

CONTRACT NO. 60119
D-91-865-09

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**PROPOSED
HIGHWAY PLANS**

F.A.U. 2843 - DIXIE HIGHWAY
OVER BUTTERFIELD CREEK
BEAMS AND BEARINGS FABRICATION
SECTION 3249B-F
COOK COUNTY
C-91-865-09
PROJECT NO. BRM-2843(008)



RME Rubinos & Mesia Engineers, Inc.
200 S. Michigan Ave, Suite 1500 Chicago IL 60604-2482
T> 312 870 6600 F> 312 663 1473

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED June 24, 2009
Dean O'Neil
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

August 14, 2009
Charles J. Ingersoll
ENGINEER OF DESIGN AND ENVIRONMENT

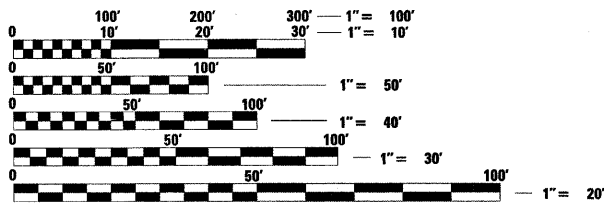
August 14, 2009
Christine M. Reed
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

FOR INDEX OF SHEETS, SEE SHEET NO. 2

PROJECT IS LOCATED IN:
VILLAGE OF FLOSSMOOR

PROJECT DESCRIPTION:
BEAM AND BEARINGS FABRICATION

DESIGN DESIGNATION:
2160(15) URBAN ARTERIAL 1.59 (FD-20)
TRAFFIC DATA
DIXIE HIGHWAY
DESIGN SPEED = 45 MPH
POSTED SPEED = 40 MPH
DHV 14,000 (2000)
ADT 21,572 (2020)

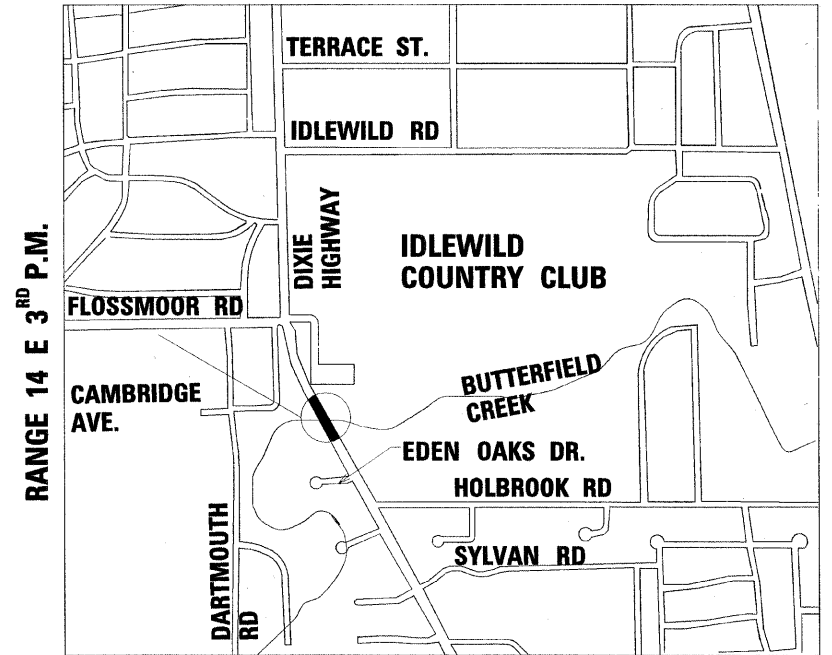


FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

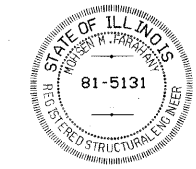
J.v.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123

CONTRACT NO. 60119

1 PROPOSED BEAM AND BEARINGS FABRICATION
2 DIXIE HIGHWAY OVER BUTTERFIELD CREEK BRIDGE REPLACEMENT
SN 016-7946 (PROPOSED)
(EXISTING SN 016-0775)
STA. 77+72.17 TO STA. 79+37.83



BLOOM TOWNSHIP T. 35 N
LOCATION MAP
SCALE: 1" = 750'
GROSS & NET LENGTH OF PROJECT = 165 FEET (0.03 MILE)



Mohsen Farahany
Licensed Structural Engineer
State of Illinois
Lic. No. 81-5131
Expires: 11-30-2010
Pages: 1-20
Mohsen Farahany

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OF THE STATE OF ILLINOIS**

DESIGN /CONSULTANT SERVICES PROJECT MANAGER - BRIAN KUTTAB (847)705-4431

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	2
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	

Contract No. 60119

INDEX OF SHEETS

1. Cover Sheet
2. Index of Sheets and Summary of Quantities
- 3-22 Structural Plan

SUMMARY OF QUANTITIES		URBAN 80% FED. 20% STATE	FUND CODE XG71-2A
CODE	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY
50500205	FURNISHING STRUCTURAL STEEL	LSUM	1
50500455	STORAGE OF STRUCTURAL STEEL	CAL DA	45

~~BEARING DETAILS~~

REVISIONS	
NAME	DATE

INDEX OF SHEETS AND
SUMMARY OF QUANTITIES

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

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DESIGNED BY TH
CHECKED BY MF

RME Rubinos &
Mesia
Engineers, Inc.

#PENTRIS#
#PLTDVYS#

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CURVE PDIXIE1-5

© F.A.U. RTE 2843
PI STA. = 83+27.12
Δ = 28° 46' 29" (RT)
D = 4° 05' 36"
T = 359.13'
R = 1,400.00'
L = 702.95'
E = 45.33'
SE = 2.4%
P.C. STA. = 79+67.99
P.T. STA. = 86+70.94
Normal Crown
Sta. 74+00.00
Full Superlevation
Sta. 77+19.00 to Sta. 79+91.00
Normal Crown
Sta. 84+25.00

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	3
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT-	

Sheet 1 of 22 Contract No. 60119

TOTAL BILL OF MATERIAL

ITEM DESCRIPTION	UNIT	TOTAL QUANTITY
FURNISHING STRUCTURAL STEEL	LSUM	1
STORAGE OF STRUCTURAL STEEL	CAL DAY	45

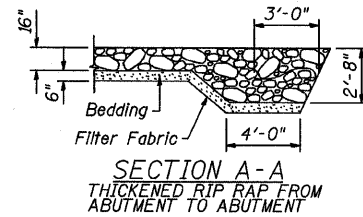
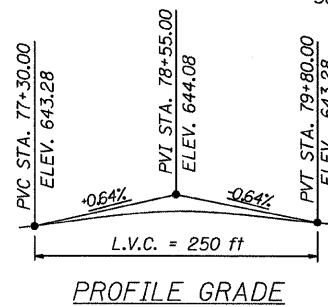
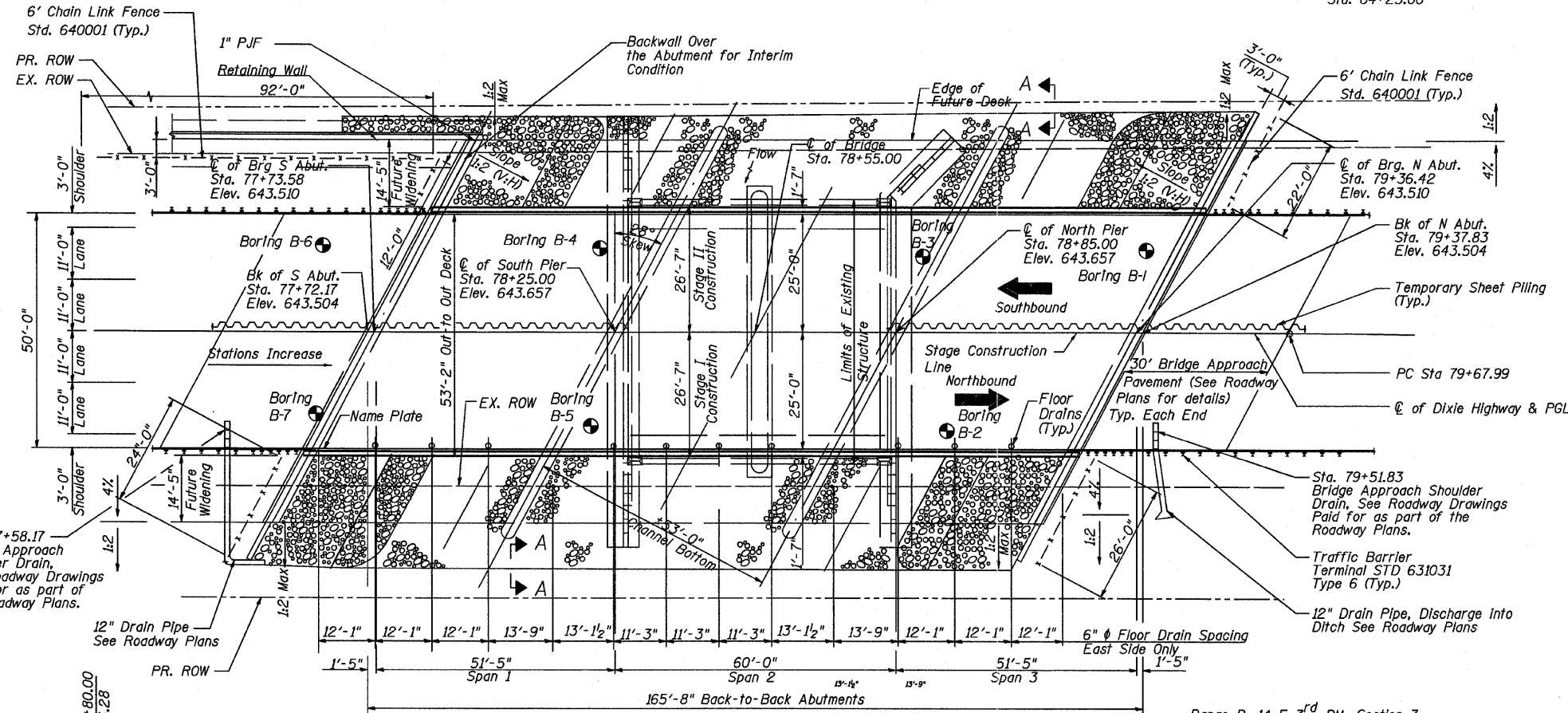
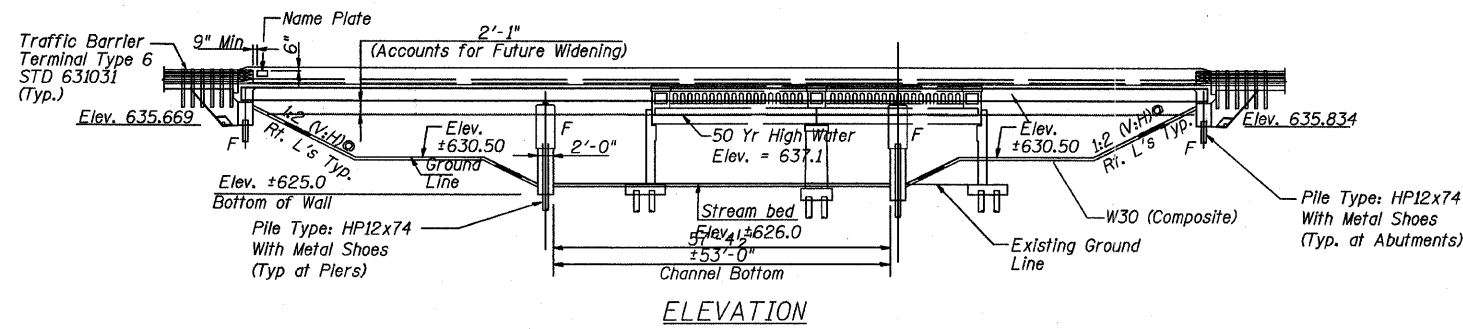
BENCH MARK: Control Point #1, "X" On Concrete Island at Southwest Quadrant of Dixie Highway and Flossmoor Road Elevation = 647.768.

The Existing Structure (SN 016-0775) Was Built in 1917 and Widened in 1930. The Superstructure Consists of a Two Span Cast-In-Place Reinforced Concrete Slab. The Substructure Consists of Two Closed Abutments With Wing-Walls on Each Side and One Pier.

Stage Construction will be Utilized as Shown, Allowing One Lane of Traffic in Each Direction to Remain Open at All Times.

The Existing Bridge will be Removed and Replaced in Two Stages. The Substructure Is Designed to Accomodate a Future Superstructure Widening.

No Salvage



WATERWAY INFORMATION

Drainage Area = 22.7 Sq. Mi. Prop. Low Grade Elev. = 644.6 ft. @ Sta 75+50

Flood	Freq yr.	Q cfs	Opening ft ²		Nat. H.W.E.	Head (ft)		Headwater EL.	
			Exist.	Prop		Exist.	Prop.	Exist.	Prop.
10	1650	337	337	946	636.4	0.7	637.1	636.6	
Design	50	2305	337	1038	637.1	1.1	0.2	638.2	637.3
Base	100	2775	337	1091	637.5	1.2	0.2	638.7	637.7
Max Calc	500	3920	337	1226	638.5	1.0	0.2	639.5	638.7

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications for Highway Bridges, (17th Edition)

LOADING HS20-44

Allow 50 psf for Future Wearing Surface

DESIGN STRESSES

FIELD UNITS
f'_c = 3500 psi
f_y = 50,000 psi
(M 270 Grade 50)
f_y = 60,000 psi (Reinf.)

SEISMIC DATA

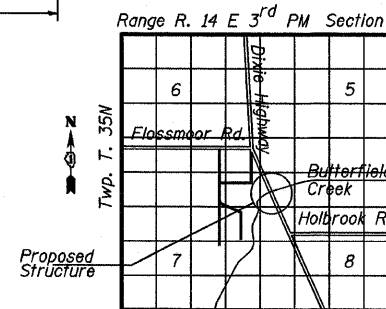
Seismic Performance Category (SPC) = A
Bedrock Acceleration Coefficient (A) 0.04 g
Site Coefficient (S) = 1.0

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

Ralph E. Anderson
ENGINEER OF BRIDGES AND STRUCTURES



Mohsen Farahy
7-24-09
Mohsen Farahy
Licensed Structural Engineer
State of Illinois
Lic. No. 81-5131
Expires: 11-30-2010



STATION 78+55.00
BUILT 20... BY
STATE OF ILLINOIS
F.A.U. ROUTE 2843 SEC. 3249B-R
LOADING HS20
STRUCTURE NO. 016-7946

NAME PLATE
See Std. 51500I.

REVISIONS	
NAME	DATE

GENERAL PLAN, ELEVATION & BILL OF MATERIAL

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 7-10-09

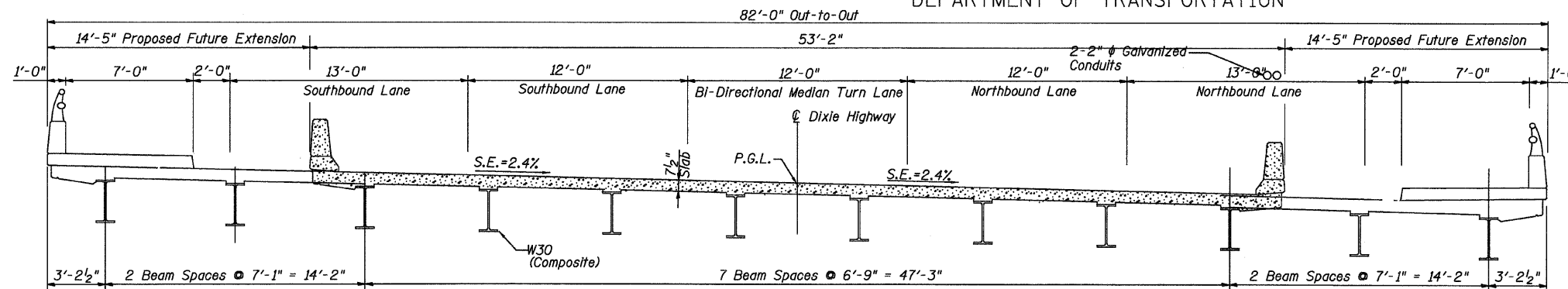
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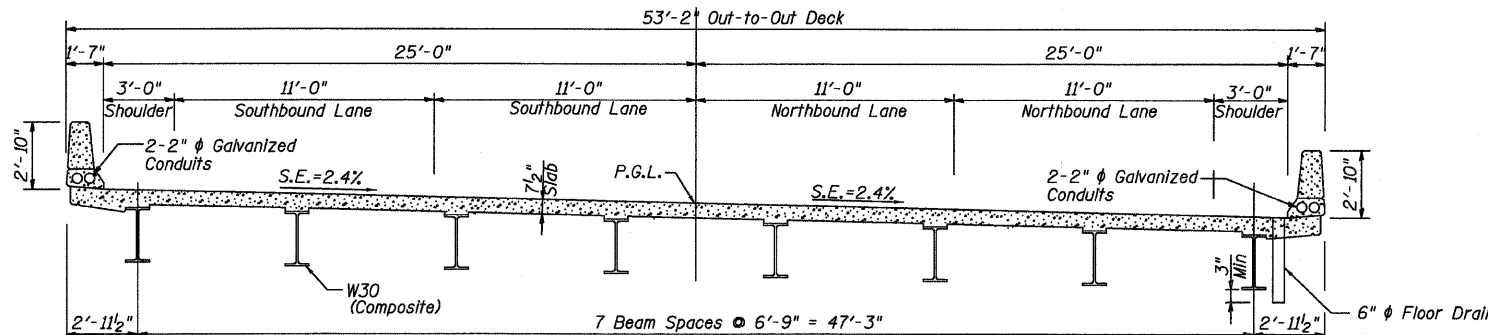
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	4
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT-	
			Sheet 2 of 22 Contract No. 60119	



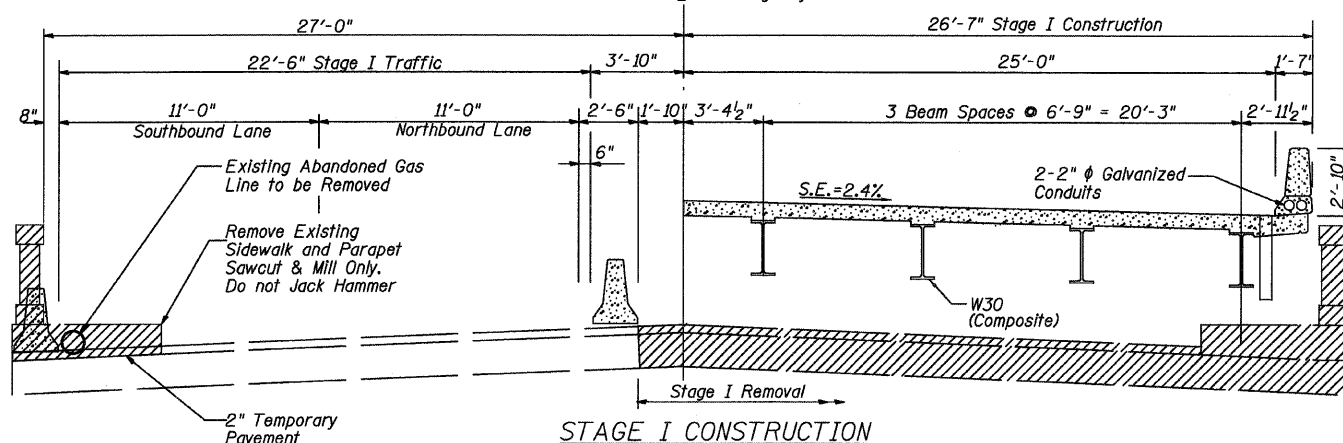
PROPOSED FUTURE BRIDGE SECTION

Looking North
Dixie Highway



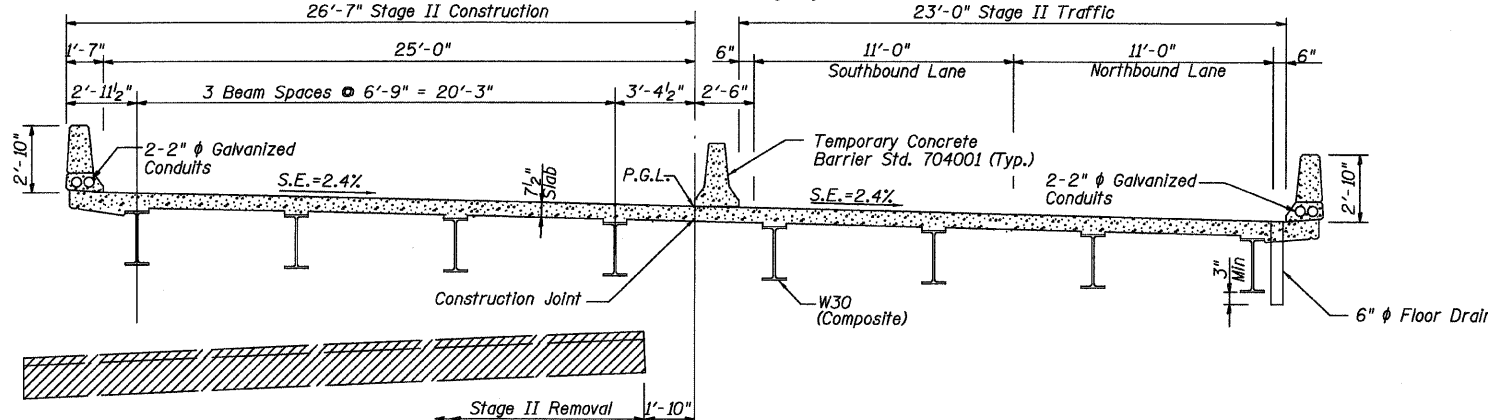
TYPICAL BRIDGE SECTION

Looking North
Dixie Highway



STAGE I CONSTRUCTION

Looking North
Dixie Highway



STAGE II CONSTRUCTION

Looking North

- * This work is not included in this fabrication contract and is provided for information only.
- * * This work is not included in this fabrication contract and sheet is not included in these plans.

These plans are for the fabrication of the structural steel. All work shown that is not related to the fabrication is for information only. It is not included in this contract, and is identified as "Not Included in This Contract" or "For Information Only".

GENERAL NOTES

1. Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts $\frac{7}{8}$ " ϕ , open holes $\frac{15}{16}$ " ϕ , unless otherwise noted.
2. Calculated weight of structural steel = 14,100 lbs. M 270 Grade 50, 25,000 lbs. M 270 Grade 36.
3. All structural steel shall be AASHTO M270 grade 50. Steel H-Piles shall be according to AASHTO M270 Grade 50.
4. Field welding of construction accessories will not be permitted to beams.
- * 5. Anchor bolts shall be set before bolting diaphragms over supports.
6. The main load carrying member components subject to tensile stress shall conform to the supplemental requirements for notch toughness zone 2. These components are the wide flange beams and all splice plate material except fill plates.
- * 7. Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.
- * 8. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two $\frac{1}{8}$ in. adjusting shims, of the dimensions of the bottom bearing plate, shall be provided for each bearing in addition to all other plates or shims.
- * 9. The contractor shall drive HP12x74 test piles in a permanent location at piers and HP12x74 test piles in a permanent location at abutments as directed by the Engineer before ordering the remainder of piles.
- * * 10. Excavation behind existing abutment walls shall be done before removing the existing superstructure. The Contractor shall sawcut the existing abutments at the stage removal line before Stage I removal.
11. 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 steel surfaces shall be gray, Munsell No. 5b 7/L. See special provisions for "Cleaning and Painting New Metal Structures".
- * 12. All construction joints shall be bonded.
- * 13. The contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.
- * 14. Concrete sealer shall be applied to the designated areas of the piers and Abutments.
- * 15. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See special provisions.
- * 16. Reinforcement bars designated (E) shall be epoxy coated.
- * 17. Slipforming of parapets is not allowed.
18. Field painting of structural steel shall be done under a separate contract.

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1. General Plan, Elevation & Bill of Material
- * 2. Construction Staging & General Notes
- * 3. Footing Layout, Sheet Pile Elevation & Rip-Rap Detail
- * 4. Top of Deck Elevations
- * 5. Top of Deck Elevations
- * 6. Top of Deck Elevations
- * 7. Deck Plan And Cross Section
- * 8. Diaphragm Elevation, Sections & Drain Detail
- * 9. Parapet Elevation
- * 10. Deck Details & Bill of Material
11. Framing Plan And Beam Elevation
12. Steel Details & Top of Beam Elevations
13. Bearing Details
- * 14. South Abutment
- * 15. North Abutment
- * 16. South Pier
- * 17. North Pier
- * * 18. Bar Splicer Assembly Details
- * 19. Anchor Bolt Details For Bearings
- * * 20. Temporary Concrete Barrier For Stage Construction
- * 21. Soil Borings
- * 22. Soil Borings

REVISIONS	
NAME	DATE

CONSTRUCTION STAGING & GENERAL NOTES

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

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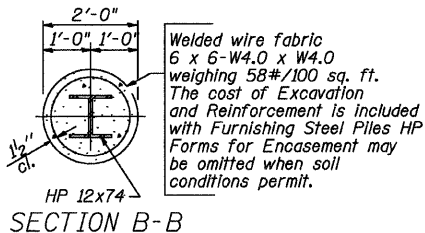
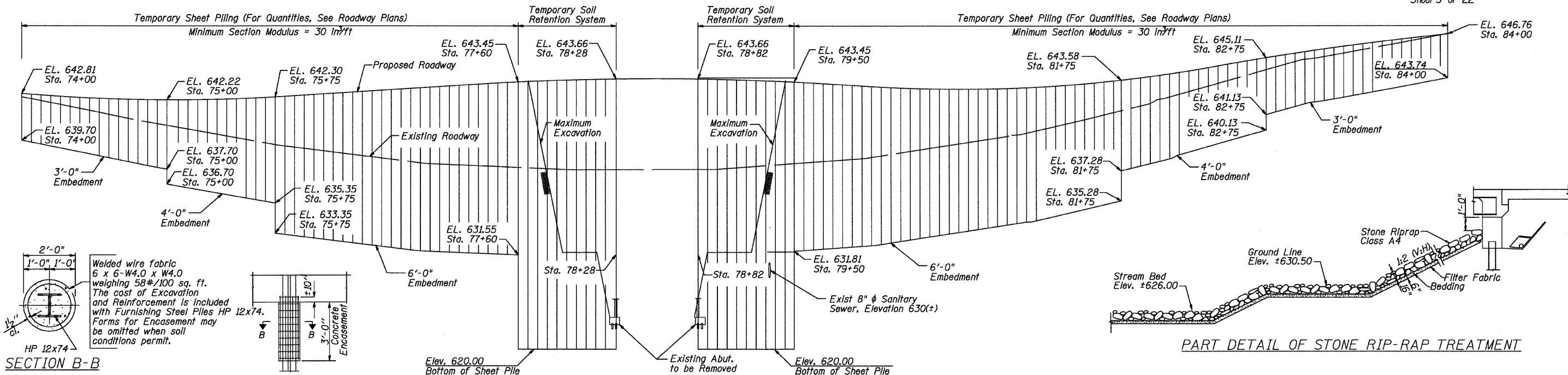


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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	5

FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-
Sheet 3 of 22 Contract No. 60119



PART DETAIL OF STONE RIP-RAP TREATMENT

Notes:

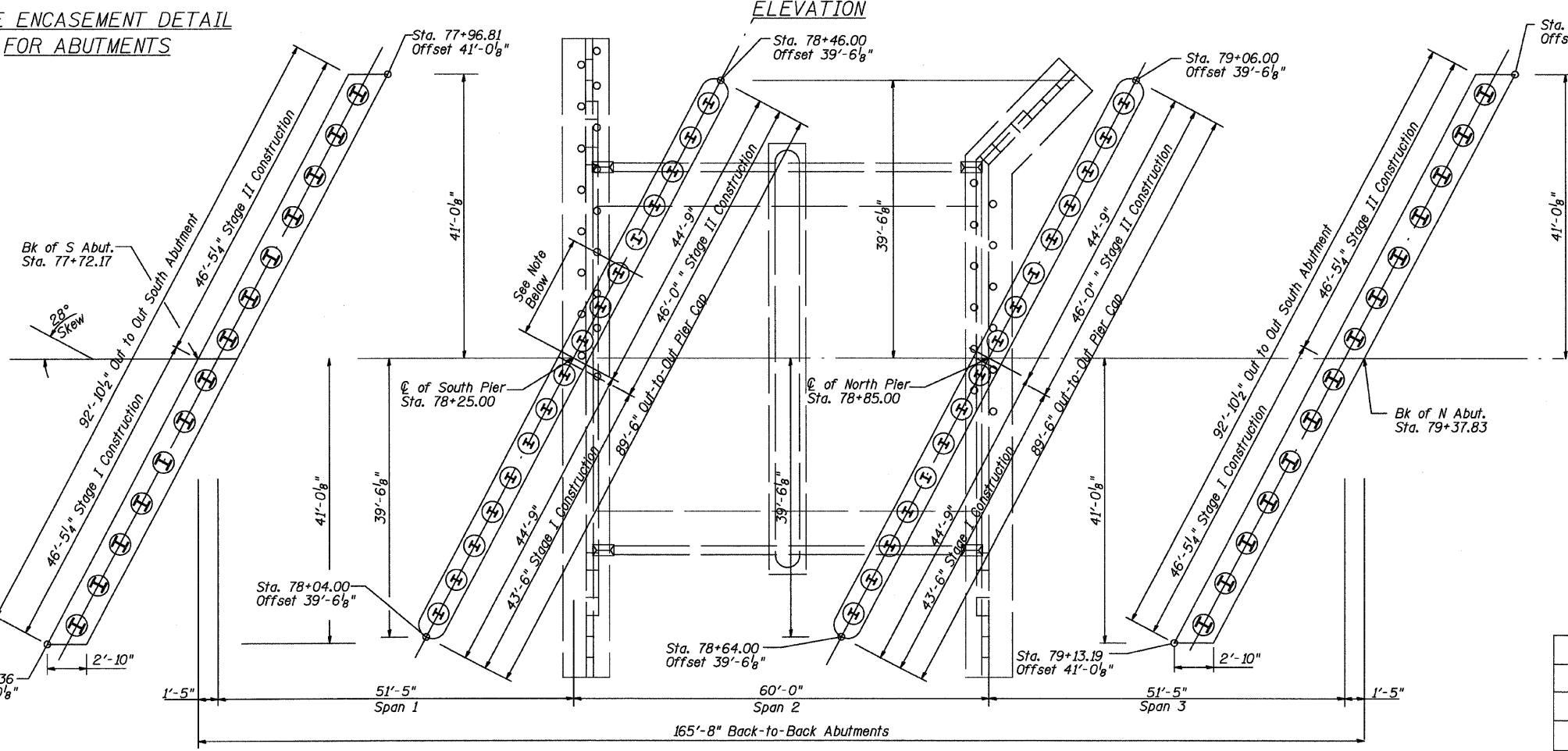
A cantilevered sheet piling design is not feasible in the region designated as "Temporary Soil Retention System". A wale restraining system or other system will be required. The contractor shall submit a temporary soil retention system design including plan details and computations to the Engineer for review and approval. The design requires a seal from a Licensed Structural Engineer.

If the contractor chooses to alter the temporary cantilevered sheet piling design requirements shown on the plans, a design submittal including plan details and calculations will be required for review and acceptance by the Engineer.

The contractor shall connect the first sheet to the existing abutment wall to ensure stability of sheets driven to the top of the existing footing. This connection shall be reviewed and accepted by the Engineer and included in the cost for Temporary Sheet Piling.

Hard driving may be encountered during the sheet piling installation. The Contractor shall provide the appropriate driving equipment for the soil conditions indicated on the boring logs.

There are existing utilities in the areas where proposed sheet piling will be installed. Contractor to locate all existing utilities per requirements of the special provisions. For overhead utilities and all other known utilities. See Roadway Plans, Sheet 13.



Note:
Interference With Existing Piles in Existing Abutment is Possible. In Such Case, Proposed Piles Shall be Relocated as Directed by the Engineer of Record. Maintain Minimum Pile Spacing of 3'-0". New Piles Must Remain Along \bar{C} of Pier.

FOOTING LAYOUT

REVISIONS	
NAME	DATE

**FOOTING LAYOUT
SHEET PILE ELEVATION
& RIP-RAP DETAIL**
DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
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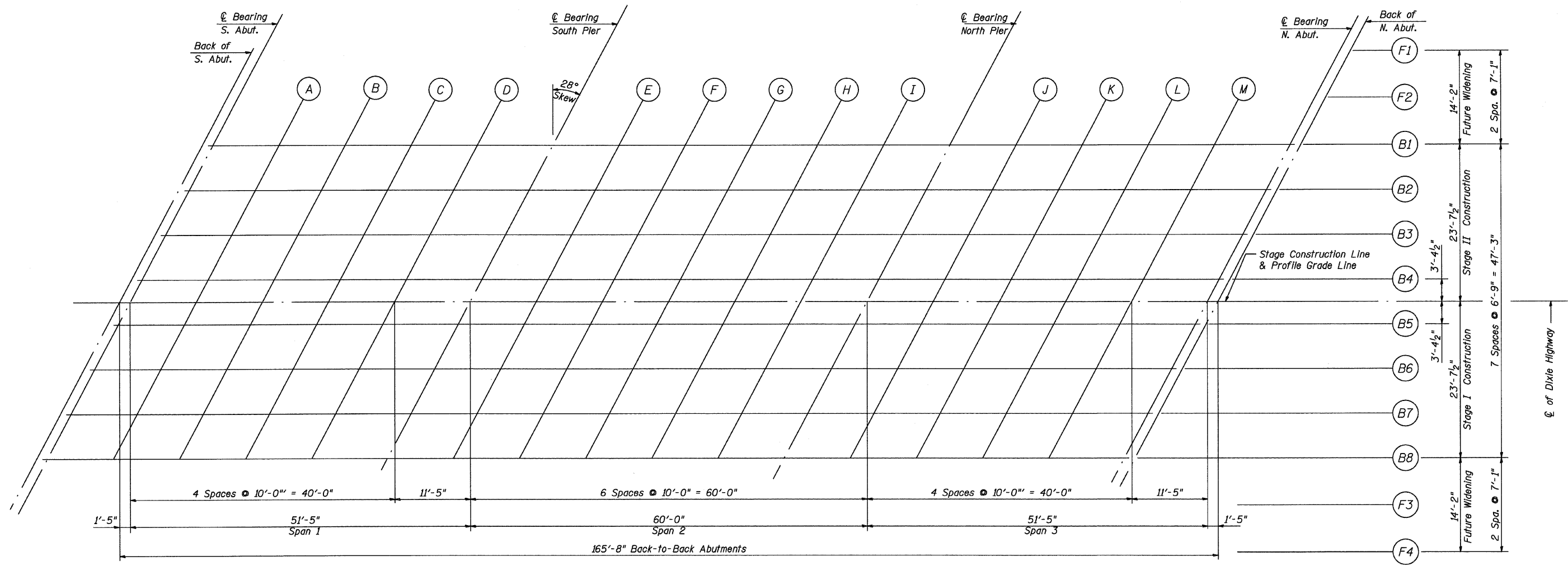
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DEPARTMENT OF TRANSPORTATION

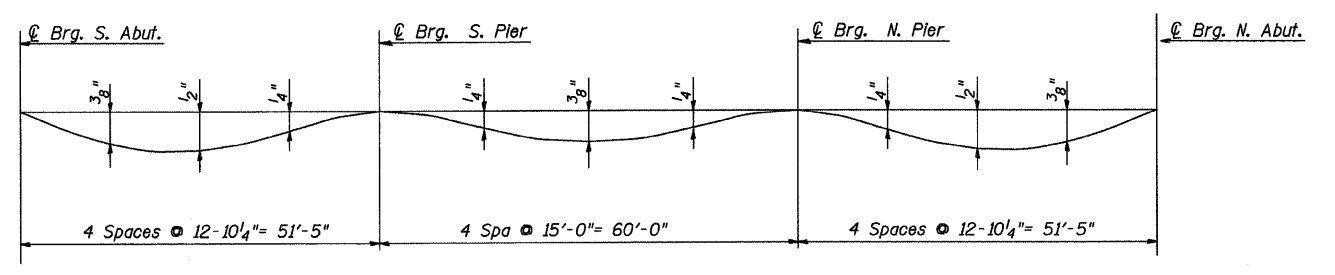
F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	6

FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-

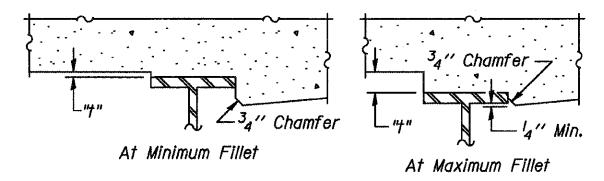
Sheet 4 of 22 Contract No. 60119



PLAN



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 deck elevation tables.



To determine "f": 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 tables, minus slab thickness, equals the fillet heights "f" above top flange of beams.

FILLET HEIGHTS

REVISIONS	
NAME	DATE

TOP OF DECK ELEVATIONS

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	7

FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-
Sheet 5 of 22 Contract No. 60119

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+84.728	-23.625	644.121	644.121
CL Brg. S. Abut.	77+86.145	-23.625	644.126	644.126
A	77+96.145	-23.625	644.158	644.184
B	78+06.145	-23.625	644.186	644.225
C	78+16.145	-23.625	644.208	644.243
D	78+26.145	-23.625	644.226	644.242
CL S. Pier	78+37.562	-23.625	644.239	644.239
E	78+47.562	-23.625	644.246	644.255
F	78+57.562	-23.625	644.247	644.271
G	78+67.562	-23.625	644.243	644.274
H	78+77.562	-23.625	644.234	644.258
I	78+87.562	-23.625	644.220	644.229
CL N. Pier	78+97.562	-23.625	644.201	644.201
J	79+07.562	-23.625	644.176	644.190
K	79+17.562	-23.625	644.147	644.179
L	79+27.562	-23.625	644.112	644.151
M	79+37.562	-23.625	644.072	644.101
CL Brg. N. Abut.	79+48.978	-23.625	644.021	644.021
BK N. Abut.	79+50.395	-23.625	644.014	644.014

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+81.139	-16.875	643.945	643.945
CL Brg. S. Abut.	77+82.556	-16.875	643.951	643.951
A	77+92.556	-16.875	643.985	644.011
B	78+02.556	-16.875	644.015	644.053
C	78+12.556	-16.875	644.039	644.073
D	78+22.556	-16.875	644.058	644.074
CL S. Pier	78+33.973	-16.875	644.074	644.074
E	78+43.973	-16.875	644.082	644.091
F	78+53.973	-16.875	644.085	644.109
G	78+63.973	-16.875	644.083	644.114
H	78+73.973	-16.875	644.076	644.100
I	78+83.973	-16.875	644.064	644.072
CL N. Pier	78+93.973	-16.875	644.046	644.046
J	79+03.973	-16.875	644.024	644.037
K	79+13.973	-16.875	643.996	644.028
L	79+23.973	-16.875	643.963	644.002
M	79+33.973	-16.875	643.925	643.954
CL Brg. N. Abut.	79+45.389	-16.875	643.876	643.876
BK N. Abut.	79+46.806	-16.875	643.869	643.869

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+77.550	-10.125	643.769	643.769
CL Brg. S. Abut.	77+78.967	-10.125	643.775	643.775
A	77+88.967	-10.125	643.811	643.837
B	77+98.967	-10.125	643.843	643.881
C	78+08.967	-10.125	643.869	643.903
D	78+18.967	-10.125	643.890	643.906
CL S. Pier	78+30.384	-10.125	643.907	643.907
E	78+40.384	-10.125	643.918	643.926
F	78+50.384	-10.125	643.922	643.946
G	78+60.384	-10.125	643.922	643.953
H	78+70.384	-10.125	643.917	643.941
I	78+80.384	-10.125	643.907	643.915
CL N. Pier	78+90.384	-10.125	643.891	643.891
J	79+00.384	-10.125	643.870	643.884
K	79+10.384	-10.125	643.844	643.877
L	79+20.384	-10.125	643.814	643.853
M	79+30.384	-10.125	643.778	643.806
CL Brg. N. Abut.	79+41.800	-10.125	643.730	643.730
BK N. Abut.	79+43.217	-10.125	643.724	643.724

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+73.961	-3.375	643.593	643.593
CL Brg. S. Abut.	77+75.378	-3.375	643.599	643.599
A	77+85.378	-3.375	643.637	643.662
B	77+95.378	-3.375	643.670	643.709
C	78+05.378	-3.375	643.698	643.732
D	78+15.378	-3.375	643.721	643.737
CL S. Pier	78+26.795	-3.375	643.741	643.741
E	78+36.795	-3.375	643.753	643.761
F	78+46.795	-3.375	643.759	643.783
G	78+56.795	-3.375	643.761	643.792
H	78+66.795	-3.375	643.757	643.781
I	78+76.795	-3.375	643.749	643.758
CL N. Pier	78+86.795	-3.375	643.735	643.735
J	78+96.795	-3.375	643.716	643.730
K	79+06.795	-3.375	643.692	643.725
L	79+16.795	-3.375	643.663	643.702
M	79+26.795	-3.375	643.629	643.657
CL Brg. N. Abut.	79+38.211	-3.375	643.584	643.584
BK N. Abut.	79+39.628	-3.375	643.578	643.578

STAGE LINE & BONDED CONSTRUCTION JOINT

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+72.167	0.0	643.504	643.504
CL Brg. S. Abut.	77+73.583	0.0	643.510	643.510
A	77+83.583	0.0	643.549	643.575
B	77+93.583	0.0	643.583	643.622
C	78+03.583	0.0	643.612	643.646
D	78+13.583	0.0	643.636	643.653
CL S. Pier	78+25.000	0.0	643.657	643.657
E	78+35.000	0.0	643.670	643.679
F	78+45.000	0.0	643.677	643.701
G	78+55.000	0.0	643.680	643.711
H	78+65.000	0.0	643.677	643.701
I	78+75.000	0.0	643.670	643.679
CL N. Pier	78+85.000	0.0	643.657	643.657
J	78+95.000	0.0	643.639	643.653
K	79+05.000	0.0	643.616	643.648
L	79+15.000	0.0	643.588	643.627
M	79+25.000	0.0	643.555	643.583
CL Brg. N. Abut.	79+36.417	0.0	643.510	643.510
BK N. Abut.	79+37.833	0.0	643.504	643.504

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+70.372	3.375	643.416	643.416
CL Brg. S. Abut.	77+71.789	3.375	643.422	643.422
A	77+81.789	3.375	643.462	643.487
B	77+91.789	3.375	643.497	643.535
C	78+01.789	3.375	643.527	643.561
D	78+11.789	3.375	643.551	643.568
CL S. Pier	78+23.205	3.375	643.573	643.573
E	78+33.205	3.375	643.587	643.596
F	78+43.205	3.375	643.595	643.619
G	78+53.205	3.375	643.599	643.630
H	78+63.205	3.375	643.597	643.621
I	78+73.205	3.375	643.591	643.599
CL N. Pier	78+83.205	3.375	643.579	643.579
J	78+93.205	3.375	643.562	643.575
K	79+03.205	3.375	643.540	643.572
L	79+13.205	3.375	643.512	643.551
M	79+23.205	3.375	643.480	643.508
CL Brg. N. Abut.	79+34.622	3.375	643.437	643.437
BK N. Abut.	79+36.039	3.375	643.431	643.431

REVISIONS	
NAME	DATE

TOP OF DECK ELEVATIONS

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

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CHECKED BY MF



FOR INFORMATION ONLY

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	8

FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-

Sheet 6 of 22

Contract No. 60119

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+66.783	10.125	643.238	643.238
CL Brg. S. Abut.	77+68.200	10.125	643.244	643.244
A	77+78.2.00	10.125	643.286	643.311
B	77+88.2.00	10.125	643.323	643.361
C	77+98.2.00	10.125	643.354	643.389
D	78+08.2.00	10.125	643.381	643.397
CL S. Pier	78+19.616	10.125	643.405	643.405
E	78+29.616	10.125	643.421	643.429
F	78+39.616	10.125	643.431	643.455
G	78+49.616	10.125	643.436	643.467
H	78+59.616	10.125	643.436	643.460
I	78+69.616	10.125	643.432	643.440
CL N. Pier	78+79.616	10.125	643.421	643.421
J	78+89.616	10.125	643.406	643.420
K	78+99.616	10.125	643.386	643.418
L	79+09.616	10.125	643.361	643.400
M	79+19.616	10.125	643.330	643.358
CL Brg. N. Abut.	79+31.033	10.125	643.289	643.289
BK N. Abut.	79+32.450	10.125	643.283	643.283

BEAM 7

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+63.194	16.875	643.059	643.059
CL Brg. S. Abut.	77+64.611	16.875	643.066	643.066
A	77+74.611	16.875	643.110	643.135
B	77+84.611	16.875	643.148	643.187
C	77+94.611	16.875	643.182	643.216
D	78+04.611	16.875	643.210	643.226
CL S. Pier	78+16.027	16.875	643.236	643.236
E	78+26.027	16.875	643.254	643.262
F	78+36.027	16.875	643.266	643.290
G	78+46.027	16.875	643.273	643.304
H	78+56.027	16.875	643.275	643.299
I	78+66.027	16.875	643.272	643.281
CL N. Pier	78+76.027	16.875	643.264	643.264
J	78+86.027	16.875	643.250	643.264
K	78+96.027	16.875	643.232	643.264
L	79+06.027	16.875	643.208	643.247
M	79+16.027	16.875	643.180	643.208
CL Brg. N. Abut.	79+27.444	16.875	643.141	643.141
BK N. Abut.	79+28.861	16.875	643.135	643.135

BEAM 8

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK S. Abut.	77+59.605	23.625	642.880	642.880
CL Brg. S. Abut.	77+61.022	23.625	642.887	642.887
A	77+71.022	23.625	642.932	642.958
B	77+81.022	23.625	642.973	643.012
C	77+91.022	23.625	643.008	643.042
D	78+01.022	23.625	643.038	643.055
CL S. Pier	78+12.438	23.625	643.067	643.067
E	78+22.438	23.625	643.086	643.095
F	78+32.438	23.625	643.100	643.124
G	78+42.438	23.625	643.109	643.140
H	78+52.438	23.625	643.113	643.137
I	78+62.438	23.625	643.112	643.121
CL N. Pier	78+72.438	23.625	643.105	643.105
J	78+82.438	23.625	643.094	643.107
K	78+92.438	23.625	643.077	643.109
L	79+02.438	23.625	643.055	643.095
M	79+12.438	23.625	643.029	643.057
CL Brg. N. Abut.	79+23.855	23.625	642.992	642.992
BK N. Abut.	79+25.272	23.625	642.987	642.987

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#LTDW\$

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REVISIONS	
NAME	DATE

TOP OF DECK ELEVATIONS

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

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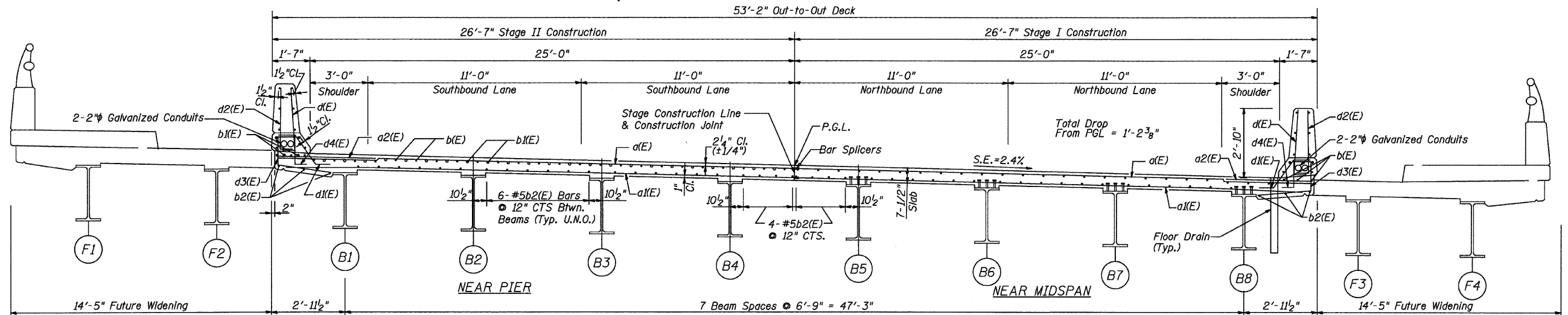
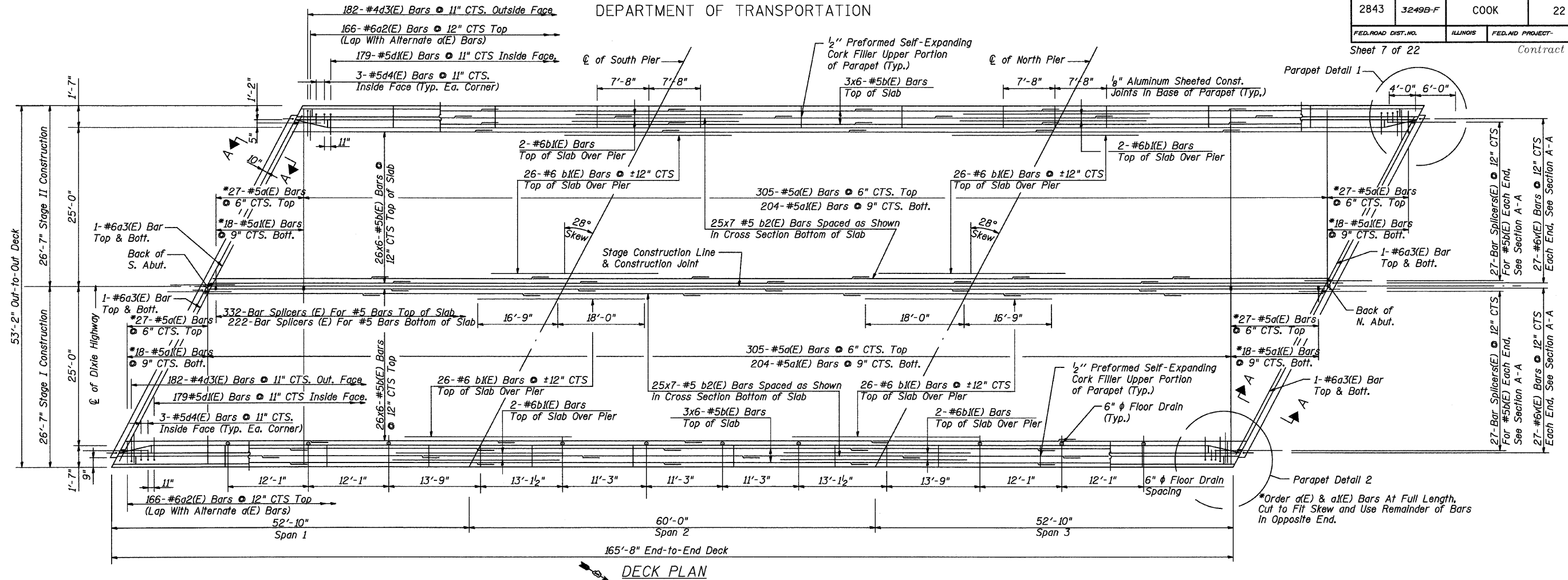


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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RT.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	9
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	

Sheet 7 of 22 Contract No. 60119



Notes: See Sheet #10 of 22 for Superstructure Details and Bill of Material.
Reinforcement Bars Designated (E) Shall be Epoxy Coated.
Bars Indicated Thus 25 x 7-#5 etc. Indicates 25 Lines of Bars With 7 Lengths per Line.
See Sheet # 9 of 22 for Parapet Reinforcement.
Space Reinforcement to Avoid Floor Drains.
Minimum Bar Lap For #5 Bar - 2'-2".
Minimum Bar Lap For #6 Bar - 2'-7".
For Floor Drain Details, See Sht. #10 of 22.
For Section A-A & Deck Diaphragm, See Sht #8 of 22.
See Sheet #9 of 22 For Parapet Details 1 & 2.

CROSS SECTION
Looking North

REVISIONS	
NAME	DATE

DECK PLAN AND
CROSS SECTION

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

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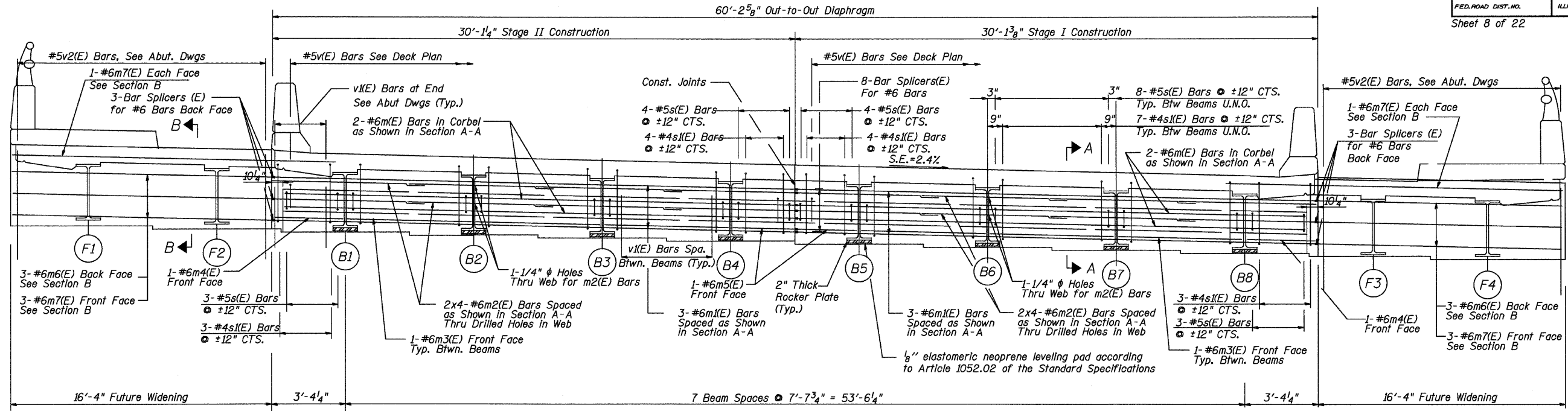
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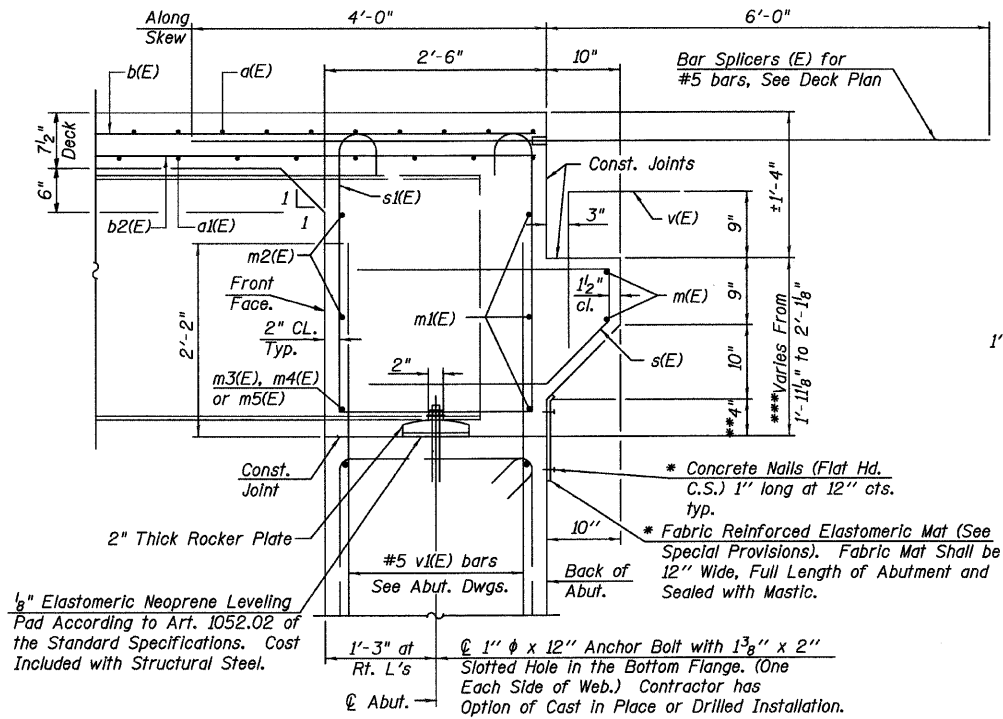
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	10

FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-
Sheet 8 of 22 Contract No. 60119

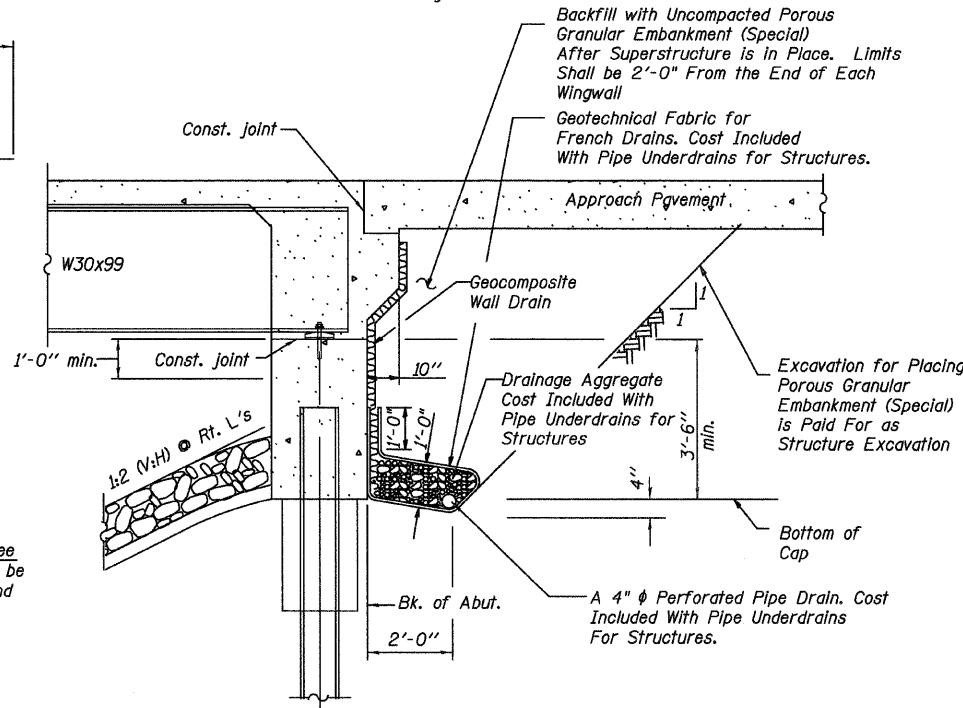


DIAPHRAGM ELEVATION AT ABUTMENT
Looking North



SECTION A-A

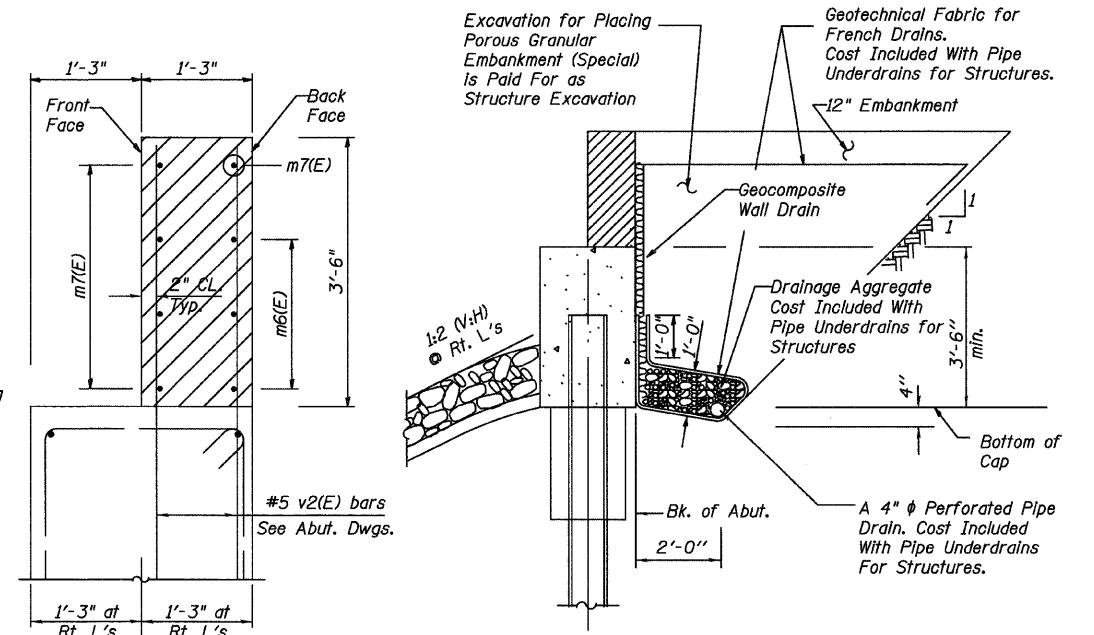
Dimensions at right angles to abutment, except as shown.
* Cost included with Concrete Superstructure.
** 4 1/2" at Centerline of Beam
*** 2'-0 1/8" at Centerline of Beam



SECTION THRU ABUTMENT DRAIN
(Horiz. dim. @ Rt. L's)

Notes:
Reinforcement bars in Diaphragm are Billed With Superstructure on Sheet 10 of 22.
Concrete in Diaphragm is Included with Concrete Superstructure on Sheet 7 of 22.
For Details of Bars s(E) & s(E) See Sheet 10 of 22.
The s(E) and s(E) Bars Shall Be Placed Parallel to the Beams. Spacing for These Bars Shall be at Right Angles to the Beams.
For Anchor Bolt Details, See Sheet 19 of 22.

MIN. BAR LAP
#6 bar = 2'-9"



SECTION B-B

Hatching Indicates Backfill Over Abutment for Interim Conditions

SECTION THRU ABUTMENT DRAIN
(Horiz. dim. @ Rt. L's)
At Southwest Quadrant, Adjacent to Retaining Wall

Note:
All drainage components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with side slopes. (See Article 601.05 of the Standard Specifications and Highway Standard 601101)

REVISIONS	
NAME	DATE

DIAPHRAGM ELEVATION,
SECTIONS & DRAIN DETAIL

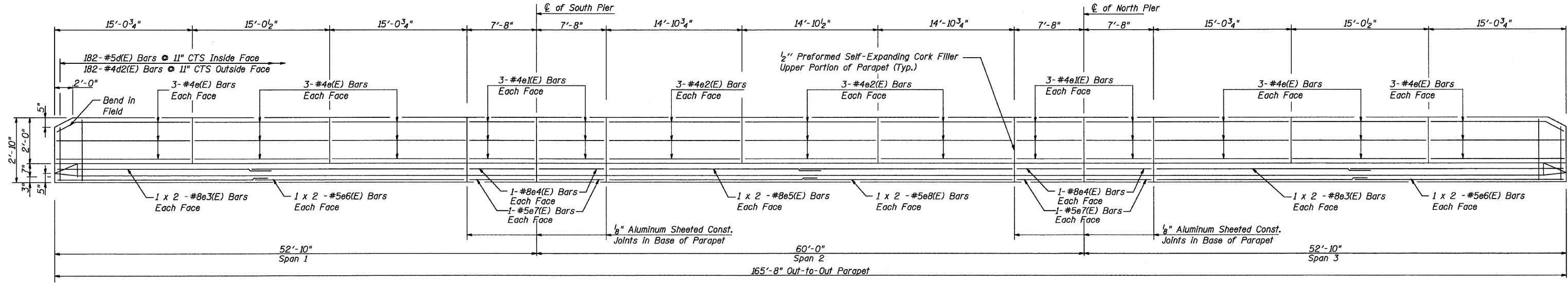
DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

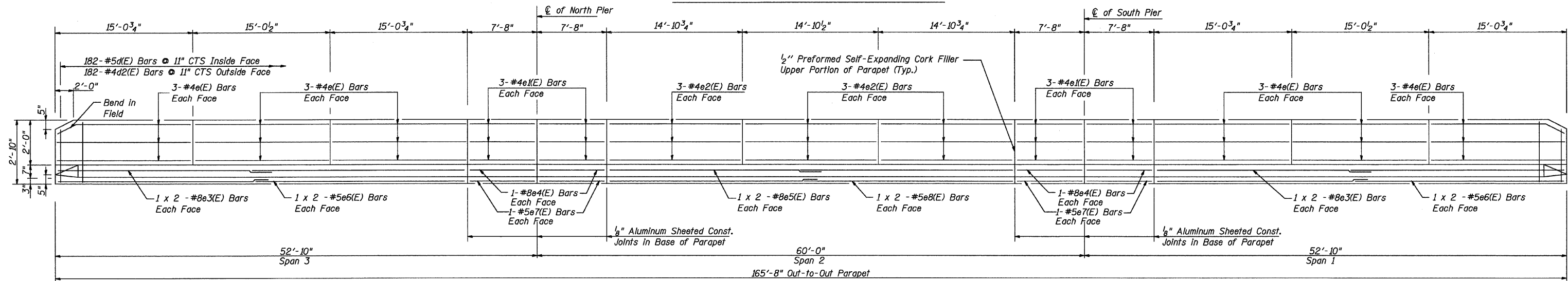
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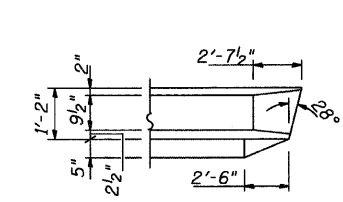
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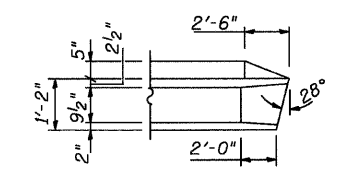
INSIDE ELEVATION OF WEST PARAPET



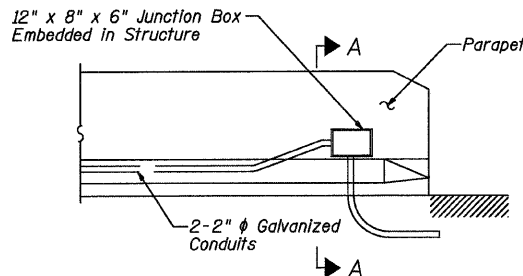
INSIDE ELEVATION OF EAST PARAPET



PARAPET DETAIL 1



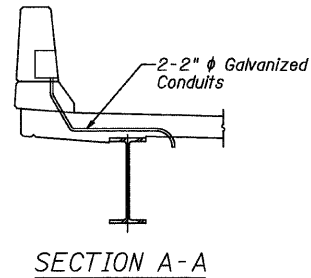
PARAPET DETAIL 2



JUNCTION BOX EMBEDDED IN PARAPET

Notes:

1. The Junction Box Shall Only be Installed when Indicated on the Plans or as Directed by the Engineer to Facilitate the Installation of Unit Duct into the Conduit Embedded in the Parapet.
2. The Junction Box Shall be Paid for at the Unit Price for Junction Box, Embedded in Structure, 12" x 8" x 6"
3. The Exact Location of the Junction Box Shall be Determined by the Engineer.



SECTION A-A

Notes: See Sheet #10 of 22 for Superstructure Details and Bill of Material.

Reinforcement bars designated (E) shall be epoxy coated.

Bars Indicated thus 1 x 2-#8 etc. Indicates 1 Line of Bars With 2 Lengths per Line.

Minimum Bar Lap For #4 Bar - 1'-8".

Minimum Bar Lap For #5 Bar - 2'-2".

Minimum Bar Lap For #8 Bar - 4'-6".

For Deck Diaphragm, See Sit #8 of 22.

REVISIONS	
NAME	DATE

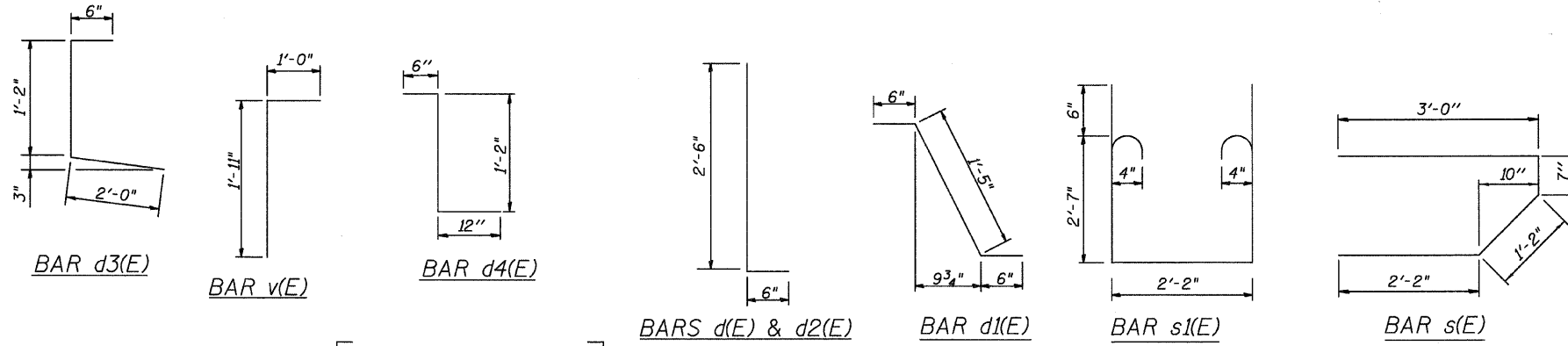
PARAPET ELEVATION

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
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SUPERSTRUCTURE
BILL OF MATERIAL

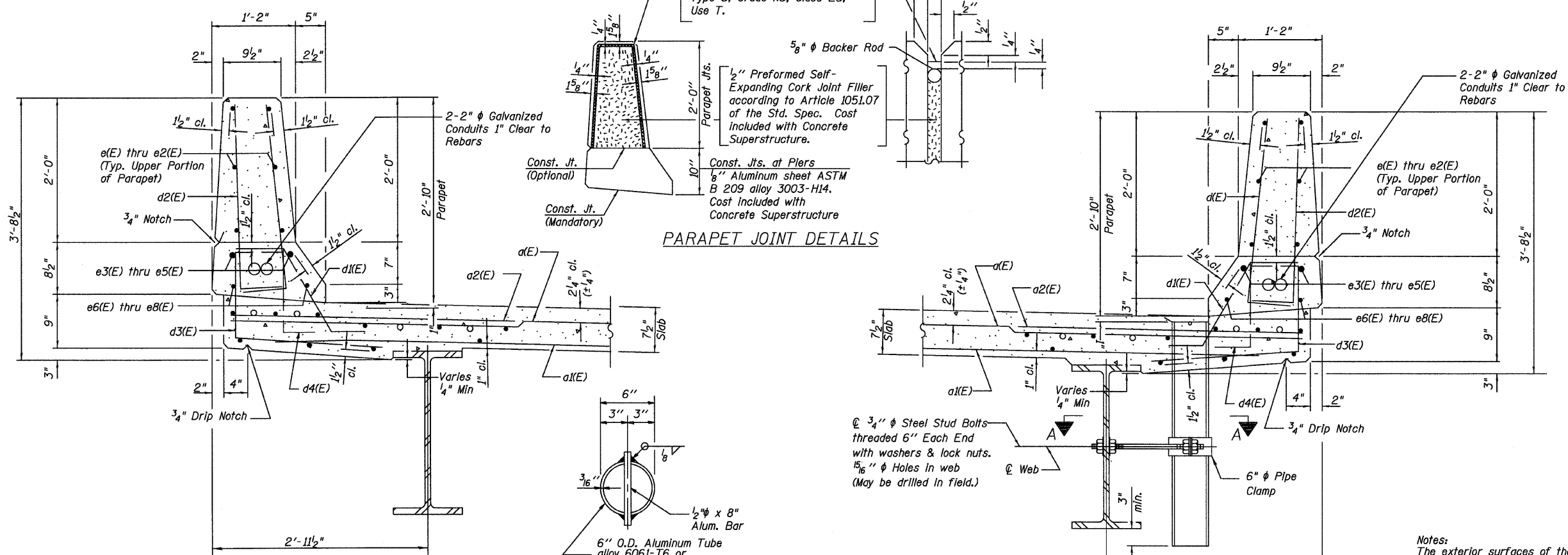
Bar	No.	Size	Length	Shape
a(E)	664	#5	26'-2"	
a1(E)	444	#5	25'-10"	
a2(E)	332	#6	4'-6"	
a3(E)	8	#6	29'-4"	
b(E)	348	#5	29'-5"	
b1(E)	112	#6	34'-9"	
b2(E)	350	#5	25'-6"	
d(E)	364	#5	3'-0"	
d1(E)	358	#5	2'-5"	
d2(E)	364	#4	3'-0"	
d3(E)	364	#4	3'-8"	
d4(E)	12	#5	2'-8"	
e(E)	72	#4	14'-9"	
e1(E)	48	#4	7'-5"	
e2(E)	36	#4	14'-7"	
e3(E)	16	#8	24'-10"	
e4(E)	16	#8	7'-4"	
e5(E)	8	#8	24'-7"	
e6(E)	16	#5	23'-8"	
e7(E)	16	#5	7'-4"	
e8(E)	8	#5	23'-5"	
m(E)	8	#6	29'-0"	
m1(E)	12	#6	29'-10"	
m2(E)	32	#6	9'-8"	
m3(E)	12	#6	7'-4"	
m4(E)	4	#6	3'-1"	
m5(E)	4	#6	3'-7"	
m6(E)	12	#6	16'-1"	
m7(E)	20	#6	18'-10"	
s(E)	124	#5	6'-11"	
s1(E)	112	#4	8'-4"	
v(E)	108	#6	2'-11"	
Reinforcement Bars, Epoxy Coated			Pound	70800
Concrete Superstructure			Cu Yd	300
Bar Splacers			Each	690

Non-staining gray one component non-sag elastomeric gun grade polyurethane sealant meeting the requirements of ASTM C-920, Type S, Grade NS, Class 25, Use T.

1/2" Preformed Self-Expanding Cork Joint Filler according to Article 1051.07 of the Std. Spec. Cost included with Concrete Superstructure.

Const. Jts. at Piers
1/8" Aluminum sheet ASTM B 209 alloy 3003-H14. Cost included with Concrete Superstructure

PARAPET JOINT DETAILS

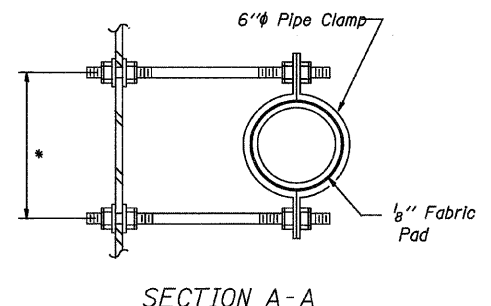
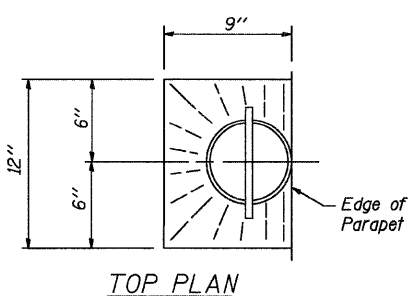
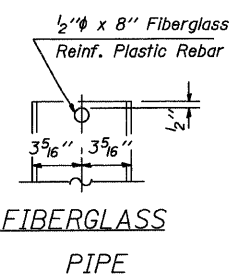
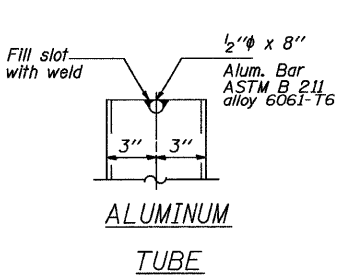


Notes:
The exterior surfaces of the floor drains shall be painted with the finish coat as specified in the special provisions for Cleaning and Painting New Metal Structures. The exterior surfaces of the drains shall be cleaned according to Steel Structures Painting Council's Spec. SSPC-SP1 prior to painting.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

SECTION THRU WEST PARAPET

TOP PLAN
(Showing Aluminum Tube)

SECTION THRU EAST PARAPET



* Dimension as required by Pipe Clamp

REVISIONS	
NAME	DATE

DECK DETAILS & BILL OF MATERIAL

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

DRAWN BY TH
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RME Rubinos & Mesia Engineers, Inc.

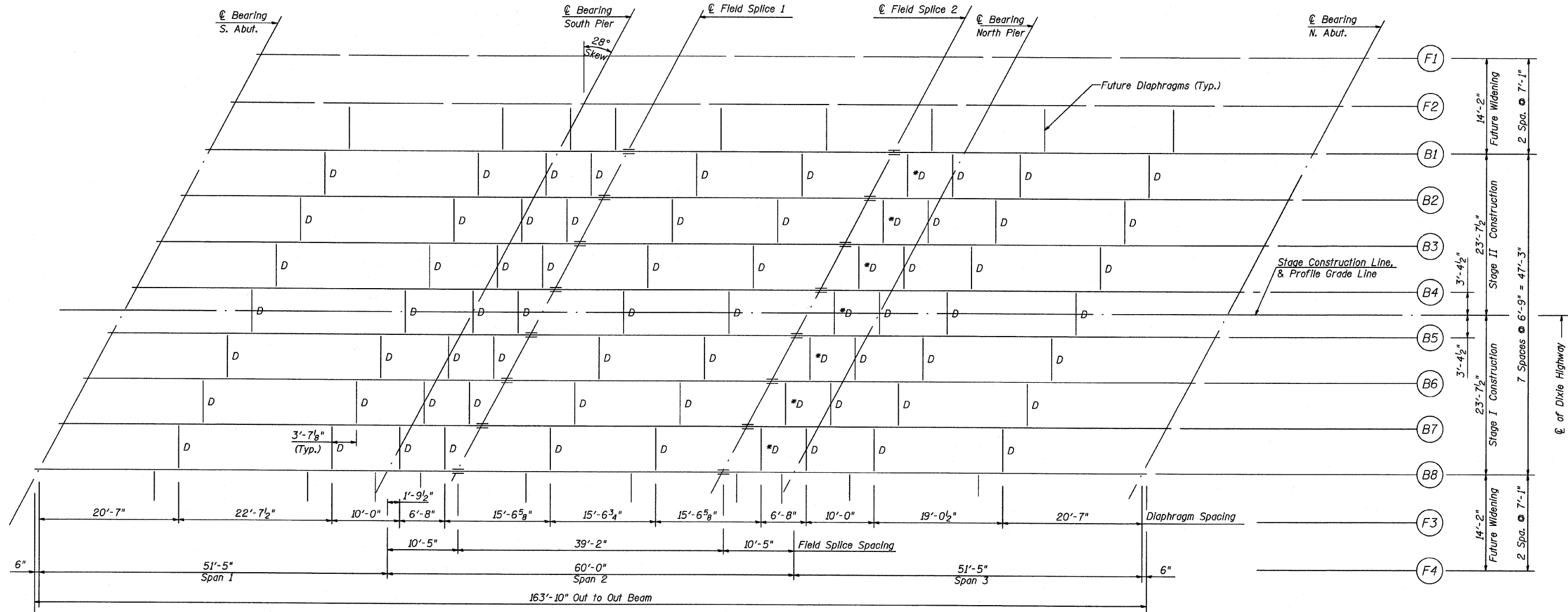
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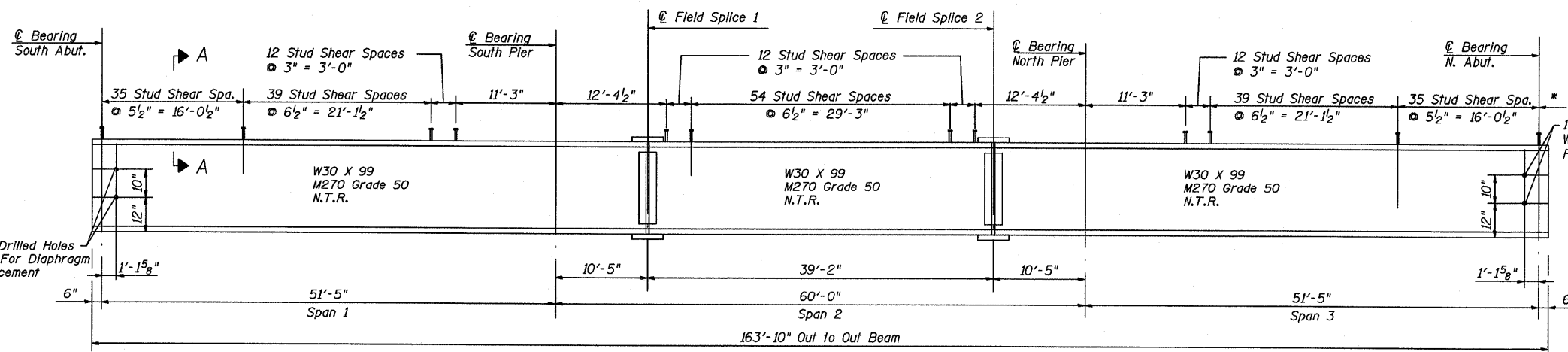
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	13
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT-		
			Sheet 11 of 22 Contract No. 60119	



FRAMING PLAN

*D - Place Diaphragms at Center of Higher Beam



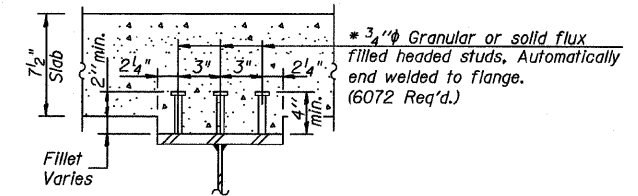
ELEVATION

Components designated "N.T.R." shall conform to the supplemental requirements for notch toughness, Zone 2.

All Steel Beams Shall be M270 Grade 50

Note:

D1 - Denotes Location of Future Diaphragms



SECTION A-A

* Shear studs shown in section A-A and spacing shown in Elevation are not part of this contract and are shown for information only.

REVISIONS	
NAME	DATE

FRAMING PLAN AND BEAM ELEVATION

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 7-10-09

DRAWN BY TH
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CHECKED BY MF

RME Rubinos & Mesia Engineers, Inc.

\$FILES \$DATE \$TIME \$PENTELS \$PLTDVMS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	14
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT-	
			Sheet 12 of 22 Contract No. 60119	

	0.4 Sp. 1	S. Pier	0.5 Sp. 2	N. Pier	0.6 Sp. 3
I_s (in ⁴)	3990	3990	3990	3990	3990
I_c (n) (in ⁴)	11961		11961		11961
I_c (3n) (in ⁴)	8864		8864		8864
S_s (in ³)	269	269	269	269	269
S_c (n) (in ³)	419		419		419
S_c (3n) (in ³)	378		378		378
Z (in ³)		312		312	
ϕ (k/ft.)	0.87	1.44	0.87	1.44	0.87
$M\phi$ (k)	169	404	124	404	169
$s\phi$ (k/ft.)	0.57		0.57		0.57
$Ms\phi$ (k)	127		121		127
$M\phi$ (k)	363	191	362	191	363
M (Imp) (k)	101	53	98	53	101
$S_3[M\phi + M(Imp)]$ (k)	773.3	406.7	766.7	406.7	773.3
M_a (k)	1390.1	1053.9	1315.2	1053.9	1390.1
M_u (k)	2062	1300	2073	1300	2062
$f_s\phi$ (non-comp) (k.s.i.)	7.5	18.0	5.5	18.0	7.5
$f_s\phi$ (comp) (k.s.i.)	4.0		3.8		4.0
$f_s S_3(\phi + Imp)$ (k.s.i.)	22.1	18.1	22.0	18.1	22.1
f_s (Overload) (k.s.i.)	33.6	36.1	31.3	36.1	33.6
f_s (Total) (k.s.i.)					
VR (k)	50.4		40.2		50.4

*Compact Braced Sections
**Non-Compact Section

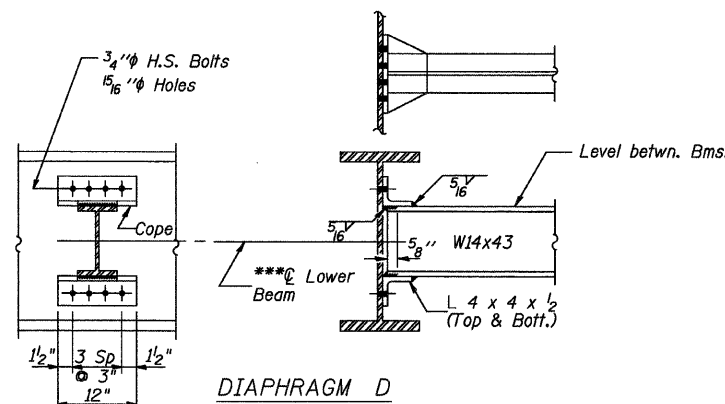
	S. Abut.	S. Pier	N. Pier	N. Abut.
$R\phi$ (k)	29.2	88.1	88.1	29.2
$R\phi$ (k)	36.7	42.8	42.8	36.7
Imp. (k)	10.3	12.0	12.0	10.3
R (Total) (k)	76.2	142.9	142.9	76.2

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (Total & Overload).
 I_c (n) and S_c (n) are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.
 I_c (3n) and S_c (3n) are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads.
 VR is the maximum Live Load + Impact shear within the composite portion of the span.
 Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.
 M_a (Applied Moment) = $1.3[M\phi + Ms\phi + S_3(M\phi + M(Imp))]$.
 The Plastic Moment capacity (M_u) is computed according to AASHTO 10.48.1 and 10.50.1.1.
 f_s (Overload) is the sum of the stresses due to $M\phi + Ms\phi + S_3(M\phi + M(Imp))$.
 f_s (Total) (Non-compact section) is the sum of the stresses due to $1.3[M\phi + Ms\phi + S_3(M\phi + M(Imp))]$.

TOP OF BEAM ELEVATIONS

For Fabrication Only

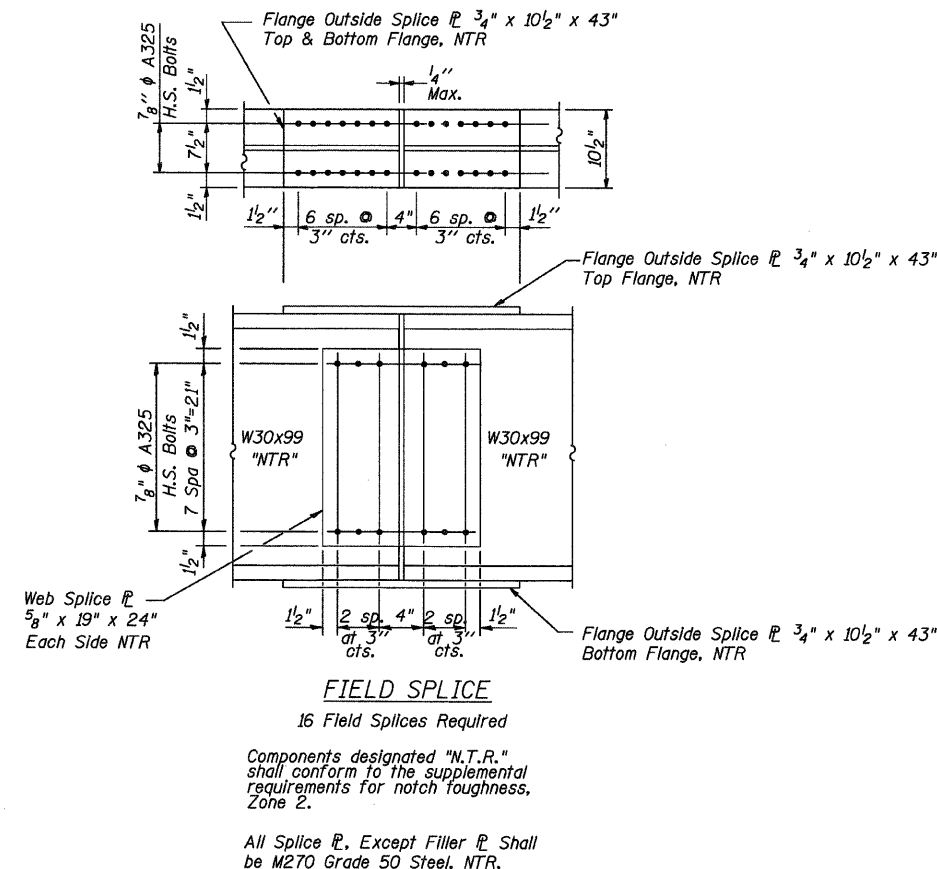
Location	Beam B1	Beam B2	Beam B3	Beam B4	Beam B5	Beam B6	Beam B7	Beam B8
⊕ Bearing South Abutment	643.438	643.263	643.088	642.911	642.734	642.557	642.378	642.199
⊕ South Pier	643.495	643.329	643.163	642.996	642.828	642.660	642.491	642.322
⊕ Field Splice 1	643.506	643.342	643.178	643.013	642.847	642.681	642.514	642.347
⊕ Field Splice 2	643.481	643.324	643.167	643.009	642.851	642.692	642.532	642.372
⊕ North Pier	643.456	643.301	643.146	642.990	642.834	642.677	642.519	642.361
⊕ Bearing North Abutment	643.333	643.188	643.043	642.896	642.749	642.602	642.453	642.304



DIAPHRAGM D
70 Required

***For Diaphragm Adjacent to Field Splice 2, Use ⊕ Higher Beam

Notes: Two hardened washers shall be required over all oversize holes
 For future diaphragm D1, apply 1 5/16 inch holes at location specified on Framing Plan.



FIELD SPLICE

16 Field Splices Required

Components designated "N.T.R." shall conform to the supplemental requirements for notch toughness, Zone 2.

All Splice ⊕, Except Filler ⊕ Shall be M270 Grade 50 Steel, NTR.

REVISIONS	
NAME	DATE

STEEL DETAILS &
TOP OF BEAM ELEVATIONS

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09

DRAWN BY TH
DESIGNED BY TH
CHECKED BY MF

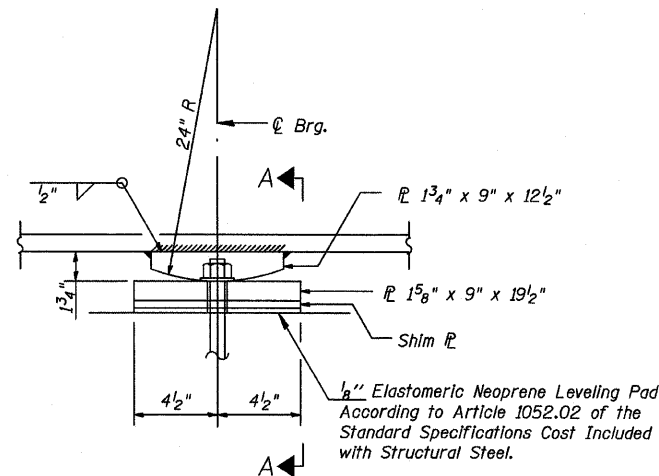


9PENTELS
P.L.DRVS

SHEET 14 of 22.dgn
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F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	15
FED. ROAD DIST. NO.	ILLINOIS	FED. RD. PROJECT		

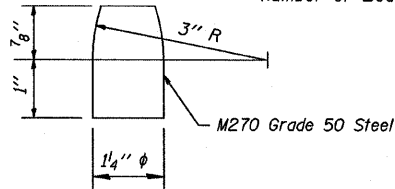
Sheet 13 of 22 Contract No. 60119



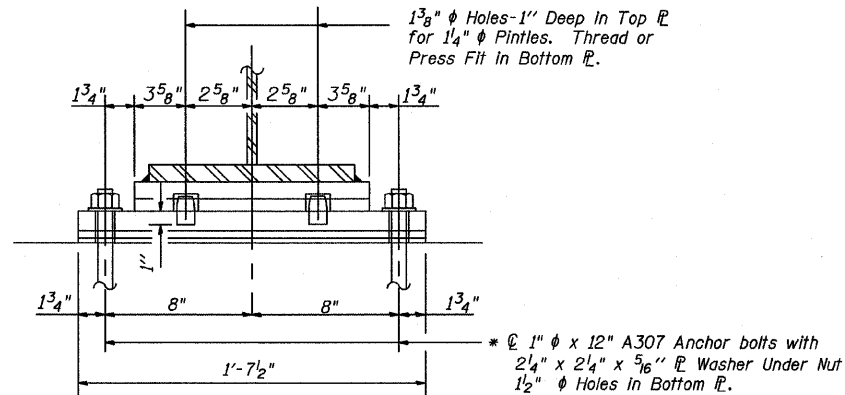
ELEVATION AT SOUTH PIER

FIXED BEARING

Number of Bearing Assemblies Required - 8



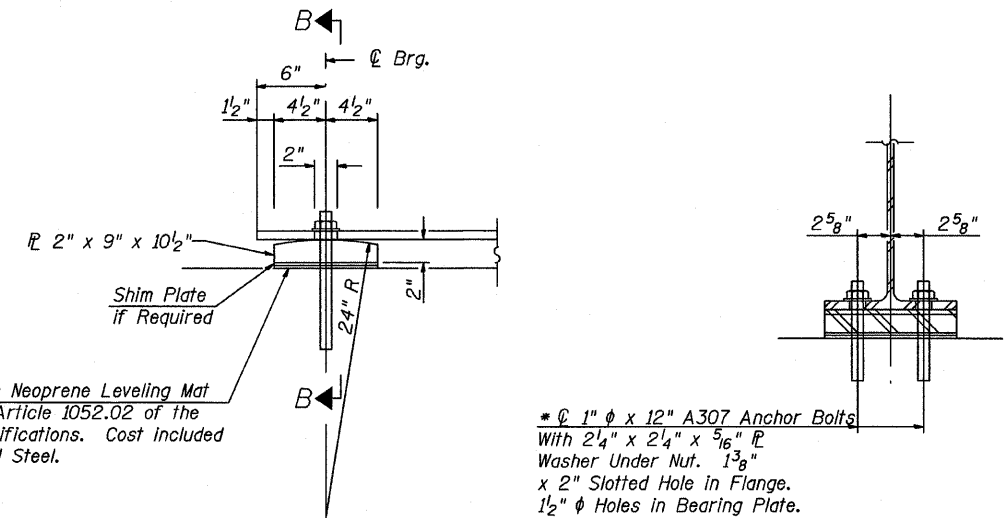
PINTLE



SECTION A-A

BEARINGS BILL OF MATERIALS

Item	Unit	Total
Anchor Bolts, 1"	Each	64

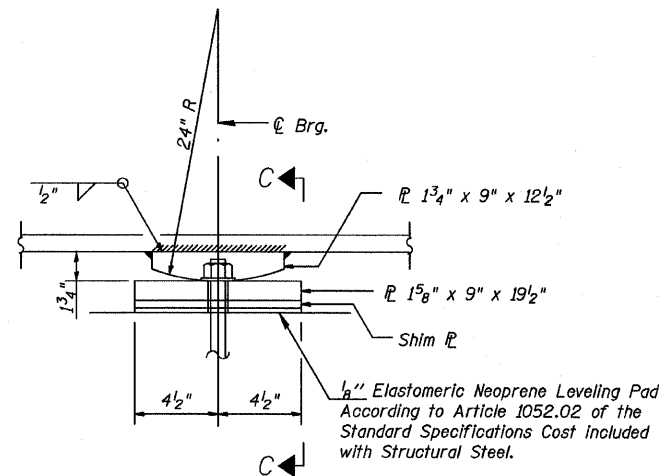


ELEVATION AT SOUTH ABUTMENT

FIXED BEARING

Number of Bearing Assemblies Required - 8

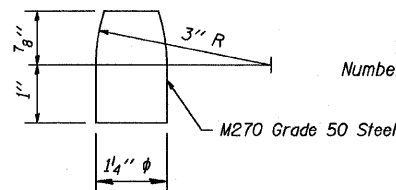
SECTION B-B



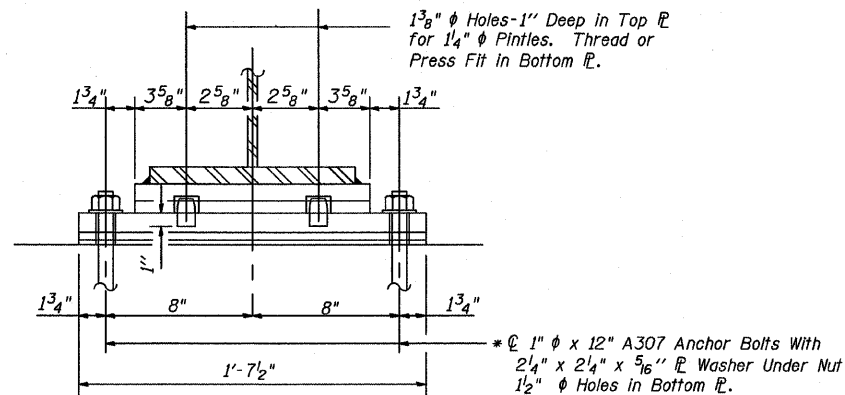
ELEVATION AT NORTH PIER

FIXED BEARING

Number of Bearing Assemblies Required - 8

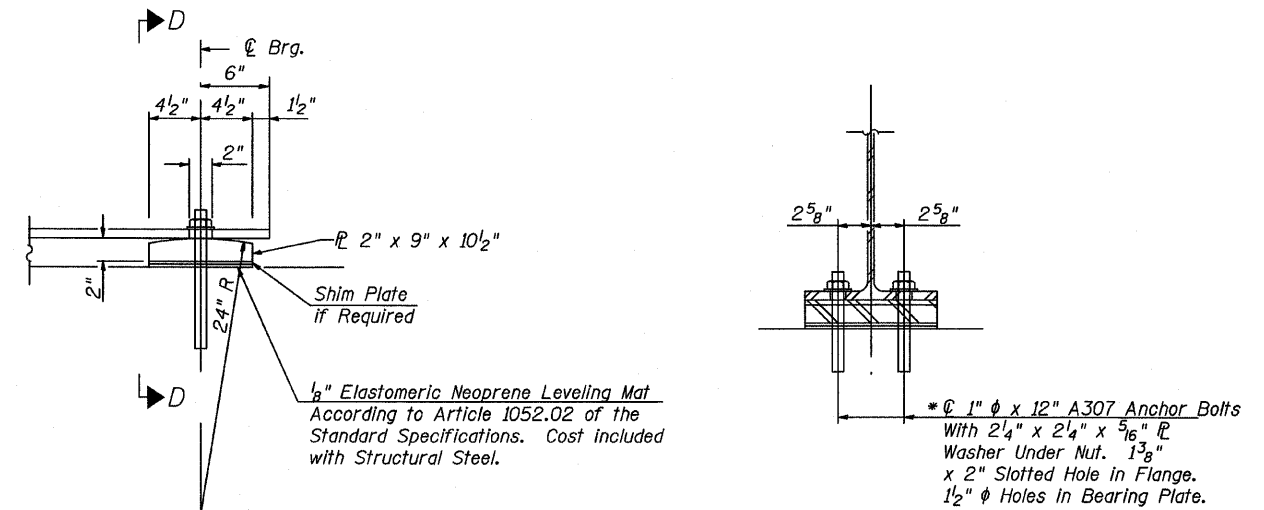


PINTLE



SECTION C-C

* Anchor bolts shown are not part of this contract and are shown for information only.



ELEVATION AT NORTH ABUTMENT

FIXED BEARING

Number of Bearing Assemblies Required - 8

SECTION D-D

Notes:
Anchor bolts at fixed bearings may be built into the Concrete Abutment.
See sheet 19 of 20 for Anchor Bolt Installation.

REVISIONS

NAME	DATE

BEARING DETAILS

DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 7-10-09

DRAWN BY TH
DESIGNED BY TH
CHECKED BY MF

RME Rubinos & Mesia Engineers, Inc.

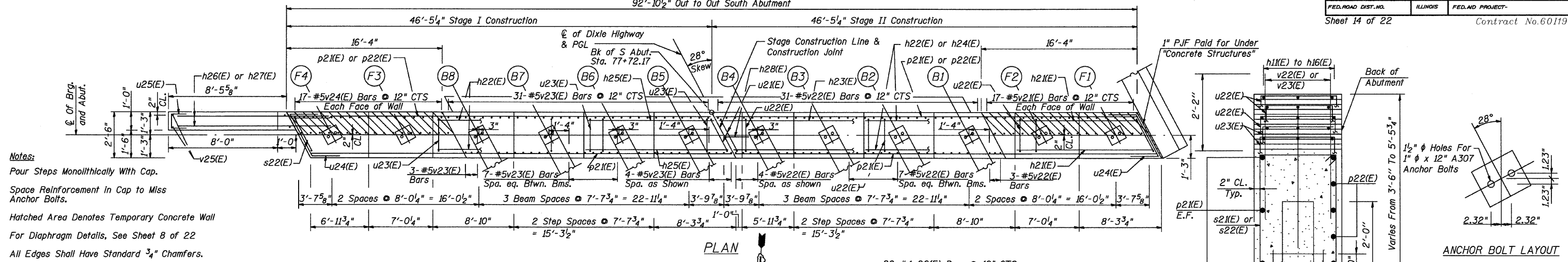
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PLDRV\$

*FILES\$
*DATE\$
*TIMES

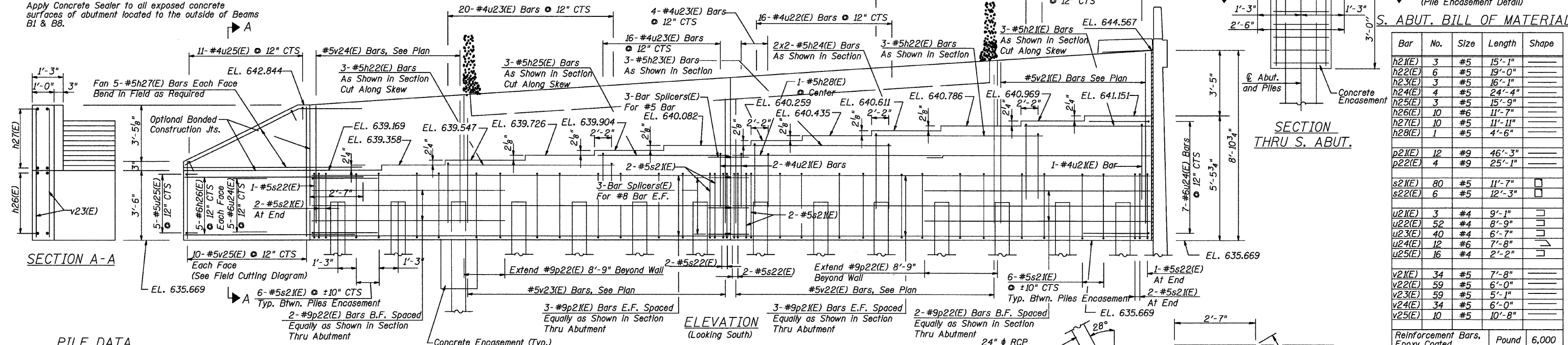
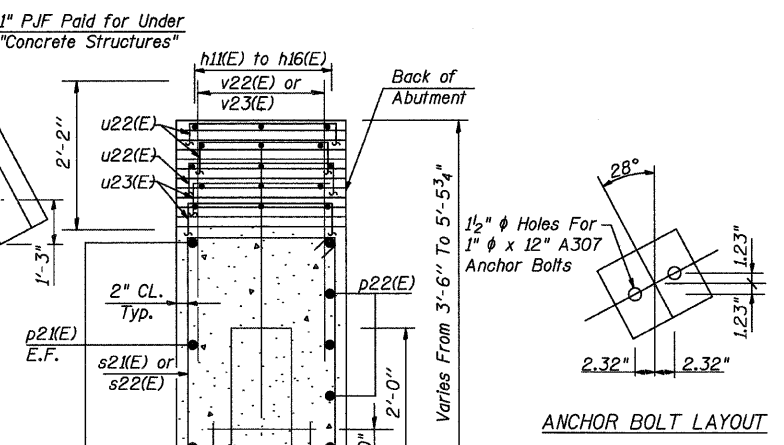
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	16
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		
			Sheet 14 of 22 Contract No. 60119	

92'-10 1/2" Out to Out South Abutment



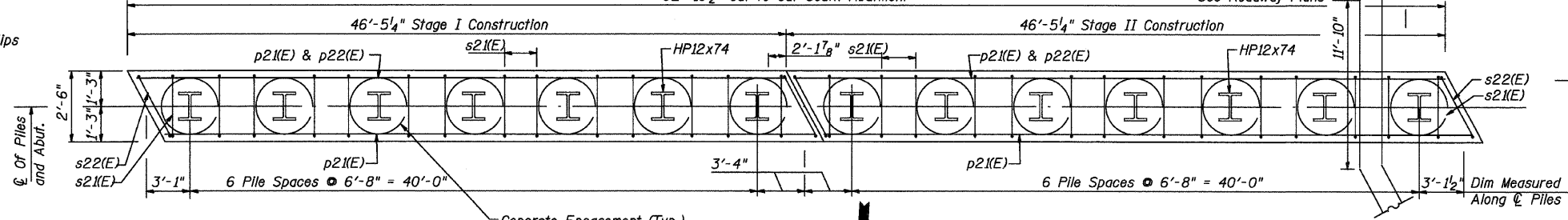
Notes:
 Pour Steps Monolithically With Cap.
 Space Reinforcement in Cap to Miss Anchor Bolts.
 Hatched Area Denotes Temporary Concrete Wall
 For Diaphragm Details, See Sheet 8 of 22
 All Edges Shall Have Standard 3/4" Chamfers.
 Bars Indicated Thus 2x2-#5 etc. Indicates 2 Lines of Bars With 2 Lengths Per Line.
 Apply Concrete Sealer to all exposed concrete surfaces of abutment located to the outside of Beams B1 & B8.



S. ABUT. BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h21(E)	3	#5	15'-1"	
h22(E)	6	#5	19'-0"	
h23(E)	3	#5	16'-1"	
h24(E)	4	#5	24'-4"	
h25(E)	3	#5	15'-7"	
h26(E)	10	#6	11'-7"	
h27(E)	10	#5	11'-11"	
h28(E)	1	#5	4'-6"	
p21(E)	12	#9	46'-3"	
p22(E)	4	#9	25'-1"	
s21(E)	80	#5	11'-7"	
s22(E)	6	#5	12'-3"	
u21(E)	3	#4	9'-1"	
u22(E)	52	#4	8'-9"	
u23(E)	40	#4	6'-7"	
u24(E)	12	#6	7'-8"	
u25(E)	16	#4	2'-2"	
v21(E)	34	#5	7'-8"	
v22(E)	59	#5	6'-0"	
v23(E)	59	#5	5'-1"	
v24(E)	34	#5	6'-0"	
v25(E)	10	#5	10'-8"	

PILE DATA
 Type: HP12x74
 Nominal Required Bearing: 589 Kips
 Allowable Resistance Available: 196 Kips
 Est. Total Length: 45'-0"
 No. Required: 13 + 1 Test Pile
 Negative Skin Friction: 30 Kips/Pile
 Provide Pile Shoes for all Piles



LEGEND
 [Hatched Box] Indicates Temporary Wall
 B.F. Indicates Back Face of Abutment
 E.F. Indicates Each Face of Abutment

REVISIONS	
NAME	DATE

SOUTH ABUTMENT

DIXIE HIGHWAY OVER
 BUTTERFIELD CREEK
 F.A.U. ROUTE 2843 SECTION 3249B-F
 STA. 78+55.00
 COOK COUNTY
 STRUCTURE NUMBER 016-7946 - PROPOSED
 016-0775 - EXISTING

SCALE: NOT-TO-SCALE
 DATE 4-27-09
 DRAWN BY TH
 DESIGNED BY TH
 CHECKED BY MF



FOR INFORMATION ONLY

SHEET 14 of 22 6/18/2009 03:54:49 AM

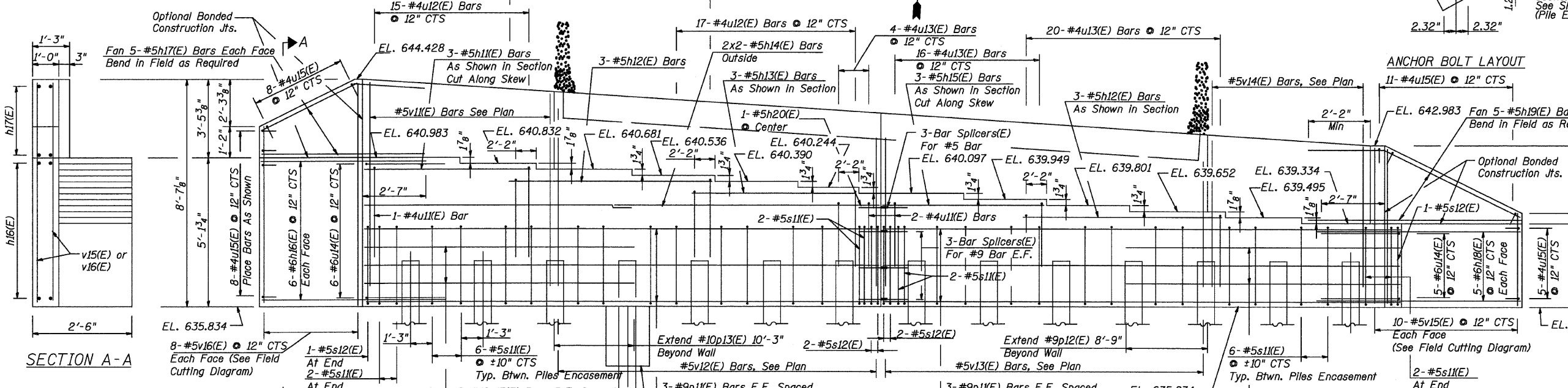
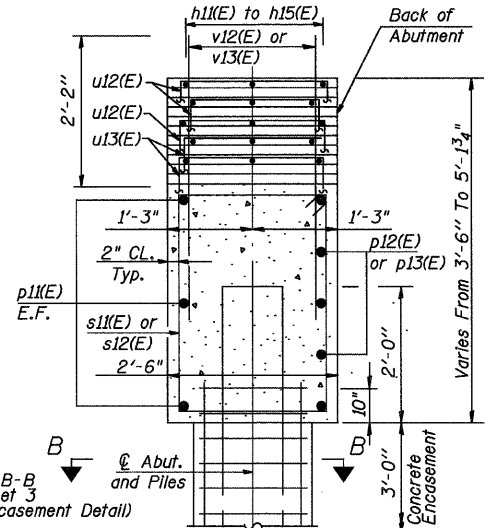
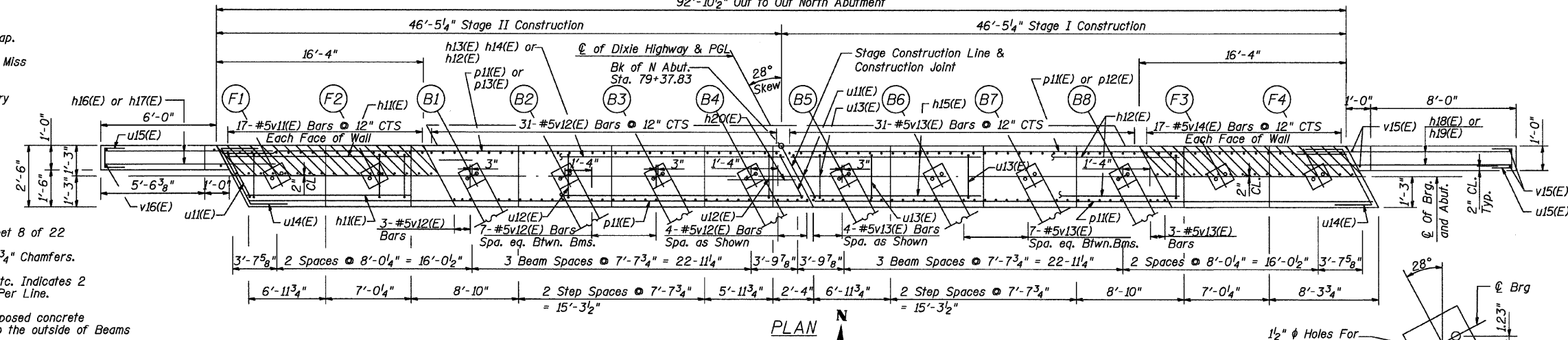
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	17

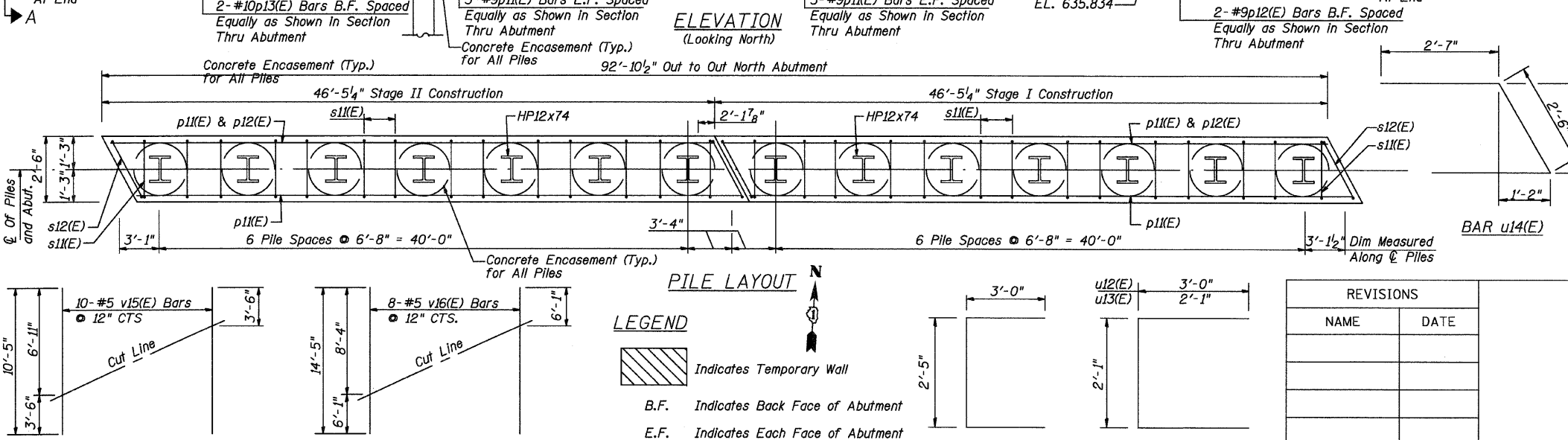
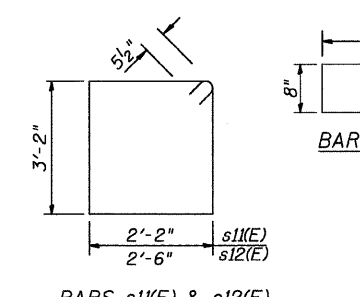
92'-10 1/2" Out to Out North Abutment

Notes:
 Pour Steps Monolithically With Cap.
 Space Reinforcement in Cap to Miss Anchor Bolts.
 Hatched Area Denotes Temporary Concrete Wall

For Diaphragm Details, See Sheet 8 of 22
 All Edges Shall Have Standard 3/4" Chamfers.
 Bars Indicated Thus 2x2-#5 etc. Indicates 2 Lines of Bars With 2 Lengths Per Line.
 Apply Concrete Sealer to all exposed concrete surfaces of abutment located to the outside of Beams B1 & B8.

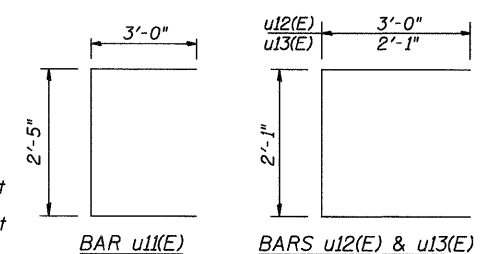


PILE DATA
 Type: HP12x74
 Nominal Required Bearing: 589 Kips
 Allowable Resistance Available: 196 Kips
 Est. Total Length: 45'-0"
 No. Required: 13 + 1 Test Pile
 Negative Skin Friction: 30 Kips/Pile
 Provide Pile Shoes for all Piles



FIELD CUTTING DIAGRAM
 Order v15(E) Full Length, Cut as Shown and Use Remainder of Bars in Opposite Face.
FIELD CUTTING DIAGRAM
 Order v16(E) Full Length, Cut as Shown and Use Remainder of Bars in Opposite Face.

LEGEND
 [Hatched Area] Indicates Temporary Wall
 B.F. Indicates Back Face of Abutment
 E.F. Indicates Each Face of Abutment



ANCHOR BOLT LAYOUT

SECTION THRU N. ABUT. N. ABUT. BILL OF MATERIAL

Bar No.	Size	Length	Shape
h11(E)	3	#5	15'-1"
h12(E)	6	#5	18'-8"
h13(E)	3	#5	15'-10"
h14(E)	4	#5	24'-4"
h15(E)	3	#5	15'-9"
h16(E)	12	#6	9'-1"
h17(E)	10	#5	9'-1"
h18(E)	10	#6	11'-7"
h19(E)	10	#5	11'-10"
h20(E)	1	#5	4'-6"
p11(E)	12	#9	46'-3"
p12(E)	2	#9	25'-1"
p13(E)	2	#10	26'-7"
s11(E)	80	#5	11'-7"
s12(E)	6	#5	12'-3"
u11(E)	3	#4	8'-5"
u12(E)	52	#4	8'-1"
u13(E)	40	#4	6'-3"
u14(E)	11	#6	7'-8"
u15(E)	32	#4	2'-2"
v11(E)	34	#5	7'-4"
v12(E)	59	#5	6'-0"
v13(E)	59	#5	5'-1"
v14(E)	34	#5	6'-0"
v15(E)	10	#5	10'-5"
v16(E)	8	#5	14'-5"
Reinforcement Bars, Epoxy Coated	Pound	6,300	
Concrete Structures	Cu. Yds.	42	
Bar Splicers	Each	9	
Furnishing Steel Piles HP12x74	Foot	590	
Driving Piles	Foot	590	
Test Pile Steel, HP12x74	Each	1	
Pile Shoes	Each	13	
Structure Excavation	Cu. Yd.	15	
Concrete Sealer	Sq. Ft.	520	
Concrete Encasement	Cu. Yds.	5	

NORTH ABUTMENT
 DIXIE HIGHWAY OVER BUTTERFIELD CREEK
 F.A.U. ROUTE 2843 SECTION 3249B-F
 STA. 78+55.00
 COOK COUNTY
 STRUCTURE NUMBER 016-7946 - PROPOSED
 016-0775 - EXISTING

SCALE: NOT-TO-SCALE
 DATE 4-27-09

DRAWN BY TH
 DESIGNED BY TH
 CHECKED BY MF

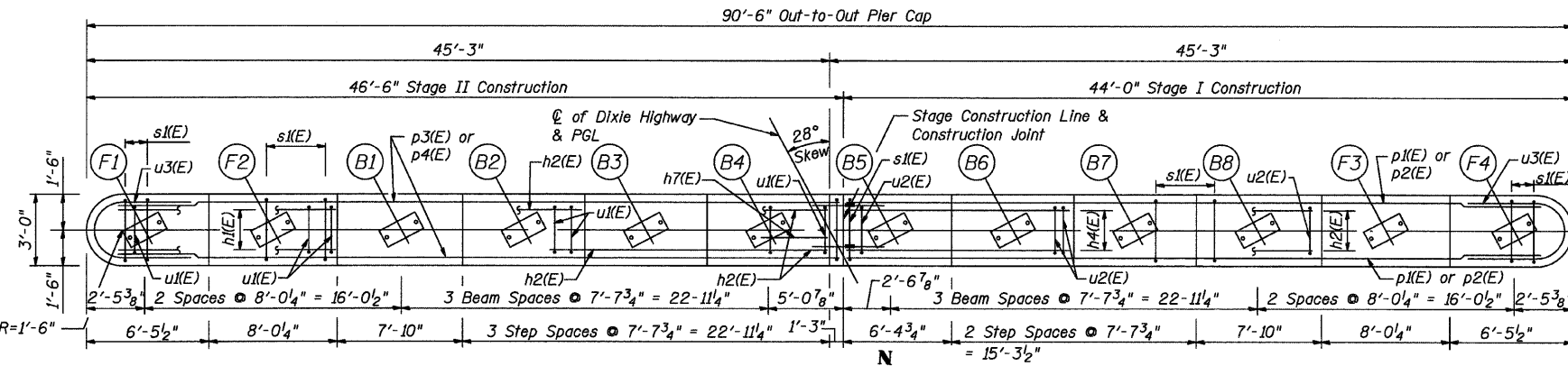
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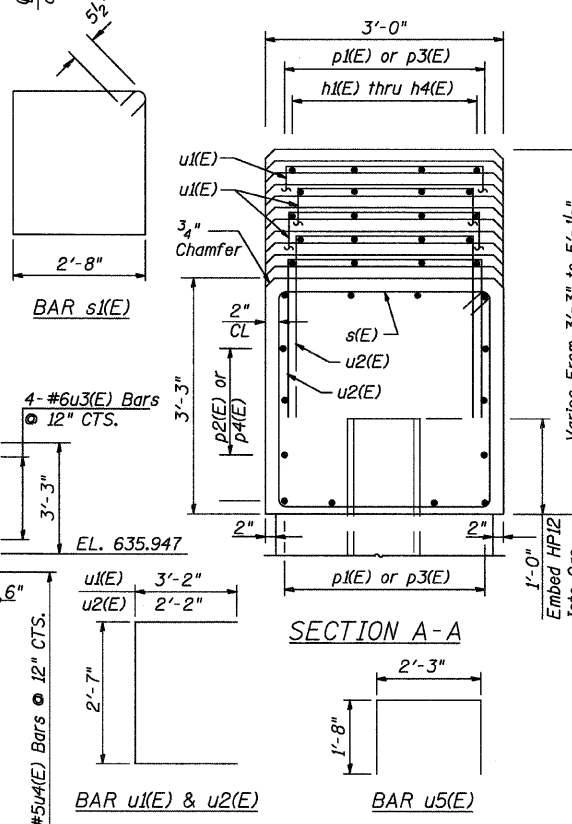
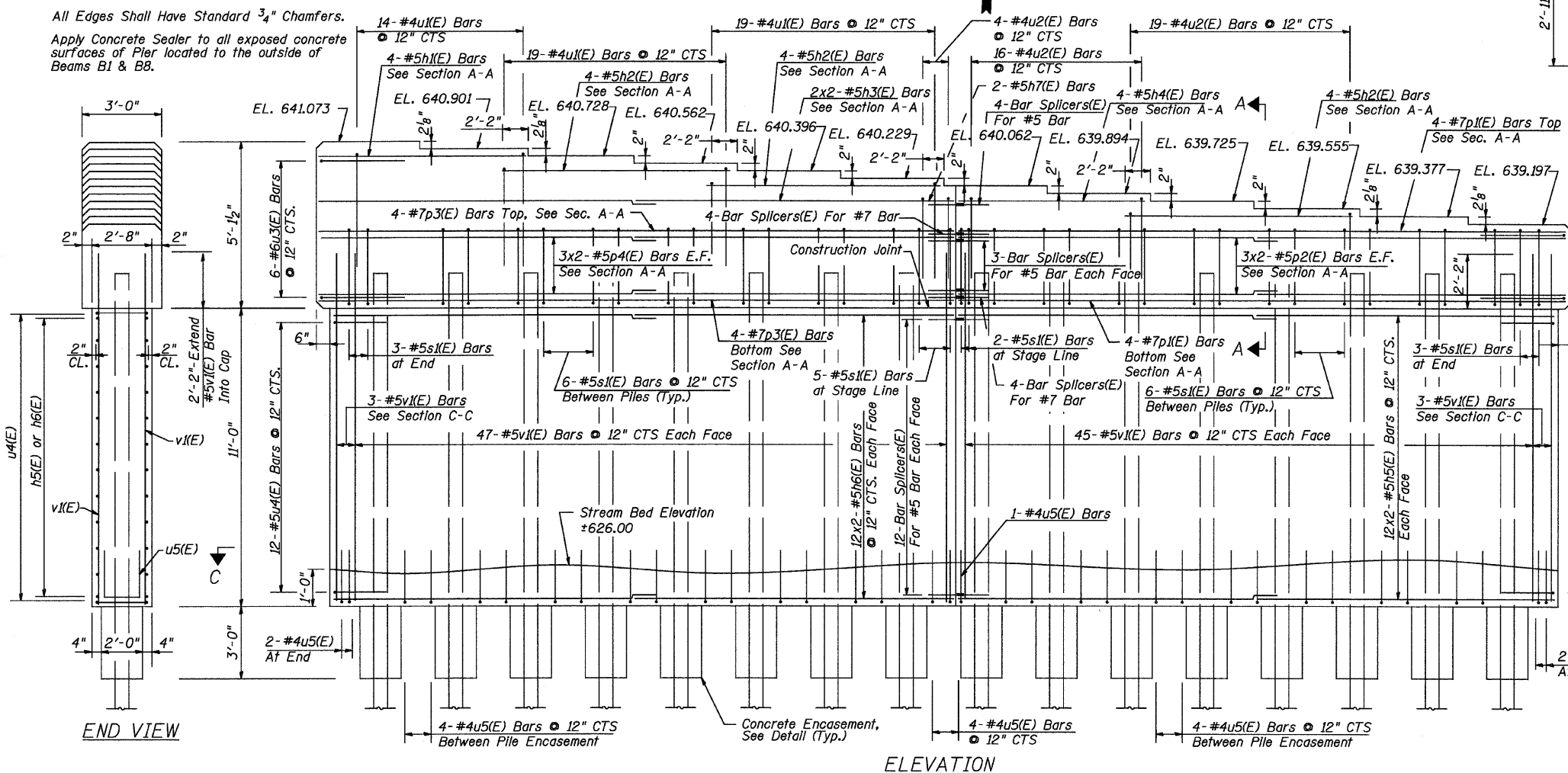
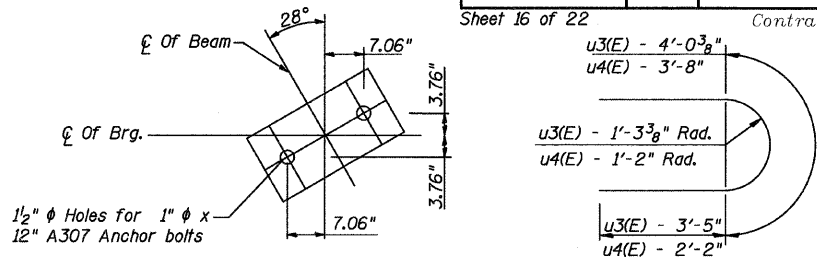
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	18

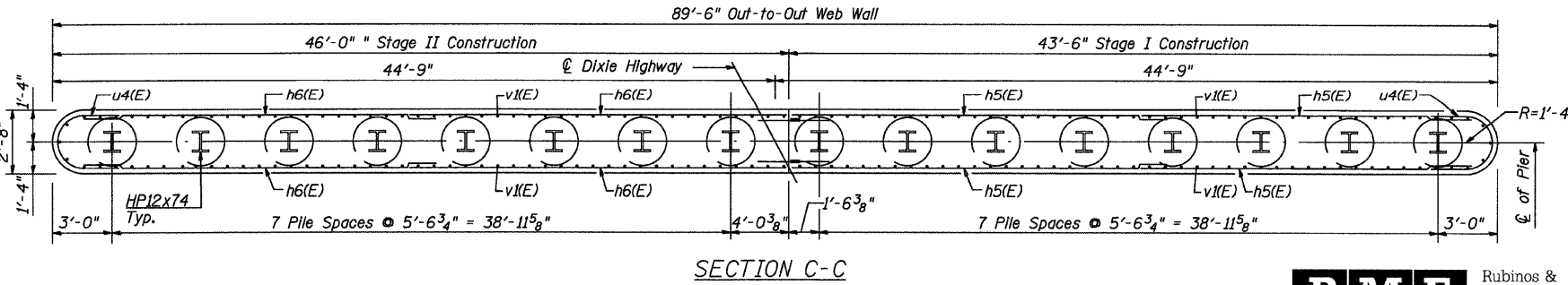
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-
Sheet 16 of 22 Contract No. 60119



Notes:
Space Reinforcement in Cap to Miss Anchor Bolts.
Four steps Monolithically With Cap.
Bars Indicated Thus 4 x 2-#5 etc. Indicates 4 Lines of Bars With 2 Lengths Per Line
All Edges Shall Have Standard 3/4" Chamfers.
Apply Concrete Sealer to all exposed concrete surfaces of Pier located to the outside of Beams B1 & B8.



PILE DATA
Type: HP12x74
Nominal Required Bearing: 589 Kips
Allowable Resistance Available: 196 Kips
Est. Total Length: 45'-0"
No. Required: 15 + 1 Test Pile
Negative Skin Friction: 30 Kips/Pile
Provide Pile Shoes for all Piles



REVISIONS	
NAME	DATE

SOUTH PIER
DIXIE HIGHWAY OVER BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING
SCALE: NOT-TO-SCALE
DATE 4-27-09
DRAWN BY TH
DESIGNED BY TH
CHECKED BY MF

RME Rubinos & Mesia Engineers, Inc.

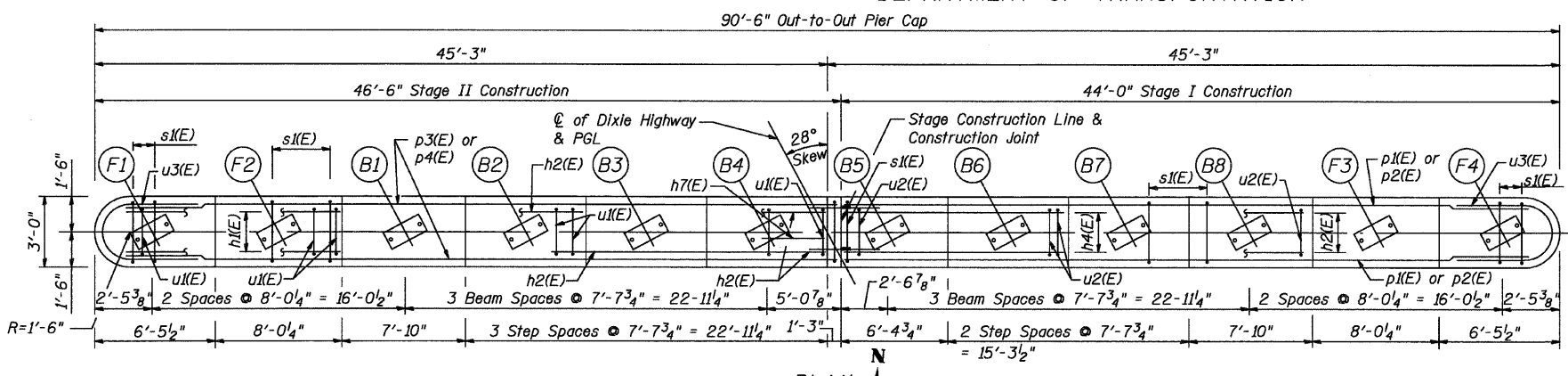
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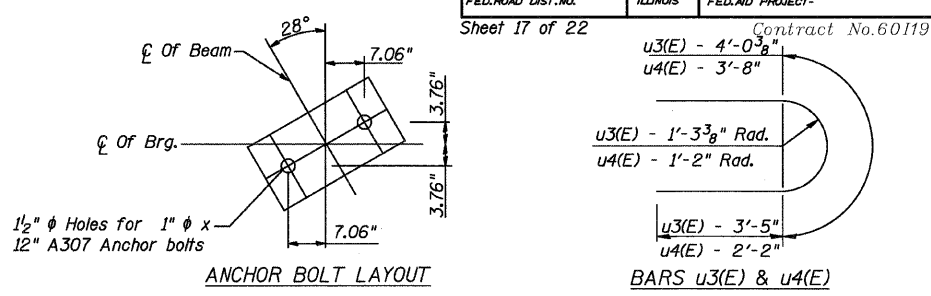
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	19

FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-
Sheet 17 of 22 Contract No. 60119



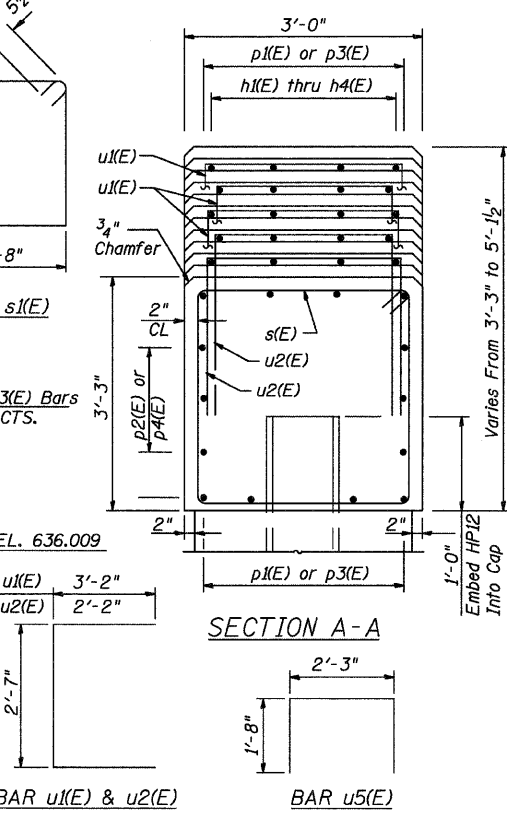
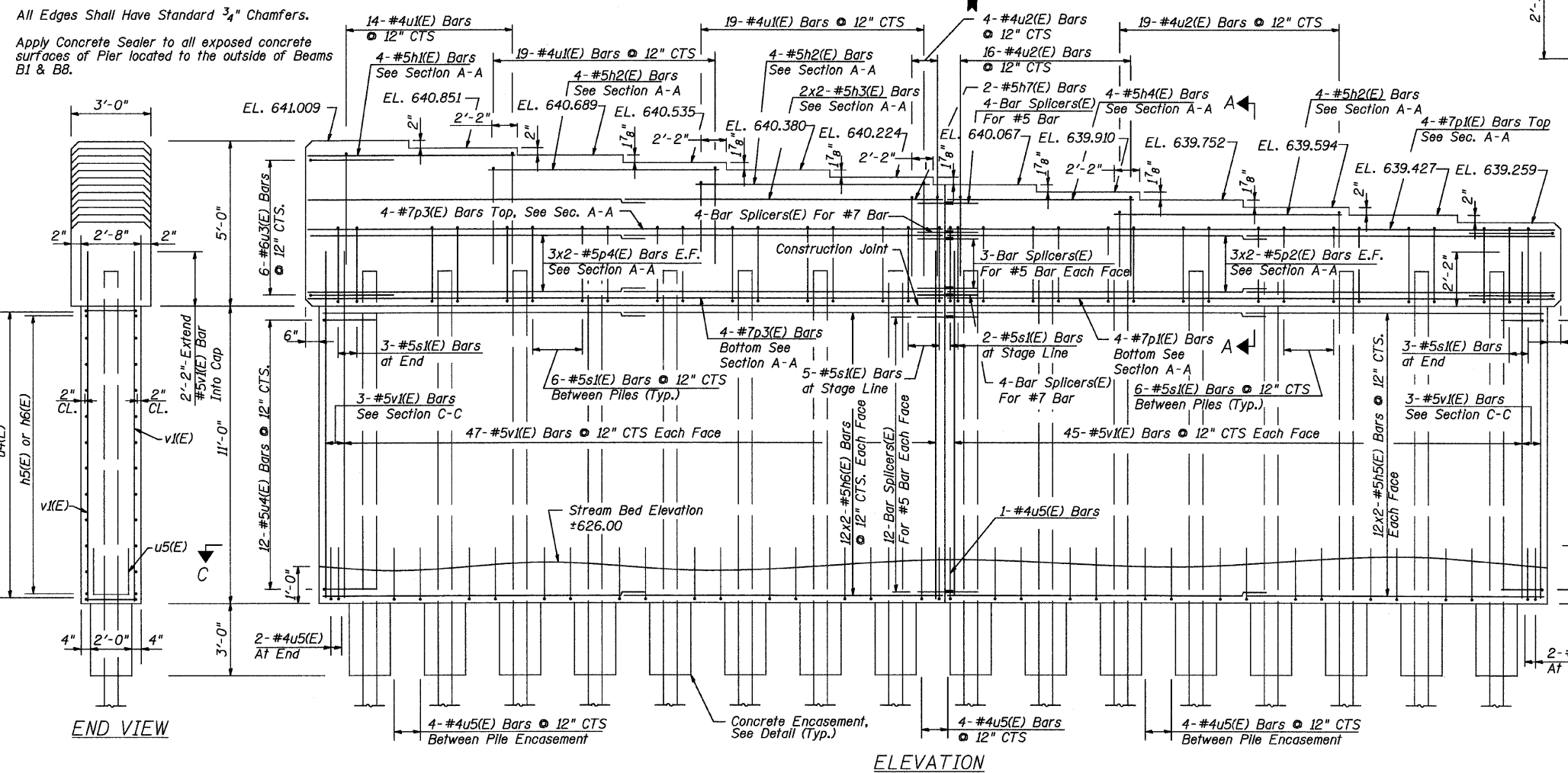
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All Edges Shall Have Standard 3/4" Chamfers.
Apply Concrete Sealer to all exposed concrete surfaces of Pier located to the outside of Beams B1 & B8.



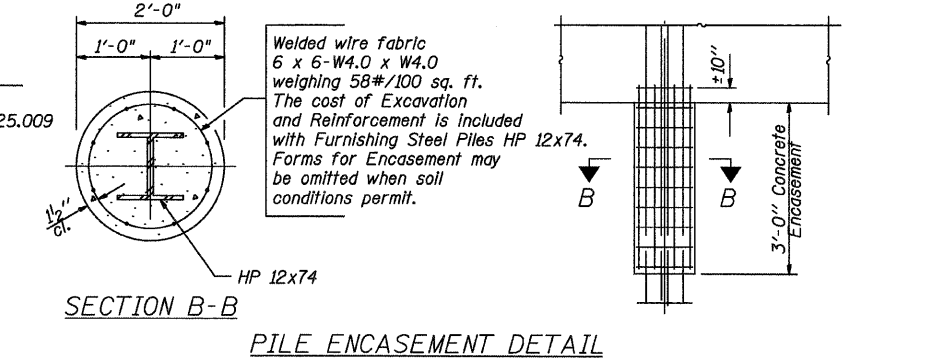
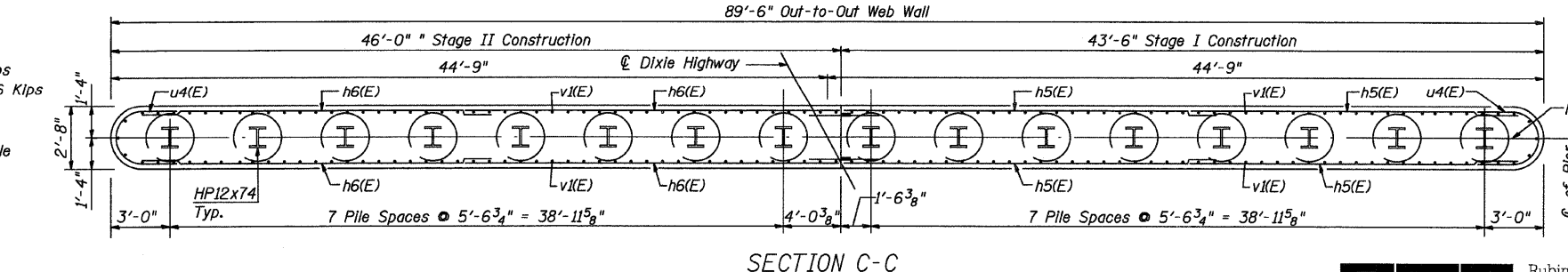
NORTH PIER
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h1(E)	4	#5	12'-10"	
h2(E)	12	#5	17'-9"	
h3(E)	4	#5	23'-7"	
h4(E)	4	#5	13'-10"	
h5(E)	48	#5	22'-9"	
h6(E)	48	#5	24'-0"	
h7(E)	2	#5	4'-0"	
p1(E)	8	#7	42'-5"	
p2(E)	12	#5	22'-4"	
p3(E)	8	#7	44'-11"	
p4(E)	12	#5	23'-7"	
s(E)	97	#5	12'-1"	
u1(E)	52	#4	8'-11"	
u2(E)	39	#4	6'-11"	
u3(E)	10	#6	10'-10"	
u4(E)	24	#5	8'-0"	
u5(E)	65	#4	5'-7"	
v(E)	190	#5	13'-2"	

Material	Unit	Quantity
Reinforcement Bars, Epoxy Coated	Pound	9,720
Concrete Structures	Cu. Yd.	140
Bar Splicers	Each	42
Furnishing Steel Piles HP12x74	Foot	680
Driving Piles	Foot	680
Test Pile Steel, HP12x74	Each	1
Pile Shoes	Each	15
Structure Excavation	Cu. Yd.	25
Concrete Encasement	Cu. Yd.	5
Concrete Sealer	Sq. Ft.	1,240



PILE DATA
Type: HP12x74
Nominal Required Bearing: 589 Kips
Allowable Resistance Available: 196 Kips
Est. Total Length: 45'-0"
No. Required: 15 + 1 Test Pile
Negative Skin Friction: 30 Kips/Pile
Provide Pile Shoes for all Piles



REVISIONS	
NAME	DATE

NORTH PIER
DIXIE HIGHWAY OVER BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
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STRUCTURE NUMBER 016-7946 - PROPOSED
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CHECKED BY MF



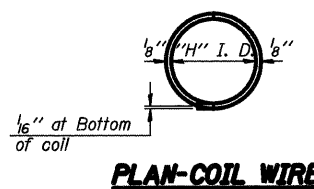
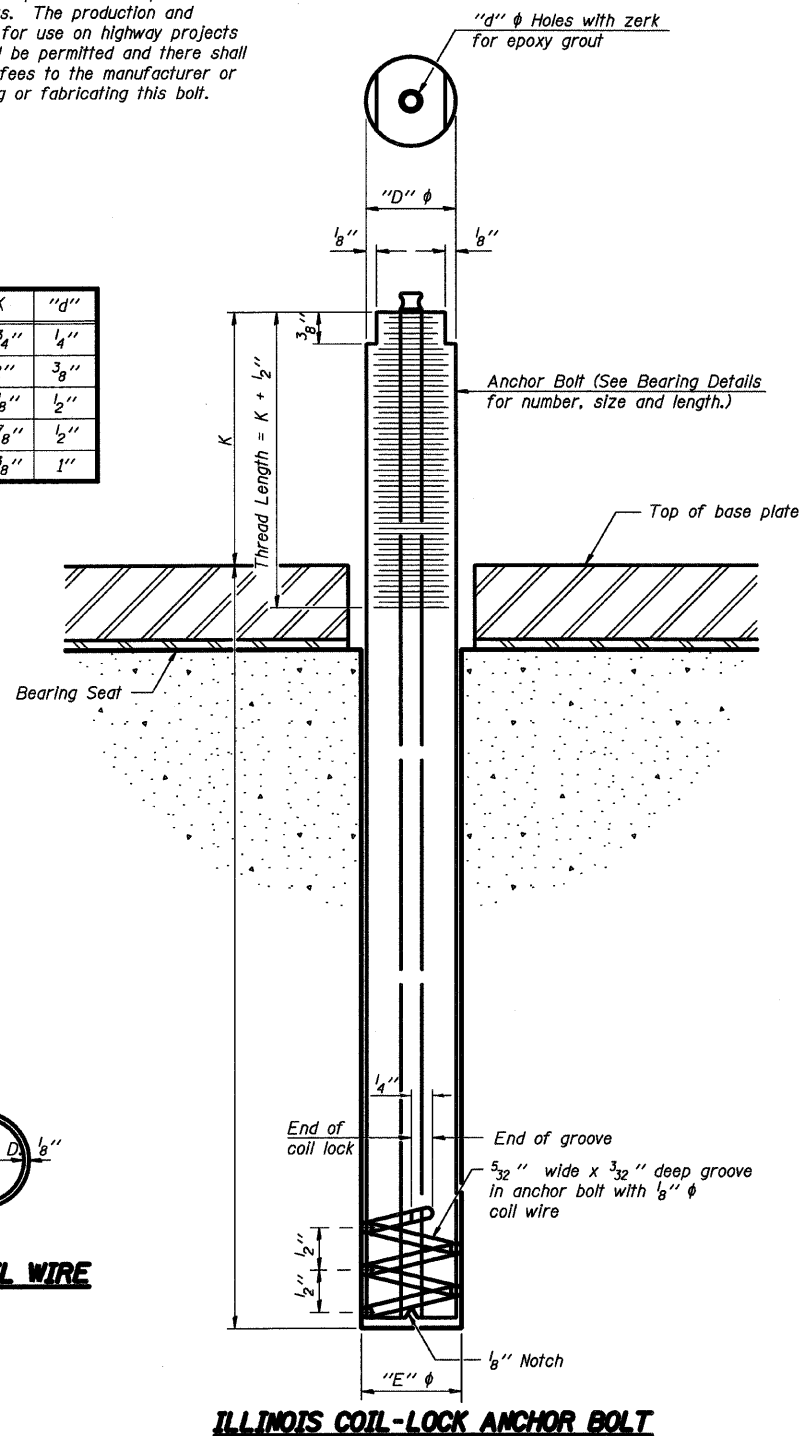
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F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	20
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	
Sheet 19 of 22			Contract No. 60119	

The Illinois Coil-Lock Anchor Bolt is a proprietary item which is the property of the Illinois Department of Transportation. Use, reproduction or disclosure without express written permission is prohibited and protected under Federal copyright laws. The production and the fabrication of this bolt for use on highway projects in the State of Illinois shall be permitted and there shall be no incurred charges or fees to the manufacturer or the fabricator for producing or fabricating this bolt.

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



MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT

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

INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

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

ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures.
The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:
1. A threaded rod stud with nut and washer of the type specified.
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

Location	Type
S. Abut.	A307
S. Pier	A307
N. Pier	A307
N. Abut.	A307

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

GENERAL NOTES

Holes in the masonry for anchor bolts shall be drilled through the base plates to the diameter and depth shown or according to the manufacturer's recommendation after beams or girders have been erected and adjusted.
Prior to setting the bolts, the holes shall be dry and all dust and loose particles shall be removed by the use of compressed air or vacuuming.

REVISIONS		ANCHOR BOLT DETAILS FOR BEARINGS
NAME	DATE	
		DIXIE HIGHWAY OVER BUTTERFIELD CREEK F.A.U. ROUTE 2843 SECTION 3249B-F STA. 78+55.00 COOK COUNTY STRUCTURE NUMBER 016-7946 - PROPOSED 016-0775 - EXISTING SCALE: NOT-TO-SCALE DATE 4-27-09 DRAWN BY TH DESIGNED BY TH CHECKED BY MF

RME Rubinos & Mesia Engineers, Inc.

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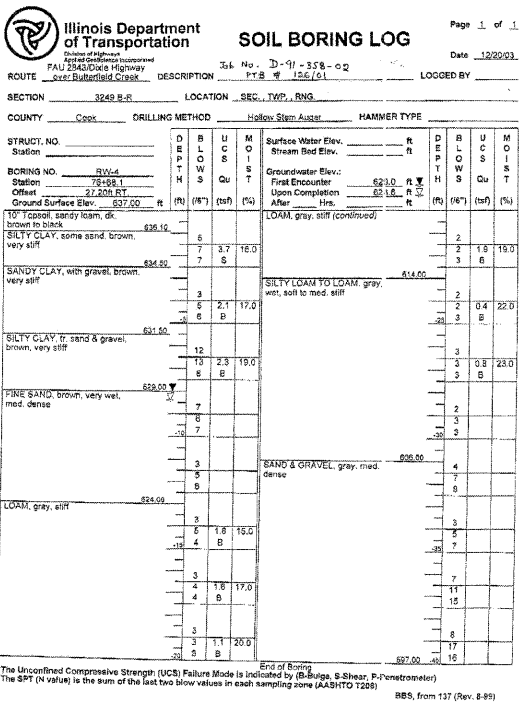
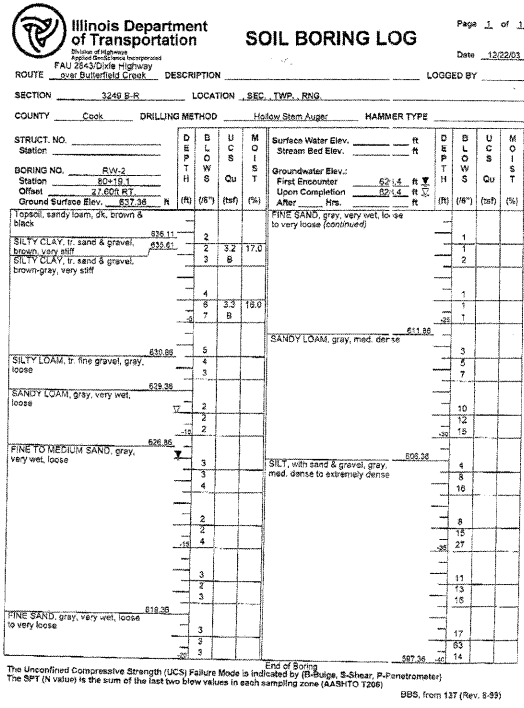
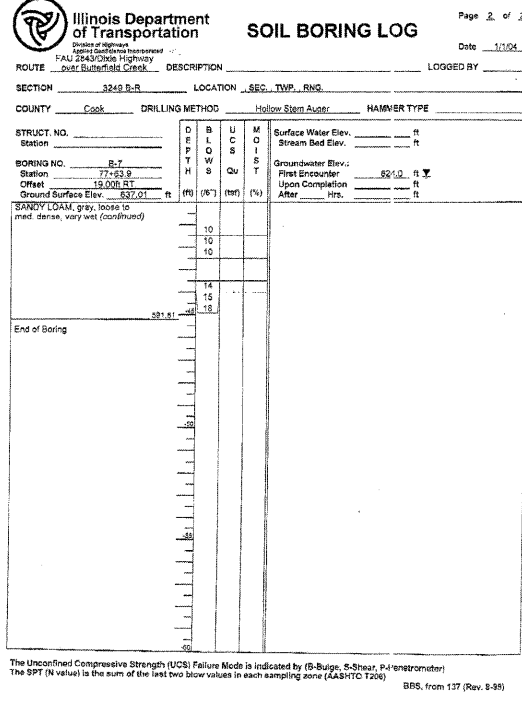
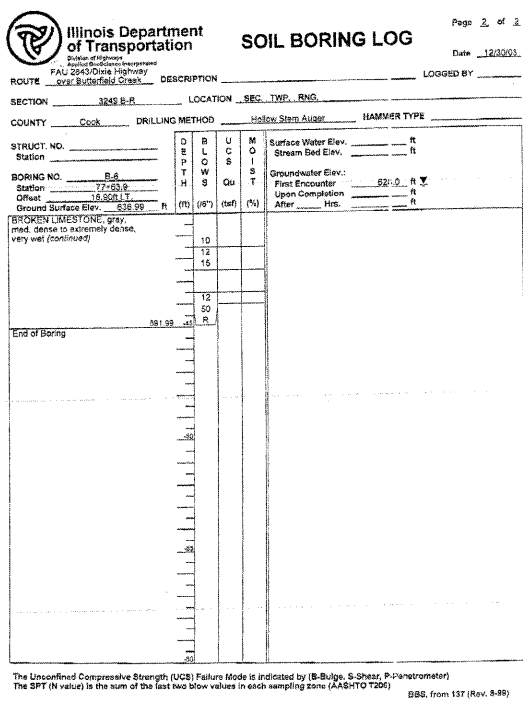
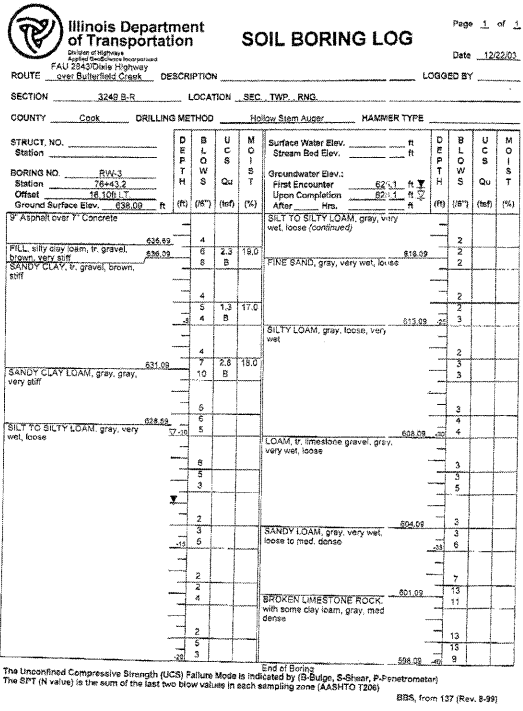
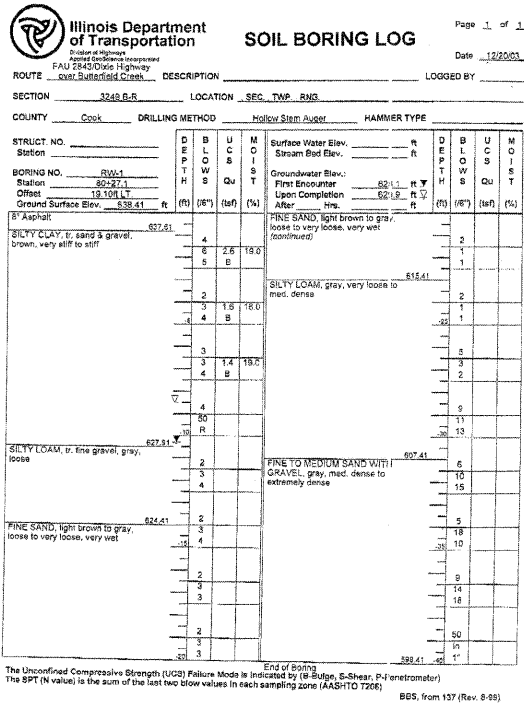
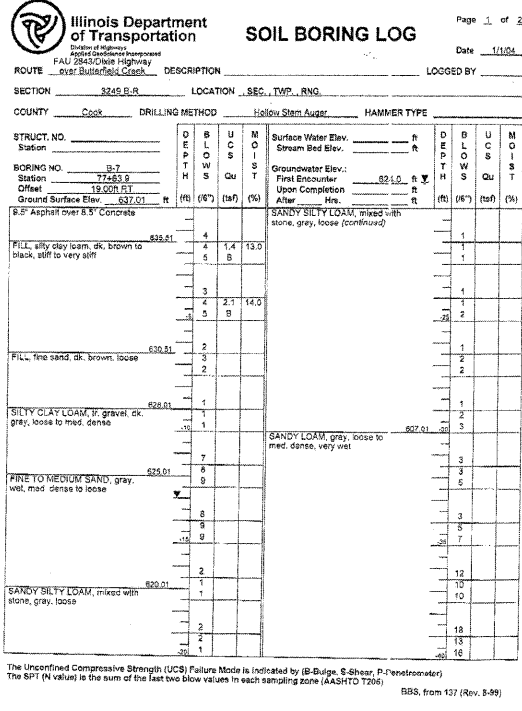
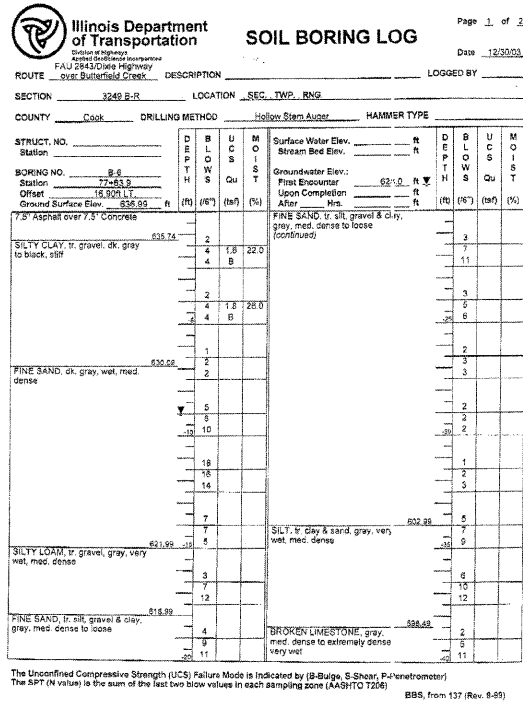
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	22

FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT-
Sheet 22 of 22 Contract No. 60119



REVISIONS	
NAME	DATE

SOIL BORINGS
DIXIE HIGHWAY OVER
BUTTERFIELD CREEK
F.A.U. ROUTE 2843 SECTION 3249B-F
STA. 78+55.00
COOK COUNTY
STRUCTURE NUMBER 016-7946 - PROPOSED
016-0775 - EXISTING

SCALE: NOT-TO-SCALE
DATE 4-27-09
DRAWN BY TH
DESIGNED BY TH
CHECKED BY MF

FOR INFORMATION ONLY



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