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- 6. SUPERSTRUCTURE DETAILS
- 7. BRIDGE RAILING
- 8. WEST ABUTMENT
- 9. EAST ABUTMENT
- 10. PILE DETAIL

- //. CROSS SECTIONS
- 12. EROSION CONTROL PLAN

LIST OF HIGHWAY STANDARDS

- STD.000001-05 Standard Symbols, Abbreviations, and Patterns
- STD.280001-04 Temporary Erosion Control Systems
- STD.515001-03 Name Plate for Bridges
- STD.701006-03 Off Road Operations, ect
- STD.701011-02 Off Road Moving Operations, ect
- STD.701301-03 Lane Closure, 2L 2W, Short time Operations
- STD.701901-01 Traffic Control Devices
- BLR.21-8 Typical Applications of Traffic Control Devices

SCALES:

- PLAN: 1"=N/A
- PROFILE HOR.: 1"=N/A
- PROFILE VERT: 1"=N/A'
- CROSS SECTIONS VERT: 1"=N/A
- CROSS SECTIONS HOR.: 1"=N/A

DESIGN INFORMATION

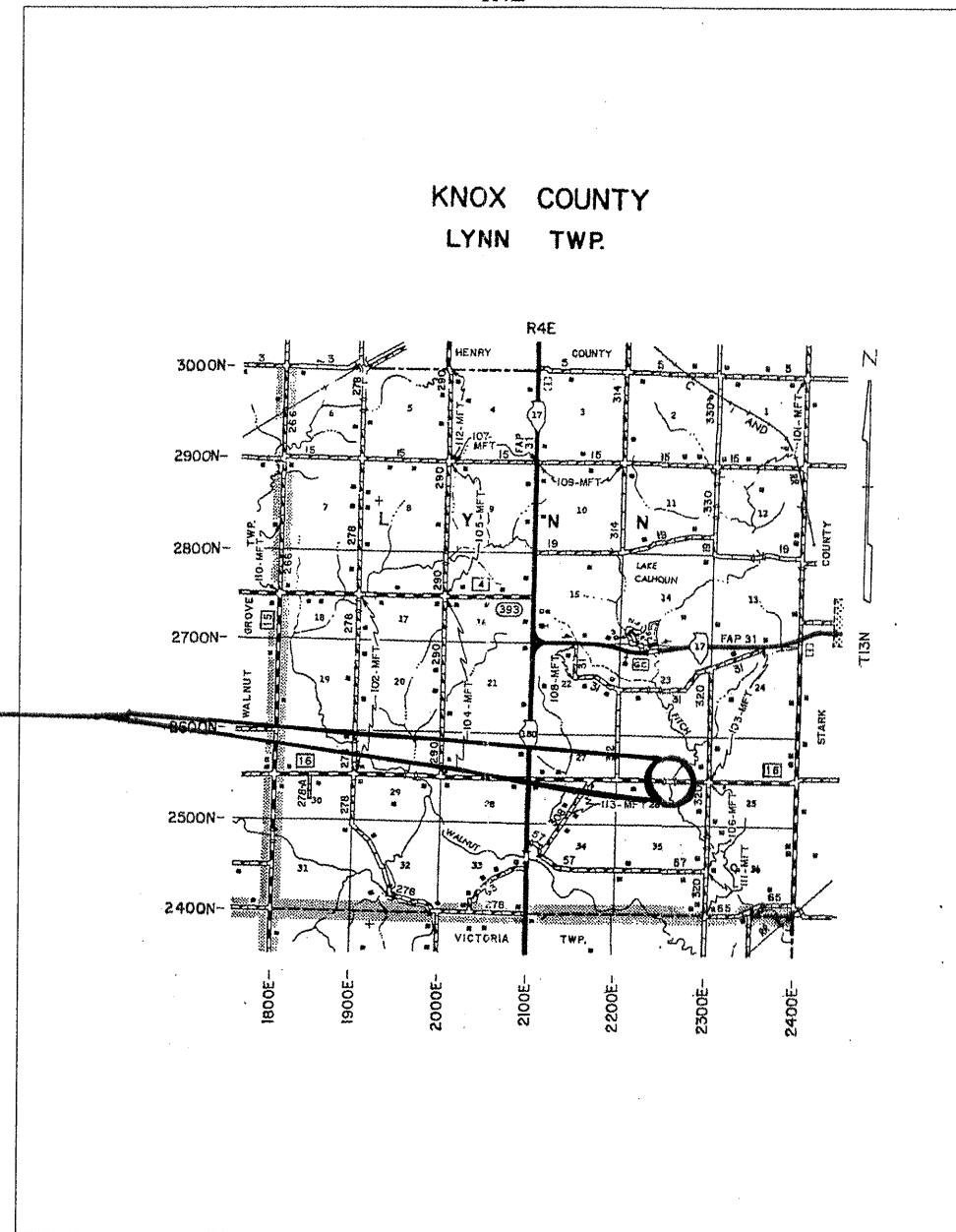
- NET LENGTH OF SECTION: 300.00' (0.057mi)
- ADT= 225
- FUNCTIONAL CLASSIFICATION: LOCAL ROAD
- DESIGN SPEED: 35 MPH
- DESIGN POLICY: RURAL
- VARIANCES GRANTED: NONE
- COMMITMENTS: NONE

CATALOG #033321-00
J.U.L.I.E. 1-800-892-0123

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF LOCAL ROADS & STREETS
PLANS FOR PROPOSED COUNTY HIGHWAY IMPROVEMENTS

CH-16 OVER FITCH CREEK
 SECTION 05-00096-01-BR
 PROJECT # ARA (0095) 126
 C-94-126-06
 R4E

COUNTY	ROUTE	CONTRACT	SEC.	SHEET
KNOX	CH-16	89427	05-00096-01-BR	1 OF 12



End Construction STA.11+50
 Construct P.P.C. Deck Beam Bridge
 Centerline STA.10+00
 Existing Structure #048-3216
 Proposed Structure #048-3389
 Begin Construction STA.8+50

LYNN TWP

PROJECT LOCATION



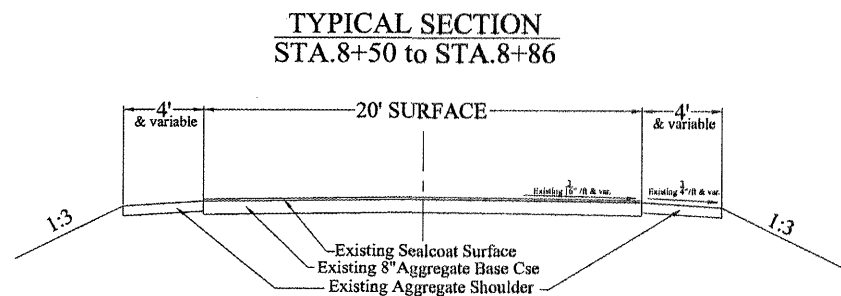
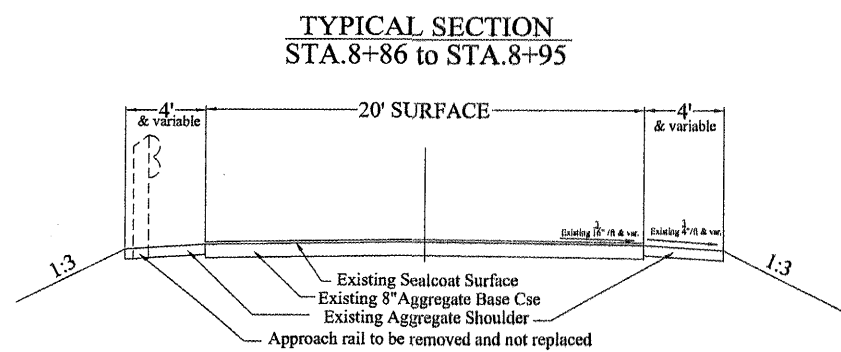
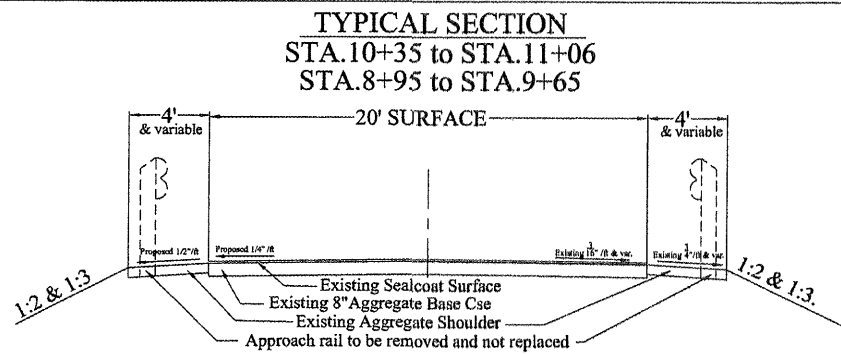
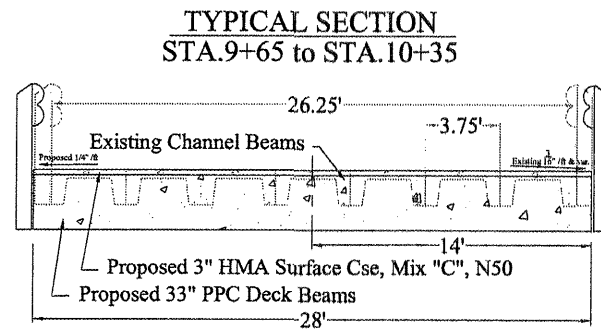
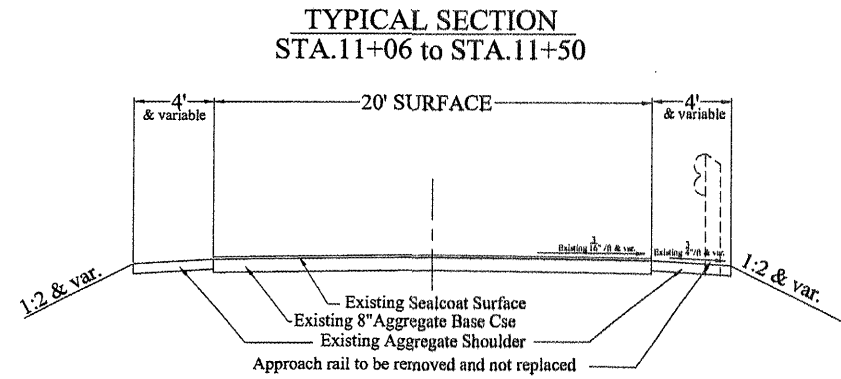
APPROVED _____ 20____
_____ Road Commissioner
APPROVED <i>April 2 20 09</i> <i>Duane J. Ratermann</i> County Engineer
PASSED <i>April 9 20 09</i> <i>D. C. O.</i> District Four Engineer of Local Roads & Streets
Releasing for Bid Based on <i>APRIL 9 20 09</i> Limited Review <i>[Signature]</i> Deputy Director of Highways, Region Three Engineer
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

DUANE J. RATERMANN
 62-051696
 REGISTERED
 PROFESSIONAL
 ENGINEER
 ILLINOIS
Duane J. Ratermann
 4/2/09

Duane J. Ratermann
 II. Prof. Eng. #062-051696
 Expires 11-30-09

COUNTY	ROUTE	CONTRACT	SHEET
KNOX	CH-16	89427	2 OF 12

SEC.05-00096-01-BR



SUMMARY OF QUANTITIES

X081-2A

QUANT.	UNIT	ITEMS	CODE NUMBER
25	POUND	Temporary Erosion Control Seeding	28000250
4	EACH	Temporary Ditch Checks	28000300
257	SQ YD	Stone Dumped Riprap, Class A4	28100707
27	TON	Hot-mix asphalt Surface Course, Mix "C", N50	40603310
1	EACH	Removal of Existing Structures	50100100
24.2	CU YD	Concrete Structures	50300225
2240	SQ FT	Precast Prestressed Concrete Deck Beams (33" Depth)	50400605
2880	POUND	Reinforcement Bars, epoxy coated	50800205
160	FOOT	Steel Railing, Type S1	50900205 *
445	FOOT	Furnishing Metal Shell Piles 12" x 0.250"	51200957
445	FOOT	Driving Piles	51202305
1	EACH	Test Pile Metal shells	51203200
1	EACH	Name Plates	51500100
249	SQ YD	Waterproofing Membrane System	58100200
480	FOOT	Portland Cement Mortar Fairing Course	58300100
1	L.SUM	Mobilization	67100100

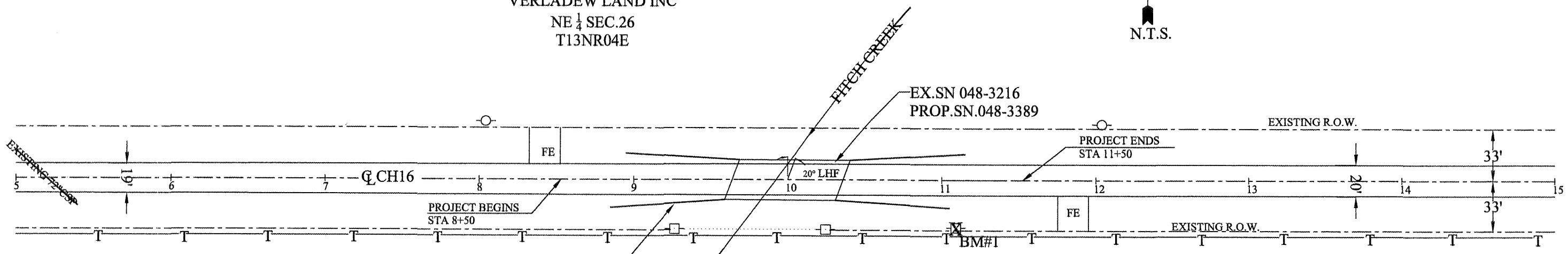
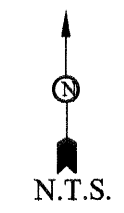
* Specialty Items

BM- ELEV. 100.0'
 SPIKE IN TELE. POLE
 STA. 11+10 RT.

COUNTY	ROUTE	CONTRACT	SHEET
KNOX	CH16	89427	3 of 12

SEC. 05-00096-01-BR

VERLADEW LAND INC
 NE 1/4 SEC.26
 T13NR04E

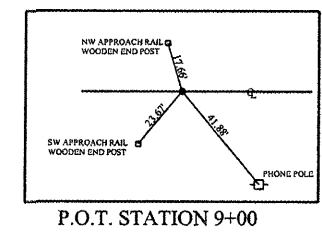


Approach rail on all four corners
 to be removed and not replace.

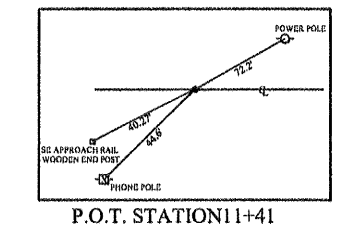
DOROTHA INGELS
 SE 1/4 SEC. 26
 T13NR04E

LEGEND

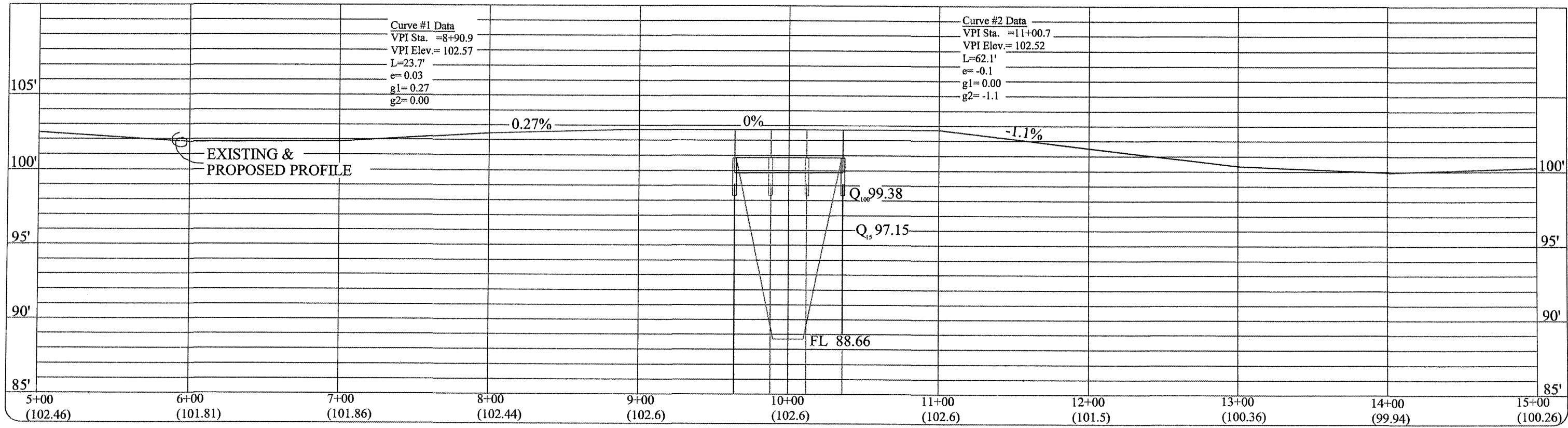
	Phone
	Phone Pole
	Power Pole
	Overhead Phone



UTILITIES:
 Corn Belt Energy 1-800-879-0339
 Midcentury 800-365-0525



APPROACHES AND PERMANENT SEEDING BY KNOX COUNTY



Not to Scale

BENCHMARK:
Spike Nail in Telephone Pole Sta. 11+10.00, Rt.
Elevation = 100.00

EXISTING STRUCTURE (SN 048-3032):
3-Span Concrete Channel Beam Bridge on
Concrete Abutments and Piers with Steel Piles.
26'-5" O. to O. Deck. 74'-0" Bk.-Bk. Abutments.

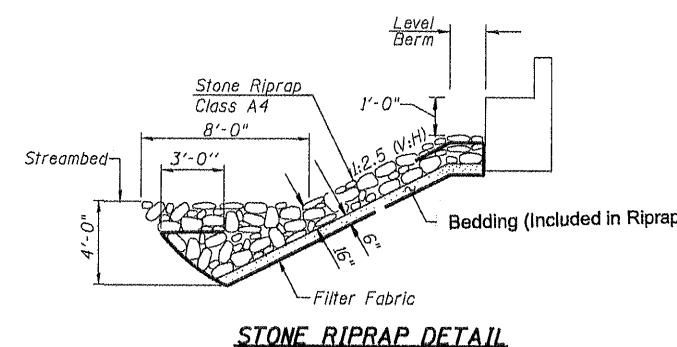
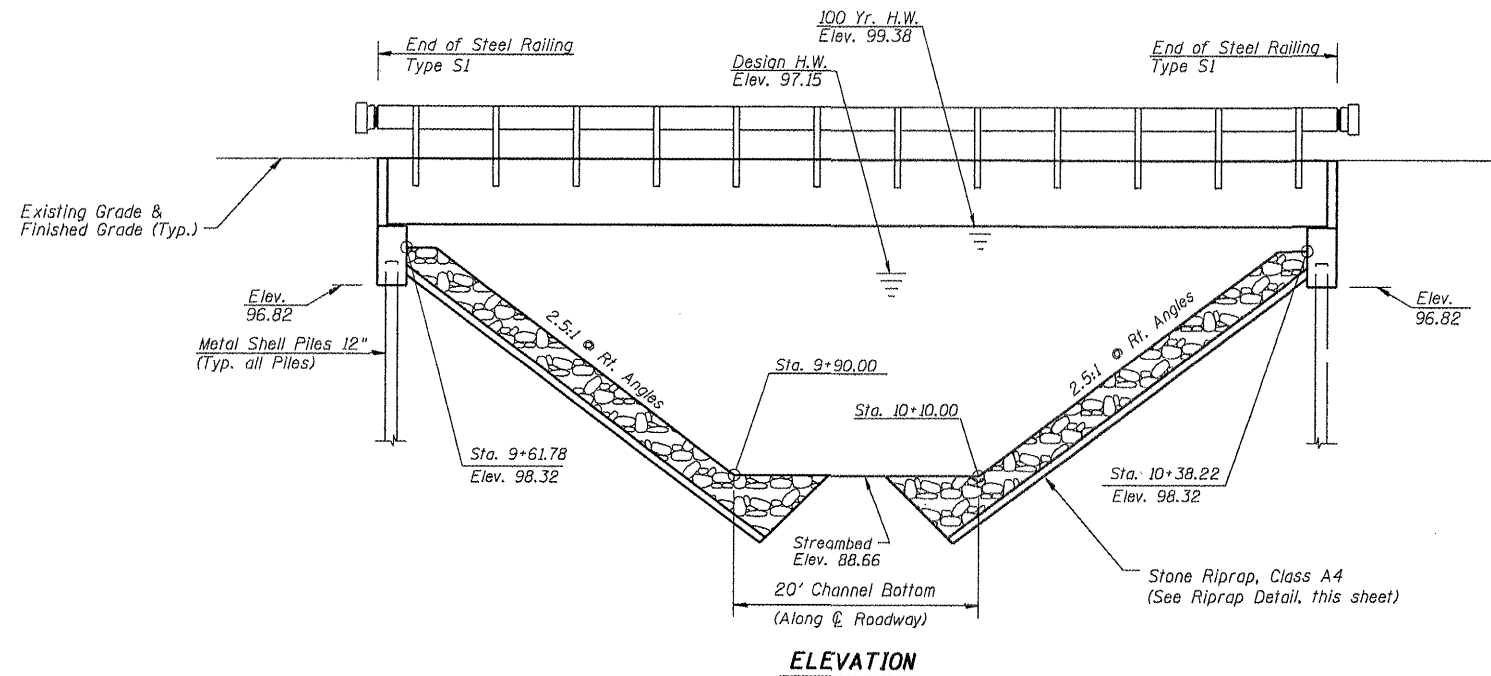
Traffic is to be detoured during construction.
No Salvage.

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 16	05-00096-01-BR	KNOX	12	4
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

CONTRACT # 89427

GENERAL NOTES

Layout of Riprap Slopes may be varied in the field to suit ground conditions as directed by the Engineer.
See Proposal for Boring Data.
Reinforcement Bars shall conform to the requirements of ASTM A 706, Grade 60 (See Special Provisions).
The Contractor shall drive one Metal Shell Test Pile in a permanent location at the West Abutment as directed by the Engineer before ordering the remainder of piles.
Excavation required for abutment construction shall be included in Concrete Structures. No additional compensation will be provided for Structure Excavation.
Channel Excavation shall be included in the cost of Stone Riprap, Class A4.

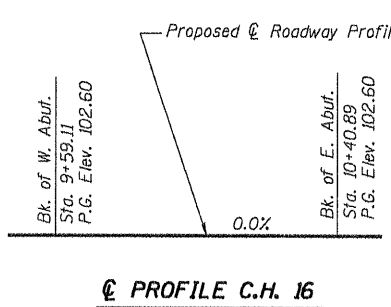
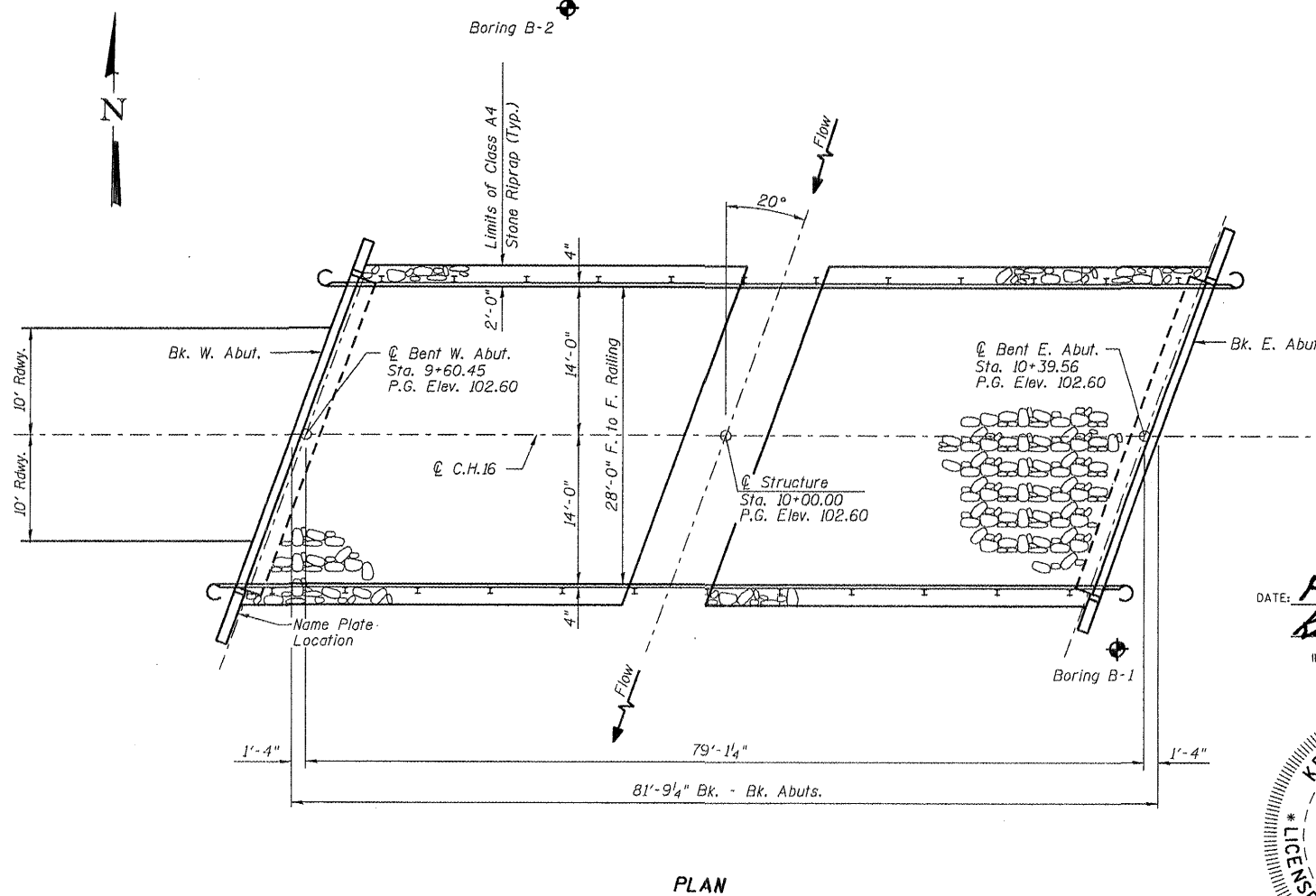


**FITCH CREEK
BUILT 200_, BY
KNOX COUNTY
SECTION 05-00096-01-BR
C.H. 16 STA. 10+00.00
STR. NO. 048-3389 LOADING HL-93**

NAME PLATE
(See Std. 515001)

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures	Each			1
P.P.C Deck Beams (33" Depth)	Sq. Ft.	2240		2240
Concrete Structures	Cu. Yd.		24.2	24.2
Reinforcement Bars, Epoxy Coated	Pound		2880	2880
FURNISHING METAL SHELL PILES 12" X 0.250"	Foot		445	445
Driving Piles	Foot		445	445
Test Pile Metal Shells	Each		1	1
Stone Riprap, Class A4	Sq. Yd.		257	257
Name Plates	Each		1	1
Steel Railing, Type S1	Foot	160		160
Portland Cement Mortar Fairing Course	Foot	480		480
Waterproofing Membrane System	Sq. Yd.	249		249
Hot-Mix Asphalt Surface Course, Mixture C, N50	Ton	27		27



DESIGN SPECIFICATIONS

2007 AASHTO LRFD with 2008 Interim

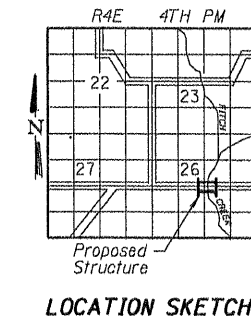
LOADING HL-93

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

DESIGN STRESSES

FIELD UNITS
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i.
n = 9

PPC UNITS
f'ci = 5,000 p.s.i.
f'c = 6,000 p.s.i.
f's = 270,000 p.s.i.
f'si = 201,960 p.s.i.



WATERWAY INFORMATION

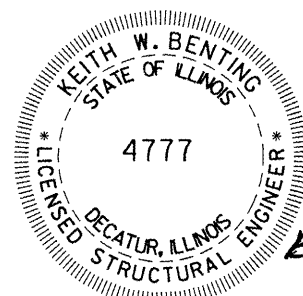
Drainage Area = 17.1 Sq. Mi. Existing Low Grade Elev. 99.94 @ Sta. 14+00.00
Proposed Low Grade Elev. 99.94 @ Sta. 14+00.00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head-Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	15	2025	275	350	97.15	0.62	0.52	97.77	97.67
Base	100	3299	389	501	99.38	0.85	0.67	100.23	100.05
Overtopping									
Max. Calc.	500	4387	439	619	100.9	0.97	0.78	101.87	101.68

Low Beam Elev. (Prop.) = 99.38

DATE: February 16, 2009
Keith W. Bunting
KEITH W. BUNTING
ILL. STRUCTURAL NO. 4777

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.

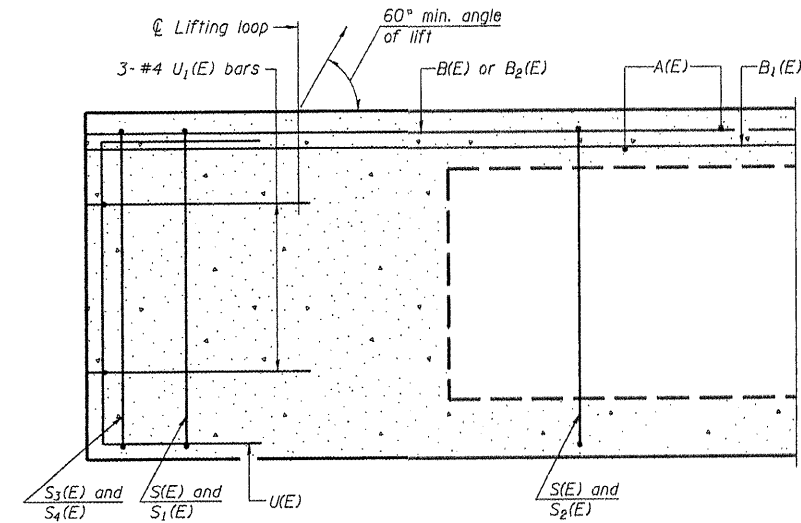


Exp. 11/30/2010

GENERAL PLAN AND ELEVATION

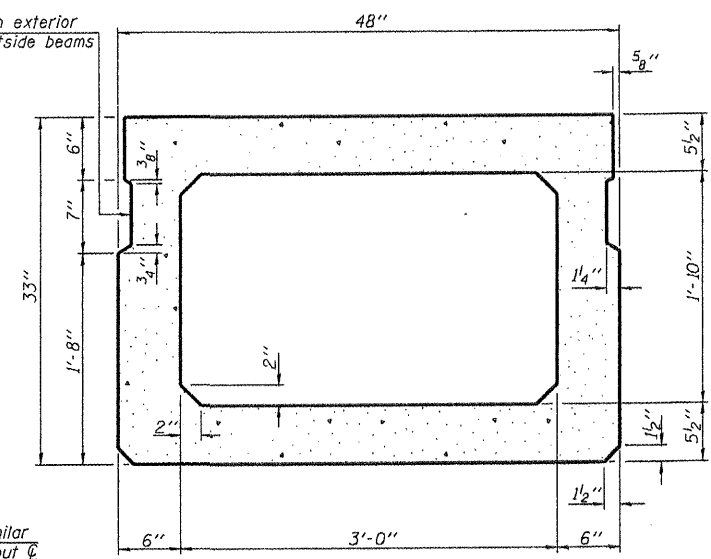
Date	Designed DCS	C.H. 16 OVER FITCH CREEK SECTION 05-00096-01-BR KNOX COUNTY STA. 10+00.00 PROP. STR. NO. 048-3389	Sheet No.
Revisions	Drawn DCS		1
	Checked MJP		
	Approved KWB		
Prepared by:	URS 345 East Ash Avenue Decatur, IL 62526		of 7 URS Job No. 36432317

CONTRACT # 89427

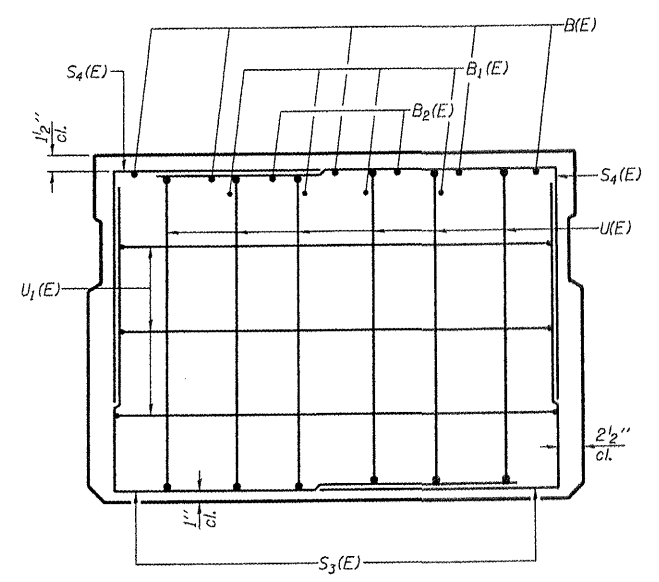


SECTION C-C

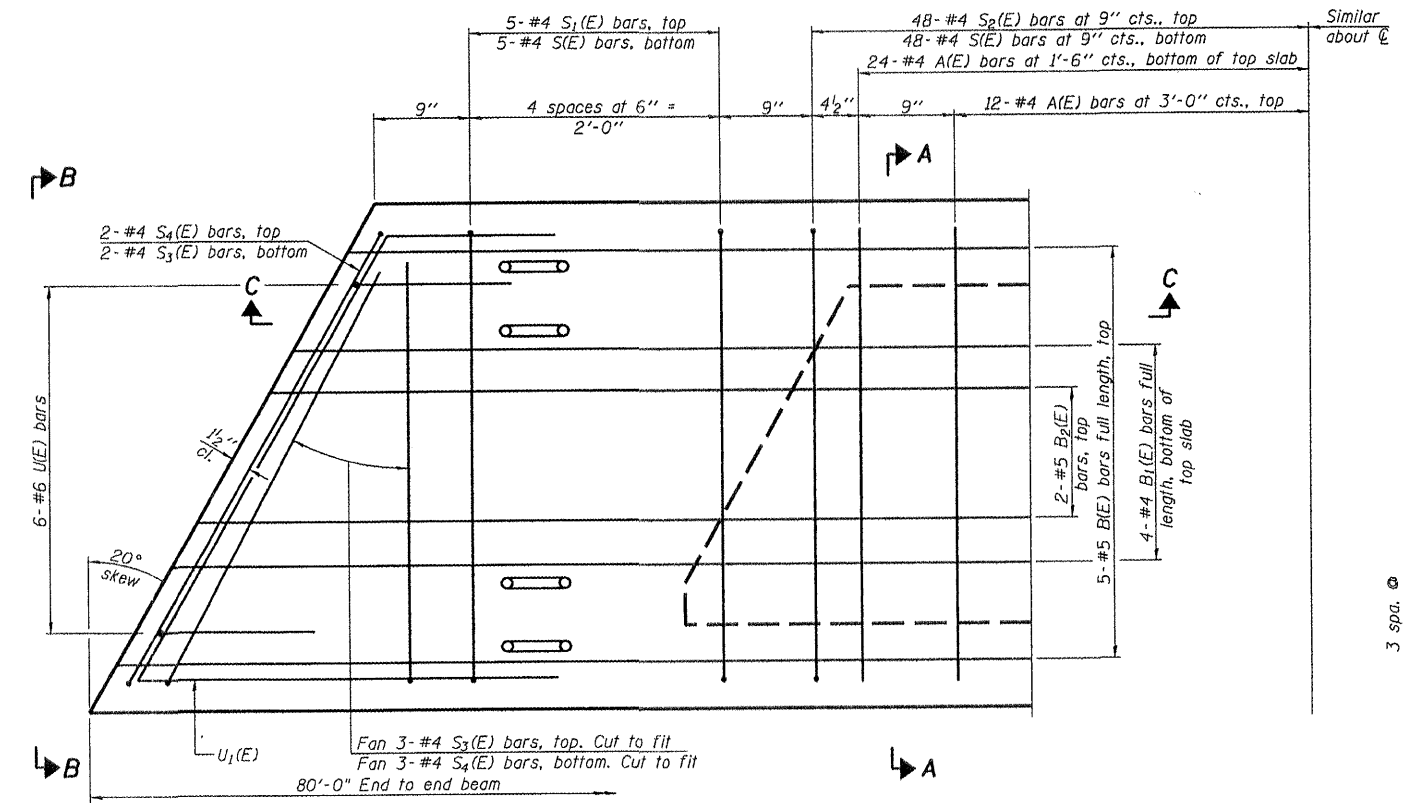
Omit key on exterior face of outside beams



SECTION A-A
(Showing dimensions)



VIEW B-B

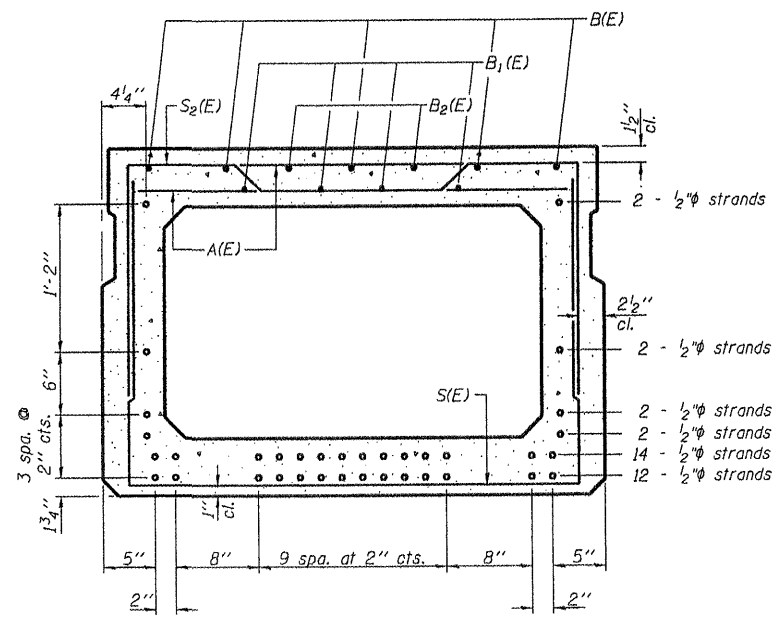


PLAN VIEW

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

Min. Bar Lap

- #4 bar = 1'-8"
- #5 bar = 2'-2"



SECTION A-A

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

BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	72	#4	3'-7"	—
B(E)	15	#5	28'-0"	—
B1(E)	12	#4	27'-8"	—
B2(E)	6	#5	28'-1"	—
S(E)	106	#4	8'-5"	U
S1(E)	10	#4	7'-3"	U
S2(E)	96	#4	7'-6"	U
S3(E)	10	#4	5'-1"	U
S4(E)	10	#4	4'-6"	U
U(E)	12	#6	5'-0"	U
U1(E)	6	#4	7'-9"	U

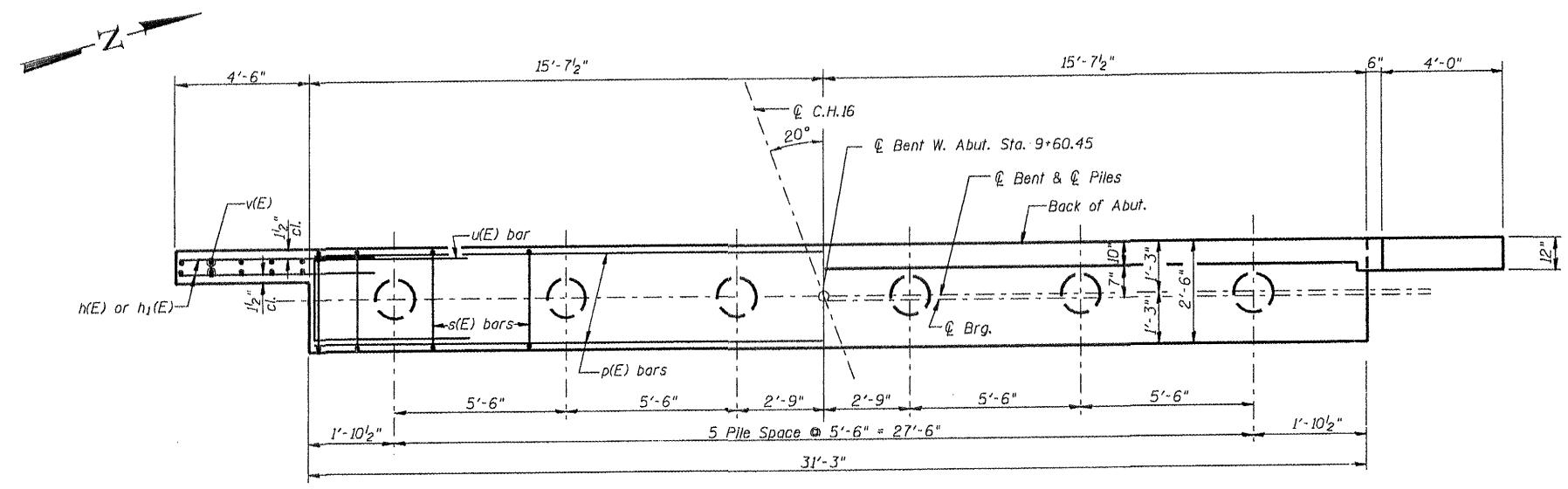
Note: See sheet 3 of 7 for additional details and Bill of Material.

33" X 48" PPC DECK BEAM
STRUCTURE NO. 048-3389

SUPERSTRUCTURE		C.H. 16 OVER FITCH CREEK SECTION 05-00096-01-BR KNOX COUNTY STA. 10+00.00 PROP. STR. NO. 048-3389	Sheet No.
			2
Date	Designed DCS	Prepared by: URS 345 East Ash Avenue Decatur, IL 62526	of 7
Revisions	Drawn DCS		URS Job No.
	Checked MJP		36432317
	Approved KWB		

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 16	05-00096-01-BR	KNOX	12	8
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

CONTRACT # 89427



PLAN

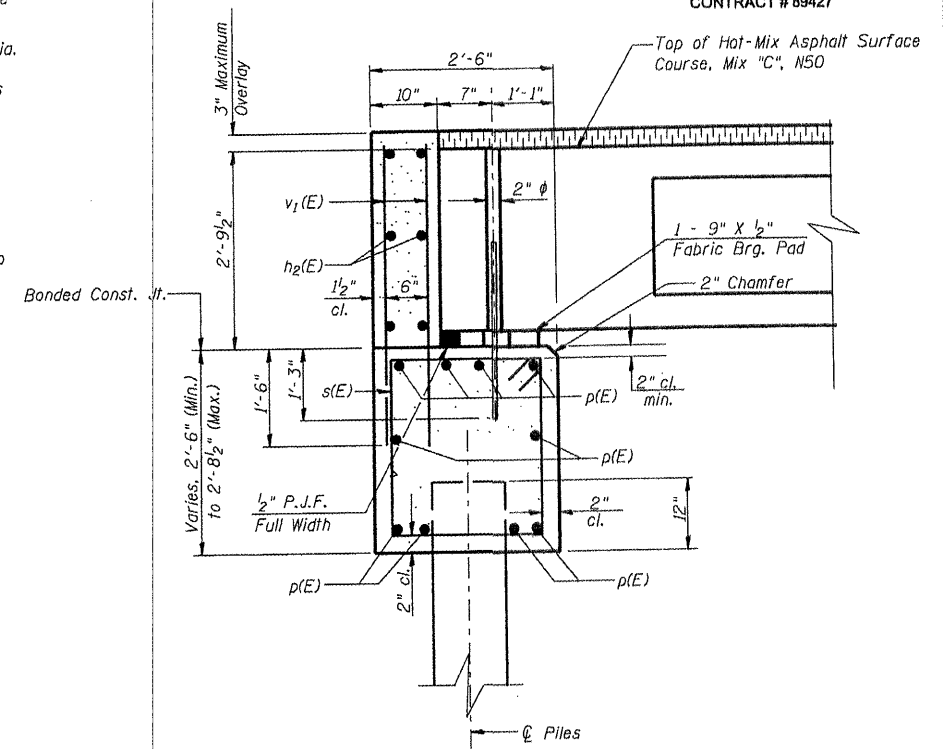
PILE DATA
 Type & Size: Metal Shell - 12" dia. x 0.250 in. walls
 Nominal Required Bearing: 296 Kips
 Factored Resistance Available: 148 Kips
 Estimated Length: 50'-0"
 No. Required: 6

NOTES

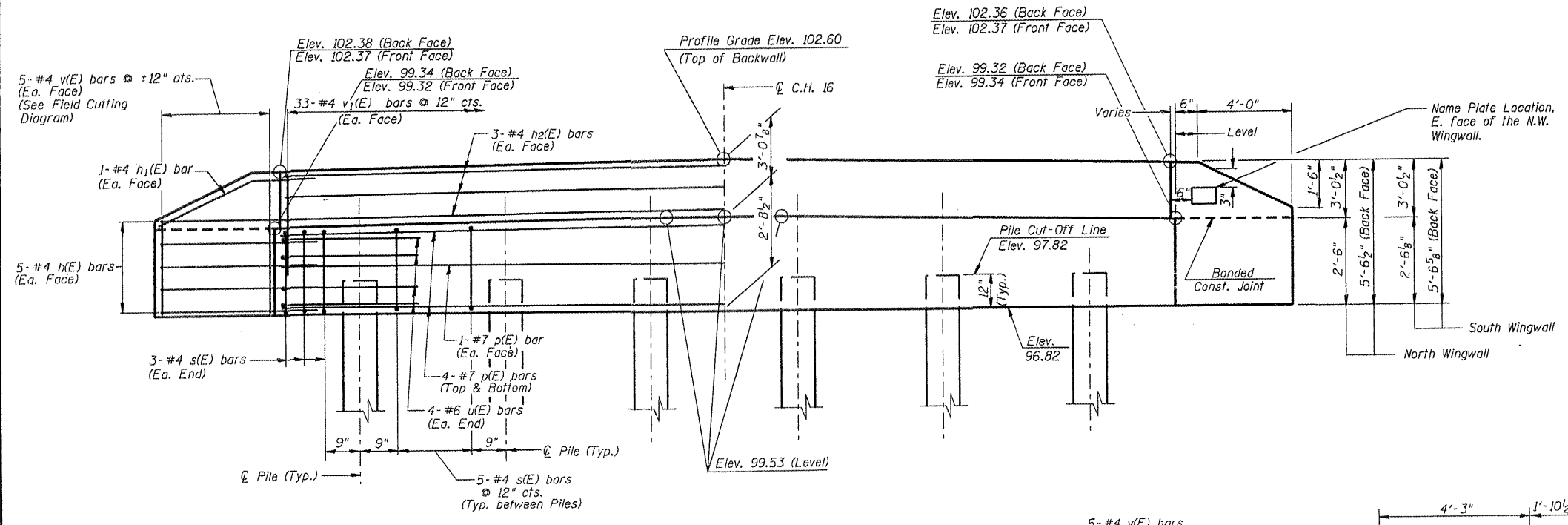
- The Backwall and the portion of the Wingwalls above the banded construction joint shall be cast against the in-place beam.
- 1" dia. x 2'-6" dowel rods in 1 1/2" dia. holes drilled in cap (2 each beam). Dowel rods to be grouted after beams are in place and allowed to cure (min. 24 hrs.) prior to grouting the shear keys. The grout shall be an approved non-shrink grout.
- Reinforcement bars designated (E) shall be Epoxy coated.
- Reinforcement bars shall conform to the requirements of A.S.T.M A706 Grade 60. See Special Provisions.
- Space reinforcement in cap to miss dowel rods.

DESIGN STRESSES

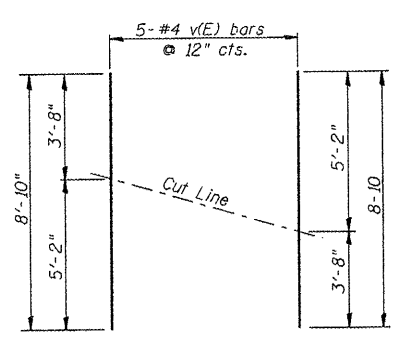
$f'_c = 3,500$ psi
 $f_y = 60,000$ psi



SECTION THRU ABUT.
(At Rt. Angles)

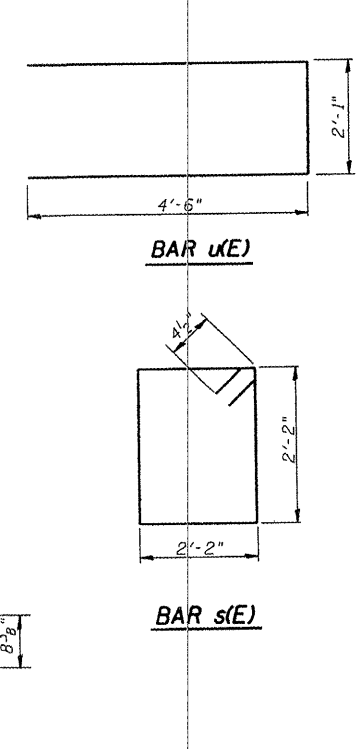


ELEVATION
(Looking West)



FIELD CUTTING DIAGRAM

Order bars full length. Cut to fit as shown and use remainder of bars in other face.



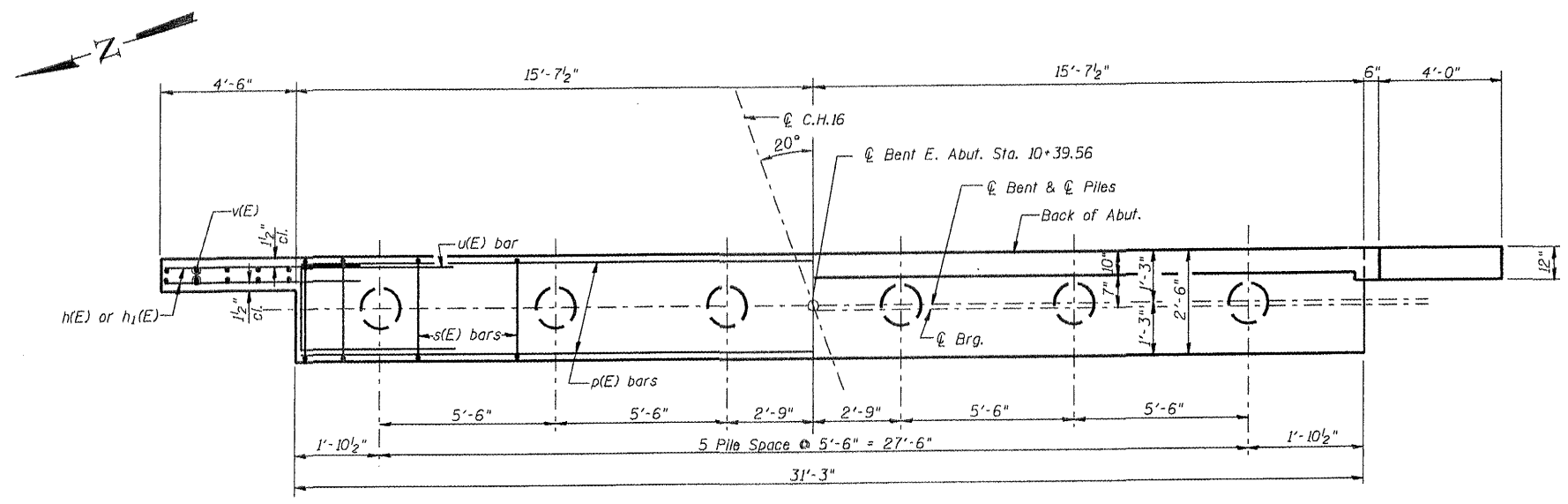
BILL OF MATERIAL WEST ABUTMENT

Bar	No.	Size	Length	Shape
h(E)	20	#4	6'-0"	—
h1(E)	4	#4	6'-3"	—
h2(E)	6	#4	30'-11"	—
p(E)	10	#7	30'-11"	—
s(E)	31	#4	9'-5"	□
u(E)	8	#6	11'-1"	—
v(E)	10	#4	8'-10"	—
v1(E)	66	#4	4'-5"	—
Concrete Structures			Cu. Yd.	12.1
Reinforcement Bars, Epoxy Coated			Pound	1440
FURNISHING METAL SHELL PILES 12" X 0.250"			Foot	300

WEST ABUTMENT

Date	Designed DCS	C.H. 16 OVER FITCH CREEK SECTION 05-00096-01-BR KNOX COUNTY STA. 10+00.00 PROP. STR. NO. 048-3389	Sheet No.	
Revisions	Drawn DCS		5	
	Checked MJP			of 7
	Approved KWB			URS Job No.
Prepared by: URS	345 East Ash Avenue Decatur, IL 62526			36432317

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 16	05-00096-01-BR	KNOX	12	9
FED. ROAD DIST. NO.	ILLINOIS PROJECT		CONTRACT # B9427	



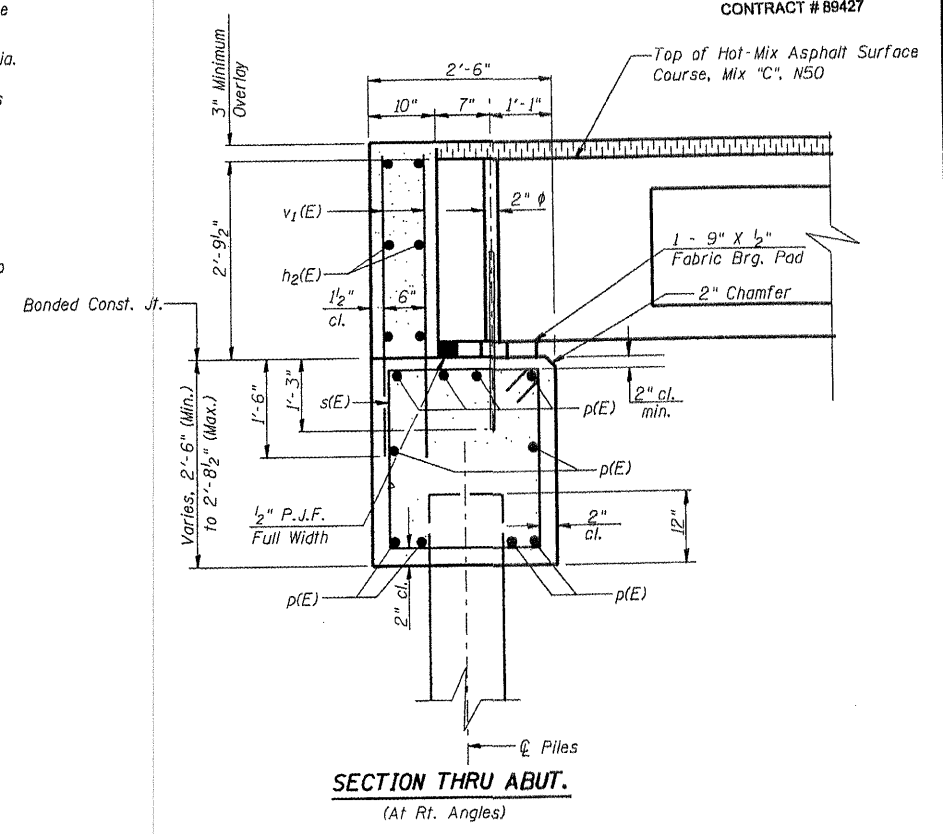
PLAN

PILE DATA
 Type & Size: Metal Shell - 12" dia. x 0.250 in. walls
 Nominal Required Bearing: 296 Kips
 Factored Resistance Available: 148 Kips
 Estimated Length: 29'-0"
 No. Required: 5 plus 1 permanent test pile

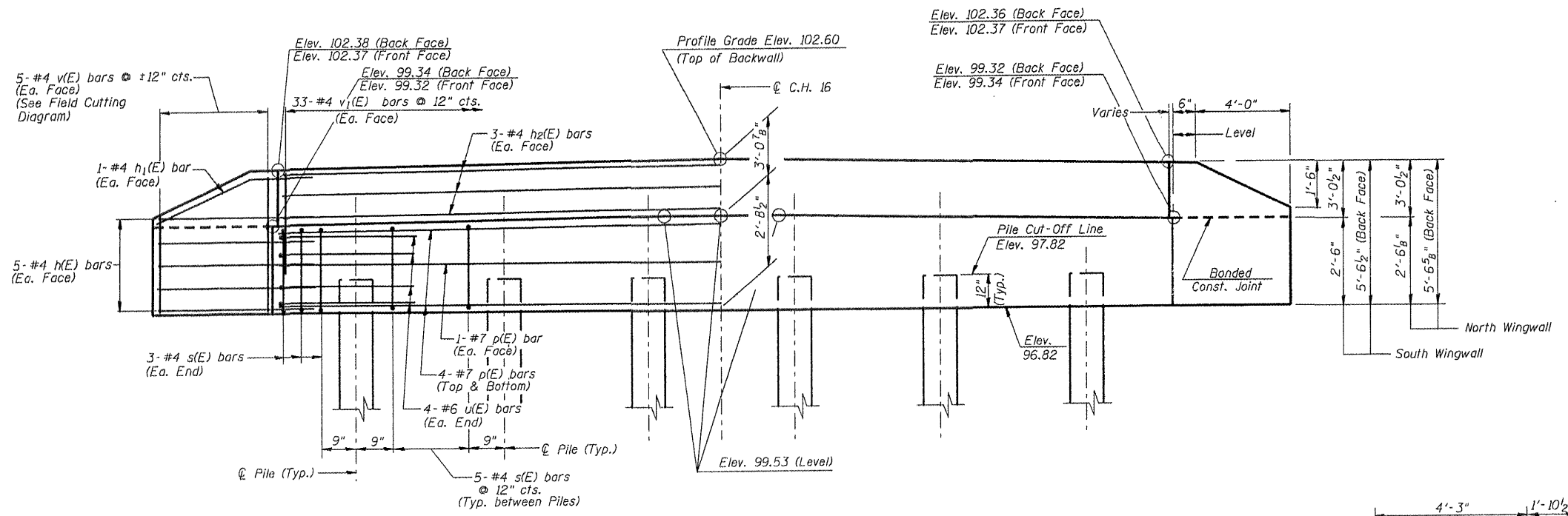
- NOTES**
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
 - 1" dia. x 2'-6" dowel rods in 1 1/2" dia. holes drilled in cap (2 each beam). Dowel rods to be grouted after beams are in place and allowed to cure (min. 24 hrs.) prior to grouting the shear keys. The grout shall be an approved non-shrink grout.
 - Reinforcement bars designated (E) shall be Epoxy coated.
 - Reinforcement bars shall conform to the requirements of A.S.T.M A706 Grade 60. See Special Provisions.
 - Space reinforcement in cap to miss dowel rods.
 - The Test Pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the Pile Data information.

DESIGN STRESSES

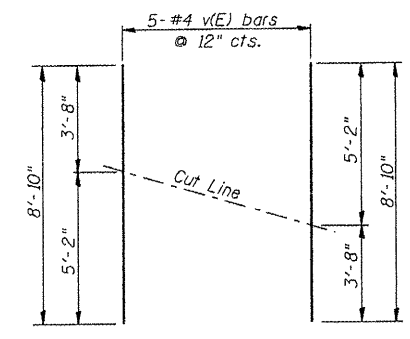
$f'_c = 3,500$ psi
 $f_y = 60,000$ psi



SECTION THRU ABUT.
(At Rt. Angles)

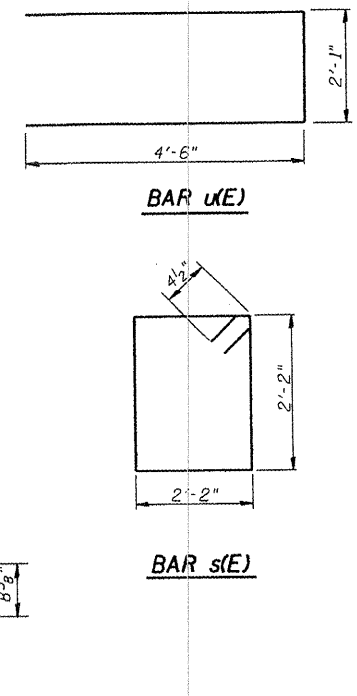


ELEVATION
(Looking East)



FIELD CUTTING DIAGRAM

Order bars full length. Cut to fit as shown and use remainder of bars in other face.



BAR u(E)

BAR s(E)

BAR h1(E)

BILL OF MATERIAL EAST ABUTMENT

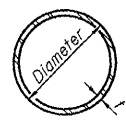
Bar	No.	Size	Length	Shape
h(E)	20	#4	6'-0"	—
h1(E)	4	#4	6'-3"	—
h2(E)	6	#4	30'-11"	—
p(E)	10	#7	30'-11"	—
s(E)	31	#4	9'-5"	□
u(E)	8	#6	11'-1"	—
v(E)	10	#4	8'-10"	—
v1(E)	66	#4	4'-5"	—
Concrete Structures			Cu. Yd.	12.1
Reinforcement Bars, Epoxy Coated			Pound	1440
FURNISHING METAL SHELL PILES 12" X 0.250"			Foot	145
Test Pile Metal Shells			Each	1

EAST ABUTMENT

Date	Designed DCS	C.H. 16 OVER FITCH CREEK SECTION 05-00096-01-BR KNOX COUNTY STA. 10+00.00 PROP. STR. NO. 048-3389	Sheet No.	
Revisions	Drawn DCS		6	
	Checked MJP			of 7
	Approved KWB			URS Job No.
Prepared by:	URS 345 East Ash Avenue Decatur, IL 62526			

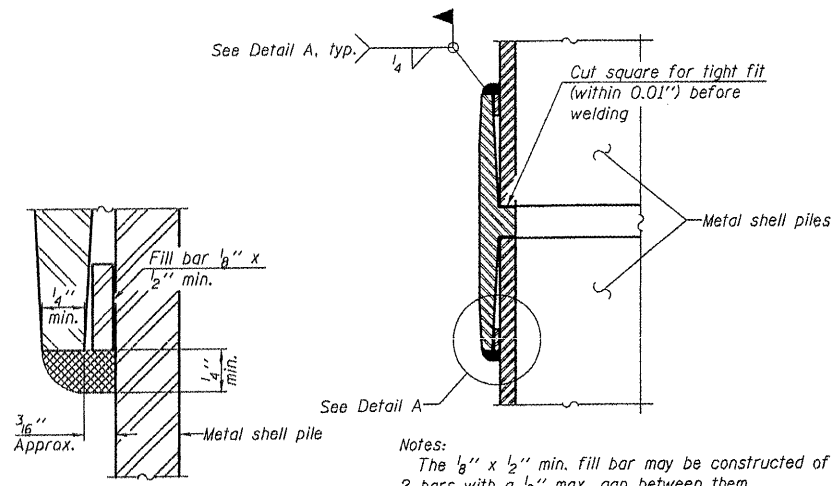
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 16	05-00096-01-BR	KNOX	12	10
FED. ROAD DIST. NO.		LLINDS	PROJECT	

CONTRACT # 89427



METAL SHELL PILE TABLE

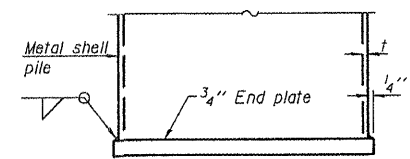
Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. ³ /ft.)
PP12	0.179"	22.60	0.0274
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361



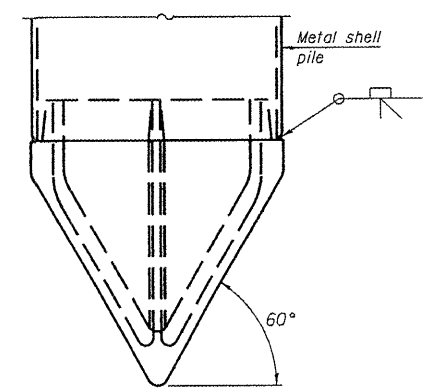
DETAIL A

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



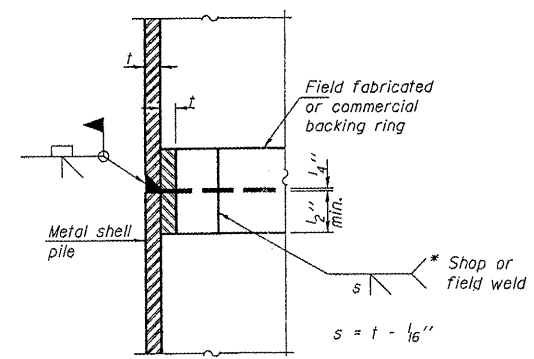
END PLATE ATTACHMENT



METAL SHELL PILE SHOE ATTACHMENT

(See Note A)

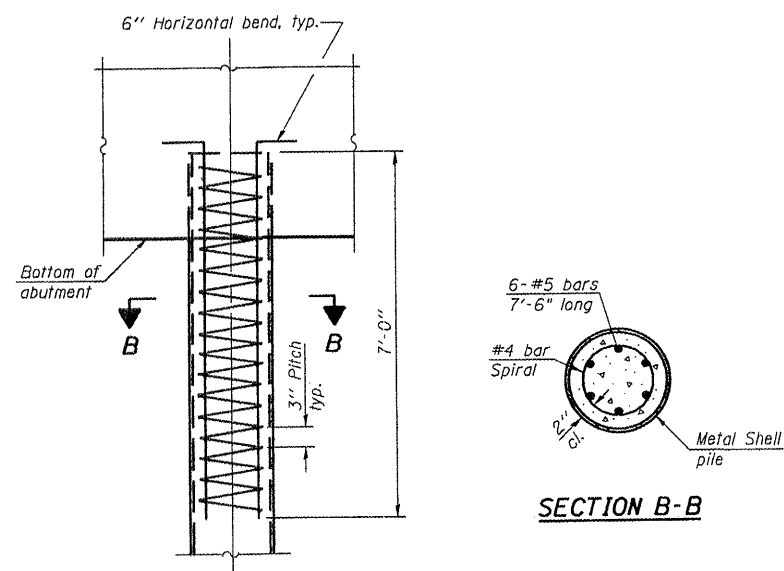
Note A:
 When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld.



COMPLETE PENETRATION WELD SPLICE

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

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



ELEVATION

METAL SHELL REINFORCEMENT AT ABUTMENTS

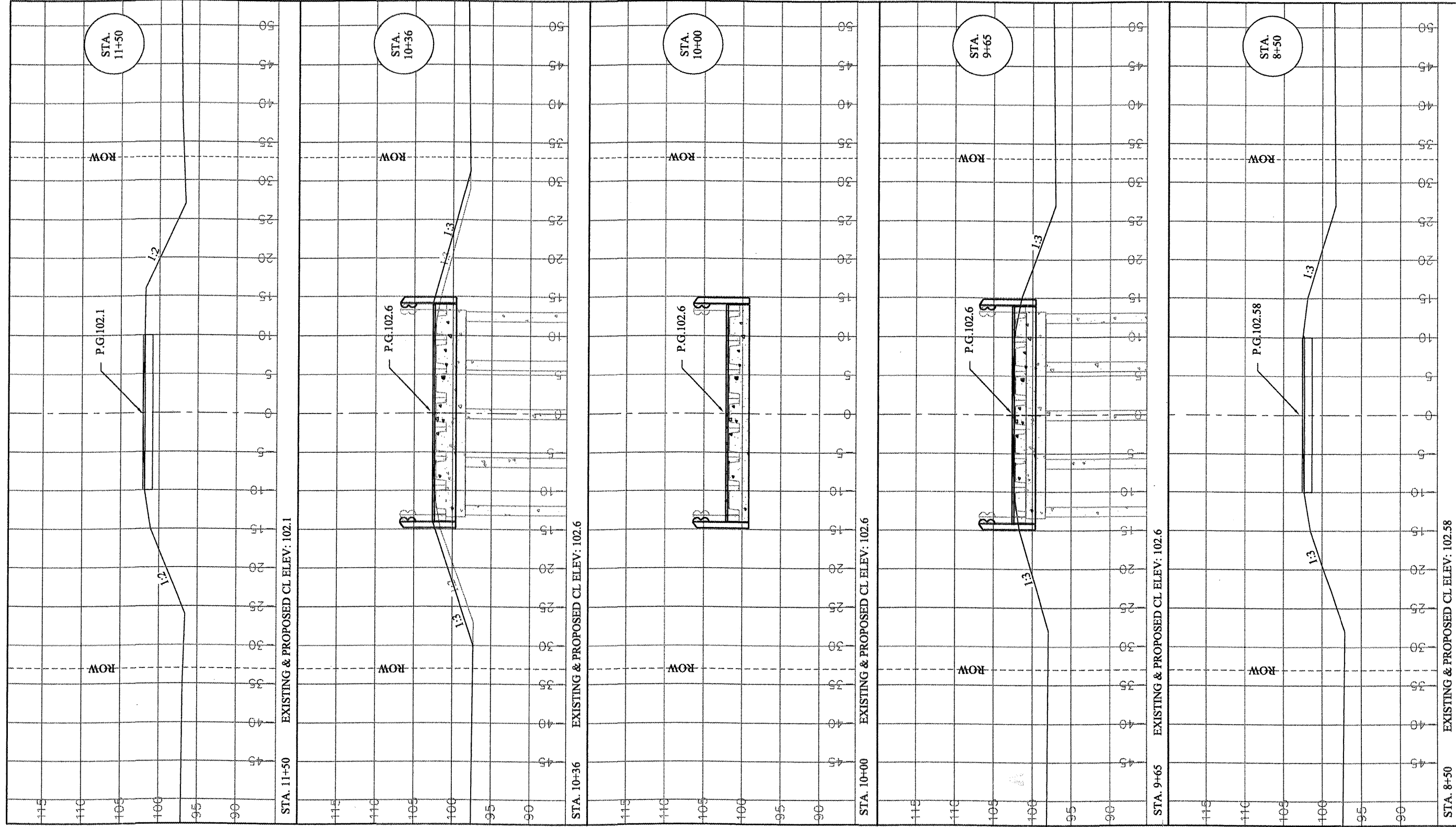
SECTION B-B

**METAL SHELL PILE DETAILS
 STRUCTURE NO. 048-3389**

PILE DETAILS			Sheet No.
Date	Designed DCS	C.H. 16 OVER FITCH CREEK SECTION 05-00096-01-BR KNOX COUNTY STA. 10+00.00 PROP. STR. NO. 058-3366	7 of 7
Revisions	Drawn DCS		
	Checked MJP		
	Approved KWB		
Prepared by:	URS		
3040 North University Avenue Decatur, IL 62526			URS Job No. 36432317

COUNTY	ROUTE	CONTRACT	SHEET
KNOX	CH-16	89427	11 OF 12

SECTION 05-00096-01-BR



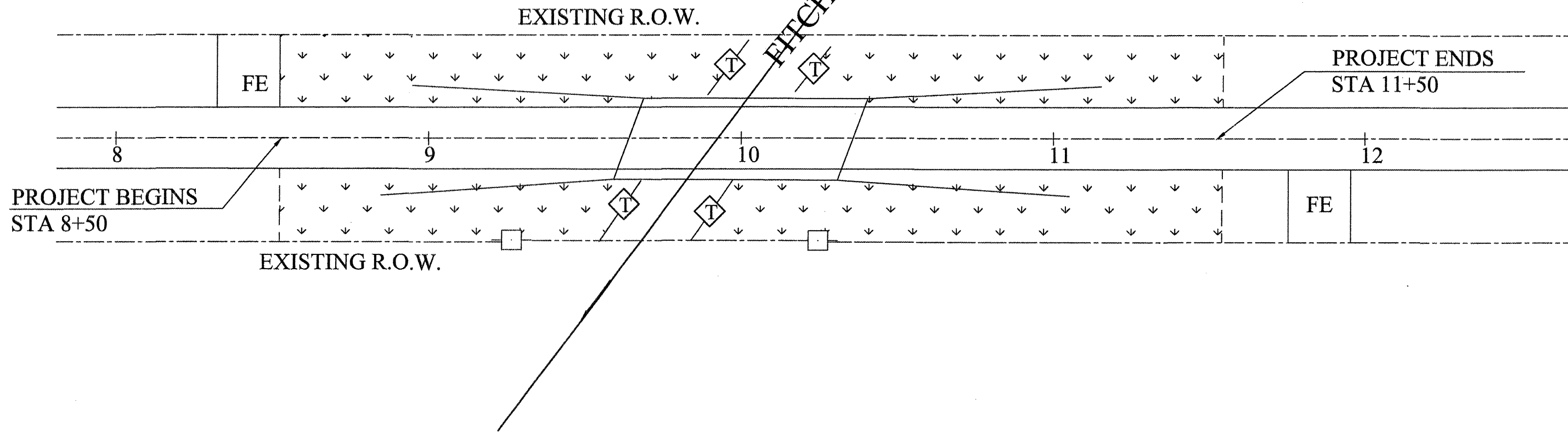
COUNTY	ROUTE	CONTRACT	SHEET
KNOX	CH16	89427	12 of 12

SEC. 05-00096-01-BR



EROSION CONTROL PLAN

FITCH CREEK



EROSION CONTROL LEGEND	
	TEMPORARY DITCH CHECK
	TEMPORARY EROSION CONTROL SEEDING