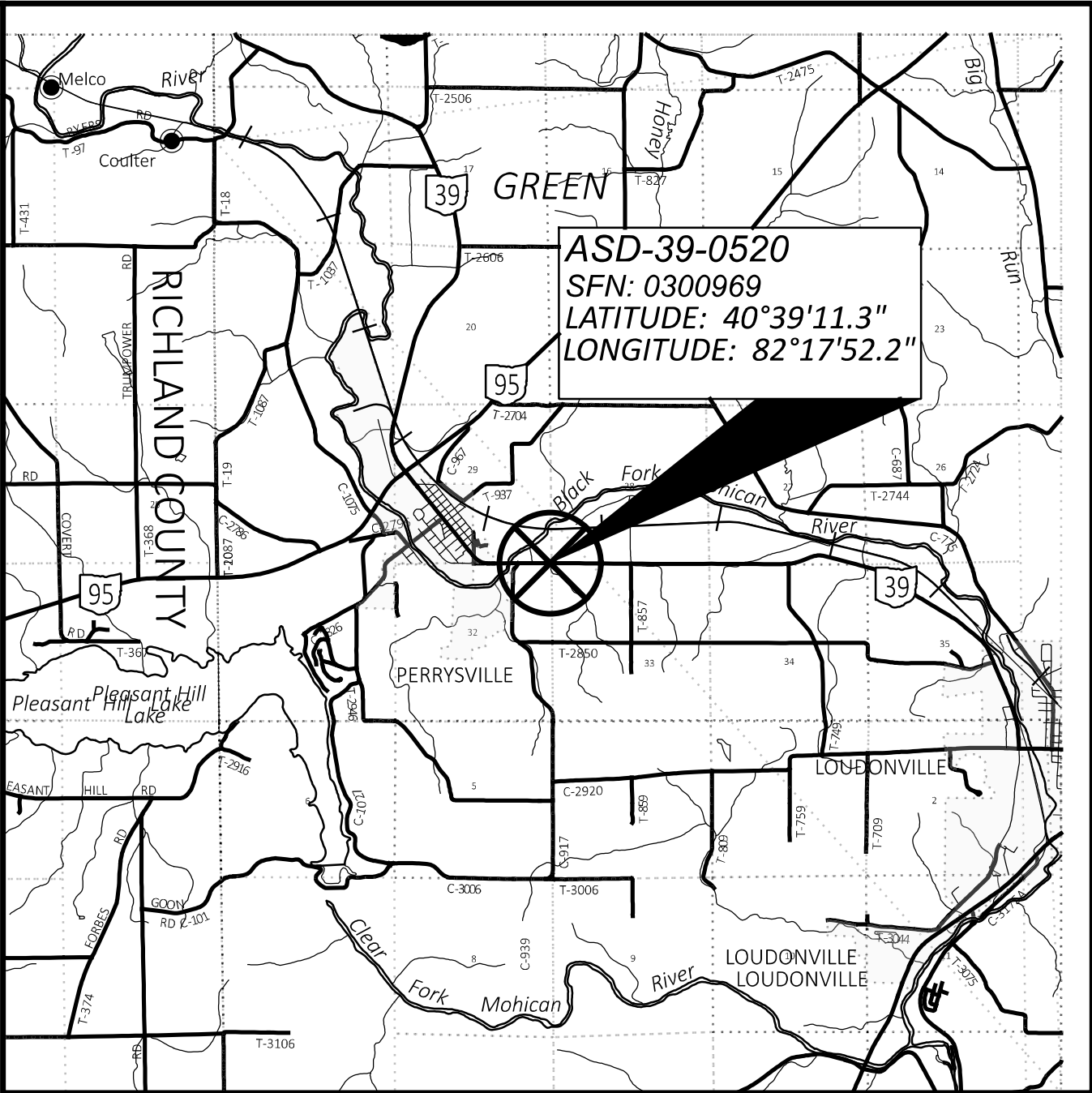




PORTION TO BE IMPROVED	
INTERSTATE HIGHWAY	
FEDERAL ROUTES	
STATE ROUTES	
COUNTY & TOWNSHIP ROADS	
OTHER ROADS	

DESIGN DESIGNATION

CURRENT ADT (2025)	3200
DESIGN YEAR ADT (2045)	3400
DESIGN HOURLY VOLUME (2045)	350
DIRECTIONAL DISTRIBUTION %	51.6
TRUCKS (24 HOUR B&C) %	8
DESIGN SPEED	55
LEGAL SPEED	55
DESIGN FUNCTIONAL CLASSIFICATION:	
MAJOR COLLECTOR (RURAL)	
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE

ADA DESIGN WAIVERS

NONE

UNDERGROUND UTILITIES

Contact Two Working Days Before You Dig

OHIO811.org

Before You Dig

OHIO811, 8-1-1, or 1-800-362-2764 (Non members must be called directly)

OHIO DEPARTMENT OF TRANSPORTATION

DISTRICT THREE ENGINEERING

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

ASD-39-5.20

GREEN TOWNSHIP

ASHLAND COUNTY

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CULVERT DETAILS	24	
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FEDERAL PROJECT NUMBER

E220494

RAILROAD INVOLVEMENT

NONE

PROJECT DESCRIPTION

THIS PROJECT INCLUDES THE REPLACEMENT OF AN EXISTING TWIN 6' X 4' WOODEN BOX CULVERT UNDER STATE ROUTE 39 USING OPEN CUT METHODS.

EARTH DISTURBED AREAS

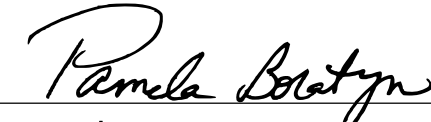
PROJECT EARTH DISTURBED AREA:	0.57 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	0.25 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA:	N/A * ACRES
* PROJECT EARTH DISTURBED AREA + ESTIMATED CONTRACTOR EARTH DISTURBED AREA < 1.0 ACRES.	

2023 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS, CHANGES LISTED IN THE PROPOSAL, AND THE SUPPLEMENTAL SPECIFICATION 800 VERSION INDICATED ON THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT DETOURS WILL BE PROVIDED AS INDICATED ON SHEET 6.


Robert Weaver
District 03 Deputy Director


Pamela Boratyn
Director, Department of Transportation

STANDARD CONSTRUCTION DRAWINGS						SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
BP-3.1	1/19/24	MT-97.10	4/19/19			800-2023	1/17/25
BP-4.1	7/19/13	MT-99.20	4/19/19			832	7/19/24
		MT-101.60	4/21/23			902	7/19/19
CB-5	7/19/24	MT-101.90	7/17/20				
		MT-105.10	1/17/20				
DM-1.1	1/17/25						
DM-4.3	1/15/16	RM-1.1	1/20/23				
DM-4.4	1/15/16						
		TC-42.10	10/18/13				
HW-1.1	7/19/24	TC-42.20	10/18/13				
HW-2.1	7/15/22	TC-52.10	10/18/13				
HW-2.2	7/20/18	TC-52.20	1/15/21				

ENGINEER'S SEAL



TITLE SHEET

DESIGN AGENCY
DISTRICT 3



ENGINEERING
TEAM THREE

DESIGNER
JSR

REVIEWER
ACM 01/28/25

PROJECT ID
114936

SHEET
P.1

TOTAL
35

SHEET NUMBER													PART.	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
4	5	6	10	25	RW.3								01/STR/10						
																		ROADWAY	
			LS										LS	201	11000	LS		CLEARING AND GRUBBING	
			235										235	202	23000	235	SY	PAVEMENT REMOVED	
			58										58	202	35100	58	FT	PIPE REMOVED, 24" DIAMETER AND UNDER	
			239										239	203	10000	239	CY	EXCAVATION	
			186										186	203	20000	186	CY	EMBANKMENT	
			256										256	204	10000	256	SY	SUBGRADE COMPACTION	
					3								3	623	38500	3	EACH	MONUMENT ASSEMBLY, TYPE C	
LS													LS	623	50000	LS		PRECONSTRUCTION SURVEY MONUMENT VERIFICATION AND REPORT	
LS													LS	623	51000	LS		POST CONSTRUCTION SURVEY MONUMENT VERIFICATION AND REPORT	
																		EROSION CONTROL	
				22									22	601	32100	22	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	
	2												2	659	00100	2	EACH	SOIL ANALYSIS TEST	
	96												96	659	00300	96	CY	TOPSOIL	
	868												868	659	10000	868	SY	SEEDING AND MULCHING	
	43												43	659	14000	43	SY	REPAIR SEEDING AND MULCHING	
	43												43	659	15000	43	SY	INTER-SEEDING	
	0.12												0.12	659	20000	0.12	TON	COMMERCIAL FERTILIZER	
	0.18												0.18	659	31000	0.18	ACRE	LIME	
	4.81												4.81	659	35000	4.81	MGAL	WATER	
			431										431	670	00530	431	SY	SLOPE EROSION PROTECTION MAT, TYPE C	
													3,000	832	30000	3,000	EACH	EROSION CONTROL	
																		DRAINAGE	
				32									32	605	31100	32	FT	AGGREGATE DRAINS	
			59										59	611	07600	59	FT	18" CONDUIT, TYPE C	
			1										1	611	98300	1	EACH	CATCH BASIN, NO. 5	
																		PAVEMENT	
			158										158	254	01000	158	SY	PAVEMENT PLANING, ASPHALT CONCRETE	
			54										54	301	56000	54	CY	ASPHALT CONCRETE BASE, PG64-22, (449)	
			112										112	304	20000	112	CY	AGGREGATE BASE	
			65										65	407	10000	65	GAL	TACK COAT	
			38										38	408	10001	38	GAL	PRIME COAT, AS PER PLAN	5
			34										34	442	22001	34	CY	ASPHALT CONCRETE SURFACE COURSE, 9.5 MM, TYPE A (449), AS PER PLAN	5
																		TRAFFIC CONTROL	
			2										2	621	54000	2	EACH	RAISED PAVEMENT MARKER REMOVED	
			3										3	630	85100	3	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
			2										2	630	86010	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND REERECTION	
			0.05										0.05	642	00104	0.05	MILE	EDGE LINE, 6", TYPE 1	
			0.02										0.02	642	00300	0.02	MILE	CENTER LINE, TYPE 1	
																		STRUCTURE 20 FOOT SPAN AND UNDER (ASD-39-5.20)	
			LS										LS	202	11001	LS		STRUCTURE REMOVED, AS PER PLAN	25
				LS									LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
				LS									LS	503	21300	LS		UNCLASSIFIED EXCAVATION	
				4,931									4,931	509	10000	4,931	LB	EPOXY COATED STEEL REINFORCEMENT	
				11									11	511	46010	11	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING	
				31									31	511	46510	31	CY	CLASS QC1 CONCRETE, FOOTING	
				2									2	511	46610	2	CY	CLASS QC1 CONCRETE, HEADWALL	
				20									20	512	10100	20	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
				86									86	512	33000	86	SY	TYPE 2 WATERPROOFING	
				98									98	512	33010	98	SY	TYPE 3 WATERPROOFING	
				32									32	516	13600	32	SF	1" PREFORMED EXPANSION JOINT FILLER	
				LS									LS	518	21230	LS		POROUS BACKFILL WITH GEOTEXTILE FABRIC	
				0.33									0.33	602	20000	0.33	CY	CONCRETE MASONRY	
				60									60	611	95600	60	FT	12' X 4' CONDUIT, TYPE A, 706.05	
				15									15	611	95601	15	FT	12' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN	5

GENERAL SUMMARY

DESIGN AGENCY
DISTRICT 3



ENGINEERING
TEAM THREE

DESIGNER
JSR

REVIEWER
ACM 01/28/25

PROJECT ID
114936

SHEET
P.8

TOTAL
35



PROPOSED STRUCTURE

TYPE: CONCRETE BOX CULVERT, 706.05
SFN: 0300970
SIZE: 12' SPAN X 4' RISE
LENGTH: 75 FT.
SKEW: 21°00'00" R.F.
APP. SLAB: NONE
ALIGNMENT: TANGENT
SUPERELEVATION: NONE
ROADWAY: 28'-0" TREATED SH. TO TREATED SH.
DESIGN SERVICE LIFE: 75 YEARS
LOADING: HL-93
FUTURE WEARING SURFACE: 60 PSF

DRAINAGE AREA = 441 ACRES

Q (25) = 428 CFS	V (25) = 10.47 FT/S
Q (100) = 664 CFS	V (100) = 11.24 FT/S

 - RESURFACING

 - ROCK CHANNEL PROTECTION
TYPE B W/ FILTER

 - SLOPE EROSION MAT, TYPE C

1.) EARTHWORK LIMITS SHOWN ARE APPROXIMATE ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

2.) EXISTING STRUCTURE TO BE REMOVED ROAD TO BE CLOSED DURING CONSTRUCTION AND TRAFFIC TO BE DETOURED. MAINTENANCE OF TRAFFIC DETAILS ARE SHOWN ON THE DETOUR PLAN ON SHEET 7.



DESIGN AGENCY	
DISTRICT 3	
	
ENGINEERING TEAM THREE	
DESIGNER	
JSR	
REVIEWER	
ACM 05/22/2	
PROJECT ID	
114936	
SUBSET	TOTAL
1	10
SHEET	TOTAL
P.24	35

FULL-HEIGHT HEADWALLS

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE 9TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2020, AND THE ODOT BRIDGE DESIGN MANUAL, 2020.

DESIGN DATA

THE FOLLOWING DESIGN DATA IS ASSUMED:
INTERNAL ANGLE OF FRICTION, $\phi_{BF} = 30^\circ$
TOTAL UNIT WEIGHT OF BACKFILL SOIL = 120 PCF
INTERNAL ANGLE OF FRICTION (DRAINED), FOUNDATION SOIL, $\phi_F = 28^\circ$
UNDRAINED SHEAR STRENGTH (COHESIVE), FOUNDATION SOIL, $S = 1500$ PSF
UNIT WEIGHT OF CONCRETE = 150 PCF

CLASS QC1 CONCRETE (FOOTING, HEADWALL, AND FORESLOPE) = 4.0 KSI COMPRESSIVE STRENGTH

REINFORCING STEEL: A615, A616, OR A617
GRADE 60 MINIMUM YIELD STRENGTH
60 KSI (ALL REINFORCING STEEL SHALL BE EPOXY COATED)

FORESLOPE ANCHOR WALL DOWELS

ANCHOR PER CMS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO CMS 705.20 AND TO A DEPTH OF 5". PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 511.

THREADED INSERTS OR NON-PROTRUDING MECHANICAL CONNECTORS CAPABLE OF DEVELOPING AT LEAST 125 PERCENT OF THE SPECIFIED FIELD STRENGTH OF THE REINFORCEMENT SHOWN ARE AN ACCEPTABLE ALTERNATIVE TO RESIN BONDING. MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE CULVERT SLAB. MECHANICAL CONNECTORS SHALL HAVE AN "L-SHAPED" BAR INSIDE THE CULVERT WITH A MINIMUM HORIZONTAL LENGTH OF 12 INCHES. THE DEPARTMENT WILL CONSIDER PAYMENT FOR INSERTS OR MECHANICAL CONNECTORS AS INCIDENTAL TO ITEM 611.

BACKFILL LIMITATION

WHEN THE DESIGN HEIGHT IS GREATER THAN 10 FT, THE BACKFILL BEHIND THE WINGWALLS SHALL NOT BE PLACED HIGHER THAN THE ELEVATION OF THE SOIL ABOVE THE TOE. WHEN THE SOIL ABOVE THE TOE IS AT ITS FINISHED ELEVATION, THE REMAINDER OF THE BACKFILL MAY BE PLACED.

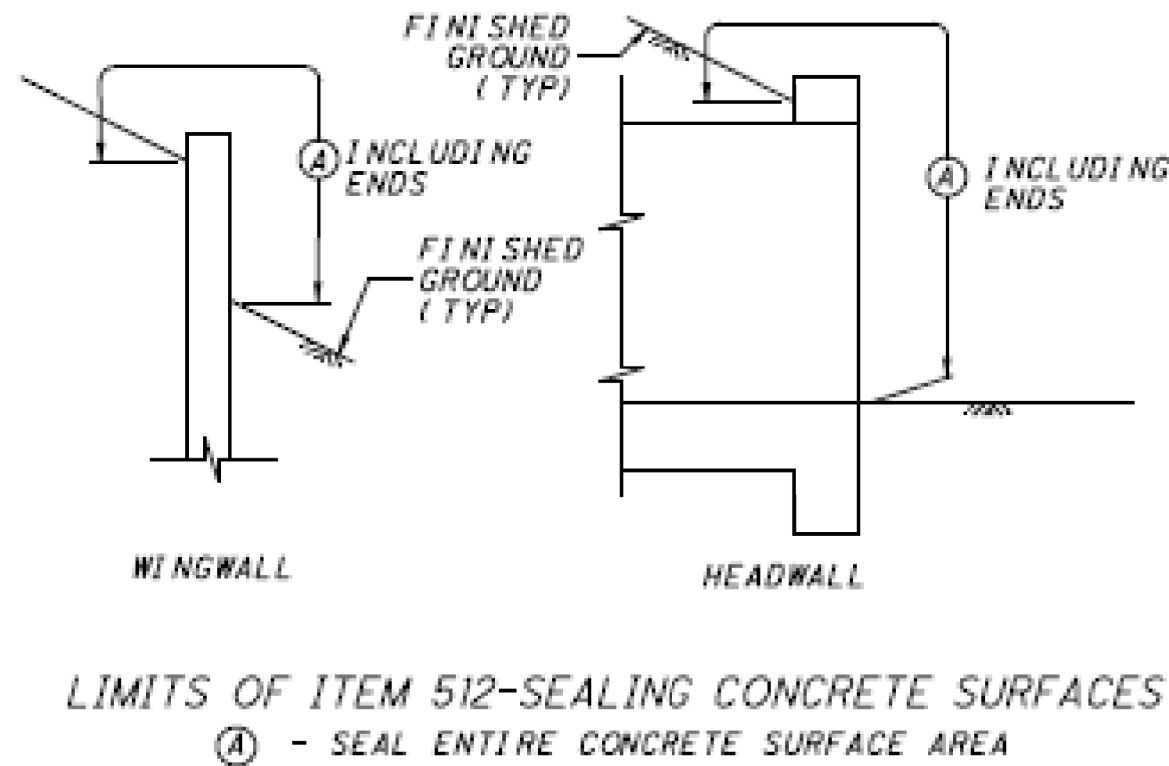
POROUS BACKFILL WITH FILTER FABRIC

POROUS BACKFILL WITH FILTER FABRIC 1'-6" THICK SHALL BE PLACED BEHIND THE WINGWALLS ONLY AND SHALL EXTEND TO 12" BELOW THE EMBANKMENT SURFACE. GEOTEXTILE FABRIC TYPE A SHALL BE PLACED BETWEEN THE POROUS BACKFILL AND REPLACED EXCAVATION ADJACENT TO THE STRUCTURE. IT SHALL TURN UNDER THE BOTTOM OF THE POROUS BACKFILL AND RETURN 6" ABOVE THE TOP ELEVATION OF THE WEEPHOLE.

WEEPHOLES SHALL BE PLACED 6" TO 12" ABOVE THE NORMAL WATER ELEVATION OR GROUND LINE AND SHALL HAVE A MAXIMUM SPACING OF 10'-0". A MINIMUM OF ONE WEEPHOLE SHALL BE PROVIDED PER WINGWALL. PLACE 2 CUBIC FEET OF BAGGED NO. 3 AGGREGATE AT EACH WEEP HOLE TO RETAIN THE POROUS BACKFILL.

SEALING OF HEADWALL AND WINGWALLS

ALL EXPOSED FORESLOPE WALL AND WINGWALL CONCRETE SHALL BE SEALED WITH EPOXY-URETHANE SEALER. THE LIMITS SHALL BE AS SHOWN IN THE DIAGRAMS BELOW. PAYMENT FOR THE EPOXY-URETHANE SEALER SHALL BE PER ITEM 512 – SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).



ITEM 503 – UNCLASSIFIED EXCAVATION (WINGWALL/FOOTING)

EXCAVATION LIMITS FOR THE PROPOSED STRUCTURE SHALL BE AS DEFINED IN 503. EXCAVATION OUTSIDE THESE LIMITS NECESSARY TO REMOVE THE EXISTING STRUCTURE OR INSTALL THE PROPOSED STRUCTURE SHALL BE INCLUDED IN ITEM 202 – PORTIONS OF STRUCTURE REMOVED, AS PER PLAN, AND ALL NECESSARY ITEM 511 OR 611 ITEMS.

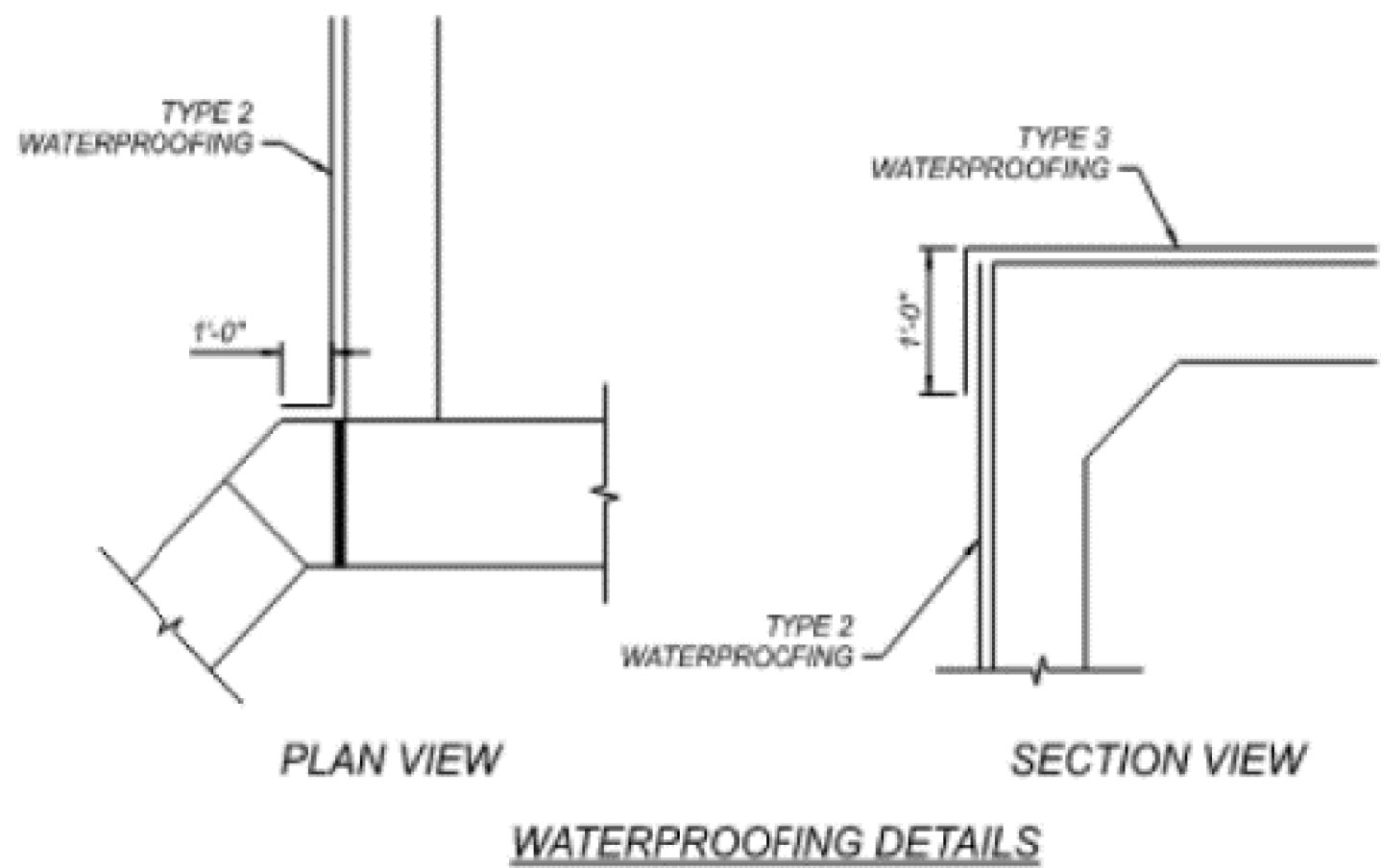
PREFORMED EXPANSION JOINT FILLER

PREFORMED EXPANSION JOINT FILLER (PEJF) CONFORMING TO CMS 705.03, 1 INCH THICK, SHALL BE PLACED ABOVE THE FOOTING BETWEEN THE SIDES OF THE BOX CULVERT AND THE ENDS OF THE WINGWALLS. PAYMENT FOR MATERIALS AND INSTALLATION SHALL BE INCLUDED WITH ITEM 516 – 1" PREFORMED EXPANSION JOINT FILLER.

WATERPROOFING

TYPE 2 WATERPROOFING, PER CMS 512 AND 711.25, SHALL EXTEND VERTICALLY DOWN THE ENTIRE SIDES OF THE PRECAST CULVERT SECTIONS FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT BID PRICE PER SQUARE YARD FOR ITEM 512 – TYPE 2 WATERPROOFING.

TYPE 3 WATERPROOFING, PER CMS 512 AND 711.29 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL AND PAVEMENT. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT BID PRICE PER SQUARE YARD FOR ITEM 512 – TYPE 3 WATERPROOFING.

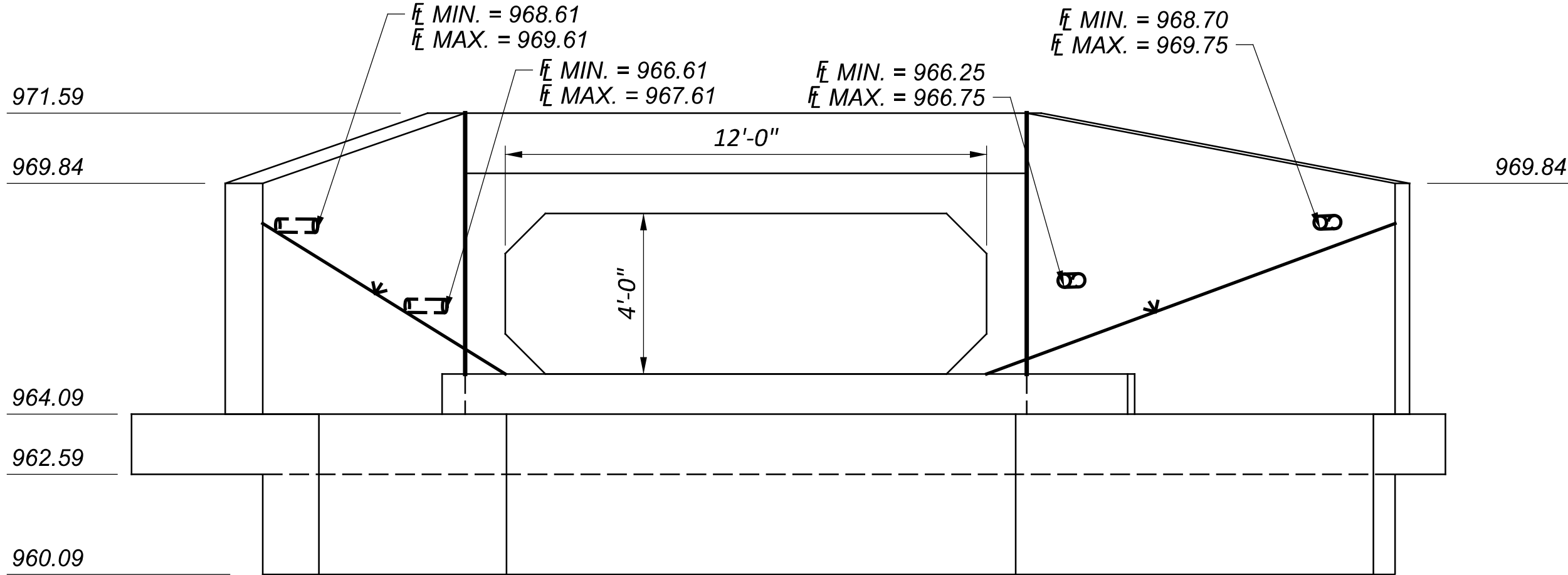
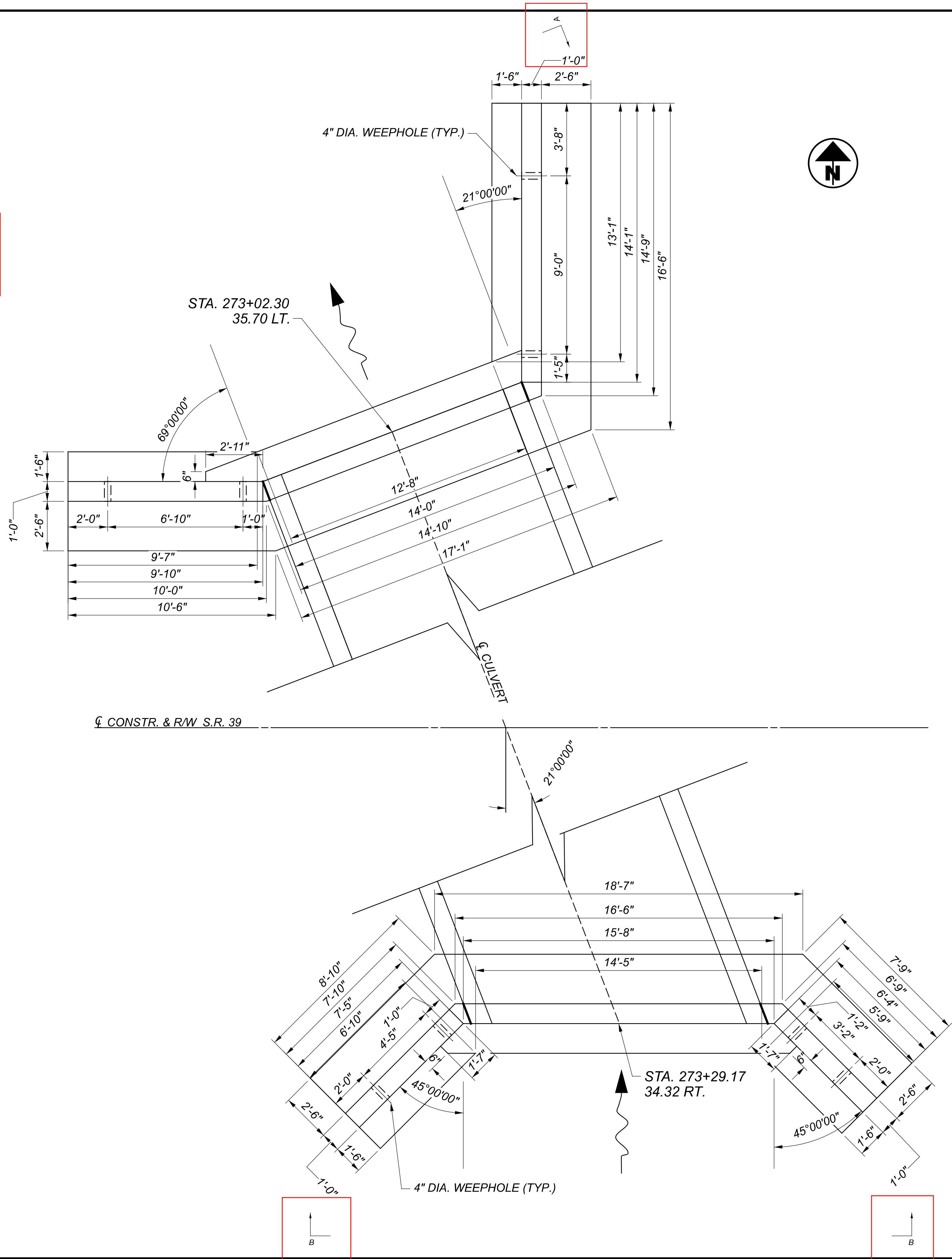
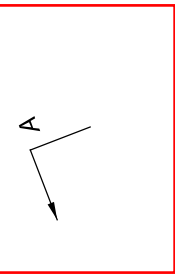


ITEM 511 – CLASS QC1

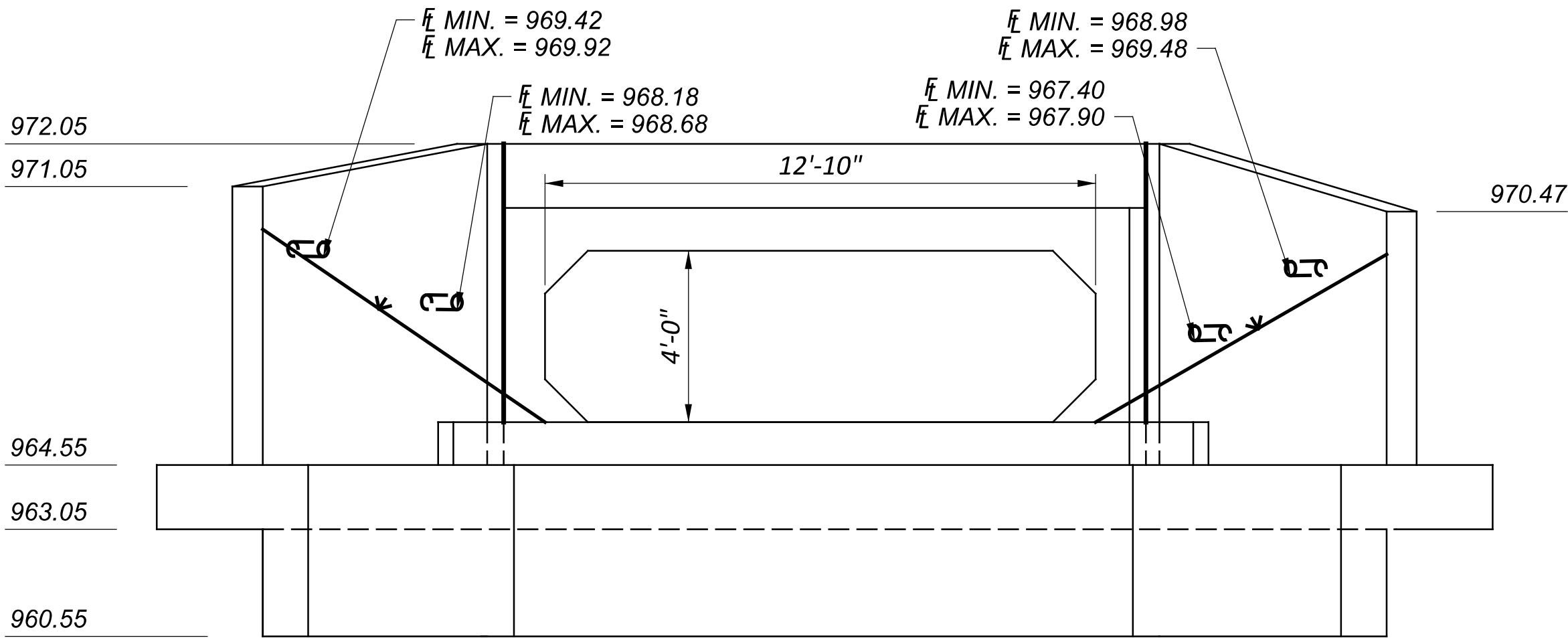
ALL LABOR, EQUIPMENT, AND INCIDENTALS REQUIRED TO CONSTRUCT THE FOOTINGS, CUTOFF WALLS, WINGWALLS, AND HEADWALLS SHALL BE INCLUDED WITH ITEM 511 – CLASS QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING. PAYMENT FOR REINFORCING STEEL SHALL BE INCLUDED WITH ITEM 509 – EPOXY COATED STEEL REINFORCEMENT.

ASD-39-5.20 ESTIMATED QUANTITIES (01/STR/10)			
ITEM	QUANTITY	UNIT	DESCRIPTION
503	LS		COFFERDAMS AND EXCAVATION BRACING
503	LS		UNCLASSIFIED EXCAVATION
509	4931	LB	EPOXY COATED STEEL REINFORCEMENT
511	11	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING
511	31	CY	CLASS QC1 CONCRETE, FOOTING
511	2	CY	CLASS QC1 CONCRETE, HEADWALL
512	20	SY	SEALING OF CONCRETE STRUCTURES (EPOXY-URETHANE)
512	86	SY	TYPE 2 WATERPROOFING
512	98	SY	TYPE 3 WATERPROOFING
516	32	SF	1" PREFORMED EXPANSION JOINT FILLER
518	LS		POROUS BACKFILL WITH GEOTEXTILE FABRIC
601	22	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER
605	32	FT	AGGREGATE DRAINS
611	60	FT	12' X 4' CONDUIT, TYPE A, 706.05
611	15	FT	12' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN

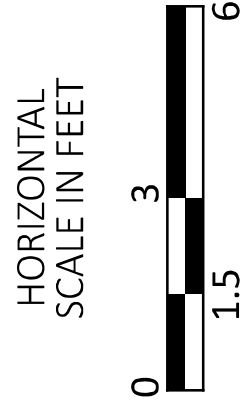
ALL QUANTITIES CARRIED TO GENERAL SUMMARY



VIEW A-A
OUTLET

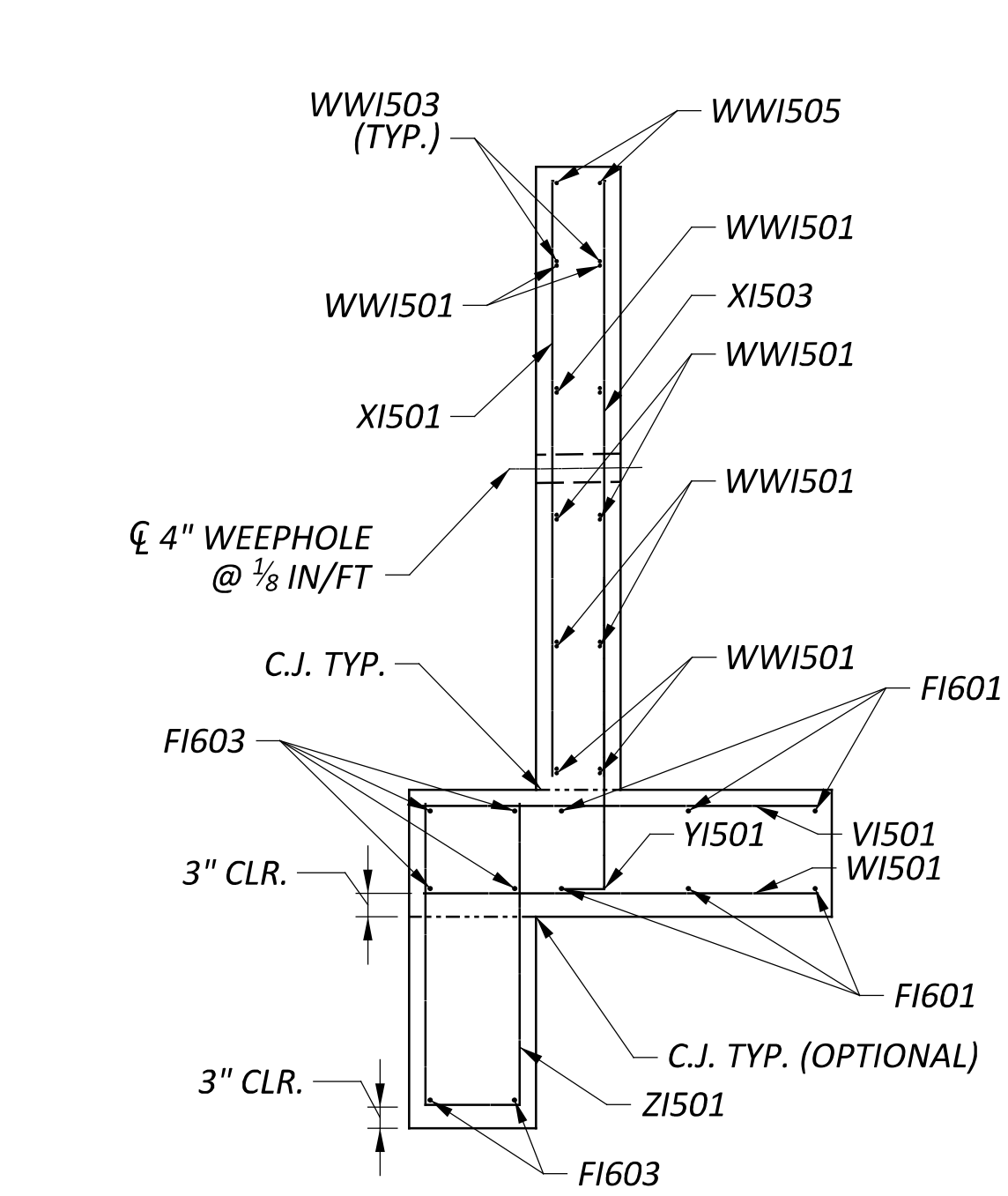


VIEW B-B
INLET

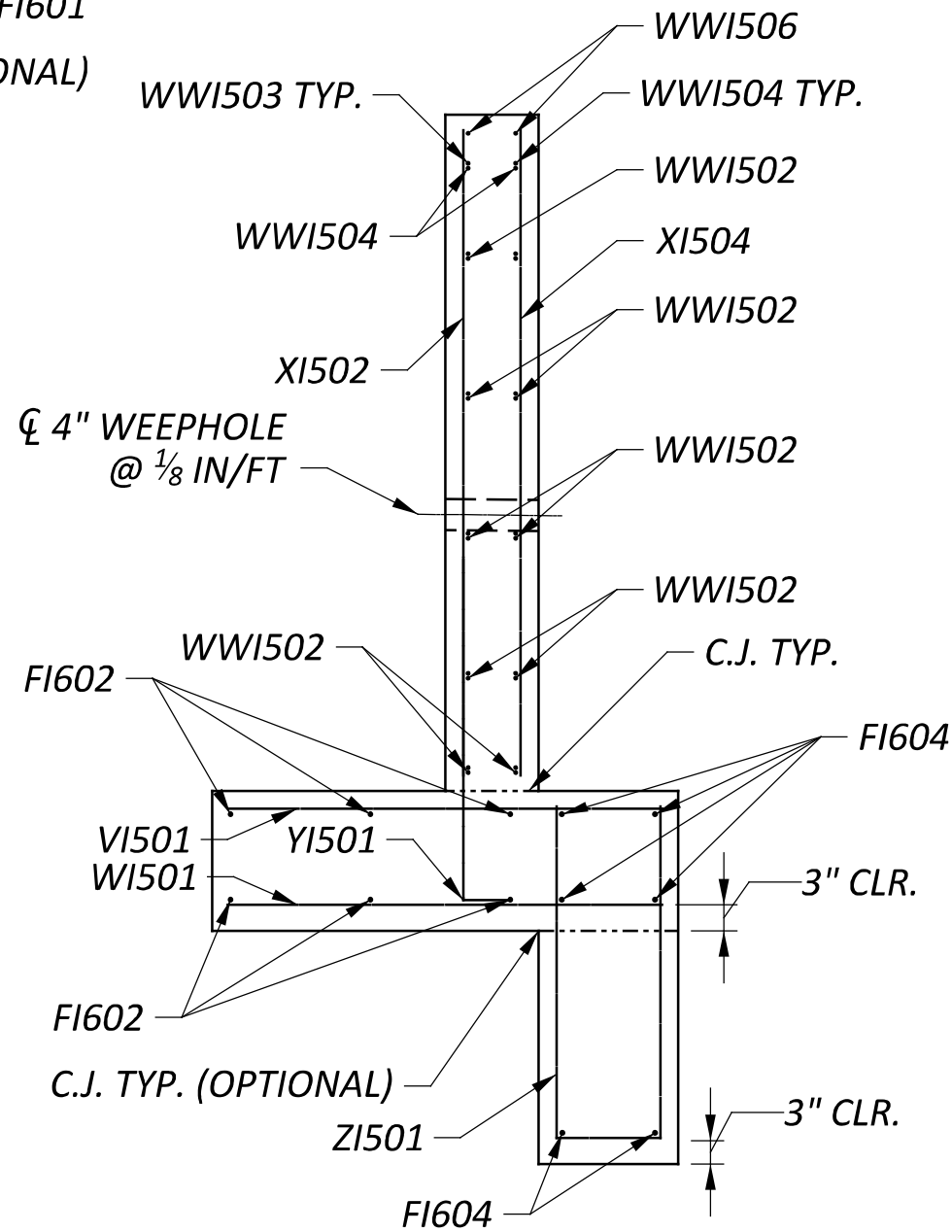


HEADWALL DETAILS

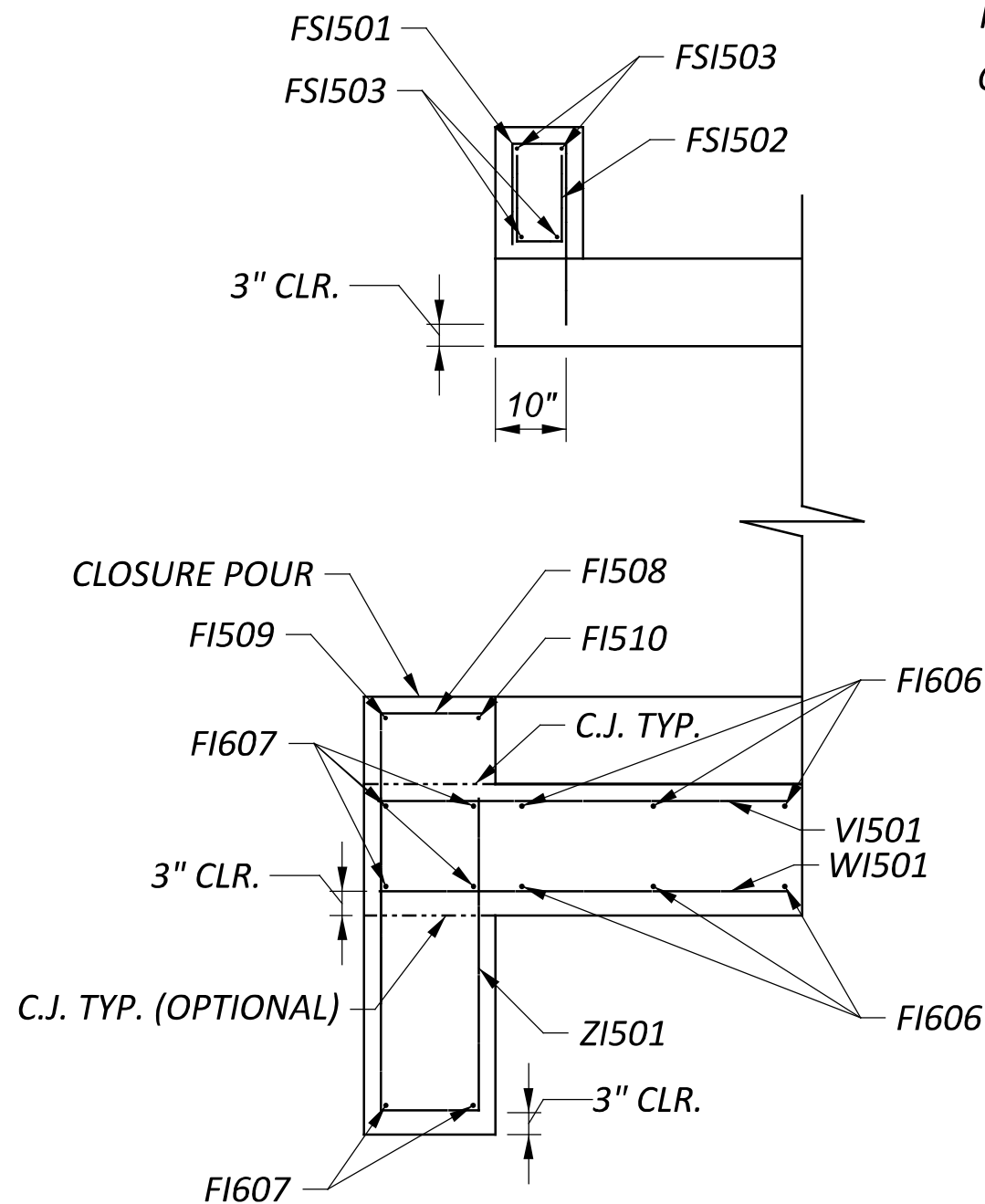
DESIGN AGENCY	
DISTRICT 3	
ENGINEERING TEAM THREE	
DESIGNER	
JSR	
REVIEWER	
ACM 01/28/25	
PROJECT ID	
114936	
SUBSET	TOTAL
3	10
SHEET	TOTAL
P.26	35



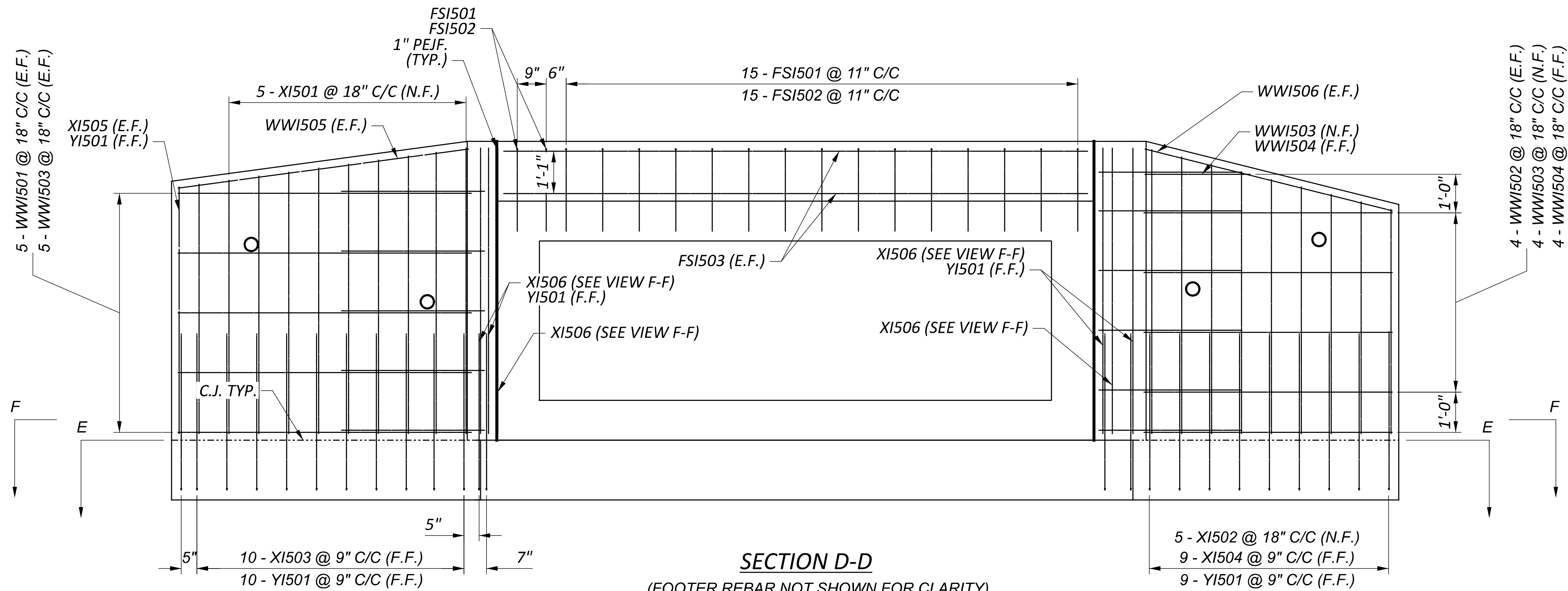
SECTION A-A



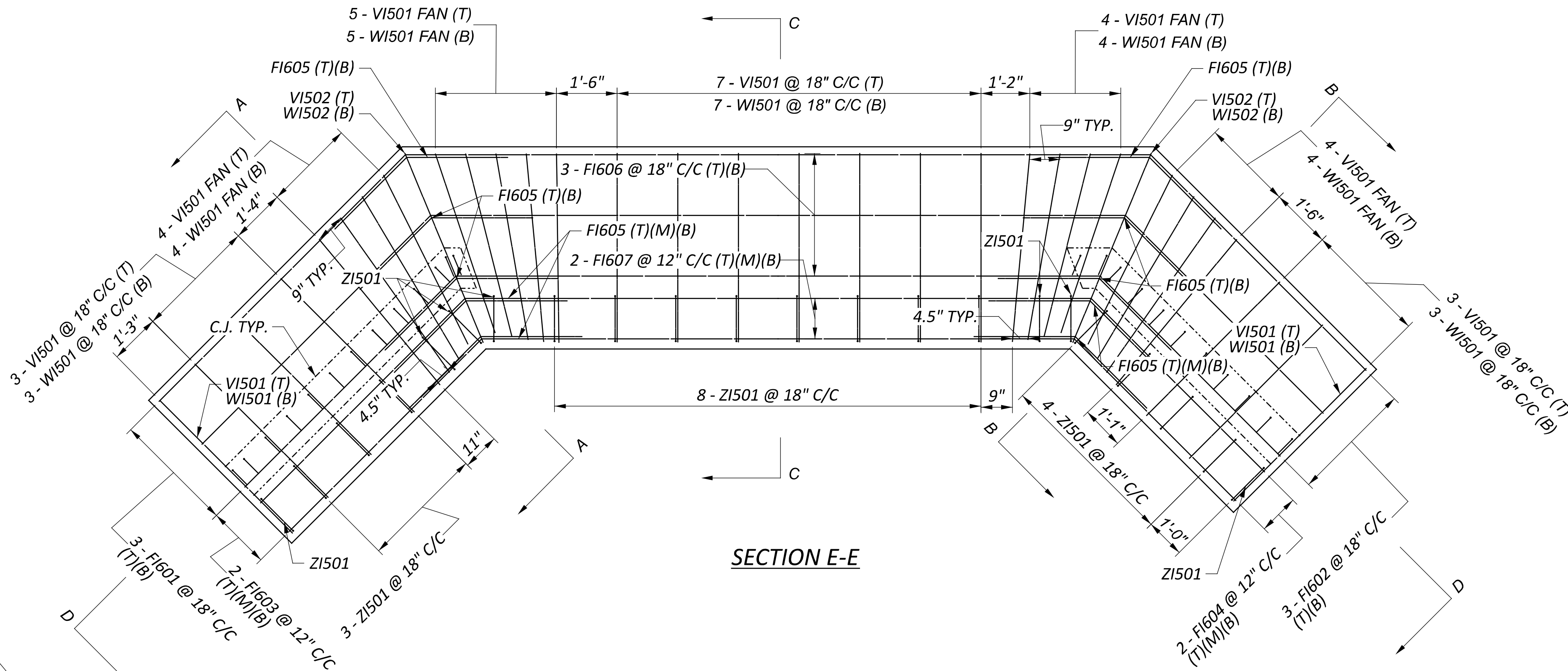
SECTION B-B



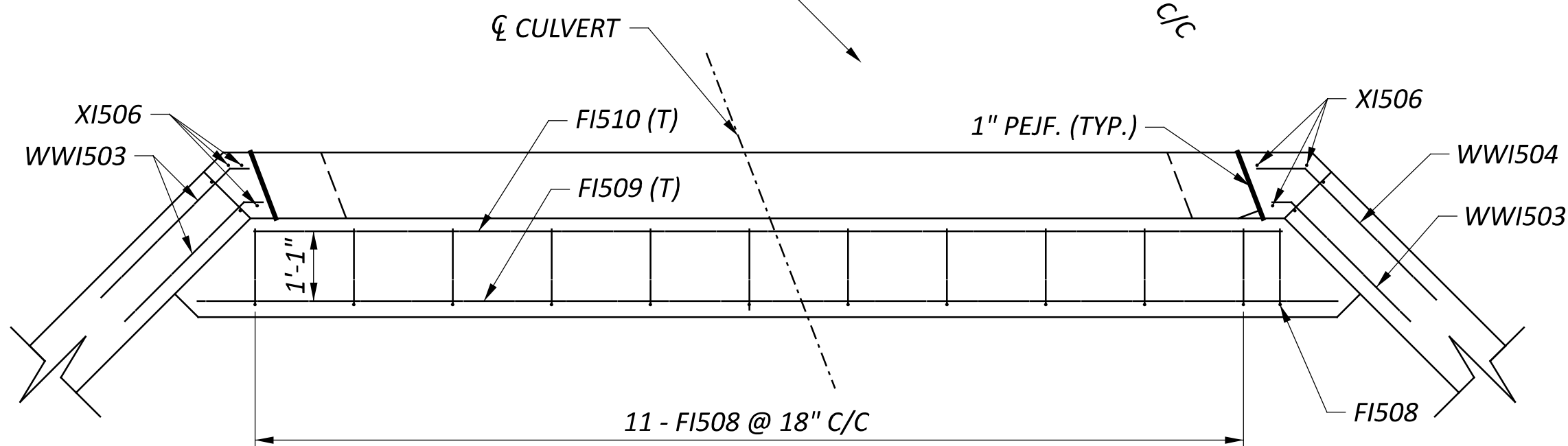
SECTION C-C



SECTION D-D
(FOOTER REBAR NOT SHOWN FOR CLARITY)



SECTION E-E



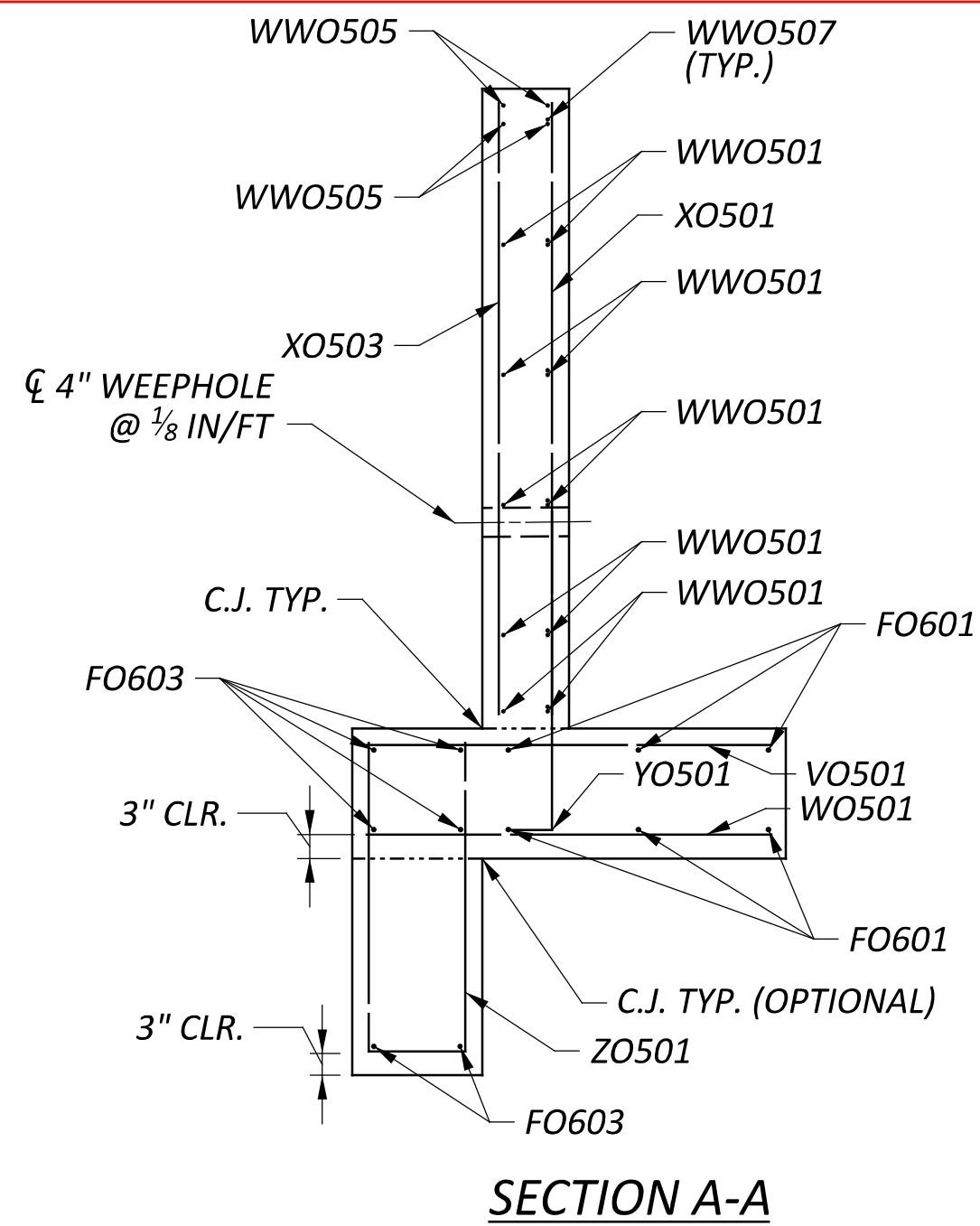
SECTION F-F (CLOSURE POUR)
FOOTER NOT SHOWN
XI504 AND WWI506 SHOWN FOR CLARITY

KEY:

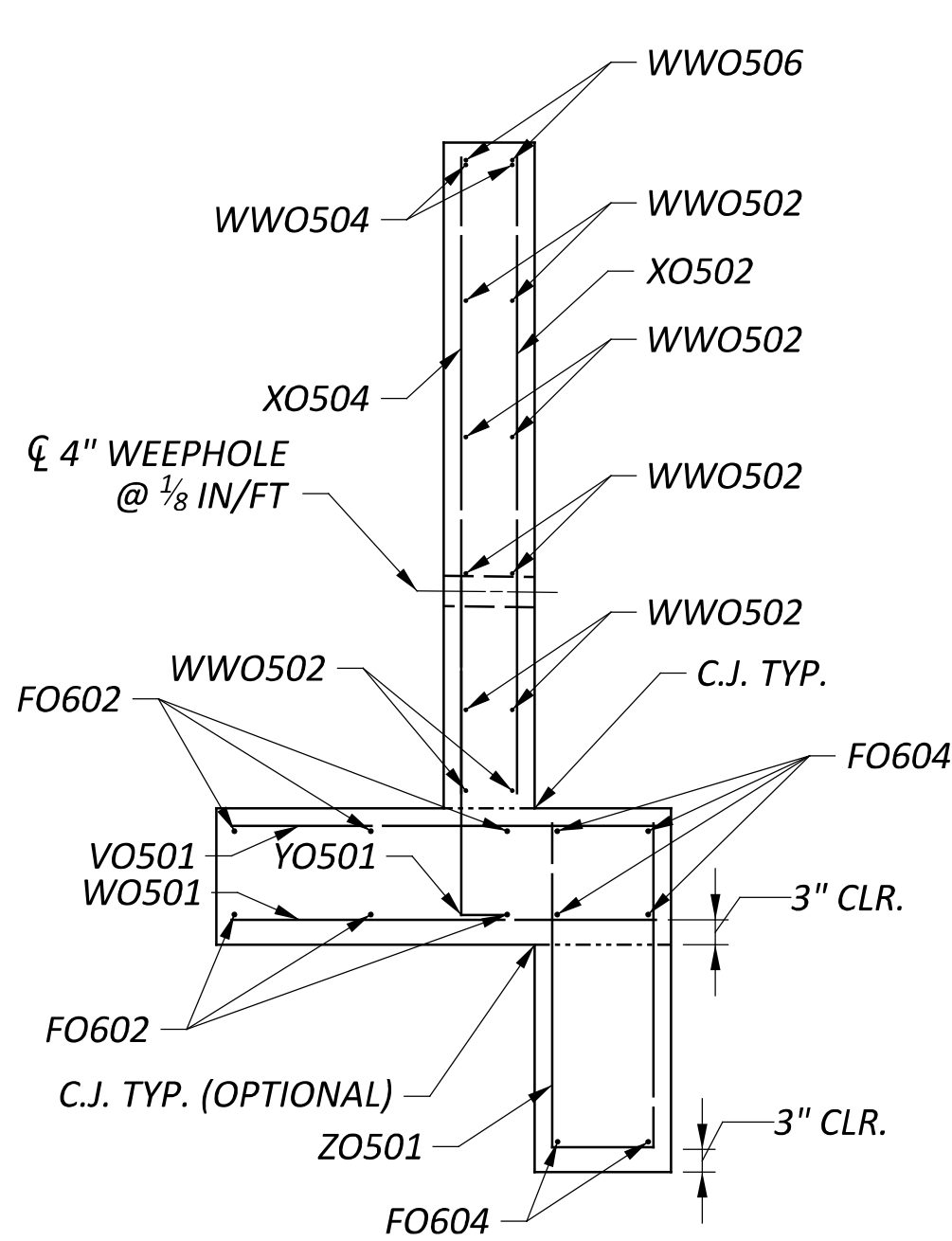
B	BOTTOM
C/C	CENTER TO CENTER
C.J.	CONSTRUCTION JOINT
CL	CENTERLINE
DIA.	DIAMETER
E.F.	EACH FACE
F.F.	FAR FACE
M	MIDDLE
N.F.	NEAR FACE
PEJF	PREFORMED EXPANSION JOINT FILLER
STR	STRAIGHT
T	TOP
TYP.	TYPICAL

NOTES:

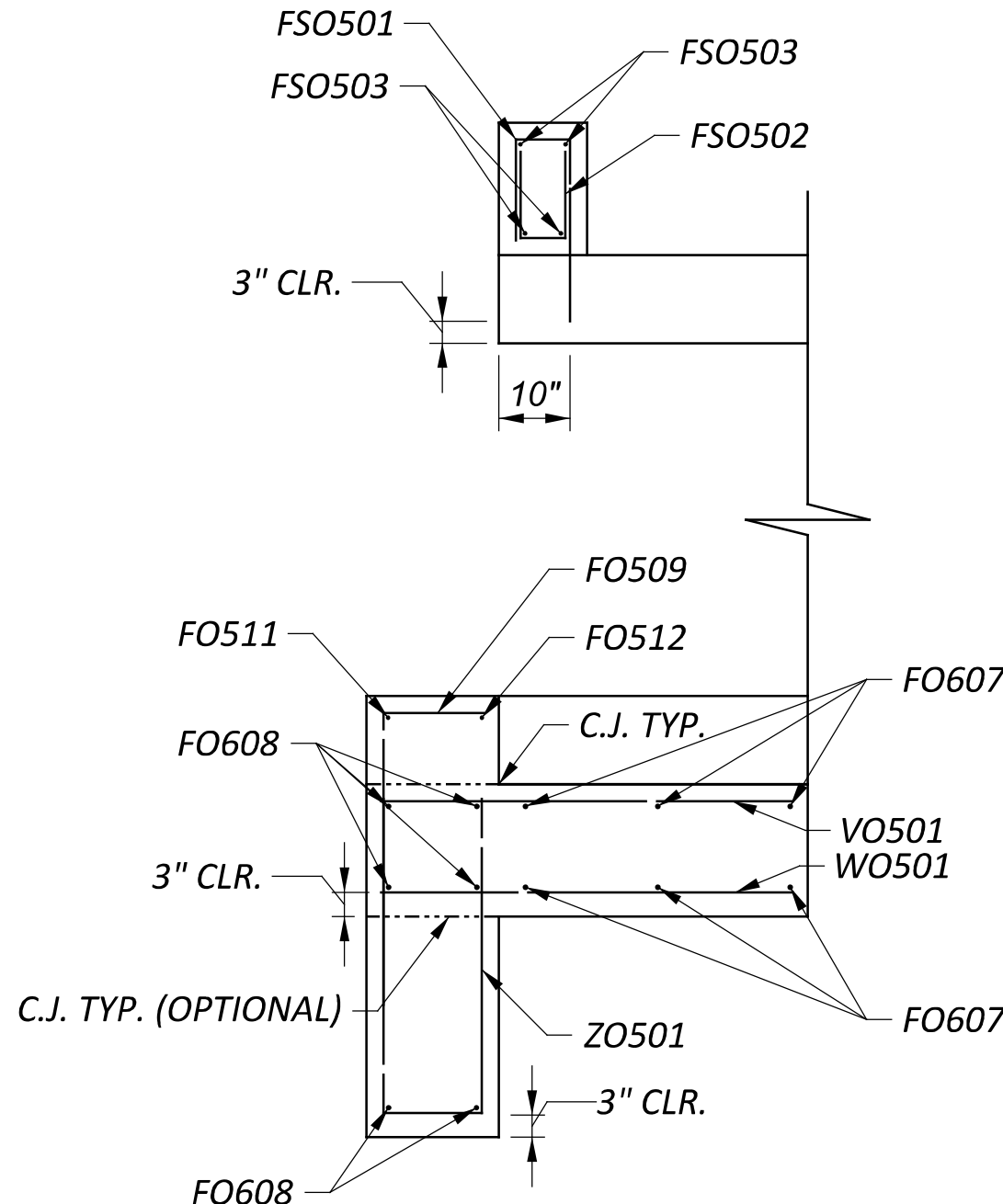
- 1.) ALL DIMENSIONS ARE OUTER-TO-OUTER.
- 2.) ALL REINFORCING STEEL IS TO BE EPOXY COATED.
- 3.) 2" COVER EXCEPT FOR THE LOCATIONS SHOWN IN SECTIONS A-A - C-C.
- 4.) ANCHORING METHODS FOR FSI501: PROVIDE A 1 INCH DIAMETER DRILLED HOLE AT EVERY LOCATION THAT THE FSI501 BARS ARE TO ANCHOR TO THE CONCRETE BOX. INSERT AND EPOXY THE BARS INTO THE HOLES USING AN APPROVED EPOXY MATERIAL. ALTERNATIVELY, CAST MECHANICAL CONNECTORS IN THE PRECAST BOX AND CONNECT THE FSI501 BARS USING THESE MECHANICAL CONNECTIONS.



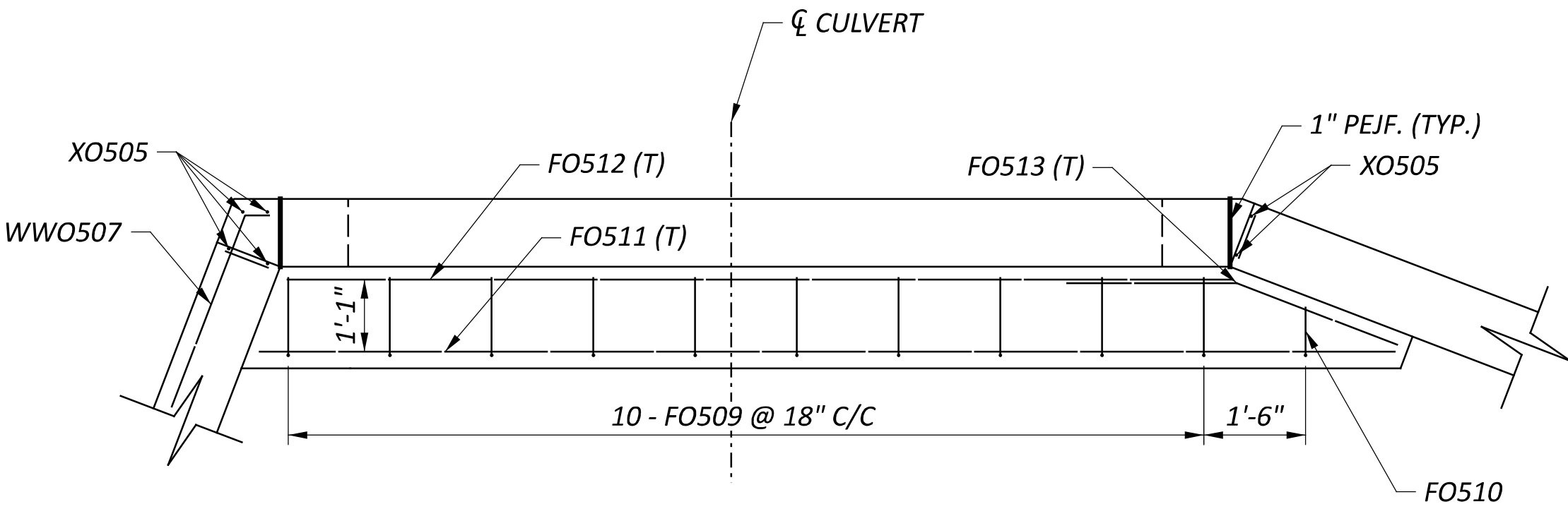
SECTION A-A



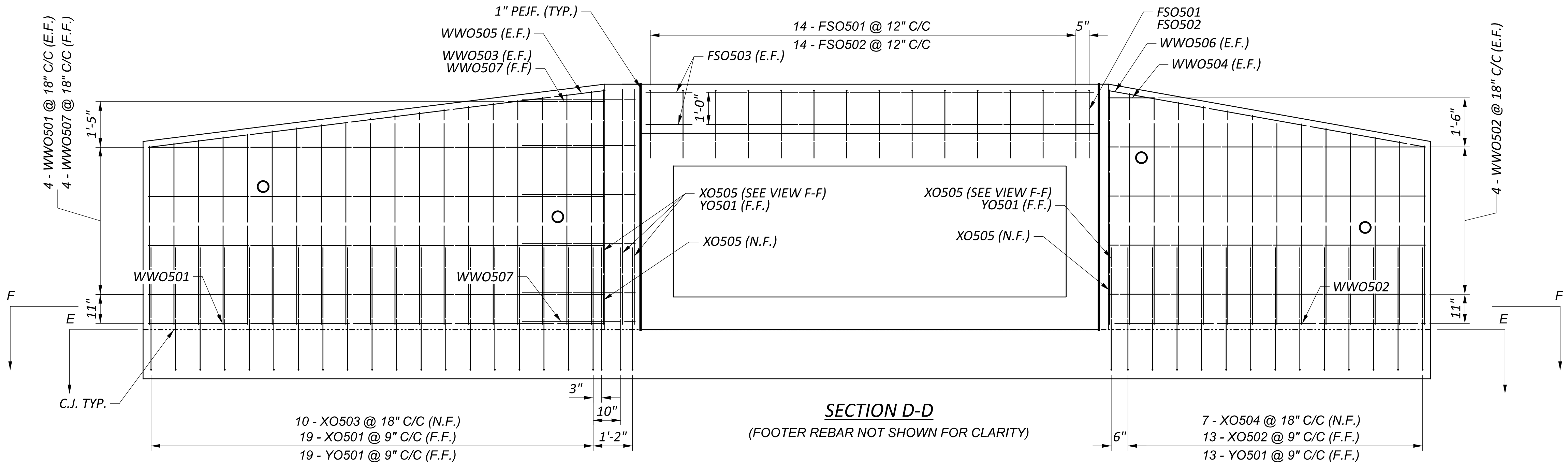
SECTION B-B



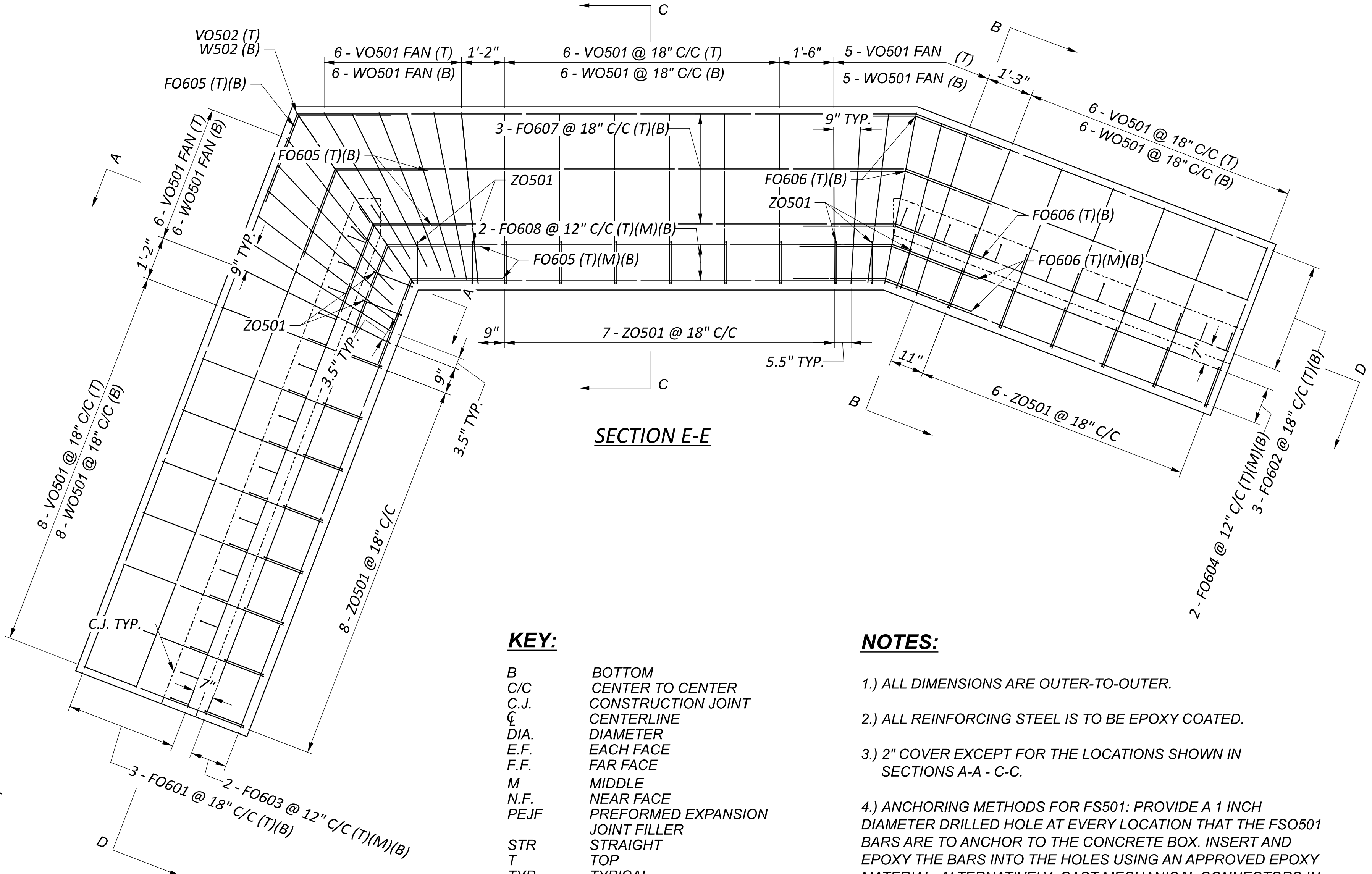
SECTION C-C



SECTION F-F (CLOSURE POUR)
FOOTER NOT SHOWN



SECTION D-D
(FOOTER REBAR NOT SHOWN FOR CLARITY)



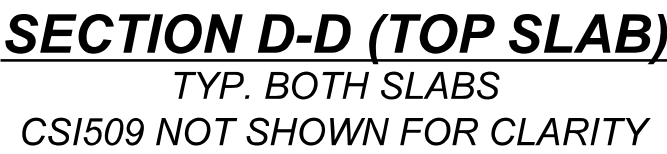
SECTION E-E

KEY:

B	BOTTOM
C/C	CENTER TO CENTER
C.J.	CONSTRUCTION JOINT
CL	CENTERLINE
DIA.	DIAMETER
E.F.	EACH FACE
F.F.	FAR FACE
M	MIDDLE
N.F.	NEAR FACE
PEJF	PREFORMED EXPANSION JOINT FILLER
STR	STRAIGHT
T	TOP
TYP.	TYPICAL

NOTES:

- 1.) ALL DIMENSIONS ARE OUTER-TO-OUTER.
- 2.) ALL REINFORCING STEEL IS TO BE EPOXY COATED.
- 3.) 2" COVER EXCEPT FOR THE LOCATIONS SHOWN IN SECTIONS A-A - C-C.
- 4.) ANCHORING METHODS FOR FSO501: PROVIDE A 1 INCH DIAMETER DRILLED HOLE AT EVERY LOCATION THAT THE FSO501 BARS ARE TO ANCHOR TO THE CONCRETE BOX. INSERT AND EPOXY THE BARS INTO THE HOLES USING AN APPROVED EPOXY MATERIAL. ALTERNATIVELY, CAST MECHANICAL CONNECTORS IN THE PRECAST BOX AND CONNECT THE FSO501 BARS USING THESE MECHANICAL CONNECTIONS.



JOINT KEY DETAIL
PRECAST SECTION NOT SHOWN

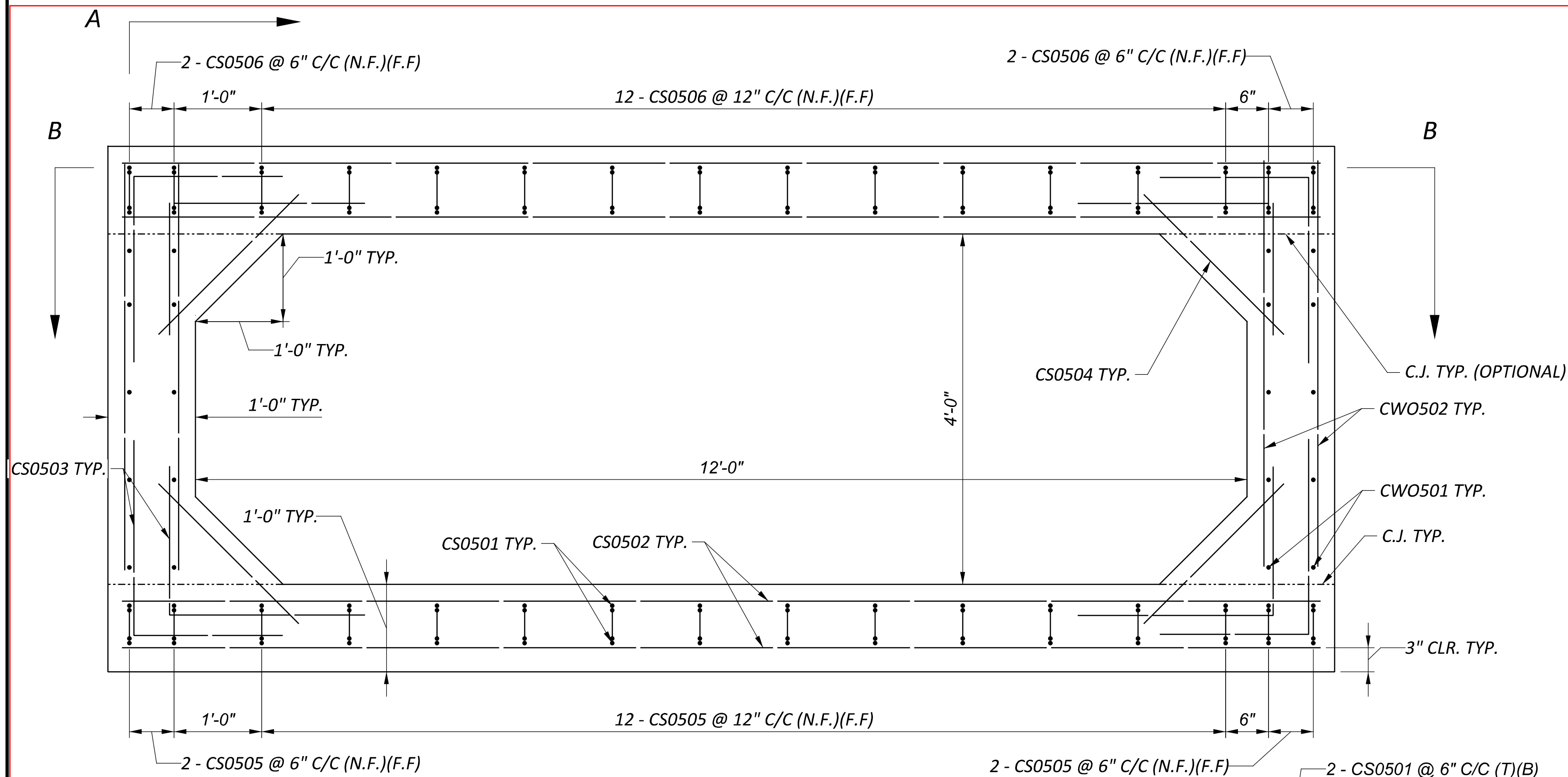
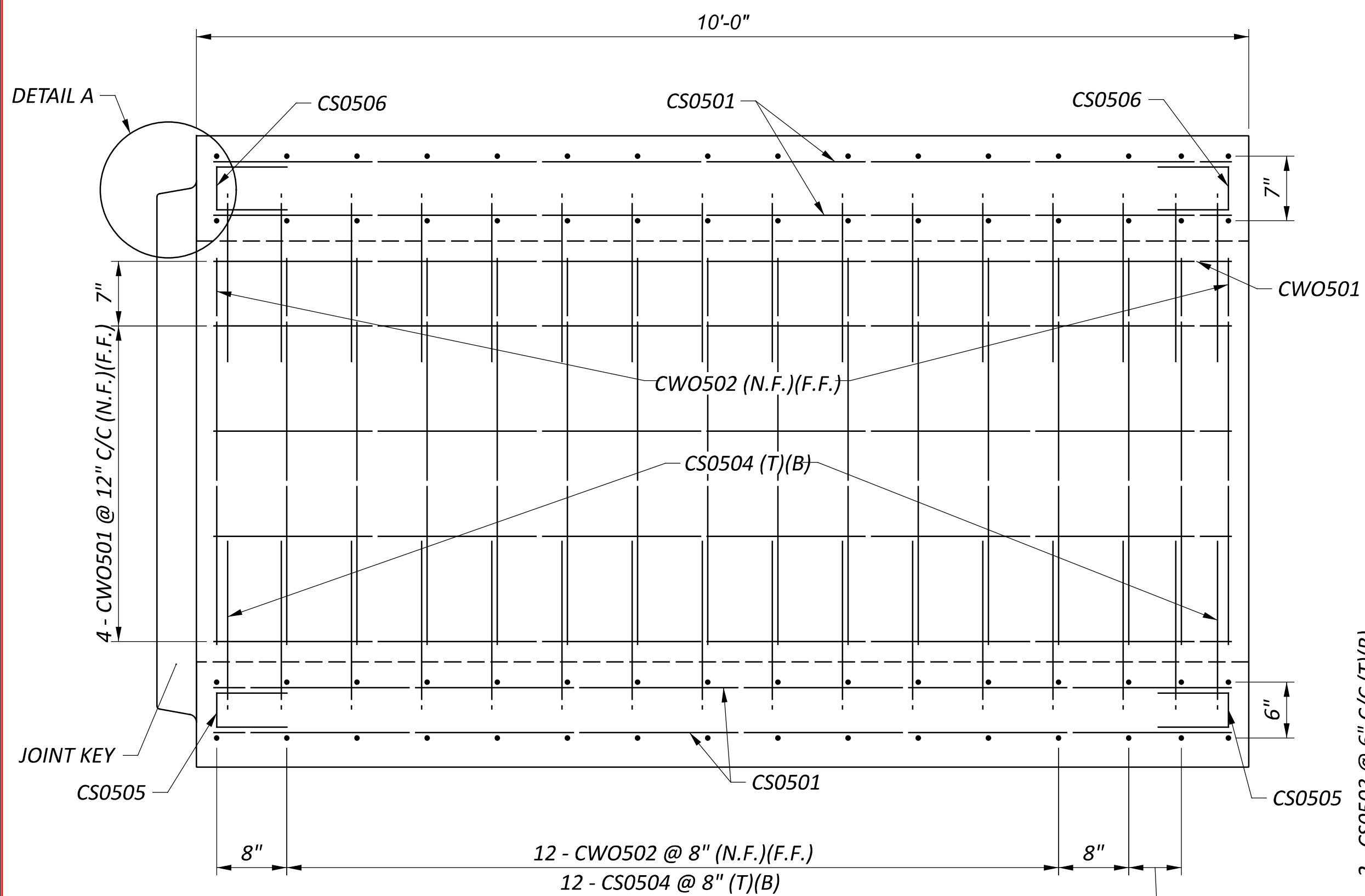
1.) ALL DIMENSIONS ARE OUTER-TO-OUTER.
2.) ALL REINFORCING STEEL IS TO BE EPOXY COATED
3.) 2" COVER EXCEPT LOCATIONS SHOWN IN DETAILS

4.) ANCHORING METHODS FOR FS501: PROVIDE A 1 INCH DIAMETER DRILLED HOLE AT EVERY LOCATION THAT THE FS501 BARS ARE TO ANCHOR TO THE CONCRETE BOX. INSERT AND EPOXY THE BARS INTO THE HOLES USING AN APPROVED EPOXY MATERIAL. ALTERNATIVELY, CAST MECHANICAL CONNECTORS IN THE PRECAST BOX AND CONNECT THE FS501 BARS USING THESE MECHANICAL CONNECTIONS.

5.) DIMENSIONS SHOWN IN THE JOINT KEY DETAIL ARE APPROXIMATE AND ARE USED FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS WILL MATCH PRE-CAST BOX CULVERT SECTIONS.

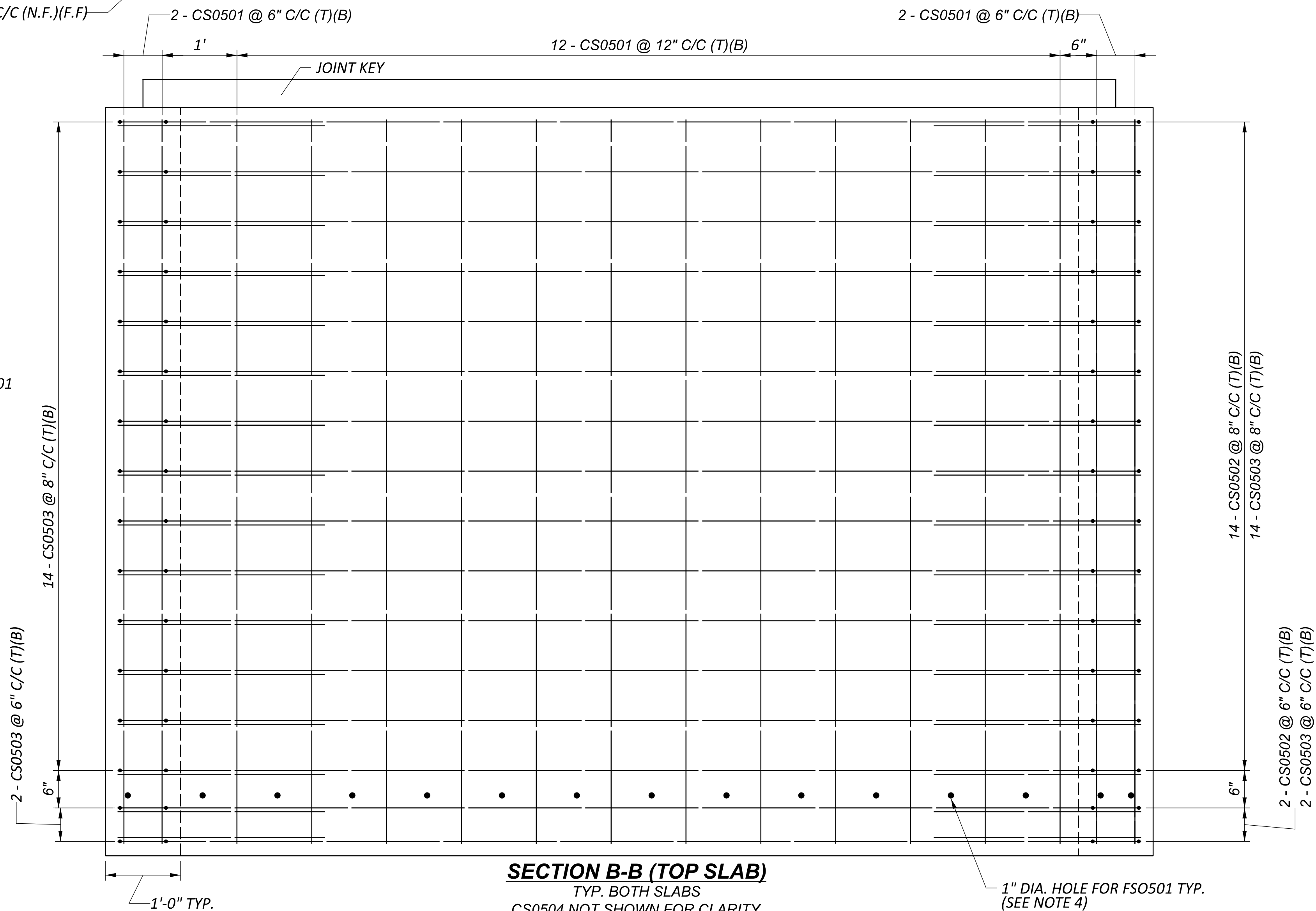
B	BOTTOM	M	MIDDLE
C/C	CENTER TO CENTER	N.F.	NEAR FACE
C.J.	CONSTRUCTION JOINT	STR	STRAIGHT
CL	CENTERLINE	T	TOP
DIA.	DIAMETER	TYP.	TYPICAL
E.F.	EACH FACE		
F.F.	FAR FACE		



**CAST-IN-PLACE BOX CULVERT LAYOUT (TOP & BOTTOM SLAB)****SECTION A-A (VERTICAL WALLS)**

TYP. BOTH WALLS

CS0503 NOT SHOWN FOR CLARITY

**SECTION B-B (TOP SLAB)**

TYP. BOTH SLABS

CS0504 NOT SHOWN FOR CLARITY

NOTES:

1.) ALL DIMENSIONS ARE OUTER-TO-OUTER.

2.) ALL REINFORCING STEEL IS TO BE EPOXY COATED.

3.) 2" COVER EXCEPT LOCATIONS SHOWN IN DETAILS

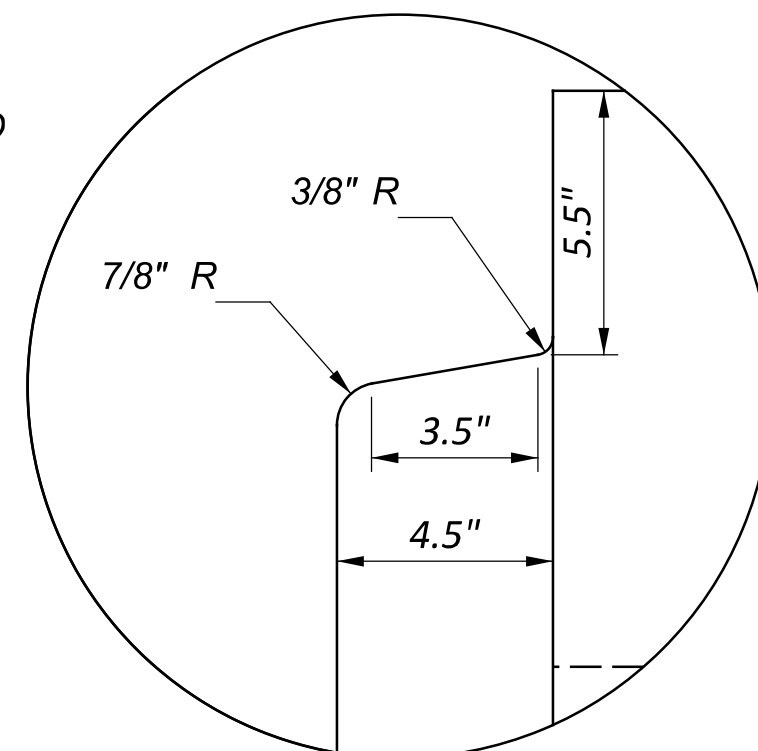
4.) ANCHORING METHODS FOR FSO501: PROVIDE A 1 INCH DIAMETER DRILLED HOLE AT EVERY LOCATION THAT THE FSO501 BARS ARE TO ANCHOR TO THE CONCRETE BOX. INSERT AND EPOXY THE BARS INTO THE HOLES USING AN APPROVED EPOXY MATERIAL. ALTERNATIVELY, CAST MECHANICAL CONNECTORS IN THE PRECAST BOX AND CONNECT THE FSO501 BARS USING THESE MECHANICAL CONNECTIONS.

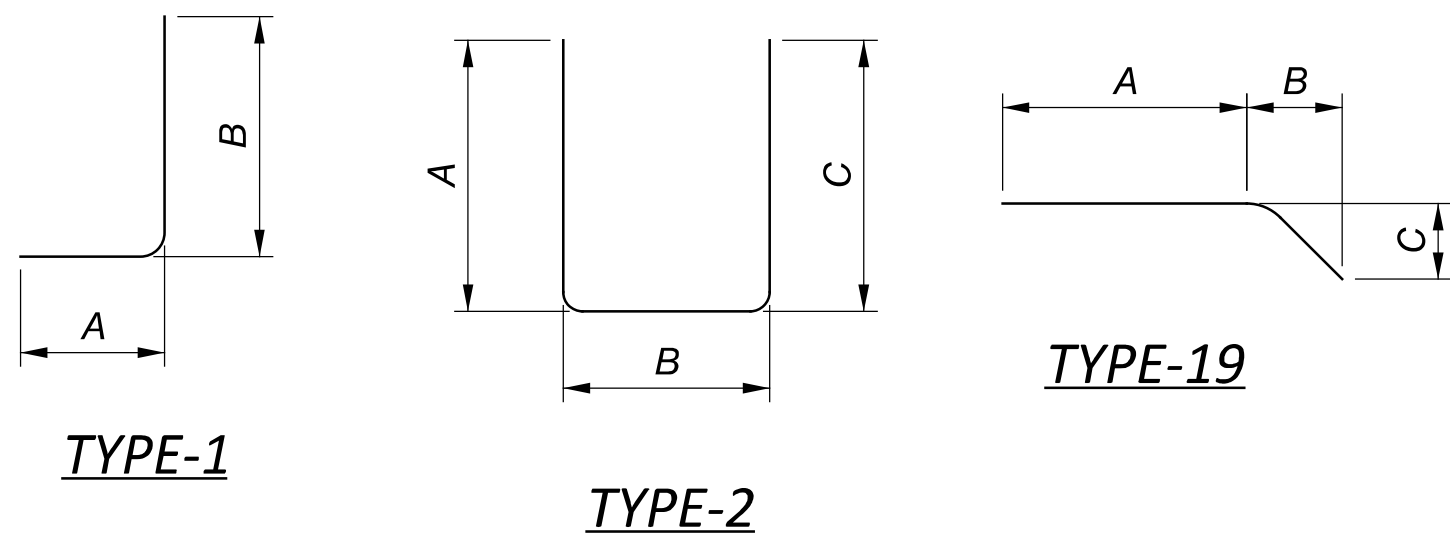
5.) DIMENSIONS SHOWN IN THE JOINT KEY DETAIL ARE APPROXIMATE AND ARE USED FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS WILL MATCH PRE-CAST BOX CULVERT SECTIONS.

KEY:

B
C/C
C.J.
CL
DIA.
E.F.
F.F.
M
N.F.
STR
T
TYP.

BOTTOM
CENTER TO CENTER
CONSTRUCTION JOINT
CENTERLINE
DIAMETER
EACH FACE
FAR FACE
MIDDLE
NEAR FACE
STRAIGHT
TOP
TYPICAL

**DETAIL A**JOINT KEY DETAIL
PRECAST SECTION NOT SHOWN

[illegible]

TYPE-1

TYPE-2

TYPE-19

CAST-IN-PLACE BOX CULVERT INLET REINFORCING SCHEDULE								DESIGNER: JSR	
								CHECKER: KAK 02/18/25	
BAR MARK	NUMBER	LENGTH	WEIGHT (LBS.)	TYPE	BAR TYPE DIMENSIONS				INC.
					A	B	C	D	
BOX CULVERT									
	4	2'- 8"							
CSI501	SERIES	TO	258	STR					0'- 4"
	13	6'- 10"							
	4	2'- 1"							
CSI502	SERIES	TO	29	STR					0'- 2"
	3	2'- 5"							
CSI503	4	7'- 0"	30	STR					
CSI504	4	7'- 2"	30	STR					
CSI505	16	13'- 8"	229	STR					
	4	1'- 10"							
CSI506	SERIES	TO	204	STR					1'-8.5"
	7	12'- 1"							
CSI507	60	3'- 10"	240	TYPE 1	1'- 8"	2'- 3"			
CSI508	4	13'- 7"	57	STR					
CSI509	30	2'- 3"	71	STR					
CSI510	36	1'- 5"	54	TYPE 2	0'- 8"	0'- 4"	0'- 8"		
CSI511	36	1'- 6"	57	TYPE 2	0'- 8"	0'- 5"	0'- 8"		
CWI501	10	7'- 2"	75	STR					
CWI502	36	3'- 8"	138	STR					
CWI503	10	2'- 4"	25	STR					
	SUBTOTAL		1497						
	GRAND TOTAL		1497						

QUANTIITIES INCIDENTAL TO ITEM 611 - 12' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN.

CAST-IN-PLACE BOX CULVERT OUTLET REINFORCING SCHEDULE								DESIGNER: JSR	
								CHECKER: KAK 02/18/25	
BAR MARK	NUMBER	LENGTH	WEIGHT (LBS.)	TYPE	BAR TYPE DIMENSIONS				INC.
					A	B	C	D	
BOX CULVERT									
CSO501	64	9'- 8"	646	STR					
CSO502	64	13'- 8"	913	STR					
CSO503	128	3'- 10"	512	TYPE 1	1'- 8"	2'- 3"			
CSO504	64	2'- 3"	151	STR					
CSO505	32	1'- 5"	48	TYPE 2	0'- 8"	0'- 4"	0'- 8"		
CSO506	32	1'- 6"	51	TYPE 2	0'- 8"	0'- 5"	0'- 8"		
CWO501	20	9'- 8"	202	STR					
CWO502	64	3'- 8"	245	STR					
	SUBTOTAL		2768						
	GRAND TOTAL		2768						

QUANTIITIES INCIDENTAL TO ITEM 611 - 12' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN.

