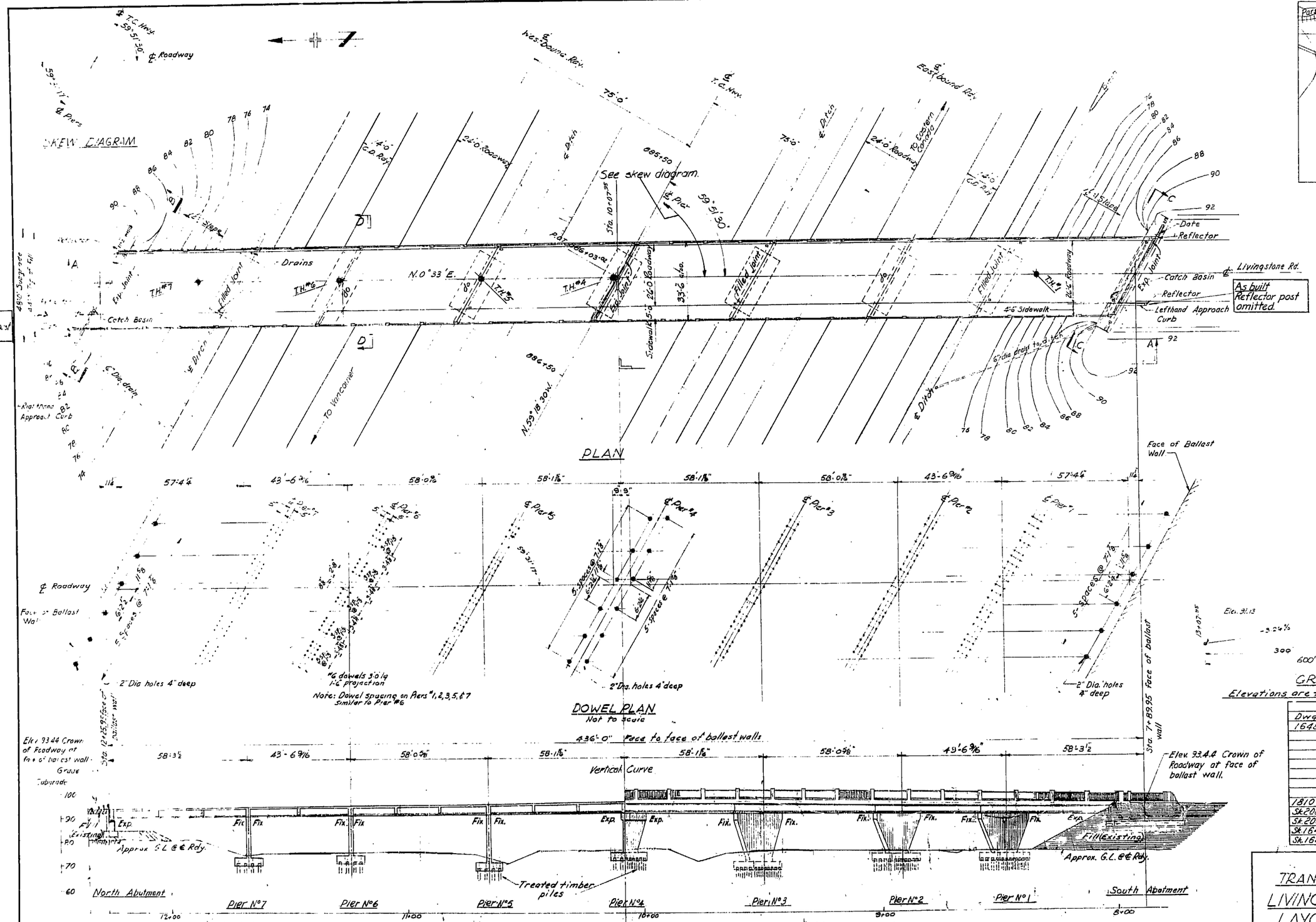
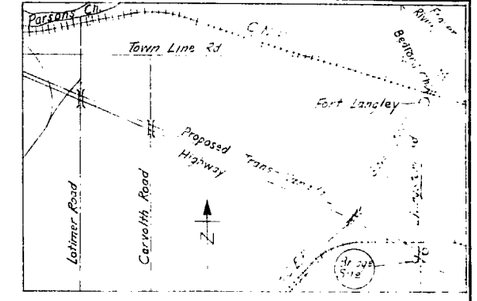


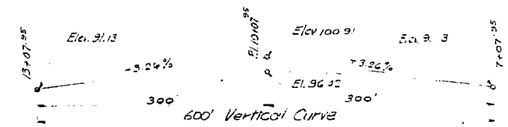


KEY MAP
Scale: 0.9" = 1 Mile

TEST HOLE DATA
TEST HOLE Nos

Elev.	#1 Material	%	#4 Material	%	#5 Material	%	#6 Material	%	#7 Material	%
10	Clayey Silt	8	Clay	5					Clayey Silt	7
25	Silty Blue Clay	4			Clay Silt	1½	Clayey Silt	1½		
40	Sandy Clayey Silt	2	Clayey Sand	1	Silty Clay	1½	Silty Clay	2	Blue Clayey Silt	2
55	2 Sand Seams (S.M)	3	Clayey Silty Sand	2	Clayey Sand	2	Silty Clayey Sand	4.5		
			Sand Layer & Sandy Clay	4	Sandy Clayey Silt	3	Clayey Silt	2		
70	Clayey Silt	3	Clayey Silty Sand	1 2					Clayey Silty Sand	2
85	Sandy Clayey Silt	2							Sandy Clayey Silt	2
	Sand	25							Sand	
100	Silty Clayey Silt	6							Clayey Silty Sand	6
115	Sand	24							Sand	11
130										
145	Silty Clayey Sand	21								
	Sand	4								
160	Silty Sand	22								
	Sand	10								

Penetration — Average number of blows per 12" penetration (140 lb hammer falling 30 inches).
▲ Denotes water table.



GRADE DIAGRAM
Elevations are to finished grade. Scale: N.T.S.

LIST OF DRAWINGS

Dwg. No.	Title
1648-3	Layout, Dowel Plan and Key Map
-4	Abutments
-5	Piers
-6	Prestressed Concrete Stringers
-7	Bearing Assemblies
-8	Floor Plates
-9	Gutters and Downpipes
-10	Deck Details
1810-76	Standard Roadway Fence
Sk 2084-1	Approach Curb
Sk 2085-1	Catch Basin
Sk 1648-15	Pile Load Test
Sk 1648-16	Electrical Conduit Installation

NOTES
1. Specifications:- Dept. of Highways
2. Live Load:- H25-S20
3. Survey by:- Location Branch.
4. Datum:- Geodetic
5. L.B.M.: 300' Left in Telephone pole Sta. 885+00 (T.C.H.W.) El. 74.39.

DELTA DISTRICT
TRANS-CANADA HIGHWAY MILE 96.82
LIVINGSTONE RD. UNDERPASS
LAYOUT, DOWEL PLAN, & KEY MAP

SCALE 1" = 20' AND AS NOTED

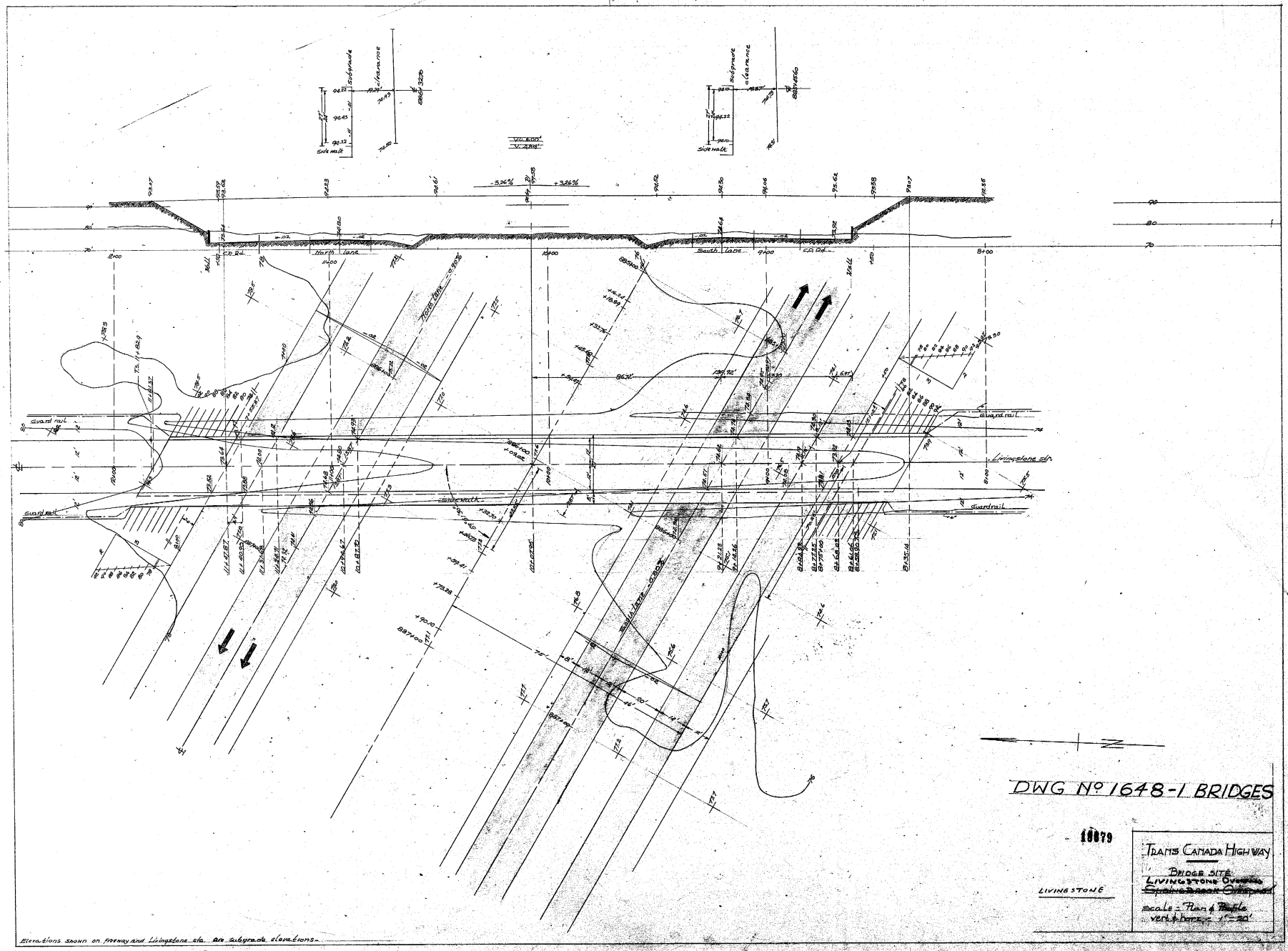
REVISIONS

Rev.	Particulars	Init.	Date
A	Jacking abts. removed	[illegible]	Feb 4/61
B	As built re-jacking of both abts. also re-reflector posts.	R.J.A.	Feb 9/62

GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	[illegible]	Dec '59
Checked by	[illegible]	May 4 '60
Approved	[illegible]	

DRAWING No. 1648-3 B



DWG No 1648-1 BRIDGES

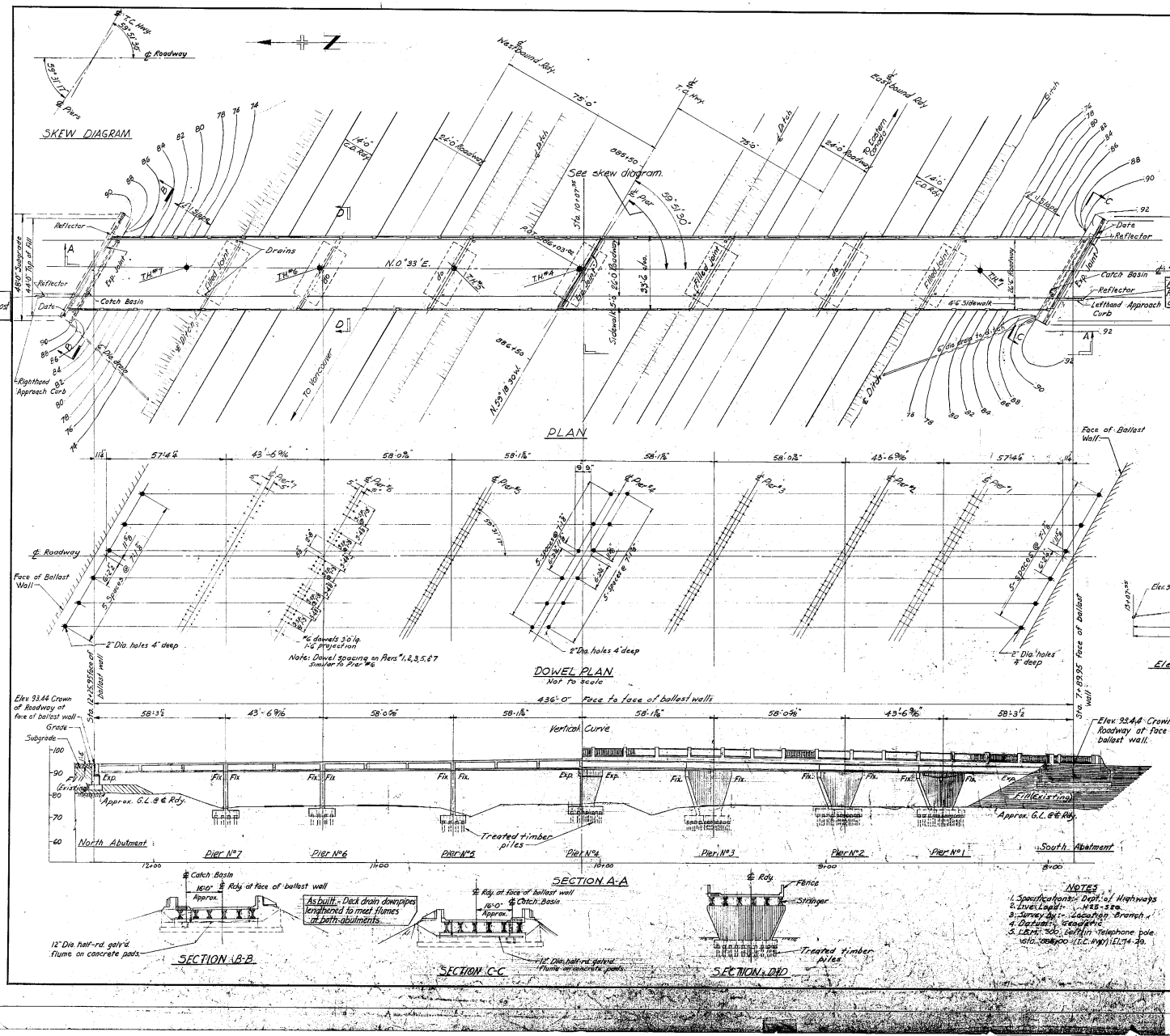
10079

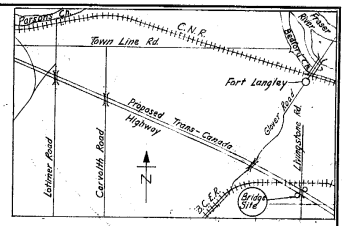
LIVINGSTONE

TRANS CANADA HIGHWAY

BRIDGE SITE
LIVINGSTONE Overpass
~~Spaghetti Overpass~~

scale: Plan & Profile
vert & horz = 1" = 20'



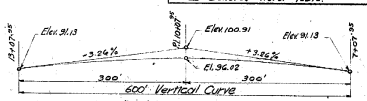


KEY MAP
Scale: 0.92 1 Mile

TEST HOLE DATA

Elev.	TEST HOLE Nos #1 Material	%	#4 Material	%	#5 Material	%	#6 Material	%	#7 Material	%
10	Clayey Silt	8	Clay	5	▲		▲		Clayey Silt	7
25	Silty Blue Clay	4			Clay Silt	12	Clayey Silt	3½		
40	Sandy Clayey Silt	2	Clayey Sand	4	Silty Clay	2	Silty Clay	2	Blue Clayey Silt	2
55	2 Sand Seams (S.M)	3	Clayey Silty Sand	2	Clayey Silty Sand	2	Silty Clay Sand	3		
70	Clayey Silt	3	Sand layer & Sandy Clay	4			Clayey Silt	2		
85	Sandy Clay By Silt	2	Clayey Silty Sand	1½					Clayey Silty Sand	2
100	Sand	25							Sandy Clayey Silt Seams	4
115	Silty Clay By Silt	6							Clayey Silty Sand	6
130	Sand	24							Sand	11
145	Silty Clay By Sand	21								
160	Sand	4								
	Silty Sand	22								
	Sand	10								

Penetration — Average number of blows per 12" penetration (140 lb hammer falling 30 inches).
▲ Denotes water table.



GRADE DIAGRAM
Elevations are to finished grade. Scale: N.T.S.

LIST OF DRAWINGS	
Dwg. No.	Title
1649-3	Layout, Dowel Plan and Key Map
-4	Abutments
-5	Piers
-6	Prestressed Concrete Stringers
-7	Bearing Assemblies
-8	Floor Plates
-9	Gutters and Downpipes
-10	Deck Details
1810-16	Standard Roadway Fence
Sk. 2086-1	Approach Curb
Sk. 2083-1	Catch Basin
Sk. 1648-15	Pile Load Test
Sk. 1648-16	Electrical Conduit Installation

NOTES
1. Specifications:- Dept. of Highways
2. Live Load:- H25-S20
3. Survey by:- Location Branch
4. Datum:- Geodetic
5. L.S.M.: 400, Left in Telephone pole. Sta. 288+00 (C.C. HWY) El. 94.40.

DELTA DISTRICT
TRANS-CANADA HIGHWAY MILE 96.82
LIVINGSTONE RD. UNDERPASS
LAYOUT, DOWEL PLAN, & KEY MAP

SCALE 1"=20' AND AS NOTED

REVISIONS			
Rev.	Particulars	Init.	Date
A	Jacking abts. removed	[illegible]	Feb 7/61
B	As built, re-jacking of both abts, also re-reflector posts.	R.J.A	Feb 9/65

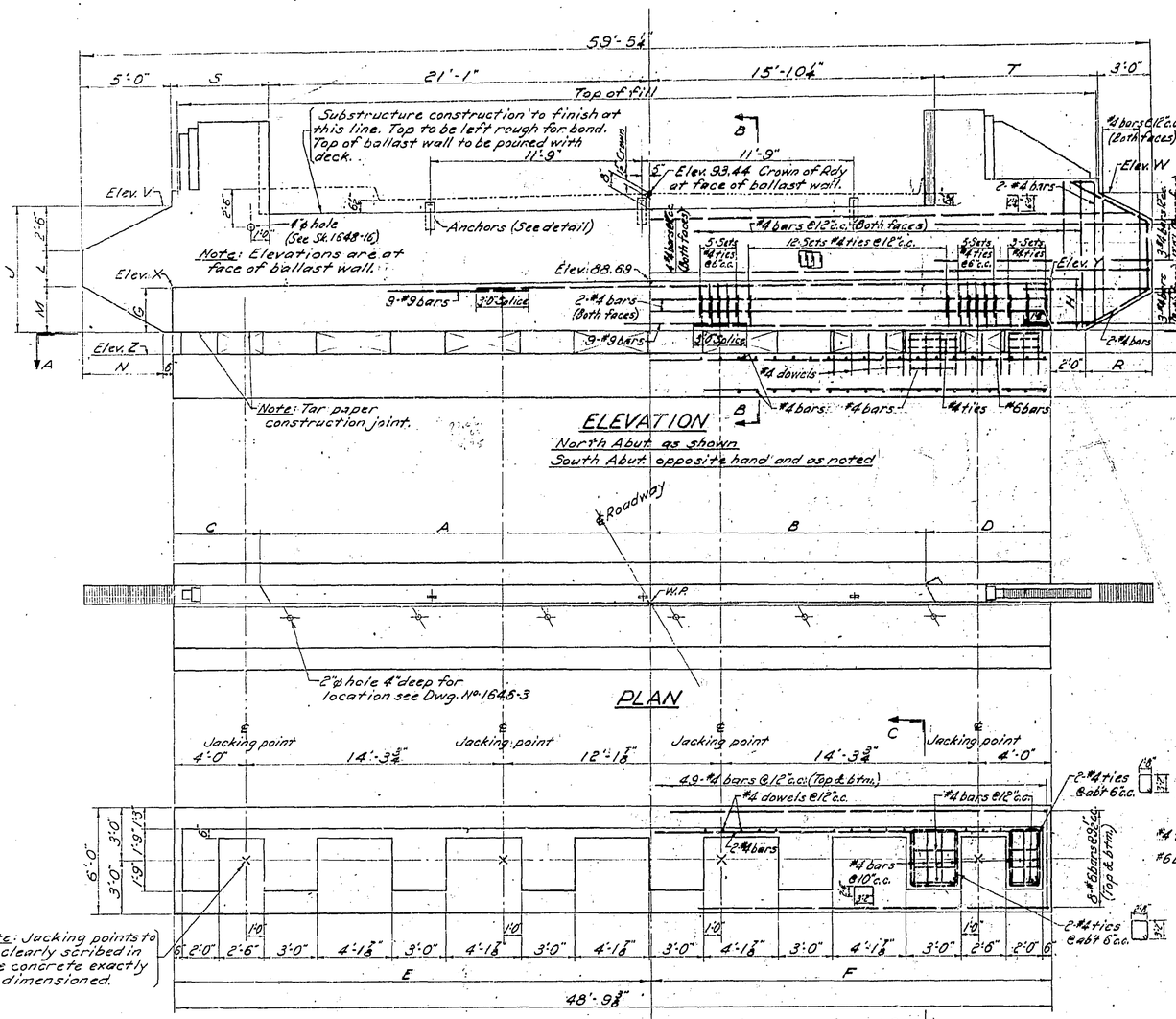
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	[illegible]	Dec '59
Checked by	[illegible]	May '60
Approved	[illegible]	

DRAWING No. 1649B-3 B

Cancel prints bearing earlier letter

18680

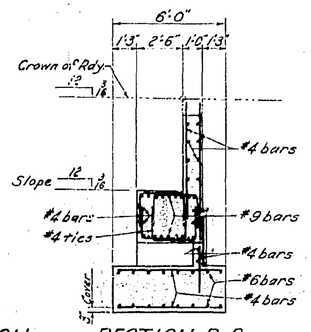


ELEVATION

North Abut. as shown
South Abut. opposite hand and as noted

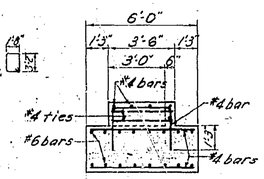
PLAN

PLAN OF BASE AT A-A

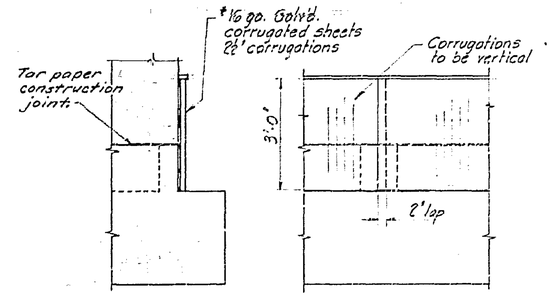


END ELEVATION

SECTION B-B



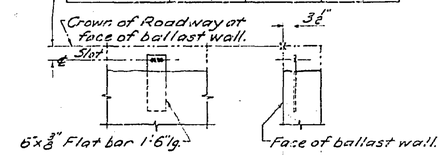
SECTION C-C



DETAIL AT CONSTRUCTION JOINT

Scale: ½" = 1'-0"

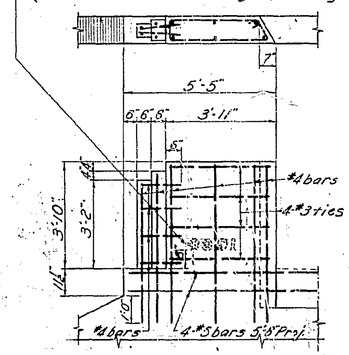
TABLE OF DIMENSIONS	Left	℄	Right
North Abut.	6¾"	4"	3¾"
South Abut.	3¾"	4"	6¾"



SETTING OF FLOOR PLATE ANCHORS

Scale: ½" = 1'-0"

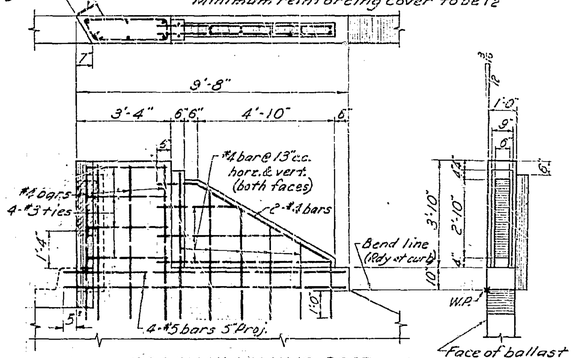
Year of construction cast in 5" high numerals on rear face of right hand post only on each abutment. Numeral forms loaned by Dept of Highways.



SIDEWALK WING POST

Traffic reflector and anchor on rear face furnished by Dept. of Highways and set in place by Contractor. Lines on reflector to slope down towards roadway.

Note: Chamfer all edges ½"
Minimum reinforcing cover to be 1½"



ROADWAY WING POST

North Abut. as shown
South Abut. similar and opposite hand
Scale: ⅜" = 1'-0"

TABLE OF DIMENSIONS																			
Dimensions	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
North Abut.	21'-8"	15'-3¼"	4'-10⅜"	6'-11⅞"	26'-6⅜"	22'-3"	2'-6"	3'-1⅛"	7'-1⅛"	7'-9"	2'-0⅛"	2'-7"	4'-5⅜"	4'-1⅞"	2'-1⅞"	3'-8¼"	5'-5"	9'-1"
South Abut.	20'-6"	16'-5¼"	6'-11⅞"	4'-10⅜"	27'-5⅜"	21'-3⅜"	3'-1⅛"	2'-6"	7'-8¼"	7'-1"	3'-6"	1'-8¼"	2'-11¼"	2'-7"	3'-0"	5'-2⅜"	4'-10"	9'-8"

TABLE OF ELEVATIONS					
Elevations	V	W	X	Y	Z
North Abut.	93.00	93.61	88.37	88.36	84.62
South Abut.	93.62	93.00	89.02	88.43	84.68

Notes:

1. Concrete to be Class "A" throughout.
2. Exposed edges to be chamfered 1" except where noted otherwise.
3. Reinforcing steel to be "Structural" grade.
4. Reinforcing steel to have 2" cover except where noted otherwise.
5. Reinf. minimum dia. of pins to be used for bending bars, including hooks, to be 2xd. for ties, 6xd. for #8 bars and under. Extensions of free ends of hooks to be 4xd. Lap bars for splices 40xd.
6. Expansion bearings to be grouted into position by contractor at least one day prior to placing of stringers.

ESTIMATED QUANTITIES		
Item	Concrete	Reinf. steel
North Abut.	66 cu.yds.	7,600 - lbs.
South Abut.	66 cu.yds.	7,600 - lbs.
Totals	132 cu.yds.	15,200 - lbs.

DELTA DISTRICT
TRANS-CANADA HIGHWAY MILE 96.82
LIVINGSTONE ROAD UNDERPASS
ABUTMENTS
SCALE: ¼" = 1'-0" AND AS NOTED

REVISIONS

Rev.	Particulars	Init.	Date
A	Replacing std. type abutment	DWS	Dec/61
B	Flashing at Constr. joint rev.	MCM	Dec/61
C	As built	R.J.A.	Feb/65

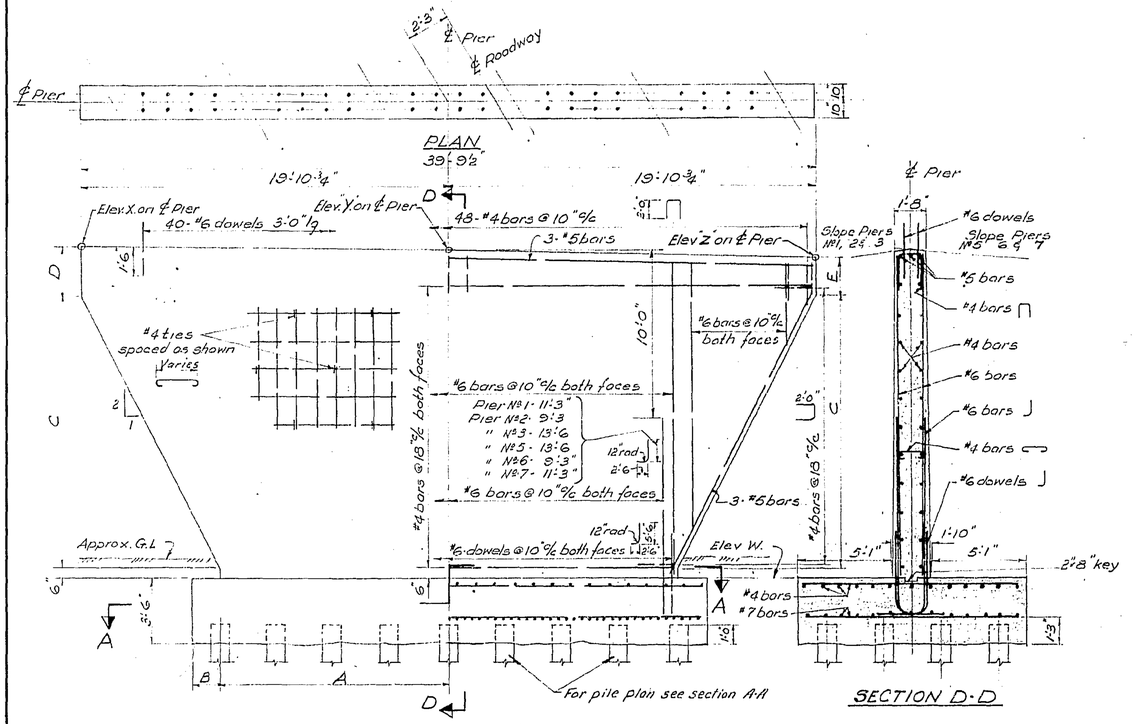
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	J.T.W.S.	Aug. 14/61
Checked by	M.C.M.	Aug. 22/61
Approved		

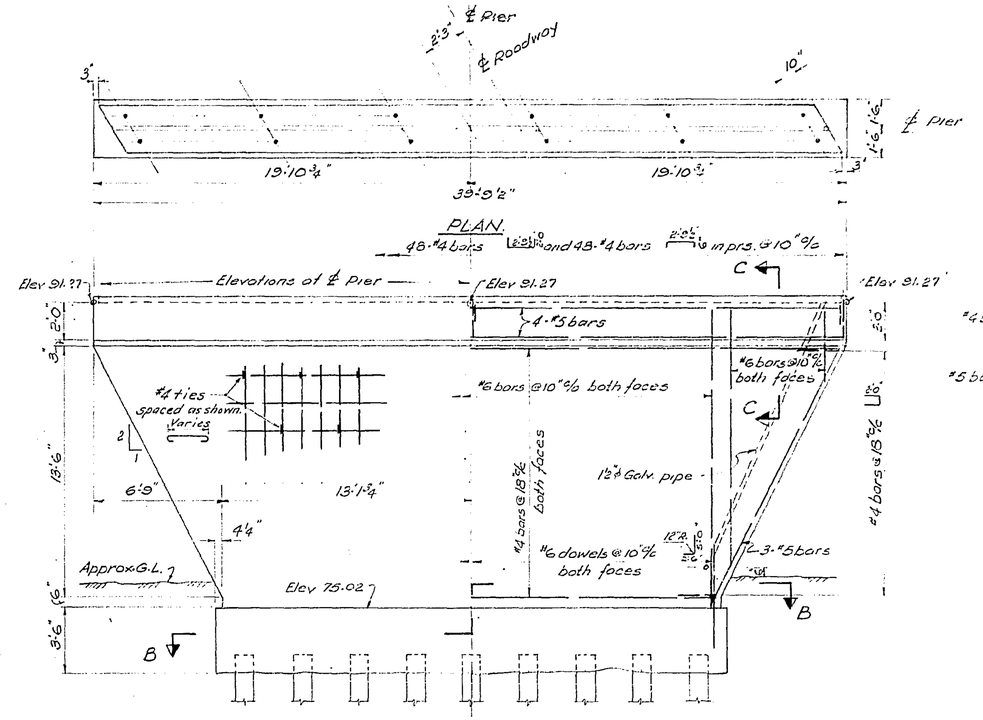
DRAWING NO. 1648-4 C

Cancel prints bearing earlier letter

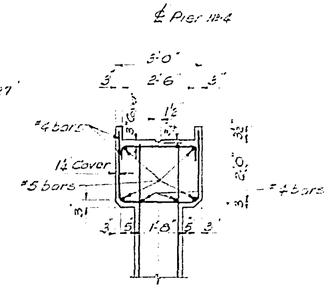
18661



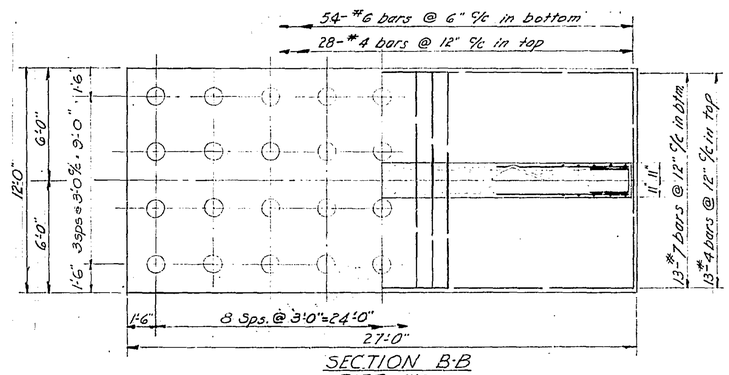
ELEVATION LOOKING NORTH



ELEVATION LOOKING NORTH

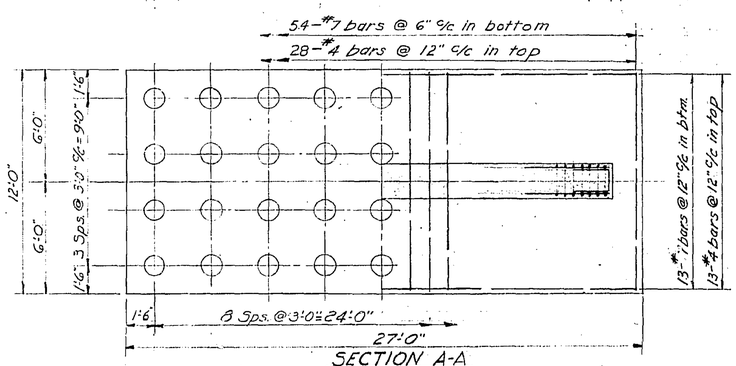


SECTION C-C
Scale ¾" = 1'-0"



SECTION B-B
PIER No 4

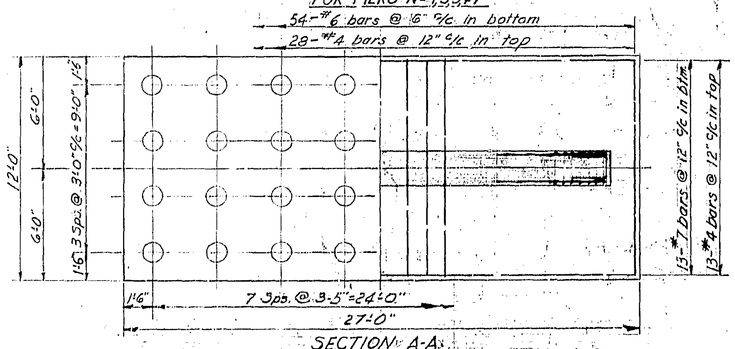
NOTES:-
1. Concrete to be class 'A' throughout.
2. Exposed edges to be chamfered 1" except where noted otherwise
3. Reinforcing steel to be Structural Grade.
4. Reinforcing steel to have 2" cover except where noted otherwise
5. Reinforcing:- Min. dia. of pins to be used for bending bars, including hooks, to be 2×d for #3, 6×d for #8 bars & under. Lap bars for splices 40×d.
6. Expansion bearings to be grouted into position by contractor at least one day prior to placing of stringers.



SECTION A-A
FOR PIERS No 1, 3, 5 & 7

PIERS No 1, 2, 6 & 7 (AS SHOWN)
PIERS No 3 & 5
All vertical bars in Pier stem to be #7

Note:-
All pile dimensions are at bottom of footing.



SECTION A-A
FOR PIERS No 2 & 6

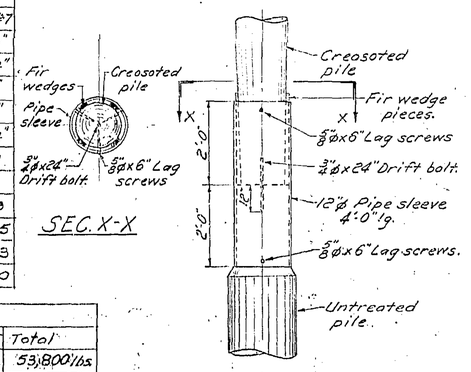
TABLE OF DIMENSIONS

DIMENSION	Pier No 1	Pier No 2	Pier No 3	Pier No 5	Pier No 6	Pier No 7
A	11'-9¾"	12'-11¾	10'-9¾"	10'-9¾"	12'-11¾"	11'-9¾"
B	1'-8¼	6¼"	2'-8¼	2'-8¼	6¼"	1'-8¼"
C	16'-2"	13'-10"	18'-2"	18'-2"	13'-10"	16'-2"
D	2'-4⅛"	2'-3"	2'-1½"	2'-0"	2'-0"	2'-0"
E	2'-0"	2'-0"	2'-0"	2'-1½"	2'-3⅛"	2'-4¼"
Slope of top normal to Pier	3/16 : 12	1/8 : 12	1/16 : 12	1/16 : 12	1/8 : 12	3/16 : 12
ELEVATIONS						
W.	71.44	74.45	70.73	70.71	74.42	71.39
X	90.44	91.04	91.52	91.38	90.75	90.05
Y	90.28	90.92	91.46	91.45	90.89	90.23
Z	90.10	90.79	91.40	91.51	91.01	90.40

ESTIMATED QUANTITIES

	Pier No 1	Pier No 2	Pier No 3	Pier No 4	Pier No 5	Pier No 6	Pier No 7	Total
Reinforcing Steel	7650	7010	9300	5880	9300	7010	7650	53,800 lbs.
Concrete c/y	80	77	84	80	84	77	80	562 c/y.
Creosoted Piles	36	32	36	36	36	32	36	244
Untreated Piles	36	32	36	36	36	32	36	244

Total length of composite pile '90'



PILE SPLICE DETAIL

DELTA DISTRICT
TRANS-CANADA HIGHWAY MILE 96.82
LIVINGSTONE ROAD UNDERPASS
PIERS
SCALE ¼" = 1'-0 AND AS NOTED

REVISIONS

Rev.	Particulars	Init.	Date
A	Length of treated pile reduced. Untreated piles added and splice shown	TJWS	July 29/62
B	As built	R.J.A	Feb 4/65

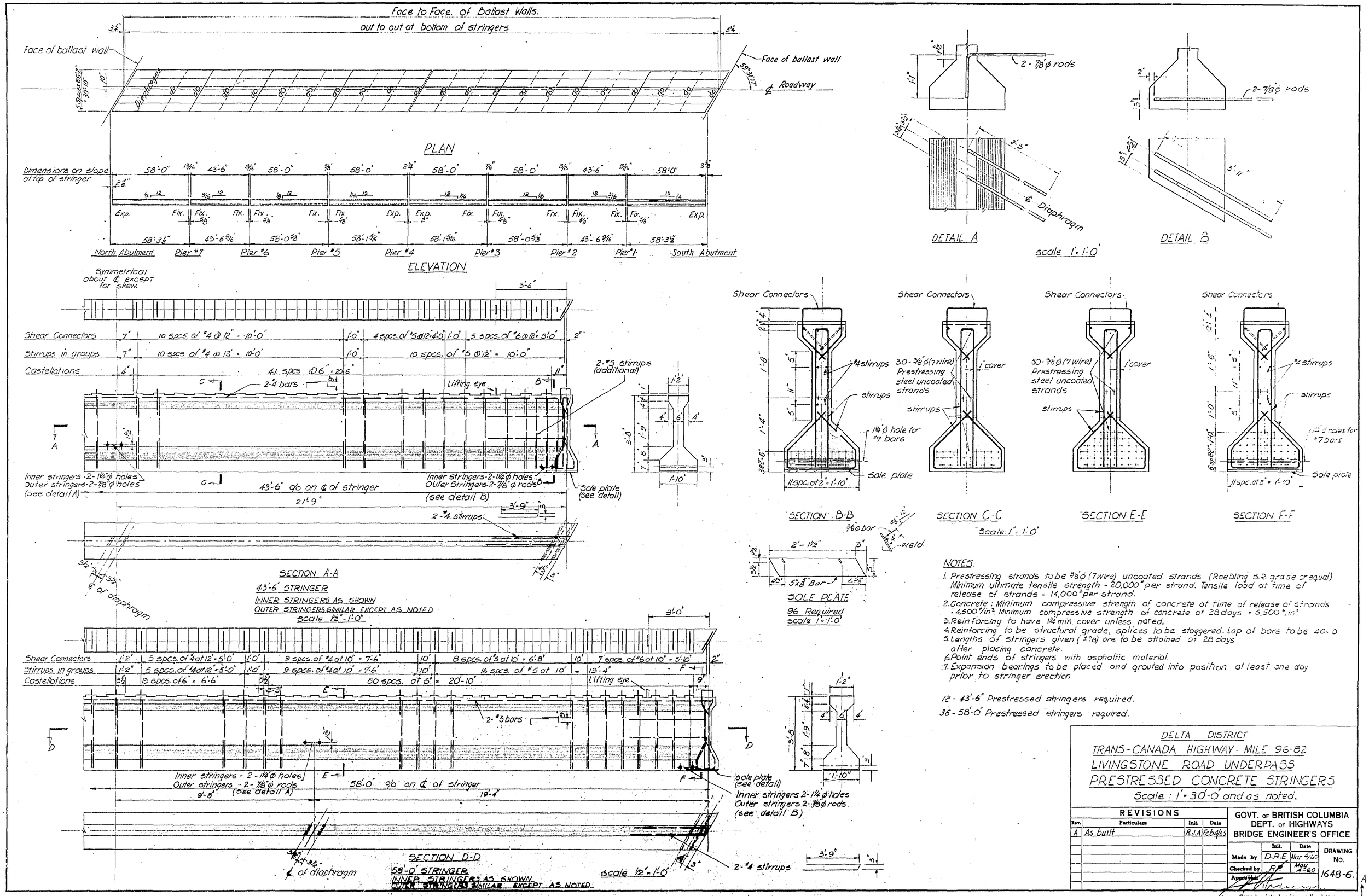
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	[illegible]	[illegible]
Checked by	N.G.D	July 14/61
Approved	[illegible]	

DRAWING No. 1648-5 B

Cancel prints bearing earlier letter

18682



NOTES.

1. Prestressing strands to be 7/8"ϕ (7 wire) uncoated strands (Roebling S.R. grade or equal) Minimum ultimate tensile strength - 20,000# per strand. Tensile load at time of release of strands = 14,000# per strand.
2. Concrete: Minimum compressive strength of concrete at time of release of strands = 4,500#/in². Minimum compressive strength of concrete at 28 days = 5,500#/in².
3. Reinforcing to have 1¼" min. cover unless noted.
4. Reinforcing to be structural grade, splices to be staggered. Lap of bars to be 40 ϕ
5. Lengths of stringers given (±½") are to be attained at 28 days after placing concrete.
6. Paint ends of stringers with asphaltic material.
7. Expansion bearings to be placed and grouted into position at least one day prior to stringer erection

12 - 43'-6" Prestressed stringers required.

36 - 58'-0" Prestressed stringers required.

DELTA DISTRICT

TRANS-CANADA HIGHWAY - MILE 96·82

LIVINGSTONE ROAD UNDERPASS

PRESTRESSED CONCRETE STRINGERS

Scale: 1" = 30'-0" and as noted.

REVISIONS			
Rev.	Particulars	Init.	Date
A	As built	R.J.A	Feb 4/65

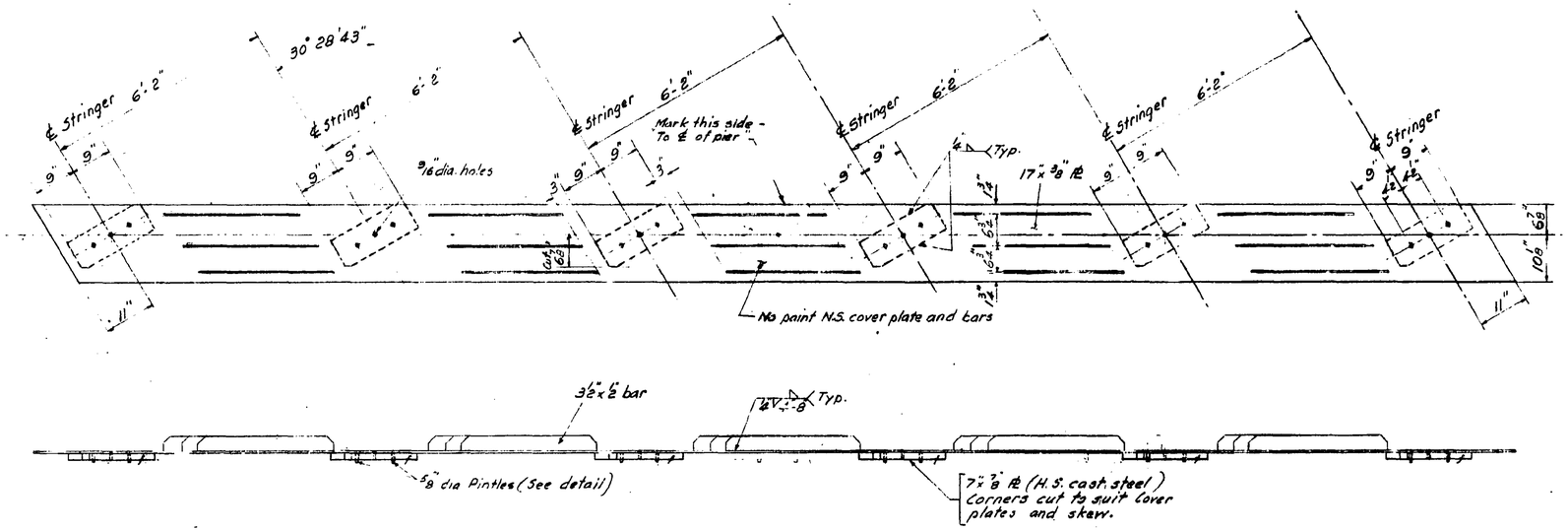
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	D.R.E.	Mar 4/60
Checked by	P.P.	May 1-60
Approved		

DRAWING NO. 1648-6. A

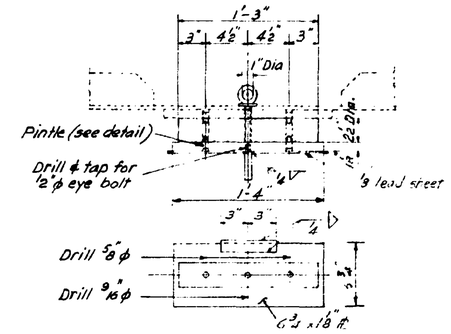
Cancel prints bearing earlier letter

18683



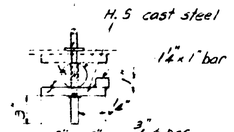
BEARING COVER PLATE FOR MK. 'X'

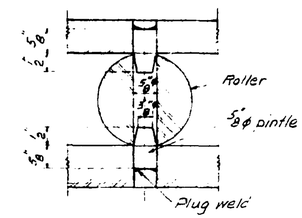
Est. Wt. each 1500 lbs.



DETAIL OF ROLLER BEARING

FOR MK. 'X' Est. Wt. each 66 lbs.





PINTLE DETAIL

2 - Bearing assemblies required. - Mk. 'X'

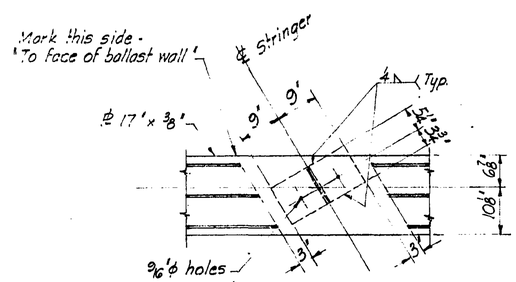
1 - Bearing assembly consists of:-

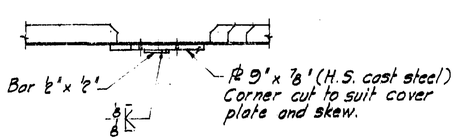
1 - Bearing cover plate.

6 - Roller bearings.

6 - Eye bolts.

6 - Base plates 1⅛" Thick





BEARING COVER PLATE FOR MK. 'Y'

Est. Wt. each 1565 lbs.

2 - Bearing assemblies req'd. - Mk. 'Y'

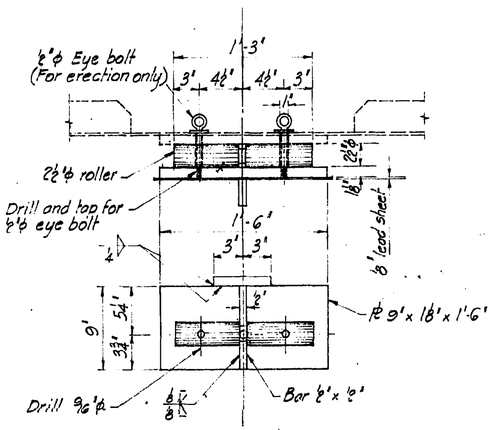
One bearing assembly consists of:

1. - Bearing cover plate.

6 - Roller bearings.

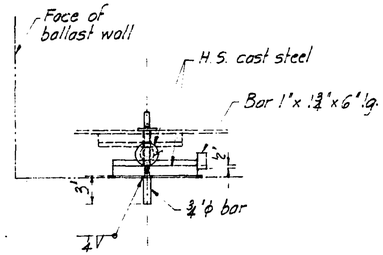
12 - Eye bolts.

6 - Base plates 1⅛" thick.



DETAIL OF ROLLER BEARING - FOR MK. 'Y'

Est. Wt. each 96 lbs.



Notes:

1. Bearing plates to be H.S. cast steel A.S.T.M. A 148-55, Grade 120-95; Rollers to be A.S.T.M. A 286-52, Grade B.C. 115,000-135,000 p.s.i.
2. All machined surfaces to be given one shop coat of lacquer.
3. Paint all steelwork one shop coat red lead except faying surfaces and where noted otherwise. Surfaces inaccessible after erection shall be given 2 coats of field paint in accordance with Section 216-11 of Dept. of Highways General Specifications.
4. Specification: Dept. of Highways.

DELTA DISTRICT

TRANS-CANADA HIGHWAY MILE 36.82

LIVINGSTONE ROAD UNDERPASS

BEARING ASSEMBLIES

NOT TO SCALE

REVISIONS			
Rev.	Particulars	Init.	Date
A	As built	R.J.A.	Feb 4/63

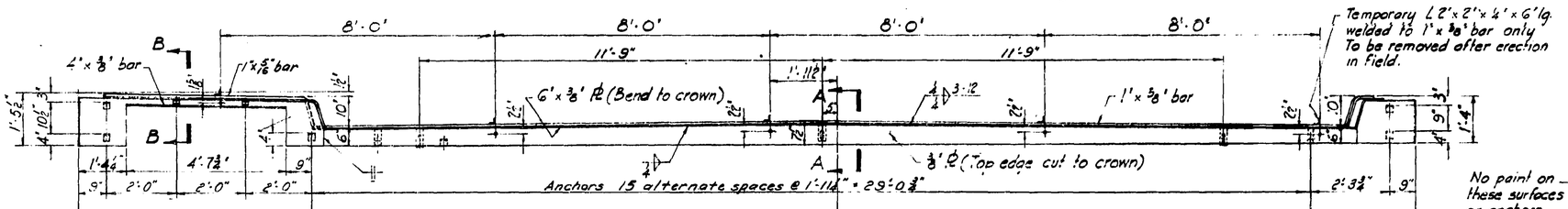
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	DCMD	MARCH 24/53
Checked by	P.G.	MAY 4-60
Approved		

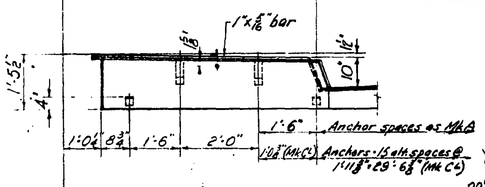
DRAWING NO. 1648-7 A

Cancel prints bearing earlier letter

18684

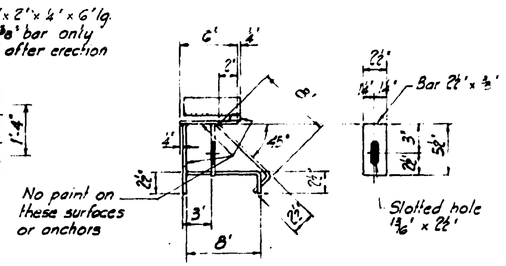


FLOOR PLATE Mk A - AS SHOWN (1-REQ'D) WT. 860# EACH
FLOOR PLATE Mk C^R - AS SHOWN AND AS NOTED (1-REQ'D) WT. 920# EACH
FLOOR PLATE Mk C^L - OPPOSITE HAND TO Mk C^R AND AS NOTED (1-REQ'D) WT. 910# EACH

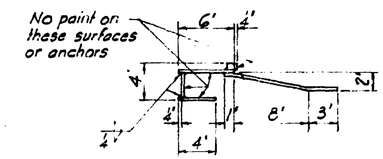


DETAIL FOR Mk C^R

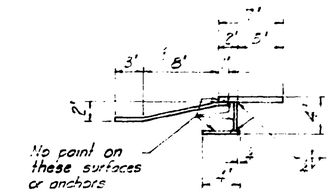
DETAIL FOR Mk C^R



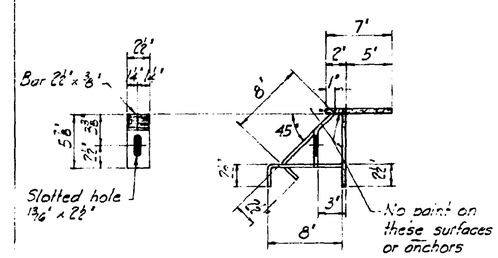
SECTION A-A
Scale: 1 1/2" = 1'-0"



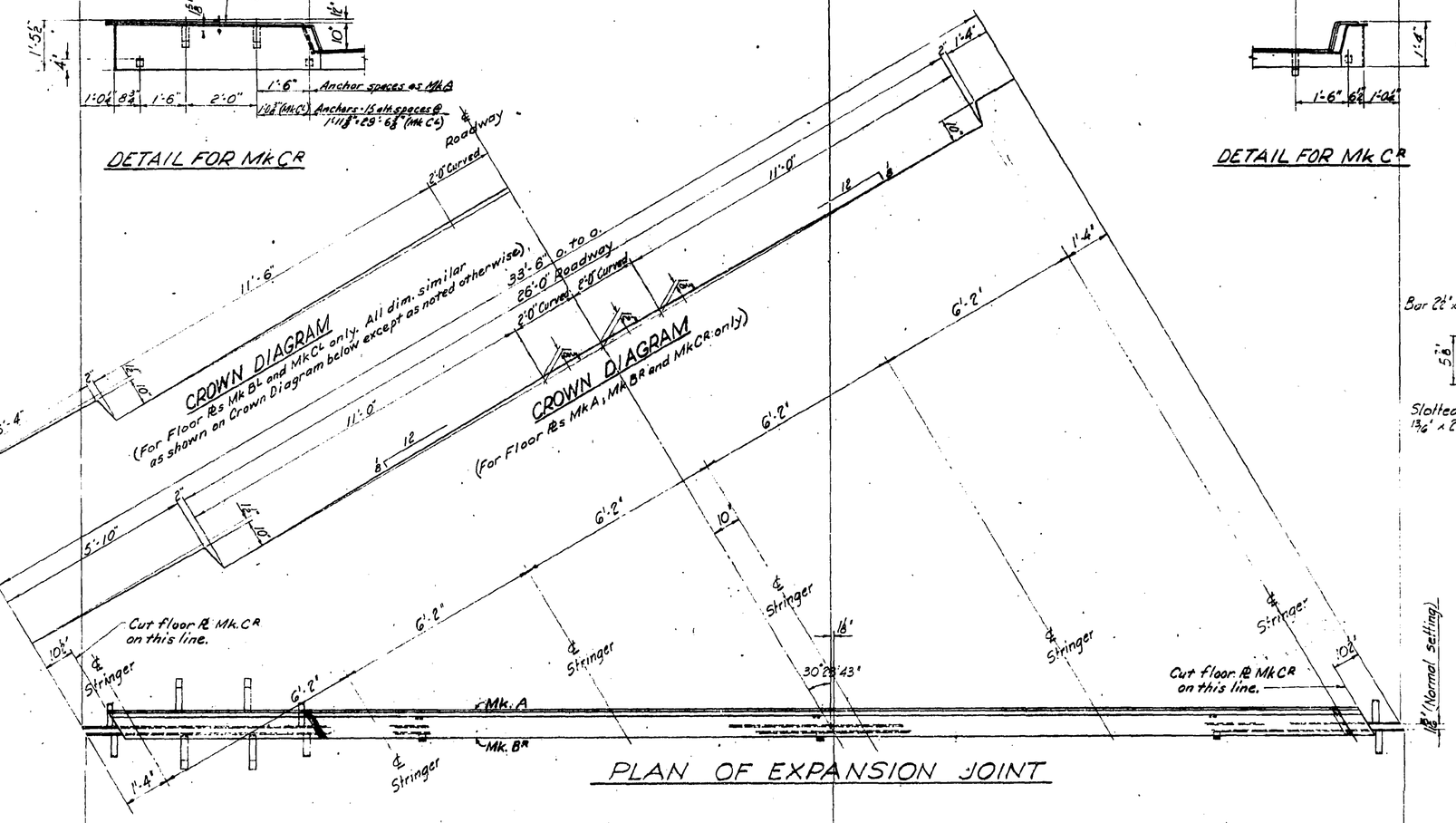
SECTION B-B
Scale: 1 1/2" = 1'-0"



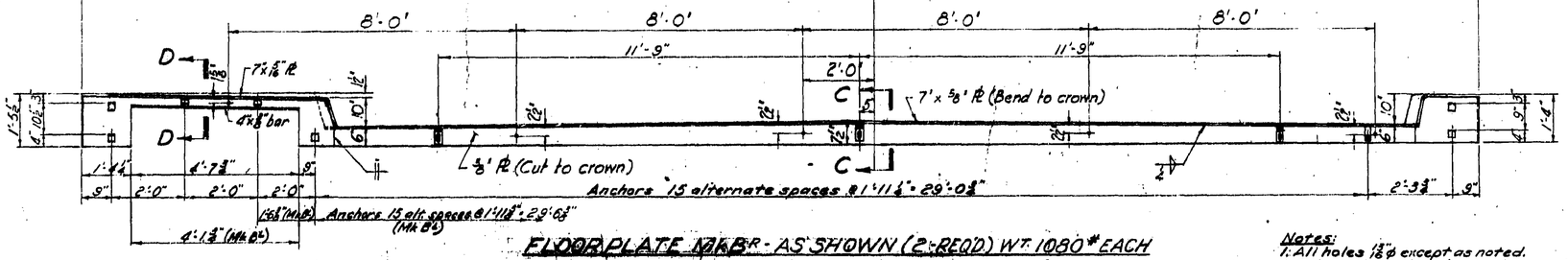
SECTION D-D
Scale: 1 1/2" = 1'-0"



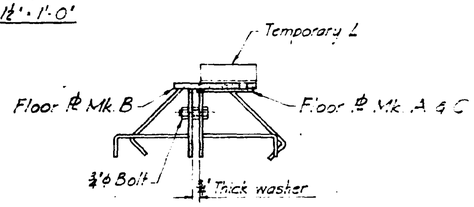
SECTION C-C
Scale: 1 1/2" = 1'-0"



PLAN OF EXPANSION JOINT



FLOOR PLATE Mk B^R - AS SHOWN (2-REQ'D) WT. 1080# EACH
FLOOR PLATE Mk B^L - OPPOSITE HAND TO Mk B^R AND AS NOTED (1-REQ'D) WT. 1080# EACH



ASSEMBLY OF FLOOR PLATES FOR SHIPMENT
Scale: 1 1/2" = 1'-0"

Notes:
1. All holes 13/16" ϕ except as noted.
2. Paint all steelwork one shop coat red lead except faying surfaces and where noted otherwise. Surfaces inaccessible after erection shall be given 2 coats of field paint in accordance with Section 216-11 of Dept. of Highways General Specification.

DELTA DISTRICT
TRANS-CANADA HIGHWAY MILE 36.82
LIVINGSTONE ROAD UNDERPASS
FLOOR PLATES
SCALE: 1/2" = 1'-0" & AS NOTED

REVISIONS			
No.	Particulars	Init.	Date
A	As built	R.J.A.	Feb 4/65

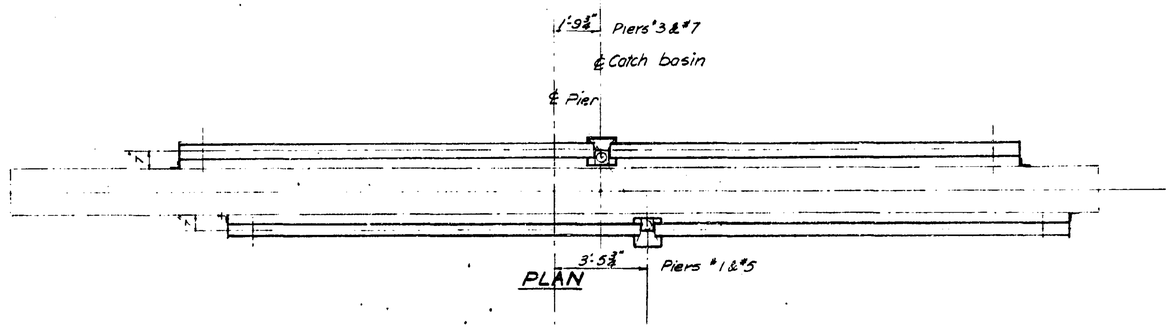
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	J.T.W.	Apr. 19/60
Checked by	P.P.	Apr. 22-60
Approved:		

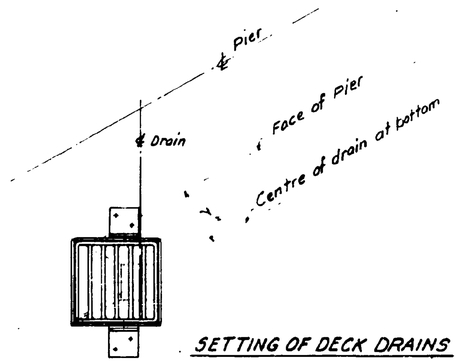
DRAWING NO. 1648-8

Cancel prints bearing earlier letter

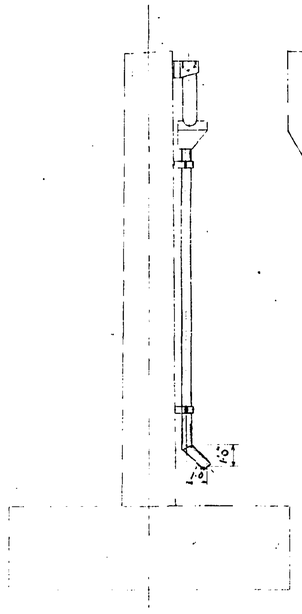
18685



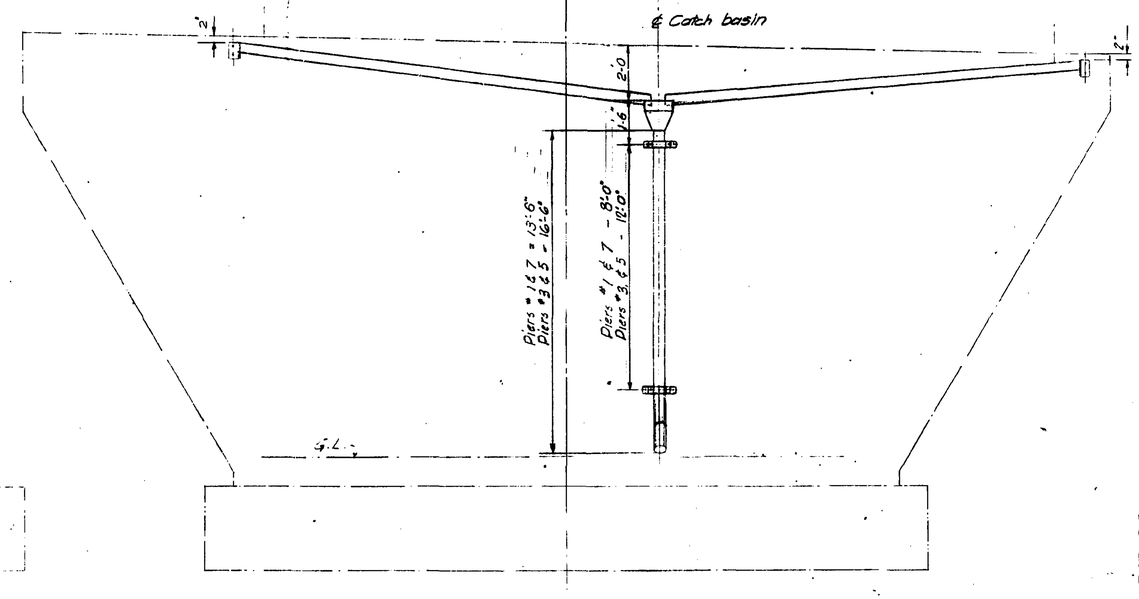
PLAN



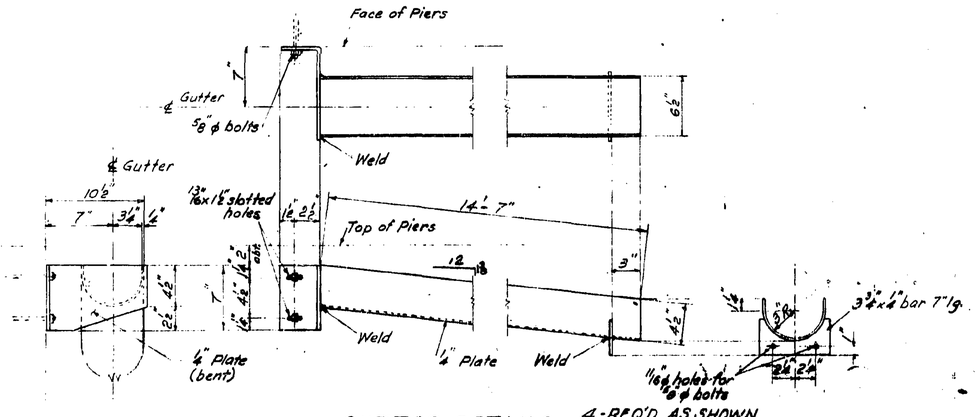
SETTING OF DECK DRAINS



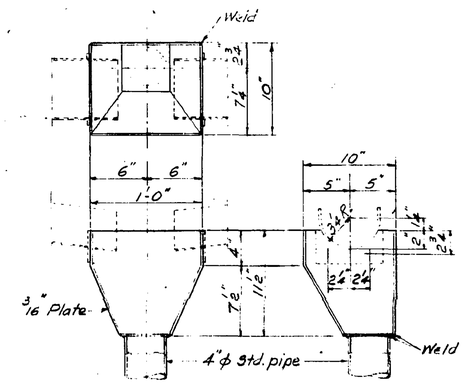
END VIEW
TYPICAL



ELEVATION
(Looking North)

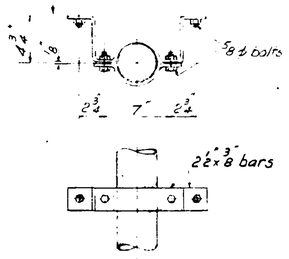


GUTTER DETAILS - 4-REQ'D AS SHOWN
4-REQ'D OPPOSITE HAND
(Galvanized after fabrication)
Scale: 1½" = 1'-0



CATCH BASIN DETAILS - 4 REQ'D
(Galvanized after fabrication)
Scale: 1½" = 1'-0

Face of Pier — 1'-0½" —



4" PIPE CLAMP — 8 REQ'D
(Galvanized after fabrication)
Scale: 6" = 1'-0

Estimated weight of steelwork — 2,225 lbs (Excl. drains)

DELTA DISTRICT
TRANS-CANADA HIGHWAY MILE 96.82
LIVINGSTONE RD. UNDERPASS
GUTTERS AND DOWNPIPES
SCALE: 3/8" = 1'-0" AND AS NOTED

REVISIONS			
Rev.	Particulars	Init.	Date
A	As built	R.J.A.	Feb 14/65

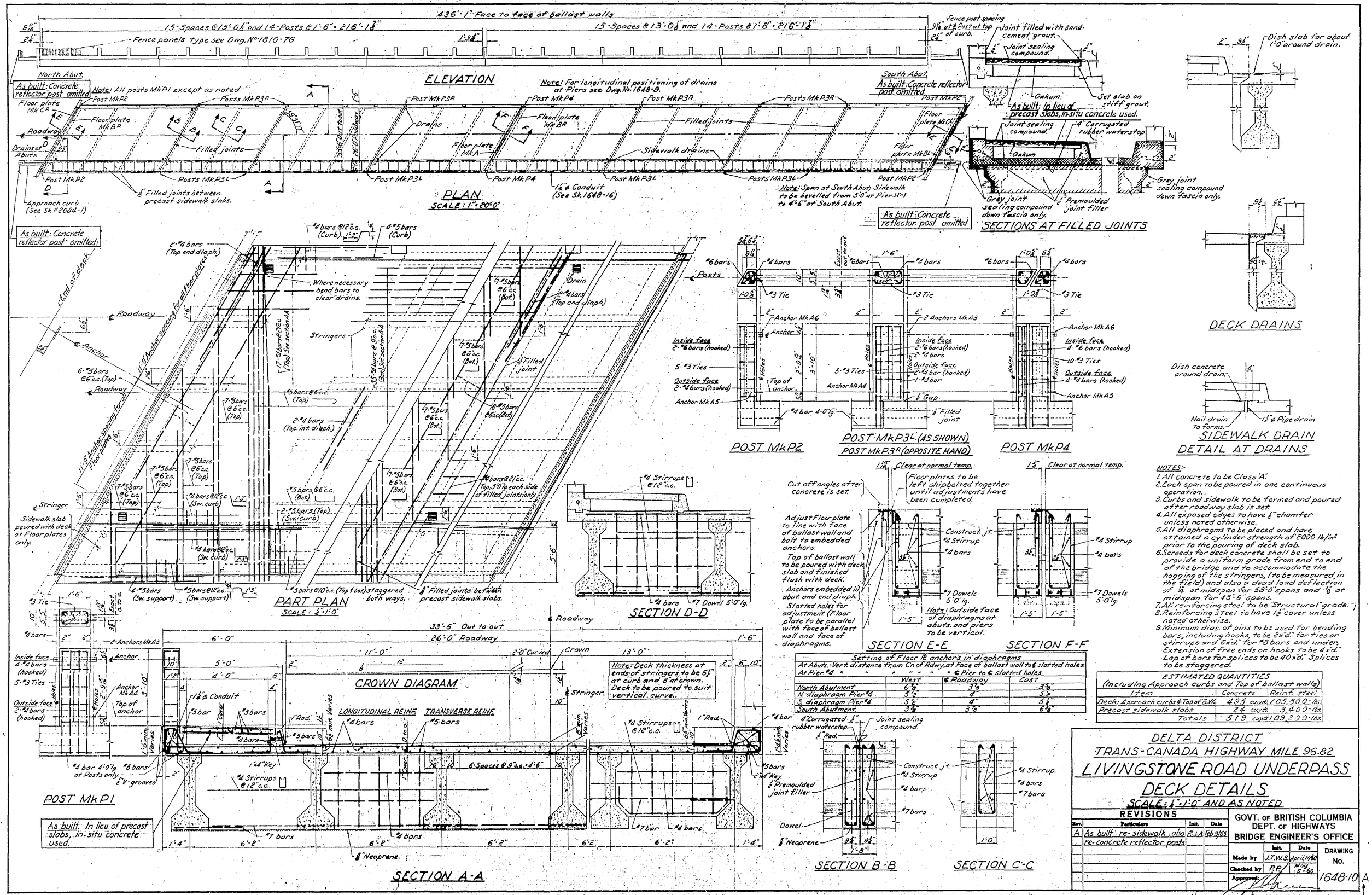
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	J.T.W.S.	
Checked by	R.J.D.	April 26/60
Approved		

DRAWING NO. 1648-9 A

Cancel prints bearing earlier letter

13586



NOTES:-

1. All concrete to be Class "A".
2. Each span to be poured in one continuous operation.
3. Curbs and sidewalk to be formed and poured after roadway slab is set.
4. All exposed edges to have ¼" chamfer unless noted otherwise.
5. All diaphragms to be placed and have attained a cylinder strength of 2000 lb/in² prior to the pouring of deck slab.
6. Screeds for deck concrete shall be set to provide a uniform grade from end to end of the bridge and to accommodate the hogging of the stringers, (to be measured in the field) and also a dead load deflection of ¼" at midspan for 58'-0" spans and ⅛" at midspan for 43'-6" spans.
7. All reinforcing steel to be "Structural" grade.
8. Reinforcing steel to have 1½" cover unless noted otherwise.
9. Minimum dias. of pins to be used for bending bars, including hooks, to be 2x d". for ties or stirrups and 5x d". for #8 bars and under. Extension of free ends on hooks to be 4x d". Lap of bars for splices to be 40x d". Splices to be staggered.

Setting of Floor ℞ anchors in diaphragms

At Abuts. - Vert. distance from Cn of Rdwy. at Face of ballast wall to ℄ slotted holes		
At Pier #1 " " " " " " " ℄ Pier to ℄ slotted holes		
	West	℄ Roadway	East
North Abutment	6⅞"	3⅞"	3⅝"
N. diaphragm Pier #1	5⅛"	4"	5⅛"
S. diaphragm Pier #1	5⅛"	4"	5⅛"
South Abutment	3⅜"	3⅜"	6¾"

ESTIMATED QUANTITIES
(Including Approach curbs and Top of ballast walls)

Item	Concrete	Reinf. steel
Deck: Approach curbs & Top of B.W.	495 cu.yds.	105,900-lbs.
Precast sidewalk slabs	24 cu.yds.	3,400-lbs.
Totals	519 cu.yds.	109,300-lbs.

DELTA DISTRICT
TRANS-CANADA HIGHWAY MILE 96.82
LIVINGSTONE ROAD UNDERPASS
DECK DETAILS
SCALE: ¼" = 1'-0" AND AS NOTED

REVISIONS

Rev.	Particulars	Init.	Date
A	As built: re-sidewalk, also re-concrete reflector posts	R.J.A.	Feb 3/65

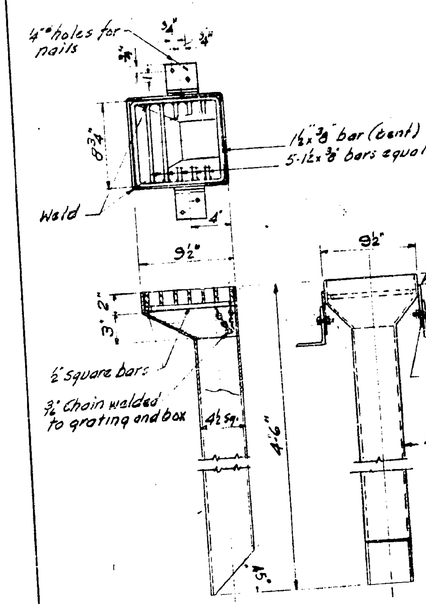
GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

	Init.	Date
Made by	J.T.W.S.	April 11/60
Checked by	P.R.	May 5-60
Approved:		

DRAWING No. 1648-10 A

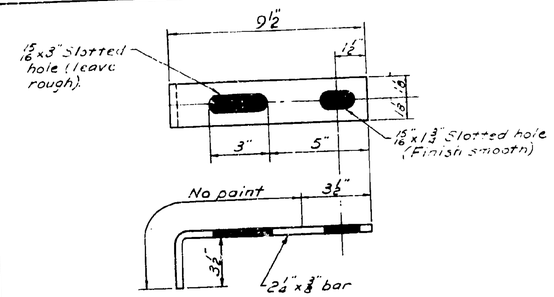
Cancel prints bearing earlier letter

18662

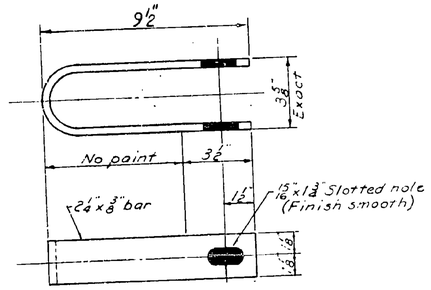


DRAIN Scale 1½"=1'-0"
(Galvanized after fabrication)
12. Req'd
Estimated wt. each 107 lbs

GOVT. OF BRITISH COLUMBIA
BRIDGE ENGINEER'S OFFICE
DELTA DISTRICT
LIVINGSTONE RD. UNDERPASS
DECK DRAINS



ANCHOR Mk.A5
8 Req'd.
Estimated wt. each 3.0 lbs.

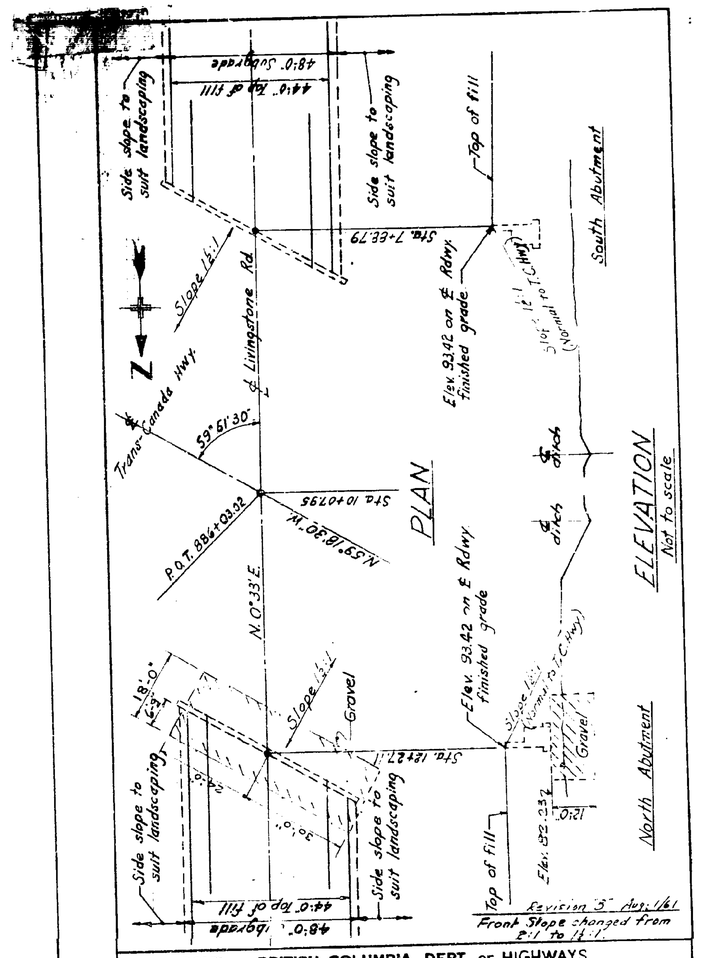


ANCHOR Mk.A6
8 Req'd
Estimated wt. each 5.0 lbs.
Scale: 3"=1'-0"

ESTIMATED WEIGHT
Total: 64 lbs

GOVT. OF BRITISH COLUMBIA. DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

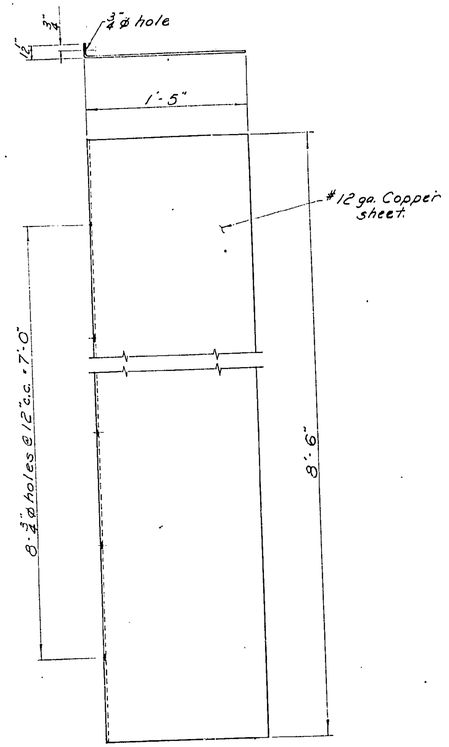
DELTA DISTRICT	MADE BY INIT.	DATE	CHECKED BY INIT.	DATE	SK.
LIVINGSTONE RD. UNDERPASS	J.T.W.S.	Jan.	P.P.		1648-12
FENCE ANCHOR DETAILS	APPROVED				



GOVT. OF BRITISH COLUMBIA. DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE.

DELTA DISTRICT	Made by Init.	Date	Checked by Init.	Date	S.K.
LIVINGSTONE RD. UNDERPASS	N.G.D.	May 12/61	J.T.W.S.	May 25/61	1648-13
LOCATION OF SLOPES	Approved:-				REV. B

18688



12 - Required
Scale: 1½" = 1'-0"

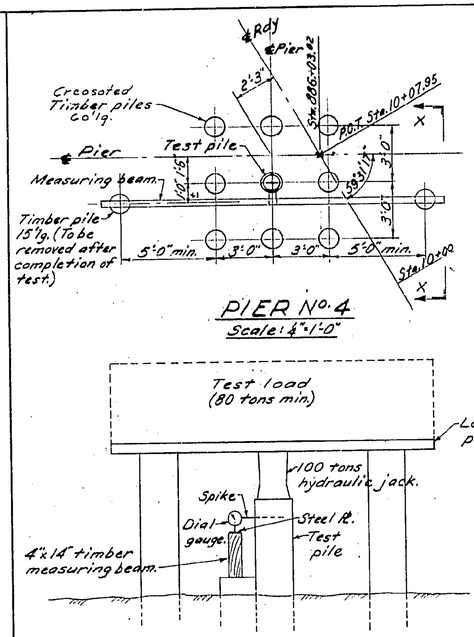
GOVT. OF BRITISH COLUMBIA. DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

DELTA DISTRICT
LIVINGSTONE ROAD UNDERPASS
COPPER FLASHING DETAIL

MADE BY		CHECKED BY	
INIT.	DATE	INIT.	DATE
J.T.W.S.	Aug 26/61	N.G.D.	Aug 26/61

APPROVED:-

SK. 1648-14



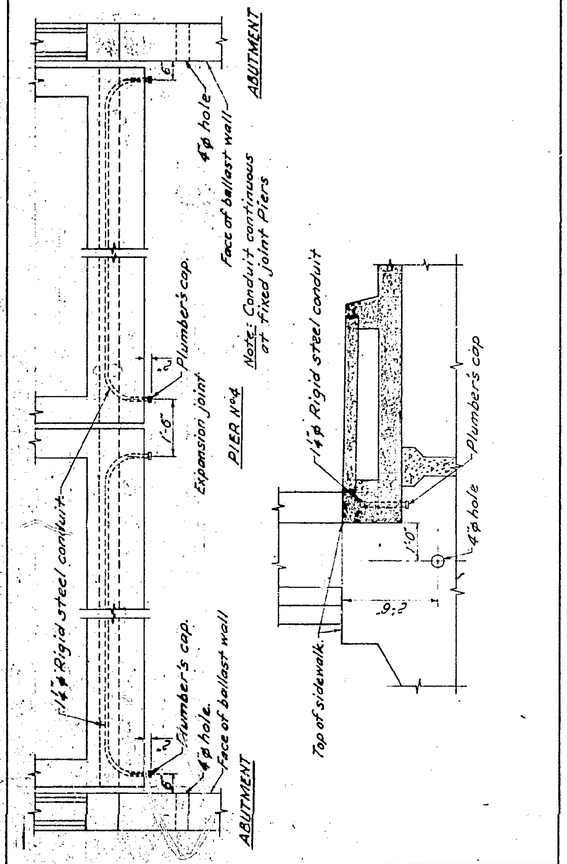
GOVT. OF BRITISH COLUMBIA. DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

DELTA DISTRICT
LIVINGSTONE RD. UNDERPASS
PILE LOAD TEST

MADE BY		CHECKED BY	
INIT.	DATE	INIT.	DATE
J.T.W.S.	Aug 26/61	D.A.	Oct 1/61

APPROVED:-

SK. 1648-15



GOVT. OF BRITISH COLUMBIA. DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

DELTA DISTRICT
LIVINGSTONE RD. UNDERPASS
ELECTRICAL CONDUIT INSTALLATION

MADE BY		CHECKED BY	
INIT.	DATE	INIT.	DATE
J.T.W.S.	Nov 14/61	D.A.	Nov 20/61

APPROVED:-

SK. 1648-16

18689

GOVERNMENT OF BRITISH COLUMBIA
DEPARTMENT OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

BILL No. 1648-X1 A
SHEET No. 1 of 1
FILE No. 1108
MADE BY J.T.W.S.
DATE July, 10/61
CHECKED BY N.G.D.
DATE August 24/61

BILL OF CREOSOTED PILES FOR PIERS

NAME OF WORK LIVINGSTONE RD. UNDERPASS
DELTA DISTRICT
TRANS-CANADA HIGHWAY

REVISIONS			
Rev.	Made by	Checked by	Date
A	J.T.W.S.	G.S.K.	July 23/62
B			
C			

ITEM No.	QUANTITY No.	SIZE	LENGTH Feet	DESCRIPTION	Total Length
				Piles to be Douglas Fir, treated with creosote oil by the "Empty Cell" boiling under vacuum process". Net quantity of oil retained to be not less than 10 lbs. per cubic foot of timber. All in accordance with the Depts' General Specifications Sections 305 & 307 except as noted below.	
1.	244		40'-0"	Piles	9,760

Length of Piles	Minimum Diameter At tip	Minimum Diameter At butt
40'-0"	10"	12"

Note: Butt measurement to be taken 3'-0" from butt

GOVERNMENT OF BRITISH COLUMBIA
DEPARTMENT OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

BILL No. 1648-X2
SHEET No. 1 of 1
FILE No. 1108
MADE BY J.T.W.S.
DATE Jan. 18/60
CHECKED BY P.P.
DATE May 4-60

BILL OF REINFORCING STEEL

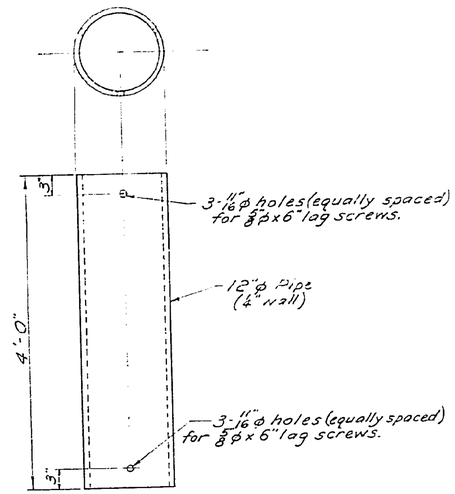
FOR SUBSTRUCTURE

NAME OF WORK LIVINGSTONE RD. U/P.

ITEM No.	No. REQ'D	MARK	SIZE	LENGTH	TOTAL LENGTH	BENDING DIMENSIONS A	B	C	D	E	F	G	H	L
1.			#9		1,855	Cut and bend to suit Dwg. No. 1648-4, 1648-5 Sk. 2085-1.								
2.			#7		10,310									
3.			#6		16,760									
4.			#5		1,860									
5.			#4		22,890									
6.			#3		270									

Total weight 53,050 lbs.

Reinforcing bars shall be in accordance with the Canadian Standards Association Specification for Billet Steel Reinforcing Bars No. G30.1 1954 or with the Specification for Rail Steel Reinforcing Bars No. G30.2 1954 and subsequent revisions thereof.



PILE SPLICE
No. req'd. 244 Est. wt. 132 lbs. ea.

Revision A: Pipe thickness altered. J.S. Aug. 3/62

Scale: 1" = 1'-0"

Estimated wt. total: 32,203 lbs. (Excluding Lag screws)

GOVT. OF BRITISH COLUMBIA. DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

DELTA DISTRICT
LIVINGSTONE RD. UNDERPASS
PILE SPLICE DETAIL

MADE BY INIT.	MADE BY DATE	CHECKED BY INIT.	CHECKED BY DATE
J.T.W.S.	July 23/62	G.P.	24-7-62

APPROVED:-

SK.
REV. A
1648-17

18690

GOVERNMENT OF BRITISH COLUMBIA
DEPARTMENT OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

BILL No. 1648-X5
SHEET No. 1 of 1
FILE No. 1108
MADE BY J.T.W.S.
DATE July, 23/62
CHECKED BY J.T.
DATE July, 23/62

BILL OF UNTREATED PILES

NAME OF WORK LIVINGSTONE RD. U/P
DELTA DISTRICT
TRANS-CANADA HIGHWAY

REVISIONS

Rev.	Made by	Checked by	Date
A			
B			
C			

ITEM No.	QUANTITY No	SIZE	LENGTH Ft.	DESCRIPTION	Total Lin. ft.
				Piles to be Douglas Fir conforming to Department's General Specifications Section 304, except as noted below.	
1.	244		50'	Piles	12,200

Length of Piles	Diameter At tip	Diameter At butt
50'	Min. 7"	Min. 12"

Note:
Butt measurements to be taken 3'-0" from butt.

GOVERNMENT OF BRITISH COLUMBIA
DEPARTMENT OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

BILL No. 1648-X4
SHEET No. 1 of 1
FILE No. 1108
MADE BY N.G.D.
DATE June 28/61
CHECKED BY J.T.W.S.
DATE June 29/61

BILL OF FENCE PANELS & ANCHORS

NAME OF WORK LIVINGSTONE RD. U/P.
DELTA DISTRICT
TRANS-CANADA HIGHWAY
MILE: 96.82

REVISIONS

Rev.	Made by	Checked by	Date
A			
B			
C			

ITEM	QUANTITY	A	B	C	D	N	WEIGHT PER UNIT	TOTAL WEIGHT
1	60	4½"	4½"	1'-2¼"	12'-11½"	8	500	30,000
Anchors								
MKA3	112						6	672
MKA4	56						6	336
MKA5	8						3	24
MKA6	8						5	40
Couplings								
Top	120						1.4	168
Btm.	120						.91	110
							Grand total	31,350 lbs

Notes:
1. With each panel are furnished two top rail couplings and two bottom rail bolts.
2. All in accordance with Dwg No 1810-7G and Sk. 1648-12

GOVERNMENT OF BRITISH COLUMBIA
DEPARTMENT OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

BILL No. 1648-X3
SHEET No. 1 of 1
FILE No. 1108
MADE BY J.T.W.S.
DATE Jan. 18/60
CHECKED BY P.P.
DATE May 4-60

BILL OF REINFORCING STEEL

FOR DECK
NAME OF WORK LIVINGSTONE RD. U/P.

ITEM No.	No. REQ'D	MARK	SIZE	LENGTH	TOTAL LENGTH	BENDING DIMENSIONS A	B	C	D	E	F	G	H	L
1.			#7		2,130									
2.			#6		230			Cut and bend to suit						
3.			#5		63,200			Dwg. No. 1648-10 and						
4.			#4		42,350			Sk 2054-1						
5.			#3		19,700									

Total weight 109,200 lbs.

Reinforcing bars shall be in accordance with the Canadian Standards Association Specification for Billet Steel Reinforcing Bars No. G30.1 1954 or with the Specification for Rail Steel Reinforcing Bars No. G30.2 1954 and subsequent revisions thereof.

18691

Revised July 23/62

DEPARTMENT OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

SCHEDULE OF MATERIAL

For LIVINGSTONE RD. UNDERPASS
DELTA DISTRICT
TRANS-CANADA HIGHWAY
MILE · 96.82

Sheet No. 1 of 2
Dwg. File No. 1648
Corr. File No. 1108
Made by J.T.W.S.
Date July 23/62
Checked by
Date July 27/62

ITEM	QUANTITY	DESCRIPTION	BILL	DRAWING	WEIGHT	REQ'N
		SUBSTRUCTURE (Including Catch basins)				
1.	9,760 lin.ft.	Creosoted piles	X1			
2.	12,280 lin.ft.	Untreated piles	X5			
3.	1-Lot	Pile splices		Sk.1648-17	32,208	
4.	1-Lot	3/8"ø x 6" Lag screws			740	
5.	1-Lot	3/4"ø x 24" Drift bolts			733	
6.	1865 sks.	Cement				
7.	1-Lot	Reinforcing steel	X2	1648-4 & 5 Sk.2085-1	69,050	
8.	23 gals.	Air entraining agent				
9.	1 set	Date numerals (3" high)				
10.	2 sets	Traffic reflectors				
11.	4 only	Reflector anchors				
12.	2 only	Trapping hoods		Misc.289-5		
13.	2 only	18" x 4" x 1'-6" plates			48	
14.	70 lin.ft.	12"ø No 16 ga. galvanized half-round metal flume 10' lg.				
15.	160 lin.ft.	6"ø No-Co-Rode pipe				
16.	20 lin.ft.	1 1/2" I.D. pipe galvanized				
17.	6 only	Floor plate anchors		Sk.2092-8	69	
18.	12 shts.	#12 ga. Copper sheet 8'-6" lg.		Sk.1648-14		
19.	1 roll	Tar paper				
		SUPERSTRUCTURE				
20.	36 only	Prestressed concrete stringers 58'-0" lg.		1648-6		
21.	12 only	" " " 43'-6" lg. (Including: Sole plates)				
22.	230 lin.ft.	Neoprene 3/8" x 19"				
23.	1-Lot	Bearings		1648-7	8,074	
24.	1-Lot	Floor plates		1648-8	5,930	
25.	1-Lot	Gutters & down pipes		1648-9	2,225	
26.	1-Lot	Fence panels & anchors	X4	1810-76 Sk.1648-12	31,350	
27.	1-Lot	Deck drains		Sk.1648-11	1,284	
28.	8 only	Sidewalk drains		Sk.2019-1	16	
29.	9 gals.	Red lead Alkyd/Oil D.O.H.A.2 (Shop)				
30.	10 gals.	Red lead Alkyd/Oil D.O.H.B.1				
31.	8 gals.	Green Alkyd D.O.H.C.1				
32.	2 gals.	Phenolic varnish vehicle				
33.	5 lbs.	Aluminum paste				

Revised July 23/62

DEPARTMENT OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

SCHEDULE OF MATERIAL

For LIVINGSTONE RD. UNDERPASS
DELTA DISTRICT
TRANS-CANADA HIGHWAY
MILE: 96.82

Sheet No. 2 of 2
Dwg. File No. 1648
Corr. File No. 1108
Made by J.T.W.S.
Date Aug. 16/61
Checked by N.C.D.
Date Sept. 13/61

ITEM	QUANTITY	DESCRIPTION	BILL	DRAWING	WEIGHT	REQ'N
		DECK (Including Approach Curbs)				
34.	3633 sks.	Cement				
35.	1-Lot	Reinforcing steel	X3	1648-10 Sk.2084-1	109,200	
36.	17 gals.	Air entraining agent				
37.	900 lin.ft.	1/2" x 12" Premoulded joint filler				
38.	240 lin.ft.	4" Corrugated rubber waterstop				
39.	27 gals.	Joint sealing compound (Black)				
40.	4 gals.	" " " (Grey)				
41.	1-bale	Oakum				
42.	12 only	Floor plate anchors		Sk.2092-8	138	

H. 217-0

18692

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Livingstone Road Underpass Delta ELECTORAL DISTRICT

General Description—Pile Driver (state motive power) Michigan Mobile Crane

Weight of hammer 5000 lbs. Length of drive lead 55 feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
25 Sept '64	1	58	50' with + 40' Treated		13	7	55	2	1	2	6	10	6	Pier #1
	2				14	8	56	1	1	2	6	10	3	
	3	90			13	7	56	1	1	2	6	10	10	
	4				13	6				2	6	10	2	
	5				14	9				2	12	10	6	
	6				13	8				2	12	10	4	
	7				14	8				2	8	10	5	
26 Sept.	8				15	9				6	10	6		
	9				13	8				10	10	3		
	10				14	7				6	10	4		
	11				15	8				4	10	6		
	12				15	8				6	10	10		
	13				14	9				12	10	6		
	14				13	8				6	10	4		
	15				14	9				8	10	8		
	16				14	8				6	10	4		
27 Sept.	17				15	7				6	10	4		
	18				15	8				8	10	4		
	19				16	7				6	10	3		
	20				15	8				6	10	3		
	21				14	7				6	10	3		
	22				15	8				8	10	4		
	23				15	8				6	10	3		
	24				16	7				6	10	3		

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542

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Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Pier #2 Pier #1 ELECTORAL DISTRICT

General Description—Pile Driver (state motive power)

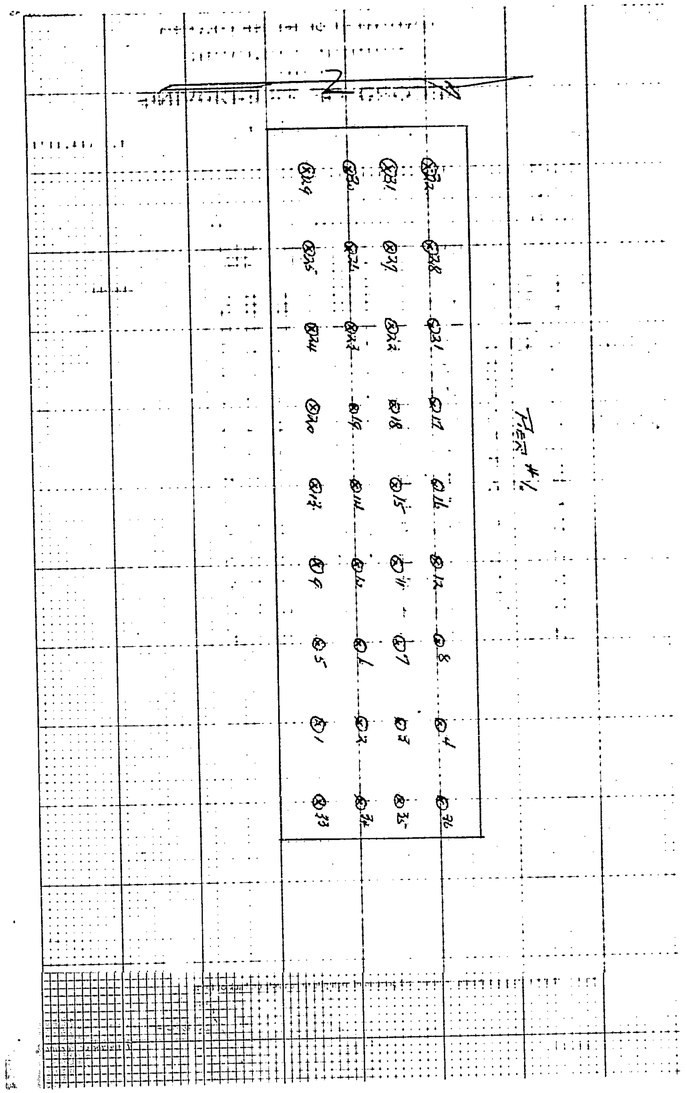
Weight of hammer lbs. Length of drive lead feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
27 Sept '63		25	58	Treated Fir	15	7	56	1	1	2	1	10	3	
		26			15	8	56	1	1	1	12	10	3	
		27			14	8	56	1	1	2	12	10	3	
8 Sept '62		28			15	8	56	1	1	2	12	10	4	
		29			15	7	56	1	1	2	12	10	3	
		30			15	9	56	1	1	3	12	10	11	
		31			14	8	56	1	1	4	12	10	4	
		32			14	8	55	2	1	2	12	10	3	
		33			15	8	56	1	1	6	12	10	4	
		34			15	9	56	1	1	8	12	10	3	
		35			14	8	56	1	1	6	12	10	4	
		36			14	8	56	1	1	6	12	10	5	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542



18693

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Livingstone Road Underpass Delta ELECTORAL DISTRICT

General Description—Pile Driver (state motive power) McKiernan Marble Crane

Weight of hammer 3000 lbs. Length of drive lead 55 feet.

	No. of Bent	No. of Pile	Length of Pile in Leads Feet	Kind of Timber	Diameter of Pile Butt Ins.	Diameter of Pile Tip Ins.	Depth Driven in Ground Feet	Length of Cut-off Feet	Length Above Ground to Cut-off Feet	First Blow Drop of Hammer Feet	First Blow Penetration Ins.	Average of Last Three Blows Drop of Hammer Feet	Average of Last Three Blows Penetration Ins.	Remarks
														Pier #2.
19 Sept 6x		1	88	50' Untreated	15 7	56	1	1	2	2	15 2			
20 Sept 6x		2			15 7					2	10 2			
		3			15 8					1	10 2			
		4			16 7					1	10 2			
21 Sept 6x		5			15 8					1	10 2			
		6			16 8					2	10 1			
		7		40' Treated	16 9					2	10 2			
		8			15 7					2	10 1			
		9			15 8					2	10 2			
		10			15 7					1	10 1			
		11			16 7					2	10 2			
		12			15 8					1	10 2			
		13			16 8					2	10 2			
		14			15 7					2	10 3			
		15			14 8					2	10 2			
		16			15 8					2	10 3			
		17			16 7					1	10 2			
		18			16 8					1	10 2			
24 Sept 6x		19			15 7					1	10 3			
		20			16 8					1	10 2			
		21			15 7					2	10 3			
		22			15 8					2	10 2			
		23			16 7					2	10 3			

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Fleet 1 & Trestle 2 ELECTORAL DISTRICT

General Description—Pile Driver (state motive power)

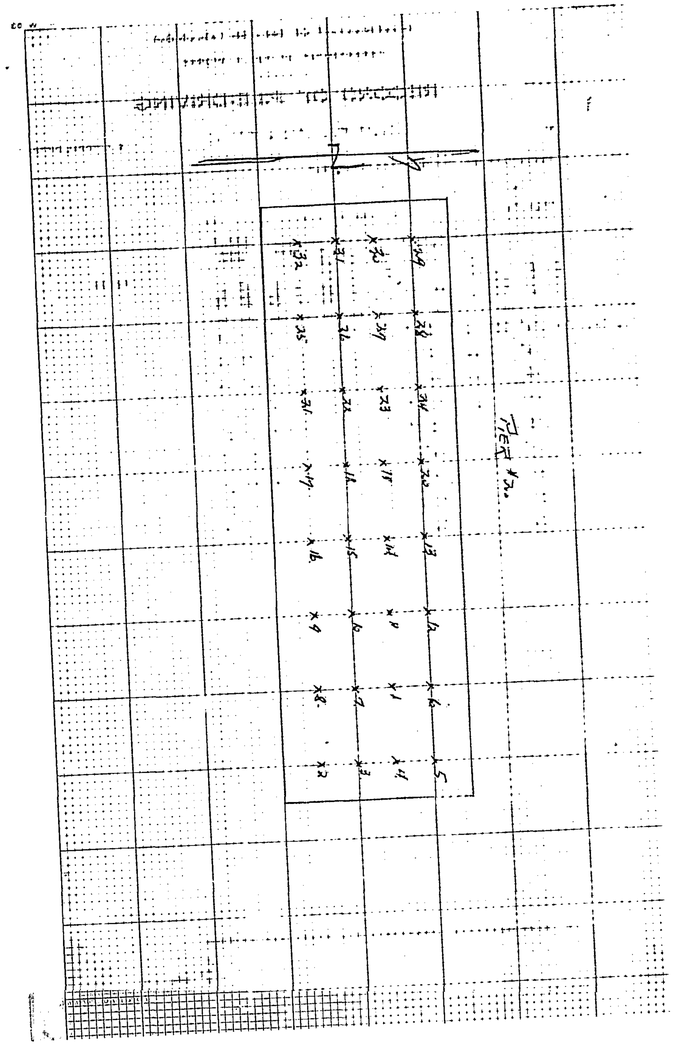
Weight of hammer lbs. Length of drive lead feet.

	No. of Bent	No. of Pile	Length of Pile in Leads Feet	Kind of Timber	Diameter of Pile Butt Ins.	Diameter of Pile Tip Ins.	Depth Driven in Ground Feet	Length of Cut-off Feet	Length Above Ground to Cut-off Feet	First Blow Drop of Hammer Feet	First Blow Penetration Ins.	Average of Last Three Blows Drop of Hammer Feet	Average of Last Three Blows Penetration Ins.	Remarks
21 Sept 6x		24	55	5	16 7	56	1	1	2	1	2			
		25			15 8					1	2			
		26			16 7					1	2			
		27			15 7					1	2			
		28			16 7					1	2			
		29			15 8					1	2			
		30			14 7					1	2			
		31			15 8					1	2			
		32			16 7					1	2			

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542



18694

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Livingstone Road Underpass Delta ELECTORAL DISTRICT

General Description—Pile Driver (state motive power) Michigan Mobile Crane

Weight of hammer 3000 lbs. Length of drive lead 55 feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
														Pier #3.
13 Sept 62	1	88	55'		12	7	87	-	1	2	6	10	12	
	2			W	14	7	86	1	1		6	10	4	
14 Sept.	3			R	14	8					8	10	8	
	4			E	15	7					8	10	5	
	5			N	14	8					8	10	6	
	6			J	14	7					12	10	5	
	7		40'		15	8					12	10	5	
	8			T	14	7					12	10	2	
17 Sept.	9			D	14	8					12	10	6	
	10			A	14	7					12	10	5	
	11			E	14	7					12	10	5	
	12			J	15	7					12	10	5	
	13				14	7					12	10	4	
18 Sept	14				12	8					12	10	3	
	15				14	7					12	10	5	
	16				15	7					12	10	4	
	17				14	7					12	10	5	
	18				15	7					12	10	5	
	19				15	7					12	10	4	
	20				14	8					12	10	3	
19 Sept.	21				15	8					12	10	2	
	22				15	7					12	10	2	
	23				14	9					12	10	3	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

F. Kelsey

Inspector or Foreman.

3M-951-8542

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Bent #2 Pier #3. ELECTORAL DISTRICT

General Description—Pile Driver (state motive power)

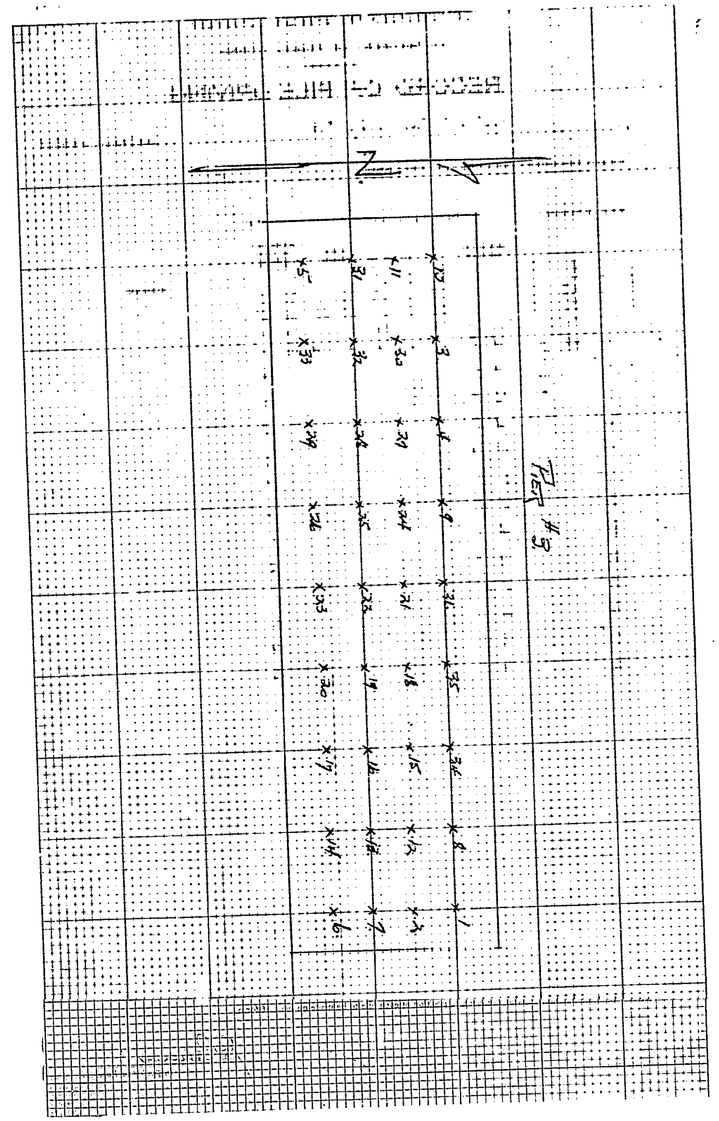
Weight of hammer lbs. Length of drive lead feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
9 Sept		24	55		14	9	56	1	1	2	24	6	-	
		25		H	14	4							3	
		26		E	15	7							2	
		27		M	14	8							3	
		28		L	15	7							3	
		29		O	15	8							3	
		30		C	15	8							2	
10 Sept		31		K	14	9							3	
		32			14	7							2	
		33			15	8							3	
		34			16	7							2	
		35			16	7							2	
		36			16	7							2	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542



18695

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Livingstone Road Underpass, Delta ELECTORAL DISTRICT

General Description—Pile Driver (state motive power) Michigan Mobile Crane.

Weight of hammer 3000 lbs. Length of drive lead 53 feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
														Pier #A.
7 Sept. 62		1	93	50'	13	7	91	1	1	1	3	10	3	
		2	93	WHITE CEDAR TIMBER	13	10	91	1					7	
10 Sept.		3	93		14	10	91	1					2	
		4	96		14	9	92	1					2	
		5	95		13	7	92	2					2	
		6	92		14	7	90	1					3	
		7	88	40'	15	7	86						3	
		8			14	8							3	
		9			13	7							3	
		10			14	8							4	
		11			13	7							4	
		12			13	7							4	
11 Sept.		13			14	8							3	
		14			14	7							3	
		15			15	7							3	
		16			13	7							4	
		17			14	7							3	
		18			14	7							3	
		19			14	7							4	
		20			13	8							3	
		21			14	8							3	
		22			13	7							3	
		23			14	7							3	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Fraser River Pier #A. ELECTORAL DISTRICT

General Description—Pile Driver (state motive power)

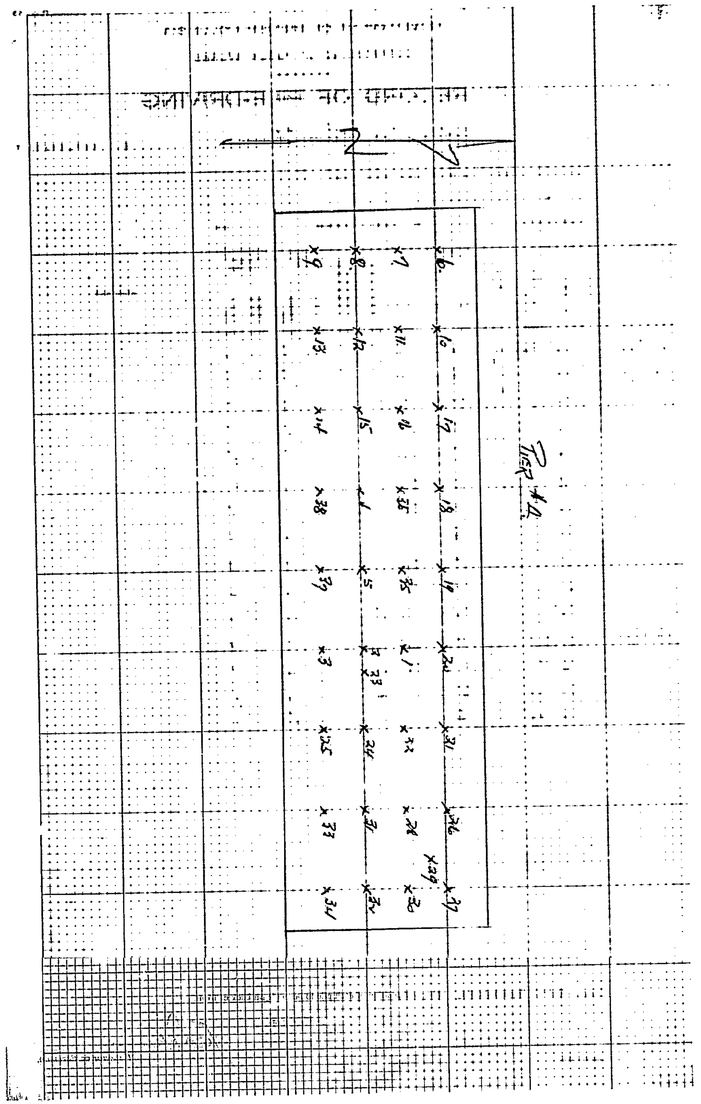
Weight of hammer lbs. Length of drive lead feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
1 Sept		24	55	Fir	14	7	56	1	1	2	3	10	3	
2 Sept		25			13	8	56	1	1		3		3	
		26			14	8	49	10			3		5	
		27			14	7	56	1			3		3	
		28			13	7	56	1			3		5	
		29			13	7	56	1			4		3	
		30			14	7	56	1			4		3	
		31			13	7	56	1			4		3	
		32			14	8	56	1			4		3	
		33			14	7	56	1			4		5	
		34			14	7	52	5			4		1	
3 Sept		35	97		16	8	64	2			4		1	
		36	97		16	7	62	2			4		1	
		37	97		15	7	61	2			4		1	
		38	97		16	7	62	2			4		1	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542



18696

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Livingstone Road Overpass Delta ELECTORAL DISTRICT

General Description—Pile Driver (state motive power) Michigan Marble Frame

Weight of hammer 3000 lbs. Length of drive lead 55 feet.

	No. of Bent	No. of Pile	Length of Pile in Leads Feet	Kind of Timber	Diameter of Pile Butt Ins.	Diameter of Pile Tip Ins.	Depth Driven in Ground Feet	Length of Cut-off Feet	Length Above Ground to Cut-off Feet	First Blow Drop of Hammer Feet	First Blow Penetration Ins.	Average of Last Three Blows Drop of Hammer Feet	Average of Last Three Blows Penetration Ins.	Remarks
														Pier #5.
12 Oct 6a		1	88	50'	16	9	85	2	1	2	6	12	2	
		2		H	15	9						12	2	
		3		N	16	9						12	3	
		4		I	15	8						14	2	
15 Oct		5		R	16	8						12	3	
		6		E	15	8						12	3	
		7		A	15	8						12	3	
		8		T	40'	14	9					10	4	
		9		E	15	10						10	3	
		10		D	14	9						12	3	
		11		A	13	9						10	4	
		12		T	14	9						10	4	
16 Oct		13		E	14	8						14	4	
		14		D	15	9						14	4	
		15			14	8						12	3	
		16	88		14	8						14	4	
		17	76		15	8	79					14	3	
		18	88		13	8	85					14	4	
		19			15	8						14	2	
		20			14	9						12	3	
17 Oct.		21			13	9						12	4	
		22			14	9	83	4				12	2	
		23			13	8	83	4				12	3	

NOTE.—Skeleton diagram showing number and position of each pile to be made on back of form.

J. E. Robson
Inspector or Foreman.

3M-951-8542

10

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Street N. Pier #5 ELECTORAL DISTRICT

General Description—Pile Driver (state motive power)

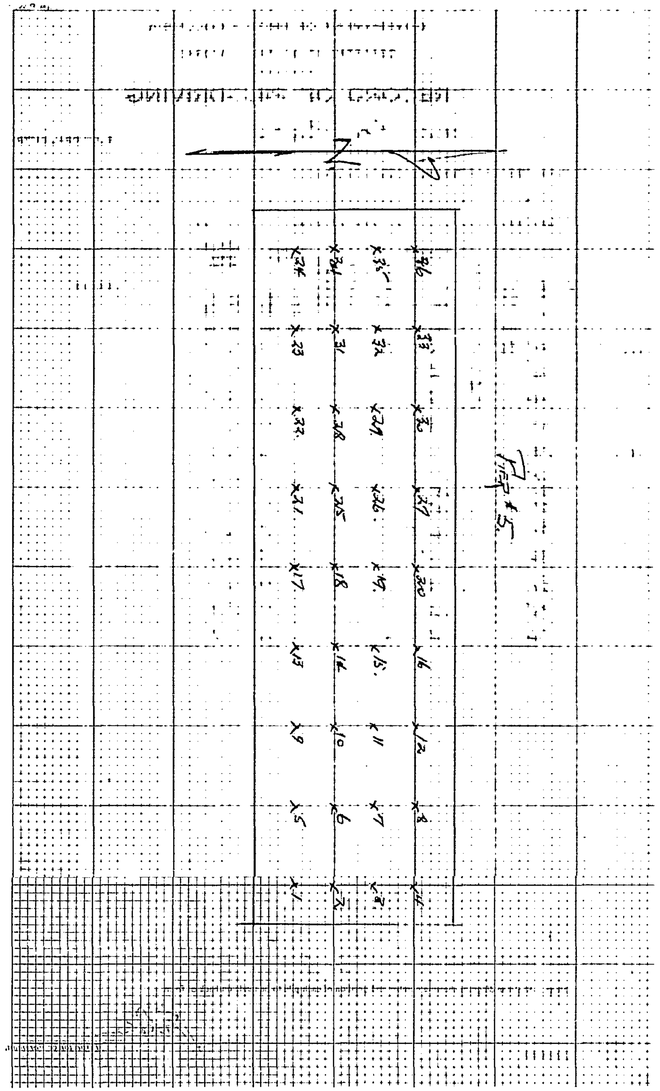
Weight of hammer lbs. Length of drive lead feet.

	No. of Bent	No. of Pile	Length of Pile in Leads Feet	Kind of Timber	Diameter of Pile Butt Ins.	Diameter of Pile Tip Ins.	Depth Driven in Ground Feet	Length of Cut-off Feet	Length Above Ground to Cut-off Feet	First Blow Drop of Hammer Feet	First Blow Penetration Ins.	Average of Last Three Blows Drop of Hammer Feet	Average of Last Three Blows Penetration Ins.	Remarks
Oct. 17		24	88	F	13	9	85	2	1	2	12	12	4	
		25		H	12	8					12	12	4	
		26		M	12	9					12	15	4	
		27		F	13	8					14	12	3	
Oct.		28			15	8					14	12	3	
		29			13	8					14	12	3	
		30			15	9					12	12	3	
		31			15	8					12	12	3	
		32			16	8					8	12	2	
		33			15	9					8	12	2	
		34			12	8					12	12	3	
		35			13	8					15	15	3	
		36			14	9					15	15	3	

NOTE.—Skeleton diagram showing number and position of each pile to be made on back of form.

J. E. Robson
Inspector or Foreman.

3M-951-8542



18697

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Livingstone Road Underpass Delta ELECTORAL DISTRICT

General Description—Pile Driver (state motive power) Michigan Mobile Crane

Weight of hammer 3000 lbs. Length of drive lead 55 feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
														Pier #6.
2 Oct '62		1	88	50'	15	9	86	1	1	2	4	12	2	
		2		H	16	9	83	4			6	12	3	
		3		N	17	6	86	1			5	12	2	
		4		T	18	7	85	2			3	12	3	
		5		R	14	8					3	12	2	
3 Oct.		6		E	13	8					4	12	2	
		7		A	14	7					3	12	3	
		8		T	15	8					4	12	3	
		9		E	14	9					3	12	2	
		10		D	14	10					4	12	3	
		11			13	8					3	12	2	
		12			15	7	82	5			4	12	3	
		13			15	8					3	12	3	
		14			14	8					3	12	2	
		15			15	7					2	12	3	
		16			15	8					3	12	2	
		17			16	8					4	12	2	
		18			15	9					2	12	3	
		19			16	8					3	12	2	
4 Oct.		20			15	8	84	3			3	12	3	
		21			17	8					4	12	3	
		22			15	7					4	12	4	
		23			15	8	85	2			4	12	4	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Sheet #2 Pier #6 ELECTORAL DISTRICT

General Description—Pile Driver (state motive power)

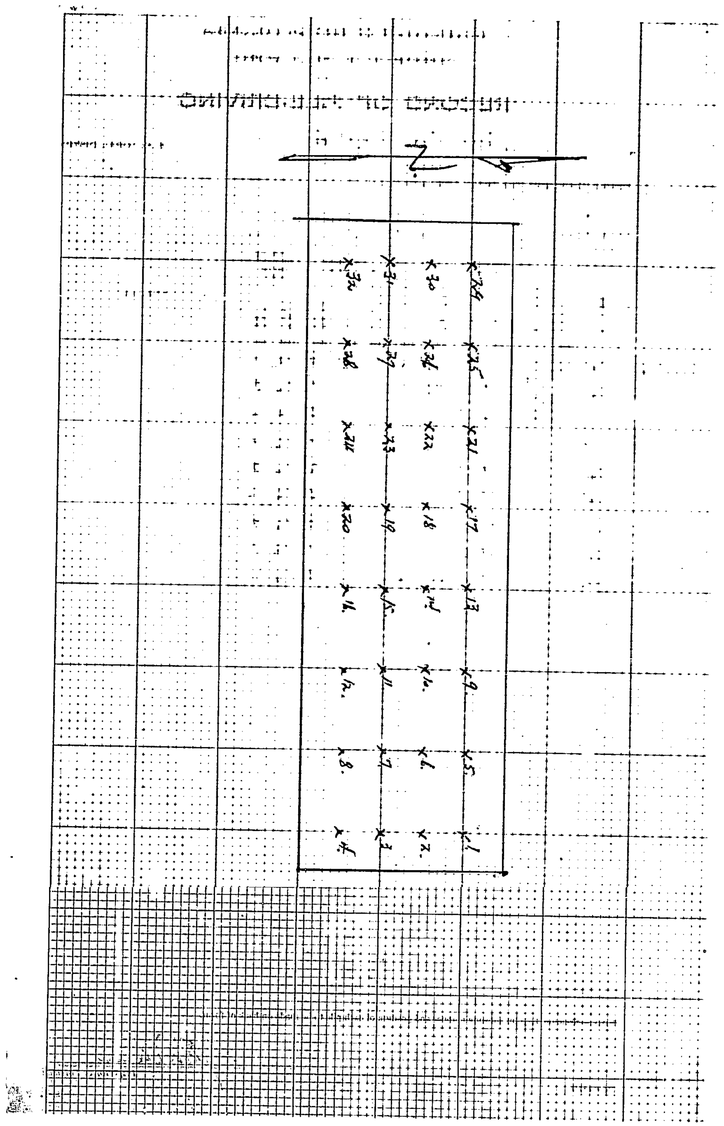
Weight of hammer lbs. Length of drive lead feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile: Butt (Ins.)	Diameter of Pile: Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow: Drop of Hammer (Feet)	First Blow: Penetration (Ins.)	Average of Last Three Blows: Drop of Hammer (Feet)	Average of Last Three Blows: Penetration (Ins.)	Remarks
4 Oct. '62		24	88	F	15	8	85	2	1	2	3	12	2	
		25		N	14	8	86	1			4	12	3	
		26			15	9					3	12	2	
		27			15	8					4	12	4	
		28			14	7					3	12	3	
		29			15	9					3	12	2	
		30			15	8					3	12	3	
		31			14	8					4	12	3	
		32			15	7	85	2			3	12	3	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542



18698

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Livingstone Road Underpass Delta ELECTORAL DISTRICT

General Description—Pile Driver (state motive power) Michigan Mobile Crane

Weight of hammer 3000 lbs. Length of drive lead 53' feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile Butt (Ins.)	Diameter of Pile Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow Drop of Hammer (Feet)	First Blow Penetration (Ins.)	Average of Last Three Blows Drop of Hammer (Feet)	Average of Last Three Blows Penetration (Ins.)	Remarks
														Pier #1
5 Oct. 62		1	88	50'	14	7	86	1	1	2	3	12	4	
		2		Untreated	15	8		1			4	12	5	
		3			13	8		1			3	12	4	
9 Oct. 62		4			15	9		1			5	12	2	
		5			15	8		1			4	12	3	
		6			15	8	85	2			5	12	4	
		7			15	8	86	1			4	12	3	
		8		40'	15	8		1			5	12	4	
		9		Treated	14	7		1			4	12	3	
		10			15	8		1			4	12	3	
		11			14	8		1			6	12	3	
10 Oct. 62		12			15	8		1			4	12	3	
		13			15	8	85	2			4	12	4	
		14			14	7	85	2			6	14	3	
		15			15	8	86	1			6	15	4	
		16			15	7	1	1			6	15	4	
		17			15	9	1	1		4	7	15	3	
		18			16	8	85	2		4	8	14	4	
		19			18	8	86	1		4	8	14	4	
		20			16	8	1	1		4	8	14	3	
		21			15	8	85	2		3	8	14	3	
		22			20	9	85	2			8	12	4	
11 Oct. 62		23			16	8	86	1			8	12	3	
		24			13	8	1	1			6	12	3	

Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

3M-951-8542

Form P.W. 53

GOVERNMENT OF BRITISH COLUMBIA

DEPARTMENT OF PUBLIC WORKS

RECORD OF PILE-DRIVING

AT Pier #2 Pier #1 ELECTORAL DISTRICT

General Description—Pile Driver (state motive power)

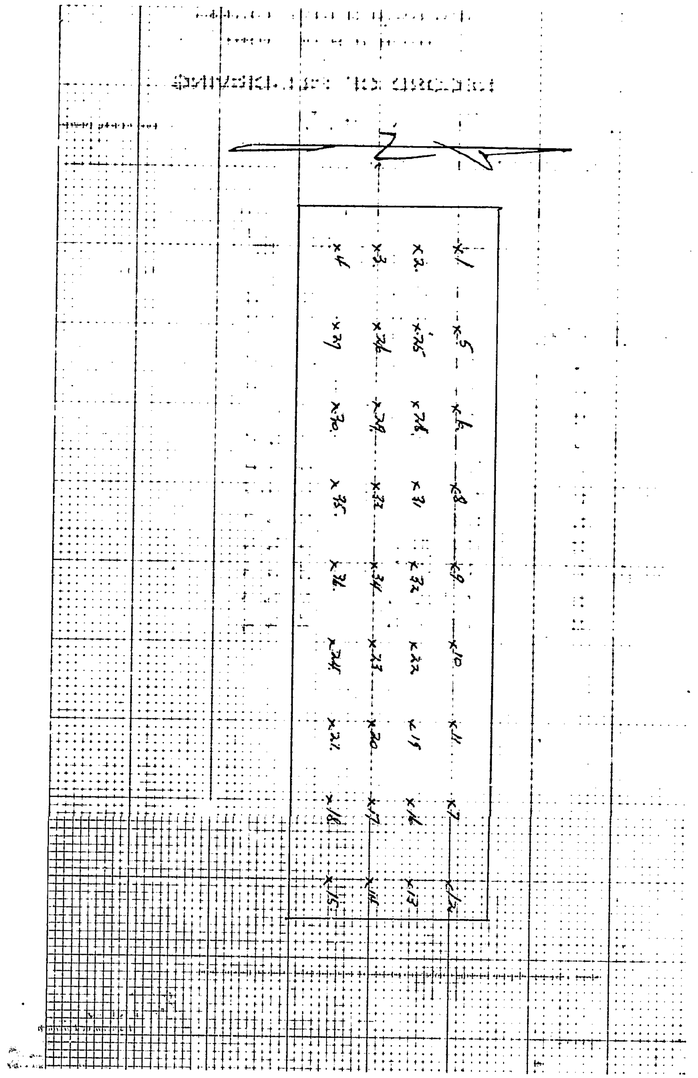
Weight of hammer lbs. Length of drive lead feet.

	No. of Bent	No. of Pile	Length of Pile in Leads (Feet)	Kind of Timber	Diameter of Pile Butt (Ins.)	Diameter of Pile Tip (Ins.)	Depth Driven in Ground (Feet)	Length of Cut-off (Feet)	Length Above Ground to Cut-off (Feet)	First Blow Drop of Hammer (Feet)	First Blow Penetration (Ins.)	Average of Last Three Blows Drop of Hammer (Feet)	Average of Last Three Blows Penetration (Ins.)	Remarks
11 Oct. 62		25	58		17	8	85	2	1	2	3	12	4	
		26			13	8	1	1		2	6	12	4	
		27			14	8	1	2		3	5	12	4	
		28			14	9	1	2		3	6	12	3	
		29			15	8	86	1		2	5	12	4	
		30			16	9	1	1			12	15	4	
		31			16	8	1	1			12	12	3	
		32			13	8	1	1			12	12	3	
		33			15	8	85	2			12	12	2	
12 Oct. 62		34			13	9	86	1			5	12	2	
		35			14	8	85	2			5	12	2	
		36			14	9	1	2			6	12	2	

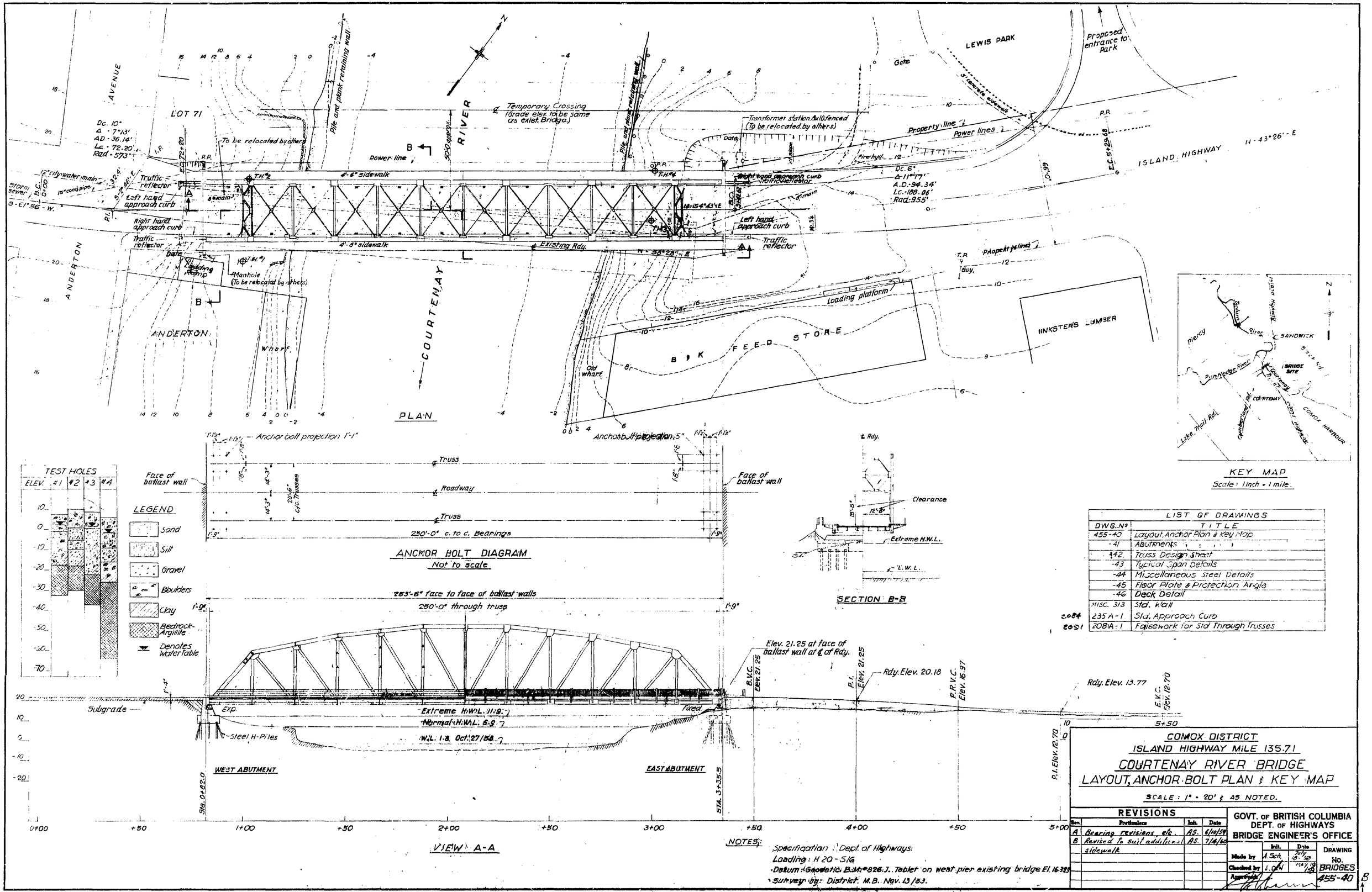
Note.—Skeleton diagram showing number and position of each pile to be made on back of form.

Inspector or Foreman.

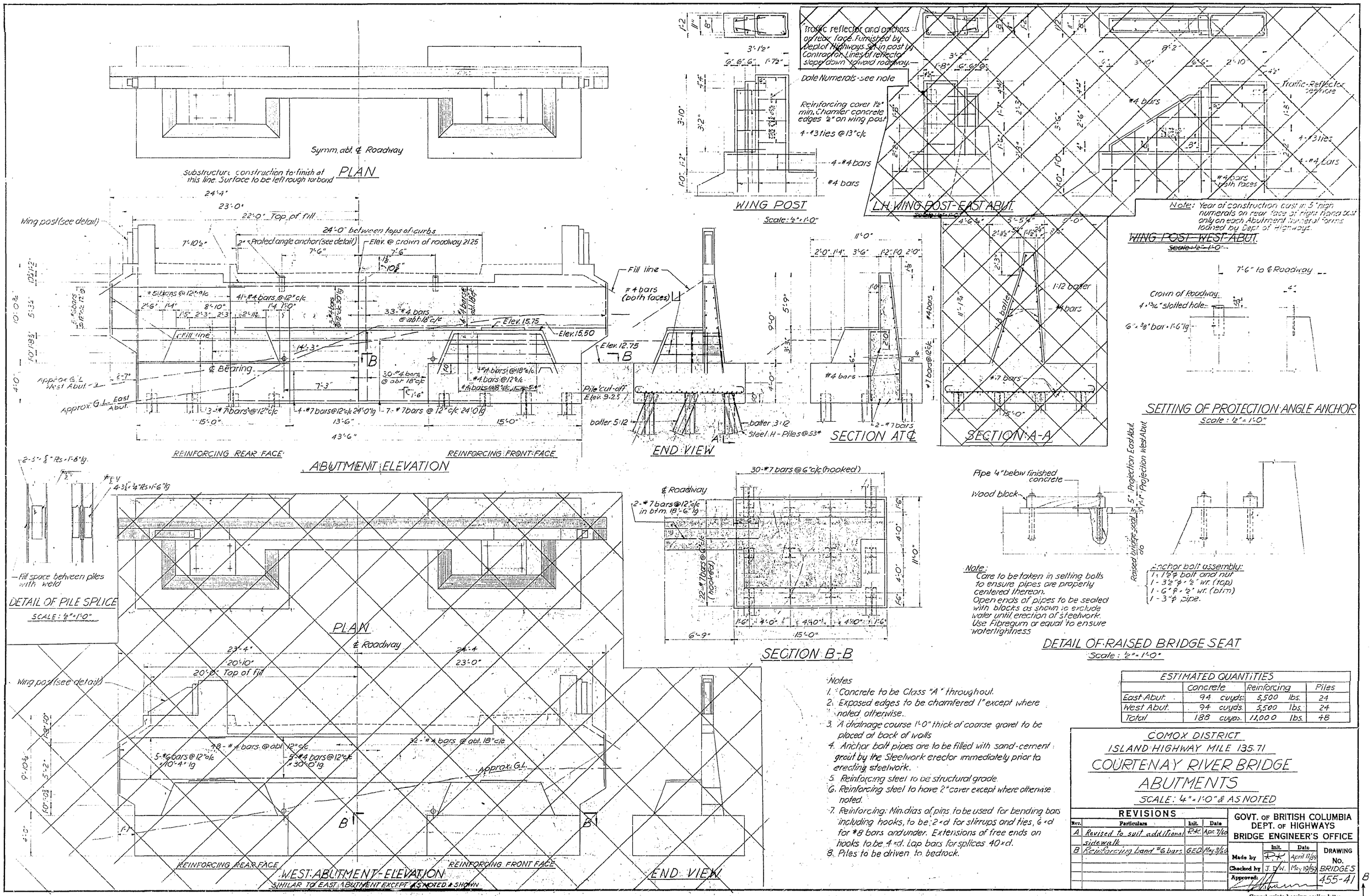
3M-951-8542



18699



LIST OF DRAWINGS		
DWG. Nº	TITLE	
455-40	Layout, Anchor Plan & Key Map	
-41	Abutments	
-42	Truss Design Sheet	
-43	Typical Span Details	
-44	Miscellaneous Steel Details	
-45	Floor Plate & Protection Angle	
-46	Deck Detail	
Misc. 313	Std. Wall	
2084 235 A-1	Std. Approach Curb	
2081 208A-1	Falsework for Std Through Trusses	



Notes

1. Concrete to be Class "A" throughout.
2. Exposed edges to be chamfered 1" except where noted otherwise.
3. A drainage course 1'-0" thick of coarse gravel to be placed at back of walls
4. Anchor bolt pipes are to be filled with sand-cement grout by the Steelwork erector immediately prior to erecting steelwork.
5. Reinforcing steel to be structural grade.
6. Reinforcing steel to have 2" cover except where otherwise noted.
7. Reinforcing: Min. dias of pins to be used for bending bars including hooks, to be: 2 x d for stirrups and ties, 6 x d for #8 bars and under. Extensions of free ends on hooks to be 4 x d. Lap bars for splices 40 x d.
8. Piles to be driven to bedrock.

ESTIMATED QUANTITIES

	Concrete	Reinforcing	Piles
East Abut.	94 cuyds.	5,500 lbs.	24
West Abut.	94 cuyds.	5,500 lbs.	24
Total	188 cuyds.	11,000 lbs.	48

COMOX DISTRICT

ISLAND HIGHWAY MILE 135.71

COURTENAY RIVER BRIDGE ABUTMENTS

SCALE: 1/4" = 1'-0" & AS NOTED

REVISIONS

Rev.	Particulars	Init.	Date
A	Revised to suit additional sidewalk	R.K.	Apr. 7/60
B	Reinforcing band #6 bars	GEO	May 3/60

GOVT. OF BRITISH COLUMBIA
DEPT. OF HIGHWAYS
BRIDGE ENGINEER'S OFFICE

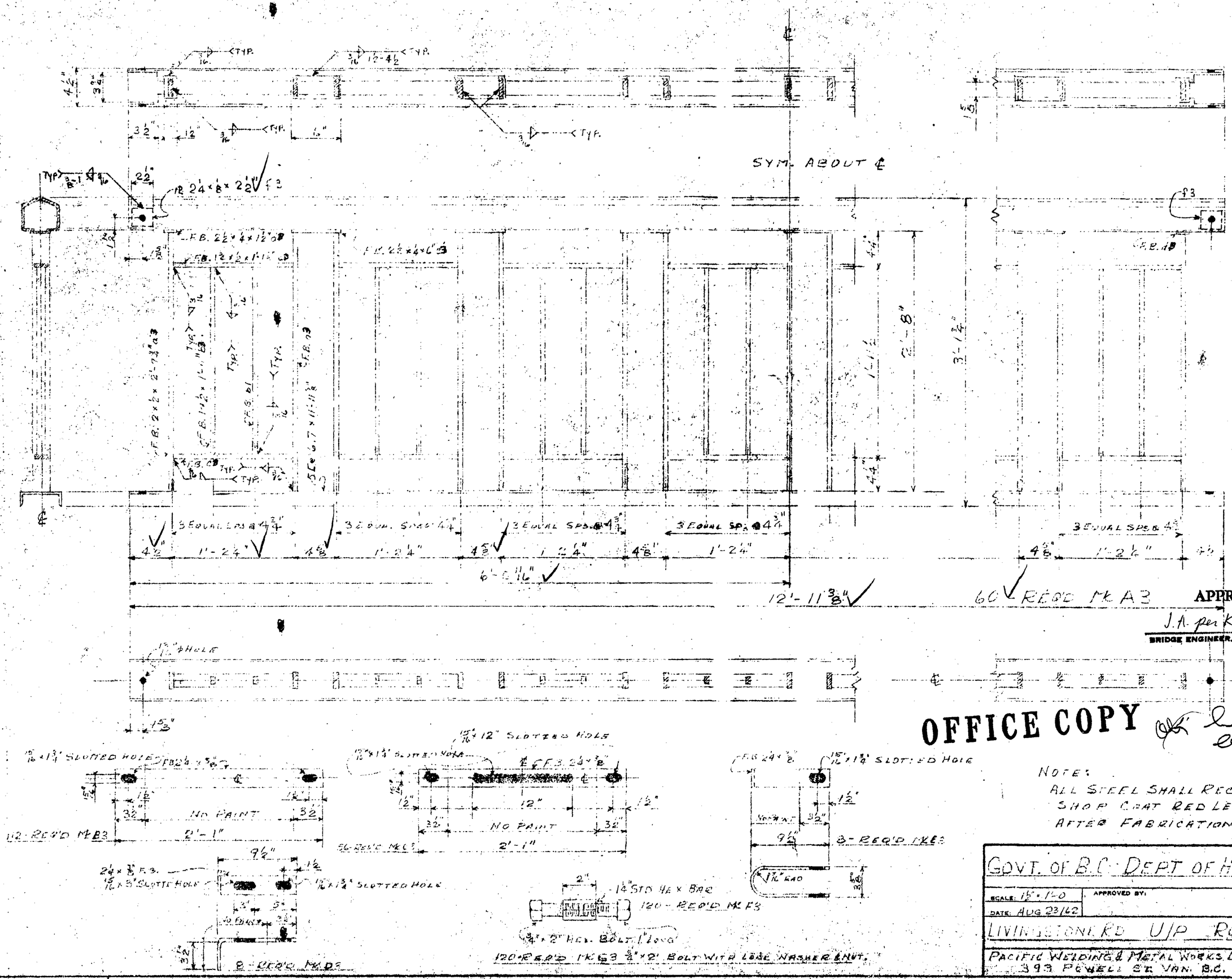
	Init.	Date
Made by	R.K.	April 17/59
Checked by	J. D.W.	May 19/59
Approved:		

DRAWING No. BRIDGES 455-41

B

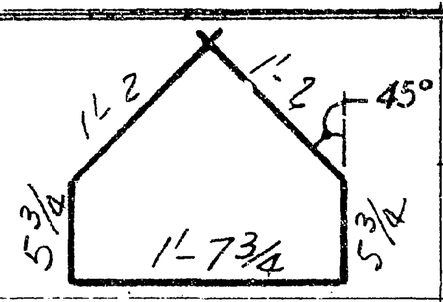
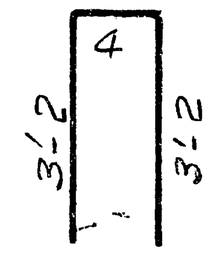
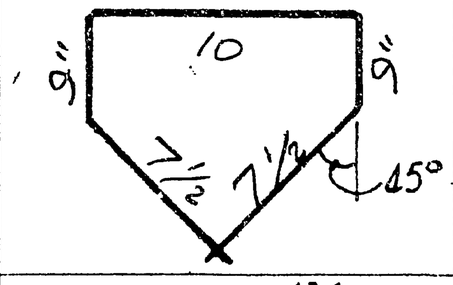
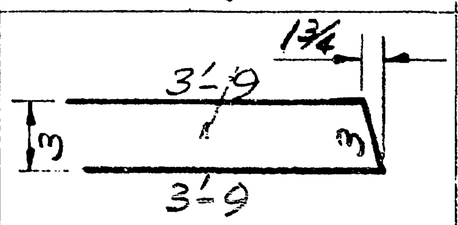
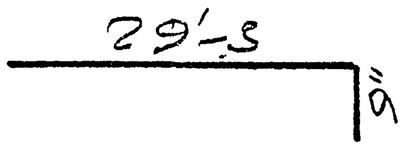
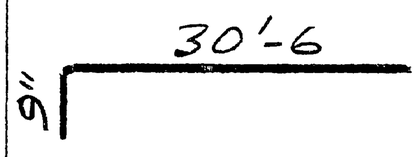
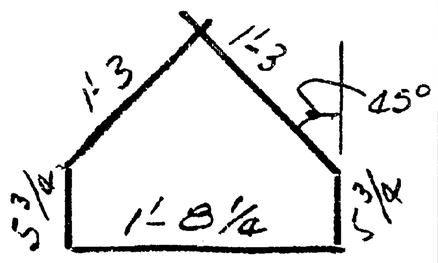
Cancel prints bearing earlier letter

18888



17X22 PRINTED ON NO. 1000H CLEARPRINT

STEEL SCHEDULE

BEAM MK	QUANTITY: BEAMS	QUANTITY: REINFORCEMENT 1-BEAM	QUANTITY: REINFORCEMENT TOTAL	BAR MK	SIZE	LENGTH FEET	TYPE	TOTAL L. FEET	REMARKS
MK 1	18	35	630	A	#4	4'-11¼"		3,111	Sharp bends required
		32	576		#5			2,844	
		35	630	B	#4	6'-8"		4,200	
		34	612		#5			4,080	
		35	630	C	#4	3'-7"		2,257	
		18	324		#5			1,161	
		16	288		#6			1,032	
		4	72	D	#4	7'-9"		558	Sharp bends required
		2	36	J	#5	30'-0"		1,080	
		2	36	J₁	#5	31'-3"		1,125	Including 2'-1 for overlap
		2	36	AA	#5	5'-1¾		185	Sharp bends required.

Σ #4	10,126	6,764#
Σ #5	10,475	10,925#
Σ #6	1,032	1,550#
		19,239# (1,069#)

Reinforcement shall be intermediate grade billet steel deformed bars conforming to C.S.A. specification G.30-1954

Bend bars to true shape and dimensions. All dimensions **OUT TO OUT.**

Tag all steel correctly.

JUN 28 1962

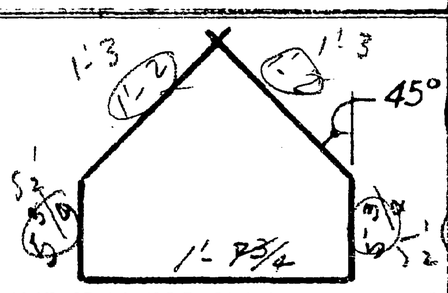
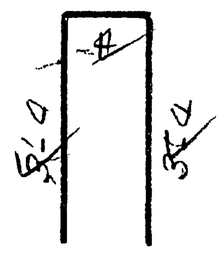
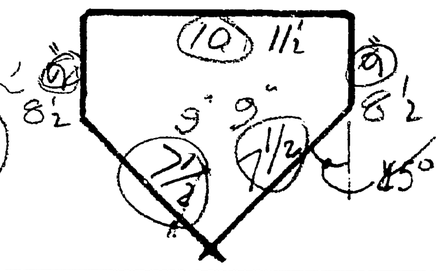
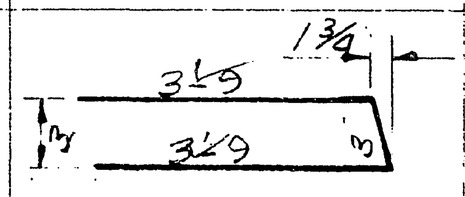
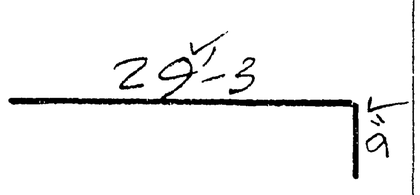
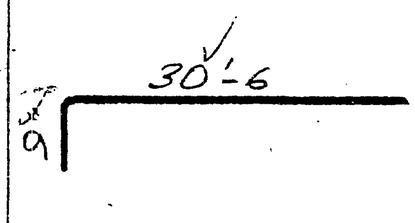
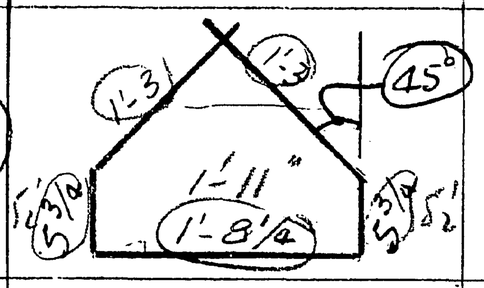
SUPERIOR CONCRETE PRODUCTS LTD.
551 SEYMOUR BLVD.
NORTH VANCOUVER, B.C.

BRIDGES 1648-6

58'-0" P/S INT. BEAMS MK 1

SCALE	MADE BY: L.V.S.	DATE: 18 May 1962	APPROVED: 99915	DWG. No. 881-3A
	CHECKED BY: VM	DATE: 25 June '62	REVISED:	

STEEL SCHEDULE

BEAM MK	QUANTITY: BEAMS	QUANTITY: REINFORCEMENT 1-BEAM	QUANTITY: REINFORCEMENT TOTAL	BAR MK	SIZE	LENGTH FEET	TYPE	TOTAL L. FEET	REMARKS
MK2	12	33 35	396 420	A	#4	4'-11¼"		2,074	Sharp bends required
		32	384		#5			1,896	
		33 35	396 420	B	#4	7'-0"		2,940	
		34	408		#5			2,856	
		33 35	396 420	C	#4	3'-7"		1,505	Check dimensions of bars for 1¼" concrete cover.
		18	216		#5			774	
		16	192		#6			688	
		4	48	D	#4	7'-9"		372	Sharp bends required
		2	24	J	#5	30'-0"		720	
		2	24	J1	#5	31'-3"		750	Including 2'-1 for overlap
		2	24	AA	#5	5'-1¾"		123	Sharp bends required.

Σ #4	6,891	4,603#
Σ #5	7,119	7,425#
Σ #6	688	1,034#
		13,062# (1,089#)

Reinforcement shall be intermediate grade billet steel deformed bars conforming to C.S.A. specification G.30-1952

Bend bars to true shape and dimensions. All dimensions **OUT TO OUT.**

Tag all steel correctly.

JUN 25 1962

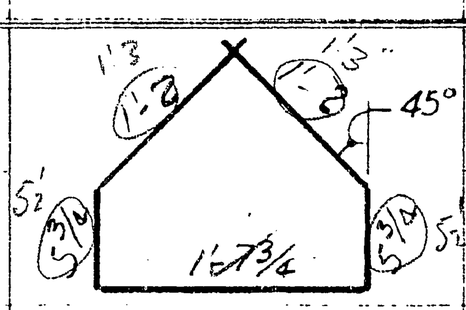
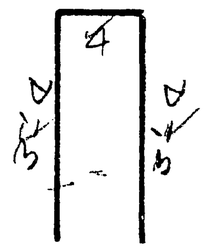
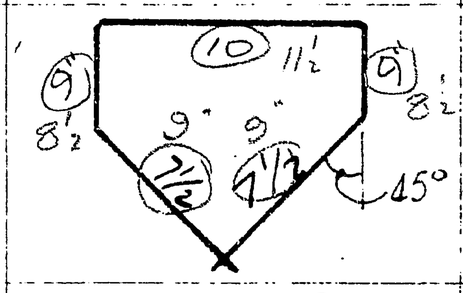
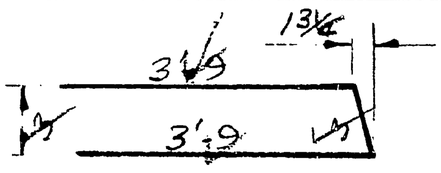
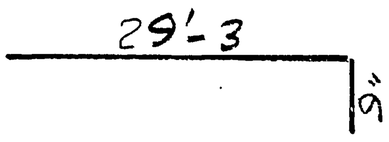
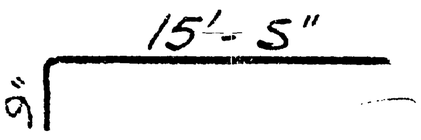
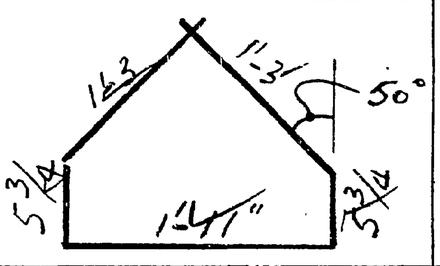
SUPERIOR CONCRETE PRODUCTS LTD.
551 SEYMOUR BLVD.
NORTH VANCOUVER, B.C.

BRIDGES 1648-6

58'-0" P/S EXT. BEAMS MK2

SCALE	MADE BY: C.V.S.	DATE: 18 May 1962	APPROVED: 99916	DWG. No. 881-4A
	CHECKED BY: V.M.	DATE: 25 June '62	REVISED:	

STEEL SCHEDULE

BEAM MK	QUANTITY: BEAMS	QUANTITY: REINFORCEMENT I-BEAM	QUANTITY: REINFORCEMENT TOTAL	BAR MK	SIZE	LENGTH FEET	TYPE	TOTAL L. FEET	REMARKS
MK3 & MK4	12	22	264	A	#4	4'-11¼		1,304	Sharp bends required
		24	288		#5			1,383	
		22	264	B	#4	7'-0"		1,848	
		26	312		#5			2,184	
		22	264	C	#4	3'-7"		946	
		10	120		#5			430	
		12	144		#6			516	
	4	48	D	#4	7'-9"		372	Sharp bends required	
	2	24	J	#4	30'-0"		720		
	2	24	J1	#4	16'-2"		388	Including 1'-8 for overlap	
	2	24	AA	#5	5'-4½"		129	Sharp bends required.	

Σ #4	5,578	3,726#
Σ #5	4,126	4,303#
Σ #6	516	775#
		8,804# (733#)

Reinforcement shall be intermediate grade billet steel deformed bars conforming to C.S.A. specification G.30-1954

Bend bars to true shape and dimensions. All dimensions **OUT TO OUT.**

Tag all steel correctly.

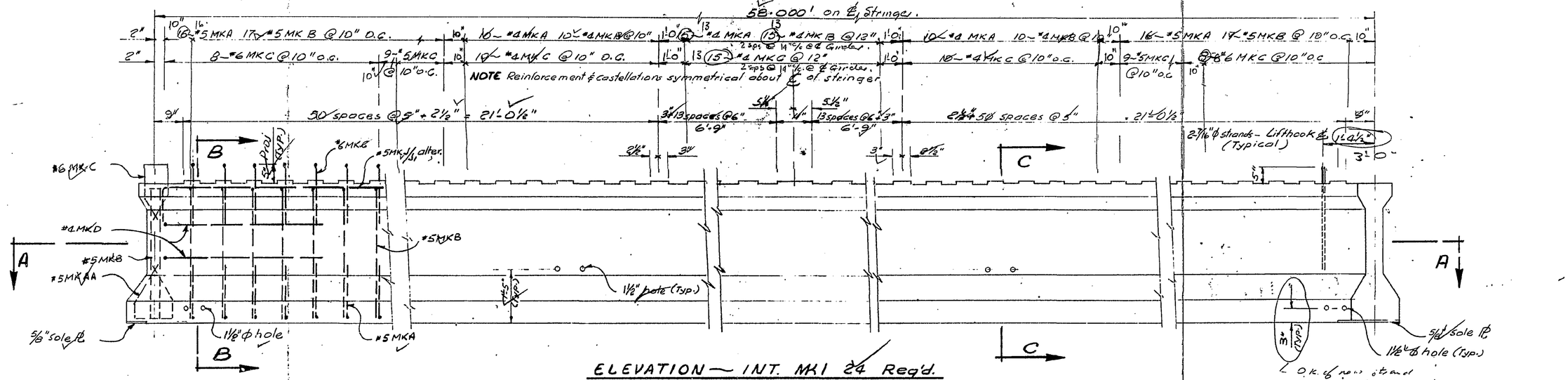
JUN 28 1962

SUPERIOR CONCRETE PRODUCTS LTD.
551 SEYMOUR BLVD.
NORTH VANCOUVER, B. C.

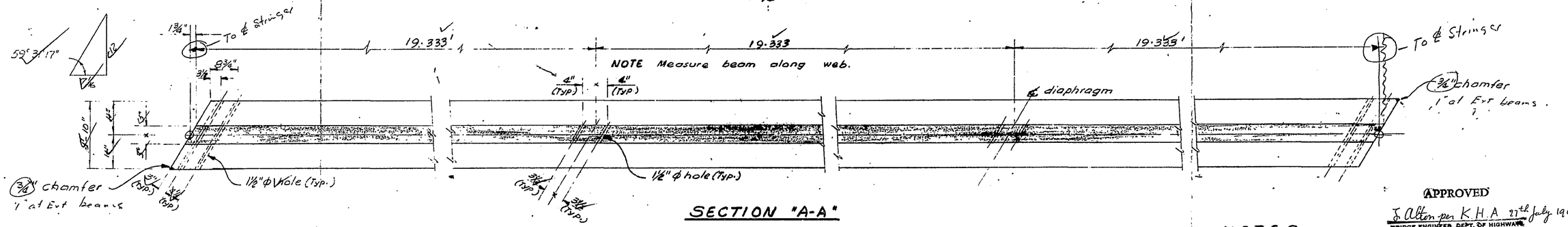
BRIDGES 1648-6

43'-6" P/S INT & EXT. BEAMS MK3 & 4

SCALE	MADE BY:	DATE:	APPROVED:	DWG. No.
	L. V. S.	26 May 1962	99917	881-6A
	CHECKED BY: VM	DATE: 29 June 1962	REVISED:	



ELEVATION — INT. MK I 24 Req'd.
Scale 3/4" = 1'-0"



SECTION "A-A"

APPROVED
J. Alton per K.H.A. 27th July 1962
BRIDGE ENGINEER, DEPT. OF HIGHWAYS

NOTES

1— Minimum concrete strength at time of release 4,500 psi at 28 days 5,500 psi

2— Minimum concrete cover unless otherwise noted 1/2"

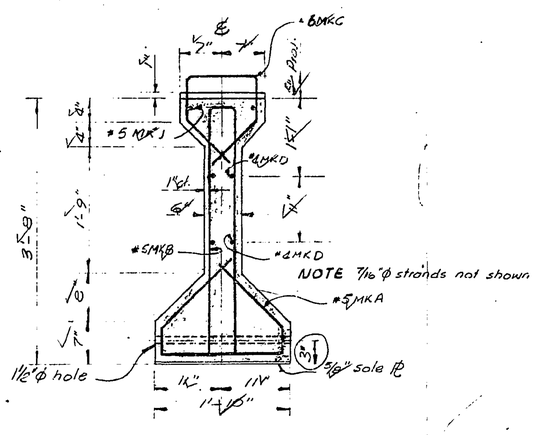
3— Mild steel reinforcement to conform to C.S.A. specification G.30-1954 Splices to be staggered with minimum bar lap of 40 diameters.

4— Prestressing strands shall be 7/16" ϕ stress relieved with a minimum ultimate strength of 27,800 Lbs Each strand shall be initially stressed to a force of 19,500 Lbs.
Alternative prestressing strands shall be 1/2" ϕ stress relieved with a minimum ultimate strength of 36,000 Lbs Strands shall be initially stressed to a force of 25,200 Lbs

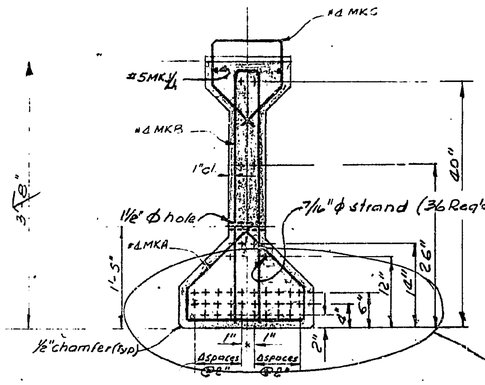
5— Point ends of stringers with asphaltic material. Alternative - strand ends to receive 1 coat of galvanizing paint or approved epoxy resin.

6— Stringers to be transported and stored in upright and horizontal position. Support only at bearings

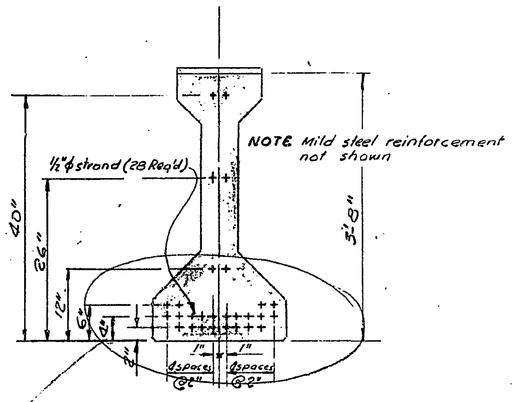
7— For key plan see dwg 881-4 and for details of inserts and hardware see dwg 881-5



SECTION "B-B"
Scale 1" = 1'-0"



7/16" ϕ STRAND
SECTION "C-C"
OK BW I



1/2" ϕ STRAND
ALTERNATE STRAND PATTERN
OK BW I

Design check required for prestressing strands. Dept of Hwys dwg shows. 50 - 3/8 ϕ.

JUN 28 1962 OFFICE COPY

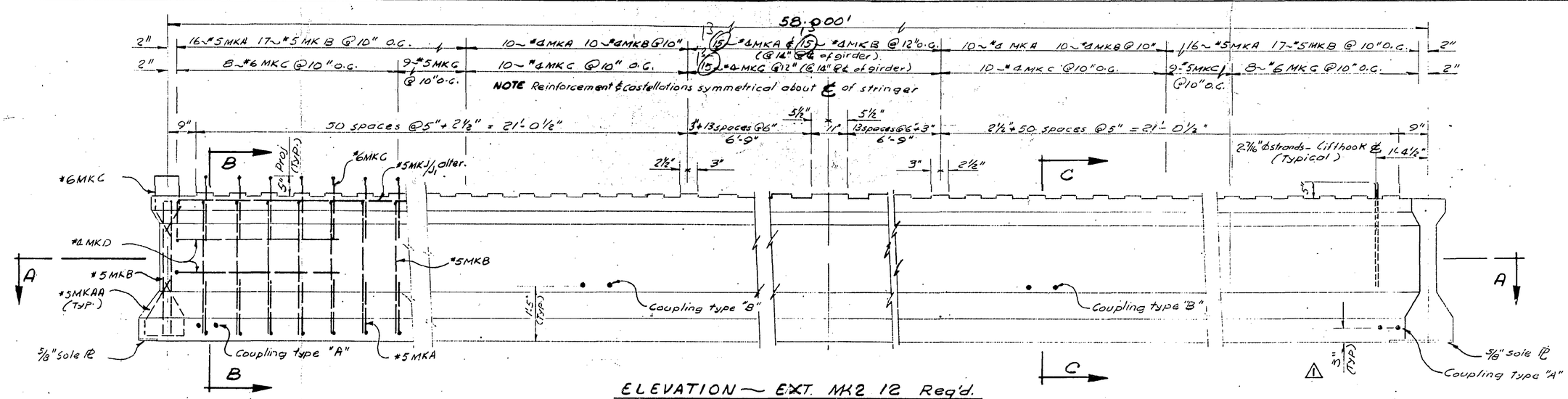
SUPERIOR CONCRETE PRODUCTS LTD.
551 SEYMOUR BLVD.
NORTH VANCOUVER, B.C.

BRIDGES 1648-E

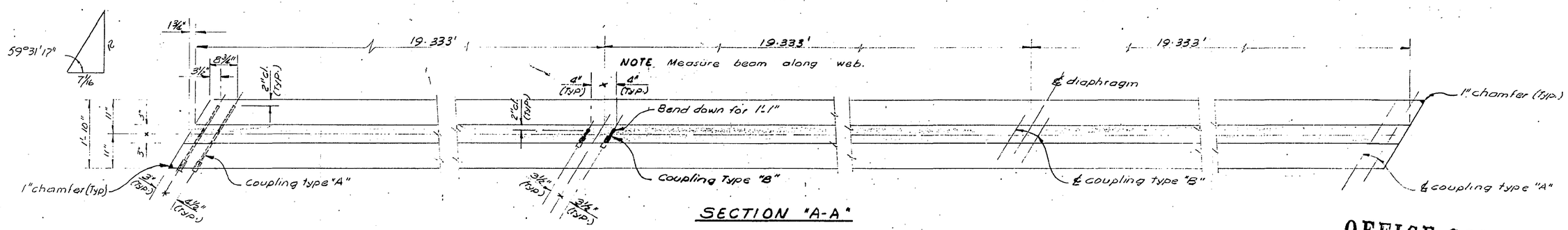
58'-0" P/S INT. BEAMS MK I
LIVINGSTONE ROAD UNDERPASS

SCALE	MADE BY:	DATE:	APPROVED:	DWG. No.
AS shown	L.V.S.	9 May 1962	99918	881-3
	CHECKED BY: VM	DATE: 29 June 1962	REVISED:	

6



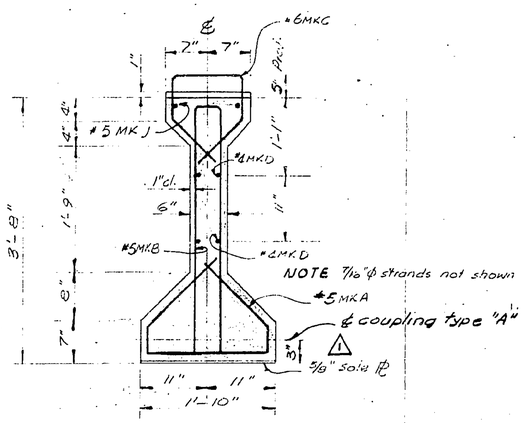
ELEVATION — EXT. MK2 12 Req'd.
Scale 3/16" = 1'-0"



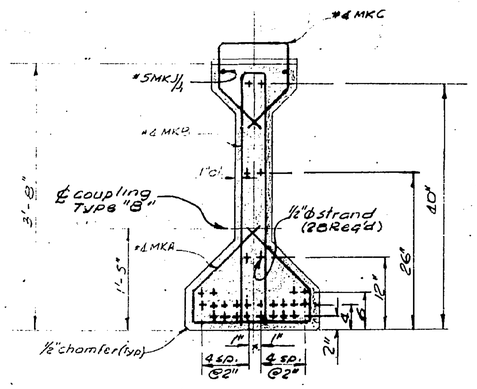
SECTION "A-A"

OFFICE COPY

APPROVED
J.A. / K.A.A. / 27th July 62.
BRIDGE ENGINEER, DEPT. OF HIGHWAYS

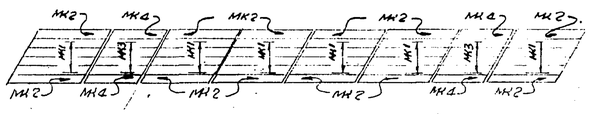


SECTION "B-B"
Scale 1" = 1'-0"



1/2" ϕ STRAND
SECTION "C-C"

NOTE for 7/16" ϕ alternate strand pattern see dwg 881-3



KEY PLAN

NOTES

1 — For general notes see drawing 881-3 and for details of hardware and inserts see drawing 881-5

Check print J.L. 25/62

JUL 19 1962

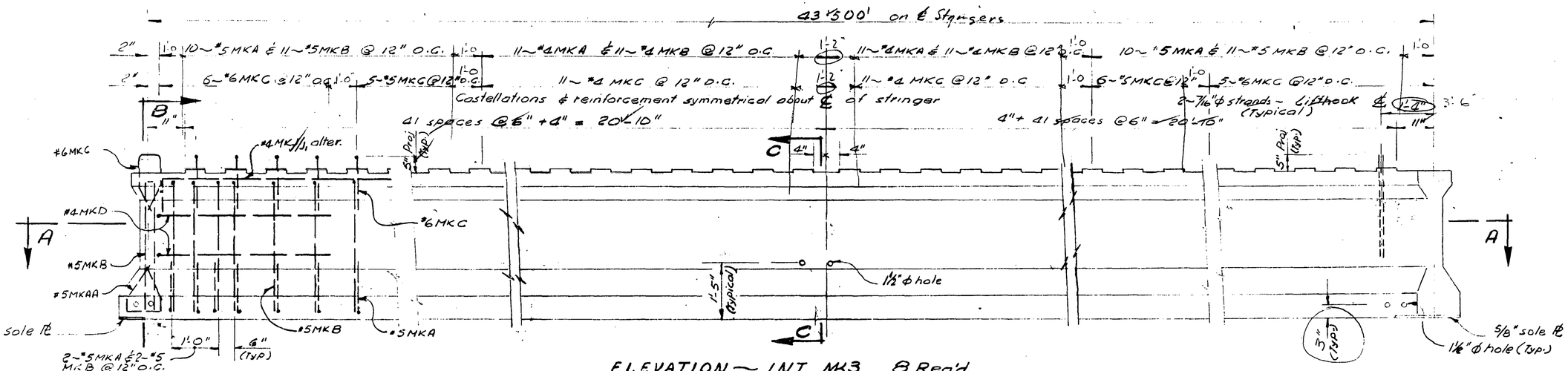
No	DATE	DESCRIPTION
1	18 July 1962	Strand pattern changed. Location coupling Type "A" revised. VM 18.7.62

SUPERIOR CONCRETE PRODUCTS LTD.
551 SEYMOUR BLVD.
NORTH VANCOUVER, B.C.

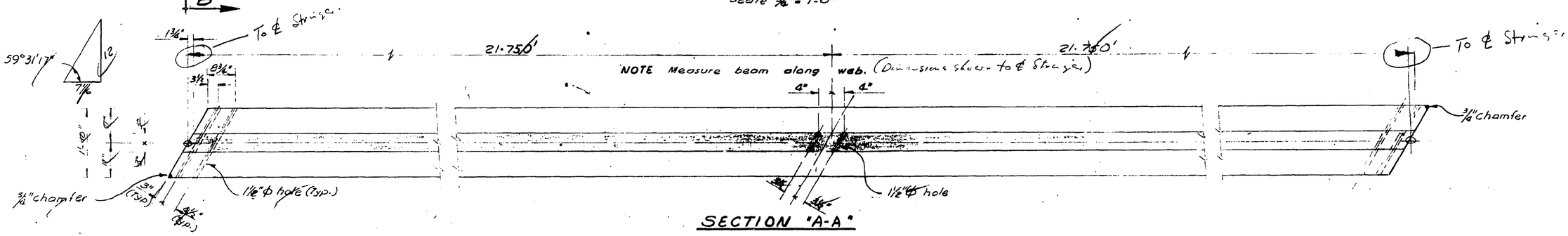
BRIDGES 1.48-6

58'-0" P/S EXT. BEAMS MK 2
LIVINGSTONE ROAD UNDERPASS

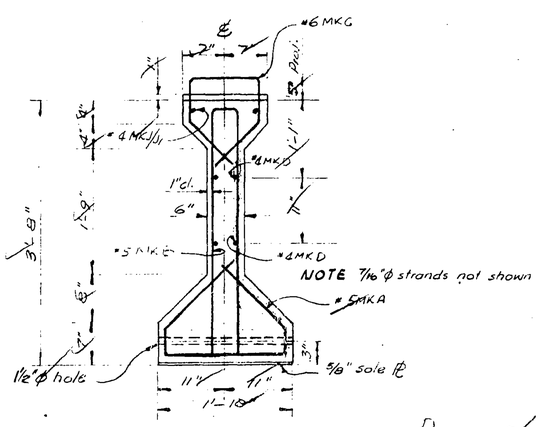
SCALE	MADE BY:	DATE:	APPROVED:	DWG. No.
As shown	L.V.S.	10, May 1962		881-4
	CHECKED BY: VM	DATE: 25 May 1962	REVISED:	



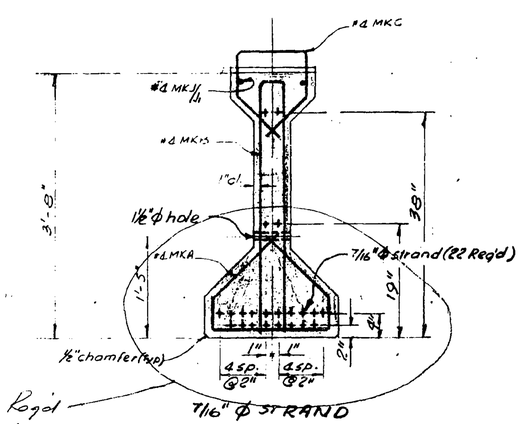
ELEVATION ~ INT. MK3 8 Req'd.
Scale 3/16" = 1'-0"



SECTION "A-A"



SECTION "B-B"
Scale 1" = 1'-0"

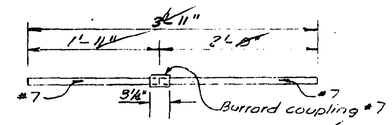


Design check Req'd
Dept of Hways dwg
shows 30 - 5/8 φ strands

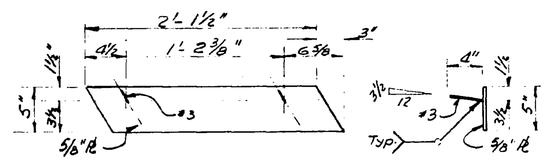
7/16" φ STRAND
SECTION "C-C"

NOTE for ½"φ alternate strand pattern see dwg 881-6

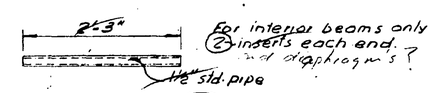
OK BWI



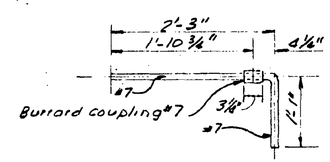
TYPE "A" COUPLING 6 Req'd



5/8" SOLE PLATE 96 Req'd.



SLEEVE INSERTS 128 Req'd.



TYPE "B" COUPLING 96 Req'd.

NOTES

1 ~ For general notes see drawing 881-3 and for Key plan see drawing 881-4

OFFICE COPY

APPROVED
Altered per K.H.A. 27th July 1962
BRIDGE ENGINEER, DEPT. OF HIGHWAYS

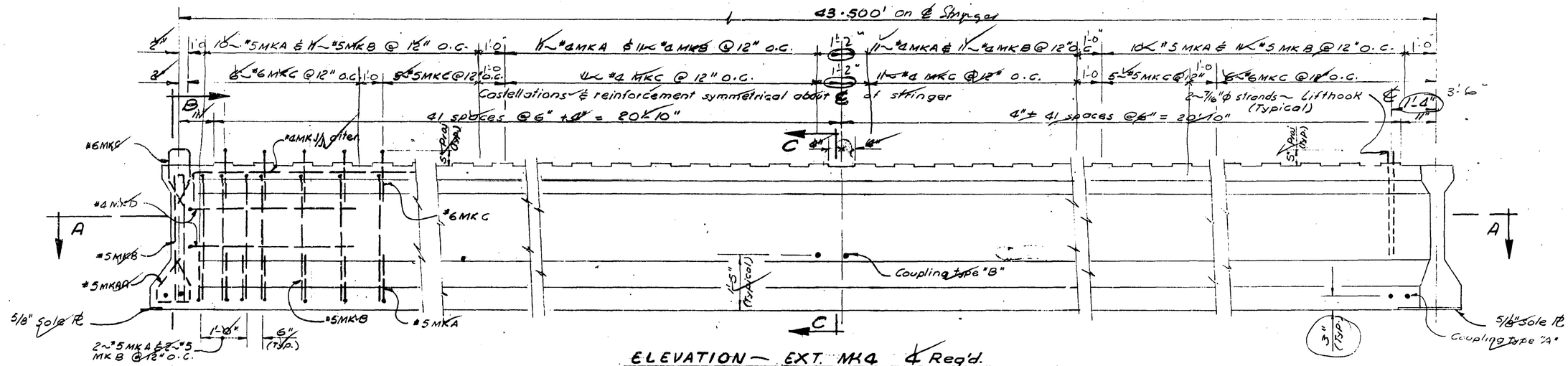
JUN 28 1962

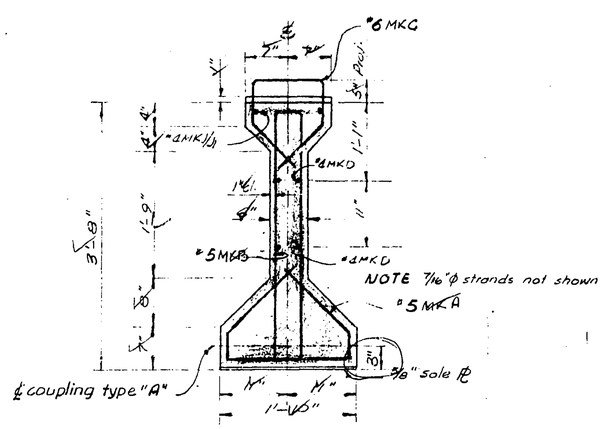
SUPERIOR CONCRETE PRODUCTS LTD.
551 SEYMOUR BLVD.
NORTH VANCOUVER, B. C.

BRIDGES 1648-6

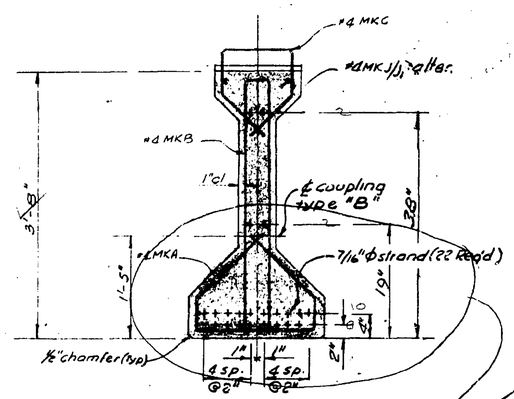
43'-6" P/S INT. BEAMS MK3
LIVINGSTONE ROAD UNDERPASS

SCALE	MADE BY:	DATE:	APPROVED:	DWG. No.
As shown	L.V.S.	23 May 1962	99920	881-5
	CHECKED BY: VM	DATE: 29 June 1962	REVISED:	

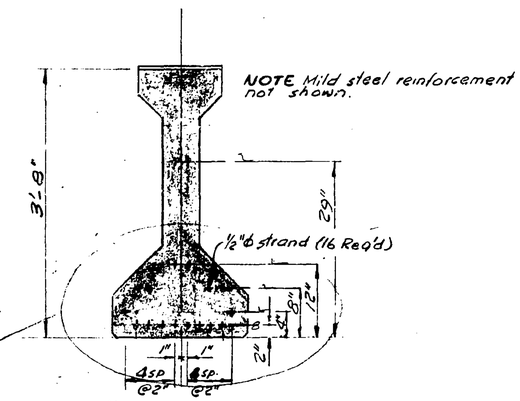




SECTION "B-B"
Scale 1" = 1'-0"



7/16" φ STRAND
SECTION "C-C"
OK BWI



1/2" φ STRAND
ALTERNATE STRAND PATTERN
OK BWI

Design check Reqd
Dept of Hwys dwg
shows 30 - 3/8" φ strands

NOTES

1 — For general notes see drawing 881-3
for key plan see drawing 881-4 and for
details of inserts & hardware see drawing 881-5

APPROVED
Altm pr K H A 27th July 1962
BRIDGE ENGINEER, DEPT. OF HIGHWAYS

OFFICE COPY

JUN 28 1962

SUPERIOR CONCRETE PRODUCTS LTD.
551 SEYMOUR BLVD.
NORTH VANCOUVER, B. C.

BRIDGES 1648-6

43'-6" P/S EXT. BEAMS MK 4
LIVINGSTONE ROAD UNDERPASS

SCALE	MADE BY:	DATE:	APPROVED:	DWG. No.
As shown	L.V.S.	25 May 1962	99921	881-6
	CHECKED BY: VM	DATE: 28 June 1962	REVISED:	

DATE	APRIL 20, 1988	APRIL 26, 1988		
WEATHER	SUNNY 27 °C	SUNNY, 20 °C		
DIRECTION POUR	SOUTH BOUND	NORTH BOUND		

FIELD DATA

CYLINDERS:
SPAN 1, LOAD 3, 3A-D
LOAD 5, 4A-D
SPAN 2, LOAD 3, 7A-D
LOAD 6, 8A-D

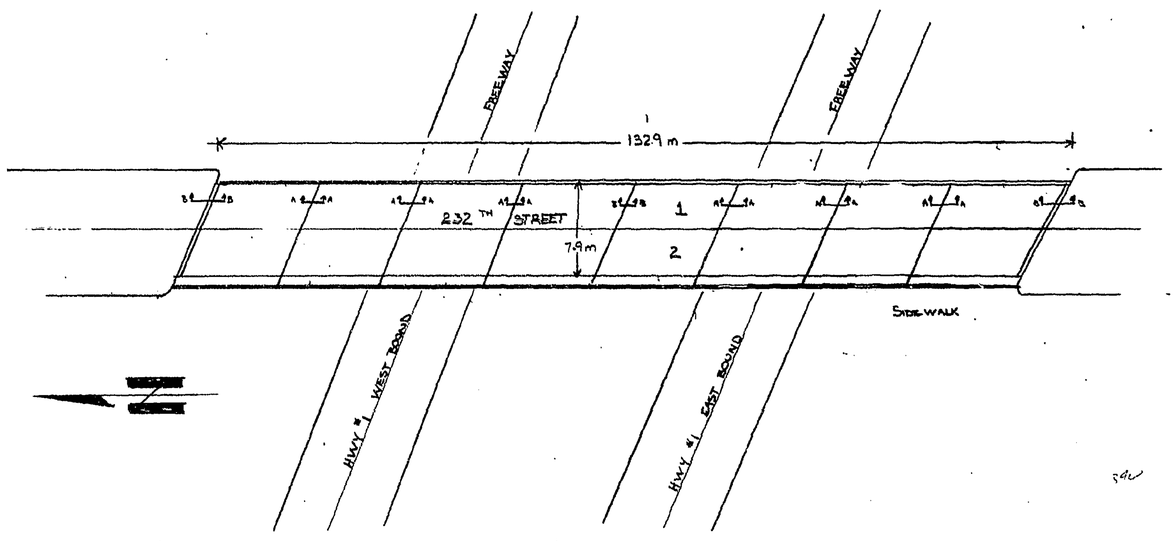
CEMENT CONTENT - 400 Kg/m³
VOLUME - 122.2 yd³ / 93.5 m³

SPAN No. 1						SPAN No. 2						SPAN No.						SPAN No.					
LOAD	TRUCK	METER/ct.	Cu.Yds.	SL.	AIR	LOAD	TRUCK	METER/ct.	Cu.Yds.	SL.	AIR	LOAD	TRUCK	METER/ct.	Cu.Yds.	SL.	AIR	LOAD	TRUCK	METER/ct.	Cu.Yds.	SL.	AIR
1	2150		8.8	32mm	5.6	1	2150		8.4	38mm	4.5												
2	2149		9.0	32	5.8	2	2149		9.0	32	5.3												
3	2150		9.9	32	—	3	2150		8.9	38	5.5												
4	2149		9.1	38	6.2	4	2149		6.0	38	—												
5	2150		9.6	32	5.5	5	2150		9.3	32	—												
6	2149		8.1	38	—	6	2149		7.9	32	6.0												
7	2150		5.9	32	—	7	2150		10.2	32	—												
						8	2149		2.4	38	—												
			60.1 yd³						62.1 yd³														

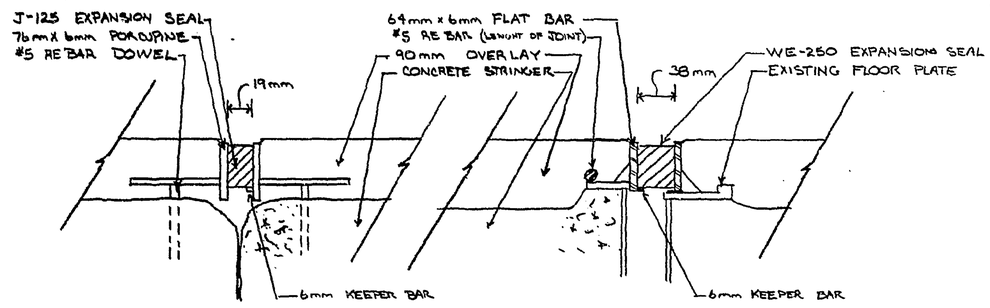
SPAN No. 1 TEST CYLINDERS	CYL. No.	3A	3B	3C	3D	4A	4B	4C	4D
	7 DAYS	27.5				30.1			
	28 DAYS	—	32.2	34.4	35.8		38.6	36.0	39.0

SPAN No. 2 TEST CYLINDERS	CYL. No.	7A	7B	7C	7D	8A	8B	8C	8D
	7 DAYS	26.0				32.4			
	28 DAYS		34.5	36.8	—		37.6	40.9	45.9

RE-BAR		WIREMESH		FLAT BAR			PORKYPINE		Jt. EXTRUSIONS		Jt. MATERIAL	
10mm	15mm	2 X 2		2 1/2"	2"	1 1/2"	3" X 1/4"	3 1/2" X 5/8"	TYPE	AMOUNT	TYPE	AMOUNT
—	67m	—		47.4m	—	—	94.8m	—	—	—	J-125	60.4 m
											WE-250	30.2 m



PLAN



CROSS-SECTION A-A
J-125

CROSS-SECTION B-B
WE-250

NOTE: CROSS FALL - 1/8 in / 3 mm

GOVERNMENT OF BRITISH COLUMBIA
MINISTRY OF TRANSPORTATION AND HIGHWAYS
BRIDGE ENGINEERING BRANCH

LIVINGSTON U/P No. 1648
NEW WESTMINISTER DISTRICT
RESURFACING AS-BUILT

D			
C			
B			
A			
	REVISIONS		

PREPARED UNDER THE DIRECTION OF	DATE	SCALE: NOT TO SCALE		NEG. No.	298682
SENIOR BRIDGE DESIGN ENGINEER		DRAWN K.L.K.	88/11/02	CHECKED	
APPROVED FOR USE IN CONSTRUCTION	DATE	EXAMINED AND ACCEPTED		DATE	DRAWING No.
DIRECTOR OF BRIDGE ENGINEERING		EXECUTIVE DIRECTOR OF ENGINEERING			

CANCEL PRINTS BEARING EARLIER LETTER