

STATE OF MAINE DEPARTMENT OF TRANSPORTATION PLANS SUSPENDED SPAN RETAINER FOR THE BILLINGS BRIDGE OVER LITTLE ANDROSCOGGIN RIVER IN THE TOWN OF PARIS OXFORD COUNTY

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SPECIFICATIONS

DESIGN: AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1996.
AISC MANUAL OF STEEL CONSTRUCTION ASD, NINTH EDITION.

CONSTRUCTION: STATE OF MAINE, DEPARTMENT OF TRANSPORTATION, STANDARD
SPECIFICATIONS, HIGHWAYS AND BRIDGES, REVISION OF APRIL, 1995.

DESIGN LOADING

LIVE LOAD: HIGHWAY LOADING _____ HS20

DESIGN METHOD

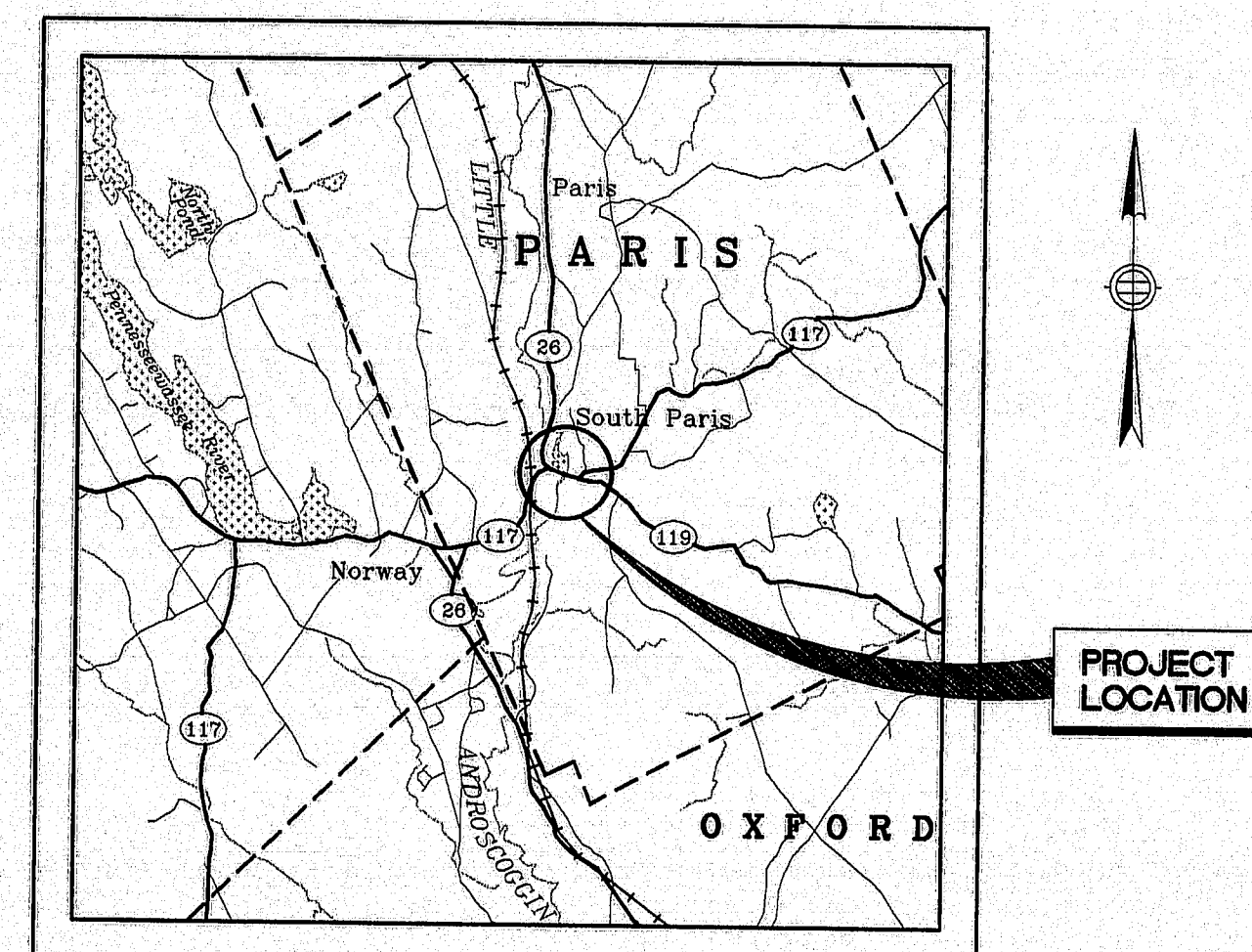
LOAD FACTOR DESIGN FOR THE EVENT OF PIN FAILURE.
ALLOWABLE STRESS DESIGN FOR SERVICE LOADING.

MATERIALS

EXISTING STRUCTURAL STEEL _____ UNKNOWN, ASSUMED ASTM A7-34, $F_y=33$ KSI.
NEW STRUCTURAL STEEL _____ ASTM A709/AASHTO M270 GRADE 50, PAINTED.
NEW HIGH STRENGTH BOLTS _____ ASTM A325 TYPE 1.
NEW WASHERS _____ HARDENED ASTM F436 GRADE 1, CIRCULAR.
NEW HEX NUTS _____ ASTM A563 GRADE C, HEAVY HEX.

GENERAL NOTES

1. THESE PLANS WERE PREPARED ASSUMING ALL RETROFIT WORK TO BE DONE BY
MDOT FORCES, AND AS SUCH, ARE NOT CONTRACT PLANS.
2. ALL WELDING AND FABRICATION SHALL CONFORM TO ANSI/AASHTO/AWS D1.5-95.

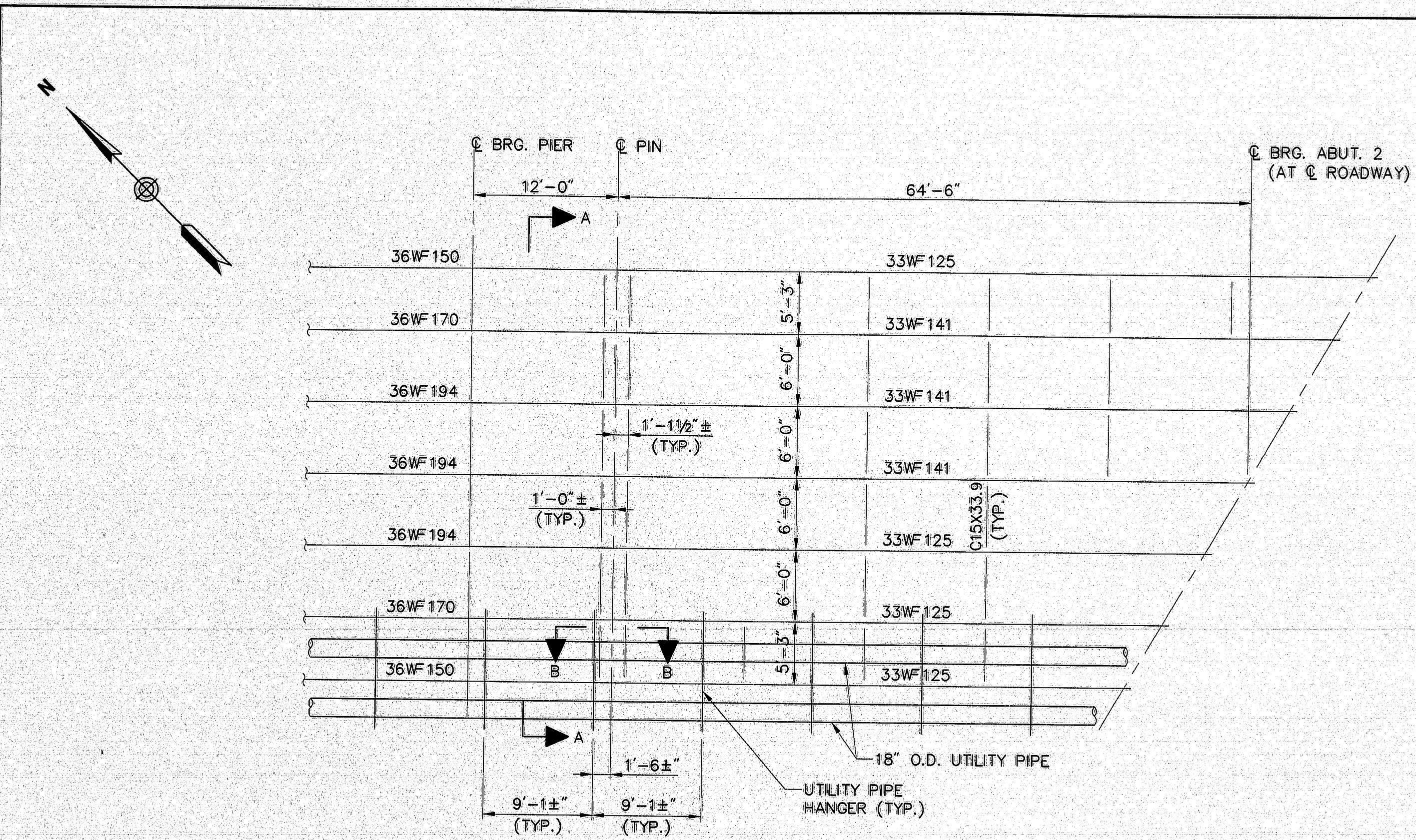


LOCATION MAP

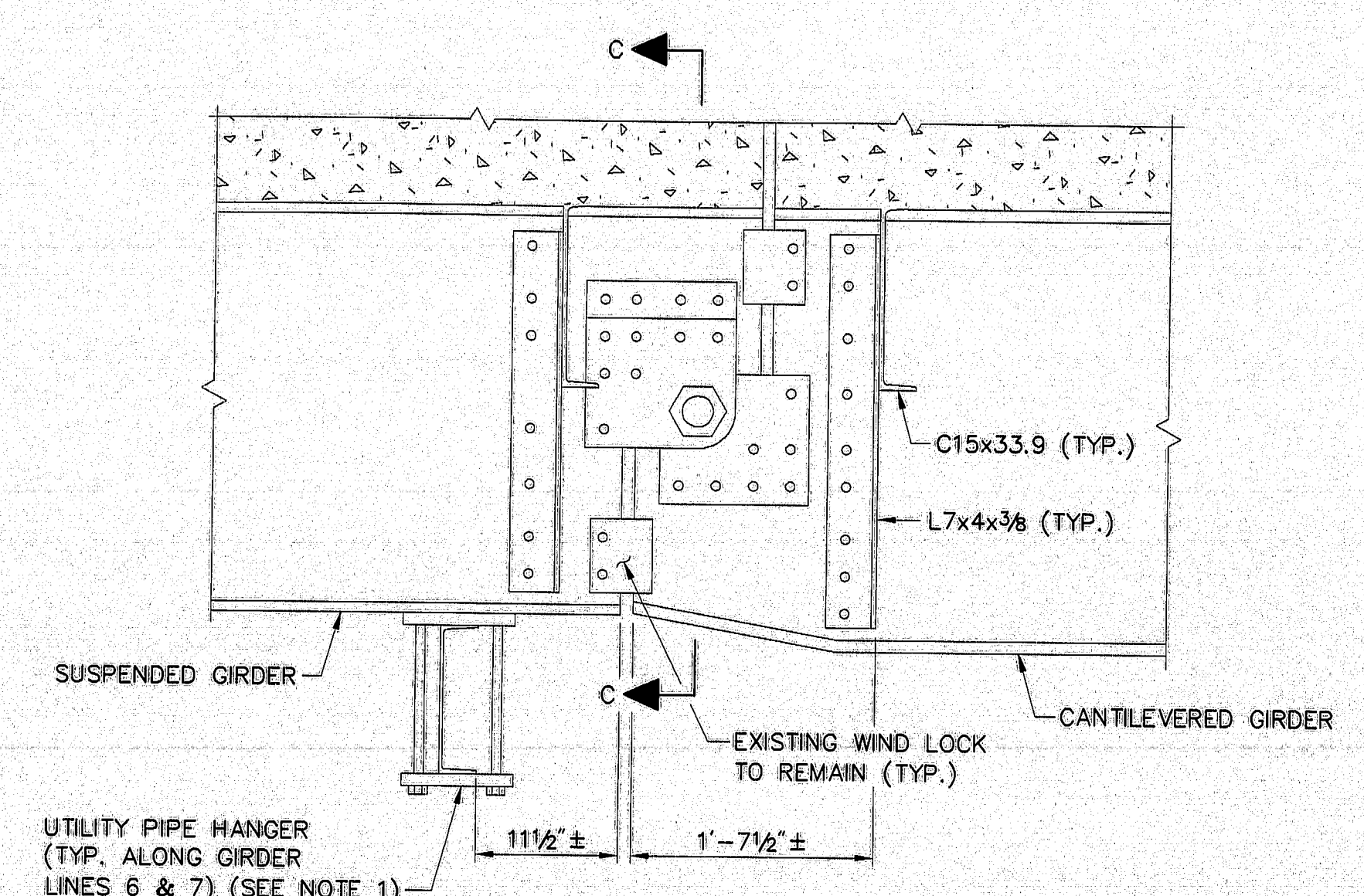
120-376

APPROVED:	
STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
COMMISSIONER _____	DATE _____
CHIEF ENGINEER _____	DATE _____

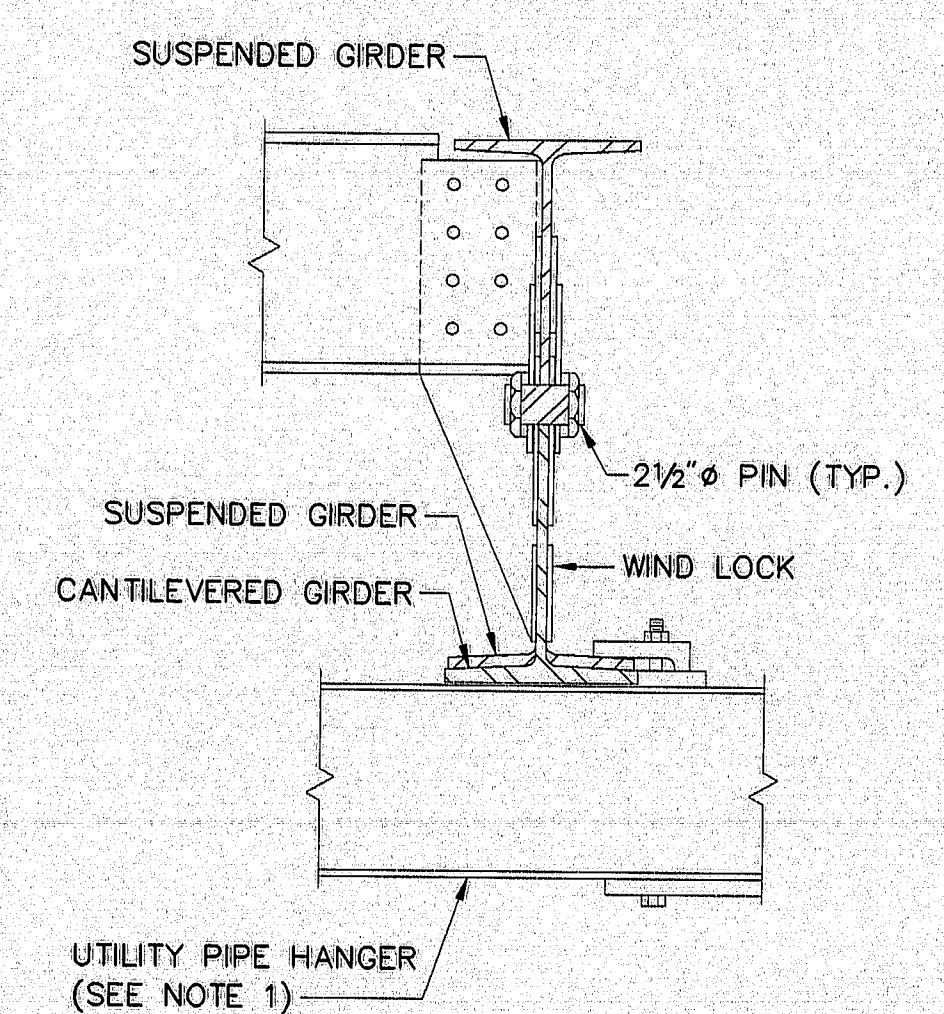
PLOTTED 6-9-97



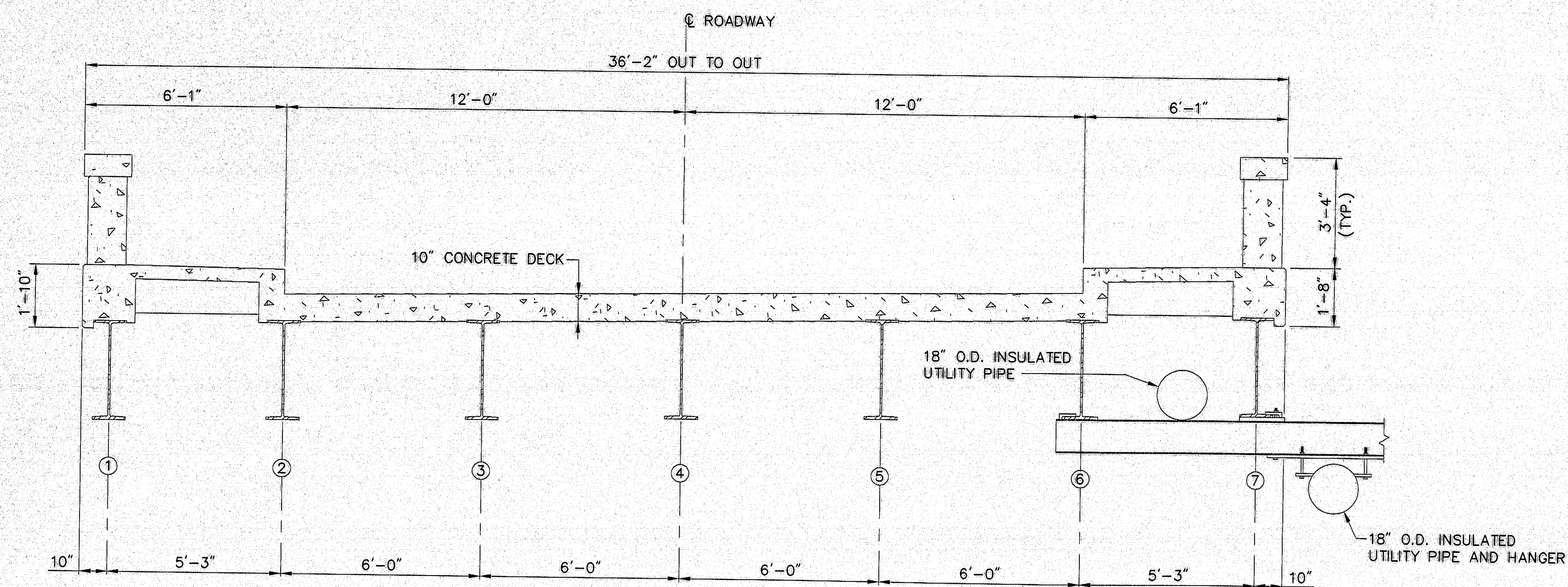
FRAMING PLAN
SCALE: 1/8" = 1'-0"



SECTION B-B
SCALE: 1" = 1'-0"



SECTION C-C
SCALE: 1" = 1'-0"
(CONCRETE NOT SHOWN)



SECTION A-A
SCALE: 3/8" = 1'-0"

- NOTES:**
1. THE EXISTING UTILITY HANGER ADJACENT TO THE PINS SHALL BE RELOCATED PRIOR TO THE INSTALLATION OF THE PROPOSED RETAINER.
 2. EXACT POSITION OF 18" UTILITIES UNKNOWN.

120-378

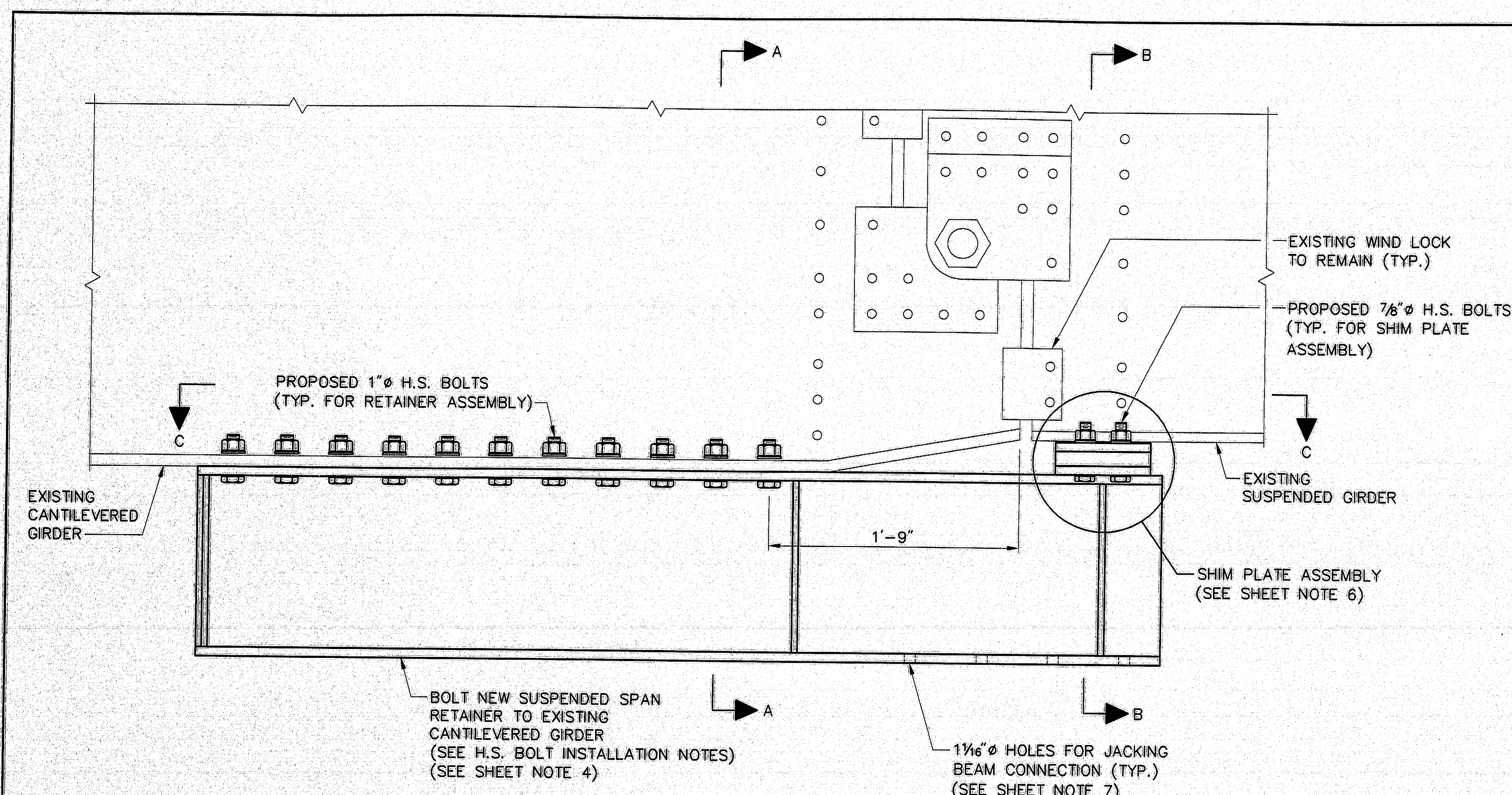
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BILLINGS BRIDGE
OVER LITTLE ANDROSCOGGIN RIVER
PARIS
OXFORD COUNTY

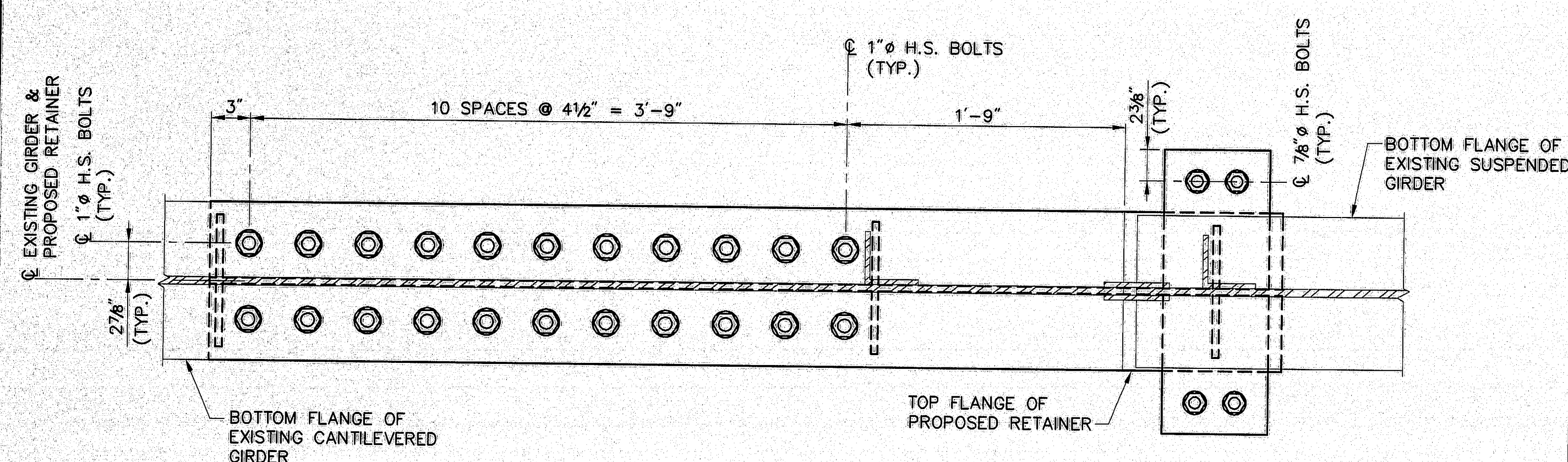
VANASSE HANGEN BRUSTLIN, INC.
VHB CAD 50576P56

FRAMING PLAN & DETAILS
SHEET 3 OF 6
DATE: 6-9-97

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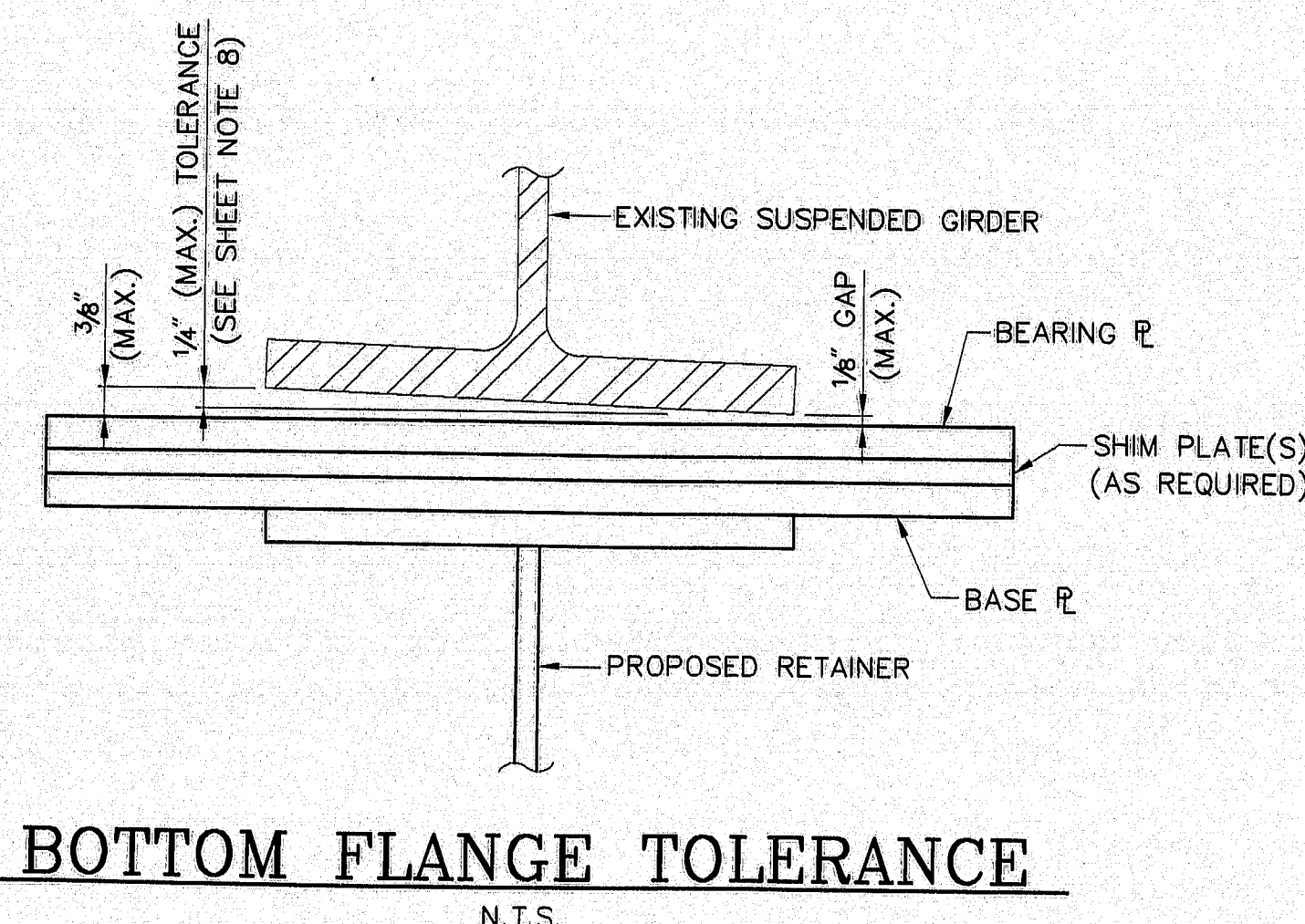
PROPOSED RETAINER ELEVATION
(AT EXTERIOR GIRDER)
SCALE: 1/2" = 1'-0"



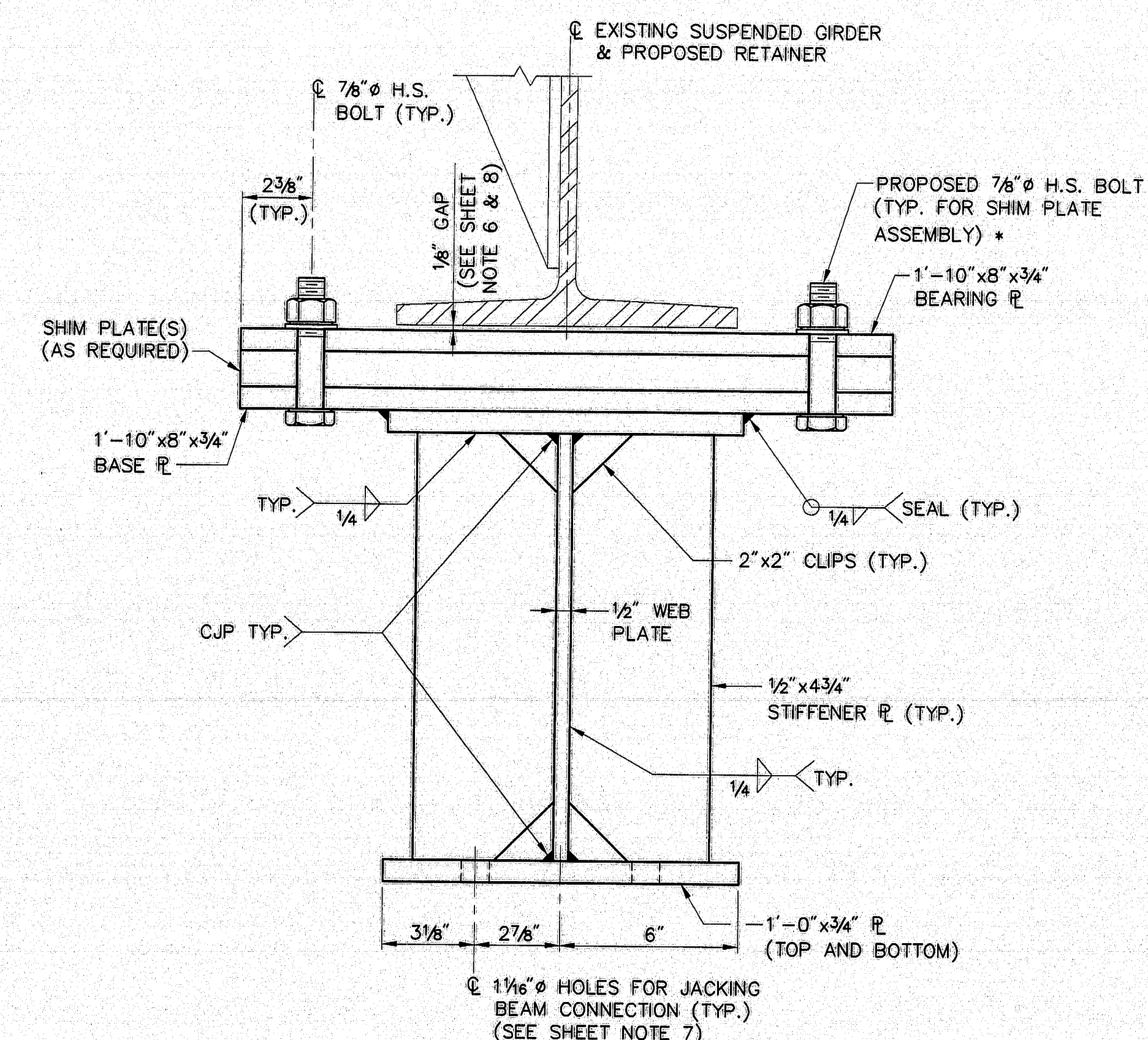
SECTION C-C
SCALE: 1/2" = 1'-0"

H.S. BOLT INSTALLATION NOTES:

1. BOLTED CONNECTIONS SHALL BE TIGHTENED BY THE "TURN-OF-NUT" METHOD, IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
2. ALL 1" H.S. BOLTS SHALL BE INSTALLED AND TIGHTENED TO A TENSION OF 51,000 LBS. PRIOR TO THE INSTALLATION OF THE SHIM PLATE ASSEMBLY.
3. 7/8" H.S. BOLTS SHALL BE TIGHTENED TO A TENSION OF 39,250 LBS.
4. F436 CIRCULAR WASHERS SHALL BE PROVIDED UNDER ALL NUTS (TURNED ELEMENT) FOR H.S. BOLTS.
5. ALL H.S. BOLT LENGTHS VARY DUE TO THE VARYING GRIP LENGTHS AT EACH RETAINER LOCATION. THE BOLT LENGTH USED SHALL BE ADJUSTED TO PREVENT THREAD "RUN OUT" DURING TIGHTENING.

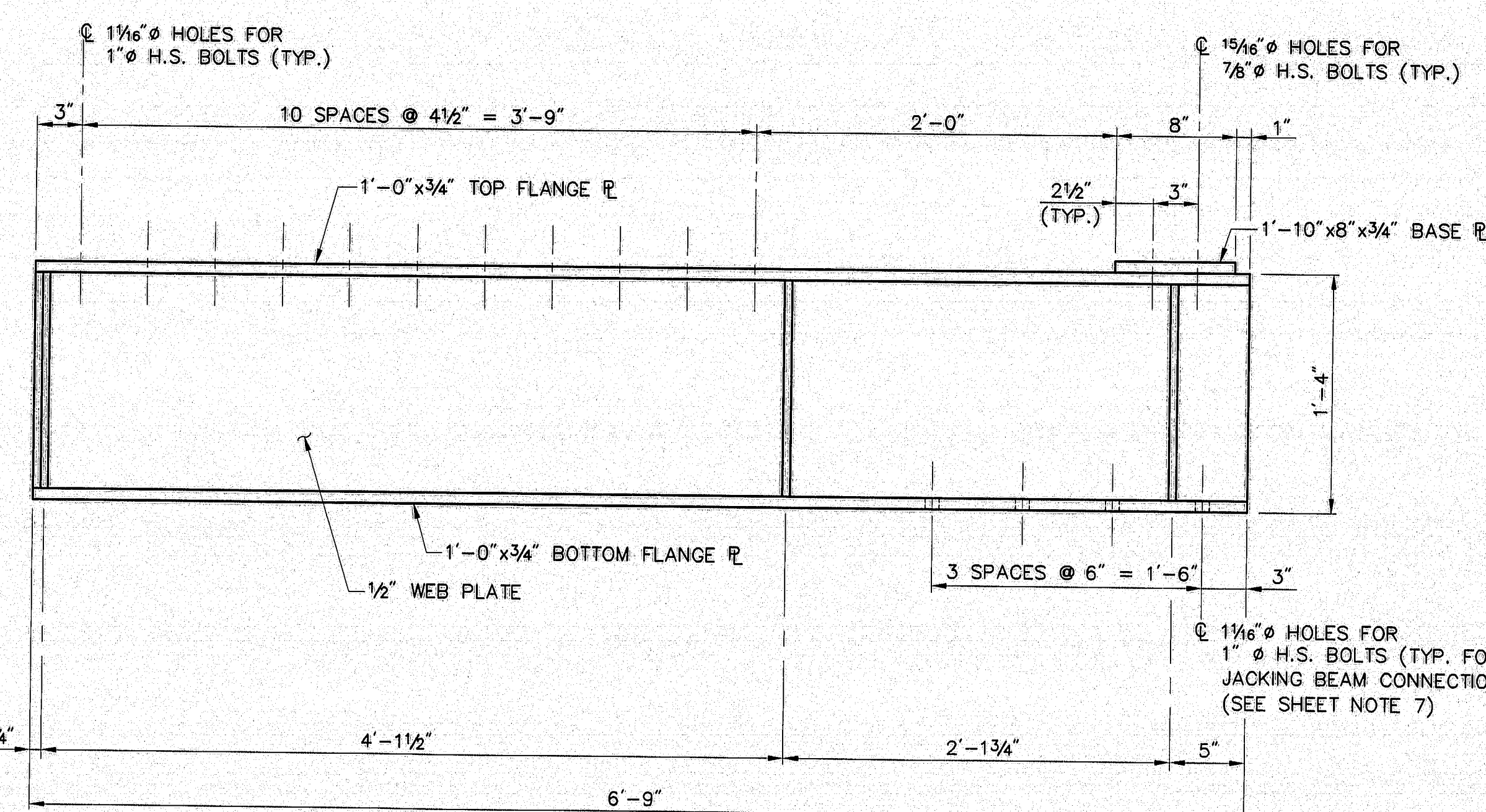


BOTTOM FLANGE TOLERANCE
N.T.S.

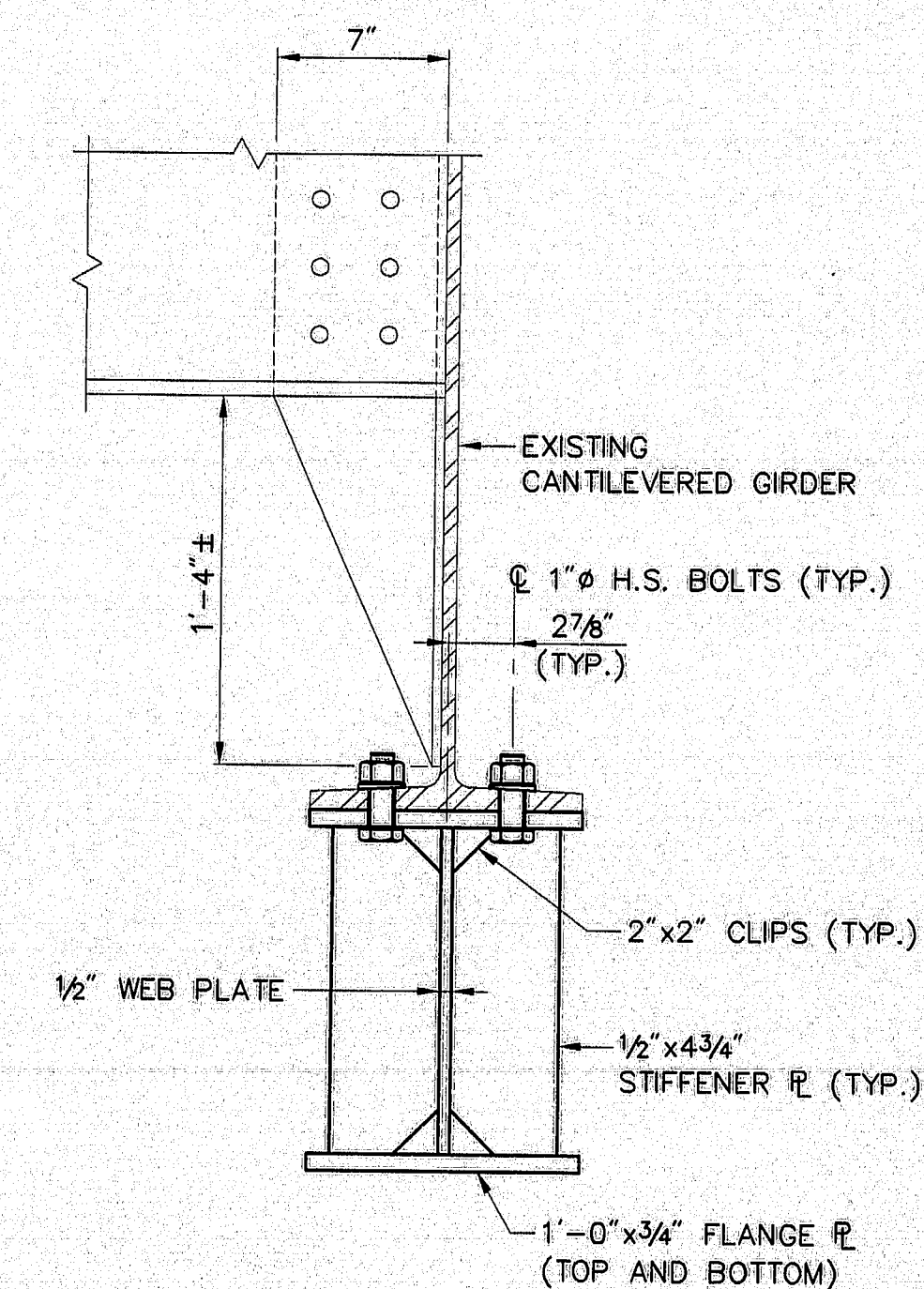


* SEE SHIM PLATE ASSEMBLY (SHEET 5) FOR LOCATION OF BOLT HOLES.

SECTION B-B
SCALE: 3" = 1'-0"



PROPOSED RETAINER
SCALE: 1/2" = 1'-0"



SECTION A-A
SCALE: 1/2" = 1'-0"

SHEET NOTES:

1. THE DIMENSIONS SHOWN ARE BASED ON EXISTING PLANS AND LIMITED FIELD MEASUREMENTS.
2. ALL NEW STEEL SHALL BE SHOP PAINTED TO MATCH THE EXISTING STEEL AT THE DISCRETION OF MOOT FORCES. AFTER ERECTION, ANY DAMAGED PAINTED SURFACES OR UNPAINTED STEEL SHALL BE PAINTED AND TOUCHED UP.
3. THE CONTACT SURFACES BETWEEN THE EXISTING CANTILEVERED GIRDER AND THE PROPOSED RETAINER SHALL BE FREE OF DIRT, BURRS, PAINT SCALE, MILL SCALE, OIL, LACQUER, OR OTHER COATINGS OR DEFECTS WHICH PREVENT SOLID SEATING BETWEEN THE TWO SURFACES.
4. SHIM PLATES SHALL NOT BE USED BETWEEN THE EXISTING CANTILEVERED GIRDER AND THE PROPOSED RETAINER.
5. AN EQUIVALENT RETAINER MAY BE USED WHICH MAINTAINS, AS A MINIMUM, THE PLATE DIMENSIONS AND SECTION PROPERTIES OF THE PROPOSED RETAINER.
6. SEE SHEET 5 FOR SHIM PLATE ASSEMBLY DETAILS.
7. SEE SHEET 6 FOR JACKING BEAM DETAILS.
8. THE BOTTOM FLANGES OF THE EXISTING GIRDERS AND THE TOP SURFACES OF THE PROPOSED BEARING PLATES SHALL NOT BE OUT OF PARALLEL BY MORE THAN A 1/4" WHEN THE RETAINER ASSEMBLY IS FULLY INSTALLED AS SHOWN IN THESE PLANS. THE EXISTING GIRDER FLANGES SHALL BE FIELD STRAIGHTENED OR BEVELED SHIM PLATES SHALL BE PLACED UNDER THE PROPOSED BEARING PLATES TO ENSURE THAT SURFACES ARE WITHIN SPECIFIED TOLERANCES.

120-379

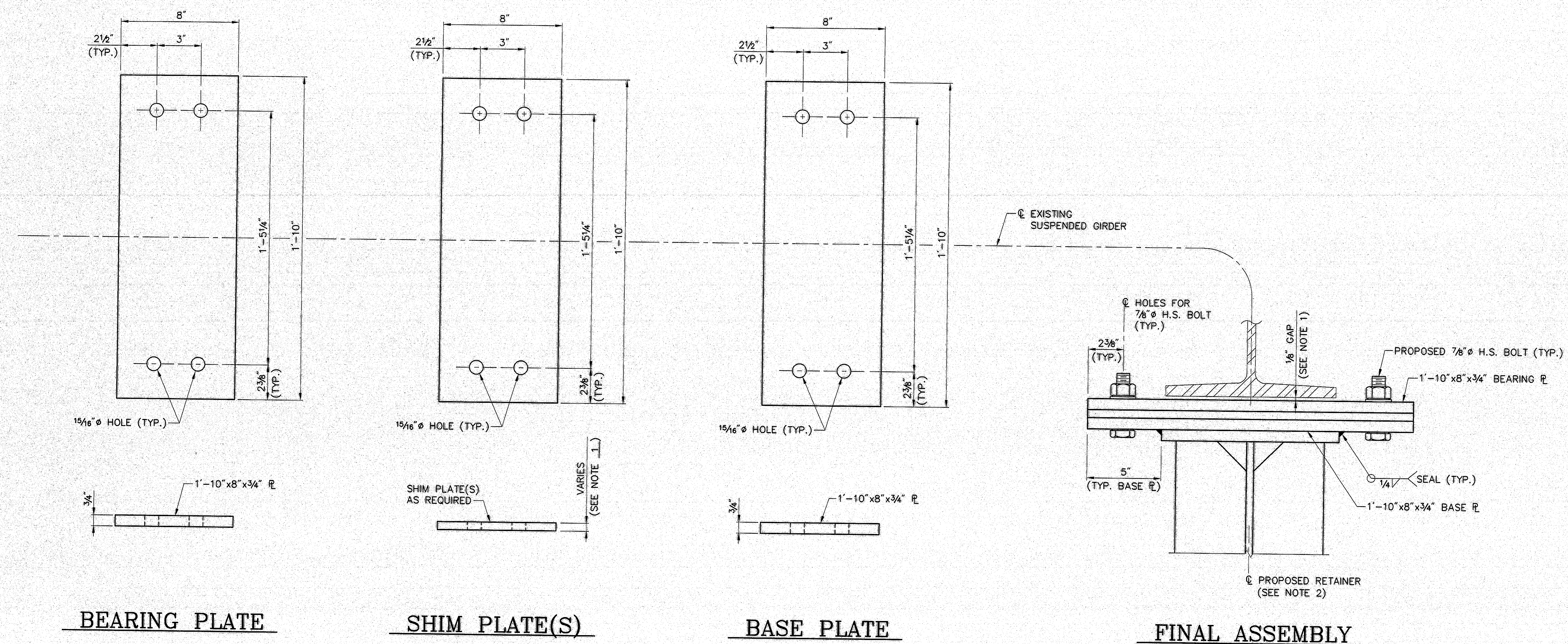
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BILLINGS BRIDGE
OVER LITTLE ANDROSCOGGIN RIVER
PARIS
OXFORD COUNTY

VANASSE HANGEN BRUSTLIN, INC.
VHB CAD 50576PS9

SUSPENDED SPAN RETAINER
SHEET 4 OF 6
DATE: 6-17-97

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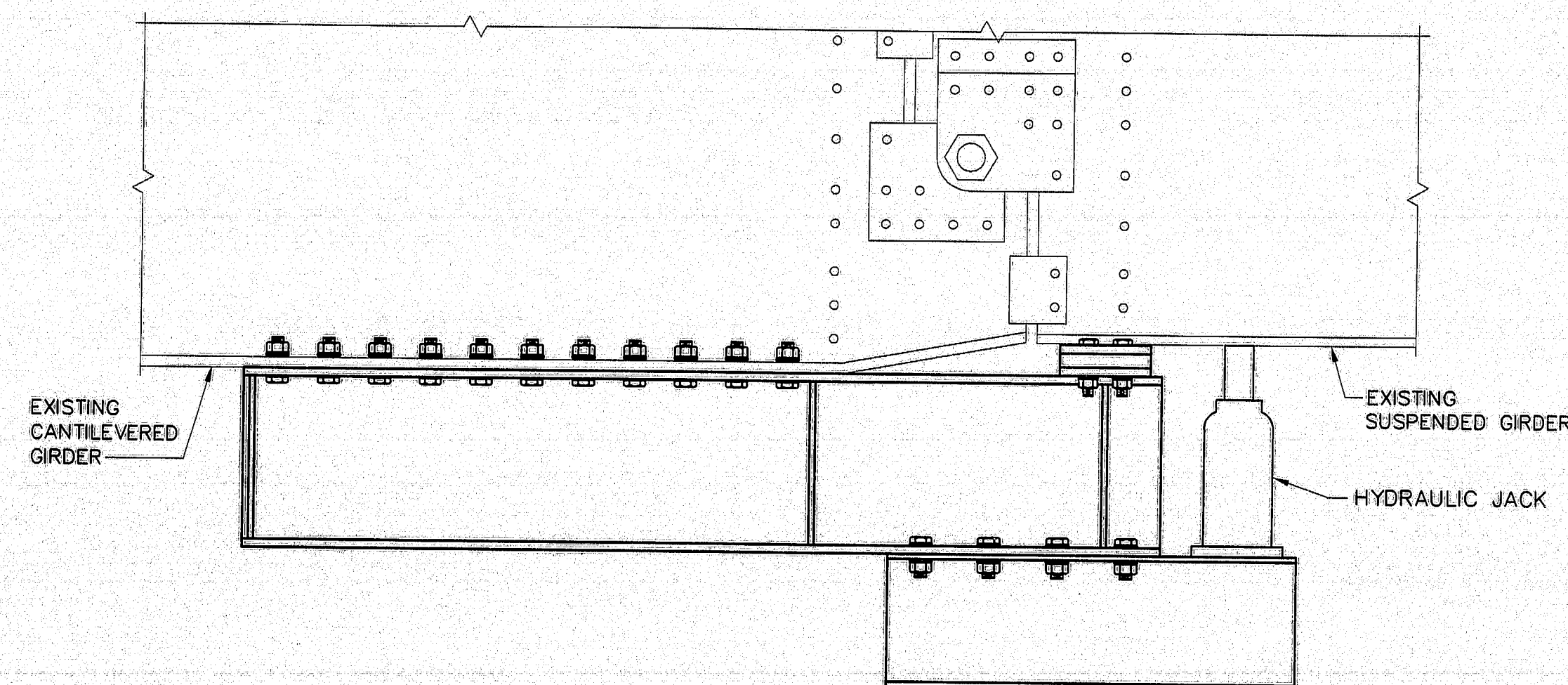
SHIM PLATE ASSEMBLY
SCALE: 3" = 1'-0"

- NOTES:
1. MULTIPLE SHIM PLATES MAY BE REQUIRED, AND SHOULD BE SELECTED TO MAINTAIN A FINAL 1/8" ± GAP BETWEEN THE SUSPENDED GIRDER AND THE SHIM ASSEMBLY BEARING PLATE. USE THE THICKEST SHIM PLATES POSSIBLE TO MINIMIZE THE NUMBER REQUIRED. SEE SHEET 6 FOR SHIM PLATE THICKNESSES.
 2. SEE SHEET 4 FOR SUSPENDED SPAN RETAINER DETAILS AND LOCATION OF BASE PLATE.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
BILLINGS BRIDGE OVER LITTLE ANDROSCOGGIN RIVER PARIS OXFORD COUNTY	
120-380	SHIM PLATE ASSEMBLY
VANASSE HANGEN BRUSTLIN, INC. VHB CAD 50576P58	SHEET 5 OF 6 DATE: 6-9-97

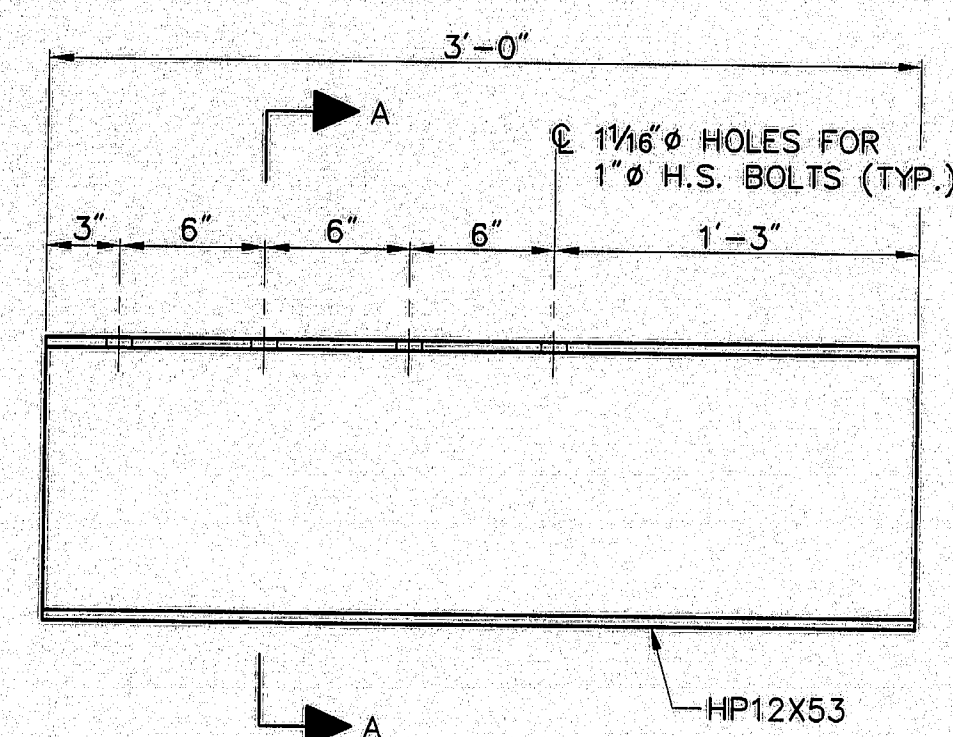
BILL OF MATERIALS				
NO.	DESCRIPTION	LENGTH	REMARKS	WEIGHT (LBS.)
PROPOSED RETAINER (7 REQUIRED)				
7	1'-0"x3/4" TOP FLANGE PL	6' 9"		1,450
7	1'-0"x3/4" BOTTOM FLANGE PL	6' 9"		1,450
7	1'-2 1/2"x1/2" WEB PL	6' 9"		1,170
42	4 3/4"x1/2" STIFFENER PL	1' 2 1/2"	CLIP 2 CORNERS - SEE SHEET 4	410
7	8"x3/4" BASE PL	1' 10"	4 - 1 5/16" HOLES - SEE SHEET 5	265
SHIM PL ASSEMBLY (7 REQUIRED)				
7	8"x3/4" BEARING PL	1' 10"	4 - 1 5/16" HOLES - SEE SHEET 5	265
10	8"x3/4" SHIM PL	1' 10"	4 - 1 5/16" HOLES - SEE SHEET 5	375
4	8"x1/2" SHIM PL	1' 10"	4 - 1 5/16" HOLES - SEE SHEET 5	100
5	8"x1/4" SHIM PL	1' 10"	4 - 1 5/16" HOLES - SEE SHEET 5	65
7	8"x1/8" SHIM PL	1' 10"	4 - 1 5/16" HOLES - SEE SHEET 5	45
BOLTS, NUTS, AND WASHERS				
8	7/8" A325 TYPE 1 H.S. BOLTS W/ A563 HEAVY HEX NUTS	0' 4 3/4"		11
8	7/8" A325 TYPE 1 H.S. BOLTS W/ A563 HEAVY HEX NUTS	0' 4 1/2"		11
12	7/8" A325 TYPE 1 H.S. BOLTS W/ A563 HEAVY HEX NUTS	0' 4 1/4"		15
12	7/8" A325 TYPE 1 H.S. BOLTS W/ A563 HEAVY HEX NUTS	0' 4"		15
8	7/8" A325 TYPE 1 H.S. BOLTS W/ A563 HEAVY HEX NUTS	0' 3 3/4"		10
48	STD. WASHER FOR 7/8" BOLT		(F436)	4
125	1" A325 TYPE 1 H.S. BOLTS W/ A563 HEAVY HEX NUTS	0' 3 1/2"		190
50	1" A325 TYPE 1 H.S. BOLTS W/ A563 HEAVY HEX NUTS	0' 3 1/4"		75
175	STD. WASHER FOR 1" BOLT		(F436)	17
JACKING BEAM				
*	HP12X53	3' 0"	SEE SHEETS 4 & 5 FOR LOCATION OF 1 1/8" HOLES	160

* ONE JACKING BEAM REQUIRED FOR BRIDGE REHABILITATIONS IN THIS CONTRACT.



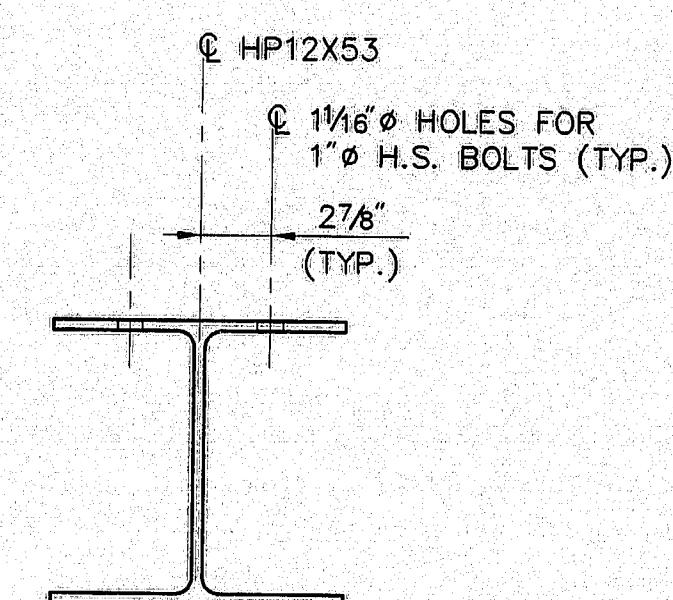
PROPOSED JACKING BEAM ELEVATION

N.T.S.



JACKING BEAM

SCALE: 1 1/2" = 1'-0"



SECTION A-A

SCALE: 1 1/2" = 1'-0"

NOTES:

1. ADDITIONAL SHIM PLATES, BOLTS, NUTS, AND WASHERS ARE INCLUDED IN THE BILL OF MATERIALS TO ACCOUNT FOR VARIABLE FIELD DIMENSIONS.
2. THE PROPOSED JACKING BEAM CAN BE USED FOR ALL OTHER BRIDGE REHABILITATIONS IN THIS CONTRACT.
3. AN EQUIVALENT JACKING BEAM MAY BE FABRICATED THAT MAINTAINS, AS A MINIMUM, THE PLATE DIMENSIONS AND SECTION PROPERTIES OF THE PROPOSED HP12X53.
4. ESTIMATED STEEL WEIGHTS DO NOT ACCOUNT FOR HOLES OR CLIPS.
5. THE PROPOSED JACKING BEAM HAS BEEN DESIGNED FOR MAXIMUM DISTRIBUTED DEAD LOAD ONLY, AND HAS NOT BEEN DESIGNED TO ACCOMMODATE DISTRIBUTED LIVE LOAD. CONSEQUENTLY TRAFFIC SHOULD NOT BE ALLOWED ON THE BRIDGE WHEN JACKING A SUSPENDED GIRDER.
6. ALL BOLTS CONNECTING THE JACKING BEAM TO THE PROPOSED RETAINER SHALL BE SNUG TIGHT, AS DEFINED IN SECTION 504.28(f) OF THE MDOT STANDARD SPECIFICATIONS. JACKING BEAM BOLTS DO NOT HAVE TO BE TIGHTENED BEYOND SNUG TIGHT.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
BILLINGS BRIDGE OVER LITTLE ANDROSCOGGIN RIVER PARIS OXFORD COUNTY	
120-381	
VANASSE HANGEN BRUSTLIN, INC.	BILL OF MATERIALS AND JACKING BEAM
VHB CAD 50576PSB	SHEET 6 OF 6
	DATE: 6-9-97