

042

04-26-2019 LETTING ITEM 042

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.I. DIST.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(75-3)BP	PIKE	20	1
ILLINOIS			CONTRACT NO. 72K65	

FOR INDEX OF SHEETS, SEE SHEET NO. 2

PROPOSED BRIDGE PAINTING

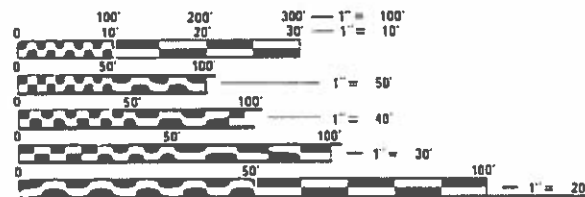
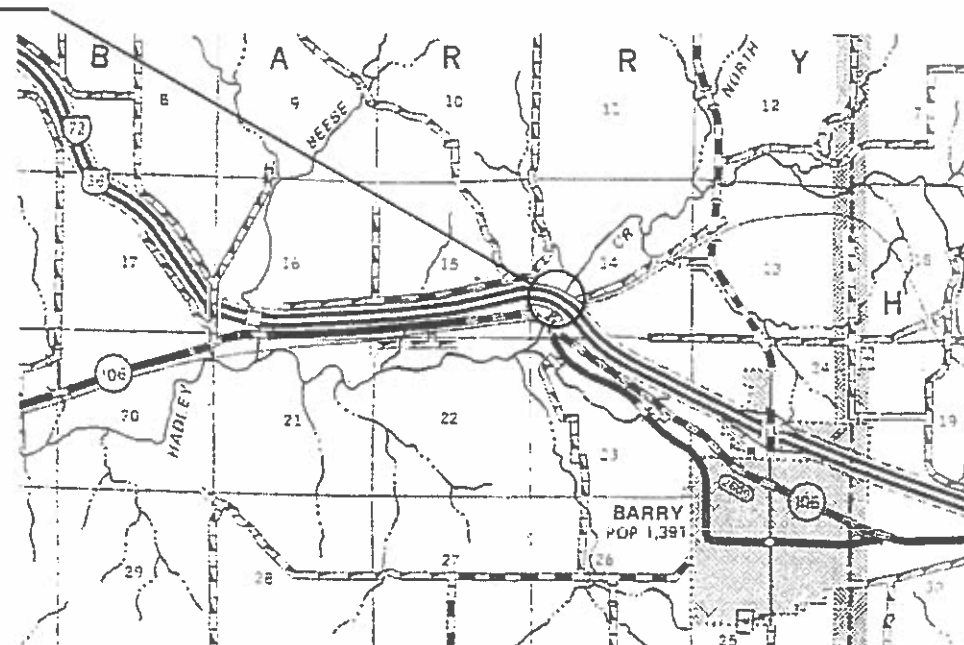
FAI ROUTE 72 (I-72)
SECTION (75-3) BP
PROJECT NHPP-9UN6(555)
BRIDGE PAINTING
PIKE COUNTY

C-96-097-18

D-96-051-18



PROJECT LOCATION
SN 075-0098 & 0099
I-72 OVER TR 92 & 149,
NSRR, & HADLEY CREEK
1.5 MI W OF BARRY INT.



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

J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123
OR 811

BRIDGE MAINTENANCE ENGINEER: BRANDON DUDLEY (217) 785-9290

GROSS LENGTH = x.xx FT. = x.xxx MILE
NET LENGTH = x.xx FT. = x.xxx MILE

CONTRACT NO. 72K65

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBMITTED 10 October 2018

[Signature] REGIONAL ENGINEER

March 22 2019

[Signature] ENGINEER OF DESIGN AND ENVIRONMENT

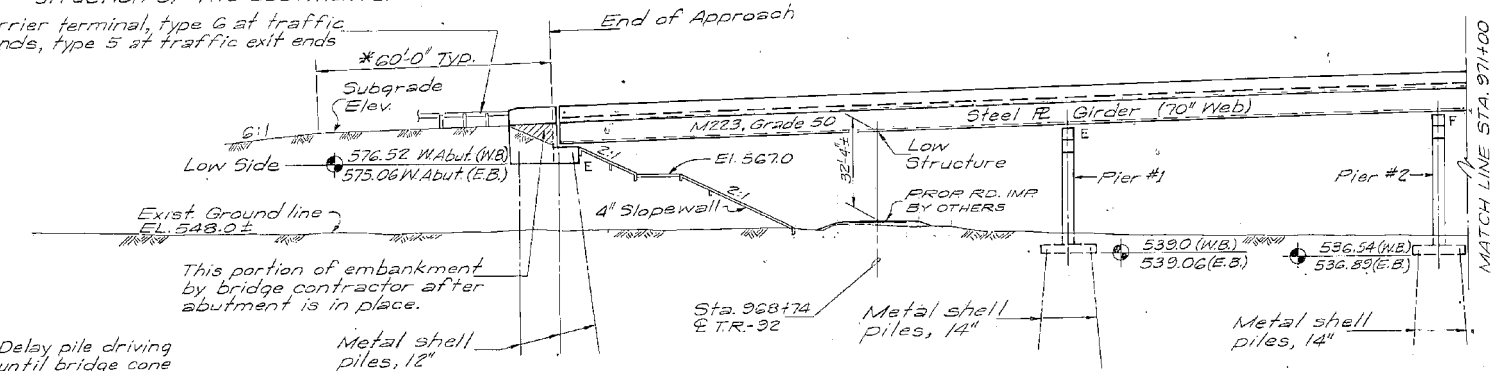
March 22 2019

[Signature] DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS

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

Traffic barrier terminal, type G at traffic approach ends, type S at traffic exit ends



ELEVATION

GIRDER DESIGN

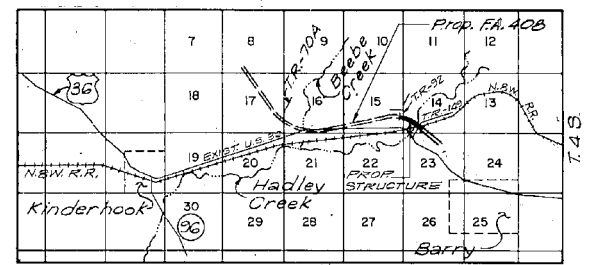
Composite in positive moment areas. (Except as noted)

NOTE: 2" Floor drains spaced at 25'-0" cts. with a min. of 10'-0" clearance from face of piers and abutments. Omit floor drains in span six and place drains in spans one and eight so they will miss the edge of roadway by 10'-0" min.

BORING	LOCATION
B-1	967+59, 41' Lt. of E
B-2	968+96, 41' Lt. of E
B-3	975+54, 41' Lt. of E
B-4	977+76, 41' Lt. of E
B-5	979+96, 41' Lt. of E
B-6	981+60, 41' Lt. of E
B-7	967+76, 41' Rt. of E
B-8	968+91, 41' Rt. of E
B-9	971+80, 41' Rt. of E
B-10	977+04, 41' Rt. of E
B-11	978+00, 41' Rt. of E
B-12	980+00, 41' Rt. of E
B-13	981+60, 41' Rt. of E
B-14	979+03, 41' Rt. of E
B-15	979+00, 41' Lt. of E

ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
FA. 408	75-3VHB-1	PIKE	114	14
STA.	TO STA.	ILLINOIS PROJECT		
FED. ROAD DIST. NO.				

SHEET NO. 3 OF 76 SHEETS



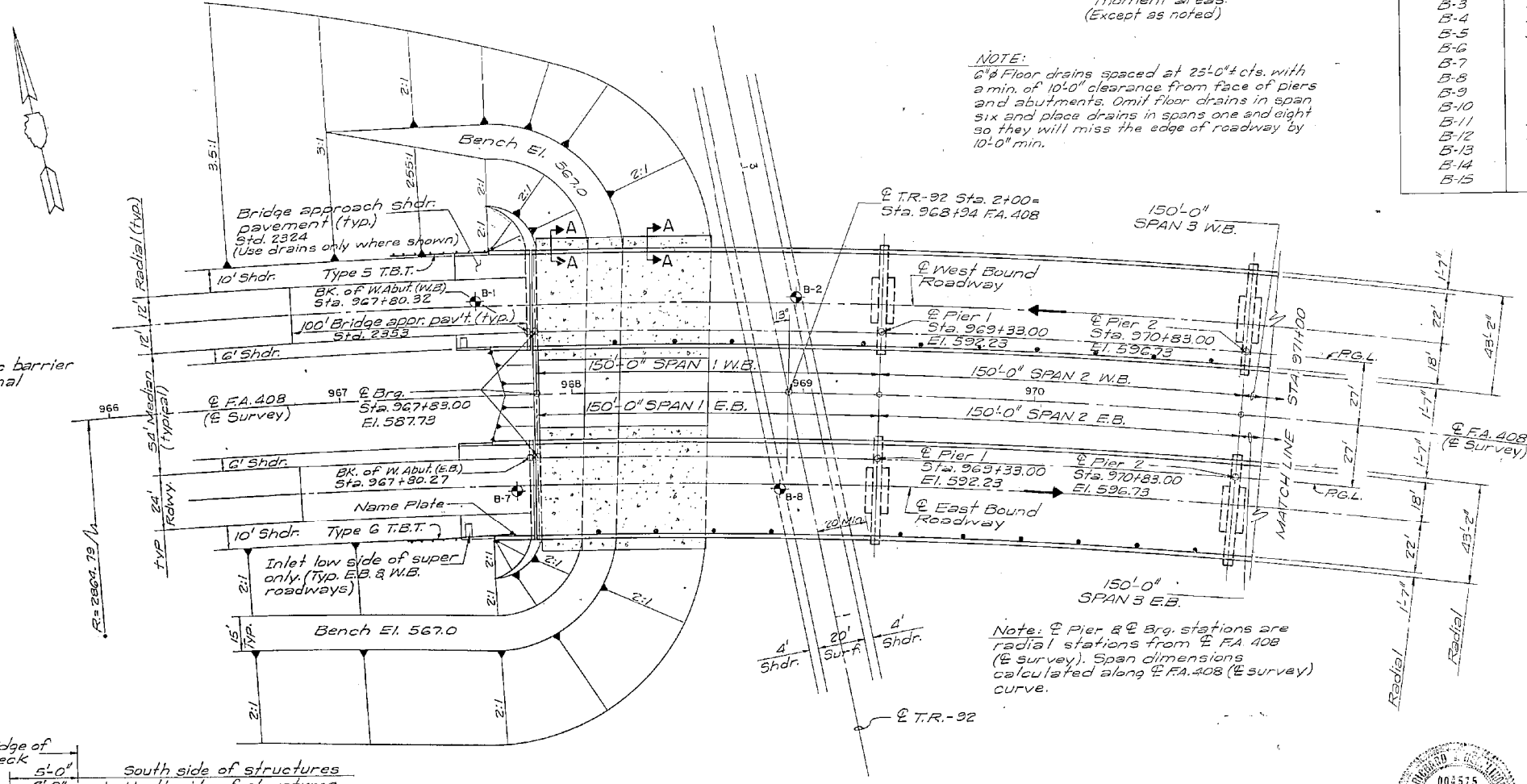
LOCATION MAP

STATION 974+71.36
BUILT 198 BY
STATE OF ILLINOIS
FA. RT. 408 SEC. 75-3VHB-1
LOADING HS-20
STR. NO. *

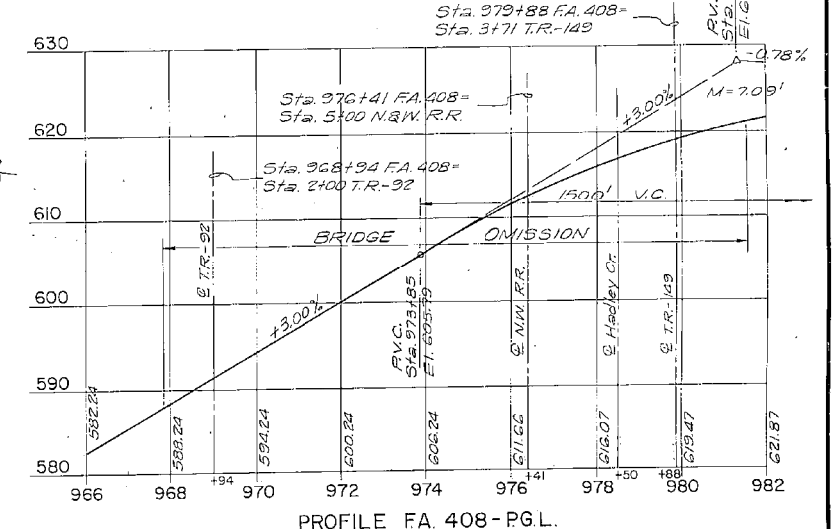
NAME PLATE

Standard 2113

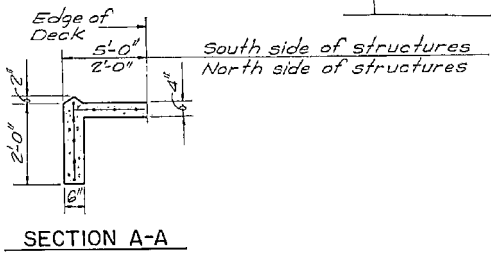
* 075-0099 W.B.
* 075-0098 E.B.



PLAN



PROFILE FA. 408-PGL



SECTION A-A

HORIZONTAL CURVE DATA FA. 408

PI Sta. 970+58.97
 $\Delta = 66^\circ 24' 32''$
 $D = 2^\circ 00'$
 $T = 1874.99'$
 $R = 2864.79'$
 $L = 3320.45'$
 $E = 559.03$
 $S.E. = 0.052'/1$
 $S.A. =$ Sta. 950+55.56 To Sta. 952+50.65
 Sta. 986+37.76 To Sta. 984+37.76

APPROVED FOR STRUCTURAL ADEQUACY ONLY

James J. Rayburn
Engineer of Bridges and Structures



NO.	BY	DATE
1	G.L.D.	10/29/85
2	G.L.D.	2/28/86

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIKE COUNTY
FA. RTE. 408
SEC. 75-3VHB-1
STA. 974+71.36

GENERAL PLAN & ELEVATION

DESIGNED BY R.J.K.
DRAWN BY G.L.D.
CHECKED BY M.W.W.
APPROVED BY M.W.W.

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSTRUCTING ENGINEERS
SPRINGFIELD, ILL. AUBURN, ILL. ST. LOUIS, MO.

SCALE NONE
JOB NO. 8466-02
DATE
SHEET 14 OF 114 SHEETS

USER NAME = dudleybm	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 100,0000' / in.	CHECKED -	REVISED -
PLOT DATE = 10/5/2018	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 075-0098 & 0099
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

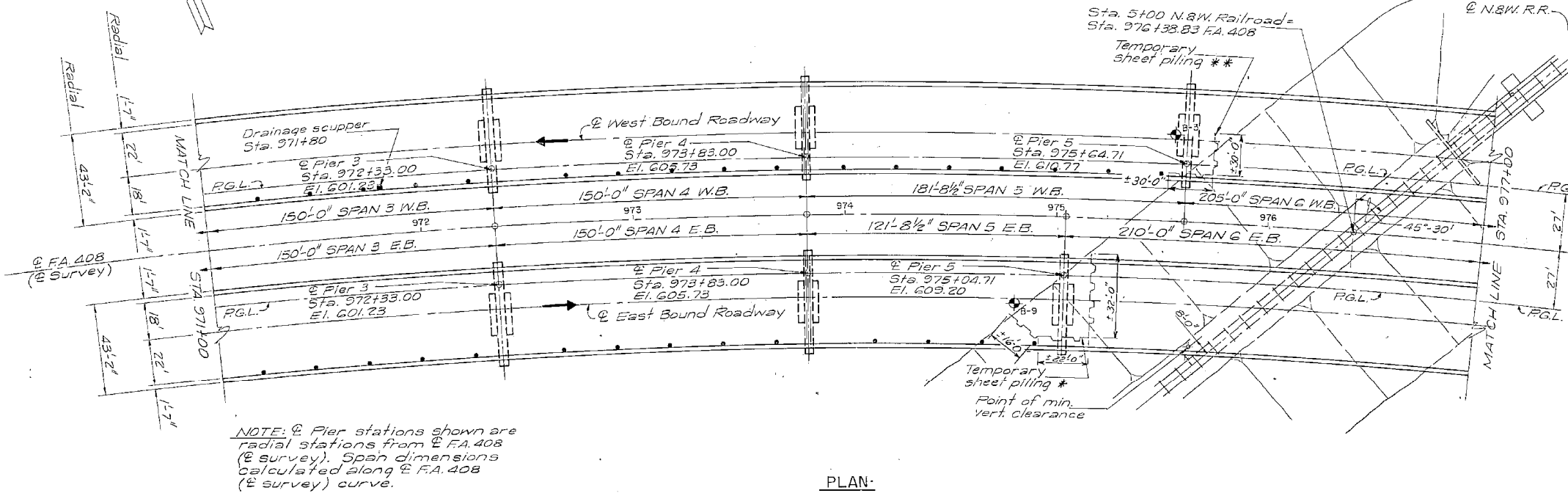
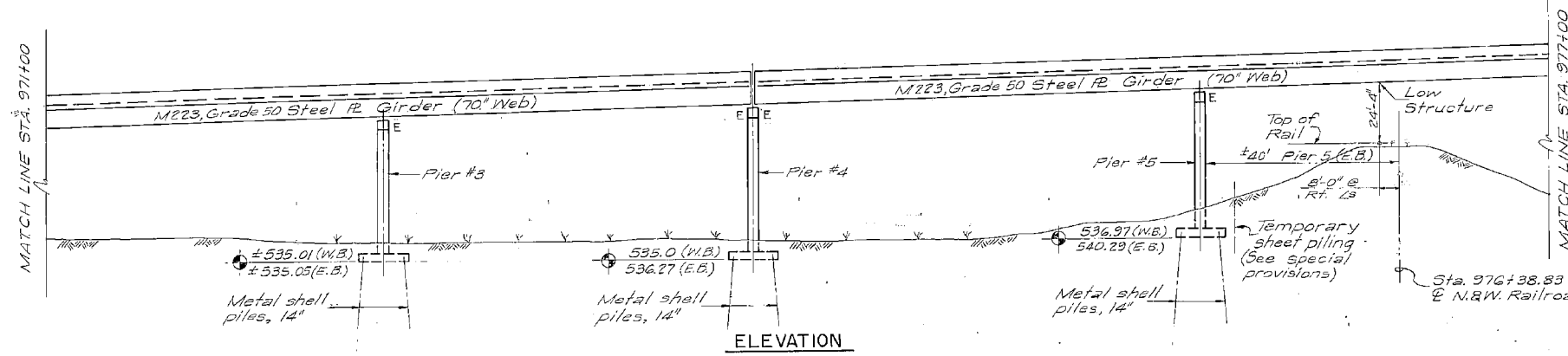
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(75-3)BP	PIKE	20	3
CONTRACT NO. 72K65				
ILLINOIS		FED. AID PROJECT		

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ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 4 OF 76 SHEETS
FA. 408	75-3VHB-1	PIKE	114	15	
STA.	TO STA.				
FED. ROAD DIST. NO.	ILLINOIS	PROJECT			

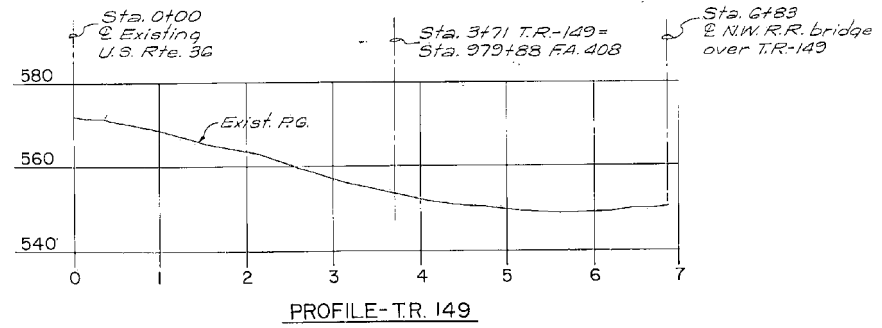
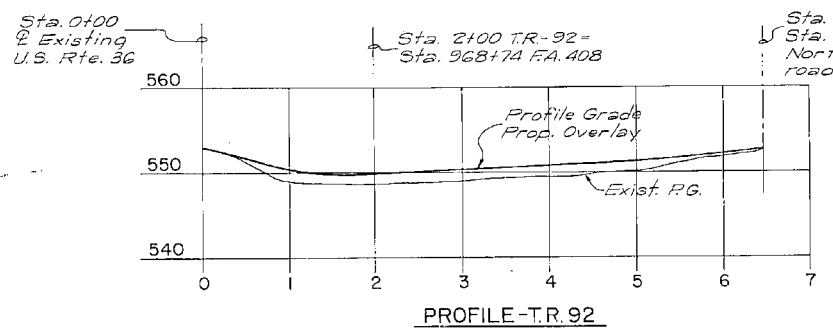
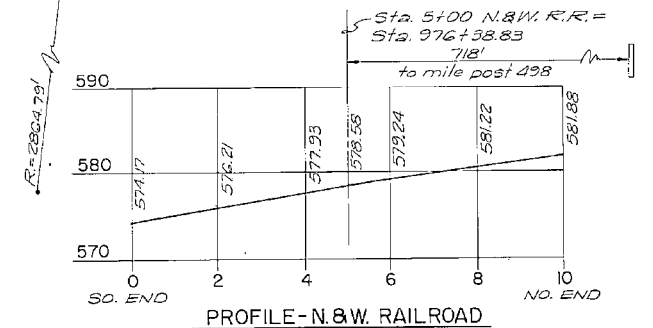
DESIGN STRESSES

- $f'_c = 3500$ P.S.I.
- $f_y = 60000$ P.S.I. (Reinforcement)
- $f_y = 50000$ P.S.I. (Structural M223, Grade 50)
- $f_y = 36,000$ P.S.I. (M-183)
- Loading HS 20-44 Earthquake - Zone 1
- Design Specifications - 1983 AASHTO, 1984 & 85 Interim, & AASHTO 1980 Guide Specifications for Horizontally Curved Highway Bridges and subsequent revisions.
- 25#/sq.ft. allowance for future wearing surface.
- Construction specifications - State of Illinois Standard Specifications for Road & Bridge construction Adopted Oct. 1, 1983 & Special Provisions.



- * Pier 5 (W.B.) Temporary Sheet Piling
top elevation 535.00 bottom elevation 528.00
- ** Pier 5 (E.B.) Temporary Sheet Piling
top elevation 538.00 bottom elevation 528.00

NOTE: Pier stations shown are radial stations from E.F.A. 408 (E survey). Span dimensions calculated along E.F.A. 408 (E survey) curve.



REVISIONS NO. BY DATE 1 G.L.D. 2/28/88		STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION PIKE COUNTY FA. RTE. 408 SEC. 75-3VHB-1 STA. 974+71.36 GENERAL PLAN & ELEVATION	
DESIGNED BY R.J.K. DRAWN BY G.L.D. CHECKED BY M.W.W. APPROVED BY M.W.W.	SCALE NONE JOB NO. 8466-02 DATE SHEET 15 OF 114 SHEETS	CMT CRAWFORD, MURPHY & TILLY, INC. CONSULTING ENGINEERS SPRINGFIELD, ILLINOIS	

MODEL: Default
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USER NAME = dudleybm	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING PLANS, SN 075-0098 & 0099 (FOR INFORMATION ONLY)	F.A.I. RTE. 72	SECTION (75-3)BP	COUNTY PIKE	TOTAL SHEETS 20	SHEET NO. 4	
PLOT SCALE = 100,0000' / in.	CHECKED -	REVISED -			CONTRACT NO. 72K65					
PLOT DATE = 10/5/2018	DATE -	REVISED -			ILLINOIS FED. AID PROJECT					
					SCALE:	SHEET	OF	SHEETS	STA.	TO

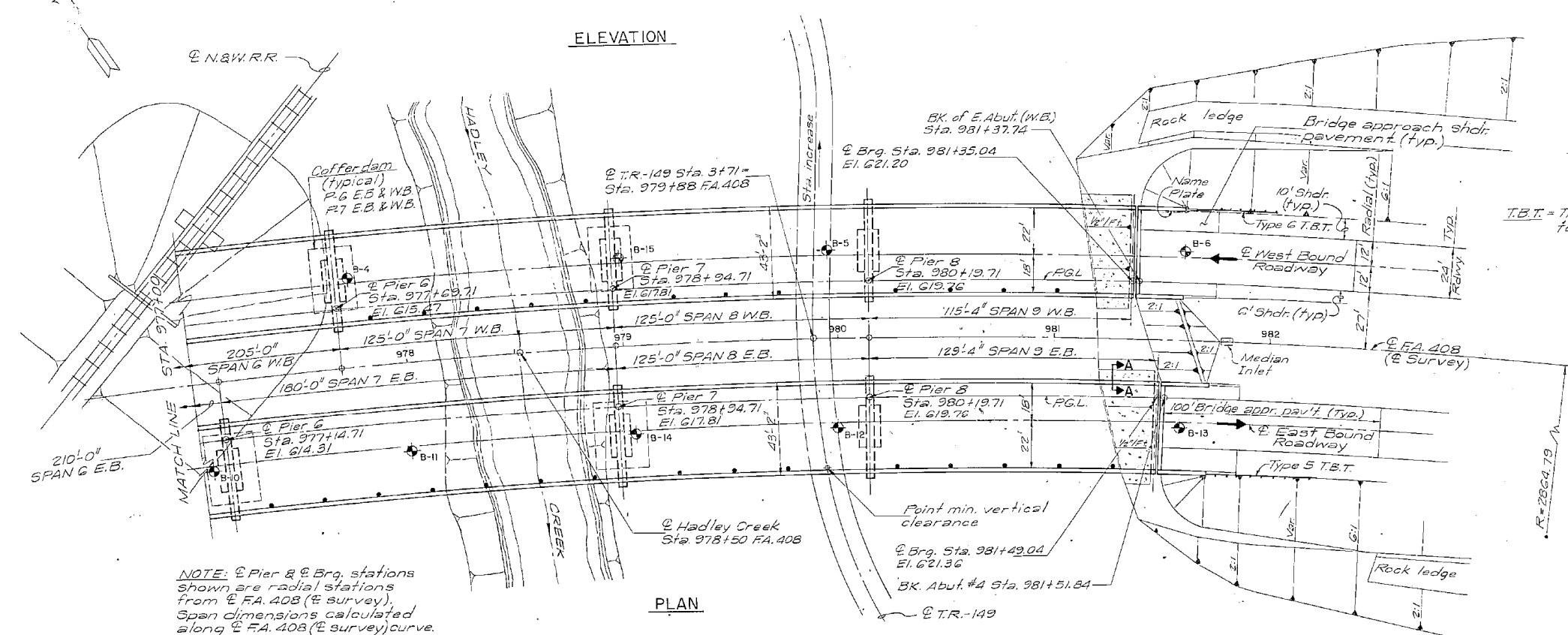
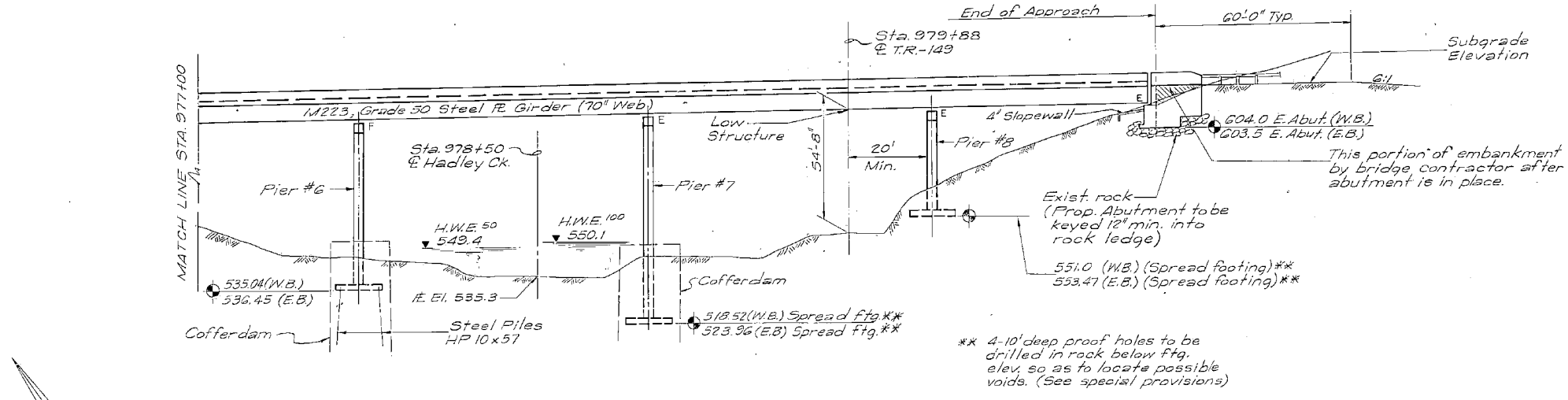
B.M. Chiseled "d" S.E. corner of bridge on curb U.S. 36, 345' Rt. of sta. 979+90 (E Median) Elev. 567.39

ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 5 OF 76 SHEETS
FA. 408	75-3VHB-1	PIKE	114	16	
STA.	TO STA.				
FED. ROAD DIST. NO.	ILLINOIS	PROJECT			

WATERWAY INFORMATION - HADLEY CREEK

DRAINAGE AREA = 40.9 Sq. Miles		LOW GRADE ELEV. = 614.0		AT STA. 977+00'		
FLOOD	FREQ. YR.	Q C.F.S.	OPENING SQ. FT.	NAT. H.W.E.	HEAD - FT.	HEADWATER EL.
DESIGN	50	10,300	---	549.4	---	549.56
BASE	100	11,400	---	550.1	---	550.28
OVERTOPPING	S/A	---	---	---	---	---
MAX. CALC.	500	15,800	---	552.5	---	552.74

Note: There is no existing structure at the site of the proposed bridges.



NOTE: @ Pier & @ Brg. stations shown are radial stations from @ FA. 408 (E survey). Span dimensions calculated along @ FA. 408 (E survey) curve.

REVISIONS		
NO.	BY	DATE
1	G.L.D.	2/28/08

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIKE COUNTY
FA RTE. 408
SEC. 75-3VHB-1
STA. 974+71.36

GENERAL PLAN & ELEVATION

DESIGNED BY R.J.K.
DRAWN BY G.L.D.
CHECKED BY M.W.W.
APPROVED BY M.W.W.

SCALE NONE

DATE

SHEET 16 OF 114 SHEETS

JOB NO. 8466-02

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS
SPRINGFIELD, ILL. AUBURN, ILL. ST. LOUIS, MO.

USER NAME = dudleybm	DESIGNED -	REVISED -
PLOT SCALE = 100,0000' / in.	DRAWN -	REVISED -
PLOT DATE = 10/5/2018	CHECKED -	REVISED -
	DATE -	REVISED -

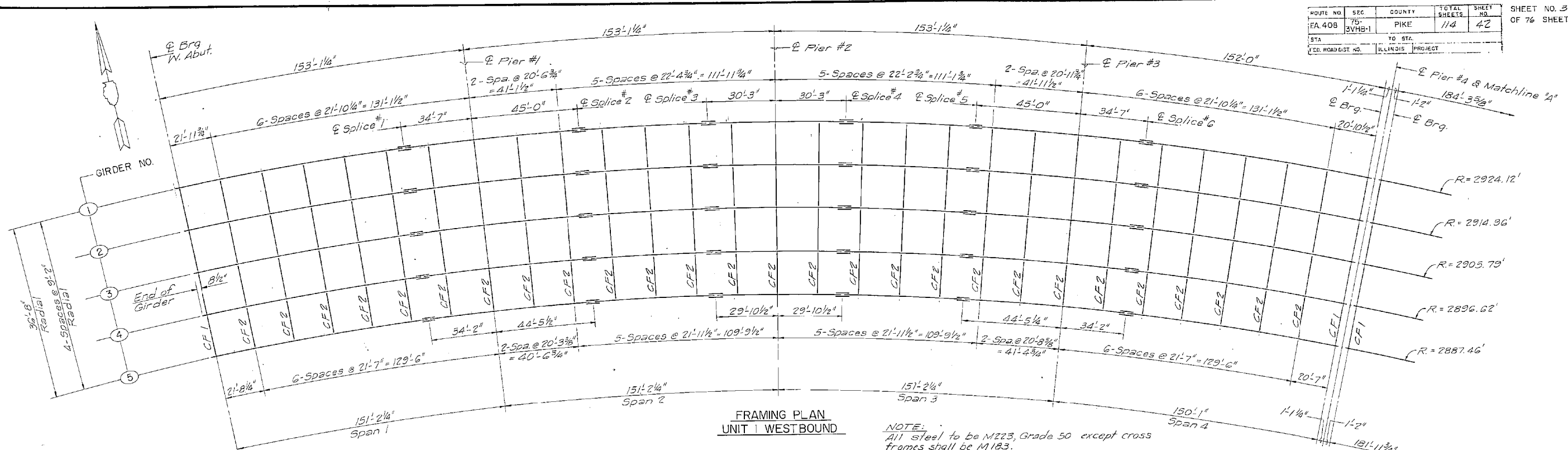
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 075-0098 & 0099
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

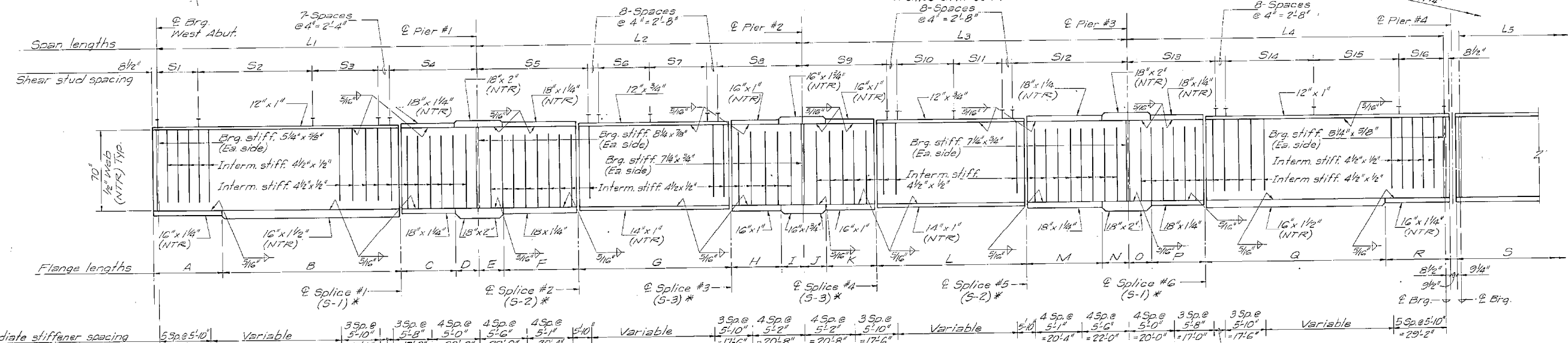
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(75-3)BP	PIKE	20	5
CONTRACT NO. 72K65				
ILLINOIS FED. AID PROJECT				

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**FRAMING PLAN
UNIT I WESTBOUND**

NOTE:
All steel to be M223, Grade 50 except cross frames shall be M183.



**GIRDER ELEVATION DETAIL
UNIT I WESTBOUND**

NOTE: Cross frame connection plates not shown for clarity. See framing plan for location and sheet 43 for details.

NOTES:
1) See sheet 43 for detail of stiffener clearance at flange splices.
2) Work this sheet with sheets 32, 36, 43, 44, 47, 48

Intermediate stiffener spacing
On one side only and on interior side of exterior girders.
* See sheet 32 for details of bolted field splices and the table of dimensions describing the splice components.

GIRDER	RADIUS OF CURVE	SPAN LENGTHS IN FEET				TOTAL LENGTH C-C BRG.
		L1	L2	L3	L4	
1	2924.12'	153'-1 1/4"	153'-1 1/4"	153'-1 1/4"	152'-0"	611'-5 3/4"
2	2914.96'	152'-7 1/2"	152'-7 1/2"	152'-7 1/2"	151'-6 1/2"	609'-4 3/4"
3	2905.79'	152'-1 3/4"	152'-1 3/4"	152'-1 3/4"	151'-0 1/2"	607'-5 3/4"
4	2896.62'	151'-8"	151'-8"	151'-8"	150'-6 3/4"	605'-6 3/4"
5	2887.46'	151'-2 1/4"	151'-2 1/4"	151'-2 1/4"	150'-1"	603'-7 3/4"

GIRDER	FLANGE LENGTHS IN FEET																TOTAL FLANGE LENGTH		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P		Q	R
1	34'-8 3/4"	84'-6"	22'-5"	12'-2"	11'-9"	33'-3"	77'-10 1/4"	20'-3"	10'-0"	10'-0"	20'-3"	77'-10 1/4"	33'-3"	11'-9"	12'-2"	22'-5"	84'-6"	33'-7 1/2"	612'-8 3/4"
2	34'-7"	84'-3"	22'-4 1/2"	12'-1 1/2"	11'-8 3/4"	33'-1 3/4"	77'-7 1/8"	20'-2 1/2"	9'-11 3/8"	9'-11 3/8"	20'-2 1/2"	77'-7 1/8"	33'-1 3/8"	11'-8 3/4"	12'-1 1/2"	22'-4 1/2"	84'-3"	33'-5 3/4"	610'-9 3/4"
3	34'-6"	83'-11 3/8"	22'-3 3/8"	12'-1 1/8"	11'-8 1/4"	33'-0 1/2"	77'-4 1/4"	20'-1 1/2"	9'-11 1/4"	9'-11 1/4"	20'-1 1/2"	77'-4 1/4"	33'-0 1/2"	11'-8 1/4"	12'-1"	22'-3 3/8"	83'-11 3/8"	33'-4 3/4"	608'-10 1/4"
4	34'-4 5/8"	83'-8 1/2"	22'-2 3/4"	12'-0 3/8"	11'-7 3/4"	32'-11 1/4"	77'-1 3/8"	20'-0 3/4"	9'-10 3/8"	9'-10 3/8"	20'-0 3/4"	77'-1 3/8"	32'-11 1/4"	11'-7 3/4"	12'-0 3/8"	22'-2 3/4"	83'-8 1/2"	33'-3 3/8"	606'-11 3/4"
5	34'-3 3/4"	83'-5 1/4"	22'-1 9/8"	12'-0"	11'-7 1/2"	32'-10"	76'-10 1/4"	20'-0"	9'-10 1/2"	9'-10 1/2"	20'-0"	76'-10 1/4"	32'-10"	11'-7 1/2"	12'-0"	22'-2"	83'-5 1/4"	33'-2 1/2"	605'-0 3/4"

N.T.R. denotes notch toughness requirements. Plate designated by (N.T.R.) shall conform to the supplemental requirements for notch toughness (zone 2). These components are the tension flanges, webs and all splice plate material of the steel girder.

REVISIONS			STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
NO.	BY	DATE		

PIKE COUNTY
FA. RTE. 408
SEC. 75-3VHB-1
STA. 974+71.36
FRAMING/UNIT I W.B./ SPANS 1 - 4

DESIGNED BY R.J.K.	SCALE NONE	JOB NO. 8466-02
DRAWN BY G.L.D.		
CHECKED BY M.W.W.		
APPROVED BY R.J.K.		

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS
SPRINGFIELD, ILL. AURORA, ILL. ST. LOUIS, MO

DATE: SHEET 42 OF 114 SHEETS

USER NAME = dudleybm	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 100,000' / in.	CHECKED -	REVISED -
PLOT DATE = 10/5/2018	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 075-0098 & 0099
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE. 72	SECTION (75-3)BP	COUNTY PIKE	TOTAL SHEETS 20	SHEET NO. 6
CONTRACT NO. 72K65			ILLINOIS FED. AID PROJECT	

TABLE OF STUD SHEAR CONNECTOR DIMENSIONS-UNIT I WESTBOUND

GIRDER	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
1	12-Spaces @ 12" = 12'-0"	48-Spaces @ 14" = 56'-0"	40-Spaces @ 12" = 48'-0"	36'-5 1/4"	47'-0"	47-Spaces @ 8" = 31'-4"	50-Spaces @ 9" = 37'-6"	31'-11 1/4"	31'-11 1/4"	50-Spaces @ 9" = 37'-6"	47-Spaces @ 8" = 31'-4"	47'-0"	36'-4"	45-Spaces @ 12" = 45'-0"	48-Spaces @ 14" = 56'-0"	12-Spaces @ 12" = 12'-0"
2	12-Spaces @ 12" = 12'-0"	48-Spaces @ 14" = 56'-0"	45-Spaces @ 12" = 45'-0"	36'-11 1/2"	46'-8"	47-Spaces @ 8" = 31'-4"	50-Spaces @ 9" = 37'-6"	31'-9 1/2"	31'-9 1/2"	50-Spaces @ 9" = 37'-6"	47-Spaces @ 8" = 31'-4"	46'-8"	36'-10 1/4"	45-Spaces @ 12" = 45'-0"	48-Spaces @ 14" = 56'-0"	11-Spaces @ 12" = 11'-0"
3	12-Spaces @ 12" = 12'-0"	48-Spaces @ 14" = 56'-0"	45-Spaces @ 12" = 45'-0"	36'-5 3/4"	46'-5 1/2"	47-Spaces @ 8" = 31'-4"	50-Spaces @ 9" = 37'-6"	31'-6 1/4"	31'-6 1/4"	50-Spaces @ 9" = 37'-6"	47-Spaces @ 8" = 31'-4"	46'-5 1/2"	36'-4 1/2"	45-Spaces @ 12" = 45'-0"	48-Spaces @ 14" = 56'-0"	11-Spaces @ 12" = 11'-0"
4	12-Spaces @ 12" = 12'-0"	48-Spaces @ 14" = 56'-0"	45-Spaces @ 12" = 45'-0"	36'-0"	46'-7"	47-Spaces @ 8" = 31'-4"	49-Spaces @ 9" = 36'-9"	31'-8"	31'-8"	49-Spaces @ 9" = 36'-9"	47-Spaces @ 8" = 31'-4"	46'-7"	36'-10 3/4"	44-Spaces @ 12" = 44'-0"	48-Spaces @ 14" = 56'-0"	11-Spaces @ 12" = 11'-0"
5	12-Spaces @ 12" = 12'-0"	46-Spaces @ 14" = 53'-8"	47-Spaces @ 12" = 47'-0"	35'-10 1/4"	46'-3 1/2"	47-Spaces @ 8" = 31'-4"	49-Spaces @ 9" = 36'-9"	31'-5 3/4"	31'-5 3/4"	49-Spaces @ 9" = 36'-9"	47-Spaces @ 8" = 31'-4"	46'-3 1/2"	36'-5"	44-Spaces @ 12" = 44'-0"	48-Spaces @ 14" = 56'-0"	11-Spaces @ 12" = 11'-0"

Total studs required = 4062
See shear stud detail sheet 43

INTERIOR GIRDER MOMENT TABLE

UNIT I W.B.	0.4 SR1 OR 0.6 SP.4	PIER 1 OR PIER 3	0.5 SP2 OR 0.5 SP3	PIER 2
I _s (in ⁴)	57,465	107,628	42,643	56,379
I _c (in ⁴)	136,119	-	103,700	-
S _s (in ³)	1,889	2,909	1,296	2,350
S _c (in ³)	2,511	-	1,813	-
S _{bi} (in ³)	64.0	108.0	32.7	74.7
Q (K/ft)	1.175	1.168	1.160	1.160
M _ℓ (K)	1,953	3,382	723	1,971
S _ℓ (K/ft)	0.364	0.364	0.364	0.364
M _{sℓ} (K)	657	918	308	600
M _ℓ (K)	1,792	1,773	1,447	1,514
M (Imp) (K)	325	321	262	274
S ₃ (M _ℓ + I) (K)	5,528	3,490	2,848	2,890
Ma (K)	7980	10,127	3,043	7,216
M _{bi} (K)	18	23	12	17
f _{sℓ} non-comp (k.s.i.)	12.4	14.0	6.7	10.1
f _{sℓ} (comp) (k.s.i.)	3.4	3.8	2.3	3.1
f _{s3} (ℓ + I) (k.s.i.)	16.9	14.4	18.9	15.2
fw (k.s.i.)	3.5	2.6	4.3	2.6
f _s (Overload) (k.s.i.)	32.7	32.2	27.9	28.4
f _s + fw (TOTAL) (k.s.i.)	46.0	44.5	40.6	39.5
V _r (K)	77.4	-	67.6	-

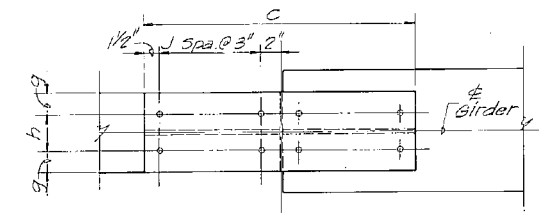
ELEVATIONS - TOP OF GIRDERS

LOCATION	G1	G2	G3	G4	G5
ℓ BRG. WEST. ABUT.	588.63	588.15	587.68	587.20	586.72
ℓ SPLICE #1	592.16	591.68	591.21	590.73	590.25
ℓ BRG. PIER NO. 1	595.05	594.57	594.10	593.62	593.14
ℓ SPLICE #2	594.41	593.93	593.45	592.97	592.50
ℓ SPLICE #3	596.73	596.25	595.77	595.29	594.81
ℓ BRG. PIER NO. 2	597.57	597.09	596.62	596.14	595.66
ℓ SPLICE #4	598.51	598.03	597.55	597.07	596.59
ℓ SPLICE #5	600.76	600.28	600.80	600.33	600.85
ℓ BRG. PIER NO. 3	602.05	601.57	601.10	600.62	600.14
ℓ SPLICE #6	603.22	602.74	602.26	601.78	601.30
ℓ BRG. PIER NO. 4	606.60	606.12	605.65	605.17	604.69

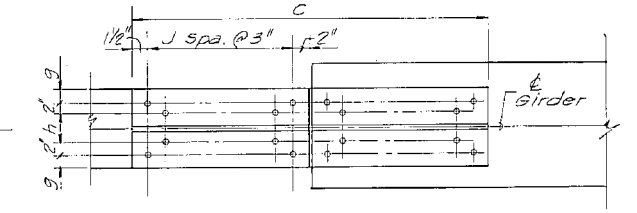
* FOR FABRICATION ONLY

WESTBOUND UNIT I SPLICE TABLE

SPLICE LOCATION	FLANGE	NO. REQ'D	TABLE OF DIMENSIONS - BOLTED FIELD SPLICE														
			a	b	c	d	e	f	g	h	j	k	n	p	q	r	s
S-1	Top	2	1/2"	12"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	5	1/4"	12"	1'-6 1/4"	3/8"	13"	5'-8"
S-1	Bottom	2	3/4"	16"	3'-7"	1/2"	6"	3'-7"	3"	6"	6	1/4"	16"	1'-9 1/4"	3/8"	13"	5'-8"
S-2	Top	2	3/8"	12"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	5	1/2"	12"	1'-6 1/4"	3/8"	13"	5'-8"
S-2	Bottom	2	1/2"	14"	3'-7"	1/2"	5"	3'-7"	2"	6"	6	1/4"	14"	1'-9 1/4"	3/8"	13"	5'-8"
S-3	Top	2	3/8"	12"	2'-7"	3/8"	4 1/2"	2'-7"	2 1/4"	7 1/2"	4	1/4"	12"	1'-3 1/4"	3/8"	13"	5'-8"
S-3	Bottom	2	1/2"	14"	3'-1"	1/2"	5"	3'-1"	2"	6"	5	-	-	-	3/8"	13"	5'-8"



TOP FLANGE SPLICE PLAN
Typical S-1 thru S-3



BOTTOM FLANGE SPLICE PLAN
Typical S-1 thru S-3

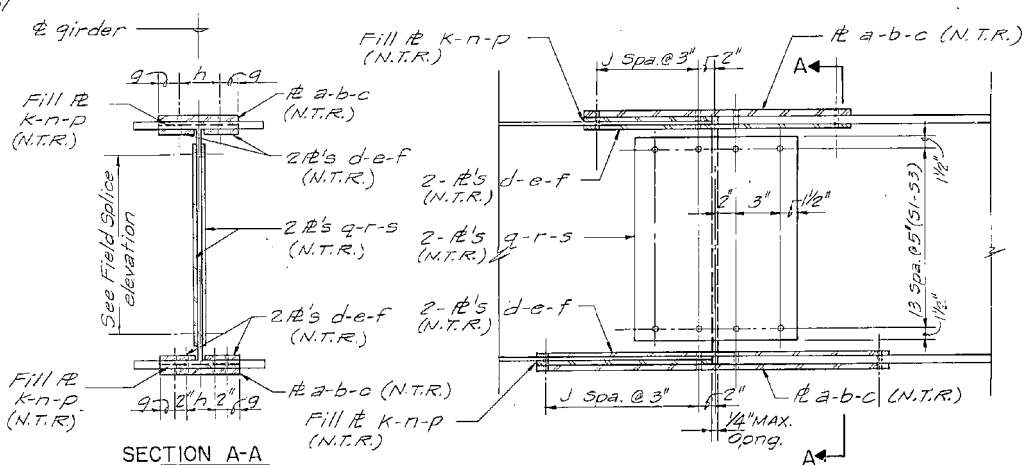
INTERIOR GIRDER REACTION TABLE

	WEST ABUT. NO. 1	PIER 1	PIER 2	PIER 3	PIER 4
R _ℓ (k)	89.1	272.1	209.5	272.1	89.1
R _ℓ (k)	59.4	119.1	111.4	119.6	59.4
IMP (k)	10.1	21.5	20.1	21.4	10.1
R TOTAL (k)	158.6	412.7	341.0	412.1	158.6

NOTES

- I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (total and overload).
- I_c and S_c are the moment of inertia and section modulus of the composite section used in computing f_s (total and overload).
- V_r is the maximum ℓ + impact shear range in span.
- f_s (total) is the sum of the stresses due to 1.3 [M_ℓ + M_{sℓ} + 2/3 (M_ℓ + I)]
- f_s (Overload) is the sum of the stresses due to M_ℓ + M_{sℓ} + 2/3 (M_ℓ + I).
- fw is the maximum warping stress in the flange due to lateral flange bending due to 1.3 [M_ℓ + M_{sℓ} + 2/3 (M_ℓ + I)].
- M_ℓ - Moment due to dead loads on non-composite section.
- M_{sℓ} - Moment due to dead loads on composite section.
- M_ℓ - Moment due to live load on non-composite or composite section.
- I - Live load impact
- fw + f_s - Maximum allowable stress computed according to AASHTO guide to horizontally curved bridges, Sec. 2.16, f_{sℓ} ℓ & f_{s3} (ℓ + I) + CF - Centrifugal and superelevation effects included.

- M_{bi} is the lateral bending moment for flange plate.
- S_{bi} is the section modulus for one flange ℓ for lateral flange bending.



FIELD SPLICE ELEVATION
Typical S-1 thru S-3

NOTES:

- All splice plate material shall conform to the requirements of AASHTO M223, Grade 50.
- All holes for spllices shall be 1/16" ℓ for 7/8" ℓ H.S. bolts.

Work this sheet with sheets 31, 36, 43, 44, 47, 48

REVISIONS			STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
NO.	BY	DATE		

PIKE COUNTY
FA. RTE. 408
SEC. 75-3VHB-1
STA. 974+71.36

TABLES & SPLICE DETAILS/UNIT I W.B.

DESIGNED BY J.J.I. & R.J.K.	SCALE NONE	JOB NO.
DRAWN BY A.O.D.		8466-02
CHECKED BY M.W.W.	DATE	
APPROVED BY R.J.K.		

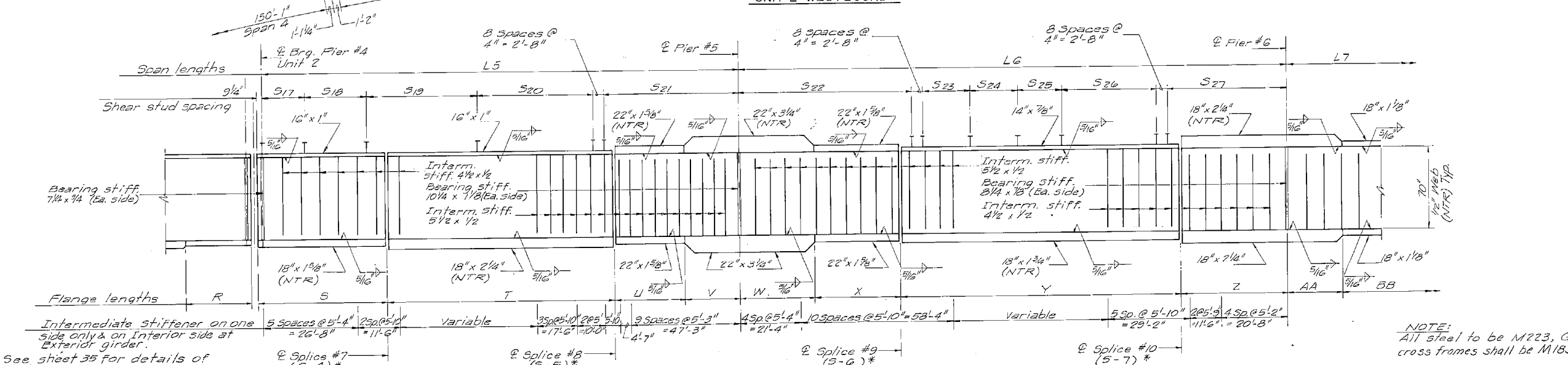
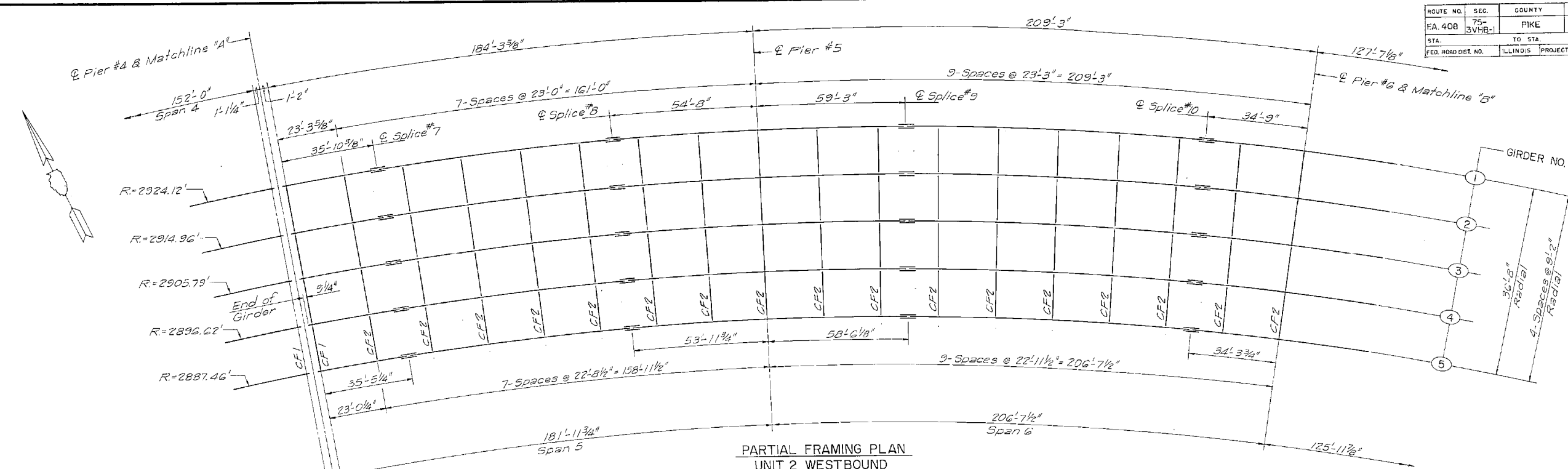
CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS
SPRINGFIELD, ILL. ■ AURORA, ILL. ■ ST. LOUIS, MO

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USER NAME = dudleybm	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 100,0000' / in.	CHECKED -	REVISED -
PLOT DATE = 10/5/2018	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

EXISTING PLANS, SN 075-0098 & 0099 (FOR INFORMATION ONLY)		F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
SCALE:	SHEET	OF	SHEETS	STA.	TO STA.	



NOTE: All steel to be M223, Grade 50 except cross frames shall be M183

* See sheet 35 for details of bolted field splices and the table of dimensions describing the splice components.

Note: Cross frame connection plates not shown for clarity. See framing plan for location & sheet 43 for details

- NOTES:
- See sheet 43 for detail of stiffener clearance at flange splices.
 - Work this sheet with sheets 34, 35, 36, 43, 45, 47, 48

GIRDER	RADIUS OF CURVE	SPAN LENGTHS IN FEET				TOTAL LENGTH C-C BRG	
		L5	L6	L7	L9		
1	2924.12	184'-3 3/8"	209'-3"	127'-7 1/8"	127'-7 1/8"	117'-8 3/8"	766'-5 1/2"
2	2914.96	183'-8 5/8"	208'-7 1/8"	127'-2 1/4"	127'-2 1/4"	117'-4 1/4"	764'-0 1/2"
3	2905.79	183'-1 3/4"	207'-1 1/8"	126'-9 1/2"	126'-9 1/2"	116'-11 3/4"	761'-7 3/8"
4	2896.62	182'-6 3/4"	207'-3 3/8"	126'-4 3/8"	126'-4 3/8"	116'-7 3/8"	759'-2 3/4"
5	2887.46	181'-11 3/4"	206'-7 1/2"	125'-11 7/8"	125'-11 7/8"	116'-3"	756'-10"

GIRDER	FLANGE LENGTHS IN FEET																TOTAL FLANGE LENGTH	
	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH		II
1	36'-7 7/8"	93'-9"	32'-10"	21'-10"	28'-6"	30'-9"	115'-3"	34'-9"	21'-0"	39'-4"	39'-4"	27'-11 1/8"	20'-6"	72'-0"	35'-1 1/8"	31'-11 1/8"	86'-6"	767'-11 1/4"
2	36'-6 1/2"	93'-5 1/2"	32'-8 3/4"	21'-9 1/4"	28'-4 7/8"	30'-7 7/8"	114'-10 3/8"	34'-7 3/4"	20'-11 1/8"	39'-2 1/2"	39'-2 1/2"	27'-10"	20'-5 1/4"	71'-9 1/4"	34'-11 3/4"	31'-10"	86'-2 3/4"	765'-6 3/8"
3	36'-5 1/8"	93'-2"	32'-7 1/2"	21'-8 3/8"	28'-3 3/8"	30'-6 3/4"	114'-6 1/4"	34'-6 1/4"	20'-10 7/8"	39'-1 1/8"	39'-1 1/8"	27'-9"	20'-4 1/2"	71'-6 1/2"	34'-10 1/2"	31'-8 3/4"	85'-11 1/2"	763'-1 3/8"
4	36'-3 3/8"	92'-10 3/8"	32'-6 1/4"	21'-7 1/2"	28'-2 3/4"	30'-5 1/2"	114'-2"	34'-5 1/8"	20'-9 5/8"	38'-1 1/2"	38'-1 1/2"	27'-8"	20'-3 5/8"	71'-3 3/8"	34'-9 1/8"	31'-7 5/8"	85'-8 1/4"	760'-8 1/2"
5	36'-2 3/8"	92'-6 3/8"	32'-5"	21'-6 3/8"	28'-1 3/4"	30'-4 3/8"	113'-9 3/8"	34'-3 3/4"	20'-9"	38'-10"	38'-10"	27'-6 7/8"	20'-3"	71'-1"	34'-7 7/8"	31'-6 3/8"	85'-5 1/8"	758'-3 3/4"

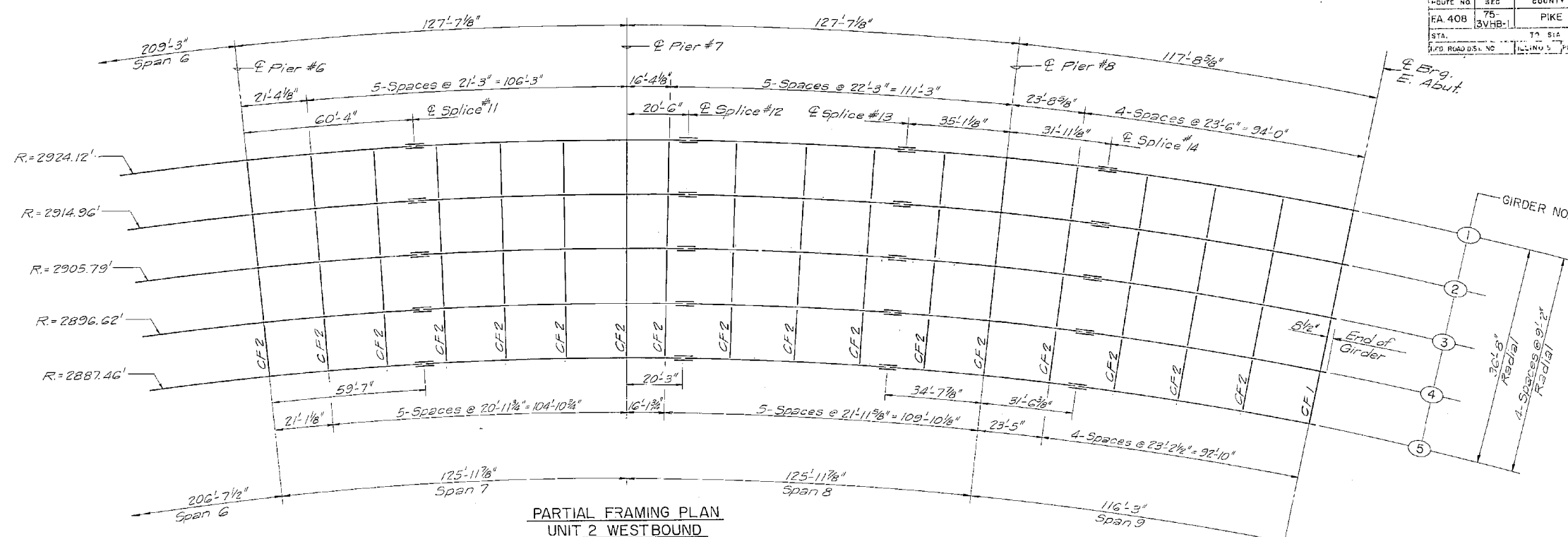
"N.T.R." denotes notch toughness requirements. Plate designated by (N.T.R.) shall conform to the supplemental requirements for notch toughness (Zone 2). These components are the tension flanges, webs and all splice plate material of the steel girder.

REVISIONS			STATE OF ILLINOIS	
NO.	BY	DATE	DEPARTMENT OF TRANSPORTATION	
			PIKE COUNTY	
			FA. RTE. 408	
			SEC. 75-3VHB-1	
			STA. 974 + 71.36	
			FRAMING/UNIT 2 W.B./ SPANS 5 & 6	
			SCALE NONE	JOB NO.
				8466-02
			DATE	SHEET 44 OF 114 SHEETS

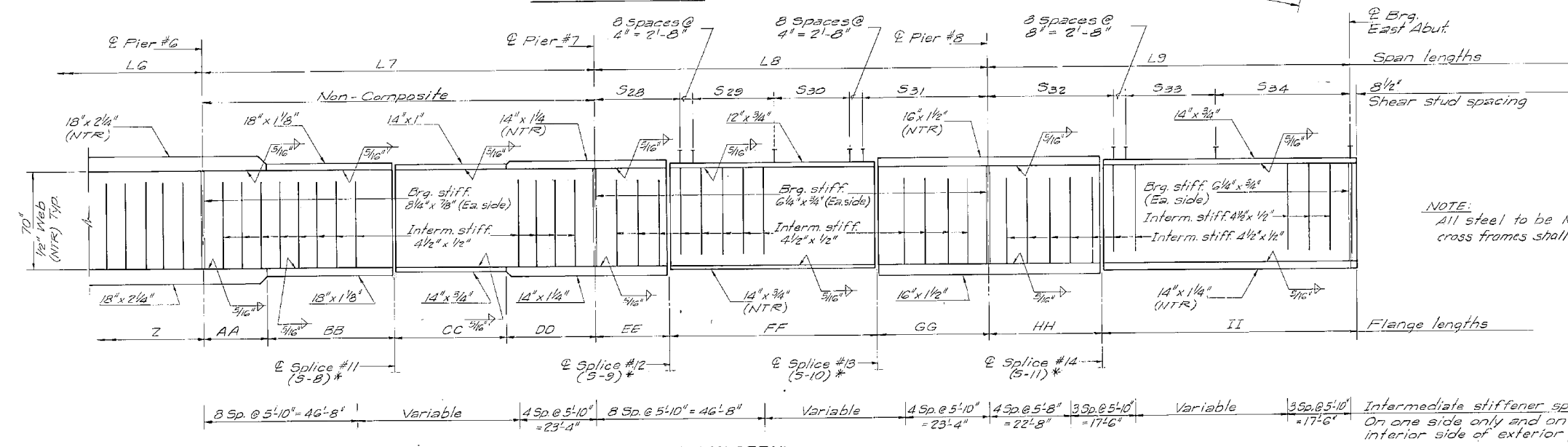
DESIGNED BY F.J.F.
 DRAWN BY G.L.D.
 CHECKED BY M.W.W.
 APPROVED BY R.J.K.

CMT
 CRAWFORD, MURPHY & TILLY, INC.
 CONSULTING ENGINEERS
 SPRINGFIELD, ILL. ■ AURORA, ILL. ■ ST. LOUIS, MO.

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PARTIAL FRAMING PLAN
UNIT 2 WESTBOUND



PARTIAL GIRDER ELEVATION DETAIL
UNIT 2 WESTBOUND

NOTE:
All steel to be M223, Grade 50 except cross frames shall be M183

NOTE:
1) See sheet 43 for detail of stiffener clearance at flange splices.
2) Work this sheet with sheets 33, 35, 36, 43, 45, 47, 48

NOTE: Cross frame connection plates not shown for clarity. See framing plan for location and sheet 43 for details.

* See sheet 35 for details of bolted field splices and the table of dimensions describing the splice components.

N.T.R. denotes notch toughness requirements. Plate designated by (N.T.R.) shall conform to the supplemental requirements for notch toughness (Zone 2). These components are the tension flanges, webs and all splice plate material of the steel girder.

REVISIONS		
NO.	BY	DATE

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
PIKE COUNTY FA. RTE. 408 SEC. 75-3VHB-1 STA. 974+71.36 FRAMING/UNIT 2 W.B./ SPANS 7 - 9	
DESIGNED BY F. J. F.	SCALE NONE
DRAWN BY G. L. D.	JOB NO. 8466-02
CHECKED BY M. W. W.	DATE
APPROVED BY R. J. K.	SHEET 45 OF 114 SHEETS

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USER NAME = dudleybm	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 100,0000' / in.	CHECKED -	REVISED -
PLOT DATE = 10/5/2018	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

EXISTING PLANS, SN 075-0098 & 0099 (FOR INFORMATION ONLY)			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(75-3)BP	PIKE	20	9
CONTRACT NO. 72K65				
ILLINOIS		FED. AID PROJECT		

ROUTE NO.	75-3VHB-1	COUNTY	PIKE	TOTAL SHEETS	114	SHEET NO.	46
STA.	N/A	TO STA.	N/A	SHEET NO. 35 OF 76 SHEETS			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT					

TABLE OF STUD SHEAR CONNECTOR DIMENSIONS - UNIT 2 WESTBOUND

GIRDÉR	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34
1	12-Spaces @ 10" = 10'-0"	20-Spaces @ 12" = 20'-0"	39-Spaces @ 14" = 45'-6"	49-Spaces @ 12" = 49'-0"	57'-15 7/8"	61'-0"	24-Spaces @ 10" = 20'-0"	20-Spaces @ 12" = 20'-0"	16-Spaces @ 14" = 18'-8"	47-Spaces @ 12" = 47'-0"	36'-9"	22'-2"	50-Spaces @ 9" = 37'-6"	51-Spaces @ 6" = 25'-6"	37'-1 1/8"	33'-8 5/8"	50-Spaces @ 8" = 33'-4"	48-Spaces @ 12" = 48'-0"
2	12-Spaces @ 10" = 10'-0"	20-Spaces @ 12" = 20'-0"	39-Spaces @ 14" = 45'-6"	48-Spaces @ 12" = 48'-0"	57'-6 3/8"	61'-9"	24-Spaces @ 10" = 20'-0"	20-Spaces @ 12" = 20'-0"	16-Spaces @ 14" = 18'-8"	46-Spaces @ 12" = 46'-0"	36'-10 1/8"	22'-0"	50-Spaces @ 9" = 37'-6"	51-Spaces @ 6" = 25'-6"	36'-10 1/4"	34'-0 1/4"	49-Spaces @ 8" = 32'-8"	48-Spaces @ 12" = 48'-0"
3	12-Spaces @ 10" = 10'-0"	20-Spaces @ 12" = 20'-0"	39-Spaces @ 14" = 45'-6"	49-Spaces @ 12" = 48'-0"	56'-11 3/4"	61'-5 3/4"	24-Spaces @ 10" = 20'-0"	20-Spaces @ 12" = 20'-0"	16-Spaces @ 14" = 18'-8"	46-Spaces @ 12" = 46'-0"	36'-5 3/8"	22'-1"	50-Spaces @ 9" = 37'-6"	50-Spaces @ 6" = 25'-0"	36'-10 1/2"	33'-7 3/4"	48-Spaces @ 8" = 32'-8"	48-Spaces @ 12" = 48'-0"
4	11-Spaces @ 10" = 9'-2"	20-Spaces @ 12" = 20'-0"	39-Spaces @ 14" = 45'-6"	48-Spaces @ 12" = 48'-0"	57'-2 1/4"	61'-0"	24-Spaces @ 10" = 20'-0"	20-Spaces @ 12" = 20'-0"	16-Spaces @ 14" = 18'-8"	46-Spaces @ 12" = 46'-0"	36'-3 3/8"	21'-11 1/8"	50-Spaces @ 9" = 37'-6"	50-Spaces @ 6" = 25'-0"	36'-7 1/2"	33'-11 3/8"	48-Spaces @ 8" = 32'-0"	48-Spaces @ 12" = 48'-0"
5	11-Spaces @ 10" = 9'-2"	20-Spaces @ 12" = 20'-0"	39-Spaces @ 14" = 45'-6"	48-Spaces @ 12" = 48'-0"	56'-7 3/4"	61'-2 1/4"	24-Spaces @ 10" = 20'-0"	20-Spaces @ 12" = 20'-0"	16-Spaces @ 14" = 18'-8"	45-Spaces @ 12" = 45'-0"	36'-5 1/4"	22'-0"	50-Spaces @ 9" = 37'-6"	49-Spaces @ 6" = 24'-6"	36'-7 3/8"	33'-7"	48-Spaces @ 8" = 32'-0"	48-Spaces @ 12" = 48'-0"

Total studs required = 4258
See shear stud detail sheet 43

WESTBOUND UNIT 2 SPLICE DETAIL

INTERIOR GIRDER MOMENT TABLE

UNIT 2 W.B.	0.4 SP5	PIER5	0.5 SP6	PIER6	0.6 SP7	PIER7	0.5 SP8	PIER8	0.6 SP9
I _s (in ⁴)	78,572	206,236	64,075	120,032	44,811	58,716	38,643	75,648	48,636
I _c (in ⁴)	182,096	-	156,519	-	-	91,985	-	115,275	-
S _s (in ³)	2860	5392	2296	3222	1184	1620	1111	2073	1508
S _c (in ³)	3642	-	3022	-	-	1572	-	2052	-
S _{bi} (in ³)	121.5	262.2	94.5	121.5	32.7	40.8	24.5	64.0	40.8
Q (K/ft.)	1275	1275	1275	1275	1175	1155	1135	1143	1150
M _Q (K)	2550	6782	1835	3465	246	1106	667	2180	1040
S _Q (K/ft.)	0.364	0.364	0.364	0.364	0.364	0.364	0.364	0.364	0.364
M _{sQ} (K)	813	1723	661	933	117	364	262	593	568
M _L (K)	2388	3044	2284	2177	969	1251	1204	1251	1328
M (Imp) (K)	385	472	342	371	192	242	238	252	274
M ₃ (M _L +I) (K)	4622	5860	4377	4247	1935	2498	2403	2505	2670
M _a (K)	10,381	18,675	5961	11,246	2987	5158	4332	6861	5301
M _{bi} (K)	26	47	23	29	7	11	11	19	14
f _s non-comp (k.s.i.)	10.7	15.1	9.7	12.9	2.5	8.2	7.2	12.6	8.3
f _s Q (comp) (k.s.i.)	2.9	3.8	2.9	3.5	1.2	2.7	2.2	3.4	2.4
f _s 3/3 (L+I) (k.s.i.)	13.2	13.0	17.4	15.8	19.6	18.5	18.3	14.5	15.6
f _w (k.s.i.)	2.6	2.2	3.0	2.8	3.2	3.3	5.2	3.5	4.2
f _s (Overload) (k.s.i.)	28.8	31.9	30.0	32.2	25.3	29.4	27.7	30.5	26.3
f _s + f _w (TOTAL) (k.s.i.)	40.0	43.7	42.0	44.7	33.5	41.5	41.2	43.2	38.4
V _r (K)	87.8	-	80.7	-	-	68.9	-	73.5	-

ELEVATIONS - TOP OF GIRDERS

LOCATION	G1	G2	G3	G4	G5
BRG. PIER NO. 4	606.67	606.20	605.72	605.24	604.77
SPLICE #7	607.92	607.44	606.97	606.49	606.01
SPLICE #8	610.35	609.87	609.40	608.92	608.44
BRG. PIER NO. 5	611.49	611.01	610.54	610.06	609.58
SPLICE #9	613.20	612.72	612.24	611.76	611.28
SPLICE #10	615.66	615.18	614.71	614.23	613.75
BRG. PIER NO. 6	616.27	615.79	615.32	614.84	614.36
SPLICE #11	617.33	616.85	616.38	615.90	615.42
BRG. PIER NO. 7	618.70	618.22	617.74	617.26	616.78
SPLICE #12	618.99	618.51	618.04	617.56	617.08
SPLICE #13	620.09	619.61	619.14	618.66	618.18
BRG. PIER NO. 8	620.61	620.13	619.66	619.18	618.70
SPLICE #14	621.02	620.54	620.07	619.59	619.11
BRG. EAST ABUT.	622.13	621.65	621.18	620.70	620.22

* FOR FABRICATION ONLY

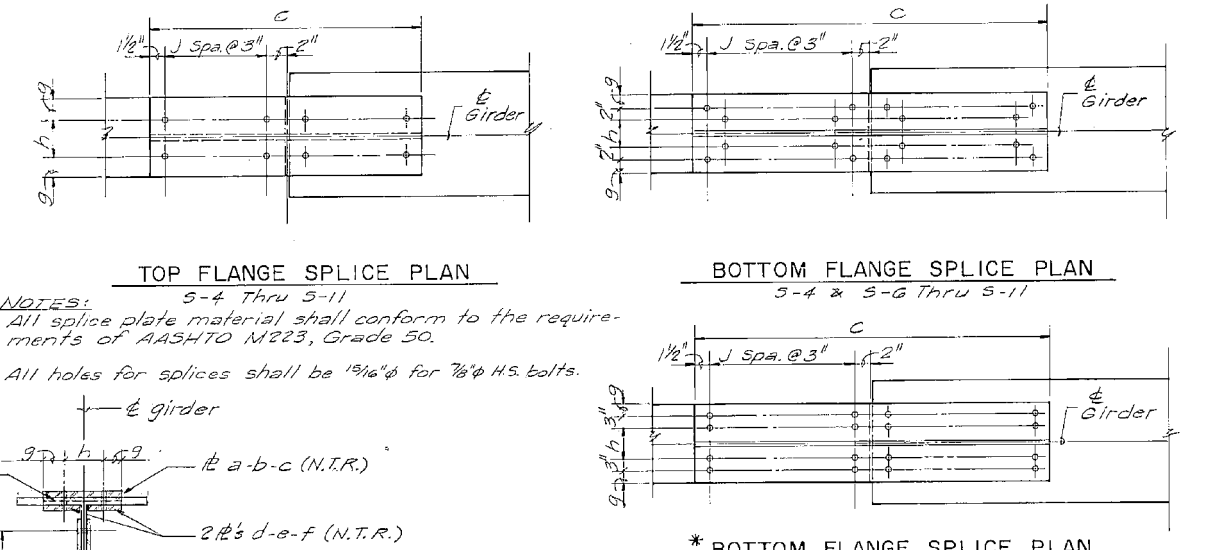
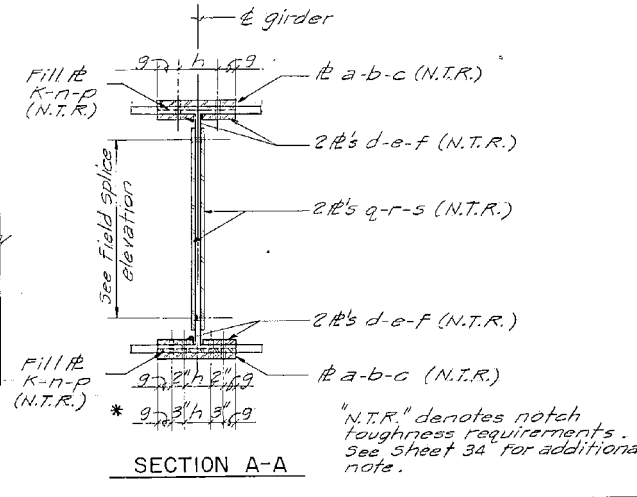
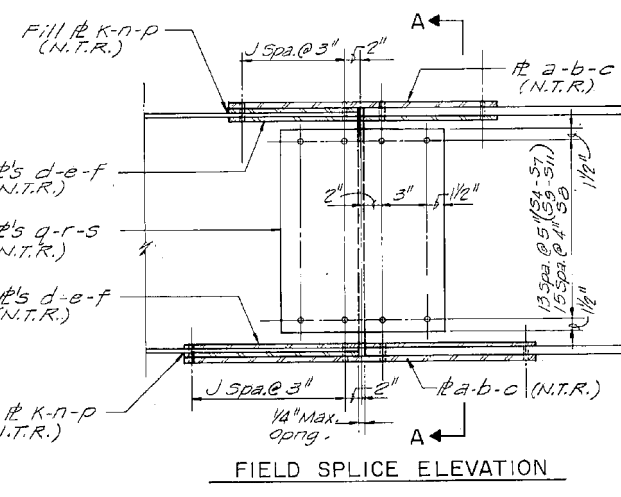
INTERIOR GIRDER REACTION TABLE

	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	EAST ABUT. WB
R _L (K)	105.5	386.5	271.4	159.6	217.1	65.2
R _R (K)	65.1	148.0	126.3	100.5	102.4	54.2
IMP (K)	11.1	23.1	22.0	19.9	20.7	11.2
R TOTAL (K)	181.7	557.6	419.6	280.0	340.2	130.6

TABLE OF DIMENSIONS - BOLTED FIELD SPLICE

SPLICE	NO.	LOCATION	FLANGE	REQD	a	b	c	d	e	f	g	h	j	k	n	p	q	r	s
5-4	Top	1	1/2"	16"	2'-7"	3/8"	6 1/2"	2'-7"	3/4"	9 1/2"	4	-	-	-	-	-	3/8"	13"	5'-8"
5-4	Bottom	1	3/4"	18"	4'-1"	3/4"	7"	4'-1"	3/2"	7"	7	5/8"	18"	2'-0 1/4"	3/8"	13"	5'-8"		
5-5	Top	1	1/2"	16"	4'-7"	1/2"	6 1/2"	4'-7"	3/4"	9 1/2"	8	3/8"	16"	2'-3 1/4"	3/8"	13"	5'-8"		
5-5	Bottom	1	1"	18"	6'-7"	1/8"	7"	6'-7"	3/2"	7"	12	3/8"	18"	3'-3 1/4"	3/8"	13"	5'-8"		
5-6	Top	1	1/2"	14"	4'-1"	3/8"	5"	4'-1"	2 1/2"	9"	7	3/4"	14"	2'-0 1/4"	3/8"	13"	5'-8"		
5-6	Bottom	1	3/4"	18"	5'-7"	3/4"	7"	5'-7"	3 1/2"	7"	10	1/8"	18"	2'-9 1/4"	3/8"	13"	5'-8"		
5-7	Top	1	1/2"	14"	3'-7"	3/8"	5"	3'-7"	2 1/2"	9"	5	1 3/8"	14"	1'-6 1/4"	3/8"	13"	5'-8"		
5-7	Bottom	1	3/4"	14"	4'-1"	3/8"	7"	4'-1"	3 1/2"	7"	7	1/2"	14"	2'-0 1/4"	3/8"	13"	5'-8"		
5-8	Top	1	1/2"	14"	4'-1"	1/2"	5"	4'-1"	2 1/2"	9"	7	1/8"	14"	1'-6 1/4"	3/8"	13"	5'-8"		
5-8	Bottom	1	3/8"	14"	3'-7"	3/8"	5"	3'-7"	2"	6"	6	3/8"	14"	1'-9 1/4"	3/8"	13"	5'-8"		
5-9	Top	1	3/8"	12"	2'-7"	3/8"	4 1/2"	2'-7"	2 1/4"	7 1/2"	4	1/2"	12"	1'-3 1/4"	3/8"	13"	5'-8"		
5-9	Bottom	1	1/2"	14"	3'-1"	3/8"	5"	3'-1"	2"	6"	5	1/2"	14"	1'-6 1/4"	3/8"	13"	5'-8"		
5-10	Top	1	3/8"	12"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	5	3/4"	12"	1'-6 1/4"	3/8"	13"	5'-8"		
5-10	Bottom	1	1/2"	14"	3'-1"	3/8"	5"	3'-1"	2"	6"	5	3/4"	14"	1'-6 1/4"	3/8"	13"	5'-8"		
5-11	Top	1	3/8"	14"	3'-1"	1/2"	5"	3'-1"	2 1/2"	9"	5	3/4"	14"	1'-6 1/4"	3/8"	13"	5'-8"		
5-11	Bottom	1	3/4"	14"	3'-7"	3/8"	5"	3'-7"	2"	6"	6	1/4"	14"	1'-9 1/4"	3/8"	13"	5'-8"		

- NOTES
- I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (total and overload)
 - I_c and S_c are the moment of inertia and section modulus of the composite section used in computing f_s (total and overload)
 - V_r is the maximum L + impact shear range in span.
 - f_s (Total) is the sum of the stresses due to 1.3[M_Q + M_{sQ} + 1/3(M_L + I)]
 - f_s (Overload) is the sum of the stresses due to M_Q + M_{sQ} + 1/3(M_L + I).
 - f_w is the maximum warping stress in the flange due to lateral flange bending due to 1.3[M_Q + M_{sQ} + 1/3(M_L + I)].
 - M_Q - Moment due to dead loads on non-composite section.
 - M_{sQ} - Moment due to dead loads on composite section.
 - M_L - Moment due to live load on non-composite or composite section.
 - I - Live load impact
 - f_w + f_s - Maximum allowable stress computed according to A.A.S.H.T.O. guide to horizontally curved bridges, Sec. 2.16, f_s & f_w 3/3 (L + I + CF) - Centrifugal and super-elevation effects included.
 - S_{bi} is the section modulus for one flange B for lateral flange bending.
 - M_{bi} is the lateral bending moment for flange plate.



NOTES:
5-4 Thru 5-11
All splice plate material shall conform to the requirements of AASHTO M223, Grade 50.
All holes for splices shall be 1/16" φ for 7/8" φ H.S. bolts.

* BOTTOM FLANGE SPLICE PLAN
5-5 only
Work this sheet with sheets 33, 34, 36, 43, 45, 47, 48

REVISIONS			STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
NO.	BY	DATE	PIKE COUNTY FA. RTE. 408 SEC. 75-3VHB-1 STA. 974+71.36	
DESIGNED BY J.T. & R.J.K.			TABLES & SPLICE DETAILS / UNIT 2 W.B.	
DRAWN BY A.A.D.			SCALE NONE	
CHECKED BY M.M.W.			JOB NO. 8466-02	
APPROVED BY R.J.K.			DATE	
CMT CRAWFORD, MURPHY & TILLY, INC. CONSULTING ENGINEERS SPRINGFIELD, ILLINOIS & ST. LOUIS, MO.			SHEET 46 OF 114 SHEETS	

MODEL: Default FILE: \\msdpc\c\operations\bridge\bridge\plan\075-0098 & 0099\plan\tablesheet.dgn

TABLE OF STUD SHEAR CONNECTOR DIMENSIONS-UNIT I EASTBOUND

GIRDER	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
6	12-Spaces @ 12" = 12'-0"	44-Spaces @ 14" = 51'-4"	47-Spaces @ 12" = 47'-0"	35'-9 3/4"	45'-6"	50-Spaces @ 7" = 29'-2"	47-Spaces @ 9" = 35'-3"	33'-6 3/4"	33'-6 3/4"	47-Spaces @ 9" = 35'-3"	50-Spaces @ 7" = 29'-2"	45'-6"	35'-8 3/4"	47-Spaces @ 12" = 47'-0"	44-Spaces @ 14" = 51'-4"	11-Spaces @ 12" = 11'-0"
7	12-Spaces @ 12" = 12'-0"	44-Spaces @ 14" = 51'-4"	47-Spaces @ 12" = 47'-0"	35'-4"	45'-3 1/4"	50-Spaces @ 7" = 29'-2"	47-Spaces @ 9" = 35'-3"	33'-3 3/4"	33'-3 3/4"	47-Spaces @ 9" = 35'-3"	50-Spaces @ 7" = 29'-2"	45'-3 1/2"	35'-3"	47-Spaces @ 12" = 47'-0"	44-Spaces @ 14" = 51'-4"	11-Spaces @ 12" = 11'-0"
8	11-Spaces @ 12" = 11'-0"	44-Spaces @ 14" = 51'-4"	47-Spaces @ 12" = 47'-0"	35'-10 1/4"	45'-3 3/4"	49-Spaces @ 7" = 28'-7"	47-Spaces @ 9" = 35'-3"	33'-4 1/2"	33'-4 1/2"	47-Spaces @ 9" = 35'-3"	49-Spaces @ 7" = 28'-7"	45'-3 3/4"	35'-9 1/4"	46-Spaces @ 12" = 46'-0"	44-Spaces @ 14" = 51'-4"	11-Spaces @ 12" = 11'-0"
9	11-Spaces @ 12" = 11'-0"	44-Spaces @ 14" = 51'-4"	47-Spaces @ 12" = 47'-0"	35'-4 1/2"	45'-0 1/2"	49-Spaces @ 7" = 28'-7"	47-Spaces @ 9" = 35'-3"	33'-2"	33'-2"	47-Spaces @ 9" = 35'-3"	49-Spaces @ 7" = 28'-7"	45'-0 1/2"	35'-3 1/2"	46-Spaces @ 12" = 46'-0"	44-Spaces @ 14" = 51'-4"	11-Spaces @ 12" = 11'-0"
10	11-Spaces @ 12" = 11'-0"	44-Spaces @ 14" = 51'-4"	47-Spaces @ 12" = 47'-0"	34'-10 3/4"	45'-1"	48-Spaces @ 7" = 28'-0"	47-Spaces @ 9" = 35'-3"	33'-2 3/4"	33'-2 3/4"	47-Spaces @ 9" = 35'-3"	48-Spaces @ 7" = 28'-0"	45'-1"	34'-11 3/4"	47-Spaces @ 12" = 47'-0"	43-Spaces @ 14" = 50'-2"	11-Spaces @ 12" = 11'-0"

Total studs required = 4002
See shear stud detail sheet 43

INTERIOR GIRDER MOMENT TABLE

UNIT I E.B.	0.4 SP1 OR 0.6 SP.4	PIER 1 OR PIER 3	0.5 SP2 OR 0.5 SP.3	PIER 2
I _s (in ⁴)	57,465	107,628	42,649	75,648
I _c (in ⁴)	136,119	-	103,700	-
S _s (in ³)	1889	2909	1296	2073
S _c (in ³)	2511	-	1813	-
S _{bi} (in ³)	64.0	108.0	32.7	64.0
M _u (K/ft.)	1175	1168	1160	1160
M _d (K)	1833	3157	696	1819
S _d (K/ft.)	0.364	0.364	0.364	0.364
M _s (K)	651	791	294	558
M _l (K)	1755	1698	1396	1427
M _{imp} (K)	321	310	255	260
S _s (M _l + I) (K)	3460	3347	2751	2812
M _a (K)	7727	9484	4864	6,745
M _{bi} (K)	23	29	15	20
f _s non-comp (k.s.i.)	11.6	13.0	6.4	10.5
f _s comp (k.s.i.)	3.4	3.3	2.2	3.2
f _s (1/3 I) (k.s.i.)	16.5	13.8	18.2	16.3
f _w (k.s.i.)	4.4	3.2	5.7	3.9
f _s (Overload) (k.s.i.)	31.5	30.1	26.8	30.0
f _s + f _w (TOTAL) (k.s.i.)	45.4	42.3	40.5	42.9
V _r (K)	76.1	-	66.6	-

ELEVATIONS - TOP OF GIRDERS

ELEVATIONS - TOP OF WEB *	G6	G7	G8	G9	G10
BRG. WEST ABUT.	587.18	586.70	586.23	585.75	585.27
SPLICE #1	590.70	590.22	589.75	589.27	588.79
BRG. PIER NO. 1	591.60	591.12	590.65	590.17	589.69
SPLICE #2	592.93	592.45	591.98	591.50	591.02
SPLICE #3	595.18	594.70	594.23	593.75	593.27
BRG. PIER NO. 2	596.15	595.67	595.20	594.72	594.24
SPLICE #4	597.11	596.63	596.16	595.68	595.20
SPLICE #5	599.29	598.81	598.34	597.86	597.38
BRG. PIER NO. 3	600.59	600.11	599.64	599.16	598.68
SPLICE #6	601.73	601.25	600.78	600.30	599.82
BRG. PIER NO. 4	605.15	604.67	604.20	603.72	603.24

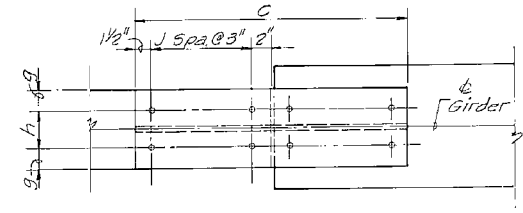
* FOR FABRICATION ONLY

INTERIOR GIRDER REACTION TABLE

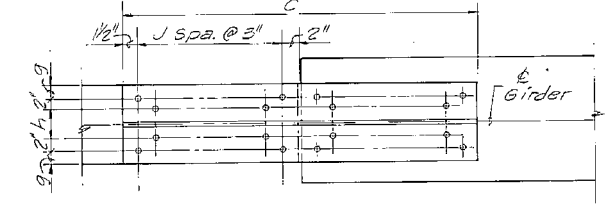
	W. ABUT. E.B.	PIER 1	PIER 2	PIER 3	PIER 4
R _u (k)	37.0	266.8	203.9	266.8	87.1
R _l (k)	58.0	116.8	109.2	117.1	58.1
IMP (k)	10.6	21.4	20.0	21.5	10.6
R TOTAL (k)	155.6	405.0	333.1	405.4	155.8

EASTBOUND UNIT I SPLICE TABLE

SPLICE LOCATION	FLANGE	NO.	TABLE OF DIMENSIONS - BOLTED FIELD SPLICE															
			a	b	c	d	e	f	g	h	j	k	n	p	q	r	s	
S-1	Top	2	1/2"	12"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	5	1/4"	12"	1'-6 1/4"	3/8"	13"	5'-8"	
S-1	Bottom	2	3/4"	16"	3'-7"	1/2"	6"	3'-7"	3"	6"	6	1/4"	16"	1'-9 1/4"	3/8"	13"	5'-8"	
S-2	Top	2	3/8"	12"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	5	1/2"	12"	1'-6 1/4"	3/8"	13"	5'-8"	
S-2	Bottom	2	1/2"	14"	3'-7"	1/2"	5"	3'-7"	2"	6"	6	1/4"	14"	1'-9 1/4"	3/8"	13"	5'-8"	
S-3	Top	2	3/8"	12"	2'-7"	3/8"	4 1/2"	2'-7"	2 1/4"	7 1/2"	4	1/4"	12"	1'-3 1/4"	3/8"	13"	5'-8"	
S-3	Bottom	2	1/2"	14"	3'-1"	1/2"	5"	3'-1"	2"	6"	5	-	-	-	-	-	-	



TOP FLANGE SPLICE PLAN

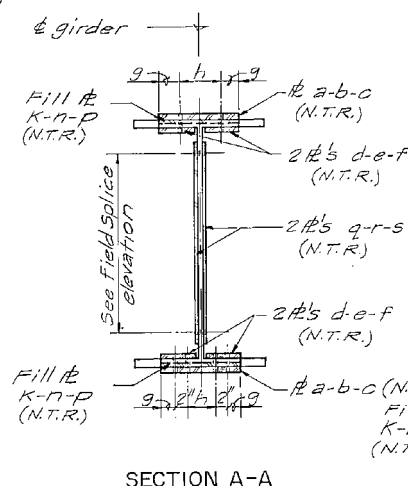


BOTTOM FLANGE SPLICE PLAN

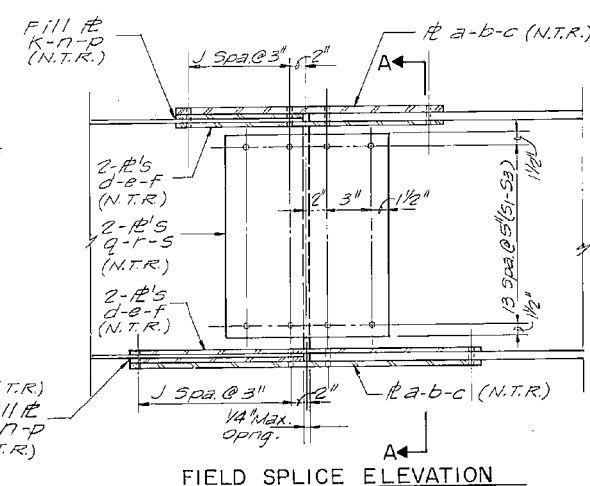
NOTES

- I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (total and overload).
- I_c and S_c are the moment of inertia and section modulus of the composite section used in computing f_s (total and overload).
- V_r is the maximum $\frac{1}{2}$ + impact shear range in span.
- f_s (Total) is the sum of the stresses due to $1.3 [M_d + M_s + \frac{2}{3} (M_l + I)]$.
- f_s (Overload) is the sum of the stresses due to $M_d + M_s + \frac{2}{3} (M_l + I)$.
- f_w is the maximum warping stress in the flange due to lateral flange bending due to $1.3 [M_d + M_s + \frac{2}{3} (M_l + I)]$.
- M_d - Moment due to dead loads on non-composite section.
- M_s - Moment due to dead loads on composite section.
- M_l - Moment due to live load on non-composite or composite section.
- I - Live load impact
- f_w + f_s - Maximum allowable stress computed according to AASHTO guide for horizontally curved bridges, Sec. 2.16, f_s & f_w (1/3 I + CF) - Centrifugal and superelevation effects included.

- S_{bi} is the section modulus for one flange R for lateral flange bending.
- M_{bi} is the lateral bending moment for flange plate.



SECTION A-A



FIELD SPLICE ELEVATION

- NOTES:
- All splice plate material shall conform to the requirements of AASHTO M223, Grade 50.
 - All holes for splices shall be 1/16" ϕ for 7/8" ϕ H.S. bolts.

"N.T.R." denotes notch toughness requirements. See sheet 36 for additional notes.

Work this sheet with sheets 37, 42, 43, 44, 49, 50

REVISIONS			STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
NO.	BY	DATE		
			PIKE COUNTY FA. RTE. 408 SEC. 75-3VHB-1 STA. 974+71.36	
DESIGNED BY J.J.T. & R.J.K.			SCALE NONE	
DRAWN BY A.D.D. & G.L.D.			JOB NO. 8466-02	
CHECKED BY M.W.W.			DATE	
APPROVED BY E.J.K.			SHEET 49 OF 114 SHEETS	

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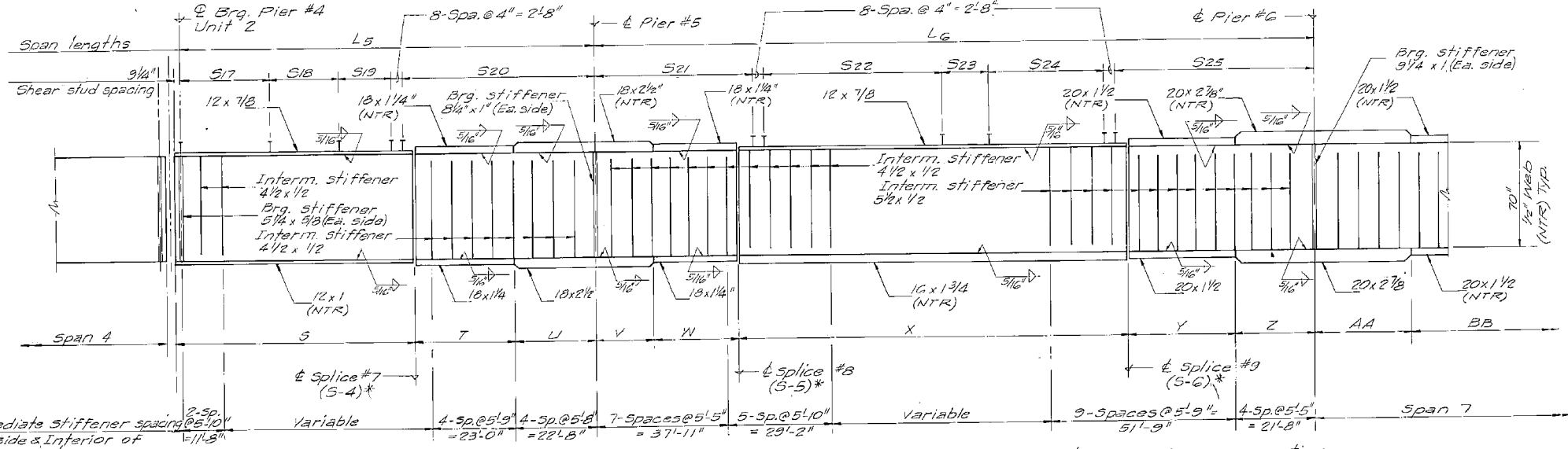
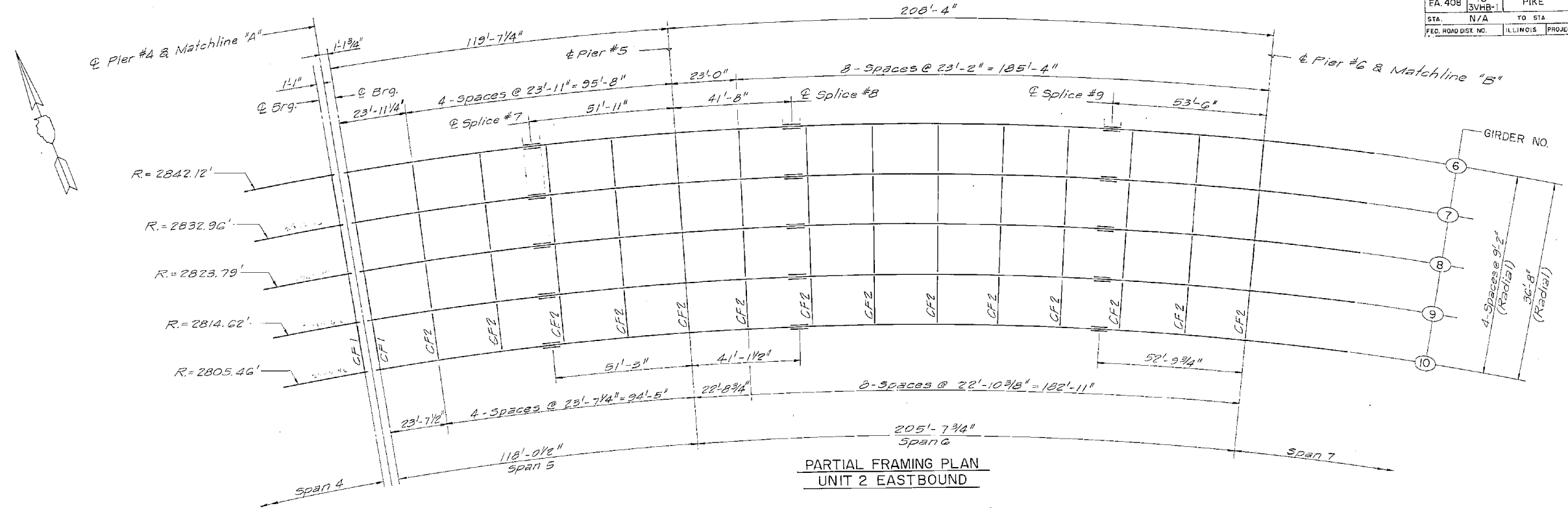
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PLOT SCALE = 100,0000' / in.	DRAWN -	REVISED -
PLOT DATE = 10/5/2018	CHECKED -	REVISED -
	DATE -	REVISED -

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 075-0098 & 0099 (FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE. 72	SECTION (75-3)BP	COUNTY PIKE	TOTAL SHEETS 20	SHEET NO. 12
CONTRACT NO. 72K65			ILLINOIS FED. AID PROJECT	



NOTE: All steel shall be M223, Grade 50 except cross frames shall be M183

* See sheet 40 for details of bolted field splices and the table of dimensions describing the splice components.

Notes: Cross frame connection plates not shown for clarity. See Framing plan for location & sheet 43 for details.

Notes:
1) See sheet 43 for detail of stiffener clearance at flange splices.
2) Work this sheet with sheets 40, 41, 42, 43, 46, 49, 50

GIRDER	RADIUS OF CURVE	SPAN LENGTHS IN FEET					TOTAL LENGTH C-C BRG.
		L5	L6	L7	L8	L9	
6	2842.12'	119'-7 1/4"	208'-4"	178'-6 7/8"	124'-0 1/8"	128'-3 3/4"	758'-10"
7	2832.96'	119'-2 5/8"	207'-8"	178'-0"	123'-7 3/8"	127'-10 3/4"	756'-4 3/4"
8	2823.79'	118'-10"	207'-0"	177'-5"	123'-2 1/2"	127'-5 3/4"	753'-11 1/4"
9	2814.62'	118'-5 1/8"	206'-3 3/4"	176'-10 1/4"	122'-9 3/4"	127'-0 7/8"	751'-5 3/4"
10	2805.46'	118'-0 1/2"	205'-7 3/4"	176'-3 1/4"	122'-4 7/8"	126'-7 7/8"	749'-0 1/4"

GIRDER	FLANGE LENGTHS IN FEET												TOTAL FLANGE LENGTH						
	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD		EE	FF	GG	HH	II	JJ
6	28'-5 1/2"	30'-7"	21'-4"	16'-8"	25'-0"	113'-2"	32'-0"	21'-6"	23'-6"	35'-4"	90'-11 7/8"	28'-9"	42'-0"	40'-10 1/8"	41'-2"	26'-8"	71'-8"	30'-8 1/4"	760'-3 3/4"
7	28'-2 7/8"	30'-5 7/8"	21'-3 1/2"	16'-7 3/8"	24'-11"	112'-9 3/4"	31'-10 3/8"	21'-5 1/8"	23'-5 1/8"	35'-2 7/8"	90'-8 3/8"	28'-7 7/8"	41'-10 1/8"	40'-8 3/8"	41'-0 3/8"	26'-7"	71'-5 1/4"	30'-7"	757'-10 1/2"
8	28'-0 1/4"	30'-4 5/8"	21'-2 3/8"	16'-6 3/4"	24'-10"	112'-5 3/8"	31'-9 1/2"	21'-4 3/8"	23'-4 1/8"	35'-1 1/4"	90'-4 3/8"	28'-6 3/8"	41'-8 3/8"	40'-6 3/8"	40'-10 3/8"	26'-5 1/2"	71'-2 1/2"	30'-5 1/8"	755'-5"
9	27'-9 3/8"	30'-3 1/2"	21'-1 1/2"	16'-6 1/8"	24'-9 1/8"	112'-0 3/8"	31'-8 1/4"	21'-3 1/2"	23'-3 1/4"	34'-11 7/8"	90'-1 1/2"	28'-5 5/8"	41'-7 1/8"	40'-5 5/8"	40'-9 1/4"	26'-4 7/8"	70'-11 7/8"	30'-4 3/8"	752'-11 1/2"
10	27'-6 3/4"	30'-2 1/2"	21'-0 3/4"	16'-5 3/8"	24'-8 1/8"	111'-8 1/2"	31'-7 1/8"	21'-2 3/8"	23'-2 3/8"	34'-10 1/2"	89'-9 7/8"	28'-4 1/2"	41'-5 1/2"	40'-3 3/4"	40'-7 3/8"	26'-3 7/8"	70'-8 7/8"	30'-3 3/8"	750'-6"

"N.T.R." denotes notch toughness requirements. Plates designated by (N.T.R.) shall conform to the supplemental requirements for notch toughness (Zone 2). These components are the tension flanges, webs and all splice plate material of the steel girder.

REVISIONS		
NO.	BY	DATE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIKE COUNTY
FA RTE. 408
SEC. 75-3VHB-1
STA. 974+71.36
FRAMING/UNIT 2 E.B. / SPANS 5 & 6

DESIGNED BY F.J.P.	SCALE NONE	JOB NO. 8466-02
DRAWN BY A.D.D.	DATE	
CHECKED BY M.W.W.		
APPROVED BY R.J.K.		

CMT
CRAWFORD MURPHY & TILLY, INC.
CONSULTING ENGINEERS
SPRINGFIELD, IL ■ AURORA, IL ■ ST. LOUIS, MO

SHEET 50 OF 114 SHEETS

USER NAME = dudleybm	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 100,0000' / in.	CHECKED -	REVISED -
PLOT DATE = 10/5/2018	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 075-0098 & 0099
(FOR INFORMATION ONLY)

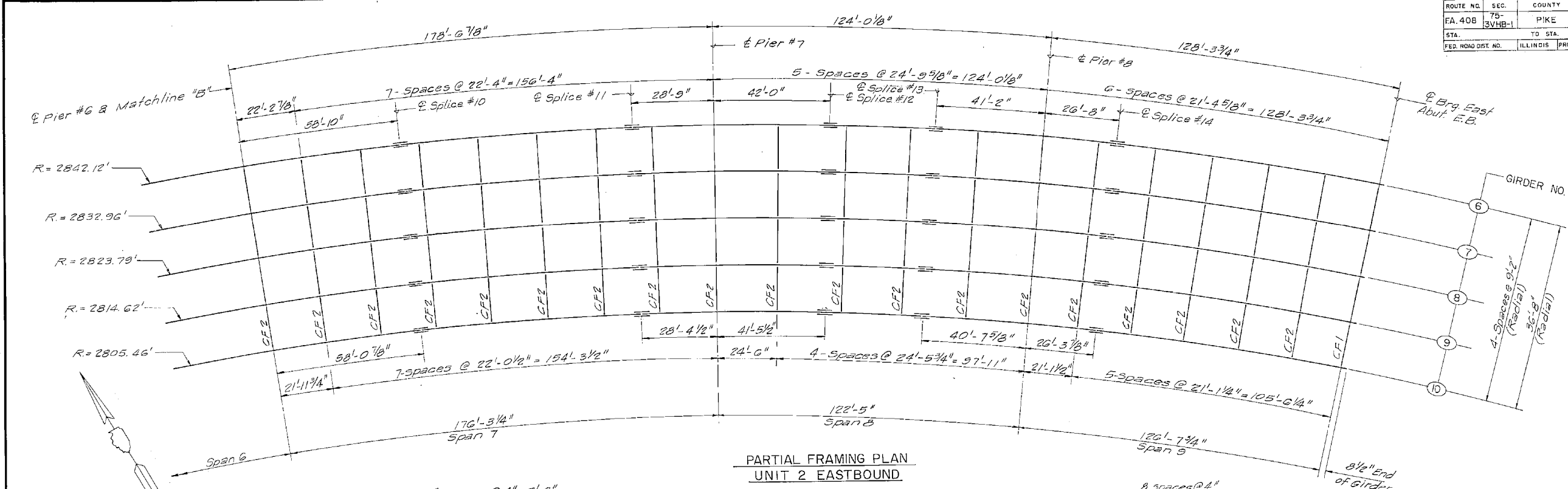
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(75-3)BP	PIKE	20	13
CONTRACT NO. 72K65				
		ILLINOIS	FED. AID PROJECT	

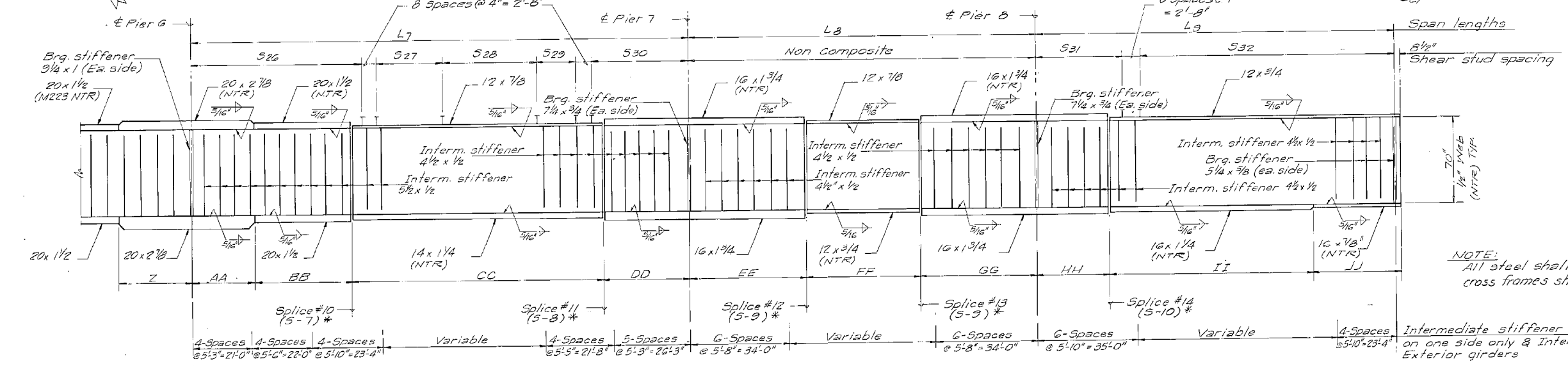
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ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
FA. 408	75-3VHB-1	PIKE	114	51
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

SHEET NO. 40
OF 76 SHEETS



PARTIAL FRAMING PLAN
UNIT 2 EASTBOUND



PARTIAL GIRDER ELEVATION DETAIL
UNIT 2 EASTBOUND

* See sheet 41 for details of bolted field splices and the table of dimensions describing the splice components.

Note: Cross frame connection plates not shown for clarity. See framing plan for location & sheet 43 for details.

- NOTES:
- See sheet 43 for detail of stiffener clearance at flange splices.
 - Work this sheet with sheets 39, 41, 42, 43, 44, 49, 50

REVISIONS			STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
NO.	BY	DATE		
			PIKE COUNTY FA. RTE. 408 SEC. 75-3VHB-1 STA. 974+71.36	
			FRAMING / UNIT 2 E.B. / SPANS 7 - 9	
DESIGNED BY	F. J.P.	SCALE NONE	JOB NO.	
DRAWN BY	A.D.D. & G.L.B.		8466-02	
CHECKED BY	M.W.W.		DATE	
APPROVED BY	R.J.K.		SHEET 51 OF 114 SHEETS	

"N.T.R." denotes notch toughness requirements. Plate designated by (N.T.R.) shall conform to the supplemental requirements for notch toughness (Zone 2). These components are the tension flanges, webs and all splice plate material of the steel girder.

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USER NAME = dudleybm	DESIGNED -	REVISED -
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PLOT SCALE = 100.0000' / in.	CHECKED -	REVISED -
PLOT DATE = 10/5/2018	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 075-0098 & 0099 (FOR INFORMATION ONLY)			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(75-3)BP	PIKE	20	14
CONTRACT NO. 72K65			ILLINOIS FED. AID PROJECT	

TABLE OF STUD SHEAR CONNECTOR DIMENSIONS - UNIT 2 EASTBOUND

GIRDER	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32
6	31-Spaces @ 10" = 25'-10"	20-Spaces @ 12" = 20'-0"	51-Spaces @ 4" = 17'-0"	54'-11 1/2"	43'-11"	40-Spaces @ 12" = 40'-0"	14-Spaces @ 14" = 16'-4"	47-Spaces @ 12" = 47'-0"	55'-9"	61'-2"	48-Spaces @ 6 1/2" = 26'-0"	42-Spaces @ 12" = 42'-0"	15-Spaces @ 11" = 13'-9"	30'-3 3/8"	28'-7 3/4"	97-Spaces @ 12" = 37'-0"
7	31-Spaces @ 10" = 25'-10"	20-Spaces @ 12" = 20'-0"	51-Spaces @ 4" = 17'-0"	53'-8 5/8"	43'-6 1/8"	40-Spaces @ 12" = 40'-0"	14-Spaces @ 14" = 16'-4"	47-Spaces @ 12" = 47'-0"	55'-5 7/8"	61'-4 1/2"	48-Spaces @ 6 1/2" = 26'-0"	42-Spaces @ 12" = 42'-0"	15-Spaces @ 11" = 13'-9"	30'-6 1/2"	28'-2 3/4"	97-Spaces @ 12" = 37'-0"
8	31-Spaces @ 10" = 25'-10"	20-Spaces @ 12" = 20'-0"	50-Spaces @ 4" = 16'-8"	53'-8"	43'-11"	39-Spaces @ 12" = 39'-0"	14-Spaces @ 14" = 16'-4"	47-Spaces @ 12" = 47'-0"	55'-5"	61'-0"	48-Spaces @ 6 1/2" = 26'-0"	42-Spaces @ 12" = 42'-0"	15-Spaces @ 11" = 13'-9"	30'-4"	28'-9 3/4"	96-Spaces @ 12" = 36'-0"
9	31-Spaces @ 10" = 25'-10"	20-Spaces @ 12" = 20'-0"	49-Spaces @ 4" = 16'-4"	53'-7 7/8"	43'-6 3/4"	39-Spaces @ 12" = 39'-0"	14-Spaces @ 14" = 16'-4"	47-Spaces @ 12" = 47'-0"	55'-1"	60'-8 1/4"	48-Spaces @ 6 1/2" = 26'-0"	42-Spaces @ 12" = 42'-0"	15-Spaces @ 11" = 13'-9"	30'-1"	28'-4 7/8"	96-Spaces @ 12" = 36'-0"
10	31-Spaces @ 10" = 25'-10"	20-Spaces @ 12" = 20'-0"	49-Spaces @ 4" = 16'-4"	53'-2 1/2"	42'-11 3/4"	39-Spaces @ 12" = 39'-0"	14-Spaces @ 14" = 16'-4"	47-Spaces @ 12" = 47'-0"	55'-0"	60'-10"	48-Spaces @ 6 1/2" = 26'-0"	42-Spaces @ 12" = 42'-0"	15-Spaces @ 11" = 13'-9"	30'-4 1/4"	27'-11 7/8"	96-Spaces @ 12" = 36'-0"

Total studs required = 4068
See detail of shear studs sheet 43

EASTBOUND UNIT 2 SPLICE DETAIL

SPLICE NO.	TABLE OF DIMENSIONS - BOLTED FIELD SPLICE																		
	LOCATION	FLANGE REQ'D	a	b	c	d	e	f	g	h	j	k	n	p	q	r	s		
5-4	Top	1	1/2"	12"	3'-7"	1/2"	4 1/2"	3'-7"	2 1/4"	7 1/2"	7	3/8"	12"	1'-9 1/4"	3/8"	13"	5'-8"		
5-4	Bottom	1	1/2"	12"	4'-1"	1/2"	5"	4'-1"	1 1/2"	5"	8	1/2"	12"	2'-0 1/4"	3/8"	13"	5'-8"		
5-5	Top	1	1/2"	12"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	6	3/8"	12"	1'-6 1/4"	3/8"	13"	5'-8"		
5-5	Bottom	1	3/4"	16"	4'-7"	3/4"	6"	4'-7"	3"	6"	9	1/2"	16"	2'-3 1/4"	3/8"	13"	5'-8"		
5-6	Top	1	1/2"	12"	3'-7"	3/8"	4 1/2"	3'-7"	2 1/4"	7 1/2"	7	3/8"	12"	1'-9 1/4"	3/8"	13"	5'-8"		
5-6	Bottom	1	3/4"	16"	5'-1"	3/4"	6"	5'-1"	3"	6"	10	1/2"	16"	2'-6 1/4"	3/8"	13"	5'-8"		
5-7	Top	1	1/2"	12"	4'-1"	1/2"	4 1/2"	4'-1"	2 1/4"	7 1/2"	8	3/8"	12"	2'-0 1/4"	3/8"	13"	5'-8"		
5-7	Bottom	1	3/4"	14"	5'-1"	1/2"	5"	5'-1"	2 1/2"	9"	8	1/2"	14"	2'-6 1/4"	3/8"	13"	5'-8"		
5-8	Top	1	1/2"	12"	2'-7"	3/8"	4 1/2"	2'-7"	2 1/4"	7 1/2"	5	3/8"	12"	1'-5 1/4"	3/8"	13"	5'-8"		
5-8	Bottom	1	1/2"	14"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	6	3/8"	12"	1'-6 1/4"	3/8"	13"	5'-8"		
5-9	Top	2	1/2"	12"	3'-1"	3/8"	4 1/2"	3'-1"	2 1/4"	7 1/2"	6	3/8"	12"	1'-6 1/4"	3/8"	13"	5'-8"		
5-9	Bottom	2	3/8"	12"	3'-1"	3/8"	5"	3'-1"	1 1/2"	5"	6	1"	12"	1'-6 1/4"	3/8"	13"	5'-8"		
5-10	Top	1	3/8"	12"	2'-7"	3/8"	4 1/2"	2'-7"	2 1/4"	7 1/2"	5	1"	12"	1'-3 1/4"	3/8"	13"	5'-8"		
5-10	Bottom	1	5/8"	16"	3'-7"	1/2"	6"	3'-7"	3"	6"	7	1/2"	16"	1'-9 1/4"	3/8"	13"	5'-8"		

INTERIOR GIRDER MOMENT TABLE

UNIT 2 E.B.	0.4 SP 5	PIER 5	0.5 SP 6	PIER 6	0.6 SP 7	PIER 7	0.5 SP 8	PIER 8	0.6 SP 9
Is (in ⁴)	42,552	132,604	60,997	167,055	48,688	86,379	38,688	86,379	48,513
Ic (in ⁴)	37,782	-	147,617	-	115,672	-	-	-	122,438
Ss (in ³)	1214	3536	2101	4411	1509	2350	1053	2350	1612
Sc (in ³)	1677	-	2784	-	2057	-	-	-	2226
Sbi (in ³)	24.0	135.0	74.7	191.7	40.8	74.7	21.0	74.7	53.3
Q (K/ft)	1176	1201	1226	1212	1198	1194	1189	1171	1153
M _D (K)	472	3978	2011	5303	1201	2104	148	2172	1409
S _D (K/ft)	0.364	0.364	0.364	0.364	0.364	0.364	0.364	0.364	0.364
M _{S_D} (K)	208	1077	715	1442	441	625	92	592	483
M _L (K)	1336	2173	2253	2765	1692	1761	355	1476	1475
M (Imp) (K)	272	375	335	434	279	319	192	294	291
S ₃ (M _L + I) (K)	2680	4247	4280	5332	3285	3467	1912	2950	2943
M ₀ (K)	4368	12,092	9108	15,700	6405	8054	2792	7428	6286
M _b (K)	15	34	24	41	16	24	9	22	14
fs _D non-comp (k.s.i.)	4.7	13.5	11.5	14.4	9.6	10.7	1.7	11.1	10.5
fs _D (comp) (k.s.i.)	1.6	3.7	3.3	3.9	2.8	3.2	1.0	3.0	2.9
fs ₃ (L + I) (k.s.i.)	19.2	14.4	18.4	14.5	19.2	17.7	21.8	15.1	15.9
fw (k.s.i.)	6.4	3.1	3.9	2.5	4.7	3.9	5.8	3.6	3.2
fs (Overload) (k.s.i.)	25.5	31.6	33.2	32.8	31.6	31.6	24.5	29.2	29.3
fs + fw (TOTAL) (k.s.i.)	39.6	44.2	47.1	45.1	45.2	45.0	37.7	41.6	41.3
Vr (K)	81.8	-	79.3	-	78.9	-	-	-	74.5

ELEVATIONS - TOP OF GIRDERS

ELEVATIONS - TOP OF WEB*									
LOCATION	G 6	G 7	G 8	G 9	G 10				
BRG. PIER NO. 4	605.23	604.75	604.28	603.80	603.32				
SPLICE #7	607.09	606.61	606.14	605.66	605.18				
BRG. PIER NO. 5	608.53	608.05	607.58	607.10	606.62				
SPLICE #8	609.89	609.41	608.94	608.46	607.98				
SPLICE #9	612.70	612.22	611.75	611.27	610.79				
BRG. PIER NO. 6	613.60	613.12	612.65	612.17	611.69				
SPLICE #10	614.99	614.51	614.03	613.55	613.07				
SPLICE #11	616.72	616.24	615.77	615.29	614.81				
BRG. PIER NO. 7	617.21	616.73	616.25	615.77	615.29				
SPLICE #12	617.81	617.33	616.85	616.37	615.89				
SPLICE #13	618.45	617.97	617.49	617.01	616.53				
BRG. PIER NO. 8	619.15	618.67	618.19	617.71	617.23				
SPLICE #14	619.52	619.04	618.57	618.09	617.61				
BRG. EAST ABUT.	620.83	620.35	619.88	619.40	618.92				

*FOR FABRICATION ONLY

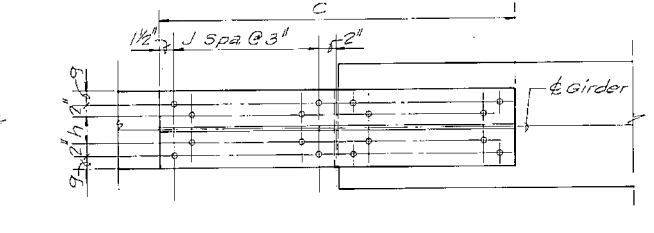
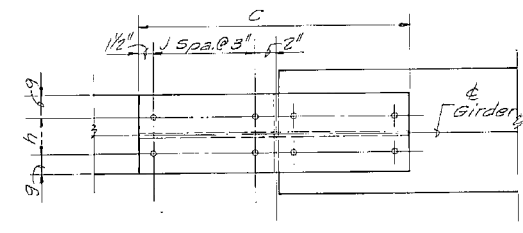
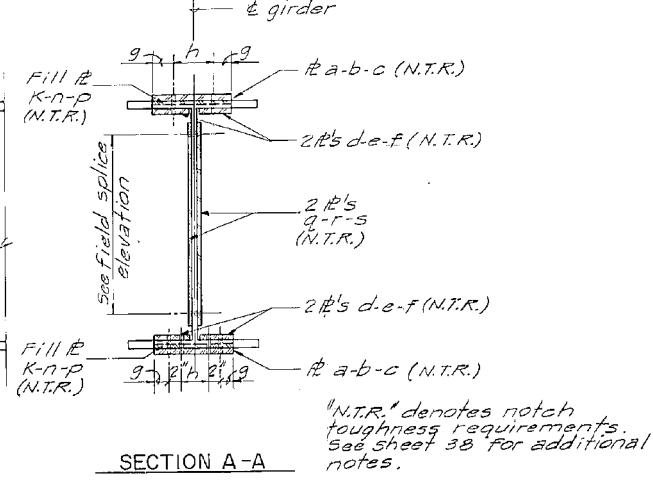
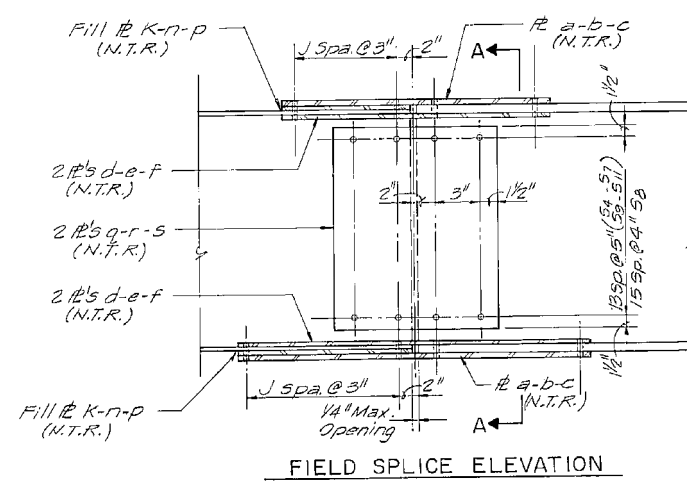
INTERIOR GIRDER REACTION TABLE

	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	E. ABUT. E.B.
R _D (K)	51.3	292.5	335.7	213.0	215.5	75.7
R _L (K)	54.3	127.6	141.4	115.4	106.5	54.7
IMP (K)	11.1	22.2	22.3	21.0	21.3	10.9
R TOTAL (K)	116.7	442.3	499.4	349.4	343.3	141.3

NOTES

- Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total and overload).
- Ic and Sc are the moment of inertia and section modulus of the composite section used in computing fs (Total and overload).
- Vr is the maximum L + impact shear range in span.
- fs (Total) is the sum of the stresses due to 1.3[M_D + M_{S_D} + 1/3(M_L + I)].
- fs (Overload) is the sum of the stresses due to M_D + M_{S_D} + 1/3(M_L + I).
- fw is the maximum warping stress in the flange due to lateral flange bending due to 1.3[M_D + M_{S_D} + 1/3(M_L + I)].
- M_D - Moment due to dead loads on non-composite section.
- M_{S_D} - Moment due to dead loads on composite section.
- M_L - Moment due to live load on non-composite or composite section.
- I - Live load impact.
- fw ifs - Maximum allowable stress computed according to A.A.S.H.T.O. guide to horizontally curved bridges Sec. 2.16, fs_D & fs₃ (L + I + CF) - Centrifugal and super-elevation effects included.

- Sbi is the section modulus for one flange re for lateral flange bending.
- Mbi is the lateral bending moment for flange plate.



- NOTES:
- All splice plate material shall conform to the requirements of AASHTO M223, Grade 50.
 - All holes for splices shall be 1 5/16" φ for 7/8" φ H.S. bolts.

Work this sheet with sheets 39, 40, 42, 43, 46, 49, 50

REVISIONS		
NO.	BY	DATE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIKE COUNTY
FA. RTE. 408
SEC. 75-3VHB-1
STA. 974+71.36

TABLES & SPLICE DETAILS/UNIT 2 E.B.

DESIGNED BY J.J.T. & R.J.K.
DRAWN BY A.D.D.
CHECKED BY H.W.W.
APPROVED BY R.J.K.

SCALE NONE
DATE
JOB NO. 8466-02
SHEET 52 OF 114 SHEETS

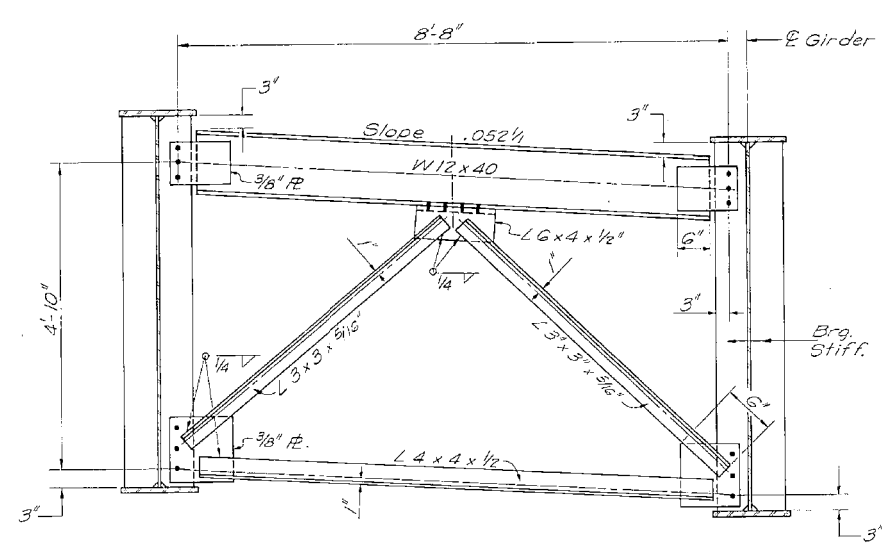
CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS
SPRINGFIELD, ILL. ■ JUPITER, ILL. ■ ST. LOUIS, MO.

MODEL: Default
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USER NAME = dudleybm	DESIGNED -	REVISED -
PLOT SCALE = 100,0000' / in.	DRAWN -	REVISED -
PLOT DATE = 10/5/2018	CHECKED -	REVISED -
	DATE -	REVISED -

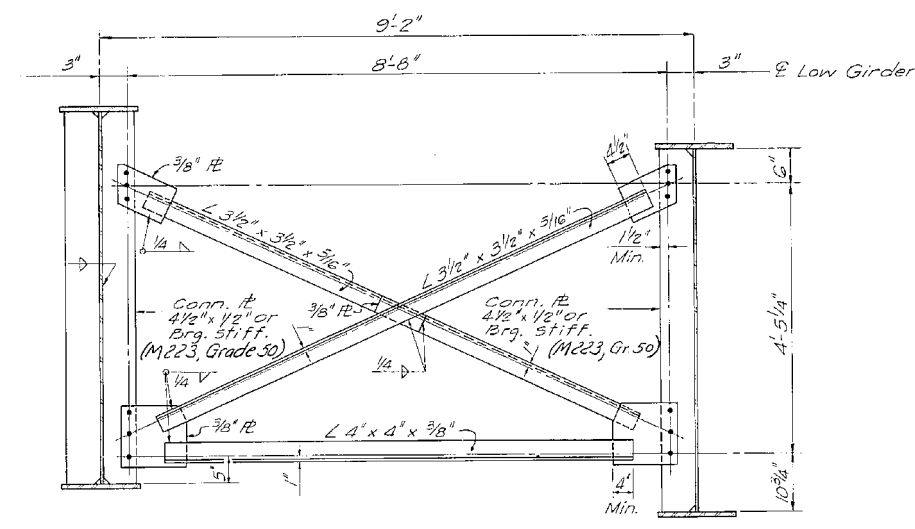
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 075-0098 & 0099 (FOR INFORMATION ONLY)		F.A.I. RTE. 72	SECTION (75-3)BP	COUNTY PIKE	TOTAL SHEETS 20	SHEET NO. 15
SCALE:	SHEET OF SHEETS	STA.	TO STA.	ILLINOIS FED. AID PROJECT CONTRACT NO. 72K65		



TYPICAL END CROSS FRAME CF 1
(Total no. required = 32)

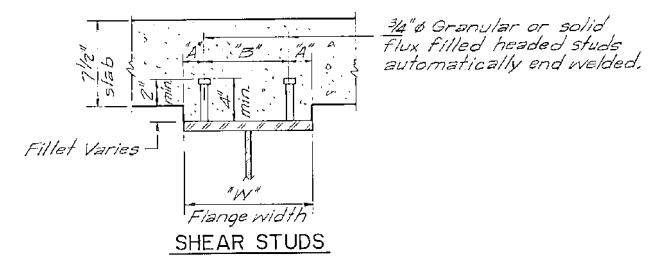
NOTE:
All holes for cross frame connections shall be 1/8"φ for 3/8"φ H.S. bolts with two hardened washers.



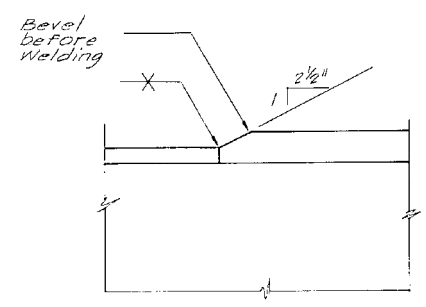
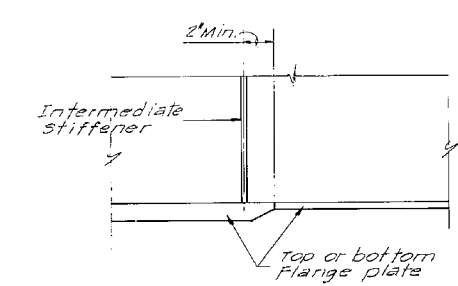
TYPICAL INTERIOR CROSS FRAME CF 2
(Total no. required = 460)

MINIMUM FILLET WELD SIZE (AWS D 1.1)	
T **	MINIMUM SIZE OF FILLET WELD (INCHES) ***
1/4" < T ≤ 1/2"	3/16"
1/2" < T ≤ 3/4"	1/4"
3/4" < T	5/16"

** Base metal thickness of thicker part joined (inches).
*** Except that the weld size need not exceed the thickness of the thinner part joined.

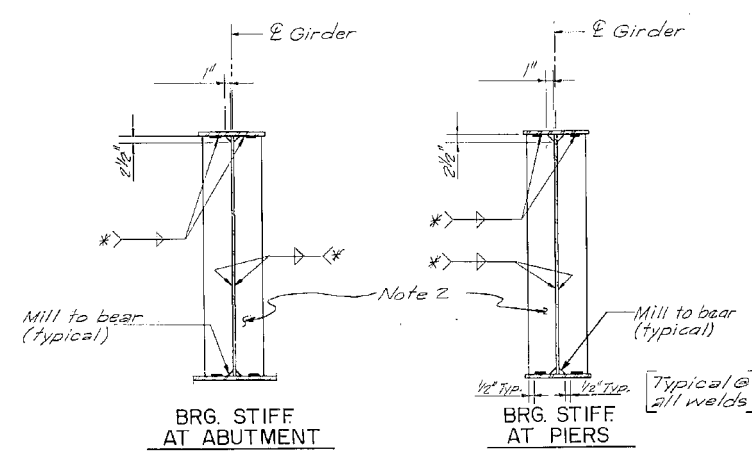


SHEAR STUD DIM.		
W	A	B
12"	3"	6"
14"	3"	8"
16"	4"	8"



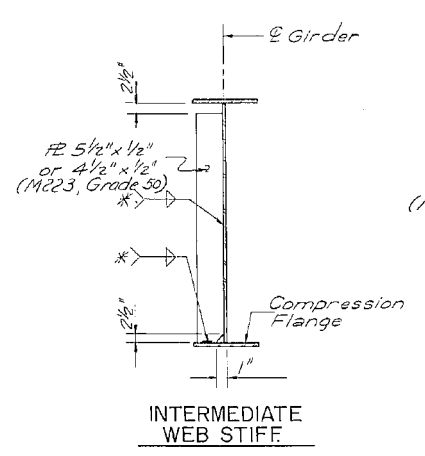
STIFFENER CLEARANCE DETAIL

FLANGE PLATE BUTT WELD DETAIL

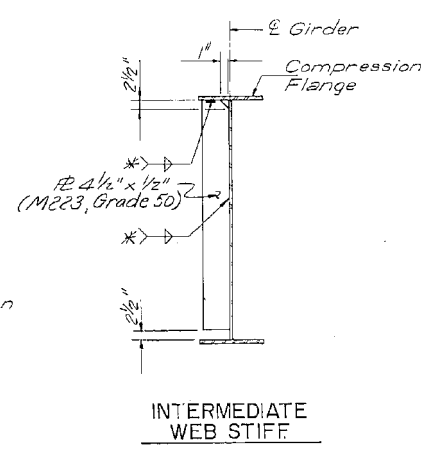


BRG. STIFF AT ABUTMENT

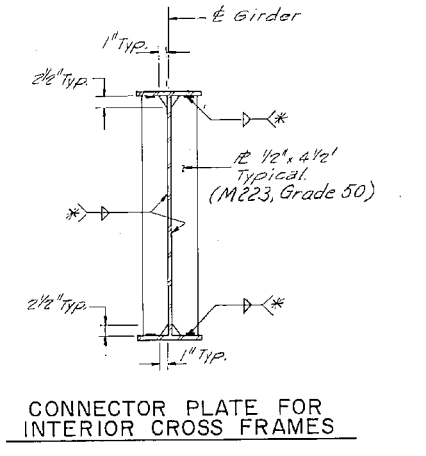
BRG. STIFF AT PIERS



INTERMEDIATE WEB STIFF.



INTERMEDIATE WEB STIFF.



CONNECTOR PLATE FOR INTERIOR CROSS FRAMES

NOTE:
1) Brg. stiffener R size varies - see girder elevations for R sizes.

* See minimum fillet weld size table for welds.
See Framing Plan sheets for plate sizes.

Work this sheet with sheets 31, 33, 34, 36, 37, 39, 40, 42

REVISIONS			STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
NO.	BY	DATE		
			PIKE COUNTY F.A. RTE. 408 SEC. 75-3VHB-1 STA. 974+71.36	
DESIGNED BY R.J.K.			STRUCTURAL STEEL DETAILS	
DRAWN BY G.L.D.			SCALE NONE	JOB NO. 8466-02
CHECKED BY M.W.W.			DATE	SHEET 54 OF 114 SHEETS
APPROVED BY R.J.K.			CMT CRAWFORD, MURPHY & TILLY, INC. CONSULTING ENGINEERS SPRINGFIELD, ILL. ALPORA, ILL. ST. LOUIS, MO.	

USER NAME = dudleybm	DESIGNED -	REVISED -
PLOT SCALE = 100,0000' / in.	DRAWN -	REVISED -
PLOT DATE = 10/5/2018	CHECKED -	REVISED -
	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**EXISTING PLANS, SN 075-0098 & 0099
(FOR INFORMATION ONLY)**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(75-3)BP	PIKE	20	16
CONTRACT NO. 72K65				
ILLINOIS FED. AID PROJECT				

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