1-18-13 LETTING ITEM 097

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	1
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 87524		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
HIGHWAY BRIDGE PROGRAM
IROQUOIS COUNTY
SECTION 08-00130-02-BR
F.A.S. 334 (CH 9) OVER LOUIS CREEK TRIBUTARY
PROJECT NO. BRS-0334(113)
JOB NUMBER C-93-067-12

LOCATION OF SECTION INDICATED THUS: –■–

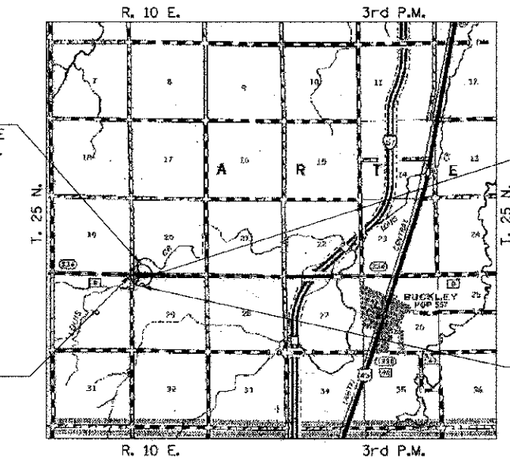
INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1.	COVER SHEET
2.	GENERAL NOTES, DETAILS, TYPICAL SECTIONS
3.	SUMMARY OF QUANTITIES, SCHEDULES OF QUANTITIES
4.	TRAFFIC CONTROL PLAN
5.	EROSION CONTROL PLAN
6.	PLAN AND PROFILE
7.-21.	STRUCTURE PLANS
22.-27.	CROSS SECTIONS

REQUIRED HIGHWAY STANDARDS

000001-06
280001-06
442201-03
515001-03
601101-01
630301-05
631032-07
635006-03
701901-02
BLR 21-9

SCALES
- PLAN, PROFILE HORIZ. } 50′ 0 50′
- PROFILE VERT. 5′ 0 5′
- CROSS SECTIONS HORIZ. CROSS SECTIONS VERT. } 5′ 0 5′



PROPOSED STRUCTURE SN 038-3014
SINGLE SPAN STEEL I BM STRUCTURE ON INTEGRAL ABUTMENTS, 67′-0″ BK. TO BK., AND 30′-0″ O. TO O. DECK, NO SKEW

SECTION 08-00130-02-BR ENDS STATION 217+00.00

SECTION 08-00130-02-BR BEGINS STATION 213+00.00

EXISTING STRUCTURE SN 038-3000
SINGLE SPAN T-BEAM WITH CONCRETE DECK ON CONCRETE CLOSED ABUTMENTS, ±32′-0″ BK. TO BK., ±27′-0″ O. TO O., NO SKEW (TO BE REMOVED)

LOCATION MAP
1 MI 0 1 MI
APPROXIMATE SCALE

NET LENGTH OF PROJECT = 400.00 FEET = 0.076 MILES

DESIGN CLASSIFICATION: MAJOR COLLECTOR (NON-URBAN)
DESIGN ADT = 925 (32)
DESIGN SPEED = 50 MPH

UTILITY COMPANIES

AMEREN CIPS
PAXTON, ILLINOIS

EASTERN ILLINI ELECTRICAL COOPERATIVE
PAXTON, ILLINOIS

FRONTIER COMMUNICATIONS
BLOOMINGTON, ILLINOIS

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

CONTRACT NO. 87524

2969E001

Hutchison Engineering, Inc.
JACKSONVILLE-SHOREWOOD-PEORIA
2012 JOB#2969

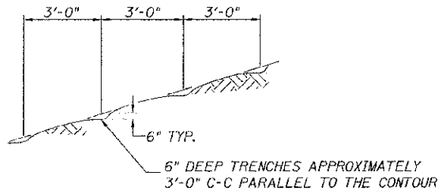
JOSEPH E. HUTCHISON 062-036339 REGISTERED PROFESSIONAL ENGINEER ILLINOIS
Lic Exp 11/30/2013
SIGNATURE
ENGINEER'S SEAL

PLANS DESIGNED IN ACCORDANCE WITH BUREAU OF LOCAL ROADS AND STREETS MANUAL GUIDELINES FOR TWO LANE RURAL COLLECTORS - 3R GUIDELINES

APPROVED June 4, 2012
IROQUOIS COUNTY ENGINEER

PASSED June 14th, 2012
PROJECT IMPLEMENTATION ENGINEER

Released For Bid Based on Limited Review June 14, 2012
DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



NOTE: ALL SLOPES 3:1 OR STEEPER AND GREATER THAN 5' IN HEIGHT SHALL BE CONTOUR PLOWED AS SHOWN IN DETAIL. COST SHALL BE INCLUDED WITH SEEDING, CLASS 2 (SPECIAL).

DETAIL OF CONTOUR PLOWING

HOT-MIX ASPHALT MIXTURE REQUIREMENTS

	HMA BINDER	HMA SURFACE
PG GRADE	PG 64-22	PG 64-22
MAX % RAP ALLOWABLE**	25%	15%
DESIGN AIR VOIDS	4% @ N50	4% @ N50
MIXTURE COMPOSITION	IL-19.0	IL 9.5
FRICTION AGGREGATE		MIXTURE C
DENSITY TEST METHOD	CORES	CORES

* MATERIAL SHALL BE COMPACTED TO 93.0-97.4 PERCENT OF THE MAXIMUM THEORETICAL DENSITY, EXCEPT THAT WHEN PLACED AS FIRST LIFT ON AN UNIMPROVED SUBGRADE THE MINIMUM PERCENT COMPACTION SHALL BE 92.0 PERCENT. THE MAXIMUM THEORETICAL DENSITY SHALL BE DETERMINED FROM THE MOVING AVERAGE AS SPECIFIED IN THE QC/QA SPECIFICATION.

** WHEN MORE THAN 20% RAP IS USED, A SOFTER ASPHALT BINDER (PG 58-22) MAY BE REQUIRED AS DETERMINED BY THE ENGINEER.

GENERAL NOTES

THE REMOVAL OF HOT-MIX ASPHALT SURFACE AND GRAVEL OR CRUSHED STONE BASE COURSE WHICH MAY BE NECESSARY FOR THE CONSTRUCTION OF THE NEW BRIDGE SHALL BE REMOVED AS EARTH EXCAVATION AND NO COMPENSATION WILL BE ALLOWED FOR ADDITIONAL LABOR OR EQUIPMENT REQUIRED.

ALL WASTE OR UNDESIRABLE MATERIAL AS IDENTIFIED BY THE ENGINEER SHALL BE DISPOSED OF OUTSIDE THE LIMITS OF THE RIGHT OF WAY AT THE CONTRACTOR'S EXPENSE.

ALL EXISTING PRIVATELY OWNED UTILITIES REQUIRING ADJUSTMENT WILL BE MADE BY THE UTILITY COMPANY INVOLVED. WHERE NO PROVISIONS HAVE BEEN MADE FOR ADJUSTMENTS ON THE PLANS, NO ADDITIONAL COMPENSATION WILL BE ALLOWED DUE TO DELAYS OR INCONVENIENCES CAUSED BY THE SAID UTILITY ADJUSTMENTS.

THE PROFILE GRADE ELEVATIONS SHOWN ON THE PLAN AND PROFILE SHEETS AND IN THE STATION CROSS SECTIONS ARE TO THE TOP OF THE FINISHED SURFACE.

ALL EXISTING DRAINAGE STRUCTURES NOT BEING REMOVED BY THE CONTRACTOR THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

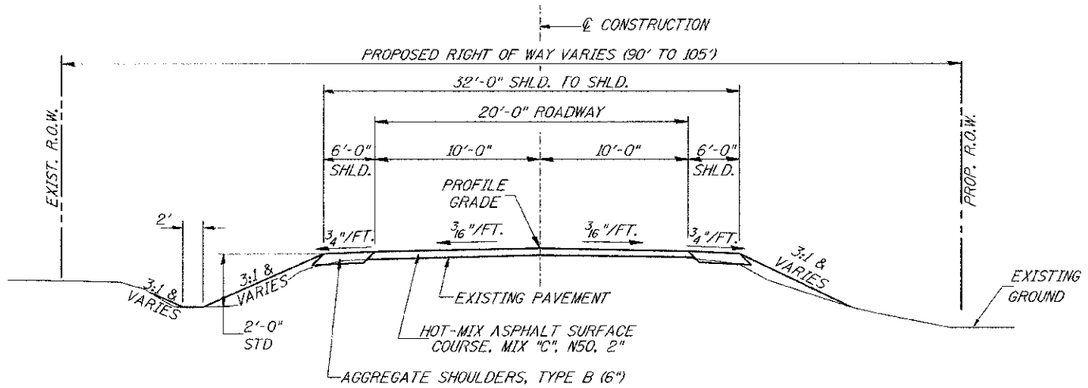
ANY REFERENCE TO STANDARDS THROUGHOUT THE PLANS SHALL BE INTERPRETED TO BE THE LATEST STANDARDS OF THE ILLINOIS DEPARTMENT OF TRANSPORTATION

THE LOCATION OF UNDERGROUND UTILITIES SHOWN ON THE PLANS REPRESENTS THE BEST KNOWLEDGE OF THE COUNTY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS OF UNDERGROUND INSTALLATIONS BEFORE STARTING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL INDEMNIFY THE COUNTY, ITS OFFICERS AND EMPLOYEES AGAINST ALL CLAIMS DUE TO DAMAGE TO CORPORATE OR PRIVATE PROPERTY RESULTING FROM HIS CONSTRUCTION OPERATIONS AS DESCRIBED IN ARTICLES 107.20 AND 107.26 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR MAY BE REQUIRED TO CONDUCT SOME OF HIS GRADING AND TRENCHING OPERATIONS AROUND TRANSMISSION POLES AND UNDER TRANSMISSION LINES. THE ADDED COST OF SO DOING SHALL BE INCLUDED IN THE COST OF EARTH EXCAVATION.

WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND PRESERVE PROPERTY MARKERS UNTIL THE OWNER, AN AUTHORIZED SURVEYOR, OR AGENT, HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.

ALL ELEVATIONS SHOWN REFER TO AN U.S.G.S. MEAN SEA LEVEL DATUM.

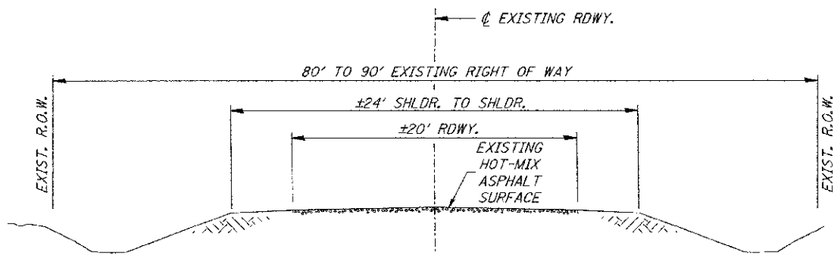


CONSTRUCT GUARDRAIL SHOULDER WIDENING IN ACCORDANCE WITH STD 630501

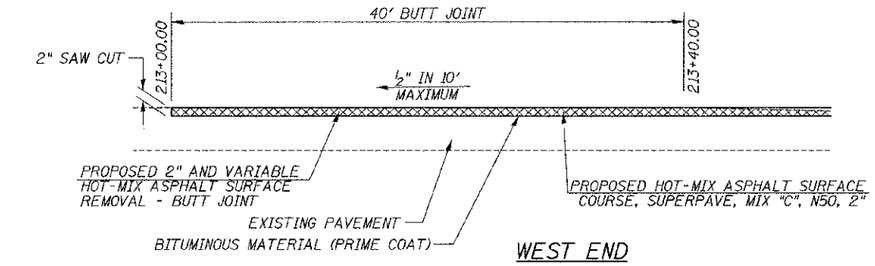
PROPOSED TYPICAL SECTION

STA. 213+00.00 TO STA. 214+62.50
STA. 215+29.50 TO STA. 217+00.00
EXCEPT TRANSITIONS

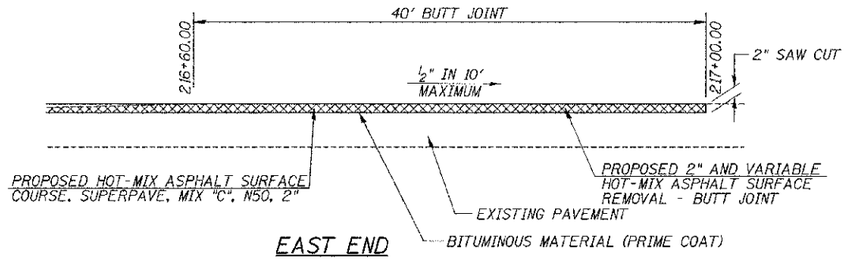
BRIDGE OMISSION
STA. 214+62.50 TO STA. 215+29.50



EXISTING TYPICAL SECTION



WEST END



EAST END

BUTT JOINT DETAILS

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	PLOT DATE = 6/1/2012	DATE -	REVISED -

IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

GENERAL NOTES, TYPICAL SECTIONS, DETAILS

SCALE: NONE | SHEET NO. 1 OF 1 SHEETS | STA. 213+00.00 TO STA. 217+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	2
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

SUMMARY OF QUANTITIES

	CODE NO.	ITEM	UNIT	QUANTITY
	20200100	EARTH EXCAVATION	CU YD	50
	20300100	CHANNEL EXCAVATION	CU YD	530
①	20400800	FURNISHED EXCAVATION	CU YD	445
①	20900110	POROUS GRANULAR BACKFILL	CU YD	100
	25100630	EROSION CONTROL BLANKET	SQ YD	106
	28000305	TEMPORARY DITCH CHECKS	FOOT	36
	28000400	PERIMETER EROSION BARRIER	FOOT	595
	28100209	STONE RIPRAP, CLASS A5	TON	425
	28200200	FILTER FABRIC	SQ YD	365
	40300100	BITUMINOUS MATERIALS (PRIME COAT)	GALLON	76
	40600982	HOT-MIX ASPHALT SURFACE REMOVAL - BUTT JOINT	SQ YD	178
①	40603080	HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50	TON	20
①	40603310	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N50	TON	84
	42001300	PROTECTIVE COAT	SQ YD	245
①	44201745	CLASS D PATCHES, TYPE III, 8 INCH	SQ YD	19
①	44201747	CLASS D PATCHES, TYPE IV, 8 INCH	SQ YD	28
	48101200	AGGREGATE SHOULDERS, TYPE B	TON	153
①	50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
	50200100	STRUCTURE EXCAVATION	CU YD	150
	50300225	CONCRETE STRUCTURES	CU YD	25.4
	50300255	CONCRETE SUPERSTRUCTURE	CU YD	71.9
	50300260	BRIDGE DECK GROOVING	SQ YD	209
	50300280	CONCRETE ENCASEMENT	CU YD	4.6
	50500105	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1
	50500505	STUD SHEAR CONNECTORS	EACH	885
	50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	19,230
	51200957	FURNISHING METAL SHELL PILES 12"x0.250"	FOOT	360
	51202305	DRIVING PILES	FOOT	360
	51203200	TEST PILE METAL SHELLS	EACH	1
	51204650	PILE SHOES	EACH	10
	51500100	NAME PLATES	EACH	1
	52100520	ANCHOR BOLTS, 1"	EACH	20
	59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	57
②	63100087	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	2
②	63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	2
①	63200310	GUARDRAIL REMOVAL	FOOT	300
	67100100	MOBILIZATION	L SUM	1
② ①	78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	4
①	X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.6
①	Z0046304	PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT	119
①	XX004633	FIELD TILE ADJUSTMENT	EACH	3
② ①	XX006198	STEEL BRIDGE RAIL, TYPE SM (SPECIAL)	FOOT	134

① SEE SPECIAL PROVISIONS
② SPECIALTY ITEMS

CONSTRUCTION CODE TYPE: 0011

EARTHWORK SUMMARY

STATION TO STATION		EARTH EXCAVATION	CHANNEL EXCAVATION	STRUCTURE EXCAVATION	FILL	WASTE (SHORTAGE)
		CU YD	CU YD	CU YD	CU YD	CU YD
RDWY 213+00.00 - 214+62.50		7			256	(251)
RDWY 215+29.50 - 217+00.00		44			226	(193)
CHANNEL			530			
STRUCTURE				150		
	TOTAL	51	530	150	482	(444)
	USE	50	530	150	-	(445)

(@ 25% SHRINKAGE)

TEMPORARY DITCH CHECKS

STATION	SIDE	FOOT
215+16	RIGHT	12
215+70	RIGHT	12
216+20	RIGHT	12
	TOTAL	36

PERIMETER EROSION BARRIER

STATION TO STATION	SIDE	FOOT
213+00 - 214+63	LEFT	180
213+00 - 214+63	RIGHT	195
215+30 - 217+00	LEFT	190
216+75 - 217+00	RIGHT	30
	TOTAL	595

EROSION CONTROL BLANKET

STATION TO STATION	SIDE	WIDTH	LENGTH	AREA (SQ YD)
215+16 - 216+75	RIGHT	6'	159'	106
			TOTAL	106

AGGREGATE SHOULDERS, TYPE B

STATION TO STATION	SIDE	WIDTH	LENGTH	TON
213+00.00 - 213+50.00	LEFT	4.25' AVG.	50.00'	7
213+00.00 - 213+58.75	RIGHT	5.58' AVG.	58.75'	11
213+50.00 - 214+62.50	LEFT	6.00'	112.50'	24
213+58.75 - 213+93.75	RIGHT	10.00'	35.00'	12
213+93.75 - 213+95.25	RIGHT	9.88' AVG.	1.50'	1
213+95.25 - 214+18.79	RIGHT	9.75'	23.54'	8
214+18.79 - 214+43.37	RIGHT	9.47' AVG.	24.58'	8
214+43.37 - 214+62.50	RIGHT	7.60' AVG.	19.13'	5
215+29.50 - 215+48.63	LEFT	7.60' AVG.	19.13'	5
215+29.50 - 216+50.00	RIGHT	6.00'	120.50'	25
215+48.63 - 215+73.21	LEFT	9.47' AVG.	24.58'	8
215+73.21 - 215+96.75	LEFT	9.75'	23.54'	8
215+96.75 - 215+98.25	LEFT	9.88' AVG.	1.50'	1
215+98.25 - 216+33.25	LEFT	10.00'	35.00'	12
216+33.25 - 216+68.96	LEFT	7.03' AVG.	35.71'	9
216+50.00 - 217+00.00	RIGHT	3.45' AVG.	50.00'	6
216+68.96 - 217+00.00	LEFT	2.45' AVG.	31.04'	3
			TOTAL	153

HOT-MIX ASPHALT SURFACE REMOVAL - BUTT JOINT

STATION TO STATION	WIDTH	LENGTH	SQ YD
213+00.00 - 213+40.00	20.00'	40.00'	89
216+60.00 - 217+00.00	20.00'	40.00'	89
		TOTAL	178

GUARDRAIL REMOVAL

STATION TO STATION	SIDE	FOOT
214+00 - 214+75	LEFT	75
214+00 - 214+75	RIGHT	75
215+07 - 215+82	LEFT	75
215+07 - 215+82	RIGHT	75
	TOTAL	300

TRAFFIC BARRIER TERMINAL, TYPE 6A

SIDE	STATION TO STATION	EACH
RIGHT	214+18.75 - 214+62.50	1
LEFT	215+29.50 - 215+73.25	1
	TOTAL	2

PAVEMENT SCHEDULE

STATION TO STATION	WIDTH	LENGTH	PRIME COAT GALLON 0.10 GAL/SQ YD	HOT-MIX ASPHALT SURF CSE, MIX "C", N50 TON 112#/SQ YD/IN	HOT-MIX ASPHALT BINDER CSE, IL-19.0, N50 TON 112#/SQ YD/IN
213+00.00 - 214+62.50	20.33'	162.50'	37		
215+29.50 - 217+00.00	20.33'	170.50'	39		
213+00.00 - 214+62.50	20.17'	162.50'		41	
215+29.50 - 217+00.00	20.17'	170.50'		43	
214+53.00 - 214+62.50	21.00'	9.50'			10
215+29.50 - 215+39.00	21.00'	9.50'			10
		TOTAL	76	84	20

CLASS D PATCHES, TYPE III, 8 INCH

STATION TO STATION	SIDE	WIDTH	LENGTH	SQ YD
215+45 - 215+74	LEFT	6'	29'	19
			TOTAL	19

CLASS D PATCHES, TYPE IV, 8 INCH

STATION TO STATION	SIDE	WIDTH	LENGTH	SQ YD
215+40 - 215+82	RIGHT	6'	42'	28
			TOTAL	28

TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT

SIDE	STATION TO STATION	EACH
RIGHT	213+68.75 - 214+18.75	1
LEFT	215+73.25 - 216+23.25	1
	TOTAL	2

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	PLOT DATE = 8/1/2012	DATE -	REVISED -

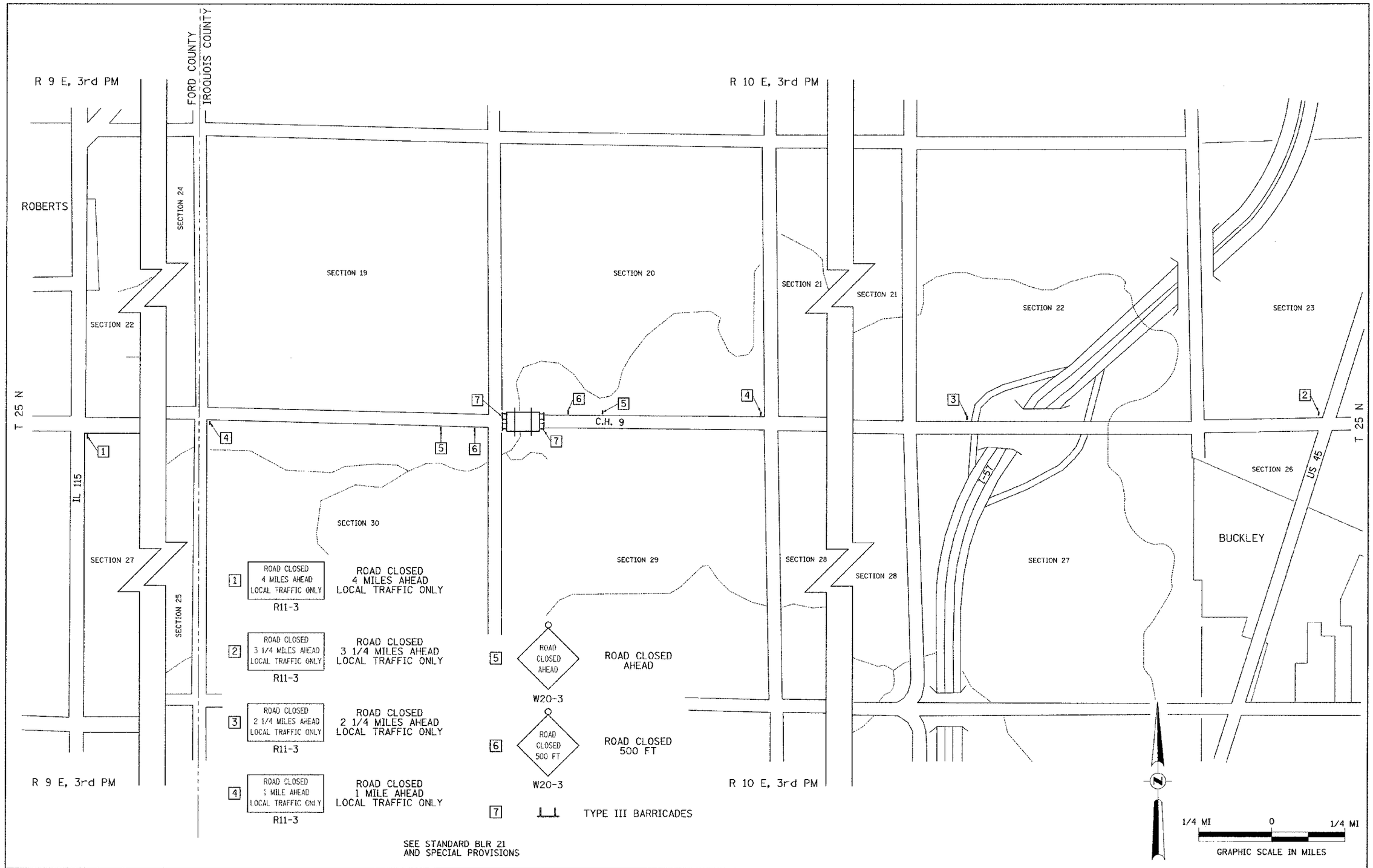
IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

SUMMARY OF QUANTITIES, & SCHEDULES OF QUANTITIES

SCALE: NONE | SHEET NO. 1 OF 1 SHEETS | STA. 213+00.00 TO STA. 217+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	3
		CONTRACT NO. 87524		

FED. ROAD DIST. NO. 7 | ILLINOIS | FED. AID PROJECT NO. BRS-0334(113)



SEE STANDARD BLR 21
AND SPECIAL PROVISIONS

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IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

TRAFFIC CONTROL PLAN

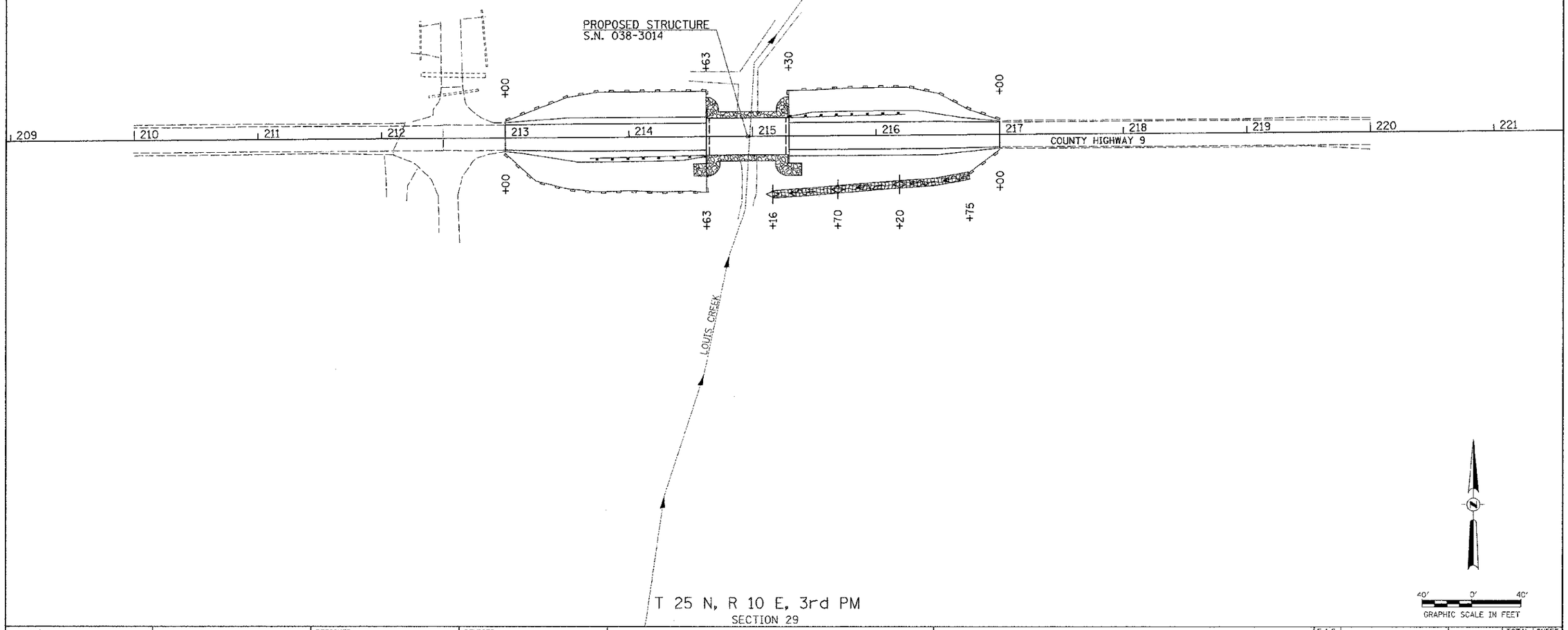
SCALE: NONE | SHEET NO. 1 OF 1 SHEETS | STA. 213+00.00 TO STA. 217+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	4
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

T 25 N, R 10 E, 3rd PM
SECTION 20

LEGEND

- PERIMETER EROSION BARRIER
- TEMPORARY DITCH CHECK
- SPECIAL DITCH - FLOW LINE AND DIRECTION
- PROPOSED RIPRAP PLACEMENT
- EROSION CONTROL BLANKET



T 25 N, R 10 E, 3rd PM
SECTION 29

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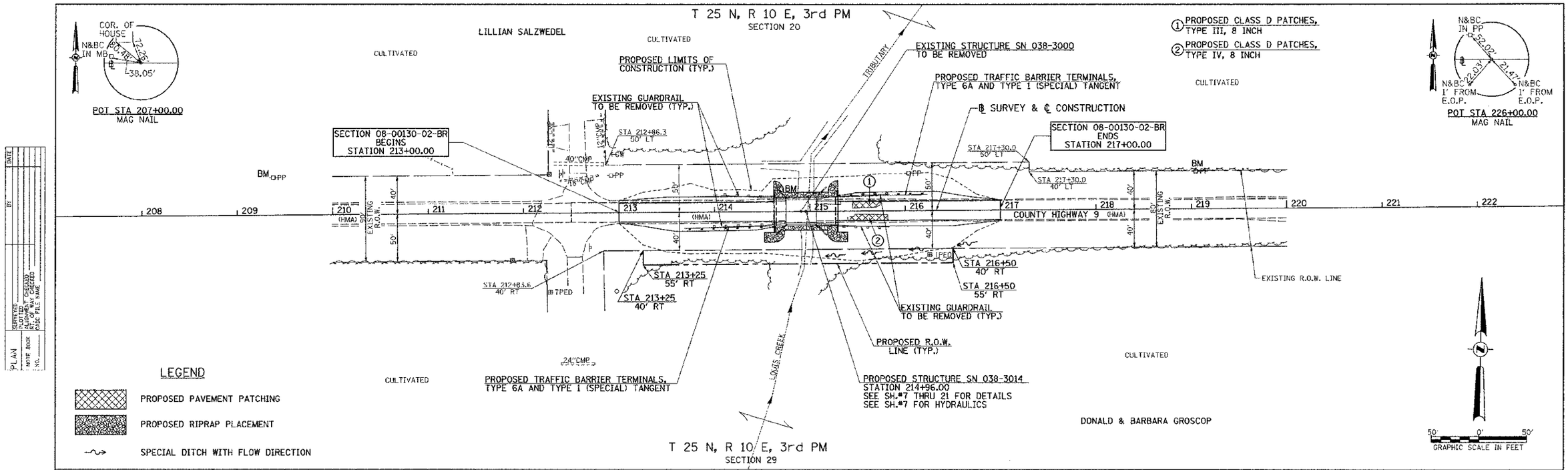
IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

EROSION CONTROL PLAN

SCALE: 1"=40' | SHEET NO. 1 OF 1 SHEETS | STA. 213+00.00 TO STA. 217+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	5
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		



PLAN — SURVEYED, PLOTTED, CHECKED, NOTE BOOK, NO., DATE, BY

PROFILE — SURVEYED, PLOTTED, CHECKED, NOTE BOOK, NO., DATE, BY, STRUCTURE NO(S) CKD

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	PLOT DATE = 6/1/2012	DATE -	REVISED -

IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER LOUIS CREEK TRIBUTARY

PLAN AND PROFILE

SCALE: 1"=50' | SHEET NO. 1 OF 1 SHEETS | STA. 213+00.00 TO STA. 217+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	6
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

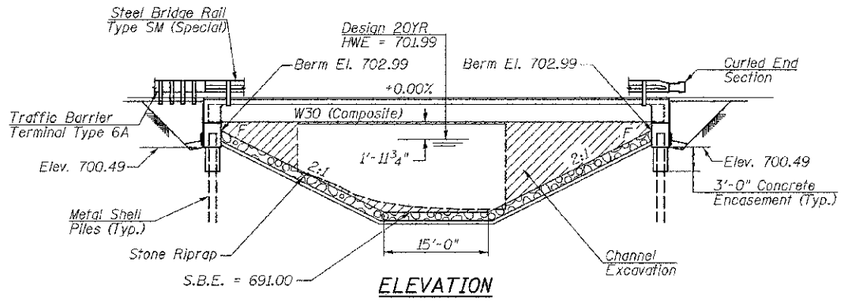
B.M.: RR Spike in Power Pole
Sta. 209+38, 38' Lt.
Elev. 708.42

RR Spike in Power Pole
Sta. 219+05, 38' Lt.
Elev. 705.21

Existing Structure:
Single span T-beam with concrete deck superstructure on concrete closed abutments. The structure is ±32'-0" back to back of abutments, ±27'-0" out to out of deck with a 24'-0" driving surface, no skew. Str. No. 038-3000 built 1939.

Salvage: None

Road to be closed to traffic during construction.



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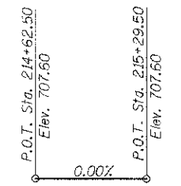
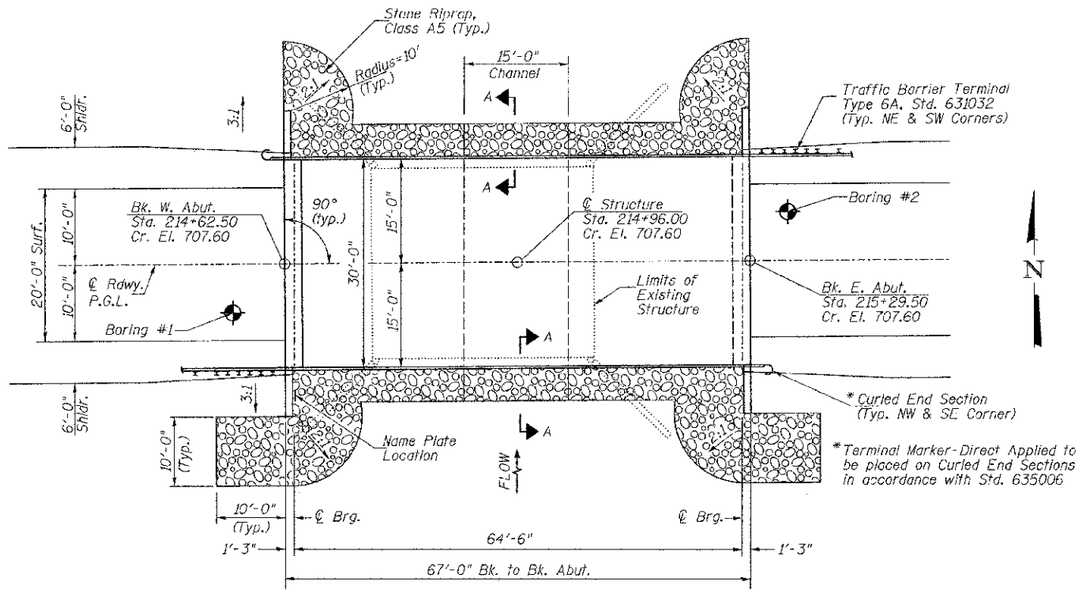


PROFILE GRADE



PLAN

N

BRIDGE PLANS INDEX TO SHEETS

Note:
For Bill of Material, General Notes, Section A-A, and Stone Rip Rap Detail, See Sheet 2 of 15.

LOUIS CREEK TRIBUTARY
BUILT 201_ BY
IROQUOIS COUNTY
SEC. 08-00130-02-BR
C.H. 9 STATION 214+96.00
F.A. PROJ. BRS-0334(113)
STR. NO. 038-3014 LOADING HL-93

NAME PLATE

Locate Name Plate at S.W. Wingwall Corner of Bridge (See Std. 515001)

DESIGN SCOUR TABLE

Location	W. Abut	E. Abut
Design Scour Elevation	693.7	693.7

WATERWAY INFORMATION

Drainage Area = 7.69 Sq. Mi. Low Grade Elev. = 707.53 @ Sta. 213+50.00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head Exist.	Head Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
Design	20	1,927	273	406	701.99	0.34	0.10	702.33	702.09
Base	100	2,870	295	451	702.72	0.94	0.33	703.66	703.05
Overtopping	-	-	-	-	-	-	-	-	-
Max. Calc.	-	-	-	-	-	-	-	-	-

DESIGNED	N.P.H.
CHECKED	B.A.N.
DRAWN	R.M.D.
CHECKED	N.P.H./B.A.N

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.08g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.14g
Soil Site Class = C

DESIGN SPECIFICATIONS

2010 AASHTO LRFD Bridge Design Specifications.
5th Edition with Interims

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50W)

LOADING HL-93

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

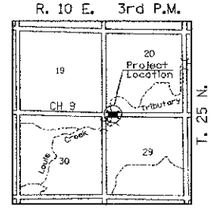
I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current AASHTO LRFD Bridge Design Specifications.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

Illinois Structural No. 6527
Expires 11/30/2012

6/1/2012

BENJAMIN A. NEHER
062-060527
LICENSED STRUCTURAL ENGINEER
OF ILLINOIS
Lic. Exp. 11/30/2012

R. 10 E. 3rd P.M.

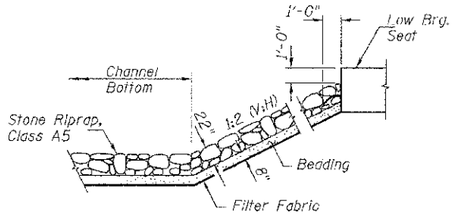


LOCATION SKETCH

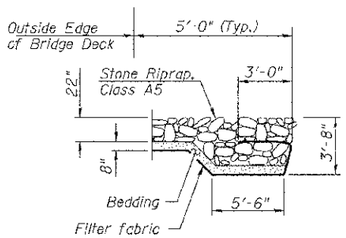
GENERAL PLAN & ELEVATION
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00
STRUCTURE NO. 038-3014

SHEET NO. 1	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	7
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

2969b001

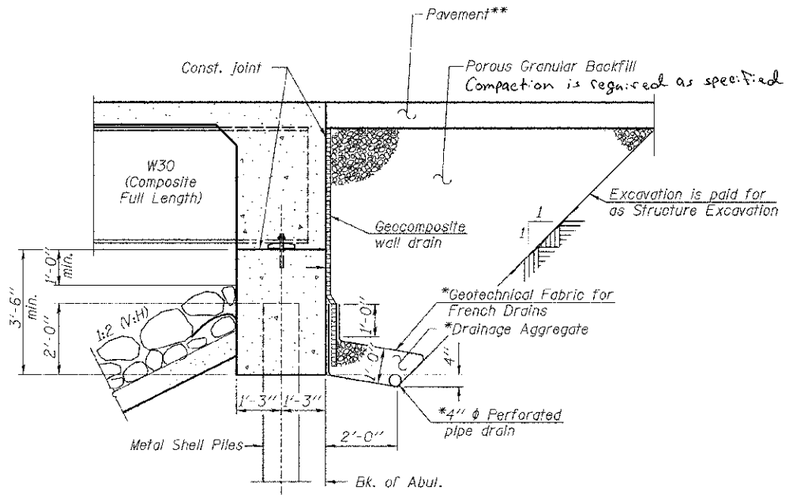


STONE RIPRAP DETAIL



SECTION A-A

** Pavement Structure over Porous Granular Backfill/ Structure Excavation Area shall consist of 10" HMA consisting of 2" Surface and 8" Binder.



*Included in the cost of Pipe Underdrains for Structures.

Note:

All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into *concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101)

SECTION THRU INTEGRAL ABUTMENTS

GENERAL NOTES

All structural steel shall be AASHTO M 270 Grade 50W.

Calculated weight of Structural Steel = 44,710 lbs, Grade 50W.

Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts (in painted areas and M164 Type 3 in unpainted areas). Bolts $\frac{3}{4}$in. ϕ, holes $\frac{15}{16}$in. ϕ, unless otherwise noted.

No field welding is permitted except as specified in the contract documents.

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60.

Reinforcement bars designated (E) shall be epoxy coated.

Structural steel shall only be painted for a distance equal to the depth of embedment into the concrete cap plus 3 inches. Painted areas shall be primed in the shop with a Department approved zinc rich primer. Field painting will not be required.

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

All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted.

Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure.

Protective coat shall be applied to the top and sides of the deck.

TOTAL BILL OF MATERIAL

	ITEM	UNIT	SUPER	SUB	TOTAL
(1)	Removal of Existing Structures	EACH	—	—	1
	Structure Excavation	CU YD	—	150	150
	Channel Excavation	CU YD	—	530	530
	Concrete Superstructure	CU YD	71.9	—	71.9
	Concrete Structures	CU YD	—	25.4	25.4
	Furnishing Metal Shell Piles 12"x0.250"	FOOT	—	360	360
	Driving Piles	FOOT	—	360	360
	Test Pile Metal Shells	EACH	—	1	1
	Concrete Encasement	CU YD	—	4.6	4.6
	Furnishing and Erecting Structural Steel	L SUM	1	—	1
	Anchor Bolts, 1"	EACH	—	20	20
	Reinforcement Bars, Epoxy Coated	POUND	15,750	3,480	19,230
	Stone Riprap, Class A5	TON	—	425	425
	Filter Fabric	SQ YD	—	365	365
	Steel Bridge Rail, Type SM (Special)	FOOT	134	—	134
	Protective Coat	SQ YD	245	—	245
	Bridge Deck Grooving	SQ YD	209	—	209
	Stud Shear Connectors	EACH	885	—	885
	Name Plates	EACH	—	1	1
(1)	Porous Granular Backfill	CU YD	—	100	100
(1)	Pipe Underdrains For Structures 4"	FOOT	—	119	119
	Geocomposite Wall Drain	SQ YD	—	57	57
	Pile Shoes	EACH	—	10	10

(1) See Special Provisions

GENERAL NOTES & BILL OF MATERIAL
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 2	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	8
		SN 038-3014	CONTRACT NO. 87524		
		FED. ROAD DIST. NO. 7 ILLINOIS	FED. AID PROJECT BRS-0344(113)		

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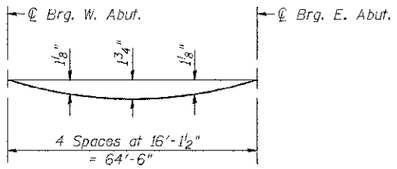
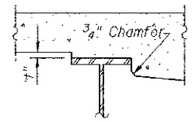


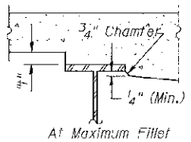
DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only)

Note: The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on sheet 4 of 15.



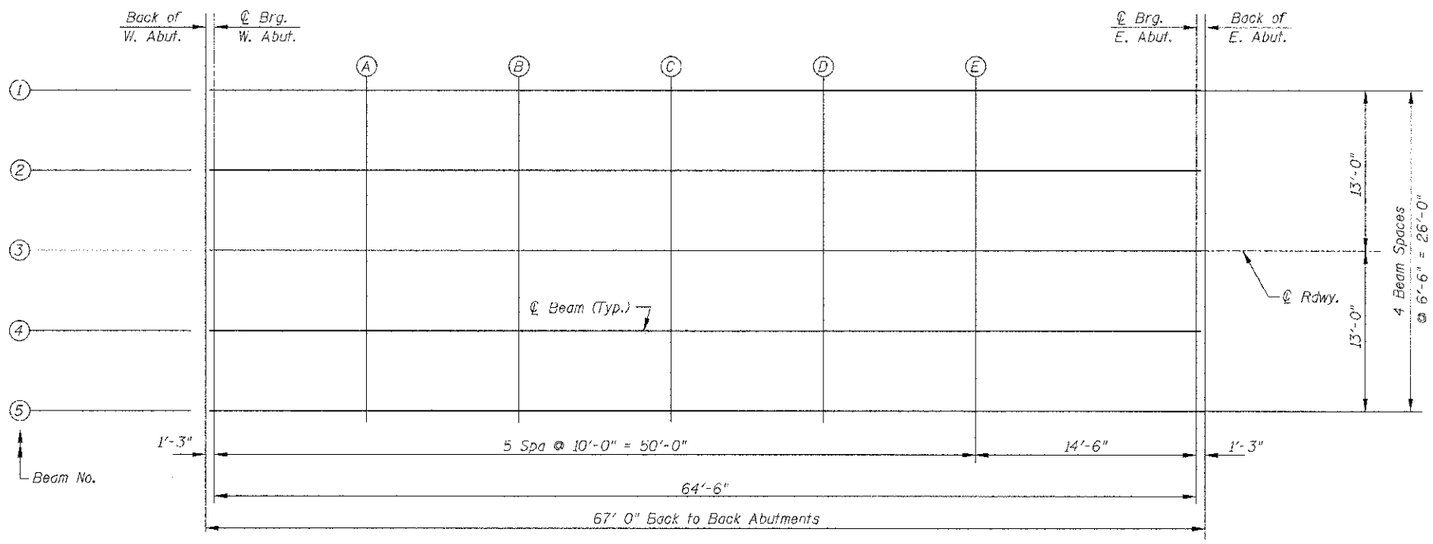
At Minimum Fillet



At Maximum Fillet

To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" minus slab thickness, equals the fillet heights "t" above top flanges of beams.

FILLET HEIGHTS



PLAN

TOP OF SLAB ELEVATIONS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 3	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	9
	SN 038-3014		CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0344(113)		

29696003

BEAM #1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abutment	214+62.50	-13.00	707.39	707.39
CL Brg. W. Abutment	214+63.75	-13.00	707.39	707.39
A	214+73.75	-13.00	707.39	707.46
B	214+83.75	-13.00	707.39	707.51
C	214+93.75	-13.00	707.39	707.53
D	215+03.75	-13.00	707.39	707.52
E	215+13.75	-13.00	707.39	707.48
CL Brg. E. Abutment	215+28.25	-13.00	707.39	707.39
Bk. E. Abutment	215+29.50	-13.00	707.39	707.39

BEAM #2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abutment	214+62.50	-6.50	707.50	707.50
CL Brg. W. Abutment	214+63.75	-6.50	707.50	707.50
A	214+73.75	-6.50	707.50	707.57
B	214+83.75	-6.50	707.50	707.62
C	214+93.75	-6.50	707.50	707.64
D	215+03.75	-6.50	707.50	707.63
E	215+13.75	-6.50	707.50	707.59
CL Brg. E. Abutment	215+28.25	-6.50	707.50	707.50
Bk. E. Abutment	215+29.50	-6.50	707.50	707.50

PROFILE GRADE & BEAM #3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abutment	214+62.50	0.00	707.60	707.60
CL Brg. W. Abutment	214+63.75	0.00	707.60	707.60
A	214+73.75	0.00	707.60	707.67
B	214+83.75	0.00	707.60	707.72
C	214+93.75	0.00	707.60	707.74
D	215+03.75	0.00	707.60	707.73
E	215+13.75	0.00	707.60	707.69
CL Brg. E. Abutment	215+28.25	0.00	707.60	707.60
Bk. E. Abutment	215+29.50	0.00	707.60	707.60

BEAM #4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abutment	214+62.50	6.50	707.50	707.50
CL Brg. W. Abutment	214+63.75	6.50	707.50	707.50
A	214+73.75	6.50	707.50	707.57
B	214+83.75	6.50	707.50	707.62
C	214+93.75	6.50	707.50	707.64
D	215+03.75	6.50	707.50	707.63
E	215+13.75	6.50	707.50	707.59
CL Brg. E. Abutment	215+28.25	6.50	707.50	707.50
Bk. E. Abutment	215+29.50	6.50	707.50	707.50

BEAM #5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abutment	214+62.50	13.00	707.39	707.39
CL Brg. W. Abutment	214+63.75	13.00	707.39	707.39
A	214+73.75	13.00	707.39	707.46
B	214+83.75	13.00	707.39	707.51
C	214+93.75	13.00	707.39	707.53
D	215+03.75	13.00	707.39	707.52
E	215+13.75	13.00	707.39	707.48
CL Brg. E. Abutment	215+28.25	13.00	707.39	707.39
Bk. E. Abutment	215+29.50	13.00	707.39	707.39

TOP OF SLAB ELEVATIONS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 4	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	10
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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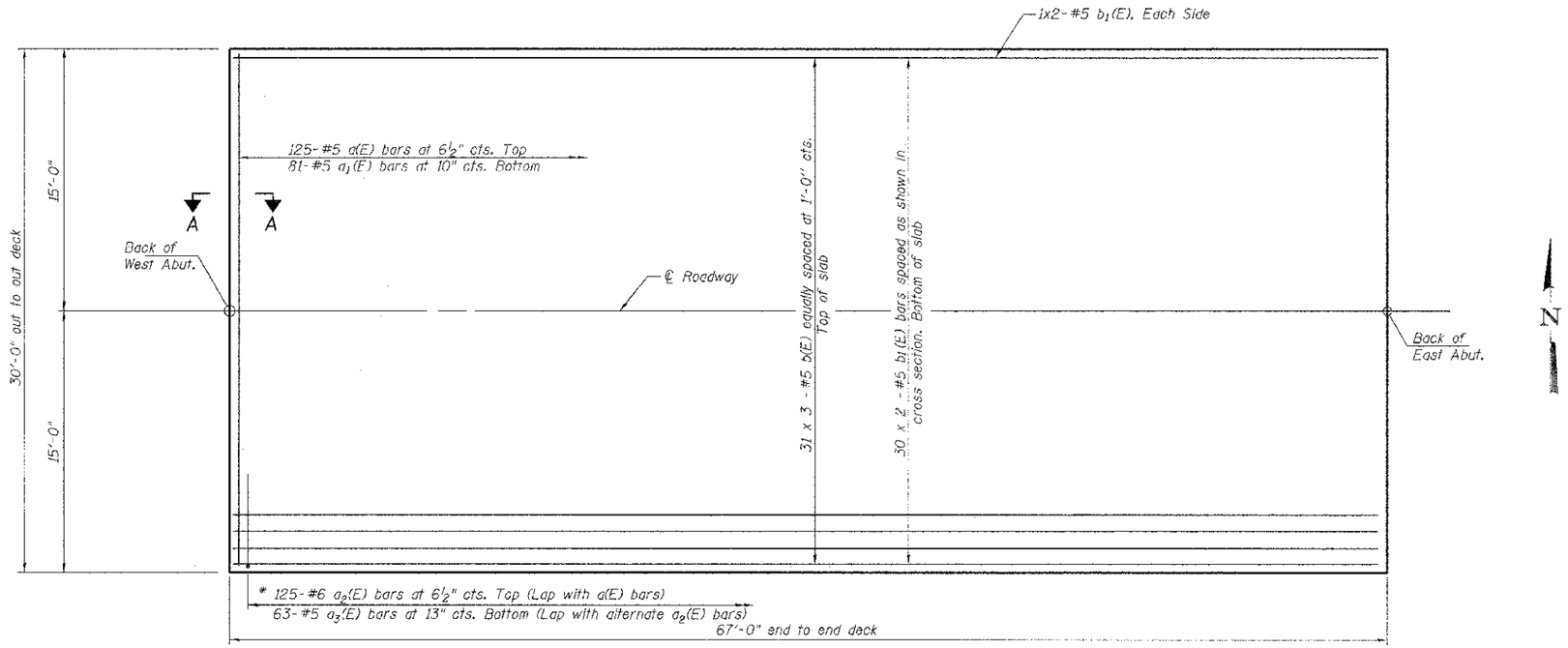


N

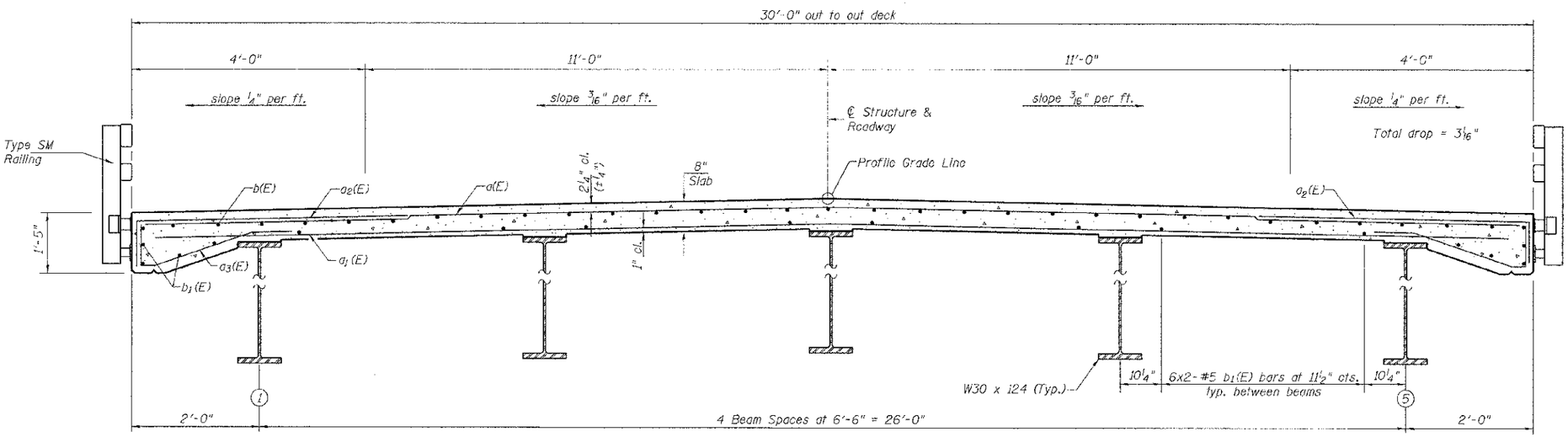
MIN. BAR LAP

#5 = 2'-6"

Notes:
See Sheet 6 of 15 for superstructure details, rail post spacing, and bill of material.
Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
See Sheet 7 of 15 for Section A-A and diaphragm details.
See Sheet 8 of 15 for rail details.

* Add 2 additional #6 $a_2(E)$ bars at 6½" cts. at each railpost anchor location (Lap with alternate a(E) bars).

PLAN



CROSS SECTION

(Looking East)

SUPERSTRUCTURE
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 5	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	11
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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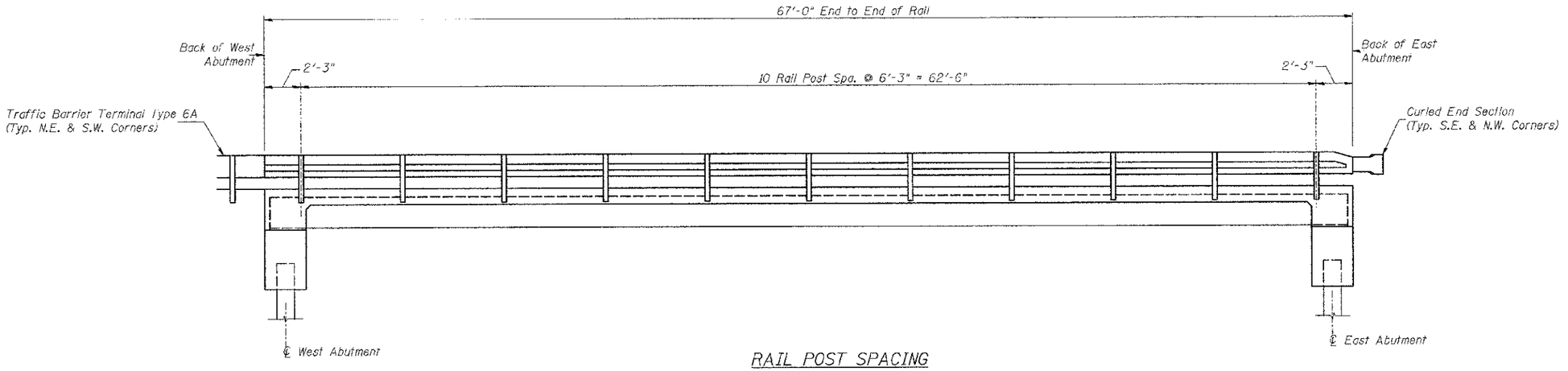
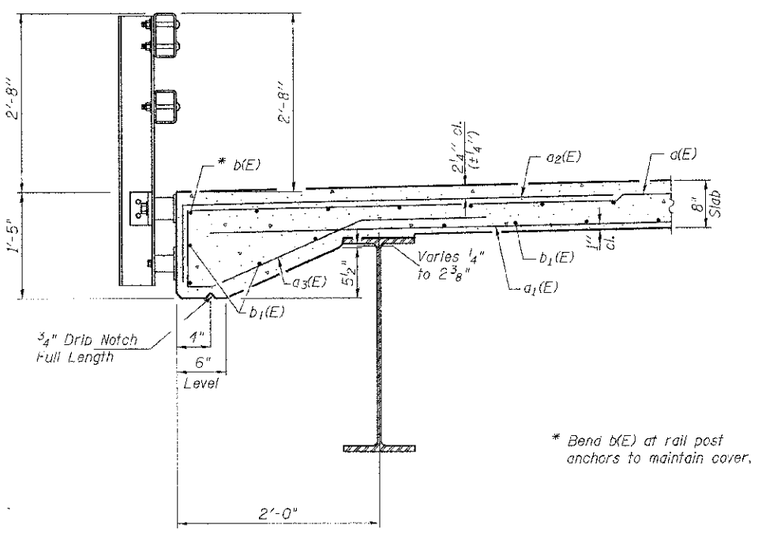


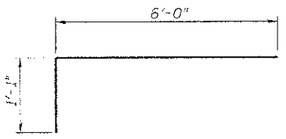
RAIL POST SPACING



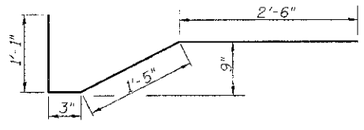
* Bend b(E) at rail post anchors to maintain cover.

SECTION THRU EDGE OF DECK

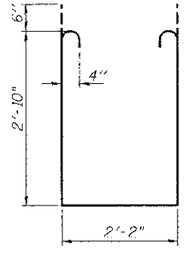
See Sheet 8 of 15 for Rail Post Anchor Details



BAR a2(E)



BAR a3(E)



BAR s(E)

SUPERSTRUCTURE BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(F)	125	#5	29'-9"	
a1(E)	81	#5	28'-9"	
a2(E)	294	#6	7'-1"	
a3(F)	126	#5	5'-3"	
b(E)	93	#5	23'-11"	
b1(E)	64	#5	34'-8"	
m(E)	6	#6	29'-9"	
m1(E)	12	#6	9'-10"	
m2(E)	4	#6	1'-9"	
m3(E)	8	#6	6'-3"	
m4(E)	8	#6	5'-10"	
s(F)	64	#4	8'-10"	
Reinforcement Bars, Epoxy Coated			POUND	15,750
Concrete Superstructure			CU YD	71.9

SUPERSTRUCTURE DETAILS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 6	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	12
		SN 038-3014	CONTRACT NO. 87524		
		FED. ROAD DIST. NO. 7 ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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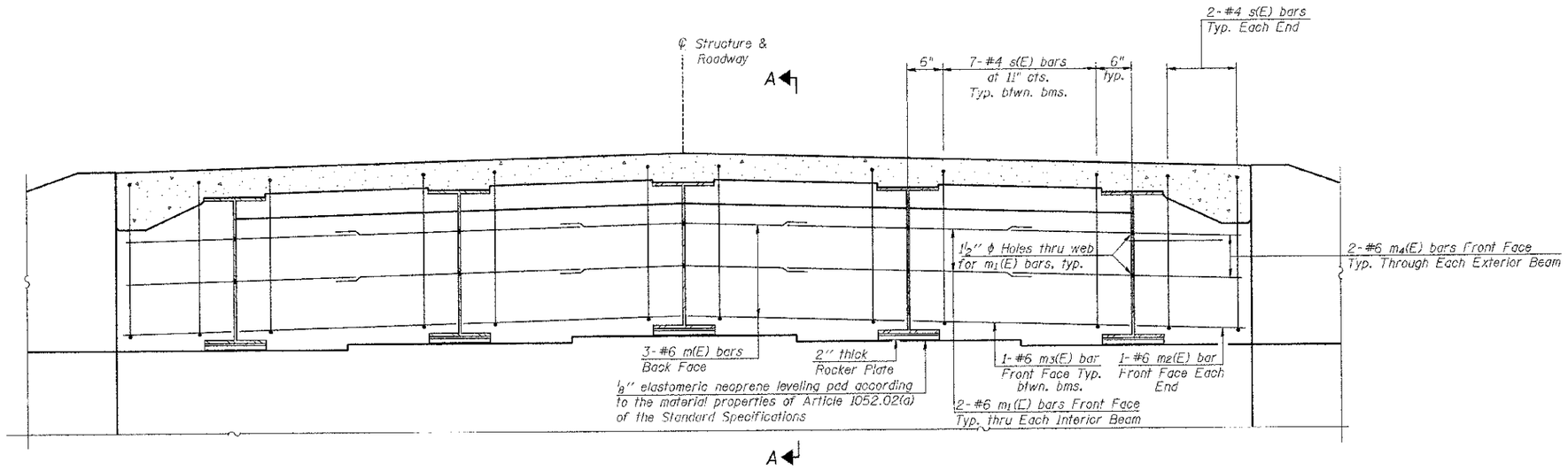
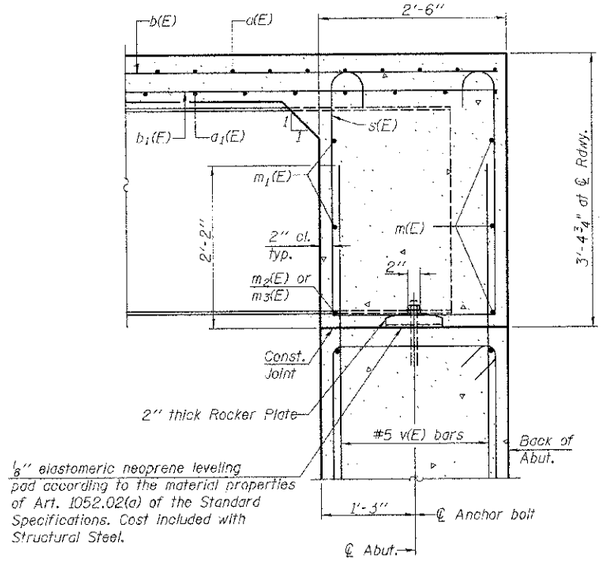


DIAPHRAGM ELEVATION AT ABUTMENT

Notes:
Reinforcement bars in diaphragm are billed with superstructure on sheet 6 of 15.
Concrete in diaphragm is included with Concrete Superstructure on sheet 6 of 15.
For detail of bar s(E) see sheet 6 of 15.
The s(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.
For placement of v(E) bars see sheet 11 of 15.

MIN. BAR LAP

#6 bar = 3'-4"



SECTION A-A

DIAPHRAGM DETAILS
COUNTY HIGHWAY 9 OVER LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 7	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	13
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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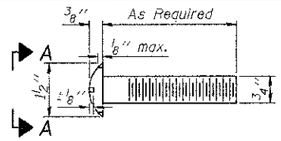
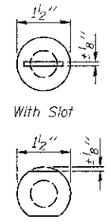
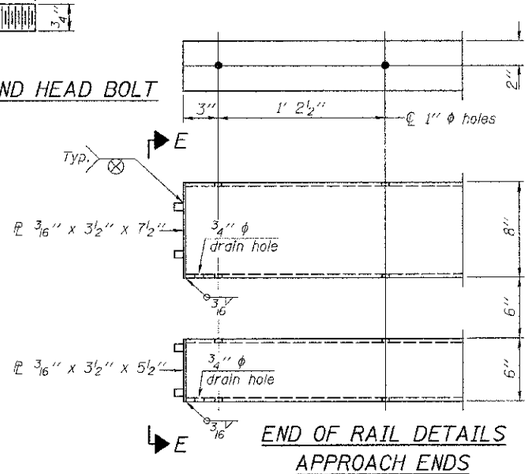
FOR RAIL POST SPACING SEE SH.#6 OF 15.



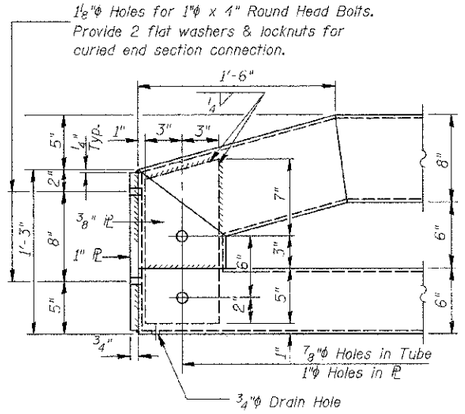
DETAIL OF 3/4" ϕ ROUND HEAD BOLT

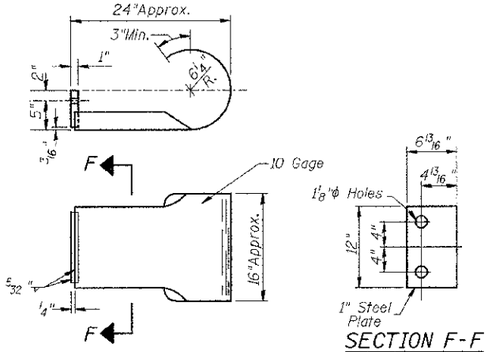


VIEW A-A



END OF RAIL DETAILS
APPROACH ENDS

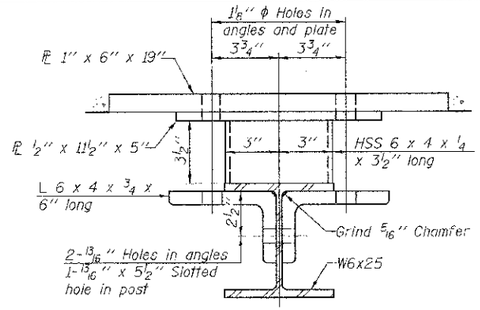




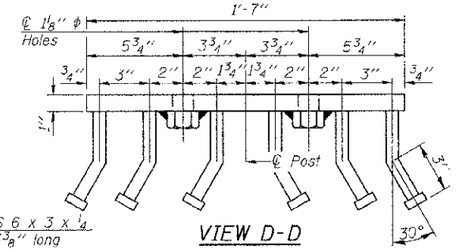
CURLED END SECTION

SECTION F-F

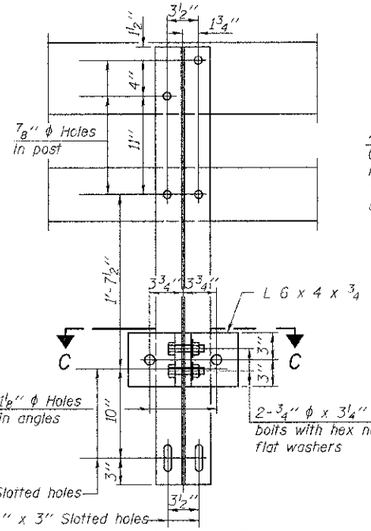
(2 Req'd) Cost Included with Steel Bridge Rail, Type SM (Special). Terminal Markers - Direct Applied shall be placed on end of each Curled End Section. (N.W. & S.E. Corner)



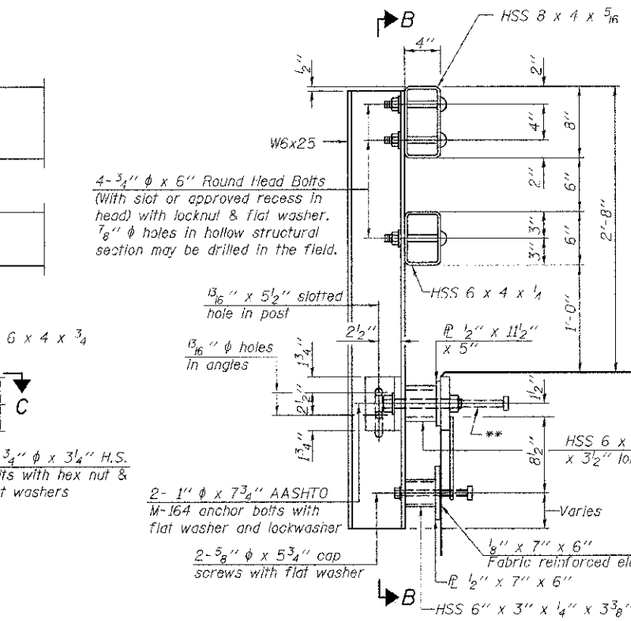
SECTION C-C



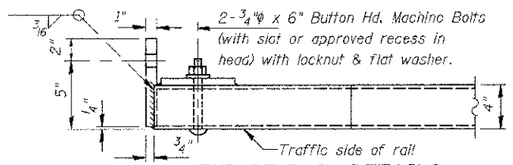
VIEW D-D



SECTION B-B

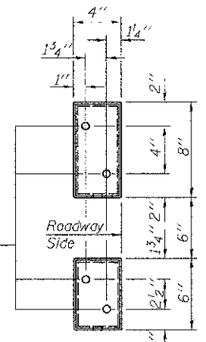


SECTION AT RAIL POST

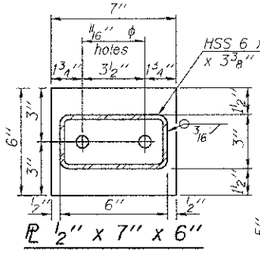


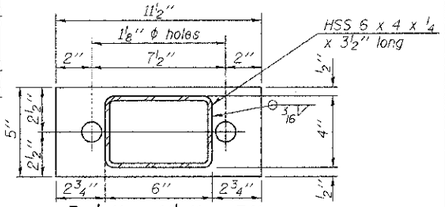
END OF RAIL DETAILS
DEPARTURE ENDS

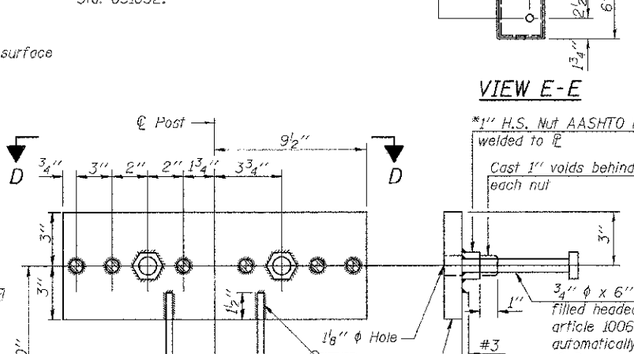
℄ - 5/8" reduced base welded studs. Provide 4 - 5/8" washers and self-locking nuts or nuts and jam nuts for guardrail connection shown on Std. 631032.



VIEW E-E







ANCHOR DEVICE

*Threaded areas shall be plugged or blocked off during casting of deck. Galvanized after fabrication.

Notes:

All field drilled holes shall be coated with an approved zinc rich paint before erection.

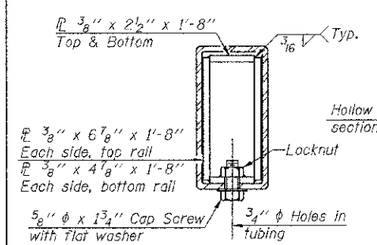
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Bridge Rail, Type SM (Special).

Steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.

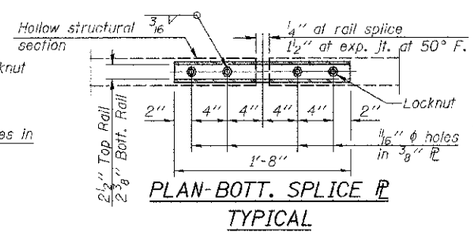
** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

BILL OF MATERIAL

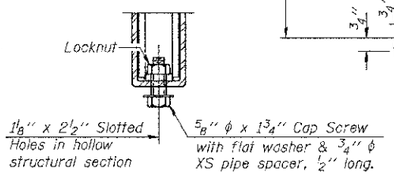
Item	Unit	Quantity
Steel Bridge Rail, Type SM (Special)	FOOT	134



SECTION AT RAIL SPLICE



PLAN-BOTT. SPLICE PL TYPICAL



RAIL SPLICE CONNECTION AT EXPANSION JT.

STEEL BRIDGE RAIL, TYPE SM (SPECIAL)
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 8	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	14
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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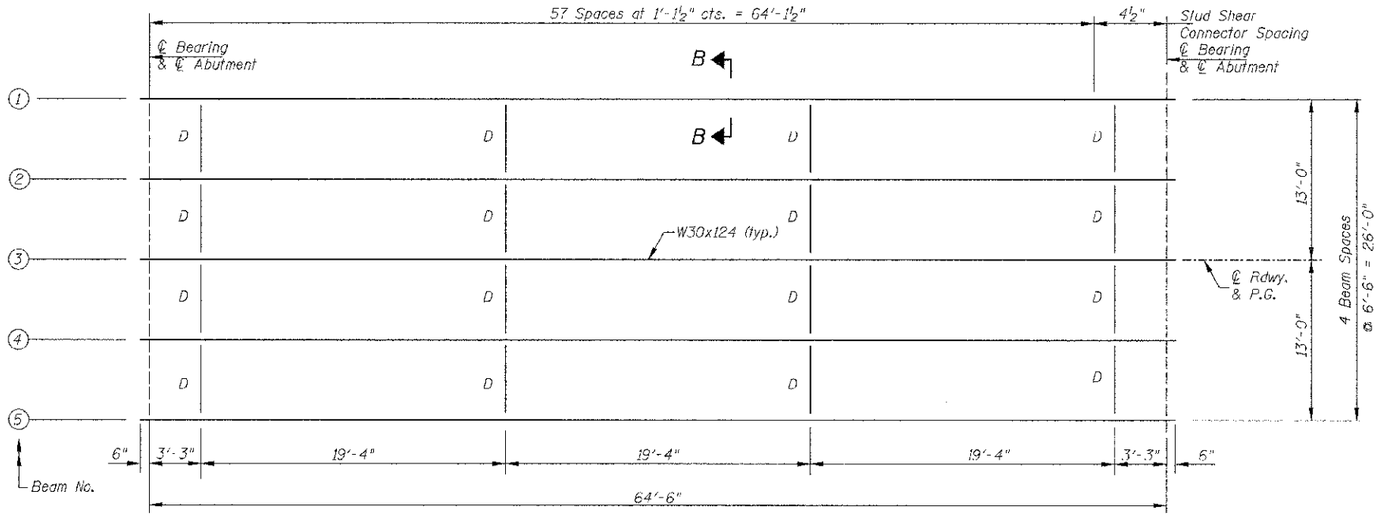
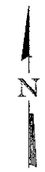
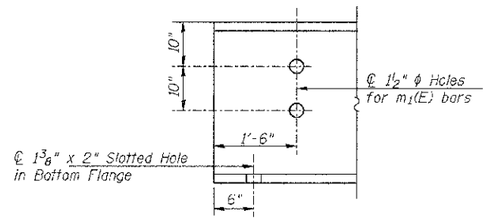


FRAMING PLAN





TYPICAL END OF BEAM DETAIL

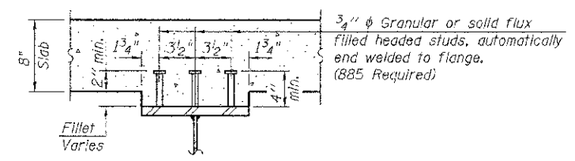
Note:
All beams are W30x124 AASHTO M270 Gr. 50W NTR.
Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

INTERIOR GIRDER MOMENT TABLE		0.5 Sp. 1
I_s	(in^4)	5360
$I_c(n)$	(in^4)	14450
$I_c(3n)$	(in^4)	10650
S_s	(in^3)	355
$S_c(n)$	(in^3)	523
$S_c(3n)$	(in^3)	473
DC1	(k/')	0.815
M_{DC1}	('k)	424
DC2	(k/')	0.03
M_{DC2}	('k)	16
DW	(k/')	0.325
M_{DW}	('k)	169
M_{L+IM}	('k)	885
M_u (Strength I)	('k)	2352
$\phi_f M_n$	('k)	2782
f_s DC1	(ksi)	14.33
f_s DC2	(ksi)	0.40
f_s DW	(ksi)	4.29
f_s (L+IM)	(ksi)	20.31
f_s (Service II)	(ksi)	45.41
$0.95R_hF_{yf}$	(ksi)	47.50
V_f	(k)	23.0

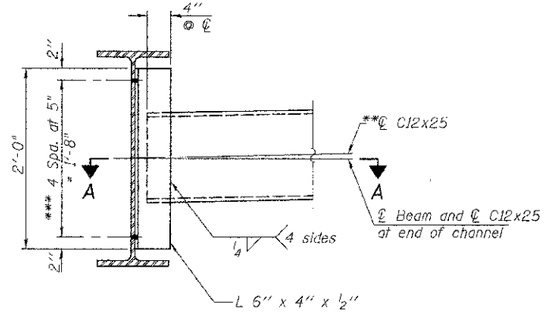
INTERIOR GIRDER REACTION TABLE		Abutment
R_{DC1}	(k)	26.3
R_{DC2}	(k)	1.0
R_{DW}	(k)	10.4
R_{L+IM}	(k)	72.5
R_{Total}	(k)	110.2

I_s, S_s: Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads ($in.^4$ and $in.^3$).
$I_c(n)$, $S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) due to short-term composite live loads ($in.^4$ and $in.^3$).
$I_c(3n)$, $S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) due to long-term composite (superimposed) dead loads ($in.^4$ and $in.^3$).
DC1: Un-factored non-composite dead load (kips/ft.).
M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
M_{L+IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
M_u (Strength I): Factored design moment (kip-ft.).
$1.25\,(M_{DC1} + M_{DC2}) + 1.5\,M_{DW} + 1.75\,M_{L+IM}$
$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).
f_s (Service II): Sum of stresses as computed from the moments below (ksi).
$M_{DC1} + M_{DC2} + M_{DW} + 1.3\,M_{L+IM}$
V_f: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.
$0.95R_hF_{yf}$: Composite stress capacity for Service II loading according to Article 6.10.4.2. (ksi)

SECTION A-A



SECTION B-B



INTERIOR DIAPHRAGM D

(16 req'd)

Note:
Two hardened washers required for each set of oversized holes.
**Alternate channels (C12x30) are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section. The alternate, if utilized, shall be provided at no additional cost to the Department.
***¾" ϕ HS bolts, $^{15}/_{16}$" ϕ holes

****TOP OF BEAM ELEVATIONS

LOCATION	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5
W. Abut.	706.68	706.79	706.89	706.79	706.68
E. Abut.	706.68	706.79	706.89	706.79	706.68

****For fabrication only.

STRUCTURAL STEEL
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 9	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	15
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0344(113)		

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Notes:

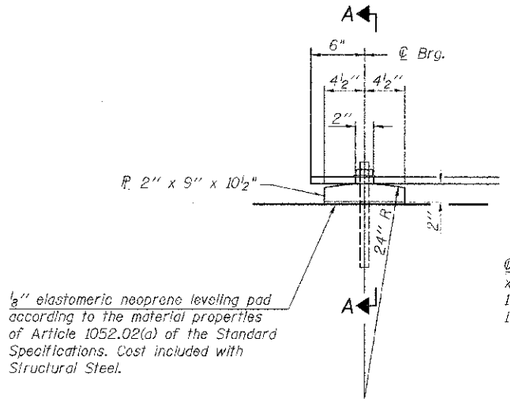
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.

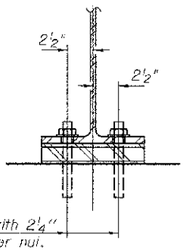
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

The structural steel bearing plates shall conform to the requirements of AASHTO M 270 Grade 50W.

Anchors shall be set and grout cured for a minimum of 24 hours prior to forming the bridge deck.



ELEVATION AT ABUTMENT



SECTION A-A

FIXED BEARING
(10 Required)

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Anchor Bolts, 1"	EACH	20

BEARING DETAILS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
SHEET NO. 10	334	08-00130-02-BR	IROQUOIS	27	16
15 SHEETS		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0344(113)		

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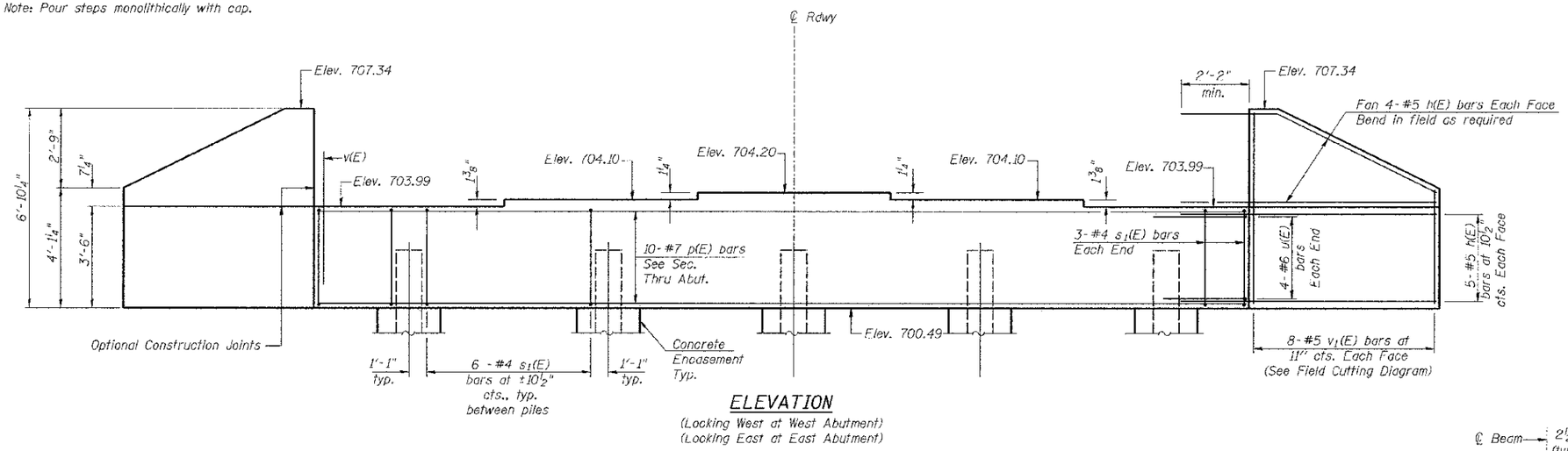
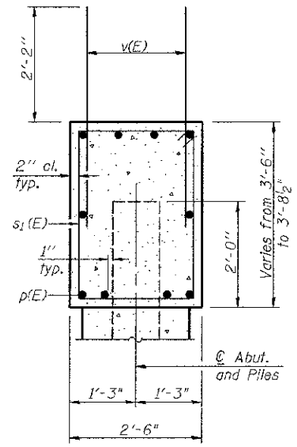
Note: Pour steps monolithically with cap.

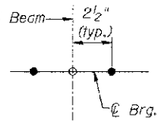


ELEVATION

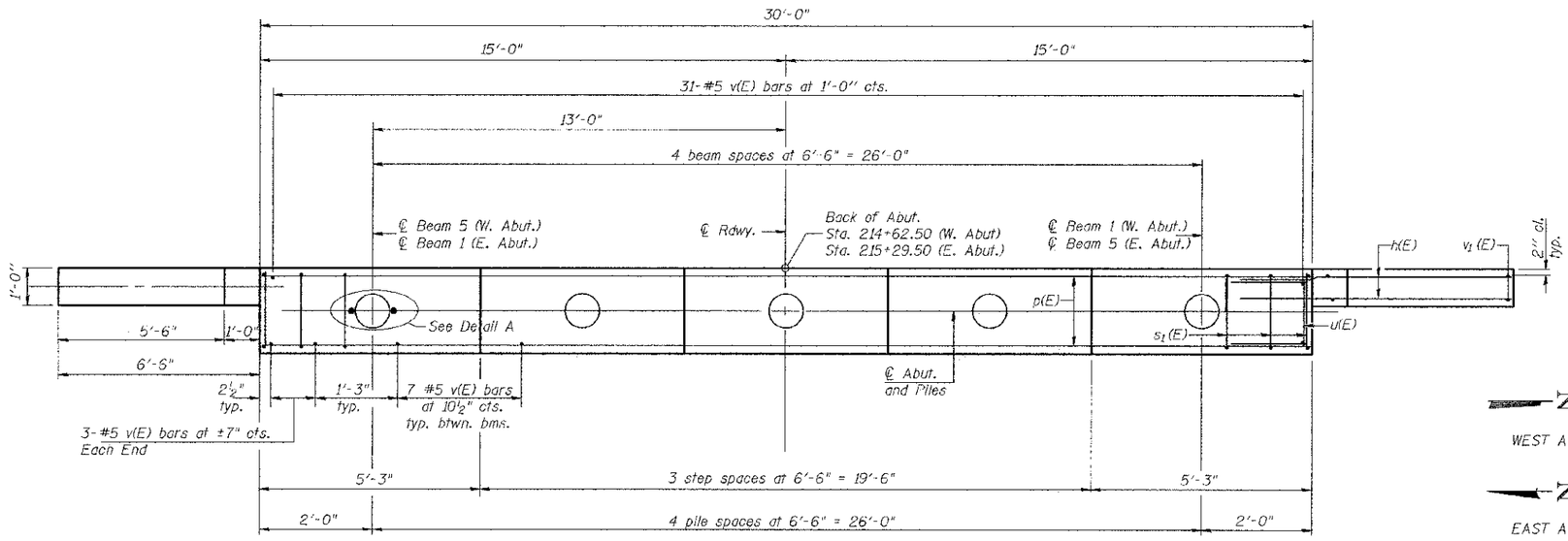
(Looking West at West Abutment)
(Looking East at East Abutment)



SEC. THRU ABUT.



DETAIL A



PLAN

WEST ABUTMENT

EAST ABUTMENT

TWO ABUTMENTS BILL OF MATERIAL

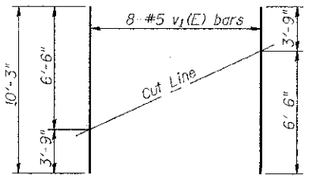
Bar	No.	Size	Length	Shape
h(E)	72	#5	8'-6"	——
p(E)	20	#7	29'-8"	——
s1(E)	60	#4	11'-5"	□
u(E)	16	#6	10'-1"	⌐¬
v(E)	130	#5	4'-4"	——
v1(E)	32	#5	10'-3"	——
Structure Excavation		CU YD	150	
Concrete Structures		CU YD	25.4	
Reinforcement Bars, Epoxy Coated		POUND	3,480	
Furnishing Metal Shell Piles 12"x0.250"		FOOT	360	
Driving Piles		FOOT	360	
Test Pile Metal Shells		EACH	1	
Concrete Encasement		CU YD	4.6	
Pile Shoes		EACH	10	

For details of piles and Concrete Encasement, see sheet 12 of 15.

Space reinforcement in cap to miss anchor bolts.

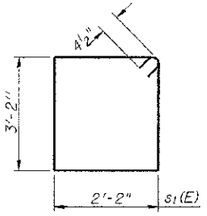
PILE DATA

Type & Size: Metal Shell 12"ϕx0.250" walls with pile shoes
Nominal Required Bearing: 265 k
Factored Resistance Available: 145 k
Est. Length: 40'
No. Req'd.: 10 (includes 1 Test Pile at West Abut.)

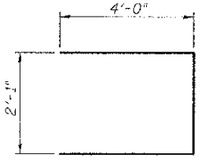


FIELD CUTTING DIAGRAM

Order $v_1(E)$ full length. Cut as shown and use remainder of bars in opposite face.



BAR $s_1(E)$



BAR u(E)

ABUTMENTS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 11	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	17
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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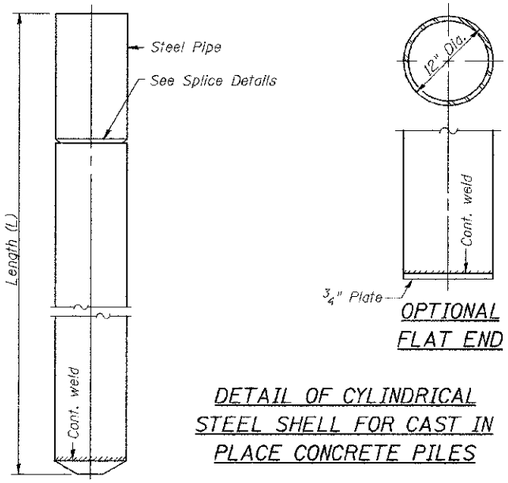
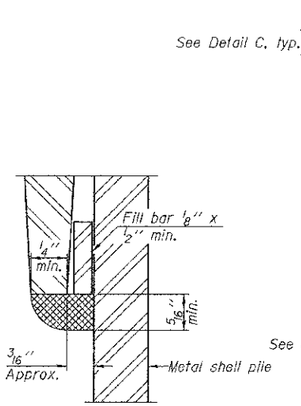
Notes: Driving and bearing ends of pipe shall be cut square. The thickness of the shell shall be 0.25 inches with a tolerance of 5%. The shell shall be according to Article 1006.05(a) of the Standard Specifications, and shall be ASTM A252 Grade 3.

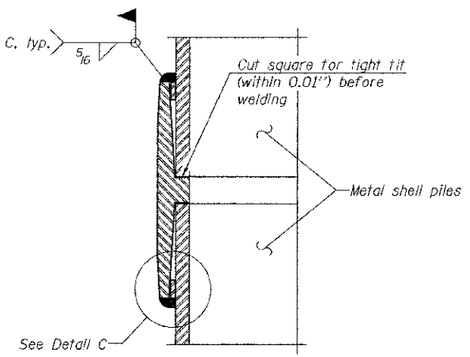


OPTIONAL FLAT END

DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES

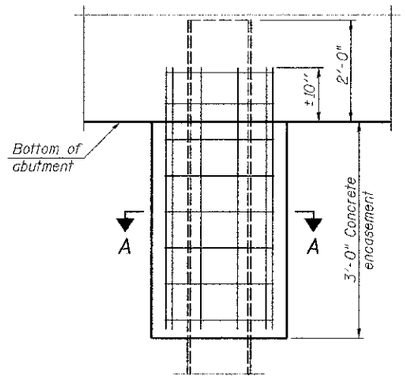


DETAIL C

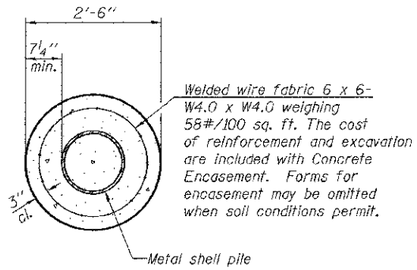


Notes:
The 1/8" x 1/2" min. fill bar may be constructed of 2 bars with a 1/8" max. gap between them.
Pile segments shall be driven to solid contact with splicer before welding.

WELDED COMMERCIAL SPLICE

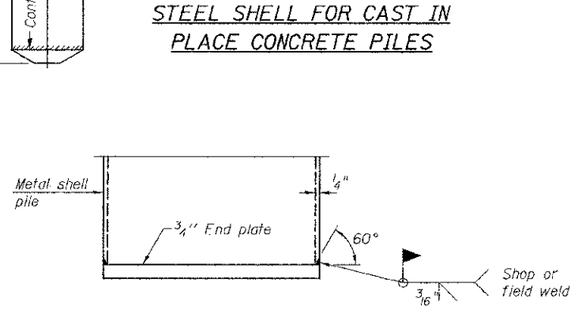


ELEVATION

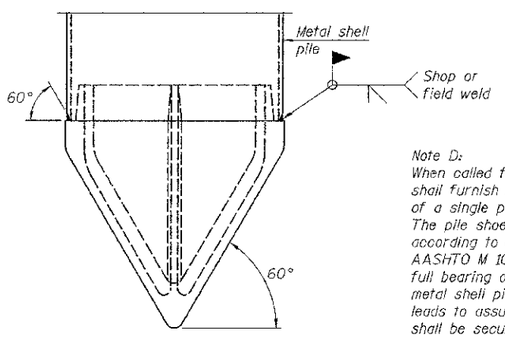


SECTION A-A

CONCRETE ENCASEMENT AT ABUTMENTS

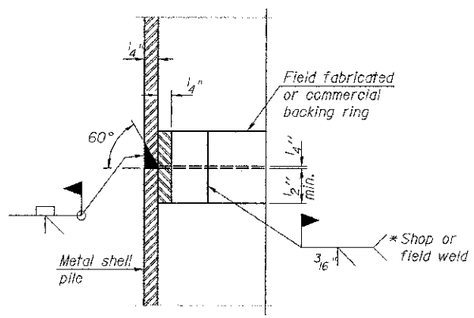


END PLATE ATTACHMENT



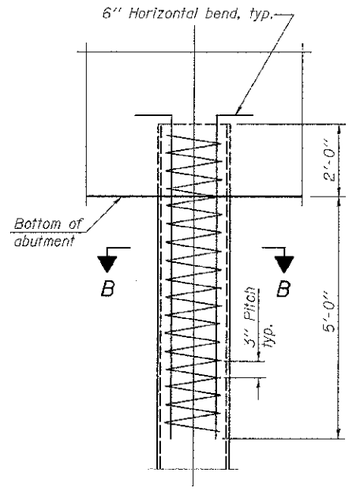
Note D:
When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over 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.

METAL SHELL PILE SHOE ATTACHMENT
(See Note D)

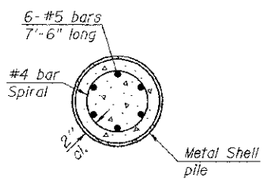


COMPLETE PENETRATION WELD SPLICE

* 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



SECTION B-B

Note:
The cost of reinforcement is included with Furnishing Metal Shell Piles 12"ϕx0.250".

METAL SHELL REINFORCEMENT AT ABUTMENTS

METAL SHELL PILE DETAILS
COUNTY HIGHWAY 9 OVER LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 12	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	18
		S.N. 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

29695012

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354
Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 1 of 3

Client: Hutchison Engineering, Inc.
Project Name: Section 08-00130-02-BR
Project Site: CH-9 Over Louis Creek Tributary
Iroquois County, IL.

Boring No. B-1
Surface Elev. *707.30*
Auger Depth 61' Rotary Depth NA
Start Date 06/11/11 Finish Date 06/11/11

Location: 7' Right of Station 214+55
WEST ABUTMENT

DRILLED BY: Randy Safranski
Diedrich D-120

(DEPTH) *ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
707.30											
706.30			1								
705.30			2								
704.30	Stiff Black And Brown Clay (Fill)		3	1	SS	1.6	8	B	21		
703.30			4								
702.30			5	2	SS	1.3	10	S	19		
701.30			6								
700.30	Stiff Black Clay		7	3	SS	1.2	6	B	26		
699.30			8								
698.30			9								
697.30	Stiff Brownish Gray Clay		10	4	SS	1.9	11	B	25		
696.30			11								
695.30			12								
694.30	Very Stiff Gray Clay		13	5	SS	2.3	13	B	21		
693.30			14								
692.30			15								
691.30	Hard Gray Silty Clay Till		16	6	SS	4.7	21	S	17		
690.30			17								
689.30			18	7	SS	4.4	21	S	16		
688.30			19								
687.30			20	8	SS	4.9	20	S	16		

Groundwater Data: No groundwater encountered at time of surface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354
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e-mail: mts37@comcast.net

BORING LOG

Sheet 2 of 3

Client: Hutchison Engineering, Inc.
Project Name: Section 08-00130-02-BR
Project Site: TR-212 Over Drainage Ditch
Iroquois County, IL.

Boring No. B-1
Surface Elev. *707.30*
Auger Depth 61' Rotary Depth NA
Start Date 06/11/11 Finish Date 06/11/11

Location: 7' Right of Station 214+55

DRILLED BY: Randy Safranski
Diedrich D-120

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
686.30											
685.30	Hard Gray Silty Clay Till		22								
684.30			23	9	SS	2.6	14	B	19		
683.30			24								
682.30			25								
681.30			26	10	SS	2.8	17	B	17		
680.30			27								
679.30	Very Stiff Gray Clay Till		28								
678.30			29								
677.30			30								
676.30			31	11	SS	2.4	14	B	20		
675.30			32								
674.30			33								
673.30			34								
672.30			35	12	SS	2.1	13	B	22		
671.30			36								
670.30			37								
669.30			38								
668.30	Stiff Gray Clay		39								
667.30			40								
666.30			41	13	SS	1.9	8	B	26		

Groundwater Data: No groundwater encountered at time of surface investigation.
Comments:

SOIL BORING LOGS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 13	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	19
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

2969b013

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354
Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 3 of 3

Client: Hutchison Engineering, Inc.
Project Name: Section 08-00130-02-BR
Project Site: TR-212 Over Drainage Ditch
Iroquois County, IL.

Boring No. B-1
Surface Elev. *707.30*
Auger Depth 61' Rotary Depth NA
Start Date 06/11/11 Finish Date 06/11/11

Location: 7' Right of Station 214+55

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
665.30											
664.30	Stiff Gray Clay		43								
663.30			44								
662.30			45	14	SS	1.8	17	B	16		
661.30			46								
660.30			47								
659.30			48								
658.30			49								
657.30			50	15	SS	3.1	21	S	14		
656.30	Very Stiff Gray Clay Till		51								
655.30			52								
654.30			53								
653.30			54								
652.30			55	16	SS	2.5	17	S	15		
651.30			56								
650.30			57								
649.30	Medium Gray Clay Till		58								
648.30			59								
647.30			60	17	SS	4.1	20	B	13		
646.30	Bottom of Boring		61								
645.30			62								

SAMPLES — DRILLED BY: Randy Safranski, Diedrich D-120

Groundwater Data: No groundwater encountered at time of surface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354
Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 1 of 3

Client: Hutchison Engineering, Inc.
Project Name: Section 08-00130-02-BR
Project Site: CH-9 Over Louis Creek Tributary
Iroquois County, IL.

Boring No. B-2
Surface Elev. *707.30*
Auger Depth 61' Rotary Depth NA
Start Date 06/10/11 Finish Date 06/10/11

Location: 7' Left of Station 215+35
EAST ABUTMENT

(DEPTH) *ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
707.30											
706.30			1								
705.30			2								
704.30			3	1	SS	1.0	5	B	24		
703.30	Stiff To Medium Black And Brown Clay (Fill)		4								
702.30			5	2	SS	0.8	4	B	27		
701.30			6								
700.30			7								
699.30			8	3	SS	1.4	6	B	25		
698.30			9								
697.30			10								
696.30	Stiff To Very Stiff Brownish Gray Clay		11	4	SS	1.8	9	B	20		
695.30			12								
694.30			13	5	SS	2.1	12	B	18		
693.30			14								
692.30			15	6	SS	4.5	20	S	16		
691.30			16								
690.30			17								
689.30	Hard Gray Silty Clay Till		18	7	SS	4.1	20	S	17		
688.30			19								
687.30			20								
				8	SS	5.3	24	S	16		

SAMPLES — DRILLED BY: Randy Safranski, Diedrich D-120

Groundwater Data: No groundwater encountered at time of surface investigation.
Comments:

SOIL BORING LOGS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 14	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	20
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354
Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 2 of 3

Client: Hutchison Engineering, Inc.
Project Name: Section 08-00130-02-BR
Project Site: CH-9 Over Louis Creek Tributary
Iroquois County, IL.

Location:

Boring No. B-2
Surface Elev. *707.30*
Auger Depth 61' Rotary Depth NA
Start Date 06/10/11 Finish Date 06/10/11

DRILLED BY: Randy Safranski
Diedrich D-120

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
686.30											
685.30	Hard Gray Silty Clay Till		22								
684.30			23	9	SS	3.1	16	B	16		
683.30			24								
682.30			25								
681.30			26	10	SS	2.7	14	B	18		
680.30			27								
679.30	Very Stiff Gray Clay Till		28								
678.30			29								
677.30			30								
676.30			31	11	SS	2.2	13	B	20		
675.30			32								
674.30			33								
673.30			34								
672.30			35								
671.30			36	12	SS	2.3	13	B	21		
670.30			37								
669.30			38								
668.30	Very Stiff Gray Clay		39								
667.30			40								
666.30			41	13	SS	2.0	9	B	24		

Groundwater Data: No groundwater encountered at time of surface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354
Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 3 of 3

Client: Hutchison Engineering, Inc.
Project Name: Section 08-00130-02-BR
Project Site: CH-9 Over Louis Creek Tributary
Iroquois County, IL.

Location: 7' Left of Station 215+35

Boring No. B-2
Surface Elev. *707.30*
Auger Depth 61' Rotary Depth NA
Start Date 06/10/11 Finish Date 06/10/11

DRILLED BY: Randy Safranski
Diedrich D-120

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
665.30											
664.30			43								
663.30	Stiff Gray Clay		44								
662.30			45								
661.30			46	14	SS	1.7	10	B	20		
660.30			47								
659.30			48								
658.30			49								
657.30			50								
656.30	Very Stiff Gray Clay Till		51	15	SS	3.4	20	S	15		
655.30			52								
654.30			53								
653.30			54								
652.30			55								
651.30			56	16	SS	2.7	18	B	16		
650.30			57								
649.30	Hard Gray Clay Till		58								
648.30			59								
647.30			60								
646.30			61	17	SS	4.5	26	B	13		
645.30	Bottom of Boring		62								

Groundwater Data: No groundwater encountered at time of surface investigation.
Comments:

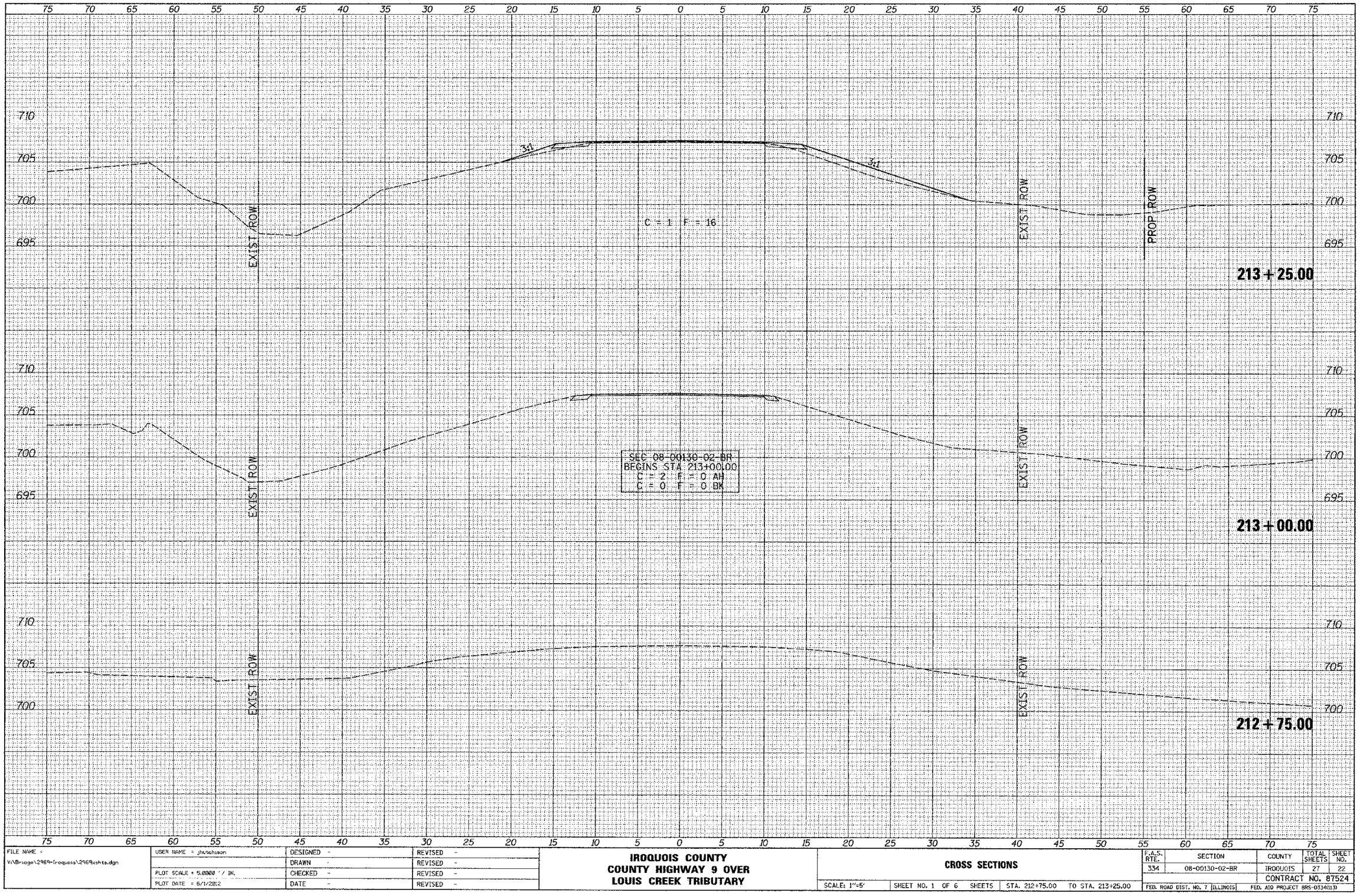
SOIL BORING LOGS
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY
SEC. 08-00130-02-BR
IROQUOIS COUNTY
STATION 214+96.00

SHEET NO. 15	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
15 SHEETS	334	08-00130-02-BR	IROQUOIS	27	21
		SN 038-3014	CONTRACT NO. 87524		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

2969b015

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

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



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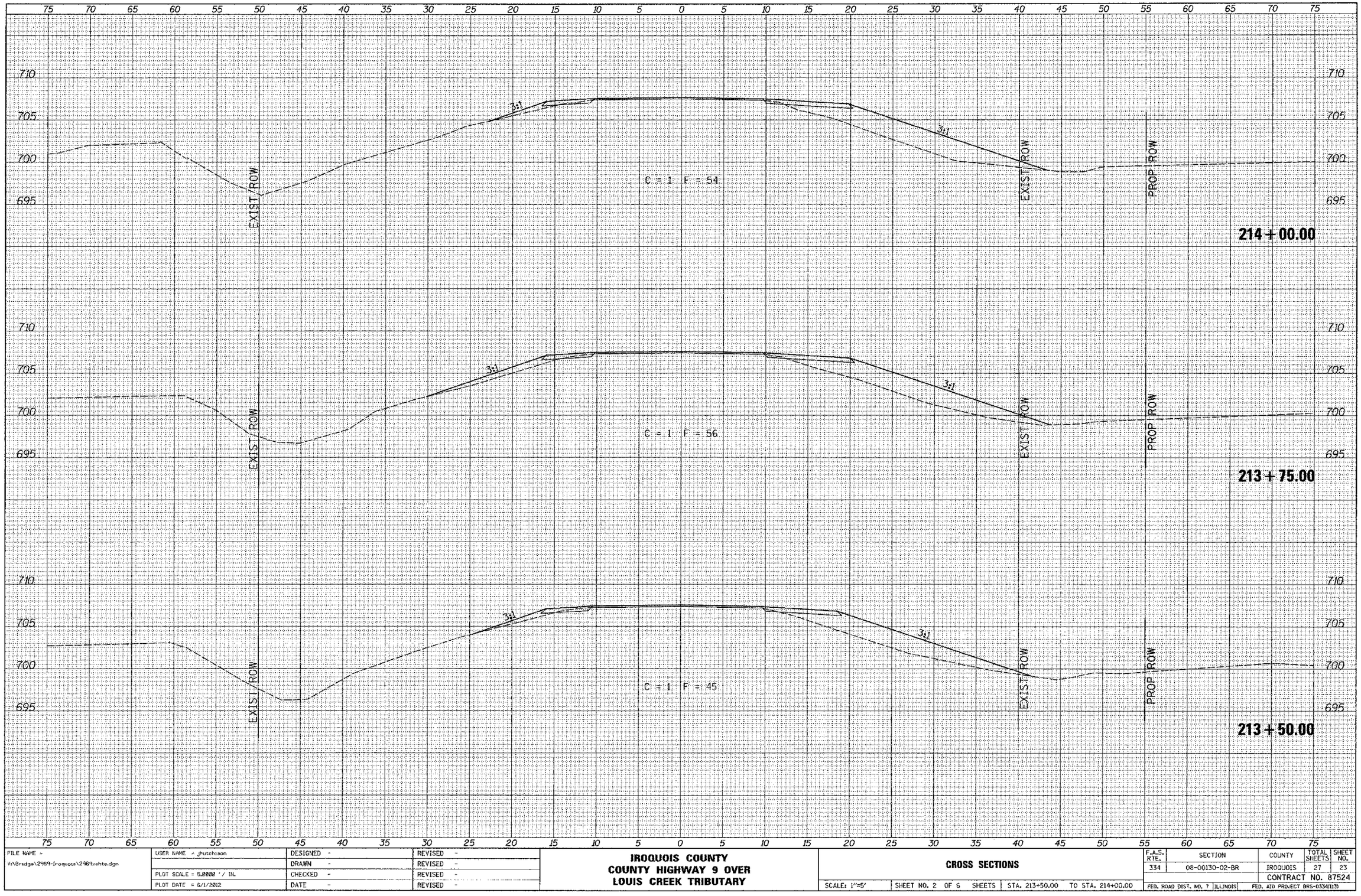
	PLOT DATE = 6/1/2012	DATE -	REVISED -

IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

CROSS SECTIONS

SCALE: 1"=5' | SHEET NO. 1 OF 6 SHEETS | STA. 212+75.00 TO STA. 213+25.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	22
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		



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	PLOT DATE = 6/1/2012	DATE -	REVISED -

IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

CROSS SECTIONS

SCALE: 1"=5' | SHEET NO. 2 OF 6 SHEETS | STA. 213+50.00 TO STA. 214+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	23
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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

STA 215+29.50
C = 18 F = 49 AH
C = 0 F = 0 BK

BRIDGE OMISSION

STA 214+62.50
C = 0 F = 0 AH
C = 1 F = 55 BK

C = 1 F = 55

EXIST ROW

PROP ROW

214 + 50.00

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

C = 2 F = 52

EXIST ROW

PROP ROW

214 + 25.00

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IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

CROSS SECTIONS

SCALE: 1"=5' | SHEET NO. 3 OF 6 SHEETS | STA. 214+25.00 TO STA. 214+50.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	24
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

FINAL SURVEY	SURVEYED	BY:	DATE
NOTE BOOK	PLOTTED		
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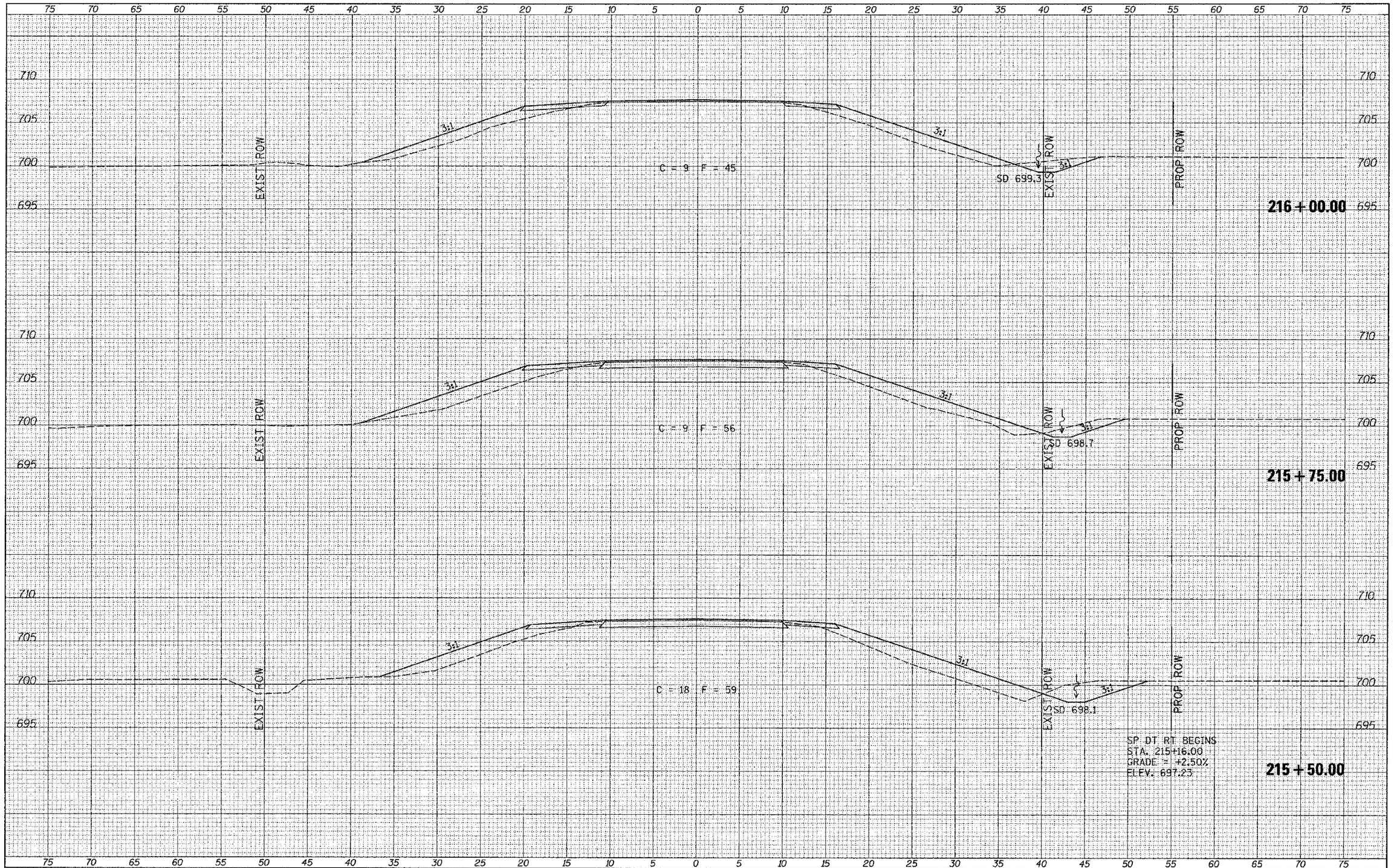

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	AREAS		
	AREAS CHECKED		

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IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

CROSS SECTIONS

SCALE: 1"=5' | SHEET NO. 4 OF 6 SHEETS | STA. 215+50.00 TO STA. 216+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	25
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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

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

SP DT RT ENDS
STA. 216+75.00
GRADE = +2.50%
ELEV. 701.20

EXIST ROW

C = 1 F = 3

SD 701.2

EXIST ROW

216 + 75.00

EXIST ROW

C = 2 F = 26

SD 700.6

EXIST ROW

PROP ROW

216 + 50.00

EXIST ROW

C = 2 F = 40

SD 700.0

EXIST ROW

PROP ROW

216 + 25.00

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IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

CROSS SECTIONS

SCALE: 1"=5' | SHEET NO. 5 OF 6 SHEETS | STA. 216+25.00 TO STA. 216+75.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	26
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(113)		

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

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

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

710
705
700

EXIST. ROW

SEC 08-00130-02-BR
ENDS STA 217+00.00
C = 1 F = 0 AH
C = 0 F = 0 BK

EXIST. ROW

217 + 25.00

217 + 00.00

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IROQUOIS COUNTY
COUNTY HIGHWAY 9 OVER
LOUIS CREEK TRIBUTARY

CROSS SECTIONS

SCALE: 1"=5' | SHEET NO. 6 OF 6 SHEETS | STA. 217+00.00 TO STA. 217+25.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
334	08-00130-02-BR	IROQUOIS	27	27
		CONTRACT NO. 87524		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT BRS-0334(613)		