03-09-12 LETTING ITEM 113

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	1
CONTRACT NO. 95668		ILLINOIS		

Joint Utility Locating Information for Excavators

JULIE 1-800-892-0123

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED
HIGHWAY BRIDGE PROGRAM PROJECT

SECTION 05-18109-00-BR WAYNE COUNTY
ORCHARD ROAD DISTRICT
PROJECT BROS-0191(063)
JOB NO. C-97-027-12
T.R. 165

INDEX OF SHEETS

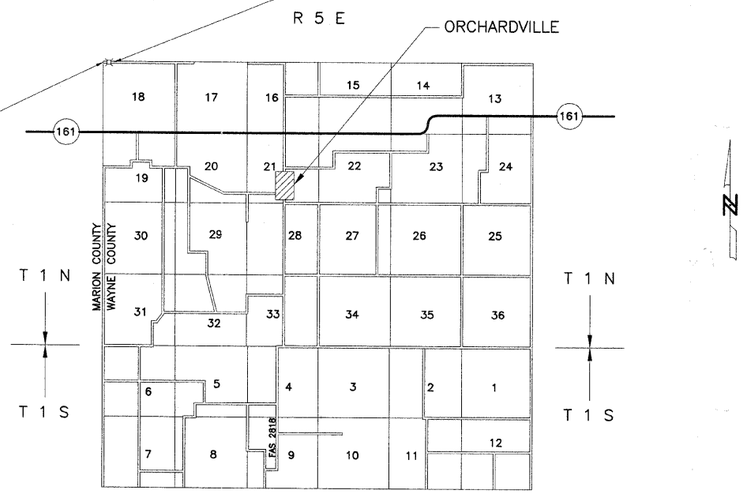
SHEET	ITEM
1	COVER SHEET
2	SUMMARY OF QUANTITIES
3	ROADWAY PLAN AND PROFILE
4	GENERAL PLAN AND ELEVATION
5	SUPERSTRUCTURE
6	SUPERSTRUCTURE DETAILS
7	STEEL RAILING, TYPE S-1
8	WEST ABUTMENT DETAILS
9	EAST ABUTMENT DETAILS
10	PILE DETAILS
11	BORING LOGS
12-14	CROSS SECTIONS
	STANDARD 000001-06
	STANDARD 280001-06
	STANDARD 515001-03
	STANDARD 701901-02
	STANDARD BLR 21-9
	STANDARD BLR 22-7

PLAN 0 50' 100'
PROFILE HOR. 0 50' 100'
PROFILE VERT. 0 10' 20'
CROSS SECTIONS
HOR. 0 5' 10'
VERT. 0 5' 10'

SECTION 05-18109-00-BR ENDS STA. 7+00.00

SECTION 05-18109-00-BR BEGINS STA. 1+50.00

SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE
66'-7" BK.- BK. ABUTMENTS
METAL SHELL PILE / SPILLTHROUGH ABUTMENTS
24' DECK
15° SKEW RT. FORWARD
EXISTING STRUCTURE NO. 096-3411
PROPOSED STRUCTURE NO. 096-3458



CONTRACT NO. 95668

FUNCTIONAL CLASSIFICATION - RURAL LOCAL ROAD
ADT = 50
DESIGN SPEED = 30 MPH

NET LENGTH SECTION 05-18109-00-BR = 550.00 Ft. = 0.104 Mi.

Roger A. Charleston
Ill. Reg. Prof. Eng. # 29105
11/22/11
Lic. Expires 11/30/11

ROGER A. CHARLESTON 29105 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

CHARLESTON ENGINEERING, INC.
CONSULTING ENGINEERS
105 NORTH KITCHELL
P.O. BOX 397
OLNEY, ILLINOIS 62450
(618) 392-0736
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

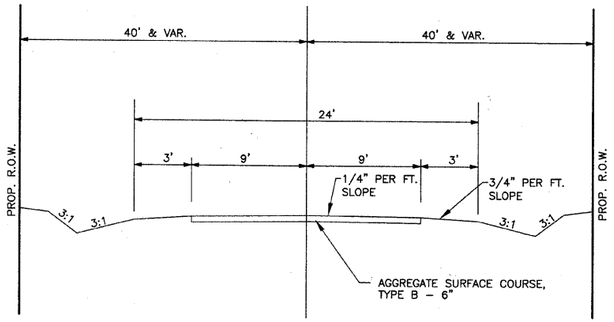
APPROVED NOV. 22 2011
Arthur J. Burbank
COUNTY ENGINEER

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PASSED 1-11 2012
Maurice L. Koontz
DISTRICT SEVEN ENGINEER OF
LOCAL ROADS AND STREETS

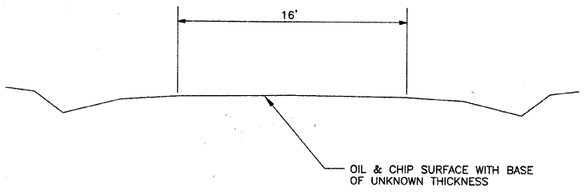
Releasing For Bid Based on Limited Review 1-11 2012
Roger L. Driskell
DEPUTY DIRECTOR OF HIGHWAYS
REGION FOUR ENGINEER

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	2
CONTRACT NO. 95668		ILLINOIS		



TYPICAL SECTION

PROPOSED

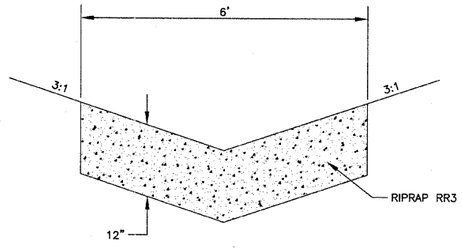


TYPICAL SECTION

EXISTING

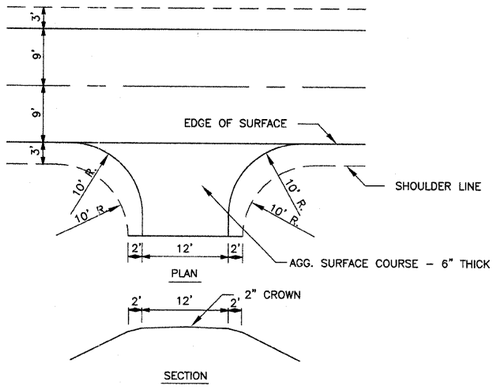
DESIGN DATA

LOCAL ROAD
ADT = 50



AGGREGATE DITCH (SPECIAL) DETAIL

LT. STA. 3+40 TO 3+65

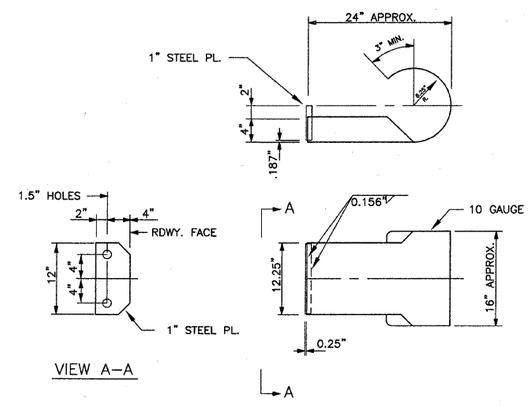


ENTRANCE DETAIL

SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	QUANTITY
X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.55
X2830495	AGGREGATE DITCH (SPECIAL)	TON	8
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	229
20100210	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	18
20200100	EARTH EXCAVATION	CU YD	140
20300100	CHANNEL EXCAVATION	CU YD	275
20400800	FURNISHED EXCAVATION	CU YD	1215
28000305	TEMPORARY DITCH CHECKS	FOOT	30
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	180
35101400	AGGREGATE BASE COURSE, TYPE B	TON	65
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	300
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50105220	PIPE CULVERT REMOVAL	FOOT	50
50300225	CONCRETE STRUCTURES	CU YD	24.6
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	1560
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	3310
* 50900205	STEEL RAILING, TYPE S1	FOOT	130
51200957	FURNISHING METAL SHELL PILES 12" X 0.250"	FOOT	560
51202305	DRIVING PILES	FOOT	560
51203200	TEST PILE METAL SHELLS	EACH	1
51204650	PILE SHOES	EACH	9
51500100	NAME PLATES	EACH	1
542D0229	PIPE CULVERTS, CLASS D, TYPE 1 24"	FOOT	50
67100100	MOBILIZATION	L. SUM	1

* SPECIALTY ITEMS



CURLED END SECTION DETAILS

4 REQUIRED - COST INCLUDED IN
"STEEL RAILING, TYPE S-1"

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	3
ORCHARD ROAD DISTRICT		ILLINOIS		

TIES P.O.T. STA. 1+00.00

STEEL PIN
13.4'
STEEL PIN
12.9'
11.2'
STEEL PIN
STEEL PIN

ESTEL DEON ALLISON
MYRTLE STELLA ALLISON

AT&T DISTRIBUTION
203 GOETHE ST.
COLLINSVILLE, ILLINOIS 62234
618-346-6422

EXISTING TELEPHONE LINE

SECTION 05-18109-00-BR BEGINS STA. 1+50.00

LT. STA. 3+15
CONSTRUCT P.E. 24' WIDTH
PIPE CULVERT 50' x 24"
TY.-1, CL.D
U.S.F.L. 422.84
D.S.F.L. 422.55

STA. 4+05.00 EXISTING STRUCTURE NO. 096-3411
SINGLE SPAN STEEL BEAM BRIDGE
26' BK.- BK. ABUTMENTS
CLOSED TIMBER ABUTMENTS
20' CONCRETE DECK

JESSE V. BROWN

EXISTING POWER LINE

WAYNE-WHITE ELECTRIC CO-OP
1501 WEST MAIN
FAIRFIELD, ILLINOIS 62837
PH. 618-842-2196

LT. STA. 6+00
CONSTRUCT F.E. 12' WIDTH
NO PIPE

SECTION 05-18109-00-BR ENDS STA. 7+00.00

TIES P.O.T. STA. 7+09.27

STEEL PIN
STEEL PIN
13.7'
12.2'
STEEL PIN
8.3'
STEEL PIN

HATCH LEGEND

ROADWAY

SHOULDER

SCALES:
1" = 50' HOR
1" = 10' VER

EXIST. R.O.W.
PROP. R.O.W.
TEMP. DITCH CHECKS (TYP.)
EXISTING WATER LINE

WESTERN WAYNE WATER DISTRICT
R.R. 2
WAYNE CITY, ILLINOIS 62895
618-895-4755

MARVIN & ROBBIE WUEBBLES

CIRCULAR
D = 07°18'09"
Da = 07°18'44"
Dc = 07°19'02"
T = 50.00
R = 783.55
L = 99.86
C = 99.80
E = 1.59
M = 1.59
PI Sta = 2+89.01

PC Sta = 2+39.01
PT Sta = 3+38.88

POPLAR
CREEK
MINIMUM CLEARANCE FROM POWER LINE
@ AMEREN 345 KV POWER LINE
38'

EXISTING POWER LINE

AMEREN
OLNEY, ILLINOIS
618-393-5641

MIKE & TINA SIMMONS

STA. 4+05.00 PROPOSED STRUCTURE NO. 096-3458
SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE
66'-7" BK.- BK. ABUTMENTS
METAL SHELL PILE / SPILLTHROUGH ABUTMENTS
24' DECK
15° SKEW

B.M. RT. STA. 5+32
SPIKE IN PP
ELEV. 457.25

℄ SURVEY & CONSTRUCTION T.R. 165

RT. STA. 6+00
CONSTRUCT F.E. 12' WIDTH
NO PIPE

SEE EXHIBIT "E" FOR TYPICAL CROSS SECTION

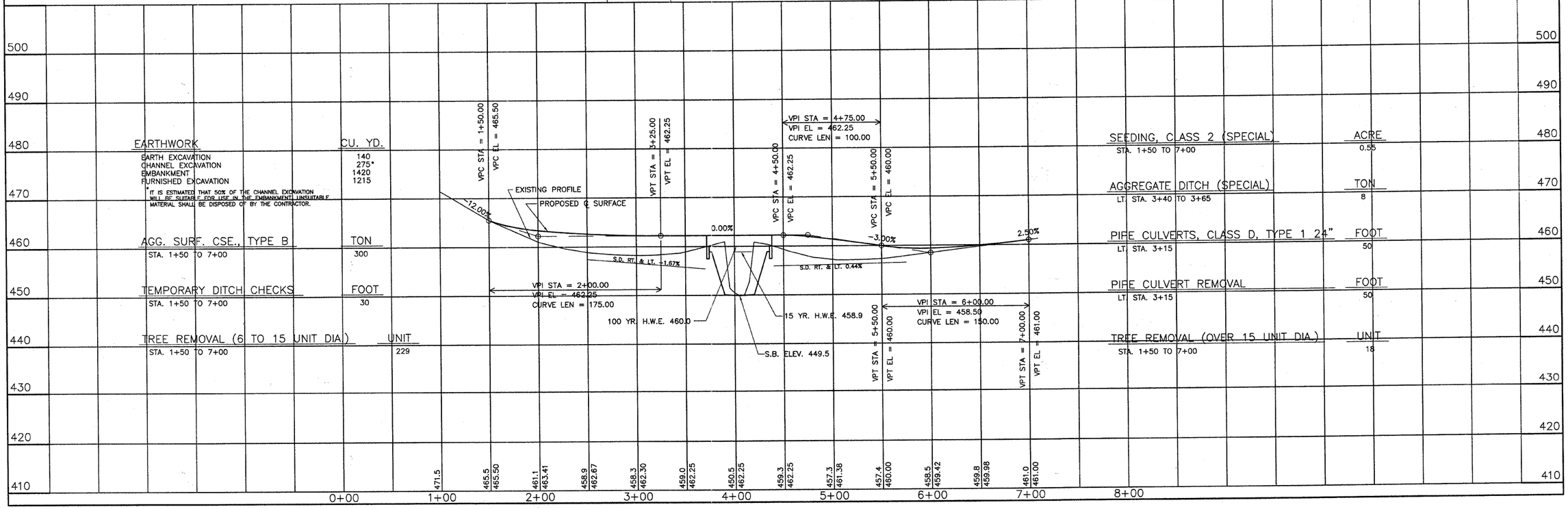
TRANSITION EXISTING ROADWAY TO PROPOSED ROADWAY
STA. 1+00 TO 1+50 AND STA. 7+00 TO 7+50
QUANTITIES FOR THE ABOVE ARE INCLUDED IN THOSE LISTED

EARTHWORK	CU. YD.
EARTH EXCAVATION	140
CHANNEL EXCAVATION	275*
EMBANKMENT	1420
FURNISHED EXCAVATION	1215

* IT IS ESTIMATED THAT 50% OF THE CHANNEL EXCAVATION WILL BE SUITABLE FOR USE IN THE EMBANKMENT. UNSUITABLE MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR.

AGG. SURF. CSE., TYPE B	TON	
STA. 1+50 TO 7+00		300
TEMPORARY DITCH CHECKS	FOOT	
STA. 1+50 TO 7+00		30
TREE REMOVAL (6 TO 15 UNIT DIA)	UNIT	
STA. 1+50 TO 7+00		229

SEEDING, CLASS 2 (SPECIAL)	ACRE	
STA. 1+50 TO 7+00		0.55
AGGREGATE DITCH (SPECIAL)	TON	
LT. STA. 3+40 TO 3+65		8
PIPE CULVERTS, CLASS D, TYPE 1 24"	FOOT	
LT. STA. 3+15		50
PIPE CULVERT REMOVAL	FOOT	
LT. STA. 3+15		50
TREE REMOVAL (OVER 15 UNIT DIA.)	UNIT	
STA. 1+50 TO 7+00		18

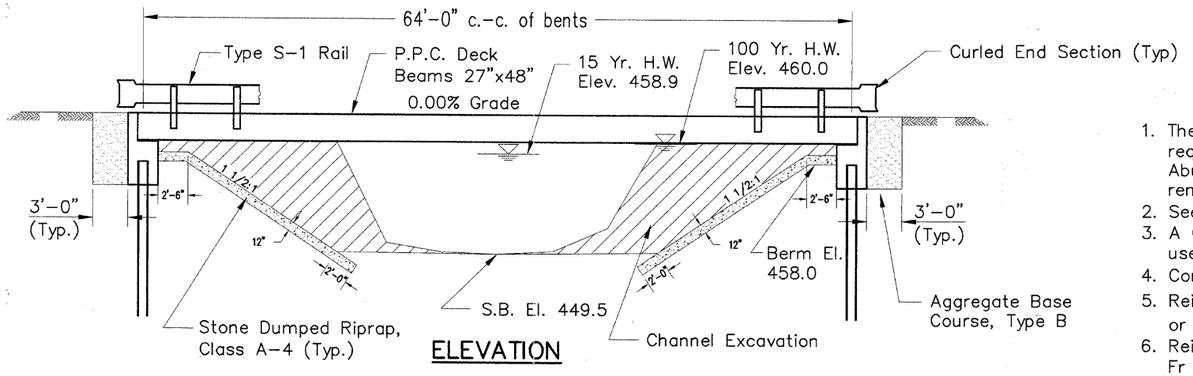


B.M.–Rt. Sta. 5+32, spike in power pole, *Elev. 457.25*

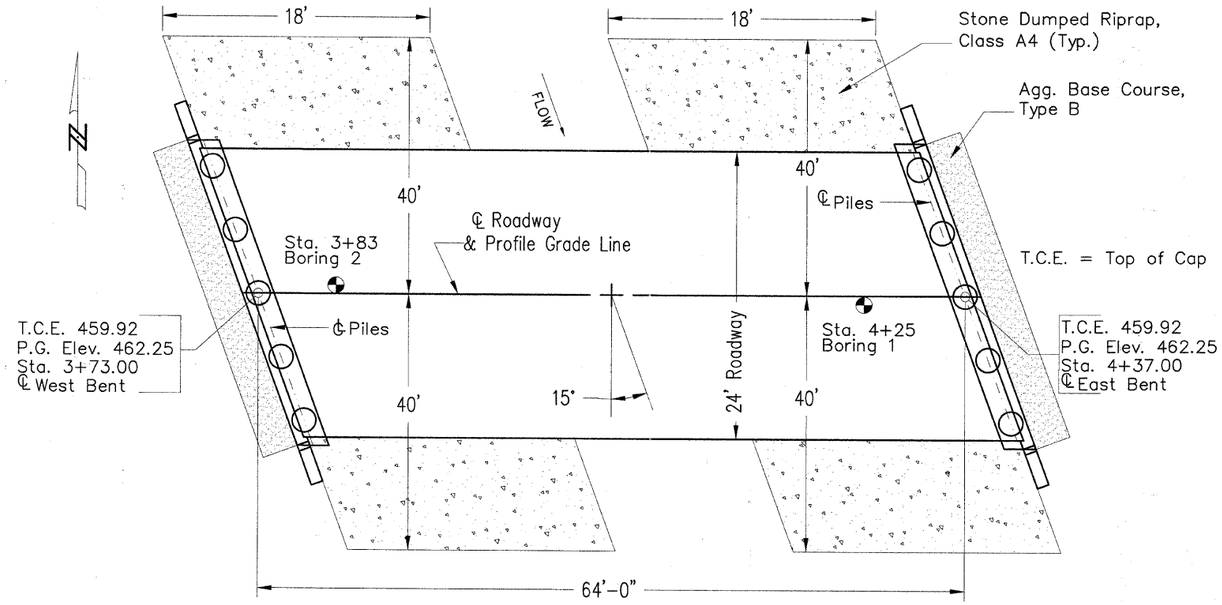
Existing Structure – Existing structure No. 096–3411 consists of a single span concrete deck on steel I–beams bearing on closed timber abutments. The bk. to bk. of abutments length is 26' and the out–to–out roadway width is 20'. The existing structure shall be completely removed. Road closure shall be used during construction.

Salvage – Any material deemed salvageable by the Engineer shall be stockpiled on the R.O.W. and shall become the property of Orchard Road District. The Contractor shall dispose of all remaining material.

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	4
ORCHARD ROAD DISTRICT		ILLINOIS		

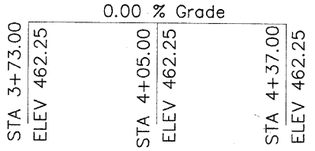


ELEVATION



PLAN

Skew Angle = 15° Forward Right



PROFILE GRADE
(along ℄ roadway)

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
Fy = 60,000 psi (reinforcement)

PRECAST PRESTRESSED UNITS

f'c = 6,000 psi
f'ci = 5,000 psi
F's = 270,000 psi (½" low relax. strands)
Fsi = 201,960 psi (½" low relax. strands)

DESIGN SPECIFICATIONS

AASHTO LRFD Bridge Design Specifications – 5th ed.

SEISMIC DATA

Seismic Performance Zone (SPZ) = 2
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.272g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.651g
Soil Site Class = D

PILE DATA (2–ABUTS.)

Type	*Metal Shell Piles 12" X 0.250"*
Nominal Required Bearing	294 kips
Factored Resistance Available	162 kips
Estimated Pile Length	60 Ft. West 65 Ft. East
Number of Production Piles	9
Number of Test Piles	1 at East Abut.

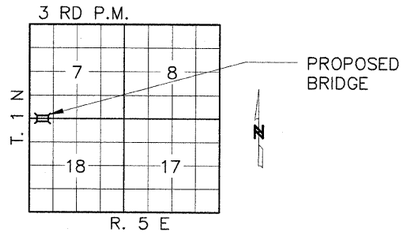
LOADING HL–93

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

STATION 4+05.00
POPLAR CREEK
SEC. 05–18109–00–BR BUILT 201_
ORCHARD ROAD DISTRICT
WAYNE COUNTY
LOADING HL–93
STR. NO. 096–3458

LETTERING FOR NAME PLATE

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



LOCATION SKETCH

WATERWAY INFORMATION

Drainage Area = 6.6 SQ MI Low Grade Elev = 459.4 @ Sta. 6+00

Flood	Freq. Yr.	Q. C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head – Ft. Exist.	Head – Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
Design	15	2050	191	385	458.9	0.3	0.0	459.2	458.9
Base	100	3430	222	450	460.0	0.5	0.1	460.5	460.1

GENERAL NOTES

1. The Contractor shall drive metal shell test pile to 110% of the nominal required bearing specified in production locations at the East Abutment as approved by the Engineer before ordering the remainder of piles. Test pile shall be equipped with metal shoe.
2. See Sheet 11 for boring logs.
3. A Corrosion inhibitor, as covered in the Special Provisions, shall be used in the concrete for precast prestressed concrete deck beams.
4. Concrete sealer shall be applied to exterior face of each fascia beam.
5. Reinforcement bars shall conform to the requirements of AASHTO M31 or M322 Grade 60.
6. Reinforcement bars shall conform to the requirements of ASTM A 706 Fr 60 (IL Modified). See Special Provisions.
7. Reinforcement bars designated (E) shall be epoxy coated.
8. Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub. Piers	Sub. Abuts.	Total
Removal of Existing Structures	Each	–	–	–	1
Concrete Structures	Cu. Yd.	–	–	24.6	24.6
Precast Prestressed Concrete Deck Beams (27" Depth)	Sq. Ft.	1560	–	–	1560
Steel Railing, Type S–1	Foot	130	–	–	130
Reinforcement Bars, Epoxy Coated	Pound	–	–	3310	3310
Furnishing Metal Shell Piles 12" X 0.250"	Foot	–	–	560	560
Driving Piles	Foot	–	–	560	560
Test Pile Metal Shells	Each	–	–	1	1
Name Plates	Each	–	–	1	1
Aggregate Base Course, Type B	Tons	–	–	65	65
Stone Dumped Riprap, Class A4	Tons	–	–	180	180
Channel Excavation	Cu. Yd.	–	–	275	275
Pile Shoes	Each	–	–	9	9

I certify that to the best of 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.

INDEX OF SHEETS

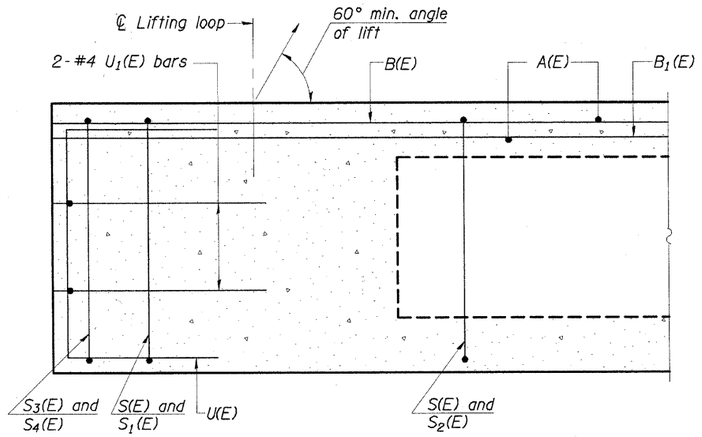
1. General Plan & Elevation
2. Superstructure
3. Superstructure Details
4. Steel Railing, Type S–1
5. West Abutment Details
6. East Abutment Details
7. Pile Details
8. Boring Logs

2012
Nizkraddin
09-20-2011

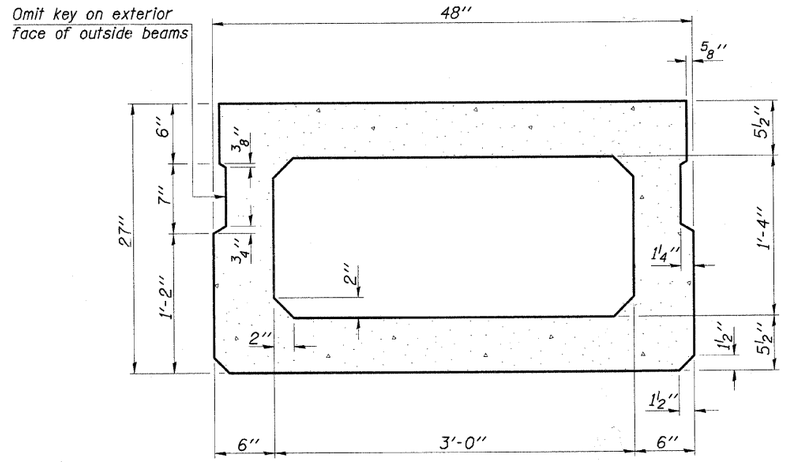
CHARLESTON ENGINEERING, INC.
CONSULTING ENGINEERS
105 NORTH KITCHELL
P.O. BOX 397
OLNEY, ILLINOIS 62450
(618) 392-0736
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

GENERAL PLAN & ELEVATION
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY
STATION 4+05.00

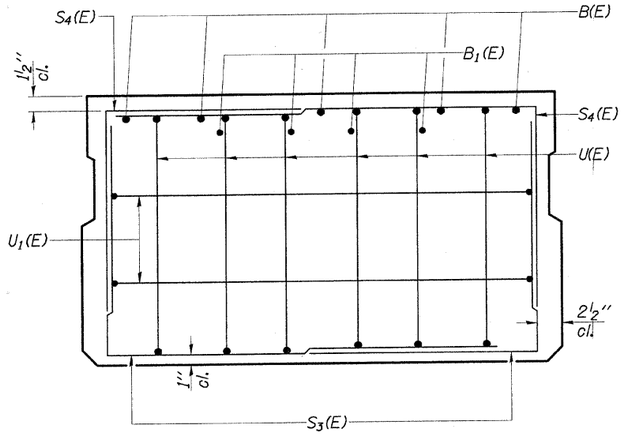
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	5
ORCHARD ROAD DISTRICT		ILLINOIS		



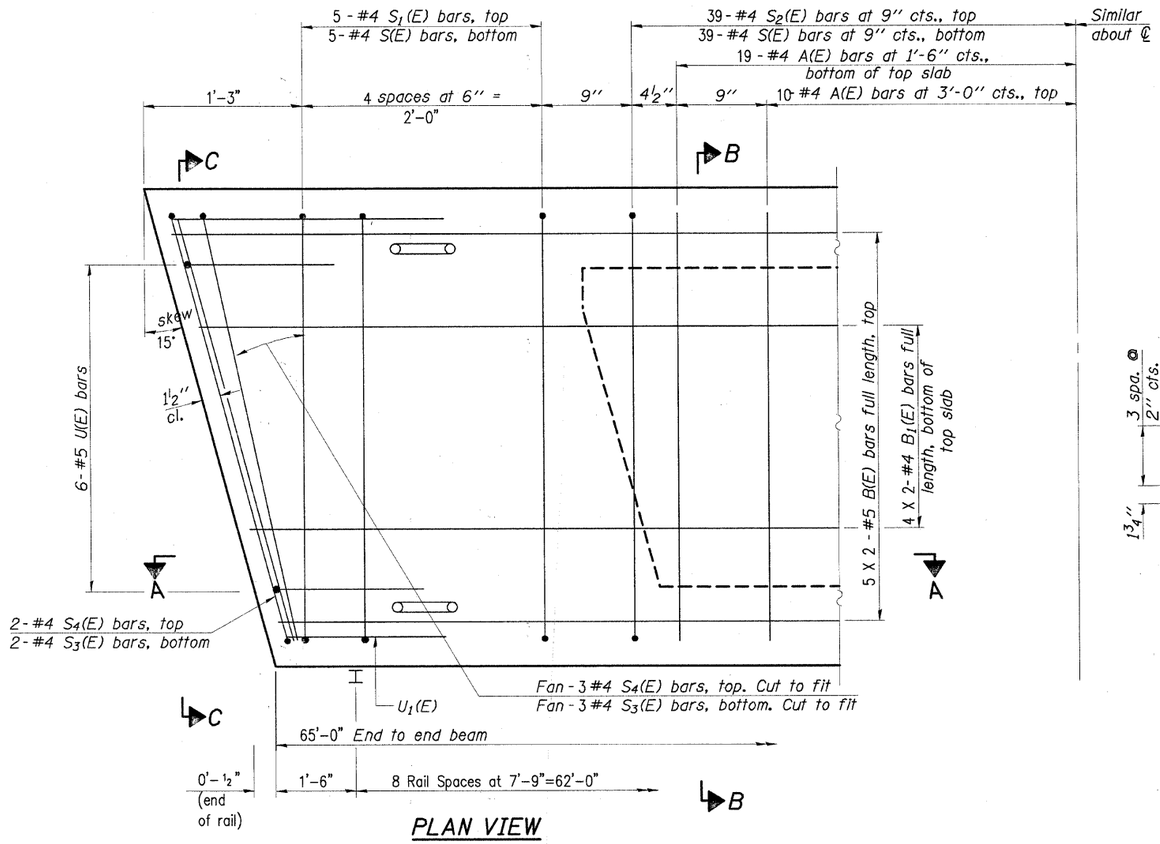
SECTION A-A



SECTION B-B
(Showing dimensions)



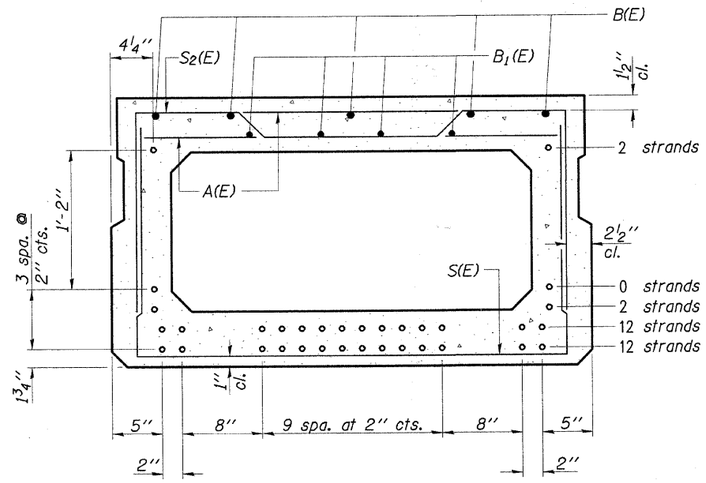
VIEW C-C



PLAN VIEW

Note: Spacing of S(E) and S_2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.

Bars indicated thus 5 X 2–#5 etc. indicates 5 lines of bars with 2 lengths per line.



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

Notes: 1. 28 Total Strands
2. Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

MINIMUM BAR LAP
#4 bar = 2'-0"
#5 bar = 2'-6"

BAR LIST
ONE BEAM ONLY
(For information only)

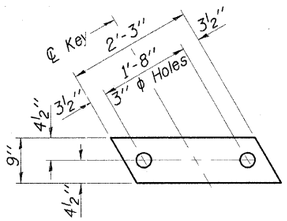
Bar	No.	Size	Length	Shape
A(E)	58	#4	3'-7"	—
B(E)	10	#5	33'-8"	—
B_1(E)	8	#4	33'-8"	—
S(E)	88	#4	7'-5"	⌊⌋
S_1(E)	10	#4	6'-11"	⌐¬
S_2(E)	78	#4	7'-2"	⌐¬
S_3(E)	10	#4	5'-9"	⌊⌋
S_4(E)	10	#4	5'-6"	⌊⌋
U(E)	12	#5	4'-5"	⊏
U_1(E)	4	#4	7'-0"	⊐

Note: See sheet 6 of 14 for additional details and Bill of Material.

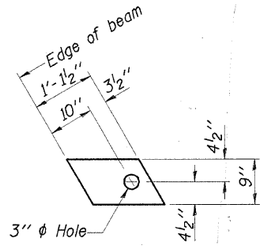
CHARLESTON ENGINEERING, INC.
CONSULTING ENGINEERS
105 NORTH KITCHELL
P.O. BOX 397
OLNEY, ILLINOIS 62450
(618) 392-0736
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

SUPERSTRUCTURE
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY
STATION 4+05.00

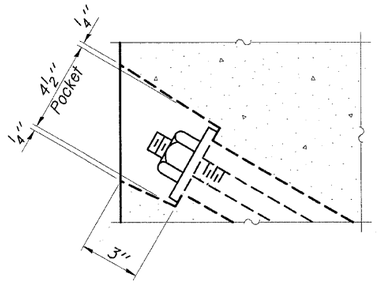
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	6
ORCHARD ROAD DISTRICT		ILLINOIS		



FABRIC BEARING PAD
(Interior)



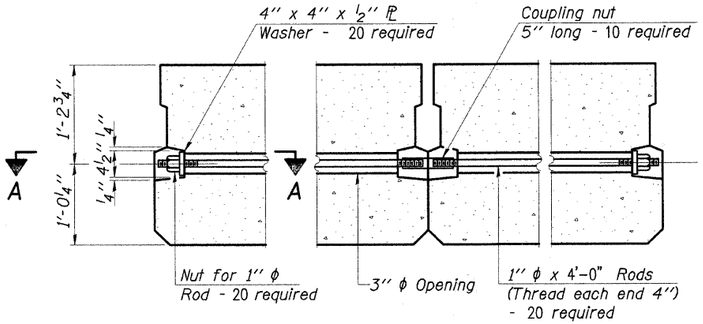
FABRIC BEARING PAD
(Exterior)



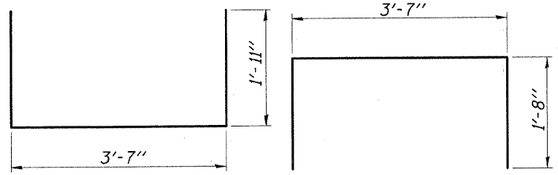
SECTION A-A

FIXED

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

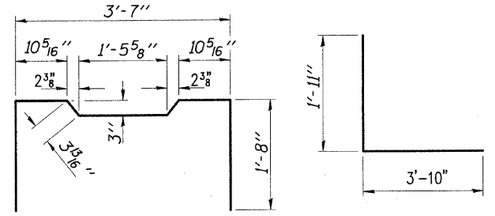


TYPICAL TRANSVERSE TIE ASSEMBLY



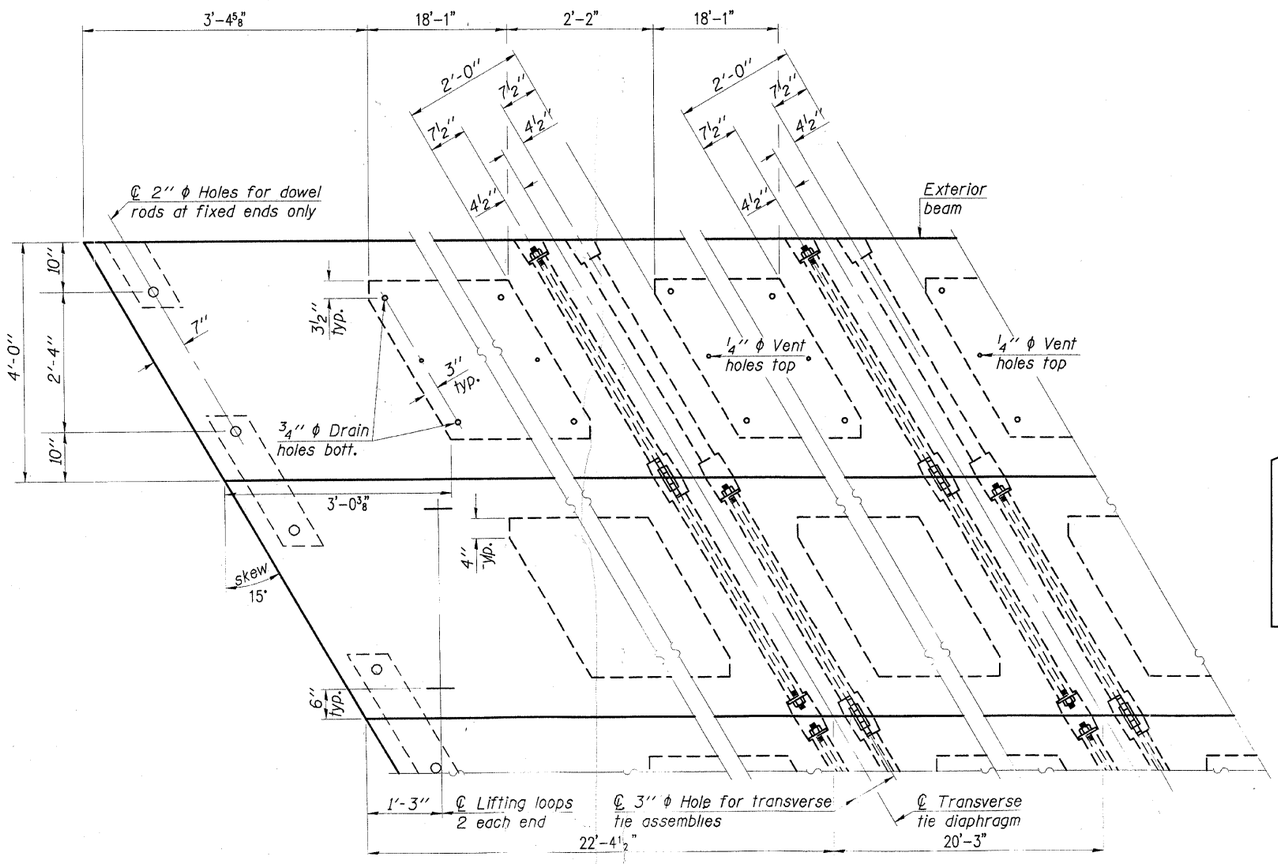
BAR S(E)

BAR S_1(E)



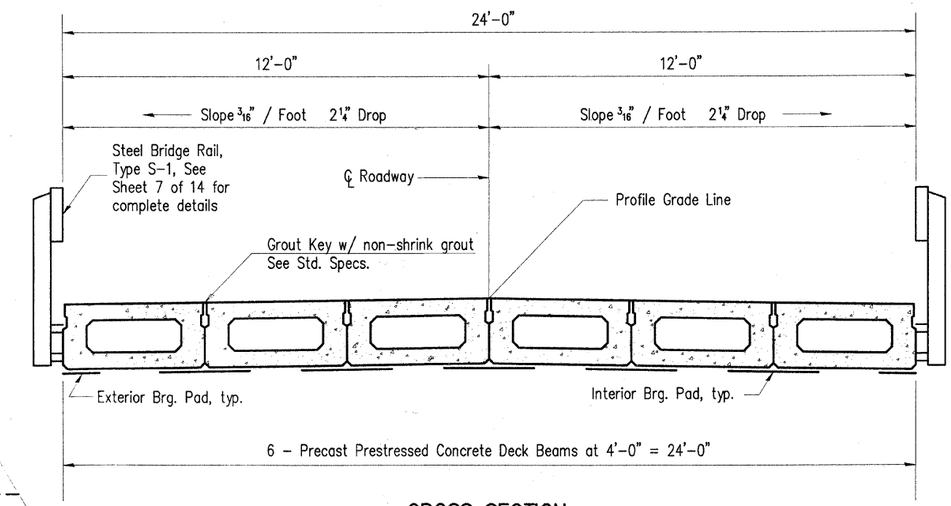
BAR S_2(E)

BAR S_3(E)

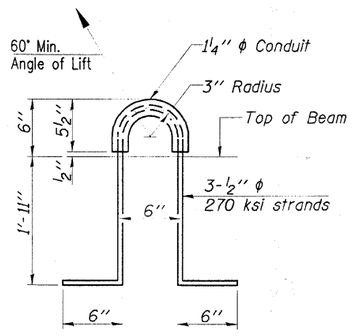


PLAN VIEW

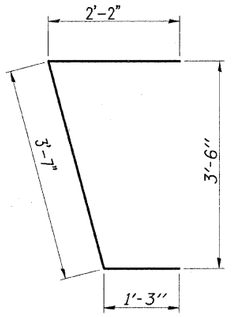
Note: Connect beams in pairs with the transverse tie configuration shown.



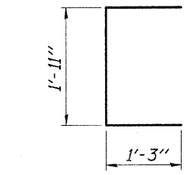
CROSS SECTION



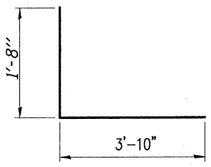
LIFTING LOOP DETAIL



BAR U_1(E)



BAR U(E)



BAR S_4(E)

NOTES

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be ½" and the nominal cross-sectional area shall be 0.153 sq. in.

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

Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).

Two ⅛" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2½" ϕ lifting pin shall be used to engage the lifting loops during handling.

Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

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

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

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (27" depth)	Sq. Ft.	1560

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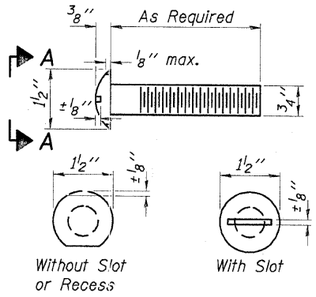
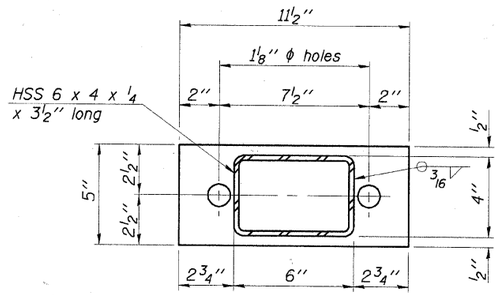
SUPERSTRUCTURE DETAILS
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY
STATION 4+05.00

PD-2748-LD 7-1-10

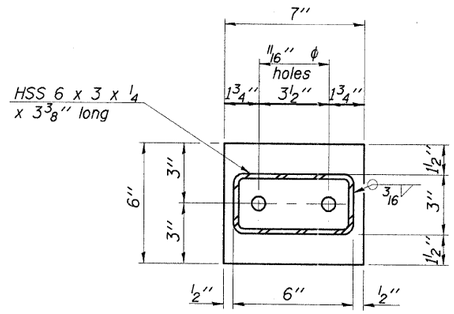
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	7
ORCHARD ROAD DISTRICT		ILLINOIS		



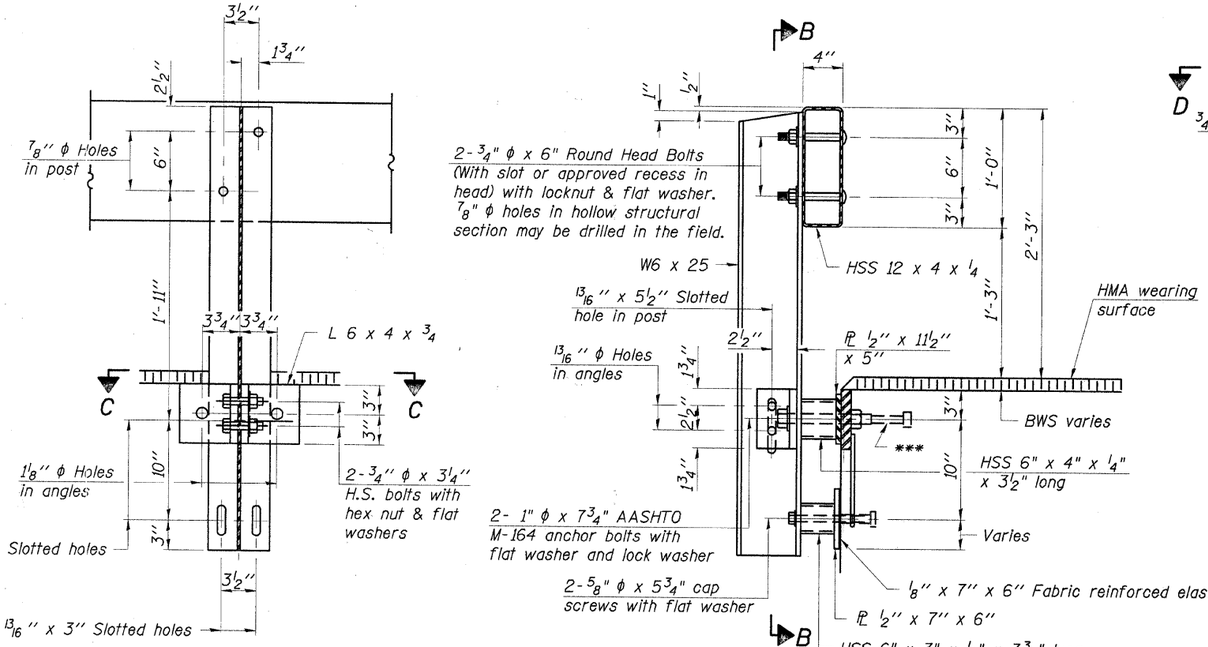
VIEW A-A ROUND HEAD BOLT



℄ 1/2" x 11 1/2" x 5"

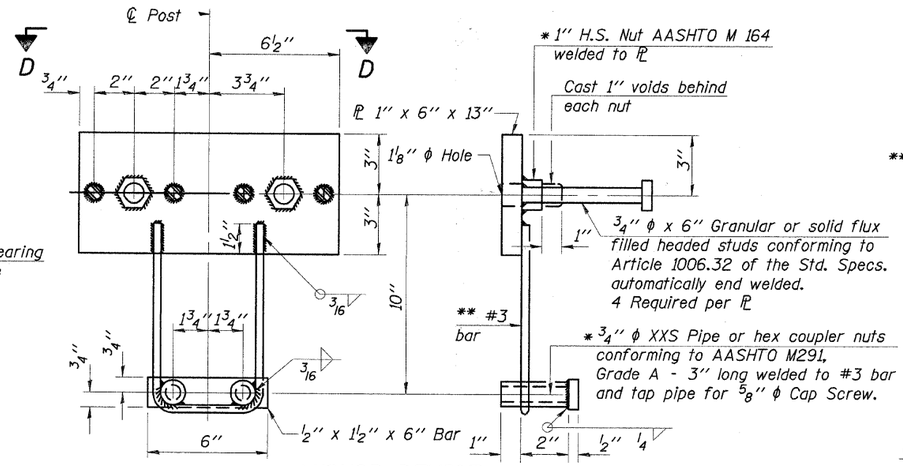


℄ 1/2" x 7" x 6"



SECTION B-B

SECTION AT RAILING POST



ANCHOR DEVICE

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

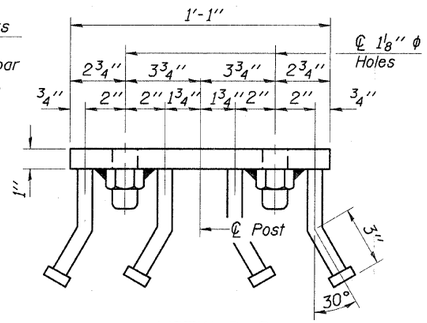
Notes:

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 Railing, Type S-1.

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

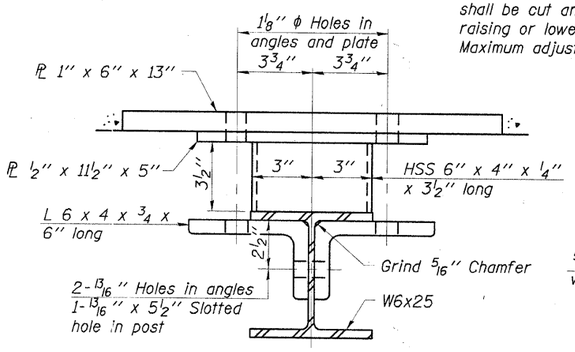
*** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.



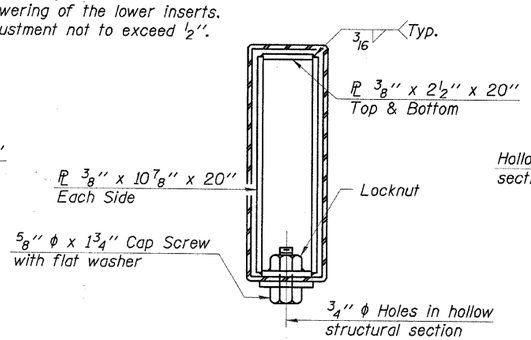
VIEW D-D

BILL OF MATERIAL

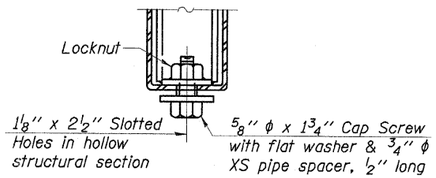
Item	Unit	Quantity
Steel Railing, Type S-1	Foot	130



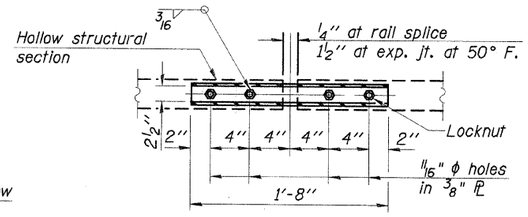
SECTION C-C



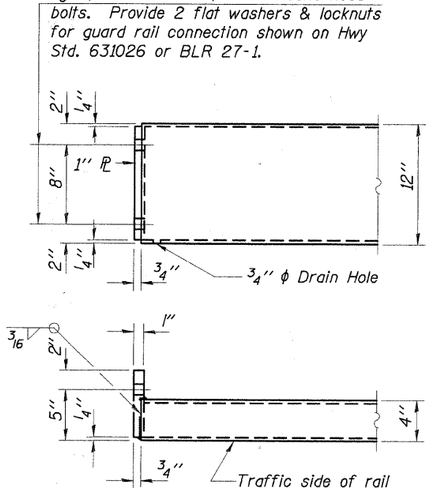
SECTIONS AT RAIL SPLICE



RAIL SPLICE CONNECTION AT EXPANSION JT.



PLAN-BOTT. SPLICE ℄ TYPICAL



END OF RAIL DETAILS

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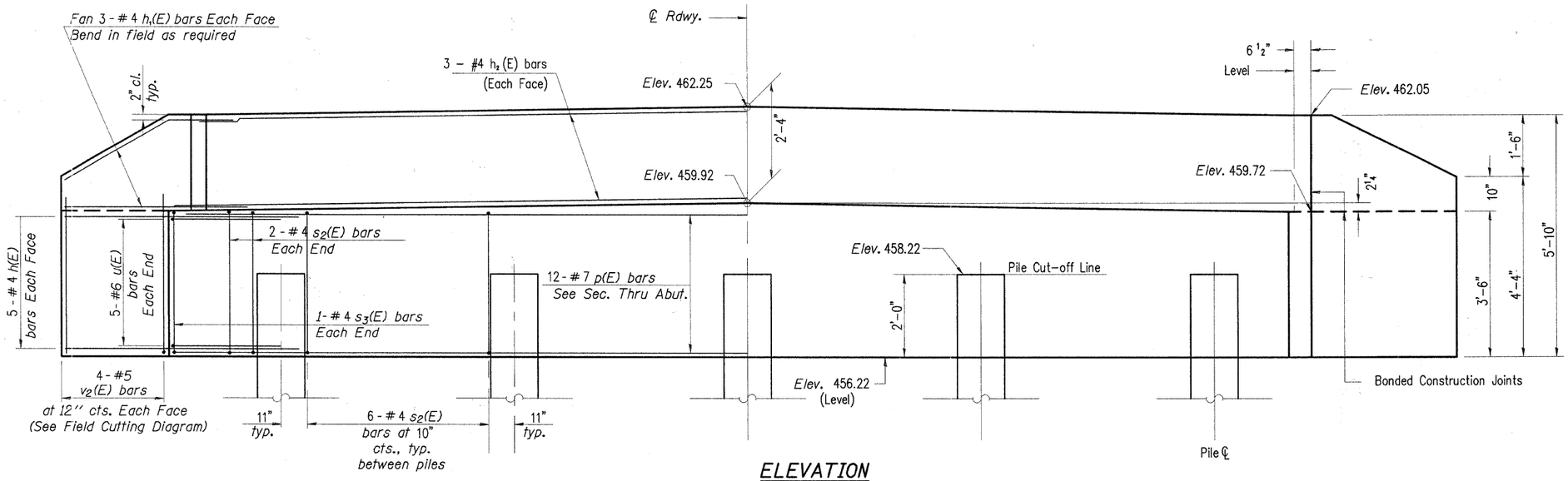
STEEL RAILING, TYPE S-1

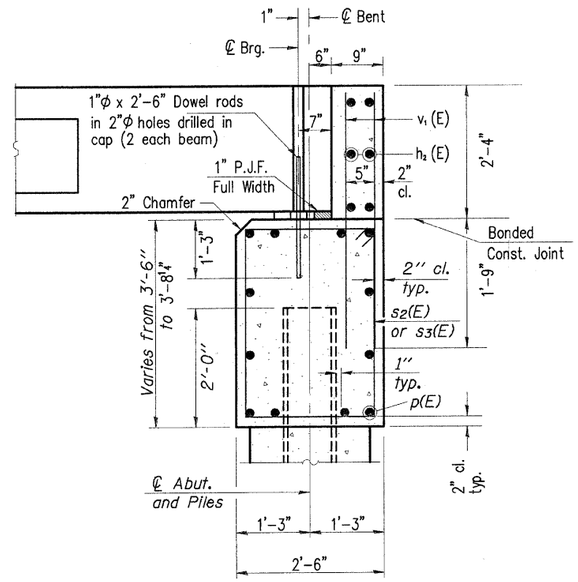
STEEL RAILING, TYPE S-1
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY

R-23A 7-1-10 (10'-9" Maximum Post Spacing)

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	8
ORCHARD ROAD DISTRICT		ILLINOIS		

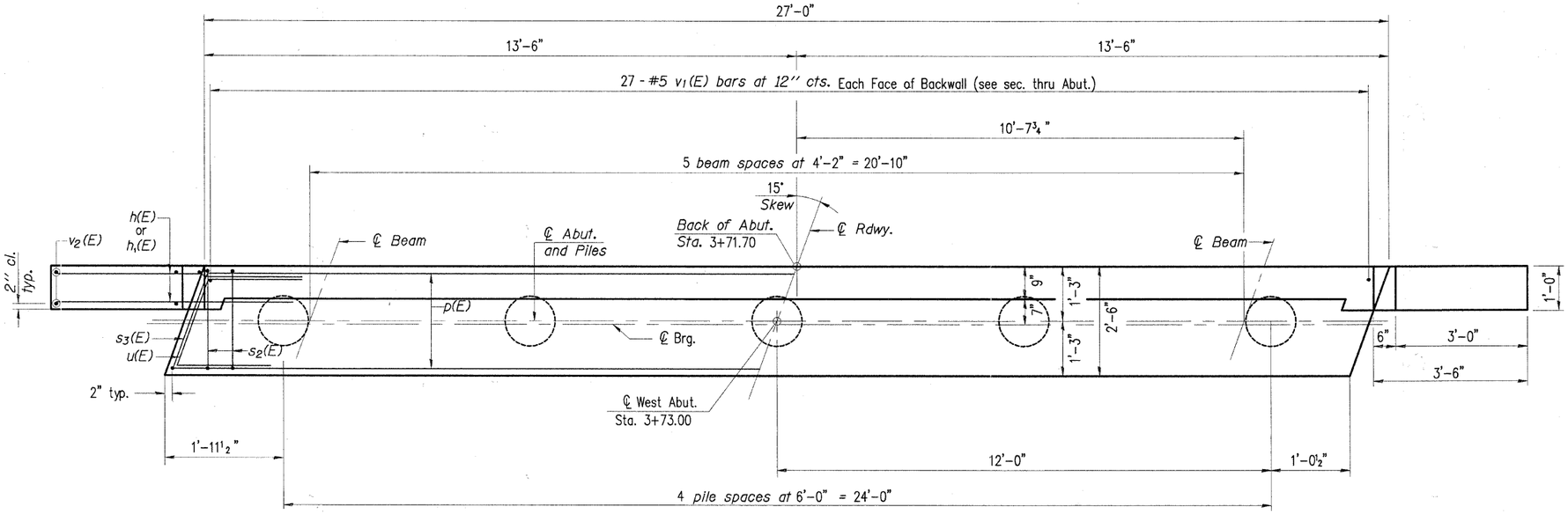


ELEVATION



SEC. THRU ABUT.

(At Right Angles)



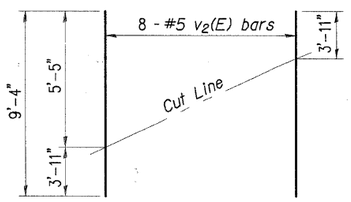
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	20	#4	5'-0"	
h1(E)	12	#4	5'-3"	
h2(E)	6	#4	26'-8"	
p(E)	12	#7	26'-8"	
s2(E)	28	#4	11'-5"	
s3(E)	2	#4	11'-8"	
u(E)	10	#6	11'-3"	
v1(E)	54	#5	5'-5"	
v2(E)	8	#5	9'-4"	
Concrete Structures		Cu. Yd.	12.3	
Reinforcement Bars, Epoxy Coated		Pound	1655	
Furnishing Metal Shell Piles 12" X 0.250"		Foot	300	
Driving Piles		Foot	300	
Pile Shoes		Each	5	

For details of piles see sheet 10 of 14.

PILE DATA

Type: Metal Shell Piles 12" X 0.250"
Nominal Required Bearing: 294 kips
Factored Resistance Available: 162 kips
Est. Length: 60 Feet
No. Production Piles: 5

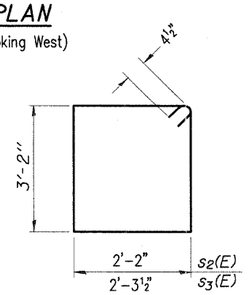


FIELD CUTTING DIAGRAM

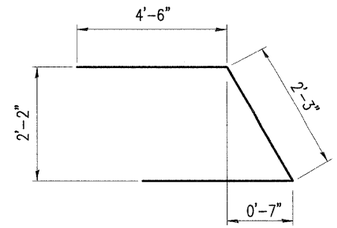
Order $v_2(E)$ full length. Cut as shown and use remainder of bars in opposite face.

PLAN

(Looking West)



BARS s2(E) & s3(E)



BAR u(E)

Notes:
1. The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
2. Space reinforcement in cap to miss anchor bolts.

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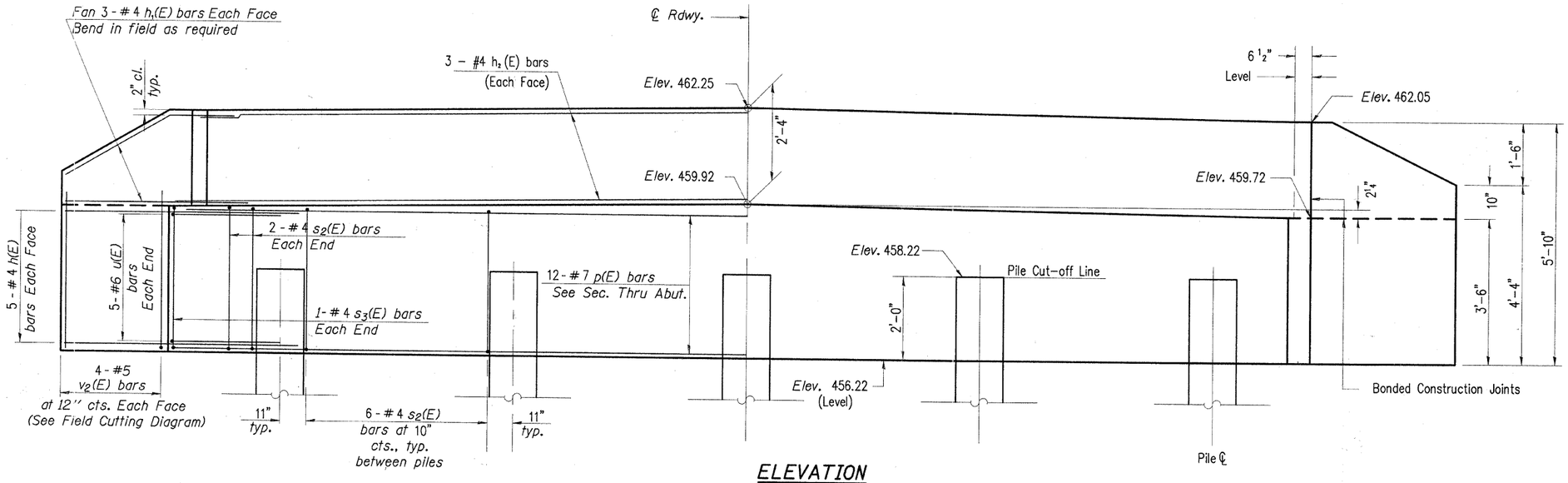
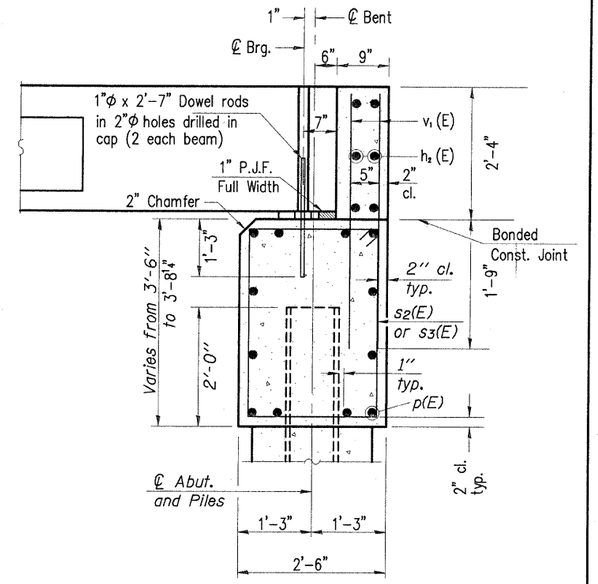
WEST ABUTMENT DETAILS
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY
STATION 1+05.00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	9
ORCHARD ROAD DISTRICT		ILLINOIS		



ELEVATION

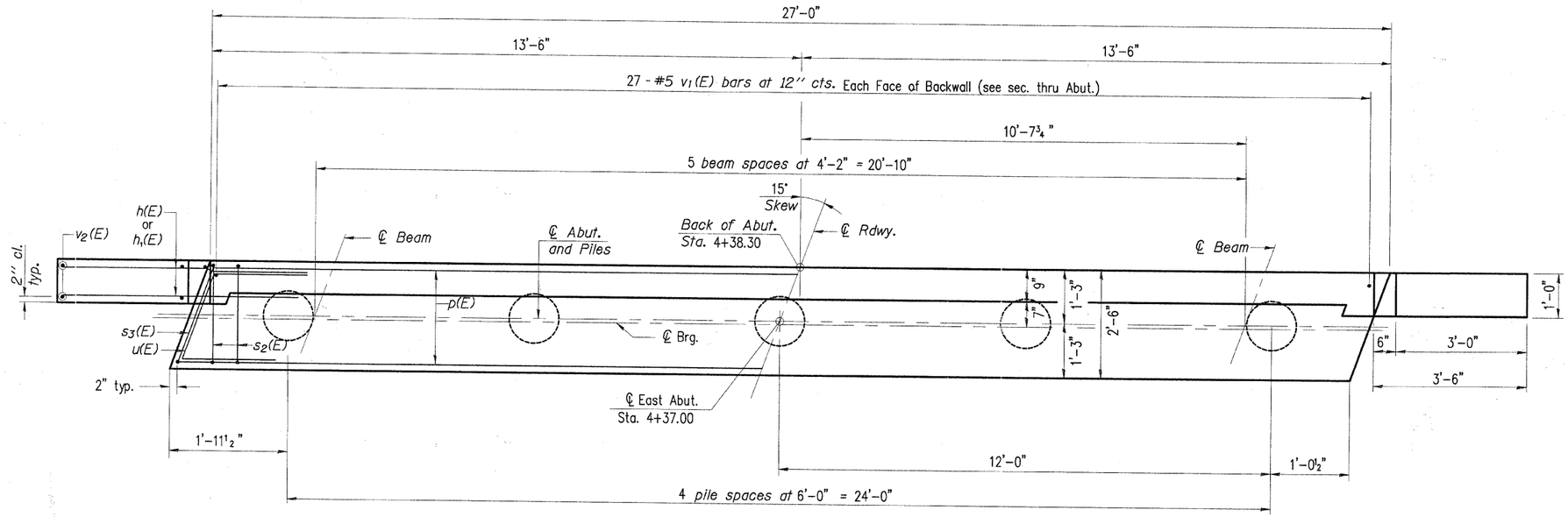


SEC. THRU ABUT.

(At Right Angles)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	20	#4	5'-0"	
h1(E)	12	#4	5'-3"	
h2(E)	6	#4	26'-8"	
p(E)	12	#7	26'-8"	
s2(E)	28	#4	11'-5"	
s3(E)	2	#4	11'-8"	
u(E)	10	#6	11'-3"	
v1(E)	54	#5	5'-5"	
v2(E)	8	#5	9'-4"	
Concrete Structures		Cu. Yd.	12.3	
Reinforcement Bars, Epoxy Coated		Pound	1655	
Furnishing Metal Shell Piles 12" X 0.250"		Foot	260	
Driving Piles		Foot	260	
Test Pile Metal Shells		Each	1	
Pile Shoes		Each	4	

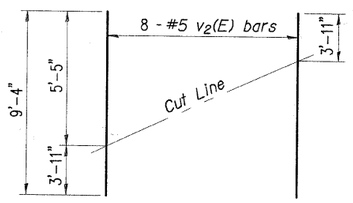


PLAN

(Looking East)

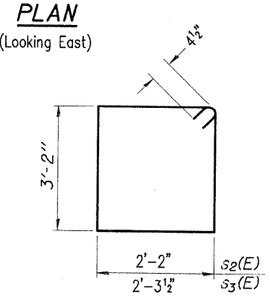
PILE DATA

Type: Metal Shell Piles 12" X 0.250"
Nominal Required Bearing: 294 kips
Factored Resistance Available: 162 kips
Est. Length: 65 Feet
No. Production Piles: 4
No. Test Piles: 1

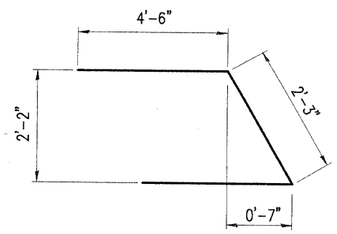


FIELD CUTTING DIAGRAM

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



BARS s2(E) & s3(E)



BAR u(E)

Notes:
1. The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
2. Space reinforcement in cap to miss anchor bolts.
3. The test pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.

For details of piles see sheet 10 of 14.

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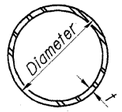
EAST ABUTMENT DETAILS
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY

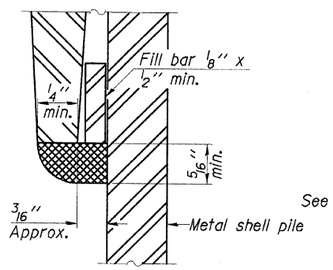
AI-L 7-1-10

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	10
ORCHARD ROAD DISTRICT		ILLINOIS		

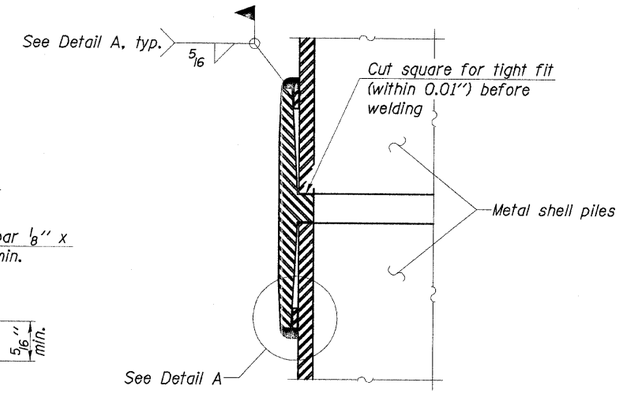


METAL SHELL PILE TABLE

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~~

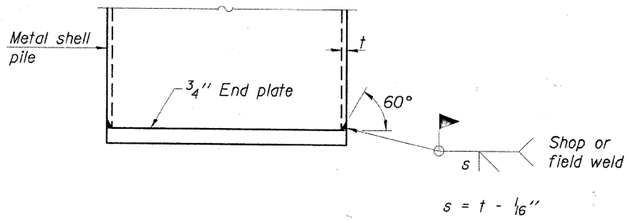


DETAIL A



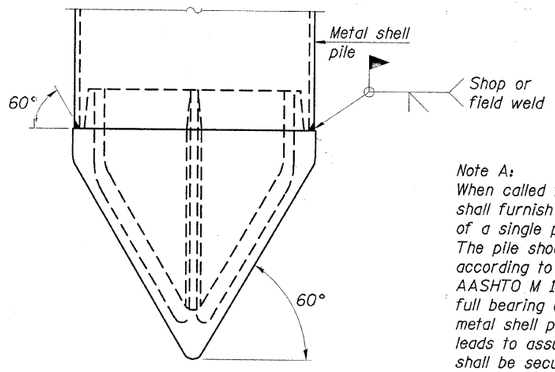
Notes:
The 1/8″ x 1/2″ min. fill bar may be constructed of 2 bars with a 1/8″ max. gap between them.
Pile segments shall be driven to solid contact with splicer before welding.

WELDED COMMERCIAL SPLICE



$s = t - 1/16''$

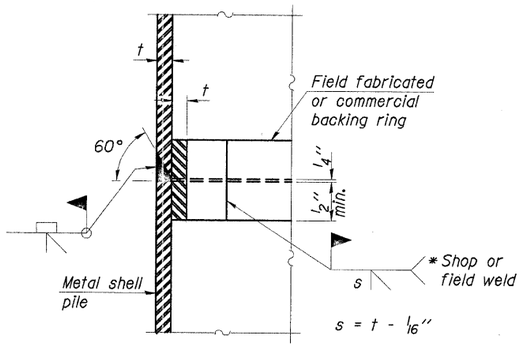
END PLATE ATTACHMENT



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.

METAL SHELL PILE SHOE ATTACHMENT

(See Note A)

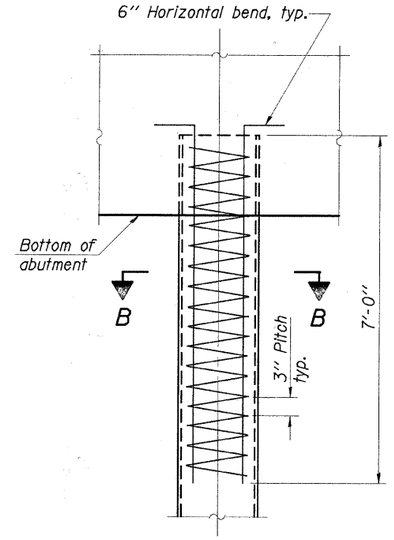


$s = t - 1/16''$

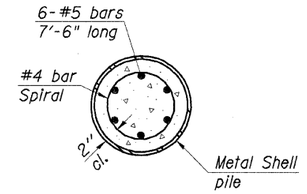
COMPLETE PENETRATION WELD SPLICE

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

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



ELEVATION



SECTION B-B

METAL SHELL REINFORCEMENT AT ABUTMENTS

CHARLESTON ENGINEERING, INC.
CONSULTING ENGINEERS
105 NORTH KITCHELL
P.O. BOX 397
OLNEY, ILLINOIS 62450
(618) 392-0736
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

PILE DETAILS
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY

E-MS 7-1-10

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	11
ORCHARD ROAD DISTRICT		ILLINOIS		

HOLCOMB FOUNDATION ENGINEERING INC.
P.O. Box 88 618-529-5262
Carbondale, Il. 62903 618-457-8991 fax
Page 1 of 3

Bridge Foundation Boring Log

Project: 11108 Bridge TR 165 Over Poplar Creek Date: 6/16/2011
Section: 05-18109-00-BR Station
Structure: Bored by: B. Schwartz
County: Wayne Checked By: T. Holcomb

Boring No: 1
Station: 4+25
Offset: ℄

Surface Water Elev.
Ground Water Elev. During Drilling 452.8
Upon Completion plugged

	Elevation	N	Qu tsf	% w
Ground Surface 2" A-3 Surface over 8" gravel and clay mix	460.8	0		
Brown Mottled Gray Clayey SAND (A-2-4)		5	0.75	13
	456.8			
Gray Mottled Brown Silty CLAY (A-6)		4	1.55	19
	454.3			
Brown Mottled Gray Clayey SAND (A-2-4)		2	0.28	22
	451.8			
Gray Clayey SAND (A-2-4)		2	0.48	23
	449.3			
Brown Sandy CLAY (A-6)		3	0.58	24
	446.8			
Gray Clayey SAND (A-2-4)		4	0.39	21
	444.3			
Gray Sandy CLAY (A-6)		1	0.48	25
	441.8			
Gray Silty CLAY (A-6)		0	0.78	28
	439.3			
Gray Clayey SAND (A-2-4)		>	10.38	24

clayey sand (continued)

	Elevation	N	Qu tsf	% w
		2	--	23
	434.3			
Gray Silty CLAY (A-6)		3	1.08	26
	431.8			
Gray Clayey SAND to SAND (A-2-4)		7	--	21
	426.8			
Gray Silty CLAY (A-6) with sand and		17	3.58	14
		15	2.88	15

N = Standard Penetration Test
Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with a 140 lbs. hammer falling 30"

Qu-Unconfined Compressive Strength in tons/sq.ft.
w-Water Content-percentage of oven dry weight-%

B = Bulge Failure
S = Shear Failure
E = Estimated Value
P = Penetrometer

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Bridge Foundation Boring Log

Project: 11108 Bridge TR 165 Over Poplar Creek Date: 6/16/2011
Section: 05-18109-00-BR Station
Structure: Bored by: B. Schwartz
County: Wayne Checked By: T. Holcomb

Boring No: 1
Station: 4+25
Offset: ℄

Surface Water Elev.
Ground Water Elev. During Drilling 452.8
Upon Completion plugged

	Elevation	N	Qu tsf	% w
silty clay (continued)		45	16	2.78	16
		50	11	1.69	18
	406.8			
Gray Clayey SAND (A-2-4)		55	27	--	20
	401.8			
Gray Silty CLAY (A-6) with sand		60	12	2.48	18
	396.8			
Gray Mottled Brown Silty CLAY (A-6) with sand and pebbles		65	17	3.68	19

silty clay (continued)

	Elevation	N	Qu tsf	% w
		70	13	2.38	23
	387.8			
Gray Fine to Medium SAND (A-2-4)		75	0	--	28
		80	11	--	21
	372.3			
Gray SHALE		100/5"		--	14

N = Standard Penetration Test
Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with a 140 lbs. hammer falling 30"

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Bridge Foundation Boring Log

Project: 11108 Bridge TR 165 Over Poplar Creek Date: 6/16/2011
Section: 05-18109-00-BR Station
Structure: Bored by: B. Schwartz
County: Wayne Checked By: T. Holcomb

Boring No: 1
Station: 4+25
Offset: ℄

Surface Water Elev.
Ground Water Elev. During Drilling 452.8
Upon Completion plugged

	Elevation	N	Qu tsf	% w
shale (continued)		90			
		100/5"	2.35	15
	366.6			
		100/5"	--	14
End of Boring @ -94.0'				

	Elevation	N	Qu tsf	% w
	120			
	125			
	130			
	135			

N = Standard Penetration Test
Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with a 140 lbs. hammer falling 30"

Qu-Unconfined Compressive Strength in tons/sq.ft.
w-Water Content-percentage of oven dry weight-%

B = Bulge Failure
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Page 1 of 3

Bridge Foundation Boring Log

Project: 11108 Bridge TR 165 Over Poplar Creek Date: 6/17/2011
Section: 05-18109-00-BR Station
Structure: Bored by: B. Schwartz
County: Wayne Checked By: T. Holcomb

Boring No: 2
Station: 3+83
Offset: 1' Lt

Surface Water Elev.
Ground Water Elev. During Drilling 451.6
Upon Completion 452.6

	Elevation	N	Qu tsf	% w
Ground Surface 2" A-3 Surface over 8" gravel and clay mix	460.6	0		
Brown Mottled Gray Silty CLAY (A-6)		8	1.65	12
	456.6			
Brown Sandy SILT (A-4)		3	1.15	21
	454.1			
Brown Mottled Gray Fine to Medium SAND (A-2-4)		4	--	13
		4	--	21
	449.1			
Brown Mottled Gray Silty CLAY (A-6) with sand		3	1.28	24
	446.6			
Gray Mottled Brown Silty CLAY (A-6)		3	1.29	26
	444.1			
Gray Silty CLAY to CLAY (A-7-6)		3	1.38	26
		3	1.48	26
		1	1.08	24

cloy (continued)

	Elevation	N	Qu tsf	% w
		5	1.78	27
	434.6			
Gray Clayey SAND (A-2-4)		12	--	17
	431.6			
Gray Silty CLAY (A-6) with sand and pebbles		15	3.58	14
		18	2.88	15

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Bridge Foundation Boring Log

Project: 11108 Bridge TR 165 Over Poplar Creek Date: 6/17/2011
Section: 05-18109-00-BR Station
Structure: Bored by: B. Schwartz
County: Wayne Checked By: T. Holcomb

Boring No: 2
Station: 3+83
Offset: 1' Lt

Surface Water Elev.
Ground Water Elev. During Drilling 451.6
Upon Completion 452.6

	Elevation	N	Qu tsf	% w
silty clay (continued)		45	19	3.58	15
		50	19	2.18	16
	401.6			
Brown Clayey SILT to SILT (A-4)		60	21	2.35	51
	396.6			
Gray Mottled Brown Silty CLAY (A-6)		65	22	3.18	19

silty clay (continued)

	Elevation	N	Qu tsf	% w
		70	21	3.85	21
	386.6			
Gray Clayey SAND (A-2-4)		75	6	1.28	18
	381.6			
Gray Fine to Medium SAND (A-2-4)		80	0	--	29
		85			
	372.1			
Gray SHALE		100/5"		--	12

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County: Wayne Checked By: T. Holcomb

Boring No: 2
Station: 3+83
Offset: 1' Lt

Surface Water Elev.
Ground Water Elev. During Drilling 451.6
Upon Completion 452.6

	Elevation	N	Qu tsf	% w
shale (continued)		90			
		100/5"	--	12
	366.6			
		100/5"	--	11
End of Boring @ -94.0'				

	Elevation	N	Qu tsf	% w
	120			
	125			
	130			
	135			

N = Standard Penetration Test
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BORING LOGS
STRUCTURE NO. 096-3458
T.R. 165
OVER POPLAR CREEK
SECTION 05-18109-00-BR
WAYNE COUNTY
STATION 4+05.00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	12
CONTRACT NO. 95668		ILLINOIS		

3 + 00
DESIGN EL =462.30
FILL AREA =128.0
CUT AREA =14.9

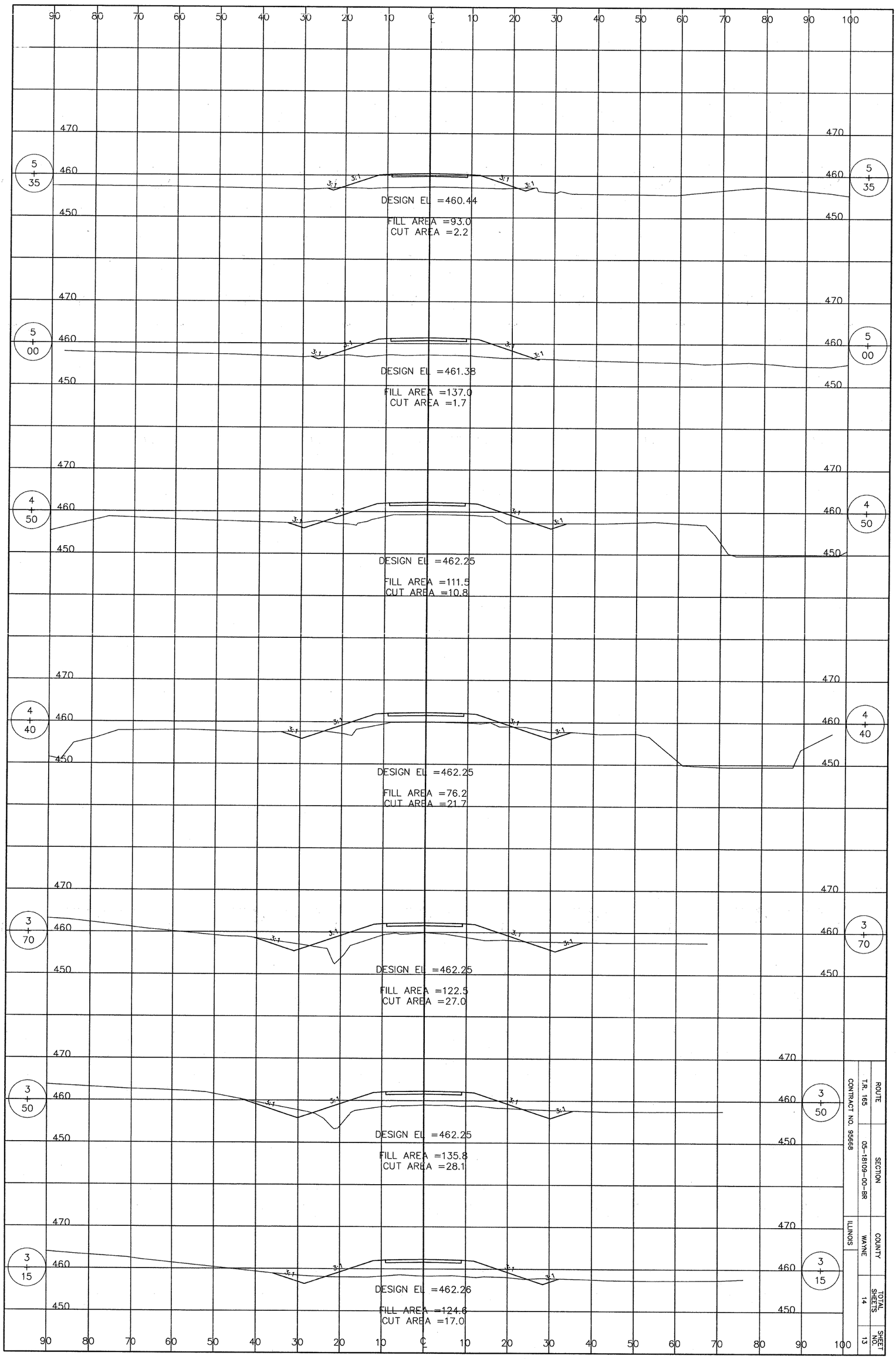
2 + 50
DESIGN EL =462.67
FILL AREA =143.4
CUT AREA =1.7

2 + 30
DESIGN EL =462.92
FILL AREA =111.5
CUT AREA =0.0

2 + 00
DESIGN EL =463.41
FILL AREA =67.3
CUT AREA =0.0

1 + 50
DESIGN EL =465.50
FILL AREA =18.5
CUT AREA =10.6

1 + 00
FILL AREA =0.0
CUT AREA =0.0



ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	13

CONTRACT NO. 95868

ILLINOIS

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 165	05-18109-00-BR	WAYNE	14	14
CONTRACT NO. 95668		ILLINOIS		

7 + 00

DESIGN EL =461.00
FILL AREA =2.0
CUT AREA =13.2

6 + 50

DESIGN EL =459.98
FILL AREA =2.9
CUT AREA =9.3

6 + 00

DESIGN EL =459.42
FILL AREA =13.0
CUT AREA =0.0

5 + 50

DESIGN EL =460.00
FILL AREA =70.2
CUT AREA =1.0

3:1

470
460
450