

PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF HIGHWAYS

BRIDGE PROJECT

No. 929

LIONS' GATE BRIDGE MODIFICATIONS

CONTRACT No. 1

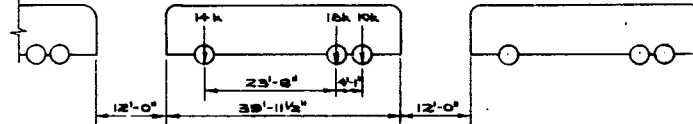
NORTH VIADUCT

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NOTES  
LOADING

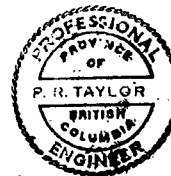
- Design loading for the new deck is H20-S16 as defined by C.S.A. Standard S6-1966.
- Design loading for the structure as a whole is:
  - In outer lanes, consecutive buses 12'-0" apart with the following axle loads:-



- plus an impact factor  $I = \frac{50}{L+25}$  where L = span in feet. [This loading is produced by a series of fully-laden MC-6 buses.]
- In the centre lane, a uniform lane load of 0.42 kips/ft. with no additional allowance for impact.
  - On sidewalks, a load of p where  $p = \frac{400(L+160)}{29L}$  lb/sq.ft. where L = span in feet.
- Design stresses for new construction are in accordance with S6-1966.

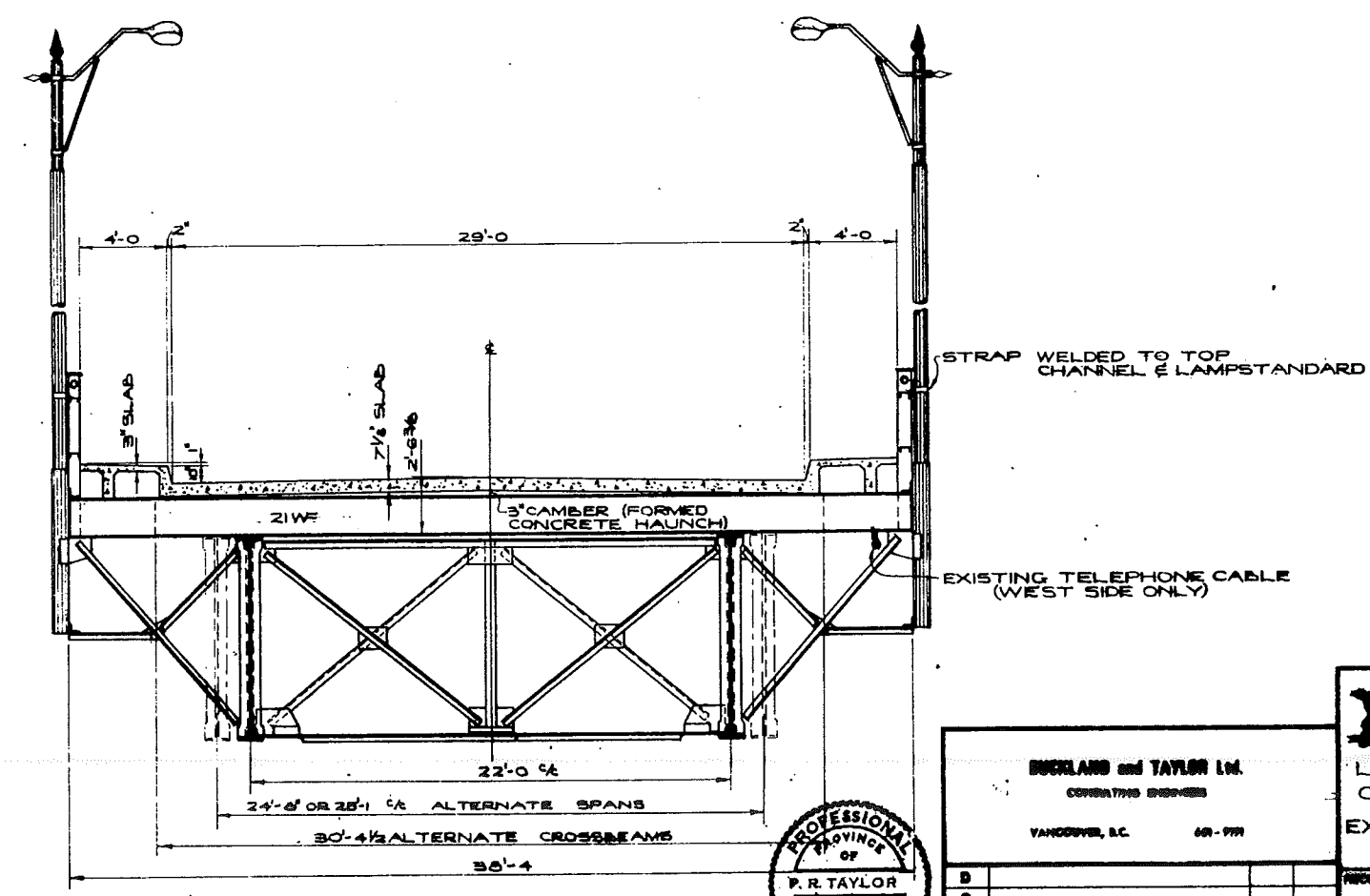
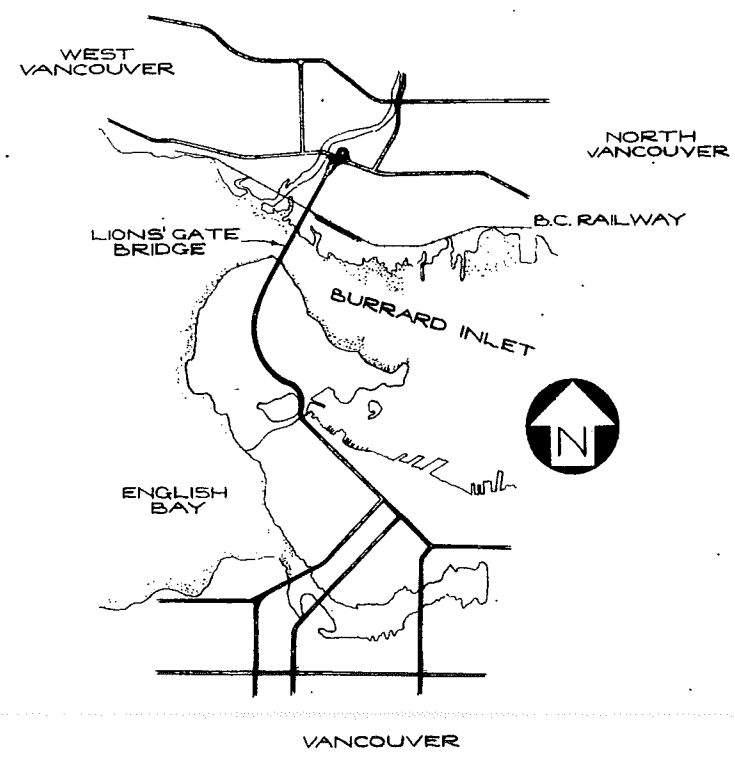
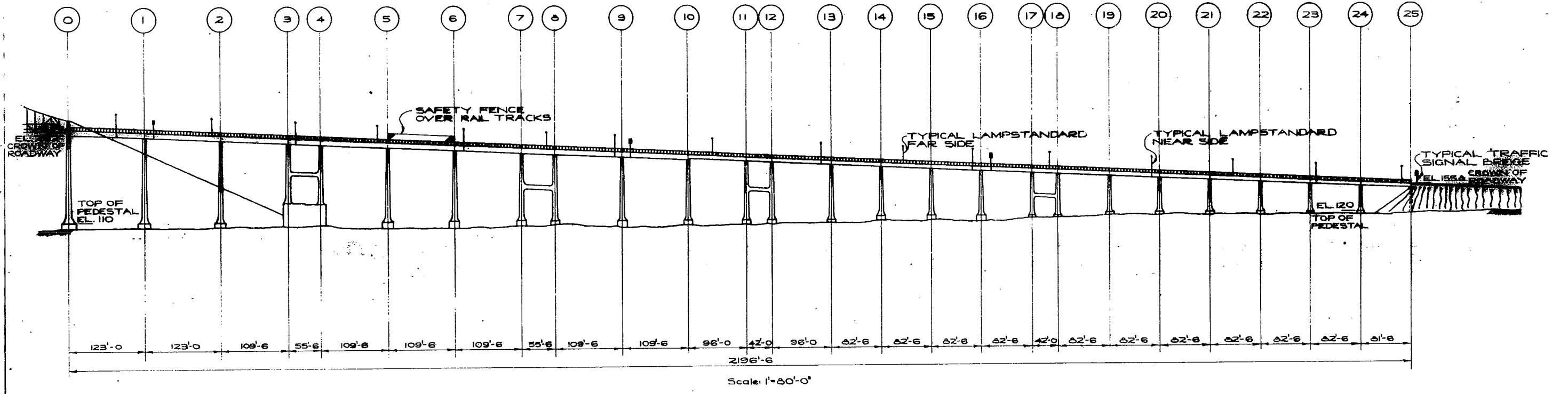
INTERRUPTION OF TRAFFIC DURING CONSTRUCTION

- Interruption of traffic on the bridge shall not be permitted except as noted here or in the specifications.
- At the request of the contractor, one lane of the viaduct may be closed for work on the deck for periods up to 5 hours between 10:00 and 15:00 hours on Monday to Friday inclusive except Statutory Holidays and after 19:00 hours on all days of the week. When required by the contractor, the viaduct will be completely closed to traffic at 24:00 hours, but at least two lanes must be re-opened by 06:00 hours the following morning and three lanes must be available by 07:00 hours.
- The contractor will be required to give notice to the D.O.H. District Highway Manager at least two weeks in advance of any total closures which are required. Traffic control will be handled by Department of Highways personnel.

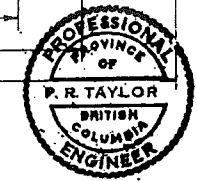


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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS BRIDGE DESIGN			
LIONS' GATE BRIDGE MODIFICATIONS CONTRACT NO 1 - NORTH VIADUCT DRAWING INDEX & GENERAL NOTES			
SCALE:	DRAWN	CHECKED	DATE
	J.G.W.		
DESIGNED BY	APPROVED	DRAWING No.	
		1481-20	



CROSS SECTION OF NORTH VIADUCT  
Scale: 1/4" = 1'-0"



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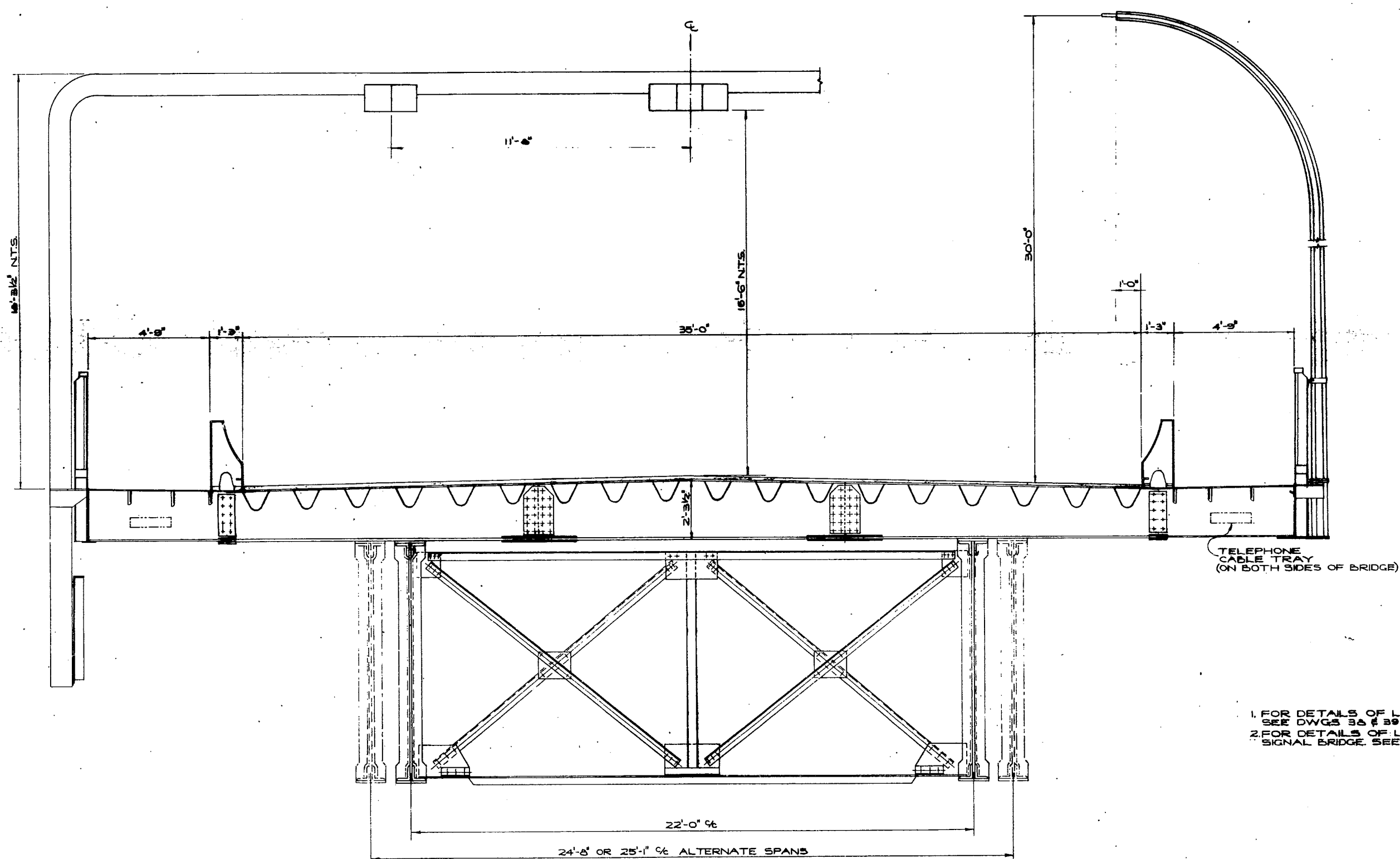
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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

LIONS GATE BRIDGE MODIFICATIONS  
CONTRACT No 1 - NORTH VIADUCT  
EXISTING STRUCTURE - GENERAL LAYOUT

SCALE: AS SHOWN

14-01-21



- 1. FOR DETAILS OF LAMPSTANDARDS SEE DWGS 38 & 39
- 2. FOR DETAILS OF LANE CONTROL SIGNAL BRIDGE SEE DWGS 38 & 40.



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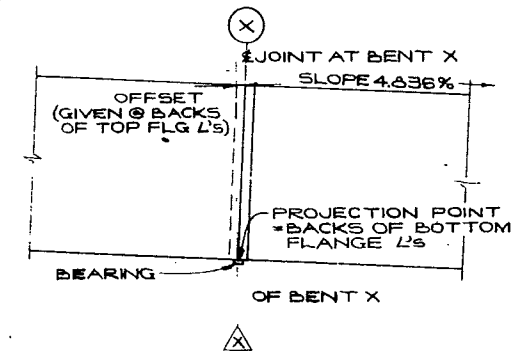
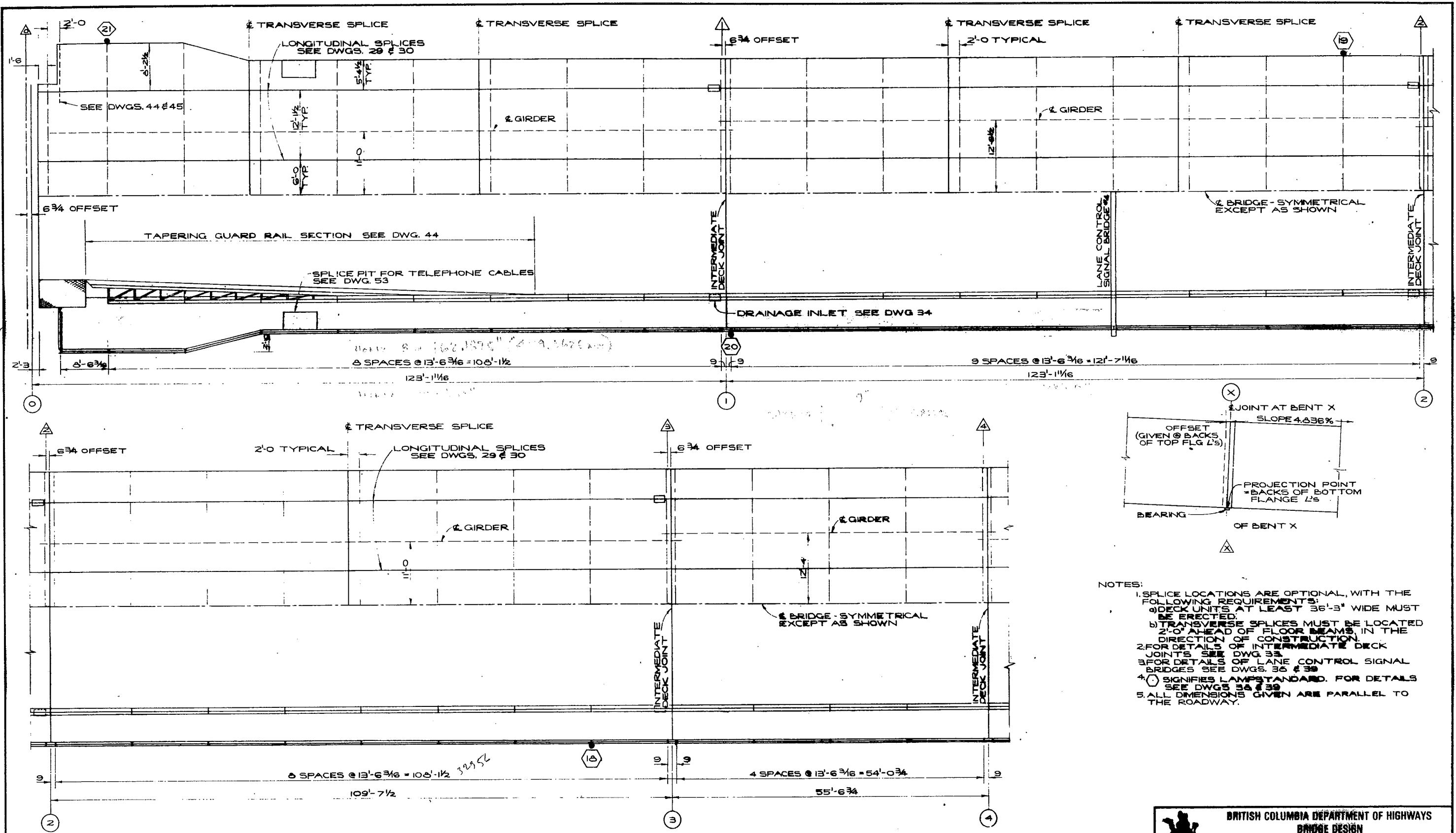
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**LIONS' GATE BRIDGE MODIFICATIONS**  
 CONTRACT NO 1 - NORTH VIADUCT

**TYPICAL SECTION**  
**NEW DECK SYSTEM**

RECOMMENDED BY: *P.R.T.*  
 DRAWN: *[Signature]*  
 CHECKED: *[Signature]*  
 GENERAL APPROVAL: *[Signature]*



- NOTES:
1. SPLICE LOCATIONS ARE OPTIONAL, WITH THE FOLLOWING REQUIREMENTS:
    - a) DECK UNITS AT LEAST 36'-3" WIDE MUST BE ERECTED.
    - b) TRANSVERSE SPLICES MUST BE LOCATED 2'-0" AHEAD OF FLOOR BEAMS, IN THE DIRECTION OF CONSTRUCTION.
  2. FOR DETAILS OF INTERMEDIATE DECK JOINTS SEE DWG. 33.
  3. FOR DETAILS OF LANE CONTROL SIGNAL BRIDGES SEE DWGS. 35 & 39.
  4.  $\Delta$  SIGNIFIES LAMPSTANDARD. FOR DETAILS SEE DWGS. 34 & 39.
  5. ALL DIMENSIONS GIVEN ARE PARALLEL TO THE ROADWAY.



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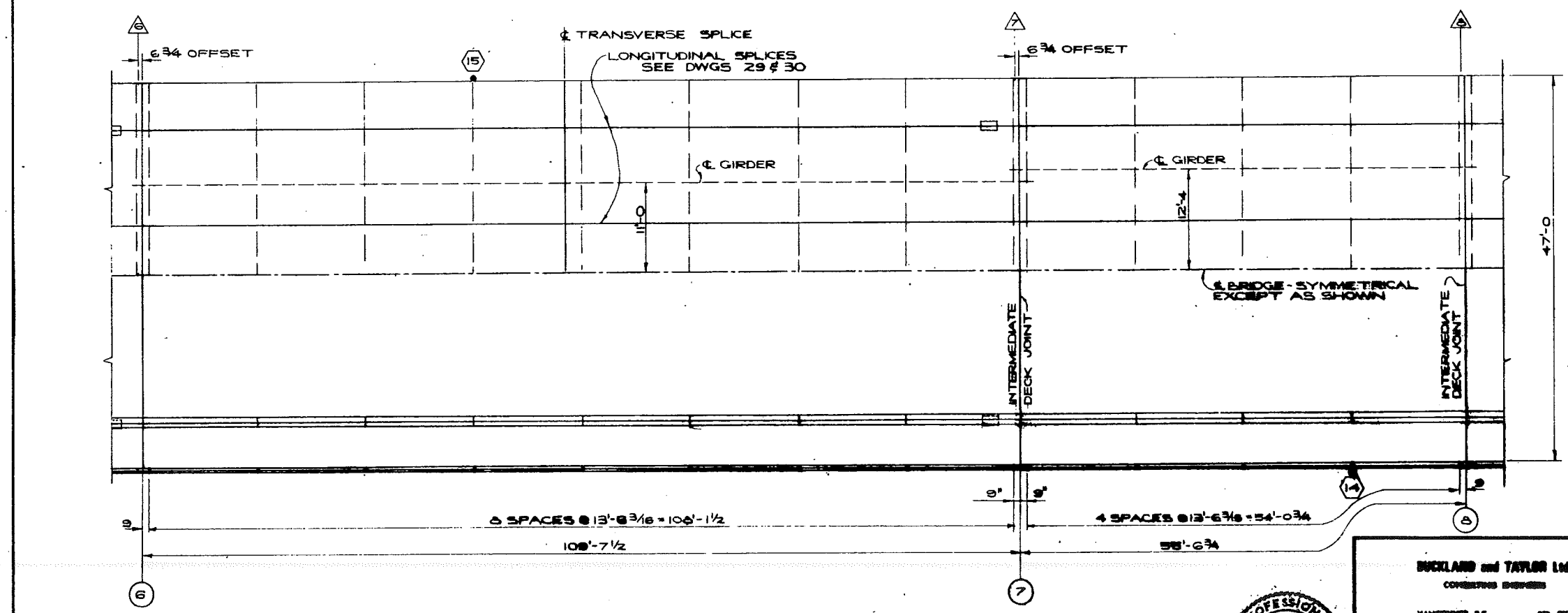
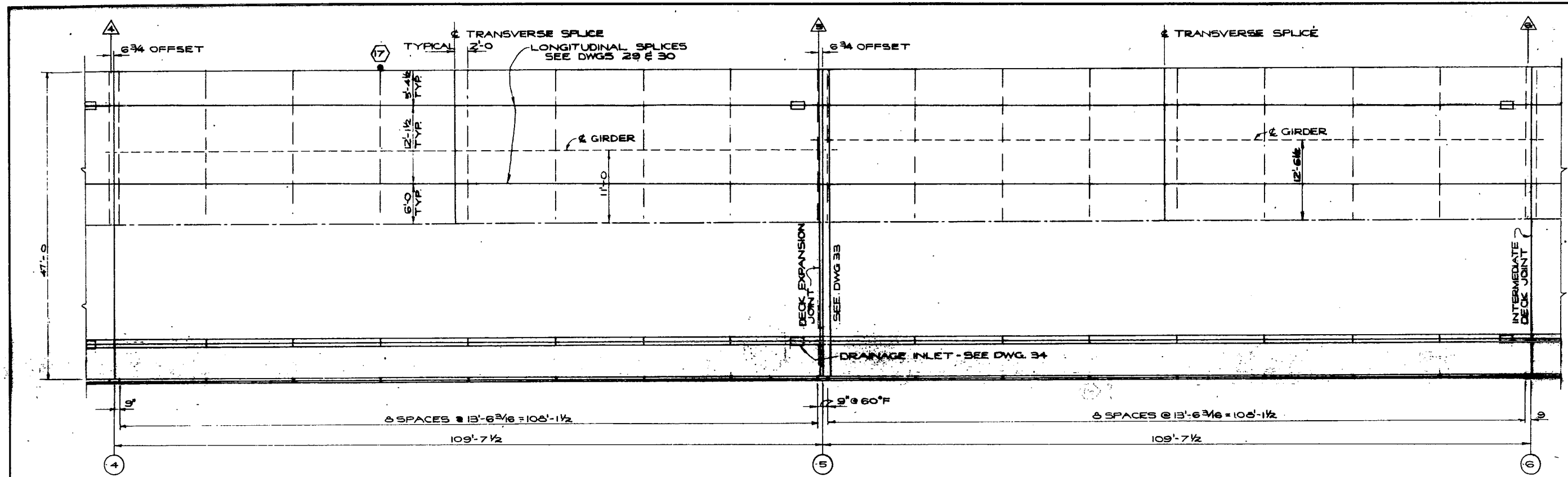
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BRIDGE DESIGN

**LIONS' GATE BRIDGE MODIFICATIONS**  
CONTRACT N<sup>o</sup> 1 - NORTH VIADUCT  
PLAN OF SPANS BETWEEN  
BENTS 0 AND 4

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

RECOMMENDED BY: *P.R.T.*  
DRAWN: *J.G.W.*  
CHECKED: *P.H.L.*  
DATE: *146-23*

GENERAL APPROVED: *[Signature]*



NOTES:  
 1. FOR DETAILS OF INTERMEDIATE DECK JOINTS SEE DWG. 33.  
 2. SIGNIFIES LAMPSTANDARD. FOR DETAILS SEE DWGS. 36 & 39.

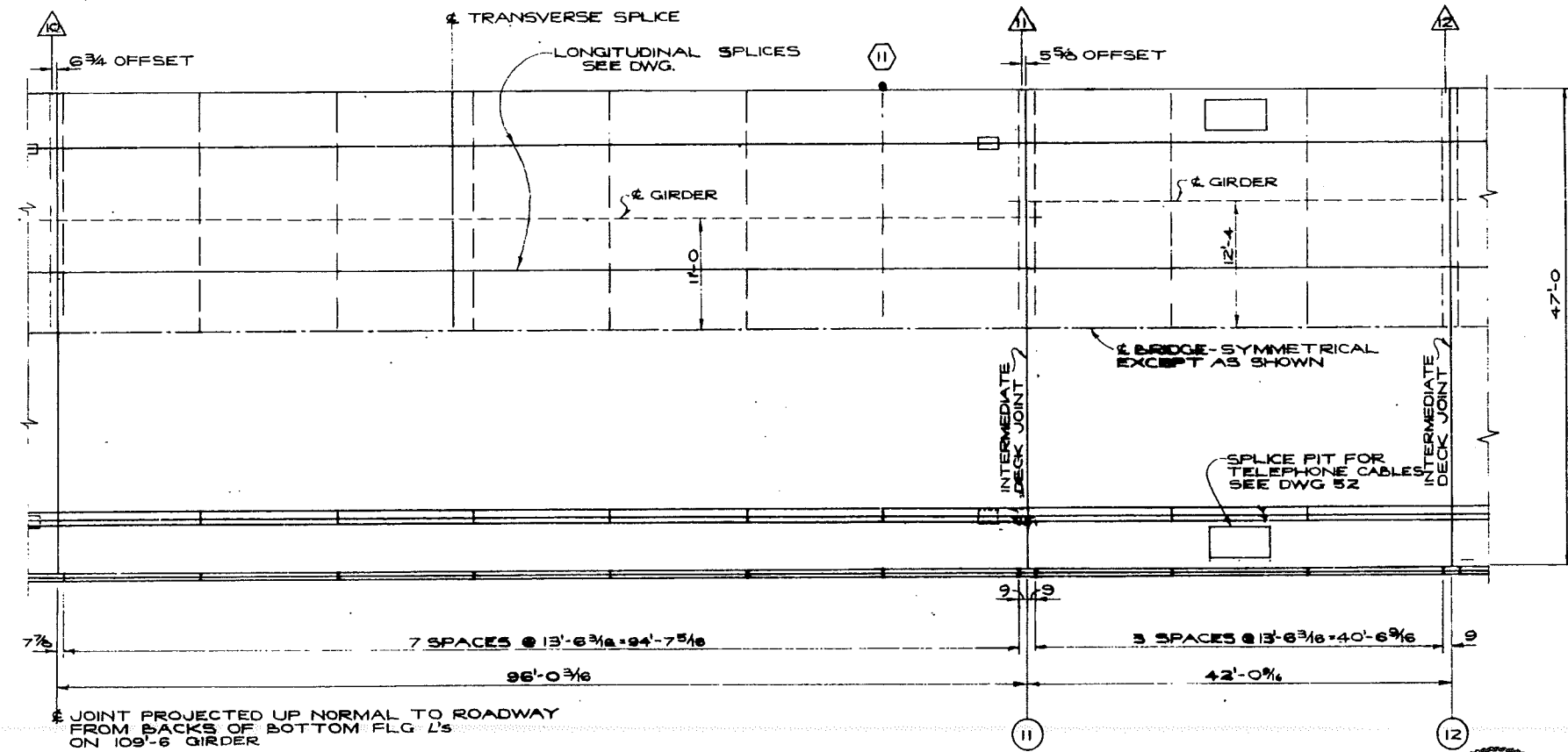
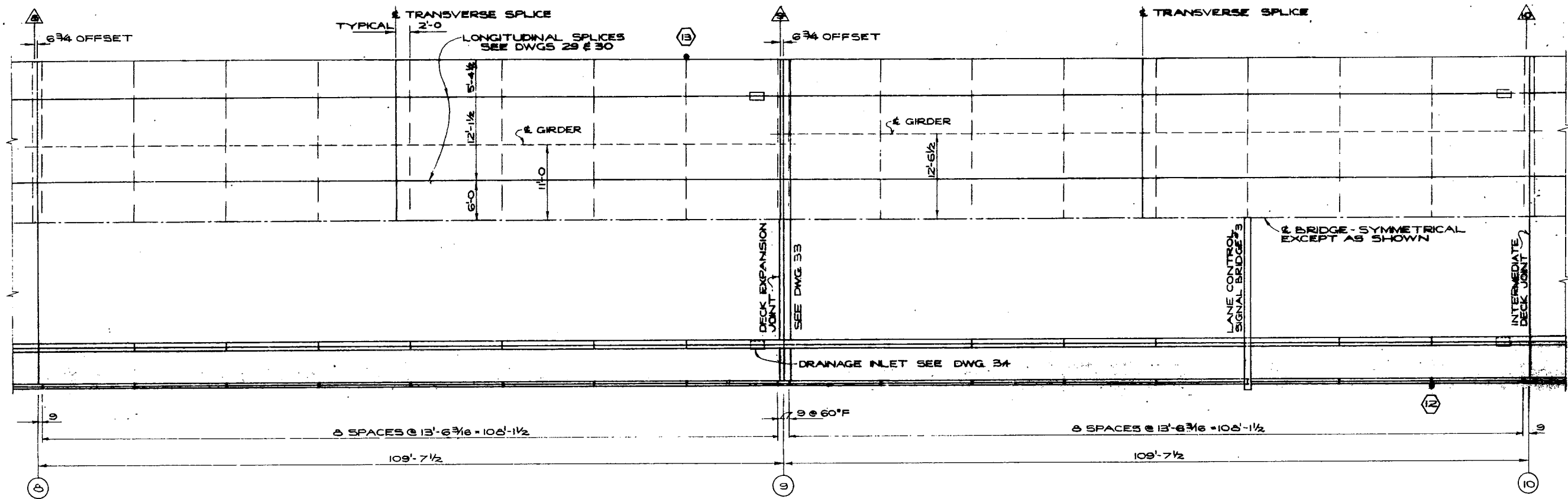


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**LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
PLAN OF SPANS BETWEEN  
BENTS 4 AND 6**

SCALE: 1/4" = 1'-0"	CHECKED: [Signature]
DATE: [Blank]	APPROVED: [Signature]
DRAWN: [Blank]	DESIGN NO. [Blank]



- NOTES:
1. FOR DETAILS OF INTERMEDIATE DECK JOINTS SEE DWG 33.
  2. FOR DETAILS OF LANE CONTROL SIGNAL BRIDGES SEE DWGS 35 & 36.
  3. SIGNIFIES LAMP STANDARD. FOR DETAILS SEE DWGS 35 & 39.
  4. ALL DIMENSIONS GIVEN ARE PARALLEL TO ROADWAY.

JOINT PROJECTED UP NORMAL TO ROADWAY FROM BACKS OF BOTTOM FLG L'S ON 109'-6 GIRDER



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LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
PLAN OF SPANS BETWEEN  
BENTS 8 AND 12

RECOMMENDED: *P. R. Taylor*

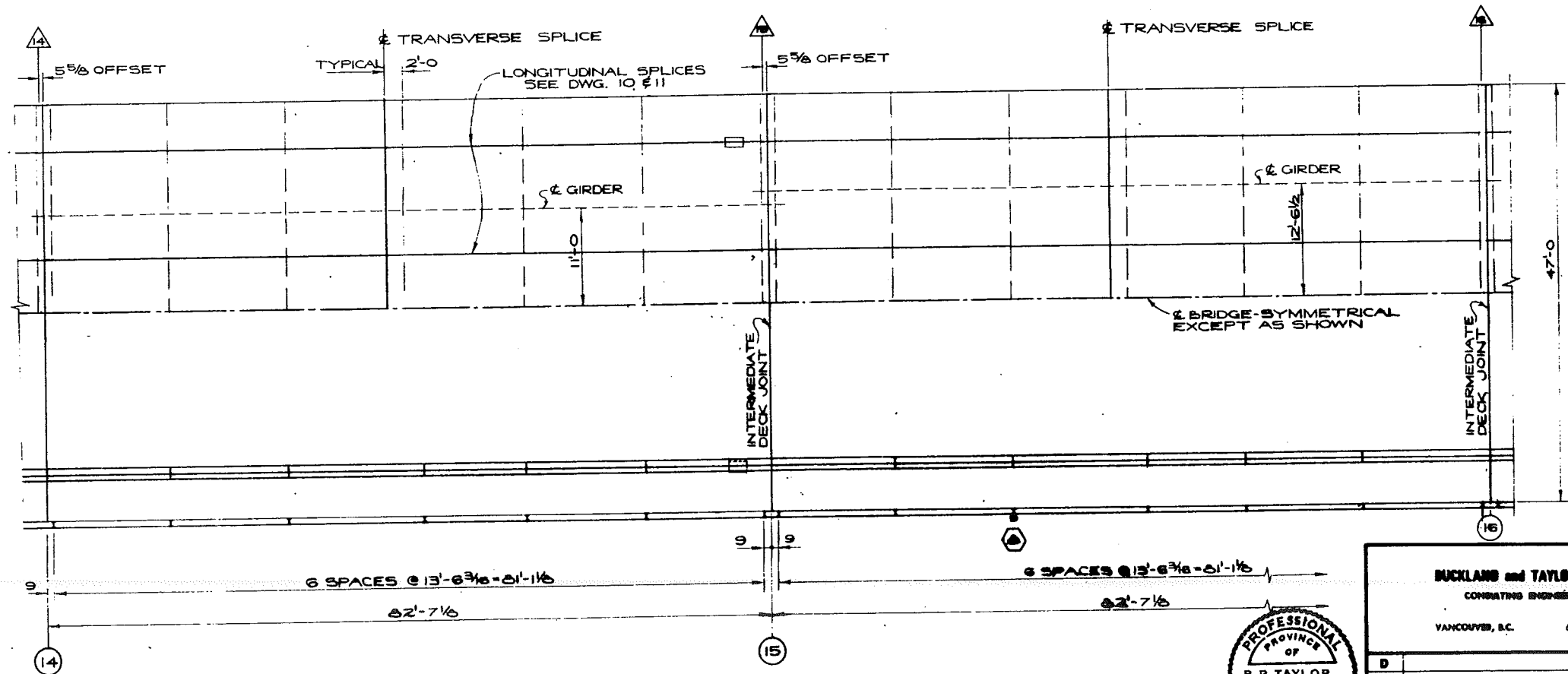
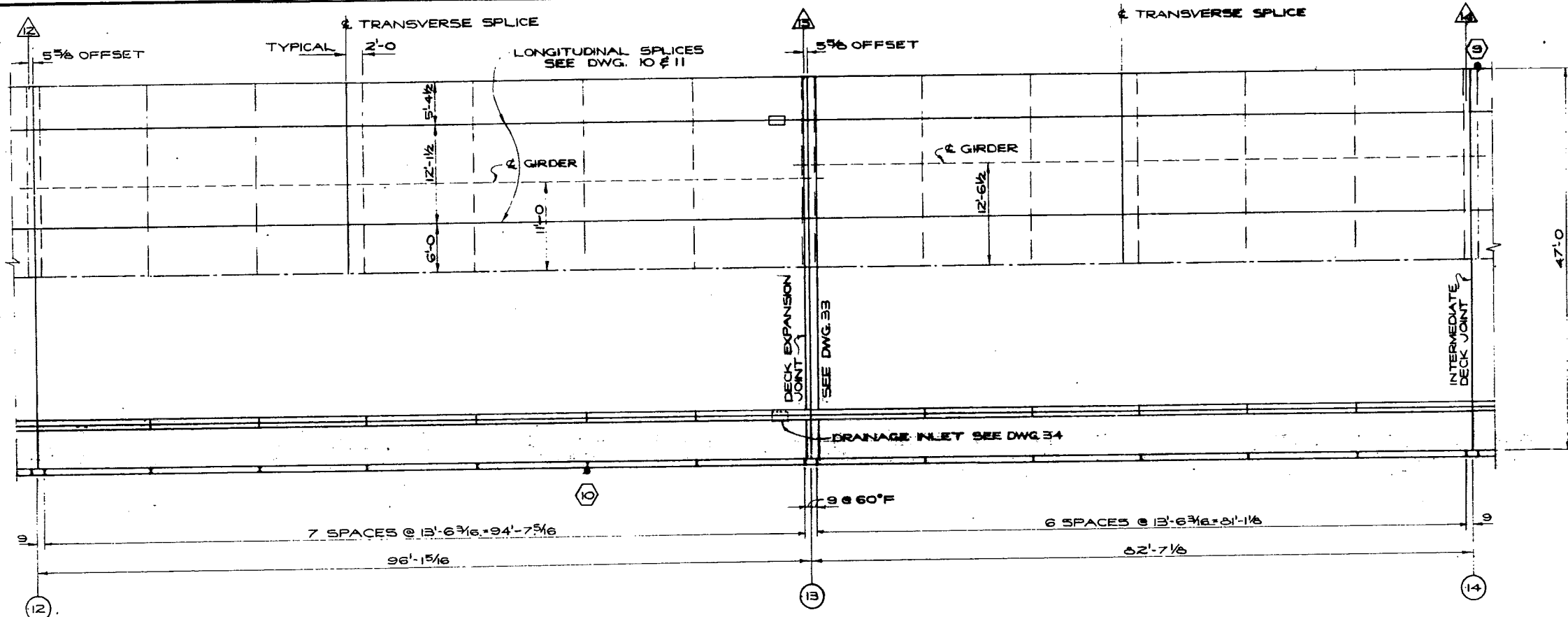
SCALE: 1/4" = 1'-0"


DRAWN: JGN

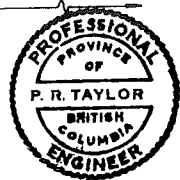
CHECKED: PNL

GENERAL ARRANGEMENT APPROVED: *[Signature]*

DRAWING NO. 1461-25



- NOTES:
1. FOR DETAILS OF INTERMEDIATE DECK JOINTS SEE DWG. 33
  2.  SIGNIFIES LAMP STANDARD. FOR DETAILS SEE DWGS. 36 AND 39



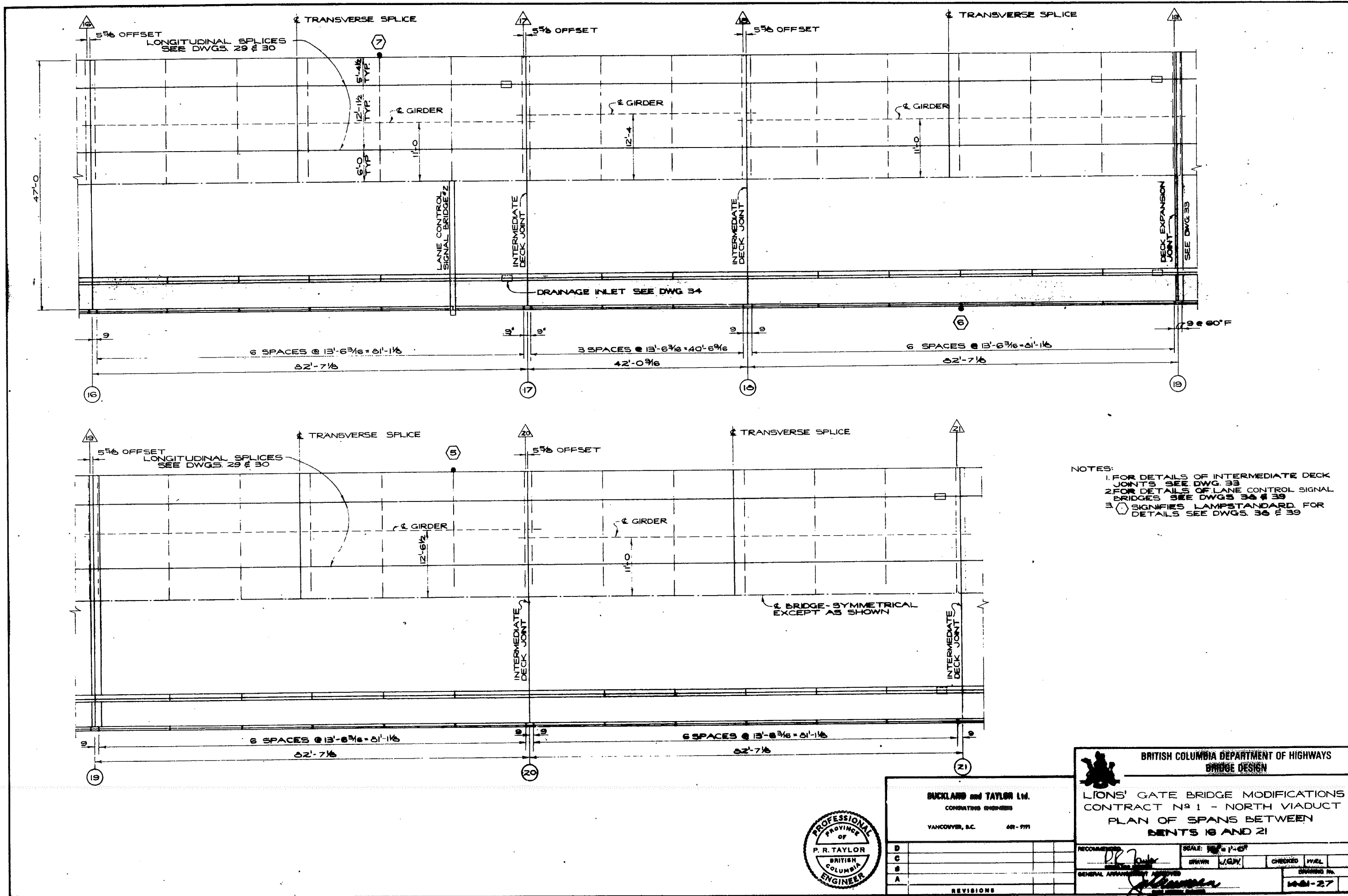
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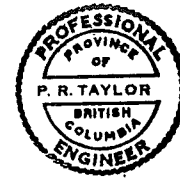
LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT N<sup>o</sup> 1 - NORTH VIADUCT  
PLAN OF SPANS BETWEEN  
BENTS 12 AND 16

RECOMMENDED	SCALE: 1/8" = 1'-0"
<i>P.R. Taylor</i>	DRAWN: <i>L.J.M.</i> CHECKED: <i>J.V.C.</i>
GENERAL APPROVAL	DRAWING NO. 1451-26





- NOTES:
1. FOR DETAILS OF INTERMEDIATE DECK JOINTS SEE DWG. 33
  2. FOR DETAILS OF LANE CONTROL SIGNAL BRIDGES SEE DWGS. 36 & 39
  3. SIGNIFIES LAMP STANDARD. FOR DETAILS SEE DWGS. 36 & 39



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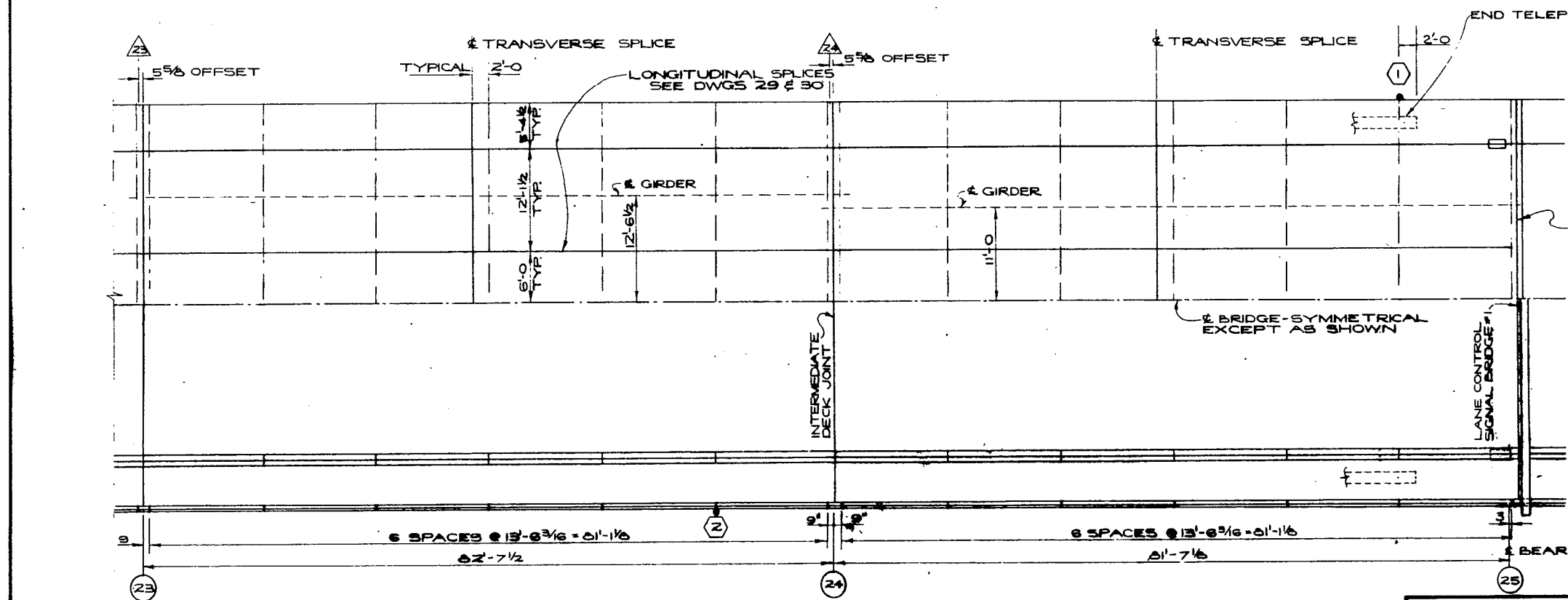
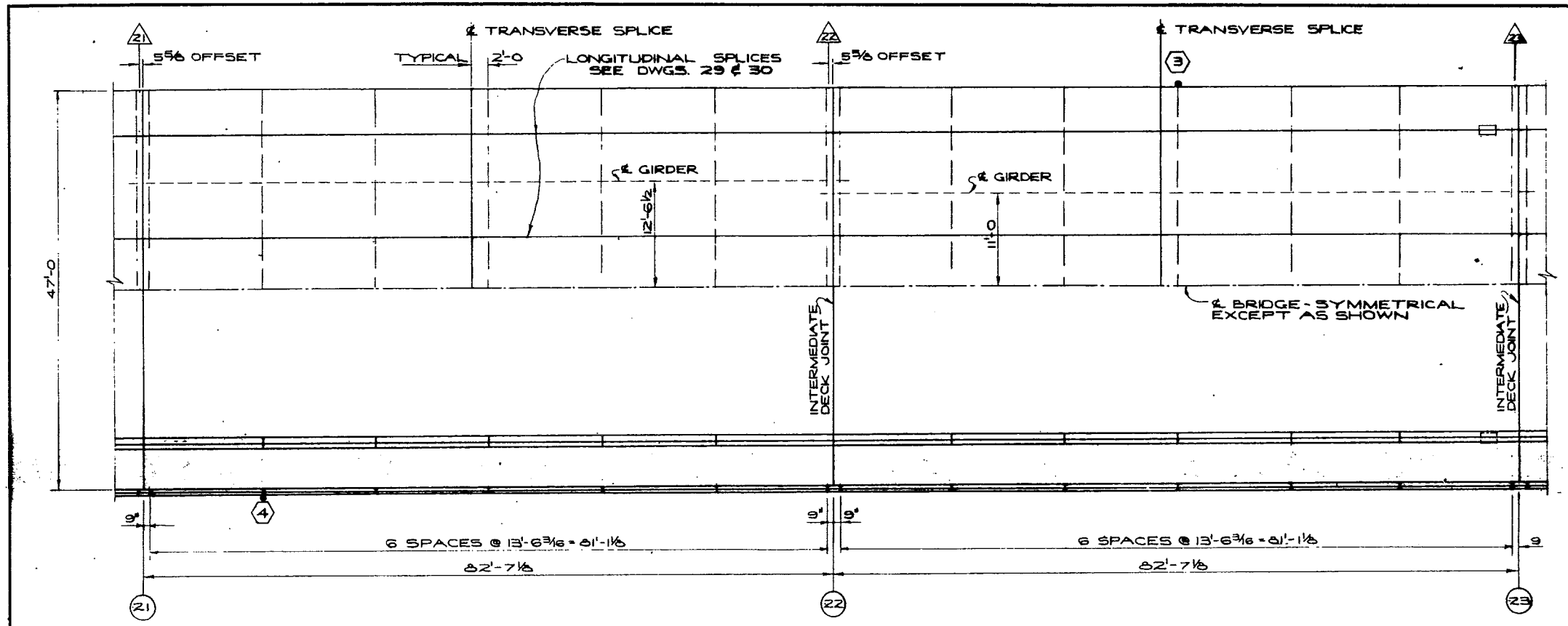
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**BRIDGE DESIGN**

**LIONS' GATE BRIDGE MODIFICATIONS**  
 CONTRACT NO. 1 - NORTH VIADUCT  
 PLAN OF SPANS BETWEEN  
 BENTS 16 AND 21

SCALE: 1/4" = 1'-0"

RECOMMENDED BY: *[Signature]*  
 DRAWN: J.G.V.  
 CHECKED: J.W.L.  
 GENERAL APPROVAL: *[Signature]*

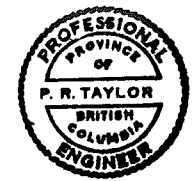
DRAWING NO. **1001-27**



- NOTES:
1. FOR DETAILS OF INTERMEDIATE DECK JOINTS SEE DWG. 33.
  2. FOR DETAILS OF LANE CONTROL SIGNAL BRIDGES SEE DWGS. 38 & 39.
  3. SIGNIFIES LAMPSTANDARD. FOR DETAILS SEE DWGS. 38 & 39.

FACE OF NORTH ABUTMENT FOR DETAILS SEE DWGS. 41, 42 & 43

END TELEPHONE CABLE TRAY HERE



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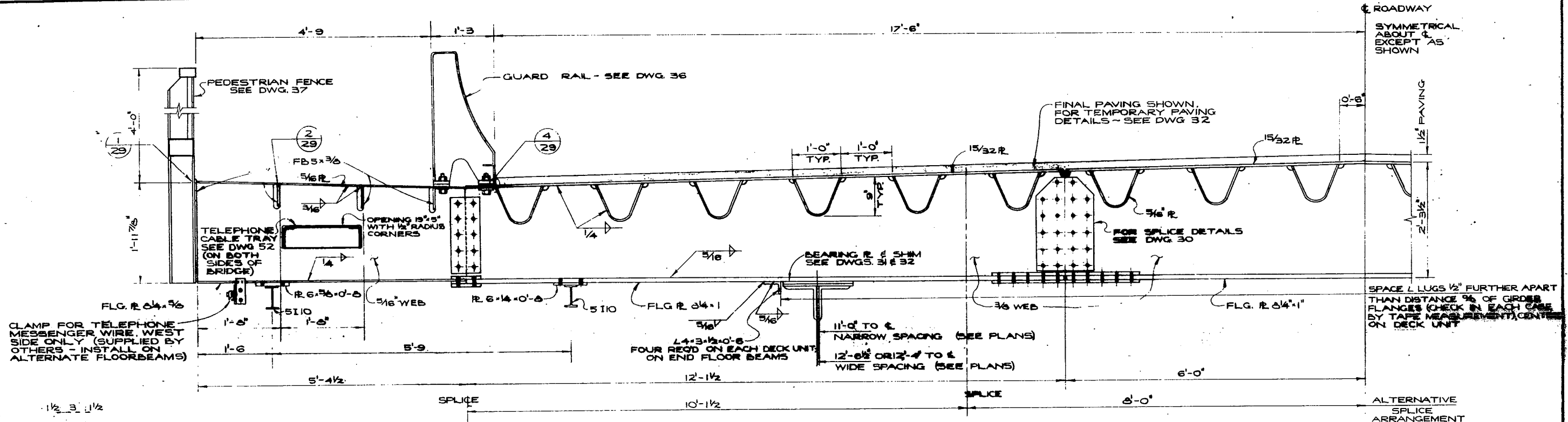
LIONS' GATE BRIDGE MODIFICATIONS  
 CONTRACT NO 1 - NORTH VIADUCT  
 PLAN OF SPANS BETWEEN  
 BENTS 21 AND 25

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

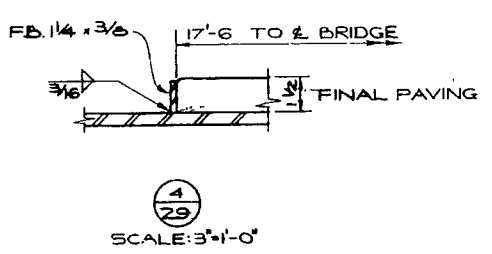
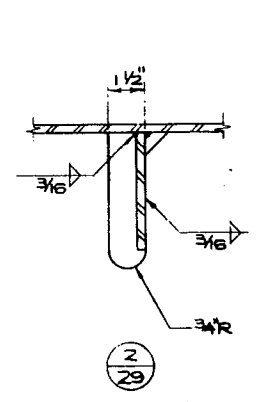
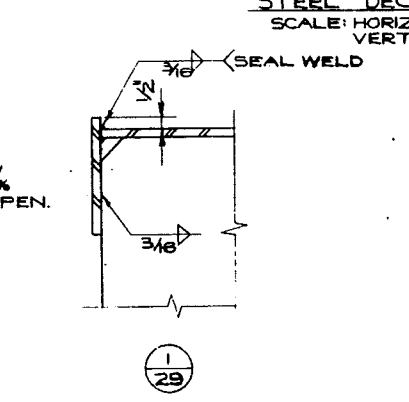
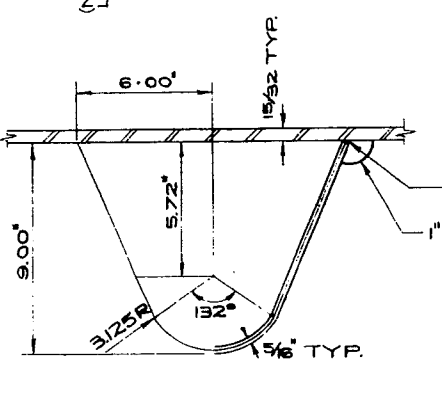
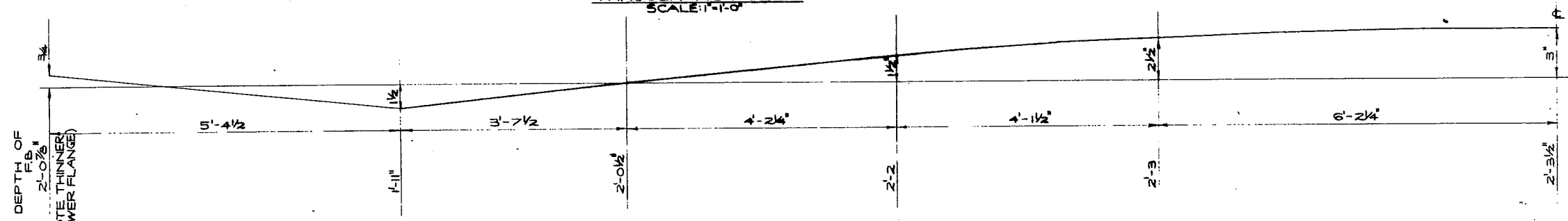
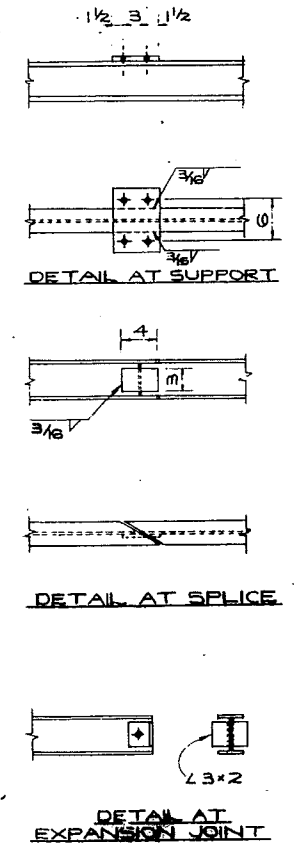
DRAWN: J.C.W. CHECKED: J.W.A.

GENERAL MANAGER APPROVED: *[Signature]*

DRAWING NO. 1451-25



TYPICAL CROSS SECTION THROUGH NEW DECK  
SCALE: 1"=1'-0"



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LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
TYPICAL SECTIONS

SCALE: AS SHOWN

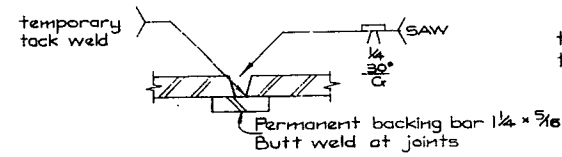
RECOMMENDED: P. R. TAYLOR

GENERAL ARRANGEMENT APPROVED: [Signature]

DRAWN: J.G.W. CHECKED: W.E.L.

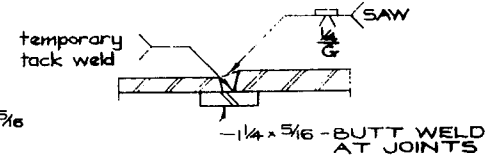
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CANCEL PRINTS BEARING EARLIER LETTERS

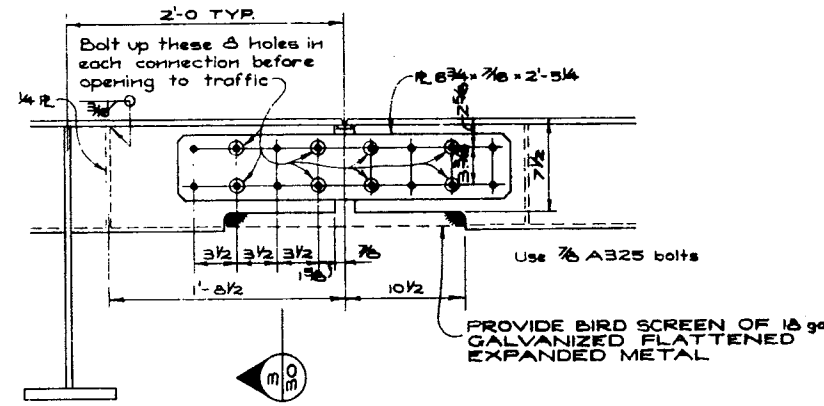


15/32 R TO 15/32 R  
AND 5/16 R TO 5/16 R

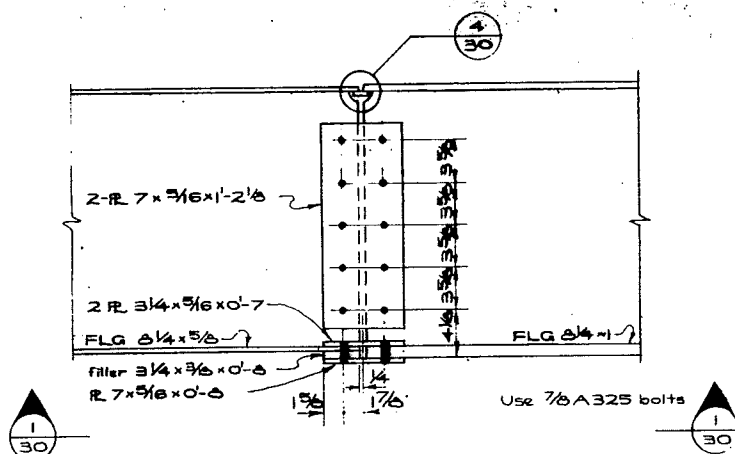
DECK WELDS  
SCALE: 1/2 FULL SIZE



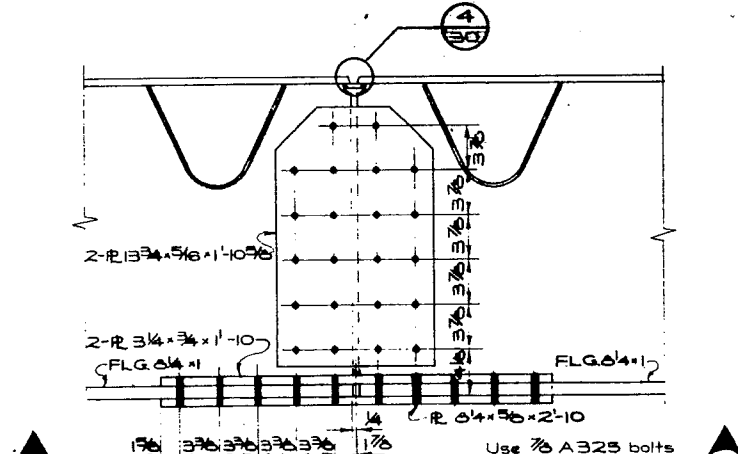
5/16 R TO 15/32 R



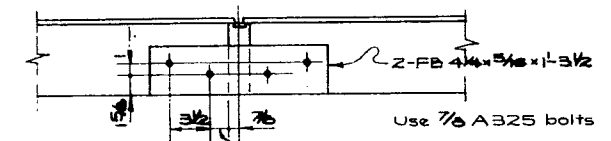
ROADWAY DECK STIFFENER SPLICE  
SCALE: 1 1/2" = 1'-0"



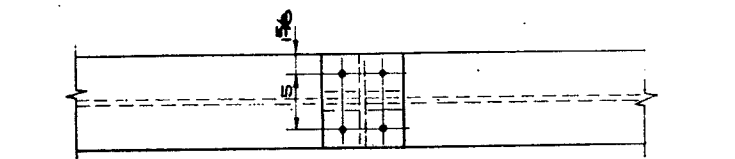
SPLICE OF FLOOR BEAM  
16'-1/2 FROM C BRIDGE  
SCALE: 1 1/2" = 1'-0"



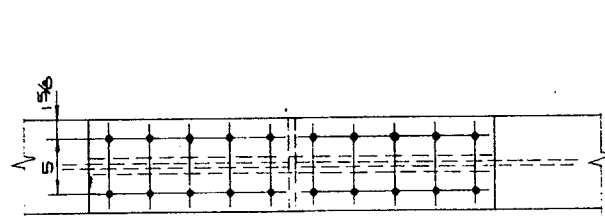
SPLICE OF FLOOR BEAM  
6'-0 FROM C BRIDGE  
SCALE: 1 1/2" = 1'-0"



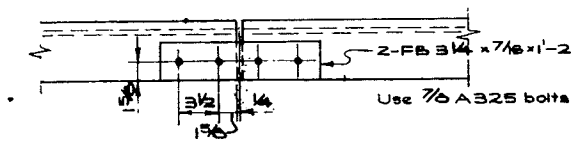
INNER SIDEWALK DECK STIFFENER  
SPLICE  
SCALE: 1 1/2" = 1'-0"



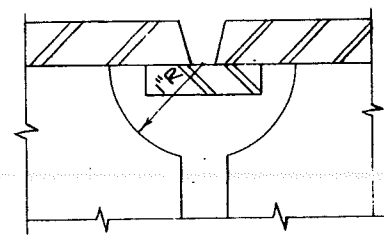
SCALE: 1 1/2" = 1'-0"



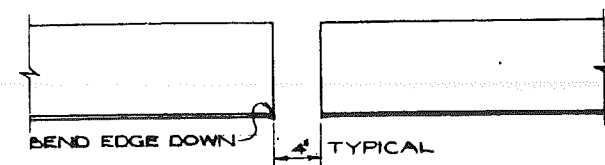
SCALE: 1 1/2" = 1'-0"



OUTER SIDEWALK DECK STIFFENER  
SPLICE  
SCALE: 1 1/2" = 1'-0"



SCALE: FULL SIZE



TYPICAL JOINT IN CABLE TRAY  
MIDWAY BETWEEN FLOOR BEAMS  
SCALE: 1 1/2" = 1'-0"



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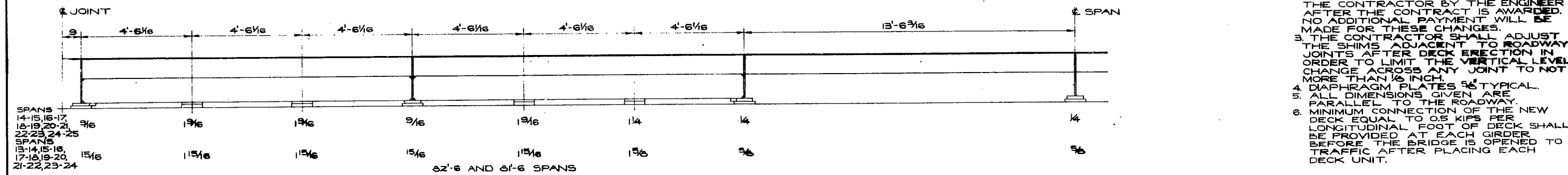
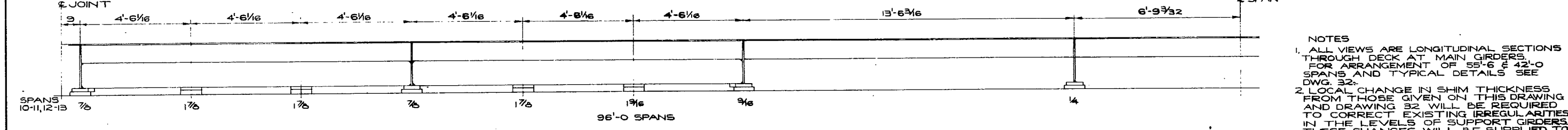
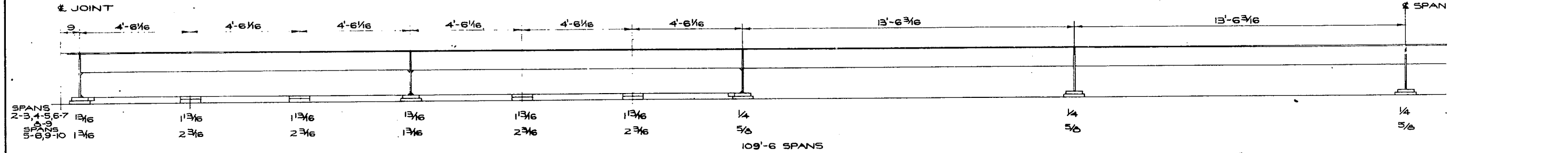
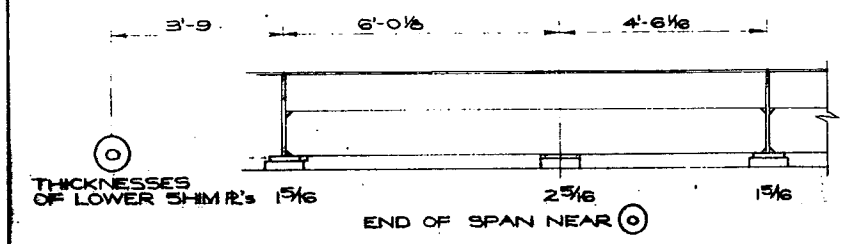
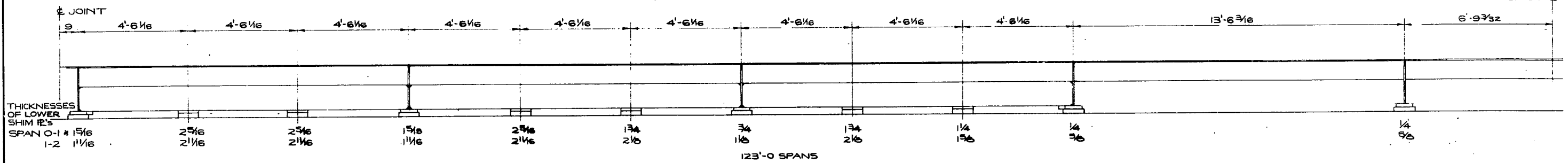
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LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
SPLICES


RECOMMENDED BY	SCALE AS SHOWN
DESIGNED BY	CHECKED BY
GENERAL APPROVED BY	DATE

14-41-30

EXCEPT FOR END OF SPAN NEAR ○ - SEE VIEW BELOW



- NOTES
1. ALL VIEWS ARE LONGITUDINAL SECTIONS THROUGH DECK AT MAIN GIRDERS. FOR ARRANGEMENT OF 55'-6" & 42'-0" SPANS AND TYPICAL DETAILS SEE DWG. 32.
  2. LOCAL CHANGE IN SHIM THICKNESS FROM THOSE GIVEN ON THIS DRAWING AND DRAWING 32 WILL BE REQUIRED TO CORRECT EXISTING IRREGULARITIES IN THE LEVELS OF SUPPORT GIRDERS. THESE CHANGES WILL BE SUPPLIED TO THE CONTRACTOR BY THE ENGINEER AFTER THE CONTRACT IS AWARDED. NO ADDITIONAL PAYMENT WILL BE MADE FOR THESE CHANGES.
  3. THE CONTRACTOR SHALL ADJUST THE SHIMS ADJACENT TO ROADWAY JOINTS AFTER DECK ERECTION IN ORDER TO LIMIT THE VERTICAL LEVEL CHANGE ACROSS ANY JOINT TO NOT MORE THAN  $\frac{1}{16}$  INCH.
  4. DIAPHRAGM PLATES  $\frac{5}{16}$ " TYPICAL.
  5. ALL DIMENSIONS GIVEN ARE PARALLEL TO THE ROADWAY.
  6. MINIMUM CONNECTION OF THE NEW DECK EQUAL TO 0.5 KIPS PER LONGITUDINAL FOOT OF DECK SHALL BE PROVIDED AT EACH GIRDER BEFORE THE BRIDGE IS OPENED TO TRAFFIC AFTER PLACING EACH DECK UNIT.



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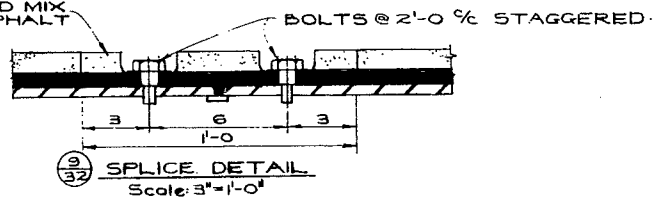
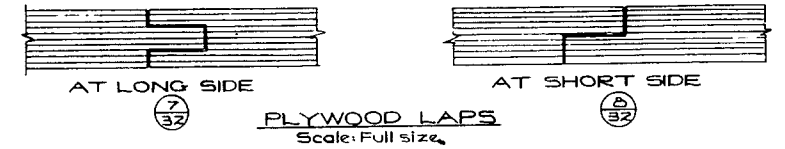
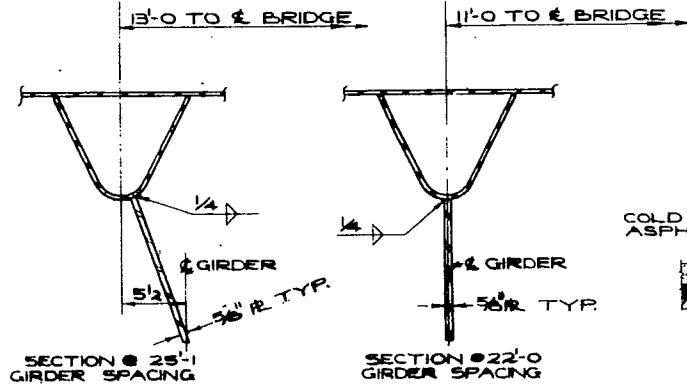
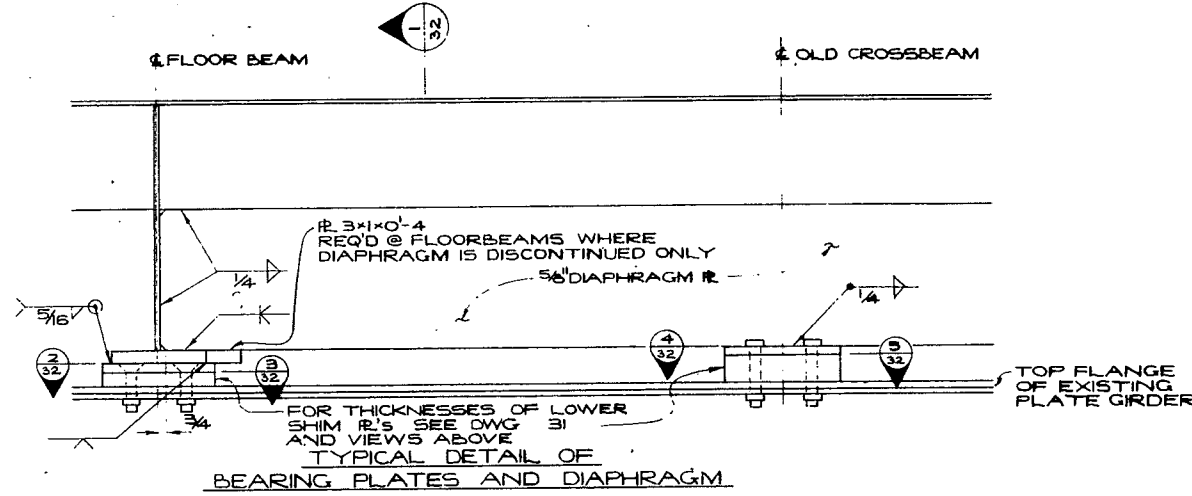
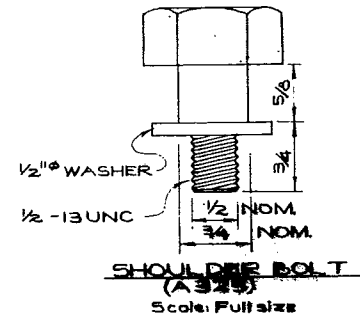
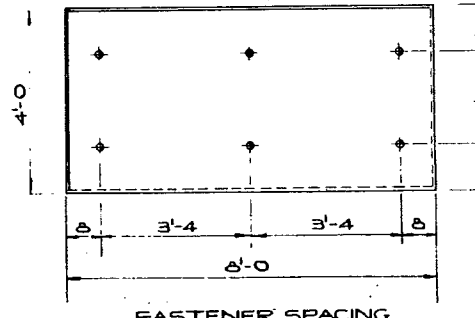
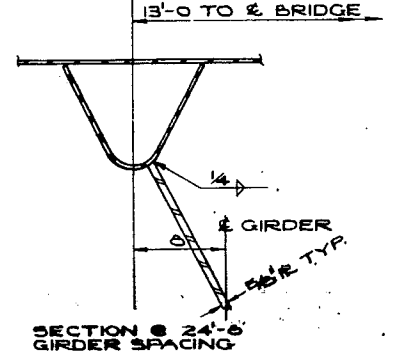
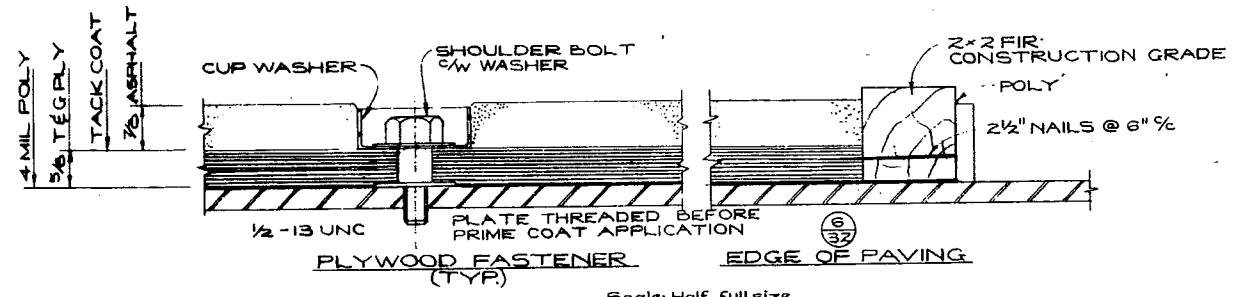
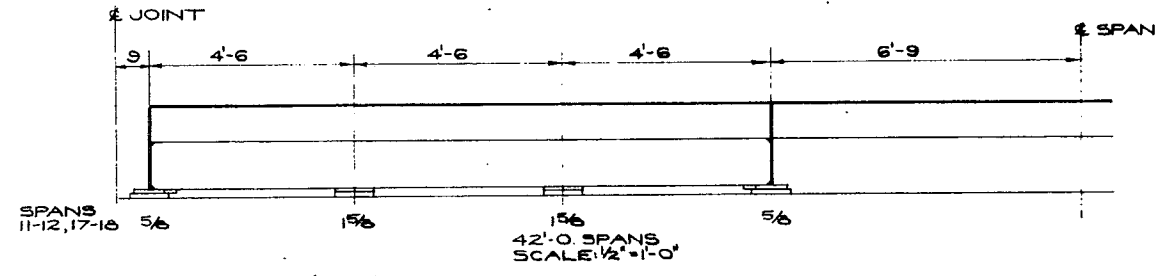
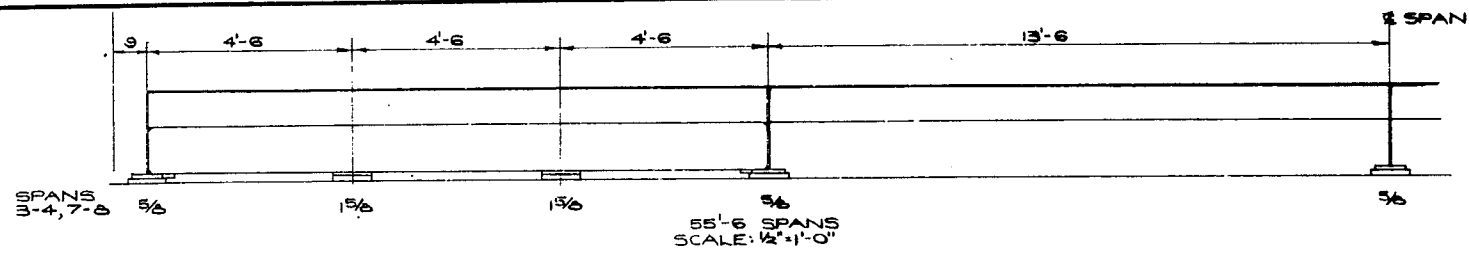
**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS**  
**BRIDGE DESIGN**

LIONS' GATE BRIDGE MODIFICATIONS  
 CONTRACT No 1 - NORTH VIADUCT  
 BEARING PLATES AND DIAPHRAGMS  
 SHEET 1

RECOMMENDED	SCALE: $\frac{1}{2}" = 1'-0"$	DRAWN J.G.W.	CHECKED N.V.L.
DRAWING No. 1481-31		DRAWING No. 1481-31	

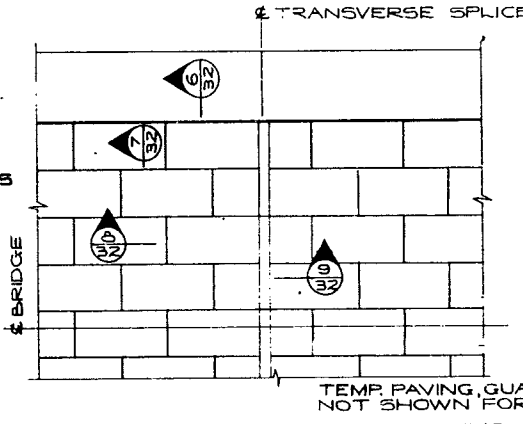
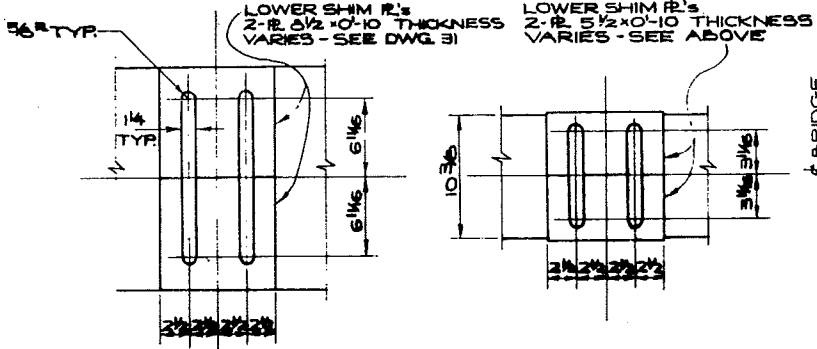
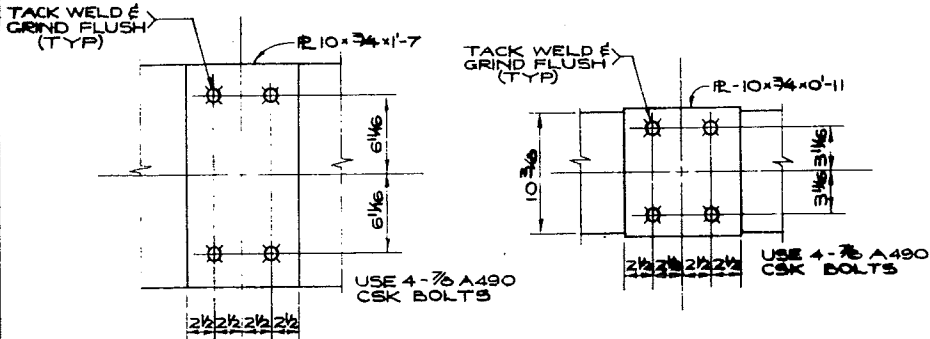
REVISIONS

CANCEL PRINTS BEARING DRAWING LETTERS



TEMPORARY PAVING DETAILS

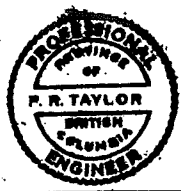
- NOTES
1. DISCONTINUOUS WHITE PAINTED LANE MARKINGS WITH OVERLAY GLASS REFLECTORIZING BEADS SHALL BE APPLIED TO THE TEMPORARY PAVING BEFORE ERECTION OF THE DECK UNITS. TWO LANE MARKING LINES SHALL BE APPLIED, EACH 4'-6 FROM THE CENTRELINE OF BRIDGE. TRAFFIC PAINT SHALL BE ACCORDING TO SECTION 321 OF THE GENERAL SPECIFICATIONS.
  2. ATTACHMENT BOLTS FOR PLYWOOD SHEATHING SHALL BE LOCATED INSIDE TROUGH STIFFENERS WHEREVER POSSIBLE.
  3. SLOTTED LOWER SHIM PLATES ARE REQUIRED ONLY AT FLOORBEAMS ADJACENT TO JOINTS BETWEEN SPANS. OTHER LOWER SHIM PLATES MAY HAVE INDIVIDUAL 1/4 INCH DIAMETER HOLES.
  4. THE CONTRACTOR SHALL ADJUST THE SHIMS ADJACENT TO ROADWAY JOINTS AFTER DECK ERECTION IN ORDER TO LIMIT THE VERTICAL LEVEL CHANGE ACROSS ANY JOINT TO NOT MORE THAN 1/8 INCH.



HALF PLAN - TEMPORARY PAVING PLYWOOD LAYOUT TYPICAL DECK UNIT Scale: 1/2"=1'-0"

FOR 123'-0, 109'-6, 96'-0, 82'-6 AND 8'-6 SPANS (2) (32)  
 FOR 55'-6 AND 42'-0 SPANS (4) (32) SIMILAR EXCEPT BOLTS ARE NOT COUNTERSUNK IN

FOR 123'-0, 109'-6, 96'-0, 82'-6 AND 8'-6 SPANS (3) (32)  
 FOR 55'-6 AND 42'-0 SPANS (8) (32)



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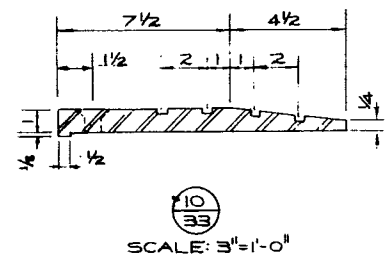
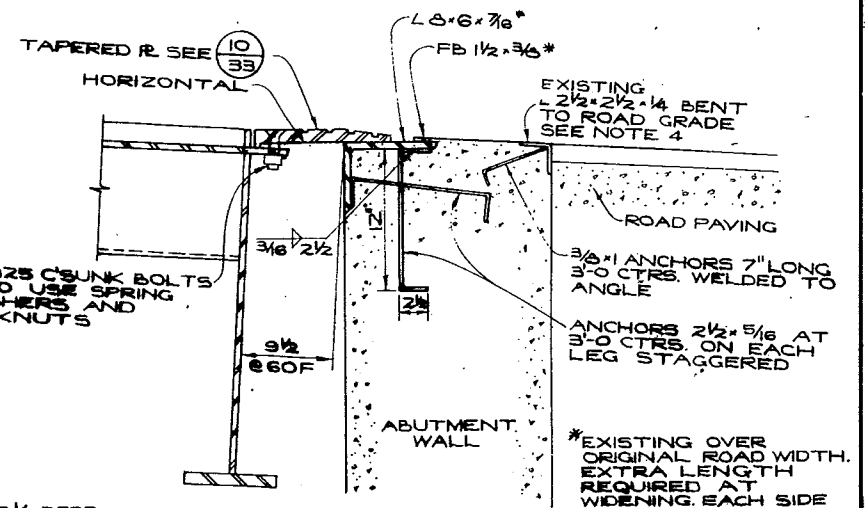
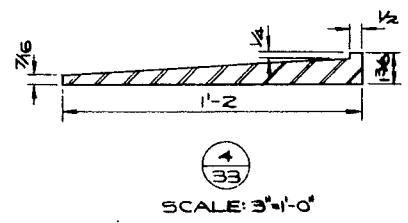
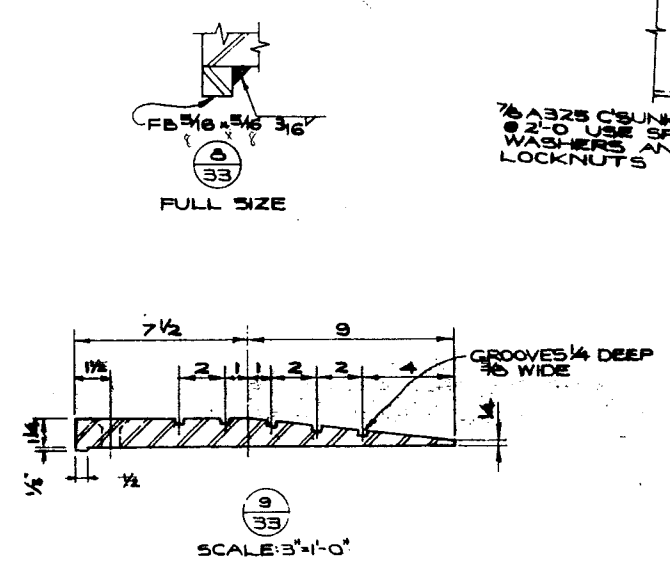
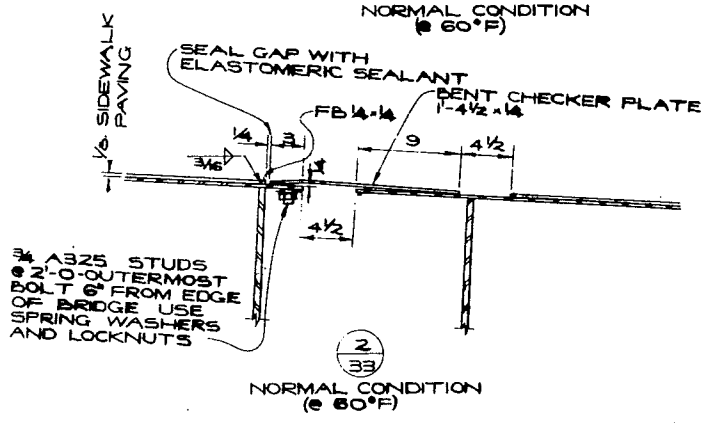
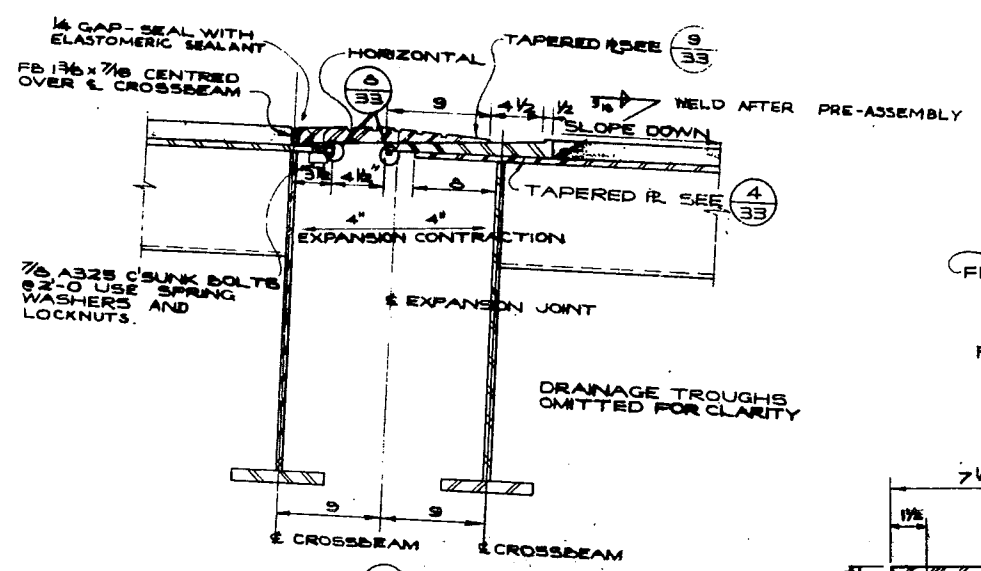
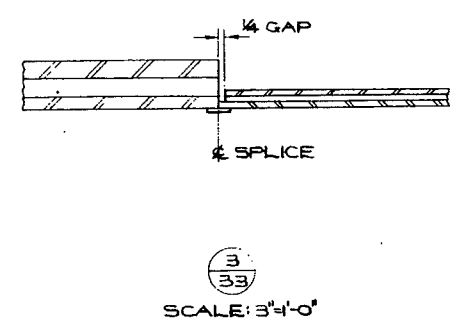
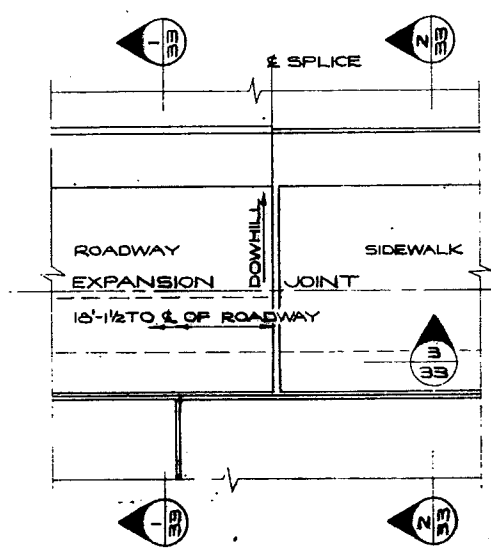
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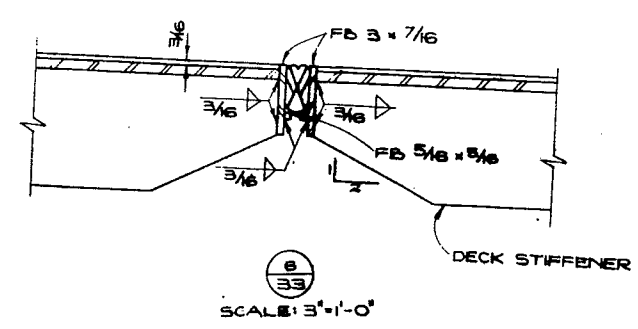
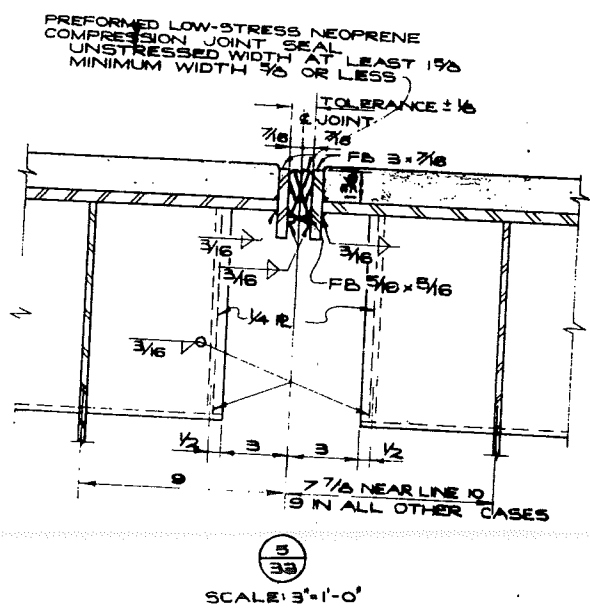
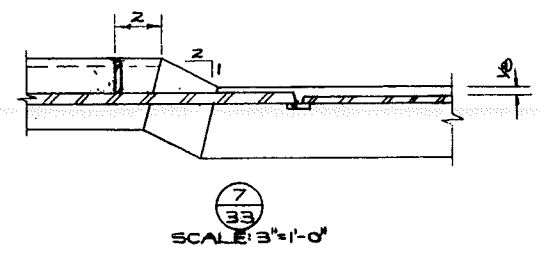
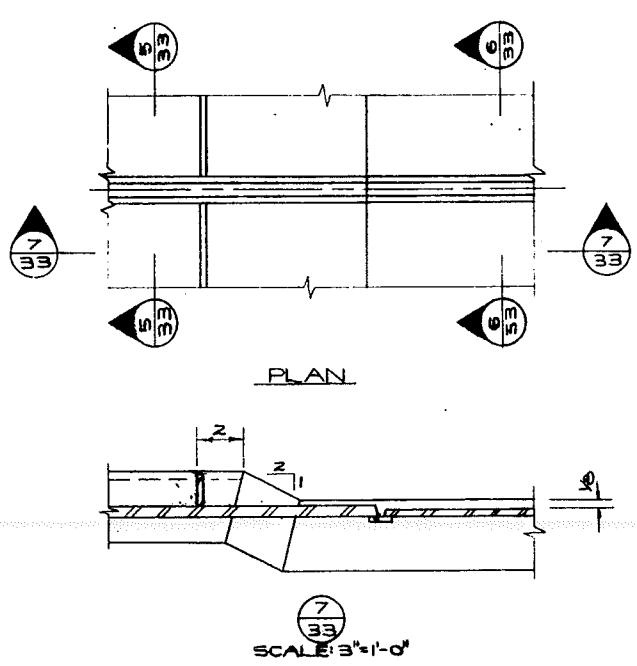
BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
 BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
 CONTRACT No 1 - NORTH VIADUCT  
 BEARING PLATES AND DIAPHRAGMS  
 SHEET 2

RECOMMENDED: P. R. Taylor  
 SCALE: 1/2"=1'-0" EXCEPT AS SHOWN  
 DRAWN: J.G.W. CHECKED: W.R.L.  
 GENERAL APPROVAL: J. Johnson  
 DRAWING NO. 1428-38  
 CANCEL PRINTS BEARING EARLIER LETTERS

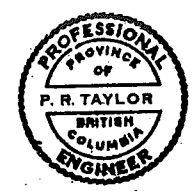


EXPANSION JOINTS AT (6), (9), (13), (19)



INTERMEDIATE DECK JOINTS

- NOTES
- HOLES IN DECK FOR ATTACHMENT OF SLIDING PLATES SHALL BE DRILLED 3/16 INCH UNDERSIZE AND REAMED FULL SIZE AFTER ERECTION OF THE JOINT IN ITS FINAL POSITION AND AFTER ADJUSTMENT TO ATTAIN EVEN BEARING ON THE LOWER PLATE.
  - PREFORMED NEOPRENE COMPRESSION JOINT SEALS ARE TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS USING AN APPROVED ADHESIVE.
  - ROADWAY EXPANSION JOINTS MUST BE INSTALLED COMPLETE BEFORE THE BRIDGE IS OPENED TO TRAFFIC. UPPER PLATES MAY BE REMOVED FOR ADJUSTMENT DURING SUBSEQUENT BRIDGE CLOSURES.
  - ON EXISTING ROAD WIDTH REMOVE ANGLES, BREAK BACK TO SOUND CONCRETE, PATCH WITH EXPRESS REPAIR AS SUPPLIED BY W.R. CONSTRUCTION PRODUCTS LTD. OR APPROVED EQUIVALENT, FILL FLUSH TO NEW CONCRETE WITH HOT MIX ASPHALT.
  - FOR EXTENSIONS OF ABUTMENT CAST REINFORCED CONCRETE WITHOUT ANGLE ON BACK FACE.



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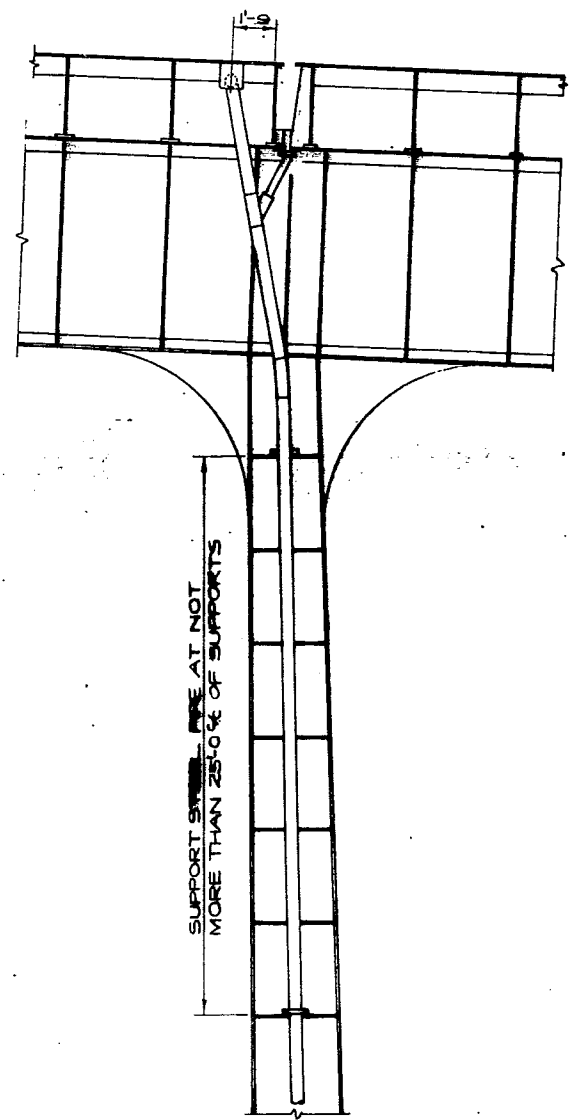
REVISIONS

BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

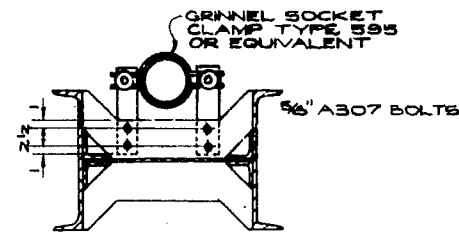
LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
DECK JOINTS

SCALE: 1 1/2"=1'-0" EXCEPT AS SHOWN

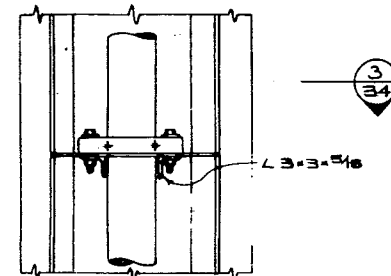
RECOMMENDED BY: P.R. Taylor  
DRAWN: J.E.W. CHECKED: A.M.L.  
GENERAL APPROVAL: [Signature]  
DRAWING NO. 1461-33



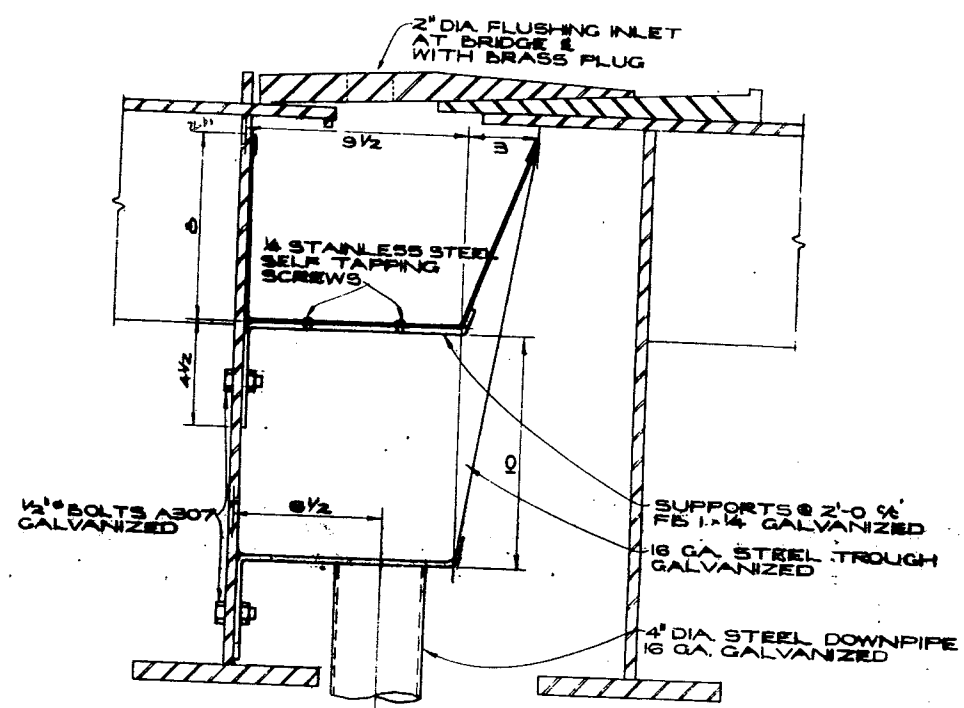
Scale: 1/4" = 1'-0"



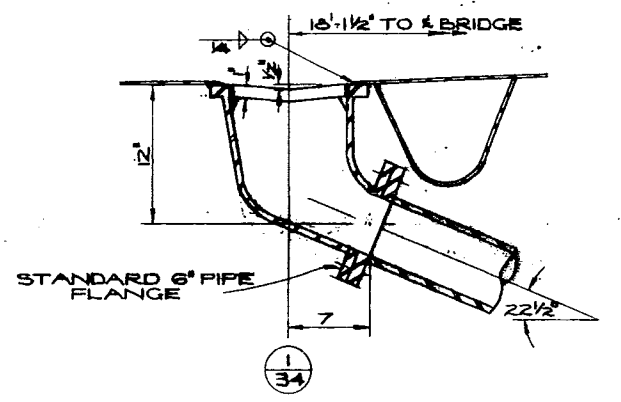
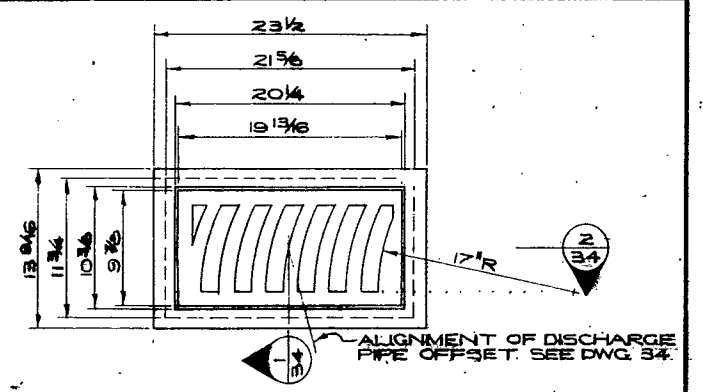
3/34



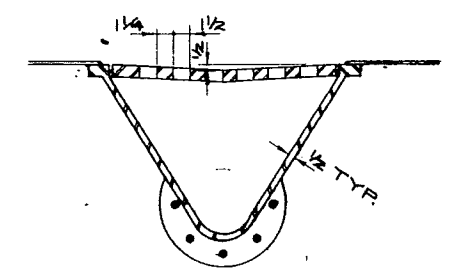
DETAIL OF PIPE SUPPORT  
Scale: 3/4" = 1'-0"



Scale: 3" = 1'-0"



1/34

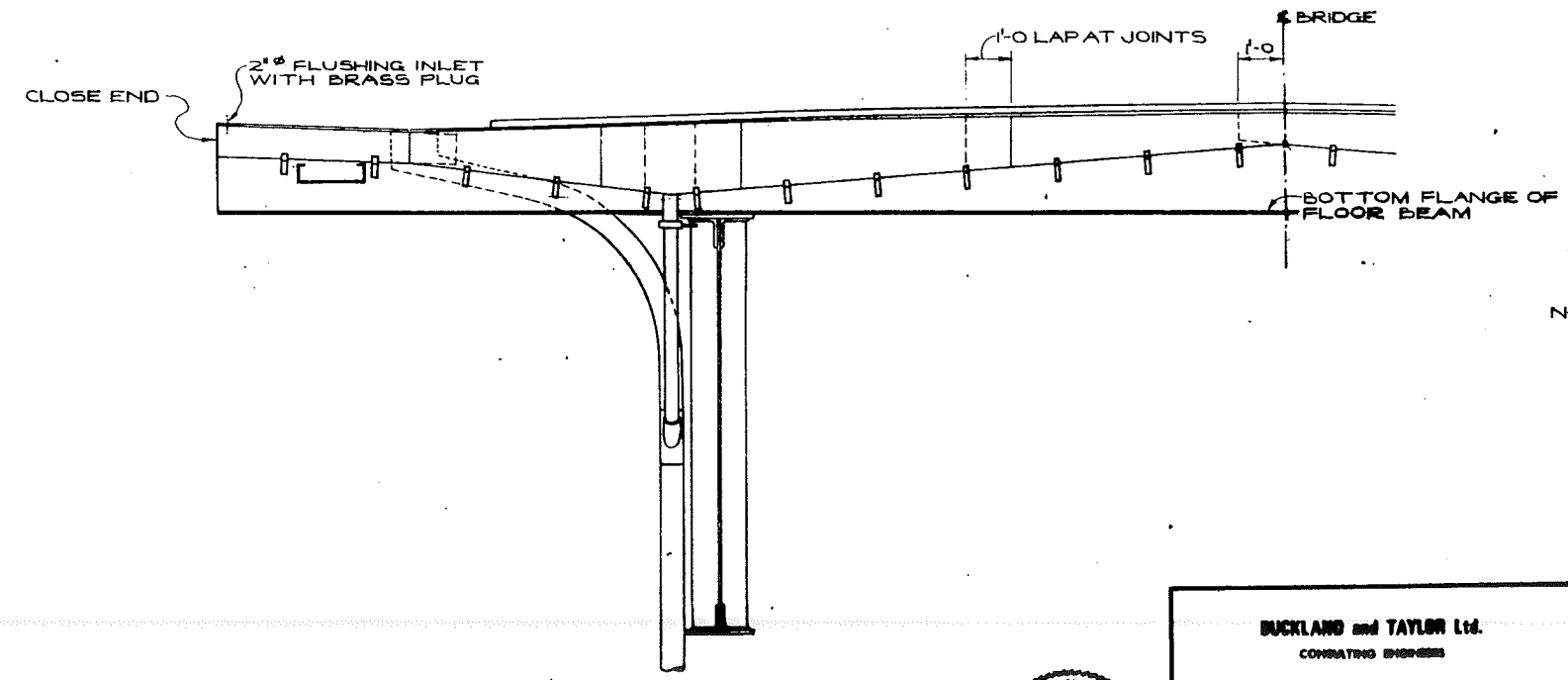


2/34

MATERIAL ASTM A27 OR 60-40 MILD CARBON STEEL

DETAILS OF TYPICAL CAST STEEL DECK DRAIN  
Scale: 1 1/2" = 1'-0"

NOTE: FOR LONGITUDINAL POSITIONS OF DRAINS SEE DWGS. 23 TO 26



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



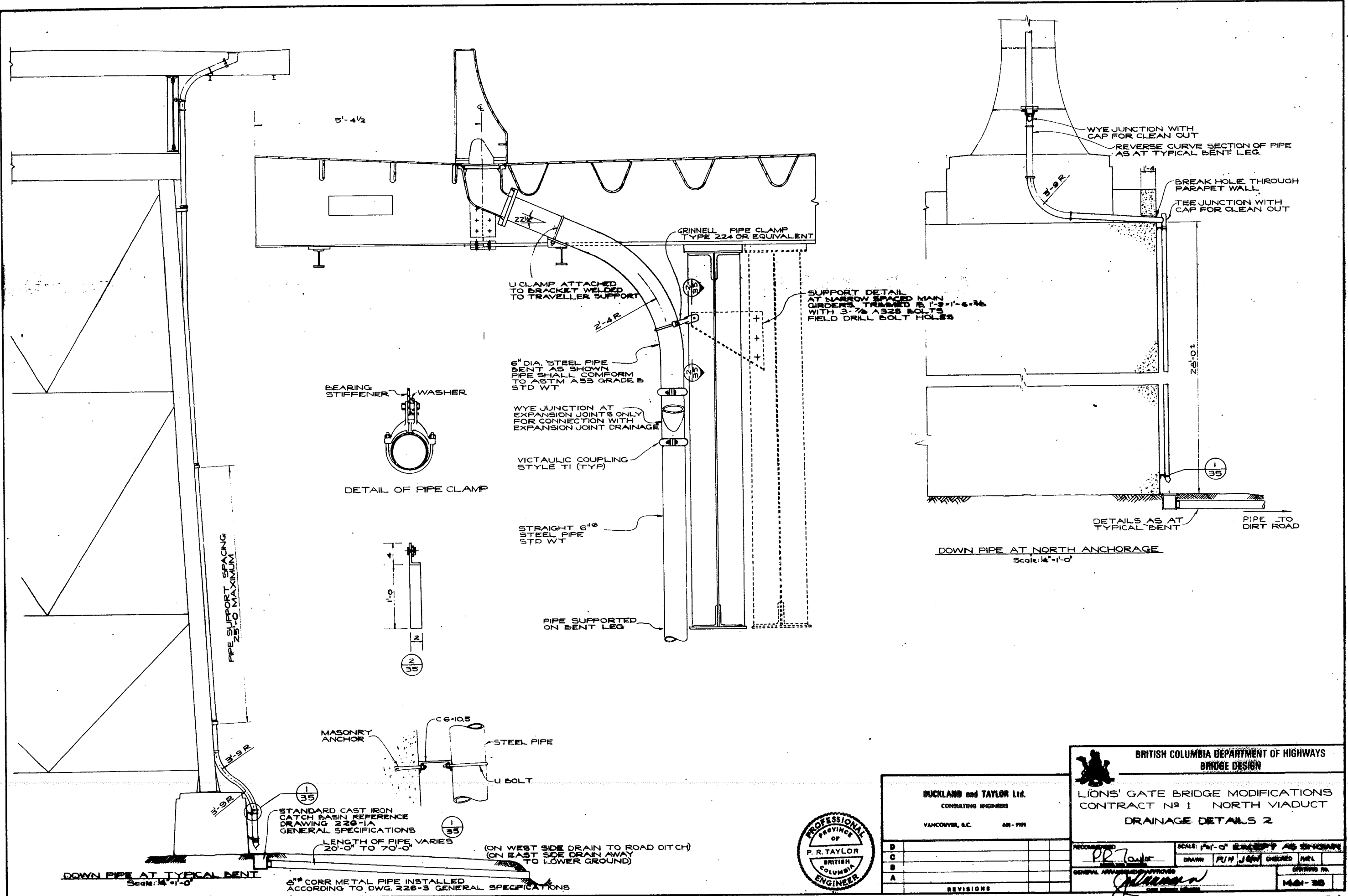
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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO. 1 NORTH VIADUCT  
DRAINAGE DETAILS I

RECOMMENDED BY <i>P.R. Taylor</i>	SCALE: AS SHOWN
CHECKED BY <i>M.W.L.</i>	DRAWN BY <i>[Signature]</i>
DATE: 1961-3-6	





5'-4 1/2

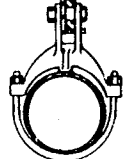
GRINNELL PIPE CLAMP  
TYPE 224 OR EQUIVALENT

U CLAMP ATTACHED  
TO BRACKET WELDED  
TO TRAVELLER SUPPORT

SUPPORT DETAIL  
AT NARROW SPACED MAIN  
GIRDERS TRACED B. I-3 x 1'-6.36  
WITH 3-7/8 A325 BOLTS  
FIELD DRILL BOLT HOLES

6" DIA. STEEL PIPE  
BENT AS SHOWN  
PIPE SHALL CONFORM  
TO ASTM A53 GRADE B  
STD WT

BEARING  
STIFFENER WASHER



DETAIL OF PIPE CLAMP

WYE JUNCTION AT  
EXPANSION JOINTS ONLY  
FOR CONNECTION WITH  
EXPANSION JOINT DRAINAGE

VICTAULIC COUPLING  
STYLE T1 (TYP)

STRAIGHT 6" DIA  
STEEL PIPE  
STD WT

PIPE SUPPORTED  
ON BENT LEG

WYE JUNCTION WITH  
CAP FOR CLEAN OUT  
REVERSE CURVE SECTION OF PIPE  
AS AT TYPICAL BENT LEG

BREAK HOLE THROUGH  
PARAPET WALL  
TEE JUNCTION WITH  
CAP FOR CLEAN OUT

DETAILS AS AT  
TYPICAL BENT  
PIPE TO  
DIRT ROAD

DOWN PIPE AT NORTH ANCHORAGE

Scale: 1/4" = 1'-0"

PIPE SUPPORT SPACING  
25'-0" MAXIMUM



MASONRY  
ANCHOR

STEEL PIPE

U BOLT

STANDARD CAST IRON  
CATCH BASIN REFERENCE  
DRAWING 226-1A  
GENERAL SPECIFICATIONS

LENGTH OF PIPE VARIES  
20'-0" TO 70'-0"  
(ON WEST SIDE DRAIN TO ROAD DITCH)  
(ON EAST SIDE DRAIN AWAY  
TO LOWER GROUND)

6" CORR METAL PIPE INSTALLED  
ACCORDING TO DWG. 226-3 GENERAL SPECIFICATIONS

DOWN PIPE AT TYPICAL BENT

Scale: 1/4" = 1'-0"

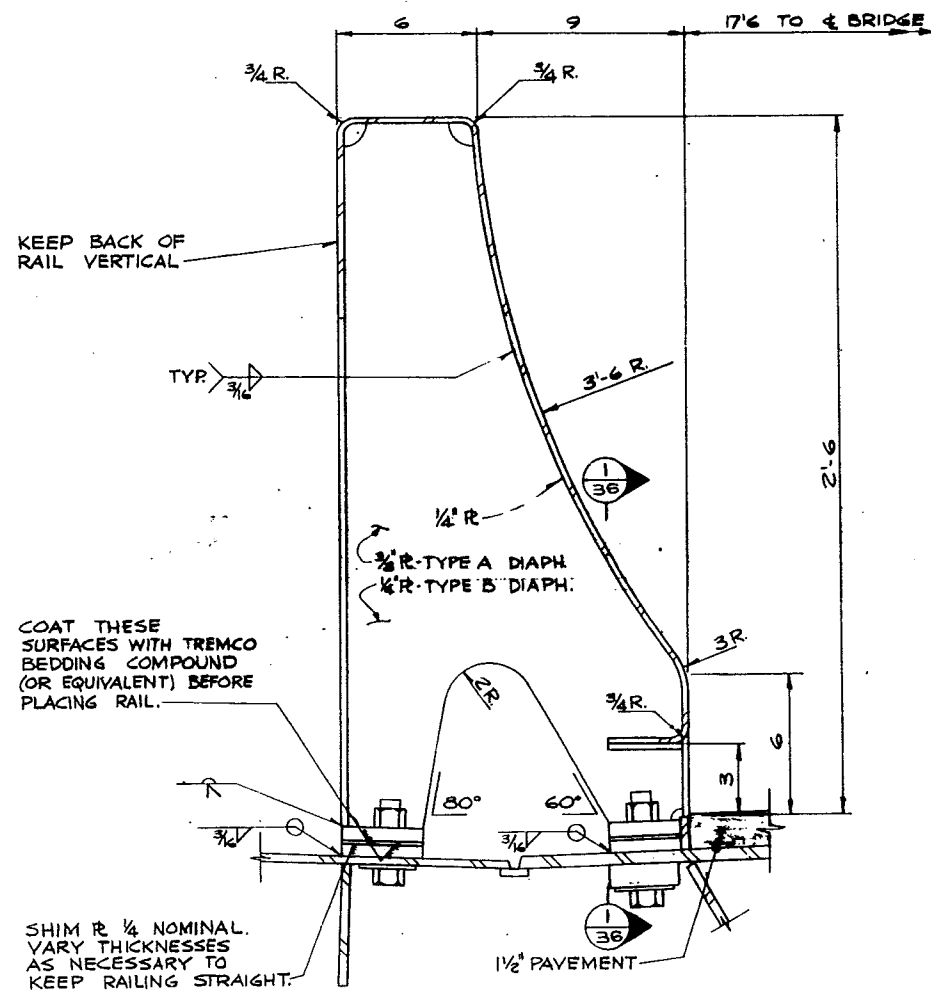


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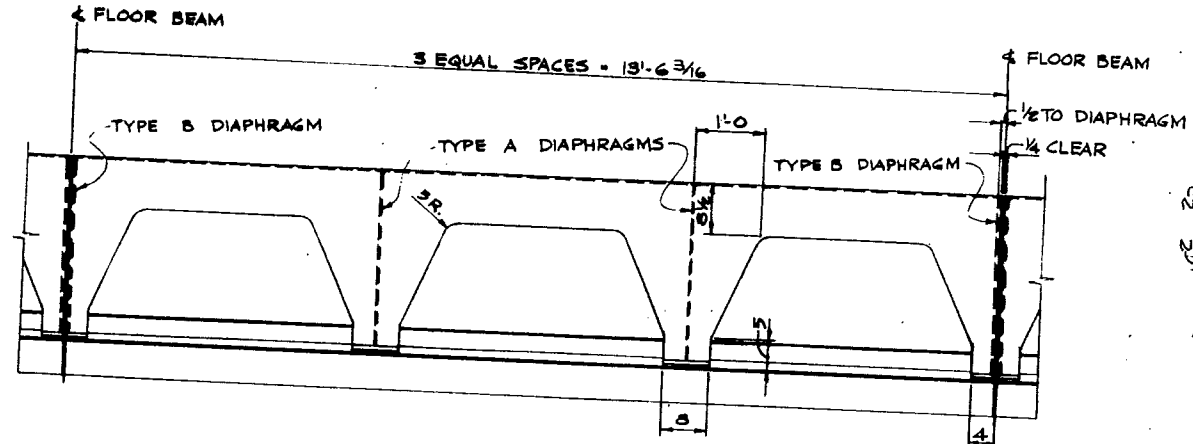
BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 NORTH VIADUCT  
DRAINAGE DETAILS 2

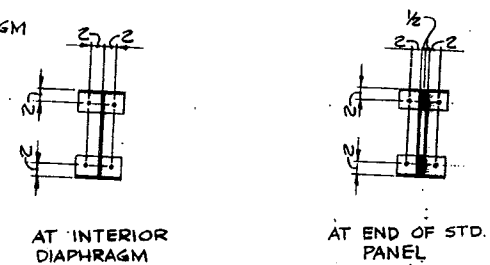
RECOMMENDED: P. R. TAYLOR  
SCALE: 1/4" = 1'-0" EXCEPT AS SHOWN  
DRAWN: R. H. JEN  
CHECKED: M. L.  
GENERAL APPROVED: [Signature]  
DRAWING NO. 1424-38



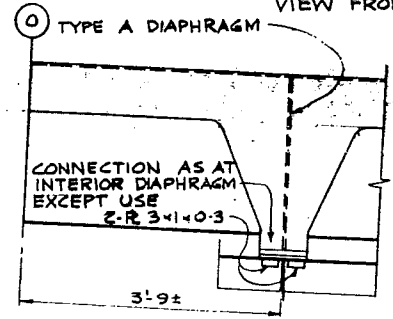
TYPICAL SECTION



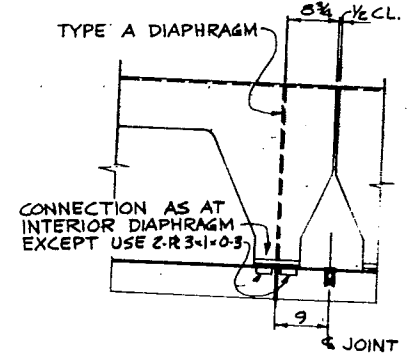
TYPICAL PANEL VIEW FROM BACK



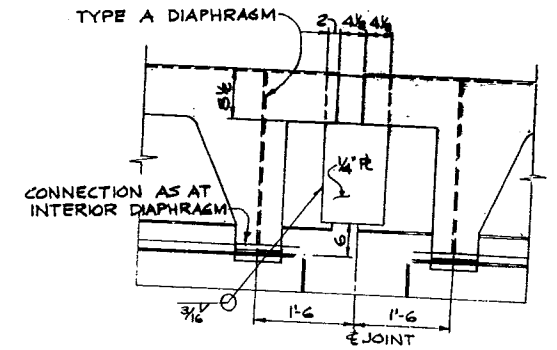
BOLT ARRANGEMENT



END DETAIL NEAR LINE

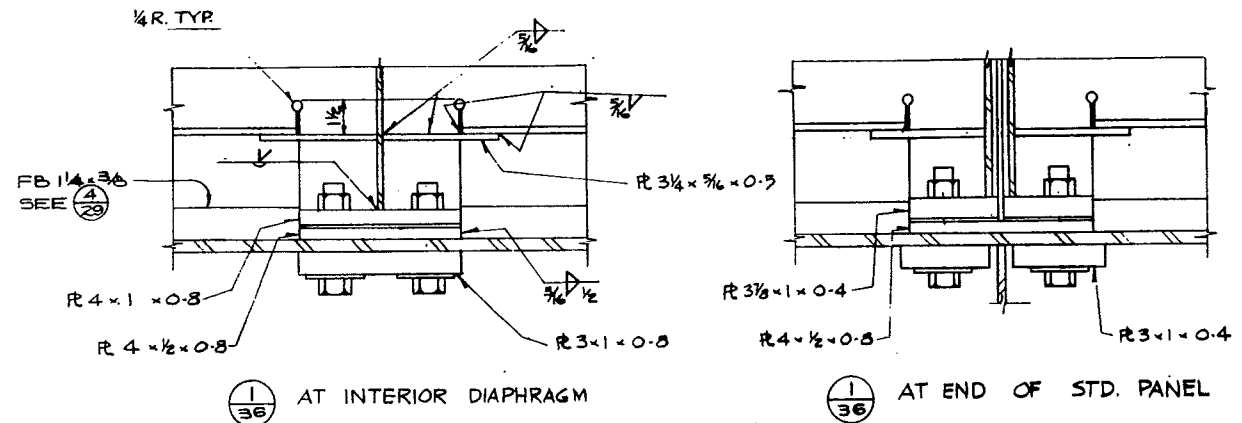


END DETAIL AT TYPICAL INTERMEDIATE JOINT



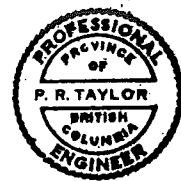
END DETAIL AT TYPICAL EXPANSION JOINT

NOTES  
 ALL BOLTS 7/8 A325 GALVANIZED.  
 ALL GUARD RAILS & SHIMS SHALL BE HOT-DIP GALVANIZED.  
 ONE PAIR OF END PANELS 14'-3" LONG IS TO BE SUPPLIED TO BE PLACED BY OTHERS LATER NEAR LINE 0 - SEE DWG. 44.  
 1/2" SOLE PLATES FOR THESE PANELS ARE NOT TO BE WELDED TO THE DECK. THESE PANELS ARE TO BE DELIVERED TO THE D.O.H.



AT INTERIOR DIAPHRAGM

AT END OF STD. PANEL



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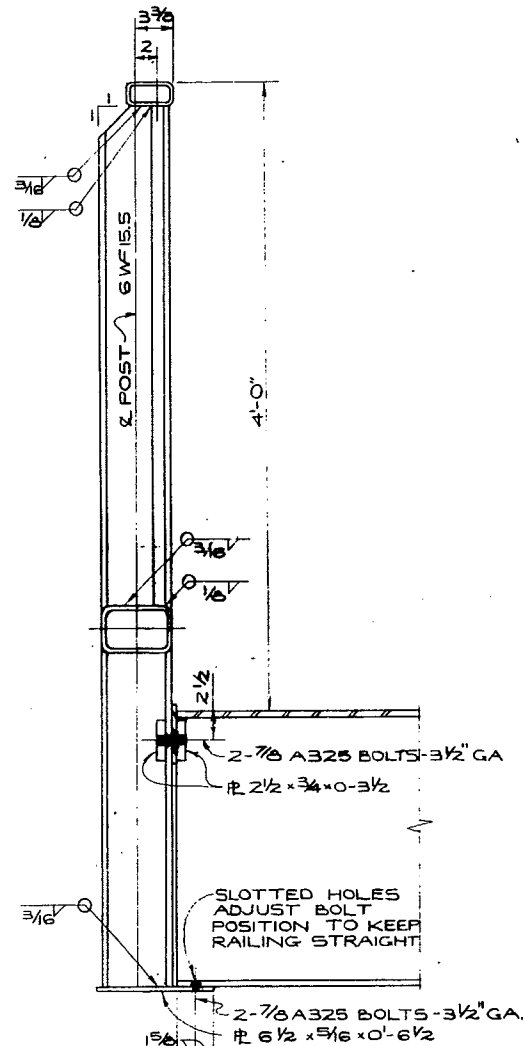
LIONS' GATE BRIDGE MODIFICATIONS  
 CONTRACT NO 1 - NORTH VIADUCT  
 TRAFFIC GUARD RAILS

RECOMMENDED: P. R. TAYLOR  
 SCALE: 3" = 1'-0"

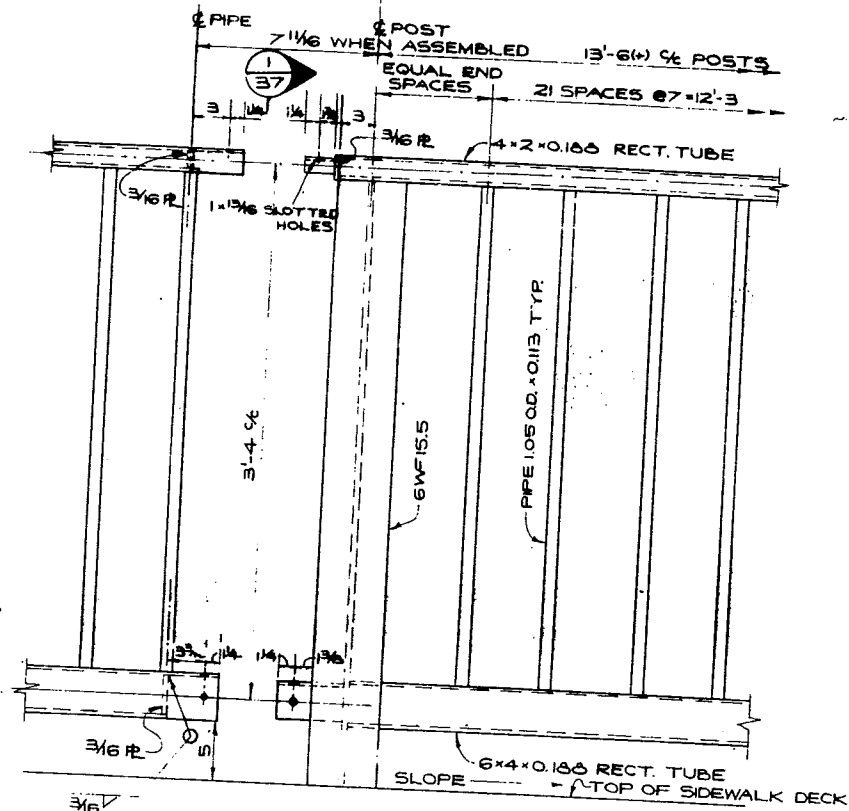
DRAWN: JOW  
 CHECKED: NREL

GENERAL ARRANGEMENT APPROVED: [Signature]

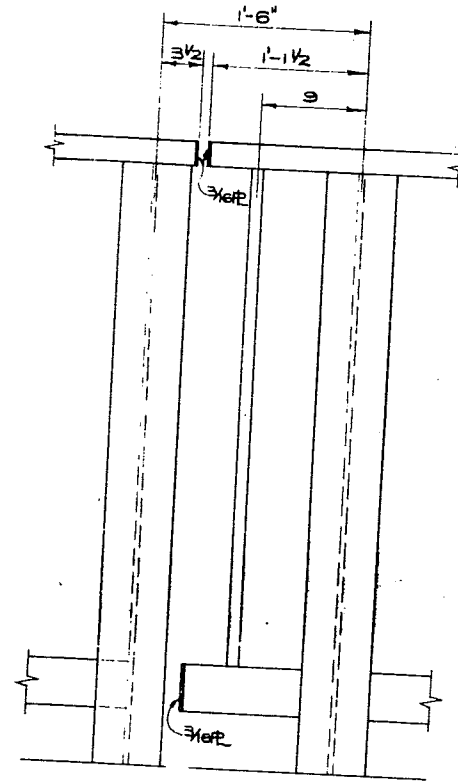
DRAWING NO. 1481-34



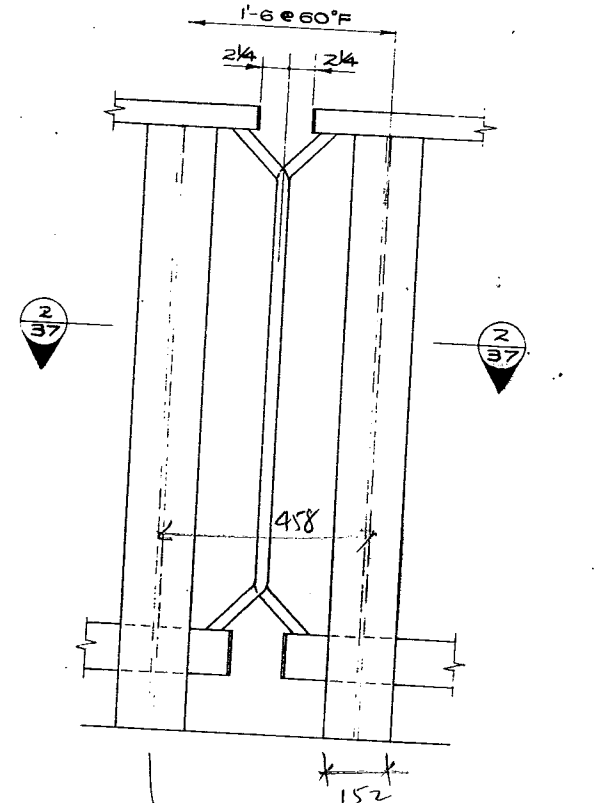
TYPICAL SECTION  
SCALE: 1/2" = 1'-0"



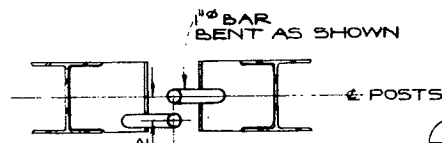
ELEVATION AT SPLICE  
SCALE: 1/2" = 1'-0"



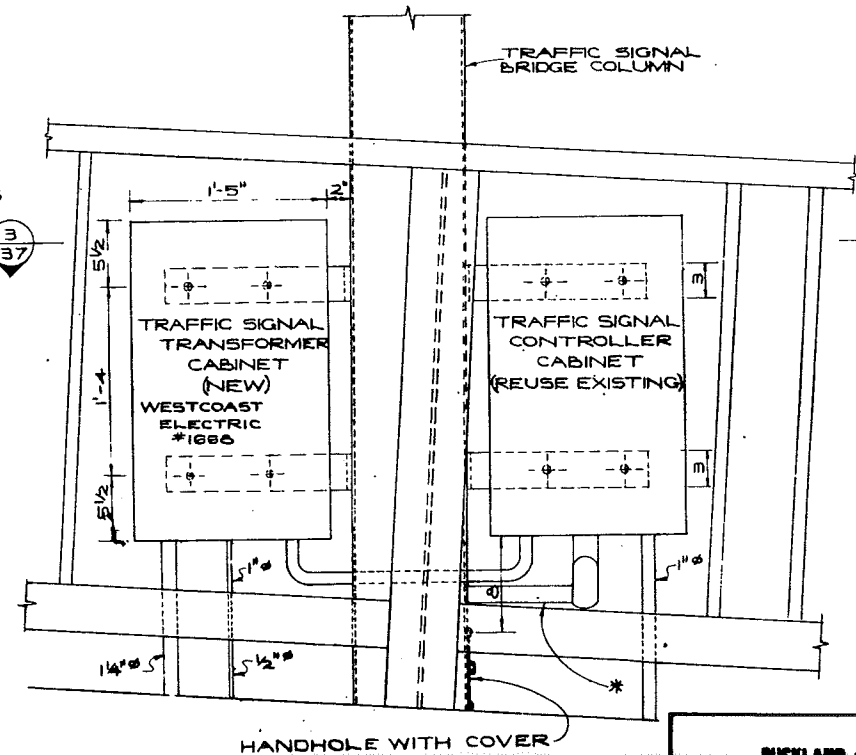
ELEVATION AT INTERMEDIATE DECK JOINT  
SCALE: 1/2" = 1'-0"



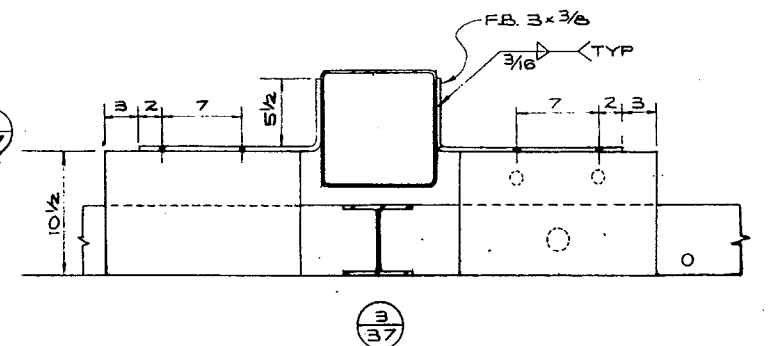
ELEVATION AT JOINTS (5, 9, 13, 19, 25)  
SCALE: 1/2" = 1'-0"



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

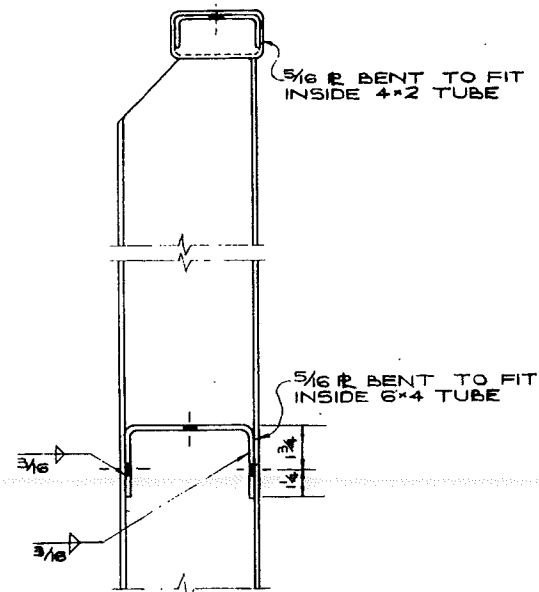


DETAILS OF ELECTRICAL CONTROL BOXES MOUNTED ON TRAFFIC SIGNAL  
SCALE: 1/2" = 1'-0"

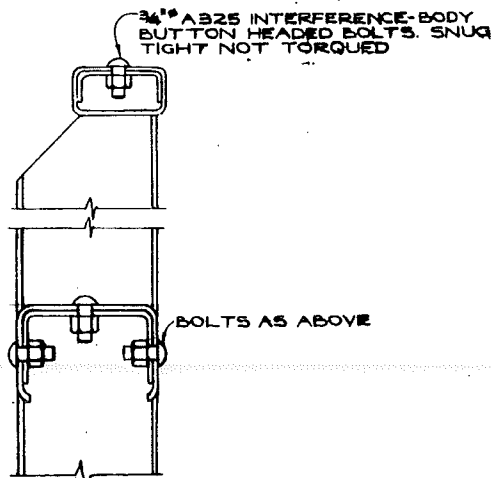


ATTACHMENT DETAILS FOR ELECTRICAL BOXES ON TRAFFIC SIGNAL POSTS (EAST SIDE ONLY)

- NOTE
1. SPLICES AT A MINIMUM SPACING OF 27'-6"
  2. FOR SIZE OF CONDUIT MARKED THUS \* SEE TABLE 1 ON DWG. 1481-63.



SCALE: 3/4" = 1'-0"



SCALE: 3/4" = 1'-0"

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REVISIONS

BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
PEDESTRIAN FENCES

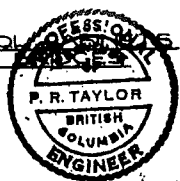
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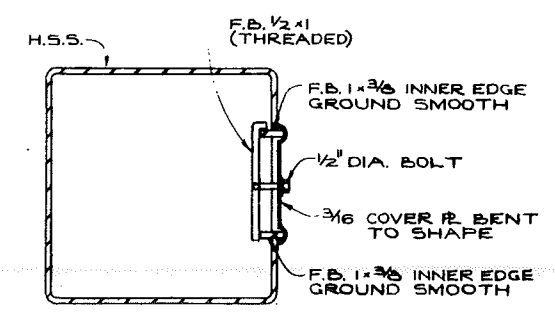
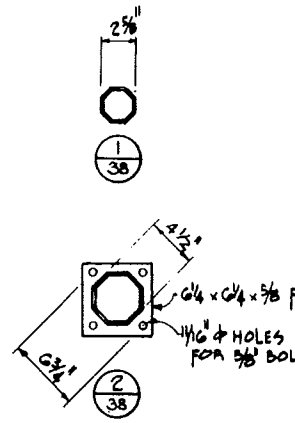
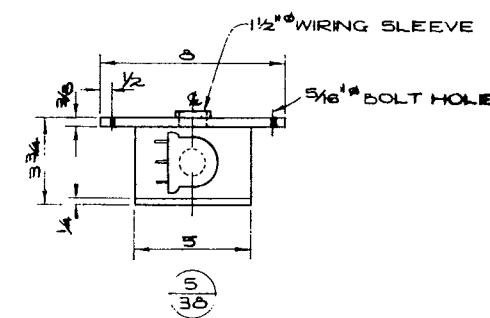
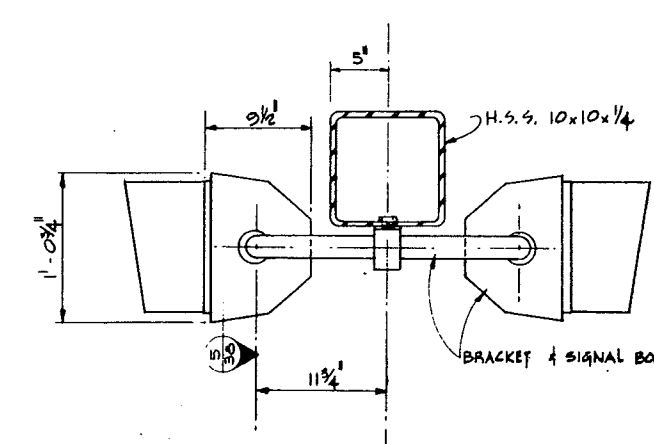
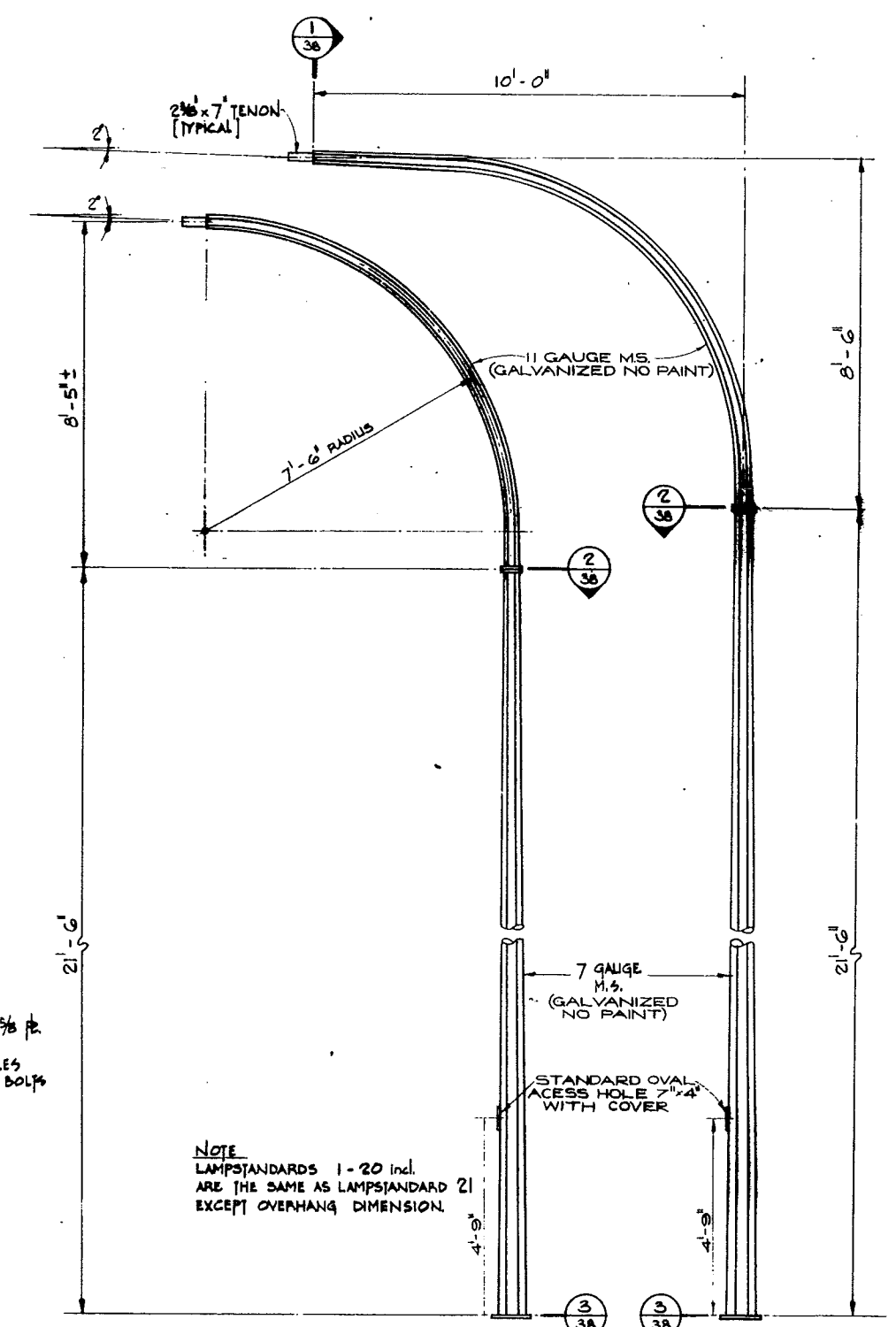
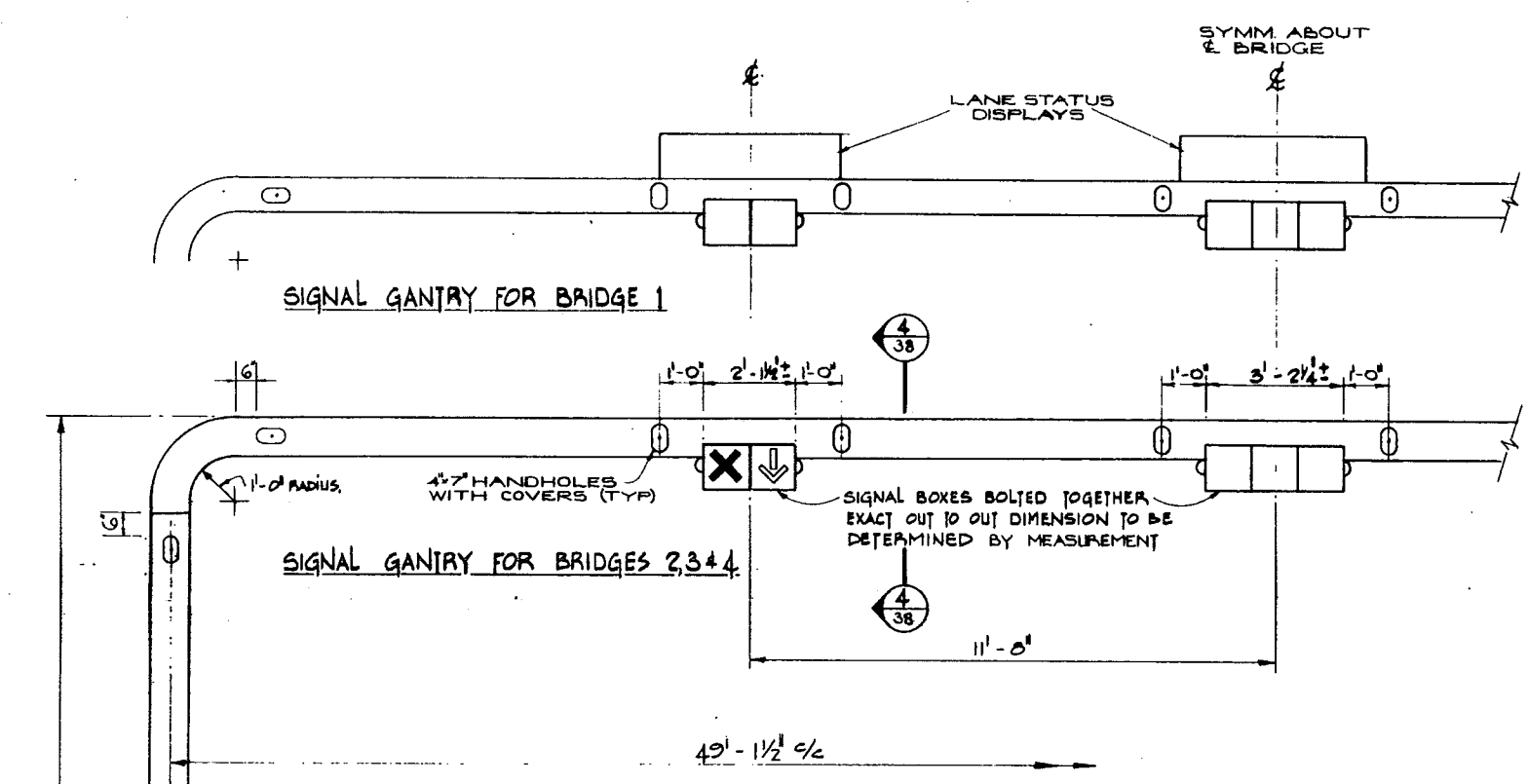
RECOMMENDED BY: [Signature]

DRAWN: J.G.W. CHECKED: M.W.L.

GENERAL APPROVAL: [Signature]

DRAWING NO. 1481-37





- NOTES:**
- BRACKETS AND SIGNAL BOXES FOR THE NEW SIGNAL BRIDGE 1 WILL BE SUPPLIED BY THE DEPARTMENT.
  - BRACKETS AND SIGNAL BOXES ON THE EXISTING SIGNAL BRIDGE 1 WILL BE USED ON THE NEW SIGNAL BRIDGE 2 AND SO ON.
  - BRACKETS AND SIGNAL BOXES ON THE EXISTING SIGNAL BRIDGE 4 WILL BE RECOVERED AND RETURNED TO THE DEPARTMENT.
  - EXISTING LANE STATUS DISPLAY UNITS WILL BE REUSED.
  - FOR DETAILS OF SIGNAL BRIDGES SEE DWG. 40.
  - REQUIREMENTS FOR LAMPSTANDARDS ARE AS FOLLOWS:  
 NUT COVERS TO BE SUPPLIED  
 ALL BOLTS TO BE GALVANIZED  
 3/8" GROUNDING STUD AND NUT TO BE SUPPLIED BEHIND EACH HANDHOLE.  
 MAST ARM RISERS APPLY TO UNLOADED STRUCTURE IN STANDING POSITION.  
 ALL WELDS TO BE CLEANED OF WELD FLUX  
 ALL WELDS TO BE CONTINUOUS  
 GALVANIZING SHALL RESULT IN THE DEPOSITION OF NOT LESS THAN 2 OZ. OF ZINC PER SQUARE FOOT.

TYPICAL HANDHOLE WITH COVER FOR TRAFFIC SIGNAL BRIDGE

LAMPSTANDARDS 1-20  
LAMPSTANDARD 21

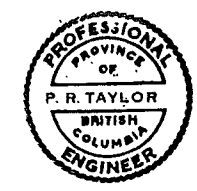
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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

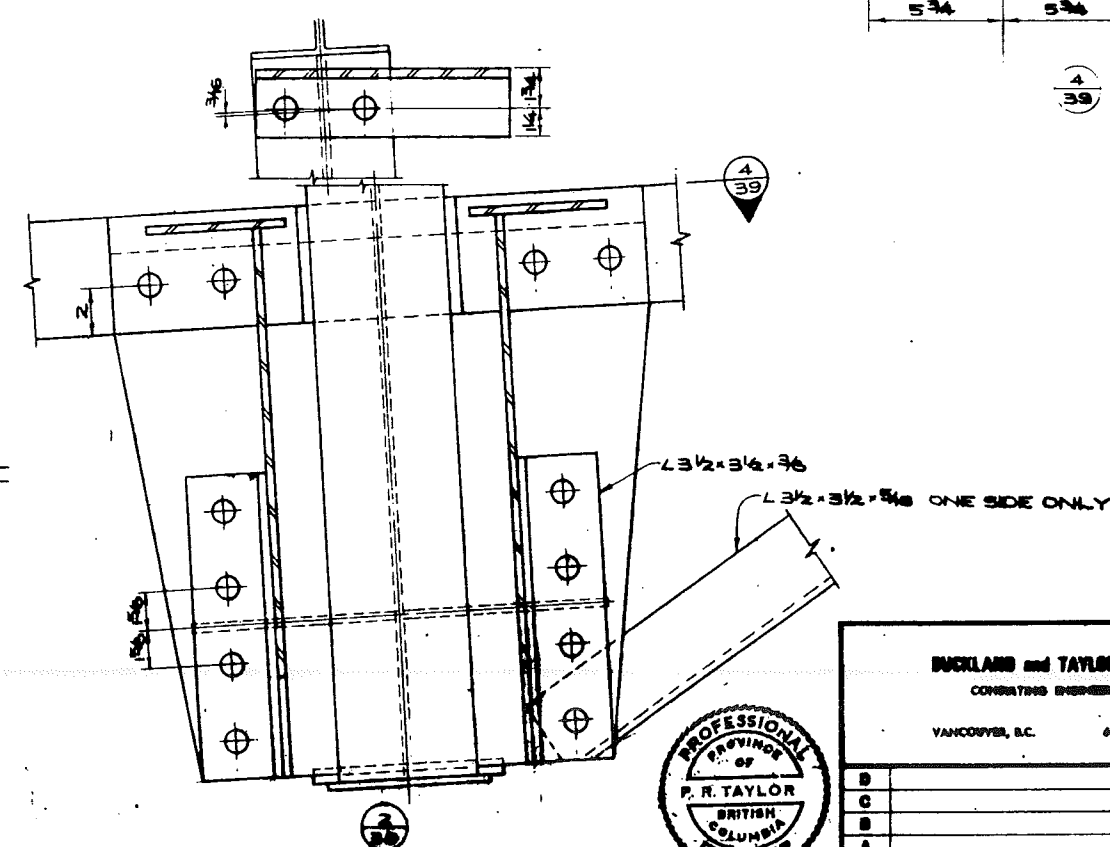
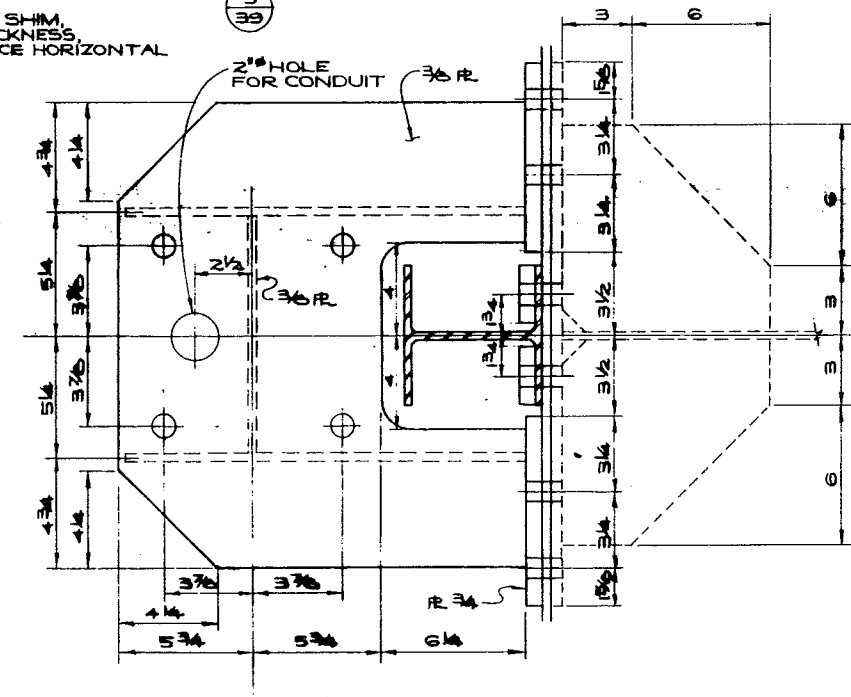
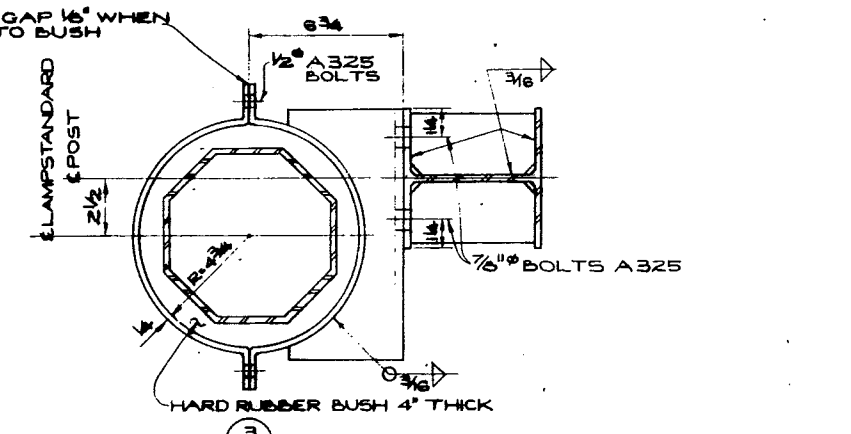
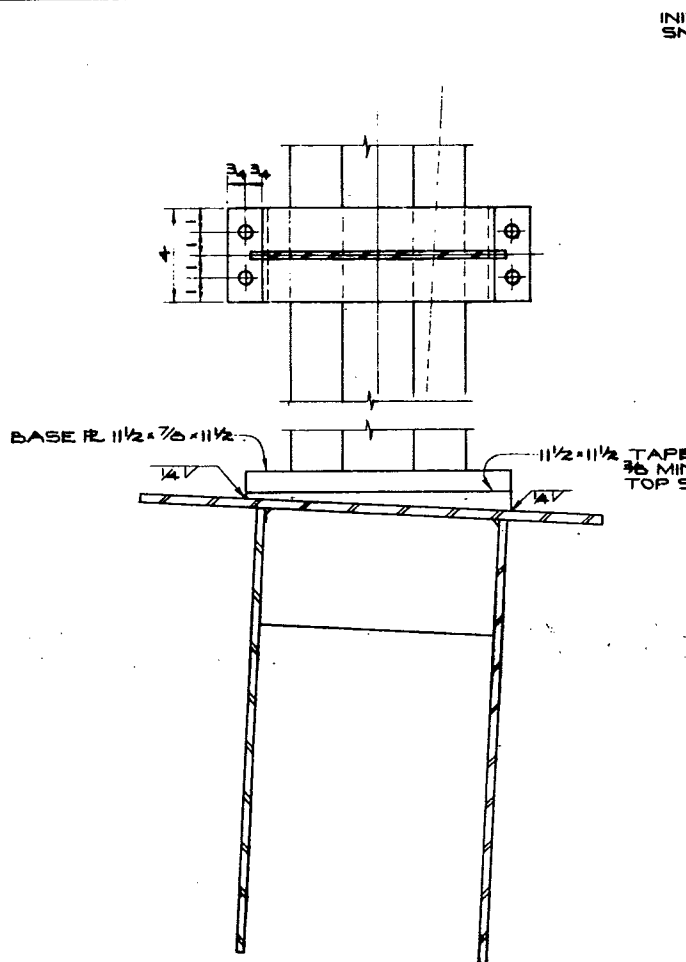
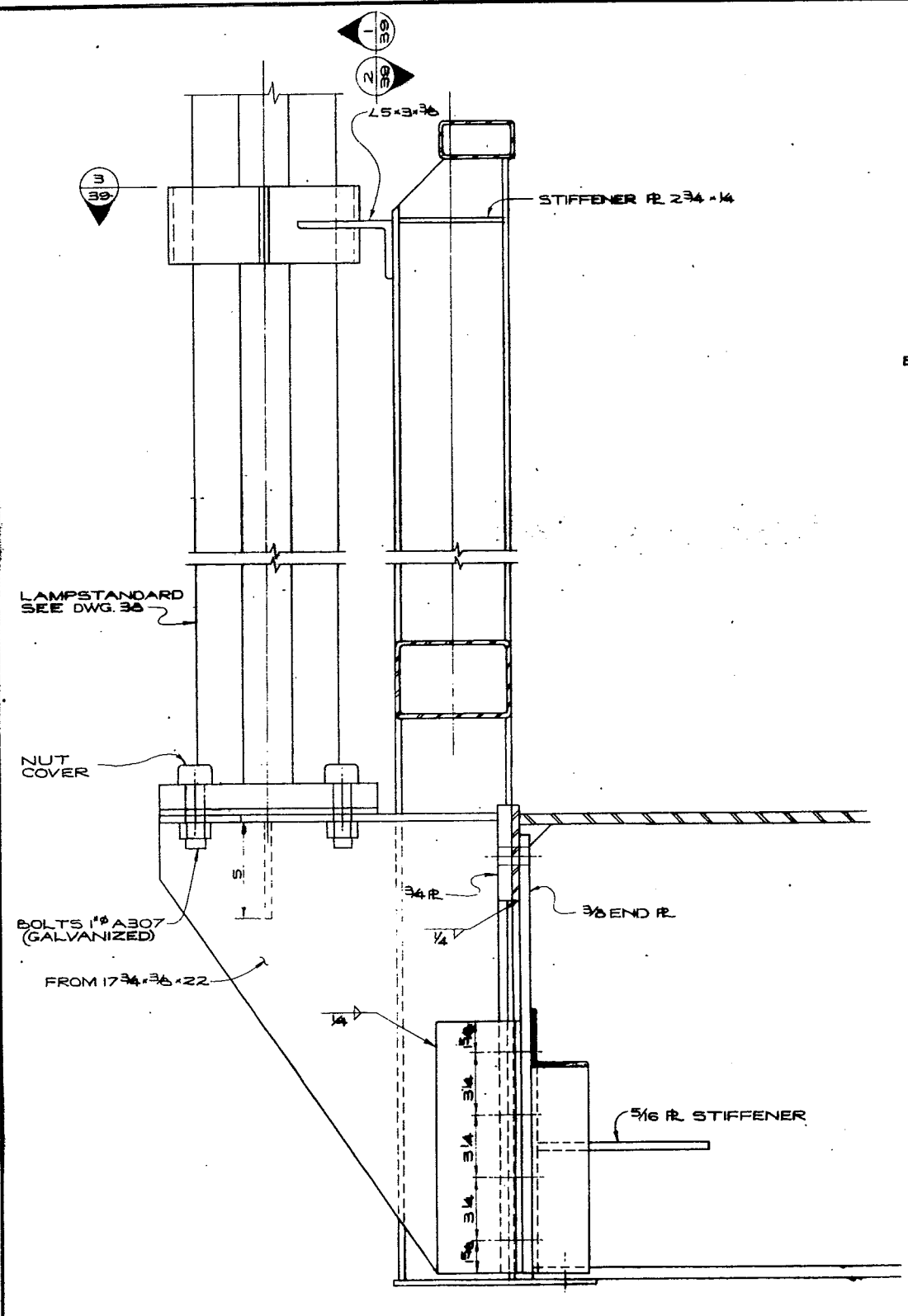
LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
LAMPSTANDARDS & LANE CONTROL  
SIGNAL BRIDGES

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

RECOMMENDED P. R. TAYLOR  
DRAWN THN /JGW CHECKED J.V.L.  
GENERAL ARRANGEMENT APPROVED  
DRAWING NO. 1461-38



REVISIONS	NO.	DESCRIPTION
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NOTE:  
WELDS NOT TO BE LESS THAN THE  
MINIMUM PERMITTED BY AWS D11-72

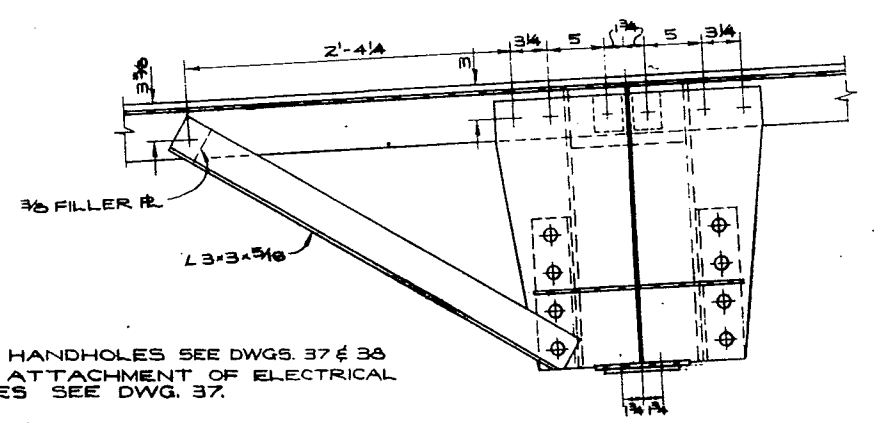
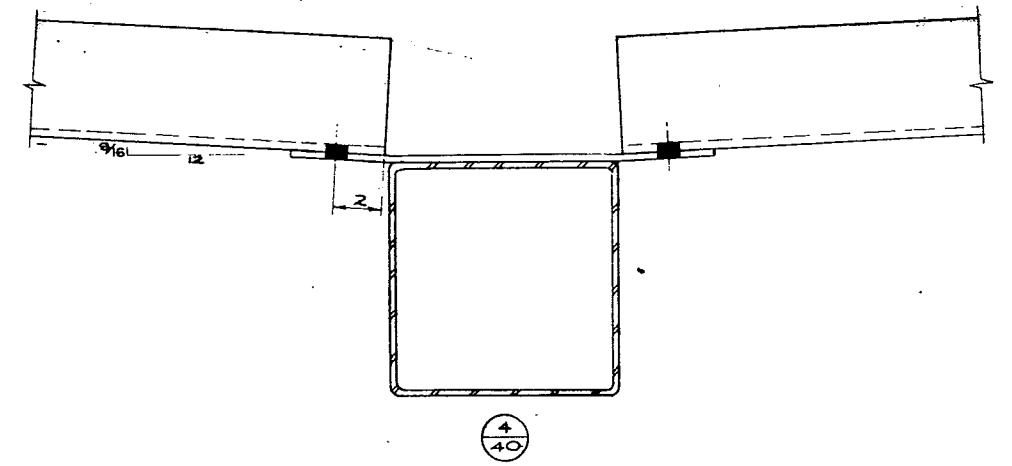
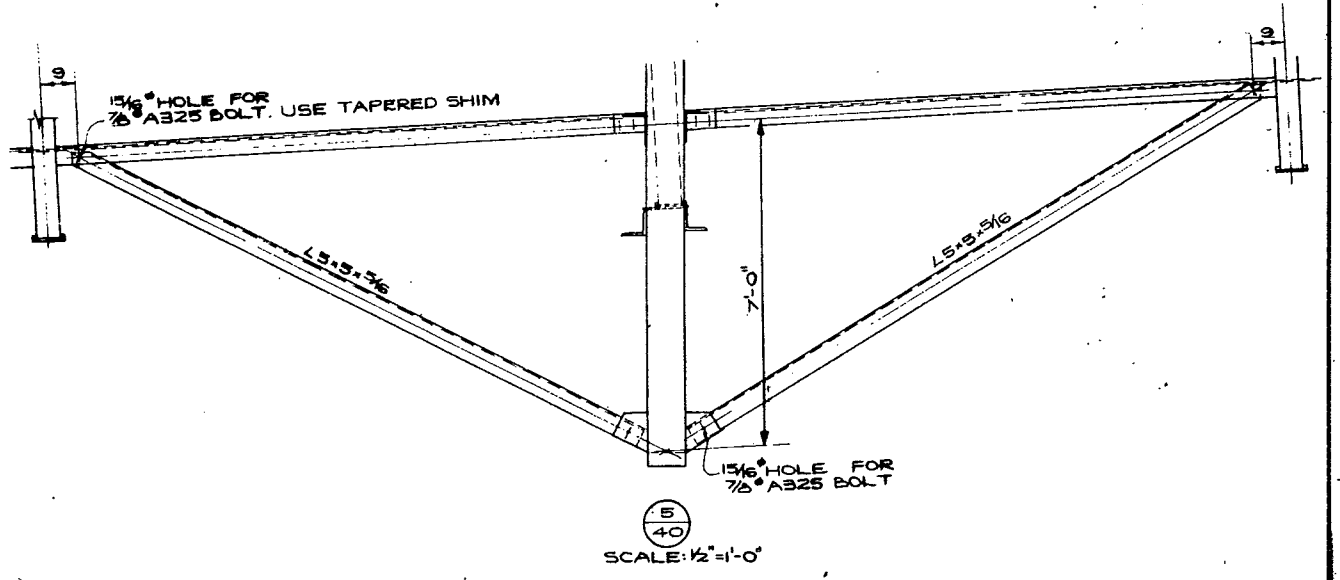
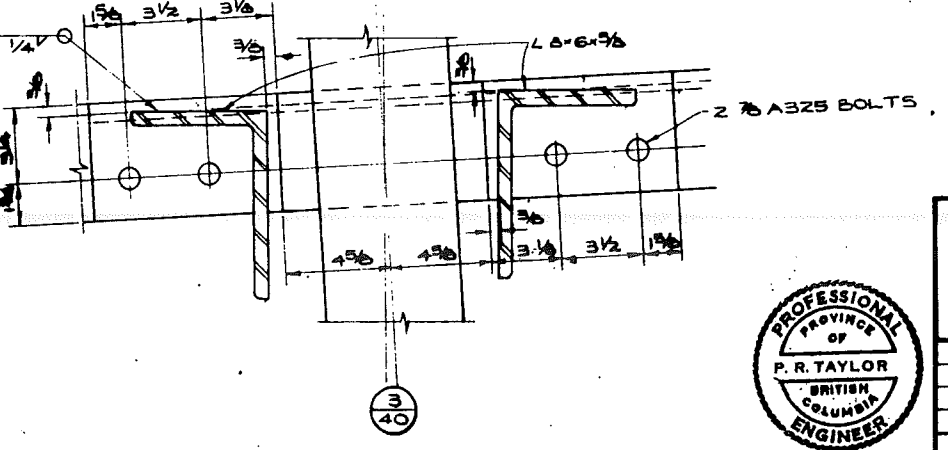
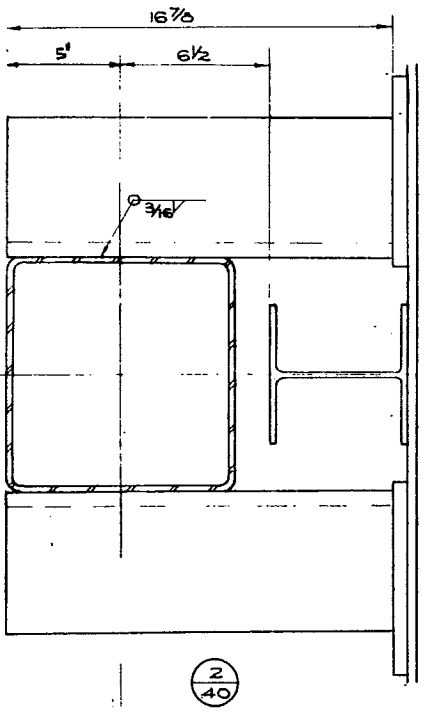
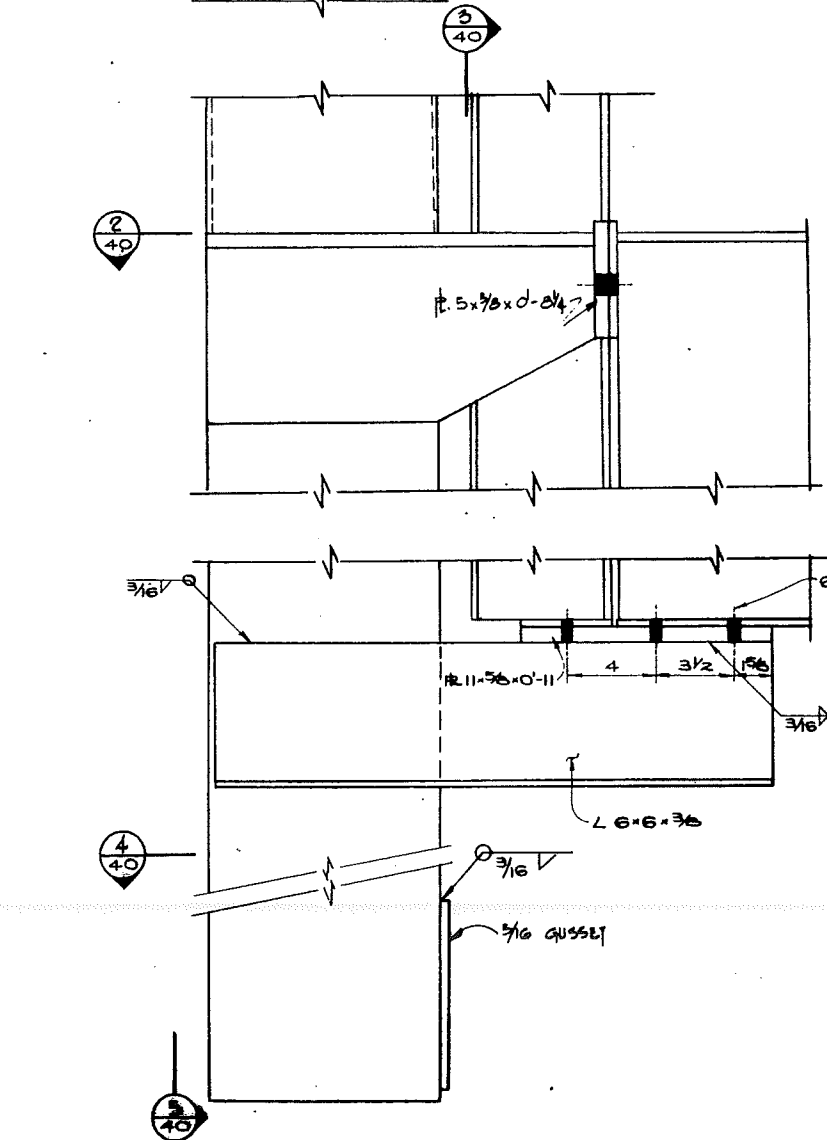
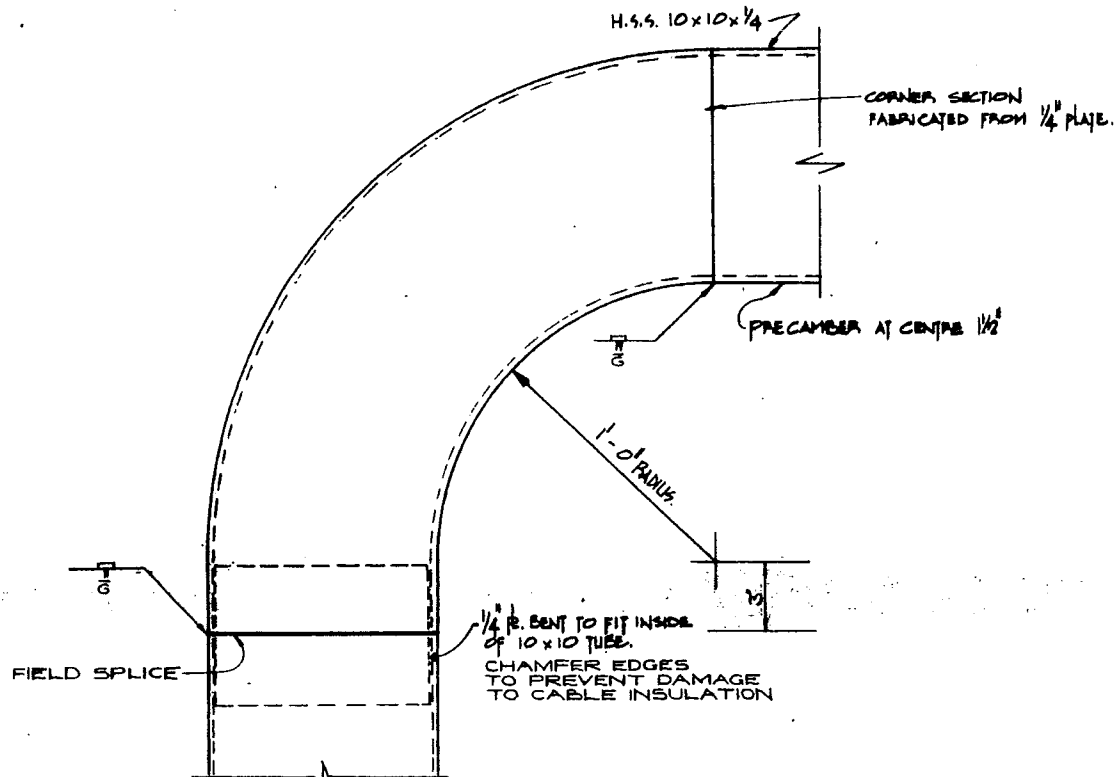


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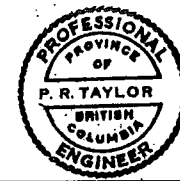
BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN  
LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
LAMPSTANDARDS-DETAILS

REVISIONS	DATE	BY	CHKD
B			
C			
D			
A			

APPROVED	SCALE	DATE
<i>PR Taylor</i>		
DRAWN	CHECKED	DATE



NOTE:  
 1. FOR HANDHOLES SEE DWGS. 37 & 38  
 2. FOR ATTACHMENT OF ELECTRICAL BOXES SEE DWG. 37.



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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
 BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
 CONTRACT NO 1 - NORTH VIADUCT  
 LANE CONTROL SIGNAL BRIDGES  
 DETAILS

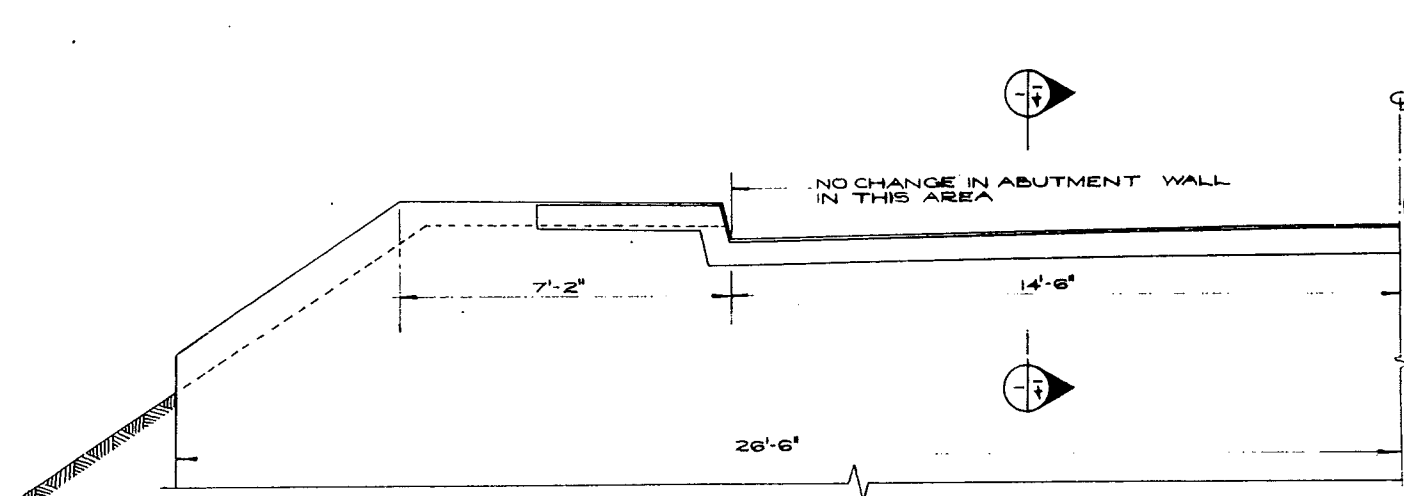
SCALE: 3/4" = 1'-0" EXCEPT AS SHOWN

RECOMMENDED BY: [Signature] DATE: [Date]

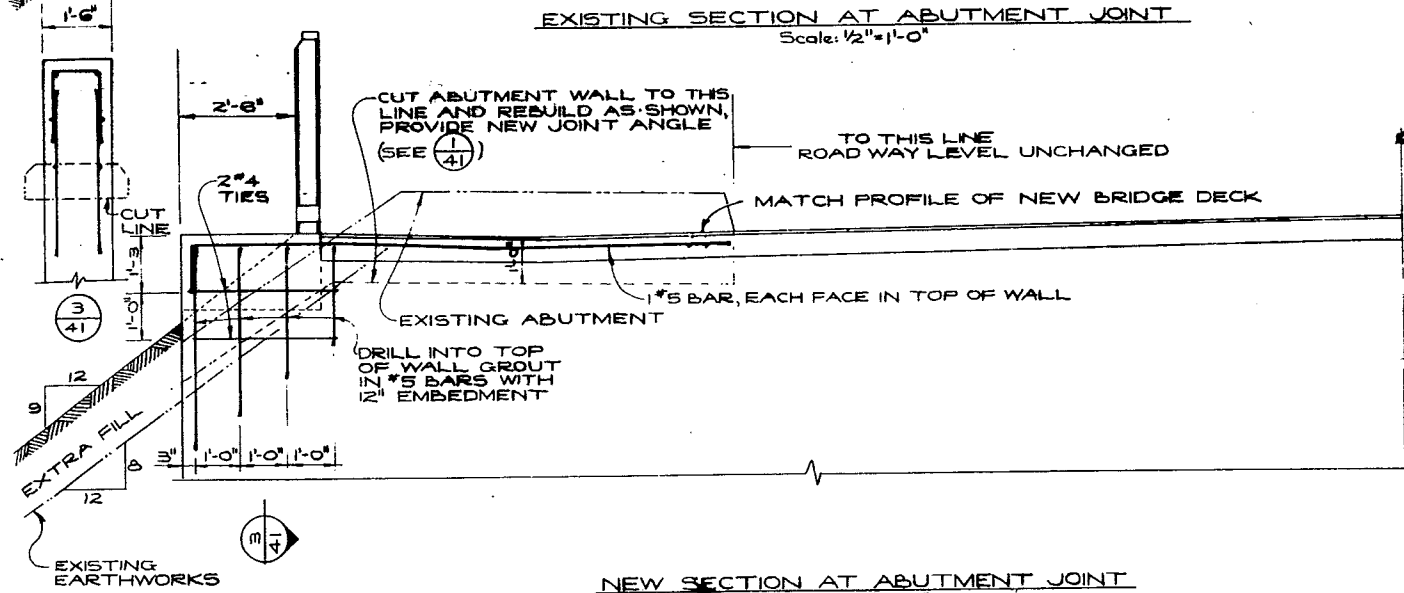
DRAWN: J.G.W. CHECKED: A/Z.L. APPROVED: [Signature]

GENERAL ARRANGEMENT APPROVED: [Signature]

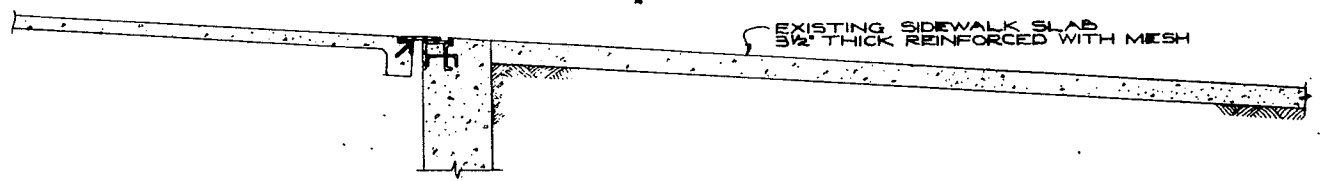
DRAWING NO. 1481-40



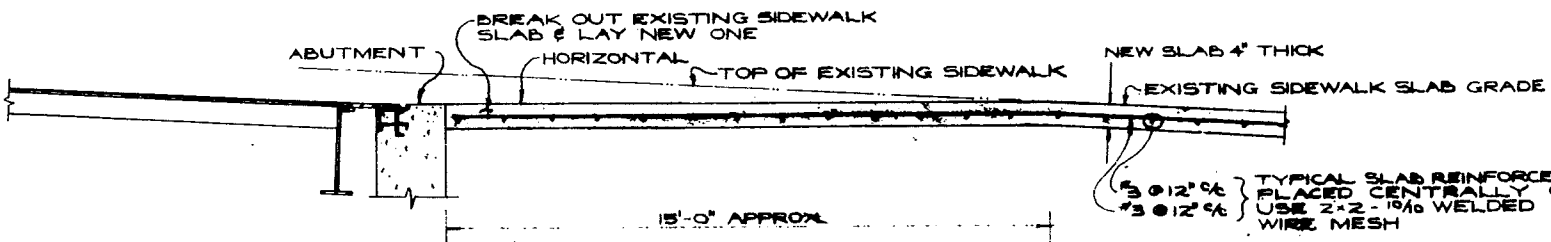
EXISTING SECTION AT ABUTMENT JOINT  
Scale: 1/2"=1'-0"



NEW SECTION AT ABUTMENT JOINT  
Scale: 1/2"=1'-0"

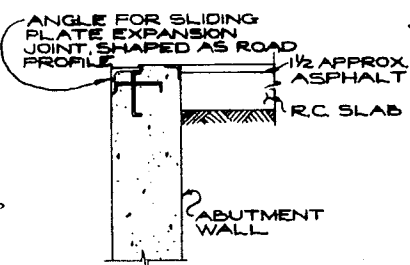


SECTION THROUGH EXISTING SIDEWALK AT ABUTMENT  
Scale: 1/2"=1'-0"



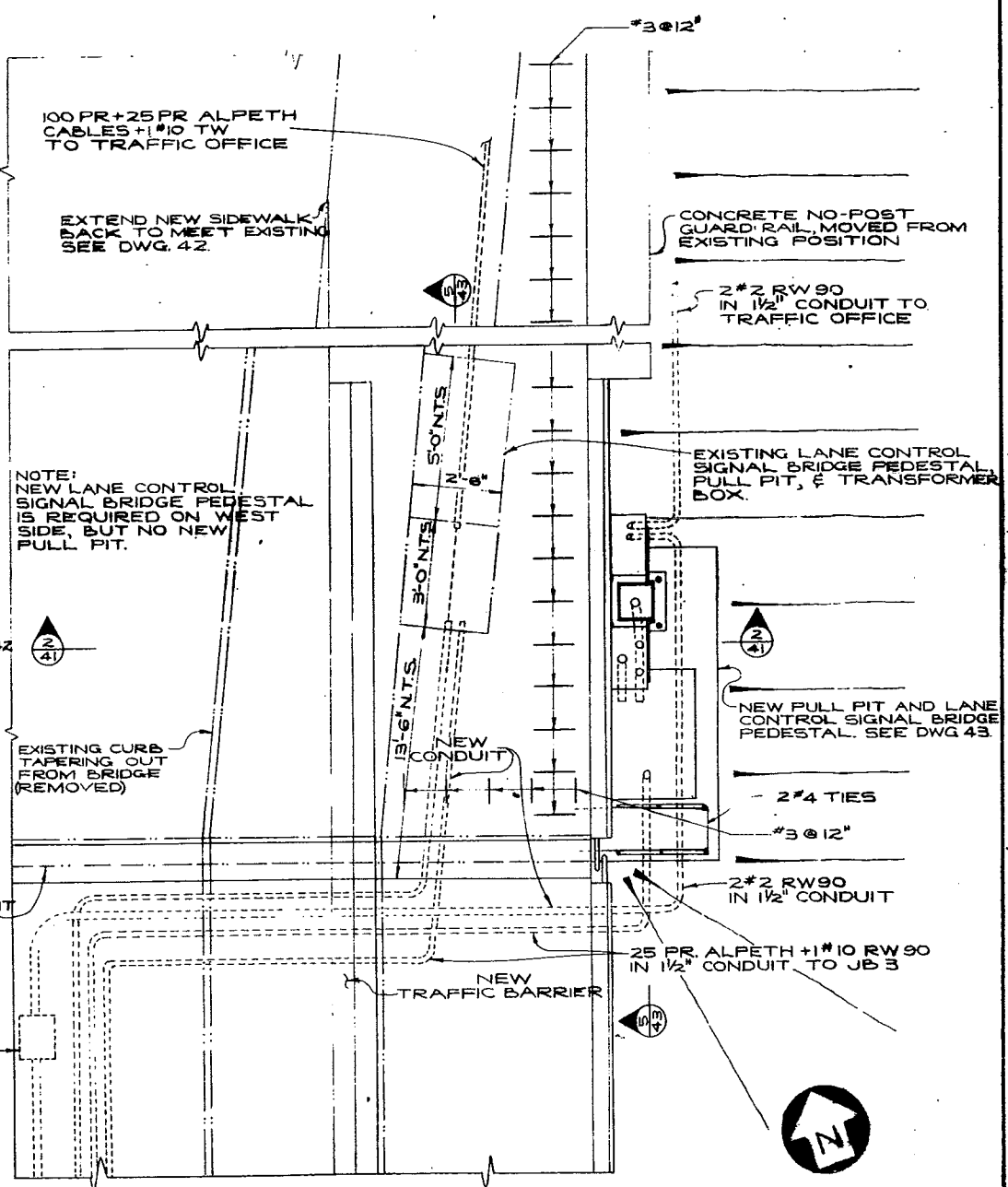
SECTION THROUGH NEW SIDEWALK AT ABUTMENT  
Scale: 1/2"=1'-0"

HANRAIL OMITTED

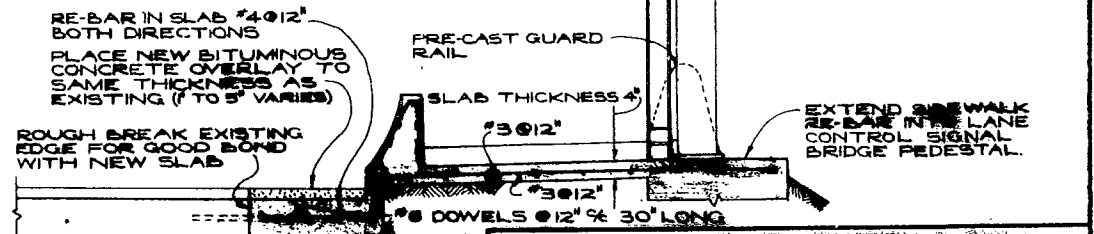


NO CHANGE IN ABUTMENT WALL IN THIS AREA, EXCEPT FOR PATCHING OF BACK FACE SEE DWG. 33.

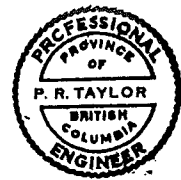
FOR DETAIL OF ANGLE & ANCHORS SEE DWG. 33.  
SYMMETRICAL ABOUT & EXCEPT - NEW PULL PIT ON EAST SIDE ONLY - MORE FILL ON EAST SIDE SEE DWG. 42



PLAN AT ABUTMENT  
Scale: 1/2"=1'-0"



SECTION THROUGH NEW SIDEWALK AND ROADWAY SLAB  
Scale: 1/2"=1'-0"



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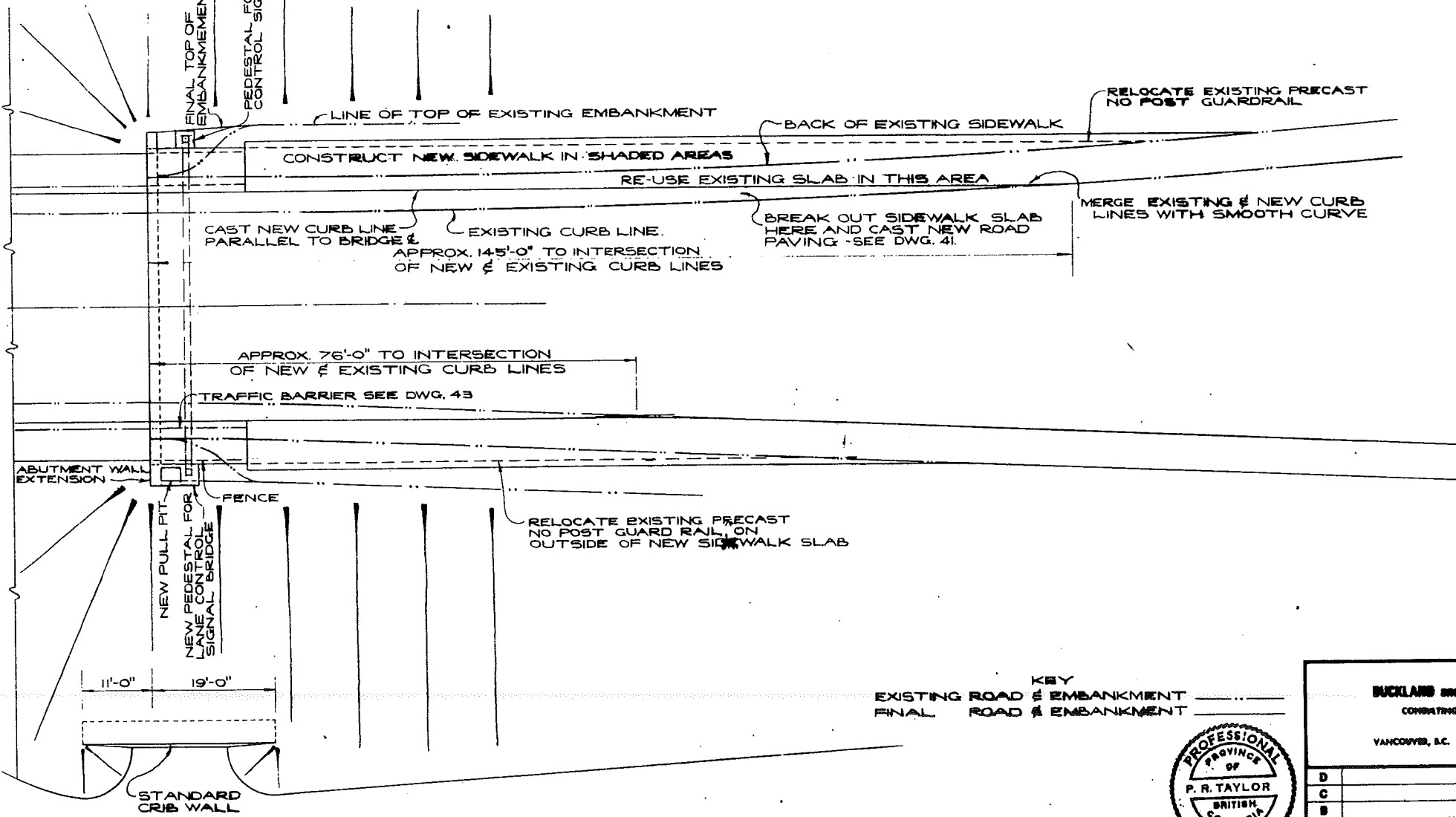
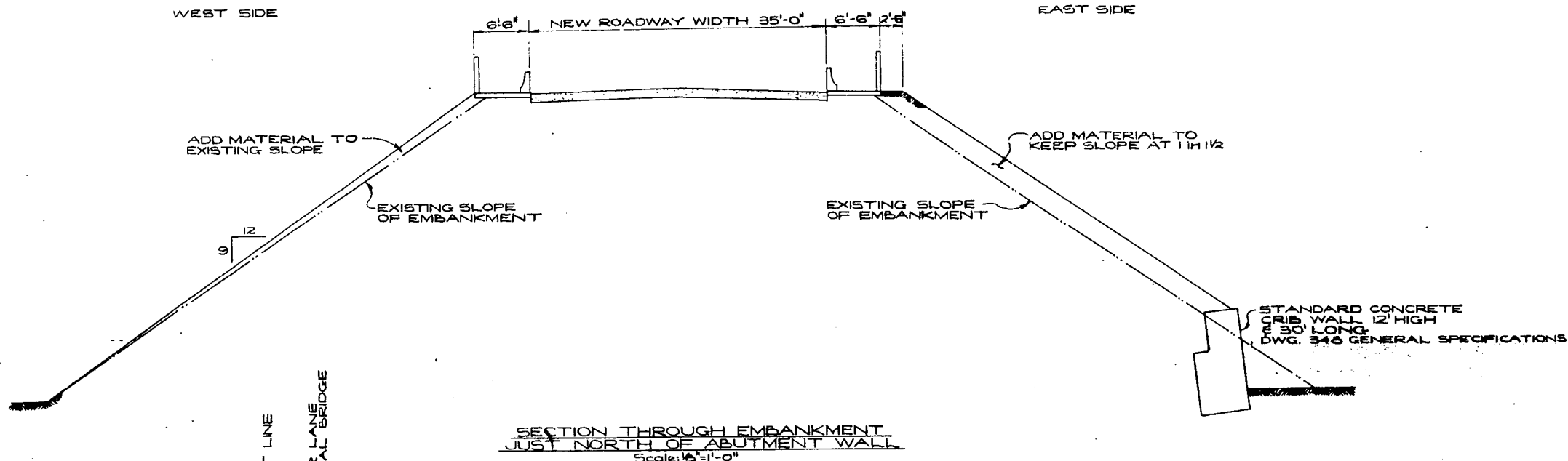
BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO. 1 - NORTH VIADUCT  
WIDENING OF NORTH ABUTMENT  
AND APPROACHES 1

SCALE: AS SHOWN

RECOMMENDED BY: [Signature]  
DRAWN: [Signature] CHECKED: [Signature] APPROVED: [Signature]

GENERAL ARRANGEMENT APPROVED



- NOTES
- 1) CHAMFER ALL CONCRETE CORNERS 3/4"
  - 2) USE CLASS Y CONCRETE FOR SIDEWALK SLAB CURBS, PULL PIT, PEDESTAL & ABUTMENT EXTN.
  - 3) USE CLASS A CONCRETE FOR ROADWAY SLAB AS DEFINED IN THE GENERAL SPECIFICATIONS.
  - 4) AT ALL JOINTS BETWEEN EXISTING CONCRETE AND NEW WORK, EXPOSE REBAR FOR A MINIMUM AND LAP NEW REBAR. WET FACE OF EXISTING CONCRETE BEFORE POURING NEW.

KEY

EXISTING ROAD & EMBANKMENT

FINAL ROAD & EMBANKMENT



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REVISIONS

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BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT No 1 - NORTH VIADUCT  
WIDENING OF NORTH ABUTMENT  
AND APPROACHES 2

RECOMMENDED: P.R.T. (Signature)

SCALE: AS SHOWN

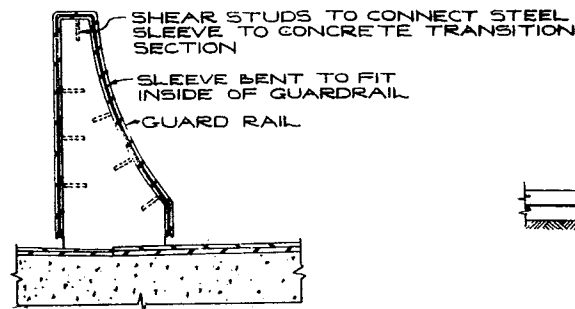
DRAWN: R.H.W. CHECKED: M.H.L.

GENERAL APPROVAL: (Signature)

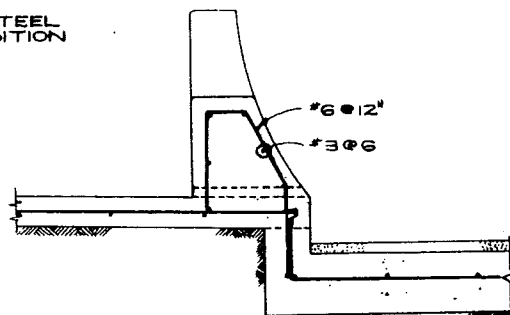
DRAWING No. M&I-42

CANCEL POINTS BEARING EARLIER LETTERS

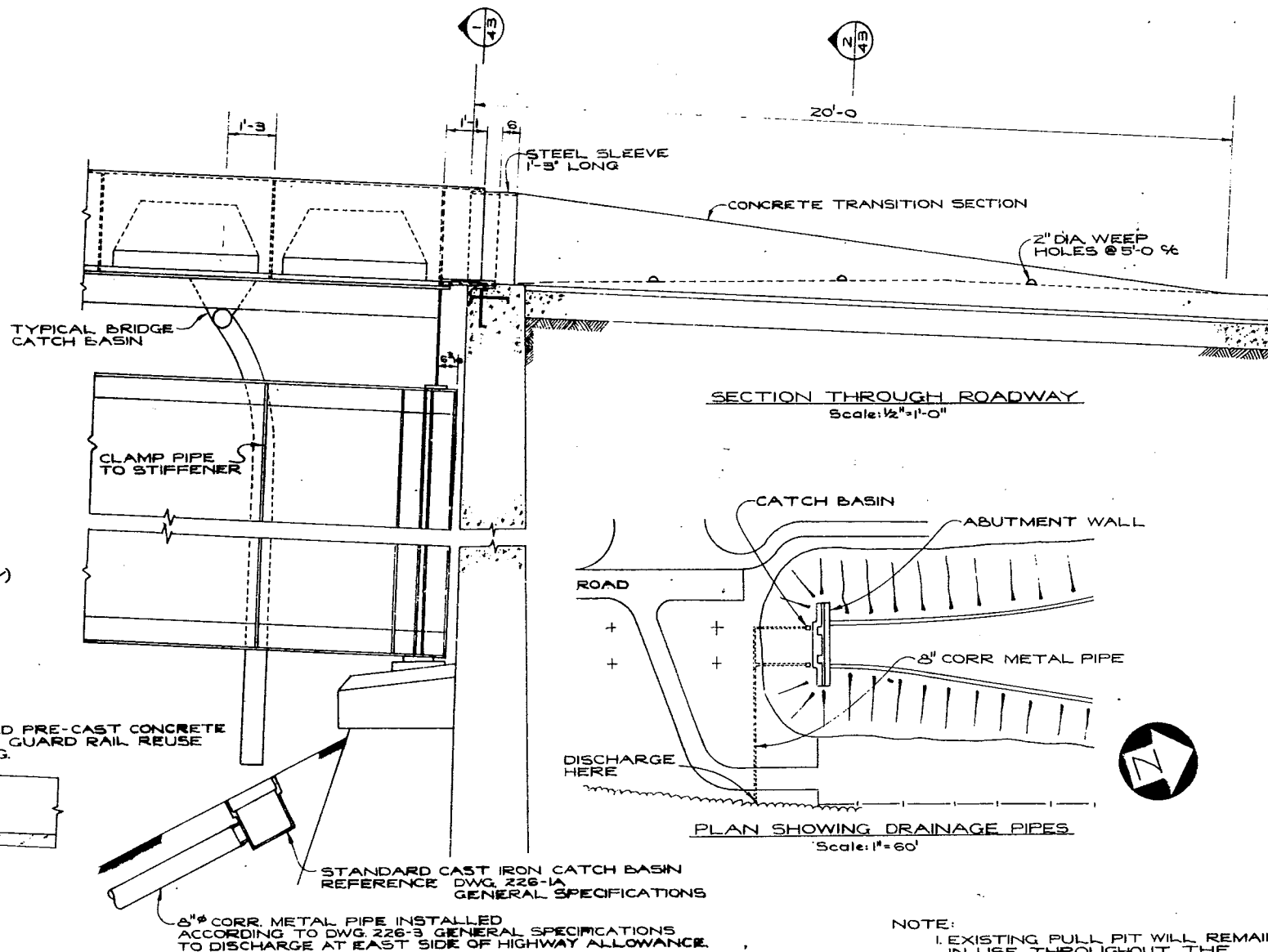




1  
43  
Scale: 1"=1'-0"

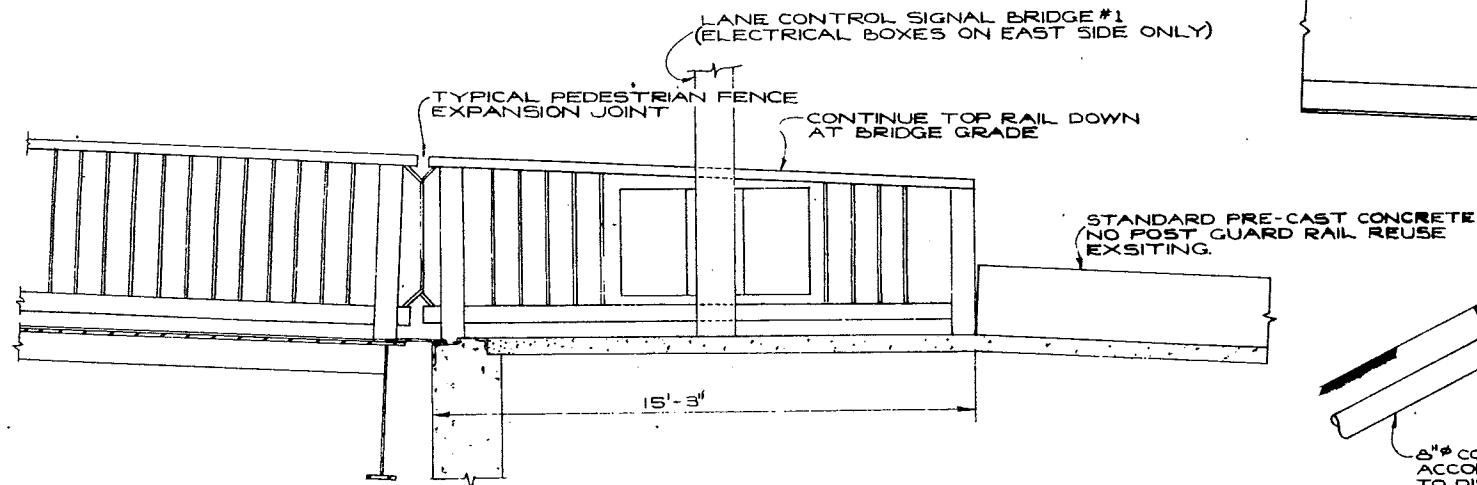


2  
43  
Scale: 1"=1'-0"

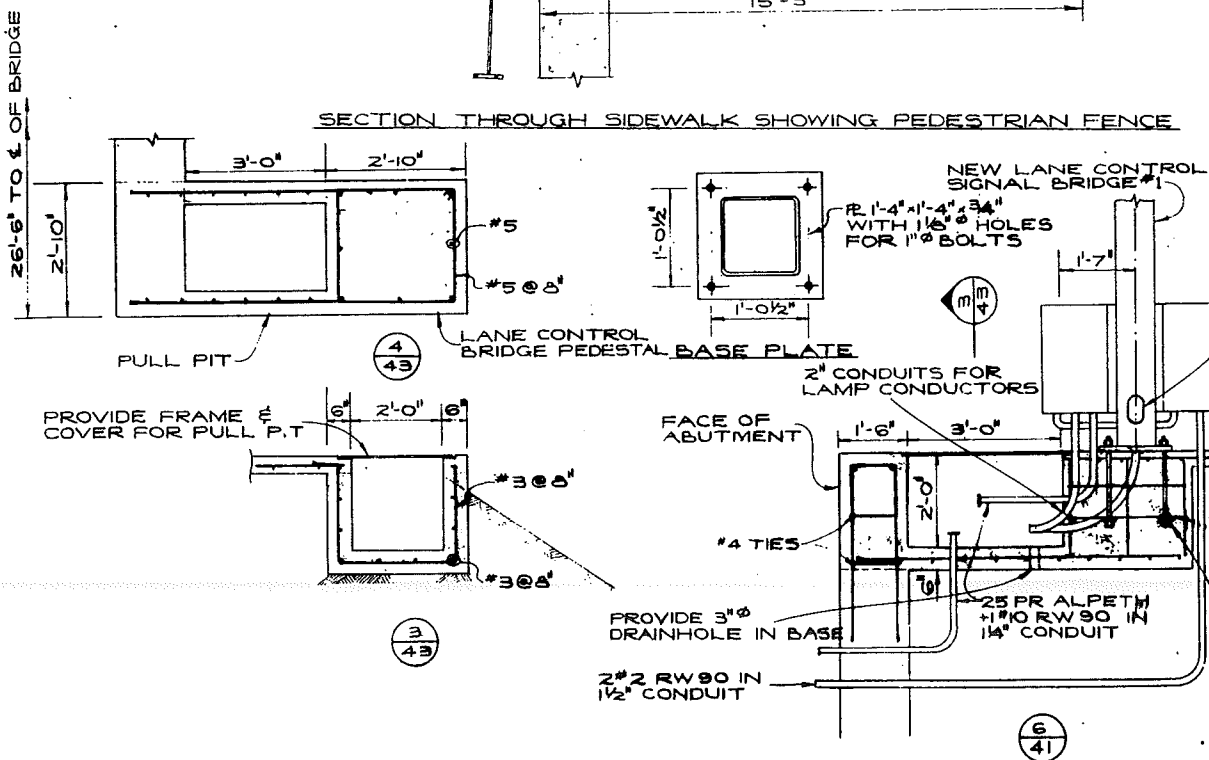


SECTION THROUGH ROADWAY  
Scale: 1/2"=1'-0"

PLAN SHOWING DRAINAGE PIPES  
Scale: 1"=60'



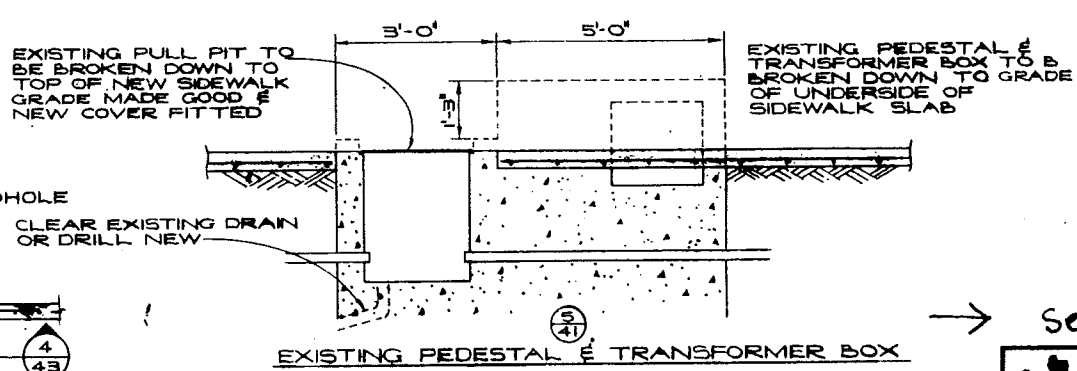
SECTION THROUGH SIDEWALK SHOWING PEDESTRIAN FENCE



4  
43

3  
43

6  
41



EXISTING PEDESTAL & TRANSFORMER BOX

NOTE:  
1. EXISTING FULL PIT WILL REMAIN IN USE THROUGHOUT. THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO PROTECT THE CABLES THEREIN, DURING RENOVATION

→ see Revision A



**BUCKLAND and TAYLOR Ltd.**  
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**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN**

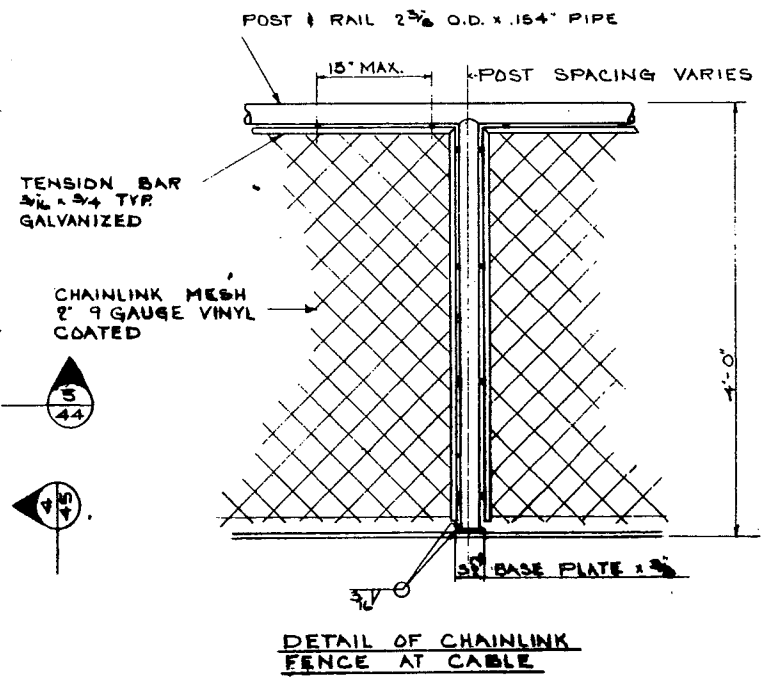
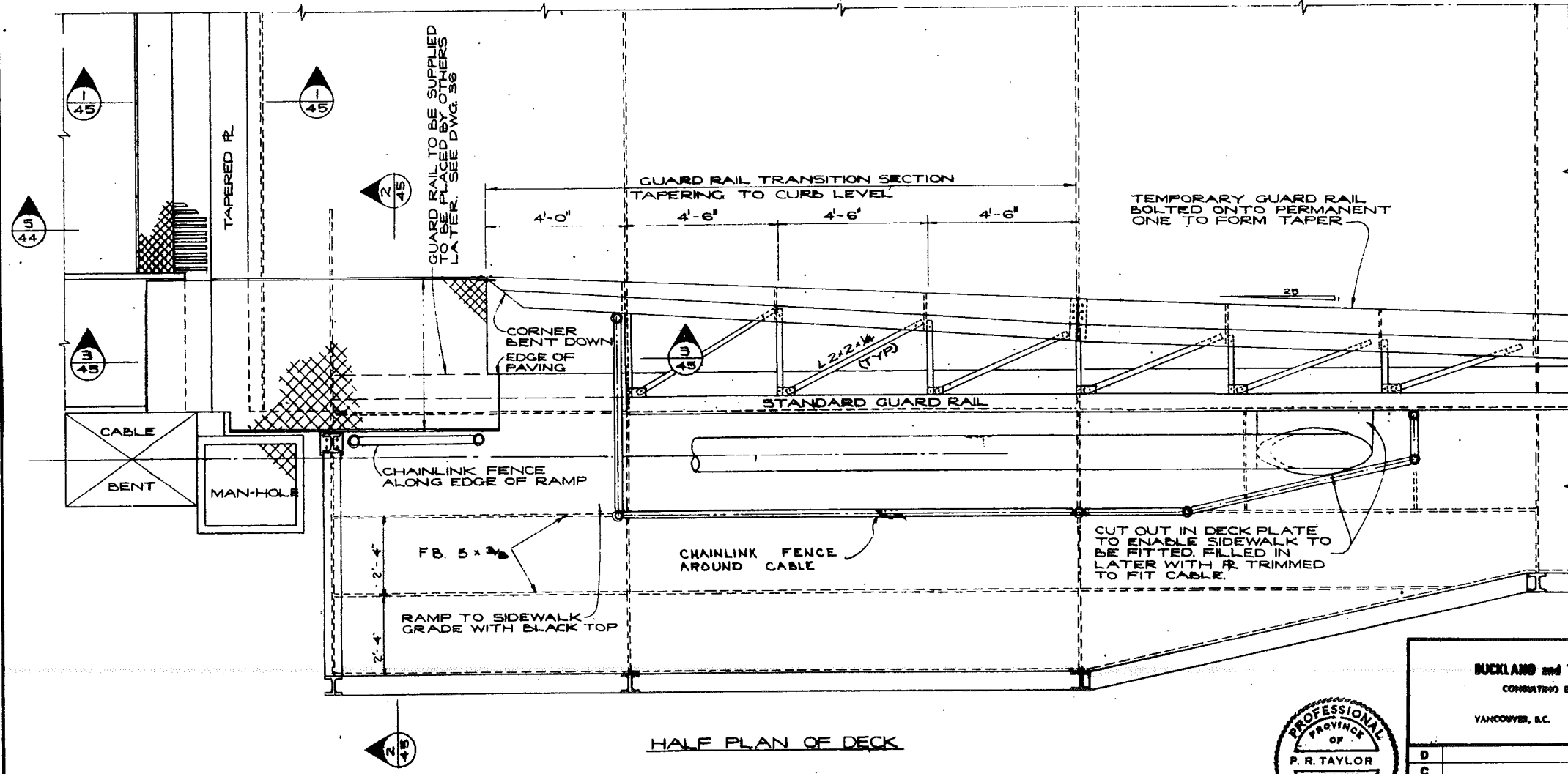
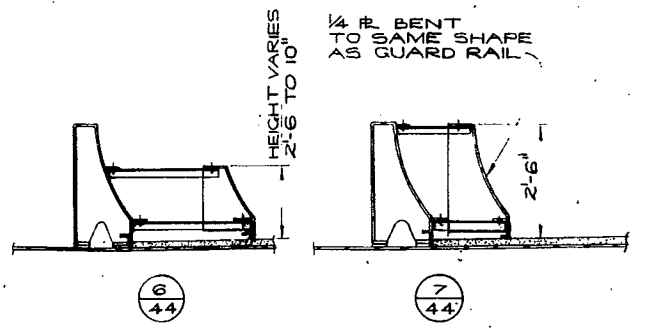
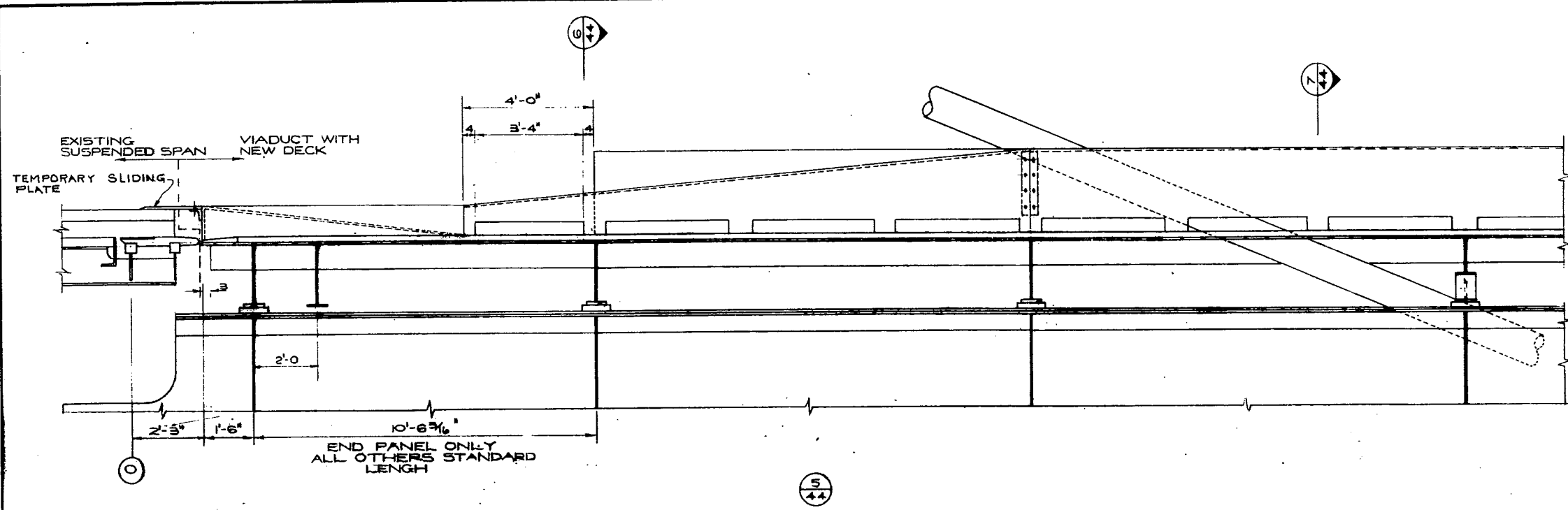
**LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
WIDENING OF NORTH ABUTMENT  
AND APPROACHES 3**

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

RECOMMENDED: *[Signature]*  
DRAWN: *[Signature]* CHECKED: *[Signature]*

GENERAL ARRANGEMENT APPROVED: *[Signature]*

DRAWING NO. 1401-43



**BUCKLAND and TAYLOR Ltd.**  
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REVISIONS



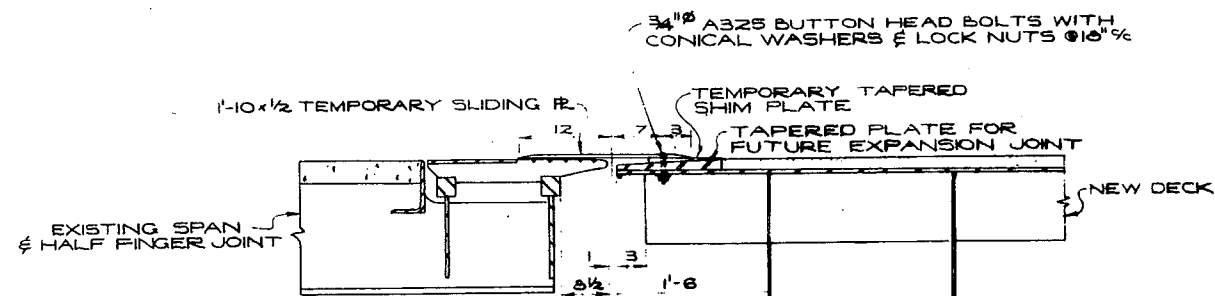
**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN**

**LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
ARRANGEMENTS AT NORTH  
CABLE BENT 1**

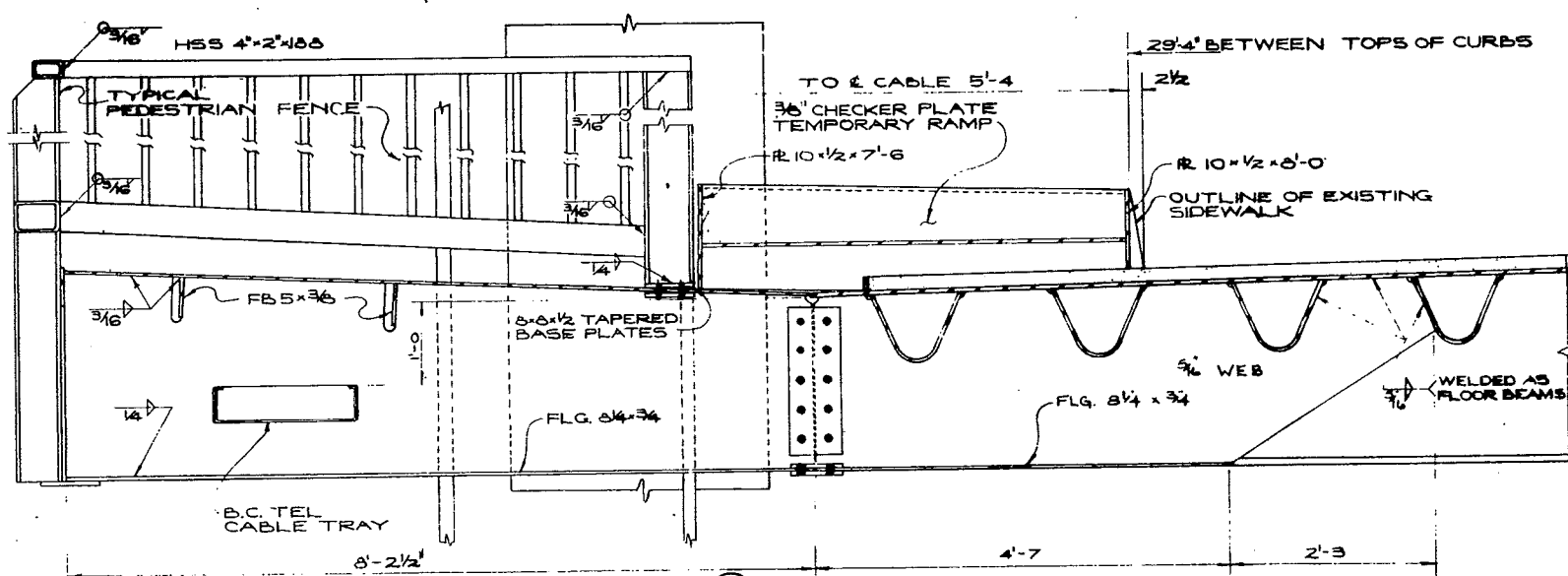
RECOMMENDED: *P.R. Taylor*  
DRAWN: *JGW*  
CHECKED: *JAW*  
SCALE: 1/2" = 1'-0"

GENERAL APPROVEMENTS APPROVED: *[Signature]*  
DRAWING NO. 1481-44

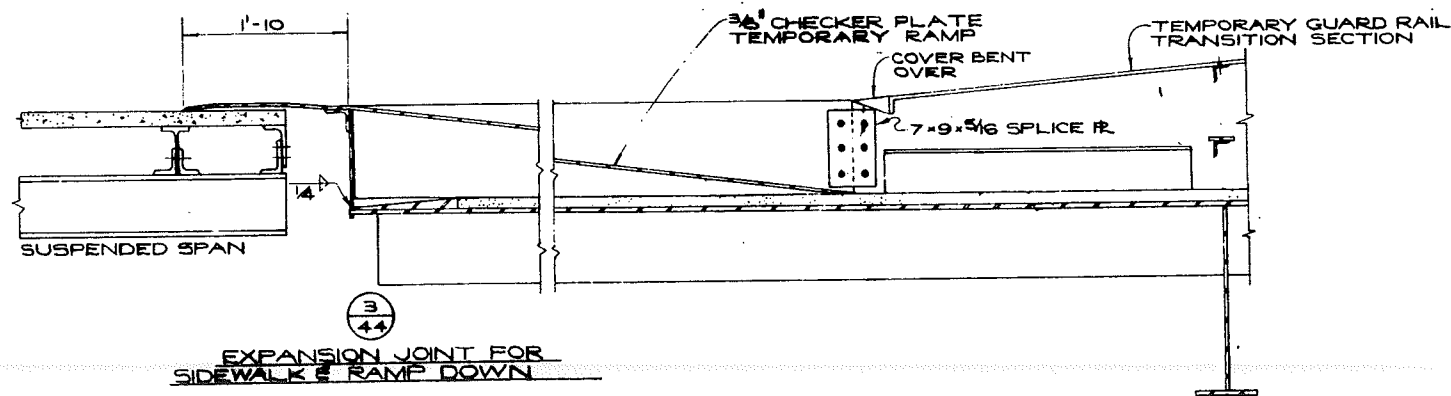
CANCEL PRINTS BEARING BUCKLAND METERS



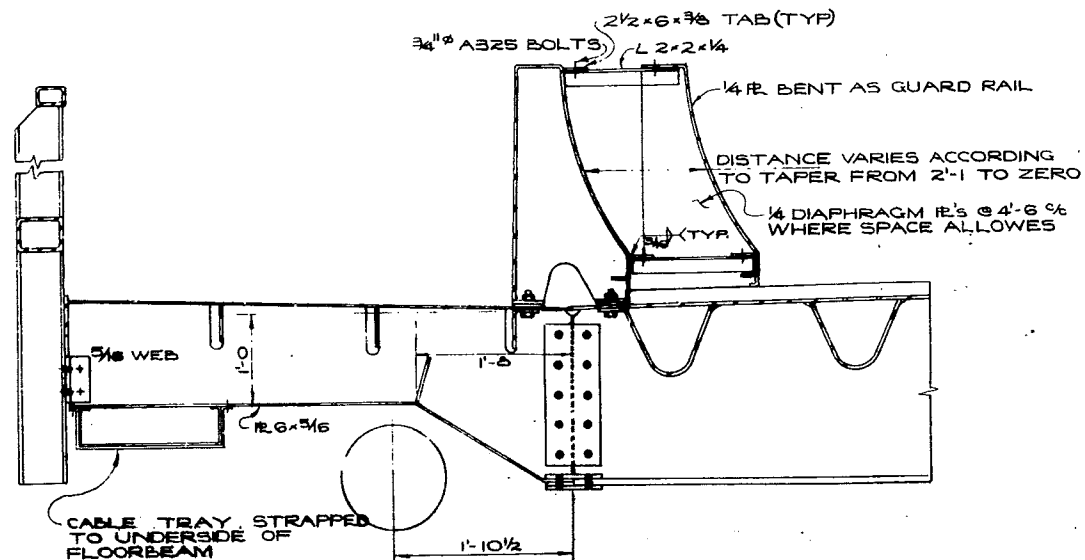
TEMPORARY EXPANSION JOINT BETWEEN EXISTING SUSPENDED SPAN & NEW DECK



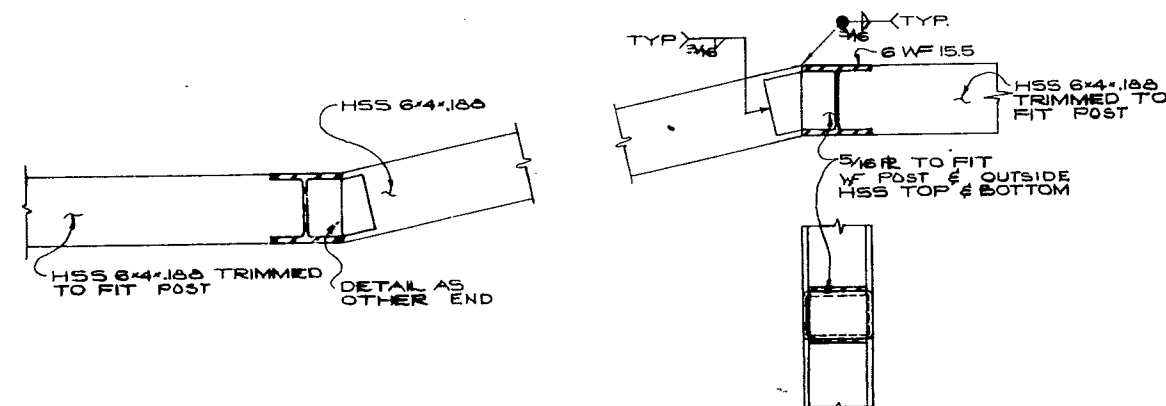
BEAM EXTENDED OUT FROM DECK TO SUPPORT SIDEWALK



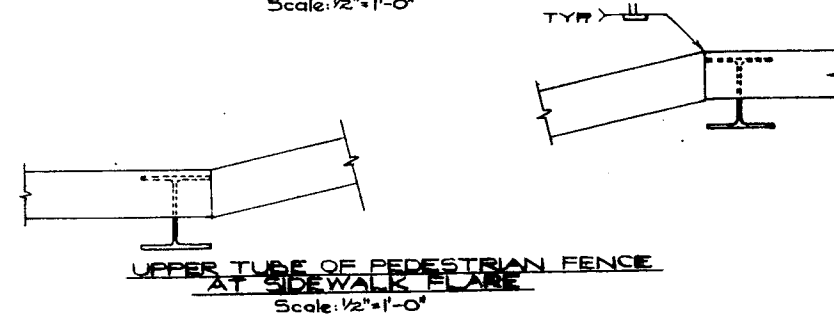
EXPANSION JOINT FOR SIDEWALK & RAMP DOWN



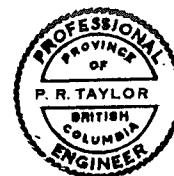
SPECIAL SIDEWALK SUPPORT BEAM TO AVOID CABLE



LOWER TUBE OF PEDESTRIAN FENCE AT SIDEWALK FLARE Scale: 1/2\"/>

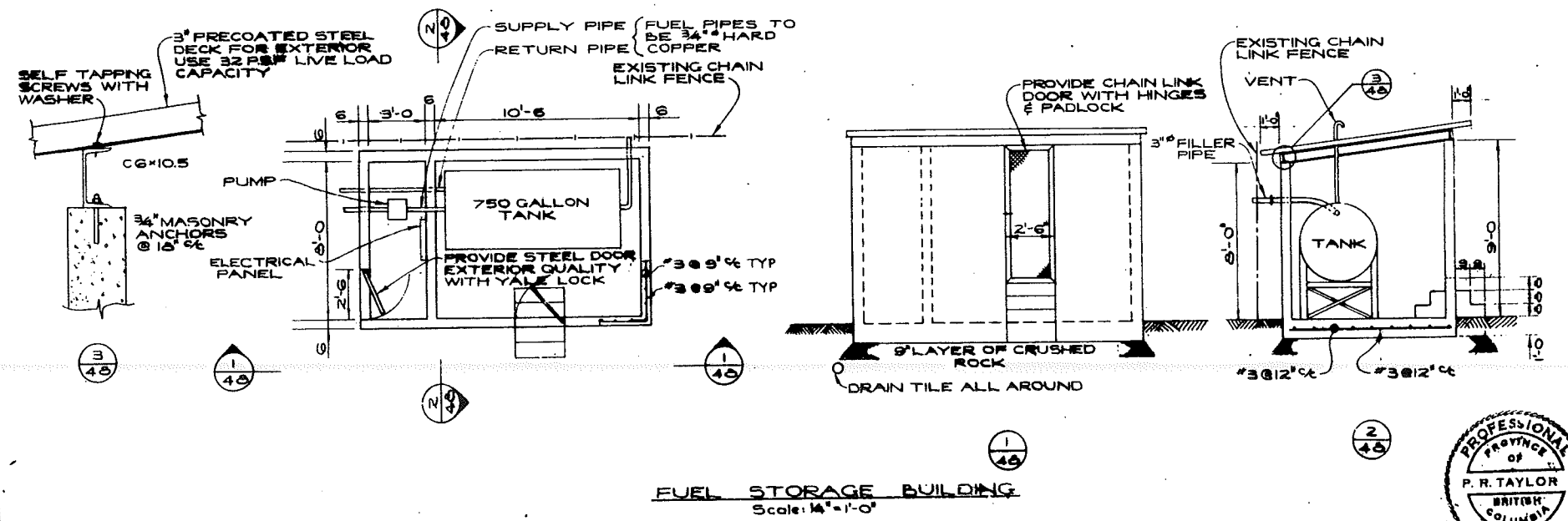
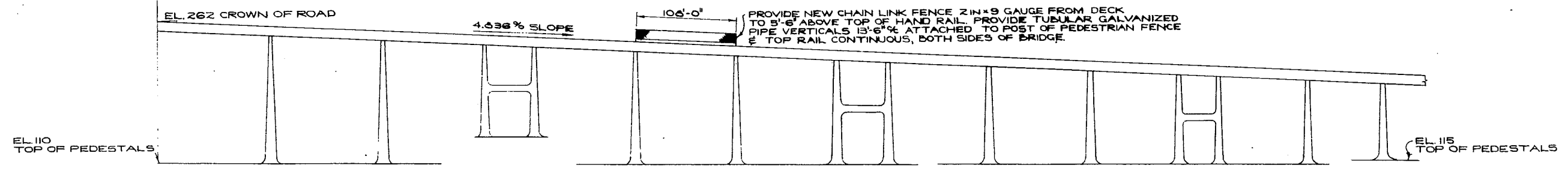
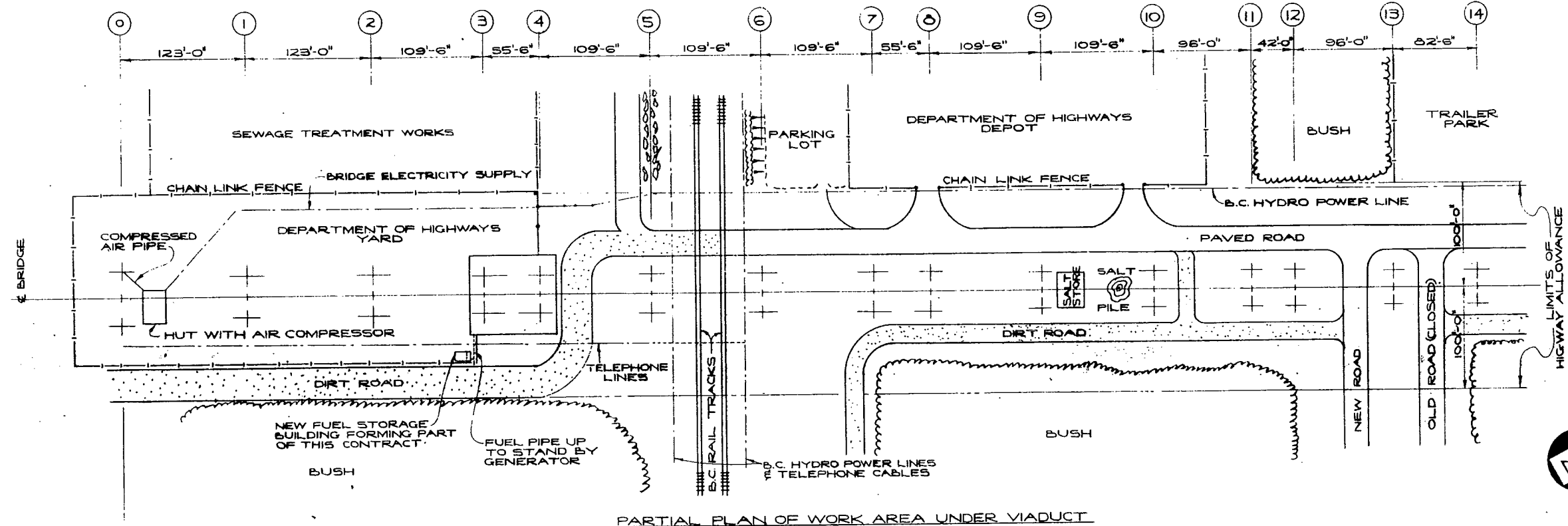


UPPER TUBE OF PEDESTRIAN FENCE AT SIDEWALK FLARE Scale: 1/2\"/>



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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS BRIDGE DESIGN	
LIONS' GATE BRIDGE MODIFICATIONS CONTRACT NO 1 - NORTH VIADUCT ARRANGEMENTS AT NORTH CABLE BENT 2	
RECOMMENDED P.R. Taylor	SCALE: 1"=1'-0" EXCEPT AS SHOWN
DRAWN PJH	CHECKED JW
DRAWING No. 1481-45	



- NOTE:
1. CONCRETE FOR THE FUEL STORAGE BUILDING SHALL BE TO CLASS Y AS DEFINED IN SECTION 211 OF THE GENERAL SPECIFICATIONS.
  2. ALL EXPOSED STEELWORK, EXCEPT PRECOATED STEEL DECK, SHALL RECEIVE 1 COAT OF SHOP PRIMER, AND 2 FIELD COATS ACCORDING TO SECTION 217 OF THE GENERAL SPECIFICATIONS.
  3. SUPPLY AND RETURN FUEL PIPES TO STAND BY GENERATOR SHALL BE PROTECTED BY GALVANIZED STEEL CASING OVER FULL LENGTH.

→ see Revisions A, B.

**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS**  
BRIDGE DESIGN

**LIONS' GATE BRIDGE MODIFICATIONS**  
CONTRACT NO 1 NORTH VIADUCT  
SITE PLAN 1

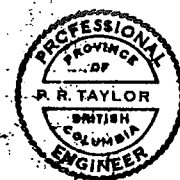
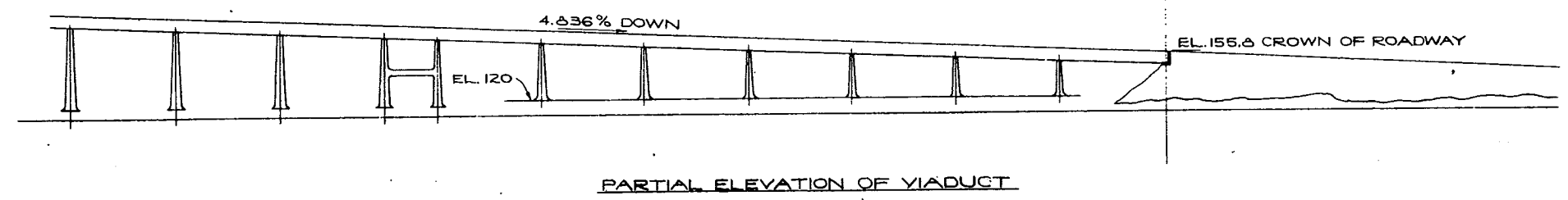
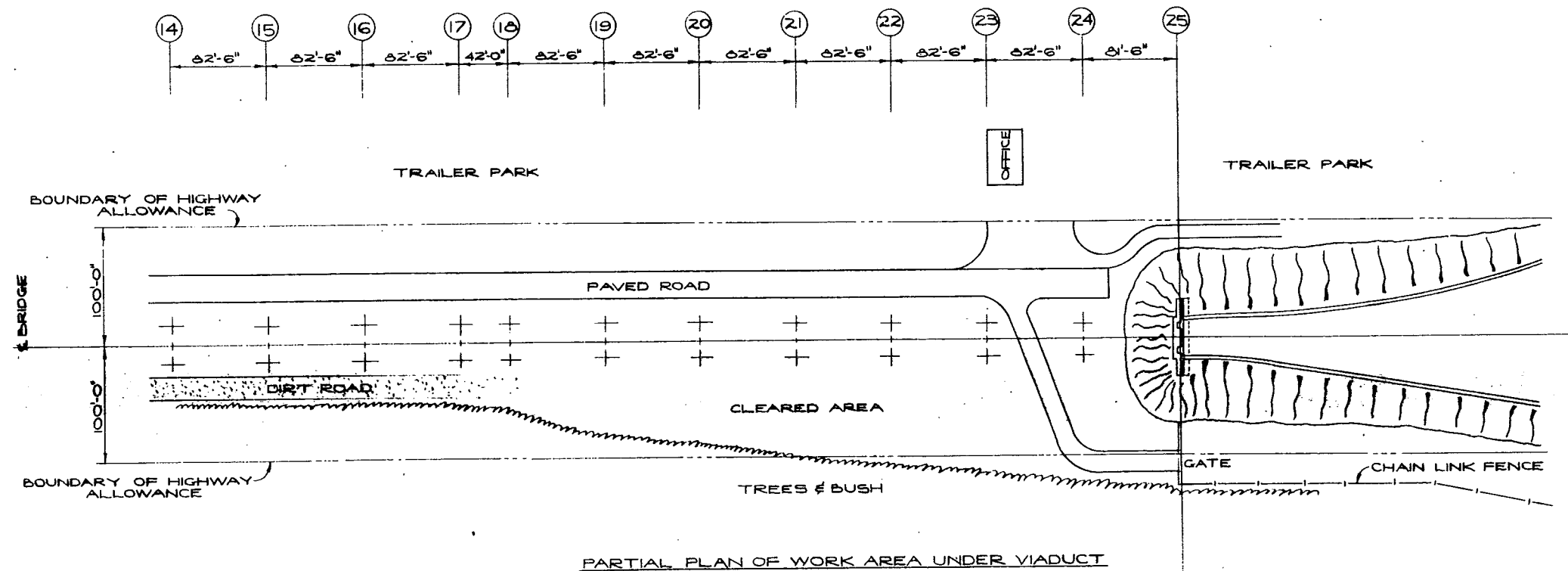
RECOMMENDED	SCALE: 1"=60'-0" AS SHOWN
DRAWN	CHECKED
APPROVED	DATE
GENERAL ARRANGEMENT APPROVED	
DRAWING NO. 1481-48	

BUCKLAND and TAYLOR Ltd.  
CONSULTING ENGINEERS  
VANCOUVER, B.C. 681-7777

PROFESSIONAL ENGINEER  
P. R. TAYLOR  
BRITISH COLUMBIA

REVISIONS	NO.	DESCRIPTION

CONC. PRINTS SHOWN EARLIER LATEST



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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

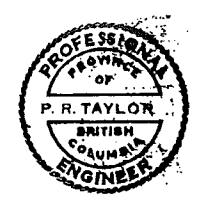
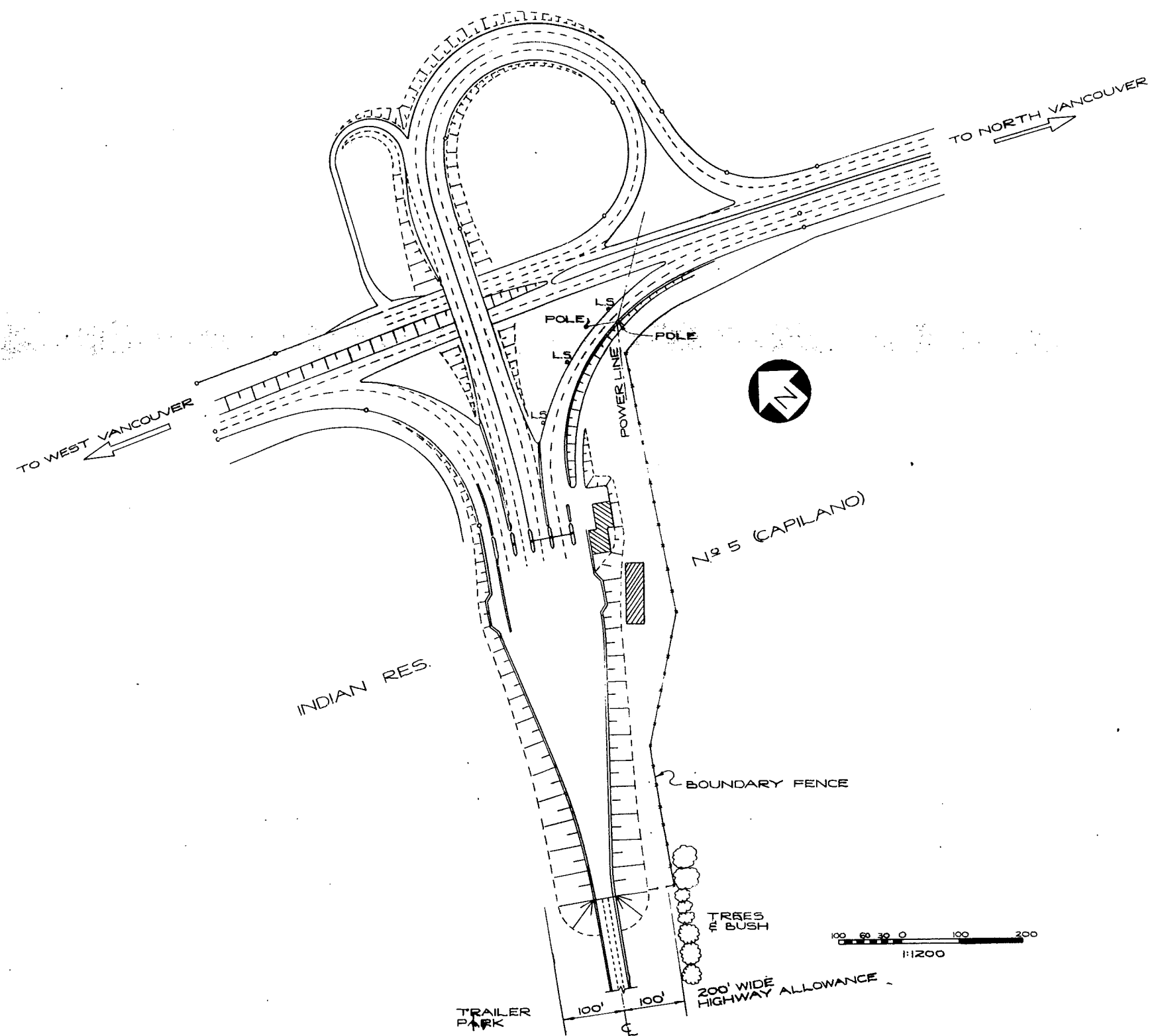
LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
SITE PLAN 2

SCALE: 1" = 60'-0"

RECOMMENDED: [Signature]  
DRAWN: [Signature]  
CHECKED: [Signature]

GENERAL APPROVAL: [Signature]

DRAWING NO. 1481-47



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VANCOUVER, B.C. 681-9791

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**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS**  
**BRIDGE DESIGN**

**LIONS' GATE BRIDGE MODIFICATIONS**  
**CONTRACT Nº 1 - NORTH VIADUCT**  
**SITE PLAN 3**

RECOMMENDED: *P.R. Taylor*  
SCALE: AS SHOWN  
DRAWN: *V.G.M.* CHECKED: *J.W.E.L.*  
GENERAL APPRONSER: *[Signature]* DRAWING NO. **1481-48**

# Construction Sequence

## 1. Preliminary Work (1974-5)

- 1.1 Install new 12000/600v. transformers, 600v service and distribution centre.
- 1.2 Install 480v. distribution centre and 600/480v. transformer.
- \* 1.3 Connect existing 600v. systems to new service.
- 1.4 Supply 2300v. bridge lighting by back feeding through existing 2300/600v. transformers.
- 1.5 Remove existing 2300v/4100v feeder, cutouts and pole.
- 1.6 Install 480v. lighting distribution system from North Abutment to lights at South Anchorage of Suspension Bridge.
- 1.7 Install new 480v. luminaires on existing poles in Suspension Bridge and at South Anchorage, arrange for photocell to control both 2300v and 480v. systems.
- 1.8 Build retaining wall and widen North Abutment.
- 1.9 Build new pedestals and pull box and erect new Traffic Signal Bridge 1
- 1.10 Make wiring revisions to existing Traffic Signal System, install J.B. # 3
- 1.11 Disconnect signal cable messenger wire from existing viaduct crossbeams, reconnect to bracing.
- 1.12 Install connection from Control Unit in Traffic Office to bridge 600v. supply.
- \* 1.13 Move controller and power unit of Signal Bridge 1 to new bridge, connect.
- \* 1.14 Disconnect 16 pair cables at Signal Bridges 2, 3 and 4, connect new 25 pair cables.
- \* 1.15 Connect Control Unit in Traffic Office to bridge 600v supply.
- 1.16 Build Fuel Storage Facility.
- 1.17 Blast clean and paint viaduct bents.
- 1.18 Replace corroded wind bracing.
- 1.19 Excavate drainage ditches.
- 1.20 Assemble, prime and prepave deck units.
- 1.21 Assist B.C. Telephone Co. forces to relocate existing telephone cable on the viaduct, remove steel braces at lampstandards.

## 2. Preparatory Work before Erection of Any Deck Unit

- 2.1 Commence erection at North Abutment.
- 2.2 Disconnect and make safe 2300v lighting circuit in this deck section.
- 2.3 Brace old deck section if necessary.
- 2.4 Remove lampstandard in deck section to be replaced
- \* 2.5 Make cut across the deck.
- 2.6 Remove some of the crossbeam attachment rivets.
- 2.7 Install any necessary lifting inserts in the existing deck.
- 2.8 Tack weld girder cover plates at floorbeam connections (if necessary)

Reference	
Dwg. No.	Specification
62	6.2.3.
62	6.2.3.
62	6.2.3.
62	6.2.3.
62	6.2.3.
60,61,64	6.3.2.
64	6.4.1-6
41,42,43	3.2.3
43	6.5.1 et seq
61	6.5.2.
61	6.5.2.
61	6.5.3.
61	6.5.4-6.5.6
61	6.5.8.
61	6.5.9.
46	6.6.5.
—	3.26
—	3.24
35	Gen. Specs. 3.1-3.8 & 5.2.1-5.2.5
32 et al	3.27
—	3.13
60,61	6.3.4.
51	3.9
21	6.2.2.
51	3.9
—	3.9
51	3.9
—	3.11

## 3. Work to be done during 6 hour night closure

- 3.1 At Traffic Signal Bridge Locations disconnect wiring and remove existing bridge, connect wiring to new bridge installed on previous lift.
- 3.2 Disconnect old pedestrian fence at last post to remain on old deck.
- 3.3 Remove remaining floorbeam rivets or bolts.
- 3.4 Remove old deck section.
- 3.5 Clean and prime bearing locations for new floorbeams.
- 3.6 Bolt on new bearing plates and skims.
- 3.7 Install new deck section and make adequate connections to the existing plate girders.
- 3.8 Partially splice trough stiffeners.
- 3.9 Install temporary traffic barriers and handrail.
- 3.10 Install traffic warning lights at reduction in roadway width.
- 3.11 Install temporary sidewalk units.
- 3.12 Place flap plate over gap between new & existing roadways.
- 3.13 Make transverse cuts in existing deck for future lifts.
- 3.14 Weld, blast clean, and prepave transverse splices in previously erected sections.
- 3.15 Install troughs underneath expansion joints.
- 3.16 Complete alignment and installation of expansion joints in previously erected pieces.

## 4. Day work during Erection of Deck

- 4.1 Complete the welding down of floorbeams.
- 4.2 Complete bolting of trough splices.
- 4.3 Erect sidewalks, cable trays, pedestrian fences, catch basins
- 4.4 Weld sidewalk longitudinal deck splice.
- 4.5 Install permanent traffic barrier.
- 4.6 Install drainpipes
- 4.7 Install and wire up new lampstandards on viaduct.
- 4.8 Commence field painting of new steel.
- 4.9 Commence blast cleaning and painting of existing girders where deck installation is complete.

## 5. Day work after Completion of Deck Erection

- 5.1 Blast clean, prime and pave sidewalks.
- 5.2 Complete blast cleaning, priming and painting of viaduct girders.
- 5.3 Complete field painting of new steelwork.
- 5.4 Complete 480 volt lighting installation.
- 5.5 Remove existing 2300/600v. transformers.
- 5.6 Install standby electrical generator and switchgear.
- 5.7 Remove temporary paving } Weekend closure.
- 5.8 Install permanent paving }
- 5.9 Clean up site.
- 5.10 Relocate existing telephone line to new position. (By B.C. Telephone forces)

Reference	
Dwg. No.	Specification
38,60, 61,63	6.5.1 et seq
—	3.9
—	3.9
51	3.9
—	3.13
31,32	3.13.
31, 51	3.14. 3.15
30	3.15
50	3.19, 3.20
50	3.19
50	3.20
51	—
51	3.9
30	3.6, 5.2.5
34	—
33	3.3
—	—
32	3.14-3.15
30	—
29, 30, 35, 37, 52, 53	3.21, 3.22
29	3.21
35	3.22
34, 35	—
38, 61, 63	6.3.3.
—	3.25
—	3.26
—	—
—	4.1-4.18
—	3.26
—	3.25
61, 62	6.3.3.
—	6.2.5.
62	6.6.1-6.6.12
32	} section 5
—	Gen. Specs.
29	3.27

\* Signifies work must be done during nocturnal closure of bridge.

NOTE: THIS LIST IS INTENDED TO ASSIST THE CONTRACTOR. IT IS NOT A DEFINITION OF THE SCOPE OF WORK.



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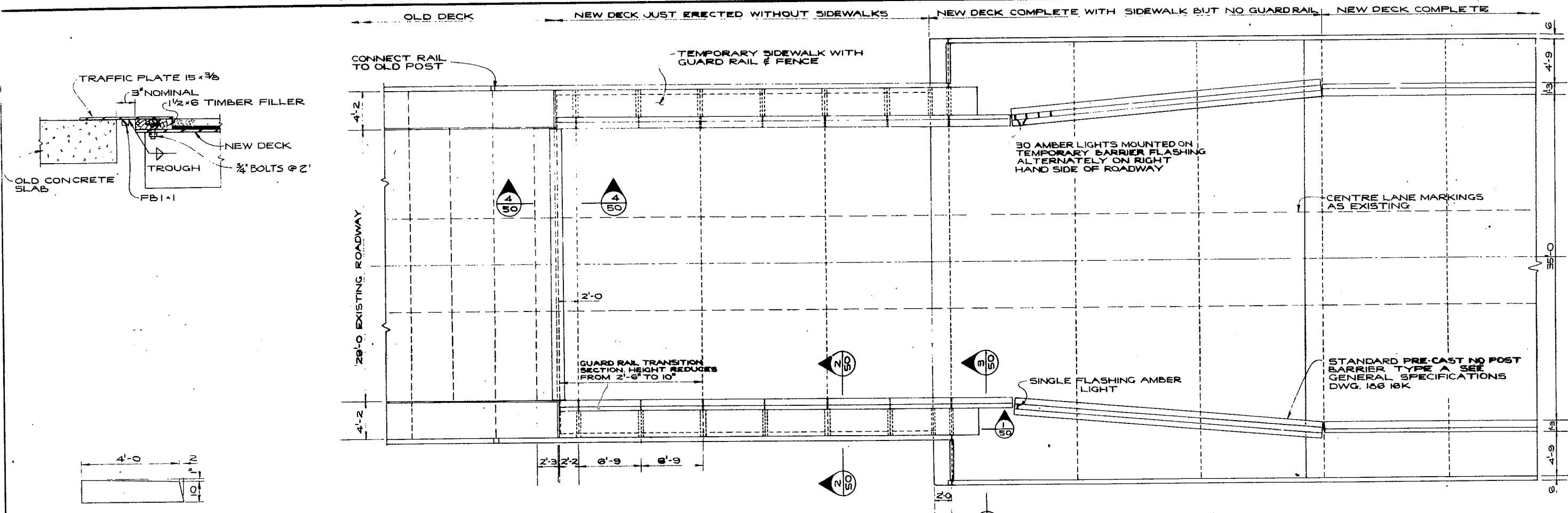
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REVISIONS

**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS**  
**BRIDGE DESIGN**

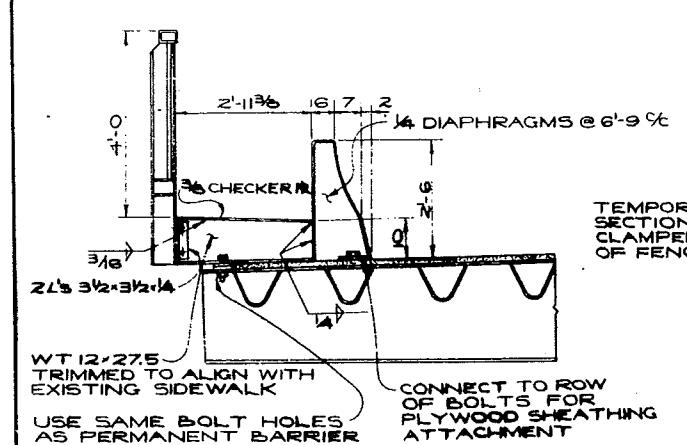
LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT N° 1- NORTH VIADUCT  
CONSTRUCTION SEQUENCE

RECOMMENDED: *P.R. Taylor*  
SCALE: \_\_\_\_\_  
DRAWN: *J.G.W.* CHECKED: *J.W.L.*  
GENERAL ARRANGEMENTS APPROVED: *[Signature]*  
DRAWING NO. 1461-49



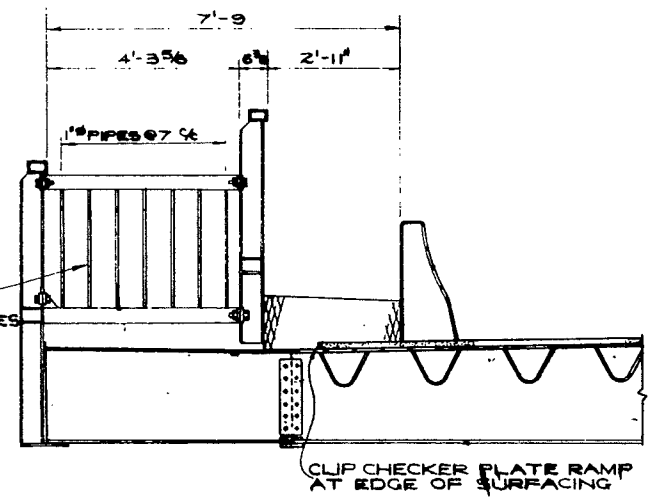
PLAN OF DECK  
Scale: 3/16" = 1'-0"

OUTLINE OF EXISTING SIDEWALK

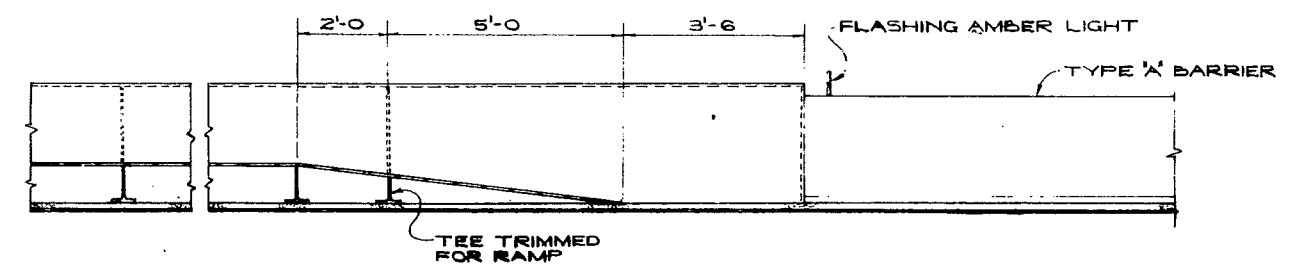


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50

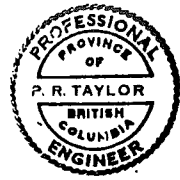
TEMPORARY END SECTION OF FENCE CLAMPED TO FLANGES OF FENCE POSTS



3  
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1  
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Scale: 1/2" = 1'-0"



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BRIDGE DESIGN**

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT No 1 - NORTH VIADUCT  
PROVISIONS FOR TRAFFIC  
DURING CONSTRUCTION

RECOMMENDED: P. R. Taylor  
GENERAL APPROVED: [Signature]

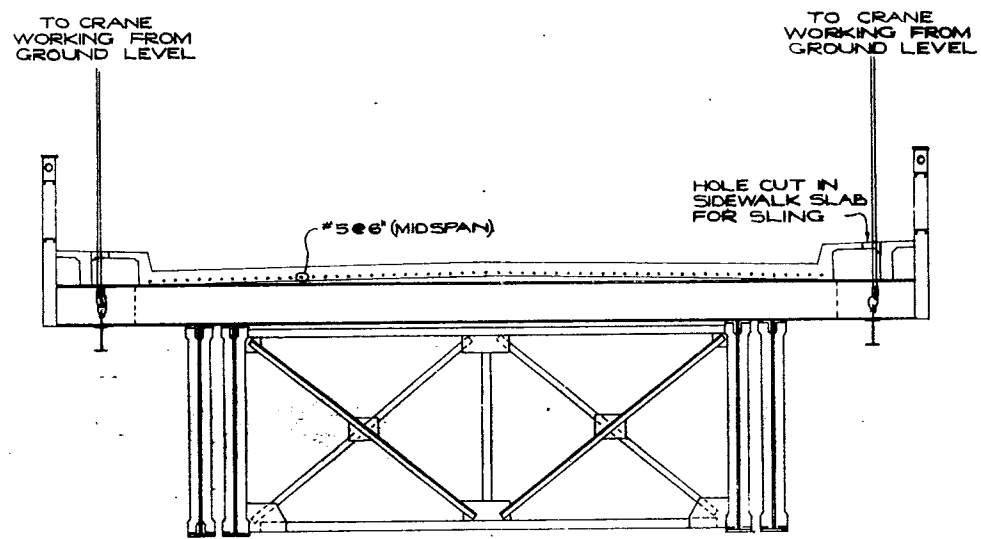
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DRAWN: RJA/JGM CHECKED: WEL

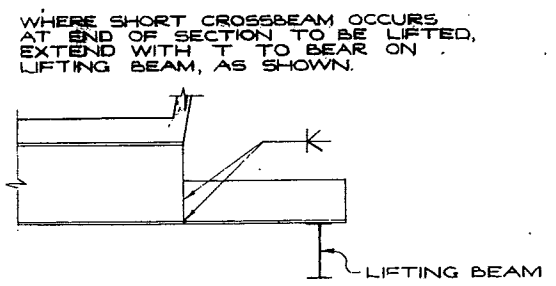
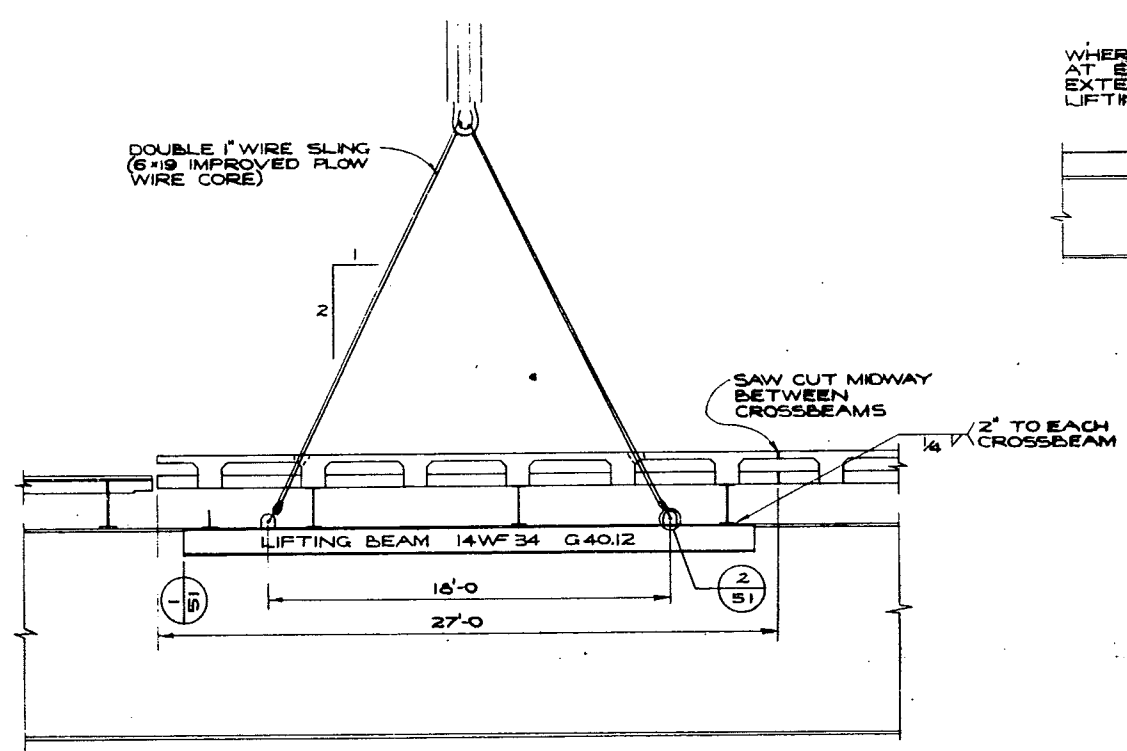
DRAWING No. 146-50

CANCEL PRINTS BEARING EARLIER LETTER

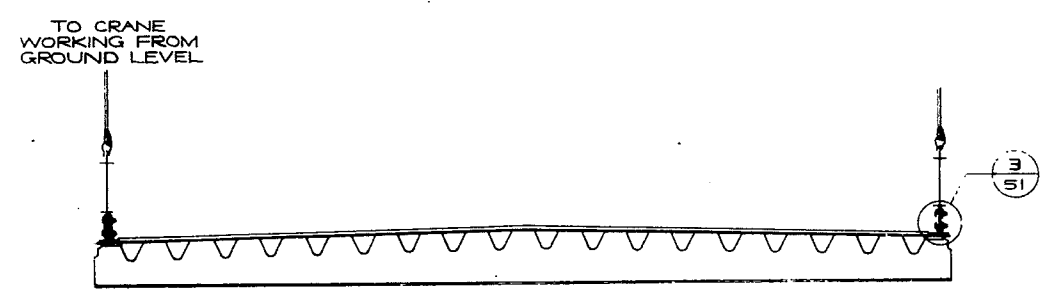
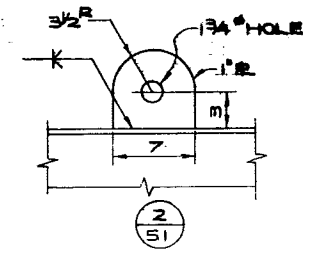




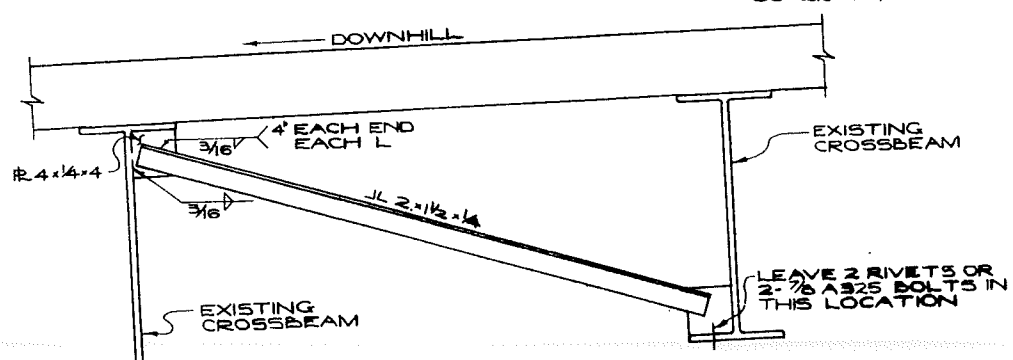
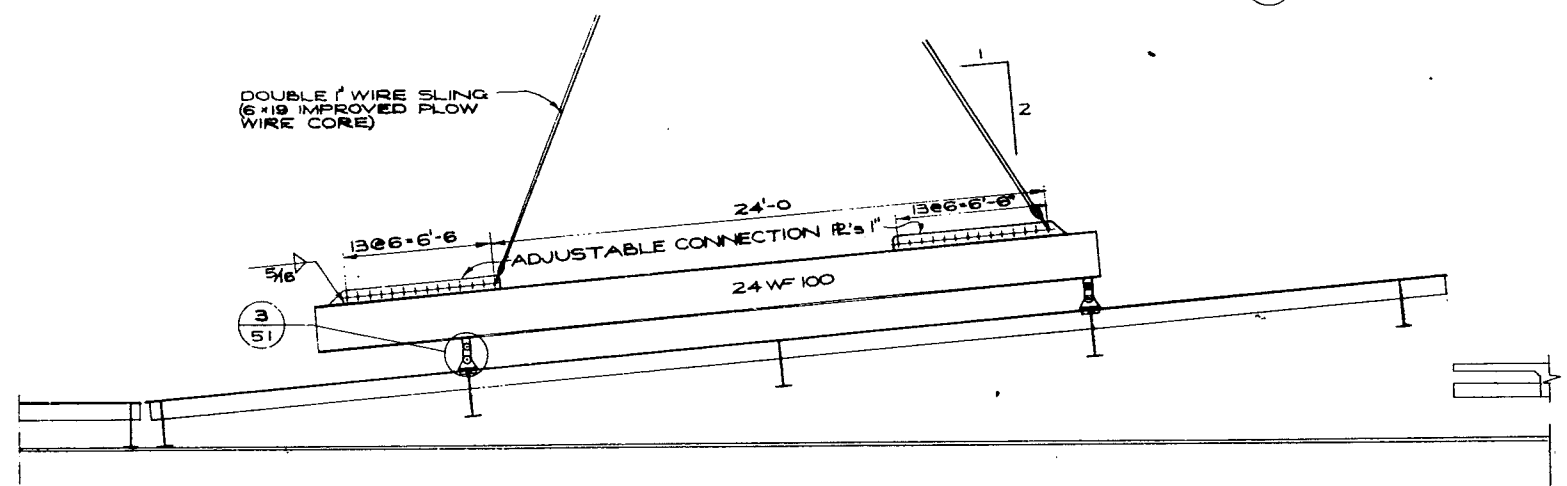
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27' SECTION SHOWN BEING LIFTED; WT ~ 54 TONS  
SCALE: 1/2" = 1'-0"



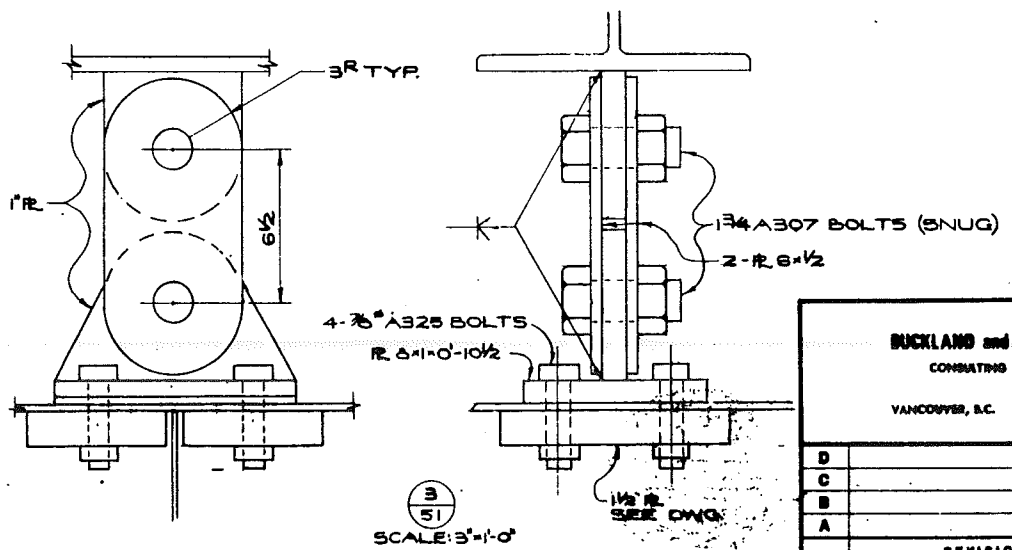
SCALE: 1/2" = 1'-0"



POSSIBLE METHOD OF ERECTION OF NEW DECK  
56'-9" SECTION SHOWN BEING LIFTED; WT ~ 64 TONS  
SCALE: 1/2" = 1'-0"



BRACING OF OLD DECK  
SCALE: 1/2" = 1'-0"



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



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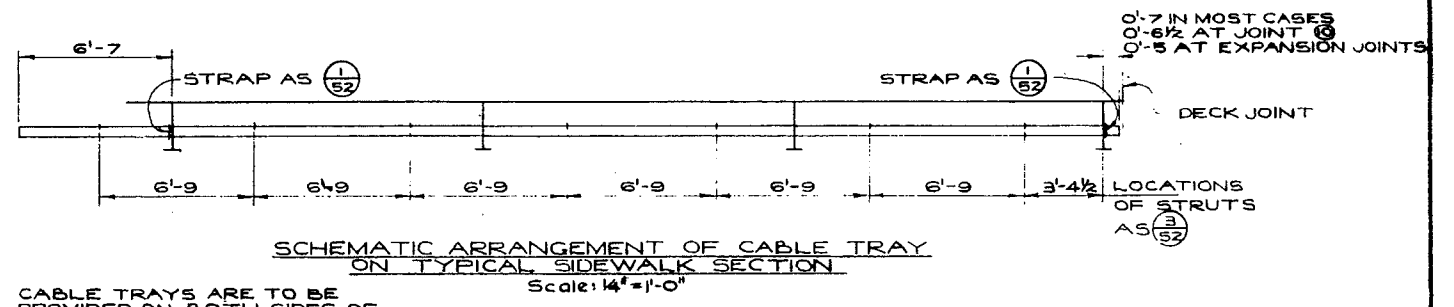
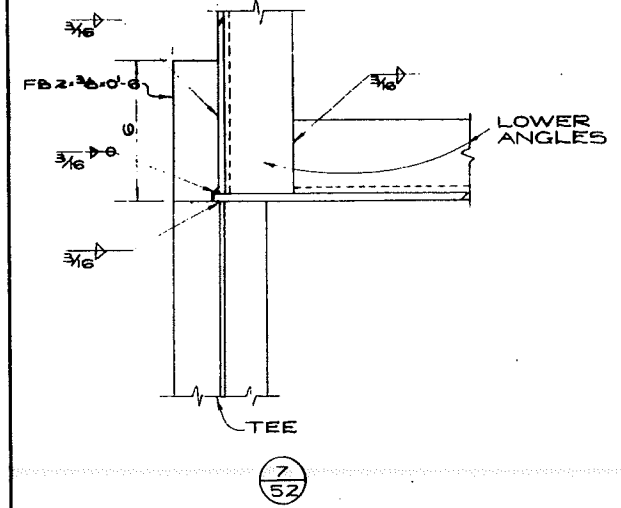
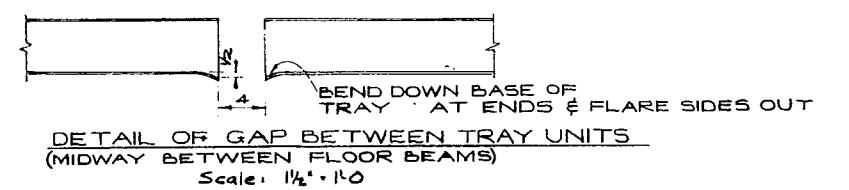
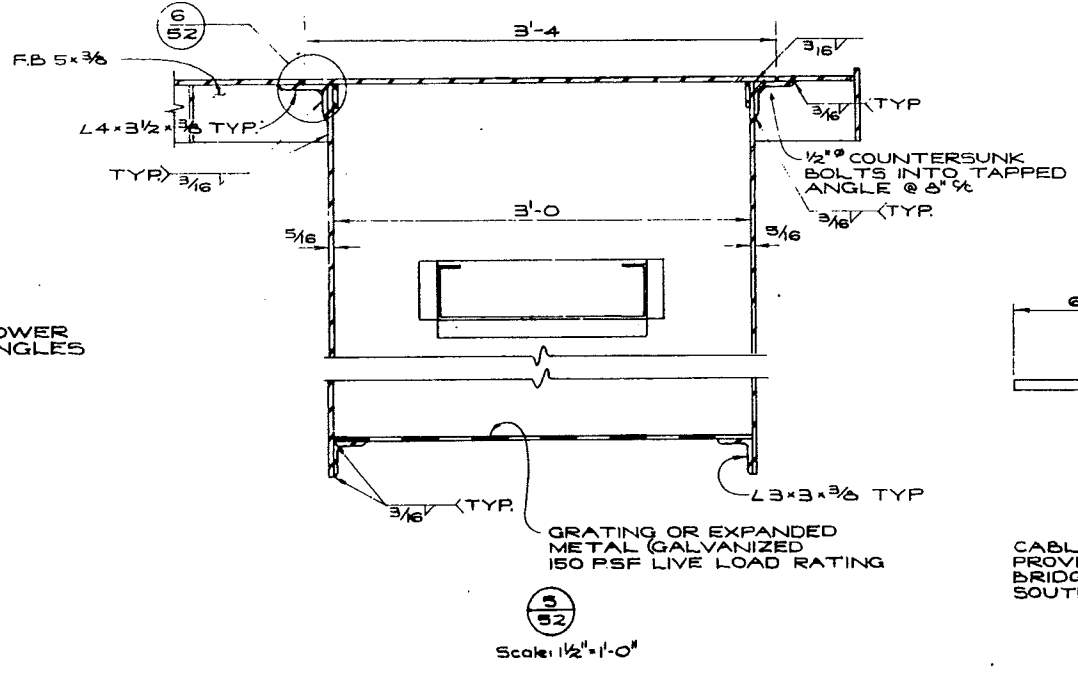
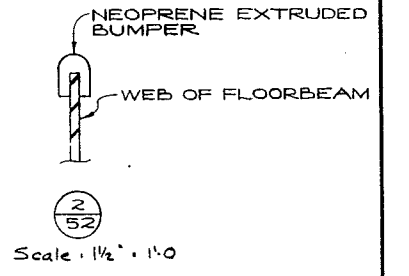
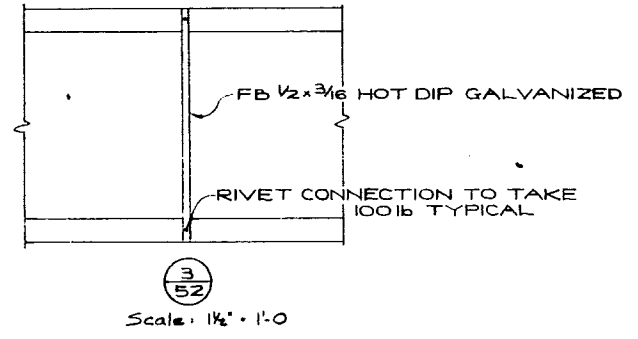
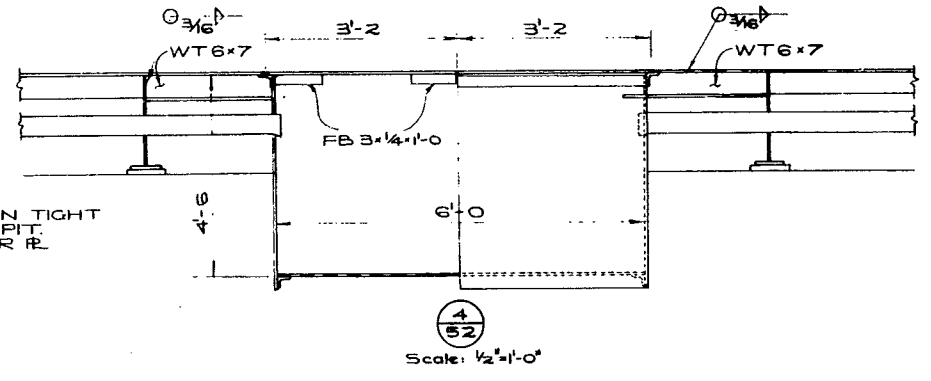
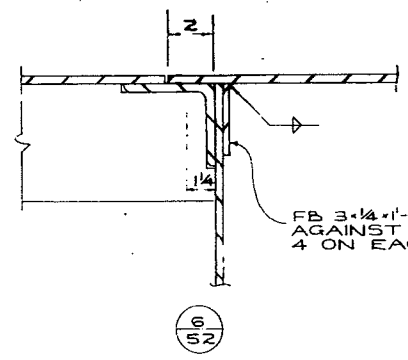
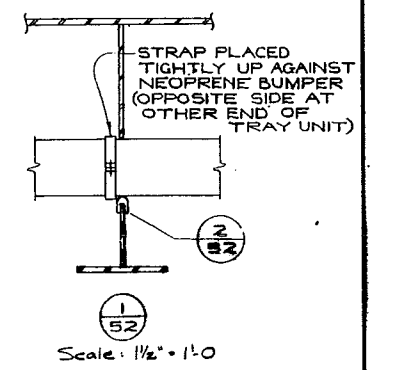
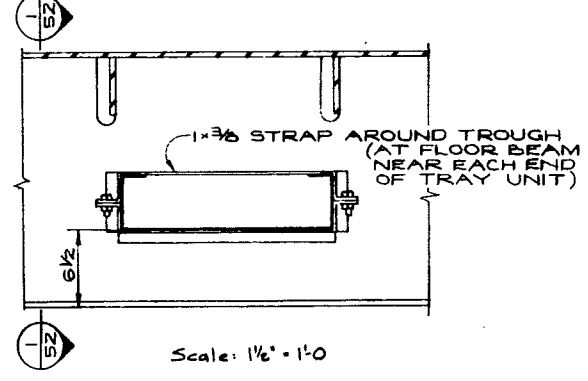
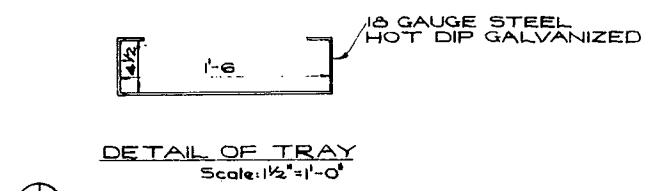
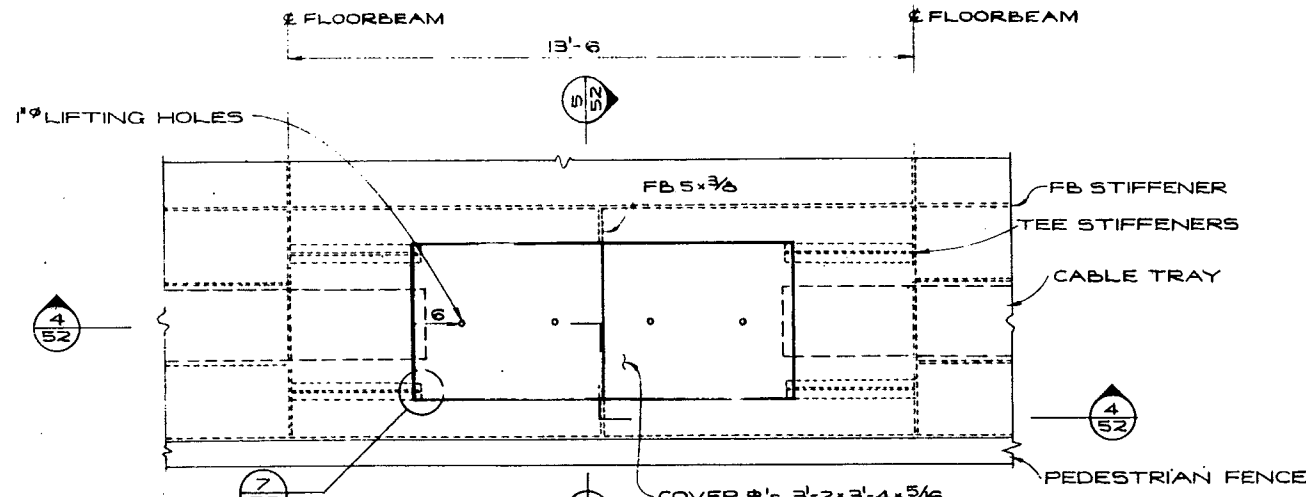
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BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS  
BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT NO 1 - NORTH VIADUCT  
CONSTRUCTION METHODS

RECOMMENDED BY: P. R. TAYLOR  
DRAWN BY: J. G. W.  
CHECKED BY: J. G. W.  
APPROVED BY: J. G. W.  
SCALE: 1/2" = 1'-0"

14-24-51



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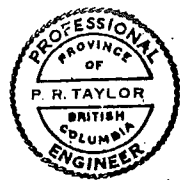
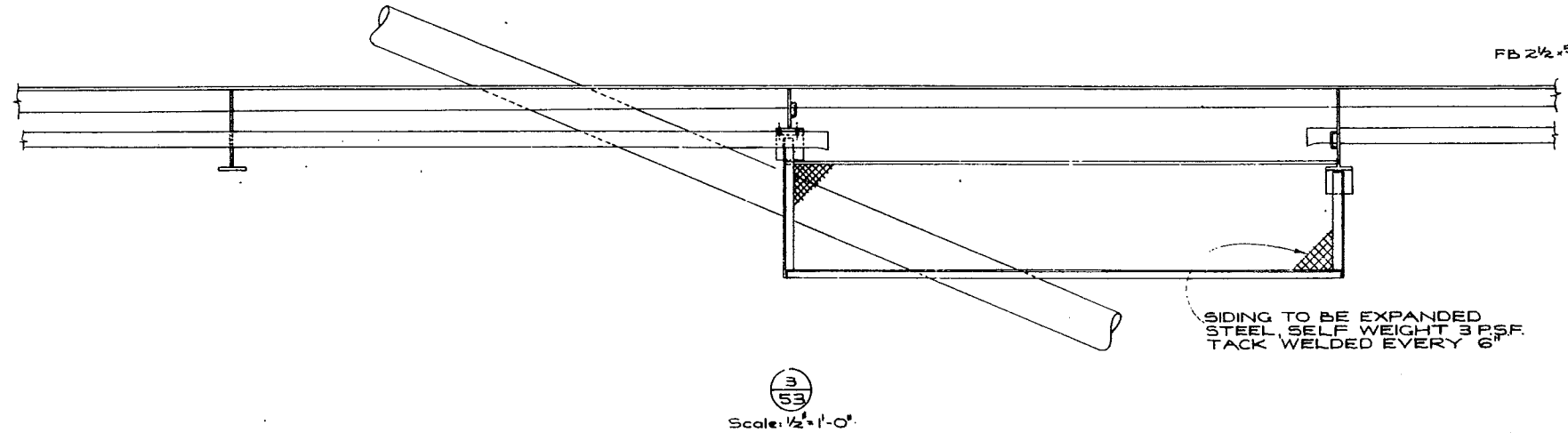
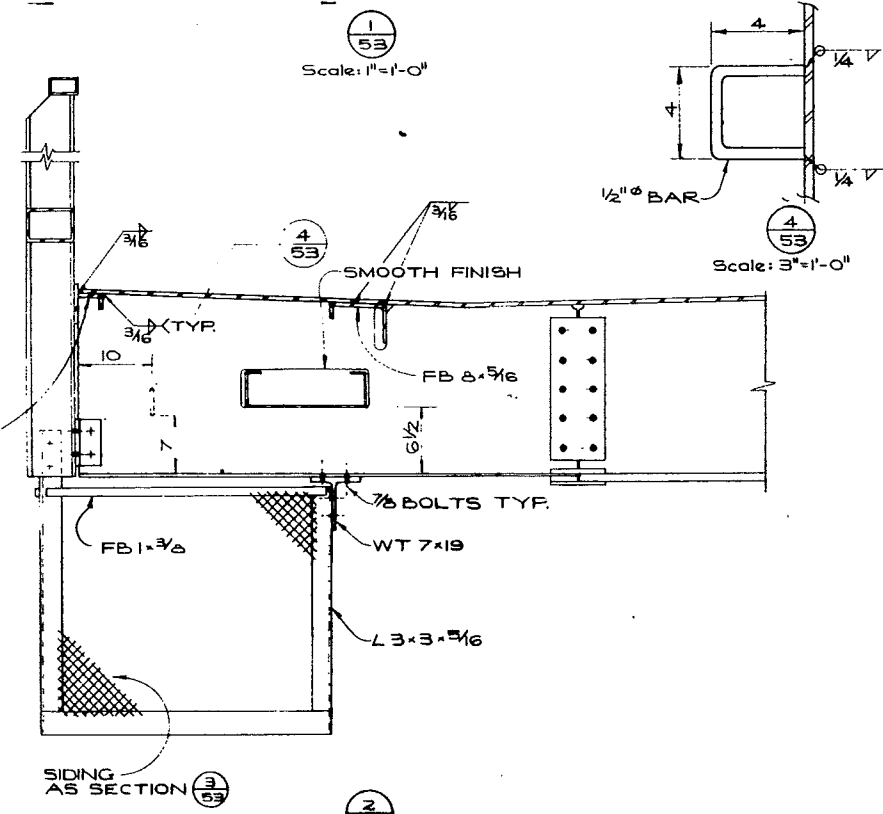
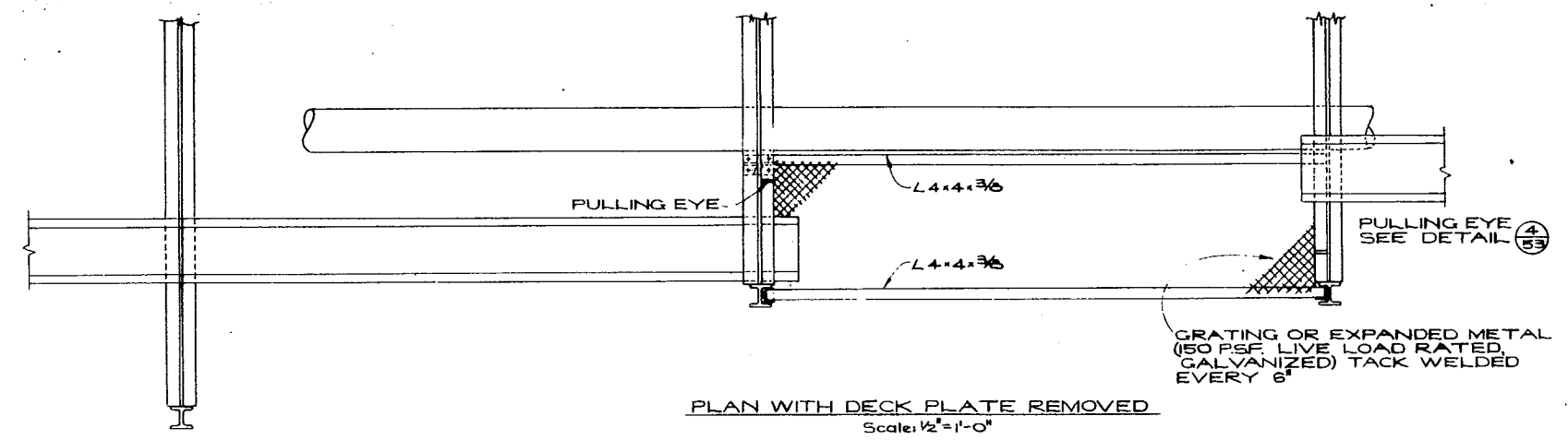
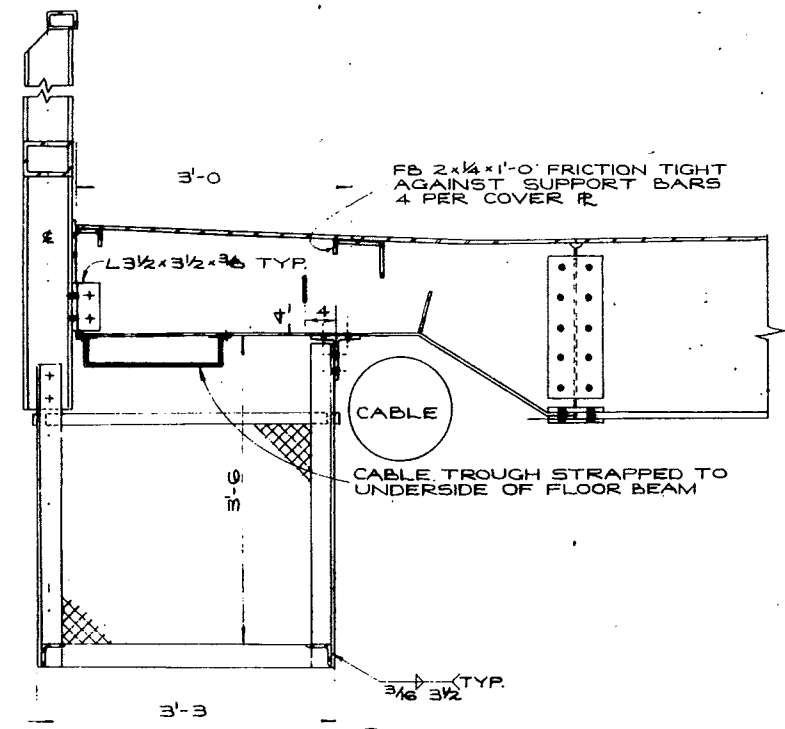
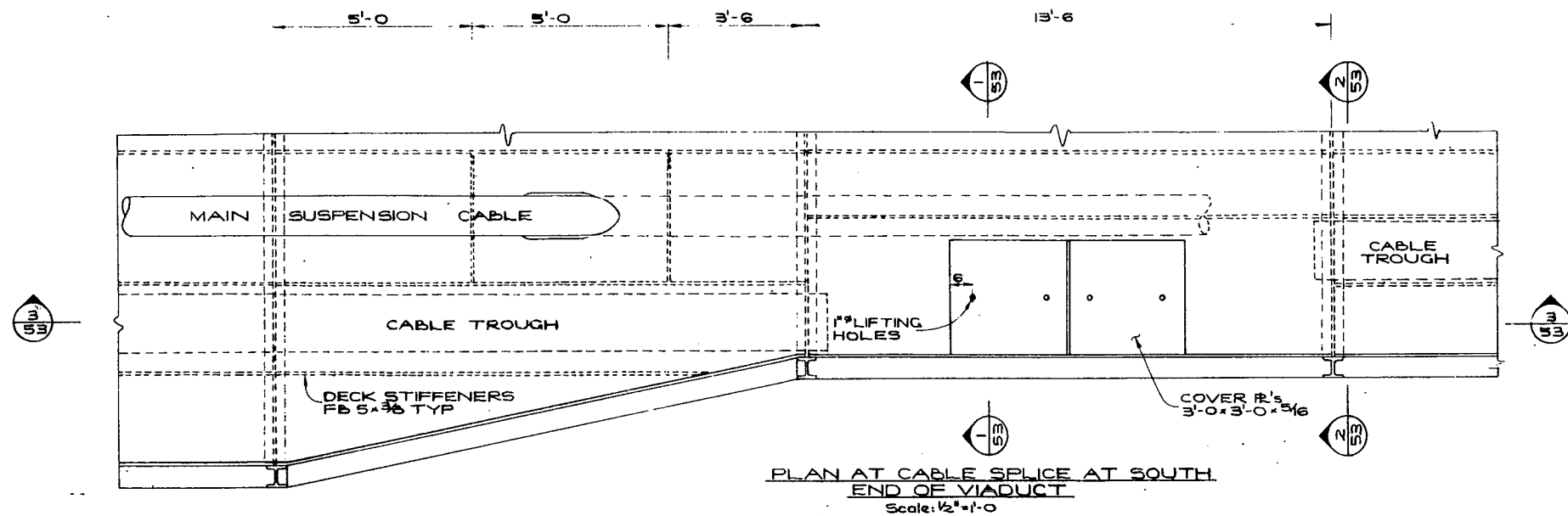
LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT N<sup>o</sup> 1 - NORTH VIADUCT  
TELEPHONE CABLE TRAY  
DETAILS 1

RECOMMENDED: [Signature]

SCALE: AS SHOWN

DRAWN	R/JH	CHECKED	M/EL
GENERAL ARRANGEMENT APPROVED			DRAWING NO.
REVISIONS			1461-52

PLEASE CHECK AGAINST EARLIER LETTER



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BRIDGE DESIGN

LIONS' GATE BRIDGE MODIFICATIONS  
CONTRACT No 1 - NORTH VIADUCT  
TELEPHONE CABLE TRAY  
DETAILS 2

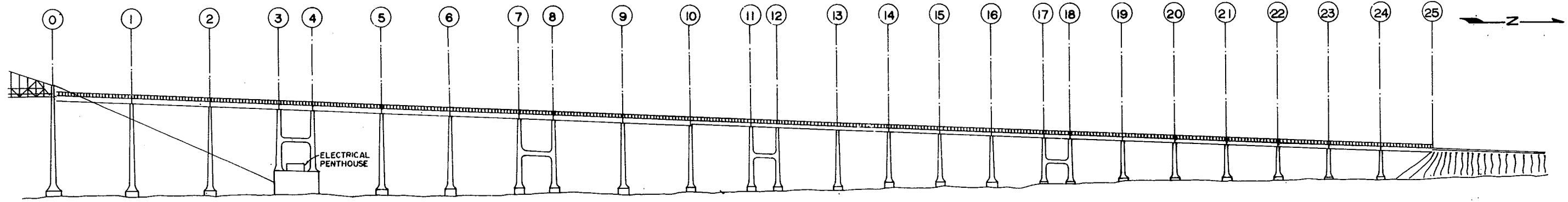
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RECOMMENDED: [Signature]

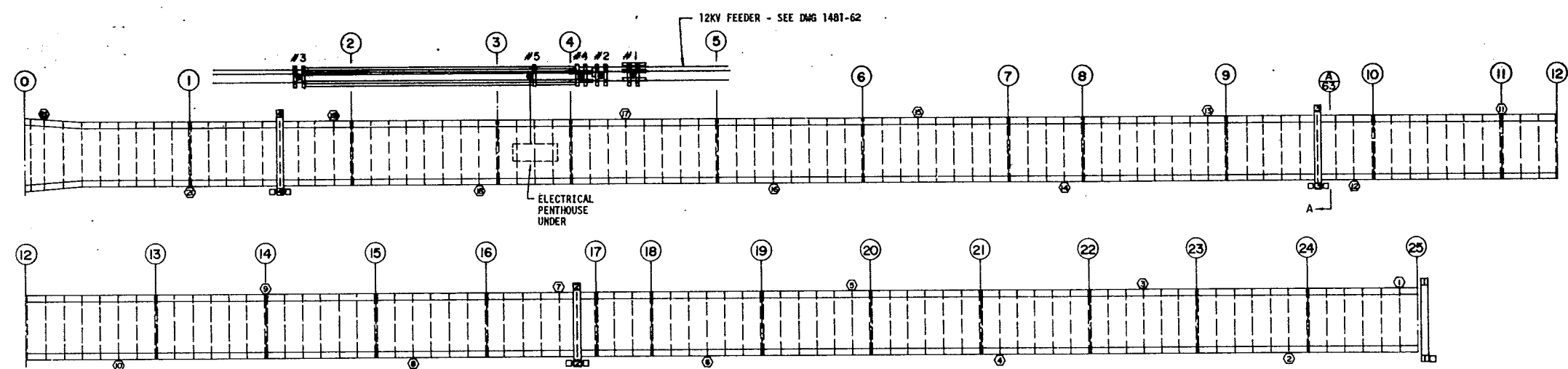
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CHECKED: W/L  
GENERAL APPROVED: [Signature]

DRAWING NO. 1461-53

CONSIDER PRINTS DRAWING BOARD LETTERS



ELEVATION - BENT IDENTIFICATION

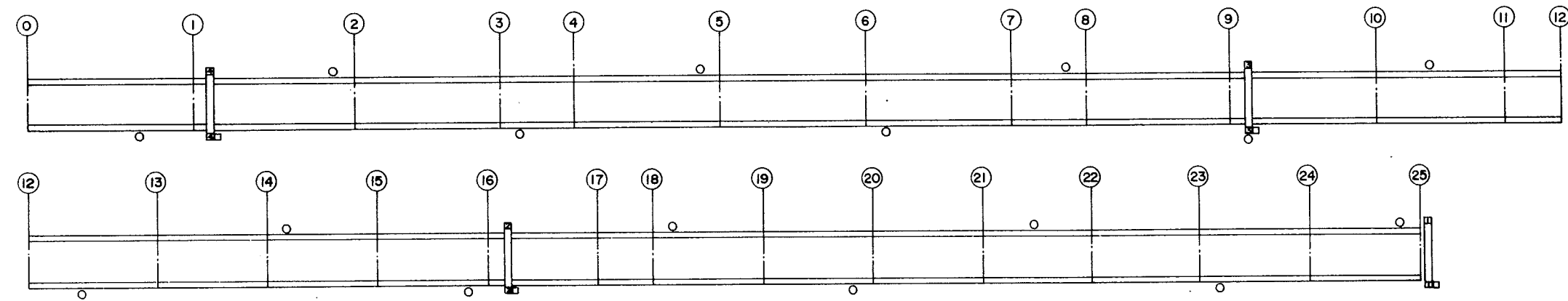


PLAN - FINAL LOCATION OF STREET LIGHTS AND LANE CONTROL SIGNAL BRIDGES

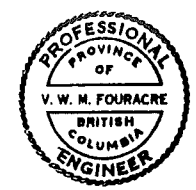
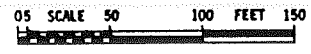


LEGEND

- ① NEW STREET LIGHTING LUMINAIRES
- EXISTING LUMINAIRES
- ▭ LANE CONTROL BRIDGES



PLAN - EXISTING LOCATION OF STREET LIGHTS AND LANE CONTROL SIGNAL BRIDGES



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VANCOUVER, B.C. 681-9991

**W. T. HAGGERT and COMPANY LTD.**  
ELECTRICAL CONSULTING ENGINEERS  
TELEPHONE (604) 738-5531  
1445 WEST 7TH AVE. VANCOUVER 9, B.C.

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REVISIONS

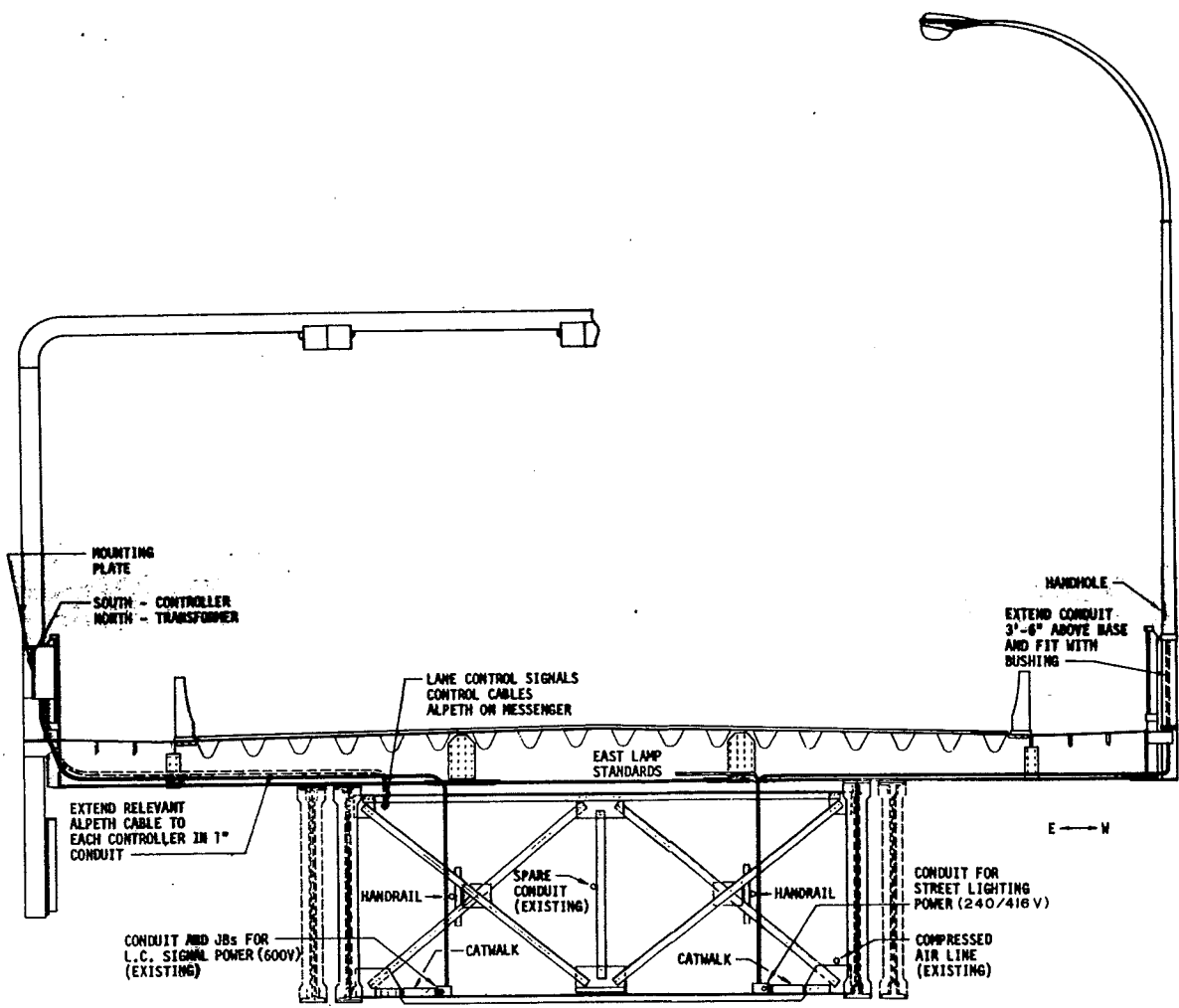
**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS**  
BRIDGE DESIGN

**LIONS GATE BRIDGE MODIFICATION**  
CONTRACT NO. 1 - NORTH VIADUCT  
LOCATIONS OF STREET LIGHTS  
AND LANE CONTROL SIGNAL BRIDGES

SCALE: AS SHOWN

DRAWN	MJK	CHECKED	JWJ
GENERAL ARRANGEMENT APPROVED			DRAWING No.
			1481-60

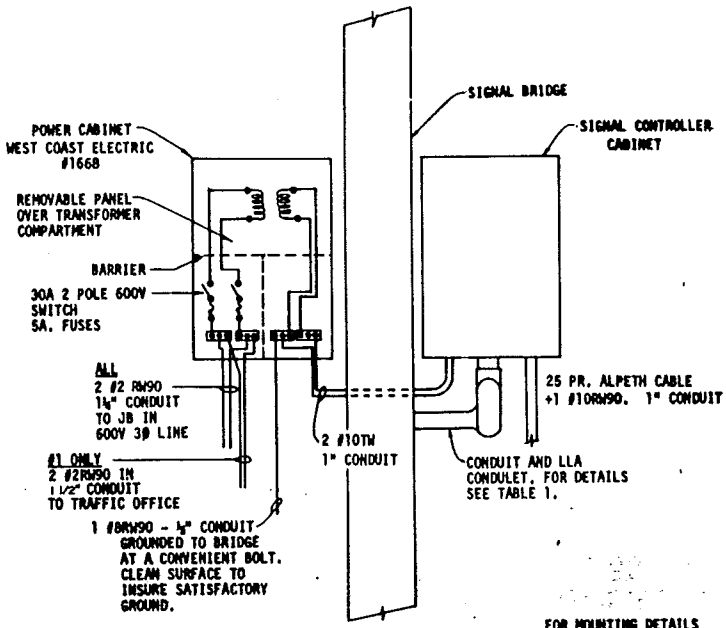
1481-60



SECTION SHOWING LOCATION OF CONDUITS AND CABLES

0 SCALE 4 8 FEET 12

SECTION (A) 60



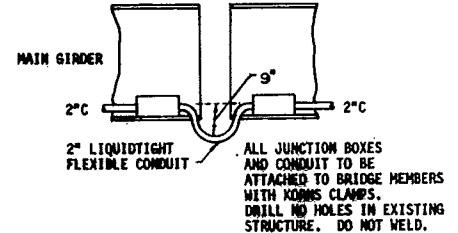
DETAIL SHOWING ARRANGEMENT SIGNAL BRIDGE CONTROLS

N. T. S.

TABLE 1

S. BR. NO.	NUMBER OF CONDUCTORS TO SIGNAL	NUMBER OF CONDUCTORS TO SIGNS	TOTAL NO. OF CONDUCTORS	CONDUIT SIZE BETWEEN CONTROL CABINET AND POLE
1	17	9	26	2" (TO PULL PIT)
2	17	NIL	17	1 1/2"
3	17	NIL	17	1 1/2"
4	17	NIL	17	1 1/2"

ALL CONDUCTORS #14 RM90 COLOURS EXACTLY AS PRESENTLY INSTALLED



DETAIL OF DOUBLE JUNCTION BOX IN 480V LINE AT EXPANSION JOINTS IN VIADUCT

N. T. S.

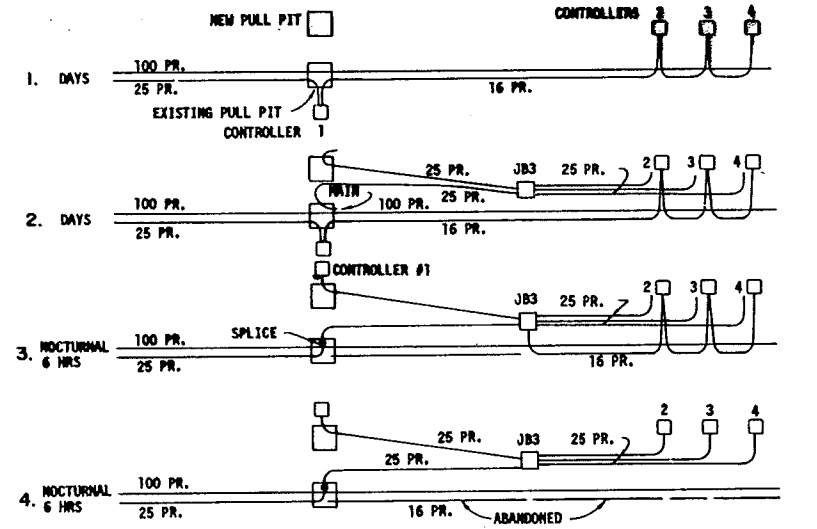
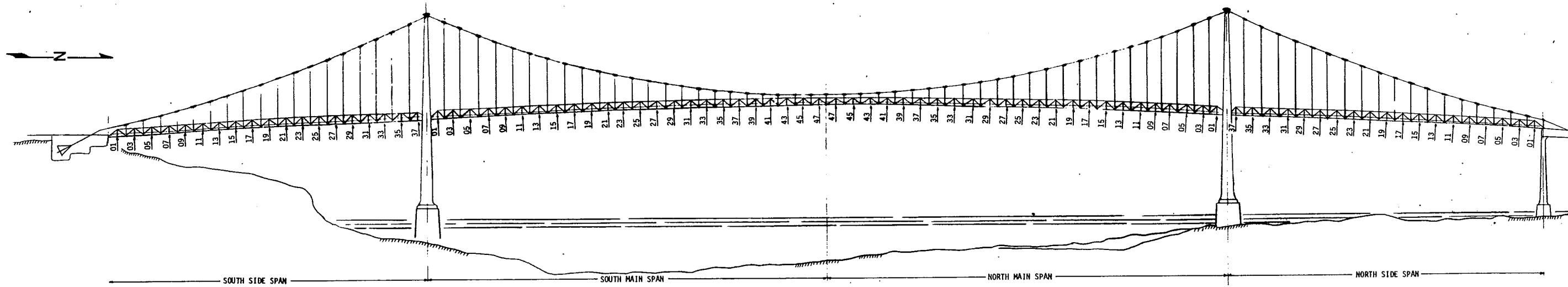


DIAGRAM SHOWING STEPS IN LANE CONTROL SIGNAL SYSTEM CHANGES

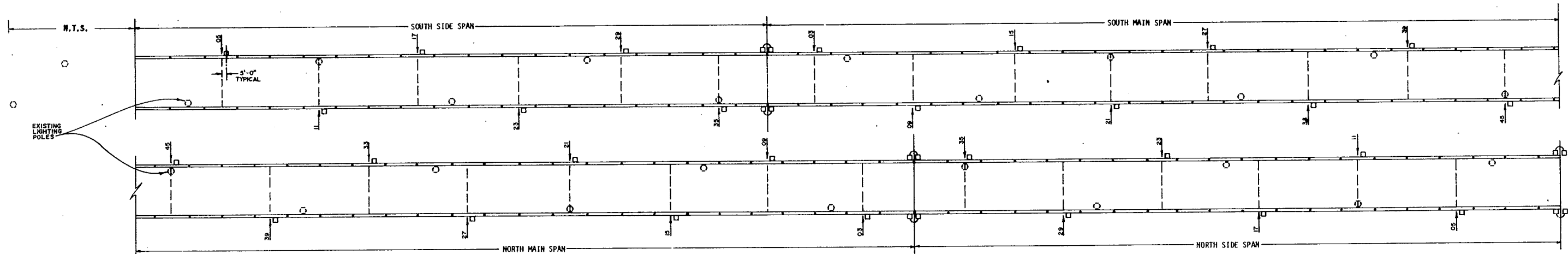
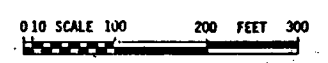
#10RW 90 COMMON NOT SHOWN



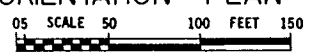
<b>BUCKLAND and TAYLOR Ltd.</b> CONSULTING ENGINEERS VANCOUVER, B.C. 681-9191		<b>BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS</b> BRIDGE DESIGN	
<b>W. T. HAGGERT and COMPANY LTD.</b> ELECTRICAL CONSULTING ENGINEERS TELEPHONE (604) 736-5531 1445 WEST 7TH AVE. VANCOUVER 9, B.C.		<b>LIONS GATE BRIDGE MODIFICATION</b> CONTRACT NO. 1 - NORTH VIADUCT ELECTRICAL DETAILS	
RECOMMENDED <i>[Signature]</i>	SCALE: AS SHOWN	DRAWN MK	CHECKED JWJ
GENERAL ARRANGEMENT APPROVED <i>[Signature]</i>		DRAWING No. 1481-63	
REVISIONS			



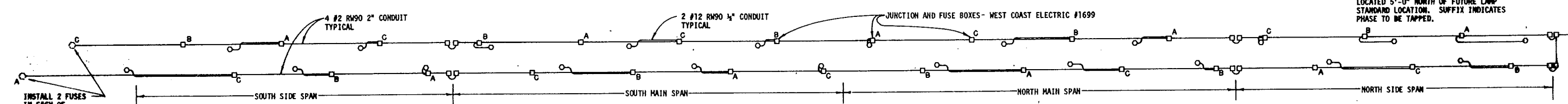
ELEVATION



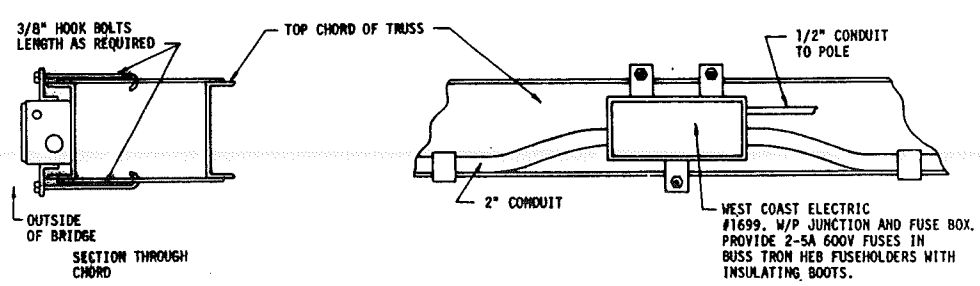
ORIENTATION PLAN



- NOTES:
- NUMBERS ON PLAN AND ELEVATION REFER TO FLOOR BEAMS.
  - □ JUNCTION AND FUSE BOXES ON PLAN ARE LOCATED 5'-0" NORTH OF FUTURE LAMP STANDARD LOCATION. SUFFIX INDICATES PHASE TO BE TAPPED.



ELECTRICAL PLAN



METHOD OF MOUNTING JUNCTION BOXES ON SUSPENSION SPAN

N. T. S.



**BUCKLAND and TAYLOR Ltd.**  
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A	

REVISIONS

**BRITISH COLUMBIA DEPARTMENT OF HIGHWAYS**  
BRIDGE DESIGN

**LIONS GATE BRIDGE**  
VIADUCT DECK REPLACEMENT  
CHANGES IN SUSPENSION SPAN  
STREET LIGHTING

SCALE: AS SHOWN

RECOMMENDED BY: *[Signature]*  
DRAWN: VM MK CHECKED: JWJ  
GENERAL ARRANGEMENT APPROVED: *[Signature]*  
DATE: 1981-64