

STATE OF ILLINOIS

DEPARTMENT OF TRANSPORTATION

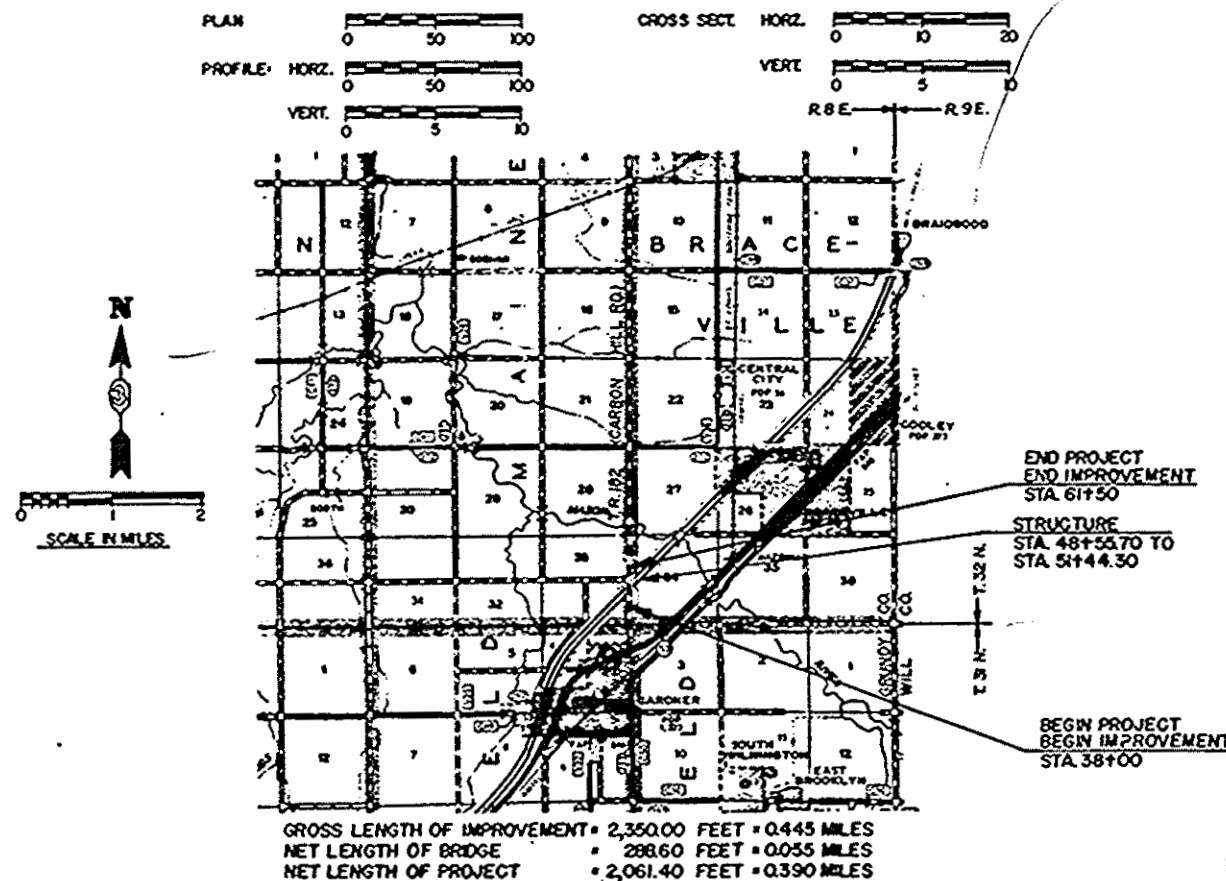
DIVISION OF HIGHWAY

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

FOR INDEX OF SHEETS SEE SHEET NO.2

F.A.I. ROUTE 55
PROJECT IM-55-6 (183)228
SECTION: 32-1-HBR-1
GRUNDY COUNTY

C-93-013-93
SCALE IN FEET



MICROFILMED _____
REEL NUMBER _____
AWARDED _____
RESIDENT ENGINEER _____
AS BUILT CHANGES WERE MADE
ON THE FOLLOWING SHEETS _____

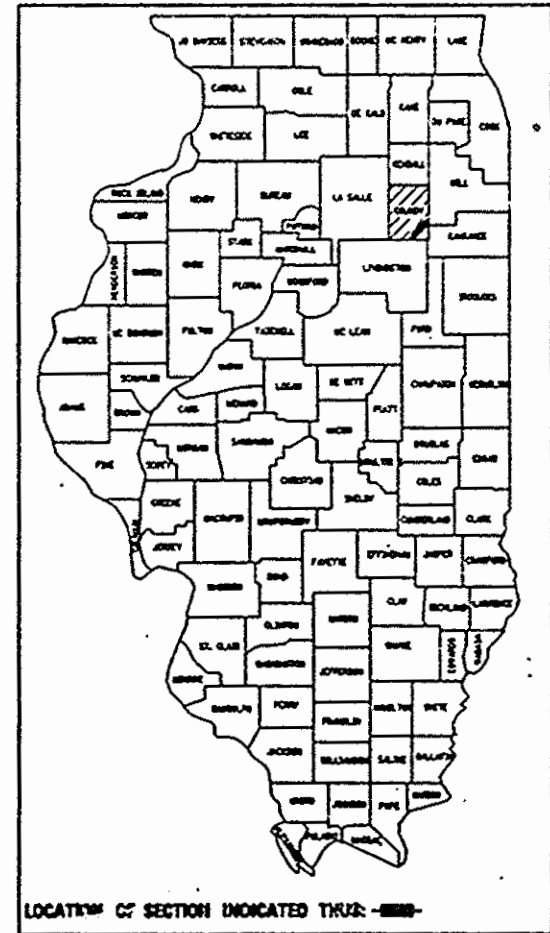
J.U.L.I.E. 1-800-892-0123
PROJECT ENGINEER: LYLE SCHAUB
SQUAD LEADER: K. VLASTNIK
TOWNSHIP: BRACEVILLE, MAINE

DISTRICT 3 PHONE NO.
815-434-6131

CONTRACT NO. 86407

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEET
55	32-1-HBR-1	GRUNDY	47

P-93-025-88
D-93-034-91



LOCATION OF SECTION INDICATED THREE--

DESIGN DESIGNATION
163402 AREA SERVICE Q17(817-20)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED Sept 15, 1992
Ralph C. Dalton
DISTRICT ENGINEER

EXAMINED 2 19--

ENGINEER OF PLANS AND CONTRACTS
PASSED Oct 23, 1992

ENGINEER OF DESIGN AND ENVIRONMENT
APPROVED Oct 23, 1992

Ralph C. Dalton
DIRECTOR, DIVISION OF HIGHWAYS



GARY R. FULTON
ILLINOIS PROFESSIONAL ENGINEER NO. 38350
REGISTRATION EXPIRES 11-30-92
HENRY, WEISBERGER & GONDE, INC.
CONSULTING ENGINEERS
CARLYLE, ILLINOIS 62231



BENCHMARK: CHISELED "X" ON STEEL.
S.E. INSIDE COR. OF EXIST. BRIDGE
STA. 48+76.77, 12.4' RT.
EL. 595.01

EXISTING STRUCTURE:

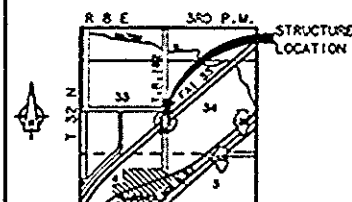
STRUCTURE NO. 032-0091 BUILT IN 1958, SEC. 32-1HB-1, STA. 50+00 CARBON HILL RD. OVER STA. 1051+36.5 F.A. RTE. 3 IN GRUNDY COUNTY. THE SUPERSTRUCTURE CONSISTS OF FOUR SPANS OF CONTINUOUS W/ GIRDERS MEASURING 55'-9", 78'-4", 78'-4" & 55'-9" WITH A TOTAL STRUCTURE LENGTH OF 274'-6 3/8" BK./BK. OF ABUTMENTS AND AN OVERALL STRUCTURE WIDTH 0.0. R.C. DECK OF 30'-4".

THE SUBSTRUCTURE CONSISTS OF THREE R.C. PIERS SUPPORTED ON SPREAD FOOTINGS AND PILE BENT SPILL THRU CONCRETE ABUTMENTS.

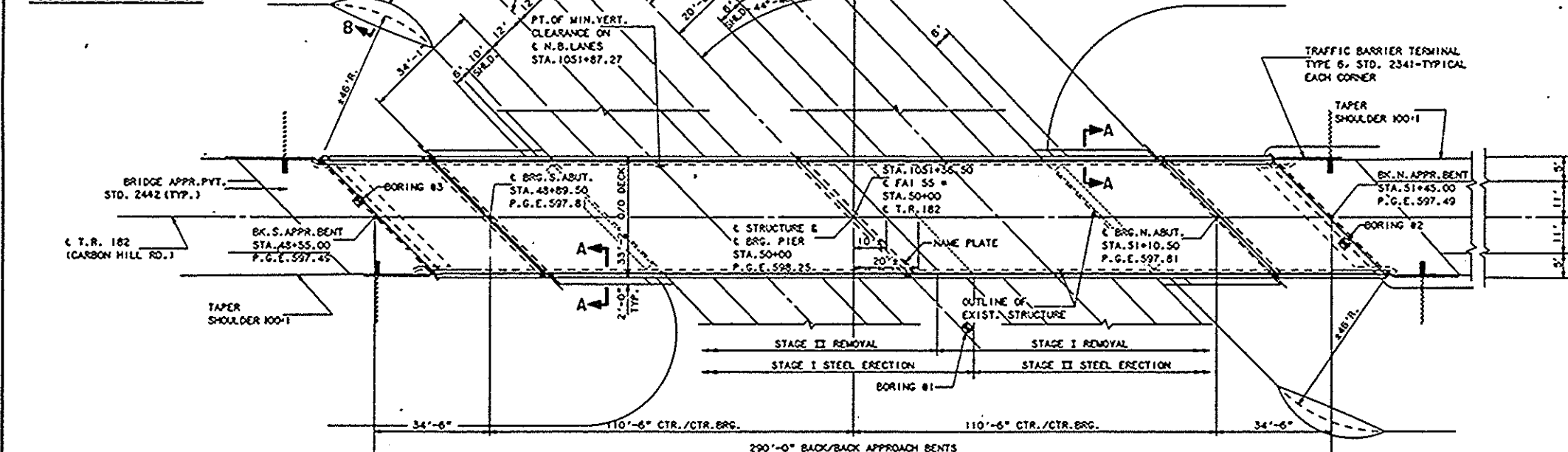
CONTRACTOR TO REMOVE AND DISPOSE OF THE EXISTING STRUCTURE AND CONSTRUCT THE NEW STRUCTURE IN STAGES AS SHOWN IN THE DETAIL PLANS AND IN ACCORDANCE WITH SECTION 501 OF THE STANDARD SPECIFICATIONS.

T.R. 182 TRAFFIC SHALL BE DETOURED. ONE LANE OF TRAFFIC NORTHBOUND & SOUTHBOUND WILL BE MAINTAINED ON FAI 55 DURING CONSTRUCTION PERIOD.

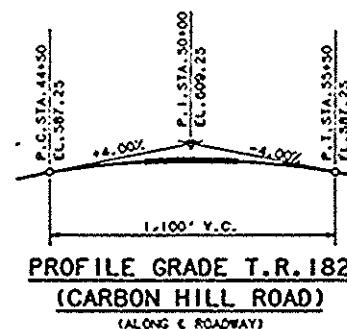
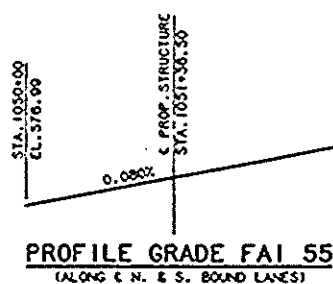
SALVAGE: NO SALVAGE



LOCATION SKETCH



ELEVATION



GENERAL NOTES:

- FASTENERS SHALL BE HIGH STRENGTH BOLTS, Bolts 3/8", OPEN HOLES 1 1/2" UNLESS OTHERWISE NOTED.
- CALCULATED WEIGHT OF STRUCTURAL STEEL 15: M270, GR. 50 = 104,090 LBS. M270, GR. 50 = 107,170 LBS. TOTAL = 211,260
- THE ZINC-SILICATE AND VINYL PAINT SYSTEM SHALL BE USED FOR SHOP AND FIELD FINISHING OF STRUCTURAL STEEL EXCEPT WHERE OTHERWISE NOTED. THE COLOR OF THE FINISH COAT SHALL BE MARSELL STANDARD 7.5G4/8 INTERSTATE GREEN.
- FIELD WELDING OF CONSTRUCTION ACCESSORIES WILL NOT BE PERMITTED TO THE BOTTOM FLANGE OF THE GIRDERS NOR TO THE TOP FLANGE FOR A DISTANCE EQUAL TO ONE-FOURTH THE SPAN LENGTH EACH WAY FROM THE PIER SUPPORT. FIELD WELDING IN OTHER AREAS WILL BE PERMITTED ONLY WHEN APPROVED BY THE ENGINEER.
- ANCHOR BOLTS SHALL BE SET BEFORE BOLTING DIAPHRAGMS OVER SUPPORTS.
- THE MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS SHALL CONFORM TO THE SUPPLEMENTAL REQUIREMENTS FOR NOTCH TOUGHNESS ZONE 2. THESE COMPONENTS ARE THE TENSION FLANGES, WEBS AND ALL SPLICE PLATE MATERIAL, EXCEPT FILL PLATES, OF THE STEEL GIRDERS.
- REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31, M-42 OR M-53 GRADE 60.
- BEARING SEAT SURFACES SHALL BE CONSTRUCTED OR ADJUSTED TO THE DESIGNATED ELEVATIONS WITHIN A TOLERANCE OF 1/8". ADJUSTMENTS SHALL BE MADE EITHER BY GRINDING THE SURFACE OR BY SHIMMING THE BEARING. TWO 1/8" ADJUSTING SHIMS, OF THE DIMENSIONS OF THE BOTTOM BEARING PLATE, SHALL BE PROVIDED FOR EACH BEARING IN ADDITION TO ALL OTHER PLATES OR SHIMS. FOR TYPE I ELASTOMERIC BEARINGS, SHIMS OF THE DIMENSIONS OF THE TOP PLATE SHALL BE PROVIDED AND PLACED AS DETAILED.
- THE CONTRACTOR SHALL DRIVE ONE (1) HP10X42 STEEL TEST PILE AT EACH ABUTMENT IN A PERMANENT LOCATION AS ORDERED BY THE ENGINEER BEFORE ORDERING THE REMOVAL OF PILES.
- BRIDGE SEAT SEALER SHALL BE APPLIED AT ABUTMENTS TO THE TOP OF THE ABUTMENT SEATS IN ACCORDANCE WITH THE PROVISION OF BSPI. ESTIMATED QUANTITY = 276 SQ. FT.
- THE CONCRETE FOR BRIDGE FLOORS FINISHED IN ACCORDANCE WITH ARTICLE 503.15 OF THE STANDARD SPECIFICATIONS, SHALL BE PLACED AND COMPACTED PARALLEL TO THE SKEW IN UNIFORM INCREMENTS ALONG CENTERLINE OF BRIDGE. THE FINISHING MACHINE, WHEN REQUIRED, SHALL BE SET PARALLEL TO THE SKEW FOR STRIKING OFF AND SCREEDING THE CONCRETE.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER.	SUB.	TOTAL
REMOVAL OF EXISTING STRUCTURES	EACH	1		1
SAND BACKFILL	CU. YD.		268	268
STRUCTURE EXCAVATION	CU. YD.		675	675
CLASS X CONCRETE	CU. YD.		334.2	334.2
CLASS X CONCRETE SUPERSTRUCTURE	CU. YD.	377.4		377.4
STRUCTURAL STEEL	L. SUM	1		1
STUD SHEAR CONNECTORS	EACH	1,250		1,250
REINFORCEMENT BARS	POUND		12,880	12,880
REINFORCEMENT BARS (EPOXY COATED)	POUND	80,140		108,500
FURNISHING STEEL PILES HP10X42	LIN. FT.		1,938	1,938
DRIVING STEEL PILES HP10X42	LIN. FT.		1,938	1,938
TEST PILE STEEL HP10X42	EACH		2	2
NAME PLATES	EACH	1		1
SLOPEWALL 4 INCH	SQ. YD.		306	306
ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	10		10
NEOPRENE EXPANSION JOINT 2"	LIN. FT.	90		90
PROTECTIVE COAT	SQ. YD.	1,200		1,200
BRIDGE SEAT SEALER	L. SUM	1		1
BRIDGE DECK SCREEDING	SQ. YD.	898		898
RUBBED FINISH (MODIFIED)	SQ. FT.	4688		4688

* SEE SPECIAL PROVISIONS
** QUANTITY IS FOR DECK AND PARAPETS

STATION 1051+36.50
BUILT 1921 BY
STATE OF ILLINOIS
F.A. I. RT. 55 SEC. 132-11HBR-1
F.A. PROJ. DR. 55-6(18)228
LOADING HS20
STR. NO. 032-0092

NAME PLATE

(SEE STD. 2113)

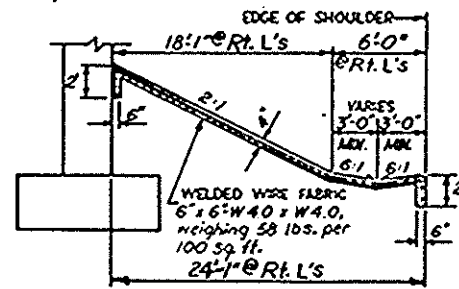
DESIGNED: T.W.O./V.S.N.
CHECKED: V.S.N./K.L.F.
DRAWN: K.H.L.
CHECKED: V.S.N./K.L.F.

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

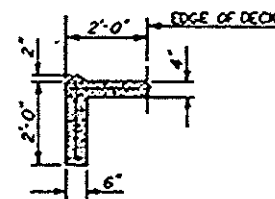
Ralph E. Anderson
Chief of Bridge and Structures

KENNETH L. FIDGE
LICENSED STRUCTURAL ENGINEER
IN ILLINOIS
NO. 081-002992, EXPIRES 11/30/92

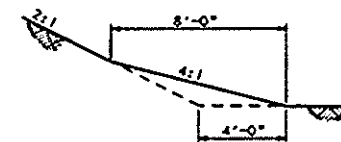
DATE: 4/5/92



SECTION THRU SLOPEWALL



SECTION A-A



SECTION 8-8

STRUCTURAL STEEL

HYBRID GIRDERS:
1) = 50,000 PSI + AASHTO M270, GR. 50
1) = 36,000 PSI + AASHTO M270, GR. 36

DESIGN STRESSES

CAST IN PLACE CONCRETE

1) = 3,500 PSI
1) = 60,000 PSI (REINF.)

LOADING HS 20-44

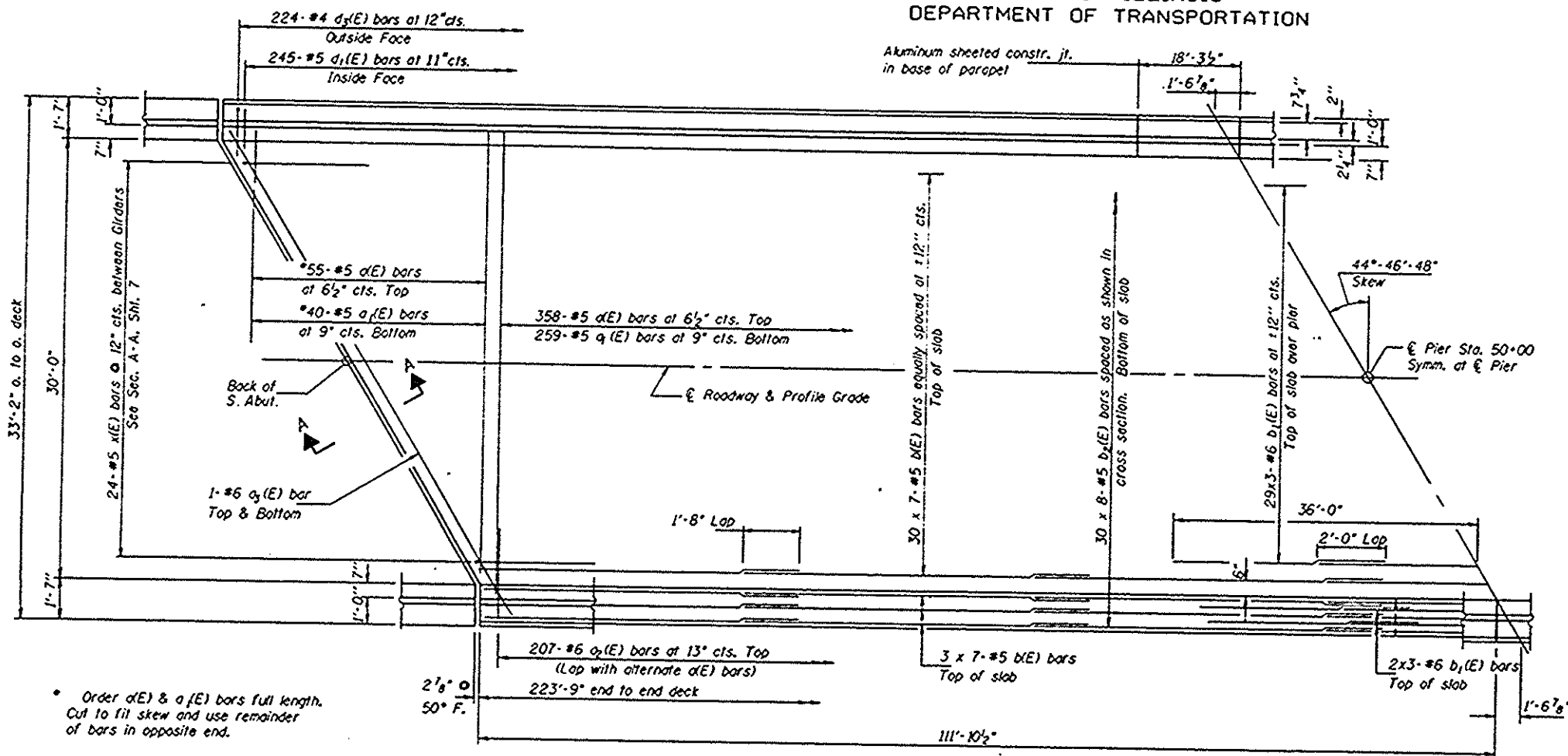
ALLOW 25 PSF FOR FUTURE WEARING SURFACE
WELDED R GIRDER COMPOSITE IN POSITIVE MOMENT REGION ONLY.
DESIGN SPECIFICATIONS: 1989 AASHTO WITH 1990 & 1991 INTERIMS

GENERAL PLAN & ELEVATION
T.R. 182 (CARBON HILL ROAD)
OVER FAI 55
SECTION (32-1)HBR-1
GRUNDY COUNTY
STA. 50+00 T.R. 182
= STA. 1051+36.5 FAI 55
STRUCTURE NUMBER 032-0092

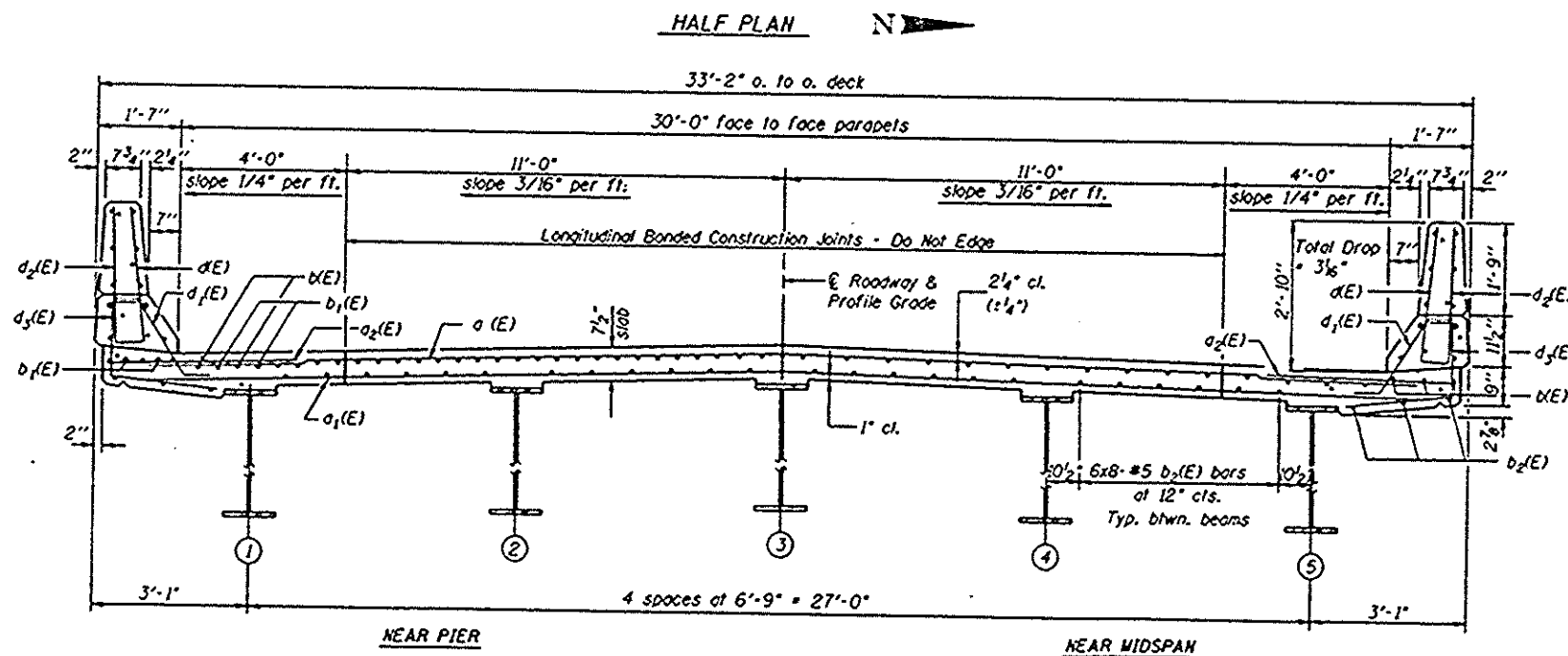
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DATE	BY	CHKD	APP'D	SHEET NO.
7.1.82	WASOR	(32-1)	GRADY	41
7.1.82	WASOR	(32-1)	GRADY	23

17 SHEETS



* Order d(E) & q(E) bars full length. Cut to fit skew and use remainder of bars in opposite end.



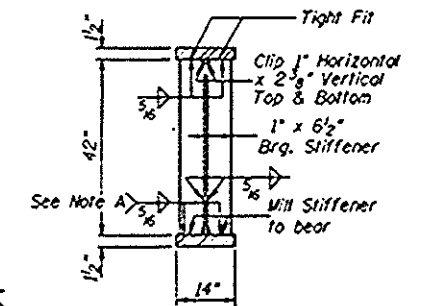
Notes: See Sheet 7 of 17 for superstructure details and Bill of Material.
Reinforcement bars designated (E) shall be epoxy coated.
Bars indicated thus 30 x 7-#5 etc. indicates 30 lines of bars with 7 lengths per line.
See Sheet 7 of 17 for parapet reinforcement.

DESIGNED	T.M.O./V.S.N.
CHECKED	V.S.N./K.L.F.
DRAWN	K.H.L.
CHECKED	V.S.N./K.L.F.

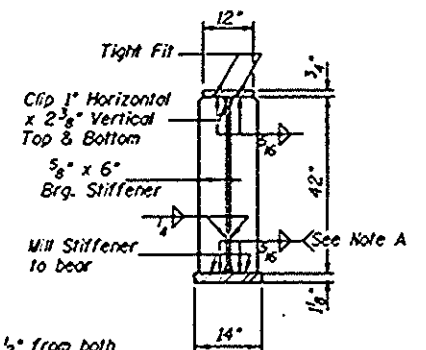
S-2-R(>30°) 12-31-87

DECK PLAN & CROSS SECTION
T.R. 182 (CARBON HILL ROAD)
OVER F.A.I. 55 SEC. (32-1) HBR-1
GRUNDY COUNTY

SHEET NO.	SECTION	CADRE	7A	7B	SHEET NO. 10
7A, 8C CARSON MILL RD	(32-11) NON-1	GRAND	47	27	17 SHEETS
FULL NAME EMP., NO. 1		NAME	FULL AND PROPERTY		



FRAMING PLAN N 



NOTE A:
Weld shall end $\frac{1}{2}$ " from both
ends of bearing stiffeners.

7 1/2" Slop
2" min.
4" 4" 2"
3/4" Granular or solid flux filled headed studs, conforming to the requirements of Art. 710.38 of the Std. Specs., Automatically end welded to flange. (No. Req'd. = 1950)
Fillet Varies

Bevel Before Welding

$2\frac{1}{2}^\circ$

DETAIL "B"
(Typical)

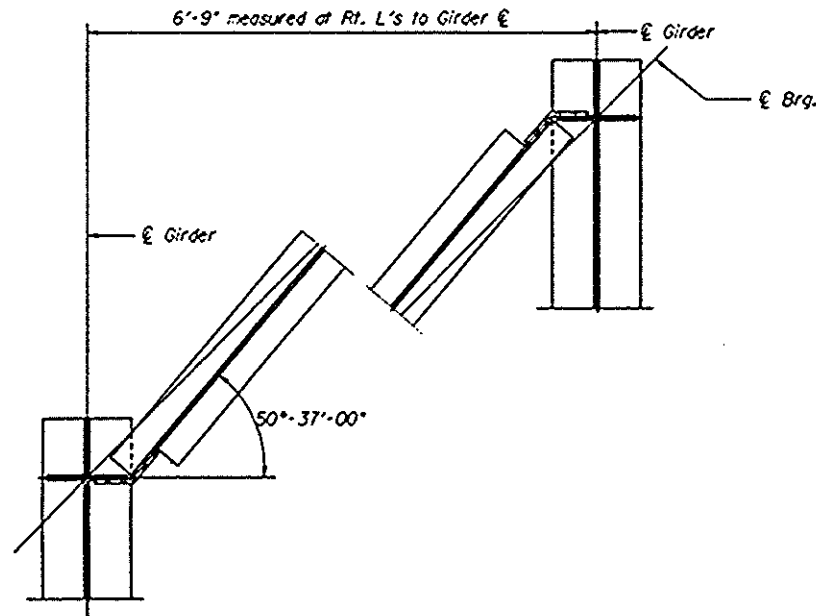


FRAMING PLAN
STRUCTURAL STEEL DETAILS
T.R. 182 (CARBON HILL ROAD)
OVER F.A.I. 55 SEC. (32-1) HBR-1
GRUNDY COUNTY

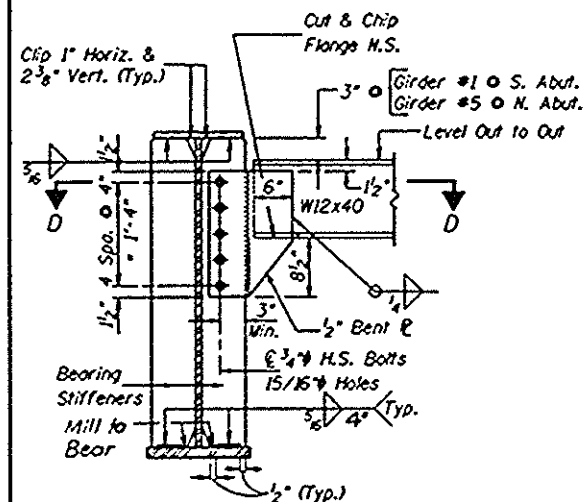
DESIGNED	T.M.O./V.S.N.
CHECKED	V.S.N./K.L.F.
DRAWN	K.H.L.
CHECKED	V.S.N./K.L.F.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DATE	BY	CHKD	APP'D	SHEET NO.
1/2/82	K.H.L.	V.S.N.	T.M.O.	11
1/2/82	K.H.L.	V.S.N.	T.M.O.	11
1/2/82	K.H.L.	V.S.N.	T.M.O.	11

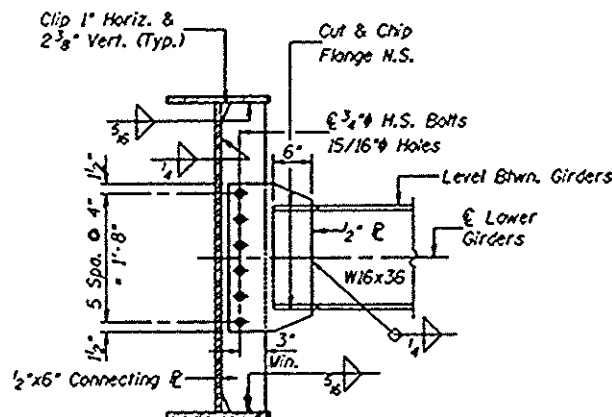


SECTION D-D



DIAPHRAGM D1

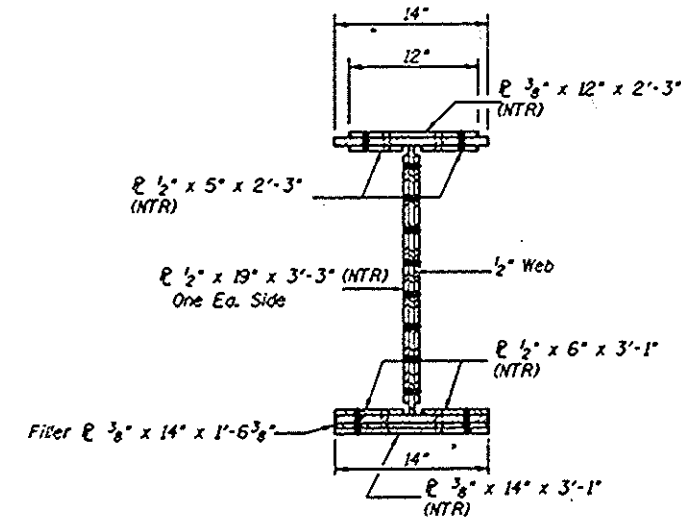
8 Required



DIAPHRAGM D

52 Required

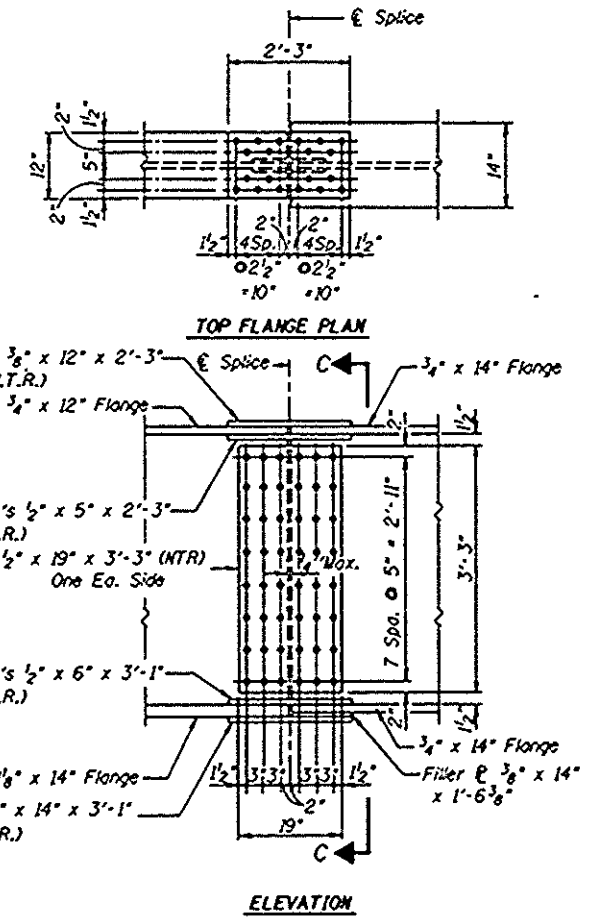
Note: Two hardened washers shall be required over all $\frac{5}{8}$ " holes.



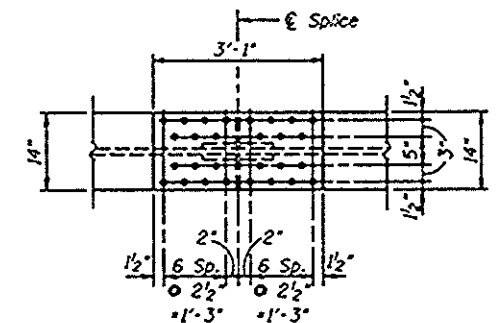
SECTION C-C

NOTES:

1. All bolts are $\frac{7}{8}$ " high strength bolts, $\frac{5}{8}$ " open holes.
2. "N.T.R." designates notch toughness requirements.
3. All flange splice plates shall be AASHTO M-270, Gr. 50 steel.



ELEVATION

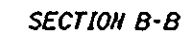


BOTTOM FLANGE PLAN

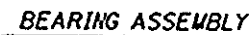
FIELD SPLICE DETAIL

STRUCTURAL STEEL DETAILS
T.R. 182 (CARBON HILL ROAD)
OVER F.A.I. 55 SEC. (32-1) HBR-1
GRUNDY COUNTY

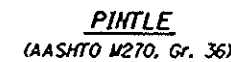
DESIGNED	T.M.O./V.S.N.
CHECKED	V.S.N./K.L.F.
DRAWN	K.H.L.
CHECKED	V.S.N./K.L.F.



*Notes:
After girders have been erected, holes at expansion bearings shall be drilled and anchor bolts grouted in place.
Anchor bolts at fixed bearings may be built into the masonry.
See sheet 13 for Anchor Bolt installation.
Shim plates will not be required at Abutments & Pier if bearing seats are built to elevations shown on plans.



Note: Shim plates shall not be placed under Bearing Assembly.



TOP OF WEB ELEVATIONS
(For Fabrication Only)

LOCATION	£ BRG. S. ABUT.	£ SPL. NO. 1	£ PIER	£ SPL. NO. 2	£ BRG. N. ABUT.
Girder 1	596.717	597.248	597.190	597.299	596.932
Girder 2	596.894	597.385	597.314	597.410	597.002
Girder 3	597.055	597.505	597.422	597.505	597.055
Girder 4	597.002	597.410	597.314	597.385	596.894
Girder 5	596.932	597.299	597.190	597.248	596.717

Elevations at Splices have been adjusted
for Camber.

	0.4 Sp. 1 ..	Pier •
Is (in ⁴)	14,050	22,964
Ic (in ⁴)	38,046	—
Ss (in ³)	743	1,020
Sc (in ³)	1,042	—
Z (in ³)	—	1,072
Q (K/ft.)	.842	1.156
MR (K)	668	1,851
sR (K/ft.)	.314	—
Mse (K)	287	—
Mt (K)	877	683
M (Imp) (K)	186	145
S ₁ (M ₁ +I) (K)	1,772	1,380
Ma (K)	3,545	4,200
Mu (K)	—	4,467
fse non-comp (k.s.i.)	10.8	21.8
fse (comp) (k.s.i.)	3.3	—
fse ₁ (k.+j) (k.s.i.)	20.4	16.2
fs (Overload) (k.s.i.)	34.5	38.0
fs (Total) (k.s.i.)	44.9	—
VR (K)	52.2	—

- Non-Compact Section
- Compact, Braced Section

		Abut.	Pier
RR	(K)	47.1	162.6
R _L	(K)	39.4	68.2
Imp.	(K)	8.4	14.5
R (Total)	(K)	94.9	245.3

M_u = Full Plastic Moment Capacity for Compact, Braced section

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (Total & Overload).

I_c and S_c are the moment of inertia and section modulus of the composite section used in computing f_s (Total & Overload).

VR is the maximum Live Load + Impact shear range in span.

Z is the plastic section modulus used to determine the Fully Plastic Moment in Non-composite Area

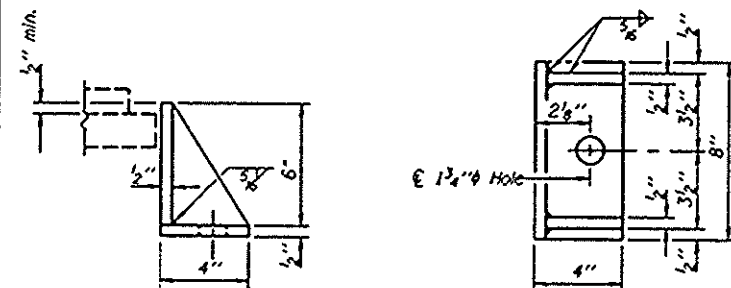
The Fully Plastic Moment (M_u) is computed according to A.A.S.H.T.O. 10.53.11 pertaining to Hybrid Girders.

$$f_s \text{ (Overload)} = \text{the sum of the stresses due to } M_R + M_{SR} + S_1(M_R + 1),$$

f_s (Total) (Non-compact section) is the sum of the stresses due to $1.3(MR + MsR + 5_s(Mt + 1))$.
 M_R = Moment due to Dead Loads on non-composite section

M_k = Moment due to Live Load on non-composite or composite section

I = Live Load Impact



SIDE RETAINER
(6 Required)

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

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	10

DESIGNED	T.U.O./V.S.N.
CHECKED	V.S.N./K.L.F.
DRAWN	K.H.L.
CHECKED	V.S.N./K.L.F.

ABUTMENT & PIER BEARING DETAILS
T.R. 182 (CARBON HILL ROAD)
OVER F.A.J. 55 SEC. (32-1) HBR-1
GRUNDY COUNTY