

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55	(84-3HB-6)BR-F	SANGAMON	21	1

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
**PROPOSED  
HIGHWAY PLANS**

F.A.I. 55 (I-55) / BUSINESS 55  
SECTIONS (84-3HB-6)BR-F  
PROJECT: IM-055-3(141)092  
**SANGAMON COUNTY**

C-96-029-09

(84-3HB-6)BR-F: STEEL FABRICATION PLANS FOR S.N. 084-0028

**INDEX OF SHEETS**

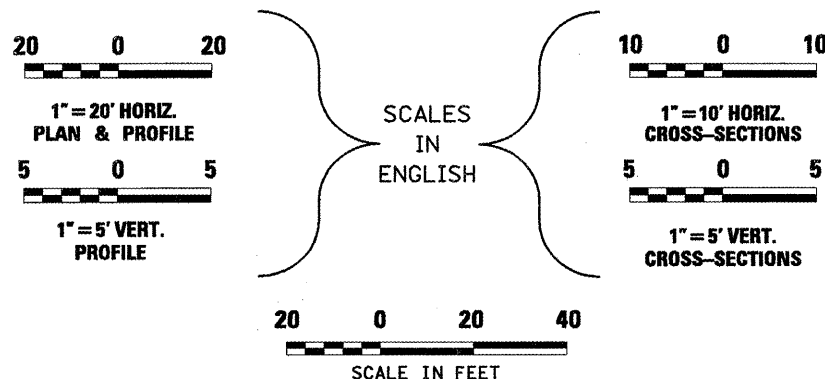
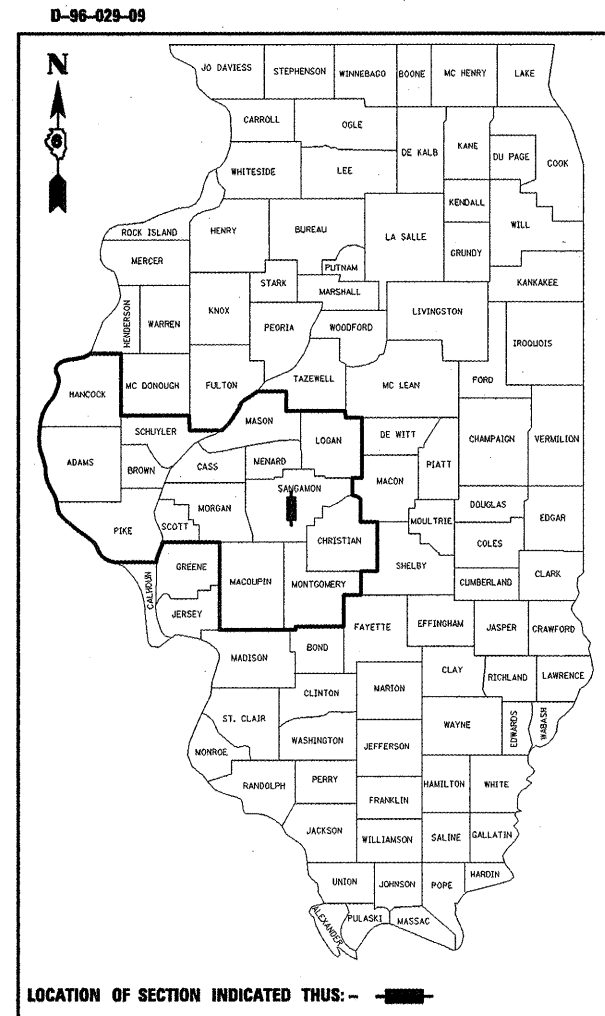
- 1 COVER SHEET
- 2 SUMMARY OF QUANTITIES
- 3-21 BRIDGE PLANS - S.N. 084-0028

**HIGHWAY STANDARDS**

- 000001-05 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 001006 DECIMAL OF AN INCH AND OF A FOOT

**PROJECT DESCRIPTION**

FURNISHING AND STORAGE OF STRUCTURAL STEEL FOR S.N. 084-0028



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES, REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES, IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

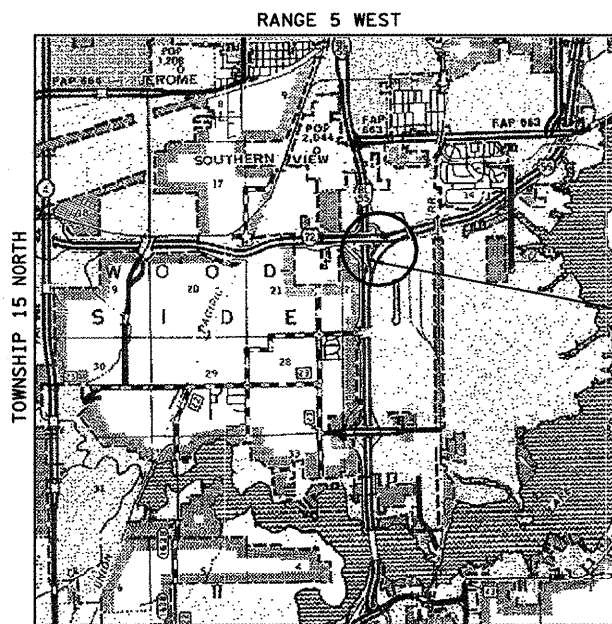
MICROFILMED \_\_\_\_\_  
REEL NUMBER \_\_\_\_\_  
AWARDED \_\_\_\_\_  
RESIDENT ENGINEER \_\_\_\_\_  
AS BUILT CHANGES WERE MADE ON THE FOLLOWING SHEETS \_\_\_\_\_

J.U.L.I.E.  
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
1-800-892-0123

**Farnsworth GROUP**  
2709 McGraw Drive  
Bloomington, Illinois 61704  
309/663-8435, 309/663-1571 fax

SQUAD LEADER: JEFF MYERS (217) 524-7940  
PROJECT ENGINEER: SAL MADONIA (217) 782-4761

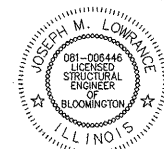
CONTRACT NO. 72C50



LOCATION MAP



SECTION (84-3HB-6)BR-F  
S.N. 084-0028 STATION 41+64.82  
FURNISHING AND STORAGE OF  
STRUCTURAL STEEL



Joseph M. Lowrance Date 12/16/08  
JOSEPH M. LOWRANCE  
ILLINOIS STRUCTURAL ENGINEER  
NO. 081-006446  
Exp. Date 11/30/10

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED DECEMBER 17 20 08  
Rosa Z. Dauter  
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

January 30 20 09  
Charles A. Dransoff  
ENGINEER OF DESIGN AND ENVIRONMENT

January 30 20 09  
Christine M. Reed  
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

**PRINTED BY THE AUTHORITY  
OF THE STATE OF ILLINOIS**

90% F.E.D.  
10% STATE

CODE	ITEM	UNIT	TOTAL QUANTITY STRUCTURE NO. 084-0028 X271-2A
50500205	FURNISHING STRUCTURAL STEEL	L SUM	1
50500455	STORAGE OF STRUCTURAL STEEL	CAL DA	60
52100110	FURNISHING ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	12
52100120	FURNISHING ELASTOMERIC BEARING ASSEMBLY, TYPE II	EACH	6
52100300	STORAGE OF ELASTOMERIC BEARING ASSEMBLIES	CAL DA	60

DISTRICT SIX	
EXAMINED	<u>Dec 3</u> 20 <u>08</u> <i>[Signature]</i>
OPERATIONS ENGINEER	
EXAMINED	<u>Dec 10</u> 20 <u>08</u> <i>[Signature]</i>
PROGRAM IMPLEMENTATION ENGINEER	
EXAMINED	<u>Dec 10</u> 20 <u>08</u> <i>[Signature]</i>
PROGRAM DEVELOPMENT ENGINEER	

FILE NAME =	USER NAME = laughlinr1	DESIGNED - JML	REVISED -
ct:\pwork\VPWIDOT\LAUGHLINR1\08115687\084-0028.S00.dgn		DRAWN - DJM	REVISED -
PLOT SCALE = 2.0000' / IN.		CHECKED - MSW	REVISED -
PLOT DATE = Dec-16-2008 11:32:58AM		DATE - 12/16/08	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES			
SCALE: NTS	SHEET NO.	OF SHEETS	STA. TO STA.

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55	084-3HB-61BR-F	SANGAMON	21	2
S.N. 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 (ILLINOIS) FED. AID PROJECT				

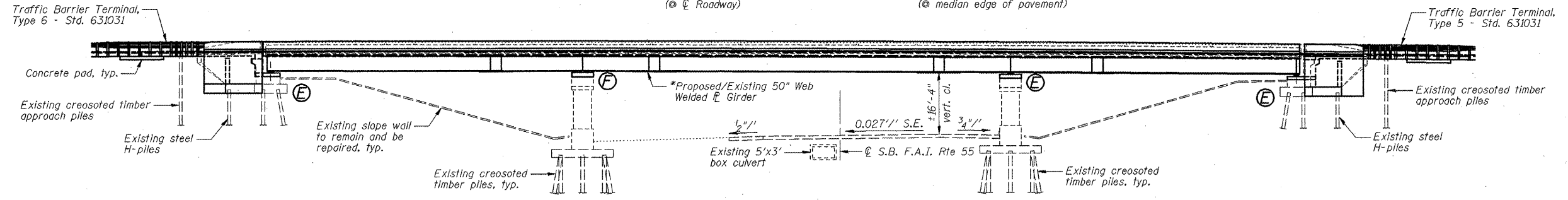
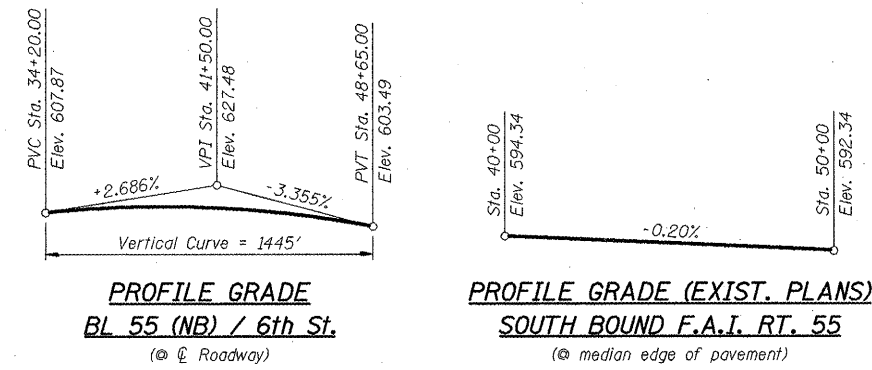
Benchmarks:  
 1.) BM TA16 Chiseled "C" on Northwest corner of concrete median, where I-55 N.B. and South Sixth St. split, 2.55 miles North of North end to lake bridges, Sta. 29+74.15/15.92' L.T., Elev. 599.05.  
 2.) BM TA17 Chiseled "C" in Southwest wingwall of hubguard of South Sixth St. bridge S.N. 084-0028, Sta. 40+00.06/16.68' RT., Elev. 616.53.

Existing Structure: Structure No. 084-0028, built in 1963 as Section 84-3HB-6. The superstructure consists of a continuous three span non-composite welded plate girder bridge with a 7" concrete slab. The substructure consists of concrete pile bent abutments supported by steel piles and concrete multiple column piers supported by timber piles. The back-to-back of abutments dimension measures 280'-3" and the out-to-out of deck dimension measures 36'-0". The span lengths are 82'-9", 113'-9" and 76'-1" (C bearing to C bearing) with a 58°42'45" right forward skew. The existing beams, piers and a portion of the abutments will be reincorporated into the new structure. One lane of traffic will be maintained utilizing stage construction.

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SCOPE OF WORK

- 1.) Remove and replace the existing reinforced concrete deck utilizing stage construction.
- 2.) Remove and replace the existing concrete approach pavement.
- 3.) Remove and replace exterior girders, all cross frames in exterior bays and all end diaphragms.
- 4.) Raise the remaining existing structural steel 3" in order to meet the vertical clearance requirement.
- 5.) Remove and replace the existing expansion bearings at the Abutments and Pier #2 with elastomeric bearings.
- 6.) Remove and replace the existing fixed bearings at Pier #1.
- 7.) Install stud shear connectors in the positive moment region in order to make the existing welded plate girders composite with the cast-in-place reinforced concrete deck.
- 8.) Remove and replace the existing abutment backwall and a portion of the wingwalls as shown.
- 9.) Place additional concrete on the abutment and pier caps in order to meet the proposed grade change.
- 10.) Remove and replace damaged/undermined sections of Slopewall.
- 11.) Repair abutments, piers and slopewall as required.
- 12.) Clean and paint existing structural steel under on separate contract.

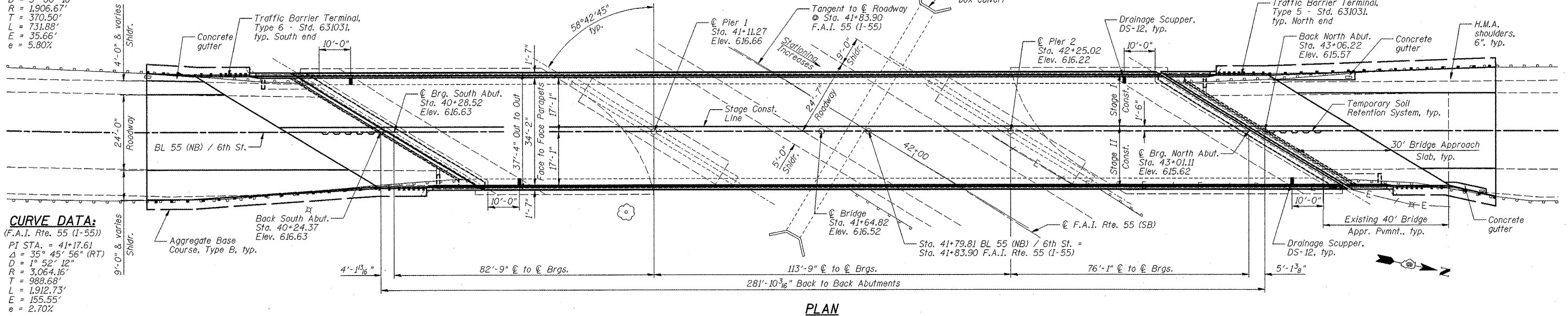


CURVE DATA:

(BL 55 (NB) / 6th St.)  
 PI STA. = 35+96.32  
 $\Delta = 21^\circ 59' 35''$  (LT)  
 $D = 3^\circ 00' 18''$   
 $R = 1,906.67'$   
 $T = 370.50'$   
 $L = 731.88'$   
 $E = 35.66'$   
 $e = 5.80\%$

CURVE DATA:

(F.A.I. Rte. 55 (I-55))  
 PI STA. = 41+17.61  
 $\Delta = 35^\circ 45' 56''$  (RT)  
 $D = 1^\circ 52' 12''$   
 $R = 3,064.16'$   
 $T = 988.63'$   
 $L = 1,912.73'$   
 $E = 155.55'$   
 $e = 2.70\%$



EXISTING DESIGN STRESSES

$f_c = 1,400$  psi  
 $f_s = 20,000$  psi (Reinforcement)  
 $f_s = 18,000$  psi (Structural Steel)  
 $n = 10$

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications for Highway Bridges

DESIGN STRESSES

FIELD UNITS  
 $f'_c = 3,500$  psi (Cast-in-Place)  
 $f_y = 60,000$  psi (Reinforcement)  
 $f_y = 36,000$  psi (Structural Steel - M270 Grade 36)  
 $f_y = 50,000$  psi (Structural Steel - M270 Grade 50)

LOADING HS20-44

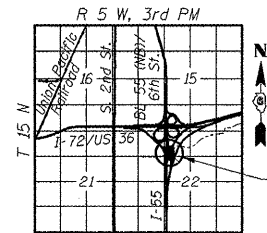
Allow 50#/sq. ft. for future wearing surface.

SEISMIC DATA

Seismic Performance Category (SPC) = A  
 Bedrock Acceleration Coefficient (A) = 0.048  
 Site Coefficient (S) = 2.0

APPROVED FOR STRUCTURAL ADEQUACY ONLY

Joseph M. Lowrance  
 ENGINEER OF BRIDGES AND STRUCTURES



LOCATION SKETCH

NOTE:

\* Composite in positive moment region only.

GENERAL PLAN AND ELEVATION  
 BUSINESS 55 / 6th STREET OVER  
 S.B. F.A.I. ROUTE 55  
 SECTION (84-3HB-6)BR  
 SANGAMON COUNTY  
 STATION 41+64.82  
 STRUCTURE NO. 084-0028

SHEET NO.	TITLE
B1	GENERAL PLAN AND ELEVATION
B2	BILL OF MATERIAL, GENERAL NOTES AND MISCELLANEOUS DETAILS
B3	STAGE CONSTRUCTION
B4	TOP OF SLAB ELEVATION LOCATIONS
B5-B7	TOP OF SLAB ELEVATIONS
B8	SUPERSTRUCTURE CROSS SECTION
B9-B13	STRUCTURAL STEEL
B14	EXISTING/PROPOSED GIRDER FIXED BEARING DETAILS
B15	EXISTING GIRDER TYPE I BEARING DETAILS
B16	PROPOSED GIRDER TYPE I BEARING DETAILS
B17	EXISTING GIRDER TYPE II BEARING DETAILS
B18	PROPOSED GIRDER TYPE II BEARING DETAILS
B19	SUBSTRUCTURE SEAT ELEVATIONS

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW
DATE	12/16/08

SHEET NO. B1	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	3
19 SHEETS	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Furnishing Structural Steel	L Sum	1
Storage of Structural Steel	Cal Da	60
Furnishing Elastomeric Bearing Assembly, Type I	Each	12
Furnishing Elastomeric Bearing Assembly, Type II	Each	6
Storage of Elastomeric Bearing Assemblies	Cal Da	60

**GENERAL NOTES:**

- 1.) Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts  $\frac{7}{8}$  in.  $\phi$ , holes  $\frac{5}{16}$  in.  $\phi$ , unless otherwise noted.
- 2.) Calculated weight of Structural Steel = 93,950 Grade 50.  
= 17,720 Grade 36.
- 3.) No field welding is permitted except as specified in the contract document.
- 4.) Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
- 5.) Reinforcement bars designated (E) shall be epoxy coated.
- 6.) Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.  
As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding  $\frac{1}{4}$  inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
- 7.) If the Contractor elects to use cantilever forming brackets on the exterior beams or girders, the brackets shall be placed at the same locations as required for the hardwood blocks in Article 503.06(b) of the Standard Specifications. If additional cantilever forming brackets are required, hardwood blocking shall be wedged between the exterior and first interior beam at each of these additional bracket locations.
- 8.) Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
- 9.) Bearing seat surfaces shall be constructed or adjusted to their designated elevations within a tolerance of  $\frac{1}{8}$  inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
- 10.) Concrete Sealer shall be applied to the designated areas of the Abutment Seats, Backwall and Abutment Face.
- 11.) Cleaning and field painting of existing structural steel shall be done under a separate painting contract.
- 12.) The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
- 13.) The Inorganic Zinc Rich Primer / Epoxy / Urethane Paint System shall be used for painting of new structural steel except where otherwise noted. The entire system shall be shop applied, with the exception that masked off connection surfaces, field installed fasteners and damaged areas shall be touched up in the field. The color of the final finish coat for all interior steel surfaces shall be Gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be Interstate Green, Munsell No. 7.5G 4/8. See Special Provision for "Cleaning and Painting New Metal Structures".
- 14.) The concrete for bridge decks finished according to Article 503.16(a) of the Standard Specifications shall be placed and compacted parallel to the skew in uniform increments along centerline of bridge. The machine used for finishing shall be set parallel to the skew for striking off and screeding the concrete.
- 15.) Slipforming of parapets is not allowed.

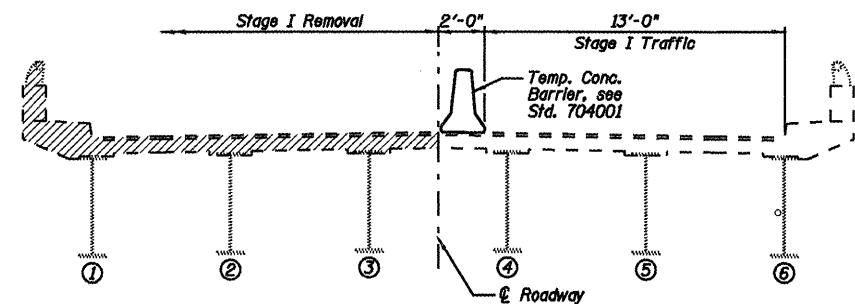
General Notes 1, 2 and 13 above are applicable to this contract.

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW
DATE	12/16/08

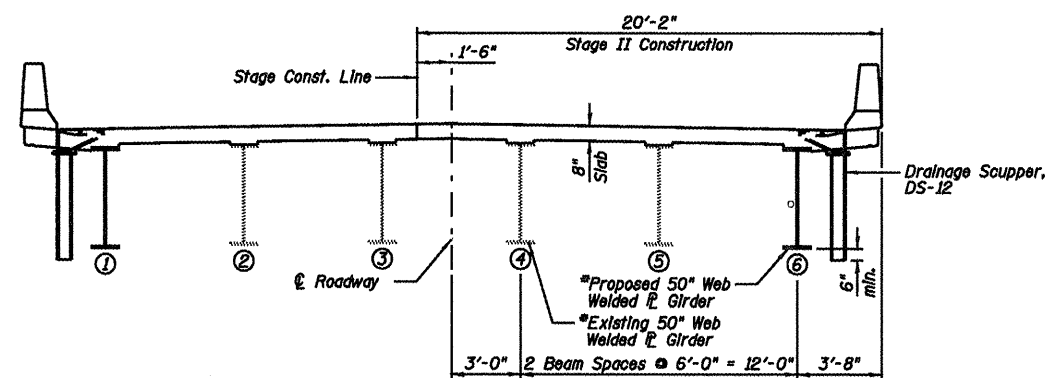
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19 SHEETS	55	(84-3HB-6)BR-F	SANGAMON	21	4
		SN 084-0028	CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

**BILL OF MATERIAL,  
GENERAL NOTES AND  
MISCELLANEOUS DETAILS  
STRUCTURE NO. 084-0028**

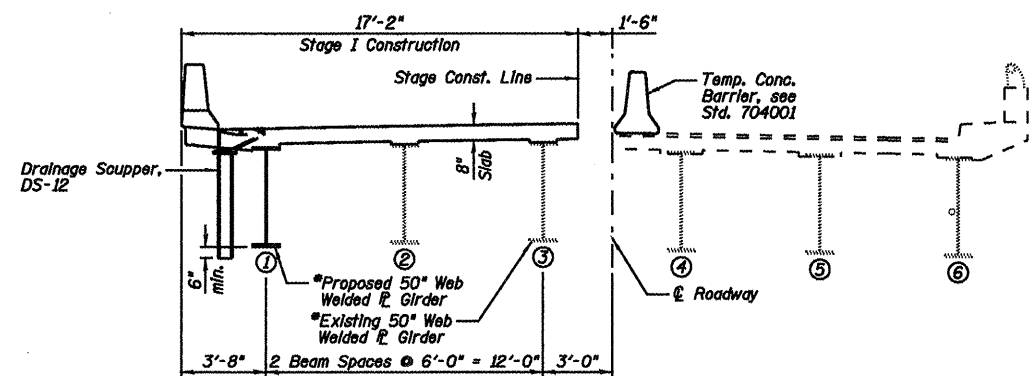
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



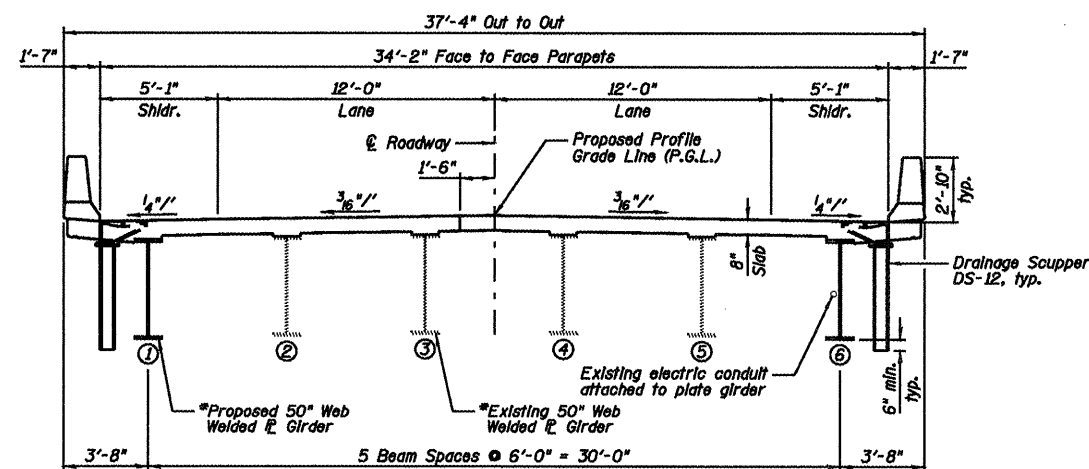
**STAGE I REMOVAL**  
(@ Looking North)



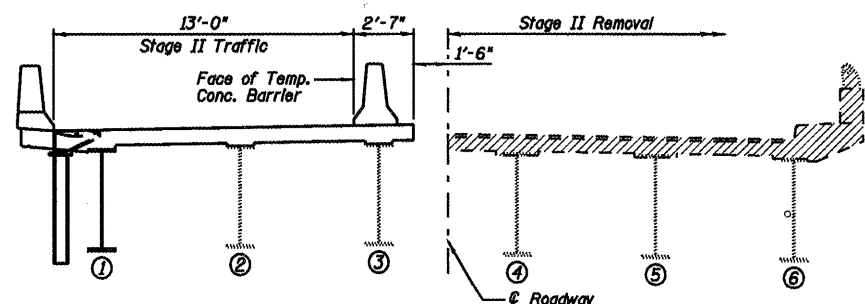
**STAGE II CONSTRUCTION**  
(@ Looking North)



**STAGE I CONSTRUCTION**  
(@ Looking North)



**CROSS SECTION**  
(@ Looking North)



**STAGE II REMOVAL**  
(@ Looking North)

FOR INFORMATION  
ONLY

**STAGE CONSTRUCTION**  
**STRUCTURE NO. 084-0028**

**NOTE:**

\* Composite in positive moment region only.

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

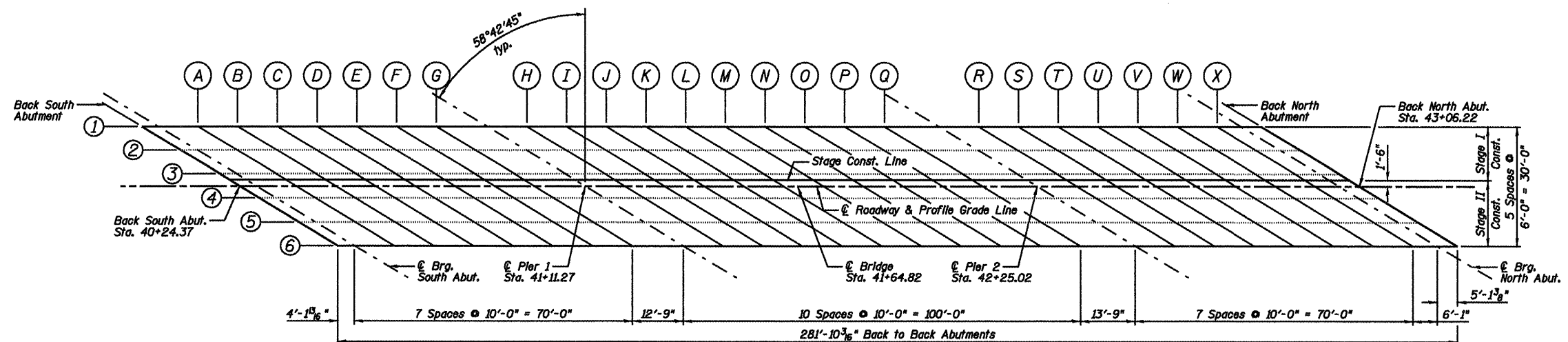
FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

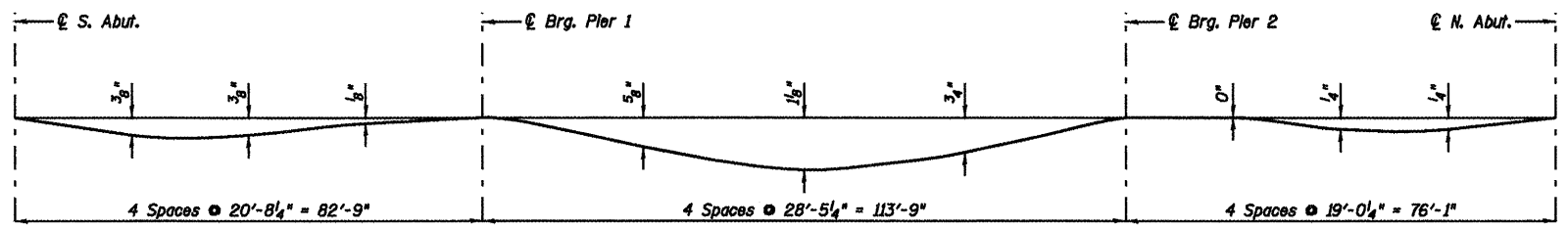
SHEET NO. B3	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	5
19 SHEETS	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

24-8181

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

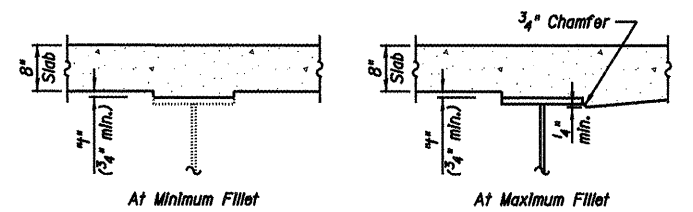


PLAN



**DEAD LOAD DEFLECTION DIAGRAM**  
(Includes weight of concrete only.)

Note:  
The above deflections are not for use in the field if the Engineer is working from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection".



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

**FILLET HEIGHTS**

FOR INFORMATION ONLY

TOP OF SLAB  
ELEVATION LOCATIONS  
STRUCTURE NO. 084-0028

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW
DATE	12/16/08

SHEET NO. B4 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	6
SN 084-0028			CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GIRDER 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted for Dead Load Deflection and Grinding
Bk. of South Abut.	39+99.69	-15.00	616.31	616.31
☉ Brg. South Abut.	40+03.84	-15.00	616.32	616.32
A	40+13.84	-15.00	616.35	616.37
B	40+23.84	-15.00	616.38	616.41
C	40+33.84	-15.00	616.39	616.43
D	40+43.84	-15.00	616.41	616.44
E	40+53.84	-15.00	616.42	616.45
F	40+63.84	-15.00	616.43	616.44
G	40+73.84	-15.00	616.43	616.43
☉ Brg. Pier 1	40+86.59	-15.00	616.43	616.43
H	40+96.59	-15.00	616.42	616.44
I	41+06.59	-15.00	616.41	616.44
J	41+16.59	-15.00	616.40	616.45
K	41+26.59	-15.00	616.38	616.45
L	41+36.59	-15.00	616.36	616.44
M	41+46.59	-15.00	616.33	616.42
N	41+56.59	-15.00	616.30	616.38
O	41+66.59	-15.00	616.26	616.32
P	41+76.59	-15.00	616.22	616.27
Q	41+86.59	-15.00	616.18	616.20
☉ Brg. Pier 2	42+00.34	-15.00	616.11	616.11
R	42+10.34	-15.00	616.06	616.05
S	42+20.34	-15.00	616.00	616.00
T	42+30.34	-15.00	615.94	615.95
U	42+40.34	-15.00	615.87	615.89
V	42+50.34	-15.00	615.80	615.82
W	42+60.34	-15.00	615.72	615.74
X	42+70.34	-15.00	615.64	615.65
☉ Brg. North Abut.	42+76.42	-15.00	615.59	615.59
Bk. of North Abut.	42+81.54	-15.00	615.55	615.55

GIRDER 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted for Dead Load Deflection and Grinding
Bk. of South Abut.	40+09.56	-9.00	616.45	616.45
☉ Brg. South Abut.	40+13.71	-9.00	616.46	616.46
A	40+23.71	-9.00	616.48	616.50
B	40+33.71	-9.00	616.50	616.53
C	40+43.71	-9.00	616.52	616.56
D	40+53.71	-9.00	616.53	616.57
E	40+63.71	-9.00	616.54	616.56
F	40+73.71	-9.00	616.54	616.55
G	40+83.71	-9.00	616.54	616.54
☉ Brg. Pier 1	40+96.46	-9.00	616.53	616.53
H	41+06.46	-9.00	616.52	616.53
I	41+16.46	-9.00	616.51	616.54
J	41+26.46	-9.00	616.49	616.54
K	41+36.46	-9.00	616.47	616.54
L	41+46.46	-9.00	616.44	616.53
M	41+56.46	-9.00	616.41	616.50
N	41+66.46	-9.00	616.37	616.45
O	41+76.46	-9.00	616.33	616.39
P	41+86.46	-9.00	616.29	616.33
Q	41+96.46	-9.00	616.24	616.26
☉ Brg. Pier 2	42+10.21	-9.00	616.17	616.17
R	42+20.21	-9.00	616.11	616.11
S	42+30.21	-9.00	616.05	616.05
T	42+40.21	-9.00	615.98	615.99
U	42+50.21	-9.00	615.91	615.93
V	42+60.21	-9.00	615.83	615.86
W	42+70.21	-9.00	615.75	615.77
X	42+80.21	-9.00	615.67	615.68
☉ Brg. North Abut.	42+86.30	-9.00	615.62	615.62
Bk. of North Abut.	42+91.41	-9.00	615.57	615.57

GIRDER 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted for Dead Load Deflection and Grinding
Bk. of South Abut.	40+19.43	-3.00	616.57	616.57
☉ Brg. South Abut.	40+23.59	-3.00	616.58	616.58
A	40+33.59	-3.00	616.60	616.62
B	40+43.59	-3.00	616.61	616.64
C	40+53.59	-3.00	616.62	616.66
D	40+63.59	-3.00	616.63	616.67
E	40+73.59	-3.00	616.63	616.66
F	40+83.59	-3.00	616.63	616.64
G	40+93.59	-3.00	616.63	616.63
☉ Brg. Pier 1	41+06.34	-3.00	616.62	616.62
H	41+16.34	-3.00	616.60	616.61
I	41+26.34	-3.00	616.58	616.62
J	41+36.34	-3.00	616.56	616.62
K	41+46.34	-3.00	616.53	616.61
L	41+56.34	-3.00	616.50	616.59
M	41+66.34	-3.00	616.47	616.56
N	41+76.34	-3.00	616.43	616.51
O	41+86.34	-3.00	616.38	616.44
P	41+96.34	-3.00	616.34	616.38
Q	42+06.34	-3.00	616.28	616.31
☉ Brg. Pier 2	42+20.09	-3.00	616.20	616.20
R	42+30.09	-3.00	616.14	616.14
S	42+40.09	-3.00	616.08	616.08
T	42+50.09	-3.00	616.00	616.02
U	42+60.09	-3.00	615.93	615.95
V	42+70.09	-3.00	615.85	615.87
W	42+80.09	-3.00	615.77	615.78
X	42+90.09	-3.00	615.68	615.69
☉ Brg. North Abut.	42+96.17	-3.00	615.62	615.62
Bk. of North Abut.	43+01.28	-3.00	615.57	615.57

FOR INFORMATION  
ONLY

TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 084-0028

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

SHEET NO. B5 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	7
	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

24-8181

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

STAGE CONSTRUCTION LINE

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted For Dead Load Deflection and Grinding
Bk. of South Abut.	40+21.90	-1.50	616.60	616.60
☉ Brg. South Abut.	40+26.05	-1.50	616.61	616.61
A	40+36.05	-1.50	616.62	616.64
B	40+46.05	-1.50	616.64	616.67
C	40+56.05	-1.50	616.65	616.69
D	40+66.05	-1.50	616.66	616.69
E	40+76.05	-1.50	616.66	616.68
F	40+86.05	-1.50	616.66	616.67
G	40+96.05	-1.50	616.65	616.65
☉ Brg. Pler 1	41+08.80	-1.50	616.64	616.64
H	41+18.80	-1.50	616.62	616.63
I	41+28.80	-1.50	616.60	616.63
J	41+38.80	-1.50	616.58	616.63
K	41+48.80	-1.50	616.55	616.62
L	41+58.80	-1.50	616.52	616.60
M	41+68.80	-1.50	616.48	616.57
N	41+78.80	-1.50	616.44	616.52
O	41+88.80	-1.50	616.40	616.45
P	41+98.80	-1.50	616.35	616.39
Q	42+08.80	-1.50	616.29	616.31
☉ Brg. Pler 2	42+22.55	-1.50	616.21	616.21
R	42+32.55	-1.50	616.15	616.15
S	42+42.55	-1.50	616.08	616.08
T	42+52.55	-1.50	616.01	616.02
U	42+62.55	-1.50	615.93	615.95
V	42+72.55	-1.50	615.85	615.87
W	42+82.55	-1.50	615.77	615.79
X	42+92.55	-1.50	615.68	615.69
☉ Brg. North Abut.	42+98.64	-1.50	615.62	615.62
Bk. of North Abut.	43+03.75	-1.50	615.57	615.57

☉ ROADWAY & PROFILE GRADE LINE

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted For Dead Load Deflection and Grinding
Bk. of South Abut.	40+24.37	0.00	616.63	616.63
☉ Brg. South Abut.	40+28.52	0.00	616.63	616.63
A	40+38.52	0.00	616.65	616.67
B	40+48.52	0.00	616.67	616.70
C	40+58.52	0.00	616.67	616.71
D	40+68.52	0.00	616.68	616.71
E	40+78.52	0.00	616.68	616.71
F	40+88.52	0.00	616.68	616.69
G	40+98.52	0.00	616.67	616.67
☉ Brg. Pler 1	41+11.27	0.00	616.66	616.66
H	41+21.27	0.00	616.64	616.65
I	41+31.27	0.00	616.62	616.65
J	41+41.27	0.00	616.59	616.65
K	41+51.27	0.00	616.56	616.64
L	41+61.27	0.00	616.53	616.62
M	41+71.27	0.00	616.49	616.58
N	41+81.27	0.00	616.45	616.53
O	41+91.27	0.00	616.41	616.47
P	42+01.27	0.00	616.36	616.40
Q	42+11.27	0.00	616.30	616.32
☉ Brg. Pler 2	42+25.02	0.00	616.22	616.22
R	42+35.02	0.00	616.16	616.15
S	42+45.02	0.00	616.09	616.09
T	42+55.02	0.00	616.01	616.03
U	42+65.02	0.00	615.94	615.96
V	42+75.02	0.00	615.86	615.88
W	42+85.02	0.00	615.77	615.79
X	42+95.02	0.00	615.68	615.69
☉ Brg. North Abut.	43+01.11	0.00	615.62	615.62
Bk. of North Abut.	43+06.22	0.00	615.57	615.57

GIRDER 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted For Dead Load Deflection and Grinding
Bk. of South Abut.	40+29.31	3.00	616.59	616.59
☉ Brg. South Abut.	40+33.46	3.00	616.60	616.60
A	40+43.46	3.00	616.61	616.63
B	40+53.46	3.00	616.62	616.65
C	40+63.46	3.00	616.63	616.67
D	40+73.46	3.00	616.63	616.67
E	40+83.46	3.00	616.63	616.66
F	40+93.46	3.00	616.63	616.64
G	41+03.46	3.00	616.62	616.62
☉ Brg. Pler 1	41+16.21	3.00	616.60	616.60
H	41+26.21	3.00	616.58	616.60
I	41+36.21	3.00	616.56	616.59
J	41+46.21	3.00	616.53	616.59
K	41+56.21	3.00	616.50	616.58
L	41+66.21	3.00	616.47	616.55
M	41+76.21	3.00	616.43	616.52
N	41+86.21	3.00	616.38	616.47
O	41+96.21	3.00	616.34	616.39
P	42+06.21	3.00	616.28	616.33
Q	42+16.21	3.00	616.23	616.25
☉ Brg. Pler 2	42+29.96	3.00	616.14	616.14
R	42+39.96	3.00	616.08	616.07
S	42+49.96	3.00	616.01	616.01
T	42+59.96	3.00	615.93	615.94
U	42+69.96	3.00	615.85	615.87
V	42+79.96	3.00	615.77	615.79
W	42+89.96	3.00	615.68	615.70
X	42+99.96	3.00	615.59	615.60
☉ Brg. North Abut.	43+06.04	3.00	615.53	615.53
Bk. of North Abut.	43+11.16	3.00	615.48	615.48

FOR INFORMATION ONLY

TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 084-0028

DESIGNED JML
CHECKED MSW
DRAWN DJM
CHECKED MGO/MSW

DATE 12/16/08

FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

SHEET NO. 86	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	8
19 SHEETS	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GIRDER 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted for Dead Load Deflection and Grinding
Bk. of South Abut.	40+39.18	9.00	616.51	616.51
☉ Brg. South Abut.	40+43.33	9.00	616.52	616.52
A	40+53.33	9.00	616.53	616.55
B	40+63.33	9.00	616.54	616.57
C	40+73.33	9.00	616.54	616.58
D	40+83.33	9.00	616.54	616.57
E	40+93.33	9.00	616.53	616.56
F	41+03.33	9.00	616.52	616.54
G	41+13.33	9.00	616.51	616.51
☉ Brg. Pier 1	41+26.08	9.00	616.49	616.49
H	41+36.08	9.00	616.47	616.48
I	41+46.08	9.00	616.44	616.47
J	41+56.08	9.00	616.41	616.46
K	41+66.08	9.00	616.37	616.45
L	41+76.08	9.00	616.33	616.42
M	41+86.08	9.00	616.29	616.38
N	41+96.08	9.00	616.24	616.32
O	42+06.08	9.00	616.19	616.25
P	42+16.08	9.00	616.13	616.18
Q	42+26.08	9.00	616.07	616.10
☉ Brg. Pier 2	42+39.83	9.00	615.98	615.98
R	42+49.83	9.00	615.91	615.91
S	42+59.83	9.00	615.84	615.84
T	42+69.83	9.00	615.76	615.77
U	42+79.83	9.00	615.67	615.69
V	42+89.83	9.00	615.59	615.61
W	42+99.83	9.00	615.49	615.51
X	43+09.83	9.00	615.40	615.41
☉ Brg. North Abut.	43+15.92	9.00	615.34	615.34
Bk. of North Abut.	43+21.03	9.00	615.29	615.29

GIRDER 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevation Adjusted for Dead Load Deflection and Grinding
Bk. of South Abut.	40+49.05	15.00	616.43	616.43
☉ Brg. South Abut.	40+53.20	15.00	616.43	616.43
A	40+63.20	15.00	616.44	616.46
B	40+73.20	15.00	616.44	616.47
C	40+83.20	15.00	616.44	616.48
D	40+93.20	15.00	616.44	616.47
E	41+03.20	15.00	616.43	616.45
F	41+13.20	15.00	616.42	616.43
G	41+23.20	15.00	616.40	616.40
☉ Brg. Pier 1	41+35.95	15.00	616.37	616.37
H	41+45.95	15.00	616.34	616.36
I	41+55.95	15.00	616.31	616.35
J	41+65.95	15.00	616.28	616.33
K	41+75.95	15.00	616.24	616.31
L	41+85.95	15.00	616.19	616.28
M	41+95.95	15.00	616.15	616.24
N	42+05.95	15.00	616.09	616.18
O	42+15.95	15.00	616.04	616.10
P	42+25.95	15.00	615.98	616.02
Q	42+35.95	15.00	615.91	615.94
☉ Brg. Pier 2	42+49.70	15.00	615.82	615.82
R	42+59.70	15.00	615.74	615.74
S	42+69.70	15.00	615.66	615.66
T	42+79.70	15.00	615.58	615.59
U	42+89.70	15.00	615.49	615.51
V	42+99.70	15.00	615.40	615.42
W	43+09.70	15.00	615.30	615.32
X	43+19.70	15.00	615.20	615.21
☉ Brg. North Abut.	43+25.79	15.00	615.14	615.14
Bk. of North Abut.	43+30.90	15.00	615.08	615.08

FOR INFORMATION  
ONLY

TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 084-0028

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

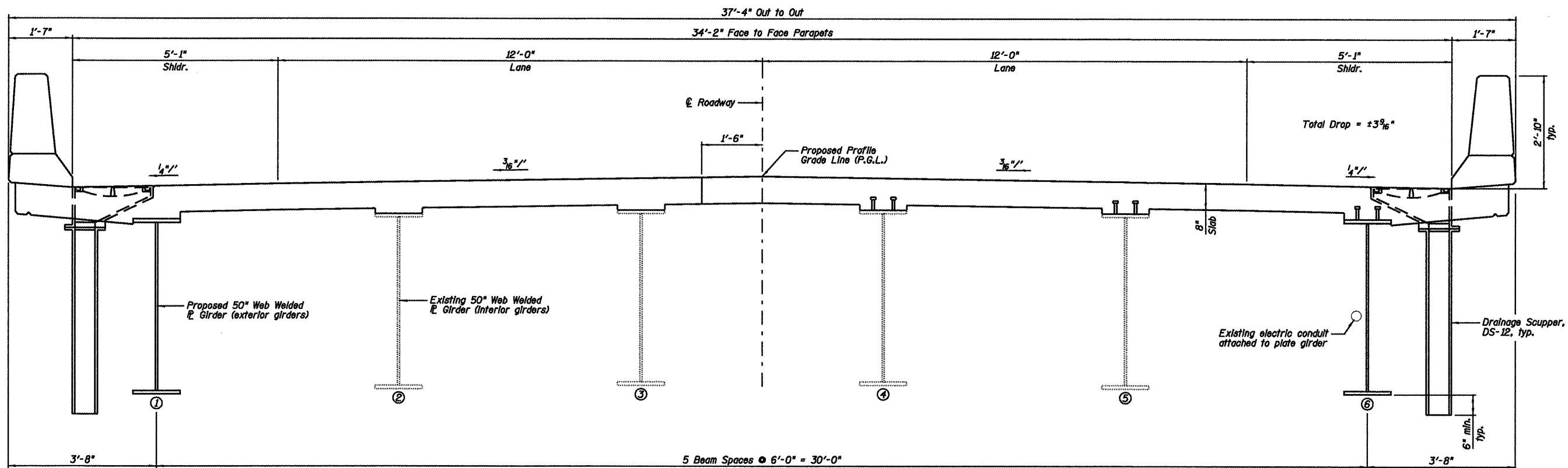
FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

SHEET NO. B7 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	9
		SN 084-0028	CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

24-8181

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



NEAR PIER

NEAR MIDSPAN

CROSS SECTION  
(@ Looking North)

FOR INFORMATION  
ONLY

SUPERSTRUCTURE CROSS SECTION  
STRUCTURE NO. 084-0028

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

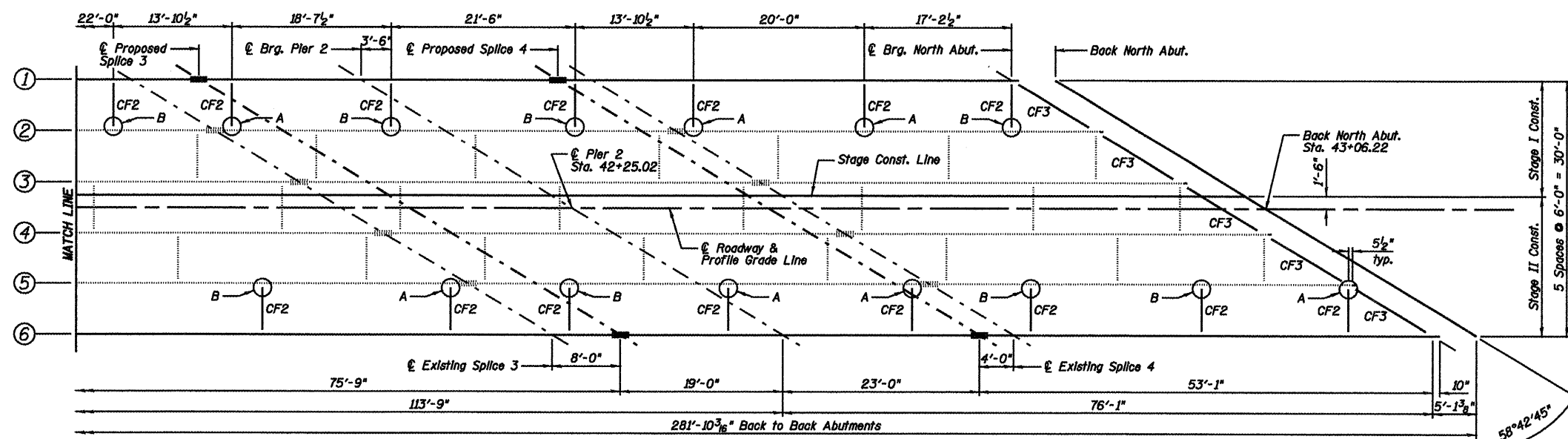
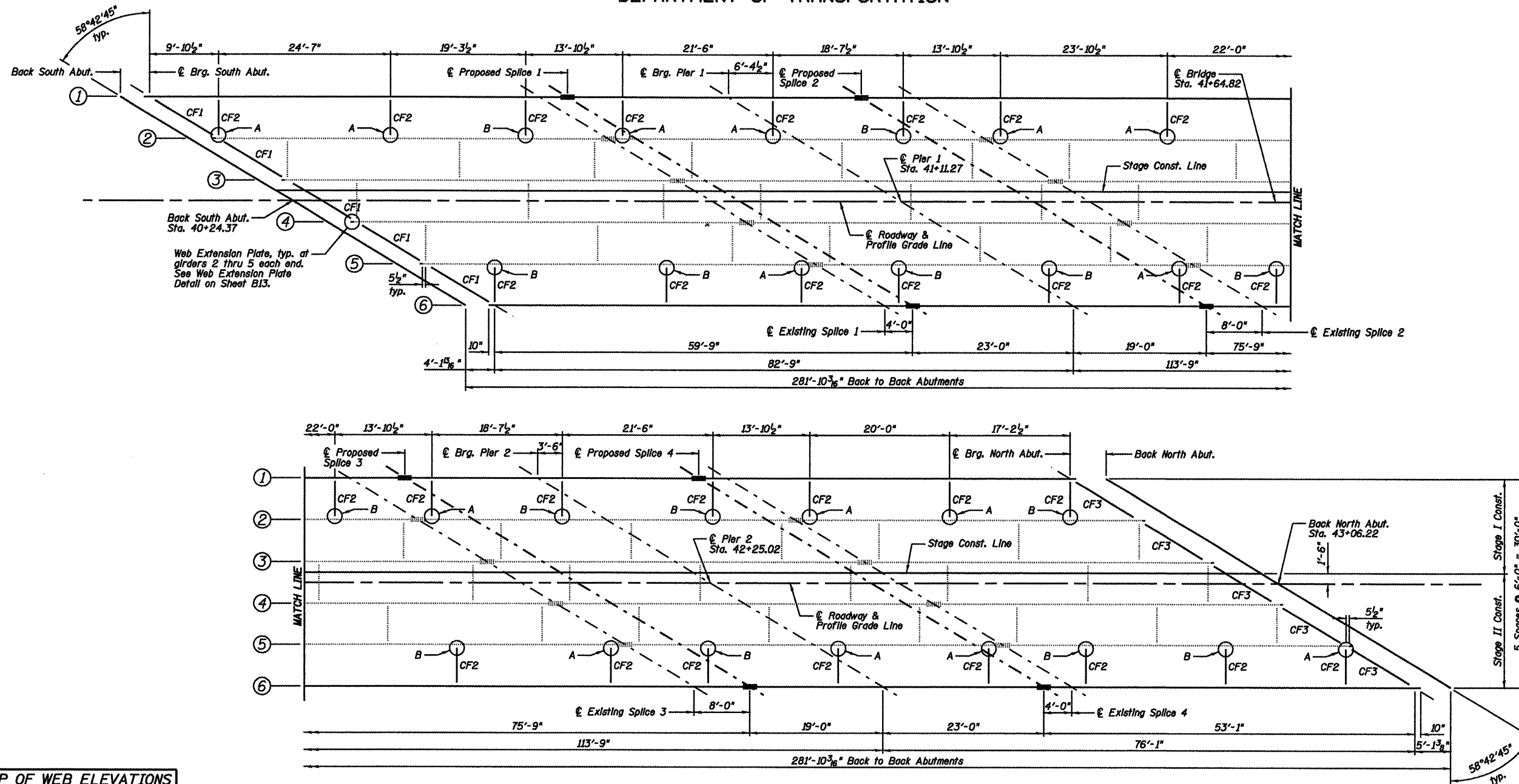
FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

SHEET NO. B8 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	10
SN 084-0028			CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

24-8181

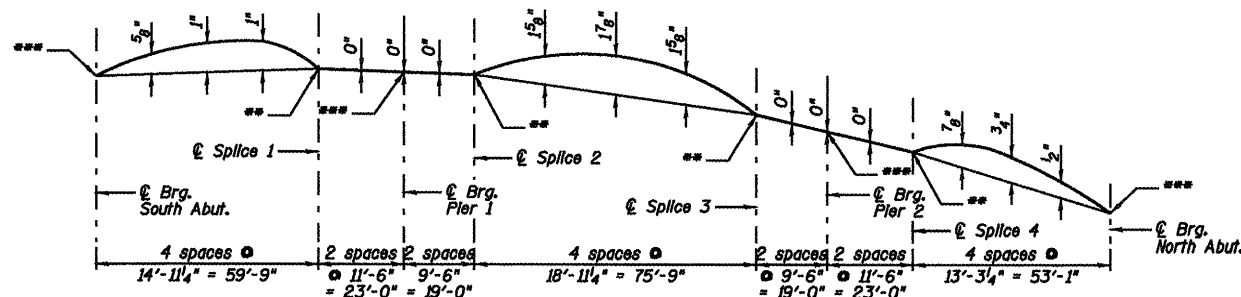
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**\*TOP OF WEB ELEVATIONS**

Location	Girder 1	Girder 6
€ Brg. S. Abut.	615.53	615.64
€ Splice 1	615.58	615.57
€ Brg. Pier 1	615.58	615.52
€ Splice 2	615.57	615.48
€ Splice 3	615.36	615.11
€ Brg. Pier 2	615.26	614.96
€ Splice 4	615.13	614.79
€ Brg. N. Abut.	614.80	614.35

\*For fabrication use only.  
Elevations at splices have been adjusted  
for Dead Load Deflection.



**CAMBER DIAGRAM**

\*\*\* Theoretical top of web elevations before Dead Load Deflection.  
\*\*\* Final top of web elevations at Abutments and Piers.

A - Denotes cross frame to transverse stiffener plate connection.  
B - Denotes cross frame to tab connection.

**NOTES:**

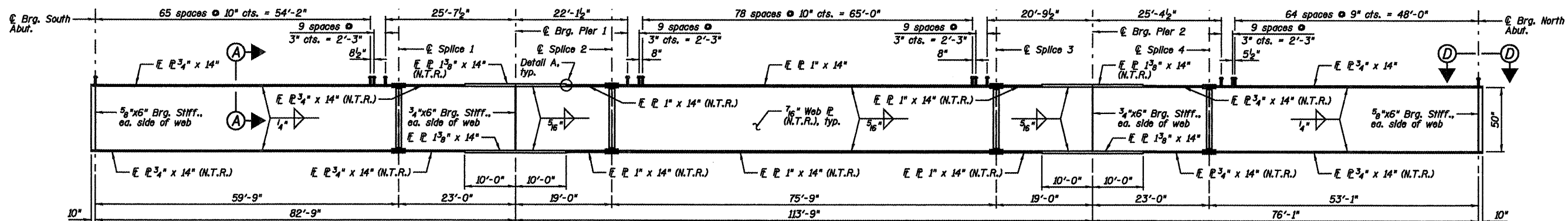
- 1.) See Sheet B12 for Cross Frame Connections "A" and "B".
- 2.) All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

DESIGNED <b>JML</b>
CHECKED <b>MSW</b>
DRAWN <b>DJM</b>
CHECKED <b>MGO/MSW</b>
DATE <b>12/16/08</b>

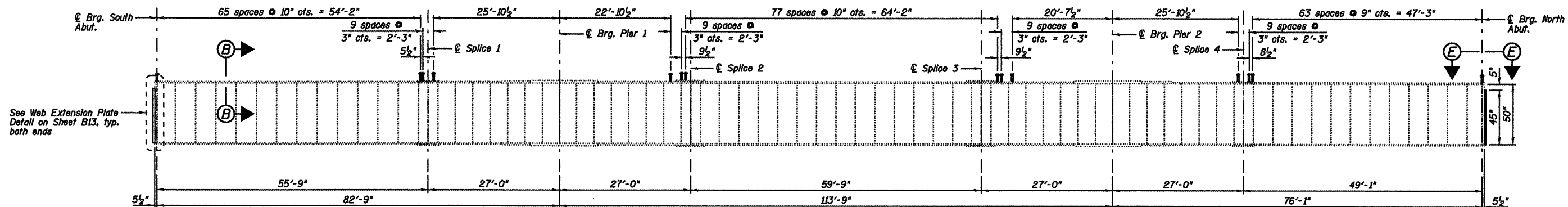
**STRUCTURAL STEEL**  
**STRUCTURE NO. 084-0028**

SHEET NO. B9 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	11
	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

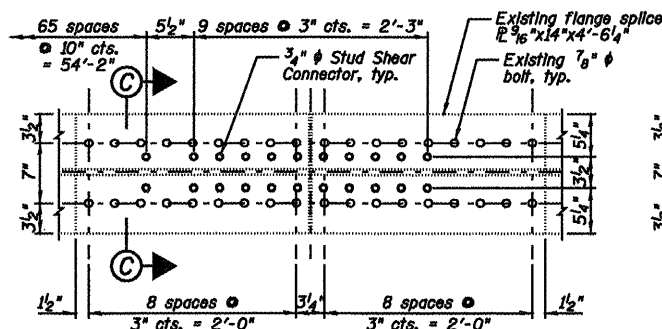
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



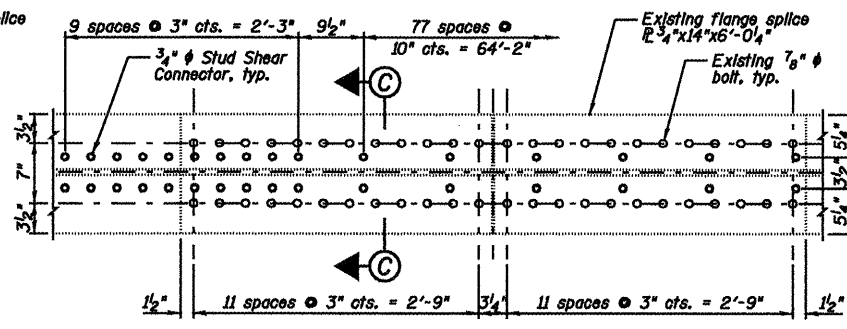
PROPOSED GIRDER ELEVATION



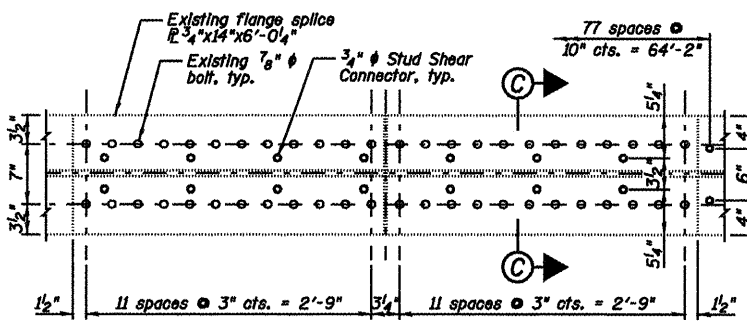
EXISTING GIRDER ELEVATION



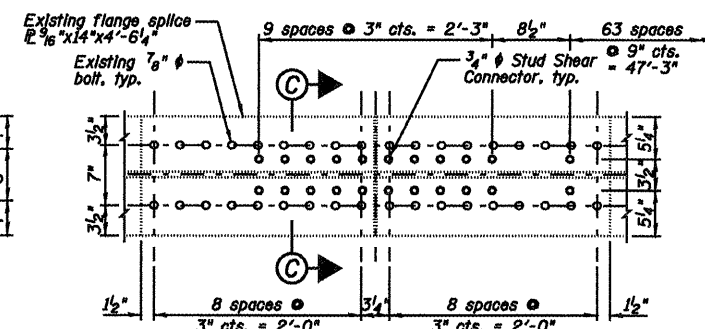
STUD SHEAR CONNECTORS -  
PLAN AT SPLICE 1



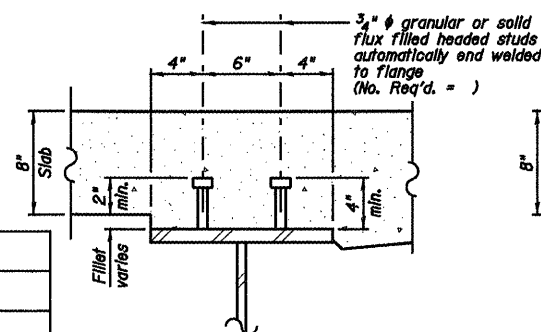
STUD SHEAR CONNECTORS -  
PLAN AT SPLICE 2



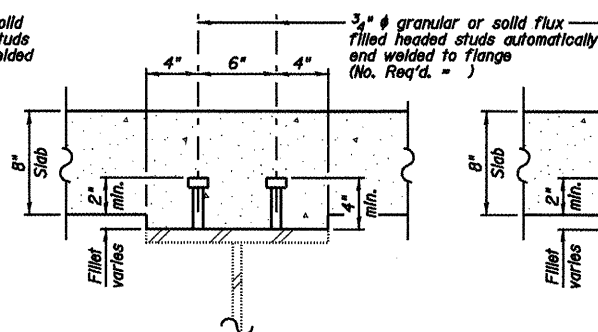
STUD SHEAR CONNECTORS -  
PLAN AT SPLICE 3



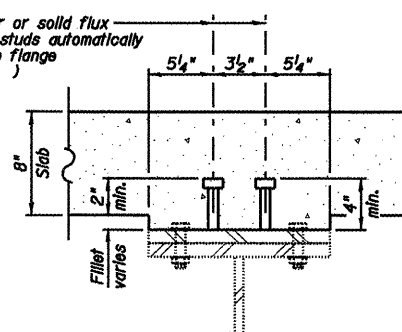
STUD SHEAR CONNECTORS -  
PLAN AT SPLICE 4



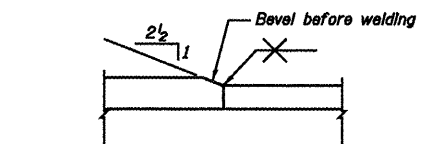
SECTION A-A



SECTION B-B



SECTION C-C



DETAIL A - FLANGE TRANSITION

**NOTES:**

- 1.) Load carrying components designated N.T.R. shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
- 2.) All girder flange plates, web plates, splice plates and bearing stiffener plates shall be AASHTO M270 Grade 50.
- 3.) See Sheet B13 for Sections D-D and E-E.

**STRUCTURAL STEEL  
STRUCTURE NO. 084-0028**

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

SHEET NO. B10 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	12
	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

24-8181

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

INTERIOR GIRDER MOMENT TABLE					
	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
$I_s$	(in <sup>4</sup> ) 17429	32995	22116	32995	17429
$I_c(n)$	(in <sup>4</sup> ) 40581	-	48002	-	40581
$I_c(3n)$	(in <sup>4</sup> ) 30457	-	36081	-	30457
$S_s$	(in <sup>3</sup> ) 677	1242	851	1242	677
$S_c(n)$	(in <sup>3</sup> ) 911	-	1097	-	911
$S_c(3n)$	(in <sup>3</sup> ) 837	-	1013	-	837
$\rho$	(k/')	1.291	0.794	1.291	0.766
$M_D$	(k)	1288	458	1187	217
$s_D$	(k/')	-	0.435	-	0.435
$M_{sD}$	(k)	-	294	-	143
$M_L$	(k)	505	670	481	499
$M_I$	(k)	113	141	109	124
$S_3 [M_L + M_I]$	(k)	1030	1352	983	1038
$M_u$	(k)	3013	2735	2821	1818
$M_u$	(k)	-	3871	-	3386
$f_s \rho$ non-comp	(ksi)	12.4	6.5	11.5	3.8
$f_s \rho$ (comp)	(ksi)	-	3.5	-	2.1
$f_s S_3 [M_L + M_I]$	(ksi)	10.0	14.8	9.5	13.7
$f_s$ (Overload)	(ksi)	22.4	24.7	21.0	19.6
$f_s$ (Total)	(ksi)	29.1	-	27.3	-
VR	(k)	-	42.7	-	48.4

EXTERIOR GIRDER MOMENT TABLE					
	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
$I_s$	(in <sup>4</sup> ) 18080	29968	22767	29968	18080
$I_c(n)$	(in <sup>4</sup> ) 42305	-	49613	-	42305
$I_c(3n)$	(in <sup>4</sup> ) 31445	-	37009	-	31445
$S_s$	(in <sup>3</sup> ) 702	1136	876	1136	702
$S_c(n)$	(in <sup>3</sup> ) 961	-	1146	-	961
$S_c(3n)$	(in <sup>3</sup> ) 876	-	1051	-	876
$\rho$	(k/')	1.348	0.873	1.348	0.845
$M_D$	(k)	1348	520	1244	245
$s_D$	(k/')	-	0.435	-	0.435
$M_{sD}$	(k)	-	302	-	146
$M_L$	(k)	464	642	441	471
$M_I$	(k)	104	134	100	117
$S_3 [M_L + M_I]$	(k)	947	1293	902	980
$M_u$	(k)	2983	2750	2789	1782
$M_u$	(k)	-	5705	-	4983
$f_s \rho$ non-comp	(ksi)	14.2	7.1	13.1	4.2
$f_s \rho$ (comp)	(ksi)	-	3.4	-	2.0
$f_s S_3 [M_L + M_I]$	(ksi)	10.0	13.5	9.5	12.2
$f_s$ (Overload)	(ksi)	24.2	24.1	22.7	18.4
$f_s$ (Total)	(ksi)	31.5	-	29.5	-
VR	(k)	-	40.1	-	45.4

INTERIOR GIRDER REACTION TABLE				
	S. Abut.	Pier 1	Pier 2	N. Abut.
RR	(k)	137.5	131.7	28.6
R <sub>L</sub>	(k)	54.2	53.0	34.5
R <sub>T</sub>	(k)	11.9	12.2	8.6
R <sub>Total</sub>	(k)	203.6	196.9	71.7

EXTERIOR GIRDER REACTION TABLE				
	S. Abut.	Pier 1	Pier 2	N. Abut.
RR	(k)	145.6	139.5	30.8
R <sub>L</sub>	(k)	50.9	49.8	32.5
R <sub>T</sub>	(k)	11.2	11.5	8.1
R <sub>Total</sub>	(k)	207.7	200.8	71.4

\* Compact sections  
\*\* Non-Compact and slender sections

\* Compact sections  
\*\* Non-Compact and slender sections

$I_s, S_s$ : Non-composite moment of inertia and section modulus of the steel section used for computing  $f_s$  (Total and Overload) due to non-composite dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(n), S_c(n)$ : Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing  $f_s$  (Total and Overload) due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(3n), S_c(3n)$ : Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing  $f_s$  (Total and Overload) due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

$\rho$ : Un-factored non-composite dead load (kips/ft.).

$M_D$ : Un-factored moment due to non-composite dead load (kip-ft.).

$s_D$ : Un-factored long-term composite (superimposed) dead load (kips/ft.).

$M_{sD}$ : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).

$M_L$ : Un-factored live load moment (kip-ft.).

$M_I$ : Un-factored moment due to impact (kip-ft.).

$M_u$ : Factored design moment (kip-ft.).

$1.3 [M_D + M_{sD} + \frac{2}{3} (M_L + M_I)]$

$M_u$ : Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).

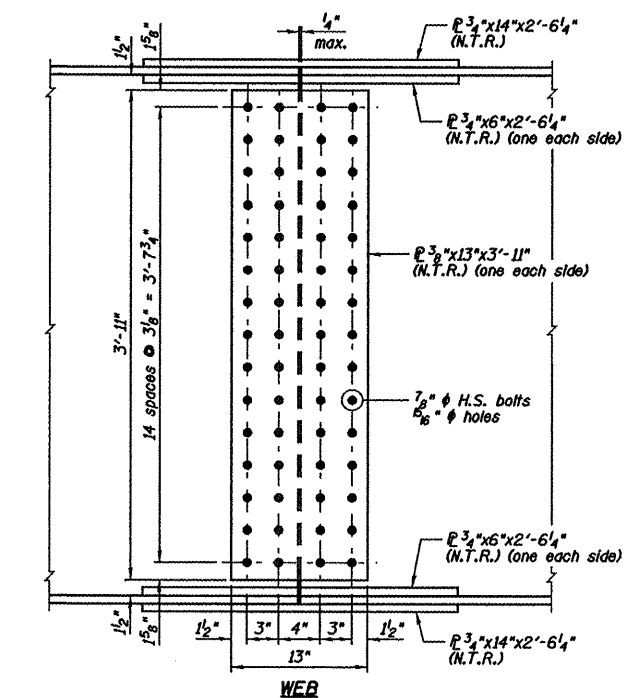
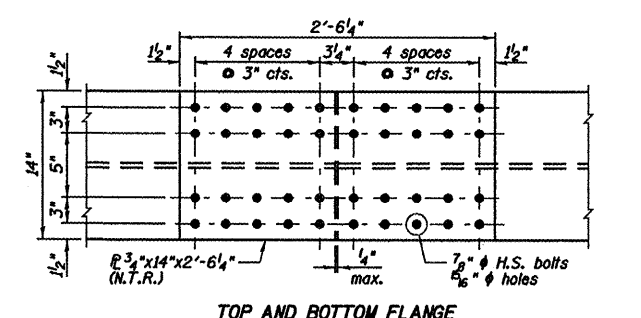
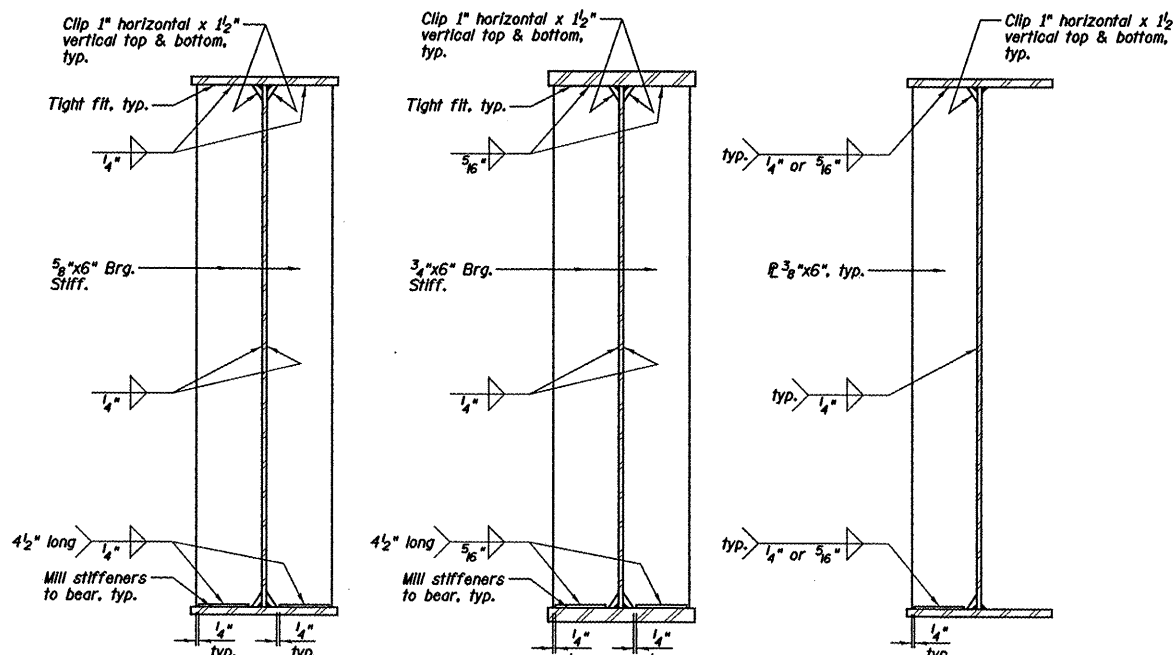
$f_s$  (Overload): Sum of stresses as computed from the moments below (ksi).

$M_D + M_{sD} + \frac{2}{3} (M_L + M_I)$

$f_s$  (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).

$1.3 [M_D + M_{sD} + \frac{2}{3} (M_L + M_I)]$

VR: Maximum  $\frac{1}{4}$  + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).



NOTES:  
1.) Load carrying components designated N.T.R. shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.  
2.) All girder flange plates, web plates, splice plates and bearing stiffener plates shall be AASHTO M270 Grade 50.

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

FARNSWORTH GROUP, INC.

SECTION @ ABUTMENTS

SECTION @ PIERS

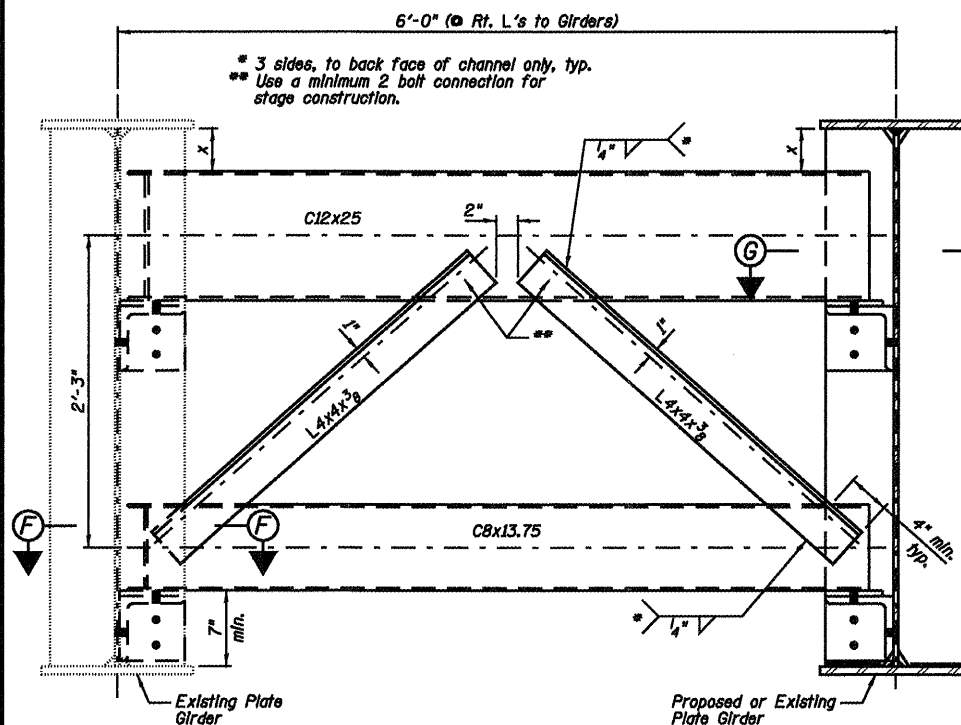
SECTION @ CROSS FRAME CF2

Note: Connecting plate not required on outside face of plate girder.

STRUCTURAL STEEL  
STRUCTURE NO. 084-0028

SHEET NO. B11	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	13
19 SHEETS	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

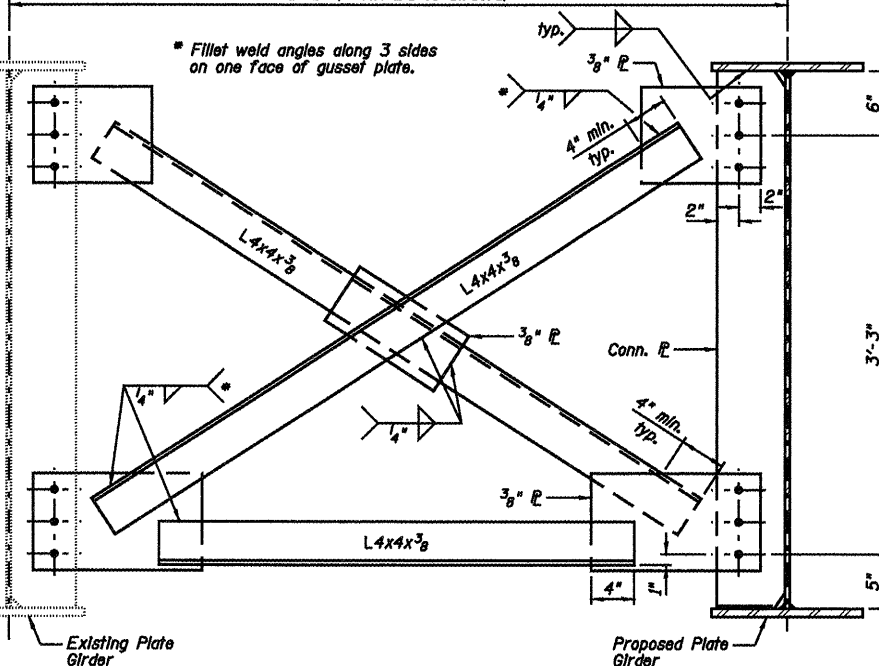
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
6'-0" (© Rt. L's to Girders)



TYPICAL END CROSS FRAME AT SOUTH ABUTMENT - CF1  
(5 - Required)

- Notes: 1.) Detail 5/8"  $\phi$  holes for all 3/4"  $\phi$  bolts.  
2.) Two hardened washers shall be required for each set of oversized holes.  
3.) Place diaphragm with projected legs outward from abutment backwall.  
4.) Bearing Stiffeners shall be welded to flanges when used as cross frame Connection Plates.

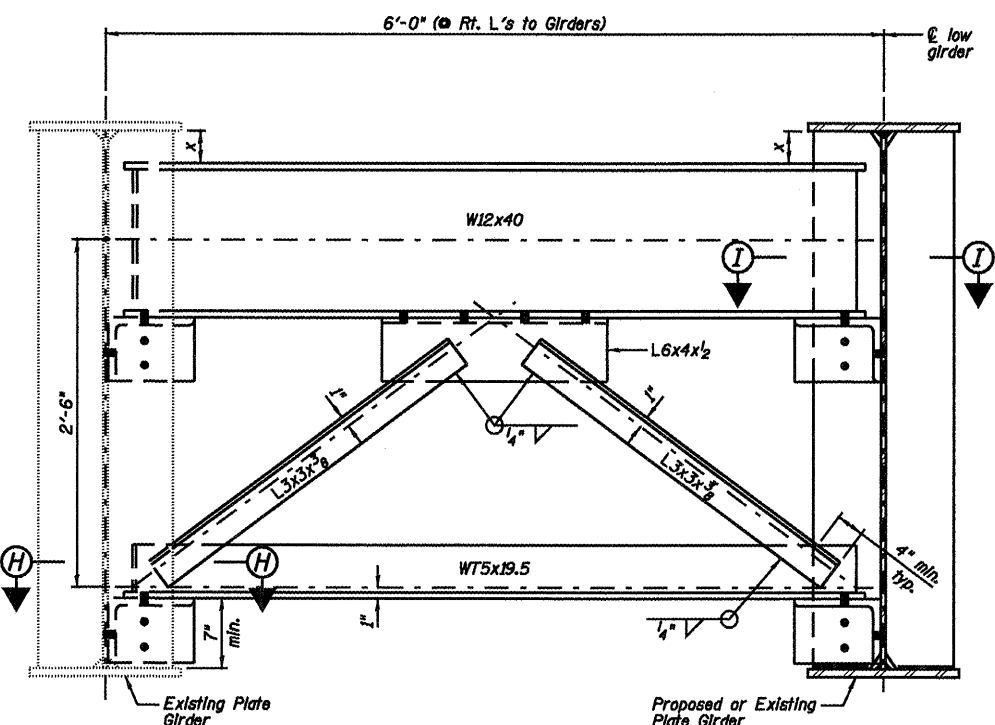
SOUTH ABUTMENT TABLE	
Girder No.	"x" Dimension
1	5 1/2"
2	5 1/2"
3	5 1/2"
4	4 3/8"
5	4 3/8"
6	5 1/2"



TYPICAL INTERIOR CROSS FRAME - CF2 (CONNECTION "A")  
(15 - Required)

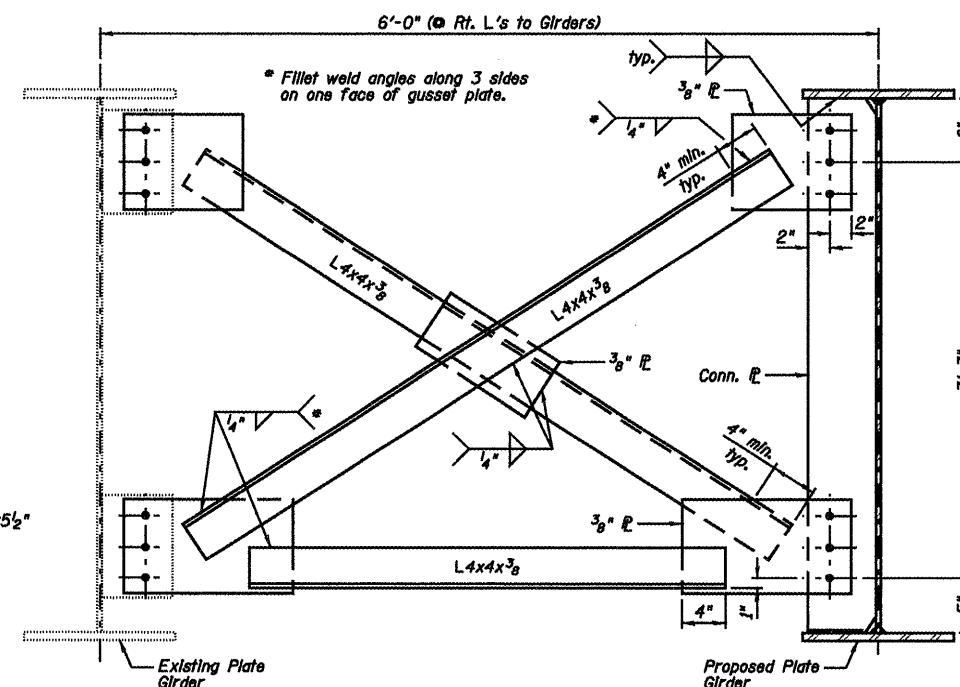
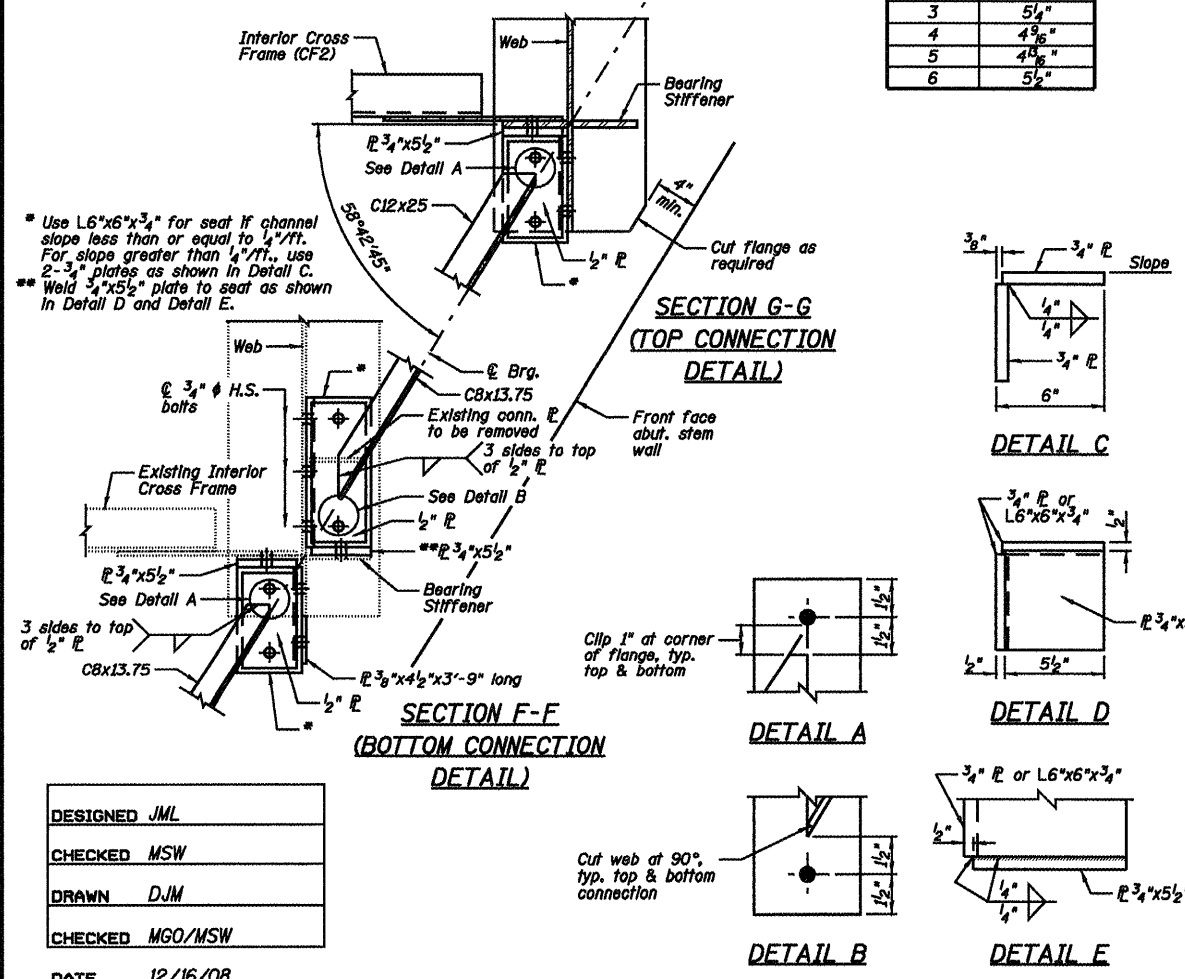
- Notes: 1.) See Sheet B9 for Cross Frame Connection "A" locations.  
2.) Detail 5/8"  $\phi$  holes for all 3/4"  $\phi$  bolts.  
3.) Two hardened washers shall be required for each set of oversized holes.  
4.) For existing to proposed connection, match existing bolt holes. The Fabrication Contractor shall provide connection details for all existing to proposed connections per the existing shop drawings.

NORTH ABUTMENT TABLE	
Girder No.	"x" Dimension
1	5 1/2"
2	5 1/2"
3	5 3/8"
4	5 1/2"
5	5 1/2"
6	5 1/2"



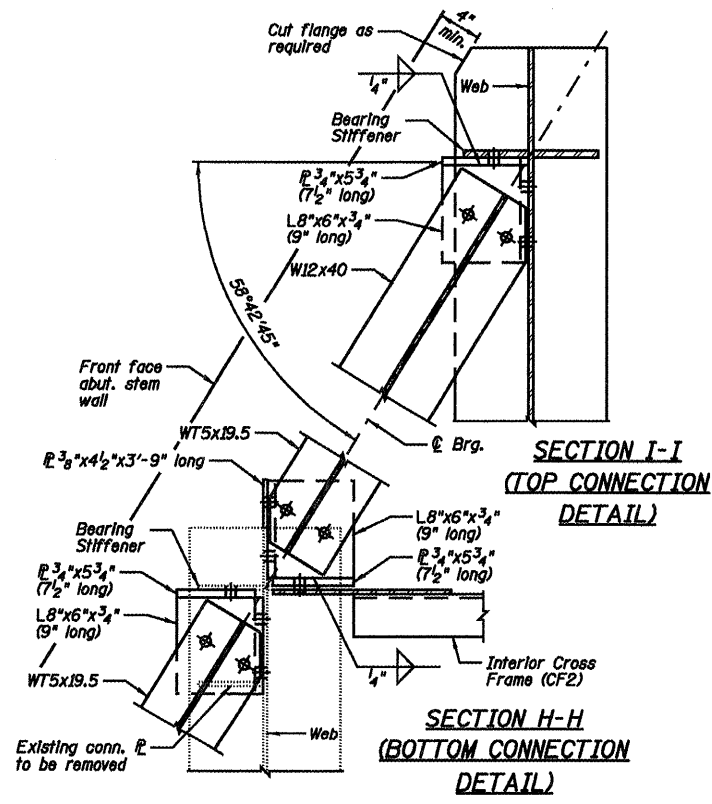
TYPICAL END CROSS FRAME AT NORTH ABUTMENT - CF3  
(5 - Required)

- Notes: 1.) Detail 5/8"  $\phi$  holes for all 3/4"  $\phi$  bolts.  
2.) Two hardened washers shall be required for each set of oversized holes.



TYPICAL INTERIOR CROSS FRAME - CF2 (CONNECTION "B")  
(15 - Required)

- Notes: 1.) See Sheet B9 for Cross Frame Connection "B" locations.  
2.) Detail 5/8"  $\phi$  holes for all 3/4"  $\phi$  bolts.  
3.) Two hardened washers shall be required for each set of oversized holes.  
4.) For existing to proposed connection, match existing bolt holes. The Fabrication Contractor shall provide connection details for all existing to proposed connections per the existing shop drawings.

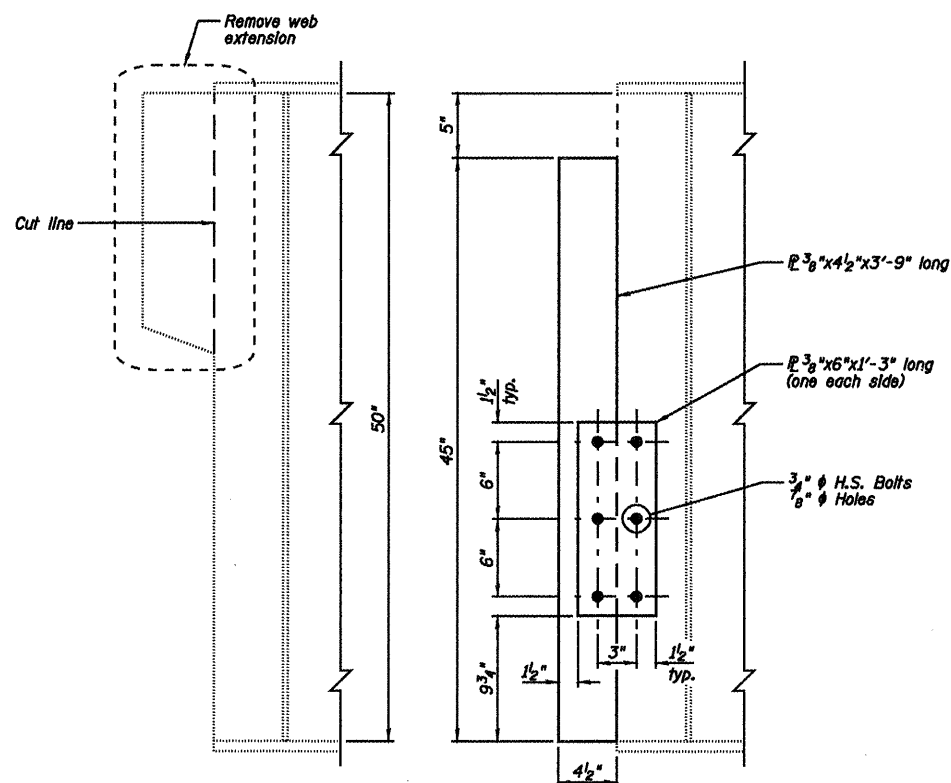


STRUCTURAL STEEL  
STRUCTURE NO. 084-0028

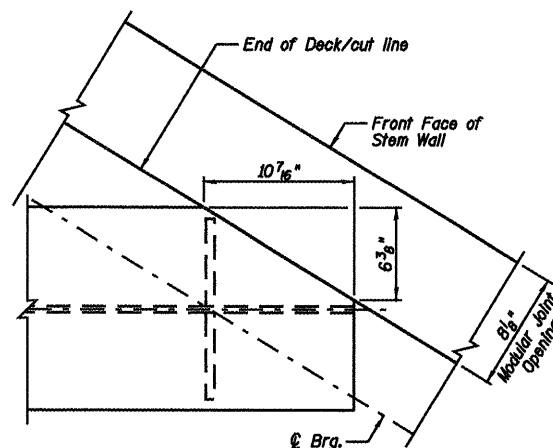
DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW
DATE	12/16/08

SHEET NO. B12 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	14
	SN 084-0028		CONTRACT NO. 72C50		
	FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT				

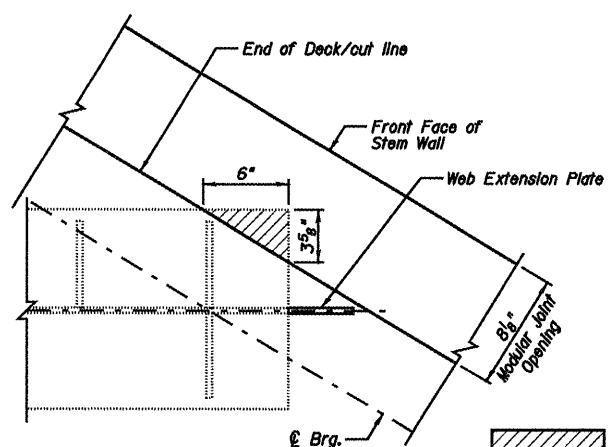
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



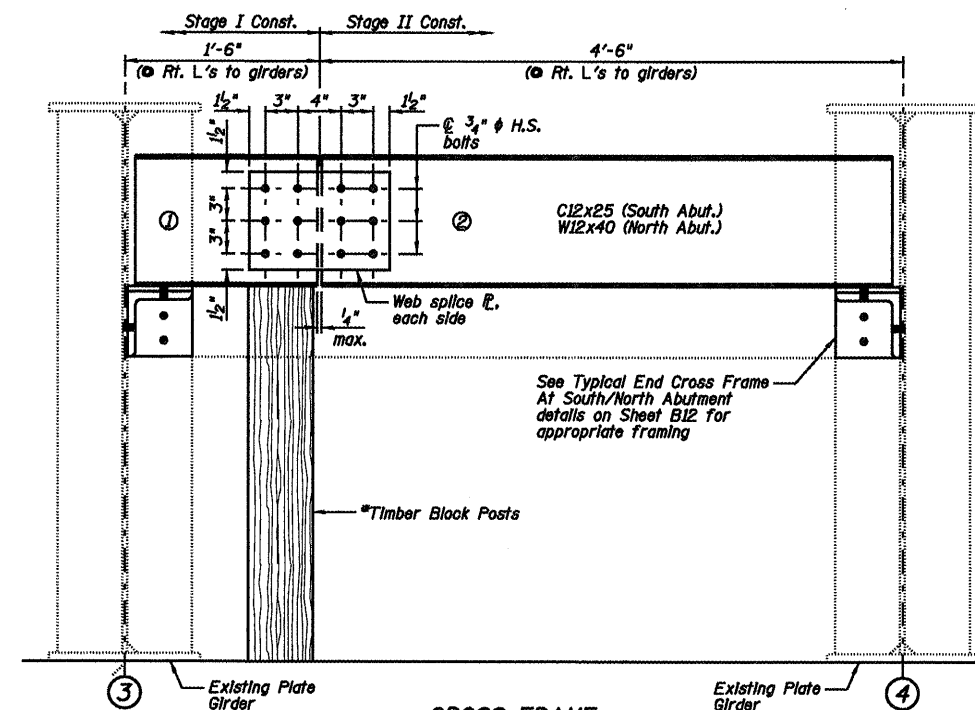
**WEB EXTENSION PLATE DETAIL**  
(8 - Required)



**SECTION D-D**  
Note: Top Flange only.



**SECTION E-E**  
Note: Top Flange only.



**CROSS FRAME**

\* Cost of Timber Block Posts are included with Erecting Structural Steel.

**CROSS FRAME STAGE CONSTRUCTION SEQUENCE**

- 1.) Order Cross Frame in two sections.
- 2.) Attach Section ① of Cross Frame to Girder 3.
- 3.) Place Timber Block Posts between Section ① of Cross Frame and Abutment Bearing Section.
- 4.) Attach Section ② of Cross Frame to both Girder 4 and Section ① of Cross Frame during Stage II Construction with splice plates.
- 5.) Remove Timber Block Posts.
- 6.) Install lower portion of Cross Frame during Stage II Construction.

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

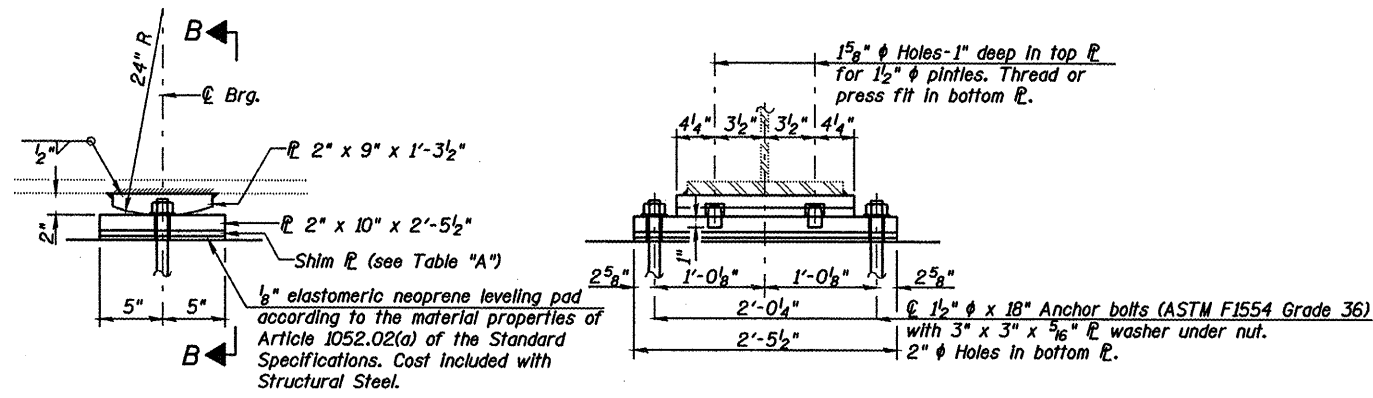
**NOTES:**

- 1.) See Sheet B10 for Web Extension Plate locations.
- 2.) See Sheet B10 for Sections D-D and E-E locations.

**STRUCTURAL STEEL  
STRUCTURE NO. 084-0028**

SHEET NO. B13 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	15
	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

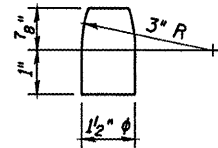
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



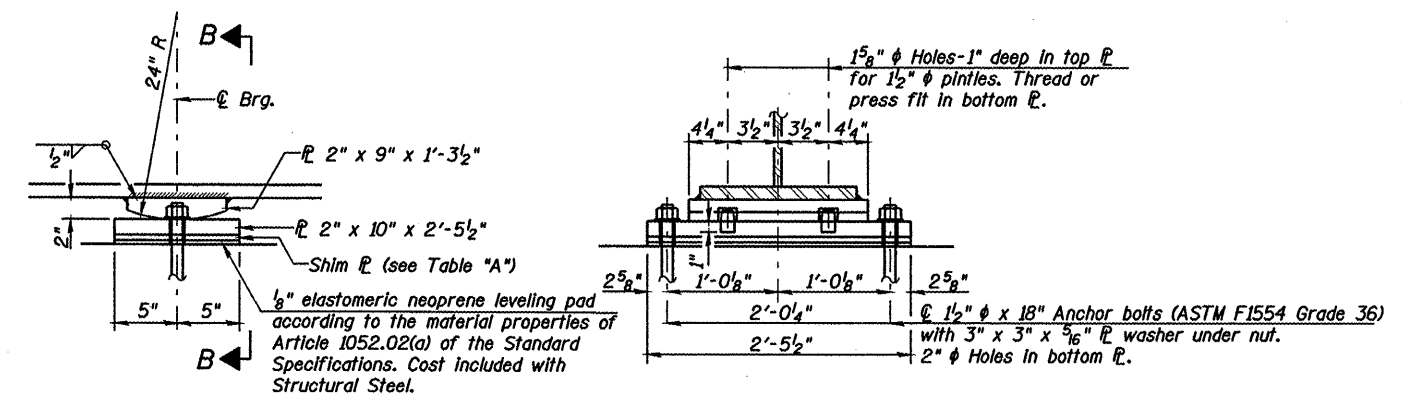
ELEVATION AT PIER NO. 1

SECTION B-B

FIXED BEARING - EXISTING  
(At Pier No. 1 - 4 Required)



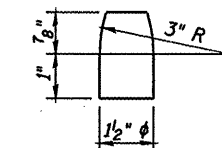
PINTLE



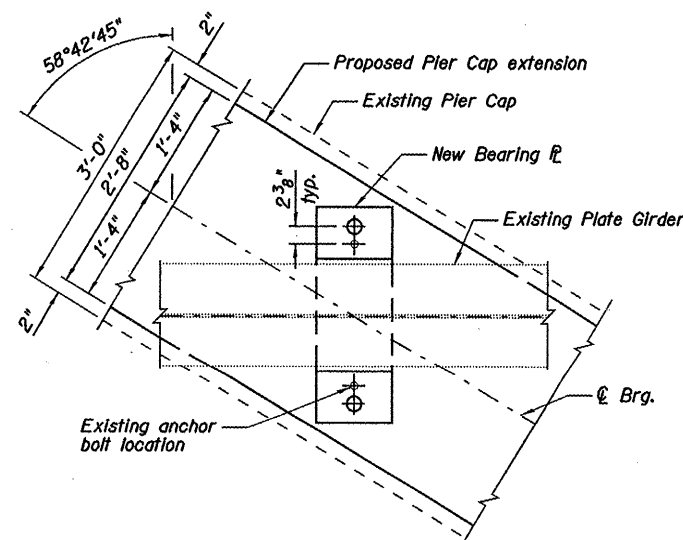
ELEVATION AT PIER NO. 1

SECTION B-B

FIXED BEARING - PROPOSED  
(At Pier No. 1 - 2 Required)

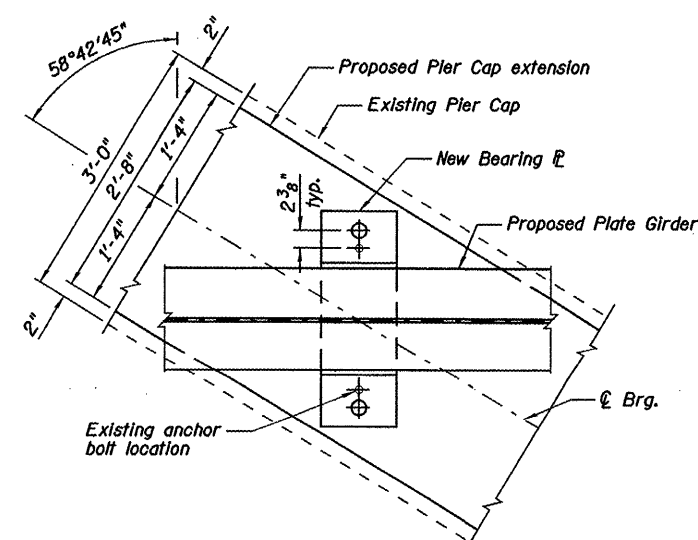


PINTLE



BEARING PLAN AT PIER NO. 1

Notes:  
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.  
Drilled and set anchor bolts shall be installed according to Article 52L06 of the Standard Specifications.



BEARING PLAN AT PIER NO. 1

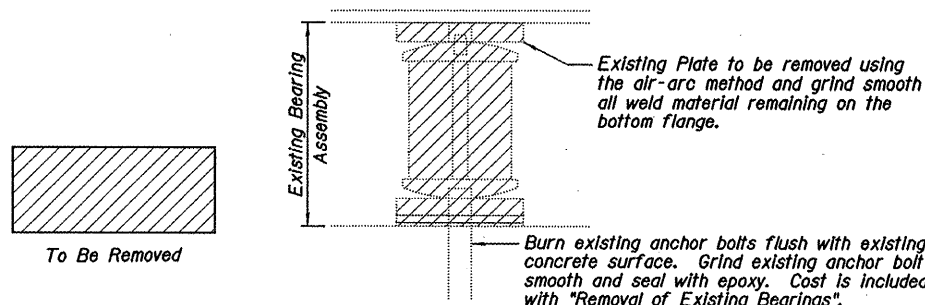
BILL OF MATERIAL

Item	Unit	Total
Anchor Bolts, 1 1/2"	Each	12

Δ For Information Only

TABLE "A"

Girder No.	Shim Thickness
1	1/4"
3	1/2"



EXISTING BEARING REMOVAL DETAIL

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

NOTE:

Two 1/2 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

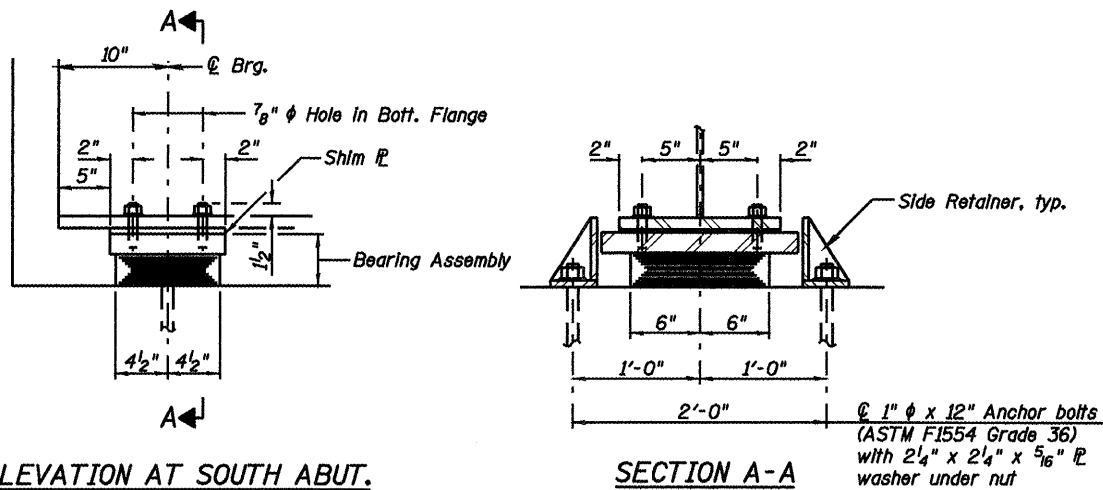
SHEET NO. B14	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	16
19 SHEETS	SN 084-0028		CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

EXISTING/PROPOSED GIRDER  
FIXED BEARING DETAILS  
STRUCTURE NO. 084-0028





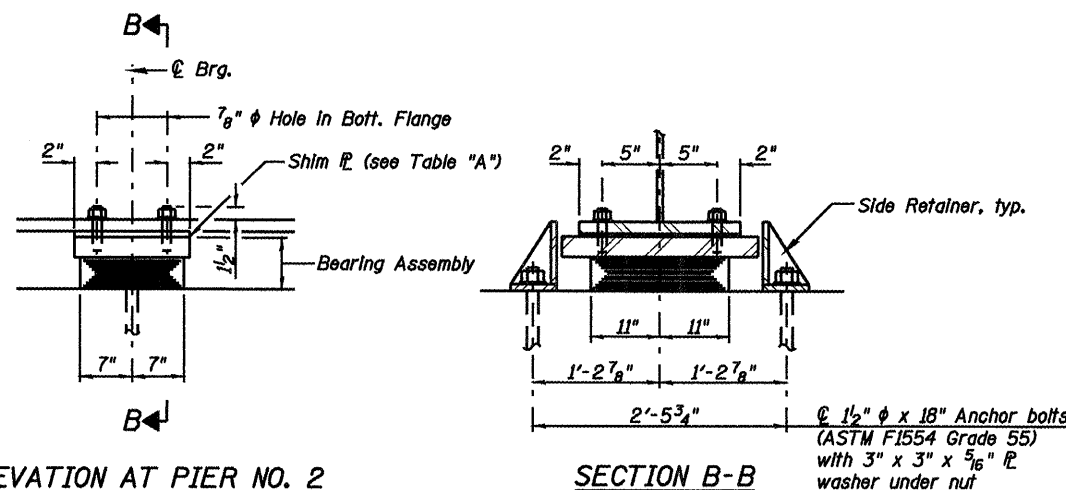
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



ELEVATION AT SOUTH ABUT.

SECTION A-A

Notes:  
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.  
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.  
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

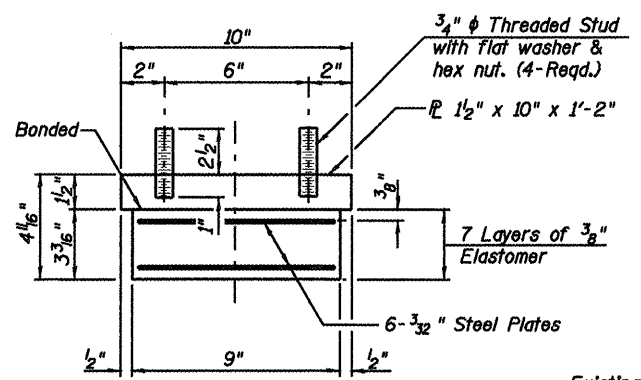


ELEVATION AT PIER NO. 2

SECTION B-B

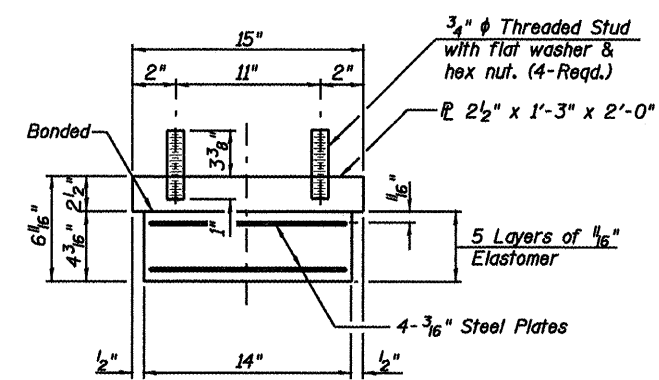
TYPE I ELASTOMERIC EXP. BRG.  
(At South Abutment - 2 Required)

TYPE I ELASTOMERIC EXP. BRG.  
(At Pier No. 2 - 2 Required)



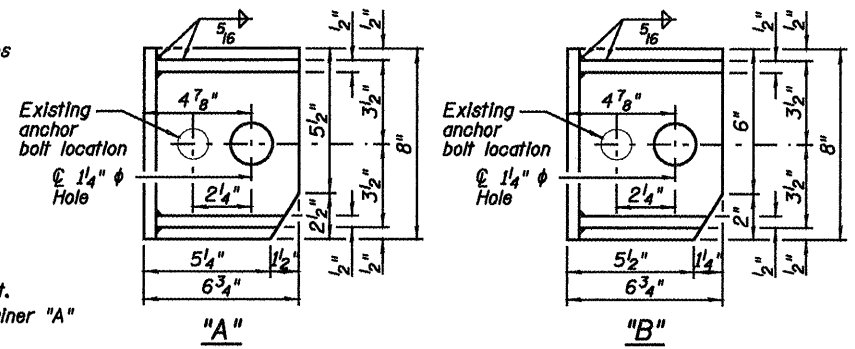
BEARING ASSEMBLY

Note: Shim plates shall not be placed under Bearing Assembly.



BEARING ASSEMBLY

Note: Shim plates shall not be placed under Bearing Assembly.

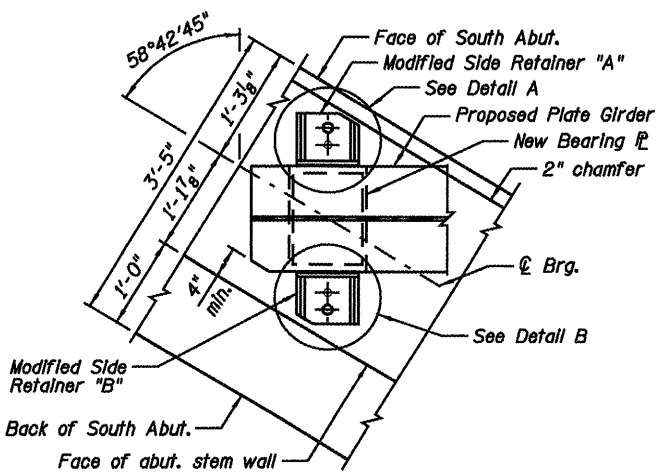


MODIFIED SIDE RETAINER

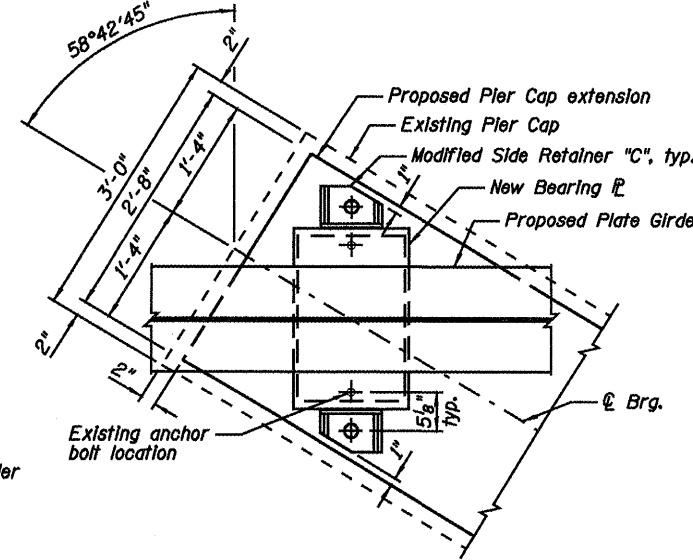
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

MODIFIED SIDE RETAINER "C"

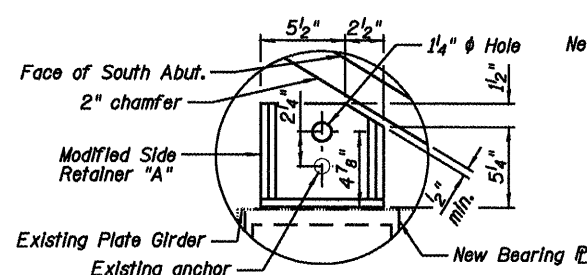
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



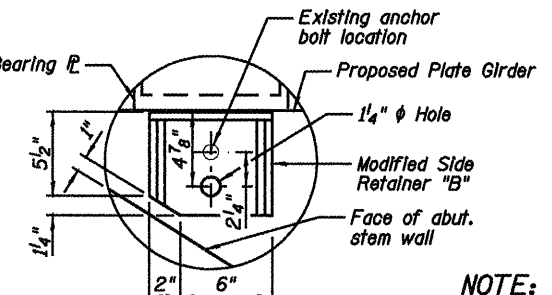
BEARING PLAN AT SOUTH ABUTMENT



BEARING PLAN AT PIER NO. 2



DETAIL A



DETAIL B

NOTE:  
Two 1/8 inch adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

BILL OF MATERIAL

Item	Unit	Total
Furnishing Elastomeric Bearing Assembly, Type I	Each	4
Anchor Bolts, 1"	Each	4
Anchor Bolts, 1 1/2"	Each	4

TABLE "A"

Location/Girder No.	Shim Thickness
Pier No. 2/1	1/2"

PROPOSED GIRDER TYPE I  
BEARING DETAILS  
STRUCTURE NO. 084-0028

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

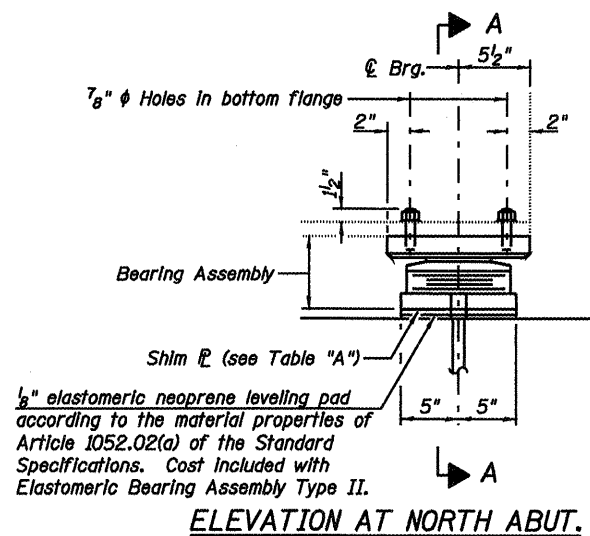
DATE 12/16/08

I-2E-1

10-1-08

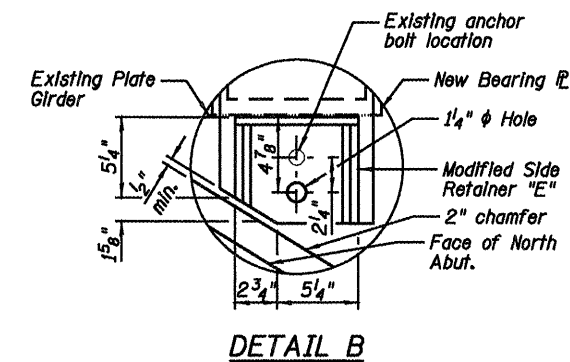
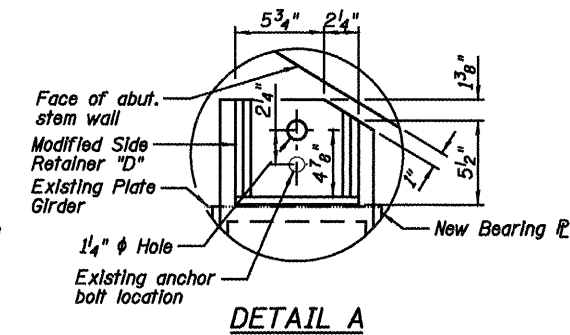
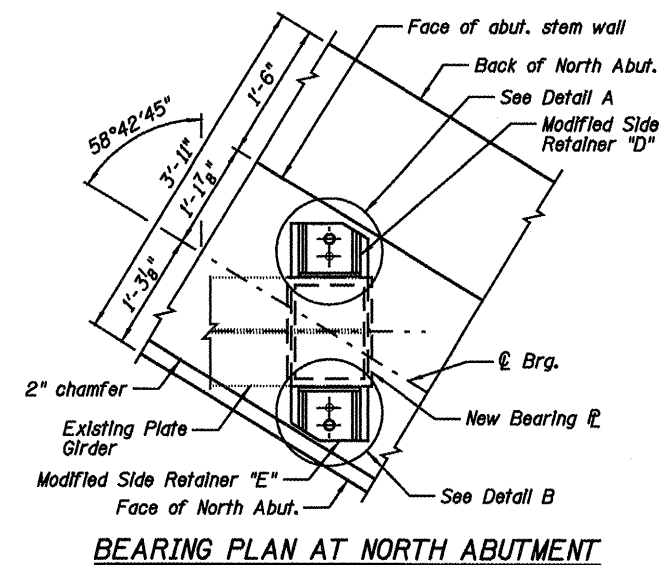
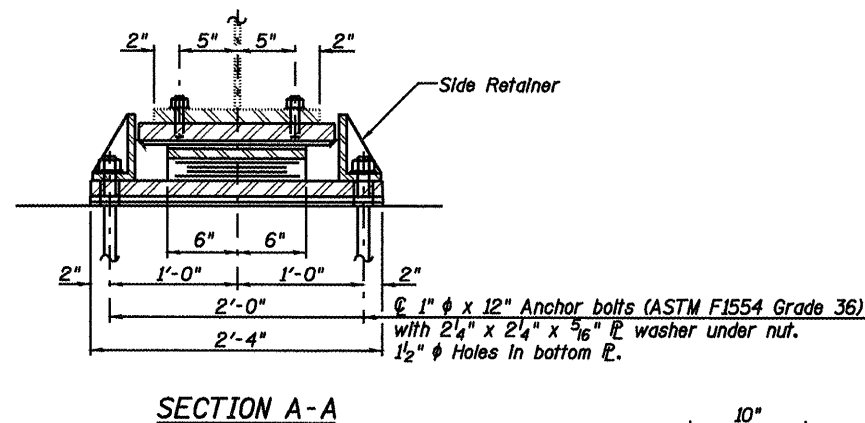
SHEET NO. B16 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	18
SN 084-0028			CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

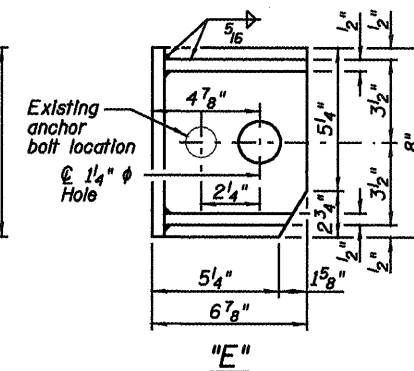
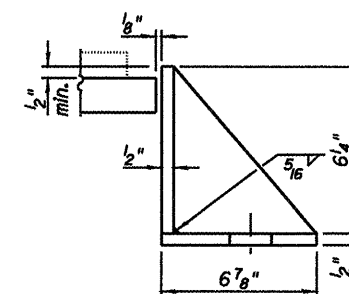
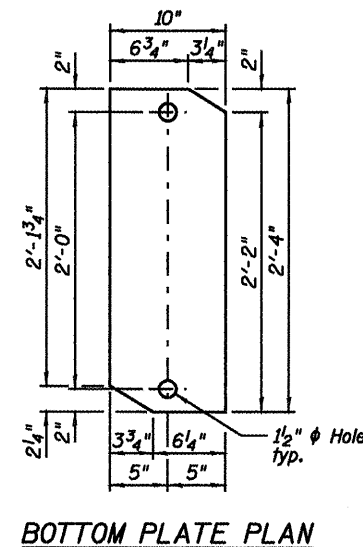
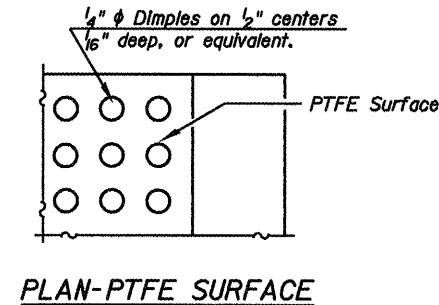
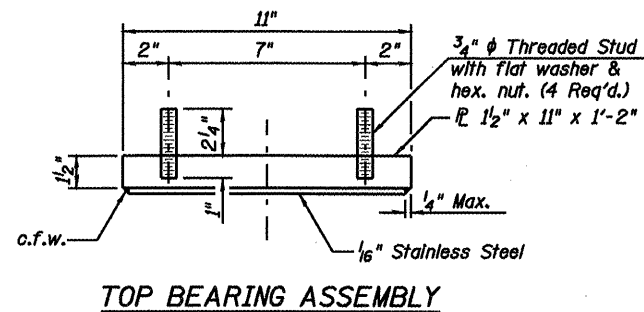


Shim  $\bar{L}$  (see Table "A")  
 $\frac{1}{8}$ " elastomeric neoprene leveling pad according to the material properties of Article 1052.02(a) of the Standard Specifications. Cost Included with Elastomeric Bearing Assembly Type II.

**TYPE II ELASTOMERIC EXP. BRG.**  
(At North Abutment - 4 Required)



Notes:  
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
Anchor bolts for Type II bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.  
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.  
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type II.  
The  $\frac{1}{8}$ " PTFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.  
Bonding of  $\frac{1}{8}$ " PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



**MODIFIED SIDE RETAINER**  
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**BILL OF MATERIAL**

Item	Unit	Total
Furnishing Elastomeric Bearing Assembly, Type II	Each	4
Anchor Bolts, 1"	Each	8

Δ For Information Only

**TABLE "A"**

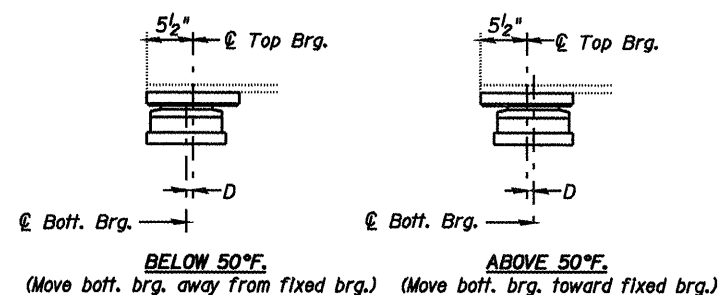
Girder No.	Shim Thickness
2	$\frac{3}{8}$ "
3	$\frac{1}{8}$ "

**EXISTING GIRDER TYPE II BEARING DETAILS**  
STRUCTURE NO. 084-0028

SHEET NO. B17	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
19 SHEETS	55	(84-3HB-6)BR-F	SANGAMON	21	19
SN 084-0028			CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

**NOTE:**

Two  $\frac{1}{8}$  in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.



DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08

I-2E-2

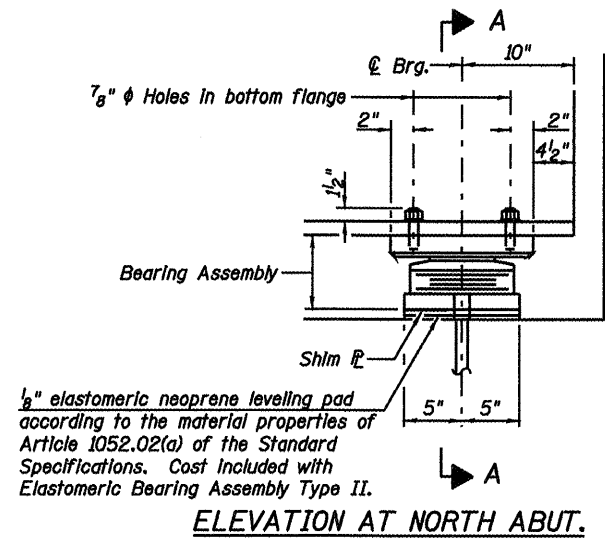
10-1-08

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24-8181

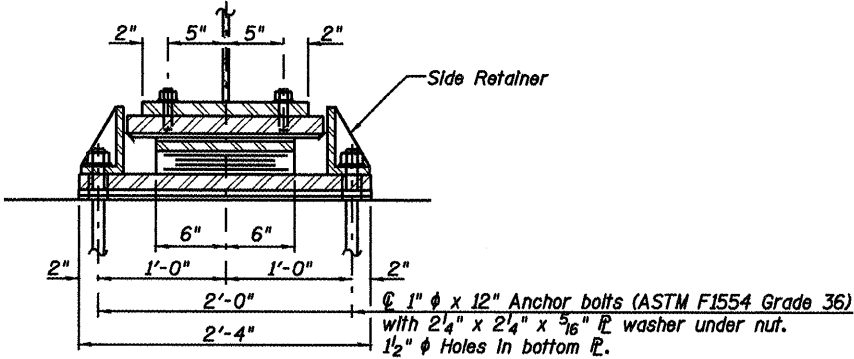
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



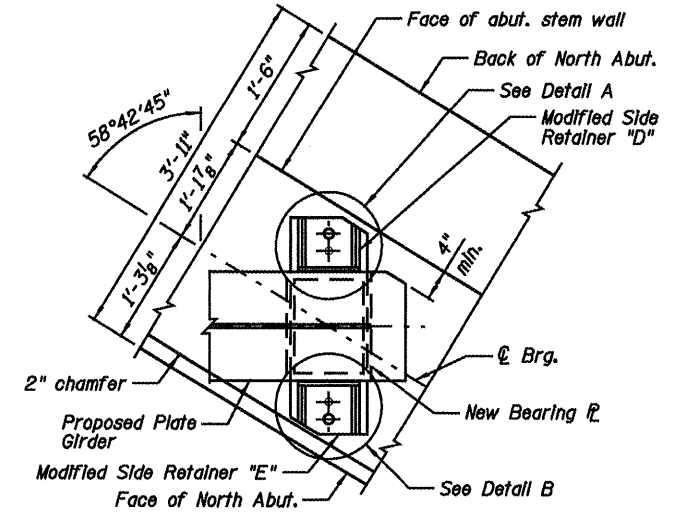
1/2" elastomeric neoprene leveling pad according to the material properties of Article 1052.02(a) of the Standard Specifications. Cost included with Elastomeric Bearing Assembly Type II.

ELEVATION AT NORTH ABUT.

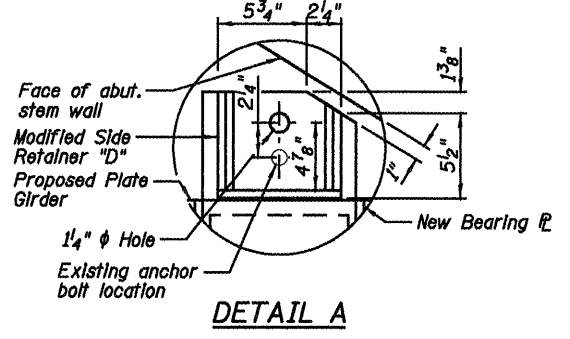
TYPE II ELASTOMERIC EXP. BRG.  
(At North Abutment - 2 Required)



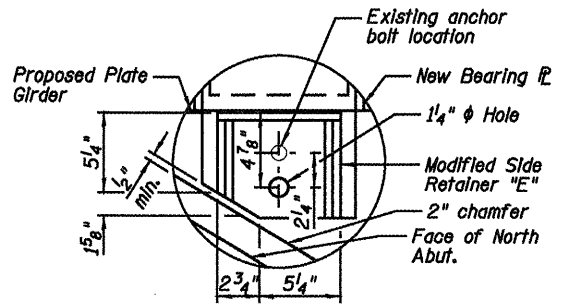
SECTION A-A



BEARING PLAN AT NORTH ABUTMENT

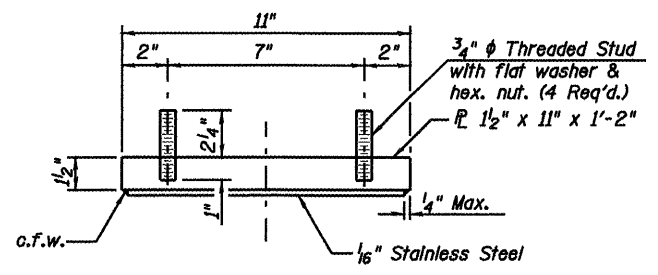


DETAIL A

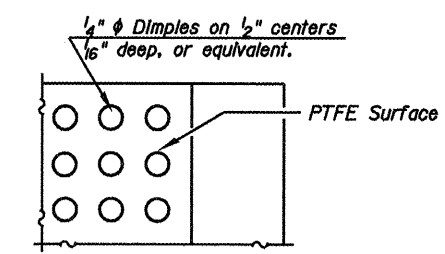


DETAIL B

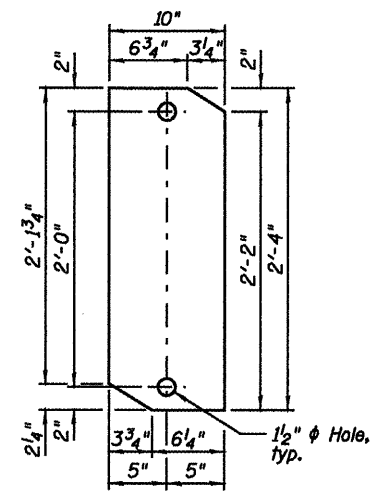
Notes:  
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
Anchor bolts for Type II bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.  
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.  
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type II.  
The 1/8" PTFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.  
Bonding of 1/8" PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



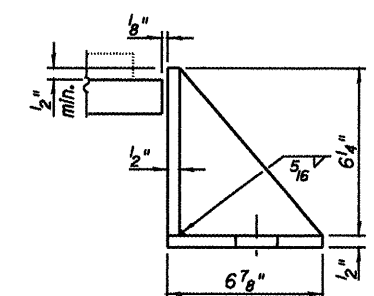
TOP BEARING ASSEMBLY



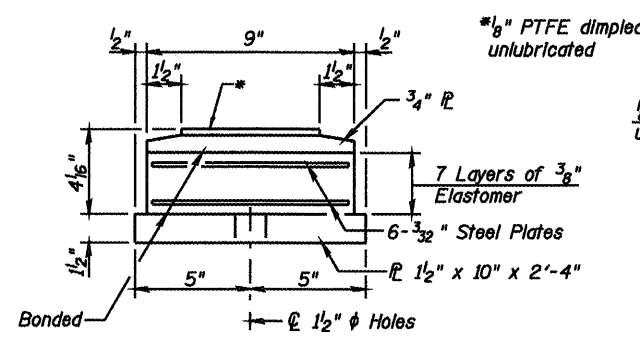
PLAN-PTFE SURFACE



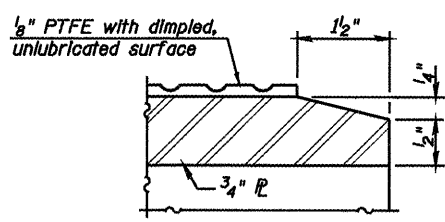
BOTTOM PLATE PLAN



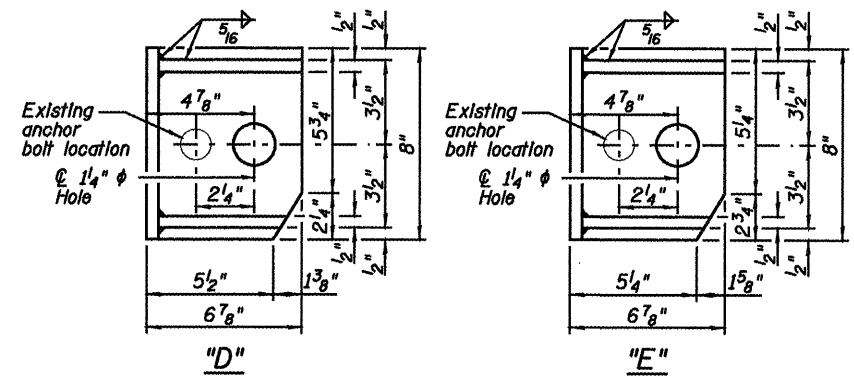
MODIFIED SIDE RETAINER  
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



BOTTOM BEARING ASSEMBLY



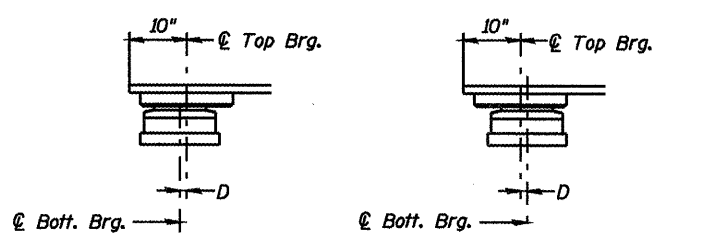
SECTION THRU PTFE



BILL OF MATERIAL

Item	Unit	Total
Furnishing Elastomeric Bearing Assembly, Type II	Each	2
Anchor Bolts, 1"	Each	4

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SETTING ANCHOR BOLTS AT EXP. BRG.

D=1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

NOTE:  
Two 1/8" adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

DESIGNED	JML
CHECKED	MSW
DRAWN	DJM
CHECKED	MGO/MSW

DATE 12/16/08 I-2E-2 10-1-08

PROPOSED GIRDER TYPE II  
BEARING DETAILS  
STRUCTURE NO. 084-0028

SHEET NO. B18	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
19 SHEETS	55	(84-3HB-6)BR-F	SANGAMON	21	20
SN 084-0028			CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TOP OF SOUTH ABUTMENT SEAT ELEVATIONS					
Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
610.91	611.01	611.11	611.11	611.02	611.02

TOP OF PIER NO. 1 SEAT ELEVATIONS					
Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
610.93	610.93	610.99	610.99	610.89	610.89

TOP OF PIER NO. 2 SEAT ELEVATIONS					
Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
610.38	610.38	610.44	610.38	610.20	610.12

TOP OF NORTH ABUTMENT SEAT ELEVATIONS					
Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
609.97	609.97	609.97	609.88	609.70	609.52

DESIGNED <i>JML</i>
CHECKED <i>MSW</i>
DRAWN <i>DJM</i>
CHECKED <i>MGO/MSW</i>

DATE 12/16/08

FARNSWORTH GROUP, INC.

**SUBSTRUCTURE SEAT ELEVATIONS**  
**STRUCTURE NO. 084-0028**

SHEET NO. B19 19 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	55	(84-3HB-6)BR-F	SANGAMON	21	21
		SN 084-0028	CONTRACT NO. 72C50		
FED. ROAD DIST. NO. 6 ILLINOIS FED. AID PROJECT					

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