

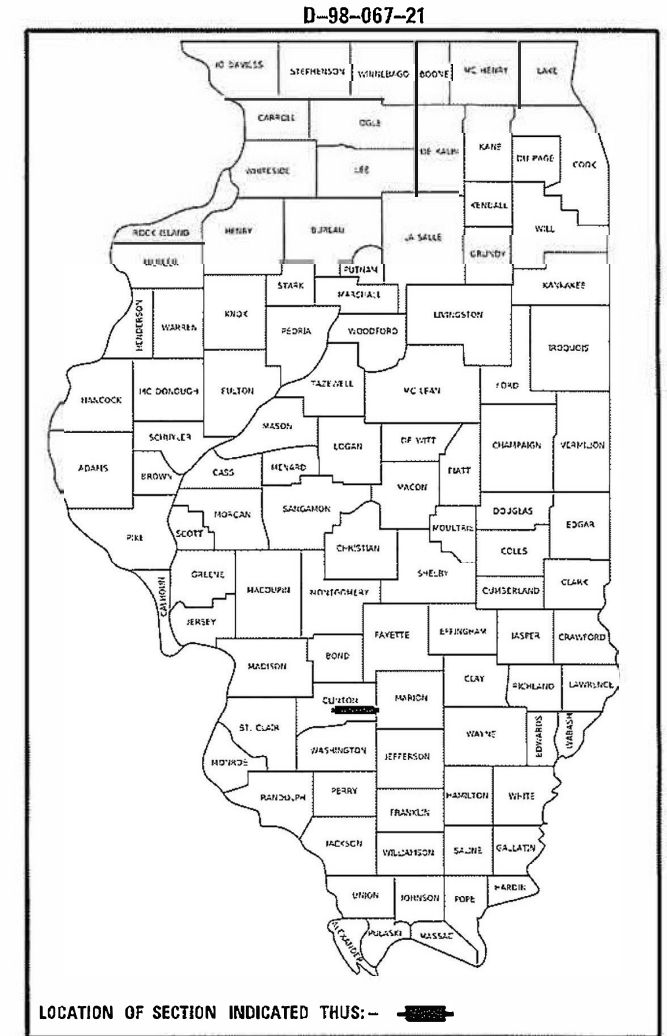
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	1
		ILLINOIS	CONTRACT NO. 76P59	

FOR INDEX OF SHEETS, SEE SHEET NO. 2

PROPOSED HIGHWAY PLANS

FAP ROUTE 327 (US 50)
SECTION 21CR
PROJECT NHPP-DH2Z(648)
CULVERT REPLACEMENT
CLINTON COUNTY
C-98-098-21

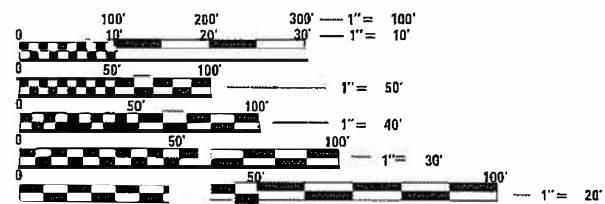


LOCATION OF SECTION INDICATED THUS: - [shaded rectangle] -

TRAFFIC DATA

FUNCTIONAL CLASSIFICATION:
OTHER PRINCIPAL ARTERIAL

HUEY RD TO HUGHES RD:
2021 ADT: 5,450
PV 86.5%, SU 4.2%, MU 9.3%

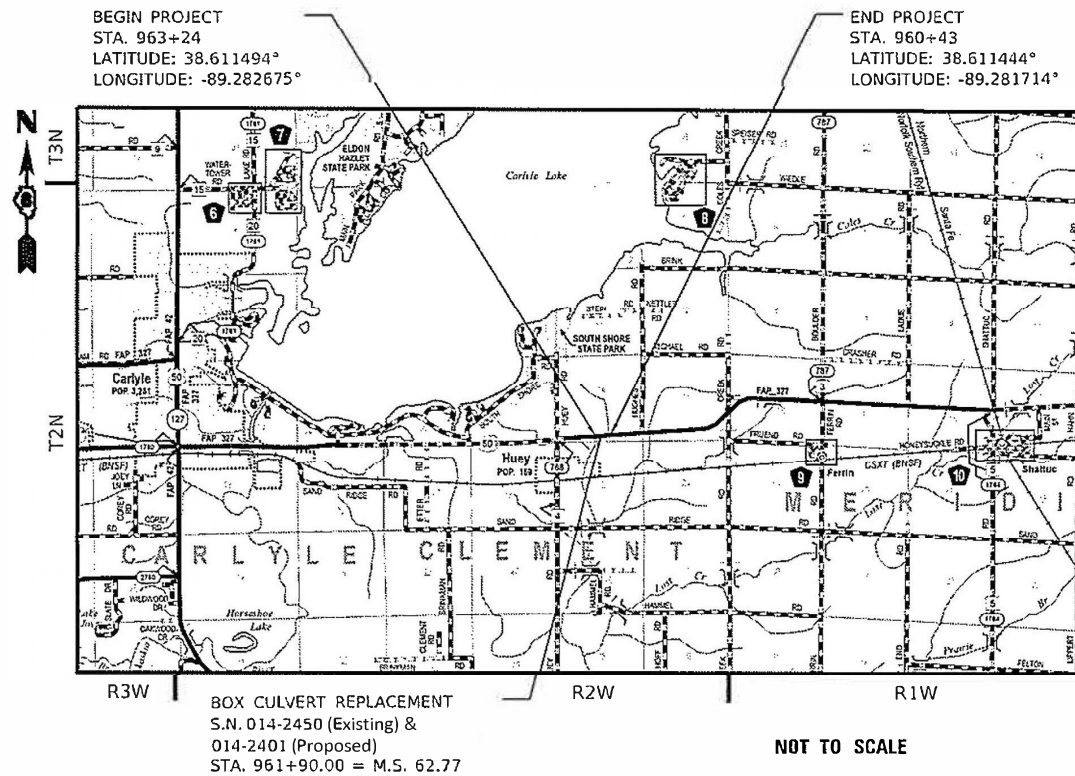


FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

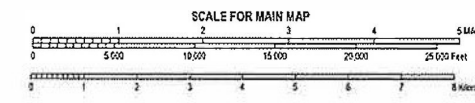
J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS
1-800-892-0123
OR 811

PROJECT ENGINEER: BILLIE OWEN

CONTRACT NO. 76P59



LOCATION MAP
GROSS LENGTH = 200 FT. = 0.0379 MILE
NET LENGTH = 200 FT. = 0.0379 MILE



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBMITTED *Feb 1, 2022*
Stephen Travis
REGIONAL ENGINEER

March 25, 2022
[Signature]
ENGINEER OF DESIGN AND ENVIRONMENT

March 28, 2022
Stephen M. Smith
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS

INDEX OF SHEETS

1	COVER SHEET
2	INDEX OF SHEETS, HIGHWAY STANDARDS, GENERAL NOTES, & COMMITMENTS
3-4	SUMMARY OF QUANTITIES
5	TYPICAL SECTIONS
6	SCHEDULE OF QUANTITIES
7	LOCATION MAP
8	ALIGNMENT, TIES AND BENCHMARKS
9	PLAN, PAVEMENT PATCHING AND GUARDRAIL DETAILS
10	DETOUR ROUTE
11	GENERAL PLAN AND ELEVATION STRUCTURE NO. 014-2401
12	GENERAL DATA STRUCTURE NO. 014-2401
13-14	BOX CULVERT END SECTION DETAILS STRUCTURE NO. 014-2401
15	BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS STRUCTURE NO. 014-2401
16-17	SOIL BORING LOGS STRUCTURE NO. 014-2401

HIGHWAY STANDARDS

000001-08	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
001001-02	AREAS OF REINFORCEMENT BARS
001006	DECIMAL OF AN INCH AND OF A FOOT
442101-09	CLASS B PATCHES
630106-02	LONG SPAN GUARDRAIL OVER CULVERT
701201-05	LANE CLOSURE, 2L, 2W, DAY ONLY FOR SPEEDS ≥ 45 MPH TRAFFIC
701901-08	CONTROL DEVICES
780001-05	TYPICAL PAVEMENT MARKINGS
781001-04	TYPICAL APPLICATIONS RAISED REFLECTIVE PAVEMENT MARKERS
782006-01	GUARDRAIL AND BARRIER WALL REFLECTOR MOUNTING DETAILS
420001-10	PAVEMENT JOINTS
420701-03	PAVEMENT WELDED WIRE REINFORCEMENT
515001-04	NAME PLATE FOR BRIDGES
630001-12	STEEL PLATE BEAM GUARDRAIL
630301-09	SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
725001-01	OBJECT AND TERMINAL MARKERS
BLR 21-9	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL HIGHWAYS

GENERAL NOTES

1. UTILITIES KNOWN TO HAVE FACILITIES WITHIN THE PROJECT AREA:

UTILITY	TYPE	ABOVE GROUND	BELOW GROUND
*AT&T ILLINOIS	COMMUNICATIONS	X	X
*CLINTON COUNTY	WATER	X	X
*METRO	COMMUNICATIONS	X	X

MEMBERS OF J.U.L.I.E. CALL TOLL FREE (800) 892-0123 OR 811 AND ARE INDICATED BY * . NON-J.U.L.I.E. MEMBERS MUST BE NOTIFIED INDIVIDUALLY.

2. THE PROPOSED PAVEMENT MARKING SHALL MATCH THE LOCATIONS OF THE EXISTING PAVEMENT MARKING, AS DIRECTED BY THE ENGINEER.
3. 2 CHANGEABLE MESSAGE SIGNS SHALL BE REQUIRED FOR THIS PROJECT. THEY SHALL BE PLACED 2 WEEKS PRIOR TO ANY LANE CLOSURE AND SHALL REMAIN FOR DURATION OF PROJECT. THE CHANGEABLE MESSAGE SIGNS SHALL BE PLACED ALONG US 50 OR AT THE DIRECTION OF THE ENGINEER.
4. THE CONTRACTOR SHALL PROVIDE POSITIVE AND ADEQUATE DRAINAGE AT ALL TIMES.
5. ALL ELEVATIONS REFER TO THE USGS MEAN SEA LEVEL DATUM, NAVD 88
6. ALL REMOVED GUARDRAIL COMPONENTS ARE THE PROPERTY OF THE CONTRACTOR AND THE SALVAGE VALUE OF SAID COMPONENTS SHALL BE REFLECTED IN THE CONTRACTOR'S BID.
7. THE CONTRACTOR SHALL STAGE ALL WORK IN SUCH A WAY AS TO MAINTAIN INGRESS AND EGRESS TO ALL ABUTTING PROPERTIES AT ALL TIME DURING CONSTRUCTION
9. HIGH EARLY STRENGTH CONCRETE TO BE USED FOR CONSTRUCTION OF THE HEADWALL.
10. ALL DISTURBED EMBANKMENT AREAS SHALL BE SEEDED WITH CLASS 2A SEED, FERTILIZED AND MULCHED AS PER SECTION 250.04 OF THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER. THE COST FOR PERFORMING THIS WORK SHALL BE CONSIDERED INCLUDED IN THE UNIT PRICE BID FOR THE ITEM OF WORK INITIATING THE DISTURBANCE.

COMMITMENTS

- 1 TO ENSURE THAT NO FORAGING HABITAT IS MADE TEMPORARILY UNAVAILABLE OR DAMAGED DURING CONSTRUCTION, ANY NECESSARY STAGING EQUIPMENT SHALL NOT BE PARKED ON THE NORTH-WEST QUARDRANT OF THE PROJECT

REV. - MS

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				SCALE:			SHEET 1 OF 1 SHEETS		STA. TO STA.
						ILLINOIS		FED. AID PROJECT	

80% FED
20% STATE

CONSTR. CODE

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	80% FED 20% STATE	
				RURAL 004 014-2401	CONSTR. CODE
20700220	POROUS GRANULAR EMBANKMENT	CU YD	36	36	
28100107	STONE RIPRAP, CLASS A4	SQ YD	96	96	
28200200	FILTER FABRIC	SQ YD	96	96	
44200050	WELDED WIRE REINFORCEMENT	SQ YD	64	64	
44201299	DOWEL BARS 1 1/2"	EACH	46	46	
44213200	SAW CUTS	FOOT	69	69	
44213204	TIE BARS 3/4"	EACH	28	28	
48102100	AGGREGATE WEDGE SHOULDER, TYPE B	TON	3	3	
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1	1	
51500100	NAME PLATES	EACH	1	1	
54001001	BOX CULVERT END SECTIONS, CULVERT NO. 1	EACH	2	2	
54011004	PRECAST CONCRETE BOX CULVERTS 10' X 4'	FOOT	33	33	
59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	52	52	
* 63000003	STEEL PLATE BEAM GUARDRAIL, TYPE A, 9 FOOT POSTS	FOOT	350	350	

* SPECIALTY ITEM

80% FED
20% STATE

CONSTR. CODE

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	80% FED 20% STATE	
				RURAL 004 014-2401	CONSTR. CODE
* 63000360	LONG-SPAN GUARDRAIL OVER CULVERT, 18 FT 9 IN SPAN	FOOT	88	88	
* 63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	1	1	
63200310	GUARDRAIL REMOVAL	FOOT	488	488	
67100100	MOBILIZATION	L SUM	1	1	
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1	1	
70107025	CHANGEABLE MESSAGE SIGN	CAL DA	68	68	
70200100	NIGHTTIME WORK ZONE LIGHTING	L SUM	1	1	
* 72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	1	1	
* 78000200	THERMOPLASTIC PAVEMENT MARKING - LINE 4"	FOOT	225	225	
* 78100100	RAISED REFLECTIVE PAVEMENT MARKER	EACH	1	1	
* 78200005	GUARDRAIL REFLECTORS, TYPE A	EACH	12	12	
78300200	RAISED REFLECTIVE PAVEMENT MARKER REMOVAL	EACH	1	1	
X0900064	MEMBRANE WATERPROOFING SYSTEM FOR BURIED STRUCTURES	SQ YD	52	52	
X4421026	CLASS B PATCHES, TYPE II, 16 INCH (SPECIAL)	SQ YD	16	16	

REV. - MS

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	DATE -	REVISED -									ILLINOIS FED. AID PROJECT				

80% FED
20% STATE

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTR. CODE
				RURAL 0004 014-2401
X4421048	CLASS B PATCHES, TYPE IV, 16 INCH, SPECIAL	SQ YD	64	64
X7011800	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1	1
Z0016702	DETOUR SIGNING	L SUM	1	1

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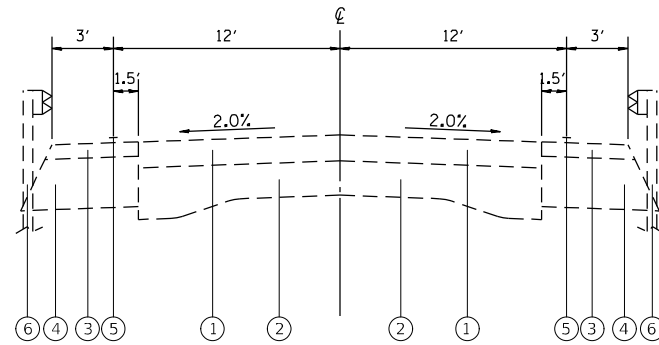
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	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES

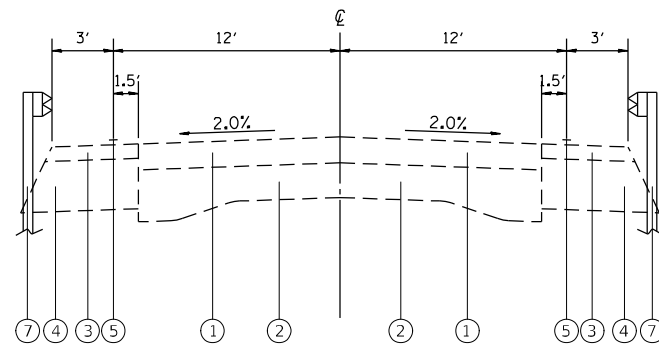
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F.A.P. RTE. 327	SECTION 21CR	COUNTY CLINTON	TOTAL SHEETS 17	SHEET NO. 4
CONTRACT NO. 76P59			ILLINOIS FED. AID PROJECT	



EXISTING TYPICAL SECTION

STA. 960+43.13 (US 50) TO STA. 963+24.38 (US 50)



PROPOSED TYPICAL SECTION

STA. 960+43.13 (US 50) TO STA. 963+24.38 (US 50)

* PAVEMENT PATCHING AND CULVERT REPLACEMENT

STA. 961+79.00 TO STA. 962+01.00

**SEE GUARDRAIL SCHEDULE FOR REPLACEMENT

LEGEND

- ① EXISTING HMA OVERLAY (4 1/2" MIN.)
- ② EXISTING P.C.C. PAVEMENT (9-6-9)
- ③ EXISTING HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N90, 2 1/4"
- ④ EXISTING HOT-MIX ASPHALT BINDER COURSE, IL-19.0 FG, N90, 8 3/4"
- ⑤ EXISTING PAINT PAVEMENT MARKING - LINE 4" (WHITE EDGELINE)
- ⑥ EXISTING GUARDRAIL
- ⑦ PROPOSED GUARDRAIL

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

TYPICAL SECTIONS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	5
CONTRACT NO. 76P59				
ILLINOIS FED. AID PROJECT				

CLASS B PATCHES SCHEDULE , (FULL DEPTH, 16" , SPECIAL)										
LOCATION		LENGTH	WIDTH	AREA	16" (SPECIAL)		DOWEL BARS	TIE BARS	WELDED WIRE REINFORCEMENT	SAW CUTS
					TYPE II	TYPE IV				
STA	SIDE	FOOT	FOOT	SQ YD	SQ YD	SQ YD	1 1/2 INCH EACH	3/4 INCH EACH	SQ YD	FOOT
961+90	LT	20.7	12	27.6		27.6	20	6	27.6	24
961+90	LT SHLD	20.7	3	6.9	6.9					6
961+90	RT	20.7	12	27.6		27.6	20	12	27.6	24
961+90	RT SHLD	20.7	3	6.9	6.9			6		6
TOTAL					13.8	55.2	40.0	24.0	55.2	60.0
ANTICIPATED FAILURES (15%)					2.1	8.3	6	4	8.3	9
TOTAL					16	64	46	28	64	69

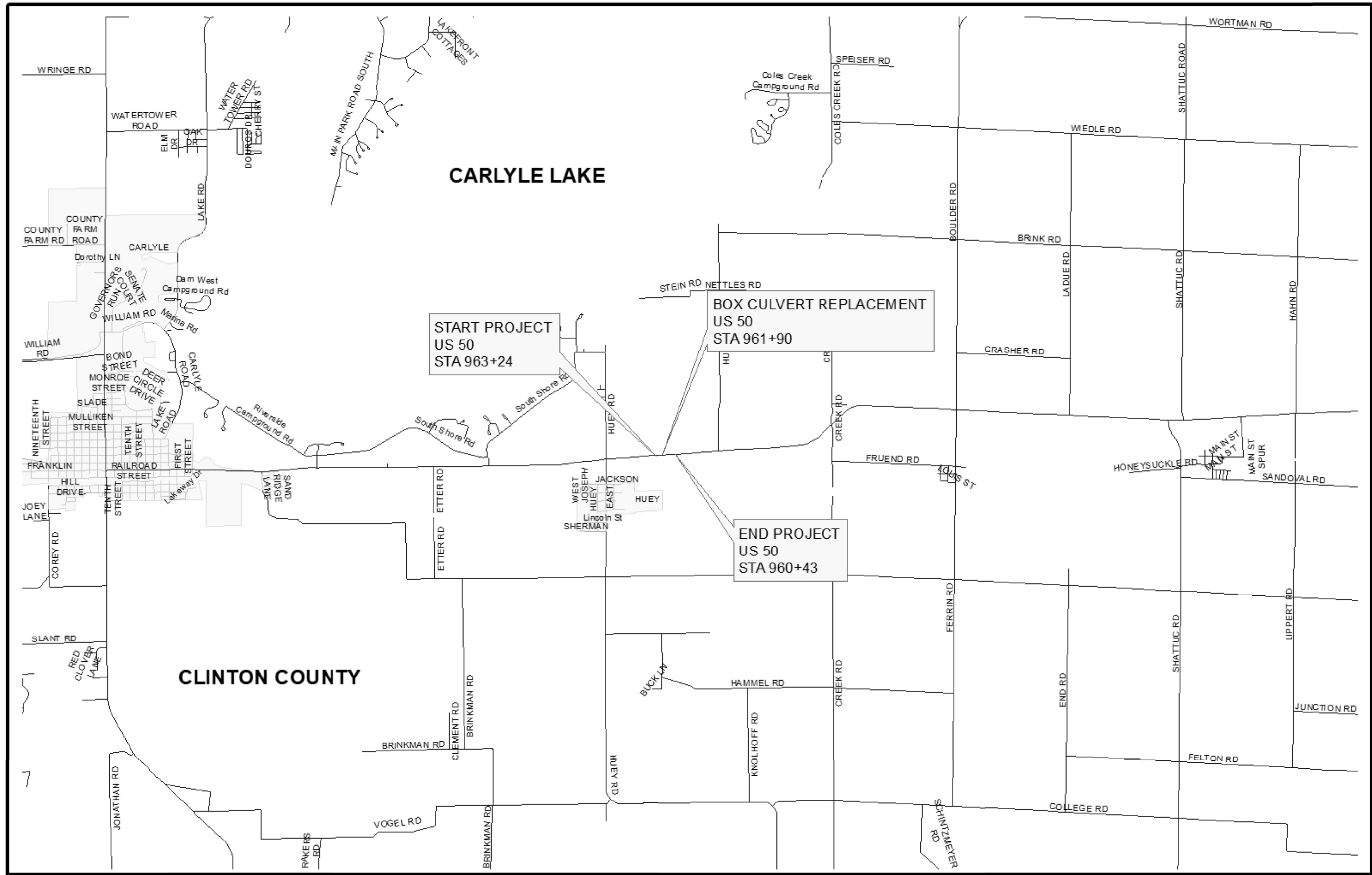
GUARDRAIL SCHEDULE									
LOCATION				GUARDRAIL REMOVAL	STEEL PLATE BEAM GUARDRAIL, TYPE A, 9 FOOT POSTS	LONG-SPAN GUARDRAIL OVER CULVERT, 18 FT 9 IN SPAN	TERMINAL MARKER - DIRECT APPLIED	GUARDRAIL REFLECTORS, TYPE A (WHITE)	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT
STA	TO	STA	LT/RT	FOOT	FOOT	FOOT	EACH	EACH	EACH
960+43.13	TO	960+93.13	LT	50			1		1
960+93.13	TO	961+68.13	LT	75	75.0			2	
961+68.13	TO	962+11.88	LT	44		43.75		2	
962+11.88	TO	962+99.38	LT	88	87.5			2	
960+93.13	TO	961+68.13	RT	75	75.0			2	
961+68.13	TO	962+11.88	RT	44		43.75		2	
962+11.88	TO	963+24.38	RT	113	112.5			2	
SUBTOTAL				488	350	88	1	12	1
TOTAL				488	350	88	1	12	1

PAVEMENT MARKING SCHEDULE						
LOCATION			THERMOPLASTIC PAVEMENT MARKING		RAISED REFLECTIVE PAVEMENT MARKER REMOVAL	RAISED REFLECTIVE PAVEMENT MARKER
			LINE - 4"			
STA	TO	STA	SOLID WHITE FOOT	SKIP-DASH YELLOW CENTERLINE (10') FOOT	EACH	EACH
961+40.00	TO	962+40.00	200	25	1	1
SUBTOTAL			200	25	1	1
TOTAL			225		1	1

NOTE: QUANTITY ESTIMATED BASED ON STRUCTURE REMOVAL AND POTENTIAL DAMAGE TO EXISTING LINES DURING CONSTRUCTION.

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DRAWN -	REVISED -	327					21CR	CLINTON	17	6	
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PLOT DATE = 2/1/2022	DATE -	REVISED -		SHEET 1 OF 1 SHEETS	STA.	TO STA.	ILLINOIS FED. AID PROJECT				



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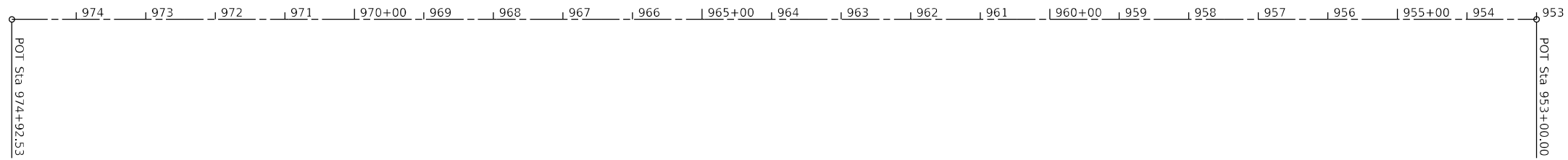
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	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION MAP			
SCALE:	SHEET 1	OF 1 SHEETS	STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	7
CONTRACT NO. 76P59				
ILLINOIS FED. AID PROJECT				

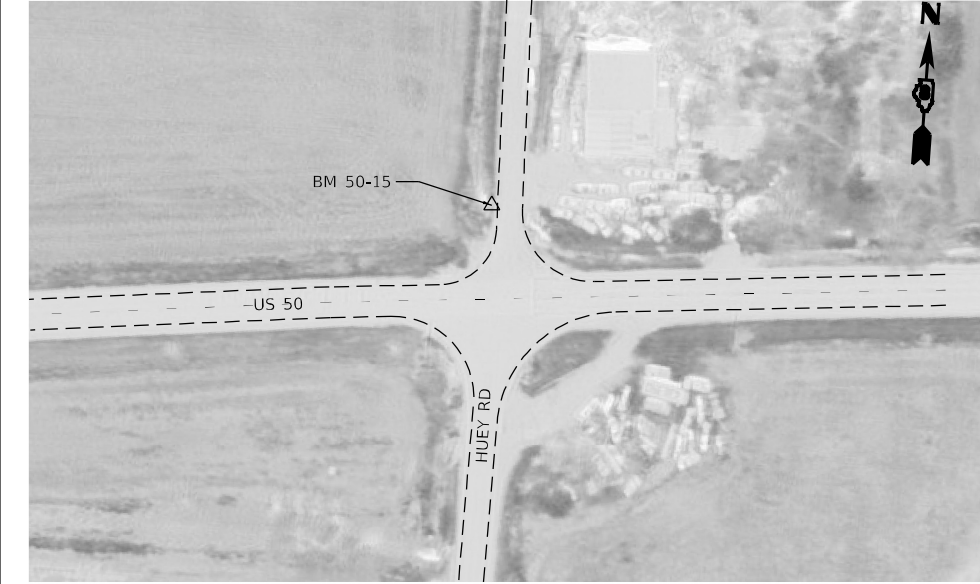
US 50 ALIGNMENT



BENCHMARK DATA

B.M. NO.	DESCRIPTION	ELEVATION (NAVD88)
BM 50-11	NEW CUT "□" ON TOP CENTER OF THE SOUTH HEADWALL (SN 014-2447) RUNNING UNDER US 50, 0.1 MILE WEST OF THE TEE INTERSECTION OF US 50 AND EDNA MAE LN.	440.719'
BM 50-12	NEW SET RR SPIKE IN NORTH SIDE OF POWER POLE, SOUTH OF US 50, WEST OF CO RD 2050 E TO THE SOUTH, SOUTHWEST OF TWO BILLBOARDS NORTH OF US 50, 0.5 MILES WEST OF THE TEE INTERSECTION OF SADDLE DAM 2 RD AND US 50.	454.620'
BM 50-15	NEW CUT "□" ON TOP CENTER OF THE WEST HEADWALL RUNNING UNDER HUEY RD, IN NORTHWEST QUADRANT OF HUEY RD AND US 50.	477.488'

ALIGNMENT POINTS - US 50	
	STATION
POT	953+00.00 R1
POT	974+92.53 R1



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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

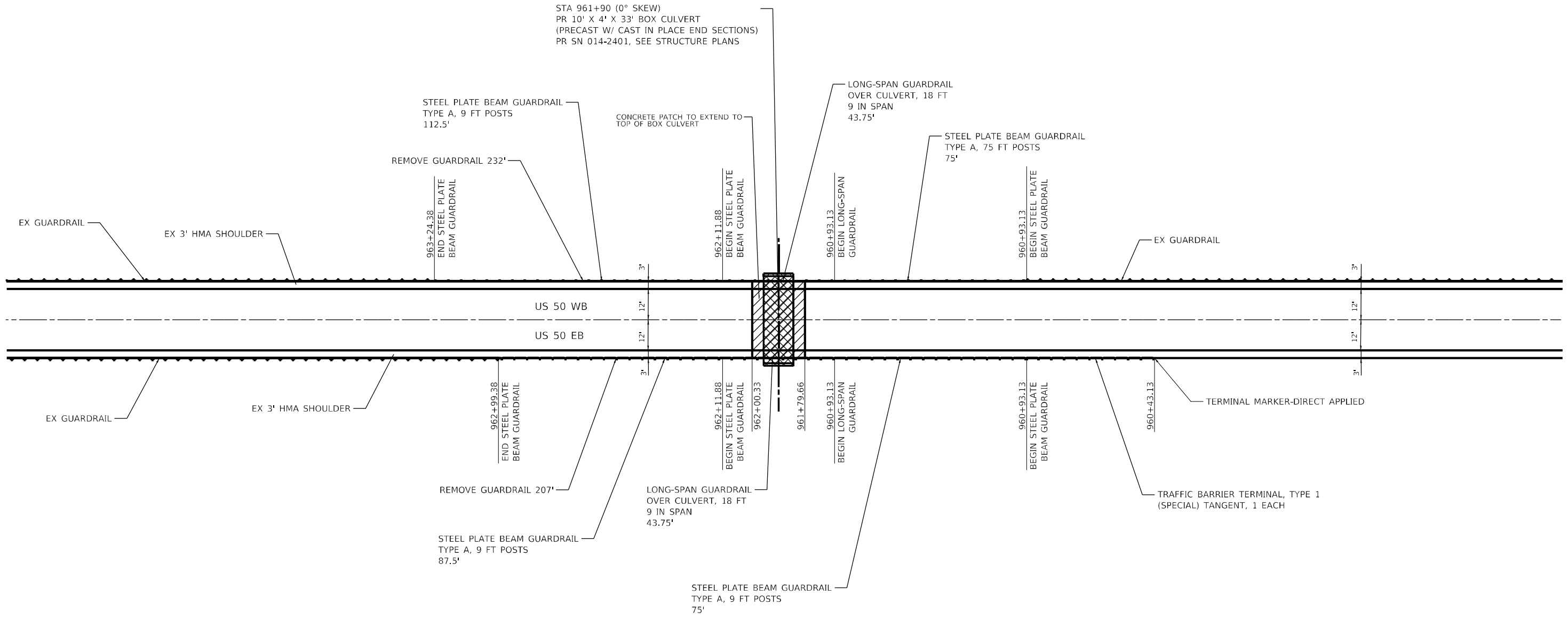
ALIGNMENT, TIES AND BENCHMARKS

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

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	8
CONTRACT NO. 76P59				
ILLINOIS FED. AID PROJECT				

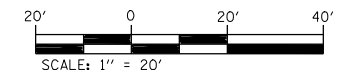


US 50 PLAN



REMOVAL LEGEND

- PAVEMENT REMOVAL
- REMOVAL OF EXISTING STRUCTURE



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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

PLAN, PAVEMENT PATCHING AND GUARDRAIL DETAILS			
SCALE: 1" = 20'	SHEET 1	OF 1	SHEETS
STA.		TO STA.	

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	9
CONTRACT NO. 76P59				
ILLINOIS FED. AID PROJECT				

Benchmark: BM 2 - Railroad spike in N. side of power pole on S. side of U.S. 50, approximately 30' E. of box culvert S.N. 014-2450, Elev. 448.79.
 Existing Structure: S.N. 014-2450 was built in 1923 under SBI 12, Section 21 at Sta. 961+90. Existing structure is a single barrel 10'-0" x 3'-6" reinforced concrete box culvert, 32'-0" long, with wing walls parallel to the roadway and no skew. The Contractor shall remove and replace the existing culvert under full closure while traffic is detoured.

No salvage.

INDEX OF SHEETS

1. General Plan and Elevation
2. General Data
- 3.-4. Box Culvert End Section Details
5. Bar Splicer Assembly Details
- 6.-7. Soil Boring Logs

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

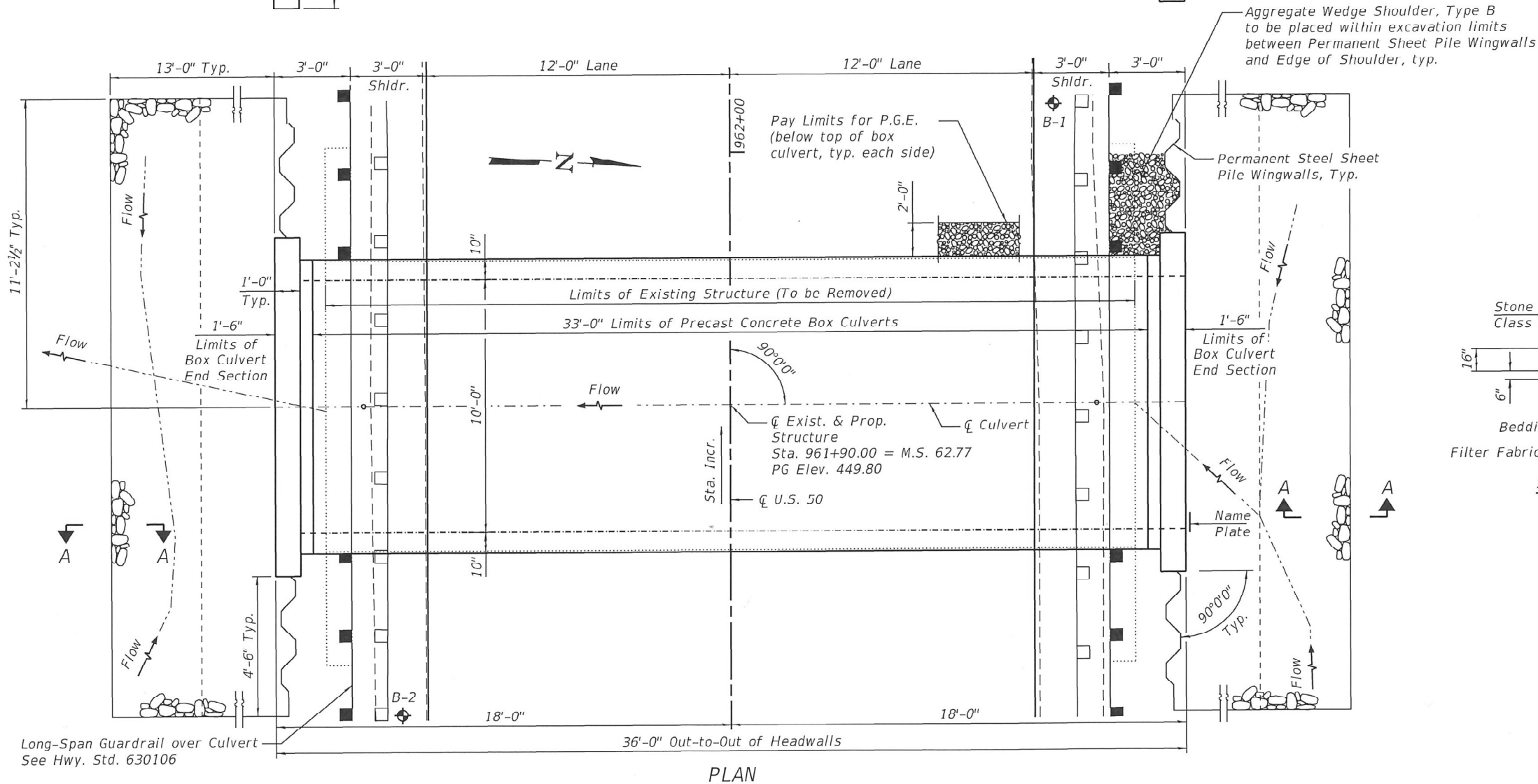
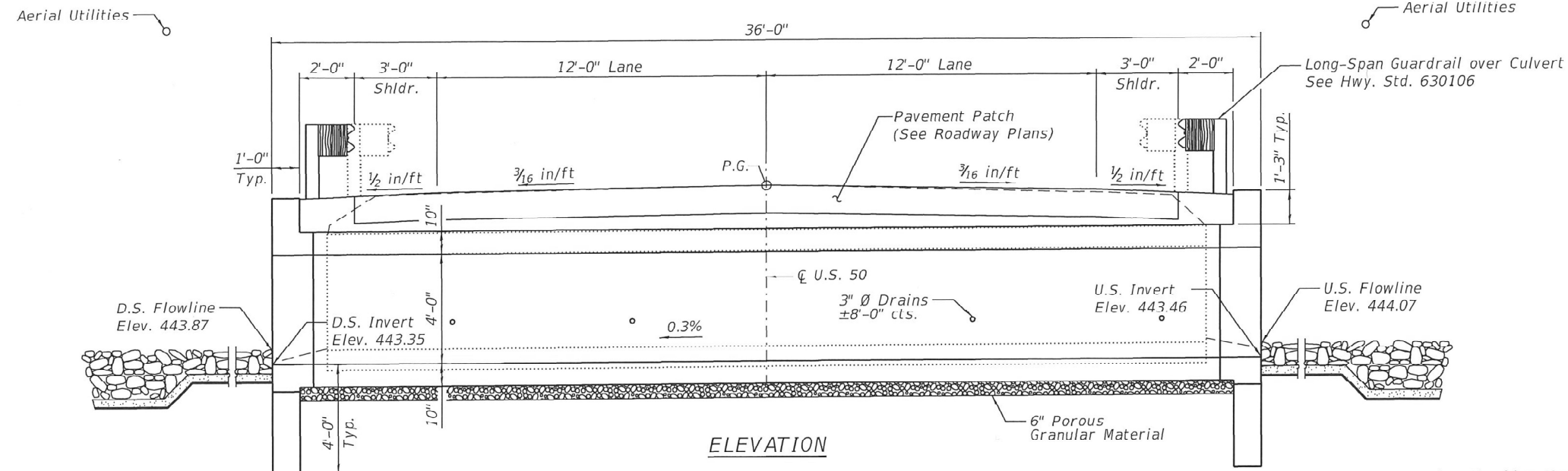
DESIGN STRESSES

PRECAST UNITS

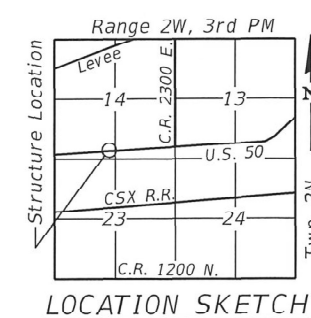
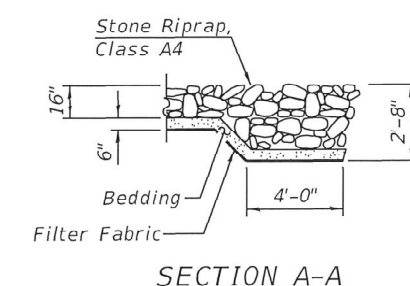
f'c = 5,000 psi
 fy = 65,000 psi (Welded Wire Reinforcement)

FIELD UNITS

f'c = 3,500 psi
 fy = 60,000 psi (Reinforcement)
 fy = 50,000 psi (Sheet Piling)



Michael J. Haley 2/2/2022
 Michael T. Haley Date
 Licensed Structural Engineer
 State of Illinois No. 081-005991
 Expires 11/30/2022



GENERAL PLAN AND ELEVATION
U.S. RTE. 50 OVER
TRIBUTARY TO LOST CREEK
F.A.P. RTE. 327 SEC. 21CR
CLINTON COUNTY
STATION 961+90.00 = M.S. 62.77
S.N. 014-2401

REV. - MS

LIN ENGINEERING, LTD.
 Consulting Engineers
 Springfield, Illinois

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		CHECKED -	MTH	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION
STRUCTURE NO. 014-2401
 SHEET 1 OF 7 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	11
CONTRACT NO. 76P59				
ILLINOIS FED. AID PROJECT				

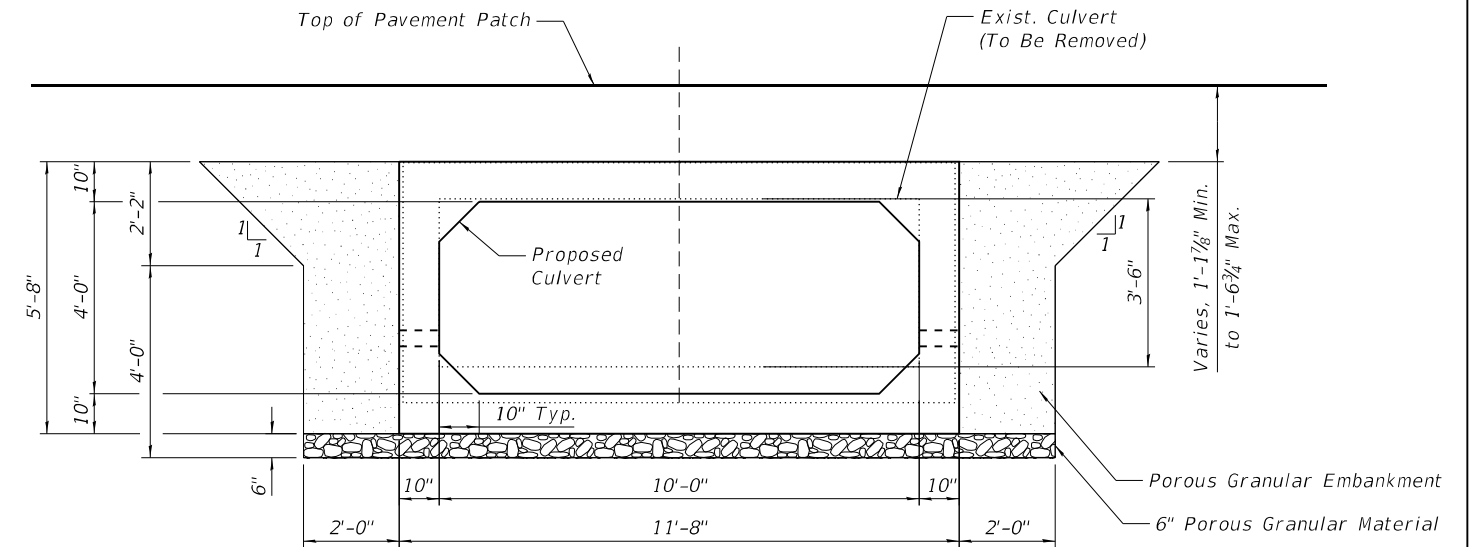
GENERAL NOTES

The design fill height for this box varies between 1.16 ft minimum and 1.56 ft maximum. 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, unless noted otherwise.

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 out to limits of Permanent Sheet Pile Wingwalls. 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.



SECTION THROUGH PRECAST BOX CULVERT

TOTAL BILL OF MATERIAL

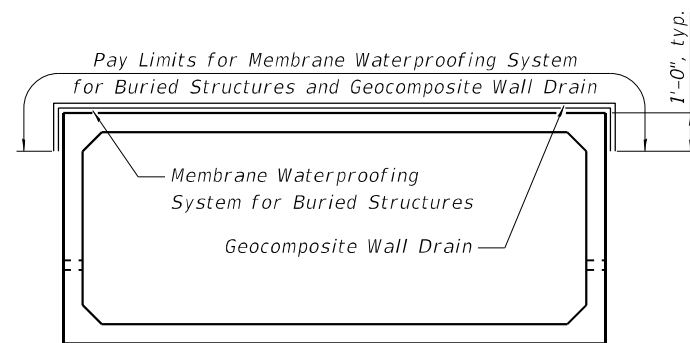
ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	36
Stone Riprap, Class A4	Sq. Yd.	96
Filter Fabric	Sq. Yd.	96
Aggregate Wedge Shoulder, Type B	Ton	3
Removal of Existing Structures	Each	1
Name Plates	Each	1
Box Culvert End Sections, Culvert No. 1	Each	2
Precast Concrete Box Culverts 10'x4'	Foot	33.0
Geocomposite Wall Drain	Sq. Yd.	52
Membrane Waterproofing System for Buried Structures	Sq. Yd.	52

CULVERT CONSTRUCTION SEQUENCE

1. Close road under detour.
2. Remove existing pavement and guardrail to limits specified in Roadway plans.
3. Remove entire existing culvert.
4. Excavate as required and prepare 6" PG base.
5. Construct new precast box culvert sections.
6. Construct both Box Culvert End Sections.
7. Place PGE material on sides of culvert between limits of Permanent Steel Sheet Piling.
8. Provide roadway base and place Roadway Pavement Patch.
9. Open both lanes over structure to traffic.

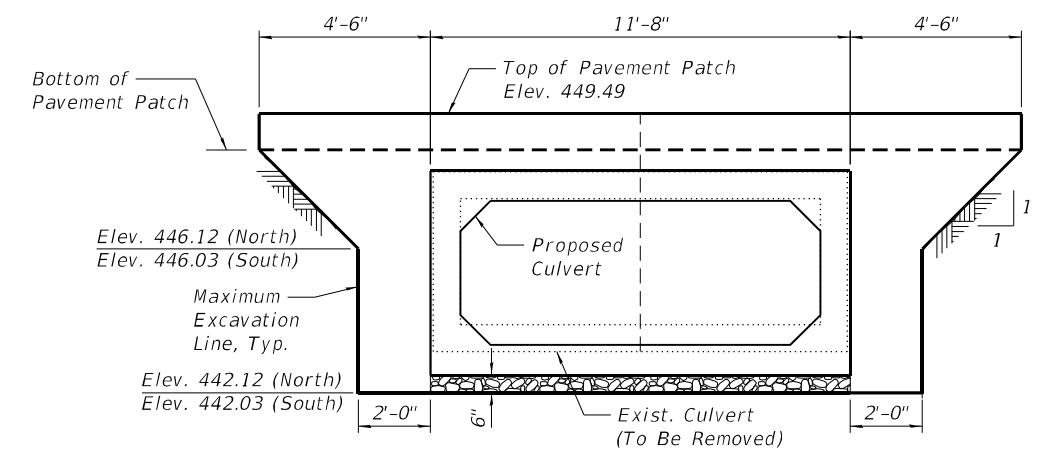
STATION 961+90.00 = M.S. 62.77
 BUILT 20 BY
 STATE OF ILLINOIS
 F.A.P. RTE. 327 SEC. 21CR
 LOADING HL-93
 STR. NO. 014-2401

NAME PLATE
 See Std. 515001



LIMITS OF MEMBRANE WATERPROOFING SYSTEM AND GEOCOMPOSITE WALL DRAIN

Note:
 Geocomposite Wall Drain shall be according to Section 591 of the Standard Specifications, except that concrete nails shall not be used in areas where it overlaps Membrane Waterproofing System for Buried Structures.



EXCAVATION LIMITS

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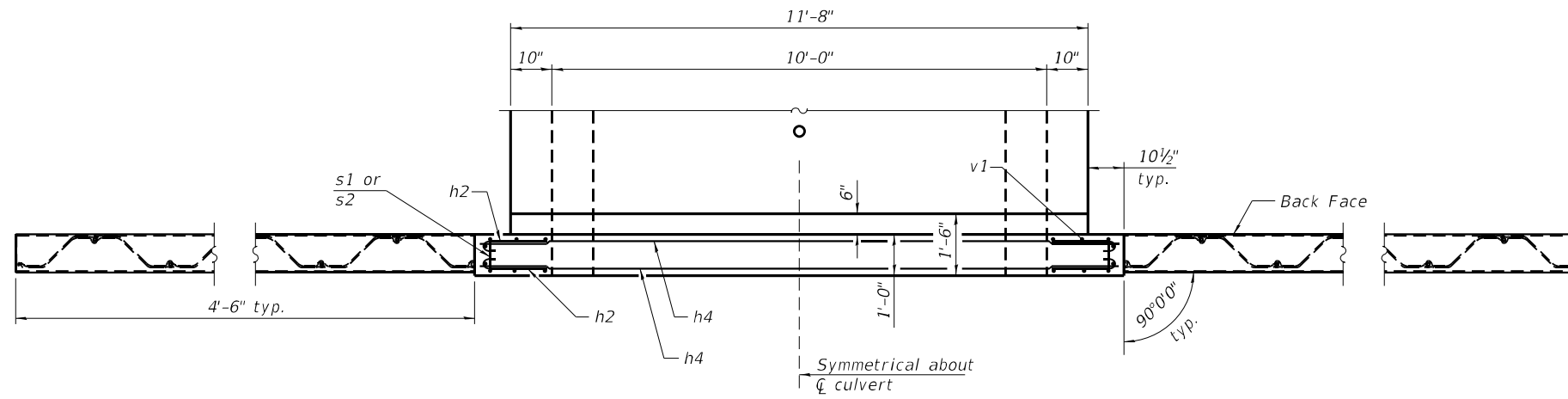
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

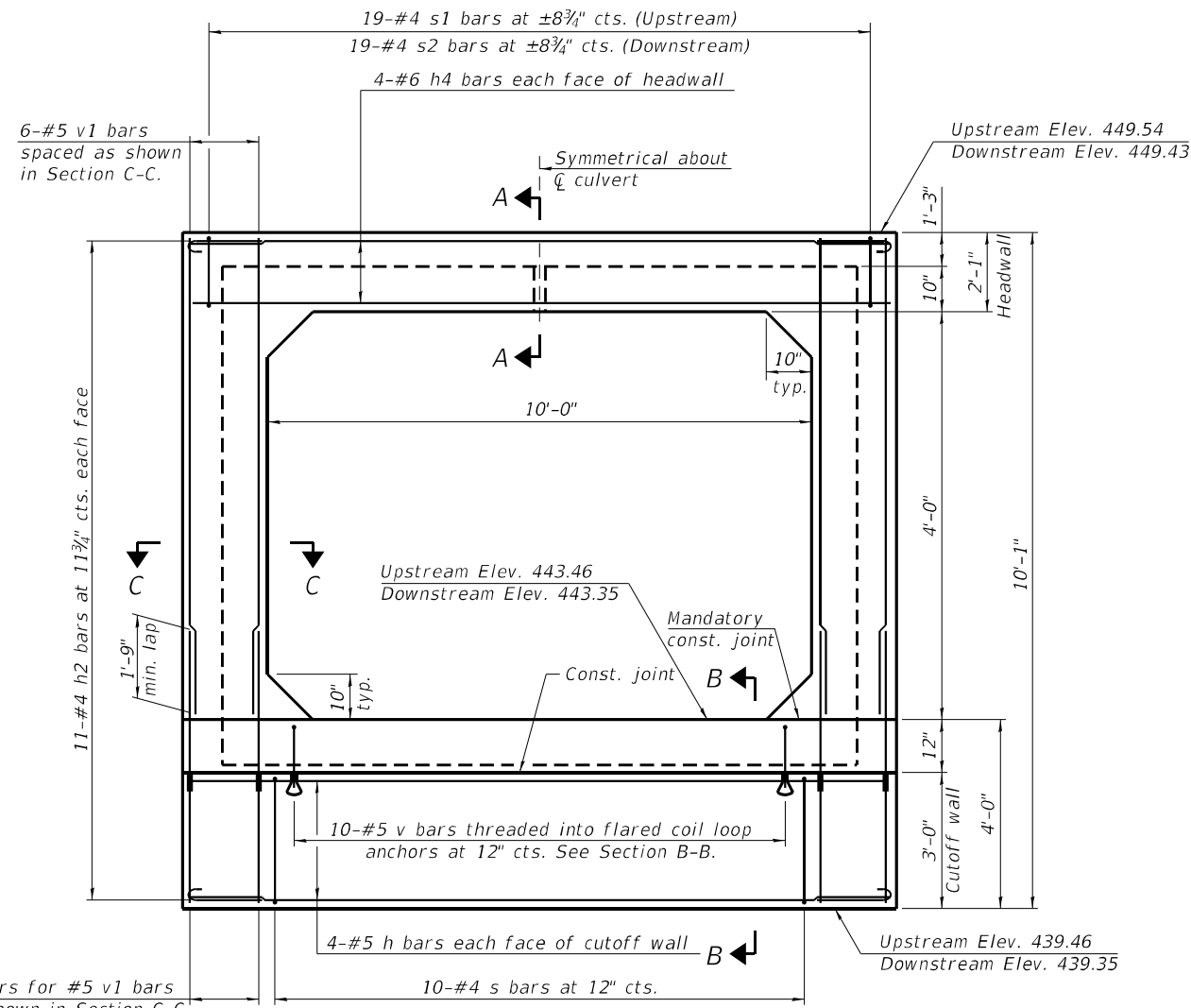
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 STRUCTURE NO. 014-2401**

SHEET 2 OF 7 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	12
CONTRACT NO. 76P59			ILLINOIS FED. AID PROJECT	



PLAN



END ELEVATION

(Wingwalls omitted in this view for clarity.)

Notes:

The design fill height for this structure varies between 1.16 ft minimum and 1.56 ft maximum. The precast concrete box culvert sections shall conform to the standard designs of ASTM C 1577.

The box culvert end section shall be built in the field and a precast option is not allowed except the cutoff wall may be precast. If the Contractor elects to use a precast cutoff wall, shop drawings and a proposed construction sequence shall be submitted to the Engineer for approval.

Areas of the precast box culvert in contact with cast-in-place concrete shall be sandblasted, cleaned, and wetted prior to placing concrete in the field according to Article 503.09(b).

The ends of the precast box sections adjacent to the end section shall be formed without male and female shapes.

The joints between precast box sections shall be sealed, all voids filled with a mastic joint sealer. In addition, the joints shall be externally sealed on all four sides with a 13 inch wide external sealing band. The seal shall be centered over the joint, secured in place and protected during the backfilling process.

Tilt h2 bars as required to maintain clearance.

Extend precast concrete box culvert welded wire reinforcement into end section. Bend as necessary to provide 1/2" clear cover.

See sheet 2 of 7 for culvert construction sequence.

See sheet 4 of 7 for Section A-A, B-B and C-C.

See sheet 4 of 7 for additional wing wall details.

Neither construction equipment nor construction materials shall be operated or stored, respectively, behind the sheet pile wingwalls until riprap has been placed in front of the wingwalls to the final elevation.

BILL OF MATERIAL

Item	Unit	Total
Box Culvert End Sections, Culvert No. 1	Each	2

(Sheet 1 of 2)

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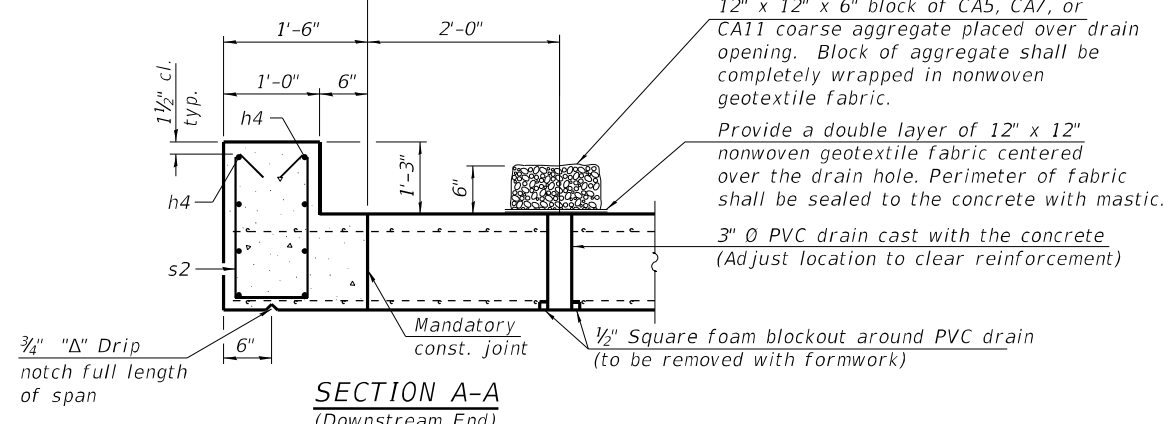
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**BOX CULVERT END SECTION DETAILS
STRUCTURE NO. 014-2401**

SHEET 3 OF 7 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	13
CONTRACT NO. 76P59			ILLINOIS FED. AID PROJECT	

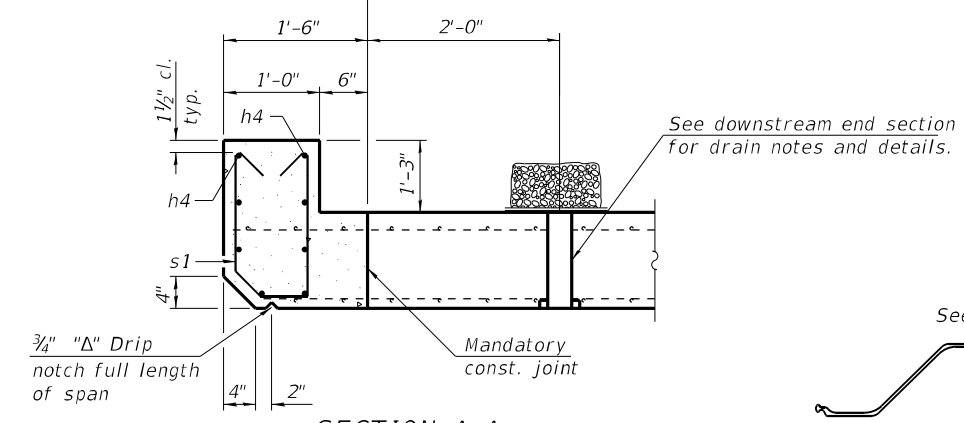
Pay Limits for Box Culvert End Sections Pay Limits for Precast Concrete Box Culverts



SECTION A-A
(Downstream End)

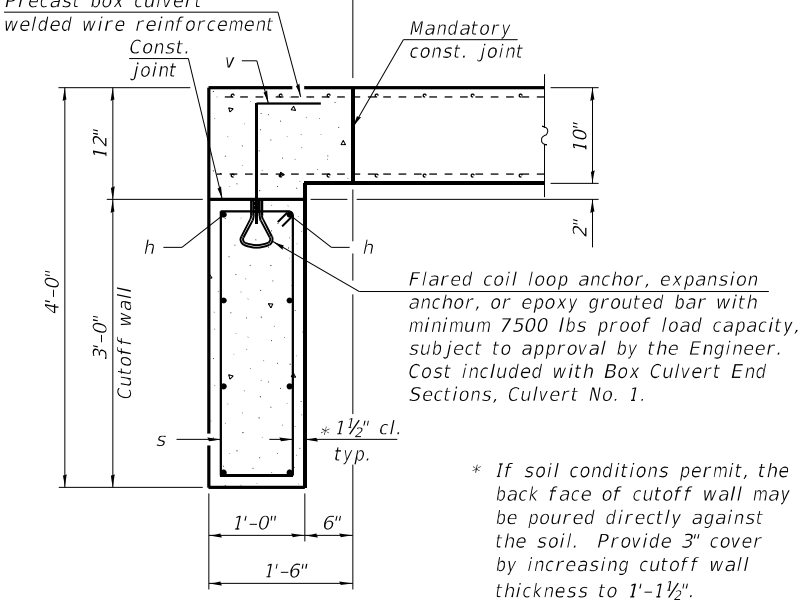
(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)

Pay Limits for Box Culvert End Sections Pay Limits for Precast Concrete Box Culverts

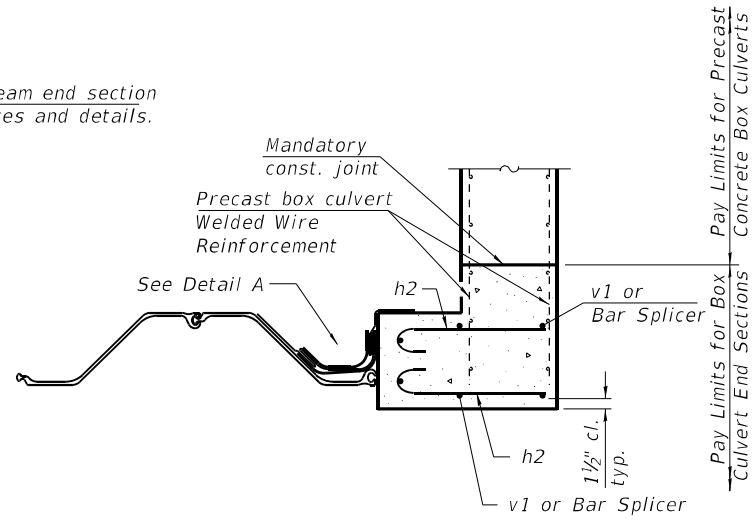


SECTION A-A
(Upstream End)

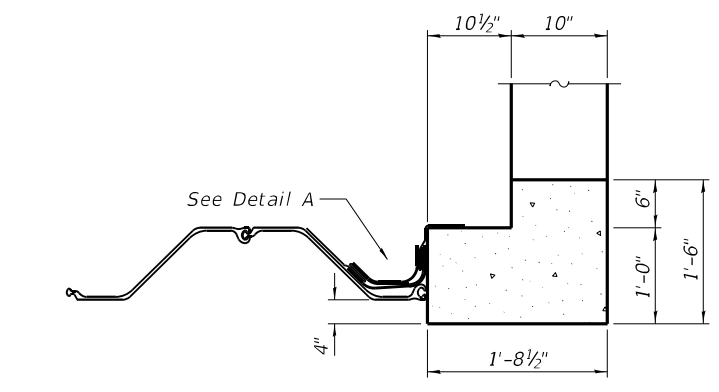
Pay Limits for Box Culvert End Sections Pay Limits for Precast Concrete Box Culverts



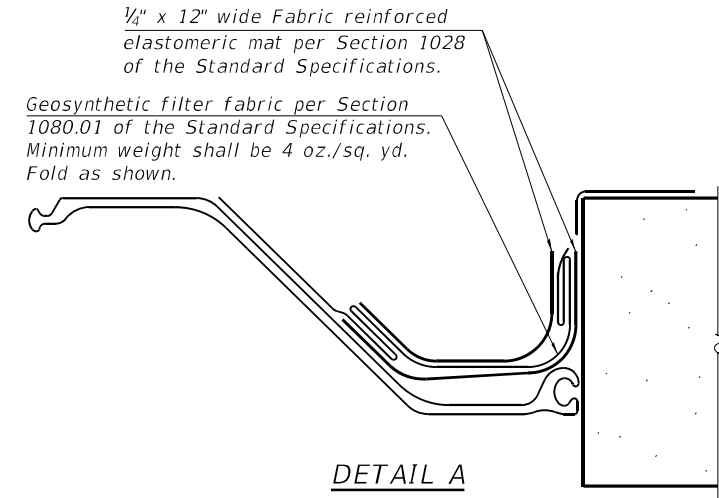
SECTION B-B



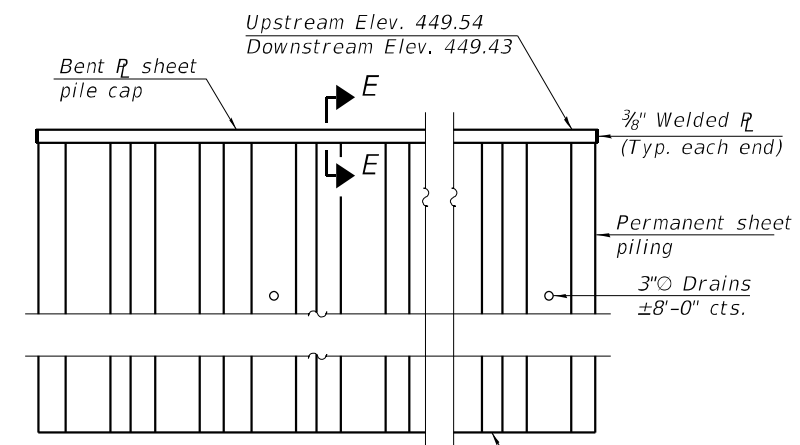
SECTION C-C
(Showing reinforcement)



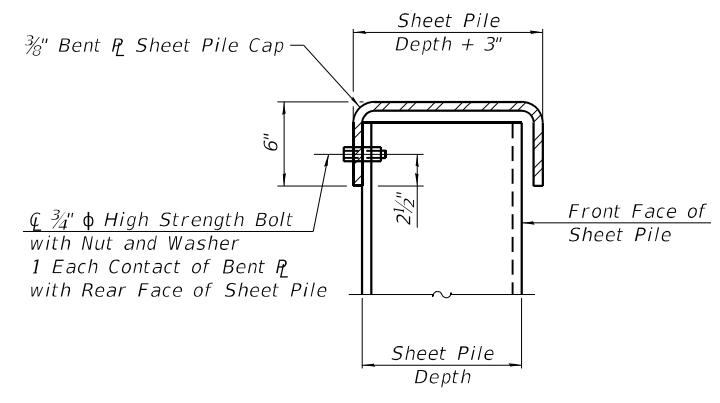
SECTION C-C
(Showing dimensions)



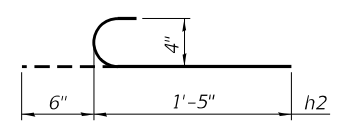
DETAIL A



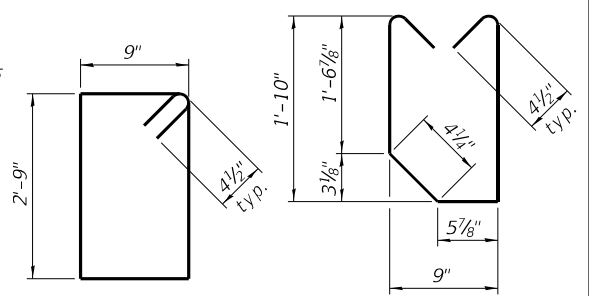
WINGWALL ELEVATION



SECTION E-E

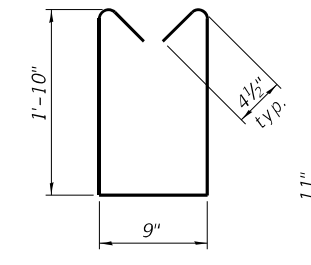


BAR h2

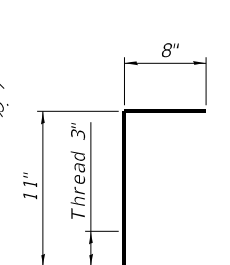


BAR s

BAR s1



BAR s2



BAR v

Notes:
The minimum effective section modulus of the permanent sheet pile wall shall be 48.4 in.³/ft.
Sheet piling shall not be driven until the concrete strength has attained a minimum flexural strength of 650 psi or a minimum compressive strength of 3500 psi.
The cost of furnishing and installing the bent R sheet pile cap, elastomeric mat, and filter fabric shall be included in the cost of the end section.
See sheet 2 of 7 for culvert construction sequence.

**ONE END SECTION
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h	8	#5	13'-1"	—
h2	44	#4	1'-11"	⌋
h4	8	#6	13'-1"	—
s	10	#4	7'-9"	⌋
s1	19	#4	5'-0"	⌋
s2	19	#4	5'-2"	⌋
v	10	#5	1'-7"	⌋
v1	12	#5	5'-10"	—
Concrete Box Culverts	Cu. Yd.		4.2	
Reinforcement Bars	Pound		530	
Bar Splicers	Each		12	
Permanent Sheet Piling	Sq. Ft.		225	

(Items in this table are for information only. All material required for the construction of the end sections is included in the pay item Box Culvert End Sections, Culvert No. 1)

(Sheet 2 of 2)

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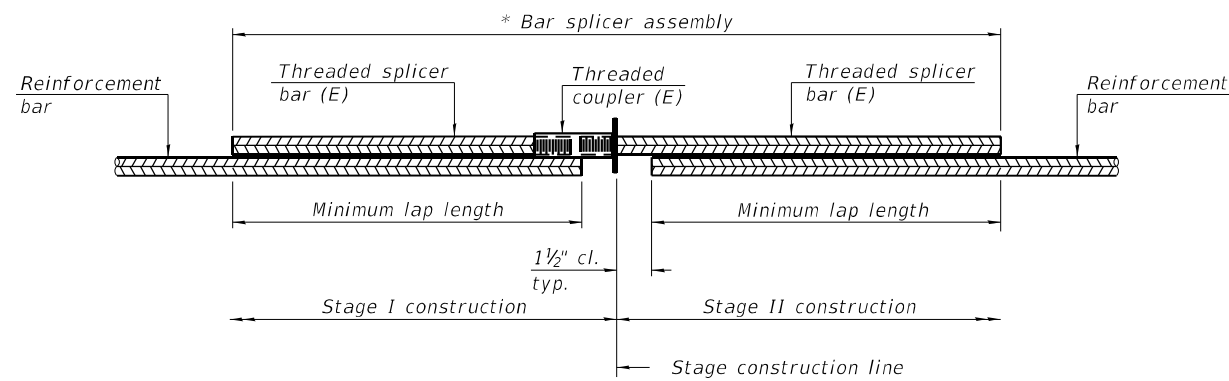
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**BOX CULVERT END SECTION DETAILS
STRUCTURE NO. 014-2401**

SHEET 4 OF 7 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21GR	CLINTON	17	14
CONTRACT NO. 76P59				

ILLINOIS FED. AID PROJECT

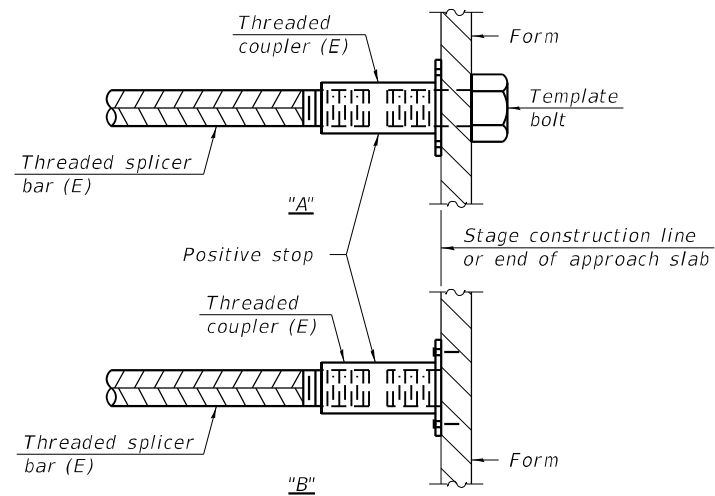


STANDARD BAR SPLICER ASSEMBLY PLAN
 (All components shall be provided from one supplier)

Threaded splicer bar length = min. lap length + 1 1/2" + thread length

* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Minimum lap length
Cutoff Wall	#5	24	1'-9"

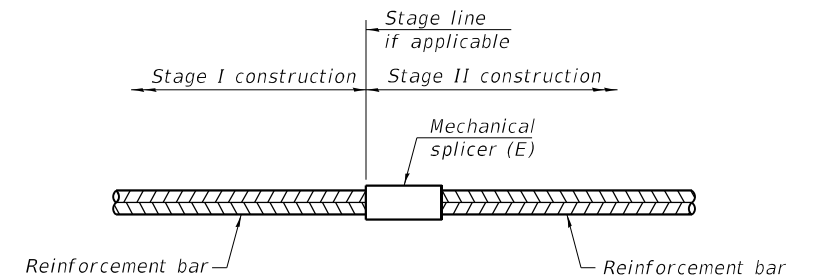


INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.

"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.

(E) : Indicates epoxy coating.



STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required

Notes:
 Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.
 All reinforcement shall be lapped and tied to the splicer bars.
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.
 See approved list of bar splicer assemblies and mechanical splicers for alternatives.

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BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
 STRUCTURE NO. 014-2401

SHEET 5 OF 7 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	21CR	CLINTON	17	15
CONTRACT NO. 76P59				

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