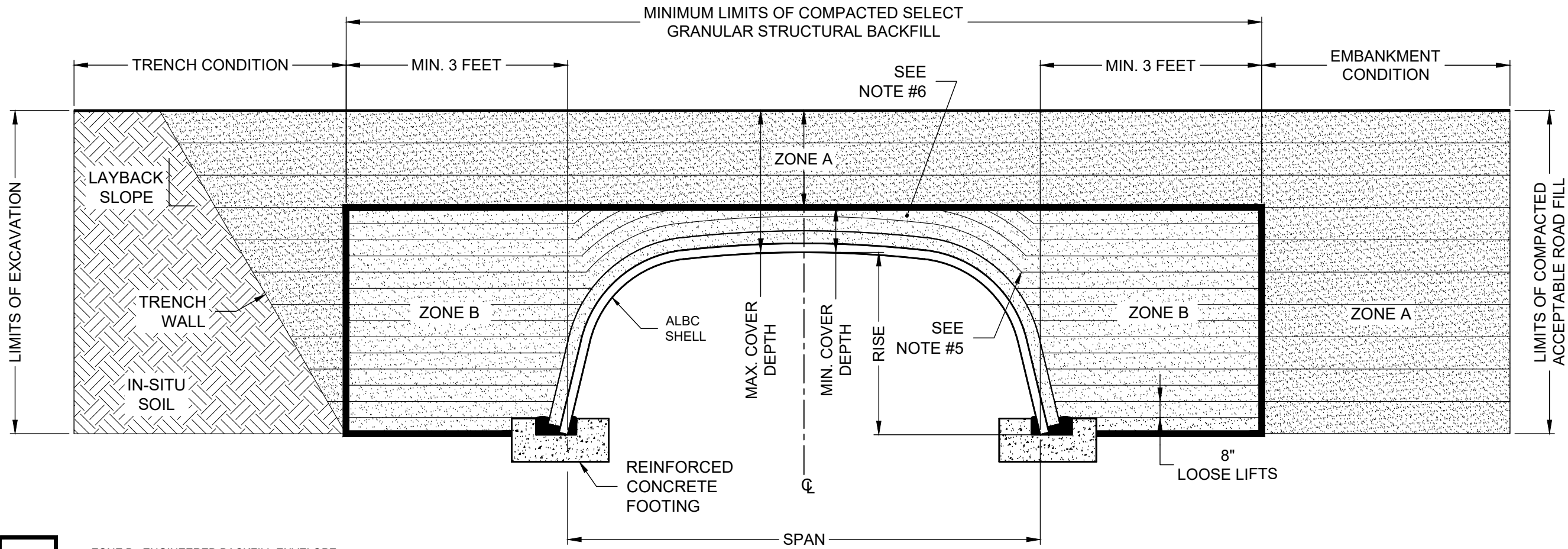
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DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
SHEET NO.: 14 OF 16		


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 ZONE B: ENGINEERED BACKFILL ENVELOPE.

 ZONE A: CONSTRUCTED EMBANKMENT OR OVERFILL.

BACKFILL ZONE SECTION

NOTES:

1. MINIMUM ENGINEERED BACKFILL ENVELOPE WIDTH IS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.
2. ENGINEERED BACKFILL ENVELOPE TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180. THERE SHOULD BE NO MORE THAN 2' DIFFERENTIAL ON EACH SIDE. ENGINEERED BACKFILL MATERIAL PLACED WITHIN 1 FOOT LATERALLY OF THE WIDEST PART OF THE STRUCTURE SHOULD BE COMPACTED USING HAND OPERATED EQUIPMENT UNTIL MINIMUM COVER HEIGHT IS REACHED.
3. SHAPE MONITORING OF THE ALBC STRUCTURE IS REQUIRED DURING THE BACKFILLING PROCESS. THE METHOD, FREQUENCY AND DURATION SHALL BE DETERMINED BASED ON THE SIZE AND SHAPE OF THE STRUCTURE.
4. PLACE ENGINEERED BACKFILL ENVELOPE IN RADIAL LIFTS BEGINNING AT APPROXIMATELY THE MIDDLE OF THE HAUNCH ZONE.
5. BECAUSE OF THE FLEXING AND VIBRATION OF THE CROWN PLATES, THE FULL COMPACTION DENSITY LEVELS OFTEN CAN NOT BE ACHIEVED IN THE FIRST SEVERAL INCHES OF FILL OVER THE CROWN.
6. ONCE THE BACKFILL ELEVATION REACHES THE MIDDLE OF THE HAUNCH CURVE (DEPENDING ON RELATIVE MOVEMENT DURING THE BACKFILL PROCESS), PLACE AND COMPACT ENGINEERED BACKFILL MATERIAL IN RADIAL LIFTS OVER THE TOP OF THE STRUCTURE.
7. WHEN REQUIRED, AS DETERMINED BY THE GEOTECHNICAL ENGINEER, A GEOTEXTILE OR GRADED SOIL FILTER MAY BE USED BETWEEN THE ENGINEERED BACKFILL AND IN-SITU SOIL TO PREVENT MIGRATION OF FINES AND POSSIBLE INTERNAL EROSION OF THE SOIL.
8. DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE.
9. THE MINIMUM COVER IS THE VERTICAL DISTANCE FROM THE OUTSIDE VALLEY OF THE CORRUGATIONS TO THE TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145					
GROUP CLASSIFICATION	A-1-a	A-1-b	A-2-4	A-2-5	A-3
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	50 max.	---	---	---	---
No. 40 (0.425 mm)	30 max.	50 max.	---	---	51 max.*
No. 200 (0.075 mm)	15 max.	25 max.	35 max.	35 max.	10 max.
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	---	---	40 max.	41 min.	---
Plasticity Index	6 max.	6 max.	10 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand		Silty or Clayey Gravel and Sand		Coarse Sand

*Modified from M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically Classified by AASHTO M-145 as A-3 materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

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	SKEW	0	
	BEVEL	0	0

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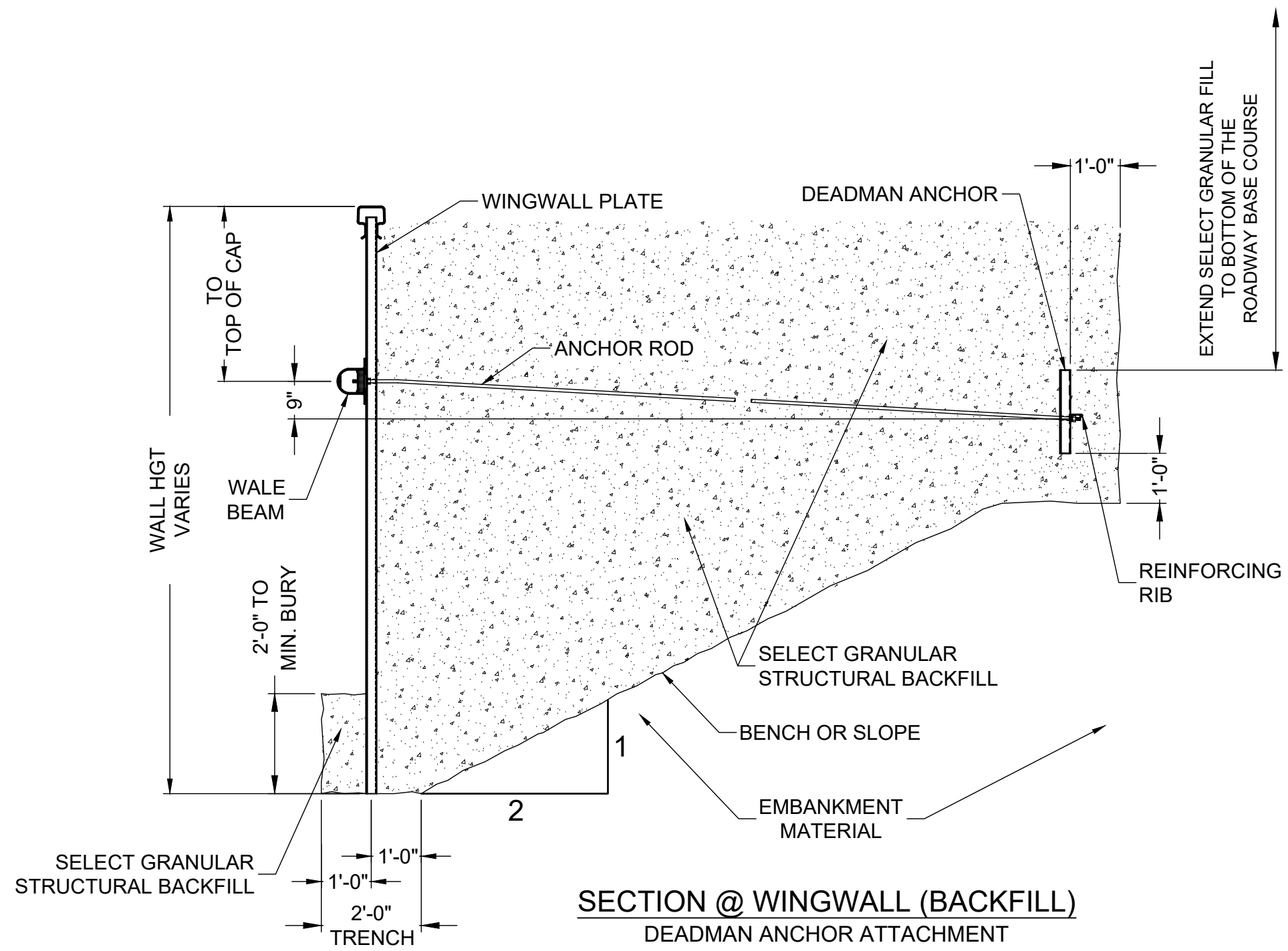
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SECTION @ WINGWALL (BACKFILL)
DEADMAN ANCHOR ATTACHMENT

TYPE: BOX SIZE: 51R1 SPAN: 20'-6" RISE: 7'-3" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN GOLF COURSE
BRIDGE A
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 010	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: KF	APPROVED:	
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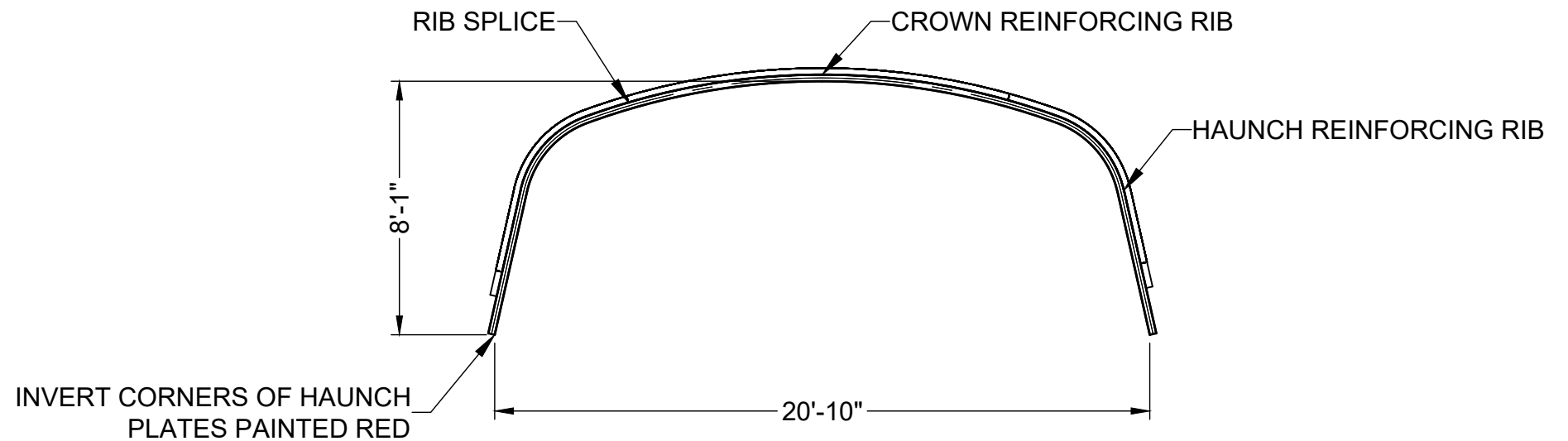
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GENERAL NOTES:

1. THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE ALUMINUM BOX CULVERT (ALBC) STRUCTURE AS DETAILED IN THE PLANS. ANY INSTALLATION INFORMATION PROVIDED HEREIN SHALL BE REVIEWED AND APPROVED BY THE ENGINEER. CHANGES AND DISCREPANCIES MUST BE FORWARDED TO THE MANUFACTURER TO BE INCORPORATED IN A REVISED DRAWING SET.
2. THE ENGINEER SHALL VERIFY THAT THE PROPOSED STRUCTURE IS APPROPRIATE FOR THE SITE CONDITIONS AND THE DESIGN PARAMETERS ARE CONSISTENT WITH THE PROJECT REQUIREMENTS. ALL ASPECTS OF THE STRUCTURE DESIGN AND SITE LAYOUT NOT EXPLICITLY INCLUDED IN THESE DRAWINGS SHALL BE PROVIDED OR COORDINATED BY THE ENGINEER. THIS MAY INCLUDE BUT IS NOT LIMITED TO: FOUNDATIONS, BACKFILL, END TREATMENTS, HYDRAULIC ANALYSIS AND SCOUR ANALYSIS AS REQUIRED.
3. CONTECH PRODUCT DRAWINGS MAY NOT BE USED, REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY WITHOUT THE PRIOR WRITTEN PERMISSION OF CONTECH ENGINEERED SOLUTIONS.
4. ALL DIMENSIONS ARE TO THE INSIDE CREST OF THE CORRUGATION PROFILE UNLESS NOTED OTHERWISE AND ARE SUBJECT TO MANUFACTURING TOLERANCES.
5. THE STRUCTURE GEOMETRY, DESIGN, AND MATERIALS AS SHOWN IN THESE DRAWINGS ONLY APPLY TO THE ALBC, DESIGNED AND FABRICATED BY CONTECH ENGINEERED SOLUTIONS (CONTECH). ALTERNATIVE SYSTEMS SHALL BE FULLY DESIGNED AND APPROVED PRIOR TO BIDDING, WITH SEALED DRAWINGS AND CALCULATIONS PROVIDED TO DEMONSTRATE COMPLIANCE WITH THE SAME GEOMETRY, DESIGN, AND MATERIAL REQUIREMENTS AS SHOWN HEREIN.
6. CIRCUMFERENTIAL PLATE LENGTHS ARE IN TERMS OF N = 9.625 INCHES.
7. FOR WATER CONVEYANCE APPLICATIONS THE STRUCTURE MUST MEET HYDRAULIC REQUIREMENTS OF THE SITE AS DETERMINED BY THE ENGINEER. SHEET PILING, INLET AND OUTLET APRONS, CUTOFF WALLS, RIP RAP, AND/OR OTHER MEASURES SHALL BE INSTALLED AS NECESSARY TO PREVENT LOSS OF ENGINEERED BACKFILL AND/OR FOUNDATION SOILS DUE TO SCOUR. THE EXTENT, SIZE, AND LOCATION OF SCOUR PROTECTION SHALL BE DETERMINED BY THE ENGINEER.
8. PERIMETER DRAINAGE, SURFACE DRAINAGE, AND GRADING AROUND THE STRUCTURE SHALL BE DESIGNED, SPECIFIED, SUPPLIED, AND INSTALLED BY OTHERS.

DESIGN PARAMETERS

1. DESIGN BY CONTECH ENGINEERED SOLUTIONS IS BASED ON THE FOLLOWING DESIGN CRITERIA:
 VEHICLE LIVE LOAD: HL-93
 MINIMUM COVER: 2.6
 MAXIMUM COVER: 4.0
 UNIT WEIGHT OF ENGINEERED BACKFILL = 120 LBS/FT³
2. ENGINEERED BACKFILL MATERIAL SHALL COMPLY WITH THE ENGINEERED BACKFILL MATERIAL REQUIREMENTS SHOWN IN THESE DRAWINGS.
3. DESIGN COVER AND LATERAL EXTENT OF ENGINEERED BACKFILL ZONE SHALL BE AS SHOWN IN THESE DRAWINGS AND REQUIRED BY THE DESIGN STANDARDS REFERENCED IN THESE NOTES.
4. REFERENCE AASHTO LRFD SECTION 12.6.1 FOR SEISMIC DESIGN CONSIDERATIONS.
5. STRUCTURE DESIGN BASED ON SITE SOIL INFORMATION PROVIDED IN CONTRACT DOCUMENTS. IF UNEXPECTED SITE SOIL CONDITIONS ARE ENCOUNTERED, CONTECH MUST BE NOTIFIED TO DETERMINE IF DESIGN CHANGES ARE NEEDED.
6. TEMPORARY CONSTRUCTION VEHICLE LOADING HEAVIER THAN THE DESIGN VEHICLE LIVE LOAD SHALL NOT BE PERMITTED TO CROSS OVER THE STRUCTURE WITHOUT THE APPROVAL OF CONTECH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY CONTECH OF THE SIZE, TYPE AND WEIGHT OF ANY CONSTRUCTION VEHICLES INTENDED TO CROSS OVER THE STRUCTURE.
7. STANDARD HIGHWAY LOADS THAT MEET PERMISSIBLE DESIGN LOAD LIMITS FOR AN ALBC ARE NOT ALLOWED ON THE STRUCTURE UNTIL IT IS BACKFILLED COMPLETELY AND PAVEMENT IS IN PLACE.
8. IT IS RECOMMENDED THAT UNPAVED ROADS INCORPORATE AT LEAST 6" MORE THAN MINIMUM ALLOWABLE COVER DEPTH TO ALLOW FOR RUTTING.



ALBC - END VIEW

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 1': 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

FOR APPROVAL

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859-744-3339 859-744-9665 FAX

CONTECH
STRUCTURAL PLATE
CONTECH
CONTRACT
DRAWING

GRIFFIN GOLF COURSE
BRIDGE B

GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.: 1 OF 16		

MARK	DATE	REVISION DESCRIPTION	BY

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- 1. DESIGN AND MANUFACTURING STANDARDS**
- 1.1 STANDARDS - ALL STANDARDS REFER TO THE CURRENT ASTM / AASHTO EDITION UNLESS OTHERWISE NOTED.
 - 1.2 AASHTO M219 - STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM ALLOY STRUCTURAL PLATE FOR FIELD-BOLTED PIPE, PIPE-ARCHES AND ARCHES
 - 1.3 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.
 - 1.4 AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS - SECTION 26.
 - 1.5 ASTM B864 - STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM BOX CULVERTS.

- 2. DEFINITIONS**
- 2.1 ENGINEER - IN THESE NOTES THE WORD "ENGINEER" SHALL MEAN THE ENGINEER OF RECORD OR OWNER'S DESIGNATED ENGINEERING REPRESENTATIVE.
 - 2.2 MANUFACTURER - IN THESE NOTES THE WORD "MANUFACTURER" SHALL MEAN THE MANUFACTURER OF THE ALBC, CONTECH ENGINEERED SOLUTIONS @ PHONE 800/338-1122.
 - 2.3 CONTRACTOR - IN THESE NOTES THE WORD "CONTRACTOR" SHALL MEAN THE FIRM OR CORPORATION UNDERTAKING THE EXECUTION OF ANY INSTALLATION WORK UNDER THE TERMS OF THESE SPECIFICATIONS.

- 3. ALUMINUM BOX CULVERT (ALBC) STRUCTURE ASSEMBLY**
- 3.1 ASSEMBLY OF THE ALBC SHALL BE IN ACCORDANCE WITH SECTION 26 OF AASHTO LRFD CONSTRUCTION SPECIFICATIONS (LATEST EDITION, WITH INTERIMS) AND ANY SUPPLEMENTAL RECOMMENDATIONS PROVIDED BY THE MANUFACTURER.
 - 3.2 ALL PLATES AND ACCESSORIES SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE. PLATES SHALL NOT BE ROLLED OR DRAGGED OVER GRAVEL ROCK AND SHALL BE PREVENTED FROM STRIKING ROCK OR OTHER HARD OBJECTS DURING PLACEMENT IN TRENCH OR ON BEDDING.
 - 3.3 FOR STRUCTURES SET ON CONCRETE FOOTINGS, PLATE ASSEMBLY CAN BEGIN AFTER PLACEMENT OF STRUCTURE FOOTINGS HAS BEEN APPROVED BY THE ENGINEER. VERIFICATION OF PROPER SPACING, ALIGNMENT, AND ORIENTATION OF THE FOUNDATIONS IS STRONGLY RECOMMENDED PRIOR TO BEGINNING PLATE ASSEMBLY. ANY MODIFICATIONS TO THE FOUNDATIONS SHALL BE MADE PRIOR TO BEGINNING PLATE ASSEMBLY.
 - 3.4 WHEN A METAL FOUNDATION IS USED, THE SOIL BEDDING REQUIRES A MINIMUM OF 6 INCHES OF LOOSE GRANULAR MATERIAL WITH A MAXIMUM PARTICLE SIZE OF ONE HALF THE CORRUGATION DEPTH. THE PROPER WIDTH OF THE BEDDING MATERIAL REQUIRED SHALL CONFORM TO THE PROJECT PLANS AND SPECIFICATIONS.
BEDDING PREPARATION SHOULD BE APPROVED BY THE ENGINEER PRIOR TO ASSEMBLY. THE BED SHOULD BE CONSTRUCTED TO UNIFORM LINE AND GRADE. IT SHOULD BE FREE OF ROCK FORMATIONS, PROTRUDING STONES, FROZEN LUMPS, ROOTS AND OTHER FOREIGN MATTER.
 - 3.5 THE SPAN AND RISE OF THE STRUCTURE SHOULD BE CHECKED FREQUENTLY DURING THE EARLY STAGES OF ASSEMBLY TO VERIFY THAT ASSEMBLY TOLERANCES ARE BEING ACHIEVED AND TO ALLOW FOR ADJUSTMENTS TO PROCEDURES, IF NECESSARY, BEFORE ASSEMBLY IS COMPLETE.
 - 3.6 CUT PLATES FOR SKEWED ENDS SHOULD BE ATTACHED AFTER THE MAIN BARREL OF A STRUCTURE HAS BEEN ASSEMBLED. WHEN CAST-IN-PLACE CONCRETE COLLARS OR HEADWALLS ARE TO BE CONSTRUCTED, THE CONTRACTOR MUST ALLOW FOR FORMWORK TO BE ERECTED ON THE END OF THE STRUCTURE. FORMING AGAINST A SKEWED CORRUGATION PROFILE IS COMPLEX AND SHOULD BE ACCOUNTED FOR BY THE FORMING CONTRACTOR WHEN PLANNING PROCEDURES AND METHODS FOR FORMWORK CONSTRUCTION. IN SOME CASES, FIELD TRIMMING OF THE STRUCTURE MAY BE NECESSARY. SPECIAL BRACING AND/OR SCAFFOLDING (DESIGN BY OTHERS) IS REQUIRED TO SUPPORT SKEWED ENDS UNTIL ADEQUATE COMPRESSIVE STRENGTH IS ACHIEVED AS REQUIRED BY THE COLLAR/HEADWALL DESIGNER.
 - 3.7 NUTS SHALL BE PLACED WITH THE ROUNDED FACE IN CONTACT WITH THE PLATES UNLESS NOTED OTHERWISE. NUTS CAN BE ON EITHER THE INSIDE OR OUTSIDE OF THE STRUCTURE TO FACILITATE ASSEMBLY.
 - 3.8 BOLTS AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-307 and/or ASTM A-449. RECOMMENDED TORQUE RANGE ON THE BOLTS IS 100 TO 150 FT-LBS.
 - 3.9 INSIDE SPAN AND RISE OF THE ASSEMBLED STRUCTURE AFTER BOLTING SHALL BE WITHIN 2% OF THE PLAN DIMENSIONS. THE STRUCTURE LENGTH SHALL BE WITHIN 1%.

- 4. ENGINEERED BACKFILL ENVELOPE**
- 4.1 ENGINEERED BACKFILL MATERIAL SHALL BE PLACED WITHIN THE ENGINEERED BACKFILL ENVELOPE TO THE MINIMUM WIDTH AND WITHIN THE COVER LIMITS SHOWN ON THESE DRAWINGS. THE ENGINEERED BACKFILL ENVELOPE SHALL NOT BE ALTERED WITHOUT WRITTEN APPROVAL FROM CONTECH.
 - 4.2. IN-SITU SOILS BELOW AND ADJACENT TO THE ENGINEERED BACKFILL ENVELOPE SHALL PROVIDE A FIRM SURFACE AGAINST WHICH TO COMPACT THE ENGINEERED BACKFILL MATERIAL. THE GEOTECHNICAL ENGINEER SHALL EVALUATE THE IN-SITU SOILS AND DETERMINE THE TYPE AND DEGREE OF ANY SOIL IMPROVEMENTS REQUIRED. THESE MAY INCLUDE BENCHING OR SLOPING OF THE SIDE SOILS. BACKFILL PLACEMENT MAY NOT BEGIN UNTIL THE GEOTECHNICAL ENGINEER HAS APPROVED THE IN-SITU SOILS AND ANY REQUIRED IMPROVEMENTS.
 - 4.3. A DRAINED CONDITION WAS ASSUMED FOR THE ENGINEERED BACKFILL ENVELOPE. DESIGN AND SUPPLY OF A SUBSURFACE DRAINAGE SYSTEM (IF NEEDED) SHALL BE PROVIDED BY OTHERS.
 - 4.4. IF REQUIRED BY THE GEOTECHNICAL ENGINEER, A GEOTEXTILE OR GRADED SOIL FILTER MAY BE USED BETWEEN THE ENGINEERED BACKFILL AND IN-SITU SOIL TO PREVENT MIGRATION OF FINES AND POSSIBLE INTERNAL EROSION OF THE SOIL.

- 5. ENGINEERED BACKFILL MATERIAL REQUIREMENTS**
- 5.1 THE DESIGN OF ALBC STRUCTURES RELIES ON COMPACTED SOIL PROPERTIES PROVIDED BY THE ENGINEERED BACKFILL MATERIALS. THE CORRECT SELECTION AND PLACEMENT OF COMPACTED ENGINEERED BACKFILL MATERIAL IS CRITICAL TO THE PERFORMANCE OF ALBC STRUCTURES.
 - 5.2 THE ENGINEERED BACKFILL MATERIAL SHALL NOT BE ADVERSELY AFFECTED BY WETTING, DRYING, SATURATION, FREEZE/THAW, VIBRATIONS, OR FLOWING WATER.
 - 5.3 BACKFILL MATERIALS SHALL CONFORM TO PROPERTIES REFERENCED IN THE PROJECT SPECIFICATIONS OR THE PROPERTIES DESCRIBED HEREIN, WHICHEVER IS MORE STRINGENT.
 - 5.4 ALBC NUMBERS 1 THROUGH 87 SHALL BE BACKFILLED USING CLEAN WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5, OR A-3 MODIFIED PER AASHTO M-145.
A-3 MATERIAL MAY NOT CONTAIN FINE BEACH SANDS, WINDBLOWN SANDS, STREAM DEPOSITED SAND, ETC. EXHIBITING FINE, ROUNDED PARTICLES.
ALBC NUMBERS 88 THROUGH 143 SHALL BE BACKFILLED USING CLEAN WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS FOR SOIL CLASSIFICATIONS A-1, A-2-4 OR A-2-5 PER AASHTO M-145.
REFER TO BACKFILL DETAILS FOR SOIL CLASSIFICATION TABLE. OPEN GRADED OR GAP GRADED MATERIALS ARE NOT PREFERRED. THE BACKFILL MATERIAL SHOULD BE FREE OF FROZEN LUMPS, FOREIGN MATERIAL OR ORGANIC DECOMPOSABLE MATERIALS. WHEN USING A-2 MATERIALS, MOISTURE CONTENT MUST BE BETWEEN -3% AND +2% OPTIMUM AS DEFINED BY AASHTO T 180.
 - 5.5 GRAIN SIZE DISTRIBUTION (GRADATION) OF THE ENGINEERED BACKFILL MATERIAL SHALL SATISFY: Cu GREATER THAN OR EQUAL TO 3 AND Cc BETWEEN 0.7 AND 3, WHERE Cu = COEFFICIENT OF UNIFORMITY = D60/D10 AND Cc = COEFFICIENT OF CURVATURE = (D30)²/(D60XD10). DXX IS THE PARTICLE SIZE CORRESPONDING TO XX% FINER ON THE CUMULATIVE PARTICLE SIZE DISTRIBUTION CURVE (ASTM D2487).
Cu REQUIREMENTS ARE WAIVED FOR CRUSHER RUN SCREENED AGGREGATES. Cc REQUIREMENTS ARE WAIVED FOR BACKFILL MATERIAL CONTAINING MORE THAN 60% GRAVEL (> #4 SIEVE).
 - 5.6 ABRASION LOSS SHALL NOT EXCEED 45% AS DETERMINED BY THE LOS ANGELES ABRASION TEST (ASTM C131).
 - 5.7 HUMIC (DECAYING) ORGANIC MATTER SHALL NOT EXCEED 1.0% (DRY WEIGHT BASIS).
 - 5.8 ELECTROCHEMICAL REQUIREMENTS FOR SOIL AND WATER IN CONTACT WITH BOTH THE INSIDE AND OUTSIDE OF THE ALBC STRUCTURE ARE AS FOLLOWS:
- PH = 4 TO 9
- RESISTIVITY > 500 OHM-CM
 - 5.9 IF THE ELECTROCHEMICAL PROPERTIES OF THE BACKFILL OR WATER FALL OUTSIDE OF THE RECOMMENDED RANGE, A SECONDARY PROTECTION SYSTEM MAY BE NEEDED TO ACHIEVE THE DESIGN SERVICE LIFE. SECONDARY PROTECTION SYSTEMS (IF REQUIRED) SHALL BE DESIGNED AND PROVIDED BY OTHERS.
 - 5.10 THE SELECTION AND EVALUATION OF PROPOSED ENGINEERED BACKFILL MATERIAL IS THE RESPONSIBILITY OF THE CONTRACTOR. THE PROPOSED ENGINEERED BACKFILL MATERIAL SHALL MEET OR EXCEED THE REQUIREMENTS OF THESE SPECIFICATIONS.

- 6. ENGINEERED BACKFILL PLACEMENT PROCEDURE**
- 6.1 CONTECH RECOMMENDS THAT A PRECONSTRUCTION CONFERENCE IS HELD PRIOR TO COMMENCEMENT OF WORK TO REVIEW AND DISCUSS THE RECOMMENDED PROCEDURES FOR BACKFILLING, AND STRUCTURE SHAPE MEASUREMENTS. ANY CONTRACTOR WITH RESPONSIBILITY FOR BACKFILLING OR CONSTRUCTION OF END TREATMENTS MUST BE REPRESENTED AT THIS MEETING. IT IS RECOMMENDED THAT THE ENGINEER AND ANY THIRD PARTY INVOLVED IN COMPACTION TESTING OR OTHER QUALITY CONTROL MEASURES ALSO ATTEND.
 - 6.2 ANY IMPROVEMENT OF THE SUBGRADE AND EMBANKMENT SOILS REQUIRED BY THE GEOTECHNICAL ENGINEER SHALL BE COMPLETED AND APPROVED PRIOR TO BEGINNING PLACEMENT OF ENGINEERED BACKFILL MATERIAL.
 - 6.3 THE ENGINEERED BACKFILL MATERIAL SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE STRUCTURE IN LAYERS OF 8 INCHES OR LESS (BEFORE COMPACTION).
 - 6.4 BACKFILL SHALL BE COMPACTED TO THE MINIMUM DENSITY INDICATED IN THESE DRAWINGS. DEPENDING ON THE COMPACTION EQUIPMENT AND ENGINEERED BACKFILL MATERIAL USED, IT MAY BE NECESSARY TO DECREASE THE LIFT THICKNESS AND/OR MOISTURE CONDITION THE LOOSE SOIL TO ACHIEVE THE SPECIFIED MINIMUM LEVEL OF COMPACTION.
 - 6.5 IF THE ENGINEERED BACKFILL MATERIAL DOES NOT PRODUCE A PROCTOR CURVE AND/OR IS NOT CONDUCTIVE TO TRADITIONAL FIELD-TESTING METHODS, QUALITATIVE METHODS OF EVALUATING COMPACTION MAY BE USED. SUCH METHODS SHALL BE EVALUATED AND APPROVED BY THE GEOTECHNICAL ENGINEER AND A COPY OF THE METHOD BE PROVIDED TO THE DESIGNER.
 - 6.6 THE DIFFERENCE IN BACKFILL LEVELS ON THE TWO SIDES OF THE STRUCTURE AT ANY TRANSVERSE SECTION SHALL NOT EXCEED 24 INCHES WITHOUT PRIOR APPROVAL FROM CONTECH.
 - 6.7 CONSTRUCTION EQUIPMENT USED WITHIN 5 FEET LATERALLY OF THE WIDEST PART OF THE STRUCTURE, UP TO THE MINIMUM DESIGN COVER HEIGHT ABOVE THE STRUCTURE, SHALL HAVE A STATIC MASS OF 10 TONS OR LESS. IT MAY BE POSSIBLE TO USE HEAVIER EQUIPMENT IF IT CAN BE DEMONSTRATED THAT THE STRUCTURE SHAPE IS NOT ADVERSELY AFFECTED. ENGINEERED BACKFILL MATERIAL PLACED WITHIN 1 FOOT LATERALLY OF THE WIDEST PART OF THE STRUCTURE SHALL BE COMPACTED USING HAND OPERATED EQUIPMENT UNTIL THE MINIMUM COVER HEIGHT IS REACHED. OVER-COMPACTION OF ENGINEERED BACKFILL IN THIS ZONE SHOULD BE AVOIDED, AS THIS CAN CONTRIBUTE TO EXCESSIVE DEFLECTION OF SOME STRUCTURES. AREAS CLOSEST TO THE STRUCTURE SHALL BE COMPACTED RUNNING PARALLEL TO THE LENGTH OF THE STRUCTURE.

- 6.8 ONCE THE BACKFILL ELEVATION REACHES THE MIDDLE OF THE HAUNCH CURVE (DEPENDING ON RELATIVE MOVEMENT DURING THE BACKFILL PROCESS), PLACE AND COMPACT ENGINEERED BACKFILL MATERIAL IN RADIAL LIFTS OVER THE TOP OF THE STRUCTURE USING EQUIPMENT AS DESCRIBED ABOVE. THE FIRST RADIAL LIFT SHOULD BE THICKER AND PROVIDE A MINIMUM 12 INCHES OF COVER BETWEEN THE STRUCTURE AND COMPACTION EQUIPMENT. EQUIPMENT SHOULD RUN PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE STRUCTURE. NO EQUIPMENT SHALL BE ALLOWED OVER THE STRUCTURE THAT WOULD EXCEED THE DESIGN LOAD AT THE MINIMUM DESIGN HEIGHT OF COVER. NO CONSTRUCTION EQUIPMENT SHALL BE ALLOWED TO PARK ON TOP OF A PARTIALLY BACKFILLED STRUCTURE.
- 6.9 AT NO TIME SHALL THE ENGINEERED BACKFILL MATERIAL BE DUMPED OR PUSHED AGAINST THE STRUCTURE WALL(S) SO AS TO CHANGE THE SHAPE OR ALIGNMENT OF THE STRUCTURE. MATERIAL SHALL NOT BE DUMPED ON TOP OF THE STRUCTURE AT ANY TIME. TRUCKS MAY UNLOAD IN ROUGH LAYERS NO CLOSER THAN 5 FEET FROM THE WIDEST PART OF THE STRUCTURE.
- 6.10 THE STRUCTURE SHALL BE CHECKED PERIODICALLY DURING BACKFILLING TO ENSURE THE FINAL SHAPE OF THE STRUCTURE MEETS DESIGN REQUIREMENTS AND IS CONSISTENT WITH THE ASSEMBLY TOLERANCES AS STATED IN THESE NOTES. IF DEFLECTION OF THE STRUCTURE IS GREATER THAN EXPECTED, BACKFILLING SHALL BE HALTED AND BACKFILL PLACEMENT AND COMPACTION PROCEDURES MODIFIED TO CORRECT THE STRUCTURE SHAPE. IT MAY BE NECESSARY TO REMOVE SOME OF THE BACKFILL TO CORRECT EXCESSIVE DEFLECTION.

- 7. CONSTRUCTION OBSERVATIONS AND TESTING**
- 7.1 OBSERVATION AND TESTING SHALL BE PERFORMED DURING CONSTRUCTION TO VERIFY COMPLIANCE WITH THESE DRAWINGS, APPLICABLE PROJECT DOCUMENTS, AND STANDARDS REFERENCED IN THESE NOTES.
 - 7.2 THE CONTRACTOR IS RESPONSIBLE FOR QUALITY CONTROL PROCEDURES, VERIFICATION MEASUREMENTS, ADEQUATE SUPERVISION, PROGRESS TESTING, EVALUATION OF PROPOSED ENGINEERED BACKFILL MATERIALS, AND/OR OTHER MEASURES AS NEEDED TO ENSURE THAT THE COMPLETED PROJECT COMPLIES WITH THESE DRAWINGS AND NOTES.
 - 7.3 THE PROJECT OWNER (OR THEIR DESIGNATED REPRESENTATIVE) IS RESPONSIBLE FOR PROJECT OVERSIGHT AND FINAL ACCEPTANCE OF THE CONSTRUCTED STRUCTURE. THE OWNER MAY ACCEPT THE CONTRACTOR'S QUALITY CONTROL PROGRAM OR ADOPT AN INDEPENDENT QUALITY ASSURANCE PROGRAM TO VERIFY COMPLIANCE.
 - 7.4 OBSERVATIONS AND TESTING PRIOR TO STRUCTURE ASSEMBLY & BACKFILL SHALL INCLUDE BUT NOT BE LIMITED TO:
 - EVALUATION OF FOUNDATION SOILS BELOW FOOTINGS AND THE ENGINEERED BACKFILL ENVELOPE
 - VERIFICATION OF PROPER ALIGNMENT, DIMENSIONS, AND PLACEMENT OF FOUNDATIONS
 - VERIFICATION OF PROPER SHAPING, PLACEMENT, AND PREPARATION OF BEDDING SOILS (STRUCTURES WITH INVERTS)
 - VERIFICATION OF PROPER PREPARATION OF EMBANKMENT SOILS ADJACENT TO THE ENGINEERED BACKFILL ENVELOPE
 - EVALUATION AND APPROVAL OF ENGINEERED BACKFILL MATERIALS
 - VERIFICATION OF PROPER PLACEMENT OF GEOTEXTILES (WHEN REQUIRED)
 - 7.5 OBSERVATIONS AND TESTING DURING ASSEMBLY & BACKFILLING SHALL INCLUDE BUT NOT BE LIMITED TO:
 - STRUCTURE ALIGNMENT
 - PLATE TIGHTNESS OBSERVATIONS
 - BOLT TORQUE MEASUREMENTS
 - INITIAL STRUCTURE SHAPE MEASUREMENTS (PRIOR TO STARTING BACKFILLING)
 - PERIODIC STRUCTURE SHAPE MEASUREMENTS (DURING BACKFILLING)
 - ENGINEERED BACKFILL MATERIAL SAMPLING AND TESTING
 - OBSERVATIONS OF PROPER FILL PLACEMENT AND COMPACTION PROCEDURES.
 - 7.6 CONTECH MAY REQUIRE ADDITIONAL OBSERVATIONS AND/OR TESTING WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, FULL TIME SHAPE MONITORING, ADDITIONAL SOIL TESTING, AND SITE EVALUATIONS DEPENDING ON THE STRUCTURE GEOMETRY, DESIGN, AND/OR OTHER PROJECT SPECIFIC FACTORS.

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ ɛ: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

FOR APPROVAL



GRIFFIN GOLF COURSE
BRIDGE B

GRIFFIN, GA

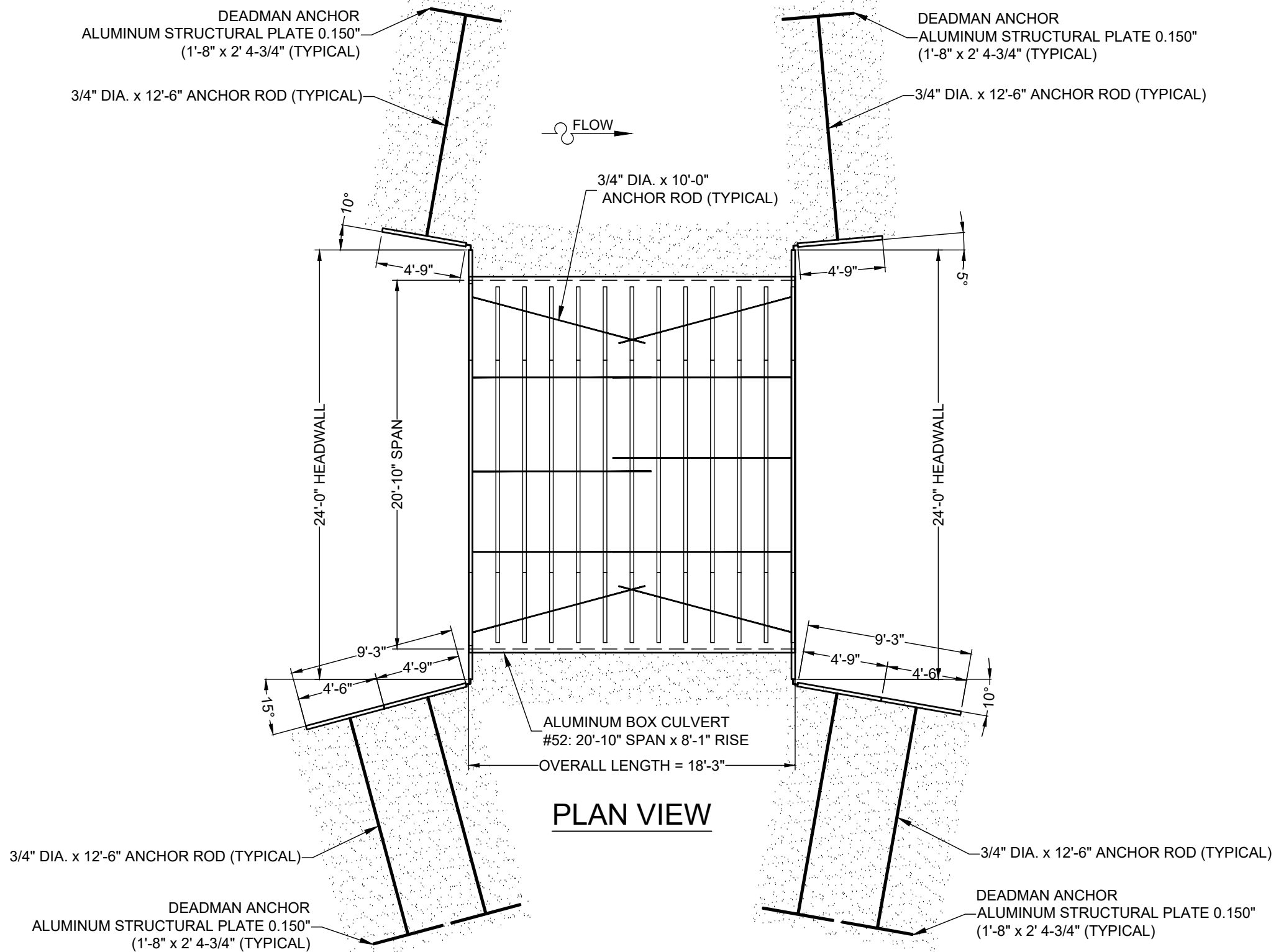
PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.: 2 OF 16		

MARK	DATE	REVISION DESCRIPTION	BY

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NOTE:
SHADED AREA REPRESENTS CRITICAL BACKFILL ZONES.



TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
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CONTECH
STRUCTURAL PLATE
CONTECH
CONTRACT
DRAWING

GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.:	3	OF 16

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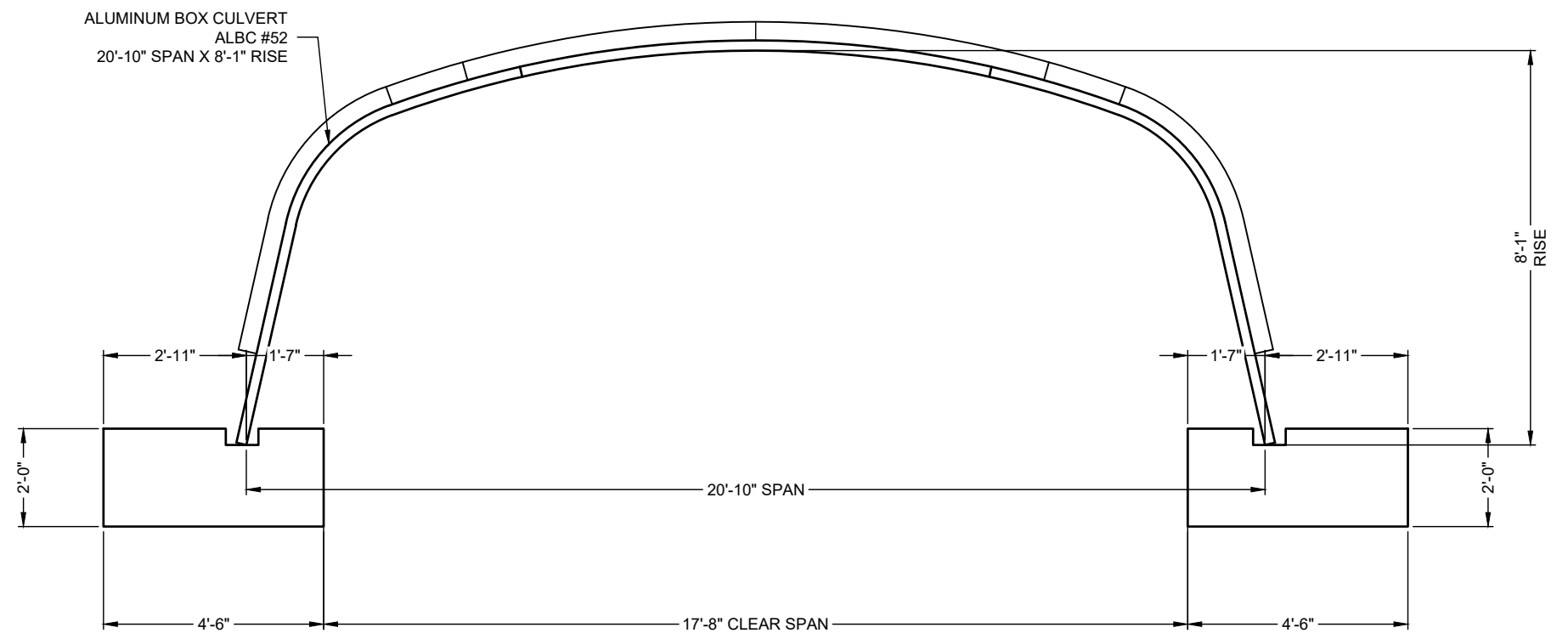
FOUNDATION NOTES:

1. THE ENGINEER SHALL VERIFY THAT THE PROPOSED FOUNDATION IS APPROPRIATE FOR THE SITE CONDITIONS AND THE DESIGN PARAMETERS ARE CONSISTENT WITH THE PROJECT REQUIREMENTS. THE FOUNDATION DESIGN CONSIDERS STRUCTURAL REQUIREMENTS OF THE FOUNDATION ONLY. HYDRAULIC ANALYSIS AND SCOUR ANALYSIS, AS REQUIRED, SHALL BE PERFORMED OR COORDINATED BY THE ENGINEER.
2. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL ELEVATIONS SHOWN WITH THE ENGINEER.
3. FOUNDATION DESIGN IS BASED ON SITE SOIL INFORMATION PROVIDED TO CONTECH AND DESCRIBED IN THE DESIGN PARAMETERS BELOW. FOUNDATION BEARING SOILS, INCLUDING ANY SOIL IMPROVEMENTS REQUIRED, SHALL BE EVALUATED AND APPROVED BY OTHERS PRIOR TO FOUNDATION CONSTRUCTION. IF UNEXPECTED SOIL CONDITIONS ARE ENCOUNTERED, OR THE BEARING REQUIREMENTS CANNOT BE ACHIEVED, CONTECH MUST BE NOTIFIED TO DETERMINE IF FOOTING DESIGN CHANGES ARE NEEDED.
4. REINFORCED CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 8, REINFORCED CONCRETE, FOR CLASS A CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.
5. REINFORCING STEEL FOR FOUNDATIONS SHALL CONFORM TO ASTM A615, GRADE 60 (Fy=60 ksi).
6. KEYWAY TO BE FILLED WITH NON-METALLIC, NON-SHRINK GROUT, WITH A MINIMUM 4,000 PSI COMPRESSIVE STRENGTH (ASTM C1107). GROUT AND SHIMMING MATERIAL SHOULD NOT CONTAIN ANY CORROSION-PROMOTING AGENTS.

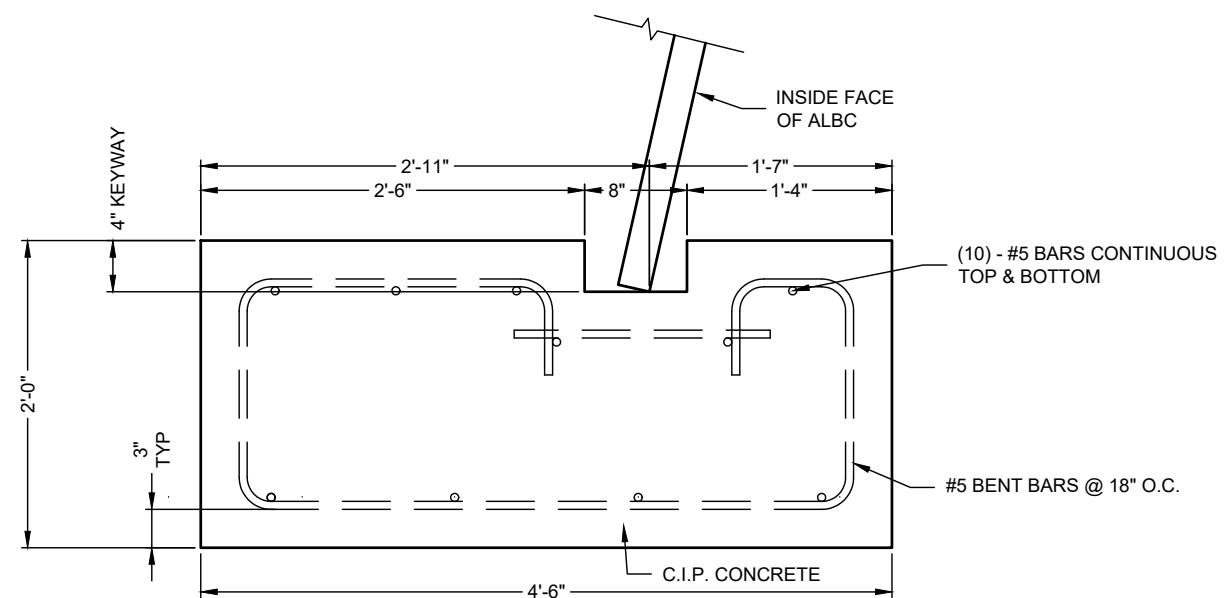
DESIGN PARAMETERS:

DESIGN LIVE LOAD: HL-93
 DESIGN MAXIMUM FILL HEIGHT: 4'
 DESIGN METHOD: LOAD FACTOR DESIGN PER AASHTO SPECIFICATION
 DESIGN MINIMUM NET ALLOWABLE BEARING CAPACITY: 3,000 PSF*

*BEARING CAPACITY PROVIDED IN GEOTECHNICAL REPORT PREPARED BY ATLAS TECHNICAL CONSULTANTS, LLC DATED APRIL 26, 2023.



CROSS SECTION



FOR APPROVAL FOOTING DETAIL

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN GOLF COURSE
 BRIDGE B
 GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.:	4 OF 16	

NOTE:
 BEGIN SHELL ASSEMBLY AT INLET END. SEE
 ASSEMBLY GUIDE INCLUDED WITH THE MATERIAL
 SHIPMENT FOR FURTHER INSTRUCTIONS.

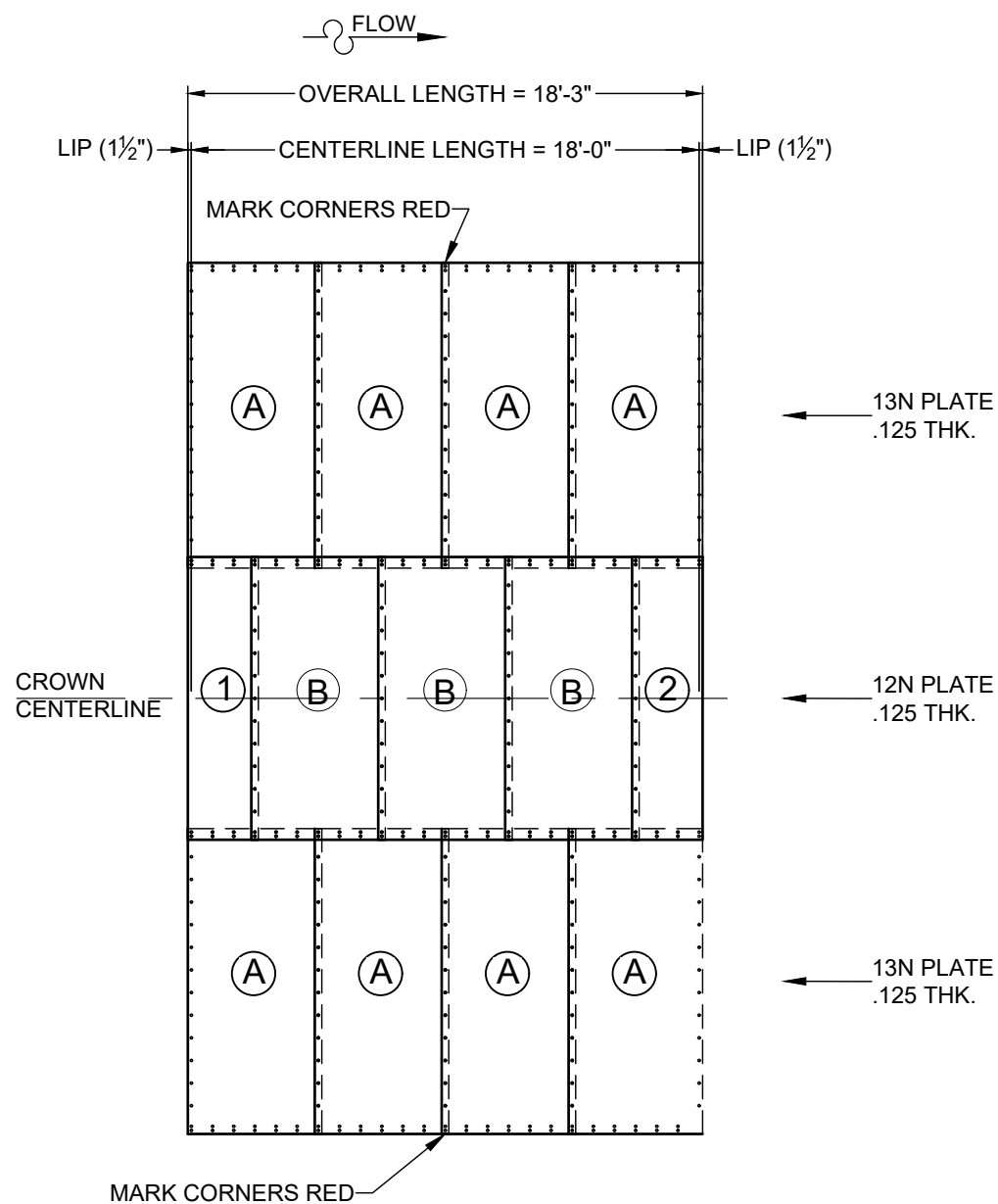



PLATE LAPPING DETAIL
3 PLATE STRUCTURE

ALBC - DEVELOPED PLAN (OUTSIDE VIEW)

20'-10" SPAN x 8'-1" RISE

PLATES ONLY - (REINFORCING RIBS NOT SHOWN FOR CLARITY)

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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 BRIDGE B

 GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.: 5 OF 16		

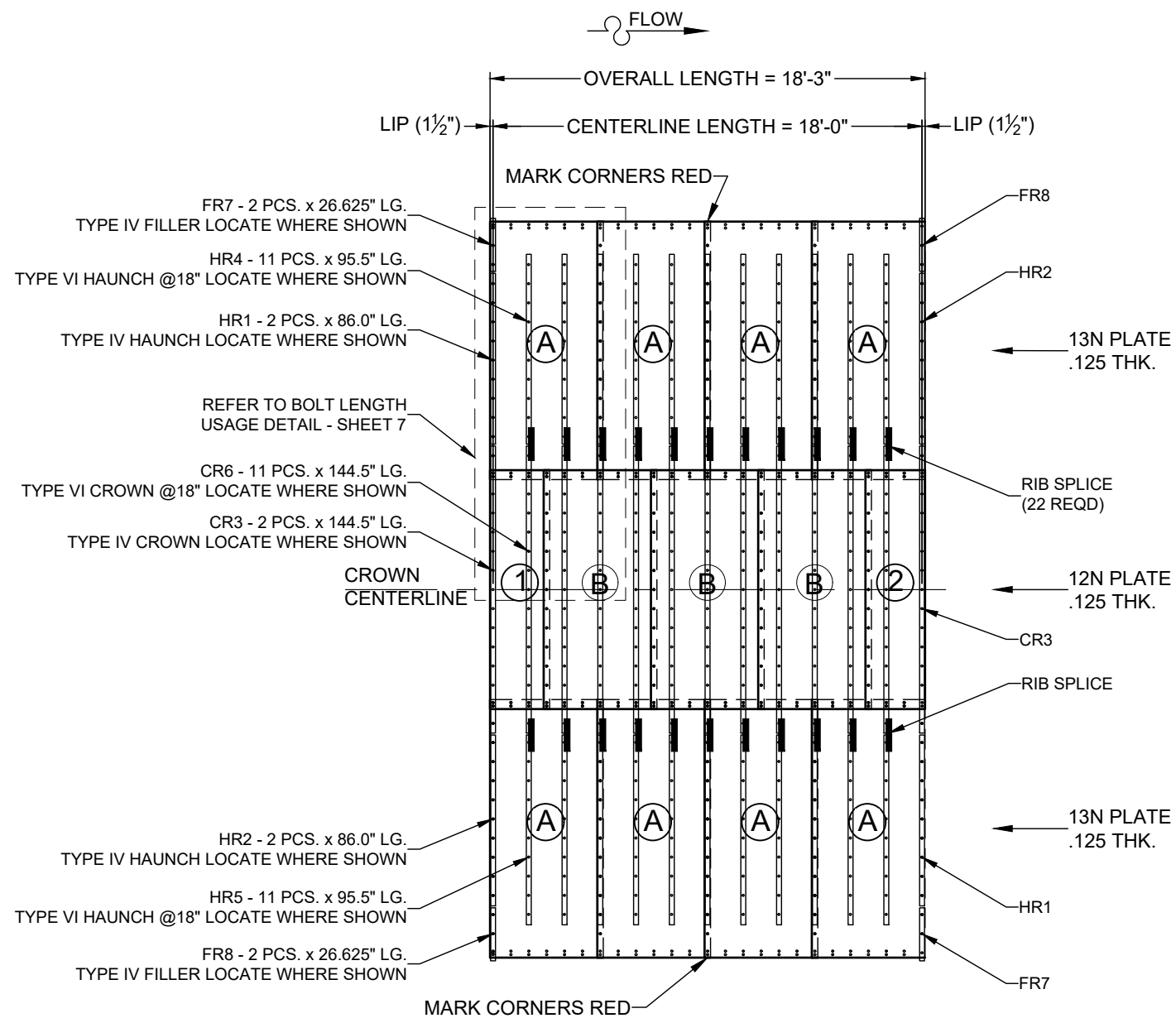
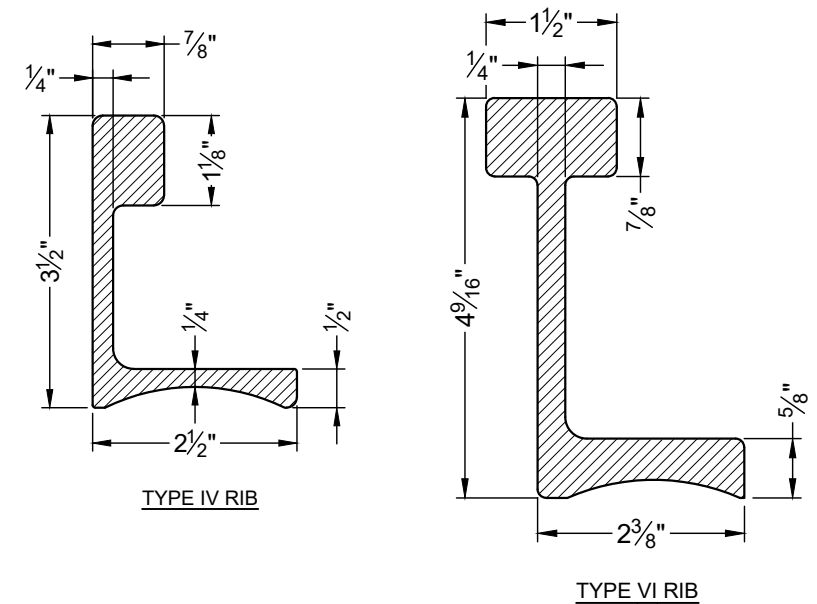
MARK	DATE	REVISION DESCRIPTION	BY

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NOTES:

1. PLATE ONLY LAPS AT CORRUGATION VALLEYS NOT SHOWN FOR CLARITY.
2. REFER TO SHEET 7 FOR ADDITIONAL DETAIL.



ALBC - DEVELOPED PLAN (OUTSIDE VIEW)
20'-10" SPAN x 8'-1" RISE

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN GOLF COURSE
BRIDGE B

GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.:	6 OF 16	

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NOTES:

1. FOR PROPER BOLT SIZE USAGE, REFER TO THE FOLLOWING:

PLATE ONLY

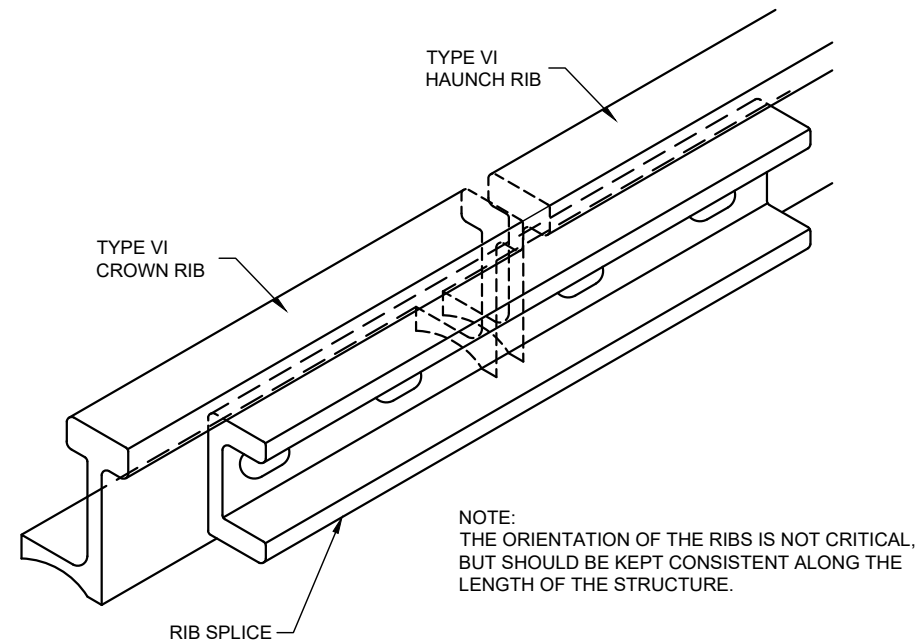
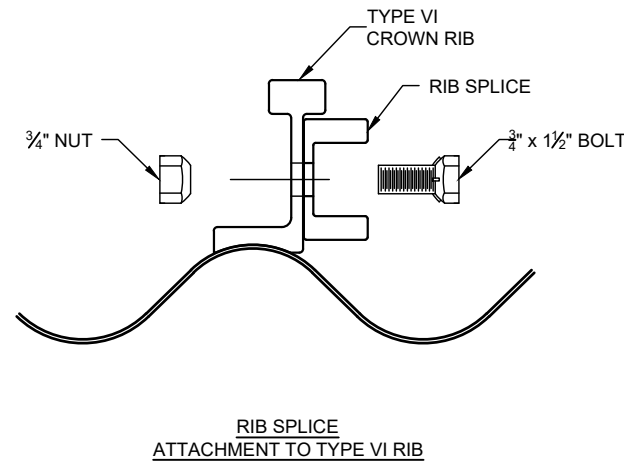
	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE	1 1/4"	1 1/4"

PLATE W/ TYPE IV REINFORCING RIB

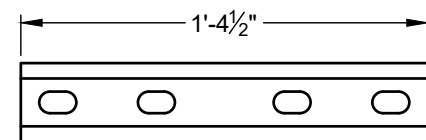
	1 PLATE	2 PLATE
0.100" - 0.125" THK. PLATE	1 1/4"	1 1/2"

PLATE W/ TYPE VI REINFORCING RIB

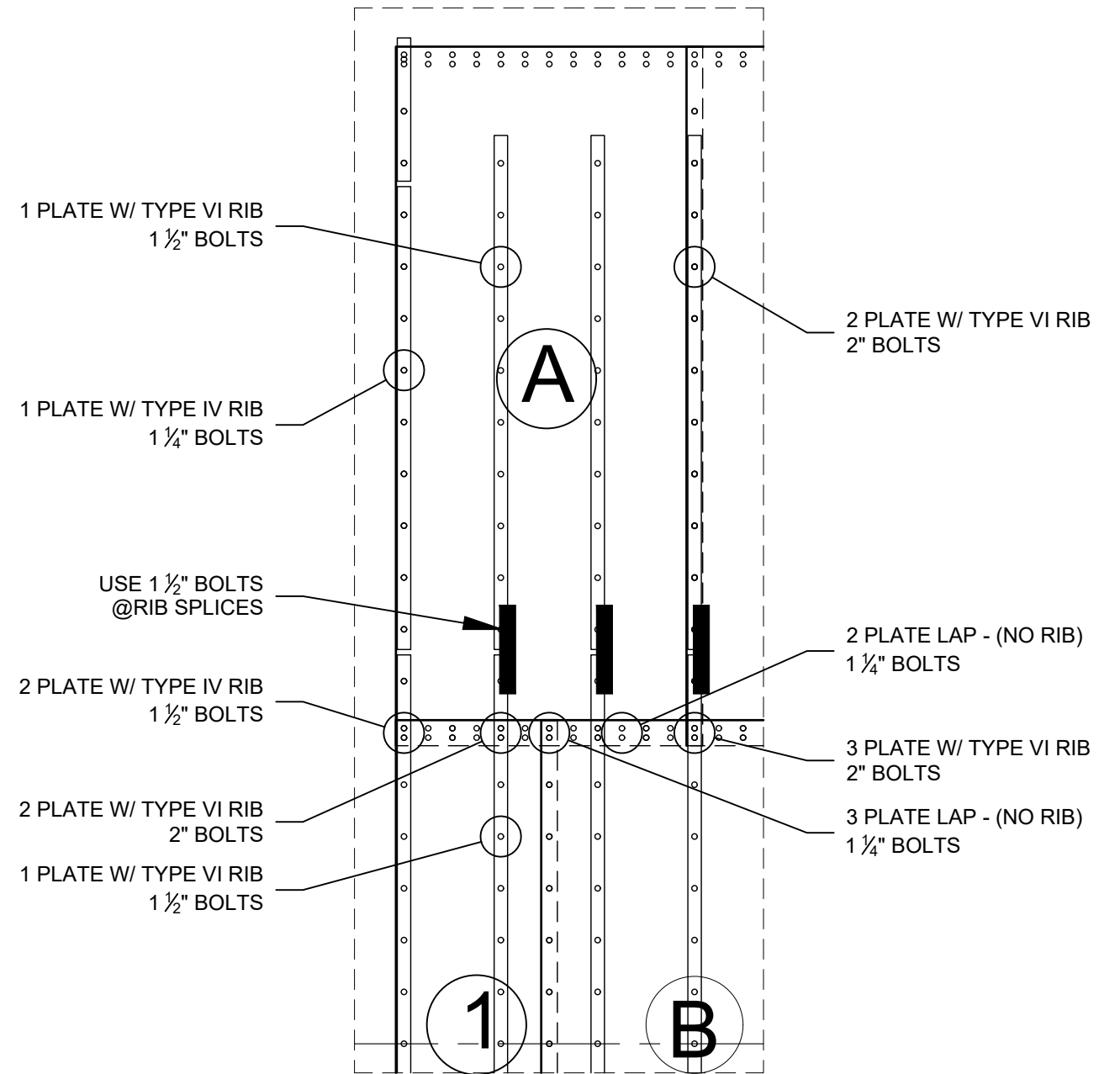
	1 PLATE	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE	1 1/2"	2"	2"



RIB SPLICE ISOMETRIC VIEW



RIB SPLICE



BOLT LENGTH USAGE DETAIL

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ ̵: 18'-0"	INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
SKEW	0	0	
BEVEL	0	0	

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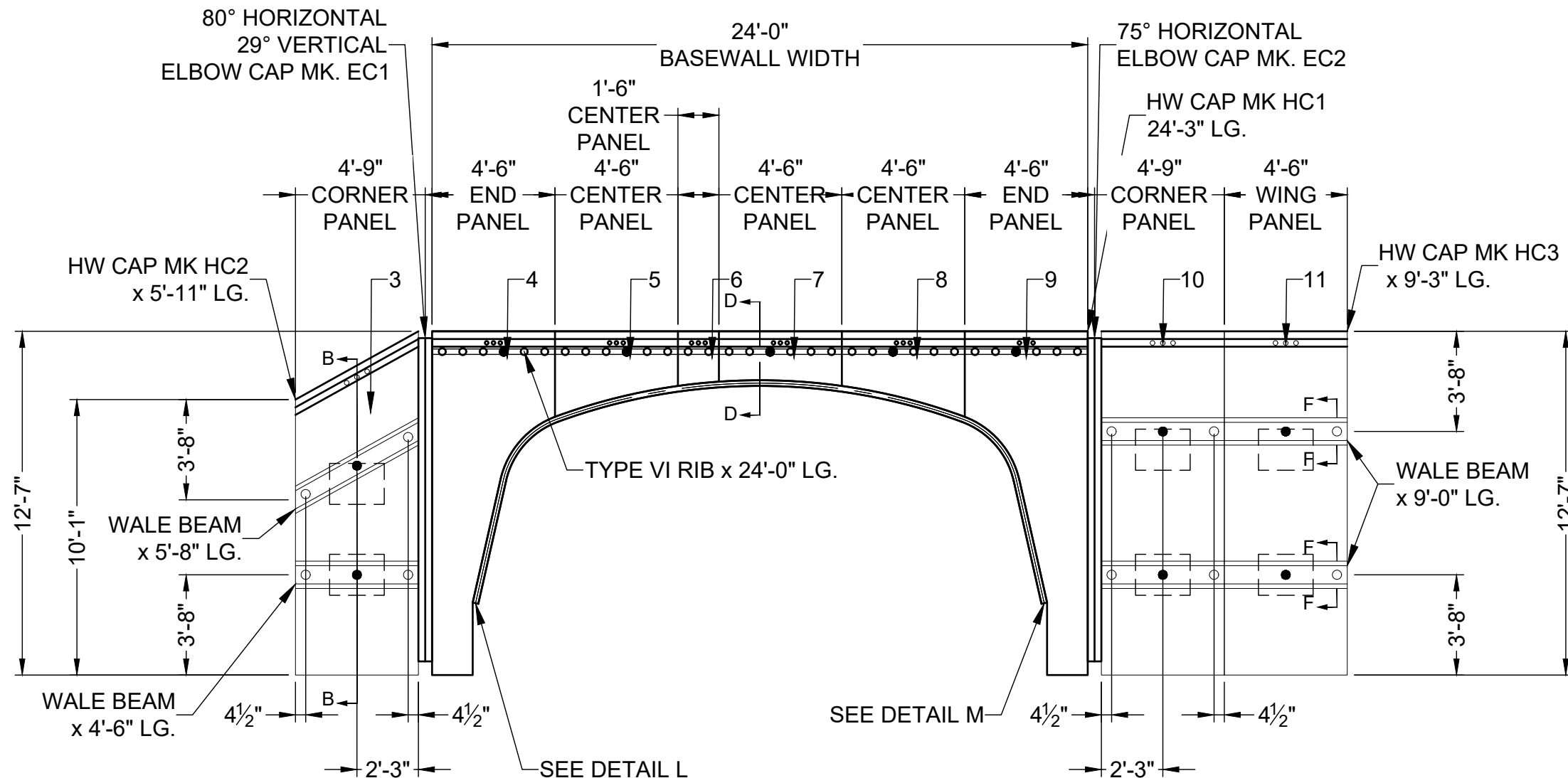
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GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.:	7 OF 16	



ALBC - INLET EXPANDED END VIEW

NOTES:

1. WALL PANEL NUMBERS ARE MARKED ON THE SOIL SIDE.
2. BOLT HEADWALL TO REINFORCING RIB AT END OF STRUCTURE.
3. SEE SHEETS 10-14 FOR REFERENCED SECTIONS AND ADDITIONAL DETAILS.
4. ALL 2'-3" DIMENSIONS ARE RELATIVE TO SECTION B-B.
5. ALL 4 1/2" DIMENSIONS ARE RELATIVE TO SECTION F-F.
6. ○ DENOTES BOLTS CONNECTION
7. ● DENOTES ANCHOR ROD CONNECTION

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ ϵ : 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN GOLF COURSE
BRIDGE B

GRIFFIN, GA

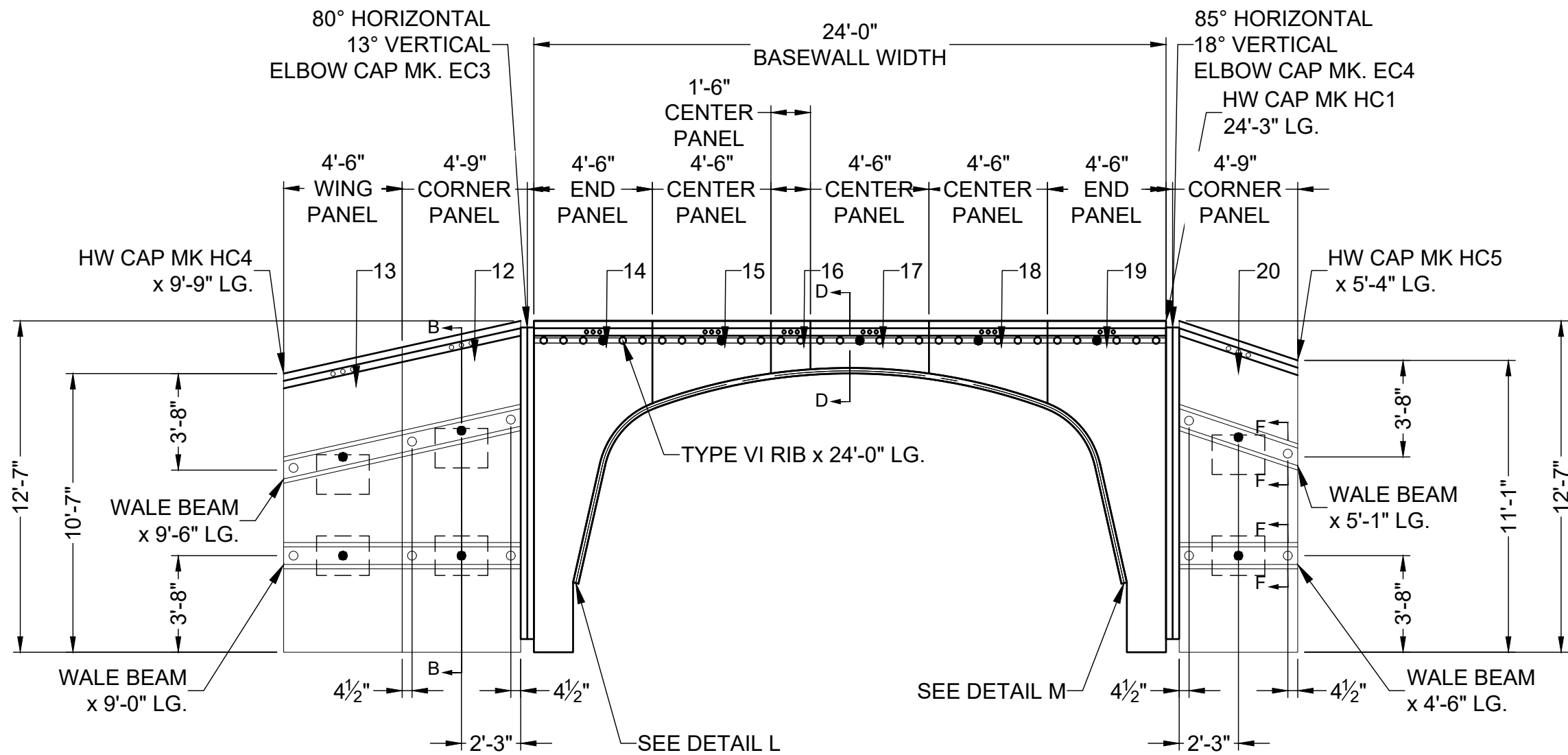
PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.: 8 OF 16		

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ALBC - OUTLET EXPANDED END VIEW

NOTES:

1. WALL PANEL NUMBERS ARE MARKED ON THE SOIL SIDE.
2. BOLT HEADWALL TO REINFORCING RIB AT END OF STRUCTURE.
3. SEE SHEETS 10-14 FOR REFERENCED SECTIONS AND ADDITIONAL DETAILS.
4. ALL 2'-3" DIMENSIONS ARE RELATIVE TO SECTION B-B.
5. ALL 4 1/2" DIMENSIONS ARE RELATIVE TO SECTION F-F.
6. ○ DENOTES BOLTS CONNECTION
7. ● DENOTES ANCHOR ROD CONNECTION

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ ϵ : 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN, GA

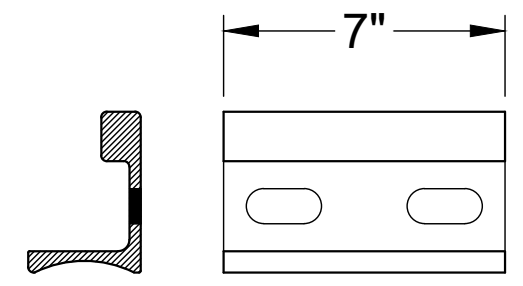
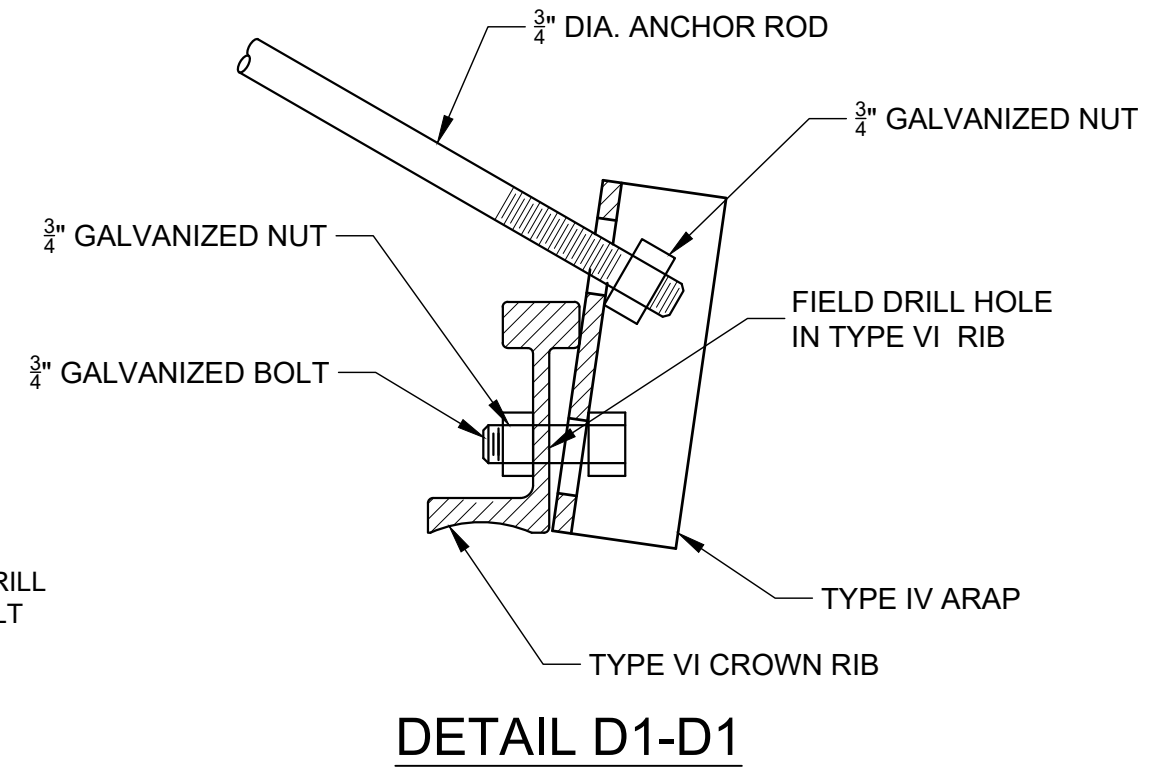
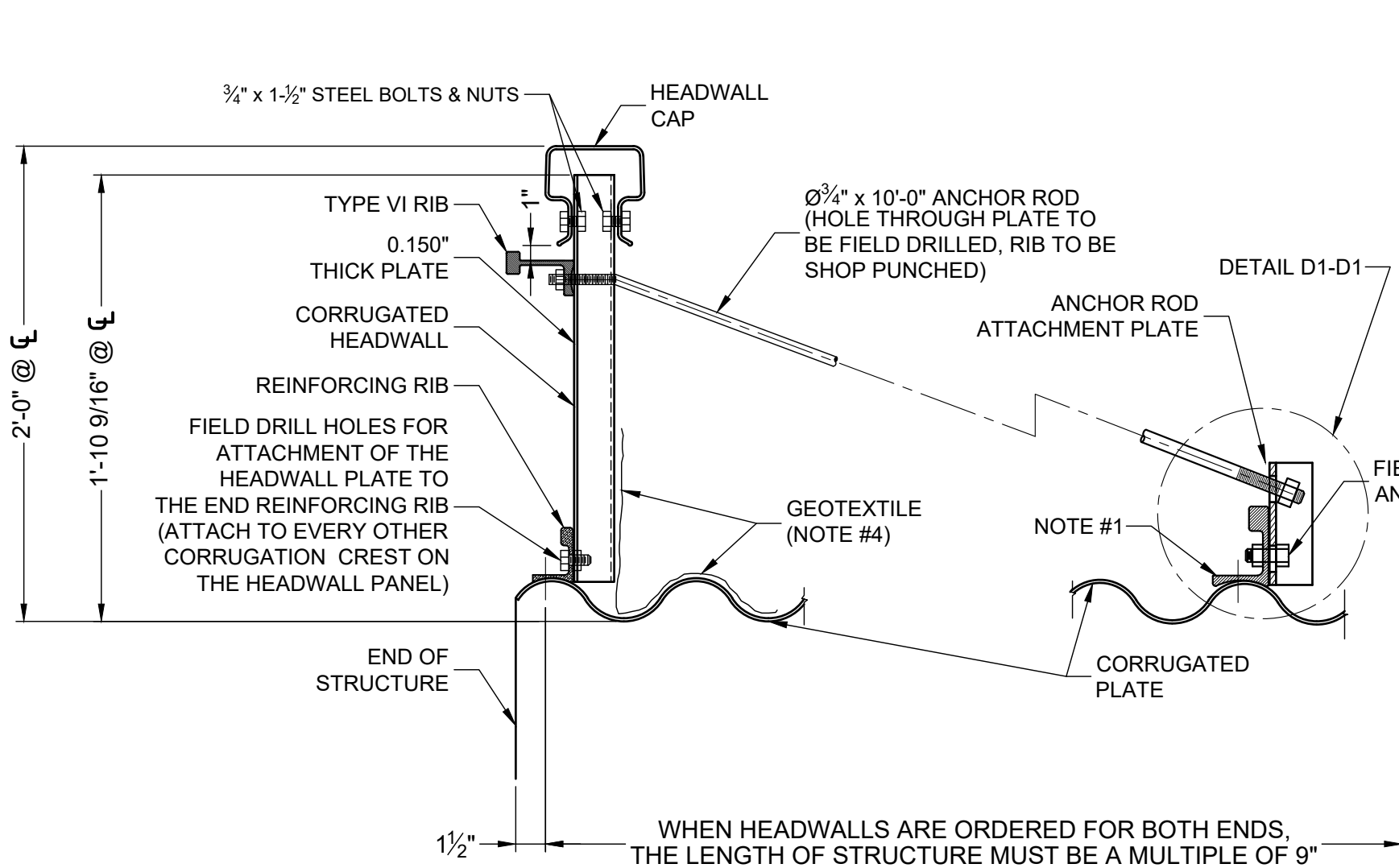
PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
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WHEN HEADWALLS ARE ORDERED FOR BOTH ENDS, THE LENGTH OF STRUCTURE MUST BE A MULTIPLE OF 9"

SECTION D-D HEADWALL ATTACHMENT TO CROWN OF STRUCTURE

NOTES:

- 1) REVERSE CROWN RIBS AT THIS CORRUGATION IF NECESSARY FOR PROPER ANCHOR ROD ATTACHMENT PLATE ORIENTATION.
- 2) NO SPLICE PLATES ARE USED FOR THE TYPE IV REINFORCING RIBS ATTACHED TO THE CORRUGATED HEADWALL.
- 3) REINFORCING RIBS AT EACH END OF STRUCTURE MUST BE ORIENTED SUCH THAT THE HEADWALL CAN BE PLACED BEHIND THEM AS SHOWN.
- 4) GEOTEXTILE PREVENTS INFILTRATION OF THE BACKFILL BETWEEN THE HEADWALL AND STRUCTURE. A ROLL OF GEOTEXTILE IS PROVIDED FOR THIS PURPOSE.

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ Ɛ: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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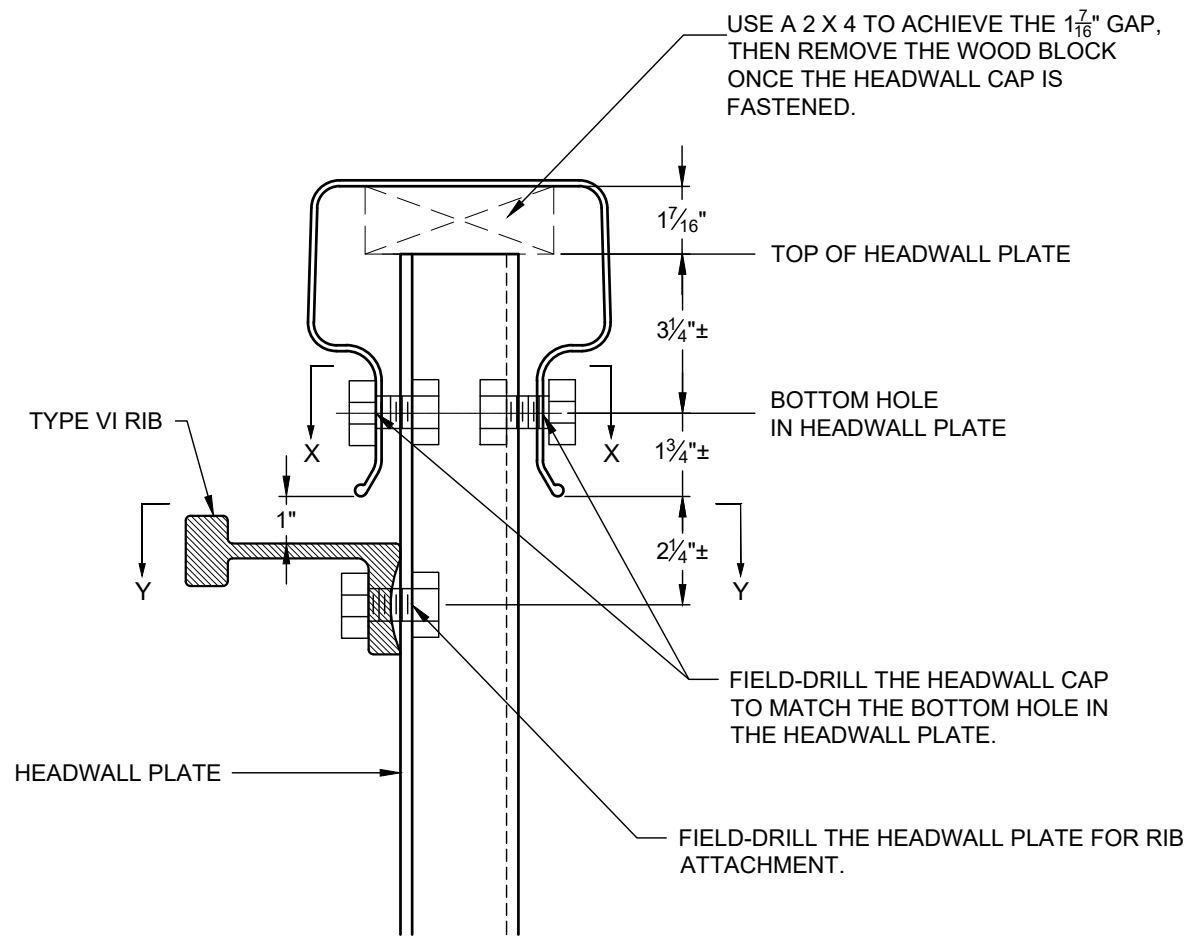
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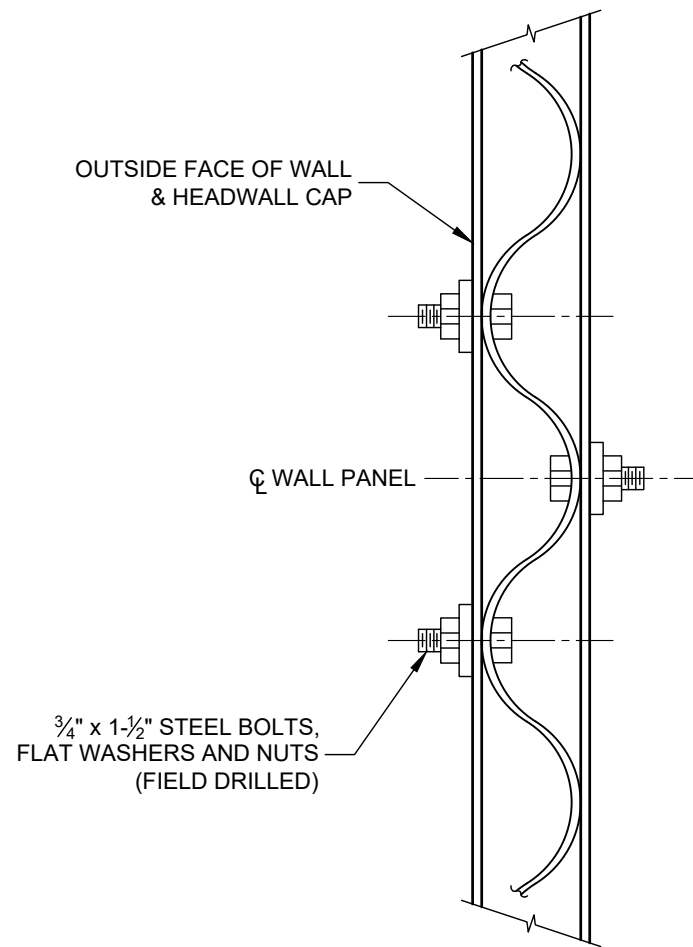
GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
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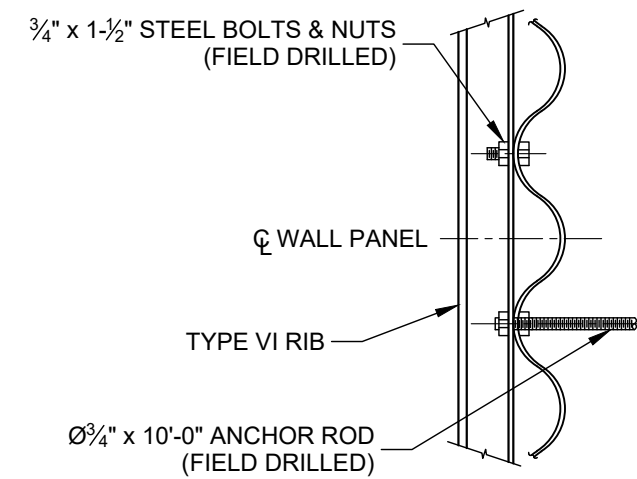
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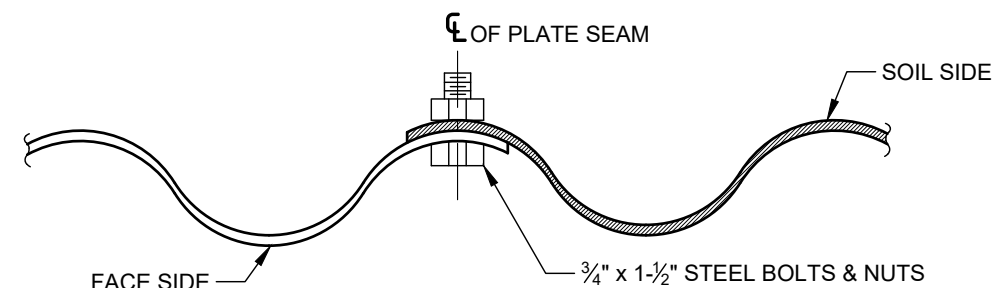
**HEADWALL
(CAP AND RIB ATTACHMENT)**



**HEADWALL/WINGWALL CAP
AT ATTACHMENT TO PANEL
DETAIL SECTION X-X**



**TYPICAL ANCHOR ROD ATTACHMENT
AT HEADWALL SECTION Y-Y**



TYPICAL PANEL LAP DETAIL

TYPE: BOX		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
SIZE: 52R1				
SPAN: 20'-10"	SKEW	0	0	
RISE: 8'-1"				
LENGTH @ ϵ : 18'-0"	BEVEL	0	0	

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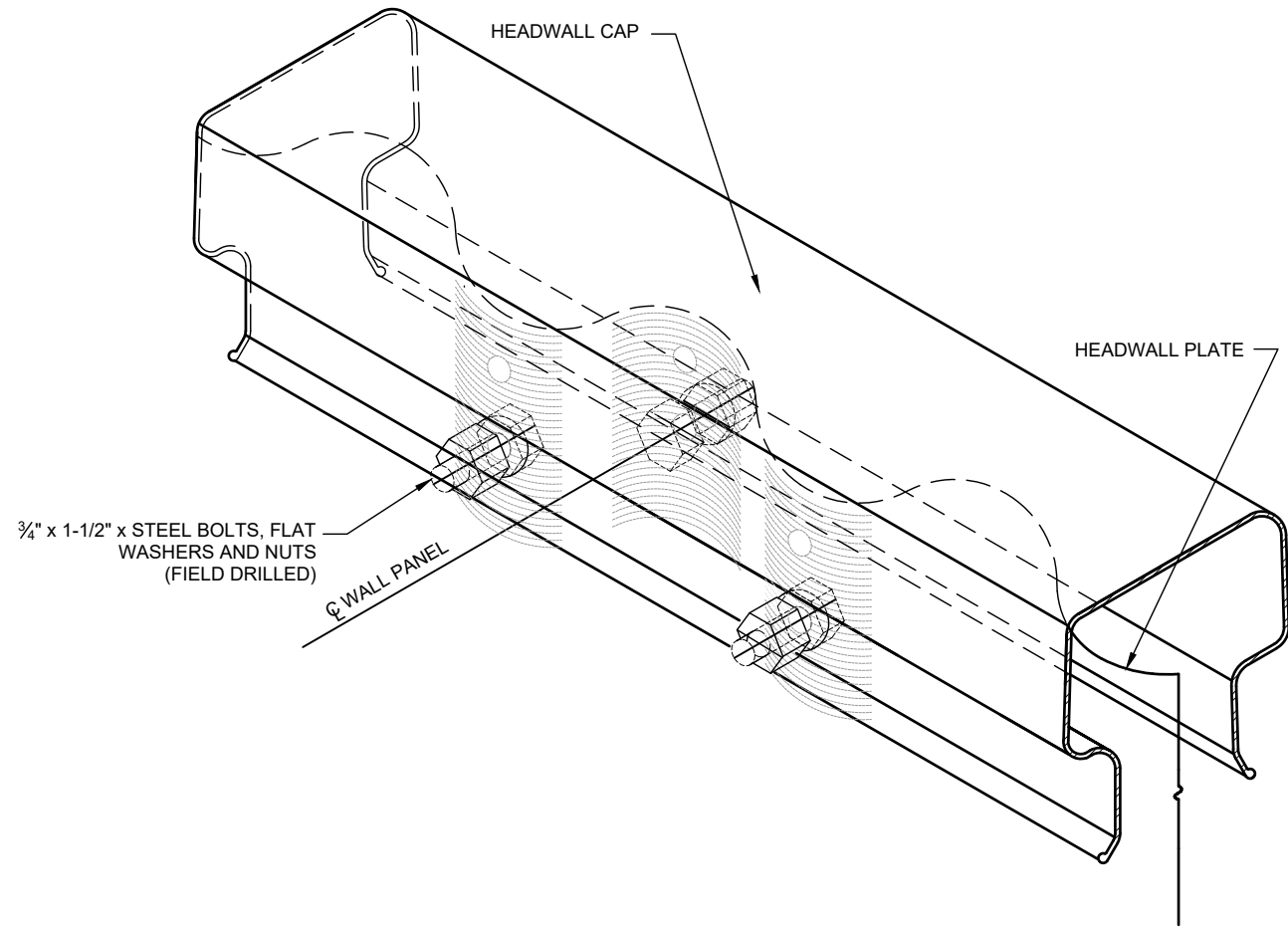
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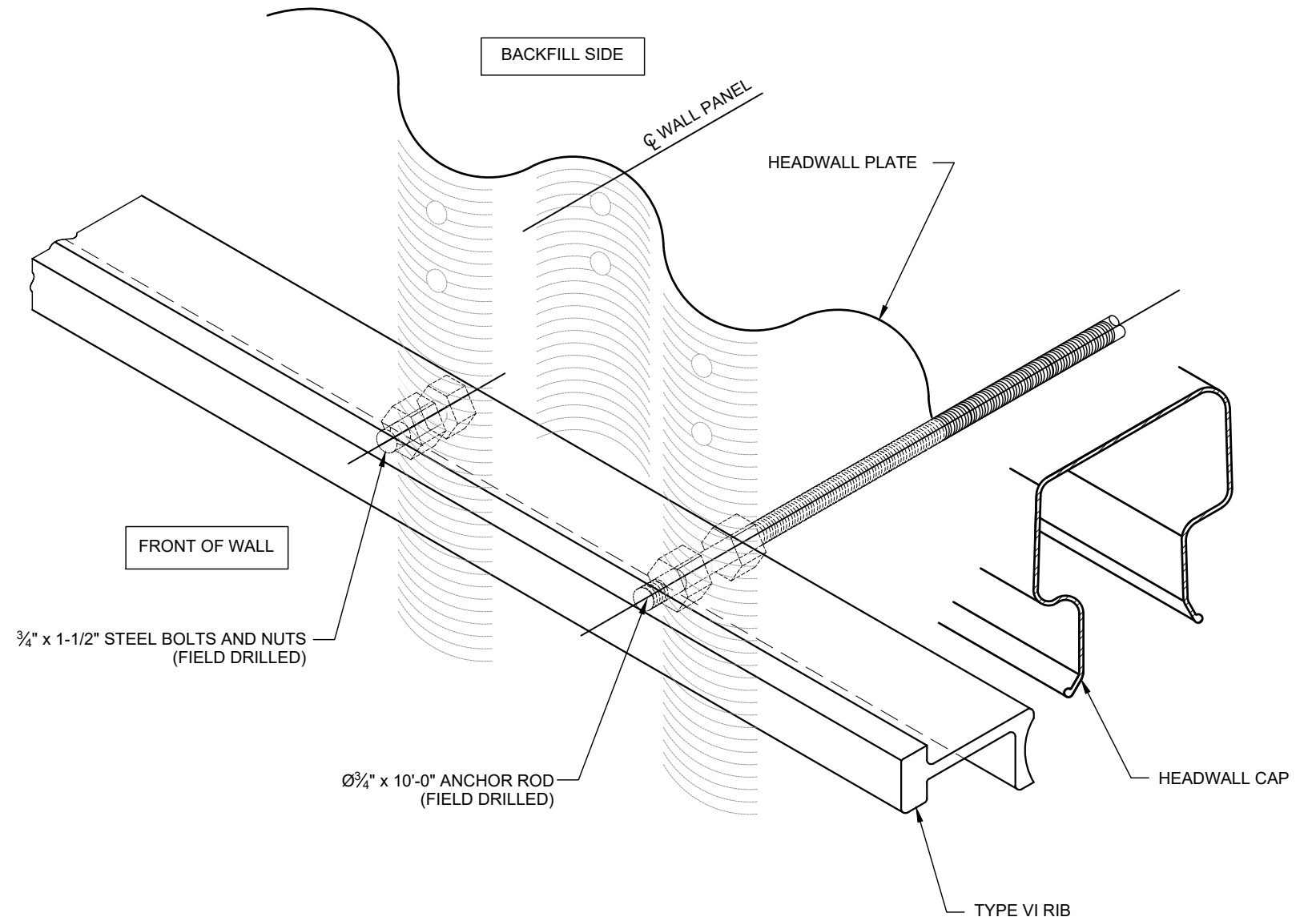
GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.: 11	OF 16	

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**HEADWALL / WINGWALL CAP AT ATTACHMENT TO PANEL DETAIL
SECTION X-X (ISOMETRIC VIEW)**



**TYPICAL ANCHOR ROD ATTACHMENT AT HEADWALL
SECTION Y-Y (ISOMETRIC VIEW)**

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ ϵ : 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN, GA

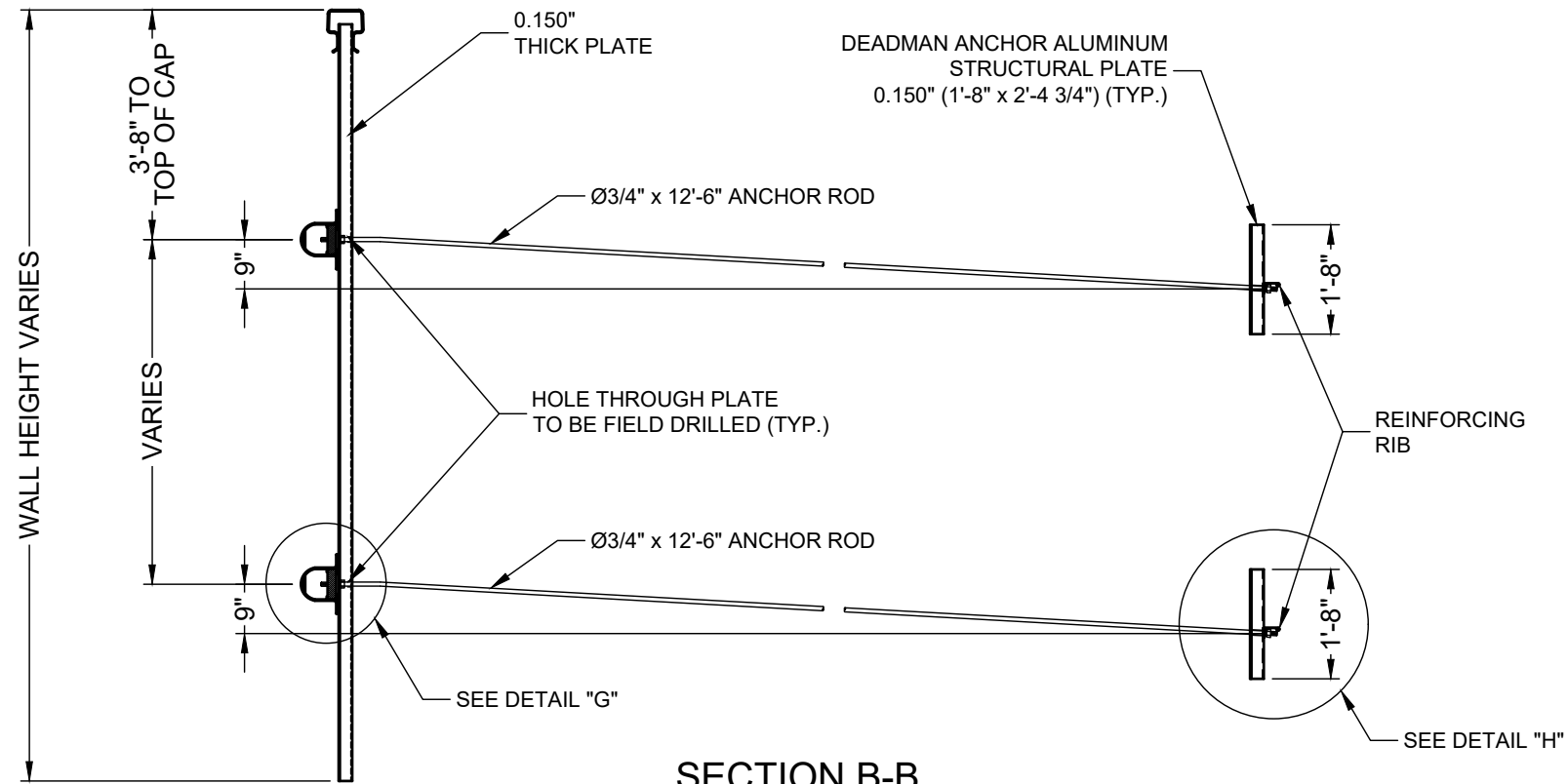
PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
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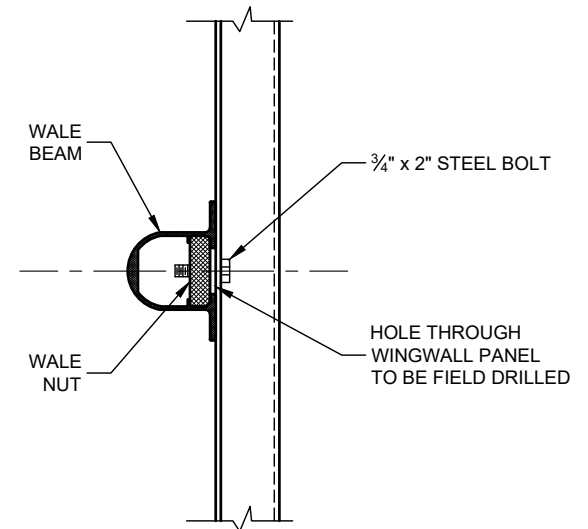
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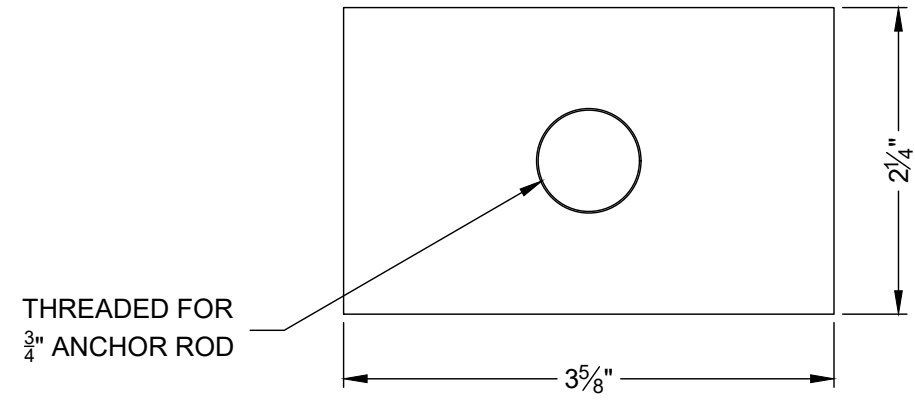
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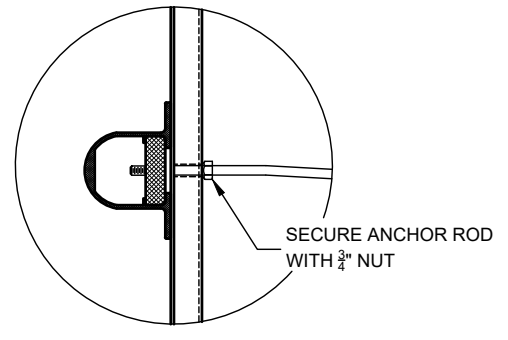
**SECTION B-B
DUAL DEADMAN ANCHOR
ATTACHMENT**



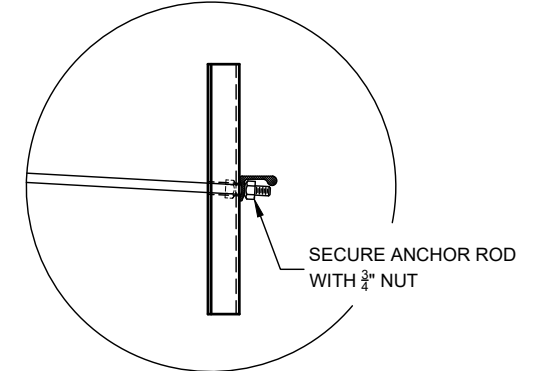
**SECTION F-F
WALE BEAM ATTACHMENT**



WALE NUT



DETAIL G



DETAIL H

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 1': 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125 (C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

FOR APPROVAL

MARK	DATE	REVISION DESCRIPTION	BY

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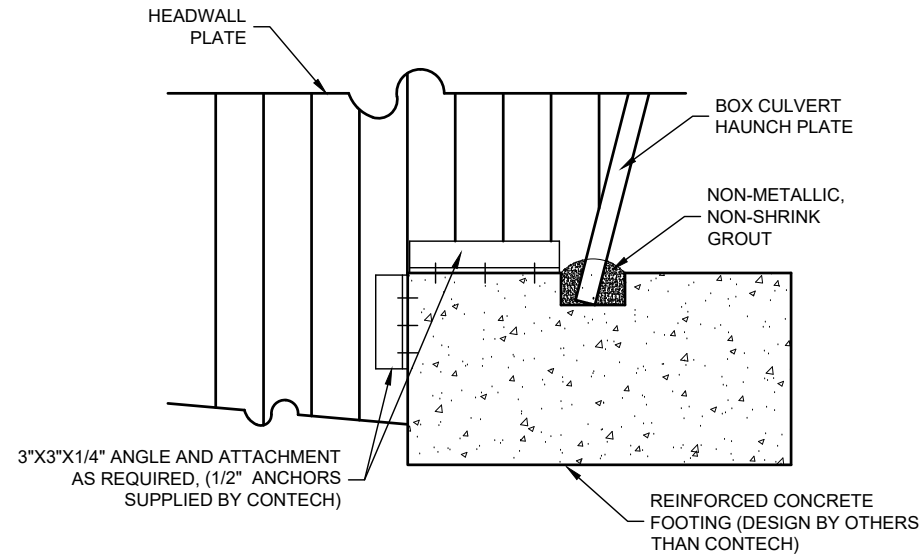
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STRUCTURAL PLATE
CONTECH
CONTRACT
DRAWING

GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.:	13 OF 16	

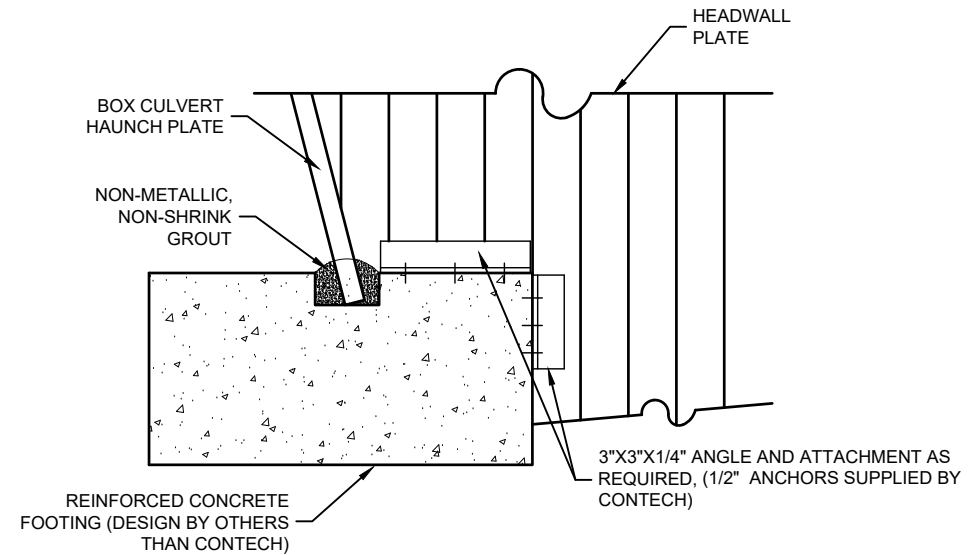
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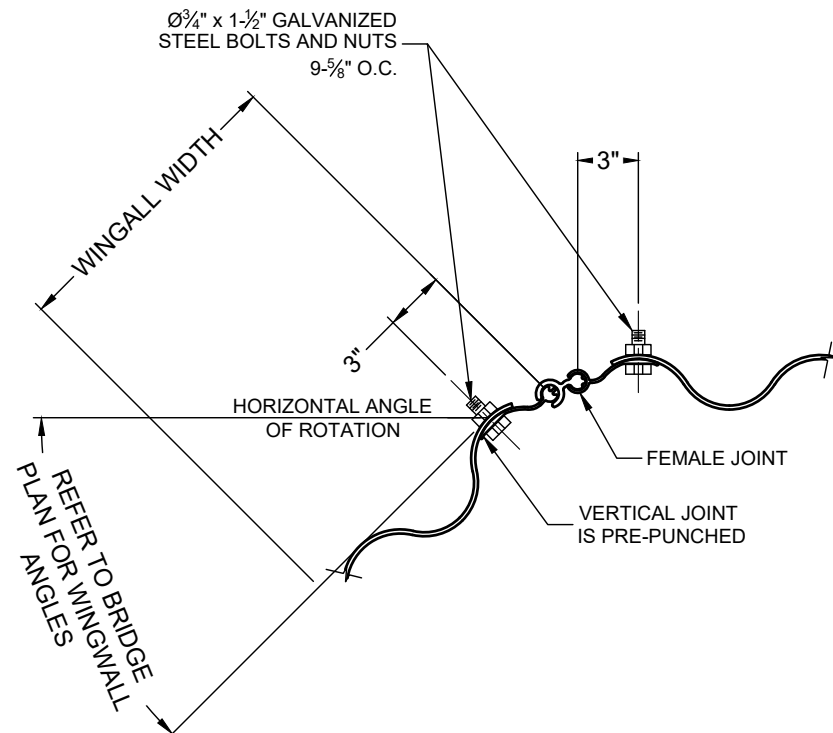
DETAIL "L"

NOTE: FIELD CUT HEADWALL TO MATCH FOOTING.

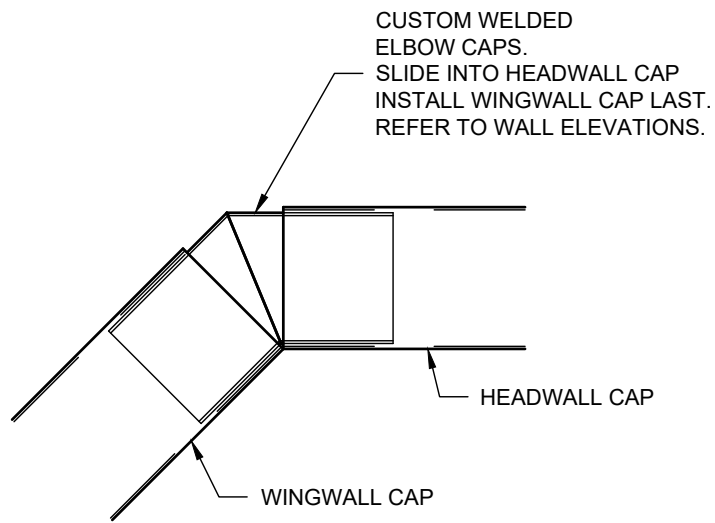


DETAIL "M"

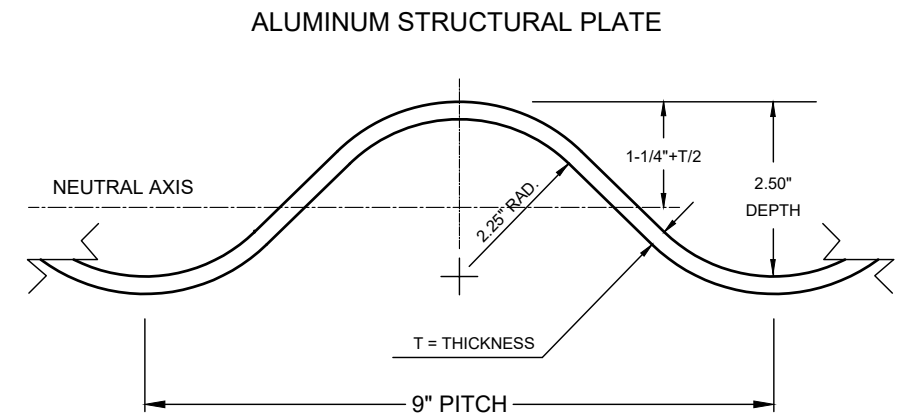
NOTE: FIELD CUT HEADWALL TO MATCH FOOTING.



TYPICAL HEADWALL PANEL TO WING PANEL JOINTS DETAIL



ELBOW CAP DETAIL



CORRUGATION PROFILE

TYPE: BOX		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
SIZE: 52R1				
SPAN: 20'-10"	SKEW	0	0	
RISE: 8'-1"				
LENGTH @ ϵ : 18'-0"	BEVEL	0	0	

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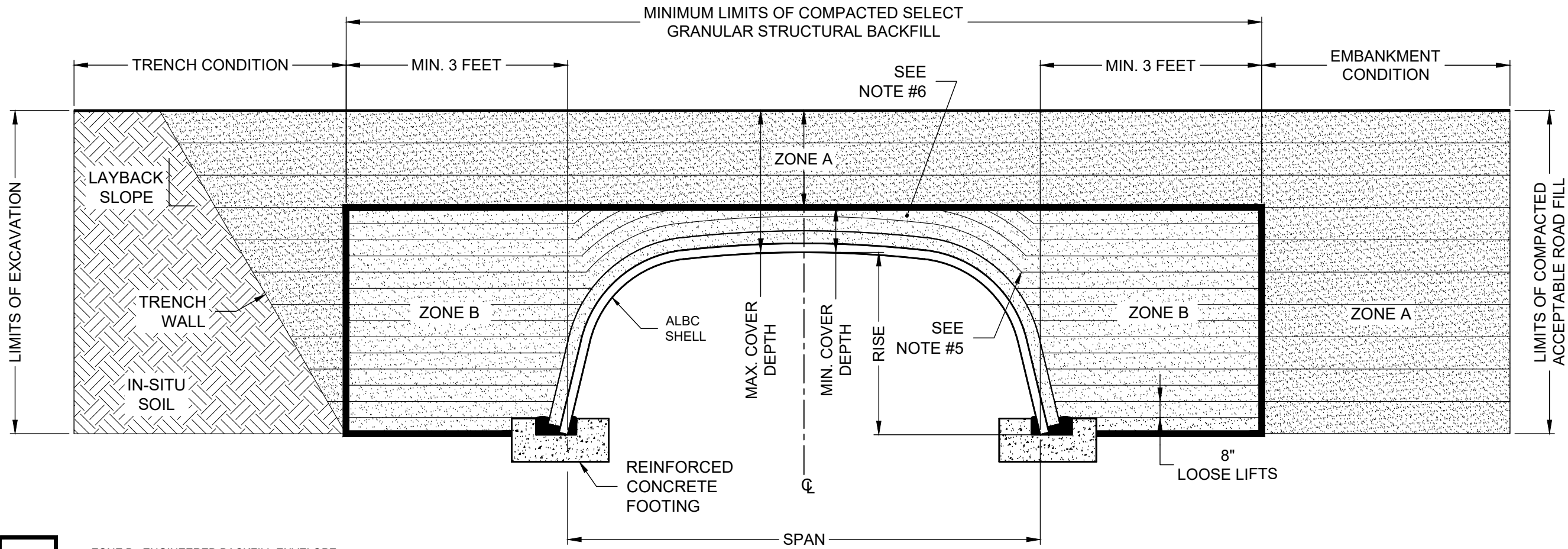
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**GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA**

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.:	14 OF 16	



 ZONE B: ENGINEERED BACKFILL ENVELOPE.

 ZONE A: CONSTRUCTED EMBANKMENT OR OVERFILL.

BACKFILL ZONE SECTION

NOTES:

- MINIMUM ENGINEERED BACKFILL ENVELOPE WIDTH IS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.
- ENGINEERED BACKFILL ENVELOPE TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180. THERE SHOULD BE NO MORE THAN 2' DIFFERENTIAL ON EACH SIDE. ENGINEERED BACKFILL MATERIAL PLACED WITHIN 1 FOOT LATERALLY OF THE WIDEST PART OF THE STRUCTURE SHOULD BE COMPACTED USING HAND OPERATED EQUIPMENT UNTIL MINIMUM COVER HEIGHT IS REACHED.
- SHAPE MONITORING OF THE ALBC STRUCTURE IS REQUIRED DURING THE BACKFILLING PROCESS. THE METHOD, FREQUENCY AND DURATION SHALL BE DETERMINED BASED ON THE SIZE AND SHAPE OF THE STRUCTURE.
- PLACE ENGINEERED BACKFILL ENVELOPE IN RADIAL LIFTS BEGINNING AT APPROXIMATELY THE MIDDLE OF THE HAUNCH ZONE.
- BECAUSE OF THE FLEXING AND VIBRATION OF THE CROWN PLATES, THE FULL COMPACTION DENSITY LEVELS OFTEN CAN NOT BE ACHIEVED IN THE FIRST SEVERAL INCHES OF FILL OVER THE CROWN.
- ONCE THE BACKFILL ELEVATION REACHES THE MIDDLE OF THE HAUNCH CURVE (DEPENDING ON RELATIVE MOVEMENT DURING THE BACKFILL PROCESS), PLACE AND COMPACT ENGINEERED BACKFILL MATERIAL IN RADIAL LIFTS OVER THE TOP OF THE STRUCTURE.
- WHEN REQUIRED, AS DETERMINED BY THE GEOTECHNICAL ENGINEER, A GEOTEXTILE OR GRADED SOIL FILTER MAY BE USED BETWEEN THE ENGINEERED BACKFILL AND IN-SITU SOIL TO PREVENT MIGRATION OF FINES AND POSSIBLE INTERNAL EROSION OF THE SOIL.
- DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE.
- THE MINIMUM COVER IS THE VERTICAL DISTANCE FROM THE OUTSIDE VALLEY OF THE CORRUGATIONS TO THE TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145					
GROUP CLASSIFICATION	A-1-a	A-1-b	A-2-4	A-2-5	A-3
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	50 max.	---	---	---	---
No. 40 (0.425 mm)	30 max.	50 max.	---	---	51 max.*
No. 200 (0.075 mm)	15 max.	25 max.	35 max.	35 max.	10 max.
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	---	---	40 max.	41 min.	---
Plasticity Index	6 max.	6 max.	10 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand		Silty or Clayey Gravel and Sand		Coarse Sand

*Modified from M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically Classified by AASHTO M-145 as A-3 materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 18'-0"	INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
SKEW	0	0	
BEVEL	0	0	

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GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA

PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.: 15	OF 16	

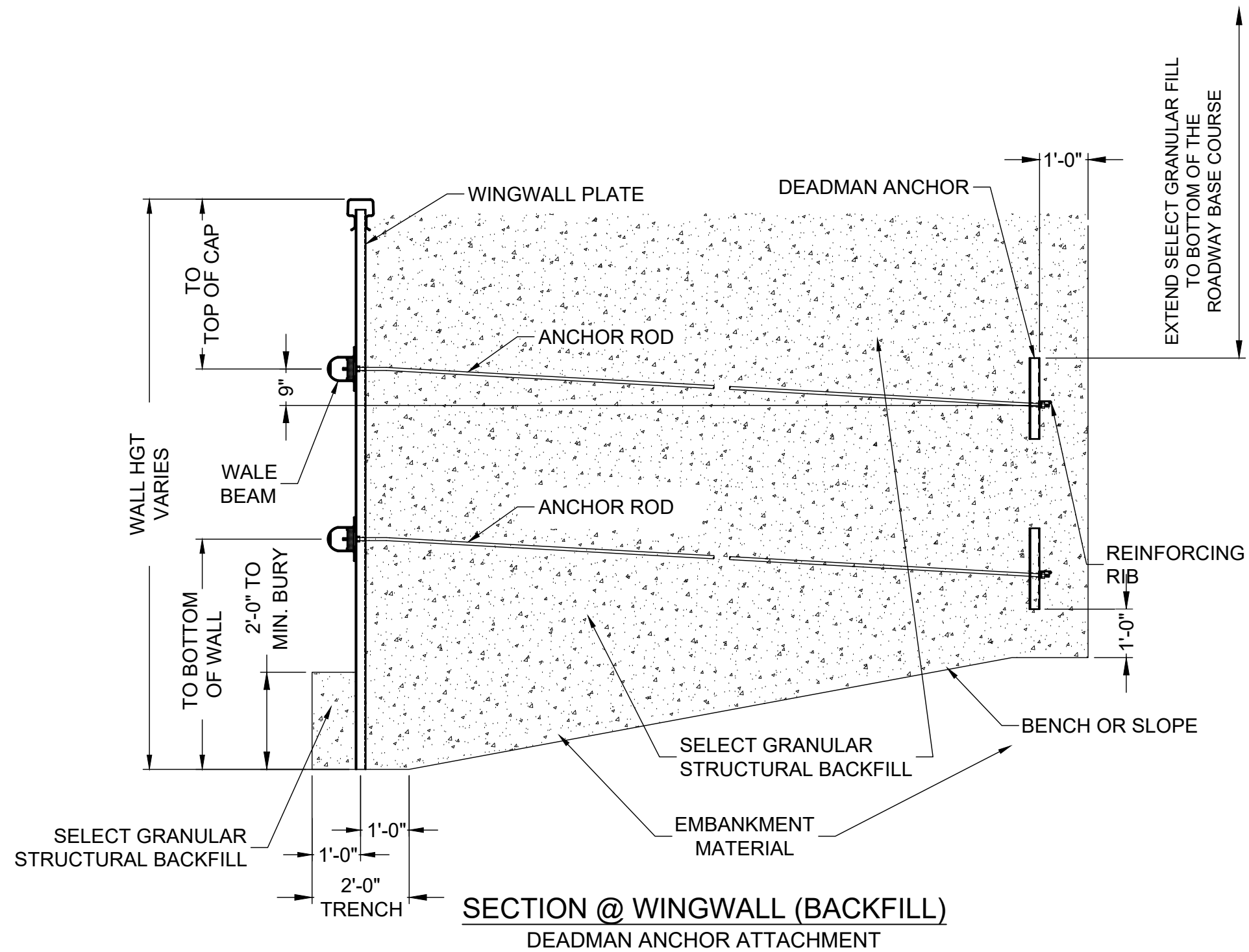
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SECTION @ WINGWALL (BACKFILL)
DEADMAN ANCHOR ATTACHMENT

TYPE: BOX SIZE: 52R1 SPAN: 20'-10" RISE: 8'-1" LENGTH @ 1: 18'-0"		INLET	OUTLET	PLATE THICKNESS: .125 (H)/.125(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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GRIFFIN GOLF COURSE
BRIDGE B
GRIFFIN, GA

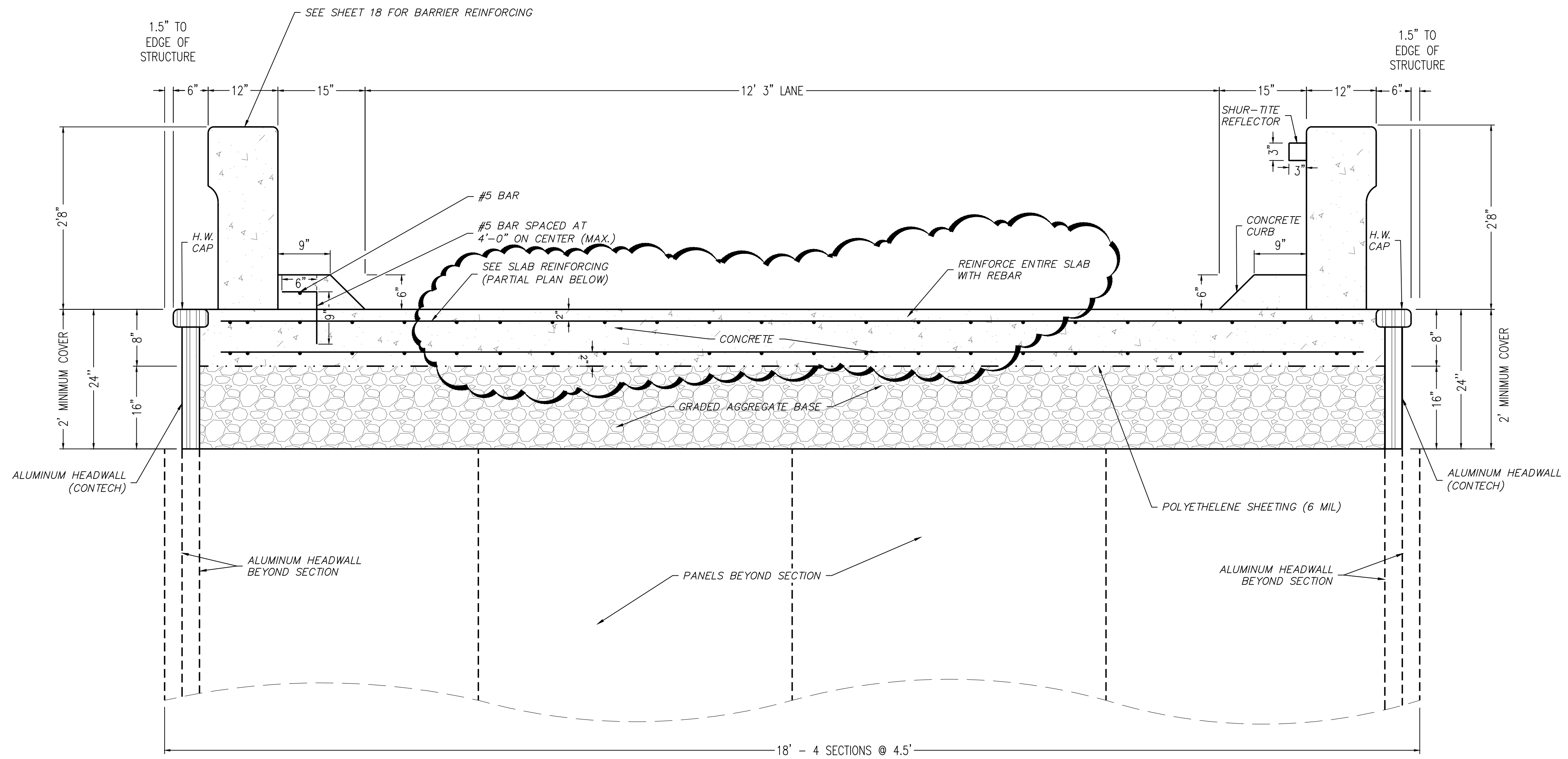
PROJECT No.: 716372	SEQ. No.: 015	DATE: 2/28/2024
DESIGNED:	DRAWN: JEM	
CHECKED: VP	APPROVED:	
SHEET NO.: 16 OF 16		

Adam Pierce , CPESC

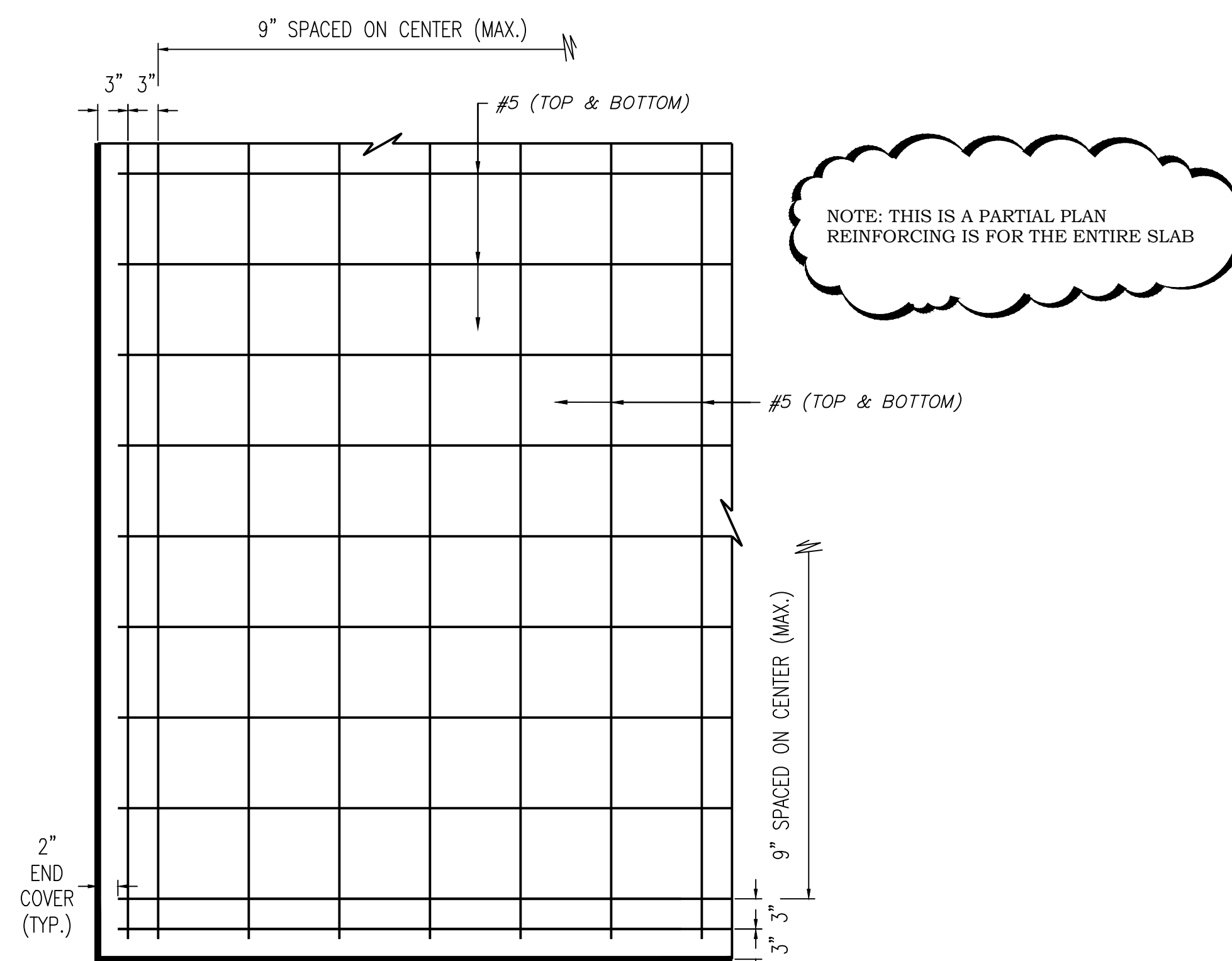
Engineering Business Manager

(m) 423-667-5741 | apierce@solmax.com
4019 Industry Drive, Chattanooga, TN 37416





BRIDGE SECTION AT CENTER
SCALE 1" = 1'



SLAB REINFORCING PARTIAL PLAN
NTS

NOTES
f_c = 4000 PSI
f_s = 60 KSI

No.	Revisions:	Date
1.	ADDENDUM #3	3/14/2024

PARAGON
CONSULTING GROUP
an LA company

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phone (770) 412-7700 www.pcgeng.com

SITE DEVELOPMENT PLANS FOR
GRIFFIN GOLF COURSE
BRIDGE REPLACEMENTS
LOCATED IN LANDLOT 142 OF THE 2nd DISTRICT, SPALDING COUNTY

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SHEET:
CONSTRUCTION
DETAILS 4

COA #: PEF004167

REGISTERED PROFESSIONAL ENGINEER
CHARLES N. PENNY
20042
2-12-24

GSWCC LEVEL II CERT. # 0000010472

Project No. 22050.00 Issue Date: FEB. 2024
Drawn By: ALP Checked By: CNP