

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	1

CONTRACT NO. 93414

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANS FOR PROPOSED
FEDERAL - AID BRIDGE REPLACEMENT
AND REHABILITATION PROGRAM
FAS ROUTE 622 (CH 15)
SECTION 04-00077-01-BR
PROJECT NO. BRS 622(104)
SANGAMON COUNTY
OVER LITTLE SPRING CREEK
C-96-214-06

INDEX OF SHEETS

SHEET NO.	TITLE
1.	COVER SHEET
2.	SUMMARY OF QUANTITIES, GENERAL NOTES, & ENTRANCE DETAILS
3.	TYPICAL CROSS SECTIONS
4.	PLAN & PROFILE
5.	GUARDRAIL & SHOULDER WIDENING DETAILS
6.-18.	BRIDGE PLANS
19.-22	CROSS SECTIONS

LIST OF ILLINOIS DOT HIGHWAY STANDARDS

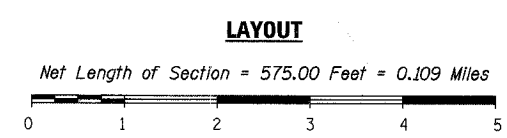
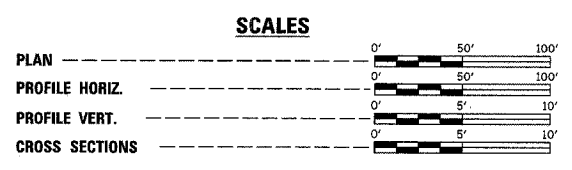
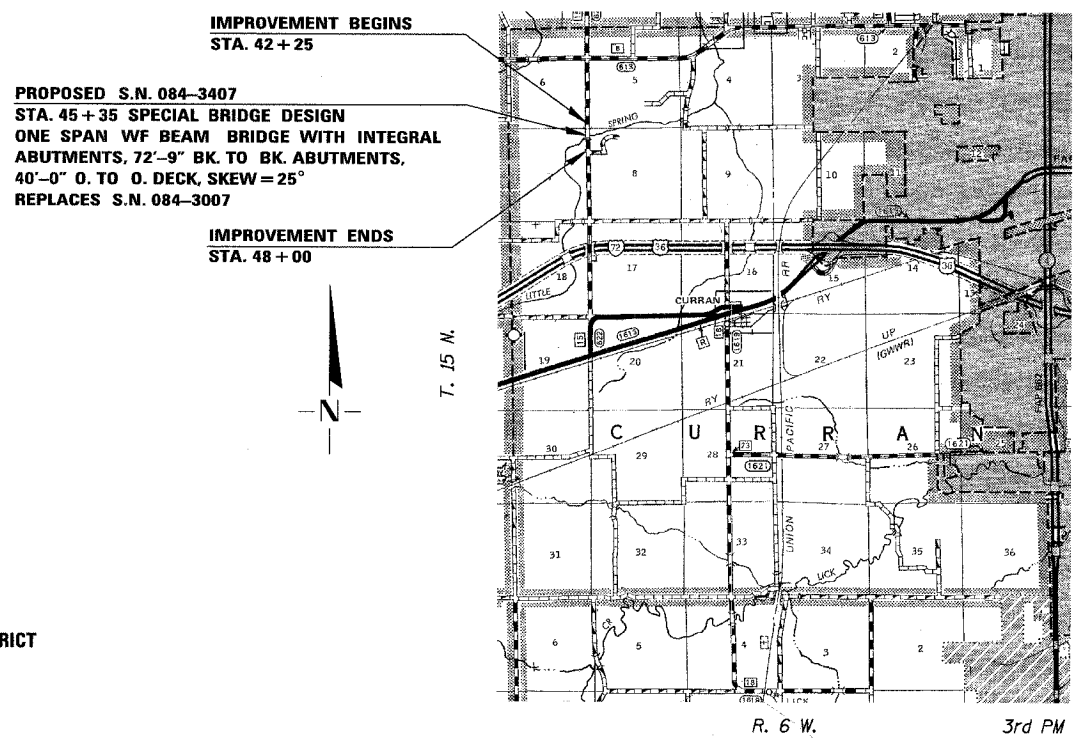
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420401-05	635006-02
515001-02	635011-01
601101	666001
630001-06	702001-06
630301-03	BLR21-6

UTILITY CONTACTS:

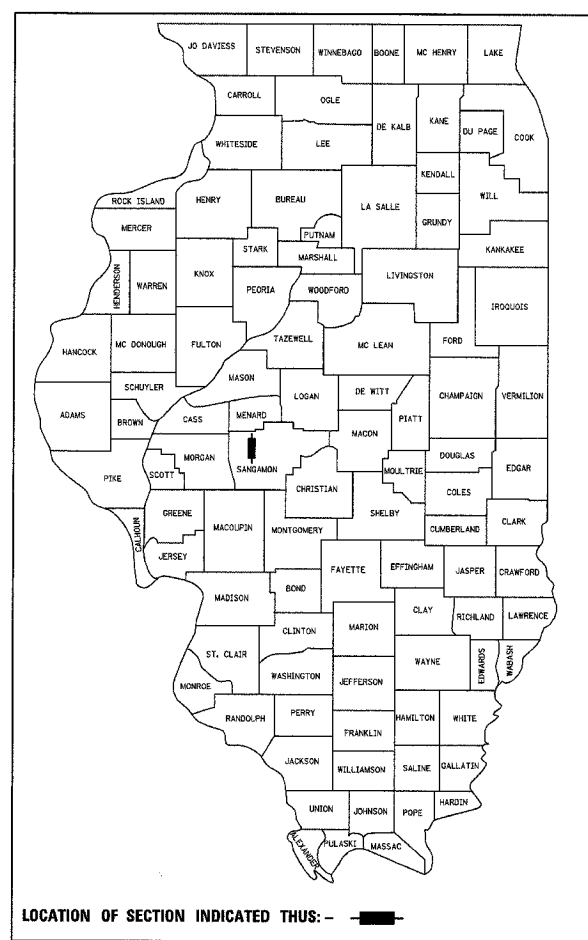
UTILITY TYPE:	UTILITY TYPE:
OVERHEAD ELECTRIC CILCO (217) 753-5187 ATTN: EDDIE LYNCH	WATER CURRAN GARDNER WATER DISTRICT (217) 491-2400 ATTN: MAX MIDDENDORF

UTILITY TYPE:
BURIED TELEPHONE
SBC
(618) 482-6157
ATTN: DAWN KRONENBERGER

CONTRACT NO. 93414



MAJOR COLLECTOR
DESIGN SPEED 50 MPH
ADT 1600 (2003) 2080 (2026)



TOLL FREE JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS (J.U.L.I.E.)
TELEPHONE NUMBER 1-800-892-0123

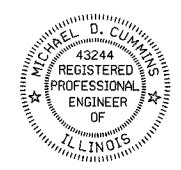
APPROVED: MARCH 17, 2006
[Signature]
COUNTY ENGINEER

PASSED: 4-6, 2006
[Signature]
DISTRICT SUPERVISOR OF LOCAL ROADS AND STREETS

PASSED: 4-6, 2006
[Signature]
DISTRICT ENGINEER OF CONSTRUCTION

RELEASED FOR BID BASED ON LIMITED REVIEW: 4-6, 2006
[Signature]
DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



[Signature] (3-16-06)
ILLINOIS PROFESSIONAL NO. 43244
(Expires 11/30/07)

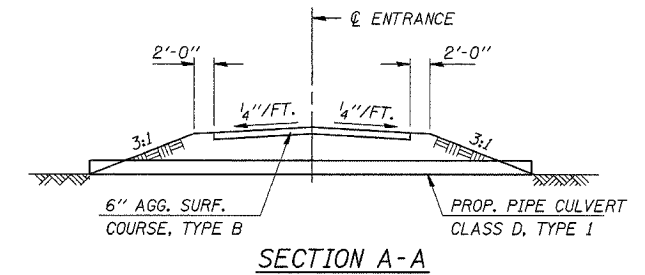
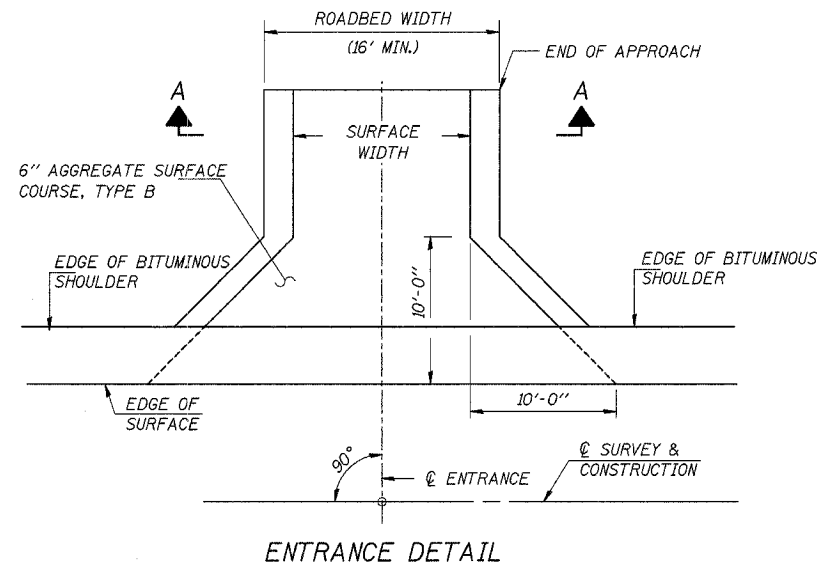
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 93414

SUMMARY OF QUANTITIES

CODE	ITEM	UNIT	CONSTRUCTION TYPE CODE: X071-2A QUANTITY
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	94
20100210	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	78
20200100	EARTH EXCAVATION	CU. YD.	1,135
20300100	CHANNEL EXCAVATION	CU. YD.	1,190
*20400800	FURNISHED EXCAVATION	CU. YD.	880
20700220	POROUS GRANULAR EMBANKMENT	CU. YD.	181
*25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.8
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	80
*28000300	TEMPORARY DITCH CHECKS	EACH	5
28000400	PERIMETER EROSION BARRIER	FOOT	100
28000500	INLET AND PIPE PROTECTION	EACH	2
*28101700	RIPRAP, SPECIAL	TON	380
*28102600	STONE RIPRAP DITCH	TON	52
31101000	SUB-BASE GRANULAR MATERIAL, TYPE B	TON	455
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	40
40600100	BITUMINOUS MATERIALS (PRIME COAT)	GALLON	420
42001165	BRIDGE APPROACH PAVEMENT	SQ. YD.	268
48101200	AGGREGATE SHOULDERS, TYPE B	TON	65
*48202400	BITUMINOUS SHOULDERS SUPERPAVE 6"	SQ. YD.	525
*50100300	REMOVAL OF EXISTING STRUCTURES NO. 1	EACH	1
50105220	PIPE CULVERT REMOVAL	FOOT	62
50200100	STRUCTURE EXCAVATION	CU. YD.	220
50300225	CONCRETE STRUCTURES	CU. YD.	36.4
*50300255	CONCRETE SUPERSTRUCTURE	CU. YD.	106.0
50300260	BRIDGE DECK GROOVING	SQ. YD.	578
50300300	PROTECTIVE COAT	SQ. YD.	325
50500105	FURNISHING AND ERECTING STRUCTURAL STEEL	L. SUM	1
50500505	STUD SHEAR CONNECTORS	EACH	1,278
*50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	24,400
50901005	STEEL BRIDGE RAIL, TYPE SM	FOOT	146
51201600	FURNISHING STEEL PILES HP12X53	FOOT	1,100
51202700	DRIVING STEEL PILES	FOOT	1,100
51203600	TEST PILE STEEL HP12X53	EACH	2
51500100	NAME PLATES	EACH	1
▲*63000000	STEEL PLATE BEAM GUARD RAIL, TYPE A	FOOT	175
▲63100045	TRAFFIC BARRIER TERMINAL, TYPE 2	EACH	2
▲63100087	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	4
▲*63100167	TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT)	EACH	3
▲*63300725	STEEL PLATE BEAM GUARD RAIL (SHORT RADIUS)	FOOT	25
66600105	FURNISHING AND ERECTING RIGHT-OF-WAY MARKERS	EACH	8
67100100	MOBILIZATION	L. SUM	1
*70101830	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L. SUM	1
▲*78200405	GUARDRAIL MARKERS	EACH	8
▲*78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	3
*542D0223	PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT	100
*X3550400	BITUMINOUS BASE COURSE SUPERPAVE 7"	SQ. YD.	1,230
*X4066414	BITUMINOUS CONCRETE SURFACE COURSE, SUPERPAVE, MIX "C", N50	TON	100
*X4066614	BITUMINOUS CONCRETE BINDER COURSE, SUPERPAVE, IL-19.0, N50	TON	172
Z0002600	BAR SPLICERS	EACH	82

*SEE SPECIAL PROVISIONS
▲ SPECIALLY ITEMS



GENERAL NOTES

- WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE ANY SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKS AND MONUMENTS UNTIL THE OWNER, AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.
- THE AREA TO BE SEEDED SHALL CONSIST OF ALL DISTURBED EARTH SURFACES WITHIN THE RIGHT OF WAY AS DIRECTED BY THE ENGINEER.
SEEDING CLASS 2 (SPECIAL) = 0.8 ACRES
- ALL ELEVATIONS SHOWN ON THE PLANS ARE ESTABLISHED FROM U.S.G.S. MEAN SEA LEVEL DATUM.
- THE LOCATIONS OF EXISTING WATER MAINS, GAS MAINS, ELECTRIC POWER LINES, TELEPHONE LINES, AND OTHER UTILITIES AS SHOWN ON THE PLANS ARE BASED ON CAREFUL FIELD INVESTIGATION AND THE BEST INFORMATION AVAILABLE, BUT ARE NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THEIR EXACT LOCATION FROM THE UTILITY COMPANIES, MUNICIPALITIES AND FIELD INSPECTION. SEE STANDARD SPECIFICATIONS.
- PAVEMENT MARKING/STRIPING SHALL BE DONE BY OTHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- REMOVAL OF EXISTING GUARDRAIL WILL NOT BE PAID FOR SEPERATELY BUT SHALL BE INCLUDED IN THE COST FOR REMOVAL OF EXISTING STRUCTURES.

7. THE FOLLOWING MIXTURE REQUIREMENTS ARE APPLICABLE FOR THIS PROJECT

MIXTURE USES	BITUMINOUS CONCRETE SURFACE COURSE SUPERPAVE, MIX "C" N50	BITUMINOUS CONCRETE BINDER COURSE SUPERPAVE, N50
AC/PG:	PG 64-22	PG 64-22
RAP %: (MAX)	0%	20%
DESIGN AIR VOIDS	4.0 • NDESIGN = 50	4.0 • NDESIGN = 50
MIXTURE COMPOSITION (GRADATION MIXTURE)	IL 9.5 OR 12.5	(IL 19.0)
FRICTION AGGREGATE	MIX "C"	N/A

APPLICATION RATES USED IN QUANTITY CALCULATIONS

Granular Materials	-----	2.05 Tons/Cu. Yd.
Riprap	-----	1.50 Tons/Cu. Yd.
Bituminous Materials (Prime Coat)	-----	0.35 Gallon/Sq.Yd.
Bituminous Concrete	-----	112#/Sq.Yd./Inch

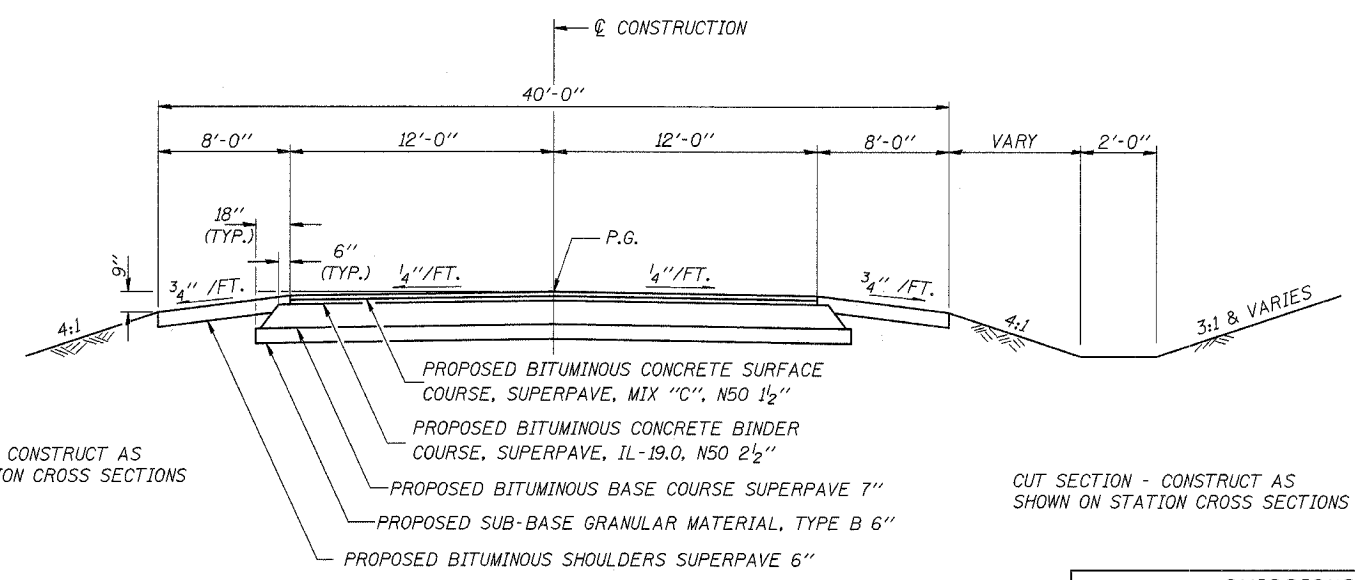
**SUMMARY OF QUANTITIES,
GENERAL NOTES, & ENTRANCE DETAILS**

FAS 622 (CH 15)
SECTION 04-00077-01-BR
SANGAMON COUNTY

CUMMINS ENGINEERING CORPORATION	JOB #: 2157 FILE: 2157TYP DATE: 3/15/06
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077 01-BR	SANGAMON	22	3

CONTRACT NO. 93414



FILL SECTION - CONSTRUCT AS SHOWN ON STATION CROSS SECTIONS

CUT SECTION - CONSTRUCT AS SHOWN ON STATION CROSS SECTIONS

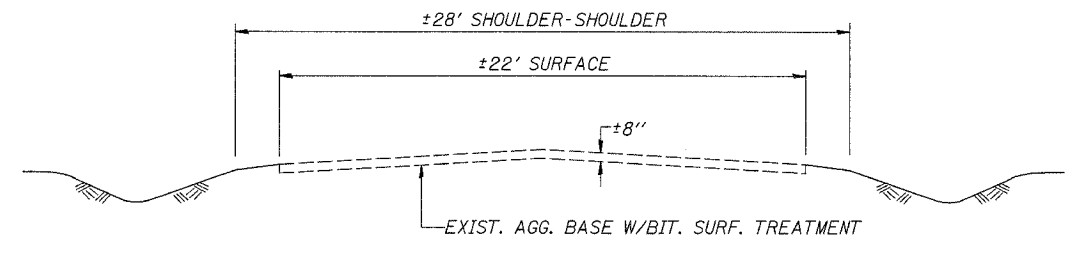
TYPICAL PROPOSED ROADWAY CROSS SECTION

STATION 43+00 TO STATION 44+68.62
STATION 46+01.38 TO STATION 47+25

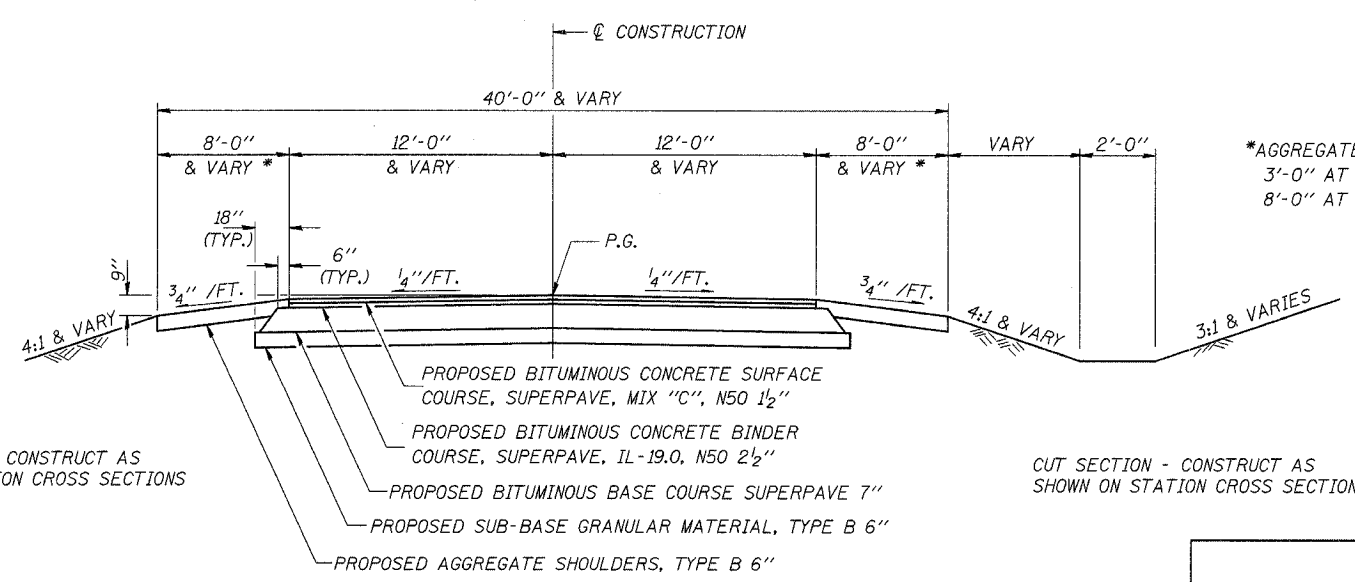
OMISSIONS

BRIDGE OMISSION:
STATION 44+98.62 TO STATION 45+71.38

BRIDGE APPROACH PAVEMENT OMISSION:
STATION 44+68.62 TO STATION 44+98.62
STATION 45+71.38 TO STATION 46+01.38



TYPICAL EXISTING ROADWAY CROSS SECTION



FILL SECTION - CONSTRUCT AS SHOWN ON STATION CROSS SECTIONS

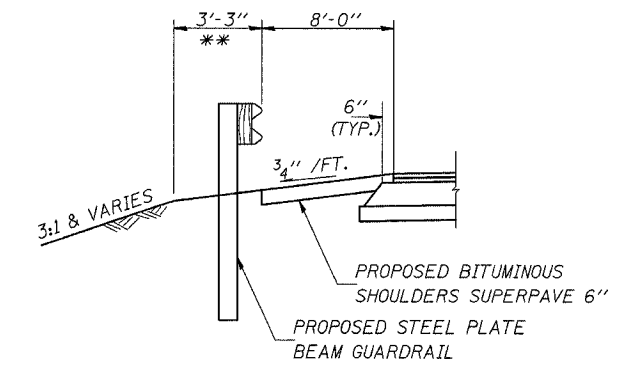
CUT SECTION - CONSTRUCT AS SHOWN ON STATION CROSS SECTIONS

TYPICAL PROPOSED ROADWAY CROSS SECTION

TRANSITION FROM EXISTING ROADWAY AT STATION 42+25 TO PROPOSED ROADWAY AT STATION 43+00

TRANSITION FROM PROPOSED ROADWAY AT STATION 47+25 TO EXISTING ROADWAY AT STATION 48+00

*AGGREGATE SHOULDER TRANSITIONS:
3'-0" AT STA. 42+25 TO 8'-0" AT STA. 43+00
8'-0" AT STA. 47+25 TO 3'-0" AT STA. 48+00



DETAIL - EARTH SHOULDER AT GUARDRAIL

** SEE STANDARD 630301 FOR EARTH SHOULDER WIDENING AT TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT) SEE SHEET 5 FOR LIMITS OF EARTH SHOULDER AND TRANSITIONS.

PAVEMENT DESIGN		
STRUCTURAL DESIGN TRAFFIC YEAR: 2016		
PV= 1602	SU= 127	MU= 91
CLASS III ROAD		
IBR=2.0 (ASSUMED)	TRAFFIC FACTOR= 0.49	
PERCENT OF SDT FOR TWO LANES		
PV=88%	SU=7%	MU=5%
STRUCTURAL NUMBER D ₁ = 4.10		
PAVEMENT COMPOSITION		
PROPOSED:		
1 1/2" BIT CONC SURF CSE, SUPERPAVE, MIX "C", N50 - A ₁ =0.40		
2 1/2" BIT CONC BINDER CSE, SUPERPAVE, N50 - A ₂ =0.40		
7" BIT BASE COURSE, SUPERPAVE - A ₃ =0.30		
6" SUB-BASE GRANULAR MATERIAL - A ₄ =0.12		

TYPICAL CROSS SECTIONS

FAS 622 (CH 15)
SECTION 04-00077-01-BR
SANGAMON COUNTY

CUMMINS ENGINEERING CORPORATION

JOB #: 2157
FILE: 2157TYP
DATE: 3/15/06

EXISTING STRUCTURE NO. 084-3007
 STA. 45+35 - SINGLE SPAN STEEL I-BEAM
 BRIDGE ON CLOSED TIMBER PILE BENT ABUTS
 ONE SPAN AT 35'-6"; 38'-10" BK. TO BK. ABUTS.
 28'-4" O. - O. DECK; 24'-0" FC-FC. CURBS
 30° SKEW RT. FWD.
 REMOVAL OF EXISTING STRUCTURES = 1 EACH

NW 1/4, NW 1/4, SEC 8, T 14 N, R 6 W
 CHRIS K. & VIRGINIA E. DILLARD

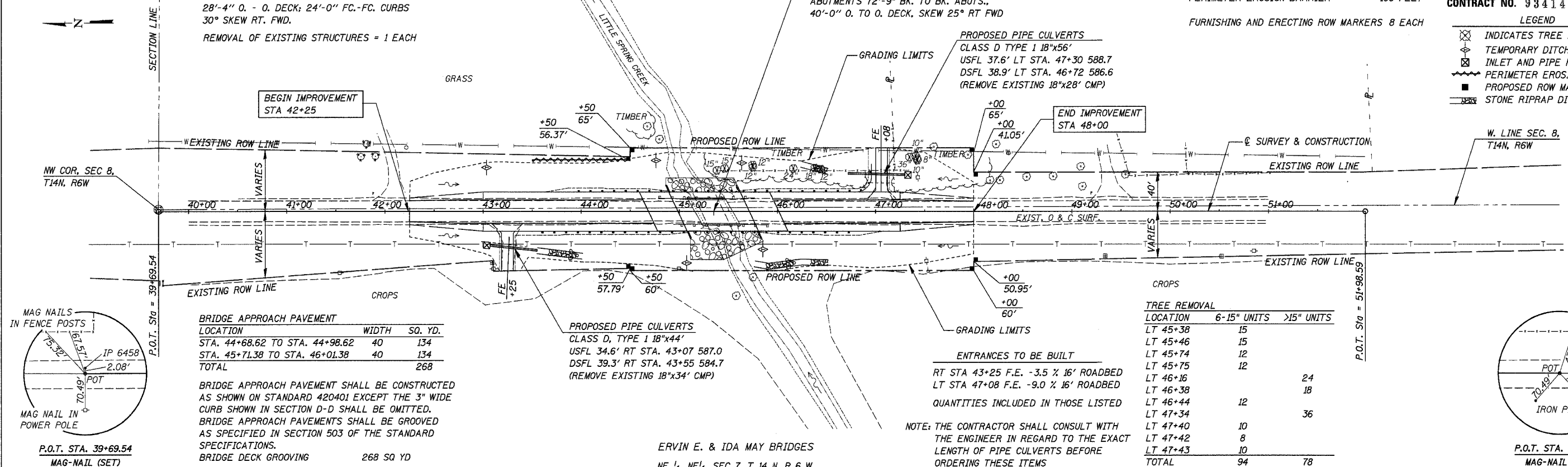
STA 45+35 PROP. STRUCTURE NO. 084-3407
 ONE SPAN WF BEAM BRIDGE WITH INTEGRAL
 ABUTMENTS 72'-9" BK. TO BK. ABUTS.,
 40'-0" O. TO O. DECK, SKEW 25° RT FWD

DAVID EARL &
 CYNTHIA E. BRIDGES

TEMPORARY EROSION CONTROL
 TEMPORARY DITCH CHECKS 5 EACH
 INLET AND PIPE PROTECTION 2 EACH
 PERIMETER EROSION BARRIER 100 FEET
 FURNISHING AND ERECTING ROW MARKERS 8 EACH

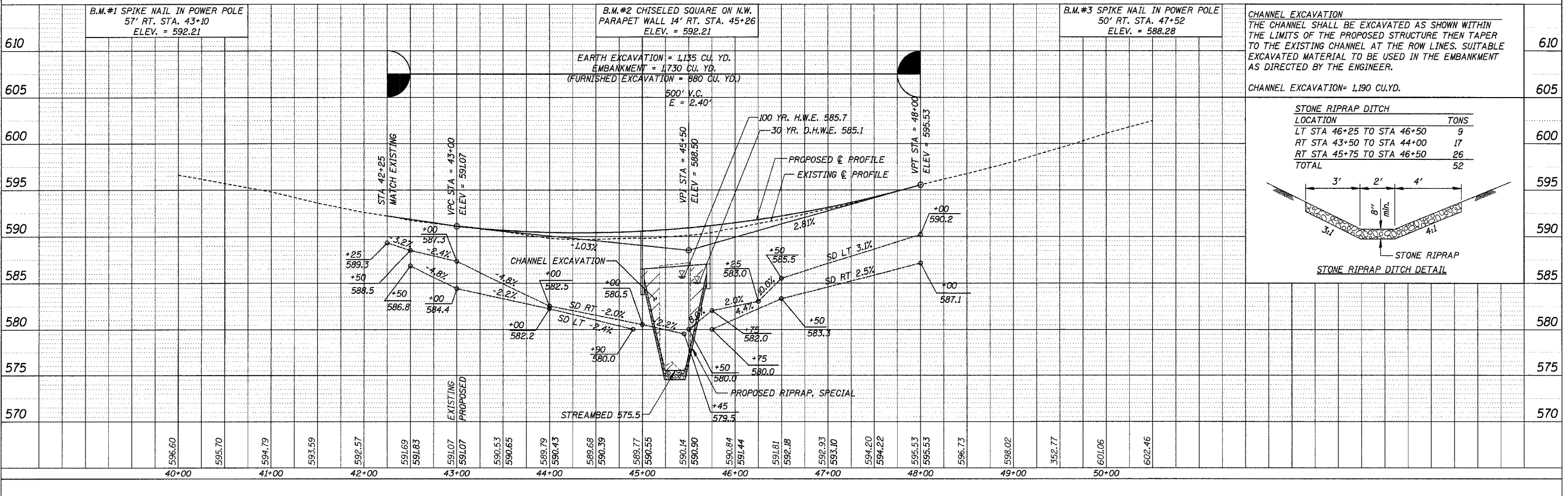
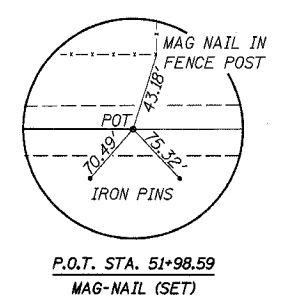
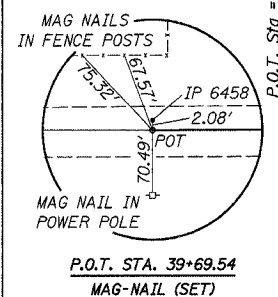
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 93414
LEGEND
 ⊗ INDICATES TREE REMOVAL
 ⊕ TEMPORARY DITCH CHECKS
 ⊠ INLET AND PIPE PROTECTION
 ~ PERIMETER EROSION BARRIER
 ■ PROPOSED ROW MARKERS
 ▬ STONE RIPRAP DITCH



CROPS

LOCATION	6-15" UNITS	>15" UNITS
LT 45+38	15	
LT 45+46	15	
LT 45+74	12	
LT 45+75	12	
LT 46+16		24
LT 46+38		18
LT 46+44	12	
LT 47+34		36
LT 47+40	10	
LT 47+42	8	
LT 47+43	10	
TOTAL	94	78

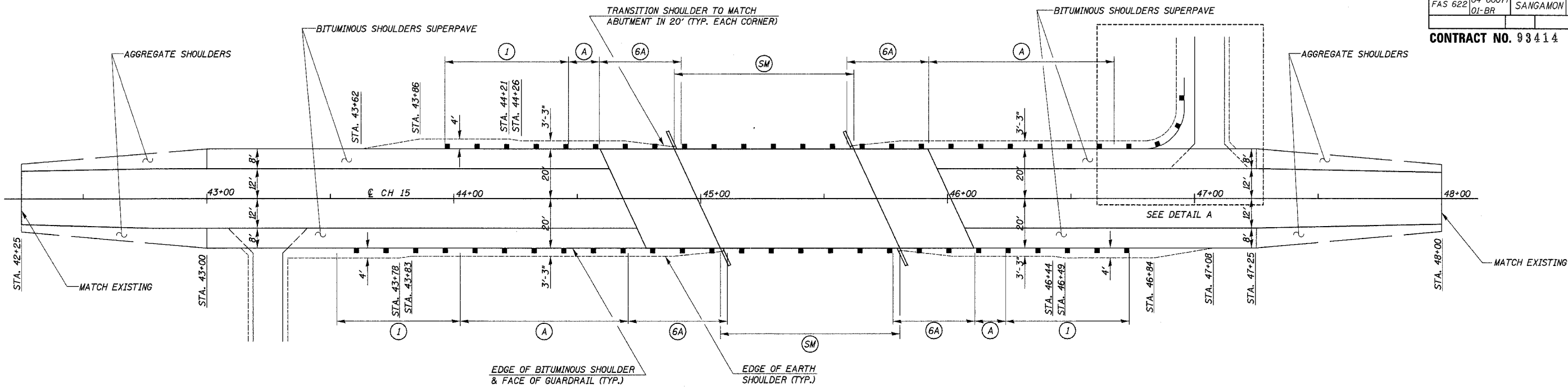


DATE: _____
 BY: _____
 SURVEYED: _____
 ALIGNED: _____
 CHECKED: _____
 PLAN: _____
 NOTE BOOK: _____

DATE: _____
 BY: _____
 SURVEYED: _____
 GRADES CHECKED: _____
 B.M. NOTED: _____
 PROFILE: _____
 NOTE BOOK: _____

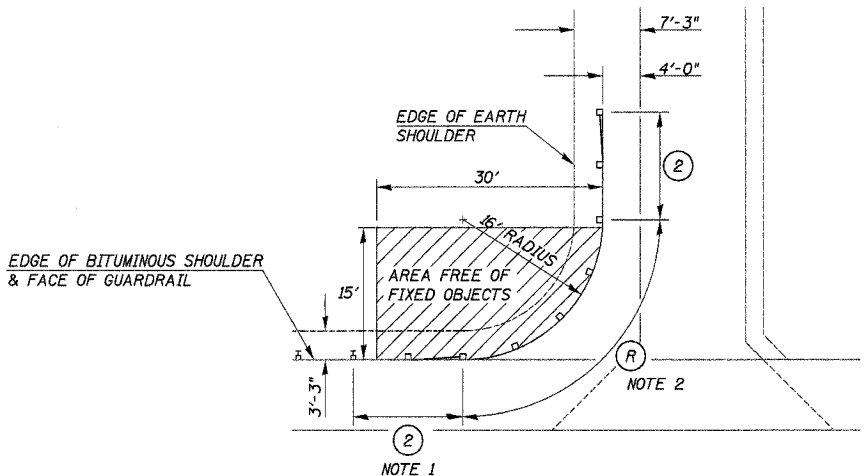
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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GUARDRAIL & SHOULDER WIDENING PLAN

LEGEND	
(A)	STEEL PLATE BEAM GUARDRAIL, TYPE A
(R)	STEEL PLATE BEAM GUARDRAIL (SHORT RADIUS)
(2)	TRAFFIC BARRIER TERMINAL, TYPE 2
(6A)	TRAFFIC BARRIER TERMINAL, TYPE 6A
(1)	TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT)
(SM)	STEEL BRIDGE RAIL, TYPE SM



DETAIL A

- NOTES
1. CONSTRUCT ACCORDING TO STANDARD 631011 FOR TRAFFIC BARRIER TERMINAL TYPE 2, EXCEPT DELETE END SECTION AND SPLICE INTO RADIUS GUARDRAIL.
 2. CONTROLLED RELEASING TERMINAL (CRT) POSTS AT 6'-3" SPACING.

STEEL PLATE BEAM GUARDRAIL, TYPE A		
LOCATION		FEET
LT STA 44+46.36	TO STA 44+58.86	12.5
LT STA 45+92.48	TO STA 46+67.48	75.0
RT STA 44+02.52	TO STA 44+77.52	75.0
RT STA 46+11.14	TO STA 46+23.64	12.5
TOTAL		175

TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT)		
LOCATION		EACH
LT STA 43+96.36	TO STA 44+46.36	1
RT STA 43+52.52	TO STA 44+02.52	1
RT STA 46+23.64	TO STA 46+73.64	1
TOTAL		3

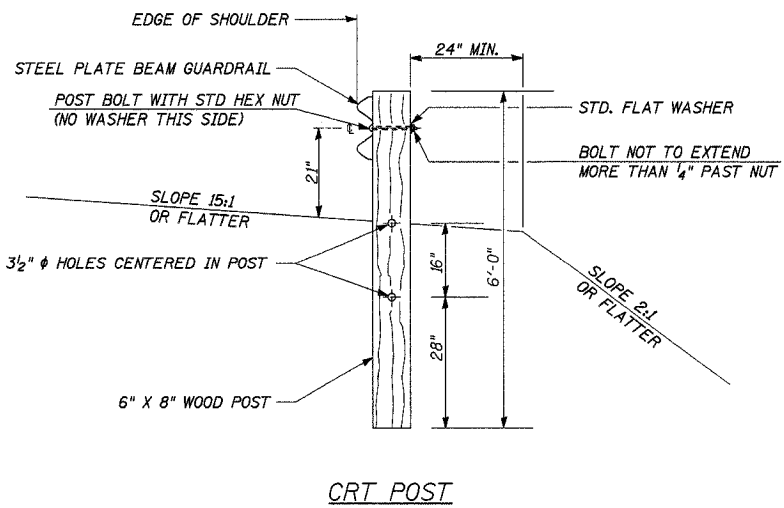
STEEL PLATE BEAM GUARDRAIL (SHORT RADIUS)		
LOCATION		FEET
LT STA 46+79.98	TO STA 46+95.98	25
TOTAL		25

TERMINAL MARKER - DIRECT APPLIED		
LOCATION		EACH
LT STA 43+96.36		1
RT STA 43+52.52		1
RT STA 46+73.64		1
TOTAL		3

TRAFFIC BARRIER TERMINAL, TYPE 2		
LOCATION		EACH
LT STA 46+67.48	TO STA 46+79.98	1
LT STA 46+95.98	TO STA 46+95.98	1
TOTAL		2

GUARDRAIL MARKERS		
LOCATION		EACH
LT STA 44+46.36	TO STA 46+95.98	4
RT STA 44+02.52	TO STA 46+23.64	4
TOTAL		8

TRAFFIC BARRIER TERMINAL, TYPE 6A		
LOCATION		EACH
LT STA 44+58.86	TO STA 44+92.09	1
LT STA 45+59.25	TO STA 45+92.48	1
RT STA 44+77.52	TO STA 45+10.75	1
RT STA 45+77.91	TO STA 46+11.14	1
TOTAL		4



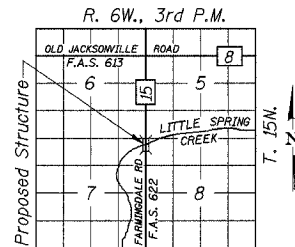
CRT POST

GUARDRAIL & SHOULDER DETAILS	
FAS 622 (CH 15) SECTION 04-00077-01-BR SANGAMON COUNTY	
CUMMINS ENGINEERING CORPORATION	JOB #: 2157 FILE: 2157GRAIL DATE: 3/16/06

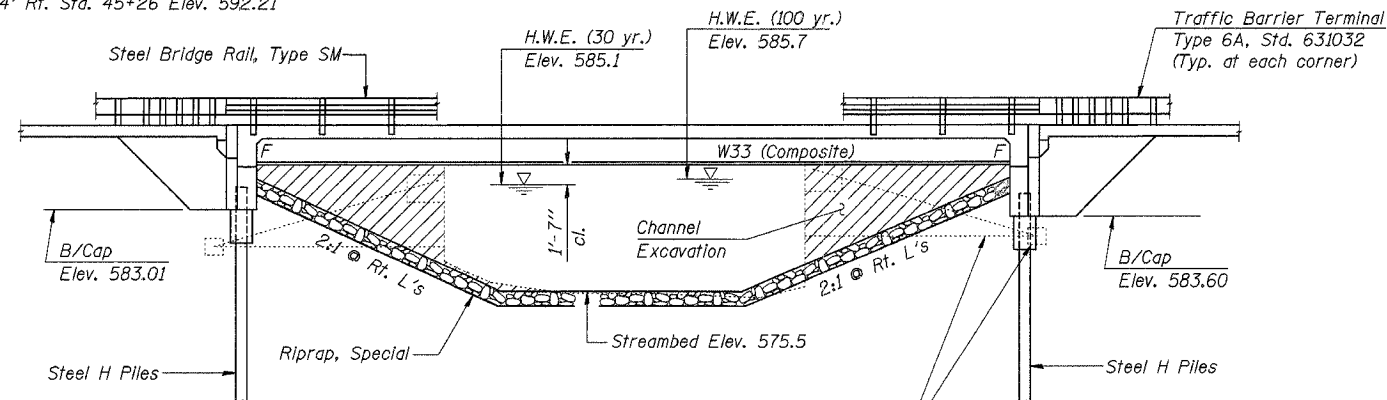
Bench Mark: B.M.#2 Chiseled Square on N.W. Parapet Wall 14' Rt. Sta. 45+26 Elev. 592.21

Existing Structure: S.N. 084-3007 built in 1955 as F.A.S. Route 622, Sec. 77-A at Sta. 45+35. Structure is a single span Steel I-beam bridge on closed timber pile bent abutments. Overall length is 38'-10" back to back abutments. Bridge width is 28'-4" out to out of deck with a 24'-0" clear roadway width. Structure is to be removed and replaced with a single span composite WF bridge on integral abutments. Construction to be completed under road closure.

No Salvage.



LOCATION SKETCH



ELEVATION

LITTLE SPRING CREEK
BUILT 200_ BY
SANGAMON COUNTY
SEC. 04-00077-01-BR
COUNTY HIGHWAY 15
F.A. PROJ. BRS-622(104)
STR. NO. 084-3407 LOADING HS20

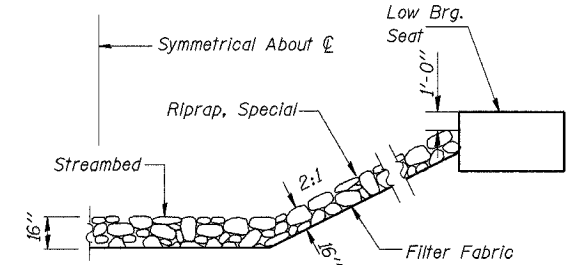
LETTERING FOR NAME PLATE
See Std. 515001

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1. General Plan and Elevation
2. General Notes & Total Bill of Material
- 3-4. Top of Slab Elevations
5. Superstructure
6. Diaphragm Details
7. Structural Steel
8. Bearing Details
9. North Abutment
10. South Abutment
11. Type SM Steel Bridge Rail Side Mounted
12. Bar Splicer Assembly Details
13. Anchor Bolt Details



SECTION A-A
STONE RIPRAP DETAIL

DESIGN SPECIFICATIONS

2002 AASHTO

LOADING HS20-44

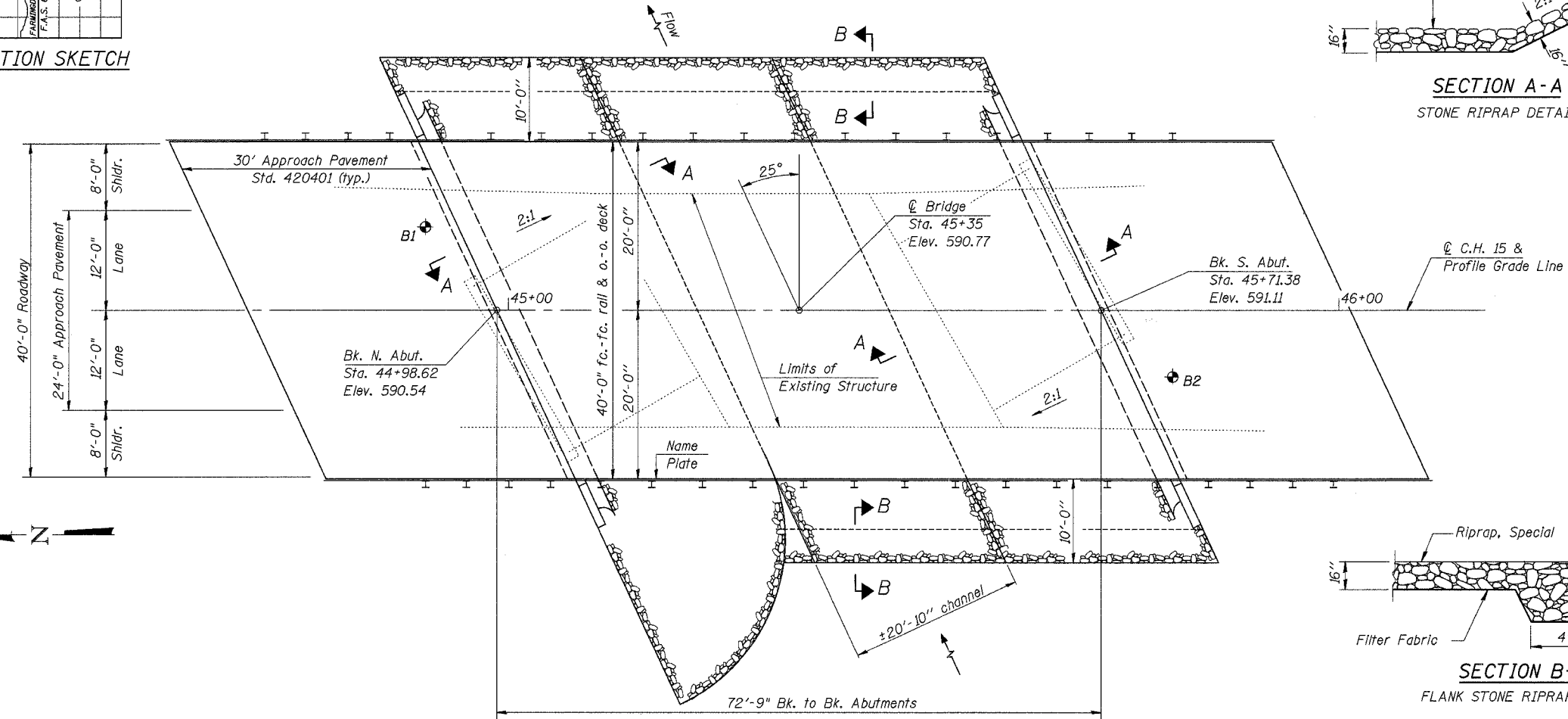
Allow 50#/Sq. Ft. for future wearing surface

DESIGN STRESSES

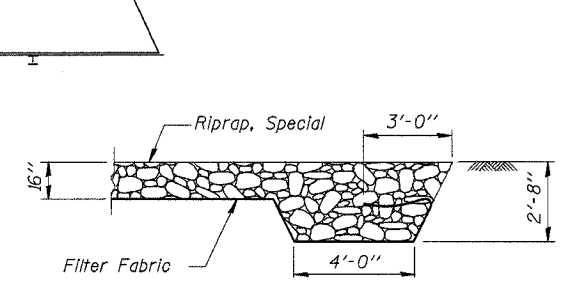
$f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (Structural Steel) (M270 GR. 50W)

SEISMIC DATA

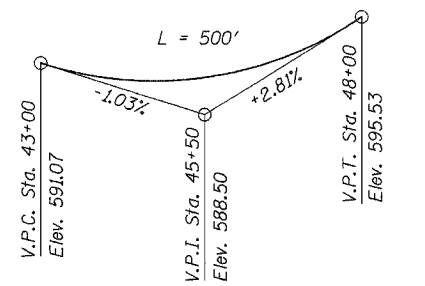
Seismic Performance Category (SPC) = A
Bedrock Acceleration Coefficient (A) = 0.05
Site Coefficient (S) = 1.5



PLAN



SECTION B-B
FLANK STONE RIPRAP DETAIL



PROFILE GRADE
(along C.H. 15)

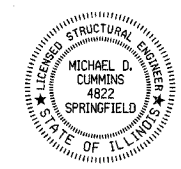
WATERWAY INFORMATION

Drainage Area	9.5 Sq. Mi.
Existing Opening (30 Yr.)	270 Sq. Ft.
Proposed Opening (30 Yr.)	380 Sq. Ft.
Existing Opening (100 Yr.)	290 Sq. Ft.
Proposed Opening (100 Yr.)	420 Sq. Ft.
Design Discharge (30 Yr.)	1422 C.F.S.
Created Head (30 Yr.)	0.2 Ft.
100 Year Discharge	1887 C.F.S.
100 Yr. Created Head	0.3 Ft.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

"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 Standard Specifications for Highway Bridges'".

Michael D. Cummins (3-16-06)
ILLINOIS STRUCTURAL NO. 4822 (Expires 11/30/06)



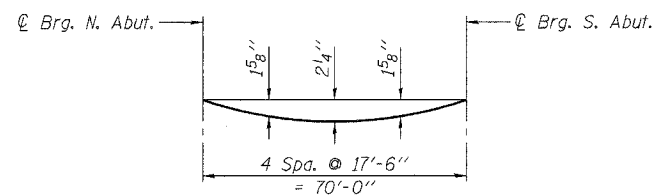
GENERAL PLAN & ELEVATION

C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

CUMMINS ENGINEERING CORPORATION	JOB #: 2157
	FILE #: 2157GPE
	DATE: 3/14/06

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	8

ILLINOIS PROJECT
CONTRACT NO. 93414
 Sheet 3 of 13

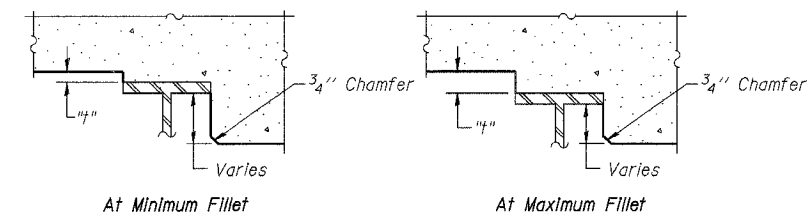


DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

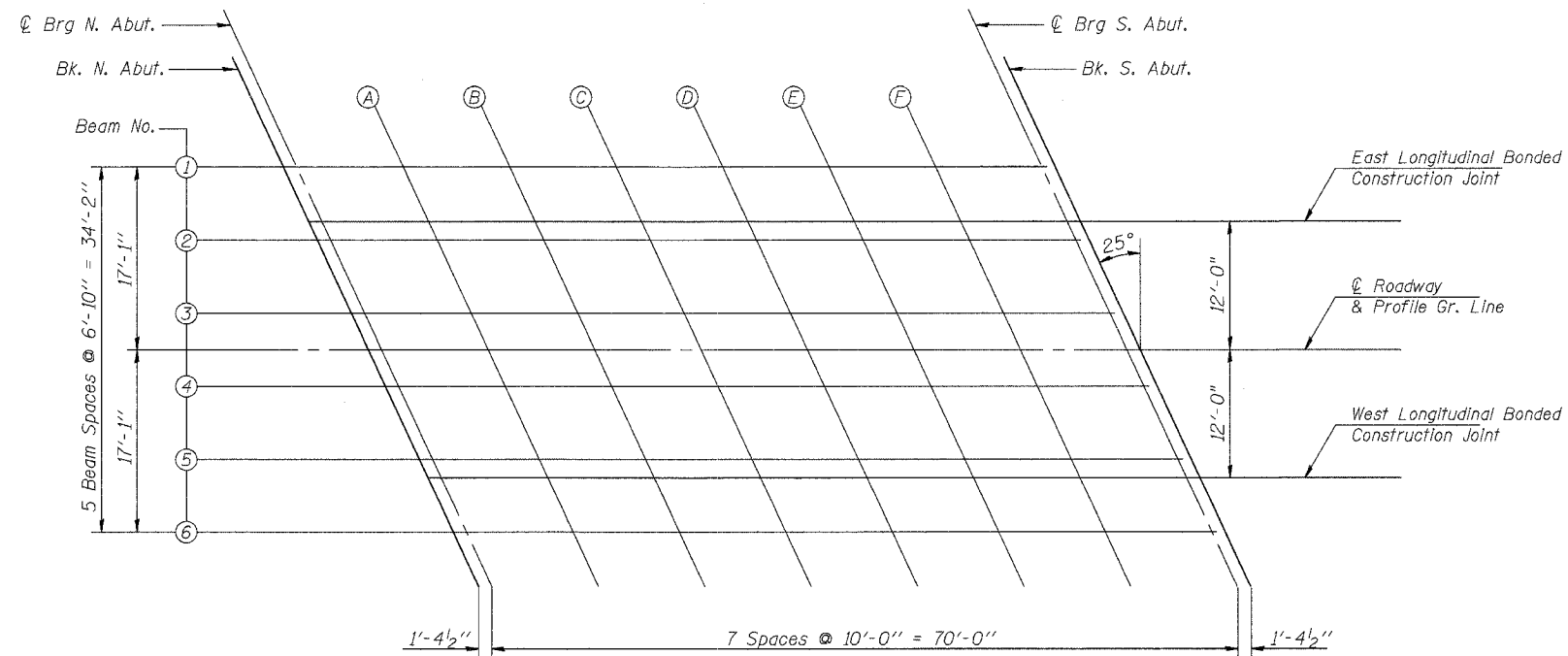
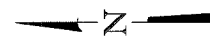
Note:

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 13.



To determine "h": 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" shown on sheet 4 of 13, minus slab thickness, equals the fillet heights "h" above top flange of beams.

FILLET HEIGHTS



PLAN

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

E-S 10-22-04

Work this sheet with sheet 4 of 13.

TOP OF SLAB ELEVATIONS	
C.H. 15 OVER LITTLE SPRING CREEK SECTION 04-00077-01-BR SANGAMON COUNTY STA. 45+35 S.N. 084-3407	
CUMMINS ENGINEERING CORPORATION	JOB #: 2157 FILE: 2157SLAB DATE: 10/13/05

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	9
ILLINOIS PROJECT				

CONTRACT NO. 93414
Sheet 4 of 13

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4490.654	-17.083	590.214	590.214
⊕ Brg. N. Abut.	4492.029	-17.083	590.220	590.220
A	4502.029	-17.083	590.268	590.346
B	4512.029	-17.083	590.324	590.467
C	4522.029	-17.083	590.388	590.561
D	4532.029	-17.083	590.460	590.632
E	4542.029	-17.083	590.539	590.681
F	4552.029	-17.083	590.625	590.703
⊕ Brg. S. Abut.	4562.029	-17.083	590.720	590.720
Bk. S. Abut.	4563.404	-17.083	590.733	590.733

EAST LONGITUDINAL BONDED CONSTRUCTION JOINT

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4493.024	-12.000	590.330	590.330
⊕ Brg. N. Abut.	4494.399	-12.000	590.337	590.337
A	4504.399	-12.000	590.387	590.464
B	4514.399	-12.000	590.445	590.587
C	4524.399	-12.000	590.510	590.683
D	4534.399	-12.000	590.583	590.756
E	4544.399	-12.000	590.664	590.807
F	4554.399	-12.000	590.753	590.830
⊕ Brg. S. Abut.	4564.399	-12.000	590.849	590.849
Bk. S. Abut.	4565.774	-12.000	590.863	590.863

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4493.840	-10.250	590.361	590.361
⊕ Brg. N. Abut.	4495.215	-10.250	590.368	590.368
A	4505.215	-10.250	590.419	590.496
B	4515.215	-10.250	590.477	590.620
C	4525.215	-10.250	590.543	590.716
D	4535.215	-10.250	590.617	590.790
E	4545.215	-10.250	590.698	590.841
F	4555.215	-10.250	590.788	590.865
⊕ Brg. S. Abut.	4565.215	-10.250	590.884	590.884
Bk. S. Abut.	4566.590	-10.250	590.898	590.898

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4497.027	-3.417	590.483	590.483
⊕ Brg. N. Abut.	4498.402	-3.417	590.490	590.490
A	4508.402	-3.417	590.543	590.620
B	4518.402	-3.417	590.604	590.747
C	4528.402	-3.417	590.672	590.845
D	4538.402	-3.417	590.749	590.921
E	4548.402	-3.417	590.833	590.975
F	4558.402	-3.417	590.924	591.002
⊕ Brg. S. Abut.	4568.402	-3.417	591.023	591.023
Bk. S. Abut.	4569.777	-3.417	591.038	591.038

⊕ ROADWAY & PROFILE GRADE LINE

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4498.620	0.000	590.544	590.544
⊕ Brg. N. Abut.	4500.000	0.000	590.551	590.551
A	4510.000	0.000	590.605	590.683
B	4520.000	0.000	590.668	590.810
C	4530.000	0.000	590.737	590.910
D	4540.000	0.000	590.815	590.987
E	4550.000	0.000	590.900	591.043
F	4560.000	0.000	590.993	591.070
⊕ Brg. S. Abut.	4570.000	0.000	591.093	591.093
Bk. S. Abut.	4571.380	0.000	591.108	591.108

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4500.213	3.417	590.499	590.499
⊕ Brg. N. Abut.	4501.588	3.417	590.506	590.506
A	4511.588	3.417	590.561	590.639
B	4521.588	3.417	590.625	590.768
C	4531.588	3.417	590.696	590.868
D	4541.588	3.417	590.775	590.947
E	4551.588	3.417	590.861	591.004
F	4561.588	3.417	590.955	591.032
⊕ Brg. S. Abut.	4571.588	3.417	591.057	591.057
Bk. S. Abut.	4572.963	3.417	591.071	591.071

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4503.400	10.250	590.409	590.409
⊕ Brg. N. Abut.	4504.775	10.250	590.416	590.416
A	4514.775	10.250	590.474	590.552
B	4524.775	10.250	590.540	590.683
C	4534.775	10.250	590.613	590.786
D	4544.775	10.250	590.695	590.867
E	4554.775	10.250	590.783	590.926
F	4564.775	10.250	590.880	590.957
⊕ Brg. S. Abut.	4574.775	10.250	590.984	590.984
Bk. S. Abut.	4576.150	10.250	590.999	590.999

WEST LONGITUDINAL BONDED CONSTRUCTION JOINT

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4504.216	12.000	590.386	590.386
⊕ Brg. N. Abut.	4505.591	12.000	590.393	590.393
A	4515.591	12.000	590.452	590.529
B	4525.591	12.000	590.518	590.661
C	4535.591	12.000	590.593	590.765
D	4545.591	12.000	590.674	590.847
E	4555.591	12.000	590.764	590.907
F	4565.591	12.000	590.861	590.938
⊕ Brg. S. Abut.	4575.591	12.000	590.966	590.966
Bk. S. Abut.	4576.966	12.000	590.981	590.981

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N. Abut.	4506.586	17.083	590.293	590.293
⊕ Brg. N. Abut.	4507.961	17.083	590.301	590.301
A	4517.961	17.083	590.361	590.439
B	4527.961	17.083	590.430	590.572
C	4537.961	17.083	590.505	590.678
D	4547.961	17.083	590.589	590.762
E	4557.961	17.083	590.680	590.823
F	4567.961	17.083	590.779	590.857
⊕ Brg. S. Abut.	4577.961	17.083	590.886	590.886
Bk. S. Abut.	4579.336	17.083	590.901	590.901

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

E-S

10-22-04

Work this sheet with sheet 3 of 13.

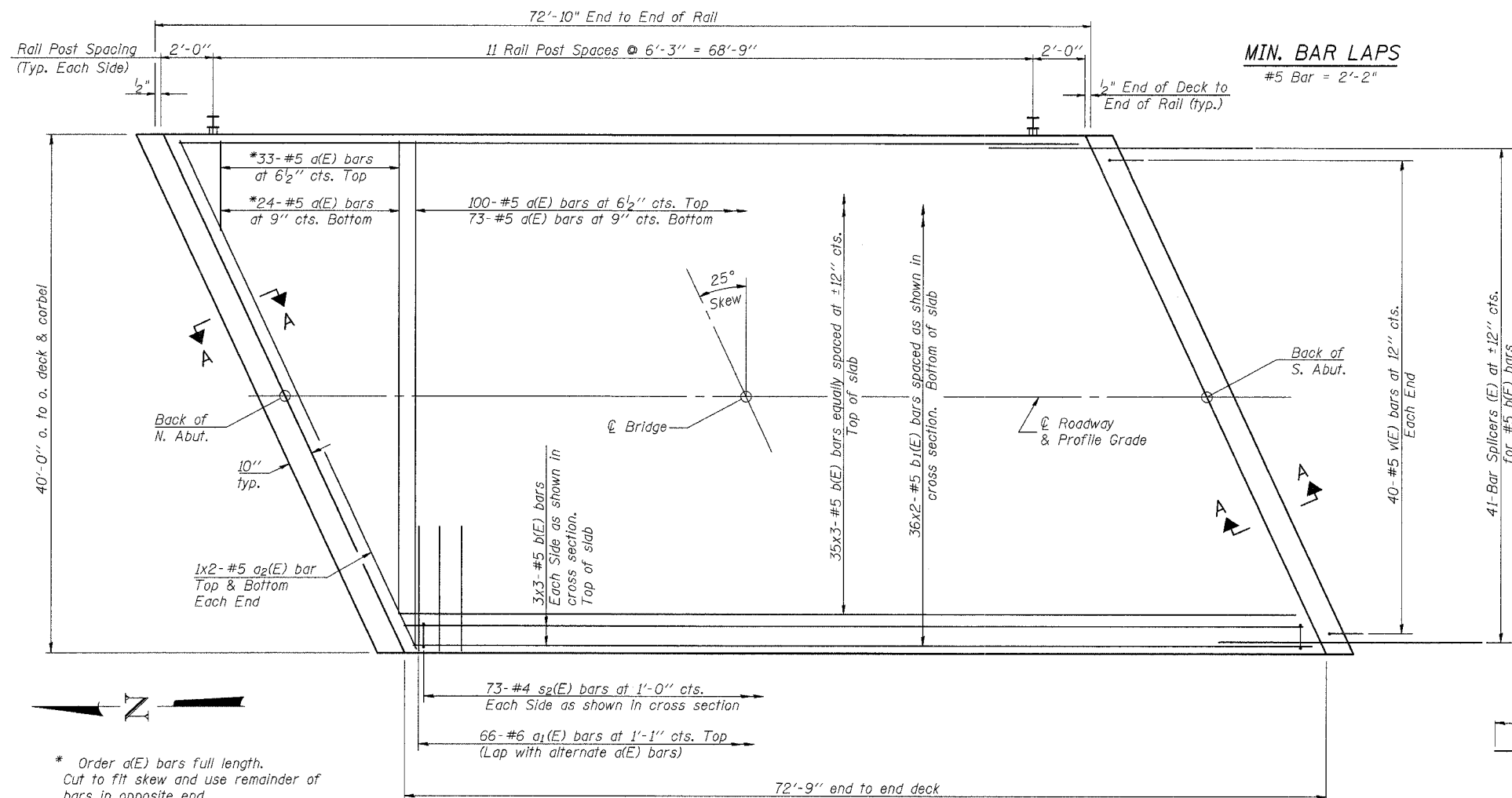
TOP OF SLAB ELEVATIONS

C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

CUMMINS ENGINEERING CORPORATION	JOB #: 2157
	FILE: 2157SLAB
	DATE: 10/13/05

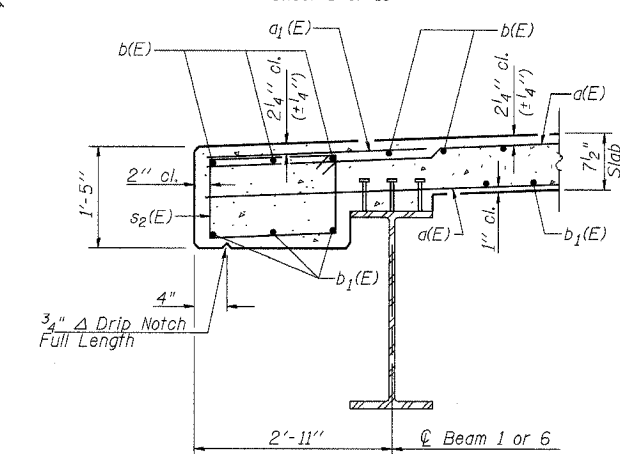
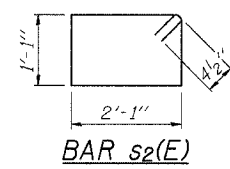
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	10
ILLINOIS PROJECT				

CONTRACT NO. 93414
Sheet 5 of 13



* Order a(E) bars full length. Cut to fit skew and use remainder of bars in opposite end.

PLAN



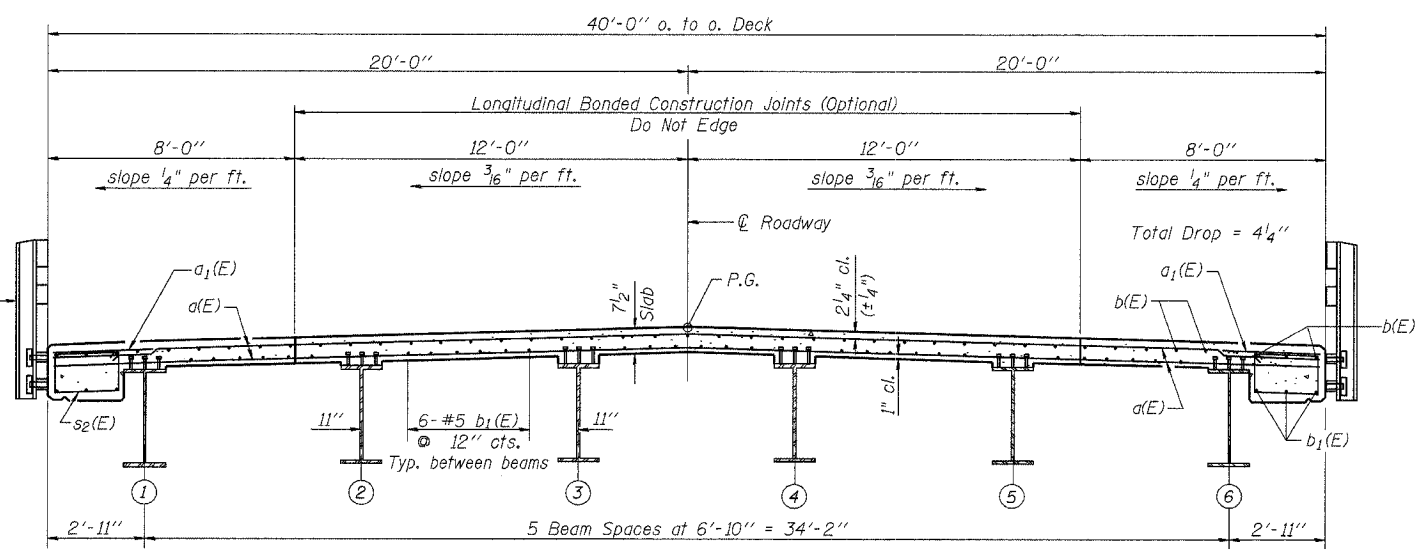
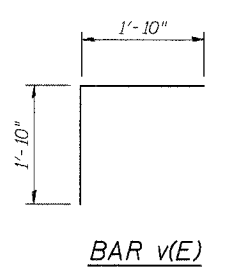
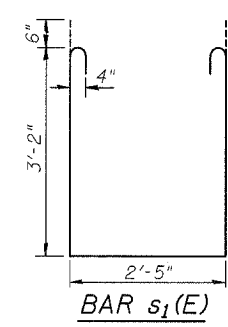
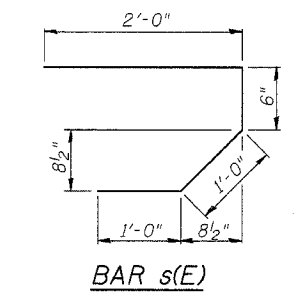
SECTION THRU EDGE OF SLAB

Reinforcement bars in the top of the deck may be placed with a 1/2" minimum clearance in the area of the rail post anchor devices. 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.

SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(E)	230	#5	39'-8"	—
a ₁ (E)	132	#6	4'-6"	—
a ₂ (E)	8	#5	23'-0"	—
b(E)	123	#5	25'-7"	—
b ₁ (E)	72	#5	37'-5"	—
m(E)	20	#6	23'-3"	—
m ₁ (E)	24	#6	9'-8"	—
m ₂ (E)	10	#6	7'-2"	—
m ₃ (E)	4	#6	2'-10"	—
s(E)	82	#5	4'-6"	U
s ₁ (E)	72	#4	9'-9"	U
s ₂ (E)	146	#4	7'-1"	U
v(E)	80	#5	3'-8"	L
Concrete Superstructure		Cu. Yd.	106	
Reinforcement Bars, Epoxy Coated		Pound	19720	
Bar Splacers		Each	82	

Notes:
Reinforcement bars designated (E) shall be epoxy coated.
Bars indicated thus 35 x 3-#5 etc. indicates 35 lines of bars with 3 lengths per line.
See Sheet 6 of 13 for diaphragm details and Section A-A.



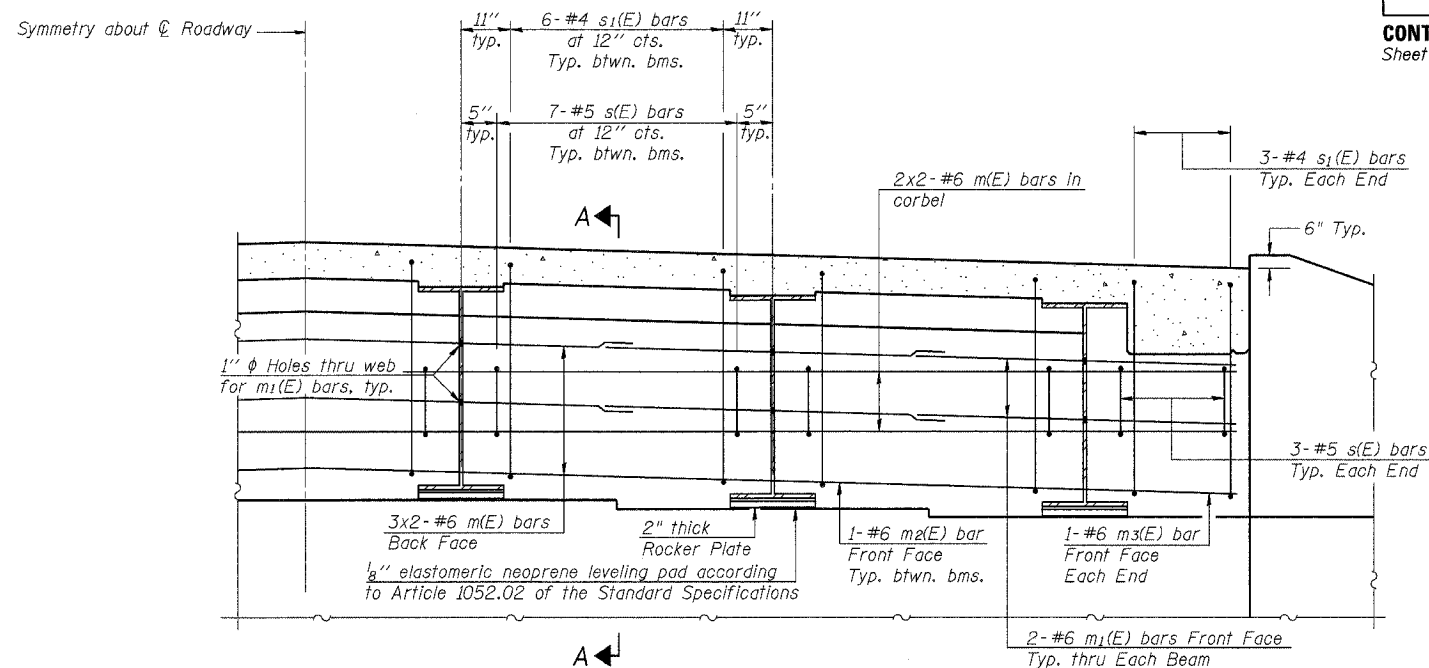
CROSS SECTION
(Looking South)

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

SUPERSTRUCTURE
C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407
CUMMINS ENGINEERING CORPORATION
JOB #: 2157
FILE #: 2157SUPER
DATE: 10/13/05

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	11
ILLINOIS PROJECT				

CONTRACT NO. 93414
Sheet 6 of 13



DIAPHRAGM ELEVATION AT ABUTMENT

Notes:

Reinforcement bars in diaphragm are billed with superstructure on sheet 5 of 13.

Concrete in diaphragm is included with Concrete Superstructure on sheet 5 of 13.

For details of bars s(E), s1(E) & v(E) see sheet 5 of 13.

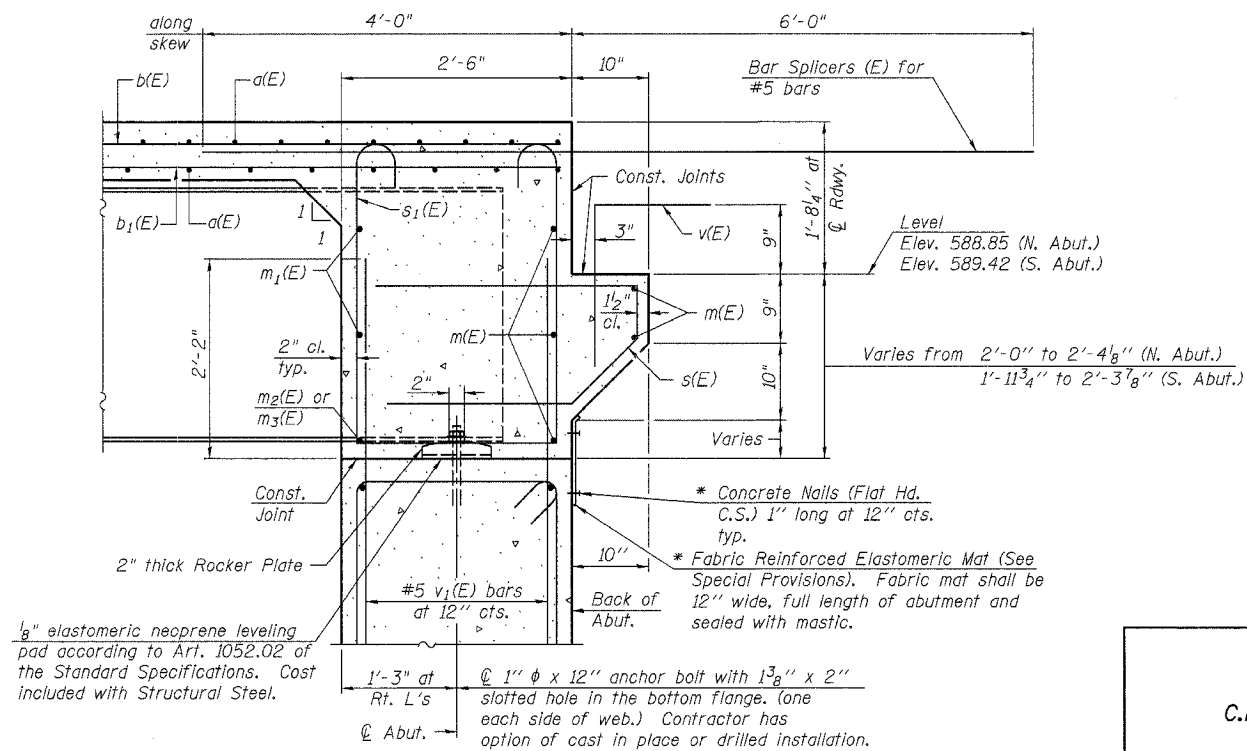
The s(E) and s1(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.

For anchor bolt details see sheet 13 of 13.

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

MIN. BAR LAP

#6 bar = 2'-9"



SECTION A-A

Dimensions at right angles to abutment, except as shown.
* Cost included with Concrete Superstructure.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

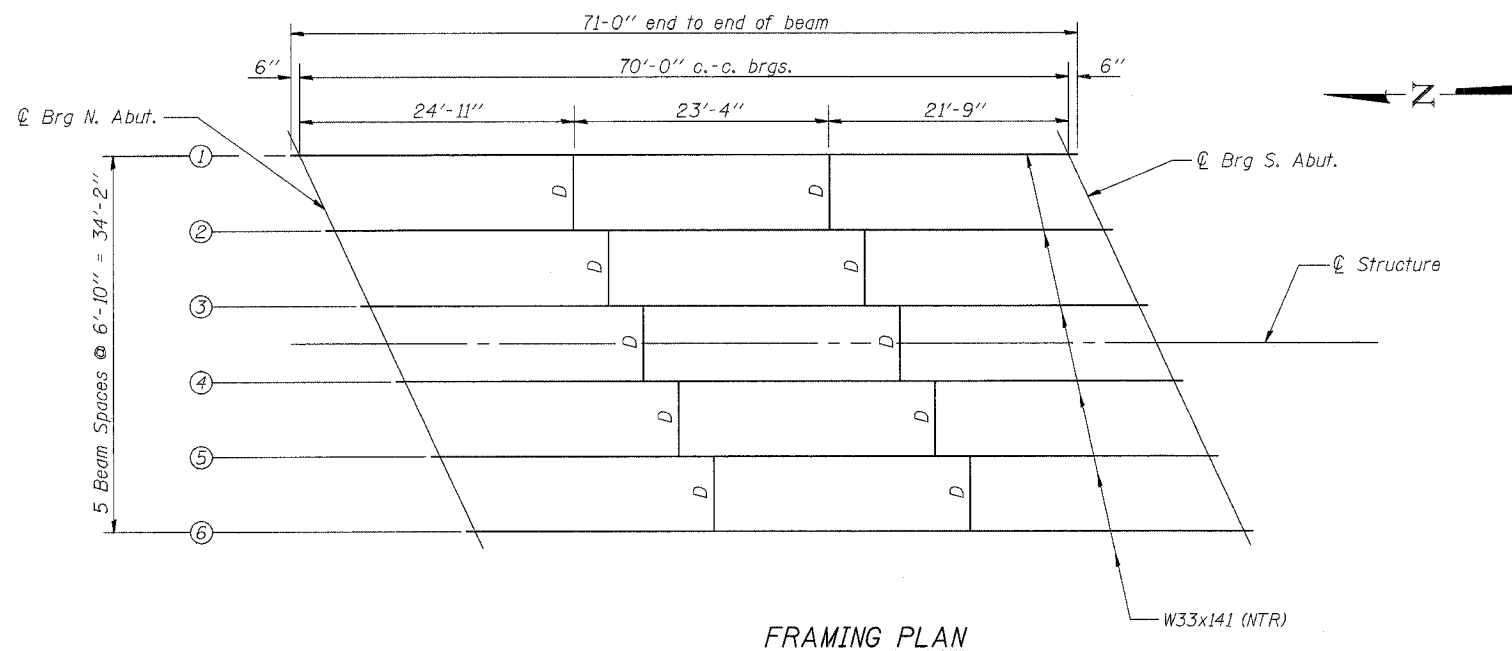
DIAPHRAGM DETAILS

C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

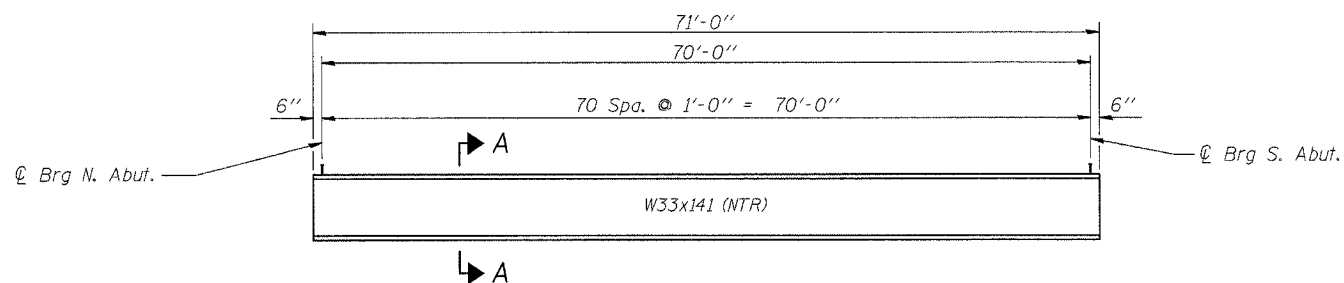
CUMMINS ENGINEERING CORPORATION	JOB #: 2157
	FILE: 2157SUPER
	DATE: 10/13/05

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	12
ILLINOIS PROJECT				

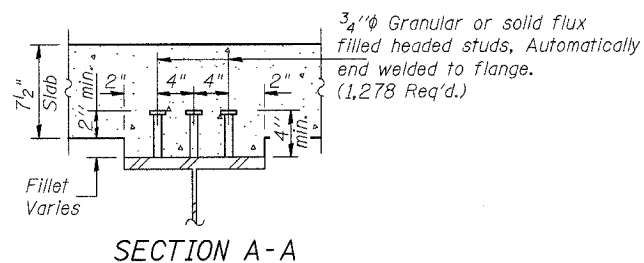
CONTRACT NO. 93414
Sheet 7 of 13



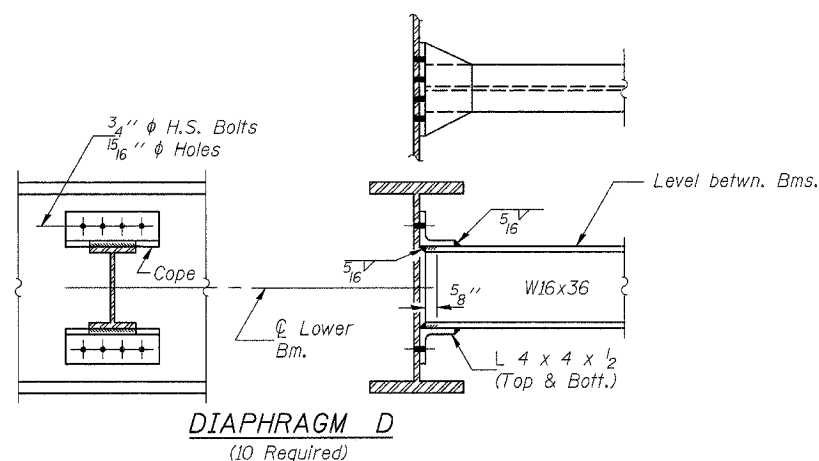
FRAMING PLAN



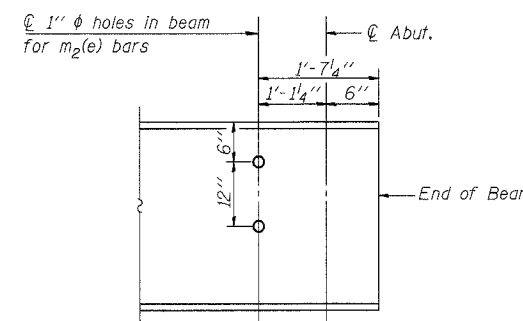
BEAM ELEVATION
(Showing Shear Connector Spacing)



SECTION A-A



DIAPHRAGM D
(10 Required)



TYP. END OF BEAM ELEVATION

TOP OF BEAM ELEVATIONS
(For Fabrication Only)

Location	☉ Brg. N. Abut.	☉ Brg. S. Abut.
Beam 1	589.46	590.05
Beam 2	589.63	590.22
Beam 3	589.77	590.36
Beam 4	589.80	590.39
Beam 5	589.73	590.32
Beam 6	589.63	590.22

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (Overload).
 $I_{c(n)}$ and $S_{c(n)}$ are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

$I_{c(3n)}$ and $S_{c(3n)}$ are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (see AASHTO 10.38)
VR is the maximum Live Load + Impact shear range in span.

The Plastic Moment capacity (M_u) is computed according to AASHTO 10.48.1 and 10.50.1.1.

f_s (Overload) is the sum of the stresses due to $M_D + M_{SD} + 5_3(M_L + M_{Imp})$.

M_D - Moment due to dead loads on non-composite section.

M_{SD} - Moment due to dead loads on composite section.

M_L - Moment due to live loads on composite section.

M_{Imp} - Moment due to live load impact on composite section.

M_a (Applied Moment) = $1.3[M_D + M_{SD} + 5_3(M_L + M_{Imp})]$.

	Abuts.
R_D	(k) 49.6
R_L	(k) 38.7
Imp.	(k) 10.1
R (Total)	(k) 98.4

	0.5 Span
I_s	(in ⁴) 7450
I_c (n)	(in ⁴) 19065
I_c (3n)	(in ⁴) 13986
S_s	(in ³) 448
S_c (n)	(in ³) 643
S_c (3n)	(in ³) 582
\bar{D}	(k/ft.) 1.062
M_D	(k) 650
s_D	(k/ft.) 0.353
M_{SD}	(k) 216
M_L	(k) 612
M_{Imp}	(k) 159
$5_3[M_L + M_{Imp}]$	(k) 1285
M_a	(k) 2796
* M_u	(k) 3053
f_s non-comp (k.s.i.)	17.4
f_s (comp) (k.s.i.)	4.5
$f_s 5_3(L + Imp)$ (k.s.i.)	24.0
f_s (Overload) (k.s.i.)	45.9
VR	(k) 48.8

*Compact, Braced Section

Notes:

All steel for beams, diaphragms and connection L's shall be AASHTO M270, Grade 50W.

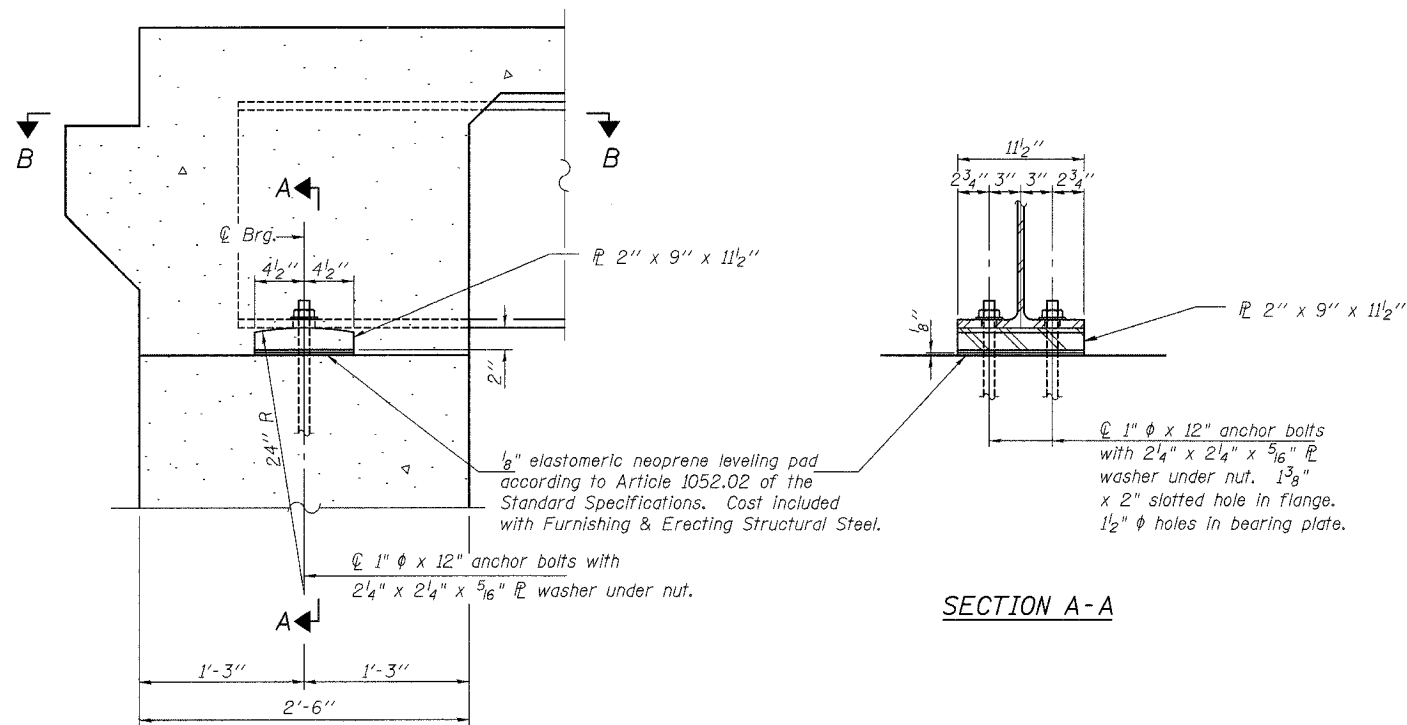
Two hardened washers shall be required over all 1 5/16" ϕ holes. "NTR" denotes members to which Notch Toughness Requirements, Zone 2 are applicable.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

STRUCTURAL STEEL	
C.H. 15 OVER LITTLE SPRING CREEK SECTION 04-00077-01-BR SANGAMON COUNTY STA. 45+35 S.N. 084-3407	
CUMMINS ENGINEERING CORPORATION	JOB #: 2157 FILE: 2157SS DATE: 10/13/05

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	13
ILLINOIS PROJECT				

CONTRACT NO. 93414
Sheet 8 of 13



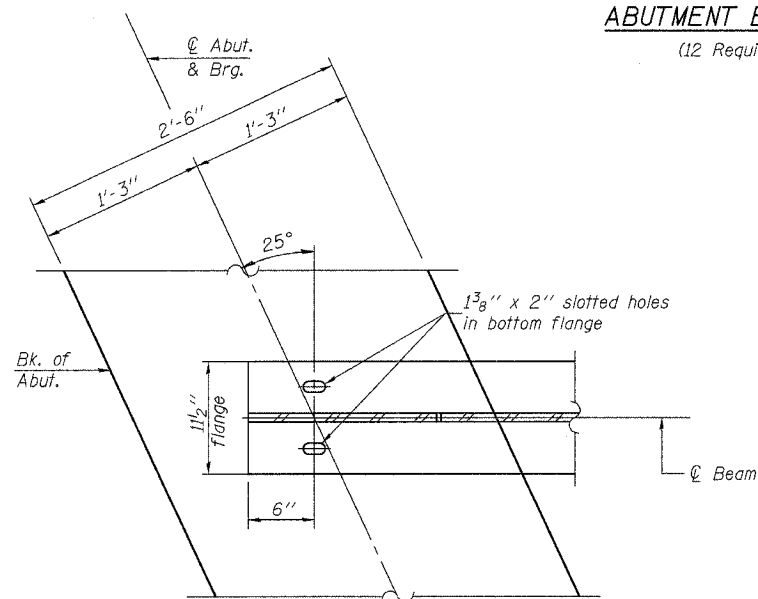
ELEVATION AT ABUTMENT

(Dimensions at Rt. L's)

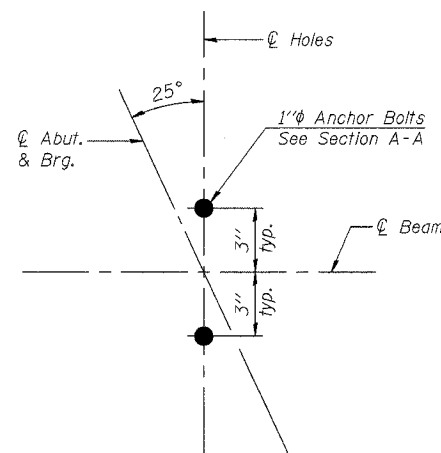
SECTION A-A

ABUTMENT BEARING

(12 Required)



SECTION B-B



ANCHOR BOLT LAYOUT AT ABUTMENTS

Notes:
Steel bearing plates shall be AASHTO M270, Grade 50W.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

BEARING DETAILS

C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

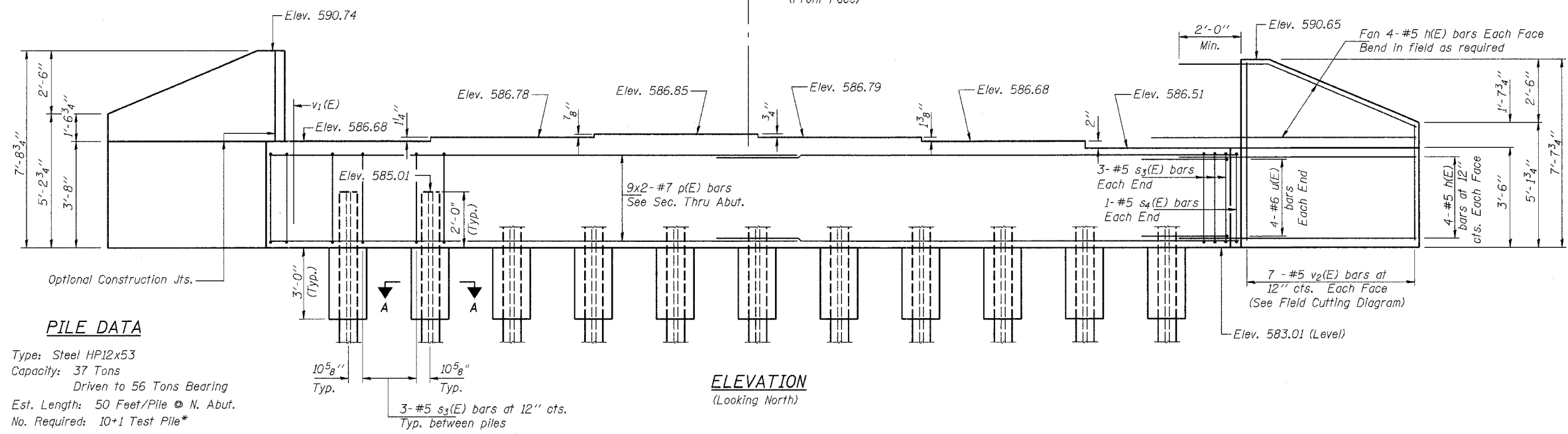
CUMMINS ENGINEERING CORPORATION	JOB #: 2157
	FILE: 2157BRG
	DATE: 10/13/05

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	14
ILLINOIS PROJECT				

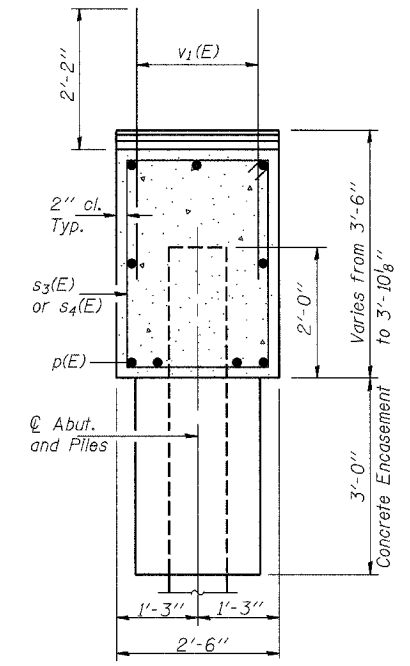
CONTRACT NO. 93414
Sheet 9 of 13

Notes: All edges shall have standard $\frac{3}{4}$ " chamfers unless otherwise noted.
Reinforcement bars designated (E) shall be epoxy coated.
Pour steps monolithically with cap.

MIN. BAR LAP
#7 bar = 3'-5"



ELEVATION
(Looking North)

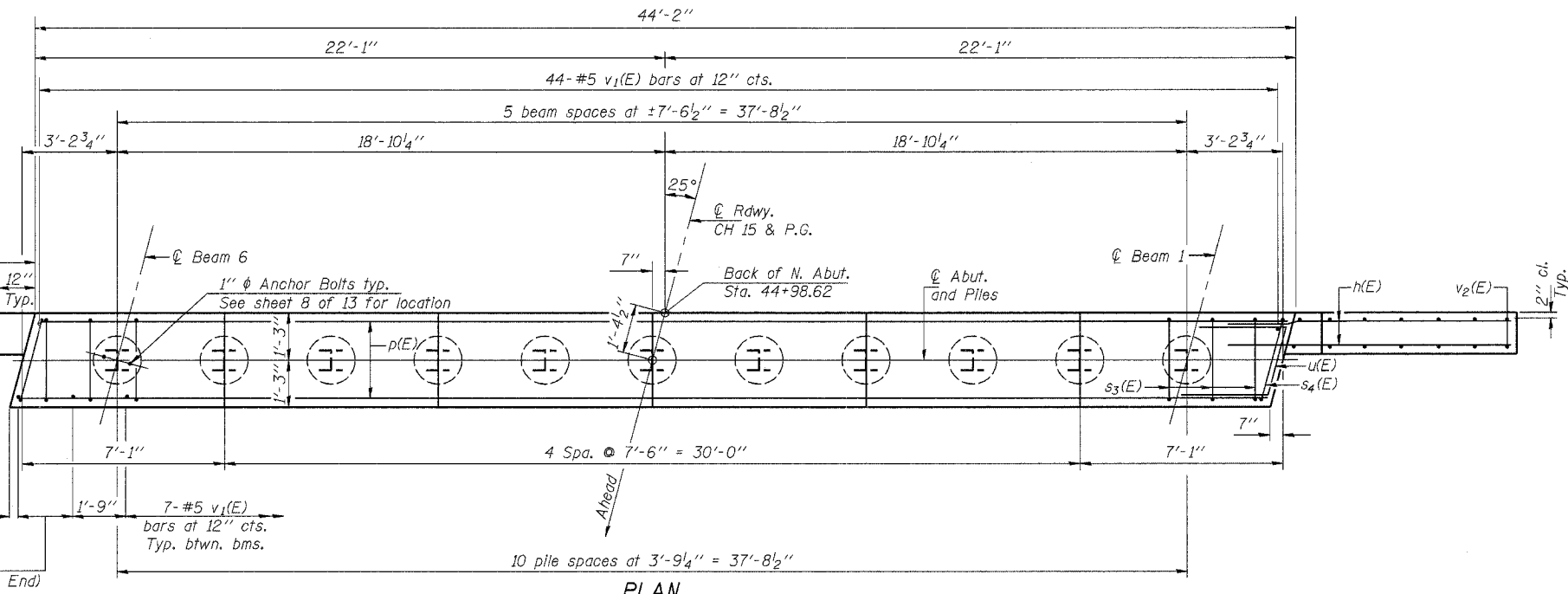


SEC. THRU ABUT.
(@ Rt. & S)

PILE DATA

Type: Steel HP12x53
Capacity: 37 Tons
Driven to 56 Tons Bearing
Est. Length: 50 Feet/Pile @ N. Abut.
No. Required: 10+1 Test Pile*

* Drive Test Piles to Refusal
Est. Length = 70' @ N. Abut.



PLAN

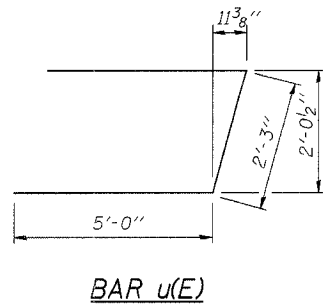
BILL OF MATERIAL-N. ABUT.

Bar	No.	Size	Length	Shape
h(E)	32	#5	8'-11"	—
p(E)	18	#7	23'-8"	—
s3(E)	36	#5	11'-7"	□
s4(E)	2	#5	12'-0"	□
u(E)	8	#6	12'-3"	┌
v1(E)	85	#5	4'-4"	—
v2(E)	14	#5	12'-1"	—
Concrete Structures		Cu. Yd.	18.2	
Reinforcement Bars, Epoxy Coated		Pound	2340	
Structure Excavation		Cu. Yd.	110	
Steel Piles HP12x53		Ft.	500	
Test Pile HP12x53		Each	1	

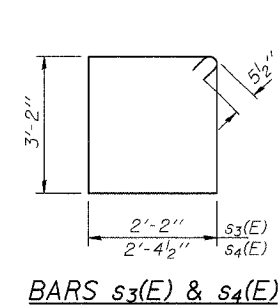
Note: Bars indicated thus 9 x 2-#7 etc. indicates 9 lines of bars with 2 lengths per line.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

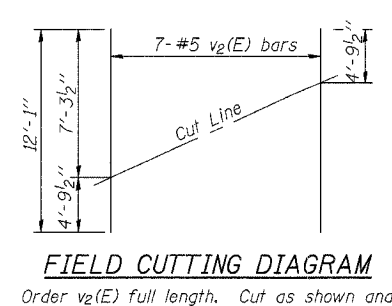
AI-R 10-22-04



BAR u(E)

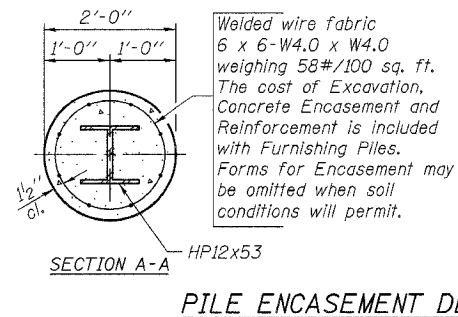


BARS s3(E) & s4(E)



FIELD CUTTING DIAGRAM

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



PILE ENCASEMENT DETAIL

NORTH ABUTMENT

C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

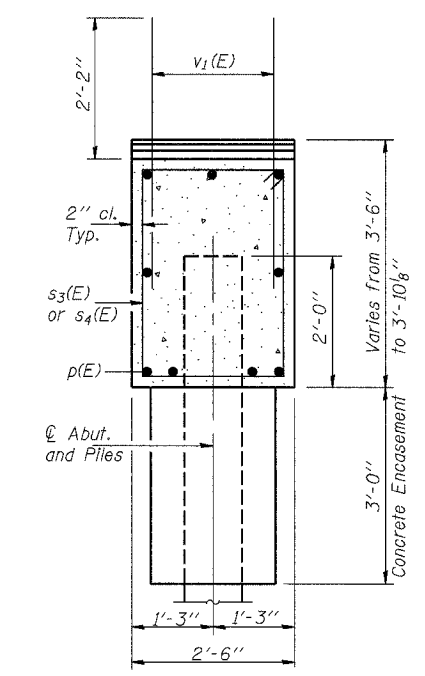
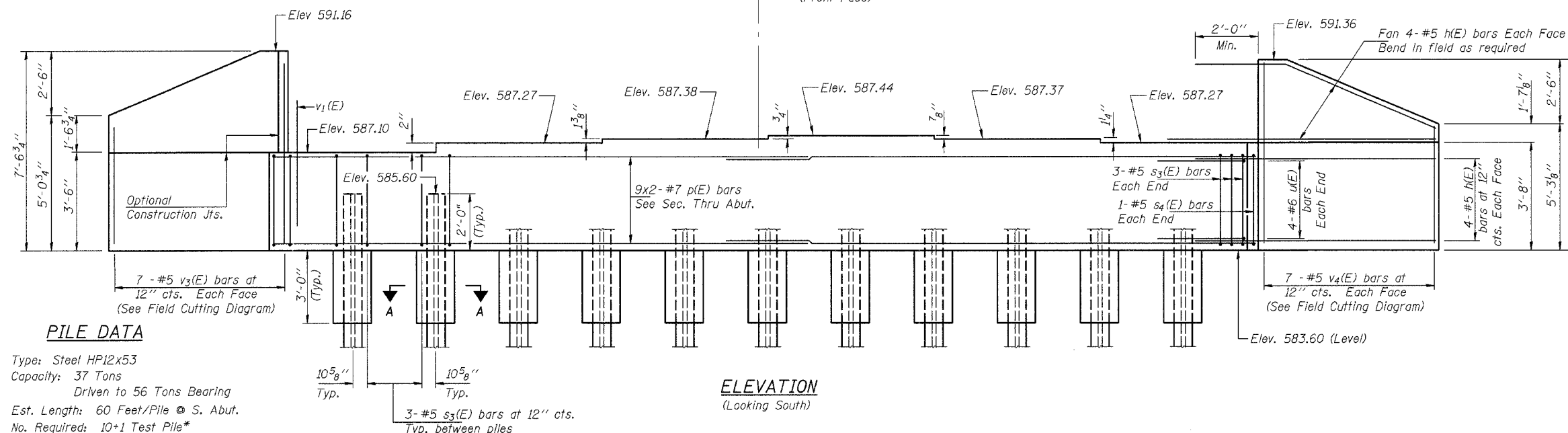
CUMMINS ENGINEERING CORPORATION	JOB #: 2157
	FILE: 215TABUTS
	DATE: 3/14/06

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	15
ILLINOIS PROJECT				

CONTRACT NO. 93414
Sheet 10 of 13

Notes: All edges shall have standard 3/4" chamfers unless otherwise noted.
Reinforcement bars designated (E) shall be epoxy coated.
Four steps monolithically with cap.

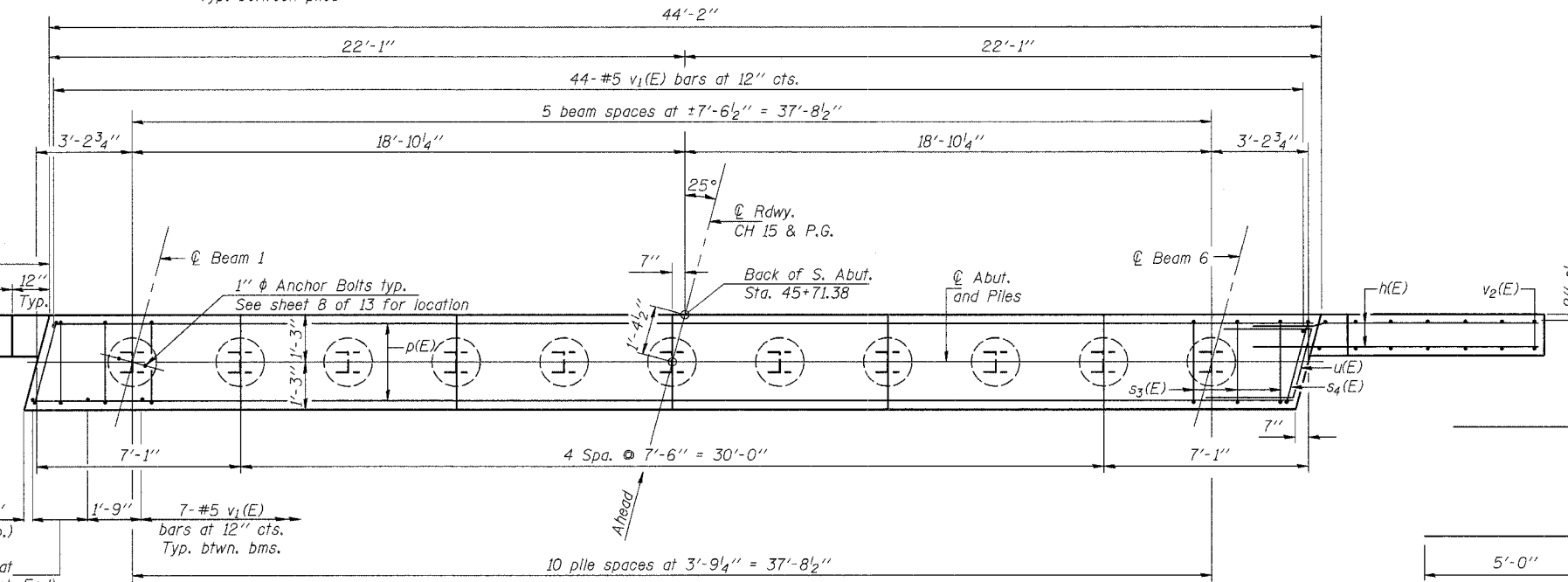
MIN. BAR LAP
#7 bar = 3'-5"



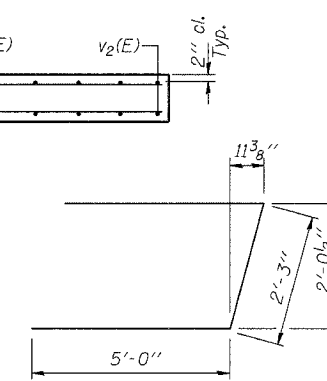
SEC. THRU ABUT.
(@ Rt. Δ's)

PILE DATA
Type: Steel HP12x53
Capacity: 37 Tons
Driven to 56 Tons Bearing
Est. Length: 60 Feet/Pile @ S. Abut.
No. Required: 10+1 Test Pile*
* Drive Test Piles to Refusal
Est. Length = 100' @ S. Abut.

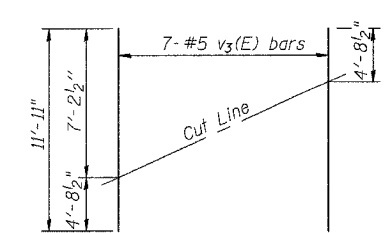
ELEVATION
(Looking South)



PLAN

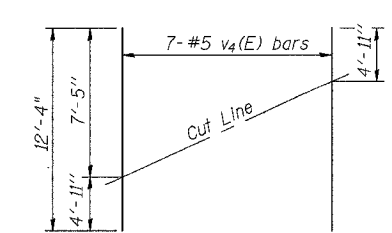


BAR u(E)



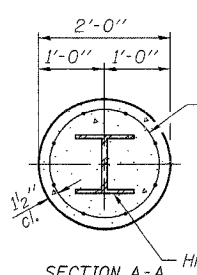
FIELD CUTTING DIAGRAM

Order v3(E) full length. Cut as shown and use remainder of bars in opposite face.



FIELD CUTTING DIAGRAM

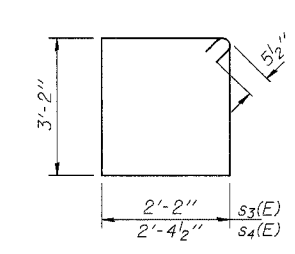
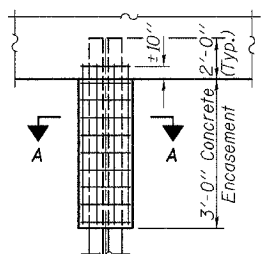
Order v4(E) full length. Cut as shown and use remainder of bars in opposite face.



SECTION A-A
HP12x53

PILE ENCASEMENT DETAIL

Welded wire fabric 6 x 6-W4.0 x W4.0 weighing 58#/100 sq. ft. The cost of Excavation, Concrete Encasement and Reinforcement is included with Furnishing Piles. Forms for Encasement may be omitted when soil conditions will permit.



BARS s3(E) & s4(E)

BILL OF MATERIAL-S. ABUT.

Bar	No.	Size	Length	Shape
h(E)	32	#5	8'-11"	—
p(E)	18	#7	23'-8"	—
s3(E)	36	#5	11'-7"	□
s4(E)	2	#5	12'-0"	□
u(E)	8	#6	12'-3"	┘
v1(E)	85	#5	4'-4"	—
v3(E)	7	#5	11'-11"	—
v4(E)	7	#5	12'-4"	—
Concrete Structures		Cu. Yd.	18.2	
Reinforcement Bars, Epoxy Coated		Pound	2340	
Structure Excavation		Cu. Yd.	110	
Steel Piles HP12x53		Ft.	600	
Test Pile HP12x53		Each	1	

Note: Bars indicated thus 9 x 2-#7 etc. indicates 9 lines of bars with 2 lengths per line.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

AI-R

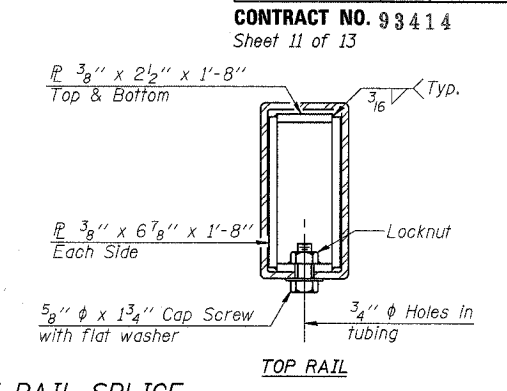
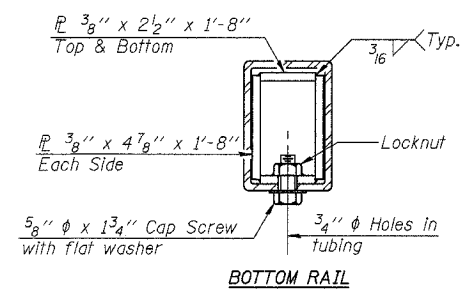
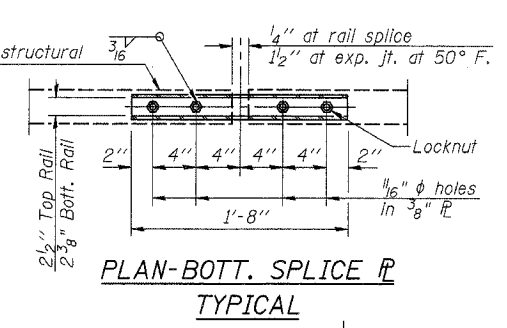
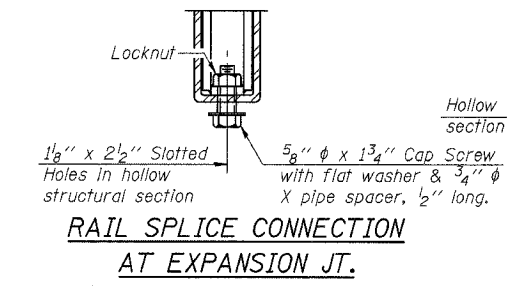
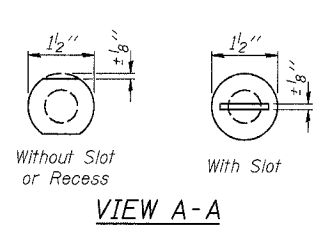
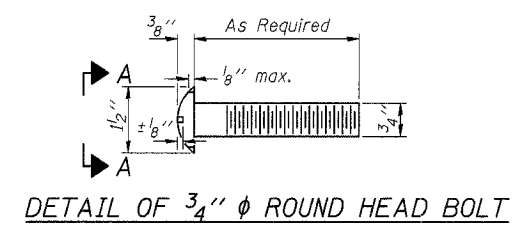
10-22-04

SOUTH ABUTMENT
C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

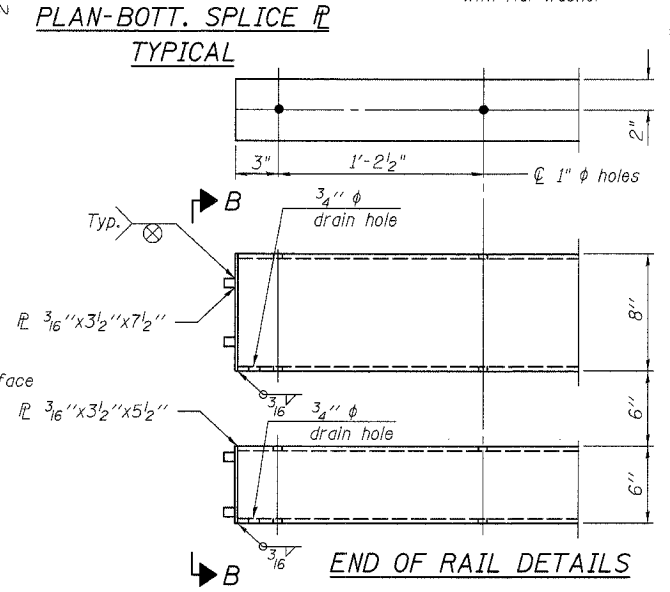
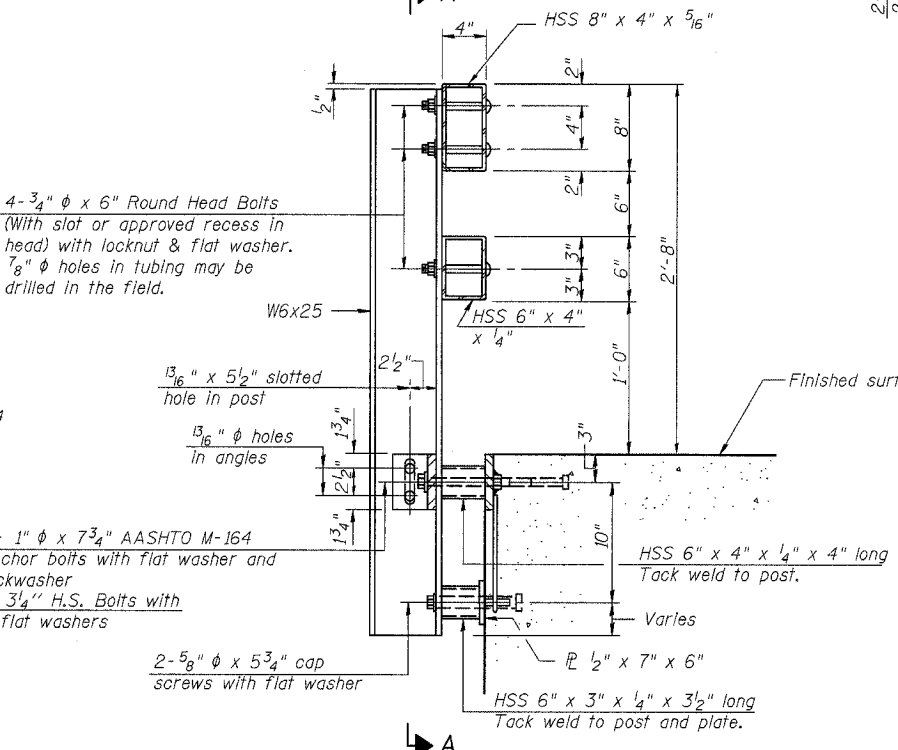
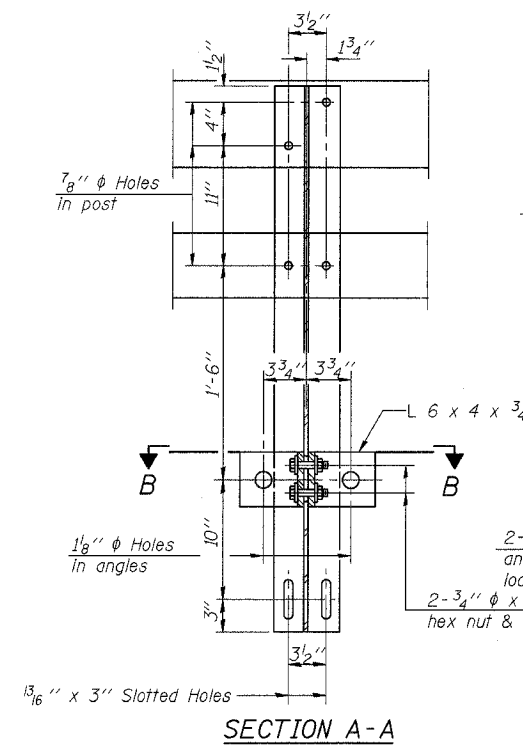
CUMMINS ENGINEERING CORPORATION
JOB #: 2157
FILE: 2157ABUTS
DATE: 10/13/05

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	16
ILLINOIS PROJECT				

CONTRACT NO. 93414
Sheet 11 of 13

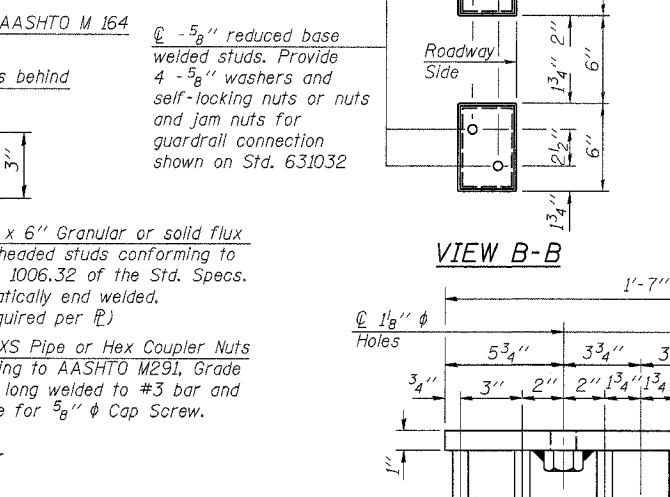
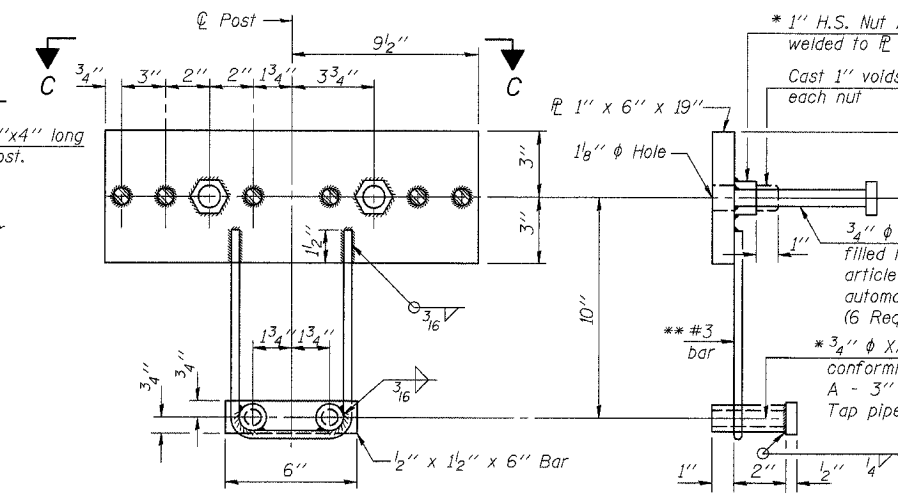
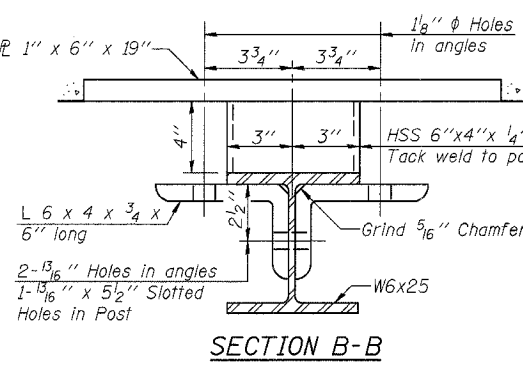


SECTIONS AT RAIL SPLICE



NOTES

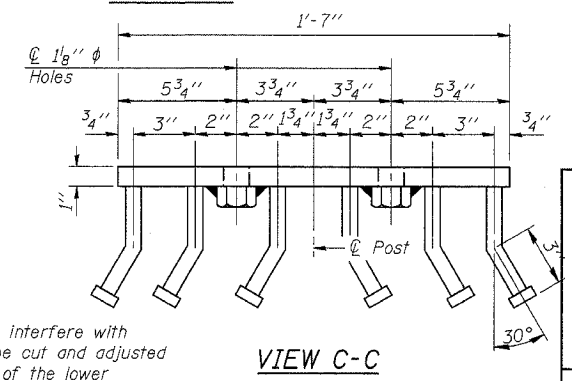
Hollow structural sections shall conform to the requirements of ASTM designation A 500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft-lbs at 0° F.
 All other steel shapes and plates shall conform to the requirements of AASHTO M 270 Grade 36 except posts and angles shall conform to AASHTO M 270, Grade 50.
 Bolts, cap screws, and nuts shall conform to the requirements of ASTM designation A 307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M 164.
 All bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 232.
 All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication according to AASHTO M 111 and ASTM A 385. Galvanized rail shall not be painted.
 Railing shall be according to Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for Steel Bridge Rail, Type SM.
 All field drilled holes shall be coated with an approved zinc rich paint before erection.
 For multi-span bridges, sufficient 1/4\"/>



BILL OF MATERIAL

Item	Unit	Quantity
Steel Bridge Rail, Type SM	Foot	146

TYPE SM
STEEL BRIDGE RAIL SIDE MOUNTED
C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407



DESIGNED Ruben V. Boehler
CHECKED Tim S. Howard
DRAWN Tim S. Howard
CHECKED Michael D. Cummins
R-34

10-22-04 (6'-3\"/>

* 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\"/>

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	17
		ILLINOIS PROJECT		

CONTRACT NO. 93414
Sheet 12 of 13

NOTES

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

- ① Minimum Capacity = $1.25 \times f_y \times A_t$
(Tension in kips)
- ② Minimum *Pull-out Strength = $1.25 \times f_{s_{allow}} \times A_t$
(Tension in kips)

Where f_y = Yield strength of lapped reinforcement bars in ksi.
 $f_{s_{allow}}$ = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)
 A_t = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	5.9
#5	2'-0"	23.0	9.2
#6	2'-7"	33.1	13.3
#7	3'-5"	45.1	18.0
#8	4'-6"	58.9	23.6
#9	5'-9"	75.0	30.0
#10	7'-3"	95.0	38.0
#11	9'-0"	117.4	46.8

Bar splicer assemblies shall be according to Section 508 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS."

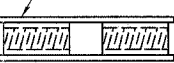
The diameter of this part is equal or larger than the diameter of bar spliced.

ROLLED THREAD DOWEL BAR



**** ONE PIECE**

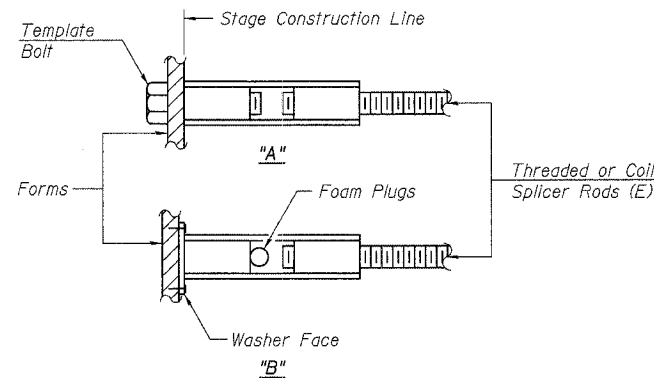
Wire Connector



WELDED SECTIONS

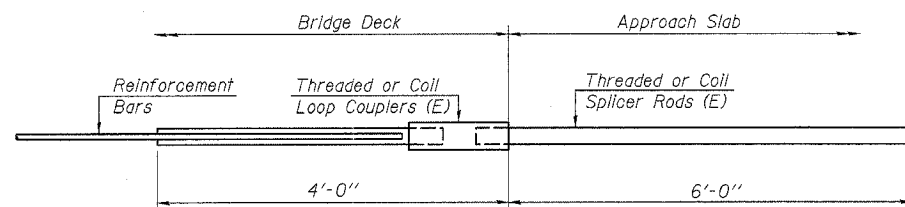
BAR SPLICER ASSEMBLY ALTERNATIVES

** Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



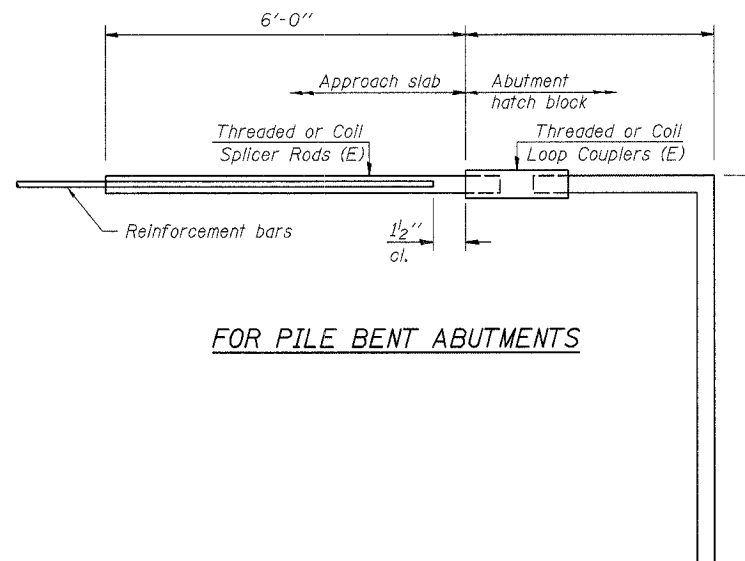
INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.
(E) : Indicates epoxy coating.



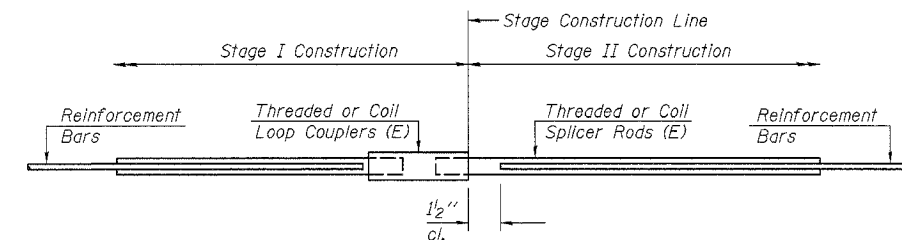
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required = 82



FOR PILE BENT ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required =



STANDARD

Bar Size	No. Assemblies Required	Location

BAR SPLICER ASSEMBLY DETAILS

C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

CUMMINS ENGINEERING CORPORATION
JOB #: 2157
FILE: 2157BARSP
DATE: 10/13/05

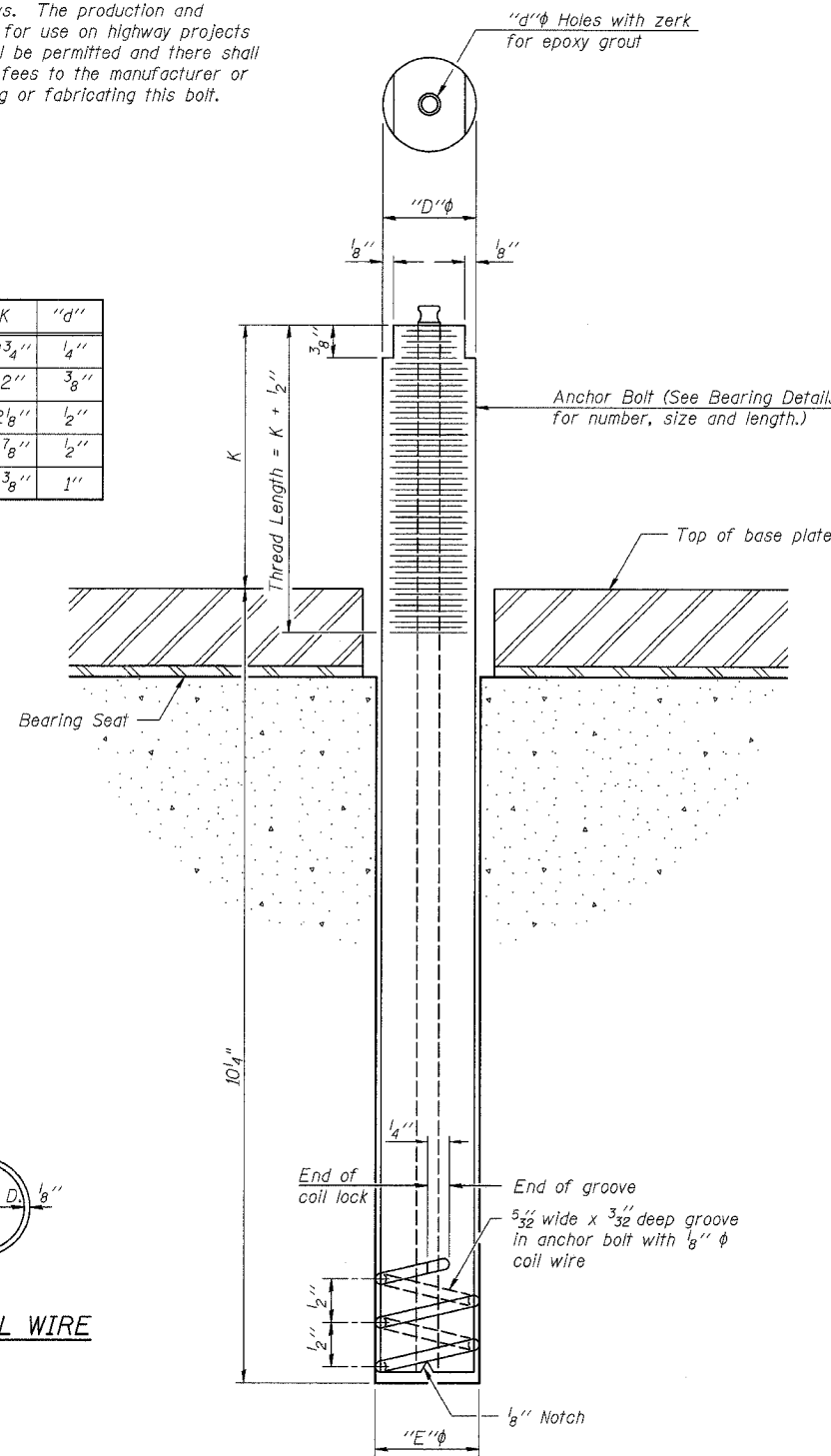
DESIGNED Ruben V. Boehler
CHECKED Tim S. Howard
DRAWN Tim S. Howard
CHECKED Michael D. Cummins

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 622	04-00077-01-BR	SANGAMON	22	18
ILLINOIS PROJECT				

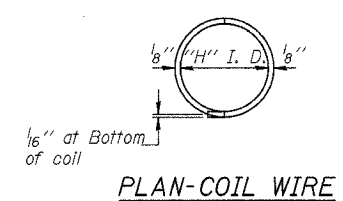
CONTRACT NO. 93414
Sheet 13 of 13

The Illinois Coil-Lock Anchor Bolt is a proprietary item which is the property of the Illinois Department of Transportation. Use, reproduction or disclosure without express written permission is prohibited and protected under Federal copyright laws. The production and the fabrication of this bolt for use on highway projects in the State of Illinois shall be permitted and there shall be no incurred charges or fees to the manufacturer or the fabricator for producing or fabricating this bolt.

D	E	H	K	"d"
1"	1/8"	3/16"	1 3/4"	1/4"
1 1/4"	1 3/8"	1 1/16"	2"	3/8"
1 1/2"	1 5/8"	1 5/16"	2 1/8"	1/2"
2"	2 1/8"	1 13/16"	2 7/8"	1/2"
2 1/2"	2 5/8"	2 5/16"	3 3/8"	1"



ILLINOIS COIL-LOCK ANCHOR BOLT



MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT

The anchor bolt shall be fabricated from cold drawn or hot finished seamless carbon steel mechanical tubing conforming to ASTM A 519, Grade 1026, CW and supplied with hexagonal nuts and cut washers.
The coil wire shall be made of any suitable soft steel wire.
The finished anchor bolt shall be cleaned of rust and other foreign materials and wrapped or packaged to prevent contamination until they are installed.
The epoxy grout shall be a two-component, epoxy resin bonding system conforming to ASTM C 881, Type I, Grade 1 and of a Class suitable for the temperature at installation.

INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

1. With the coil wire in place, the bolt shall be inserted into the hole and turned clockwise to a snug fit in the hole. Nut and washer shall be placed on the bolt. The nut shall be tensioned until the steel base plates are held securely to the concrete bearing seat.
2. Epoxy grout shall be pumped through the zerk fitting with a pressure gun. Pumping shall continue until the epoxy overflows the hole around the bolt shank. After pumping is discontinued, excess epoxy shall be immediately wiped off.

ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures.
The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:
1. A threaded rod stud with nut and washer of the type specified.
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

Location	Type
Abutments	A307

ASTM F 1554 Grade 105, ASTM A 449 and AASHTO M 314 Grade 105 anchor bolts may be substituted for the anchor bolts shown above.

GENERAL NOTES

Holes in the masonry for anchor bolts shall be drilled through the base plates to the diameter and depth shown or according to the manufacturer's recommendation after beams or girders have been erected and adjusted.
Prior to setting the bolts, the holes shall be dry and all dust and loose particles shall be removed by the use of compressed air or vacuuming.
The anchor bolts, furnished and installed and including the epoxy grout or capsules shall not be paid for separately but shall be included in the unit bid price for Furnishing and Erecting Structural Steel.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	Tim S. Howard
CHECKED	Michael D. Cummins

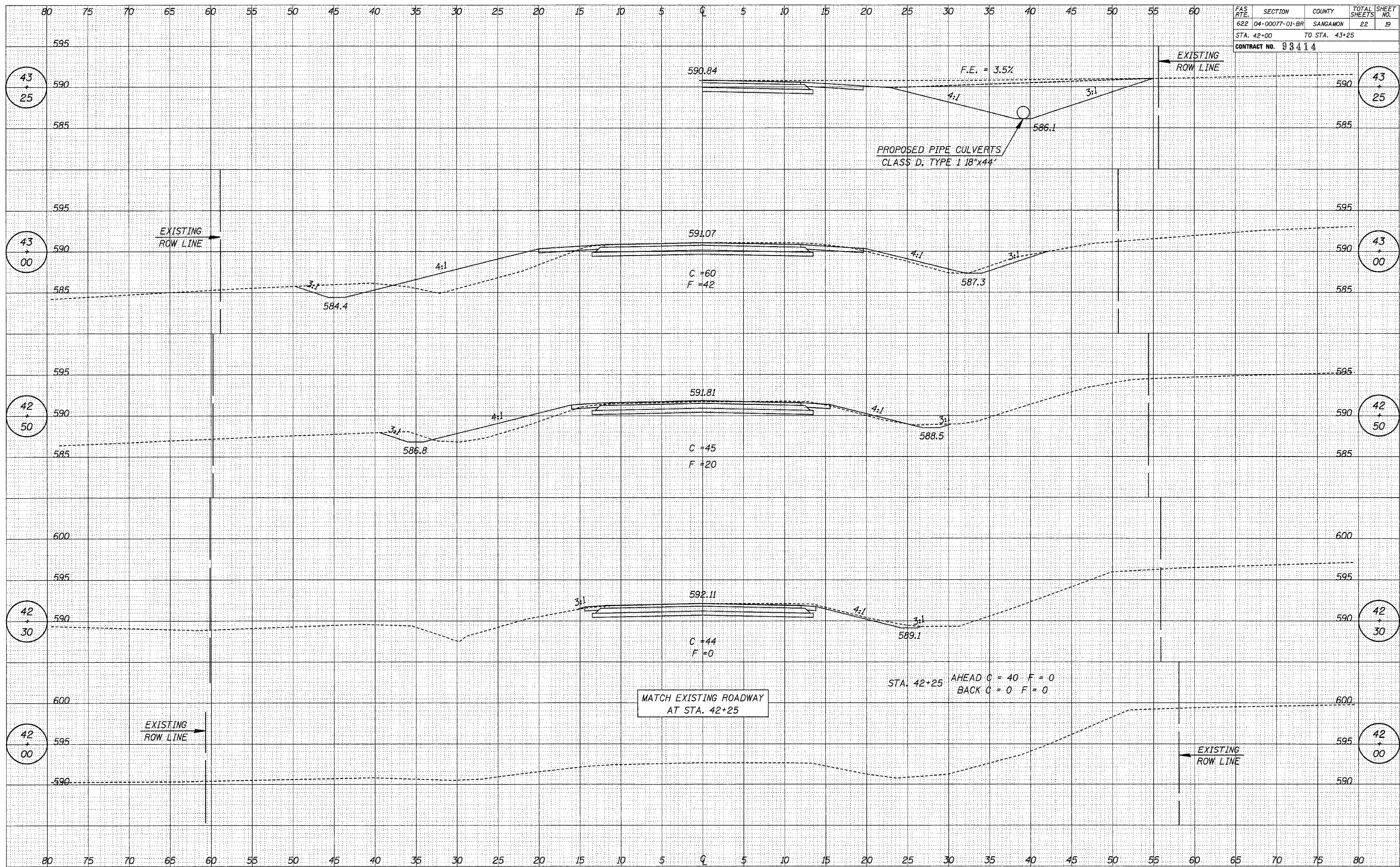
ANCHOR BOLT DETAILS FOR BEARINGS
C.H. 15 OVER LITTLE SPRING CREEK
SECTION 04-00077-01-BR
SANGAMON COUNTY
STA. 45+35
S.N. 084-3407

CUMMINS ENGINEERING CORPORATION

FAS. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
622	04-00077-01-BR	SANGAMON	22	19
STA. 42+00		TO STA. 43+25		
CONTRACT NO. 93414				

DATE	
BY	
REVISIONS	
DESIGNED	
PLOTTED	
TEMPLATE	
NOTE BOOK	
AREAS	
CREATED	
NO.	

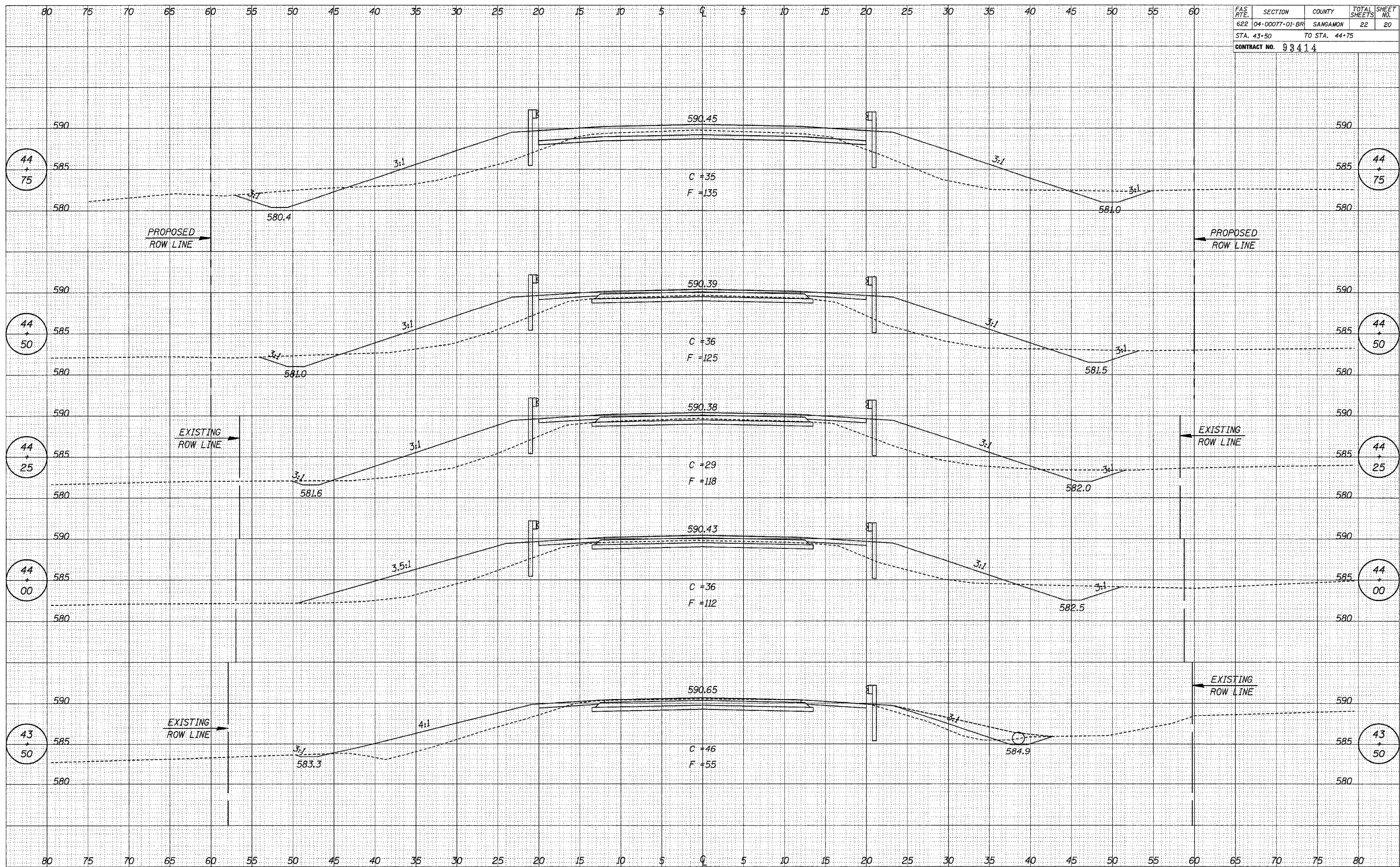
DATE	
BY	
REVISIONS	
DESIGNED	
PLOTTED	
TEMPLATE	
NOTE BOOK	
AREAS	
CREATED	
NO.	



FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
622	04-00077-01-BR	SANGAMON	22	20
STA. 43+50		TO STA. 44+75		
CONTRACT NO. 93414				

DATE	
BY	
FINAL SURVEY	
NOTE BOOK	
NO.	
ORIGINAL SURVEY	
NOTE BOOK	
NO.	

DATE	
BY	
FINAL SURVEY	
NOTE BOOK	
NO.	
ORIGINAL SURVEY	
NOTE BOOK	
NO.	



FAS. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
622	04-00077-01-BP	SANGAMON	22	21
STA. 46+00 TO STA. 47+20			CONTRACT NO. 93414	

DATE	
BY	
ENGINEER	
PLOTTED	
NOTE BOOK	
TEMPLATE	
AREAS	
CHECKED	

DATE	
BY	
ENGINEER	
PLOTTED	
NOTE BOOK	
TEMPLATE	
AREAS	
CHECKED	

