

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147-01-BR	STARK	25	1
ROAD DIST.		ILLINOIS		

CONTRACT NO. 89452

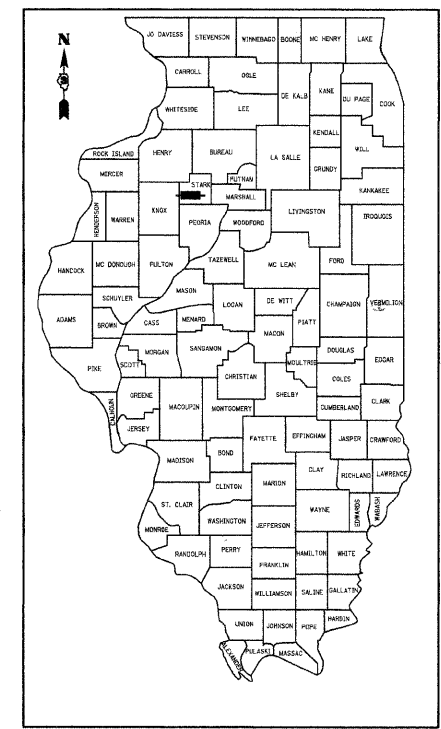
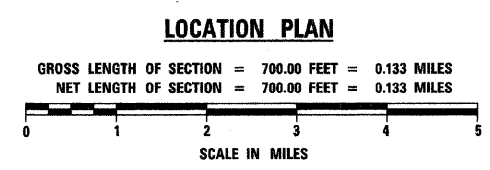
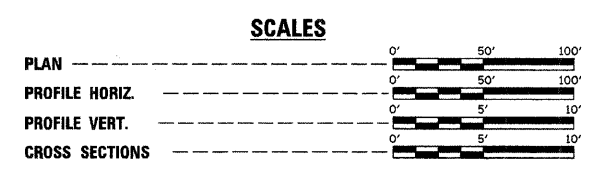
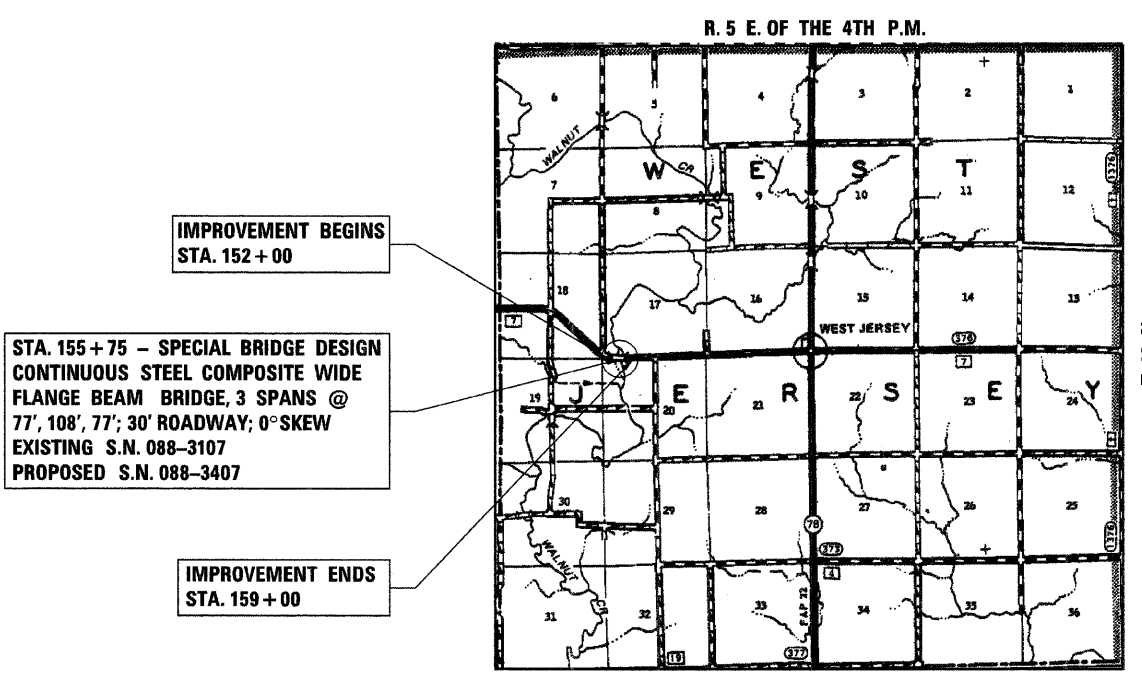
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PLANS FOR PROPOSED HIGHWAY BRIDGE PROGRAM

**SECTION 03-00147-01-BR
STARK COUNTY
PROJECT NO. BRS-376(109)
C.H. 7 (F.A.S. 376)
JOB NO. C-94-187-06**

SHEET NO.	TITLE
1.	COVER SHEET
2.	SUMMARY OF QUANTITIES, GENERAL NOTES & TYPICAL SECTIONS
3.	PLAN AND PROFILE SHEET
4.	SHOULDER AND GUARDRAIL DETAILS
5.-21.	BRIDGE PLANS
22.-25.	STATION CROSS SECTIONS

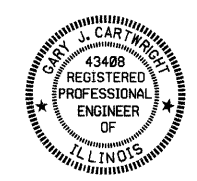
STANDARDS:

- 280001-04
- 420001-07
- 420401-06
- 421001-02
- 515001-02
- 601101
- 630001-07
- 630301-04
- 631032-03
- 635006-02
- 701901
- BLR 21-7



LOCATION OF SECTION INDICATED THUS: CLASSIFICATION: MAJOR COLLECTOR (NON URBAN)
DESIGN VOLUME: 532 (2026)
CURRENT ADT: 463 (2006)
DESIGN SPEED: 50 MPH
3R DESIGN GUIDELINES

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



Gary J. Cartwright 1-4-08
ILLINOIS PROFESSIONAL NO. 43408
EXPIRES 11-30-09

APPROVED	<i>John J. Hall</i>	20__
PASSED	<i>2-5</i>	20__
RELEASED FOR BID	<i>FEB 13</i>	20__
BASED ON LIMITED REVIEW		
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION		

4440 ASH GROVE
SPRINGFIELD, IL 62711
(217) 793-8600
www.fehr-graham.com

FEHR-GRAHAM & ASSOCIATES, LLC
ENGINEERING AND SCIENCE CONSULTANTS
POMPONA, N.J. ROCKFORD, ILL. ROCKFORD, ILL. ROCKFORD, ILL.

SUMMARY OF QUANTITIES

X071-2A

NUMBER	ITEM	UNIT	QUANTITY
20200100	EARTH EXCAVATION	CU YD	72
20300100	CHANNEL EXCAVATION	CU YD	500
20400800	FURNISHED EXCAVATION	CU YD	942
* 20700400	POROUS GRANULAR EMBANKMENT (SPECIAL)	CU YD.	104
* 25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.4
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	50
28000300	TEMPORARY DITCH CHECKS	EACH	2
28000400	PERIMETER EROSION BARRIER	FOOT	1,072
28100207	STONE RIPRAP, CLASS A4	TON	397
28200200	FILTER FABRIC	SQ. YD.	491
35101400	AGGREGATE BASE COURSE, TYPE B	TON	708
40600100	BITUMINOUS MATERIALS (PRIME COAT)	GALLON	428
40603080	HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50	TON	125
40603310	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N50	TON	75
42001165	BRIDGE APPROACH PAVEMENT	SQ YD	200
42001430	BRIDGE APPROACH PAVEMENT CONNECTOR (FLEXIBLE)	SQ YD	40
44000100	PAVEMENT REMOVAL	SQ YD	1,092
48101200	AGGREGATE SHOULDERS, TYPE B	TON	118
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD.	331
50300225	CONCRETE STRUCTURES	CU YD	98.0
50300255	CONCRETE SUPERSTRUCTURE	CU YD	243.0
50300260	BRIDGE DECK GROOVING	SQ YD	882
50300280	CONCRETE ENCASEMENT	CU YD	15.2
50300300	PROTECTIVE COAT	SQ YD	978
50500105	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1
50500505	STUD SHEAR CONNECTORS	EACH	2,625
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	63,880
50800515	BAR SPLICERS	EACH	60
Δ 50901050	STEEL RAILING, TYPE SM	FOOT	530
51201400	FURNISHING STEEL PILES HP10X42	FOOT	320
51201600	FURNISHING STEEL PILES HP12X53	FOOT	588
51202305	DRIVING PILES	FOOT	908
51203400	TEST PILE STEEL HP10X42	EACH	2
51203600	TEST PILE STEEL HP12X53	EACH	2
51500100	NAME PLATES	EACH	1
59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	64
* 60109580	PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT	130
Δ 63000000	STEEL PLATE BEAM GUARD RAIL, TYPE A	FOOT	412.5
Δ 63100087	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	3
* Δ 63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 SPECIAL (TANGENT)	EACH	2
63200310	GUARDRAIL REMOVAL	FOOT	678
* 67000500	ENGINEER'S FIELD OFFICE, TYPE B	CAL MO	6
67100100	MOBILIZATION	L SUM	1
* 70101830	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1
* Δ 78201000	TERMINAL MARKER-DIRECT APPLIED	EACH	2
* X5020501	UNDERWATER STRUCTURE EXCAVATION PROTECTION - LOCATION 1	EACH	1
* X5020502	UNDERWATER STRUCTURE EXCAVATION PROTECTION - LOCATION 2	EACH	1

*SEE SPECIAL PROVISIONS Δ SPECIALTY ITEMS

PAVEMENT REMOVAL

STA. 152+00 TO STA. 154+48.25 = 607 SQ YD
 STA. 157+01.75 TO STA. 159+00 = 485
 TOTAL = 1,092 SQ YD

TEMPORARY EROSION CONTROL

THE FOLLOWING QUANTITIES ARE ESTIMATES ONLY. ACTUAL QUANTITIES FOR EROSION CONTROL WILL BE DETERMINED BY THE ENGINEER IN THE FIELD AND THERE WILL BE NO ADJUSTMENT IN ANY UNIT PRICE DUE TO A CHANGE IN PLAN QUANTITY.

PERIMETER EROSION BARRIER = 1,072 FOOT
 TEMPORARY EROSION CONTROL SEEDING = 50 POUND
 TEMPORARY DITCH CHECKS = 2 EACH

GENERAL NOTES

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

THE AREA TO BE SEEDED SHALL CONSIST OF ALL DISTURBED EARTH SURFACES WITHIN THE RIGHT OF WAY, AS DIRECTED BY THE ENGINEER.

SEEDING, CLASS 2 (SPECIAL) = 0.4 ACRE

PAVEMENT DESIGN

Structural Design Traffic (S.D.T.): Year 2016; P.V. = 479, S.U. = 10, M.U. = 10 Class III Road

Minimum Soil Support: I.B.R. = 3.0 (Assumed) (> 3 k.s.i.)

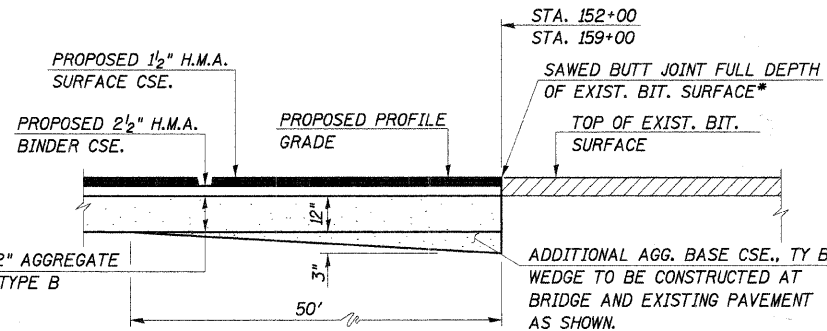
Percent of S.D.T. in Design Lane: P = 50%, S = 50%, M = 50% T.F. = 0.041

Temp. = 75° F.; E_{Ac} = 575 (AC-10); Design Strain = 368

BITUMINOUS MIXTURE REQUIREMENTS

MIXTURE USE(S)	SURFACE COURSE/ INCIDENTAL BITUMINOUS SURFACING	BINDER COURSE
AC/PG:	64-22	64-22
DESIGN AIR VOIDS:	4.0% • N _{des} = 50	4.0% • N _{des} = 50
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL 9.5	IL 19.0
FRICTION AGGREGATE:	MIXTURE C	N/A

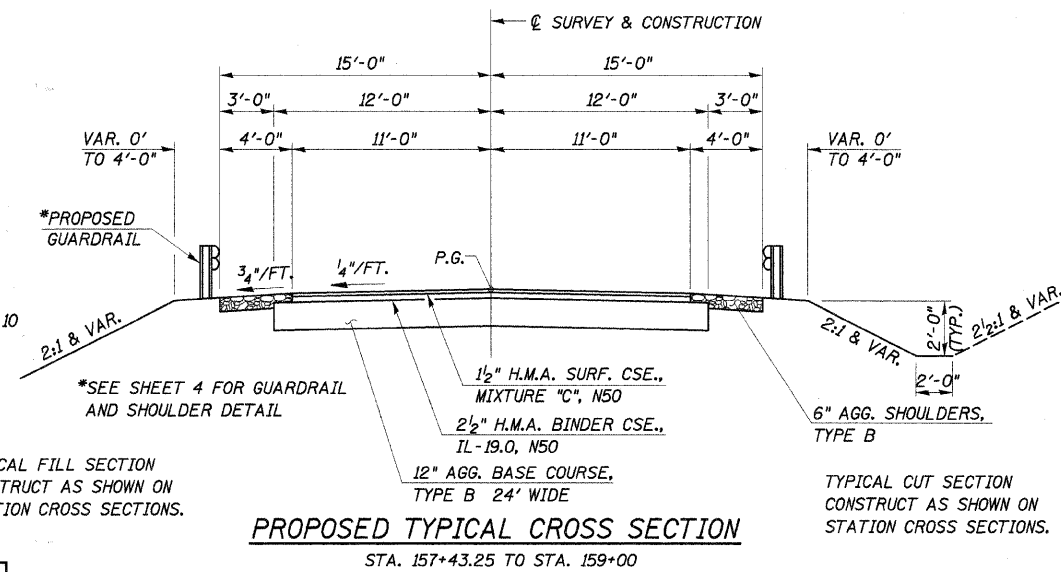
LOCATION	AGG. BASE COURSE, TYPE B	BITUMINOUS MATERIALS (PRIME COAT)	H.M.A. BINDER COURSE IL-19.0, N50	H.M.A. SURF. COURSE MIX "C", N50	AGGREGATE SHOULDERS, TYPE B
	TON	GALLON	TON	TON	TON
STA. 152+00 TO STA. 154+06.75	400	244	71	42.5	
STA. 157+43.25 TO STA. 159+00	308	184	54	32.5	
STA. 152+00 TO STA. 154+12.75					67
STA. 157+37.25 TO STA. 159+00					51
TOTAL	708	428	125	75	118



ELEVATION AT BEGINNING AND END OF IMPROVEMENT

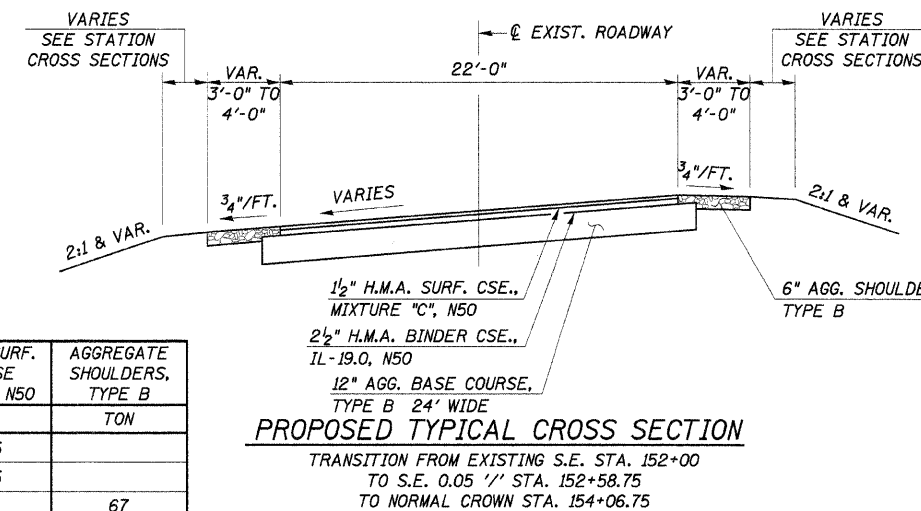
JOINT DETAILS

*COST INCLUDED IN "PAVEMENT REMOVAL".



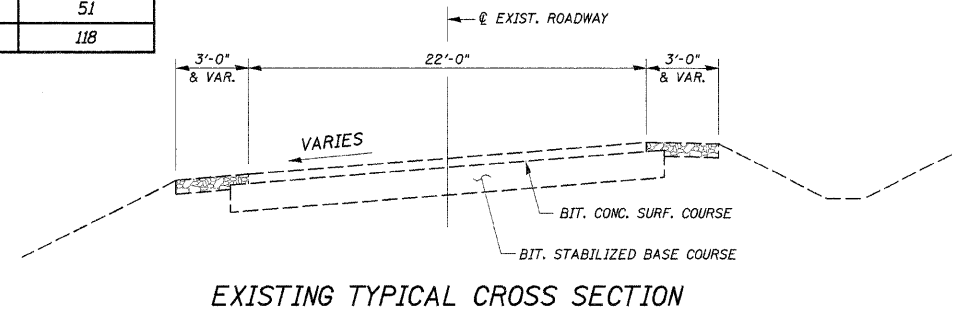
PROPOSED TYPICAL CROSS SECTION

STA. 157+43.25 TO STA. 159+00



PROPOSED TYPICAL CROSS SECTION

TRANSITION FROM EXISTING S.E. STA. 152+00 TO S.E. 0.05 ' ' STA. 152+58.75 TO NORMAL CROWN STA. 154+06.75



EXISTING TYPICAL CROSS SECTION

SUMMARY OF QUANTITIES, GENERAL NOTES AND DETAILS

SECTION 03-00147-01-BR
 STARK COUNTY
 COUNTY HIGHWAY 7
 STATION 155+75

4440 ASH GROVE
 SPRINGFIELD, IL 62711
 (217) 793-8600
 www.fehr-graham.com

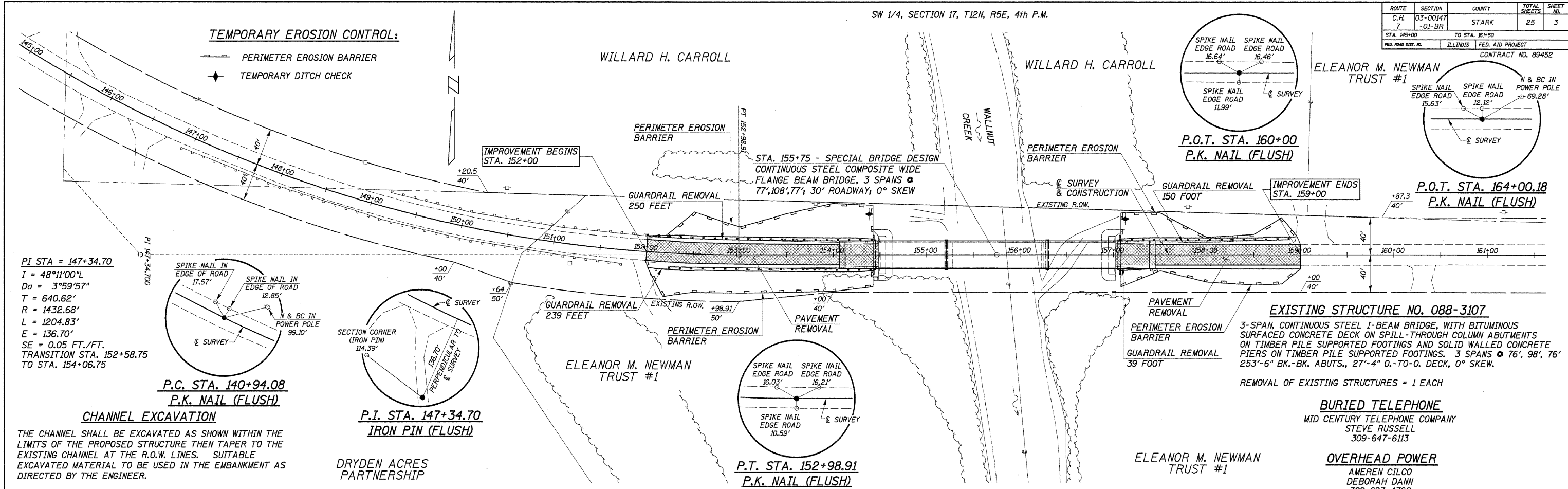
FEHR-GRAHAM & ASSOCIATES, LLC
 ENGINEERING AND SCIENCE CONSULTANTS
 PROJECTS • HIGHWAYS • ROADS • AIRPORTS • BRIDGES

DRAWN: S.A.P.
 DATE: 05/12/06

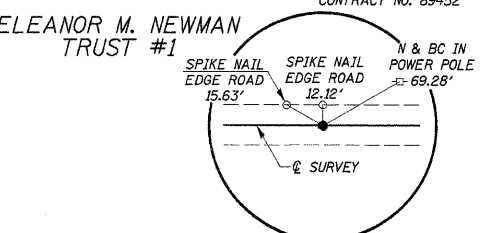
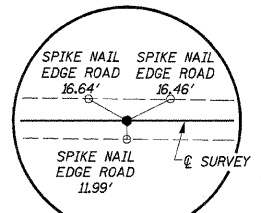
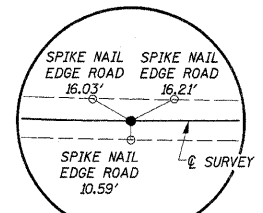
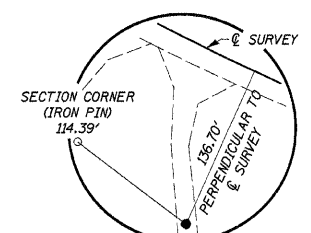
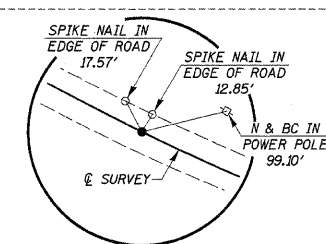
CHECKED: G.J.C.
 DATE: 05/18/06

JOB NO.: 46808
 FILE: 0423SUMTYP.DGN
 DATE: 01/04/08

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147 -01-BR	STARK	25	3
STA. 145+00	TO STA. 161+00	ILLINOIS FED. AID PROJECT		
CONTRACT NO. 89452				



PI STA = 147+34.70
 I = 48°11'00"L
 Da = 3°59'57"
 T = 640.62'
 R = 1432.68'
 L = 1204.83'
 E = 136.70'
 SE = 0.05 FT./FT.
 TRANSITION STA. 152+58.75
 TO STA. 154+06.75

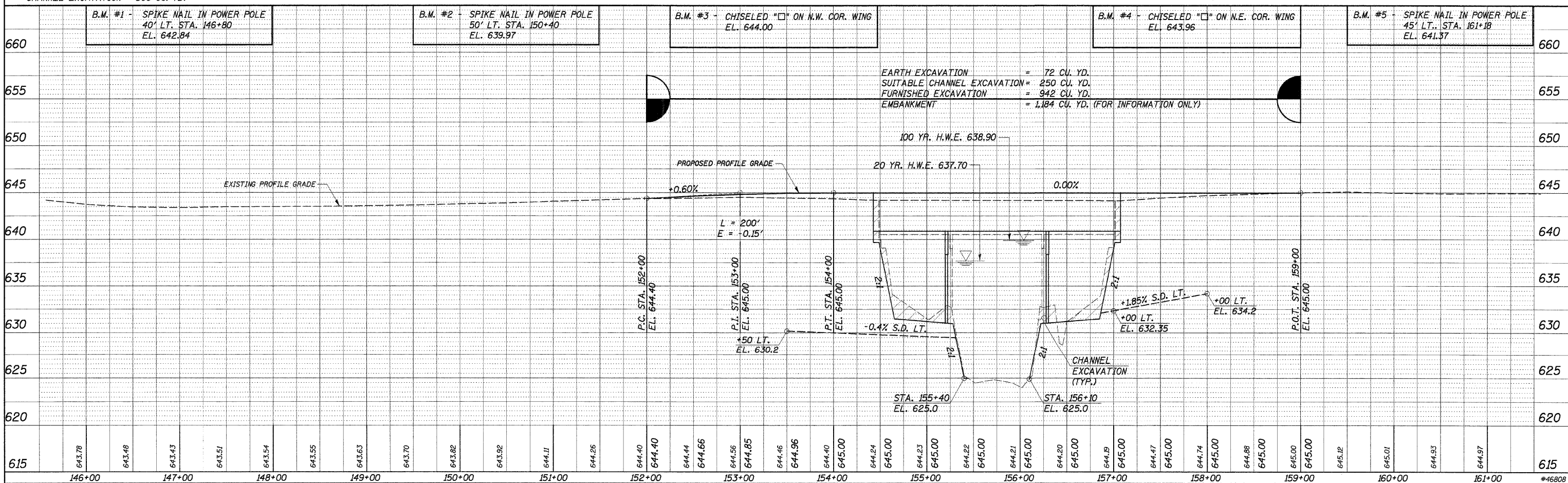


CHANNEL EXCAVATION
 THE CHANNEL SHALL BE EXCAVATED AS SHOWN WITHIN THE LIMITS OF THE PROPOSED STRUCTURE THEN TAPER TO THE EXISTING CHANNEL AT THE R.O.W. LINES. SUITABLE EXCAVATED MATERIAL TO BE USED IN THE EMBANKMENT AS DIRECTED BY THE ENGINEER.
 CHANNEL EXCAVATION = 500 CU. YD.

EXISTING STRUCTURE NO. 088-3107
 3-SPAN, CONTINUOUS STEEL I-BEAM BRIDGE, WITH BITUMINOUS SURFACED CONCRETE DECK ON SPILL-THROUGH COLUMN ABUTMENTS ON TIMBER PILE SUPPORTED FOOTINGS AND SOLID WALLED CONCRETE PIERS ON TIMBER PILE SUPPORTED FOOTINGS. 3 SPANS @ 76', 98', 76' 253'-6" BK.-BK. ABUTS., 27'-4" O.-TO-O. DECK, 0° SKEW.
 REMOVAL OF EXISTING STRUCTURES = 1 EACH

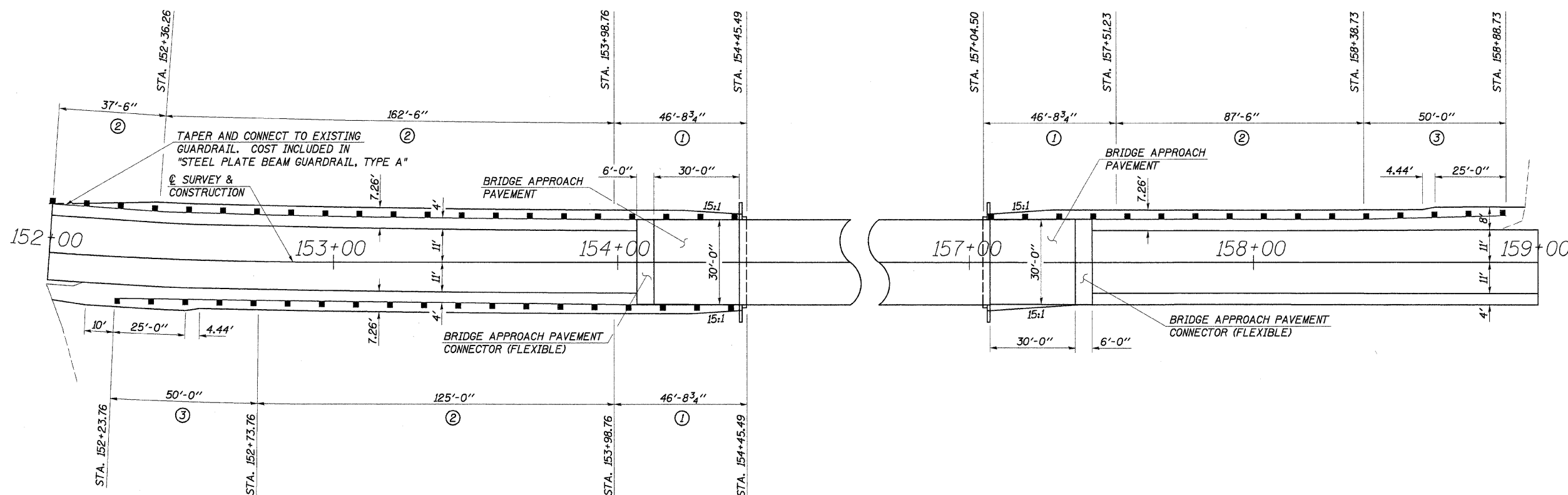
BURIED TELEPHONE
 MID CENTURY TELEPHONE COMPANY
 STEVE RUSSELL
 309-647-6113

OVERHEAD POWER
 AMEREN CILCO
 DEBORAH DANN
 309-693-4762



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147-01-BR	STARK	25	4
ROAD DIST.		ILLINOIS		

CONTRACT NO. 89452



SHOULDER AND GUARDRAIL DETAIL

TRAFFIC BARRIER TERMINAL, TYPE 6A

LT. STA. 153+98.76 TO LT. STA. 154+45.49 = 1 EACH
 RT. STA. 153+98.76 TO RT. STA. 154+45.49 = 1 EACH
 LT. STA. 157+04.50 TO LT. STA. 157+51.23 = 1 EACH
 TOTAL = 3 EACH

TRAFFIC BARRIER TERMINAL, TYPE 1, SPECIAL (TANGENT)

RT. STA. 152+23.76 TO RT. STA. 152+73.76 = 1 EACH
 LT. STA. 158+38.73 TO LT. STA. 158+88.73 = 1 EACH
 TOTAL = 2 EACH

STEEL PLATE BEAM GUARDRAIL, TYPE A

LT. STA. 151+98.76 TO LT. STA. 153+98.76 = 200.0 FOOT
 RT. STA. 152+73.76 TO RT. STA. 153+98.76 = 125.0 FOOT
 LT. STA. 157+51.23 TO LT. STA. 158+38.73 = 87.5 FOOT
 TOTAL = 412.5 FOOT

***BRIDGE APPROACH PAVEMENT**

(30' PAY WIDTH - NO CURB)
 STA. 154+12.75 TO STA. 154+42.15 = 100 SQ. YD.
 STA. 157+07.25 TO STA. 157+37.25 = 100 SQ. YD.
 TOTAL = 200 SQ. YD.

***BRIDGE APPROACH PAVEMENT CONNECTOR (FLEXIBLE)**

(30' PAY WIDTH - NO CURB)
 STA. 154+06.75 TO STA. 154+12.75 = 20 SQ. YD.
 STA. 157+37.25 TO STA. 157+43.75 = 20 SQ. YD.
 TOTAL = 40 SQ. YD.

TERMINAL MARKER - DIRECT APPLIED

RT. STA. 152+23.76 = 1 EACH
 LT. STA. 158+88.73 = 1 EACH
 TOTAL = 2 EACH

LEGEND

NOTE: ALL DIMENSIONS REFER TO FRONT FACE OF PROPOSED RAILING.

- ① TRAFFIC BARRIER TERMINAL, TYPE 6A
- ② STEEL PLATE BEAM GUARDRAIL, TYPE A
- ③ TRAFFIC BARRIER TERMINAL, TYPE 1, SPECIAL (TANGENT)

*SEE STANDARD 420401

SHOULDER AND GUARDRAIL DETAILS

SECTION 03-00147-01-BR
 STARK COUNTY
 COUNTY HIGHWAY 7
 STATION 155+75

4440 ASH GROVE
 SPRINGFIELD, IL 62711
 (217) 793-8600
 www.fehr-graham.com

FEHR-GRAHAM & ASSOCIATES, LLC
 ENGINEERING AND SCIENCE CONSULTANTS
 PEORIA, IL ROCHESTER, IL ROCKFORD, IL SPRINGFIELD, IL

DRAWN: S.A.P.
 DATE: 05/12/06

CHECKED: G.J.C.
 DATE: 05/18/06

JOB NO.: 46808
 FILE: 46808SHLD.DGN
 DATE: 01/04/08

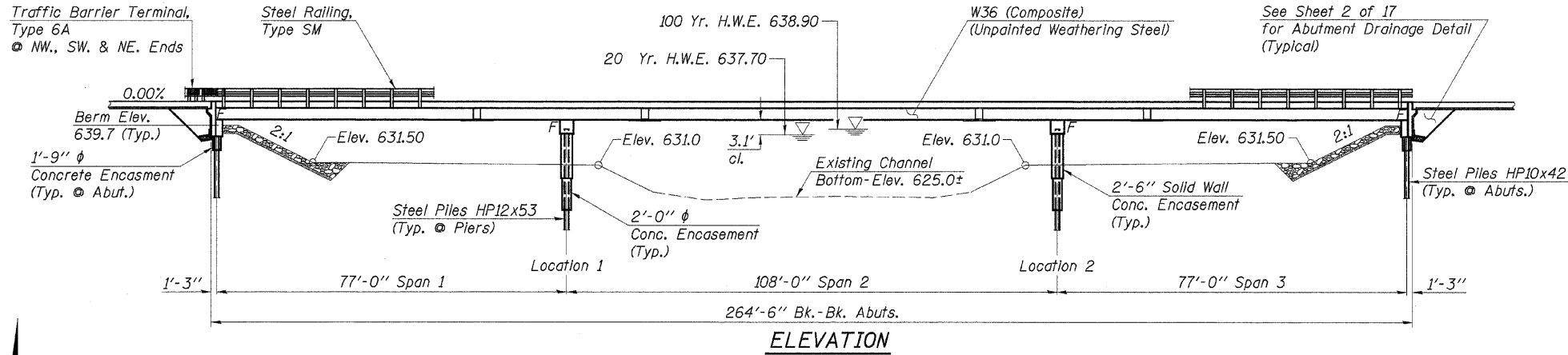
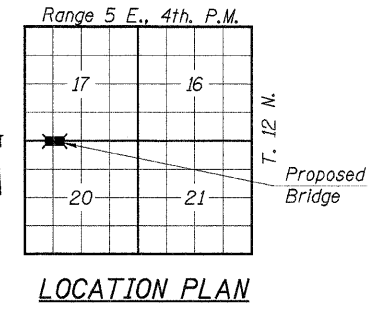
Existing Structure No. 088-3107

Sta. 155+75 - 3-Span Continuous Steel Wide Flange Beam Bridge with Bituminous Surfaced Concrete Deck on Spill-Through Column Abutments and Solid Wall Piers founded on timber pile supported footings. 253'-6" Bk.-Bk. Abuts., 27'-4" O.-O. Deck, 0° Skew.

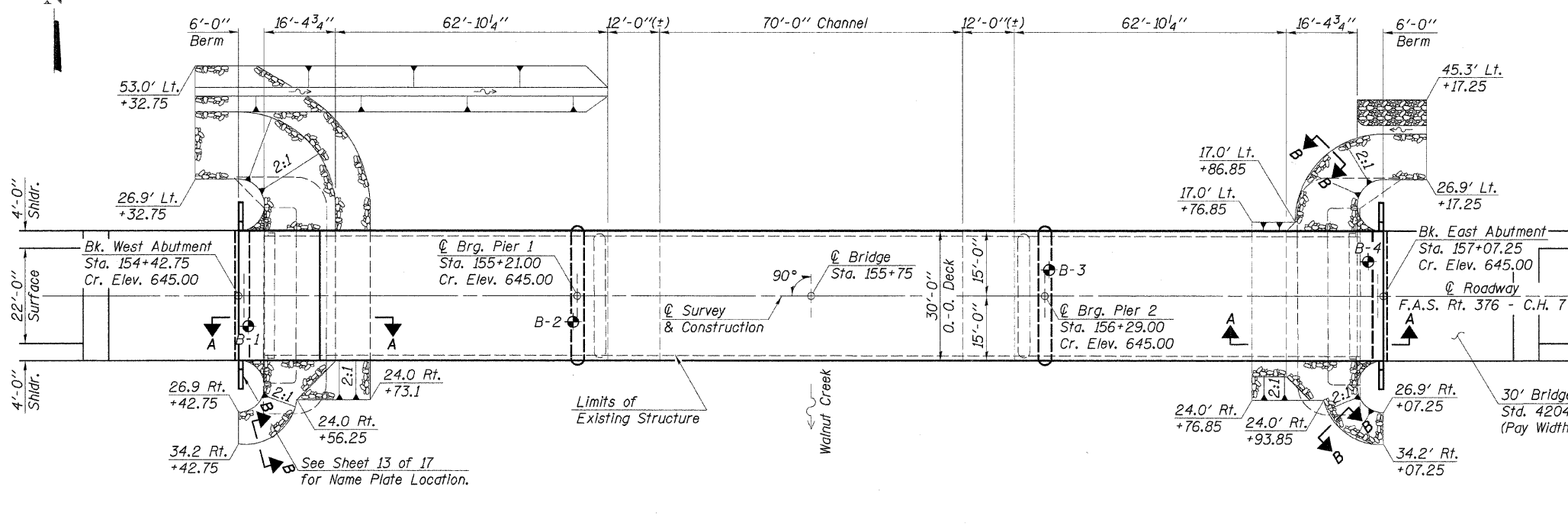
B.M. Descriptions

B.M. #3 - Chiseled "□" NW. Corner Wing Elev. 644.00

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147	STARK	25	5
F.A.S. 376	-01-BR			
ROAD DIST.	ILLINOIS	FED. AID PROJECT		
		CONTRACT NO. 89452		



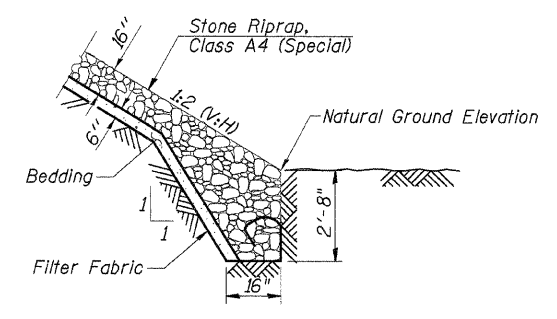
ELEVATION



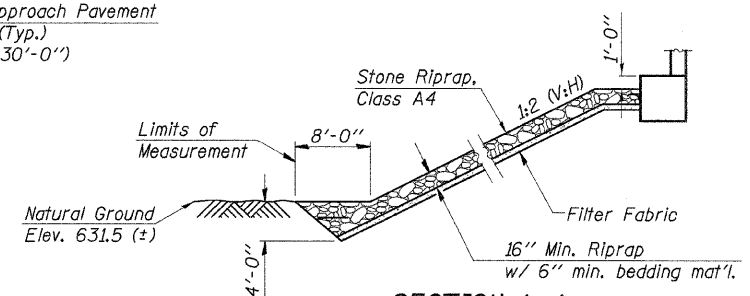
PLAN

INDEX OF SHEETS

1. General Plan and Elevation
2. General Notes and Bill of Materials
- 3.-5. Top of Slab Elevations
- 6.-7. Superstructure
8. Steel Railing, Type SM
- 9.-10. Structural Steel
11. Bearing Details
12. Anchor Bolt Details
- 13.-14. Abutments
- 15.-16. Piers
17. Bar Splicers



SECTION B-B



SECTION A-A RIPRAP PLACEMENT DETAIL

Construction Permits:
The requirements of the IDNR - Office of Water Resources have been fulfilled in accordance with Statewide Permit No. 2.

WATERWAY INFORMATION

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

Drainage Area	159.43 Sq. Mi.
Existing Opening (20 Yr.)	1816 Sq. Ft.
Required Opening (20 Yr.)	2043 Sq. Ft.
Proposed Opening (20 Yr.)	2043 Sq. Ft.
Design Discharge (20 Yr.)	6527 C.F.S.
Created Head (20 Yr.)	0.3 Ft.
100 Year Discharge	9469 C.F.S.
100 Yr. Created Head	0.5 Ft.

SEISMIC DATA

Seismic Performance Category (SPC) = A
Bedrock Acceleration Coefficient (A) = 0.038g
Site Coefficient (S) = 1.0

DESIGN STRESSES

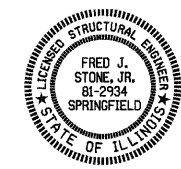
f'_c = 3,500 p.s.i. (Sub. & Super)
 f_y = 60,000 p.s.i. (Reinf. Bars -- Field Units)
 f_y = 50,000 p.s.i. AASHTO M270 GR 50W (Structural Steel)

DESIGN SPECIFICATIONS

2002 AASHTO
LOADING HS 20-44
25#/Sq. Ft. included in dead load for future wearing surface.

"I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current 'AASHTO Standard Specifications for Highway Bridges'."

Fred Stone Jr. (1-4-08)
ILLINOIS STRUCTURAL NO. 2934 (Expires 11/30/08)



GENERAL PLAN & ELEVATION

SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE SPRINGFIELD, IL 62711 (217) 793-8600 osinc@insightbb.com	FEHR-GRAHAM & ASSOCIATES, LLC ENGINEERING AND SCIENCE CONSULTANTS FREEPORT, IL ROCKFORD, IL ROCKFORD, IL SPRINGFIELD, IL	JOB NO.: 46808 FILE: 46808PE.DGN DATE: 01/02/08
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147	STARK	25	6
F.A.S. 376	-01-BR			
ROAD DIST.	ILLINOIS	FED. AID PROJECT		
			Sheet 2 of 17	CONTRACT NO. 89452

GENERAL NOTES

Fasteners shall be high strength bolts (AASHTO M 164, Type 3). Bolts $\frac{7}{8}$ " ϕ , open holes $\frac{15}{16}$ " ϕ , unless otherwise noted.

Calculated weight of Structural Steel = 258,810 Pound AASHTO M270 Grade 50W

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

Structural steel shall only be painted for a distance equal to the depth of embedment into the concrete cap plus 3 in. Those areas shall be primed in the shop with a Department approved zinc rich primer. No field painting shall be required. All structural steel shall be cleaned as specified in the Special Provision for "Surface Preparation and Painting Requirements for Weathering Steel".

Anchor Bolts shall be set before bolting diaphragms over supports.

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

Reinforcement bars shall conform to the requirements of ASTM A706 Gr 60 (IL Modified). See Special Provisions.

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

The embankment configuration shown shall be the minimum embankment that must be constructed prior to construction of the abutments.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two $\frac{1}{8}$ " adjusting shims, of the dimension of the bottom bearing plate, shall be provided for each bearing in addition to all other plates or shims.

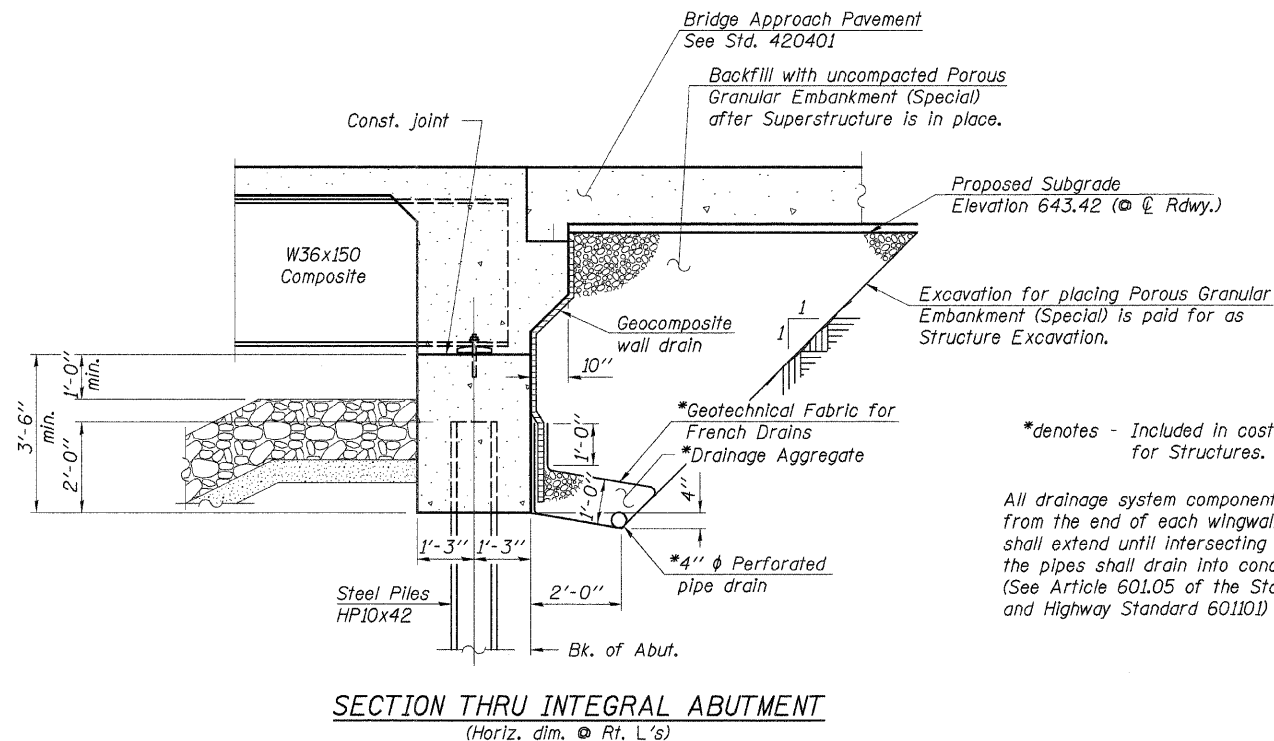
The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.

The contractor shall drive one steel HP10x42 test pile in a permanent location at each abutment & one steel HP12x53 test pile at each pier as directed by the Engineer before ordering the remainder of piles.

The Contractor shall drive test piles to 110 percent of the nominal required bearing specified in production locations at the substructures specified or approved by the Engineer before ordering the remainder of piles.

All exposed portions of abutments, wing walls, and piers shall receive a rubbed finish in accordance with Article 503.15 (b) of the standard specifications. Cost to be included in cost of Concrete Structures.

See Proposal Booklet for Soil Boring Data.

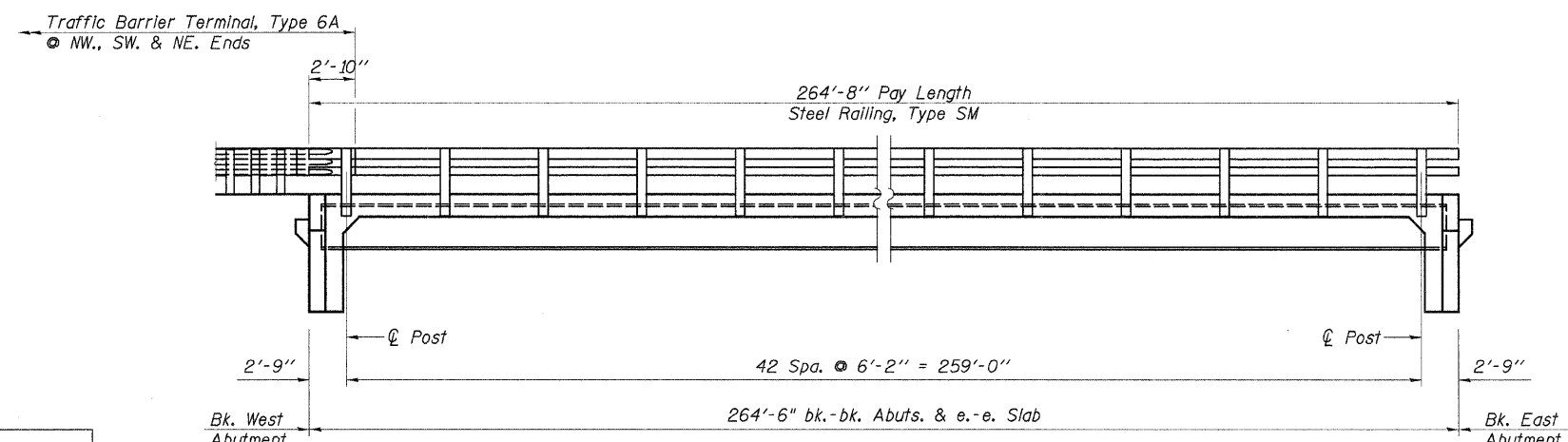


WALNUT CREEK
BUILT 200_ BY
STARK COUNTY
SEC. 03-00147-01-BR
F.A. PROJ. BRS-376(109)
STR. NO. 088-3407
LOADING HS20

LETTERING FOR NAME PLATE
See Std. 515001

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Porous Granular Embankment (Special)	Cu. Yd.		104	104
Stone Riprap, Class A4	Ton		397	397
Filter Fabric	Sq. Yd.		491	491
Removal of Existing Structures	Each		1	1
Structure Excavation	Cu. Yd.		331	331
Concrete Structures	Cu. Yd.		98.0	98.0
Concrete Superstructure	Cu. Yd.	243.0		243.0
Bridge Deck Grooving	Sq. Yd.	882		882
Protective Coat	Sq. Yd.	964	14	978
Furnishing and Erecting Structural Steel	L. Sum	1		1
Stud Shear Connectors	Each	2,625		2,625
Reinforcement Bars, Epoxy Coated	Pound	55,020	8,860	63,880
Steel Railing, Type SM	Foot	530		530
Furnishing Steel Piles HP10x42	Foot		320	320
Furnishing Steel Piles HP12x53	Foot		588	588
Driving Piles	Foot		908	908
Test Piles Steel HP10x42	Each		2	2
Test Piles Steel HP12x53	Each		2	2
Concrete Encasement	Cu. Yd.		15.2	15.2
Name Plates	Each		1	1
Pipe Underdrains for Structures 4"	Foot		130	130
Geocomposite Wall Drain	Sq.Yd.		64	64
Underwater Structure Excavation Protection - Location 1	Each		1	1
Underwater Structure Excavation Protection - Location 2	Each		1	1
Bar Splacers	Each	60		60



RAIL POST SPACING

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

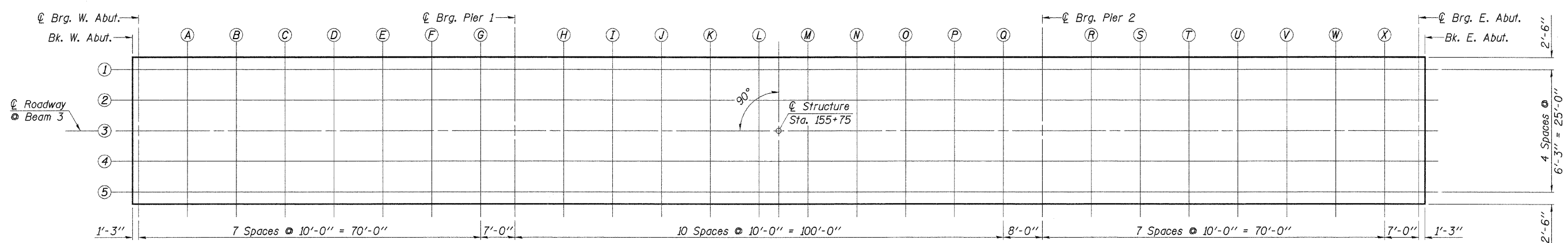
GENERAL NOTES & BILL OF MATERIAL
SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE
SPRINGFIELD, IL 62711
(217) 793-8600
obsinc@insightbb.com

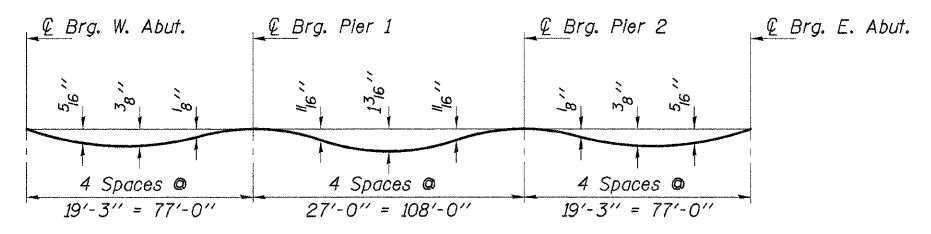
FEHR-GRAHAM & ASSOCIATES, LLC
ENGINEERING AND SCIENCE CONSULTANTS
PREPARED BY: ROBERTO L. ROCHELLE, P.E. MONROE, LA. SPRINGFIELD, IL

JOB NO.: 46808
FILE: 46808NOTES.DGN
DATE: 01/02/08

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147	STARK	25	7
F.A.S. 376	-01-BR			
ROAD DIST.	ILLINOIS	FED. AID PROJECT		
Sheet 3 of 17			CONTRACT NO. B9452	



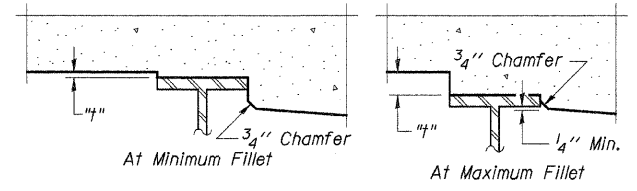
PLAN



DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

Note: The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on Sheets 4 & 5 of 17.



To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on Sheets 4 & 5 of 17, minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

TOP OF SLAB ELEVATIONS
SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE SPRINGFIELD, IL 62711 (217) 793-8600 oasinc@insightbb.com	FEHR-GRAHAM & ASSOCIATES, LLC ENGINEERING AND SCIENCE CONSULTANTS FREEPORT, IL ROCKFORD, IL ROCKFORD, IL SPRINGFIELD, IL	JOB NO.: 46808 FILE: 46808SLAB1.DGN DATE: 07/17/06
---	---	--

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
Bk. W. Abut.	15442.750	-12.500	644.805	644.805
☉ Brg. W. Abut.	15444.000	-12.500	644.805	644.805
A	15454.000	-12.500	644.805	644.819
B	15464.000	-12.500	644.805	644.833
C	15474.000	-12.500	644.805	644.833
D	15484.000	-12.500	644.805	644.832
E	15494.000	-12.500	644.805	644.821
F	15504.000	-12.500	644.805	644.812
G	15514.000	-12.500	644.805	644.808
☉ Brg. Pier 1	15521.000	-12.500	644.805	644.805
H	15531.000	-12.500	644.805	644.826
I	15541.000	-12.500	644.805	644.847
J	15551.000	-12.500	644.805	644.867
K	15561.000	-12.500	644.805	644.882
L	15571.000	-12.500	644.805	644.898
M	15581.000	-12.500	644.805	644.894
N	15591.000	-12.500	644.805	644.879
O	15601.000	-12.500	644.805	644.864
P	15611.000	-12.500	644.805	644.843
Q	15621.000	-12.500	644.805	644.822
☉ Brg. Pier 2	15629.000	-12.500	644.805	644.805
R	15639.000	-12.500	644.805	644.809
S	15649.000	-12.500	644.805	644.814
T	15659.000	-12.500	644.805	644.825
U	15669.000	-12.500	644.805	644.834
V	15679.000	-12.500	644.805	644.833
W	15689.000	-12.500	644.805	644.829
X	15699.000	-12.500	644.805	644.815
☉ Brg. E. Abut.	15706.000	-12.500	644.805	644.805
Bk. E. Abut.	15707.250	-12.500	644.805	644.805

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
Bk. W. Abut.	15442.750	-6.250	644.903	644.903
☉ Brg. W. Abut.	15444.000	-6.250	644.903	644.903
A	15454.000	-6.250	644.903	644.917
B	15464.000	-6.250	644.903	644.930
C	15474.000	-6.250	644.903	644.931
D	15484.000	-6.250	644.903	644.930
E	15494.000	-6.250	644.903	644.919
F	15504.000	-6.250	644.903	644.910
G	15514.000	-6.250	644.903	644.905
☉ Brg. Pier 1	15521.000	-6.250	644.903	644.903
H	15531.000	-6.250	644.903	644.924
I	15541.000	-6.250	644.903	644.945
J	15551.000	-6.250	644.903	644.964
K	15561.000	-6.250	644.903	644.980
L	15571.000	-6.250	644.903	644.995
M	15581.000	-6.250	644.903	644.992
N	15591.000	-6.250	644.903	644.977
O	15601.000	-6.250	644.903	644.961
P	15611.000	-6.250	644.903	644.941
Q	15621.000	-6.250	644.903	644.919
☉ Brg. Pier 2	15629.000	-6.250	644.903	644.903
R	15639.000	-6.250	644.903	644.907
S	15649.000	-6.250	644.903	644.911
T	15659.000	-6.250	644.903	644.922
U	15669.000	-6.250	644.903	644.931
V	15679.000	-6.250	644.903	644.931
W	15689.000	-6.250	644.903	644.927
X	15699.000	-6.250	644.903	644.913
☉ Brg. E. Abut.	15706.000	-6.250	644.903	644.903
Bk. E. Abut.	15707.250	-6.250	644.903	644.903

BEAM 3 - ☉ ROADWAY

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
Bk. W. Abut.	15442.750	.000	645.000	645.000
☉ Brg. W. Abut.	15444.000	.000	645.000	645.000
A	15454.000	.000	645.000	645.014
B	15464.000	.000	645.000	645.028
C	15474.000	.000	645.000	645.028
D	15484.000	.000	645.000	645.027
E	15494.000	.000	645.000	645.016
F	15504.000	.000	645.000	645.007
G	15514.000	.000	645.000	645.003
☉ Brg. Pier 1	15521.000	.000	645.000	645.000
H	15531.000	.000	645.000	645.021
I	15541.000	.000	645.000	645.042
J	15551.000	.000	645.000	645.062
K	15561.000	.000	645.000	645.077
L	15571.000	.000	645.000	645.093
M	15581.000	.000	645.000	645.089
N	15591.000	.000	645.000	645.074
O	15601.000	.000	645.000	645.059
P	15611.000	.000	645.000	645.038
Q	15621.000	.000	645.000	645.017
☉ Brg. Pier 2	15629.000	.000	645.000	645.000
R	15639.000	.000	645.000	645.004
S	15649.000	.000	645.000	645.009
T	15659.000	.000	645.000	645.020
U	15669.000	.000	645.000	645.029
V	15679.000	.000	645.000	645.028
W	15689.000	.000	645.000	645.024
X	15699.000	.000	645.000	645.010
☉ Brg. E. Abut.	15706.000	.000	645.000	645.000
Bk. E. Abut.	15707.250	.000	645.000	645.000

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

TOP OF SLAB ELEVATIONS

SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
Bk. W. Abut.	15442.750	6.250	644.903	644.903
⊕ Brg. W. Abut.	15444.000	6.250	644.903	644.903
A	15454.000	6.250	644.903	644.917
B	15464.000	6.250	644.903	644.930
C	15474.000	6.250	644.903	644.931
D	15484.000	6.250	644.903	644.930
E	15494.000	6.250	644.903	644.919
F	15504.000	6.250	644.903	644.910
G	15514.000	6.250	644.903	644.905
⊕ Brg. Pier 1	15521.000	6.250	644.903	644.903
H	15531.000	6.250	644.903	644.924
I	15541.000	6.250	644.903	644.945
J	15551.000	6.250	644.903	644.964
K	15561.000	6.250	644.903	644.980
L	15571.000	6.250	644.903	644.995
M	15581.000	6.250	644.903	644.992
N	15591.000	6.250	644.903	644.977
O	15601.000	6.250	644.903	644.961
P	15611.000	6.250	644.903	644.941
Q	15621.000	6.250	644.903	644.919
⊕ Brg. Pier 2	15629.000	6.250	644.903	644.903
R	15639.000	6.250	644.903	644.907
S	15649.000	6.250	644.903	644.911
T	15659.000	6.250	644.903	644.922
U	15669.000	6.250	644.903	644.931
V	15679.000	6.250	644.903	644.931
W	15689.000	6.250	644.903	644.927
X	15699.000	6.250	644.903	644.913
⊕ Brg. E. Abut.	15706.000	6.250	644.903	644.903
Bk. E. Abut.	15707.250	6.250	644.903	644.903

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
Bk. W. Abut.	15442.750	12.500	644.805	644.805
⊕ Brg. W. Abut.	15444.000	12.500	644.805	644.805
A	15454.000	12.500	644.805	644.819
B	15464.000	12.500	644.805	644.833
C	15474.000	12.500	644.805	644.833
D	15484.000	12.500	644.805	644.832
E	15494.000	12.500	644.805	644.821
F	15504.000	12.500	644.805	644.812
G	15514.000	12.500	644.805	644.808
⊕ Brg. Pier 1	15521.000	12.500	644.805	644.805
H	15531.000	12.500	644.805	644.826
I	15541.000	12.500	644.805	644.847
J	15551.000	12.500	644.805	644.867
K	15561.000	12.500	644.805	644.882
L	15571.000	12.500	644.805	644.898
M	15581.000	12.500	644.805	644.894
N	15591.000	12.500	644.805	644.879
O	15601.000	12.500	644.805	644.864
P	15611.000	12.500	644.805	644.843
Q	15621.000	12.500	644.805	644.822
⊕ Brg. Pier 2	15629.000	12.500	644.805	644.805
R	15639.000	12.500	644.805	644.809
S	15649.000	12.500	644.805	644.814
T	15659.000	12.500	644.805	644.825
U	15669.000	12.500	644.805	644.834
V	15679.000	12.500	644.805	644.833
W	15689.000	12.500	644.805	644.829
X	15699.000	12.500	644.805	644.815
⊕ Brg. E. Abut.	15706.000	12.500	644.805	644.805
Bk. E. Abut.	15707.250	12.500	644.805	644.805

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

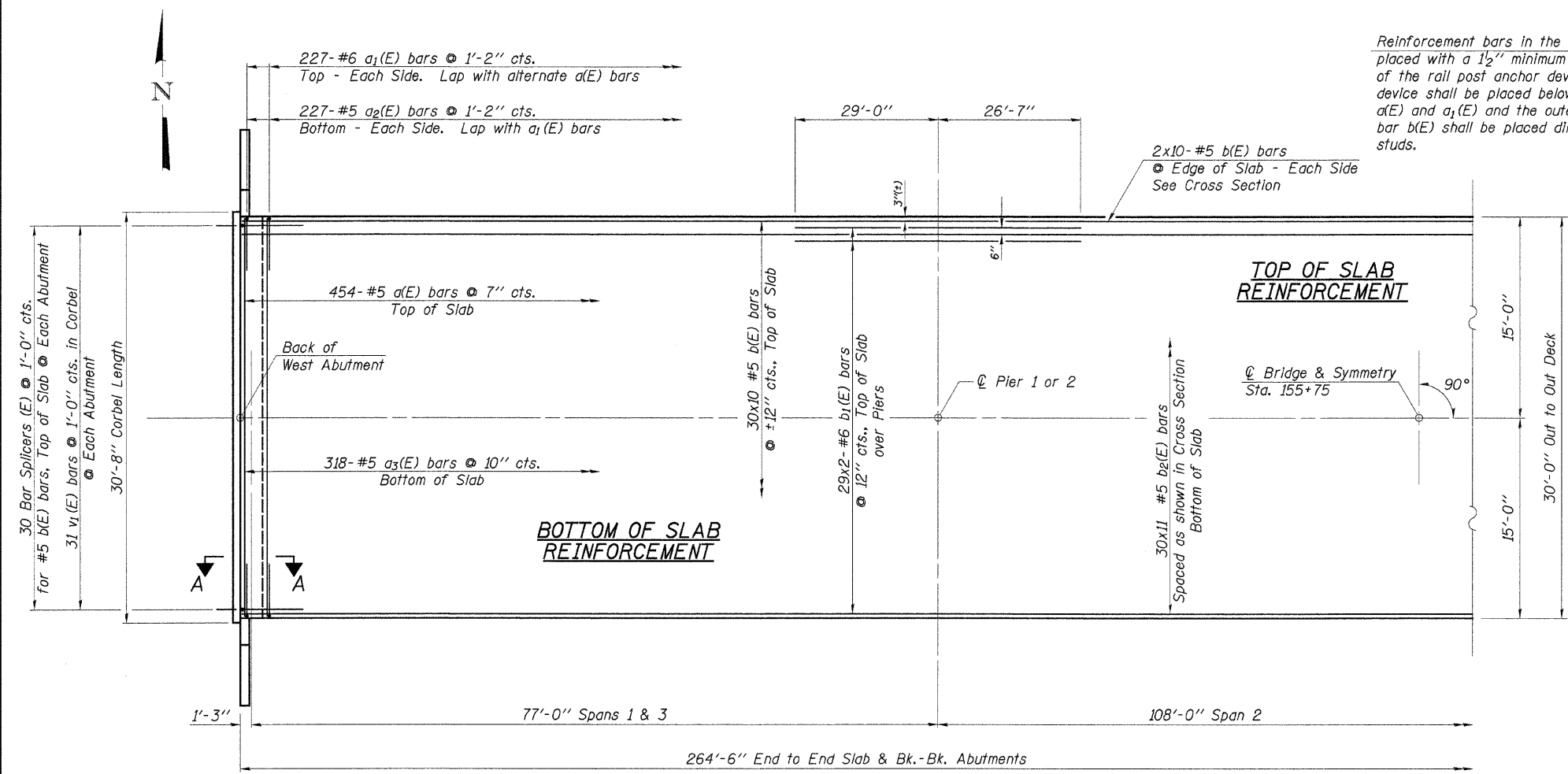
TOP OF SLAB ELEVATIONS

SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE
SPRINGFIELD, IL 62711
(217) 793-8600
oasinc@insightbb.com

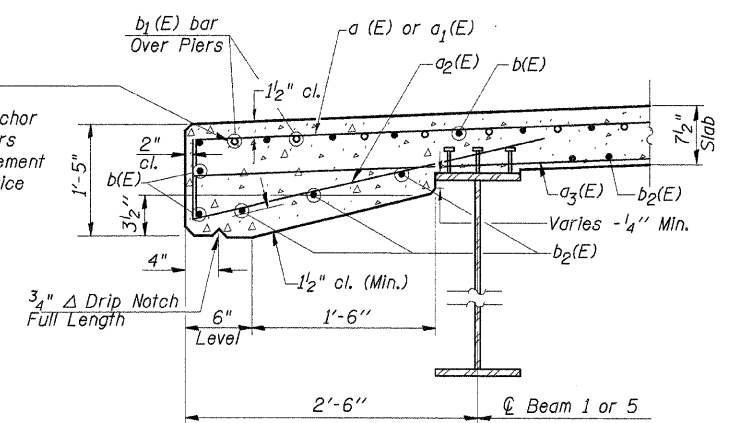
FEHR-GRAHAM & ASSOCIATES, LLC
ENGINEERING AND SCIENCE CONSULTANTS
FREEDOM, IL ROCKFORD, IL ROCKFORD, IL SPRINGFIELD, IL

JOB NO.: 46808
FILE: 46808SLAB3.DGN
DATE: 07/17/06



HALF PLAN

Reinforcement bars in the top of the deck shall be placed with a 1/2" minimum clearance in the area of the rail post anchor devices. The studs of the anchor device shall be placed below the top reinforcement bars a(E) and a1(E) and the outermost longitudinal reinforcement bar b(E) shall be placed directly above the anchor device studs.



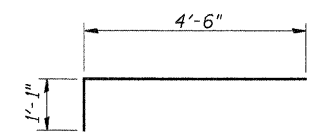
SECTION THRU EDGE OF SLAB

SUPERSTRUCTURE BILL OF MATERIAL

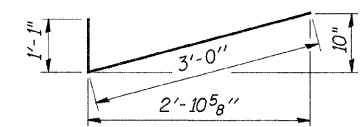
Bar	No.	Size	Length	Shape
a(E)	454	#5	29'-8"	—
a1(E)	454	#6	5'-7"	—
a2(E)	454	#5	4'-1"	✓
a3(E)	318	#5	29'-4"	—
b(E)	340	#5	27'-11"	—
b1(E)	116	#6	28'-10"	—
b2(E)	330	#5	25'-7"	—
m(E)	10	#6	29'-8"	—
m1(E)	20	#6	8'-3"	—
m2(E)	8	#6	6'-0"	—
m3(E)	4	#6	2'-4"	—
s(E)	68	#5	5'-9"	✓
s1(E)	60	#4	10'-2"	□
v1(E)	62	#5	2'-9"	┌
Protective Coat	Sq. Yd.		964	
Conc. Superstructure	Cu. Yd.		243.0	
Reinforcement Bars, Epoxy Coated	Pound		55,020	
Bridge Deck Grooving	Sq. Yd.		882	

MIN. BAR LAPS

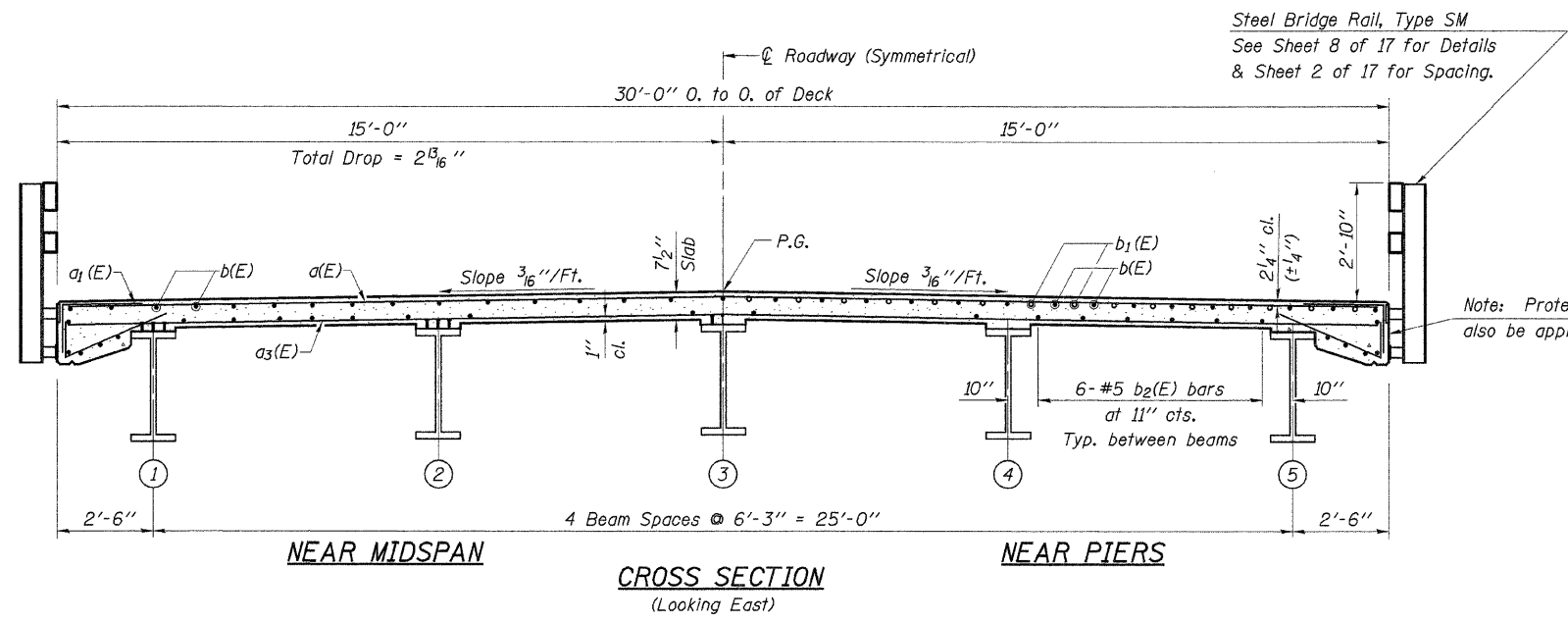
#5 1'-8"
#6 2'-0"



BAR a1(E)



BAR a2(E)



CROSS SECTION (Looking East)

Note: Protective Coat shall also be applied to Deck Fascias.

Reinforcement Bars designated (E) shall be epoxy coated.
Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
See Sheet 17 of 17 for Bar Splicer Details.

Work this Sheet with Sheet 7 of 17.

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

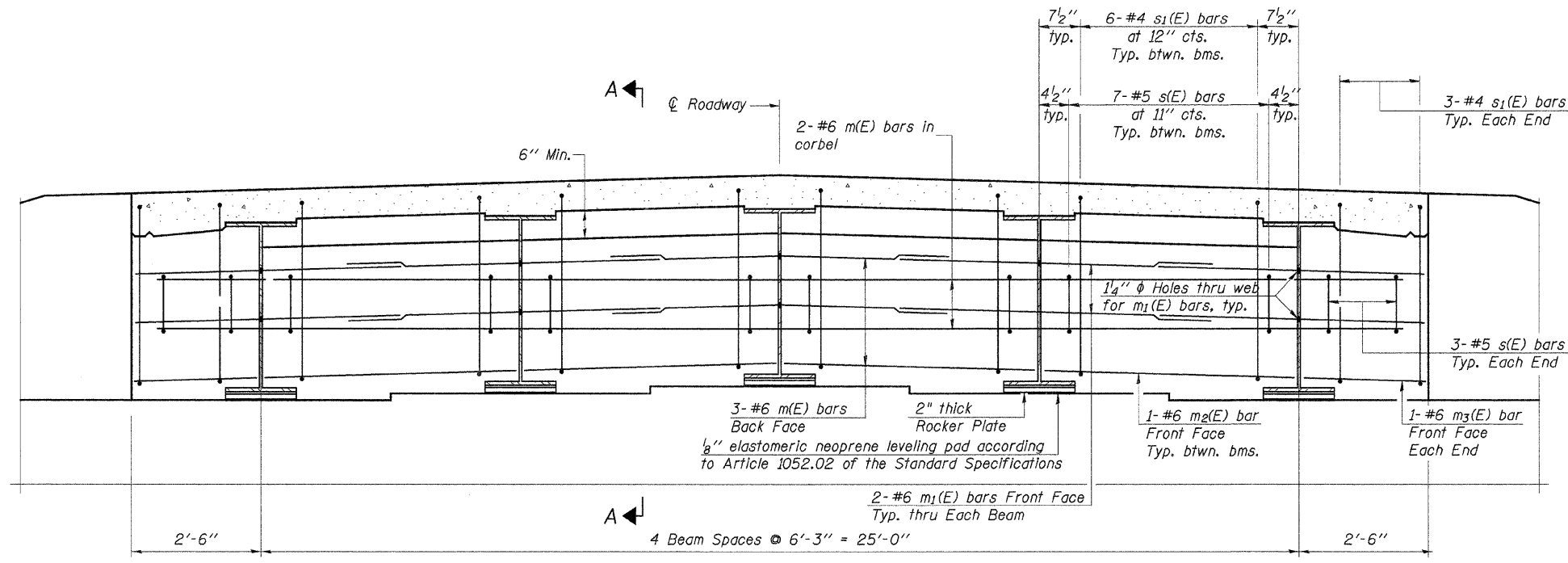
SUPERSTRUCTURE
SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE
SPRINGFIELD, IL 62711
(217) 793-8600
oasinc@insightbb.com

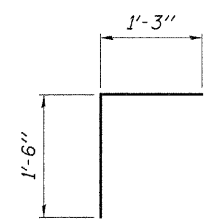
FEHR-GRAHAM & ASSOCIATES, LLC
ENGINEERING AND SCIENCE CONSULTANTS
PREPARED IN ROCKFORD, IL. SOCIETIES: IL, STONING, IA, SPRINGFIELD, IL

JOB NO.: 46808
FILE: 46808SUPER.LDGN
DATE: 07/17/06

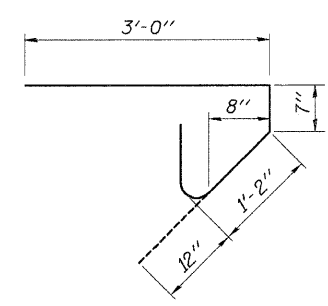
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147	STARK	25	11
F.A.S. 376	-01-BR			
ROAD DIST.	ILLINOIS	FED. AID PROJECT		
			Sheet 7 of 17	CONTRACT NO. 89452



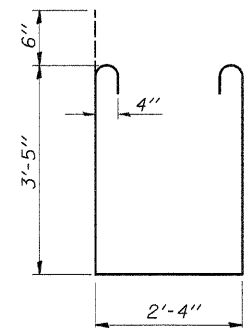
DIAPHRAGM ELEVATION AT ABUTMENT
(Dimensions @ Rt. L's @ Roadway)



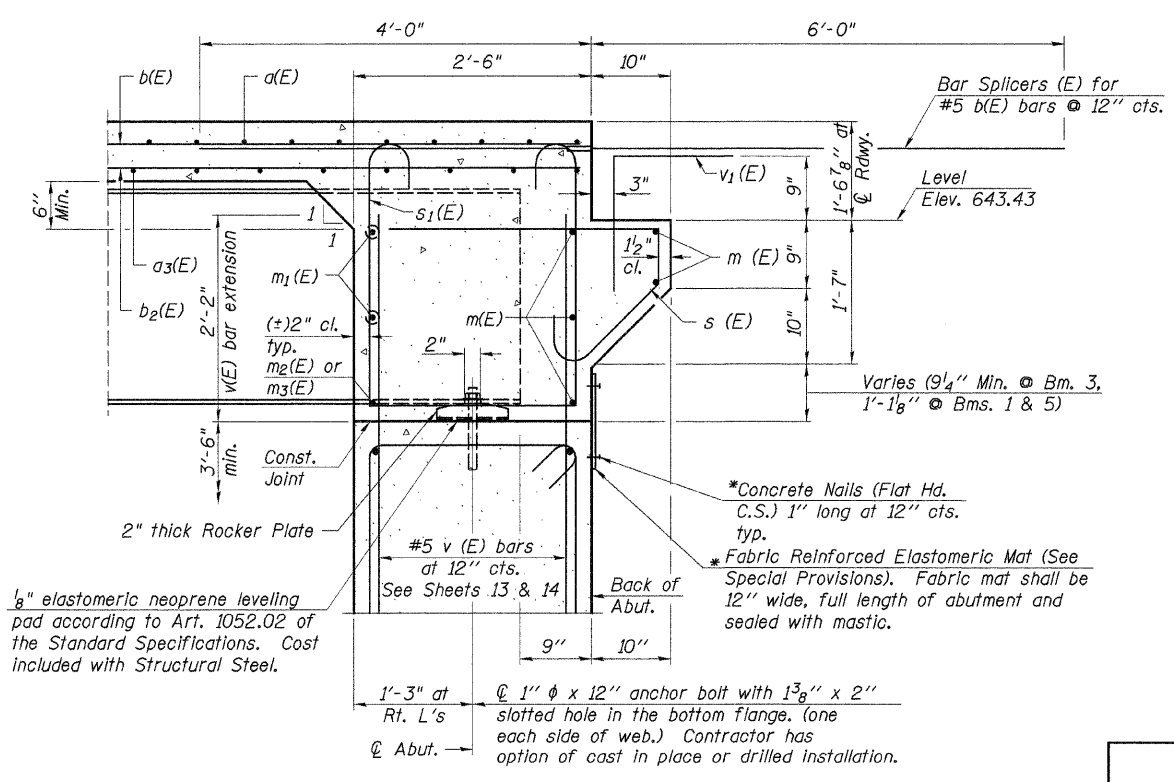
BAR v₁(E)



BAR s(E)



BAR s₁(E)



SECTION A-A

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

MIN. BAR LAP
#6 bar = 2'-0"

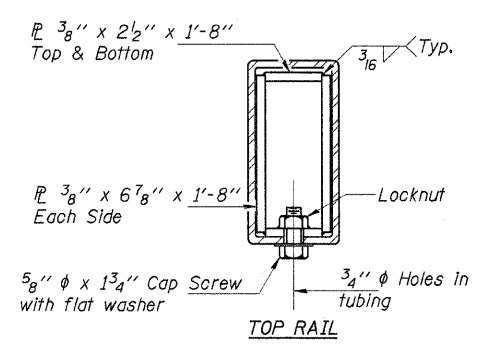
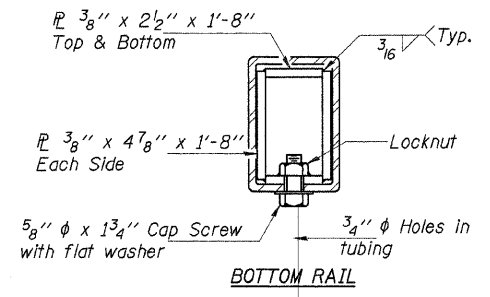
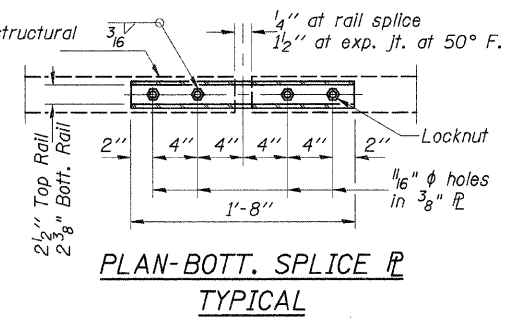
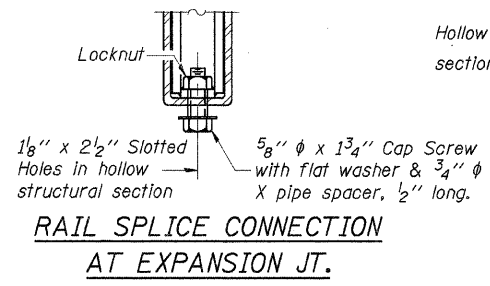
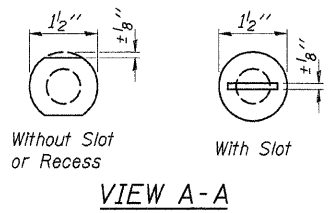
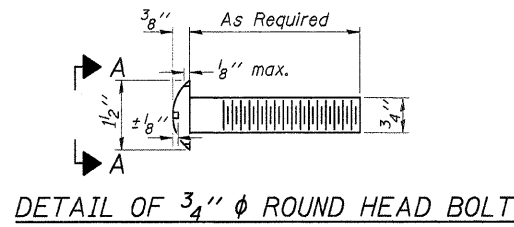
Notes:
Reinforcement bars in diaphragm are billed with superstructure on sheet 6 of 17.
Concrete in diaphragm is included with Concrete Superstructure on sheet 6 of 17.
The s(E) and s₁(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.
For anchor bolt details see sheet 12 of 17.

Work this sheet with Sheet 6 of 17.

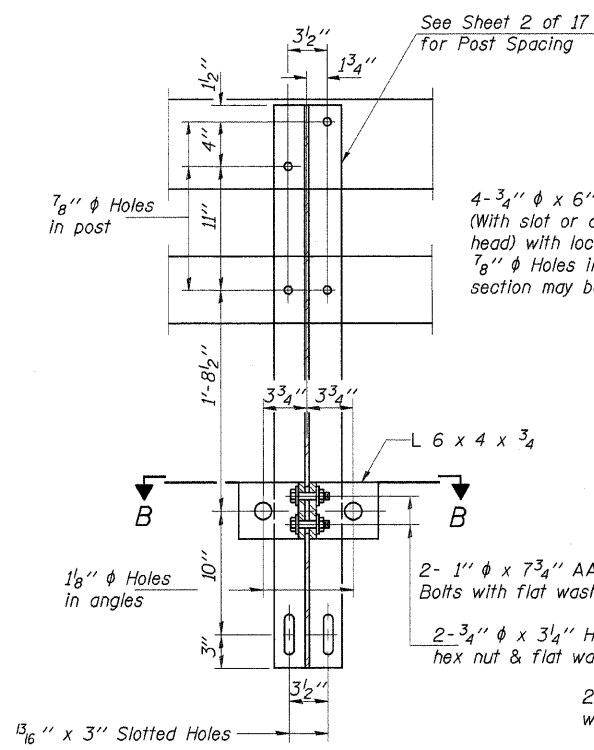
DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.
SI-DS2	9-01-03

SUPERSTRUCTURE DETAILS
SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

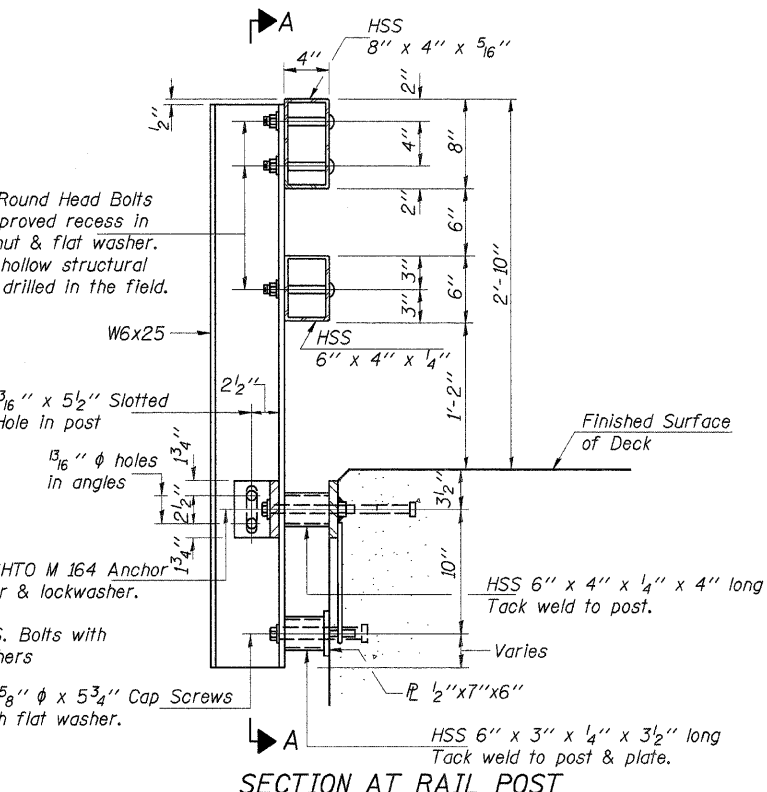
4440 ASH GROVE SPRINGFIELD, IL 62711 (217) 793-8600 oasinc@insightbb.com	FEHR-GRAHAM & ASSOCIATES, LLC ENGINEERING AND SCIENCE CONSULTANTS PROFESSOR, ROCKFORD, IL; ROCKFORD, IL; MONROE, WI; SPRINGFIELD, IL	JOB NO.: 46808 FILE: 46808SUPER2.DGN DATE: 07/17/06
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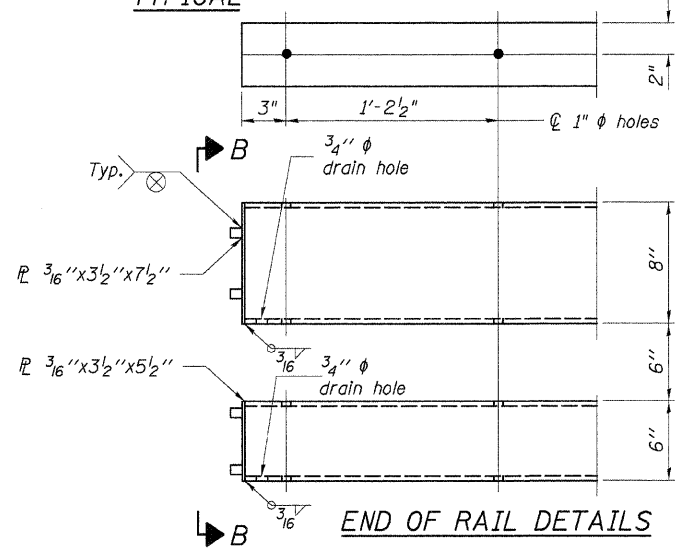
SECTIONS AT RAIL SPLICE



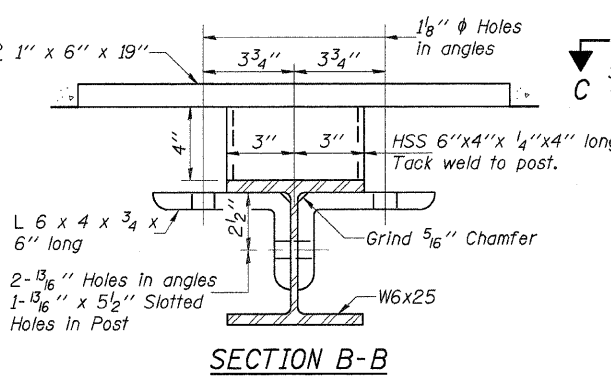
SECTION A-A



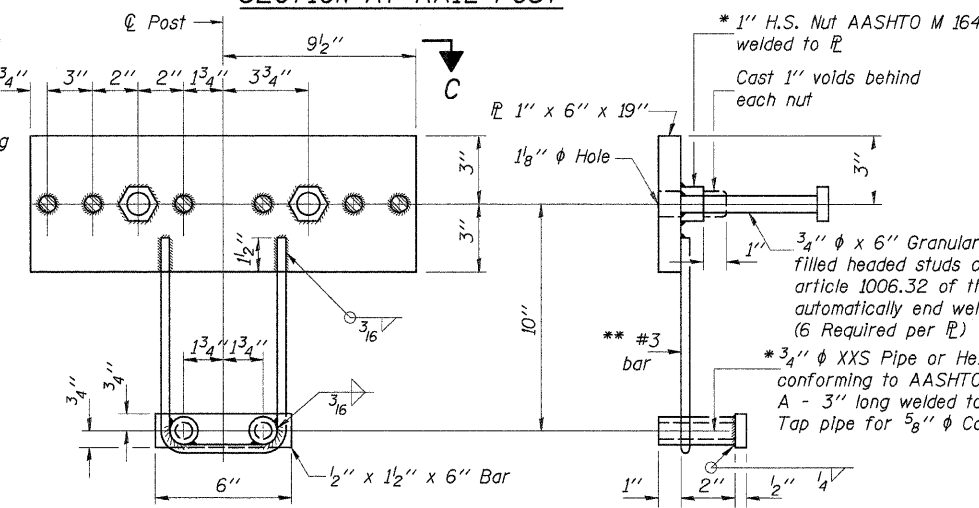
SECTION AT RAIL POST



END OF RAIL DETAILS

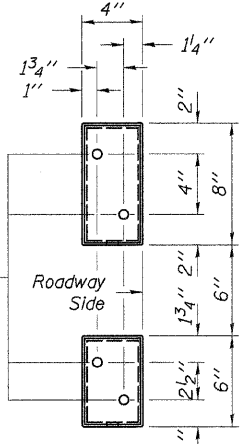


SECTION B-B

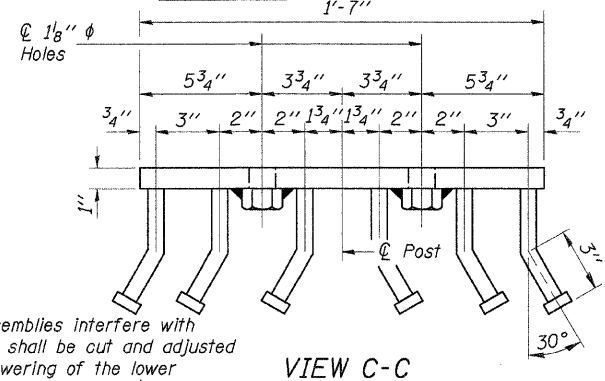


ANCHOR DEVICE

* 1" H.S. Nut AASHTO M 164 welded to \bar{r}
 Cast 1" voids behind each nut
 4 - 5/8" washers and self-locking nuts or nuts and jam nuts for guardrail connection shown on Std. 631032



VIEW B-B



VIEW C-C

NOTES

Hollow structural sections shall conform to the requirements of ASTM designation A 500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft-lbs at 0° F.
 All other steel shapes and plates shall conform to the requirements of AASHTO M 270 Grade 36 except posts and angles shall conform to AASHTO M 270, Grade 50.
 Bolts, cap screws, and nuts shall conform to the requirements of ASTM designation A 307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M 164.
 All bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 232.
 All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication according to AASHTO M 111 and ASTM A 385. Galvanized rail shall not be painted.
 Railing shall be according to Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for Steel Railing, Type SM.
 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 SM.
 The 1/2" x 7" x 6" plates that come in contact with concrete shall receive two coats of asphalt paint conforming to Section 1060.07 Type II or place 1/8" fabric bearing pads between the plates and concrete.
 The 3/4" high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04(f)(2) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

Note: See Sheet 2 of 17 for Post Spacing.

BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type SM	Foot	530

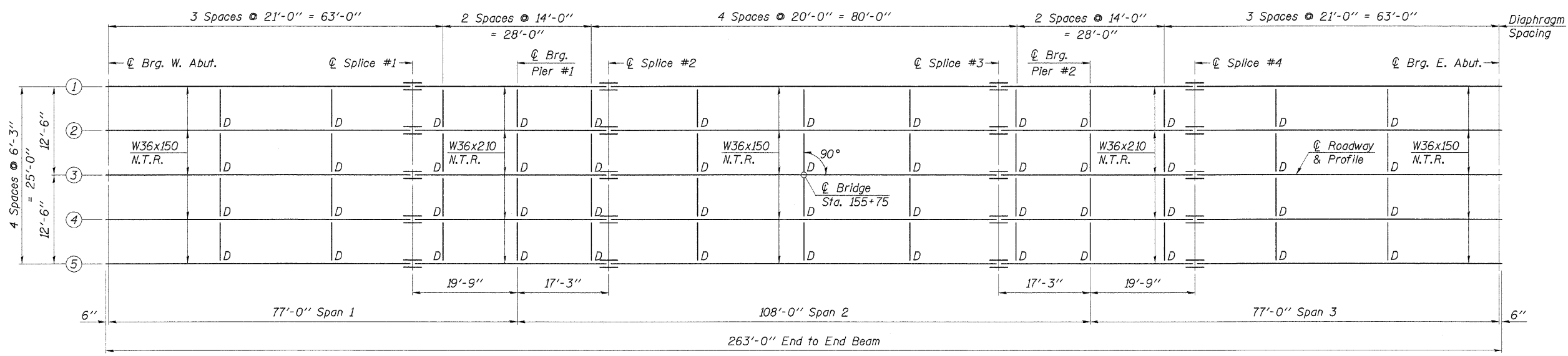
STEEL RAILING, TYPE SM
 SECTION 03-00147-01-BR
 COUNTY HIGHWAY 7
 STARK COUNTY
 STATION 155+75

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

9-01-03 (6'-3" Maximum Post Spacing)

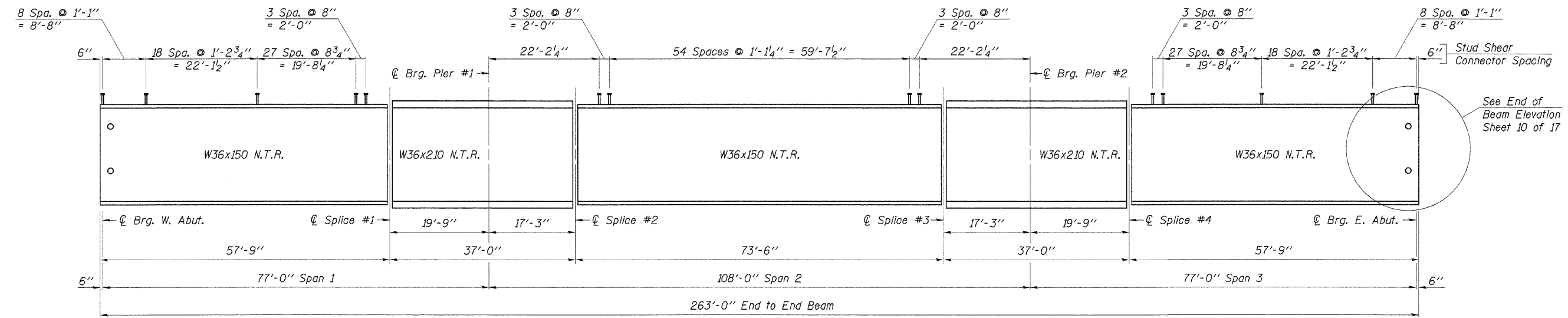
* Threaded areas shall be plugged or blocked off during casting of beam. Galvanized after fabrication.

** Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".



FRAMING PLAN

Note: N.T.R. Indicates that Notch Toughness Requirements are applicable.



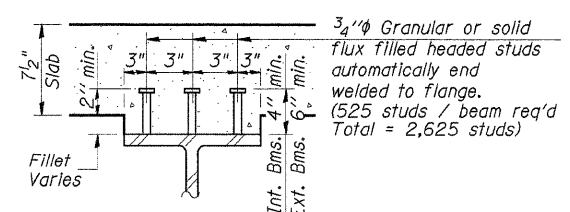
ELEVATION

Note: See Sheet 10 of 17 for Splice Details.

Load carrying components designated "N.T.R." shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.

All diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

Work this Sheet with Sheets 10 & 11 of 17.



SECTION A-A
Typical Shear Connector Detail

TOP OF BEAM ELEVATIONS
(For fabrication only)

	Beam 1 or 5	Beam 2 or 4	Beam 3
☉ Brg. W. Abut.	643.93	644.15	644.25
☉ Splice 1	643.93	644.15	644.25
☉ Brg. Pier 1	643.95	644.17	644.27
☉ Splice 2	643.96	644.18	644.28
☉ Splice 3	643.96	644.18	644.28
☉ Brg. Pier 2	643.95	644.17	644.27
☉ Splice 4	643.93	644.15	644.25
☉ Brg. E. Abut.	643.93	644.15	644.25

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

STRUCTURAL STEEL

SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE SPRINGFIELD, IL, 62711 (217) 793-8600 oasinc@insightbb.com	FEHR-GRAHAM & ASSOCIATES, LLC ENGINEERING AND SCIENCE CONSULTANTS PREPONT, IL, ROCKFORD, IL, ROCKFORD, IL, SPRINGFIELD, IL	JOB NO.: 46808 FILE: 46808STEEL.DGN DATE: 10/08/07
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		0.4 Span 1 or 0.6 Span 3	Pier 1 or Pier 2	0.5 Span 2
I_s	(in ⁴)	9,040	13,200	9,040
I_c	(in ⁴)	22,082		22,082
I_c	(3n)	16,127		16,127
S_s	(in ³)	504	719	504
S_c	(in ³)	714		714
S_c	(3n)	643		643
\bar{D}	(k/ft.)	1.043	1.283	1.043
$M\bar{D}$	('k)	336	1,218	507
$s\bar{D}$	(k/ft.)	0.240		0.240
$M_s\bar{D}$	('k)	89		145
M_t	('k)	553	454	668
M	('k)	137	136	182
$S_3[M_t + M(\text{Imp})]$	('k)	1,150	983	1,417
M_a	('k)	2,048	2,861	2,689
M_u	('k)	2,973		2,973
$f_s\bar{D}$ non-comp	(k.s.i.)	8.0	20.3	12.1
$f_s\bar{D}$ comp	(k.s.i.)	1.7		2.7
$f_s S_3$ (4+Imp)	(k.s.i.)	19.3	16.4	23.8
f_s (Overload)	(k.s.i.)	29.0	36.7	38.6
f_s (Total)	(k.s.i.)		47.7	
VR	(k)	52.1		49.9

*Compact Braced Section
**Non-Compact Section

		Abutment	Pier
$R\bar{D}$	(k)	33.6	134.5
R_t	(k)	37.5	56.8
Imp.	(k)	9.3	13.0
R (Total)	(k)	80.4	204.3

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (Total & Overload).

I_c and S_c are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

I_c and S_c are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads.

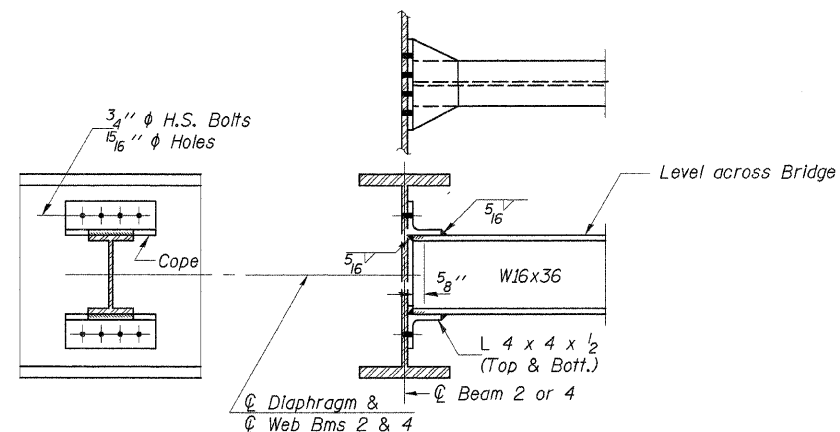
VR is the maximum Live Load + Impact shear range in the composite portion of the span.

M_a (Applied Moment) = $1.3[M\bar{D} + Ms\bar{D} + S_3(M_t + M_{\text{Imp}})]$.

The plastic moment capacity (M_u) is computed according to AASHTO 10.48.1 and 10.50.1.1

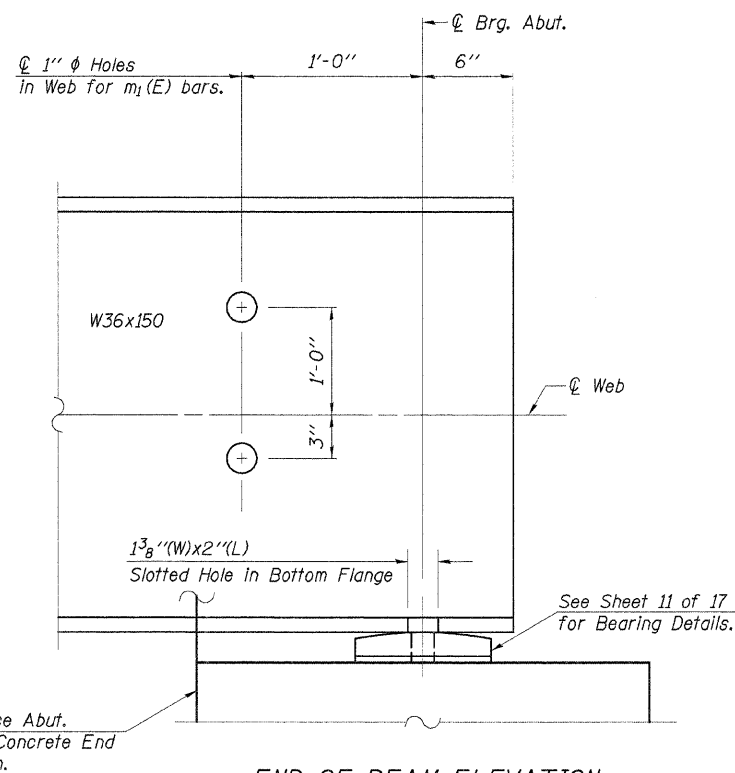
f_s (Overload) is the sum of the stresses due to $M\bar{D} + Ms\bar{D} + S_3(M_t + M_{\text{Imp}})$.

f_s (Total) (Non-compact section) is the sum of the stresses due to $1.3[M\bar{D} + Ms\bar{D} + S_3(M_t + M_{\text{Imp}})]$.



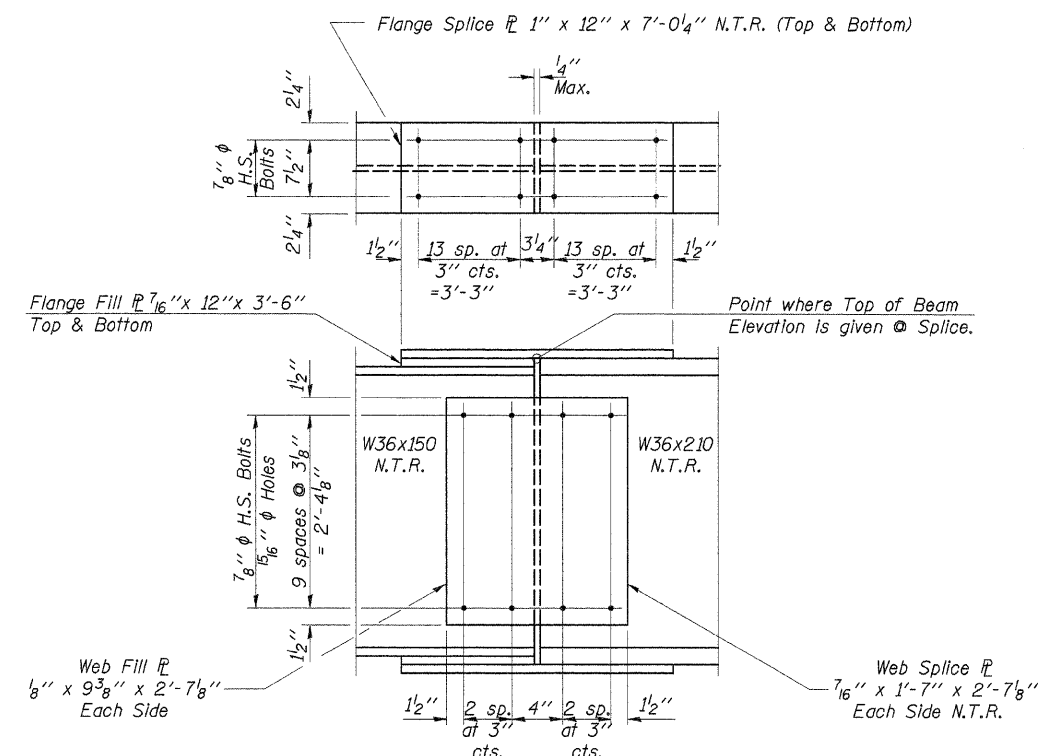
DIAPHRAGM D
52 Required

Note:
Two hardened washers shall be required over all oversize holes for diaphragms.



END OF BEAM ELEVATION

(Typical)



SPLICE

Looking North - Splice #1 or #3
Looking South - Splice #2 or #4

Work this Sheet with Sheets 9 & 11 of 17.

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

I-2-D 2-26-93

STRUCTURAL STEEL

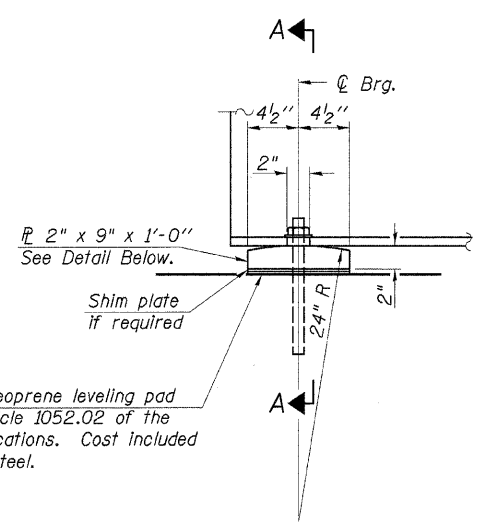
SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE
SPRINGFIELD, ILL. 62711
(217) 793-8600
oasinc@insightbb.com

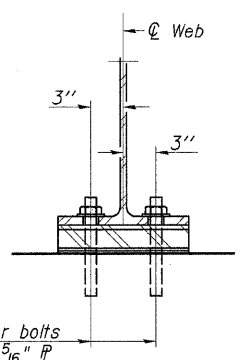
FEHR-GRAHAM & ASSOCIATES, LLC
ENGINEERING AND SCIENCE CONSULTANTS
FREEPORT, IL, ROCKFORD, IL, ROCKFORD, IL, SPRINGFIELD, IL

JOB NO.: 46808
FILE: 46808STEEL2.DGN
DATE: 07/17/06

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147	STARK	25	15
F.A.S. 376	-01-BR			
ROAD DIST.	ILLINOIS	FED. AID PROJECT		
			Sheet 11 of 17	CONTRACT NO. 89452



ELEVATION AT ABUTMENTS

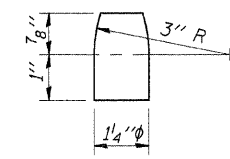


SECTION A-A

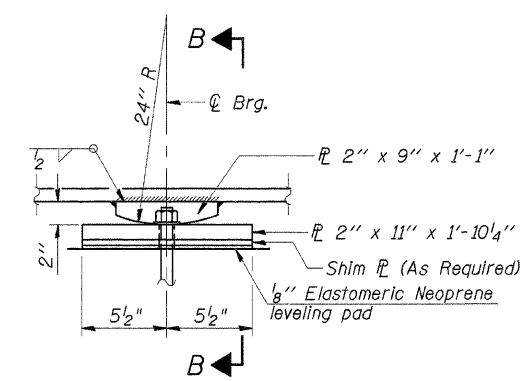
1/8" elastomeric neoprene leveling pad according to Article 1052.02 of the Standard Specifications. Cost included with Structural Steel.

1" diameter x 12" anchor bolts with 2 1/4" x 2 1/4" x 5/16" plate washer under nut. 1 3/8" x 2" slotted hole in flange. 1/2" diameter holes in bearing plate.

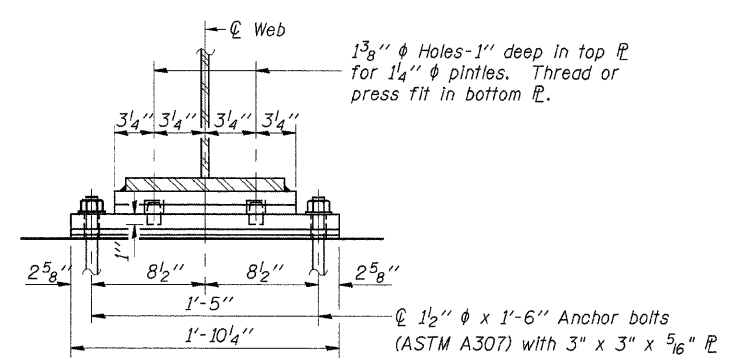
ABUTMENT BEARING
(10 Required)
Weight included with Structural Steel.



PINTLE



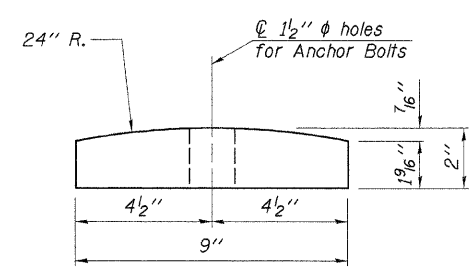
ELEVATION AT PIERS 1 & 2



SECTION B-B

FIXED BEARING
(10 Required)
Weight included with Structural Steel.

Notes: Anchor bolts at fixed bearings may be built into the masonry. See sheet 12 of 17 for Anchor Bolt installation.



BEARING PLATE DETAIL

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

I-2-E2 9-1-03

Work this Sheet with Sheets 9 & 10 of 17.

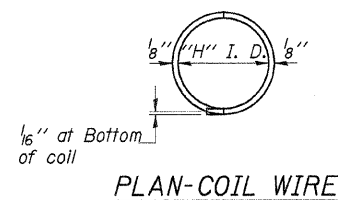
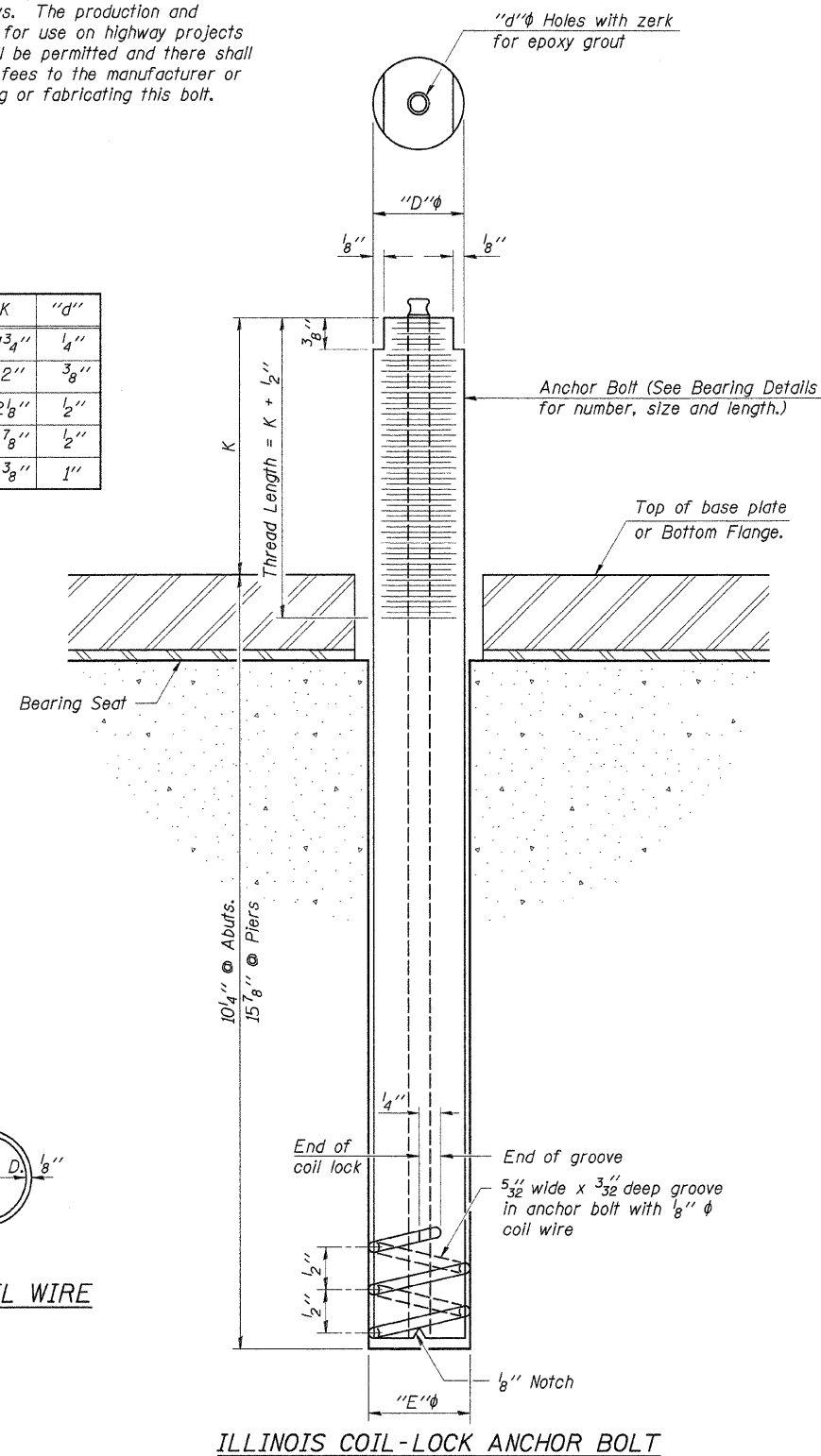
BEARING DETAILS

SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE SPRINGFIELD, IL 62711 (217) 793-8600 oasinc@insightbb.com	FEHR-GRAHAM & ASSOCIATES, LLC ENGINEERING AND SCIENCE CONSULTANTS PREPARED BY: SCARFORD, E. BOCHILLE, E. MORRIS, W. SPRINGFIELD, I.	JOB NO.: 46808 FILE: 46808BRG.DGN DATE: 10/04/07
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The Illinois Coil-Lock Anchor Bolt is a proprietary item which is the property of the Illinois Department of Transportation. Use, reproduction or disclosure without express written permission is prohibited and protected under Federal copyright laws. The production and the fabrication of this bolt for use on highway projects in the State of Illinois shall be permitted and there shall be no incurred charges or fees to the manufacturer or the fabricator for producing or fabricating this bolt.

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



MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT

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

INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

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

ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures.

- The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:
1. A threaded rod stud with nut and washer of the type specified.
 2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

Location	Type
Abutments	A307
Piers	A307

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

GENERAL NOTES

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

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

ABB-1 4-30-99

ANCHOR BOLT DETAILS

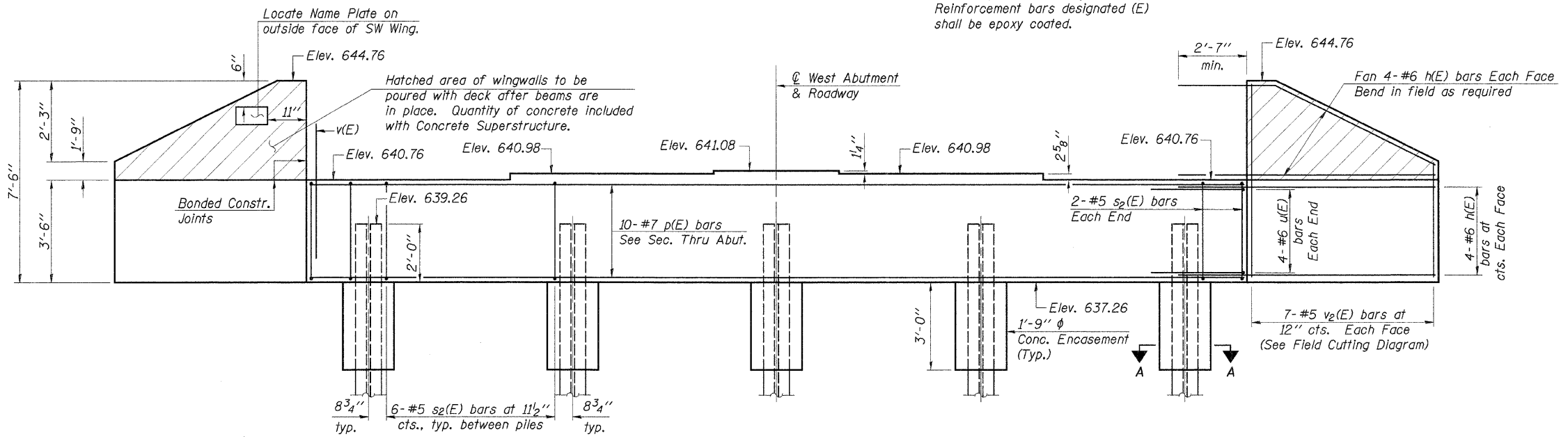
SECTION 03-00147-01-BR
 COUNTY HIGHWAY 7
 STARK COUNTY
 STATION 155+75

4440 ASH GROVE
 SPRINGFIELD, IL 62711
 (217) 793-8600
 oasinc@insightbb.com

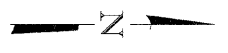
FEHR-GRAHAM & ASSOCIATES, LLC
 ENGINEERING AND SCIENCE CONSULTANTS
 FREEPORT, IL ROCKFORD, IL ROCHELLE, IL MONROE, VA SPRINGFIELD, IL

JOB NO.: 46808
 FILE: 46808ABOLT.DGN
 DATE: 07/17/06

Notes: Four steps monolithically with cap.
Reinforcement bars designated (E)
shall be epoxy coated.



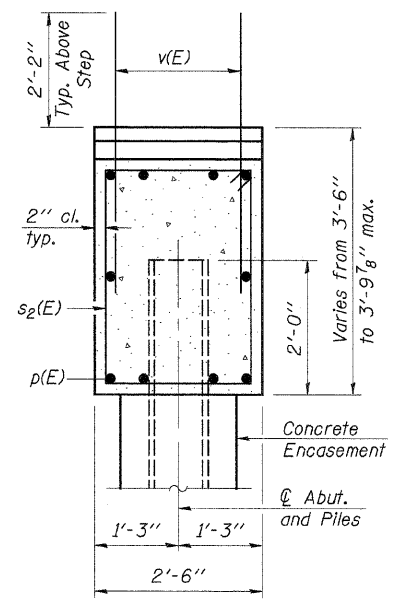
ELEVATION
(Looking West)



PILE DATA

Type..... Steel HP10x42
No. Req'd..... *5
Nominal Required Bearing..... 335 kips
Allowable Resistance Available..... 112 kips
Est. Length..... 38 Feet/Pile

*Includes 1 Test Pile to be driven in a permanent location at the West Abutment.
The steel H-piles shall be according to AASHTO M270 Grade 50.

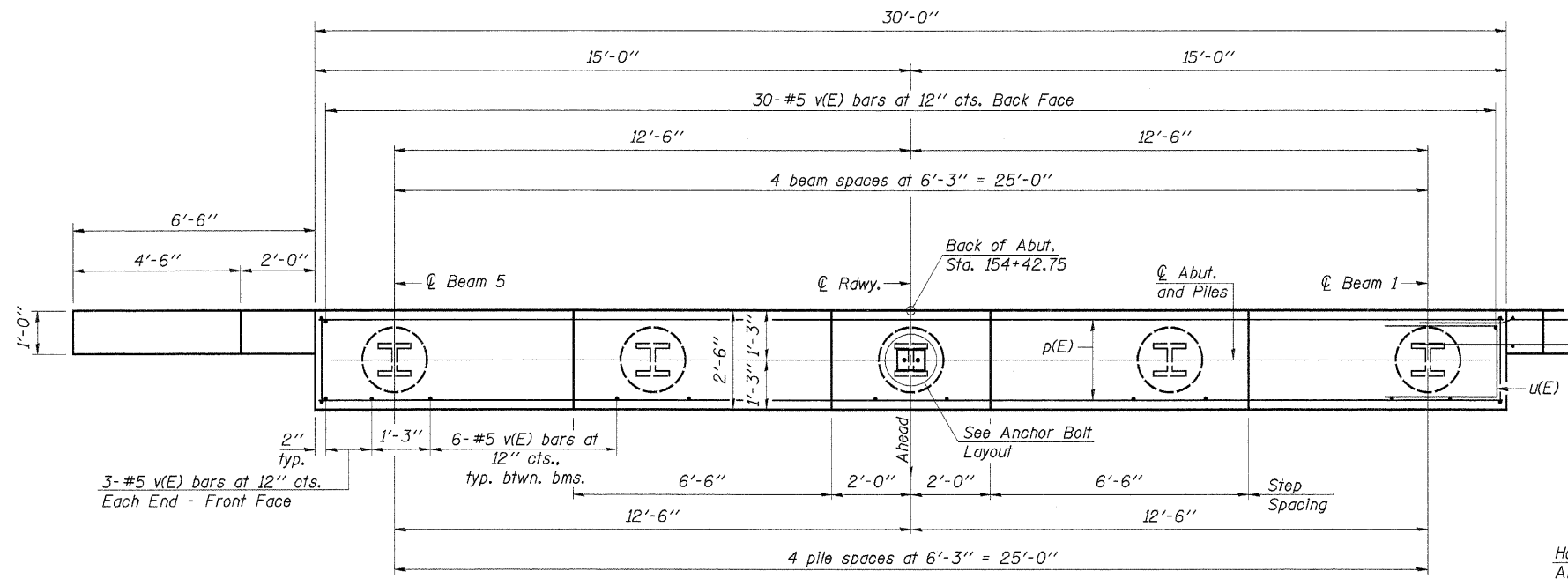


SEC. THRU ABUT.

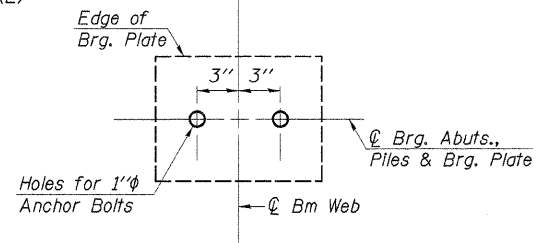
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	32	#6	8'-11"	—
p(E)	10	#7	29'-8"	—
s2(E)	28	#5	11'-7"	□
u(E)	8	#6	12'-1"	—
v(E)	60	#5	4'-4"	—
v2(E)	14	#5	12'-3"	—
Concrete Structures		Cu. Yd.	11.8	
Reinforcement Bars, Epoxy Coated		Pound	1,970	
Structure Excavation		Cu. Yd.	125	
Name Plates		Each	1	
Steel Piles HP10x42		Foot	152	
Test Pile Steel HP10x42		Each	1	
Concrete Encasement		Cu. Yd.	1.3	
Protective Coat		Sq. Yd.	7	
Porous Granular Embankment (Special)		Cu. Yd.	52	
Geocomposite Wall Drain		Sq. Yd.	32	
Pipe Underdrains for Structures 4"		Foot	65	

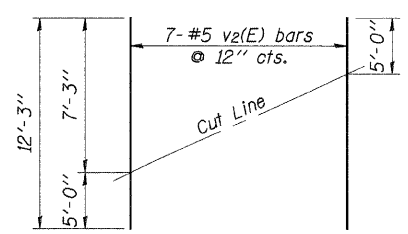
See Sheet 2 of 17 for Abutment Drainage Details.



PLAN

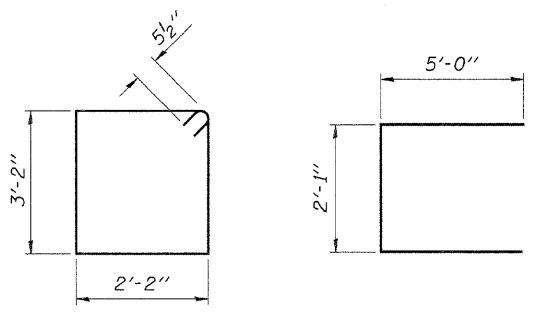


ANCHOR BOLT LAYOUT



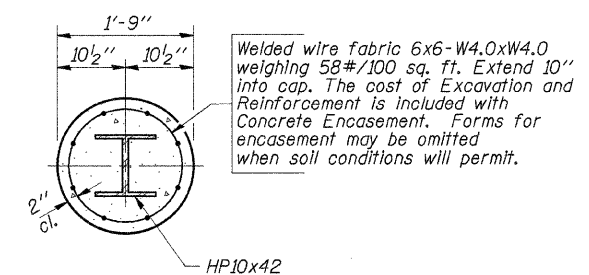
FIELD CUTTING DIAGRAM

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



BAR s2(E)

BAR u(E)



SECTION A-A

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.
AI-0	9-01-03

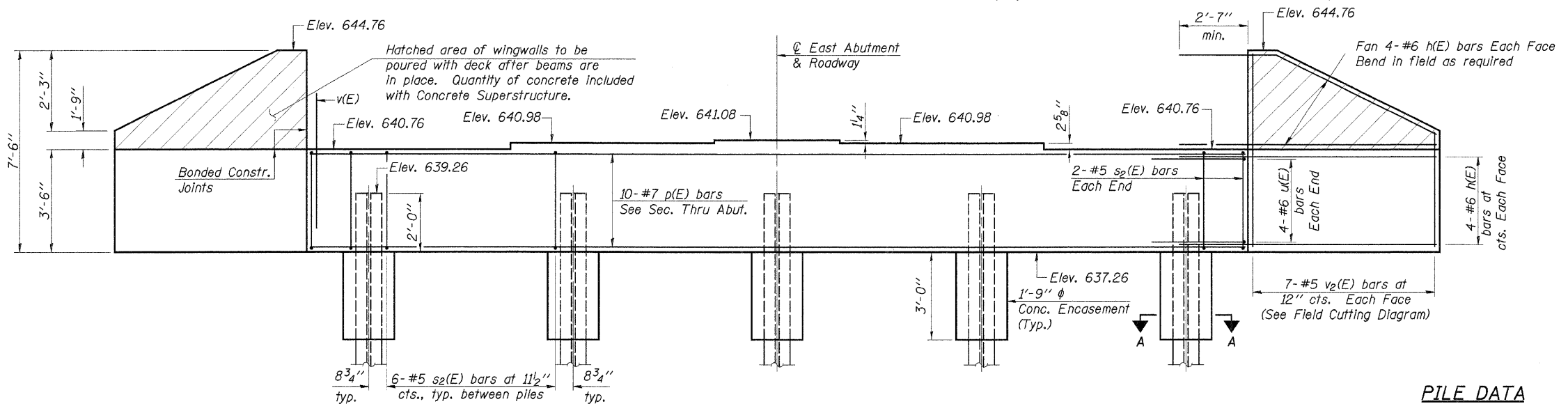
WEST ABUTMENT
SECTION 03-00147-01-BR
COUNTY HIGHWAY 7
STARK COUNTY
STATION 155+75

4440 ASH GROVE SPRINGFIELD, IL 62711 (217) 793-8800 oasinc@insightbb.com	FEHR-GRAHAM & ASSOCIATES, LLC ENGINEERING AND SCIENCE CONSULTANTS FRESNO, IL, ROCKFORD, IL, ROCKFORD, IL, MORRIS, IL, SPRINGFIELD, IL	JOB NO.: 46808 FILE: 46808ABUT1.DGN DATE: 10/04/07
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147	STARK	25	18
F.A.S. 376	-01-BR			
ROAD DIST.	ILLINOIS	FED. AID PROJECT		

Sheet 14 of 17 CONTRACT NO. 89452

Notes: Four steps monolithically with cap. Reinforcement bars designated (E) shall be epoxy coated.



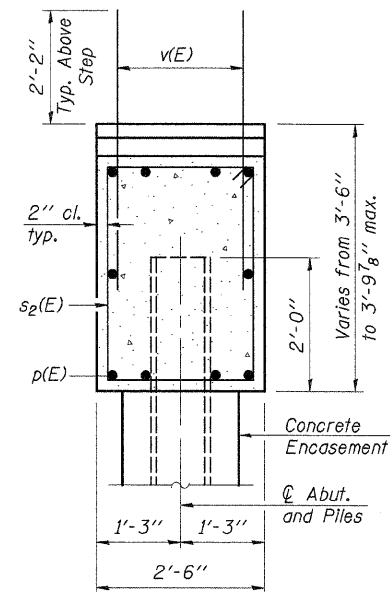
ELEVATION
(Looking West)

PILE DATA

Type..... Steel HP10x42
 No. Req'd..... *5
 Nominal Required Bearing..... 335 kips
 Allowable Resistance Available..... 112 kips
 Est. Length..... 42 Feet/Pile

*Includes 1 Test Pile to be driven in a permanent location at the East Abutment.

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



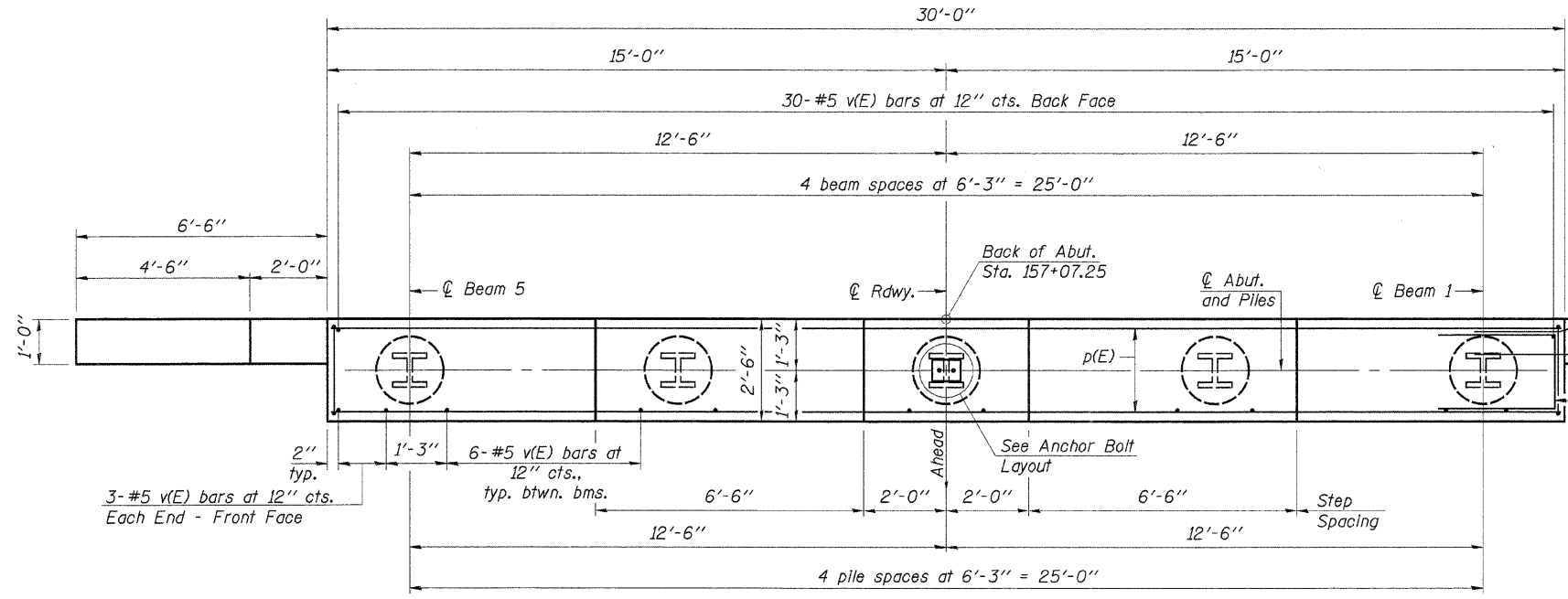
SEC. THRU ABUT.

BILL OF MATERIAL

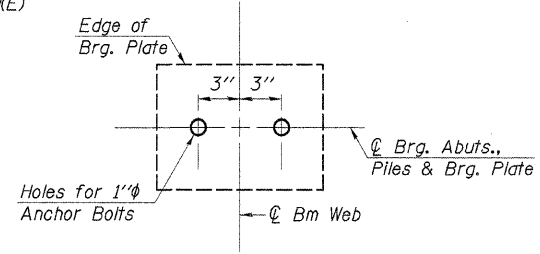
Bar	No.	Size	Length	Shape
h(E)	32	#6	8'-11"	—
p(E)	10	#7	29'-8"	—
s2(E)	28	#5	11'-7"	□
u(E)	8	#6	12'-1"	—
v(E)	60	#5	4'-4"	—
v2(E)	14	#5	12'-3"	—

Concrete Structures	Cu. Yd.	
Reinforcement Bars, Epoxy Coated	Pound	1,970
Structure Excavation	Cu. Yd.	125
Steel Piles HP10x42	Foot	168
Test Pile Steel HP10x42	Each	1
Concrete Encasement	Cu. Yd.	1.3
Protective Coat	Sq. Yd.	7
Porous Granular Embankment (Special)	Cu. Yd.	52
Geocomposite Wall Drain	Sq. Yd.	32
Pipe Underdrains for Structures 4"	Foot	65

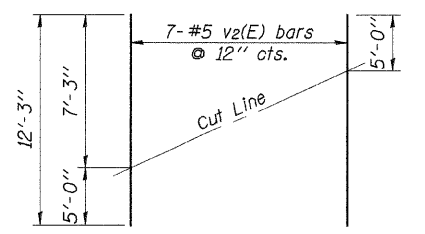
See Sheet 2 of 17 for Abutment Drainage Details.



PLAN

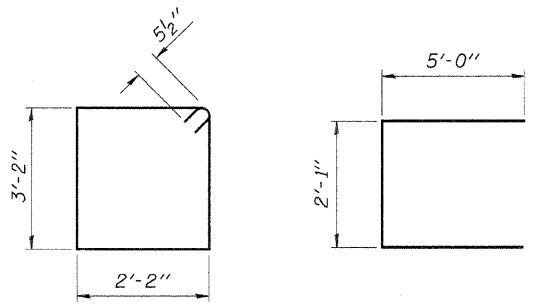


ANCHOR BOLT LAYOUT



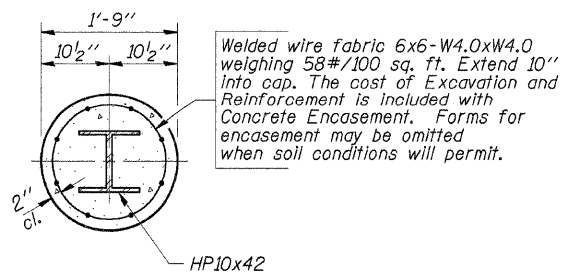
FIELD CUTTING DIAGRAM

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



BAR s2(E)

BAR u(E)



SECTION A-A

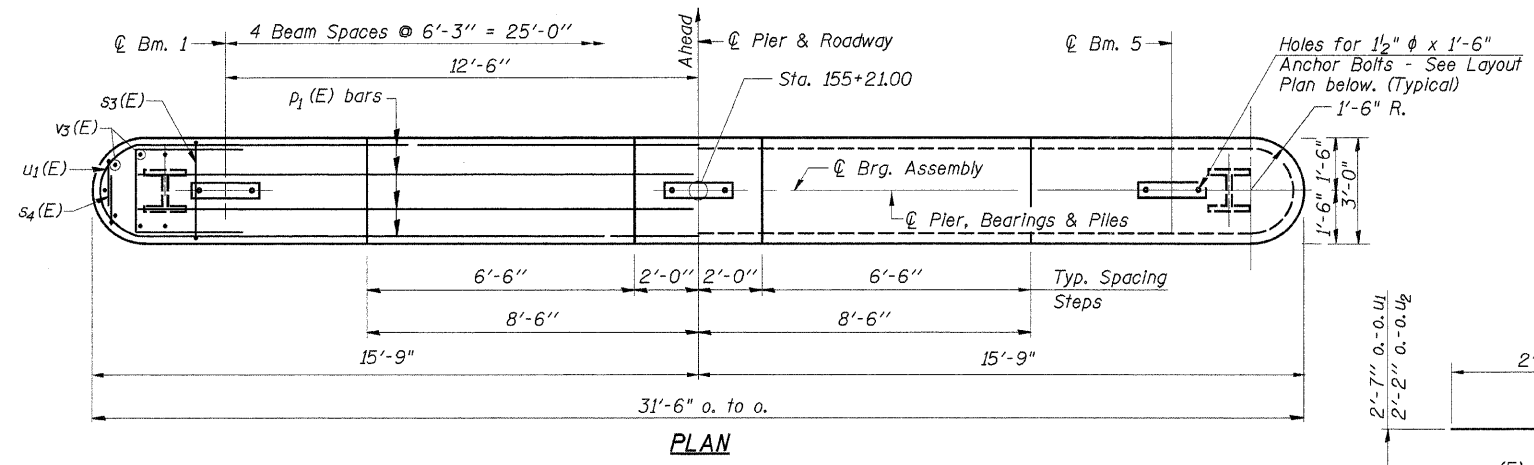
DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.
AI-0	9-01-03

EAST ABUTMENT
 SECTION 03-00147-01-BR
 COUNTY HIGHWAY 7
 STARK COUNTY
 STATION 155+75

4440 ASH GROVE
 SPRINGFIELD, IL 62711
 (217) 793-8600
 oasinc@insightbb.com

FEHR-GRAHAM & ASSOCIATES, LLC
 ENGINEERING AND SCIENCE CONSULTANTS
 FERRISPORT, IL ROCKFORD, IL ROCKFORD, IL ROCKFORD, IL

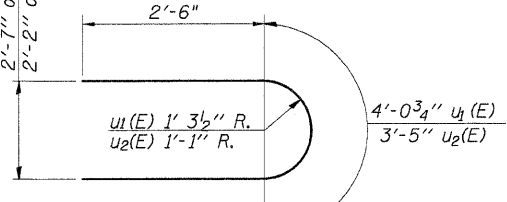
JOB NO.: 46808
 FILE: 46808ABUT2.DGN
 DATE: 10/04/07



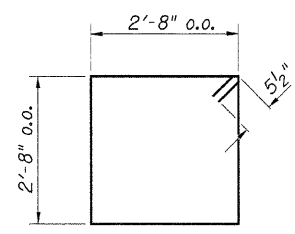
PLAN

MIN. BAR LAPS
 #5 1'-4"
 #6 1'-7"

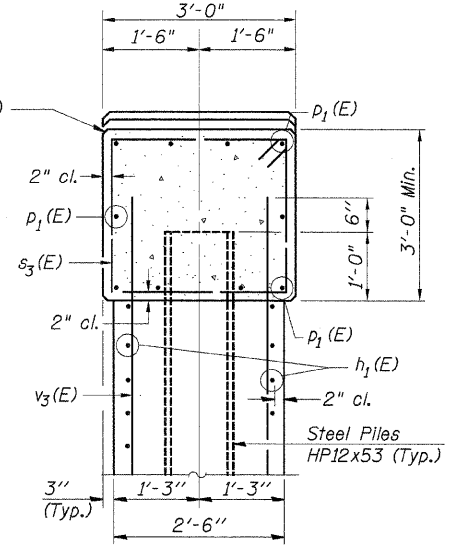
BAR s4(E)



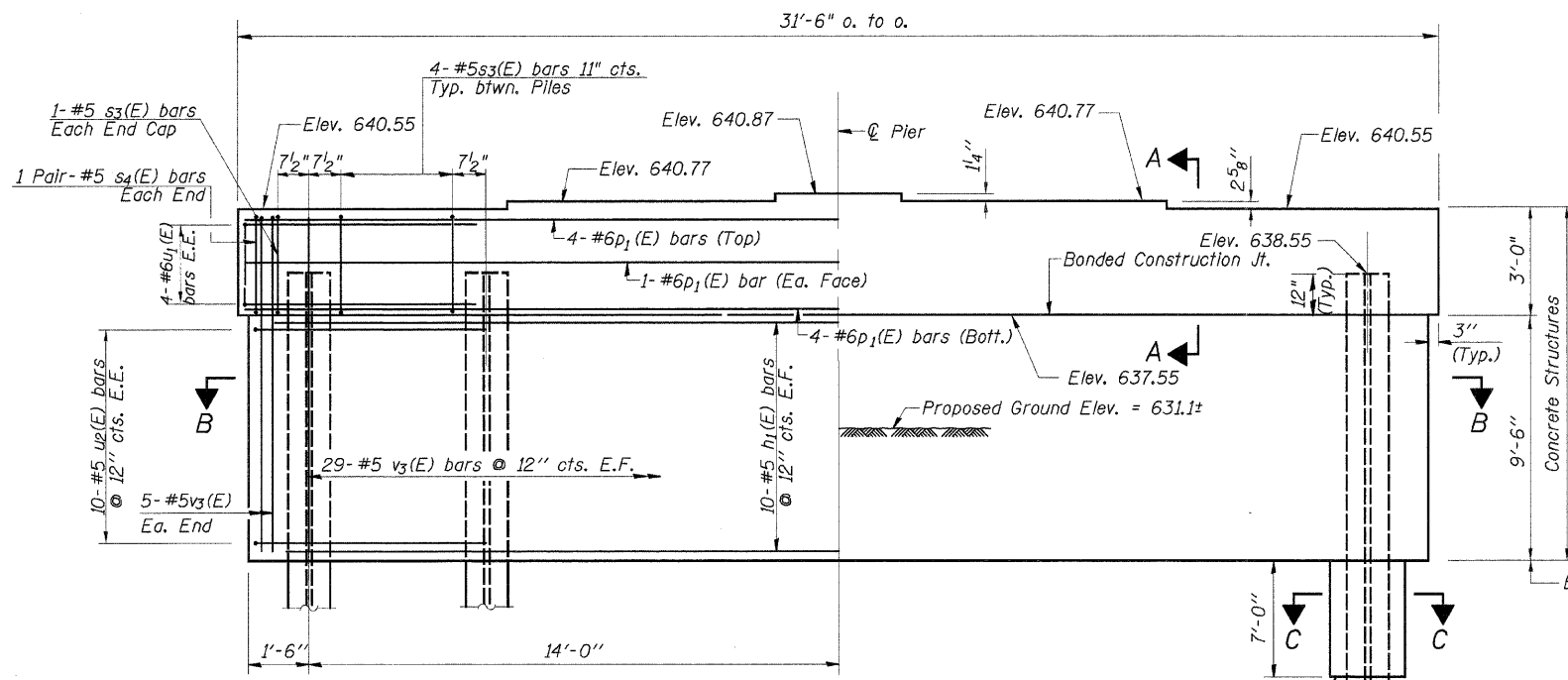
BAR u1(E) & u2(E)



BAR s3(E)



SECTION A-A



ELEVATION
(Looking East)

NOTES

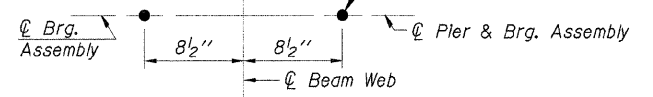
Space Reinforcement in cap to miss Anchor Bolts.
 Pour Steps monolithically with cap.
 All edges shall have the standard 3/4" Chamfer except as noted.
 Anchor Bolts at fixed bearings may be built into the masonry.

PILE DATA

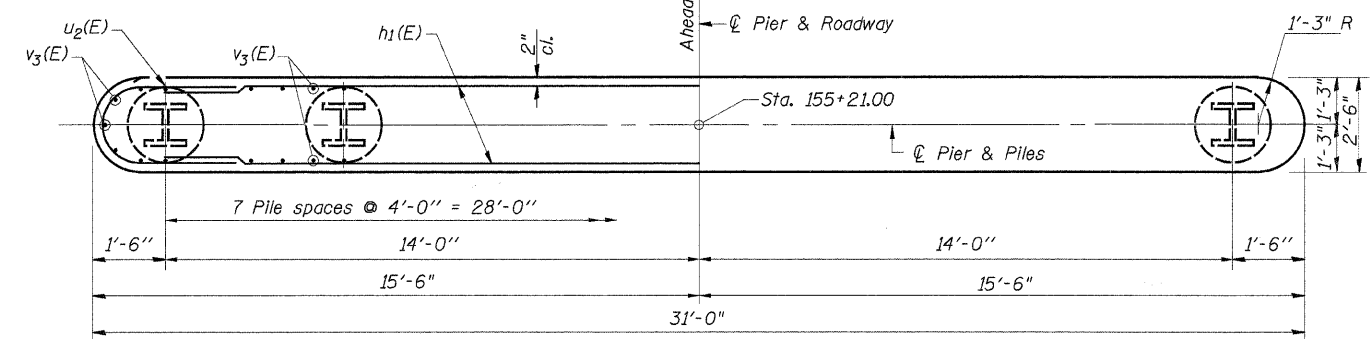
Type..... Steel HP12x53
 No. Req'd..... *8
 Nominal Required Bearing..... 418 kips
 Allowable Resistance Available..... 139 kips
 Est. Length..... 42 Feet/Pile

*Includes 1 Test Pile to be driven in a permanent location.

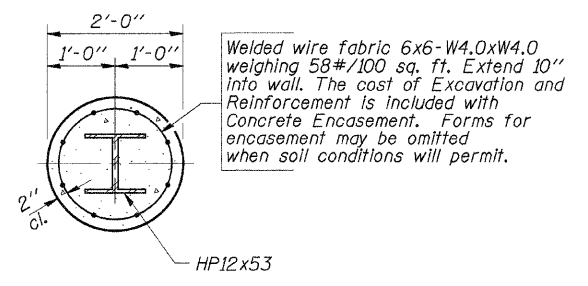
The steel H-piles shall be according to AASHTO M270 Grade 50.
 Drilled holes for 1/2" x 1'-6" Anchor Bolts Typical Ea. Beam See Sheet 12 of 17



ANCHOR BOLT LAYOUT



SECTION B-B



SECTION C-C

BILL OF MATERIAL

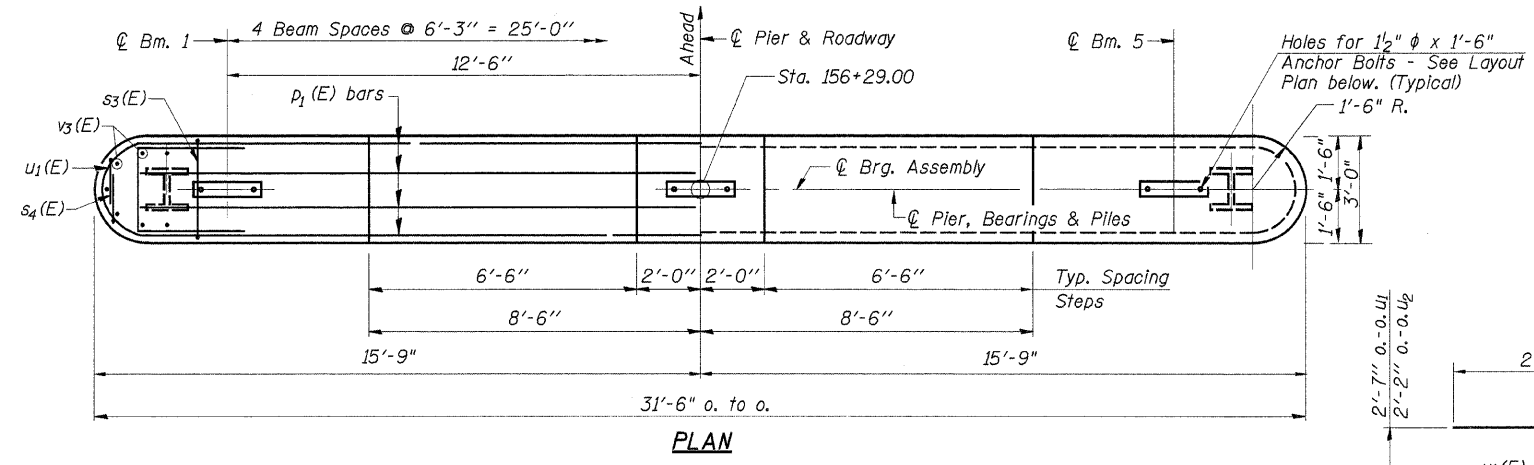
BAR	NO.	SIZE	LENGTH	SHAPE
h1(E)	20	#5	28'-6"	—
p1(E)	10	#6	28'-6"	—
s3(E)	30	#5	11'-7"	□
s4(E)	4	#5	6'-2"	□
u1(E)	8	#6	9'-1"	U
u2(E)	20	#5	8'-5"	U
v3(E)	68	#5	10'-10"	—

Concrete Structures	Cu. Yd.	37.2
Reinforcement Bars, Epoxy Coated	Pound	2,460
Steel Piles HP12x53	Foot	294
Test Pile HP12x53	Each	1
Concrete Encasement	Cu. Yd.	6.3
Underwater Structure Excavation Protection - Location 1	Each	1
Structure Excavation	Cu. Yd.	42

Reinforcement bars designated (E) shall be Epoxy Coated

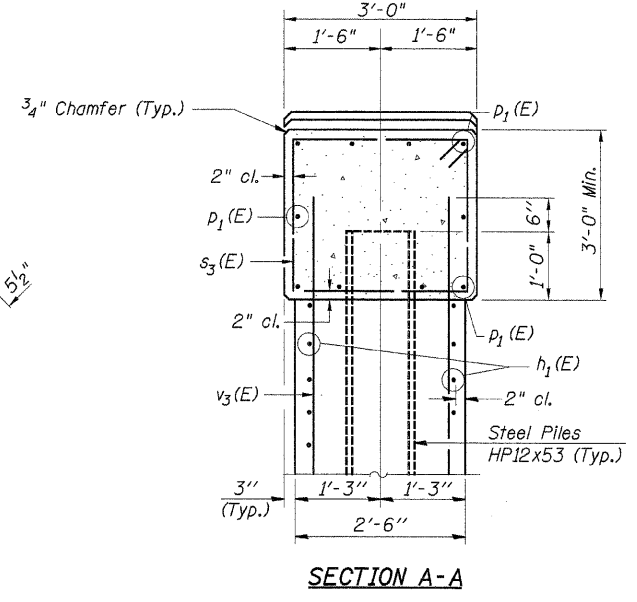
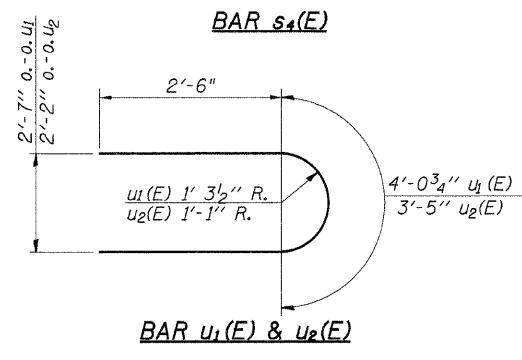
DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

PIER 1
 SECTION 03-00147-01-BR
 COUNTY HIGHWAY 7
 STARK COUNTY
 STATION 155+75

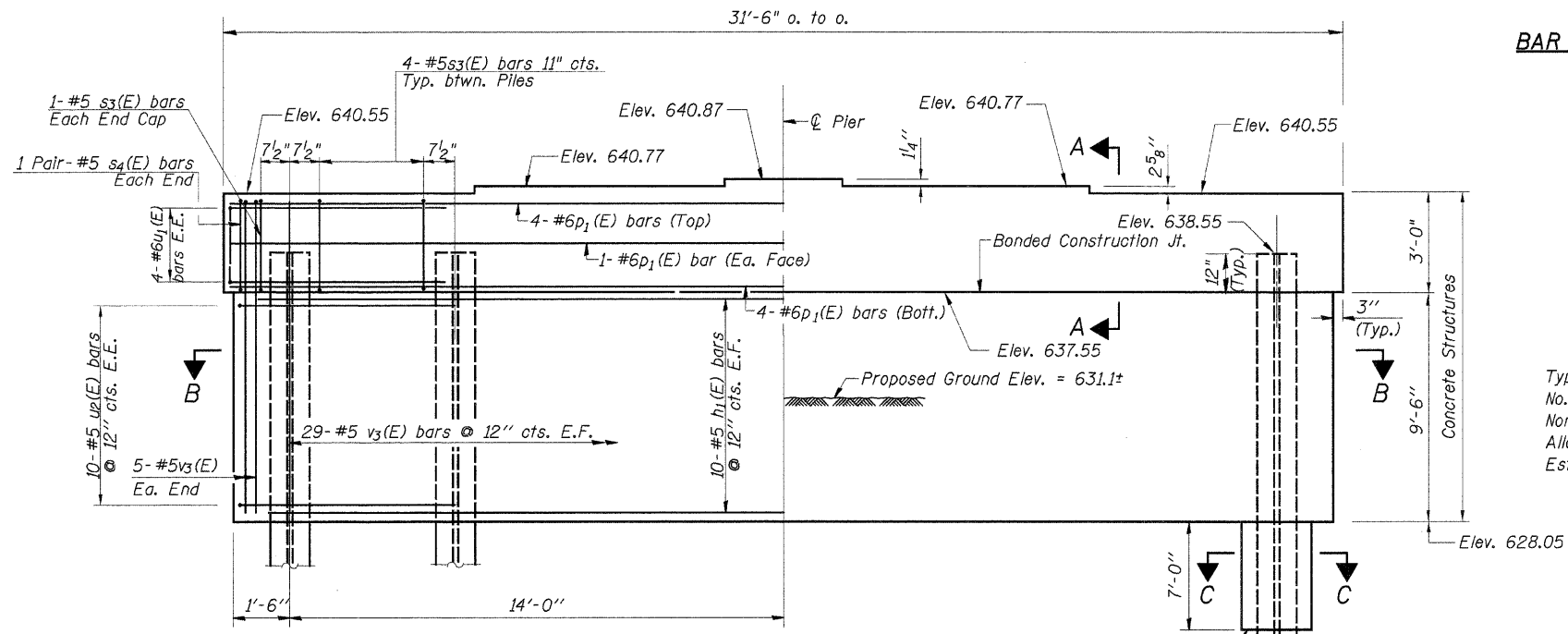


PLAN

MIN. BAR LAPS
 #5 1'-4"
 #6 1'-7"



SECTION A-A



ELEVATION
(Looking East)

NOTES

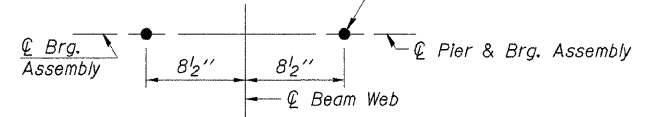
- Space Reinforcement in cap to miss Anchor Bolts.
- Pour Steps monolithically with cap.
- All edges shall have the standard 3/4" Chamfer except as noted.
- Anchor Bolts at fixed bearings may be built into the masonry.

PILE DATA

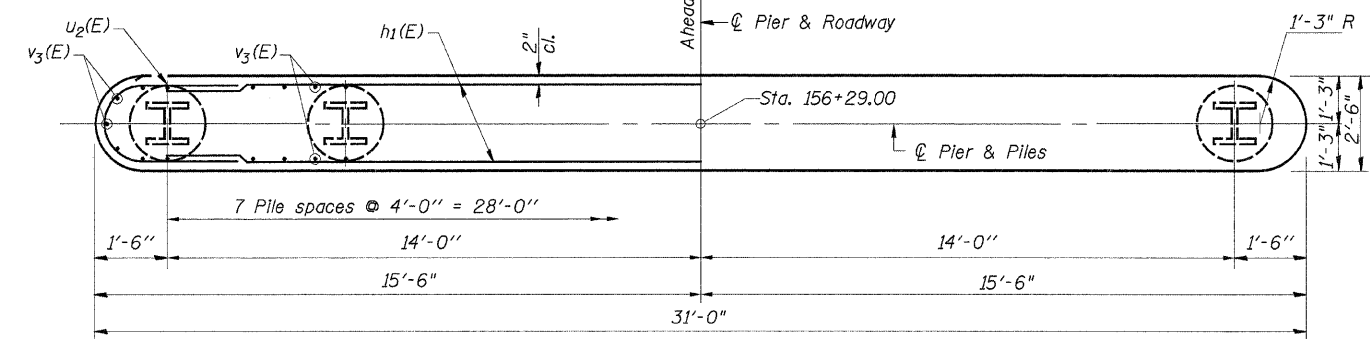
Type..... Steel HP12x53
 No. Req'd..... *8
 Nominal Required Bearing..... 418 kips
 Allowable Resistance Available..... 139 kips
 Est. Length..... 42 Feet/Pile

*Includes 1 Test Pile to be driven in a permanent location.

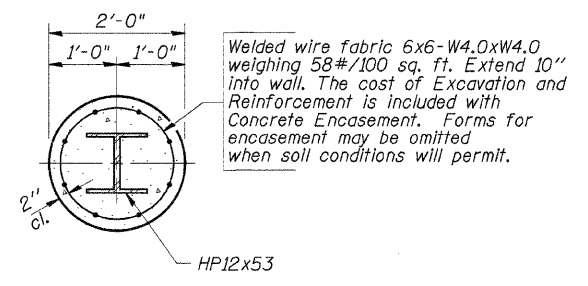
The steel H-piles shall be according to AASHTO M270 Grade 50.
 Drilled holes for 1/2" x 1'-6" Anchor Bolts Typical Ea. Beam See Sheet 12 of 17



ANCHOR BOLT LAYOUT



SECTION B-B



SECTION C-C

BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE	
h ₁ (E)	20	#5	28'-6"	—	
p ₁ (E)	10	#6	28'-6"	—	
s ₃ (E)	30	#5	11'-7"	□	
s ₄ (E)	4	#5	6'-2"	□	
u ₁ (E)	8	#6	9'-1"	U	
u ₂ (E)	20	#5	8'-5"	U	
v ₃ (E)	68	#5	10'-10"	—	
Concrete Structures				Cu. Yd.	37.2
Reinforcement Bars, Epoxy Coated				Pound	2,460
Steel Piles HP12x53				Foot	294
Test Pile Steel HP12x53				Each	1
Concrete Encasement				Cu. Yd.	6.3
Underwater Structure Excavation Protection - Location 2				Each	1
Structure Excavation				Cu. Yd.	39

Reinforcement bars designated (E) shall be Epoxy Coated

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

PIER 2
 SECTION 03-00147-01-BR
 COUNTY HIGHWAY 7
 STARK COUNTY
 STATION 155+75

NOTES

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

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

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

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

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

The diameter of this part is the same as the diameter of the bar spliced.

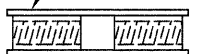
The diameter of this part is equal or larger than the diameter of bar spliced.

ROLLED THREAD DOWEL BAR



**** ONE PIECE**

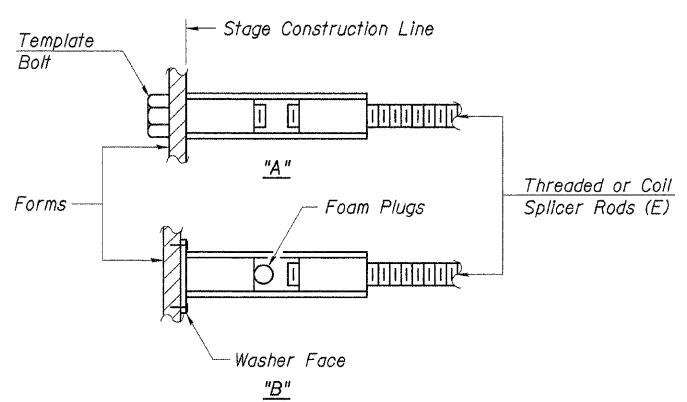
Wire Connector



WELDED SECTIONS

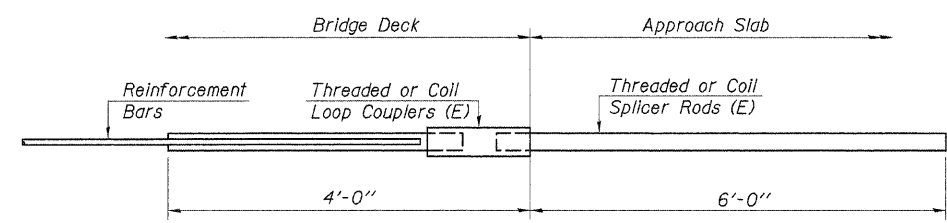
BAR SPLICER ASSEMBLY ALTERNATIVES

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



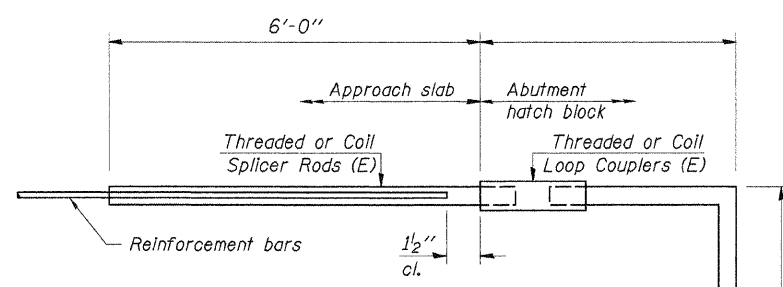
INSTALLATION AND SETTING METHODS

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



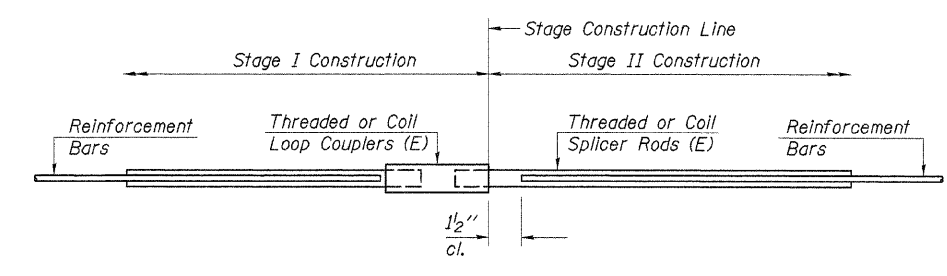
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required = 60



FOR PILE BENT ABUTMENTS

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



STANDARD

Bar Size	No. Assemblies Required	Location
#5	60	Abutts.

DESIGNED	A.R.K.
CHECKED	F.J.S. & S.F.M.
DRAWN	S.A.P.
CHECKED	A.R.K. & F.J.S.

BSD-1 9-01-03

BAR SPLICER ASSEMBLY DETAILS

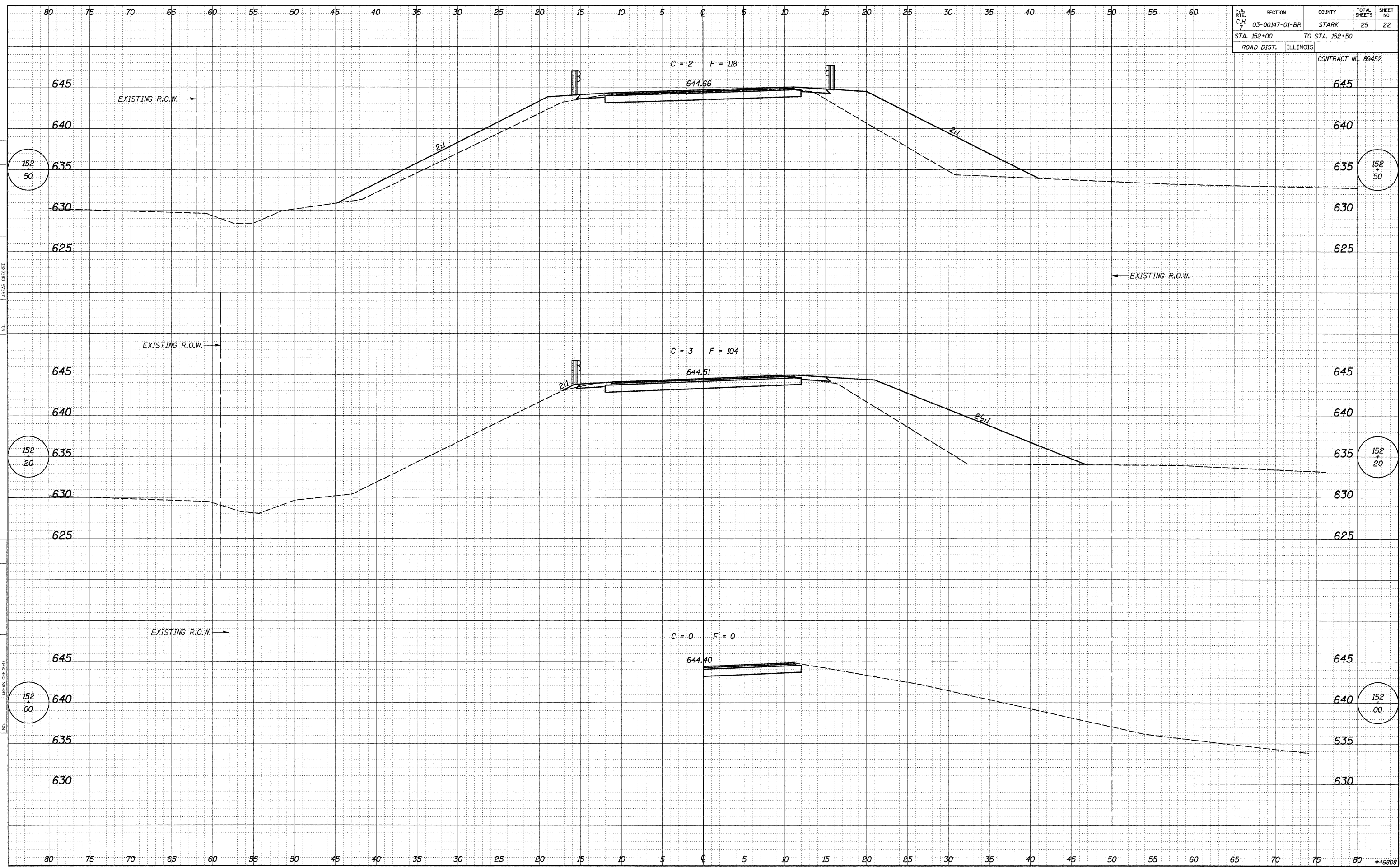
SECTION 03-00147-01-BR
 COUNTY HIGHWAY 7
 STARK COUNTY
 STATION 155+75

4440 ASH GROVE SPRINGFIELD, IL 62711 (217) 793-8800 oasinc@insightbb.com	FEHR-GRAHAM & ASSOCIATES, LLC ENGINEERING AND SCIENCE CONSULTANTS FREEPORT, IL ROCKFORD, IL ROCKFORD, IL MOORHEAD, MN SPRINGFIELD, IL	JOB NO.: 46808 FILE: 46808SPLICE.DGN DATE: 07/17/06
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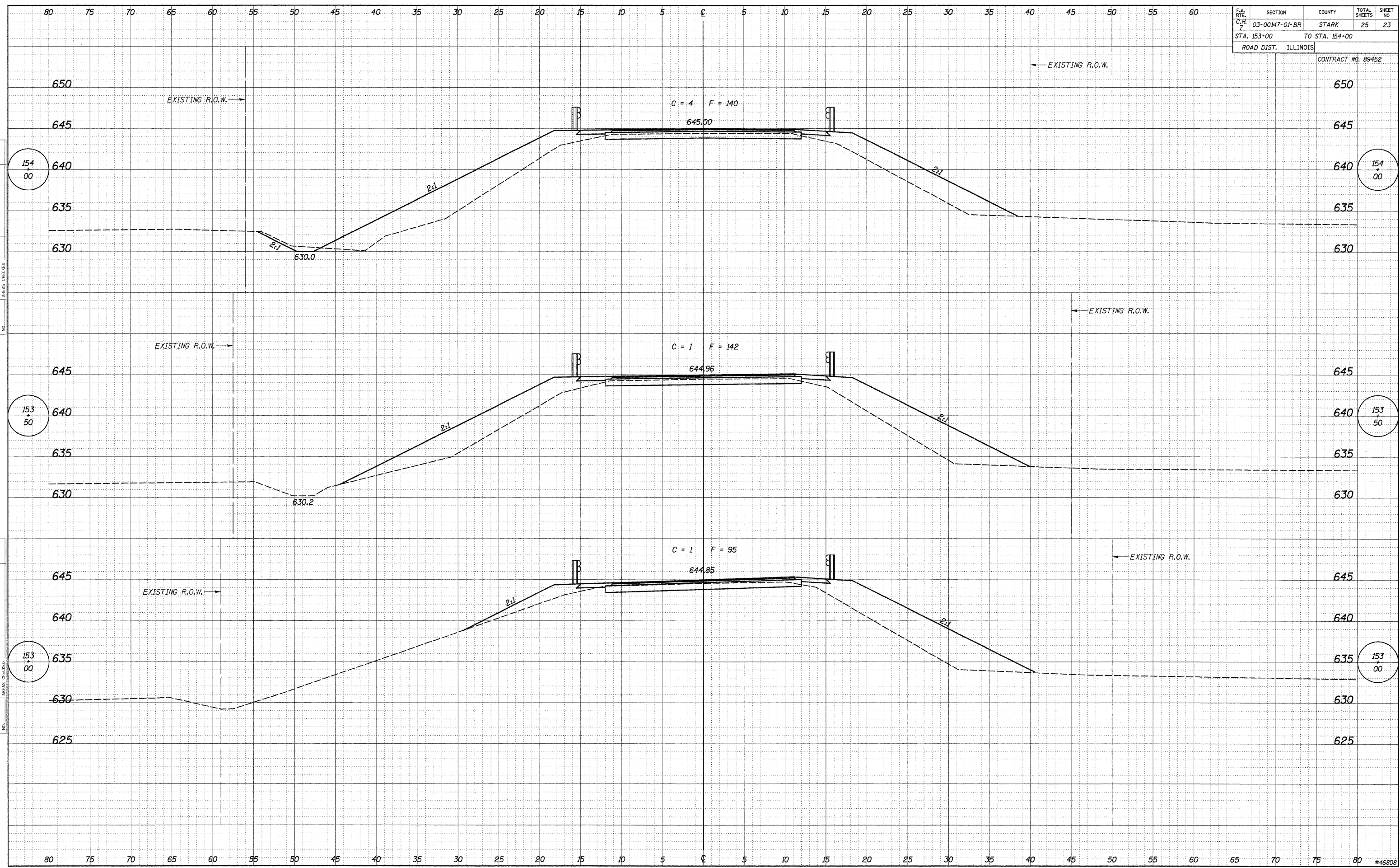
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147-01-BR	STARK	25	22
STA. 152+00		TO STA. 152+50		
ROAD DIST. ILLINOIS				
CONTRACT NO. 89452				

DATE	BY
REVIEWED	DESIGNED
PLOTTED	TEMPLATE
AREAS CHECKED	AREAS CHECKED
NO.	NO.

DATE	BY
06/12/06	S.A.P.
REVIEWED	DESIGNED
PLOTTED	TEMPLATE
AREAS CHECKED	AREAS CHECKED
NO.	NO.



F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147-01-BR	STARK	25	23
STA. 153+00		TO STA. 154+00		
ROAD DIST. ILLINOIS				
CONTRACT NO. 89452				



DATE	BY
REVIEWED	DESIGNED
SCOTTED	TEMPLATE
NOTE BOOK	AREAS CHECKED
NO.	

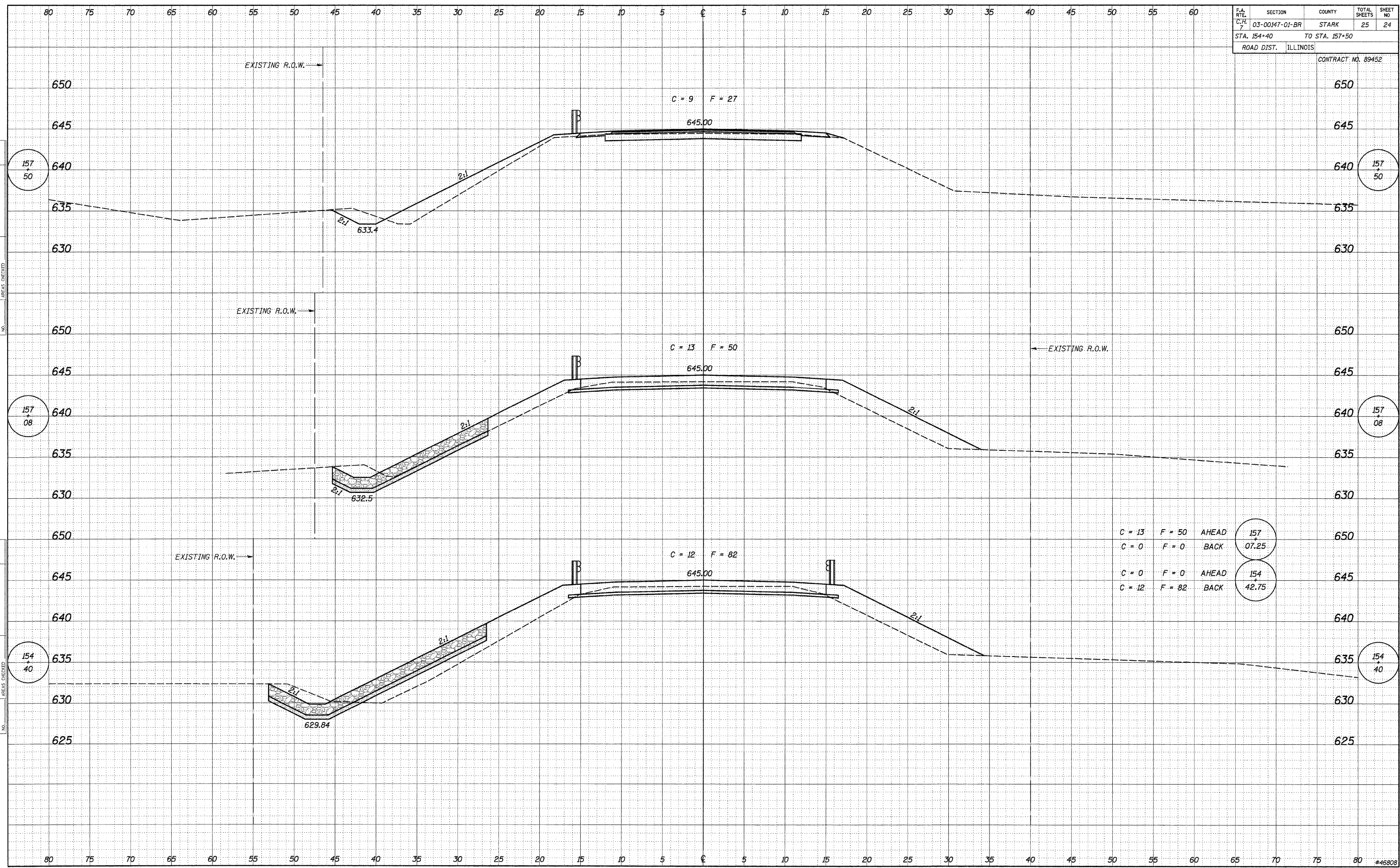
DATE	BY
06/12/06	S.A.P.
REVIEWED	DESIGNED
SCOTTED	TEMPLATE
NOTE BOOK	AREAS CHECKED
NO.	

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147-01-BR	STARK	25	24
STA. 154+40		TO STA. 157+50		
ROAD DIST. ILLINOIS				

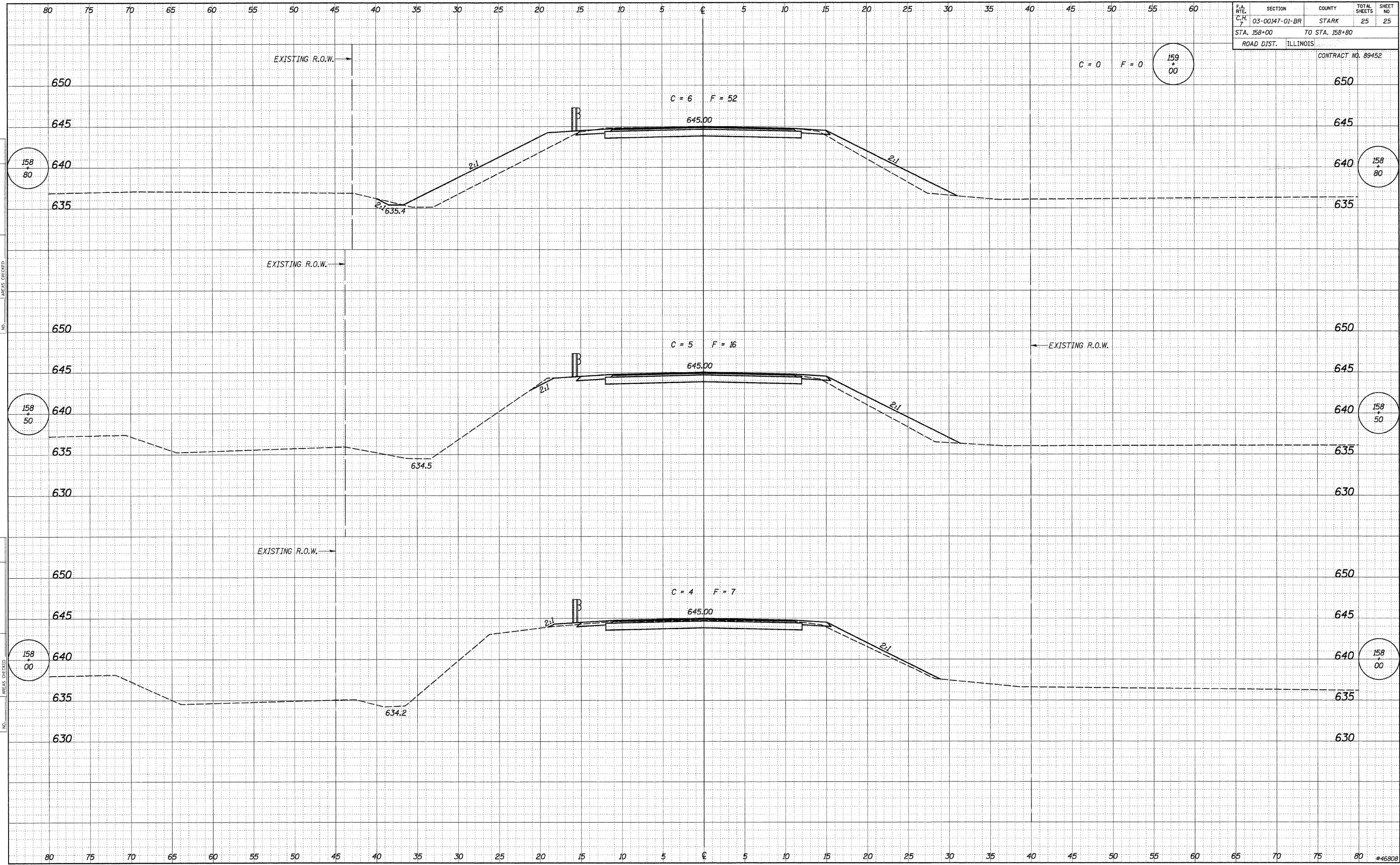
CONTRACT NO. 89452

DATE	BY
DESIGNED	PLOTTED
NOTE BOOK	TEMPLATE
AREAS CHECKED	AREAS CHECKED

DATE	BY
05/12/06	S.A.P.
DESIGNED	PLOTTED
NOTE BOOK	TEMPLATE
AREAS CHECKED	AREAS CHECKED



F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 7	03-00147-01-BR	STARK	25	25
STA. 158+00		TO STA. 158+80		
ROAD DIST. ILLINOIS				
CONTRACT NO. 89452				



DATE	BY
FINAL SURVEY NOTE BOOK NO.	CHECKED AREAS

DATE	BY
06/12/06	S.A.P.
ORIGINAL SURVEY NOTE BOOK NO.	CHECKED AREAS