

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 4B	18-15129-00-BR	LIVINGSTON	23	1
FED. ROAD DIST. NO.		ILLINOIS	CONTRACT NO. 87744	

**INDEX OF SHEETS**

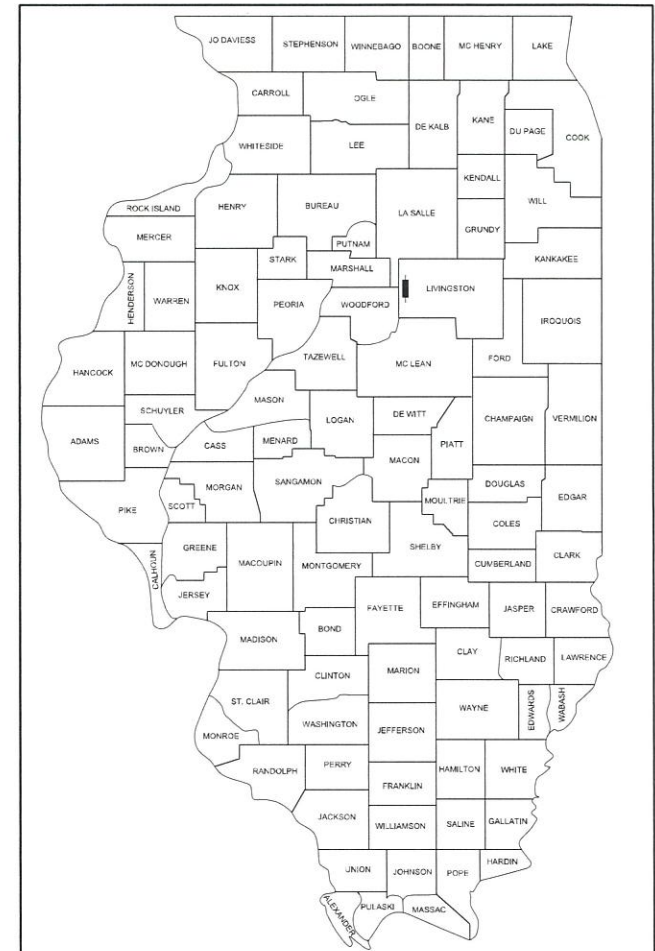
SHEET NO.	DESCRIPTION
1.	COVER SHEET
2.	SUMMARY OF QUANTITIES AND GENERAL NOTES
3.	TYPICAL CROSS SECTIONS
4.	PLAN AND PROFILE
5-12.	BRIDGE PLANS
13-14.	BORINGS
15-23.	STATION CROSS SECTIONS

HIGHWAY STANDARDS:

000001-08	STANDARD SYMBOLS, ABBREVIATIONS, AND PATTERNS
280001-07	TEMPORARY EROSION CONTROL SYSTEMS
515001-04	NAME PLATE FOR BRIDGES
601101-02	CONCRETE HEADWALL FOR PIPE UNDERDRAINS
701901-08	TRAFFIC CONTROL DEVICES
725001-01	OBJECT AND TERMINAL MARKERS
BLR 21-9	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

# PLANS FOR PROPOSED SURFACE TRANSPORTATION PROGRAM – BRIDGE

**PROJECT DUBY(495)  
SECTION 18-15129-00-BR  
NEBRASKA ROAD DISTRICT  
LIVINGSTON COUNTY  
T.R. 4B / 100 E. ROAD  
PROPOSED STRUCTURE NO. 053-4225  
C-93-010-21  
HARMS BRIDGE**



LOCATION OF SECTION INDICATED THUS: - [Black Box] -

**UTILITIES**

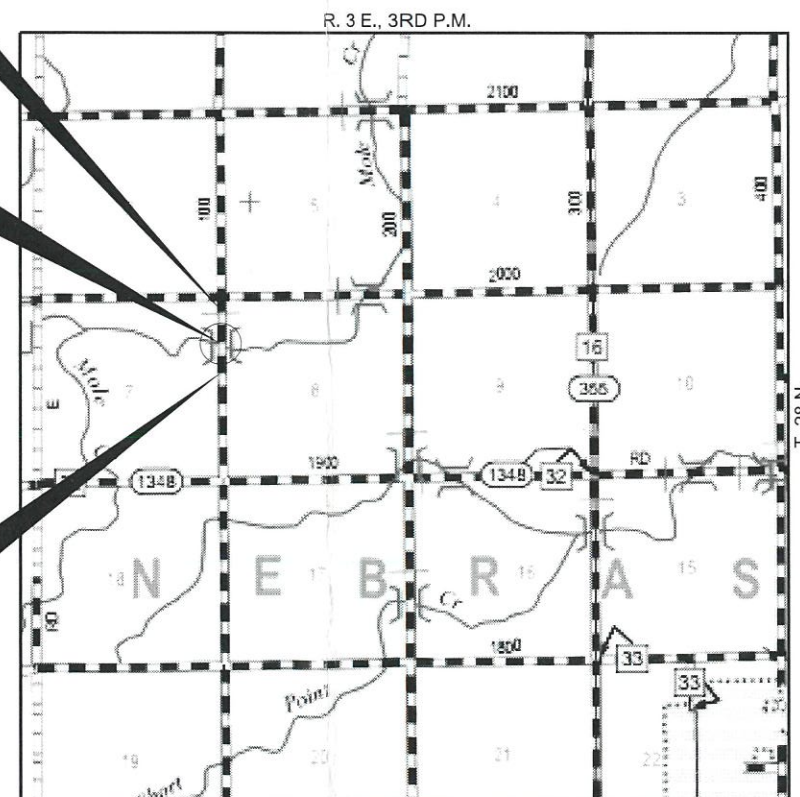
COMMONWEALTH EDISON  
ONE LINCOLN CENTRE, SUITE 600  
OAKBROOK TERRACE, IL 60181

FRONTIER COMMUNICATIONS  
109 E. MARKET STREET, 2ND FLOOR  
BLOOMINGTON, IL 61701

STA. 10+01  
PRECAST PRESTRESSED CONCRETE DECK BEAM  
BRIDGE. SINGLE SPAN @ 56'-0"  
27'-0" RDWY.; SKEW = 15°  
EXISTING STRUCTURE NO. 053-3079  
PROPOSED STRUCTURE NO. 053-4225

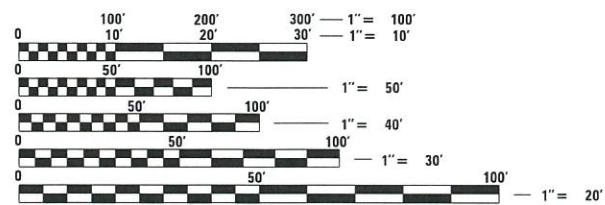
IMPROVEMENT ENDS  
STATION 12+15

IMPROVEMENT BEGINS  
STATION 7+85



**LOCATION MAP**

APPROXIMATE SCALE: 0 1/2 MILE  
NET LENGTH OF SECTION = 430 FEET = 0.081 MILES



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.

FUNCTIONAL CLASSIFICATION: LOCAL ROAD  
DESIGN SPEED: 30 MPH  
DESIGN TRAFFIC: 25 ADT



**WARNING**  
CALL JULIE TOLL FREE  
1-800-892-0123  
  
**CALL 811 BEFORE YOU DIG**  
DIG NO: X2281137

**ILLINOIS DEPARTMENT OF TRANSPORTATION**

APPROVED 11/3 2020  
*Clay Metcalf*  
COUNTY ENGINEER

APPROVED 11/3 2020  
*Kent Johnson*  
TOWNSHIP COMMISSIONER

PASSED NOVEMBER 12, 2020  
*[Signature]*

Releasing For Bid Based on Limited Review  
DISTRICT THREE ENGINEER OF LOCAL ROADS & STREETS  
NOVEMBER 12, 2020  
*[Signature]*  
REGION TWO ENGINEER

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

DATE: 11/02/2020

**HAMPTON, LENZINI AND RENWICK, INC.**  
CIVIL ENGINEERS - STRUCTURAL ENGINEERS - LAND SURVEYORS  
3085 STEVENSON DRIVE, SUITE 201  
SPRINGFIELD, ILLINOIS 62703  
217.546.3400 www.hlrengineering.com  
184.009959  
ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORPORATION

EXPIRES: 11/30/2021 PROJECT NUMBER: 19,0484,130 DATE: 11/02/2020

**SUMMARY OF QUANTITIES**

ITEM NO.	ITEM	CONSTRUCTION TYPE CODE 0010	
		UNIT	TOTAL
20200100	EARTH EXCAVATION	CU YD	190
20300100	CHANNEL EXCAVATION	CU YD	180
20400800	FURNISHED EXCAVATION	CU YD	30
28100107	STONE RIPRAP, CLASS A4	SQ YD	395
28200200	FILTER FABRIC	SQ YD	395
35100100	AGGREGATE BASE COURSE, TYPE A	TON	655
40600275	BITUMINOUS MATERIALS (PRIME COAT)	POUND	1,885
40600290	BITUMINOUS MATERIALS (TACK COAT)	POUND	187
40603080	HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50	TON	116
40604050	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "C", N50	TON	70
48101200	AGGREGATE SHOULDERS, TYPE B	TON	85
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50300225	CONCRETE STRUCTURES	CU YD	22.6
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	1,512
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	3,060
50900205	STEEL RAILING, TYPE S1	FOOT	111
51200957	FURNISHING METAL SHELL PILES 12"X0.250"	FOOT	315
51202305	DRIVING PILES	FOOT	315
51203200	TEST PILE METAL SHELLS	EACH	1
51500100	NAME PLATES	EACH	1
542D0220	PIPE CULVERTS, CLASS D, TYPE 1 15"	FOOT	156
60100945	PIPE DRAINS 12"	FOOT	20
60100955	PIPE DRAINS 15"	FOOT	20
67100100	MOBILIZATION	L SUM	1
72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	4
X2070302	POROUS GRANULAR EMBANKMENT, SPECIAL	TON	60
X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.3
Z0046304	PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT	102

^ SEE SPECIAL PROVISIONS

\* SPECIALTY ITEMS

**EARTHWORK SCHEDULE**

LOCATION	EARTH EXCAVATION	CHANNEL EXCAVATION	SHRINKAGE FACTOR	PERCENT USED	EXCAVATION ADJUSTED FOR SHRINKAGE	EMBANKMENT REQUIRED	EARTHWORK BALANCE
	CU.YD.	CU.YD.			CU.YD.	CU.YD.	CU.YD.
TR 4B / 100 E Road							
STA. 7+85 TO STA. 9+72.31	100		25.00%	100.00%	75	130	-55
STA. 9+72.31 TO STA. 10+29.69		180	25.00%	70.00%	95		95
STA. 10+29.69 TO STA. 12+15	91		25.00%	100.00%	68	135	-67
TOTAL	191	180			238	265	-27
USE	190	180					30

FURNISHED 30 CU YDS

**GENERAL NOTES**

- 1) ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE STATE OF ILLINOIS "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ADOPTED APRIL 1, 2016", (HERE IN AFTER REFERRED TO AS THE STANDARD SPECIFICATIONS; THE LATEST EDITION OF THE "ILLINOIS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS"; THE DETAILS IN THE PLANS AND THE "SPECIAL PROVISIONS" INCLUDED IN THE DOCUMENTS.
- 2) ALL CLEARING, GRUBBING, FENCE REMOVAL, PAVEMENT REMOVAL, AND REMOVAL OF EXISTING DRAINAGE STRUCTURES SHALL BE INCLUDED IN THE COST OF EARTH EXCAVATION. ALL BITUMINOUS MATERIAL SHALL BE REMOVED AND PROPERLY DISPOSED OF BY THE CONTRACTOR IN A METHOD APPROVED BY THE ENGINEER. REMOVAL AND DISPOSAL OF BITUMINOUS MATERIAL SHALL BE INCLUDED IN THE COST OF EARTH EXCAVATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 3) WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKS AND MONUMENTS UNTIL THE OWNER, AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.
- 4) ANY REFERENCE TO STANDARDS THROUGHOUT THE PLANS OR SPECIAL PROVISIONS SHALL BE INTERPRETED TO BE THE LATEST STANDARD OF THE DEPARTMENT.
- 5) THE LOCATION ON THE PLANS OF EXISTING DRAINAGE STRUCTURES, TELEPHONE LINES, ELECTRIC LINES, WATER SERVICE LINES, GAS MAINS, AND OTHER UTILITY FACILITIES AS SHOWN ON THE PLANS ARE BASED ON FIELD INVESTIGATIONS AND THE BEST INFORMATION AVAILABLE, BUT THE LOCATIONS ARE NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THEIR EXACT LOCATION FROM THE INDIVIDUAL UTILITY COMPANIES AND BY FIELD INSPECTION.
- 6) THE CONTRACTOR SHALL PROVIDE ACCESS TO ABUTTING PROPERTY AT ALL TIMES DURING CONSTRUCTION OF THE PROJECT.
- 7) THE FOLLOWING RATES OF APPLICATION HAVE BEEN USED IN CALCULATING PLAN QUANTITIES
 

AGGREGATE BASE COURSE	2.05 TON/CU YD
HOT MIX ASPHALT	112 LBS/SQ YD./INCH THICKNESS
POROUS GRANULAR EMBANKMENT	2.0 TON/CU YD

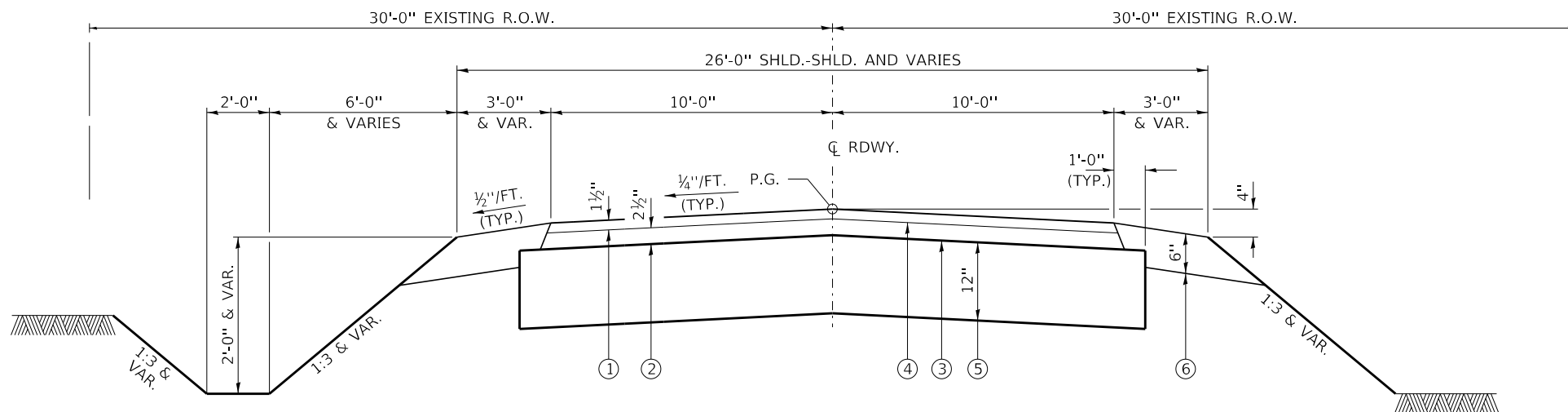
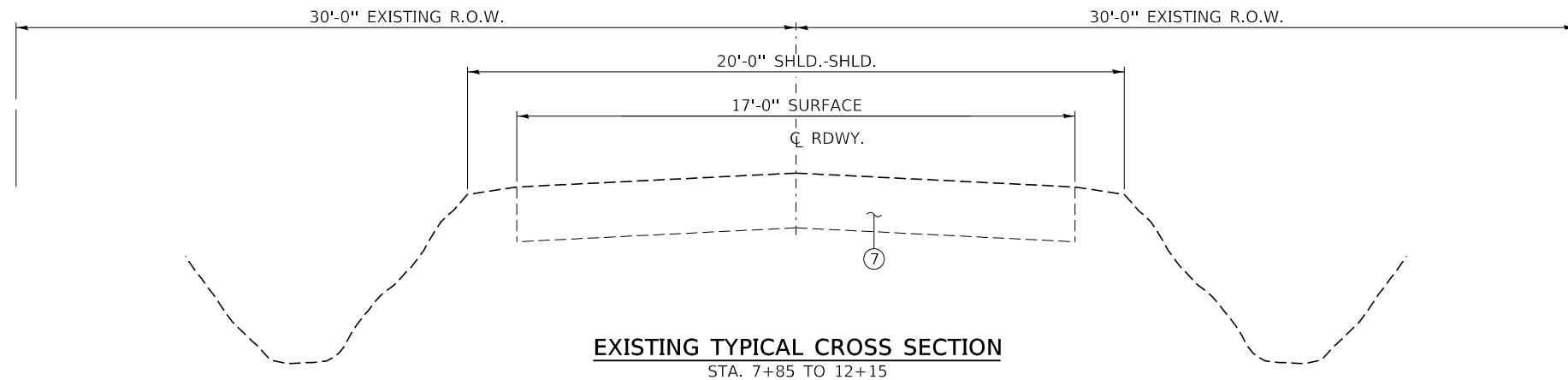
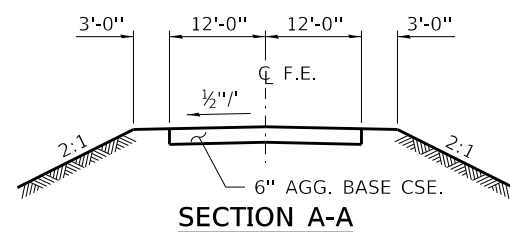
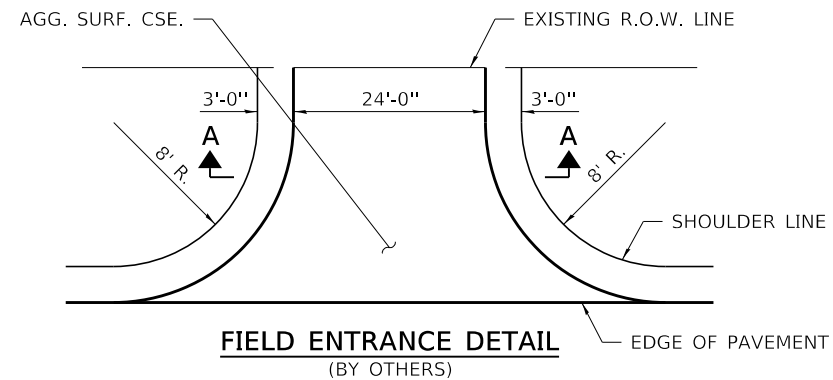
**BITUMINOUS MATERIALS RATES**

SURFACE TYPE	RESIDUAL RATE
AGGREGATE BASE	0.250 LB/SQ FT
MILLED HMA OR PCC (TACK COAT)	0.050 LB/SQ FT
EXISTING PAVEMENT (TACK COAT)	0.050 LB/SQ FT
TACK COAT (BETWEEN LIFTS)	0.025 LB/SQ FT

- 8) THE FINAL SURFACE OF ALL EMBANKMENT AREAS SHALL BE SEEDED. THE TOP 4 INCHES OF THE SEEDED AREAS SHALL BE TOPSOIL SUBJECT TO THE APPROVAL OF THE ENGINEER. THE COST OF SHAPING THE SLOPES AND PROVIDING TOP SOIL WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF EARTH EXCAVATION.
- 9) THE AREA TO BE SEEDED SHALL CONSIST OF ALL DISTURBED EARTH SURFACES WITHIN THE RIGHT OF WAY OR AS DIRECTED BY THE ENGINEER. SEEDING, CLASS 2 (SPECIAL) = 0.3 ACRES
- 10) ALL WASTE MATERIAL FROM EXCAVATIONS SHALL BE DISPOSED OF BY THE CONTRACTOR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 11) COMMITMENTS:
  - 1.) A BAT ASSESSMENT SHALL BE CONDUCTED IF WORK OCCURS TO EXISTING STRUCTURE AFTER SEPTEMBER 16, 2021.

**ROADWAY SCHEDULE**

LOCATION	AGGREGATE BASE COURSE TYPE A	BITUMINOUS MATERIALS (PRIME COAT)	BITUMINOUS MATERIALS (TACK COAT)	HOT-MIX ASPHALT BINDER COURSE IL 19.0, N50	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "C", N50	AGGREGATE SHOULDERS, TYPE B	POROUS GRANULAR EMBANKMENT, SPECIAL
TR 4B / 100 E Road	35100100	40600275	40600290	40603080	40604050	48101200	X2070302
	TON	POUND	POUND	TON	TON	TON	TON
STA. 7+85 TO STA. 9+72.31	309	948	94	58	35	43	30
STA. 10+29.69 TO STA. 12+15	306	937	93	58	35	42	30
ENTRANCES	40						
TOTAL	655	1885	187	116	70	85	60



HOT-MIX ASPHALT MIXTURE REQUIREMENTS		
LOCATIONS(S)	TR 4B / 100 E Road	TR 4B / 100 E Road
MIXTURE USE(S)	HOT-MIX ASPHALT SURFACE COURSE	HOT-MIX ASPHALT BINDER COURSE
PG:	PG 64-22	PG 64-22
DESIGN AIR VOIDS:	4% @ 50 Gyr.	4% @ 50 Gyr.
MIXTURE COMPOSITION: (MIXTURE GRADATION)	IL 9.5	IL 19.0
FRICITION AGGREGATE:	MIXTURE C	NONE
DENSITY TEST METHOD	CORES	CORES
MIXTURE WEIGHT:	112 LBS / SY / INCH THICKNESS	112 LBS / SY / INCH THICKNESS
QUALITY MANAGEMENT PROGRAM	QC/QA	QC/QA

**LEGEND**

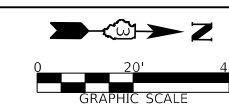
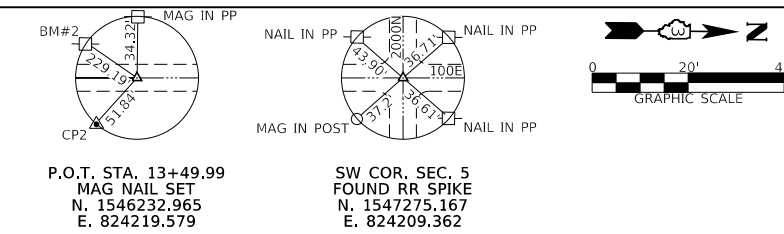
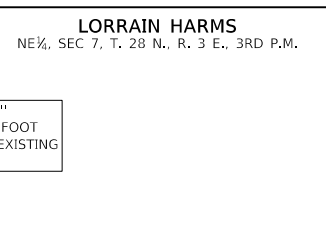
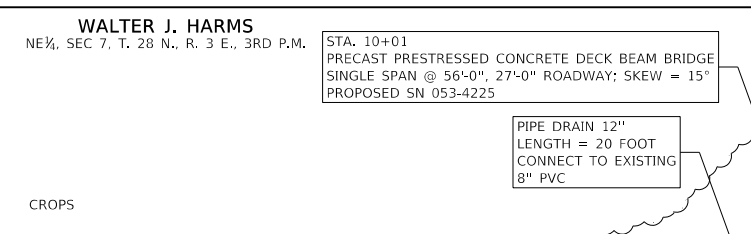
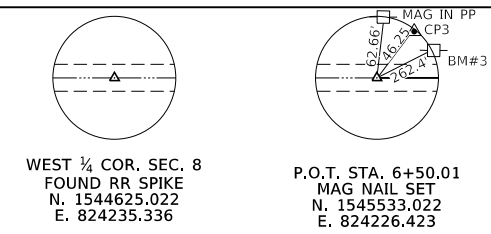
- ① HMA SURFACE COURSE, IL.-9.5, MIX C, N50 (1½" THICKNESS)
- ② HMA BINDER COURSE, IL.-19.0, N50 (2½" THICKNESS)
- ③ BITUMINOUS MATERIALS (PRIME COAT)
- ④ BITUMINOUS MATERIALS (TACK COAT)
- ⑤ AGGREGATE BASE COURSE, TYPE A (12")
- ⑥ AGGREGATE SHOULDERS, TYPE B (6")
- ⑦ EXISTING OIL & CHIP SURFACE ON AGGREGATE BASE

SUGGESTED CUT SECTION  
CONSTRUCT AS SHOWN IN  
STATION CROSS SECTIONS

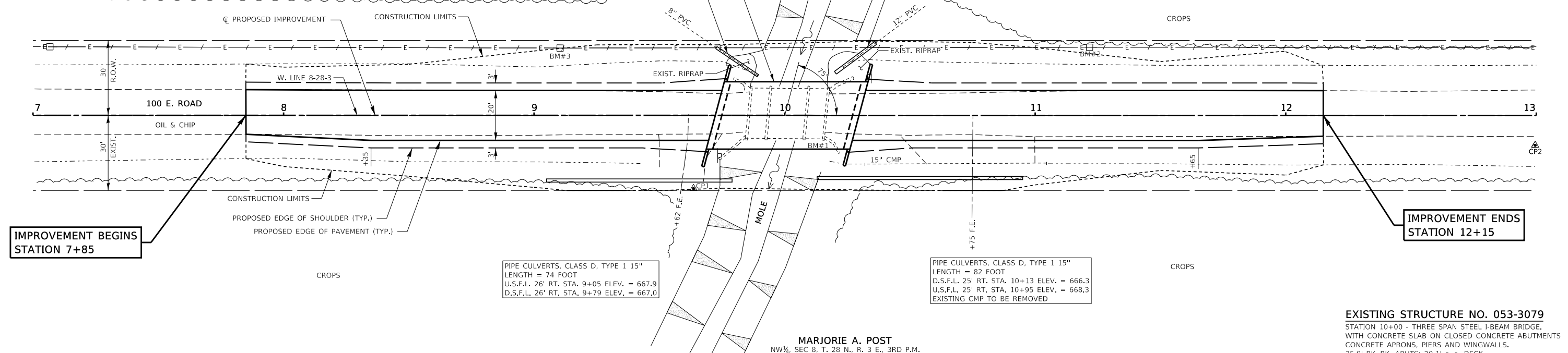
TRANSITIONS FROM THE PROPOSED ROADWAY TO THE EXISTING  
ROADWAY ARE TO BE CONSTRUCTED FROM STA. 7+85 TO 8+35  
AND STA. 11+65 TO STA. 12+15. SEE SHEET 5 FOR TRANSITION  
AT BRIDGE.

SUGGESTED FILL SECTION  
CONSTRUCT AS SHOWN IN  
STATION CROSS SECTIONS



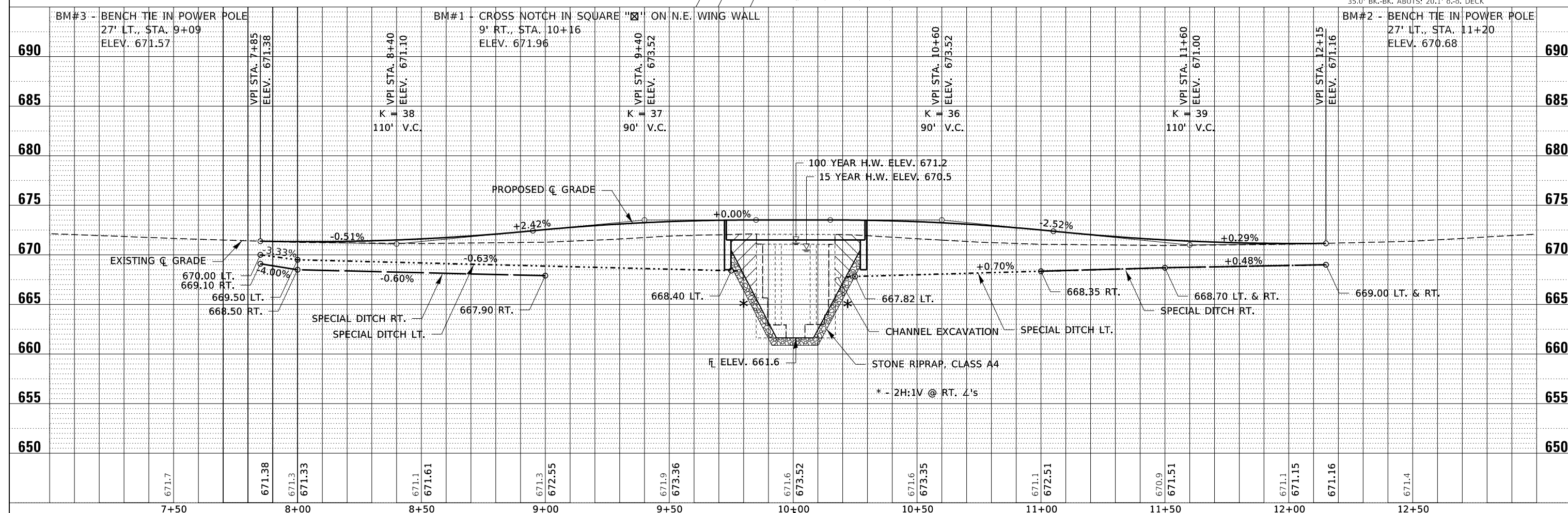


DATE	
BY	
REVISIONS	
NO.	
DATE	
BY	
REVISIONS	
NO.	
DATE	
BY	
REVISIONS	
NO.	



**EXISTING STRUCTURE NO. 053-3079**  
STATION 10+00 - THREE SPAN STEEL I-BEAM BRIDGE,  
WITH CONCRETE SLAB ON CLOSED CONCRETE ABUTMENTS  
CONCRETE APRONS, PIERS AND WINGWALLS.  
35.0' BK.-BK. ABUTTS; 20.1' o.-o. DECK

DATE	
BY	
REVISIONS	
NO.	
DATE	
BY	
REVISIONS	
NO.	
DATE	
BY	
REVISIONS	
NO.	



FILE NAME = 190484-plnpr.dgn	USER NAME = djett	DESIGNED - J.W.F.	REVISED -	<p align="center"><b>STATE OF ILLINOIS</b> <b>LIVINGSTON COUNTY HIGHWAY DEPARTMENT</b></p> <p>SCALE: 5V:20H    SHEET NO. 1 OF 1 SHEETS    STA. 7+00.00 TO STA. 13+00.00</p>	T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
HAMPTON, LENZINI AND RENWICK, INC. 3065 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62710 ILLINOIS PROFESSIONAL DESIGN FIRM L.S./P.E./S.E. CORP. 184.000959	PLOT SCALE = \$\$\$CALE5	DRAWN - T.W.K.	REVISED -		4B	18-15129-00-BR	LIVINGSTON	23	4
PLOT DATE = 11/2/2020	DATE = 11/02/2020	CHECKED - S.W.M.	REVISED -		NEBRASKA ROAD DISTRICT		CONTRACT NO. 87744		
		DATE = 11/02/2020	REVISED -		ILLINOIS		FED. AID PROJECT DHBV(465)		

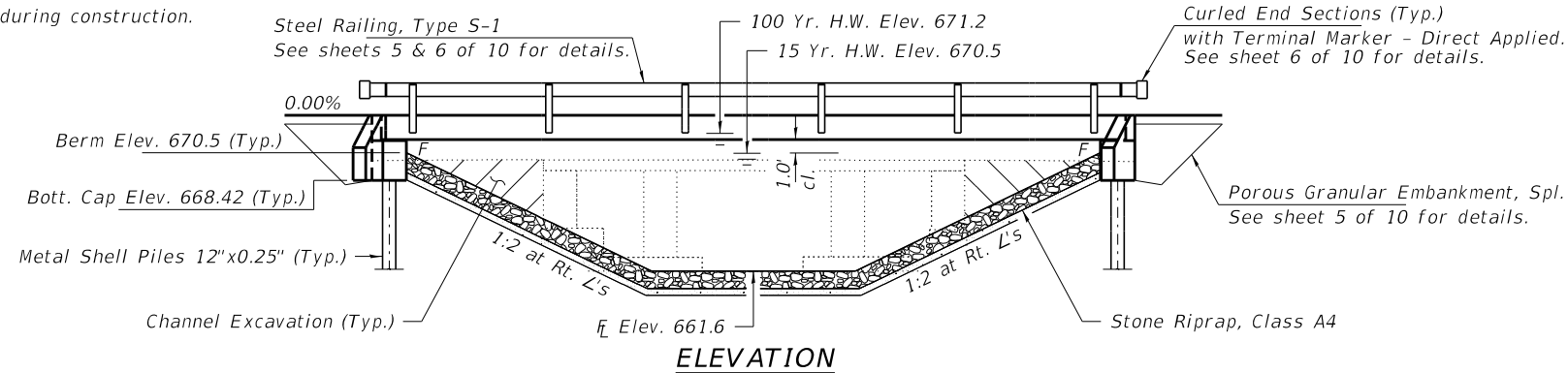


BENCHMARK: Cross Notch in square on NE Wingwall, 9' Rt., Sta. 10+16, Elev. 671.96

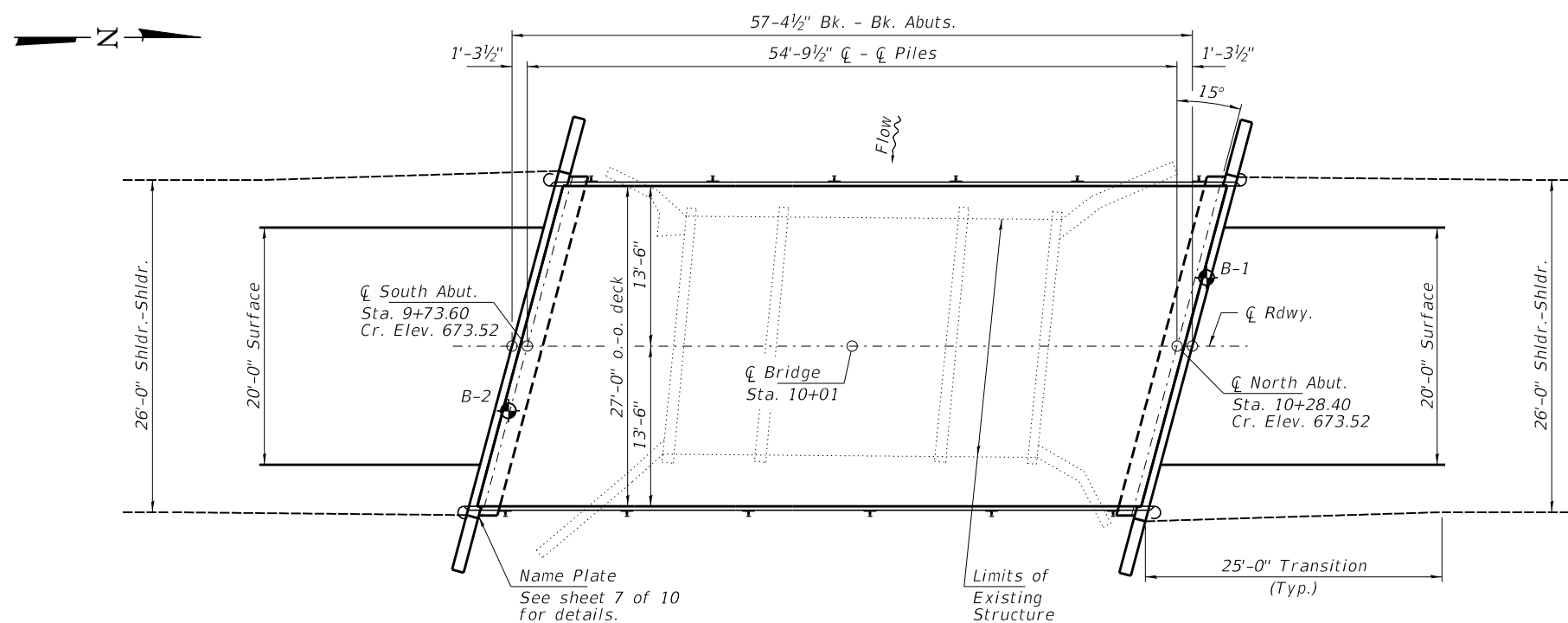
EXISTING STRUCTURE NO. 053-3079: Sta. 10+00 - Three span steel I-beam bridge with concrete slab on closed concrete abutments, concrete aprons, piers and wingwalls. 35.0' bk.-bk. abuts.; 20.1' o.-o. deck

Structure closed to traffic during construction.

No Salvage.



ELEVATION



PLAN

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition with all interims.

LOADING HL-93

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

DESIGN STRESSES

FIELD UNITS

$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (Reinf.)

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$  psi  
 $f'_ci = 5,000$  psi  
 $f_{pu} = 270,000$  psi (1/2"  $\emptyset$  low lax. strands)  
 $f_{pbt} = 201,960$  psi (1/2"  $\emptyset$  low lax. strands)  
 $f_y = 60,000$  psi (Reinf.)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1  
Design Spectral Acceleration at 1.0 sec. ( $S_{D1}$ ) = 0.108g  
Design Spectral Acceleration at 0.2 sec. ( $S_{D5}$ ) = 0.175g  
Soil Site Class = D

WATERWAY INFORMATION

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. Head - Ft.			Headwater El.	
			Exist.	Prop.	H.W.E. Exist.	Prop.	Exist.	Prop.	Exist.
Exist Overtop	10	1500	180	280	670.3	1.4	0.3	671.7	670.6
Design	15	1740	190	290	670.5	1.2	0.5	671.7	671.0
Base	100	2880	200	330	671.2	1.0	1.0	672.2	672.2
Scour Check	200	3300	200	340	671.4	1.0	0.9	672.4	672.3
Max. Calc.	500	3920	200	350	671.6	0.8	0.9	672.4	672.5

Drainage Area = 9.8 Sq. Mi. Existing Low Grade Elev. 670.9 @ Sta. 11+50  
Proposed Low Grade Elev. 671.1 @ Sta. 12+00

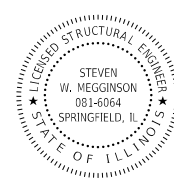
10 Year Velocity through Existing Bridge = 8.4 fps 10 Year Velocity through Proposed Bridge = 5.4 fps

DESIGN SCOUR ELEVATION TABLE

Event/Limit State	Design Scour Elev. (ft.)		Item 113
	N. Abut.	S. Abut.	
Q100	668.0	668.0	8
Q200	668.0	668.0	
Design	668.0	668.0	
Check	668.0	668.0	

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current "AASHTO LRFD Specifications."

Steven W. Megginson 11/02/2020  
ILLINOIS STRUCTURAL ENGINEER NO. 081-6064



Expires 11-30-2022

GENERAL NOTES

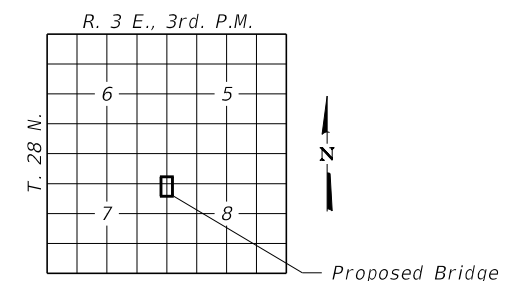
Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.  
The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at North Abutment or approved by the Engineer before ordering the remainder of piles.  
Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.  
All bars to be epoxy coated.  
Excavation required to construct the Abutments shall be included in the cost of Concrete Structures. No additional compensation will be allowed for Structure Excavation.  
All proposed construction activities shall be in accordance with Nationwide Permit number 14 of the Department of the Army authorized under Section 404 of the Clean Water Act.  
The IEPA has issued Section 401 Water Quality Certification for this activity. See Special Provisions for conditions.

INDEX OF STRUCTURE SHEETS

1. General Plan & Elevation
2. Riprap Layout
3. 21"x36" PPC Deck Beam
4. 21"x36" PPC Deck Beam Details
5. Superstructure Details
6. Steel Railing, Type S-1
7. Abutments
8. Metal Shell Pile Details
- 9-10. Borings

BUILT 202\_ BY  
LIVINGSTON COUNTY  
SEC. 18-15129-00-BR  
NEBRASKA ROAD DISTRICT  
STR. NO. 053-4225  
LOADING HL-93

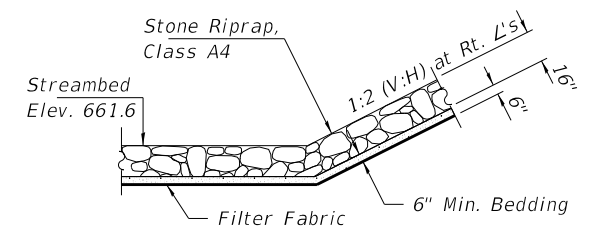
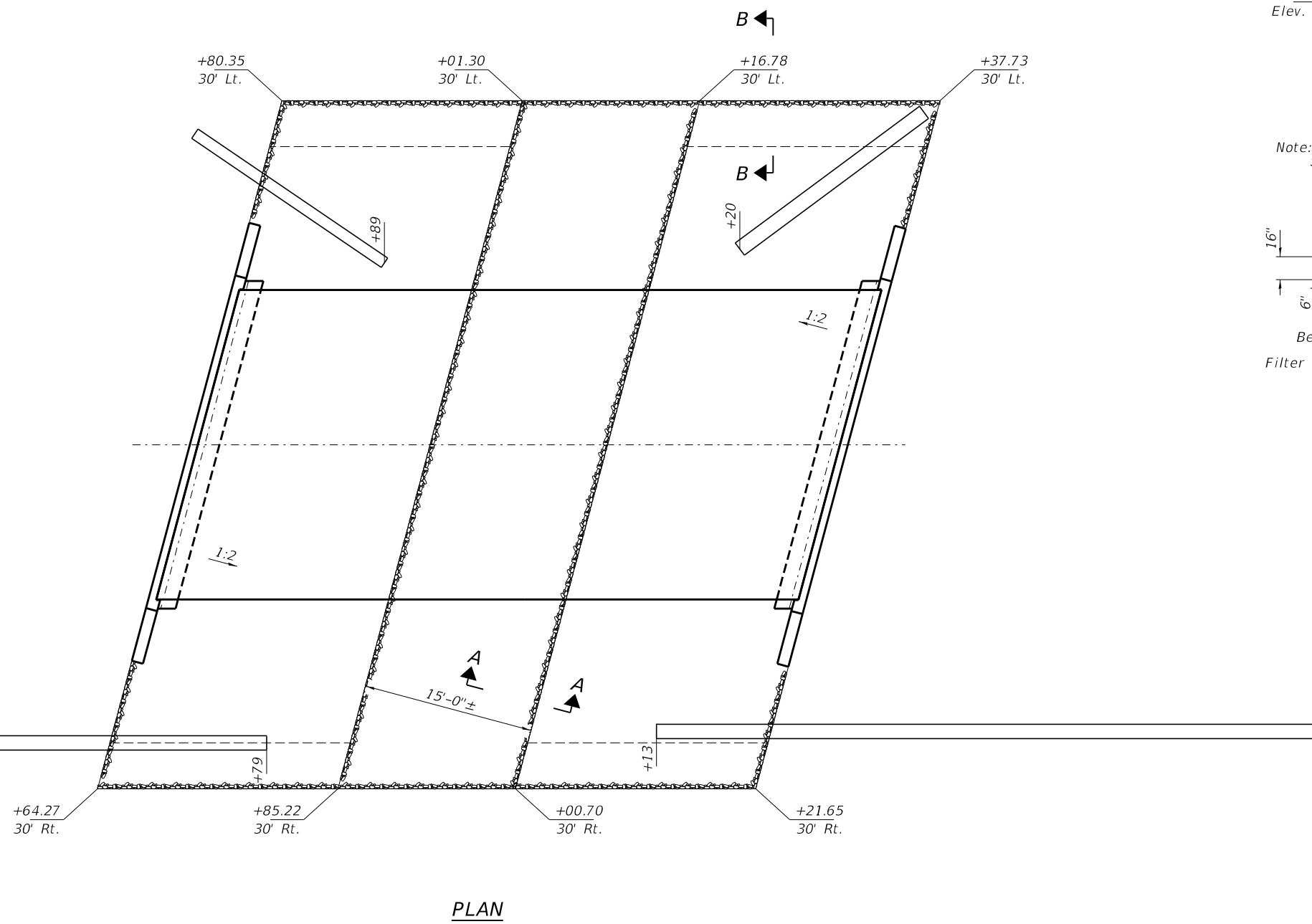
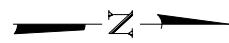
NAME PLATE  
See Std. 515001



LOCATION SKETCH

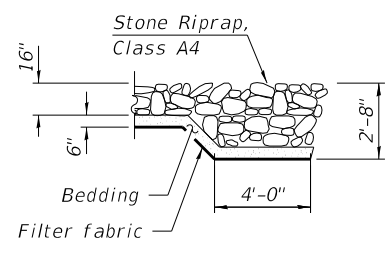
TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Channel Excavation	Cu. Yd.			180
Stone Riprap, Class A4	Sq. Yd.			395
Filter Fabric	Sq. Yd.			395
Removal of Existing Structures	Each			1
Concrete Structures	Cu. Yd.		22.6	22.6
Precast Prestressed Conc. Deck Beams (21" Depth)	Sq. Ft.	1,512		1,512
Reinforcement Bars, Epoxy Coated	Pound		3,060	3,060
Steel Railing, Type S-1	Foot	111		111
Furnishing Metal Shell Piles 12"x0.250"	Foot		315	315
Driving Piles	Foot		315	315
Test Pile Metal Shells	Each		1	1
Name Plates	Each		1	1
Terminal Marker - Direct Applied	Each	4		4
Porous Granular Embankment, Special	Ton		60	60
Pipe Underdrains for Structures 4"	Foot		102	102



**SECTION A-A**

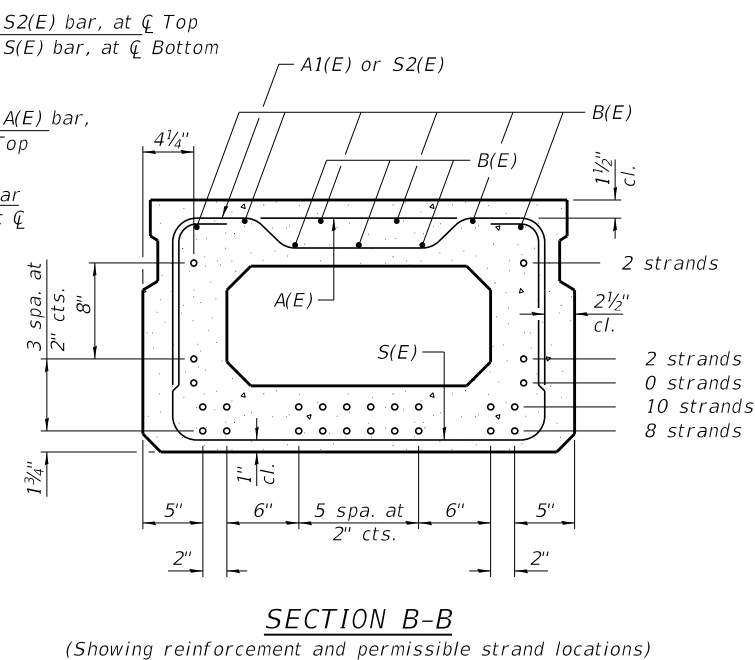
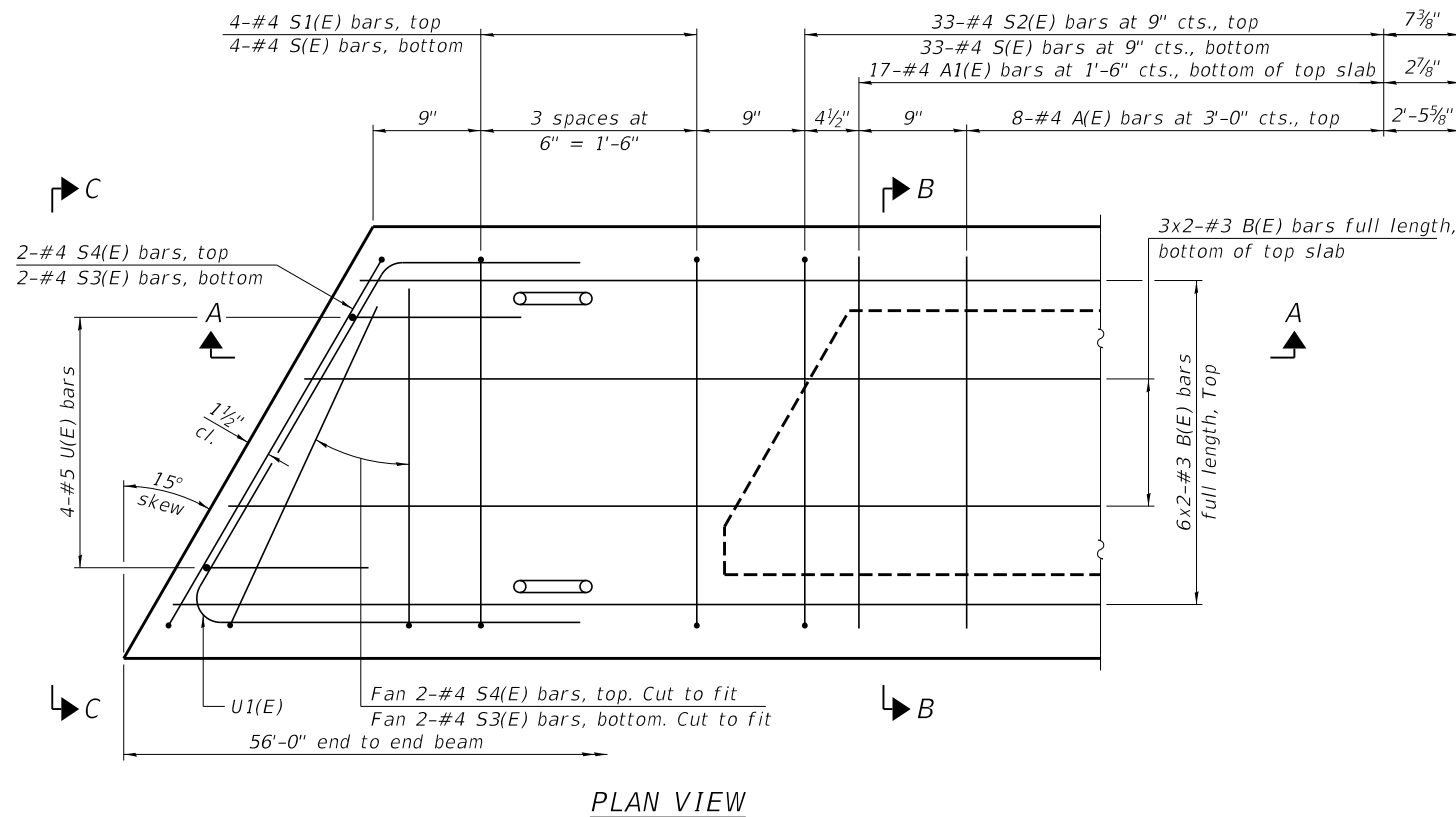
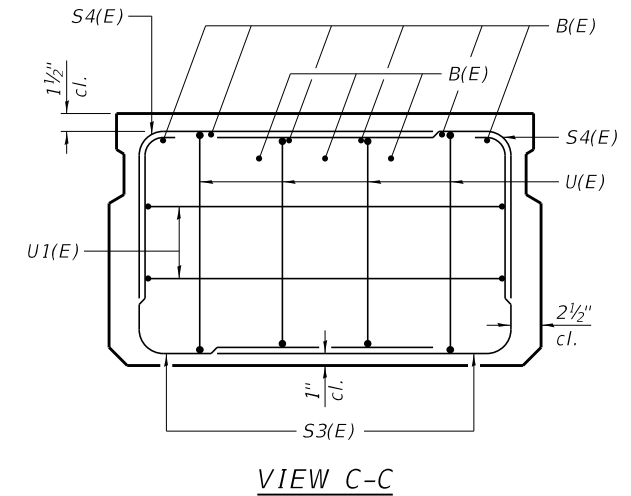
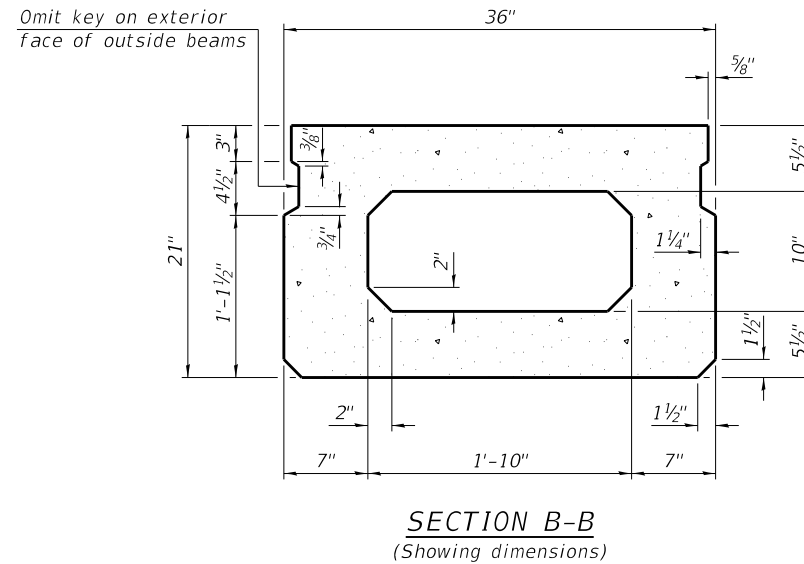
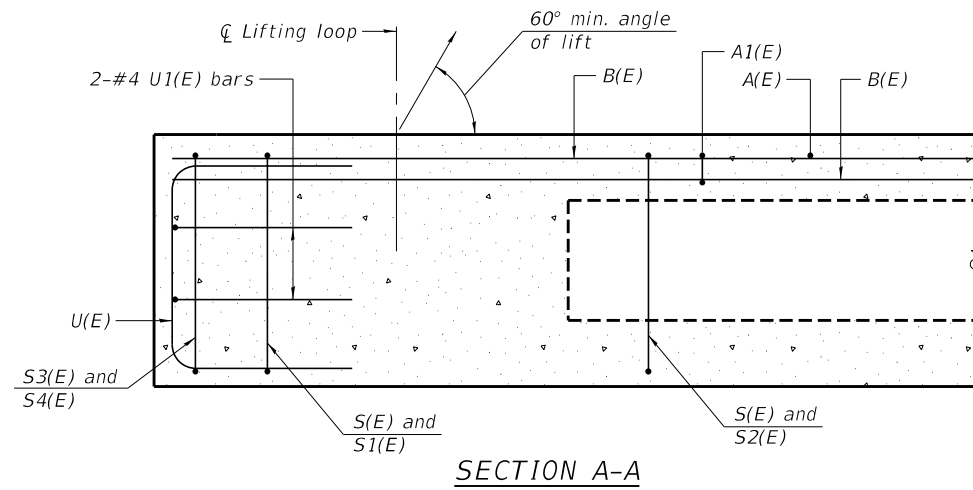
Note: See Special Provisions for Stone Riprap, Class A4.



**SECTION B-B**

**PLAN**

FILE NAME = 190484-shi-bridge.dgn	USER NAME = djett	DESIGNED - J.W.F.	REVISED -	<b>STATE OF ILLINOIS LIVINGSTON COUNTY HIGHWAY DEPARTMENT</b>	<b>RIPRAP LAYOUT STRUCTURE NO. 053-4225</b>	T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
<b>HAMPTON, LENZINI AND RENWICK, INC.</b> 3035 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.000959		CHECKED - S.W.M.	REVISED -			4B	18-15129-00-BR	LIVINGSTON	23	6
	PLOT SCALE = \$SCALE\$	DRAWN - A.C.	REVISED -			NEBRASKA ROAD DISTRICT		CONTRACT NO. 87744		
	PLOT DATE = 11/2/2020	CHECKED - S.W.M.	REVISED -			SHEET NO. 2 OF 10 SHEETS		ILLINOIS FED. AID PROJECT DHBV(495)		



**BAR LIST**  
**ONE BEAM ONLY**  
(For information only)

Bar	No.	Size	Length	Shape
A(E)	17	#4	2'-7"	—
A1(E)	34	#4	2'-10"	—
B(E)	18	#3	28'-8"	—
S(E)	75	#4	6'-5"	⌊
S1(E)	8	#4	4'-11"	⌊
S2(E)	67	#4	5'-2"	⌊
S3(E)	8	#4	4'-4"	⌊
S4(E)	8	#4	3'-7"	⌊
U(E)	8	#5	4'-0"	⌊
U1(E)	4	#4	5'-9"	⌊

Note:  
Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

**MINIMUM BAR LAP**  
#3 bar = 1'-6"

Note:  
Spacing of S(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.

Bars indicated thus 6x2-#3 etc. indicates 6 lines of bars with 2 lengths per line

PD-2136-L

1-1-2020

FILE NAME = 190484-shi-bridge.dgn	USER NAME = djett
<b>HAMPTON, LENZINI AND RENWICK, INC.</b> 3035 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.000959	
PLOT SCALE = \$SCALE\$	
PLOT DATE = 11/2/2020	

DESIGNED - J.W.F.	REVISED -
CHECKED - S.W.M.	REVISED -
DRAWN - A.C.	REVISED -
CHECKED - S.W.M.	REVISED -

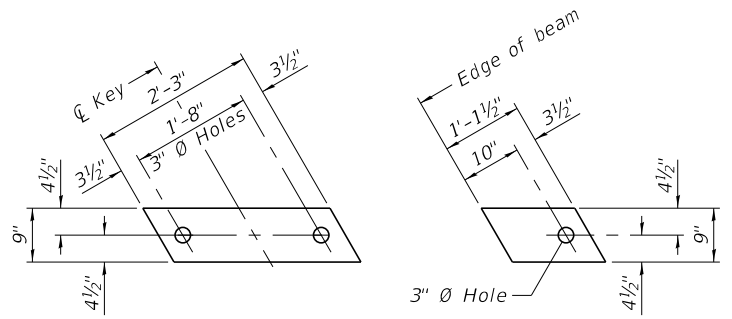
**STATE OF ILLINOIS**  
**LIVINGSTON COUNTY HIGHWAY DEPARTMENT**

**21" x 36" PPC DECK BEAM**  
**STRUCTURE NO. 053-4225**

SHEET NO. 3 OF 10 SHEETS

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
4B	18-15129-00-BR	LIVINGSTON	23	7
NEBRASKA ROAD DISTRICT		CONTRACT NO. 87744		
ILLINOIS		FED. AID PROJECT DHBV(495)		



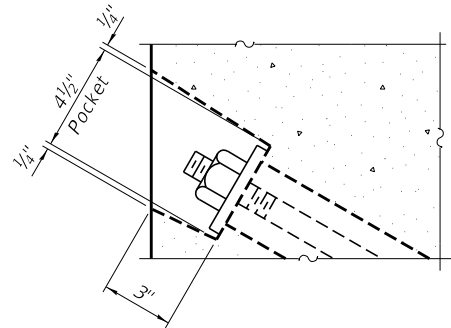


**FABRIC BEARING PAD**  
(Interior - 16 Req'd.)

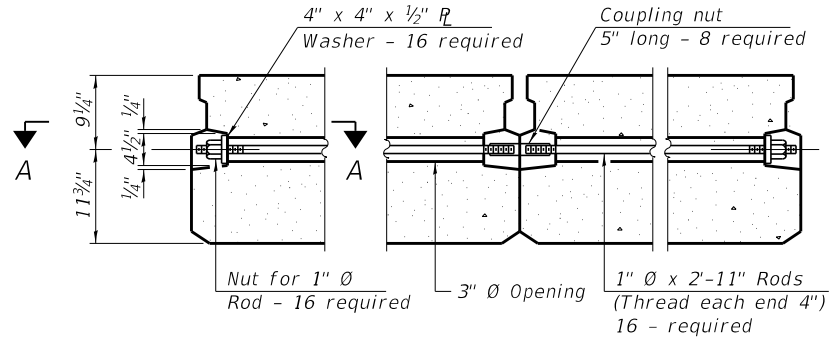
**FABRIC BEARING PAD**  
(Exterior - 4 Req'd.)

**FIXED**

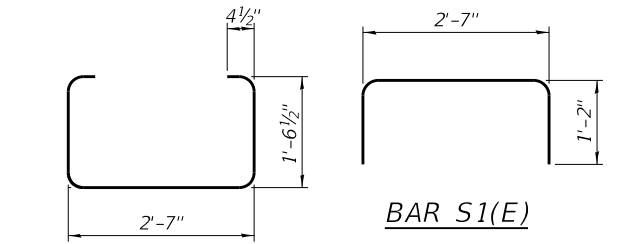
Notes:  
All bearing pads shall be 1" thick.  
Omit holes when using expansion bearings.  
Expansion bearing pads shall be bonded to the substructure.



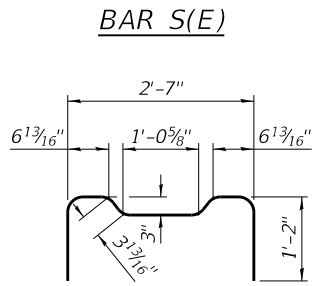
**SECTION A-A**



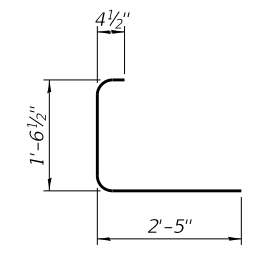
**TYPICAL TRANSVERSE TIE ASSEMBLY**



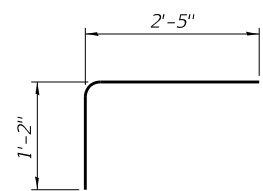
**BAR S1(E)**



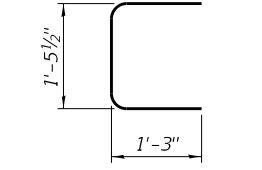
**BAR S2(E)**



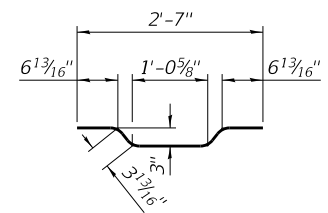
**BAR S3(E)**



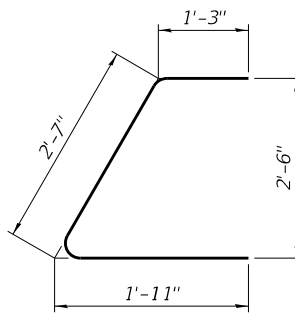
**BAR S4(E)**



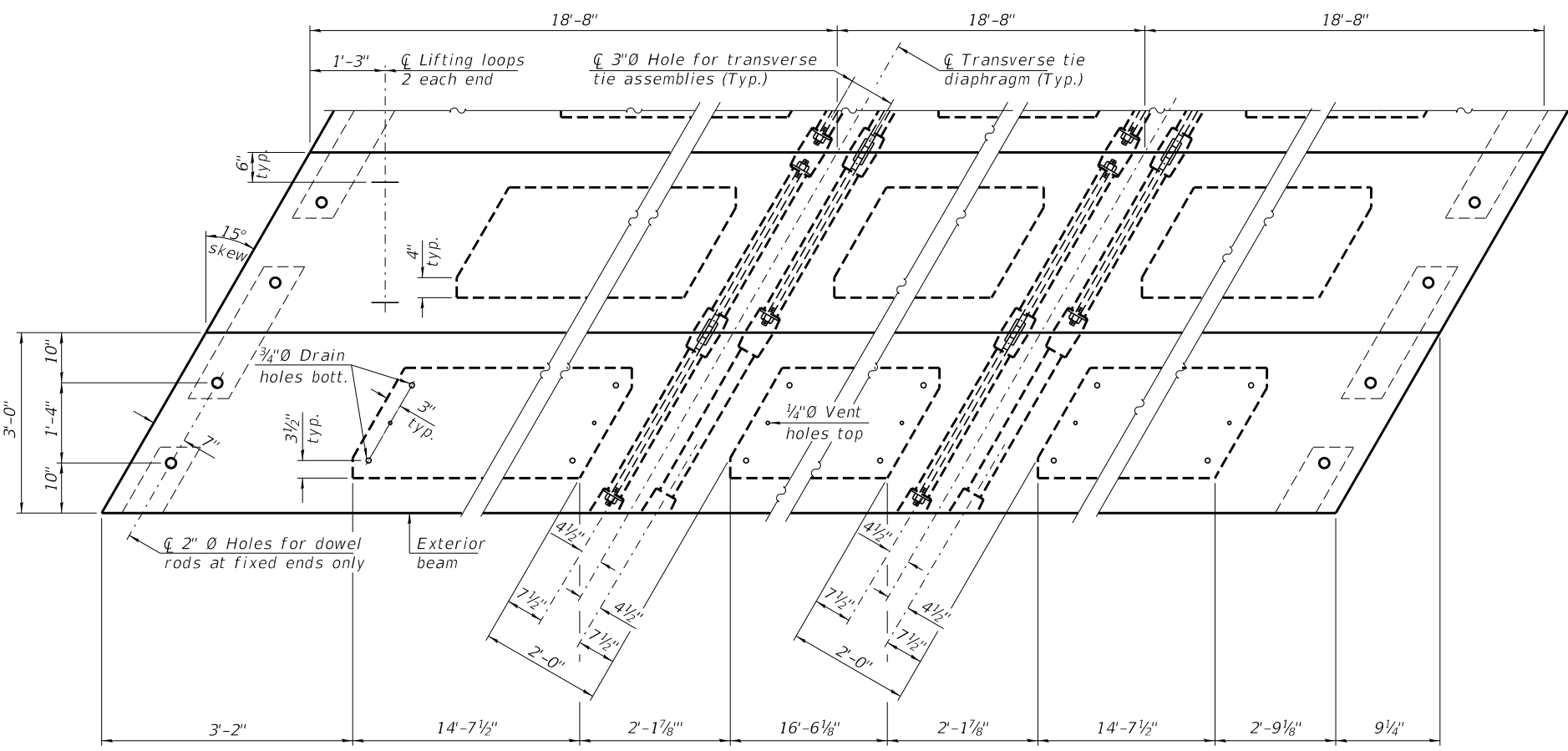
**BAR U(E)**



**BAR A1(E)**



**BAR U1(E)**



**NOTES**

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

The 1" diameter rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.

Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling.

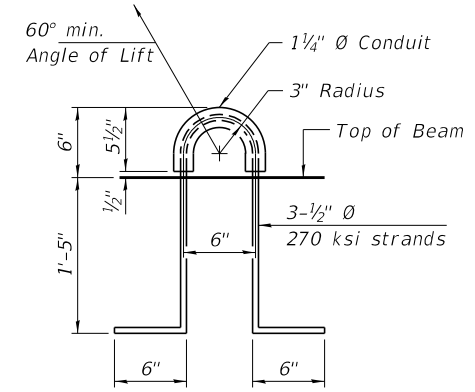
Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

Compressive strength of prestressed concrete, f'c, shall be 6000 psi.

Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

Reinforcement bars designated (E) shall be epoxy coated.

Note:  
Connect beams in pairs with the transverse tie configuration shown.



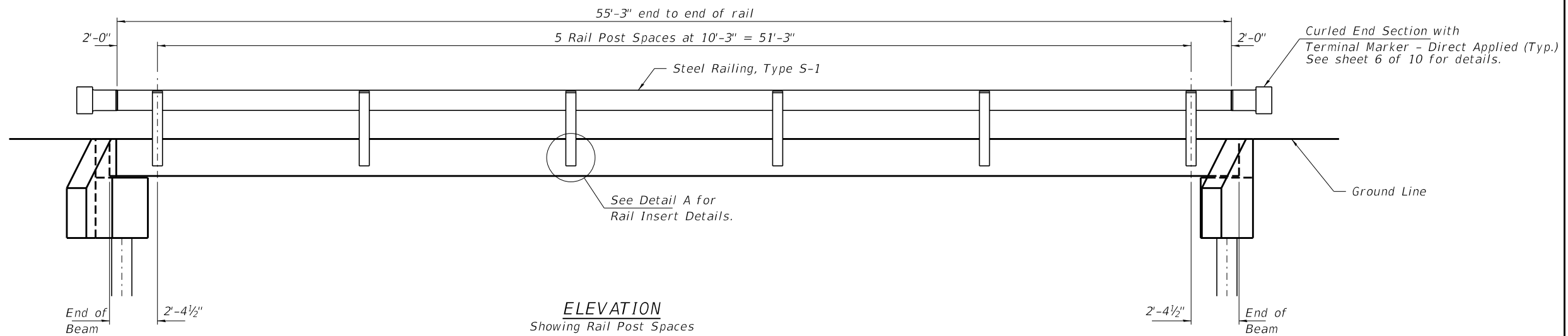
**LIFTING LOOP DETAIL**

**BILL OF MATERIAL**

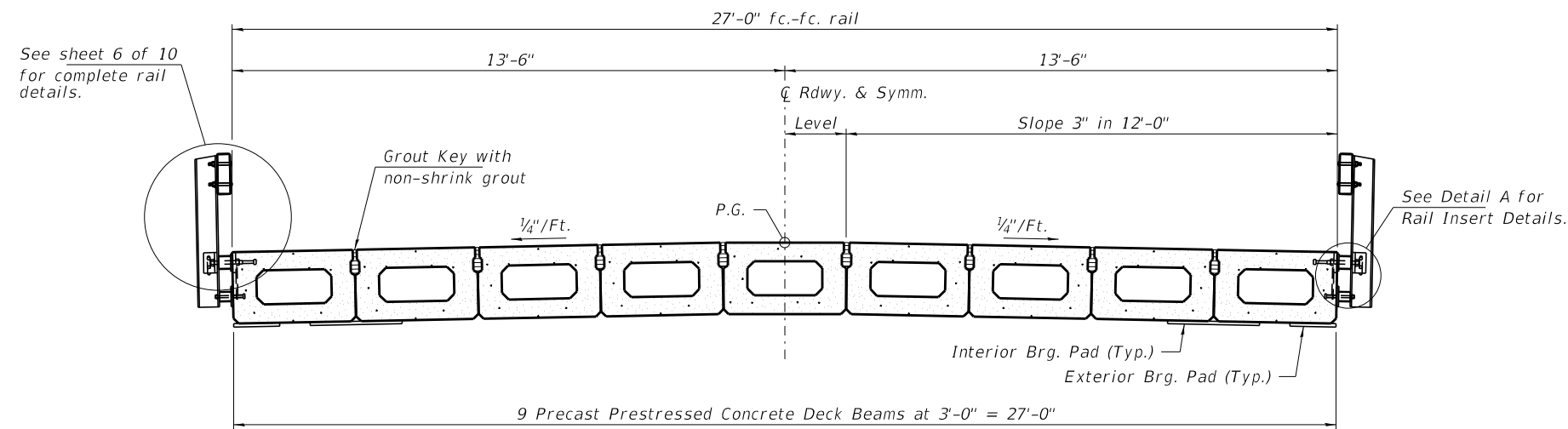
Precast Prestressed Conc. Deck Bms. (21" depth)	Sq. Ft.	1,512
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PDD-2136-L 1-1-2020

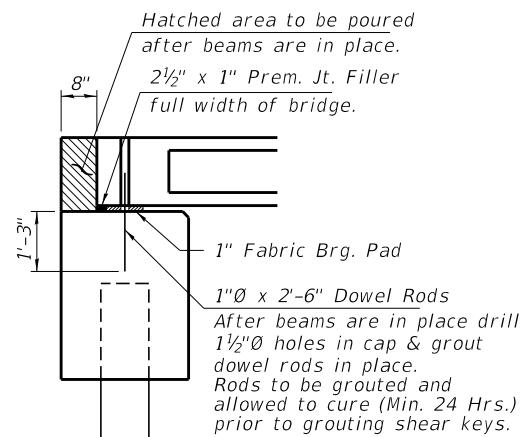
FILE NAME = 190484-shi-bridge.dgn	USER NAME = djett	DESIGNED - J.W.F.	REVISED -	<b>STATE OF ILLINOIS LIVINGSTON COUNTY HIGHWAY DEPARTMENT</b>	<b>21" x 36" PPC DECK BEAM DETAILS STRUCTURE NO. 053-4225</b>	T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
HAMPTON, LENZINI AND RENWICK, INC. 3035 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM L5 / PE / SE CORP. 184.000959	PLOT SCALE = \$SCALE\$	CHECKED - S.W.M.	REVISED -			4B	18-15129-00-BR	LIVINGSTON	23	8	
	PLOT DATE = 11/2/2020	DRAWN - A.C.	REVISED -			NEBRASKA ROAD DISTRICT					CONTRACT NO. 87744
		CHECKED - S.W.M.	REVISED -					ILLINOIS			FED. AID PROJECT DHBV(495)



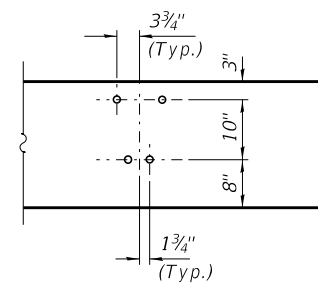
**ELEVATION**  
Showing Rail Post Spaces  
See sheet 6 of 10 for Railing Details.



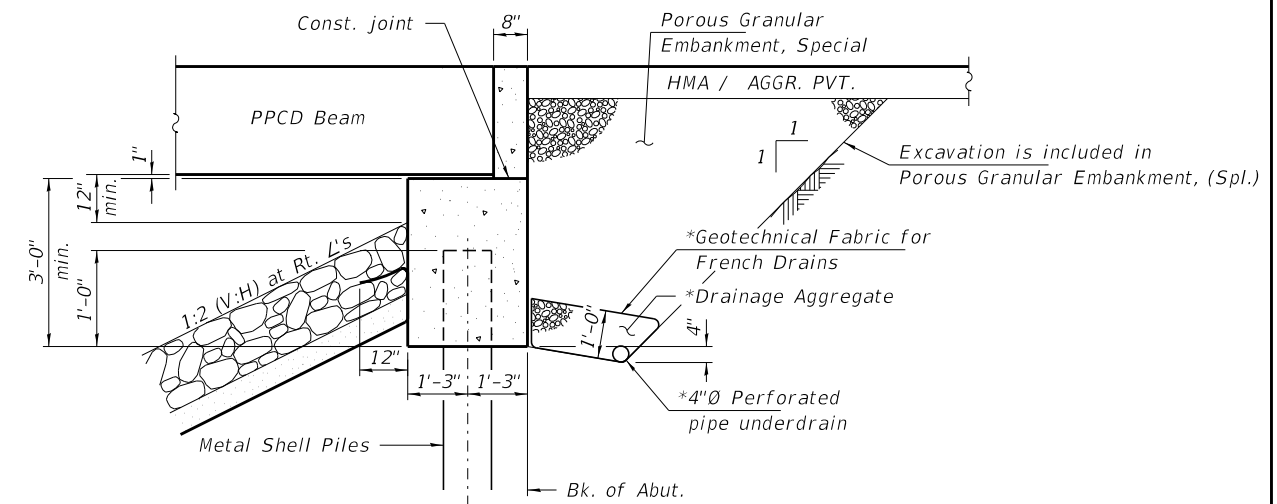
**CROSS SECTION**  
See sheets 3 & 4 of 10 for Superstructure.



**SECTION AT ABUTMENTS**  
at Rt. L's



**DETAIL A**

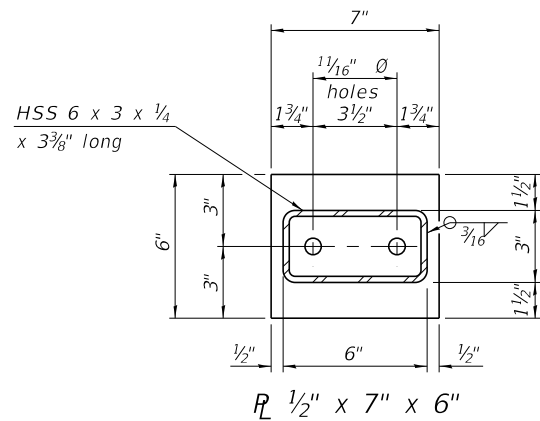
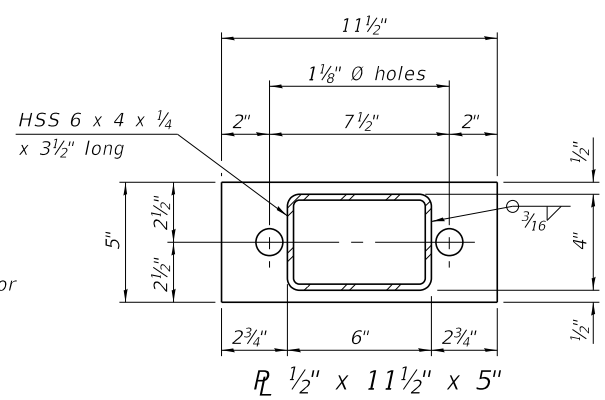
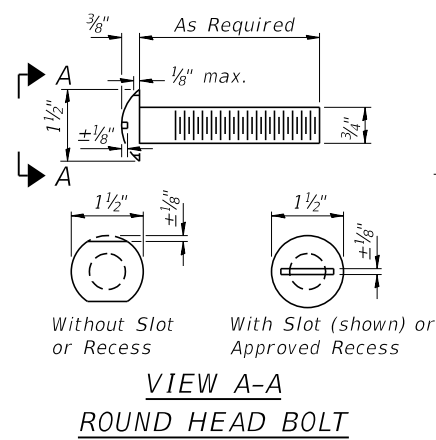


**SECTION THRU ABUTMENT**  
(Horiz. dim. at Rt. L's)

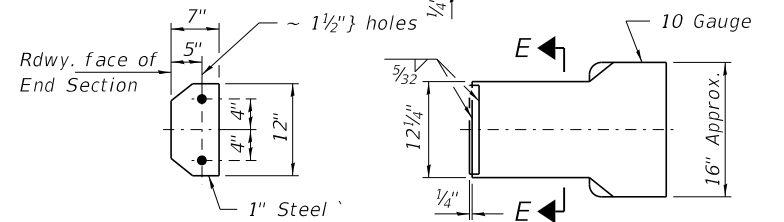
\*Included in the cost of Pipe Underdrains for Structures. (See Special Provisions)

Note:  
Outlet pipe underdrains to the West only as directed by the Engineer.

FILE NAME = 190484-shi-bridge.dgn	USER NAME = djett	DESIGNED - J.W.F.	REVISED -	<b>STATE OF ILLINOIS LIVINGSTON COUNTY HIGHWAY DEPARTMENT</b>	<b>SUPERSTRUCTURE DETAILS STRUCTURE NO. 053-4225</b>	T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
HAMPTON, LENZINI AND RENWICK, INC. 3035 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.000959	PLOT SCALE = \$SCALE\$	CHECKED - S.W.M.	REVISED -			4B	18-15129-00-BR	LIVINGSTON	23	9
	PLOT DATE = 11/2/2020	DRAWN - A.C.	REVISED -			NEBRASKA ROAD DISTRICT		CONTRACT NO. 87744		
		CHECKED - S.W.M.	REVISED -			SHEET NO. 5 OF 10 SHEETS		ILLINOIS   FED. AID PROJECT DHBV(495)		



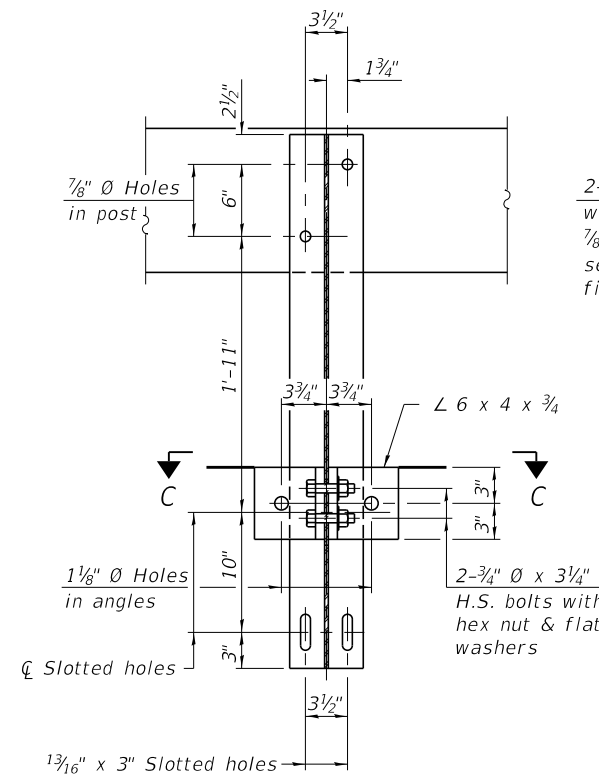
Note: Cost of curled end sections shall be included with the Steel Railing. (4 Required)



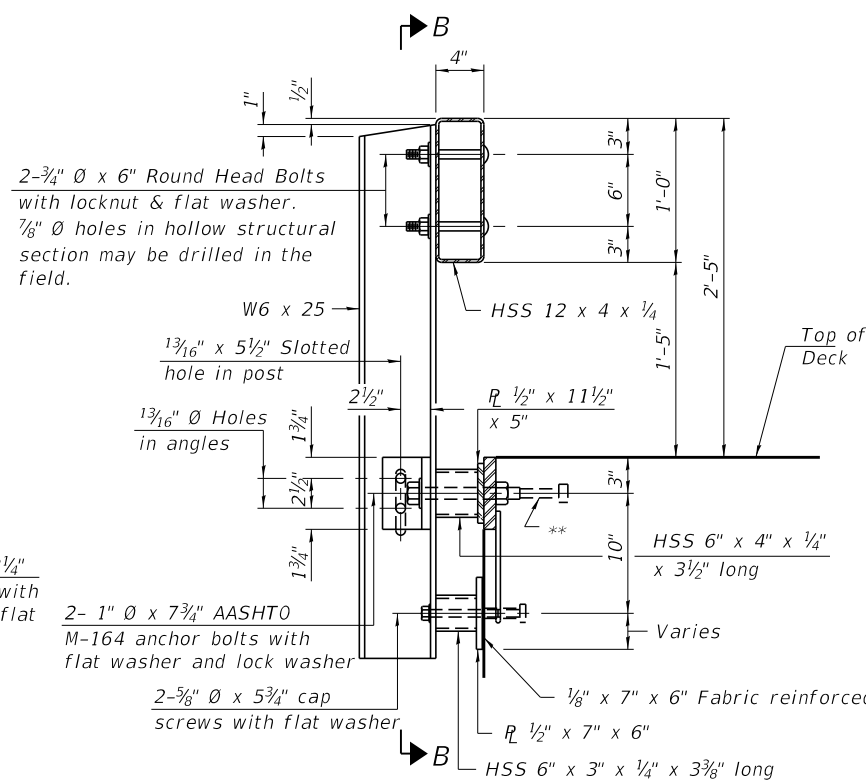
SECTION E-E CURLED END SECTION DETAILS  
SPLICE DIMENSIONS

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"	—

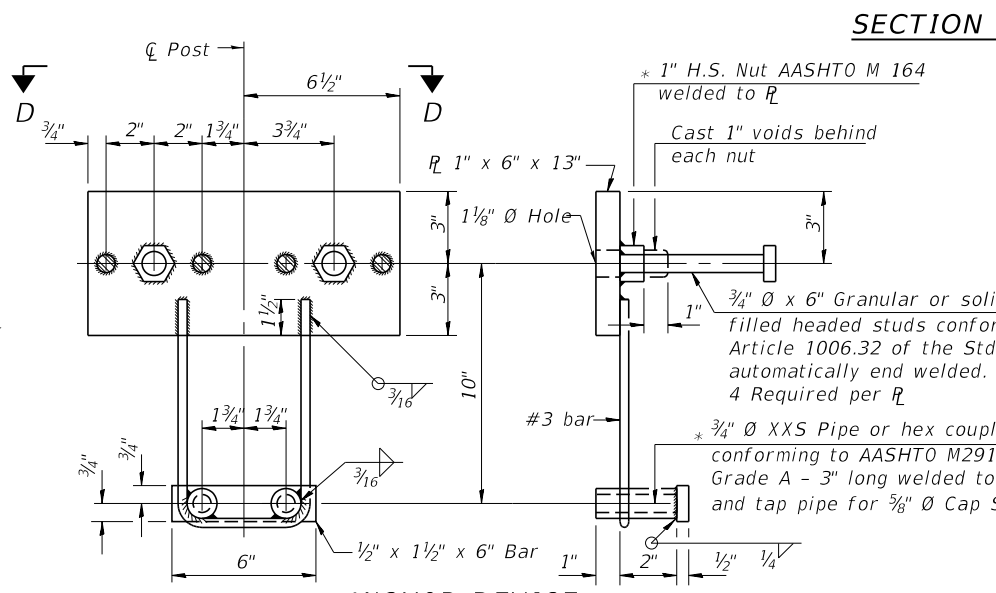
T = Total movement at expansion joint as shown on the design plans.



SECTION B-B

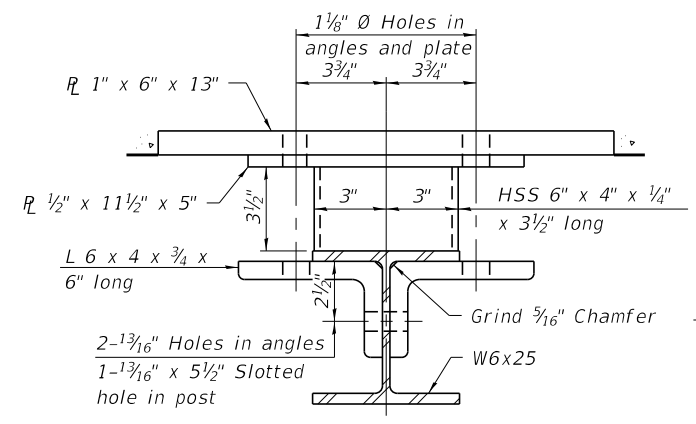


SECTION AT RAILING POST

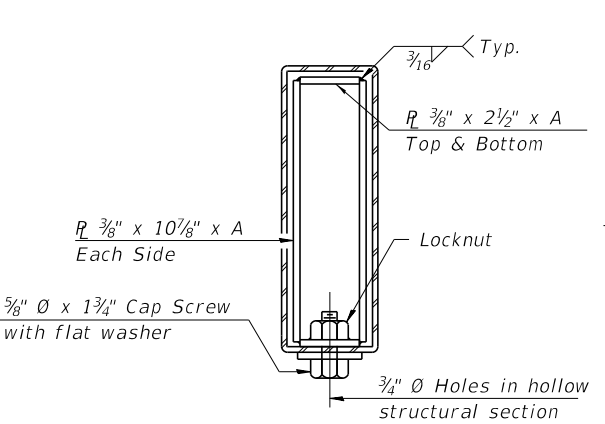


ANCHOR DEVICE

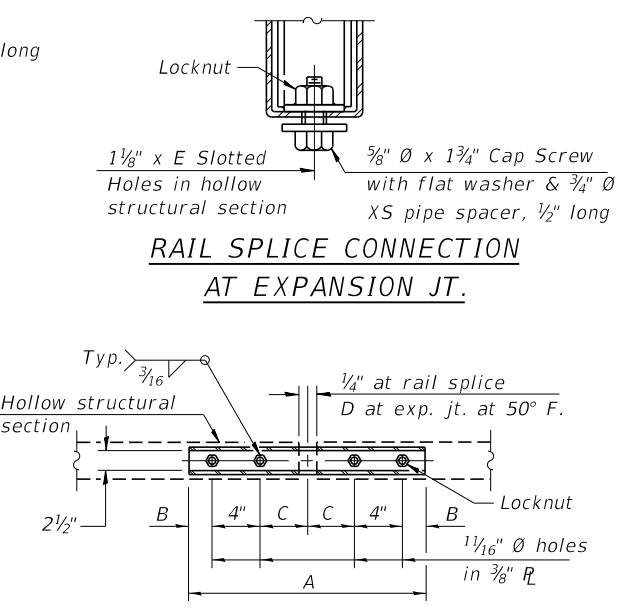
\* Threaded areas shall be plugged or blocked off during casting of beam.



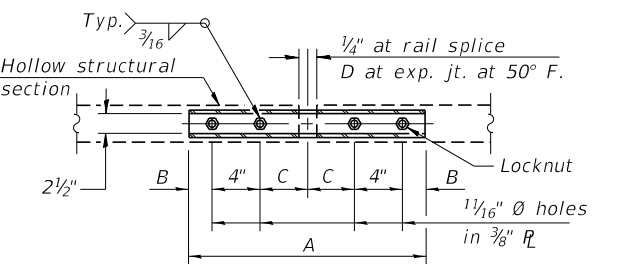
SECTION C-C



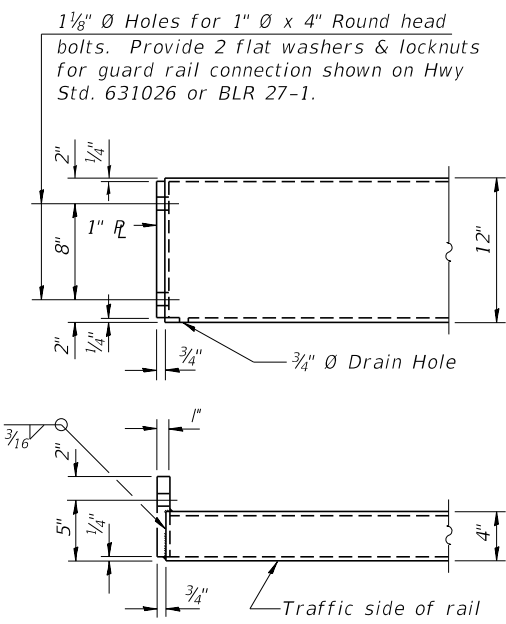
SECTIONS AT RAIL SPLICE



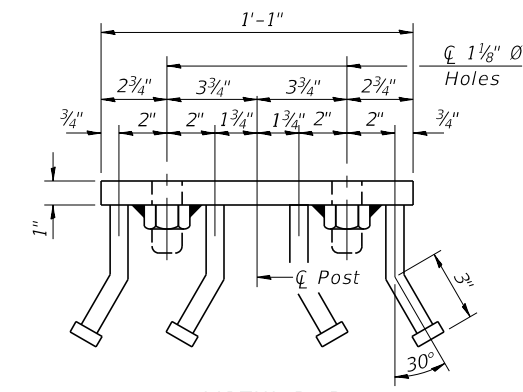
RAIL SPLICE CONNECTION AT EXPANSION JT.



PLAN-BOTT. SPLICE R TYPICAL



END OF RAIL DETAILS



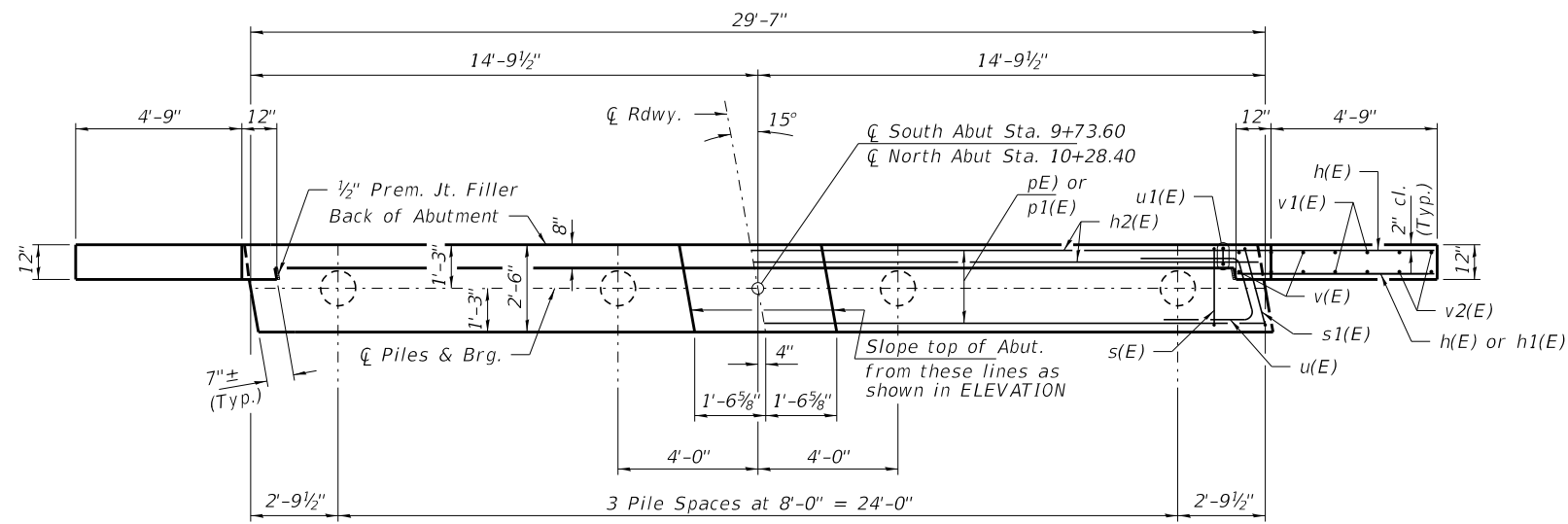
VIEW D-D

BILL OF MATERIAL

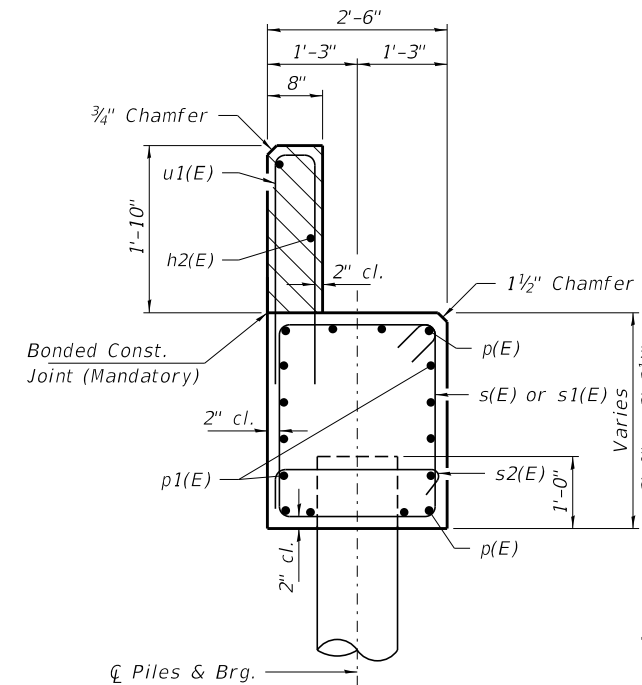
Item	Unit	Quantity
Steel Railing, Type S-1	Foot	111

R-23A 8-11-2017 (10'-9" Maximum Post Spacing)





**PLAN**

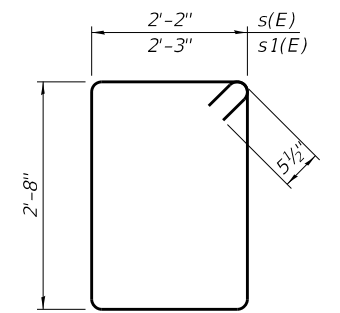


**SECTION A-A**

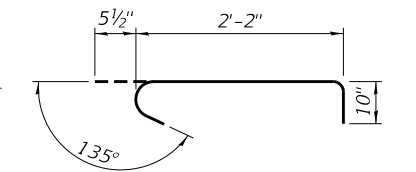
Hatched area to be poured after beams are in place.

Cast top of wingwall flush with exterior beam face after beams have been erected.

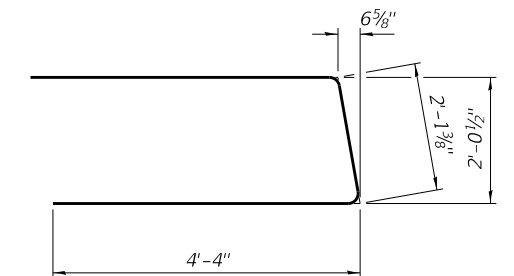
Note: Extend h(E) bars into abutment cap.



**BARS s(E) & s1(E)**

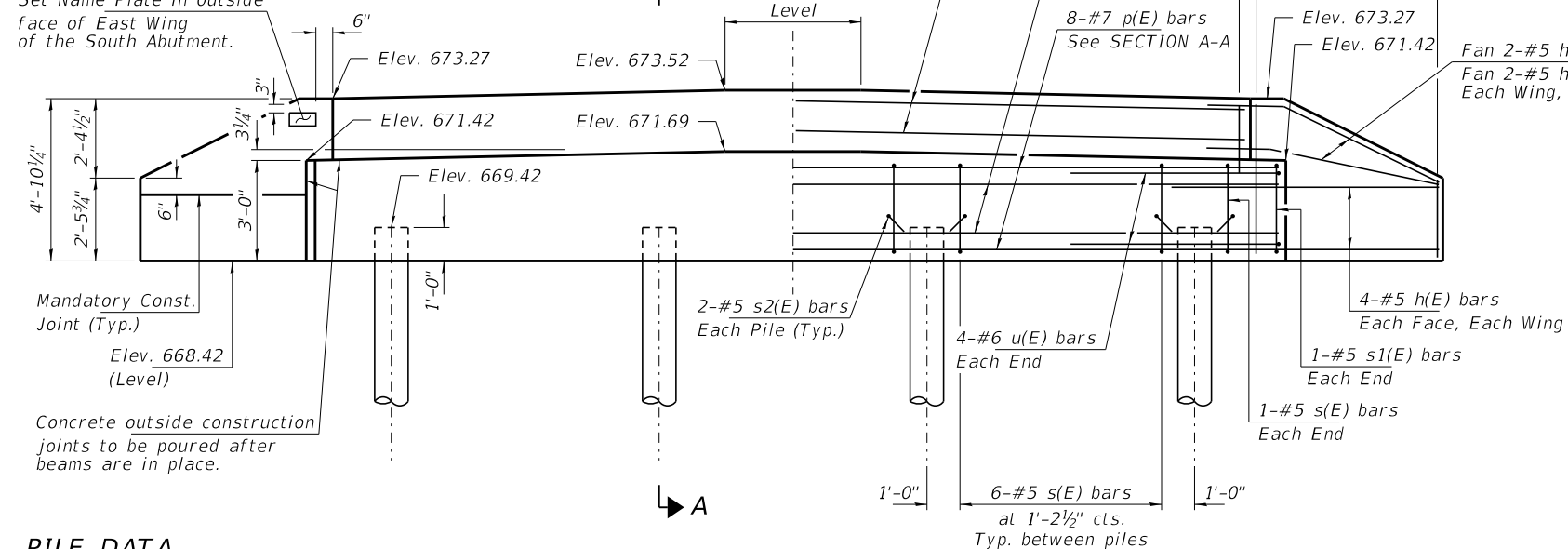


**BAR s2(E)**



**BAR u(E)**

Set Name Plate in outside face of East Wing of the South Abutment.



**ELEVATION**

**BILL OF MATERIAL - 2 ABUTS.**

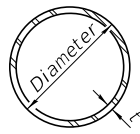
BAR	NO.	SIZE	LENGTH	SHAPE
h(E)	40	#5	7'-0"	—
h1(E)	8	#5	5'-6"	—
h2(E)	4	#5	29'-3"	—
p(E)	16	#7	29'-3"	—
p1(E)	16	#4	29'-3"	—
s(E)	40	#5	10'-7"	□
s1(E)	4	#5	10'-9"	□
s2(E)	16	#5	3'-6"	J
u(E)	16	#6	10'-10"	U
u1(E)	58	#5	5'-8"	U
v(E)	24	#5	4'-0"	—
v1(E)	16	#5	3'-1"	—
v2(E)	16	#5	2'-2"	—
Concrete Structures			Cu. Yd.	22.6
Reinf. Bars, Epoxy Coated			Pound	3,060
Metal Shell Piles 12"x0.250"			Foot	315
Test Pile Metal Shells			Each	1
Name Plates			Each	1

**PILE DATA**

Type: Metal Shell Piles 12"x0.250"  
 Nominal Required Bearing: 311 Kips/Pile  
 Factored Resistance Available: 171 Kips/Pile  
 Est. Length: 45 Ft/Pile  
 No. Production Piles: 7  
 No. Test Piles: 1

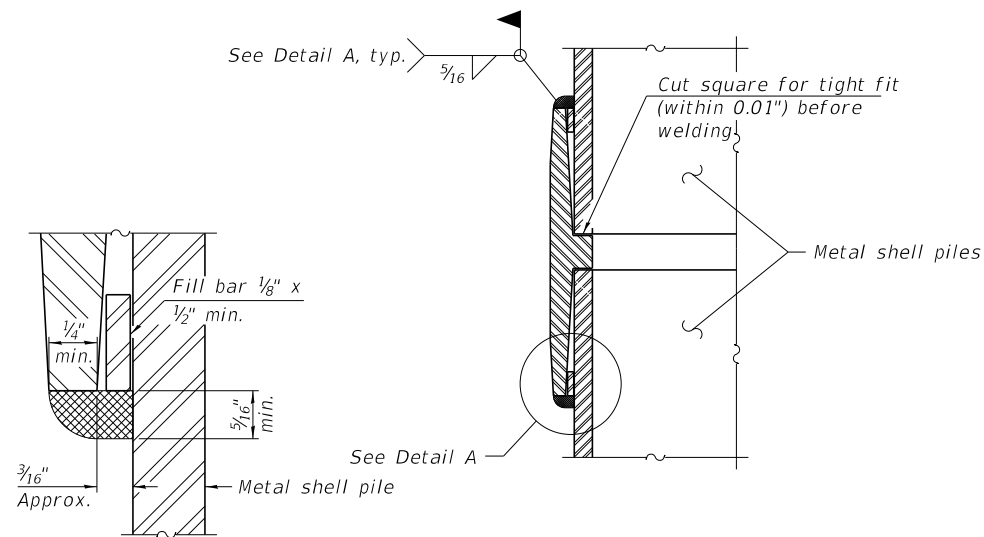
Notes: One test pile shall be driven in a permanent location at the North Abutment.

The test pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.

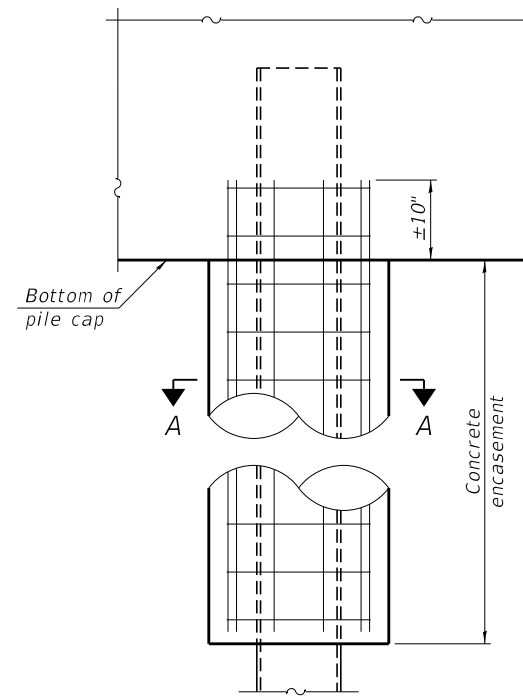


**METAL SHELL PILE TABLE**

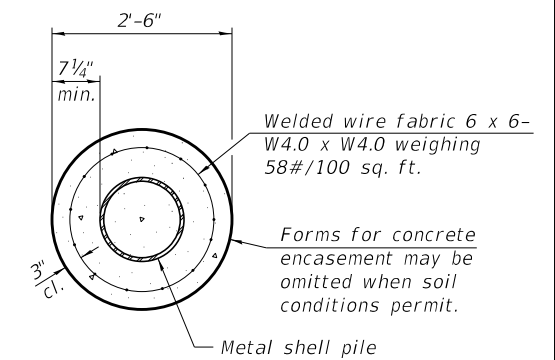
Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. <sup>3</sup> /ft.)
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361
PP16	0.312"	52.32	0.0478
PP16	0.375"	62.64	0.0470



**DETAIL A**

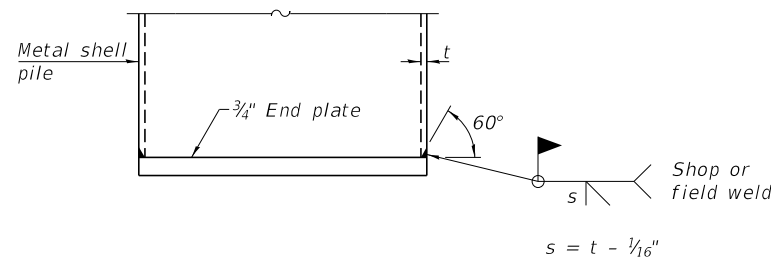


**ELEVATION**



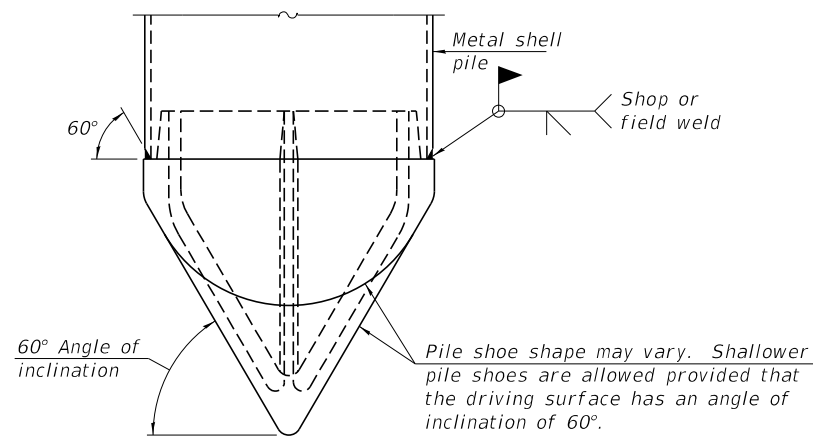
**SECTION A-A**

**INDIVIDUAL PILE CONCRETE ENCASUREMENT**  
(When specified)



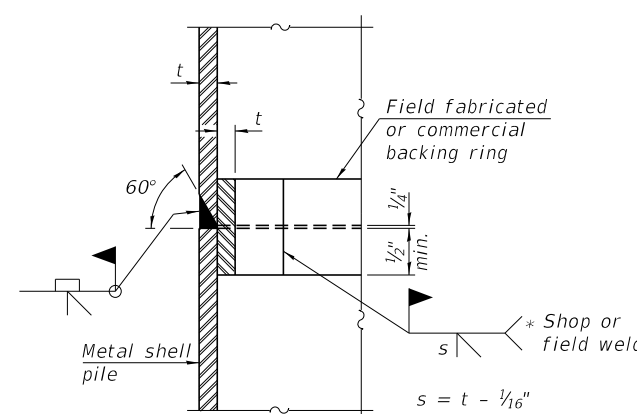
**END PLATE ATTACHMENT**

**WELDED COMMERCIAL SPLICE**  
Notes:  
The 1/8" x 1/2" min. fill bar may be constructed of 2 bars with a 1/8" max. gap between them.  
Pile segments shall be driven to solid contact with splicer before welding.



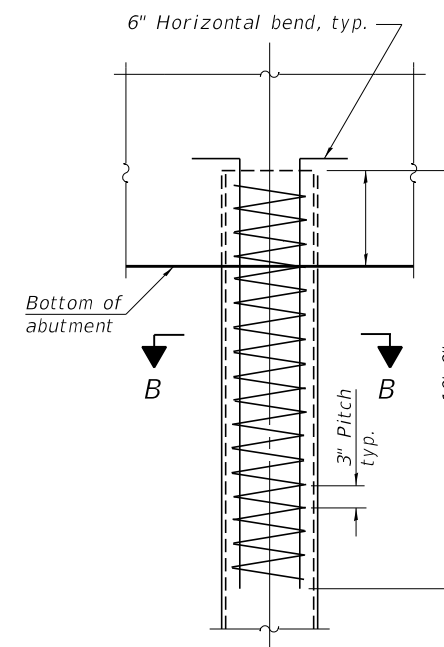
**PILE SHOE ATTACHMENT**

(When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 80-50 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld).



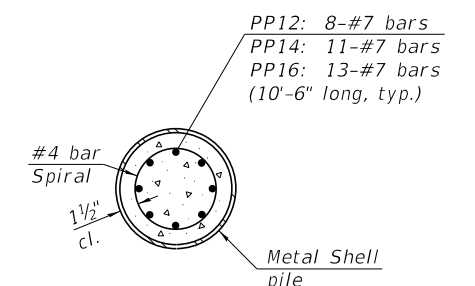
**COMPLETE PENETRATION WELD SPLICE**

\* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



**ELEVATION**

**REINFORCEMENT AT ABUTMENTS**  
(Omit when concrete encasement is specified)

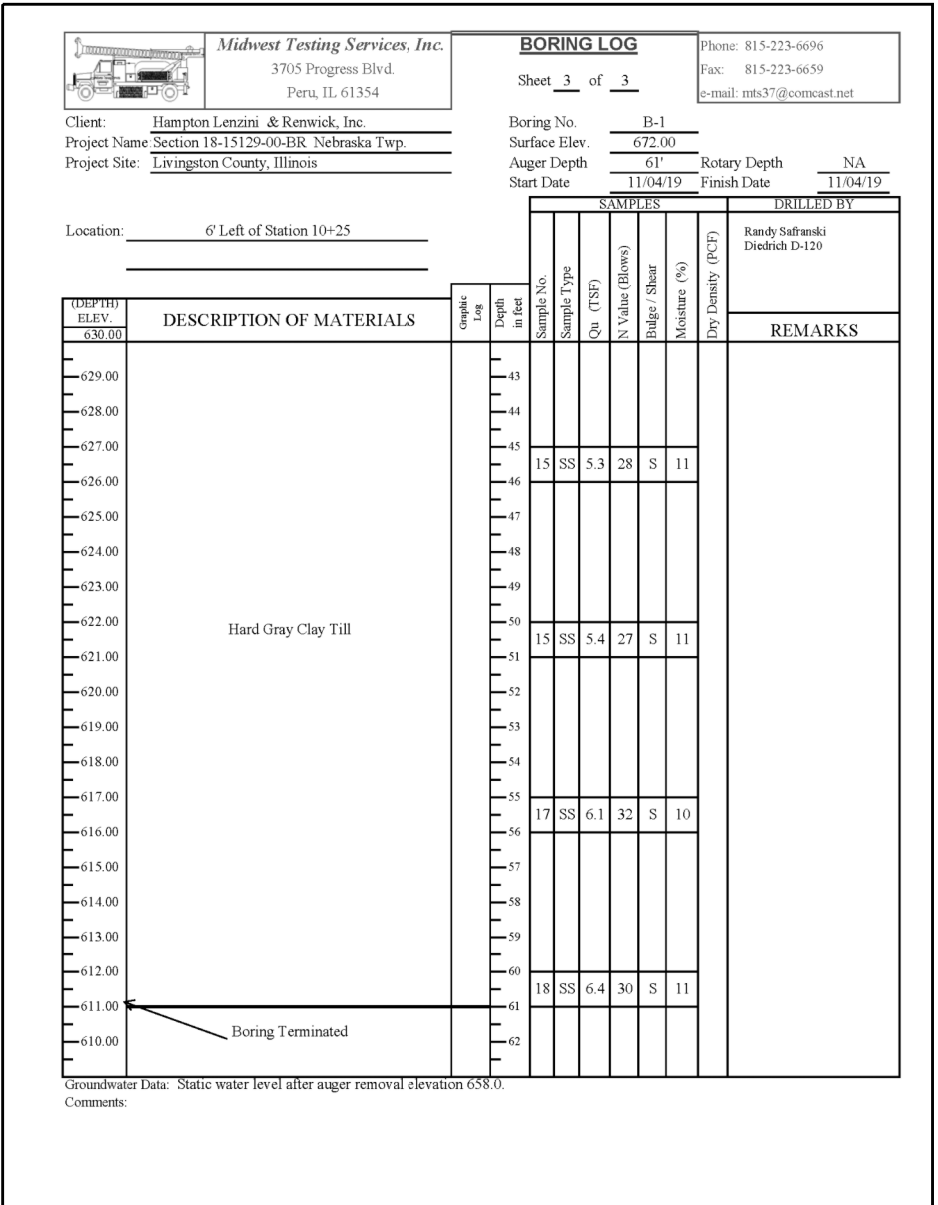
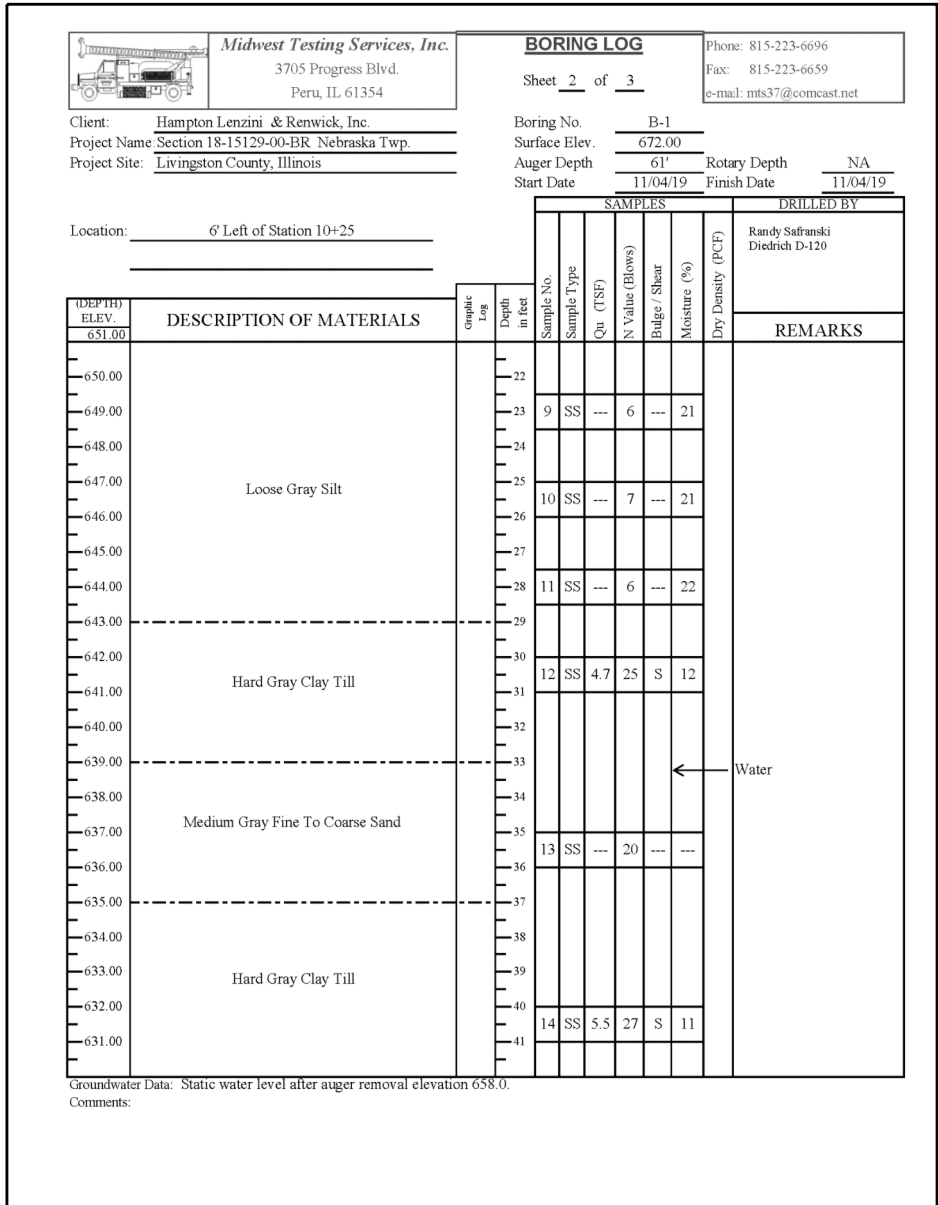
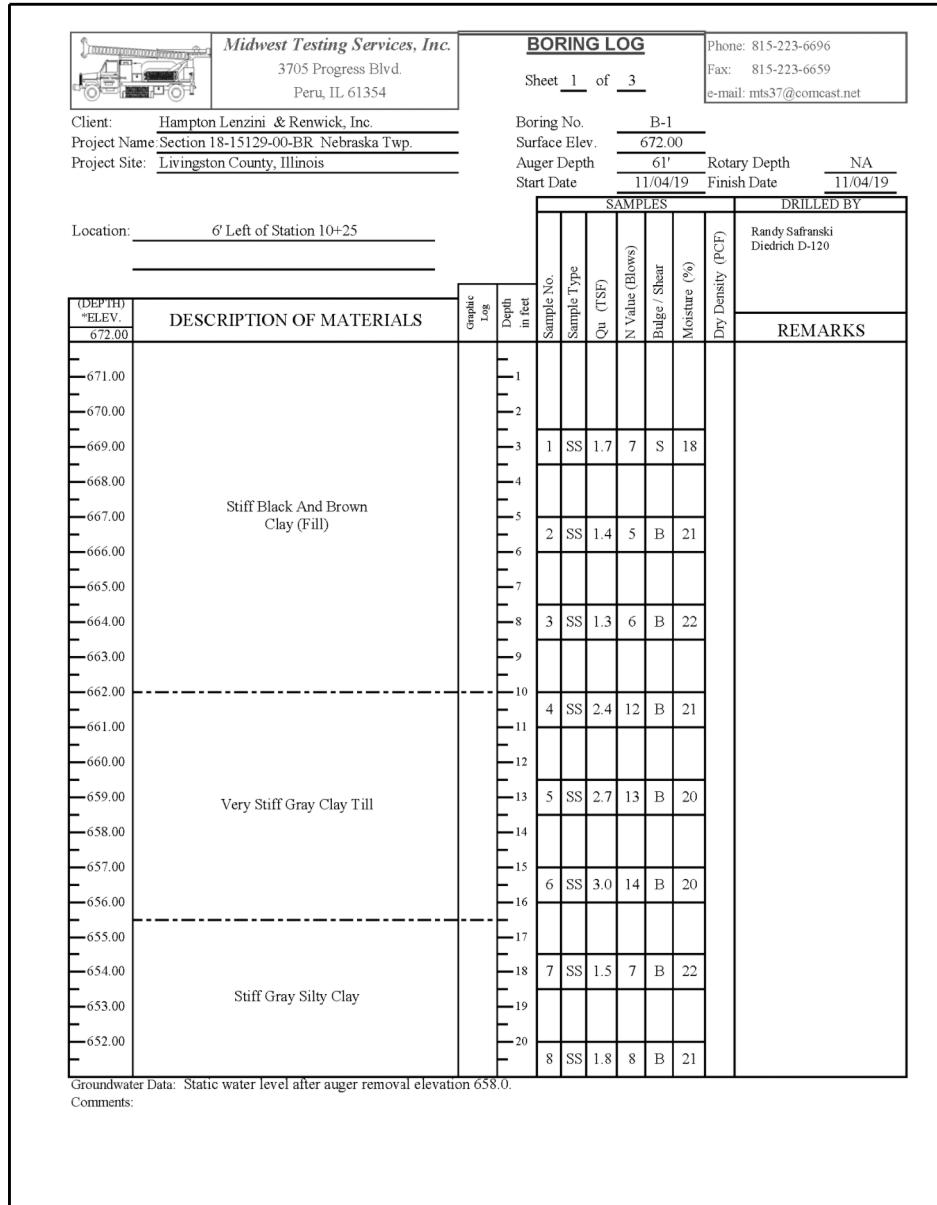


**SECTION B-B**

Note:  
The metal shell piles shall be according to Article 1006.05 of the Standard Specifications.

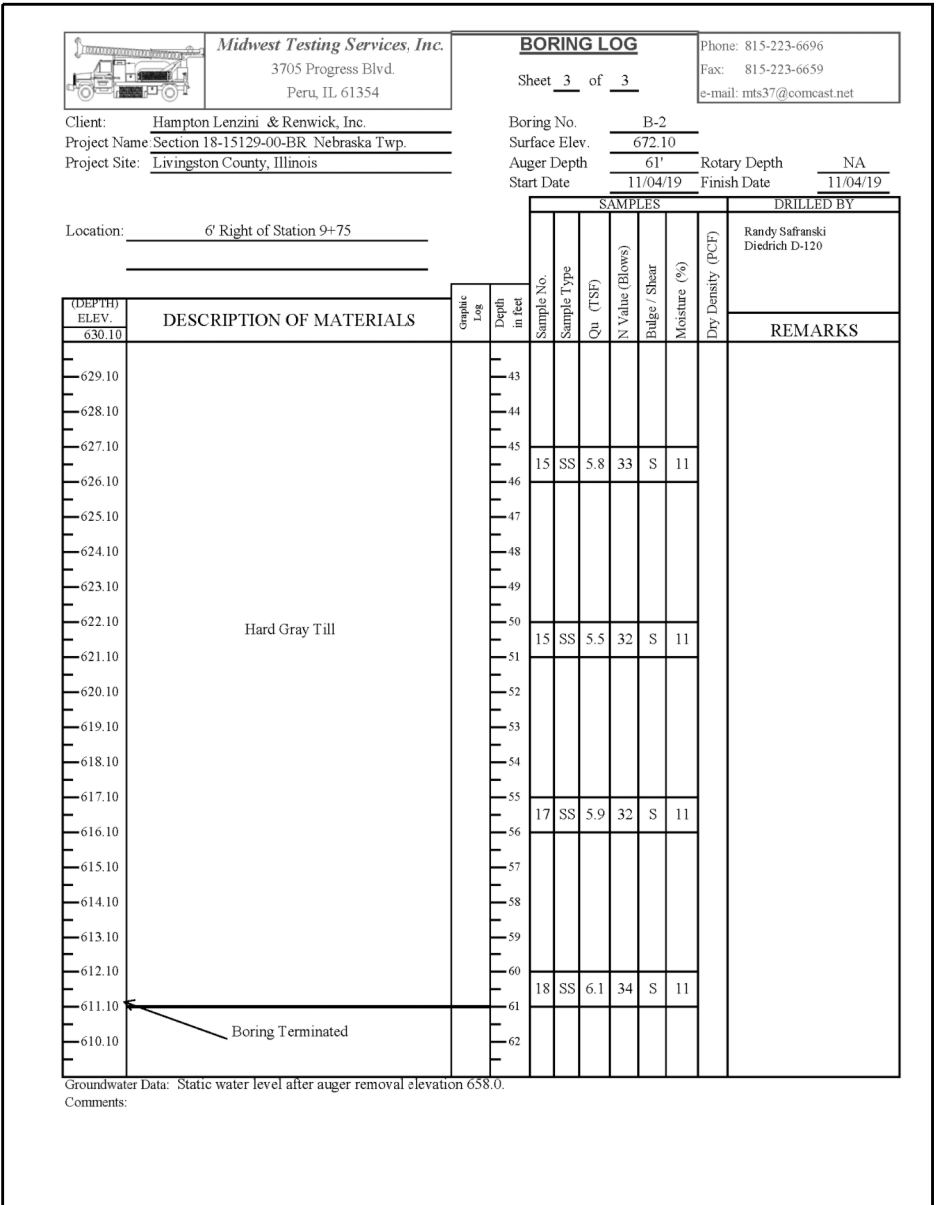
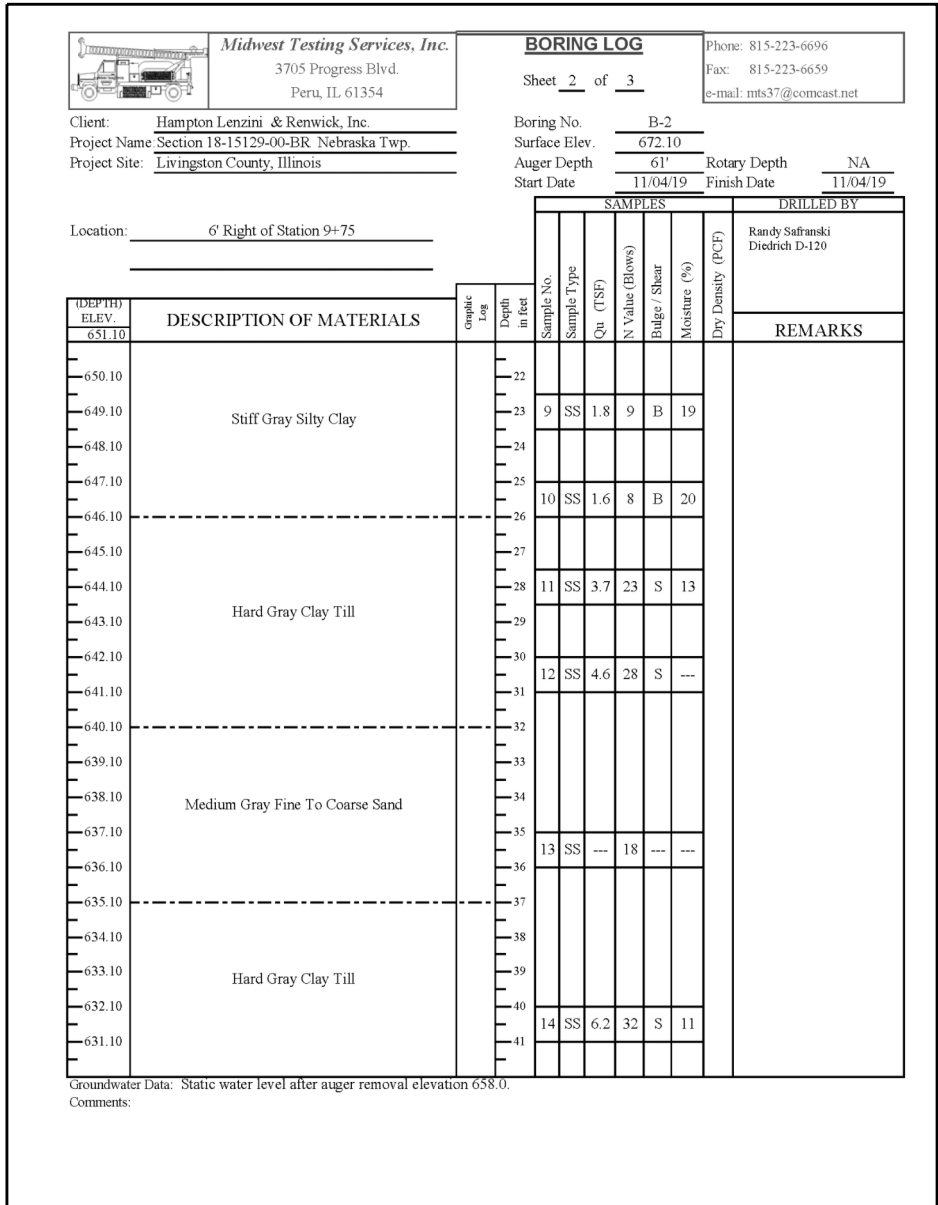
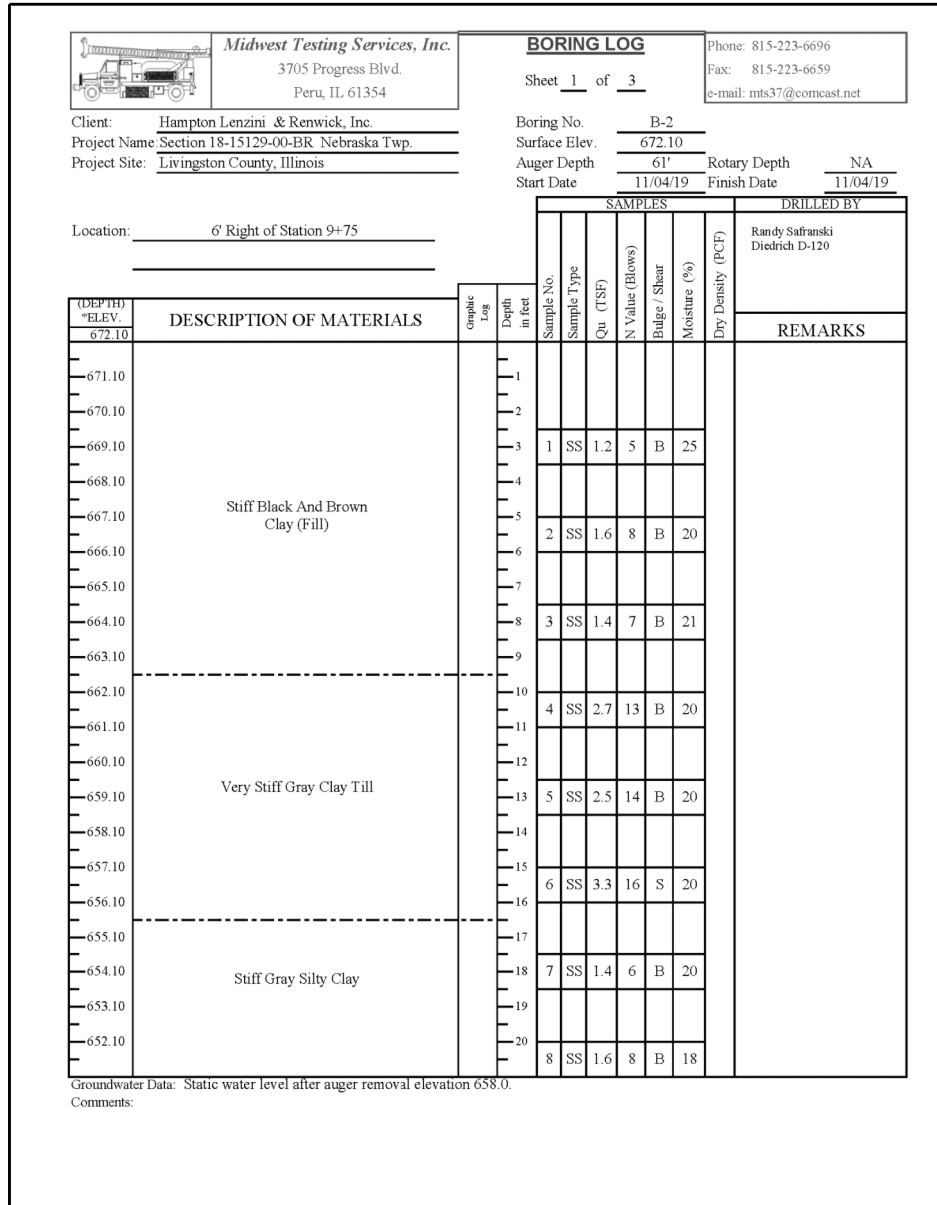
F-MS 1-1-2020

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HAMPTON, LENZINI AND RENWICK, INC. 3035 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.000959	PLOT SCALE = \$SCALE\$	CHECKED - S.W.M.	REVISED -			4B	18-15129-00-BR	LIVINGSTON	23	12
	PLOT DATE = 11/2/2020	DRAWN - A.C.	REVISED -			NEBRASKA ROAD DISTRICT		CONTRACT NO. 87744		
		CHECKED - S.W.M.	REVISED -			ILLINOIS		FED. AID PROJECT D8BY(495)		



**BORING-1**

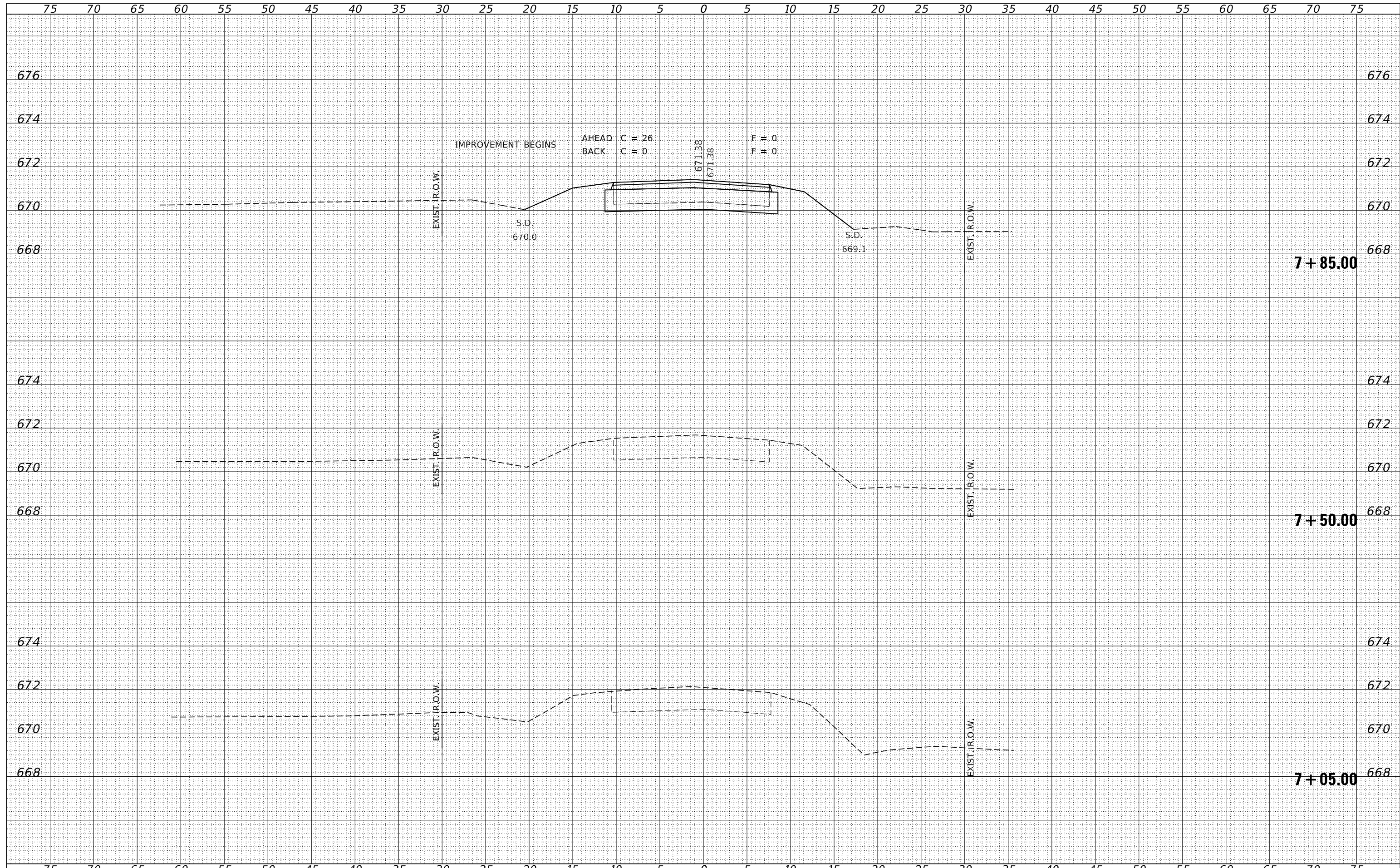




**BORING-2**

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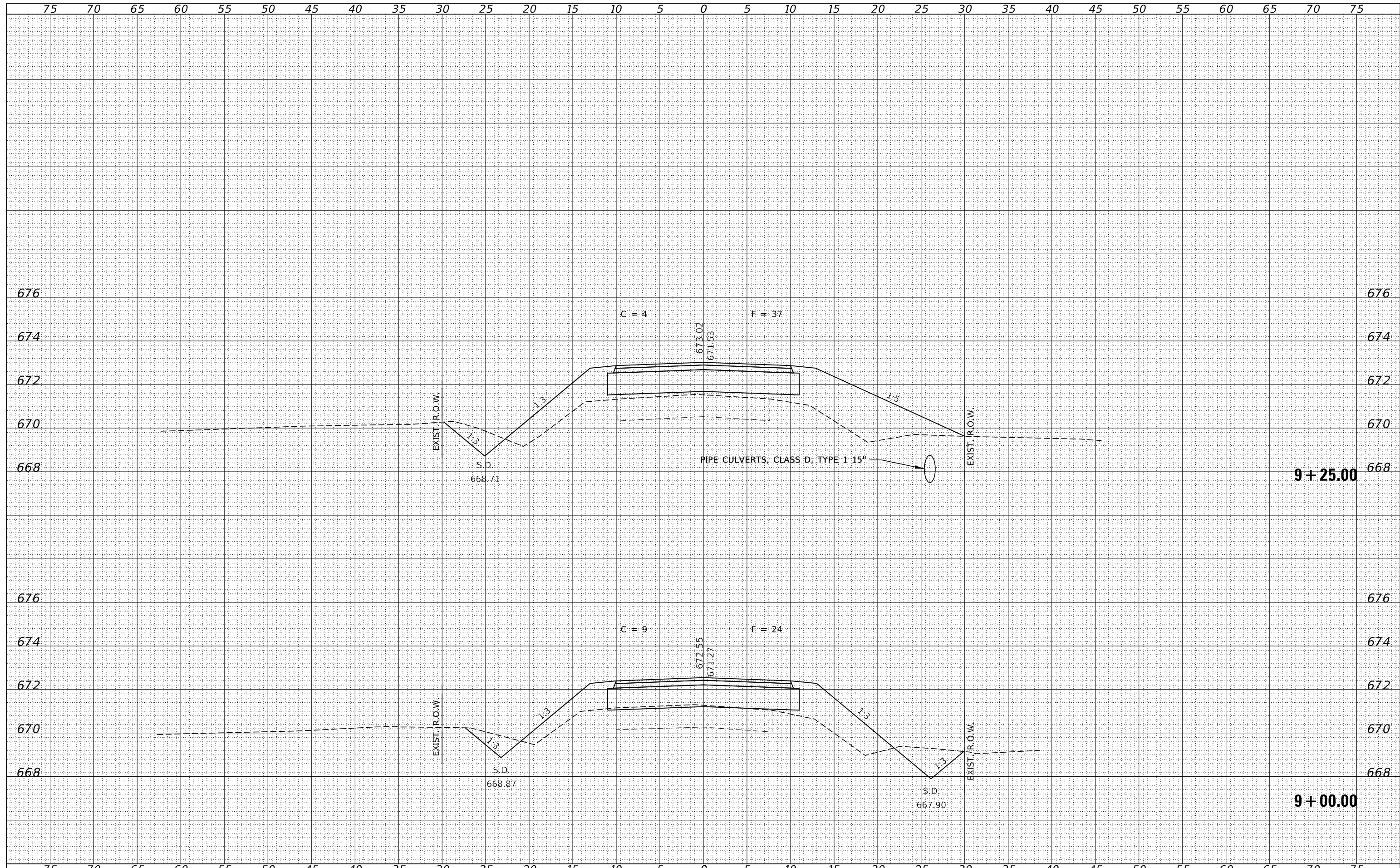
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HAMPTON, LENZINI AND RENWICK, INC.		DRAWN - T.W.K.	REVISED -		4B	18-15129-00-BR	LIVINGSTON	23	15			
3885 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM L/S / PE / SE CORP. 184.000958	PLOT SCALE = \$SCALES	CHECKED - S.W.M.	REVISED -		NEBRASKA ROAD DISTRICT			CONTRACT NO. 87744				
PLOT DATE = 11/02/2020	DATE = 11/02/2020	REVISED -			SCALE: 5H:2V	SHEET NO. 1 OF 9 SHEETS	STA. 7+05.00	TO STA. 7+85.00	ILLINOIS FED. AID PROJECT DHBV(495)			



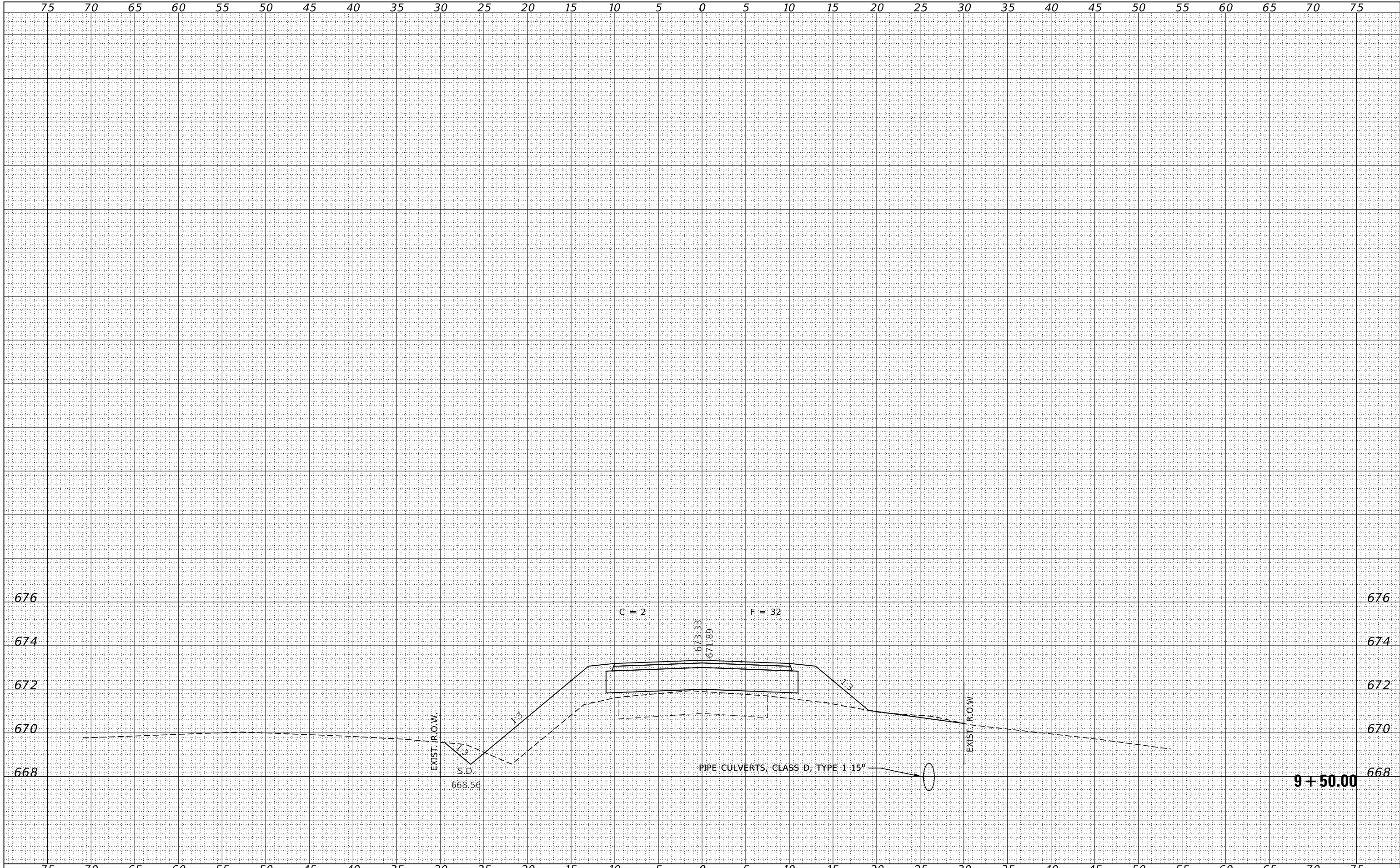


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HAMPTON, LENZINI AND RENWICK, INC. 3885 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.009958	PLOT SCALE = \$SCALE\$	DRAWN - T.W.K.	REVISED -					4B	18-15129-00-BR	LIVINGSTON	23	17
PLOT DATE = 11/20/2020	DATE - 11/02/2020	CHECKED - S.W.M.	REVISED -		NEBRASKA ROAD DISTRICT			CONTRACT NO. 87744				
		REVISIED -	REVISED -		SCALE: 5H:2V	SHEET NO. 3 OF 9 SHEETS	STA. 9+00.00	TO STA. 9+25.00	ILLINOIS FED. AID PROJECT DHBV(495)			



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AREAS CHECKED	
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 CHECKED - S.W.M.  
 DATE - 11/02/2020  
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 PLOT DATE = 11/2/2020

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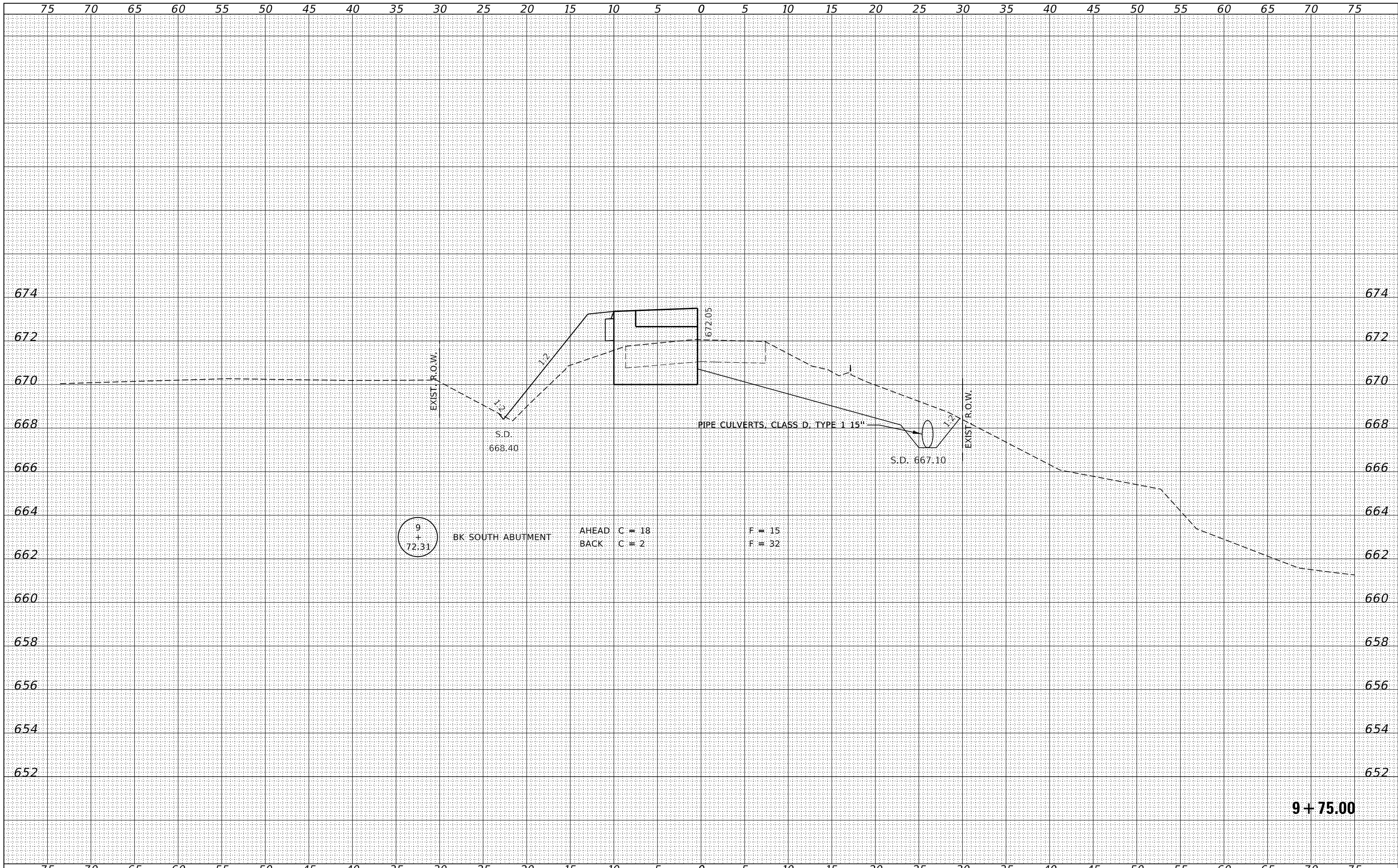
**STATE OF ILLINOIS**  
**LIVINGSTON COUNTY HIGHWAY DEPARTMENT**

**STATION CROSS SECTIONS**  
 SCALE: 5H:2V  
 SHEET NO. 4 OF 9 SHEETS  
 STA. 9+50.00 TO STA. 9+50.00

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
4B	18-15129-00-BR	LIVINGSTON	23	18
NEBRASKA ROAD DISTRICT			CONTRACT NO. 87744	
ILLINOIS FED. AID PROJECT DHBV(495)				

DATE
BY
SURVEYED
PLOTTED
TEMPLATE
AREAS CHECKED
FINAL SURVEY NOTE BOOK NO.

DATE
BY
SURVEYED
PLOTTED
TEMPLATE
AREAS CHECKED
ORIGINAL SURVEY NOTE BOOK NO.



9 + 75.00

FILE NAME = 190484-xssheets.dgn  
 HAMPTON, LENZINI AND RENWICK, INC.  
 3885 STEVENSON DRIVE, SUITE 201  
 SPRINGFIELD, ILLINOIS 62703  
 ILLINOIS PROFESSIONAL DESIGN FIRM  
 LS / PE / SE CORP. 184-009958

USER NAME = djett  
 PLOT SCALE = \$SCALES  
 PLOT DATE = 11/02/2020

DESIGNED - J.W.F.  
 DRAWN - T.W.K.  
 CHECKED - S.W.M.  
 DATE - 11/02/2020

REVISED -  
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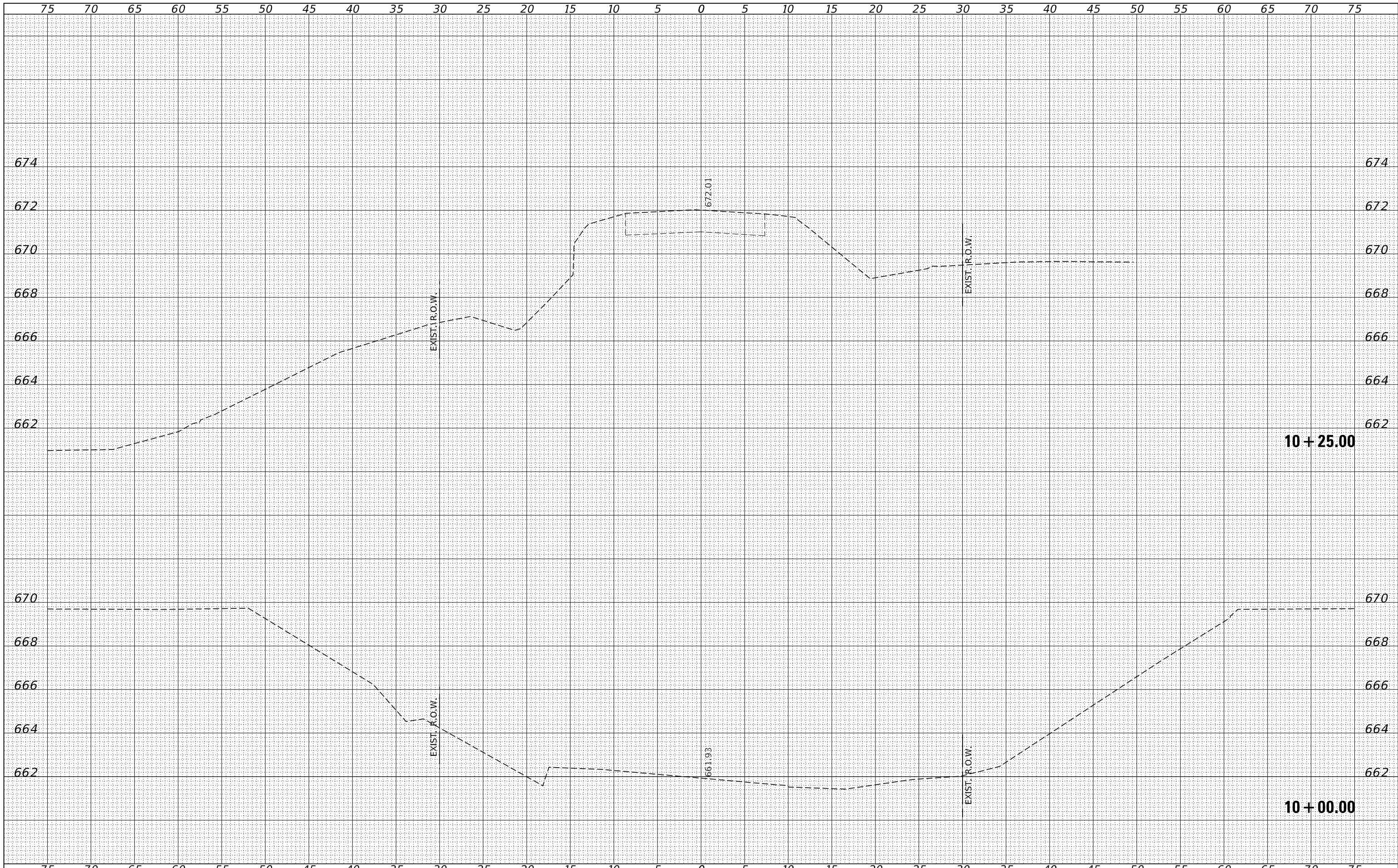
STATE OF ILLINOIS  
 LIVINGSTON COUNTY HIGHWAY DEPARTMENT

STATION CROSS SECTIONS  
 SCALE: 5H:2V  
 SHEET NO. 5 OF 9 SHEETS  
 STA. 9+75.00 TO STA. 9+75.00

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
4B	18-15129-00-BR	LIVINGSTON	23	19
NEBRASKA ROAD DISTRICT			CONTRACT NO. 87744	
ILLINOIS		FED. AID PROJECT DHBV(495)		

DATE	
BY	
FINAL SURVEY NO.	
SURVEYED PLOTTED	
TEMPLATE AREAS CHECKED	
NOTE BOOK AREAS CHECKED	

DATE	
BY	
ORIGINAL SURVEY NO.	
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TEMPLATE AREAS CHECKED	
NOTE BOOK AREAS CHECKED	



FILE NAME = 190484-xssheets.dgn  
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 DESIGNED - J.W.F.  
 DRAWN - T.W.K.  
 CHECKED - S.W.M.  
 DATE - 11/02/2020  
 PLOT SCALE = \$SCALE\$  
 PLOT DATE = 11/02/2020

DESIGNED - J.W.F.  
 DRAWN - T.W.K.  
 CHECKED - S.W.M.  
 DATE - 11/02/2020

REVISED -  
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STATE OF ILLINOIS  
 LIVINGSTON COUNTY HIGHWAY DEPARTMENT

STATION CROSS SECTIONS  
 SCALE: 5H:2V  
 SHEET NO. 6 OF 9 SHEETS  
 STA. 10+00.00 TO STA. 10+25.00

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
4B	18-15129-00-BR	LIVINGSTON	23	20
NEBRASKA ROAD DISTRICT			CONTRACT NO. 87744	
ILLINOIS FED. AID PROJECT DHBV(495)				

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FINAL SURVEY	SURVEYED
NOTE BOOK	PLOTTED
NO.	TEMPLATE
	AREAS
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ORIGINAL SURVEY	SURVEYED
NOTE BOOK	PLOTTED
NO.	TEMPLATE
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