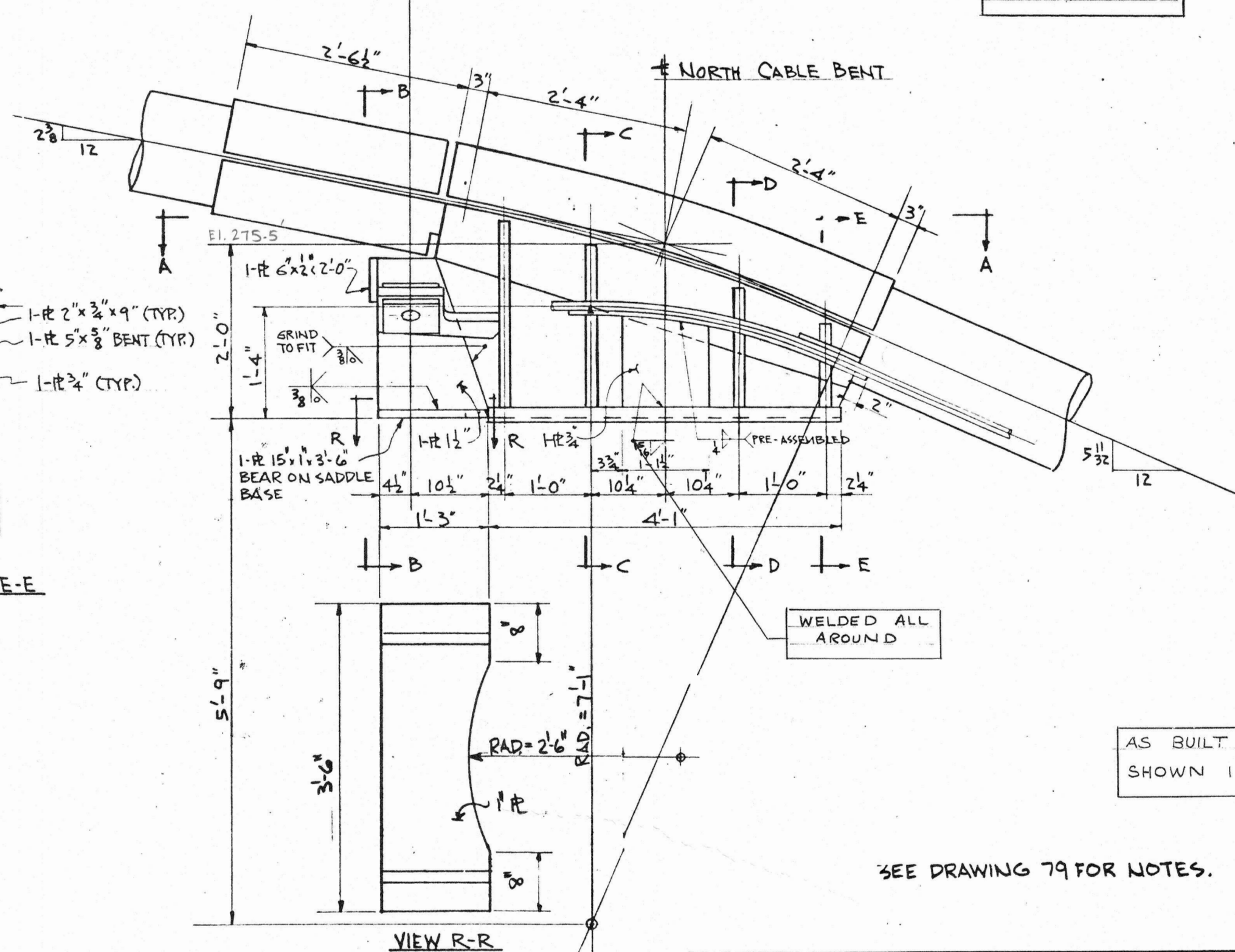
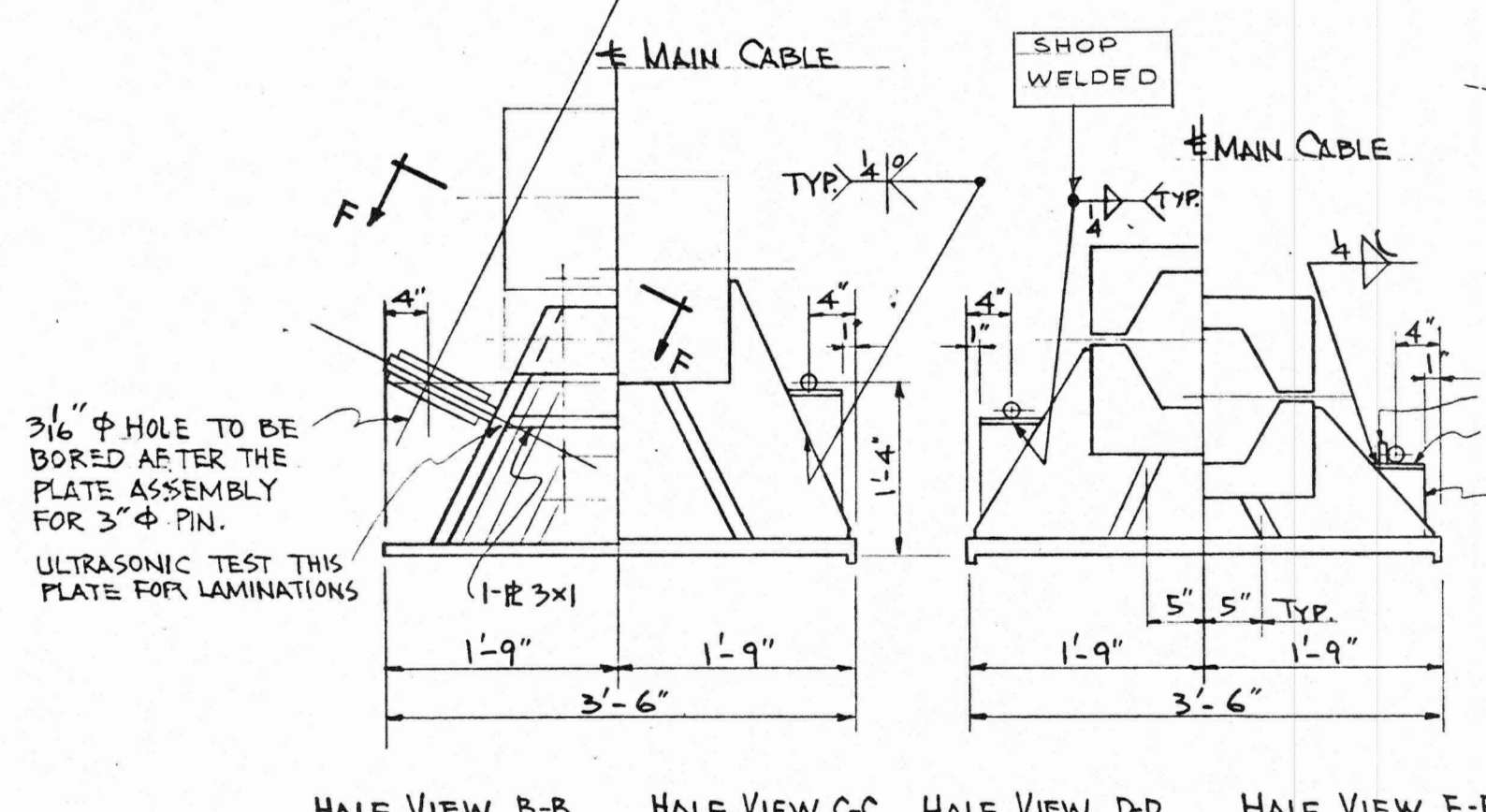
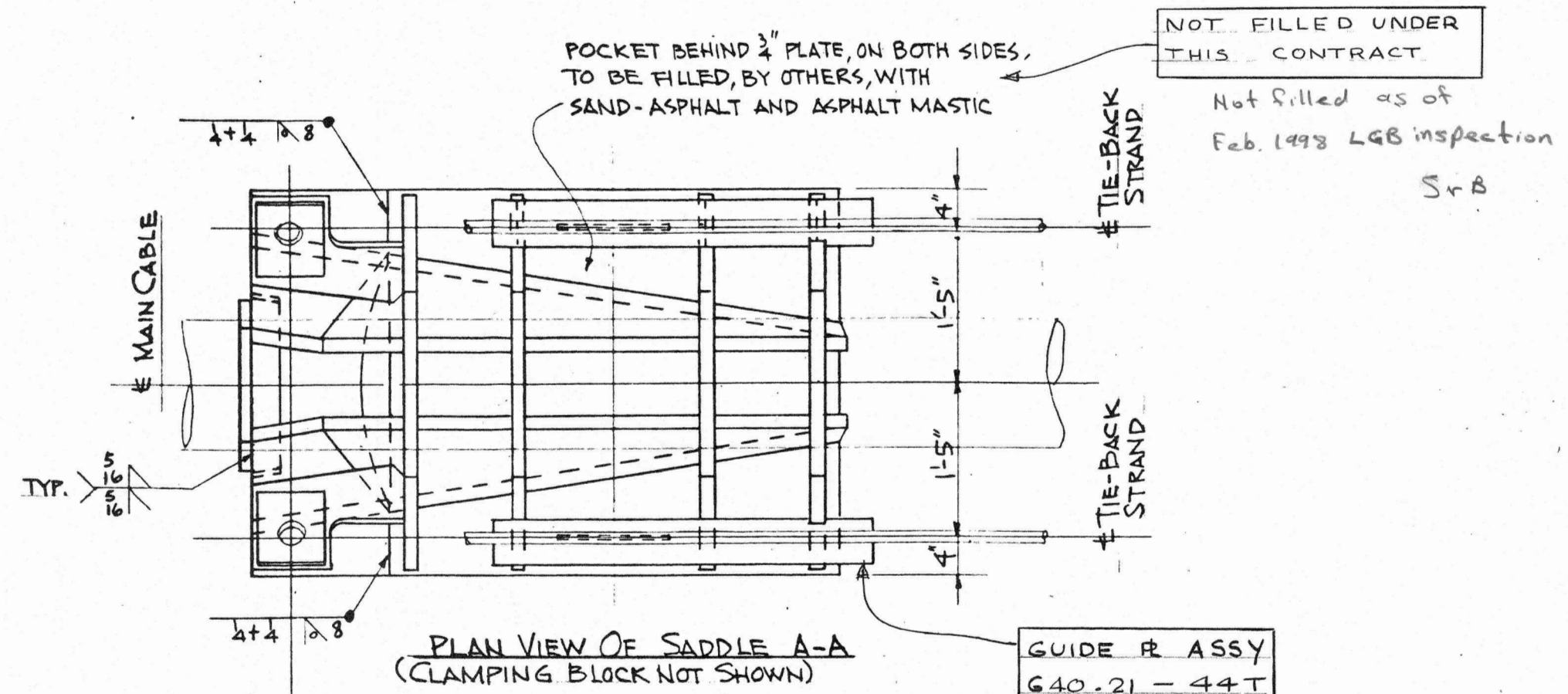
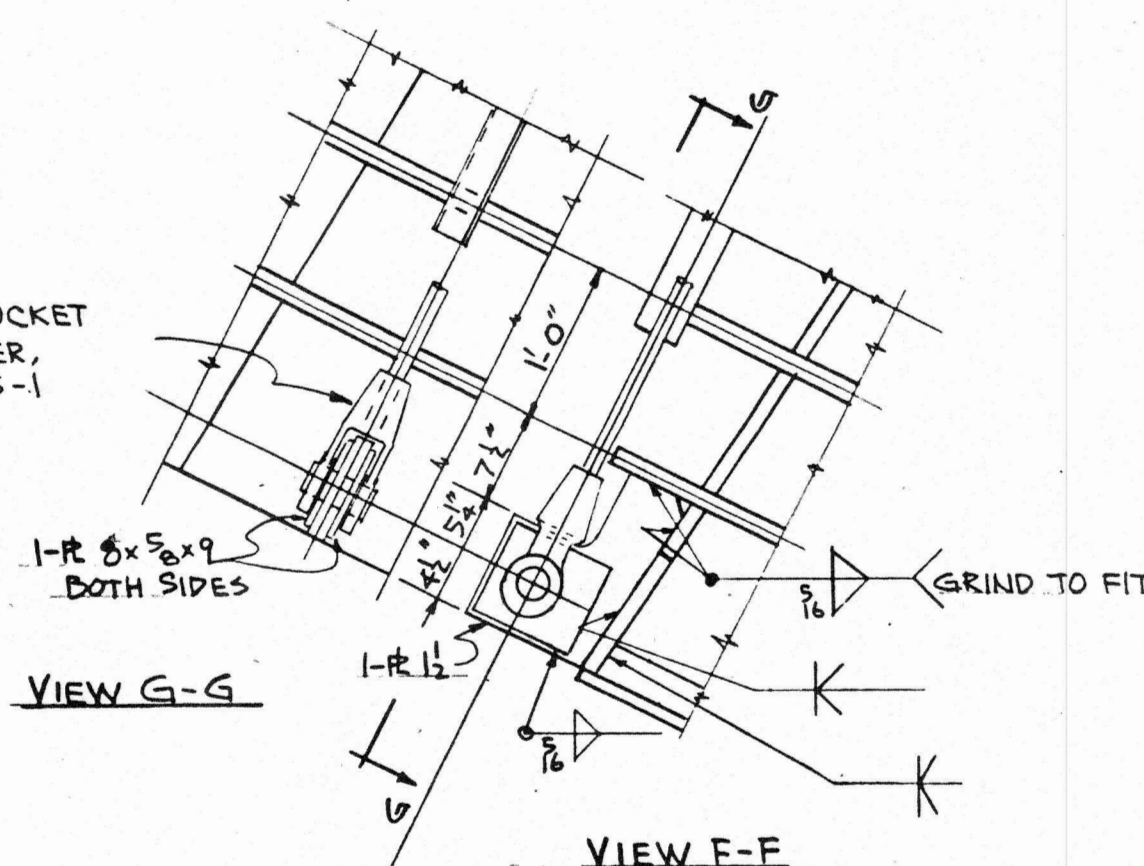


AS BUILT NOTES
SHOWN IN FRAMES

SEE DRAWING 79 FOR NOTES.

BUCKLAND and TAYLOR Ltd. CONSULTING ENGINEERS		BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS BRIDGE DESIGN			
		LIONS' GATE BRIDGE MODIFICATIONS CONTRACT N ^o 1 - NORTH VIADUCT NORTH CABLE BENT TIE-BACK			
D		RECOMMENDED	SCALE: AS NOTED		
C		P. S. Buckland CONSULTING ENGINEER	DRAWN	RKCC APR 76	CHECKED
B		GENERAL ARRANGEMENT APPROVED			RCH MAY 76
A	REVISED TO AS BUILT	JGM	DRAWING No.		1481-76 A
REVISIONS		J. Galumson CHIEF HIGHWAY ENGINEER			

OPEN STRAND SOCKET FOR 1 1/8" DIAMETER, (SUCH AS TYPE OS-1 BETHLEHEM)



ALL G40.21 - 50 A UNLESS NOTED

AS BUILT NOTES SHOWN IN FRAMES

SEE DRAWING 79 FOR NOTES.

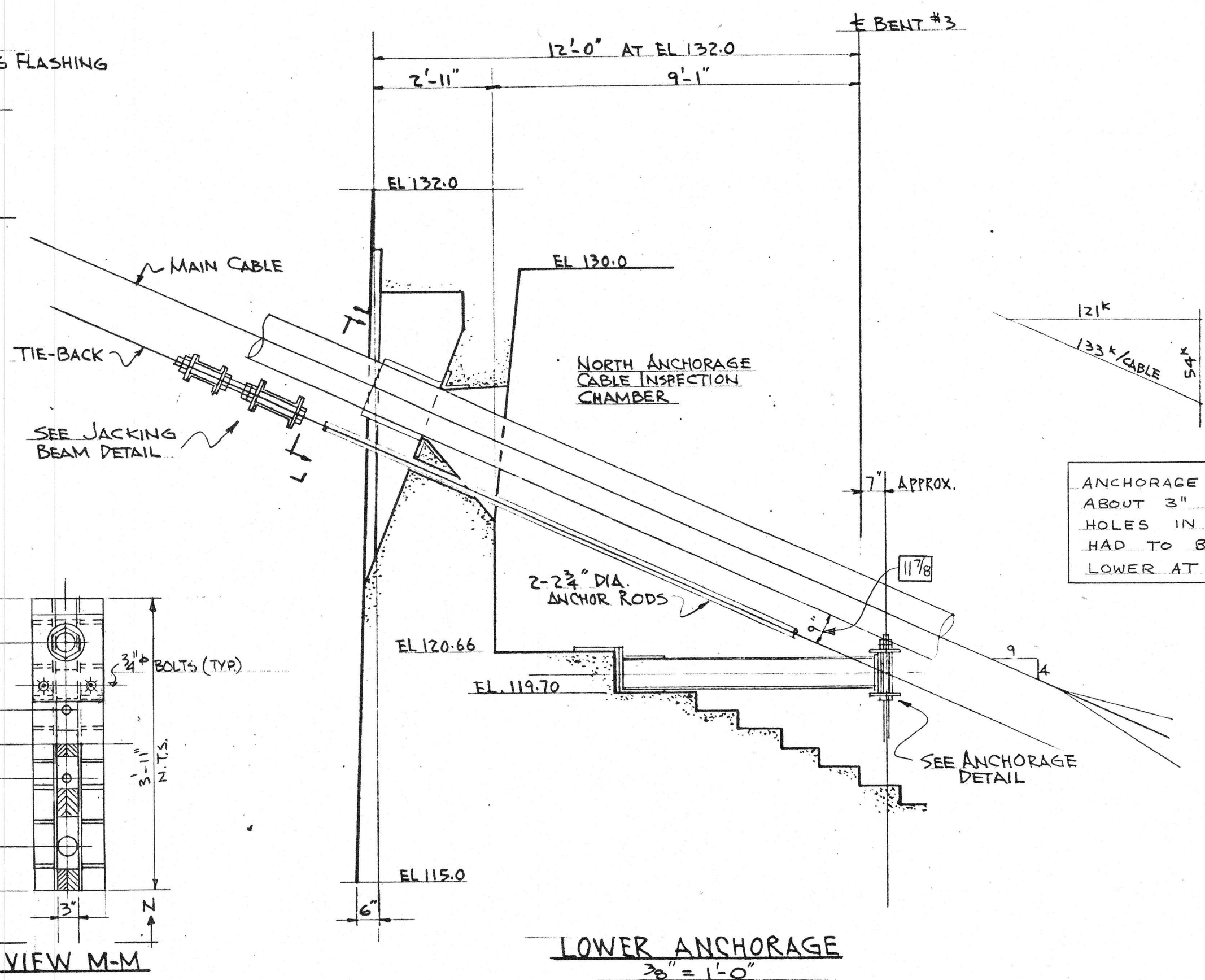
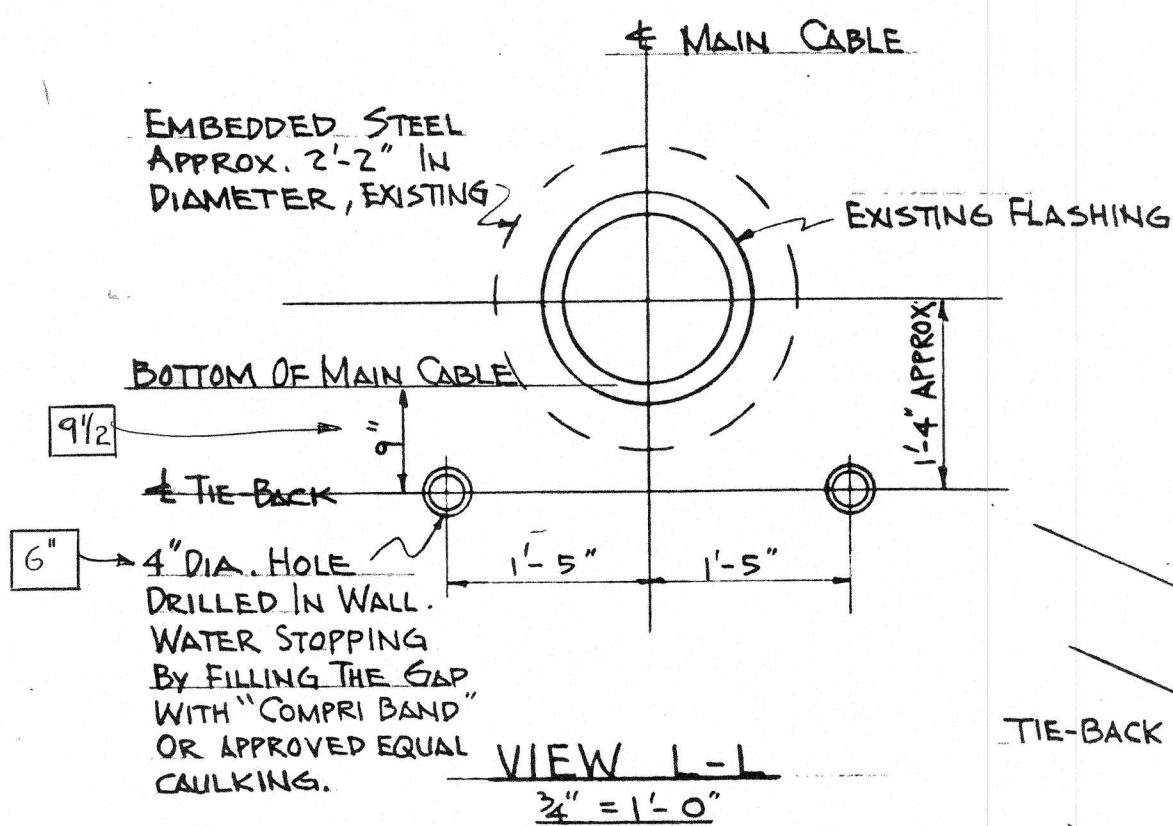


BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS
BRIDGE DESIGN

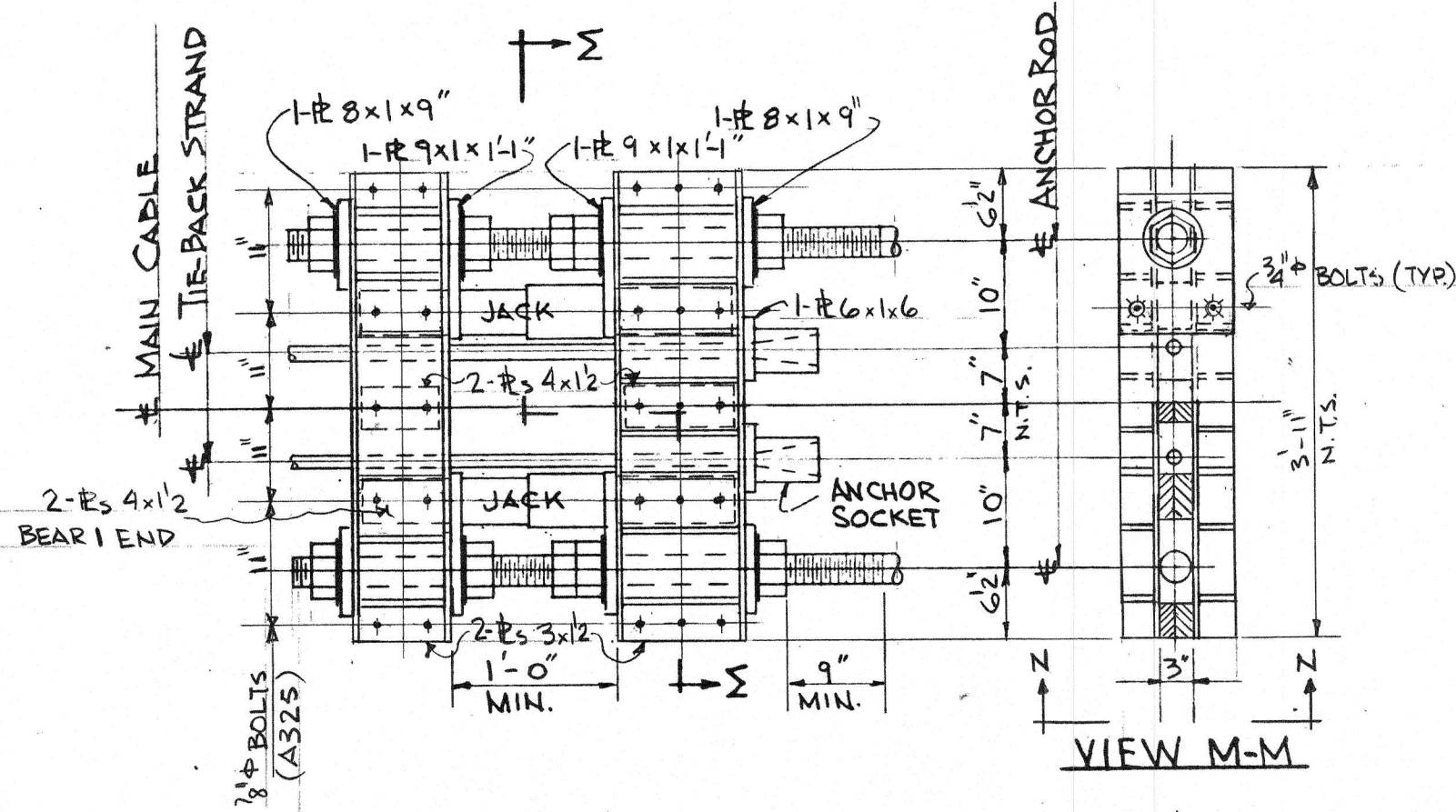
LIONS' GATE BRIDGE MODIFICATIONS
CONTRACT N°1 - NORTH VIADUCT
NORTH CABLE BENT
TIE-BACK UPPER END DETAIL

BUCKLAND and TAYLOR Ltd. CONSULTING ENGINEERS	
D	
C	
B	
A	REVISED TO AS BUILT JGM JUL 77
REVISIONS	

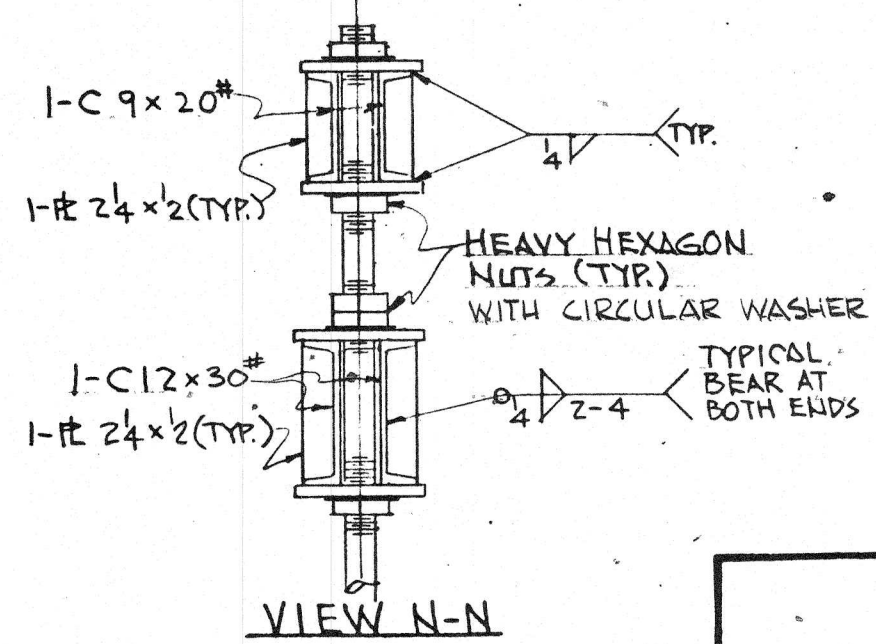
RECOMMENDED	SCALE: 3/4" = 1'-0"
P. S. Buelland CONSULTING ENGINEER	DRAWN RKC APR 76 CHECKED PGB MAY 76
GENERAL ARRANGEMENT APPROVED J. G. Larsson CHIEF HIGHWAY ENGINEER	DRAWING No. 1481-77 A



ANCHORAGE WAS ERECTED ABOUT 3" LOW SO THAT HOLES IN CONCRETE FACE HAD TO BE REDRILLED LOWER AT 6" DIAMETER



JACKING BEAM DETAIL
3/4" = 1'-0"
GALVANIZED



AS BUILT NOTES SHOWN IN FRAMES

SEE DRAWING 79 FOR NOTES

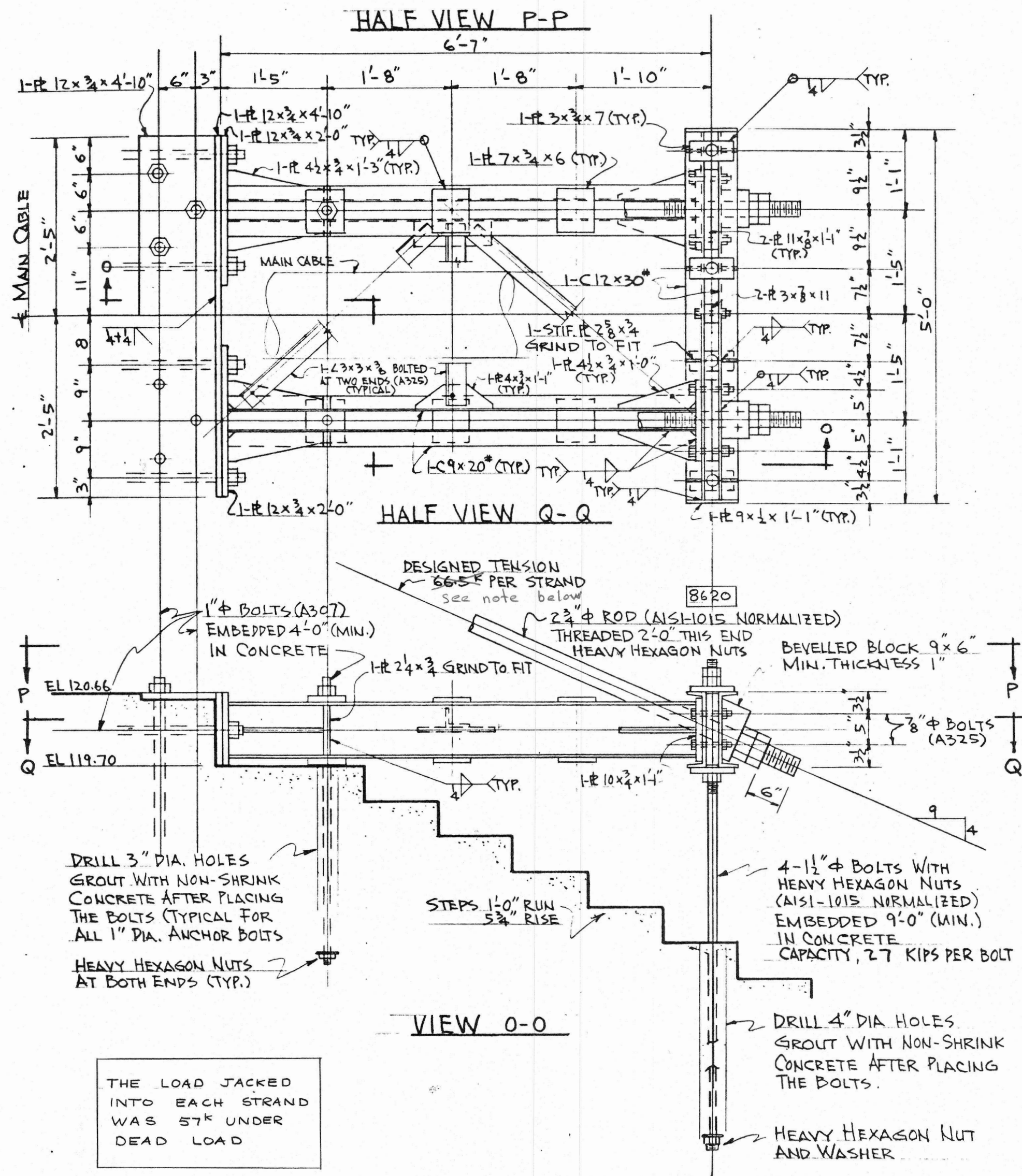
BUCKLAND and TAYLOR Ltd.
CONSULTING ENGINEERS

D			
C			
B	ARROW HEAD CORRECTED	PJF	78SEP
A	REVISED TO AS BUILT	JGM	JUL77
REVISIONS			

**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS
BRIDGE DESIGN**

**LIONS' GATE BRIDGE MODIFICATIONS
CONTRACT N°1 - NORTH VIADUCT
NORTH CABLE BENT
TIE-BACK ANCHORAGE AND JACKING BEAM.**

RECOMMENDED	SCALE: AS NOTED				
<i>P.G. Buckland</i> CONSULTING ENGINEER	DRAWN	RKCC	APR 76	CHECKED	PCB
GENERAL ARRANGEMENT APPROVED				DRAWING No.	
<i>J. G. Macdonald</i> CHIEF HIGHWAY ENGINEER				1481-78	B



THE LOAD JACKED INTO EACH STRAND WAS 57k UNDER DEAD LOAD

AS BUILT NOTES SHOWN IN FRAMES

SPECIFICATIONS FOR THE TIE-BACK

1. ALL SUPPLY, FABRICATION, AND CONSTRUCTION OF THE TIE-BACK SHALL CONFORM TO THE GENERAL CONDITIONS AND SPECIAL PROVISIONS OF THIS CONTRACT, EXCEPT AS NOTED IN THE TIE-BACK DRAWINGS, NOS. 1481-76, 1481-77, 1481-78, AND 1481-79.
2. THE SCOPE OF THE TIE-BACK WORK CONSISTS OF THE SUPPLY, FABRICATION, AND INSTALLATION OF A PAIR OF TIE-BACK STRANDS TO EACH OF THE TWO COLUMNS OF THE NORTH CABLE BENT, FROM THE UPPER ANCHORAGES AT THE TOP OF THE COLUMNS TO THE LOWER ANCHORAGES IN THE NORTH ANCHORAGE CABLE INSPECTION CHAMBERS.
3. ALL STEEL SHALL BE OF CSA-640.21-44T GRADE, EXCEPT AS NOTED IN THE DRAWINGS.
4. ALL WELDS SHALL BE MADE WITH E7018 LOW HYDROGEN ELECTRODES, EXCEPT THAT THE ROOT PASS ON GROOVE WELDS MAY BE MADE WITH E6010 ELECTRODES.
5. THE TIE-BACK STRANDS SHALL BE OF 1 1/8 INCHES DIAMETER ZINC-COATED BRIDGE STRAND OF 1x46 CONSTRUCTION, CLASS C WEIGHT ZINC-COATED OUTER WIRES, 102.0 TONS MIN. BREAKING STRENGTH, AND SHALL CONFORM TO ASTM A586-68 SPECIFICATIONS FOR ZINC-COATED STEEL STRUCTURAL STRAND.
6. EACH STRAND SHALL BE PRESTRETCHED, AND ITS LENGTH MARKED UNDER WORKING TENSION. PRESTRETCHING CYCLES SHALL BE CONTINUED UNTIL AN ELASTIC MODULUS OF 25,200 KSI IS DEVELOPED. AT THE CONCLUSION OF THE PRESTRETCHING, EACH STRAND SHALL BE MARKED WITH A LONGITUDINAL ORIENTATION STRIPE.
7. EACH STRAND SHALL BE PACKED INDIVIDUALLY AND CAREFULLY IN ONE WOODEN REEL SO THAT NO PERMANENT DEFORMATION OF WIRES IN THE STRAND WILL OCCUR, NOR ANY DAMAGE TO THE COATING WILL BE ALLOWED DURING TRANSPORTATION, HANDLING, AND ERECTION.
8. SAMPLING AND TESTING OF EACH STRAND ARE REQUIRED, AND SHALL CONFORM TO THE SAME ASTM A586-68 SPECIFICATIONS.
9. THE OPEN STRAND SOCKETS SHALL BE HIGH-STRENGTH STEEL CASTING, GRADE 80-50, NORMALIZED, STRESS RELIEVED, AND CONFORMING TO ASTM A148 STANDARD SPECIFICATIONS FOR HIGH-STRENGTH CASTINGS FOR STRUCTURAL PURPOSES. THE FINISHED CASTINGS SHALL ALSO BE TESTED BY RADIOGRAPHIC INSPECTION. [NOT TESTED]
10. SOCKET PINS SHALL BE CLASS C1 FORGED STEEL, NORMALIZED, FORGED WITHOUT WELDS FROM SOLID STEEL, AND CONFORMING TO ASTM A235 THE SPECIFICATIONS FOR CARBON STEEL FORGINGS FOR GENERAL INDUSTRIAL USE.
11. BEFORE THE ASSEMBLY OF THE UPPER END ANCHORAGE IS WELDED TO THE EXISTING SADDLE ON TOP OF THE CABLE BENT, IT SHALL BE STRESS RELIEVED AND CHECKED BY ULTRASONIC TEST.
12. TEST OF THE CAPACITY OF THE ANCHOR BOLTS TO THE DESIGN LOAD SHALL BE DONE BEFORE JACKING THE TIE-BACKS. THE VERTICAL UPLIFT IS DESIGNED FOR 2.7 KIPS PER ANCHOR BOLT.
13. ANCHORAGE OF THE TIE-BACKS IS DESIGNED FOR TWICE THE DESIGNED TENSION IN STRANDS.
14. JACKING THE TIE-BACKS SHALL BE SYNCHRONIZED, SO THAT THE TENSION IN THE FOUR STRANDS SHALL BE MAINTAINED THE SAME ALL THE TIME.
15. WRAPPING OF THE MAIN CABLES SHALL BE PROTECTED AND REPAIRED, IF REQUIRED, DURING THE ERECTION OF THE TIE-BACKS.
16. ALL STEEL SHALL BE CLEANED AND PAINTED AFTER THE COMPLETION OF THE ERECTION, EXCEPT GALVANIZED STEEL, ACCORDING TO PARA 3.25 OF THE SPECIAL PROVISIONS.
17. CONTRACTOR SHALL DOUBLE CHECK ALL DIMENSIONS IN THE FIELD BEFORE DETAILING, AND MAKE TEMPLATES IF NECESSARY.

1x37

BUCKLAND and TAYLOR Ltd.		
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C		
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A	REVISED TO AS BUILT	JGM JUL 77
REVISIONS		



BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS
BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS
CONTRACT N^o 1 - NORTH VIADUCT
NORTH CABLE BENT
TIE-BACK ANCHORAGE DETAIL

RECOMMENDED	SCALE: 3/4" = 1'-0"
P. G. Buehland CONSULTING ENGINEER	DRAWN RKCC APR 76 CHECKED PGB MAY 76
GENERAL ARRANGEMENT APPROVED <i>J. S. ...</i> CHIEF HIGHWAY ENGINEER	DRAWING No. 1481-79 A