

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
846	4B-1-1-1	WILL	39	1

CONTRACT NO. 60D26

D-91-294-01



LOCATION OF SECTION INDICATED THUS: - [shaded box] -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**PROPOSED
HIGHWAY PLANS**

FAP RTE 846 /IL RTE 53 OVER PRAIRIE CREEK
SECTION 4B-1-1-1

BEAM AND BEARING FABRICATION

WILL COUNTY

C-91-370-07

PROJECT: BRF-F-0846 (017)

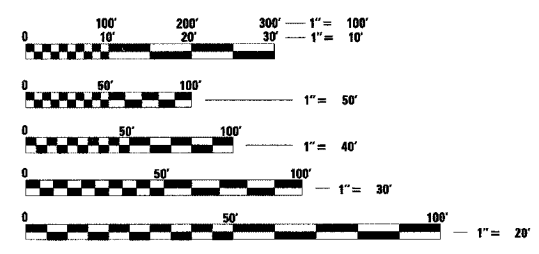
FABRICATION FOR:
FAP RTE 846 /IL RTE 53 OVER PRAIRIE CREEK
SN = 099-0090 (NB) AND 099-0242 (SB)
THE PROJECT INVOLVES THE REMOVAL AND REPLACEMENT OF THE EXISTING DECKS AND SUPERSTRUCTURES. THE ARCH BEAMS OF THE NORTHBOUND STRUCTURE WILL BE REPLACED WITH STANDARD BEAMS WITH AN ARCH FACADE ON BOTH SIDES TO MAINTAIN THE HISTORIC CONFIGURATION OF THE STRUCTURE. THE PRE STRESSED PRECAST CONCRETE BOX BEAMS OF THE SOUTHBOUND STRUCTURE WILL BE REPLACED WITH THREE SPAN CONTINUOUS COMPOSITE STEEL BEAMS WITH CONCRETE DECK. THE APPROACH ROADWAY WILL CONSIST OF TWO 12-FOOT NORTHBOUND AND TWO 12-FOOT SOUTHBOUND LANES, 10-FOOT OUTSIDE SHOULDERS AND 6-FOOT INSIDE SHOULDERS.

FOR INDEX OF SHEETS, SEE SHEET NO. 2

TRAFFIC DATA FOR NB & SB
EXISTING 1999 ADT = 7,000 VPD
PROPOSED 2021 ADT = 9,450 VPD
POSTED SPEED LIMIT = 45 MPH

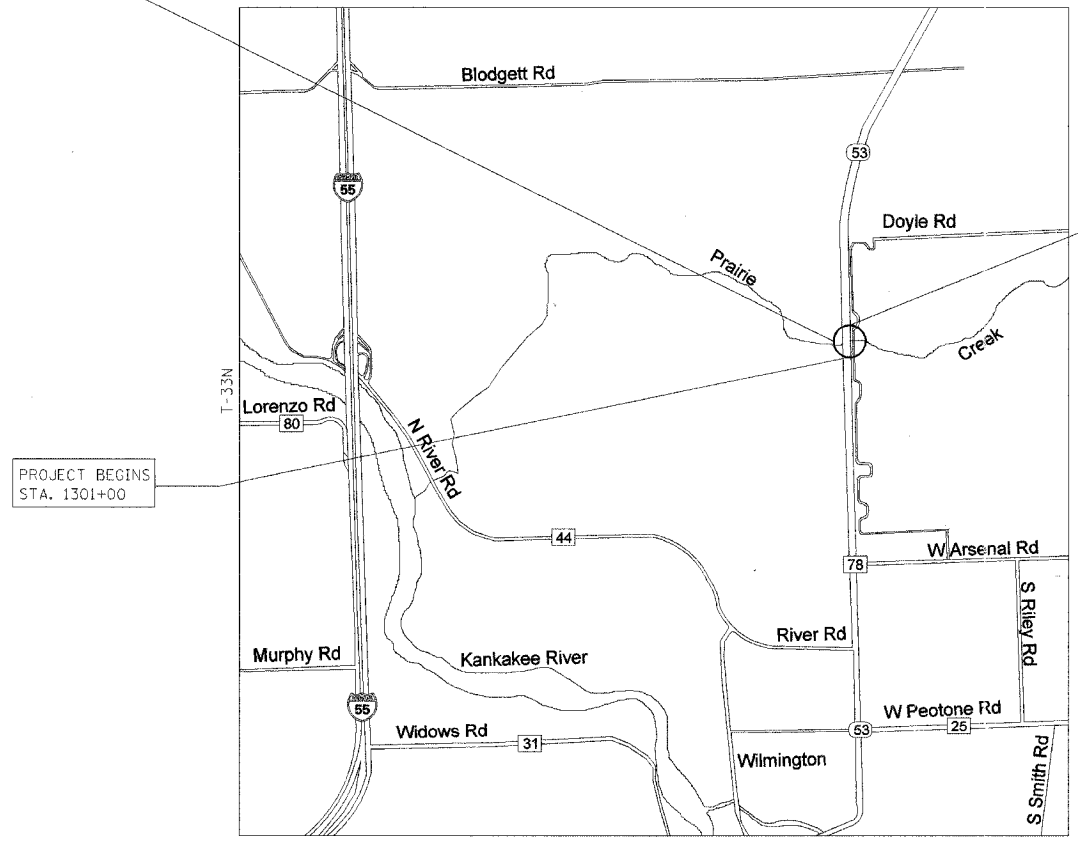
DESIGN DESIGNATION
8000 (08) ARTERIAL (FD-20)

THE PROJECT IS LOCATED IN THE FLORENCE TOWNSHIP OF WILL COUNTY.

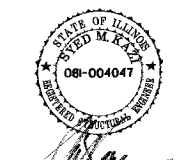


FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

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



MAP SCALE: 1"=1 MILE
GROSS AND NET LENGTH OF PROJECT 800 FT



Syed M. Kazi
Licensed Structural Engineer
State of Illinois
License No. 081-004047
Expires: 11-30-2008

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SUBMITTED July 19, 20 07
Diane O'Keefe
DEPUTY DIRECTOR OF HIGHWAYS REGION 1 ENGINEER
August 17, 20 07
Eric E. Harrell
Interim ENGINEER OF DESIGN AND ENVIRONMENT
August 17, 20 07
Milton R. Sear, P.E.
DIRECTOR, DIVISION OF HIGHWAYS

DELTA ENGINEERING, INC.
CONSULTING ENGINEERS, CONSTRUCTION MANAGERS, SURVEYORS
111 West Jackson Blvd., Suite 910 Chicago, IL 60604-2001

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

DISTRICT ONE - DESIGN /CONSULTANT PROJECT MANAGER: RAJENDRA C. SHAH, P.E. (847)705-4555

CONTRACT NO. 60D26

Rev.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
846	4B-1-1-1	WILL	39	2
STA. 1301+00	TO STA. 1309+00			
FED. ROAD DIST. NO. 1	ILLINOIS		FED. AID PROJECT	

CONTRACT No. 60D26

INDEX OF SHEETS

1. COVER SHEET
2. INDEX OF SHEETS & SUMMARY OF QUANTITIES
- 3-22. BRIDGE PLANS - NORTHBOUND (STR. No. 099-0090)
- 23-39. BRIDGE PLANS - SOUTHBOUND (STR. No. 099-0242)

ILLINOIS ROUTE 53 OVER PRAIRIE CREEK

CODE NO.	SUMMARY OF QUANTITIES	UNIT	TOTAL QTY.	CONSTRUCTION TYPE CODE	
				BRF NB BRIDGE X771-2A	F SB BRIDGE X771-2A
52100110	FURNISHING ELASTOMETRIC BEARING ASSEMBLY, TYPE I	EACH	36	18	18
50500205	FURNISHING STRUCTURAL STEEL	L SUM	1	0.52	0.48
X0320622	FIELD MEASUREMENTS	L SUM	1	0.52	0.48
X0322770	STORAGE OF STRUCTURAL STEEL AND BEARINGS	CAL DA	60	30	30

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION
 IL RTE 53 OVER PRAIRIE CREEK
 INDEX OF SHEETS &
 SUMMARY OF QUANTITIES

SCALE: NONE
 DATE: JUNE 2007

DRAWN BY: MAK
 CHECKED BY: GBC

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. S1
F. A. P. 846	4B-1-1-1	WILL	39	3	SHEETS S20
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

Bench Mark:
BM #7 Elevation = 570.41 (Feet)
A square cut in northeast wingwall of north bound Illinois route 53 bridge.

Existing Structure:
The existing structure No. 099-0090 (NB) was built in 1942 under construction route FA-5 and section 4-RB. The existing bridge consists of three continuous spans of reinforced concrete T-beams. The structure length is 108'-9" Bk. to Bk. of Abutments and 32'-10" Out to Out Deck. The substructure consists of two abutments, two piers, and two curtain walls between N.B. & S.B. structures. The concrete facing creates triple arches supported on two piers and the abutments (Historic Bridge). The deck and superstructure of existing bridge to be removed and replaced. Traffic shall be detoured by providing cross over away from the structure location, see roadway plans. No salvage.

DESIGN SPECIFICATIONS

Superstructure:
2007 AASHTO LRFD Bridge Design Specifications

Substructure:
AASHTO Standard Specifications For Highway Bridges 17th Edition 2002.

LOADING HL-93 (Struct. Steel, Deck & Bearings)

LOADING HS20-44 (Substructure)

Allow 50 psf for future wearing surface.

DESIGN STRESSES

Existing

$f'_c = 3,500$ psi (concrete)
 $f_y = 33,000$ psi (reinforcement)

Proposed

$f'_c = 3,500$ psi (concrete)
 $f_y = 60,000$ psi (reinforcement)
 $f_y = 50,000$ psi (structural steel) (M270 GR.50)
 $f_y = 36,000$ psi (diaphragms) (M270 GR.36)

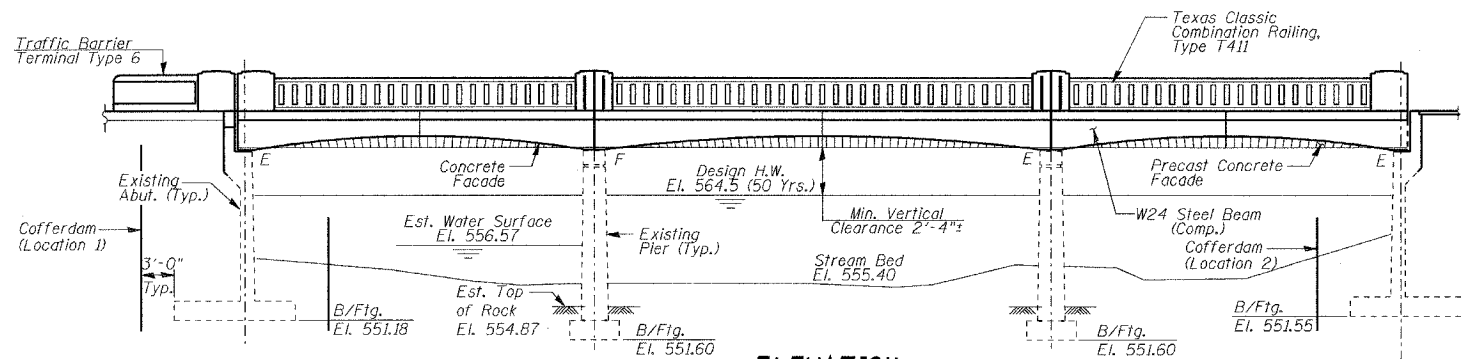
SEISMIC DATA

Seismic performance category (S.P.C.) = A
Bedrock acceleration coefficient (A) = .04g
Site coefficient (s) = 1.0

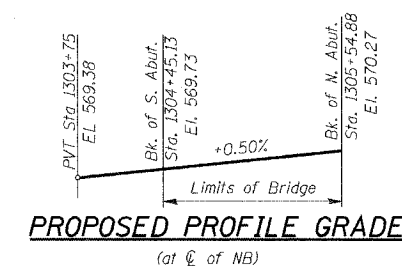
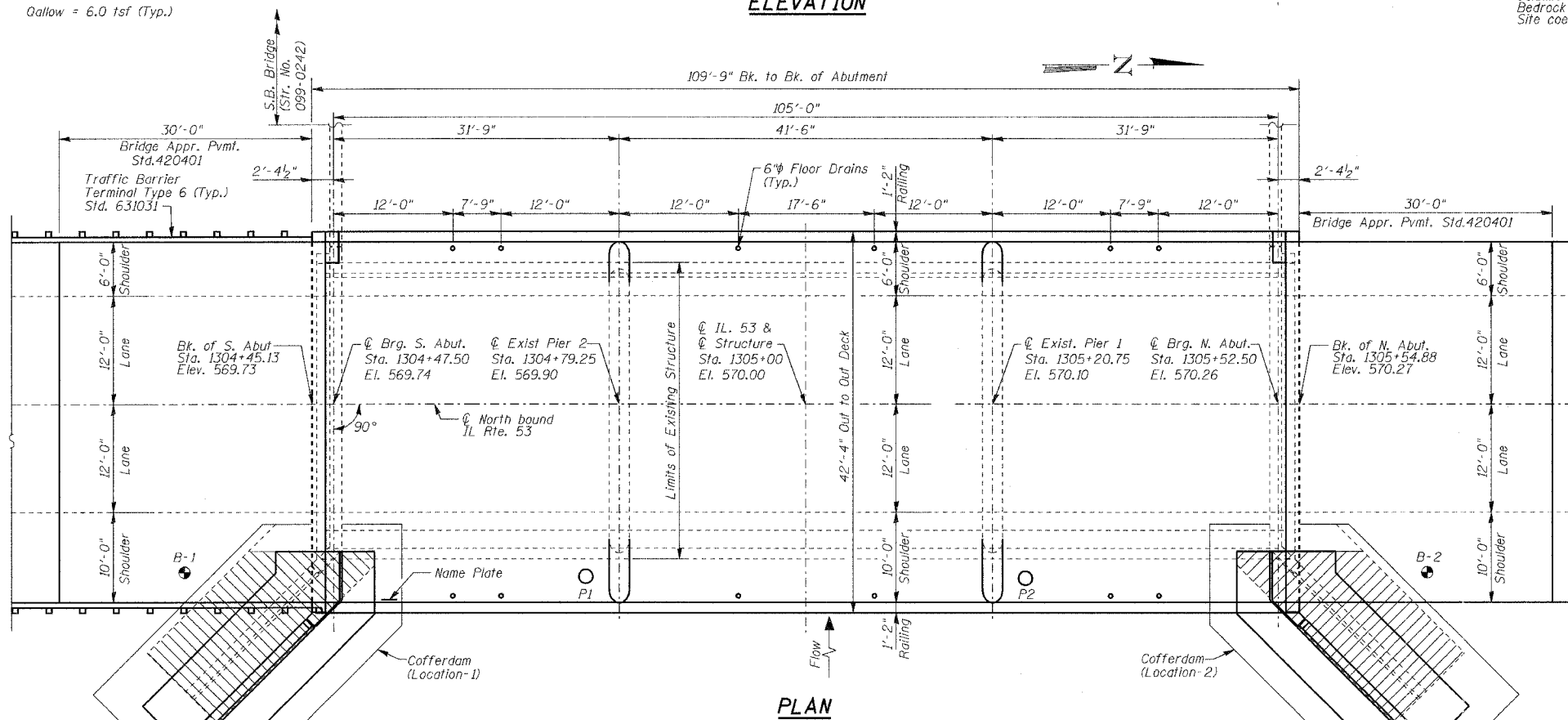
CONTRACT NO. 60D26

INDEX OF SHEETS

S1	General Plan & Elevation
S2	General Notes, Total Bill of Material and Section thru Abutment
S3	Top of Deck Elevation and Layout of Elevation Lines
S4	Top of Deck Elevation Tables
S5	Superstructure
S6	Concrete Bridge Railing (Sheet 1 of 2)
S7	Superstructure Details & Concrete Bridge railing (Sheet 2 of 2)
S8	Framing Plan and Structural Steel Details
S9	Structural Steel Details
S10	Bearing Details
S11	Concrete Removal Details
S12	South Abutment - Repairs and Extension
S13	North Abutment - Repairs and Extension
S14	Pier No. 1 - Repairs and Extension
S15	Pier No. 2 - Repairs and Extension
S16	Preformed Joint Strip Seal
S17	Precast Concrete Facade
S18	Cantilever Forming Brackets For Superstructures
S19	Bar Splicer Assembly Details
S20	Soil Boring Logs



Gallow = 6.0 tsf (Typ.)



STATION 1305+00
RE-BUILT 20 BY
STATE OF ILLINOIS
F.A.P. 846 SEC. 4-RB
LOADING HL-93 (HS20)
STR. NO. 099-0090

NAME PLATE

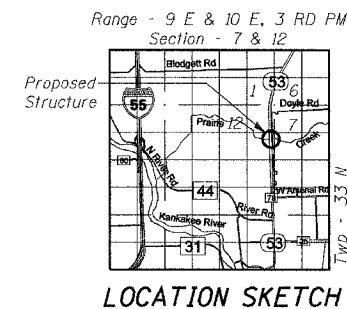
See Std. 515001
Existing Name Plate shall be cleaned and relocated next to New Name Plate. Cost included with Name Plates.



APPROVED
FOR STRUCTURAL ADEQUACY ONLY

Ralph E. Anderson (TWP)
ENGINEER OF BRIDGES AND STRUCTURES

Syed M. Kazim
Licensed Structural Engineer
State of Illinois
License No. 081-004047
Expires: 11-30-2008



WATERWAY INFORMATION

Drainage Area = 45.1 sq.mi Low Grade Elev. 569.7 Ft. @ Sta. 1301+00

Flood Yr.	Freq.	C.F.S.	Opening Sq. Ft.		Nat. H.W.E.		Head - Ft.		Headwater El.	
			Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
10	2010	738	738	738	562.9	562.9	0.0	0.0	562.9	562.9
Design	50	2910	901	901	564.5	564.6	0.1	0.1	564.6	564.6
Base	100	3260	959	959	565.1	565.3	0.2	0.2	565.3	565.3
Overlapping										
Max. Calc.	500	4080	1095	1095	566.7	567.0	0.3	0.3	567.0	567.0

All elevations are in highway datum.

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

B-1 \bullet Indicates boring location
P1 \circ Indicates soil probe location

ILLINOIS DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. S2 SHEETS S20
F. A. P. 846	4B-1-1-1	WILL.	39	4	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

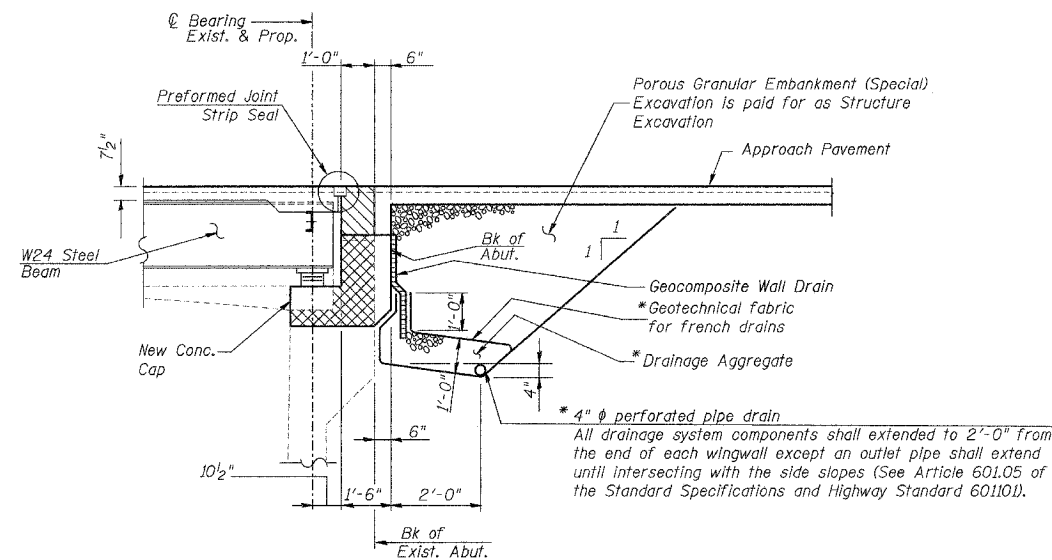
CONTRACT NO. 60D26

GENERAL NOTES:

- Fasteners shall be AASHTO M164 Type I, mechanically galvanized bolts. Bolts $\frac{3}{4}$ in ϕ , holes $\frac{13}{16}$ in ϕ , unless otherwise noted.
- Calculated weight of Structural Steel = 63,990 pounds (M270, Grade 50)
8,830 pounds (M270, Grade 36)
- 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 Grade 60 (IL modified). See Special Provisions.
- Reinforcement bars designated (E) shall be epoxy coated.
- Plan dimensions and details relative to existing plans are subject to routine 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 based upon the unit price bid for the work.
- Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ in (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
- The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the final finish coat for all interior and exterior steel surfaces and bottom flanges of all beams shall be light warm gray, munsell No 10Y 7/1. See Special Provision for "Cleaning and Painting new Metal Structures".
- Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
- Backfill shall be placed behind the abutment after the superstructure has been poured and falsework removed. See Article 502.10 of the Standard Specifications.
- A cantilevered sheet piling design does not appear feasible and additional members or other retention systems may be necessary. The Contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer.
- All construction joints shall be bonded.
- Clean and relocate existing name plate adjacent to new plate. Cost included with Name Plates.
- Concrete Sealer shall be applied to the designated areas of the abutments.

TOTAL BILL OF MATERIAL

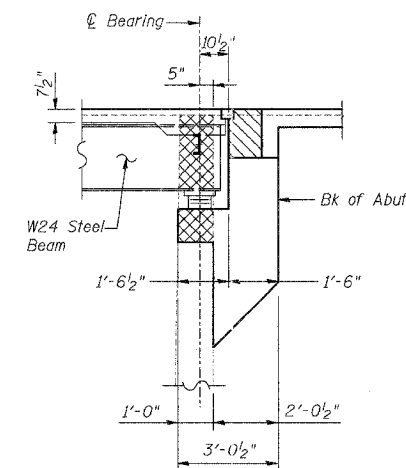
ITEM	UNIT	SUPER.	SUB.	TOTAL
Furnishing Structural Steel	L Sum	0.52	-	0.52
Furnishing Elastomeric Bearing Assembly, Type I	Each	18	-	18
Field Measurements	L Sum	0.52	-	0.52
Storage of Structural Steel and Bearings	Cal. Day	30	-	30





SECTION THRU ABUTMENT

(Section thru Abutment Extension Similar)


* Included in the cost of Pipe Under Drains for Structures, 4".



**SECTION THRU ABUTMENT
AT CURTAIN WALL**

 Area of Backwall to be constructed after removal of formwork for Superstructure
 Area of Abutment to be constructed before placement of Superstructure

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

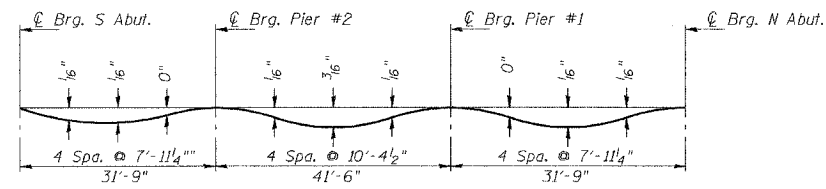
ILLINOIS DEPARTMENT OF TRANSPORTATION
GENERAL NOTES, TOTAL BILL OF MATERIAL & SECTION THRU ABUTMENT
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: AUGUST 2007
 DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F. A. P. 846	4B-1-I-1	WILL	39	5
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. S3
SHEETS S20

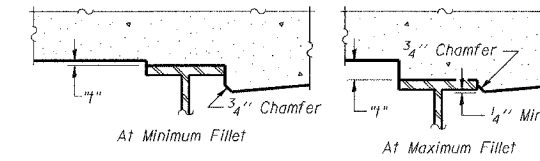
CONTRACT NO. 60D26



DEAD LOAD DEFLECTION DIAGRAM

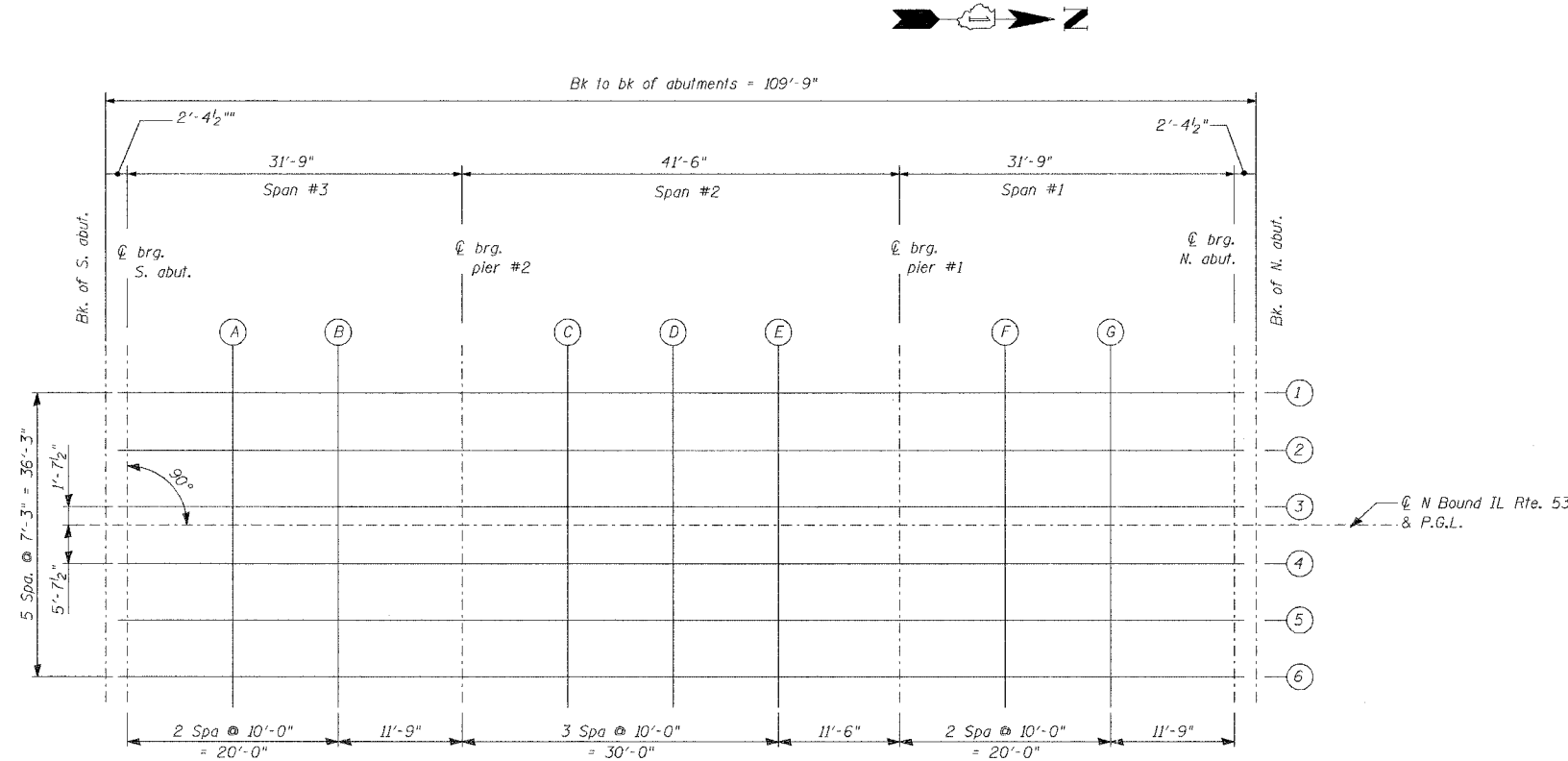
(Includes weight of concrete only.)

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 sht. S-4



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 this sheet, minus slab thickness, equals the fillet heights "T" above top flange of beams.

FILLET HEIGHTS



PLAN

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION
TOP OF DECK ELEVATION AND
LAYOUT OF ELEVATION LINES
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
DETA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F. A. P. 846	4B-1-1-1	WILL	39	6
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. 54
SHEETS 520

CONTRACT NO. 60D26

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF S ABUT.	1304+45.125	-16.125	569.452	569.452
CL BRG S ABUT.	1304+47.500	-16.125	569.464	569.464
A	1304+57.500	-16.125	569.514	569.521
B	1304+67.500	-16.125	569.564	569.570
CL PIER 2	1304+79.250	-16.125	569.622	569.622
C	1304+89.250	-16.125	569.672	569.681
D	1304+99.250	-16.125	569.722	569.738
E	1305+09.250	-16.125	569.772	569.783
CL PIER 1	1305+20.750	-16.125	569.830	569.830
F	1305+30.750	-16.125	569.880	569.885
G	1305+40.750	-16.125	569.930	569.938
CL BRG. N ABUT.	1305+52.500	-16.125	569.989	569.989
BK. OF N ABUT.	1305+54.875	-16.125	570.000	570.000

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF S ABUT.	1304+45.125	-8.875	569.586	569.586
CL BRG S ABUT.	1304+47.500	-8.875	569.598	569.598
A	1304+57.500	-8.875	569.648	569.656
B	1304+67.500	-8.875	569.698	569.704
CL PIER 2	1304+79.250	-8.875	569.757	569.757
C	1304+89.250	-8.875	569.807	569.816
D	1304+99.250	-8.875	569.857	569.873
E	1305+09.250	-8.875	569.907	569.917
CL PIER 1	1305+20.750	-8.875	569.965	569.965
F	1305+30.750	-8.875	570.015	570.019
G	1305+40.750	-8.875	570.065	570.073
CL BRG. N ABUT.	1305+52.500	-8.875	570.123	570.123
BK. OF N ABUT.	1305+54.875	-8.875	570.135	570.135

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF S ABUT.	1304+45.125	-1.625	569.700	569.700
CL BRG S ABUT.	1304+47.500	-1.625	569.712	569.712
A	1304+57.500	-1.625	569.762	569.769
B	1304+67.500	-1.625	569.812	569.818
CL PIER 2	1304+79.250	-1.625	569.870	569.870
C	1304+89.250	-1.625	569.920	569.929
D	1304+99.250	-1.625	569.970	569.986
E	1305+09.250	-1.625	570.020	570.031
CL PIER 1	1305+20.750	-1.625	570.078	570.078
F	1305+30.750	-1.625	570.128	570.133
G	1305+40.750	-1.625	570.178	570.186
CL BRG. N ABUT.	1305+52.500	-1.625	570.237	570.237
BK. OF N ABUT.	1305+54.875	-1.625	570.248	570.248

CL N BOUND IL. RTE. 53 & P.G.L.

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF S ABUT.	1304+45.125	0.000	569.725	569.725
CL BRG S ABUT.	1304+47.500	0.000	569.737	569.737
A	1304+57.500	0.000	569.787	569.795
B	1304+67.500	0.000	569.837	569.843
CL PIER 2	1304+79.250	0.000	569.896	569.896
C	1304+89.250	0.000	569.946	569.954
D	1304+99.250	0.000	569.996	570.011
E	1305+09.250	0.000	570.046	570.056
CL PIER 1	1305+20.750	0.000	570.103	570.103
F	1305+30.750	0.000	570.153	570.158
G	1305+40.750	0.000	570.203	570.211
CL BRG. N ABUT.	1305+52.500	0.000	570.262	570.262
BK. OF N ABUT.	1305+54.875	0.000	570.274	570.274

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF S ABUT.	1304+45.125	5.625	569.637	569.637
CL BRG S ABUT.	1304+47.500	5.625	569.649	569.649
A	1304+57.500	5.625	569.699	569.707
B	1304+67.500	5.625	569.749	569.755
CL PIER 2	1304+79.250	5.625	569.808	569.808
C	1304+89.250	5.625	569.858	569.867
D	1304+99.250	5.625	569.908	569.924
E	1305+09.250	5.625	569.958	569.968
CL PIER 1	1305+20.750	5.625	570.015	570.015
F	1305+30.750	5.625	570.065	570.07
G	1305+40.750	5.625	570.115	570.124
CL BRG. N ABUT.	1305+52.500	5.625	570.174	570.174
BK. OF N ABUT.	1305+54.875	5.625	570.186	570.186

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF S ABUT.	1304+45.125	12.875	569.519	569.519
CL BRG S ABUT.	1304+47.500	12.875	569.531	569.531
A	1304+57.500	12.875	569.581	569.589
B	1304+67.500	12.875	569.631	569.637
CL PIER 2	1304+79.250	12.875	569.690	569.690
C	1304+89.250	12.875	569.740	569.749
D	1304+99.250	12.875	569.790	569.806
E	1305+09.250	12.875	569.840	569.850
CL PIER 1	1305+20.750	12.875	569.898	569.898
F	1305+30.750	12.875	569.947	569.952
G	1305+40.750	12.875	569.997	570.006
CL BRG. N ABUT.	1305+52.500	12.875	570.056	570.056
BK. OF N ABUT.	1305+54.875	12.875	570.068	570.068

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF S ABUT.	1304+45.125	20.125	569.368	569.368
CL BRG S ABUT.	1304+47.500	20.125	569.380	569.380
A	1304+57.500	20.125	569.430	569.438
B	1304+67.500	20.125	569.480	569.486
CL PIER 2	1304+79.250	20.125	569.539	569.539
C	1304+89.250	20.125	569.589	569.598
D	1304+99.250	20.125	569.639	569.655
E	1305+09.250	20.125	569.689	569.699
CL PIER 1	1305+20.750	20.125	569.747	569.747
F	1305+30.750	20.125	569.796	569.801
G	1305+40.750	20.125	569.846	569.855
CL BRG. N ABUT.	1305+52.500	20.125	569.905	569.905
BK. OF N ABUT.	1305+54.875	20.125	569.917	569.917

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

- NOTES:
- For elevations location plan see sheet no. 53
 - Elevations shown are to the top of concrete deck.
 - All elevations and offsets are in feet.
 - Offsets: + is to the right of CL IL Route 53 looking upstation.
- is to the left of CL IL Route 53 looking upstation.

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION

TOP OF DECK ELEVATION TABLES

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 090900(NB)
SCALE: NONE
DATE: JUNE 2007

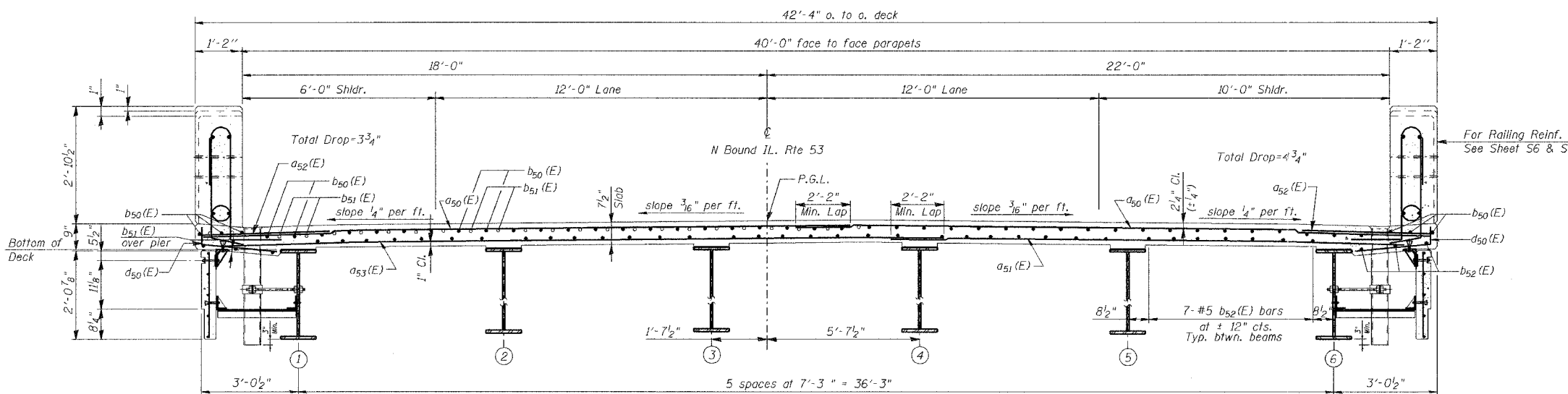
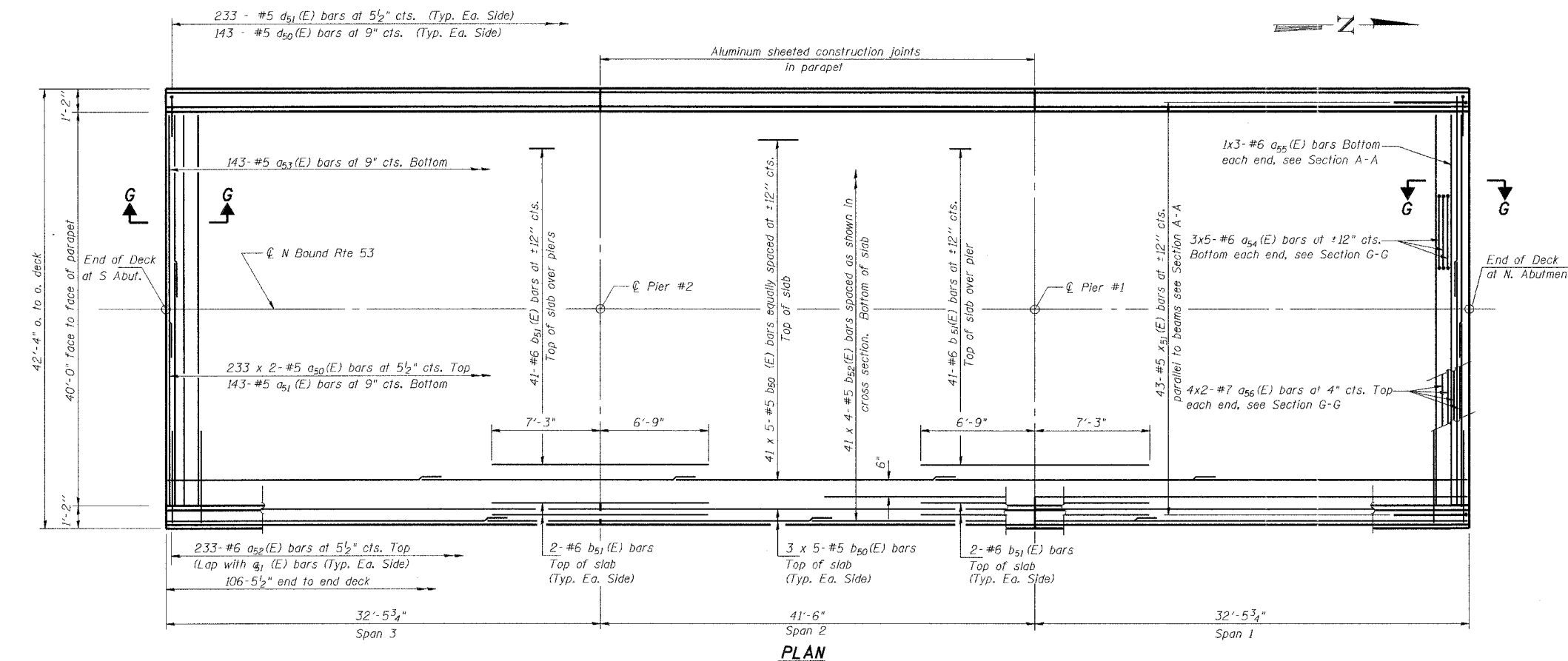
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F. A. P. 846	4B-1-1-1	WILL	39	7
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. S5
SHEETS S20

CONTRACT NO. 60D26



MIN. BAR LAP
#5 Bars = 2'-2"

Notes:
See Sheets S6 and S7 of S20 for superstructure details and Bill of Material.
Reinforcement bars designated (E) shall be epoxy coated.
Bars indicated thus 41 x 5-#5 etc. indicates 41 lines of bars with 5 lengths per line.
For Section G-G, See Sheet S7 of S20.

THIS SHEET IS FOR INFORMATION ONLY

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	DCB/DCB
CHECKED	SMK/GBC

CROSS SECTION
at Railing Post Shown (Looking North)

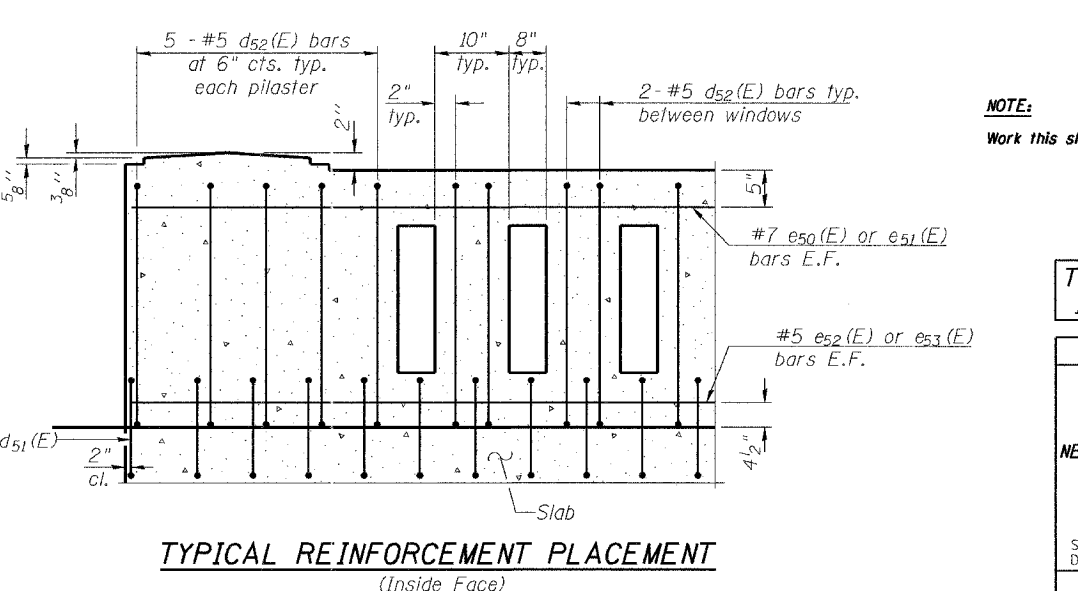
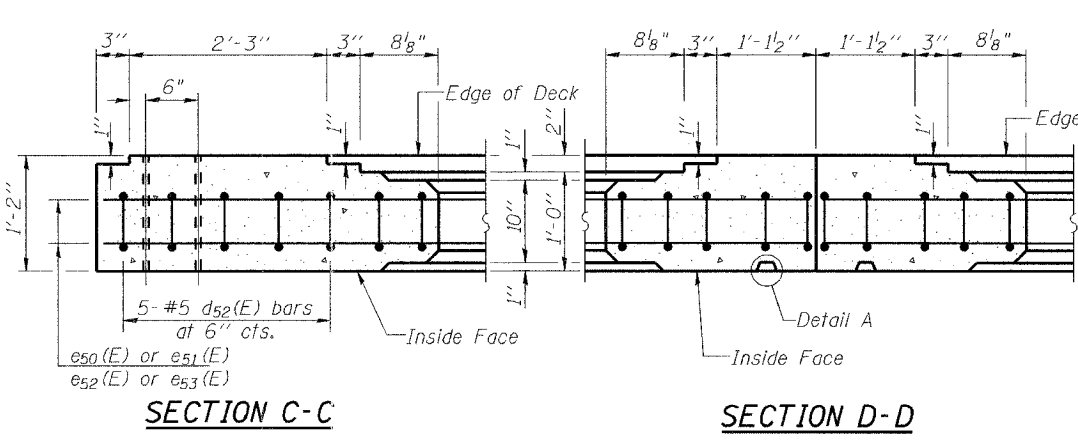
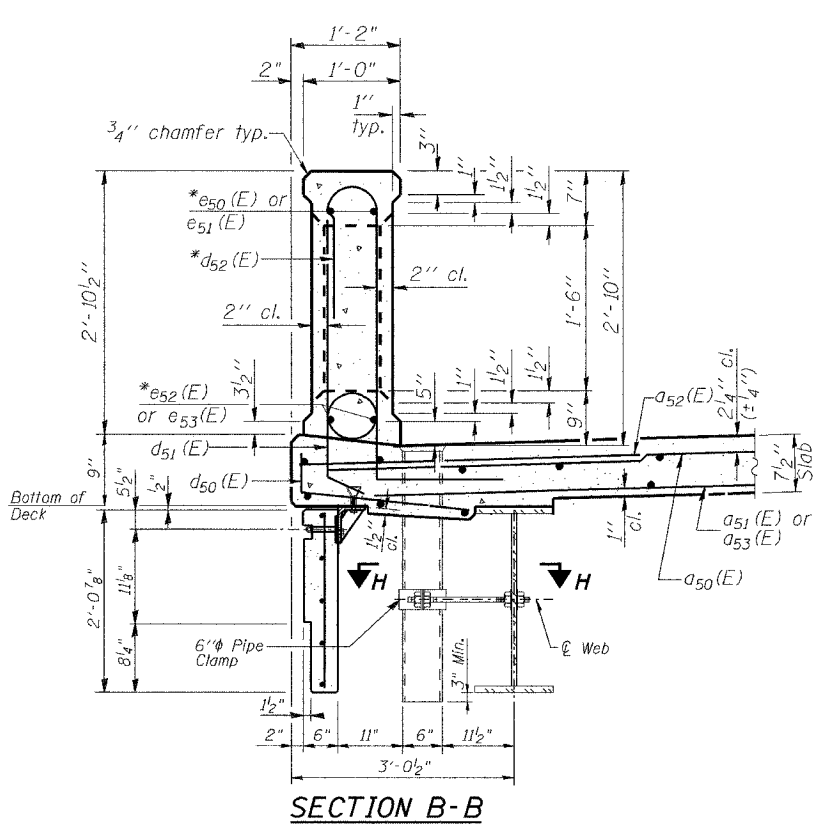
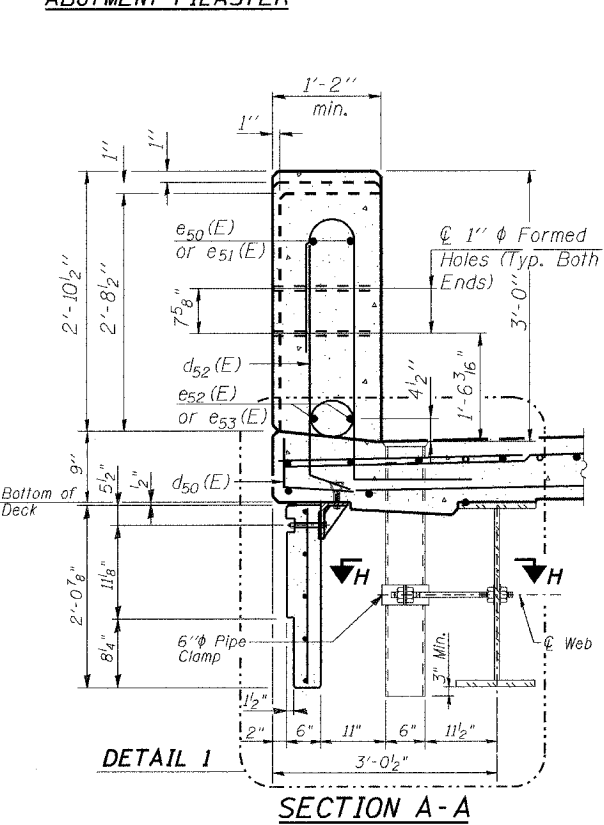
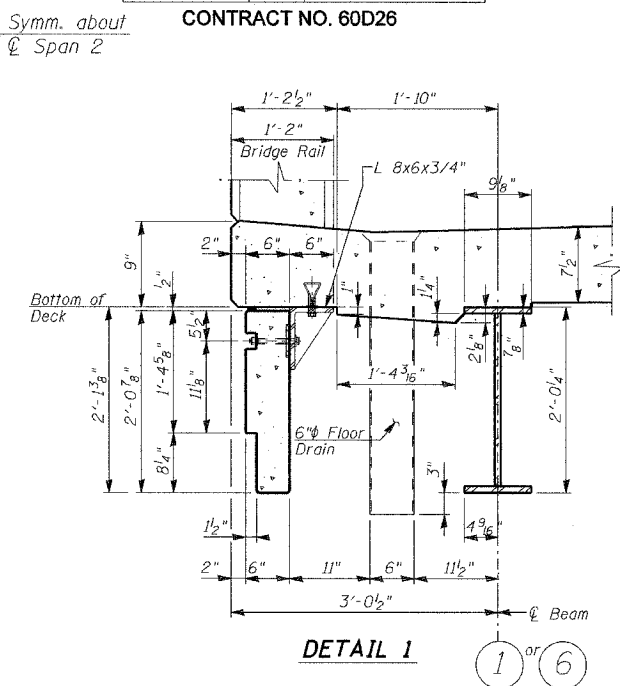
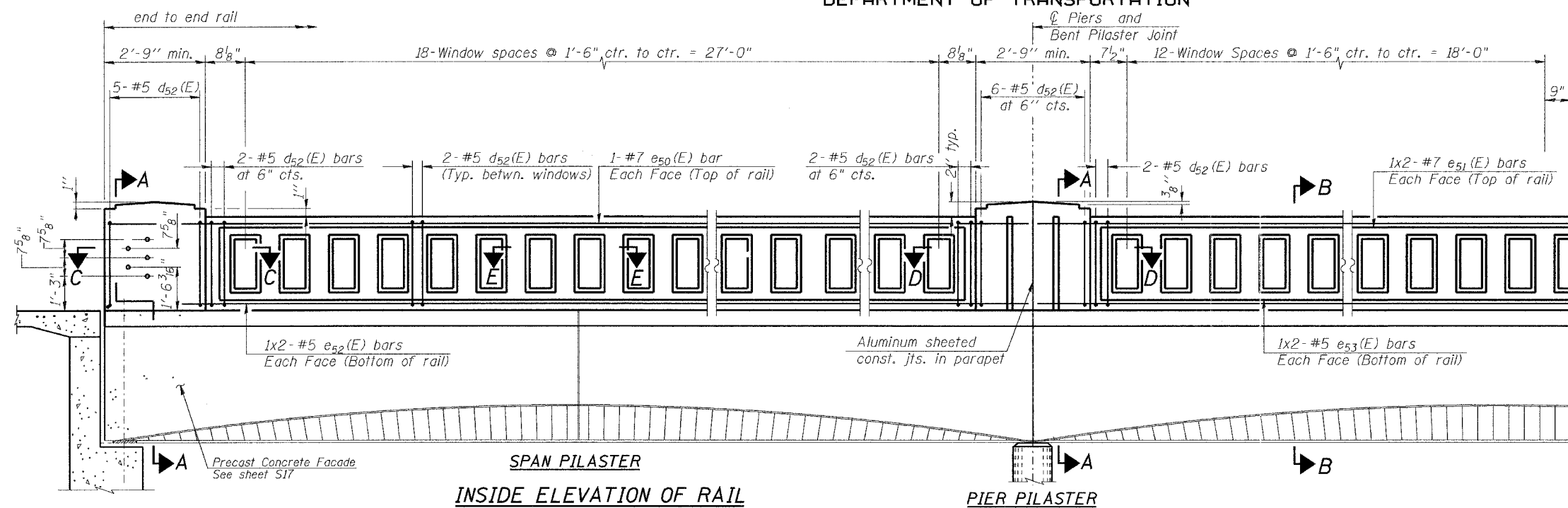
ILLINOIS DEPARTMENT OF TRANSPORTATION
SUPERSTRUCTURE
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
F. A. P. 846	4B-1-1-1	WILL	39	8
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 56
SHEETS S20

CONTRACT NO. 60D26



DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	BDB/DCB
CHECKED	SMK/GBC

Notes:

All concrete for railing wall shall be Class BS according to Article 1020.04 of the Standard Specifications. Surface of railing shall receive a rubbed finish according to Article 503.15(b) of the Standard Specifications.

All parts of the railing including concrete and reinforcing will be paid for at the contract unit price per foot for Concrete Bridge Rail Special.

Holes and recesses must be formed or cored. Drilling is not permitted.

* Bars $e_{50}(E)$ thru $e_{53}(E)$ & $d_{52}(E)$ are included in the cost of Concrete Bridge Rail, Special.

NOTE:
Work this sheet together with sheet S5, S7 and S17.

THIS SHEET IS FOR INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
(Sheet 1 of 2)

FAP 846

NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

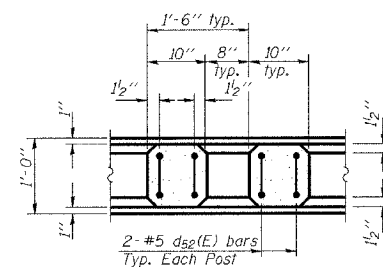
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

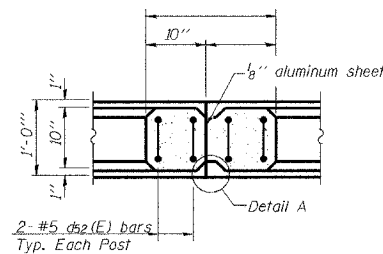
ROUTE NO. I. A. R. 846	SECTION 4B-1-1-1	COUNTY WILL	DIST. SHEETS 39	SHEET NO. 9
FED. ROAD DIST. NO. 7		ILLINOIS PREL. PROJ. NO.		

SHEET NO. S7
SHEETS S20

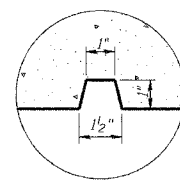
CONTRACT NO. 62D28



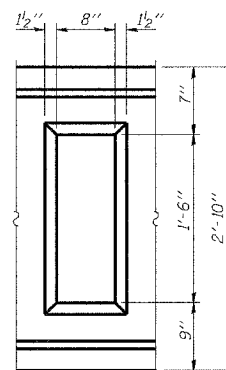
SECTION E-E



SECTION F-F
(For span greater than 50'-0")



DETAIL A



BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d52(E)	312	#5	7'-4"	U
e50(E)	8	#7	32'-2"	—
e51(E)	8	#7	21'-11"	—
e52(E)	16	#5	16'-11"	—
e53(E)	8	#5	21'-5"	—

NOTE:

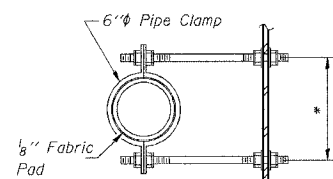
The above list of bars are for information only. All Reinforcement bars shown in this Bill of Material are included in the cost for "Concrete Bridge Rail (Special)".

SUPERSTRUCTURE & RAIL
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a50(E)	466	#5	21'-11"	—
a51(E)	143	#5	18'-1"	—
a52(E)	466	#6	6'-0"	—
a53(E)	143	#5	25'-3"	—
a54(E)	30	#6	8'-4"	U
a55(E)	6	#6	15'-8"	—
a56(E)	16	#7	23'-3"	—
b50(E)	235	#5	23'-0"	—
b51(E)	90	#6	14'-0"	—
b52(E)	164	#5	28'-4"	—
d50(E)	286	#5	2'-8"	L
d51(E)	466	#5	4'-8"	L
x51(E)	86	#5	5'-11"	—

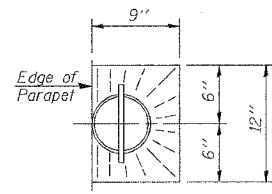
Reinforcement Bars, Epoxy Coated	Pound	39,320
Concrete Superstructure	Cu. Yds.	124
Concrete Bridge Rail (Special)	Foot	213

Bars indicated thus 1 x 2-#2 etc. indicates 1 line of bars with 2 lengths per line.

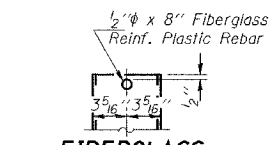


SECTION H-H

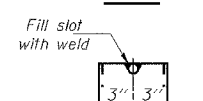
* Dimension as required by Pipe Clamp



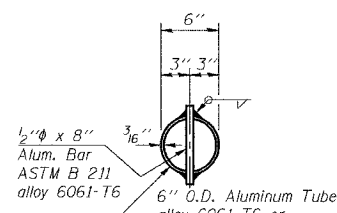
TOP PLAN



FIBERGLASS PIPE



ALUMINUM TUBE



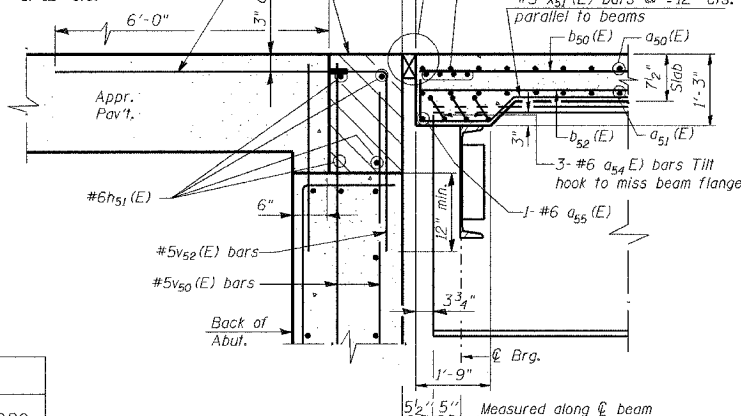
TOP PLAN
(Showing Aluminum Tube)

Notes:

The exterior surfaces of the floor drains shall be painted with the finish coat as specified in the special provisions for Cleaning and Painting New Metal Structures. The exterior surfaces of the drains shall be cleaned according to Steel Structures Painting Council's Spec. SSPC-SP1 prior to painting. Fiberglass pipe shall conform to ASTM D 2996, with short-time rupture strength hoop tensile stress of 30,000 p.s.i. minimum.

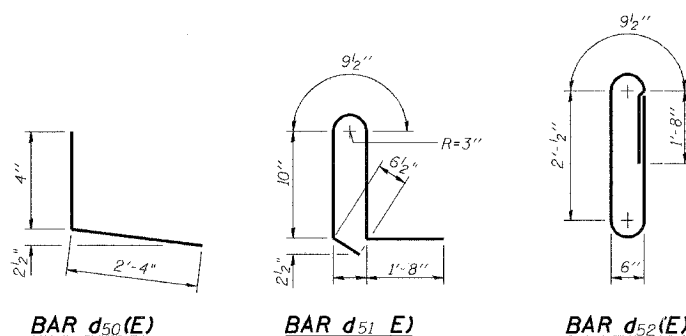
Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure.

* Bar Splice (E) for #5 bars at 12" cts.



SECTION G-G

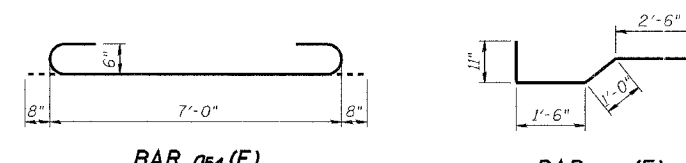
* Alternate with #4v50(E) bars. Place parallel to the beams.



BAR d50(E)

BAR d51(E)

BAR d52(E)



BAR a54(E)

BAR x51(E)

THIS SHEET IS FOR INFORMATION ONLY

MINIMUM BAR LAP (Edge Beam)

#5 bar = 1'-8"	#6 bar = 2'-7"
#7 bar = 2'-8"	#7 bar = 4'-10"

NOTE:

Work this sheet together with sheets S5, S6 and S17.

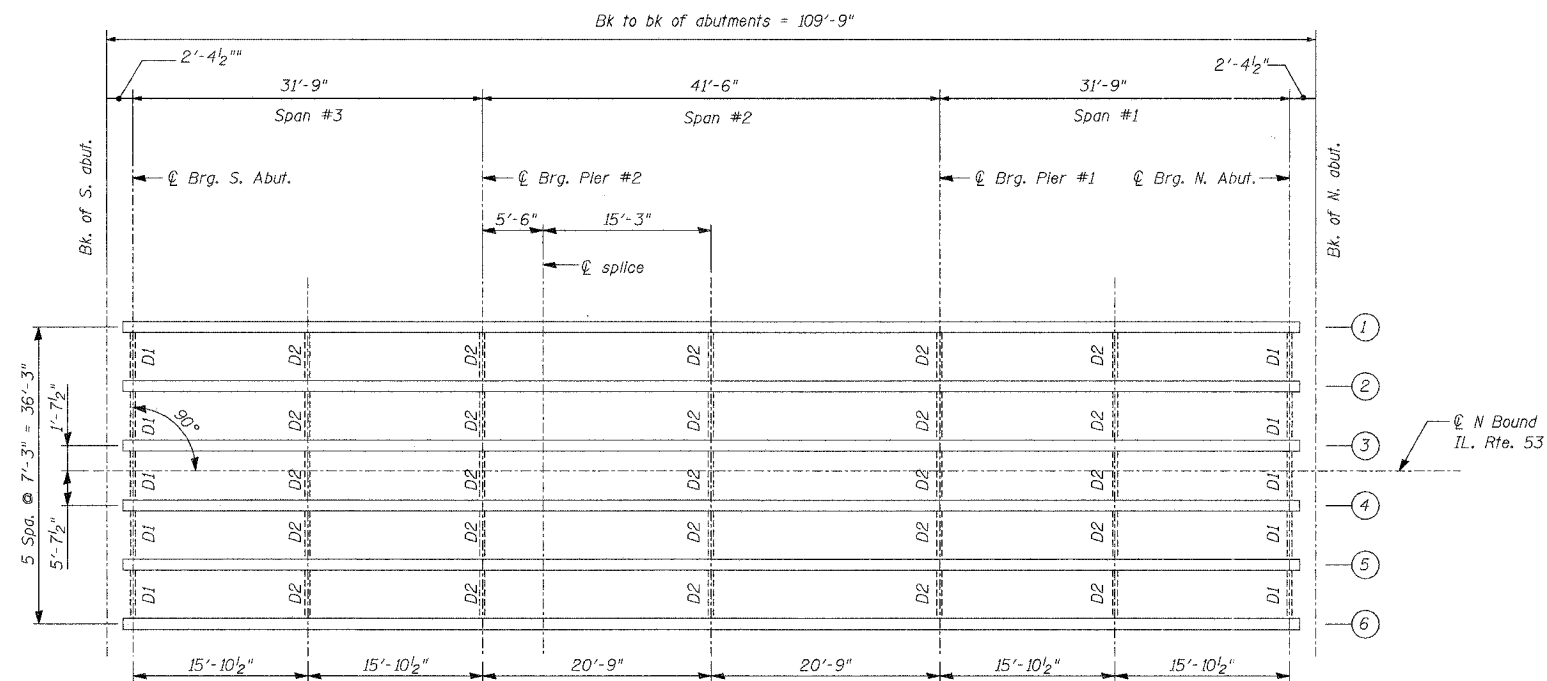
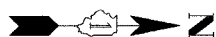
DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION
SUPERSTRUCTURE DETAILS AND CONCRETE BRIDGE RAILING
(Sheet 2 of 2)
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHE-00 ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. F. A. P. 846	SECTION 4B-1-1-1	COUNTY WILL	TOTAL SHEETS 39	SHEET 10	SHEET NO. S8 SHEETS S20
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

CONTRACT NO. 60D26

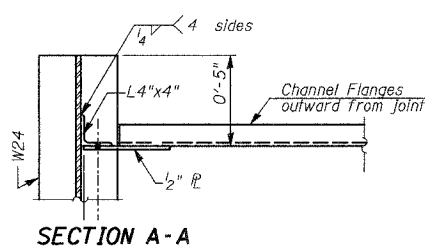


PLAN

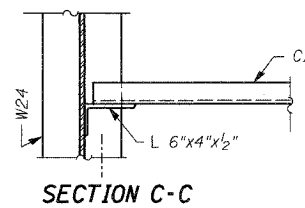
Note:
All diaphragms shall be installed as steel is erected and secured with erection pins and bolts, except as otherwise noted. Individual diaphragms at support may be temporarily disconnected to install bearing anchor rods.

Legend:

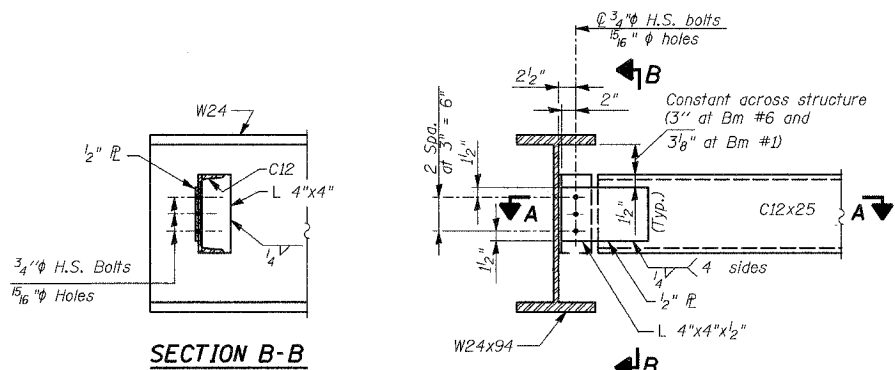
D1 = Exterior Diaphragm
D2 = Interior Diaphragm



SECTION A-A

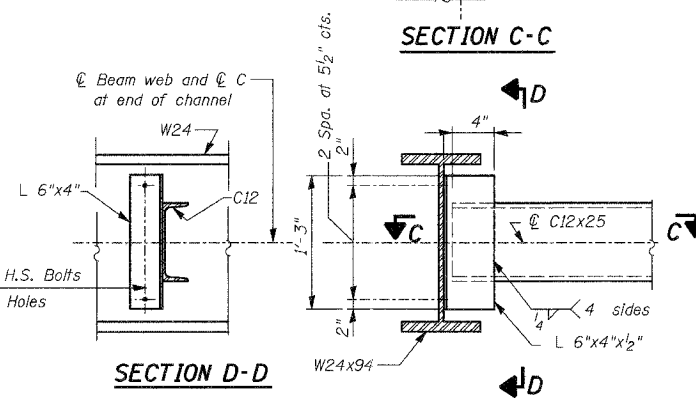


SECTION C-C



SECTION B-B

DIAPHRAGM D1
(10 Required)

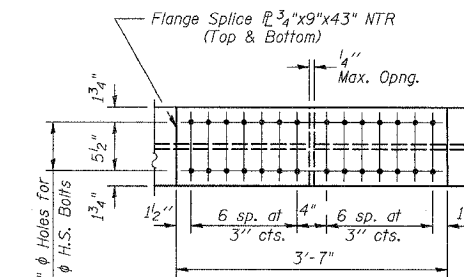


SECTION D-D

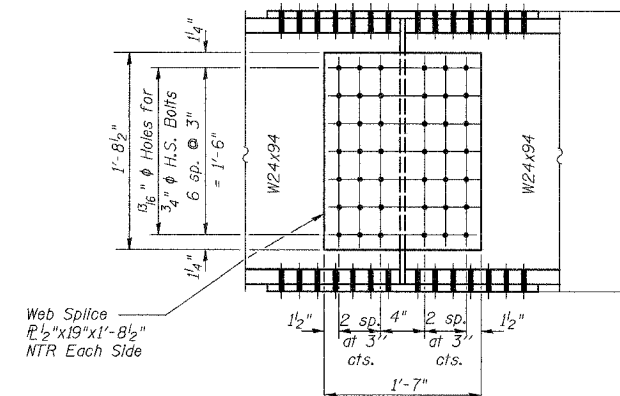
DIAPHRAGM D2
(25 Required)

CONNECTION DETAILS FOR
DIAPHRAGMS TO BEAMS

Note: Two hardened washers required for each set of oversized holes.



FLANGE SPLICE PLATE



WEB SPLICE PLATE
(6 Required)

NTR = Notch toughness requirement

BILL OF MATERIAL

Item	Unit	Total
Furnishing Structural Steel	L Sum	0.52

NOTES: FOR INFORMATION ONLY

1. Install shear stud connectors in positive moment regions of the entire superstructure, as shown on sht. S8.
2. For cleaning and painting see general notes on sht. S2.
3. HS Bolts shall be AASHTO M164/ASTM A325.
4. Load carrying components designated "NTR" shall conform to the supplemental requirements for Notch toughness, Zone 2.

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

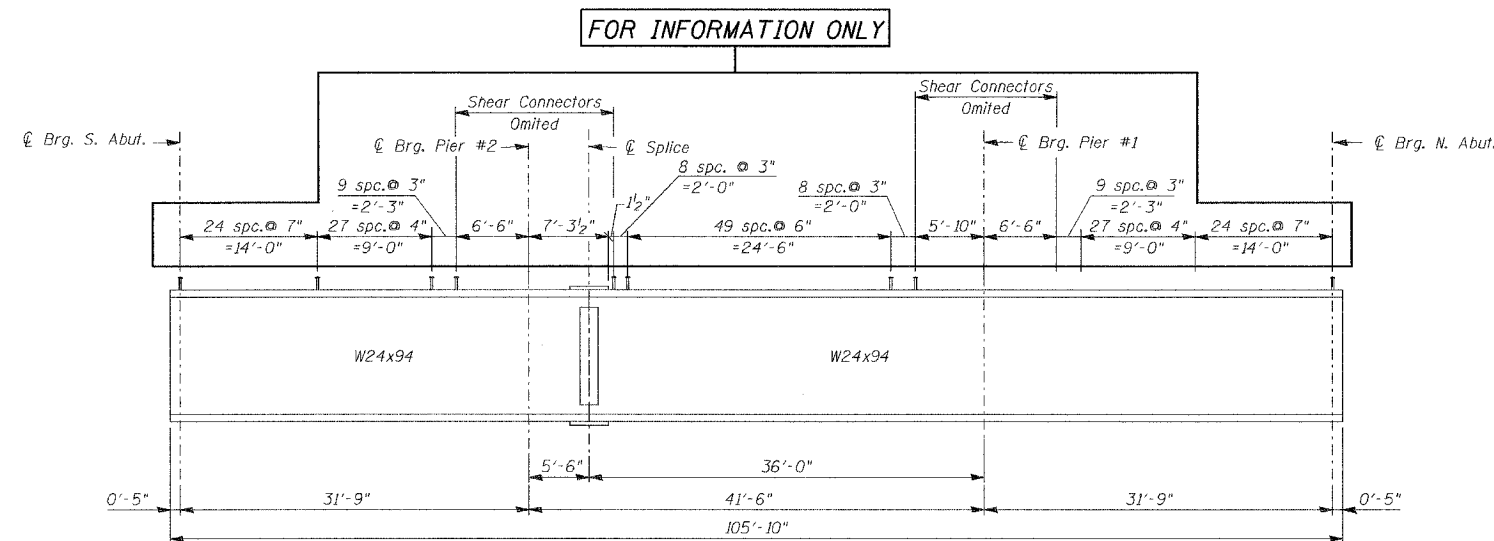
ILLINOIS DEPARTMENT OF TRANSPORTATION
FRAMING PLAN AND STRUCTURAL
STEEL DETAILS
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: AUGUST 2007
DETA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET
B46	4-RB	WILL	87	11
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

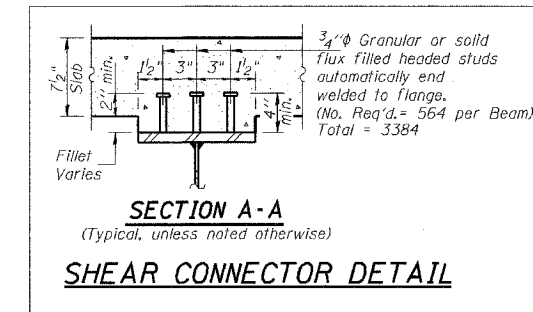
SHEET NO. S9
SHEETS S20

CONTRACT NO. 62269



BEAM ELEVATION

NOTE:
All wide flange beams and splice plate material shall be AASHTO M270 Grade 50 and shall meet notch toughness requirements.



FOR INFORMATION ONLY

	INTERIOR BEAM MOMENT TABLE		
	0.4 Sp. 1 0.6 Sp. 3	Pier #1 Pier #2	0.5 Sp. 2
I_s	(in ⁴) 2700	2700	2700
I_c (n)	(in ⁴) 9400	-	9400
I_c (3n)	(in ⁴) 6907	-	6907
S_s	(in ³) 222	222	222
S_c (n)	(in ³) 373	-	373
S_c (3n)	(in ³) 336	-	336
Z	(in ³) 254	254	254
DC1	(K/')	0.92	0.92
MDC1	(K)	126	73
DC2	(K/')	0.25	0.25
MDC2	(K)	33	19
DW	(K/')	0.33	0.33
MDW	(K)	45	26
MLL+I	(K)	249	328
Mu (Strength I)	(K)	703.0	728.0
ϕ F _{Mn} , ϕ F _{Mnc}	(K)	805.0	1900.0
f _s DC1	(ksi)	6.8	3.9
f _s DC2	(ksi)	1.8	0.6
f _s DW	(ksi)	2.4	0.8
f _s 1.3(LL+I)	(ksi)	17.6	13.6
f _s (Service II)	(ksi)	28.8	19.2
f _s (Total) (Strength I)	(ksi)	38.3	25.6
Vf	(K)	15.6	10.4

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s due to non-composite loads.

I_c (n) and S_c (n) are the moment of inertia and section modulus of the composite section based on modular ratio, n, used in computing f_s due to short-term composite live loads.

I_c (3n) and S_c (3n) are the moment of inertia and section modulus of the composite section based upon 3 times modular ratio, 3n, used in computing f_s due to long-term composite (superimposed) dead loads.

Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.

DC1 is the unfactored non-composite dead load acting on the non-composite section.

DC2 is the unfactored long term composite (superimposed excluding future wearing surface) dead load.

DW is the unfactored long term composite (superimposed future wearing surface only) dead load.

Mu (Strength I) Factored design moment
 $1.25(MDC1+MDC2)+1.5MDW+1.75MLL+Imp$

ϕ F_{Mn} is the Compact composite positive moment capacity computed according to Article 6.10.7.1

ϕ F_{Mnc} is the Compact non-composite negative moment capacity computed according to Article A6.1.1

f_s (Service II) is the sum of the stresses from the moments below:
 $MDC1+MDC2+MDW+1.3MLL+Imp$

f_s (Total) (Strength I) (Non-Compact Section) is the sum of the stresses due to $1.25MDC1+DC2+1.5MDW+1.75MLL+Imp$

Vf is the factored maximum shear range computed according to Article 6.10.10

TOP OF BEAM ELEVATIONS **					
Beam	€ Brg. S Abut.	€ Brg. Pier #2	€ Splice	€ Brg. Pier #1	€ Brg. N Abut.
1	568.672	568.782	568.804	569.011	569.197
2	568.807	568.917	568.939	569.145	569.332
3	568.920	569.030	569.052	569.259	569.445
4	568.857	568.968	568.989	569.196	569.382
5	568.740	568.850	568.872	569.078	569.265
6	568.589	568.699	568.721	568.927	569.114

** For Fabrication Only.

INTERIOR GIRDER REACTION TABLE HS20 LOADING					
	S. Abut.	Pier #2	Pier #1	N. Abut.	
R (DL)	(K)	60.8	60.8	18.1	
R (LL)	(K)	44.2	42.1	35.3	
R (Imp)	(K)	13.3	12.6	10.6	
R (Total)	(K)	118.3	115.5	64.0	

INTERIOR GIRDER REACTION TABLE HL93 Loading					
	S. Abut.	Pier #2	Pier #1	N. Abut.	
R (DC1)	(K)	37.8	37.8	10.7	
R (DC2+DW)	(K)	23.7	23.7	6.7	
R (LL)	(K)	83.0	80.3	41.4	
R (Imp)	(K)	27.4	26.5	13.6	
R (Total)	(K)	171.9	168.3	72.4	

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

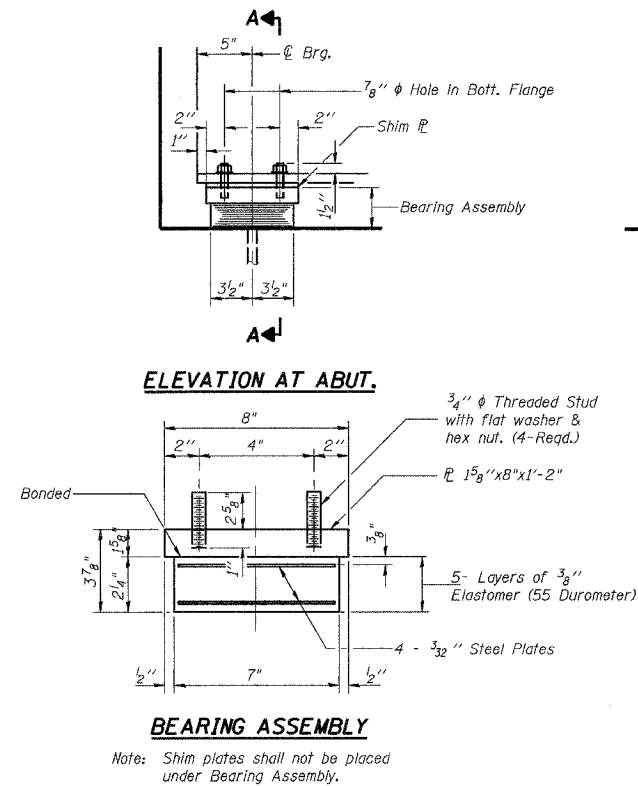
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

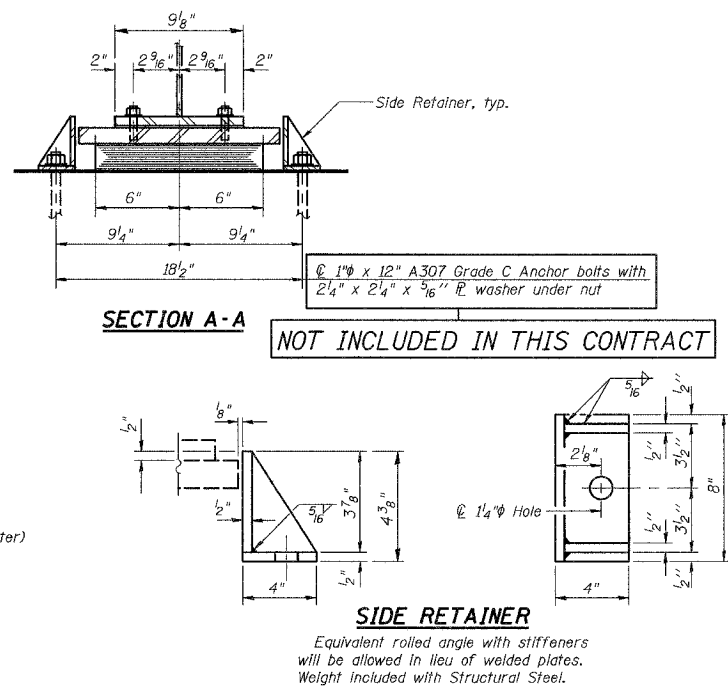
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F. A. P. 846	4B-1-I-1	WILL	39	12
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. S18
SHEETS S20

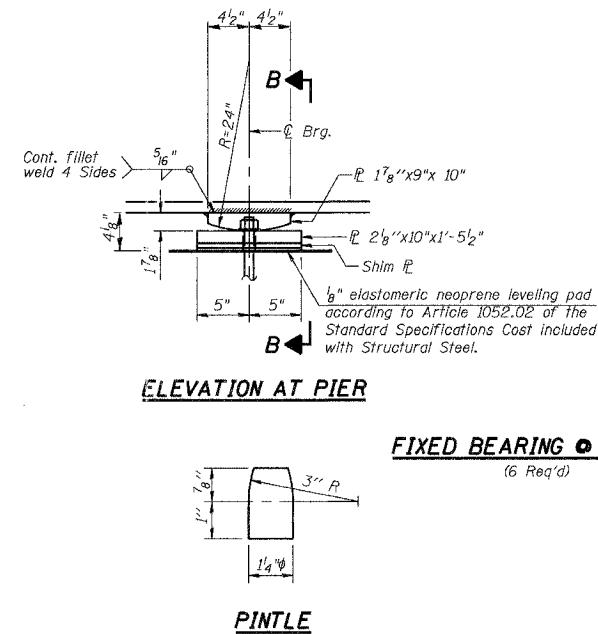
CONTRACT NO. 60D28



TYPE I ELASTOMERIC EXP. BRG. @ ABUTMENTS
(12 Req'd)

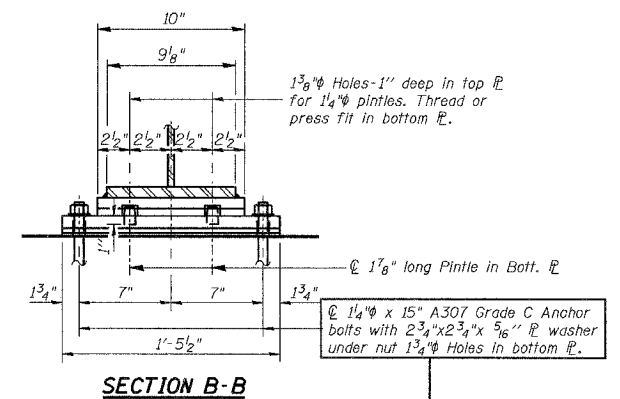


NOT INCLUDED IN THIS CONTRACT



FIXED BEARING @ PIER #2
(6 Req'd)

NOT INCLUDED IN THIS CONTRACT



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 of fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
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.

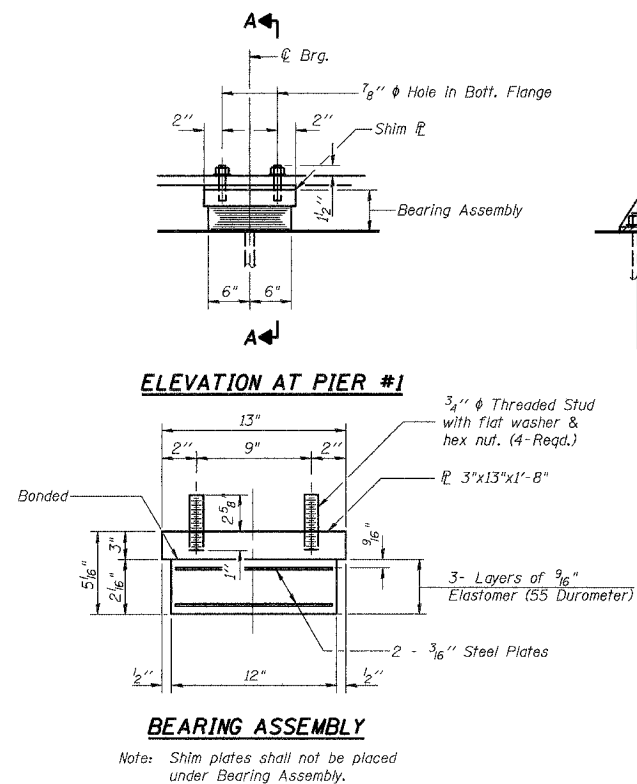
The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 36.
Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

Notes: Anchor bolts at fixed bearings may be built into the masonry.

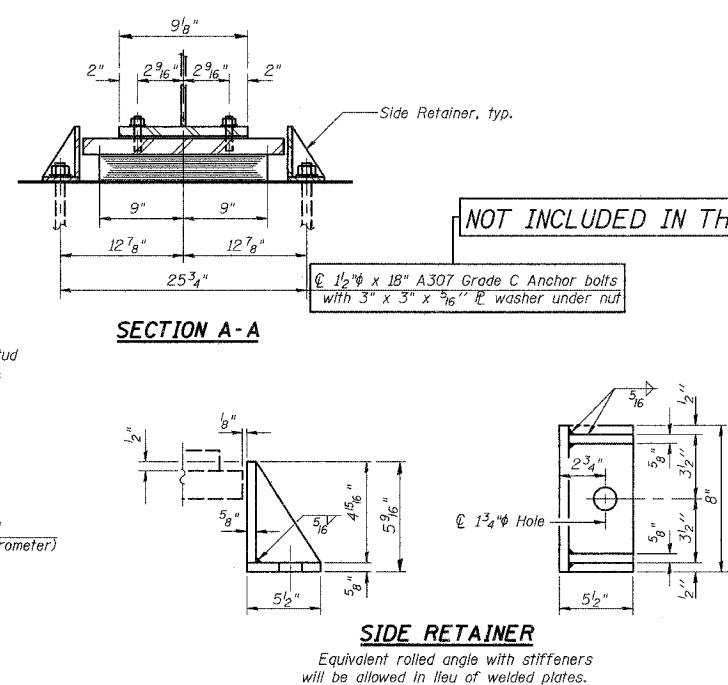
BILL OF MATERIAL

Item	Unit	Total
Furnishing Elastomeric Bearing Assembly Type I	Each	18
Anchor bolts 1 1/4"	Each	24
Anchor bolts 1 1/2"	Each	12
Anchor bolts 1 1/2"	Each	12

NOT INCLUDED IN THIS CONTRACT



TYPE I ELASTOMERIC EXP. BRG. @ PIER #1
(6 Req'd)



NOT INCLUDED IN THIS CONTRACT

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION

BEARING DETAILS

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090

SCALE: NONE
DATE: AUGUST 2007

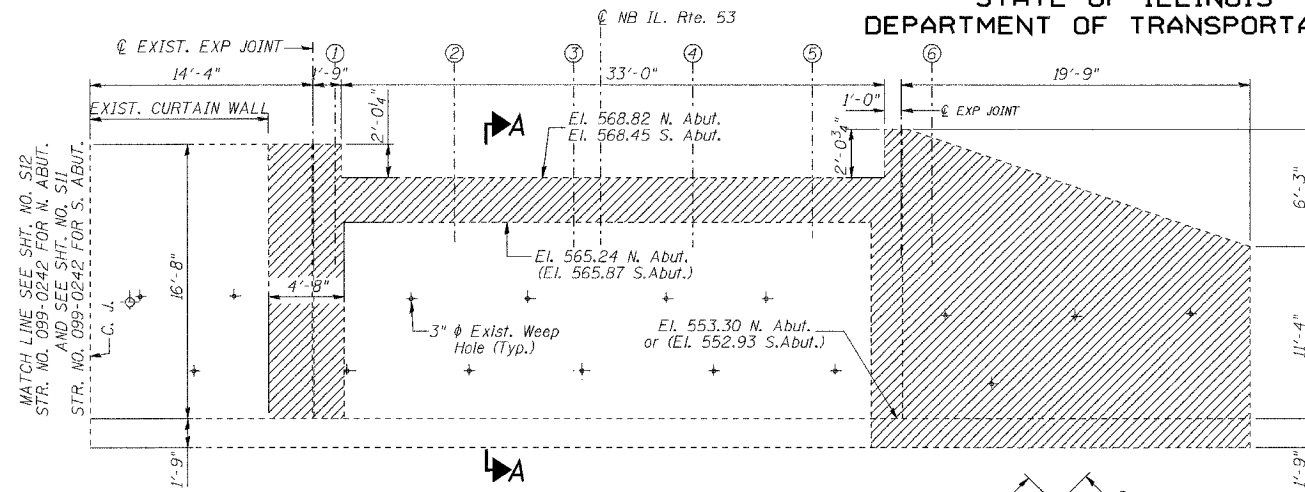
DEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

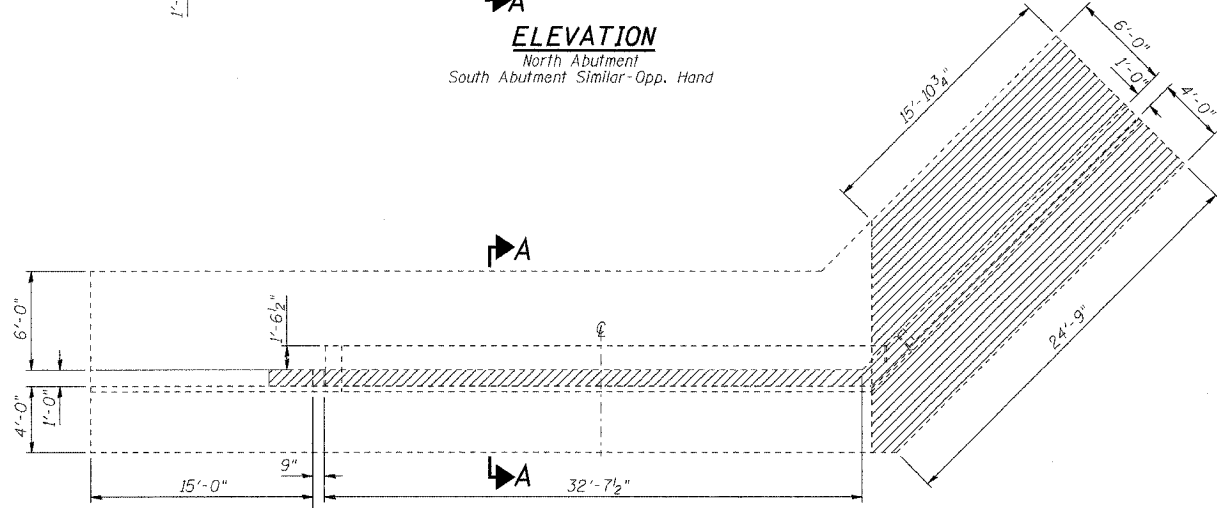
ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET
F. A. P. 846	4B-1-1-1	WILL	39	13
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. S-11
SHEETS S20

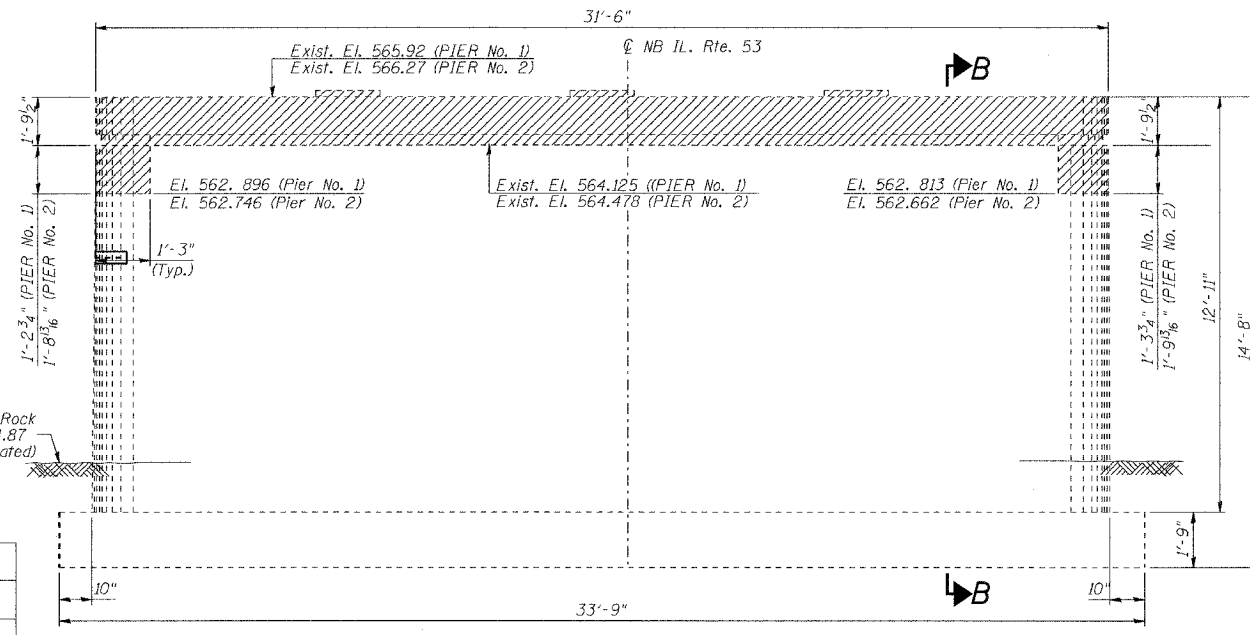
CONTRACT NO. 60D26



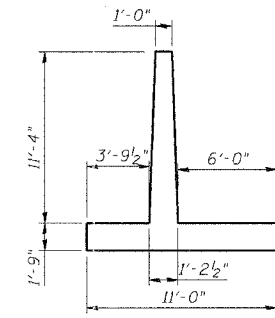
ELEVATION
North Abutment
South Abutment Similar-Opp. Hand



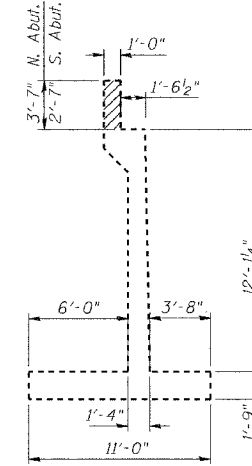
PLAN
North Abutment
South Abutment Similar-Opp. Hand



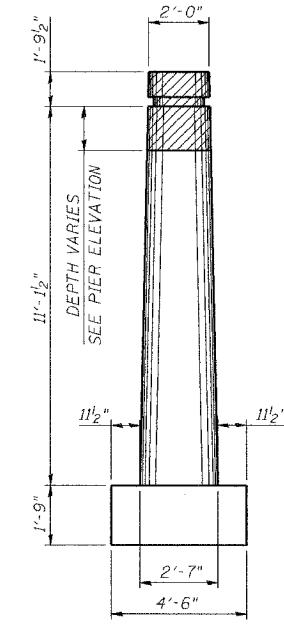
ELEVATION
(LOOKING NORTH)
PIER No. 1 AND PIER No. 2



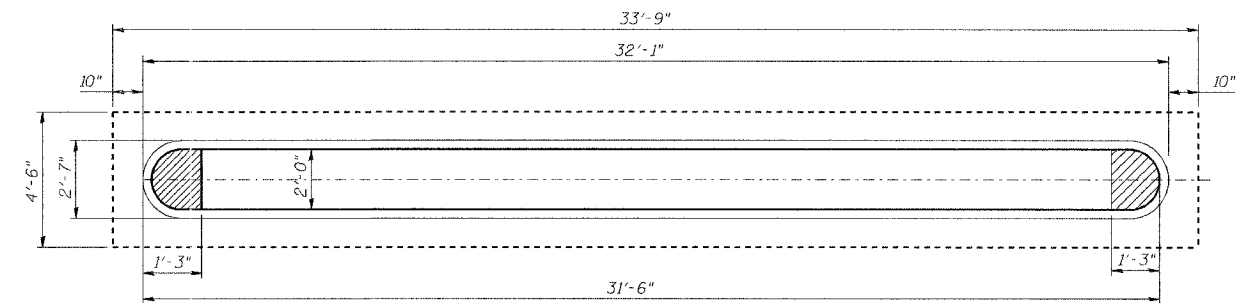
END OF WINGWALL



SECTION A-A



SECTION B-B



TOP PLAN
Pier No. 1 & Pier No. 2

BILL OF MATERIAL

PAY ITEM	UNIT	S. ABUT.	N. ABUT.	S. PIER	N. PIER	TOTAL
CONCRETE REMOVAL	CU YD	37.8	37.7	4.7	4.6	84.8

THIS SHEET IS FOR INFORMATION ONLY

NOTES:

- Concrete removal shall be accomplished by methods that will not damage the existing Abutments and Piers.
- Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in the pay item for Concrete Removal.

LEGEND:

CONCRETE REMOVAL

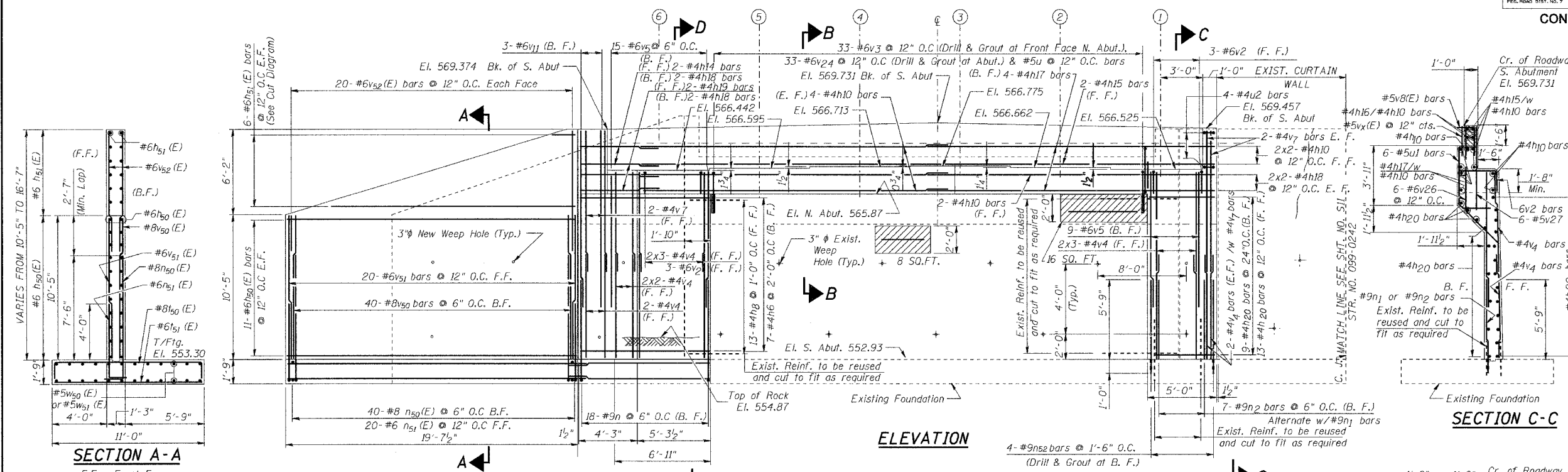
DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION
CONCRETE REMOVAL DETAILS
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
 DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

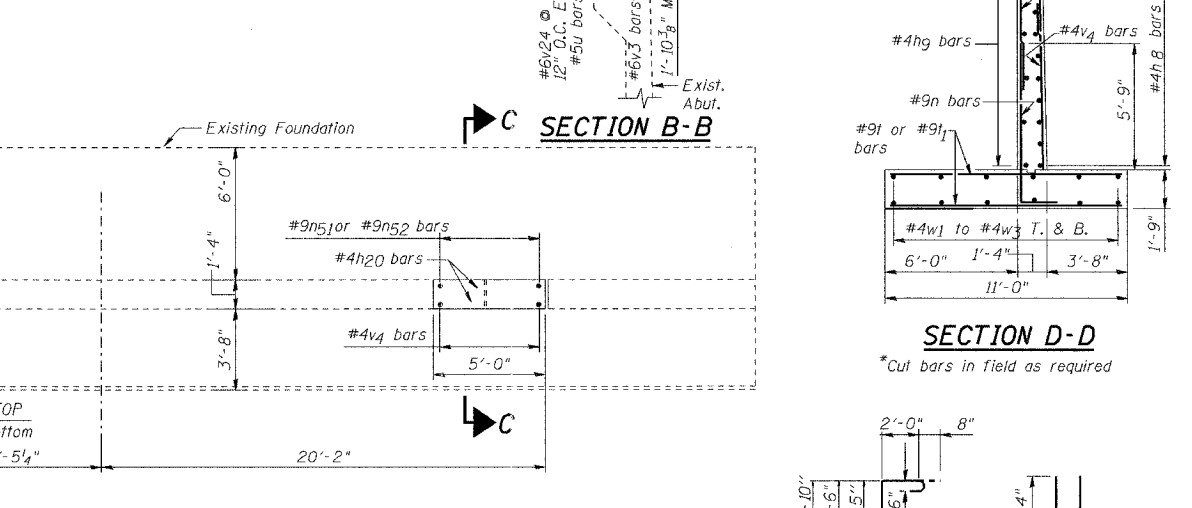
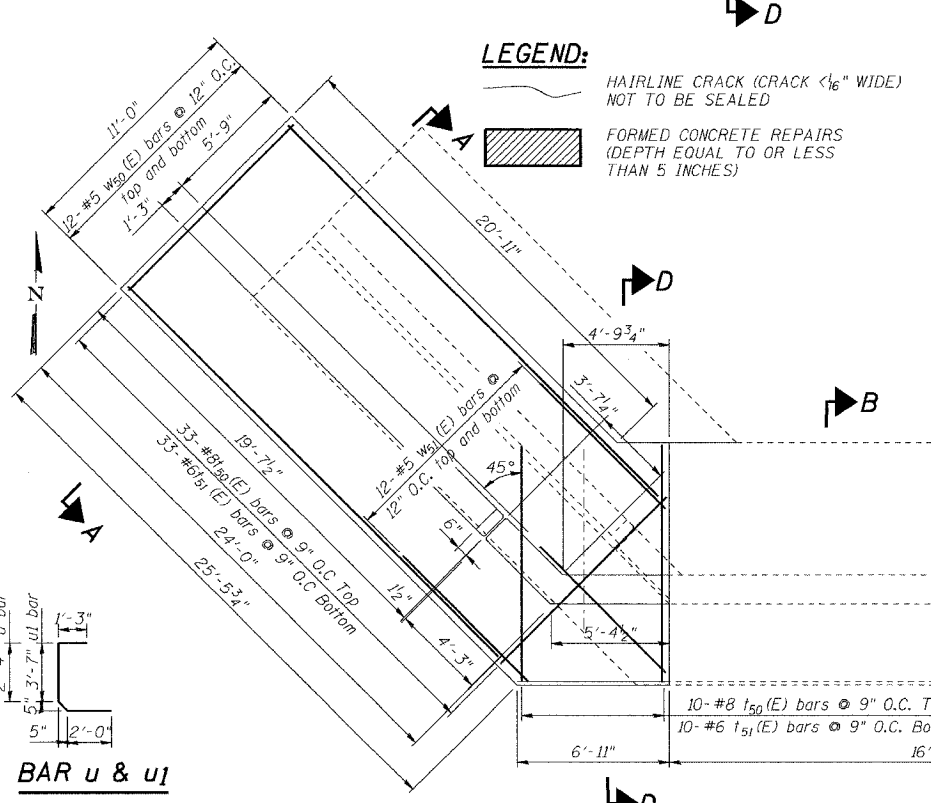
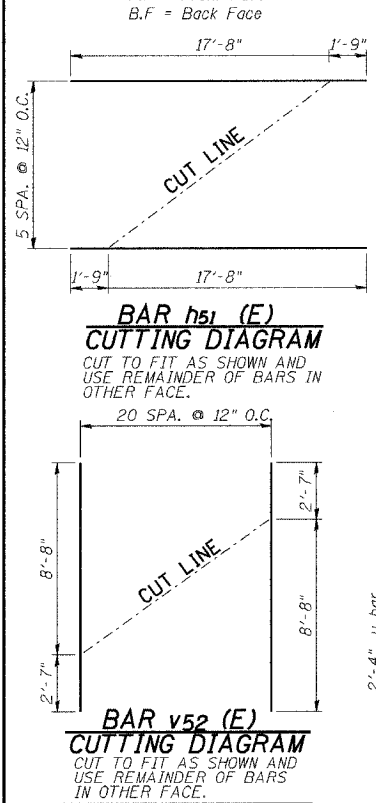
ROUTE NO.	SECTION	COUNTY	SHEET	SHEET NO. S12
F.A.P. 846	4B-1-1-1	WILL	39	14
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		SHEETS 520

CONTRACT NO. 60D26
BILL OF MATERIAL



Bar(E)	No.	Size	Length	Shape
h8(E)	1	#4	12'-0 1/4"	
h8(E)	13	#4	9'-3"	
h9(E)	6	#4	8'-2"	
h10(E)	14	#4	21'-5"	
h11(E)	1	#4	7'-11"	
h12(E)	1	#4	8'-6"	
h14(E)	6	#4	3'-8"	
h15(E)	2	#4	24'-5"	
h16(E)	2	#4	24'-4"	
h17(E)	2	#4	24'-3"	
h18(E)	5	#4	4'-2"	
h19(E)	2	#4	5'-10"	
h20(E)	22	#4	4'-10"	
h50(E)	22	#6	19'-4"	
h51(E)	6	#6	19'-5"	
v2(E)	3	#6	8'-9"	
v3(E)	33	#6	5'-6"	
v4(E)	20	#4	7'-9"	
v5(E)	16	#6	10'-5"	
v6(E)	33	#6	4'-1"	
v7(E)	8	#4	10'-1"	
v8(E)	42	#5	3'-3"	
v11(E)	3	#6	10'-5"	
v24(E)	66	#6	5'-10"	
v25(E)	42	#6	3'-1"	
v26(E)	12	#6	8'-9"	
v27(E)	12	#6	5'-3"	
v50(E)	40	#8	10'-3"	
v51(E)	20	#6	10'-3"	
v52(E)	20	#6	11'-3"	
u(E)	42	#5	6'-2"	
u1(E)	12	#5	7'-5"	
u2(E)	4	#4	3'-5"	
1(E)	18	#9	8'-3"	
11(E)	59	#9	10'-9"	
150(E)	43	#8	13'-4"	
151(E)	43	#6	10'-8"	
n(E)	55	#9	10'-3"	
n1(E)	4	#9	6'-9"	
n2(E)	7	#9	5'-9"	
n50(E)	40	#8	10'-4"	
n51(E)	20	#6	6'-5"	
n52(E)	4	#9	6'-9"	
w1(E)	8	#4	13'-4"	
w2(E)	8	#4	14'-5"	
w3(E)	8	#4	15'-6"	
w50(E)	24	#5	24'-0"	
w51(E)	24	#5	8'-1"	

Bar	A	B	C	D	Length
h8(E)	5'-3"	4'-0"	2'-9 1/2"	2'-9 1/2"	9'-3"
h9(E)	5'-2"	3'-0"	2'-2"	2'-2"	8'-2"
h11(E)	6'-6"	1'-5"	11 3/4"	11 3/4"	7'-11"
h12(E)	7'-2"	1'-4"	11 1/4"	11 1/4"	8'-6"
h14(E)	2'-2"	1'-6"	1'-0 1/2"	1'-0 1/2"	3'-8"
h18(E)	3'-5"	0'-9"	0'-6 1/4"	0'-6 1/4"	4'-2"
h19(E)	3'-10"	2'-0"	1'-5"	1'-5"	5'-10"
v26(E)	5'-9"	3'-0"	2'-1 1/2"	2'-1 1/2"	8'-9"



PLAN (FOUNDATION)

NOTES:

- Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in the pay item for Concrete Removal.
- Exposed reinforcement bars after removal of existing concrete will be cleaned and wire brushed and re-used before pouring new concrete.

Concrete Structures	Cu. Yd.	60
Reinforcement Bars, Epoxy coated	Pound	7460
Structure Excavation	Cu.Yd.	475
Rock Excavation for Structures	Cu.Yd.	83
Structural Repair of Concrete (Depth greater than 5")	SQ FT	16.0
Structural Repair of Concrete (Depth Equal to or Less Than 5")	SQ FT	8.0

Reinforcement Bars designated (E) shall be epoxy coated.
Cast steps monolithically with abutment.
Space top reinforcement to miss anchor bolts.

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOUTH ABUTMENT REPAIRS & EXTENSION

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

DETA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO. 513
F. A. R. 846	4B-1-1-1	WILL	39	15
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		SHEETS 520

CONTRACT NO. 60D26
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h8 (E)	13	#4	9'-3"	
h9 (E)	6	#4	8'-2"	
h10 (E)	14	#4	21'-5"	
h11 (E)	1	#4	7'-11"	
h12 (E)	1	#4	8'-6"	
h14 (E)	6	#4	3'-8"	
h15 (E)	2	#4	24'-5"	
h16 (E)	2	#4	24'-4"	
h17 (E)	2	#4	24'-3"	
h18 (E)	5	#4	4'-2"	
h19 (E)	2	#4	5'-10"	
h20 (E)	22	#4	4'-10"	
h50 (E)	22	#6	19'-4"	
h51 (E)	6	#6	19'-5"	
v2 (E)	3	#6	8'-2"	
v3 (E)	33	#6	5'-6"	
v4 (E)	20	#4	7'-9"	
v5 (E)	16	#6	10'-5"	
v6 (E)	33	#6	4'-1"	
v7 (E)	8	#4	10'-1"	
v8 (E)	42	#5	3'-3"	
v11 (E)	3	#6	10'-5"	
v24 (E)	66	#6	5'-10"	
v25 (E)	42	#6	3'-1"	
v26 (E)	12	#6	8'-9"	
v27 (E)	12	#6	5'-3"	
v50 (E)	40	#8	10'-3"	
v51 (E)	20	#6	10'-3"	
v52 (E)	20	#6	11'-3"	
u (E)	42	#5	6'-2"	
u1 (E)	12	#5	7'-5"	
u2 (E)	4	#4	3'-5"	
t (E)	18	#9	8'-3"	
t1 (E)	59	#9	10'-9"	
t50 (E)	43	#8	13'-4"	
t51 (E)	43	#6	10'-8"	
n (E)	55	#9	10'-3"	
n1 (E)	4	#9	6'-9"	
n2 (E)	7	#9	5'-9"	
n50 (E)	40	#8	10'-4"	
n51 (E)	20	#6	6'-5"	
w1 (E)	8	#4	13'-4"	
w2 (E)	8	#4	14'-5"	
w3 (E)	8	#4	15'-6"	
w50 (E)	24	#5	24'-0"	
w51 (E)	24	#5	8'-1"	
Concrete Structures		Cu. Yd.	60	
Reinforcement Bars, Epoxy coated		Pound	7460	
Structure Excavation		Cu.Yd.	475	
Rock Excavation for Structures		Cu.Yd.	83	
Structural Repair of Concrete (Depth Equal to or Less Than 5")		SQ FT	1.0	

Bar	A	B	C	D	Length
h8	5'-3"	4'-0"	2'-9½"	2'-9½"	9'-3"
h9	5'-2"	3'-0"	2'-2"	2'-2"	8'-2"
h11	6'-6"	1'-5"	11'-4"	11'-4"	7'-11"
h12	7'-2"	1'-4"	11'-4"	11'-4"	8'-6"
h14	2'-2"	1'-6"	1'-0½"	1'-0½"	3'-8"
h18	3'-5"	0'-9"	0'-6¼"	0'-6¼"	4'-2"
h19	3'-10"	2'-0"	1'-5"	1'-5"	5'-10"
v26	5'-9"	3'-0"	2'-1½"	2'-1½"	8'-9"

Reinforcement Bars designated (E) shall be epoxy coated.
Cast steps monolithically with abutment.
Space top reinforcement to miss anchor bolts.

ILLINOIS DEPARTMENT OF TRANSPORTATION

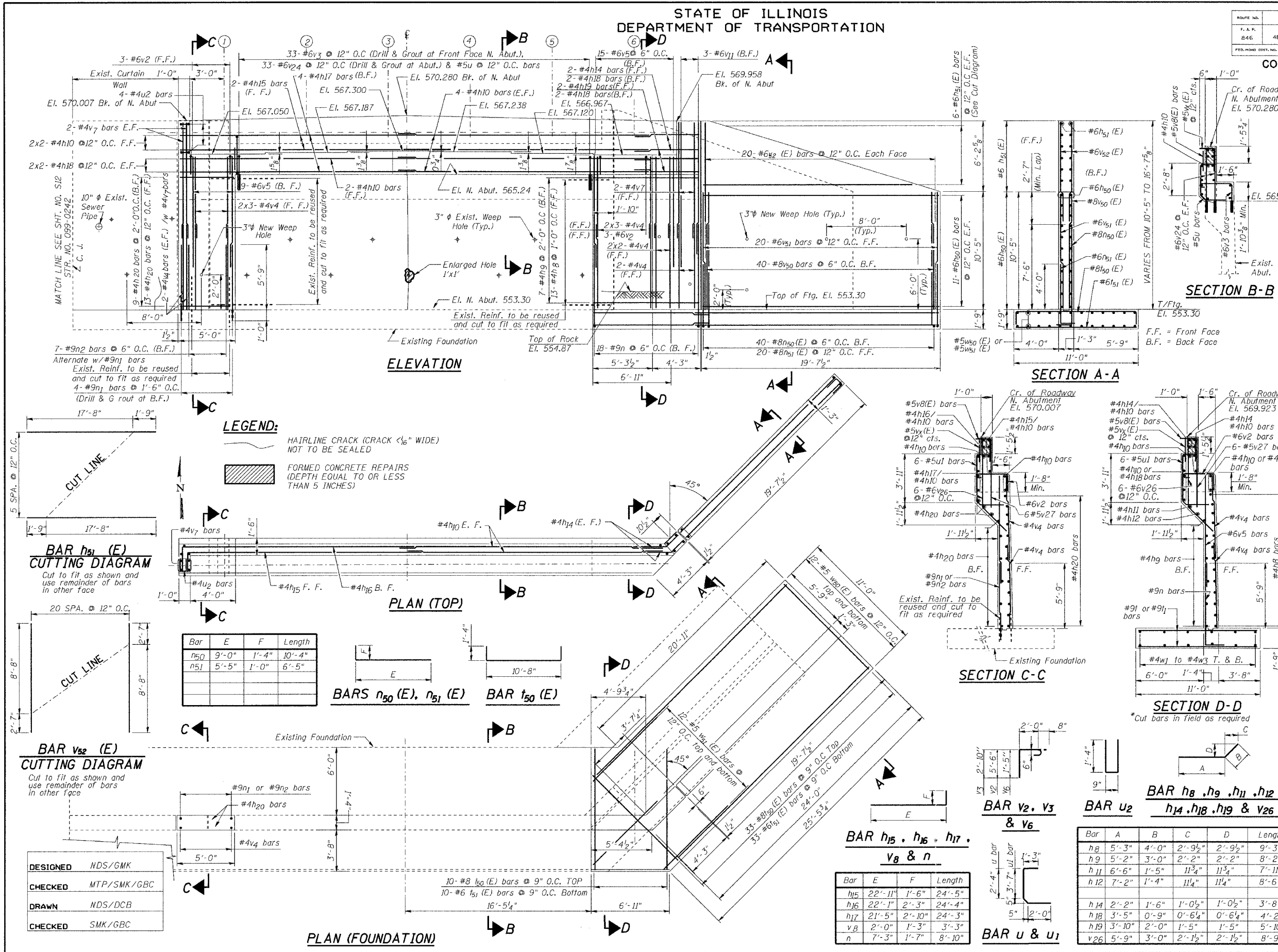
**NORTH ABUTMENT
REPAIRS & EXTENSION**

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

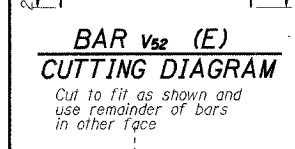
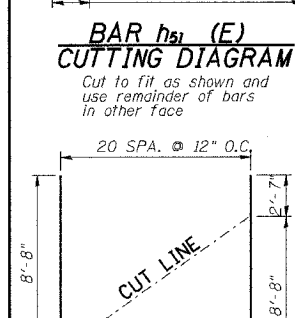
DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS



LEGEND:

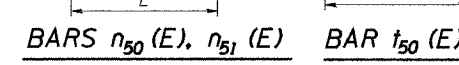
HAIRLINE CRACK (CRACK < 1/16" WIDE)
NOT TO BE SEALED

FORMED CONCRETE REPAIRS
(DEPTH EQUAL TO OR LESS
THAN 5 INCHES)

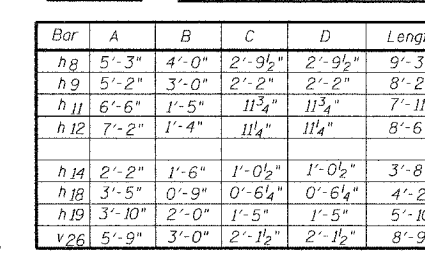
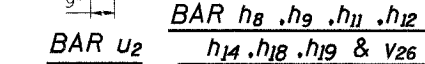
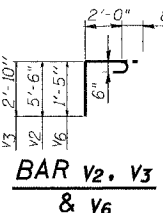


DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

Bar	E	F	Length
n50	9'-0"	1'-4"	10'-4"
n51	5'-5"	1'-0"	6'-5"



Bar	E	F	Length
h15	22'-11"	1'-6"	24'-5"
h16	22'-1"	2'-3"	24'-4"
h17	21'-5"	2'-10"	24'-3"
v8	2'-0"	1'-3"	3'-3"
n	7'-3"	1'-7"	8'-10"



Bar	A	B	C	D	Length
h8	5'-3"	4'-0"	2'-9½"	2'-9½"	9'-3"
h9	5'-2"	3'-0"	2'-2"	2'-2"	8'-2"
h11	6'-6"	1'-5"	11'-4"	11'-4"	7'-11"
h12	7'-2"	1'-4"	11'-4"	11'-4"	8'-6"
h14	2'-2"	1'-6"	1'-0½"	1'-0½"	3'-8"
h18	3'-5"	0'-9"	0'-6¼"	0'-6¼"	4'-2"
h19	3'-10"	2'-0"	1'-5"	1'-5"	5'-10"
v26	5'-9"	3'-0"	2'-1½"	2'-1½"	8'-9"

PLAN (FOUNDATION)

ELEVATION

PLAN (TOP)

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. F. & P. 846	SECTION 4B-1-1-1	COUNTY WILL	SHEET NO. 39	SHEET NO. 16
ILLINOIS DEPARTMENT OF TRANSPORTATION				

SHEET NO. S14
SHEETS S20

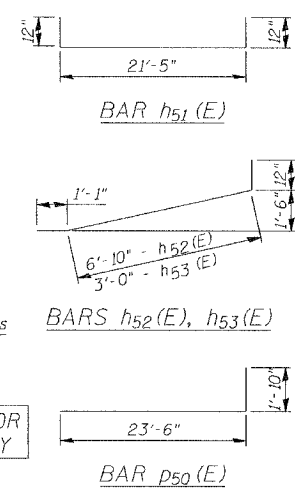
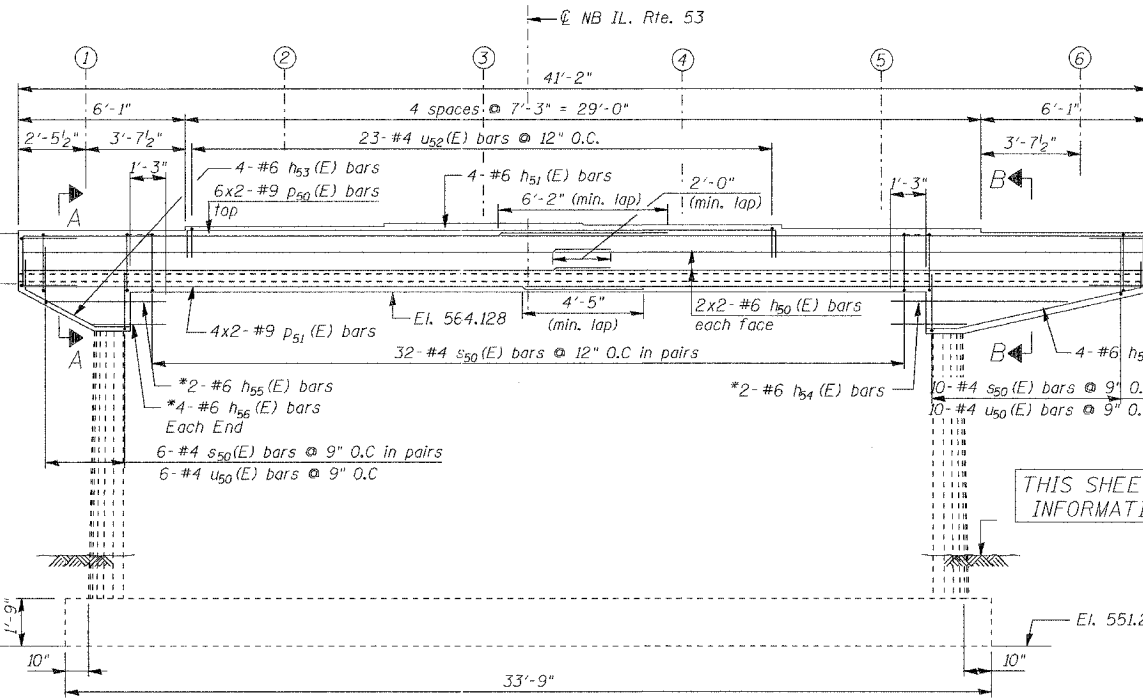
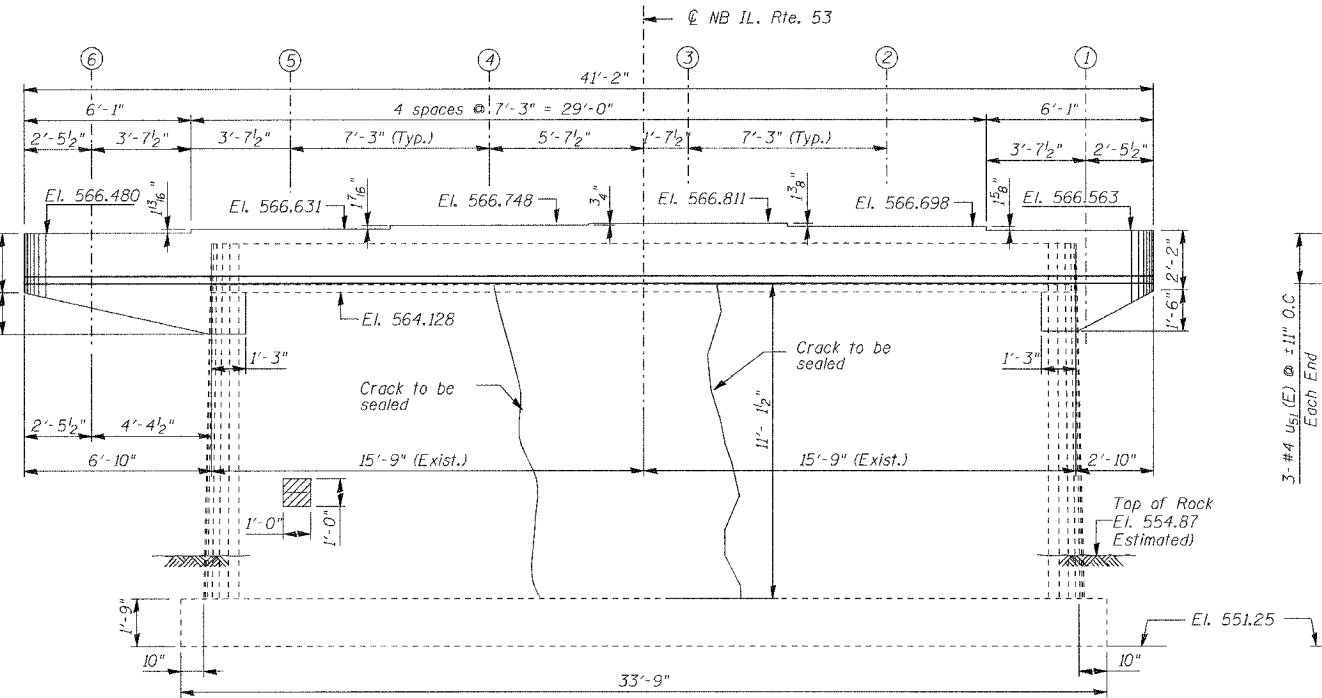
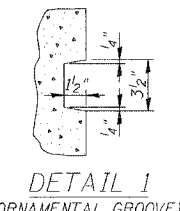
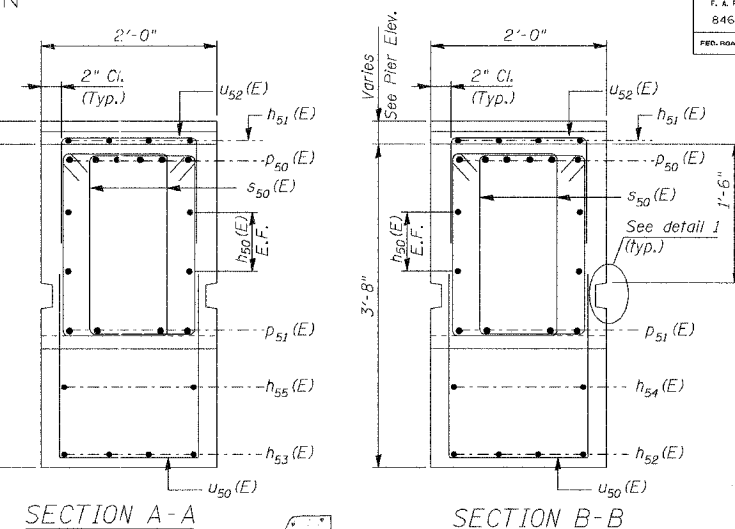
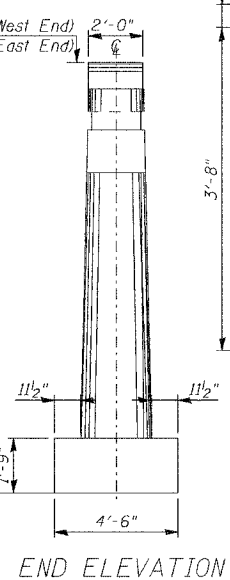
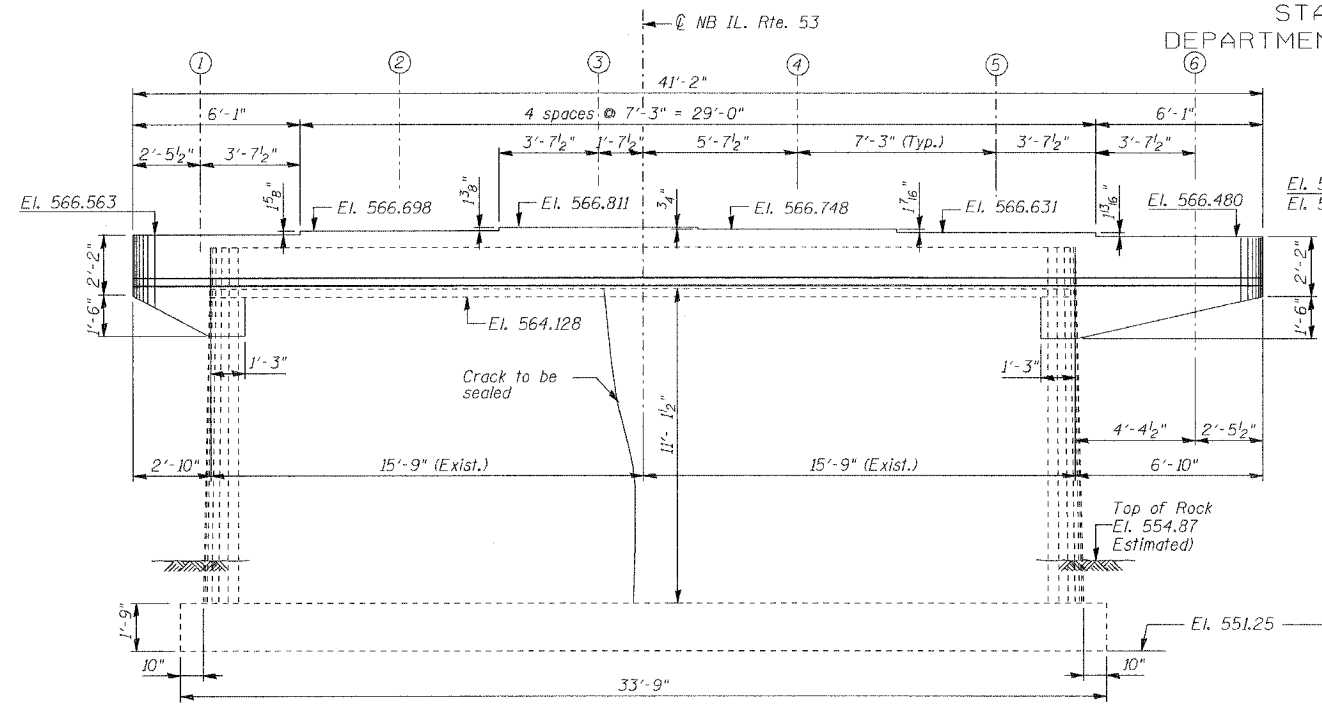
CONTRACT NO. 60D26

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
$h_{50}(E)$	8	#6	21'-10"	
$h_{51}(E)$	4	#6	23'-5"	
$h_{52}(E)$	4	#6	8'-11"	
$h_{53}(E)$	4	#6	5'-1"	
$h_{54}(E)$	2	#6	5'-7"	
$h_{55}(E)$	2	#6	4'-3"	
$h_{56}(E)$	8	#6	2'-4"	
$p_{50}(E)$	12	#9	25'-4"	
$p_{51}(E)$	8	#9	22'-8"	
$s_{50}(E)$	96	#4	7'-3"	
$u_{50}(E)$	16	#4	5'-9"	
$u_{51}(E)$	6	#4	7'-8"	
$u_{52}(E)$	23	#4	3'-8"	

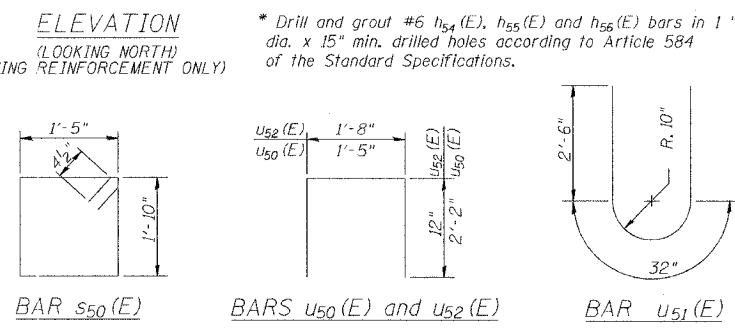
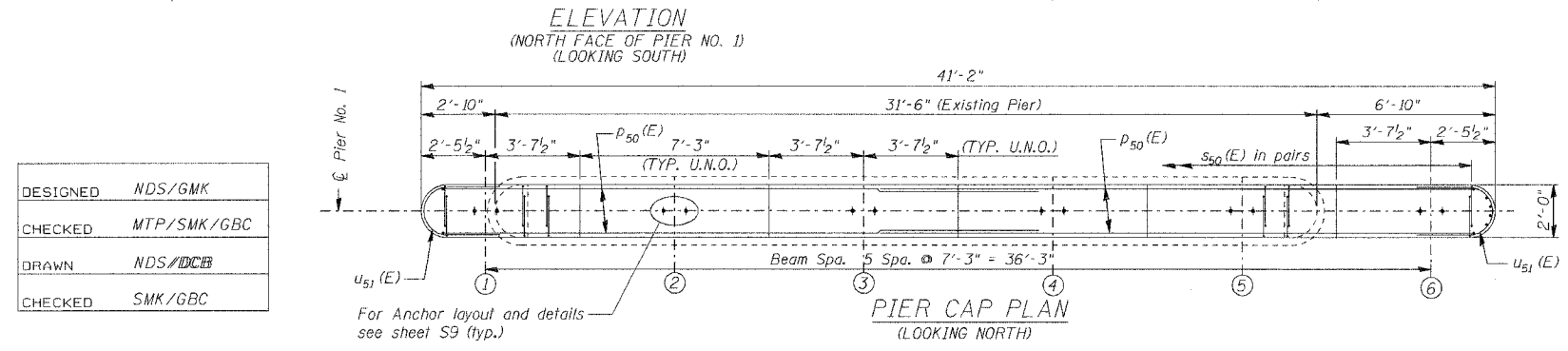
Reinforcement Bars, Epoxy Coated	Pound	2870
Concrete Structures	Cu. Yd.	8.6
Structural Repair of Concrete (Depth Equal To or Less Than 5")	sq. FT	1.0
Epoxy Crack Injection	Foot	23.0

Reinforcement Bars designated (E) shall be epoxy coated.
Cast steps monolithically with cap.
Space cap reinforcement to miss anchor bolts.



LEGEND:

- Hairline crack (crack < 1/16" wide) Not to be sealed Unless Noted Otherwise
- Spall with exposed rebar



DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

For Anchor layout and details see sheet S9 (typ.)

* Drill and grout #6 $h_{54}(E)$, $h_{55}(E)$ and $h_{56}(E)$ bars in 1" dia. x 15" min. drilled holes according to Article 584 of the Standard Specifications.

ILLINOIS DEPARTMENT OF TRANSPORTATION

PIER NO. 1
REPAIRS & EXTENSION

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

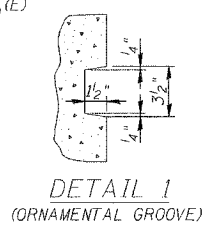
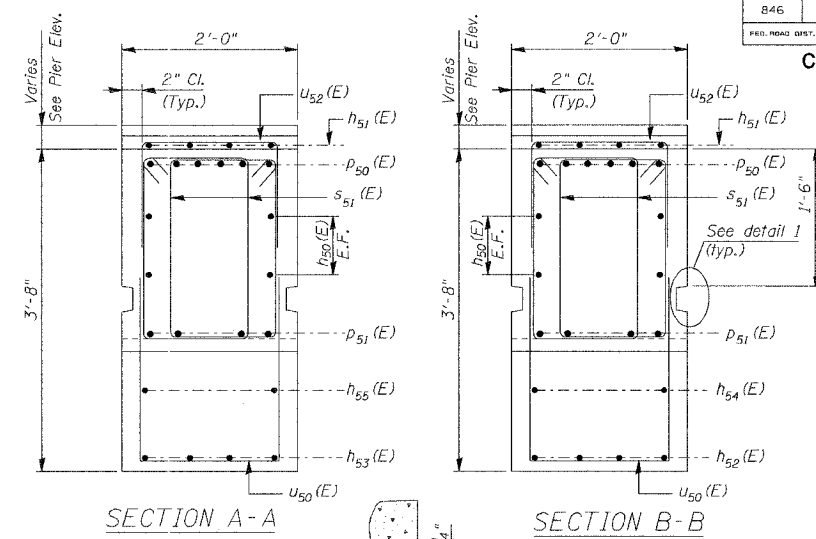
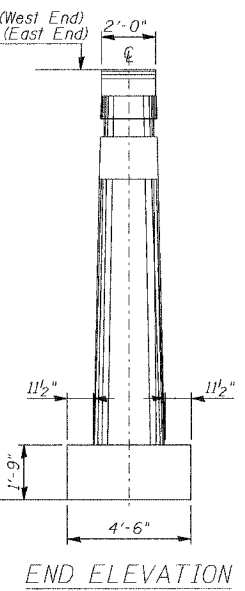
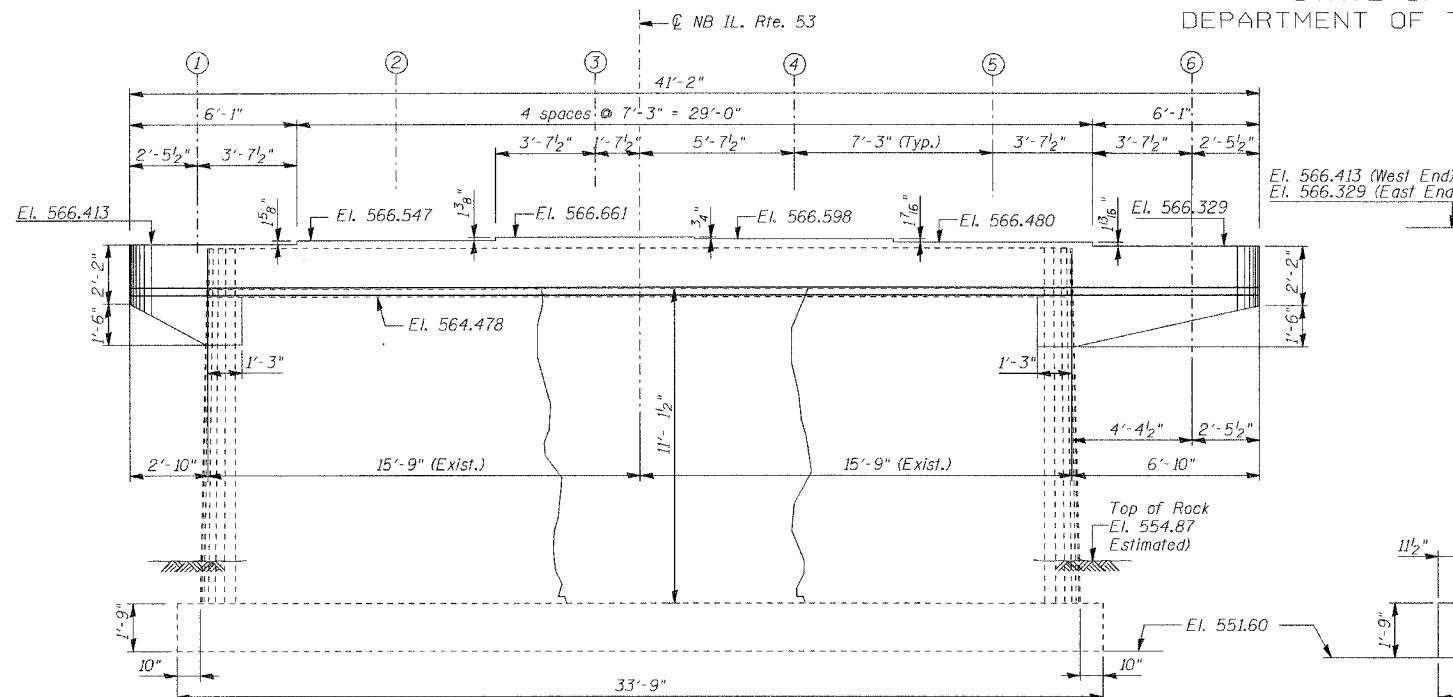
DELT DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I. A. P. 846	4B-1-1-1	WILL	39	17
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

CONTRACT NO. 60D26

SHEET NO. S15
SHEETS S20

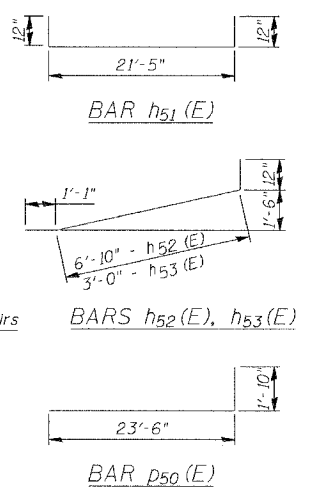
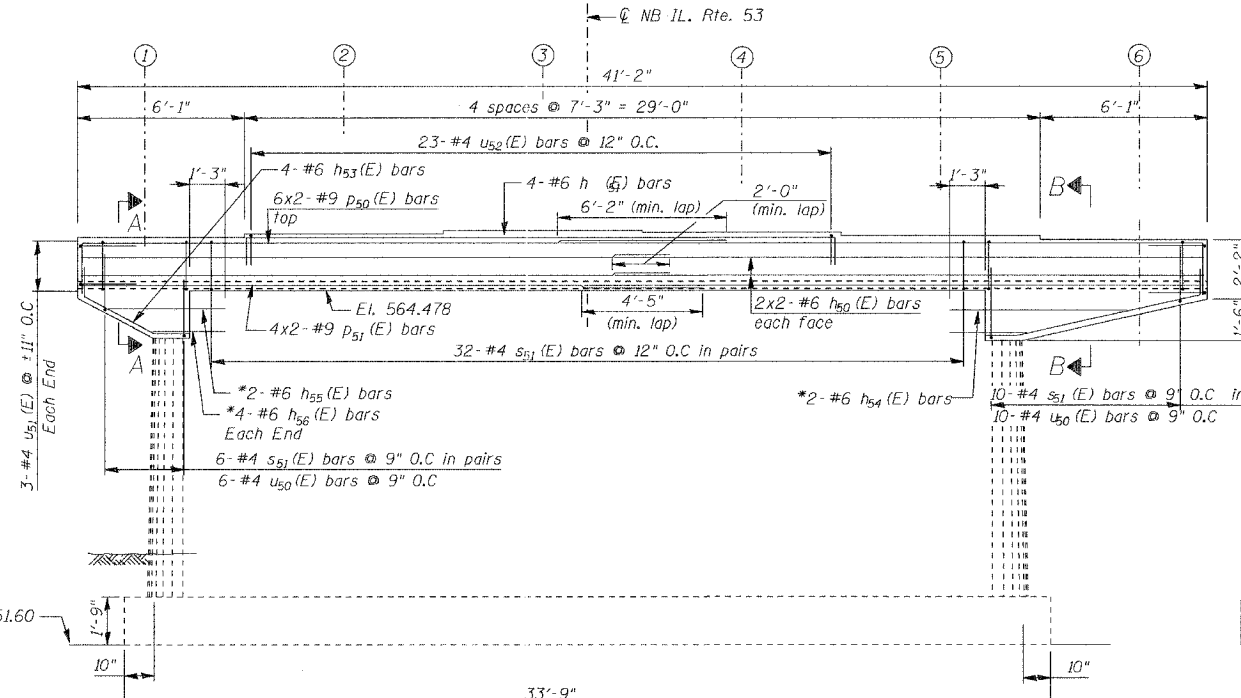
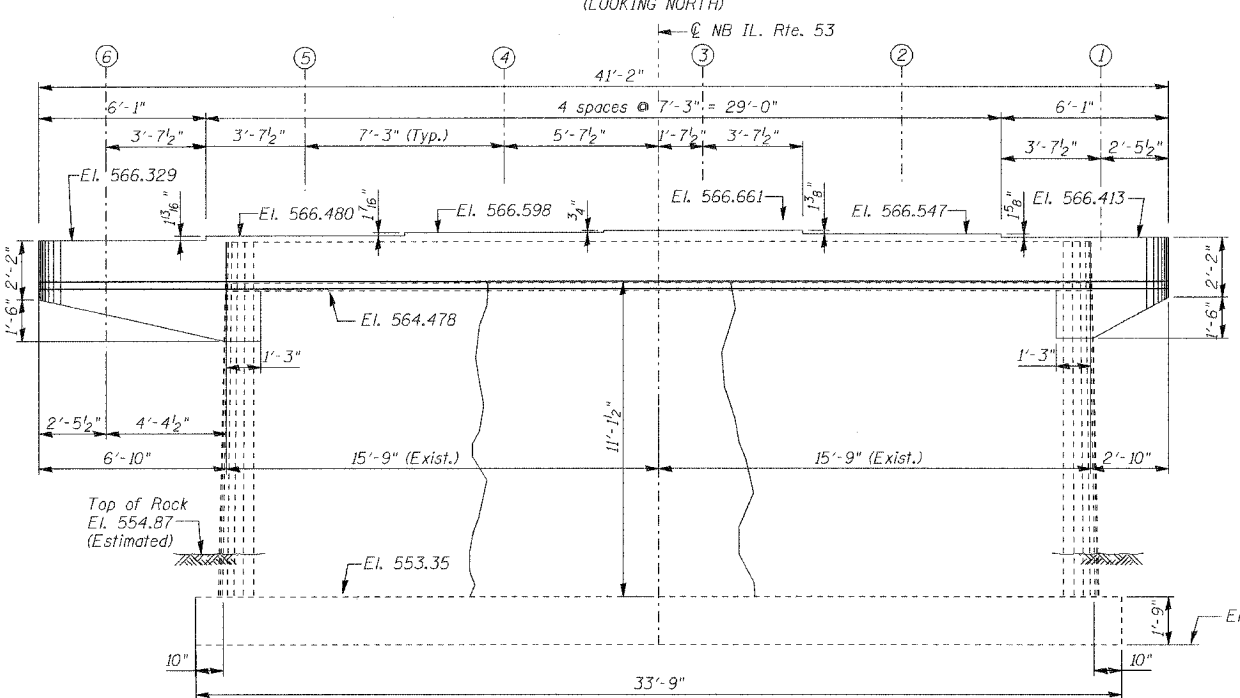


BILL OF MATERIAL

Bar	No.	Size	Length	Shape
$h_{50}(E)$	8	#6	21'-10"	
$h_{51}(E)$	4	#6	23'-5"	
$h_{52}(E)$	4	#6	8'-11"	
$h_{53}(E)$	4	#6	5'-1"	
$h_{54}(E)$	2	#6	5'-7"	
$h_{55}(E)$	2	#6	4'-3"	
$h_{56}(E)$	8	#6	2'-4"	
$p_{50}(E)$	12	#9	25'-4"	
$p_{51}(E)$	8	#9	22'-8"	
$s_{51}(E)$	96	#4	6'-9"	
$u_{50}(E)$	16	#4	5'-9"	
$u_{51}(E)$	6	#4	7'-8"	
$u_{52}(E)$	23	#4	3'-8"	

Reinforcement Bars, Epoxy Coated Concrete Structures: Pound 2840, Cu. Yd. 7.5

Reinforcement Bars designated (E) shall be epoxy coated.
Cast steps monolithically with cap.
Space cap reinforcement to miss anchor bolts.

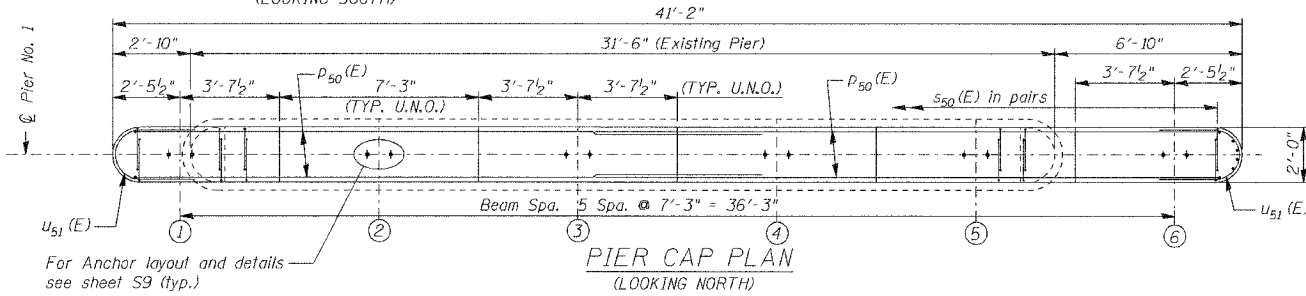


THIS SHEET IS FOR INFORMATION ONLY

LEGEND:

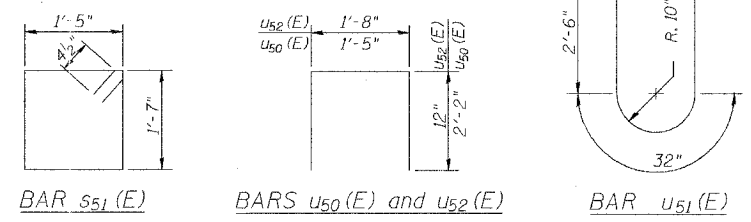
Hairline crack (crack < 1/16" wide)
Not to be sealed

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/SMK
CHECKED	SMK/GBC



For Anchor layout and details see sheet S9 (typ.)

* Drill and grout #6 $h_{54}(E)$, $h_{55}(E)$ and $h_{56}(E)$ bars in 1" dia. x 15" min. drilled holes according to Article 584 of the Standard Specifications.



ILLINOIS DEPARTMENT OF TRANSPORTATION

PIER NO. 2
REPAIRS & EXTENSION
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007

DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

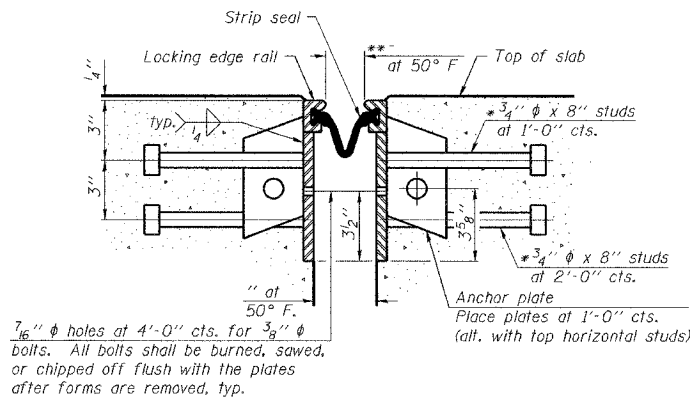
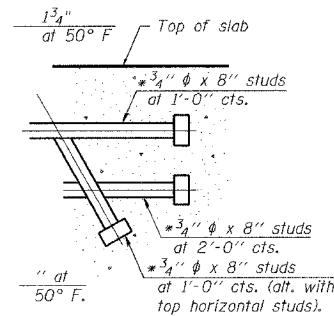
ROUTE NO.	SECTION	COUNTY	SUBDIVISION	SHEET NO.
F. A. P. 846	4B-1-1-1	WILL	39	18
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. S16
SHEETS S20

CONTRACT NO. 60D26

* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

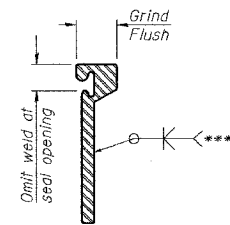
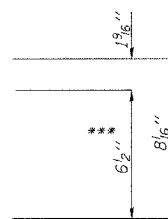
When joint is fixed, dimension is set at 1 1/2".



Notes:

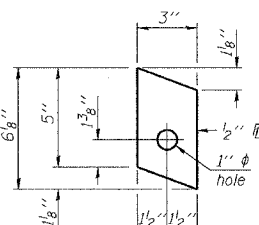
The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches. The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints. The manufacturer's recommended installation methods shall be followed. The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State. All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

SECTION THRU
ROLLED RAIL JOINT

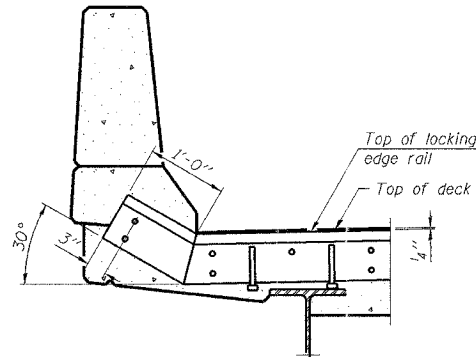


*** Back gouge not required if complete joint penetration is verified by mock-up.

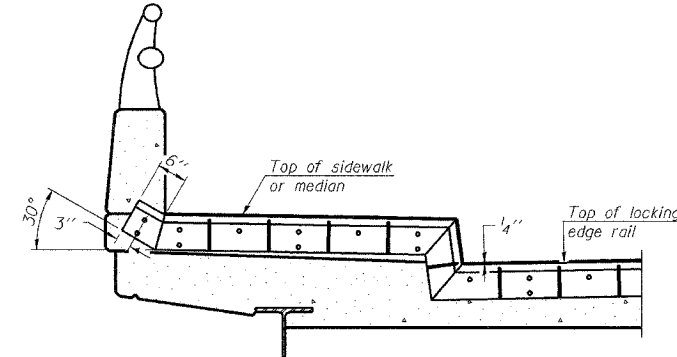
SECTION THRU
WELDED RAIL JOINT



ANCHOR PLATE
(for welded rail)



AT PARAPET



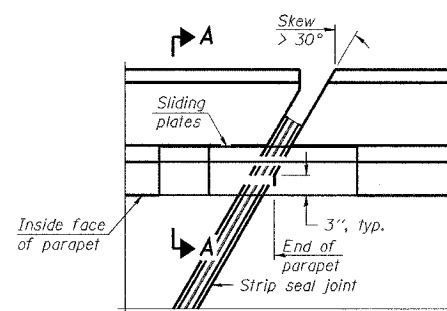
AT SIDEWALK OR MEDIAN

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

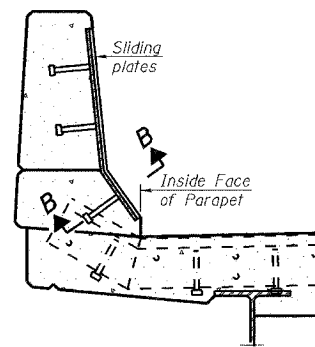
LOCKING EDGE
RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

LOCKING EDGE RAILS

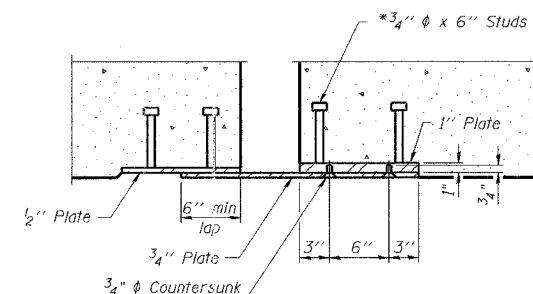


PLAN



SECTION A-A

POINT BLOCK DETAILS
(for skews > 30°)



SECTION B-B

TYPICAL END TREATMENTS

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	85

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

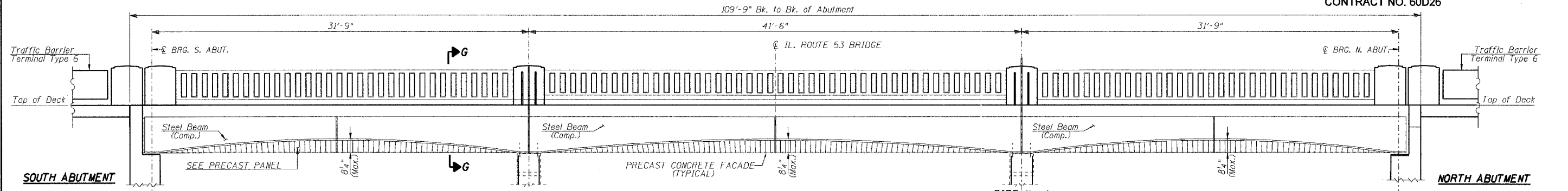
THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION
PREFORMED JOINT STRIP SEAL
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
DEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

ROUTE NO.	SECTION	COUNTY	FED. AID PROJ. NO.	SHEET NO.	CONTRACT NO. 60D26
F. A. P.	4B-1-1-1	WILL	39	19	
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-			

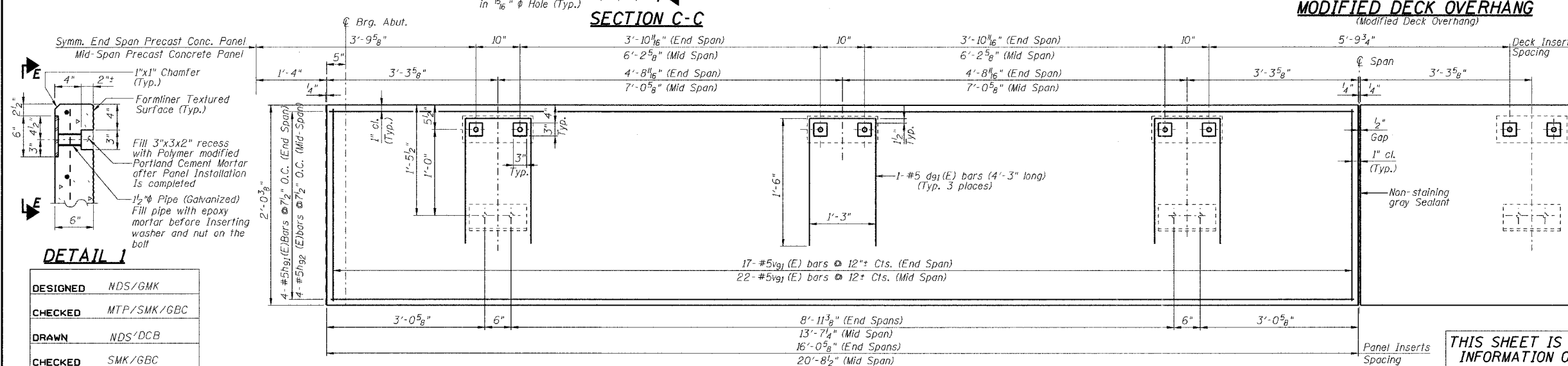
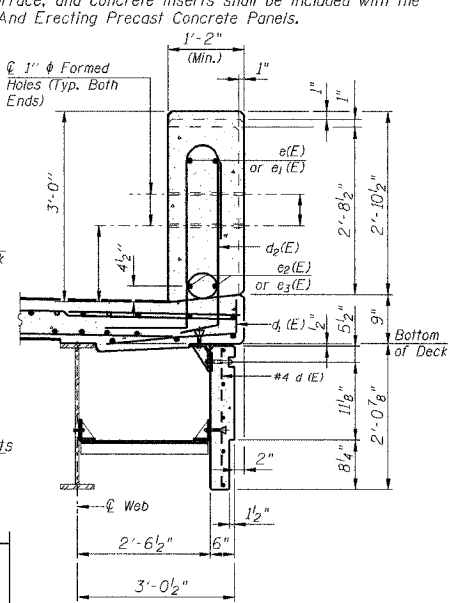
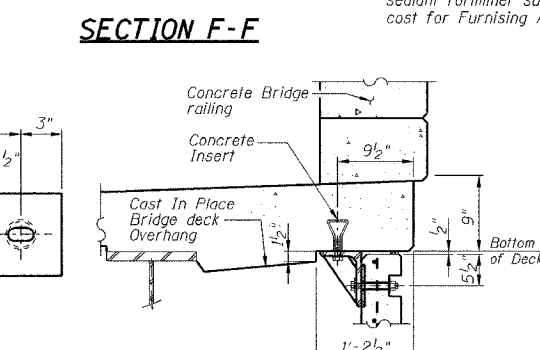
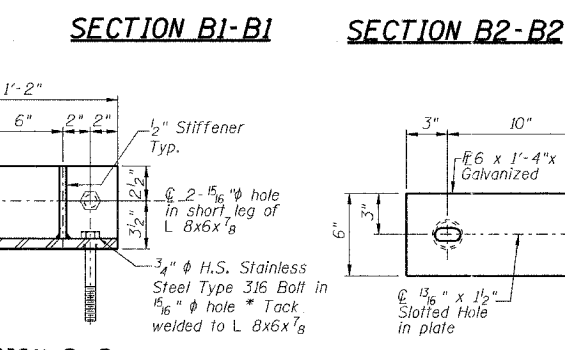
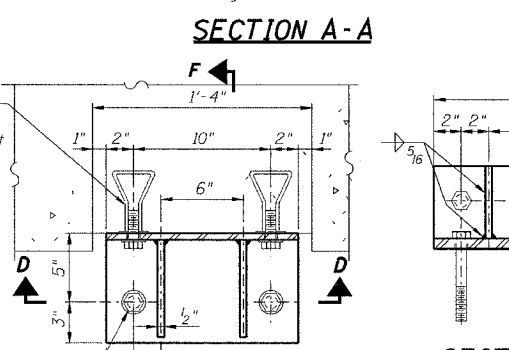
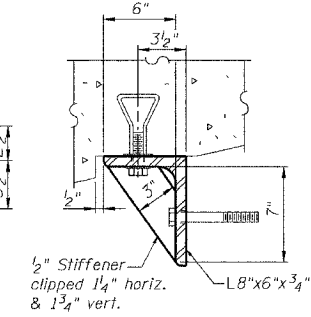
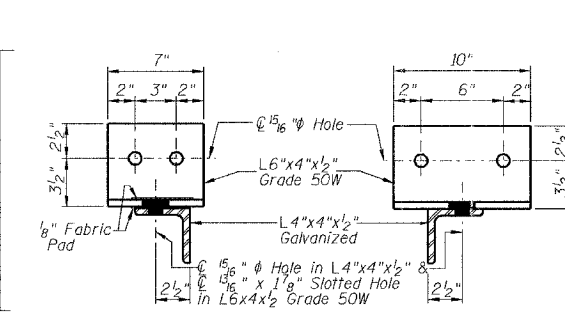
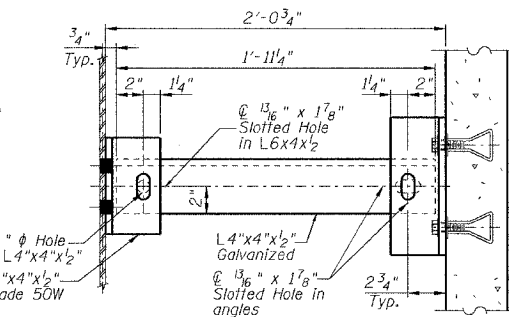
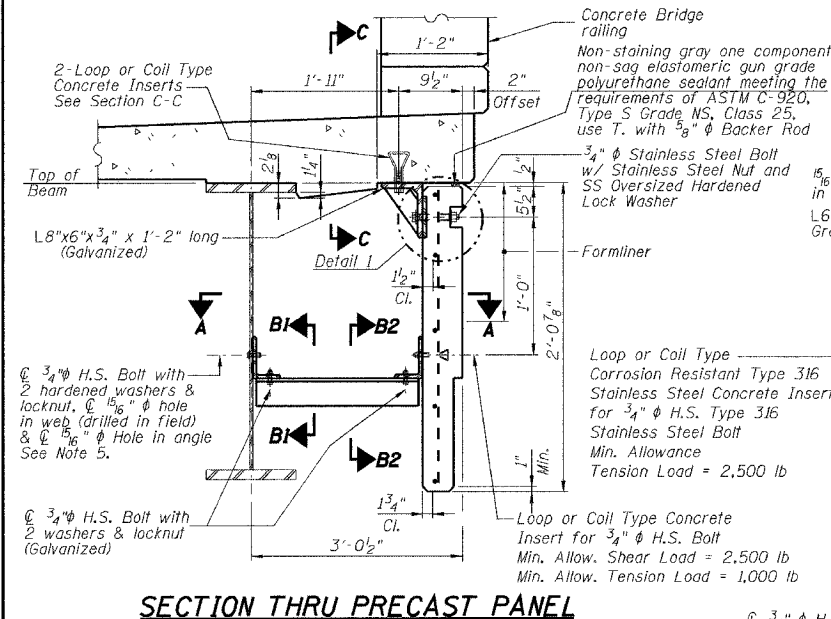
SHEET NO. 17
SHEETS S20



BILL OF MATERIAL

Item	Unit	Quantity
Furnishing And Erecting Precast Concrete Panels	Each	12

- Notes:**
1. Location of inserts in Deck and Precast Concrete Panels shall be very accurate ($\pm 1/16"$), move or bend reinforcement if in conflict with the insert location.
 2. Reinforcement bars shall conform to the requirements of AASHTO M31 or M322 Grade 60. Reinforcement Bars designated (E) shall be epoxy coated.
 3. Field welding of construction accessories will not be permitted to beams or girders.
 4. All structural steel shall be AASHTO M270 Grade 36, except for L 6x4x1/2" attached to Fascia Beam's web, which shall be AASHTO M270 Grade 50W.
 5. Fasteners connecting the L 6x4x1/2" to the beam shall be high strength bolts AASHTO M164, Type 3 in unpainted areas and mechanically galvanized AASHTO M164, Type 1 in painted areas. Bolts 3/4" ϕ , open holes 5/16" ϕ , unless otherwise noted.
 6. For beam details see Sheets SB & S9. For deck details see Sheets S5 & S7.
 7. All members called out to be Galvanized shall be galvanized after shop fabrication according to AASHTO M111 and ASTM A305. All nuts, bolts and washers called out to be galvanized shall be galvanized according to M232.
 8. Cost for all connection angles, fasteners, reinforcement bars epoxy coated, sealant formliner surface, and concrete inserts shall be included with the cost for Furnishing And Erecting Precast Concrete Panels.



DETAIL 1

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS'DCB
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION
PRECAST CONCRETE FACADE
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

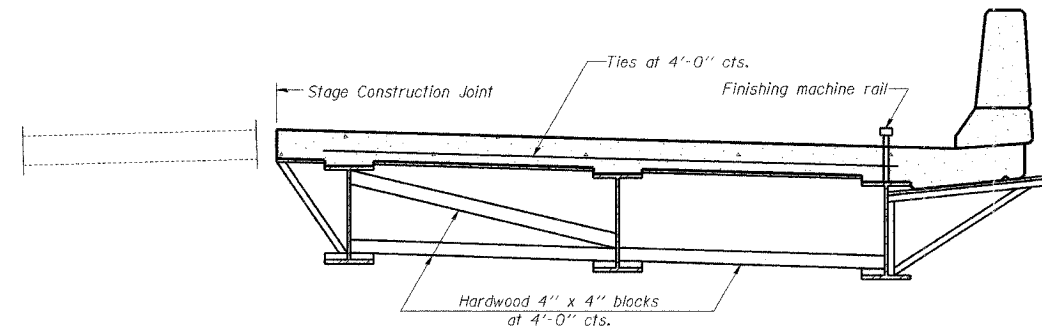
ROUTE NO.	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
F. A. P. B46	4B-1-1-1	WILL	39	20
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. S18

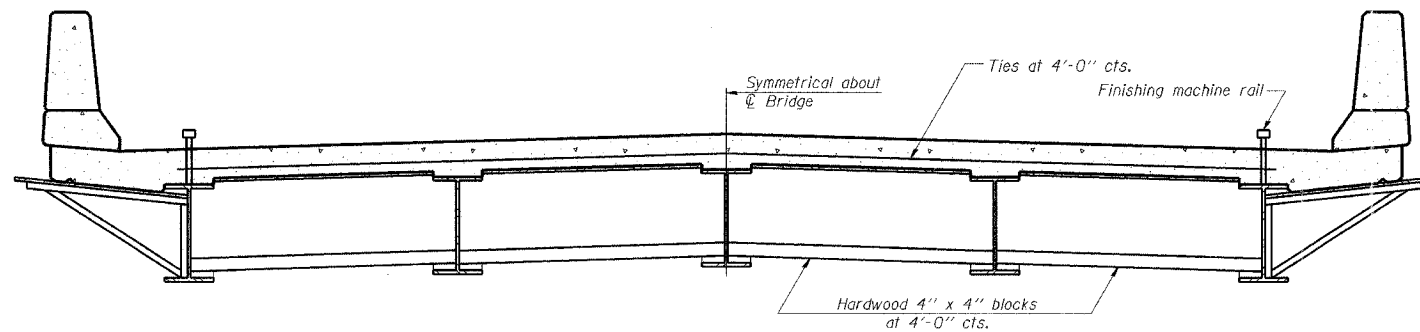
SHEETS S20

CONTRACT NO. 60D26

When cantilever forming brackets are used, the work shall be done according to Article 503.06(b) of the Standard Specifications, except as modified below and in the details shown on this sheet.
The finishing machine rails shall be placed on the top flange of the exterior beams.
The beams or girders, supporting cantilever forming brackets, shall be tied together at 4 foot intervals.
For Standard construction, or Stage Construction the Hardwood bracing materials shall be placed as shown between webs of beams in each bay.



**FORM BRACES FOR
STAGE CONSTRUCTION**



**FORM BRACES FOR
STANDARD CONSTRUCTION**

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION
CANTILEVER FORMING BRACKETS
FOR SUPERSTRUCTURES
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
F. A. P. 846	4B-1-1-1	WILL	39	21
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. S19
SHEETS 520

CONTRACT NO. 60D26

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:

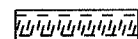
- ① Minimum Capacity = $1.25 \times f_y \times A_s$
(Tension in kips)
 - ② Minimum *Pull-out Strength = $0.66 \times f_y \times A_s$
(Tension in kips)
- Where f_y = Yield strength of lapped reinforcement bars in ksi.
 A_s = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

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	7.9
#5	2'-0"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8

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**

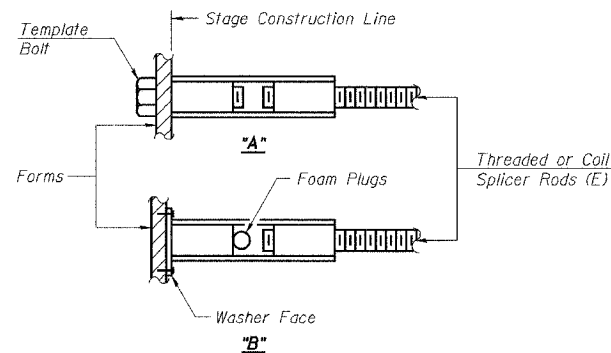
Wire Connector



WELDED SECTIONS

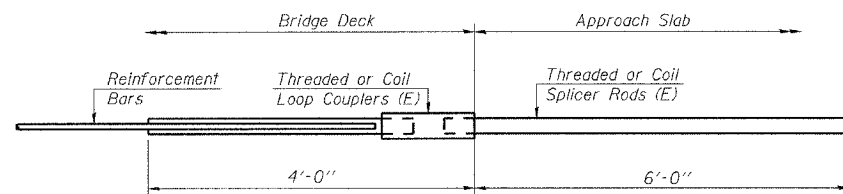
BAR SPLICER ASSEMBLY ALTERNATIVES

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



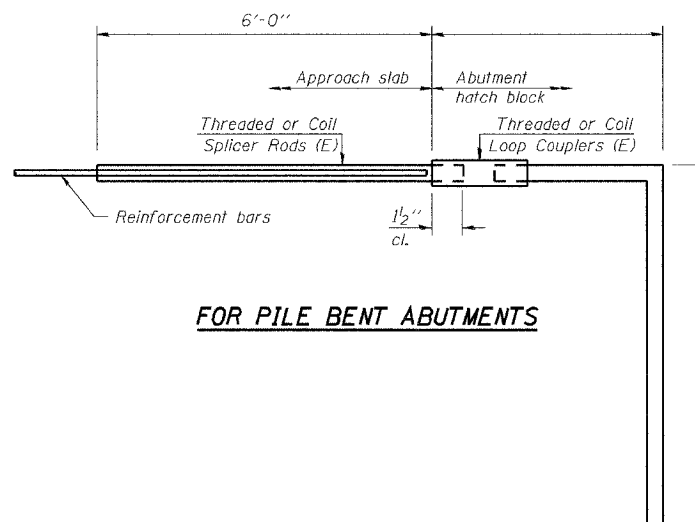
INSTALLATION AND SETTING METHODS

"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.



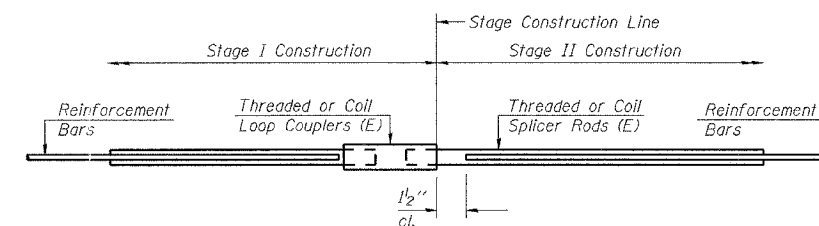
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 12.3 kips - tension
No. Required =



FOR PILE BENT ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 12.3 kips - tension
No. Required = 96



STANDARD

Bar Size	No. Assemblies Required	Location

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

THIS SHEET IS FOR INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION

BAR SPLICER ASSEMBLY DETAILS

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. F.A.P. 846	SECTION 4B-1-1-1	COUNTY WILL	SHEET NO. 39	SHEET NO. 22
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

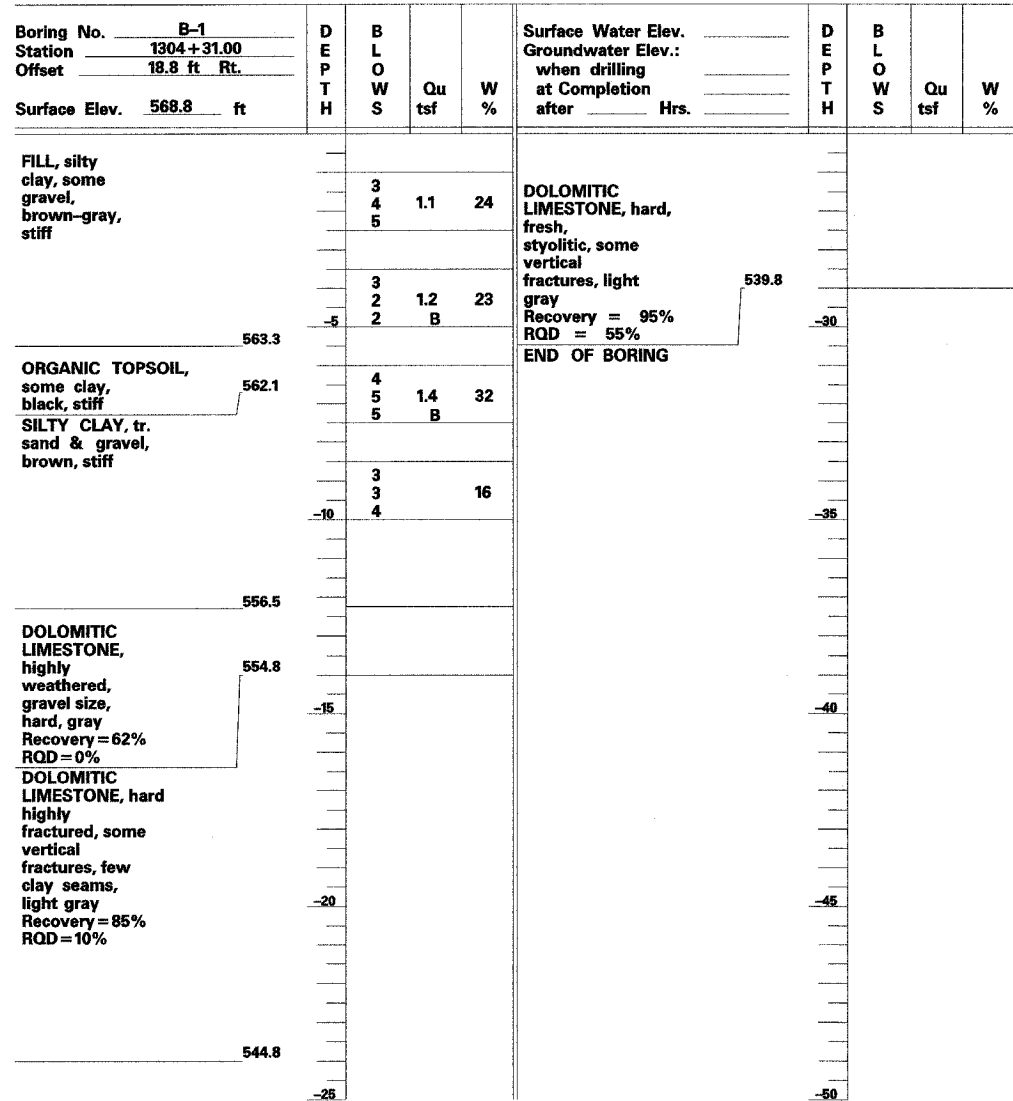
SHEET NO. S20
SHEETS S20

CONTRACT NO. 60D26

GROUND ENGINEERING CONSULTANTS, INC.
STRUCTURE BORING LOG

Page 1 of 1
Date 7/18/02

ROUTE IL-53 (FAP846) DESCRIPTION Proposed Bridge Improvements
SECT. 4-RB/4B-1-R STRUCT. NO. 099-0900 (NB) DRILLED BY GEOCON
COUNTY Will LOCATION IL-53 over Prairie Creek S. , TWP. 33N , RNG. 9E-10E 3rd PM

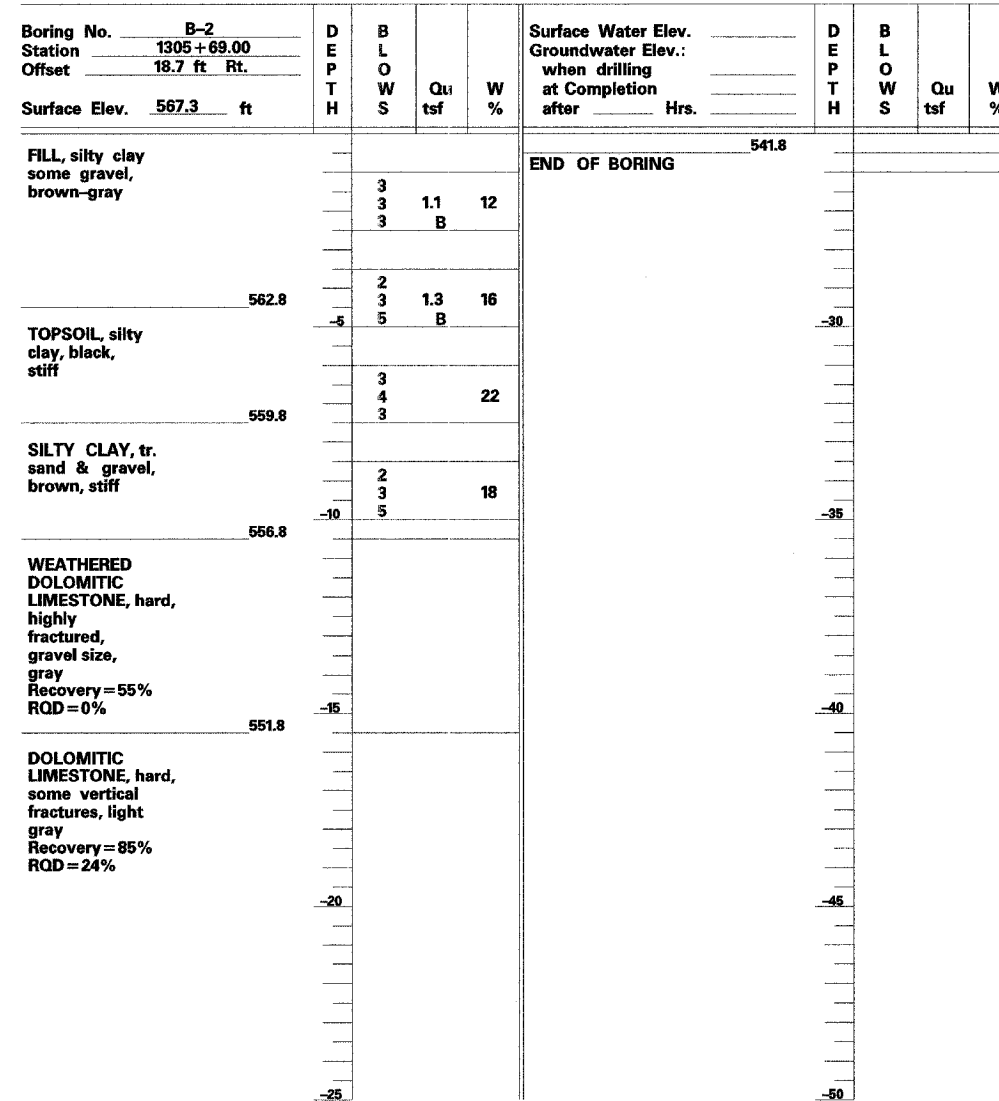


SPT. (N) = Sum of last two blow values in sample. (Qu) B=Bulge S=Shear P=Penetration Test Stations, Depths, Offset, and Elevations are in Feet

GROUND ENGINEERING CONSULTANTS, INC.
STRUCTURE BORING LOG

Page 1 of 1
Date 7/25/02

ROUTE IL-53 (FAP846) DESCRIPTION Proposed Bridge Improvements
SECT. 4-RB/4B-1-R STRUCT. NO. 099-0900 (NB) DRILLED BY GEOCON
COUNTY Will LOCATION IL-53 over Prairie Creek S. , TWP. 33N , RNG. 9E-10E 3rd PM



SPT. (N) = Sum of last two blow values in sample. (Qu) B=Bulge S=Shear P=Penetration Test Stations, Depths, Offset, and Elevations are in Feet

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/DCB
CHECKED	SMK/GBC

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION
SOIL BORING LOGS
FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY
STRUCTURE NO. 099-0090
SCALE: NONE
DATE: JUNE 2007
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

Bench Mark:
 BM #3 Elevation = 571.36 (Feet)
 A square cut in northwest wingwall of south bound Illinois route 53 bridge.

Existing Structure:
 The existing structure No. 099-0242 (SB) was built in 1978 under construction route FA-5 and section 4B-1-R. The existing bridge consists of three-spans precast concrete box beam (14 beams) in each span. The structure length is 105'-8" Bk. to Bk. of Abutments and 43'-2" Out to Out Deck. The substructure consists of two abutments, two piers, and two curtain walls between this Bridge and N.B. Bridge (099-0090). The piers and abutments are on spread footings over solid rock. The superstructure of existing bridge to be removed and replaced. Traffic shall be detoured by providing cross over away from the structure location, see roadway plans. No salvage.

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET	SHEET NO. S1
F. A. P.	4B-1-R	WILL	39	23	SHEETS S17
FED. ROAD DIST. NO. 7		ILLINOIS		FED. AID PROJECT	

CONTRACT NO. 60D26

DESIGN SPECIFICATIONS

Superstructure:
 2007 AASHTO LRFD Bridge Design Specifications

Substructure:
 AASHTO Standard Specifications For Highway Bridges 17th. Edition 2002

LOADING HL-93 (Struct. Steel, Deck & Bearings)

LOADING HS20-44 (Substructure)

Allow 50 psf for future wearing surface.

DESIGN STRESSES

Existing

$f'_c = 3,500$ psi (concrete)
 $f_y = 60,000$ psi (reinforcement)

Proposed

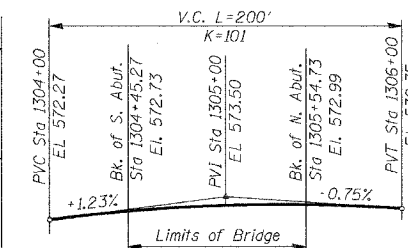
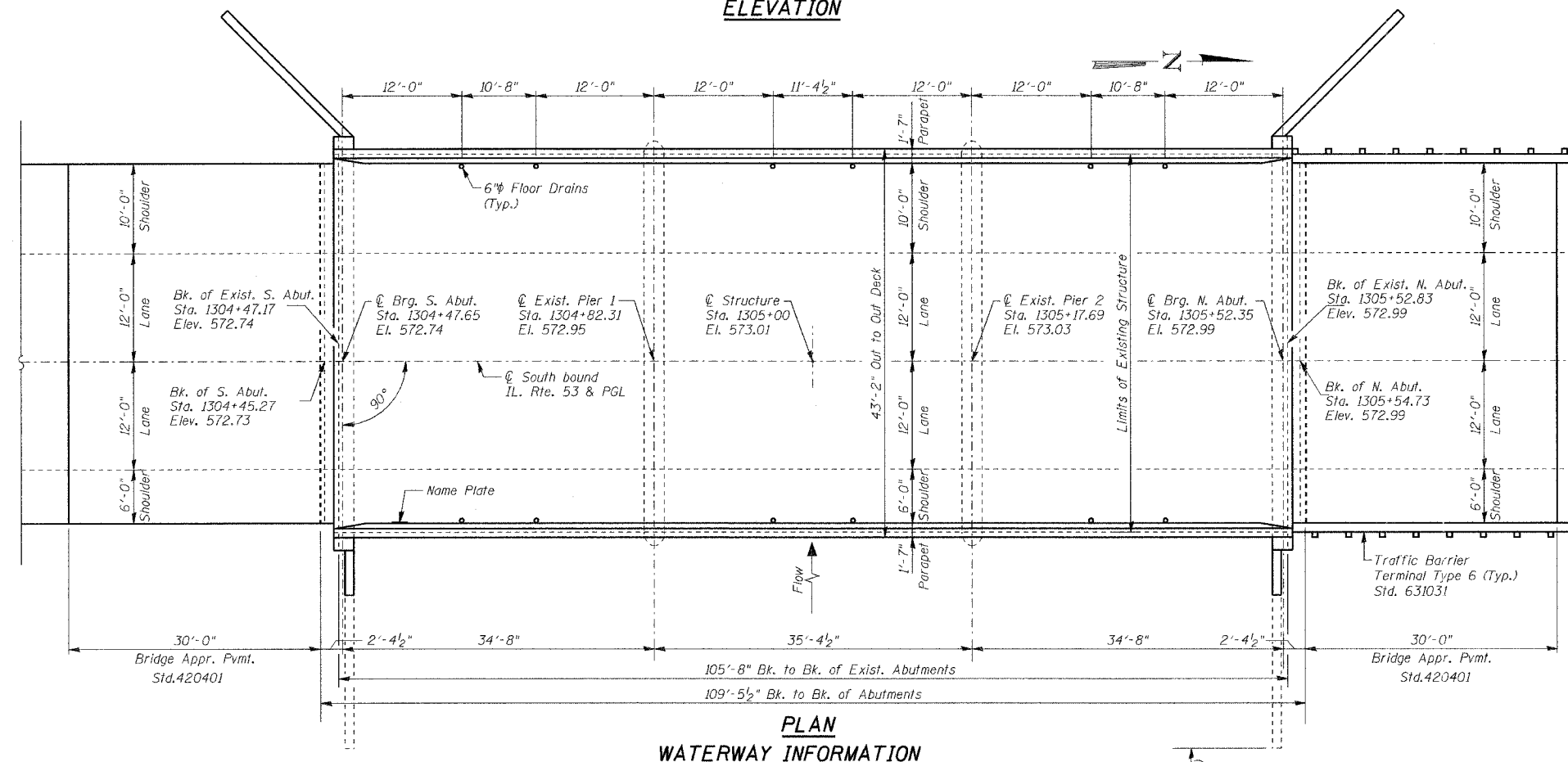
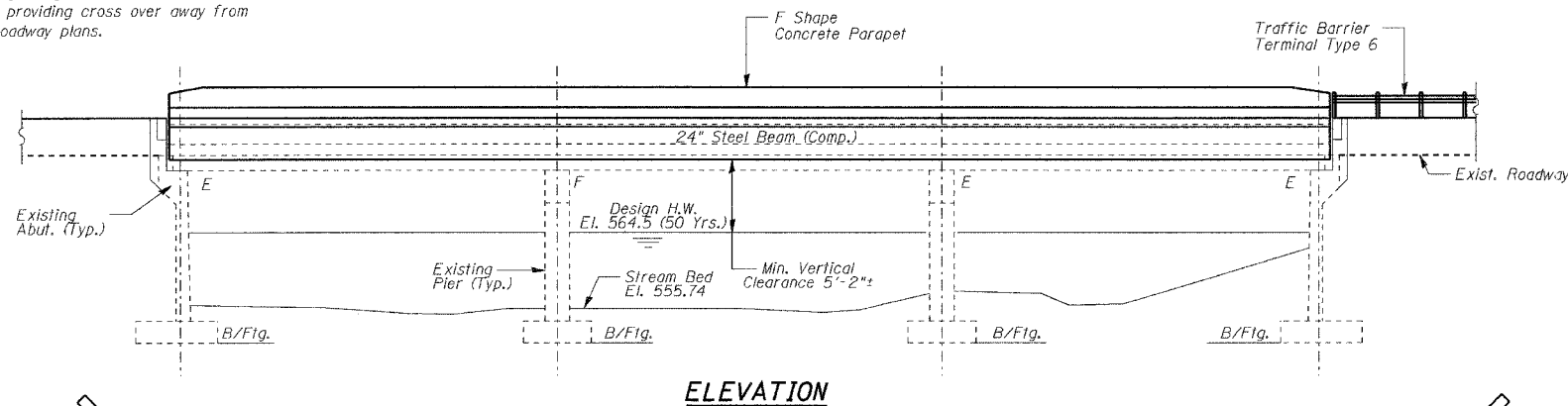
$f'_c = 3,500$ psi (concrete)
 $f_y = 60,000$ psi (reinforcement)
 $f_y = 50,000$ psi (structural steel) (M270 GR.50)
 $f_y = 36,000$ psi (diaphragms) (M270 GR.36)

SEISMIC DATA

Seismic performance category (S.P.C.) = A
 Bedrock acceleration coefficient (A) = .04g
 Site coefficient (s) = 1.0

INDEX OF SHEETS

S1	General Plan & Elevation
S2	General Notes, Total Bill of Material and Section thru Abutment
S3	Top of Deck Elevation and Layout of Elevation Lines
S4	Top of Deck Elevation Tables
S5	Superstructure
S6	Superstructure Details
S7	Framing Plan and Structural Steel Details
S8	Structural Steel Details
S9	Bearing Details
S10	Concrete Removal Details
S11	South Abutment - Repairs and Extension
S12	North Abutment - Repairs and Extension
S13	Pier No. 1 - Repairs
S14	Pier No. 2 - Repairs
S15	Preformed Joint Strip Seal
S16	Cantilever Forming Brackets for Superstructure
S17	Bar Splicer Assembly Details

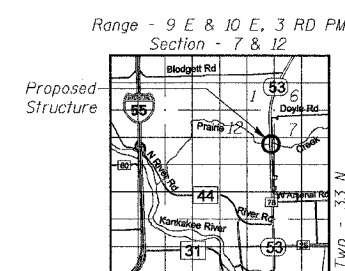


PROPOSED PROFILE GRADE
 (at \odot of SB)

STATION 1305+00
RE-BUILT 20 BY
STATE OF ILLINOIS
F.A.P. 846 SEC. 4B-1-R
LOADING HL-93 (HS20)
STR. NO. 099-0242

NAME PLATE

See Std. 515001
 Existing Name Plate shall be cleaned and relocated next to New Name Plate. Cost included with Name Plates.



LOCATION SKETCH

WATERWAY INFORMATION

Drainage Area = 45.1 sq.mi Low Grade Elev. 569.7 Ft. \odot Sta. 1301+00

Flood Yr.	Freq. C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head - Ft.		Headwater El.	
		Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
10	2010	738	738	562.9	0.0	0.0	562.9	562.9
Design	50	2910	901	564.5	0.1	0.1	564.6	564.6
Base	100	3260	959	565.1	0.2	0.2	565.3	565.3
Overlapping								
Max. Calc.	500	4080	1095	566.7	0.3	0.3	567.0	567.0

All elevations are in highway datum.

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

APPROVED
 FOR STRUCTURAL ADEQUACY ONLY

Ralph E. Anderson (TS)
 ENGINEER OF BRIDGES AND STRUCTURES



Syed M. Kazi
 Licensed Structural Engineer
 State of Illinois
 License No. 081-004047
 Expires: 11-30-2008

ILLINOIS DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION

FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY

STRUCTURE NO. 099-0242
 SCALE: NONE
 DATE: JUNE 2007



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET	SHEET NO. 52
F. A. P. 846	4B-1-R	WILL	39	24	5 SHEETS 517
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

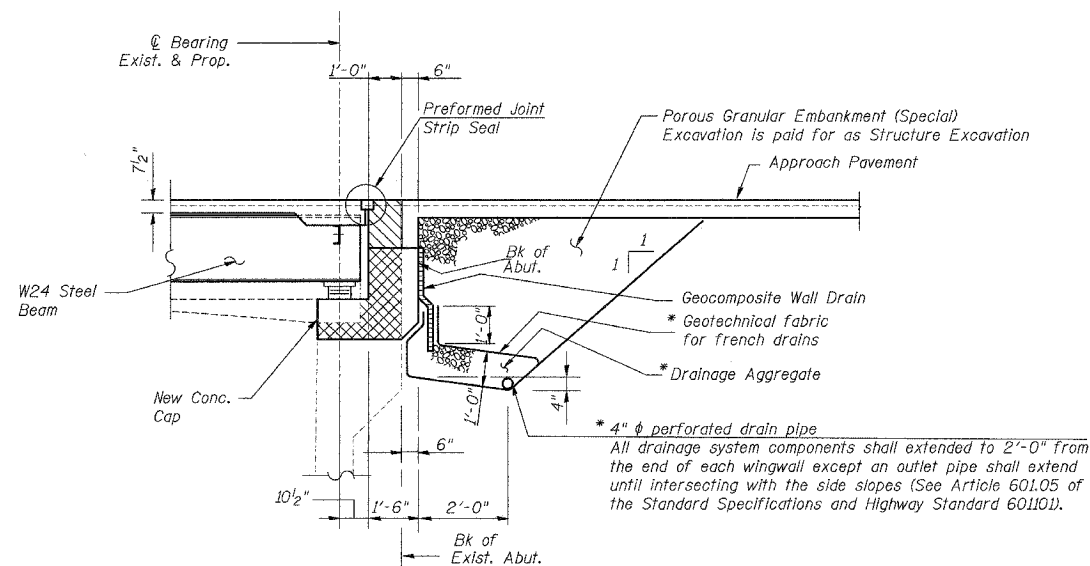
CONTRACT NO. 60D26

GENERAL NOTES:

- Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts $\frac{3}{4}$ in ϕ , holes $\frac{1}{8}$ in ϕ unless otherwise noted.
- Calculated weight of Structural Steel = 57,100 pounds (M270, Grade 50)
9,870 pounds (M270, Grade 36)
- 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 Grade 60 (IL modified). See special provisions.
- Reinforcement bars designated (E) shall be epoxy coated.
- Plan dimensions and details relative to existing plans are subject to routine 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 based upon the unit price bid for the work.
- Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ in (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
- The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the final finish coat for all interior and exterior steel surfaces and bottom flanges of all beams shall be light warm gray, Munsell No. 10Y 7/1. See Special Provision for "Cleaning and Painting New Metal Structures".
- Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
- Backfill shall be placed behind the abutment after the superstructure has been poured and falsework removed. See Article 502.10 of the Standard Specifications.
- Concrete Sealer shall be applied to the designated areas of the abutments.
- All construction joints shall be bonded.
- Clean and relocate existing name plate adjacent to new plate. Cost included with Name Plates.
- The Contractor is advised that the existing PPC deck beams are in a deteriorated condition with reduced load carrying capacity. It is the Contractor's responsibility to account for the condition of the beams when developing construction procedures for removal and replacement of the superstructure.
- If the Contractor's procedures for existing beam removal or placement of new beams involves placement of heavy equipment on the existing deck beams, a detailed procedure shall be submitted to the Engineer for approval. The procedure shall include calculations, sealed by an Illinois Licensed Structural Engineer, verifying the structural adequacy of the beams for the proposed loads.
- Bearing pads under existing PPC deck beams at both abutments have graphited asbestos.

TOTAL BILL OF MATERIAL

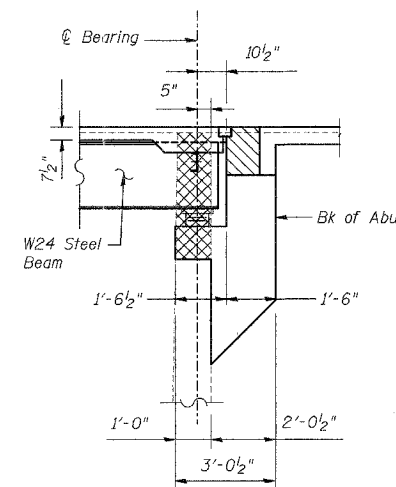
ITEM	UNIT	SUPER.	SUB.	TOTAL
Furnishing Structural Steel	L Sum	0.48	-	0.48
Furnishing Elastomeric Bearing Assembly, Type I	Each	18	-	18
Field Measurements	L Sum	0.48	-	0.48
Storage of Structural Steel and Bearings	Cal Day	30	-	30



SECTION THRU ABUTMENT

(Section thru Abutment Extension Similar)

* Included in the cost of Pipe Under Drains for Structures, 4".



SECTION THRU ABUTMENT

AT CURTAIN WALL

Area of Backwall to be constructed after removal of formwork for Superstructure
Area of Abutment to be constructed before placement of Superstructure

DESIGNED	NDS/GMK
CHECKED	MTP/SWK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

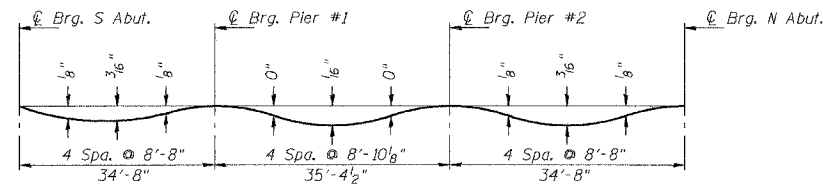
ILLINOIS DEPARTMENT OF TRANSPORTATION
GENERAL NOTES, TOTAL BILL OF MATERIAL & SECTION THRU ABUTMENT
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: AUGUST 2007
DEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. 846	SECTION 4B-1-R	COUNTY WILL	DIST. 39	SHEET NO. 25
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

SHEET NO. 93
SHEETS 517

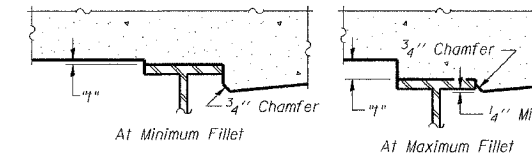
CONTRACT NO. 60D26



DEAD LOAD DEFLECTION DIAGRAM

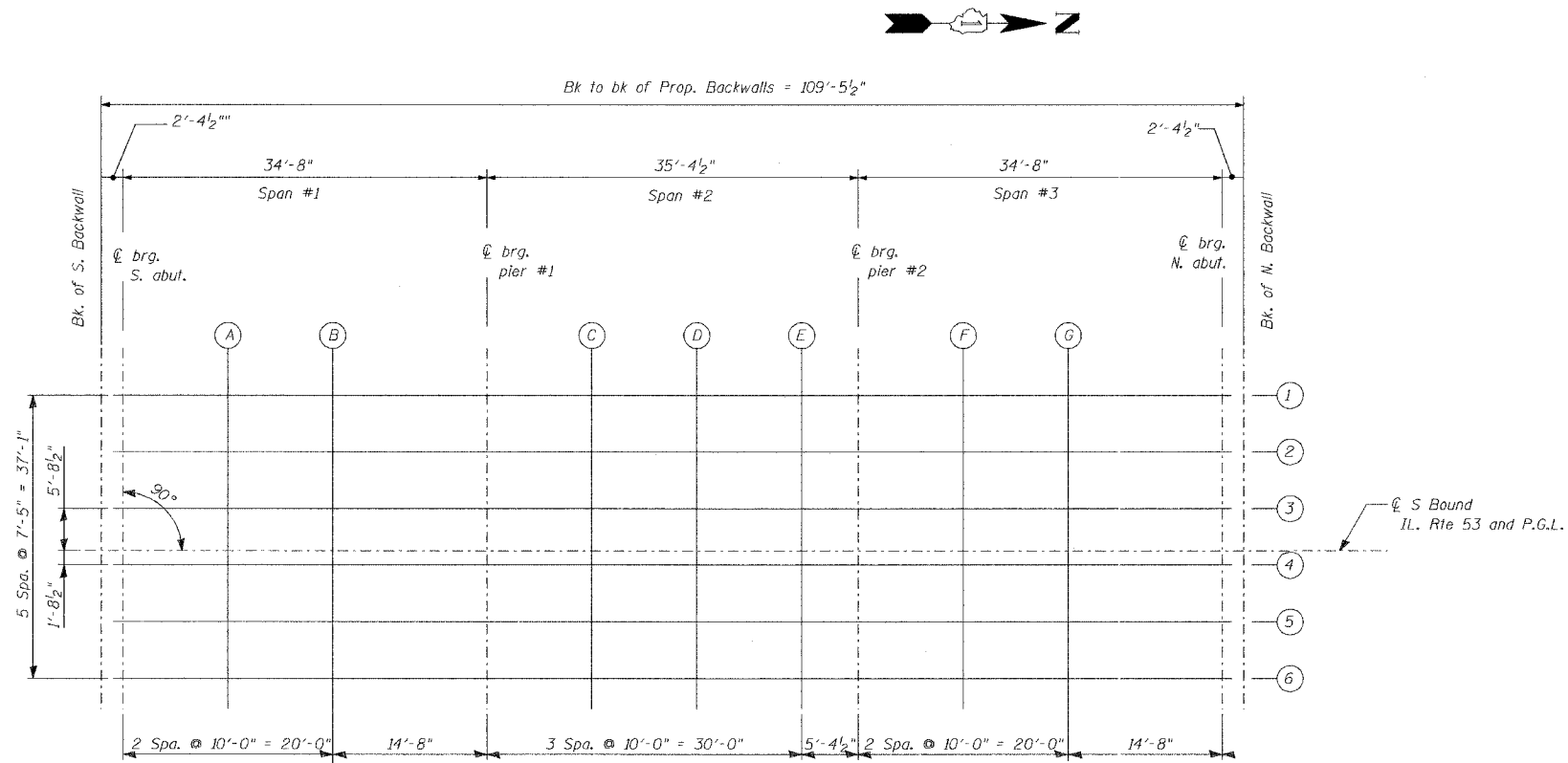
(Includes weight of concrete only.)

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 below.



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 below, minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS



PLAN

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION
TOP OF DECK ELEVATION AND
LAYOUT OF ELEVATION LINES
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
DETA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. S4
F. A. P. 846	4B-1-R	WILL	39	26	SHEETS S17
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-			

CONTRACT NO. 60D26

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF SOUTH ABUT.	1304+45.275	-20.542	572.359	572.359
CL BRG SOUTH ABUT.	1304+47.650	-20.542	572.378	572.378
A	1304+57.650	-20.542	572.449	572.465
B	1304+67.650	-20.542	572.510	572.527
CL PIER 1	1304+82.317	-20.542	572.581	572.581
C	1304+92.317	-20.542	572.618	572.618
D	1305+02.317	-20.542	572.644	572.647
E	1305+12.317	-20.542	572.661	572.660
CL PIER 2	1305+17.691	-20.542	572.666	572.666
F	1305+27.691	-20.542	572.668	572.680
G	1305+37.691	-20.542	572.659	572.678
CL BRG. NORTH ABUT.	1305+52.357	-20.542	572.629	572.629
BK. OF NORTH ABUT.	1305+54.732	-20.542	572.622	572.622

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF SOUTH ABUT.	1304+45.275	-13.125	572.514	572.514
CL BRG SOUTH ABUT.	1304+47.650	-13.125	572.532	572.532
A	1304+57.650	-13.125	572.603	572.619
B	1304+67.650	-13.125	572.664	572.681
CL PIER 1	1304+82.317	-13.125	572.736	572.736
C	1304+92.317	-13.125	572.772	572.773
D	1305+02.317	-13.125	572.799	572.801
E	1305+12.317	-13.125	572.816	572.815
CL PIER 2	1305+17.691	-13.125	572.821	572.821
F	1305+27.691	-13.125	572.822	572.822
G	1305+37.691	-13.125	572.814	572.833
CL BRG. NORTH ABUT.	1305+52.357	-13.125	572.784	572.784
BK. OF NORTH ABUT.	1305+54.732	-13.125	572.777	572.777

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF SOUTH ABUT.	1304+45.275	-5.708	572.636	572.636
CL BRG SOUTH ABUT.	1304+47.650	-5.708	572.654	572.654
A	1304+57.650	-5.708	572.725	572.741
B	1304+67.650	-5.708	572.786	572.803
CL PIER 1	1304+82.317	-5.708	572.857	572.857
C	1304+92.317	-5.708	572.894	572.895
D	1305+02.317	-5.708	572.921	572.923
E	1305+12.317	-5.708	572.937	572.937
CL PIER 2	1305+17.691	-5.708	572.942	572.942
F	1305+27.691	-5.708	572.944	572.956
G	1305+37.691	-5.708	572.935	572.954
CL BRG. NORTH ABUT.	1305+52.357	-5.708	572.905	572.905
BK. OF NORTH ABUT.	1305+54.732	-5.708	572.898	572.898

☉ S. BOUND IL Rte 53 & P.G.L.

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF SOUTH ABUT.	1304+45.275	0.000	572.725	572.725
CL BRG SOUTH ABUT.	1304+47.650	0.000	572.743	572.743
A	1304+57.650	0.000	572.814	572.830
B	1304+67.650	0.000	572.875	572.892
CL PIER 1	1304+82.317	0.000	572.947	572.947
C	1304+92.317	0.000	572.983	572.984
D	1305+02.317	0.000	573.010	573.012
E	1305+12.317	0.000	573.027	573.026
CL PIER 2	1305+17.691	0.000	573.031	573.031
F	1305+27.691	0.000	573.033	573.045
G	1305+37.691	0.000	573.025	573.044
CL BRG. NORTH ABUT.	1305+52.357	0.000	572.994	572.994
BK. OF NORTH ABUT.	1305+54.732	0.000	572.988	572.988

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF SOUTH ABUT.	1304+45.275	1.708	572.698	572.698
CL BRG SOUTH ABUT.	1304+47.650	1.708	572.717	572.717
A	1304+57.650	1.708	572.787	572.804
B	1304+67.650	1.708	572.848	572.866
CL PIER 1	1304+82.317	1.708	572.920	572.920
C	1304+92.317	1.708	572.956	572.957
D	1305+02.317	1.708	572.983	572.985
E	1305+12.317	1.708	573.000	572.999
CL PIER 2	1305+17.691	1.708	573.005	573.005
F	1305+27.691	1.708	573.006	573.018
G	1305+37.691	1.708	572.998	573.017
CL BRG. NORTH ABUT.	1305+52.357	1.708	572.968	572.968
BK. OF NORTH ABUT.	1305+54.732	1.708	572.961	572.961

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF SOUTH ABUT.	1304+45.275	9.125	572.582	572.582
CL BRG SOUTH ABUT.	1304+47.650	9.125	572.601	572.601
A	1304+57.650	9.125	572.671	572.688
B	1304+67.650	9.125	572.732	572.75
CL PIER 1	1304+82.317	9.125	572.804	572.804
C	1304+92.317	9.125	572.841	572.841
D	1305+02.317	9.125	572.867	572.869
E	1305+12.317	9.125	572.884	572.883
CL PIER 2	1305+17.691	9.125	572.889	572.889
F	1305+27.691	9.125	572.89	572.903
G	1305+37.691	9.125	572.882	572.901
CL BRG. NORTH ABUT.	1305+52.357	9.125	572.852	572.852
BK. OF NORTH ABUT.	1305+54.732	9.125	572.845	572.845

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. OF SOUTH ABUT.	1304+45.275	16.542	572.443	572.443
CL BRG SOUTH ABUT.	1304+47.650	16.542	572.461	572.461
A	1304+57.650	16.542	572.532	572.548
B	1304+67.650	16.542	572.593	572.61
CL PIER 1	1304+82.317	16.542	572.664	572.664
C	1304+92.317	16.542	572.701	572.702
D	1305+02.317	16.542	572.728	572.73
E	1305+12.317	16.542	572.744	572.744
CL PIER 2	1305+17.691	16.542	572.749	572.749
F	1305+27.691	16.542	572.751	572.763
G	1305+37.691	16.542	572.743	572.761
CL BRG. NORTH ABUT.	1305+52.357	16.542	572.712	572.712
BK. OF NORTH ABUT.	1305+54.732	16.542	572.705	572.705

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

- NOTES:
1. For elevations location plan see sheet no. S3
 2. Elevations shown are to the top of concrete deck.
 3. All elevations and offsets are in feet.
 4. Offsets: + is to the right of ☉ IL Route 53 looking upstation.
- is to the left of ☉ IL Route 53 looking upstation.

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION

TOP OF DECK ELEVATION TABLES

FAP 846

SB IL. ROUTE 53 OVER PRAIRIE CREEK


STATION 1305+00 SECTION 4B-1-R

WILL COUNTY

STRUCTURE NO. 099-0242

SCALE: NONE

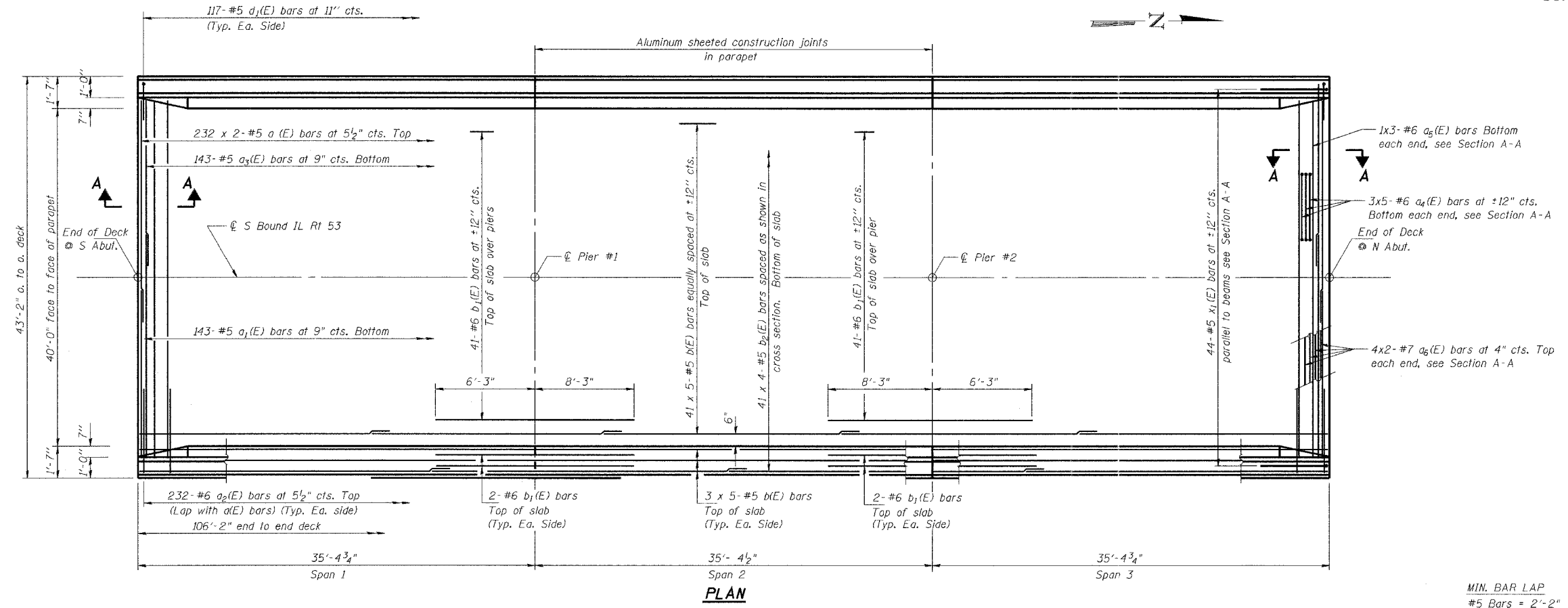
DATE: JUNE 2007

 DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

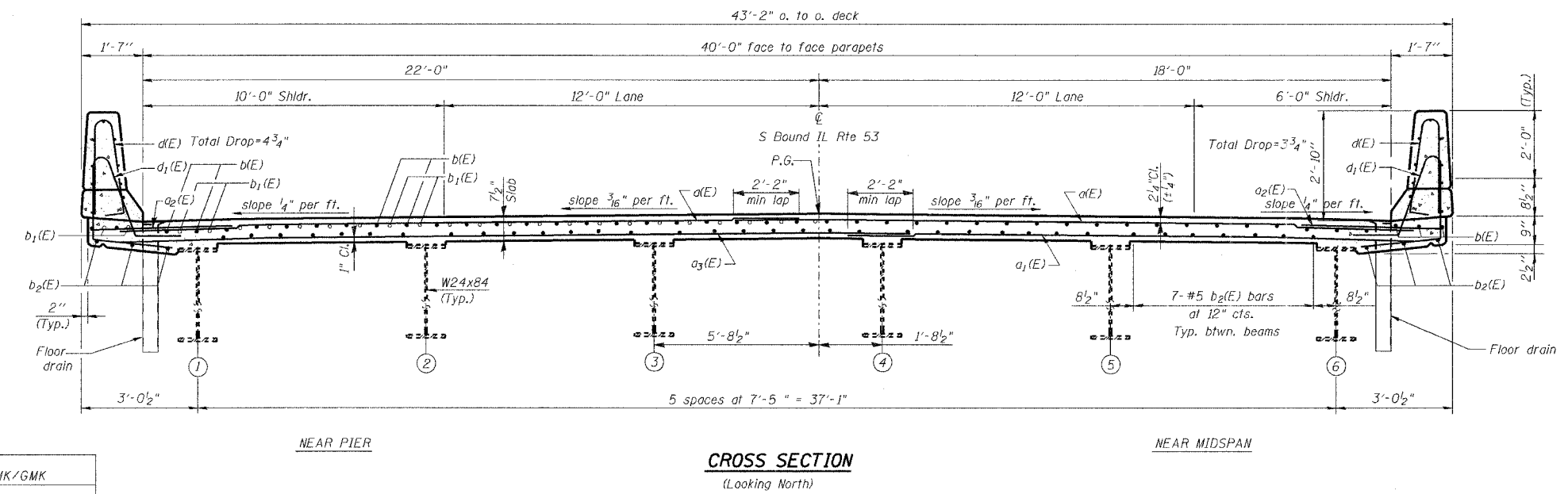
ROUTE NO.	SECTION	COUNTY	SHEET	TOTAL SHEETS
F. A. P. 846	4B-1-R	WILL	39	27
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

CONTRACT NO. 60D26



MIN. BAR LAP
#5 Bars = 2'-2"

Notes: See Sheet # S6 of S17 for superstructure details and Bill of Material.
 Bars indicated thus 41 x 5-#5 etc. indicates 41 lines of bars with 5 lengths per line.
 See Sheet # S6 of S17 for parapet reinforcement.
 For section A-A see sheet # S6 of S17.



DESIGNED	GMK/GMK
CHECKED	MTP/SMK/GBC
DRAWN	GMK/GMK
CHECKED	SMK/GBC

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION
SUPERSTRUCTURE
 FAP 846
 SB IL. ROUTE 53 OVER PRAIRIE CREEK
 STATION 1305+00 SECTION 4B-1-R
 WILL COUNTY
 STRUCTURE NO. 099-0242
 SCALE: NONE
 DATE: JUNE 2007
 DELTA ENGINEERING INC.
 CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO. 96
F. A. R. 846	4B-1-R	WILL	39	28
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

CONTRACT NO. 60D26

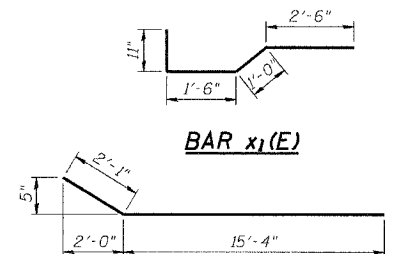
**SUPERSTRUCTURE
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	464	#5	22'-2"	—
a ₁ (E)	143	#5	18'-3"	—
a ₂ (E)	464	#6	6'-0"	—
a ₃ (E)	143	#5	25'-10"	—
a ₄ (E)	30	#6	8'-6"	—
a ₅ (E)	6	#6	15'-11"	—
a ₆ (E)	16	#7	23'-10"	—
b(E)	235	#5	22'-11"	—
b ₁ (E)	90	#6	14'-6"	—
b ₂ (E)	164	#5	28'-1"	—
d(E)	222	#5	5'-7"	Δ
d ₁ (E)	234	#5	7'-10"	—
d ₂ (E)	12	#5	4'-7"	Δ
e(E)	12	#4	18'-3"	—
e ₁ (E)	4	#4	17'-5"	—
e ₂ (E)	6	#8	35'-1"	—
e ₃ (E)	80	#4	17'-5"	—
x ₁ (E)	88	#5	5'-11"	—
Reinforcement Bars, Epoxy Coated		Pound	40,150	
Concrete Superstructure		Cu. Yds.	149.0	

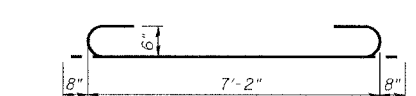
MINIMUM BAR LAP

(Parapet) (Edge Beam)
#4 bar = 1'-4" #6 bar = 2'-7"
#8 bar = 3'-5" #7 bar = 4'-10"

BAR x₁(E)



BAR e₁(E)

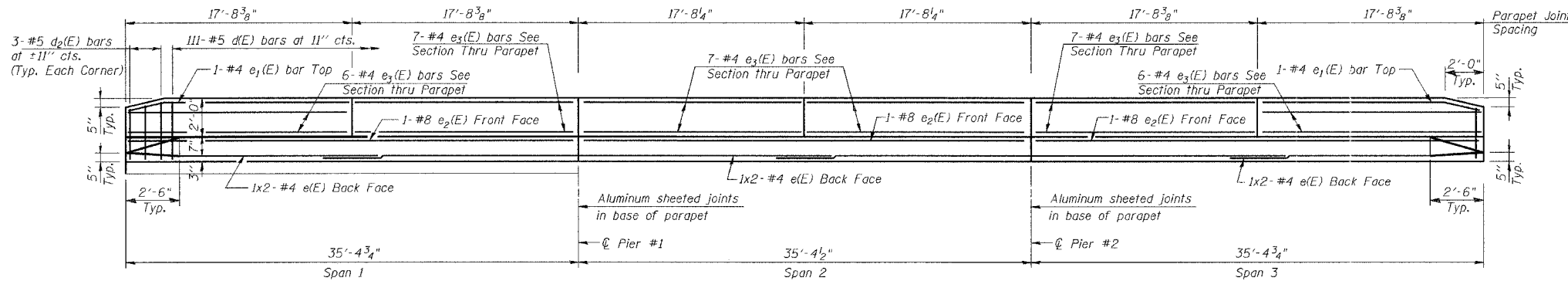


BAR a₄(E)

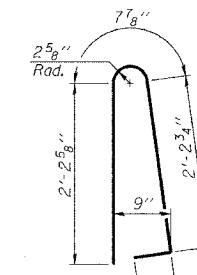


THIS SHEET IS FOR INFORMATION ONLY

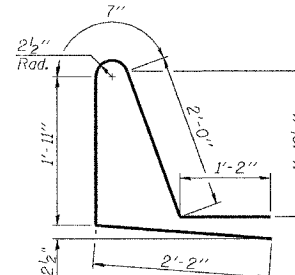
ILLINOIS DEPARTMENT OF TRANSPORTATION
SUPERSTRUCTURE DETAILS
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
DELT A ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS



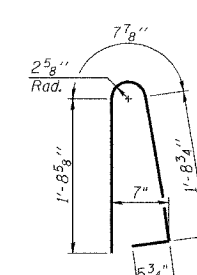
INSIDE ELEVATION OF PARAPET
(2 Thus)



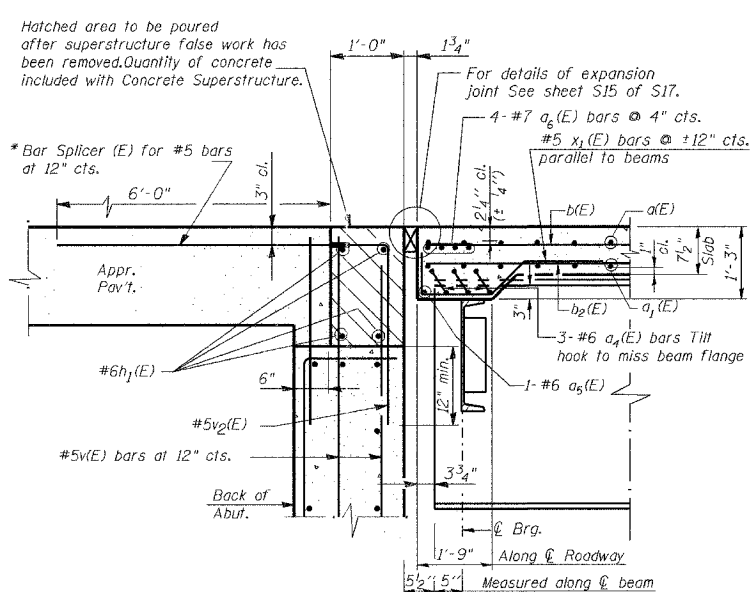
BAR d(E)



BAR d₁(E)

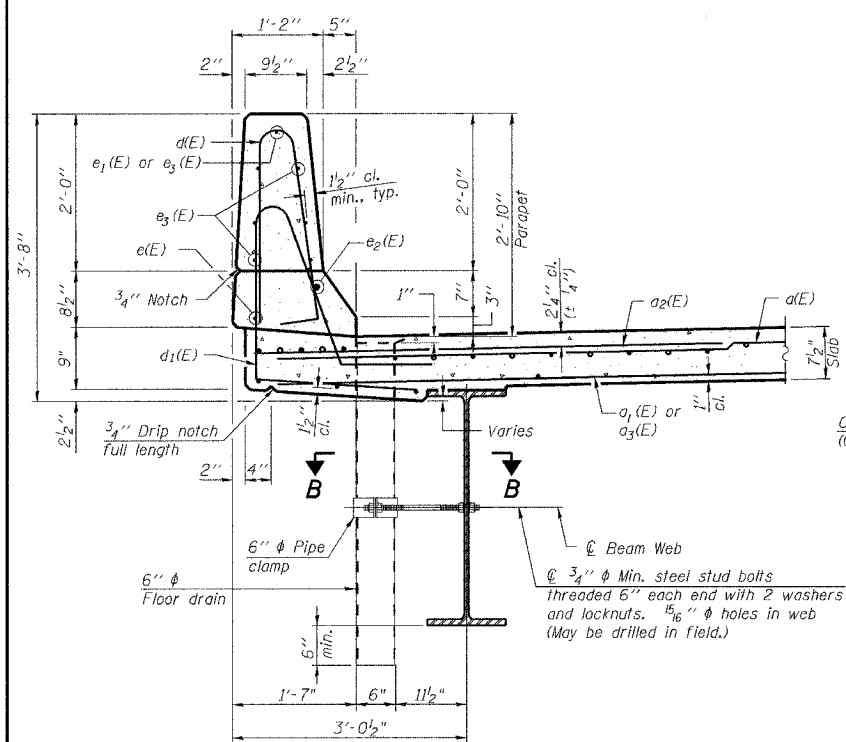


BAR d₂(E)

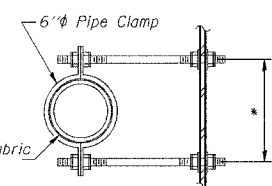


SECTION A-A

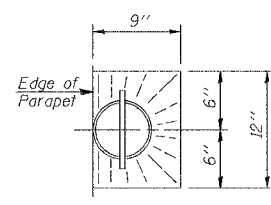
* Alternate with #4v(E) bars.
Place parallel to the beams.



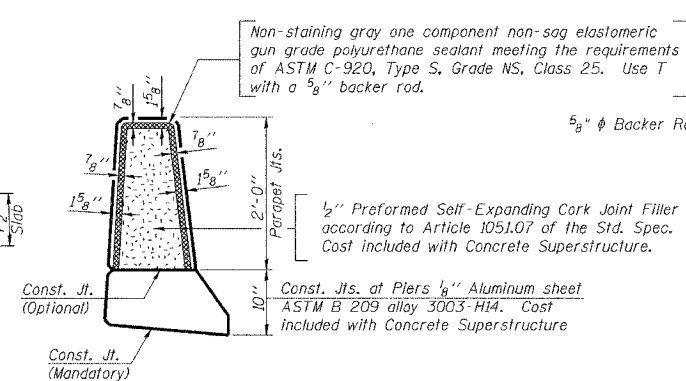
SECTION THRU PARAPET



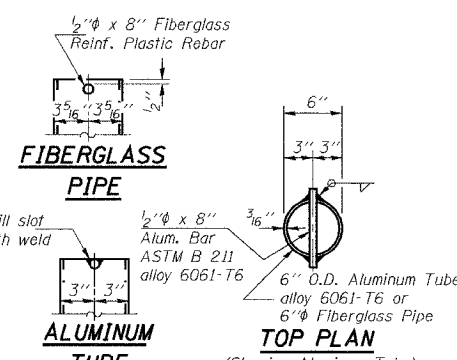
SECTION B-B
* Dimension as required by Pipe Clamp



TOP PLAN



PARAPET JOINT DETAILS



FIBERGLASS PIPE
ALUMINUM TUBE
(Showing Aluminum Tube)

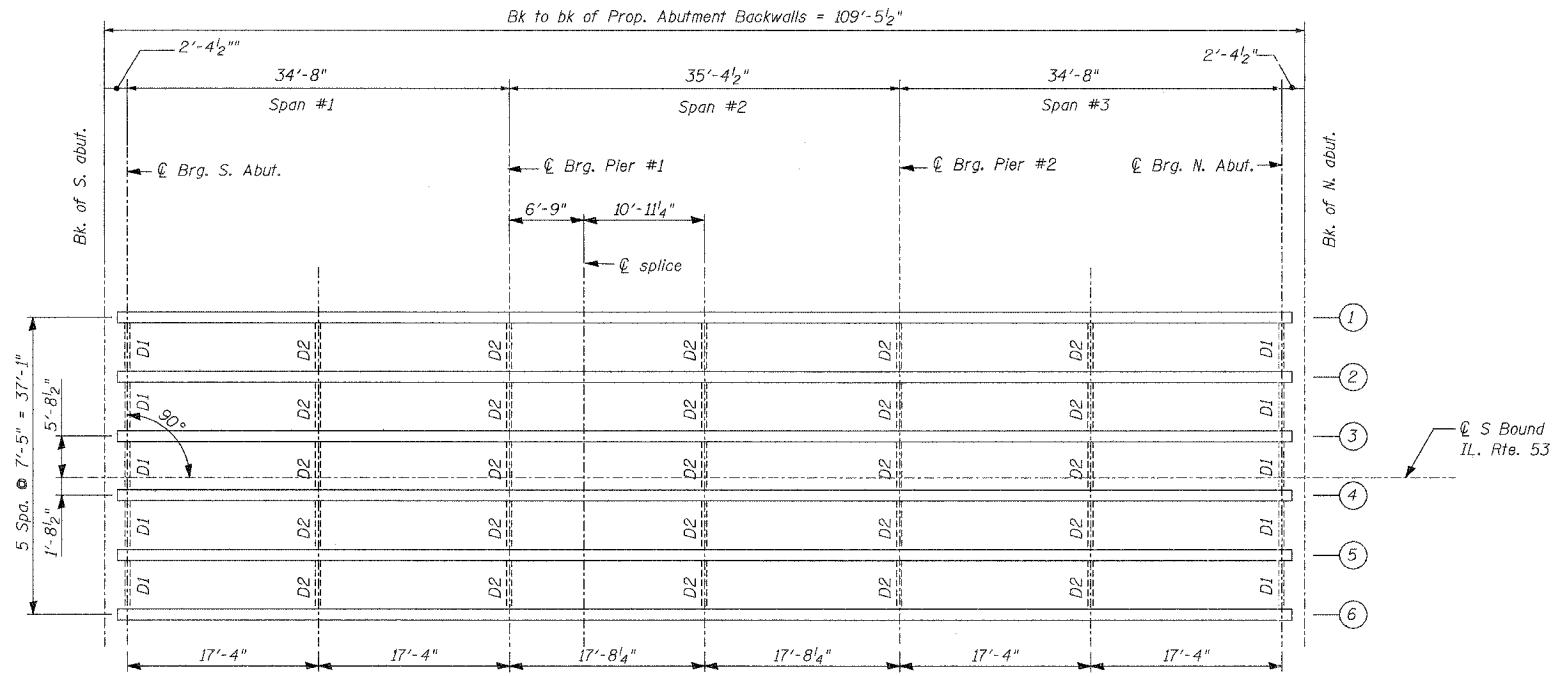
DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

Notes:
The exterior surfaces of the floor drains shall be painted with the finish coat as specified in the special provisions for Cleaning and Painting New Metal Structures. The exterior surfaces of the drains shall be cleaned according to Steel Structures Painting Council's Spec. SSPC-SP1 prior to painting.
Fiberglass pipe shall conform to ASTM D 2996, with short-time rupture strength hoop tensile stress of 30,000 p.s.i. minimum.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

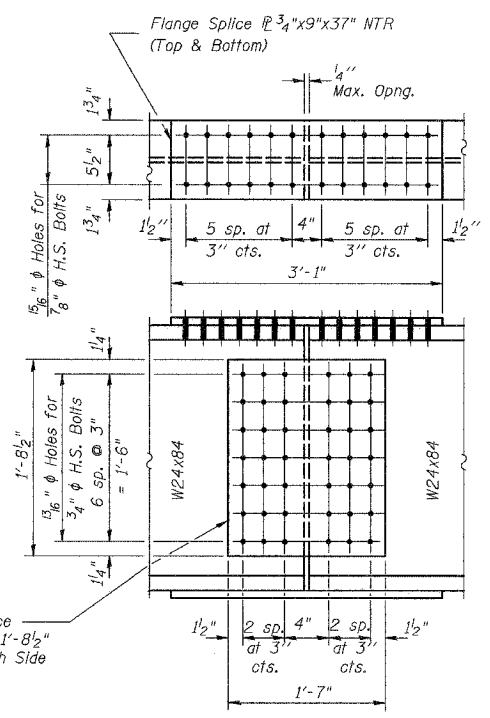
ROUTE NO. F. A. P. 846	SECTION 4B-1-R	COUNTY WILL.	SHEET NO. 39	SHEET 29	SHEET NO. S7 SHEETS S17
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

CONTRACT NO. 60D26



PLAN

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

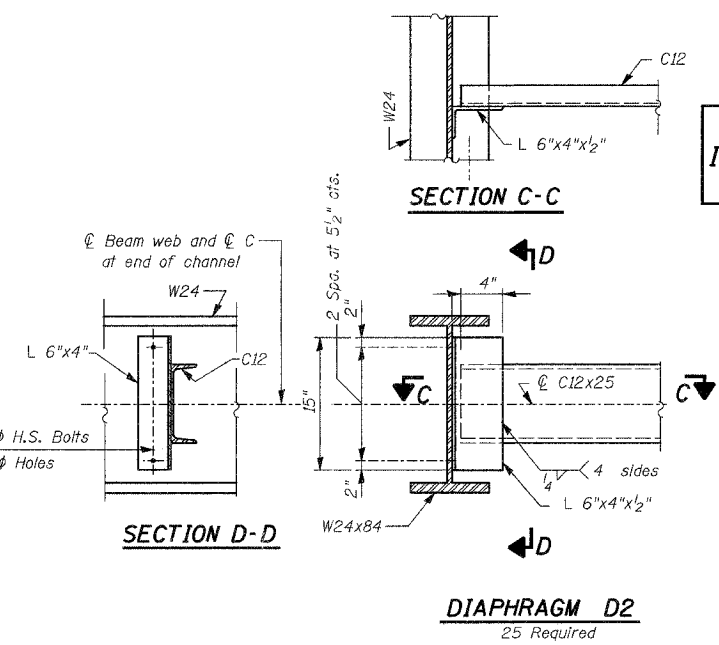
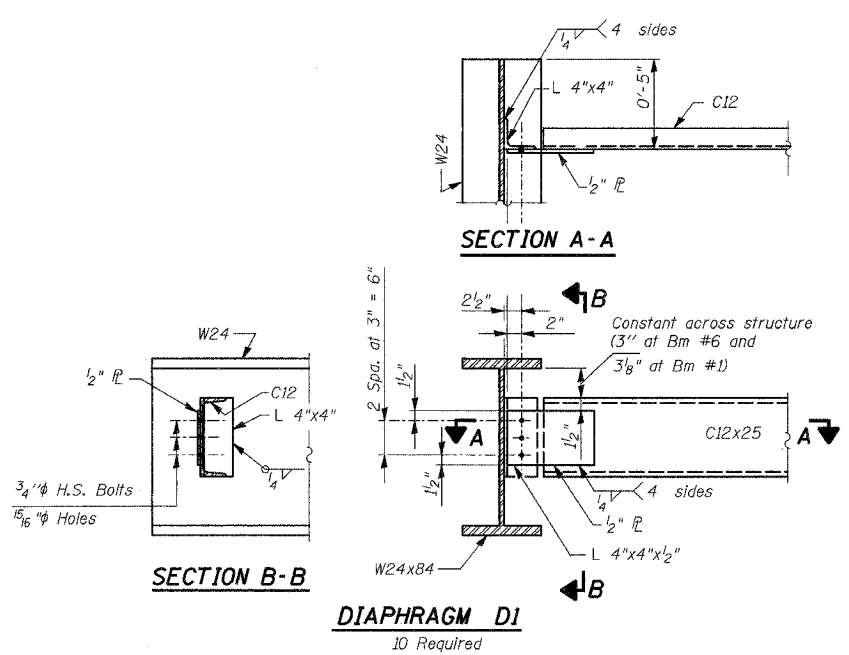


SPLICE
(6 Required)

NTR = Notch toughness requirement

FOR INFORMATION ONLY

- NOTES:
1. Install shear stud connectors in positive moment regions of the entire superstructure, as shown on sht. S8.
 2. For cleaning and painting see general notes on sht. S2.
 3. HS Bolts shall be AASHTO M164/ASTM A325.
 4. Load carrying components designated "NTR" shall conform to the supplemental requirements for Notch toughness, Zone 2.



CONNECTION DETAILS FOR
DIAPHRAGMS TO BEAMS

Note: Two hardened washers required for each set of oversized holes.

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION

FRAMING PLAN AND STRUCTURAL STEEL DETAILS

FAP 846

SB IL. ROUTE 53 OVER PRAIRIE CREEK STATION 1305+00 SECTION 4B-1-R

WILL COUNTY

STRUCTURE NO. 099-0242

SCALE: NONE

DATE: AUGUST 2007

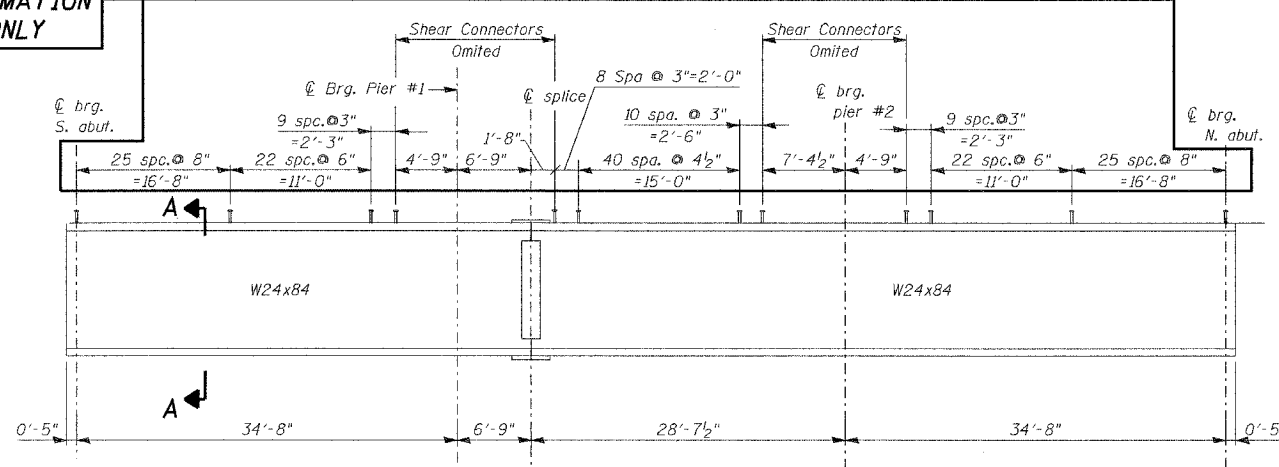
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEETS	FEET	SHEET NO. SB
F. A. P. 846	4B-1-R	WILL	39	30	1 SHEETS S17
FED. ROAD DIST. NO. 7	ILL. PROJ. NO.	FED. AID PROJECT			

CONTRACT NO. 60D26

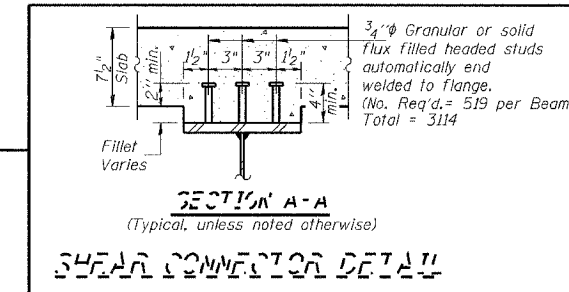
FOR
INFORMATION
ONLY



BEAM ELEVATION

NOTE:
All wide flange beams and splice plate material shall be AASHTO M270 Grade 50 and shall meet notch toughness requirements.

FOR
INFORMATION
ONLY



	INTERIOR BEAM MOMENT TABLE		
	0.4 Sp. 1 0.6 Sp. 3	Pier #1 Pier #2	0.5 Sp. 2
I_s	(in ⁴) 2370	2370	2370
I_c (n)	(in ⁴) 8522	-	8522
I_c (3n)	(in ⁴) 6354	-	6354
S_s	(in ³) 196	196	196
S_c (n)	(in ³) 335	-	335
S_c (3n)	(in ³) 302	-	302
Z	(in ³) 224	224	224
DC1	(K/')	0.92	0.92
MDC1	(K)	88	32
DC2	(K/')	0.15	0.15
MDC2	(K)	14	5
DW	(K/')	0.33	0.33
MDW	(K)	31	11
MLL+I	(K)	353	293
M_u (Strength I)	(K)	794.0	578.0
ϕM_n , ϕM_{nc}	(K)	1712.0	1712.0
f_s DC1	(ksi)	5.4	2.0
f_s DC2	(ksi)	0.5	0.2
f_s DW	(ksi)	1.1	0.4
f_s 1.3(LL+I)	(ksi)	16.4	13.6
f_s (Service II)	(ksi)	23.7	16.3
f_s (Total) (Strength I)	(ksi)	48.6	35.4
Vf	(k)	12	9.9

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s due to non-composite loads.

$I_c(n)$ and $S_c(n)$ are the moment of inertia and section modulus of the composite section based on modular ratio, n , used in computing f_s due to short-term composite live loads.

$I_c(3n)$ and $S_c(3n)$ are the moment of inertia and section modulus of the composite section based upon 3 times modular ratio, $3n$, used in computing f_s due to long-term composite (superimposed) dead loads.

Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.

DC1 is the unfactored non-composite dead load acting on the non-composite section.

DC2 is the unfactored long term composite (superimposed excluding future wearing surface) dead load.

DW is the unfactored long term composite (superimposed future wearing surface only) dead load.

M_u (Strength I) Factored design moment
1.25 (MDC1+MDC2)+1.5 M DW +1.75 MLL+Imp

ϕM_n is the Compact composite positive moment capacity computed according to Article 6.10.7.1

ϕM_{nc} is the Compact non-composite negative moment capacity computed according to Article A6.1.1

f_s (Service II) is the sum of the stresses from the moments below:
MDC1+MDC2+MDW+1.3MLL+Imp

f_s (Total) (Strength I) (Non-Compact Section) is the sum of the stresses due to 1.25MDC1+DC2+1.5MDW+1.75MLL+Imp

Vf is the factored maximum shear range computed according to Article 6.10.10

TOP OF BEAM ELEVATIONS **					
Beam	¢ Brg. S Abut.	¢ Brg. Pier #1	¢ Splice	¢ Brg. Pier #2	¢ Brg. N Abut.
1	571.586	571.734	571.763	571.796	571.837
2	571.741	571.888	571.917	571.951	571.992
3	571.862	572.010	572.039	572.073	572.114
4	571.925	572.073	572.102	572.135	572.176
5	571.809	571.957	571.986	572.019	572.060
6	571.669	571.817	571.846	571.880	571.921

** For Fabrication Only.

INTERIOR GIRDER REACTION TABLE HS20 LOADING				
	S. Abut.	Pier #1	Pier #2	N. Abut.
R (DL) (K)	19.8	53.6	53.6	19.8
R (LL) (K)	36.0	44.2	44.0	36.0
R (Imp) (K)	11.2	13.8	13.7	11.2
R (Total) (K)	67.2	111.7	111.4	67.2

INTERIOR GIRDER REACTION TABLE HL93 Loading				
	S. Abut.	Pier #1	Pier #2	N. Abut.
R (DC1) (K)	12.7	35.5	35.5	12.7
R (DC2+DW) (K)	6.6	18.6	18.6	6.6
R (LL) (K)	42.2	83.7	83.7	42.2
R (Imp) (K)	13.9	27.6	27.6	13.9
R (Total) (K)	75.6	165.5	165.5	75.6

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS

FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY

STRUCTURE NO. 099-0242

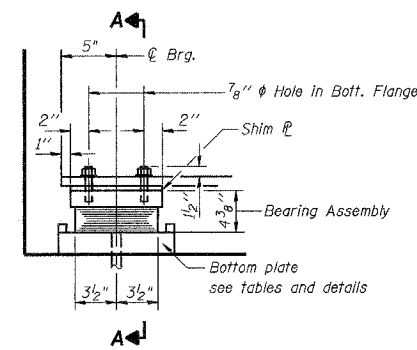
SCALE: NONE
DATE: JUNE 2007

DEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

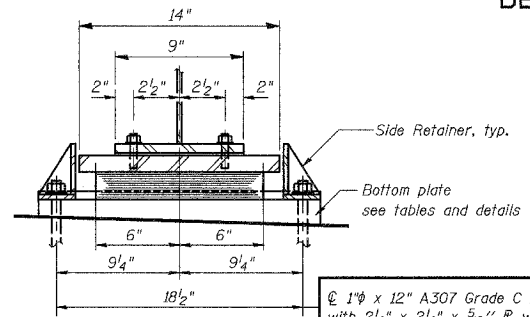
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 59
F. A. P. 846	4B-1-R	WILL.	39	31	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		SHEETS 517

CONTRACT NO. 60D26

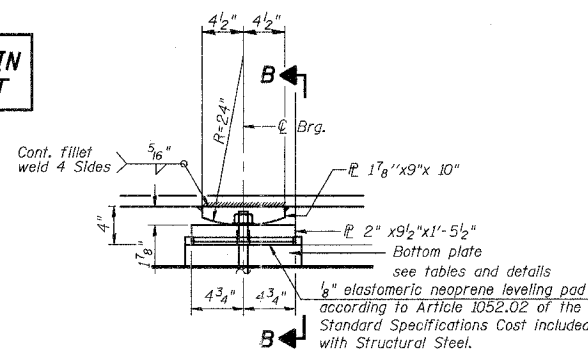


ELEVATION AT ABUT.

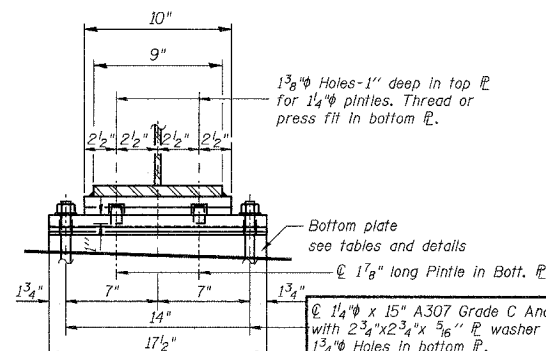


SECTION A-A

NOT INCLUDED IN THIS CONTRACT

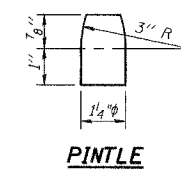


ELEVATION AT PIER #1



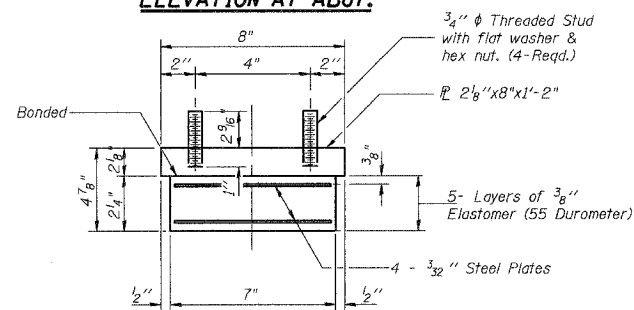
SECTION B-B

NOT INCLUDED IN THIS CONTRACT

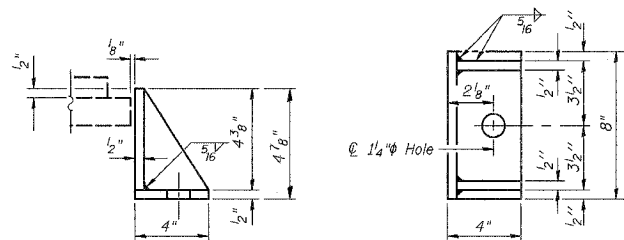


PINTLE

FIXED BEARING • PIER #1
(6 Req'd)



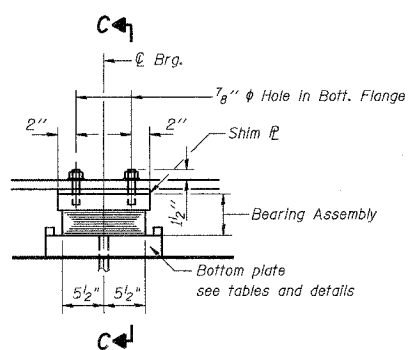
BEARING ASSEMBLY



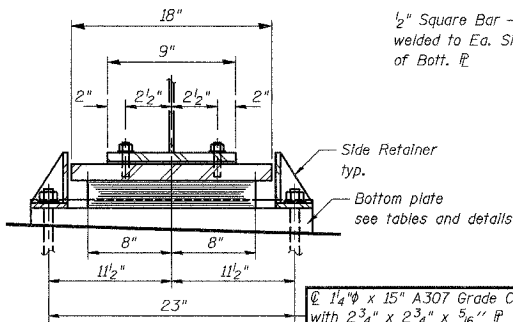
SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates. Weight Included with Structural Steel.

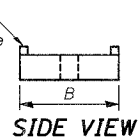
TYPE I ELASTOMERIC EXP. BRG. • ABUTMENTS
(12 Req'd)



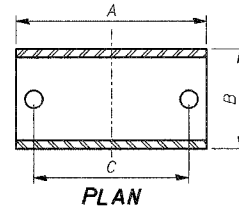
ELEVATION AT PIER #2



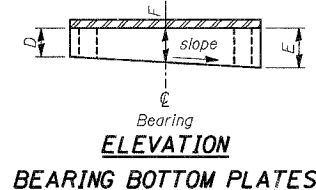
SECTION C-C



SIDE VIEW

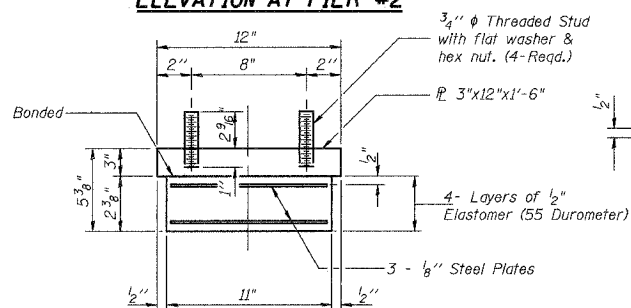


PLAN

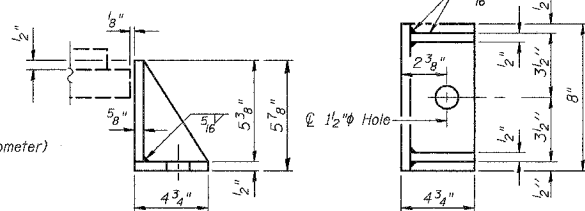


ELEVATION BEARING BOTTOM PLATES

NOT INCLUDED IN THIS CONTRACT



BEARING ASSEMBLY



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates. Weight Included with Structural Steel.

TYPE I ELASTOMERIC EXP. BRG. • PIER #2
(6 Req'd)

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 of fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.

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.

The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 36.

Two 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.

Notes: Anchor bolts at fixed bearings may be built into the masonry.

BILL OF MATERIAL

Item	Unit	Total
Furnishing Elastomeric Bearing Assembly Type I	Each	18
Anchor bolts 1"	Each	24
Anchor bolts 1 1/4"	Each	24

NOT INCLUDED IN THIS CONTRACT

DESIGNED	NDS/GMK
CHECKED	MTP/SWK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

Bottom Plate • South Abutment (Exp.)

Beam No.	A	B	C	D	E	F
1	22 1/4	9	18 1/2	1 5/16	1 3/4	1 9/16
2	22 1/4	9	18 1/2	1 1/4	1 3/4	1 1/2
3	22 1/4	9	18 1/2	1 1/16	1 3/4	1 5/8
4	22 1/4	9	18 1/2	1 5/16	1 5/8	1 1/2
5	22 1/4	9	18 1/2	1 5/16	1 1/16	1 1/2
6	22 1/4	9	18 1/2	1 1/4	1 1/16	1 1/16

Bottom Plate • North Abutment (Exp.)

Beam No.	A	B	C	D	E	F
1	22 1/4	9	18 1/2	1 1/8	9/16	3/8
2	22 1/4	9	18 1/2	1/16	9/16	5/16
3	22 1/4	9	18 1/2	1/4	9/16	1/16
4	22 1/4	9	18 1/2	9/16	1/16	5/16
5	22 1/4	9	18 1/2	1/8	1/2	5/16
6	22 1/4	9	18 1/2	1/16	1/2	5/16

Bottom Plate • Pier #1 (Fix.)

Beam No.	A	B	C	D	E	F
1	17 1/2	11 1/2	14	2	2 5/16	2 3/16
2	17 1/2	11 1/2	14	2	2 3/8	2 3/16
3	17 1/2	11 1/2	14	2 3/16	2 7/16	2 5/16
4	17 1/2	11 1/2	14	2 1/16	2 3/16	2 3/16
5	17 1/2	11 1/2	14	2 1/16	2 3/16	2 3/16
6	17 1/2	11 1/2	14	1 5/16	2 3/16	2 3/16

Bottom Plate • Pier #2 (Exp.)

Beam No.	A	B	C	D	E	F	Grinding Req'd
1	27 3/4	13	23	0	9/16	5/16	* 3/16
2	27 3/4	13	23	0	9/16	5/16	* 3/16
3	27 3/4	13	23	1/16	7/16	1/4	* 1/8
4	27 3/4	13	23	0	7/16	1/4	* 1/8
5	27 3/4	13	23	0	7/16	3/16	* 1/16
6	27 3/4	13	23	0	9/16	5/16	* 1/4

* Existing top surface of Pier # 2 need to be ground under proposed bottom plate to the thickness shown.

ILLINOIS DEPARTMENT OF TRANSPORTATION

BEARING DETAILS

FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY

STRUCTURE NO. 099-0242

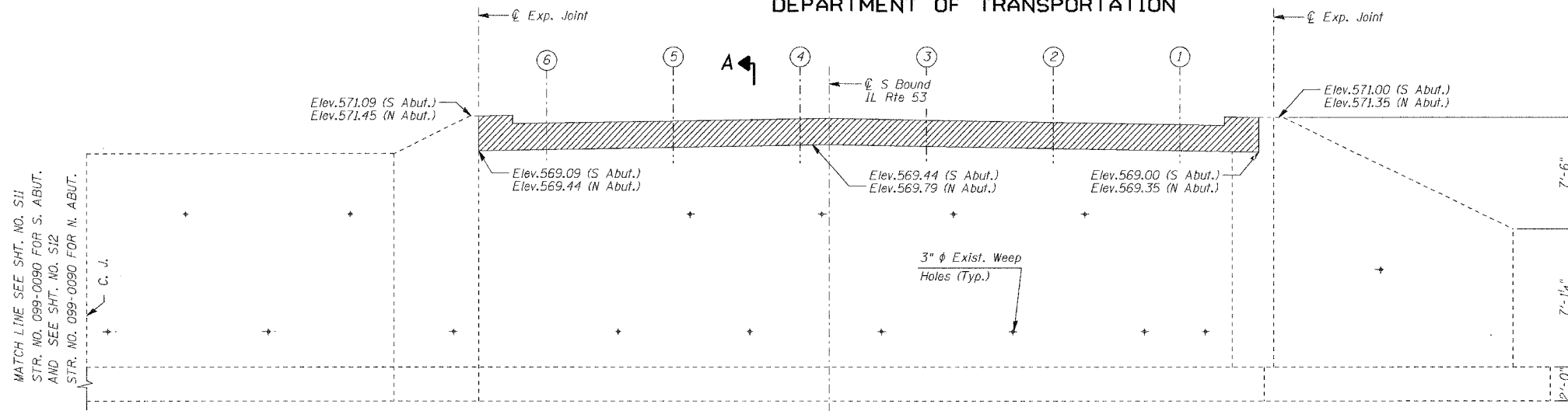
SCALE: NONE
DATE: AUGUST 2007

DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

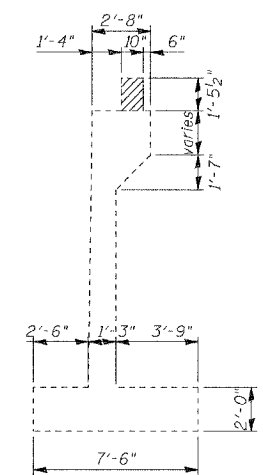
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET NO.	SHEET NO. 518 SHEETS 517
F. A. P. 846	4B-1-R	WILL	39	32	
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

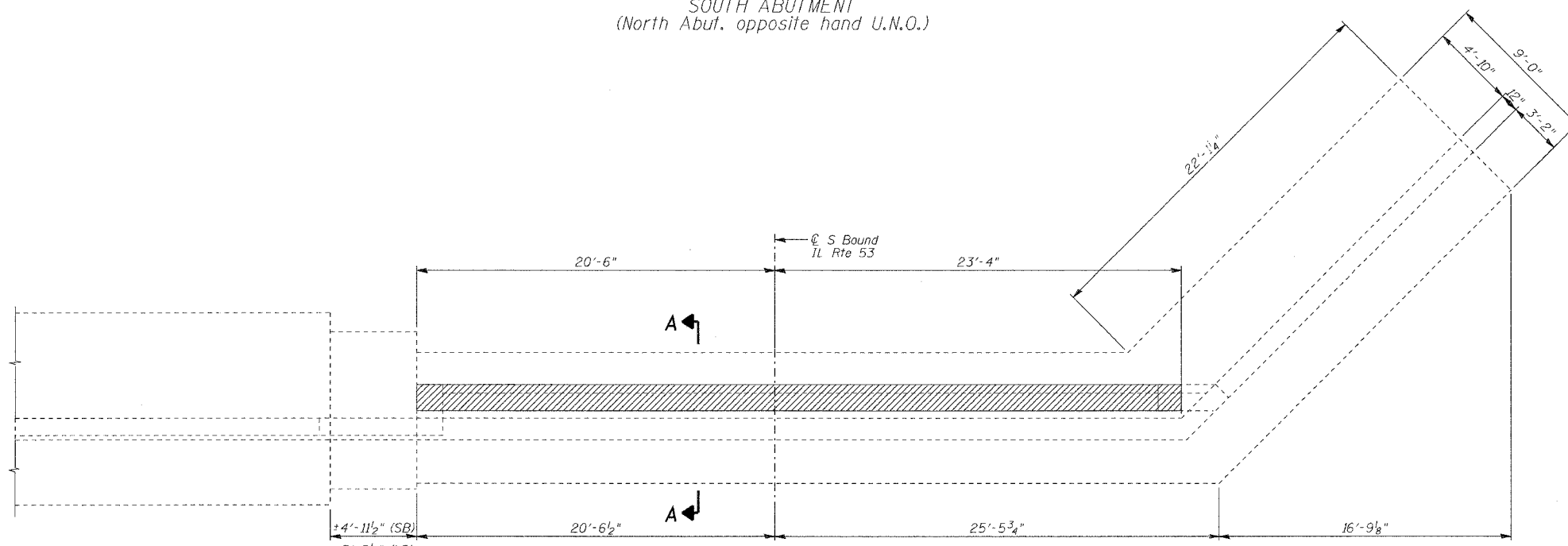
CONTRACT NO. 60D26



ELEVATION
SOUTH ABUTMENT
(North Abut. opposite hand U.N.O.)



SECTION A-A

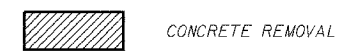


PLAN
SOUTH ABUTMENT
(North Abut. opposite hand U.N.O.)

NOTES:

1. Concrete removal shall be accomplished by methods that will not damage the existing Abutments and Piers.
2. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in the pay item for Concrete Removal.

LEGEND:



BILL OF MATERIAL

PAY ITEM	UNIT	S. ABUT.	N. ABUT.	TOTAL
CONCRETE REMOVAL	Cu yd	2.5	2.5	5.0

THIS SHEET IS FOR INFORMATION ONLY

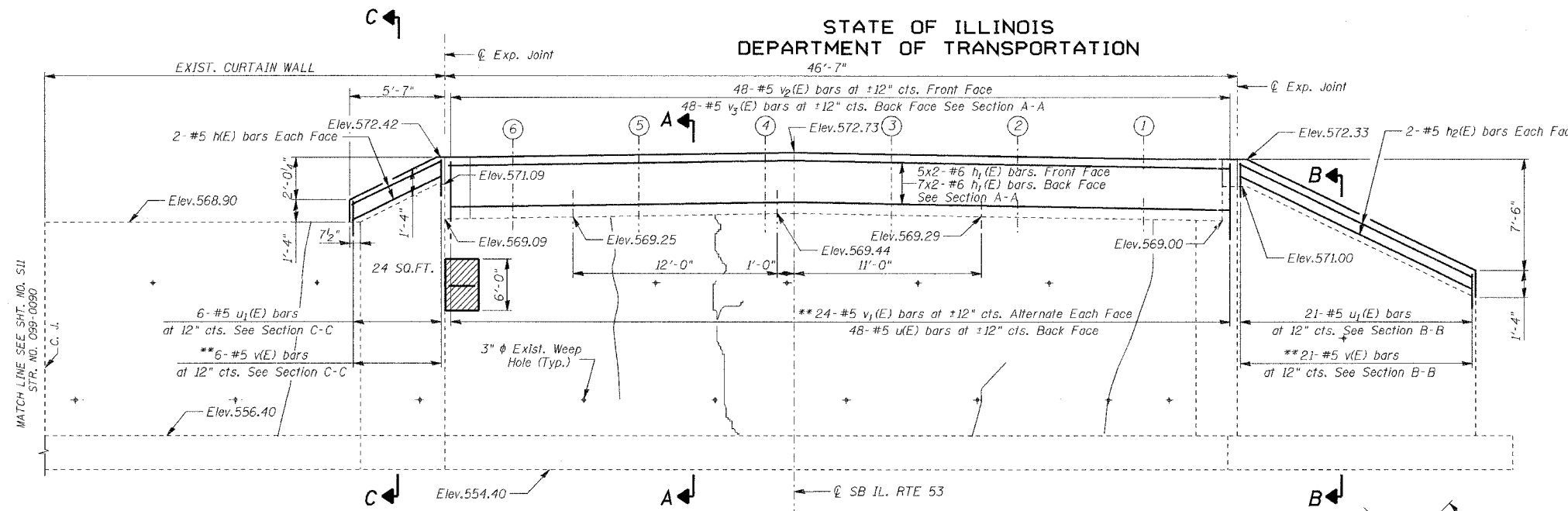
DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION
CONCRETE REMOVAL DETAILS
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
 DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

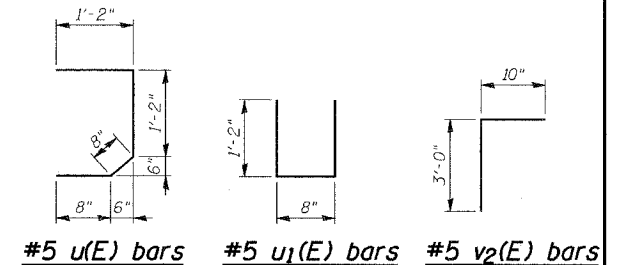
ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET	SHEET NO. S11
F. A. P. 846	4B-1-R	WILL	39	33	SHEETS S17
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-			

CONTRACT NO. 60D26



ELEVATION
(Looking South)

** Drill and grout #5 v(E) and #5 v1(E) bars in 7/8" dia. x 12" min. drilled holes according to Article 584 of the Standard Specifications.



BILL OF MATERIAL

Bar	No.	Size	Length	Shape	
h(E)	4	#5	5'-9"	—	
h1(E)	24	#6	24'-6"	—	
h2(E)	4	#5	20'-10"	—	
v(E)	31	#5	2'-5"	—	
v1(E)	48	#5	4'-2"	—	
v2(E)	48	#5	3'-10"	—	
v3(E)	48	#5	2'-8"	—	
u(E)	48	#5	3'-8"	U	
u1(E)	27	#5	3'-0"	U	
Reinforcement Bars, Epoxy Coated				Pound	1,920.0
Concrete Structures				Cu yd	9.0
Structural Repair of Concrete (Depth greater than 5")				Sq ft	24.0

MINIMUM BAR LAP

#5 bar = 2'-2"
#6 bar = 2'-7"

MINIMUM EMBEDMENT

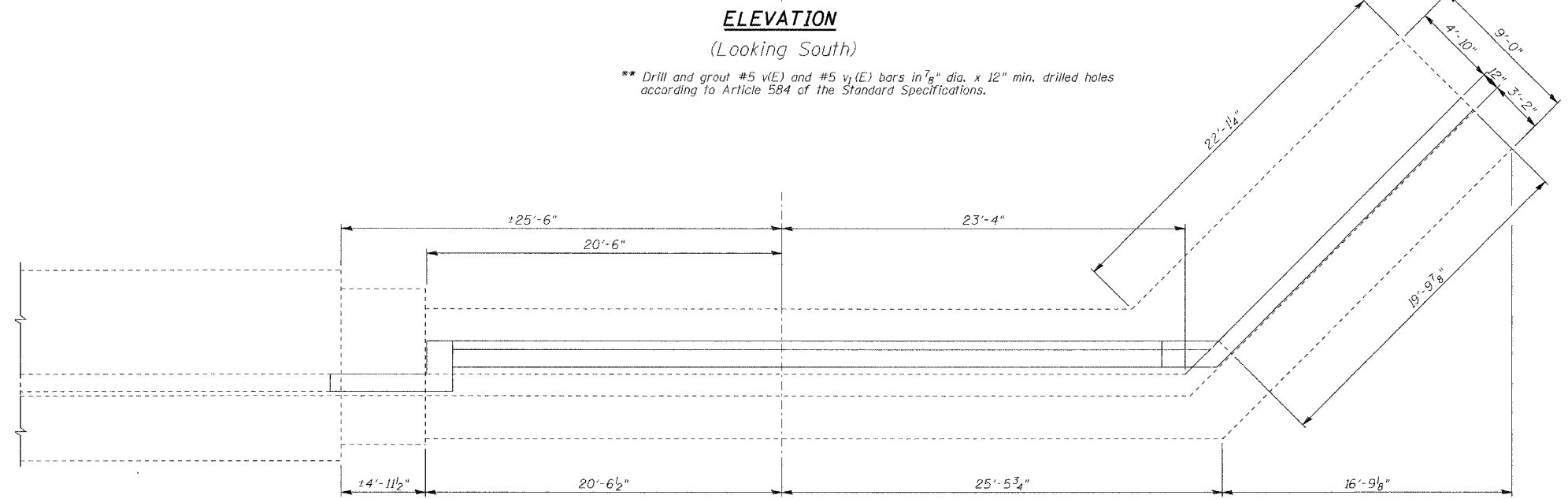
#5 bar = 12"

LEGEND:

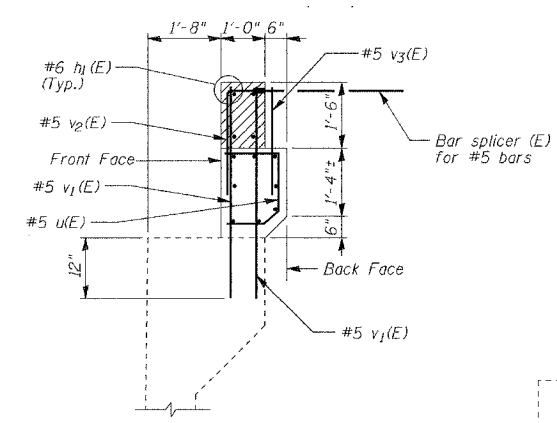
- HAIRLINE CRACK (CRACK < 1/16" WIDE) NOT TO BE SEALED
- SPALL WITH EXPOSED REBAR
Structural Repair of Concrete (Depth greater than 5")

NOTES:

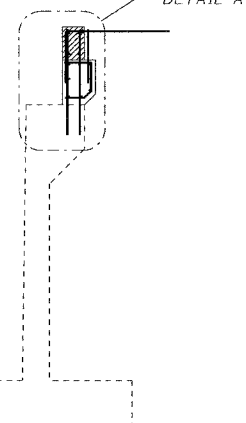
- Concrete removal shall be accomplished by methods that will not damage the existing Abutments and Piers.
- Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in the pay item for Concrete Removal.



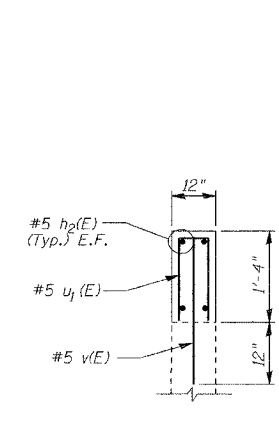
PLAN



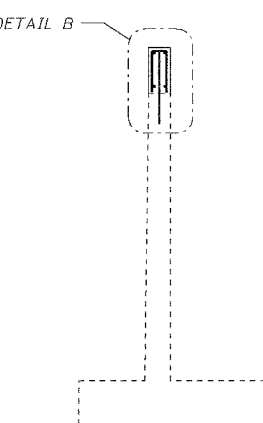
DETAIL A



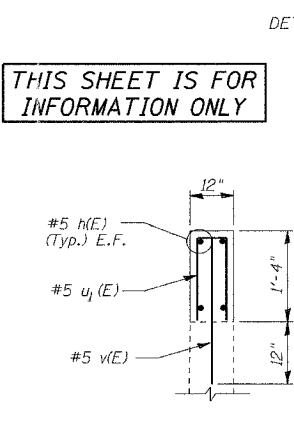
SECTION A-A



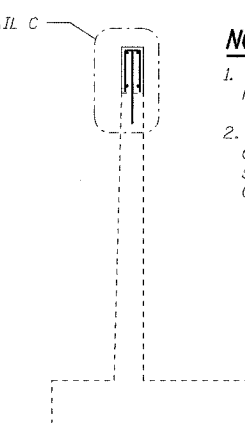
DETAIL B



SECTION B-B



DETAIL C



SECTION C-C

THIS SHEET IS FOR INFORMATION ONLY

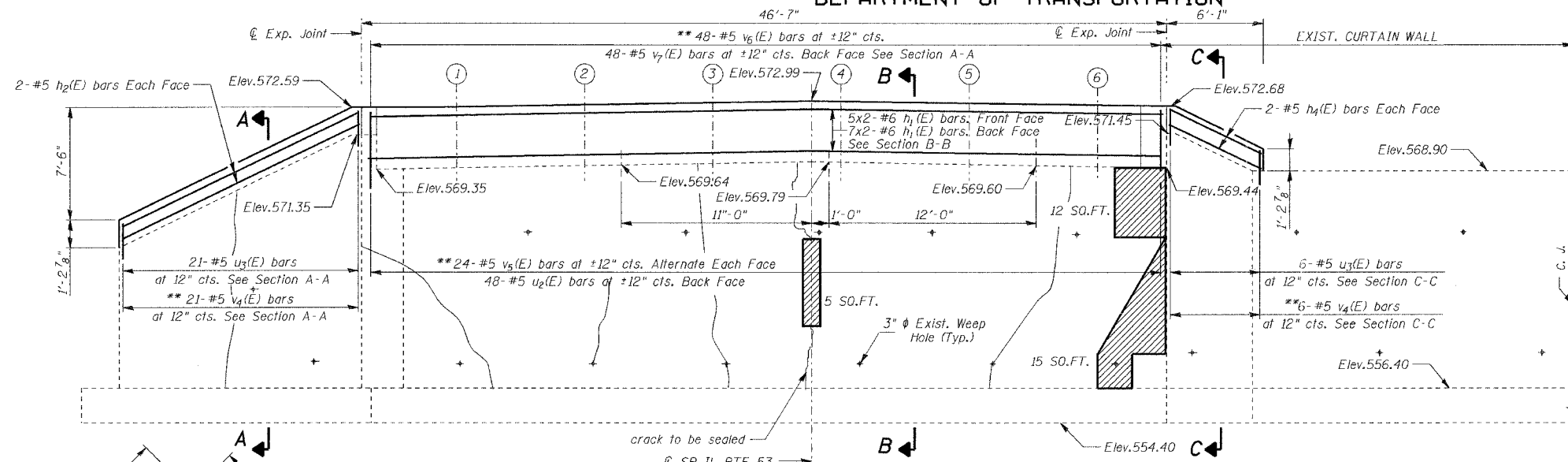
DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION
SOUTH ABUTMENT REPAIRS & EXTENSION
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

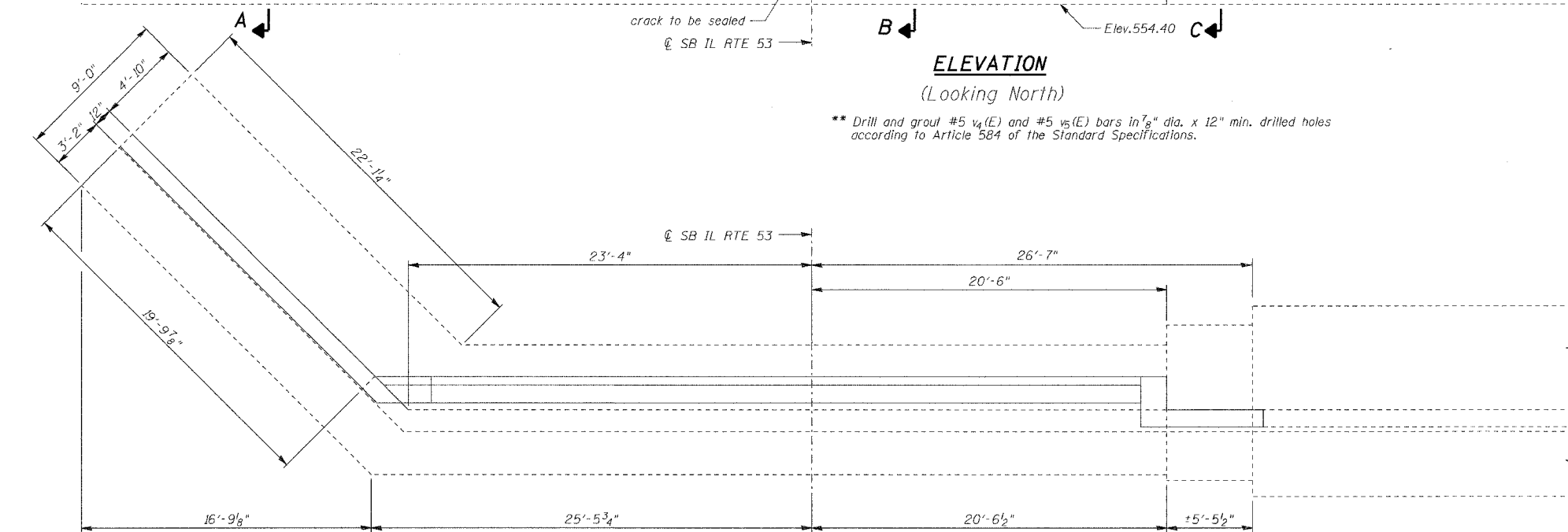
ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
F. A. R.	4B-1-R	WILL	39	34
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

CONTRACT NO. 60D26

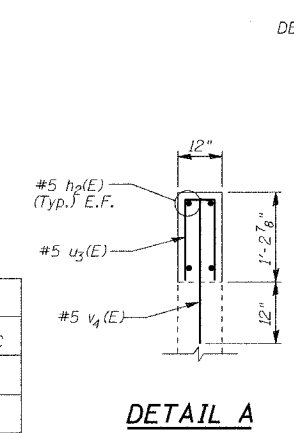


ELEVATION
(Looking North)

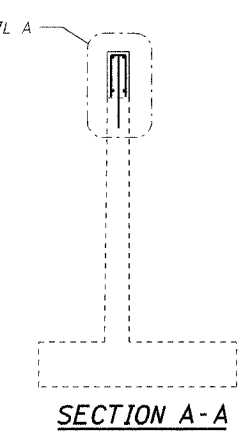
** Drill and grout #5 v4(E) and #5 v5(E) bars in 7/8" dia. x 12" min. drilled holes according to Article 584 of the Standard Specifications.



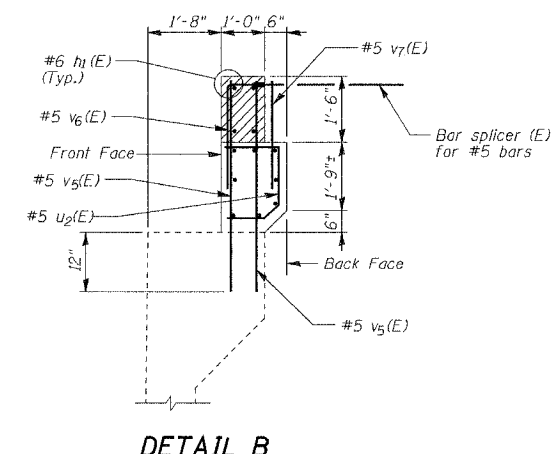
PLAN



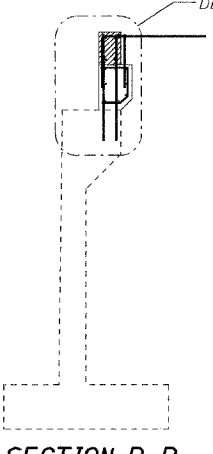
DETAIL A



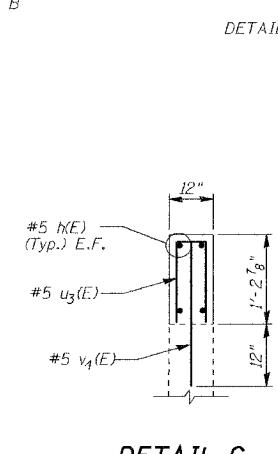
SECTION A-A



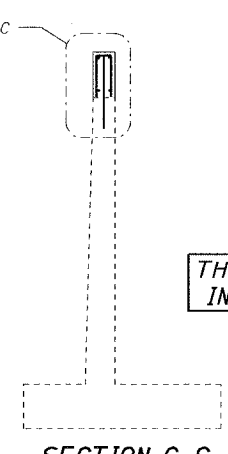
DETAIL B



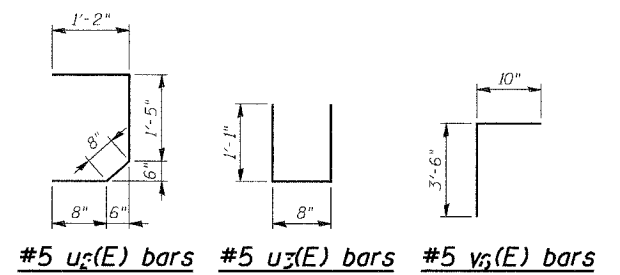
SECTION B-B



DETAIL C



SECTION C-C



BILL OF MATERIAL

Bar	No.	Size	Length	Shape	
h1(E)	24	#6	24'-6"	—	
h2(E)	4	#5	20'-10"	—	
h4(E)	4	#5	6'-3"	—	
v4(E)	27	#5	2'-1"	—	
v5(E)	48	#5	4'-7"	—	
v6(E)	48	#5	4'-4"	—	
v7(E)	48	#5	3'-1"	—	
u2(E)	48	#5	3'-11"	—	
u3(E)	27	#5	2'-10"	—	
Reinforcement Bars, Epoxy Coated				Pound	1,980.0
Concrete Structures				Cu yd	10.3
Epoxy Crack Injection				Foot	15.0
Structural Repair of Concrete (Depth greater than 5")				Sq ft	32.0

MINIMUM BAR LAP

#5 bar = 2'-2"
#6 bar = 2'-7"

MINIMUM EMBEDMENT

#5 bar = 12"

LEGEND:

HAIRLINE CRACK (CRACK < 1/16" WIDE)
NOT TO BE SEALED UNLESS NOTED OTHERWISE

STRUCTURAL REPAIR OF CONCRETE
(DEPTH GREATER THAN 5 INCHES)

NOTES:

- Concrete removal shall be accomplished by methods that will not damage the existing Abutments and Piers.
- Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in the pay item for Concrete Removal.

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

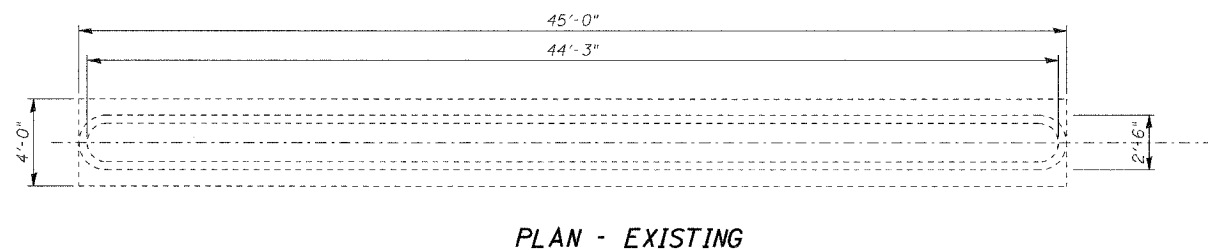
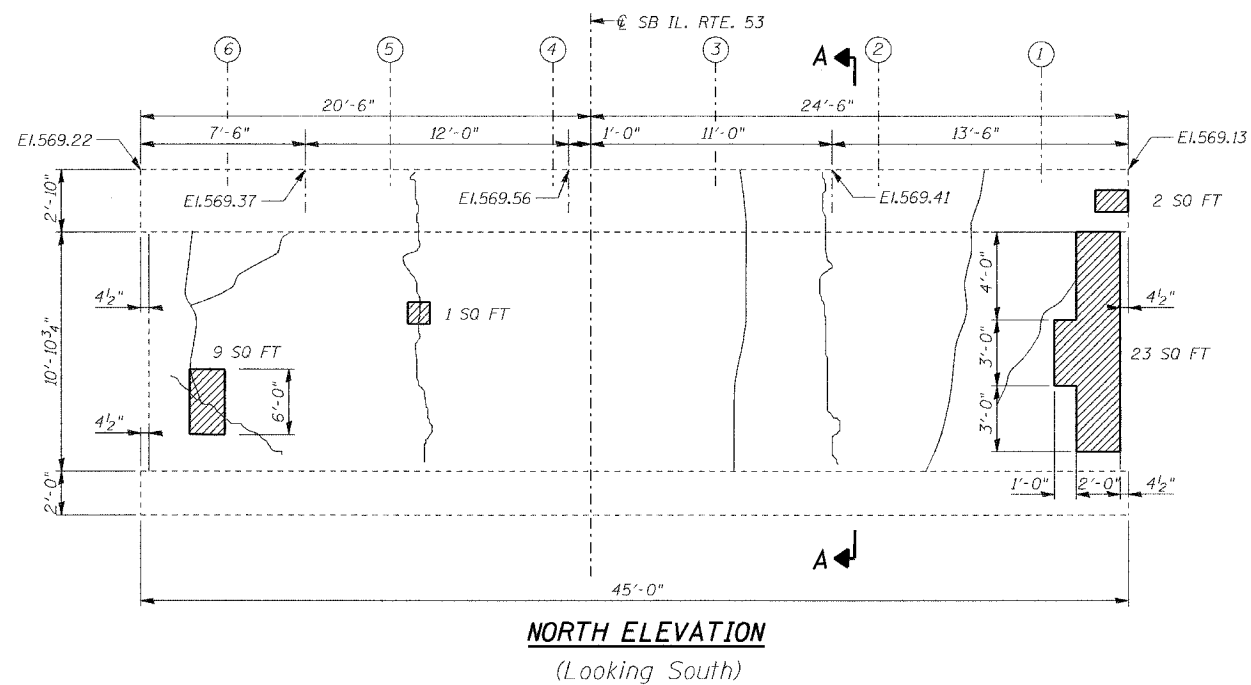
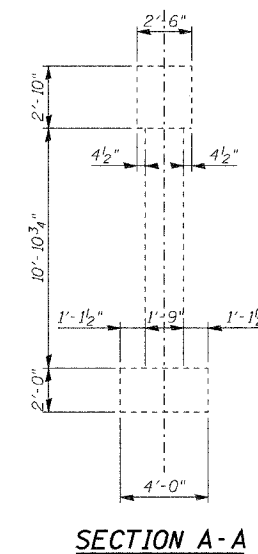
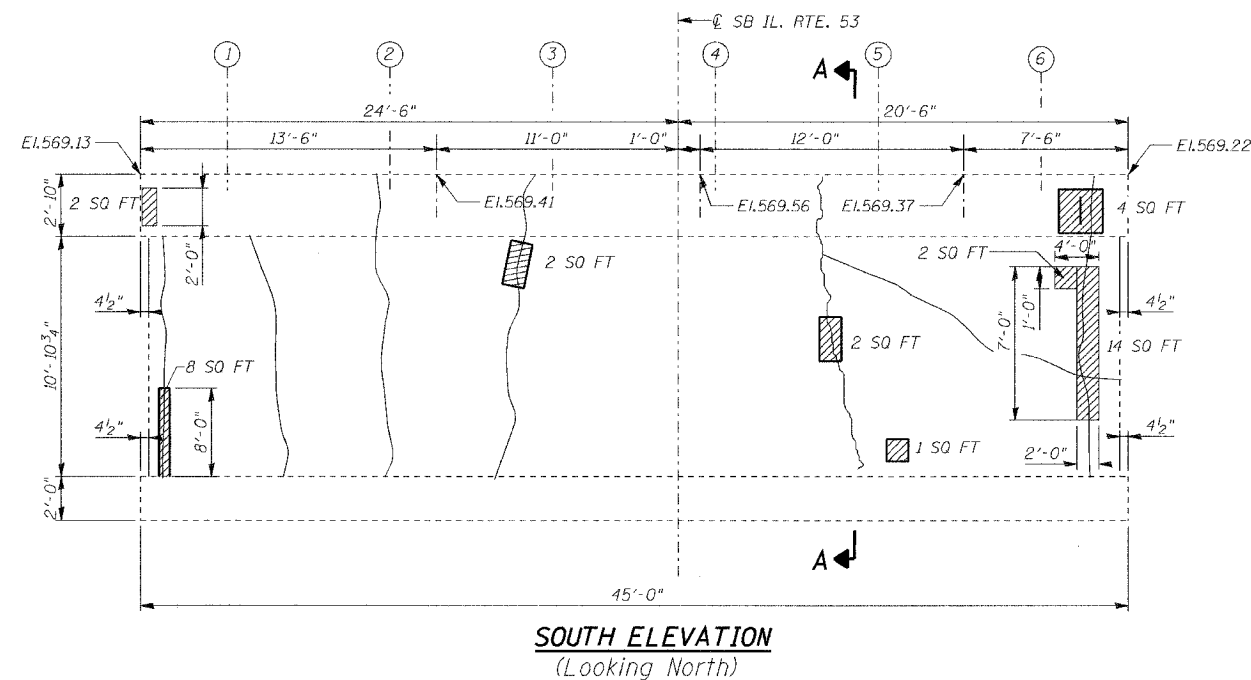
THIS SHEET IS FOR INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION
NORTH ABUTMENT REPAIRS & EXTENSION
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
DEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. F. A. P. 846	SECTION 4B-1-R	COUNTY WILL	SHEET NO. 39	SHEET NO. 35	SHEET NO. S13 SHEETS S17
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

CONTRACT NO. 60D26



BILL OF MATERIAL

PAY ITEM	UNIT	S. ELEV.	N. ELEV.	TOTAL
STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5")	SQ FT	31.0	35	66.0
STRUCTURAL REPAIR OF CONCRETE (DEPTH GREATER THAN 5")	SQ FT	4.0	0	4.0

LEGEND:

- HAIRLINE CRACK (CRACK <math>< \frac{1}{16}</math> WIDE) NOT TO BE SEALED
- STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)
- SPALL WITH EXPOSED REBAR
STRUCTURAL REPAIR OF CONCRETE (DEPTH GREATER THAN 5")

NOTES:

1. Concrete removal shall be accomplished by methods that will not damage the existing Abutments and Piers.
2. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in the pay item for Concrete Removal.

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

THIS SHEET IS FOR
INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION

PIER No. 1 - REPAIRS

FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY

STRUCTURE NO. 099-0242

SCALE: NONE
DATE: JUNE 2007

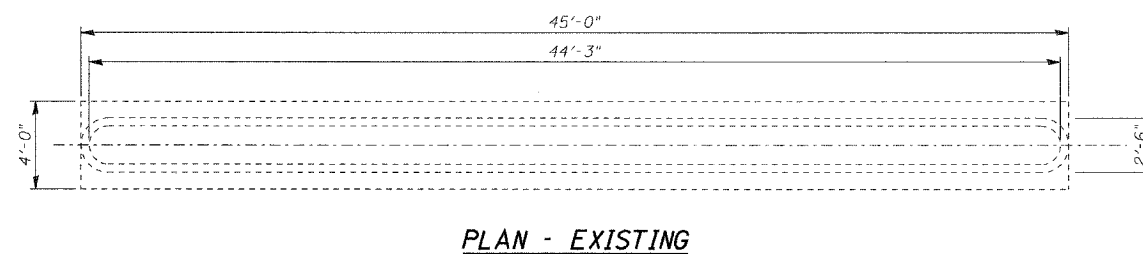
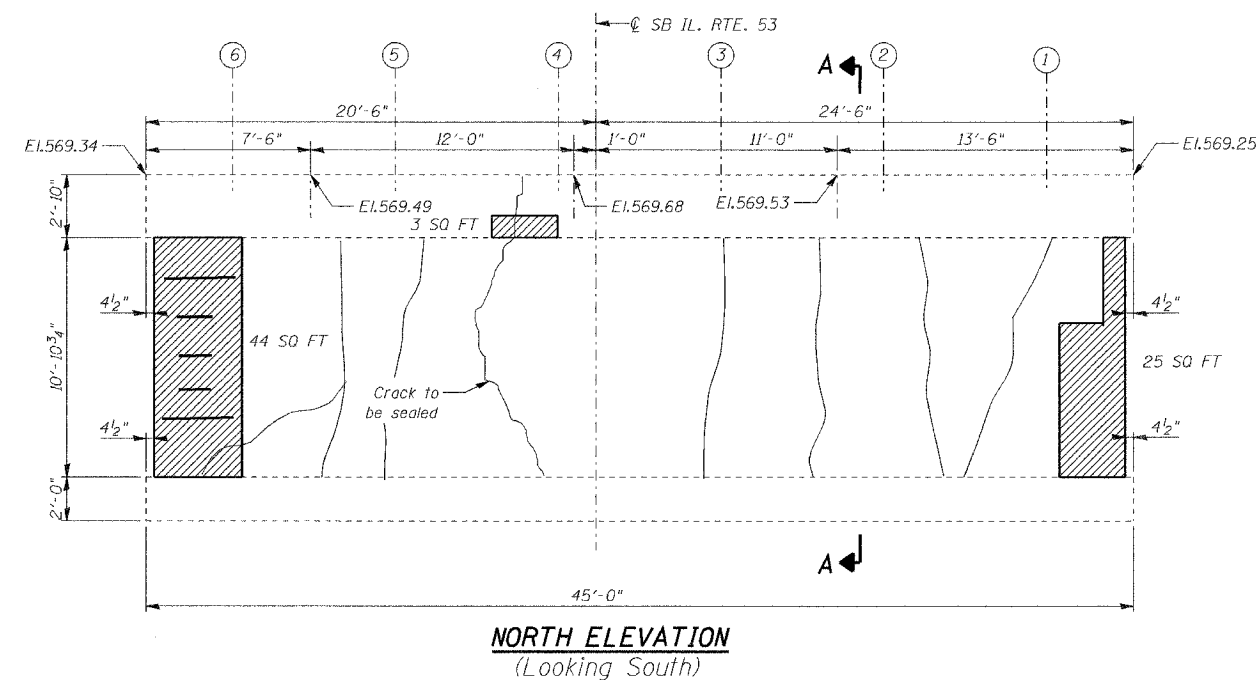
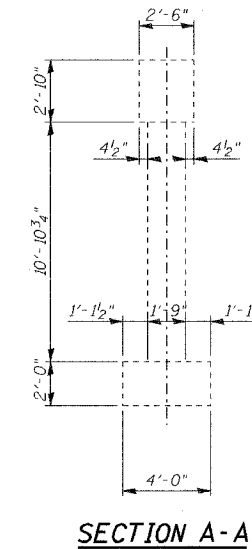
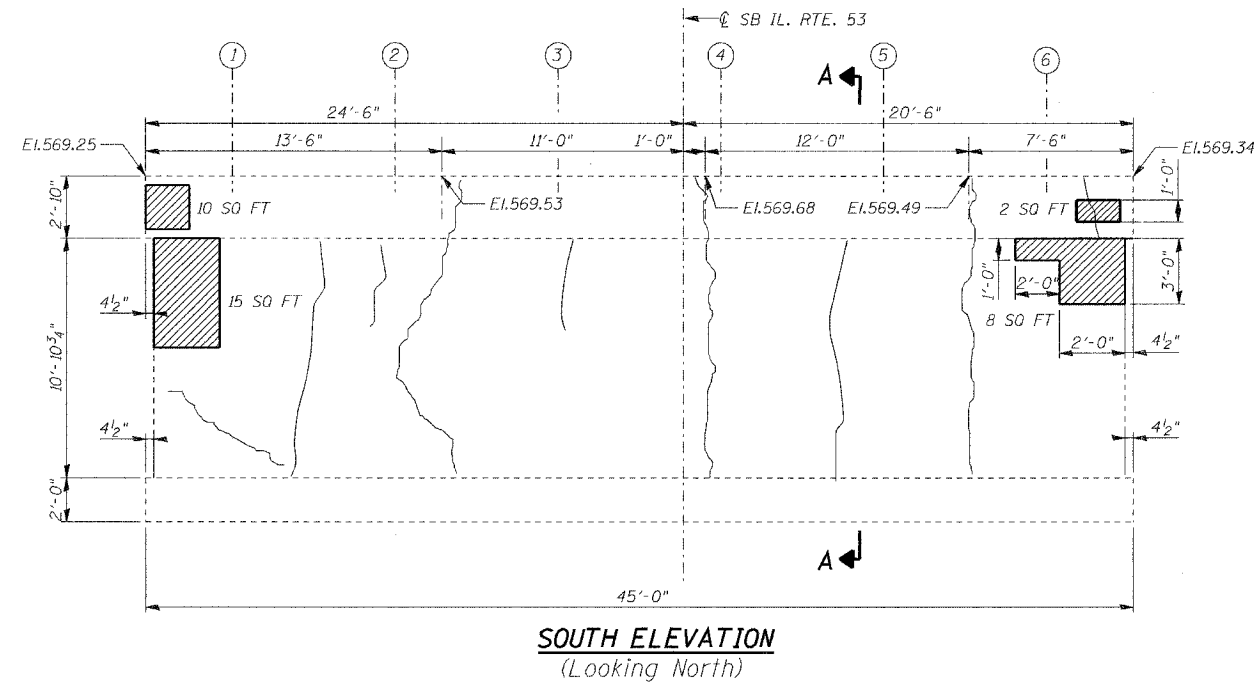
DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. F. A. P. 846	SECTION 4B-1-R	COUNTY WILL	SHEET 39	SHEET NO. 36
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

SHEET NO. S14
SHEETS S17

CONTRACT NO. 60D26



BILL OF MATERIAL

PAY ITEM	UNIT	S. ELEV.	N. ELEV.	TOTAL
STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5")	SQ FT	35.0	28.0	63.0
STRUCTURAL REPAIR OF CONCRETE (DEPTH GREATER THAN 5")	SQ FT	0.0	44.0	44.0
EPOXY CRACK INJECTION	FOOT	0.0	15.0	15.0

LEGEND:

- HAIRLINE CRACK (CRACK < 1/16" WIDE, NOT TO BE SEALED UNLESS NOTED OTHERWISE)
- STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)
- SPALL WITH EXPOSED REBAR
STRUCTURAL REPAIR OF CONCRETE (DEPTH GREATER THAN 5")

NOTES:

1. Concrete removal shall be accomplished by methods that will not damage the existing Abutments and Piers.
2. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in the pay item for Concrete Removal.

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

THIS SHEET IS FOR INFORMATION ONLY

ILLINOIS DEPARTMENT OF TRANSPORTATION

PIER No. 2 - REPAIRS

FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242

SCALE: NONE
DATE: JUNE, 2007

DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

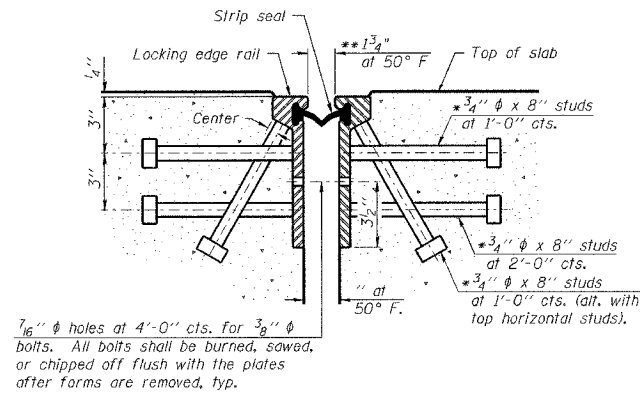
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
F. A. P. 846	4B-1-R	WILL	39	37
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

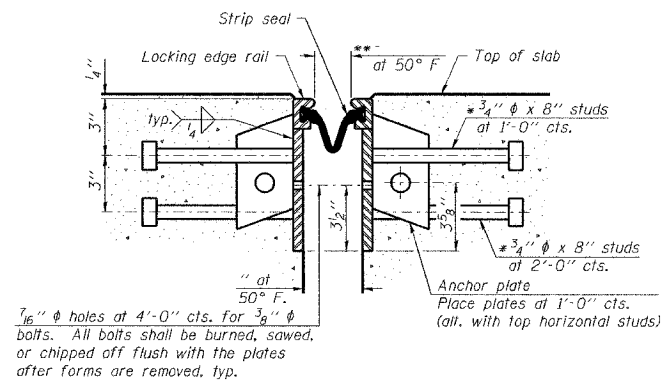
CONTRACT NO. 60D26

* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

** When joint is fixed, dimension is set at 1 1/2".



**SECTION THRU
ROLLED RAIL JOINT**



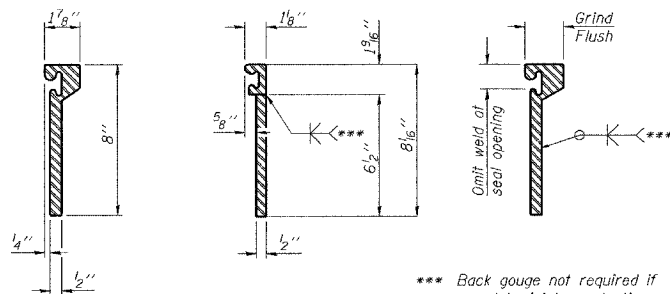
**SECTION THRU
WELDED RAIL JOINT**

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches. The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.

The manufacturer's recommended installation methods shall be followed. The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

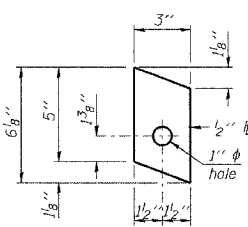


**ROLLED
(EXTRUDED) RAIL WELDED RAIL**

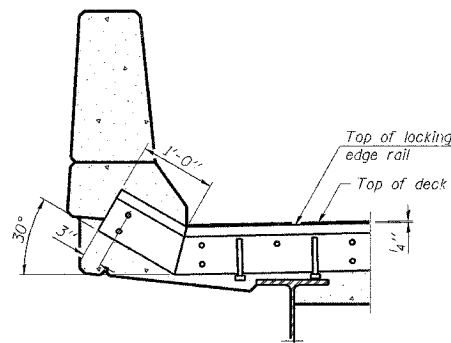
*** Back gouge not required if complete joint penetration is verified by mock-up.

**LOCKING EDGE
RAIL SPLICE**

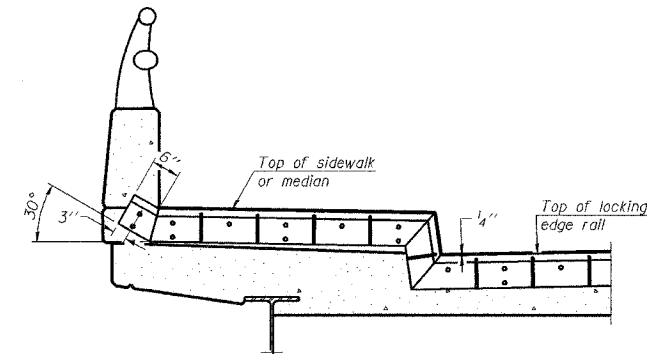
The inside of the locking edge rail groove shall be free of weld residue.



**ANCHOR P
(for welded rail)**



AT PARAPET

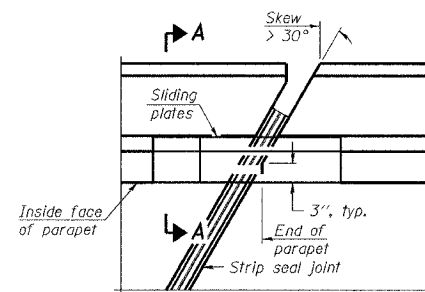


AT SIDEWALK OR MEDIAN

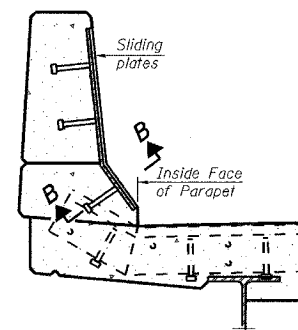
Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

TYPICAL END TREATMENTS

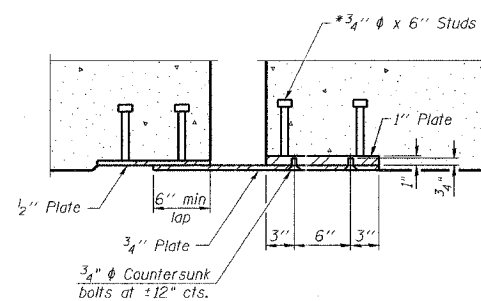
LOCKING EDGE RAILS



PLAN



SECTION A-A



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	87

THIS SHEET IS FOR
INFORMATION ONLY

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

**POINT BLOCK DETAILS
(for skews > 30°)**

ILLINOIS DEPARTMENT OF TRANSPORTATION
PREFORMED JOINT STRIP SEAL
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
DELT A ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

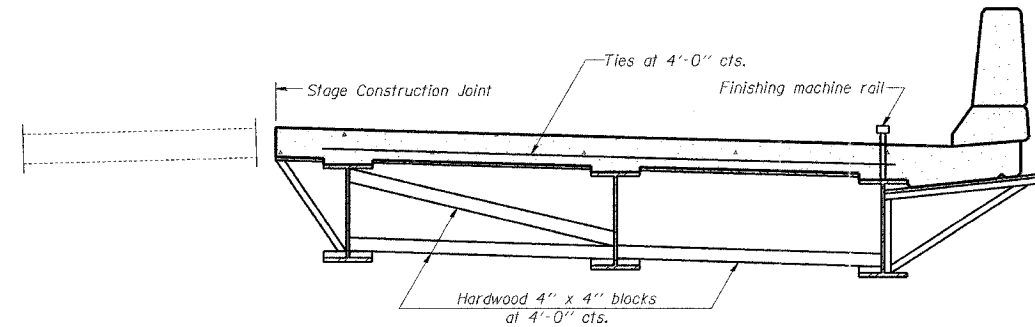
ROUTE NO.	SECTION	COUNTY	DISTRICT	SHEET NO.
F. A. P. 846	4B-1-R	WILL	39	38
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. S16

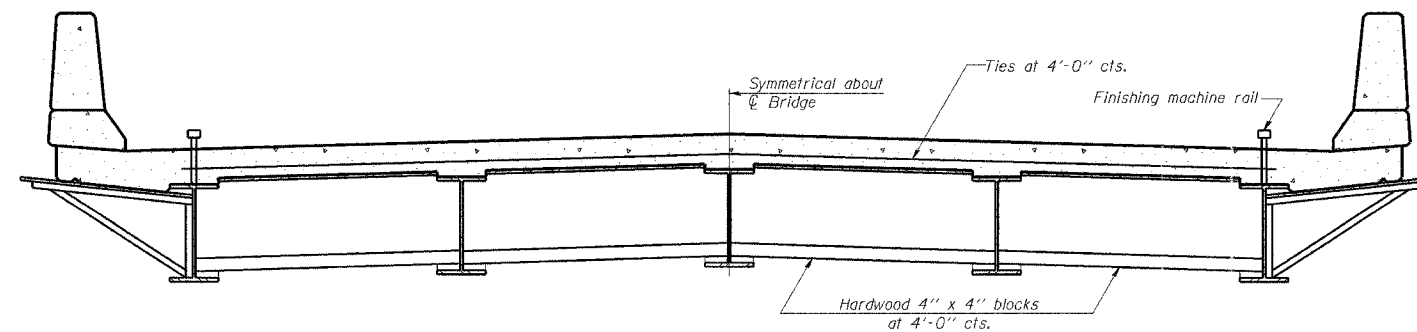
SHEETS S17

CONTRACT NO. 60D26

When cantilever forming brackets are used, the work shall be done according to Article 503.06(b) of the Standard Specifications, except as modified below and in the details shown on this sheet.
The finishing machine rails shall be placed on the top flange of the exterior beams.
The beams or girders, supporting cantilever forming brackets, shall be tied together at 4 foot intervals.
For Standard construction, or Stage Construction the Hardwood bracing materials shall be placed as shown between webs of beams in each bay.



**FORM BRACES FOR
STAGE CONSTRUCTION**



**FORM BRACES FOR
STANDARD CONSTRUCTION**

**THIS SHEET IS FOR
INFORMATION ONLY**

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION
**CANTILEVER FORMING BRACKETS
FOR SUPERSTRUCTURES**
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEETS	PAGE	SHEET NO. S17
F. A. P. 846	4B-1-R	WILL	39	39	SHEETS S17
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

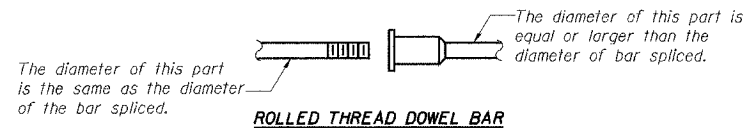
CONTRACT NO. 60D26

NOTES

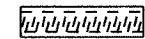
Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.
All reinforcement bars shall be lapped and tied to the 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 (Tension in kips) = $1.25 \times f_y \times A_t$
 - ② Minimum *Pull-out Strength (Tension in kips) = $0.66 \times f_y \times A_t$
- Where f_y = Yield strength of lapped reinforcement bars in ksi.
 A_t = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

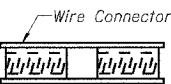
BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-0"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



ROLLED THREAD DOWEL BAR



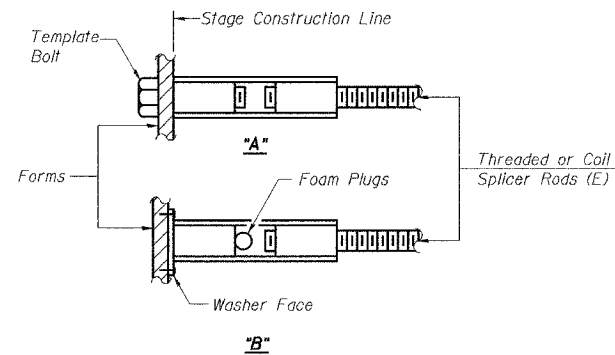
** ONE PIECE



WELDED SECTIONS

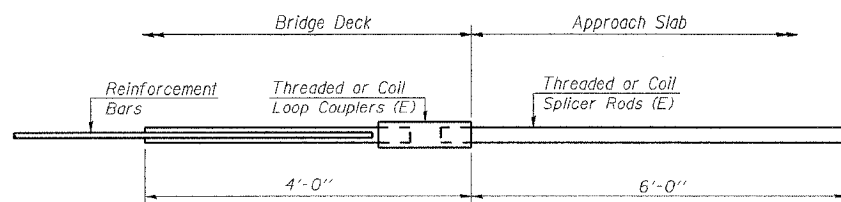
BAR SPLICER ASSEMBLY ALTERNATIVES

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



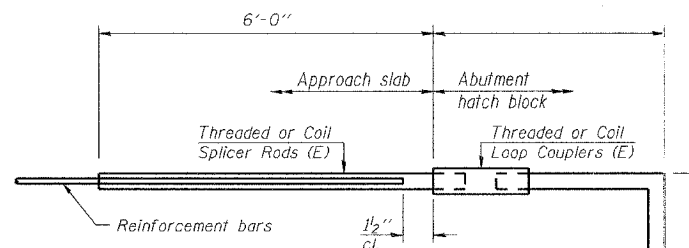
INSTALLATION AND SETTING METHODS

"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.



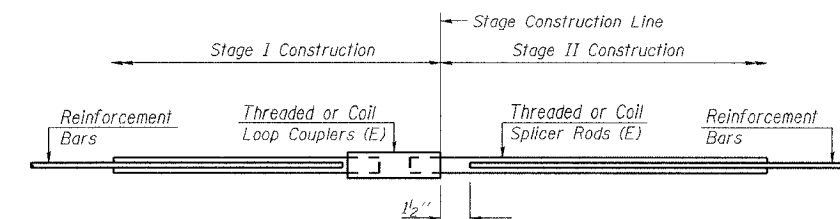
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 12.3 kips - tension
No. Required =



FOR STUB ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 12.3 kips - tension
No. Required = 96



STANDARD

Bar Size	No. Assemblies Required	Location

THIS SHEET IS FOR
INFORMATION ONLY

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC

ILLINOIS DEPARTMENT OF TRANSPORTATION
BAR SPLICER ASSEMBLY DETAILS
FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242
SCALE: NONE
DATE: JUNE 2007
AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS