

INDEX OF SHEETS

06-15-12 LETTING ITEM 053

STATE OF ILLINOIS

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

**PLANS FOR PROPOSED
FEDERAL AID PROJECT
HIGHWAY BRIDGE PROGRAM**

TOWNSHIP ROUTE 106 (850 E. ST.)

SECTION 08-15119-00-BR

PROJECT BROS-0011(086)

STRUCTURE REPLACEMENT

BUREAU COUNTY

MANLIUS ROAD DISTRICT

C-93-066-12

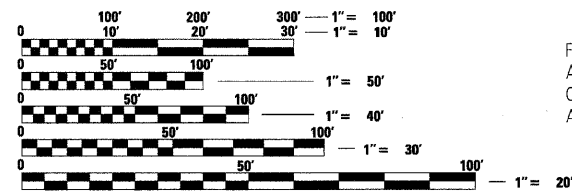
TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	1
		ILLINOIS	CONTRACT NO. 87523	



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STANDARDS

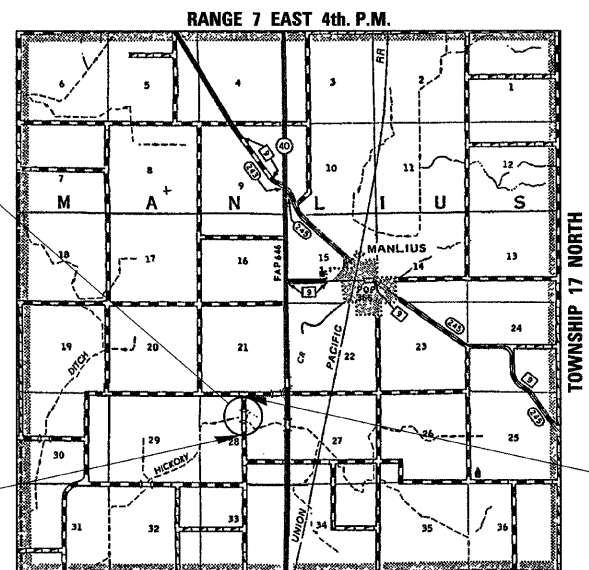
- 000001-06 STANDARD SYMBOLS, ABBREVIATIONS, AND PATTERNS
- 280001-06 TEMPORARY EROSION CONTROL SYSTEMS
- 515001-03 NAME PLATE FOR BRIDGES
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- 720011-01 METAL POSTS FOR SIGNS, MARKERS & DELINEATORS
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- 729001-01 APPLICATIONS OF TYPE A & B METAL POSTS (FOR SIGNS & MARKERS)
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- B.L.R. 22-7 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.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123
OR 811

PROPOSED STRUCTURE: S.N. 006-4218
A SINGLE SPAN (1@59'-2") PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE ON SPILL THRU ABUTMENTS @ STA. 20+00. SKEWED 0°.



CONSTRUCTION BEGINS STATION 18+75



UTILITIES:
VERIZON (FRONTIER COM.)
Attn: Garrett Burt
112 Elm Street
Sycamore, IL 60178
815-895-1538

CORN BELT ENERGY CORP.
Attn: Barry Burkman
1702 West Peru
Princeton, IL 61356
309-662-5330 Ext. 301

CONSTRUCTION ENDS STATION 21+25

GROSS LENGTH = 250 FT. = 0.047 MILE
NET LENGTH = 250 FT. = 0.047 MILE

PROJECT ENGINEER - MCW
PROJECT MANAGER - BKC

CONTRACT NO. 87523

FUNCTIONAL CLASSIFICATION
LOCAL ROAD (NON-URBAN)
DESIGN SPEED 30 MPH
2012 ADT = 15
3R GUIDELINES



Brian K. Converse
DATE: 3/23/2012
EXPIRES 11/30/2013

BUREAU COUNTY HIGHWAY DEPARTMENT	
APPROVED	03/30/12 <i>Julian C. Gorman</i> BUREAU COUNTY ENGINEER
APPROVED	03/30/12 <i>Eric R. Rasmussen</i> MANLIUS ROAD COMMISSIONER
PASSED	April 9, 2012 <i>John J. [Signature]</i> DISTRICT PROJECT IMPLEMENTATION ENGINEER
RELEASING FOR BID BASED ON LIMITED REVIEW	April 9, 2012 <i>[Signature]</i> DEPUTY DIRECTOR OF HIGHWAYS, REGION 2 ENGINEER

**WILLETT HOFMANN
& ASSOCIATES INC**
ENGINEERING ARCHITECTURE LAND SURVEYING
809 EAST 2ND STREET, DIXON, IL 61021-0367
T: 815-284-3381 DESIGN FIRM: #184-000918

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SUMMARY OF QUANTITIES

CONSTRUCTION TYPE CODE: 0011

PAY CODE	QUANTITY	UNIT	ITEM
20100500	0.17	Acre	Tree Removal, Acres
20300100	57	Cu. Yd.	Channel Excavation
20400800	40	Cu. Yd.	Furnished Excavation
25100630	956	Sq. Yd.	Erosion Control Blanket
28000400	534	Foot	Perimeter Erosion Barrier
*40200100	264	Ton	Aggregate Surface Course, Type A
50100100	1	Each	Removal of Existing Structures
*50300225	27.4	Cu. Yd.	Concrete Structures
50400505	1,420	Sq. Ft.	Precast Prestressed Concrete Deck Beams (27" Depth)
50800105	3,540	Pound	Reinforcement Bars
Δ 50900205	121	Foot	Steel Railing, Type S-1
51200957	268	Foot	Furnishing Metal Shell Piles 12" x 0.250"
51202305	268	Foot	Driving Piles
51203200	2	Each	Test Pile Metal Shells
51500100	1	Each	Name Plates
67100100	1	L. Sum	Mobilization
Z0013798	1	L. Sum	Construction Layout
*X2020410	125	Cu. Yd.	Earth Excavation (Special)
*X2070302	112	Ton	Porous Granular Embankment, Special
*X2501100	0.20	Acre	Seeding, Class 3 (Special)
*X2810208	398	Ton	Stone Riprap, Class A4 (Special)
*X7010216	1	L. Sum	Traffic Control and Protection, (Special)

*See B.L.R. 11310 in the contract documents for Special Provisions.

Δ Specialty Items

FILE = S:\PROJECTS\2010\1287012 - Bureau Co. TR106 DESIGN STRUCTURE\Drawings\1287012_Summary of Quantities.dgn

DESIGNED -	MICHAEL WAGNER	REVISED -	
CHECKED -	MEGAN CACKLEY	REVISED -	
DRAWN -	RON ALLEN	REVISED -	
CHECKED -	BRIAN CONVERSE	REVISED -	

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20 + 00

SUMMARY OF QUANTITIES
STRUCTURE NO. 006-4218

TWP.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	2
WHA# 1287010		CONTRACT NO. 87523		
ILLINOIS FED. AID PROJECT BROS-00110861				

GENERAL NOTES

All elevations shown on the plans are established from U.S.G.S. mean sea level datum.

Existing structures (including foundations, walls, cisterns, wells or other underground structures) within the right-of-way shall be removed in accordance with Article 501.04 and 501.05 of the Standard Specifications, without additional compensation, unless otherwise noted in the Plans or Special Provisions.

The Contractor shall seed all disturbed areas within the project limits.

No overhaul has been computed and none shall be paid for from any source.

The final top four inches of soil in any right-of-way area disturbed by the Contractor must be a cohesive soil capable of supporting vegetation complying with Section 211 of the Standard Specification for top soil.

The Contractor shall be responsible for protecting utility property during construction operations as outlined in Article 107.31 of the Standard Specifications.

All utility poles, gas pipes, etc. in the way of the improvements shall be moved by the utilities prior to construction and shall not be included in the contract. The Contractor shall notify the respective utilities to make the necessary adjustments prior to construction.

The location and elevation of the various underground utilities as shown on the plans are not to be taken as exact. The Contractor shall use special care when conducting construction operations near them to prevent damage.

The utilities located within the project limits or immediately adjacent to the project construction limits include:

Verizon (Frontier Com.)	Corn Belt Energy Corp.
Attn: Garrett Burt	Attn: Barry Burkman
112 Elm Street	1702 West Peru
Sycamore, IL 60178	Princeton, IL 61356
(815) 895-1538	309-662-5330 Ext. 301

A minimum of 48 hours advance notice is required for non-emergency work.

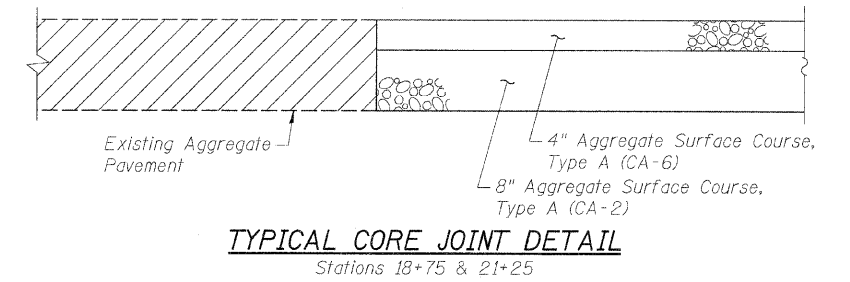
A Nationwide 404 Permit has been issued for this project and the conditions of that Permit must be adhered to.

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 markers, monuments and right-of-way pins until the Owner, an Authorized Surveyor, or Agent has witnessed or otherwise referenced their location.

Existing mail boxes, street signs and traffic signs that are within the construction limits shall be removed and reset by the Contractor. Cost of removing and resetting to be included in the contract unit price bid per Cubic Yard for Earth Excavation (Special).

SCHEDULE OF QUANTITIES

TREE REMOVAL, ACRES			
LOCATION	ACRE	REMARKS	
LT. STA. 20+11 - 21+25	0.05		
RT. STA. 18+75 - 19+91	0.06		
RT. STA. 20+01 - 21+25	0.06		
TOTAL 0.17 ACRE			20100500
FURNISHED EXCAVATION			
LOCATION	CU. YD.	REMARKS	
STA. 18+75 - 21+25	40		
TOTAL 40 CU. YD.			20400800
EROSION CONTROL BLANKET			
LOCATION	SQ. YD.	REMARKS	
LT. STA. 18+75 - 21+25	469		
RT. STA. 18+75 - 21+25	487		
TOTAL 956 SQ. YD.			25100630
PERIMETER EROSION BARRIER			
LOCATION	FOOT	REMARKS	
LT. STA. 18+75 - 19+96	141		
LT. STA. 20+14 - 21+25	128		
RT. STA. 18+75 - 19+88	125		
RT. STA. 20+01 - 21+25	140		
TOTAL 534 FOOT			28000400
AGGREGATE SURFACE COURSE, TYPE A			
LOCATION	TON	REMARKS	
STA. 18+75 - 19+42.20	91	12" (TAPER)	
STA. 19+42.20 - 19+69.75	42	12"	
STA. 20+30.25 - 20+53.30	35	12"	
STA. 20+53.30 - 21+25	96	12" (TAPER)	
TOTAL 264 TON			*40200100
EARTH EXCAVATION (SPECIAL)			
LOCATION	CU. YD.	REMARKS	
STA. 18+75 - 21+25	125		
TOTAL 125 CU. YD.			X2020410
SEEDING, CLASS 3 (SPECIAL)			
LOCATION	ACRE	REMARKS	
LT. STA. 18+75 - 21+25	0.10		
RT. STA. 18+75 - 21+25	0.10		
TOTAL 0.20 ACRE			*X2501100



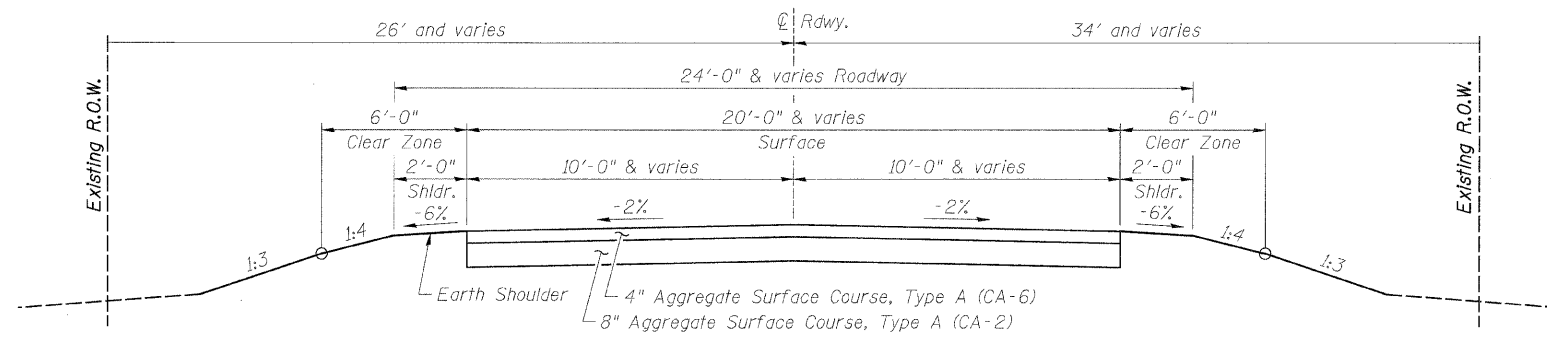
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DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -

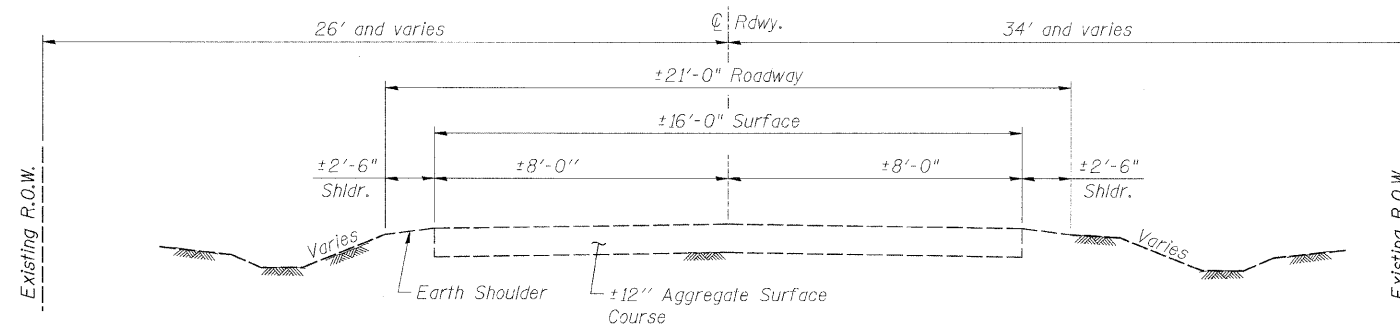
BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

GENERAL NOTES, SCHEDULE OF QUANTITIES & DETAIL
STRUCTURE NO. 006-4218

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	3
WHA# 1287D10		CONTRACT NO. 87523		
[ILLINOIS] FED. AID PROJECT BR05-0011086				



PROPOSED ROADWAY TYPICAL SECTION
STA. 18+75 - STA. 21+25
 (Looking North)



EXISTING ROADWAY TYPICAL SECTION
 (Looking North)

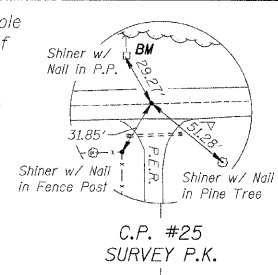
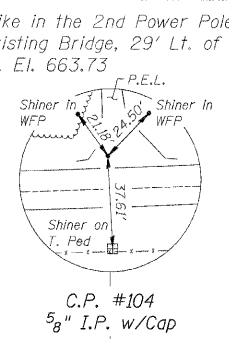
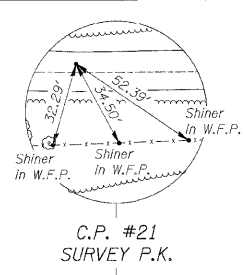
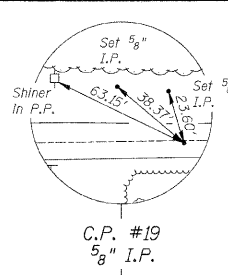
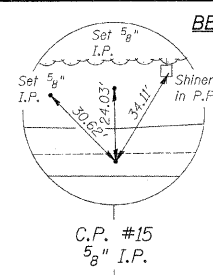
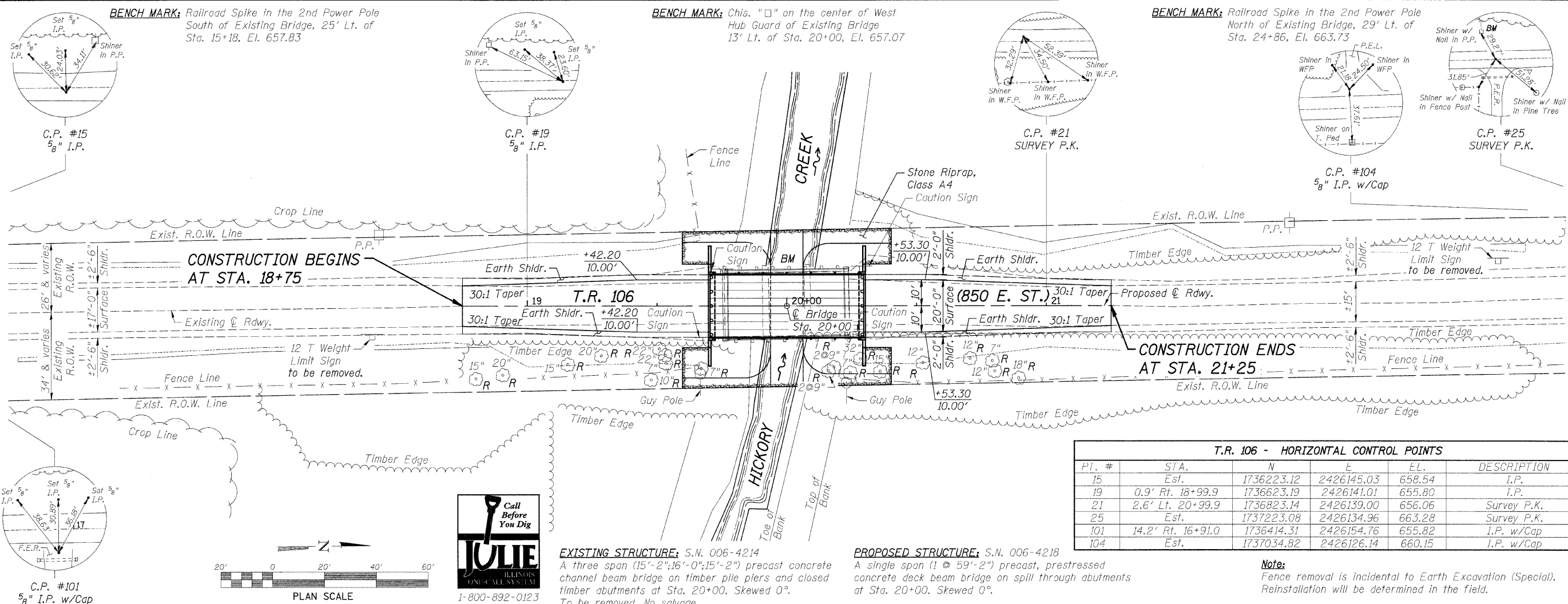
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DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

TYPICAL SECTIONS
STRUCTURE NO. 006-4218

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	4
WHA# 1287D10			CONTRACT NO. 87523	
[ILLINOIS] FED. AID PROJECT BR05-00110861				



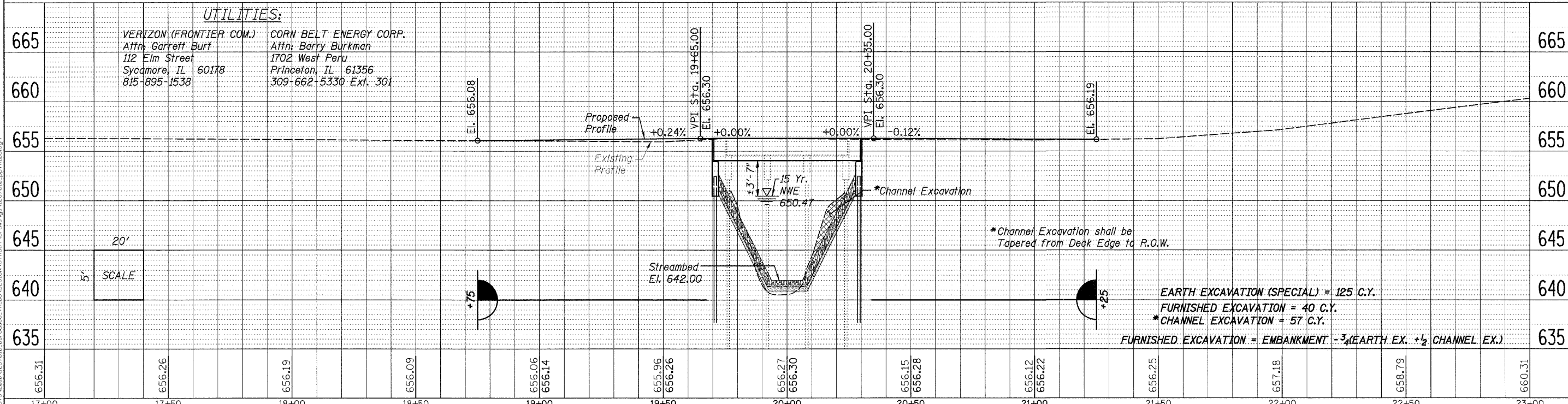
PI. #	STA.	N	E	EL.	DESCRIPTION
15	Est.	1736223.12	2426145.03	658.54	I.P.
19	0.9' Rt. 18+99.9	1736623.19	2426141.01	655.80	I.P.
21	2.6' Lt. 20+99.9	1736823.14	2426139.00	656.06	Survey P.K.
25	Est.	1737223.08	2426134.96	663.28	Survey P.K.
101	14.2' Rt. 16+91.0	1736414.31	2426154.76	655.82	I.P. w/Cap
104	Est.	1737034.82	2426126.14	660.15	I.P. w/Cap

EXISTING STRUCTURE: S.N. 006-4214
 A three span (15'-2", 16'-0", 15'-2") precast concrete channel beam bridge on timber pile piers and closed timber abutments at Sta. 20+00. Skewed 0°. To be removed. No salvage.

PROPOSED STRUCTURE: S.N. 006-4218
 A single span (1 @ 59'-2") precast, prestressed concrete deck beam bridge on spill through abutments at Sta. 20+00. Skewed 0°.

Note:
 Fence removal is incidental to Earth Excavation (Special). Reinstallation will be determined in the field.

UTILITIES:
 VERIZON (FRONTIER COM.)
 Attn: Garrett Burt
 112 Elm Street
 Sycamore, IL 60178
 815-895-1538
 CORN BELT ENERGY CORP.
 Attn: Barry Burkman
 1702 West Peru
 Princeton, IL 61356
 309-662-5330 Ext. 301



EARTH EXCAVATION (SPECIAL) = 125 C.Y.
FURNISHED EXCAVATION = 40 C.Y.
***CHANNEL EXCAVATION = 57 C.Y.**
FURNISHED EXCAVATION = EMBANKMENT - 3/4 (EARTH EX. + 1/2 CHANNEL EX.)

DESIGNED - MICHAEL WAGNER
 CHECKED - MEGAN CACKLEY
 DRAWN - RON ALLEN
 CHECKED - BRIAN CONVERSE

REVISED -
 REVISED -
 REVISED -
 REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STRUCTURE NO. 006-4218
STATION 20+00

PLAN & PROFILE
STRUCTURE NO. 006-4218
 SCALE: 1" = 20'-0" SHEET NO. 1 OF 1 SHEETS STA. 17+00.00 TO STA. 23+00.00

TWP. 106	SECTION 08-15119-00-BR	COUNTY BUREAU	TOTAL SHEETS 18	SHEET NO. 5
WHA# 1287D10		CONTRACT NO. 87523		
ILLINOIS FED. AID PROJECT BROS-00110861				

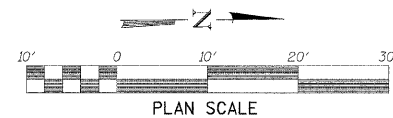
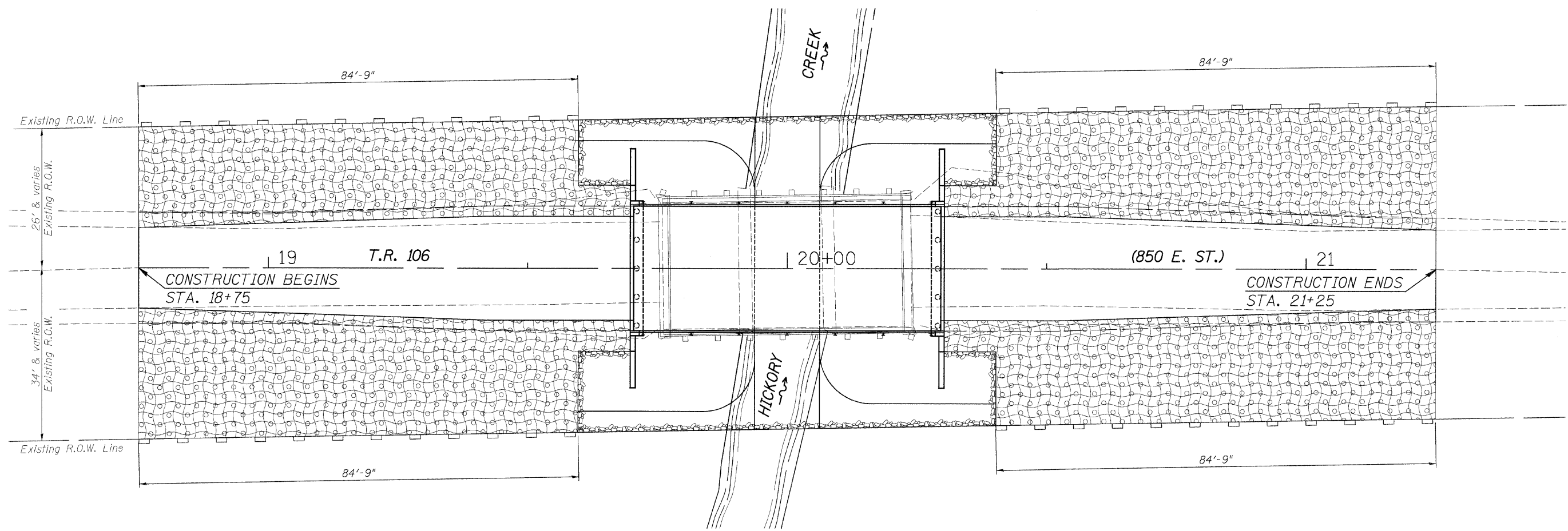
DATE: _____ BY: _____
 SURVEYED _____
 NOTE BOOK _____
 ALIGNMENT CHECKED _____
 PLAN FILE NAME _____
 NO. _____

DATE: _____ BY: _____
 SURVEYED _____
 NOTE BOOK _____
 GRADES CHECKED _____
 STRUCTURE NOTATIONS OK'D _____
 NO. _____

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DATE	
BY	
REVIEWED	
DESIGNED	
CHECKED	
ALIGNMENT	
GRADES	
NOTED	
NO.	

DATE	
BY	
REVIEWED	
DESIGNED	
CHECKED	
ALIGNMENT	
GRADES	
NOTED	
NO.	



EROSION CONTROL NOTES

The soil erosion and sediment control practices will be inspected weekly and after 1/2" of rain or more by the individual on site in charge of soil erosion and sediment control during the construction of the project.

Perimeter erosion barrier shall comply with Section 280 of the Standard Specifications and shall be placed as shown on the Erosion Control Plan and in accordance with stations shown on the Schedule of Quantities sheet or as directed by the Engineer.

Silt fence shall be installed following the completion and stabilization of all areas adjacent to the on-site drainages. The silt fence will remain in place until the contributing area is stabilized.

For Seeding, Class 3 (Special) see Special Provisions.




Erosion control blanket shall be placed in ditches and to all disturbed areas as shown on this Erosion Control Plan sheet and in accordance with Section 251 of the Standard Specifications for Road and Bridge Construction.

The use of green dye in the erosion control blanket is not acceptable.

Stockpiles of soil and other building materials to remain in place more than 3 days shall be furnished with erosion and sediment control measures (i.e. perimeter silt fence). Stockpiles to remain in place for 14 days or more shall receive temporary seeding.

All adjacent streets must be kept clear of debris. Inspected daily and cleaned when necessary.

LEGEND

-  Perimeter Erosion Barrier
-  Seeding, Class 3 (Special)
-  Erosion Control Blanket

BILL OF MATERIAL

Item	Unit	Quantity
Erosion Control Blanket	Sq. Yd.	956
Perimeter Erosion Barrier	Foot	534
Seeding, Class 3 (Special)	Acre	0.20

DESIGNED	- MICHAEL WAGNER	REVISED	-
CHECKED	- MEGAN CACKLEY	REVISED	-
DRAWN	- RON ALLEN	REVISED	-
CHECKED	- BRIAN CONVERSE	REVISED	-

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

EROSION CONTROL PLAN
STRUCTURE NO. 006-4218

SCALE: 1" = 10'-0" SHEET NO. 1 OF 1 SHEETS STA. 18+50.00 TO STA. 21+50.00

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	6
WHA# 1287D10		CONTRACT NO. 87523		
ILLINOIS/FED. AID PROJECT BR03-00110861				

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EXISTING STRUCTURE NO. 006-4214

The existing structure was originally built in 1970. The existing structure is a three span (15'-2", 16'-0", 15'-2") precast concrete channel beam bridge on closed timber abutments and timber pile piers. 49'-6" back to back of abutments and 27'-0" out to out of deck. Structure to be removed and replaced. Road shall be closed to traffic during construction. No salvage.

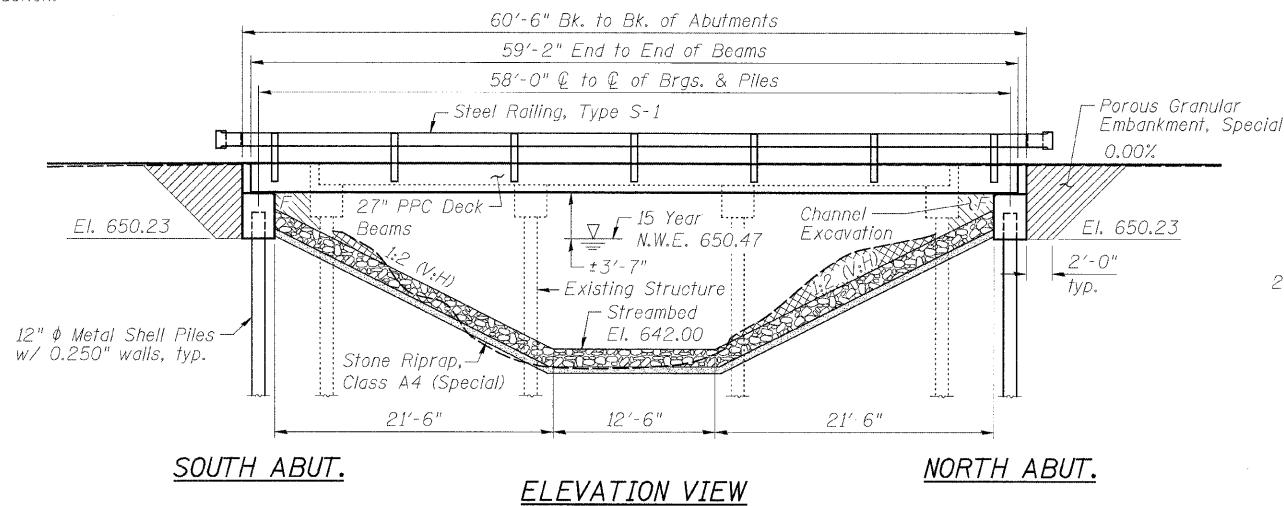
BENCH MARK: Chiseled "□" on the center of west hub guard of exist. bridge, El. 657.07

INDEX OF SHEETS

- 1.) General Plan and Elevation
- 2.) Riprap and Pile Layout
- 3.) 27" x 36" PPC Deck Beam
- 4.) 27" x 36" PPC Deck Beam Details
- 5.) South Abutment Details
- 6.) North Abutment Details
- 7.) Steel Railing, Type S-1 Details
- 8.) Metal Shell Pile Details
- 9.) Boring Logs

BILL OF MATERIAL - BRIDGE

ITEM	UNIT	SUPER	SUB	TOTAL
Channel Excavation	Cu. Yd.	---	57	57
Removal of Existing Structures	Each	---	---	1
Concrete Structures	Cu. Yd.	---	27.4	27.4
Precast Prestressed Concrete Deck Beams (27" Depth)	Sq. Ft.	1,420	---	1,420
Reinforcement Bars	Pound	---	3,540	3,540
Steel Railing, Type S-1	Foot	121	---	121
Furnishing Metal Shell Piles 12" x 0.250"	Foot	---	268	268
Driving Piles	Foot	---	268	268
Test Pile Metal Shells	Each	---	2	2
Name Plates	Each	---	1	1
Porous Granular Embankment, Special	Ton	---	112	112
Stone Riprap, Class A4 (Special)	Ton	---	398	398



LOADING HL-93

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

DESIGN SPECIFICATIONS

2010 AASHTO LRFD Bridge Design Specifications, 5th. Edition & 2011 Interims

DESIGN STRESSES

FIELD UNITS

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

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$ psi
 $f'_{ci} = 5,000$ psi
 $f_{pu} = 270,000$ psi ($\frac{1}{2}$ " ϕ Low Lax Strands)
 $f_{pbt} = 201,960$ psi ($\frac{1}{2}$ " ϕ Low Lax Strands)

SEISMIC DATA

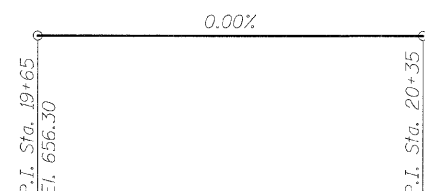
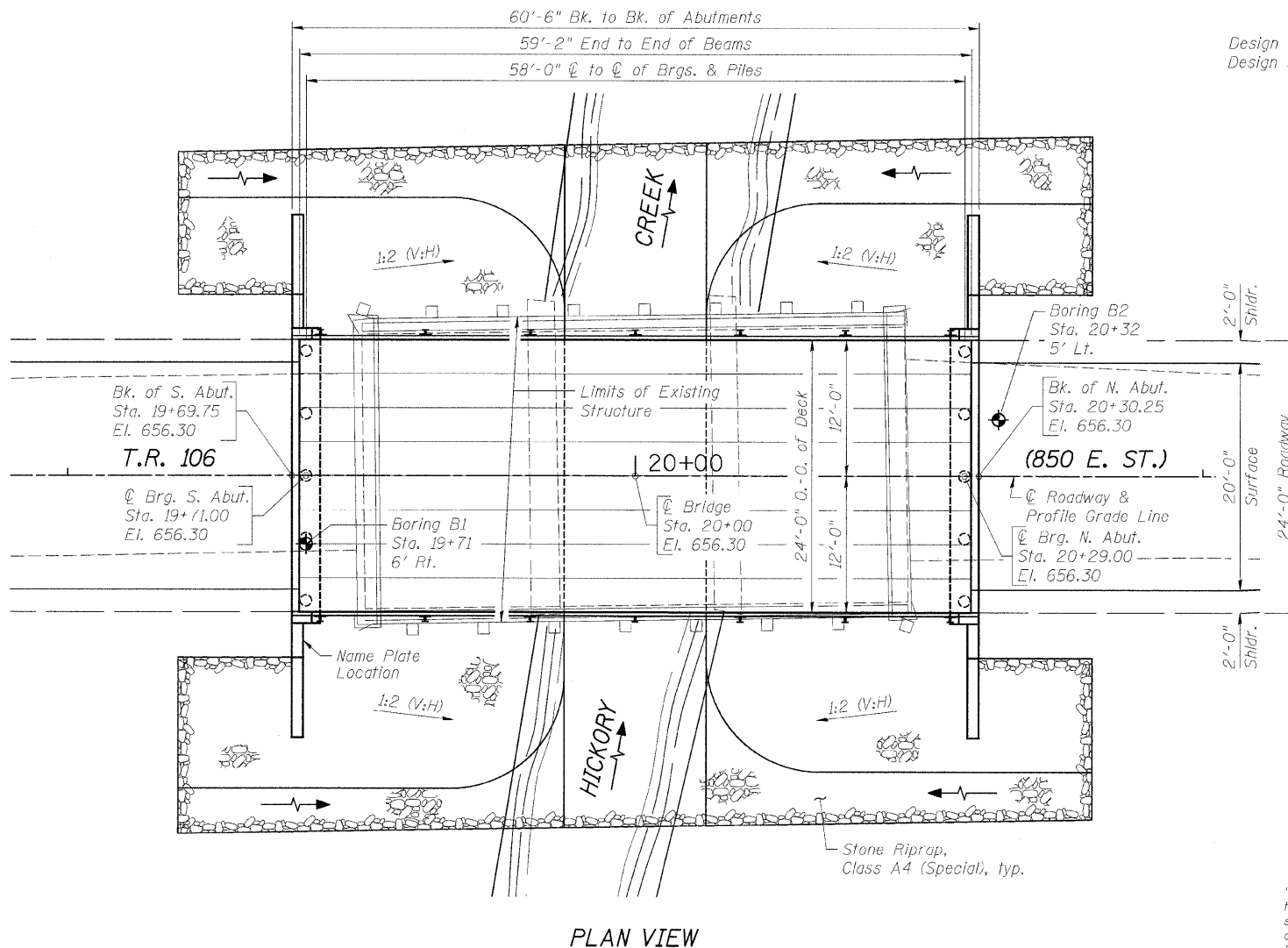
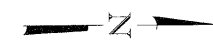
Seismic Performance Zone (SPZ) = 1
 Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.093g
 Design Spectral Acceleration at 0.2 sec. (S_{D5}) = 0.150g
 Soil Site Class = D

GENERAL NOTES

* See Special Provisions.

Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure. The Contractor shall sawcut the upper portion of the existing abutment at the stage removal line before Stage 1 removal to ensure the remaining portion will not be prematurely damaged.



PROFILE GRADE

(Along ϕ Roadway)

WATERWAY INFORMATION

Drainage Area = 19.6 sq. mi. Low Grade El. 656.09 @ Sta. 19+00		Opening Sq. Ft.		Nat. Head - Ft.		Headwater El.			
Flood	Freq. Yr.	Q C.F.S.	Exist.	Prop.	H.W.E.	Exist.	Prop.		
Design	15	1,690	248	250	650.47	0.28	0.14	650.75	650.61
Base	100	2,550	317	327	652.03	0.72	0.56	652.75	652.59

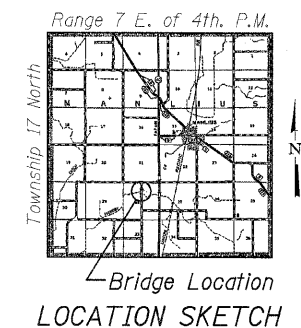
DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	S. Abut.	N. Abut.
	650.23	650.23

HICKORY CREEK
 BUILT 2012 BY
 BUREAU COUNTY
 SECTION 08-15119-00-BR
 TWP. RTE. 106 STATION 20+00
 STR. NO. 006-4218 LOADING HL-93

NAME PLATE LETTERING

Refer To Std. 515001



GENERAL PLAN AND ELEVATION
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
SECTION 08-15119-00-BR
BUREAU COUNTY
STATION 20+00
STRUCTURE NO. 006-4218



Brian K. Converse
 DATE: March 29, 2012
 EXPIRES 11/30/12

"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 Bridge Design Specifications."

DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -

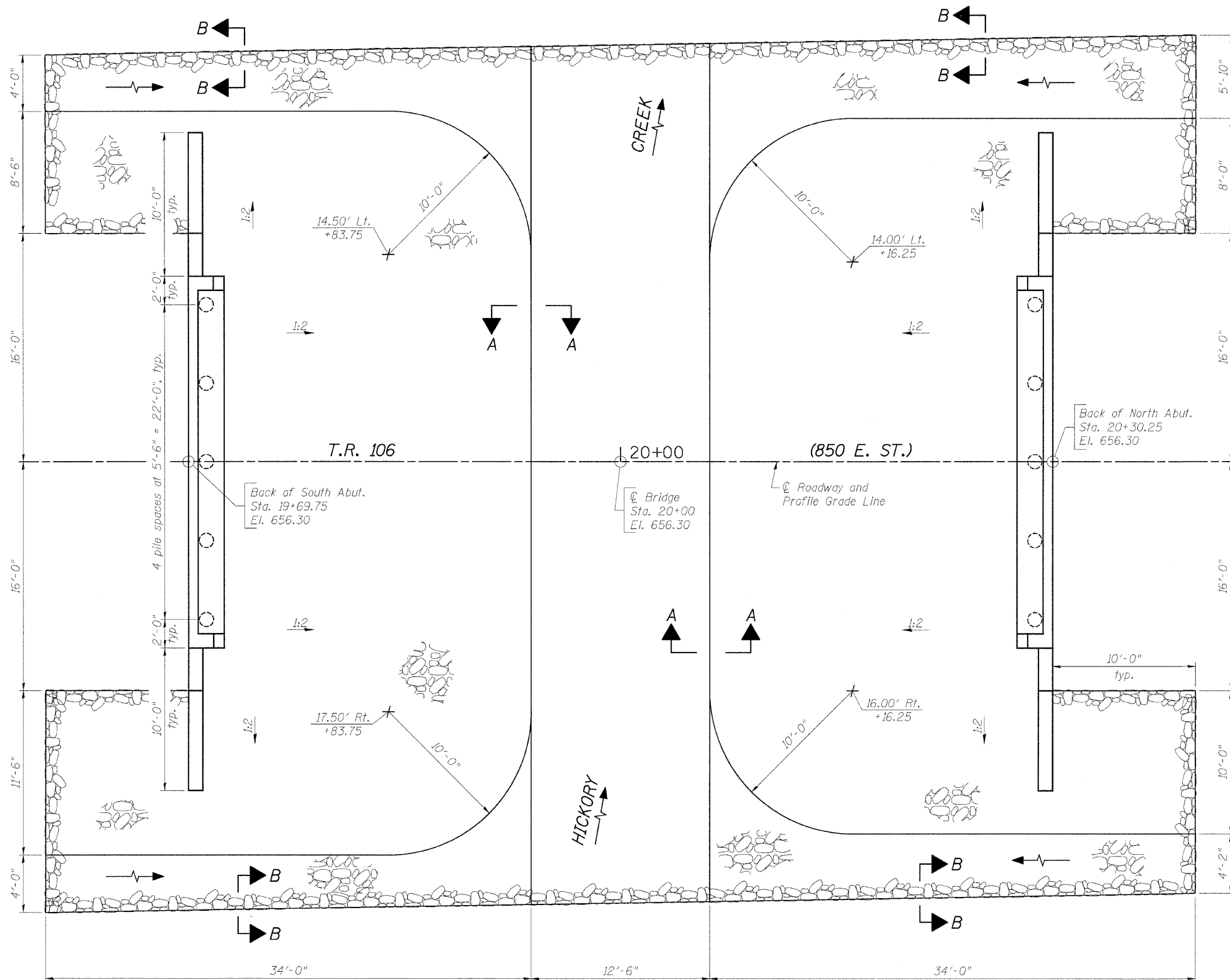
BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

STRUCTURAL SHEET NO. 1 OF 9 SHEETS

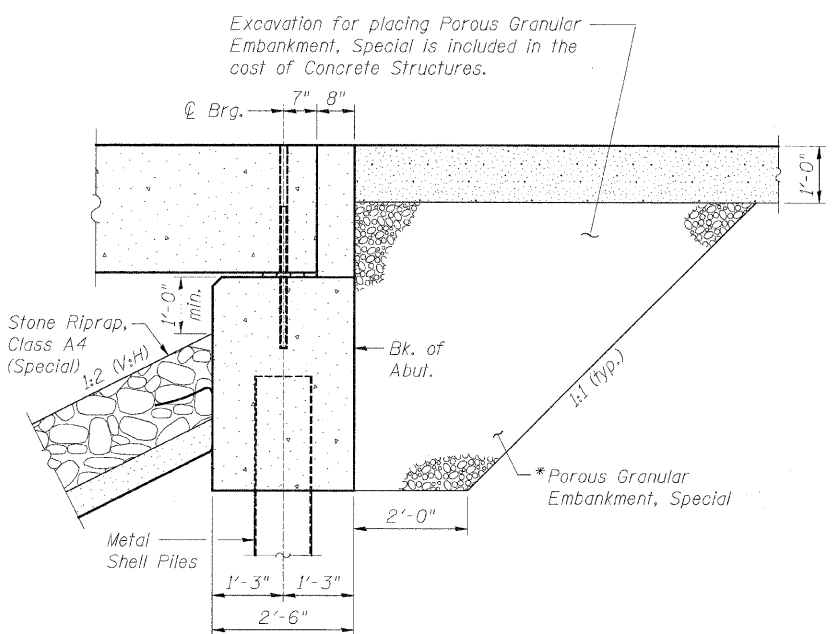
TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	7
WHA# 1287D10		CONTRACT NO.	87523	
ILLINOIS/FED. AID PROJECT BR05-0011086				

FILE: S:\PROJECTS\2010\1287D10_BureauCo_Tribes\DESIGN\PROJECT\Drawings\1287D10_08.dwg

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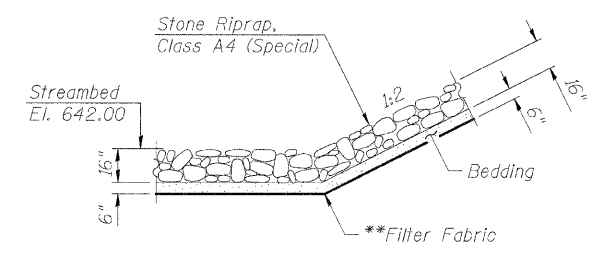


PLAN VIEW

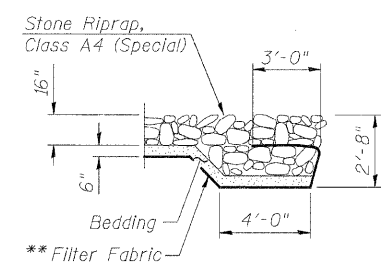


SECTION THRU ABUTMENT

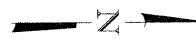
*Pay Limits of Porous Granular Embankment, Special shall extend to 2'-0" from the end of each wingwall.



SECTION A-A



SECTION B-B



BILL OF MATERIAL

Item	Unit	Quantity
Stone Riprap, Class A4 (Special)	Ton	398

** Included in the cost of Stone Riprap, Class A4 (Special).

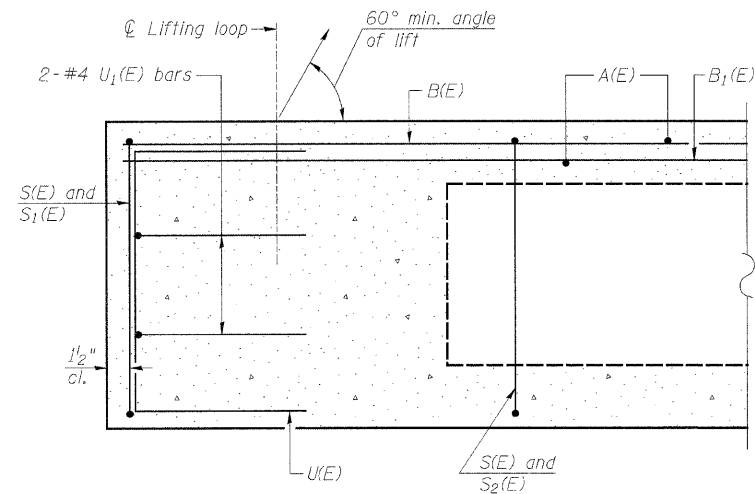
DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

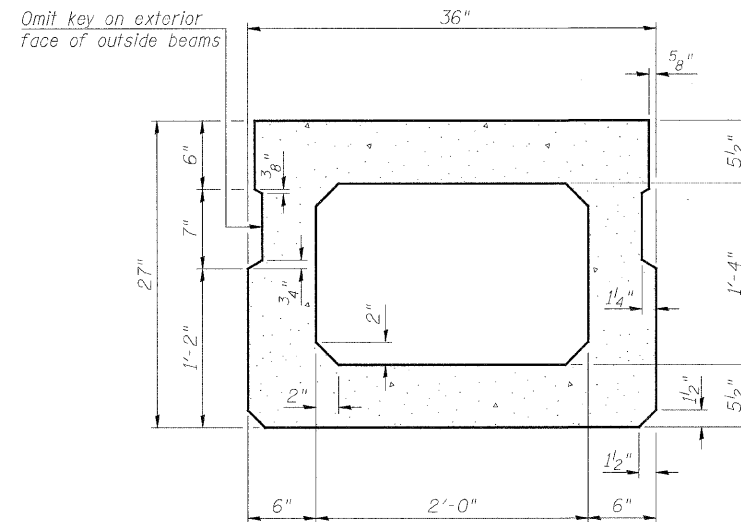
RIPRAP AND PILE LAYOUT
STRUCTURE NO. 006-4218

STRUCTURAL SHEET NO. 2 OF 9 SHEETS

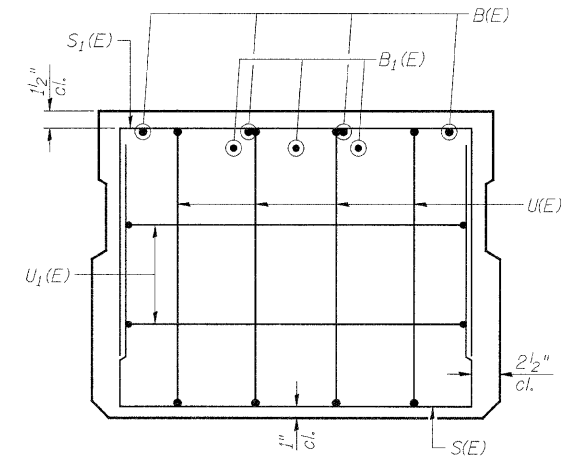
TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	8
WHA# 1287D10		CONTRACT NO. 87523		
[ILLINOIS] FED. AID PROJECT BROS-00110861				



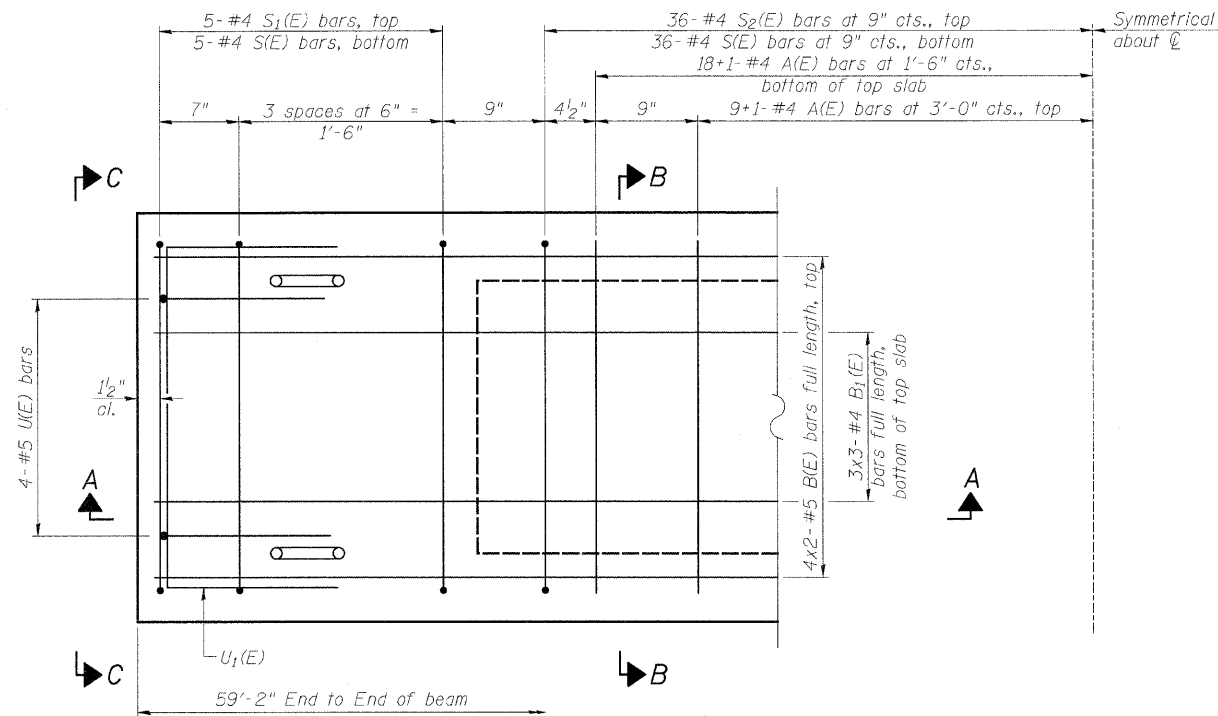
SECTION A-A



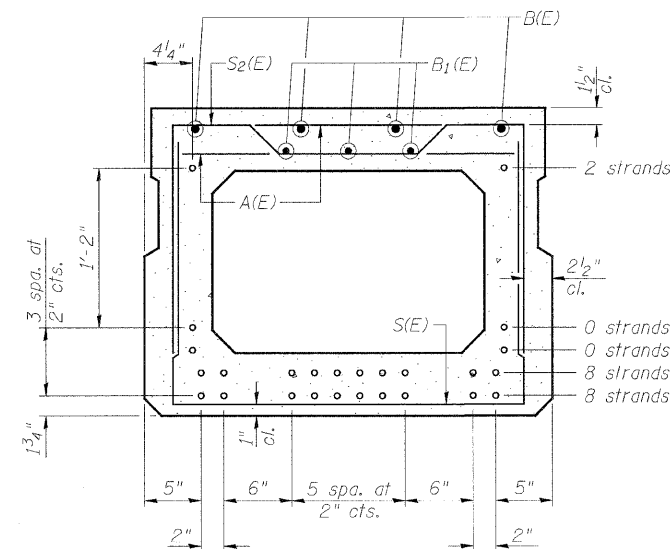
SECTION B-B
(Showing dimensions)



VIEW C-C



PLAN VIEW



SECTION B-B
(Showing reinforcement and permissible strand locations)

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

BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	54	#4	2'-7"	—
B(E)	8	#5	30'-9"	—
B1(E)	9	#4	21'-0"	—
S(E)	82	#4	6'-5"	□
S1(E)	10	#4	5'-11"	□
S2(E)	72	#4	6'-2"	□
U(E)	8	#5	4'-6"	□
U1(E)	4	#4	5'-0"	□

NOTES:

See Structural Sheet 4 of 9 for additional details and Bill of Material.

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 4x2-#5 etc. indicates 4 lines of bars with 2 lengths per line.

Bars indicated thus 9+1-#4 etc. indicates 9 bars each side of centerline plus 1 additional bar at centerline.

MINIMUM BAR LAP

#4 bar = 2'-0"
#5 bar = 2'-6"

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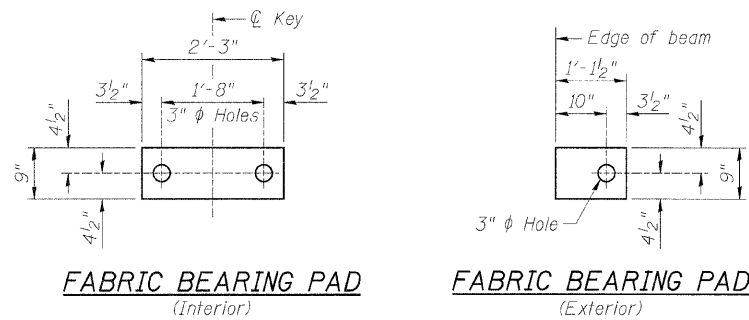
DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20 + 00

27" x 36" PPC DECK BEAM
STRUCTURE NO. 006-4218

STRUCTURAL SHEET NO. 3 OF 9 SHEETS

TWP.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	9
WHA# 1287D10		CONTRACT NO. 87523		
ILLINOIS FED. AID PROJECT BROS-0011066				



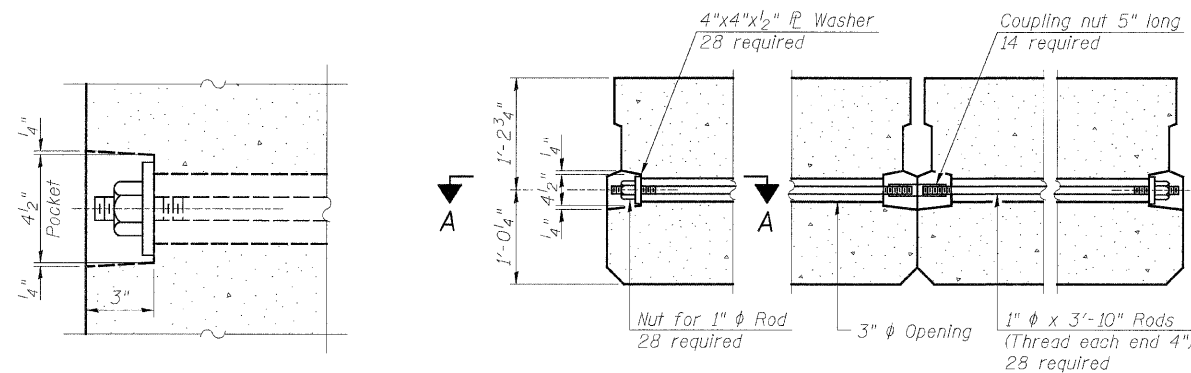
FABRIC BEARING PAD
(Interior)

FABRIC BEARING PAD
(Exterior)

FIXED

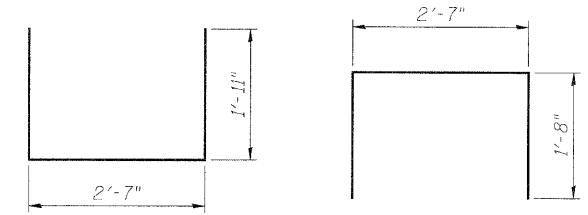
NOTE:

All bearing pads shall be 1" thick.
Exterior bearing pads shall be used at crown break.
Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.



SECTION A-A

TYPICAL TRANSVERSE TIE ASSEMBLY

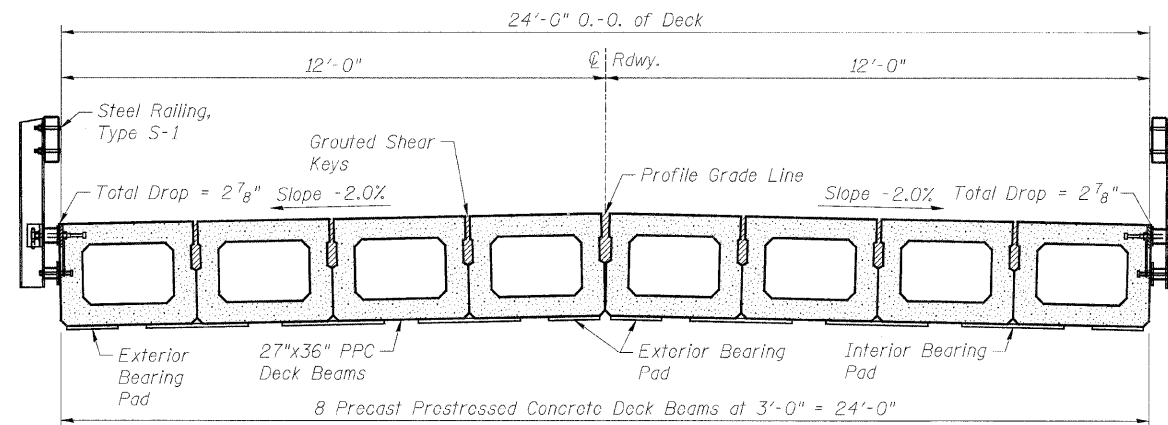


BAR S1(E)

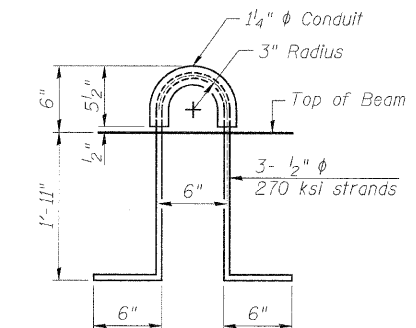
BAR S2(E)

BAR U1(E)

BAR U2(E)



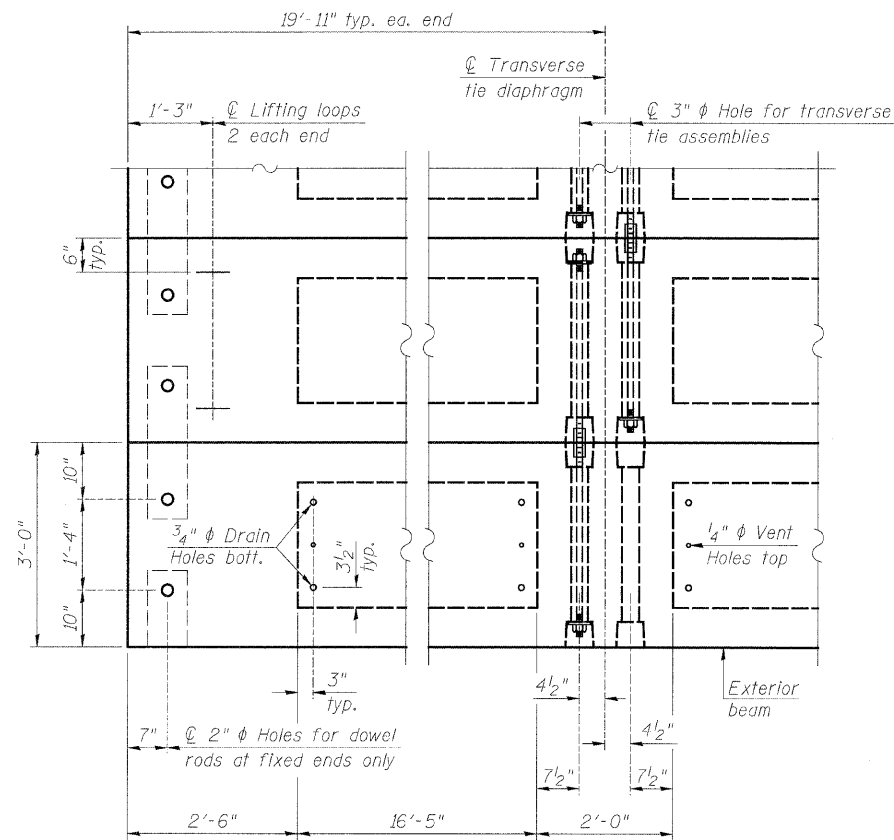
CROSS SECTION



LIFTING LOOP DETAIL

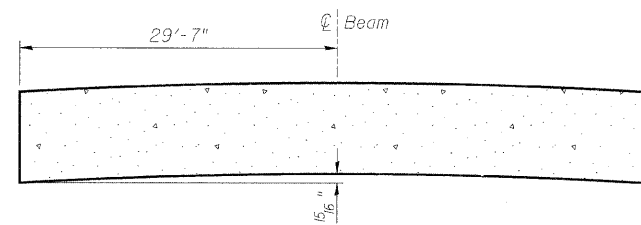
BILL OF MATERIAL

Item	Unit	Quantity
Precast Prestressed Concrete Deck Beams (27" Depth)	Sq. Ft.	1,420



PLAN VIEW

NOTE:
Connect beams in pairs with the transverse tie configuration shown.
Unused transverse tie hole on exterior beams can be omitted.



CAMBER DIAGRAM

NOTES:

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal ϕ shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.
The 1" ϕ 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.
Reinforcement bars shall conform to ASTM A 706, Grade 60.
A minimum 2 1/2" ϕ lifting pin shall be used to engage the lifting loops during handling.
Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 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 6,000 psi.
Compressive strength of prestressed concrete at release, $f'ci$, shall be 5,000 psi.

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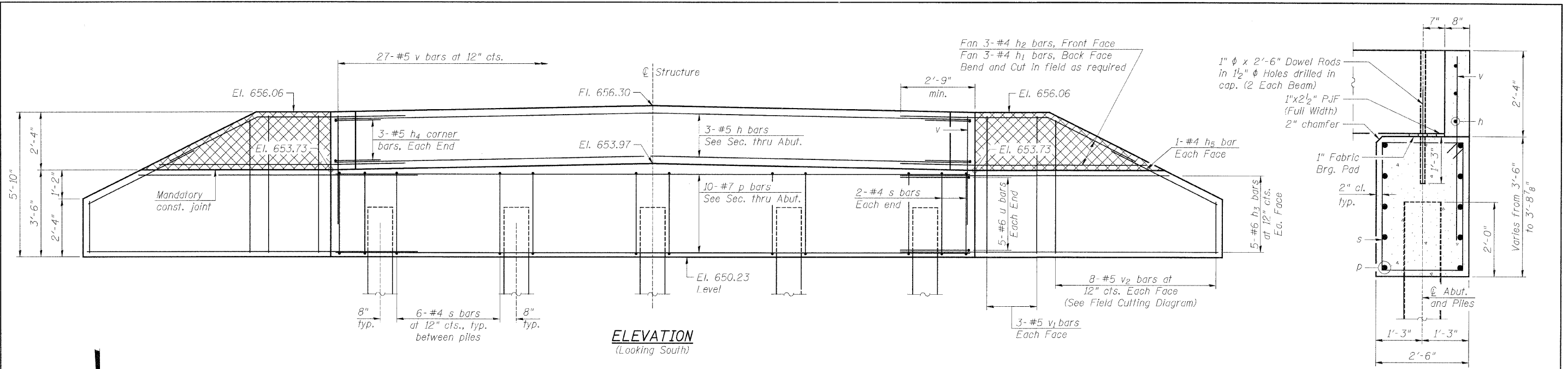
DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20 + 00

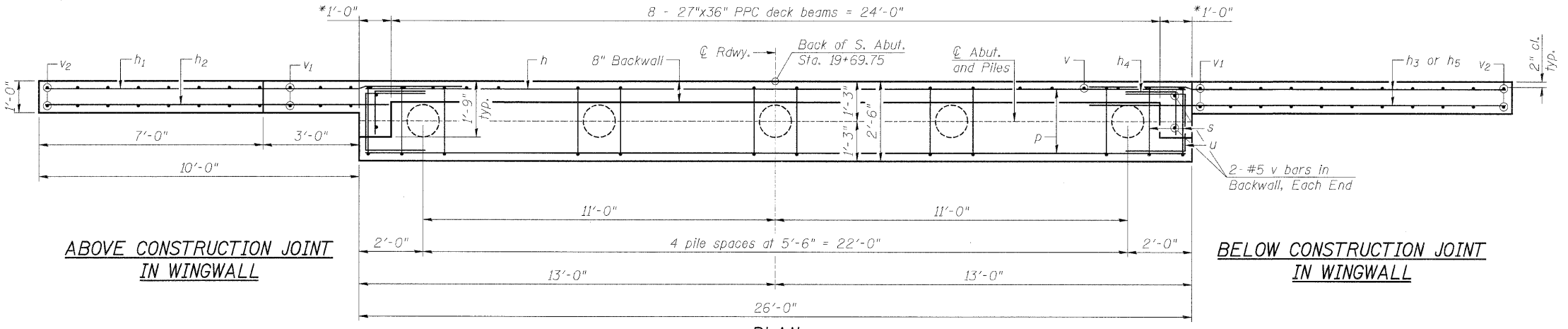
27" x 36" PPC DECK BEAM DETAILS
STRUCTURE NO. 006-4218

STRUCTURAL SHEET NO. 4 OF 9 SHEETS

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	10
WHA# 1287D10			CONTRACT NO. 87523	
[ILLINOIS] FED. AID PROJECT BR05-00110861				



SECTION THRU ABUTMENT



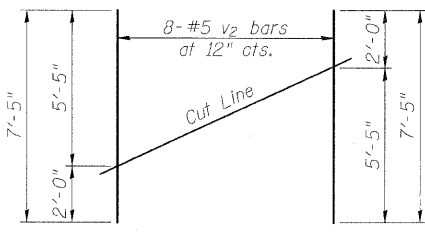
PLAN

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h	3	#5	25'-8"	
h ₁	6	#4	10'-3"	
h ₂	6	#4	8'-4"	
h ₃	20	#6	13'-1"	
h ₄	6	#5	3'-3"	
h ₅	4	#4	5'-10"	
p	10	#7	25'-8"	
s	28	#4	11'-5"	
u	10	#6	7'-1"	
v	31	#5	4'-4"	
v ₁	12	#5	5'-6"	
v ₂	16	#5	7'-5"	
Concrete Structures	Cu. Yd.	13.7		
Reinforcement Bars	Pound	1,770		
Furnishing Metal Shell Piles 12" x 0.250"	Foot	132		
Driving Piles	Foot	132		
Test Pile Metal Shells	Each	1		
** Porous Granular Embankment, Special	Ton	56		

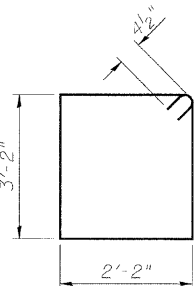
PILE DATA

Type: Metal Shell 12" ϕ x 0.250" walls
 Nominal Required Bearing: 244 kips
 Factored Resistance Available: 135 kips
 Est. Length: 33'
 No. Production Piles: 4
 No. Test Piles: 1

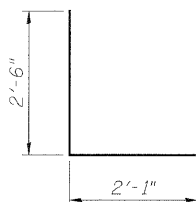


FIELD CUTTING DIAGRAM

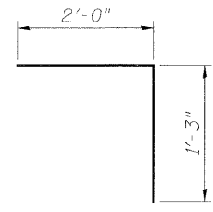
Order v₂ bars full length. Cut as shown and use remainder of bars in opposite face.



BAR s



BAR u



BAR h₄

NOTES:

- Hatched portion of wingwalls to be poured with the backwall after the deck beams have been installed and grout has cured for a minimum of 24 hours.
- All exposed edges shall have standard $\frac{3}{4}$ " chamfers, except as noted.
- Space reinforcement in cap to miss dowel rods.
- After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure a min. of 24 hours prior to grouting the shear keys.
- For pile details, see Structural Sheet 8 of 9.
- * May vary due to overrun of beams.
- ** For Drainage Details, see Structural Sheet 2 of 9.

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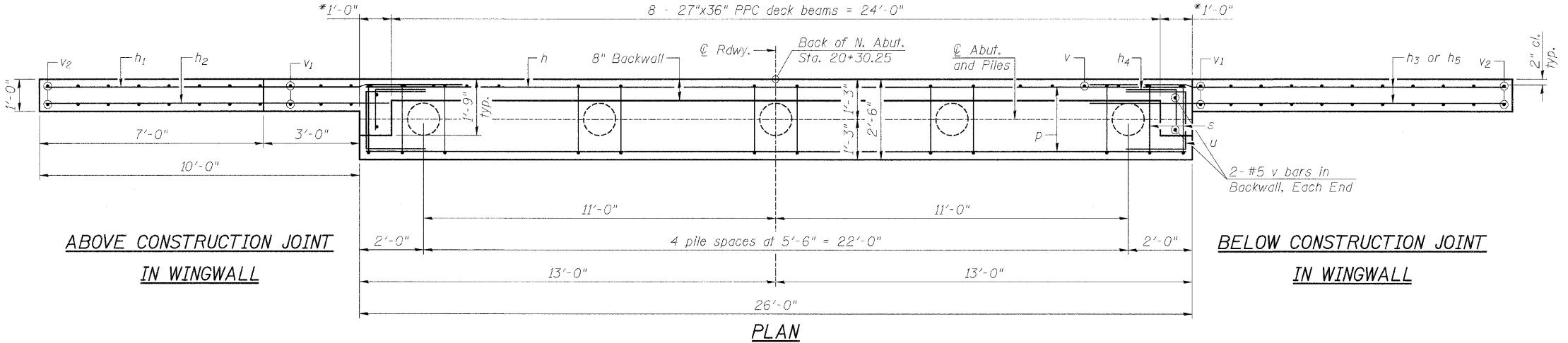
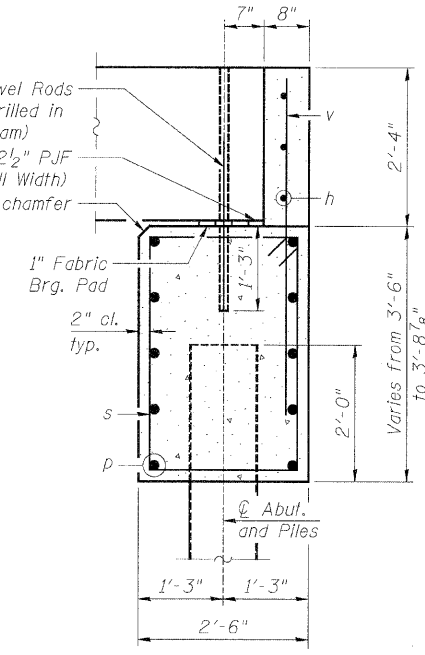
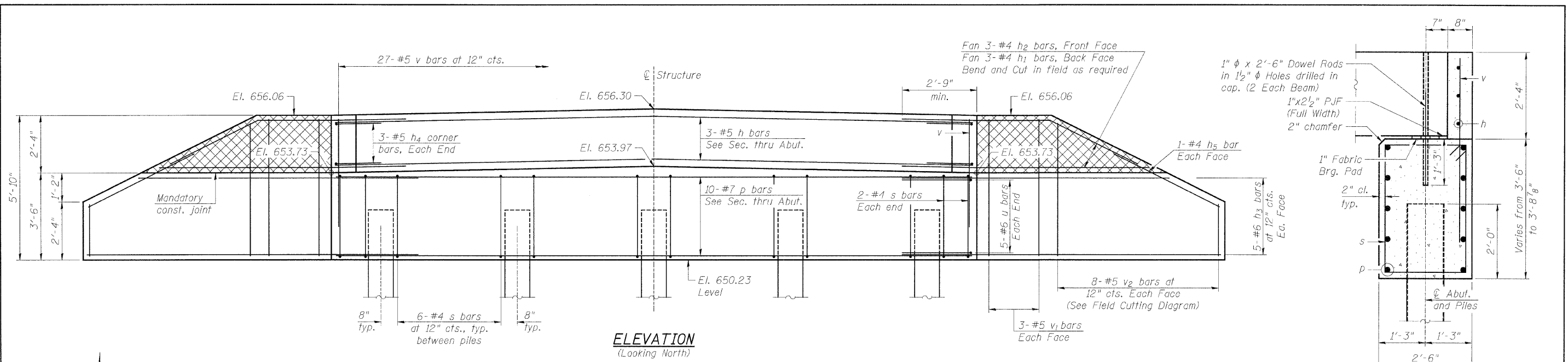
WILLETT HOFMANN & ASSOCIATES INC.
 ENGINEERING ARCHITECTURE LAND SURVEYING
 809 EAST 2ND STREET, DIXON, IL 61021-0267
 T: 815-284-3381 DESIGN FIRM: #154-009118

DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20 + 00

SOUTH ABUTMENT DETAILS
STRUCTURE NO. 006-4218
 STRUCTURAL SHEET NO. 5 OF 9 SHEETS

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	11
WHA# 1287D10		CONTRACT NO.	87523	
ILLINOIS/FED. AID PROJECT BR05-001(086)				

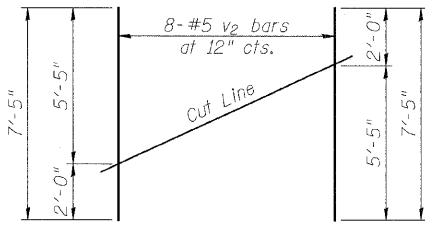


BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h	3	#5	25'-8"	—
h1	6	#4	10'-3"	—
h2	6	#4	8'-4"	—
h3	20	#6	13'-1"	—
h4	6	#5	3'-3"	└
h5	4	#4	5'-10"	—
p	10	#7	25'-8"	—
s	28	#4	11'-5"	□
u	10	#6	7'-1"	▭
v	31	#5	4'-4"	—
v1	12	#5	5'-6"	—
v2	16	#5	7'-5"	—
Concrete Structures	Cu. Yd.		13.7	
Reinforcement Bars	Pound		1,770	
Furnishing Metal Shell Piles 12" x 0.250"	Foot		136	
Driving Piles	Foot		136	
Test Pile Metal Shells	Each		1	
** Porous Granular Embankment, Special	Ton		56	

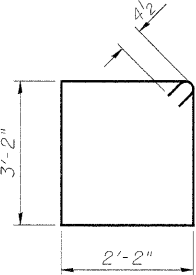
PILE DATA

Type: Metal Shell 12" ϕ x 0.250" walls
 Nominal Required Bearing: 244 kips
 Factored Resistance Available: 135 kips
 Est. Length: 34'
 No. Production Piles: 4
 No. Test Piles: 1

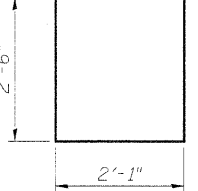


FIELD CUTTING DIAGRAM

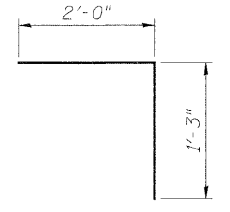
Order v2 bars full length. Cut as shown and use remainder of bars in opposite face.



BAR s



BAR u



BAR h4

NOTES:

- Hatched portion of wingwalls to be poured with the backwall after the deck beams have been installed and grout has cured for a minimum of 24 hours.
- All exposed edges shall have standard 3/4" chamfers, except as noted.
- Space reinforcement in cap to miss dowel rods.
- After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure a min. of 24 hours prior to grouting the shear keys.
- For pile details, see Structural Sheet 8 of 9.
- *May vary due to overrun of beams.
- **For Drainage Details, see Structural Sheet 2 of 9.

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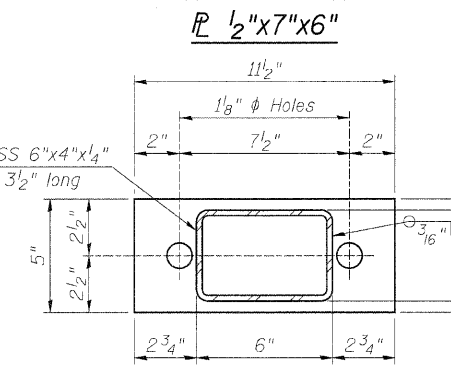
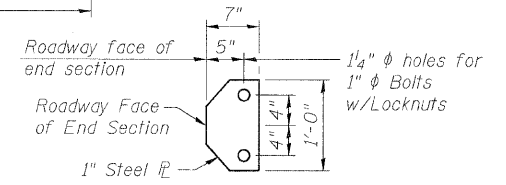
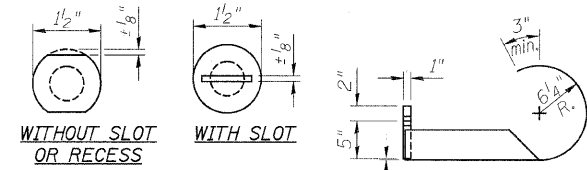
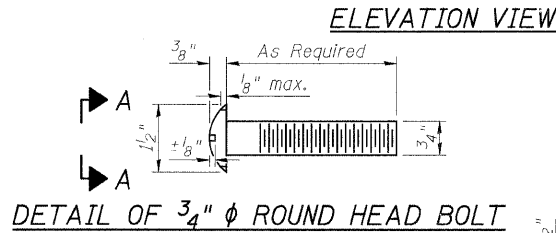
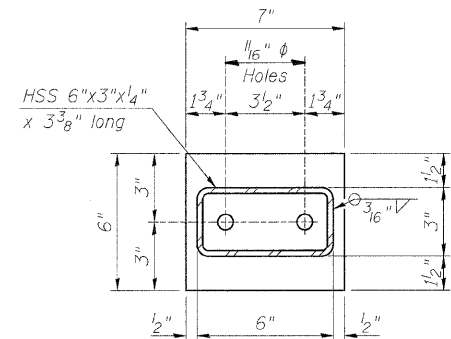
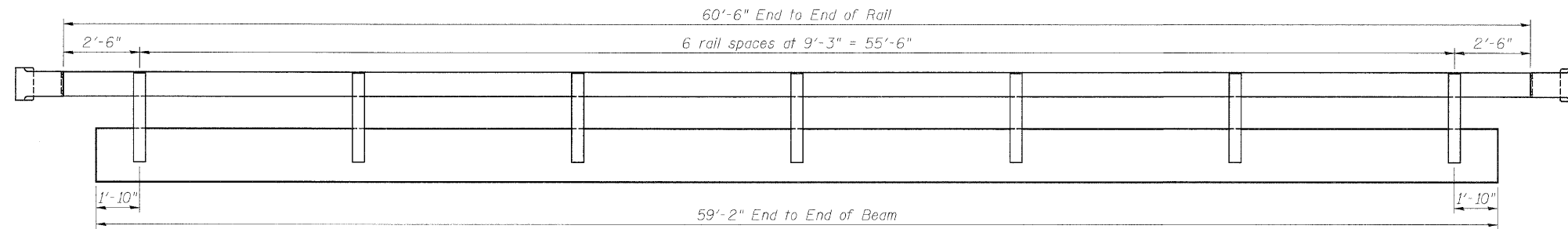
WILLETT HOFMANN ASSOCIATES INC.
 ENGINEERING ARCHITECTURE LAND SURVEYING
 809 EAST 2ND STREET, DIXON, IL 61021-0367
 T: 315-294-5381 DESIGN FIRM: #184-000918

DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -

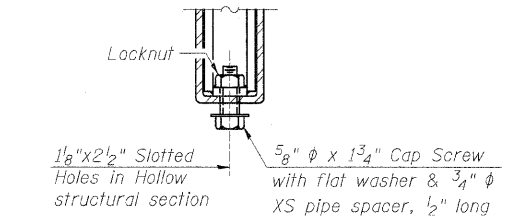
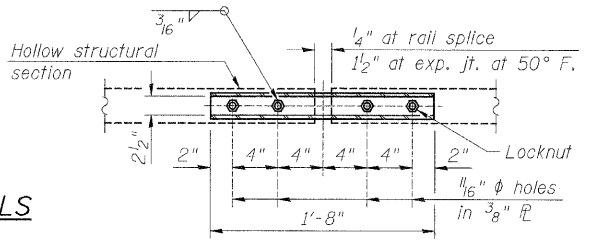
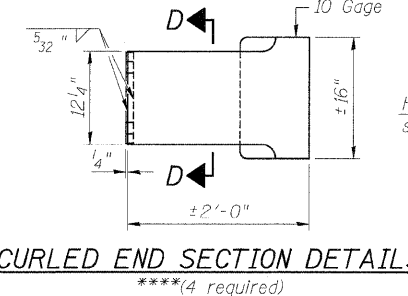
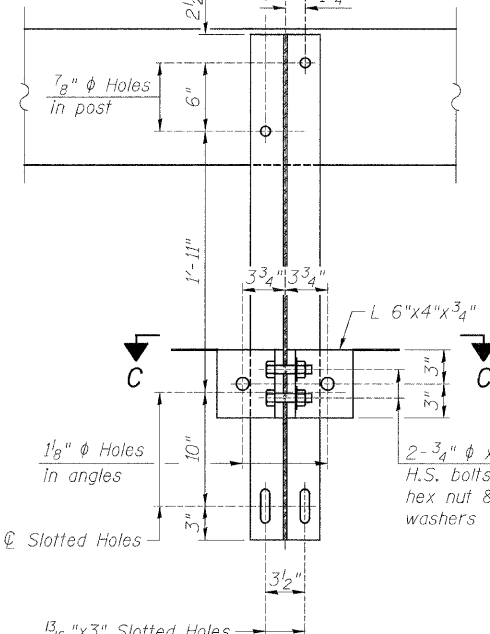
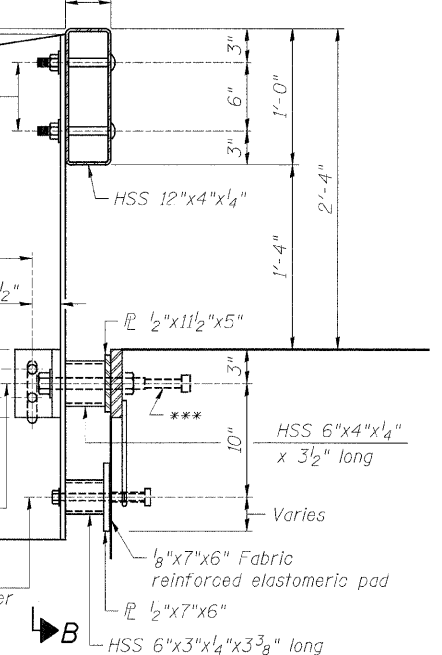
BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20 + 00

NORTH ABUTMENT DETAILS
STRUCTURE NO. 006-4218
 STRUCTURAL SHEET NO. 6 OF 9 SHEETS

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	12
WHA# 1287D10		CONTRACT NO.	87523	
ILLINOIS/FED. AID PROJECT BR05-00110861				



2- 3/4" ϕ x 6" Round Head Bolts (With slot or approved recess in head) with locknut & flat washer. 7/8" ϕ Holes in Hollow structural section may be drilled in the field.

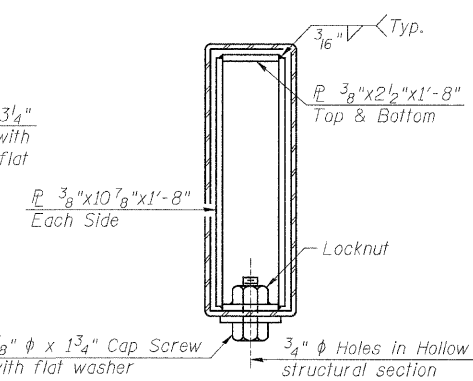
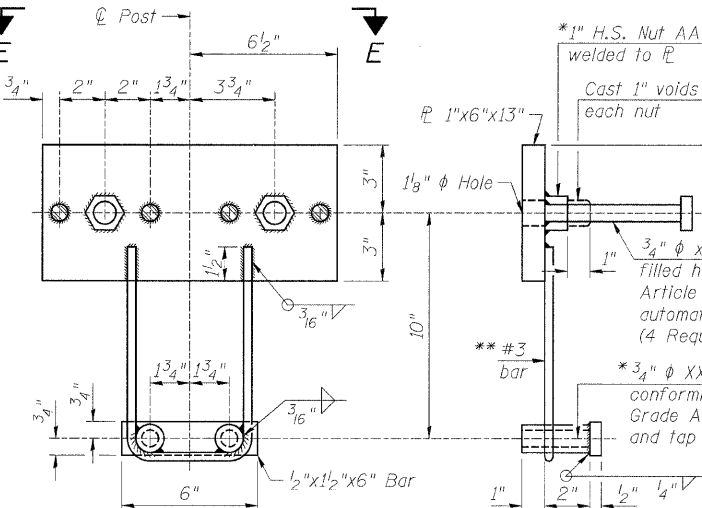
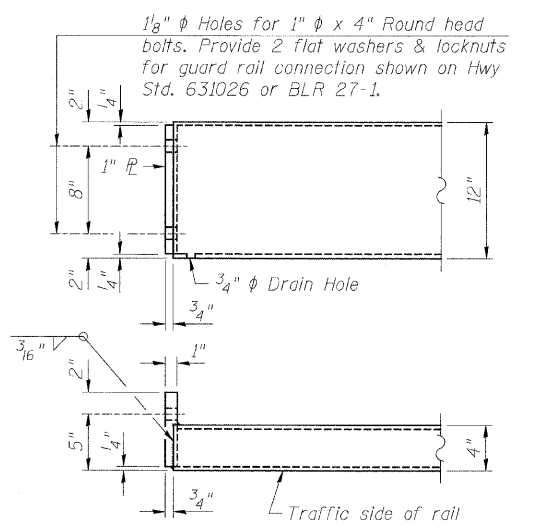
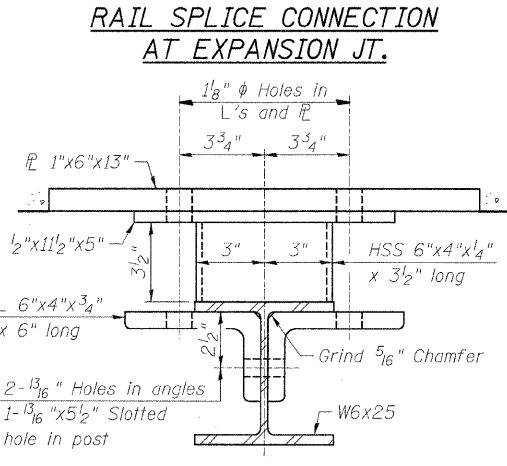


SECTION AT RAILING POST

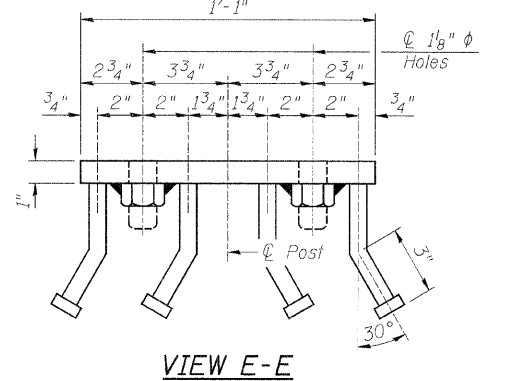
SECTION B-B

CURLLED END SECTION DETAILS

PLAN-BOTT. SPLICE R TYPICAL



SECTIONS AT RAIL SPLICE



BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	121

NOTES:

- All field drilled holes shall be coated with an approved zinc rich paint before erection.
- For multi-span bridges, sufficient 1/4"x6"x1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cast included with Steel Railing, Type S-1.
- All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
- * Threaded areas shall be plugged or blocked off during casting of beam. Galvanized after fabrication.
- ** Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".
- *** 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.
- **** Cost of Curled End Sections to be included with Steel Railing, Type S-1.

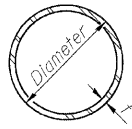


DESIGNED - MICHAEL WAGNER	REVISED -
CHECKED - BRIAN CONVERSE	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MEGAN CACKLEY	REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20 + 00

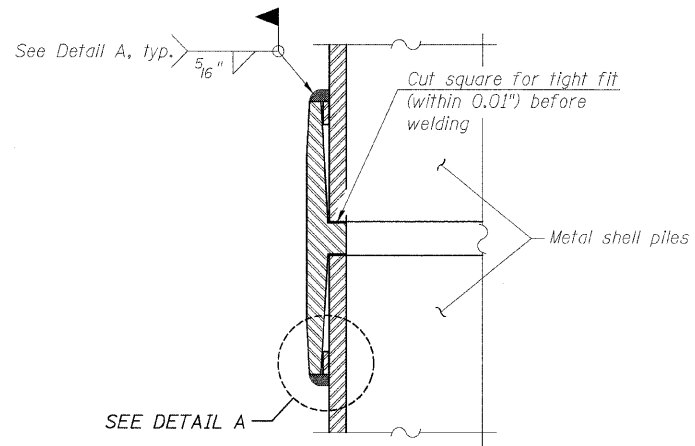
STEEL RAILING, TYPE S-1 DETAILS
STRUCTURE NO. 006-4218
STRUCTURAL SHEET NO. 7 OF 9 SHEETS

TWP. 106	SECTION 08-1519-00-BR	COUNTY BUREAU	TOTAL SHEETS 18	SHEET NO. 13
WHA# 1287D10		CONTRACT NO. 87523		
[ILLINOIS] FED. AID PROJECT BR05-0011(086)				



METAL SHELL PILE TABLE

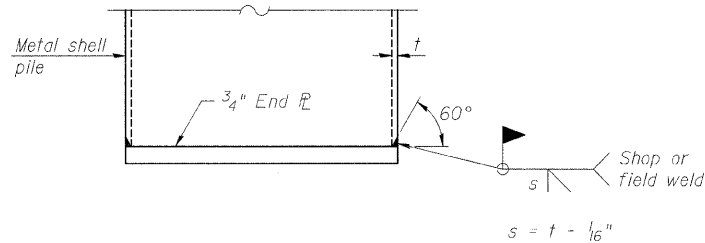
Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. ³ /ft.)
PP12	0.179"	22.60	0.0274
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361



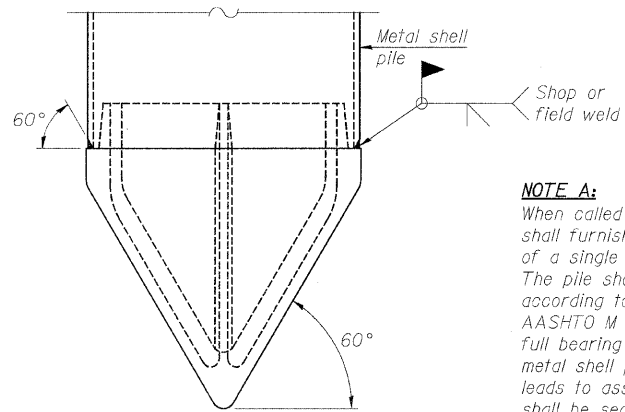
NOTES:

The 1/8"x1/2" 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.

WELDED COMMERCIAL SPLICE



END PLATE ATTACHMENT

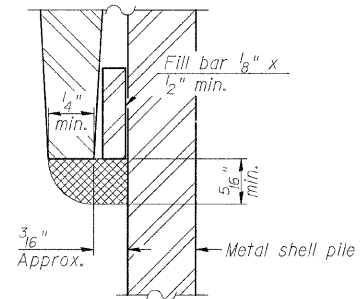


METAL SHELL PILE SHOE ATTACHMENT

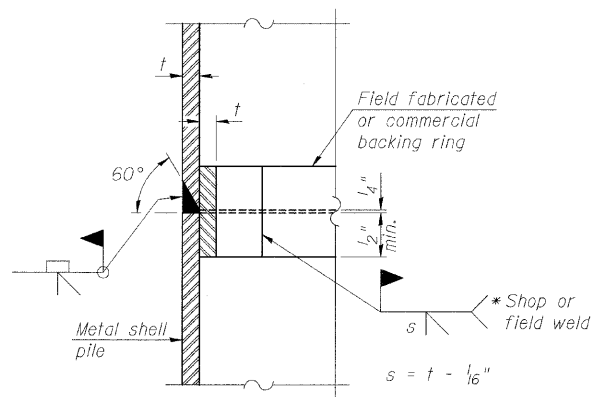
(See Note A)

NOTE A:

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 90-60 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.



DETAIL A

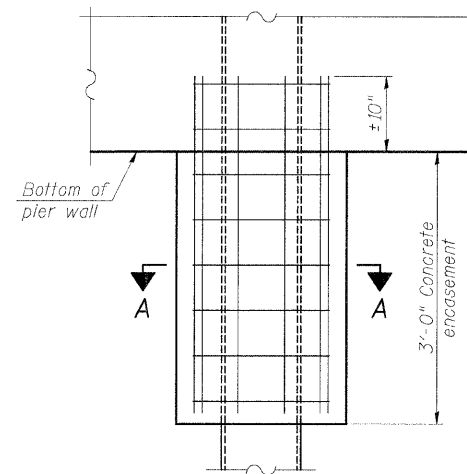


COMPLETE PENETRATION WELD SPLICE

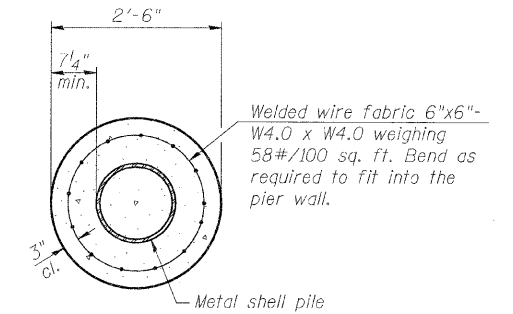
*Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.

NOTE:

The metal shell piles shall be according to ASTM A 252 Grade 3.



ELEVATION

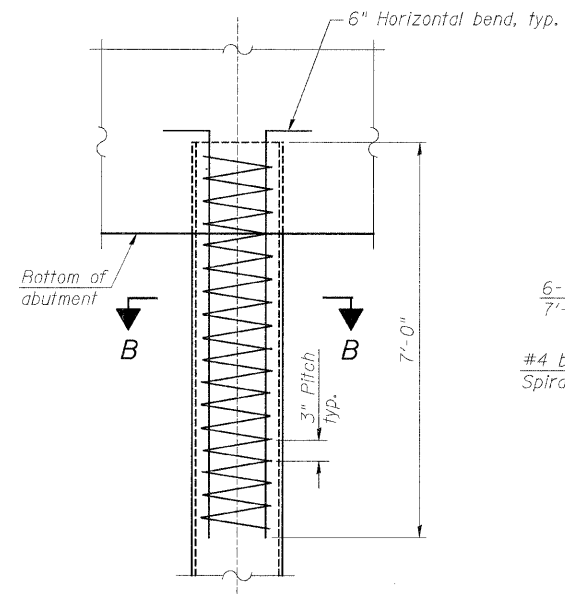


SECTION A-A

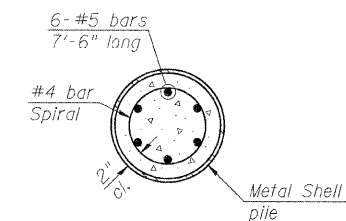
NOTE:

Forms for encasement may be omitted when soil conditions permit.

CONCRETE ENCASEMENT AT PIERS



ELEVATION



SECTION B-B

METAL SHELL REINFORCEMENT AT ABUTMENTS



DESIGNED - MICHAEL WAGNER
CHECKED - BRIAN CONVERSE
DRAWN - RON ALLEN
CHECKED - MEGAN CACKLEY

REVISED -
REVISED -
REVISED -
REVISED -

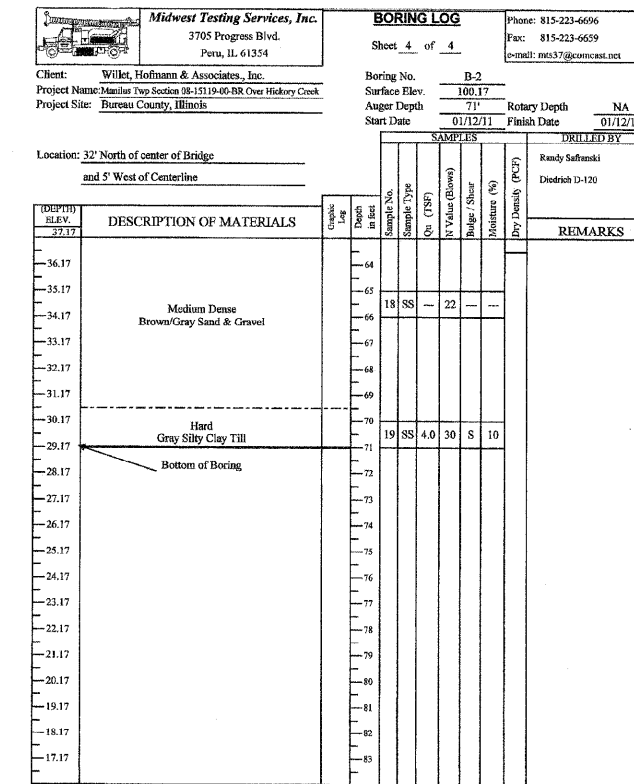
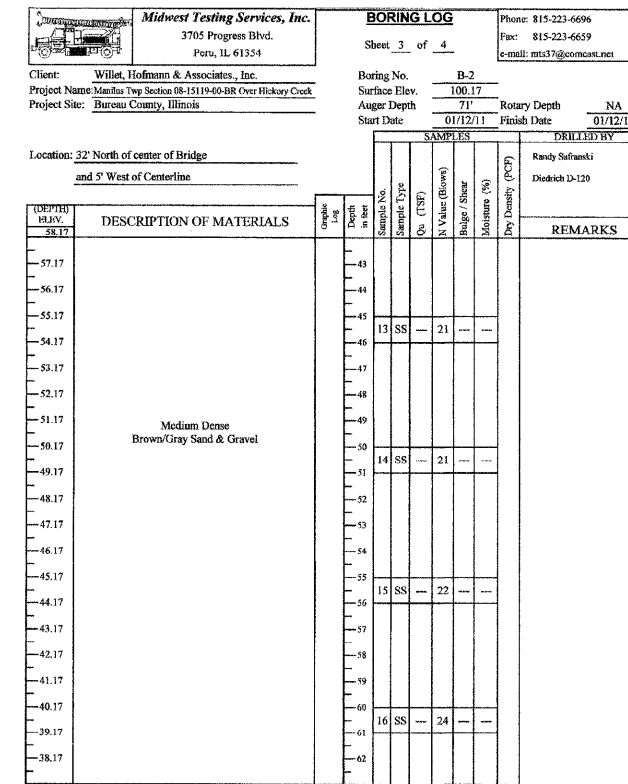
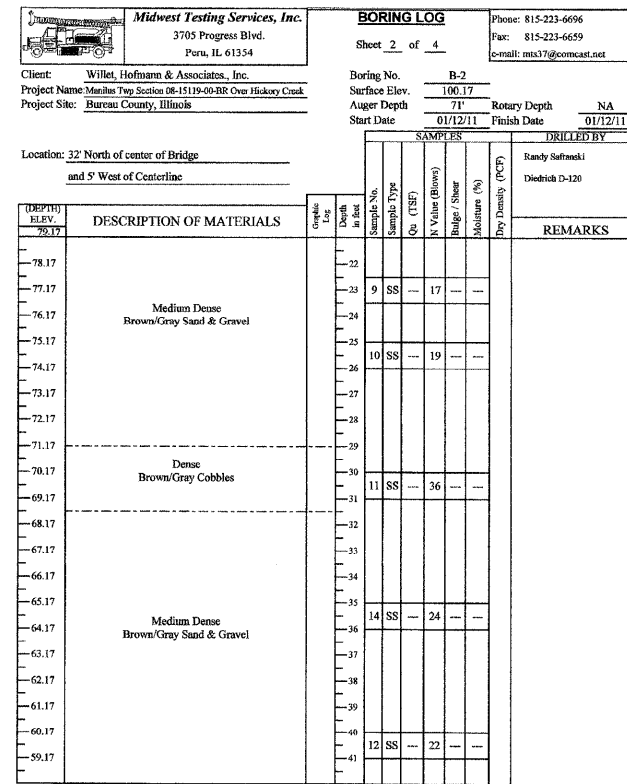
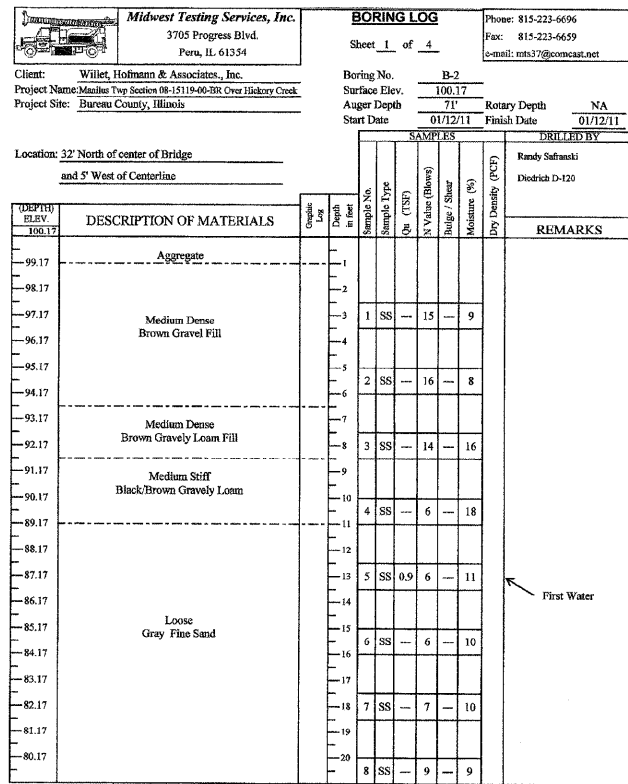
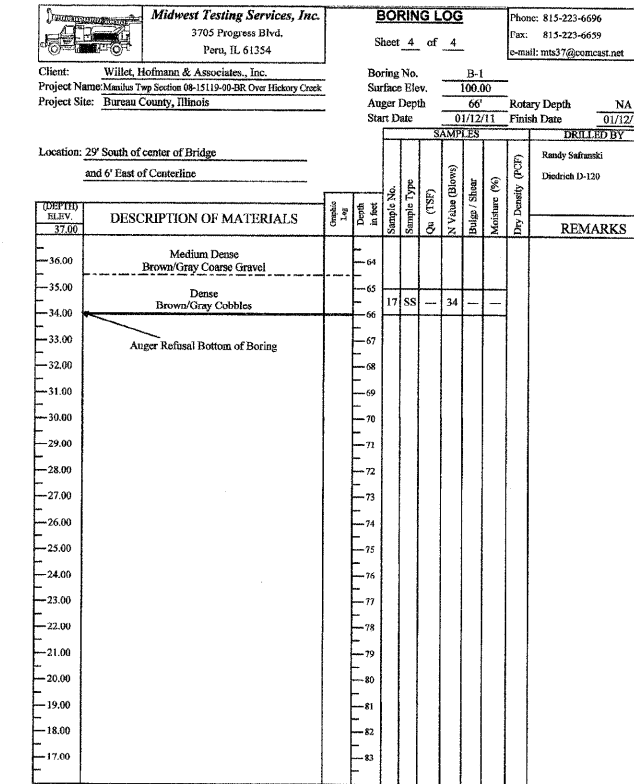
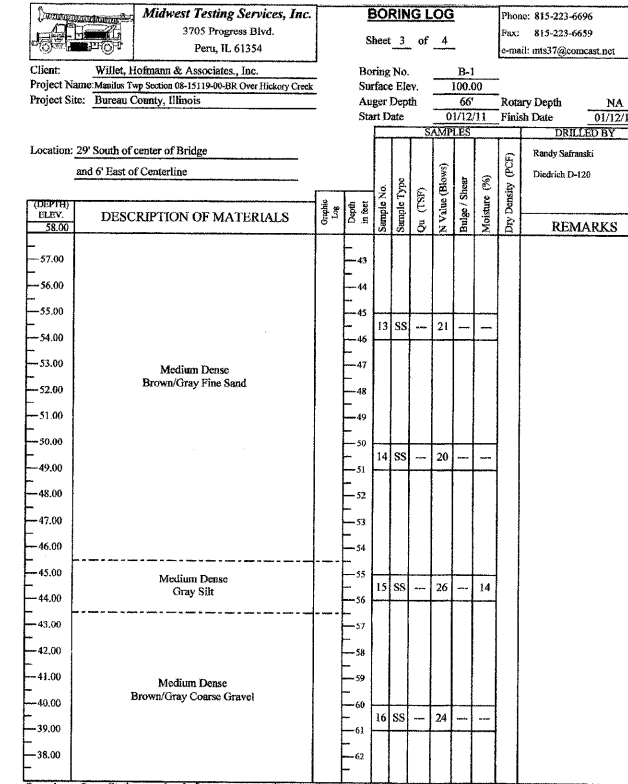
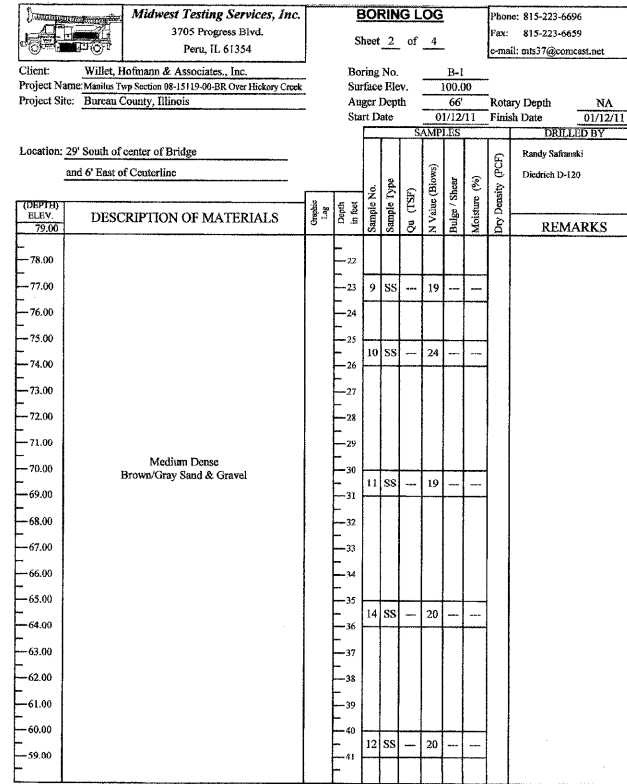
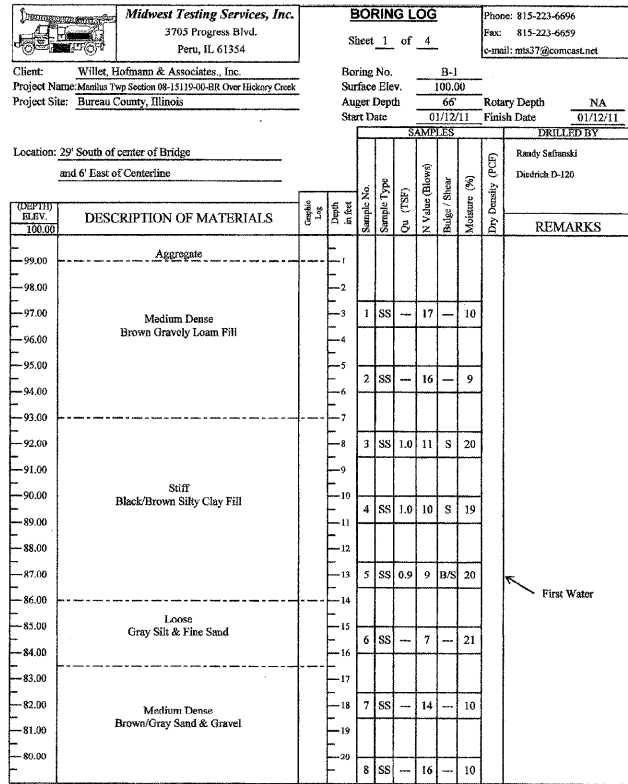
BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

METAL SHELL PILE DETAILS
STRUCTURE NO. 006-4218

STRUCTURAL SHEET NO. 8 OF 9 SHEETS

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	14
WHA# 1287D10			CONTRACT NO. 87523	
[ILLINOIS] FED. AID PROJECT BRCS-00110861				

FILE - SA PROJECTS - 2018 - 1287D10 - Bureau Co. - 18186 - DESIGN STRUCTURE - 08-15119-00-BR - Metal Shell Piles.dgn



DESIGNED - MICHAEL WAGNER
CHECKED - BRIAN CONVERSE
DRAWN - RON ALLEN
CHECKED - MEGAN CACKLEY

REVISED -
REVISED -
REVISED -
REVISED -

**BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00**

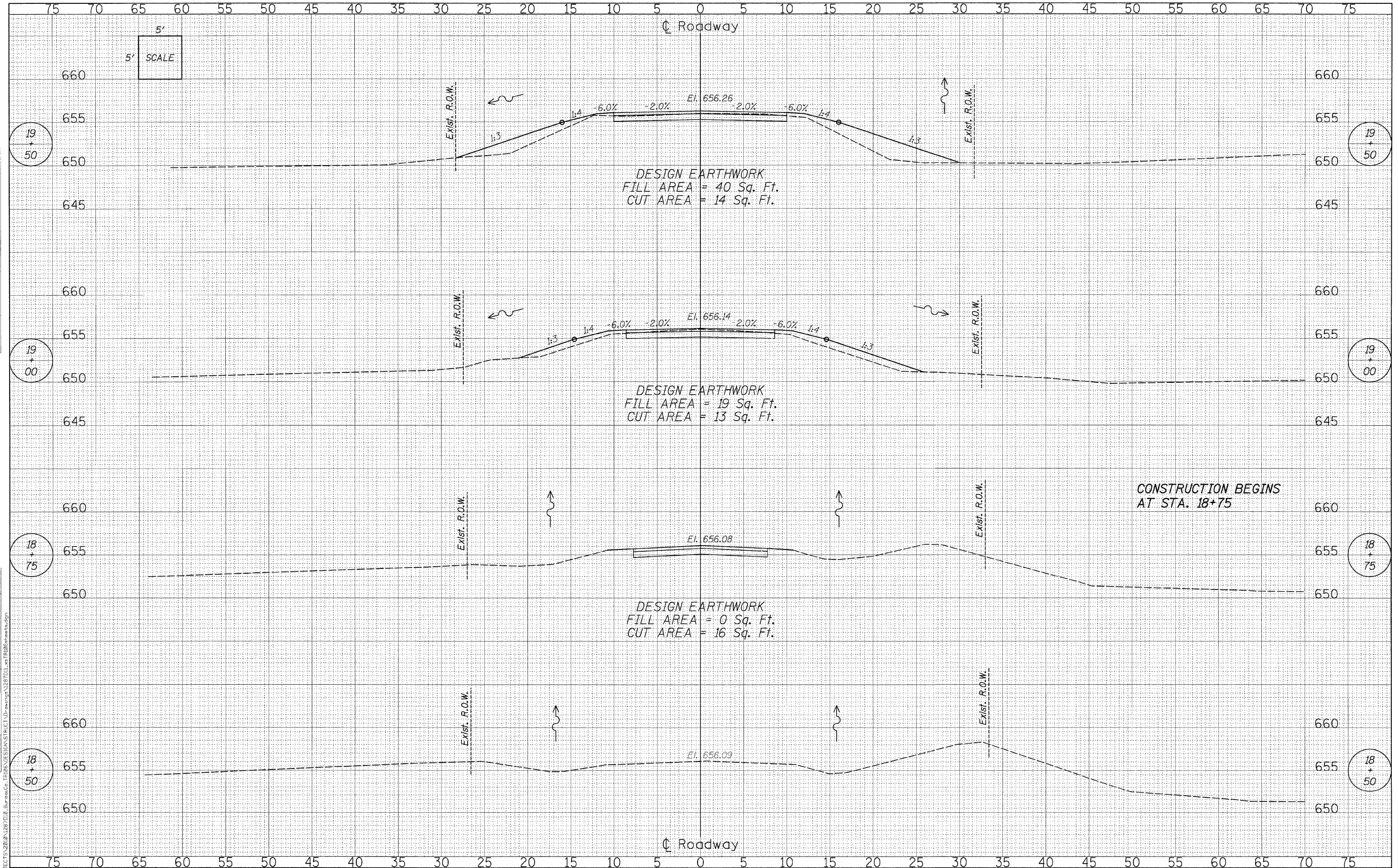
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STRUCTURE NO. 006-4218**
STRUCTURAL SHEET NO. 9 OF 9 SHEETS

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	15
SHA# 1287D10		CONTRACT NO.		87523
ILLINOIS FED. AID PROJECT BR05-0011086				

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FINAL SURVEY	
NOTE BOOK	
AREAS CHECKED	

DATE	
BY	
ORIGINAL SURVEY	
NOTE BOOK	
AREAS CHECKED	



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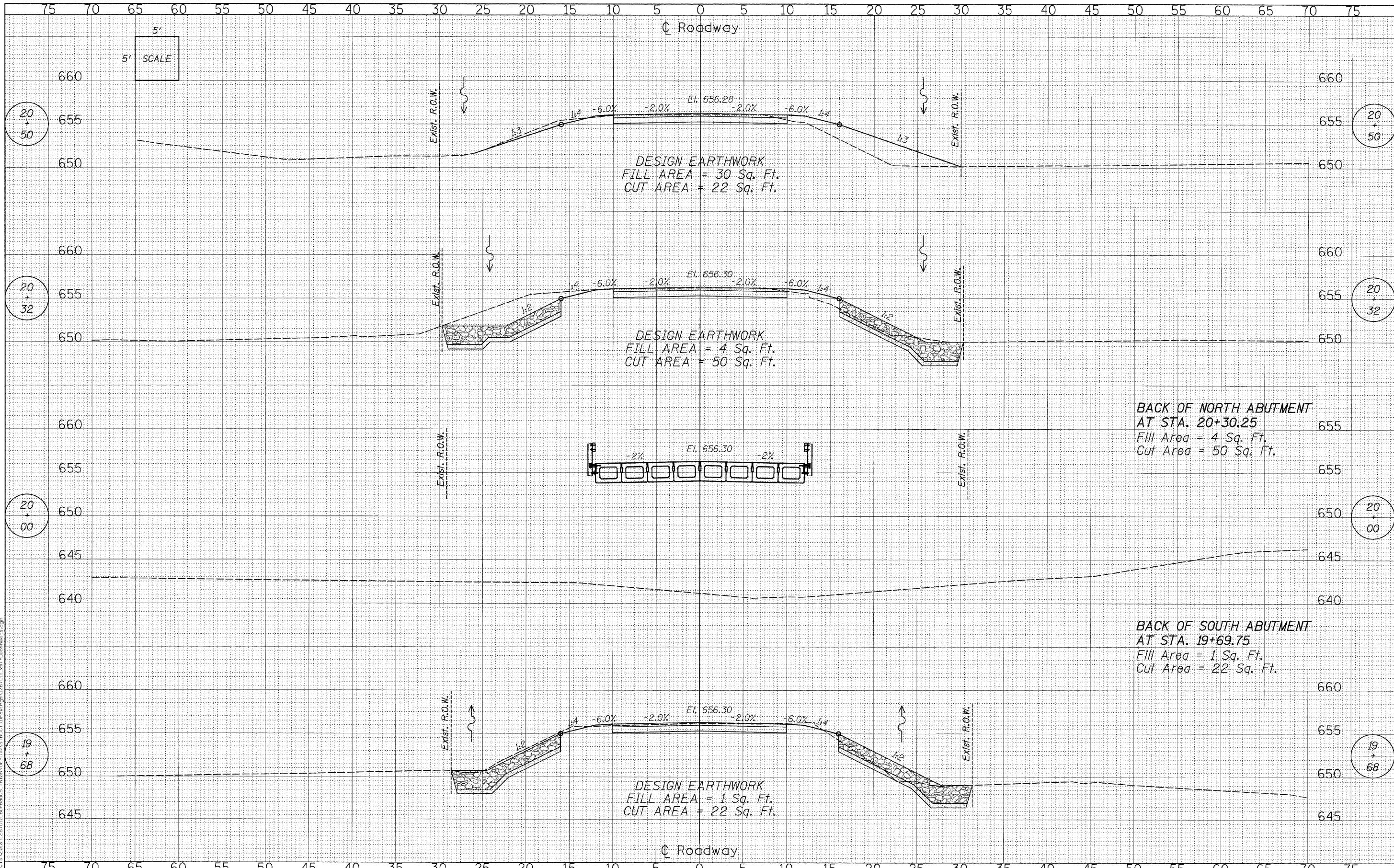


DESIGNED -	MICHAEL WAGNER	REVISED -	
CHECKED -	MEGAN CACKLEY	REVISED -	
DRAWN -	RON ALLEN	REVISED -	
CHECKED -	MICHAEL WAGNER	REVISED -	

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

CROSS SECTIONS
STRUCTURE NO. 006-4218
SCALE: 1" = 5' SHEET NO. 1 OF 3 SHEETS STA. 18+50.00 TO STA. 19+50.00

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-1519-00-BR	BUREAU	18	16
WHA# 1287D10			CONTRACT NO. 87523	
[ILLINOIS] FED. AID PROJECT BROS-0011(086)				



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

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CHECKED -	MEGAN CACKLEY	REVISED -	
DRAWN -	RON ALLEN	REVISED -	
CHECKED -	MICHAEL WAGNER	REVISED -	

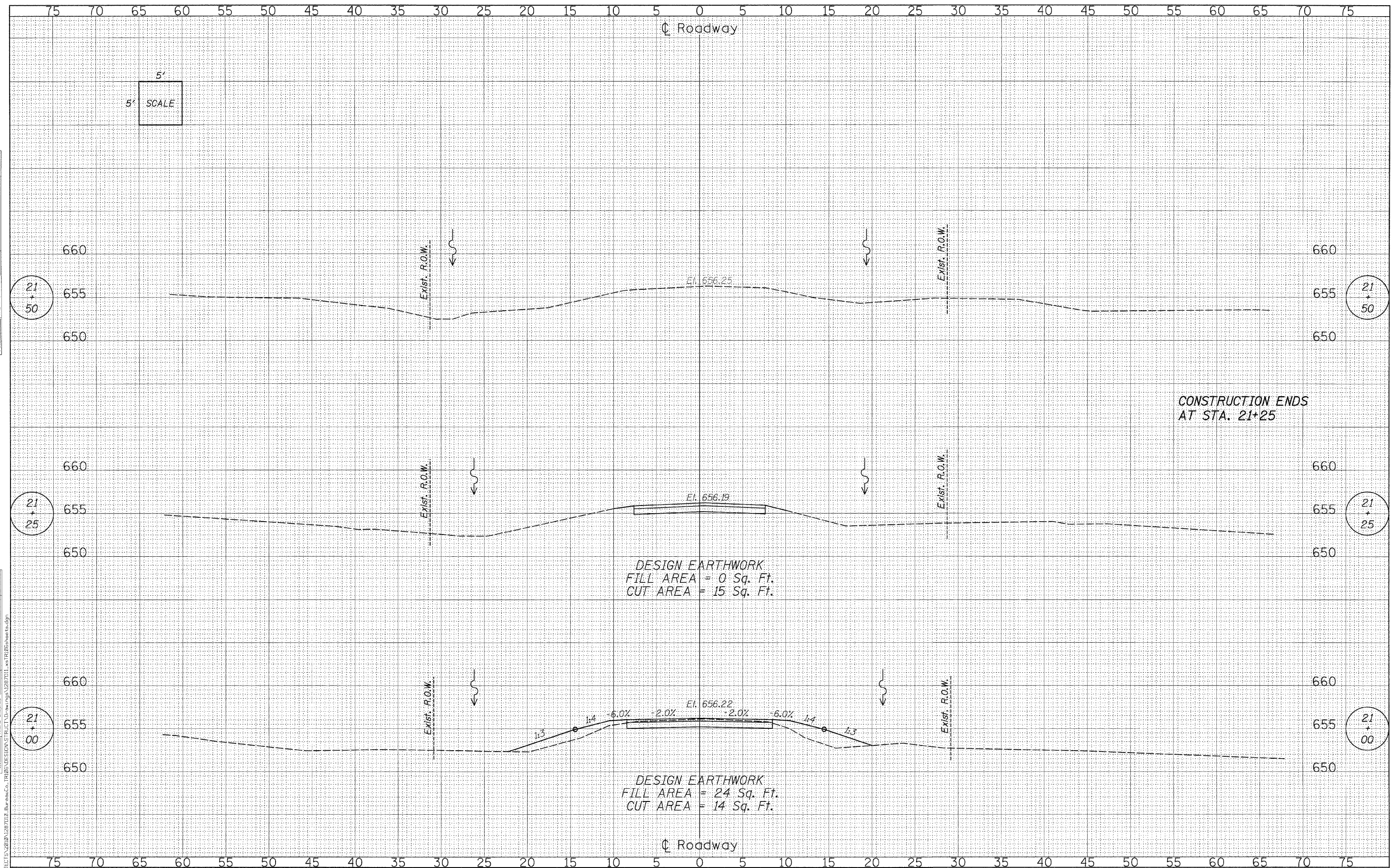
BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

CROSS SECTIONS
STRUCTURE NO. 006-4218
 SCALE: 1" = 5'
 SHEET NO. 2 OF 3 SHEETS
 STA. 19+68.00 TO STA. 20+50.00

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	17
WHA# 1287D10		CONTRACT NO.	87523	
ILLINOIS FED. AID PROJECT BR05-001(086)				

FINAL SURVEY	BY	DATE
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PLOTTED		
NOTE BOOK		
AREAS CHECKED		
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ORIGINAL SURVEY	BY	DATE
SURVEYED		
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NOTE BOOK		
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CHECKED - MEGAN CACKLEY	REVISED -
DRAWN - RON ALLEN	REVISED -
CHECKED - MICHAEL WAGNER	REVISED -

BUREAU COUNTY
T.R. 106 (850 E. ST.) OVER HICKORY CREEK
STATION 20+00

CROSS SECTIONS
STRUCTURE NO. 006-4218
 SCALE: 1" = 5' SHEET NO. 3 OF 3 SHEETS STA. 21+00.00 TO STA. 21+50.00

TWP. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
106	08-15119-00-BR	BUREAU	18	18
WHA* 1287D10			CONTRACT NO. 87523	
[ILLINOIS] FED. AID PROJECT BROS-00110861				