

47

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*Bea -
extralighting*

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**PLANS FOR PROPOSED
FEDERAL AID HIGHWAY**

VARIOUS DISTRICT ONE
SECTION: 1995-1131

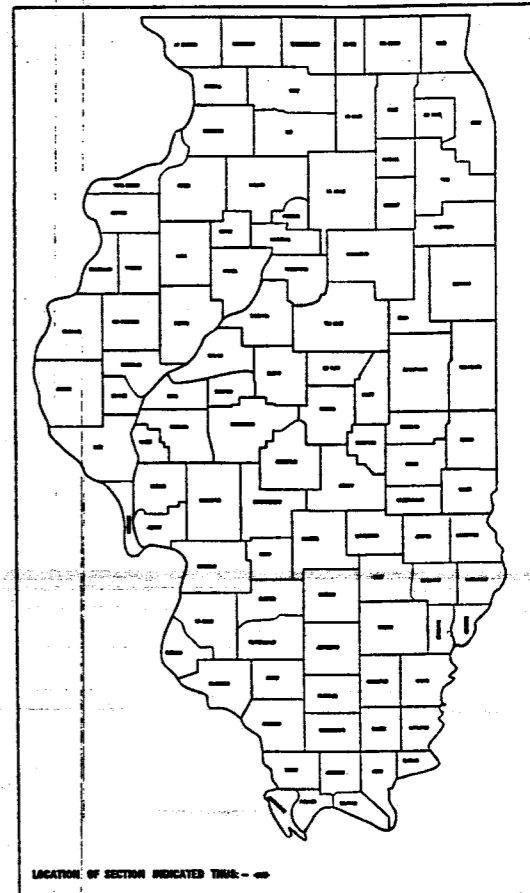
EXTRA

- 1. U.S. 20 OVER ~~IL. 25 (SN:045-0007)~~
- 2. U.S. 20 OVER ST. CHARLES ST. (SN:045-0006)
- 3. U.S. 20 OVER McLEAN BLVD. (SN:045-0003 EB, 045-0002 WB)
- 4. IL. 43 OVER I-55 (SN:016-0316)
- 5. THORNDALE AVE. OVER I-290 (SN:022-0108)
- 6. 111th ST. OVER I-94 (BISHOP FORD) (SN:016-0992)
- 7. 115th ST. OVER I-94 (BISHOP FORD) (SN:016-2042 EB, 016-2043 WB)
- 8. I-80 OVER I-55 (SN:099-0044 EB, 099-0045 WB)
- 9. IL. 171 SB RAMP TO I-55 (SN:016-1026)

BRIDGE PIN & LINK CONNECTORS
VARIOUS COUNTIES
C-91-166-95

F.A.P. VAR.	SECTION 1995-1131	COUNTY	TOTAL SHEETS	SHEET NO.
			51	1

D-91-166-95

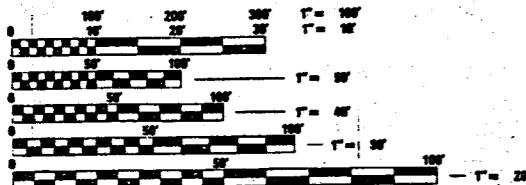


LOCATION OF SECTION INDICATED THERE - - -

STATE STANDARDS

701401	701406	701411
701601-01	701606-01	701801-01
	702001	

THIS IMPROVEMENT IS LOCATED IN THE MUNICIPALITIES OF ELGIN, SUMMIT, ITASCA, CHICAGO AND UNINCORPORATED WILL COUNTY.



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

FOR LOCATION MAPS,
SEE PLAN SHEET NO. 2

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED *July 29, 1998*

EXAMINED *John L. ...*

PASSED *August 14, 1998*
Bill ...

APPROVED *August 14, 1998*
James B. ...

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STATE OF ILLINOIS

FOR UTILITY INFORMATION
CALL J.U.L.I.E. 1-800-892-0123
C.U.A.N. (312)-744-7000

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROJECT NO.	DISTRICT	COUNTY	SHEETS	SHEET NO.
F.A. 426		KANE	51	4
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 1
4 SHEETS

GENERAL NOTES

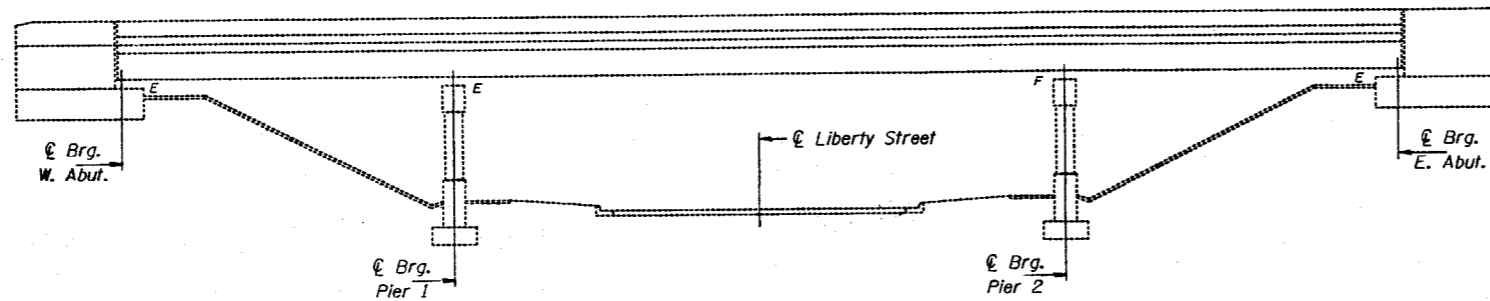
All new structural steel shall conform to AASHTO Classification M-270 Gr. 36. Grind existing nicks, gouges and shallow cracks in the damaged beams as detailed. Ground surfaces shall be inspected for cracks using magnetic particle testing prior to initiating any beam straightening operations. Cost shall be included in the cost of "Beam Straightening". Any cracks that cannot be removed by grinding approximately 1/4" deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition.

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 the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

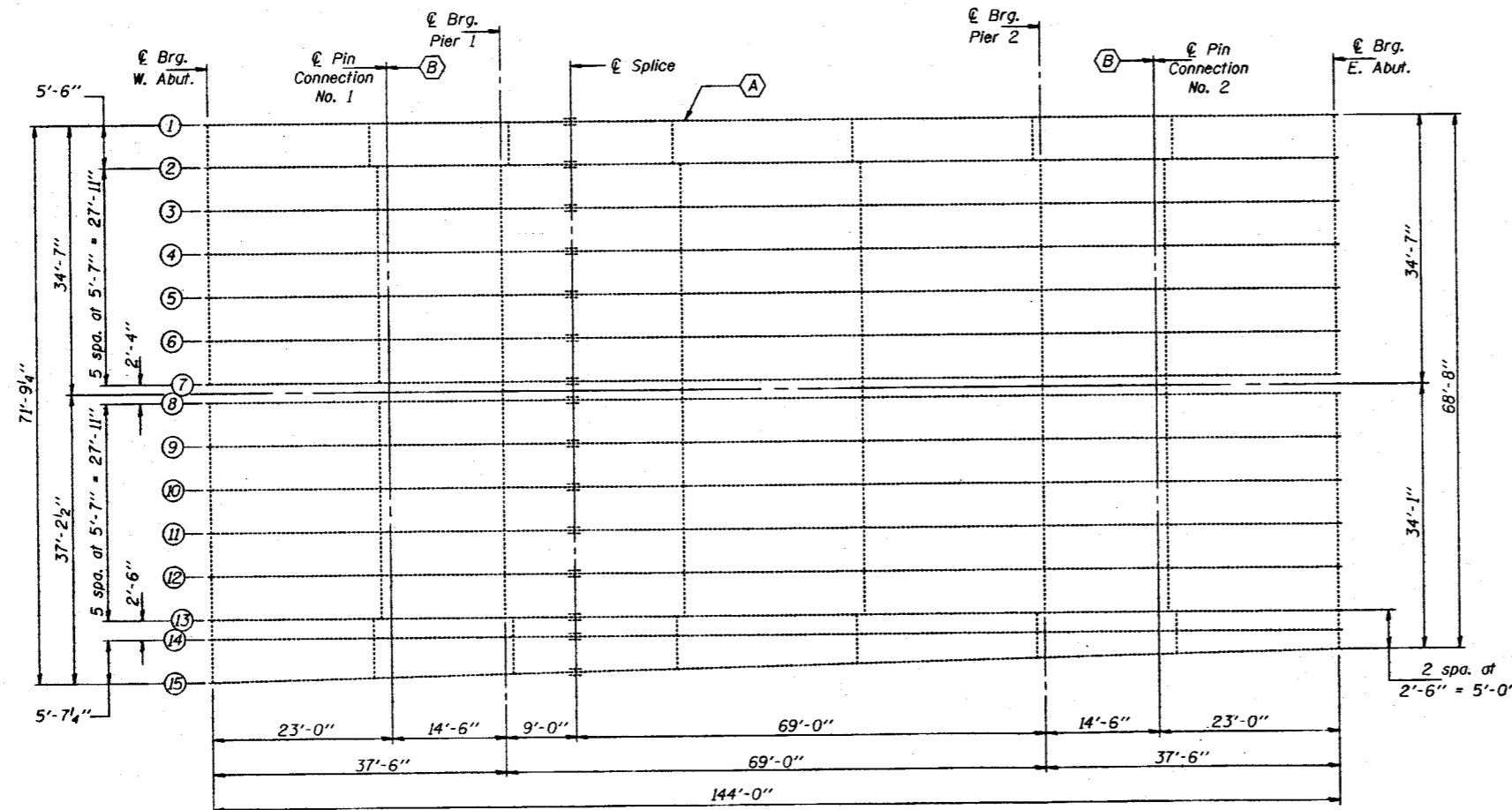
Existing Structural steel shall only be cleaned and painted as required by the Special Provision "Cleaning and Painting Adjacent Areas of Existing Steel Structures".

The inorganic zinc rich primer/acrylic/acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Interstate Green, Munsell No. 7.5G 4/8. See Special Provision "Cleaning and Painting New Metal Structures".

The existing structural steel coating contains lead. The Contractor should take appropriate precautions to deal with the presence of lead on this project.



ELEVATION



FRAMING PLAN

- Notes: (A) Existing W36x160 Beam to be straightened & plated.
(B) Existing Pin & Link Plates to be removed & replaced.

TOTAL BILL OF MATERIAL

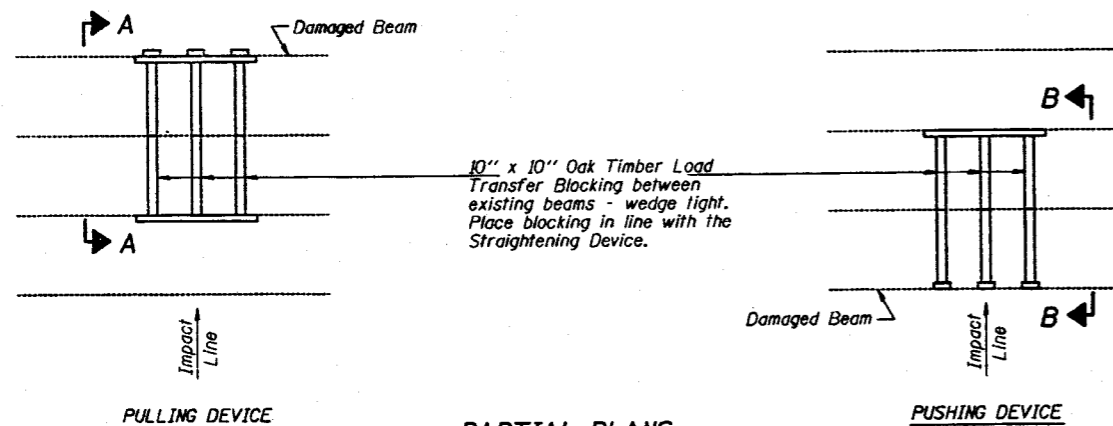
ITEM	UNIT	QUANTITY
Furnishing and Erecting Structural Steel	Pound	250
Beam Straightening	L.S.	1
Temporary Support System	Each	30
Pin and Link Plate Replacement	Each	30

DESIGNED	<i>Curt M. Erny</i>	AUGUST 5, 1998
CHECKED	<i>VECTOR H. VELS</i>	EXAMINED <i>John E. Han</i>
DRAWN	<i>Dierbert</i>	PASSED
CHECKED	<i>CMV VHV</i>	ENGINEER OF BRIDGES AND STRUCTURES

BRIDGE REPAIRS
F.A. RTE. 426 SEC. BR-HB-6
KANE COUNTY
STA. 221+35.32
S.N. 045-0007

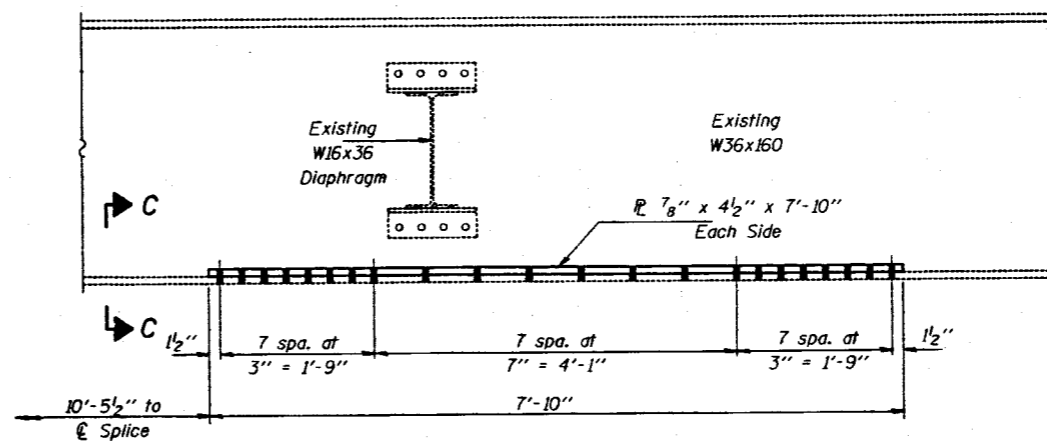
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROJECT NO.	SECTION	CRAFT	DATE	SHEET	SHEET NO. 2
F.A. 426		KANE	5/5	5	4 SHEETS
PROJ. DIST. NO. 7	ILLINOIS	NO. AND PROJECT			

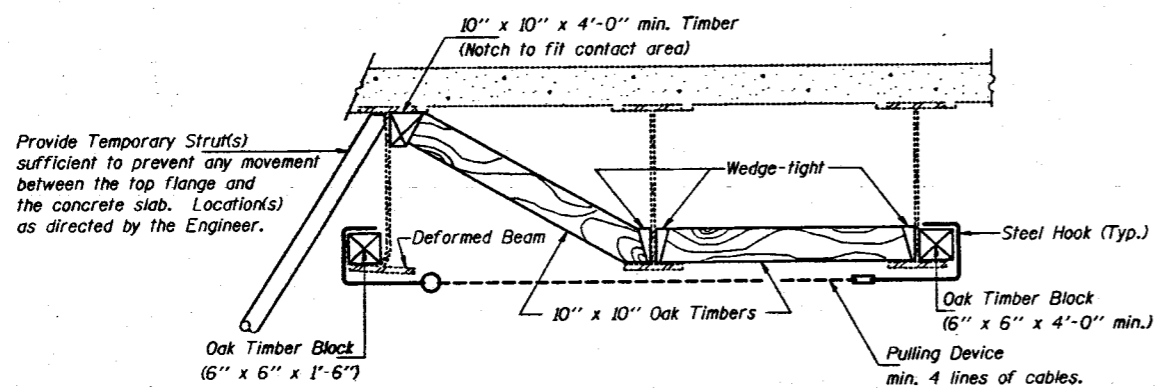
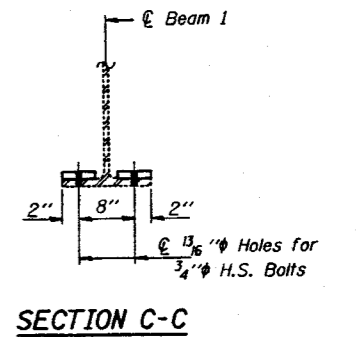


PARTIAL PLANS
SUGGESTED BEAM STRAIGHTENING METHODS

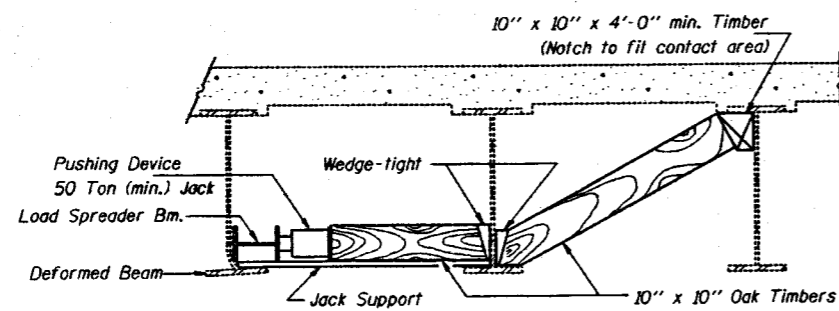
Straightening force shall be maintained on all load transfer blocking during beam straightening.



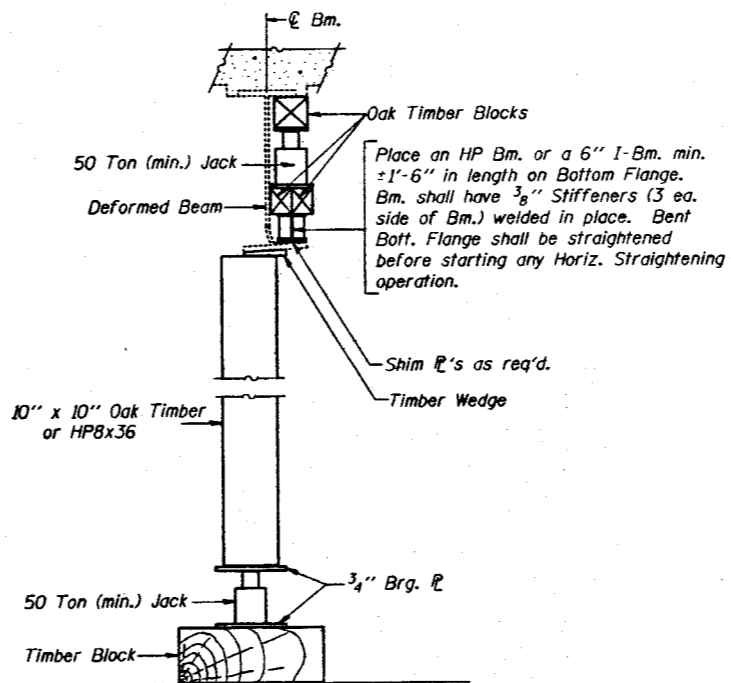
PARTIAL ELEVATION BEAM 1
(Looking North)



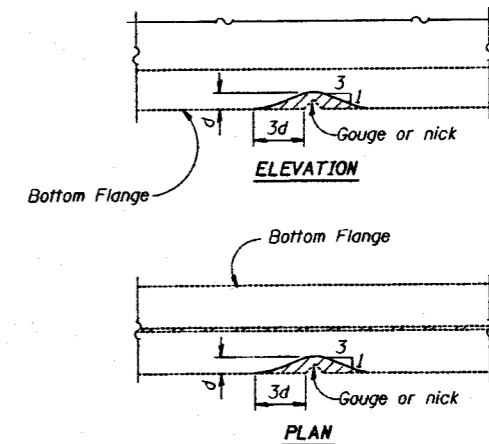
SECTION A-A



SECTION B-B



VERTICAL STRAIGHTENING DETAIL



DESIGNED	CME
CHECKED	VHV
DRAWN	D-Herbert
CHECKED	VHV CME

EXAMINED	1998
PASSED	1-2-97

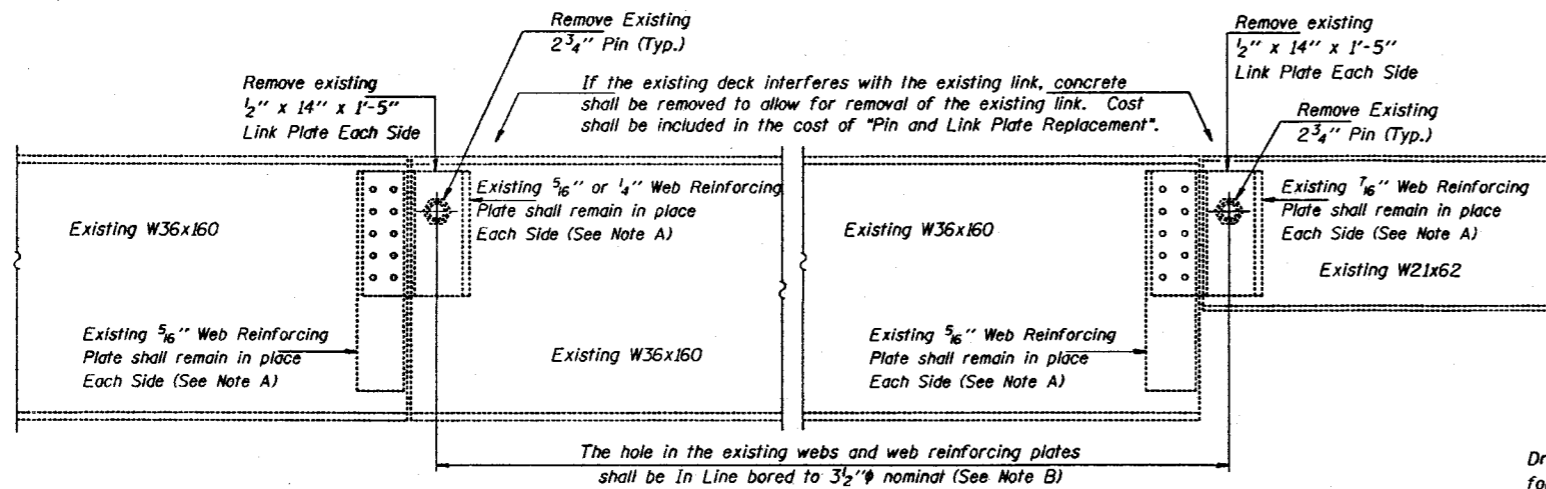
REP-1 1-2-97

BRIDGE REPAIRS
F.A. RTE. 426 SEC. BR-HB-6
KANE COUNTY
STA. 221+35.32
S.N. 045-0007

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

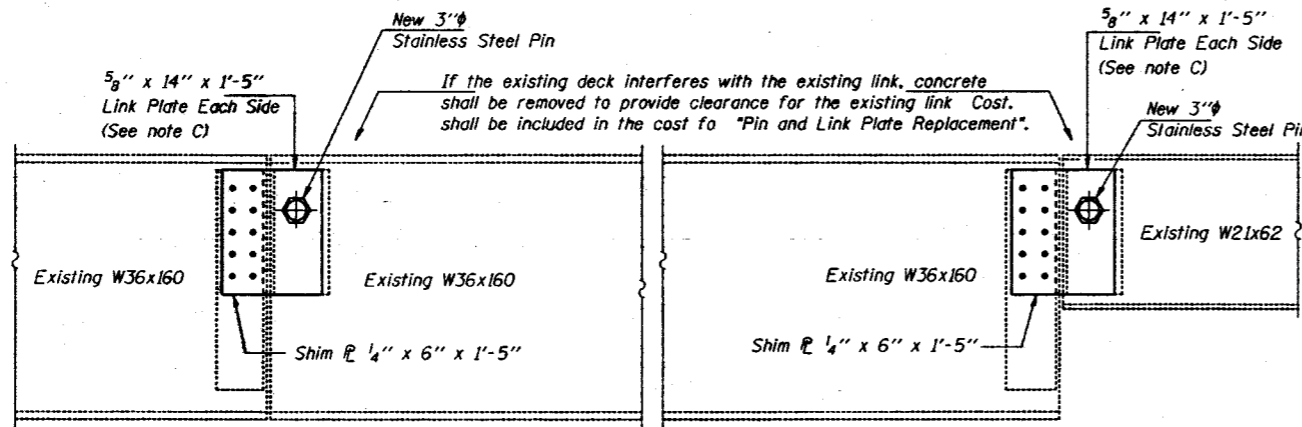
PROJECT NO.	SHEET NO.	DATE	BY	CHKD
F.A. 426			KANE	5/1
DESIGNED	CHECKED	DRAWN	CHECKED	
VHV	CME	Paul Sumner	VHV	CME

SHEET NO. 3
4 SHEETS



**ELEVATION AT EXISTING PIN ASSEMBLY
FOR BEAMS 1, 2, 13, 14 & 15**

**ELEVATION AT EXISTING PIN ASSEMBLY
FOR BEAMS 3 THRU 12**

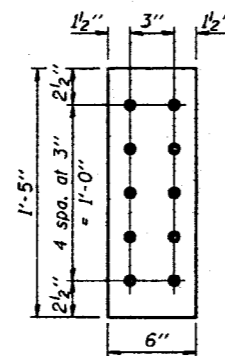


**ELEVATION AT NEW PIN ASSEMBLY
FOR BEAMS 1, 2, 13, 14 & 15**

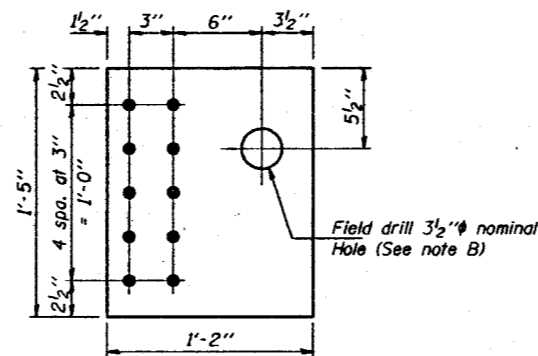
**ELEVATION AT NEW PIN ASSEMBLY
FOR BEAMS 3 THRU 12**

MAXIMUM REACTIONS AT PIN

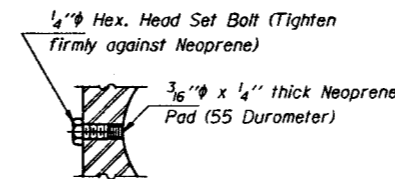
RP	(K)	10.3
RE	(K)	22.6
Imp.	(K)	6.8
R (Total)	(K)	39.7



**SHIM PLATE DETAIL
(60 Required)**

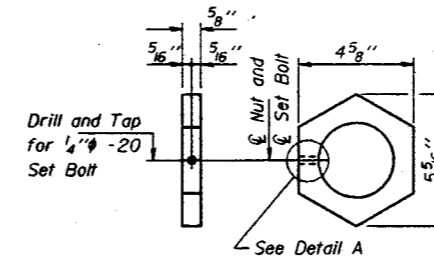


**LINK PLATE DETAIL
(60 Required)**

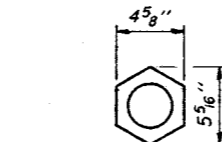


DETAIL A

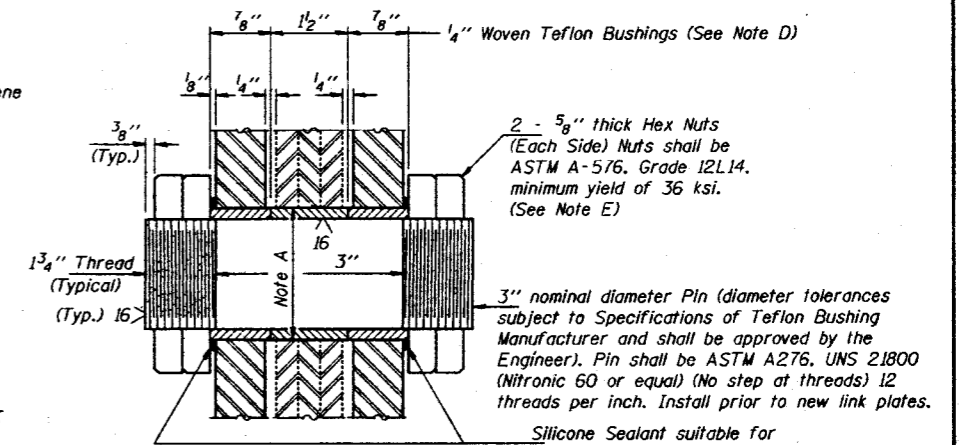
Set Bolts shall conform to the requirements of ASTM A 307 and shall be galvanized according to AASHTO M 232.



**EXTERIOR NUT DETAIL
(60 Required)**



**INTERIOR NUT DETAIL
(60 Required)**



**SECTION THRU PIN
(30 Required)**

NOTES

- All new structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.
- The Contractor shall provide support and/or shoring systems for the beam in the area of existing pin and link plate replacement. See Special Provision "Temporary Support System."
- The inorganic zinc rich primer/acrylic/acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Interstate Green, Munsell No. 7.5G 4/8. See Special Provisions "Cleaning and Painting New Metal Structures". Cost shall be included in the cost of "Pin and Link Plate Replacement".
- Existing Structural steel shall be cleaned and painted as required by the Special Provision "Cleaning and Painting Adjacent Areas of Existing Steel Structures". Cost shall be included in the cost of "Pin and Link Plate Replacement".
- All existing steel surfaces behind link plates shall be cleaned and primed before installation of new link plates. Cost shall be included in the cost of "Pin and Link Plate Replacement".
- 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, except the pin diameters, 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 the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
- The Pins and Link Plates shall conform to the minimum Charpy V-Notch Toughness of 25 ft.-lbs. at 40° F.
- The pins, link plates, bushings, nuts, Set Bolts, Neoprene Pad, silicone sealant, fill plates and high strength bolts are the items included in "Pin and Link Plate Replacement".

- Note A:** Existing welds shall be inspected for cracks using liquid dye penetrant or magnetic particle testing. Any cracks that are found shall be identified and reported to the Bureau of Bridges and Structures for further disposition. Clean and paint before installing new link plates.
- Note B:** Bore diameter for bushing in link plate, existing webs and web reinforcement plates shall correspond to bushing manufacturer's allowable tolerances for proper functioning. Hole diameter may be adjusted to allow use of stock bushings.
- Note C:** Inside face of new link plates shall receive first field coat in shop. The primer shall pass the M.E.K. Rub Test before the first field coat is applied.
- Note D:** Actual bushing thickness per manufacturer's specifications, 1/4" is approximate. Bushings shall be a self lubricating filament wound epoxy matrix backed Duralon Bearing, metal backed Fiber Glide Bearing or equivalent. No primer or grease shall be allowed on bushings. Bushings shall be suitable for dynamic loads of 20,000 psi.
- Note E:** Tighten inside nuts to bring all bushings into firm contact, then back off 1/4 turn and tighten outer nuts.
- Note F:** Apply 3/8" bead to face of the web reinforcing plates approximately 1/2" from bushing immediately before installing new link plates. Place sealant around nuts after installation. Sealant shall be suitable for prolonged exterior exposure without losing flexibility or adhesion to painted steel surfaces. Proposed products shall be subject to Department's acceptance based on documented testing or other evidence.

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Temporary Support System	Each	30
Pin and Link Plate Replacement	Each	30

PIN AND LINK PLATE REPLACEMENT

F.A. RT. 426 SEC. 8R-HB-6
KANE COUNTY
STA. 221+35.32
STR. No. 045-0007

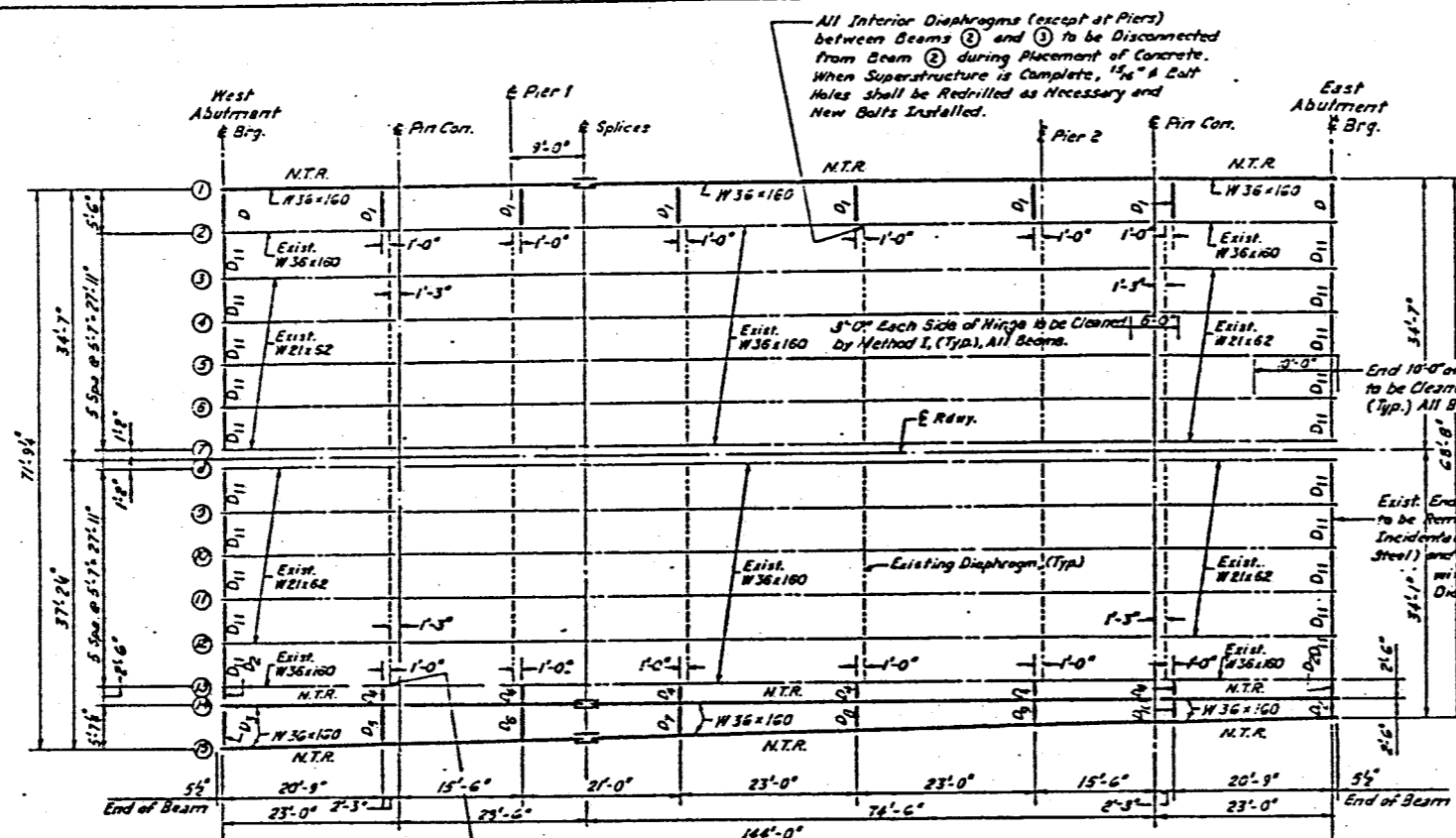
DESIGNED	VHV
CHECKED	CME
DRAWN	Paul Sumner
CHECKED	VHV CME

EXAMINED	19 98
Paul E. Adams	ENGINEER OF STRUCTURAL SERVICES
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

FOR INFORMATION ONLY

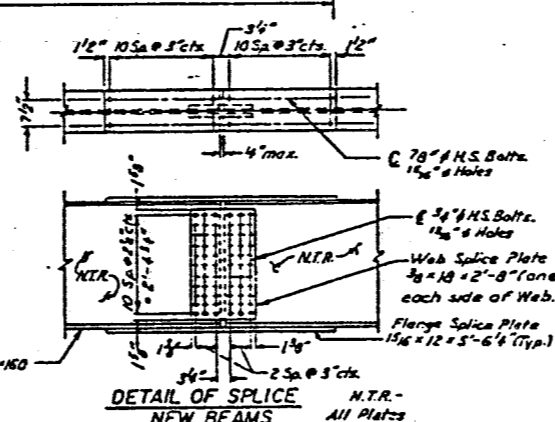
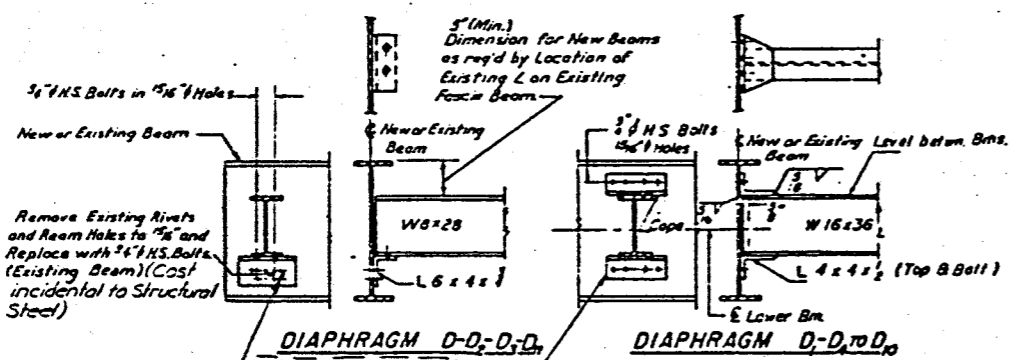
- NOTES:
- TWO HARDENED FLASHES SHALL BE REQUIRED OVER ALL 1/2" HOLES IN DIAPHRAGM.
 - ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M213, UNLESS OTHERWISE NOTED.
 - BEARINGS TO BE SELF LUBRICATING FILAMENT WOUND EPOXY MATRIX BACKED CAR-FIB BEARING OR METAL BACKED FIBER GLE'S BEARING OR EQUIVALENT, COST INCIDENTAL TO STRUCTURAL STEEL.
 - SUGGESTED SEQUENCE OF CONSTRUCTION OR HINGE REPLACEMENT. CONTRACTOR MAY SUBMIT HIS OWN SEQUENCE OF CONST. FOR APPROVAL.
 - REMOVE PORTIONS OF CONCRETE DECK ABOVE OR BELOW I.
 - ERECT FALSEWORK TO SUPPORT BEAMS IN SPANS 1 AND 2. FALSEWORK SHALL CONFORM TO THE REQUIREMENTS OF ART. 547.10 AND THE COST SHALL BE INCIDENTAL TO FINISHING AND ERECTING STRUCTURAL STEEL. SEE SPECIAL PROVISIONS.
 - REMOVE EXISTING PINS AND BEAM HINGE CONNECTION PLATES.
 - CLEAN BEAMS - SEE NOTE NO. 5.
 - CLEAR 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 5 FT. EACH SIDE OF THE HINGE CONNECTIONS AFTER THE CONNECTIONS ARE DISASSEMBLED; AND THE BEARINGS AT PIER 1.

FOLLOWING REMOVAL OF THE CONCRETE DECK IN THE DESIGNATED AREAS, THE TOP FLANGES OF THE FACIA BEAMS, SPICES AND END DIAPHRAGMS SHALL BE CLEANED USING METHOD II. THE METAL TRUS EXPOSED SHALL BE FIELD PAINTED PRIOR TO FORMING THE NEW DECK. SEE SPECIAL PROVISIONS FOR CLEANING AND PAINTING STEEL STRUCTURES.
 - ALL CONTACT SURFACES OF JOINTS FOR THE DIAPHRAGMS SHALL BE FREE OF PAINT OR LACQUER.
 - SEE GENERAL NOTES, SHEET NO. 2, FOR NOTCH TOUGHNESS REQUIREMENTS.
 - 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.



FRAMING PLAN

All Interior Diaphragms (except at Piers) between Beams ② and ③ to be Disconnected from Beam ② during Placement of Concrete. When Superstructure is Complete, 1/2" Bolt Holes shall be Redrilled as Necessary and New Bolts Installed. (Cost incidental to Structural Steel.)



MOMENT TABLE

	0.5 Sp. 1 or 0.7 Sp. 2	PIER 1 or 2	0.5 Sp. 2
I (New) (in ⁴)	9750	9750	9750
I (Exist) (in ⁴)	1330	9750	13106
DL (K)	0.945	0.945	0.945
ML (K)	62.6	256.4	305.9
ML (K)	93.3	311.6	490.3
Imp (K)	28.0	86.9	126.5
M. Total (K)	183.9	654.9	922.7
f _b (New) (ksi)	4.1	14.5	20.4
f _b (Exist) (ksi)	17.3	14.5	15.7

FOR EXISTING INTERIOR BEAMS

BEAM REACTION TABLE

	ABUTMENT	PIER
R _Q (K)	10.9	57.1
R _L (K)	26.5	43.1
Imp (K)	7.9	12.0
R. Total (K)	45.3	112.2

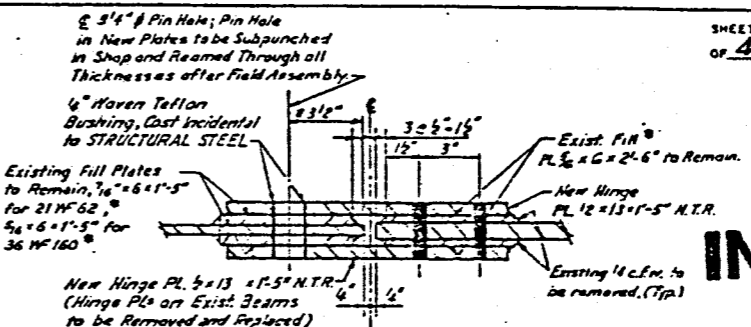
DIAPHRAGM No. 2 to 6 BRG. 5/8"

D ₁	5'-6"
D ₂	2'-6"
D ₃	5'-7 1/2"
D ₄	5'-1 1/2"
D ₅	4'-9 1/2"
D ₆	4'-3 1/2"
D ₇	3'-9 1/2"
D ₈	3'-3 1/2"
D ₉	2'-4 1/2"
D ₁₀	5'-7"

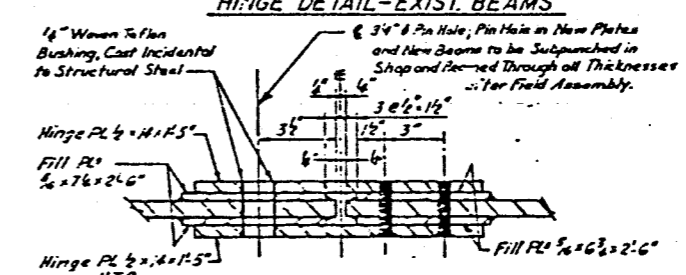
TOP OF FLANGE ELEVATIONS (BEFORE ANY DEFLECTION)

LOC. BEAM	BRG. W. ABUT.	HINGE NO. 1	PIER 1	BRG. SPLICE	PIER 2	HINGE NO. 2	BRG. E. ABUT.
1	749.554	749.322	749.083	749.326	749.504	747.163	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

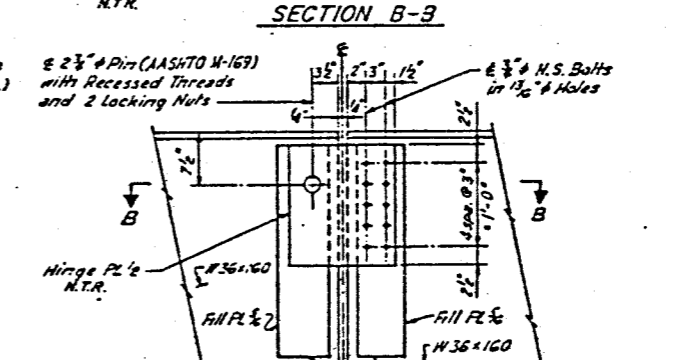
FOR FABRICATION ONLY



HINGE DETAIL-EXIST. BEAMS



HINGE DETAIL-NEW BEAMS



DESIGNED: R. Zemaitis
CHECKED: P. Wood
DRAWN: Z. Dobrowski
CHECKED: R. Zemaitis

- I --- MOMENT OF INERTIA
- DL --- DEAD LOAD INCLUDING BEAM, SLAB, MEDIAN AND/OR PARAPET
- M_L --- MOMENT DUE TO DEAD LOAD
- M_L --- MOMENT DUE TO LIVE LOAD
- IMP --- IMPACT
- f_b --- BENDING STRESS DUE TO TOTAL MOMENT, M_T.

AS REVISED

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL

U.S. ROUTE 20 BY-PASS (FA R426) OVER LIBERTY STREET
SECTION BR-HB-(86)
KANE COUNTY - STATION 221+35.32
STR. NO. 045-0007

REVISIONS	
NAME	DATE

As Revised 3-10-87