

FOR INDEX OF SHEETS, SEE SHEET NO. 2

HIGHWAY STANDARDS

001001-02	701001-02
280001-07	701006-05
442201-03	701201-05
515001-04	701311-03
630001-12	701321-18
630101-10	701901-08
630106-02	704001-08
630301-09	780001-05
631011-10	782006-01

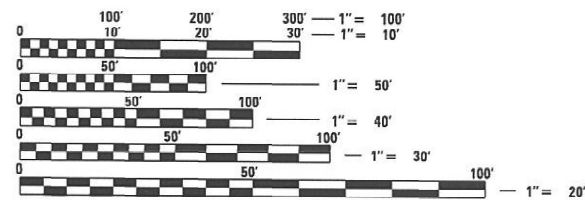
DESIGN DESIGNATION

DOUBLE 4x4 CULVERT LOCATION
 MINOR ARTERIAL
 ADT: 1,100 (2021)
 MU: 12.7%
 SU: 10.0%

10x7 CULVERT LOCATION
 MINOR ARTERIAL
 ADT: 1,350 (2021)
 MU: 6.67%
 SU: 6.67%

IL 116 STA. 1451+20
 (SN 048-1005)
 4' X 4' DOUBLE BOX CULVERT

IL 116 STA. 117+12
 (SN 048-1006)
 10' X 7' BOX CULVERT



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.
 JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS
 1-800-892-0123
 OR 811

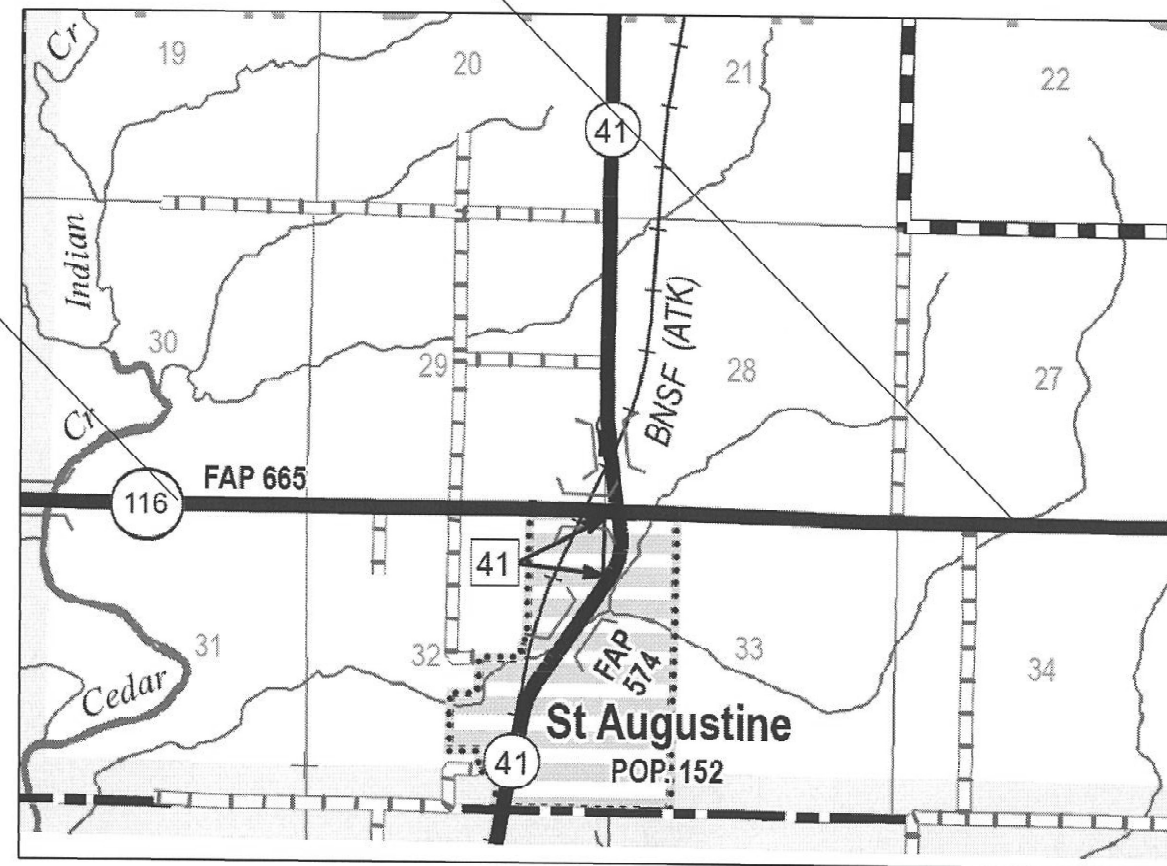
PROJECT ENGINEER: NICOLE FAYANT (309) 671-3454
 PROJECT MANAGER: DAVID GREEN (309) 671-3475
 CATALOG NO. 036253-00D
 CONTRACT NO. 68G66

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

**PROPOSED
 HIGHWAY PLANS**

FAP 665 (IL 116)
 SECTION (140,142)CLV
 CONTRACT MAINTENANCE
 CULVERT REPAIRS
 KNOX COUNTY

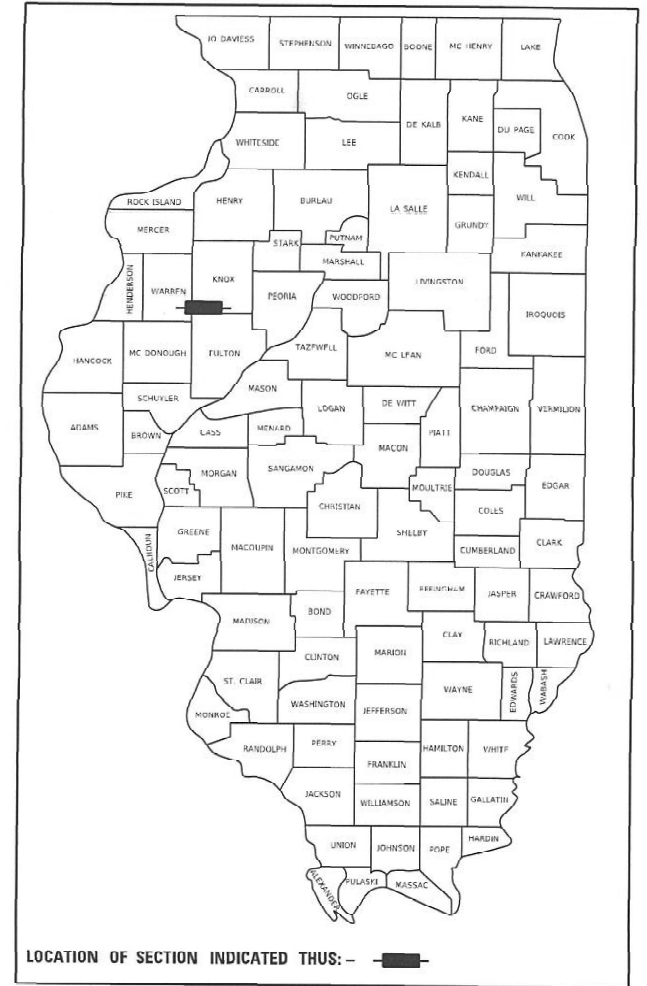
C-94-090-21



NET LENGTH = 0.16 MILES

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	1
		ILLINOIS	CONTRACT NO. 68G66	

D-94-068-21



PROJECT DESCRIPTION:

CULVERT REPAIRS ON 2 BOX CULVERTS CROSSING IL 116 IN KNOX COUNTY

0.49 MILE EAST OF WARREN COUNTY LINE: EXTEND CULVERT TO CLEAR ZONE AND REMOVE GUARDRAIL OF DOUBLE 4'X4' BOX

0.15 MILE EAST OF 325TH STREET: REPLACE WINGWALLS, HEADWALLS, AND GUARDRAIL OF 10'X7' BOX

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

SUBMITTED July 07 2023
Ronald A. Barnett RSD
 REGIONAL ENGINEER

August 18, 2023 [Signature]
 ENGINEER OF DESIGN AND ENVIRONMENT

August 18, 2023 [Signature]
 DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

**PRINTED BY THE AUTHORITY
 OF THE STATE OF ILLINOIS**

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				100% STATE KNOX COUNTY	100% STATE KNOX COUNTY
				BOX CULVERT 0004	BOX CULVERT 0004
				S.N. 048-1005	S.N. 048-1006
20200100	EARTH EXCAVATION	CU YD	500	220	280
* 20201200	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	CU YD	40	0	40
20700220	POROUS GRANULAR EMBANKMENT	CU YD	345	110	235
21001000	GEOTECHNICAL FABRIC FOR GROUND STABILIZATION	SQ YD	48	0	48
21101600	TOPSOIL FURNISH AND PLACE, VARIABLE DEPTH	SQ YD	555	285	270
25000210	SEEDING, CLASS 2A	ACRE	0.25	0.13	0.12
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	11	6	5
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	11	6	5
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	11	6	5
25100125	MULCH, METHOD 3	ACRE	0.25	0.13	0.12
25100900	TURF REINFORCEMENT MAT	SQ YD	193	0	193
28000315	AGGREGATE DITCH CHECKS	TON	120	80	40
28000400	PERIMETER EROSION BARRIER	FOOT	45	0	45
28100105	STONE RIPRAP, CLASS A3	SQ YD	68	0	68

* = SPECIALTY ITEM

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	DRAWN -	REVISED -
PLOT SCALE = 1:100	CHECKED -	REVISED -
PLOT DATE = 7/7/2023	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES			
SCALE:	SHEET 1	OF 5 SHEETS	STA. TO STA.

F.A.P. RTE. 665	SECTION (140,142)CLV	COUNTY KNOX	TOTAL SHEETS 38	SHEET NO. 3
CONTRACT NO. 68G66			ILLINOIS FED. AID PROJECT	

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				100% STATE KNOX COUNTY	100% STATE KNOX COUNTY
				BOX CULVERT	BOX CULVERT
				0004	0004
				S.N. 048-1005	S.N. 048-1006
28100109	STONE RIPRAP, CLASS A5	SQ YD	256	163	93
28200200	FILTER FABRIC	SQ YD	323	163	160
35101100	AGGREGATE BASE COURSE, TYPE A 12"	SQ YD	187	95	92
40800025	BITUMINOUS MATERIALS (PRIME COAT)	POUND	420	213	207
40800029	BITUMINOUS MATERIALS (TACK COAT)	POUND	135	68	67
44201821	CLASS D PATCHES, TYPE IV, 14 INCH	SQ YD	187	95	92
48100200	AGGREGATE SHOULDERS, TYPE A	CU YD	25	0	25
50102400	CONCRETE REMOVAL	CU YD	75.1	13.7	61.4
50800105	REINFORCEMENT BARS	POUND	530	240	290
51500100	NAME PLATES	EACH	2	1	1
52200020	TEMPORARY SOIL RETENTION SYSTEM	SQ FT	682	207	475
54001001	BOX CULVERT END SECTIONS, CULVERT NO. 1	EACH	2	2	0
54001002	BOX CULVERT END SECTIONS, CULVERT NO. 2	EACH	2	0	2
54003000	CONCRETE BOX CULVERTS	CU YD	6.1	2.6	3.5

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES

SCALE: SHEET 2 OF 5 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	4
CONTRACT NO. 68G66			ILLINOIS FED. AID PROJECT	

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				100% STATE KNOX COUNTY	100% STATE KNOX COUNTY
				BOX CULVERT	BOX CULVERT
				0004	0004
				S.N. 048-1005	S.N. 048-1006
54010904	PRECAST CONCRETE BOX CULVERTS 9' X 4'	FOOT	41	41	0
54011007	PRECAST CONCRETE BOX CULVERTS 10' X 7'	FOOT	35	0	35
59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	150	76	74
* 63000001	STEEL PLATE BEAM GUARDRAIL, TYPE A, 6 FOOT POSTS	FOOT	769	0	769
* 63000030	STRONG POST GUARDRAIL ATTACHED TO CULVERT	FOOT	12.5	0	12.5
* 63000370	LONG-SPAN GUARDRAIL OVER CULVERT, 25 FT SPAN	FOOT	50	0	50
* 63100045	TRAFFIC BARRIER TERMINAL, TYPE 2	EACH	1	0	1
* 63100169	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) FLARED	EACH	3	0	3
63200310	GUARDRAIL REMOVAL	FOOT	555	307	248
67100100	MOBILIZATION	L SUM	1	0.5	0.5
70100405	TRAFFIC CONTROL AND PROTECTION, STANDARD 701321	EACH	2	1	1
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1	0.5	0.5
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	2	1	1
70106700	TEMPORARY RUMBLE STRIPS	EACH	12	6	6
70107005	PAVEMENT MARKING BLACKOUT TAPE, 5"	FOOT	220	120	100

* = SPECIALTY ITEM

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES

SCALE: SHEET 3 OF 5 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	5
CONTRACT NO. 68G66			ILLINOIS FED. AID PROJECT	

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CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				100% STATE KNOX COUNTY	100% STATE KNOX COUNTY
				BOX CULVERT	BOX CULVERT
				0004	0004
				S.N. 048-1005	S.N. 048-1006
70107025	CHANGEABLE MESSAGE SIGN	CAL DA	28	14	14
70300150	SHORT TERM PAVEMENT MARKING REMOVAL	SQ FT	92	50	42
70400100	TEMPORARY CONCRETE BARRIER	FOOT	537.5	250	287.5
70400125	PINNING TEMPORARY CONCRETE BARRIER	EACH	15	0	15
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	250	125	125
70600251	IMPACT ATTENUATORS, TEMPORARY (NON- REDIRECTIVE, NARROW), TEST LEVEL 3	EACH	4	2	2
70600352	IMPACT ATTENUATORS, RELOCATE (NON- REDIRECTIVE, NARROW), TEST LEVEL 3	EACH	4	2	2
* 72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	3	0	3
* 78001110	PAINT PAVEMENT MARKING - LINE 4"	FOOT	3270	1580	1690
* 78200005	GUARDRAIL REFLECTORS, TYPE A	EACH	9	0	9
X0900064	MEMBRANE WATERPROOFING SYSTEM FOR BURIED STRUCTURES	SQ YD	150	76	74
X2850001	REVTMENT MAT REMOVAL	SQ YD	59	0	59
* X6330725	STEEL PLATE BEAM GUARDRAIL (SHORT RADIUS)	FOOT	25	0	25
Z0001002	GUARDRAIL AGGREGATE EROSION CONTROL	TON	213	0	213

*= SPECIALTY ITEM

USER NAME = \$USERS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SUMMARY OF QUANTITIES				F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
PLOT SCALE = 1:100	DRAWN -	REVISED -						665	(140,142)CLV	KNOX	38	6
PLOT DATE = 7/7/2023	CHECKED -	REVISED -		SCALE:	SHEET 4	OF 5 SHEETS	STA.	TO STA.	CONTRACT NO. 68G66			
	DATE -	REVISED -						ILLINOIS FED. AID PROJECT				

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				100% STATE KNOX COUNTY BOX CULVERT	100% STATE KNOX COUNTY BOX CULVERT
				0004	0004
				S.N. 048-1005	S.N. 048-1006
Z0013798	CONSTRUCTION LAYOUT	L SUM	1	0.5	0.5
* Z0054400	ROCK FILL	CU YD	41	0	41

*= SPECIALTY ITEM

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES

SCALE: SHEET 5 OF 5 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	7
			CONTRACT NO. 68G66	
			ILLINOIS FED. AID PROJECT	

LOCATION	IMPACT ATTENUATORS, TEMPORARY (NON-REDIRECTIVE, NARROW), TEST LEVEL 3	IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE, NARROW), TEST LEVEL 3	TEMPORARY CONCRETE BARRIER	PINNING TEMPORARY CONCRETE BARRIER*	RELOCATE TEMPORARY CONCRETE BARRIER	PAVEMENT MARKING BLACKOUT TAPE, 5"	SHORT TERM PAVEMENT MARKING REMOVAL	TEMPORARY RUMBLE STRIPS
	EACH	EACH	FOOT	EACH	FOOT	FOOT	SQ. FT.	EACH
DOUBLE 4x4 CULVERT (SN 048-1005)								
STAGE I	2.0		250.0			120.0	50.0	6.0
STAGE II		2.0			125.0			
10x7 CULVERT (SN 048-1006)								
STAGE I	2.0		287.5			100.0	41.7	6.0
STAGE II		2.0		15.0	125.0			
4x4 SUBTOTAL	2.0	2.0	250.0	0.0	125.0	120.0	50.0	6.0
10x7 SUBTOTAL	2.0	2.0	287.5	15.0	125.0	100.0	42.0	6.0
TOTAL	4.0	4.0	537.5	15.0	250.0	220.0	92.0	12.0

*BARRIER WALL SHALL BE PINNED BETWEEN STA. 116+33.7 AND 116+96.2

LOCATION	PAINT PAVEMENT MARKING - LINE 4"	
	EDGELINE	CL SKIP
	WHITE	YELLOW
	FOOT	FOOT
DOUBLE 4x4 CULVERT (SN 048-1005)		
STA. 1448+00 TO 1455+00	1400.0	180.0
10x7 CULVERT (SN 048-1006)		
STA. 113+00 TO 120+50	1500.0	190.0
4x4 SUBTOTAL	1580.0	
10x7 SUBTOTAL	1690.0	
TOTAL	3270.0	

LOCATION	MOBILIZATION	CHANGEABLE MESSAGE SIGN*	CONSTRUCTION LAYOUT	TRAFFIC CONTROL AND PROTECTION, STANDARD 701321	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201
	LSUM	CAL DAY	LSUM	EACH	LSUM
DOUBLE 4x4 CULVERT (SN 048-1005)	0.5	14.0	0.5	1.0	0.5
10x7 CULVERT (SN 048-1006)	0.5	14.0	0.5	1.0	0.5
TOTAL	1.0	28.0	1.0	2.0	1.0

*4 Boards @ 7 Days Each

LOCATION	STEEL PLATE BEAM GUARDRAIL, TYPE A, 6 FOOT POSTS	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) FLARED	TRAFFIC BARRIER TERMINAL, TYPE 2	LONG-SPAN GUARDRAIL OVER CULVERT, 25' SPAN	STRONG POST GUARDRAIL ATTACHED TO CULVERT	STEEL PLATE BEAM GUARDRAIL (SHORT RADIUS)	GUARDRAIL REFLECTORS, TYPE A	TERMINAL MARKER - DIRECT APPLIED	GUARDRAIL AGGREGATE EROSION CONTROL
	FOOT	EACH	EACH	FOOT	FOOT	FOOT	EACH	EACH	TON
10x7 CULVERT (SN 048-1006)									
LT STA. 116+92.2 TO 117+06.1			1.0			25.0			7.6
LT STA. 117+06.1 TO 118+93.6	175.0				12.5		4.0		38.2
LT STA. 118+93.6 TO 119+43.6		1.0						1.0	12.2
RT STA. 112+79.4 TO 113+29.4		1.0						1.0	12.2
RT STA. 113+29.4 TO 116+48.4	319.0								64.9
RT STA. 116+48.4 TO 116+98.4				50.0			5.0		10.2
RT STA. 116+98.4 TO 119+23.4	275.0								56.0
RT STA. 119+23.4 TO 119+73.4		1.0						1.0	12.2
TOTAL	769.0	3.0	1.0	50.0	12.5	25.0	9.0	3.0	213.0

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PLOT SCALE = 1:100	CHECKED -	REVISED -
PLOT DATE = 7/7/2023	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SCHEDULE OF QUANTITIES			
SCALE:	SHEET 1	OF 2 SHEETS	STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	8
CONTRACT NO. 68G66			ILLINOIS FED. AID PROJECT	

LOCATION	EARTHWORK			TOPSOIL
	20200100 EARTHWORK EXCAVATION	EMBANKMENT	BALANCE WASTE (+) OR SHORTAGE (-)	TOPSOIL FURNISH AND PLACE, VARIABLE DEPTH
	(CU YD)	(CU YD)	(CU YD)	(SQ YD)
STA 1451+15.32 IL RTE 116 RC BOX CULVERT				
1451+15.35 RT	111.0	59.0	52.0	200.5
1451+15.35 LT	109.0	54.0	55.0	82.0
SUB-TOTAL	220.0	113.0	107.0	282.4
ADJ. SUB-TOTAL	220.0	115.0	110.0	285.0
STA 116+94.46 IL RTE 116 RC BOX CULVERT				
116+94.46 RT	148.2	63.4	84.8	121.9
116+94.46 LT	129.2	63.4	65.8	144.7
SUB-TOTAL	277.4	126.8	150.6	266.6
ADJ. SUB-TOTAL	280.0	130.0	155.0	270.0
R.E. DESCRETION				
GRAND TOTAL	500.0	245.0	265.0	555.0

RAW VALUES NO SHRINKAGE FACTOR APPLIED

EARTHWORK - STA 1451+15.35

- TRENCH FOR CULVERT UNDER PVMT ESTIMATED AT 40 CU YD PER SIDE
- BARRELL SECTION ESTIMATED 20' LENGTH (SOUTH SIDE) - FILL 2.5 CU YD PER FOOT & CUT 0.5 CU YD PER FOOT
BARRELL SECTION ESTIMATED 22.5' LENGTH (NORTH SIDE) - FILL 2.4 CU YD PER FOOT & CUT 0.6 CU YD PER FOOT
- RIPRAP SECTION ESTIMATED AT 45' LENGTH (SOUTH SIDE) - FILL 0.2 CU YD PER FOOT & CUT 1.4 CU YD PER FOOT
RIPRAP SECTION ESTIMATED AT 12' LENGTH (NORTH SIDE) - FILL 0.0 CU YD PER FOOT & CUT 4.6 CU YD PER FOOT

EARTHWORK - STA 116+94.46

- TRENCH FOR CULVERT UNDER PVMT ESTIMATED AT 136 CU YD SOUTH SIDE & 117 CU YD NORTH SIDE
- BARRELL SECTION ESTIMATED 12' LENGTH (SOUTH SIDE) - FILL 2.5 CU YD PER FOOT & CUT 0.4 CU YD PER FOOT
- WINGWALLS & RIPRAP SECTION ESTIMATED AT 37' LENGTH (SOUTH SIDE) - FILL 0.2 CU YD PER FOOT & CUT 1.4 CU YD PER FOOT

PAVEMENT SCHEDULE						
LOCATION		AGG BASE CSE A 12	BIT MATLS PR CT	BIT MATLS TACK CT	CL D PATCH T4 14	AGGREGATE SHLDS A
STATION	STATION	35101100 (SQ YD)	40800025 (POUND)	40800029 (POUND)	44201821 (SQ YD)	48100200 (CU YD)
STA 1451+15.32 IL RTE 116 RC BOX CULVERT						
1451+04.03	LT 1451+42.03	46.4	104.4	33.4	46.4	
1450+89.14	RT 1451+27.14	48.0	107.9	34.5	48.0	
SUB-TOTAL		94.4	212.3	67.9	94.4	0.0
ADJUSTED SUB-TOTAL		95.0	213.0	68.0	95.0	0.0
STA 116+94.46 IL RTE 116 RC BOX CULVERT						
116+94.92	LT 117+06.56	7.8	17.5	5.6	7.8	11.3
116+43.87	RT 116+93.11	43.6	98.1	31.4	43.6	12.8
116+94.92	LT 117+46.02	40.6	91.3	29.2	40.6	
SUB-TOTAL		91.9	206.8	66.2	91.9	24.1
ADJUSTED SUB-TOTAL		92.0	207.0	67.0	92.0	25.0
GRAND TOTAL		187.0	420.0	135.0	187.0	25.0
ADJUSTED GRAND TOTAL		187.0	420.0	135.0	187.0	25.0

EROSION SCHEDULE												
LOCATION		SEEDING CL 2A	NITROGEN FERT NUTR	PHOSPHORUS FERT NUTR	POTASSIUM FERT NUTR	MULCH METHOD 3	TURF REINF MAT	AGG DITCH CHECKS	PERIMETER EROS BAR	STONE RIPRAP, CLASS A3	STONE RIPRAP, CLASS A5	FILTER FABRIC
STATION	STATION	25000210 (ACRE)	25000400 (POUND)	25000500 (POUND)	25000600 (POUND)	25100125 (ACRE)	25100900 (SQ YD)	28000315 (TON)	28000400 (FOOT)	28100105 (SQ YD)	28100109 (SQ YD)	28200200 (SQ YD)
STA 1451+15.32 IL RTE 116 RC BOX CULVERT												
1450+75	RT 1451+16										116.2	116.2
1451+15	LT 1451+56										46.6	46.6
1451+04.03	LT 1451+44.08	0.017	1.5	1.5	1.5	0.017						
1450+74.2	RT 1451+27.14	0.041	3.7	3.7	3.7	0.041						
1451+65	LT							20				
1451+05	LT							20				
1451+30	RT							20				
1450+65	RT							20				
SUB-TOTAL		0.058	5.3	5.3	5.3	0.058		80			162.7	162.7
ADJUSTED SUB-TOTAL		0.1	6.0	6.0	6.0	0.1		80			163.0	163.0
STA 116+94.46 IL RTE 116 RC BOX CULVERT												
117+28.24	117+46.02									19.6		19.6
116+30.15	116+61.94									48.0		48.0
117+30.31	LT 117+60.04										46.1	46.1
116+30.15	RT 166+59.88										46.1	46.1
117+46.02	LT 117+60.04	0.006	0.5	0.5	0.5	0.006	29.2					
116+94.36	LT 117+47	0.024	2.1	2.1	2.1	0.024	78.1					
116+43.2	RT 116+93.11	0.025	2.3	2.3	2.3	0.025	84.9					
116+15	RT 116+52.72								45			
117+70	LT							20				
116+90	RT							20				
SUB-TOTAL		0.055	5.0	5.0	5.0	0.055	192.3	40	45.0	67.6	92.3	159.9
ADJUSTED SUB-TOTAL		0.1	5.0	5.0	5.0	0.1	193.0	40	45.0	68.0	93.0	160.0
GRAND TOTAL		0.2	11.0	11.0	11.0	0.2	193.0	120	45.0	68.0	256.0	323.0
ADJUSTED GRAND TOTAL		0.25	11.0	11.0	11.0	0.25	193.0	120	45.0	68.0	256.0	323.0

REMOVAL SCHEDULE			
LOCATION		GUARDRAIL REMOV	REVETMENT MAT REMOVAL
STATION	STATION	63200310 (FOOT)	X2850001 (SQ YD)
STA 1451+15.32 IL RTE 116 RC BOX CULVERT			
1450+63.96	LT 1452+17.49	153.5	
1450+13.06	RT 1451+66.27	153.4	
SUB-TOTAL		306.9	0.0
ADJUSTED SUB-TOTAL		307.0	0.0
STA 116+94.46 IL RTE 116 RC BOX CULVERT			
115+55.99	RT 117+00.88	144.9	
117+07.98	LT 118+10.64	102.7	
116+94.92	LT 117+46.02		
116+94.92	LT 117+06.56		
116+43.87	RT 116+93.11		
116+30.15	RT 116+66.39		58.7
SUB-TOTAL		247.6	58.7
ADJUSTED SUB-TOTAL		248.0	59.0
GRAND TOTAL		555.0	59.0
ADJUSTED GRAND TOTAL		555.0	59.0

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PROJECT: 116+94.46 IL RTE 116 RC BOX CULVERT.dwg
DATE: 7/7/2023



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PLOT SCALE = 10.0000' / in.
PLOT DATE = 7/7/2023

DESIGNED - RJO
DRAWN - RJO
CHECKED - RJB
DATE -

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

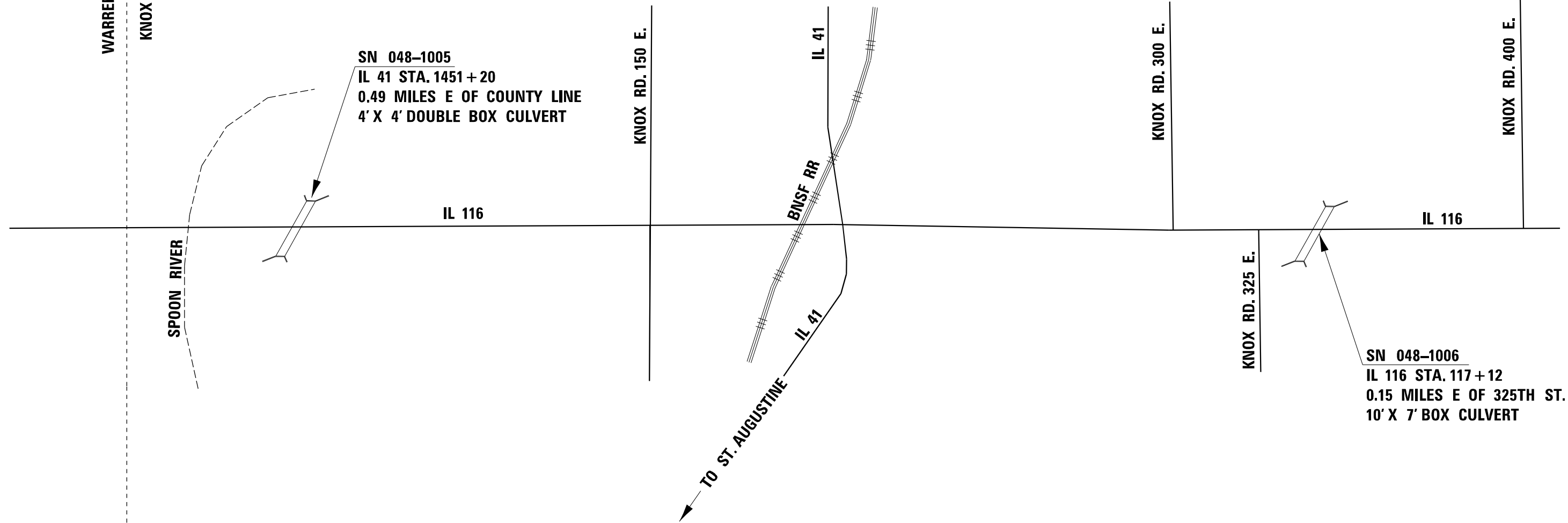
**SCHEDULE OF QUANTITIES
FAP 665 (IL 116) CONTRACT MAINTENANCE CULVERT REPAIRS**

SCALE: N.T.S. SHEET 1 OF 1 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	9
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				

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WARREN COUNTY
 KNOX COUNTY



SN 048-1005
 IL 41 STA. 1451 + 20
 0.49 MILES E OF COUNTY LINE
 4' X 4' DOUBLE BOX CULVERT

SN 048-1006
 IL 116 STA. 117 + 12
 0.15 MILES E OF 325TH ST.
 10' X 7' BOX CULVERT

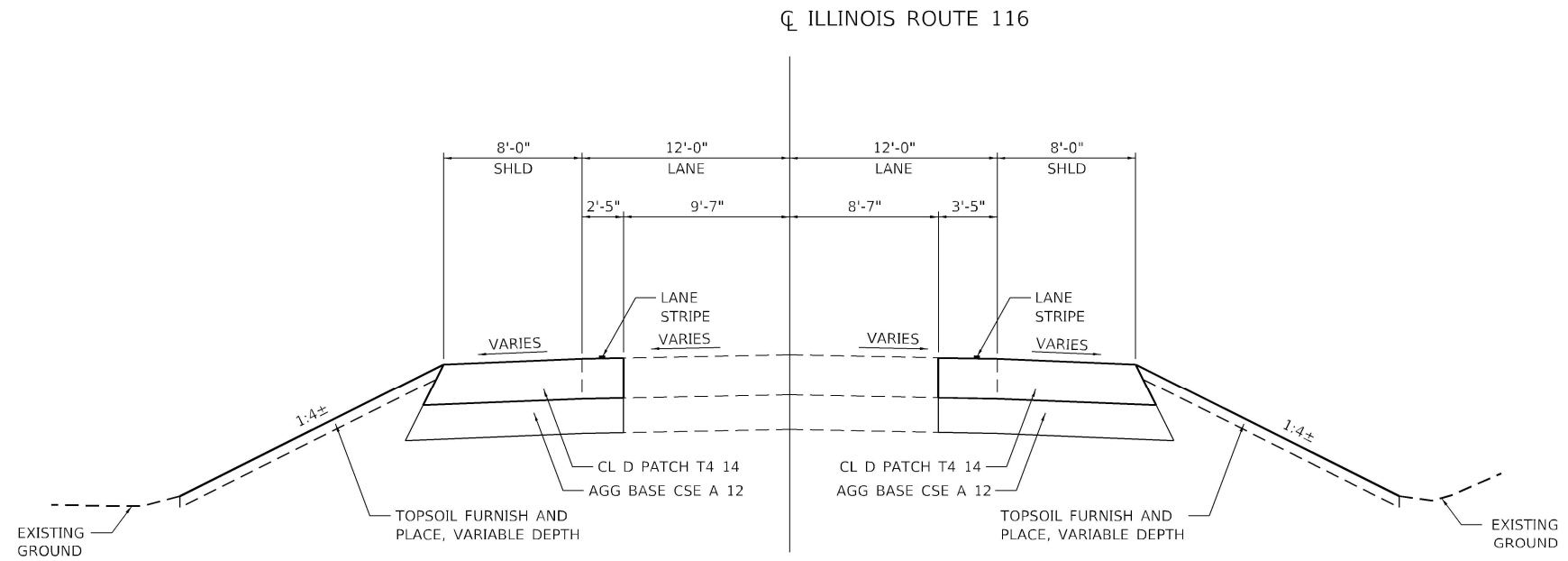
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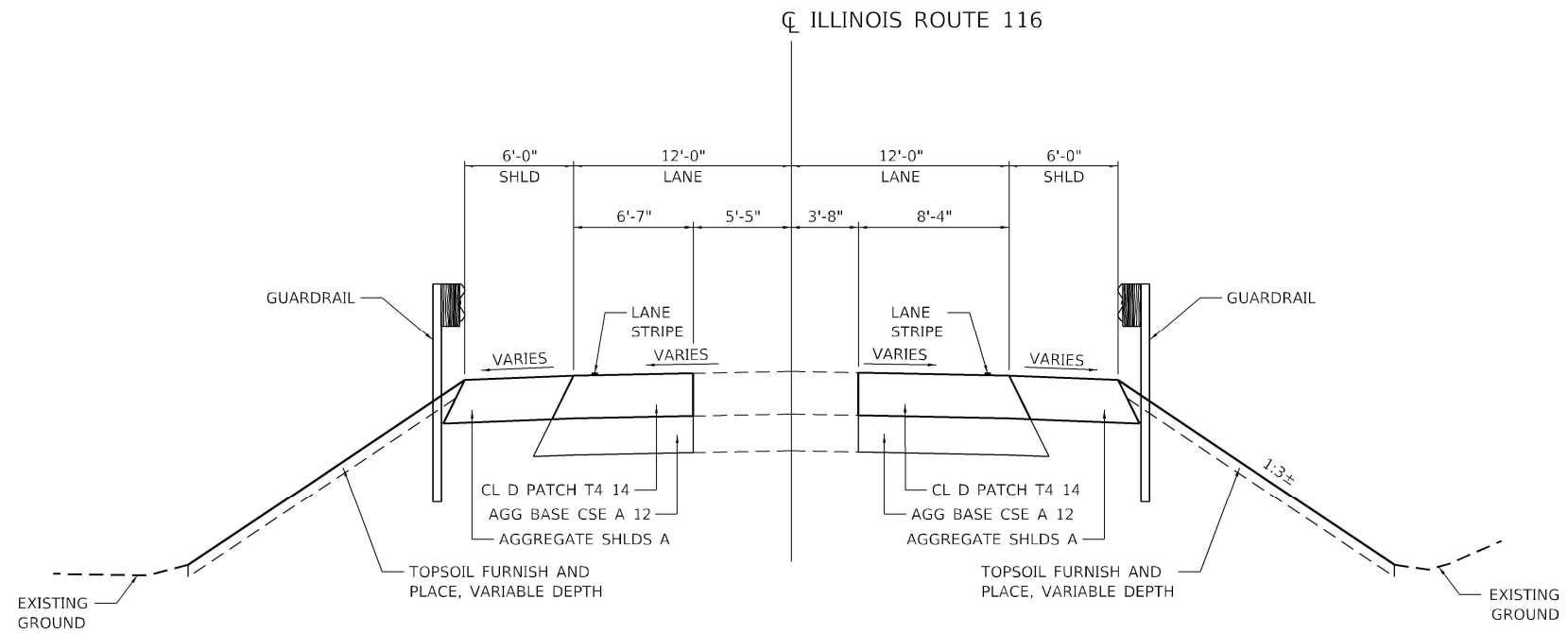
**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

LINE DIAGRAM			
SCALE:	SHEET 11	OF 11 SHEETS	STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	10
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



PROPOSED TYPICAL SECTION
ILLINOIS ROUTE 116
STA 1450+89.14 TO STA 1451+27.14 RT
STA 1451+04.03 TO STA 1451+42.03 LT



PROPOSED TYPICAL SECTION
ILLINOIS ROUTE 116
STA 116+43.87 TO STA 116+93.11 RT
STA 116+94.92 TO STA 117+46.02 LT

CALCULATION/APPLICATION RATES
AGGREGATE 2.0 TONS/CU YD
TACK COAT 0.08 LBS/SQ FT
PRIME COAT 0.25 LBS/SQ FT
ASPHALT 112 LBS/SQ YD/IN (0.056 TONS/SQ YD/IN)
FERTILIZER 90 LBS/ACRE

MODEL: Default
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DRAWN - RJO	REVISED -	
CHECKED - RJB	REVISED -	
DATE - 7/5/2023	REVISED -	

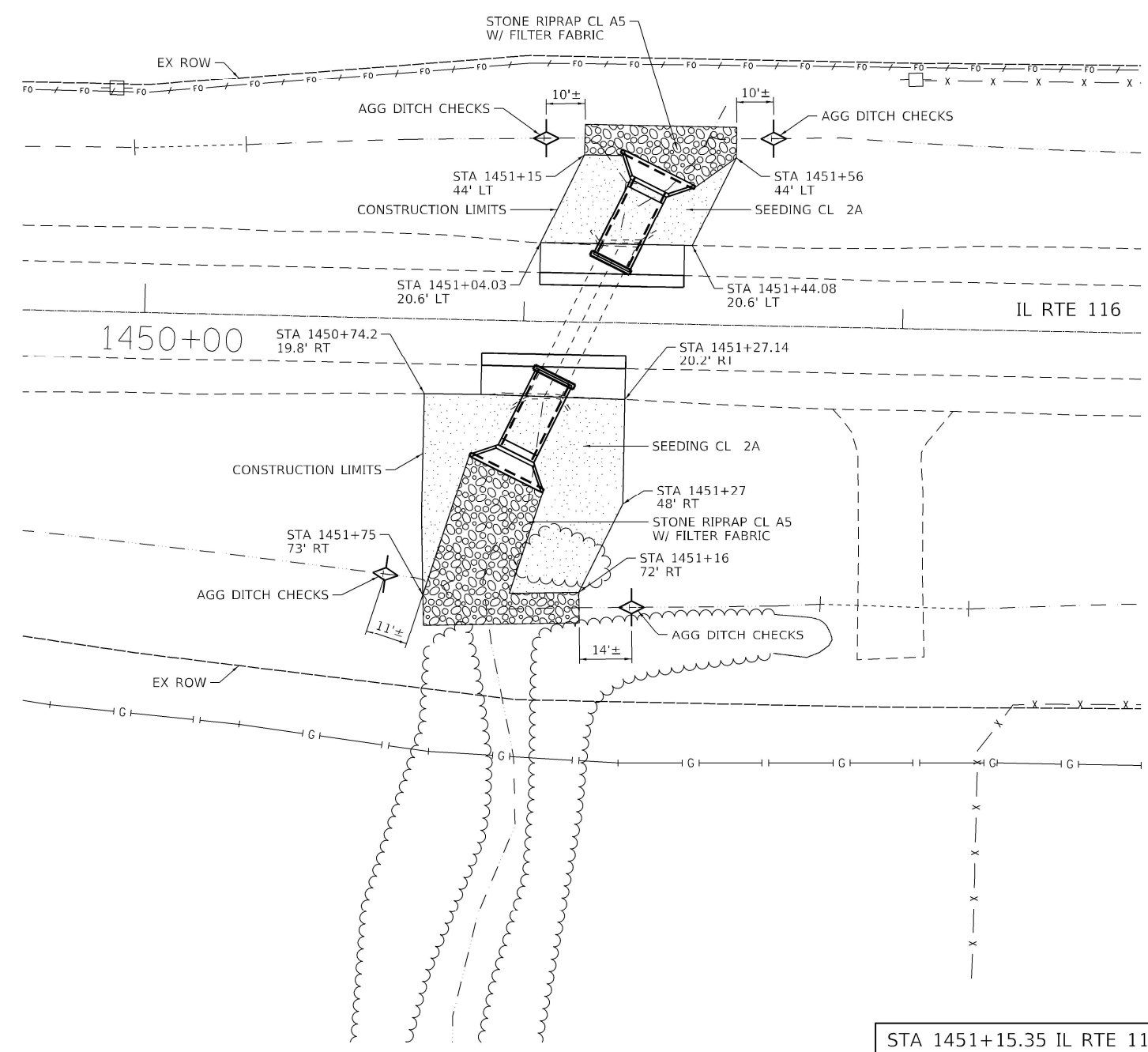
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS	
FAP 665 (IL 116) CONTRACT MAINTENANCE CULVERT REPAIRS	
SCALE: N.T.S.	SHEET 1 OF 1 SHEETS
STA.	TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	11
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



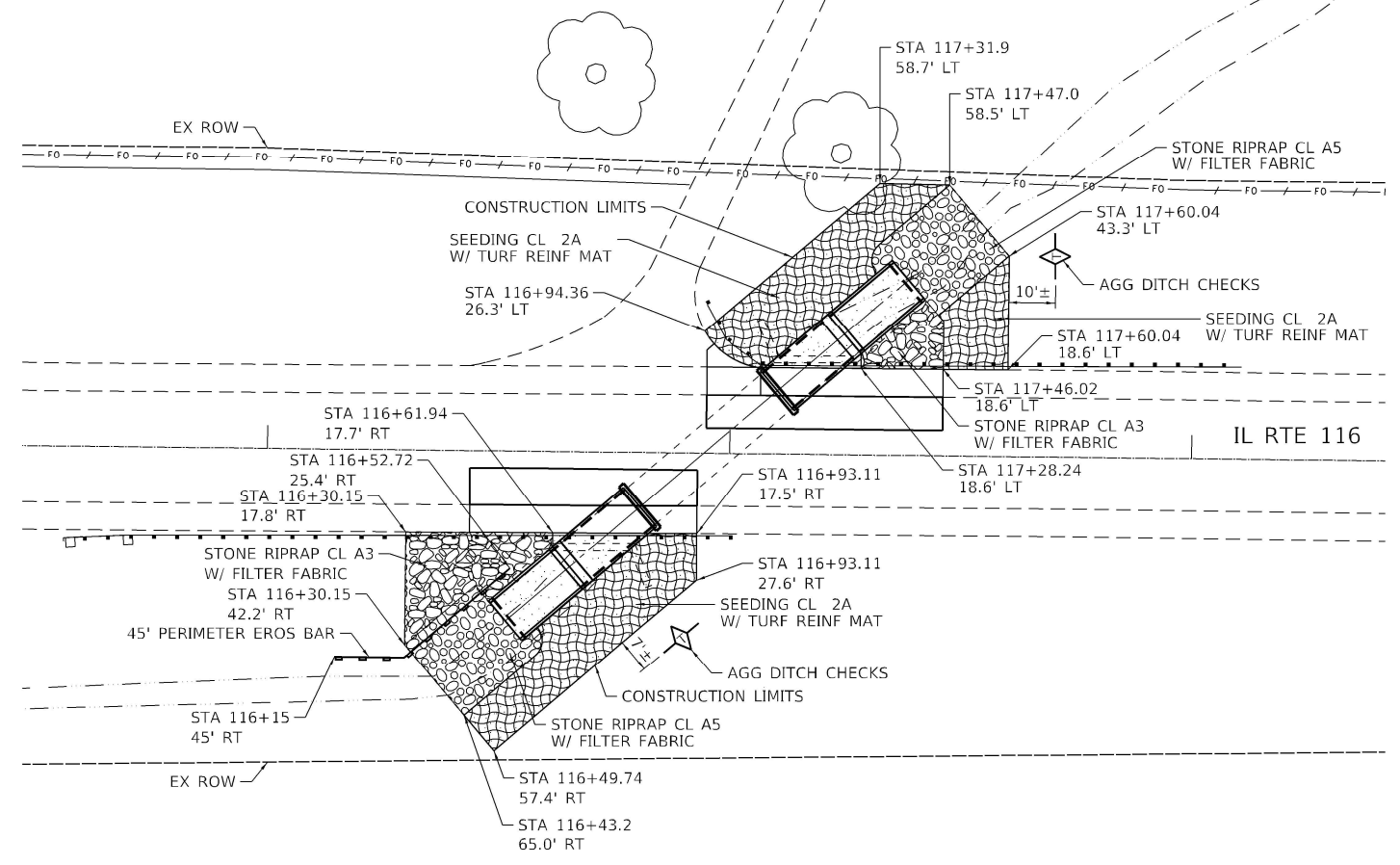
NOTE:
SEE BOX CULVERT PLANS FOR
CULVERT REMOV, IMPROVEMENTS
& QUANTITIES



STA 1451+15.35 IL RTE 116
RC BOX CULVERT



NOTE:
SEE BOX CULVERT PLANS FOR
CULVERT REMOV, IMPROVEMENTS
& QUANTITIES



STA 116+94.46 IL RTE 116
RC BOX CULVERT

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PLOT DATE = 7/5/2023

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EROSION CONTROL SHEET
FAP 665 (IL 116) CONTRACT MAINTENANCE CULVERT REPAIRS
SCALE: 1" = 20'
SHEET 1 OF 1 SHEETS
STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	14
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



BEGIN TEMPORARY CONCRETE BARRIER
STA. 1449+97.4, 6.0' RT (1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

STAGE I

STAGE I TRAFFIC LANE
SEE STAGING TYPICAL FOR WIDTH

STA. 1451+84.6

STA. 1452+34.6

IL 116 CL

12"
12"

12"
12"

+29.7
+39.7

+79.7

+04.7

+10.0

+60.0

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

END TEMPORARY CONCRETE BARRIER
STA. 1452+46.73, 6.0' RT (1:12 TAPER)

TEMPORARY TRAFFIC SIGNAL NOTES:

1. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH STANDARD 701321 EXCEPT WHERE MODIFIED ON THIS PLAN SHEET.
2. TWO PHASE SIGNAL OPERATION IS REQUIRED FOR STAGES I AND II.
3. THE CONTRACTOR SHALL SUPPLY ALL PROPOSED SIGNAL TIMING PARAMETERS AND CALCULATIONS TO THE IDOT RESIDENT ENGINEER AT LEAST 14 DAYS PRIOR TO SIGNAL TURN-ON. THE IDOT RESIDENT ENGINEER SHALL PROVIDE THE PROPOSED SIGNAL TIMING PARAMETERS AND CALCULATIONS TO TONY BRIDSON, DISTRICT 4 TRAFFIC SIGNAL TECHNICIAN, FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL INSTALL EITHER DETECTOR LOOPS OR MICROWAVE DETECTORS FOR USE WITH THE TEMPORARY TRAFFIC SIGNALS IN ACCORDANCE WITH HIGHWAY STANDARD 701321.
5. ALL TRAFFIC SIGNAL SECTIONS SHALL HAVE 12" DIAMETER LED LENSES.
6. THE TEMPORARY TRAFFIC SIGNAL HEADS SHALL BE PLACED AT THE LOCATIONS INDICATED ON THE PLAN SHEETS OR DIRECTED BY THE ENGINEER.
7. THE TEMPORARY TRAFFIC SIGNAL INSTALLATION SHALL CONFORM TO ALL MUTCD REQUIREMENTS.
8. A MINIMUM OF 2 SIGNAL HEADS ARE REQUIRED PER APPROACH.
9. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH BACKPLATES.
10. ALL LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO COMPLY WITH THESE REQUIREMENTS AND PLAN SHEET DETAILS SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR THE TEMPORARY BRIDGE TRAFFIC SIGNALS. THERE WILL BE NO ADDITIONAL COMPENSATION.

NOTES:

1. OFFSETS TO TEMPORARY CONCRETE BARRIER ARE MEASURED TO THE CENTERLINE OF THE BARRIER.
2. TRAFFIC CONTROL SHALL BE INSTALLED ACCORDING TO HIGHWAY STANDARD 701321 AND THESE DETAILS.
3. USE A BLACKOUT TAPE APPROVED BY THE ENGINEER TO COVER ANY CONFLICTING RAISED REFLECTIVE PAVEMENT MARKERS. USE A MATERIAL APPROVED BY THE ENGINEER TO COVER THE LENSES PRIOR TO THE PLACEMENT OF THE BLACKOUT TAPE IN ORDER TO PROTECT THE LENSES FROM THE BLACKOUT TAPE ADHESIVE. ALL COSTS ASSOCIATED WITH PROVIDING, INSTALLING, AND REMOVING THESE ITEMS SHALL BE INCLUDED IN THE COST OF THE VARIOUS TRAFFIC CONTROL PAY ITEMS PROVIDED IN THE PLANS.
4. TEMPORARY RUMBLE STRIPS SHALL BE USED FOR BOTH DIRECTIONS OF IL 116 AS DETAILED ON HIGHWAY STANDARD 701321.
5. BE PREPARED TO STOP (W3-4) SIGNS SHALL BE USED AFTER THE ROAD CONSTRUCTION AHEAD SIGNS AS DIRECTED BY THE ENGINEER. THE SIGNS SHALL BE CONSIDERED INCLUDED IN THE COST OF TEMPORARY BRIDGE TRAFFIC SIGNALS.

STA. 1450+09.6

STA. 1450+59.6



STAGE II

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

BEGIN TEMPORARY CONCRETE BARRIER
STA. 1449+97.4, 5.0' LT (1:12 TAPER)

END TEMPORARY CONCRETE BARRIER
STA. 1452+46.8, 5.0' LT (1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

STAGE II TRAFFIC LANE
SEE STAGING TYPICAL FOR WIDTH

IL 116 CL

+29.7
+34.3

+79.7

+04.7

+10.0

+60.0






STA. 1450+09.6

STA. 1450+59.6

STA. 1452+34.6

STA. 1451+84.6

LEGEND

-  TRAFFIC SIGNALS
-  IMPACT ATTENUATORS
-  PAVEMENT MARKING TAPE, TYPE IV 24"
-  TEMPORARY CONCRETE BARRIER
-  WORK AREA

USER NAME = \$USERS

DESIGNED -

REVISED -

DRAWN -

CHECKED -

REVISED -

PLOT SCALE = 1:100

DATE -

REVISED -

PLOT DATE = 7/7/2023

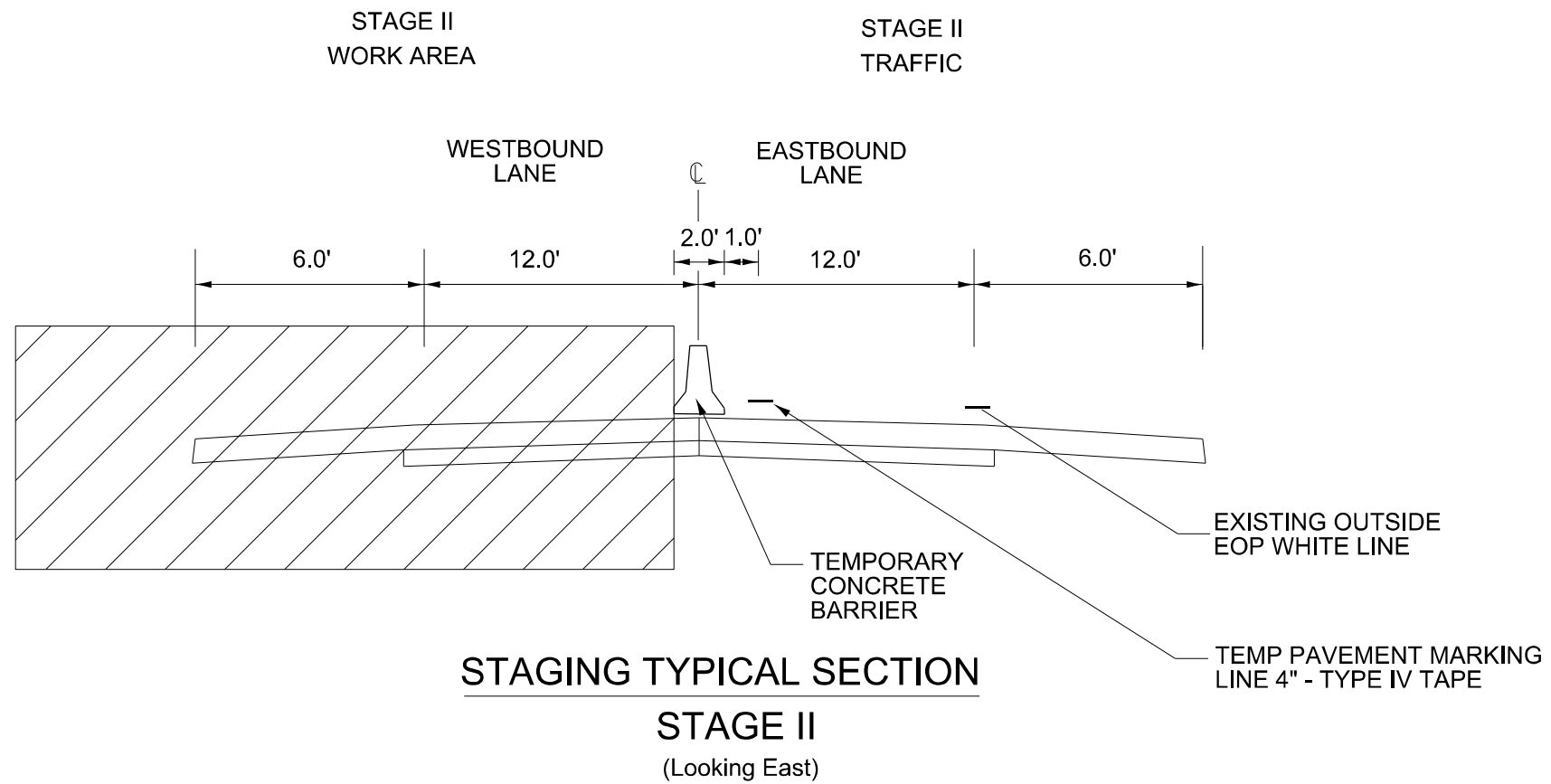
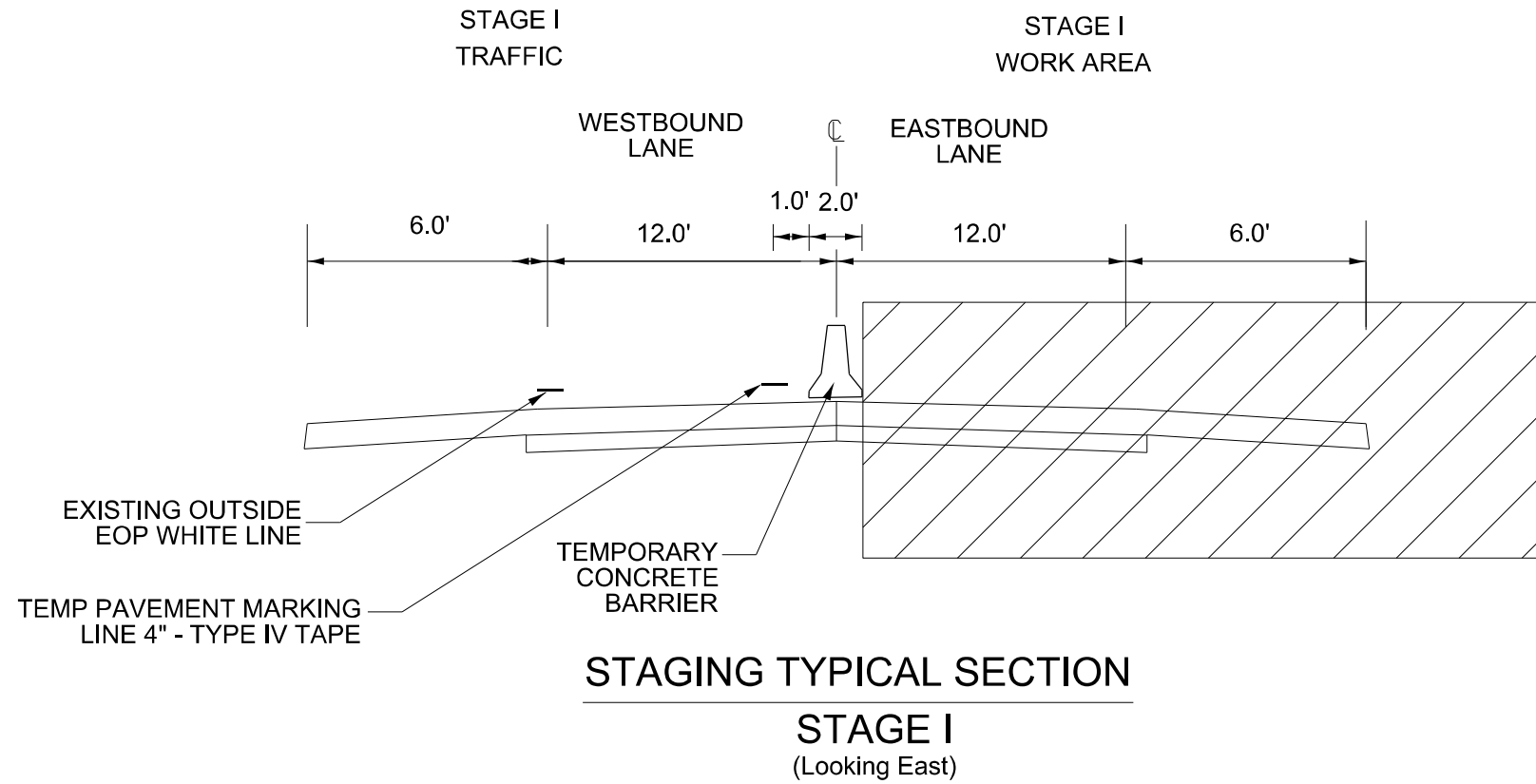
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

4' X 4' CULVERT STAGING DETAILS

SCALE: SHEET 1 OF 4 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	16
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				

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PLOT DATE = 7/7/2023	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

4' X 4' CULVERT STAGING DETAILS
 SCALE: SHEET 2 OF 4 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	17
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



BEGIN TEMPORARY CONCRETE BARRIER
STA. 115+46.4, 7.5' LT (1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

END TEMPORARY CONCRETE BARRIER
STA. 118+33.5, 7.5' LT (1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

NOTES:

1. OFFSETS TO TEMPORARY CONCRETE BARRIER ARE MEASURED TO THE CENTERLINE OF THE BARRIER.
2. TRAFFIC CONTROL SHALL BE INSTALLED ACCORDING TO HIGHWAY STANDARD 701321 AND THESE DETAILS.
3. USE A BLACKOUT TAPE APPROVED BY THE ENGINEER TO COVER ANY CONFLICTING RAISED REFLECTIVE PAVEMENT MARKERS. USE A MATERIAL APPROVED BY THE ENGINEER TO COVER THE LENSES PRIOR TO THE PLACEMENT OF THE BLACKOUT TAPE IN ORDER TO PROTECT THE LENSES FROM THE BLACKOUT TAPE ADHESIVE. ALL COSTS ASSOCIATED WITH PROVIDING, INSTALLING, AND REMOVING THESE ITEMS SHALL BE INCLUDED IN THE COST OF THE VARIOUS TRAFFIC CONTROL PAY ITEMS PROVIDED IN THE PLANS.
4. TEMPORARY RUMBLE STRIPS SHALL BE USED FOR BOTH DIRECTIONS OF IL 116 AS DETAILED ON HIGHWAY STANDARD 701321.
5. BE PREPARED TO STOP (W3-4) SIGNS SHALL BE USED AFTER THE ROAD CONSTRUCTION AHEAD SIGNS AS DIRECTED BY THE ENGINEER. THE SIGNS SHALL BE CONSIDERED INCLUDED IN THE COST OF TEMPORARY BRIDGE TRAFFIC SIGNALS.

TEMPORARY TRAFFIC SIGNAL NOTES:

1. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH STANDARD 701321 EXCEPT WHERE MODIFIED ON THIS PLAN SHEET.
2. TWO PHASE SIGNAL OPERATION IS REQUIRED FOR STAGES I AND II.
3. THE CONTRACTOR SHALL SUPPLY ALL PROPOSED SIGNAL TIMING PARAMETERS AND CALCULATIONS TO THE IDOT RESIDENT ENGINEER AT LEAST 14 DAYS PRIOR TO SIGNAL TURN-ON. THE IDOT RESIDENT ENGINEER SHALL PROVIDE THE PROPOSED SIGNAL TIMING PARAMETERS AND CALCULATIONS TO TONY BRIDSON, DISTRICT 4 TRAFFIC SIGNAL TECHNICIAN, FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL INSTALL EITHER DETECTOR LOOPS OR MICROWAVE DETECTORS FOR USE WITH THE TEMPORARY TRAFFIC SIGNALS IN ACCORDANCE WITH HIGHWAY STANDARD 701321.
5. ALL TRAFFIC SIGNAL SECTIONS SHALL HAVE 12" DIAMETER LED LENSES.
6. THE TEMPORARY TRAFFIC SIGNAL HEADS SHALL BE PLACED AT THE LOCATIONS INDICATED ON THE PLAN SHEETS OR DIRECTED BY THE ENGINEER.
7. THE TEMPORARY TRAFFIC SIGNAL INSTALLATION SHALL CONFORM TO ALL MUTCD REQUIREMENTS.
8. A MINIMUM OF 2 SIGNAL HEADS ARE REQUIRED PER APPROACH.
9. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH BACKPLATES.
10. ALL LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO COMPLY WITH THESE REQUIREMENTS AND PLAN SHEET DETAILS SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR THE TEMPORARY BRIDGE TRAFFIC SIGNALS. THERE WILL BE NO ADDITIONAL COMPENSATION.

STAGE I

PINNING TEMPORARY CONCRETE BARRIER
STA. 116+43.9 TO 116+93.1
= 15.0 EACH

BEGIN TEMPORARY CONCRETE BARRIER
STA. 115+46.4, 7.5' RT (1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

STAGE II TRAFFIC LANE
SEE STAGING TYPICAL FOR WIDTH

STA. 117+71.2

STA. 118+21.2

STAGE II

TEMP PAVEMENT MARKING
LINE 4" - TYPE IV TAPE
(1:12 TAPER)

IMPACT ATTENUATORS, TEMPORARY
(NON-REDIRECTIVE, NARROW), TEST LEVEL 3

END TEMPORARY CONCRETE BARRIER
STA. 118+33.3, 7.5' RT (1:12 TAPER)

LEGEND

- TRAFFIC SIGNALS
- IMPACT ATTENUATORS
- PAVEMENT MARKING TAPE, TYPE IV 24"
- TEMPORARY CONCRETE BARRIER
- WORK AREA

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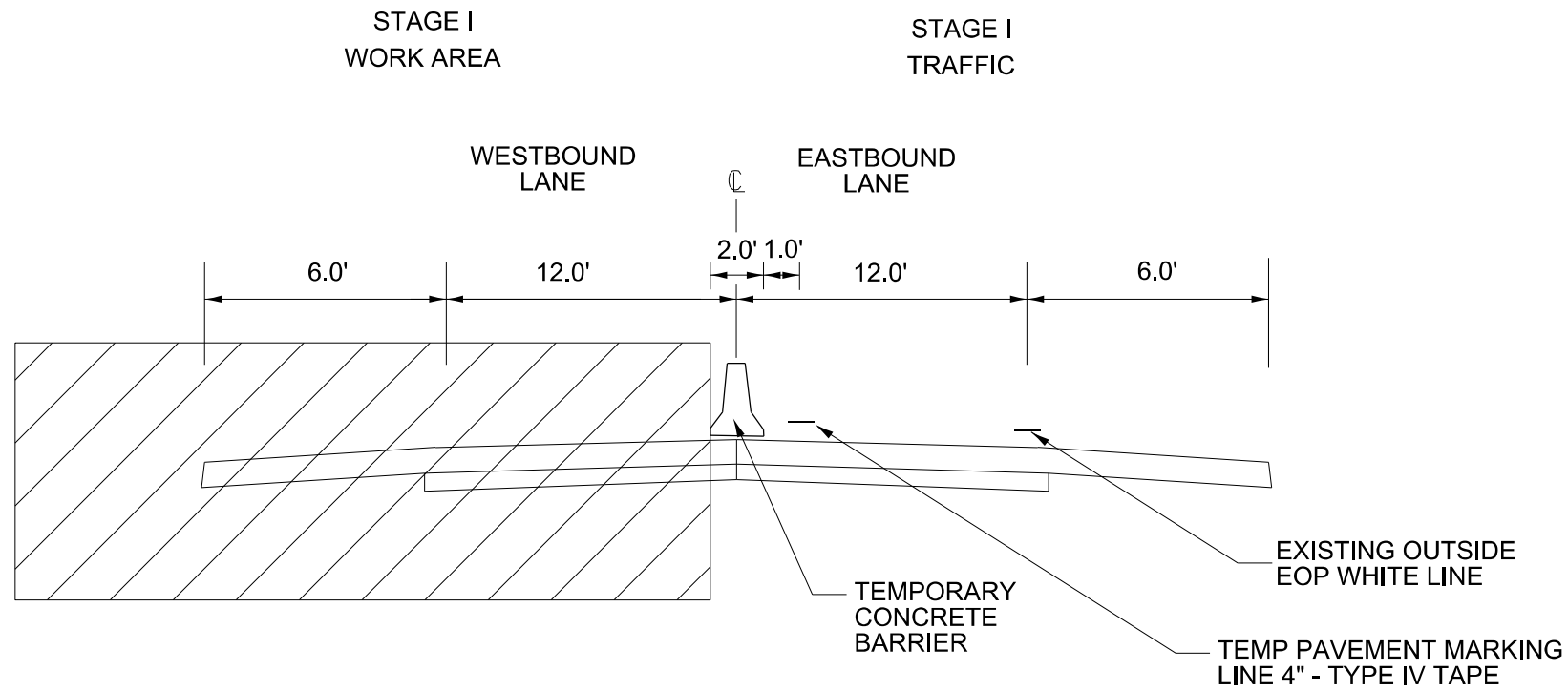
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	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

10' X 7' CULVERT STAGING DETAILS

SCALE: SHEET 3 OF 4 SHEETS STA. TO STA.

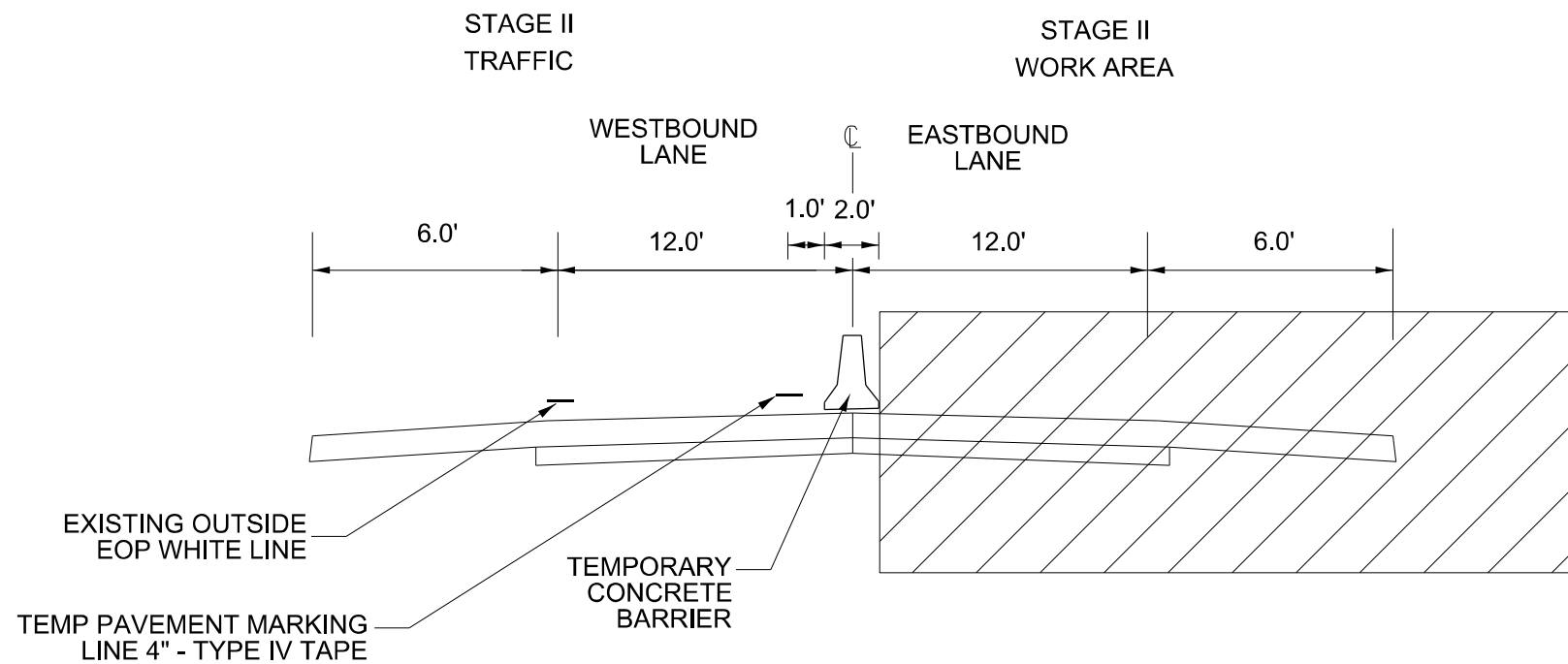
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	18
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



STAGING TYPICAL SECTION

STAGE I

(Looking East)



STAGING TYPICAL SECTION

STAGE II

(Looking East)

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	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

10' X 7' CULVERT STAGING DETAILS

SCALE: SHEET 4 OF 4 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	19
CONTRACT NO. 68G66			ILLINOIS FED. AID PROJECT	

Existing Structure: The structure is a double 4' x 4' reinforced concrete box culvert constructed circa 1933 and rehabilitated circa 1975.

Culvert extension work will be done under staged closures. See Roadway Plans.

Salvage: None.

DESIGN STRESSES

PRECAST UNITS

$f'_c = 5,000 \text{ psi}$
 $f_y = 65,000 \text{ psi}$ (Welded Wire Reinforcement)

FIELD UNITS

$f'_c = 3,500 \text{ psi}$
 $f_y = 60,000 \text{ psi}$ (Reinforcement)

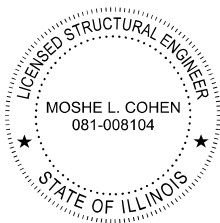
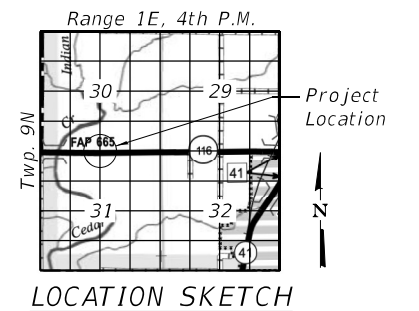
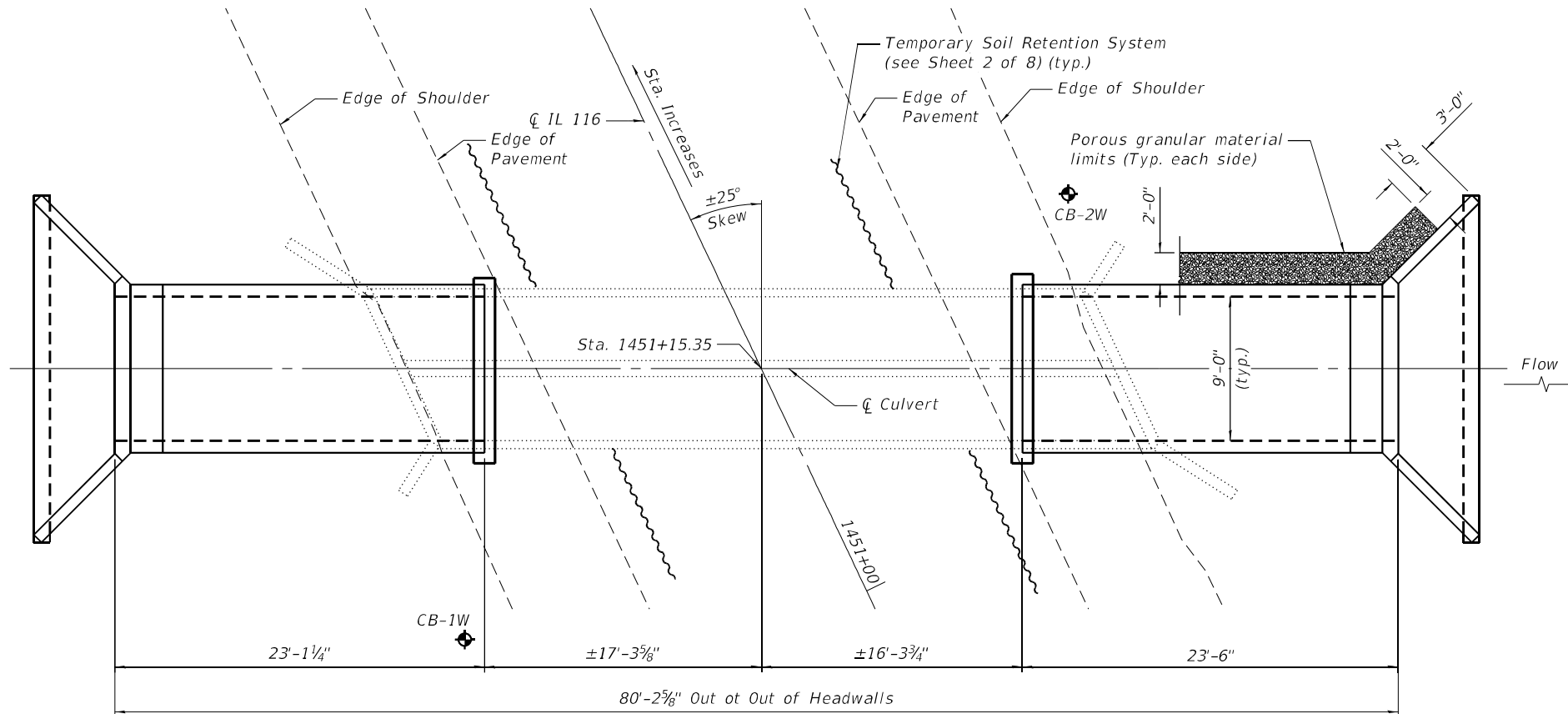
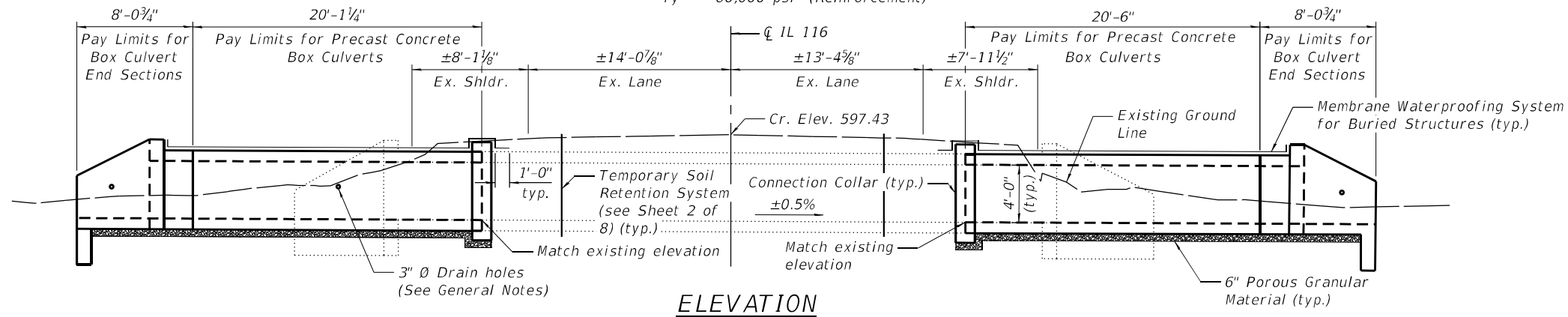
DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge
 Design Specifications, 9th Edition

LOADING HL-93

INDEX OF SHEETS

- 1 - General Plan & Elevation
- 2 - General Data
- 3 - Culvert Removal Details
- 4-5 - Precast Concrete Box Culvert Apron End Section Details
- 6 - Connection Collar Details
- 7-8 - Boring Logs



Signed: *Moshe L. Cohen*
 Dated: 2023-08-16
 Illinois Structural Engineer
 No. 081-008104
 License Expires: 11-30-2024

GENERAL PLAN AND ELEVATION
IL RTE. 116 OVER UNNAMED DITCH
F.A.P. RTE. 665 SEC. (140,142)CLV
KNOX COUNTY
STATION 1451+15.35
STRUCTURE NO. 048-1005

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

USER NAME =	DESIGNED - MLC	REVISED -
PLOT SCALE =	CHECKED - MMC	REVISED -
PLOT DATE =	DRAWN - MLC	REVISED -
	CHECKED - MMC	REVISED -

SHEET 1 OF 8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	20
CONTRACT NO. 68G66				

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GENERAL NOTES

Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contactor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

The design fill height for this box shall be determined by the contractor based on field measurements and accepted by the engineer. The precast box culvert sections shall conform to the requirements of ASTM C 1577.

Drain holes shall be provided on exterior culvert walls for each precast box segment with a clear rise greater than 3 ft. The drain hole shall be located within 1/3 of the clear rise of the box culvert, shall not intercept the haunch, and shall conform to the requirements of Article 503.11 of the Standard Specification.

Nonwoven geotextile fabric shall conform to the requirements of Art. 1080.01 of the Standard Specifications. The minimum weight of the fabric shall be 6 ounces per square yard.

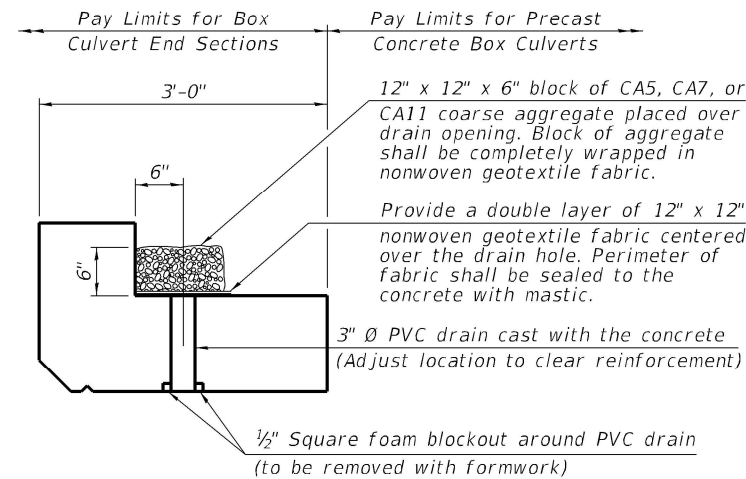
Precast concrete box culverts and box culvert end sections shall be backfilled with Porous Granular Embankment in the required excavation areas on the sides of the box culvert from the top of the box culvert to the bottom of the box culvert. This area of PGE is included in the Porous Granular Embankment pay item. The 6-inch thick layer of porous granular material required under the precast concrete box culvert, according to Section 540.06 of the standard specifications, shall also apply to the end sections. Cost of this porous granular material will not be paid for separately but shall be included in the unit price of the work for which it is required.

All exposed concrete edges shall have a standard 3/4" chamfer unless noted otherwise.

All construction joints shall be bonded.

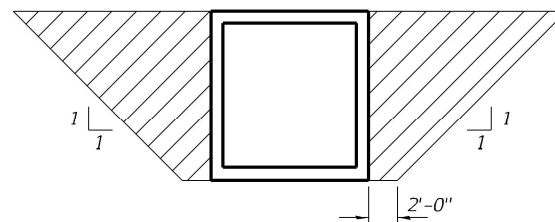
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	110
Concrete Removal	Cu. Yd.	13.7
Reinforcement Bars	Pound	2,570
Name Plates	Each	1
Temporary Soil Retention System	Sq. Ft.	207
Box Culvert End Sections, Culvert No. 1	Each	2
Concrete Box Culverts	Cu. Yd.	7.1
Precast Concrete Box Culverts 9' x 4'	Foot	41
Geocomposite Wall Drain	Sq. Yd.	81
Membrane Waterproofing System for Buried Structures	Sq. Yd.	81



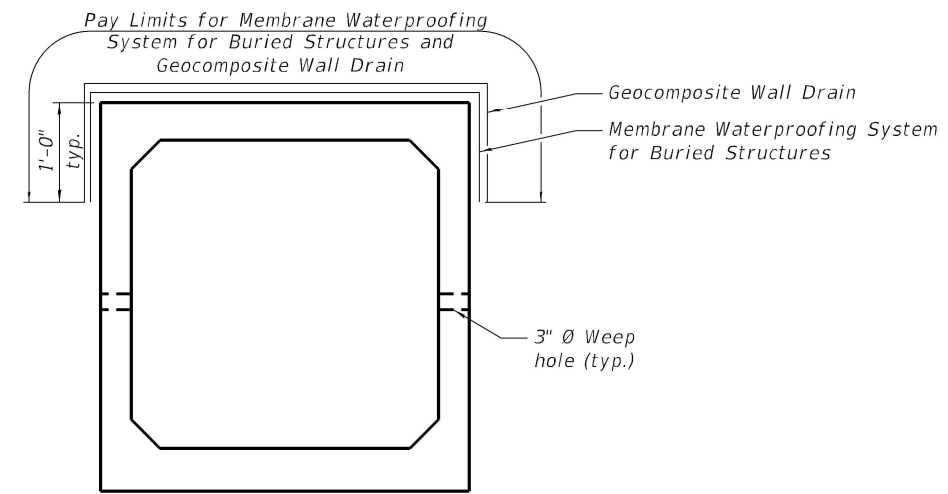
DRAIN DETAIL

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)



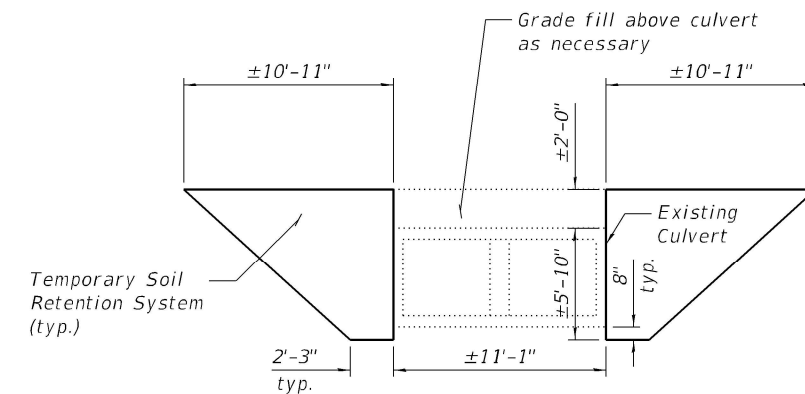
PAY LIMITS FOR POROUS GRANULAR EMBANKMENT

(Hatched area)



SECTION THRU BARREL

Showing limits of Membrane Waterproofing System for Buried Structures and Geocomposite Wall Drain.



TEMPORARY SOIL RETENTION SYSTEM

(Showing Pay Limits)

The Contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer. The Contractor's design shall incorporate all safety and strength requirements, including but not limited to those of IDOT and the Occupational Safety and Health Administration. Variations in the limits of the Temporary Soil Retention System from those shown shall not be paid; plan quantity will be considered total compensation for the amount actually furnished.

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Kaskaskia Engineering Group, LLC
Professional Engineering Group
1170 N. Main St., Suite 300
Bella Vista, Illinois 62226
618.555.2877 (Phone)
618.555.2877 (Fax)
www.kaskaskiaeng.com

USER NAME =	DESIGNED - MLC	REVISED -
PLOT SCALE =	CHECKED - MMC	REVISED -
PLOT DATE =	DRAWN - MLC	REVISED -
	CHECKED - MMC	REVISED -

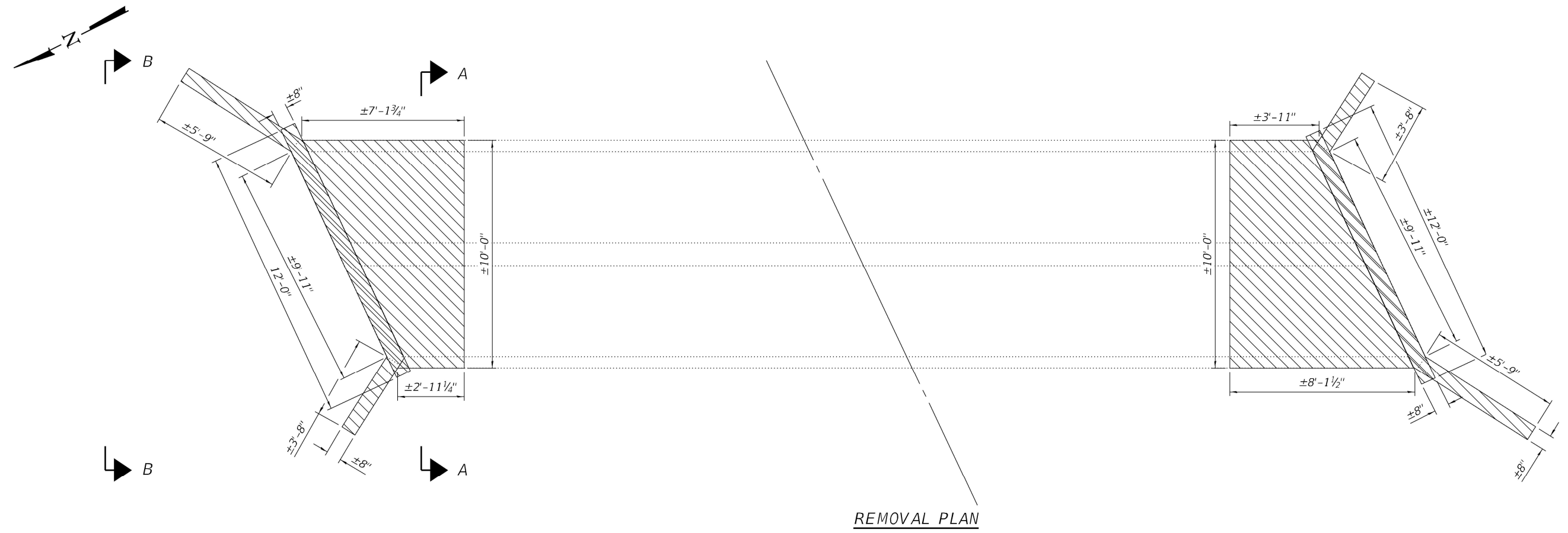
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**GENERAL DATA
STRUCTURE NO. 048-1005**

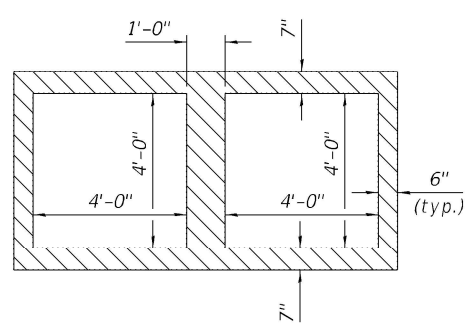
SHEET 2 OF 8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	21
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				

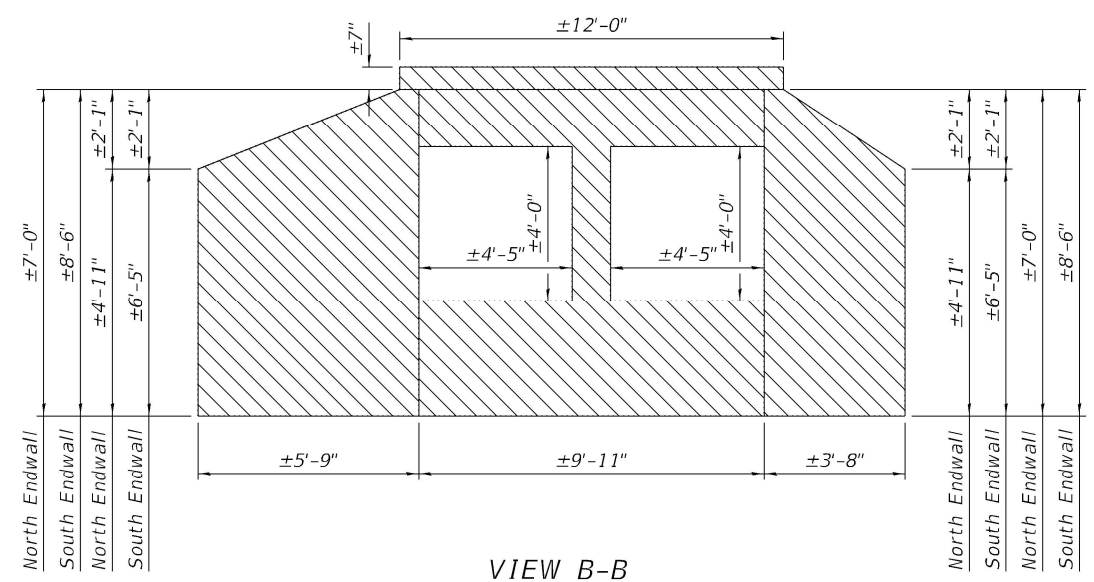
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REMOVAL PLAN



SECTION A-A



VIEW B-B

- Concrete Removal

BILL OF MATERIAL

Item	Unit	Total
Concrete Removal	Cu. Yd.	13.6

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 Engineering Group, LLC
 1127 N. Main St., Suite 100
 Moline, IL 61704
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 309.335.2877
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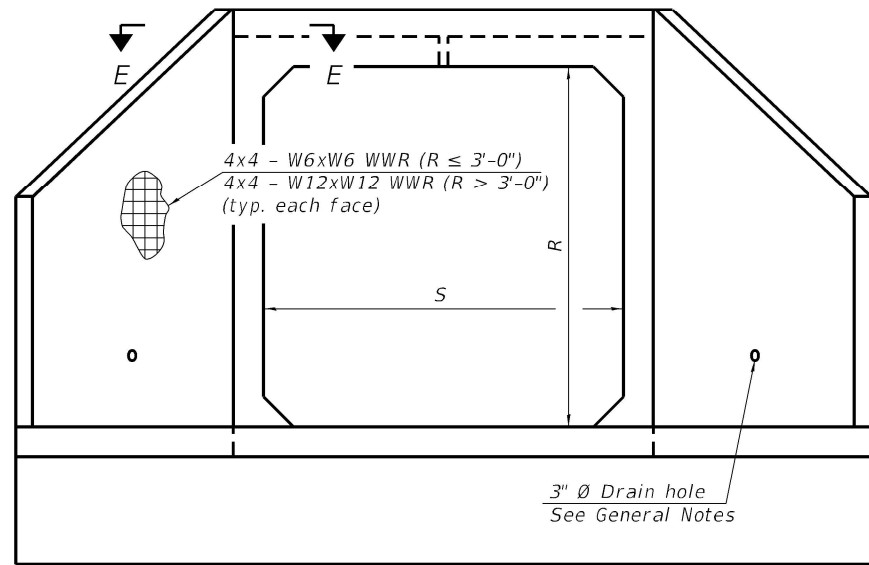
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	CHECKED - MMC	REVISED -
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PLOT DATE =	CHECKED - MMC	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

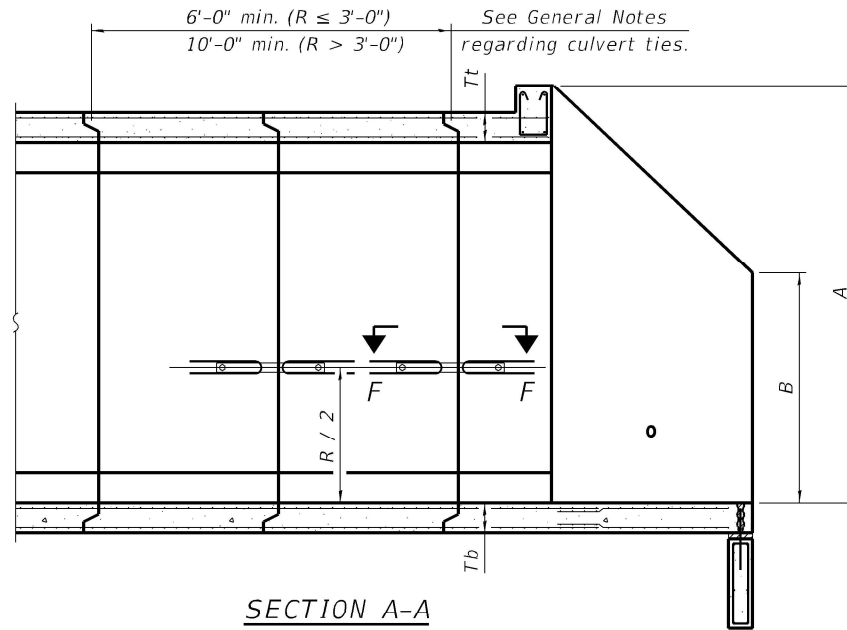
CULVERT REMOVAL DETAILS
 STRUCTURE NO. 048-1005

SHEET 3 OF 8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	22
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



END VIEW



SECTION A-A

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. End sections will be paid for at the contract unit price per each for Box Culvert End Sections.

The Contractor may furnish the end section as a single precast concrete piece or construct the end section in the field using cast-in-place (CIP) construction. For CIP construction, the bottom slab thickness shall be increased by 2" and the clear cover to the bottom mat of reinforcement shall be increased to 3".

Box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements for ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

The number of culvert ties shall be sufficient to engage the minimum length of culvert barrel shown within the pay limits for Precast Concrete Box Culverts and will be dependent upon the length of box culvert segments furnished by the Contractor. Culvert ties are not required for box culverts having a rise (R) less than or equal to 3 ft and a span (S) greater than or equal to 10 ft.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the unit price for Box Culvert End Sections of the culvert number specified.

Shop drawings that detail slab thickness and reinforcement layout for the Box Culvert End Sections shall be provided to the Engineer for review and approval. Reinforcement bars not detailed herein shall be detailed with a clear distance at the end of the reinforcement not less than 1/2" nor more than 2". For the precast option, it shall be the Contractor's responsibility for determining a method of handling and a construction procedure shall be included in the shop drawings. The Contractor shall determine and detail in the shop drawings any necessary strengthening or stiffening provisions necessary to handle the precast segment. Any required modifications shall be at no extra charge.

The Contractor may use reinforcement bars in lieu of welded wire reinforcement (WWR). Reinforcement bars shall be limited to the sizes of #3 through #5 bars, a maximum spacing of the lesser of 8" or the member thickness, and shall result in an area of reinforcement equal to or greater than that provided by the WWR. Minimum lap lengths detailed herein are applicable to WWR and reinforcement bars.

Reinforcement (circumferential and longitudinal) in the culvert barrel portion of the end section being lapped with reinforcement from the wingwalls or bottom slab of the end section shall not be less than that required by ASTM C 1577 for the design fill height or the reinforcement detailed for the end section, whichever is greater.

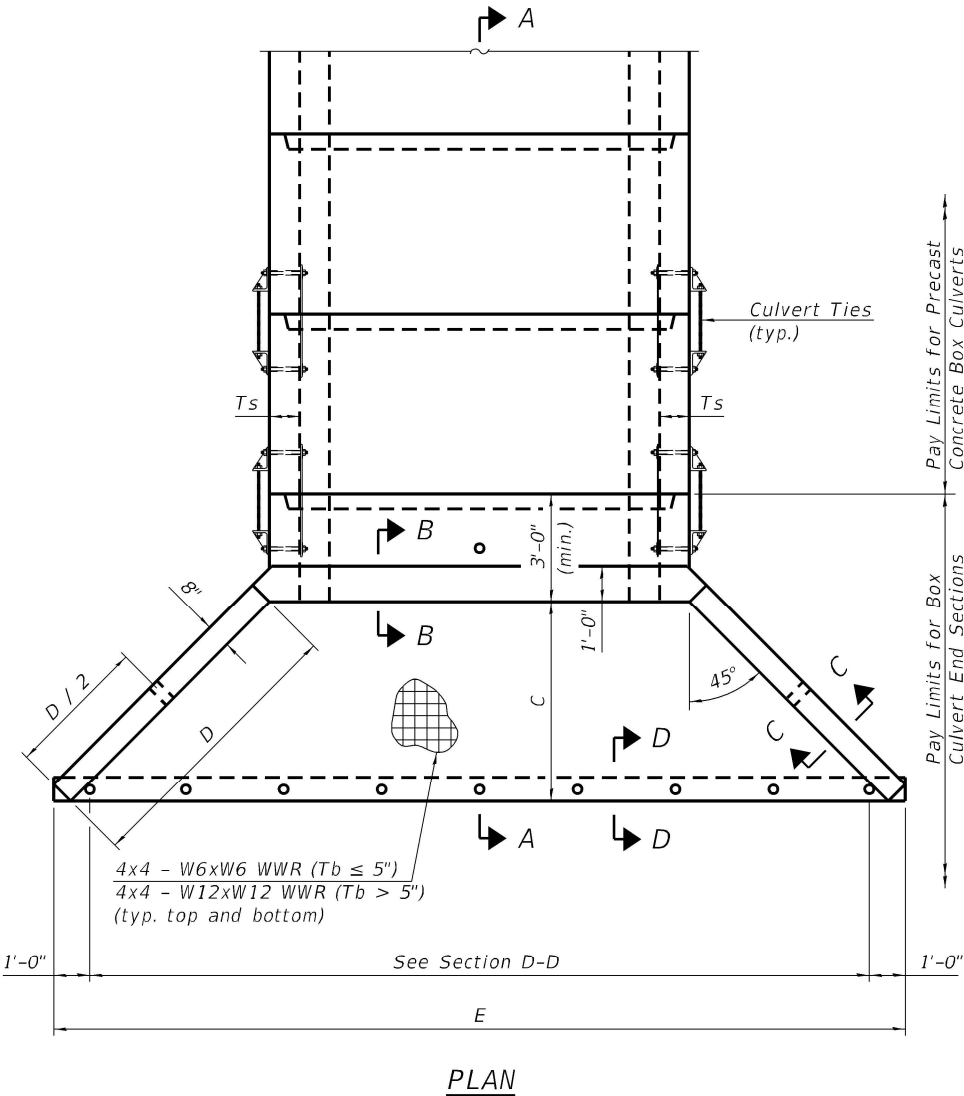
One drain hole shall be provided in each wingwall for end sections of box culverts having an opening with a clear rise greater than 3 ft. The drain hole shall be located within the lower 1/3 of the clear rise of the box culvert and shall conform to the requirements of Article 503.11 of the Standard Specifications.

APRON END SECTION DIMENSIONS

Span (S)	Rise (R)	Tl	Tb	Ts	A	B	C	D	E	Concrete Cu. Yd.	Culvert Ties Required
3'-0"	2'-0"	7"	6"	4"	3'-4"	2'-2"	2'-10 5/8"	4'-1"	10'-4 5/8"	2.8	Yes
3'-0"	2'-0"	4"	4"	4"	3'-1"	2'-1"	2'-7 1/8"	3'-9"	9'-11"	2.3	Yes
3'-0"	3'-0"	7"	6"	4"	4'-4"	2'-8"	3'-10 3/8"	5'-6"	12'-4 3/8"	3.7	Yes
3'-0"	3'-0"	4"	4"	4"	4'-1"	2'-7"	3'-7 3/8"	5'-2"	11'-11"	3.1	Yes
4'-0"	2'-0"	7.5"	6"	5"	3'-4 1/2"	2'-2 1/2"	2'-11 3/8"	4'-2"	11'-8"	3.3	Yes
4'-0"	2'-0"	5"	5"	5"	3'-2"	3'-2"	2'-8 1/2"	3'-10"	11'-2 3/8"	2.8	Yes
4'-0"	3'-0"	7.5"	6"	5"	4'-4 1/2"	2'-8 1/2"	3'-11 3/8"	5'-7"	13'-8 1/8"	4.2	Yes
4'-0"	3'-0"	5"	5"	5"	4'-2"	2'-7"	3'-8 1/2"	5'-3"	13'-2 3/8"	3.7	Yes
4'-0"	4'-0"	7.5"	6"	5"	5'-4 1/2"	3'-2 1/2"	4'-11 3/8"	7'-0"	15'-8 1/8"	5.3	Yes
4'-0"	4'-0"	5"	5"	5"	5'-2"	3'-1"	4'-8 3/8"	6'-8"	15'-2 1/2"	4.7	Yes
5'-0"	2'-0"	8"	7"	6"	3'-5"	2'-3"	2'-11 3/8"	4'-2"	12'-10"	3.9	Yes
5'-0"	2'-0"	6"	6"	6"	3'-3"	2'-2"	2'-10"	4'-0"	12'-7 1/4"	3.5	Yes
5'-0"	3'-0"	8"	7"	6"	4'-5"	2'-9"	3'-11 3/8"	5'-7"	14'-11 1/8"	4.9	Yes
5'-0"	3'-0"	6"	6"	6"	4'-3"	2'-8"	3'-10"	5'-5"	14'-7 1/4"	4.5	Yes
5'-0"	4'-0"	8"	7"	6"	5'-5"	3'-3"	4'-11 3/8"	7'-0"	16'-10 1/8"	6.1	Yes
5'-0"	4'-0"	6"	6"	6"	5'-3"	3'-2"	4'-9 1/4"	6'-9"	16'-5 7/8"	5.5	Yes
5'-0"	5'-0"	8"	7"	6"	6'-5"	3'-9"	5'-11 3/8"	8'-5"	18'-10 1/8"	7.4	Yes
5'-0"	5'-0"	6"	6"	6"	6'-3"	3'-8"	5'-9 1/4"	8'-2"	18'-5 7/8"	6.8	Yes
6'-0"	2'-0"	8"	7"	7"	3'-5"	2'-3"	2'-11 3/8"	4'-2"	14'-0"	4.3	Yes
6'-0"	2'-0"	7"	7"	7"	3'-4"	2'-2"	2'-10 3/8"	4'-1"	13'-10 3/8"	4.2	Yes
6'-0"	3'-0"	8"	7"	7"	4'-5"	2'-9"	3'-11 3/8"	5'-7"	16'-0 1/8"	5.4	Yes
6'-0"	3'-0"	7"	7"	7"	4'-4"	2'-8"	3'-10 3/8"	5'-6"	15'-10 3/8"	5.2	Yes
6'-0"	4'-0"	8"	7"	7"	5'-5"	3'-3"	4'-11 3/8"	7'-0"	18'-0 1/8"	6.5	Yes
6'-0"	4'-0"	7"	7"	7"	5'-4"	3'-2"	4'-10 3/8"	6'-11"	17'-10 3/4"	6.5	Yes
6'-0"	5'-0"	8"	7"	7"	6'-5"	3'-9"	5'-11 3/8"	8'-5"	20'-0 1/8"	8.0	Yes
6'-0"	5'-0"	7"	7"	7"	6'-4"	3'-8"	5'-10 3/4"	8'-4"	19'-10 3/4"	7.8	Yes
6'-0"	6'-0"	8"	7"	7"	7'-5"	4'-3"	6'-11 1/2"	9'-10"	22'-0 1/4"	9.5	Yes
6'-0"	6'-0"	7"	7"	7"	7'-4"	4'-2"	6'-10 3/4"	9'-9"	21'-10 3/4"	9.3	Yes
7'-0"	2'-0"	8"	8"	8"	3'-5"	2'-3"	2'-11 3/8"	4'-2"	15'-2"	4.9	Yes
7'-0"	3'-0"	8"	8"	8"	4'-5"	2'-9"	3'-11 3/8"	5'-7"	17'-2 1/8"	6.1	Yes
7'-0"	4'-0"	8"	8"	8"	5'-5"	3'-3"	4'-11 3/8"	7'-0"	19'-2 1/8"	7.4	Yes
7'-0"	5'-0"	8"	8"	8"	6'-5"	3'-9"	5'-11 3/8"	8'-5"	21'-2 1/8"	8.9	Yes
7'-0"	6'-0"	8"	8"	8"	7'-5"	4'-3"	6'-11 1/2"	9'-10"	23'-2 1/4"	10.6	Yes
8'-0"	2'-0"	8"	8"	8"	3'-5"	2'-3"	2'-11 3/8"	4'-2"	16'-2"	5.3	Yes
8'-0"	3'-0"	8"	8"	8"	4'-5"	2'-9"	3'-11 3/8"	5'-7"	18'-2 1/8"	6.5	Yes
8'-0"	4'-0"	8"	8"	8"	5'-5"	3'-3"	4'-11 3/8"	7'-0"	20'-2 1/8"	7.8	Yes
8'-0"	5'-0"	8"	8"	8"	6'-5"	3'-9"	5'-11 3/8"	8'-5"	22'-2 1/8"	9.3	Yes
8'-0"	6'-0"	8"	8"	8"	7'-5"	4'-3"	6'-11 1/2"	9'-10"	24'-2 1/4"	11.0	Yes
9'-0"	2'-0"	9"	9"	9"	3'-6"	2'-3"	3'-0 3/4"	4'-4"	17'-6 7/8"	6.2	Yes
9'-0"	3'-0"	9"	9"	9"	4'-6"	2'-9"	4'-0 3/4"	5'-9"	19'-6 1/8"	7.5	Yes
9'-0"	4'-0"	9"	9"	9"	5'-6"	3'-3"	5'-0 3/4"	7'-2"	21'-6 7/8"	9.0	Yes
9'-0"	5'-0"	9"	9"	9"	6'-6"	3'-9"	6'-0 7/8"	8'-7"	23'-7"	10.6	Yes
9'-0"	6'-0"	9"	9"	9"	7'-6"	4'-3"	7'-0 1/8"	9'-11"	25'-5 5/8"	12.4	Yes
10'-0"	2'-0"	10"	10"	10"	3'-7"	2'-4"	3'-1 1/2"	4'-5"	18'-10 1/4"	7.1	No
10'-0"	3'-0"	10"	10"	10"	4'-7"	2'-10"	4'-1 1/2"	5'-10"	20'-10 1/4"	8.6	No
10'-0"	4'-0"	10"	10"	10"	5'-7"	3'-4"	5'-1 1/2"	7'-3"	22'-10 3/8"	10.2	Yes
10'-0"	5'-0"	10"	10"	10"	6'-7"	3'-10"	6'-1 1/2"	8'-8"	24'-10 3/8"	12.0	Yes
10'-0"	6'-0"	10"	10"	10"	7'-7"	4'-4"	7'-1 1/2"	10'-1"	26'-10 3/8"	13.9	Yes
11'-0"	2'-0"	11"	11"	11"	3'-8"	2'-4"	3'-2 3/8"	4'-7"	20'-3 3/8"	8.2	No
11'-0"	3'-0"	11"	11"	11"	4'-8"	2'-10"	4'-2 3/8"	6'-0"	22'-3 3/8"	9.8	No
11'-0"	4'-0"	11"	11"	11"	5'-8"	3'-4"	5'-2 3/4"	7'-4"	24'-1 3/4"	11.5	Yes
11'-0"	5'-0"	11"	11"	11"	6'-8"	3'-10"	6'-2 1/4"	8'-9"	26'-1 3/4"	13.3	Yes
11'-0"	6'-0"	11"	11"	11"	7'-8"	4'-4"	7'-2 1/4"	10'-2"	28'-1 1/8"	15.5	Yes
12'-0"	2'-0"	12"	12"	12"	3'-9"	2'-5"	3'-3 3/8"	4'-8"	21'-6 1/2"	9.3	No
12'-0"	3'-0"	12"	12"	12"	4'-9"	2'-11"	4'-3 3/8"	6'-1"	23'-6 1/2"	11.1	No
12'-0"	4'-0"	12"	12"	12"	5'-9"	3'-5"	5'-3 3/8"	7'-6"	25'-6 3/8"	13.0	Yes
12'-0"	5'-0"	12"	12"	12"	6'-9"	3'-11"	6'-3 3/8"	8'-11"	27'-6 3/8"	14.1	Yes
12'-0"	6'-0"	12"	12"	12"	7'-9"	4'-5"	7'-3 3/8"	10'-4"	29'-6 3/8"	17.4	Yes

Note:

Two sets of apron end section dimensions are shown above for some box culvert sizes due to the top and bottom slabs having different thicknesses per ASTM C 1577 for design fill heights less than 2 ft. (Sheet 1 of 2)



PLAN

SCB-AES

2-17-2017

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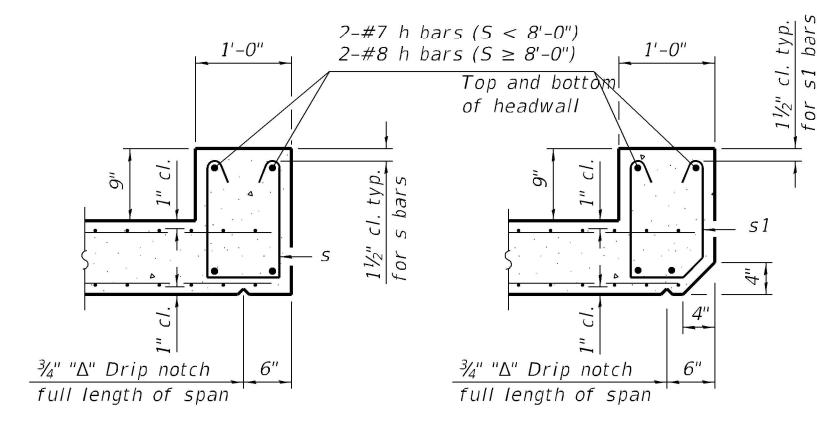
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

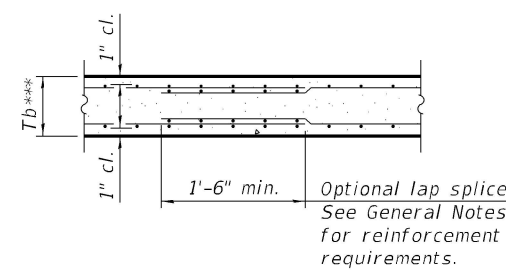
PRECAST CONCRETE BOX CULVERT APRON END SECTION DETAILS
STRUCTURE NO. 048-1005

SHEET 4 OF 8 SHEETS

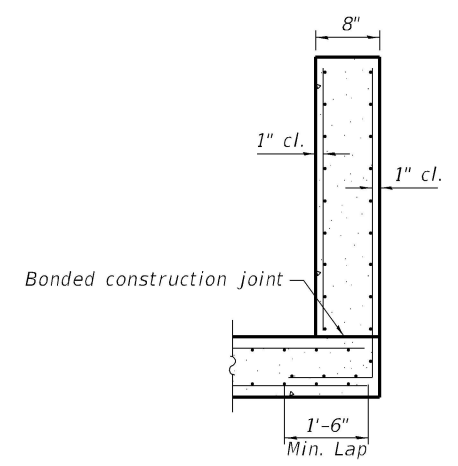
F.A.P. RTE. 665	SECTION (140,142)CLV	COUNTY KNOX	TOTAL SHEETS 38	SHEET NO. 23
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



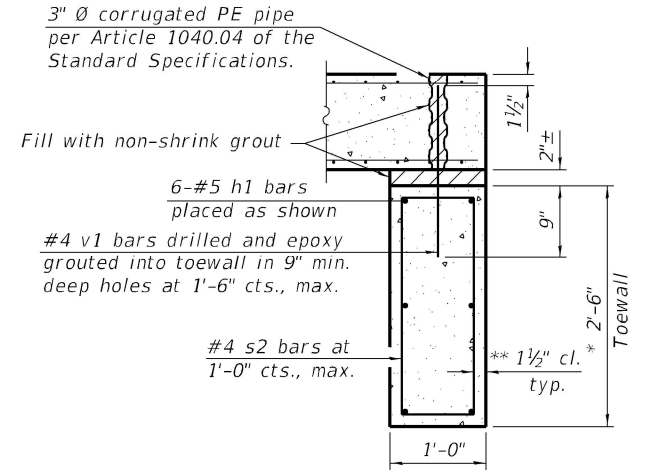
SECTION B-B (Top slab at downstream end)
SECTION B-B (Top slab at upstream end)



SECTION B-B (Bottom Slab)

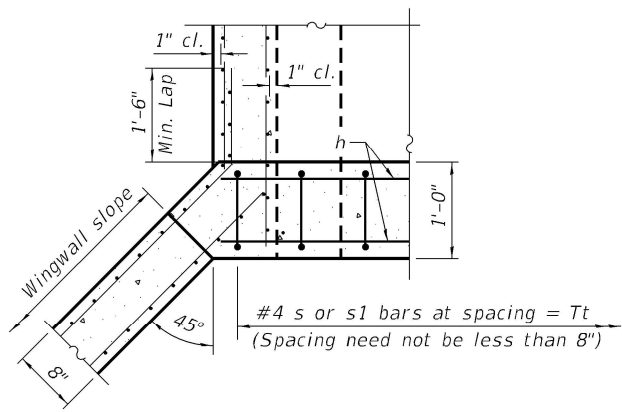


SECTION C-C

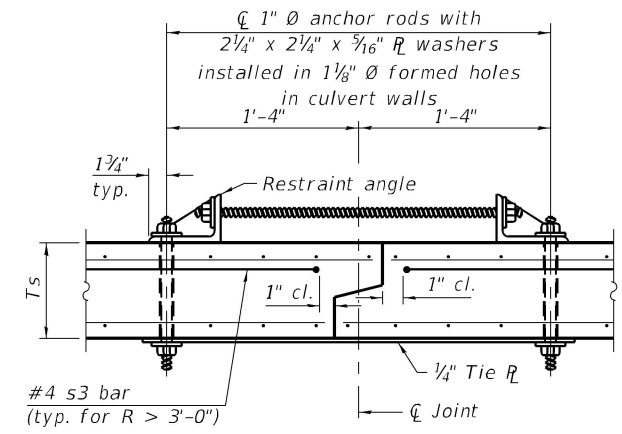


SECTION D-D

*** This dimension shall be increased by 2" for CIP construction.



SECTION E-E



SECTION F-F (Showing culvert tie details)

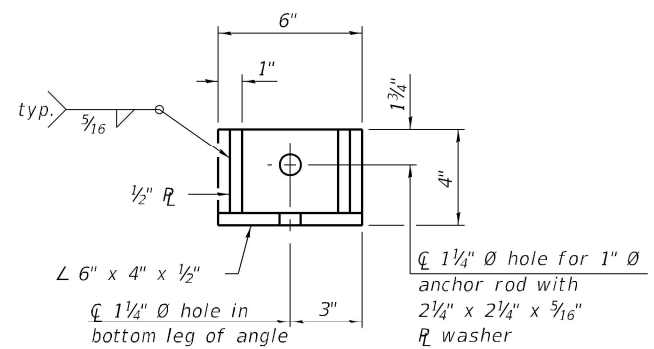
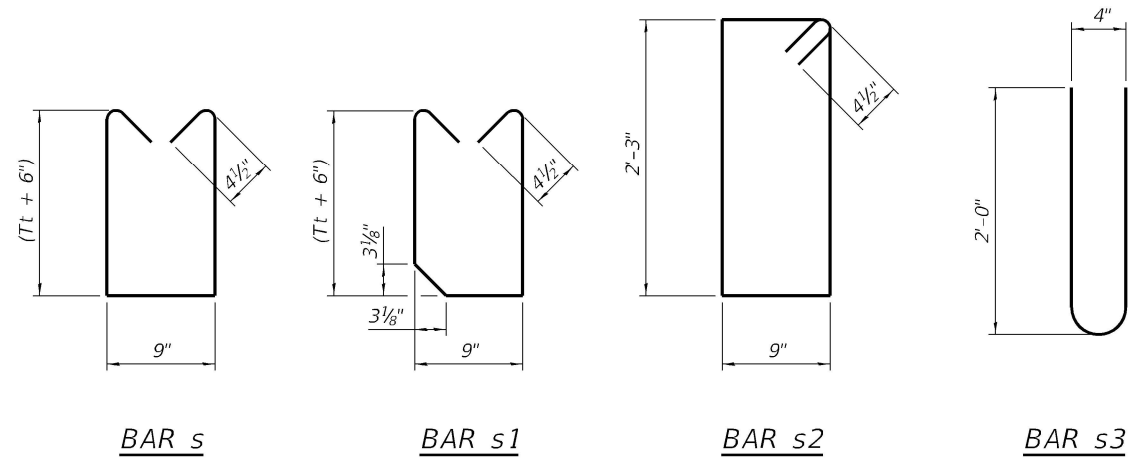
TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
2. Backfill accordingly and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.

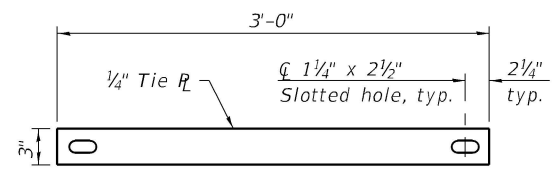
* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.

Notes:
1" Ø anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for the tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2 1/4" x 2 1/4" x 3/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional 1/2 turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.



RESTRAINT ANGLE DETAIL



TIE PLATE DETAIL

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2-17-2017

(Sheet 2 of 2)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PRECAST CONCRETE BOX CULVERT APRON END SECTION DETAILS
STRUCTURE NO. 048-1005

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	24
CONTRACT NO. 68G66				

SHEET 5 OF 8 SHEETS

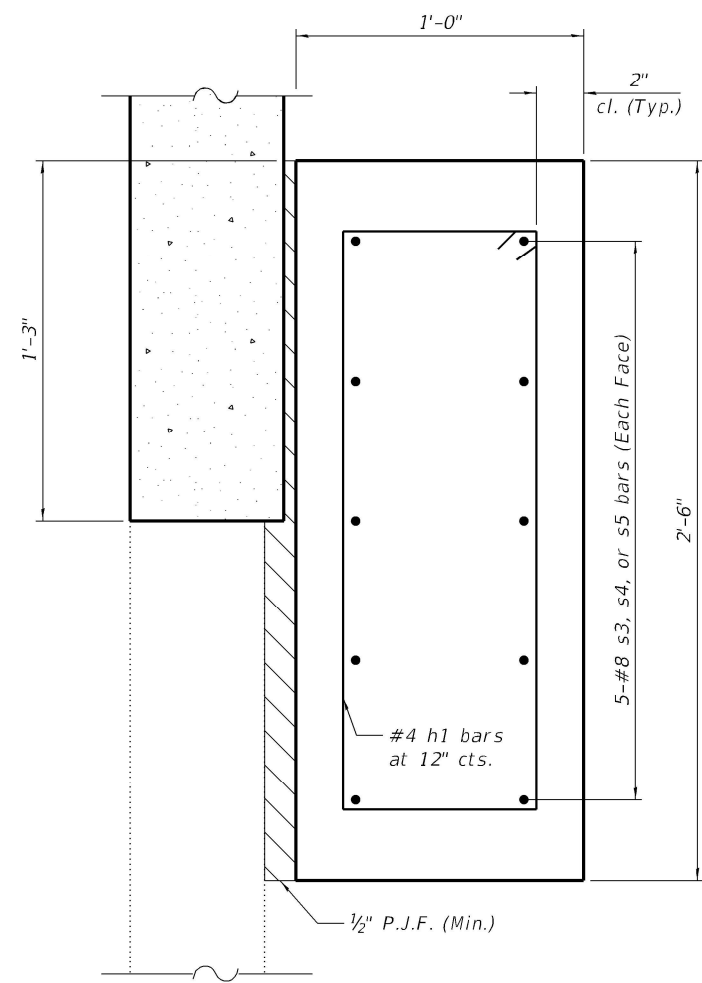
ILLINOIS FED. AID PROJECT

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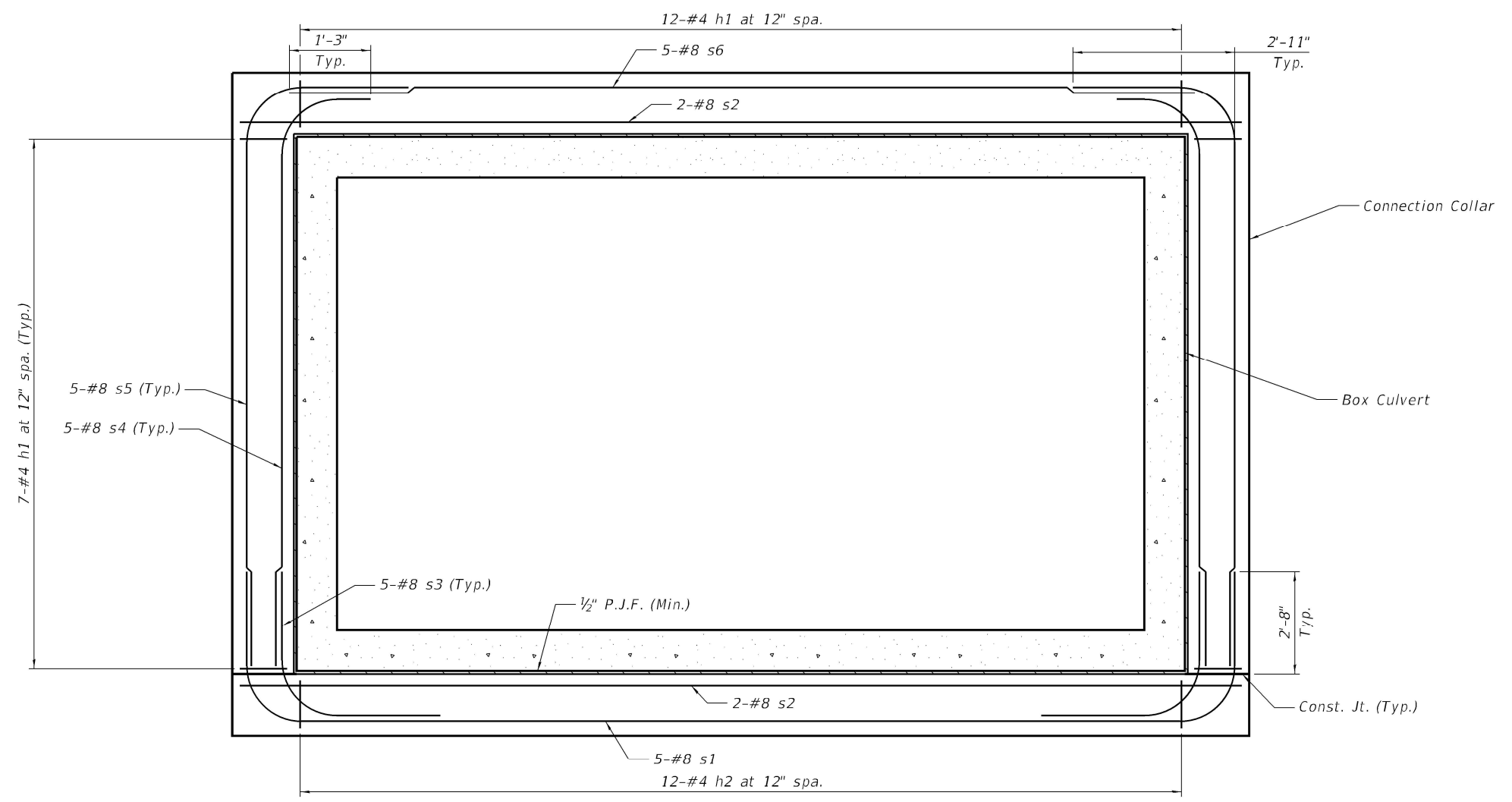
Kaskaskia
Engineering Group, LLC
Professional Engineering Firm
11700 N. 11th St.
Moline, IL 61704
314.869.9111
www.kaskaskiaeng.com

USER NAME =	DESIGNED - MLC	REVISED -
PLOT SCALE =	CHECKED - MMC	REVISED -
PLOT DATE =	DRAWN - MLC	REVISED -
	CHECKED - MMC	REVISED -

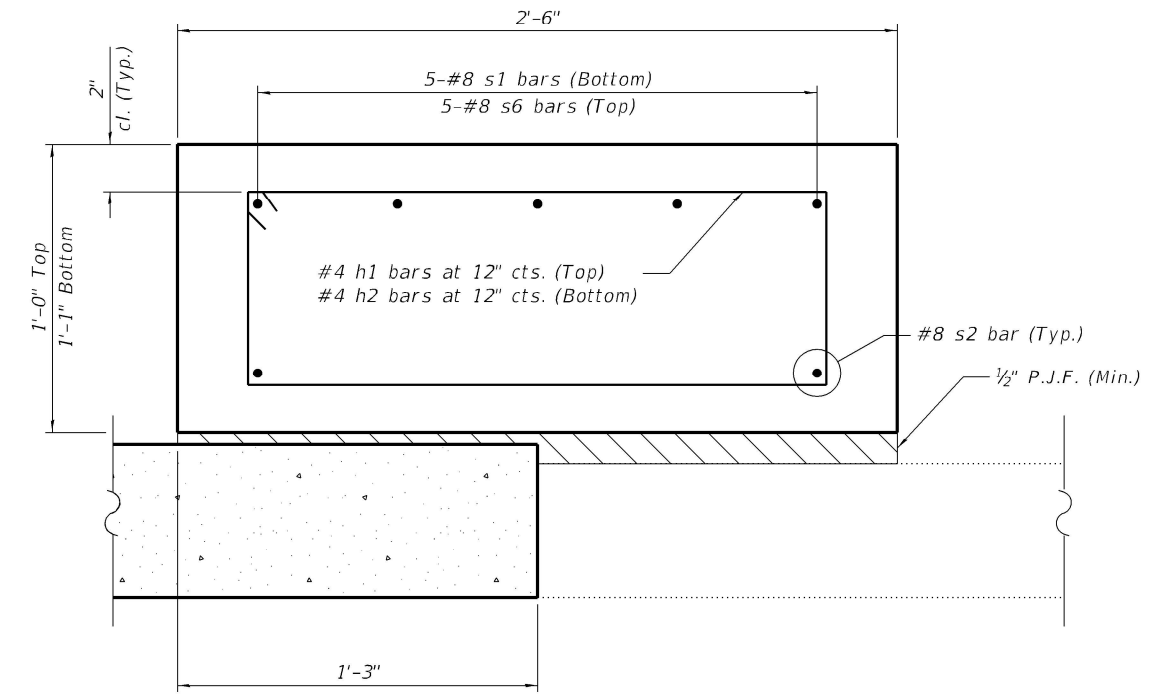
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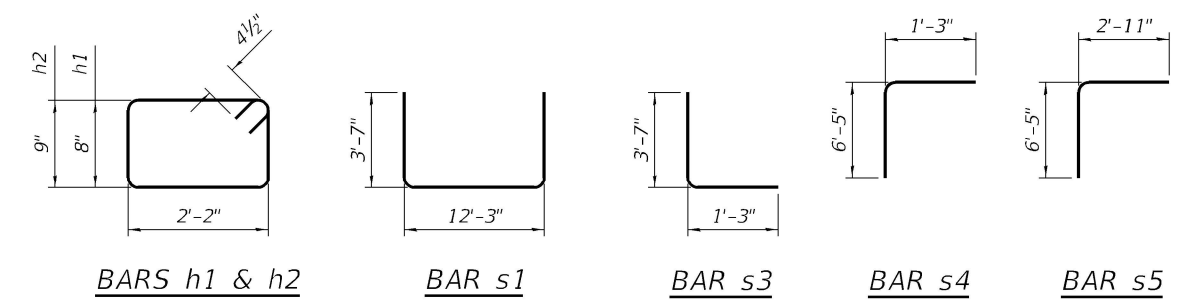
SECTION THRU SIDEWALL



CONNECTION COLLAR ELEVATION



SECTION THRU TOP AND BOTTOM SLAB



BILL OF MATERIAL
 (Two Collars)

Bar	No.	Size	Length	Shape
h1	52	#4	6'-5"	□
h2	24	#4	6'-7"	□
s1	10	#8	19'-5"	U
s2	8	#8	12'-3"	U
s3	20	#8	4'-10"	L
s4	20	#8	7'-8"	L
s5	20	#8	9'-4"	L
s6	10	#8	11'-0"	U
Reinforcement Bars			Pound	2,570
Concrete Box Culverts			Cu. Yd.	7.1

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

CONNECTION COLLAR DETAILS
 STRUCTURE NO. 048-1005

SHEET 6 OF 8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	25
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				

USER NAME	DESIGNED	REVISIONS
MLC	MLC	-
MMC	MMC	-
MLC	MLC	-
MMC	MMC	-



SOIL BORING LOG

ROUTE FAP 665 (IL 116) DESCRIPTION Structure boring for culvert LOGGED BY Maria Rojo

SECTION 140 and 142 LOCATION IL 116 west of IL 41, SEC. 30, TWP. 9 N, RNG. 1 E, 4th PM,

Latitude 40.729320, Longitude -90.434831

COUNTY Knox DRILLING METHOD HSA HAMMER TYPE Automatic

STRUCT. NO.	D	B	U	M	Surface Water Elev.	D	B	U	M
Station	E	L	C	O	ft	E	L	C	O
	P	O	S	I	Stream Bed Elev.	P	O	S	I
	T	W	Qu	T	ft	H	S	Qu	T
BORING NO.	H	S			Groundwater Elev.:				
Station					First Encounter	ft	(/6")	(tsf)	(%)
Offset					Upon Completion	ft			
Ground Surface Elev.	ft	(ft)	(/6")	(tsf)	After	ft	(/6")	(tsf)	(%)
1451+20					601.39				
CB-1W									
1451+08					587.4				
24.0 ft LT									
601.39									
12-inch thick, dark brown SILTY CLAY LOAM; damp									
--TOPSOIL--									
Stiff to very stiff, brown and gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp									
--FILL--									
--RDR 2--									
595.39									
Stiff to very stiff, gray and brown CLAY to SILTY CLAY; damp									
--RDR 2-3--									
590.39									
Very loose to medium dense, orange brown to gray fine SAND to SANDY LOAM; damp to wet									
--RDR 2--									
582.89									
Loose, gray medium grained SAND, trace gravel; saturated									
--RDR 2--									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
 BBS, form 137 (Rev. 8-99)



SOIL BORING LOG

ROUTE FAP 665 (IL 116) DESCRIPTION Structure boring for culvert LOGGED BY Maria Rojo

SECTION 140 and 142 LOCATION IL 116 west of IL 41, SEC. 30, TWP. 9 N, RNG. 1 E, 4th PM,

Latitude 40.729320, Longitude -90.434831

COUNTY Knox DRILLING METHOD HSA HAMMER TYPE Automatic

STRUCT. NO.	D	B	U	M	Surface Water Elev.	D	B	U	M
Station	E	L	C	O	ft	E	L	C	O
	P	O	S	I	Stream Bed Elev.	P	O	S	I
	T	W	Qu	T	ft	H	S	Qu	T
BORING NO.	H	S			Groundwater Elev.:				
Station					First Encounter	ft	(/6")	(tsf)	(%)
Offset					Upon Completion	ft			
Ground Surface Elev.	ft	(ft)	(/6")	(tsf)	After	ft	(/6")	(tsf)	(%)
1451+20									
CB-1W									
1451+08					587.4				
24.0 ft LT									
601.39									
Stiff to very stiff, gray SILTY CLAY, trace gravel; damp									
--RDR 2-- (continued)									
--mud rotary below 21 ft--									
551.39									
End of Boring									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
 BBS, form 137 (Rev. 8-99)

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CHECKED - MMC	REVISOR -	
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PLOT DATE =	CHECKED - MMC	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

BORING LOGS
 STRUCTURE NO. 048-1005
 SHEET 7 OF 8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	26
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				

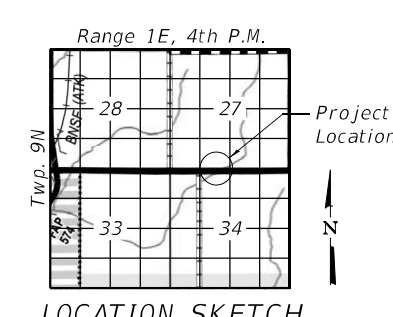
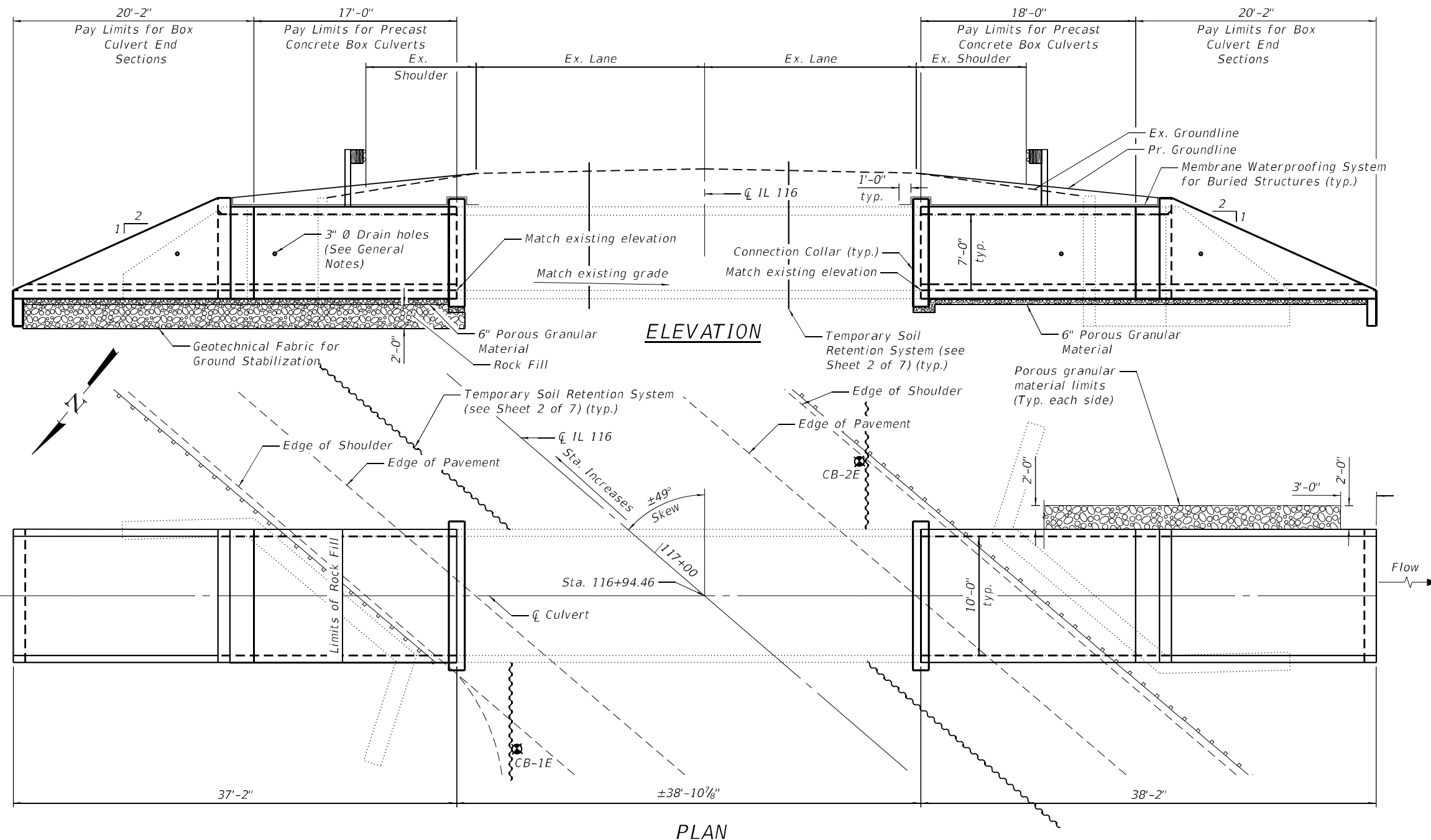
INDEX OF SHEETS

- 1 - General Plan & Elevation
- 2 - General Data
- 3 - Culvert Removal Details
- 4-5 - Single Cell Precast Box Culvert Tapered End Sections
- 6 - Connection Collar Details
- 7 - Boring Logs

Existing Structure: The structure is a 10' x 7' reinforced concrete box culvert constructed circa 1933.

Culvert extension work will be done under staged closures. See Roadway Plans.

Salvage: None.



Licensed Structural Engineer
 MOSHE L. COHEN
 081-008104
 State of Illinois

Signed: *Moshe L. Cohen*
 Dated: 2023-08-16
 Illinois Structural Engineer
 No. 081-008104
 License Expires: 11-30-2024

DESIGN SPECIFICATIONS
 2020 AASHTO LRFD Bridge Design
 Specifications, 9th Edition

LOADING HL-93

DESIGN STRESSES

PRECAST UNITS
 $f'_c = 5,000 \text{ psi}$
 $f_y = 65,000 \text{ psi}$ (Welded Wire Reinforcement)

FIELD UNITS
 $f'_c = 3,500 \text{ psi}$
 $f_y = 60,000 \text{ psi}$ (Reinforcement)

GENERAL PLAN AND ELEVATION
IL RTE. 116 OVER UNNAMED DITCH
F.A.P. RTE. 665 SEC. (140,142)CLV
KNOX COUNTY
STATION 116+94.46
STRUCTURE NO. 048-1006

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET 1 OF 7 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	28
CONTRACT NO. 68G66				

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PLOT DATE =	CHECKED - MMC	REVISED -

GENERAL NOTES

Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contactor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

The design fill height for this box shall be determined by the contractor based on field measurements and accepted by the engineer. The precast box culvert sections shall conform to the requirements of ASTM C 1577.

Drain holes shall be provided on exterior culvert walls for each precast box segment with a clear rise greater than 3 ft. The drain hole shall be located within 1/3 of the clear rise of the box culvert, shall not intercept the haunch, and shall conform to the requirements of Article 503.11 of the Standard Specification.

Nonwoven geotextile fabric shall conform to the requirements of Art. 1080.01 of the Standard Specifications. The minimum weight of the fabric shall be 6 ounces per square yard.

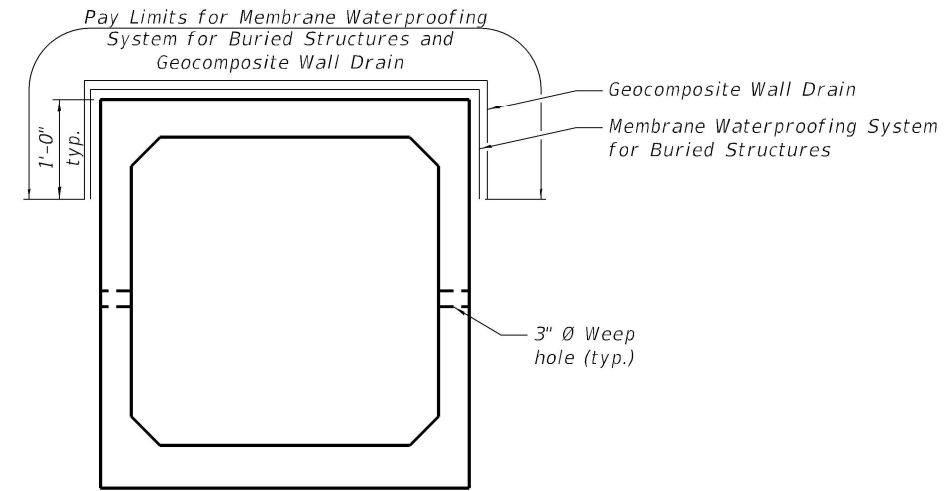
Precast concrete box culverts and box culvert end sections shall be backfilled with Porous Granular Embankment in the required excavation areas on the sides of the box culvert from the top of the box culvert to the bottom of the box culvert. This area of PGE is included in the Porous Granular Embankment pay item. The 6-inch thick layer of porous granular material required under the precast concrete box culvert, according to Section 540.06 of the standard specifications, shall also apply to the end sections. Cost of this porous granular material will not be paid for separately but shall be included in the unit price of the work for which it is required.

All exposed concrete edges shall have a standard 3/4" chamfer unless noted otherwise.

All construction joints shall be bonded.

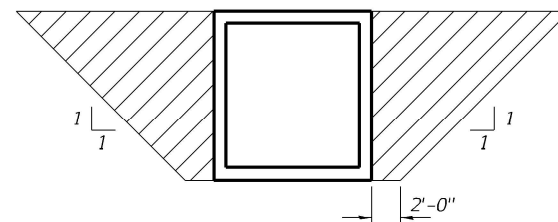
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	235
Geotechnical Fabric for Ground Stabilization	Sq. Yd.	48
Concrete Removal	Cu. Yd.	61.4
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd.	40
Reinforcement Bars	Pound	3,140
Name Plates	Each	1
Temporary Soil Retention System	Sq. Ft.	475
Box Culvert End Sections, Culvert No. 2	Each	2
Concrete Box Culverts	Cu. Yd.	8.8
Precast Concrete Box Culverts 10' x 7'	Foot	35
Geocomposite Wall Drain	Sq. Yd.	79
Membrane Waterproofing System for Buried Structures	Sq. Yd.	79
Rock Fill	Ton	41



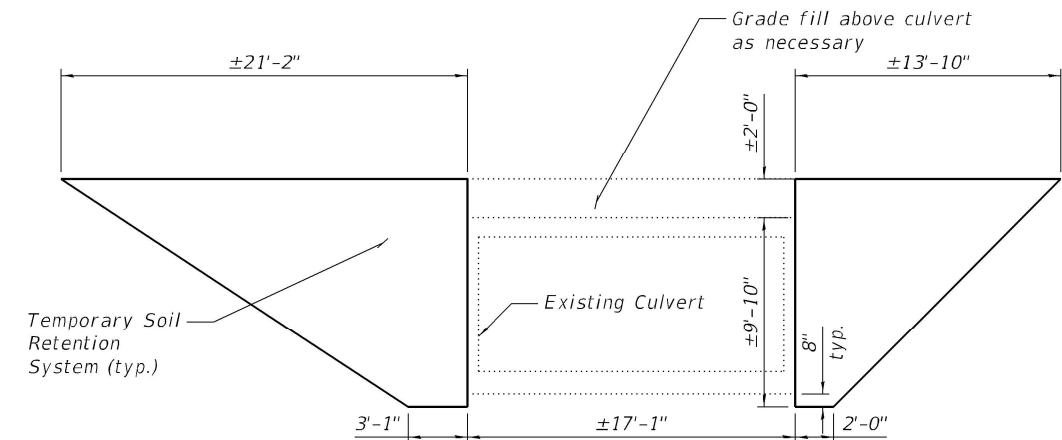
SECTION THRU BARREL

Showing limits of Membrane Waterproofing System for Buried Structures and Geocomposite Wall Drain.



PAY LIMITS FOR POROUS GRANULAR EMBANKMENT

(Hatched area)



TEMPORARY SOIL RETENTION SYSTEM

(Showing Pay Limits)

The Contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer. The Contractor's design shall incorporate all safety and strength requirements, including but not limited to those of IDOT and the Occupational Safety and Health Administration. Variations in the limits of the Temporary Soil Retention System from those shown shall not be paid; plan quantity will be considered total compensation for the amount actually furnished.

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Kaskaskia
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Professional Engineering Group
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Bella Vista, Illinois 62226
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11/27/2013
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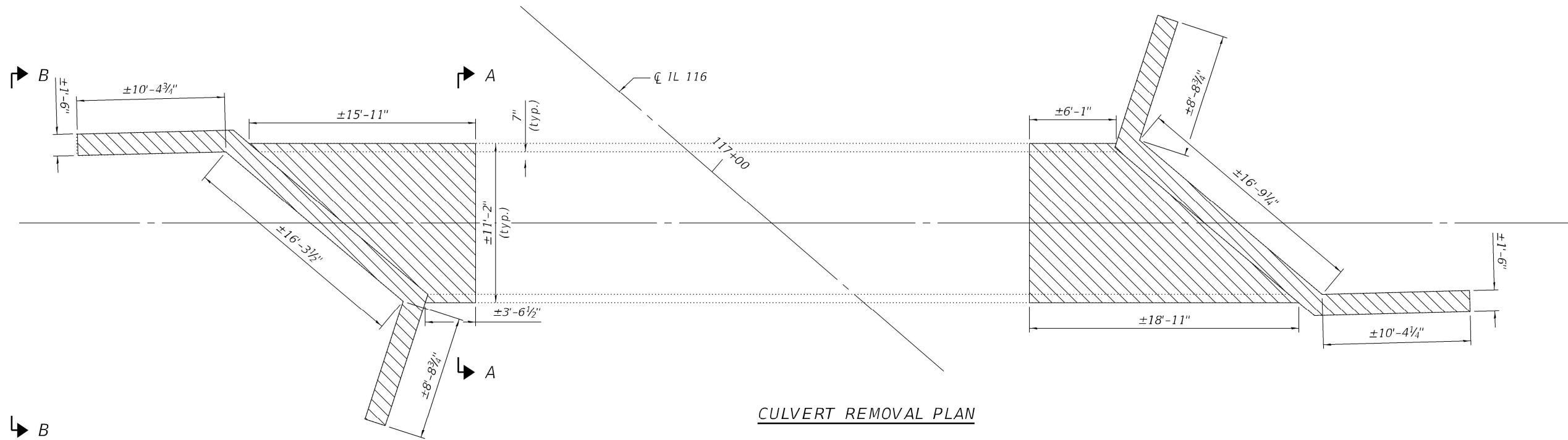
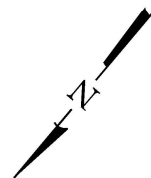
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

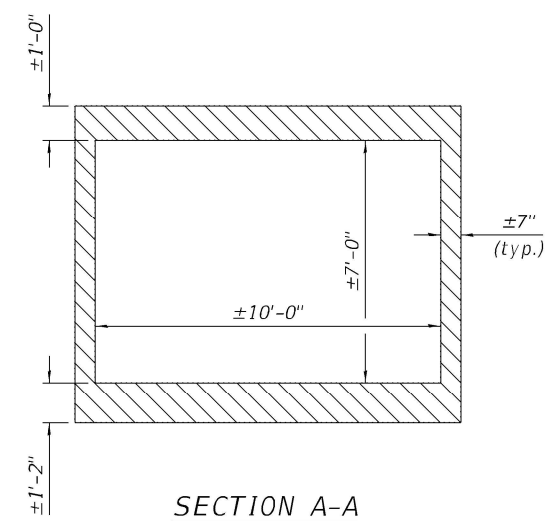
**GENERAL DATA
STRUCTURE NO. 048-1006**

SHEET 2 OF 7 SHEETS

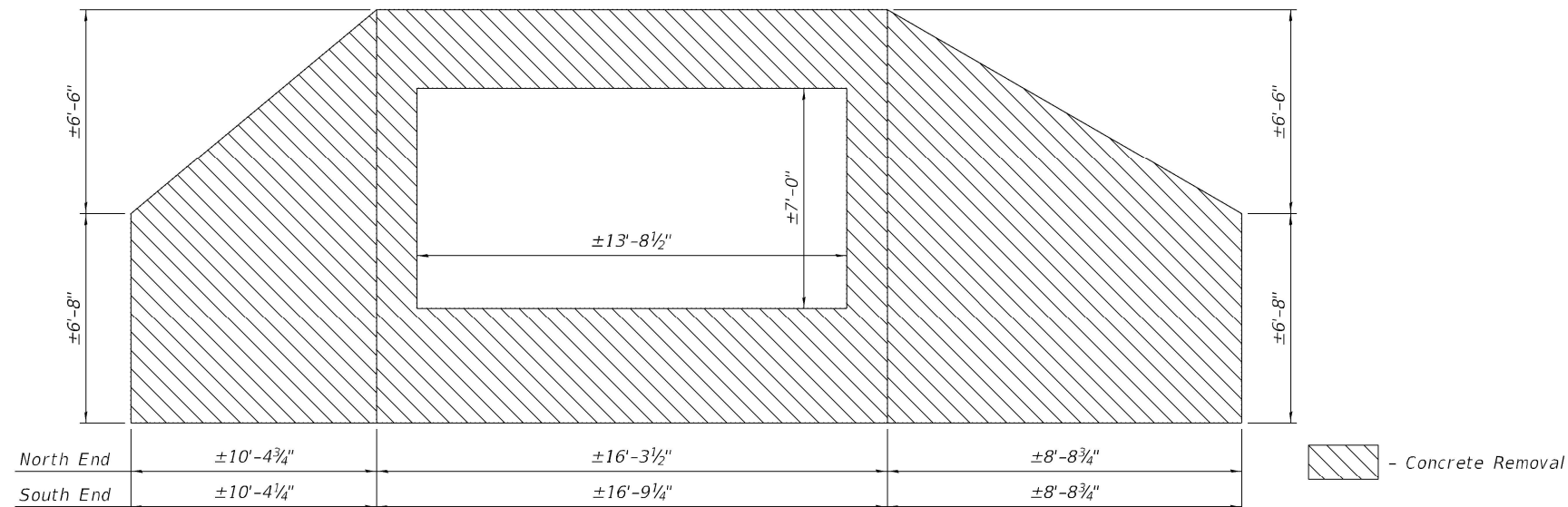
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	29
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



CULVERT REMOVAL PLAN



SECTION A-A



VIEW B-B

- Concrete Removal

BILL OF MATERIAL

Item	Unit	Total
Concrete Removal	Cu. Yd.	61.4

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Kaskaskia
Engineering Group LLC
Professional Engineering Group
11700 N. Illinois
20-088056

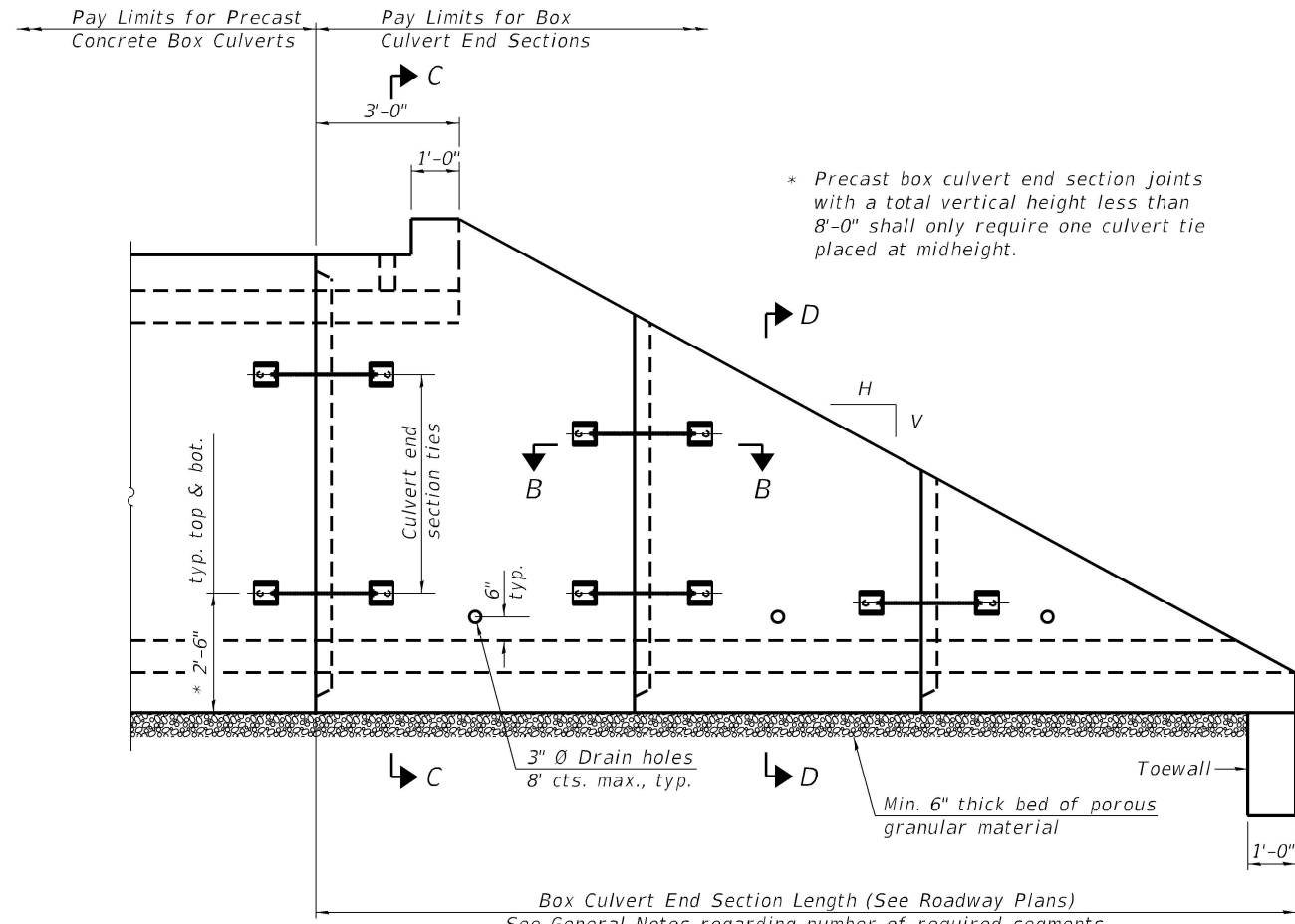
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	CHECKED - MMC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

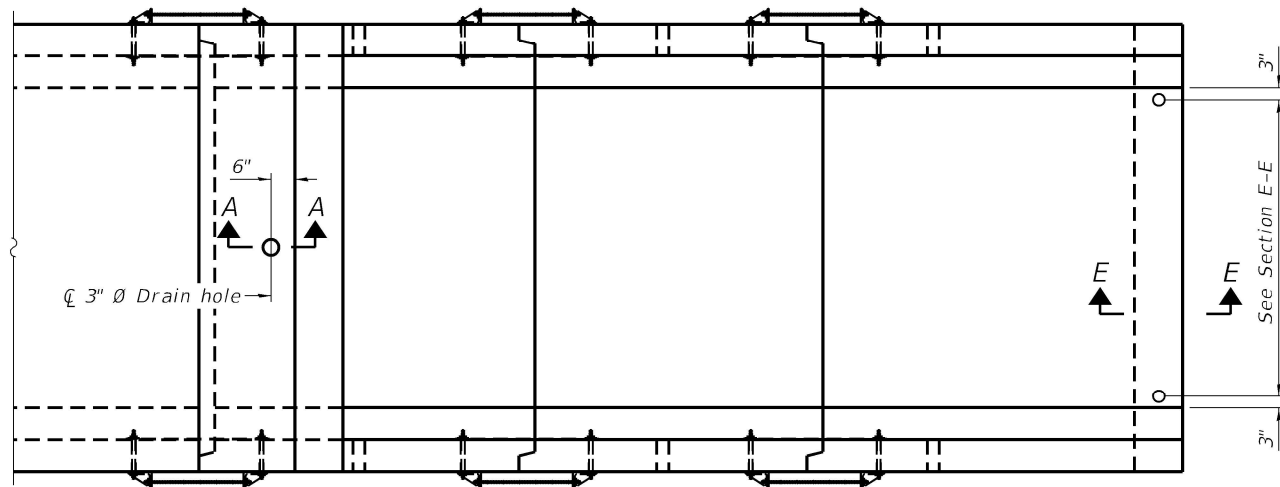
CULVERT REMOVAL DETAILS
STRUCTURE NO. 048-1006
SHEET 3 OF 7 SHEETS

F.A.P. RTE. 665	SECTION (140,142)CLV	COUNTY KNOX	TOTAL SHEETS 38	SHEET NO. 30
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				

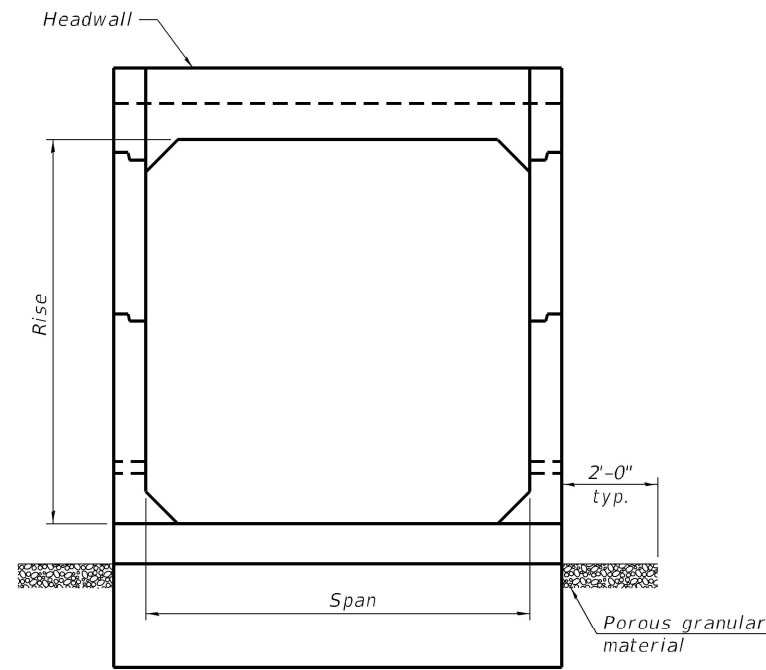
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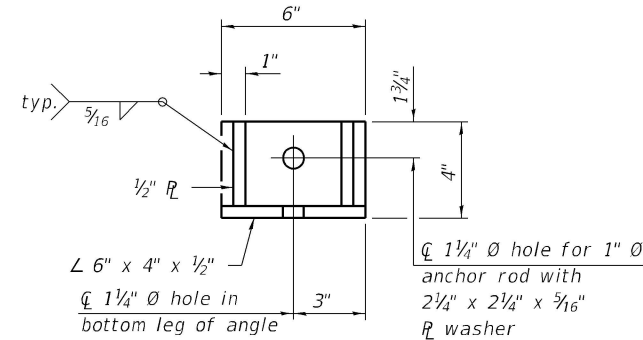
ELEVATION



PLAN



END VIEW



RESTRAINT ANGLE DETAIL

12" x 12" x 6" block of CA5, CA7, or CA11 coarse aggregate placed over drain opening. Block of aggregate shall be completely wrapped in nonwoven geotextile fabric.

Provide a double layer of 12" x 12" nonwoven geotextile fabric centered over the drain hole. Fabric shall be sealed to the concrete with mastic.

3" Ø PVC drain cast with the concrete (Adjust location to clear reinforcement).

1/2" Square foam blockout around PVC drain (to be removed with formwork)

SECTION A-A

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.) (Sheet 1 of 2)

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. This work will be measured for payment as each, with each end of each culvert being one each. End sections will be paid for at the contract unit price per each for Box Culvert End Sections of the culvert number specified.

Typical box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements of ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

Number of segments shown in Elevation is for example only. Length and number of precast box sections required to construct Box Culvert End Sections shall be determined by the Contractor.

See roadway plans for embankment slope (V:H).

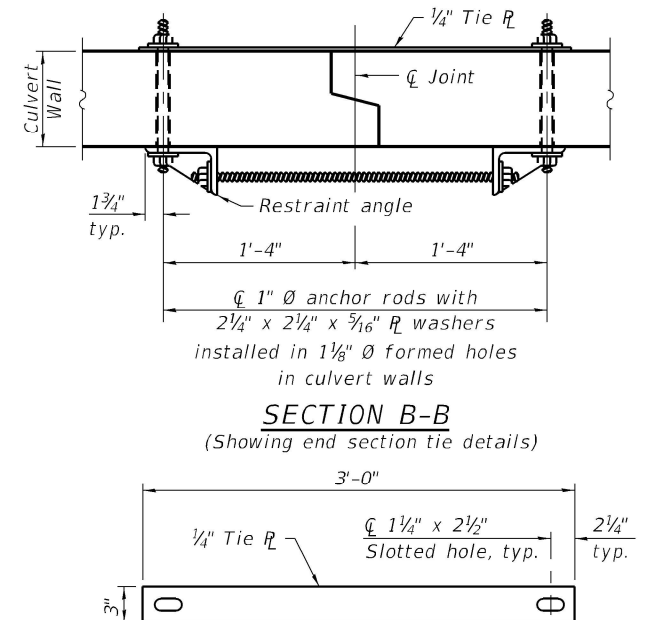
1" Ø anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2 1/4" x 2 1/4" x 5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional 1/2 turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the contract unit price for Box Culvert End Sections of the culvert number specified.

Drain holes shall conform to the requirements of Article 503.11 of the Standard Specifications unless noted otherwise.

Nonwoven geotextile fabric shall conform to the requirements of Article 1080.01. The minimum weight of the fabric shall be 6 oz. / sq. yd..

For end sections with traversable pipe grate systems, see grate detail sheet for required modifications.



TIE PLATE DETAIL

SCB-TES

2-17-2017

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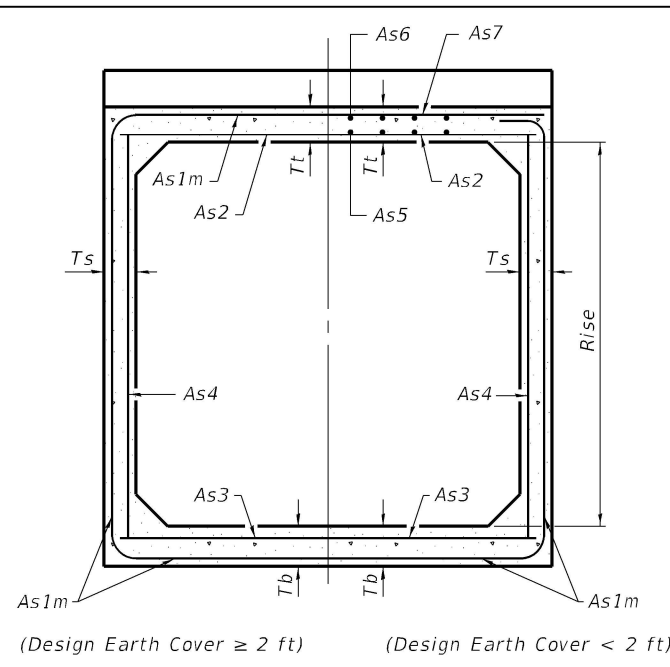
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SINGLE CELL PRECAST BOX CULVERT TAPERED END SECTIONS
STRUCTURE NO. 048-1006

SHEET 4 OF 7 SHEETS

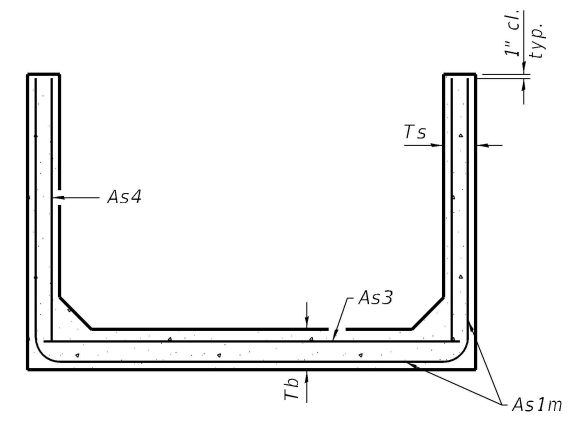
F.A.P. RTE. 665	SECTION (140,142)CLV	COUNTY KNOX	TOTAL SHEETS 38	SHEET NO. 31
CONTRACT NO. 68G66				

ILLINOIS FED. AID PROJECT

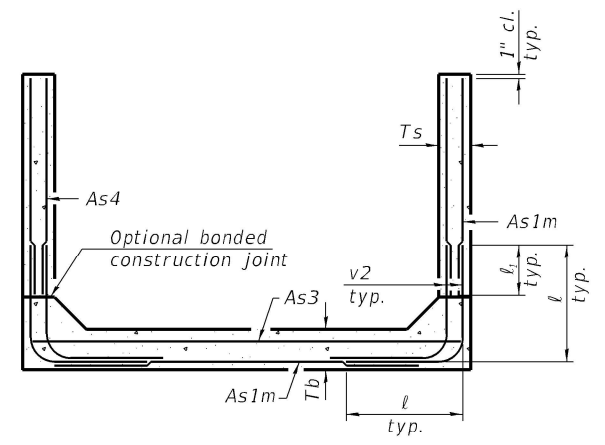


(Design Earth Cover \geq 2 ft) (Design Earth Cover < 2 ft)

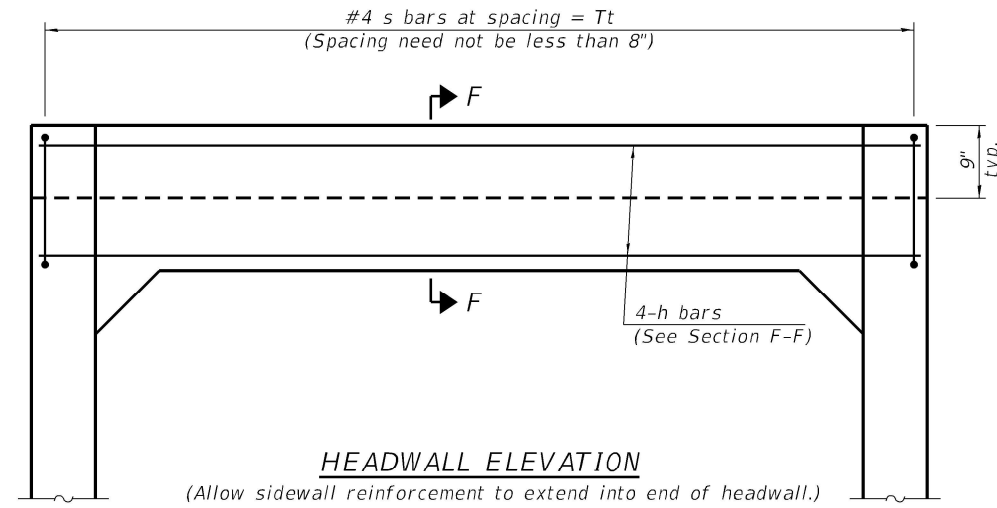
SECTION C-C



SECTION D-D



ALTERNATE SECTION D-D



HEADWALL ELEVATION

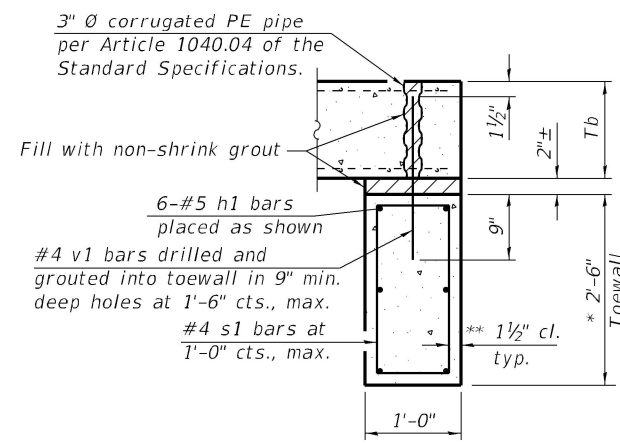
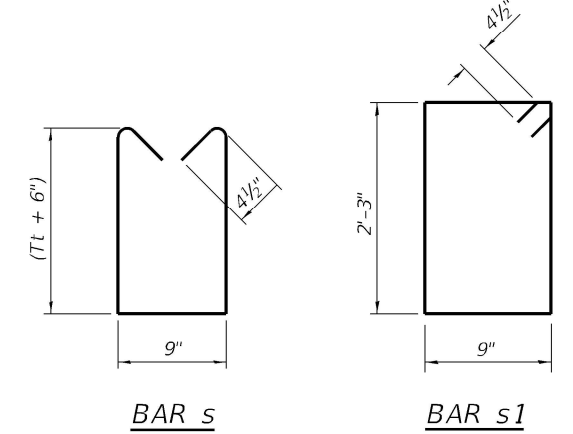
As1m REINFORCEMENT												
		(in. ² /ft)										
Ts (in.)	Rise (ft)	2	3	4	5	6	7	8	9	10	11	12
4	0.19	0.17										
5	0.26	0.21	0.18									
6	0.22	0.26	0.23	0.22								
7	0.25	0.33	0.59	0.27	0.28							
8	0.40	0.35	0.43	0.39	0.36	0.34	0.40					
9	0.44	0.39	0.35	0.43	0.40	0.37	0.36	0.48				
10	0.48	0.42	0.38	0.47	0.44	0.41	0.38	0.42	0.56			
11	0.52	0.45	0.54	0.50	0.46	0.44	0.41	0.46	0.50	0.65		
12	0.55	0.49	0.58	0.54	0.50	0.48	0.45	0.46	0.46	0.61	0.75	

(As1m reinforcement based upon welded wire reinforcement conforming to AASHTO M 55 or M 221).

l₁ DIMENSION

- #3 bar = 2'-0"
- #4 bar = 2'-8"
- #5 bar = 3'-4"
- #6 bar = 3'-11"

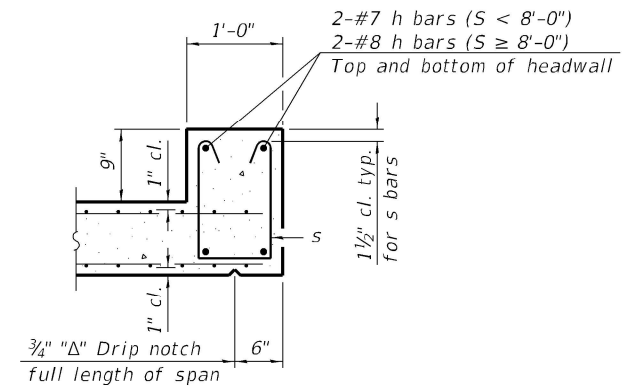
Notes:
 Alternate Section D-D is provided to allow the Contractor the option of casting the bottom slab of the end section first followed by construction of the sidewalls using conventional forming methods. Shop drawings that detail slab thickness and reinforcement layout shall be submitted to the Engineer for review and approval when using Alternate Section D-D.
 The size and spacing of the v2 bars shall provide a minimum reinforcement area along each face of the walls (in.²/ft.) equal to 1.10*(As1m). v2 bars may consist of #3 thru #6 size reinforcement bars and the longitudinal spacing shall not exceed the lesser of the wall thickness or 8 inches.
 Bonded construction joints shall be prepared according to Article 503.09 of the Standard Specifications.



SECTION E-E

TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
 2. Backfill according to the applicable paragraphs of Article 502.10 of the Standard Specifications and place bedding for precast box culvert end sections.
 3. Set precast box culvert end section.
 4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
 5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.
- * The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling the method.
- ** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.



SECTION F-F

SCB-TES 2-17-2017

(Sheet 2 of 2)

Kaskaskia
 Engineering Group, LLC
 1127 N. Main St., Suite 200
 P.O. Box 1000
 Macomb, Illinois 61456
 618-255-2877
 618-255-2877 Fax
 www.kaskaskiaeng.com

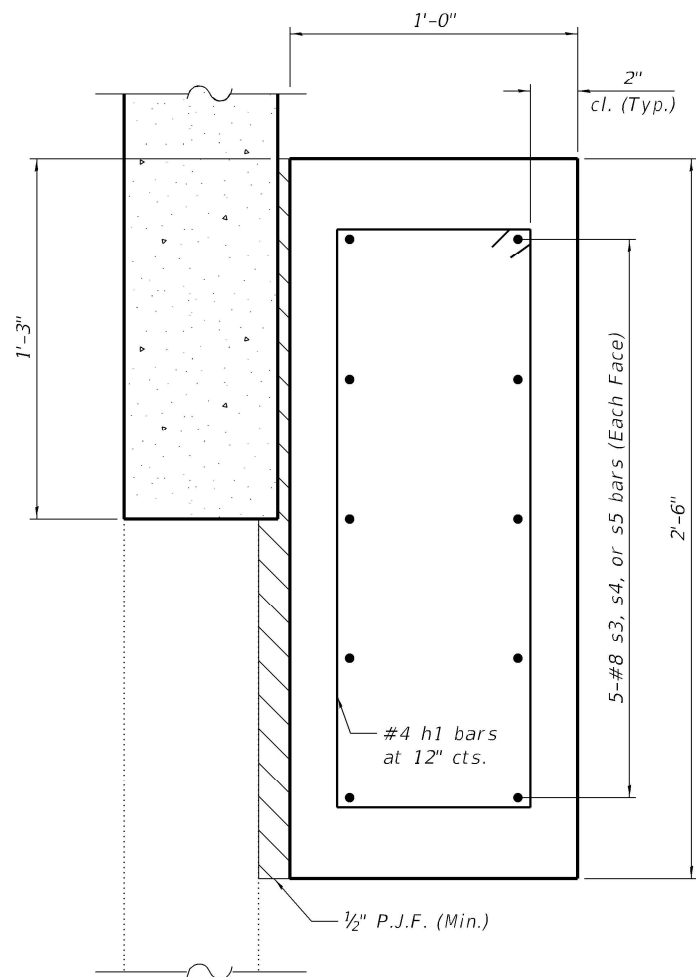
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

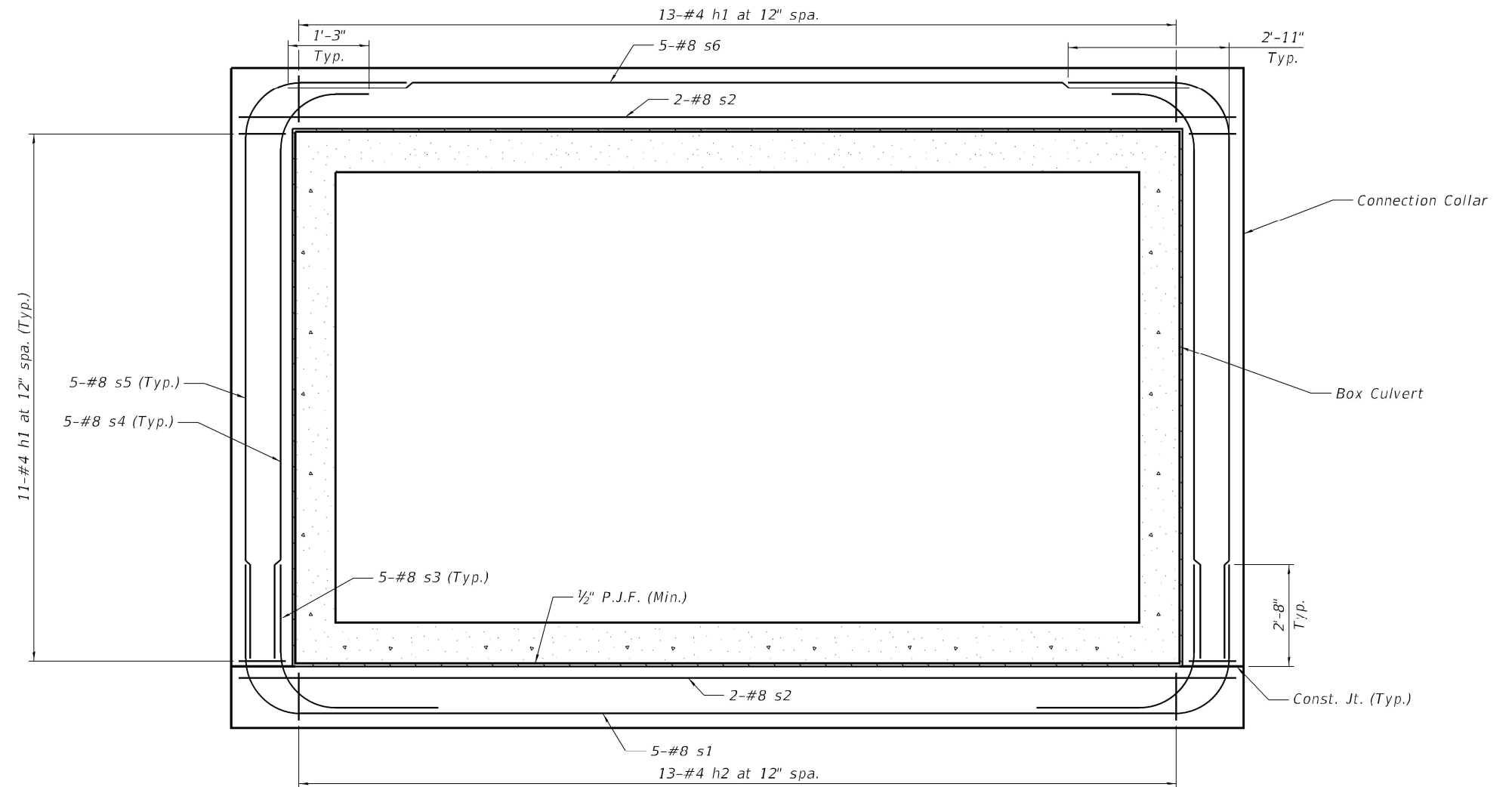
SINGLE CELL PRECAST BOX CULVERT TAPERED END SECTIONS
STRUCTURE NO. 048-1006

SHEET 5 OF 7 SHEETS

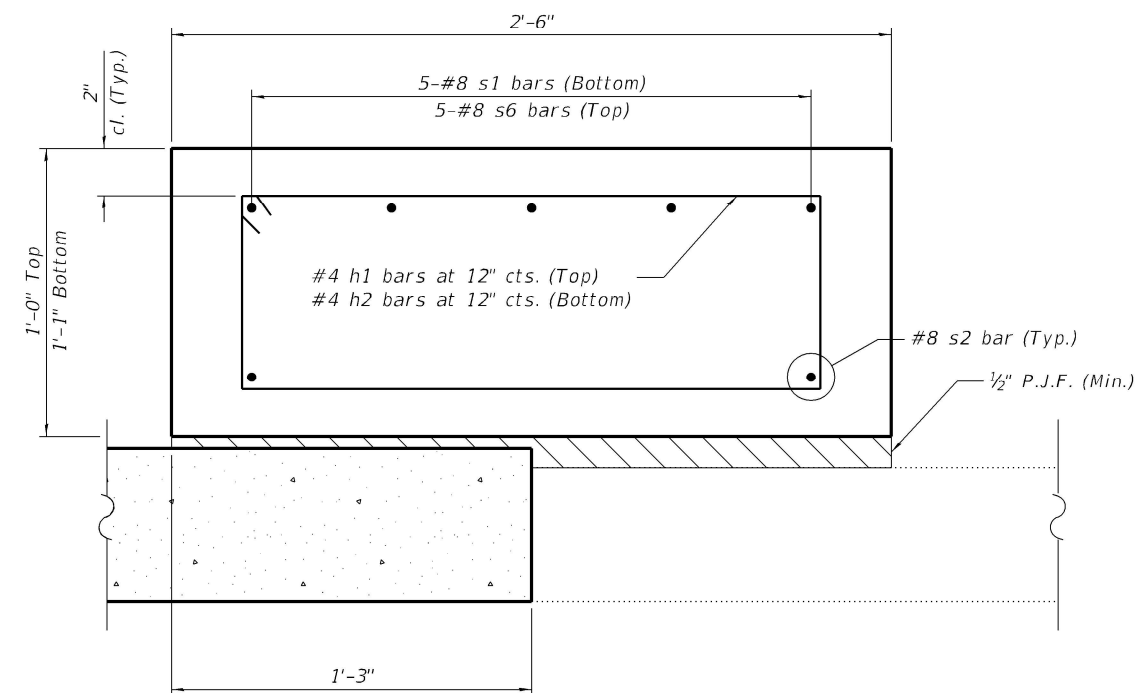
F.A.P. RTE. 665	SECTION (140,142)CLV	COUNTY KNOX	TOTAL SHEETS 38	SHEET NO. 32
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



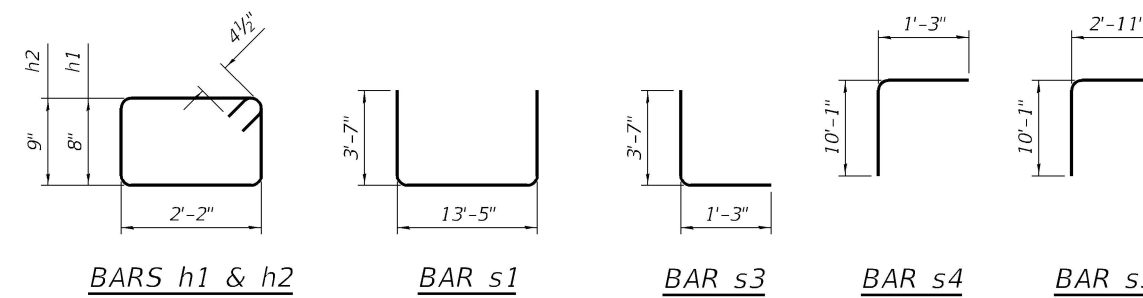
SECTION THRU SIDEWALL



CONNECTION COLLAR ELEVATION



SECTION THRU TOP AND BOTTOM SLAB



BILL OF MATERIAL
(Two Collars)

Bar	No.	Size	Length	Shape
h1	70	#4	6'-5"	□
h2	26	#4	6'-7"	□
s1	10	#8	20'-7"	U
s2	8	#8	13'-5"	—
s3	20	#8	4'-10"	L
s4	20	#8	11'-4"	L
s5	20	#8	13'-0"	L
s6	10	#8	12'-1"	—
Reinforcement Bars			Pound	3,140
Concrete Box Culverts			Cu. Yd.	8.8

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Kaskaskia
Engineering Group, LLC
Professional Engineering Group

USER NAME =	DESIGNED - MLC	REVISED -
	CHECKED - MMC	REVISED -
PLOT SCALE =	DRAWN - MLC	REVISED -
PLOT DATE =	CHECKED - MMC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CONNECTION COLLAR DETAILS
STRUCTURE NO. 048-1006

F.A.P. RTE. 665	SECTION (140,142)CLV	COUNTY KNOX	TOTAL SHEETS 38	SHEET NO. 33
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



SOIL BORING LOG

ROUTE FAP 665 (IL 116) DESCRIPTION Structure boring for culvert LOGGED BY Maria Rojo

SECTION 140 and 142 LOCATION IL 116 east of IL 41, SEC. 27, TWP. 9 N, RNG. 1 E, 4th PM, Latitude 40.728821, Longitude -90.379108

COUNTY Knox DRILLING METHOD HSA HAMMER TYPE Automatic

STRUCT. NO. Station	D E P T H	B L O W S	U C S Qu	M O I S T %	Surface Water Elev. ft	D E P T H	B L O W S	U C S Qu	M O I S T %
117+12									
CB-1E 116+98									
20.0 ft LT									
657.58									
2-inch thick GRAVEL --Shoulder--					637.08				
Stiff to very stiff, brown SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp	3		1.5	24		11		NP	32
--RDR 2--	3		P			10			
--FILL--	4				634.58	10			
	2		3.0	21		4		3.3	15
	3		P			6		S	
	-5					7			
	2					-25			
651.58									
Soft to medium stiff, dark brown to black SILTY CLAY, trace organic matter; damp	2		0.4	35		50/5		NP	15
--Buried TOPSOIL--	2		B						
--RDR 2--	2								
	1		0.5	35	628.58	50/5		NP	13
	-10								
	1					-30			
646.58									
Stiff, gray and brown CLAY to SILTY CLAY, trace gravel; damp	1		1.6	30					
--RDR 2--	3		B						
	3								
644.08									
Stiff to very stiff, light gray and to blueish gray SILTY CLAY, trace shale fragments; damp to wet	3		1.2	23					
--Highly Weathered SHALE BEDROCK--	3		S			-35			
--RDR 2--	5								
--mud rotary from 15 ft--	2		1.4	25					
--silt seams--	3		B						
	2								
	5		2.1	17					
--silt seams--	6		B						
	9								
	-20					-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, form 137 (Rev. 8-99)



SOIL BORING LOG

ROUTE FAP 665 (IL 116) DESCRIPTION Structure boring for culvert LOGGED BY Maria Rojo

SECTION 140 and 142 LOCATION IL 116 east of IL 41, SEC. 34, TWP. 9 N, RNG. 1 E, 4th PM, Latitude 40.728706, Longitude -90.379119

COUNTY Knox DRILLING METHOD HSA HAMMER TYPE Automatic

STRUCT. NO. Station	D E P T H	B L O W S	U C S Qu	M O I S T %	Surface Water Elev. ft	D E P T H	B L O W S	U C S Qu	M O I S T %
117+12									
CB-2E 116+92									
17.0 ft RT									
662.81									
6-inch thick, brown Gravelly SAND					641.81				
--Shoulder--									
Medium stiff to very stiff, brown and gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp	2		1.3	32		7		NP	13
--RDR 2--	2		P			9			
--FILL--	1					11			
	2		2.5	22		8		NP	11
	3		P			14			
	-5					-25			
	2					13			
654.31									
Medium stiff, black SILTY CLAY, trace gravel; damp to moist	1		1.0	32		30		NP	13
--Buried TOPSOIL--	2		B			39			
--RDR 2--	2					41			
651.81									
Very soft, gray CLAY; moist	0		0.3	37					
--RDR 1--	0		P						
--weighted hammer--	0								
	0								
649.31									
Very stiff, gray SILTY CLAY, trace gravel; damp	2		2.5	32		22		NP	12
--RDR 2--	2		S			37			
	4					50/4			
646.81									
Medium dense, blue gray SILT, trace gravel, damp	2		NP	18		50/4		NP	18
--Highly Weathered SHALE BEDROCK--	4								
--RDR 2--	5								
644.31									
Medium dense, black weathered COAL, damp to moist	10		NP	29					
--RDR 2--	6								
	-20					-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, form 137 (Rev. 8-99)

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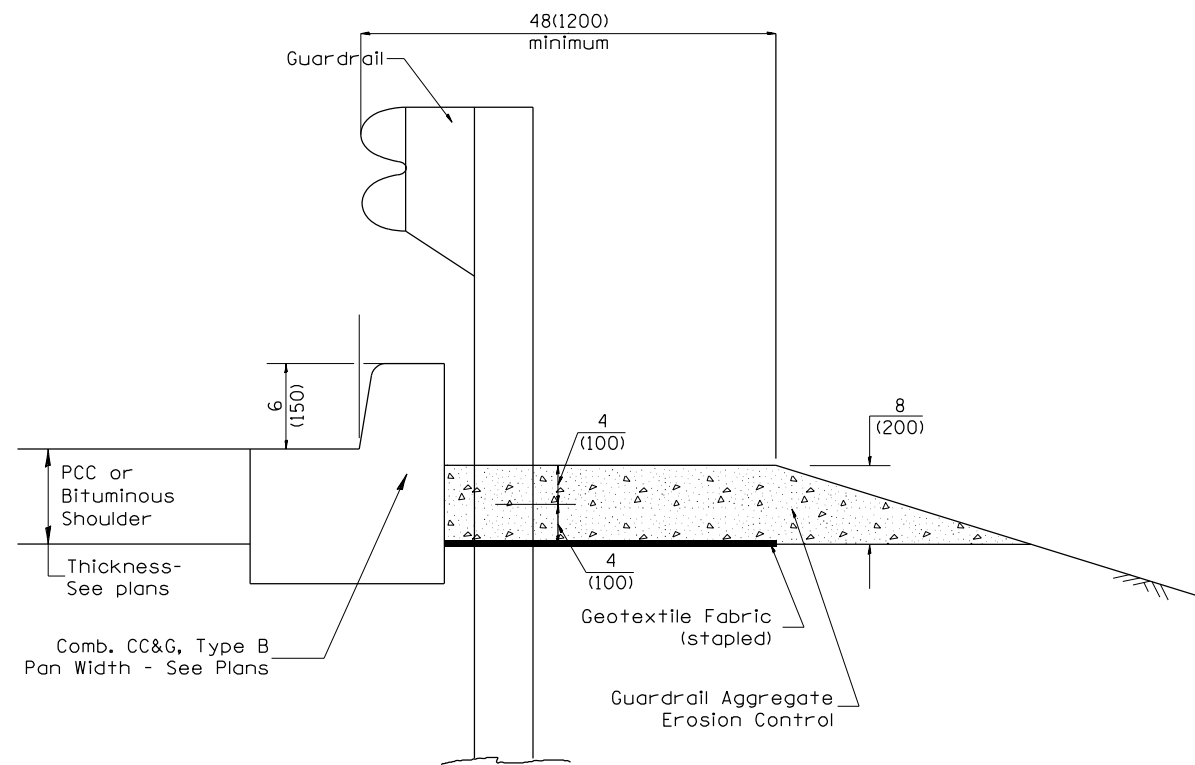


USER NAME =	DESIGNED - MLC	REVISED -
CHECKED - MMC	REVISED -	
PLOT SCALE =	DRAWN - MLC	REVISED -
PLOT DATE =	CHECKED - MMC	REVISED -

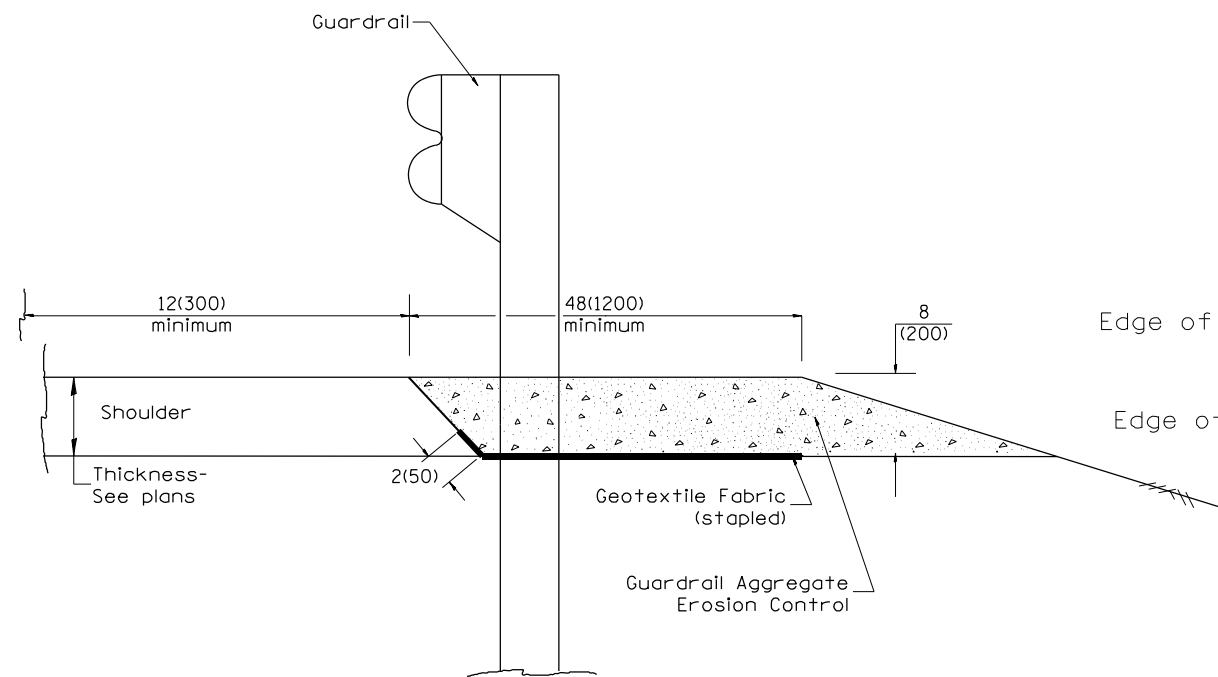
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS
STRUCTURE NO. 048-1006
SHEET 7 OF 7 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	34
CONTRACT NO. 68G66				
ILLINOIS FED. AID PROJECT				



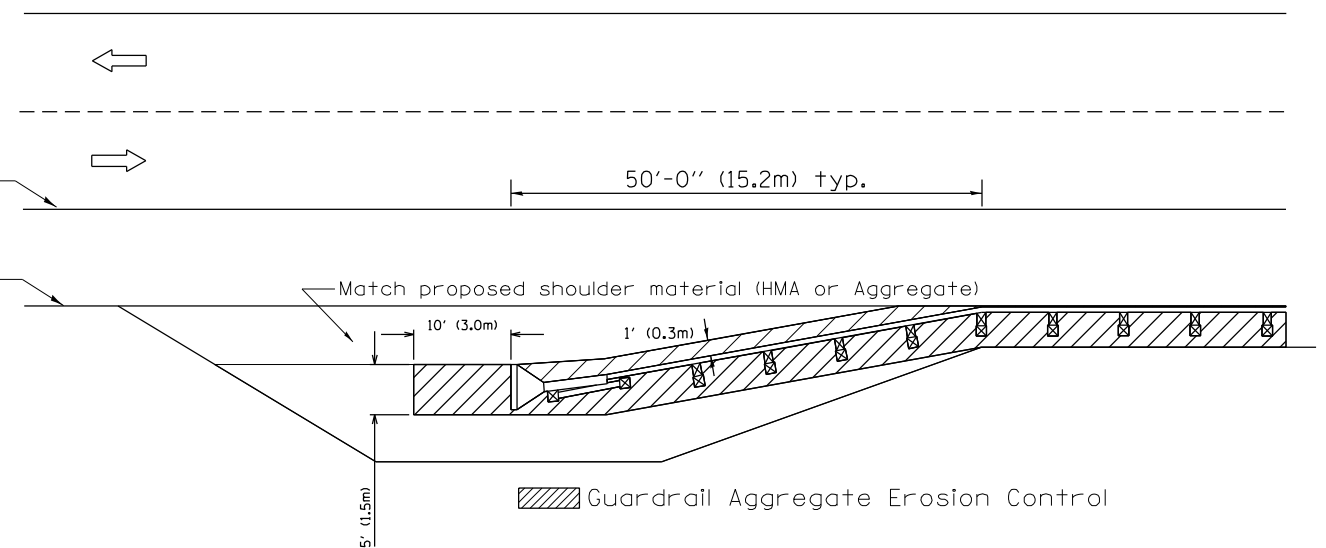
TYPICAL SECTION WITH COMBINATION CONCRETE CURB & GUTTER



TYPICAL SECTION WITHOUT EROSION CONTROL CURB

GENERAL NOTES: GUARDRAIL AGGREGATE EROSION CONTROL

1. This work shall consist of grading as needed, furnishing and installing geotextile fabric and staples, and furnishing, placing and shaping crushed aggregate around and behind Steel Plate Beam Guardrail posts in accordance with Plan Details.
2. Before placing the aggregate and the Geotextile Fabric, weeds and grass shall be removed from the area to be covered.
3. After the area has been prepared, and in a dry condition, the Geotextile fabric shall be placed with a 12(300) minimum overlap. A knife cut for guardrail post installation is necessary.
4. The aggregate shall be deposited, compacted and shaped by either mechanical or hand methods, in a manner reasonably true to line and grade.
5. The Contractor shall have the option of placing the guardrail before or after the Geotextile Fabric and Aggregate are in place. If the guardrail is placed after the Geotextile Fabric and Aggregate, then any voids must be filled and the aggregate returned to line and grade.
6. Materials shall meet the following requirements:
 - A. The crushed aggregate shall be CA1 gradation in accordance with Article 1004.01(c) of the Standard Specifications.
 - B. The Geotextile Fabric shall be nonwoven fabric in accordance with Article 1080.02 of the Standard Specifications.



All dimensions are in inches (millimeters) unless otherwise noted.

03-07-11	ADDED DETAIL SHOWING PLAN VIEW	R.D.	5-30-18	CHANGE B CURB TO CC&G	R.D.
08-10-12	REVISED CURB "B" AND AGGREGATE	R.D.	07-16-19	SPELLING CORRECTIONS	R.D.
07-15-15	ADDRESSED SHOULDER INLET CURB	R.D.			
01-26-17	REVISED	R.D.			

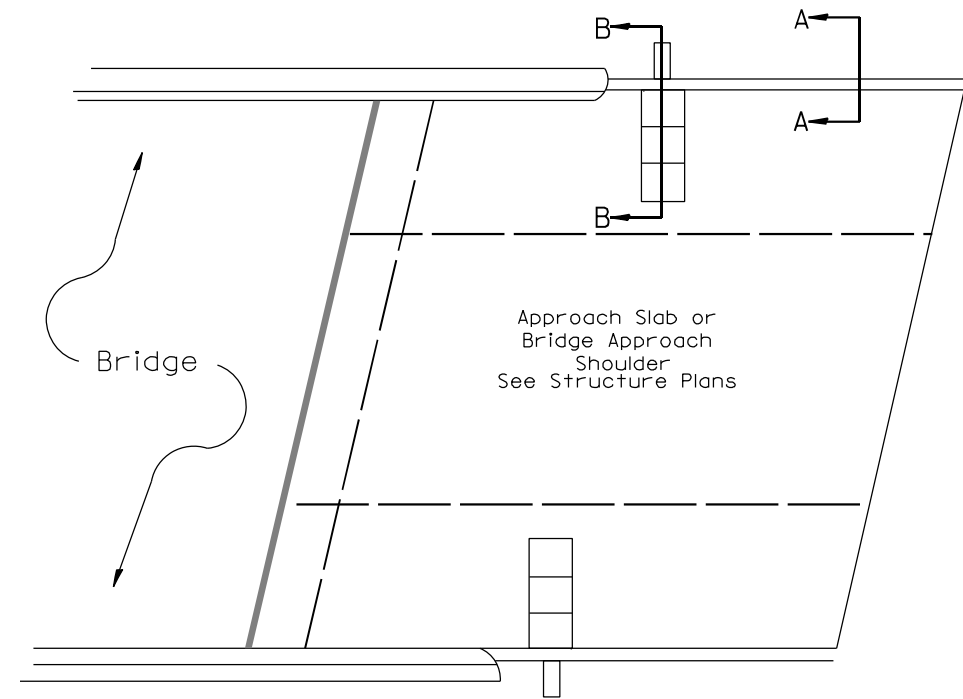
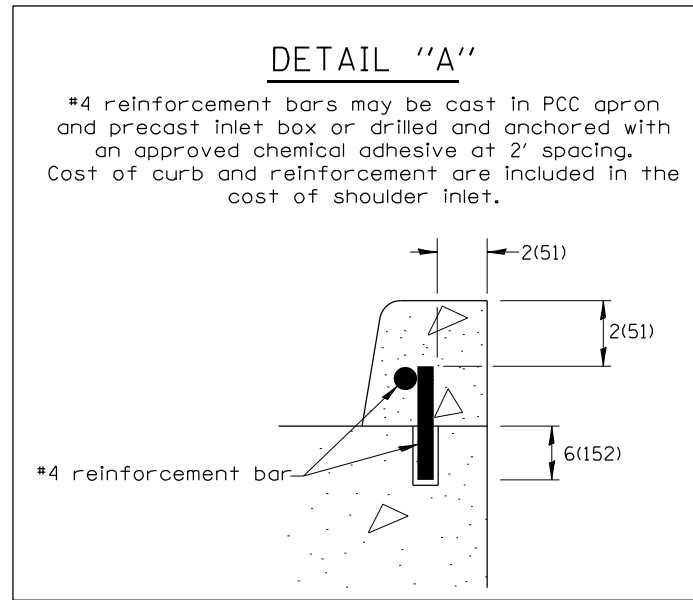
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

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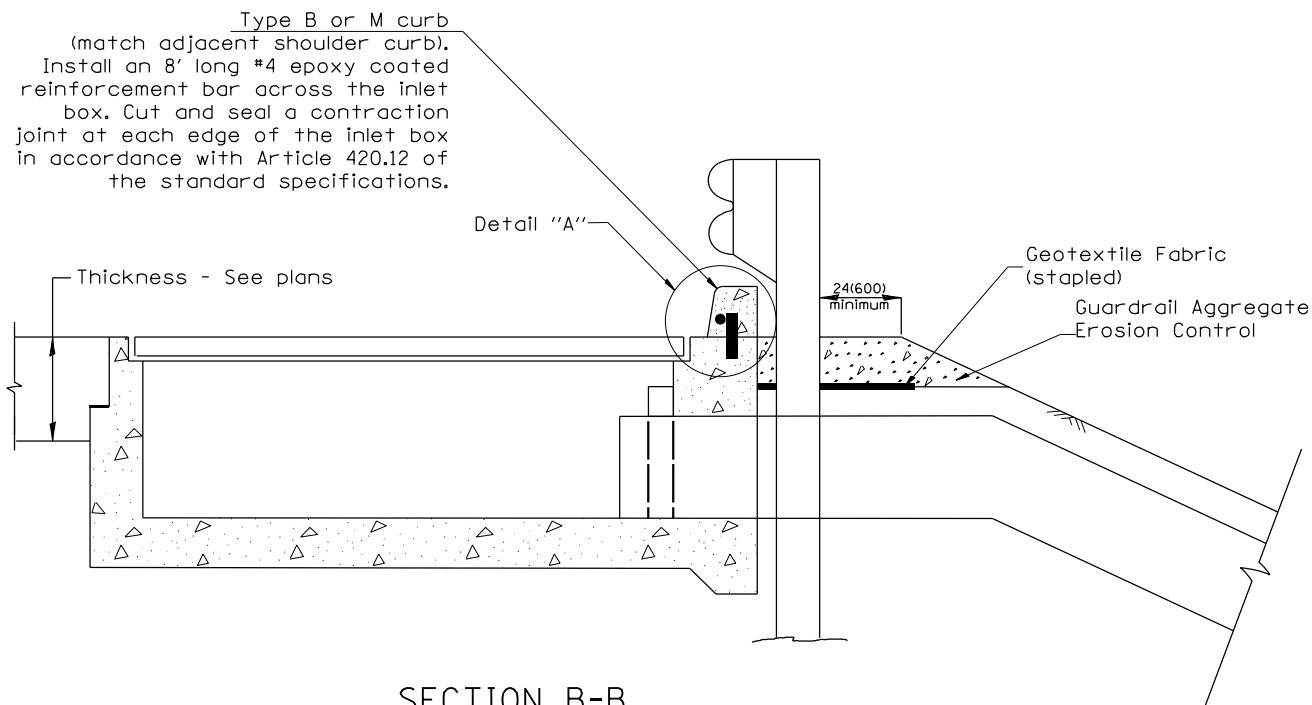
GUARDRAIL EROSION CONTROL TREATMENTS

SHT. 1 OF 2
CADD STD. 630101-D4

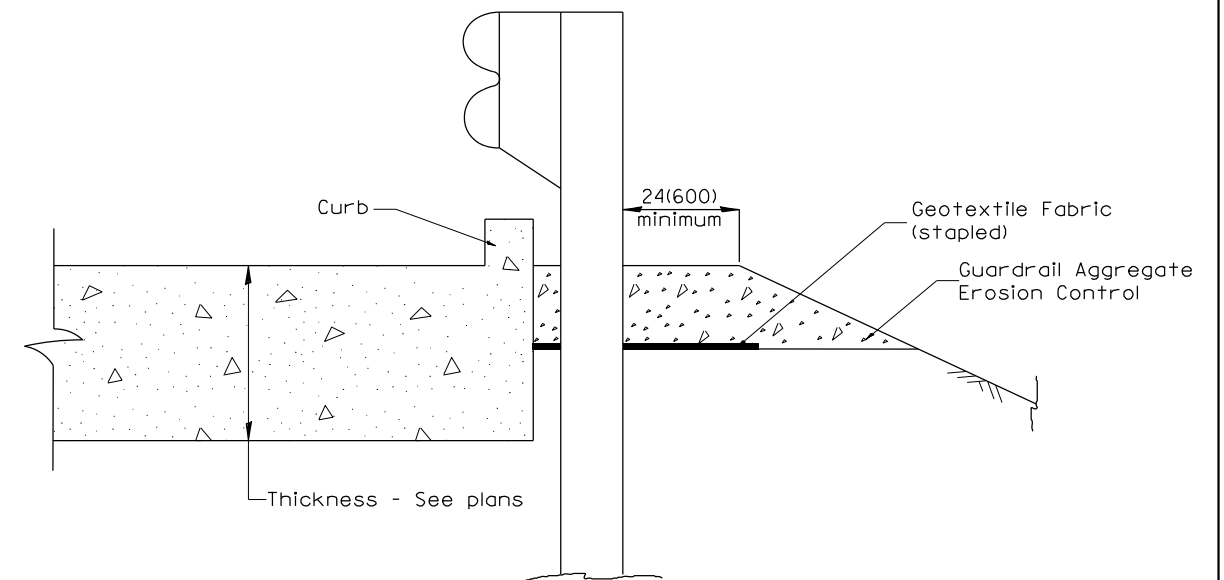
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	35
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT	
			CONTRACT NO. 68G66	



PLAN VIEW
APPROACH SLAB OR SHOULDER PLACEMENT



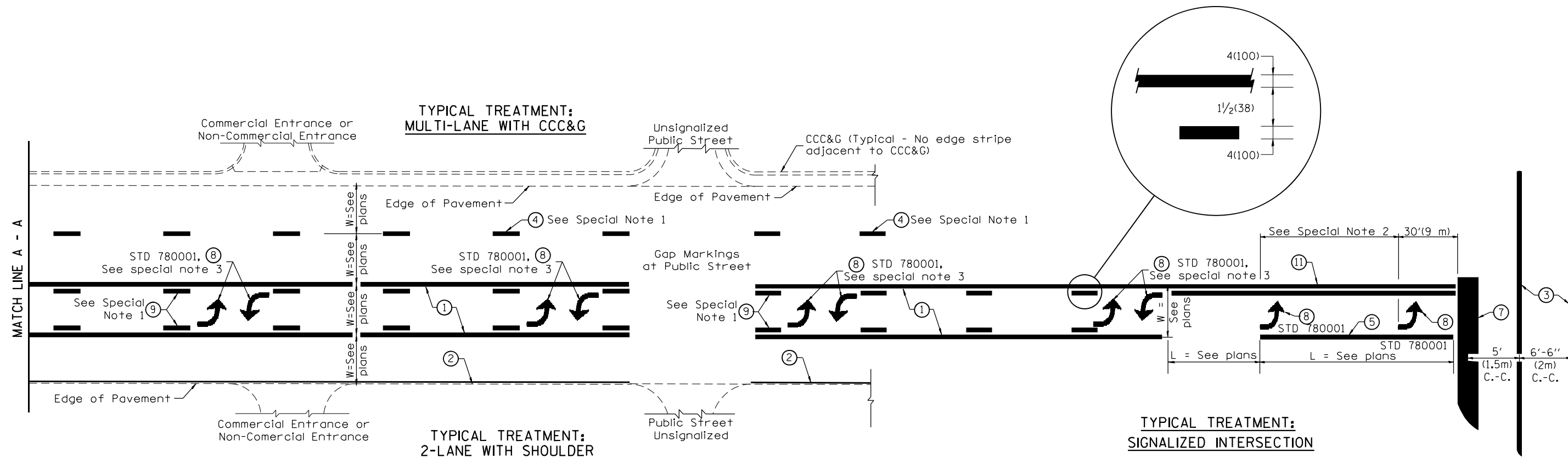
SECTION B-B
TYPICAL SECTION AT INLETS
TYPE E, F & G (HIGHWAY STANDARD 610001)



SECTION A-A
TYPICAL SECTION WITH BRIDGE APPROACH CURB

All dimensions are in inches (millimeters) unless otherwise noted.

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION				GUARDRAIL EROSION CONTROL TREATMENTS				F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
				NOT TO SCALE				665	(140,142)CLV	KNOX	38	36
				SHT. 2 OF 2 CADD STD. 630101-D4				CONTRACT NO. 68G66				
								FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



FLUSH PAVED MEDIAN: TWO-WAY LEFT TURN LANE WITH ONE-WAY LEFT TURN LANE AT SIGNALIZED INTERSECTION

TYPICAL PAVEMENT MARKING LEGEND

(Note: This is a District Standard Legend. Some elements may not apply to specific project.)

- ① 4(100) Solid (Yellow)
- ② 4(100) Solid (White)
- ③ 2-6(150) Crosswalk @ 6'-6" (2m)min C.-C. (White)
2-8(200) Crosswalk @ 6'-6" (2m)min C.-C. (White) (When traffic signals are present.)
- ④ 6(150) Skip-Dash (White) (See Special Note 1)
- ⑤ 8(200) Solid (White)
- ⑥ 12(300) Diagonal (White) (Item ⑥ is shown on Std. 780001)
- ⑦ 24(600) Stop Bar (White)
- ⑧ Letters & Arrows (See Std. 780001 and Special Notes 2 & 3)
- ⑨ 4(100) Skip-Dash (Yellow) (See Special Note 1)
- ⑩ 12(300) Diagonal (Yellow) (See Table A) (See Table A)
- ⑪ 4(100) Double Solid (Yellow) (See Table A)

SPECIAL NOTES

1. Skip-Dash markings will be centered between both ends of city blocks and shall be placed in alignment transversely across the pavement.
2. The following shall apply to arrows located in one-way left turn lanes:
 - A. A minimum of two (2) arrows is required.
 - B. The maximum spacing between arrows is 80' (24 m).
 - C. Arrows shall be evenly spaced if three (3) or more are required.
3. The following shall apply to arrow pairs located in two-way left turn lanes:
 - A. A minimum of two (2) arrow pairs is required.
 - B. The maximum spacing between arrow pairs is 200' (61 m).
 - C. Arrow pairs shall be evenly spaced if three (3) or more are required.
 - D. The spacing between Bi Directional Left Turn Arrows is 33' (10 m).

GENERAL NOTES

1. Refer to State Standard 780001 for additional Pavement Markings including letters & arrows.
2. See Plans for Pavement Markings adjacent to curbed islands and medians, and through lane reductions.
3. Refer to Article 780.13 for letter, number and symbol areas (sq. ft.)
4. Areas are grooved 1" beyond each edge for the following symbols:
 - Through Arrow= 14.8 sq. ft.
 - Large Left or Right Arrow= 21.9 sq. ft.
 - 2 Arrow Combination Left (or Right) and Through= 34.9 sq. ft.
 - Wrong Way Arrow= 29.5 sq. ft.
 - Railroad Crossing Symbol= 69.8 sq. ft.
 (For further information, refer to BDE Special Provision: Grooving for Recessed Pavement Markings)

01-01-97	RENUM. F-8.03, NEW REVISION BOX	T.P.	10-16-06	REVISED TO 2007 SPEC.	
02-07-97	ADD BI DIRECTIONAL DIMENSION	J.A.	2/29/16	ADDED GROOVING AREAS	R.D.
10-97	CORRECT BI DIRECTIONAL DIMENSION	J.A.	07-16-19	SPELLING CORRECTIONS	R.D.
08-02	ADD CROSSWALK DMNS. WITH T.S.	M.A.			

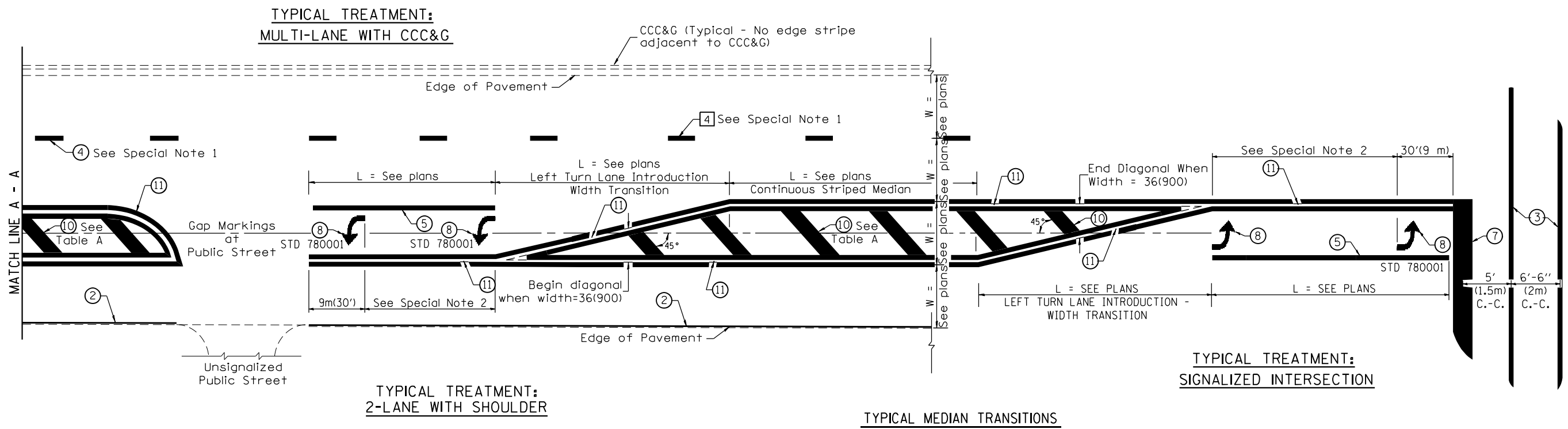
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

NOT TO SCALE

TYPICAL PAVEMENT MARKINGS

SHT. 1 OF 2
CADD STD. 780001-D4

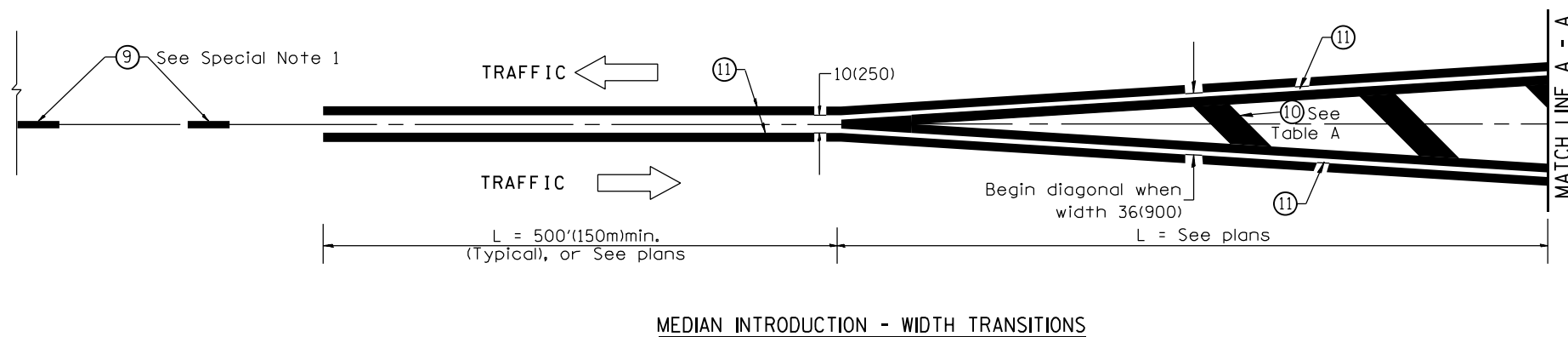
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
665	(140,142)CLV	KNOX	38	37
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 68G66	



FLUSH PAVED MEDIAN: RESTRICTED LEFT TURN LANE

TABLE A
RECOMMENDED SPACING BETWEEN DIAGONAL LINES

SPEED LIMIT RANGE	INTERSECTION CHANNELIZATION (Includes Width Transitions for Median and Left Turn Lane Introductions)	
	CONTINUOUS	
Less Than 30 mph (50 km/h)	50' (15m)	15' (5m)
30 - 45 mph (50 - 70 km/h)	75' (23m)	20' (6m)
Over 45 mph (70 km/h)	150' (46m)	30' (9m)



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