Karl Keeney

Keeney's Plans.

FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1 (82)	WILL	64	1
F.HD.A. REG. 7	ILLINOIS	PROJECT		

P-91-137-81

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

FOR INDEX OF SHEETS SEE SHEET NO. 2

SCALES
- PLAN — 1 INCH = 20 FEET
- PROFILE HOR. — 1 INCH = 20 FEET
- PROFILE VERT. — 1 INCH = 5 FEET
- CROSS SECTIONS

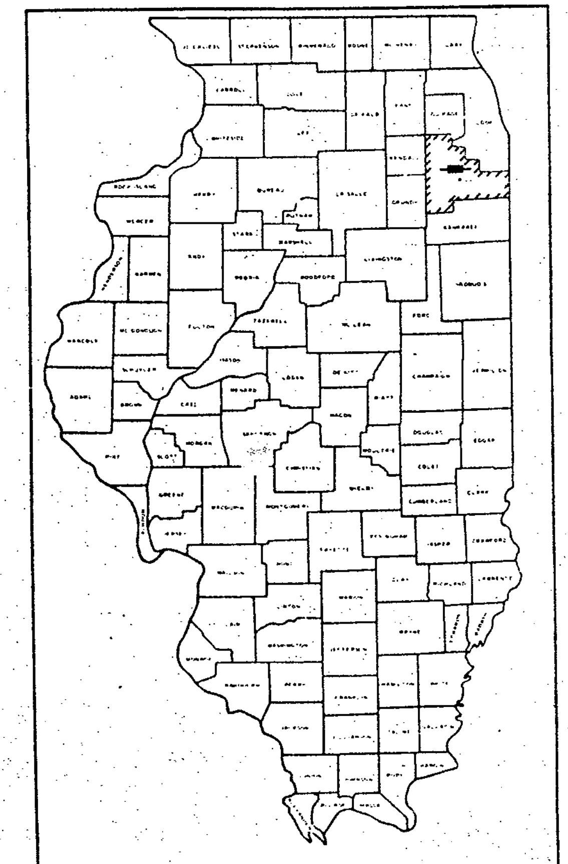
F.A.P. ROUTE 607 (U.S. 30)

CASS STREET BRIDGE REHABILITATION

SECTION G-R-I-1 (82)

WILL COUNTY

C-91-099-82



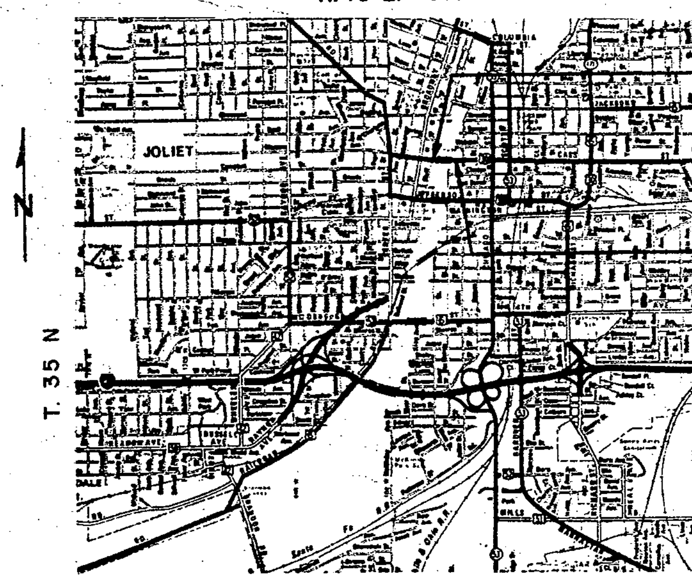
DESCRIPTION OF EXISTING

THE EXISTING STRUCTURE WAS BUILT TO CARRY ILLINOIS 30 OVER THE DES PLAINES RIVER, SECTION G-R-I-1(82), STATION 10+00 IN THE YEAR 1933. THE STRUCTURE IS A SCHERZER ROLLING LIFT BASCULE BRIDGE WITH A MAIN SPAN OF 174 FEET AND FOUR APPROACH SPANS. IT CARRIES FOUR LANES OF TRAFFIC, IS 70' OUT TO OUT AND 290' BACK TO BACK. STRUCTURE NO. 099-0101.

DESCRIPTION OF IMPROVEMENT

THE IMPROVEMENT INCLUDES COMPLETE REHABILITATION OF THE SUB-STRUCTURE UNITS, SUPERSTRUCTURE, DRIVE SYSTEM, AND ELECTRICAL SYSTEM. THE CONCRETE DECK AND OPEN STEEL GRATING WILL BE REPLACED, AND ALL STEEL WILL BE CLEANED AND PAINTED. THE OPERATOR CONSOLE AND MOTOR CONTROLS WILL BE REPLACED.

R. 10 E. 3rd PM



SECTION G-R-I-1(82) BEGINS STA. 8+00.00

SECTION G-R-I-1(82) ENDS STA. 13+20.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED April 17 19 84
[signature] DISTRICT ENGINEER
EXAMINED 5-25 19 84
[signature] ENGINEER OF PLANS AND CONTRACTS
PASSED 5-25 19 84
[signature] ENGINEER OF DESIGN
APPROVED 5-25 19 84
[signature] DIRECTOR, DIVISION OF HIGHWAYS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR ____ DATE ____

"CALL J.U.L.I.E. BEFORE YOU DIG"
800-892-0123

NET LENGTH OF PROJECT = 520.00 Ft. = 0.0985 Mi

ROY A. ECKROSE ... REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

CONTRACT NO. 38306

FAU ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-1-1 (82)	WILL	64	2
F.H.W.A. REG. 7	ILLINOIS	PROJECT		

INDEX OF SHEETS

SHEET NO. DESCRIPTION

1	TITLE SHEET
2	INDEX OF SHEETS
3	SUMMARY OF QUANTITIES
4	PLAN NOTES AND DETAILS
5	PLAN AND PROFILE
6	DETOUR PLAN
7	GENERAL PLAN & ELEVATION
8	GENERAL NOTES & BILL OF MATERIALS
9	CONSTRUCTION STAGING
10	DECK ELEVATIONS
11	DECK ELEVATIONS
12	DECK PLAN AND SECTION
13	DECK DETAILS
14	SIDEWALK DETAILS
15	EXPANSION JOINT
16	BASCULE FLOOR & SIDEWALK
17	OPEN STEEL FLOOR
18	HALF FRAMING PLAN - F/S
19	HALF FRAMING PLAN - N/S
20	STEEL REPAIR DETAILS
21	STEEL REPAIR DETAILS
22	RAILING REPAIRS
23	BEARING DETAILS
24	STEEL RAILING TYPE TP-1
25	TRACK GIRDER STAGE 1
26	TRACK GIRDER STAGE 2 & 3
27	TRACK GIRDER DETAILS
28	TRACK GIRDER DETAILS
29	SEGMENTAL GIRDER DETAILS
30	PINION RACK
31	BEARING G SUPPORT
32	COUNTERWEIGHTS
33	COUNTERWEIGHT DETAILS
34	BALANCE
35	WEST ABUTMENT
36	WEST ABUTMENT
37	WEST ABUTMENT
38	EAST ABUTMENT
39	EAST ABUTMENT
40	EAST ABUTMENT
41	PIERS 1 & 2
42	PIERS 3 & 4
43	PIER DETAILS
44	TIMBER FENDERS
45	NORTHEAST RETAINING WALL
46	NORTHEAST RETAINING WALL
47	MACHINERY HOUSE DETAILS
48	FAR LEAF DRIVE
49	NEAR LEAF DRIVE
50	MECHANICAL DETAILS
51	MECHANICAL DETAILS
52	ELECTRICAL : SYMBOLS
53	OPERATING INSTRUCTIONS
54	PLAN AND ELEVATION
55	TENDER HOUSE
56	MACHINE HOUSE
57	LINE DIAGRAM
58	CONTROL ELEMENTARY DIAGRAM #1
59	CONTROL ELEMENTARY DIAGRAM #2
60	CONTROL ELEMENTARY DIAGRAM #3
61	WOUND ROTOR CONTROLLER
62	CONSOLE AND EQUIPMENT LIST
63	TRAFFIC CONTROL - CASE U1
64	TRAFFIC CONTROL - CASE U2 MODIFIED

OF SHEETS

STATE STANDARDS INCLUDED

NO.	DESCRIPTION
1686-4	SYMBOLS AND ABBREVIATIONS
2113-2	NAME PLATE FOR BRIDGES
2130-8	CONCRETE CURB AND COMBINATION CONCRETE CURB AND GUTTER
2298-7	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2299-10	DESIGN OF TRAFFIC CONTROL DEVICES
2300-3	FLAGMAN TRAFFIC CONTROL SIGN
2307-6	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES SHORT-TIME OPERATION, DAY OR NIGHT
2319-4	SIGN PANEL MOUNTING DETAILS
2320-3	SIGN PANEL ERECTION DETAILS
2371-1	DETAILS FOR MOUNTING TRAFFIC SIGNALS
2377	ALUMINUM 15', 20', AND 25' MAST ARM ASSEMBLY AND POLE
2378-1	DETAILS OF CONCRETE FOUNDATIONS
2382-1	BRIDGE APPROACH PAVEMENT

INDEX OF SHEETS & STATE STANDARDS INCLUDED

F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	3
F.H.P. & REG. 7	ILLINOIS	PROJECT		

SUMMARY OF QUANTITIES

CASS STREET (U.S.30) OVER DES PLAINES RIVER

	ROAD STA.	BRIDGE STA.	CITY JOLIET
	8+00		
	To		
	8+56	8+56	
	11+45	To	
	To		
	13+20	13+20	

CODE NO.	PAY ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION TYPE CODE SFTY-3Q ROAD	X036-2A BRIDGE	X036-2A CITY
406001	BITUMINOUS MATERIALS (PRIME COAT)	GALLON	40	40		
406013	BITUMINOUS CONCRETE SURFACE COURSE, MIXTURE D; CLASS I	TON	34	34		
501024	CONCRETE REMOVAL	CU YD	64		46	18
501028	EXPANSION BOLTS 1/2 INCH	EACH	175		175	
501031	EXPANSION BOLTS 3/4 INCH X 6 INCH	EACH	132		132	
501036	EXPANSION BOLTS 3/4 INCH X 18 INCH	EACH	196		196	
501048	REMOVAL OF EXISTING CONCRETE DECK	L SUM	1		.83	.17
502001	STRUCTURE EXCAVATION	CU YD	75		50	25
503003	PROTECTIVE COAT	SQ YD	895		585	310
504003	CLASS X CONCRETE	CU YD	263.0		190.3	72.7
507001	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1		.9974	.0026
507011	OPEN STEEL FLOOR	SQ FT	7348		7348	
508012	REMOVING AND RE-ERECTING EXISTING RAILING	LIN FT	44			44
509003	CLEANING AND PAINTING STEEL BRIDGE	L SUM	1		1	
510001	TREATED TIMBER	F.B.M.	12745		2545	10200
510003	HARDWARE	POUND	1290		230	1060
512001	REINFORCEMENT BARS	POUND	15,610	11,300	3110	1200
512002	REINFORCEMENT BARS (EPOXY COATED)	POUND	31910		24350	7560
512004	WELDED WIRE FABRIC	SQ FT	395		395	
514001	NAME PLATES	EACH	1		1	
613001	FRAMES AND GRATES TO BE ADJUSTED	EACH	2	2		
616008	CONCRETE CURB, TYPE B (DOWELLED)	LIN FT	90	90		
617001	PAVEMENT REMOVAL	SQ YD	245	245		
617003	CURB REMOVAL	LIN FT	90	90		
617006	SIDEWALK REMOVAL	SQ FT	1193			1193
624002	PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH	SQ FT	1193			1193
646004	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	18	2	16	
648017	TRAFFIC CONTROL AND PROTECTION	L SUM	1		1	
* T50102	THERMOPLASTIC PAVEMENT MARKING - LINE 4"	LIN FT	210	110	100	
* T50107	THERMOPLASTIC PAVEMENT MARKING - LINE 24"	LIN FT	42	42		
X04748	MOBILIZATION	L SUM	1	.1	.9	
X40812	BRIDGE APPROACH PAVEMENT (STANDARD 2382)	SQ YD	245	245		
X50313	PREFORMED JOINT SEAL 2 1/2"	LIN FT	144		144	
X50315	ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	19		19	
617013	BITUMINOUS CONCRETE SURFACE REMOVAL (SPECIAL)	SQ YD	404	404		
Z10039	BRIDGE SEAT SEALER	L SUM	1		1	
Z10261	JACKING EXISTING STRUCTURE	L SUM	1		1	
XZ1361	EPOXY CRACK SEALING	LIN FT	148		148	
XZ1384	STRAIGHTENING BEAM	EACH	1		1	
X09006	REMOVAL OF EXISTING STEEL	L SUM	1		1	
X09007	REMOVAL OF EXISTING TIMBER	L SUM	1		.5	.5
X09008	POLYMER MORTAR REPAIR	CU FT	399		398	1
XZ1175	EPOXY MORTAR REPAIR	CU FT	205		205	
X09009	FIBERGLASS JACKETS	SQ FT	1120		1120	
X09010	SURFACE FINISH	SQ YD	785		635	150

* Specialty Items

CODE NO.	PAY ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION TYPE CODE ROAD SFTY-3Q	BRIDGE X036-2A	CITY X036-2A
X09011	RIVET REPLACEMENT 3/4 INCH	EACH	30		30	
X09012	RIVET REPLACEMENT 7/8 INCH	EACH	570		570	
XX1463	STEEL RAILING TYPE TP-1	LIN FT	207			207
X09013	RAIL POST REPAIR	EACH	14			14
X09014	LAMINATED TIMBER	F.B.M.	6440		6440	
X09015	CONCRETE ADJUSTMENT BLOCKS	EACH	400		400	
X09016	MACHINERY HOUSE ENCLOSURE	L SUM	1		1	
X09017	MECHANICAL WORK	L SUM	1		1	
X09872	ELECTRICAL WORK	L SUM	1		1	
X09018	REWIND ELECTRIC MOTORS	EACH	4		4	
X09019	ROADWAY LIGHTING	L SUM	1			1

SUMMARY OF QUANTITIES
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAU ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1 (82)	WILL	64	4
F.H.W.A. REG. 7	ILLINOIS	PROJECT		

PLAN NOTES

ANY REFERENCE TO A STANDARD IN THESE PLANS WILL BE INTERPRETED TO MEAN THE LATEST EDITION AS INDICATED BY THE SUB-NUMBER LISTED IN THE INDEX OF SHEETS. (COPY OF THE STANDARD INCLUDED IN THESE PLANS).

TO GET ASSISTANCE IN LOCATING UTILITIES DURING CONSTRUCTION CALL TOLL FREE J.U.L.I.E. (JOINT UTILITY LOCATING INFORMATION FOR EXCAVCTORS), TELEPHONE NUMBER 800-892-0123.

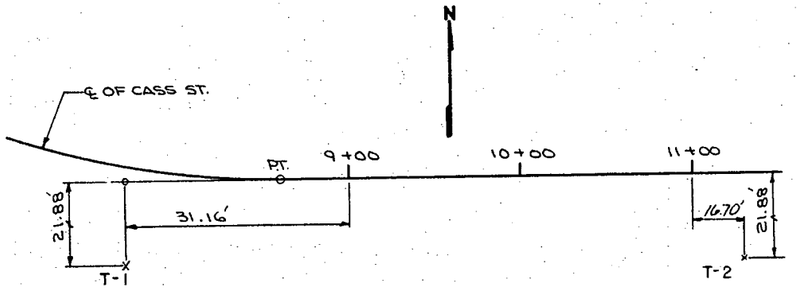
ALL SAWING OF EXISTING SURFACE SHALL BE CONSIDERED AS INCIDENTAL TO THE REMOVAL ITEM INVOLVED.

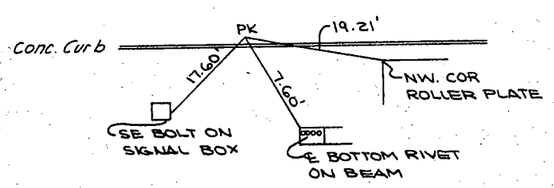
THE CONTRACTOR SHALL INSPECT THE SITE OF THE PROJECT AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS, TRAFFIC AND OTHER ITEMS, THAT EFFECT THE CONTRACT AND THE DETAILED REQUIREMENTS OF CONSTRUCTION.

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 ALL DIMENSIONS AND DETAILS IN THE FIELD AND WITH ORIGINAL SHOP DRAWINGS AND MAKE NECESSARY APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIALS. SUCH VARIATIONS SHALL NOT BE CAUSE FOR ADDITIONAL COMPENSATION OR 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.

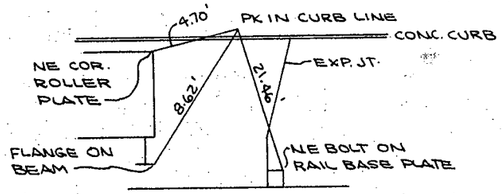
CONCRETE REPAIR AREAS ARE BASED ON FIELD INSPECTIONS COMPLETED IN 1982. THE ENGINEER SHALL APPROVE ALL CONCRETE REPAIR AREAS AND CRACK SEALING PRIOR TO COMMENCEMENT OF WORK. ALL CRACKS IN CONCRETE OVER .01. INCHES SHALL BE SEALED BY EPOXY INJECTION. ALL CHIPPED, SPALLED, AND SCALLED CONCRETE ON THE SUBSTRUCTURE UNITS NOT SHOWN ON THE PLANS SHALL BE REPAIRED WITH POLYMER MORTAR.

UNSOUND CONCRETE WILL GENERALLY BE DEFINED AS ANY CONCRETE THAT CAN BE EASILY REMOVED WITH A HAND HELD PNEUMATIC CHISEL. IN GENERAL, SOUND CONCRETE WILL BE CONSIDERED AS HAVING BEEN EXPOSED WHEN CRACKS ARE NO LONGER VISIBLE AND WHEN PIECES OF AGGREGATE FRACTURE BEFORE BEING DISLODGED INTACT.





T-1 TIES



T-2 TIES

CONSTRUCTION TIES

PLAN NOTES AND DETAILS

F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I (182)	WILL	64	5
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 5
6 SHEETS

CURVE NOTES

PI STA. 8+60.10
PC STA. 8+42.18
PT STA. 8+77.92
Δ = 10°-43'-15"
D = 30°
T = 17.92'
L = 35.74'
R = 190.99'
E = 0.84'

DES PLAINES RIVER

Sta. 8+55.87 — Sta. 11+45.14 — Sta. 11+70 — Sta. 12+25

Drive — Sidewalk Removal — River Wall — Curb Removal — Sawcut — Pavement Removal — 8'-00 — BITUMINOUS SURFACE REMOVAL (SPL.) 1 1/2" — P.C. — P.T. — 9+00 — 10+00 — P.I. — Salvage Traffic Gates — Trolley Arch To Remain — Curb Removal — Remove Signal — Sidewalk Removal — Sta. 8+00 — Sta. 8+30

River Wall — Sidewalk Removal — Curb Removal — Transformer Vault — Trolley Arch To Remain — 11+00 — Salvage Traffic Gates — Curb Removal — Sidewalk Removal — Tender House — Remove Signal — Pavement Removal — 12+00 — BITUMINOUS SURFACE REMOVAL (SPL.) 1 1/2" — 2'-03'± — 13+00 — Sawcut — Remove Signal

EXISTING PLAN

SAW CUT - INCIDENTAL TO THE CONTRACT.

NOTE: Traffic Gates and Signals Are Included In Bid Item Of ELECTRICAL WORK.

289'-4 3/4" Back To Back of Abutments
Rehabilitation of Structure 099-0101

DES PLAINES RIVER

Drive — PCC Sidewalk 5' — Sta. 8+55.87 — River Wall — Concrete Curb, Type B, (Doweled) — THERMOPLASTIC PAVEMENT MARKING - LINE 4" — 8'-00 — 11'-0" — 44'-0" — P.C. — P.T. — 9+00 — 10+00 — P.I. — New Traffic Gates See Sheet 53 — Bridge Approach Pavement Std. 2382 — Concrete Curb, Type B, (Doweled) — PCC Sidewalk 5' — Sta. 8+00 — Sta. 8+30 — Sta. 8+45 — Sta. 8+50

PROJECT AND IMPROVEMENT BEGIN STA. 8+00

1 1-2" Bituminous Concrete Surface Course, Mixture D, Class 1

New Traffic Signals See Sheet 53

PROPOSED IMPROVEMENT

New 1" water supply to inside Tenderhouse from abutment with isolation valves - see Mechanical special provisions

Tender House

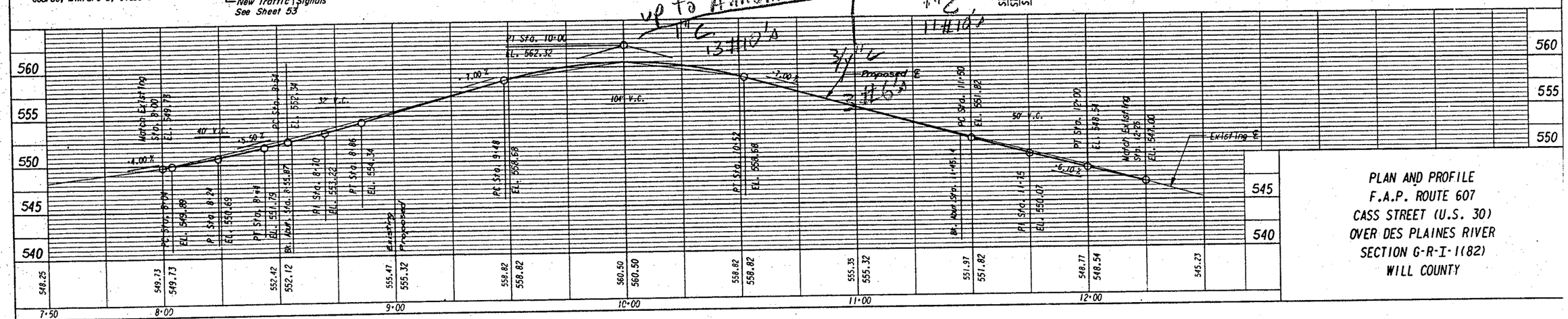
PCC SIDEWALK 5"

PCC Sidewalk 5' — Concrete Curb, Type B, (Doweled) — River Wall — Sta. 11+45.14 — Transformer Vault — New Traffic Gates See Sheet 53 — Bridge Approach Pavement Std. 2382 — Sta. 11+70 — 11+00 — 12+00 — 13+00 — 2'-03'± — Tangent at Sta. 11+45.14 — Sta. 12+25.00 — 41'-8" — Adjust Frame — Concrete Curb, Type B, (Doweled) — Thermoplastic Pavement Marking-Line 24" — STA. 11+58 — STA. 11+63 — STA. 11+68

1 1-2" Bituminous Concrete Surface Course, Mixture D, Class 1 — Retaining Wall Rehabilitation — Adjust Frame

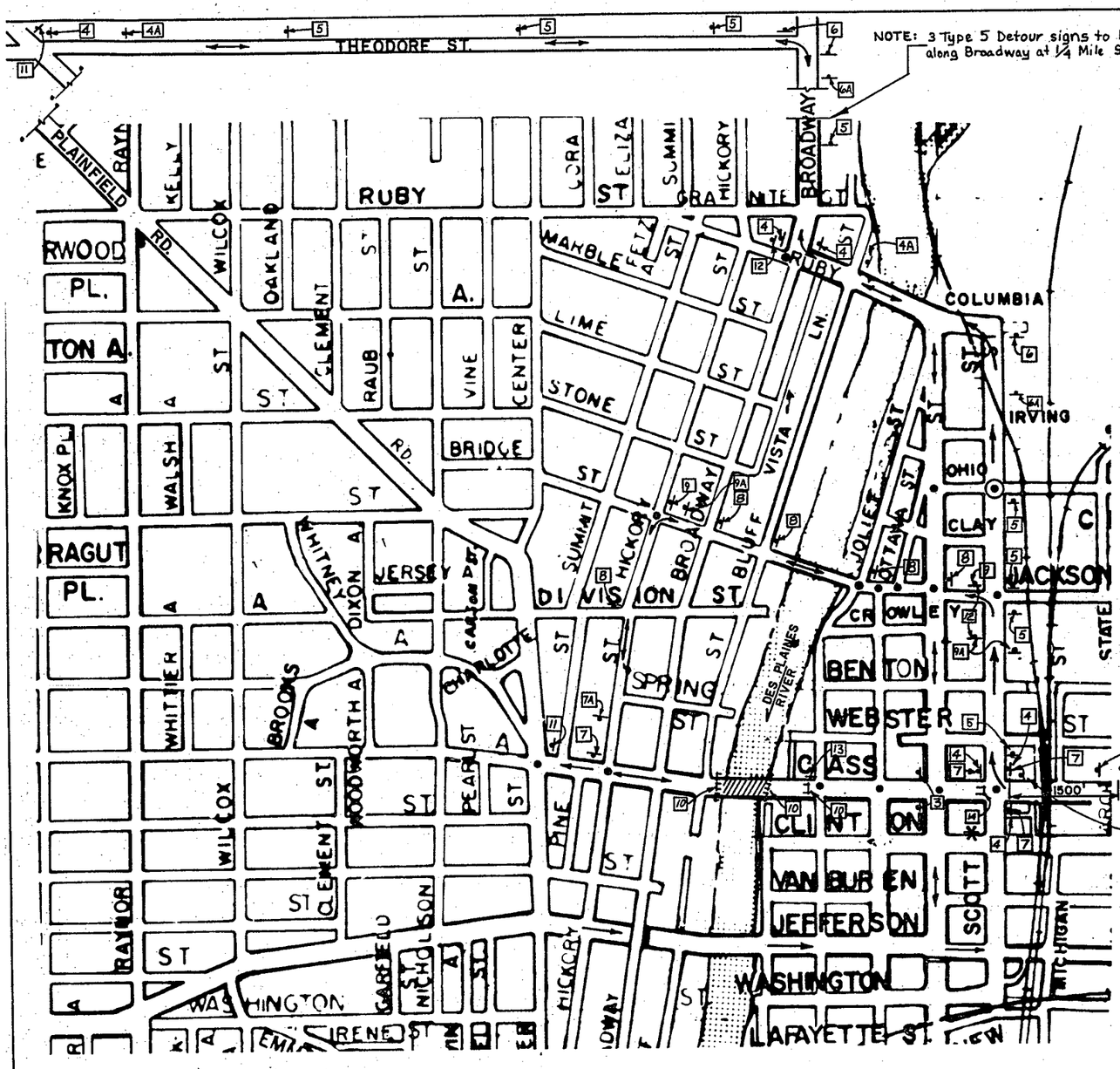
PROJECT AND IMPROVEMENT END STA. 13+20

up to Annunciator

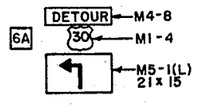


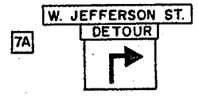
PLAN AND PROFILE
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

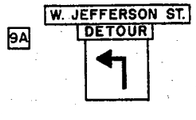
FAU ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	6
F.H.W.A. REG. 7	ILLINOIS	PROJECT		

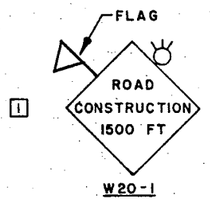


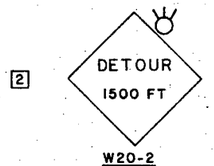
DETOUR PLAN

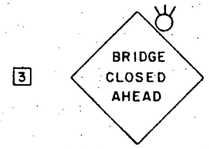


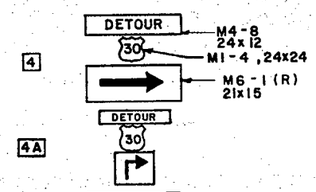


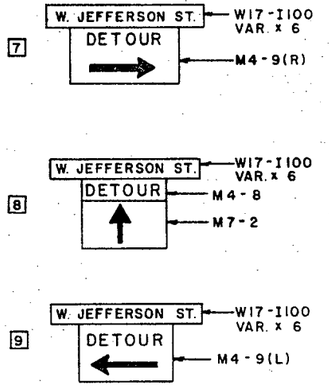






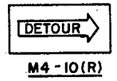






KEY

- Type III Barricade with 2 High Intensity Flashers
- Sign on Permanent Support
- Work Area
- Two Way Street
- One Way Street
- Proposed Traffic Signals by Others
- Existing Traffic Signals



* ON 2 TYPE III BARRICADES -STAGGARD TO LET TRAFFIC THROUGH

DETOUR PLAN

F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

BENCH MARK:
BRASS DISC IN CONCRETE WALL AT STA. 9+42 LEFT 316' ±, ILL. WATERWAY B.M. #288.2.
MSL '12 ELEVATION 544.578

DESCRIPTION OF IMPROVEMENT:

THE IMPROVEMENT INCLUDES THE REHABILITATION OF THE STRUCTURAL, ELECTRICAL, AND MECHANICAL SYSTEM OF THE EXISTING STRUCTURE. THE EXISTING STRUCTURE (No. 099-0101) CONSISTS OF 4 FIXED APPROACH SPANS AND A SCHERZER ROLLING LIFT DOUBLE LEAF BASCULE MAIN SPAN. IT IS 289.40' LONG BACK TO BACK OF ABUTMENTS AND 66' WIDE OUT TO OUT. THE ROADWAY WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION, BUT THE CHANNEL WILL REMAIN OPEN TO RIVER TRAFFIC.

See Special Provisions for salvage of existing traffic gates and open steel floor to be delivered to owner.

FAP. RTE.	SECTION	COUNTY	TOTAL SHEETS.	SHEET NO.
607	G-R-I-1(82)	WILL	64	7
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 1
45 SHEETS

DESIGN DATA

DESIGN SPECIFICATIONS: A.A.S.H.T.O. 1977 AND 1978, 1979, 1980, 1981, 1982 & 1983 INTERIM SPECIFICATIONS
A.A.S.H.T.O. STD. SPEC. FOR MOVABLE BRIDGES 1978

DESIGN LOAD: HS20 for Repair Work

ALLOW 25 POUNDS PER SQUARE FOOT FOR FUTURE WEARING SURFACE.

DESIGN STRESSES:

CONCRETE
f'_c = 3,500 P.S.I.

BAR STEEL REINFORCEMENT
F_y = 60,000 P.S.I.

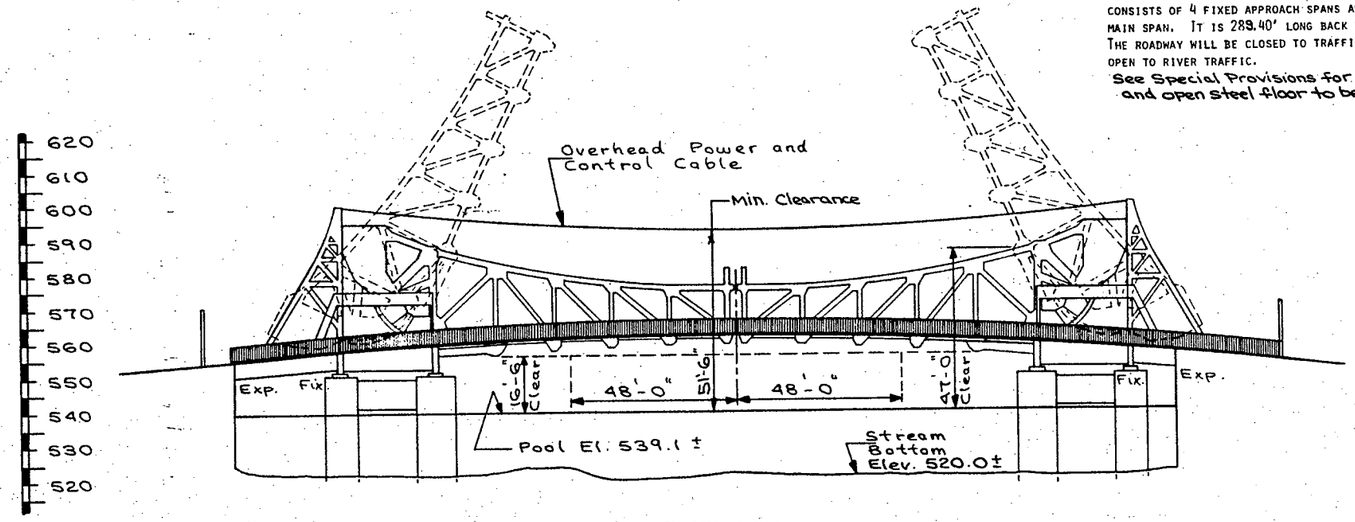
STRUCTURAL STEEL
F_y = 36,000 P.S.I. (M183)
F_y = 50,000 P.S.I. (M222)

TREATED TIMBER
SIDEWALK F_b = 1,900 P.S.I.
FENDERS F_b = 1,600 P.S.I.

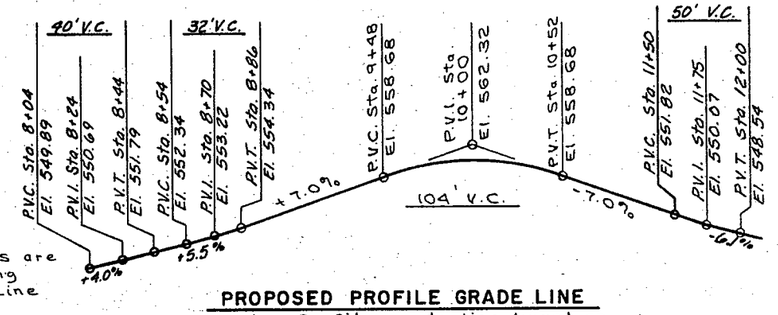
LAMINATED TIMBER
FENDERS F_b = 1,600 P.S.I.

CURVE DATA

P.C. Sta. 8 + 42.18
P.I. Sta. 8 + 60.10
P.T. Sta. 8 + 77.92
Δ = 10°-43'-15"
D. = 30°
R. = 190.99'
T. = 17.92'
L. = 35.74'
E. = 0.84'

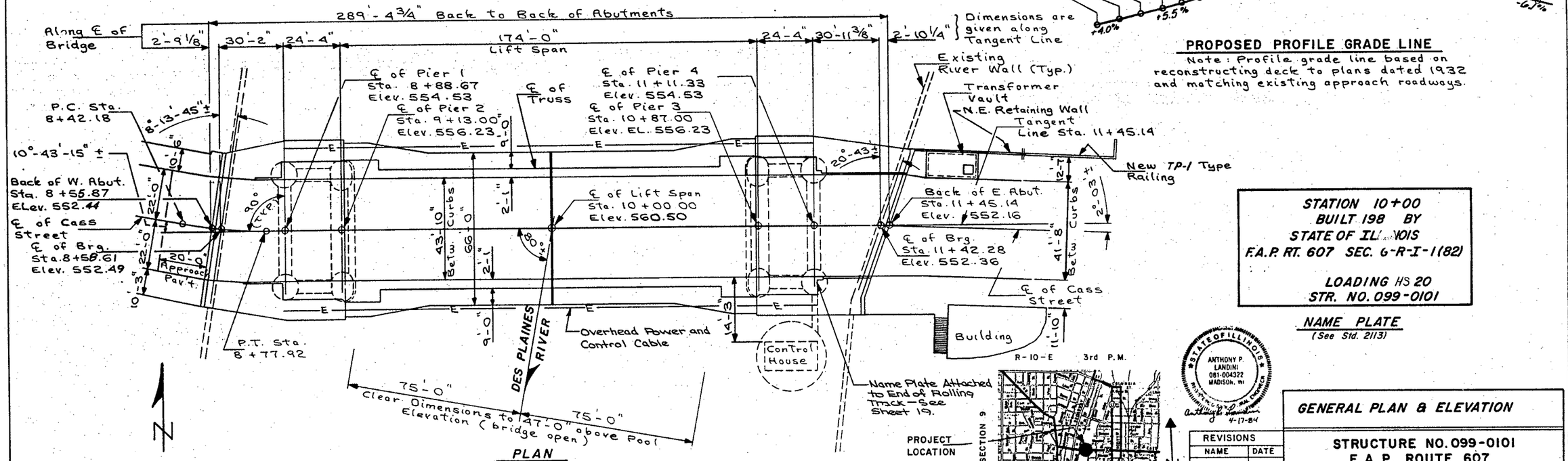


ELEVATION



PROPOSED PROFILE GRADE LINE

Note: Profile grade line based on reconstructing deck to plans dated 1932 and matching existing approach roadways.



PLAN

Note: Contractor shall provide safe temporary access to control house throughout construction period including during deck removal and replacement.

STATION 10+00
BUILT 198 BY
STATE OF ILLINOIS
F.A.P. RT. 607 SEC. G-R-I-1(82)

LOADING HS 20
STR. NO. 099-0101

NAME PLATE
(See Std. 2113)

STATE OF ILLINOIS
ANTHONY P. LANDINI
081-004322
MADISON, WI
REGISTERED PROFESSIONAL ENGINEER
4-17-84

REVISIONS	
NAME	DATE

GENERAL PLAN & ELEVATION

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CK'D.	DRAWN	CHECKED
BY: RPL	BY: KRL	BY: LEN	BY: APL

PROJECT NUMBER: 12906.100

FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	8
FED. ROAD DIST. NO. 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 2
45 SHEETS

GENERAL NOTES

FASTENERS SHALL BE HIGH STRENGTH BOLTS IN FRICTION TYPE CONNECTIONS. BOLTS 7/8 INCH DIA., OPEN HOLES 15/16 INCH DIA. UNLESS OTHERWISE NOTED. ALL BOLTS USED IN THE ROLLING TRACK, SEGMENTAL GIRDER, AND PINION RACK REPAIRS SHALL BE M-253 (ASTM A490) OF THE SIZE NOTED.

OPEN HOLES FOR BOLTS SHALL BE AS FOLLOWS EXCEPT AS NOTED OR SHOWN OTHERWISE:

3/4 INCH DIA. BOLT	- 13/16 INCH DIA. HOLE
7/8 INCH DIA. BOLT	- 15/16 INCH DIA. HOLE
1 INCH DIA. BOLT	- 1 1/16 INCH DIA. HOLE
1 1/8 INCH DIA. BOLT	- 1 3/16 INCH DIA. HOLE

CALCULATED WEIGHT OF STRUCTURAL STEEL M-183 = 96,430 LBS.
M-222 = 214,710 LBS.
TOTAL = 311,140 LBS.

ALL CONTACT SURFACES OF JOINTS SHALL BE FREE OF PAINT OR LACQUER.

THE BASIC LEAD SILICO CHROMATE PAINT SYSTEM SHALL BE USED FOR SHOP AND FIELD PAINTING OF NEW STRUCTURAL STEEL *AND OPEN STEEL GRID FLOORING, EXCEPT WHERE OTHERWISE NOTED.*

METHOD I CLEANING SHALL BE USED ON THE ENTIRE BASCULE SPAN FROM A LINE 2 FEET ABOVE THE ROADWAY DOWNWARD. METHOD I CLEANING SHALL ALSO BE USED ON THE APPROACH SPAN STEEL WITHIN 5 FEET OF THE ABUTMENT JOINTS AND WITHIN 5 FEET OF THE BASCULE LEAF JOINT.

METHOD II SHALL BE USED ON THE REMAINING STEEL OF THE STRUCTURE.

THE BASIC LEAD SILICO CHROMATE PAINT SYSTEM SHALL BE USED FOR FIELD PRIMING AND PAINTING OF STEEL CLEANED BY METHOD I AND II EXCEPT WHERE OTHERWISE NOTED. FIELD PRIMING AND TWO TOP COATS ARE REQUIRED FOR METHOD I. FIELD SPOT PRIMING AND TWO TOP COATS ARE REQUIRED FOR METHOD II.

FIELD WELDING OF CONSTRUCTION ACCESSORIES WILL NOT BE PERMITTED TO THE BOTTOM FLANGE OF BEAMS OR GIRDERS 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.

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 TENSION FLANGES, WEBS AND ALL SPLICE PLATE MATERIAL OF THE STEEL GIRDERS OR WIDE FLANGE BEAMS, STRINGERS AND ROLLING TRACK, SEGMENTAL GIRDER REPAIRS.

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

THE BACK FACE OF REPLACED PORTIONS OF ABUTMENTS SHALL BE WATERPROOFED ACCORDING TO ARTICLE 503.11 OF THE STANDARD SPECIFICATIONS.

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 ALL DIMENSIONS AND DETAILS IN THE FIELD AND WITH ORIGINAL SHOP DRAWINGS AND MAKE NECESSARY APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIALS. SUCH VARIATIONS SHALL NOT BE CAUSE FOR ADDITIONAL COMPENSATION OR 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.

CONCRETE REPAIR AREAS ARE BASED ON FIELD INSPECTIONS COMPLETED IN 1982. THE ENGINEER SHALL APPROVE ALL CONCRETE REPAIR AREAS AND CRACK SEALING PRIOR TO COMMENCEMENT OF WORK. ALL CRACKS IN CONCRETE OVER .01. INCHES SHALL BE SEALED BY EPOXY INJECTION. ALL CHIPPED, SPALLED, AND SCALLED CONCRETE ON THE SUBSTRUCTURE UNITS NOT SHOWN ON THE PLANS SHALL BE REPAIRED WITH POLYMER MORTAR.

UNSOUND CONCRETE WILL GENERALLY BE DEFINED AS ANY CONCRETE THAT CAN BE EASILY REMOVED WITH A HAND HELD PNEUMATIC CHISEL. IN GENERAL, SOUND CONCRETE WILL BE CONSIDERED AS HAVING BEEN EXPOSED WHEN CRACKS ARE NO LONGER VISIBLE AND WHEN PIECES OF AGGREGATE FRACTURE BEFORE BEING DISLODGED INTACT.

ALL SURFACES OF THE SUBSTRUCTURE UNITS AND RETAINING WALL THAT WILL BE EXPOSED TO VIEW SHALL BE FINISHED TO PROVIDE AN APPROXIMATELY UNIFORM COLOR BETWEEN OLD AND NEW CONCRETE. SEE SPECIAL PROVISIONS FOR BID ITEM SURFACE FINISH.

EXPANSION BOLTS SHALL CONSIST OF APPROVED EXPANSION ANCHORS, PROVIDING THE FOLLOWING MINIMUM CERTIFIED PROOF LOADS.

3/8 INCH	1000 LBS.
1/2 INCH	1600 LBS.
3/4 INCH	4080 LBS.

ALL PLANKS AND NAILING STRIPS USED IN THE TIMBER SIDEWALK SHALL BE DOUGLAS FIR (COAST REGION) WITH A STRESS RATING AT 19% MAXIMUM MOISTURE IN BENDING OF A MINIMUM OF 1.900 LBS PER SQ IN. IT SHALL BE TREATED WITH AMMONIACAL COPPER ARSENITE. THE MINIMUM RETENTION SHALL BE AS SPECIFIED FOR SOIL CONTACT. ALL PLANKS SHALL BE DRIED AFTER TREATMENT TO A 19% MAXIMUM MOISTURE CONTENT. ALL TIMBER PLANKS SHALL BE FREE OF STICKY OR OBJECTIONAL SURFACE COATING ON THE SIDE EXPOSED TO PEDESTRIANS. ALL NAILS SHALL BE GALVANIZED OVAL-HEADED BARBED CAR NAILS.

TOTAL BILL OF MATERIALS

Item	Unit	SUPER	SUBSTR	TOTAL
CONCRETE REMOVAL	CU CY		64	64
EXPANSION BOLTS 1/2 INCH ø	EACH		175	175
EXPANSION BOLTS 3/4 INCH ø x 6 INCH	EACH		132	132
EXPANSION BOLTS 3/4 INCH ø x 18 INCH	EACH		196	196
REMOVAL OF EXISTING CONCRETE DECK	L SUM	1		1
STRUCTURE EXCAVATION	CU YD		75	75
PROTECTIVE COAT	SQ YD	895		895
CLASS X CONCRETE	CU YD	201.2	61.8	263.0
Structural Steel	L SUM	1		1
OPEN STEEL *FLOOR*	SQ FT	7348		7348
REMOVING AND RE-ERECTING EXISTING RAILING	LIN FT	44		44
CLEANING AND PAINTING STEEL BRIDGE	L SUM	1		1
TREATED TIMBER	F.B.M.	10235	2510	12745
HARDWARE	POUND	1060	230	1290
REINFORCEMENT BARS	POUND		4310	4310
REINFORCEMENT BARS (EPOXY COATED)	POUND	31910		31910
WELDED WIRE FABRIC	SQ FT	395		395
NAME PLATES	EACH	1		1
PREFORMED JOINT SEAL 2 1/2"	LIN FT	144		144
ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	19		19
BRIDGE SEAT SEALER	L SUM	1		1
JACKING EXISTING STRUCTURE	L SUM	1		1
EPOXY CRACK SEALING	LIN FT	100	48	148
STRAIGHTENING BEAM	EACH	1		1
REMOVAL OF EXISTING STEEL	L SUM	1		1
REMOVAL OF EXISTING TIMBER	L SUM	.5	.5	1
POLYMER MORTAR REPAIR	CU FT	372	27	399
EPOXY MORTAR REPAIR	CU FT	205		205
FIBERGLASS JACKETS	SQ FT		1120	1120
SURFACE FINISH	SQ YD		785	785
RIVET REPLACEMENT 3/4 INCH ø	EACH	30		30
RIVET REPLACEMENT 7/8 INCH ø	EACH	570		570
STEEL RAILING TYPE TP-1	LIN FT		207	207
RAIL POST REPAIR	EACH	14		14
LAMINATED TIMBER	F.B.M.		6440	6440
CONCRETE ADJUSTMENT BLOCKS	EACH	400		400
MACHINERY HOUSE ENCLOSURE	L SUM	1		1
MECHANICAL WORK	L SUM	1		1
ELECTRICAL WORK	L SUM	1		1
REWIND ELECTRIC MOTORS	EACH	4		4
ROADWAY LIGHTING	L SUM	1		1

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN BY	DESIGN CHK'D. BY	DRAWN BY	CHECKED BY
APL	KRL	KRL	APL

PROJECT NUMBER

REVISIONS

NAME	DATE

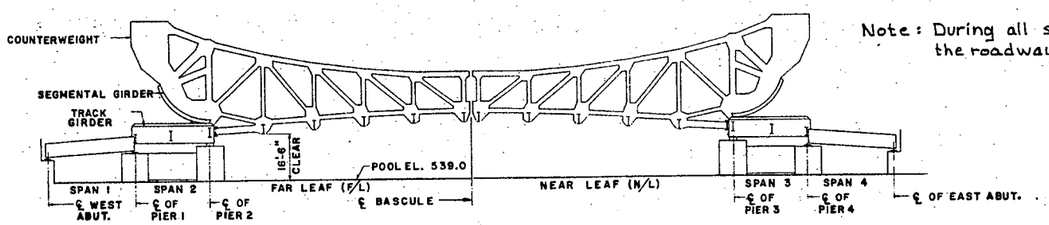
GENERAL NOTES & BILL OF MATERIALS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

REVISED 7/18/84 JE

FAI RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
607	G-R-I-1(82)	WILL	64	9
FED ROAD DIST NO 7	ILLINOIS	FED AID PROJECT		

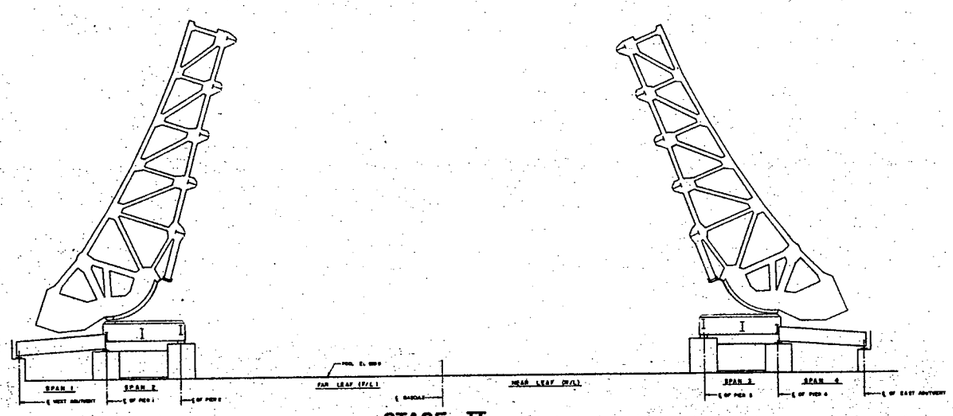
SHEET NO 3
45 SHEETS



Note: During all stages of construction the roadway will be closed to traffic.

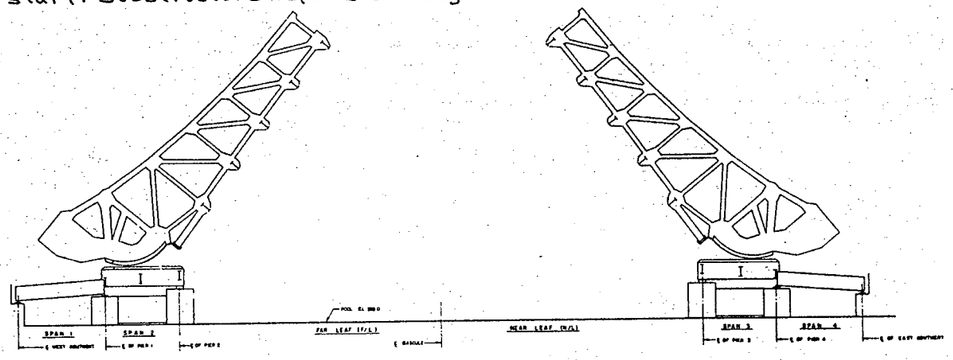
STAGE I

Bridge is operable. Contractor may raise leaves to a convenient position in order to replace heel of segmental girder. Leaves must be opened to 52° (16'-6" length of roll) to allow river traffic to pass.



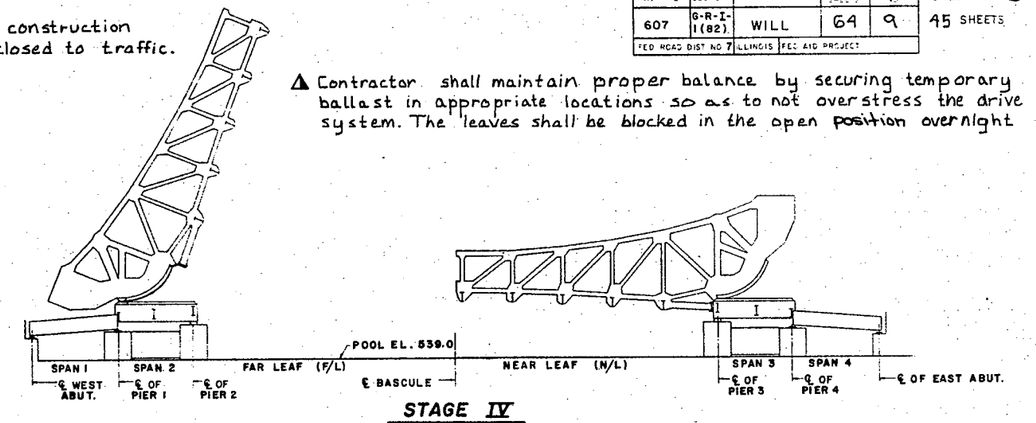
STAGE II

Bridge is inoperable. Leaves to be in the full open position (22'-4" length of roll). Contractor to submit method and details, for securing leaves in this position, to the Engineer for review. During this stage 90%± of the rolling track and segmental girder repairs should be completed. Rehabilitation of the mechanical and electrical systems should start. Substructure repairs can begin.



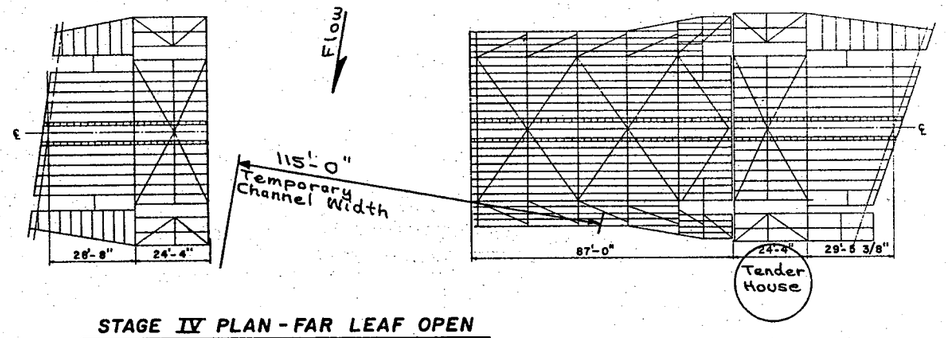
STAGE III

. Leaves to be secured at an open position of 52° (16'-6" length of roll). Rehabilitation of the rolling track, segmental girder, mechanical and electrical systems should be completed. Contractor shall Submit method and details of how the leaves will be rolled to this position and how they will be secured, To the engineer for review. The untested mechanical drive system shall not be used to lower the leaves without an independent support / lowering system.

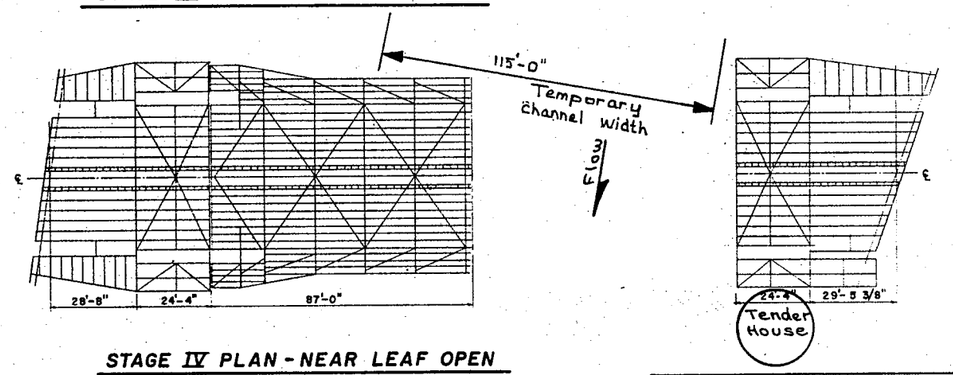


▲ Contractor shall maintain proper balance by securing temporary ballast in appropriate locations so as to not overstress the drive system. The leaves shall be blocked in the open position overnight

STAGE IV



STAGE IV PLAN - FAR LEAF OPEN



STAGE IV PLAN - NEAR LEAF OPEN

STAGE IV CONSTRUCTION

Bridge is operable. During a ten-hour construction shift, the Contractor may have one leaf down with other leaf in full open position. A work barge may be used under the closed leaf. Maximum encroachment into channel is 35 ft. Outside of the construction shift, both leaves must be left in full open position and the work barge removed from the navigation channel. Repairs include grating replacement, sidewalk replacement, steel repairs, concrete deck replacement, counterweight repairs, sandblasting and painting. See above-▲

REVISIONS	
NAME	DATE

CONSTRUCTION STAGING

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

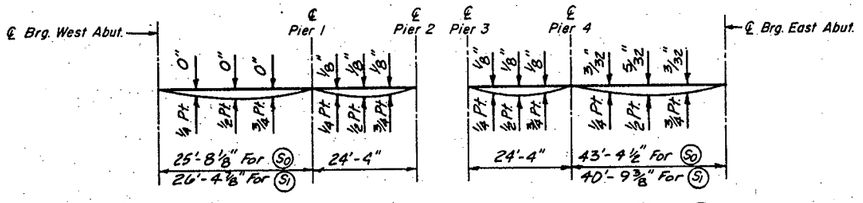
DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY APL	BY KRL	BY LEN	BY APL

PROJECT NUMBER 12906.1

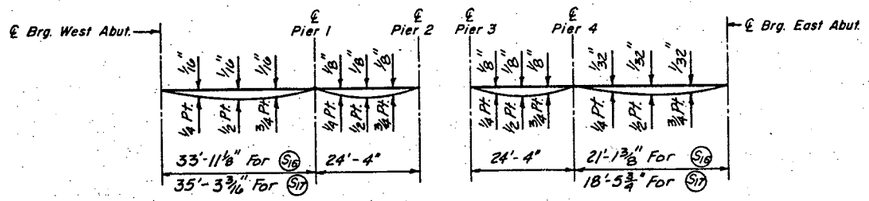
FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	10
FED ROAD DIST NO. 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 4
45 SHEETS



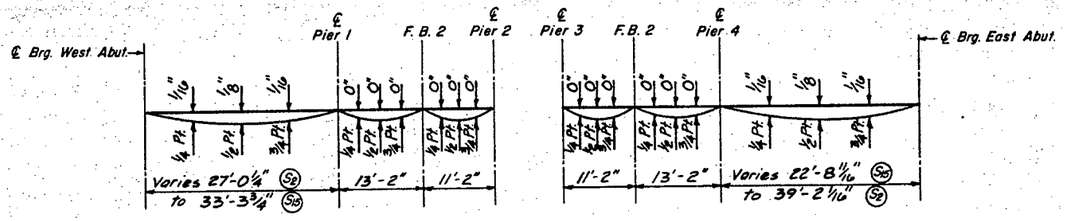
DEAD LOAD DEFLECTION DIAGRAM, GIRDERS S0 & S1

(Includes Weight Of Concrete Only)



DEAD LOAD DEFLECTION DIAGRAM, GIRDERS S16 & S17

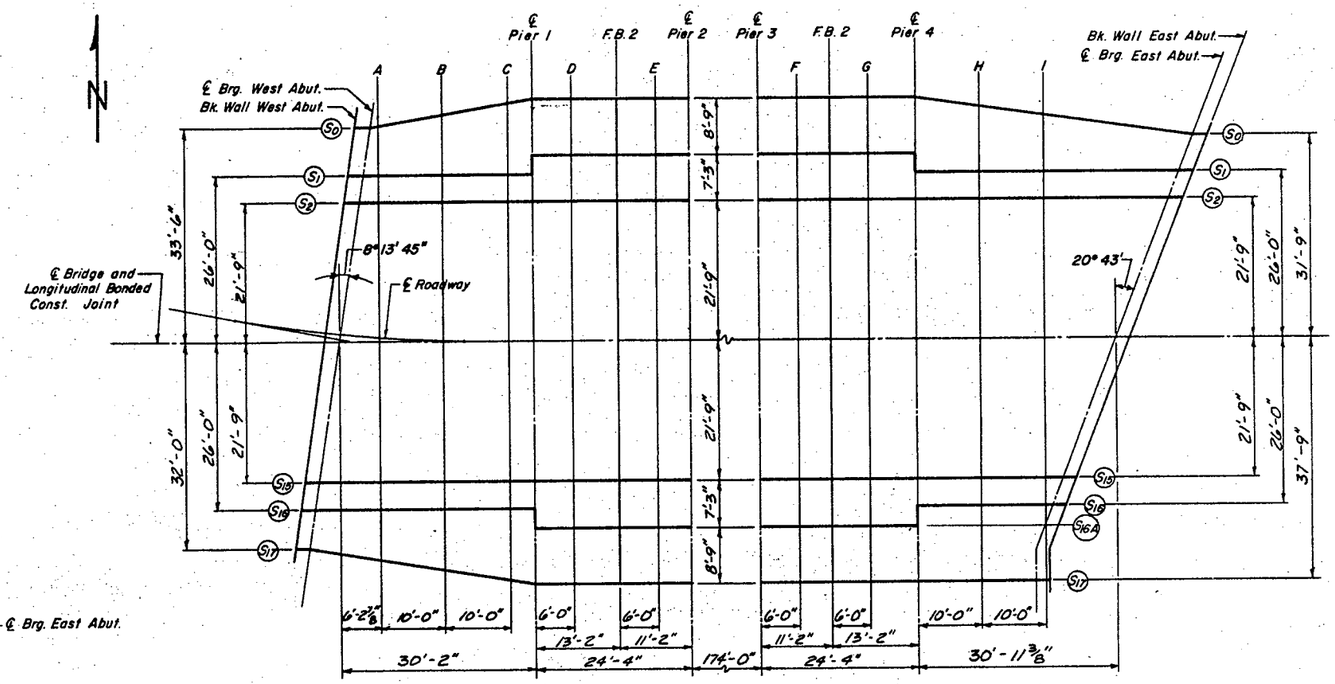
(Includes Weight Of Concrete Only)



DEAD LOAD DEFLECTION DIAGRAM, GIRDERS S2 - S18

(Includes Weight Of Concrete Only)

NOTE : DEAD LOAD DEFLECTIONS FROM THE DIAGRAMS ARE NOT FOR USE IN THE FIELD IF THE ENGINEER IS WORKING FROM THE THEORETICAL GRADE ELEVATIONS ADJUSTED FOR DEAD LOAD DEFLECTION.



WEST APPROACH - EAST APPROACH

(Showing Locations Of Top Of Slab Elevations)

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY KRL	DESIGN CHK'D. BY APL	DRAWN BY KRL	CHECKED BY APL
PROJECT NUMBER 12906.1			

REVISIONS	
NAME	DATE

DECK ELEVATIONS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-I(82)	WILL	64	11
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 5
45 SHEETS

GIRDER S 0

LOCATION	STATION	OFFSET	THEORETICAL GRADE EL.	THEO. EL. ADJUSTED FOR DEFLECTION
BK. WEST ABUT.	8+57.581	-32.603	553.035	553.035
℄ WEST ABUT.	8+60.295	-32.827	553.196	553.196
A	8+61.950	-33.183	553.292	553.292
B	8+74.017	-35.380	554.035	554.035
C	8+84.740	-37.091	554.752	554.752
℄ PIER 1	8+88.667	-37.750	555.027	555.027
D	8+94.667	-37.750	555.447	555.457
FLOOR BM. 2	9+01.834	-37.750	555.948	555.958
E	9+07.834	-37.750	556.368	556.378
℄ PIER 2	9+13.000	-37.750	556.730	556.730
℄ PIER 3	10+87.000	-37.750	556.730	556.730
F	10+93.000	-37.750	556.310	556.320
FLOOR BM. 2	10+98.167	-37.750	555.948	555.958
G	11+04.167	-37.750	555.528	555.538
℄ PIER 4	11+11.333	-37.750	555.027	555.027
H	11+21.333	-36.353	554.327	554.335
I	11+31.333	-34.956	553.627	553.640
℄ EAST ABUT.	11+53.146	-32.057	552.244	552.244
BK. EAST ABUT.	11+55.405	-32.138	552.127	552.127

GIRDER S1

LOCATION	STATION	OFFSET	THEORETICAL GRADE EL.	THEO. EL. ADJUSTED FOR DEFLECTION
BK. WEST ABUT.	8+57.257	-25.030	553.014	553.014
℄ WEST ABUT.	8+59.846	-25.259	553.169	553.169
A	8+62.695	-25.475	553.336	553.336
B	8+74.239	-25.969	554.049	554.049
C	8+84.740	-26.000	554.752	554.752
℄ PIER 1	8+88.667	-26.000	555.027	555.027
℄ PIER 1	8+88.667	-29.000	555.027	555.027
D	8+94.667	-29.000	555.447	555.457
FLOOR BM. 2	9+01.834	-29.000	555.948	555.958
E	9+07.834	-29.000	556.368	556.378
℄ PIER 2	9+13.000	-29.000	556.730	556.730
℄ PIER 3	10+87.000	-29.000	556.730	556.730
F	10+93.000	-29.000	556.310	556.320
FLOOR BM. 2	10+98.167	-29.000	555.948	555.958
G	11+04.167	-29.000	555.528	555.538
℄ PIER 4	11+11.333	-29.000	555.027	555.027
℄ PIER 4	11_11.333	-26.000	555.027	555.027
H	11+21.333	-26.000	554.327	554.335
I	11+31.333	-26.000	553.627	553.640
℄ EAST ABUT.	11+51.179	-26.233	552.347	552.347
BK. EAST ABUT.	11+53.438	-26.314	552.229	552.229

GIRDER S2

LOCATION	STATION	OFFSET	THEORETICAL GRADE EL.	THEO. EL. ADJUSTED FOR DEFLECTION
BK. WEST ABUT.	8+57.086	-20.738	552.504	552.504
℄ WEST ABUT.	8+59.610	-20.970	552.656	552.656
A	8+63.076	-21.238	552.858	552.863
B	8+74.331	-21.720	553.555	553.565
C	8+84.740	-21.750	554.252	554.252
℄ PIER 1	8+88.667	-21.750	554.527	554.527
D	8+94.667	-21.750	554.947	554.947
FLOOR BM. 2	9+01.834	-21.750	555.448	555.448
E	9+07.834	-21.750	555.868	555.868
℄ PIER 2	9+13.000	-21.750	556.230	556.230
℄ PIER 3	10+87.000	-21.750	556.230	556.230
F	10+93.000	-21.750	555.810	555.810
FLOOR BM. 2	10+98.167	-21.750	555.448	555.448
G	11+04.167	-21.750	555.028	555.028
℄ PIER 4	11+11.333	-21.750	554.527	554.527
H	11+21.333	-21.750	553.827	553.832
I	11+31.333	-21.750	553.127	553.137
℄ EAST ABUT.	11+49.724	-21.928	551.922	551.922
BK. EAST ABUT.	11+51.983	-22.009	551.805	551.805

LONGITUDINAL JOINT

LOCATION	STATION	OFFSET	THEORETICAL GRADE EL.	THEO. EL. ADJUSTED FOR DEFLECTION
BK. WEST ABUT.	8+56.331	+1.226	552.468	552.468
℄ WEST ABUT.	8+58.566	+ .984	552.596	552.596
A	8+64.760	+ .454	552.959	552.964
B	8+74.740	+ .026	553.582	553.592
C	8+84.740	0	554.252	554.252
℄ PIER 1	8+88.667	0	554.527	554.527
D	8+94.667	0	554.947	554.947
FLOOR BM. 2	9+01.834	0	555.448	555.448
E	9+07.834	0	555.868	555.868
℄ PIER 2	9+13.000	0	556.230	556.230
℄ PIER 3	10+87.000	0	556.230	556.230
F	10+93.000	0	555.810	555.810
FLOOR BM. 2	10+98.167	0	555.448	555.448
G	11+04.167	0	555.028	555.028
℄ PIER 4	11+11.333	0	554.527	554.527
H	11+21.333	0	553.827	553.832
I	11+31.333	0	553.127	553.132
℄ EAST ABUT.	11+42.280	0	552.360	552.360
BK. EAST ABUT.	11+44.540	0	552.202	552.202

GIRDER S15

LOCATION	STATION	OFFSET	THEORETICAL GRADE EL.	THEO. EL. ADJUSTED FOR DEFLECTION
BK. WEST ABUT.	8+55.732	+23.193	552.415	552.415
℄ WEST ABUT.	8+57.736	+22.943	552.546	552.546
A	8+66.102	+22.158	553.040	553.045
B	8+75.064	+21.774	553.602	553.612
C	8+84.740	+21.750	554.252	554.252
℄ PIER 1	8+88.667	+21.750	554.527	554.527
D	8+94.667	+21.750	554.947	554.947
FLOOR BM. 2	9+01.834	+21.750	555.448	555.448
E	9+07.834	+21.750	555.868	555.868
℄ PIER 2	9+13.000	+21.750	556.230	556.230
℄ PIER 3	10+87.000	+21.750	556.230	556.230
F	10+93.000	+21.750	555.810	555.810
FLOOR BM. 2	10+98.167	+21.750	555.448	555.448
G	11+04.167	+21.750	555.028	555.028
℄ PIER 4	11+11.333	+21.750	554.527	554.527
H	11+21.333	+21.750	553.827	553.837
I	11+31.333	+21.750	553.127	553.127
℄ EAST ABUT.	11+34.050	+21.750	552.936	552.936
BK. EAST ABUT.	11+36.313	+21.750	552.778	552.778

GIRDER S16

LOCATION	STATION	OFFSET	THEORETICAL GRADE EL.	THEO. EL. ADJUSTED FOR DEFLECTION
BK. WEST ABUT.	8+55.629	+27.486	552.904	552.904
℄ WEST ABUT.	8+57.593	+27.234	553.040	553.040
A	8+66.332	+26.400	553.554	553.559
B	8+75.120	+26.023	554.106	554.111
C	8+84.740	+26.000	554.752	554.752
℄ PIER 1	8+88.667	+26.000	555.027	555.027
℄ PIER 1	8+88.667	+29.000	555.027	555.027
D	8+94.667	+29.000	555.447	555.457
FLOOR BM. 2	9+01.834	+29.000	555.948	555.958
E	9+07.834	+29.000	556.368	556.378
℄ PIER 2	9+13.000	+29.000	556.730	556.730
℄ PIER 3	10+87.000	+29.000	556.730	556.730
F	10+93.000	+29.000	556.310	556.320
FLOOR BM. 2	10+98.167	+29.000	555.948	555.958
G	11+04.167	+29.000	555.528	555.538
℄ PIER 4	11+11.333	+29.000	555.027	555.027
℄ PIER 4	11+11.333	+26.000	555.027	555.027
H	11+21.333	+26.000	554.327	554.330
I	11+31.333	+26.000	553.627	553.627
℄ EAST ABUT.	11+32.448	+26.000	553.549	553.549
BK. EAST ABUT.	11+34.767	+26.000	553.386	553.386

S16A

GIRDER S17

LOCATION	STATION	OFFSET	THEORETICAL GRADE EL.	THEO. EL. ADJUSTED FOR DEFLECTION
BK. WEST ABUT.	8+55.490	+33.546	552.889	552.889
℄ WEST ABUT.	8+57.401	+33.293	553.029	553.029
A	8+66.733	+34.182	553.578	553.583
B	8+75.237	+35.471	554.114	554.119
C	8+84.740	+37.101	554.752	554.752
℄ PIER 1	8+88.667	+37.750	555.027	555.027
D	8+94.667	+37.750	555.447	555.457
FLOOR BM. 2	9+01.834	+37.750	555.948	555.958
E	9+07.834	+37.750	556.368	556.378
℄ PIER 2	9+13.000	+37.750	556.730	556.730
℄ PIER 3	10+87.000	+37.750	556.730	556.730
F	10+93.000	+37.750	556.310	556.320
FLOOR BM. 2	10+98.167	+37.750	555.948	555.958
℄ PIER 4	11+11.333	+37.750	555.027	555.027
G	11+04.167	+37.750	555.528	555.538
H	11+21.333	+37.750	554.327	554.330
℄ EAST ABUT.	11+29.813	+37.750	553.733	553.733
BK. EAST ABUT.	11+32.063	+37.750	553.576	553.576

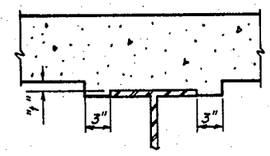
CENTERLINE BEARING EAST ABUTMENT

GIRDER	STATION	OFFSET	THEORETICAL GRADE EL.
S3	11+48.441	-18.130	551.929
S4	11+47.158	-14.331	552.019
S5	11+45.875	-10.533	552.109
S6	11+45.688	- 6.735	552.122
S7	11+43.424	- 3.021	552.280
S8	11+42.935	- 1.729	552.315
S9	11+41.627	+ 1.729	552.406
S10	11+41.139	+ 3.021	552.440
S11	11+39.728	+ 6.750	552.539
S12	11+38.310	+10.500	552.638
S13	11+36.892	+14.250	552.738
S14	11+35.474	+18.000	552.837

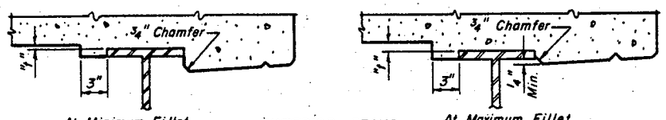
NOTE: GIRDERS S3 THRU S14 AT LOCATIONS A, B, C, CENTERLINE PIER 1, D, FLOOR BM. 2, E, CENTERLINE PIER 2, CENTERLINE PIER 3, F, FLOOR BEAM 2, G, CENTERLINE PIER 4, H, AND I HAVE THE SAME THEORETICAL GRADE EL. AND THEORETICAL EL. ADJUSTED FOR DEFLECTION AS S2 AND S15 BECAUSE THE CROSS SLOPE OF THE DECK IS ZERO.

CENTERLINE BEARING WEST ABUTMENT

GIRDER	STATION	OFFSET	THEORETICAL GRADE EL.
S3	8+59.411	-17.185	552.644
S4	8+59.221	-13.400	552.634
S5	8+59.038	- 9.615	552.623
S6	8+58.864	- 5.829	552.613
S7	8+58.696	- 2.065	552.603
S8	8+58.640	- 0.761	552.600
S9	8+58.493	+ 2.730	552.592
S10	8+58.440	+ 4.034	552.589
S11	8+58.289	+ 7.799	552.580
S12	8+58.143	+11.585	552.572
S13	8+58.002	+15.371	552.564
S14	8+57.867	+19.157	552.555



INTERIOR BEAMS



At Minimum Fillet — EXTERIOR BEAMS — At Maximum Fillet

AFTER ALL EXISTING CONCRETE HAS BEEN REMOVED, ELEVATIONS OF THE TOP FLANGES OF THE BEAMS SHALL BE TAKEN AT THE STATIONS SHOWN ON THIS SHEET. THESE ELEVATIONS SUBTRACTED FROM THE "THEORETICAL GRADE ELEVATIONS ADJUSTED FOR DEAD LOAD DEFLECTION" SHOWN ON THIS SHEET, MINUS FLOOR THICKNESS EQUALS THE "FILLET HEIGHTS ABOVE TOP FLANGE OF BEAMS."

FILLET HEIGHTS "f"

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY KRL	BY APL	BY KRL	BY APL

PROJECT NUMBER 12906.1

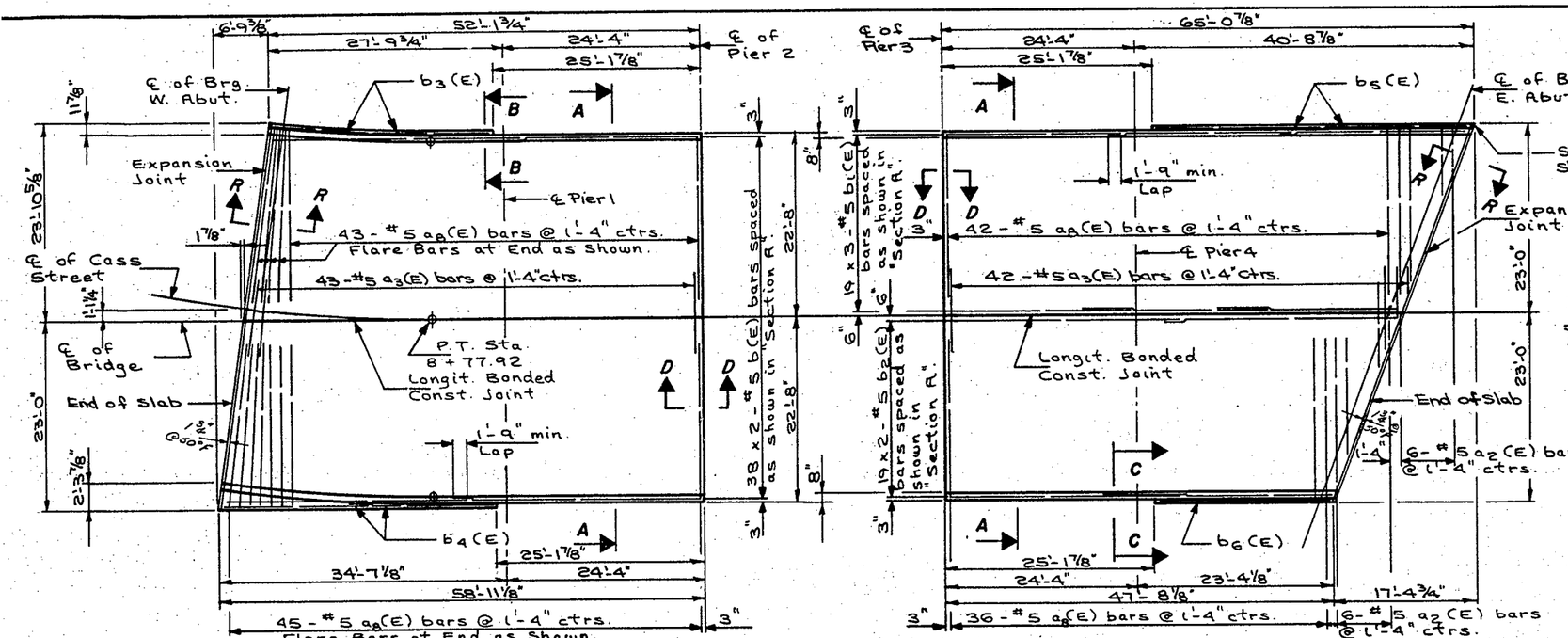
REVISIONS	
NAME	DATE

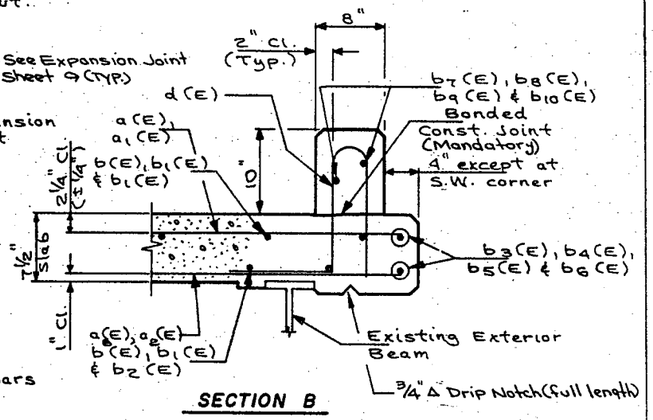
DECK ELEVATIONS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-I(82)
WILL COUNTY

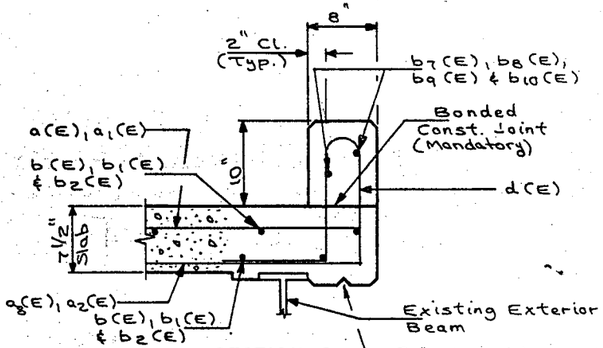
FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	12
FED. ROAD DIST. NO. 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 6
45 SHEETS

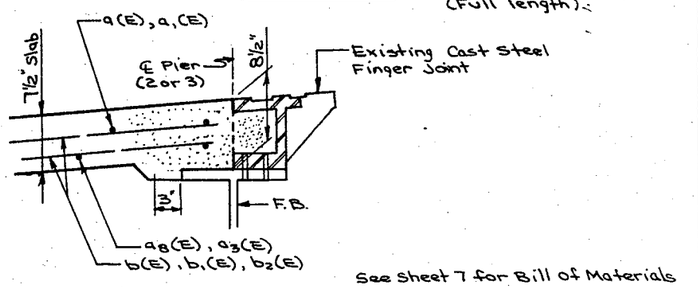




SECTION B

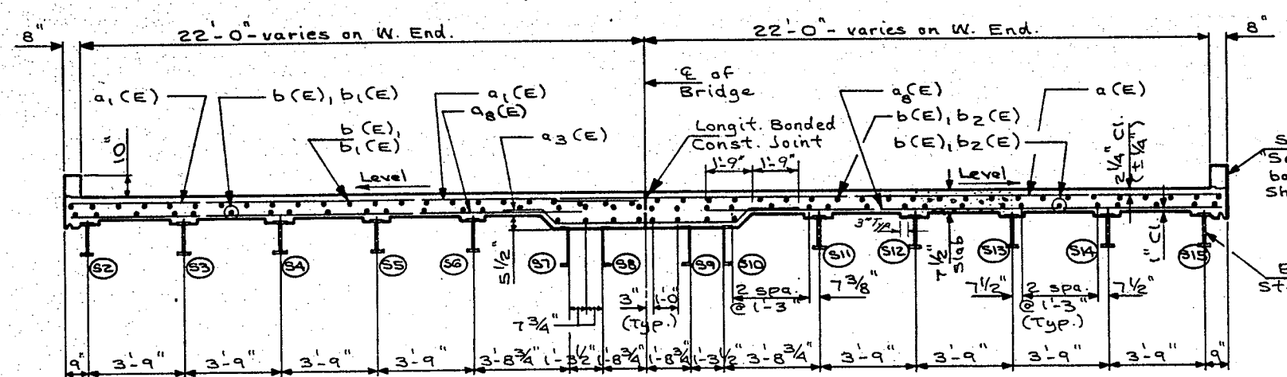


SECTION C



SECTION D-D

See Sheet 7 for Bill of Materials



SECTION A

Bars indicated thus 38 x 2 - #5 etc. indicates 38 lines of bars with 2 lengths per line.

APPROACH SPANS BAR STEEL REINFORCEMENT PLAN
(Bottom of Slab Bar Steel Shown)

Note: For Section R see Sheet 9.

N

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D.	DRAWN	CHECKED
BY: RPL	BY: KRL	BY: LEN	BY: RPL

PROJECT NUMBER 12906.1

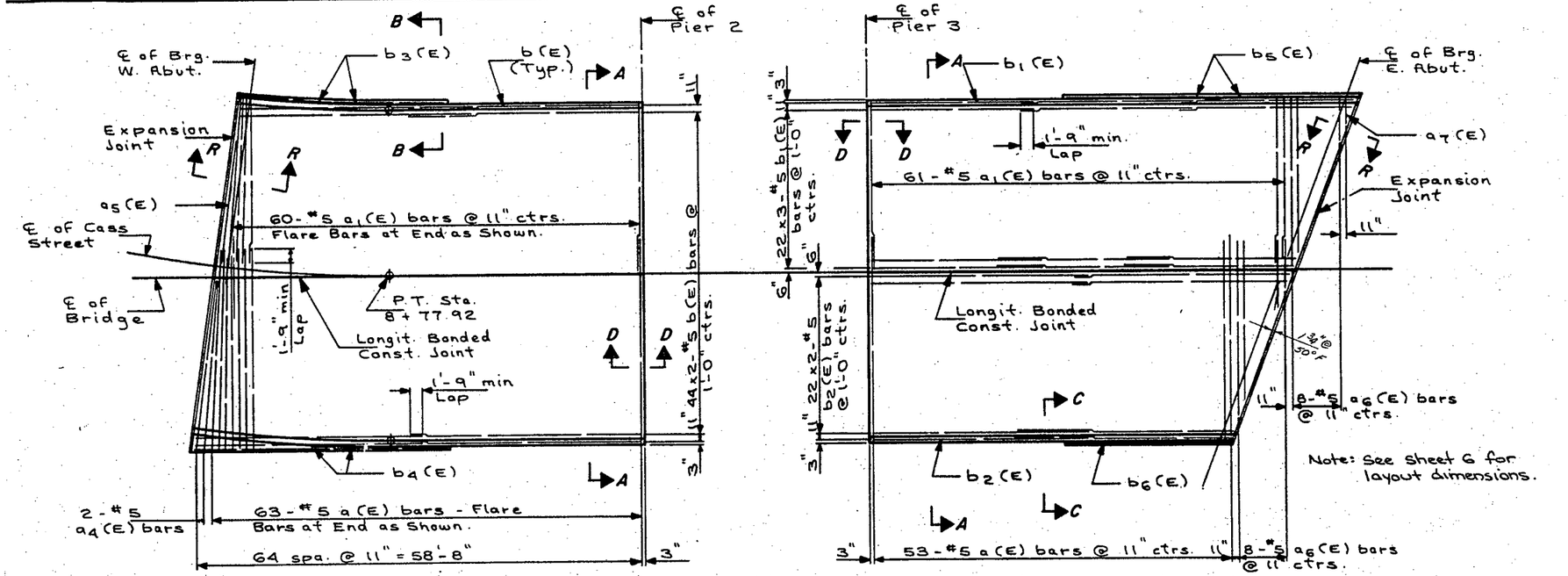
REVISIONS	
NAME	DATE

DECK PLAN & SECTION

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	13
FED. ROAD DIST NO. 7	ILLINOIS	FED AID PROJECT.		

SHEET NO. 7
45 SHEETS



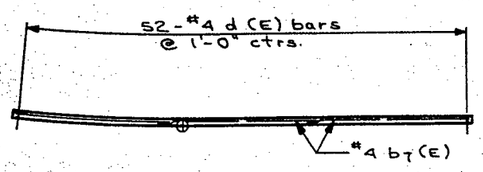
WEST APPROACH SPANS

EAST APPROACH SPANS

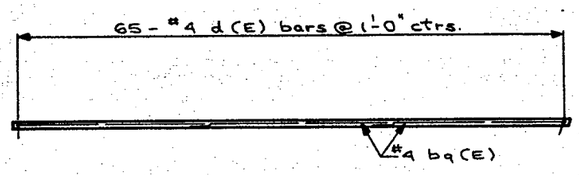
APPROACH SPANS BAR STEEL REINFORCEMENT PLAN

(Top of Slab Bar Steel Shown)

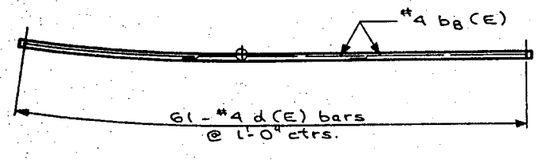
For Sections A, B, C and D See Sheet 6.
For Section R See Sheet 9.



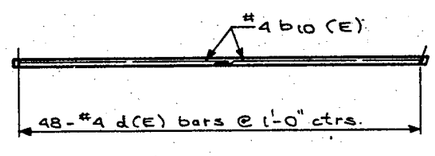
NORTHWEST CURB



NORTHEAST CURB

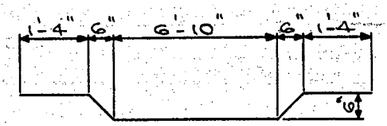


SOUTHWEST CURB

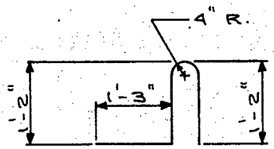


SOUTHEAST CURB

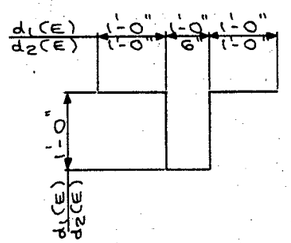
PLAN OF CURBS



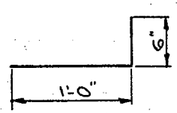
BAR a_3 (E)



BAR d (E)



BAR d_1 (E) & BAR d_2 (E)



BAR c_3 (E)

BILL OF MATERIAL

Bar	No.	Sige	Length	Shape
a(E)	116	#5	27'-3"	
a_1(E)	121	#5	22'-3"	
a_2(E)	6	#5	26'-6"	
a_3(E)	85	#5	10'-11"	
a_4(E)	2	#5	22'-5"	
a_5(E)	1	#5	17'-0"	
a_6(E)	8	#5	30'-0"	
a_7(E)	1	#5	4'-0"	
a_8(E)	166	#5	21'-6"	
b(E)	184	#5	30'-8"	
b_1(E)	138	#5	22'-9"	
b_2(E)	92	#5	28'-9"	
b_3(E)	4	#5	14'-8"	
b_4(E)	4	#5	17'-11"	
b_5(E)	4	#5	20'-3"	
b_6(E)	2	#5	21'-6"	
b_7(E)	6	#4	18'-10"	
b_8(E)	6	#4	20'-10"	
b_9(E)	6	#4	22'-8"	
b_{10}(E)	4	#4	24'-9"	
b_{11}(E)	34	#4	21'-6"	
b_{12}(E)	28	#4	18'-6"	
b_{13}(E)	50	#4	18'-0"	
b_{14}(E)	22	#4	14'-6"	
b_{15}(E)	50	#4	24'-0"	
b_{16}(E)	22	#4	21'-6"	
b_{17}(E)	36	#4	23'-0"	
b_{18}(E)	16	#4	20'-0"	
b_{19}(E)	32	#4	11'-0"	
b_{20}(E)	2	#4	15'-0"	
c(E)	204	#4	9'-3"	
c_1(E)	396	#4	8'-2"	
c_2(E)	22	#4	15'-2"	
c_3(E)	124	#4	1'-6"	
d(E)	226	#4	3'-6"	
d_1(E)	20	#4	5'-0"	
d_2(E)	18	#4	4'-6"	

Item	Unit	Quantity
Reinforcement Bars (Epoxy Coated)	Lbs.	31,990
Class X Concrete	Cu.Yd.	201.2
Protective Coat	Sq.Yd.	895
Structural Steel M-183	Lbs.	220

Note: This Bill of Material covers Sheets 6 - 8. Reinforcement bars designated (E) shall be epoxy coated.

REVISIONS	
NAME	DATE

DECK DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

DONOHUE
ENGINEERS & ARCHITECTS

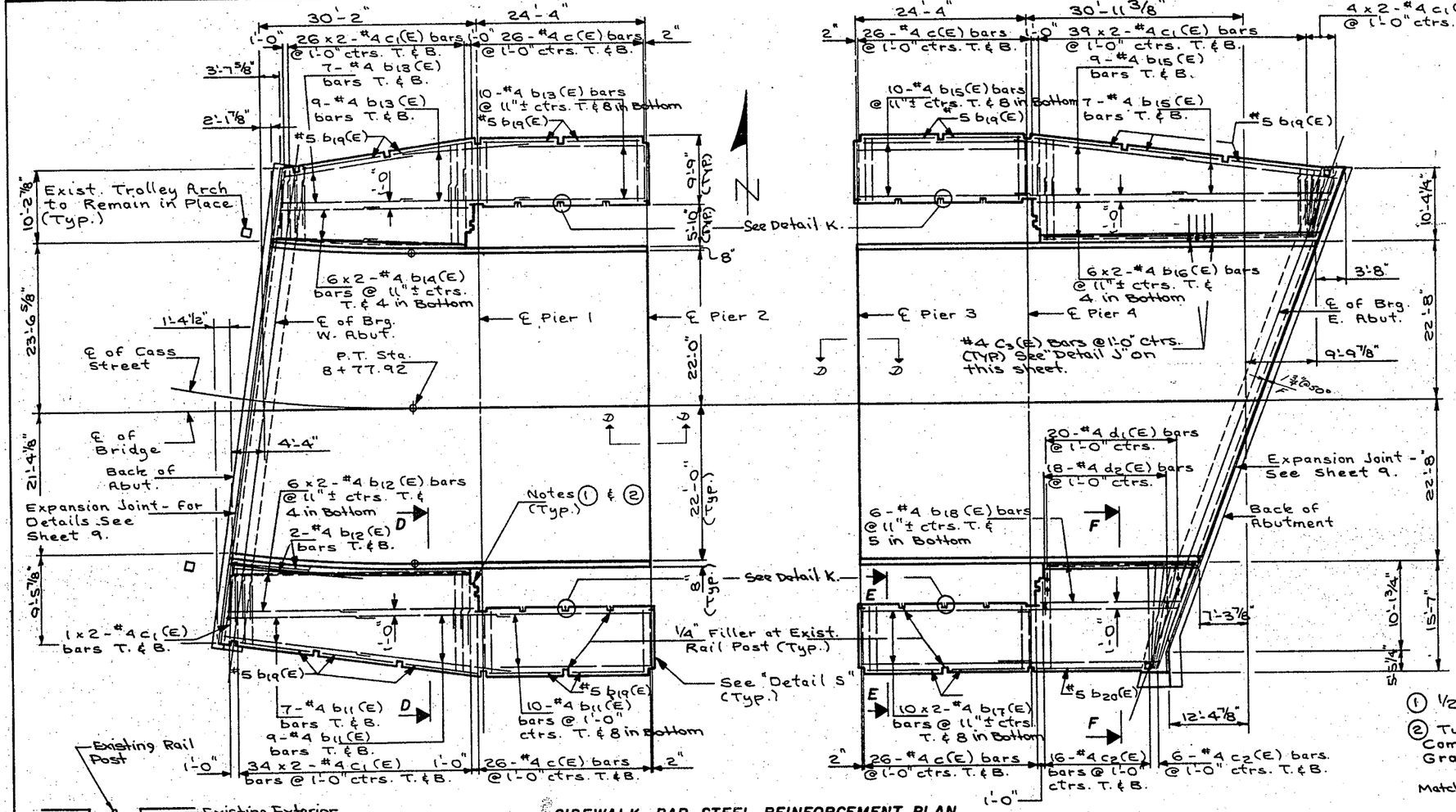
DESIGN	DESIGN CHK'D.	DRAWN	CHECKED
BY: APL	BY: KRL	BY: LEN	BY: APL

PROJECT NUMBER 12906.1

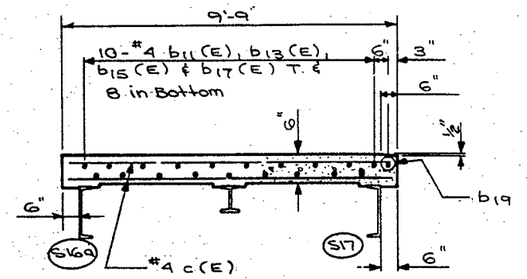
Added Epoxy note 6-1-84

FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	14
FED ROAD DIST NO 7	ILLINOIS	FED AID PROJECT		

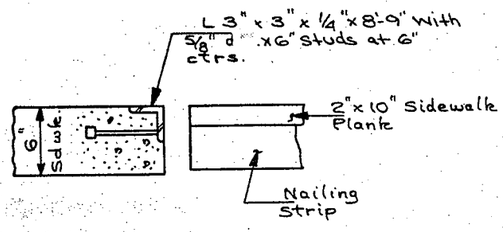
SHEET NO. 8
45 SHEETS



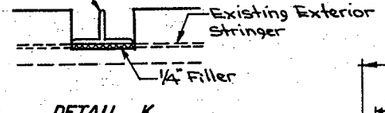
SIDEWALK BAR STEEL REINFORCEMENT PLAN



SECTION E

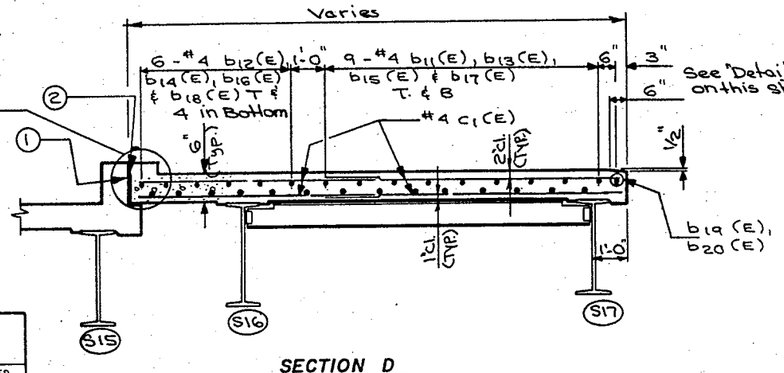


DETAIL S

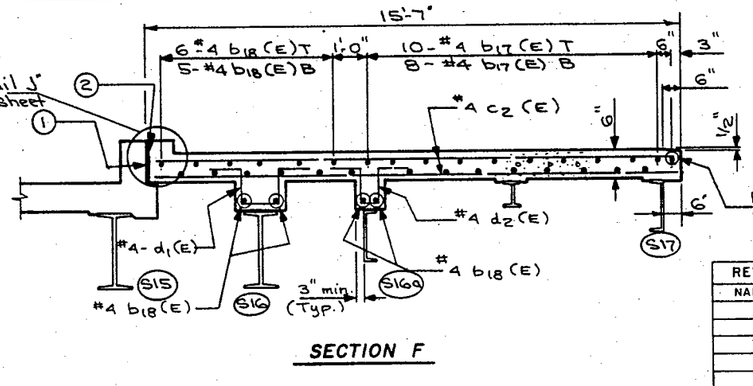


DETAIL K

See "Detail J" on this sheet.

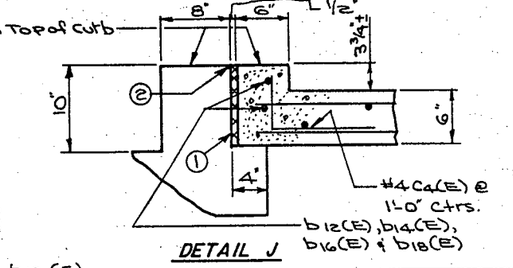


SECTION D



SECTION F

1. 1/2" Premolded Joint Filler
2. Two Component Non-Staining Gray Sealing Compound with Polysulfide Liquid Polymer Gun Grade with Primer: 1/2" thick x 1/2" Wide



DETAIL J

SIDEWALK DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

REVISIONS	
NAME	DATE

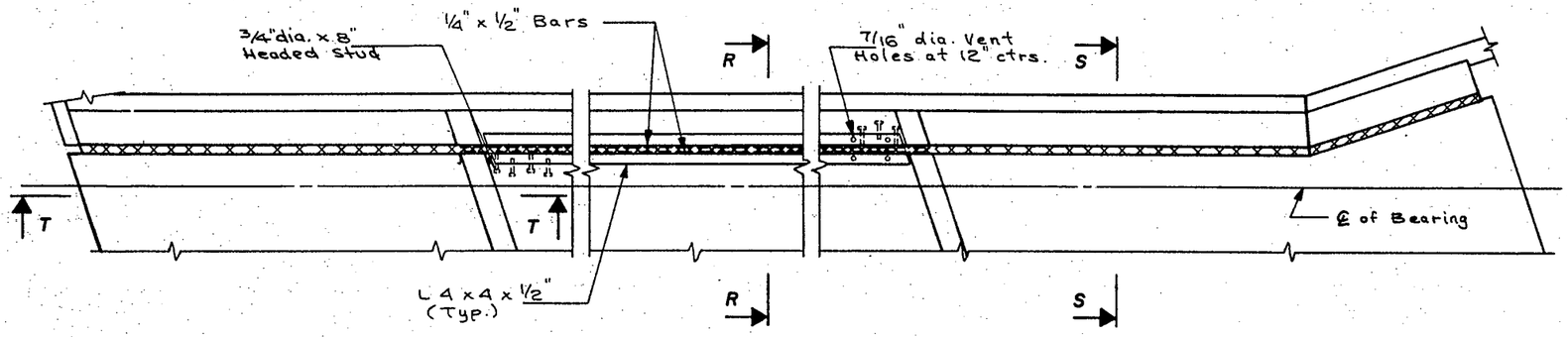
DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY: RPL	BY: KRL	BY: LEN	BY: RPL

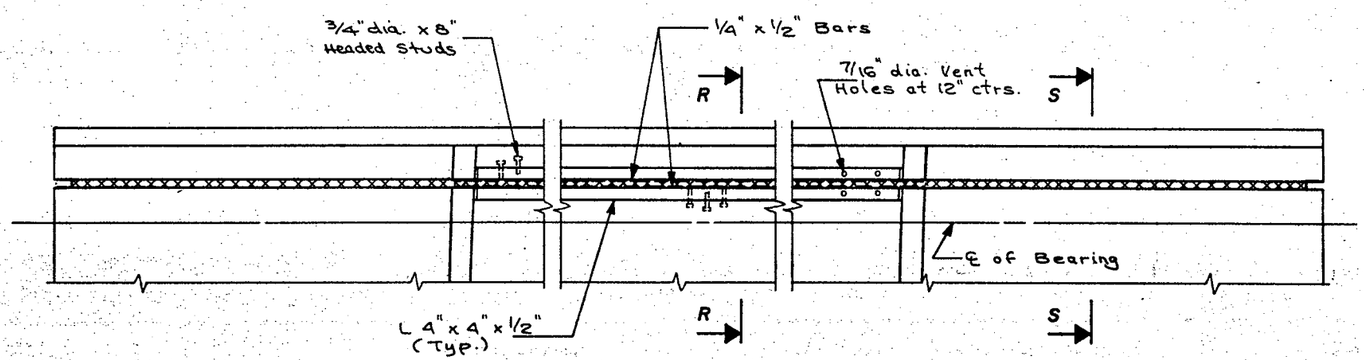
PROJECT NUMBER 12906.1

607	G-R-I-1(82)	WILL	64	15
SEC. NO. DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

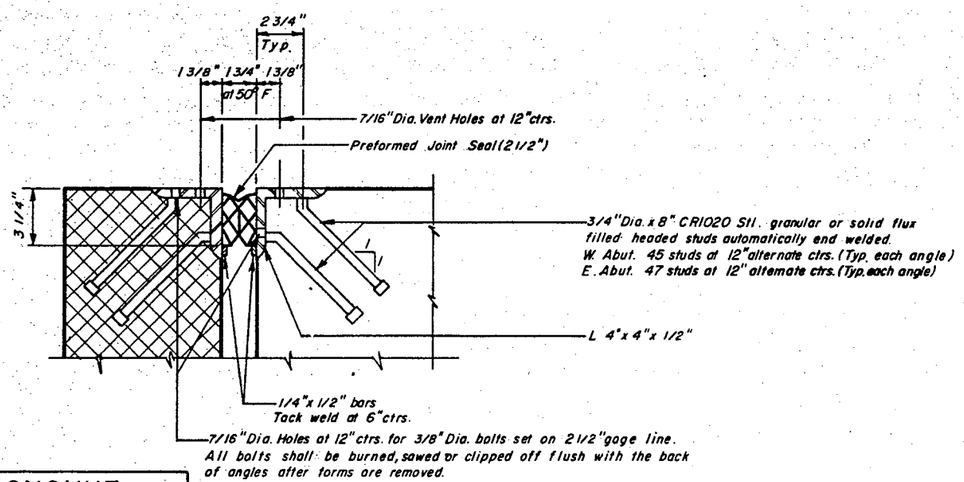
SHEET NO 9
45 SHEETS



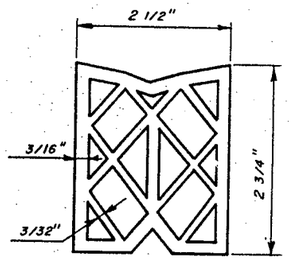
PLAN OF EXPANSION JOINT AT EAST ABUTMENT



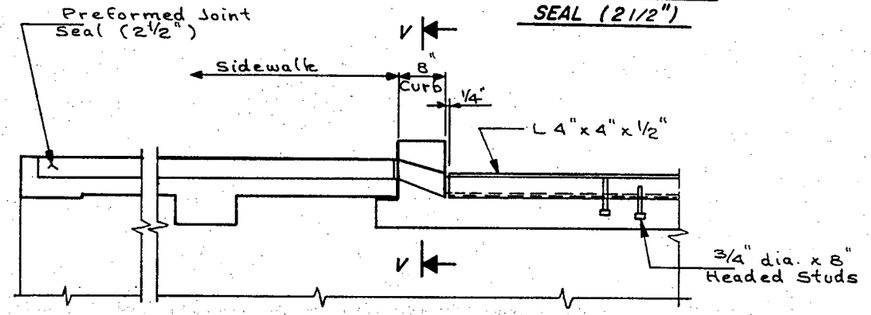
PLAN OF EXPANSION JOINT AT WEST ABUTMENT



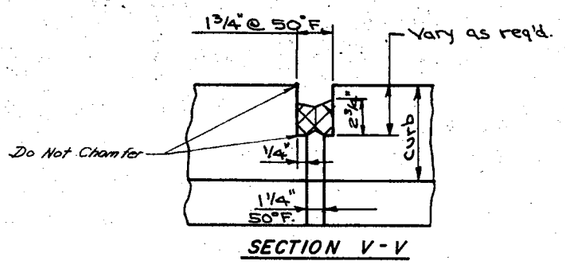
SECTION R



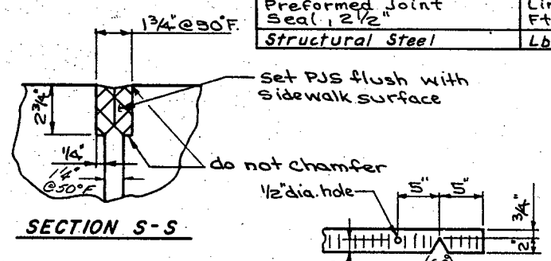
PREFORMED JOINT SEAL (2 1/2")



SECTION T



SECTION V-V



SECTION S-S

SEAL CUT-OUT

BILL OF MATERIALS

Item	Unit	Quantity
Preformed Joint Seal, 2 1/2"	Lin. Ft.	144
Structural Steel	Lbs.	2,540

DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY APL	BY KRL	BY LEN	BY RPL
PROJECT NUMBER 12906.1			

DONOHUE
ENGINEERS & ARCHITECTS

CROSS HATCHED AREA TO BE POURED AFTER SUPERSTRUCTURE FALSE WORK HAS BEEN REMOVED. QUANTITY OF CLASS X CONCRETE INCLUDED WITH SUPERSTRUCTURE.

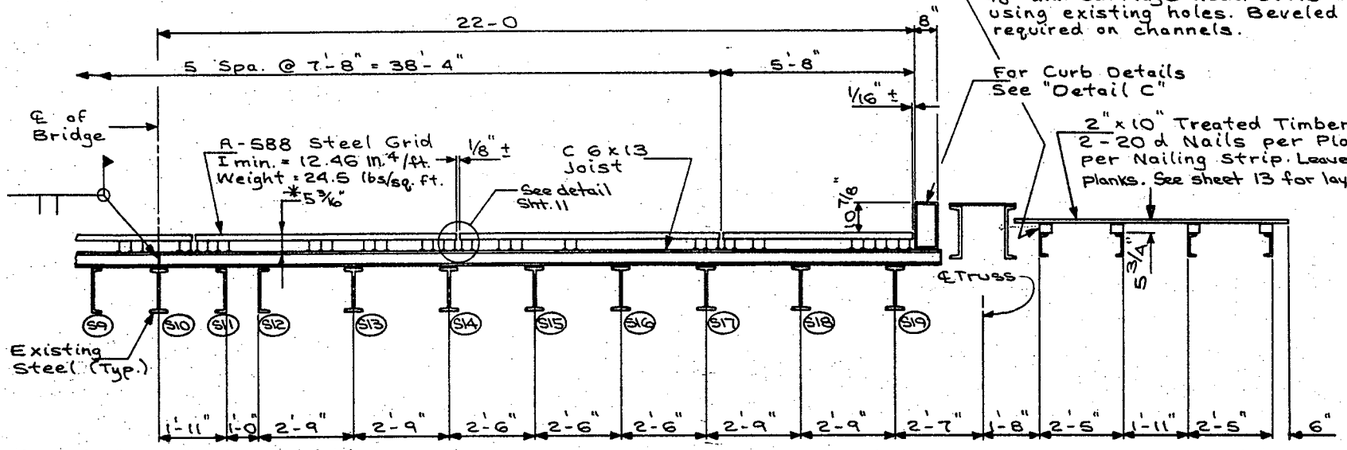
REVISIONS	
NAME	DATE

EXPANSION JOINT

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

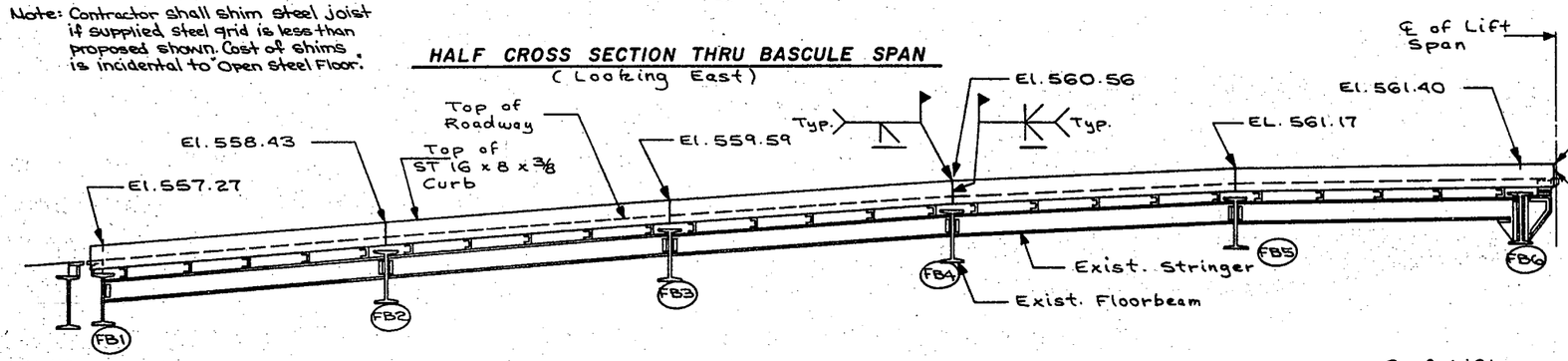
FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	16
FED. ROAD DIST. NO. 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 10
45 SHEETS

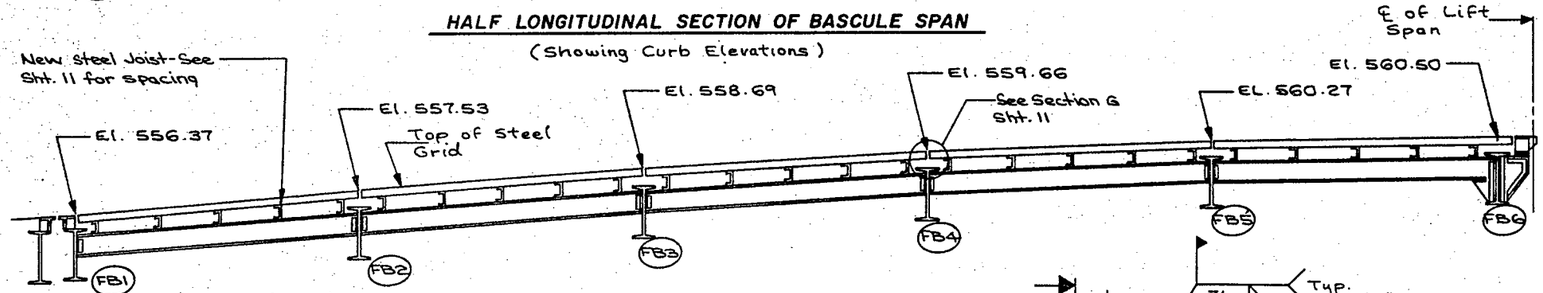


Note: Contractor shall shim steel joist if supplied steel grid is less than proposed shown. Cost of shims is incidental to "Open steel Floor".

HALF CROSS SECTION THRU BASCULE SPAN
(Looking East)

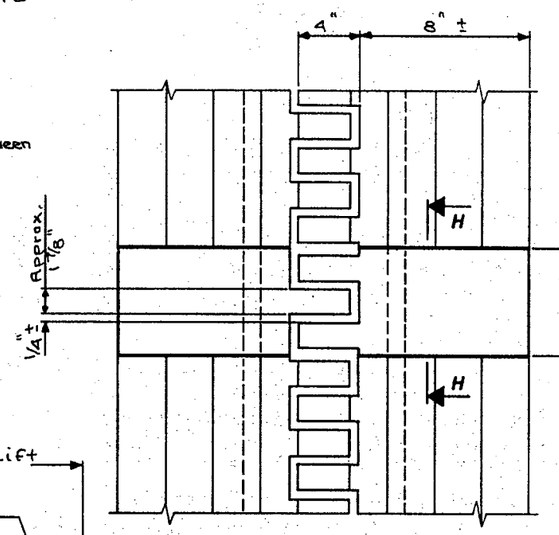


HALF LONGITUDINAL SECTION OF BASCULE SPAN
(Showing Curb Elevations)

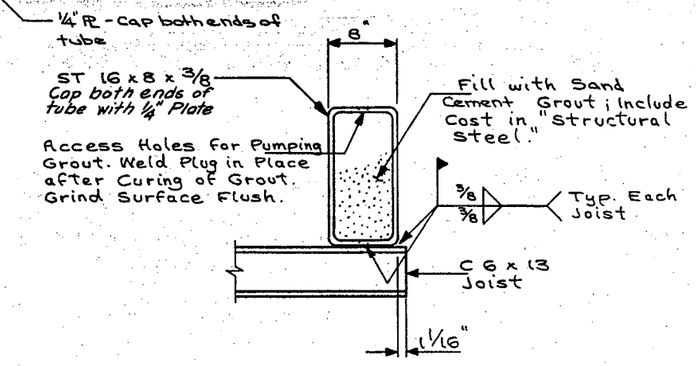


Note: See Special Provisions for Salvage of steel grid and removal of steel. Existing steel joist and shims are welded to Stringers. Weld shall be flame cut or Sheared off and the surface ground smooth.

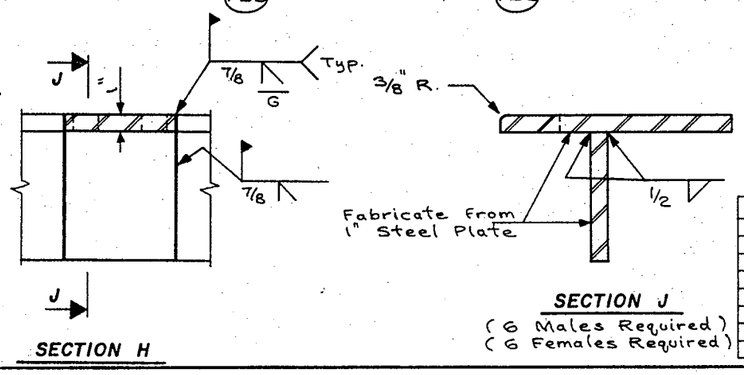
HALF LONGITUDINAL SECTION OF BASCULE SPAN
(Showing Top of Grid Elevations)



PLAN AT FINGER JOINT



DETAIL C



SECTION H

SECTION J
(6 Males Required)
(6 Females Required)

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY: RPL	DESIGN CHK'D BY: KRL	DRAWN BY: LEN	CHECKED BY: RPL
PROJECT NUMBER 12906.1			

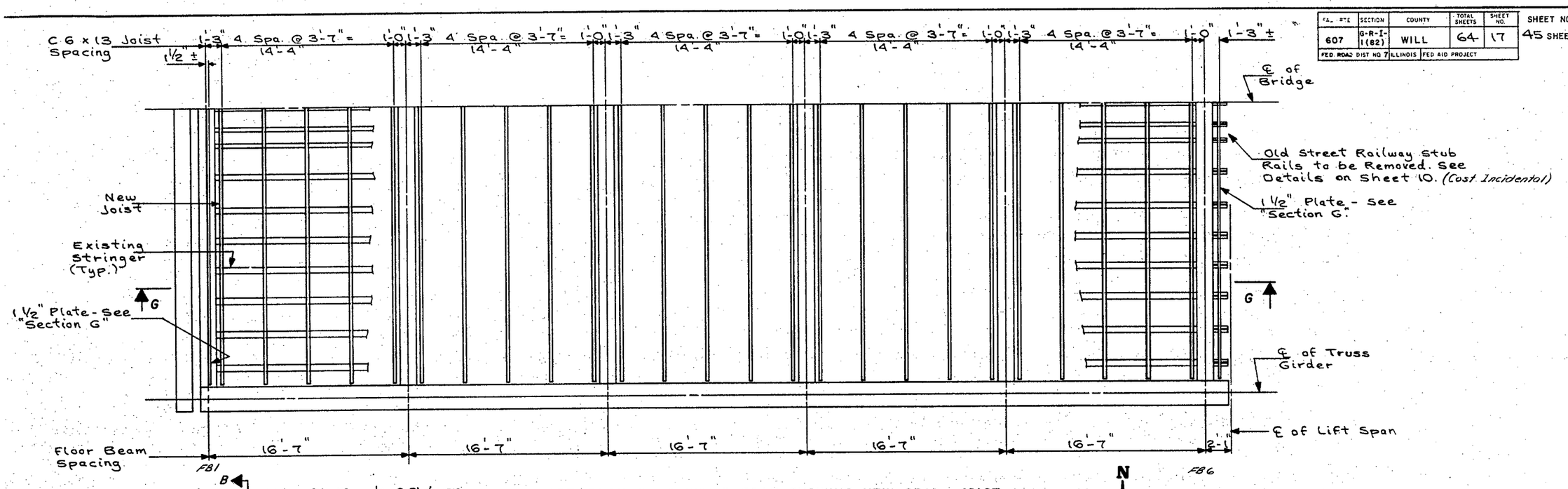
REVISIONS	
NAME	DATE

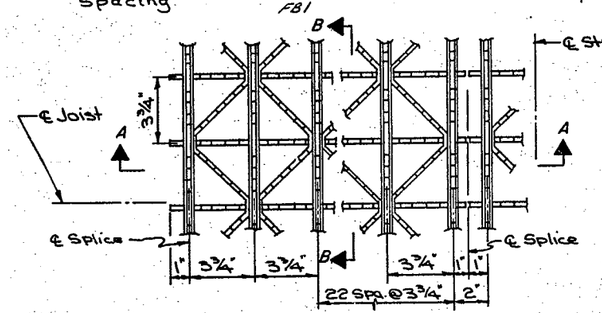
BASCULE FLOOR & SIDEWALK

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	17
FED. ROAD DIST NO. 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 11
45 SHEETS

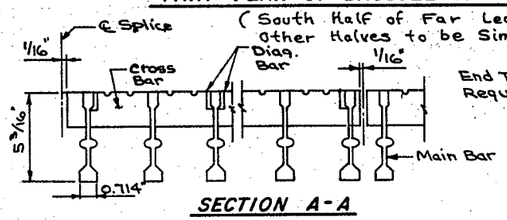




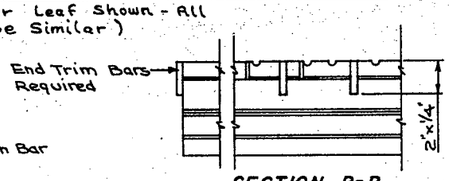
PLAN OF OPEN GRID FLOORING

PART PLAN OF BASCULE SPAN SHOWING NEW GRID JOIST

(South Half of Far Leaf Shown - All Other Halves to be Similar)



SECTION A-A



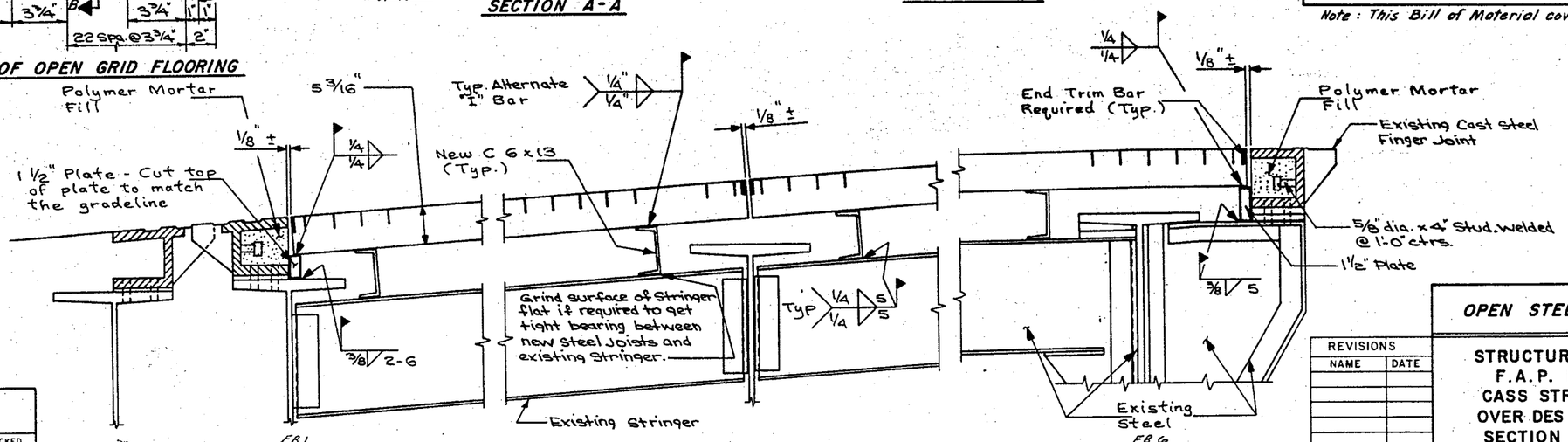
SECTION B-B

N

BILL OF MATERIAL

Item	Unit	Quantity
Open Steel Floor	Sq.Ft.	7,348
Structural Steel M-183	Lbs.	54,300
Treated Timber	FBM	10,200
Hardware	Lbs.	1,060
Polymer Mortar Repair	Cu.Ft.	12

Note : This Bill of Material covers Sheets 10 & 11.



SECTION G

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY: RPL	DESIGN CHK'D. BY: KRL	DRAWN BY: LEN	CHECKED BY: RPL
PROJECT NUMBER 12906.1			

REVISIONS	
NAME	DATE

OPEN STEEL FLOOR

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

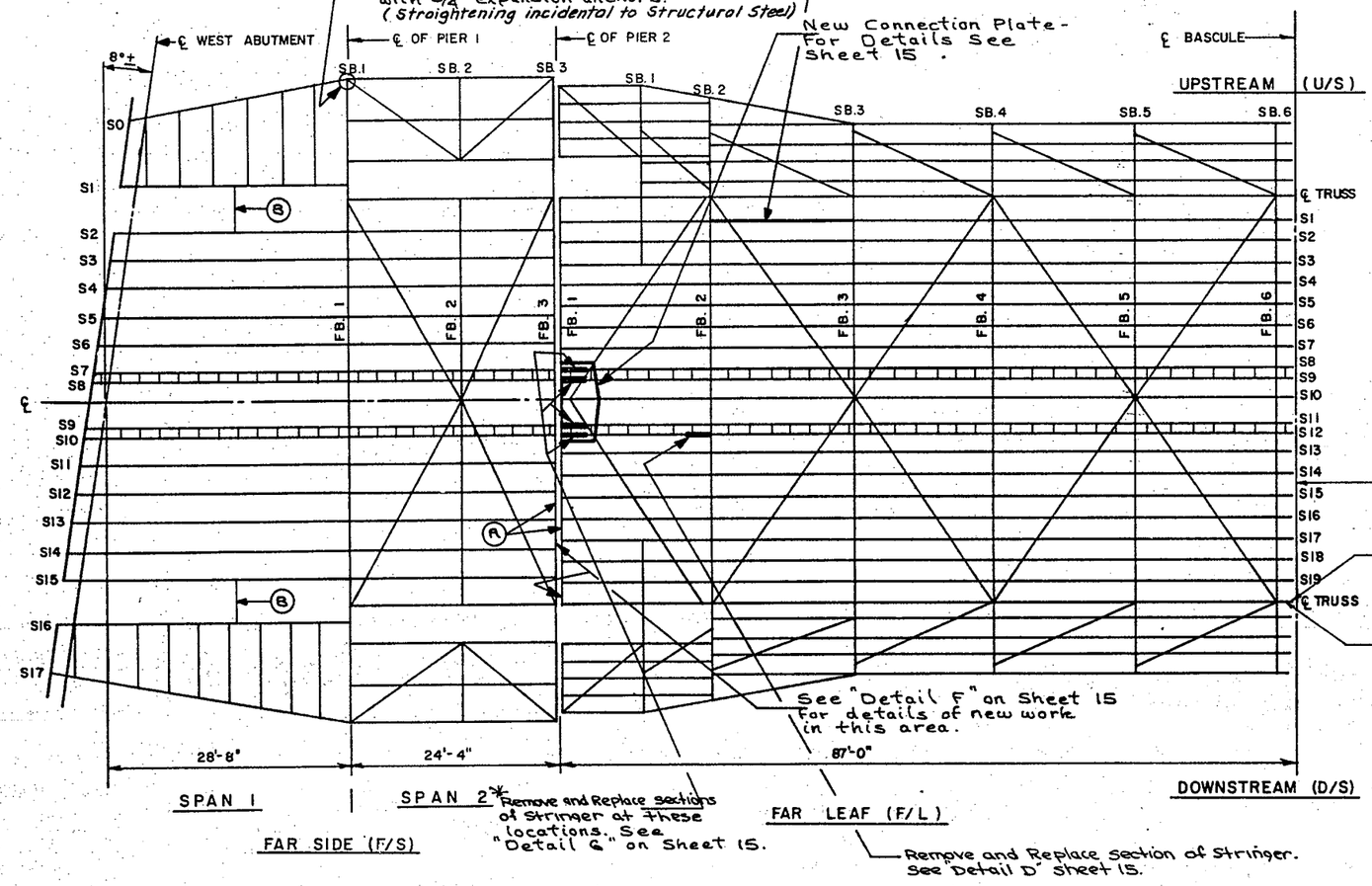
FAI. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	18
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 12
45 SHEETS

Sidewalk Bracket shall be repaired by straightening, replacing bottom angles and reanchoring to concrete with 3/4" expansion anchors. (Stroightening incidental to Structurol Steel)

Remove I 15 @ 42.9 and Connection Angles. Replace with S 15 x 42.9 - 16'-7" ± long with new connection angles 4 x 3 1/2" x 3/8". Do not Fabricate holes in top flange of the stringer.

New Connection Plate - For Details See Sheet 15 .



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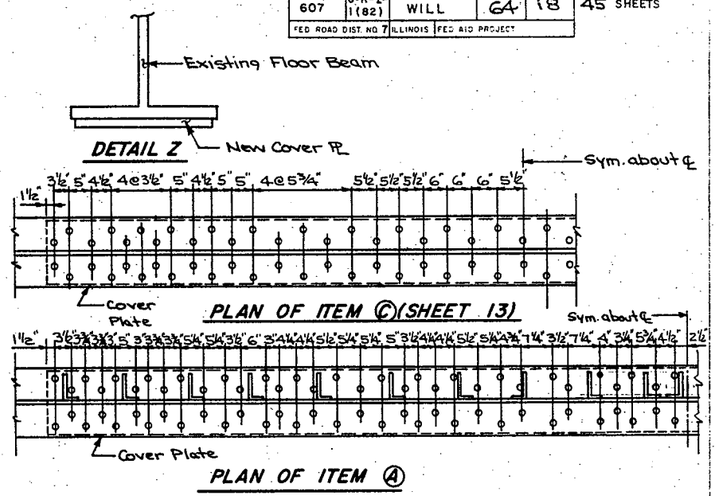


*Note: Temporary support of these stringers to be provided by leaving the existing steel joist in place until repairs are complete.

HALF PLAN

LEGEND

FB. ——— FLOOR BEAM
SB. ——— SIDEWALK BRACKET
S ——— STRINGER

Ⓐ Remove bottom flange cover plates and replace with new 7/8" x 16" x 24'-10" plates and 132 ± 7/8" dia. bolts. See detail Z above.
Ⓑ Do not repair diaphragm members. Pour new deck concrete to deflected position.

Rivet Replacement: Rivets that have one head completely rusted off flush with the surface and rivets selected by the Engineer that are severely rusted shall be replaced with the same diameter high strength bolts. The rivets shall be removed by shearing off any remaining head driving or drilling out the shank. Use of flame cutting, adjacent to material to be left in place, to facilitate the rivet removal is prohibited unless approved by the Engineer on a case by case basis. See Special Provisions for bid item "Rivet Replacement". The majority of rivet replacement is in the floor beams of the leaves on the side of the bottom flange facing the ℄ of Bascule.

ESTIMATED RIVET REPLACEMENT QUANTITIES

	Span 1	Span 2	F/L	N/L	Span 3	Span 4
3/4"	10	———	5	5	———	10
7/8"	10	5	270	270	5	10

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN	DESIGN CHKD.	DRAWN	CHECKED
BY APL	BY KRL	BY LEN	BY APL
PROJECT NUMBER 12906.1			

REVISIONS	
NAME	DATE

HALF FRAMING PLAN - F/S

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	19
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 13
45 SHEETS

N

DES PLAINES RIVER

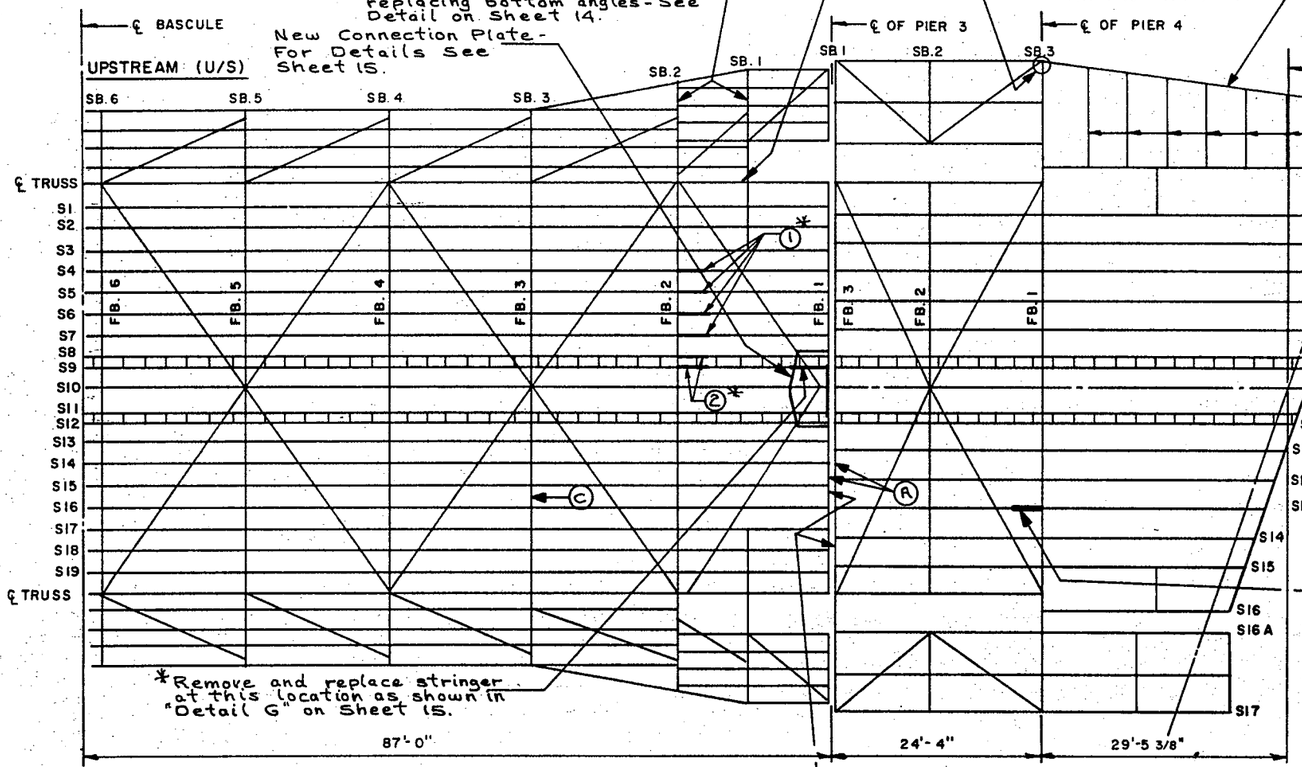
Remove Bottom Flange Angles. Straighten 3/8" Web Plate. Add 2 New Ls 3 1/2 x 5"x 1/2" - 7'-9" ± long Bolted at 3" centers ±. See detail y.

Sidewalk Bracket shall be repaired by straightening and replacing bottom angles - See Detail on Sheet 14.

New Connection Plate - For Details See Sheet 15.

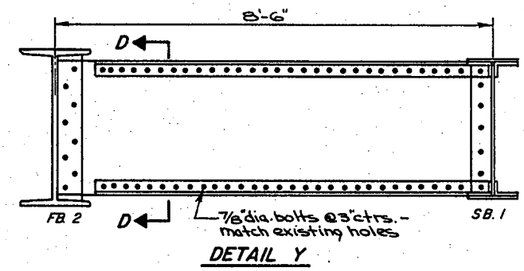
Straighten and Reanchor the Steel Column Support *Incidental to Structural Steel*

Replace Exist. 33" C.B @ 125# with W 33 x 130 - See Details on Sheet 14. *Remove and re-erect existing railing.*

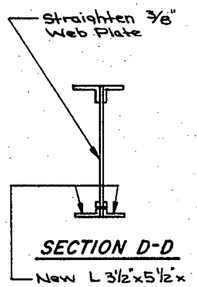


Remove and Re-erect these members. See Section Z Sheet 14. Incidental to Structural Steel.

Straighten stringer S1 back to its original position. (Existing 6"± out of plumb) See Special Provisions. Near leaf should be left in down position during the heating and cooling process to avoid forces being transmitted by the anchor backstay.



DETAIL Y



SECTION D-D

New L 3 1/2" x 5 1/2" x 7'-9"

Remove and Replace Section of Stringer. See Detail E Sheet 15. Note: No horizontal web plate at this location.

*Remove and replace stringer at this location as shown in "Detail G" on Sheet 15.

See "Detail F" on Sheet 15. for details of new work in this area.

① Remove and Replace Section of Stringer. See detail E sheet 15.
② Remove and Replace Section of Stringer. See detail D sheet 15.

* Note: Temporary support of these stringers to be provided by leaving the existing steel joist in place until repairs are complete.

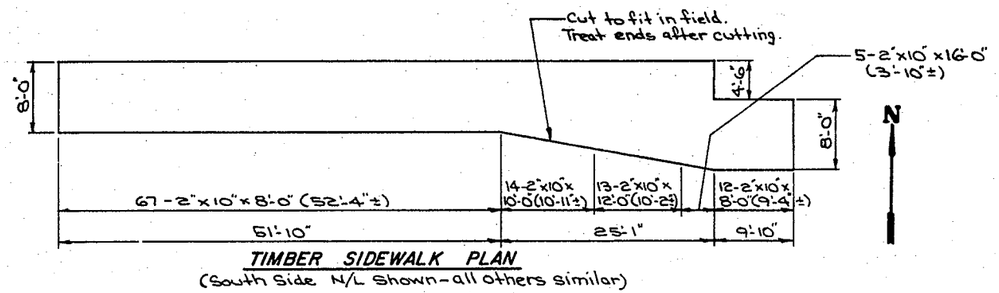
LEGEND

F.B. ——— FLOOR BEAM
S.B. ——— SIDEWALK BRACKET
S. ——— STRINGER

HALF PLAN

Ⓐ Remove bottom flange cover plate and replace with new 7/8" x 16" x 24'-10" plate and 132 ± 7/8" dia. bolts. See detail Z Sheet 12
Ⓒ Remove bottom flange cover plate and replace with new 7/8" x 16" x 18'-6" plate and 92 ± 7/8" dia. bolts. See detail Z Sheet 12.

Note: See Sheet 12 For "Rivet Replacement" note.



TIMBER SIDEWALK PLAN
(South Side N/L Shown - all others similar)

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY APL	DESIGN CHK'D BY KRL	DRAWN BY LEN	CHECKED BY APL
PROJECT NUMBER 12906.1			

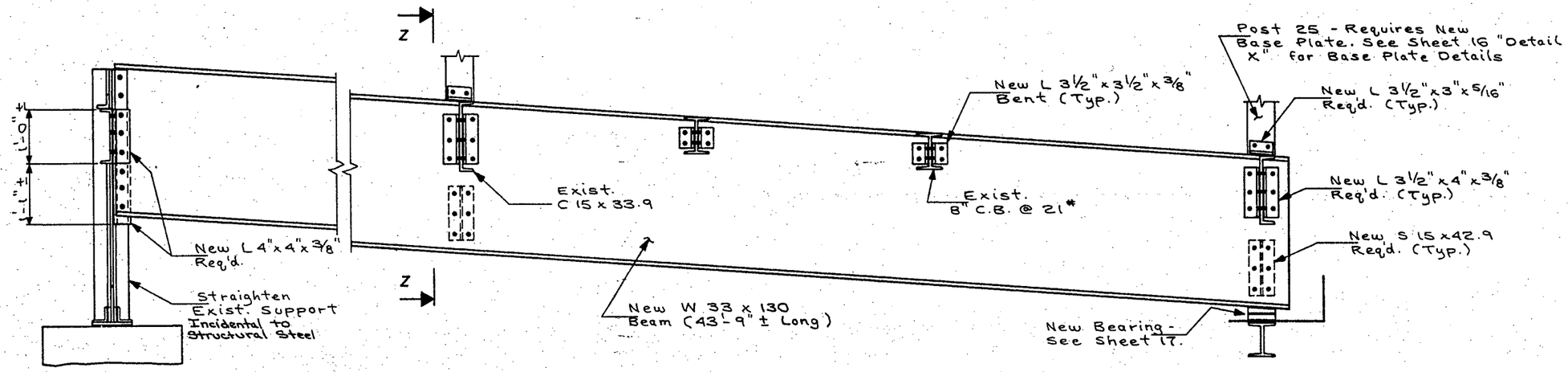
REVISIONS	
NAME	DATE

HALF FRAMING PLAN - N/S

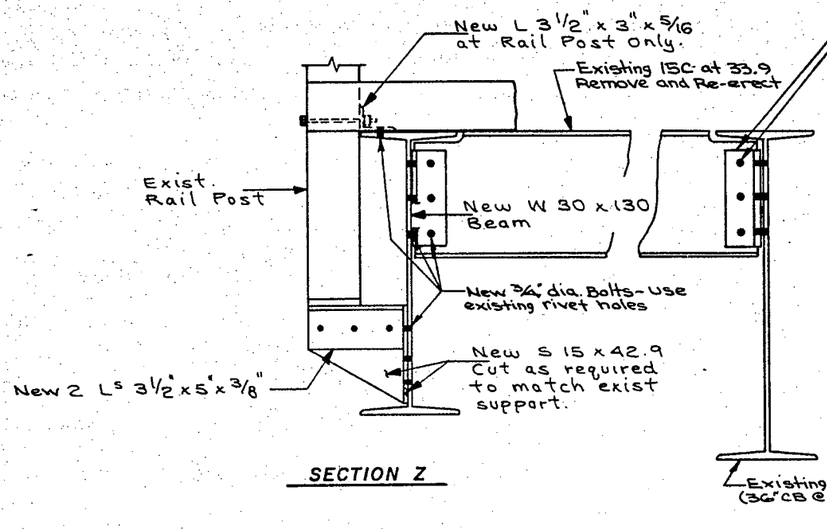
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	20
FED. ROAD DIST. NO. 7	ILLINOIS	FED AID PROJECT		

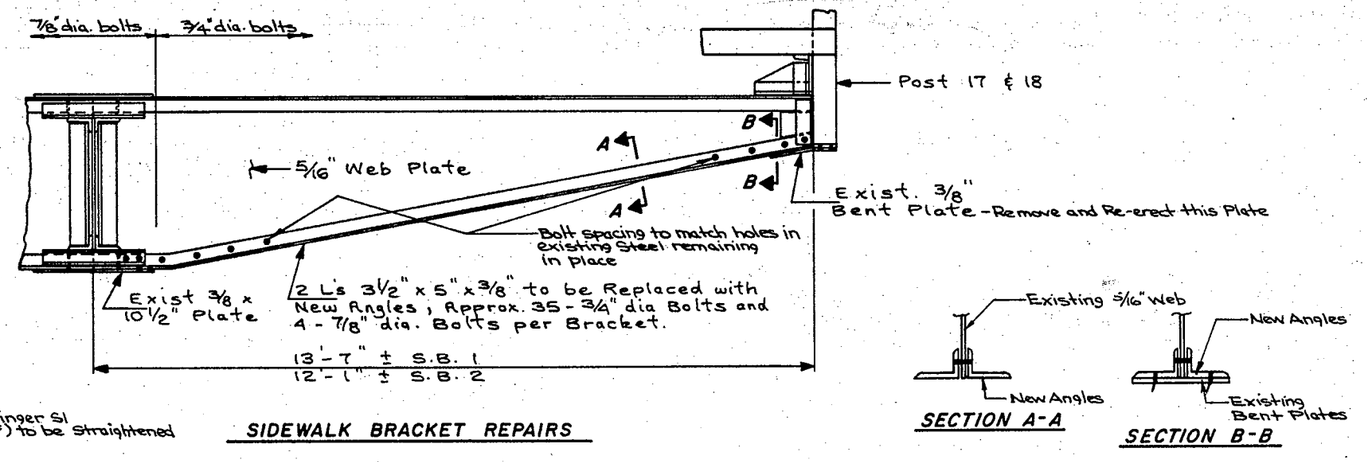
SHEET NO. 14
45 SHEETS



ELEVATION OF SIDEWALK STRINGER
(Looking North)



SECTION Z



SIDEWALK BRACKET REPAIRS

SECTION A-A **SECTION B-B**

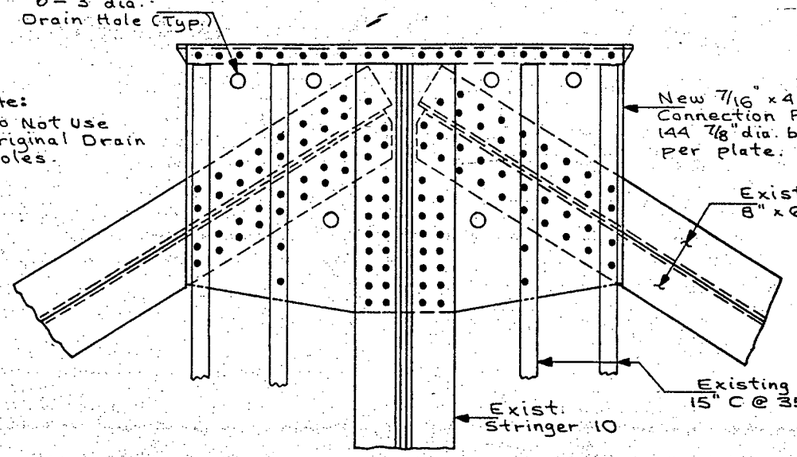
DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY APL	DESIGN CHK'D. BY KRL	DRAWN BY LEN	CHECKED BY APL
PROJECT NUMBER 12906.1			

REVISIONS	
NAME	DATE

STEEL REPAIR DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

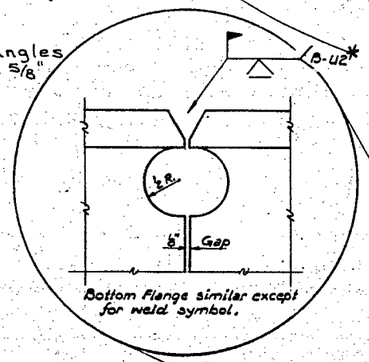
	SECTION		TOTAL SHEETS	SHEET NO.	SHEET NO. 15
607	G-R-I-1(82)	WILL	64	21	45 SHEETS
FED. ROAD DIST. NO. 7	ILLINOIS	FED. A. P. PROJECT			

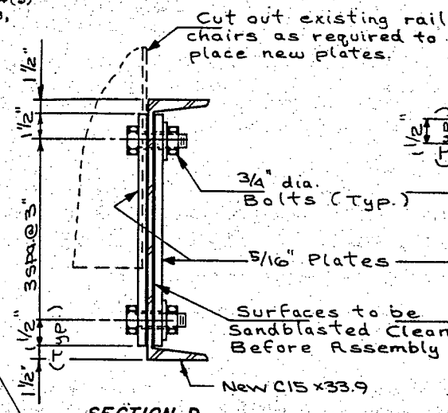


Note: Do Not Use Original Drain Holes.

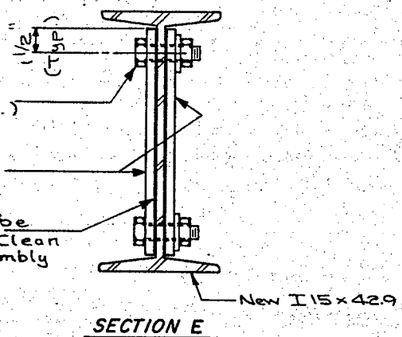
NEW CONNECTION PLATE DETAIL - 2 REQ'D.

*Welding shall comply with the requirements of Section 507.04(a) of the Standard Specifications, and shall be inspected Ultrasonically.

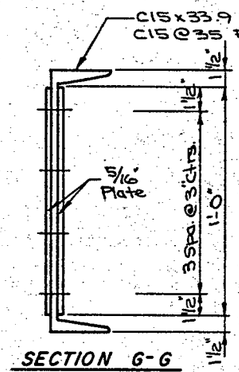




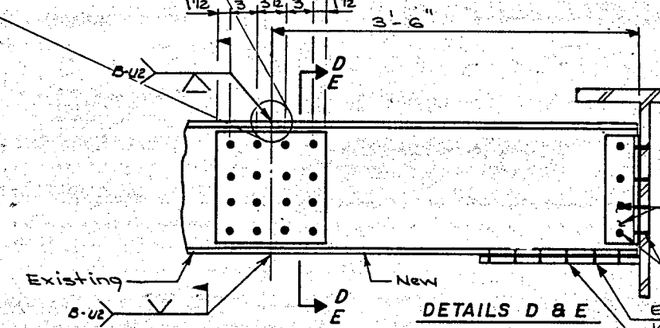
SECTION D
Stringers S8,S9



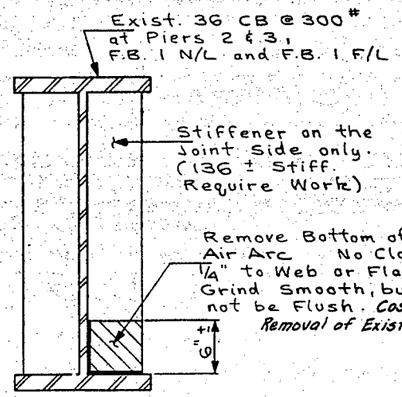
SECTION E
Stringers S4,S5,S6,S7



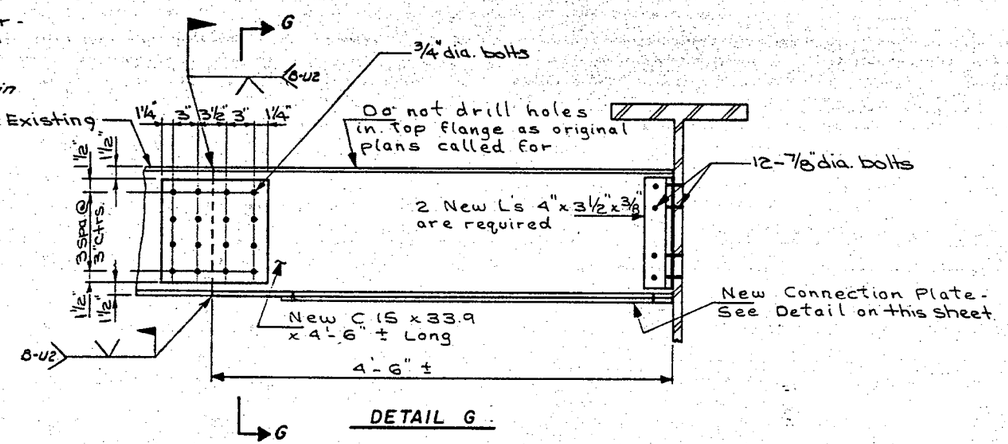
SECTION G-G



DETAILS D & E



DETAIL F



DETAIL G

BILL OF MATERIAL

Item	Unit	Quantity
Structural Steel M-183	Lbs.	15,230
Rivet Replacement, 3/4" dia.	Each	30
Rivet Replacement, 7/8" dia.	Each	570
Straightening Beam	Each	1
Removing and Re-erecting Existing Railing	Lin.Ft.	44

Note: This Bill of Material covers Sheets 12 - 15.

STEEL REPAIR DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

REVISIONS

NAME	DATE

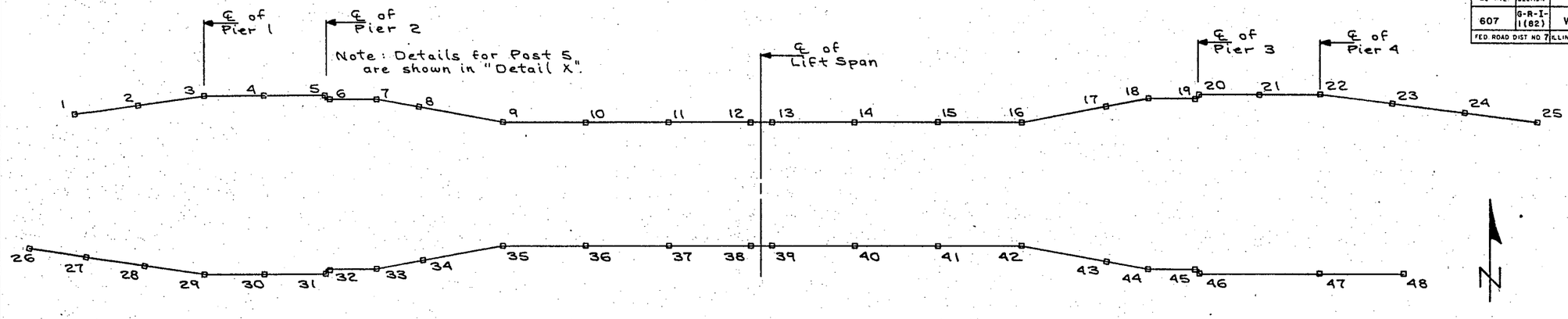
DONOHUE

RPL KRL LEN RPL
12906.1

Revised, 6-1-84

FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	22
FED. ROAD DIST NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 16
45 SHEETS



PLAN OF POST LAYOUT

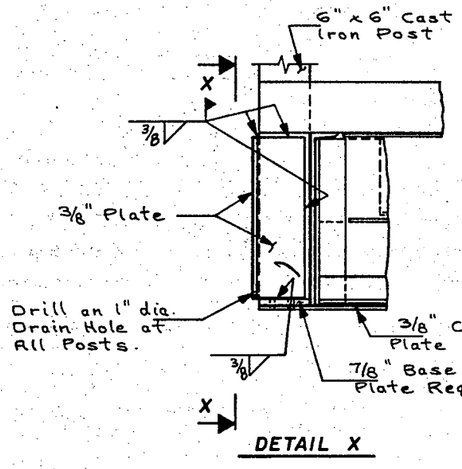
Notes: Posts 22, 23, 24 & 25; Remove and reinstall this section of railing on new brackets fabricated as part of stringer replacement. See sheet 13.

Post 24 & 25; Add a new base plate using "Detail X"

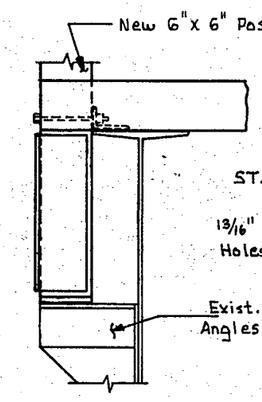
Drill an 1" dia. hole at the bottom of each post.

Cost Included in Bid Item *Structural Steel*.

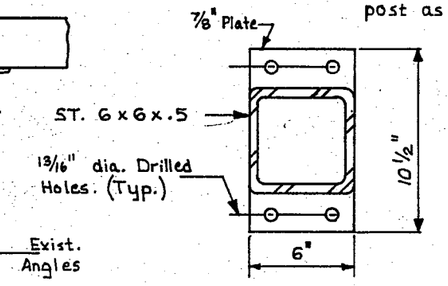
Posts 26 & 27, remove and replace existing post *with new* post as shown in "Detail R." Attachment as shown in "detail Y."



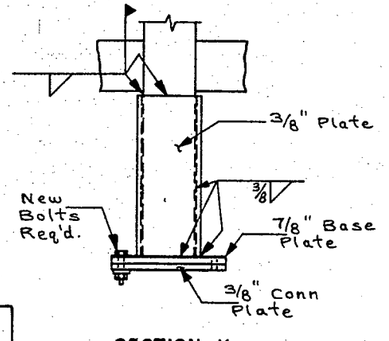
DETAIL X



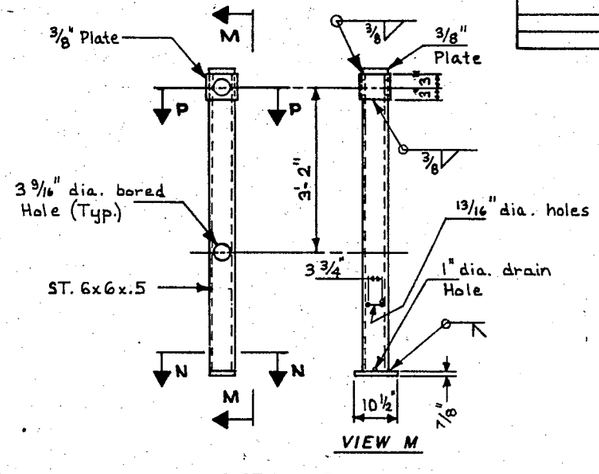
DETAIL Y



SECTION N

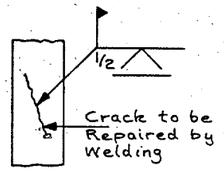


SECTION X



VIEW M

DETAIL R



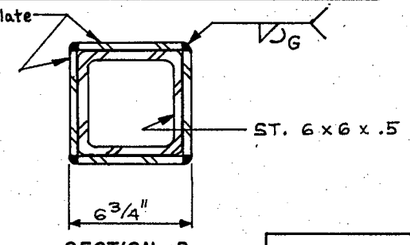
WELD DETAIL

Preparation and welding included in "RAIL POST REPAIR."

See special provisions for welding of Cast iron and for Rail Post Repair.

BILL OF MATERIAL

ITEM		UNIT	QUANTITY
Structural Steel	M-183	Lbs.	600
Rail Post Repair		Each	14



SECTION P

WELD TABLE

Post No.	Length of Vert. Weld
7	6"
8	9"
10	12"
14	9"
16	9"
18	12"
19	6"
34	6"
35	12"
36	6"
37	6"
42	6"
43	12"
44	12"

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY: APL	DESIGN CHK'D. BY: KRL	DRAWN BY: LEN	CHECKED BY: APL
PROJECT NUMBER 12906.1			

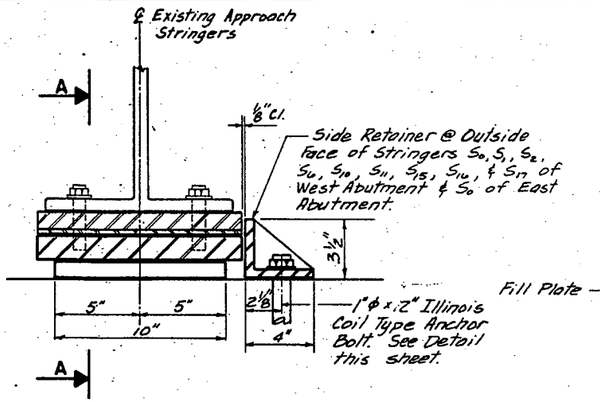
REVISIONS	
NAME	DATE

RAILING REPAIRS

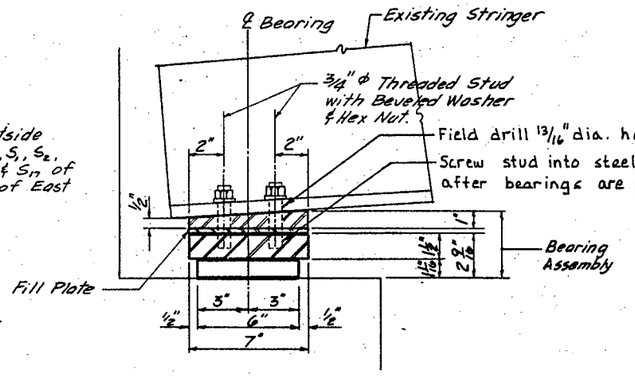
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

I.L. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	23
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

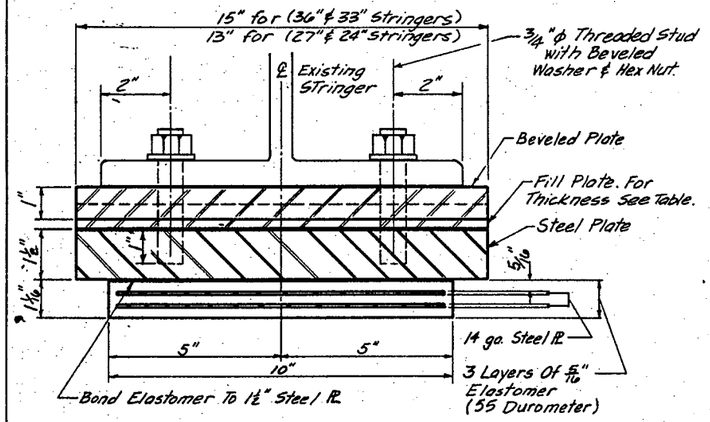
SHEET NO. 17
45 SHEETS



TYPICAL ELEVATION ABUTMENT BEARINGS

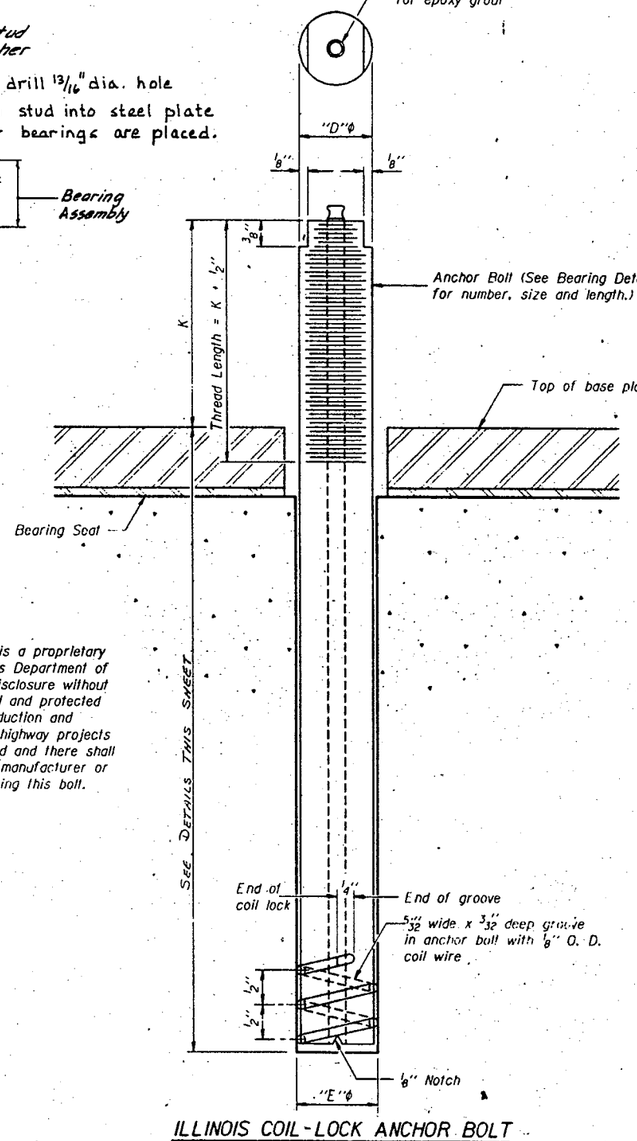


SECTION A-A



BEARING ASSEMBLY

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

NOTES

Bearing heights shall be field verified. Heights of existing bearings shall be measured and recorded before jacking stringers. Stringers may be jacked a maximum of 1/2 inch. The actual amount raised shall be recorded at each bearing. The new bearing seat elevations shall be checked by measuring the height between seat and bottom of stringer at the center line of bearing and comparing it with the proposed bearing height plus raised dimension. If additional shim plates are needed they shall be incidental to ELASTOMERIC BEARING ASSEMBLY, TYPE I.

All bevel plates, fill plates, bearing plates, and side retainer assemblies shall be M222 (Grade 50) steel and included in the bid item "ELASTOMERIC BEARING ASSEMBLY, TYPE I." Removing existing bearing included in Removing Existing Steel Lifting and Supporting Stringers included in Jacking Existing Structure. See page (30) for suggested detail.

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".

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 1 and of a Class suitable for the temperature at installation.

INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

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

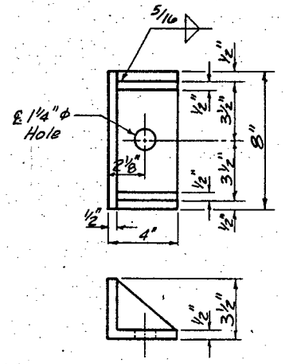
ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes in accordance with the manufacturer's recommendations and procedures.

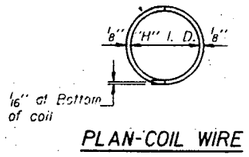
The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:

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.

FILL PLATE THICKNESS				
ABUT.	STRINGER	STRINGER DEPTH	PROPOSED BEARING SEAT EL.	FILL PLATE THICKNESS
West	S_0	33"	549.76	—
"	S_1	33"	549.76	—
"	S_2	33"	549.68	1/8"
"	S_3	24"	549.68	1/8"
"	S_4	24"	549.68	1/8"
"	S_5	24"	549.68	—
"	S_6	24"	549.68	—
"	S_7	27"	548.86	1/4"
"	S_8	27"	548.86	1/4"
"	S_9	27"	548.86	1/8"
"	S_{10}	27"	548.86	—
"	S_{11}	24"	549.58	5/8"
"	S_{12}	24"	549.58	1/2"
"	S_{13}	24"	549.58	1/4"
"	S_{14}	24"	549.58	—
"	S_{15}	33"	549.58	—
"	S_{16}	36"	548.95	—
"	S_{17}	33"	548.95	2"
East	S_0	33"	548.53	—



SIDE RETAINER



PLAN-COIL WIRE

BILL OF MATERIAL - BEARINGS

Item	Unit	Quantity
Elastomeric Bearing assem., Type I	Each	18
Structural Steel	lbs.	30

REVISIONS	
NAME	DATE

BEARING DETAILS

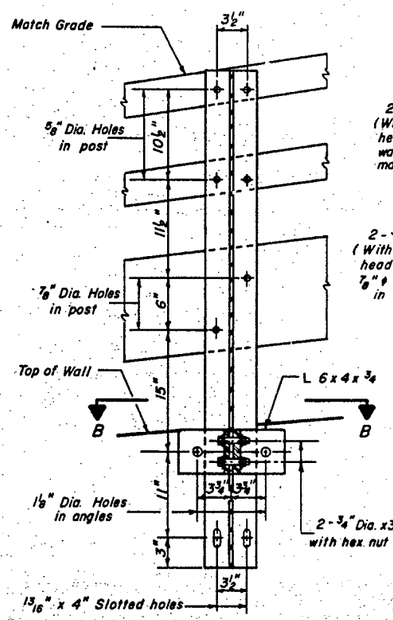
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

DONOHUE
ENGINEERS & ARCHITECTS

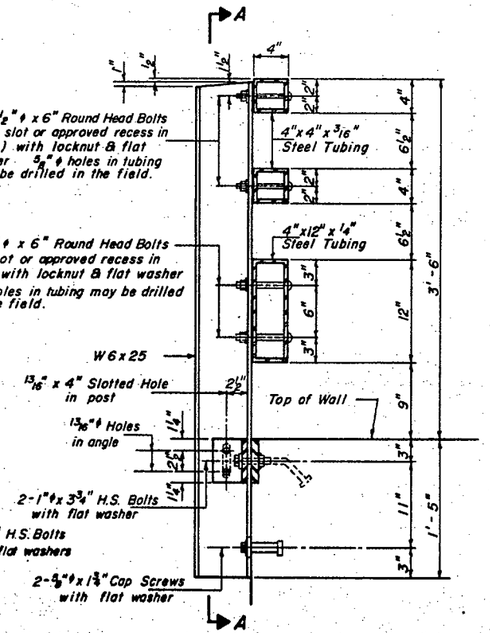
DESIGN BY: KRL	DESIGN CHK'D. BY: APL	DRAWN BY: KRL	CHECKED BY: APL
PROJECT NUMBER 12906.1			

FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	24
FED ROAD DIST NO 7	ILLINOIS	FED AID PROJECT		

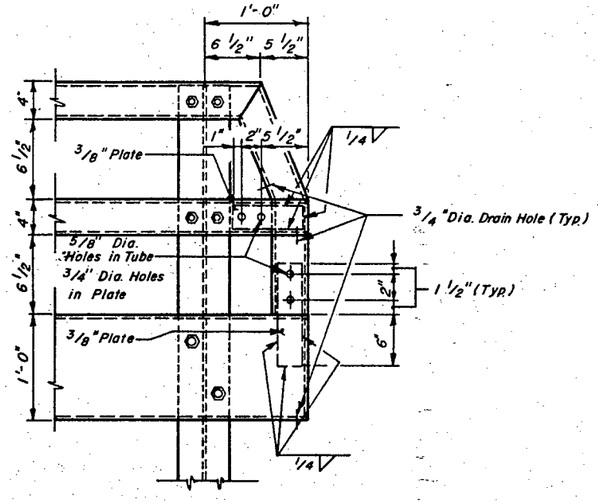
SHEET NO. 18
45 SHEETS

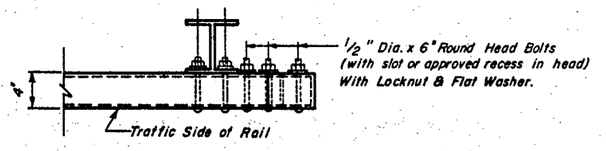


SECTION A-A



SECTION AT RAIL POST





END OF RAIL DETAILS

NOTES

Hollow structural steel tubing shall conform to the requirements of A.S.T.M. designation A-500 Grade B Structural Steel Tubing.

All other steel shapes and plates shall conform to the requirements of AASHTO M-183 except posts and angles shall conform to AASHTO M-223, Grade 50.

Bolts, cap screws, and nuts shall conform to the requirement of A.S.T.M. designation A-307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M-164.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized in accordance with AASHTO M-232.

All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication in accordance with AASHTO M-111 and ASTM A-385. Galvanized rail shall not be painted.

Railing shall be in accordance with Section 508 of the Standard Specifications, except as noted, and shall be paid for at the contract unit price per lineal foot for STEEL RAILING, TYPE TP-1.

All field drilled holes shall be coated with an approved zinc rich paint before erection.

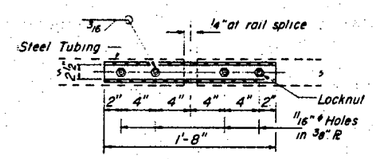
The lower portion of the post flange in contact with concrete shall receive two coats of asphalt paint conforming to Section 714.08 Type B or place ⅛" fabric bearing pad between the post and concrete.

The ¾"ϕ high strength bolts used to connect the 6 x 4 x ¾ angles to the post shall be tightened in accordance with Article 507.04(g)(3) of the Standard Specifications. The 1"ϕ high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional ⅛ turn. The ⅝"ϕ cap screws in bottom of posts shall be tightened to a snug fit only.

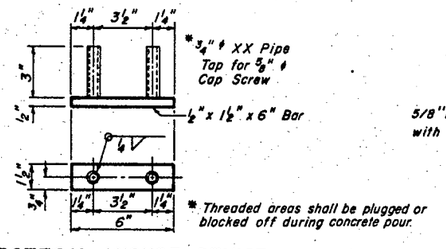
Posts shall be vertical and railing shall be parallel to the grade line.

Railing shall be painted. Special primer required.

See sheets 31 & 39 for location of steel railing.

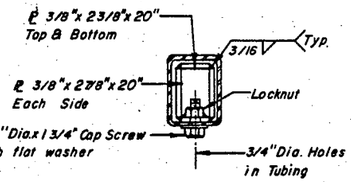


PLAN - BOTT. SPLICE PL. TYPICAL

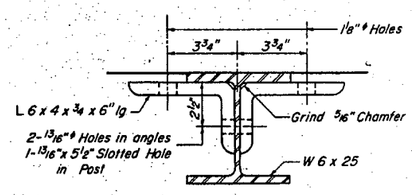


* Threaded areas shall be plugged or blocked off during concrete pour.

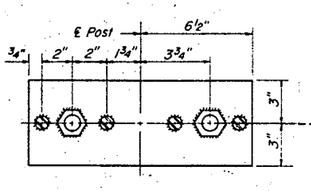
BOTTOM ANCHOR DEVICE

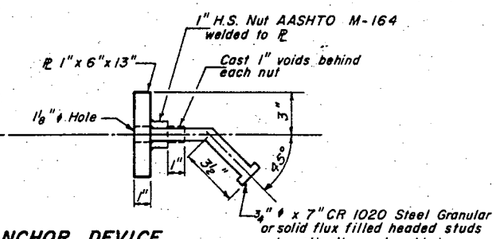


SECTION AT RAIL SPLICE
(TOP RAILS)

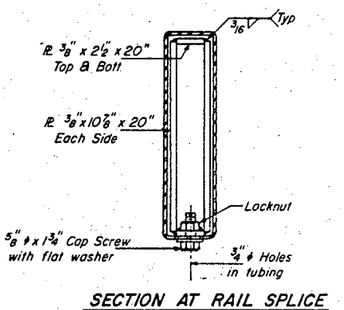


SECTION B-B





TOP ANCHOR DEVICE



SECTION AT RAIL SPLICE
(BOTTOM RAIL)

REVISIONS	
NAME	DATE

STEEL RAILING TYPE TP-1

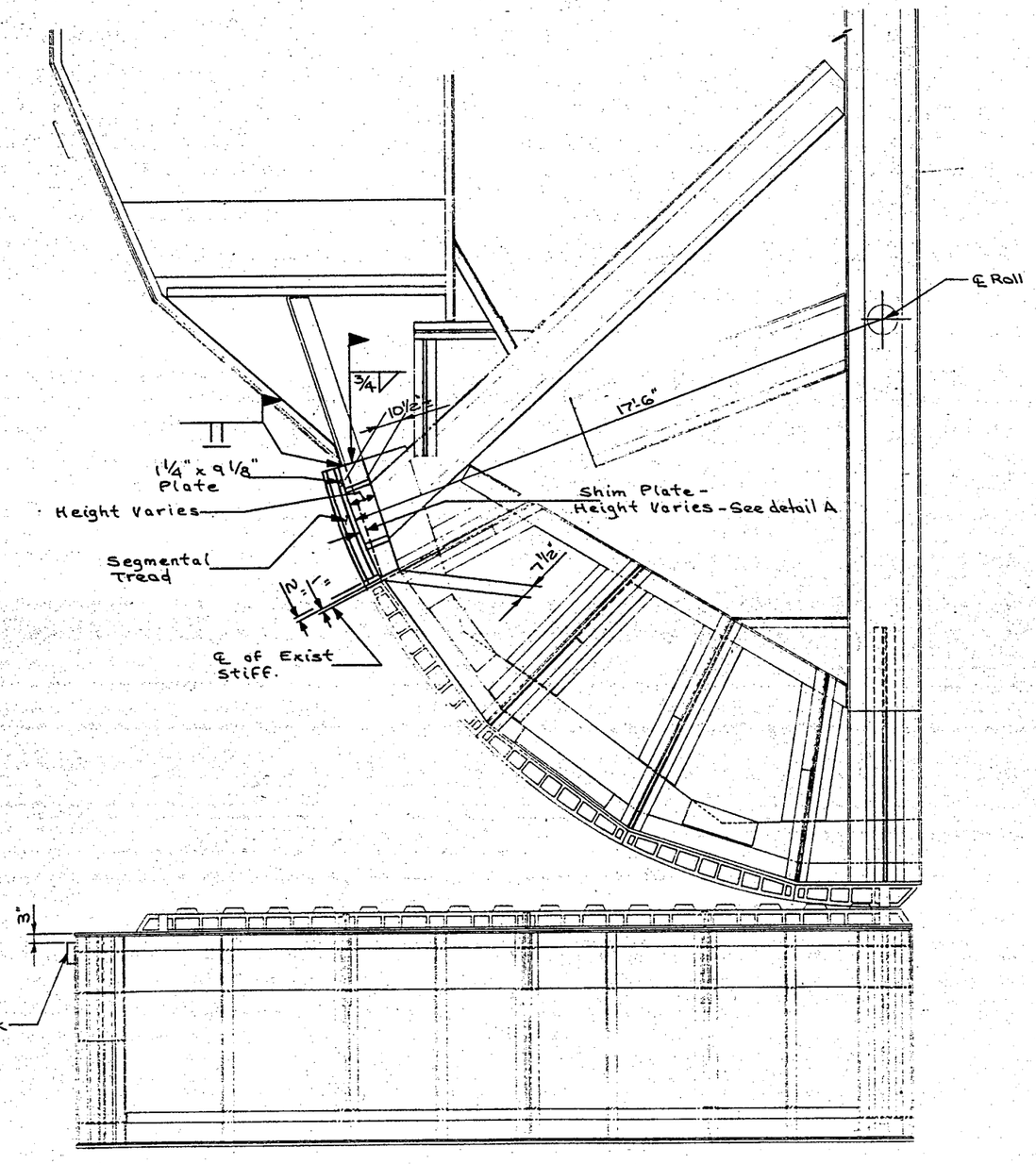
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN BY KRL	DESIGN CHK'D BY APL	DRAWN BY KRL	CHECKED BY APL

PROJECT NUMBER 12906.1

					SHEET NO 19
607	G-R-I-1(82)	WILL	64	25	45 SHEETS



TRACK REPAIR - STAGE I

NOTES

All steel for Track and Segmental Girder repair shall be AASHTO M-222 (ASTM A588). It shall be shop primed and field painted.

All bolts for Track and Segmental Girder repair shall be High Strength AASHTO M-253 (ASTM A490) bolts in friction-type connections.

Surfaces of Rolling Track and Pinion Rack must be parallel, square, level, and at the same elevations for all four tracks.

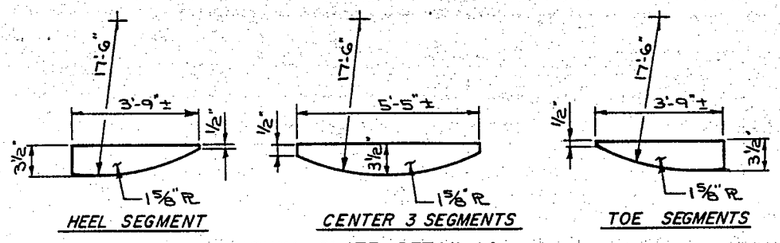
When the existing tread and Cover plates are removed the insides of the Track and Segmental Girders shall be cleaned by Method I and painted. With one (1) coat of Red Lead Primer and two (2) field coat of Aluminum Paint.

See sheet 9 for construction staging.

All shop welds used in the Track and Segmental Girder repair shall be inspected using radiographic Ultrasonic and magnetic particle in accordance with Section 507.09(S)(S).

Open holes for bolts shall be as follows except as noted or shown otherwise:

7/8" dia. bolt — 15/16" dia. hole
1" dia. bolt — 1 1/16" dia. hole
1 1/8" dia. bolt — 1 3/16" dia. hole



HEEL SEGMENT — CENTER 3 SEGMENTS — TOE SEGMENTS

SHIM PLATE DETAIL A

DONOHUE

DESIGN APL · DRAWN KRL · CHECKED LEN · QUANTITIES APL

JOB NUMBER 12906.1

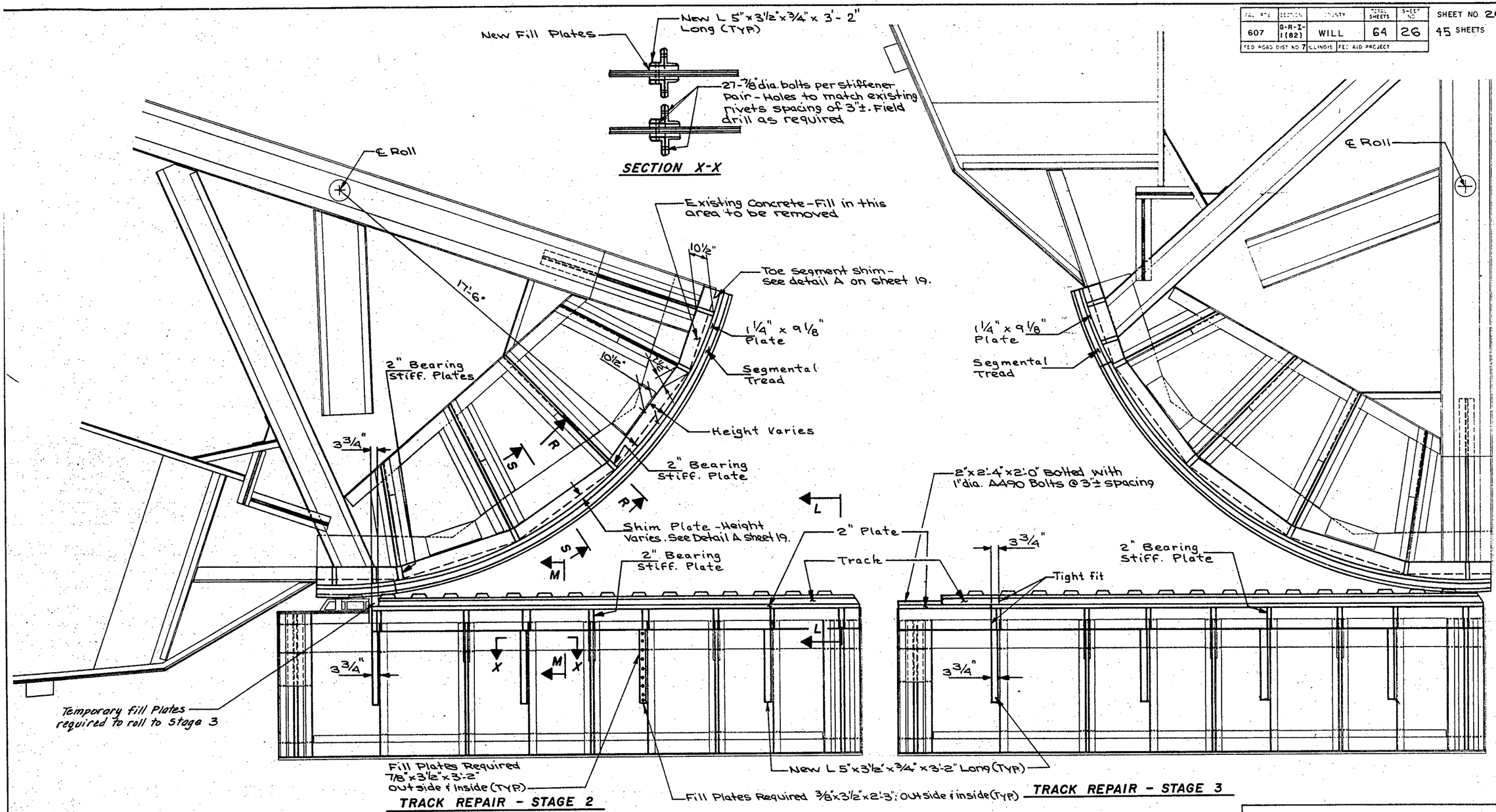
TRACK GIRDER STAGE I

REVISIONS	
NAME	DATE

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAI RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	26
FED ROAD DIST NO 7	ILLINOIS	FED AID PROJECT		

SHEET NO 20
45 SHEETS



Notes: For "Section L" See Sheet 21.
For "Section M" See Sheet 22.
For "Sections R & S" See Sheet 23.

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY: APL	DESIGN CHK'D. BY: KRL	DRAWN BY LEN	CHECKED BY APL
PROJECT NUMBER 12906.1			

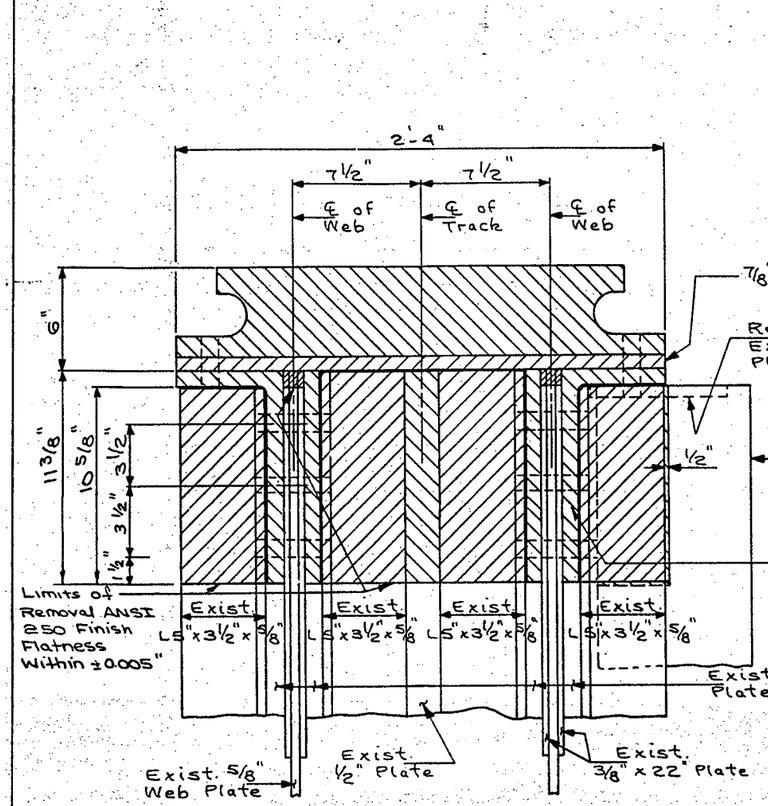
REVISIONS	
NAME	DATE

TRACK GIRDER STAGE 2 & 3

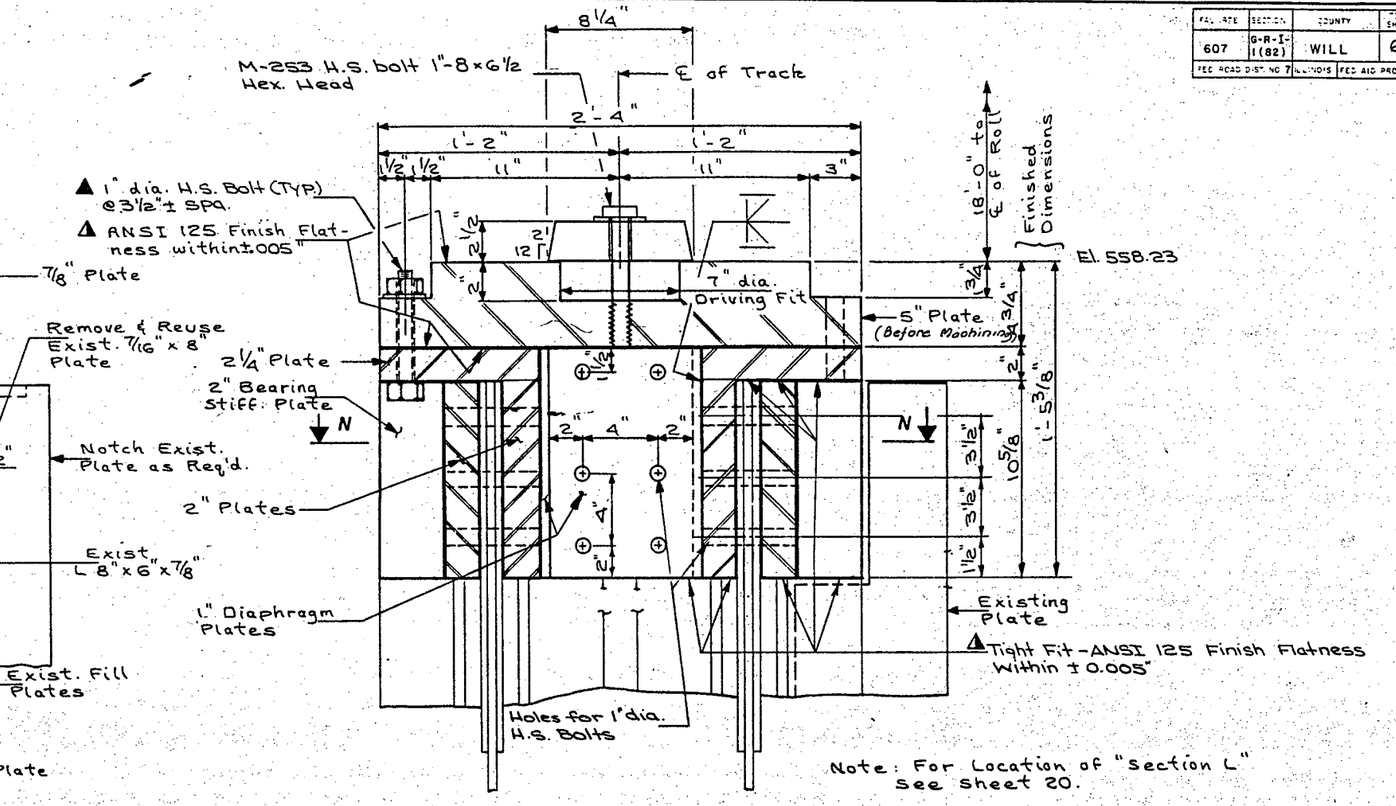
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAI. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	27
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 27 OF 45 SHEETS

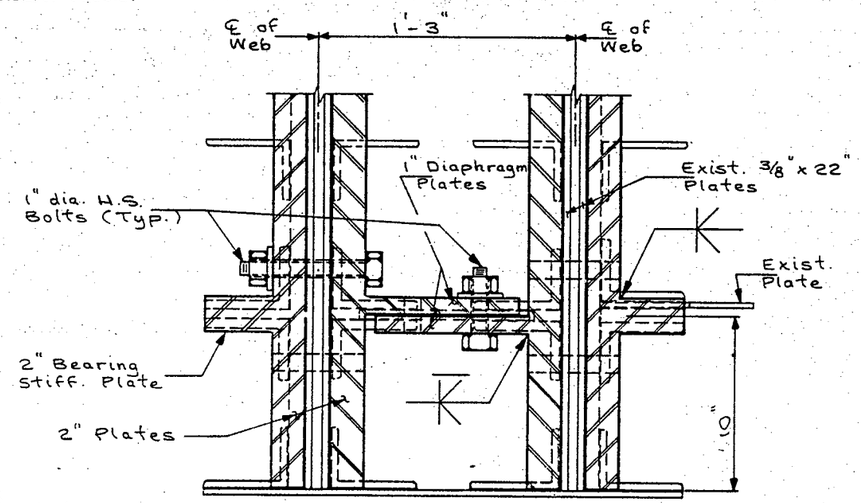


SECTION L
(Showing Removal of Exist. Track)



SECTION L

Note: For Location of "Section L" see Sheet 20.



SECTION N

▲ Adjust bolt spacing to avoid conflicts with bearing stiffener and web bolt location.

▲ These surfaces should not be shopfinished until field milling is complete and final thicknesses determined. If necessary these surfaces may have a final field milling to ensure the following tolerances:

from end to end and side to side of girder, flat within ± 0.005"; level within ± 0.010".

from upstream to downstream girders rolling surfaces elevation with ± 0.015" from N/s to F/s rolling surfaces elevation ± 0.060".

Note:
See special provisions for Removal of Existing Steel.

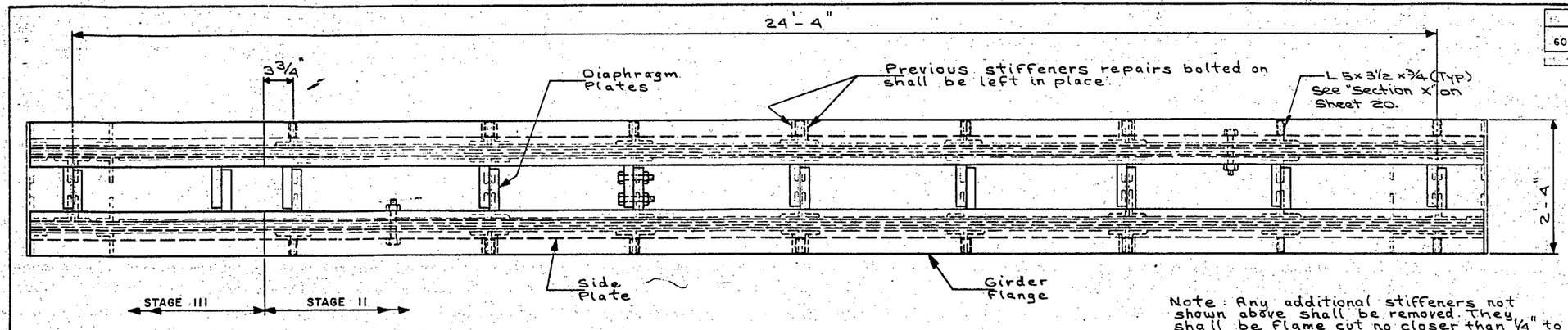
DONOHUE ENGINEERS & ARCHITECTS			
DESIGN	DESIGNED	DRAWN	CHECKED
BY RPL	BY KRL	BY LEN	BY RPL
PROJECT NUMBER 12906.1			

REVISIONS	
NAME	DATE

TRACK GIRDER DETAILS

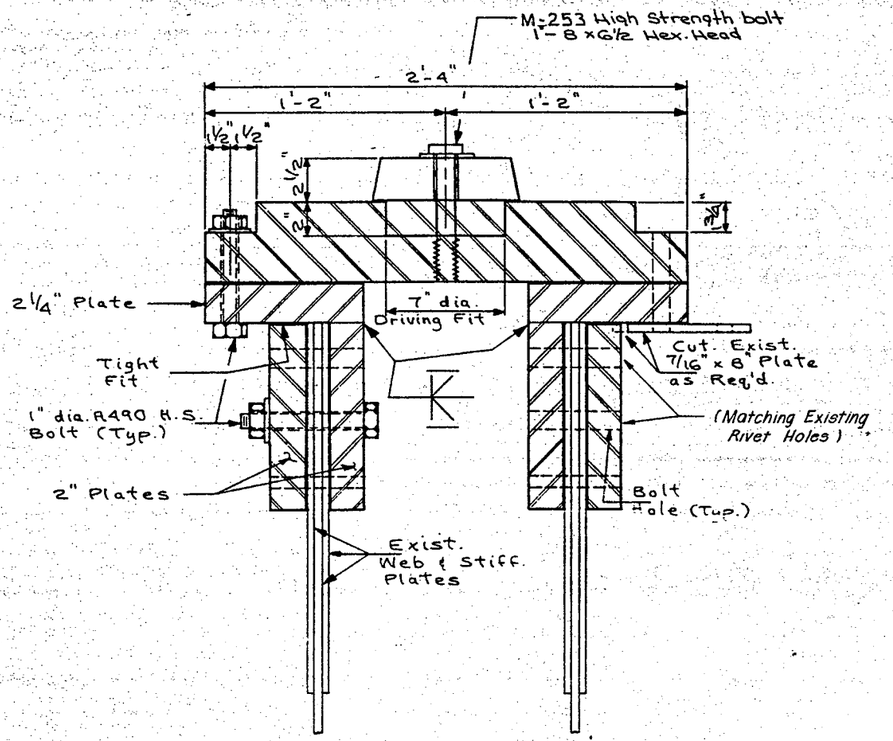
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

					SHEET NO. 22
607	G-R-I-1(82)	WILL	64	28	45 SHEETS
FED. ROAD DIST. NO. 7		STATE	FED. AID PROJECT		



TRACK GIRDER PLAN
(TREAD PLATE NOT SHOWN)

Note: Any additional stiffeners not shown above shall be removed. They shall be flame cut no closer than 1/4" to web and then ground flush.



SECTION M

Note: For Location of "Section M" See Sheet 20.

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY APL	DESIGN CHKD BY KRL	DRAWN BY LEN	CHECKED BY APL
PROJECT NUMBER 12906.1			

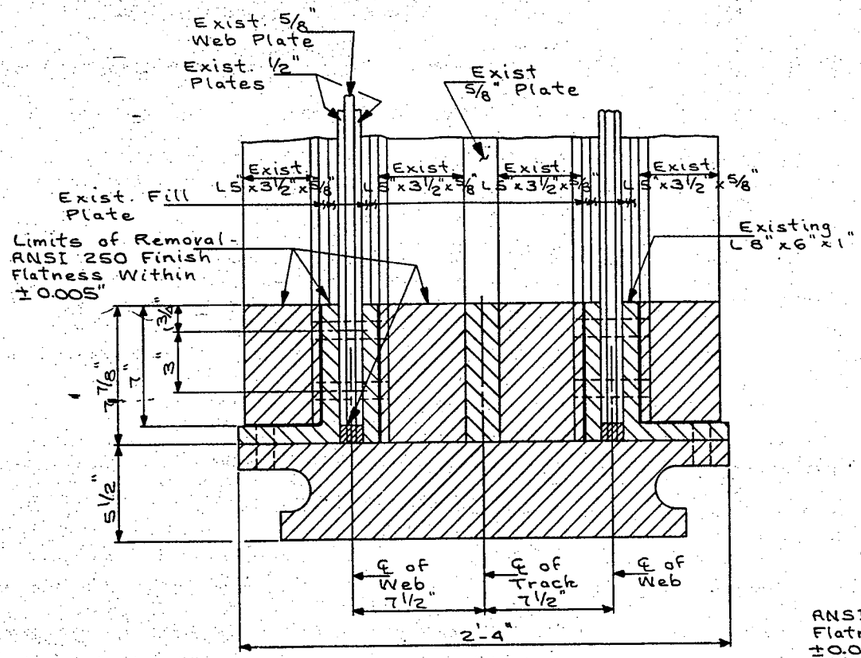
REVISIONS	
NAME	DATE

TRACK GIRDER DETAILS

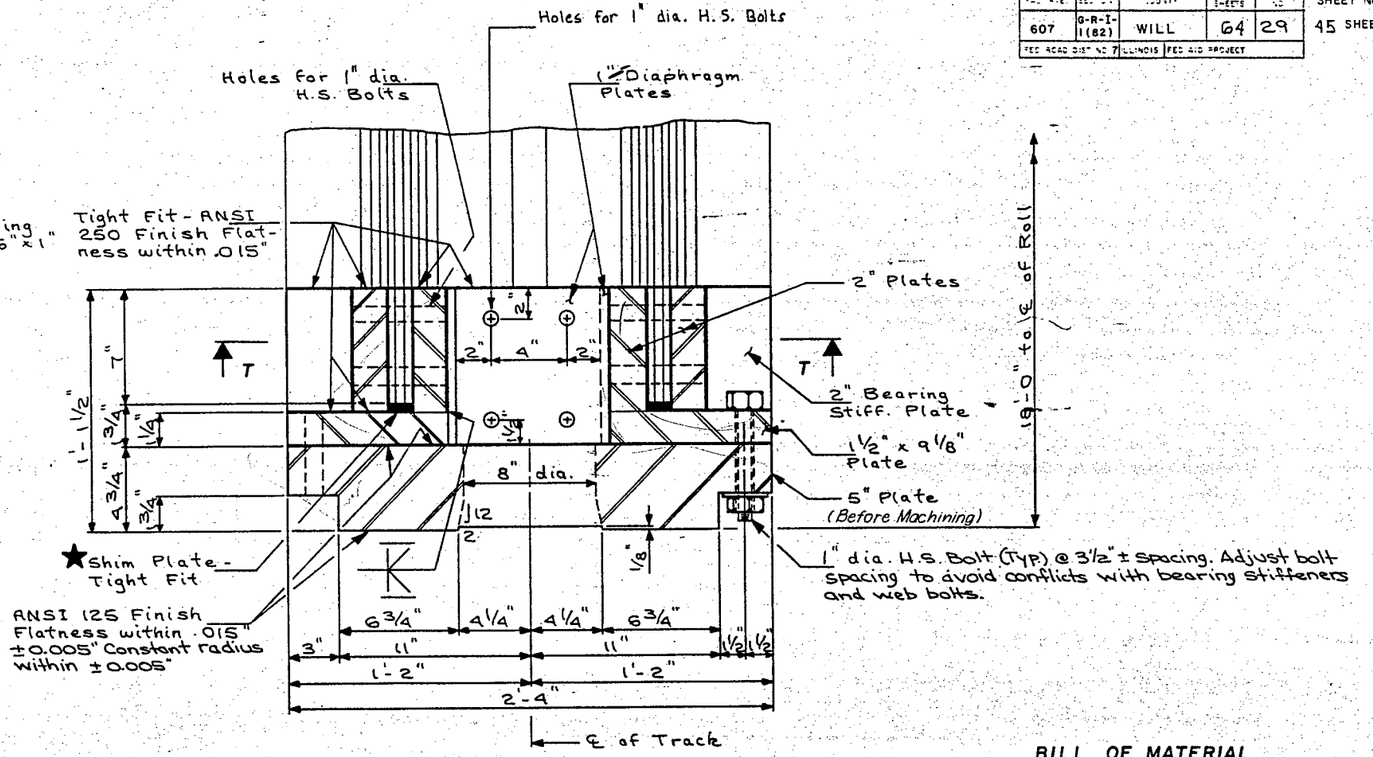
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FED. RTE.	SECT. NO.	COUNTY	SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	29
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		45 SHEETS

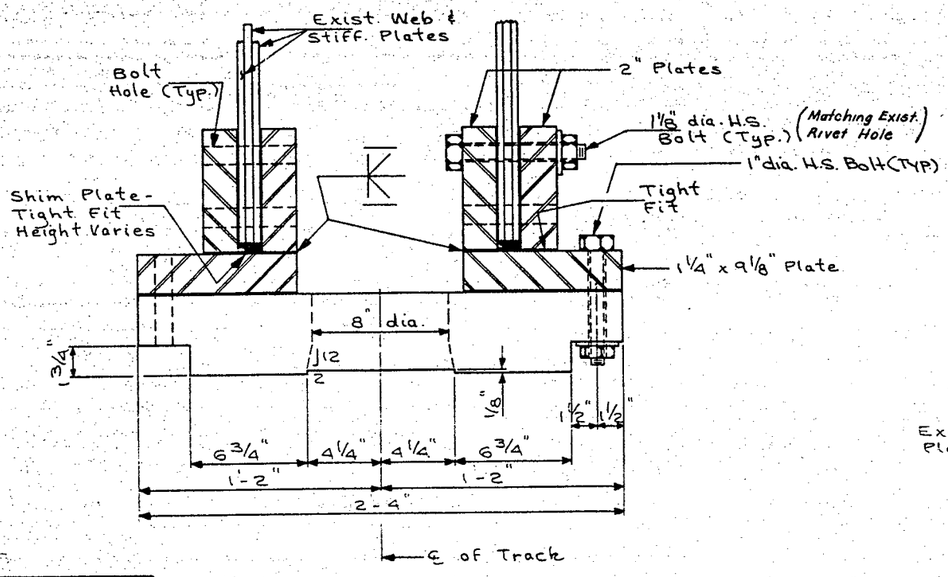
SHEET NO. 23



SECTION R
(Showing Removal of Segmental Thread)

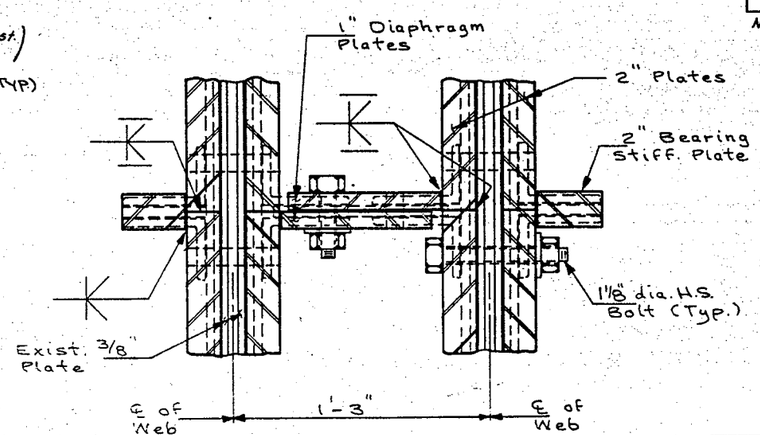


SECTION R



SECTION S

Note: For Location of "Sections R & S" See Sheet 20.



SECTION T

BILL OF MATERIAL

Item	Unit	Quantity
Structural Steel M-222	Lbs.	214,710

Note: This Bill of Material covers Sheets 19 - 23.

★Shim plate to be final finished after field milling is complete. Field dimensions shall determine final size to insure tight fit. One piece of shim plate is to be used for each segment.

REVISIONS	
NAME	DATE

SEGMENTAL GIRDER DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

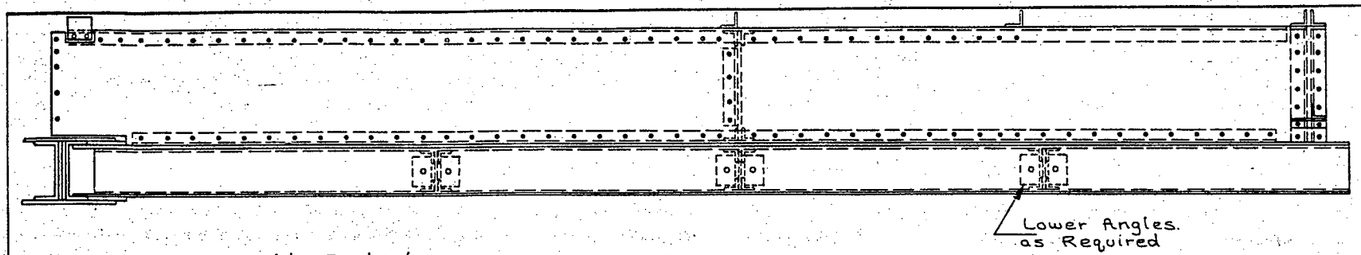
DONOHUE
ENGINEERS & ARCHITECTS

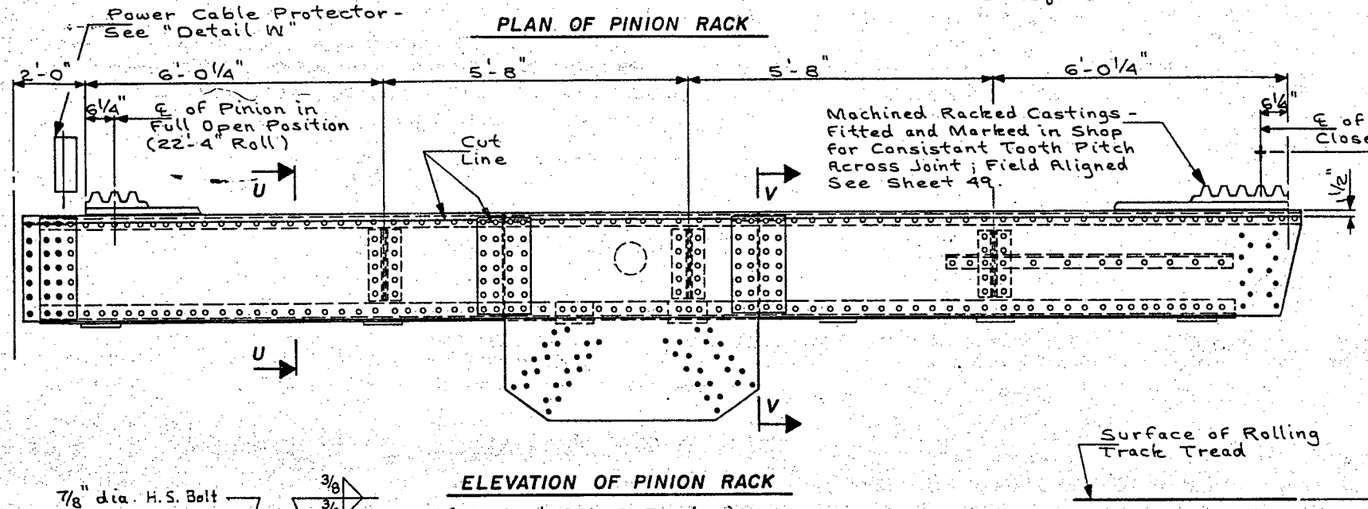
DESIGN BY	DESIGN CHK'D BY	DRAWN BY	CHECKED BY
RPL	KRL	LEN	RPL

PROJECT NUMBER 12906.1

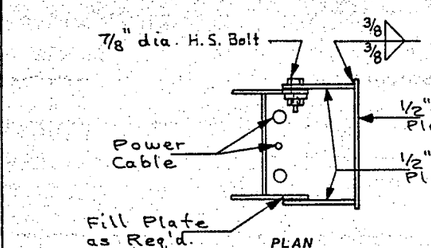
FED. ROAD DIST. NO.	STATE	COUNTY	SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	30
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO 24
45 SHEETS



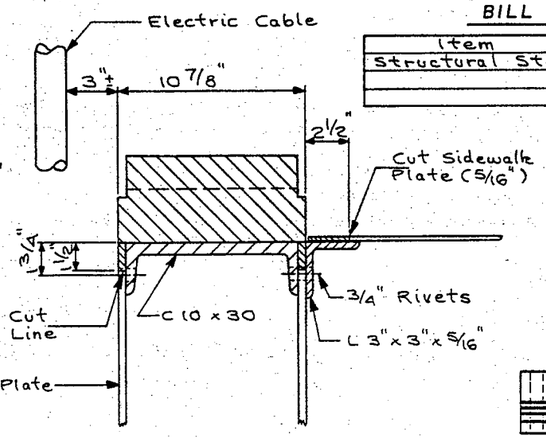


Note: Surface of Rolling Track Tread and Pinion Rack must be parallel within ± .010" and square.



ELEVATION OF PINION RACK
(Typical All 4 Racks)

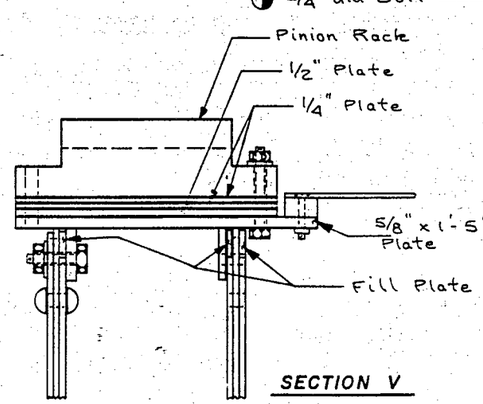
DETAIL W



SECTION U
(Showing Removal of Pinion Rack)

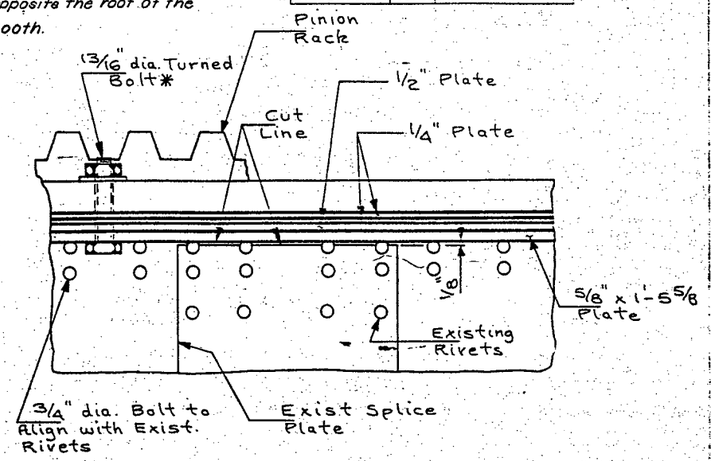
BILL OF MATERIAL

Item	Unit	Quantity
Structural Steel M-183	Lbs.	13,430

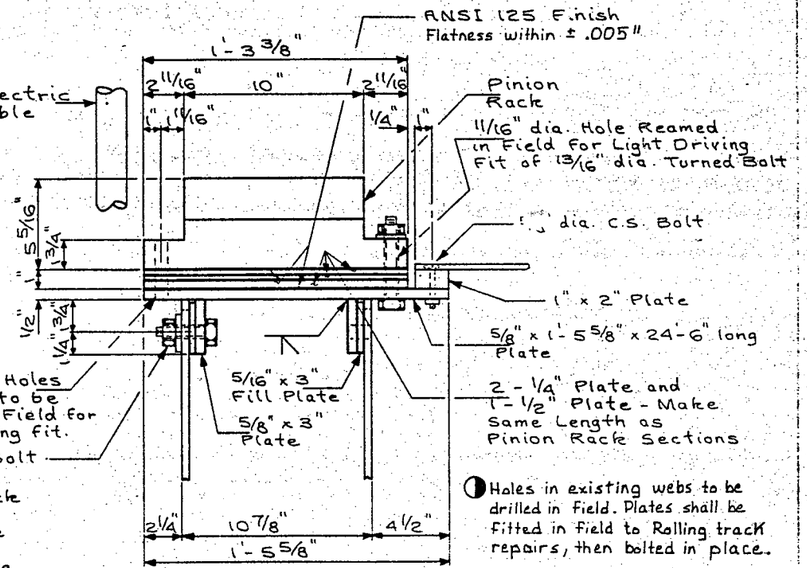


SECTION V

* Reverse the bolt if it is opposite the root of the tooth.



ELEVATION OF PINION RACK AT SPLICES



SECTION U

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY RPL	BY KRL	BY LEN	BY RPL

JOB NO. 12906.1

REVISIONS

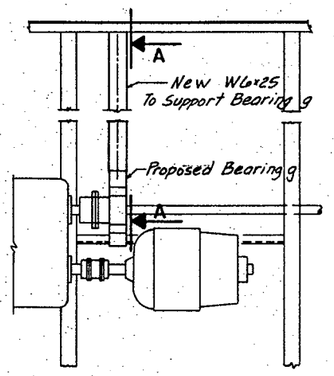
NAME	DATE

PINION RACK

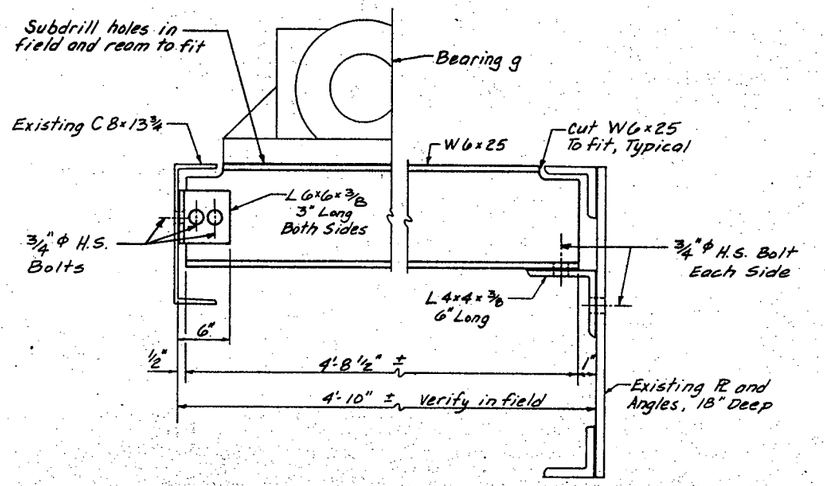
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAI. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	31
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

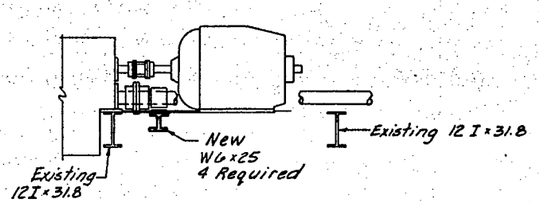
SHEET NO. 25
45 SHEETS



PLAN BEARING g SUPPORT
See Sheets 47 & 48



SECTION A-A



ELEVATION BEARING g SUPPORT

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Structural Steel M-183	Pound	510

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D.	DRAWN	CHECKED
BY KRL	BY APL	BY KRL	BY APL

PROJECT NUMBER 12906.1

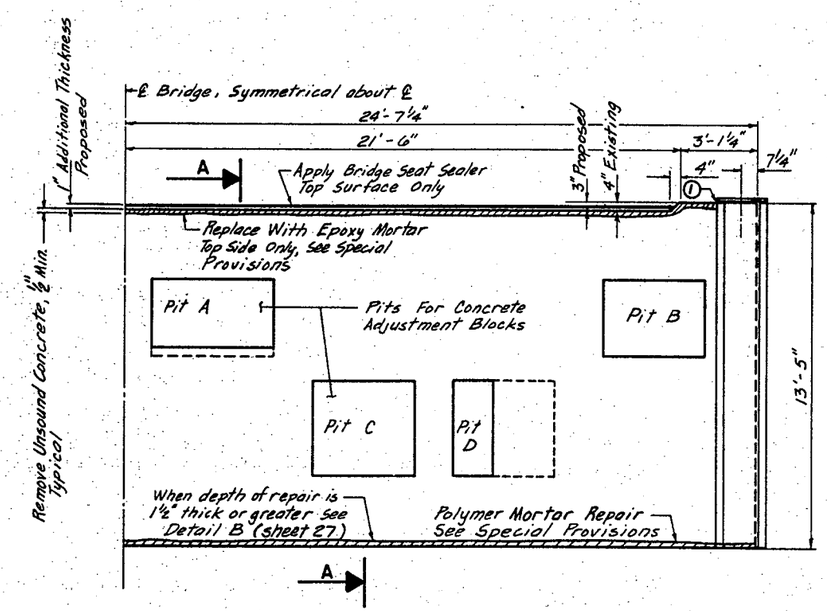
REVISIONS	
NAME	DATE

BEARING g SUPPORT

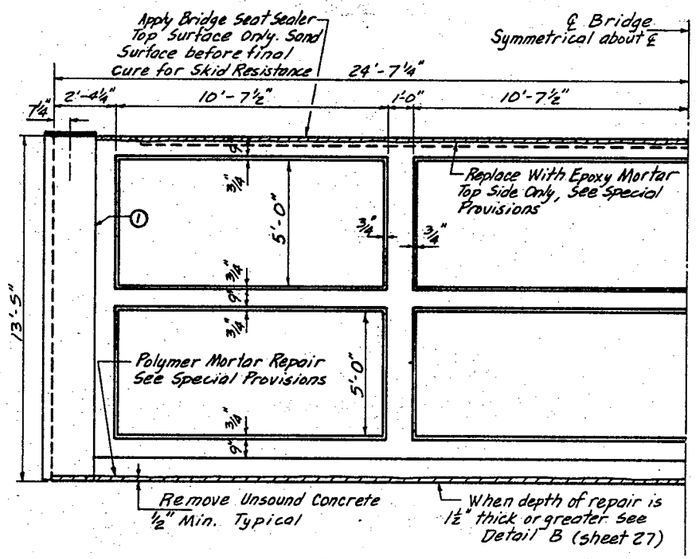
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAI. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	32
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 26
45 SHEETS



FRONT ELEVATION COUNTERWEIGHT



REAR ELEVATION COUNTERWEIGHT

NOTES

Because the Bascule leaves will be span heavy with the new steel deck in place additional weight will be added to the counterweights. The thickness of the top surface will be increased as shown on the plans.

It is estimated that 242 Concrete Adjustment Blocks are needed for the Near Leaf and 256 for the Far Leaf to obtain the proper balance of the Leaves. Currently the Near Leaf has 72 blocks and the Far Leaf 60 blocks. The Near Leaf needs 170 additional blocks and the Far Leaf 196 additional blocks for a total of 366. The breakdown for the number of blocks in each pit is as follows: (Near Leaf) Pit A 14 blocks, Pit B 7 blocks, Pit C 50 blocks, Pit D 50 blocks; (Far Leaf) Pit A 18 blocks, Pit B 10 blocks, Pit C 50 blocks, Pit D 50 blocks.

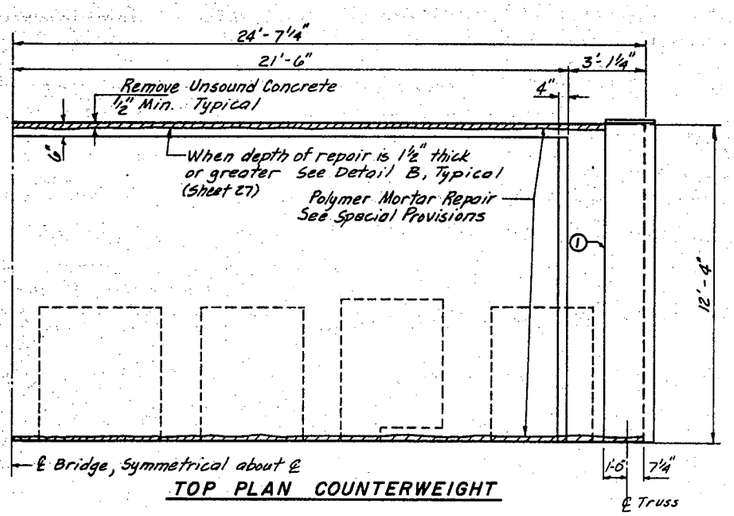
Areas to be repaired that are 1½" Thick or greater require Welded Wire Fabric and anchor bolts as shown on the plans.

Remove, blast clean and paint and reinstall steel doors over Adjustment Pits A and B. See Detail C. All costs included in bid item STRUCTURAL STEEL.

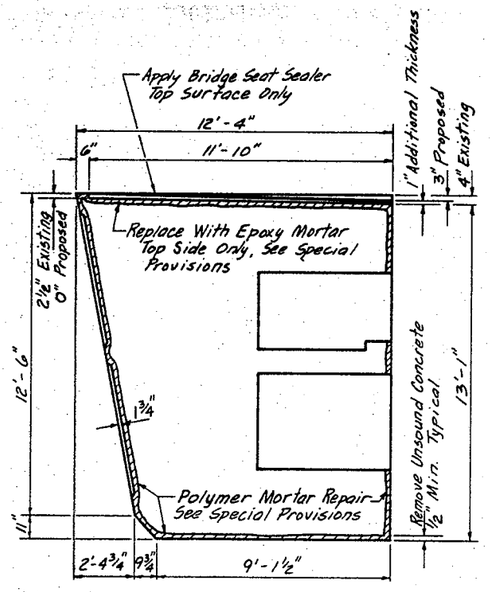
① Seal between steel and concrete along these flanges to a minimum depth of 4". Bid item is Epoxy Crack Sealing.

Fabricate steel doors to cover adjustment pits C and D using "Detail C." (sheet 27)

Welded Wire Fabric shall be epoxy coated. Anchor Bolts shall be 303 Stainless Steel.



TOP PLAN COUNTERWEIGHT



SECTION A-A

BILL OF MATERIAL - COUNTERWEIGHTS

ITEM	UNIT	QUANTITY
Polymer Mortar Repair	Cu. Ft.	360
Epoxy Mortar Repair	Cu. Ft.	205
Bridge Seat Sealer	L. S.	1
Concrete Adjustment Blocks	Each	400
Welded Wire Fabric	Sq. Ft.	395
Epoxy Crack Sealing	Lin. Ft.	100
Treated Timber	F B M	35
Structural Steel M-183	Lbs.	1150

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY KRL	DESIGN CHK'D. BY APL	DRAWN BY KRL	CHECKED BY APL
PROJECT NUMBER 12906.1			

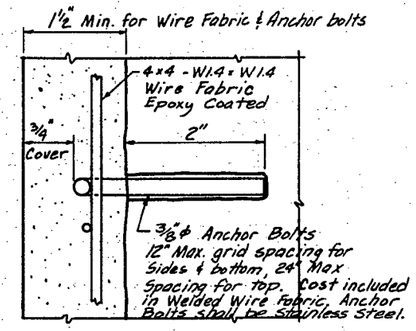
REVISIONS	
NAME	DATE

COUNTERWEIGHTS

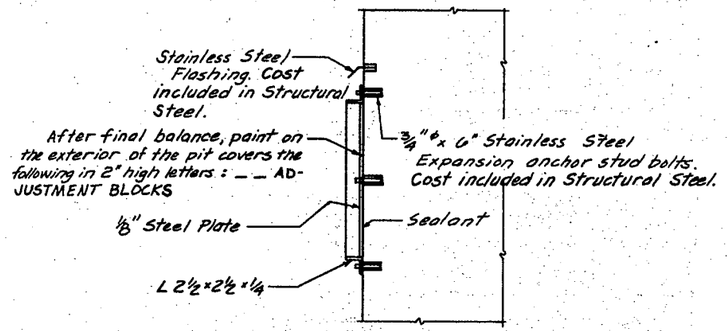
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAU. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	33
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

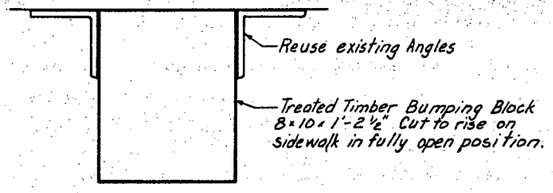
SHEET NO. 27
45 SHEETS



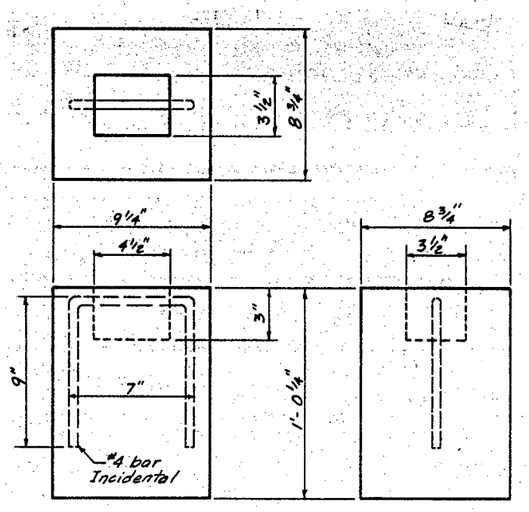
DETAIL B



DETAIL C



BUMPER BLOCK DETAIL



CONCRETE ADJUSTMENT BLOCK

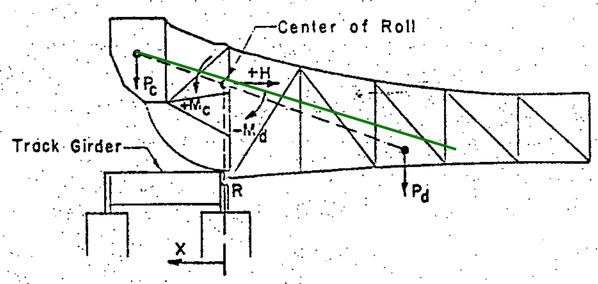
DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY: KRL	DESIGN CHK'D. BY: APL	DRAWN BY: KRL	CHECKED BY: APL
PROJECT NUMBER 12906.1			

REVISIONS	
NAME	DATE

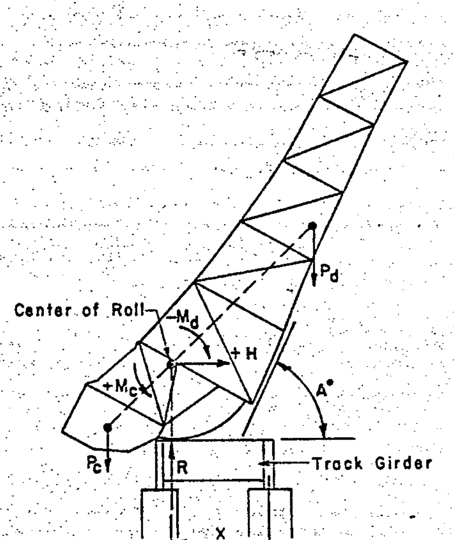
COUNTERWEIGHT DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

1931 plans say
Pc = 970 Pd= 820 R= (1790)/2 = 895



ELEVATION BASCULE CLOSED



ELEVATION BASCULE OPEN

ORIGINAL BALANCE - FAR LEAF

X ft	Pc = 966 Mc	Pd = 842 Md	R = 904 Mc + Md	H = (Mc+Md)/18'	A
0	+19,354	-19,347	+7	+0.4	0°
2	+19,164	-19,1[illegible]	+2[illegible]	+1.[illegible]	6.366°
4	+19,735	-19,70[illegible]	+33	+1.8	12.732°
6	+20,068	-20,023	+45	+2.5	19.099°
8	+20,151	-20,094	+57	+3.2	25.465°
10	+19,985	-19,918	+67	+3.7	31.831°
12	+19,573	-19,495	+78	+4.3	38.197°
14	+18,920	-18,832	+88	+4.9	44.563°
16	+18,033	-17,937	+96	+5.3	50.930°
18	+16,924	-16,821	+103	+5.7	57.296°
20	+15,606	-15,497	+109	+6.1	63.662°
22	+14,095	-13,982	+113	+6.3	70.028°
22.33	+13,826	-13,713	+113	+6.3	71.079°

ORIGINAL BALANCE - NEAR LEAF

X ft	Pc = 970 Mc	Pd = 843 Md	R = 906.5 Mc + Md	H = (Mc+Md)/18'	A
0	+18,430	-18,420	+10	+.56	0°
2	+19,243	-19,217	+26	+1.4	6.366°
4	+19,820	-19,778	+42	+2.3	12.732°
6	+20,151	-20,095	+56	+3.1	19.099°
8	+20,235	-20,164	+71	+3.9	25.465°
10	+20,068	-19,984	+84	+4.7	31.831°
12	+19,654	-19,559	+95	+5.3	38.197°
14	+18,998	-18,891	+107	+5.9	44.563°
16	+18,108	-17,991	+117	+6.5	50.930°
18	+16,993	-16,868	+125	+6.9	57.296°
20	+15,670	-15,538	+132	+7.3	63.662°
22	+14,153	-14,016	+137	+7.6	70.028°
22.33	+13,883	-13,745	+138	+7.7	71.079°

PRESENT BALANCE - FAR LEAF

X ft	Pc = 937 Mc	Pd = 797 Md	R = 867 Mc + Md	H = (Mc+Md)/18'	A
0	+17,834	-16,466	+1368	+76.0	0°
2	+18,619	-17,187	+1432	+79.6	6.366°
4	+19,177	-17,697	+1480	+82.2	12.732°
6	+19,496	-17,989	+1507	+83.7	19.099°
8	+19,577	-18,059	+1518	+84.3	25.465°
10	+19,415	-17,907	+1508	+83.8	31.831°
12	+19,013	-17,532	+1481	+82.3	38.197°
14	+18,379	-16,943	+1436	+79.8	44.563°
16	+17,516	-16,144	+1372	+76.2	50.930°
18	+16,438	-15,147	+1291	+71.7	57.296°
20	+15,157	-13,961	+1196	+66.4	63.662°
22	+13,688	-12,604	+1084	+60.2	70.028°
22.33	+13,427	-12,363	+1064	+59.1	71.079°

PRESENT BALANCE - NEAR LEAF

X ft.	Pc = 943 Mc	Pd = 798 Md	R = 670.5 Mc + Md	H = (Mc+Md)/18'	A
0	+17,949	-16,539	+1410	+78.3	0°
2	+18,738	-17,260	+1478	+82.1	6.366°
4	+19,299	-17,770	+1529	+84.9	12.732°
6	+19,620	-18,061	+1559	+86.6	19.099°
8	+19,701	-18,129	+1572	+87.3	25.465°
10	+19,537	-17,973	+1564	+86.9	31.831°
12	+19,132	-17,595	+1537	+85.4	38.197°
14	+18,493	-17,002	+1491	+82.8	44.563°
16	+17,625	-16,198	+1427	+79.3	50.930°
18	+16,539	-15,194	+1345	+74.7	57.296°
20	+15,250	-14,002	+1248	+69.3	63.662°
22	+13,772	-12,638	+1134	+63.0	70.028°
22.33	+13,509	-12,395	+1114	+61.9	71.079°

PROPOSED BALANCE - FAR LEAF

X ft	Pc = 967 Mc	Pd = 847 Md	R = 907 Mc + Md	H = (Mc+Md)/18'	A
0	+18,410	-18,560	-150	-8.3	0°
2	+19,226	-19,365	-139	-7.7	6.366°
4	+19,806	-19,932	-126	-7	12.732°
6	+20,141	-20,252	-111	-6.2	19.099°
8	+20,227	-20,323	-96	-5.3	25.465°
10	+20,054	-20,144	-80	-4.4	31.831°
12	+19,653	-19,715	-62	-3.4	38.197°
14	+19,002	-19,043	-41	-2.3	44.563°
16	+18,115	-18,137	-22	-1.2	50.930°
18	+17,005	-17,007	-2	-0.1	57.296°
20	+15,684	-15,668	+16	+0.9	63.662°
22	+14,170	-14,134	+36	+2.0	70.028°
22.33	+13,900	-13,861	+39	+2.2	71.079°

PROPOSED BALANCE - NEAR LEAF

X ft.	Pc = 970 Mc	Pd = 848 Md	R = 909 Mc + Md	H = (Mc+Md)/18'	A
0	+18,466	-18,633	-167	-9.3	0°
2	+19,284	-19,438	-154	-8.6	6.366°
4	+19,866	-20,005	-139	-7.7	12.732°
6	+20,201	-20,324	-123	-6.8	19.099°
8	+20,288	-20,393	-105	-5.8	25.465°
10	+20,124	-20,210	-86	-4.8	31.831°
12	+19,711	-19,772	-67	-3.7	38.197°
14	+19,057	-19,102	-45	-2.5	44.563°
16	+18,167	-18,191	-24	-1.3	50.930°
18	+17,053	-17,054	-1	-0.1	57.296°
20	+15,728	-15,710	+18	+1.0	63.662°
22	+14,210	-14,168	+42	+2.3	70.028°
22.33	+13,939	-13,894	+45	+2.5	71.079°

NOTES

- Pc = Weight of Counterweight and Adjustment Blocks in kips
- Pd = Weight of Movable Leaf Exclusive of Counterweight in kips
- Mc = Moment of Counterweight in kip - feet
- Md = Moment of Movable Leaf in kip - feet
- R = Reaction at Track Girder = (Pc + Pd) ÷ 2 in kips
- H = Force at Pinions to Open or Close Leaf
  - Pos. H - Counterweight Heavy
  - Neg. H - Span Heavy
- X = Distance Along Track Girder in feet
  - X = 0 When Leaf is Closed
- A° = Angle of Opening of Leaf in Degrees

The Balance Tables shown on this sheet are for the contractor's information only. The tables show the estimated force at the pinions needed to open or close the leaves at various positions. The "ORIGINAL BALANCE" tables were developed from information taken from the original plans of 1932. The "PRESENT BALANCE" tables are based on estimated weight changes from past rehabilitations. The "PROPOSED BALANCE" tables are based on estimated weight changes due to the proposed rehabilitation.

See Concrete Adjustment Blocks in the Special Provisions for the balancing.

DONOHUE
ENGINEERS ARCHITECTS
DESIGNED: KRL | DRAWN: APL | CHECKED: KRL | APL
12906.7

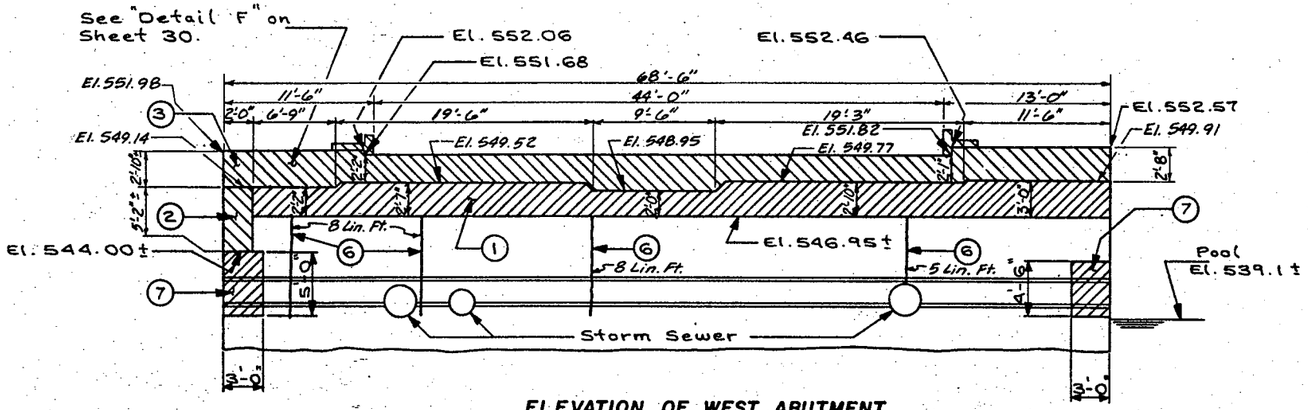
REVISIONS | NAME | DATE

BALANCE

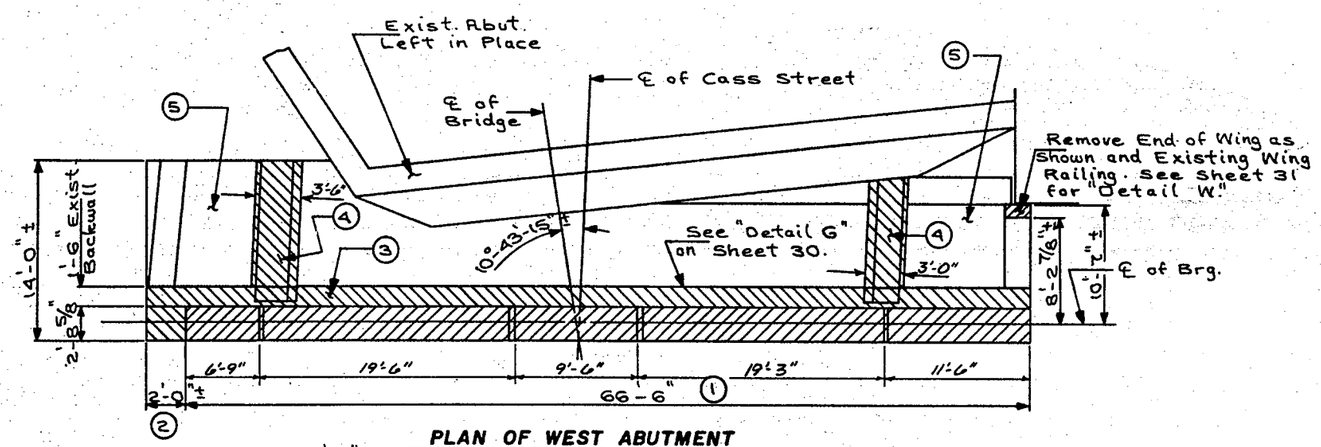
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAI. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	35
FED. ROAD DIST. NO 7	ILLINOIS	FED AID PROJECT		

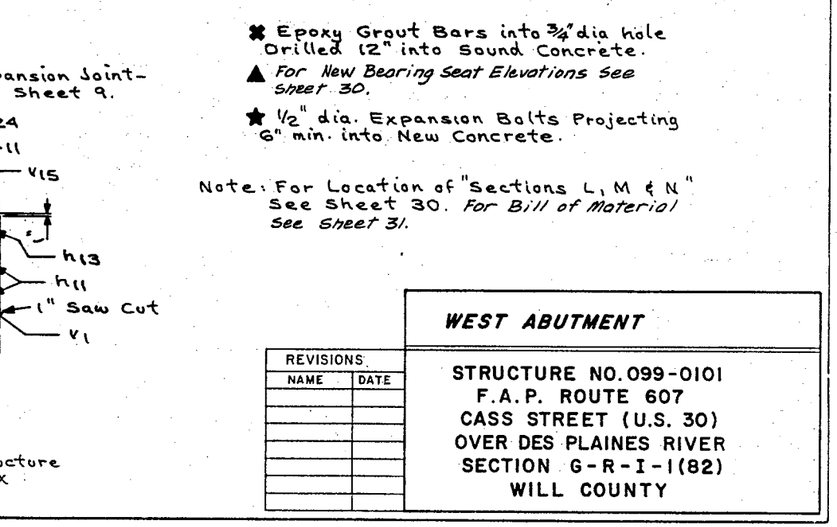
SHEET NO. 29
45 SHEETS



ELEVATION OF WEST ABUTMENT
(Looking West)

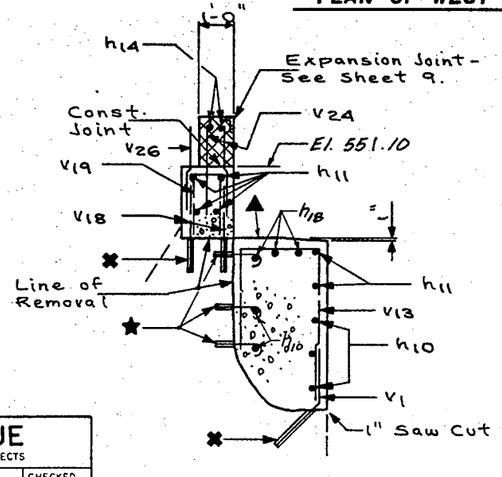


PLAN OF WEST ABUTMENT

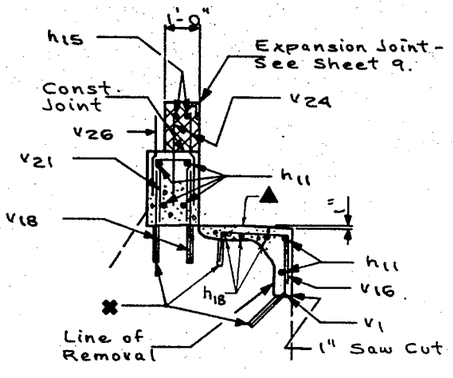


TYP. SECTION THRU EXIST. W. ABUT.

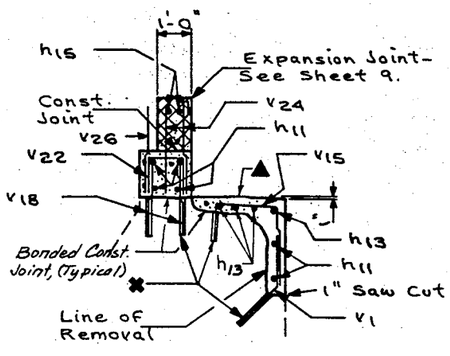
① Concrete Removal to Limits Shown in "Section M" and "Section N."
② Concrete Removal to Limits Shown in "Section L".
③ Concrete Removal of Backwall to Limits Shown in "Section L", "Section M" and "Section N."
④ Concrete Removal to Elevation 551.5±
⑤ Backfill Void under Sidewalk. Quantity included in "STRUCTURE EXCAVATION."
⑥ Epoxy Crack Sealer
⑦ *Polymer Mortar Repair*



SECTION L



SECTION M



SECTION N

✖ Epoxy Grout Bars into ¾" dia hole Drilled 12" into Sound Concrete.
▲ *For New Bearing Seat Elevations see Sheet 30.*
★ ½" dia. Expansion Bolts Projecting 6" min. into New Concrete.

Note: For Location of "Sections L, M & N" See Sheet 30. *For Bill of Material See Sheet 31.*

Cross hatched area to be poured after superstructure False work has been removed. Quantity of Class X concrete included with superstructure.

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY APL	DESIGN CHK'D BY KRL	DRAWN BY LEN	CHECKED BY RPL
PROJECT NUMBER 12906.1			

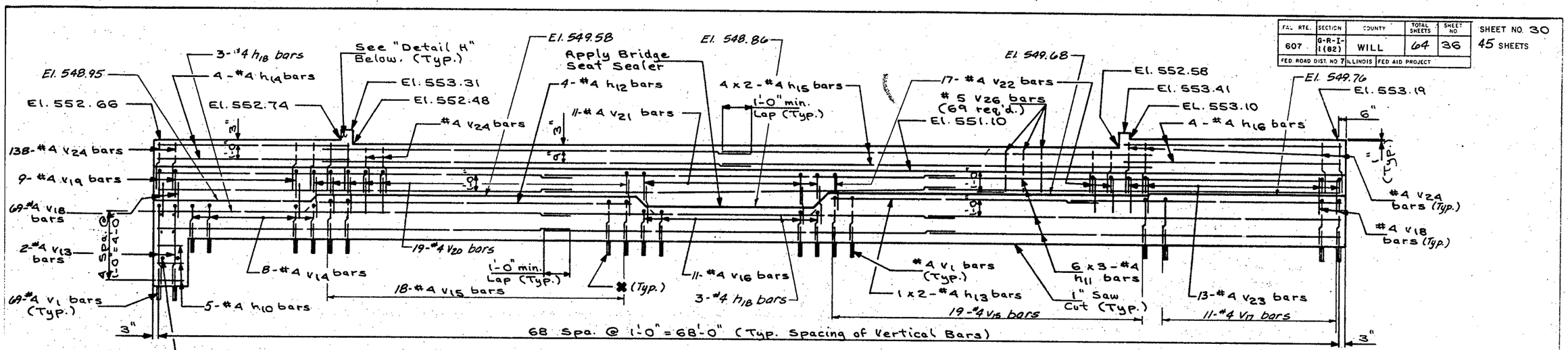
REVISIONS	
NAME	DATE

WEST ABUTMENT

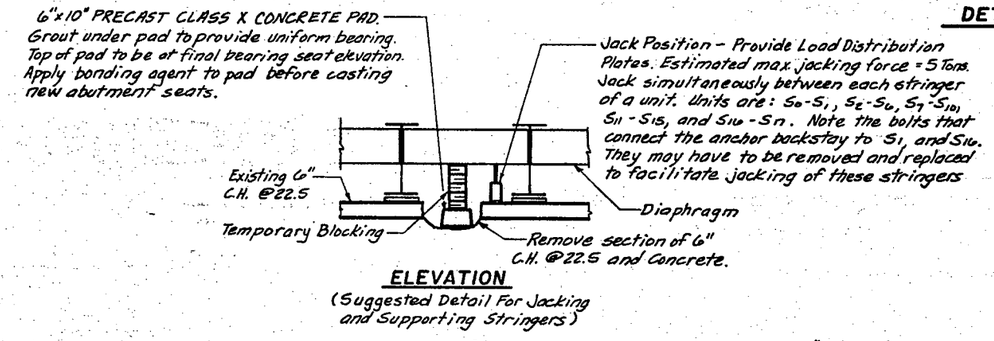
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAI. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	36
FED. ROAD DIST. NO 7	ILLINOIS	FED AID PROJECT		

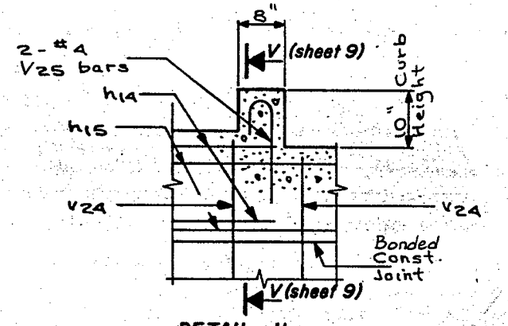
SHEET NO. 30
45 SHEETS



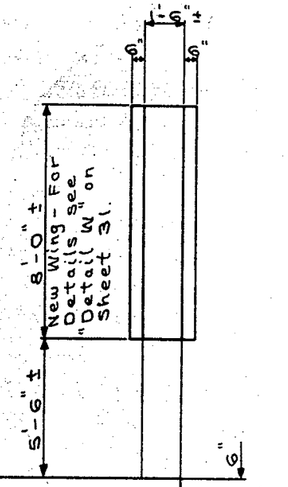
DETAIL F

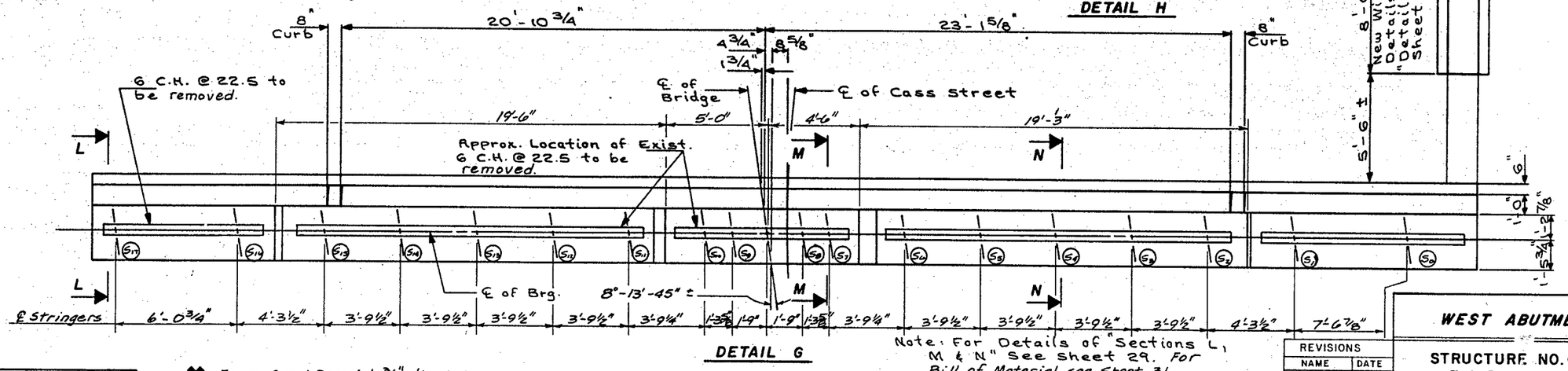


ELEVATION
(Suggested Detail For Jacking and Supporting Stringers)



DETAIL H





DETAIL G

Note: For Details of "Sections L, M & N" See Sheet 29. For Bill of Material see Sheet 31.

✖ Epoxy Grout Bars into ¾" dia. hole drilled 12" into sound concrete.

★ ½" dia. Expansion Bolts projecting 6" min. into new concrete.

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D.	DRAWN	CHECKED
BY RPL	BY: KRL	BY LEN	BY RPL

PROJECT NUMBER 12906.(

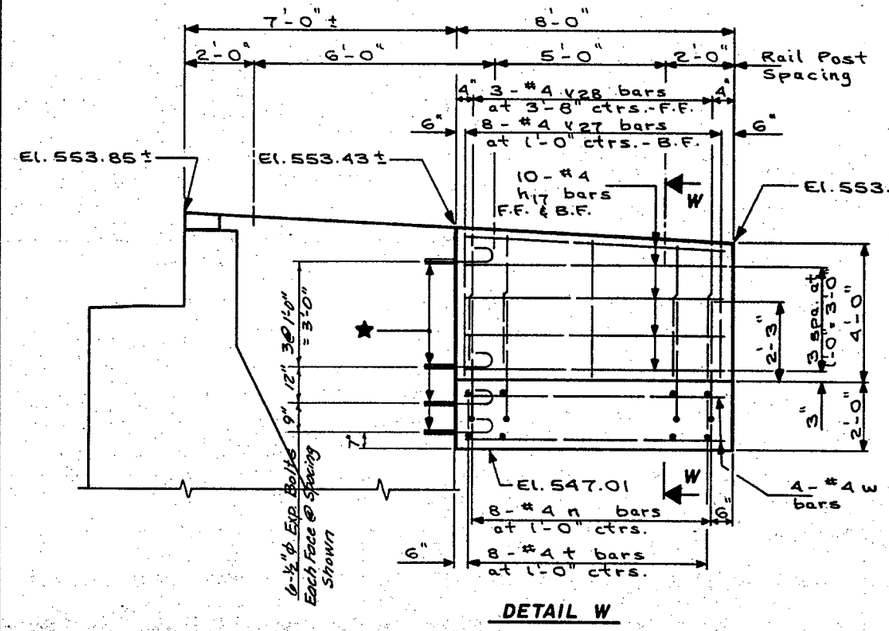
REVISIONS	
NAME	DATE

WEST ABUTMENT

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

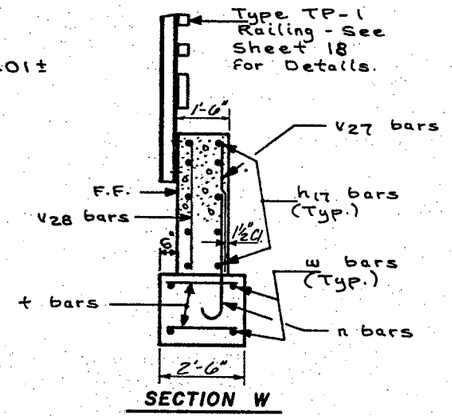
FA. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	37
FED. ROAD DIST NO 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 31
45 SHEETS

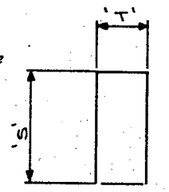


DETAIL W

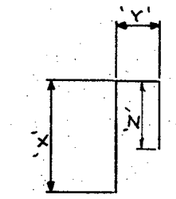
★ ½" dia. Expansion Bolts Projecting 6" min. into New Concrete. *Edge clearance 4" min.*



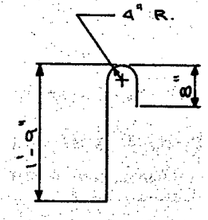
SECTION W



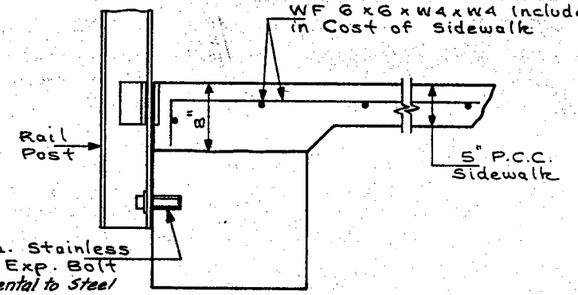
Bar	'S'	'T'
V19	1'-11"	1'-2"
V20	1'-3"	1'-2"
V21	2'-0"	1'-2"
V22	1'-2"	1'-2"
V23	1'-0"	1'-2"



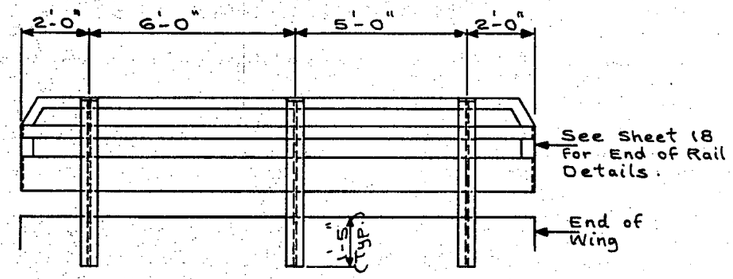
Bar	'X'	'Y'	'Z'
V13	4'-8"	2'-2"	2'-3"
V14	1'-8"	2'-2"	1'-3"
V15	2'-3"	2'-2"	1'-3"
V16	1'-7"	2'-2"	1'-3"
V17	2'-0"	2'-2"	1'-3"



BAR V25

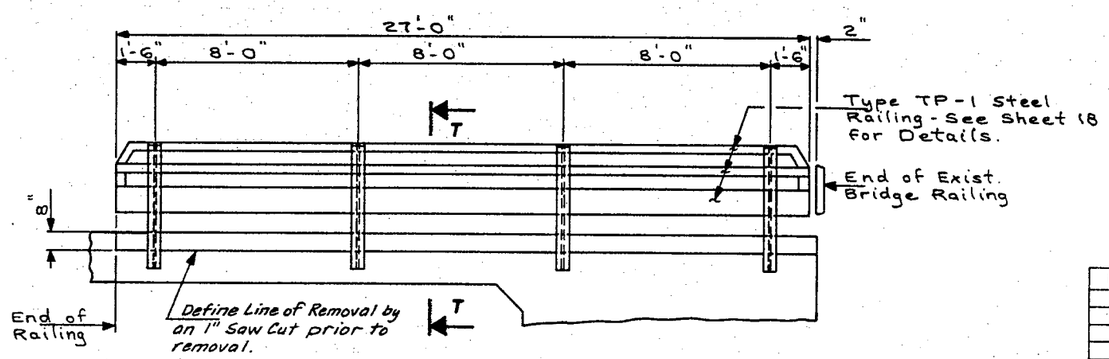


SECTION T-T



ELEVATION OF WING SHOWING RAILING

Work this Sheet with Details on Sheet 18.



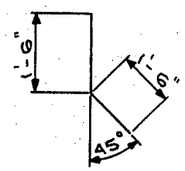
ELEVATION OF S.W. CORNER OF BRIDGE

(Looking North)

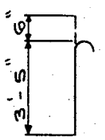
BILL OF MATERIAL - WEST ABUTMENT

Bar	No.	Size	Length	Shape
h10	5	#4	1'-8"	
h11	18	#4	23'-9"	
h12	4	#4	18'-0"	
h13	8	#4	15'-5"	
h14	4	#4	11'-0"	
h15	8	#4	24'-3"	
h16	4	#4	12'-6"	
h17	10	#4	7'-7"	
h18	6	#4	9'-3"	
n	8	#4	3'-11"	
V1	69	#4	3'-0"	
V13	2	#4	9'-1"	
V14	8	#4	5'-1"	
V15	37	#4	5'-8"	
V16	11	#4	5'-0"	
V17	11	#4	5'-11"	
V18	69	#4	2'-6"	
V19	9	#4	3'-1"	
V20	19	#4	2'-5"	
V21	11	#4	3'-2"	
V22	17	#4	2'-4"	
V23	13	#4	2'-2"	
V24	138	#4	3'-0"	
V25	4	#4	2'-10"	
V26	69	#5	2'-3"	
V27	8	#4	3'-8"	
V28	3	#4	3'-10"	
t	16	#4	2'-0"	
w	4	#4	7'-7"	

Item	Unit	Quantity
Class X Concrete	Cu.Yd.	18.3
Reinforcement Bars	Lbs.	1870
Concrete Removal	Cu.Yd.	22
Expansion Bolts, ½"	Each	18
Structural Excavation	Cu.Yd.	30
Steel Railing, Type TP-1	Lin.Ft.	42
Epoxy Crack Sealer	Lin.Ft.	29
Bridge Seat Sealer	L.Sum	1
Surface Finish	Sq.Yd.	95
Polymer Mortar Repair	Cu.Ft.	4



BAR V1



BAR n

REVISIONS	
NAME	DATE

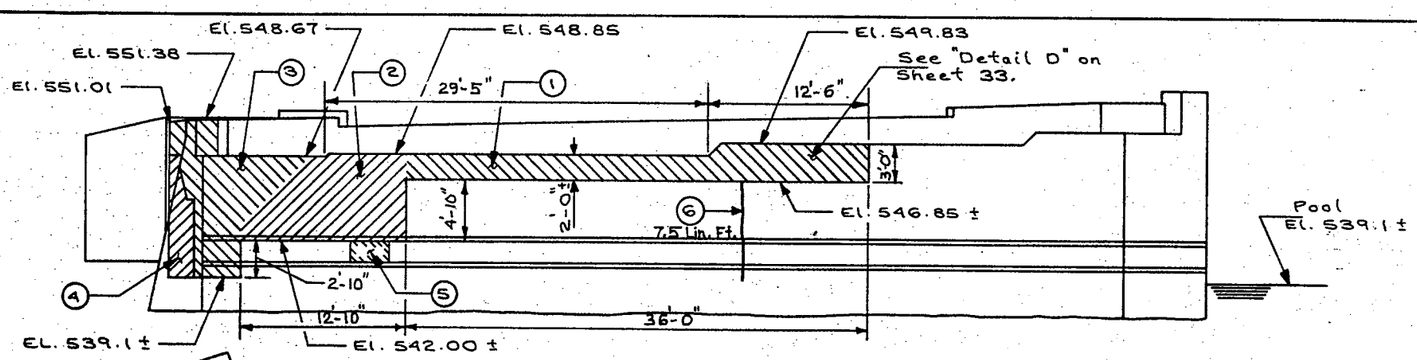
WEST ABUTMENT

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

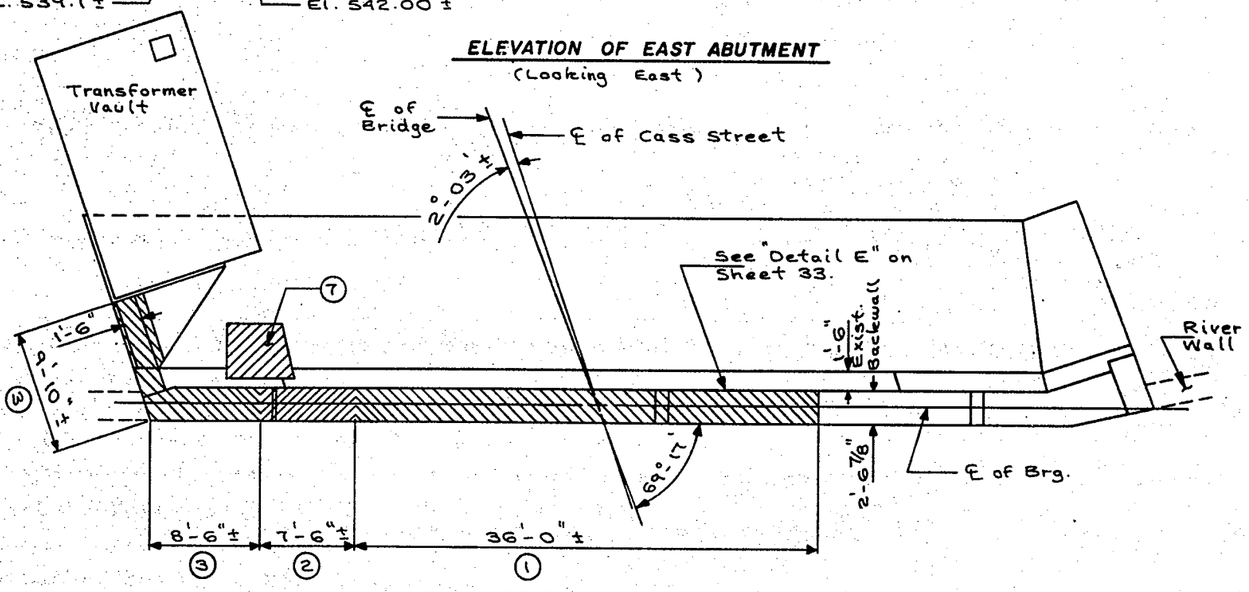
DONOHUE ENGINEERS & ARCHITECTS			
DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY APL	BY KRL	BY LEN	BY APL
PROJECT NUMBER 12906.1			

FA. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	38
FED. ROAD DIST. NO. 7	ILLINOIS	FED AID PROJECT		

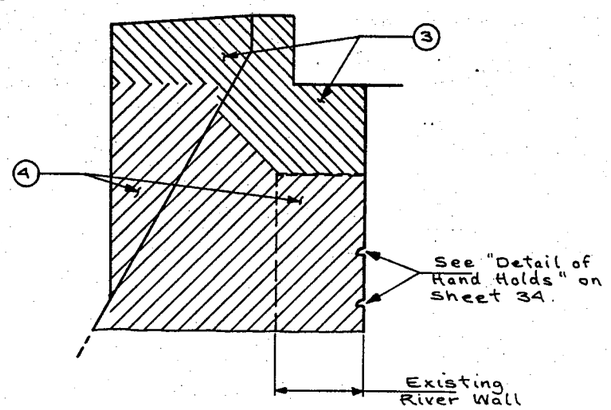
SHEET NO. 32
45 SHEETS



ELEVATION OF EAST ABUTMENT
(Looking East)



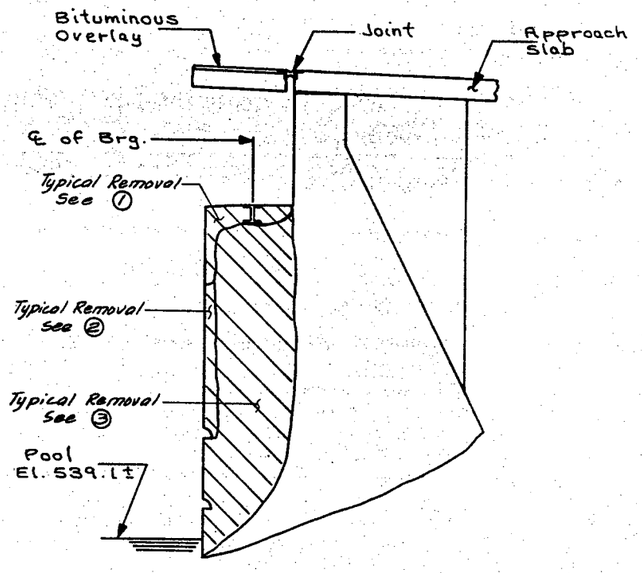
PLAN OF EAST ABUTMENT



ELEVATION OF N.E. WINGWALL

1. Concrete Removal to Limits Shown in "Section J".
2. Concrete Removal to Limits Shown in "Section H".
3. Concrete Removal to Limits Shown in "Section G" and "Section K".
4. Concrete Removal to Limits Shown in "Section K".
5. Polymer *Mortar* Repair
6. Epoxy Crack Sealer
7. Concrete Removal to Elevation 551.3 ±.

Note: For Details of "Sections G, H, J & K" See Sheet 33.



TYP. SECTION THRU EXIST. E. ABUT.

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY APL	DESIGN CHK'D BY KRL	DRAWN BY LEN	CHECKED BY RPL
PROJECT NUMBER 12906.1			

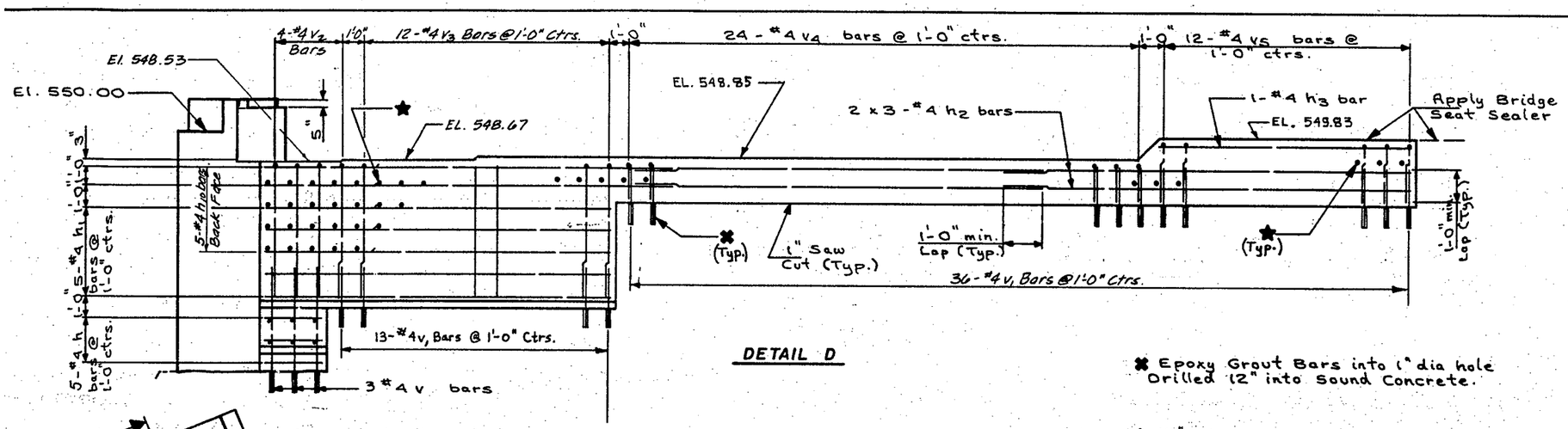
REVISIONS	
NAME	DATE

EAST ABUTMENT

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FAI RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	39
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

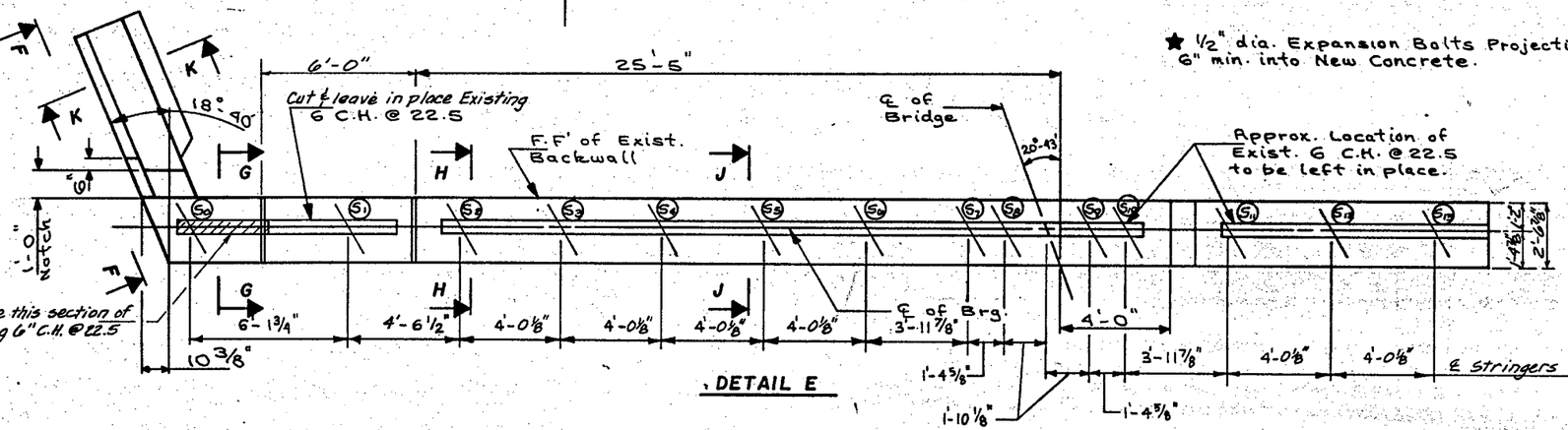
SHEET NO. 33
45 SHEETS



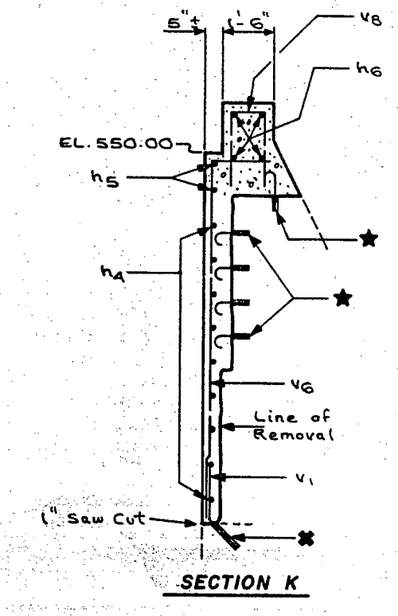
DETAIL D

✖ Epoxy Grout Bars into 1" dia hole Drilled 12" into Sound Concrete.

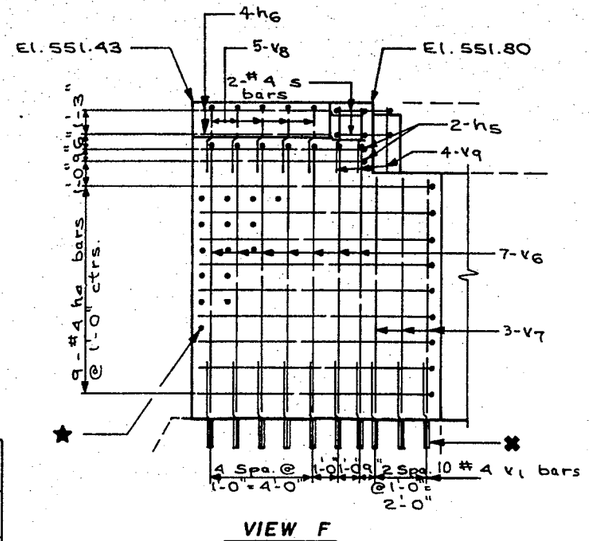
★ 1/2" dia. Expansion Bolts Projecting 6" min. into New Concrete.



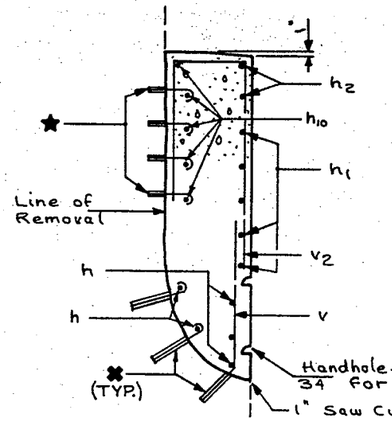
DETAIL E



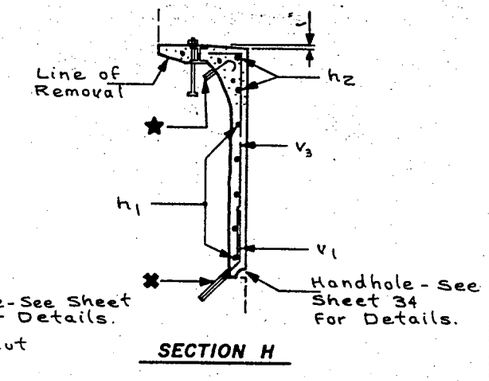
SECTION K



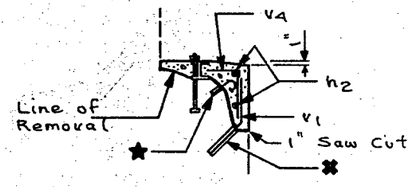
VIEW F



SECTION G



SECTION H



SECTION J

DESIGN	DESIGN CHK'D.	DRAWN	CHECKED
BY APL	BY KRL	BY LEN	BY RPL

DONOHUE
ENGINEERS & ARCHITECTS

PROJECT NUMBER 12906.1

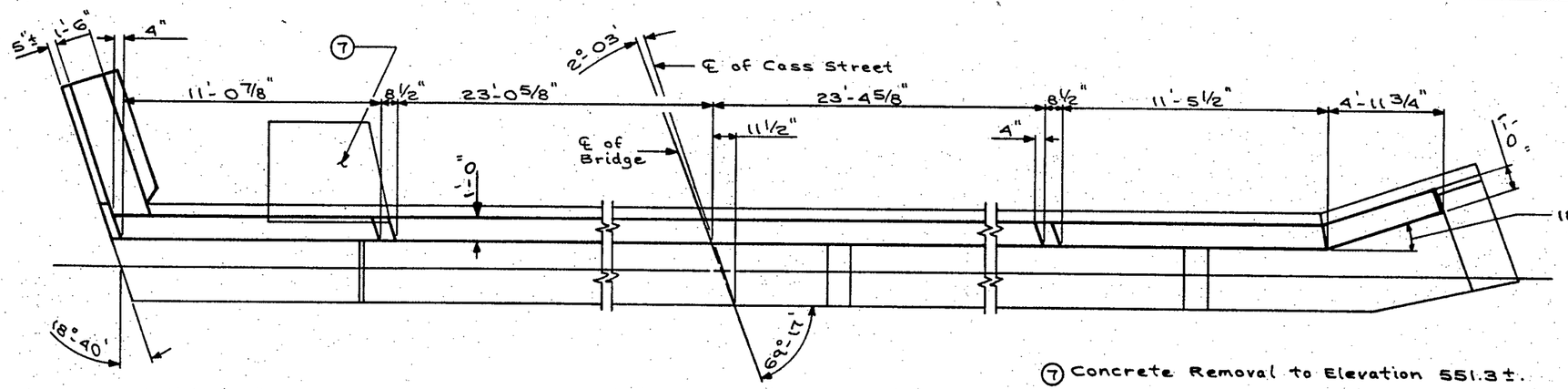
REVISIONS	
NAME	DATE

EAST ABUTMENT

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

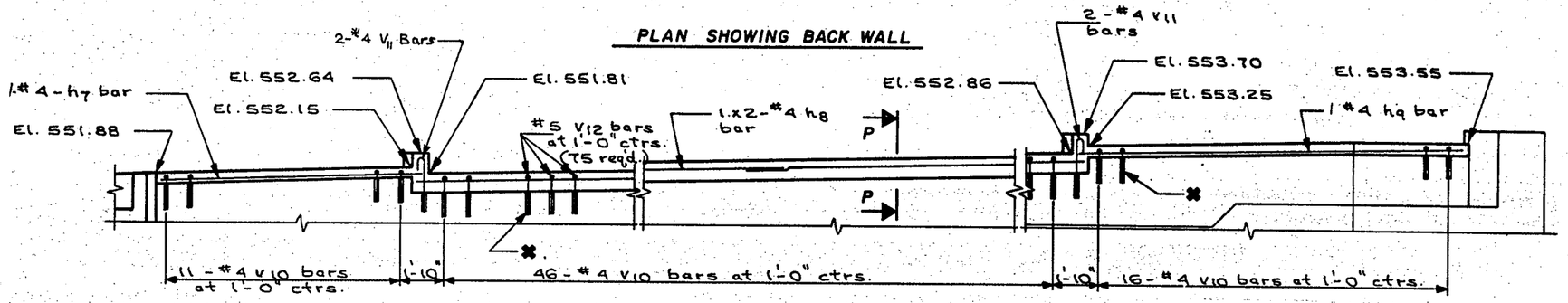
FA. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	40
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 34
45 SHEETS

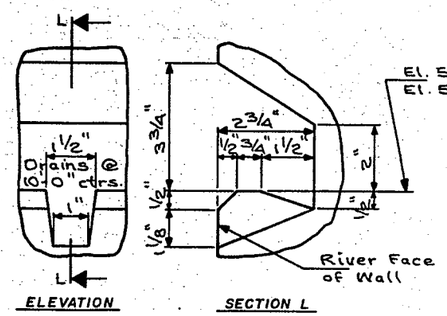


⑦ Concrete Removal to Elevation 551.3±.

PLAN SHOWING BACK WALL



ELEVATION SHOWING BACK WALL BAR STEEL

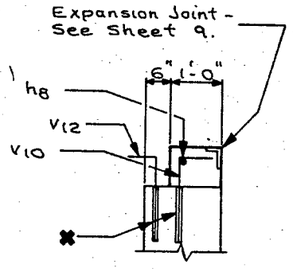


ELEVATION SECTION L

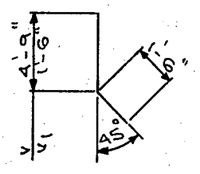
DETAIL OF HAND HOLDS

✖ Epoxy Grout Bars into 3/4" dia hole Drilled 12" into Sound Concrete.

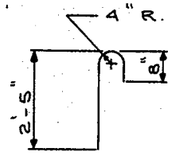
★ 1/2" dia. Expansion Bolts Projecting 6" min. into New Concrete.



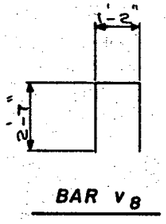
SECTION P



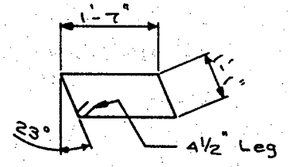
BAR v & BAR v_1



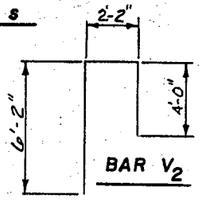
BAR v_{11}



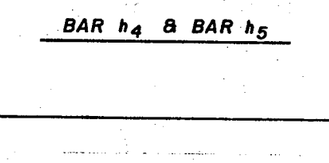
BAR v_8



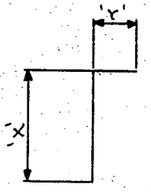
BAR s



BAR V_2



BAR h_4 & BAR h_5



Bar	'x'	'r'
V3	6'-3"	11"
V4	1'-6"	11"
V5	2'-6"	11"
V6	10'-5"	1'-8"
V10	1'-7"	8"
V12	1'-7"	8"

BILL OF MATERIAL - EAST ABUTMENT

Bar	No.	Size	Length	Shape
h	5	#4	2'-6"	
h_1	5	#4	15'-6"	
h_2	6	#4	18'-2"	
h_3	1	#4	11'-3"	
h_4	9	#4	11'-3"	
h_5	2	#4	8'-6"	
h_6	4	#4	6'-6"	
h_7	1	#4	11'-2"	
h_8	2	#4	24'-3"	
h_9	1	#4	16'-6"	
h_{10}	5	#4	5'-0"	
s	2	#4	6'-1"	
V	3	#4	6'-3"	
V_1	59	#4	3'-0"	
V_2	4	#4	8'-3"	
V_3	12	#4	7'-2"	
V_4	24	#4	2'-5"	
V_5	12	#4	3'-5"	
V_6	7	#4	12'-1"	
V_7	3	#4	9'-1"	
V_8	5	#4	6'-4"	
V_9	4	#4	2'-7"	
V_{10}	73	#4	2'-3"	
V_{11}	4	#4	3'-6"	
V_{12}	75	#5	2'-3"	

Item	Unit	Quantity
Class X Concrete	Cu.Yd.	13.2
Reinforcement Bars	Lbs.	990
Concrete Removal	Cu.Yd.	13
Expansion Bolts, 1/2"	Each	91
Structural Excavation	Cu.Yd.	20
Epoxy Crack Sealer	Lin.Ft.	8
Bridge Seat Sealer	L.Sum	1
Polymer Mortar Repair	Cu.Ft.	1
Surface Finish	Sq.Yd.	135

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY APL	BY KRL	BY LEN	BY APL

PROJECT NUMBER 12906.1

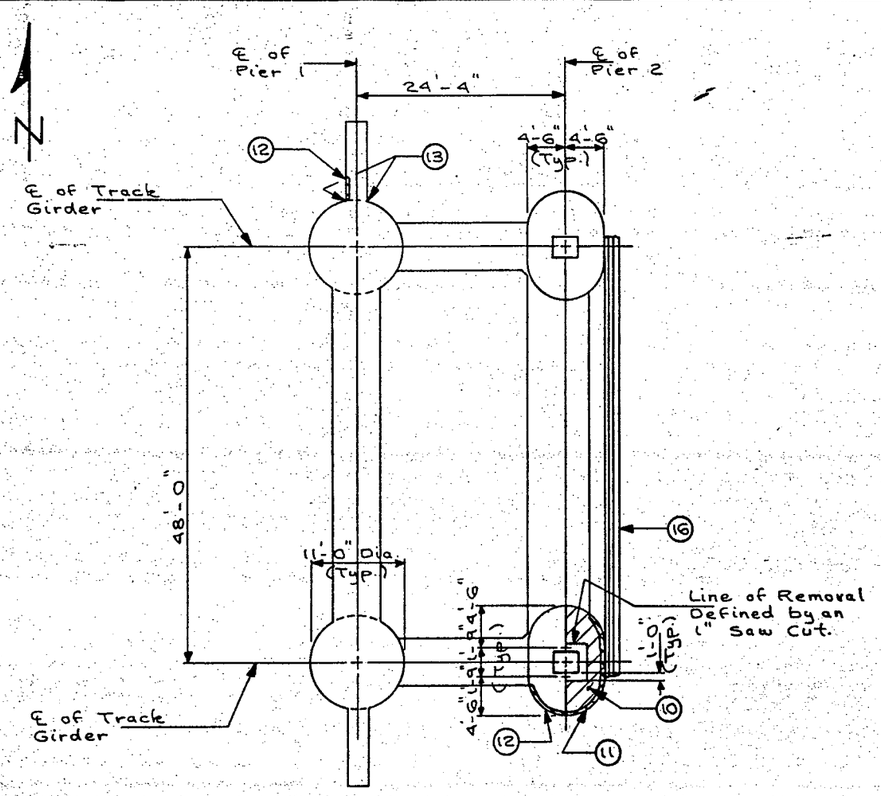
REVISIONS	
NAME	DATE

EAST ABUTMENT

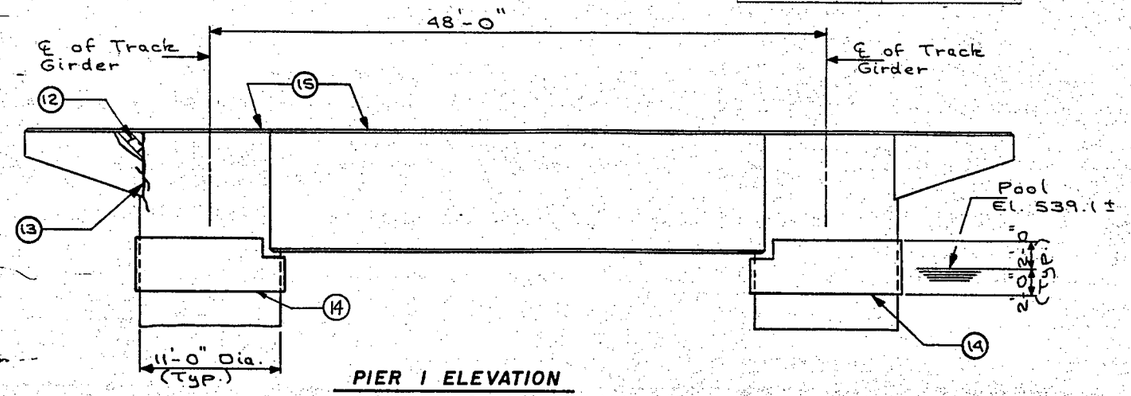
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

607	G-R-I-1(82)	WILL	64	41
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

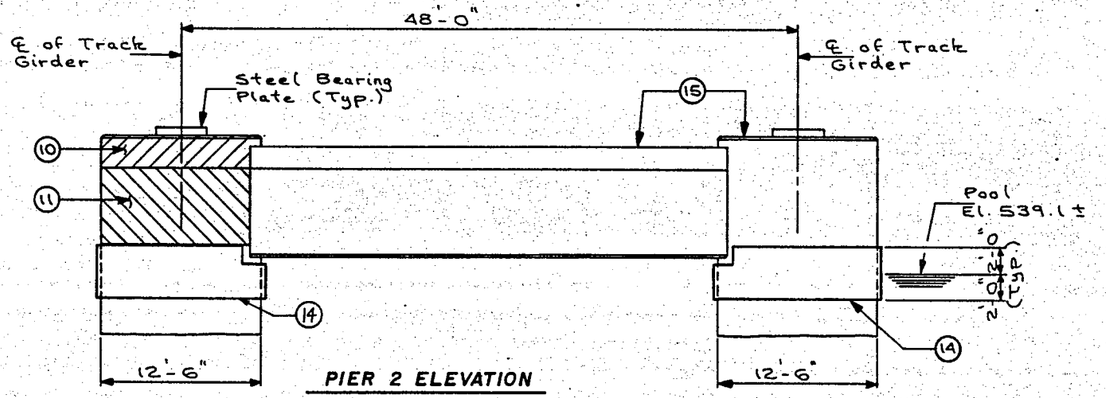
SHEET NO. 35
45 SHEETS



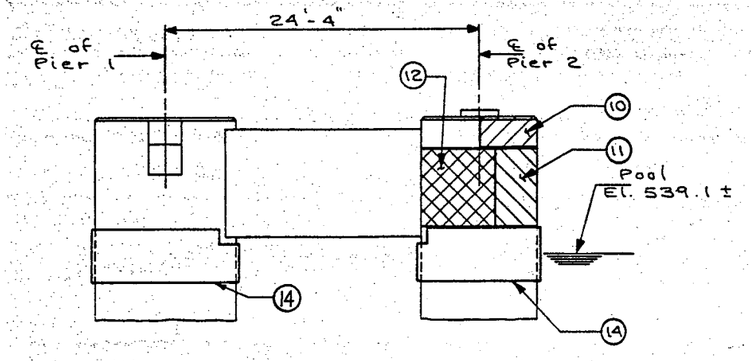
PLAN OF PIERS 1 & 2



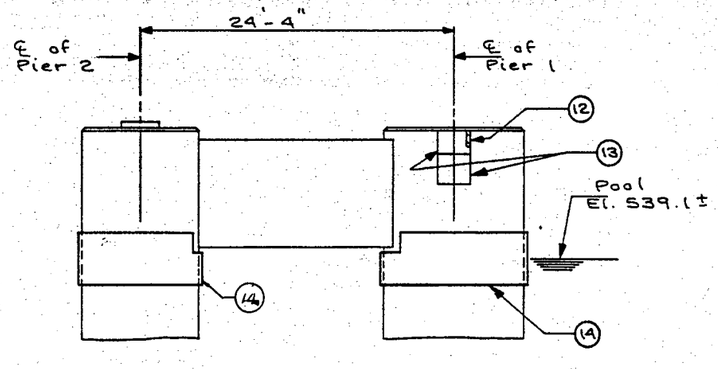
PIER 1 ELEVATION
(Looking East)



PIER 2 ELEVATION
(Looking West)



PIER ELEVATION
(Looking North)



PIER ELEVATION
(Looking South)

(10) Concrete Removal to Limits Shown in "Section P." *(Sheet 37)*
(11) Concrete Removal to Limits Shown in "Section P." *(Sheet 37)*
(12) Polymer *Mortar* Repair
(13) Epoxy Crack Sealing
(14) Repair with Fiberglass Jackets
(15) Bridge Seat Sealer shall be applied to all top surfaces of piers and connecting beams.
(16) Remove Existing Timber Fenders. See Sheet 38. for new fender system.
(17) Place Class X Concrete.

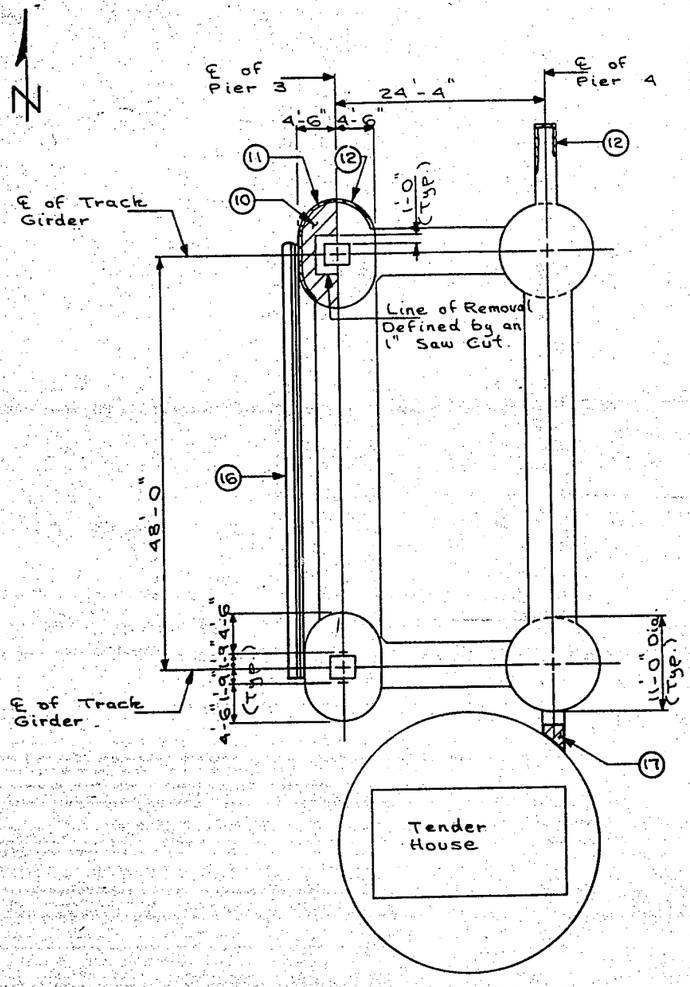
DESIGN	DETAILED	DRAWN	CHECKED
RPL	KRL	LEN	RPL

DONOHUE
ENGINEERS & ARCHITECTS
PROJECT NUMBER 12906.1

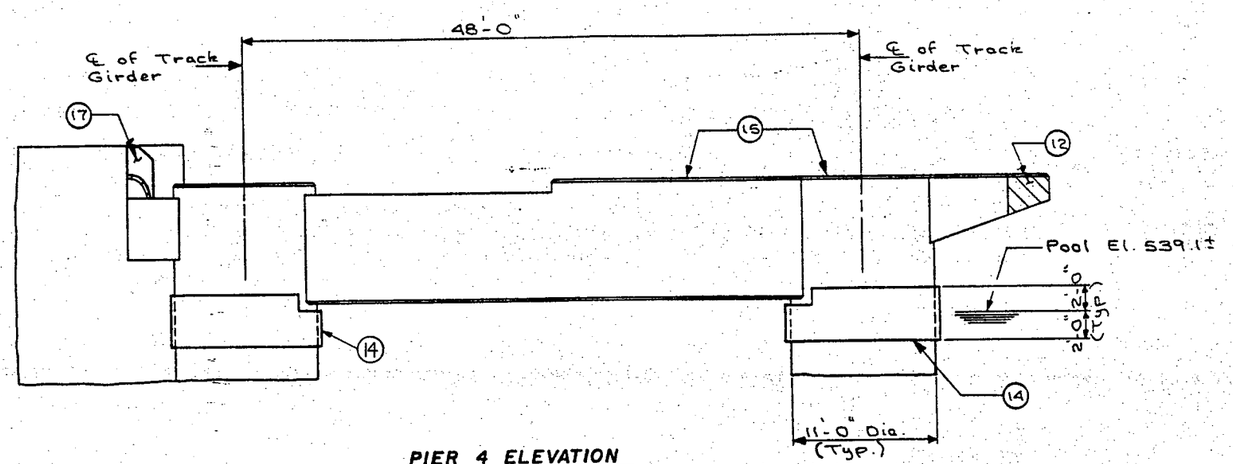
REVISIONS	
NAME	DATE

PIERS 1 & 2

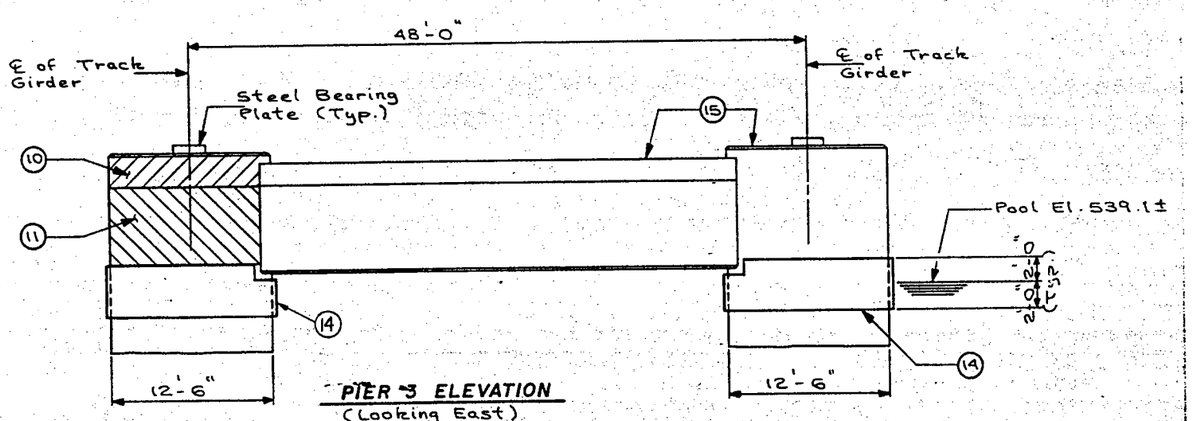
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY



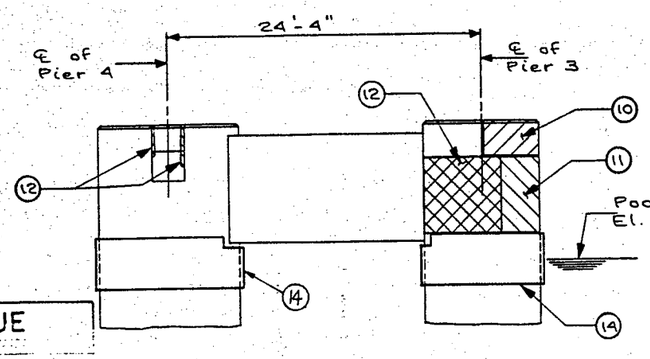
PLAN OF PIERS 3 & 4



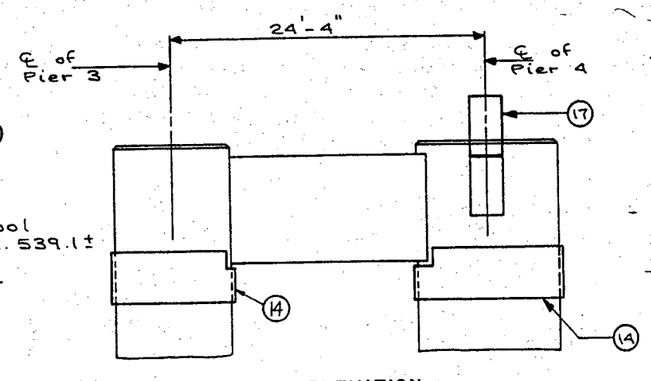
PIER 4 ELEVATION
(Looking West)



PIER 3 ELEVATION
(Looking East)



PIER ELEVATION



PIER ELEVATION
(Looking North)

(10) Concrete Removal to Limits Shown in "Section P." *(Sheet 37)*
(11) Concrete Removal to Limits Shown in "Section P." *(Sheet 37)*
(12) Polymer Mortar Repair
(13) Epoxy Crack Sealing
(14) Repair with Fiberglass Jackets
(15) Bridge Seat Sealer shall be applied to all top surfaces of piers and connecting beams.
(16) Remove Existing Timber Fenders. See Sheet 38. for new fender system.
(17) Place Class X Concrete.

DONOHUE

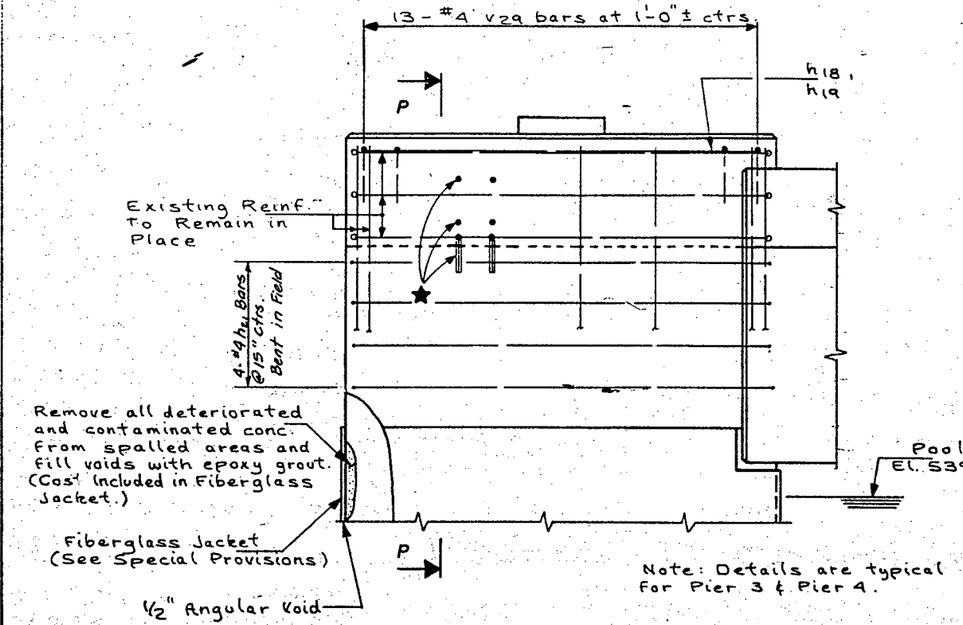
PIERS 3 & 4

REVISIONS
NAME | DATE

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

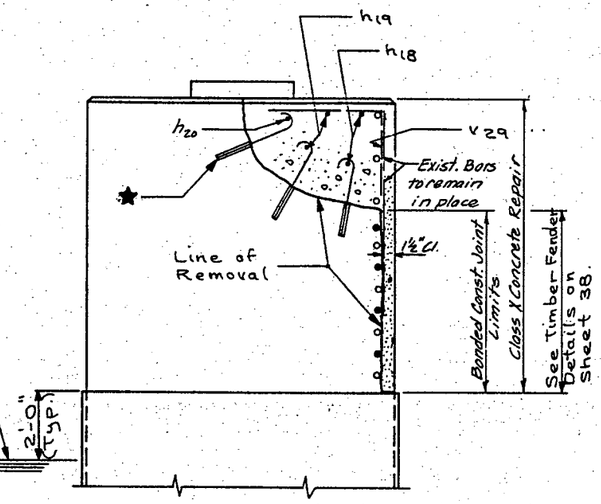
	SECTION		COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)		WILL	64	43
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

SHEET NO 37
45 SHEETS

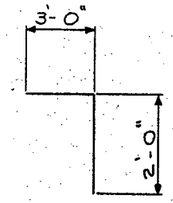


DETAIL P

Note: Details are typical For Pier 3 & Pier 4.



SECTION P



BAR v_{29}

★ ½" dia. Expansion Bolts Projecting 6" min. into New Concrete.

BILL OF MATERIAL - PIERS

Bar	No.	Size	Length	Shape
h_{18}	4	#4	8'-8"	
h_{19}	4	#4	10'-6"	
h_{20}	2	#4	11'-6"	
h_{21}	8	#4	16'-9"	
v_{29}	26	#4	5'-0"	

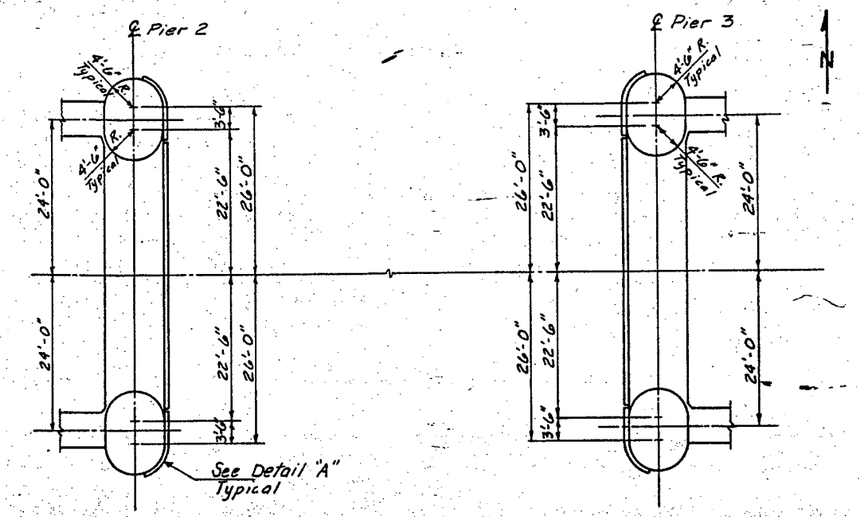
Item	Unit	Quantity
Class X Concrete	Cu. Yd.	12.3
Reinforcement Bars	Lbs.	250
Concrete Removal	Cu. Yd.	11
Expansion Bolts, 1/2"	Each	66
Polymer Mortar Repair	Cu. Ft.	21
Fiberglass Jackets	Sq. Ft.	1120
Surface Finish	Sq. Yd.	405
Bridge Seat Sealer	L. Sum	1
Epoxy Crack Sealer	Lin. Ft.	11

DONOHUE
FEET IN DEPTH TEST
RPL - KRL - LEN - RPL
12906.1

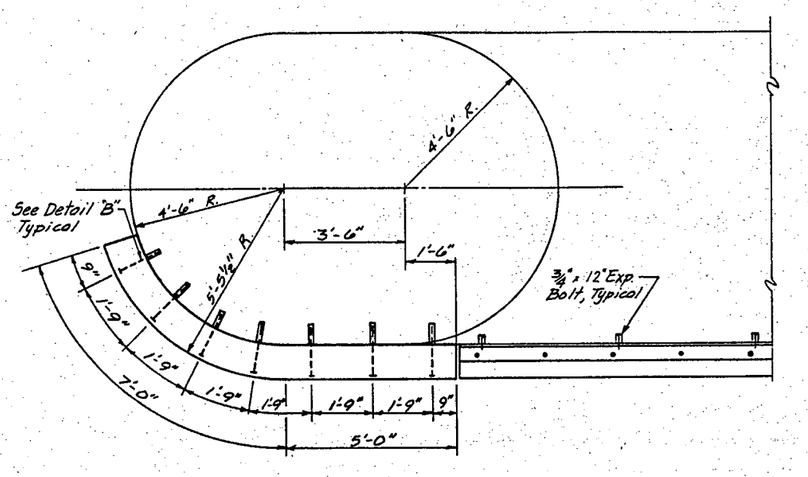
REVISIONS
NAME | DATE

PIER DETAILS

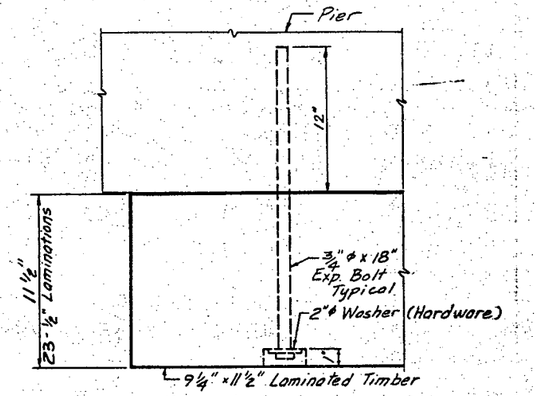
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY



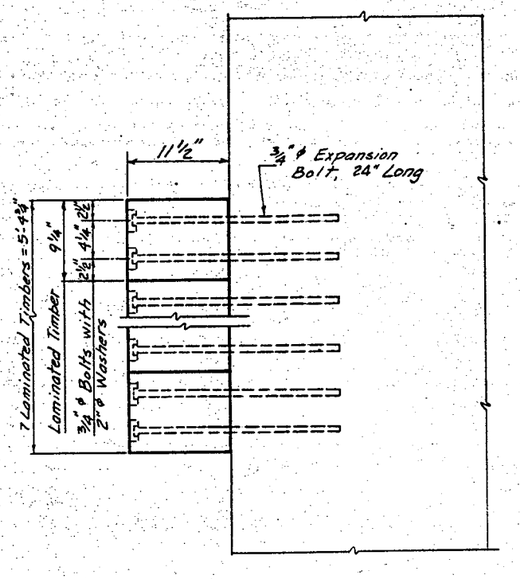
PLAN PIER PROTECTION



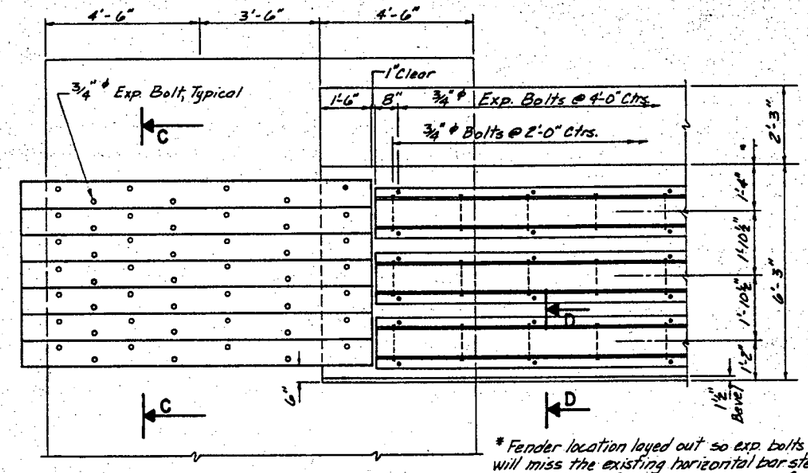
DETAIL A - PLAN



DETAIL B

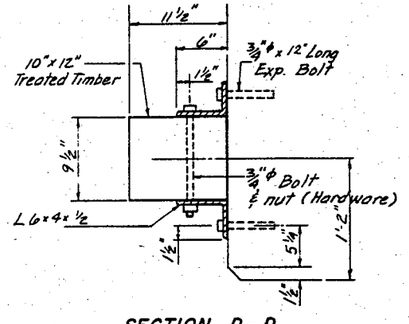


SECTION C-C



DETAIL A - ELEVATION

* Fender location layed out so exp. bolts will miss the existing horizontal bar steel. Contractor to field check previous fender attachments before angles are fabricated.



SECTION D-D

GENERAL NOTES

ALL HARDWARE; bolts, nuts, washers, and plate washers shall be galvanized in accordance with AASHTO M232.

ALL STRUCTURAL STEEL; angles shall be galvanized in accordance with AASHTO M111.

LAMINATED TIMBER shall be constructed from white oak or treated red oak.

BILL OF MATERIAL - TIMBER FENDERS

Item	Unit	Quantity
Structural steel	Pound	8420
Expansion Bolts ¾ inch x 12"	Each	132
Treated Timber	F B M	2510
Laminated Timber	F B M	6440
Hardware	Pound	230
Expansion Bolts ¾ inch x 24"	Each	196

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK	DRAWN	CHECKED
BY APL	BY KRL	BY KRL	BY APL

PROJECT NUMBER 12966.1

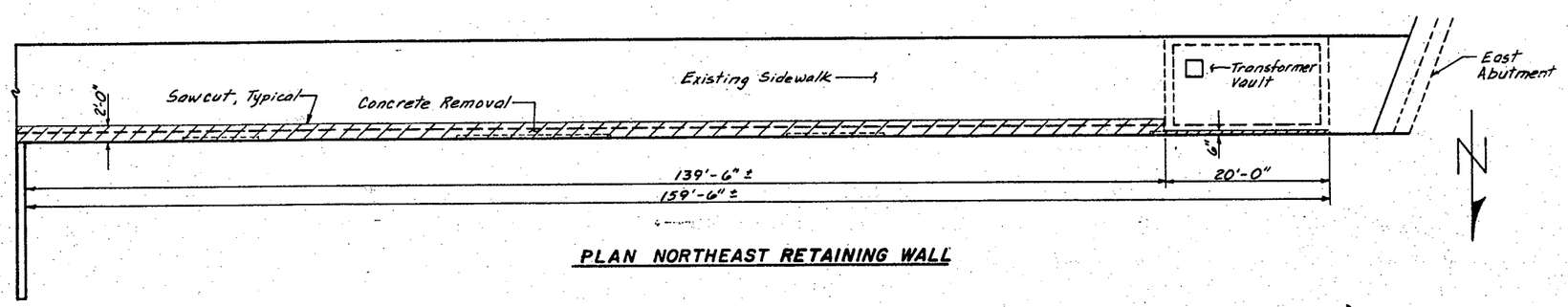
REVISIONS	
NAME	DATE

TIMBER FENDERS

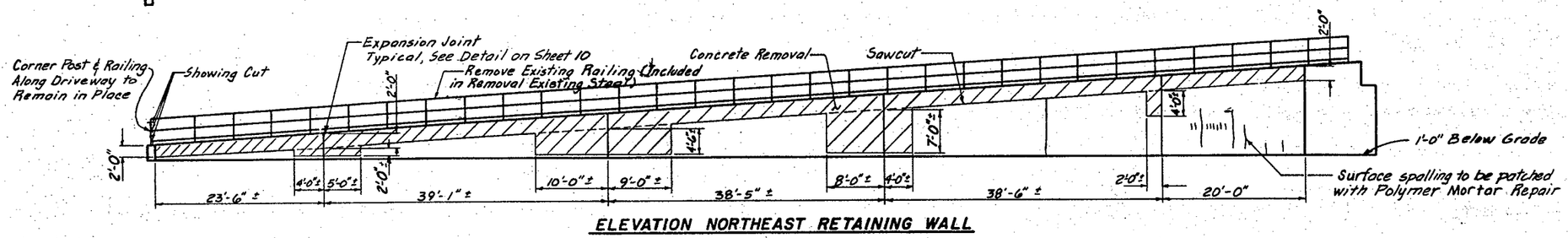
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

STATE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	45
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

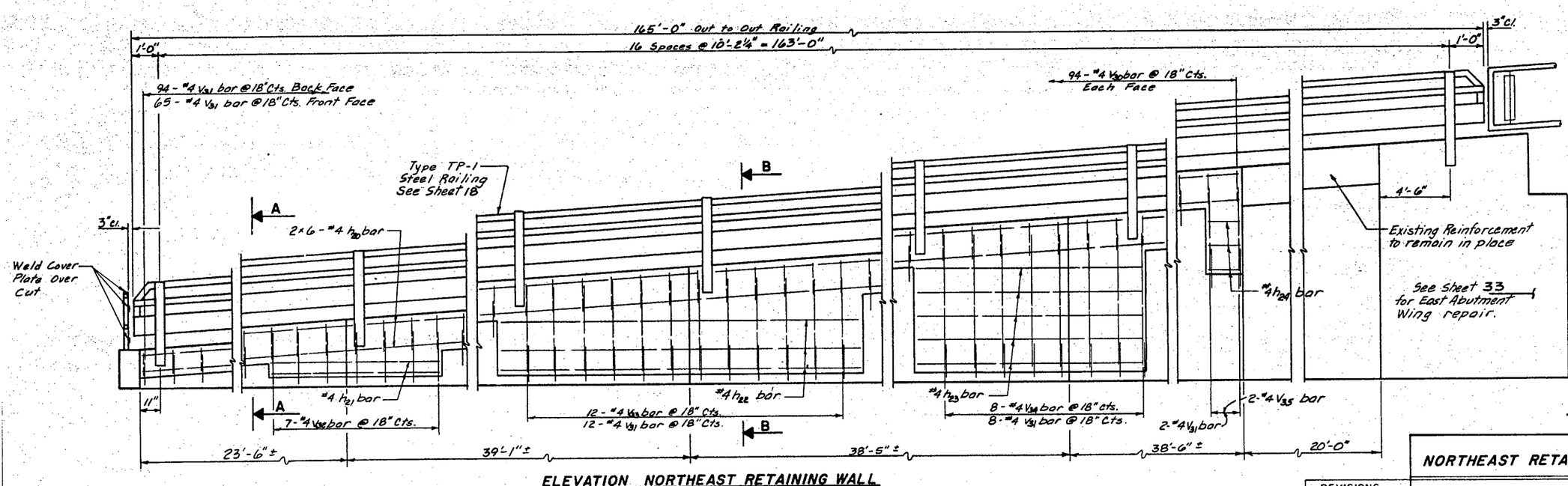
SHEET NO. 39
45 SHEETS



PLAN NORTHEAST RETAINING WALL



ELEVATION NORTHEAST RETAINING WALL



ELEVATION NORTHEAST RETAINING WALL

Note: See Sheet 40 for Sections A-A and B-B

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN	DESIGN CHK'D	DRAWN	CHECKED
BY KRL	BY APL	BY KRL	BY APL

PROJECT NUMBER 12906.1

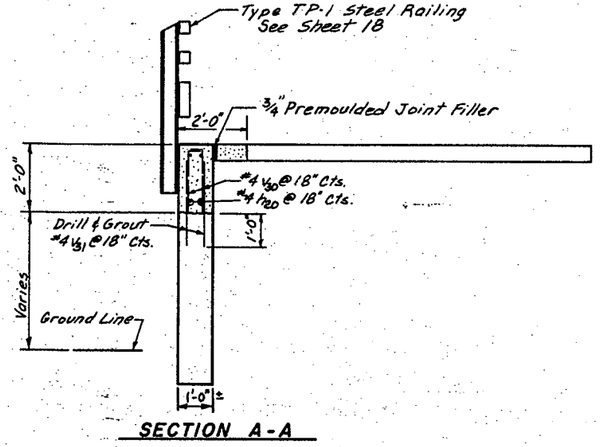
REVISIONS	
NAME	DATE

NORTHEAST RETAINING WALL

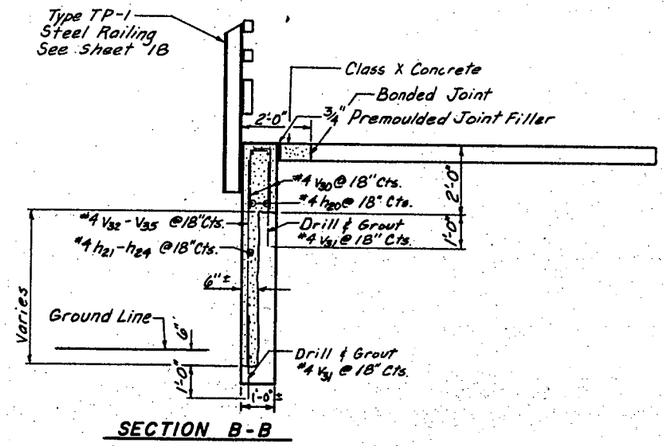
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

FED. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	46
FED ROAD DIST NO. 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 40
45 SHEETS

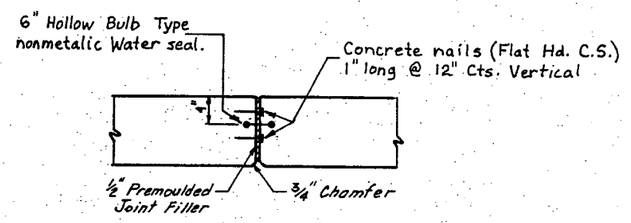


SECTION A-A

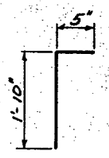


SECTION B-B

Note: See Sheet 39 for Location of Sections A-A and B-B



EXPANSION JOINT DETAIL



BAR V_{30}

BILL OF MATERIAL - RETAINING WALL *

Bar	No.	Size	Length	Shape
h_{20}	24	#4	25'-0"	——
h_{21}	2	#4	8'-6"	——
h_{22}	3	#4	18'-6"	——
h_{23}	5	#4	11'-6"	——
h_{24}	3	#4	1'-6"	——
V_{30}	188	#4	2'-3"	⌐——
V_{31}	181	#4	2'-6"	——
V_{32}	7	#4	4'-6"	——
V_{33}	12	#4	5'-9"	——
V_{34}	8	#4	8'-3"	——
V_{35}	2	#4	5'-6"	——

Item	Unit	Quantity
Class X Concrete	Cu. Yd.	18
Reinforcement bars	Pound	1,200
Steel Railing Type TP-1	Lin. Ft.	165
Concrete Removal	Cu. Yd.	18
Polymer Mortar Repair	Cu. Ft.	1
Surface Finish	Sq. Yd.	150
Structural Excavation	Cu. Yd.	25

* NOTE: RETAINING WALL REPAIR WORK WILL BE PAID FOR BY STATE FUND EXCEPT THE STEEL RAILING TYPE TP-1 AND P.C.C. SIDEWALK WILL BE PAID BY CITY FUND.

DONOHUE
ENGINEERS & ARCHITECTS

DESIGN BY	DESIGN CHK'D BY	DRAWN BY	CHECKED BY
KRL	APL	KRL	APL

PROJECT NUMBER 12906.1

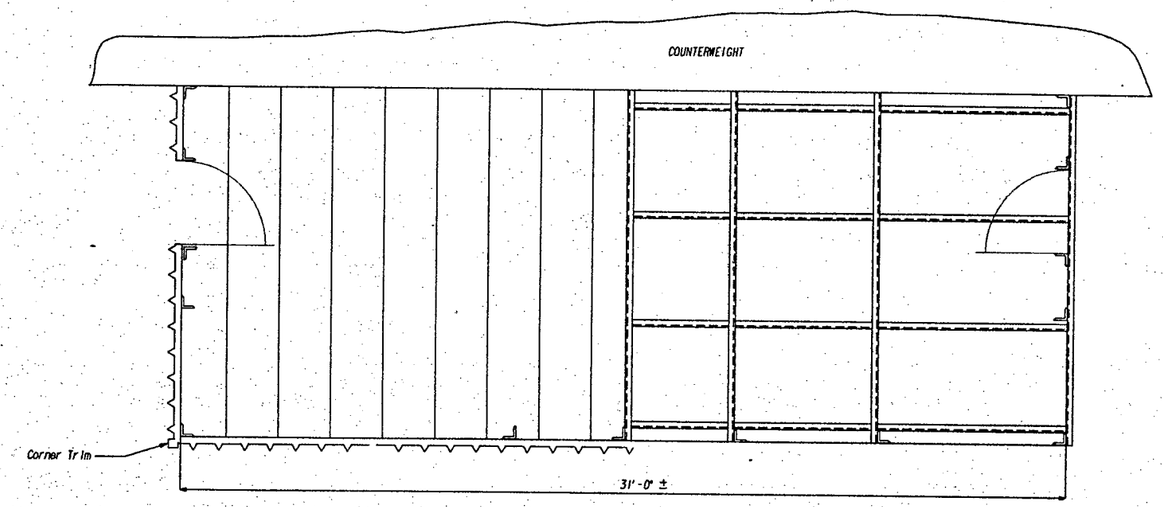
REVISIONS	
NAME	DATE

NORTHEAST RETAINING WALL

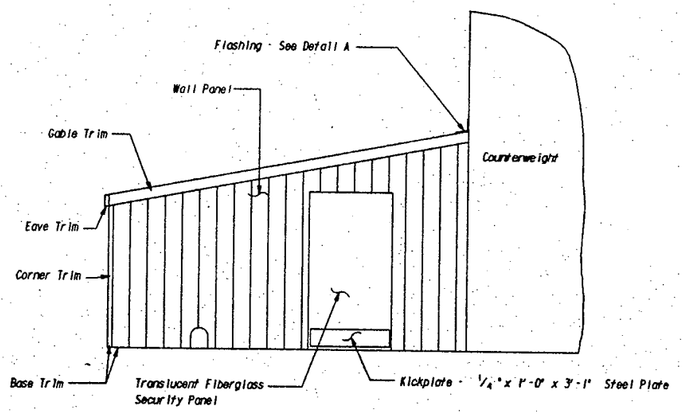
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

F.A.U. RTE.	SECTION	CO.	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(80)	WILL	64	47
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

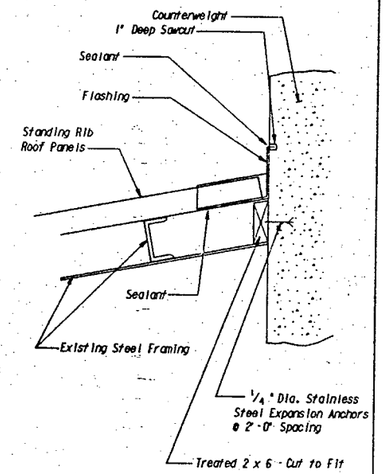
SHEET NO. 41
45 SHEETS



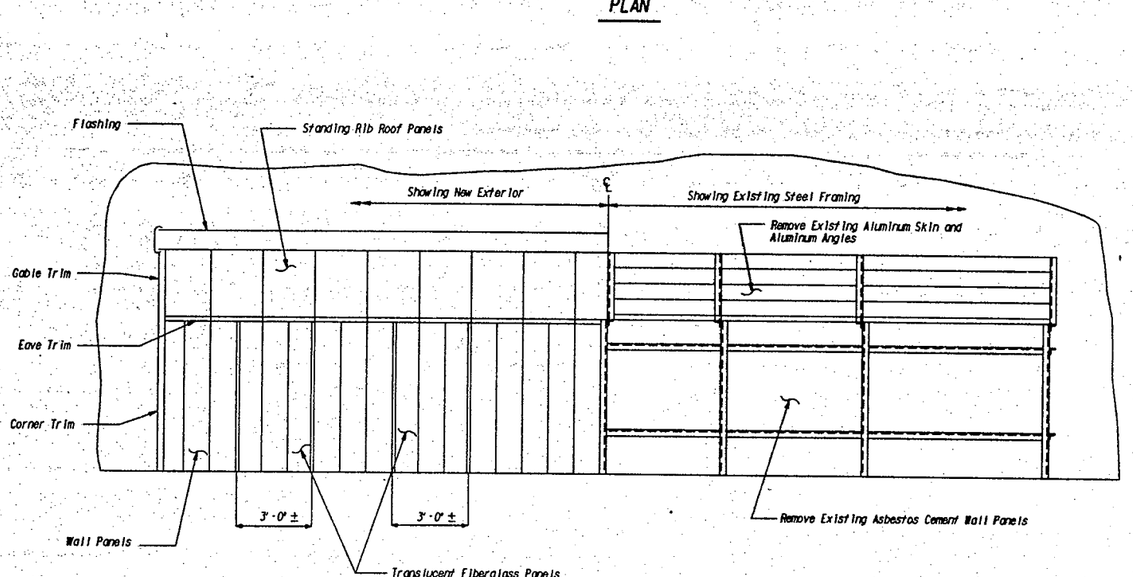
PLAN



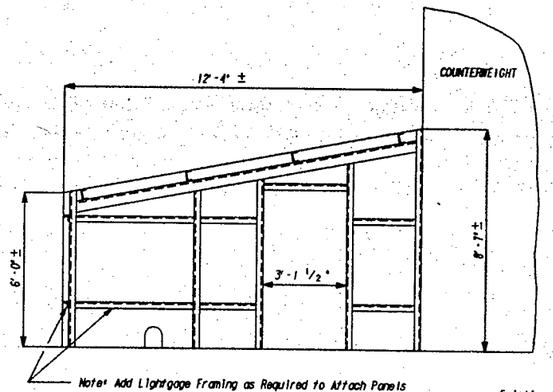
SIDE VIEW
Showing New Exterior



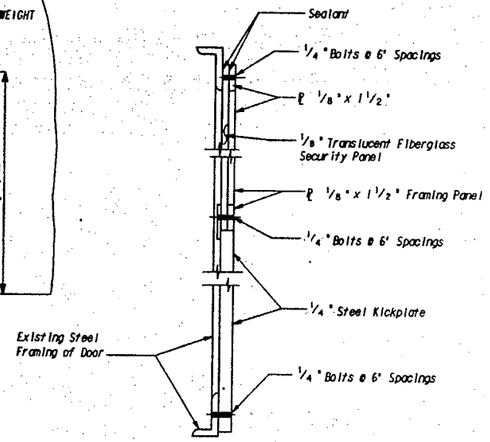
DETAIL A



ELEVATION



SIDE VIEW
Showing Existing Steel Framing



DOOR SECTION

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY:	DESIGN CK'D. BY:	DRAWN BY:	CHECKED BY:
A.P.L.	K.R.L.	J.A.R.	A.P.L.

PROJECT NUMBER 12906.100

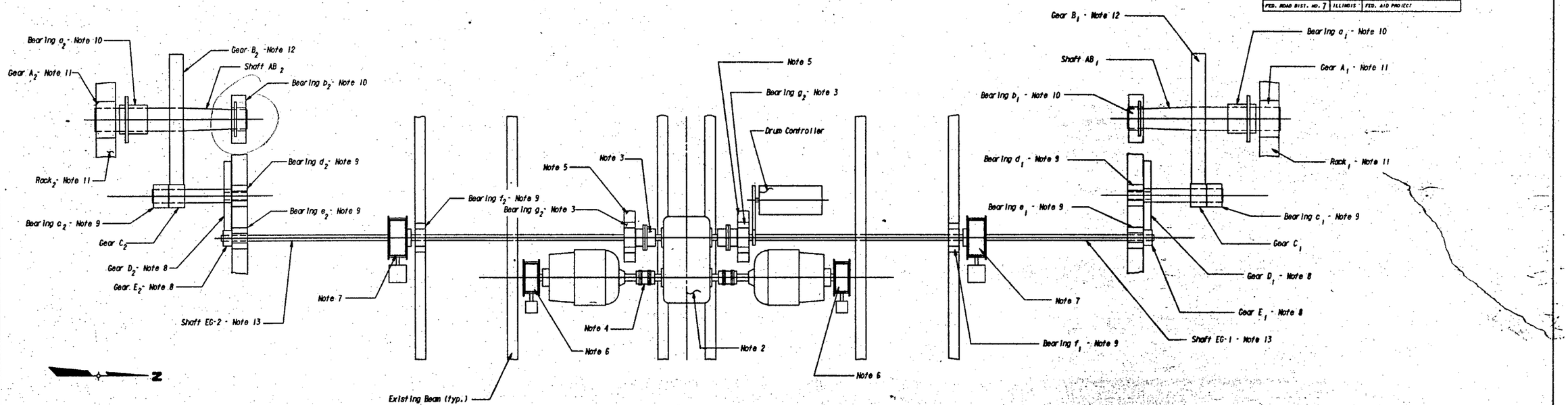
REVISIONS	
NAME	DATE

MACHINERY HOUSE DETAILS

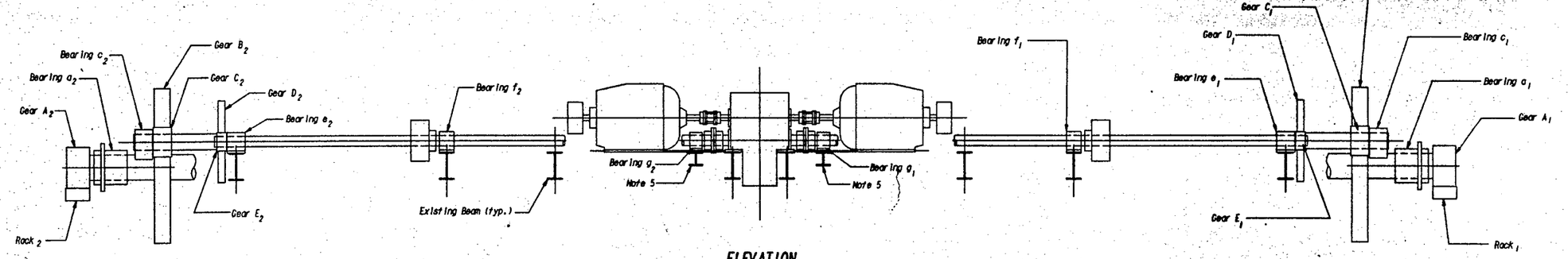
STRUCTURE NO.099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(80)
WILL COUNTY

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(80)	WILL	64	49
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 43
45 SHEETS



PLAN



ELEVATION

LEGEND

1. Plan dimensions taken from original design plans. Contractor to verify all dimensions in the field and reflect differences on shop drawing submittal.
2. Replace existing open gears with enclosed differential gearbox. See sheet 45.
3. Install gear type coupling and additional bearing g_1 and g_2 onto existing 4 5/8" Dia. shaft.
4. Install gear type spacer coupling to connect existing motor shaft to new gear reducer.
5. Structural member added to support additional bearing - See sheet 25.
6. Clean and lubricate existing motor brakes and adjust to holding torque of 450 Ft.Lb.
7. Clean and lubricate existing emergency brakes and adjust to holding torque of 900 Ft.Lb.
8. Replace gears D and E - 4 places - See sheet 44.
9. Rebabbit bearings and bore to Rc-6 running fit.
10. Install new bushings in bearing 'a' and 'b'.
11. Install new gear A and rack - See sheet 44.
12. Install new shaft - Reuse Gears B and C.
13. Install new shaft - Reuse brake wheels.
14. Completely lubricate all gear teeth, bearings and rack upon completion.

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: K.N.B.	DESIGN CK'D. BY: A.P.L.	DRAWN BY: J.A.R.	CHECKED BY: K.N.B.

PROJECT NUMBER 12906.102

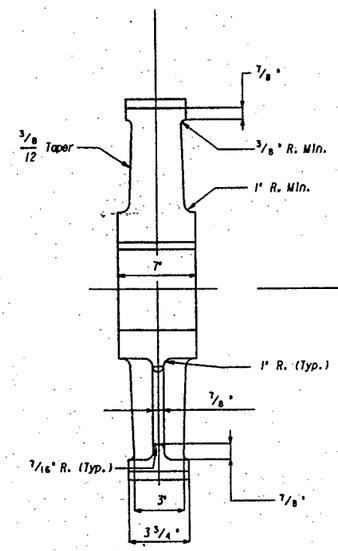
NEAR LEAF DRIVE

STRUCTURE NO.099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(80)
WILL COUNTY

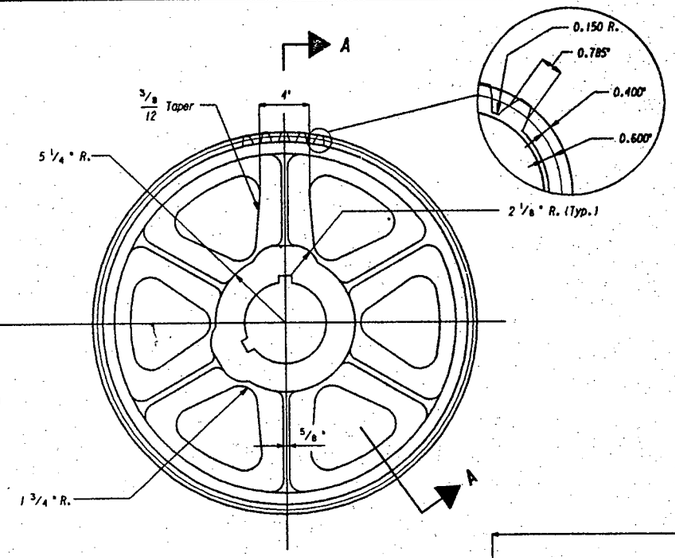
REVISIONS	
NAME	DATE

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0313	08-R-1 -1182)	WILL	64	50
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 44
45 SHEETS

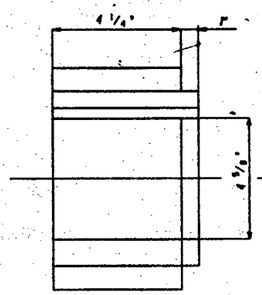


SECTION A-A

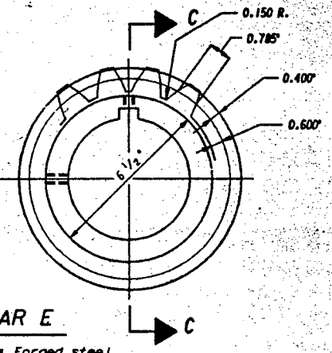


GEAR D

Material: Cast Steel
AASHTO M103 Grade 70-36

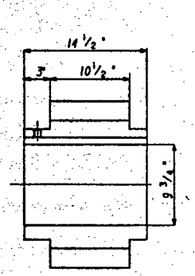


SECTION C-C

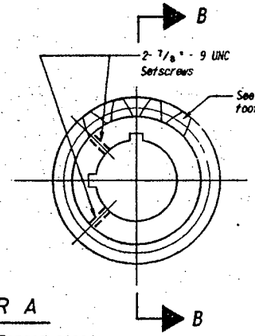


GEAR E

Material: Forged steel
AASHTO M102 Class D

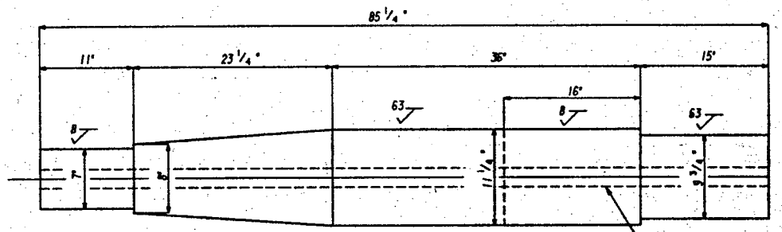


SECTION B-B



GEAR A

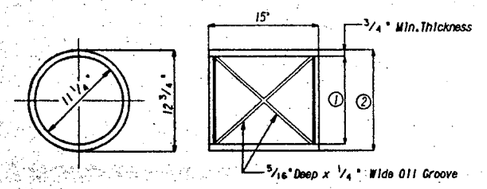
Material: Forged steel
AASHTO M102 CLASS D



Note: Field verify all shaft dimensions.

SHAFT AB

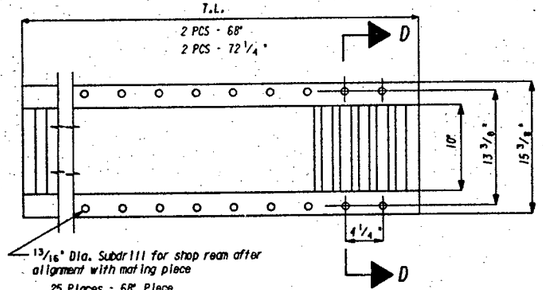
Material: Forged Alloy Steel
AASHTO M102 Class G

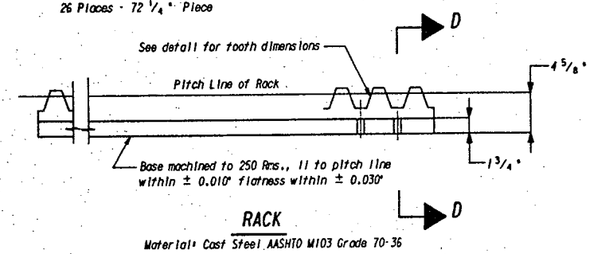


① Running Fit - ANSI RC-6
② Press fit into existing Housing - ANSI FN-2

BEARING a

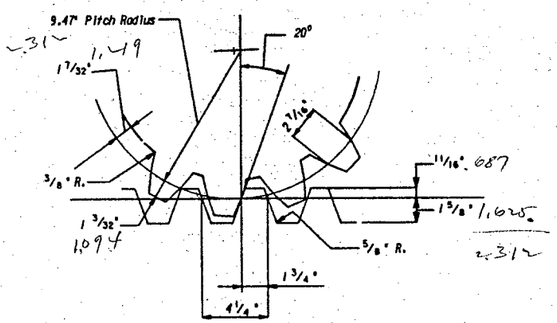
Material: Bronze bushing AASHTO M107 Alloy 937



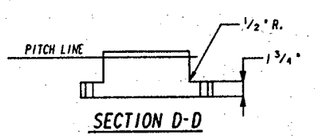


RACK

Material: Cast Steel AASHTO M103 Grade 70-36



TOOTH DIMENSION DETAIL



SECTION D-D

Gear	Qty. Reqd.	Pitch Dia.	No. Teeth	Pitch	Tooth	Bore Dia.	Bore Fin. (Rms.)	Key	Shaft Fit	Notes
Rack	4 Sets	N/A	N/A	4 1/4"	Spec 20° Involute	N/A	N/A	N/A	N/A	One set includes 2 - 68" PCS and 2 - 72 1/4" PCS
Gear A	4	18.94"	14	4 1/4"	Spec 20° Involute	See Note	63	2-1 3/4" x 1 1/4" Gibhead	Fn2	Machine bore for Fn2 fit on shaft
Gear D	4	37"	74	2.0 DP	Std. 20° Involute STub Tooth	See Note	63	to Match Existing Shaft	Fn2	Machine bore for Fn2 fit on shaft
Gear E	4*	8"	16	2.0 DP	Std. 20° Involute STub Tooth	See Note	63	to Match Existing Shaft	Fn2	Machine bore for Fn2 fit on shaft

Note: All gear and shaft dimensions are nominal - Actual dimensions to match existing gears and shafts as noted.

* Install 3 new gears and 1 replacement (Rough Bored) stored on site - Total 4 Gears

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY:	DESIGN CK'D. BY:	DRAWN BY:	CHECKED BY:
K.N.B.	A.P.L.	J.A.R.	A.P.L.

PROJECT NUMBER 12906.102

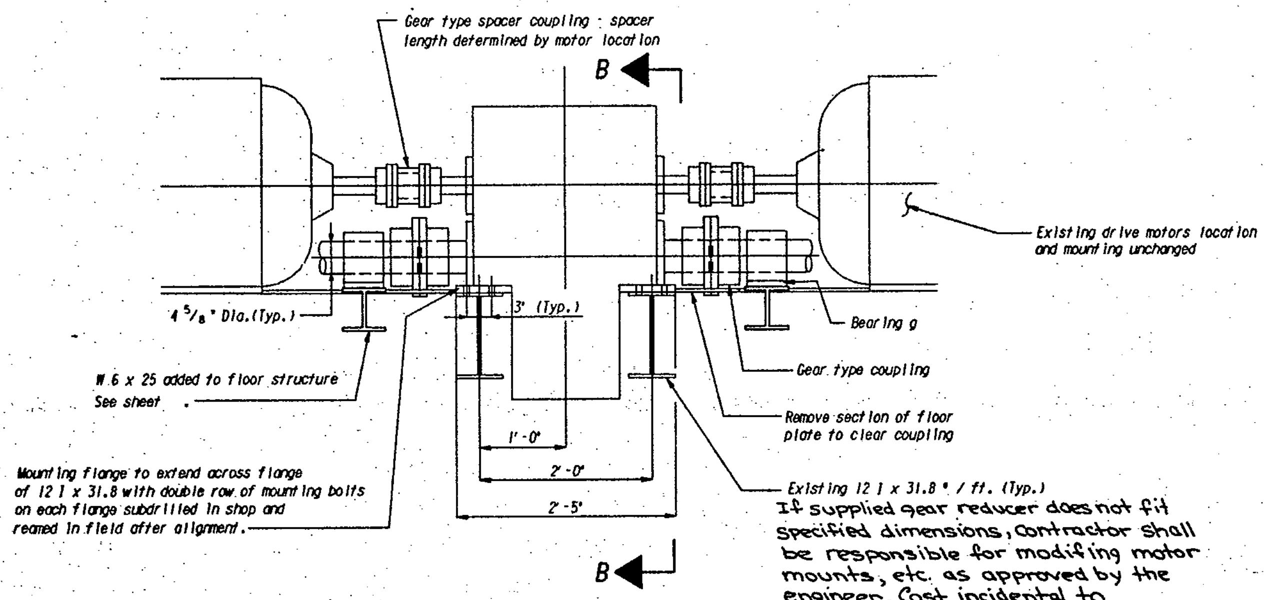
REVISIONS	
NAME	DATE

MECHANICAL DETAILS

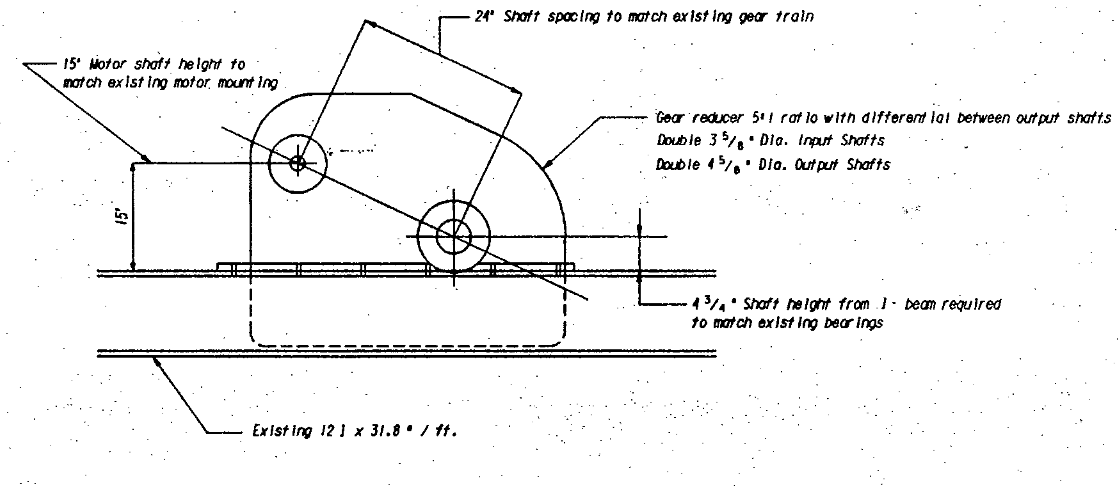
STRUCTURE NO.099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-1-1(80)
WILL COUNTY

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-1-1(80)	WILL	64	51
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

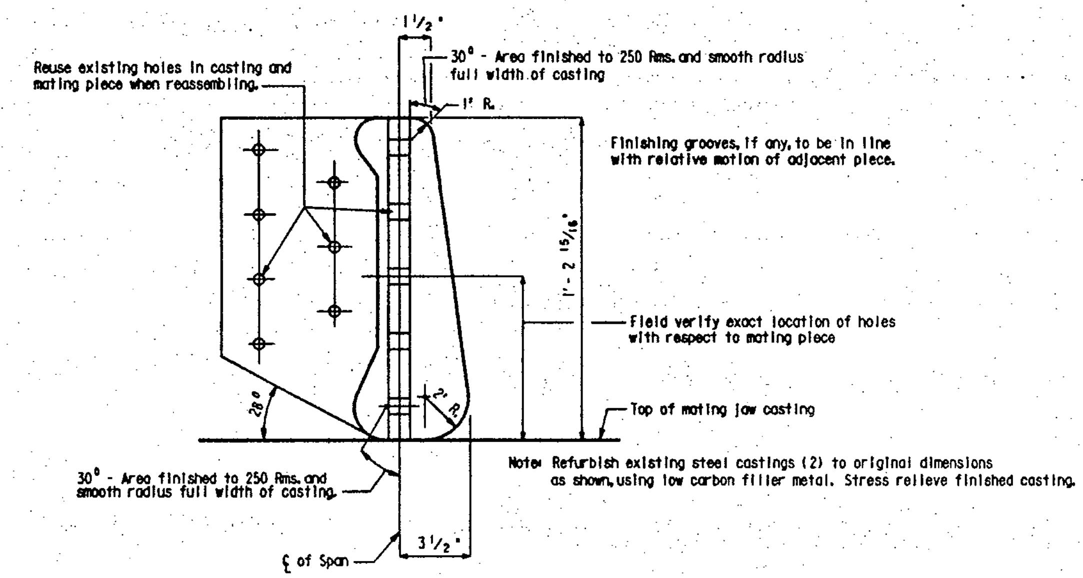
SHEET NO. 45
45 SHEETS



ELEVATION

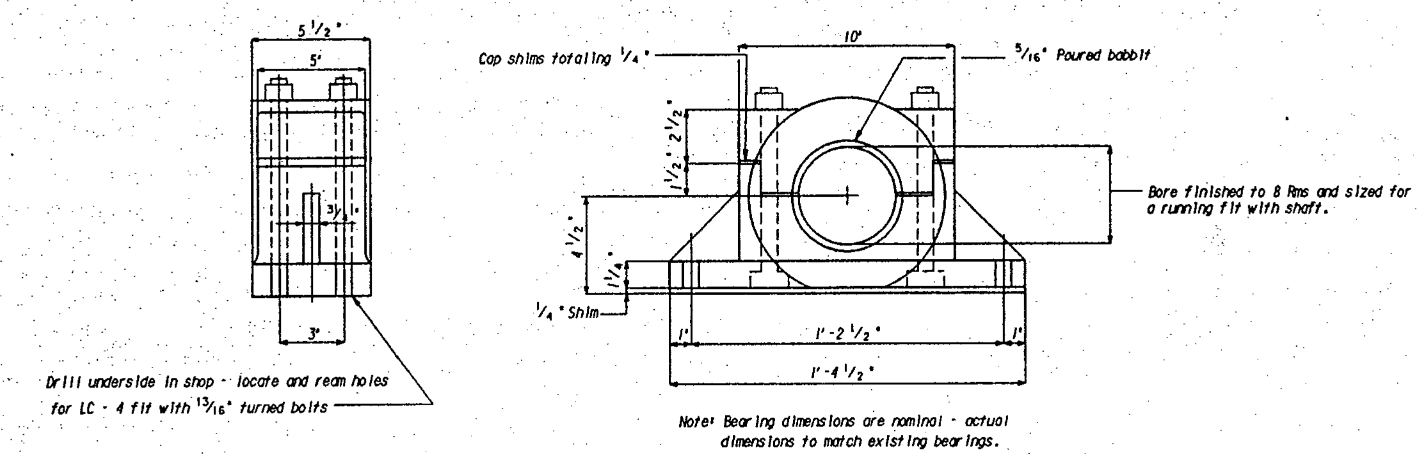


SECTION B-B



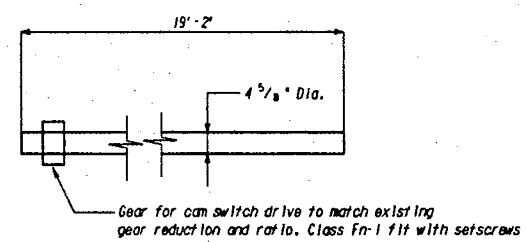
CENTER LOCK DIAPHRAGM CASTING

Note: 2 pieces required total. Field verify all dimensions.



BEARING g

Material: Cast Steel AASHTO M103 Grade 70-36



SHAFT EG

Material: Rolled Steel ASTM A-663 Grade 75
Finish: 250 Rms. overall, 8 Rms. at bearing journals

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY:	DESIGN CK'D. BY:	DRAWN BY:	CHECKED BY:
K.N.B.	A.P.L.	J.A.R.	A.P.L.
PROJECT NUMBER 12906.102			

REVISIONS	
NAME	DATE

MECHANICAL DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-1-1(80)
WILL COUNTY

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-I(82)	WILL	64	52
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 1
11 SHEETS

ABBREVIATIONS

CR	CONTROL RELAY
CS	CAM SWITCH
CT	CURRENT TRANSFORMER
GRD	GROUND
HP	HORSEPOWER
JB	JUNCTION BOX
KVA	KILOVOLT AMPS
KW	KILOWATT
LP	LIGHTING PANEL
LS	LIMIT SWITCH
MCC	MOTOR CONTROL CENTER
MTR, M	MOTOR
NC	NORMALLY CLOSED
NEUT, N	NEUTRAL
NO	NORMALLY OPEN
OL	OVERLOAD RELAY
PAN	PANEL
PB	PUSHBUTTON/PULLBOX
RAI	REMAIN AS IS
SS	SELECTOR SWITCH
SW	SWITCH
TB	TERMINAL BLOCK
TD	TIME DELAY
TR	TIMING RELAY
TS	TIME SWITCH
V	VOLTS
WP	WEATHERPROOF
XFMR	TRANSFORMER

SYMBOLS

- FLUORESCENT FIXTURE (LETTER DENOTES TYPE)
- FLUORESCENT FIXTURE-WALL MOUNTED (LETTER DENOTES TYPE)
- INCANDESCENT OR HID FIXTURE (LETTER DENOTES TYPE)
- INCANDESCENT OR HID FIXTURE-WALL MOUNTED (LETTER DENOTES TYPE)
- POLE MOUNTED ROADWAY FIXTURE (LETTER DENOTES TYPE)
- TRAFFIC LIGHT

- SINGLE POLE SWITCH
- TWO POLE SWITCH
- 3-WAY SWITCH
- 4-WAY SWITCH
- DIMMER SWITCH
- MOMENTARY CONTACT SWITCH
- KEY-OPERATED SWITCH
- SINGLE POLE SWITCH WITH PILOT LIGHT
- DUPLEX GROUNDED RECEPTACLE, 120 VOLT
- FLUSH FLOOR BOX/GROUND ROD
- SPECIAL PURPOSE OUTLET, DIRECT CONNECT
- WALL MOUNTED THERMOSTAT
- TELEPHONE OUTLET, WALL MOUNT WITH 3/4" CONDUIT TO TELEPHONE TERMINAL CABINET
- LIGHTING OR POWER PANEL
- HORN
- MOTOR
- CONDUIT RUNS EXPOSED
- CONDUIT RUNS CONCEALED IN FLOOR, WALL, UNDERGROUND OR UNDERSIDE OF BRIDGE
- CONDUIT TURNING UP OR TOWARD OBSERVER
- CONDUIT TURNING DOWN OR AWAY FROM OBSERVER
- CONDUIT STUB
- CONDUIT FOR TELEPHONE
- CONDUIT FOR CONTROL
- DIRECT BURIAL CABLE
- GROUNDING CABLE
- HOMERUN CIRCUIT OR CONDUCTORS

ONE-LINE AND ELEMENTARY DIAGRAM SYMBOLS

- MOLDED CASE CIRCUIT BREAKER (UPPER NUMERAL INDICATES FRAME SIZE) (LOWER NUMERAL INDICATES TRIP SETTING)
- FUSED DISCONNECT SWITCH-3 POLE UNLESS OTHERWISE NOTED (UPPER NUMERAL INDICATES SWITCH SIZE) (LOWER NUMERAL INDICATES FUSE SIZE)
- THERMAL ELEMENT
- CURRENT TRANSFORMER ($\frac{300}{5}$ - INDIATES TURN RATIO) (3- INDICATES QUANTITY)
- TRANSFORMER
- GROUND
- INDUCTION MOTOR (NUMERAL INDICATES HORSEPOWER)
- WOUND ROTOR MOTOR
- INDICATING LAMP A-AMBER G-GREEN R-RED
- AMMETER SELECTOR SWITCH
- VOLTMETER SELECTOR SWITCH
- AMMETER
- VOLTMETER
- RELAY OR TIMER COIL
- PRESS-TO TEST CONSOLE LIGHT (LETTER DENOTES LENS COLOR)
- LIMIT SWITCH OR CAM SWITCH
- PUSHBUTTON
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- TERMINAL FOR EXTERNAL WIRING
- ON-DELAY TIMED CLOSING CONTACT (T.C.)
- ON-DELAY TIMED OPENING CONTACT (T.O.)
- OFF-DELAY TIMED OPENING CONTACT (T.O.)
- ACCELERATION TIMING RELAY
- SELECTOR SWITCH
- CONNECTION EXTERNAL TO WOUND ROTOR CONTROLLER.

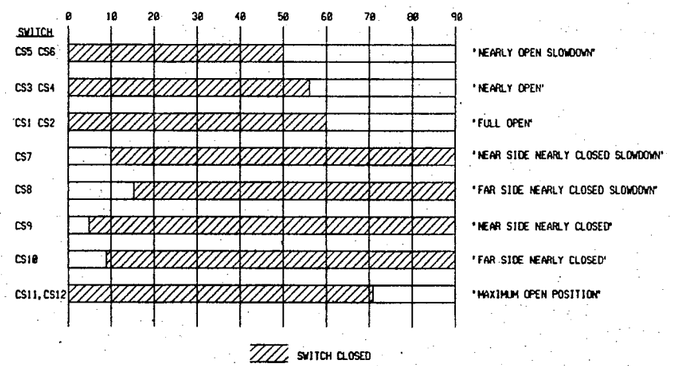
DRAWING LIST

E-1	SYMBOLS - DRAWING LIST - PROJECT NOTES
E-2	OPERATING INSTRUCTIONS
E-3	BRIDGE PLAN - ELEVATIONS - DETAILS
E-4	TENDER HOUSE PLANS - ELEVATION - DETAILS
E-5	MACHINE HOUSE PLANS - SCHEDULES
E-6	ONE-LINE DIAGRAM - MCC ELEVATION
E-7	BRIDGE CONTROL ELEMENTARY DIAGRAM #1
E-8	BRIDGE CONTROL ELEMENTARY DIAGRAM #2
E-9	BRIDGE CONTROL ELEMENTARY DIAGRAM #3
E-10	WOUND ROTOR CONTROLLER ELEMENTARY DIAGRAM
E-11	CONSOLE AND EQUIPMENT LIST

PROJECT NOTES

1. REMOVE ALL EXISTING 1 1/2" AND SMALLER EXPOSED CONDUIT. INSPECT AND REPLACE LARGER SIZE CONDUIT AS REQUIRED OR AS DIRECTED BY THE ENGINEER.
2. ARRANGE WITH TELEPHONE COMPANY FOR RELOCATING AND RE-CONNECTING TELEPHONE INTERFACE CABLES TO POLICE, FIRE, AND HOSPITALS. RE: STATUS OF BRIDGE ROADWAY.

ROTATING CAM SWITCH DEVELOPMENT
BRIDGE POSITION - IN DEGREES FROM CLOSED



Donohue Engineers & Architects			
DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM
PROJECT NUMBER	12986.101		

REVISIONS	
NAME	DATE

SYMBOLS - DRAWING LIST
PROJECT NOTES

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-I(82)
WILL COUNTY

4-13-84

FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	53
FED. ROAD DIST. NO. 7	ILLINOIS	FED AID PROJECT		

SHEET NO. 2
11 SHEETS

THE DETAILED SEQUENCE OF OPERATION OF THE BRIDGE SHALL BE AS NOTED IN THE FOLLOWING:

1. THE OPERATOR FIRST SHALL PUSH THE "CONSOLE POWER" "ON" BUTTON. THIS WILL RESULT IN THE FOLLOWING CIRCUITS BEING ENERGIZED.

   (1) "CONSOLE POWER" INDICATING LIGHT
   (2) CONTROL CIRCUIT
   (3) TRAFFIC GATE POSITION LIGHTS (UP)
   (4) POSITION INDICATING LIGHTS (CLOSED)
   (5) EMERGENCY BRAKE LIGHTS (LOCKED)
   (6) MOTOR BRAKE LIGHTS (LOCKED)

2. TO STOP TRAFFIC, THE OPERATOR SHALL TURN THE WARNING SYSTEM SWITCH ON THE CONTROL CONSOLE TO "ON". THIS WILL TURN THE TRAFFIC SIGNALS FROM STEADY GREEN TO AMBER, AT WHICH TIME THE BELL STARTS, THEN AFTER A 5 SECOND DELAY ALL TRAFFIC SIGNALS WILL BE STEADY RED. AFTER THE TRAFFIC SIGNALS ARE RED FOR 10 SECONDS THE GATE WARNING LIGHTS WILL FLASH RED, INDICATING POWER IS AVAILABLE TO LOWER GATES.

3. WHEN ON-COMING VEHICULAR AND PEDESTRIAN TRAFFIC HAS STOPPED, ON-COMING GATES CAN BE LOWERED BY THEIR RESPECTIVE SWITCHES. AFTER TRAFFIC HAS CLEARED, OFF-GOING GATES CAN BE LOWERED. BARRIERS WILL CLOSE AND THE INDICATOR LIGHTS ON THE CONSOLE WILL SHOW WHEN THE BARRIERS ARE IN THE DOWN POSITIONS. LIMIT SWITCHES AUTOMATICALLY WILL STOP BARRIERS AT LIMITS OF TRAVEL. OPERATOR SHALL TURN OFF TRAFFIC GATE SWITCHES. GATE WARNING LIGHTS SHALL CONTINUE TO FLASH RED.

4. WHEN IT IS OBSERVED VISUALLY, BY THE GATE CLOSED LIGHTS ILLUMINATING GREEN, INDICATING THAT THE BARRIERS ARE CLOSED, THE CONDITIONS REQUIRED TO RAISE BRIDGE HAVE BEEN MET.

   AT THIS STEP IN THE SEQUENCE OBSERVE INDICATING LIGHTS AS FOLLOWS:

	COLOR	INDICATION
WARNING SYSTEM	AMBER	SIGNALS AGAINST TRAFFIC WARNING BELLS RINGING
ONCOMING GATES	GREEN	GATES CLOSED TO TRAFFIC
OFFGOING GATES	GREEN	GATES CLOSED TO TRAFFIC
EMERGENCY BRAKES	RED	BRAKES LOCKED
LEAF POSITION	RED	LEAVES SEATED

5. TO RAISE THE LEAVES:

   A. THE OPERATOR CAN THEN TURN THE "EMERGENCY BRAKE" SELECTORS TO THE "RELEASED" POSITIONS. THE OPERATOR MAY TURN THE RIVER TRAFFIC SIGNALS TO "OPENING", OBSERVING GREEN LIGHT.

   B. WHEN IT IS OBSERVED THAT THE GREEN "EMERGENCY BRAKE RELEASED" INDICATING LIGHTS ARE ILLUMINATED, THE OPERATOR SHALL MOVE BOTH MASTER SWITCHES IN THE "RAISE" DIRECTION TO POINT 0, THUS RELEASING MOTOR BRAKES. BOTH MASTER SWITCHES MUST BE MOVED IN THE RAISE DIRECTION IN ORDER TO RELEASE THE MOTOR BRAKES AND RAISE THE BRIDGE. IF ONLY ONE MASTER SWITCH IS MOVED IN THE RAISE DIRECTION, WHEN THE LEAVES ARE INTERLOCKED, NO ACTION SHALL RESULT UNTIL THE OTHER IS MOVED IN THE RAISE DIRECTION. ONCE THE LEAVES PASS THE NEARLY CLOSED POSITION, THE OPERATOR CAN OPERATE EITHER LEAF INDEPENDENTLY.

   C. THE OPERATOR SHALL THEN MOVE ON TO POINT 1, "RAISE" AND THEN MOVE HANDLE SLOWLY THROUGH SUCCESSIVE POINTS "RAISE", INCREASING POWER AS DESIRED UP TO FINAL POWER POINT 6. ADJUSTABLE TIMED RELAYS SHALL BE INCORPORATED INTO CONTROLLER TO REQUIRE MINIMUM LENGTH OF STAY IN EACH POWER POINT DURING ACCELERATION. IF MOTOR OVERLOAD OCCURS, IT WILL BE APPAPENT BY EXCESSIVELY HIGH READINGS ON THE AMMETER DIALS ON CONSOLE. MOTOR OVERLOAD RESET BUTTONS SHALL BE LOCATED ON OUTSIDE OF MCC CABINET IN FIRST FLOOR OF TENDER HOUSE.

OPERATING PROCEDURE

   D. AS THE LEAVES APPROACH ABOUT 50 DEGREES, POWER SHALL BE AUTOMATICALLY LIMITED TO POINTS 0 THRU 3. WHEN THE LEAVES APPROACH ABOUT 56 DEGREES, THE LEAVES SHALL BE BROUGHT TO A STOP AUTOMATICALLY, IF NOT ALREADY DONE MANUALLY, AND THE MOTOR BRAKES APPLIED. AT THIS POINT, THE OPERATOR WILL PUSH THE NEARLY OPEN BYPASS BUTTON, TO BE ABLE TO PROCEED TO THE FULL OPEN POSITION. THIS MOMENTARY BUTTON, EFFECTIVE BETWEEN 50 AND 56 DEGREES, IS TO ENABLE ACTION ONLY IF THE MASTER SWITCHES ARE IN THE OFF POSITION. NOTE: NO LEAVE ACTION TO RESULT DIRECTLY FROM THIS LIMIT SWITCH BYPASS.

   E. THE OPERATOR SHALL THEN USE POWER POINTS 0 TO 3 TO RAISE LEAVES TO THE FULL OPEN POSITION. HOWEVER, ONCE THE MOMENTARY BYPASS BUTTON IS PUSHED AND ACTION ENABLED, ALL POWER POINTS SHALL BE AVAILABLE."

   F. WHEN THE LEAVES REACH 60 DEGREES, THE "FULL OPEN" LIGHTS WILL BE ILLUMINATED AND THE LEAF DRIVES WILL AUTOMATICALLY STOP. THE LIFT SPAN LIGHTS SHALL AUTOMATICALLY SWITCH FROM RED TO GREEN. IF DESIRED, A KEY-OPERATED LIMIT SWITCH BYPASS CAN BE TURNED ON TO ENABLE THE OPERATOR TO RAISE LEAVES BEYOND THE 60 DEGREE FULL OPEN POSITION TO THE MAX. OPEN POSITION OF 71 DEGREES, AT WHICH TIME THE LEAVES WILL AUTOMATICALLY STOP AND MOTOR BRAKES APPLIED.

6. LOWER THE LEAVES:

   A. AFTER THE OPERATOR CONFIRMS THAT VESSEL HAS CLEARED SPAN, HE SHALL TURN THE "RIVER TRAFFIC" SIGNAL SELECTOR TO THE "CLOSING" POSITION. THE RIVER TRAFFIC LIGHTS WILL THEN FLASH RED.

   B. WHEN IT IS DESIRED TO LOWER THE LEAVES, THE OPERATOR SHALL MOVE THE MASTER SWITCH IN "LOWER" DIRECTION. UPON MOVEMENT THE LIFT SPAN LIGHTS SHALL AUTOMATICALLY SWITCH FROM GREEN TO RED.

   C. THE OPERATOR SHALL MOVE MASTER SWITCH HANDLE TO POWER POINT 1 AND THEN SLOWLY TO SUCCESSIVE POINTS "LOWER", INCREASING SPEED.

   D. AS THE LEAVES APPROACH ABOUT 10 DEGREES FOR THE NEAR SIDE AND 15 DEGREES FOR THE FAR SIDE THE CONTROLLER WILL AUTOMATICALLY LIMIT THE LEAF DRIVES POWER TO SETTINGS 0 THRU 3.

   E. AS THE LEAVES REACH ABOUT 5 DEGREES FOR THE NEAR SIDE AND 9 DEGREES FOR THE FAR SIDE AS OBSERVED BY THE "NEARLY CLOSED" LIGHTS ILLUMINATING, THE CONTROLLER WILL AUTOMATICALLY STOP THE LEAF DRIVES AND APPLY THE MOTOR BRAKES, IF NOT ALREADY DONE MANUALLY, TO ALLOW PROPER CLOSING OF THE BASCULE SPANS.

   F. THE OPERATOR SHALL THEN MOVE THE MASTER SWITCHES TO THE "OFF" POSITION TO ENABLE THE LIMIT SWITCH BYPASS BUTTONS, ONE FOR EACH LEAF, TO BE PUSHED. NO ACTION SHOULD RESULT DIRECTLY FROM THE PUSHING OF THIS LIMIT SWITCH BUTTON.

   G. THE OPERATOR SHALL THEN MOVE THE MASTER SWITCHES TO "LOWER" TO RESTART THE DOWNWARD TRAVEL. LEAF DRIVE POWER SHALL HAVE ALL SETTINGS 0 THRU 6.

   H. WHEN THE LEAVES REACH THE FULLY CLOSED POSITION THE "FULLY CLOSED" LIGHT WILL ILLUMINATE. THE MASTER SWITCHES SHALL THEN BE PLACED IN THE "OFF" POSITION TO STOP THE DRIVE.

   I. IF THE MASTER SWITCHES ARE NOT TURNED OFF WITHIN A PRESET ADJUSTABLE TIME DELAY PERIOD, THE DRIVE WILL AUTOMATICALLY SHUT DOWN AND MOTOR BRAKES APPLIED.

   J. THE OPERATOR SHALL TURN THE "EMERGENCY BRAKE" SELECTORS TO THE LOCKED POSITIONS.

   K. AFTER INDICATING LIGHTS INDICATE BOTH LEAVES ARE IN THE SEATED POSITION, THE OPERATOR SHALL BE ABLE TO TURN THE "GATE SWITCHES" TO THE RAISE POSITION.

   L. WHEN THE "GATES UP" INDICATING LIGHTS ARE ILLUMINATED AMBER, THE OPERATOR SHALL TURN THE WARNING SYSTEM OFF AT WHICH TIME THE TRAFFIC LIGHTS WILL SWITCH TO GREEN AND THE BELLS WILL BE SILENCED.

   M. AT THIS STEP IN THE SEQUENCE OBSERVE THE INDICATING LIGHTS AS SHOWN IN STEP 4.

7. THE OPERATOR SHALL TURN THE MASTER "POWER" SELECTOR SWITCH TO TURN OFF CONSOLE POWER.

8. THERE SHOULD BE IDENTICAL KEYED BYPASS SWITCHES TO OVERRIDE THE FOLLOWING CONDITIONS:

   A.) IF LIMIT SWITCHES VERIFYING "FULLY CLOSED" POSITION FAIL, A BYPASS WILL ENABLE THE OPERATOR TO OPEN GATES, AND TURN OFF WARNING SYSTEM.

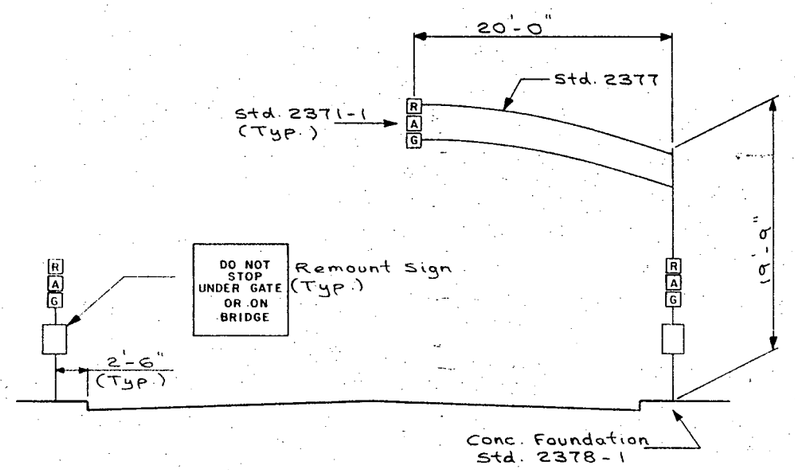
   B.) IF LIMIT SWITCHES FOR "GATES DOWN" FAIL, A BYPASS WILL ENABLE BRIDGE OPERATION.

   C.) IF LIMIT SWITCHES FOR "GATES OPEN" FAIL, A BYPASS WILL ENABLE TURNING OFF OF WARNING SYSTEM (TRAFFIC SIGNALS SWITCH TO GREEN.)

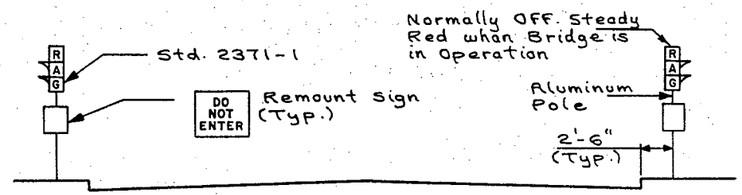
   D.) TO PERMIT RAISING OF BRIDGE BEYOND FULLY OPEN (60°).

   BYPASS KEY SHALL BE STORED IN A GLASS WINDOWED LOCKED BOX MOUNTED ON WALL OF TENDER HOUSE SECOND FLOOR. IT SHALL BE CLEARLY LABELED AS CONTAINING BYPASS KEY AND "BREAK GLASS IN CASE OF EMERGENCY".

9. IF CONSOLE POWER FAILS DURING OPERATION, ALL LEAF DRIVE POWER STOPS, EMERGENCY AND MOTOR BRAKES LOCK. UPON RESTORATION OF POWER NO MOVEMENT SHALL BE ALLOWED UNTIL THE "CONSOLE POWER" "ON" BUTTON IS PUSHED. OPERATOR SHALL TURN EMERGENCY BRAKES SWITCHES TO LOCKED POSITION AND MASTER SWITCHES TO "OFF" POSITION BEFORE TURNING CONSOLE POWER "ON".

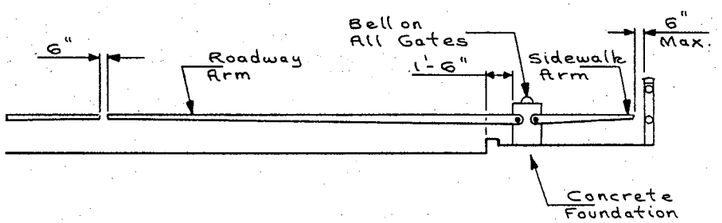


EAST APPROACH



WEST APPROACH

Note: West approach signals shall be wired for red, amber and green to accommodate possible temporary 2-way street operation. Amber and green signal heads shall be turned 90° away from roadway. They shall be mounted to easily turn to traffic to permit 2-way street operation



TRAFFIC GATE

DONOHUE ENGINEERS & ARCHITECTS			
DESIGN BY: APL	DESIGN CHK'D. BY: KRL	DRAWN BY: LEN	CHECKED BY: APL
PROJECT NUMBER 12906.1			

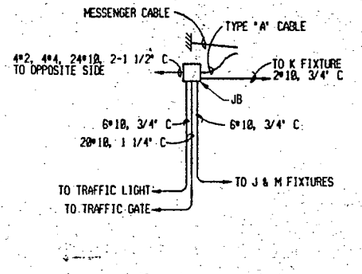
REVISIONS	
NAME	DATE

OPERATING INSTRUCTIONS

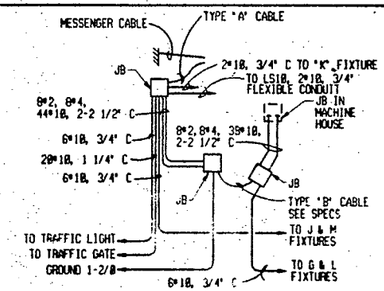
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	54
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

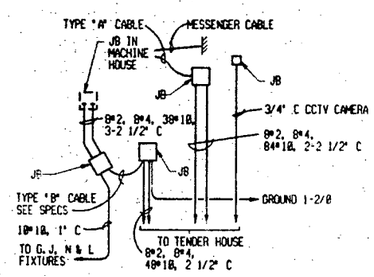
SHEET NO. 3
11 SHEETS



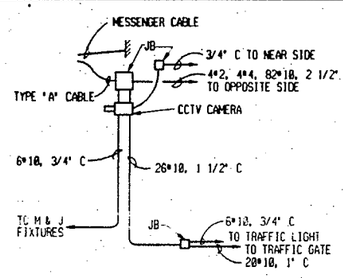
SECTION 1
NTS



SECTION 2
NTS



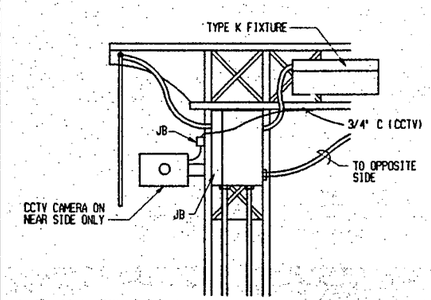
SECTION 3
NTS

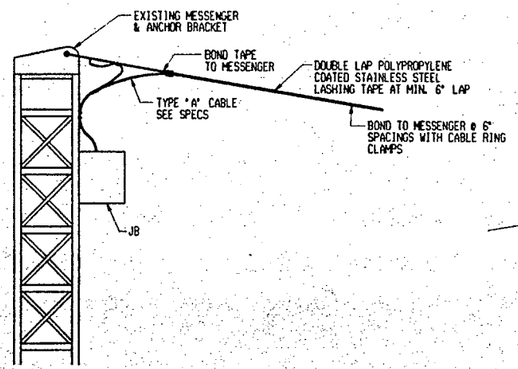


SECTION 4
NTS

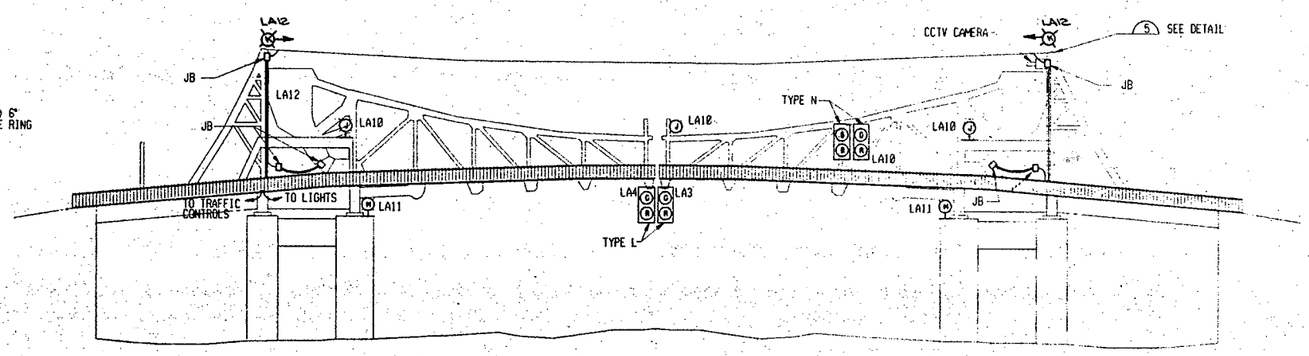
NOTE:

1. LIMIT SWITCHES SHALL BE N.C. SQUARE D CLASS 9007 TYPE PSN 2244 OR EQUAL) MOUNT SWITCH 1.5 INCHES FROM SUPPORTING STEEL MEMBER CLEAR OF ANY LIP. ADJUST SWITCH SUCH THAT CLEARANCE FROM END OF SENSING HEAD IS .375" TO STEEL PLATE OF MOVABLE ELEMENT.
2. ROUTE NEW 3 1/2" FEEDER FROM EXISTING JP AT WALKWAY FROM TENDER HOUSE UNDER BRIDGE. SUPPORT EVERY 4'. PROVIDE SWEEPING ELL AT NORTH SIDE. ROUTE CONDUIT TO RIVER WALL. EXTEND CONDUIT TO EXISTING TRANSFORMER VAULT.
3. PROVIDE 20X16X6 PB AS PER SPECIFICATIONS.
4. MOUNT UNDER MACHINE HOUSE.
5. SEE SHEET E-5 FOR FIXTURE SCHEDULE.

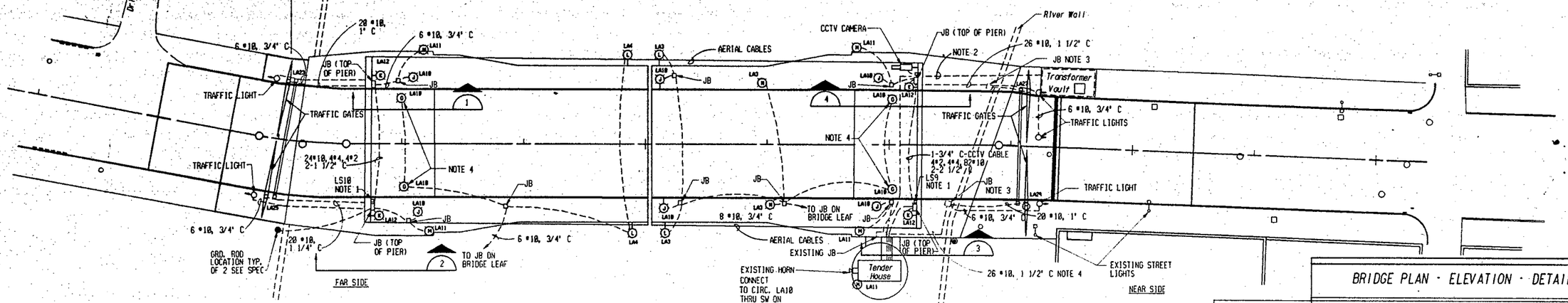




DETAIL 5
NTS



SOUTH ELEVATION
(NORTH ELEVATION SIMILAR)



PLAN VIEW

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM
PROJECT NUMBER 12986.181			

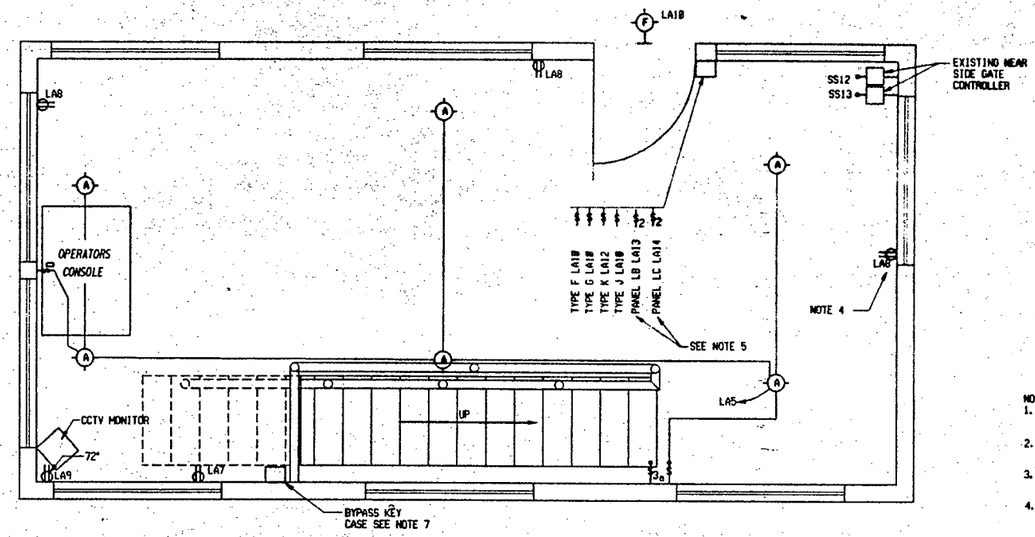
REVISIONS	
NAME	DATE

BRIDGE PLAN · ELEVATION · DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

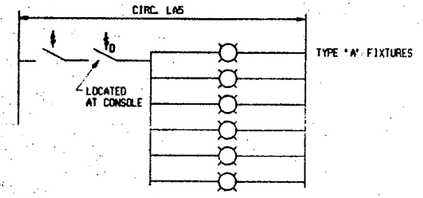
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(80)	WILL	64	55
FED. ROAD DIST. NO. 7	ILL. RTE. 5	FED. AID PROJECT		

SHEET NO. 4
11 SHEETS



UPPER FLOOR PLAN-CASS STREET

1/2"=1'-0"

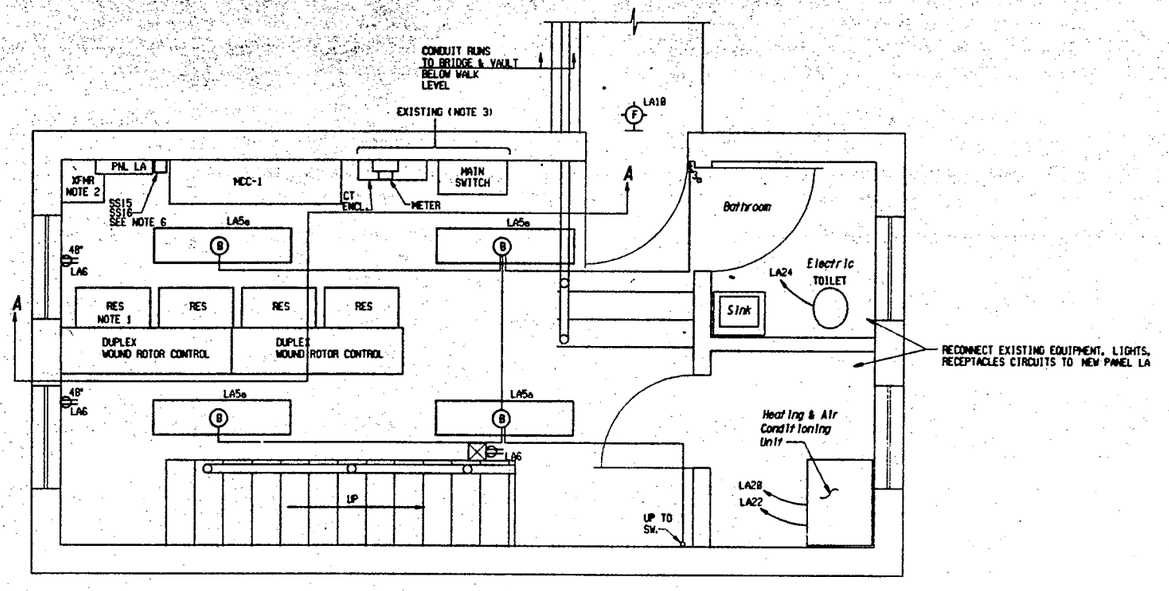


TENDER HOUSE UPPER LEVEL LIGHTING CIRCUIT

NTS

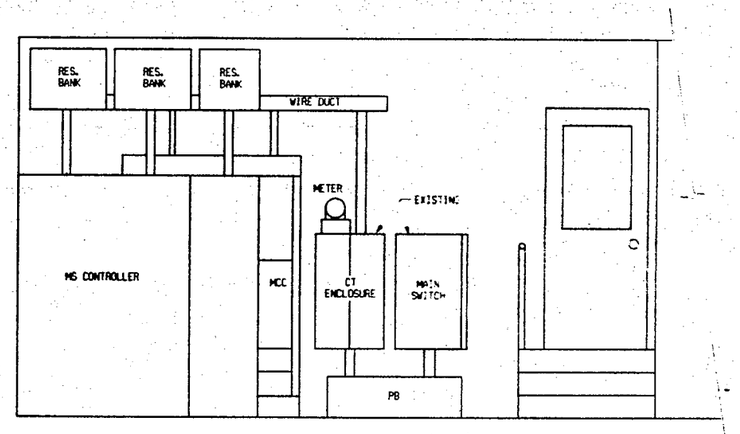
NOTES:

1. SUSPEND RESISTOR BANK ASSEMBLIES FROM CEILING. MAINTAIN 12" MINIMUM CLEARANCE FROM CEILING.
2. RECONNECT EXISTING LIGHTING TRANSFORMER AS SHOWN.
3. MAIN JB, MAIN SWITCH AND UTILITY METERING TO REMAIN AS IS (RAI) PB COVER PLATE SHALL BE FASTENED TO EN CLOSURE ON COMPLETION OF WORK.
4. RECEPTACLES AT 12" ABOVE FLOOR UNLESS OTHERWISE SHOWN SWITCHES AT 54" ABOVE FLOOR. SWITCHES HUBBELL 1201 DIMMING SWITCH LUTRON 3032-PL.
5. PROVIDE 2-30 AMP DPST SWITCHES TO CONTROL CIRCUITS FEEDING PANELS LB AND LC.
6. 2-POSITION KEY OPERATED SELECTOR SWITCHES- SQUARE D 9001-TYPE KS IN NEMA 12 ENCLOSURE. (KEYS TO BE SAME FOR BOTH SWITCHES)
7. 6"X8"X4" KEY CASE WITH BREAK GLASS TYPE DOOR AND HAMMER AND CHAIN.



LOWER FLOOR PLAN-CASS STREET

1/2"=1'-0"



ELEVATION A-A

1/2"=1'-0"

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM
PROJECT NUMBER 12986.181			

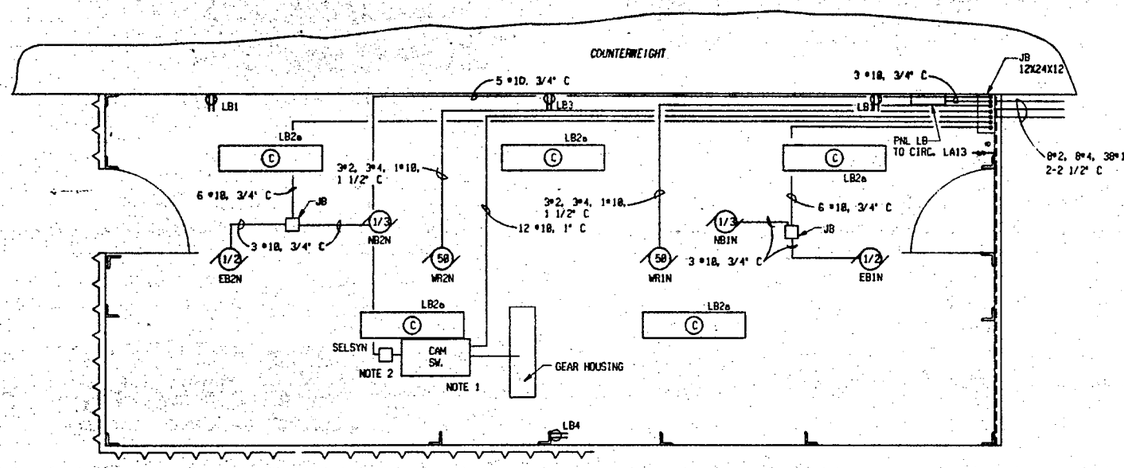
REVISIONS	
NAME	DATE

TENDER HOUSE PLANS - ELEVATIONS - DETAILS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-I(80)	WILL	64	56
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 5
11 SHEETS



MACHINE HOUSE PLAN (NS)
3/8" = 1'-0"

PANEL SCHEDULE

PANEL NO. LA
VOLTS/PHASE 120/240/1 PHASE MAIN BREAKER 125A BUS SIZE 225A

DESCRIPTION	TRIP	P	CIRCUIT NUMBER		P	TRIP	DESCRIPTION
TRAFFIC LIGHTS	20	1	1	2	1	20	TRAFFIC LIGHTS
RIVER LIGHTS	20	1	3	4	1	20	RIVER LIGHTS
HOUSE LIGHTS	20	1	5	6	1	20	RECEPTACLES
RECEPTACLE-RADIO XMTR	20	1	7	8	1	20	RECEPTACLES
RECEPTACLE-CCTV	20	1	9	10	1	20	BRIDGE, WALK LIGHTS
PIER LIGHTS	20	1	11	12	1	20	FLOOD LIGHTS
PANEL LB	30	2	13	14	2	30	PANEL LC
CONTROL CONSOLE POWER	20	1	17	18	2	30	AIR CONDITIONER
TOILET AND FURNACE LIGHTS	20	1	19	20			
HORN	20	1	21	22	1	20	FURNACE
HEATER-GATE FS	20	1	23	24	1	20	ELECTRIC TOILET
HEATER-GATE FS	20		25	26	1	20	SPARE
HEATER-GATE NS	20		27	28	1	20	SPARE
HEATER-GATE NS	20		29	30			SPACE
SPARE	20	1	31	32			
SPARE	20	1	33	34			
SPACE			35	36			
			37	38			
			39	40			
			41	42			

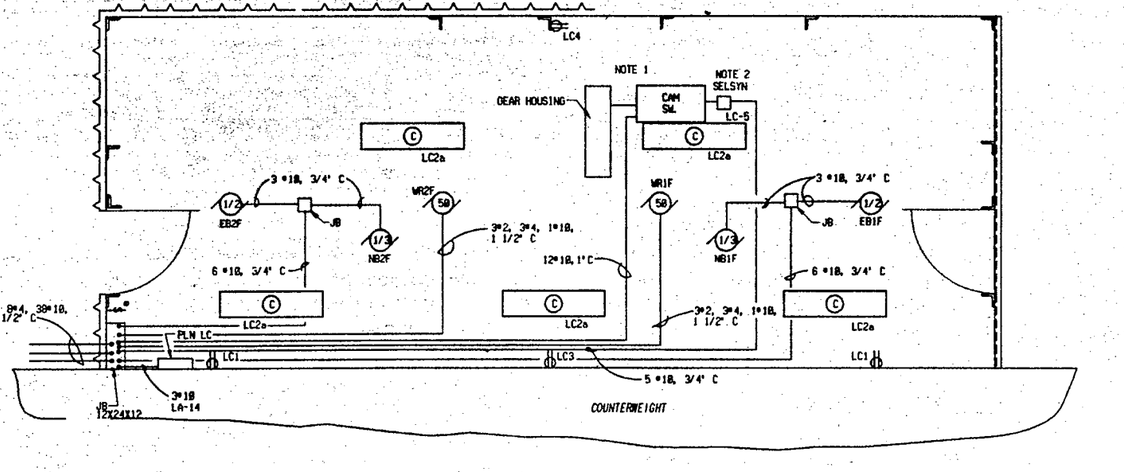
PANEL SCHEDULE

PANEL NO. LB, LC
VOLTS/PHASE 120/240/1 PHASE MAIN BREAKER — BUS SIZE 100A

DESCRIPTION	TRIP	P	CIRCUIT NUMBER		P	TRIP	DESCRIPTION
RECEPTACLE	20	1	1	2	1	20	LIGHTING
RECEPTACLE	20	1	3	4	1	20	RECEPTACLE
SPARE	20	1	5	6	1	20	SPARE

(2 REQUIRED)

NOTES:
1. PROVIDE A 18 POLE ROTATING CAM LIMIT SWITCH W/ CONTACTS RATED AT LEAST 3450 VA INRUSH, 345VA SEALED 600V AC OR LESS. GEAR RATIO ON DRIVE SHAFT SHALL BE COMPATIBLE WITH AND MATE EXISTING GEARING FROM MAIN SHAFT. GEMCO 1980-1218 OR EQUAL IN NEMA 12 ENCLOSURE. PROVISION FOR SHAFT EXTENSIONS ON OTHER END OF ENCLOSURE.
2. PROVIDE SELSYN POSITION INDICATING TRANSMITTER TO SEND PHASE SEEKING INFORMATION TO DIAL FACE RECEIVER IN CONTROL CONSOLE. CONNECT TO SHAFT EXTENSION FROM ROTATING CAM LIMIT SWITCH
3. FIXTURES TO BE REWIRED, RELAMPED & ALIGNED



MACHINE HOUSE PLAN (FS)
3/8" = 1'-8"

FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NO.	MOUNTING				LAMPS		REMARKS
				SURF.	SUS.	WALL	MH	NO.	TYPE	
A	INCANDESCENT DOWNLIGHTS	HALO	H1318AL	X				1	75R30FL	
B	FLUORESCENT-INDUSTRIAL 1X4	WESTINGHOUSE	H240RD	X				2	F40T12/RS/CW	
C	FLUORESCENT-PEG ENCLOSED 1X4	WESTINGHOUSE	PEG 240R W/ -20°F	X				2	F40T12/RS/CW	W/-20°F BALLAST
D	NOT USED									
E	NOT USED									
F	MPS WALL LIGHT EXTERIOR	HUBBELL	NRG-121-MP			X	102"	1	LU50	WET LABEL RATING
G	MPS SURFACE MOUNT	HUBBELL	S-918-1WIHS	X				1	LU100	
H	WALL MOUNTED MPS	MOLDCAST	B9020-12-BZ-F1	X			90"	1	LU40	
J	EXTERIOR MPS WALK	HUBBELL	MFS-B1805-7HJ-A1FL			X	14'	1	LU100	
K	FLOODLITE	WIDELITE	SBS-400-1-120-S			X	14'	1	LU400	W/-20°F BALLAST
L	EXISTING LIFT SPAN LIGHTS	(EXISTING)								SEE NOTE 3
M	EXISTING PIER LIGHTS	(EXISTING)								SEE NOTE 3
N	EXISTING RIVER TRAFFIC CONTROL LIGHTS	(EXISTING)								SEE NOTE 3

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM
PROJECT NUMBER 12906.101			

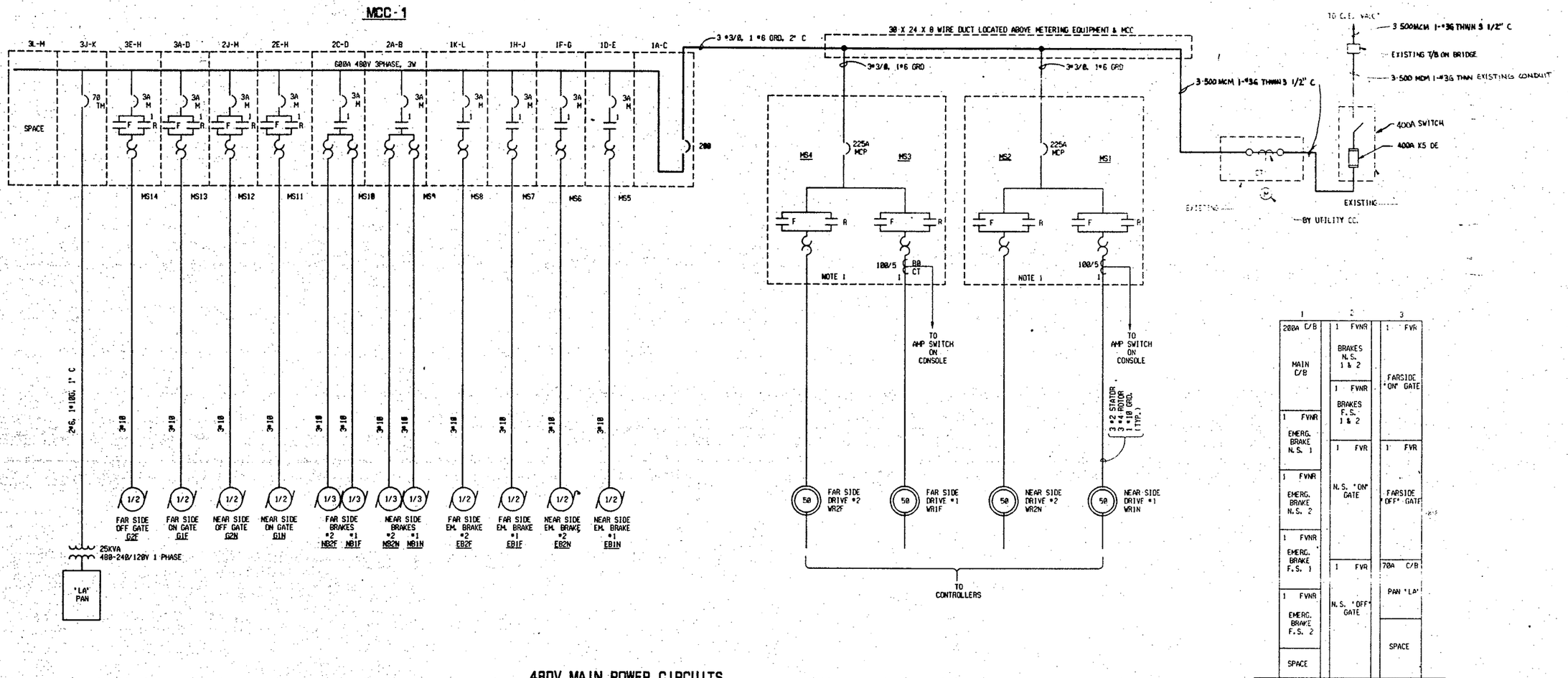
REVISIONS	
NAME	DATE

MACHINE HOUSE - PLANS

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

607	G-R-I-I(82)	WILL	64	57

SHEET NO. 6
11 SHEETS



480V MAIN POWER CIRCUITS
ONE-LINE DIAGRAM
NTS

MCC-1 ELEVATION
NTS

NOTE:
1. STARTERS TO BE DUPLEX IN EXTRA NARROW NEMA 1 ENCLOSURES 60" WIDE X 84" HIGH MAX. SQUARE D CLASS 6428 TYPE FGR CUTLER-HAMMER, ALLEN BRADLEY, GENERAL ELECTRIC, WESTINGHOUSE OR EQUAL.

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM
PROJECT NUMBER 12986.101			

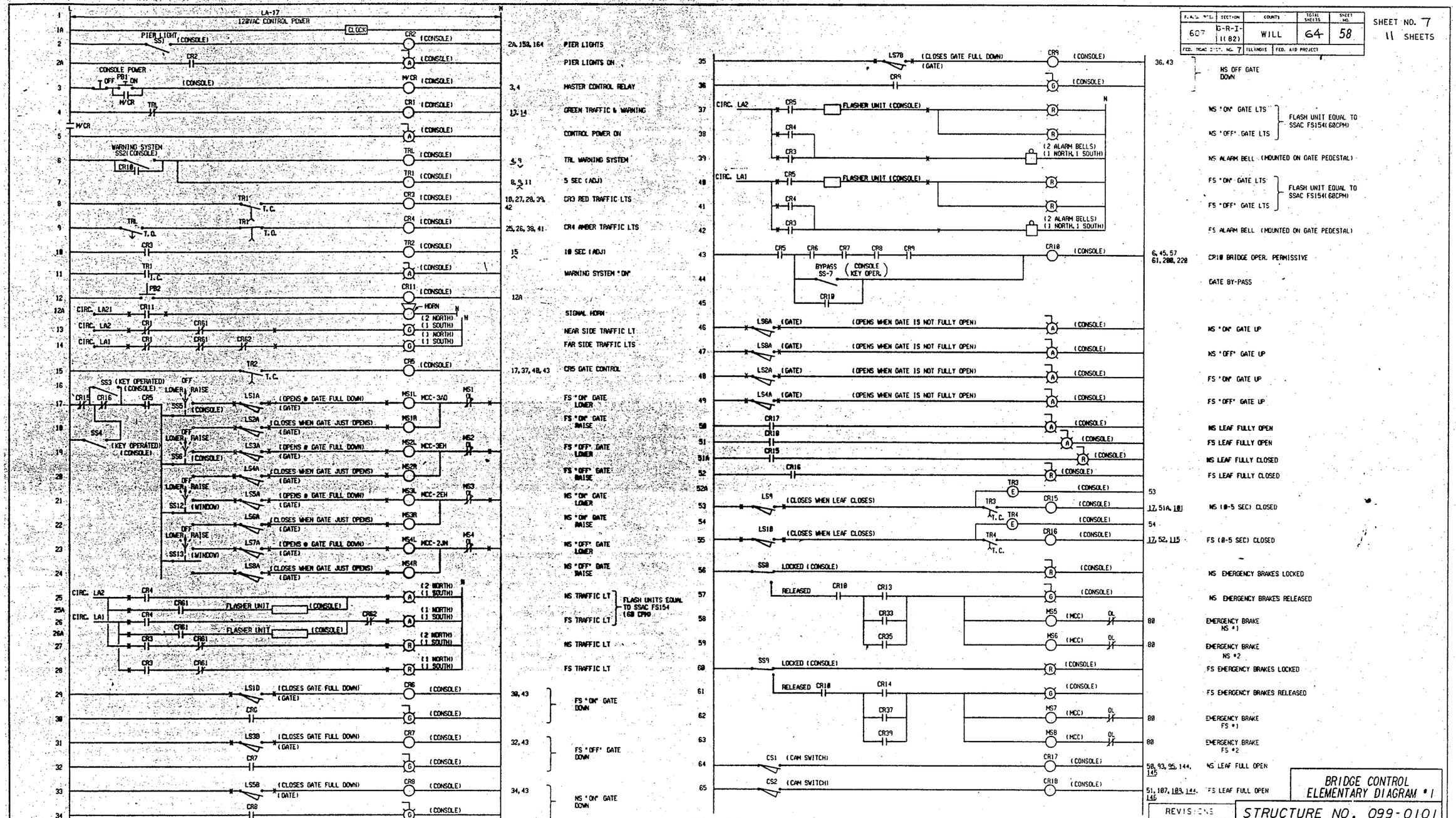
REVISIONS	
NAME	DATE

ONE-LINE DIAGRAM
MCC ELEVATION

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-I(82)
WILL COUNTY

Rev. 6-11-84

E-6



F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-I(82)	WILL	64	58
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 7
11 SHEETS

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM

PROJECT NUMBER 12906.101

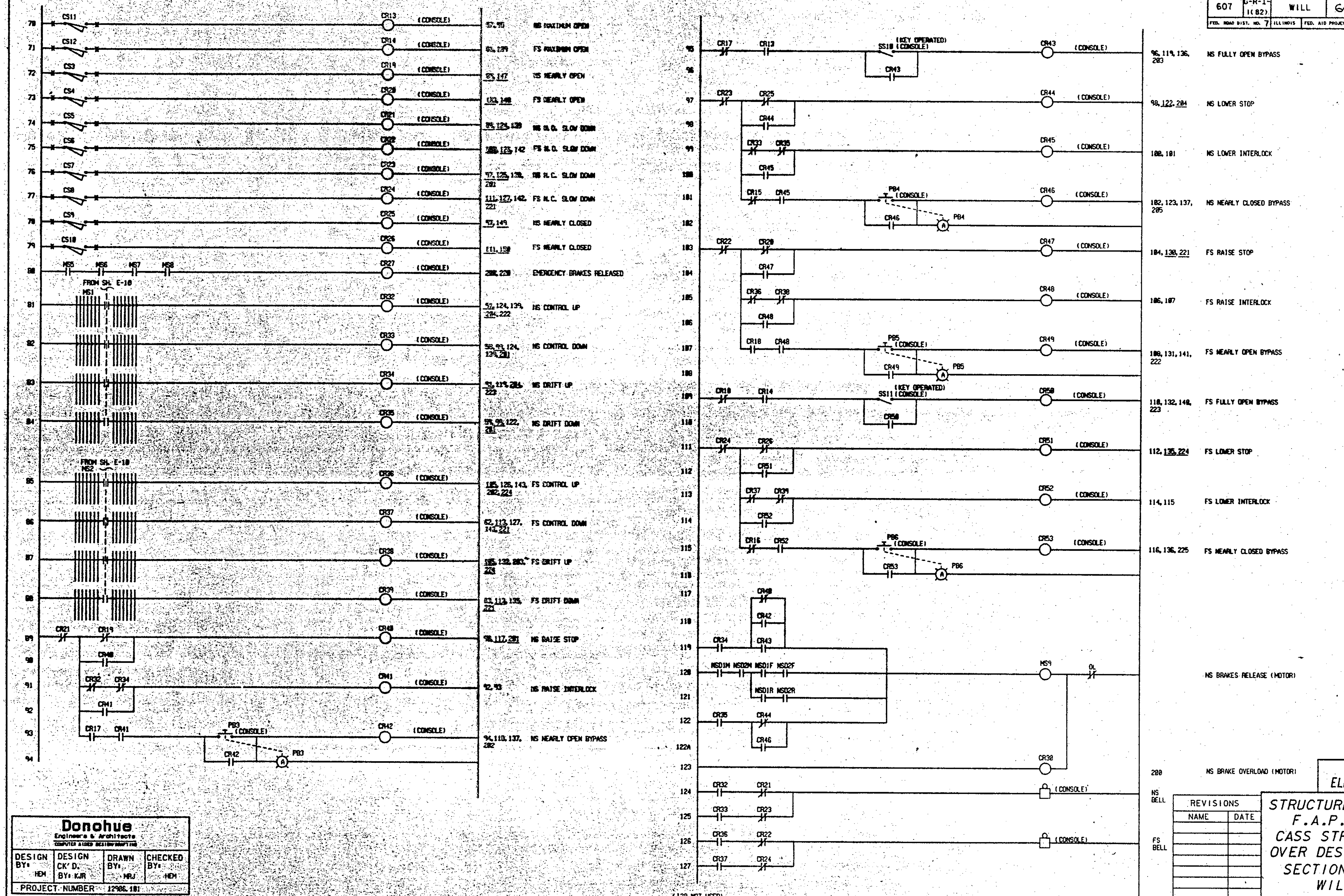
BRIDGE CONTROL
ELEMENTARY DIAGRAM #1

REVISIONS	
NAME	DATE

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-I(82)
WILL COUNTY

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	59
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 8
11 SHEETS



NS MAXIMUM OPEN
FS MAXIMUM OPEN
NS NEARLY OPEN
FS NEARLY OPEN
NS N.O. SLOW DOWN
FS N.O. SLOW DOWN
NS N.C. SLOW DOWN
FS N.C. SLOW DOWN
NS NEARLY CLOSED
FS NEARLY CLOSED
EMERGENCY BRAKES RELEASED
NS CONTROL UP
NS CONTROL DOWN
NS DRIFT UP
NS DRIFT DOWN
FS CONTROL UP
FS CONTROL DOWN
FS DRIFT UP
FS DRIFT DOWN
NS RAISE STOP
NS RAISE INTERLOCK
NS NEARLY OPEN BYPASS
NS FULLY OPEN BYPASS
NS LOWER STOP
NS LOWER INTERLOCK
NS NEARLY CLOSED BYPASS
FS RAISE STOP
FS RAISE INTERLOCK
FS NEARLY OPEN BYPASS
FS FULLY OPEN BYPASS
FS LOWER STOP
FS LOWER INTERLOCK
FS NEARLY CLOSED BYPASS
NS BRAKES RELEASE (MOTOR)
NS BRAKE OVERLOAD (MOTOR)
NS BELL
FS BELL
(128 NOT USED)

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM

PROJECT NUMBER 12906.101

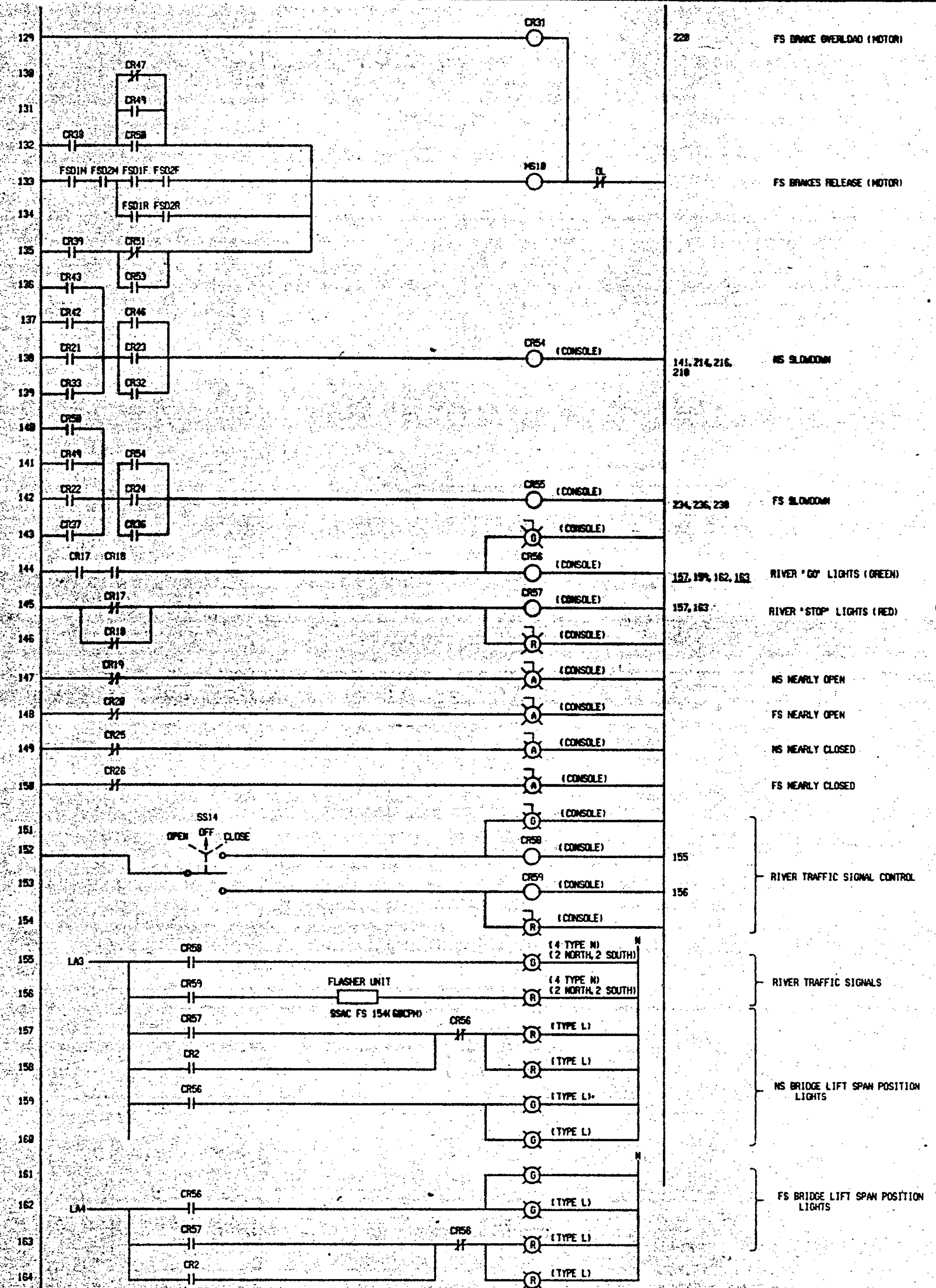
BRIDGE CONTROL
ELEMENTARY DIAGRAM #2

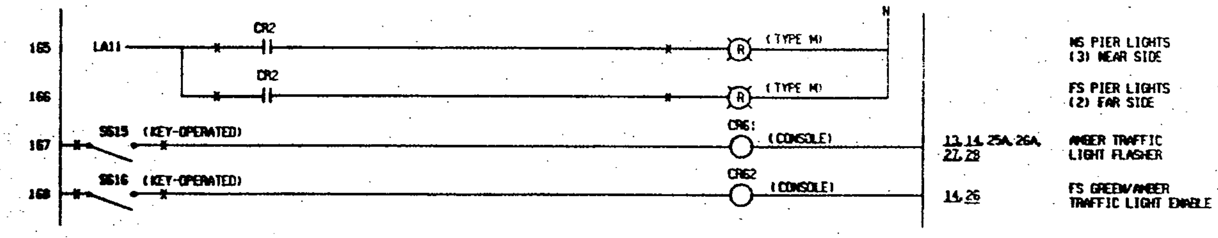
REVISIONS	
NAME	DATE

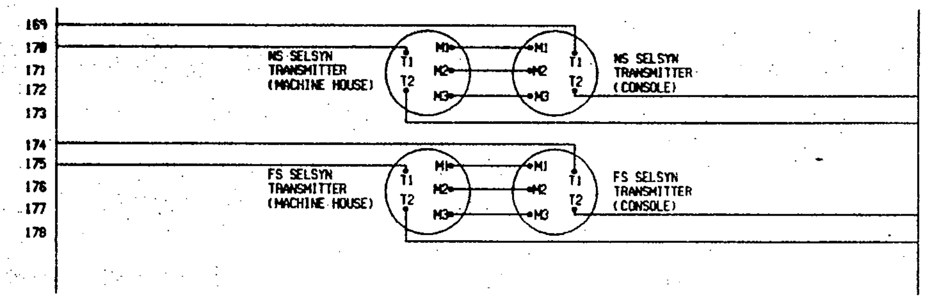
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-1(82)	WILL	64	60
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 9
11 SHEETS

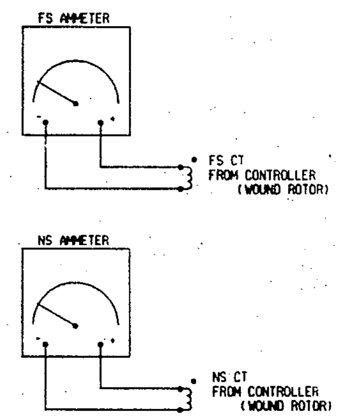






BRIDGE LEAF POSITION TRANSMITTER/ INDICATOR WIRING

NTS



CONSOLE AMMETER CIRCUITS

NTS

BRIDGE CONTROL
ELEMENTARY DIAGRAM #3

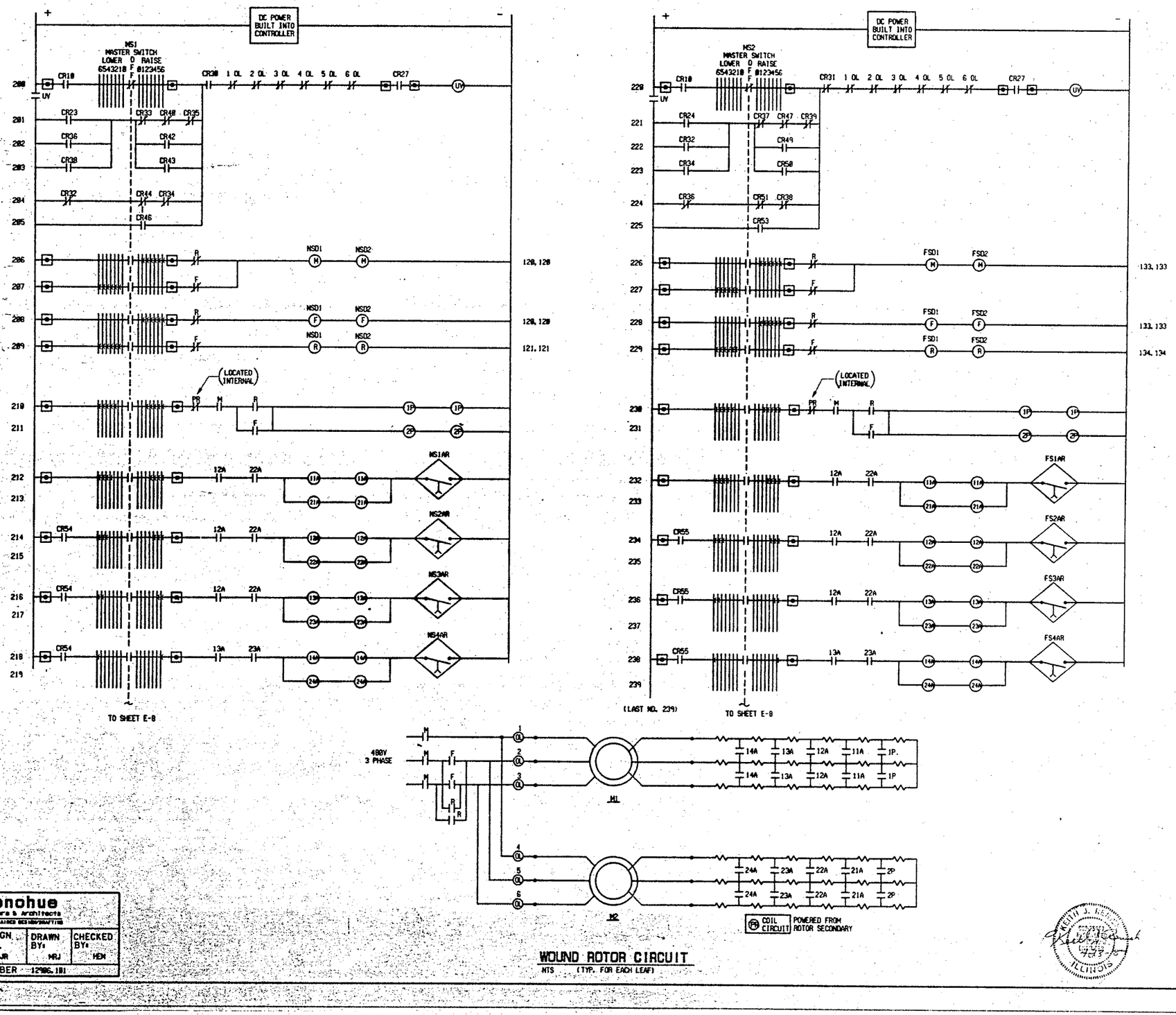
REVISIONS	
NAME	DATE

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM

PROJECT NUMBER 12906.101



WOUND ROTOR CIRCUIT

NTS (TYP. FOR EACH LEAF)

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	G-R-I-I(82)	WILL	64	61
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 10
11 SHEETS

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

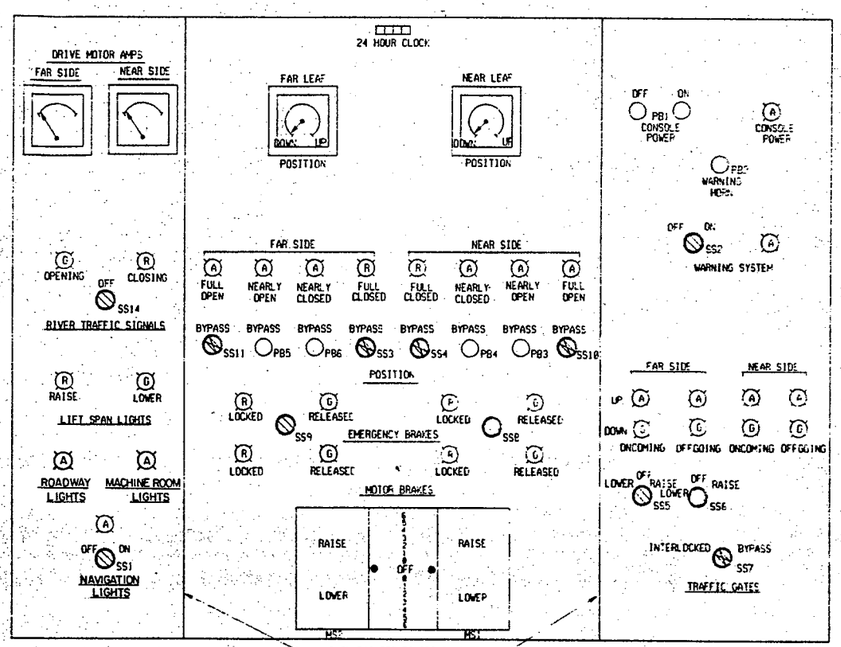
DESIGN BY: HEM	DESIGN CK'D. BY: KJR	DRAWN BY: MRJ	CHECKED BY: HEM

PROJECT NUMBER 12986.181

WOUND ROTOR CONTROLLER ELEMENTARY DIAGRAM

REVISIONS	
NAME	DATE

STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-I(82)
WILL COUNTY



CONTROL CONSOLE PLAN VIEW

NTS

CONSOLE LEGEND

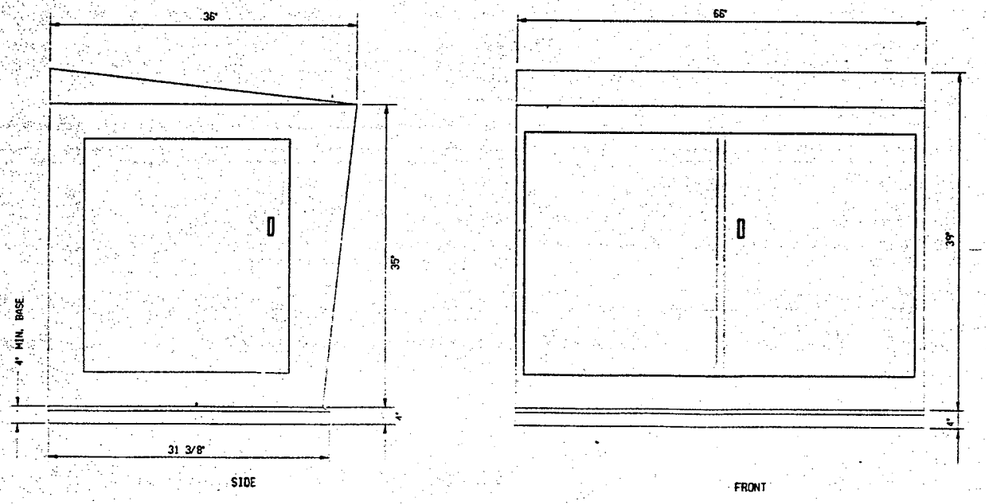
- KEY OPERATED SELECTOR SWITCH
- SELECTOR SWITCH
- PUSHBUTTON SWITCH
- INDICATING LAMP
  - A=AMBER
  - G=GREEN
  - R=RED

NOTE 1:
ALL TRAFFIC GATES SHALL BE WIRED AND SWITCHED SEPARATELY AS SHOWN TO ACCOMODATE FUTURE TWO WAY TRAFFIC. BOTH FAR SIDE GATES SHALL BE LABELED OFFGOING AND BOTH NEAR SIDE GATES SHALL BE LABELED ONCOMING TO ACCOMODATE PRESENT ONE WAY TRAFFIC.

NOTE 2:
DEVICE NOS. SHOWN ARE FOR REFERENCE ONLY AND ARE NOT INCLUDED IN NAMEPLATES.

OPERATORS CONSOLE EQUIPMENT SCHEDULE

TAG	DEVICE	MANUFACTURER-CATALOG #	EQUIPMENT-MANUFACTURERS	REMARKS
SS1, SS2	2 POSITION SELECTOR SWITCH W/ STANDARD OPERATOR	SQUARE D 9001-TYPE KS	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	
SS3, SS4, SS7, SS10, SS11	2 POSITION SELECTOR SWITCH W/KEY OPERATOR (KEY SHALL NOT BE REMOVABLE IN BP POS	SQUARE D 9001-TYPE KS	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	—
SS5, SS6, SS8, SS9, SS14	3 POSITION SELECTOR SWITCH W/ STANDARD OPERATOR	SQUARE D 9001-TYPE KS	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	—
PB1	"START/STOP" MOMENTARY PUSHBUTTON	SQUARE D 9001-TYPE KR	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	—
PB2	"START" MOMENTARY PUSHBUTTON	SQUARE D 9001-TYPE KR	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	—
PB3, PB4, PB5, PB6	"START" MOMENTARY PUSHBUTTON W/ INTEGRAL PILOT LIGHT	SQUARE D 9001-TYPE K	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	—
MCR, CR6-CR10, CR13-CR27 CR30-CR55	INDUSTRIAL CONTROL RELAY W/ STANDARD CONTACT RATING	SQUARE D 8501-TYPE HO/120V	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	PROVIDE NO. OF POLES SHOWN ON DIAGRAM PLUS A MINIMUM OF 1 SPARE POLE FOR EACH RELAY
CR1, CR2, CR5, CR56-CR62	INDUSTRIAL CONTROL RELAY W/ SPECIAL TUNGSTEN LOAD RATED CONTACTS	SQUARE D 8903-TYPE LO/120V	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	—
CR11, CR12, CR28, CR29	NOT USED	—	—	—
TR1, TR1, TR2, TR3, TR4	TIMERS	SQUARE D 9050-TYPE F1	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	PROVIDE E OR D TYPE W/ TIMING FUNCTIONS INDICATED
—	PILOT LIGHTS	SQUARE D 9001-TYPE KT	ALLEN BRADLEY, CUTLER HAMMER, GENERAL ELECTRIC, WESTINGHOUSE	PROVIDE LENS COLORS INDICATED
NS1AR, NS2AR, NS3AR, NS4AR FS1AR, FS2AR, FS3AR, FS4AR	ACCELERATION TIMING RELAY	W/ CONTROLLER	—	PART OF WOUND ROTOR CONTROLLER



CONTROL CONSOLE ELEVATIONS

NTS

Donohue
Engineers & Architects
COMPUTER AIDED DESIGN/DRAFTING

DESIGN BY: HEM	DESIGN CK'D. BY: KJS	DRAWN BY: HRJ	CHECKED BY: HEH

PROJECT NUMBER 12986.101

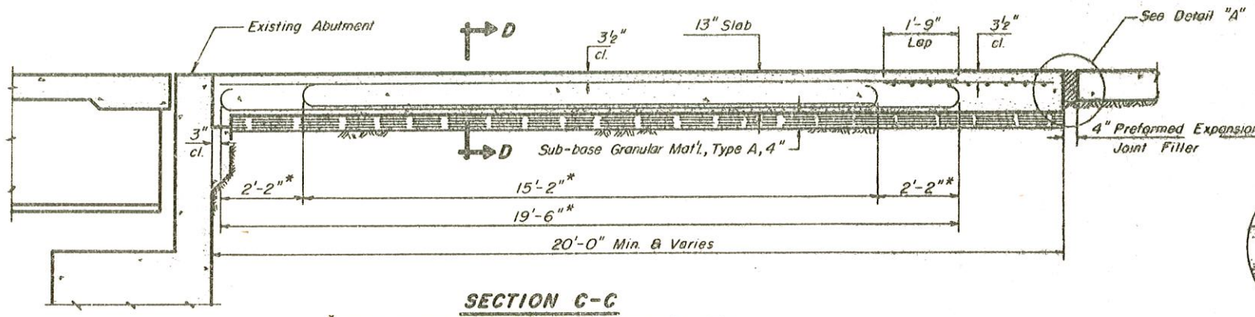
PLOT SCALE: 4

REVISIONS	
NAME	DATE

CONSOLE AND EQUIPMENT LIST

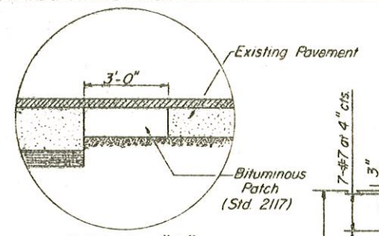
STRUCTURE NO. 099-0101
F.A.P. ROUTE 607
CASS STREET (U.S. 30)
OVER DES PLAINES RIVER
SECTION G-R-I-1(82)
WILL COUNTY

Rev. 6-11-84



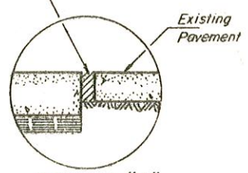
SECTION C-C

*Stagger alternate #7 bars as shown on plan - full width.



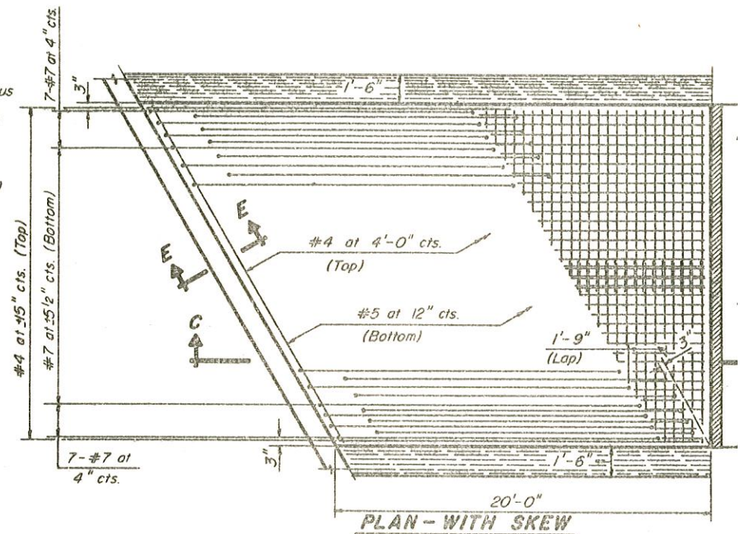
DETAIL "A"

(When bituminous surface is being placed)

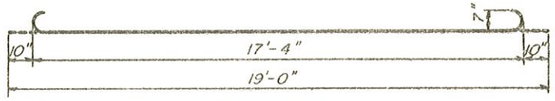


DETAIL "A"

(P.C.C. Pavement Construction)

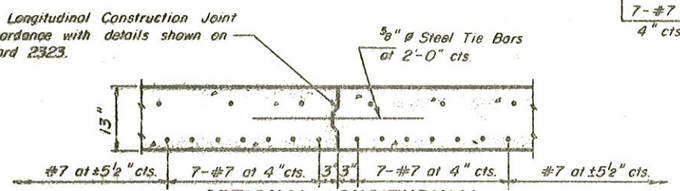


PLAN - WITH SKEW



#7 BARS

Keyed Longitudinal Construction Joint in accordance with details shown on Standard 2323.

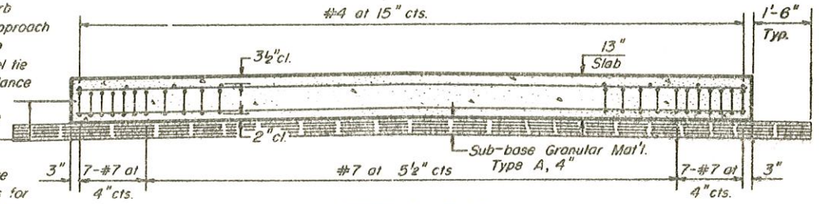


OPTIONAL LONGITUDINAL CONSTRUCTION JOINT

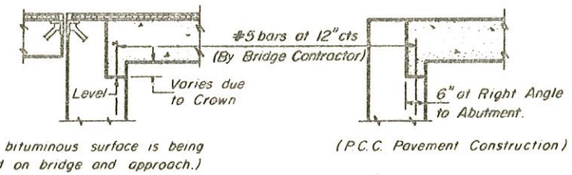
As approved by the Engineer, the Contractor may elect to reduce the widths of pour by use of the Optional Longitudinal Construction Joint shown. Joints shall be located at the edge of a traffic lane.

PLAN - WITHOUT SKEW

When the road plans show curb and gutter, gutter, or bridge approach shoulder pavement adjacent to approach slabs, place ½" ø steel tie bars at 2'-6" centers in accordance with the detail for Bulkhead Longitudinal Construction Joint shown on Standard 2323. Cost of the tie bars will be included in the contract unit price for the adjacent item. Transitions for curb and gutter or gutter shall be as shown on the plans.



SECTION D-D



(When bituminous surface is being placed on bridge and approach.)

(P.C.C. Pavement Construction)

SECTION E-E

Notes:

For skews of less than 10° omit wire fabric. For skews of 10° or more use Welded Wire Fabric, 6"x6"- W5.5 x W5.5, placed 3½" below top of slab

Expanded Metal weighing not less than 78 Pounds per 100 Sq. Ft. or a welded bar mat weighing not less than 78 Pounds per 100 Sq. Ft. having members of equal size in both directions and spaced not over 8" apart may be used instead of the Welded Wire Fabric, 6"x6"-W5.5 x W5.5, provided the expanded metal or bar mat is furnished at no additional cost to the State.

Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. : M 31 or M 53, Grade 60.

DESIGN STRESSES

fy = 60,000 p.s.i.
f'c = 3500 psi
n = 8.5

GENERAL NOTES

The cost of tie bars, expansion joint filler, sub-base, welded wire fabric and bituminous prime when required shall be considered as included in the unit cost of the Bridge Approach Pavement.

Preformed Expansion Joint Filler shall conform to Section 715 of the Standard Specifications.

Width of Bridge Approach Slab shall be determined before the reinforcement bars are fabricated.

The bituminous patch, when required, will be paid for in accordance with Section 620 of the Standard Specifications.

Illinois Department of Transportation

PASSED Sept 4, 1979
Earl E. Thurmond Jr.
Engineer of Bridge and Traffic Structures

APPROVED Sept 4, 1979
Engineer of Design

ISSUED 3-1-79

BRIDGE APPROACH PAVEMENT

STANDARD 2382-1