03-06-2020 LETTING ITEM 183

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	1
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED
SURFACE TRANSPORTATION PROGRAM - BRIDGE

SECTION 18-06125-00-BR LAWRENCE COUNTY
PROJECT ST15(541)
JOB NO. C-97-072-20
T.R. 142

INDEX OF SHEETS

SHEET	ITEM
1	COVER SHEET
2	SUMMARY OF QUANTITIES
3	ROADWAY PLAN AND PROFILE
4	GENERAL PLAN AND ELEVATION
5	SUPERSTRUCTURE SPAN 1 OR 3
6	SUPERSTRUCTURE DETAILS SPAN 1 OR 3
7	SUPERSTRUCTURE SPAN 2
8	SUPERSTRUCTURE DETAILS SPAN 2
9	STEEL RAILING, TYPE S-1
10	STEEL RAILING, TYPE S-1 DETAILS
11	SOUTH ABUTMENT DETAILS
12	NORTH ABUTMENT DETAILS
13	PIER DETAILS
14	PILE DETAILS
15	BORING LOGS
16-20	CROSS SECTIONS

STANDARD DRAWINGS
- STANDARD 000001-07
- STANDARD 280001-07
- STANDARD 515001-04
- STANDARD 701901-08
- STANDARD 720001-01
- STANDARD 720006-04
- STANDARD 728001-01
- STANDARD 725001-01
- STANDARD BLR 21-9
- STANDARD BLR 23-4
- STANDARD BLR 26-3
- STANDARD BLR 27-1

SECTION 18-06125-00-BR BEGINS STA. 1+50.00

THREE-SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE
96'-4½" BK.- BK. ABUTMENTS
STEEL H PILE / SPILLTHROUGH ABUTMENTS
STEEL H PILE / SOLID WALL PIERS
28' DECK
EXISTING STRUCTURE NO. 051-3079
PROPOSED STRUCTURE NO. 051-3306

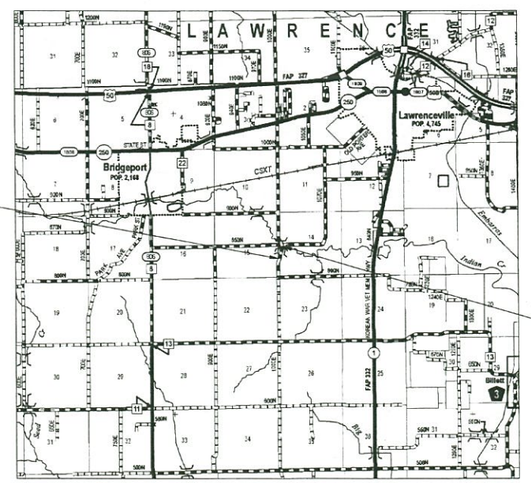
FUNCTIONAL CLASSIFICATION - LOCAL ROAD
ADT = 150
DESIGN SPEED = 30 MPH

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

NOTE: SCALES VALID FOR 24" X 36" SHEETS

R 12 W — R 11 W

T 4 N — T 3 N



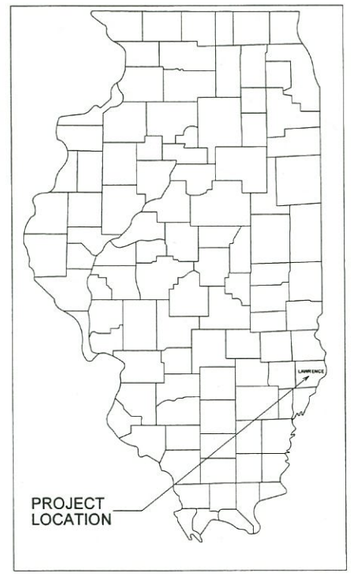
SECTION 18-06125-00-BR ENDS STA. 8+85.00

NET LENGTH SECTION 18-06125-00-BR = 735.00 Ft. = 0.139 Mi.

CONTRACT NO. 95867

Joint Utility Locating Information for Excavators

JULIE 1-800-892-0123



BRANDON M. BRIDGES
062.064453
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

12-5-2019

LICENSE EXPIRES 11/30/2021

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

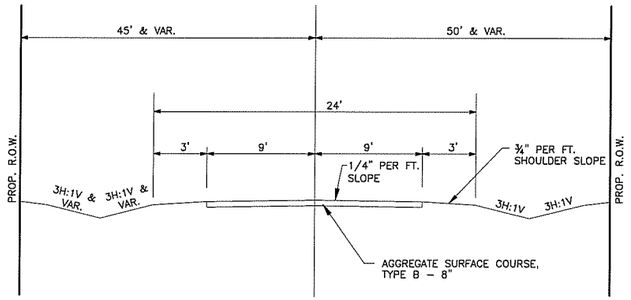
APPROVED December 10, 2019
COUNTY ENGINEER

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PASSED Dec 26, 2019
DISTRICT SEVEN ENGINEER OF LOCAL ROADS AND STREETS

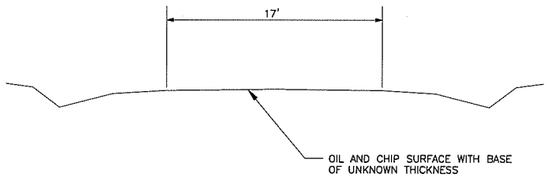
Releasing For Bid Based on Limited Review Dec 26, 2019
REGION FOUR ENGINEER

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	2
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



TYPICAL SECTION

PROPOSED

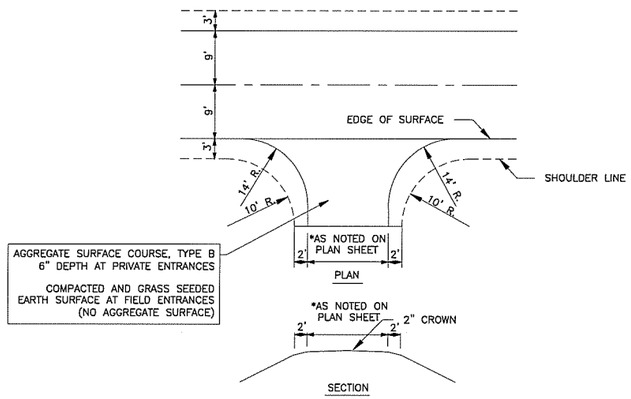


TYPICAL SECTION

EXISTING

DESIGN DATA

LOCAL ROAD
ADT = 150



ENTRANCE DETAIL

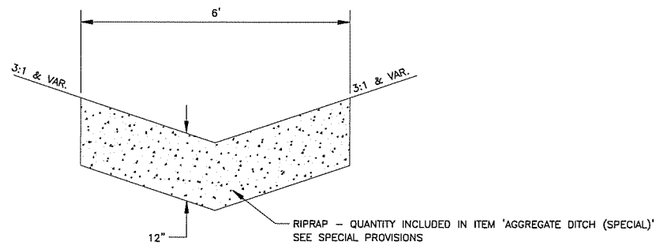
RT. STA. 2+64 - PE
LT. STA. 3+27 - FE
RT. STA. 3+46 - PE

*SEE SHEET 3 FOR REQUIRED DIMENSION

SUMMARY OF QUANTITIES

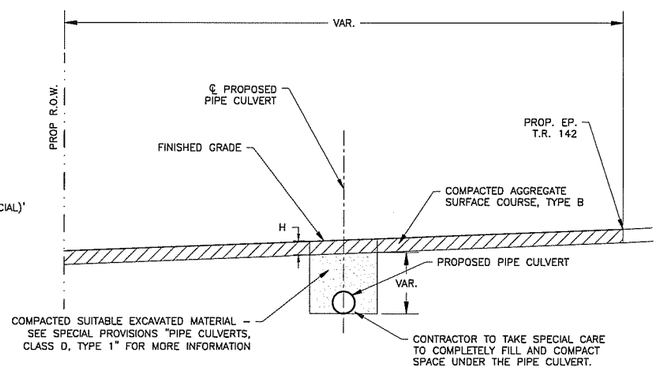
CODE NO.	ITEM	UNIT	QUANTITY
△ LR631020	TRAFFIC BARRIER TERMINAL, TYPE 1	EACH	1
X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.80
X2830495	AGGREGATE DITCH (SPECIAL)	TON	105
Z0065000	SETTING PILES IN ROCK	EACH	17
20100500	TREE REMOVAL, ACRES	ACRE	0.4
20200100	EARTH EXCAVATION	CU YD	525
20200200	ROCK EXCAVATION	CU YD	35
20300100	CHANNEL EXCAVATION	CU YD	1025
20400800	FURNISHED EXCAVATION	CU YD	920
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	700
35101400	AGGREGATE BASE COURSE, TYPE B	TON	70
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	750
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50300225	CONCRETE STRUCTURES	CU YD	129
50300280	CONCRETE ENCASEMENT	CU YD	2.1
50400305	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ FT	2642
50800105	REINFORCEMENT BARS	POUND	10,420
△ 50900205	STEEL RAILING, TYPE S1	FOOT	192
51201600	FURNISHING STEEL PILES HP12X53	FOOT	598
51202305	DRIVING PILES	FOOT	104
51203600	TEST PILE STEEL HP12X53	EACH	1
51204650	PILE SHOES	EACH	4
51500100	NAME PLATES	EACH	1
54200223	PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT	40
54200229	PIPE CULVERTS, CLASS D, TYPE 1 24"	FOOT	100
△ 63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	1
67100100	MOBILIZATION	L. SUM	1
△ 72000200	SIGN PANEL - TYPE 2	SQ FT	18
△ 72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	4
△ 72800100	TELESCOPING STEEL SIGN SUPPORT	FOOT	16

△ SPECIALTY ITEMS



AGGREGATE DITCH DETAIL

LT. STA. 3+45 TO 4+75
RT. STA. 3+65 TO 4+60

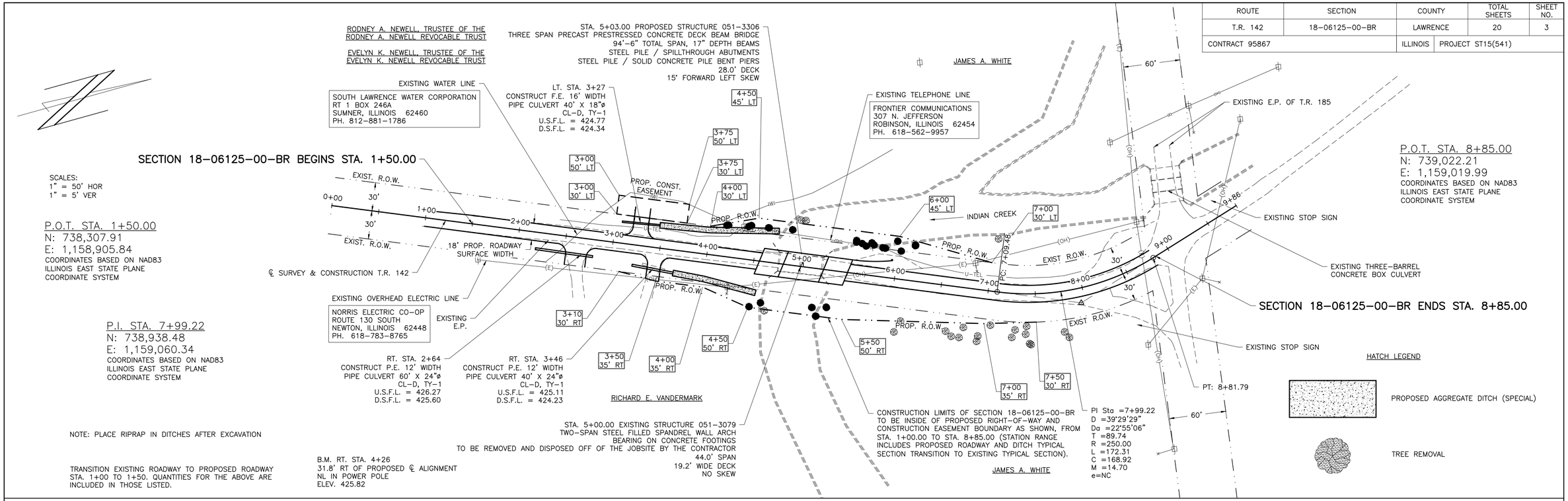


TRENCH DETAIL

THROUGH AGGREGATE OR GRASS SURFACES

NOTES:
1. DIMENSION H = 6" FOR PRIVATE ENTRANCES (PE)
2. DIMENSION H = 0" FOR FIELD ENTRANCES (FE)

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	3
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



EARTHWORK	CU YD
EARTH EXCAVATION	525*
CHANNEL EXCAVATION	1025**
EMBANKMENT	1475***
FURNISHED EXCAVATION	920

*QUANTITY INCLUDES 45 C.Y. EXCAVATION FOR CONCRETE STRUCTURES AND AGGREGATE BASE COURSE, TYPE B. COST OF EXCAVATION FOR CONCRETE STRUCTURES INCLUDED IN ITEM "EARTH EXCAVATION." EARTH EXCAVATION QUANTITY ALSO INCLUDES 45 C.Y. OF OVERDIG FOR RIPRAP DITCHES. VOLUME QUANTITIES SHOWN ON CROSS SECTION SHEETS DO NOT INCLUDE OVERDIG VOLUMES.

**IT IS ESTIMATED THAT 215 C.Y. OF CHANNEL EXCAVATION WILL BE SUITABLE FOR USE IN THE EMBANKMENT. UNSUITABLE MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR.

***QUANTITY INCLUDES ADDITIONAL 15 C.Y. AT LT. STA. 3+27 AND 10 C.Y. AT RT. STA. 3+46. VOLUME QUANTITIES SHOWN ON CROSS SECTION SHEETS DO NOT INCLUDE THESE ADDITIONAL EMBANKMENT VOLUMES.

TREE REMOVAL, ACRES	ACRE
LT. STA. 4+00 TO 8+85	0.3
RT. STA. 4+50 TO 5+40	0.1
	TOTAL 0.4 ACRES

PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT
LT. STA. 3+27	40

PIPE CULVERTS, CLASS D, TYPE 1 24"	FOOT
RT. STA. 2+64	60
RT. STA. 3+46	40
	TOTAL 100 FOOT

SIGN PANEL - TYPE 2	SQ FT
RT. STA. 0+00 - W8-18 (36 X 36)	18.0

TELESCOPING STEEL SIGN SUPPORT	FOOT
RT. STA. 0+00	16.0

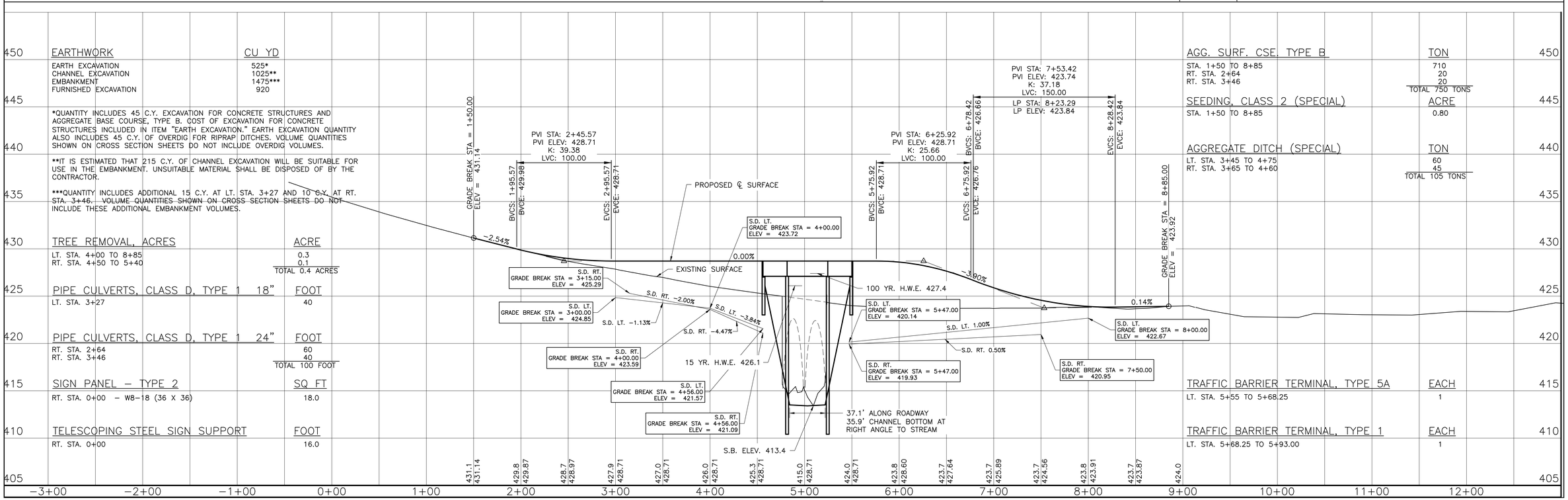
AGG. SURF. CSE. TYPE B	TON
STA. 1+50 TO 8+85	710
RT. STA. 2+64	20
RT. STA. 3+46	20
	TOTAL 750 TONS

SEEDING, CLASS 2 (SPECIAL)	ACRE
STA. 1+50 TO 8+85	0.80

AGGREGATE DITCH (SPECIAL)	TON
LT. STA. 3+45 TO 4+75	60
RT. STA. 3+65 TO 4+60	45
	TOTAL 105 TONS

TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH
LT. STA. 5+55 TO 5+68.25	1

TRAFFIC BARRIER TERMINAL, TYPE 1	EACH
LT. STA. 5+68.25 TO 5+93.00	1

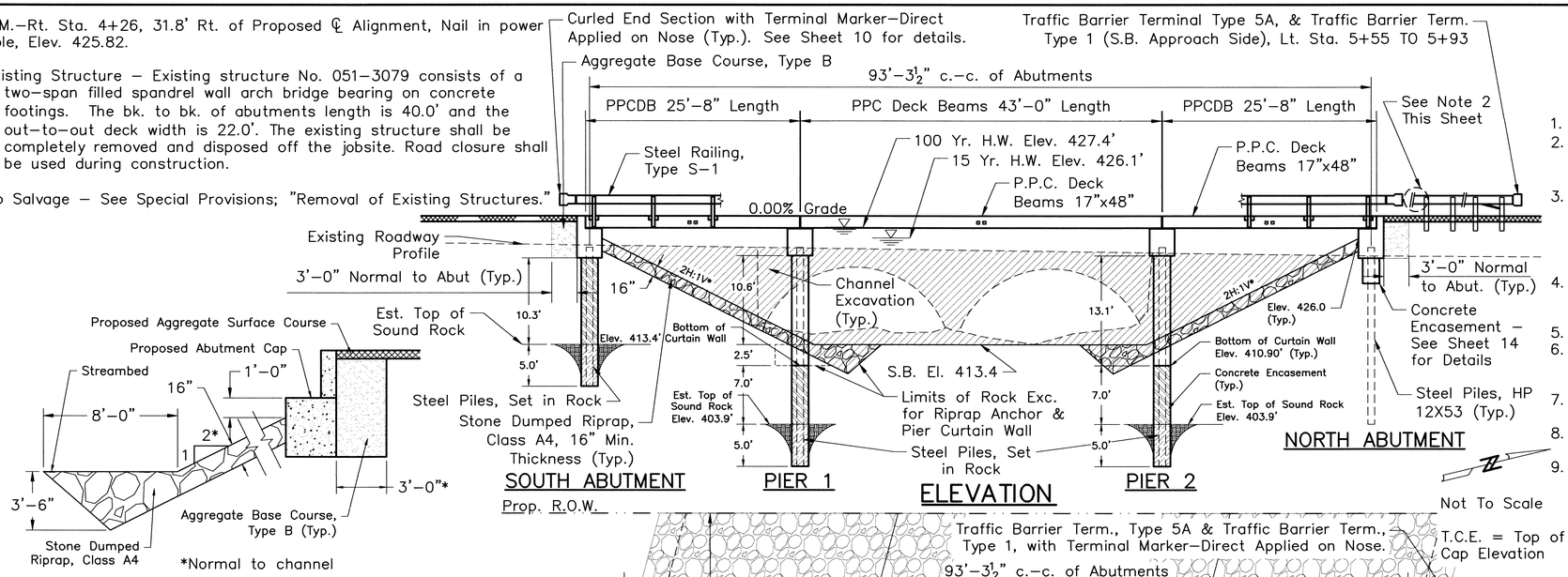


ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	4
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	

B.M.–Rt. Sta. 4+26, 31.8' Rt. of Proposed ℄ Alignment, Nail in power pole, Elev. 425.82.

Existing Structure – Existing structure No. 051–3079 consists of a two–span filled spandrel wall arch bridge bearing on concrete footings. The bk. to bk. of abutments length is 40.0' and the out–to–out deck width is 22.0'. The existing structure shall be completely removed and disposed off the jobsite. Road closure shall be used during construction.

No Salvage – See Special Provisions; "Removal of Existing Structures."



SECTION A–A

Note: See Special Provisions for Stone Dumped Riprap, Class A4

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 – 7th edition

SEISMIC DATA

Seismic Performance Zone (SPZ) = 2
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.232g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.532g
Soil Site Class = D

LOADING HL–93

50#/sq. ft. included in dead load for future wearing surface.

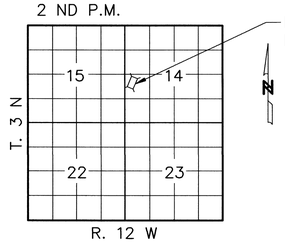
STATION 5+03.00
INDIAN CREEK
SEC. 18–06125–00–BR BUILT 202_
LAWRENCE ROAD DISTRICT
LAWRENCE COUNTY
LOADING HL–93
STR. NO. 051–3306

LETTERING FOR NAME PLATE

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

PLAN

Skew Angle = 15°
Forward Left



LOCATION SKETCH

GENERAL NOTES

1. Do not scale sheets 4–15.
2. Transition guardrail from bridge rail height (23" top of deck beam to ℄ railing) to Traffic Barrier Terminal Type 5A height (21" finished ground line to ℄ terminal railing)
3. The Contractor shall drive the test pile to 110% of the nominal required bearing specified in production locations at the North Abutment as shown on the plans or as approved by the Engineer before ordering the remainder of piles. The test pile shall be equipped with a steel pile shoe, and the cost of the pile shoe shall be included in item Test Pile Steel HP 12 X 53.
4. South Abutment and Pier pile lengths are Engineer's estimate and include an extra five feet for each pile to ensure proper setting of piles into various rock strata elevations.
5. See Sheet 15 for boring logs.
6. Excavation required to construct the Abutments shall be included in the cost of Earth Excavation. No additional compensation will be allowed for Structure Excavation.
7. Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
8. Toe stone riprap treatment as shown in Section A–A shall extend entire channel length from proposed R.O.W. West to proposed R.O.W. East.
9. All proposed construction activities shall be in acordance with Nationwide Permit Number 14 of the Department of the Army authorized under Section 404 of the Clean Water Act. The IEPA has issued Section 401 Water Quality Certification for this activity.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub. Piers	Sub. Abuts.	Total
Rock Excavation	Cu. Yd.	–	35	–	35
Channel Excavation	Cu. Yd.	–	–	1025	1025
Stone Dumped Riprap, Class A4	Tons	–	–	700	700
Aggregate Base Course, Type B	Tons	–	–	70	70
Removal of Existing Structures	Each	–	–	–	1
Concrete Structures	Cu. Yd.	–	96.6	32.4	129.0
Concrete Encasement	Cu. Yd.	–	–	2.1	2.1
Precast Prestressed Concrete Deck Beams (17" Depth)	Sq. Ft.	2642	–	–	2642
Reinforcement Bars	Pound	–	6240	4180	10,420
Steel Railing, Type S1	Foot	192	–	–	192
Furnishing Steel Piles HP 12 X 53	Foot	–	384	214	598
Setting Piles in Rock	Each	–	12	5	17
Driving Piles	Foot	–	–	104	104
Test Pile Steel HP 12 X 53	Each	–	–	1	1
Pile Shoes	Each	–	–	4	4
Name Plates	Each	–	–	1	1
Terminal Marker – Direct Applied	Each	4	–	–	4

WATERWAY INFORMATION

Drainage Area=18.9 Sq.Mi. Low Grade Elev = 423.84 Sta. 8+23.29

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	4060	249.7	764.0	426.1	0.2	0.2	426.3	426.3
Base	100	6510	249.7	872.9	427.4	0.2	0.2	427.6	427.6
Overtopping									
Max. Calc.	500								

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.

Lic. Exp 11-30-2020
9-6-2019

INDEX OF SHEETS

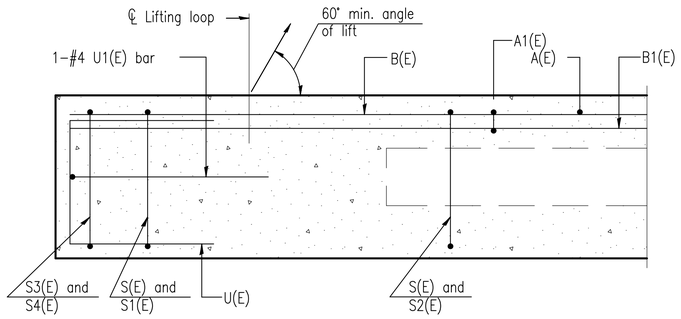
CHARLESTON ENGINEERING, INC.
CONSULTING ENGINEERS
105 NORTH KITCHELL
P.O. BOX 397
OLNEY, ILLINOIS 62450
(618) 392-0736
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

GENERAL PLAN & ELEVATION

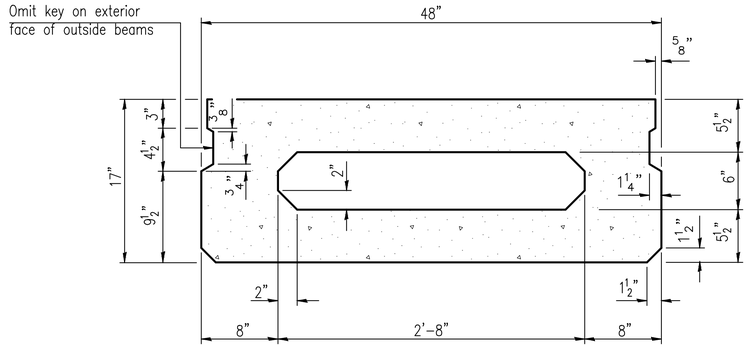
STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

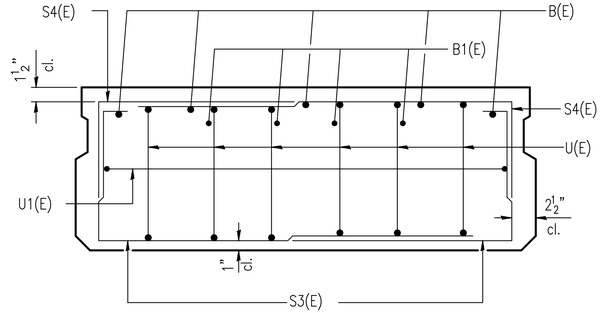
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	5
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



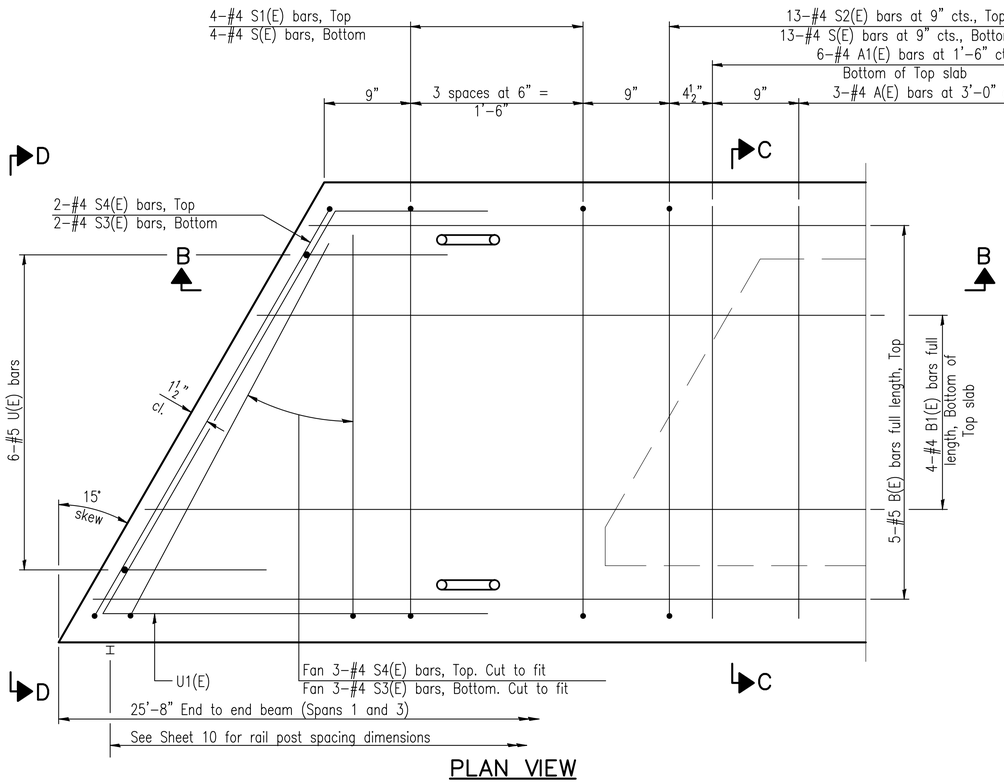
SECTION B–B



SECTION C–C
(Showing dimensions)

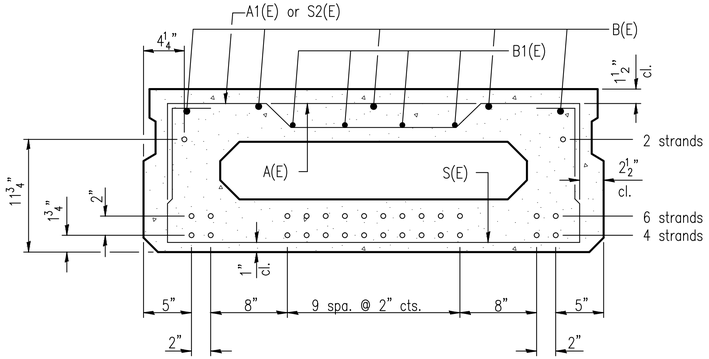


VIEW D–D



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.



SECTION C–C
(Showing reinforcement and permissible strand locations)

Notes: 12 total strands.

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)	7	#4	3'–7"	——
A1(E)	13	#4	3'–10"	⌣
B(E)	5	#5	25'–3"	——
B1(E)	4	#4	25'–3"	——
S(E)	34	#4	6'–9"	⌊⌋
S1(E)	8	#4	5'–3"	⌈⌉
S2(E)	26	#4	5'–6"	⌈⌉
S3(E)	10	#4	5'–3"	⌋
S4(E)	10	#4	4'–6"	⌊
U(E)	12	#5	3'–8"	⊏
U1(E)	2	#4	7'–1"	∠

Note: See sheet 6 of 20 for additional details and Bill of Material.

MINIMUM BAR LAP
#4 bar = 1'–11"
#5 bar = 2'–6"

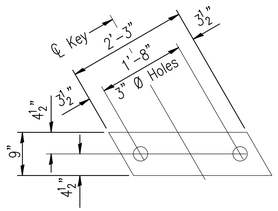
SPAN 1 OR 3

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

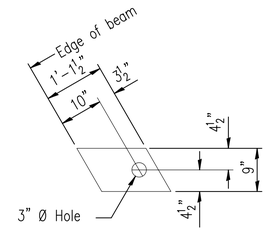
SUPERSTRUCTURE
SPAN 1 OR 3
STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

PD–1748–L

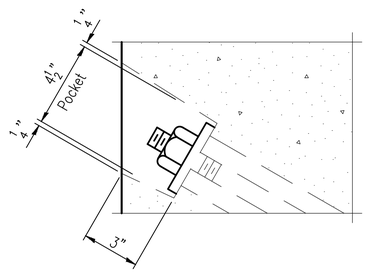
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	6
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



FABRIC BEARING PAD
(Interior)
24 Required



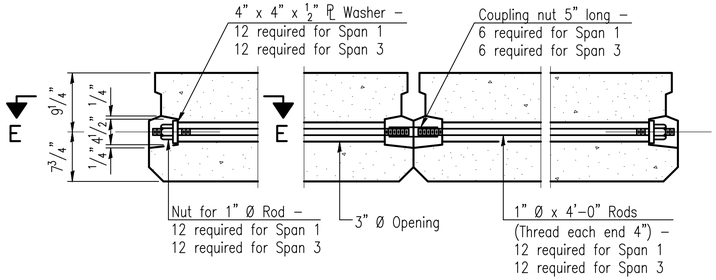
FABRIC BEARING PAD
(Exterior)
8 Required



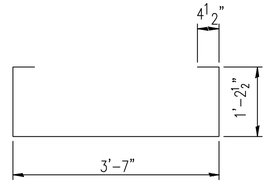
SECTION E-E

FIXED

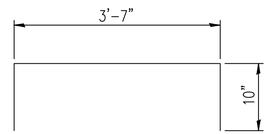
Notes:
All bearing pads shall be 1" thick.



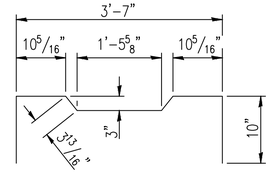
TYPICAL TRANSVERSE TIE ASSEMBLY



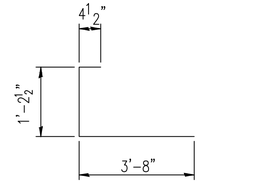
BAR S(E)



BAR S1(E)



BAR S2(E)



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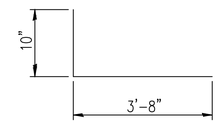
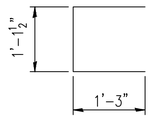
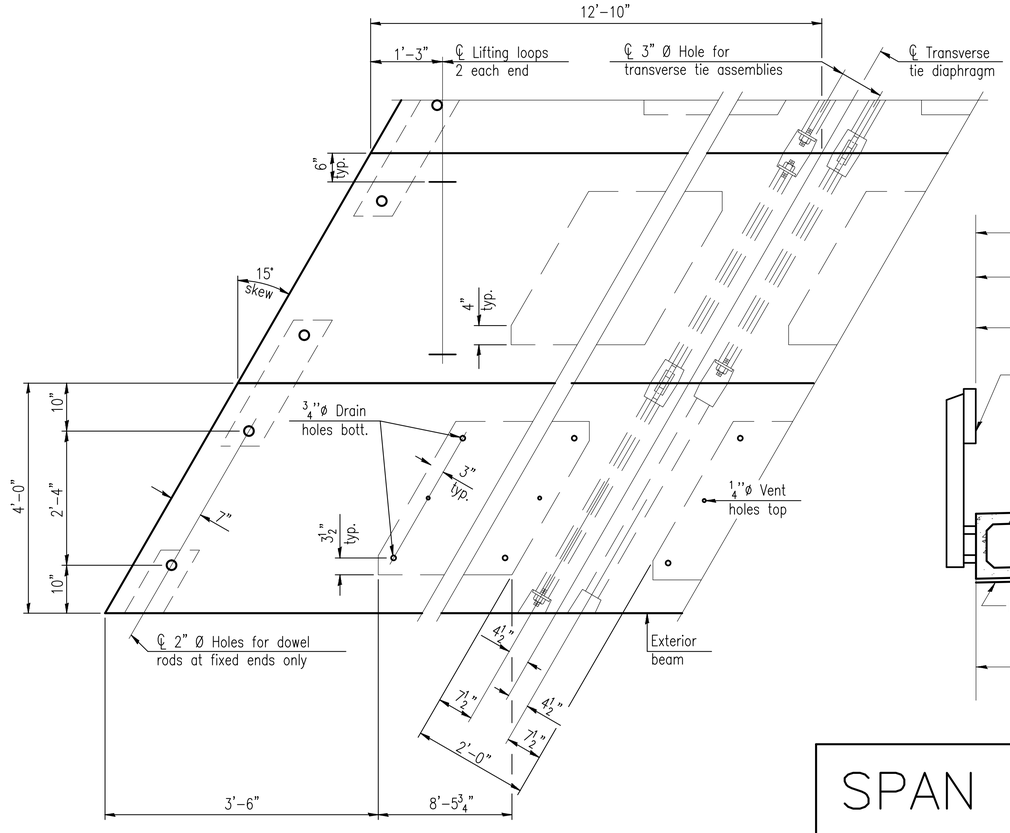


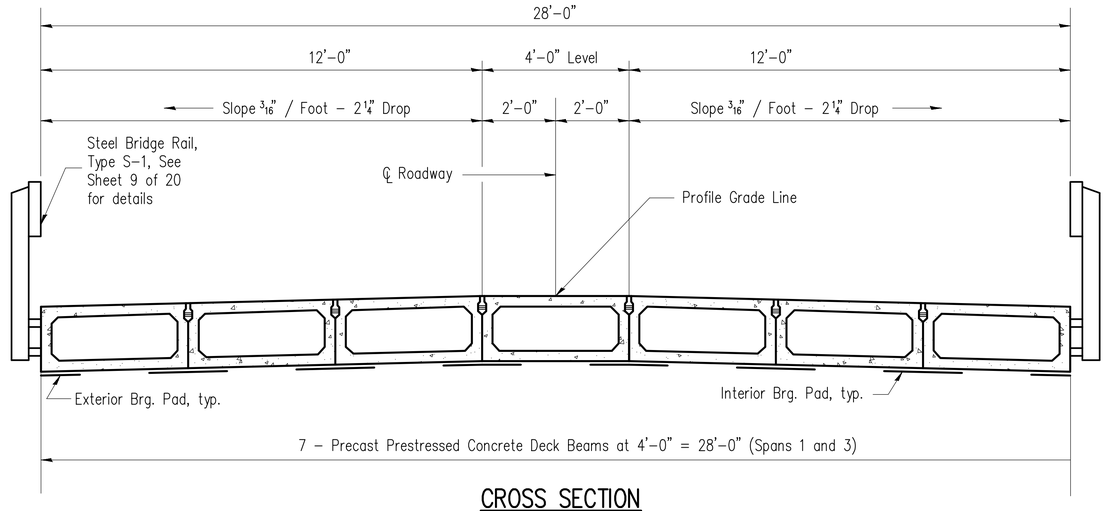
BAR S4(E)



BAR U(E)



PLAN VIEW



CROSS SECTION

SPAN 1 OR 3

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

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"Ø 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 Standard Specifications.

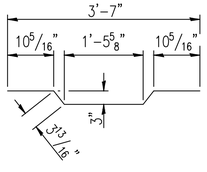
Two ⅛" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

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

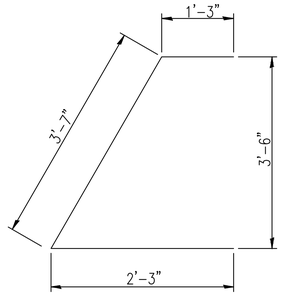
Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

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

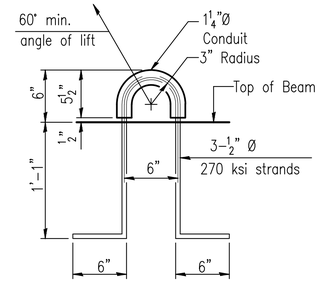
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



BAR A1(E)



BAR U1(E)



LIFTING LOOP DETAIL

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (17" depth) – Spans 1 and 3	Sq. Ft.	1438

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

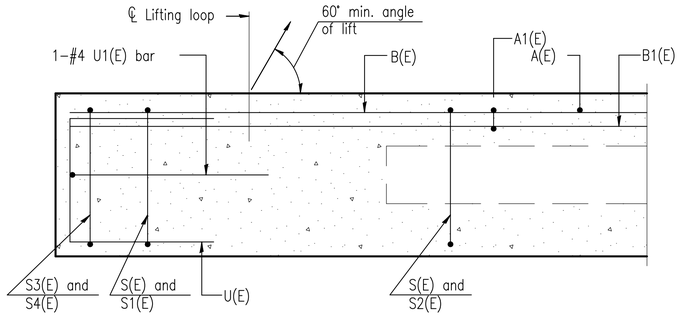
PD-1748-LD

SUPERSTRUCTURE DETAILS
SPAN 1 OR 3

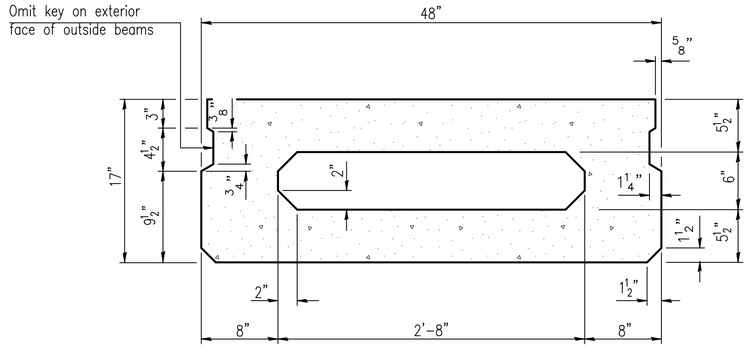
STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

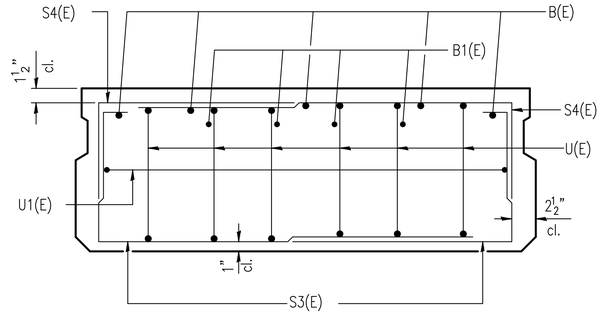
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	7
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



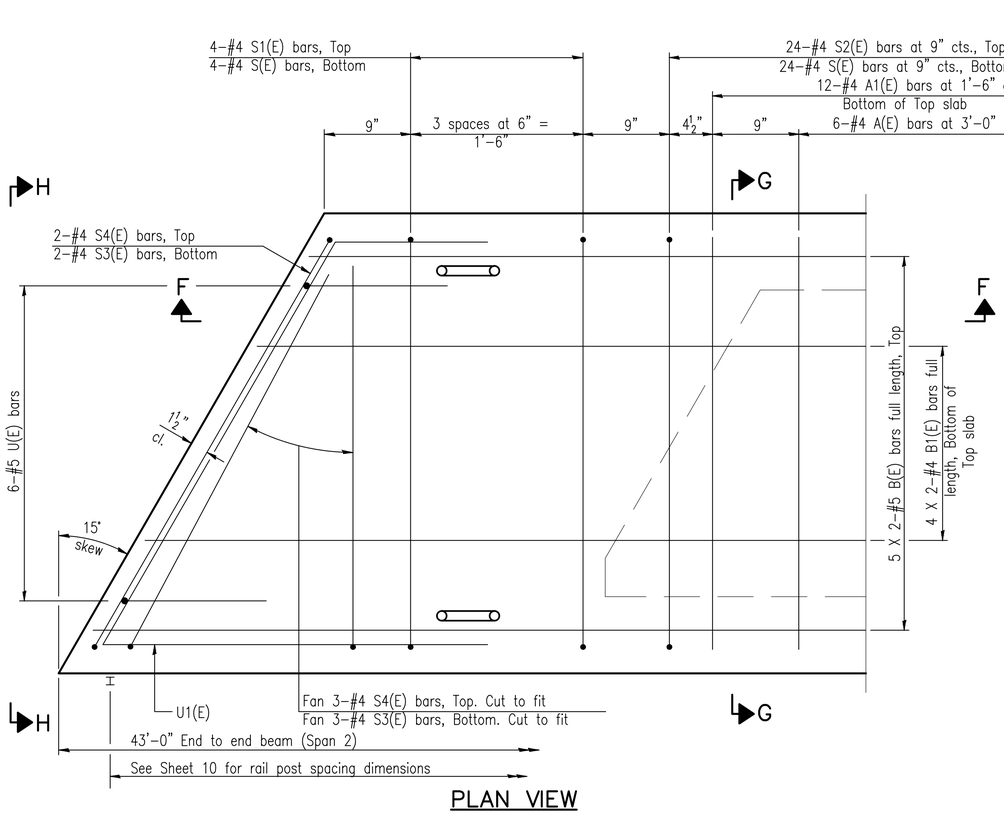
SECTION F-F



SECTION G-G
(Showing dimensions)

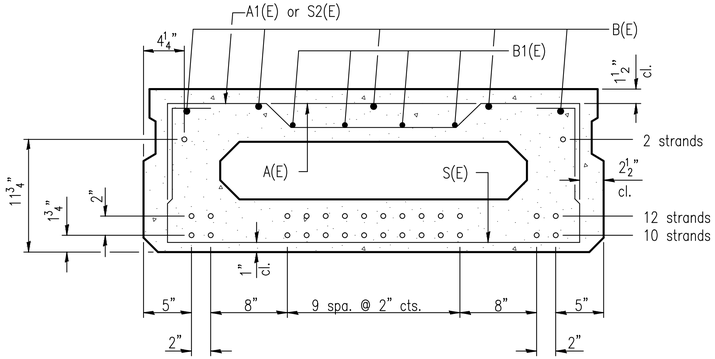


VIEW H-H



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.



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

Notes: 24 total strands.

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)	13	#4	3'-7"	
A1(E)	25	#4	3'-10"	
B(E)	10	#5	22'-8"	
B1(E)	4	#4	22'-4"	
S(E)	57	#4	6'-9"	
S1(E)	8	#4	5'-3"	
S2(E)	49	#4	5'-6"	
S3(E)	10	#4	5'-3"	
S4(E)	10	#4	4'-6"	
U(E)	12	#5	3'-8"	
U1(E)	2	#4	7'-1"	

Note: See sheet 8 of 20 for additional details and Bill of Material.

MINIMUM BAR LAP
#4 bar = 1'-11"
#5 bar = 2'-6"

SPAN 2

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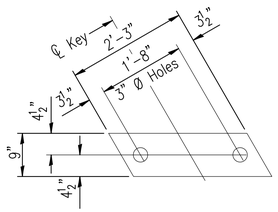
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

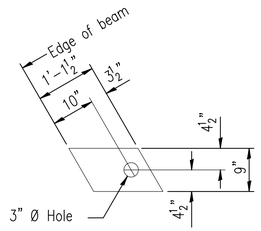
SUPERSTRUCTURE
SPAN 2
STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

PD-1748-L

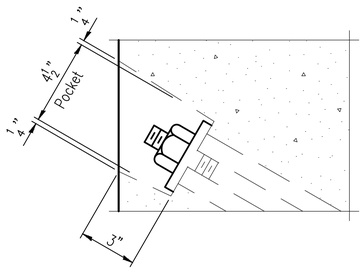
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	8
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



FABRIC BEARING PAD
(Interior)
12 Required



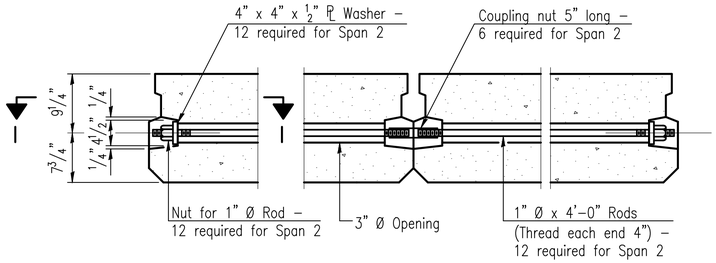
FABRIC BEARING PAD
(Exterior)
4 Required



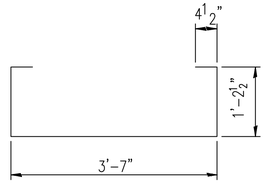
SECTION I–I

FIXED

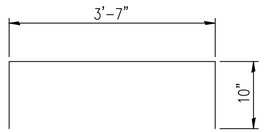
Notes:
All bearing pads shall be 1" thick.



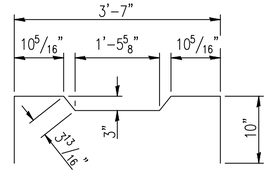
TYPICAL TRANSVERSE TIE ASSEMBLY



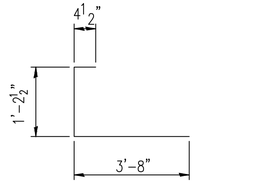
BAR S(E)



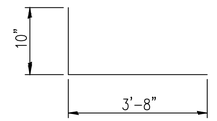
BAR S1(E)



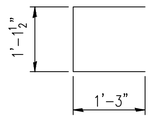
BAR S2(E)



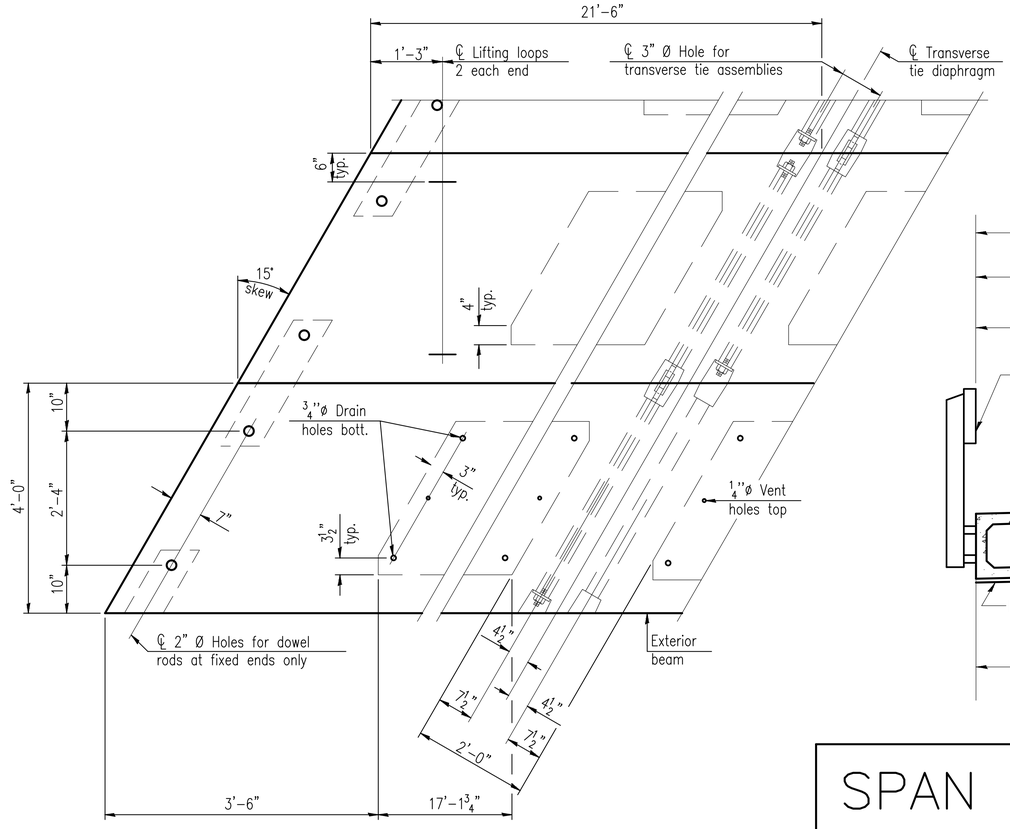
BAR S3(E)



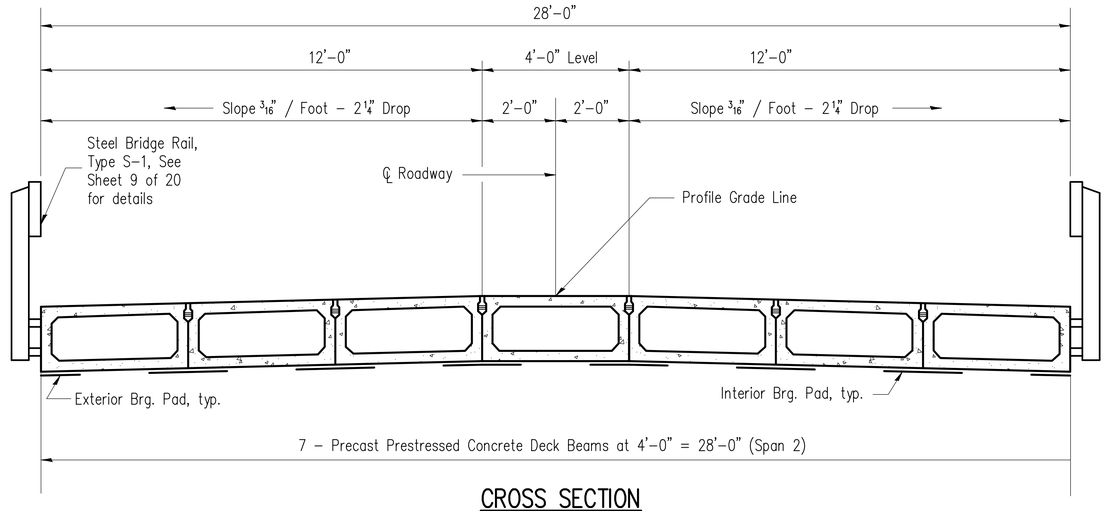
BAR S4(E)



BAR U(E)



PLAN VIEW



CROSS SECTION

SPAN 2

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

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"Ø 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 Standard Specifications.

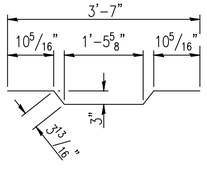
Two ⅛" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

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

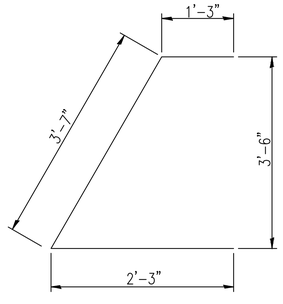
Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

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

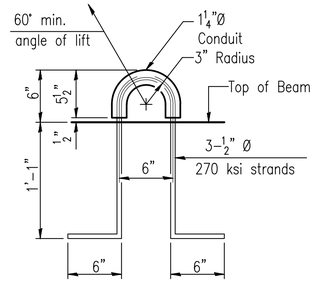
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



BAR A1(E)



BAR U1(E)



LIFTING LOOP DETAIL

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (17" depth) – Span 2	Sq. Ft.	1204

CHARLESTON ENGINEERING, INC.
CONSULTING ENGINEERS
105 NORTH KITCHELL
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OLNEY, ILLINOIS 62450
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ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

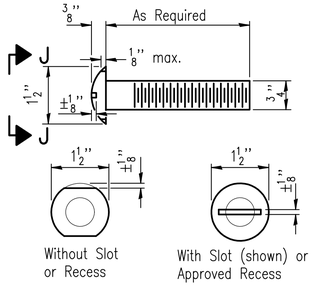
SUPERSTRUCTURE DETAILS
SPAN 2

STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

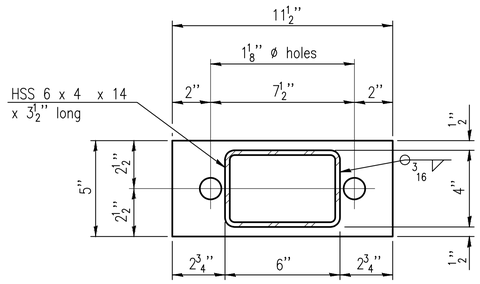
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

PD-1748-LD

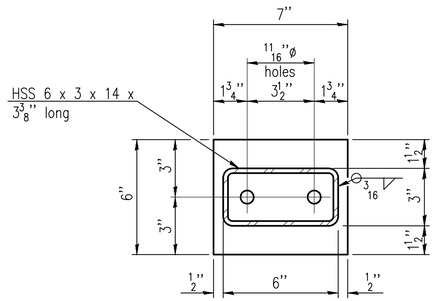
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	9
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



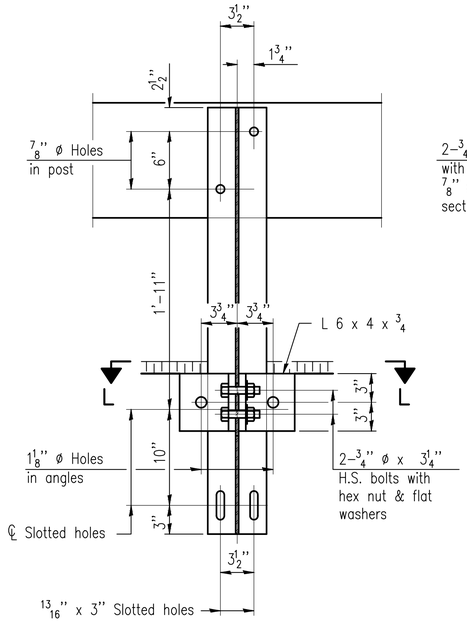
VIEW J–J
ROUND HEAD BOLT



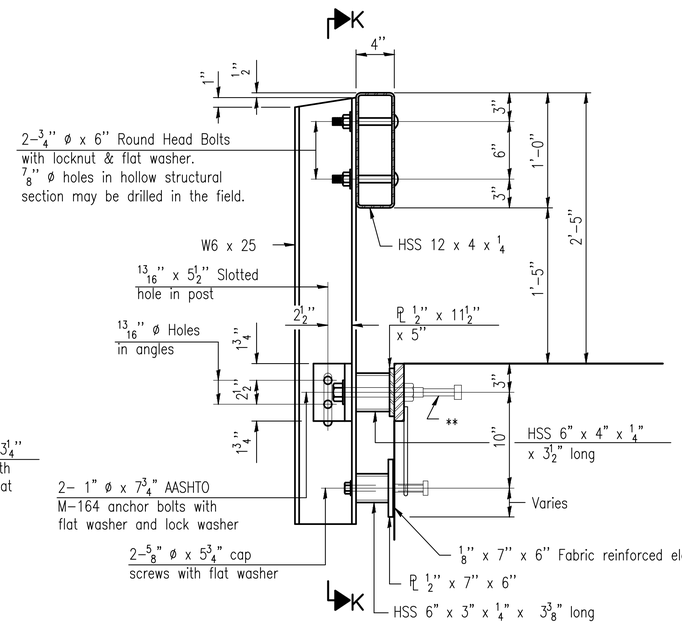
PL 1/2" x 11 1/2" x 5"



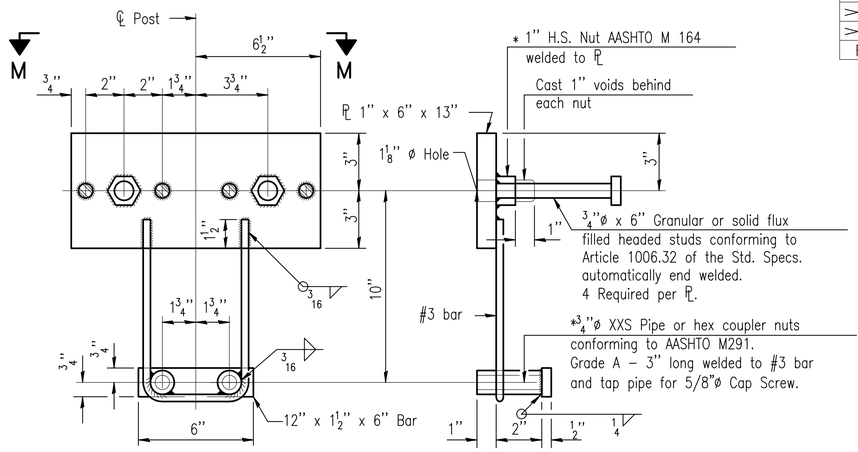
PL 1/2" x 7" x 6"



SECTION K–K



SECTION AT RAILING POST



ANCHOR DEVICE

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

SPLICE DIMENSIONS

T	D	A	B	C	E
≤ 4"	2 1/2"	1'-8"	2"	4"	2 1/2"
> 4" ≤ 6 1/2"	3 3/4"	2'-0"	2 1/2"	5 1/2"	3 1/2"
> 6 1/2" ≤ 9"	5"	2'-4"	3 1/2"	6 1/2"	9"
> 9" ≤ 13"	7"	2'-10"	4 1/2"	8 1/2"	11"
Rail Splice	1/4"	1'-8"	2"	4"	———

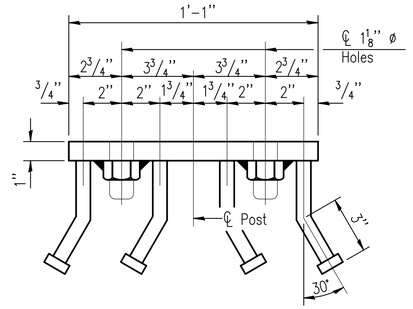
T = Total movement at expansion joint
as shown on the design plans.

Notes:

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.

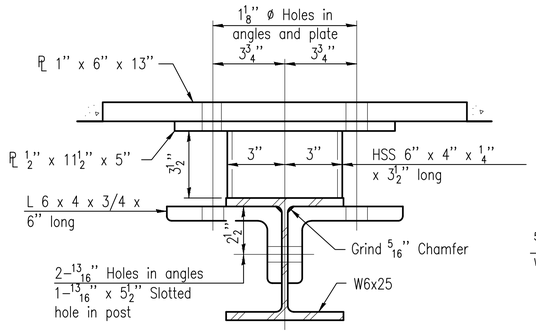
** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.



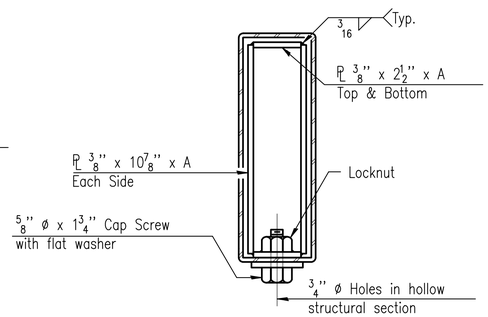
VIEW M–M

BILL OF MATERIAL

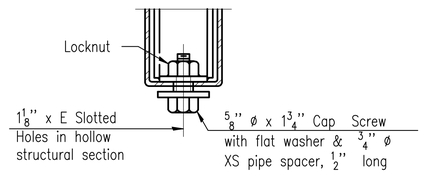
Item	Unit	Quantity
Steel Railing, Type S-1	Foot	192



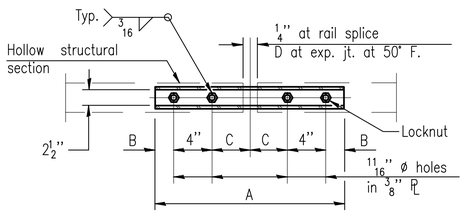
SECTION L–L



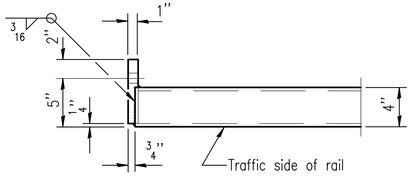
SECTIONS AT RAIL SPLICE



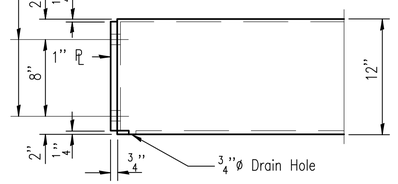
RAIL SPLICE CONNECTION
AT EXPANSION JT.



PLAN–BOTT. SPLICE PL
TYPICAL



END OF RAIL DETAILS



(10'-9" Maximum Post Spacing)

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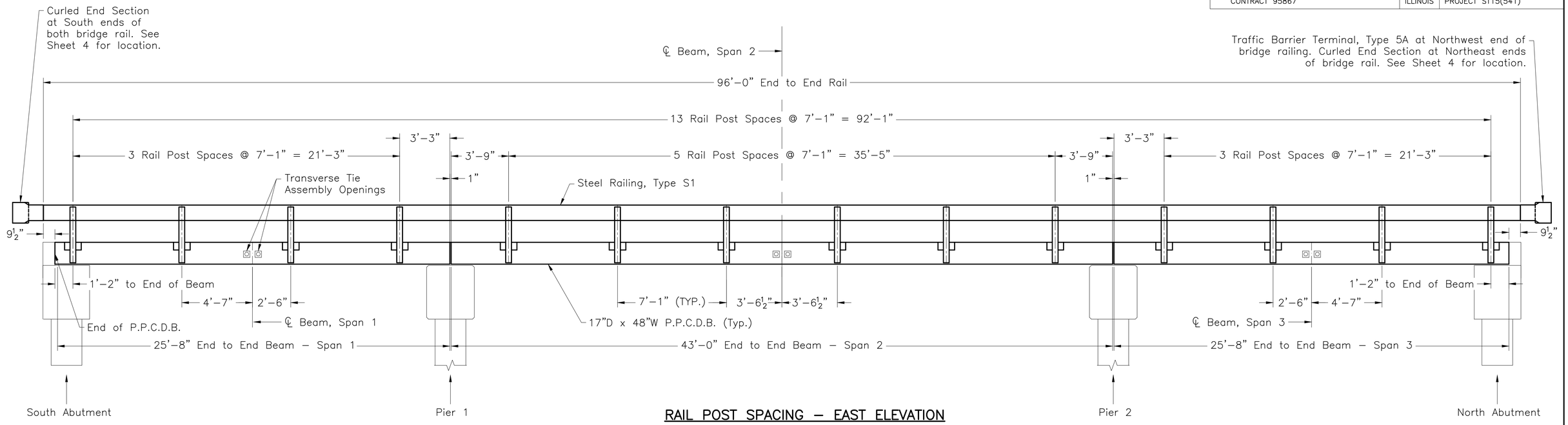
105 NORTH KITCHELL
P.O. BOX 397
OLNEY, ILLINOIS 62450
(618) 392-0736
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION REGISTRATION #184.003513

STEEL RAILING, TYPE S-1
STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

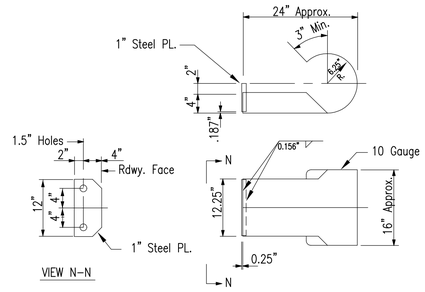
R–23A

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	10
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



RAIL POST SPACING – EAST ELEVATION

Not to Scale



CURLED END SECTION DETAILS

3 Required – The cost of the Curled End Sections shall be included the contract unit price per foot for "STEEL RAILING, TYPE S1", and no additional compensation will be allowed.

CHARLESTON ENGINEERING, INC.
CONSULTING ENGINEERS
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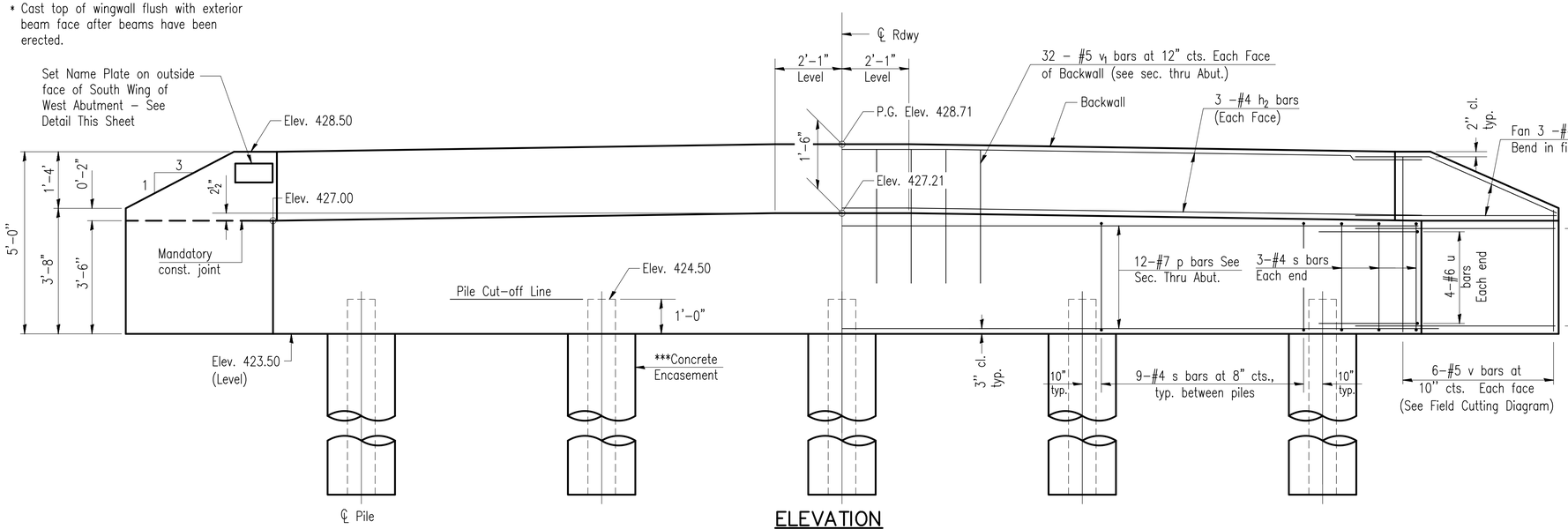
STEEL RAILING, TYPE S1 DETAILS

STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

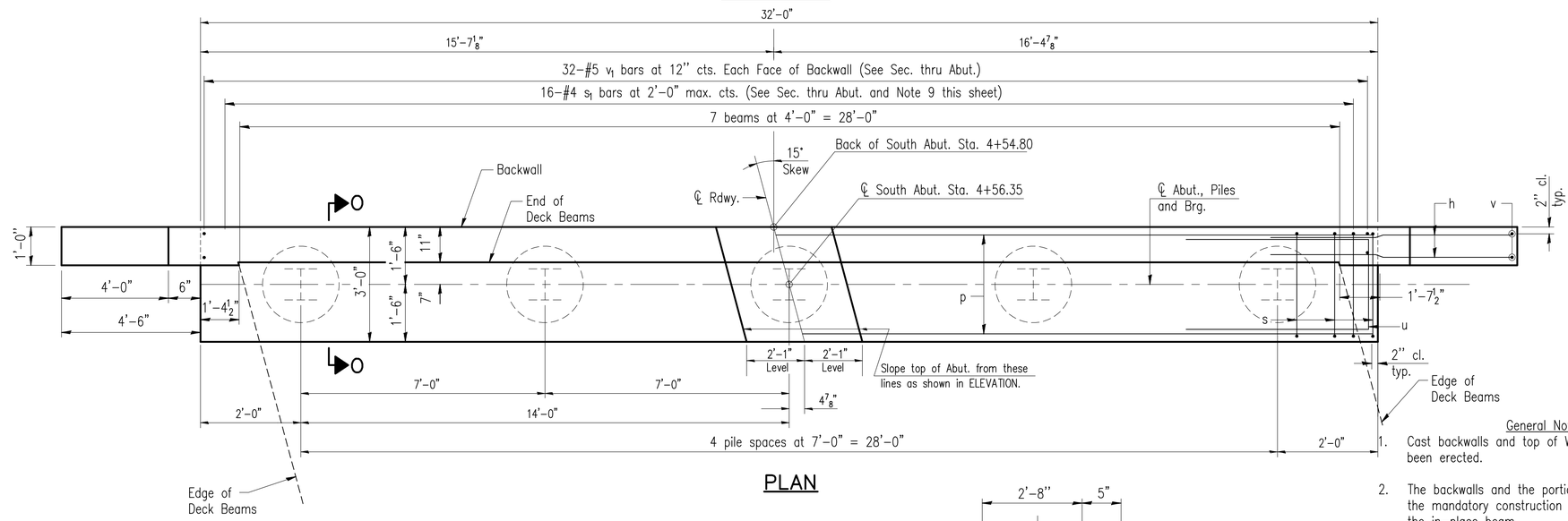
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	11
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	

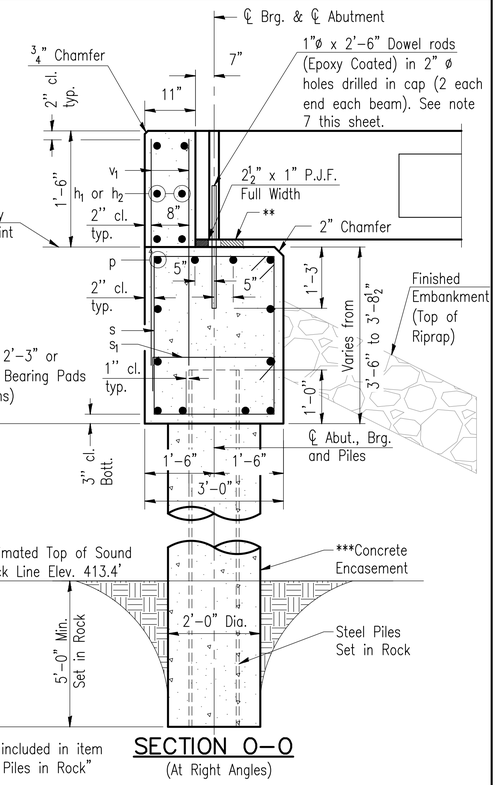
* Cast top of wingwall flush with exterior beam face after beams have been erected.



ELEVATION



PLAN



***Cost included in item "Setting Piles in Rock"

SECTION O-O

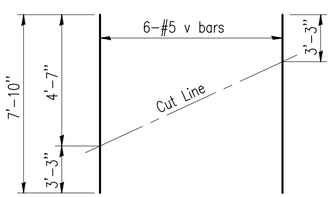
(At Right Angles)

BILL OF MATERIAL SOUTH ABUTMENT

Bar	No.	Size	Length	Shape
h	28	#6	6'-6"	
h_1	12	#4	6'-9"	
h_2	6	#4	31'-8"	
p	12	#7	31'-8"	
s	42	#4	11'-11"	
s_1	16	#4	3'-10"	
u	8	#6	11'-7"	
v	12	#5	7'-10"	CUT IN FIELD
v_1	64	#5	3'-7"	
Concrete Structures			Cu. Yd.	16.2
Reinforcement Bars			Pound	2090
Furnishing Steel Piles HP 12 X 53			Foot	110
Setting Piles in Rock			Each	5
Name Plates			Each	1

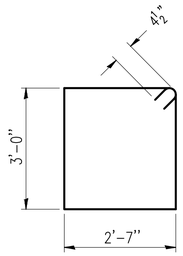
PILE DATA

Type: HP 12 X 53
Nominal Required Bearing: Set in Rock
Factored Resistance Available: 426 kips
Est. Length: 22 Feet
No. Production Piles: 5
No. Test Piles: 0
See Section Thru Abutment for Estimated Top of Rock Elevation, Rock Socket Depth, Rock Socket Diameter, and Concrete Encasement

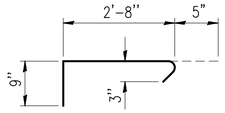


FIELD CUTTING DIAGRAM

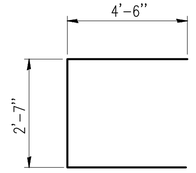
Order v bars full length. Cut as shown and use remainder of bars in opposite face.



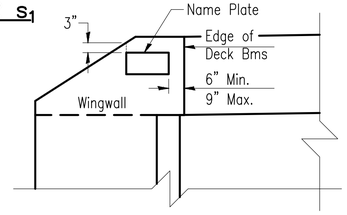
BAR s



BAR s_1



BAR u



NAME PLATE PLACEMENT

General Notes:

1. Cast backwalls and top of Wingwalls after beams have been erected.
2. The backwalls and the portion of the Wingwalls above the mandatory construction joint shall be cast against the in-place beam.
3. Extend "h" bars into the abutment cap.
4. For details of piles and Concrete Encasement, see sheet 14 of 20. The cost of the excavation required for Setting Piles in Rock and Concrete Encasement, and the cost of the Class SI Concrete Encasement and Welded Wire Fabric around each pile shall be included in item Setting Piles in Rock.
5. Drawings not to scale.
6. All clearances between rebar and form surface shall be 2" unless otherwise noted.
7. Space reinforcement in cap to miss PPCDB dowel rods.
8. All exposed edges shall have a standard ¾" chamfer unless otherwise noted or as directed by the Engineer.
9. s1 bars: Alternate the position of the 90° and 135° hooked ends between adjacent s1 bars.

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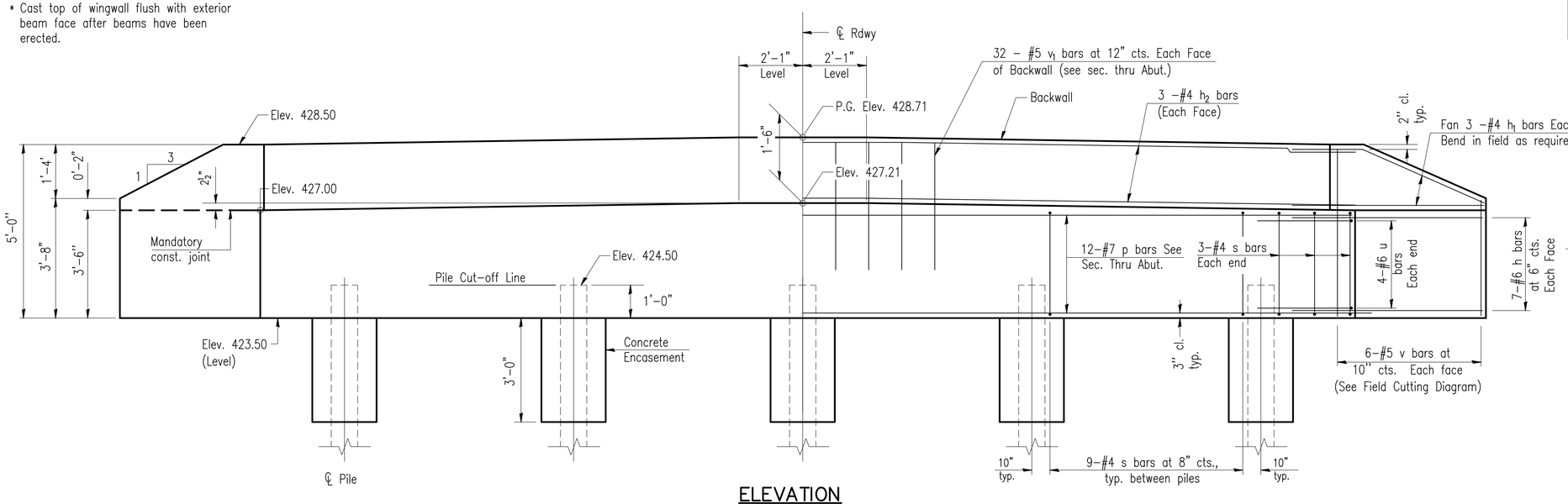
SOUTH ABUTMENT DETAILS

STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

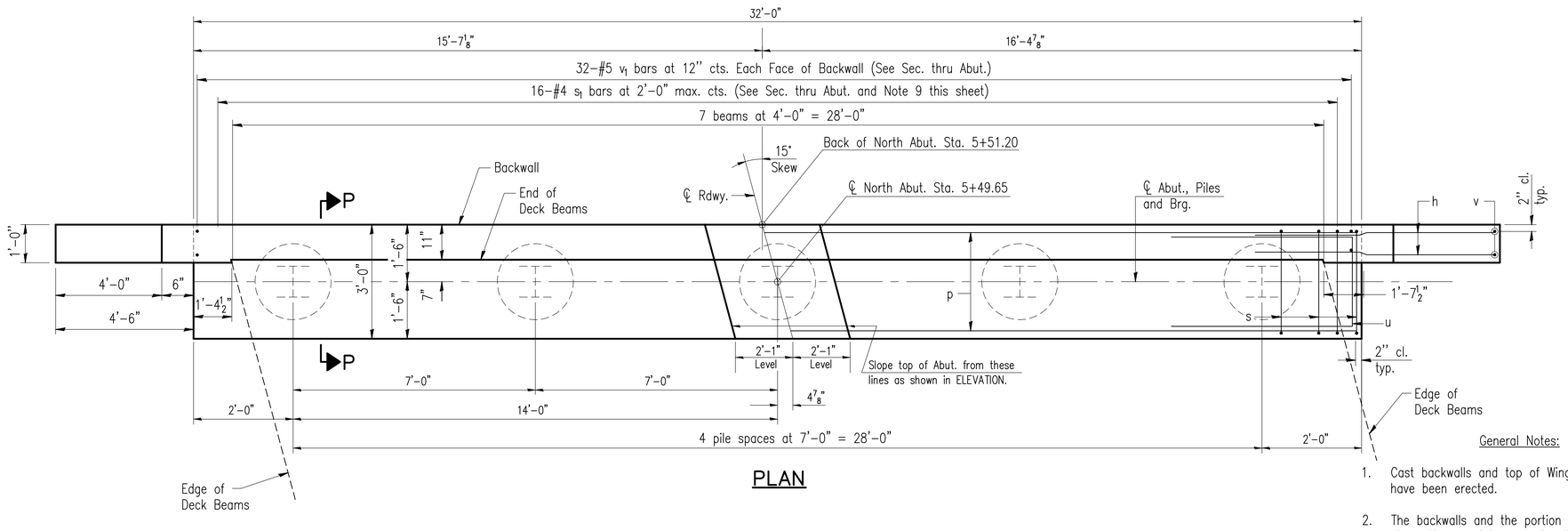
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	12
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	

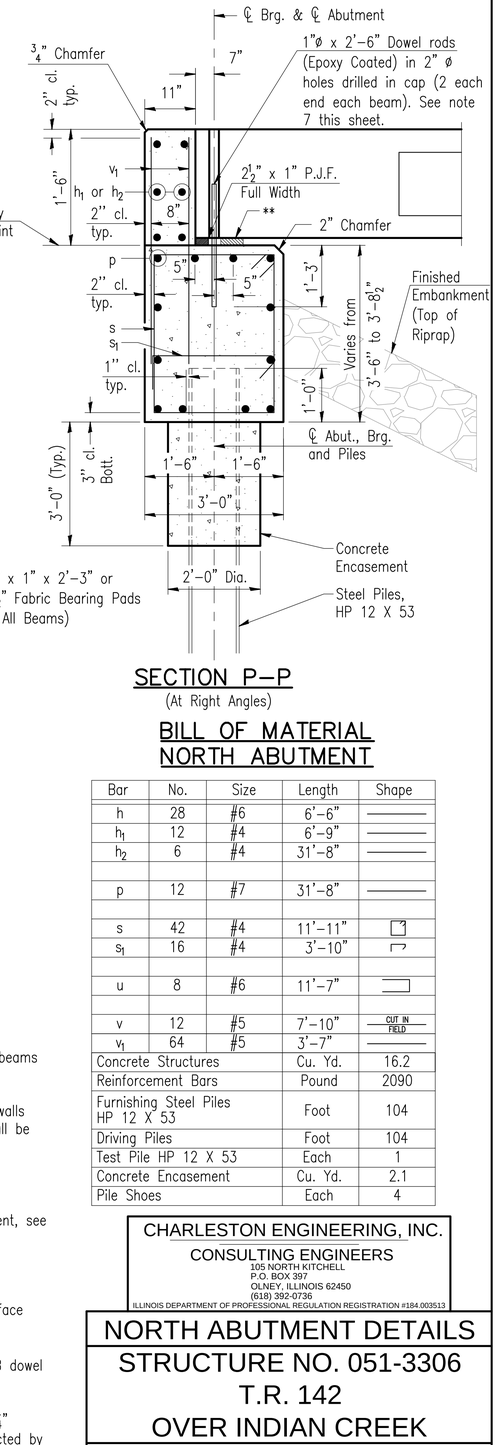
* Cast top of wingwall flush with exterior beam face after beams have been erected.



ELEVATION



PLAN



SECTION P-P

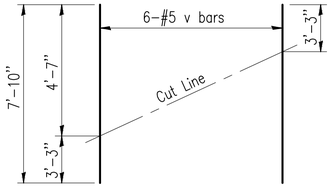
(At Right Angles)

BILL OF MATERIAL NORTH ABUTMENT

Bar	No.	Size	Length	Shape
h	28	#6	6'-6"	
h_1	12	#4	6'-9"	
h_2	6	#4	31'-8"	
p	12	#7	31'-8"	
s	42	#4	11'-11"	
s_1	16	#4	3'-10"	
u	8	#6	11'-7"	
v	12	#5	7'-10"	CUT IN FIELD
v_1	64	#5	3'-7"	
Concrete Structures			Cu. Yd.	16.2
Reinforcement Bars			Pound	2090
Furnishing Steel Piles HP 12 X 53			Foot	104
Driving Piles			Foot	104
Test Pile HP 12 X 53			Each	1
Concrete Encasement			Cu. Yd.	2.1
Pile Shoes			Each	4

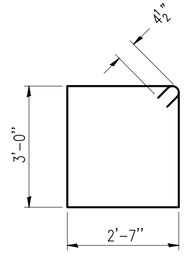
PILE DATA

Type: HP 12 X 53
Nominal Required Bearing: 418 kips
Factored Resistance Available: 230 kips
Est. Length: 26 Feet
No. Production Piles: 4
No. Test Piles: 1 - North Abutment

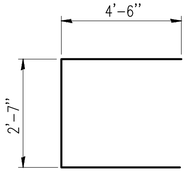


FIELD CUTTING DIAGRAM

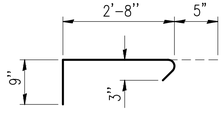
Order v bars full length. Cut as shown and use remainder of bars in opposite face.



BAR s



BAR u



BAR s_1

General Notes:

1. Cast backwalls and top of Wingwalls after beams have been erected.
2. The backwalls and the portion of the Wingwalls above the mandatory construction joint shall be cast against the in-place beam.
3. Extend "h" bars into the abutment cap.
4. For details of piles and Concrete Encasement, see sheet 14 of 20.
5. Drawings not to scale.
6. All clearances between rebar and form surface shall be 2" unless otherwise noted.
7. Space reinforcement in cap to miss PPCDB dowel rods.
8. All exposed edges shall have a standard ¾" chamfer unless otherwise noted or as directed by the Engineer.
9. s1 bars: Alternate the position of the 90° and 135° hooked ends between adjacent s1 bars.

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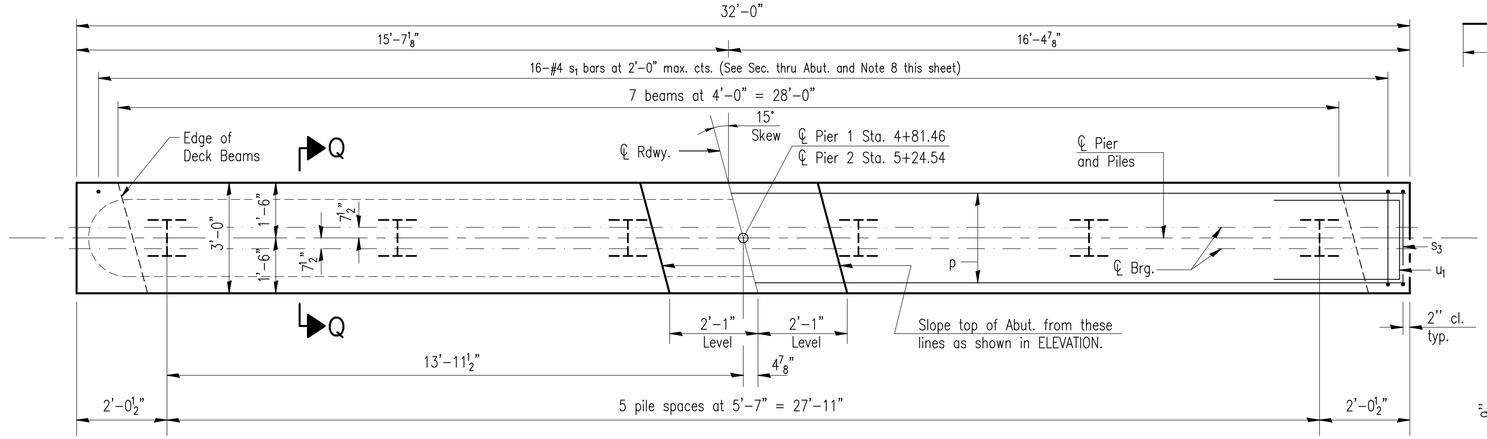
NORTH ABUTMENT DETAILS

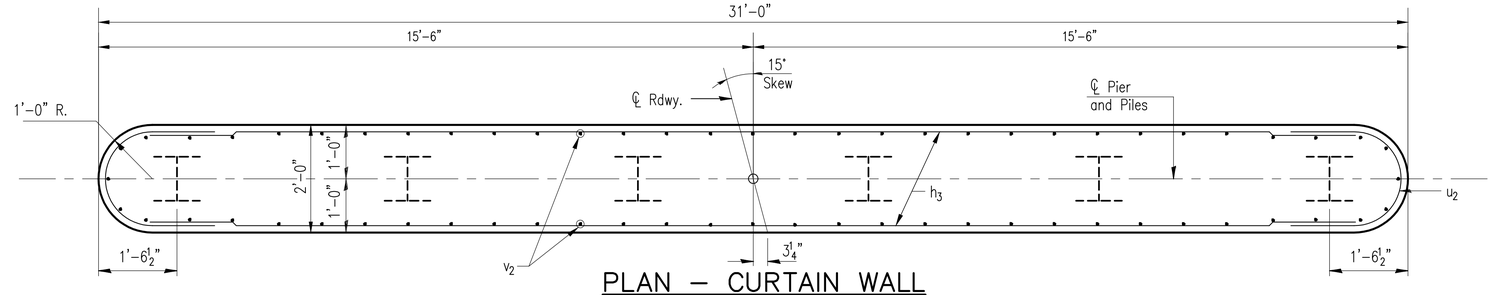
STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	13
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	

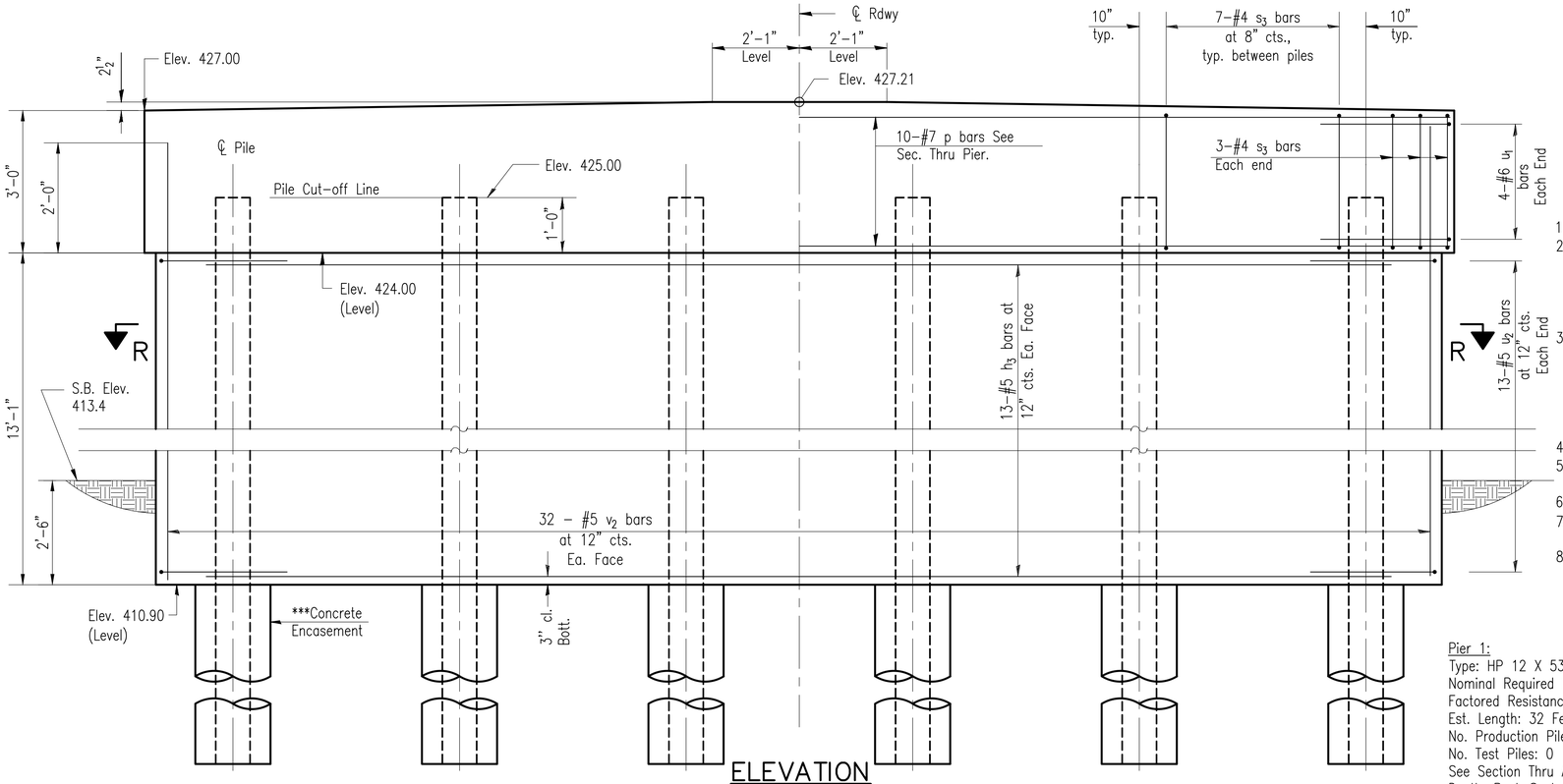


PLAN – PIER CAP

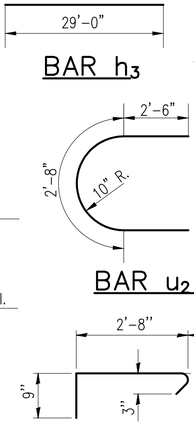


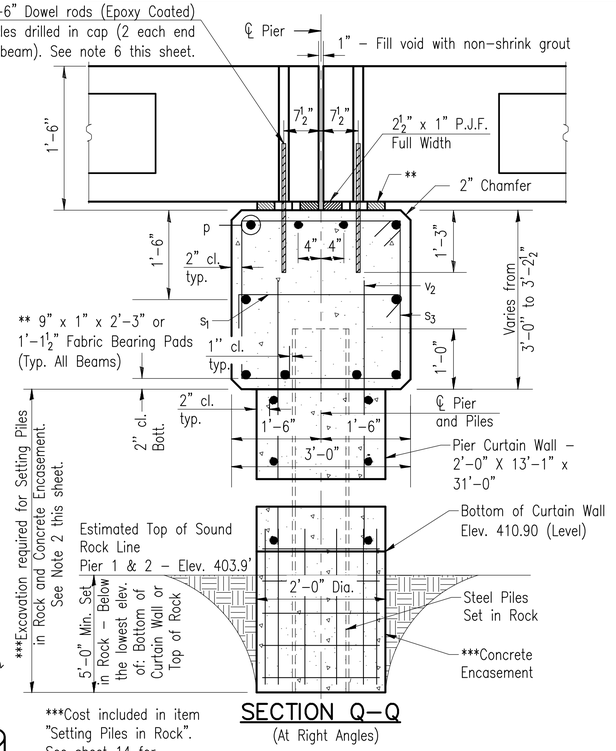
PLAN – CURTAIN WALL

SEC. R–R



ELEVATION





SECTION Q–Q

(At Right Angles)

***Cost included in item "Setting Piles in Rock". See sheet 14 for required concrete encasement reinforcement.

BILL OF MATERIAL – 2 PIERS

Bar	No.	Size	Length	Shape
h_3	52	#5	29'-0"	
p	20	#7	31'-8"	
s_1	32	#4	3'-10"	
s_3	82	#4	11'-1"	
u_1	16	#6	11'-7"	
u_2	52	#5	7'-8"	
v_2	128	#5	14'-10"	
Concrete Structures			Cu. Yd.	96.6
Reinforcement Bars			Pound	6240
Furnishing Steel Piles HP 12 X 53			Foot	384
Setting Piles in Rock			Each	12

General Notes:

1. Extend "v_2" bars into pier cap.
2. Quantity of Concrete Structures on this sheet includes 15 Cu. Yd. of Class SI concrete to fill void from Rock Excavation overdig at Pier 1. A 2'–0" overdig around limits of proposed curtain wall at Pier #1 was used to estimate additional concrete.
3. For details of piles and Concrete Encasement see sheet 14 of 20. The cost of the excavation required for Setting Piles in Rock and Concrete Encasement, and the cost of the Class SI Concrete Encasement and Welded Wire Fabric around each pile shall be included in item "Setting Piles in Rock."
4. Drawings not to scale.
5. All clearances between rebar and form surface shall be 2" unless otherwise noted.
6. Space reinforcement in cap to miss PPCDB dowel rods.
7. All exposed edges shall have a standard ¾" chamfer unless otherwise noted or as directed by the Engineer.
8. s1 bars: Alternate the position of the 90° and 135° hooked ends between adjacent s1 bars.

PILE DATA

Pier 1:
Type: HP 12 X 53
Nominal Required Bearing: Set in Rock
Factored Resistance Available: 426 kips
Est. Length: 32 Feet
No. Production Piles: 6
No. Test Piles: 0

Pier 2:
Type: HP 12 X 53
Nominal Required Bearing: Set in Rock
Factored Resistance Available: 426 kips
Est. Length: 32 Feet
No. Production Piles: 6
No. Test Piles: 0

See Section Thru Abutment for Estimated Top of Rock Elevation, Rock Socket Depth, Rock Socket Diameter, and Concrete Encasement

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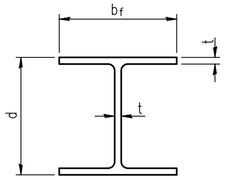
PIER DETAILS

STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

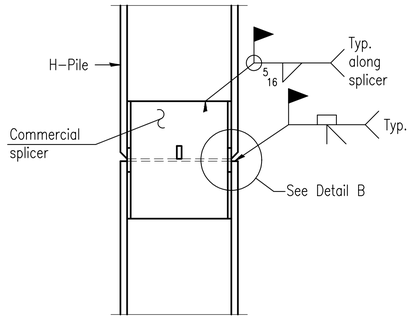
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	14
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	

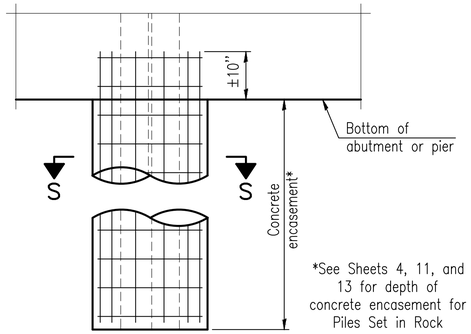


STEEL PILE TABLE

Designation	Depth d	Flange width b_f	Web and Flange thickness t	Encasement diameter A
HP 12x53	$11\frac{3}{4}$''	12''	$\frac{7}{16}$''	24''

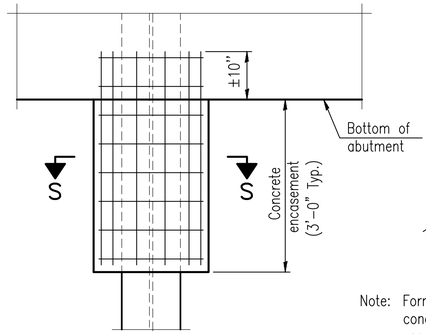


ELEVATION

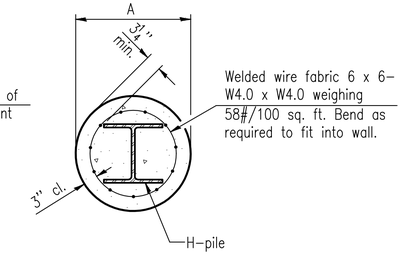


*See Sheets 4, 11, and 13 for depth of concrete encasement for Piles Set in Rock

ELEVATION
PILES SET IN ROCK



ELEVATION
DRIVEN PILES

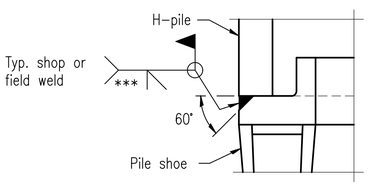


Note: Forms for encasement may be omitted when soil conditions permit. If soil conditions are not favorable to use the soil as forms, the Contractor shall provide forms; the cost for the forms and all labor to install forms shall be included in item "Concrete Encasement."

SECTION S-S

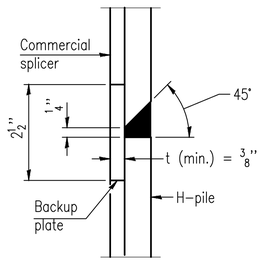
PILE ENCASEMENT

ELEVATION

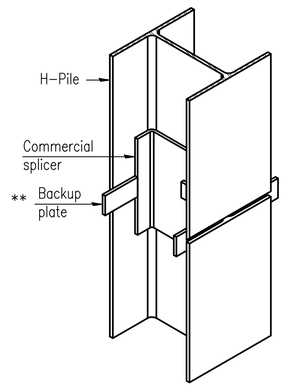


DETAIL A

H-PILE SHOE ATTACHMENT

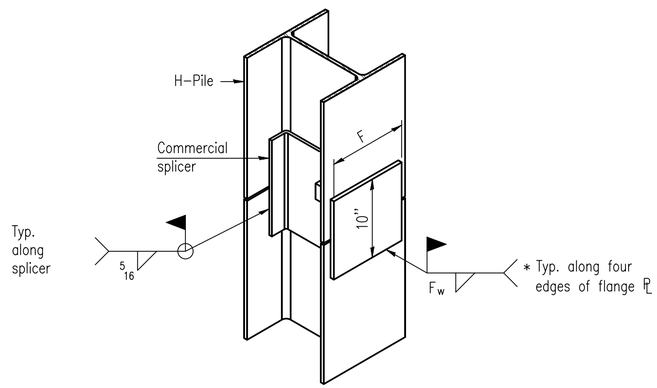


DETAIL "B"



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE



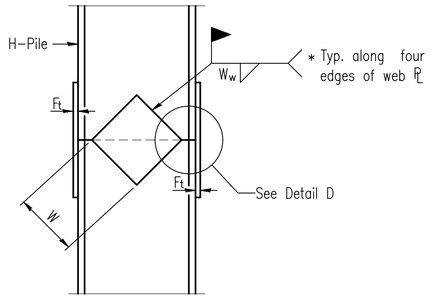
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

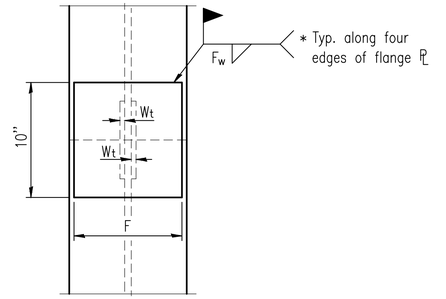
* Interrupt welds $\frac{1}{4}$'' from end of web and/or each flange.

** Remove portions of backup plates that extend outside the flanges.

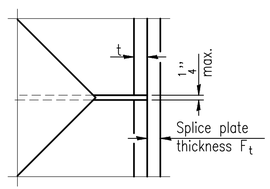
***Weld size per pile shoe manufacturer ($\frac{5}{16}$'' min.).



ELEVATION



END VIEW



DETAIL D

Designation	F	F_t	F_w	W	W_t	W_w
HP 12x53	10''	$\frac{5}{8}$''	$\frac{1}{2}$''	$6\frac{1}{2}$''	$\frac{1}{2}$''	$\frac{3}{8}$''

WELDED PLATE FIELD SPLICE

Note: The steel H-piles shall be according to AASHTO M270 Grade 50.

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PILE DETAILS
STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK
SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00

F-HP

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	15
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	

NOBLE — ***ENGINEERING CONSULTANTS***

BORING No. B-1

Client: Charleston Engineering	Weather: Sunny	Temperature: 30's	**water level reading**
Driller: Noble Engineering Consultants	Date Start: 11-13-18	Surface Elevation: 423.7**	@completion / Dry Cave
Location: Sec. #18-06125-00-BR	Date Finished: 11-13-18	Driller: Tony Schocker	Backfill: / Soil cuttings

water level reading
1st encounter: Dry

Depth:	Sample No.	Sample Depth	N-Value	Blow Count	Recovery (%)	Qp (tsf)*	Soil Description		USC Class.	Elev.**
1										422.7
2	SS-1	1.0'-2.5'	19	4-7-12	20		0.0'-9.5' Silt, Clay, Etc. FILL		FILL	421.7
3										420.7
4	SS-2	3.5'-5.0'	22	9-11-11	80				FILL	419.7
5										418.7
6	SS-3	6.0'-7.5'	17	8-8-9	80				FILL	417.7
7										416.7
8										415.7
9	SS-4	8.5'-10.0'	10	5-8-2	100	0.8	9.5'-12.0' CLAY, trace to some sand, medium stiff, gray		CH	414.7
10										413.7
11										412.7
12										411.7
13										410.7
14	SS-5	13.5'-15.0'	22	4-10-12	100	3.4	12.0'-17.1' SILTY CLAY, trace to some sand, very stiff, light brown		CL	409.7
15										408.7
16										407.7
17										406.7
18										405.7
19	SS-6	18.5'-20.0'	100+	100/2"	100	-	17.1'-19.8' HIGHLY WEATHERED SHALE		-	404.7
20							AR 19.8'			403.7
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

Drilling Method: HSA (2-1/4" id)
Depth: 0' to 19.8'
Drill Rig: Mobile B-47
Sampling: split-spoon (SS)

comments
* Qp test is an estimate of the unconfined compressive strength performed by a compact calibrated spring loaded cylinder
** ground surface elevation at boring location is estimated from bridge deck 100.0 and is not surveyed

NOBLE — ***ENGINEERING CONSULTANTS***

BORING No. B-2

Client: Charleston Engineering	Weather: Sunny	Temperature: 30's	**water level reading**
Driller: Noble Engineering Consultants	Date Start: 11-13-18	Surface Elevation: 425.3**	@completion / Dry Cave
Location: Sec. #18-06125-00-BR	Date Finished: 11-13-18	Driller: Tony Schocker	Backfill: / Soil cuttings

water level reading
1st encounter: Dry

Depth:	Sample No.	Sample Depth	N-Value	Blow Count	Recovery (%)	Qp (tsf)*	Soil Description		USC Class.	Elev.**
1										424.3
2	SS-1	1.0'-2.5'	14	3-5-9	40		0.0'-3.5' Silt, Clay, Etc. FILL		FILL	423.3
3										422.3
4	SS-2	3.5'-5.0'	12	4-5-7	80	1.0			CL	421.3
5										420.3
6	SS-3	6.0'-7.5'	13	4-6-7	80	1.1	3.5'-8.2' SILTY CLAY, trace to some sand, stiff, brown		CL	419.3
7										418.3
8										417.3
9	SS-4	8.5'-10.0'	10	47-100/2"	80	-	8.2'-11.9' HIGHLY WEATHERED SHALE		-	416.3
10										415.3
11										414.3
12							AR 11.9'			413.3
13										
14										
15										
16										
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19										
20										
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22										
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25										
26										
27										
28										
29										
30										

Drilling Method: HSA (2-1/4" id)
Depth: 0' to 11.9'
Drill Rig: Mobile B-47
Sampling: split-spoon (SS)

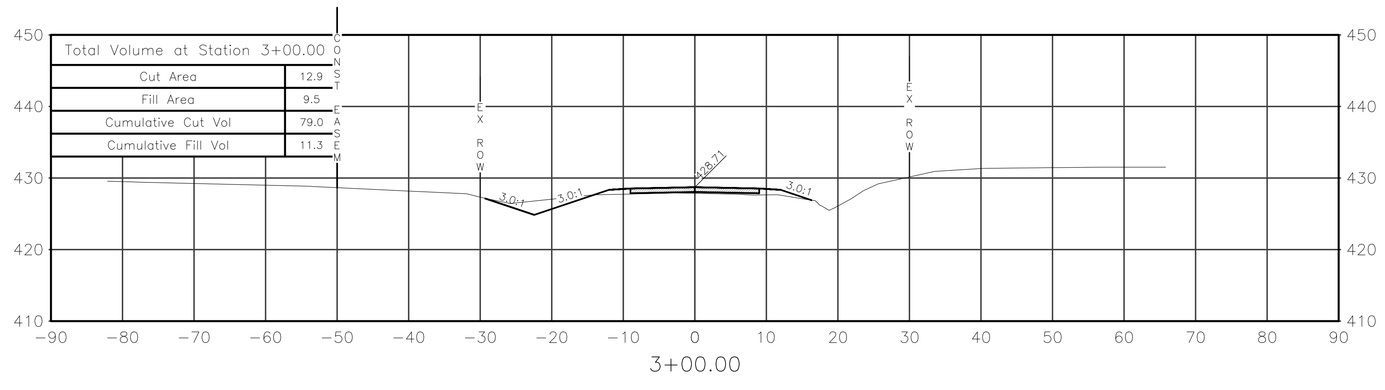
comments
* Qp test is an estimate of the unconfined compressive strength performed by a compact calibrated spring loaded cylinder
** ground surface elevation at boring location is estimated from bridge deck 100.0 and is not surveyed

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

BORING LOGS

STRUCTURE NO. 051-3306
T.R. 142
OVER INDIAN CREEK

SECTION 18-06125-00-BR
LAWRENCE COUNTY
STATION 5+03.00



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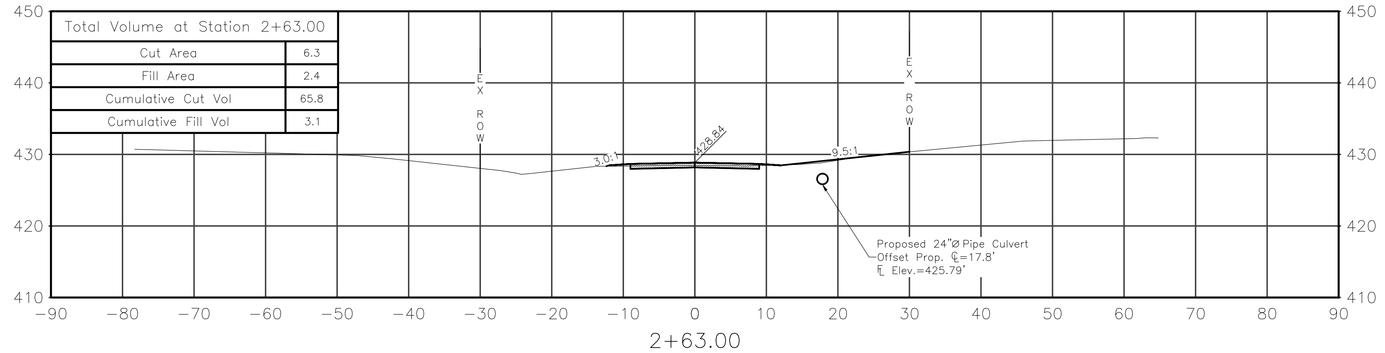

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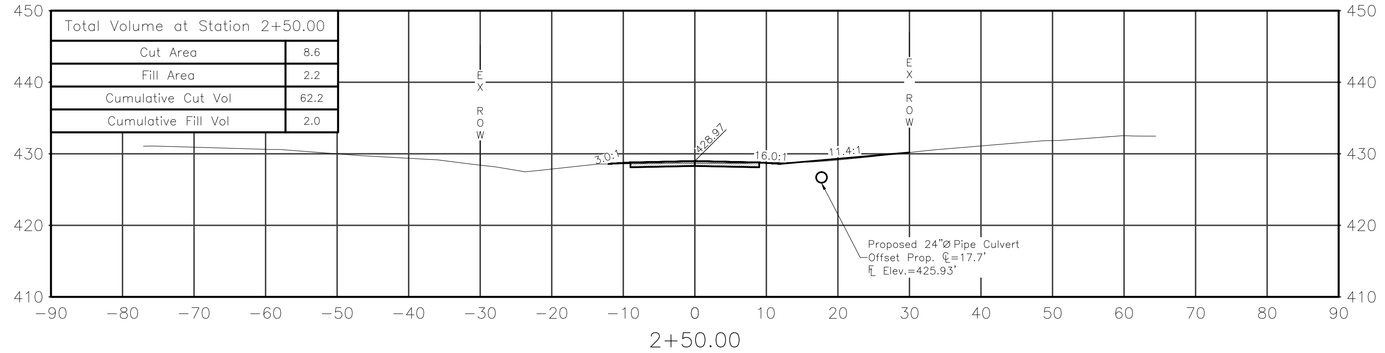

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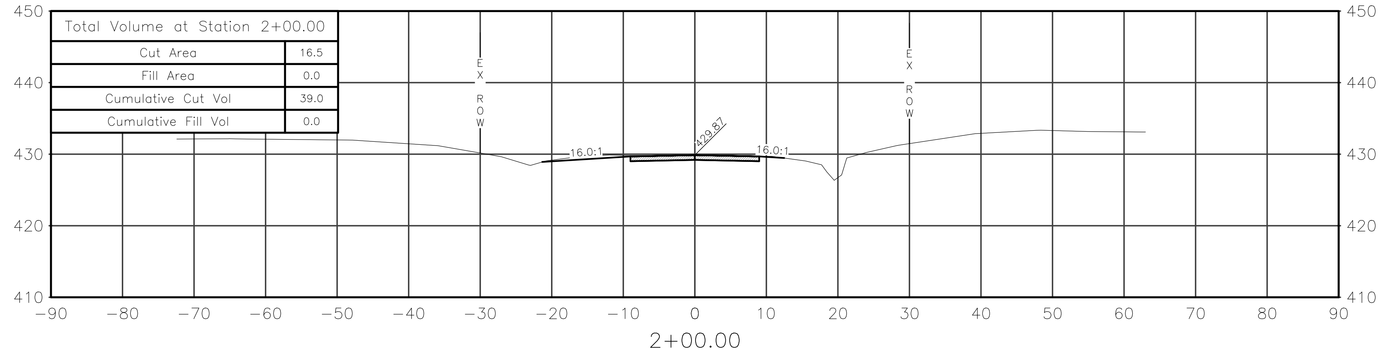

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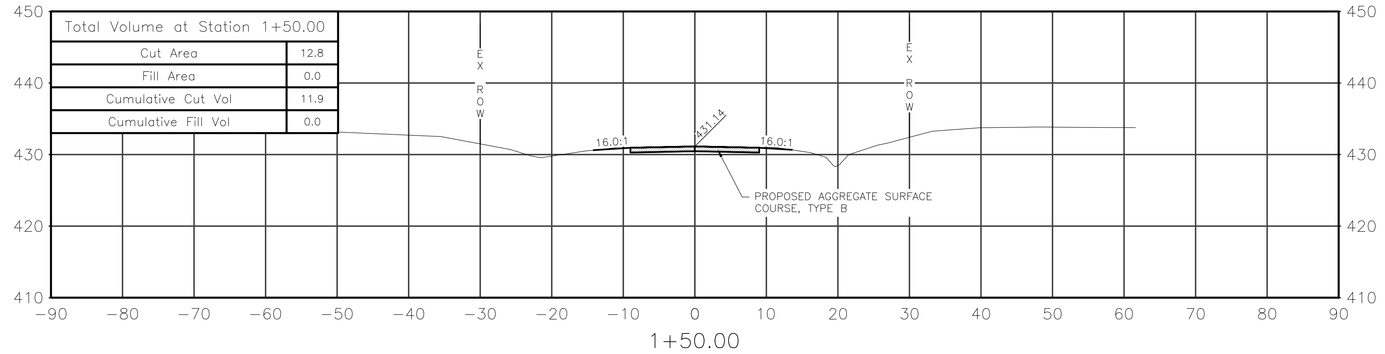

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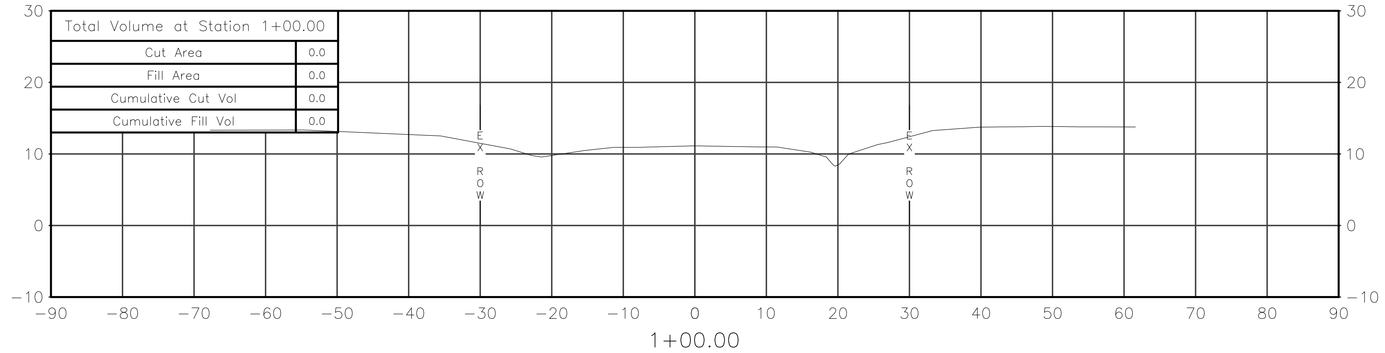

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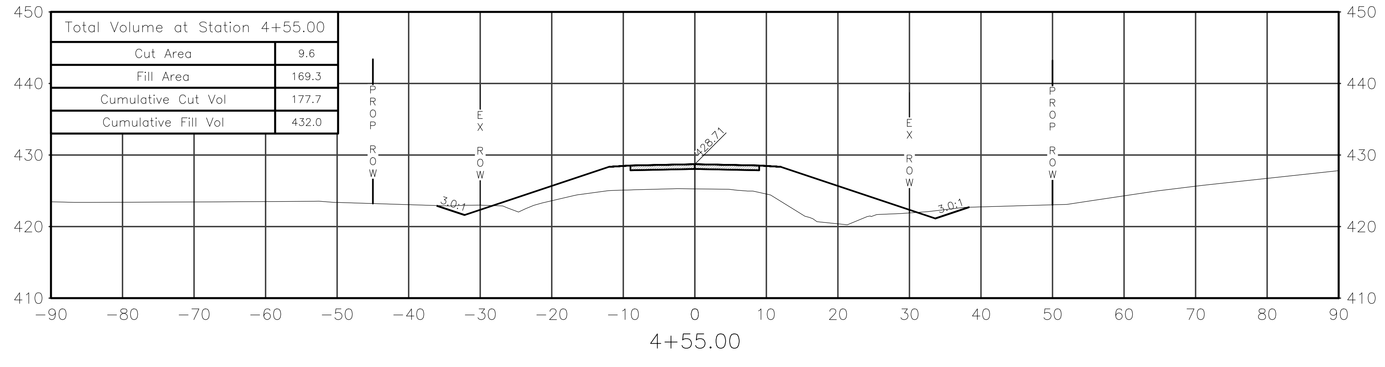
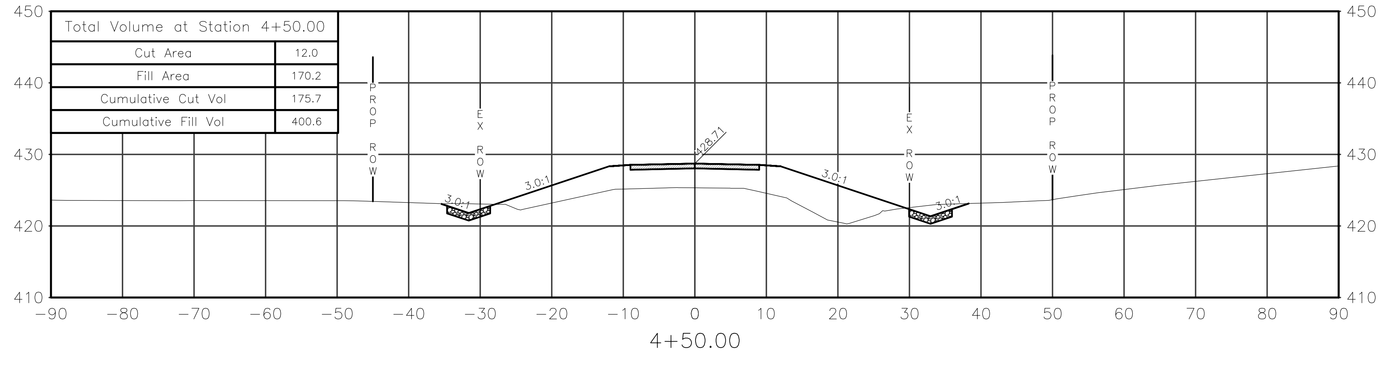
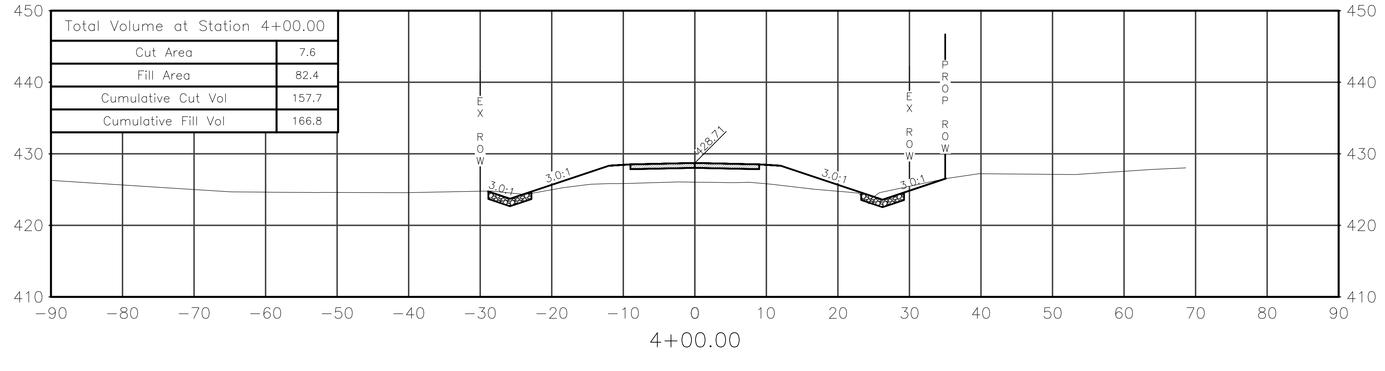
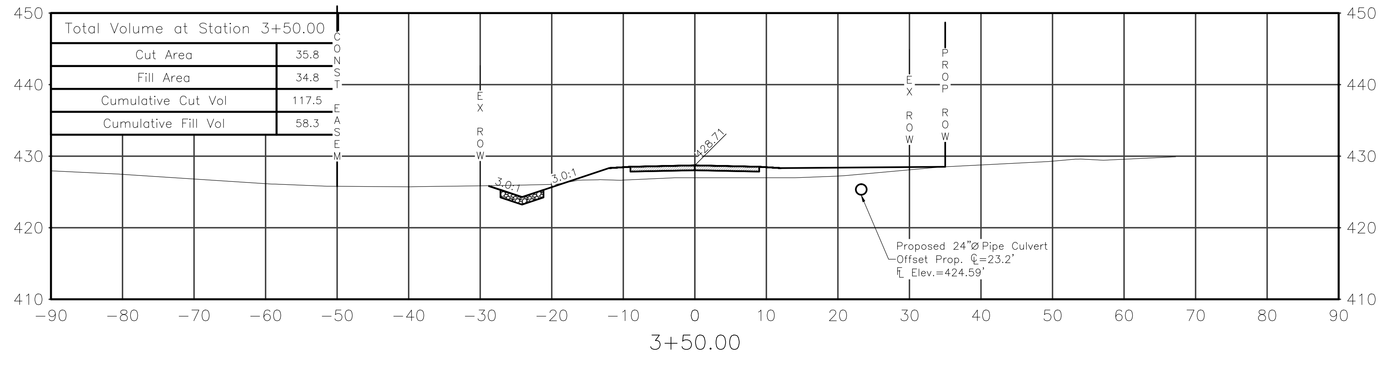
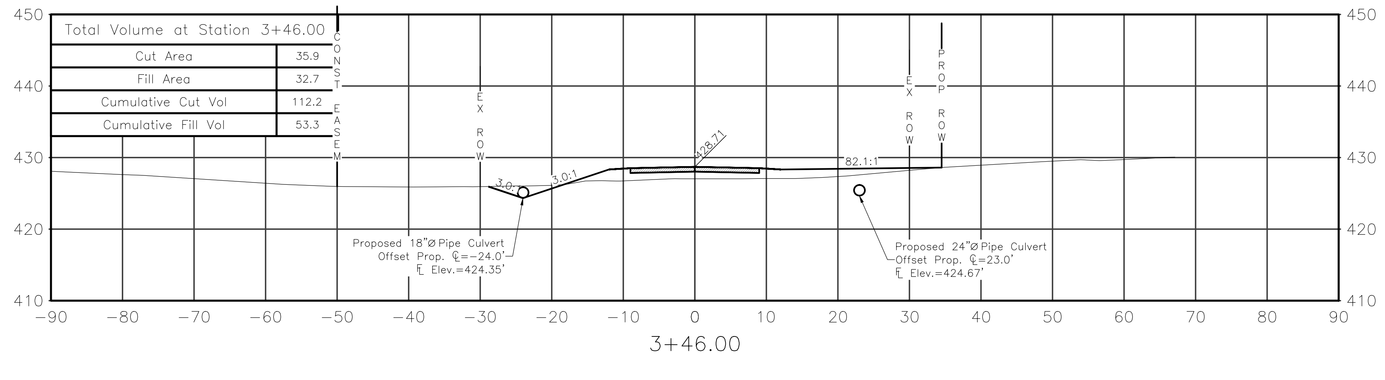
CONTRACT 95867	ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
ILLINOIS	T.R. 142	18-06125-00-BR	LAWRENCE	20	16
PROJECT ST15(541)					

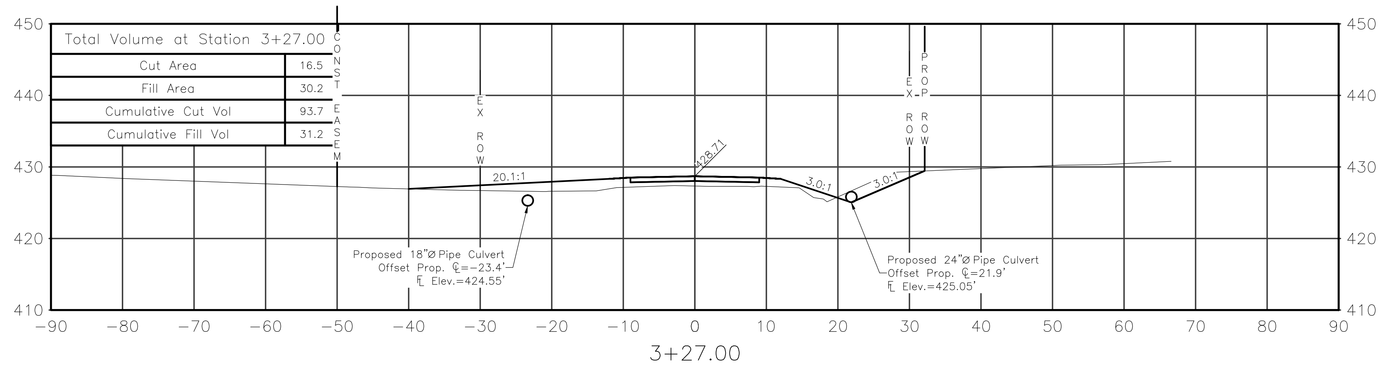












ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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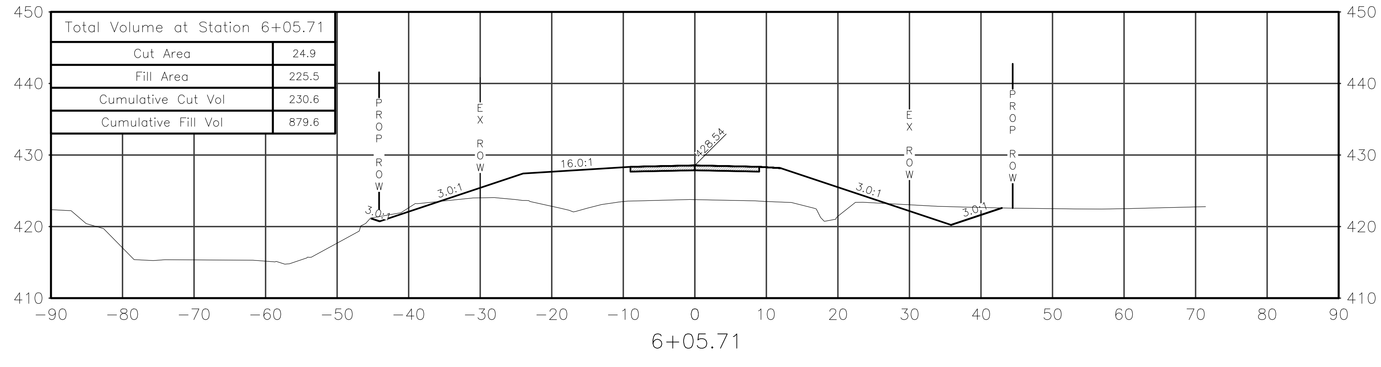
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	



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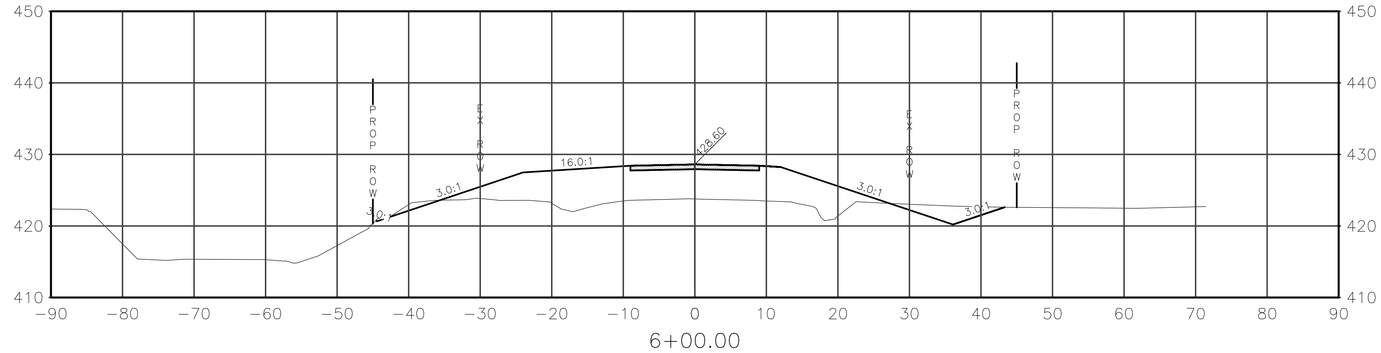

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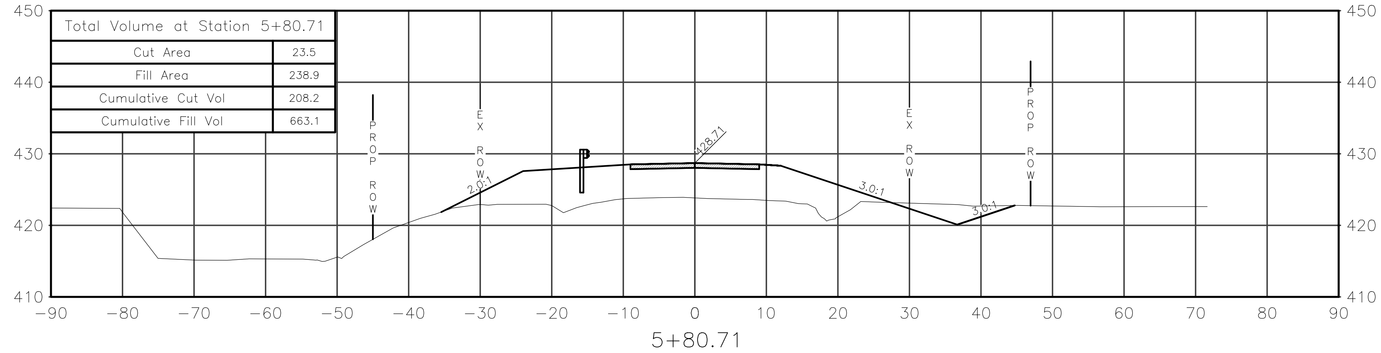
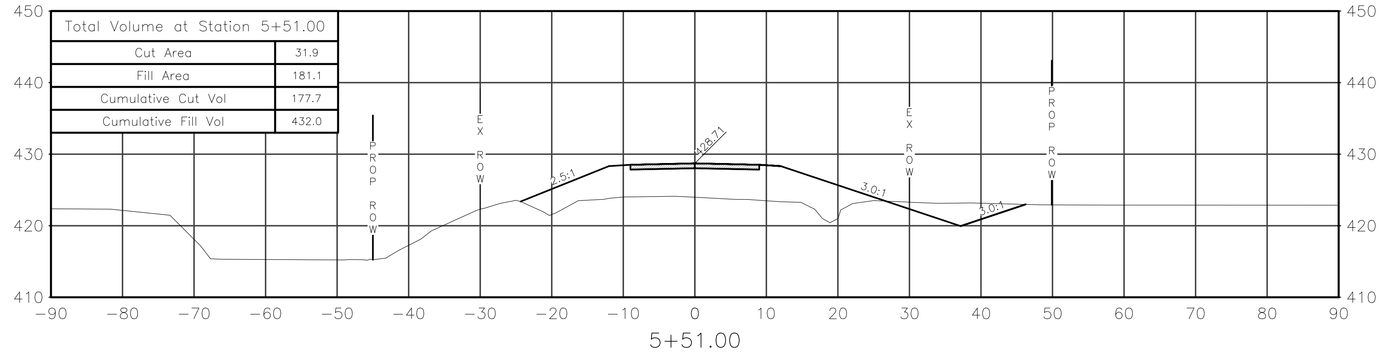


5+80.71



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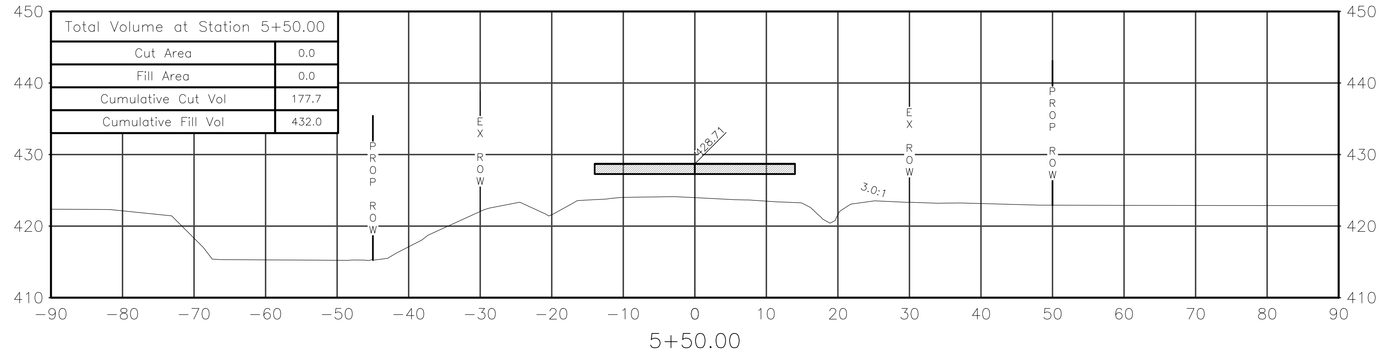

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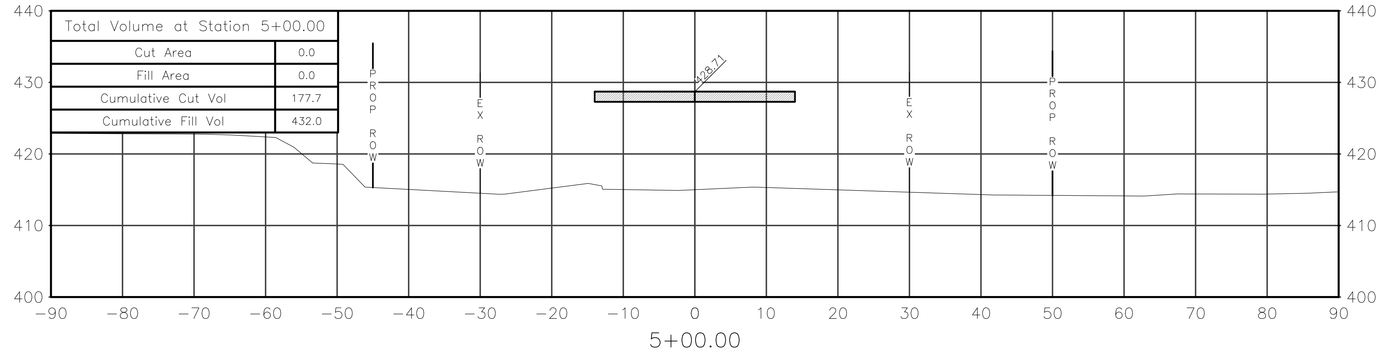
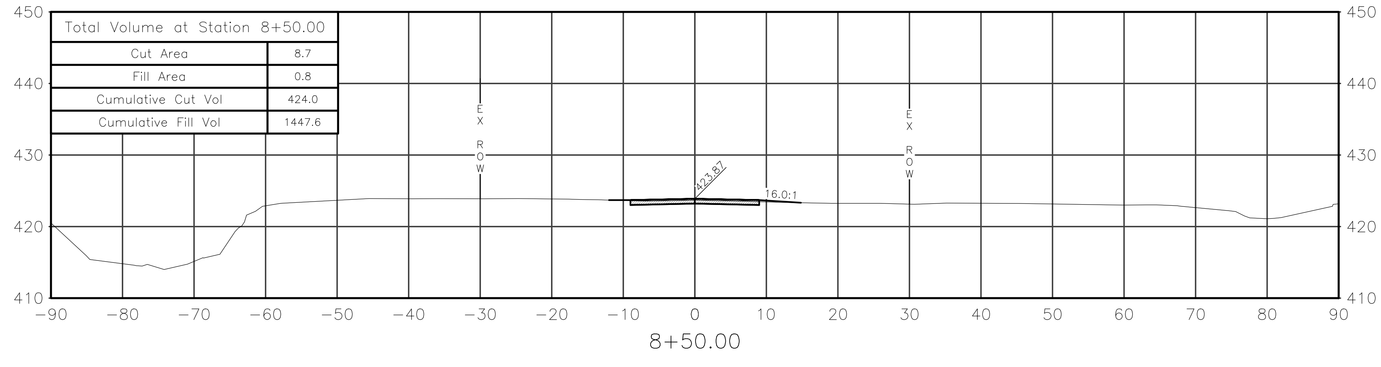
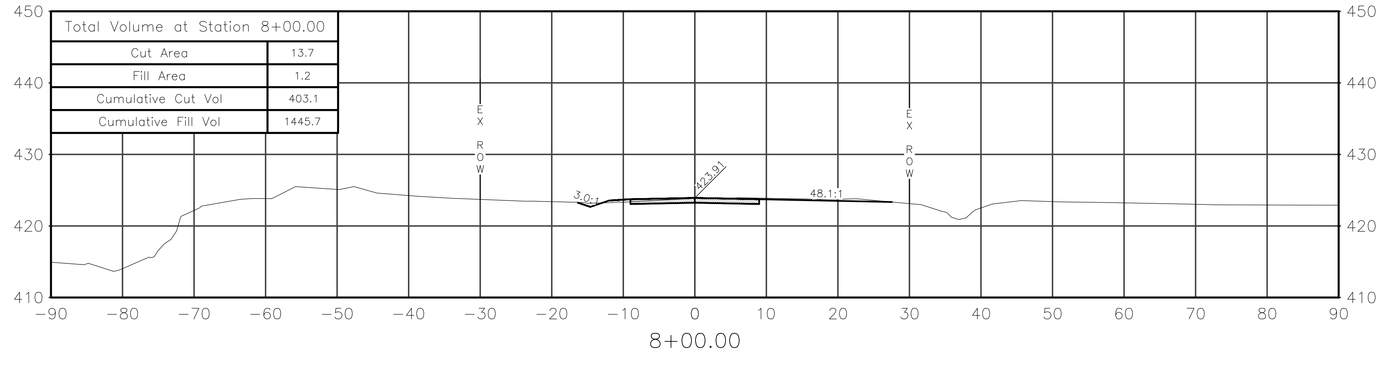
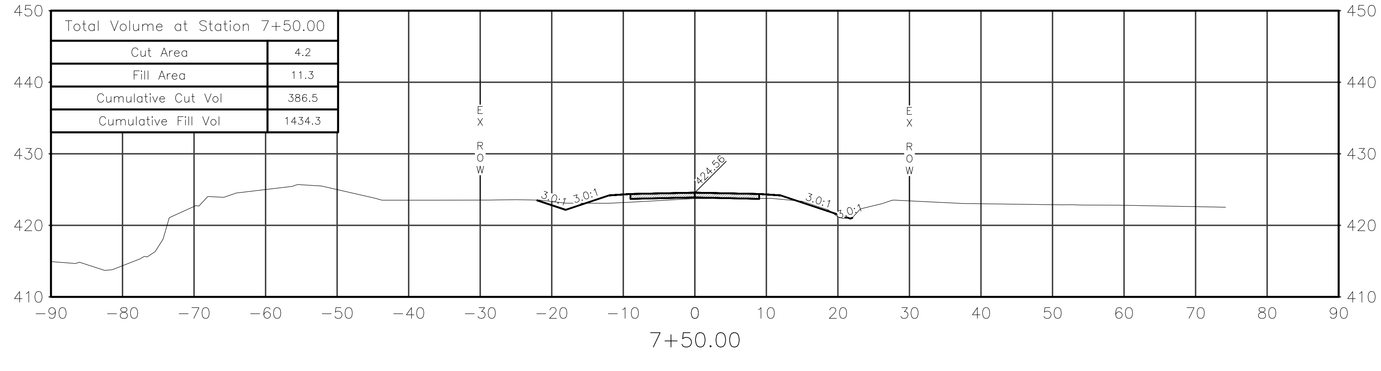


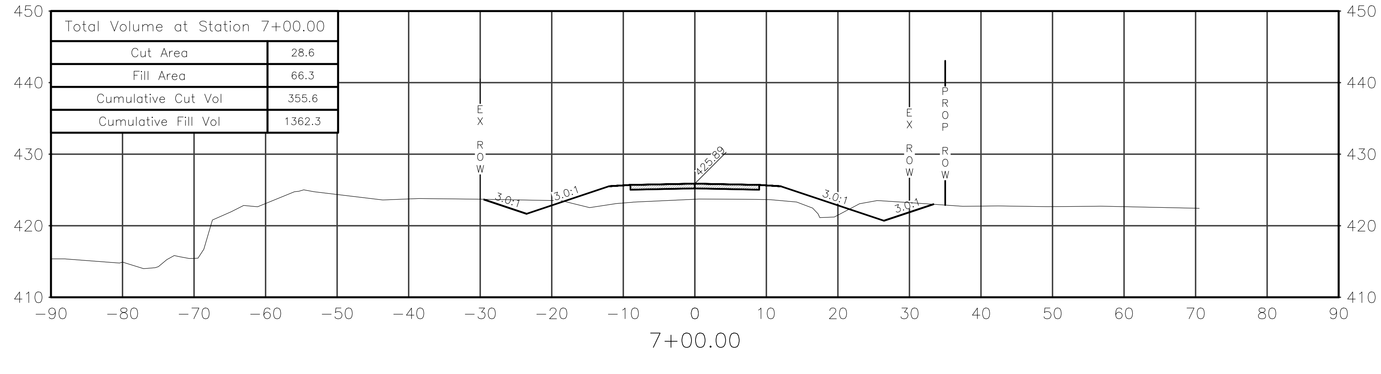
5+00.00

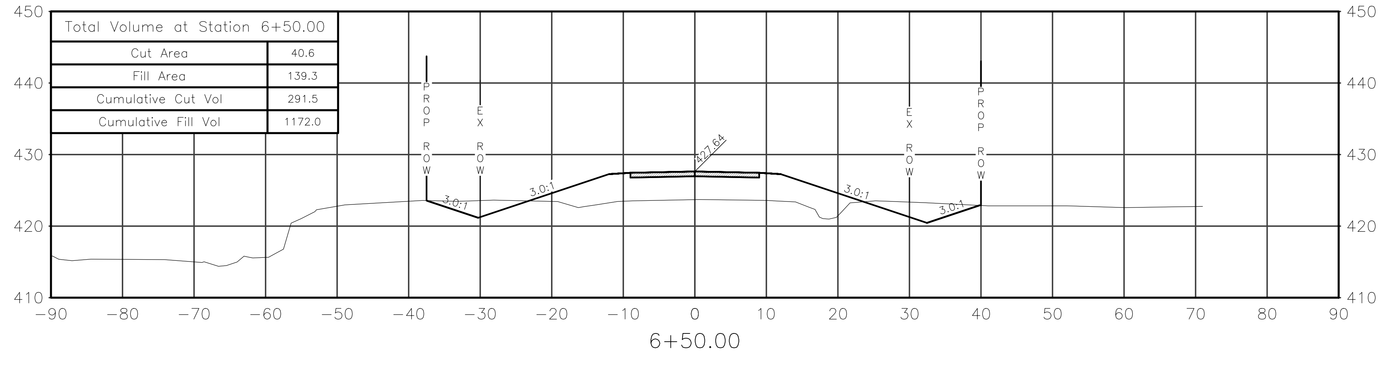
CONTRACT 95867	ROUTE T.R. 142	SECTION 18-06125-00-BR		
	ILLINOIS	PROJECT ST15(541)	COUNTY LAWRENCE	TOTAL SHEETS 20	SHEET NO. 18

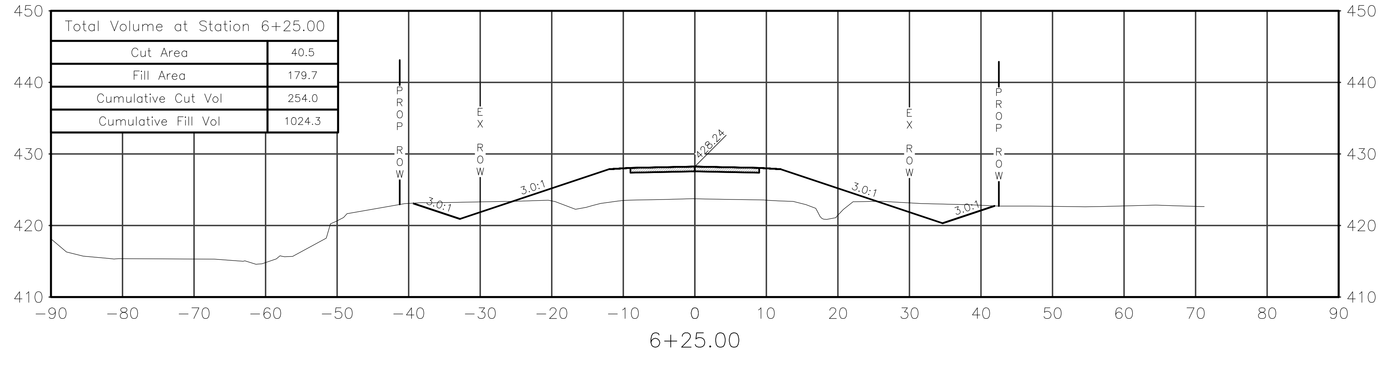












ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT 95867		ILLINOIS	PROJECT ST15(641)	

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 142	18-06125-00-BR	LAWRENCE	20	20
CONTRACT 95867		ILLINOIS	PROJECT ST15(541)	