

07-30-2021 LETTING ITEM 049

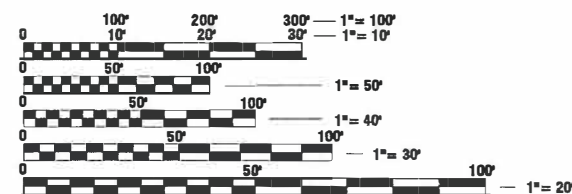
# SURFACE TRANSPORTATION PROGRAM PLANS FOR PROPOSED STRUCTURE REPLACEMENT TR 120 (DENNY ROAD) OVER GERYUNE CREEK BOONE COUNTY/BOONE ROAD DISTRICT SN 004-3102 SECTION 20-03121-00-BR PROJECT NUMBER 5YF7(613) JOB NO. C-92-057-21 CONTRACT NO. 85713

**INDEX OF SHEETS**

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8	GENERAL PLAN AND ELEVATION
9	END SECTION DETAILS
10	BOX CULVERT DETAILS
11	S1 RAIL DETAIL

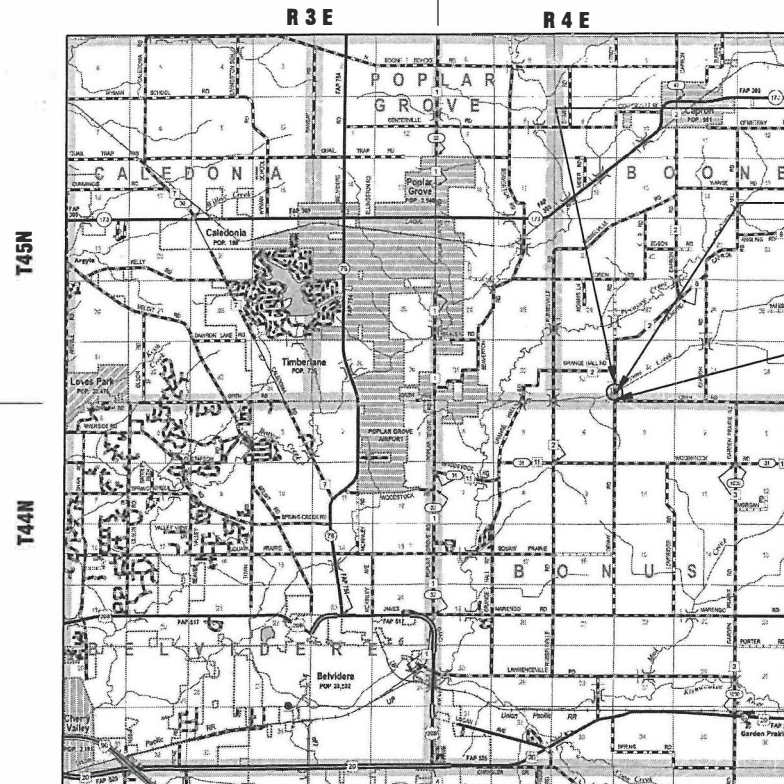
**STANDARDS**

000001-08	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
001001-02	AREAS OF REINFORCEMENT BARS
001006	DECIMAL OF AN INCH AND OF A FOOT
280001-07	TEMPORARY EROSION CONTROL SYSTEMS
515001-04	NAME PLATE FOR BRIDGES
701001-02	OFF-ROAD OPERATIONS, 2L, 2W, MORE THAN 15' (4.5 M) AWAY
701006-05	OFF-ROAD OPERATIONS, 2L, 2W, 15' (4.5 M) TO 24' (600 MM) FROM PAVEMENT EDGE
701201-05	LANE CLOSURE, 2L, 2W, DAY ONLY, FOR SPEEDS > 45 MPH
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701901-08	TRAFFIC CONTROL DEVICES
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725001-01	OBJECT AND TERMINAL MARKERS
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729001-01	APPLICATIONS OF TYPES A & B METAL POSTS (FOR SIGNS & MARKERS)
782006-01	GUARDRAIL AND BARRIER WALL REFLECTOR MOUNTING DETAILS
BLR 21-9	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS



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.E.  
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
1-800-892-0123



LOCATION MAP NOT TO SCALE  
GROSS LENGTH OF SECTION = 150 FEET (0.03 MILE)  
NET LENGTH OF SECTION = 150 FEET (0.03 MILE)

**DESIGN CRITERIA**

ROADWAY	DESIGN CLASSIFICATION	ADT	DESIGN SPEED
TR 120	LOCAL ROAD	214	55 mph

END IMPROVEMENT  
STA 13+50

SECTION 20-03121-00-BR  
STATION 12+70  
PROPOSED 10x8 TRIPLE CELL BOX  
CULVERT PR SN 004-3102

BEGIN IMPROVEMENTS  
STA 12+00



CHAD T. CLAUSON  
DIXON, ILLINOIS  
ILLINOIS LICENSED PROFESSIONAL  
ENGINEER NO. 062-071543  
EXPIRES 11-30-2021



www.wendlers.com ph: 815.288.2261  
Illinois Professional Design Firm No. 184-000848

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
160	20-03121-00-BR	BOONE	11	1



LOCATION OF SECTION INDICATED THUS: -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED May 7 20 21

*[Signature]*  
COUNTY ENGINEER

SUBMITTED May 10 20 21

*[Signature]*  
BOONE ROAD DISTRICT

PASSED 5/26 20 21

*[Signature]*  
DISTRICT 2 ENGINEER OF LOCAL ROADS & STREETS

RELEASED FOR  
BID BASED ON  
LIMITED REVIEW 5/26 20 21

*[Signature]*  
REGION 2 ENGINEER

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OF THE STATE OF ILLINOIS

**GENERAL NOTES:**

1. THE FINAL TOP FOUR INCHES OF SOIL IN ANY RIGHT-OF-WAY AREA DISTURBED BY THE CONTRACTOR MUST BE CAPABLE OF SUPPORTING VEGETATION. THE SOIL MUST BE FROM THE A HORIZON (ZERO TO 2' DEEP) OF SOIL PROFILES OF LOCAL SOILS. THE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICES BID AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
2. ENVIRONMENTAL REVIEWS PRIOR TO THE USE OF ANY PROPOSED BORROW AREAS, USE AREAS (TEMPORARY ACCESS ROADS, DETOURS, RUN-AROUNDS, ETC.) AND/OR WASTE AREAS, THE CONTRACTOR SHALL FILE THE REQUIRED ENVIRONMENTAL RESOURCE REQUEST SURVEYS ACCORDING TO SECTION 107.22 OF THE STANDARD SPECIFICATIONS. THESE SURVEYS ARE REQUIRED IN ORDER FOR THE DEPARTMENT TO CONDUCT CULTURAL AND BIOLOGICAL RESOURCE SURVEYS FOR THE PROPOSED SITE.
- PRIOR TO ANY WASTE MATERIALS BEING REMOVED FROM THE CONSTRUCTION SITE THE REQUIRED ENVIRONMENTAL RESOURCE SURVEYS SHALL BE OBTAINED AND FILED BY THE CONTRACTOR. EXCESS WASTE PRODUCTS REMOVED FROM THE CONSTRUCTION SITE SHALL BE DISPOSED OF AS REQUIRED IN SECTION 202.03 OF THE STANDARD SPECIFICATIONS. ANY PROTRUDING METAL BARS SHALL BE REMOVED PRIOR TO THE DISPOSAL OF BROKEN CONCRETE AT APPROVED DISPOSAL SITES. PLEASE NOTE THAT A MINIMUM OF FOUR WEEKS SHALL BE ALLOWED FOR THE DISTRICT TO OBTAIN THE REQUIRED WASTE SITE ENVIRONMENTAL CLEARANCES AND SIX WEEKS FOR THE REQUIRED BORROW SITE ENVIRONMENTAL CLEARANCES.
3. FERTILIZER NUTRIENTS SHALL BE APPLIED AT THE RATE SPECIFIED IN SECTIONS 250 AND 252 OF THE STANDARD SPECIFICATIONS. THIS SHALL BE INCLUDED IN THE COST OF THE SEEDING OR SODDING.
4. ALL EMBANKMENT CONSTRUCTED OF COHESIVE SOIL SHALL BE CONSTRUCTED WITH NOT MORE THAN 110% OF OPTIMUM MOISTURE CONTENT, DETERMINED BY THE STANDARD PROCTOR TEST. COHESIVE SOIL SHALL BE DEFINED AS ANY SOIL WHICH CONTAINS GREATER THAN 10% PARTICLES BY WEIGHT PASSING THE #200 SIEVE. THE 110% OF OPTIMUM MOISTURE LIMIT MAY BE WAIVED IN FREE-DRAINING GRANULAR MATERIAL WHEN APPROVED BY THE ENGINEER.
6. SAW CUTS SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM EARTH EXCAVATION (SPECIAL).
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING UTILITY PROPERTY DURING CONSTRUCTION OPERATIONS AS OUTLINED IN ARTICLE 107.39 OF THE STANDARD SPECIFICATIONS. A MINIMUM OF 48 HOURS ADVANCE NOTICE IS REQUIRED FOR NON-EMERGENCY WORK. THE JULIE NUMBER IS 800-892-0123. THE UTILITIES LOCATED WITHIN THE PROJECT LIMITS OR IMMEDIATELY ADJACENT TO THE PROJECT CONSTRUCTION LIMITS ARE LISTED ON THE COVER SHEET.
8. THE APPLICABLE PORTIONS OF ARTICLE 105.07 OF THE STANDARD SPECIFICATION SHALL APPLY EXCEPT FOR THE FOLLOWING: THE CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE THE VERTICAL DEPTHS OF THE UNDERGROUND UTILITIES WHICH MAY INTERFERE WITH CONSTRUCTION OPERATIONS. THIS WORK WILL NOT BE MEASURED OR PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED AS INCLUDED IN THE UNIT BID PRICE FOR THE ITEM OF CONSTRUCTION INVOLVED.
9. COST OF PAVEMENT AND CULVERT REMOVAL IS INCLUDED IN EARTH EXCAVATION (SPECIAL)
10. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONTACT AND COORDINATE HIS ACTIVITIES WITH THE UTILITIES BY CONTACTING: JULIE - 800/892-0123.
11. REMOVAL OF EXISTING GUARDRAIL SHALL BE CONSIDERED INCLUDED IN THE UNIT PRICE BID PER EACH FOR REMOVAL OF EXISTING STRUCTURES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE FLOWS FOR THE DURATION OF THE PROJECT.

THE FOLLOWING RATES OF APPLICATION HAVE BEEN USED IN CALCULATING PLAN QUANTITIES:

GRANULAR MATERIALS	2.05 TONS / CU YD
HOT MIX ASPHALT	112 LBS / SY-INCH
BITUMINOUS MATERIALS (PRIME COAT) (ON GRAVEL)	0.25 LBS / SF
BITUMINOUS MATERIALS (TACK COAT) (BETWEEN LIFTS)	0.025 LBS / SF
TEMPORARY EROSION CONTROL SEEDING	100 LBS / ACRE / APPLICATION

UTILITY CONTACT INFORMATION			
UTILITY	COMPANY	CONTACT	PHONE NUMBER
ELECTRIC	COMED	NA	630-576-7094
COMMUNICATIONS	FRONTIER	KALIN HINSHAW	815-895-1515

### LEGEND

TOPOGRAPHIC		SURVEY	
	BOUNDARY OF SURVEY		STEEL PIN FOUND
	SECTION LINE		STEEL PIN SET
	RIGHT OF WAY LINE		SET SURVEY NAIL
	CENTERLINE		R.O.W. MARKER
	BUILDING SETBACK (BSL)		CHISELED "X"
	EASEMENT (UE)		STONE FOUND
	GAS MAIN		P.K. NAIL
	WATERMAIN		
	OVERHEAD ELECTRIC LINE		
	UNDERGROUND ELECTRIC		
	OVERHEAD TELEPHONE LINE		
	UNDERGROUND TELEPHONE		
	FIBER OPTIC LINE		
	FENCE LINE		
	STORM SEWER		
	SANITARY SEWER		
	CURB AND GUTTER		
	DEPRESSED CURB		
	EXISTING CONTOUR LINE		
	DECIDUOUS SHRUB		HANDHOLE
	CONIFEROUS SHRUB		GUY WIRE
	DECIDUOUS TREE		STREET LIGHT
	CONIFEROUS TREE		FIRE HYDRANT
	STUMP		MANHOLE
	TELEPHONE POLE		CLEANOUT
	TELEPHONE PEDESTAL		WATER VALVE
	CABLE TV RISER		WATER SERVICE
	POWER POLE		GAS VALVE
	POWER POLE WITH LIGHT		DROP INLET
	ELEC. PAD W/ TRANS.		INLET
	GAS METER/REGULATOR		SIGN
	MANHOLE FOR ELECTRIC		

### PROPOSED

	PROPOSED SANITARY SEWER
	PROPOSED SANITARY MANHOLE
	PROPOSED SANITARY SERVICE
	PROPOSED WATER MAIN
	PROPOSED WATER SERVICE
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER SERVICE
	PROPOSED STORM SEWER
	PROPOSED STORM INLET
	PROPOSED STORM MANHOLE
	PROPOSED DRAIN TILE
	PROPOSED END SECTION
	PROPOSED RIP RAP
	PROPOSED DIRECTION OF FLOW
	PROPOSED 100 YEAR FLOOD ROUTE
	TOP OF FOUNDATION
	PROPOSED CONTOUR LINE
	PROPOSED CURB & GUTTER

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**SUMMARY OF QUANTITIES**

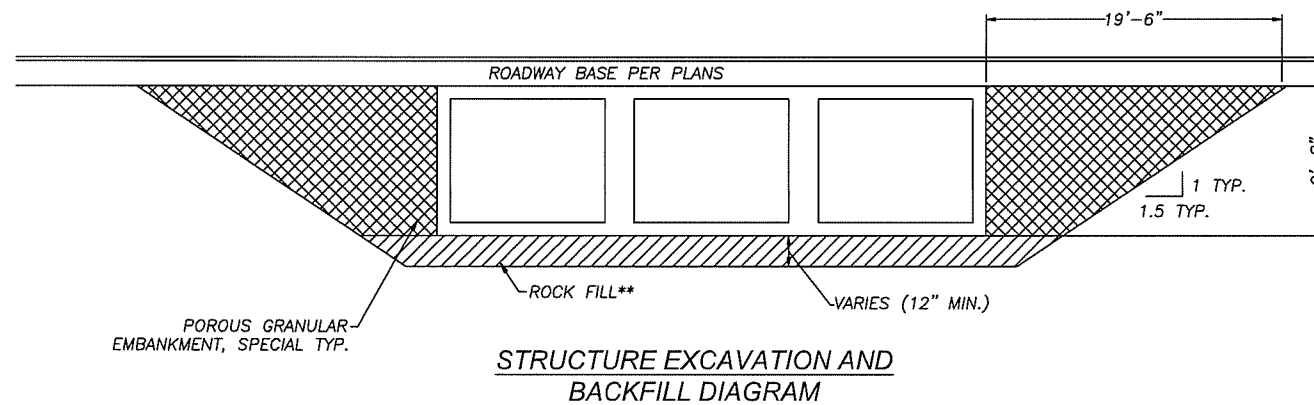
CONSTRUCTION TYPE CODE: 0010

Code	Item	Unit of Measure	Quantity
25100630	EROSION CONTROL BLANKET	SQ YD	360
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	142
28000400	PERIMETER EROSION BARRIER	FOOT	177
35101400	AGGREGATE BASE COURSE, TYPE B	TON	274
40600275	BITUMINOUS MATERIALS (PRIME COAT)	POUND	822
40600290	BITUMINOUS MATERIALS (TACK COAT)	POUND	83
40603080	HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50	TON	63
40604050	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "C", N50	TON	63
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	3088
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	87
51500100	NAME PLATES	EACH	1
52200015	PERMANENT SHEET PILING	SQ FT	1430
54003000	CONCRETE BOX CULVERTS	CU YD	21.8
54011008	PRECAST CONCRETE BOX CULVERTS 10' X 8'	FOOT	106
67100100	MOBILIZATION	LSUM	1
* X0900064	MEMBRANE WATERPROOFING SYSTEM FOR BURIED STRUCTURES	SQ YD	165
* X2020410	EARTH EXCAVATION (SPECIAL)	CU YD	60
* X2070304	POROUS GRANULAR EMBANKMENT, SPECIAL	CU YD	204
* X2501020	SEEDING, CLASS 2A (SPECIAL)	ACRE	0.1
* X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	LSUM	1
* Z0013798	CONSTRUCTION LAYOUT	LSUM	1
Z0054400	ROCK FILL	CU YD	125

\* SEE SPECIAL PROVISIONS  
 Δ SPECIALTY ITEMS

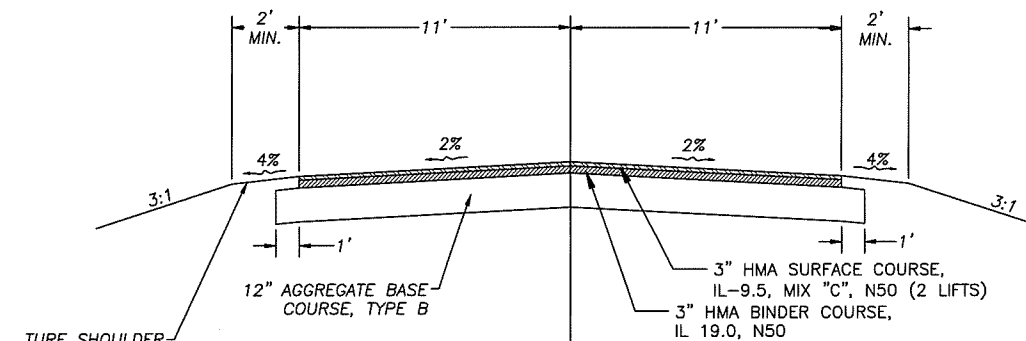
EARTHWORK SCHEDULE				
COLUMN IDENTIFICATION	A	B = A * (1-SLF)	C	D = B-C
		EARTH EXCAVATION		EARTHWORK
	EARTH	ADJUSTED FOR		BALANCE WASTE (+)
LOCATION	EXCAVATION	SHRINKAGE / LOSS	EMBANKMENT (IN PLACE)	OR SHORTAGE (-)
	CUBIC YARD	CUBIC YARD	CUBIC YARD	CUBIC YARD
STA. 11+45 TO STA. 12+25	15	11	12	-1
STA. 13+25 TO STA. 13+75	45	34	15	19
<b>TOTAL</b>	<b>60</b>	<b>45</b>	<b>27</b>	<b>18</b>
		SHRINKAGE / LOSS FACTOR (SLF) = 0.25		

MIX DESIGN TABLE		
LOCATION AND MIXTURE USES:	TOP LIFT	ALL LOWER LIFTS
PG:	PG 58-28	PG 58-28
DESIGN AIR VOIDS	4.0 @ N50	4.0 @ N50
MIXTURE COMPOSITION (GRADATION MIXTURE)	IL 9.5	IL 19.0
FRICTION AGGREGATE	C	N/A
MIX UNIT WEIGHT	112 LBS/SY/IN	112 LBS/SY/IN
QUALITY MANAGEMENT PROGRAM TO BE USED	QC/QA	QC/QA

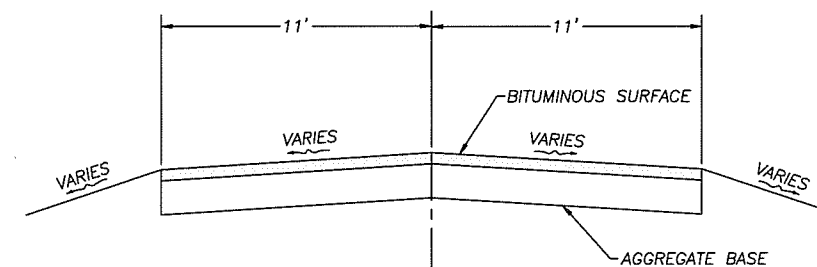


\*\*ROCK FILL SHALL MEET QUALITY DESIGNATION "B" AS REQUIRED IN ARTICLE 1004.01 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE TOP 6" SHALL BE CRUSHED STONE AND MEET THE GRADATION OF CA7 PER ARTICLE 1004.01 OF THE STANDARD SPECIFICATIONS. THE REMAINING THICKNESS SHALL BE CS02 MEETING THE GRADATION REQUIREMENTS LISTED BELOW. AGGREGATE SHALL BE PLACED IN 6 INCH LIFTS AND COMPACTED AS APPROVED BY THE ENGINEER. THE ROCK FILL THICKNESS SHALL BE BASED ON THE SOIL CONDITIONS AS DETERMINED IN THE FIELD BY THE ENGINEER. ALL EXCAVATION AND DISPOSAL OF UNSTABLE MATERIALS FOR ROCK FILL SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER CUBIC YARD FOR ROCK FILL.

GRADATION TABLE			
GRADE NO.	SIEVE SIZE AND PERCENT PASSING		
CS02	6"	4"	2"
	100	80±10	25±15



PROPOSED TYPICAL CROSS SECTION



EXISTING TYPICAL CROSS SECTION

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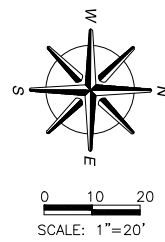
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FILE NAME = plan-2200296.dwg	DATE - 12/18/2020	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES, TYPICAL SECTION

SCALE: -	SHEET - OF - SHEETS	STA. - TO STA. -	TR RTE. 120	SECTION 20-03121-00-BR	COUNTY BOONE	TOTAL SHEETS 11	SHEET NO. 3
						CONTRACT NO 85713	
						ILLINOIS FED. AID PROJECT TR	





STA 12+70 PROPOSED SN 004-3102  
10X8 CONCRETE TRIPLE BOX CULVERT AT  
25° SKEW  
EXISTING SN 004-3055 38' SINGLE SPAN  
CONCRETE TEE BEAM BRIDGE TO BE  
REMOVED

**LEGEND**

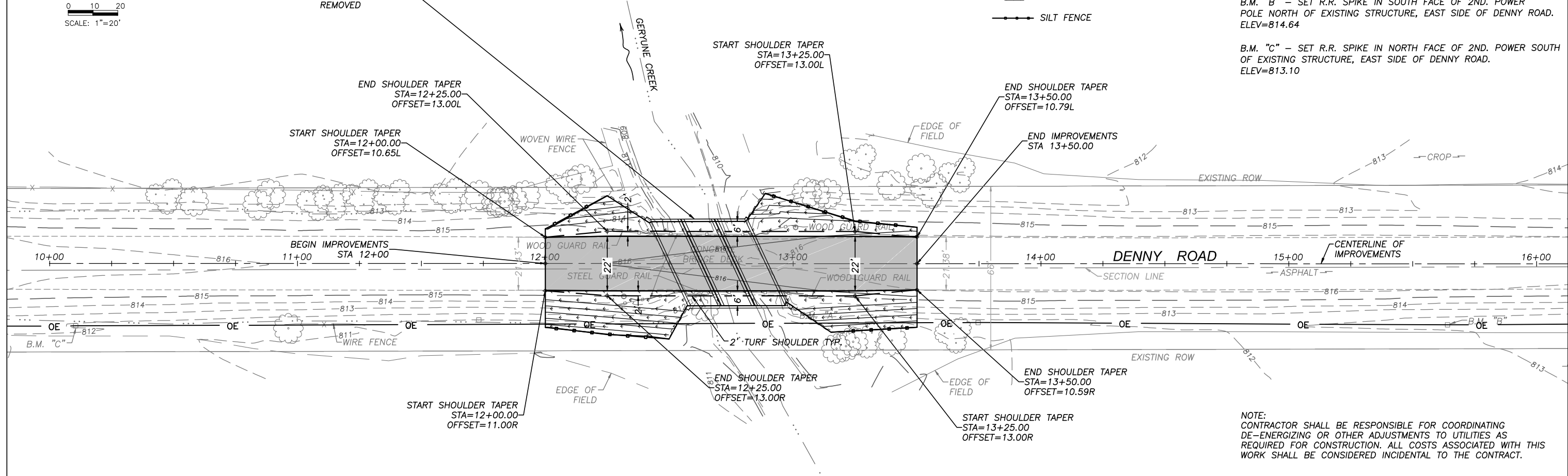
- PROPOSED HMA PAVEMENT (SEE TYPICAL CROSS SECTION)
- CLASS 2A SEEDING
- SILT FENCE

**BENCHMARK INFORMATION:**

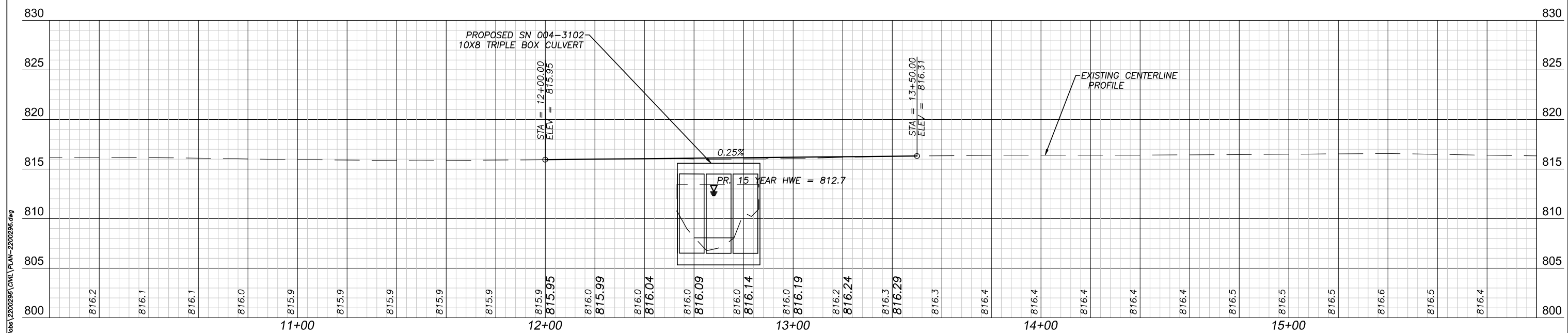
B.M. "A" - SET CHISELED "□" ON NORTH EAST CORNER OF EXISTING STRUCTURE. ELEV=816.55

B.M. "B" - SET R.R. SPIKE IN SOUTH FACE OF 2ND. POWER POLE NORTH OF EXISTING STRUCTURE, EAST SIDE OF DENNY ROAD. ELEV=814.64

B.M. "C" - SET R.R. SPIKE IN NORTH FACE OF 2ND. POWER SOUTH OF EXISTING STRUCTURE, EAST SIDE OF DENNY ROAD. ELEV=813.10

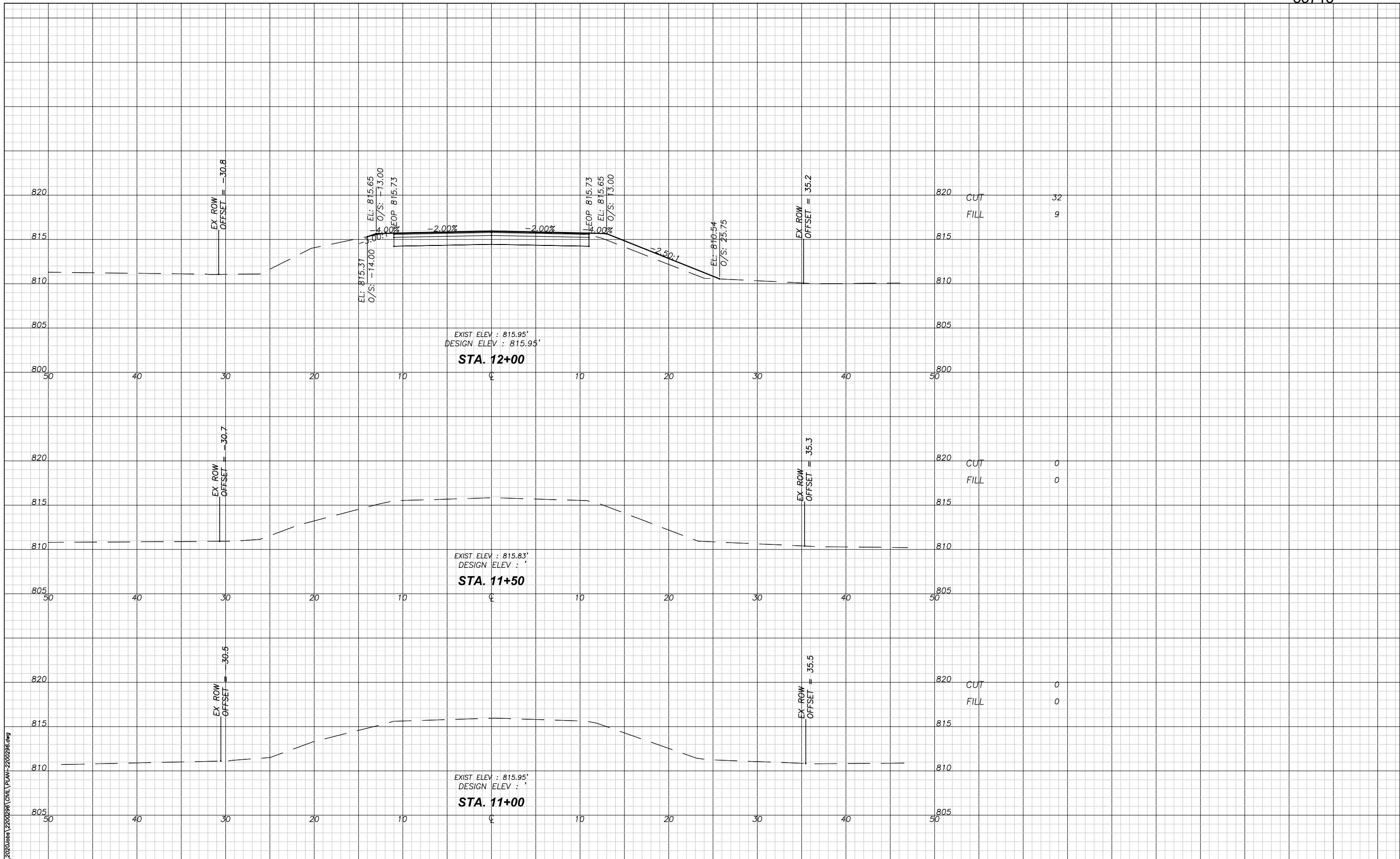


NOTE:  
CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING DE-ENERGIZING OR OTHER ADJUSTMENTS TO UTILITIES AS REQUIRED FOR CONSTRUCTION. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.



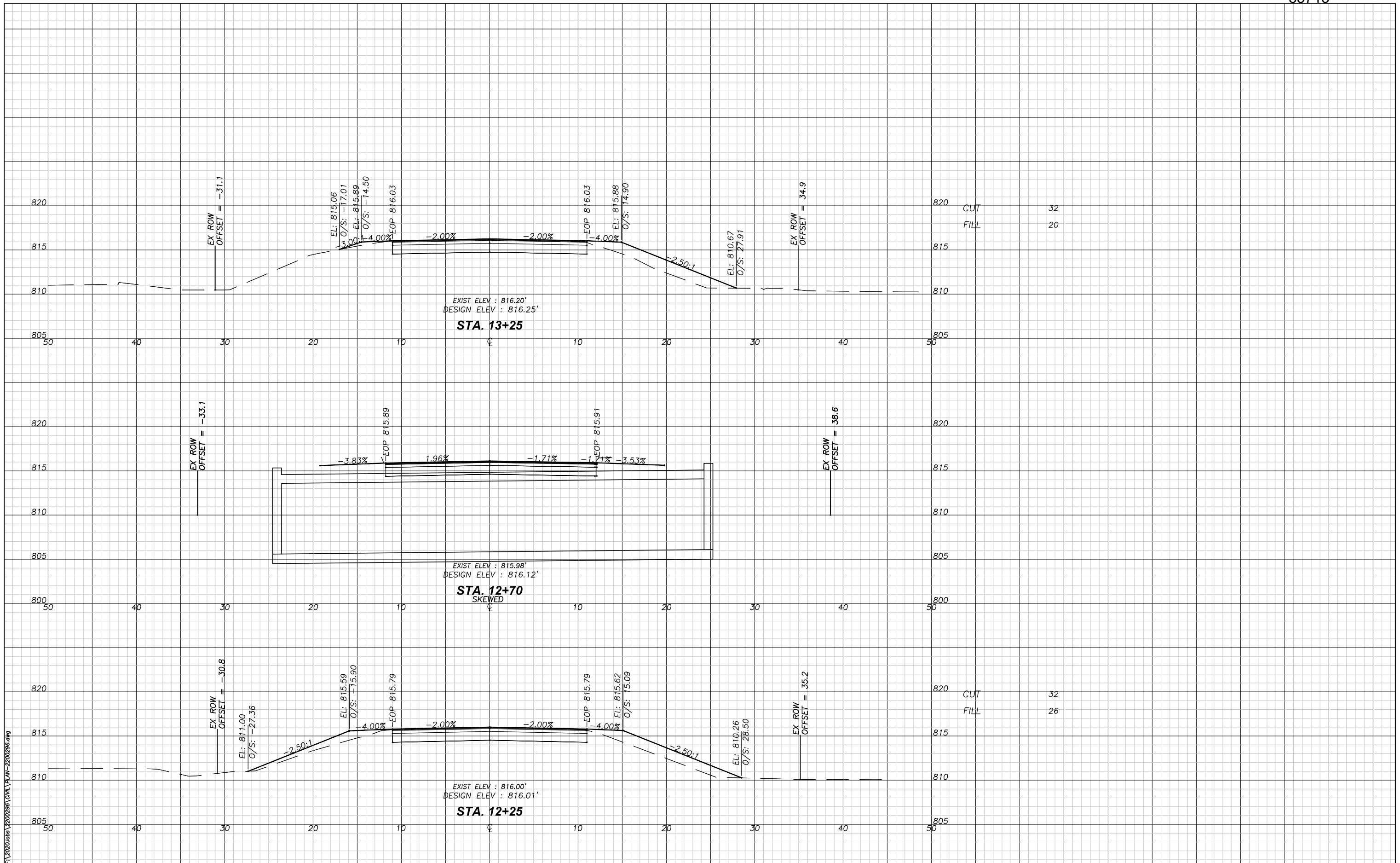
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SCALE: - SHEET - OF - SHEETS STA. - TO STA. -						CONTRACT NO 85713 - ILLINOIS FED. AID PROJECT TR				



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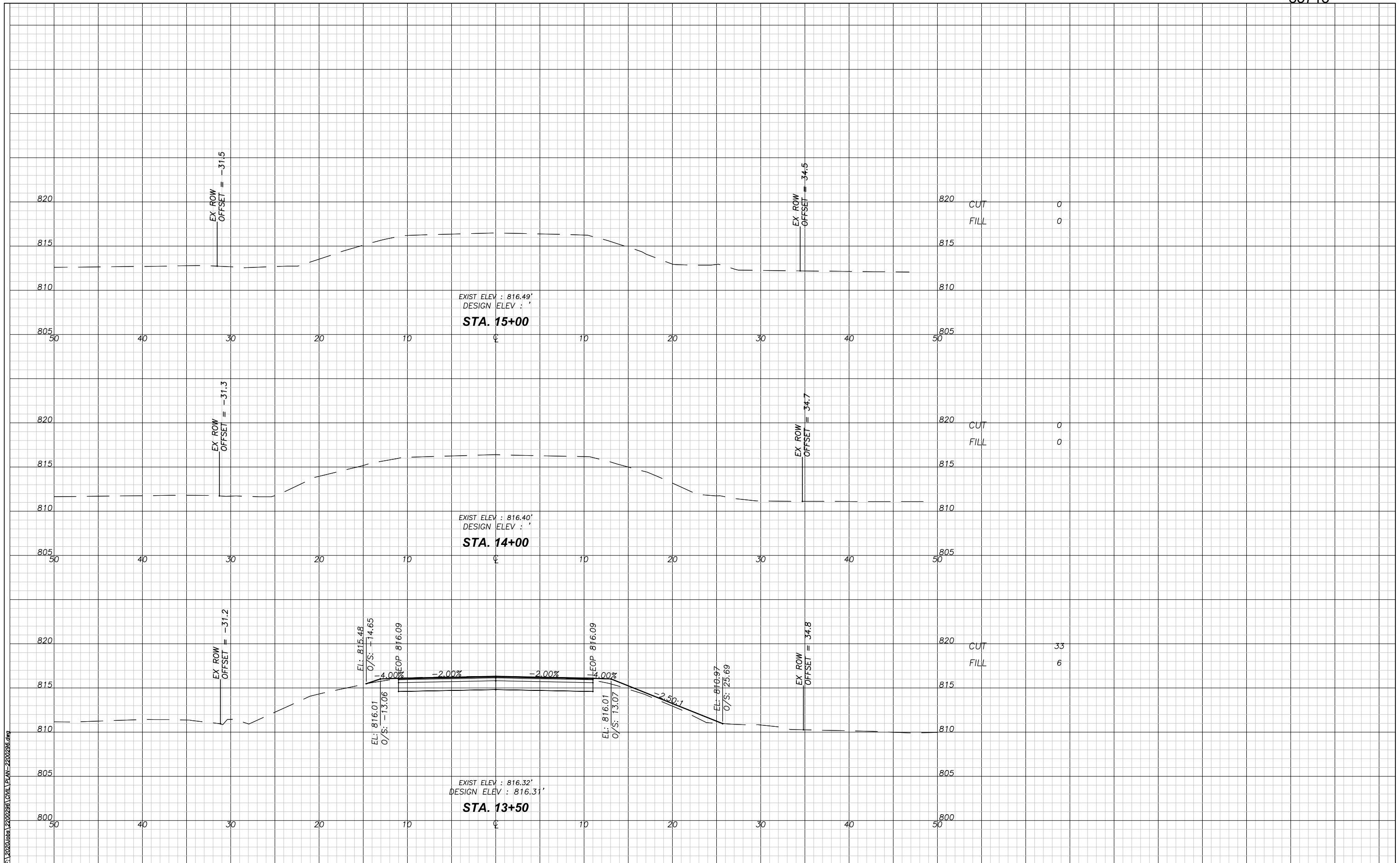
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FILE NAME = plan-2200296.dwg	DATE - 12/18/2020	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**CROSS SECTION 2 OF 3**

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

TR RTE. 120	SECTION 20-03121-00-BR	COUNTY BOONE	TOTAL SHEETS 11	SHEET NO. 6
CONTRACT NO 85713 -			ILLINOIS FED. AID PROJECT TR	



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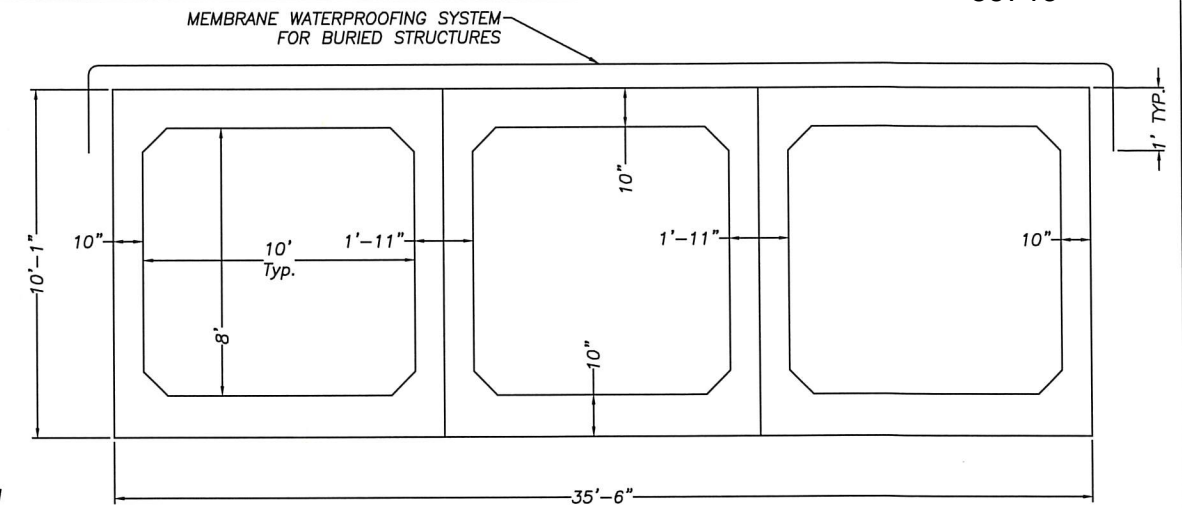
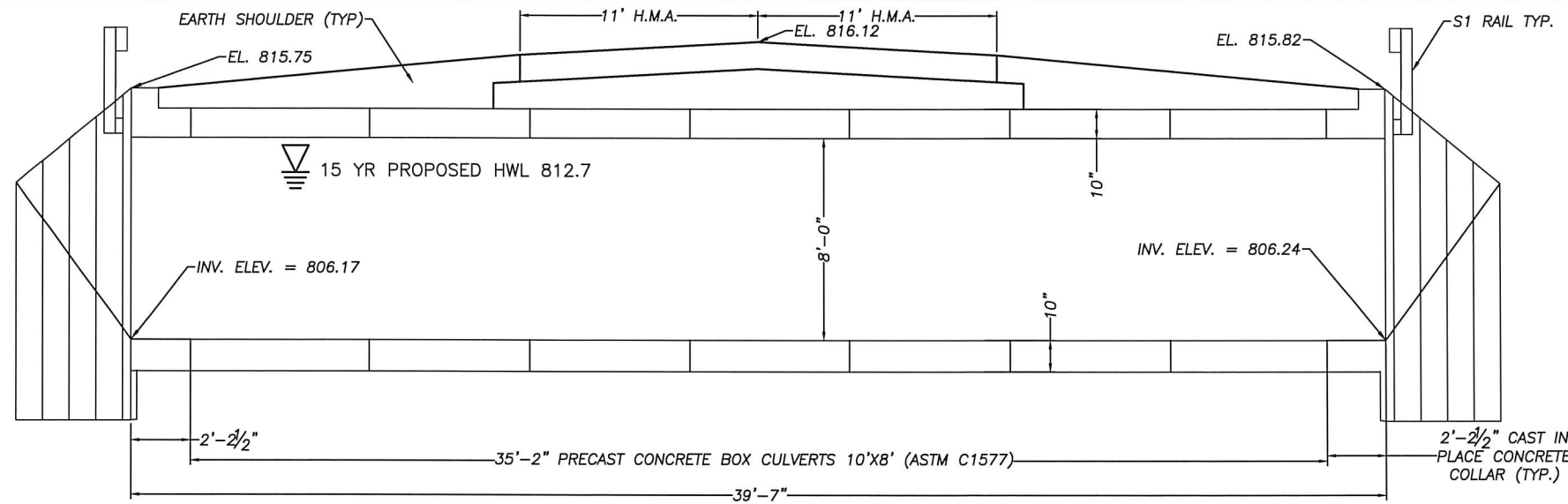
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FILE NAME = plan-2200296.dwg	DATE - 12/18/2020	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**CROSS SECTION 3 OF 3**

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

TR RTE. 120	SECTION 20-03121-00-BR	COUNTY BOONE	TOTAL SHEETS 11	SHEET NO. 7
CONTRACT NO 85713-			ILLINOIS FED. AID PROJECT TR	



SECTION THRU BARREL

GERYUNE CREEK  
 BUILT 2021  
 DENNY ROAD (TR 120)  
 BOONE COUNTY  
 SEC. 20-03121-00-BR  
 STR. NO. 004-3102 LOADING HL-93

LETTERING FOR NAME PLATE  
 See Std. 515001

WATERWAY INFORMATION TABLE

Drainage Area = 14.01 sq. miles		Existing Low Grade Elev. = 815.9 at Roadway Sta. 12+00 Proposed Low Grade Elev. = 815.95 at Roadway Sta. 12+00							
Flood	Frequency Year	Q (cfs)	Opening Sq. Ft.		Natural H.W.E.	Head-Ft.		Headwater El.	
			Existing	Proposed		Existing	Proposed	Existing	Proposed
Base	10	633	131	182	812.5	0.1	0.0	812.6	812.5
Design	15	691	135	186	812.6	0.2	0.1	812.8	812.7
Max Calc.	100	1070	154	208	813.4	0.4	0.3	813.8	813.7

EXISTING STRUCTURE

SN 004-3055 38' SINGLE SPAN CONCRETE TEE BEAM BRIDGE

PROPOSED STRUCTURE

SN 004-3102 10X8 TRIPLE CELL PRECAST BOX CULVERT

LOADING: HL-93

DESIGN EARTH COVER: 10"

DESIGN STRESSES

Field Units

f'c = 4,000 psi  
 fy = 60,000 psi

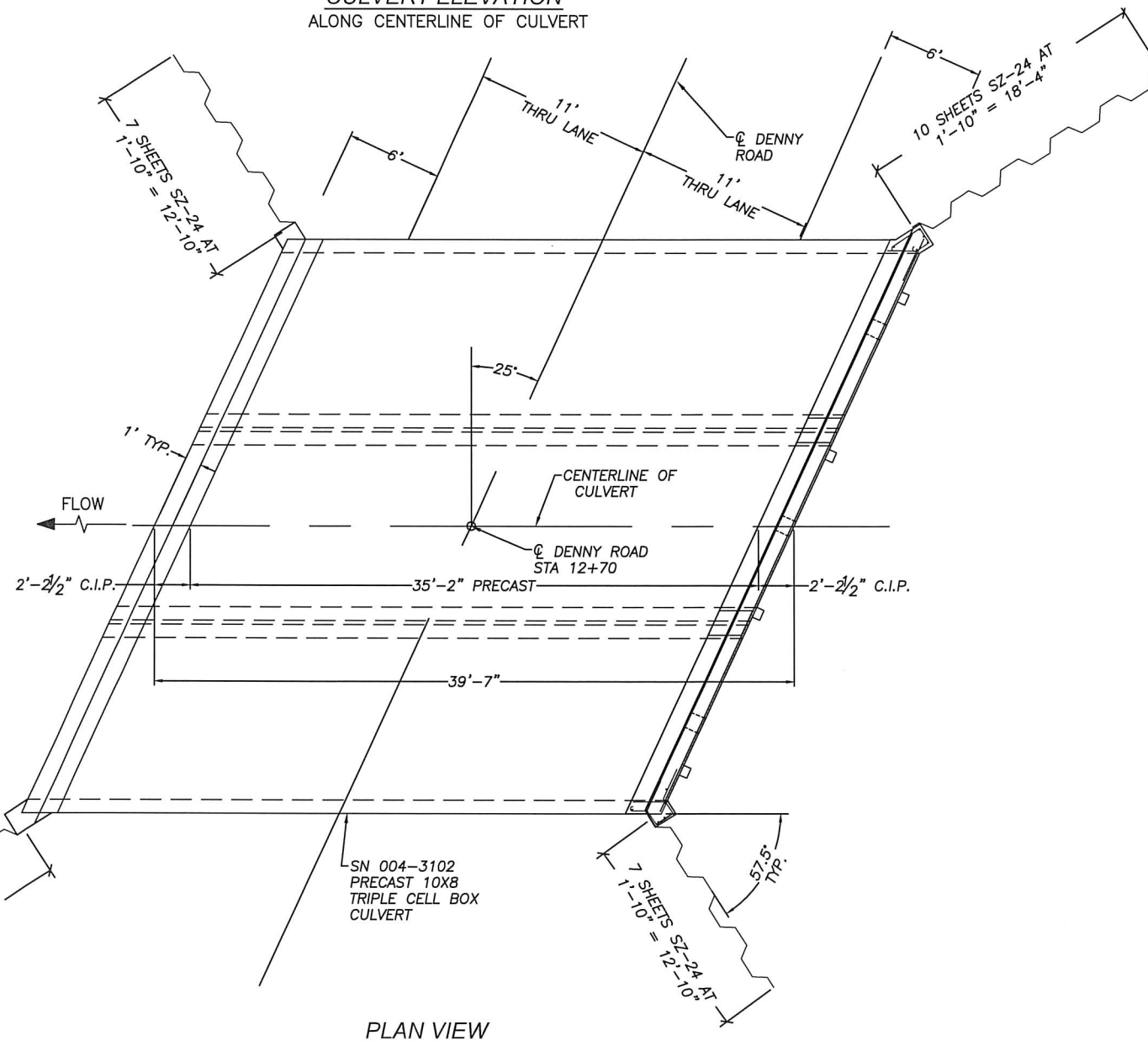
Precast Units

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

HIGHWAY CLASSIFICATION

DENNY ROAD TR 120  
 FUNCTIONAL CLASS: LOCAL ROAD  
 DESIGN ADT: 214  
 DESIGN SPEED = 55 M.P.H.  
 REGULATORY SPEED = 55 M.P.H.

CULVERT ELEVATION ALONG CENTERLINE OF CULVERT



PLAN VIEW

WENDLER ENGINEERING SERVICES, INC.  
 Illinois Professional Design Firm No. 184-000848  
 For Structural Adequacy Only

SCOTT A. BROWN  
 081-005981  
 STATE OF ILLINOIS  
 LICENSED STRUCTURAL ENGINEER

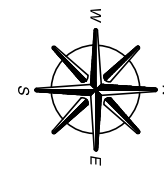
5/12/21  
 DATE

SCOTT A. BROWN  
 DIXON, ILLINOIS  
 ILLINOIS LICENSED STRUCTURAL ENGINEER NO. 081-005981  
 EXPIRES 11-30-2022

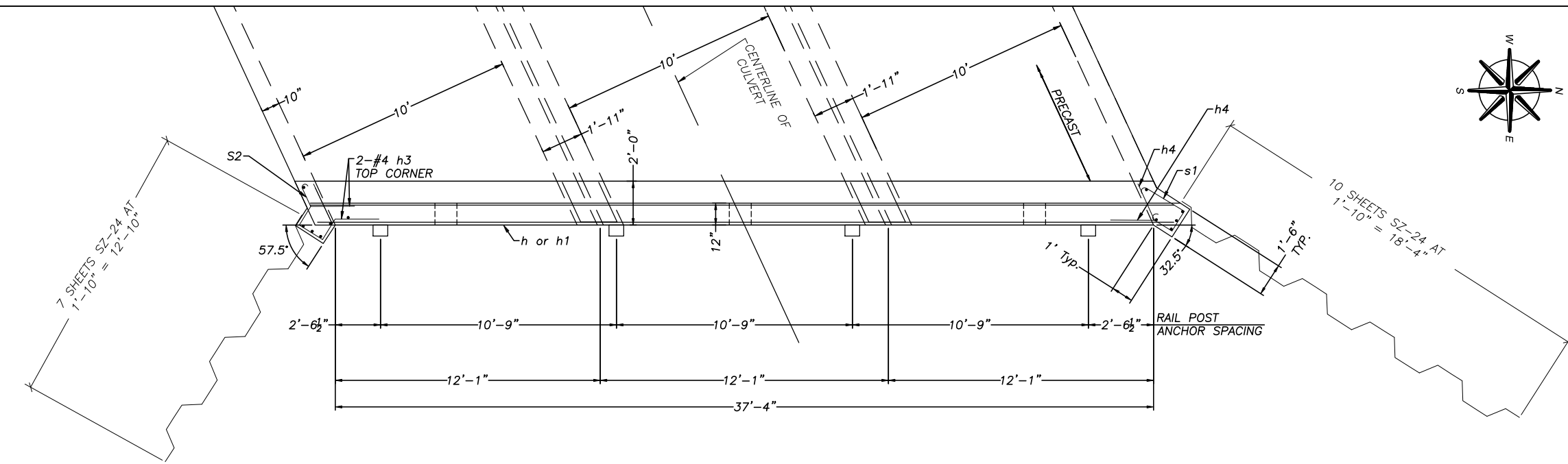
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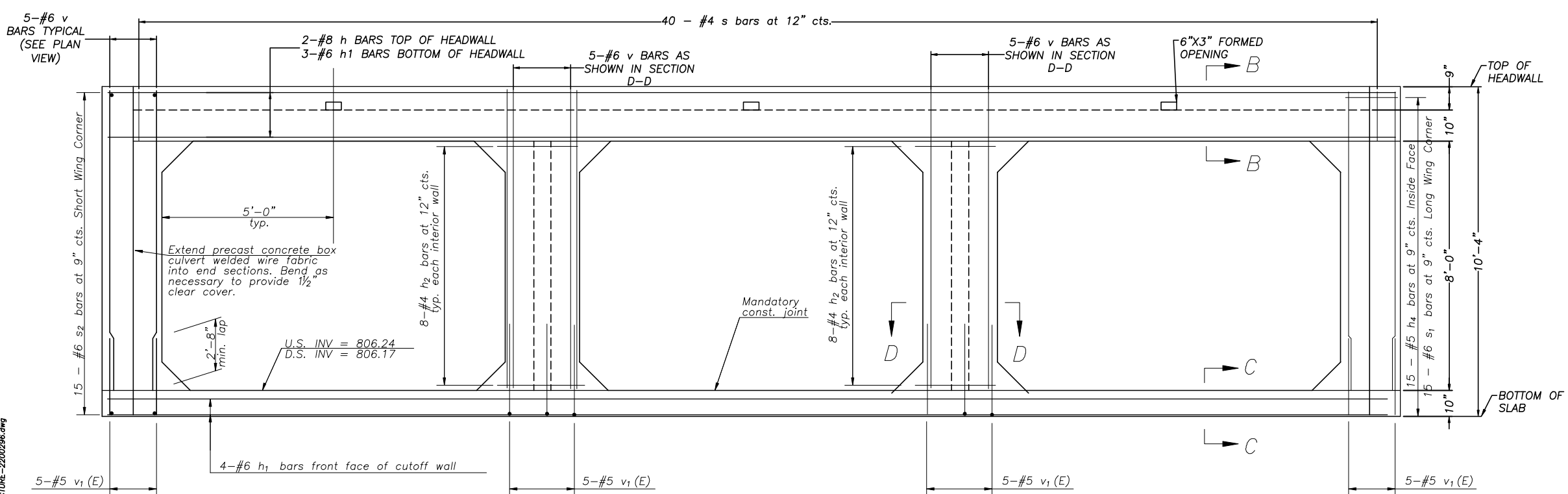
GENERAL NOTES



Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.  
 The design fill height for this structure is 1 foot. The precast concrete box culvert sections shall conform to the requirements of AASHTO M259.  
 The minimum effective section modulus of the permanent sheet pile walls shall be 15.0 in./ft.  
 The sheet pile cap shall be AASHTO M164 Type 3. Bolts 1/2" dia, holes 5/8".  
 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 5003.09(b).  
 The ends of the precast box sections adjacent to the end section shall be formed without the male and female shapes specified in Article 8.1 of AASHTO M259.  
 The joints between precast box sections shall be sealed, all voids filled with mastic joint sealer. In addition, the joints shall be externally sealed on all four sides with a 13 inch wide external sealing bond. The seal shall be centered over the joint, secured in place and protected during the backfilling process.  
 Remaining sheet piling shall not be driven until concrete strength has attained a minimum flexural strength of 650 psi or a minimum compressive strength of 3500 psi. All sheet piling may be driven prior to constructing collar. Adjust concrete corner dimensions to match sheeting.  
 Collar dimensions assume a 10" wall thickness on the precast box sections. Adjustment of the cast in place reinforcing shall be required for other wall thicknesses.  
 Precast section reinforcement shall be extended a minimum of 2 feet on the end sections at the collar.  
 All construction joints to the precast shall be bonded.



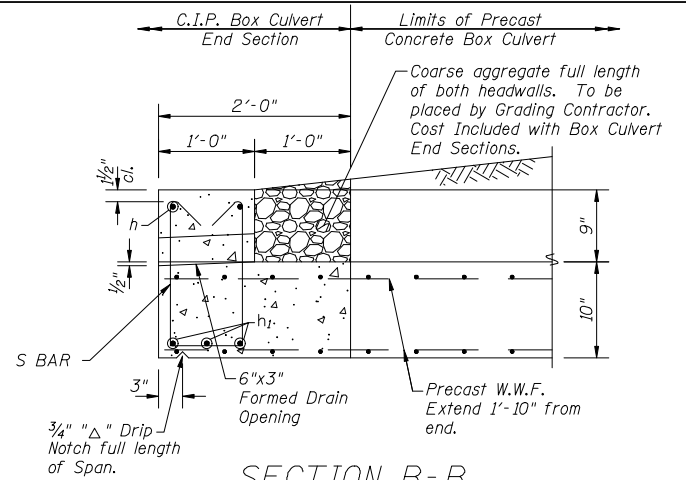
COLLAR PLAN VIEW



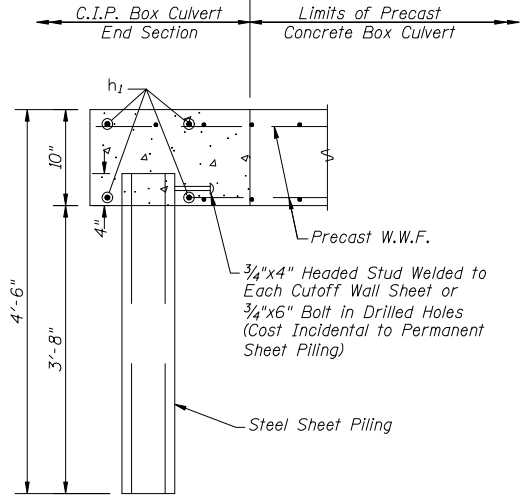
SECTION THRU BARREL

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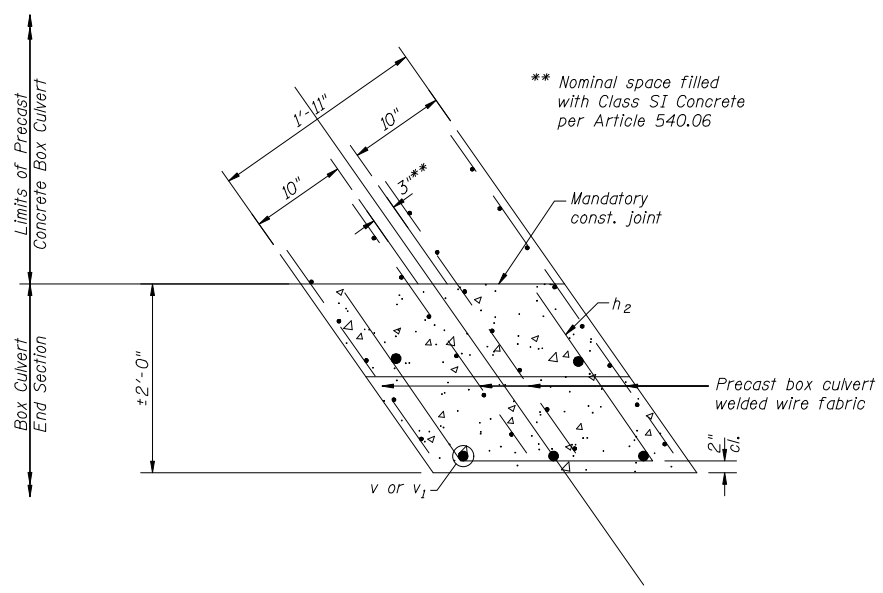
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PLOT DATE = 5/12/21	CHECKED - SAB	REVISIONS -		SCALE: -	SHEET - OF - SHEETS	STA. - TO STA. -	CONTRACT NO 85713 -		ILLINOIS FED. AID PROJECT TR		
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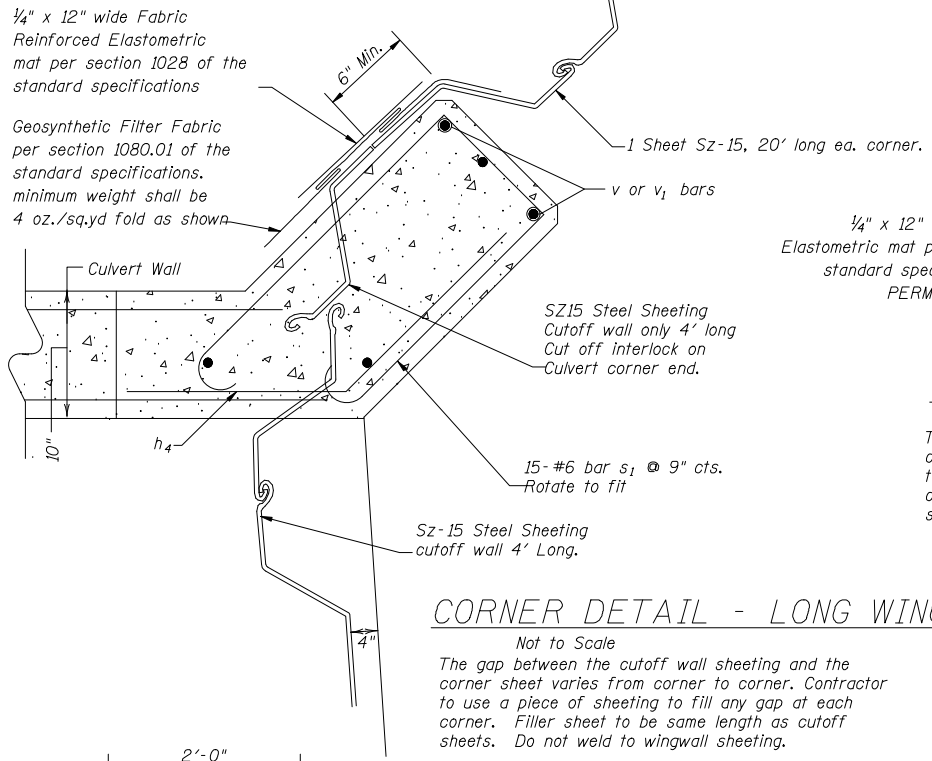
SECTION B-B



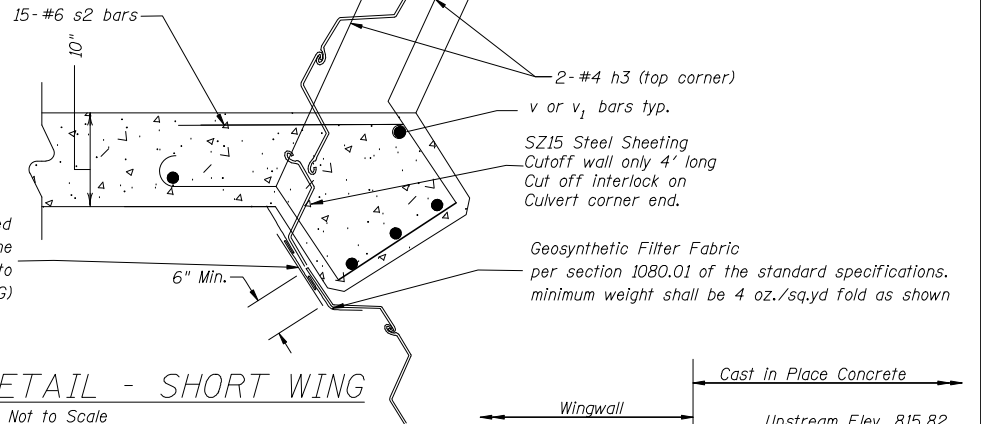
SECTION C-C



SECTION D-D

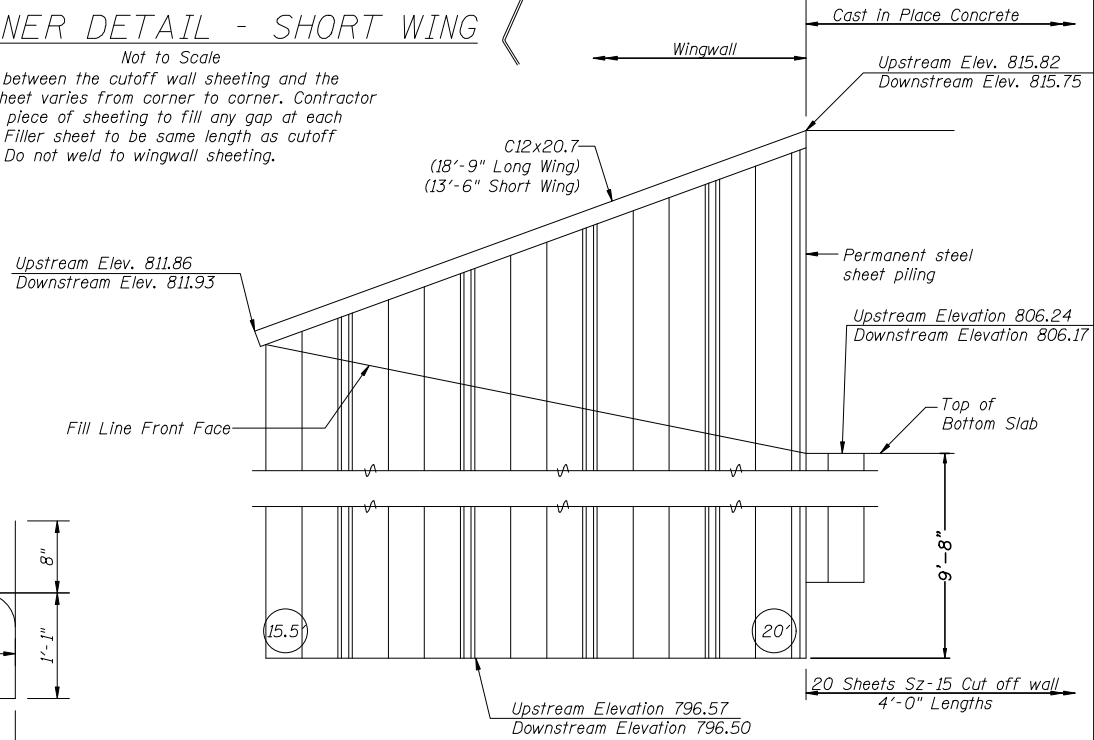


CORNER DETAIL - LONG WING



CORNER DETAIL - SHORT WING

The gap between the cutoff wall sheeting and the corner sheet varies from corner to corner. Contractor to use a piece of sheeting to fill any gap at each corner. Filler sheet to be same length as cutoff sheets. Do not weld to wingwall sheeting.



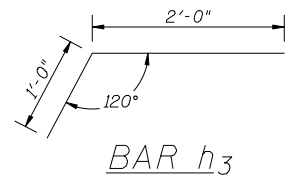
WINGWALL ELEVATION

Note: Cap channel shall be welded to every other sheet in contact on the back face with a 2 inch length of 1/4" fillet weld. The steel channel cap shall be painted with a Organic Zinc Rich Primer (shop applied). The Channel, welding and painting shall be incidental to PERMANENT SHEET PILING.

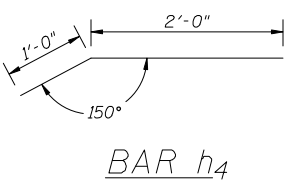
BILL OF MATERIAL - 2 ENDS

Bar	No.	Size	Length	Shape
h	4	#8	39'-0"	—
h1	14	#6	39'-0"	—
h2	32	#4	5'-9"	┌
h3	4	#4	3'-0"	┌
h4	30	#4	3'-0"	┌
s	80	#4	4'-6"	┐
s1	30	#6	5'-10"	┐
s2	30	#6	6'-9"	┐
v	40	#6	10'-10"	—
v1	40	#5	4'-10"	—

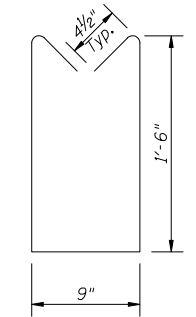
Concrete Box Culverts	Cu. Yd.	21.8
Reinforcement Bars, Epoxy Coated	Pound	3,088
Permanent Sheet Piling	Sq. Ft.	1,430



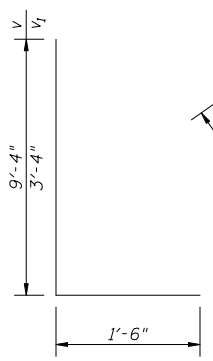
BAR h3



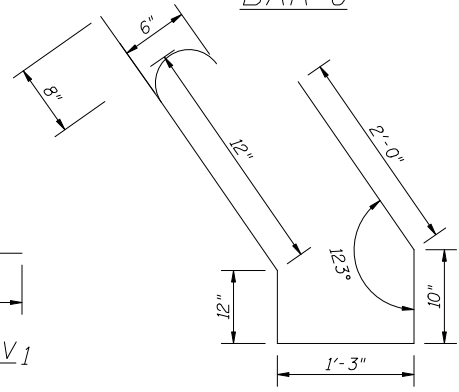
BAR h4



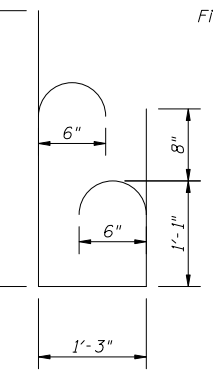
BAR s



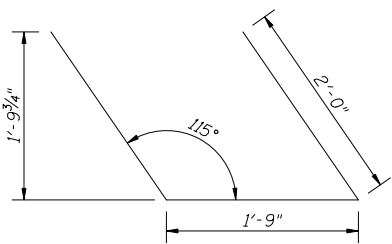
BARS v & v1



BAR s2



BAR s1



BAR h2

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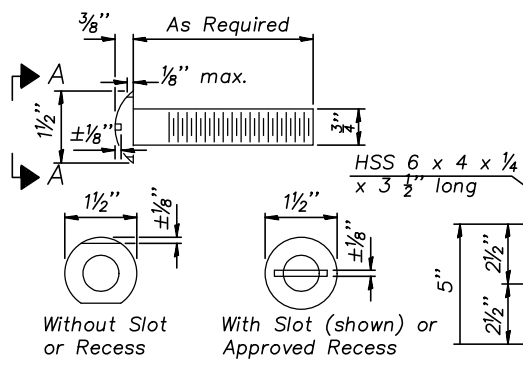
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

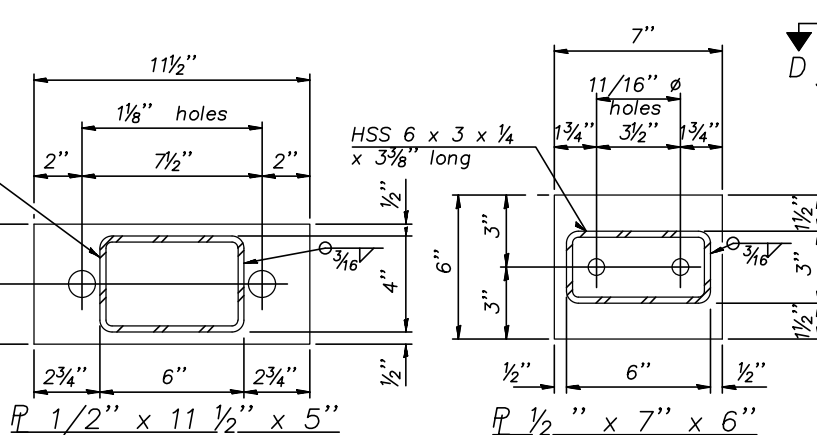
BOX CULVERT DETAILS

SCALE: -	SHEET - OF - SHEETS	STA. - TO STA. -
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TR RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
120	20-03121-00-BR	BOONE	11	10
CONTRACT NO 85713 -			TR	



VIEW A-A  
ROUND HEAD BOLT



ANCHOR DEVICE

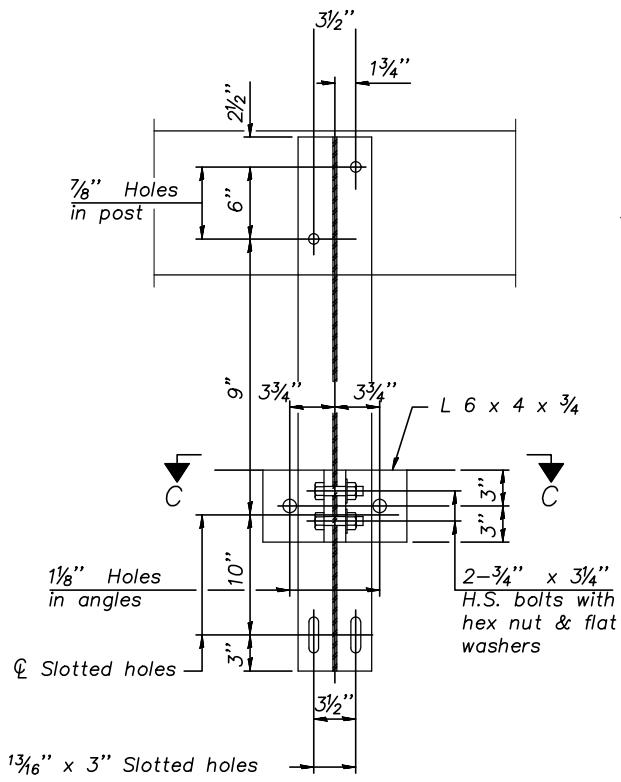
\* Threaded areas shall be plugged or blocked off during casting of beam.

**SPLICE DIMENSIONS**

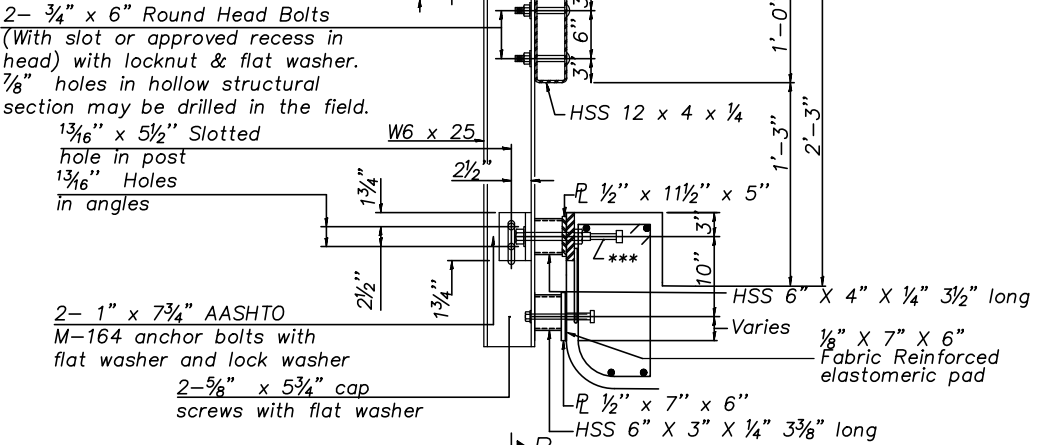
T	D	A	B	C	E
≤ 4"	2 1/2"	1'-8"	2"	4"	2 1/2"
> 4" ≤ 6 1/2"	3 3/4"	2'-0"	2 1/2"	5 1/2"	3 1/2"
> 6 1/2" ≤ 9"	5"	2'-4"	3 1/2"	6 1/2"	9"
> 9" ≤ 13"	7"	2'-10"	4 1/2"	8 1/2"	11"
Rail Splice	1/4"	1'-8"	2"	4"	

T = Total movement at expansion joint as shown on the design plans.

Notes:  
 For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1.  
 All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.  
 \*\* The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.



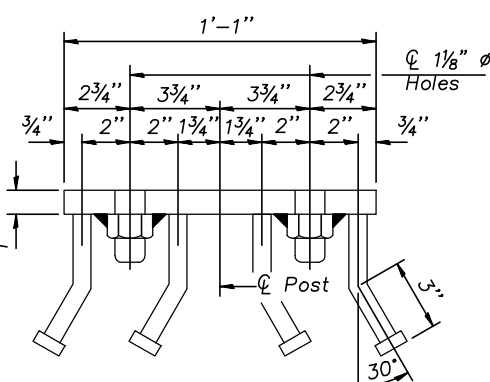
SECTION B-B



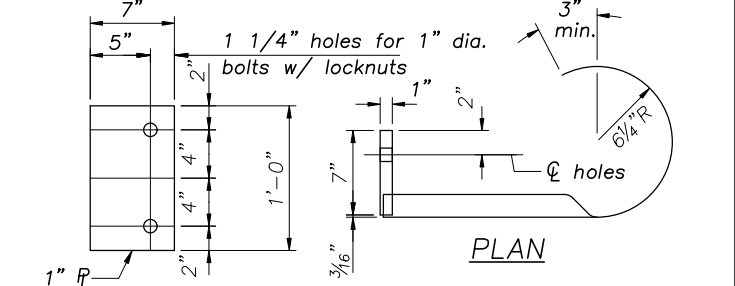
SECTION AT RAILING POST

Upstream end shown. Downstream end similar.

2- 3/4" x 6" Round Head Bolts (With slot or approved recess in head) with locknut & flat washer. 7/8" holes in hollow structural section may be drilled in the field.  
 1 3/16" x 5 1/2" Slotted hole in post  
 1 3/16" Holes in angles  
 2- 1" x 7 3/4" AASHTO M-164 anchor bolts with flat washer and lock washer  
 2- 5/8" x 5 3/4" cap screws with flat washer  
 HSS 6" X 4" X 1/4" 3 1/2" long  
 Varies  
 1/8" X 7" X 6" Fabric Reinforced elastomeric pad  
 R 1/2" x 7" x 6"  
 HSS 6" X 3" X 1/4" 3 3/8" long

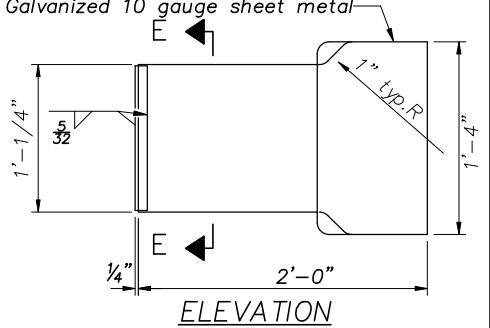


VIEW D-D



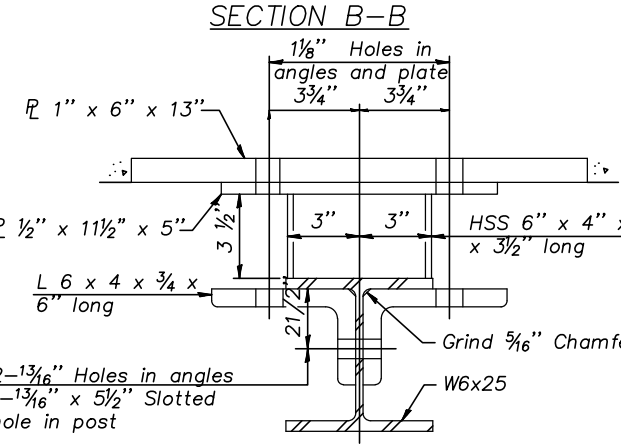
PLAN

SECTION E-E

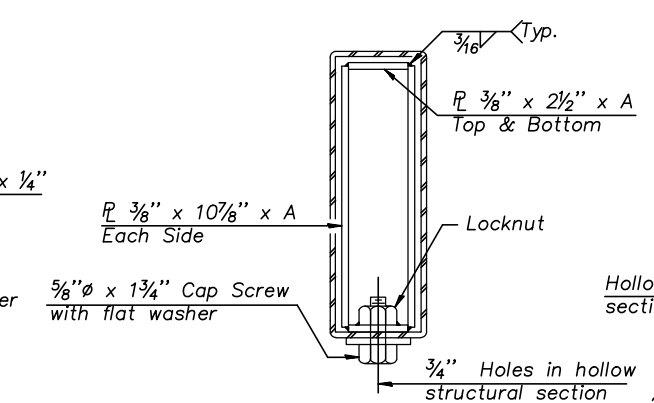


ELEVATION

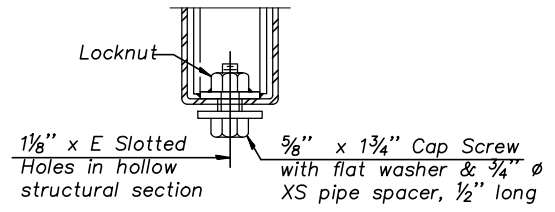
**CURLED END SECTION DETAILS**  
 4 required - All materials per Article 1006.25 Steel Plate Beam Guardrail of the Standard Specifications  
 Cost of curled end sections is included in the contract unit price per Foot for Steel Railing, Type S-1. This price shall include all material, labor, and equipment necessary to complete work as indicated in the plans.



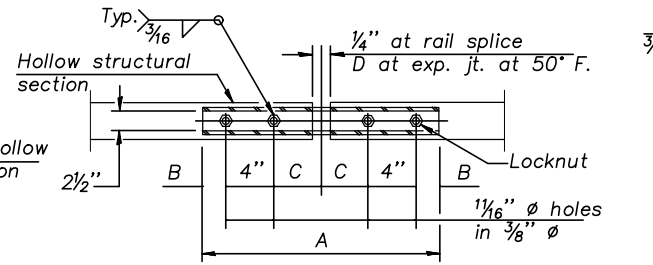
SECTION C-C



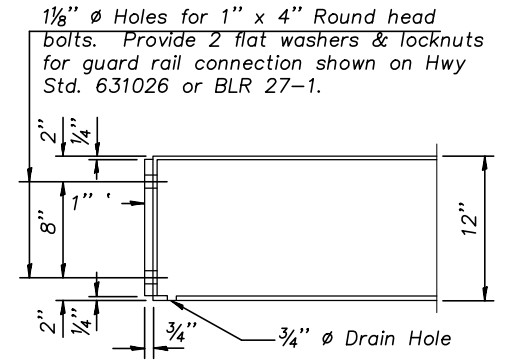
SECTIONS AT RAIL SPLICE



RAIL SPLICE CONNECTION AT EXPANSION JT.



PLAN-BOTT. SPLICE R TYPICAL



END OF RAIL DETAILS

**BILL OF MATERIAL**

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	87

1-12-15 (10'-9" Maximum Post Spacing)

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