STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

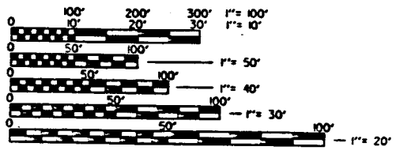
PLANS FOR PROPOSED FEDERAL AID HIGHWAY

FA RTE	SECTION	COUNTIES	TOTAL SHEETS	SHEET NO.
FA-426	P	KANE & COOK	209	1

P-91-356-86

*(8R & 8R-1)RS-1, 7Y-V-I-1, 8R-HB(4,5,6,7)BY, 8RB(I & 1-BY)86

FOR INDEX OF SHEETS, SEE SHEET NO. 2



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.

SCALES
- PLAN 1"= 50'
- PROFILE HORIZ. 1"= 50'
- PROFILE VERT. 1"= 5'
- CROSS SECTIONS
  - HORIZ 1"= 10'
  - VERT. 1"= 5'

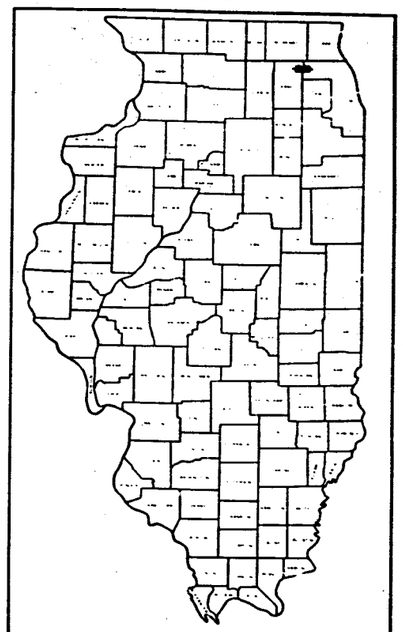
F.A. ROUTE 426 (U.S. 20)

SECTION (8R & 8R-1)RS-1; 7Y-V-I-1; 8R-HB(4,5,6,7)BY; 8RB(I & 1-BY)86

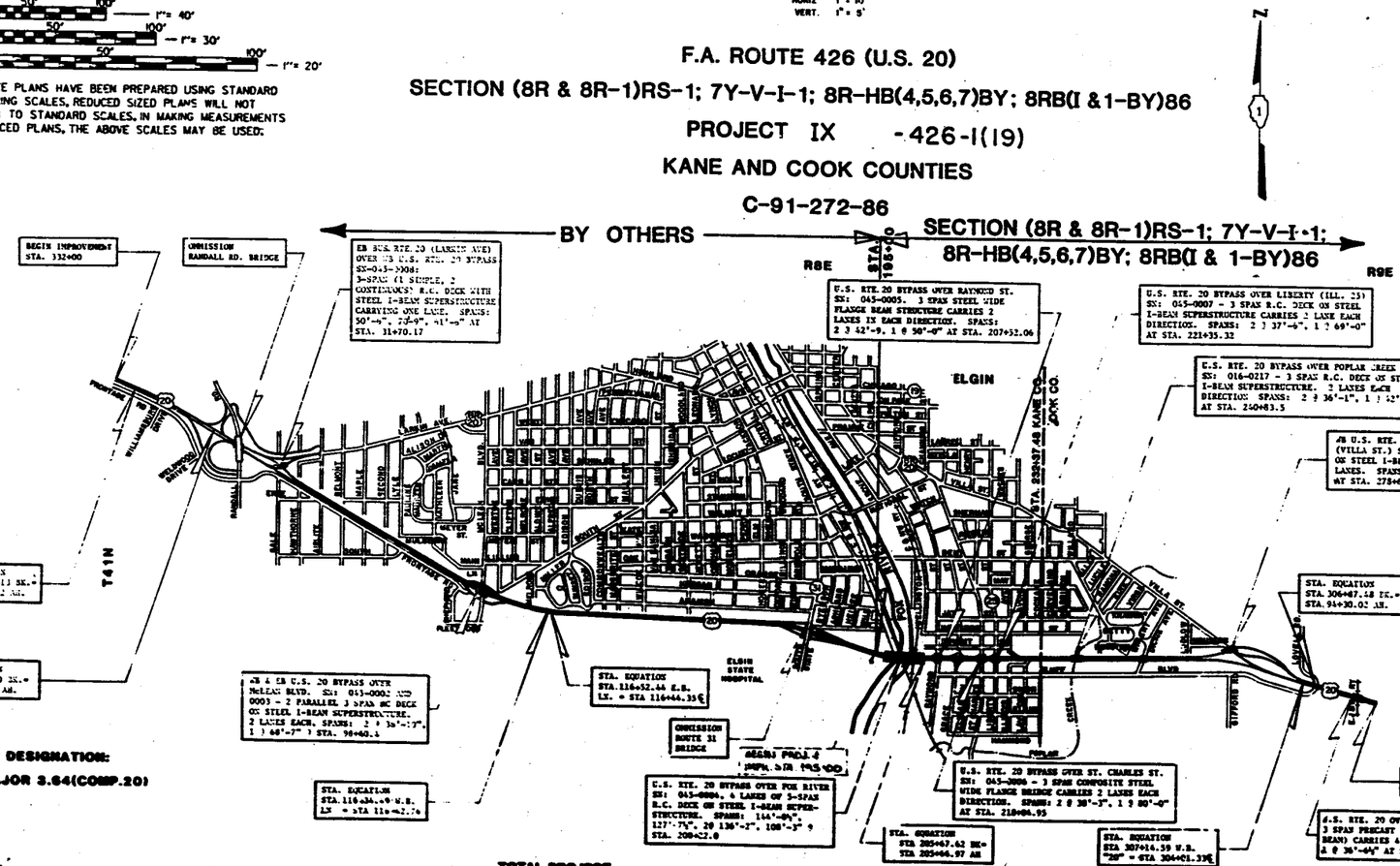
PROJECT IX -426-1(19)

KANE AND COOK COUNTIES

C-91-272-86



LOCATION OF SECTION INDICATED THUS: —



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

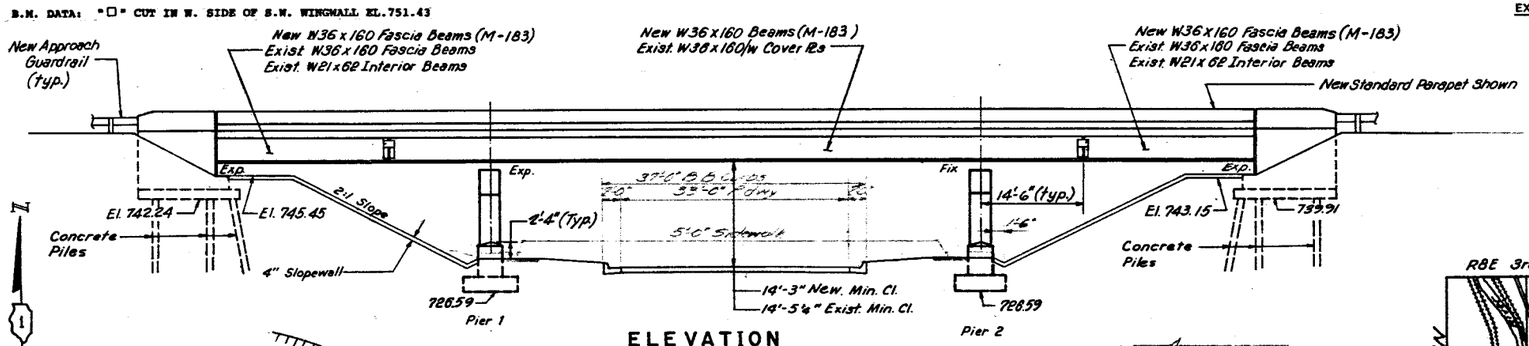
SUBMITTED: 9-23 1986
RECOMMENDED: 9-2 1986
PASSED: 9-2 1986
APPROVED: 9-2 1986

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE

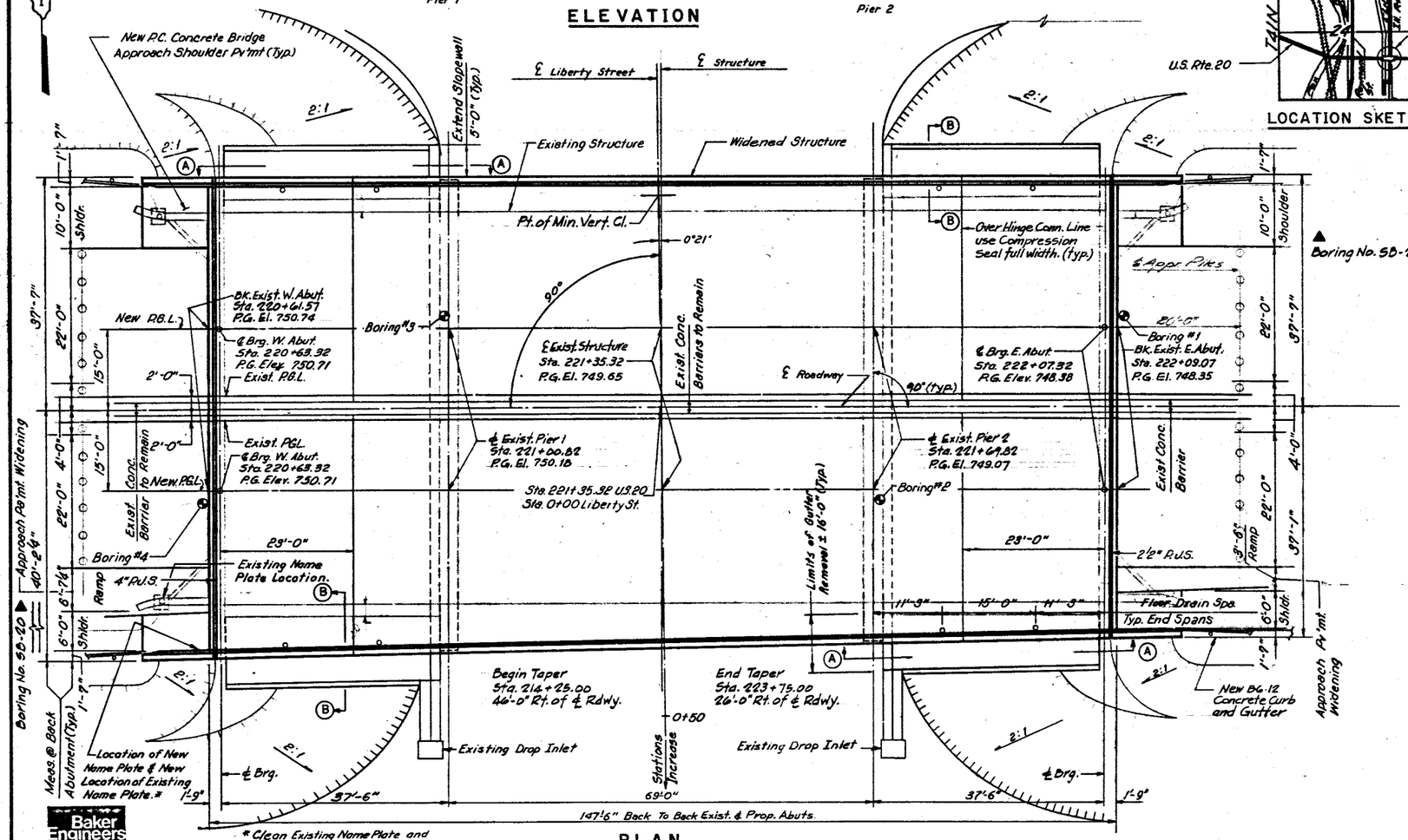
KANE/COOK COUNTIES — SEC. (8R & 8R-1)RS-1; 7Y-V-I-1; 8R-HB(4,5,6,7)BY; 8RB(I & 1-BY)86 — F.A. ROUTE 426 (U.S. ROUTE 20)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

B.M. DATA: "□" CUT IN W. SIDE OF S.W. WINGWALL EL. 751.43

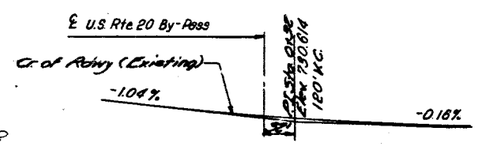


ELEVATION

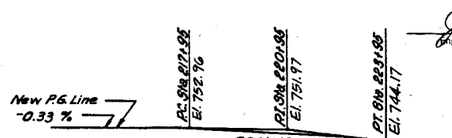


* Clean Existing Name Plate and Relocate. (Cost Incidental)

PLAN



PROFILE - LIBERTY ST.



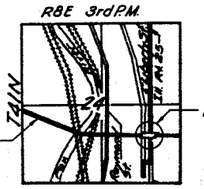
PROFILE U.S. RT. 20 BY-PASS

EXISTING STRUCTURE DATA: THE EXISTING THREE SPAN NON-COMPOSITE ROLLED BEAM STRUCTURE WAS CONSTRUCTED IN 1959, CARRYING TWO LANES IN EACH DIRECTION OF U. S. ROUTE 20 TRAFFIC OVER LIBERTY STREET (ILL-25) IN THE CITY OF ELGIN. THE STRUCTURE IS 147'-6" LONG WITH A 69'-8" O. TO O. ROADWAY WIDTH. THE EAST AND WESTBOUND TRAFFIC IS SEPARATED BY A NEW JERSEY TYPE CONCRETE BARRIER WALL MEDIAN WHICH WAS CONSTRUCTED IN 1979. THE DECKS AND SUBSTRUCTURES ARE REINFORCED CONCRETE. THE PIERS ARE SUPPORTED ON SPREAD FOOTINGS, AND THE ABUTMENTS ARE SUPPORTED ON PILES.

THE CONTRACTOR SHALL WIDEN THE EXISTING STRUCTURE, SCARIFY THE EXISTING DECK AND APPLY A CONCRETE OVERLAY OVER THE EXISTING DECK. TWO LANES OF TRAFFIC SHALL BE MAINTAINED AT ALL TIMES UTILIZING STAGE CONSTRUCTION. NO SALVAGE.

STA. 221+35.32
WIDENED 19'8" BY
STATE OF ILLINOIS
F.A.R.T. 6 (S.B.I. 5) SEC. 8R-HB-6(86)
F.A. PROJ. IX-[illegible]-426-1(19)
LOADING HS20
STR. NO. 045-0007

See Standard 2113
See Plan for locations of new and existing Name Plates.



LOCATION SKETCH

▲ Boring No. SB-21

SHEET NO. 1 OF 21 SHEETS	F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
	426	8R-HB-6(86)	KANE	209	157
	STA.		TO STA.		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

● Original Construction Boring Locations.
▲ 1985 Reconstruction Boring Locations.

NOTE:
See Sheet #2 for Sections A-A and B-B

Baker Engineers
Baker Engineering, Inc.

DESIGNED	P. Wood
CHECKED	J. Owen
DRAWN	T. Shelby
CHECKED	P. Wood

JOHN H. OWEN 81-3361 REGISTERED STRUCTURAL ENGINEER OF ILLINOIS

Signed John H. Owen Date 3-18-86
John H. Owen, SE, Ill. Reg. No. 81-3361

APPROVED
FOR STRUCTURAL ADEQUACY ONLY
James T. Rayburn
Engineer of Bridges and Structures

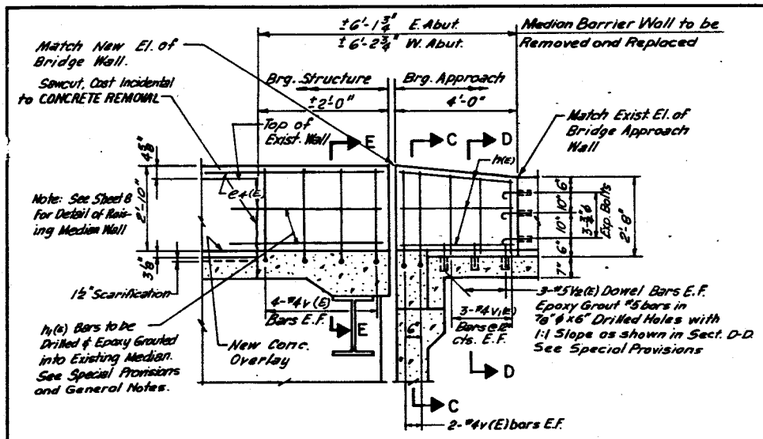
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION

REVISIONS	
NAME	DATE
Revised Profile Grade	5/31/85
Revised Profile Grade	2/3/86

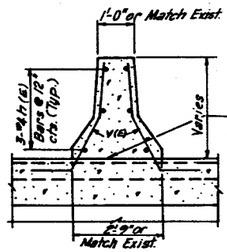
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

045-0007

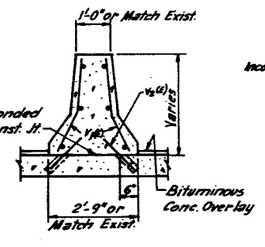


DETAIL OF MEDIAN BARRIER WALL

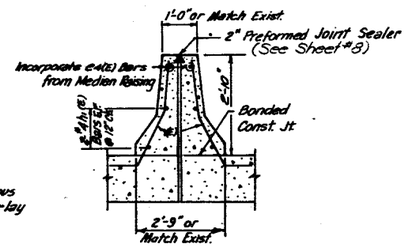
@ Abutments (Work this detail with Sheet No. 8)



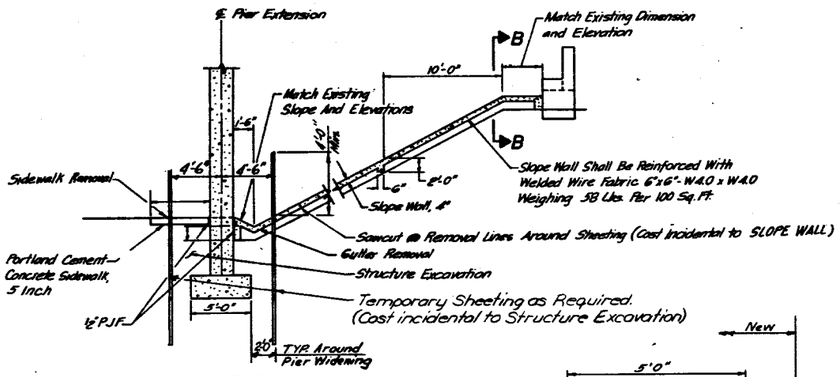
SECTION C-C



SECTION D-D

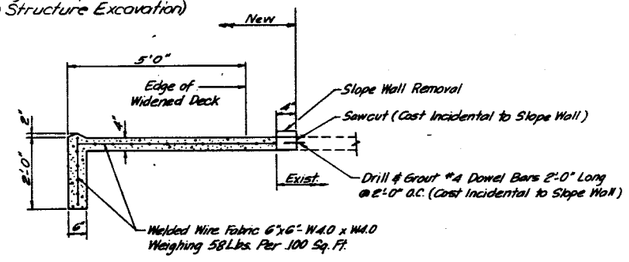


SECTION E-E



SECTION A-A

NOTE: See Sheet No. 1 for Location of Section A-A.



SECTION B-B

Baker Engineers
Baker Engineering, Inc.

DESIGNED	P. Wood
CHECKED	J. Owen
DRAWN	C. Arieto, Z. Dobrowski
CHECKED	P. Wood

TOTAL BILL OF MATERIALS

ITEM	UNIT	SUPER-STRUCTURE	SUB-STRUCTURE	TOTAL
CONCRETE REMOVAL	CU YD	72	9	81
EXPANSION BOLTS, 3/4 INCH	EACH	6	96	102
REMOVAL OF EXISTING BEARINGS	EACH	---	36	36
STRUCTURE EXCAVATION	CU YD	---	119	119
FLOOR DRAINS	EACH	8	---	8
PROTECTIVE COAT	SQ YD	1,408	---	1,408
PREFORMED JOINT SEAL, 2½"	LIN FT	75	---	75
PREFORMED JOINT SEAL, 4"	LIN FT	78	---	78
PREFORMED JOINT SEAL, 1"	LIN FT	153	---	153
PREFORMED JOINT SEAL, 2"	LIN FT	146	---	146
ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	---	30	30
ELASTOMERIC BEARING ASSEMBLY, TYPE II	EACH	---	15	15
CLASS X CONCRETE	CU YD	141.4	111.8	253.2
STRUCTURAL STEEL	L. SUM	.24	---	.24
CLEANING AND PAINTING ST. BR. NO. 3	L SUM	1	---	1
REINFORCEMENT BARS	POUND	---	11,680	11,680
REINFORCEMENT BARS, EPOXY COATED	POUND	27,160	---	27,160
FURNISHING CONCRETE PILES	LIN FT	---	191	191
DRIVING CONCRETE PILES	LIN FT	---	191	191
TEST PILE CONCRETE	EACH	---	1	1
NAME PLATE	EACH	1	---	1
FURNISH & INSTALL ℄	---	---	---	---
TEMPORARY CONCRETE BARRIER	UNIT	57	---	57
TEMPORARY CONCRETE BARRIER, TERMINAL SECTION	EACH	2	---	2
RELOCATE TEMPORARY CONCRETE BARRIER	UNIT	57	---	57
GUTTER REMOVAL	LIN FT	---	32	32
SIDEWALK REMOVAL	SQ FT	---	325	325
SLOPE WALL REMOVAL	SQ YD	---	6	6
SLOPE WALL, 4 INCH	SQ YD	---	178	178
PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH	SQ FT	---	325	325
BRIDGE DECK SCARIFICATION 1½"	SQ YD	775	---	775
PLASTICIZED BRIDGE DECK CONCRETE OVERLAY	SQ YD	783	---	783
DECK SLAB REPAIR (FULL DEPTH)	SQ YD	45	---	45
DECK SLAB REPAIR (PARTIAL DEPTH)	SQ YD	400	---	400
EPOXY MORTAR REPAIR	CU FT	---	7	7
EPOXY CRACK SEALING	LIN FT	---	232	232

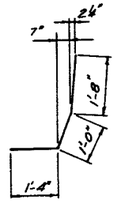
Calculated weight of Structural Steel = 79,850 Lbs.

BILL OF MATERIAL

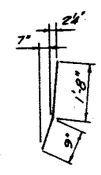
Bar	No.	Size	Length	Shape
h (E)	12	#4	9'-8"	
h1(E)	8	#4	2'-9"	
V (E)	24	#4	4'-0"	
V1(E)	12	#4	2'-5"	
½(E)	?	#8	1'-3"	

Item	Unit	Quantity
Class X Concrete	Cu. Yd.	1.8
Reinforcement Bars	Pound	170
Concrete Removal	Cu. Yd.	2
Expansion Bolts	Each	6

Note: Quantities of Concrete & Reinforcement Bars Are For Medians At Both Approaches And Are Included In Superstructure Quantities



BAR V(E)



BAR V1(E)

GENERAL NOTES

SEE PROPOSAL FOR BORING DATA.

FASTENERS SHALL BE HIGH STRENGTH BOLTS. BOLTS 3/4" DIA., OPEN HOLES 13/16" DIA., UNLESS OTHERWISE NOTED.

ALL STRUCTURAL STEEL SHALL RECEIVE ONE COAT OF DULL ORANGE PRIMER; NEW STRUCTURAL STEEL SHALL BE SHOP PRIMED. ALL STRUCTURAL STEEL, NEW AND EXISTING, SHALL RECEIVE TWO FIELD COATS OF ALUMINUM PAINT WITH THE FOLLOWING EXCEPTIONS, AS APPLICABLE, WHICH SHALL RECEIVE *ONE COAT OF MAROON FIRST FIELD COAT AND FINAL COAT OF INTERSTATE GREEN.*

- THE EXTERIOR WEB SURFACE, THE BOTTOM AND EDGES OF THE BOTTOM FLANGE, THE BOTTOM SURFACE OF THE EXTERIOR TOP FLANGE, AND THE TOP SURFACE OF THE EXTERIOR BOTTOM FLANGE, OF NEW FACIA BEAMS.
- ALL STRUCTURAL STEEL ELEMENTS OF NEW ELASTOMERIC BEARING ASSEMBLIES AND NEW STRUCTURAL STEEL FIXED BEARINGS FOR NEW FACIA BEAMS.

FIELD WELDING OF CONSTRUCTION ACCESSORIES WILL NOT BE PERMITTED TO THE BOTTOM FLANGE OF BEAMS NOR TO THE TOP FLANGE FOR A DISTANCE EQUAL TO ONE-FOURTH THE SPAN LENGTH EACH WAY FROM THE PIER SUPPORTS. FIELD WELDING IN OTHER AREAS WILL BE PERMITTED ONLY WHEN APPROVED BY THE ENGINEER.

ANCHOR BOLTS SHALL BE SET BEFORE BOLTING NEW DIAPHRAGMS OVER SUPPORTS.

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, ALL SPLICE PLATE MATERIAL AND HINGE PLATES.

REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 OR M-53, GRADE 60.

PLAN DIMENSIONS AND DETAILS RELATIVE TO EXISTING STRUCTURE HAVE BEEN TAKEN FROM EXISTING PLANS AND ARE SUBJECT TO NOMINAL CONSTRUCTION VARIATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY SUCH DIMENSIONS AND DETAILS IN THE FIELD 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 THE SCOPE OF WORK. HOWEVER, THE CONTRACTOR WILL BE PAID FOR THE QUANTITY ACTUALLY FURNISHED AT THE UNIT PRICE BID FOR THE WORK.

EXPANSION BOLTS SHALL CONSIST OF APPROVED EXPANSION ANCHORS, PROVIDING MINIMUM CERTIFIED PROOF LOAD = 4,000 LBS., AND 3/4" DIA. X 12" HOOKED BOLTS.

BEARING SEAT SURFACES SHALL BE CONSTRUCTED OR ADJUSTED TO THE DESIGNATED ELEVATIONS WITHIN A TOLERANCE OF 1/8 INCH. ADJUSTMENT SHALL BE MADE EITHER BY GRINDING THE SURFACE OR BY SHIMMING THE BEARING. TWO 1/8" ADJUSTING SHIMS, OF THE DIMENSIONS OF THE BOTTOM BEARING PLATE, SHALL BE PROVIDED FOR EACH BEARING IN ADDITION TO ALL OTHER PLATES OR SHIMS. FOR TYPE I ELASTOMERIC BEARINGS, SHIMS OF THE DIMENSIONS OF TOP PLATE SHALL BE PROVIDED AND PLACED AS DETAILED.

CONCRETE PILES AT ABUTMENTS SHALL BE DRIVEN THROUGH THE EMBANKMENT WITHOUT PRECORING.

THE CONTRACTOR SHALL DRIVE ONE CONCRETE TEST PILE(S) IN PERMANENT LOCATION(S) SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF PILES.

THE EMBANKMENT CONFIGURATION SHOWN SHALL BE THE MINIMUM EMBANKMENT THAT MUST BE CONSTRUCTED PRIOR TO WIDENING OF THE ABUTMENTS.

DESIGN DATA

DESIGN SPECIFICATIONS: AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1983 EDITION, 1984 & 1985 INTERIMS.

DESIGN STRESSES:

NEW CONCRETE: FC=3500PSI
FC=1400PSI
NEW REINFORCING STEEL: FY=60,000PSI
FS=24,000PSI
NEW STRUCTURAL STEEL: FS=20,000PSI
EXISTING STRUCTURAL STEEL: FS=18,000PSI
STRUCTURAL STEEL, CONCRETE DECK AND SUBSTRUCTURE CONCRETE ARE DESIGNED BY THE SERVICE LOAD METHOD.

DESIGN LOADING: HS20-44

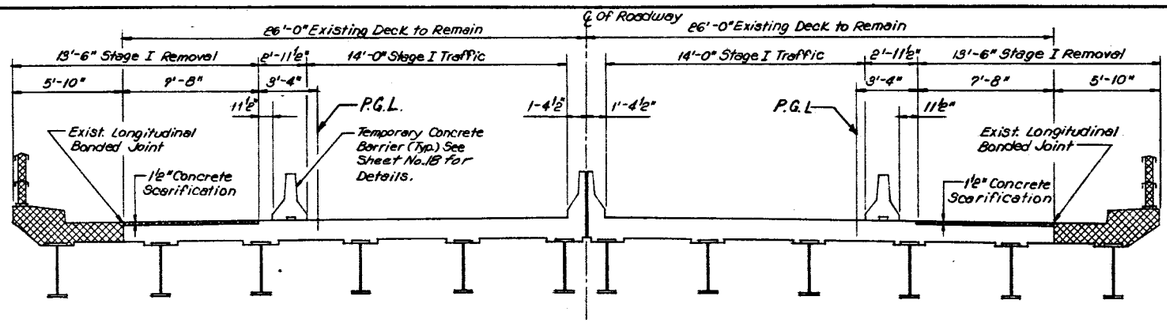
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES, BILL OF MATERIAL AND DETAILS

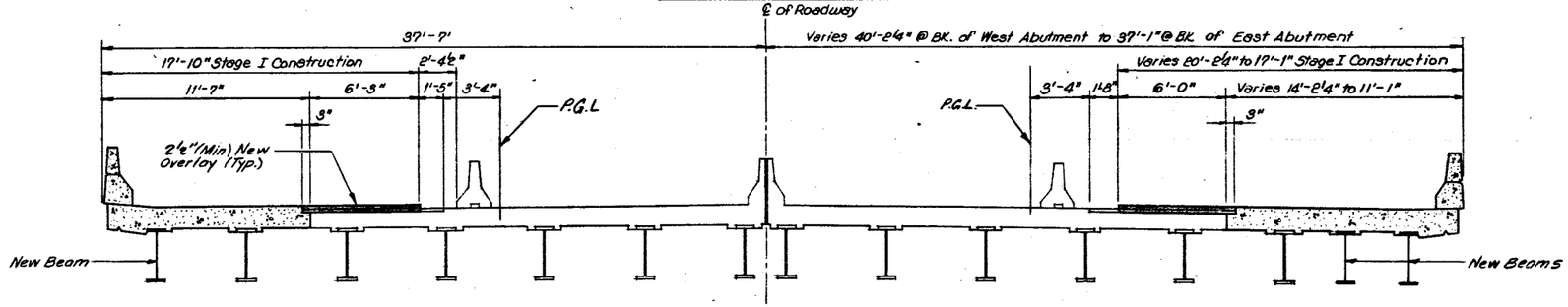
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY—STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

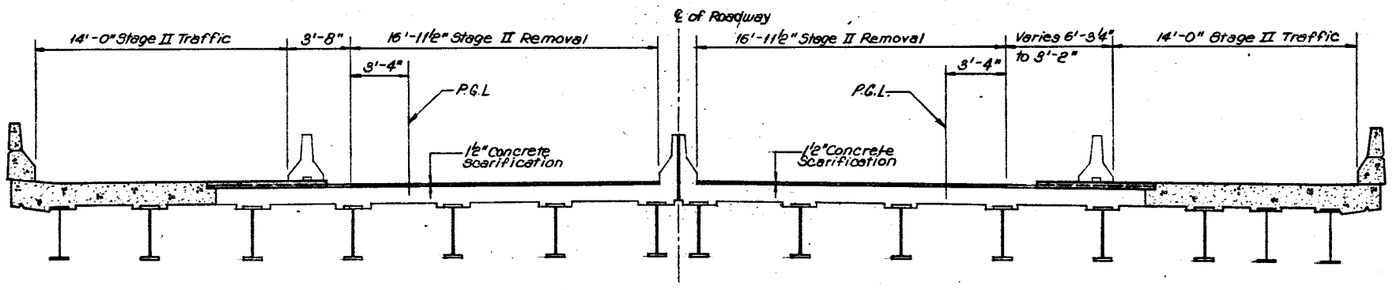
SHEET NO. 3 OF 21 SHEETS	F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	426	8R-HB-6(86)	KANE	209	139
	STA.		TO STA		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		



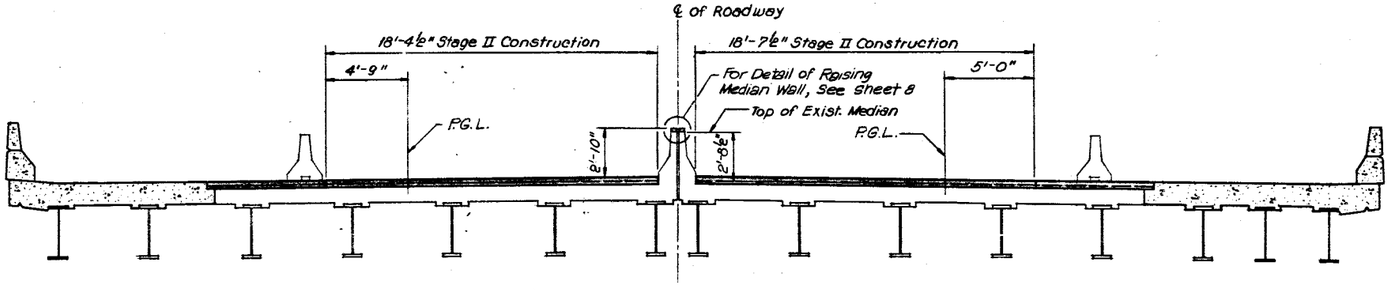
* STAGE I REMOVAL



* STAGE I CONSTRUCTION



* STAGE II REMOVAL



* STAGE II CONSTRUCTION

* LOOKING EAST

NOTES:
Transverse Deck Reinforcement Extending into Removed Ares Shall be Cleaned and Incorporated into the New Construction.

Denotes Removal

Baker Engineers
Baker Engineering, Inc.

DESIGNED	J. Chaliklis
CHECKED	R. Zemaitaitis
DRAWN	J. Chaliklis
CHECKED	R. Zemaitaitis

REVISIONS	
NAME	DATE

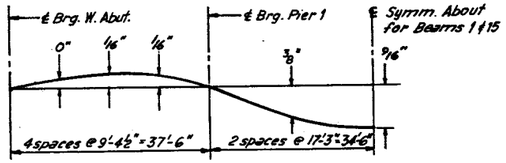
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STAGE CONSTRUCTION

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER
LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	8R-HB-6(86)	KANE	209	140
STA.		TO STA.		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Sheet No. 4 of 8 sheets.



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 deflection as shown below.

DEAD LOAD DEFLECTION DIAGRAM

FILLET HEIGHTS

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

℄ BEAM 1

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRGWA	220+63.32	-19.500	750.362	750.362
A	220+73.32	-19.500	750.226	750.225
B	220+83.32	-19.500	750.086	750.081
C	220+93.32	-19.500	749.942	749.938
CBRGP1	221+00.82	-19.500	749.831	749.831
D	221+10.82	-19.500	749.681	749.689
E	221+20.82	-19.500	749.536	749.561
F	221+30.82	-19.500	749.368	749.412
G	221+40.82	-19.500	749.206	749.250
H	221+50.82	-19.500	749.041	749.074
I	221+60.82	-19.500	748.871	748.887
CBRGP2	221+69.82	-19.500	748.715	748.715
J	221+79.82	-19.500	748.539	748.534
K	221+89.82	-19.500	748.398	748.394
L	221+99.82	-19.500	748.174	748.173
CBRGEA	222+07.32	-19.500	748.053	748.053

℄ BEAM 2

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRGWA	220+63.32	-14.000	750.478	750.478
A	220+73.32	-14.000	750.342	750.342
B	220+83.32	-14.000	750.201	750.199
C	220+93.32	-14.000	750.057	750.055
CBRGP1	221+00.82	-14.000	749.947	749.947
D	221+10.82	-14.000	749.796	749.809
E	221+20.82	-14.000	749.642	749.668
F	221+30.82	-14.000	749.484	749.517
G	221+40.82	-14.000	749.322	749.355
H	221+50.82	-14.000	749.156	749.182
I	221+60.82	-14.000	748.987	748.999
CBRGP2	221+69.82	-14.000	748.831	748.831
J	221+79.82	-14.000	748.654	748.652
K	221+89.82	-14.000	748.474	748.473
L	221+99.82	-14.000	748.288	748.288
CBRGEA	222+07.32	-14.000	748.149	748.149

NORTH LONG. CONST. JOINT

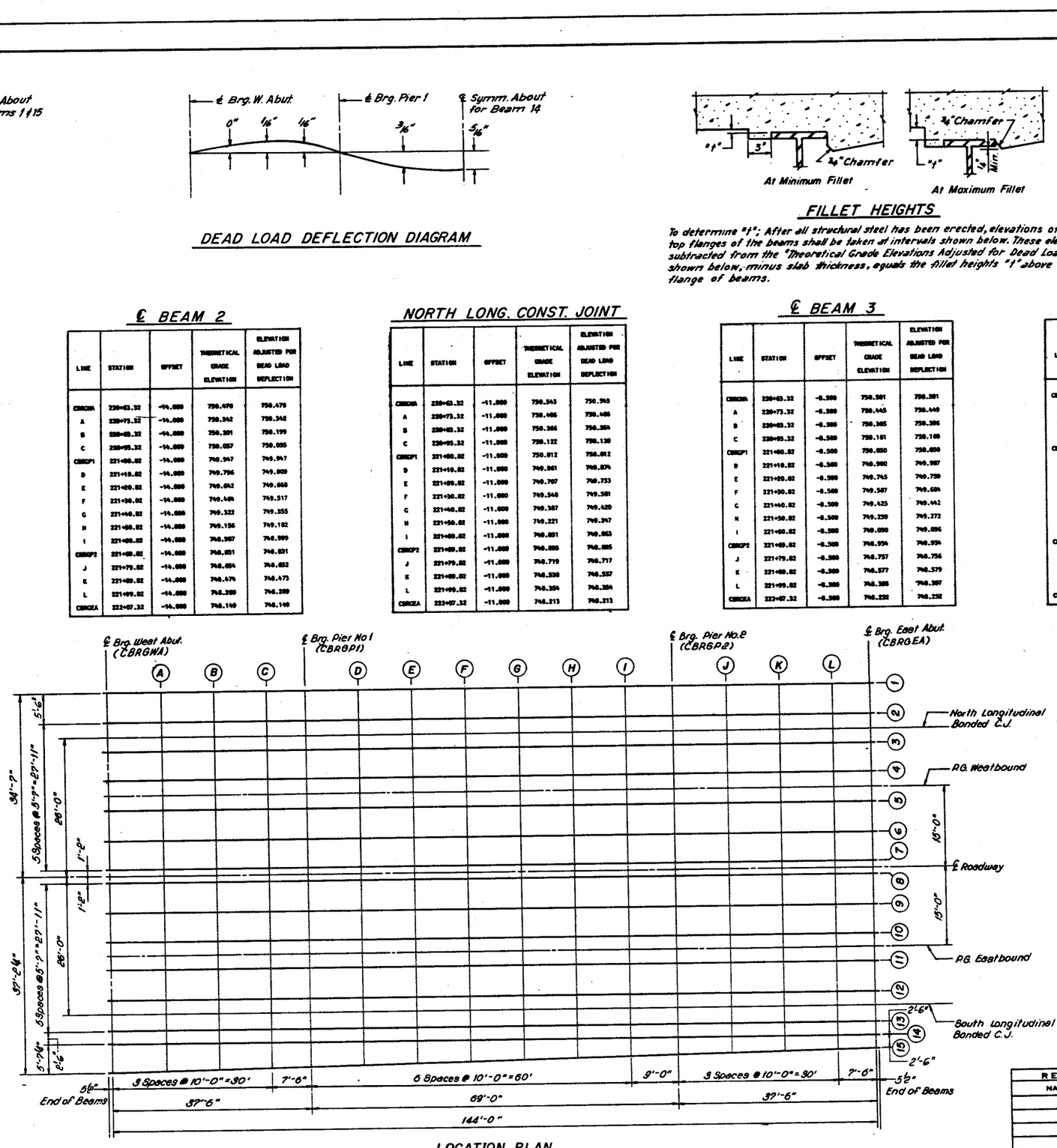
LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRGWA	220+63.32	-11.000	750.543	750.543
A	220+73.32	-11.000	750.405	750.405
B	220+83.32	-11.000	750.266	750.264
C	220+93.32	-11.000	750.122	750.120
CBRGP1	221+00.82	-11.000	750.012	750.012
D	221+10.82	-11.000	749.861	749.874
E	221+20.82	-11.000	749.707	749.733
F	221+30.82	-11.000	749.548	749.581
G	221+40.82	-11.000	749.387	749.420
H	221+50.82	-11.000	749.221	749.247
I	221+60.82	-11.000	749.051	749.063
CBRGP2	221+69.82	-11.000	748.885	748.885
J	221+79.82	-11.000	748.719	748.717
K	221+89.82	-11.000	748.538	748.537
L	221+99.82	-11.000	748.354	748.354
CBRGEA	222+07.32	-11.000	748.213	748.213

℄ BEAM 3

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRGWA	220+63.32	-8.500	750.581	750.581
A	220+73.32	-8.500	750.445	750.449
B	220+83.32	-8.500	750.305	750.306
C	220+93.32	-8.500	750.161	750.169
CBRGP1	221+00.82	-8.500	750.050	750.050
D	221+10.82	-8.500	749.900	749.907
E	221+20.82	-8.500	749.745	749.758
F	221+30.82	-8.500	749.587	749.604
G	221+40.82	-8.500	749.425	749.442
H	221+50.82	-8.500	749.259	749.272
I	221+60.82	-8.500	749.090	749.096
CBRGP2	221+69.82	-8.500	748.934	748.934
J	221+79.82	-8.500	748.757	748.756
K	221+89.82	-8.500	748.577	748.579
L	221+99.82	-8.500	748.388	748.387
CBRGEA	222+07.32	-8.500	748.252	748.252

℄ BEAM 4

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRGWA	220+63.32	-2.920	750.667	750.667
A	220+73.32	-2.920	750.531	750.535
B	220+83.32	-2.920	750.391	750.392
C	220+93.32	-2.920	750.247	750.246
CBRGP1	221+00.82	-2.920	750.136	750.136
D	221+10.82	-2.920	749.986	749.993
E	221+20.82	-2.920	749.831	749.845
F	221+30.82	-2.920	749.673	749.690
G	221+40.82	-2.920	749.511	749.528
H	221+50.82	-2.920	749.346	749.359
I	221+60.82	-2.920	749.176	749.182
CBRGP2	221+69.82	-2.920	749.020	749.020
J	221+79.82	-2.920	748.844	748.843
K	221+89.82	-2.920	748.663	748.665
L	221+99.82	-2.920	748.479	748.483
CBRGEA	222+07.32	-2.920	748.338	748.338



LOCATION PLAN

34.8
~~38.0~~

NOTE:
The deck pour on each side of widening shall be completed at one continuous pour to avoid tension over piers.

Baker Engineers
Baker Engineering, Inc.

DESIGNED	P. Wood
CHECKED	J. Owen
DRAWN	J. Shelby
CHECKED	P. Wood

REVISIONS	
NAME	DATE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

SHEET NO. 5 OF 21 SHEETS

F. A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
426	8R-HB-6(86)	KANE	209	141
STA.		TO STA		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

PROFILE GRADE LINE WESTBOUND & EASTBOUND

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	0.000	750.713	750.713
A	220+73.32	0.000	750.576	750.580
B	220+83.32	0.000	750.436	750.437
C	220+93.32	0.000	750.292	750.291
CBRCP1	221+00.82	0.000	750.182	750.182
D	221+10.82	0.000	750.031	750.038
E	221+20.82	0.000	749.877	749.891
F	221+30.82	0.000	749.718	749.735
G	221+40.82	0.000	749.557	749.574
H	221+50.82	0.000	749.391	749.409
I	221+60.82	0.000	749.221	749.227
CBRCP2	221+69.82	0.000	749.065	749.065
J	221+79.82	0.000	748.889	748.888
K	221+89.82	0.000	748.705	748.710
L	221+99.82	0.000	748.524	748.528
CBRCEA	222+07.32	0.000	748.383	748.383

℄ BEAM 5

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	2.670	750.754	750.754
A	220+73.32	2.670	750.617	750.621
B	220+83.32	2.670	750.477	750.478
C	220+93.32	2.670	750.333	750.332
CBRCP1	221+00.82	2.670	750.223	750.223
D	221+10.82	2.670	750.072	750.079
E	221+20.82	2.670	749.918	749.932
F	221+30.82	2.670	749.760	749.777
G	221+40.82	2.670	749.598	749.615
H	221+50.82	2.670	749.432	749.445
I	221+60.82	2.670	749.262	749.268
CBRCP2	221+69.82	2.670	749.107	749.107
J	221+79.82	2.670	748.930	748.929
K	221+89.82	2.670	748.749	748.751
L	221+99.82	2.670	748.565	748.569
CBRCEA	222+07.32	2.670	748.425	748.425

℄ BEAM 6

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	8.250	750.840	750.840
A	220+73.32	8.250	750.703	750.707
B	220+83.32	8.250	750.563	750.564
C	220+93.32	8.250	750.419	750.418
CBRCP1	221+00.82	8.250	750.309	750.309
D	221+10.82	8.250	750.158	750.165
E	221+20.82	8.250	750.004	750.018
F	221+30.82	8.250	749.846	749.863
G	221+40.82	8.250	749.684	749.701
H	221+50.82	8.250	749.518	749.531
I	221+60.82	8.250	749.348	749.354
CBRCP2	221+69.82	8.250	749.193	749.193
J	221+79.82	8.250	749.016	749.015
K	221+89.82	8.250	748.835	748.837
L	221+99.82	8.250	748.651	748.655
CBRCEA	222+07.32	8.250	748.510	748.510

℄ BEAM 7

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	13.830	750.923	750.923
A	220+73.32	13.830	750.786	750.790
B	220+83.32	13.830	750.646	750.647
C	220+93.32	13.830	750.502	750.501
CBRCP1	221+00.82	13.830	750.392	750.392
D	221+10.82	13.830	750.241	750.248
E	221+20.82	13.830	750.087	750.101
F	221+30.82	13.830	749.928	749.945
G	221+40.82	13.830	749.767	749.784
H	221+50.82	13.830	749.601	749.614
I	221+60.82	13.830	749.431	749.437
CBRCP2	221+69.82	13.830	749.275	749.275
J	221+79.82	13.830	749.099	749.098
K	221+89.82	13.830	748.918	748.920
L	221+99.82	13.830	748.734	748.738
CBRCEA	222+07.32	13.830	748.593	748.593

℄ BEAM 8

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	-13.830	750.923	750.923
A	220+73.32	-13.830	750.786	750.790
B	220+83.32	-13.830	750.646	750.647
C	220+93.32	-13.830	750.502	750.501
CBRCP1	221+00.82	-13.830	750.392	750.392
D	221+10.82	-13.830	750.241	750.248
E	221+20.82	-13.830	750.087	750.101
F	221+30.82	-13.830	749.928	749.945
G	221+40.82	-13.830	749.767	749.784
H	221+50.82	-13.830	749.601	749.614
I	221+60.82	-13.830	749.431	749.437
CBRCP2	221+69.82	-13.830	749.275	749.275
J	221+79.82	-13.830	749.099	749.098
K	221+89.82	-13.830	748.918	748.920
L	221+99.82	-13.830	748.734	748.738
CBRCEA	222+07.32	-13.830	748.593	748.593

℄ BEAM 9

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	-8.250	750.840	750.840
A	220+73.32	-8.250	750.708	750.707
B	220+83.32	-8.250	750.563	750.564
C	220+93.32	-8.250	750.419	750.418
CBRCP1	221+00.82	-8.250	750.308	750.309
D	221+10.82	-8.250	750.158	750.165
E	221+20.82	-8.250	750.004	750.018
F	221+30.82	-8.250	749.846	749.863
G	221+40.82	-8.250	749.684	749.701
H	221+50.82	-8.250	749.518	749.531
I	221+60.82	-8.250	749.348	749.354
CBRCP2	221+69.82	-8.250	749.193	749.193
J	221+79.82	-8.250	749.016	749.015
K	221+89.82	-8.250	748.835	748.837
L	221+99.82	-8.250	748.651	748.655
CBRCEA	222+07.32	-8.250	748.510	748.510

℄ BEAM 10

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	-2.670	750.754	750.754
A	220+73.32	-2.670	750.617	750.621
B	220+83.32	-2.670	750.477	750.478
C	220+93.32	-2.670	750.333	750.332
CBRCP1	221+00.82	-2.670	750.223	750.223
D	221+10.82	-2.670	750.072	750.079
E	221+20.82	-2.670	749.918	749.932
F	221+30.82	-2.670	749.760	749.777
G	221+40.82	-2.670	749.598	749.615
H	221+50.82	-2.670	749.432	749.445
I	221+60.82	-2.670	749.262	749.268
CBRCP2	221+69.82	-2.670	749.107	749.107
J	221+79.82	-2.670	748.930	748.929
K	221+89.82	-2.670	748.749	748.751
L	221+99.82	-2.670	748.565	748.569
CBRCEA	222+07.32	-2.670	748.425	748.425

℄ BEAM 11

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	2.920	750.666	750.666
A	220+73.32	2.920	750.530	750.534
B	220+83.32	2.920	750.390	750.391
C	220+93.32	2.920	750.246	750.245
CBRCP1	221+00.82	2.920	750.135	750.135
D	221+10.82	2.920	749.985	749.992
E	221+20.82	2.920	749.830	749.844
F	221+30.82	2.920	749.672	749.689
G	221+40.82	2.920	749.510	749.527
H	221+50.82	2.920	749.344	749.357
I	221+60.82	2.920	749.175	749.181
CBRCP2	221+69.82	2.920	749.019	749.019
J	221+79.82	2.920	748.842	748.841
K	221+89.82	2.920	748.662	748.664
L	221+99.82	2.920	748.478	748.482
CBRCEA	222+07.32	2.920	748.337	748.337

℄ BEAM 12

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	8.500	750.577	750.577
A	220+73.32	8.500	750.441	750.445
B	220+83.32	8.500	750.301	750.302
C	220+93.32	8.500	750.157	750.156
CBRCP1	221+00.82	8.500	750.046	750.046
D	221+10.82	8.500	749.896	749.903
E	221+20.82	8.500	749.742	749.756
F	221+30.82	8.500	749.583	749.600
G	221+40.82	8.500	749.421	749.438
H	221+50.82	8.500	749.256	749.269
I	221+60.82	8.500	749.086	749.092
CBRCP2	221+69.82	8.500	748.931	748.931
J	221+79.82	8.500	748.754	748.753
K	221+89.82	8.500	748.573	748.575
L	221+99.82	8.500	748.389	748.393
CBRCEA	222+07.32	8.500	748.249	748.249

SOUTH LONG. CONST. JOINT

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	11.000	750.538	750.538
A	220+73.32	11.000	750.401	750.401
B	220+83.32	11.000	750.261	750.260
C	220+93.32	11.000	750.117	750.115
CBRCP1	221+00.82	11.000	750.007	750.007
D	221+10.82	11.000	749.856	749.865
E	221+20.82	11.000	749.702	749.722
F	221+30.82	11.000	749.544	749.569
G	221+40.82	11.000	749.382	749.407
H	221+50.82	11.000	749.216	749.235
I	221+60.82	11.000	749.047	749.056
CBRCP2	221+69.82	11.000	748.891	748.891
J	221+79.82	11.000	748.716	748.712
K	221+89.82	11.000	748.534	748.533
L	221+99.82	11.000	748.350	748.350
CBRCEA	222+07.32	11.000	748.209	748.209

℄ BEAM 13

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	14.080	750.449	750.449
A	220+73.32	14.080	750.352	750.352
B	220+83.32	14.080	750.212	750.211
C	220+93.32	14.080	750.068	750.066
CBRCP1	221+00.82	14.080	749.958	749.958
D	221+10.82	14.080	749.807	749.817
E	221+20.82	14.080	749.653	749.673
F	221+30.82	14.080	749.495	749.528
G	221+40.82	14.080	749.333	749.358
H	221+50.82	14.080	749.167	749.186
I	221+60.82	14.080	748.998	749.007
CBRCP2	221+69.82	14.080	748.842	748.842
J	221+79.82	14.080	748.665	748.663
K	221+89.82	14.080	748.485	748.484
L	221+99.82	14.080	748.301	748.301
CBRCEA	222+07.32	14.080	748.160	748.160

℄ BEAM 14

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	16.580	750.449	750.449
A	220+73.32	16.580	750.312	750.311
B	220+83.32	16.580	750.172	750.170
C	220+93.32	16.580	750.028	750.026
CBRCP1	221+00.82	16.580	749.918	749.918
D	221+10.82	16.580	749.767	749.776
E	221+20.82	16.580	749.612	749.629
F	221+30.82	16.580	749.453	749.475
G	221+40.82	16.580	749.290	749.312
H	221+50.82	16.580	749.123	749.140
I	221+60.82	16.580	748.953	748.961
CBRCP2	221+69.82	16.580	748.796	748.796
J	221+79.82	16.580	748.619	748.617
K	221+89.82	16.580	748.438	748.436
L	221+99.82	16.580	748.253	748.253
CBRCEA	222+07.32	16.580	748.112	748.112

℄ BEAM 15

LINE	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
CBRCWA	220+63.32	22.180	750.333	750.333
A	220+73.32	21.967	750.201	750.200
B	220+83.32	21.753	750.065	750.060
C	220+93.31	21.540	749.925	749.921
CBRCP1	221+00.82	21.380	749.817	749.817
D	221+10.82	21.166	749.671	749.680
E	221+20.82	20.946	749.520	749.555
F	221+30.81	20.732	749.366	749.410
G	221+40.81	20.516	749.208	749.252
H	221+50.81	20.301	749.047	749.080
I	221+60.81	20.085	748.881	748.897
CBRCP2	221+69.82	19.898	748.729	748.729
J	221+79.82	19.674	748.556	748.551
K	221+89.82	19.458	748.380	748.376
L	221+99.81	19.242	748.200	748.199
CBRCEA	222+07.32	19.080	748.062	748.062

Baker Engineers
Baker Engineering, Inc.

DESIGNED	P. Wood
CHECKED	J. Owen
DRAWN	Z. Dabrowski
CHECKED	P. Wood

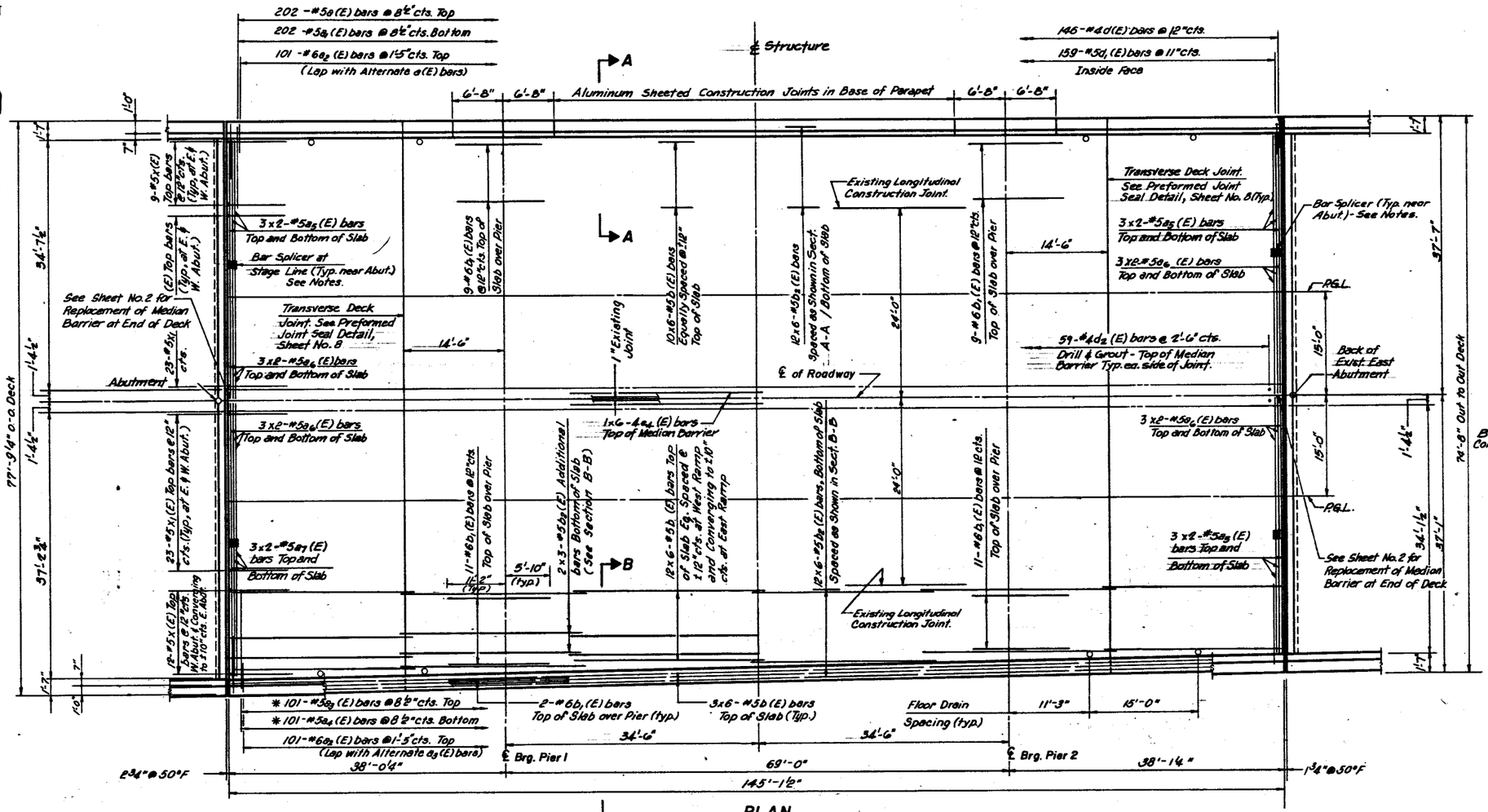
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

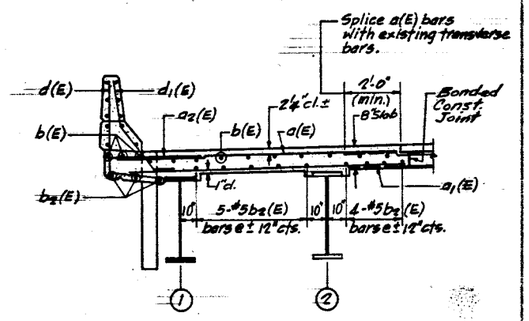
TOP OF SLAB ELEVATIONS

REVISIONS	
NAME	DATE

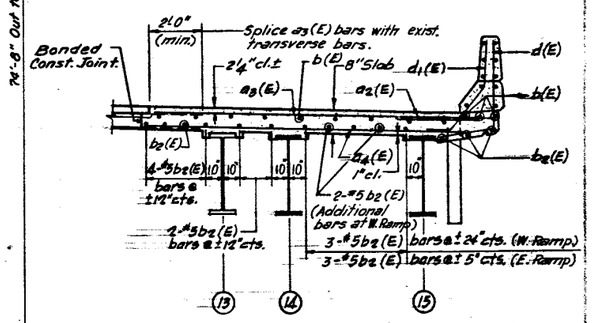
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY—STATION 221+35.32
STR. NO. 045-0007

SHEET NO. 6 OF 21 SHEETS	F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	426	8R-HB-6(86)	KANE	209	142
	STA.		TO STA		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		





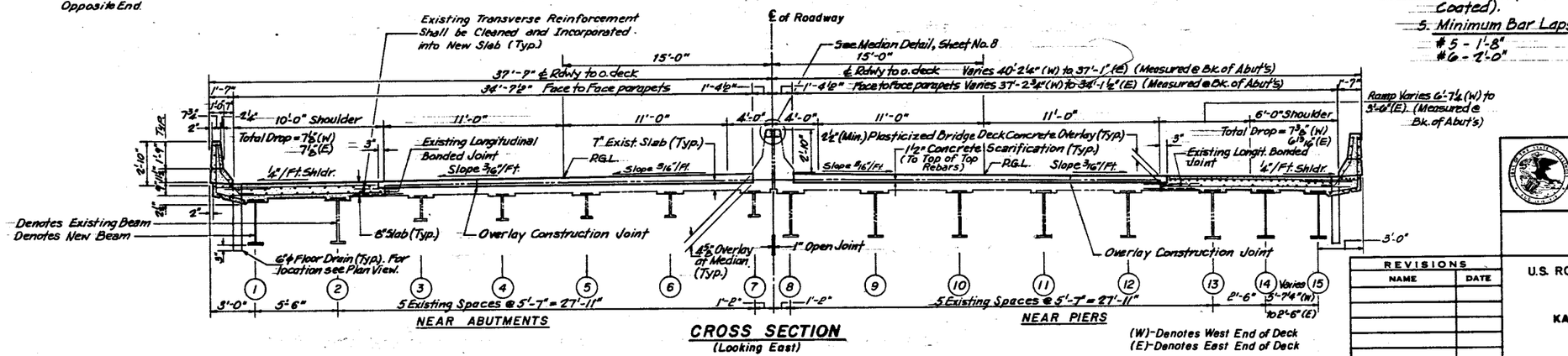
SECTION A-A



SECTION B-B

NOTES:

1. See Sheet No. 7 for Superstructure Details and Bill of Material.
2. Reinforcement Bars designated (E) shall be Epoxy coated.
3. Bars indicated thus 20 x 3 - #5 etc. indicates 20 lines of bars with 3 lengths per line.
4. For Bar Splicer Details, see Std. Sheet. Cost incidental to REINFORCEMENT BARS (Epoxy Coated).
5. Minimum Bar Laps
   - # 5 - 1'-8"
   - # 6 - 2'-0"



NEAR ABUTMENTS

CROSS SECTION
(Looking East)

NEAR PIERS

(W) - Denotes West End of Deck
(E) - Denotes East End of Deck

* Order a3 (E) and a4 (E) bars full Length. Cut to Fit Taper and use Remainder in Opposite End.

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Zemaitaitis
CHECKED	P. Wood
DRAWN	J. Chaliki's
CHECKED	R. Zemaitaitis

REVISIONS	
NAME	DATE

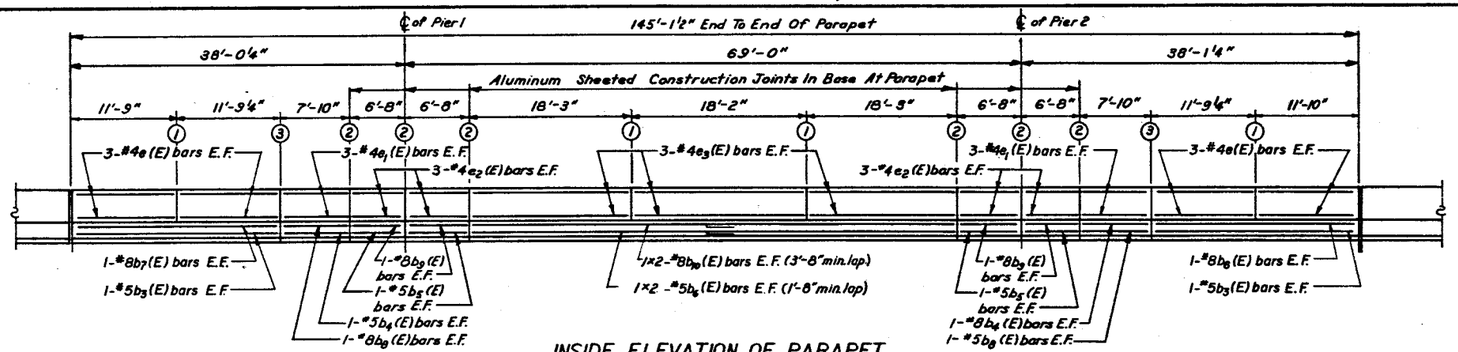
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

SHEET NO. 7 OF 21 SHEETS	F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	426	8R-HB-6(86)	KANE	209	143
	STA.		TO STA		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

1. E.F.-indicates Each Face.
2. Bars indicated thus 15x2-#5 etc. indicates 1 line of bars with 15 lengths per line.
3. The exterior surfaces of the Floor Drain shall be painted with two coats of green paint as specified for Str. Steel. The exterior surfaces of the Aluminum Tube shall be cleaned and given a washcoat pretreatment in accordance with Steel Structures Painting Council's Specification SSPC-SP1 & SSPC-Paint 27 prior to painting.
4. Fiberglass Pipe shall conform to ASTM D 2996, with short-time rupture strenght hoop tensile stress of 30,000 psi. minimum. The surface of the Fiberglass Pipe shall be free of bond inhibiting agents.
5. Reinforcement bars designated (E) shall be Epoxy coated.



INSIDE ELEVATION OF PARAPET
Looking North

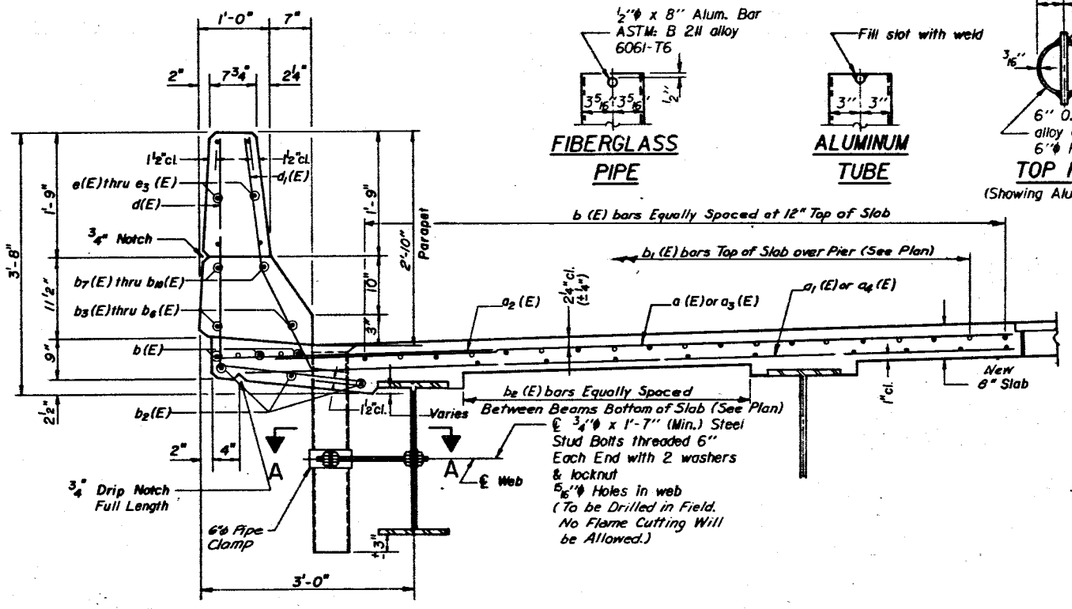
Note: Encircled Numbers Indicate Joint Type. For Details See Sheet No. 6.

SUPERSTRUCTURE BILL OF MATERIAL

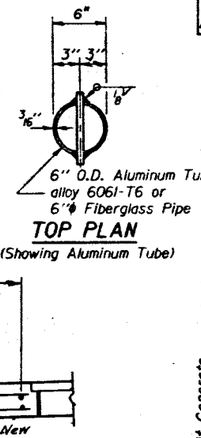
ITEM	UNIT	TOTAL
Plasticized Bridge Deck Conc. Overlay	Sq. Yd.	783
Bridge Deck Scarification 1/2"	Sq. Yd.	775
Deck Slab Repair (Partial Depth)	Sq. Yd.	400
Deck Slab Repair (Full Depth)	Sq. Yd.	45
Concrete Removal	Cu. Yd.	70
Preformed Joint Seal, 1in.	Lin. Ft.	153
Preformed Joint Seal, 2in.	Lin. Ft.	146

SUPERSTRUCTURE BILL OF MATERIAL (Con't.)

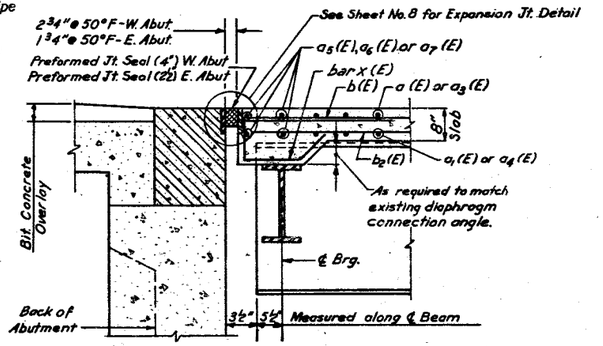
Bar	No.	Size	Length	Shape
a(E)	202	#5	10'-6"	
a1(E)	202	#5	11'-0"	
a2(E)	202	#6	4'-0"	
a3(E)	101	#5	29'-1"	
a4(E)	101	#5	24'-7"	
a5(E)	18	#5	15'-6"	
a6(E)	24	#5	19'-5"	
a7(E)	6	#5	19'-0"	
b(E)	168	#5	25'-8"	
b1(E)	48	#6	17'-0"	
b2(E)	150	#5	25'-8"	
b3(E)	8	#5	23'-2"	
b4(E)	8	#5	7'-6"	
b5(E)	16	#5	6'-4"	
b6(E)	8	#5	19'-0"	
b7(E)	8	#8	23'-2"	
b8(E)	8	#8	7'-6"	
b9(E)	16	#8	6'-4"	
b10	8	#8	20'-0"	
d(E)	292	#4	5'-0"	
d1(E)	318	#5	3'-11"	
d2(E)	146	#4	1'-0"	
x(E)	42	#5	5'-5"	
x1(E)	92	#5	3'-7"	
e(E)	48	#4	11'-6"	
e1(E)	24	#4	7'-7"	
e2(E)	48	#4	6'-5"	
e3(E)	36	#4	17'-11"	
e4(E)	14	#4	20'-2"	
Reinforcement Bars (Epoxy Coated)		Lbs.	26,990	
Class "X" Concrete		Cu. Yd.	139.6	
Floor Drains		Ea.	8	



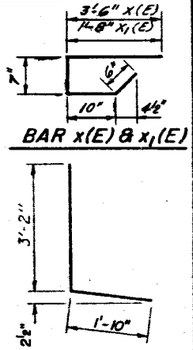
SECTION THRU WIDENING

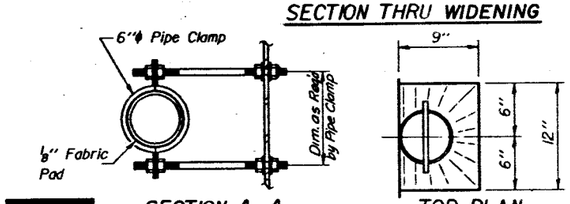


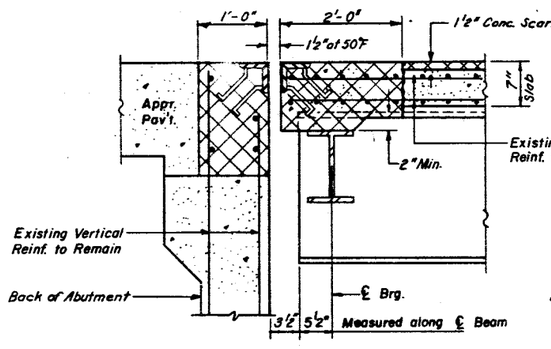
TOP PLAN
(Showing Aluminum Tube)



SECTION THRU ABUTMENTS AT WIDENING

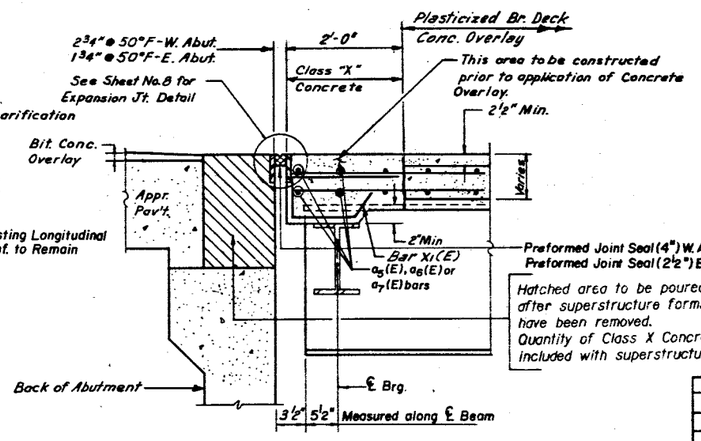






EXISTING SECTION THRU ABUTMENTS

Denotes Concrete Removal and Scarification



NEW SECTION THRU EXISTING ABUTMENTS

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Zemaitaitis
CHECKED	F. Wood
DRAWN	K. Dypkowski
CHECKED	R. Zemaitaitis

REVISIONS	
NAME	DATE

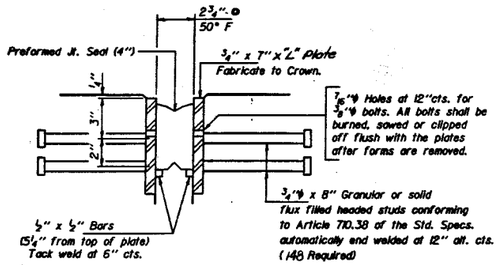
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE DETAILS

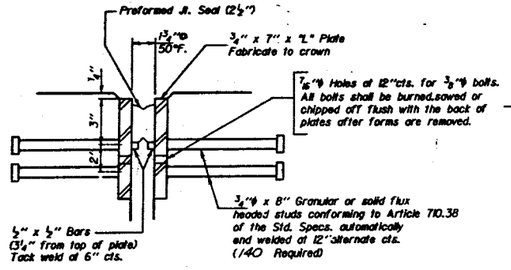
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY—STATION 221+35.32
STR. NO. 045-0007

SECTION	COUNTY	TOTAL SHEETS	SHEET NO
426	8R-HB-6(86)	KANE	209	144
STA		TO STA	
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT	

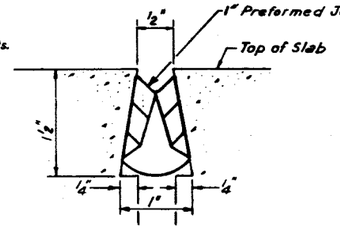
P-91-356-84



EXPANSION JOINT
(WEST ABUTMENT)

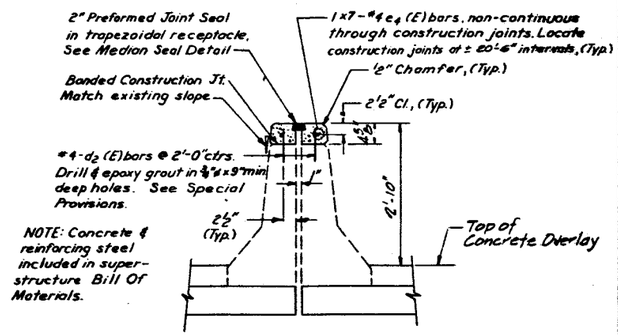


EXPANSION JOINT
(EAST ABUTMENT)

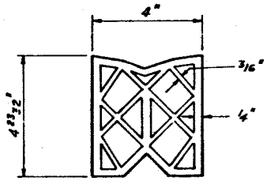


TRANSVERSE DECK JOINT
(AT HINGE - All horizontal dimensions at right angles to joint)

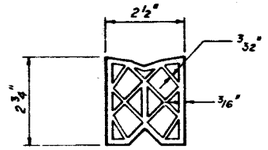
L Lengths for Stage Construction		
	Stage I	Stage II
North	16'-2¾"	18'-5¼"
South	15'-5¾" E. Abut. 19'-7" W. Abut.	18'-7¼"
Butt Weld Plates at Stage Line		



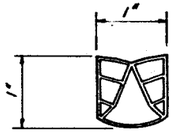
MEDIAN DETAIL



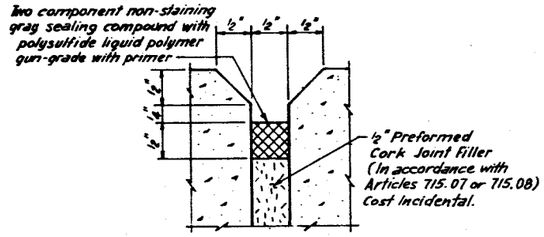
PREFORMED JOINT SEAL (4")



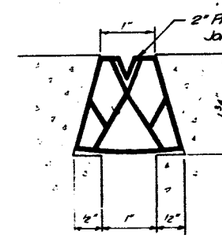
PREFORMED JOINT SEAL (2½")



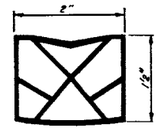
PREFORMED JOINT SEAL (1")
(0.450" MOVEMENT)



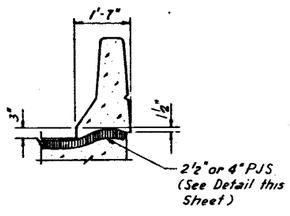
SECTION A - A



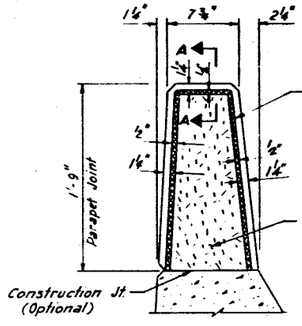
MEDIAN SEAL DETAIL



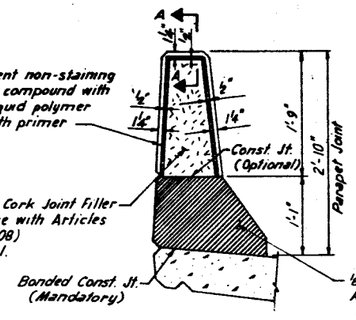
PREFORMED JOINT SEAL (2")
(0.975" MOVEMENT)



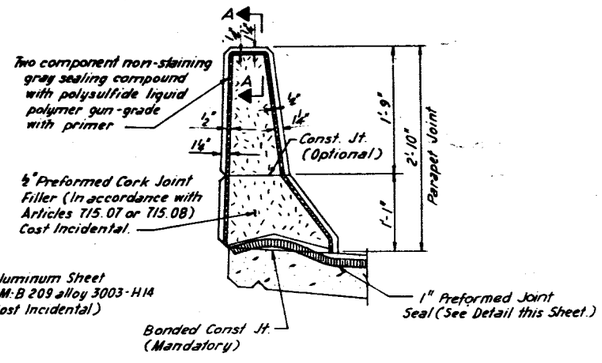
EXPANSION JOINT
END OF SEAL TREATMENT



TYPE 1



TYPE 2



TYPE 3

PARAPET JOINT DETAILS
(For Location of Parapet Joints See Sheet No. 7)

Baker Engineers
Baker Engineering, Inc.™

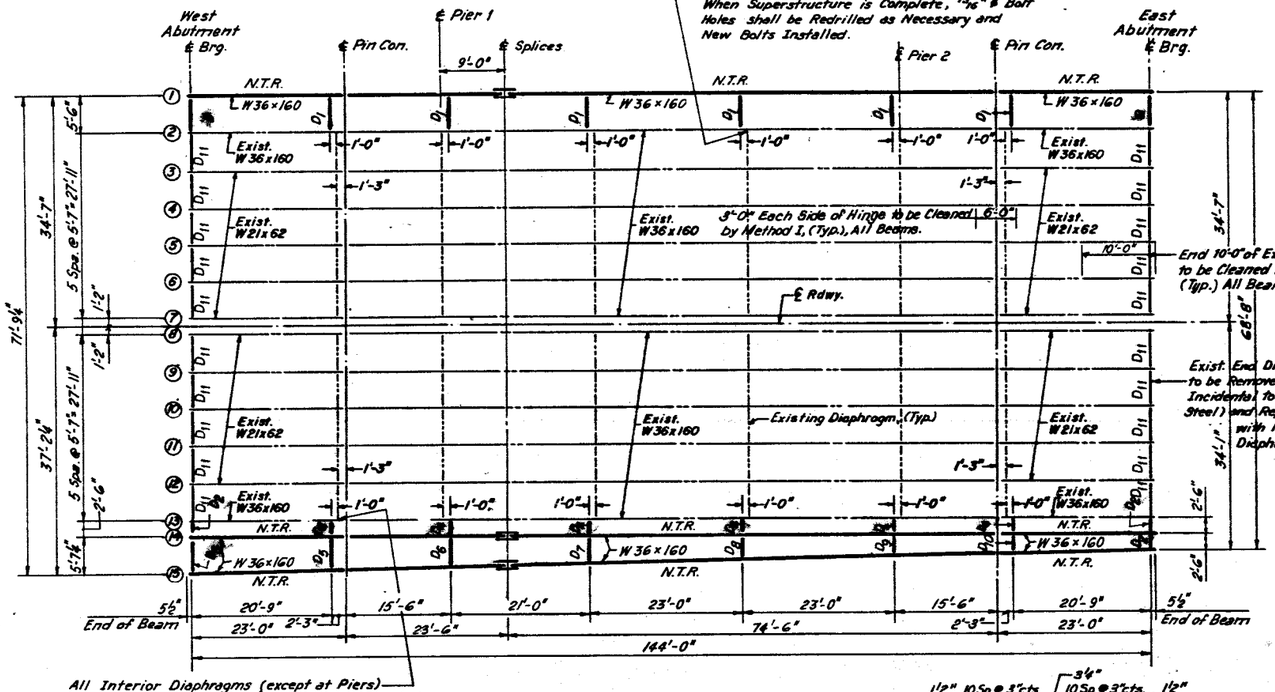
DESIGNED	P. Wood
CHECKED	J. Owen
DRAWN	Z. Dabrowski
CHECKED	P. Wood

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

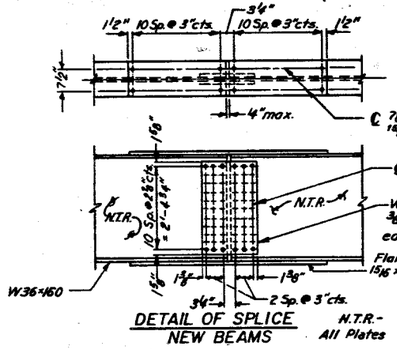
SUPERSTRUCTURE DETAILS

REVISIONS	
NAME	DATE

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY - STATION 221+35.32
STR. NO. 045-0007

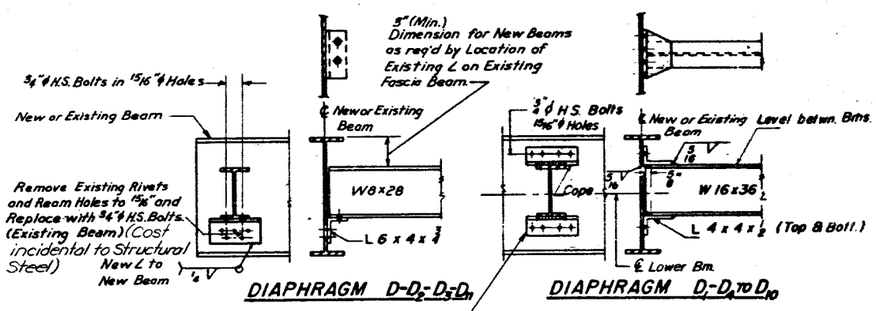


FRAMING PLAN



DETAIL OF SPLICE NEW BEAMS

N.T.R.- All Plates



DIAPHRAGM $D-D_2-D_3-D_{11}$ DIAPHRAGM D_1-D_4 TO D_{10}

BEAM REACTION TABLE		ABUTMENT	PIER
R_{LL}	(K)	10.9	57.1
R_{IL}	(K)	26.5	43.1
Imp.	(K)	7.9	12.0
R. Total	(K)	45.3	112.2

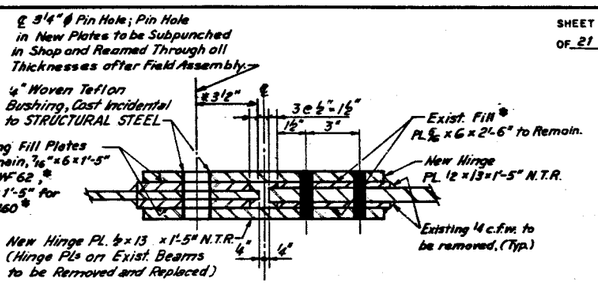
DIAPHRAGM No.	℄ To ℄ BM. SPA.
D, D_1	5'-6"
D_2, D_4	2'-6"
D_3	5'-7¼"
D_5	5'-1⅞"
D_6	4'-9⅝"
D_7	4'-3⅞"
D_8	3'-9⅛"
D_9	3'-3⅛"
D_{10}	2'-11⅜"
D_{11}	5'-7"

MOMENT TABLE		0.3 Sp. 1 or 0.7 Sp. 3	PIER 1 or 2	0.5 Sp. 2
I (New)	(in⁴)	9750	9750	9750
*I (Exist)	(in⁴)	1330	9750	13106
DL	(K/')	0.945	0.945	0.945
M_{LL}	('K)	62.6	256.4	305.9
M_{IL}	('K)	93.3	311.6	490.3
Imp.	('K)	28.0	86.9	126.5
M. Total	('K)	183.9	6549	922.7
fs (New)	(Ksi)	4.1	14.5	20.4
*fs (Exist)	(Ksi)	17.3	14.5	15.7

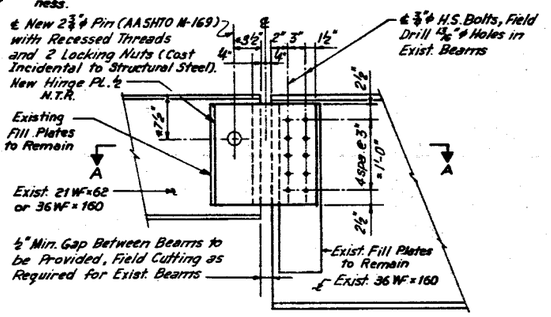
*FOR EXISTING INTERIOR BEAMS

TOP OF FLANGE ELEVATIONS **(BEFORE ANY DEFLECTION)								
BEAM \ LOC.	℄ BRG. W. ABUT.	℄ HINGE NO. 1	℄ BRG. PIER 1	℄ SPLICE	℄ BRG. PIER 2	℄ HINGE NO. 2	℄ BRG. E. ABUT.
1	749.654	749.332	749.063	748.896	747.984	747.763	747.325
14	749.741	749.417	749.137	748.964	748.047	747.825	747.404
15	749.625	749.308	749.043	748.878	747.979	747.762	747.354

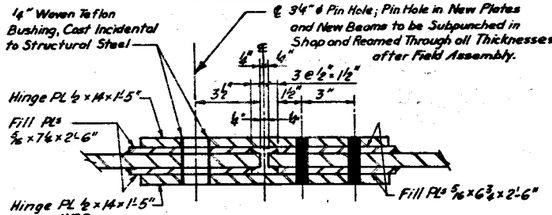
**FOR FABRICATION ONLY



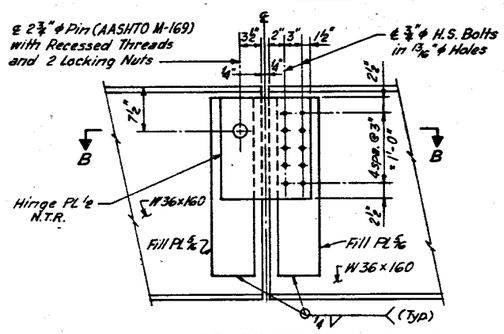
SECTION A-A



HINGE DETAIL - EXIST. BEAMS



SECTION B-B



HINGE DETAIL - NEW BEAMS

N.T.R.

NOTES:

1. TWO HARDENED WASHERS SHALL BE REQUIRED OVER ALL 15/16" HOLES IN DIAPHRAGMS.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M183, UNLESS OTHERWISE NOTED.
3. BUSHINGS TO BE SELF LUBRICATING FILAMENT WOUND EPOXY MATRIX BACKED GAR-FIL BEARING OR METAL BACKED FIBER GLIDE BEARING OR EQUIVALENT. COST INCIDENTAL TO STRUCTURAL STEEL.
4. SUGGESTED SEQUENCE OF CONSTRUCTION FOR HINGE REPLACEMENT. CONTRACTOR MAY SUBMIT HIS OWN SEQUENCE OF CONST. FOR APPROVAL.
   a. REMOVE PORTIONS OF CONCRETE DECK SHOWN ON SHEET 3.
   b. ERECT FALSEWORK TO SUPPORT BEAMS IN SPANS 1 AND 3. FALSEWORK SHALL CONFORM TO THE REQUIREMENTS OF ART. 547.06 AND THE COST SHALL BE INCIDENTAL TO FURNISHING AND ERECTING STRUCTURAL STEEL. SEE SPECIAL PROVISIONS.
   c. REMOVE EXISTING PINS AND BEAM HINGE CONNECTION PLATES.
   d. CLEAN BEAMS - SEE NOTE NO. 5.
   e. FIELD DRILL BOLT HOLES IN BEAM WEBS AND FILL PLATES. INSTALL BOLTS FINGER TIGHT, ADJUST PLATES INTO PROPER POSITION FOR PIN, FULLY TORQUE H.S. BOLTS. REAM PIN HOLE THROUGH BEAM WEB AND PLATES, INSTALL PIN ASSEMBLY.
   f. REMOVE FALSEWORK.
5. CLEAN AND PAINT ALL STRUCTURAL METALS. ALL EXISTING STRUCTURAL METALS SHALL BE CLEANED USING METHOD II, WITH THE EXCEPTION OF THE FOLLOWING WHICH SHALL BE CLEANED BY METHOD I: THE END 10 FT. OF EACH BEAM AT THE ABUTMENTS; THE EXISTING BEAMS FOR A DISTANCE OF 3 FT. EACH SIDE OF THE HINGE CONNECTIONS AFTER THE CONNECTIONS ARE DISASSEMBLED; AND THE BEARINGS AT PIER 2.

   FOLLOWING REMOVAL OF THE CONCRETE DECK IN THE DESIGNATED AREAS, THE TOP FLANGES OF THE FACIA BEAMS, SPLICES AND END DIAPHRAGMS SHALL BE CLEANED USING METHOD II. THE METAL THUS EXPOSED SHALL BE FIELD PRIMED PRIOR TO POURING THE NEW DECK.

   SEE SPECIAL PROVISIONS FOR CLEANING AND PAINTING STEEL STRUCTURES.
6. ALL CONTACT SURFACES OF JOINTS FOR THE DIAPHRAGMS SHALL BE FREE OF PAINT OR LACQUER.
7. SEE GENERAL NOTES, SHEET NO. 2, FOR NOTCH TOUGHNESS REQUIREMENTS.
8. REMOVAL OF EXISTING WELDS SHALL BE BY USE OF ARC-AIR METHOD TO MINIMIZE DAMAGE TO THE EXISTING STRUCTURAL STEEL, EXCEPT THAT CONTRACTOR MAY USE OTHER METHODS IF APPROVED BY THE ENGINEER.

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Zemaitaitis
CHECKED	P. Wood
DRAWN	Z. Dabrowski
CHECKED	R. Zemaitaitis

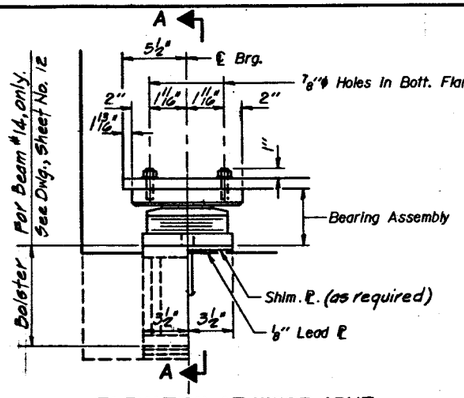
I ---- MOMENT OF INERTIA
DL --- DEAD LOAD INCLUDING BEAM, SLAB, MEDIAN AND/OR PARAPET
M_{DL} -- MOMENT DUE TO DEAD LOAD
M_{LL} -- MOMENT DUE TO LIVE LOAD
IMP --- IMPACT
f_s --- BENDING STRESS DUE TO TOTAL MOMENT, M_T.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

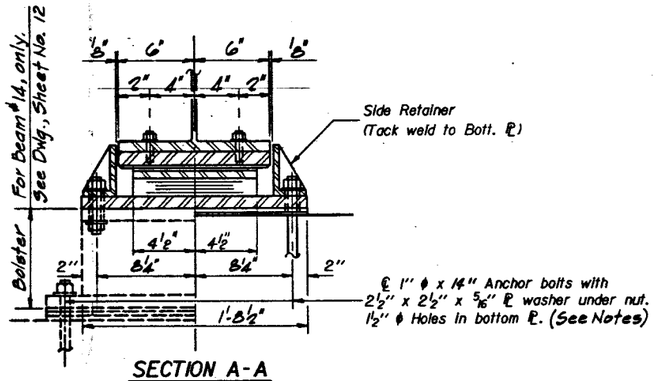
STRUCTURAL STEEL

REVISIONS	
NAME	DATE

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

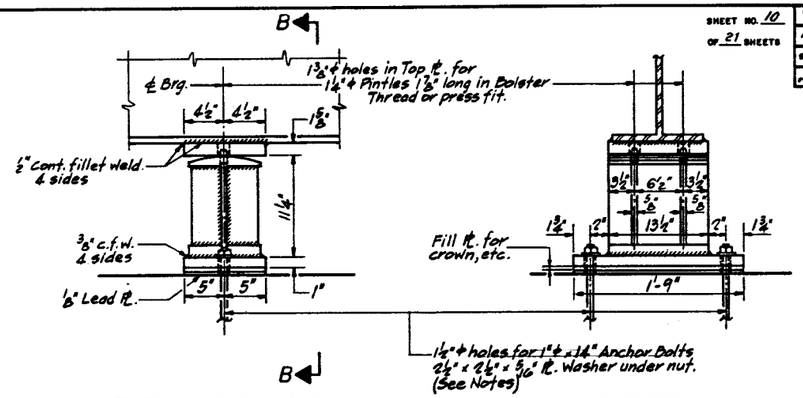


ELEVATION AT WEST ABUT.
(Looking North)



SECTION A-A

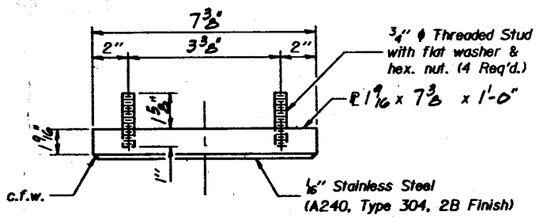
TYPE II TFE ELASTOMERIC EXP. BRG.



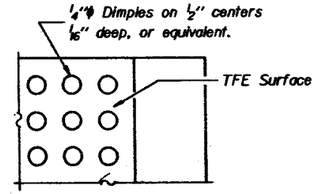
ELEVATION AT PIER 2

SECTION B-B

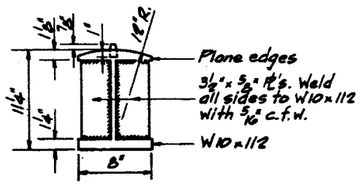
FIXED BEARING



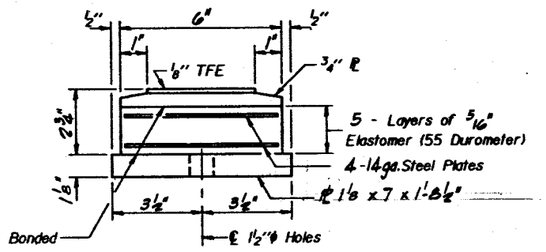
TOP BEARING ASSEMBLY



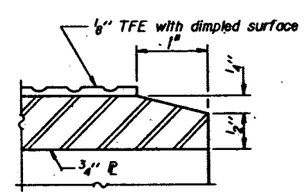
PLAN-TFE SURFACE



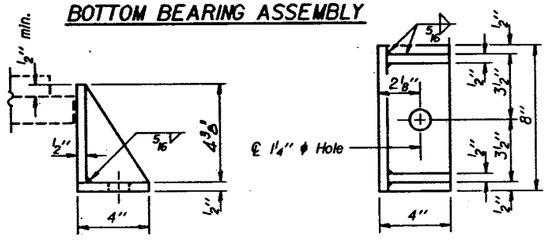
BOLSTER



TOP BEARING ASSEMBLY



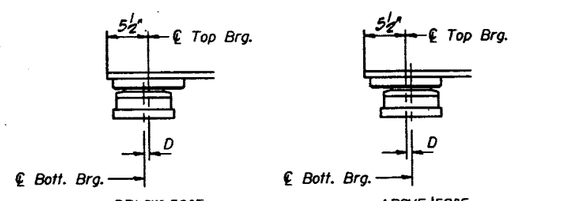
SECTION THRU TFE



BOTTOM BEARING ASSEMBLY

SIDE RETAINER

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



SETTING ANCHOR BOLTS AT EXP. BRG. (TYPE II)

D = ⅛" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly, Type II	Each	3

Notes:

1. Anchor bolts at fixed bearings may be built into the masonry. See Sheet #20 for Anchor Bolt Details.
2. All steel plates shown on this sheet shall be AASHTO M-183 unless otherwise noted.
3. The ⅛" TFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces. Bonding of ⅛" TFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.
4. Cost of Structural Steel for Fixed Bearing at Pier #2 is included for payment with "Furnishing and Erecting Structural Steel."

F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
426	8R-HB-6(86)	KANE	209	146
STA.	TO STA.			
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 10 OF 21 SHEETS

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Zemaitaitis
CHECKED	J. Owen
DRAWN	J. Chaliki's
CHECKED	P. Wood

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

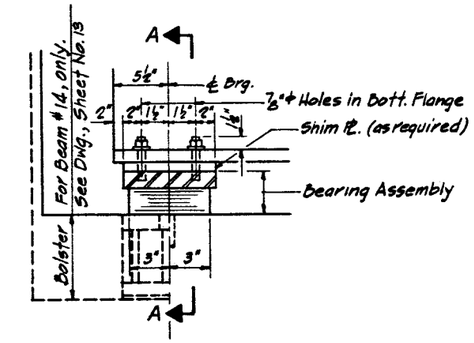
NEW BEARING DETAILS
WEST ABUTMENT & PIER 2

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER
LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

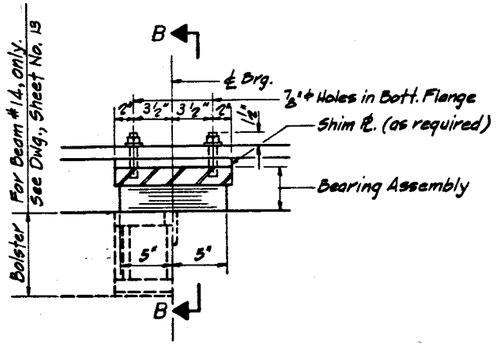
REVISIONS	
NAME	DATE

01

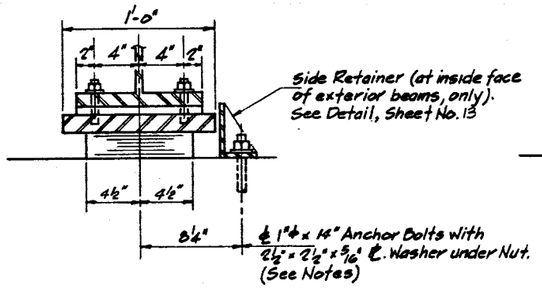
F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
426	8R-HB-6(86)	KANE	209	147
STA.	TO STA			
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		



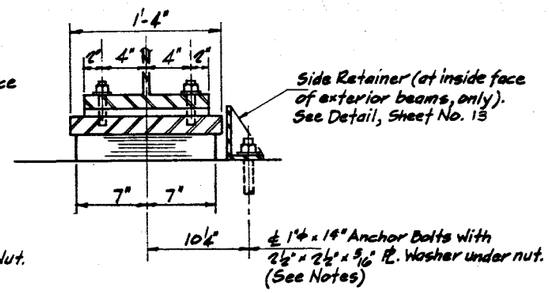
ELEVATION AT EAST ABUT.
(Looking South)



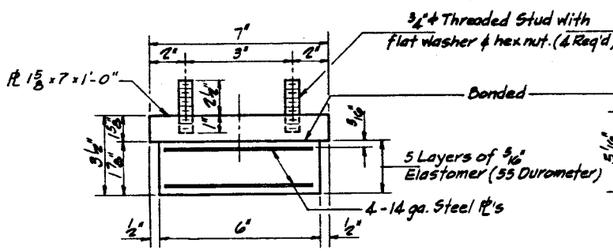
ELEVATION AT PIER 1



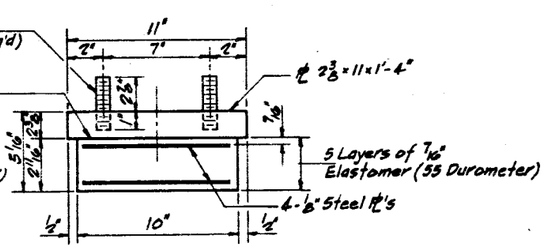
SECTION A-A



SECTION B-B



EAST ABUT. BEARING ASSEMBLY



PIER 1 BEARING ASSEMBLY

TYPE I ELASTOMERIC EXPANSION BRG.

NOTES:
1. See Sheet # 20 for Anchor Bolt Details.
2. Shim plates shall not be placed under Bearing Assembly.

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Zemaitaitis
CHECKED	J. Owen
DRAWN	J. Chaliki's
CHECKED	P. Wood

BILL OF MATERIAL

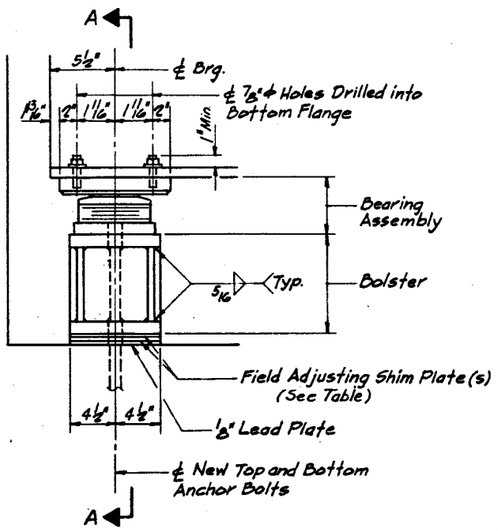
Item	Unit	Total
Elastomeric Bearing Assembly, Type I	Each	6

REVISIONS	
NAME	DATE

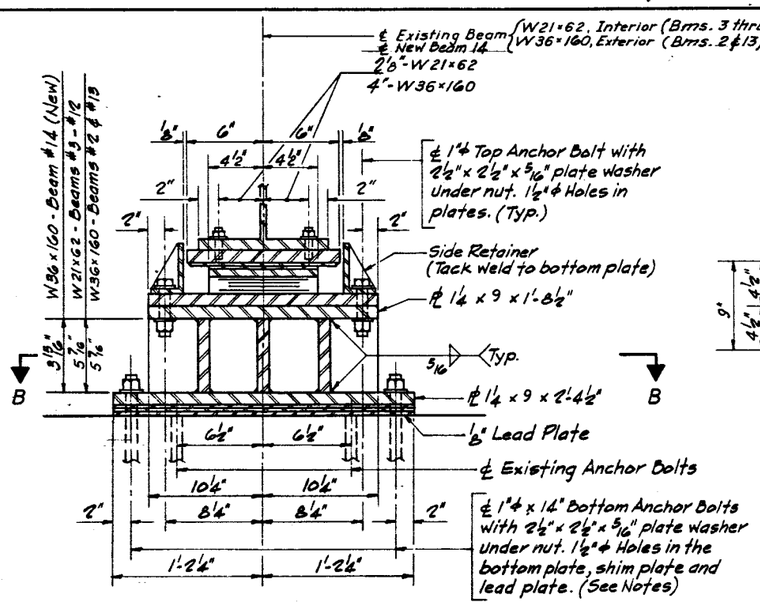
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NEW BEARING DETAILS
EAST ABUTMENT & PIER 1

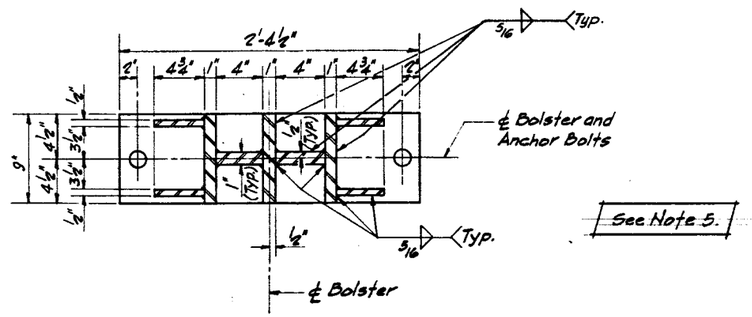
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER
LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY—STATION 221+35.32
STR. NO. 045-0007



ELEVATION AT WEST ABUT.



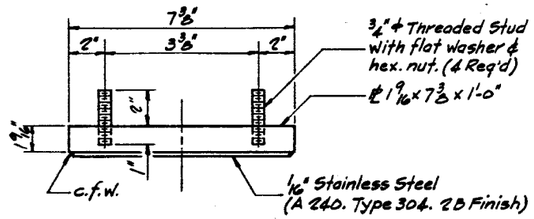
SECTION A-A



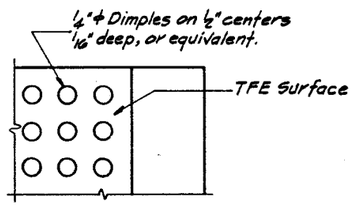
SECTION B-B

See Note 5.

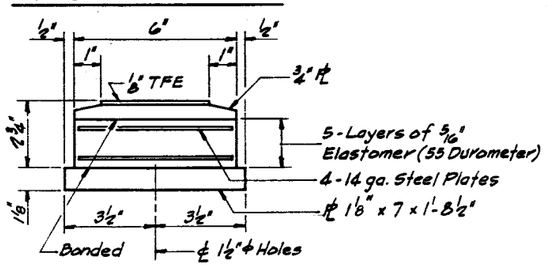
TYPE II TFE ELASTOMERIC EXP. BRG. WITH BOLSTER



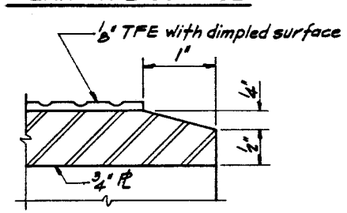
TOP BEARING ASSEMBLY



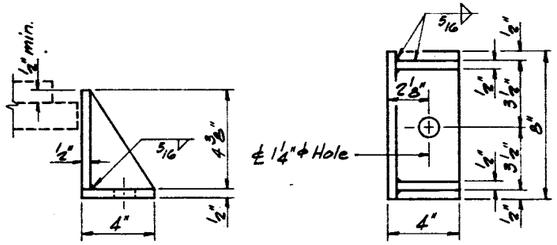
PLAN - TFE SURFACE



BOTTOM BEARING ASSEMBLY

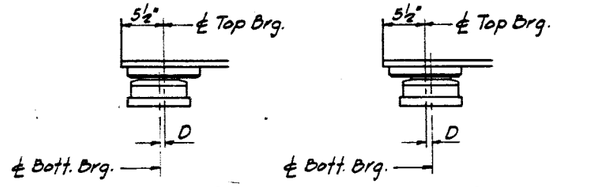


SECTION THRU TFE



SIDE RETAINER

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



BELOW 50°F. (Move bott. brg. away from fixed brg.)

ABOVE 50°F. (Move bott. brg. toward fixed brg.)

SETTING ANCHOR BOLTS AT EXP. BRG.

D = ⅛" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

TABLE OF SHIM PLATES

Location \ Beam	2	3	4	5	6	7	8	9	10	11	12	13
West Abutment	0	0	9/16"	0	9/16"	0	0	9/16"	0	9/16"	0	0

Notes:

1. See Sheet #20 for Anchor Bolt Details.
2. The ⅛" TFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces. Bonding of ⅛" TFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.
3. Contractor shall verify dimensions of exist. Bearings before removal and ordering of new Bearings, or fabrication of Bolsters.
4. Cost of Structural Steel for Bolsters is included for payment with "Furnishing and Erecting Structural Steel".
5. The Contractor has the option to provide an alternate Bolster arrangement made up of an appropriate wide Flange or H.P. shape with the necessary Stiffeners. This alternate must be submitted via Detailer shop Drawings and must receive approval by the Engineer prior to Fabrication.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly, Type II	Each	12

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Zemaitaitis
CHECKED	J. Owen
DRAWN	J. Chaliki's
CHECKED	P. Wood

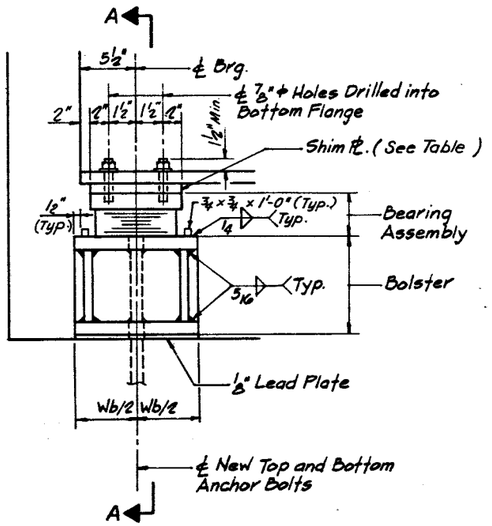
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

REPLACEMENT BEARING DETAILS
WEST ABUTMENT

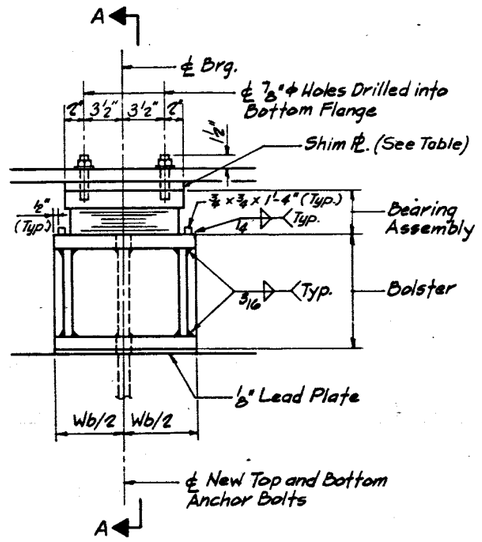
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 6R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
426	8R-HB-6(86)	KANE	209	149
STA	TO STA			
FED ROAD DIST NO. 7	ILLINOIS	FED AID PROJECT		

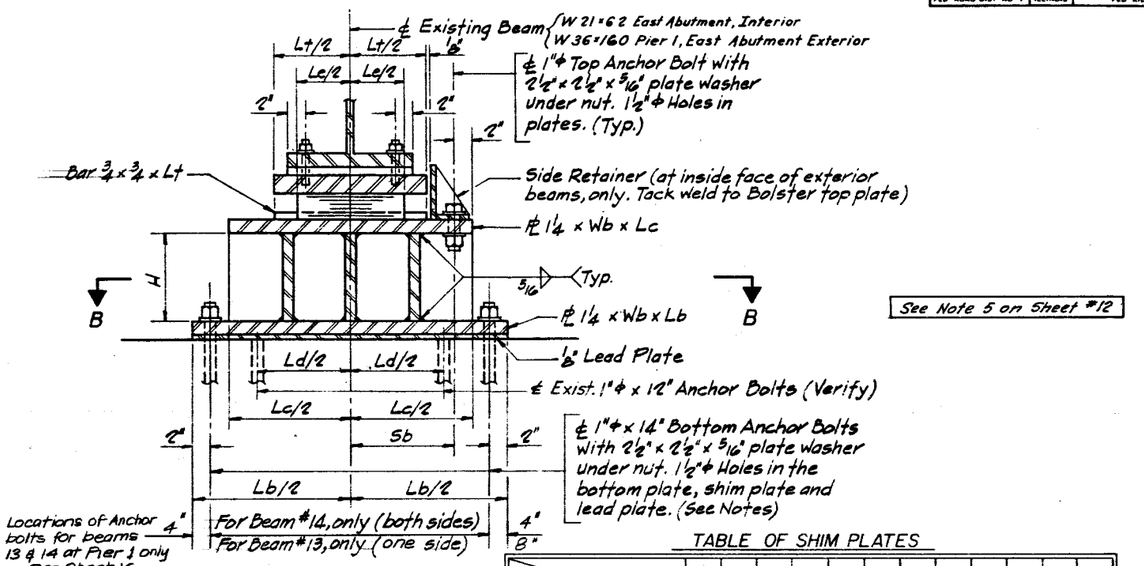


ELEVATION AT EAST ABUT.



ELEVATION AT PIER I

TYPE I ELASTOMERIC EXPANSION BRG. WITH BOLSTER

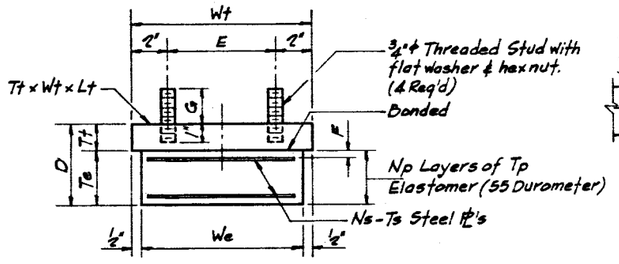


See Note 5 on Sheet #12

SECTION A-A

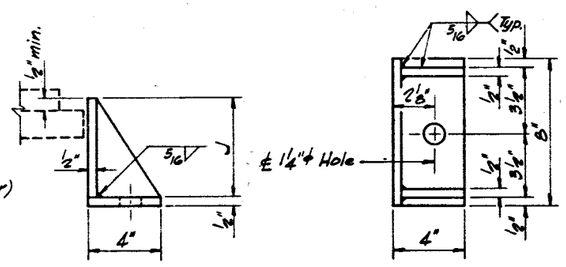
TABLE OF SHIM PLATES

Location \ Beam	2	3	4	5	6	7	8	9	10	11	12	13
East Abutment	0	0	9/16"	0	9/16"	0	0	9/16"	0	9/16"	0	0
Pier 1	0	9/16"	0	9/16"	0	9/16"	9/16"	0	9/16"	0	9/16"	0



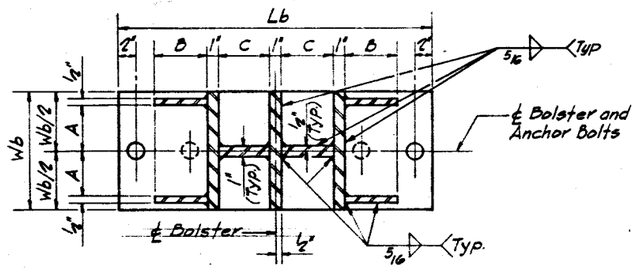
EAST ABUT. BEARING ASSEMBLY

PIER I BEARING ASSEMBLY



SIDE RETAINER

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



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly, Type I	Each	24

TABLE OF VARIABLES FOR TYPE I EXPANSION BEARINGS WITH BOLSTERS

LOCATION	VARIABLE																							
	Te	We	Le	Np	Tp	Ns	Ts	Tt	Wt	Lt	Wb	Lb	Lc	Sb	Ld	A	B	C	D	E	F	G	H	J
East Abutment Int. W21x62 Beams #3-#12	1⅞"	6"	9"	5	5/16"	4	14 Ga.	1⅝"	7"	1'-0"	10"	2'-4½"	1'-8½"	8¼"	1'-1"	4"	4¾"	4"	3½"	3"	5/16"	2⅞"	7⅜"	3½"
East Abutment Ext. W36x160 Beams #2 & #13	1⅞"	6"	9"	5	5/16"	4	14 Ga.	1⅝"	7"	1'-0"	10"	2'-4½"	1'-8½"	8¼"	1'-1"	4"	4¾"	4"	3½"	3"	5/16"	2⅞"	7⅜"	3½"
East Abutment Ext. W36x160 Beam #14	1⅞"	6"	9"	5	5/16"	4	14 Ga.	1⅝"	7"	1'-0"	10"	2'-4½"	1'-8½"	8¼"	NA	4"	4¾"	4"	3½"	3"	5/16"	2⅞"	5 15/16"	3½"
Pier 1, Beams #2-#13	2 1/16"	10"	1'-2"	5	7/16"	4	12 Ga.	2⅜"	11"	1'-4"	1'-2"	2'-8½"	2'-0½"	10¼"	1'-5½"	6"	5¾"	5"	5 1/16"	7"	7/16"	2⅞"	6 15/16"	5 1/16"
Pier 1, Beam #12	2 1/16"	10"	1'-2"	5	7/16"	4	12 Ga.	2⅜"	11"	1'-4"	1'-2"	2'-0½"	2'-0½"	10¼"	NA	6"	5¾"	5"	5 1/16"	7"	7/16"	2⅞"	5 15/16"	5 1/16"

Notes:

1. See Sheet #20 for Anchor Bolt Details.
2. Contractor shall verify dimensions of existing Bearings before removal and ordering of new Bearings, or fabrication of Bolsters.
3. Cost of Structural Steel for Bolsters is included for payment with "Furnishing and Erecting Structural Steel".

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Zemaitaitis
CHECKED	J. Owen
DRAWN	J. Chaliklis
CHECKED	F. Wood

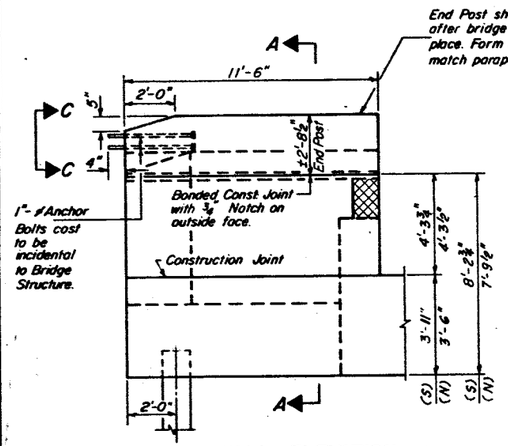
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

REPLACEMENT BEARING DETAILS
EAST ABUTMENT & PIER I

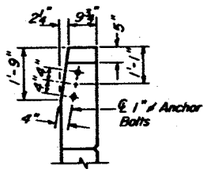
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

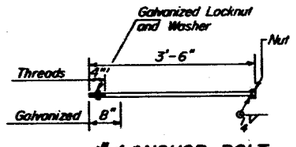
1/3



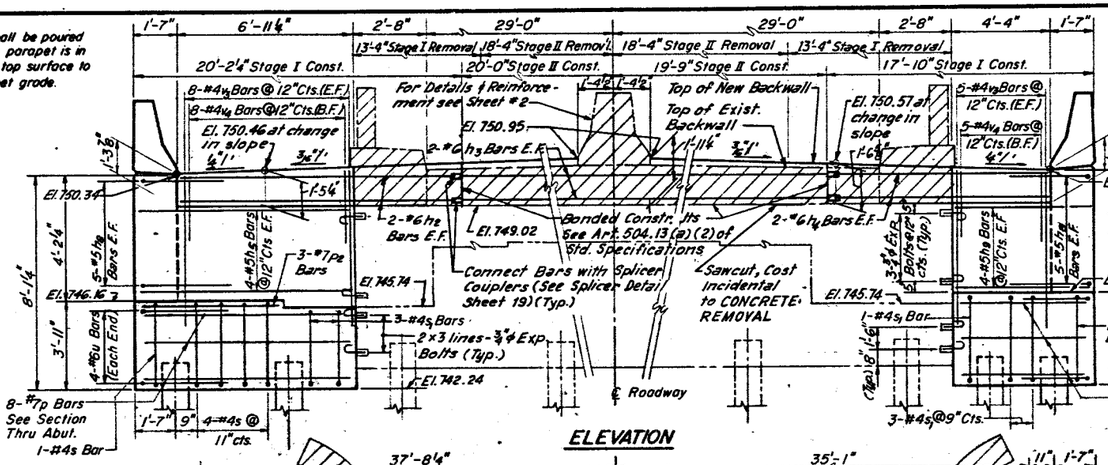
WING WALL ELEVATION



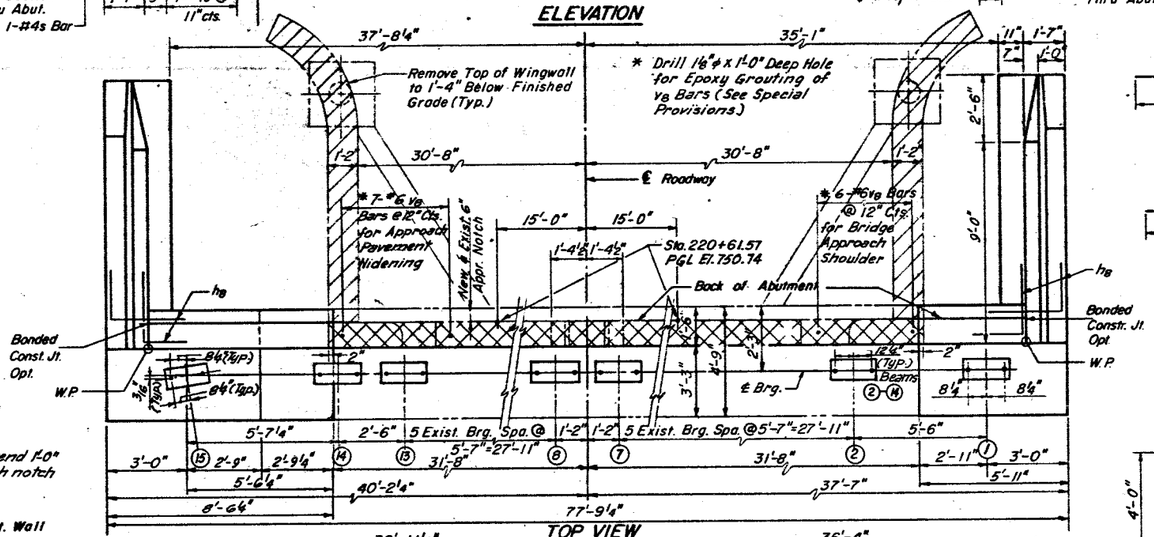
VIEW C-C



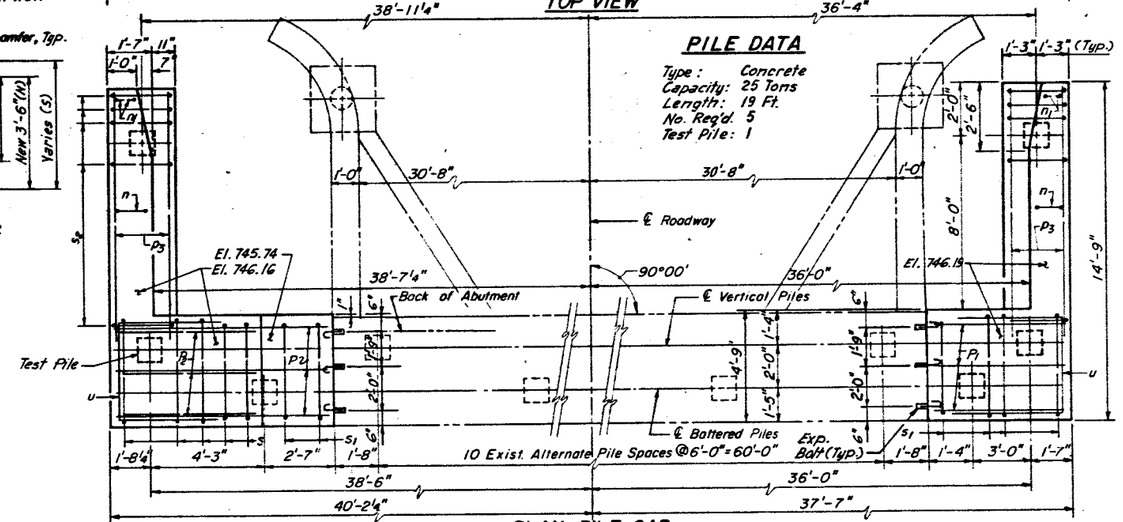
1"ø ANCHOR BOLT



ELEVATION



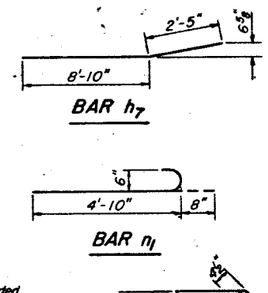
TOP VIEW



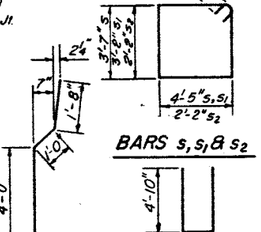
PLAN-PILE CAP

PILE DATA

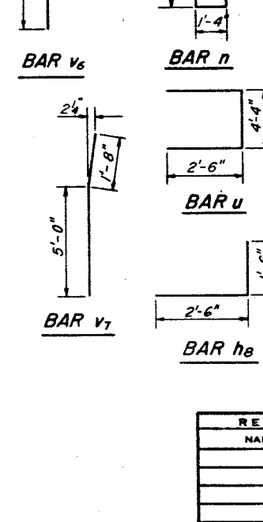
Type: Concrete
Capacity: 25 Tons
Length: 19 Ft.
No. Req'd. 5
Test Pile: 1



BAR h_7



BAR n_1



BARS s, s_1 & s_2

BAR n

BAR v_4

BAR v_7

BAR u

BAR h_8

NOTES:

Hatched Area Indicates Concrete Removal. Reinforcement Extending Into Removed Area Shall Be Cleaned And Incorporated Into The New Construction.

Cross Hatched Area To Be Poured After Superstructure Is In Place. Quantity Of Class X Concrete Included With Superstructure.

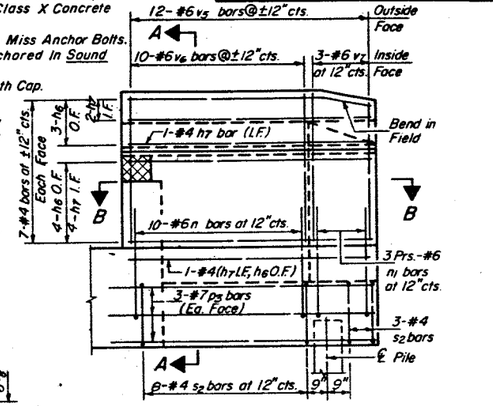
Space Reinforcement In Cap To Miss Anchor Bolts.

Expansion Bolts Shall Be Anchored In Sound Concrete.

Pour Steps Monolithically With Cap.

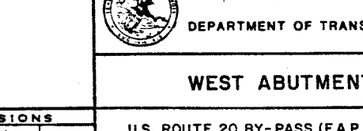
Designations:
(N) Denotes North Wingwall
(S) Denotes South Wingwall
I.F. Denotes Inside Face
O.F. Denotes Outside Face
E.F. Denotes Each Face
N.F. Denotes Near Face
B.F. Denotes Back Face

Cost of Bar Splicer Incidental to REINFORCEMENT BARS.



WING WALL ELEVATION

Reinforcement



SEC. B-B

WEST ABUTMENT BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h_2	4	#6	18'-3"	
h_3	4	#6	39'-11"	
h_4	4	#6	15'-10"	
h_5	8	#5	8'-3"	
h_6	16	#4	11'-3"	
h_7	16	#4	11'-3"	
h_8	20	#5	4'-0"	
h_9	8	#5	5'-8"	
n	20	#6	11'-0"	
n_1	12	#6	5'-6"	
		#		
P	8	#7	8'-3"	
p_1	8	#7	5'-8"	
p_2	2	#7	5'-5"	
p_3	12	#7	11'-3"	
s	5	#4	16'-9"	
s_1	8	#4	15'-11"	
s_2	22	#4	9'-5"	
u	8	#6	9'-4"	
v_3	26	#4	5'-6"	
v_4	13	#4	3'-9"	
v_5	24	#6	6'-8"	
v_6	20	#6	6'-8"	
v_7	6	#6	6'-8"	
v_8	13	#6	2'-0"	
Class X Concrete			Cu. Yds	25.9
Reinforcement Bars			Lbs.	2910
Furnishing Concrete Piles			Lin. Ft.	95
Test Pile Concrete			Ea.	1
Concrete Removal			Cu. Yds.	4.5
Expansion Bolts (¾"ø)			Ea.	18

SEC. A-A

SEC. THRU NEW ABUT. EXTENSIONS

DESIGNED	P. Wood
CHECKED	J. Owen
DRAWN	Z. Dabrowski
CHECKED	P. Wood

Baker Engineers

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
426	8R-HB-6(86)	KANE	209	150
STA.	TO STA			
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 14 OF 21 SHEETS

NOTES:

Hatched Area Indicates Concrete Removal. Reinforcement Extending Into Removed Area Shall Be Cleaned And Incorporated Into The New Construction.

Cross Hatched Area To Be Poured After Superstructure Is In Place. Quantity Of Class X Concrete Included With Superstructure.

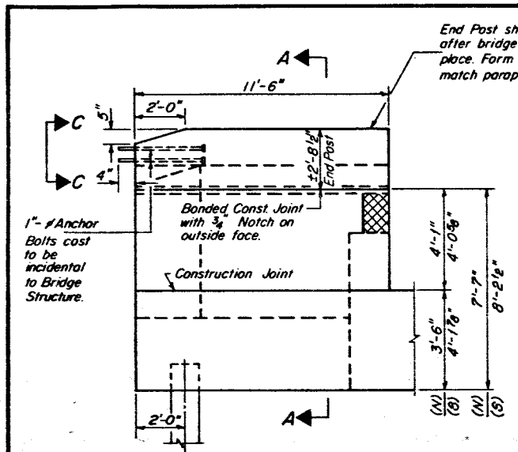
Space Reinforcement In Cap To Miss Anchor Bolts.

Expansion Bolts Shall Be Anchored In Sound Concrete.

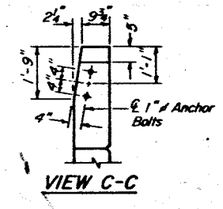
Pour Steps Monolithically With Cap.

Designations:
- (N) Denotes North Wingwall
- (S) Denotes South Wingwall
- I.F. Denotes Inside Face
- O.F. Denotes Outside Face
- E.F. Denotes Each Face
- N.F. Denotes Near Face
- B.F. Denotes Back Face

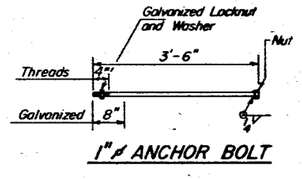
Cost Of Bar Splicers Incidental To REINFORCEMENT BARS.



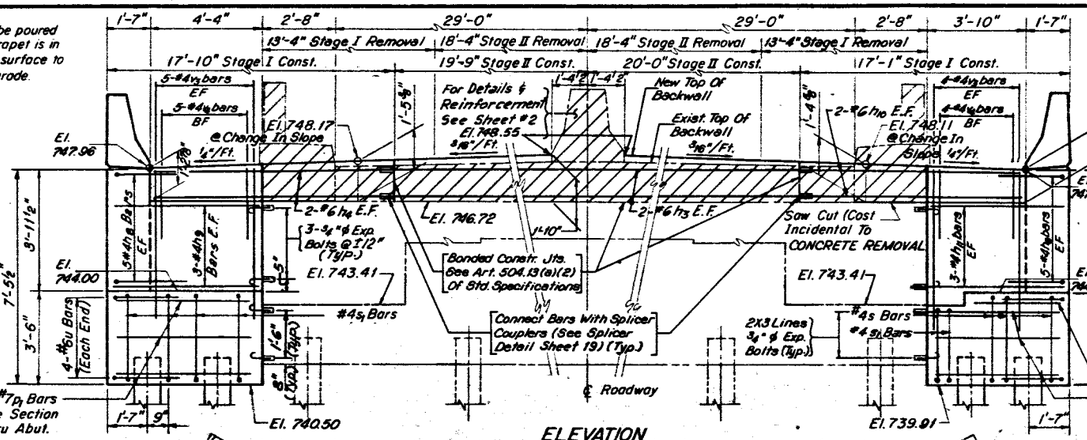
WING WALL ELEVATION

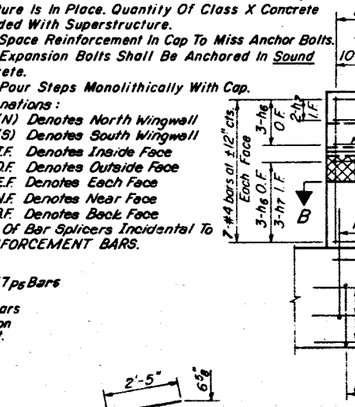


VIEW C-C

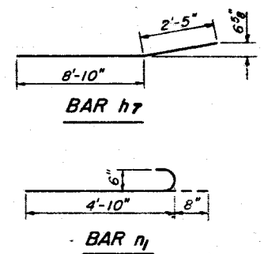


1"ø ANCHOR BOLT



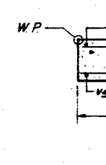


WING WALL ELEVATION
Reinforcement

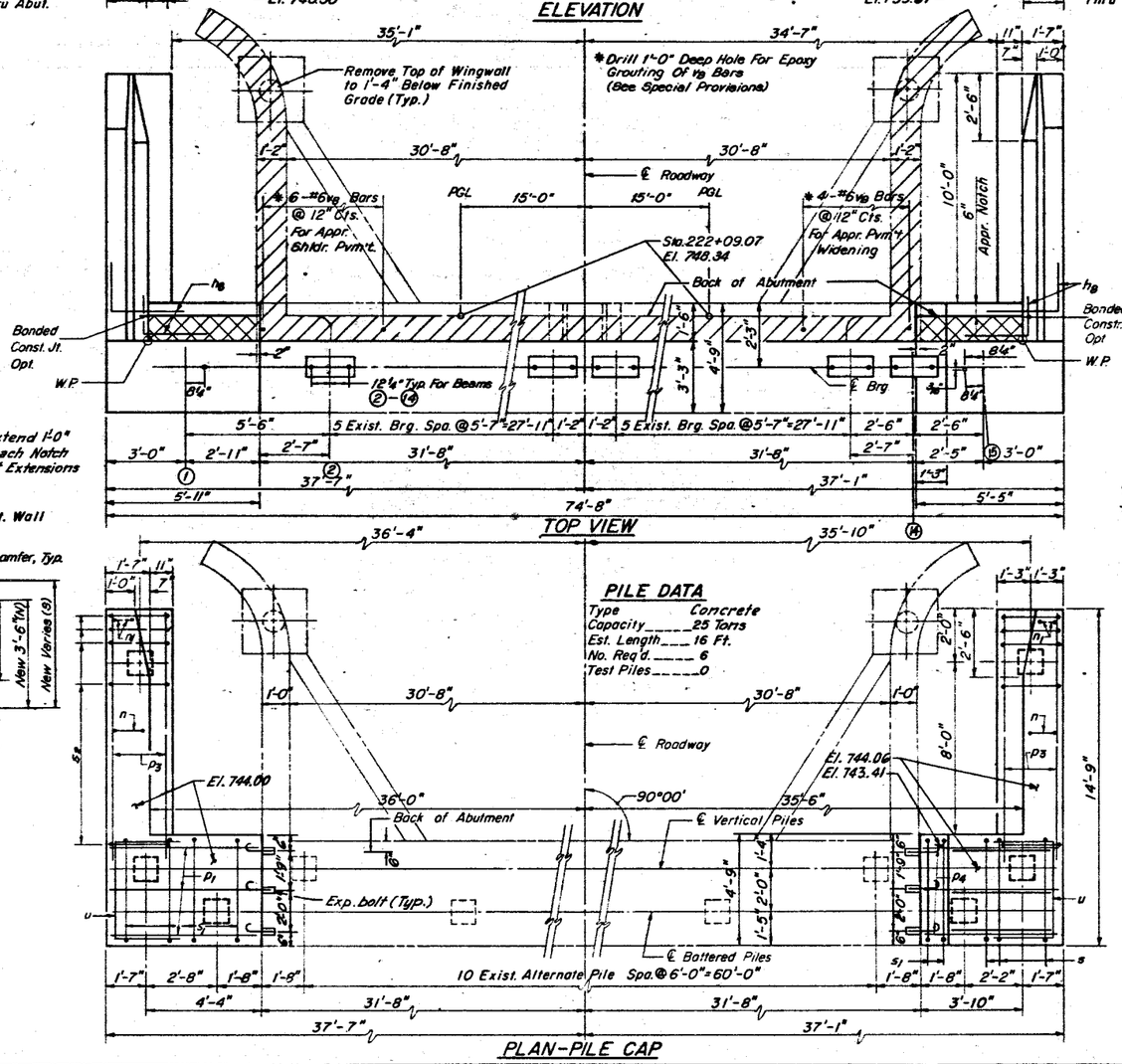


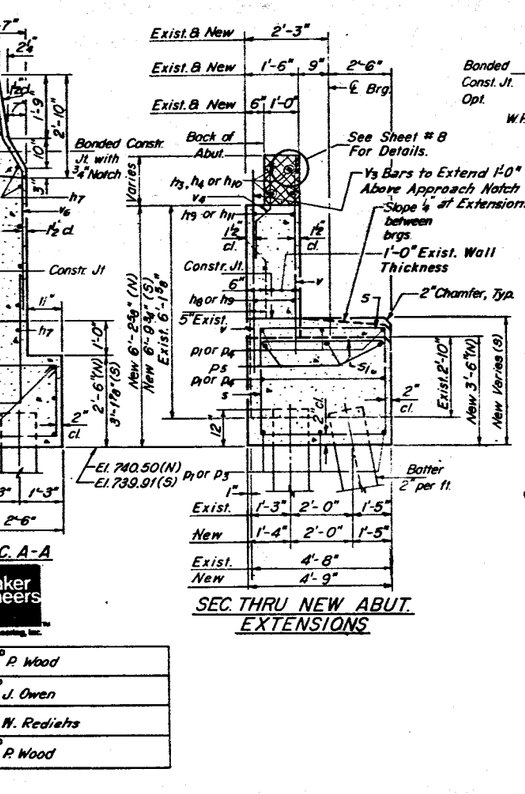
BAR h7

BAR n1



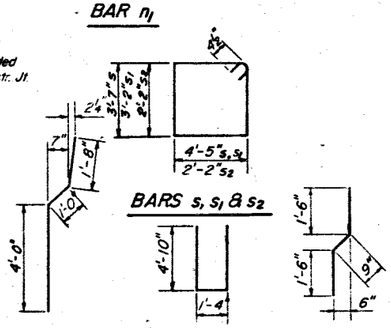
SEC. B-B





SEC. A-A

SEC. THRU NEW ABUT. EXTENSIONS



BARS s, s1 & s2

EAST ABUTMENT BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h3	4	#6	39'-11"	
h4	4	#6	15'-10"	
h6	16	#4	11'-3"	
h7	16	#4	11'-3"	
h8	20	#5	4'-0"	
h9	6	#5	5'-8"	
h10	4	#4	15'-1"	
h11	6	#4	5'-1"	
n	20	#6	11'-0"	
n1	12	#6	5'-6"	
p1	8	#7	5'-8"	
p3	12	#7	11'-3"	
p4	8	#7	5'-2"	
p5	3	#7	3'-10"	
s	3	#4	16'-9"	
s1	6	#4	15'-11"	
s2	22	#4	9'-5"	
u	8	#6	9'-4"	
v3	18	#4	5'-6"	
v4	9	#4	3'-9"	
v5	24	#6	6'-8"	
v6	20	#6	6'-8"	
v7	6	#6	6'-8"	
v8	10	#6	2'-0"	
Class X Concrete			Cu. Yds.	23.9
Reinforcement Bars			Lbs.	2770
Furnishing Concrete Piles			Lin. Ft.	96
Concrete Removal			Cu. Yds	4.5
Expansion Bolts (¾"ø)			Ea.	18

DESIGNED	P. Wood
CHECKED	J. Owen
DRAWN	M. Rediehs
CHECKED	P. Wood

Baker Engineers
Baker Engineering, Inc.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST ABUTMENT

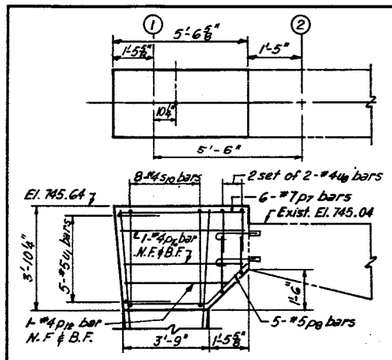
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

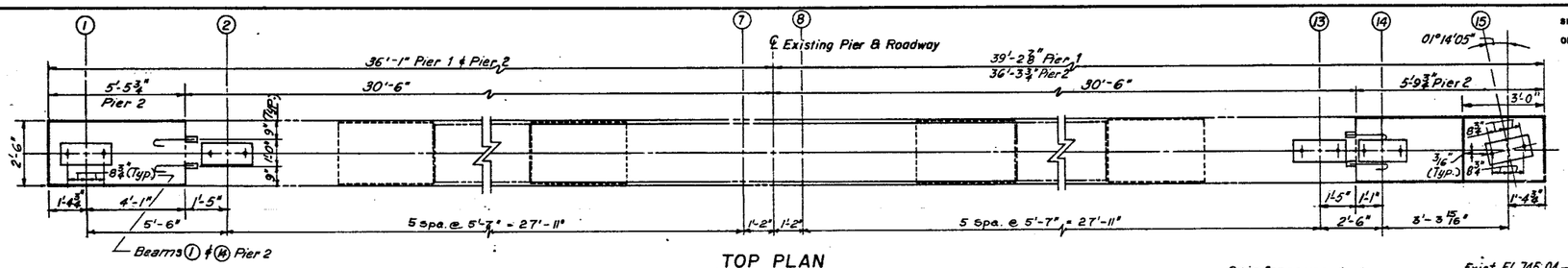
51

F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
426	8R-HB-6(86)	KANE	209	152
STA.		TO STA		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

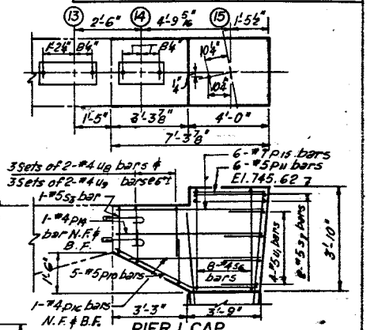
SHEET NO. 16 OF 21 SHEETS



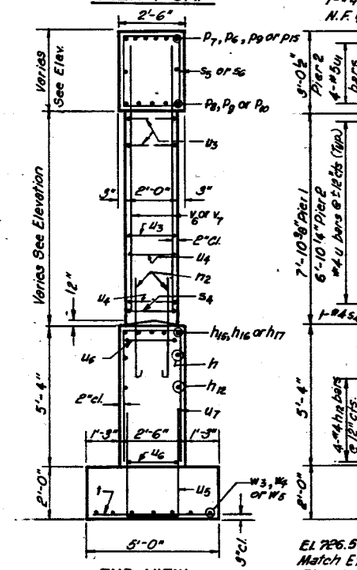
PIER 1 CAP



TOP PLAN

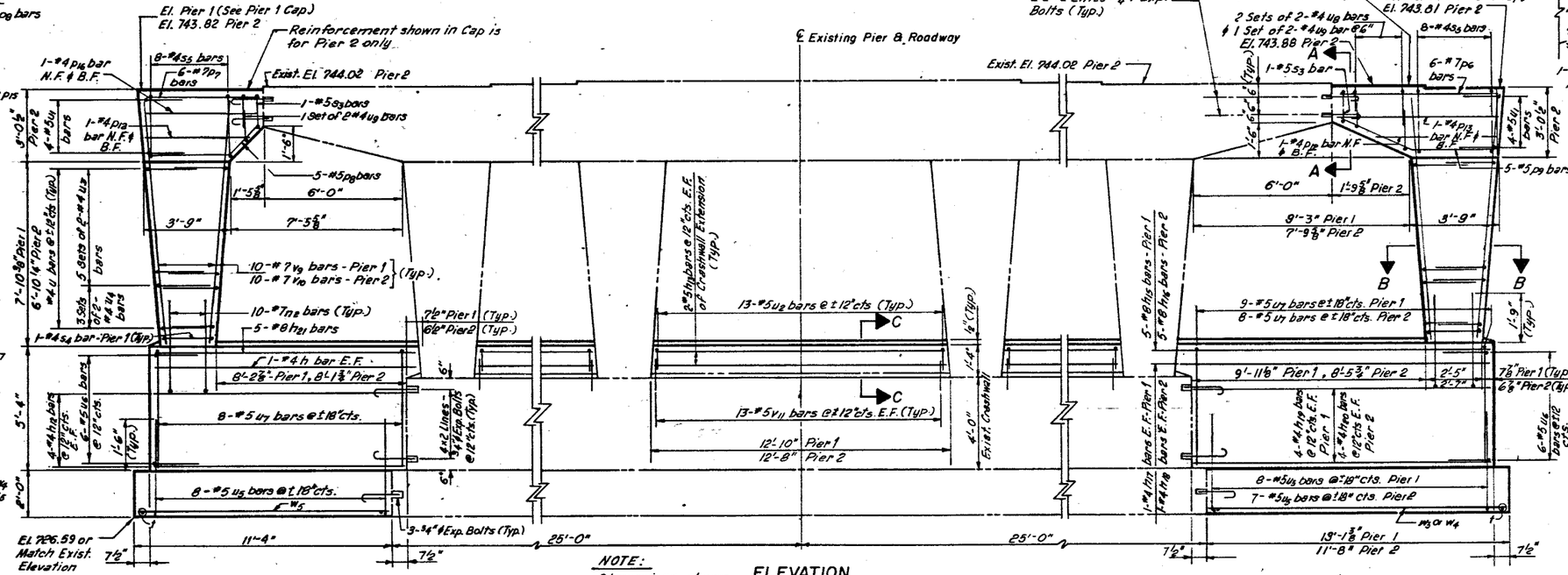


PIER 1 CAP



END VIEW

Note: All Edges Shall have Standard ¾" Chamfer Except Footing.

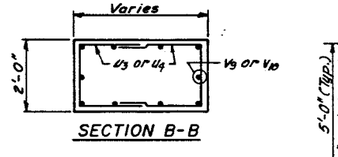


ELEVATION

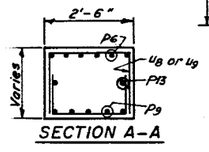
Looking East

NOTE:
Dimensions shown are for Piers 1 & 2 unless otherwise noted.

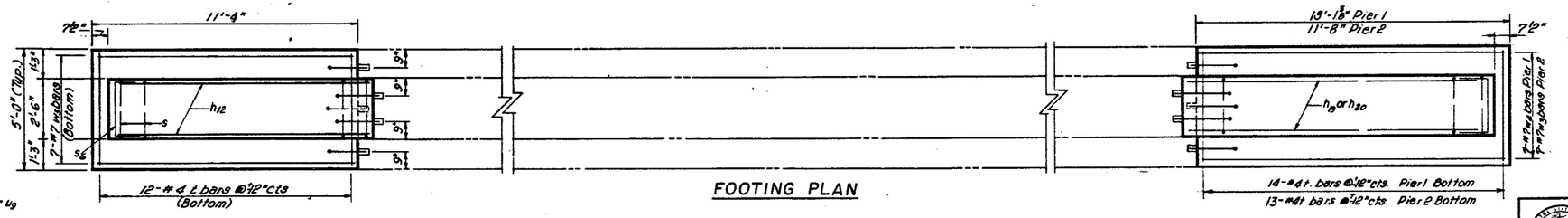
Maximum Soil Pressure = 3.25 Tons/sq.ft



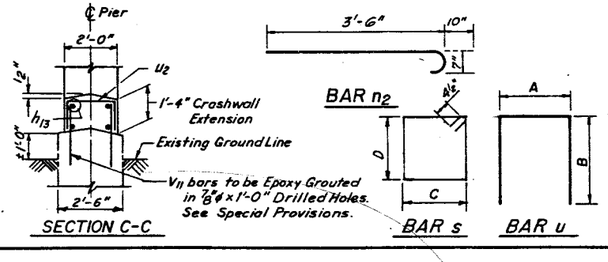
SECTION B-B



SECTION A-A



FOOTING PLAN



SECTION C-C

BAR BENDING DETAILS

A & B DIMENSIONS

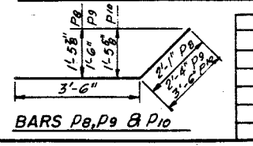
BAR	A	B
U_1	2'-1"	1'-8"
U_2	1'-8"	1'-0"
U_3	1'-8"	2'-7"
U_4	1'-8"	2'-0"
U_5	2'-2"	3'-3"
U_6	2'-1"	2'-0"
U_7	2'-2"	4'-11"
U_8	2'-2"	2'-4"
U_9	2'-2"	1'-8"

C & D DIMENSIONS

BAR	C	D
S_3	2'-2"	1'-8"
S_4	2'-2"	1'-8"
S_5	2'-2"	2'-8"
S_6	2'-2"	3'-6"
S_7	2'-2"	3'-8"

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Class X Concrete	Cu. Yd.	62.0
Reinforcement Bars	Pound	6000
Expansion Bolts ¾"ϕ	Each	60
Structure Excavation	Cu. Yd.	71



BARS P_8, P_9 & P_{10}

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h_{12}	16	#4	11'-6"	—
h_{13}	24	#5	12'-4"	—
h_{15}	5	#8	13'-4"	—
h_{16}	5	#8	11'-1"	—
h_{17}	2	#4	13'-4"	—
h_{18}	2	#4	11'-1"	—
h_{19}	8	#4	12'-11"	—
h_{20}	8	#4	11'-3"	—
h_{21}	10	#8	11'-6"	—
P_6	6	#7	5'-4"	—
P_7	12	#7	5'-0"	—
P_8	10	#5	5'-7"	⟋
P_9	5	#5	5'-10"	⟋
P_{10}	5	#5	7'-0"	⟋
P_{11}	6	#5	3'-7"	—
P_{12}	6	#4	4'-3"	—
P_{13}	2	#4	5'-2"	—
P_{14}	2	#4	6'-9"	—
P_{15}	6	#7	6'-9"	—
P_{16}	6	#4	5'-0"	—
n_2	40	#7	4'-4"	⊃
S_3	3	#5	8'-5"	☐
S_4	2	#4	8'-1"	☐
S_5	16	#4	10'-5"	☐
S_6	16	#4	12'-1"	☐
S_7	2	#5	12'-5"	☐
t	51	#4	4'-8"	—
U_1	17	#5	5'-5"	☐
U_2	78	#5	3'-8"	☐
U_3	40	#4	6'-10"	☐
U_4	24	#4	6'-0"	☐
U_5	31	#5	8'-8"	☐
U_6	24	#5	6'-1"	☐
U_7	33	#5	12'-0"	☐
U_8	13	#4	6'-10"	☐
U_9	11	#4	5'-6"	☐
V_9	20	#7	9'-3"	—
V_{10}	20	#7	10'-3"	—
V_{11}	156	#5	2'-0"	—
W_3	7	#7	11'-4"	—
W_4	7	#7	12'-11"	—
W_5	7	#7	11'-0"	—

Baker Engineers
Baker Engineering, Inc.

DESIGNED	R. Žemaitaitis
CHECKED	P. Wood
DRAWN	K. Dypkowski
CHECKED	P. Wood

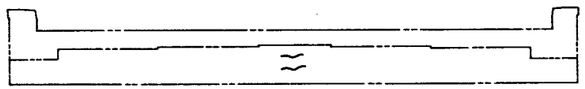
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIERS

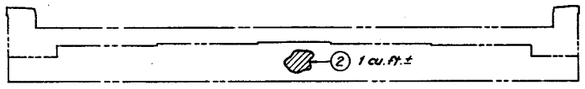
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER
LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

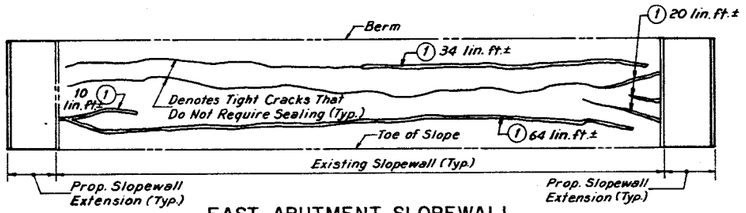
9/



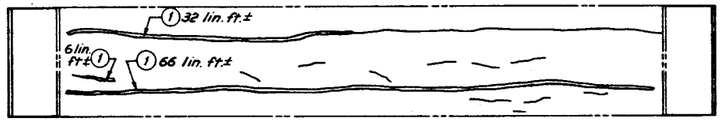
EAST ABUTMENT



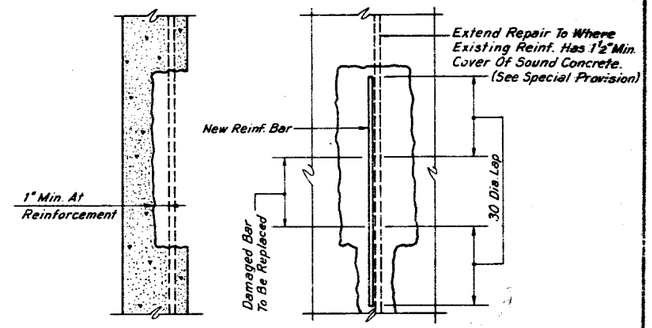
WEST ABUTMENT



EAST ABUTMENT SLOPEWALL

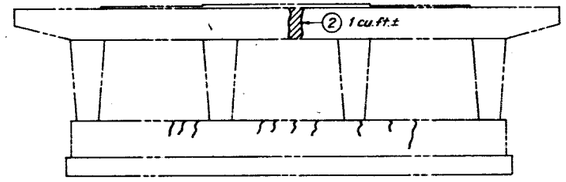


WEST ABUTMENT SLOPEWALL

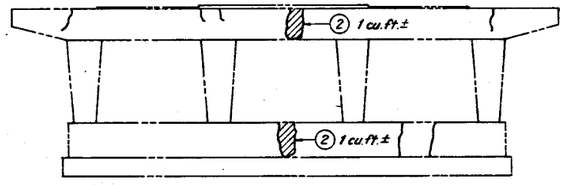


NOTE: Detail Applies Where Exist. Reinf. Is Exposed As A Result Of Removing Unsound Concrete. Exist. Reinf. Having 25% Or More Of Cross Sectional Area Lost Due To Corrosion Or Damage During Concrete Removal Shall Be Replaced By New Reinf. Lapped As Shown. Payment For Added Reinforcing Steel Shall Be At The Unit Price For Reinforcement Bars.

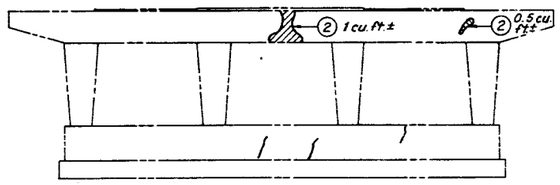
EPOXY MORTAR REPAIR DETAIL



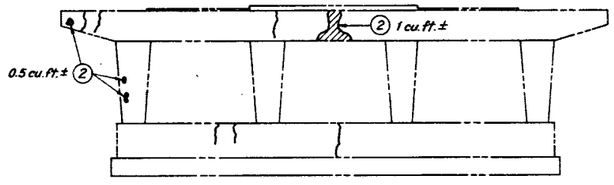
PIER 2 EAST FACE



PIER 2 WEST FACE



PIER 1 EAST FACE



PIER 1 WEST FACE

BILL OF MATERIAL

Item	Unit	Quantity
Epoxy Crack Sealing	Lin.Ft.	232
Epoxy Mortar Repair	Cu.Ft.	7

LEGEND

1 Denotes Epoxy Crack Sealing
2 Denotes Epoxy Mortar Repair
— Denotes Tight Crack that does not Require Sealing.

Baker Engineers
Baker Engineering, Inc.

DESIGNED	C. Prieto
CHECKED	P. Wood
DRAWN	C. Prieto
CHECKED	P. Wood

REVISIONS	
NAME	DATE

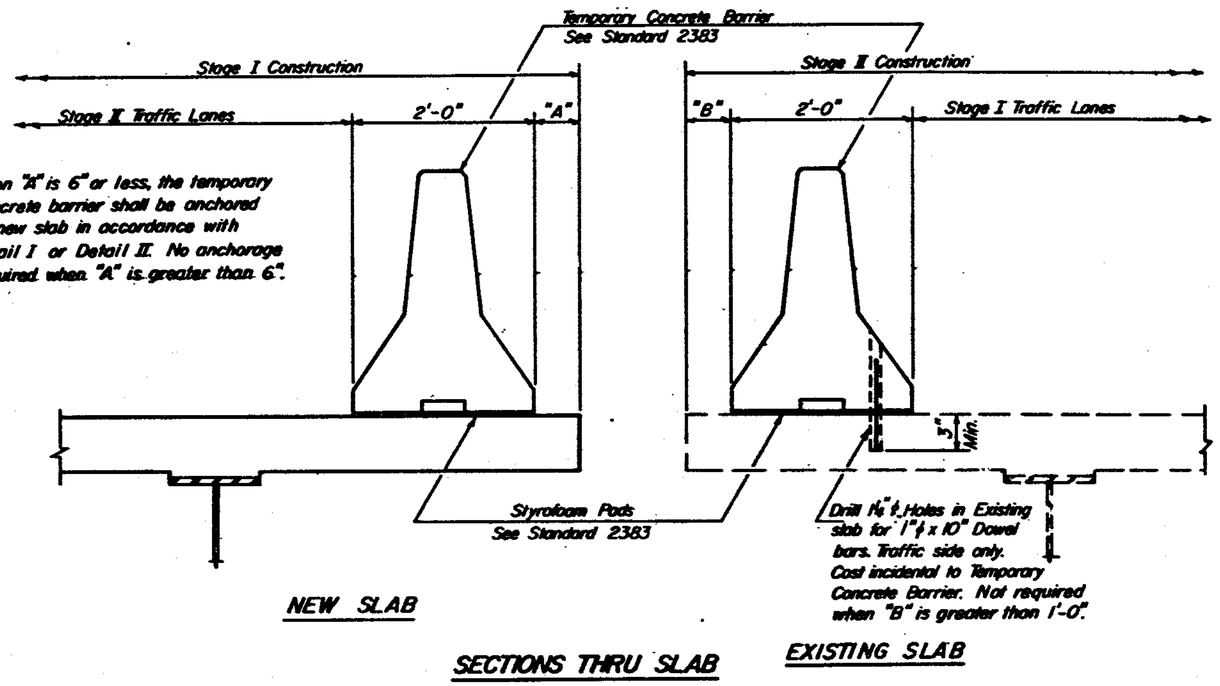
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING SUBSTRUCTURE REPAIRS

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY—STATION 221+35.32
STR. NO. 045-0007

F.A.P. 426	8R-HB-6 (86)	KANE	209	154

SHEET NO. 18 OF 21 SHEETS



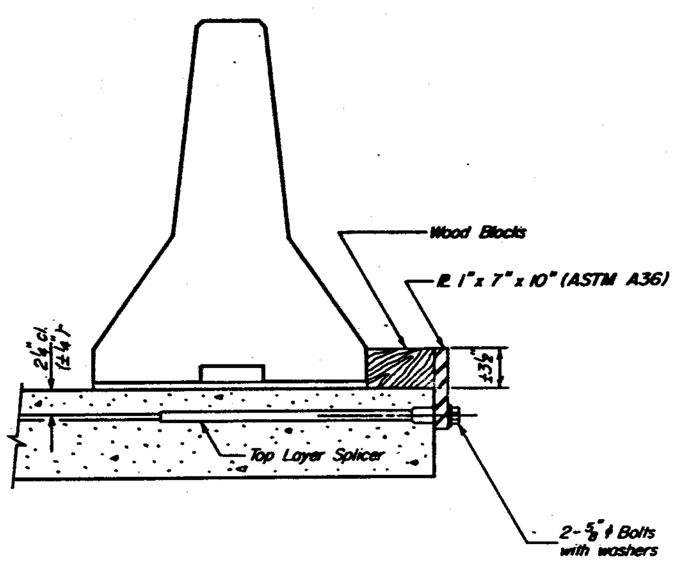
SECTIONS THRU SLAB

NOTES

Detail I - With Bar Splicer or Couplers:
Connect one (1) 1" x 7" x 10" steel PL to the top layer of couplers with 2-5/8" ϕ bolts screwed to coupler at approximate ℄ of each 10'-0" barrier panel.

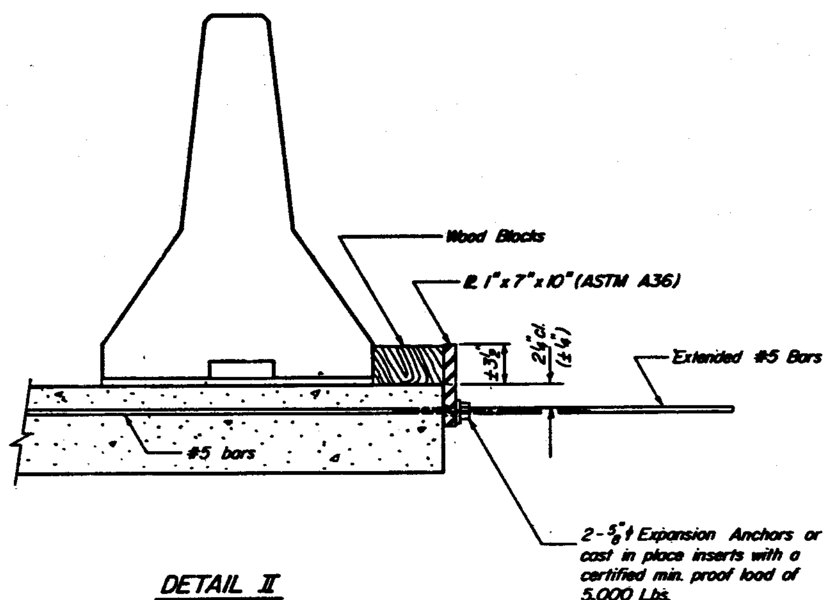
Detail II - With Extended Reinforcement Bars
Connect one (1) 1" x 7" x 10" steel PL to the concrete slab with 2-5/8" ϕ Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate ℄ of each 10'-0" barrier panel.

Cost of anchorage is incidental to Temporary Concrete Barrier.



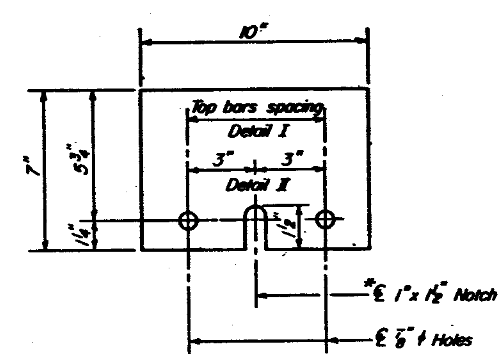
DETAIL I

The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and reinforcement bars are in place.



DETAIL II

The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and all reinforcement bars are in place and the concrete is ready to be placed.



PL 1" x 7" x 10"

* Required only with Detail II

Baker Engineers
Baker Engineering, Inc.

DESIGNED	
CHECKED	
DRAWN	
CHECKED	

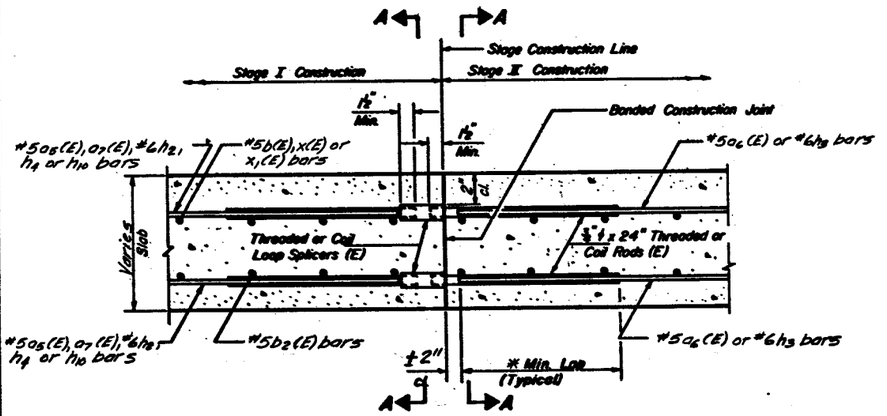
REVISIONS	
NAME	DATE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER FOR STAGE CONSTRUCTION

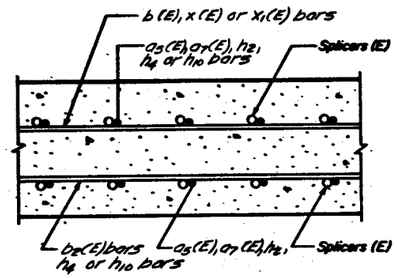
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER
LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY — STATION 221+35.32
STR. NO. 045-0007

F.A.P. 426	BR-HB-6 (86)	KANE	209	155



SECTION THRU SLAB

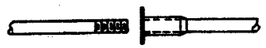
Min. Bar Laps: #5 bars 1'-8"
#6 bars 2'-0"



SECTION A-A

SPLICER DETAILS
(No. Req'd. 40)

Cost incidental to reinforcement bars (Epoxy Coated).



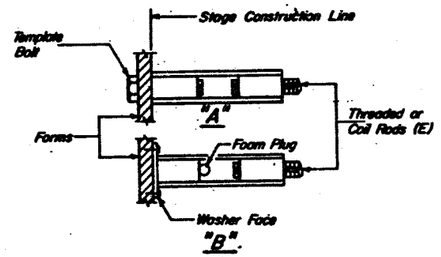
Rolled Thread Dowel Bar

**ONE PIECE

WELDED SECTIONS

SPLICER ALTERNATIVES

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



INSTALLATION AND SETTING METHODS

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

NOTES

Steel Splicer (Coupler) assembly shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Steel Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length and have effective tensile stress area equal or greater than that of the lapped reinforcement bars.

Splicer rods shall extend minimum ½ inches into the couplers.

All reinforcement bars shall be lapped and tied to the splicer rods.

Splicer (coupler) assembly in the slab shall be epoxy coated in accordance with 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 splicer (coupler) assembly satisfies the following requirements:

(1) Minimum Capacity (Tension in kips) = $1.25 \times f_y \times A_y$

(2) Minimum *Pull-out Strength (Tension in kips) = $1.25 \times f_{s\,allow} \times A_y$

Where f_y = Yield strength of lapped reinforcement bars in k.s.i.

$f_{s\,allow}$ = Allowable tensile stress in lapped reinforcement bars in k.s.i. (Service Load)

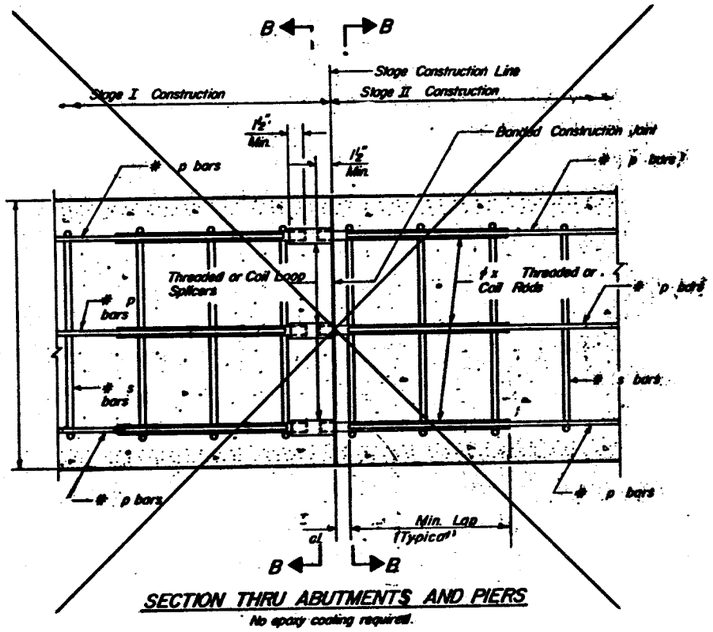
A_y = Tensile stress area of lapped reinforcement bars.

* 28 day concrete

Typical Splicer (Coupler) Assembly Sizes:

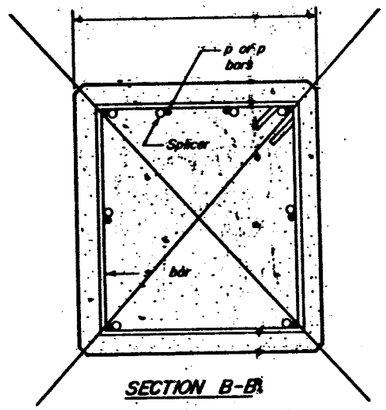
In Slabs:
- #5 bar lap with ¾" ϕ Splicer (Coupler) x 2'-0" Splicer Rods — Minimum Capacity = 23.0 kips-tension; Minimum Pull-out Strength = 19.2 kips-tension
- #7 bar lap with 1" ϕ Splicer (Coupler) x 3'-5" Splicer Rods — Minimum Capacity = 45.1 kips-tension; Minimum Pull-out Strength = 38.0 kips-tension

In Sub-structures:
- #8 bar lap with 1¼" ϕ Splicer (Coupler) x 4'-6" Splicer Rods — Minimum Capacity = 58.9 kips-tension; Minimum Pull-out Strength = 49.6 kips-tension



SECTION THRU ABUTMENTS AND PIERS

No epoxy coating required.



SECTION B-B

SPLICER DETAILS
(No. Req'd.)

Cost incidental to reinforcement bars.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BAR SPLICER (COUPLER) DETAILS AT STAGE CONSTRUCTION

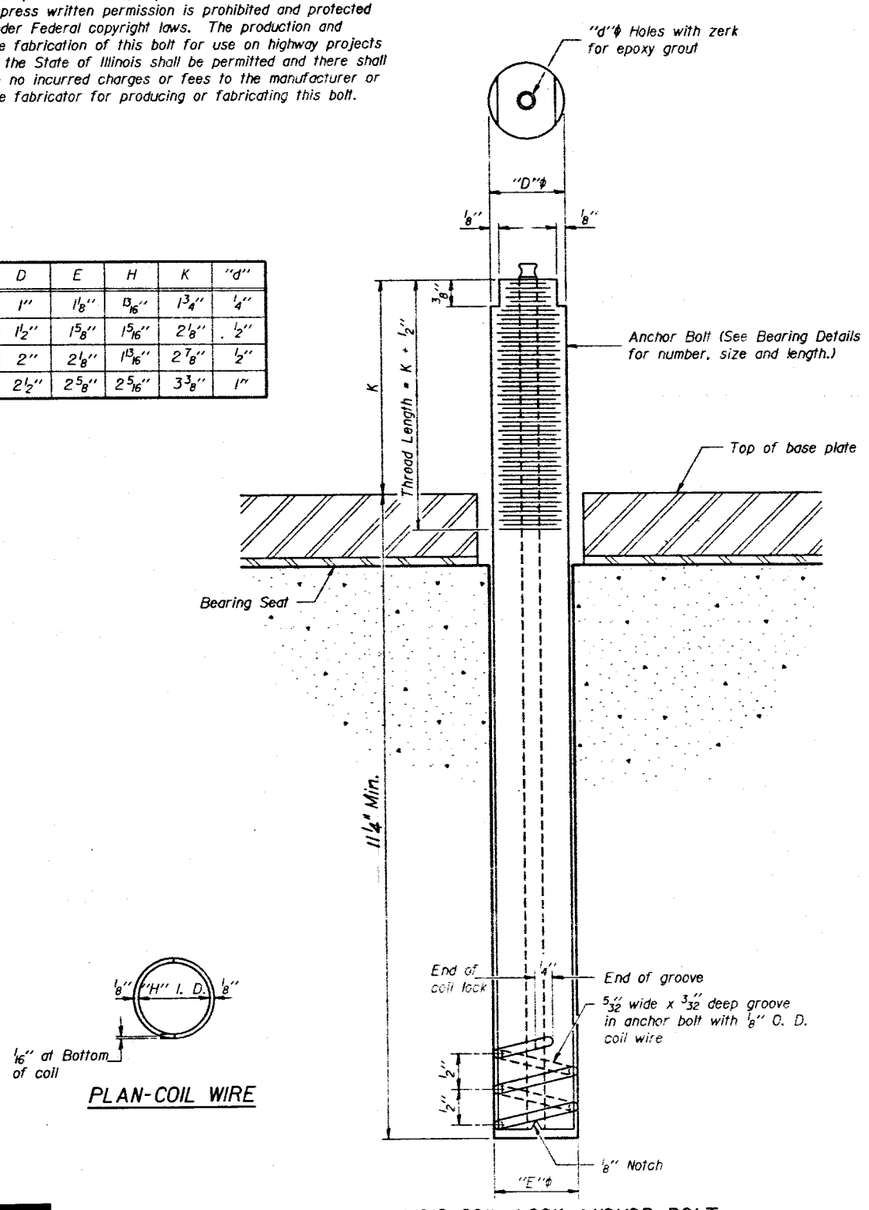
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY - STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

Baker Engineers
Baker Engineering, Inc.

DESIGNED
CHECKED
DRAWN
CHECKED

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



ILLINOIS COIL-LOCK ANCHOR BOLT

PLAN-COIL WIRE

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 A519, Grade 1026 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 comforming to ASTM C881, Type I, Grade I 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 in accordance with 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 conforming to ASTM A307.
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

NOTES

Holes in the masonry for anchor bolts shall be drilled through the base plates to the diameter and depth shown or in accordance with the manufacturer's recommendation after beams or girders have been erected and adjusted.

Prior to setting the bolts, the holes shall be dry and all dust and loose particles shall be removed by the use of compressed air or vacuuming.

The anchor bolts, furnished and installed and including the epoxy grout or capsules shall not be paid for separately but shall be included in the unit bid price for "Furnishing and Erecting Structural Steel".

Baker Engineers
Baker Engineering, Inc.

DESIGNED	
CHECKED	
DRAWN	
CHECKED	

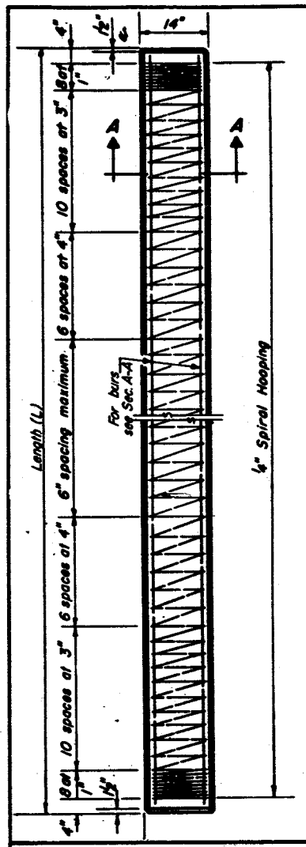
NO

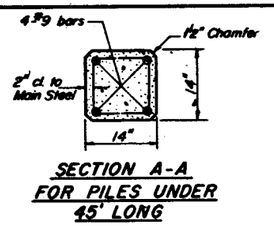
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ANCHOR BOLT DETAILS FOR BEARINGS

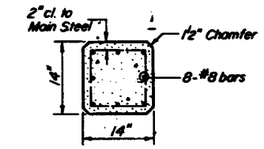
U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY—STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE





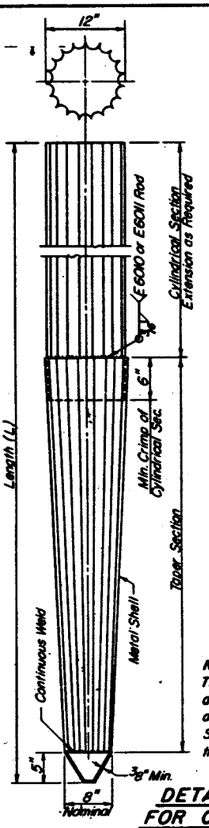
SECTION A-A FOR PILES UNDER 45' LONG



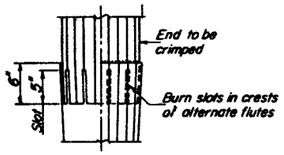
SECTION A-A FOR PILES 45' OR MORE

Handling: For Pile lengths up to 45', use two slings placed at a distance of 0.21 L from each end. For Piles longer than 45', use three slings placed at a distance of 0.12 L from each end and at mid point of pile.

DETAIL OF PRECAST CONCRETE PILES

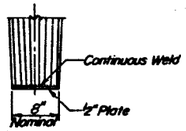


DETAIL OF TAPERED METAL SHELLS FOR CAST IN PLACE CONCRETE PILES



FIELD CRIMP DETAIL

Note: 6" Crimp shall either be supplied on the cylindrical section or made in the field as detailed.

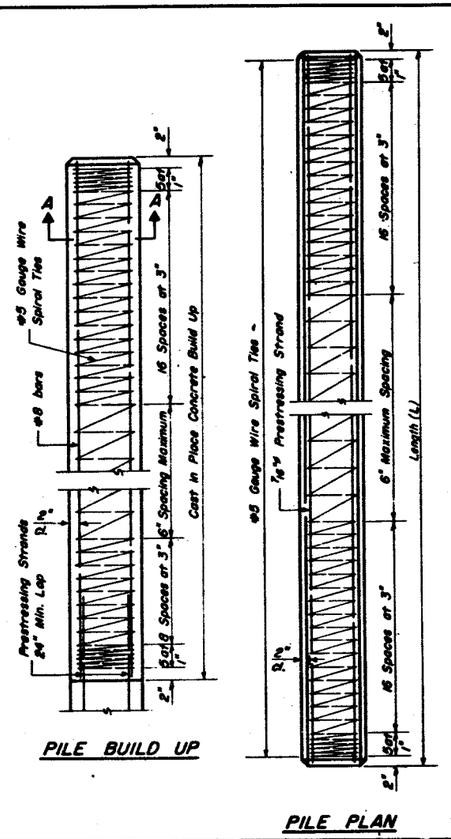


OPTIONAL FLAT END

ALLOWABLE TAPER SECTIONS

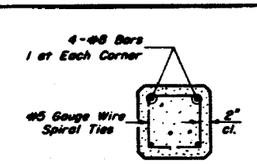
10' Length - Taper 1" in 2'-6"
17' Length - Taper 1" in 4'-0"
25' Length - Taper 1" in 7'-0"
30' Length - Taper 1" in 7'-0"

NOTE: The thickness of the shell shall be 0.1495 inches with a tolerance of 5%. The shell shall be in accordance with Artic'e 710.05 (a) of the Standard Specification except that minimum yield strength for the steel after cold working shall be 50,000 psi.

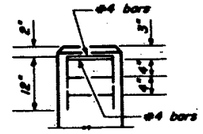


PILE BUILD UP

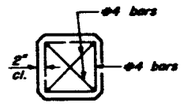
PILE PLAN



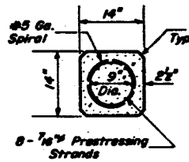
SECTION A-A



ELEVATION
(End Reinforcement)



PLAN
(End Reinforcement)



SECTION THRU PILE

DESIGN STRESSES

f'c = 5,000 psi.
f'ci = 4,000 psi.
fps = 270,000 psi. (31,000 lbs.-7/16"ϕ or 41,300 lbs.-½"ϕ)
fpsi = 189,000 psi. (21,700 lbs.-7/16"ϕ or 28,900 lbs.-½"ϕ)

NOTES

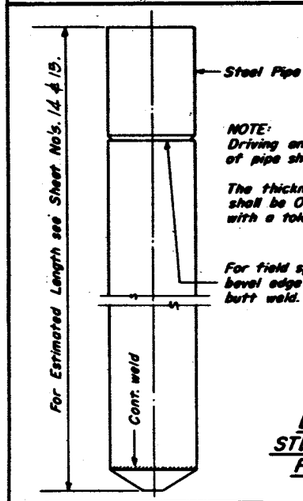
Prestressing steel shall be non-galvanized extra high strength stress-relieved 7-wire strand. The nominal diameter shall be ½" and the minimum nominal cross-sectional area shall be 0.115 sq.in. or the equivalent 6-½"ϕ strands with a cross-sectional area of 0.153 sq in. may be used.

For Pile lengths up to 65', use two slings placed at a distance of 0.21 L from each end. For Piles longer than 65', use three slings placed at a distance of 0.12 L* from each end and at mid-point of pile. * L = Over all length of pile to be handled.*

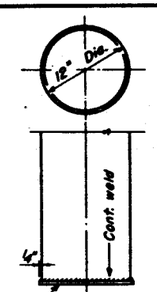
PRECAST PRESTRESSED CONCRETE PILE

GROUP NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
R.B. & I.	8R-HB-6 (86)	KANE	209	157
F.A. 426				
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 21 OF 21 SHEETS



DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES



OPTIONAL FLAT END

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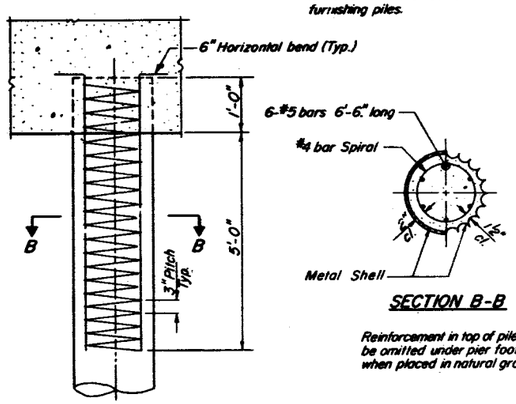
Baker Engineers
Baker Engineering, Inc.

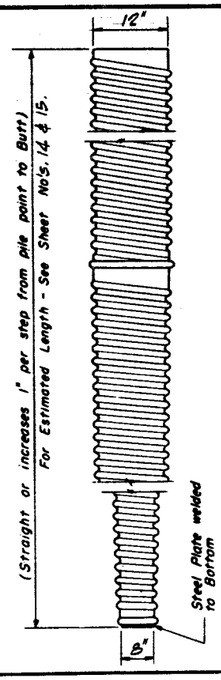
The cost of Reinforcement is incidental to the cost of furnishing piles.

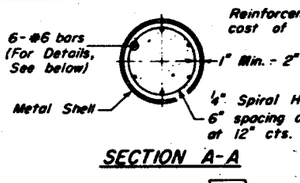


SECTION B-B

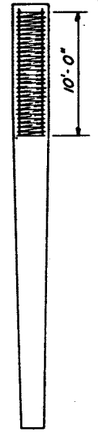
Reinforcement in top of pile shall be omitted under pier footings when placed in natural ground.

DETAIL OF REINFORCEMENT FOR METAL SHELLS





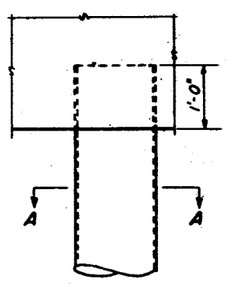
SECTION A-A

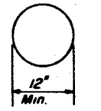


PILE REINFORCEMENT

Reinforcement is incidental to the cost of furnishing piles.

At least 10% of the length of pile shall have a Butt diameter equal to or greater than 12". Gauges are furnished to suit soil conditions (16 Gauge avg. thin.)





BUTT

POINT
(Applies only to Step Taper type pile)

DETAIL OF MANDREL DRIVEN STRAIGHT OR STEP-TAPER PILES FOR CAST IN PLACE CONCRETE PILES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PILE DETAILS

REVISIONS	
NAME	DATE

U.S. ROUTE 20 BY-PASS (F.A.P. 426) OVER LIBERTY STREET
SECTION 8R-HB-6(86)
KANE COUNTY—STATION 221+35.32
STR. NO. 045-0007