

The Government of the Province of British Columbia  
 Ministry of the Environment  
 Water Investigations Branch

Canada - British Columbia  
 Fraser River Flood Control 1968 Agreement

Project No. 3 The Township of Richmond

Contract No. 18B

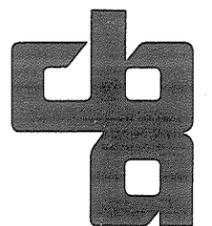
Drainage Discharge Structures

Nos. 14, 15, 18 and 25

**DRAWING LIST**

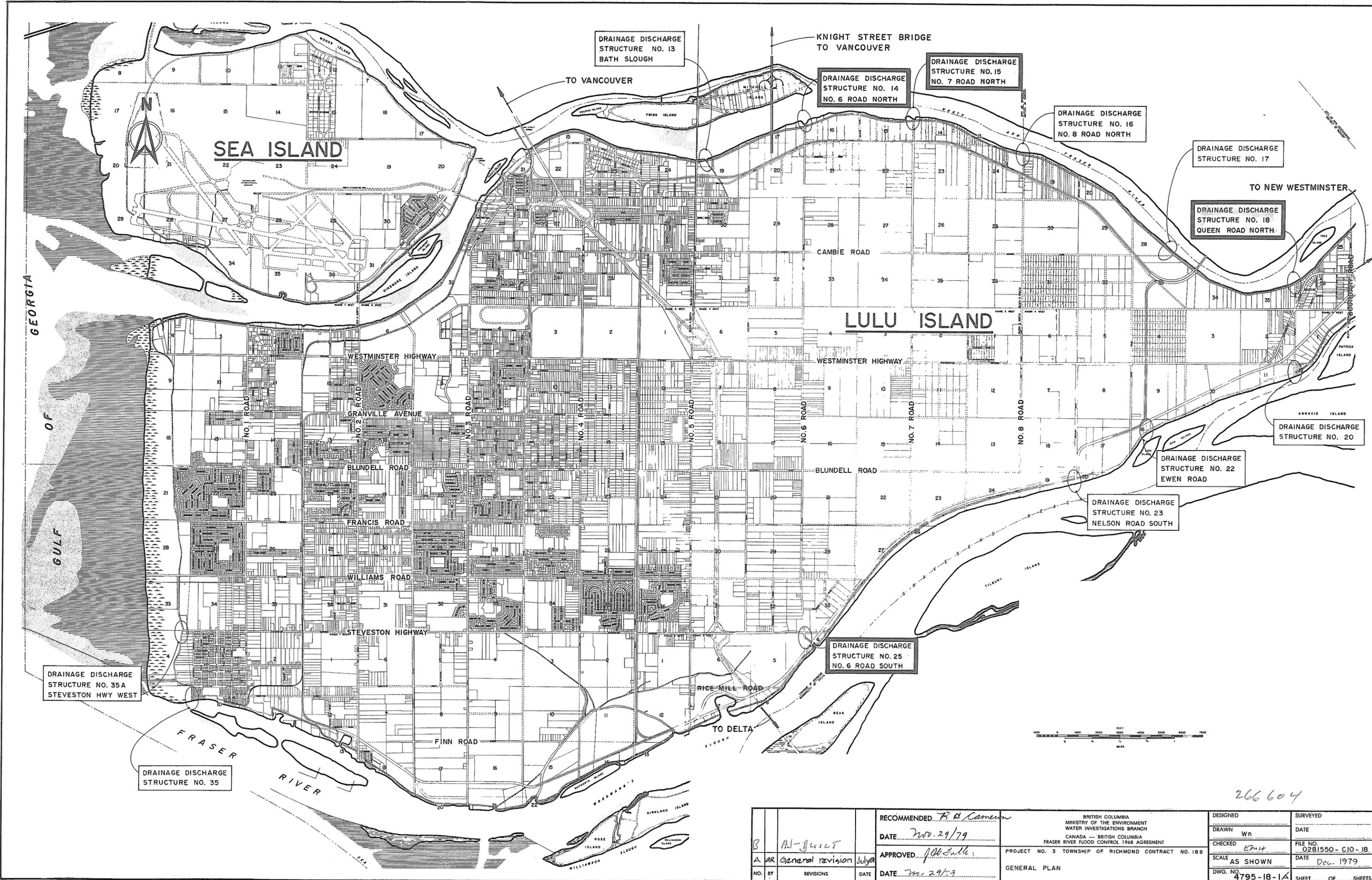
CONTRACT DRAWINGS

Drawing No.	Title	Drawing No.	Title	Drawing No.	Title
4795-18-1	GENERAL PLAN	4795-18-27	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 MAIN STRUCTURE REINFORCING SHEET 1 OF 3	4795-18-42	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY AND PROPERTY REQUIREMENTS
4795-18-13	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 PLAN SHOWING EXISTING DRAINAGE STRUCTURES TO BE REMOVED, PRELOAD FILL AND UTILITIES	4795-18-28	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 MAIN STRUCTURE REINFORCING SHEET 2 OF 3	4795-18-43	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 GENERAL ARRANGEMENT SECTIONS
4795-18-14	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY AND PROPERTY REQUIREMENTS	4795-18-29	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 MAIN STRUCTURE REINFORCING SHEET 3 OF 3	4795-18-44	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 DETAILS OF EARTHWORKS
4795-18-15	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 GENERAL ARRANGEMENT SECTIONS	4795-18-30	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 ENTRY CULVERT AND BOX CULVERT CONCRETE OUTLINE AND REINFORCING	4795-18-45	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 MAIN STRUCTURE - CONCRETE OUTLINE
4795-18-16	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 DETAILS OF EARTHWORKS	4795-18-32	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 PLAN SHOWING EXISTING DRAINAGE STRUCTURES TO BE REMOVED AND UTILITIES	4795-18-46	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 MAIN STRUCTURE REINFORCING SHEET 1 OF 3
4795-18-17	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 MAIN STRUCTURE - CONCRETE OUTLINE	4795-18-33	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY AND PROPERTY REQUIREMENTS	4795-18-47	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 MAIN STRUCTURE REINFORCING SHEET 2 OF 3
4795-18-18	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 MAIN STRUCTURE REINFORCING SHEET 1 OF 3	4795-18-34	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 GENERAL ARRANGEMENT SECTIONS	4795-18-48	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 MAIN STRUCTURE REINFORCING SHEET 3 OF 3
4795-18-19	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 MAIN STRUCTURE REINFORCING SHEET 2 OF 3	4795-18-35	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 DETAILS OF EARTHWORKS	4795-18-49	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 ENTRY CULVERT AND BOX CULVERT CONCRETE OUTLINE AND REINFORCING
4795-18-20	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 MAIN STRUCTURE REINFORCING SHEET 3 OF 3	4795-18-36	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 MAIN STRUCTURE - CONCRETE OUTLINE	4795-18-102	EMBEDDED ELECTRICAL CONDUIT DRAINAGE DISCHARGE STRUCTURES 14, 15, 18 AND 25 MAINTENANCE FLOOR AND TEMPORARY TIMBER COVER DETAILS
4795-18-21	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 14 ENTRY CULVERT AND BOX CULVERT CONCRETE OUTLINE AND REINFORCING	4795-18-37	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 MAIN STRUCTURE REINFORCING SHEET 1 OF 3	4795-18-107	ENTRY SCREEN DETAILS
4795-18-22	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 PLAN SHOWING EXISTING DRAINAGE STRUCTURES TO BE REMOVED, PRELOAD FILL AND UTILITIES	4795-18-38	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 MAIN STRUCTURE REINFORCING SHEET 2 OF 3	4795-18-111	DISCHARGE SCREEN DETAILS
4795-18-23	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY AND PROPERTY REQUIREMENTS	4795-18-39	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 MAIN STRUCTURE REINFORCING SHEET 3 OF 3	4795-18-112	MISCELLANEOUS CONCRETE DETAILS
4795-18-24	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 GENERAL ARRANGEMENT SECTIONS	4795-18-40	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 18 ENTRY CULVERT AND BOX CULVERT CONCRETE OUTLINE AND REINFORCING	4795-18-114	MISCELLANEOUS STEEL DETAILS SHEET 1 OF 2
4795-18-25	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 DETAILS OF EARTHWORKS	4795-18-41	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 25 PLAN SHOWING EXISTING DRAINAGE STRUCTURES TO BE REMOVED, PRELOAD FILL AND UTILITIES	4795-18-115	MISCELLANEOUS STEEL DETAILS SHEET 2 OF 2
4795-18-26	NO. 7 ROAD SOUTH - DRAINAGE DISCHARGE STRUCTURE NO. 15 MAIN STRUCTURE - CONCRETE OUTLINE			4795-18-116	MISCELLANEOUS EARTHWORKS DETAILS
				4795-18-117	INSTALLATION DETAILS OF CSP DRAINAGE DISCHARGE PIPES
				4795-18-118	



CBA ENGINEERING LTD

Consulting Engineers  
 Vancouver, Canada



DRAINAGE DISCHARGE  
STRUCTURE NO. 13  
BATH SLOUGH

KNIGHT STREET BRIDGE  
TO VANCOUVER

DRAINAGE DISCHARGE  
STRUCTURE NO. 14  
NO. 6 ROAD NORTH

DRAINAGE DISCHARGE  
STRUCTURE NO. 15  
NO. 7 ROAD NORTH

DRAINAGE DISCHARGE  
STRUCTURE NO. 16  
NO. 8 ROAD NORTH

DRAINAGE DISCHARGE  
STRUCTURE NO. 17

DRAINAGE DISCHARGE  
STRUCTURE NO. 18  
QUEEN ROAD NORTH

DRAINAGE DISCHARGE  
STRUCTURE NO. 20

DRAINAGE DISCHARGE  
STRUCTURE NO. 22  
EWEN ROAD

DRAINAGE DISCHARGE  
STRUCTURE NO. 23  
NELSON ROAD SOUTH

DRAINAGE DISCHARGE  
STRUCTURE NO. 25  
NO. 6 ROAD SOUTH

DRAINAGE DISCHARGE  
STRUCTURE NO. 35A  
STEVESTON HWY WEST

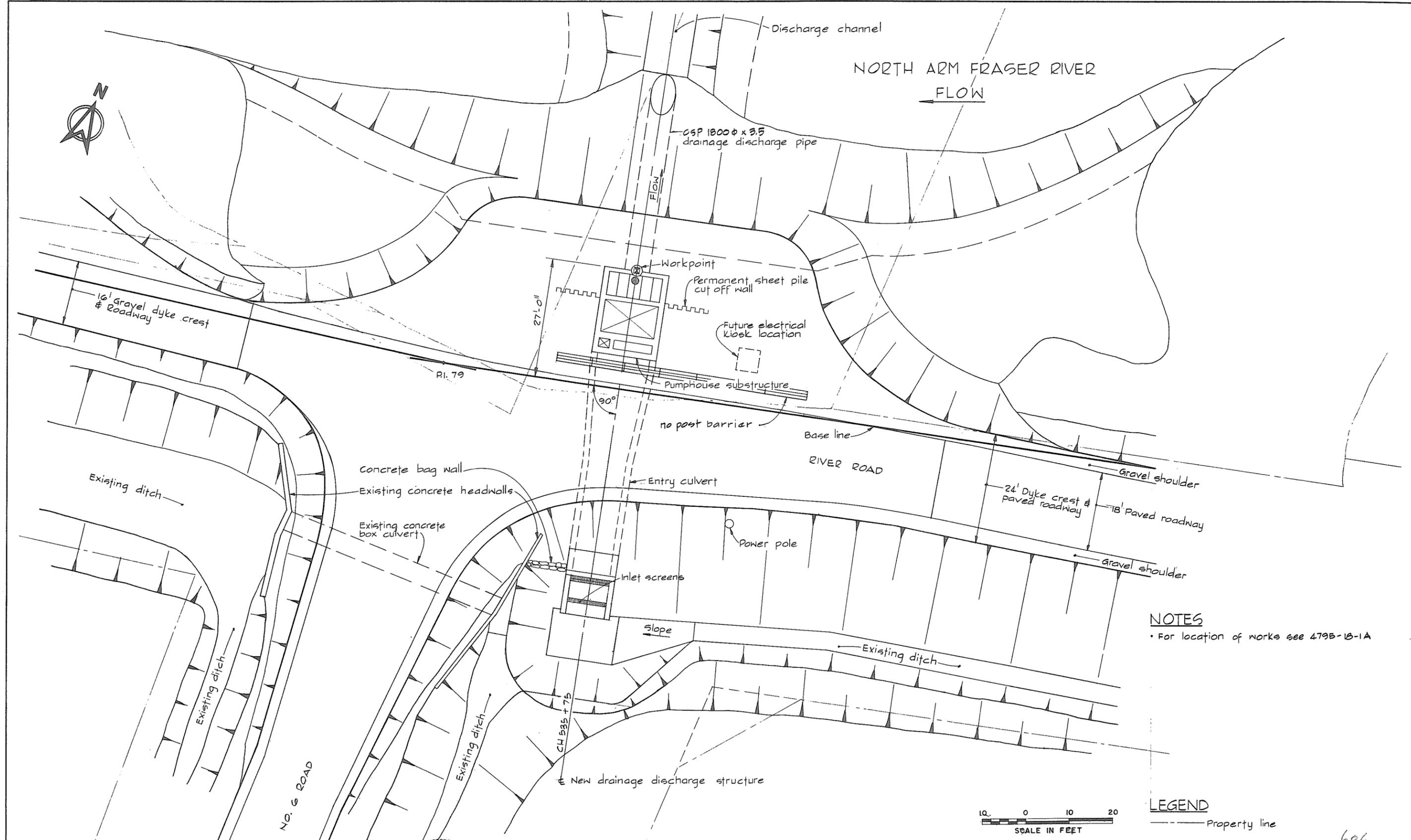
DRAINAGE DISCHARGE  
STRUCTURE NO. 35



266604

B A AR NO. BY REVISIONS DATE	General revision July	RECOMMENDED <i>R. A. Cameron</i> DATE <i>Nov. 29/79</i>	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA — BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1968 AGREEMENT PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 188	DESIGNED DRAWN <i>Wn</i> CHECKED <i>EPH</i> SCALE <i>AS SHOWN</i> DWG. NO. <i>4795-18-1A</i>	SURVEYED DATE FILE NO. <i>0281550-C10-18</i> DATE <i>Dec. 1979</i> SHEET <i>3</i> OF <i>3</i> SHEETS
		APPROVED <i>JOB</i> DATE <i>Nov. 29/79</i>		GENERAL PLAN	





**NOTES**  
 • For location of works see 4795-18-1A



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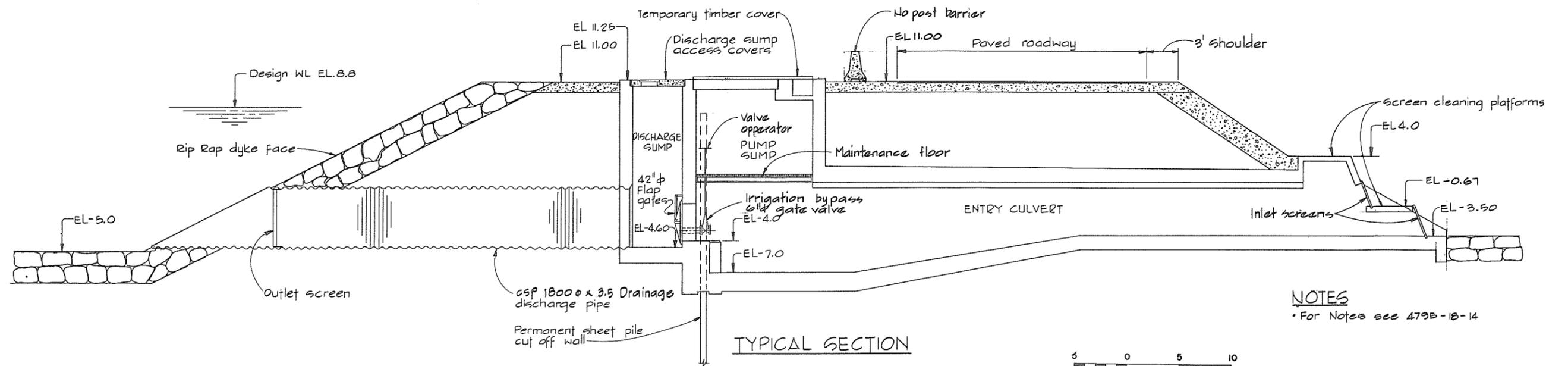
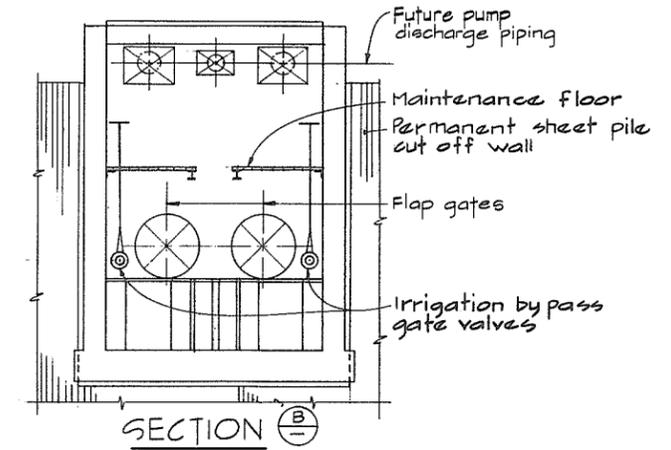
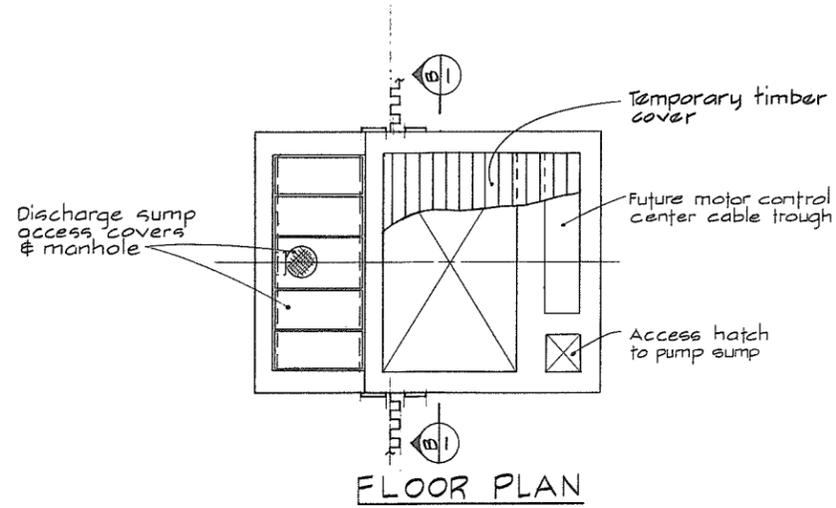
NO.	BY	REVISIONS	DATE

RECOMMENDED *R. A. Cameron*  
 PROJECT MANAGER  
 DATE *June 2, 1981*  
 APPROVED *John Fuller*  
 DIRECTOR  
 DATE *June 3, 1981*

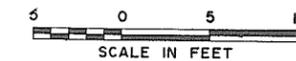
BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 188  
 NO. 6 ROAD NORTH-DRAINAGE DISCHARGE STRUCT NO. 14  
 GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY  
 AND PROPERTY REQUIREMENTS

DESIGNED	SP	SURVEYED	
DRAWN	DLC	DATE	
CHECKED		FILE NO.	0281550-C10-18
SCALE	AS SHOWN	DATE	July 1981
DWG. NO.	4795-18-14 C	SHEET	
		OF	

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NOTES  
 • For Notes see 4795-18-14



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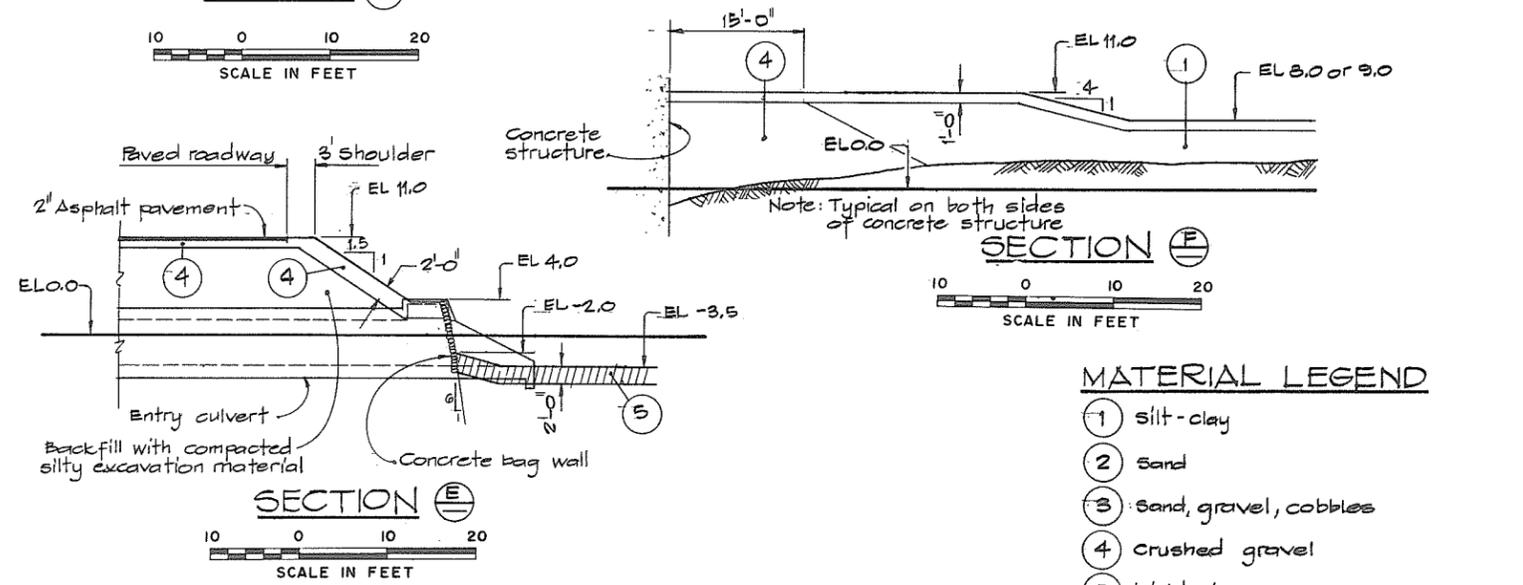
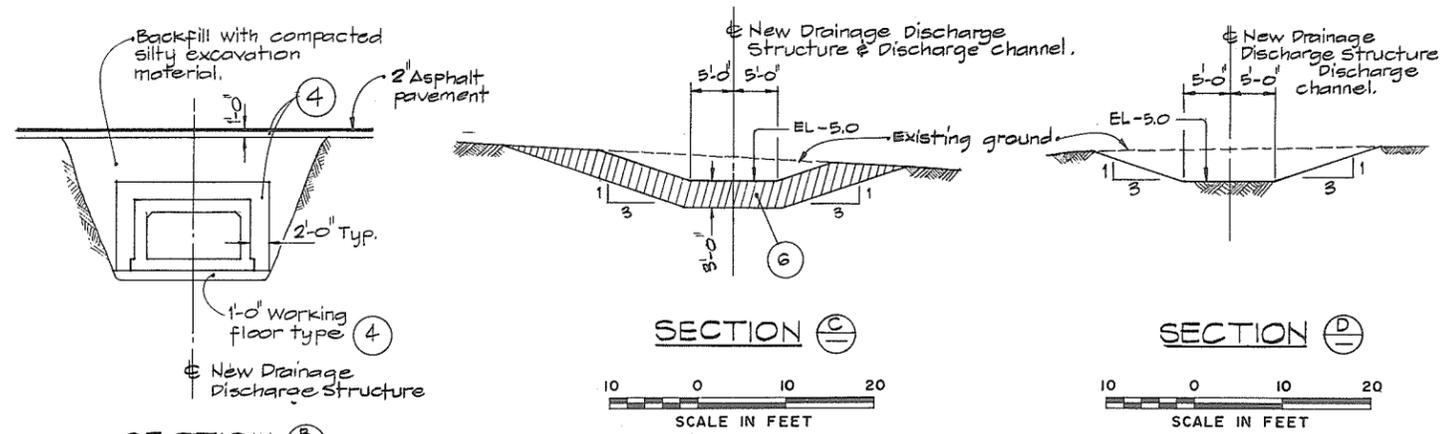
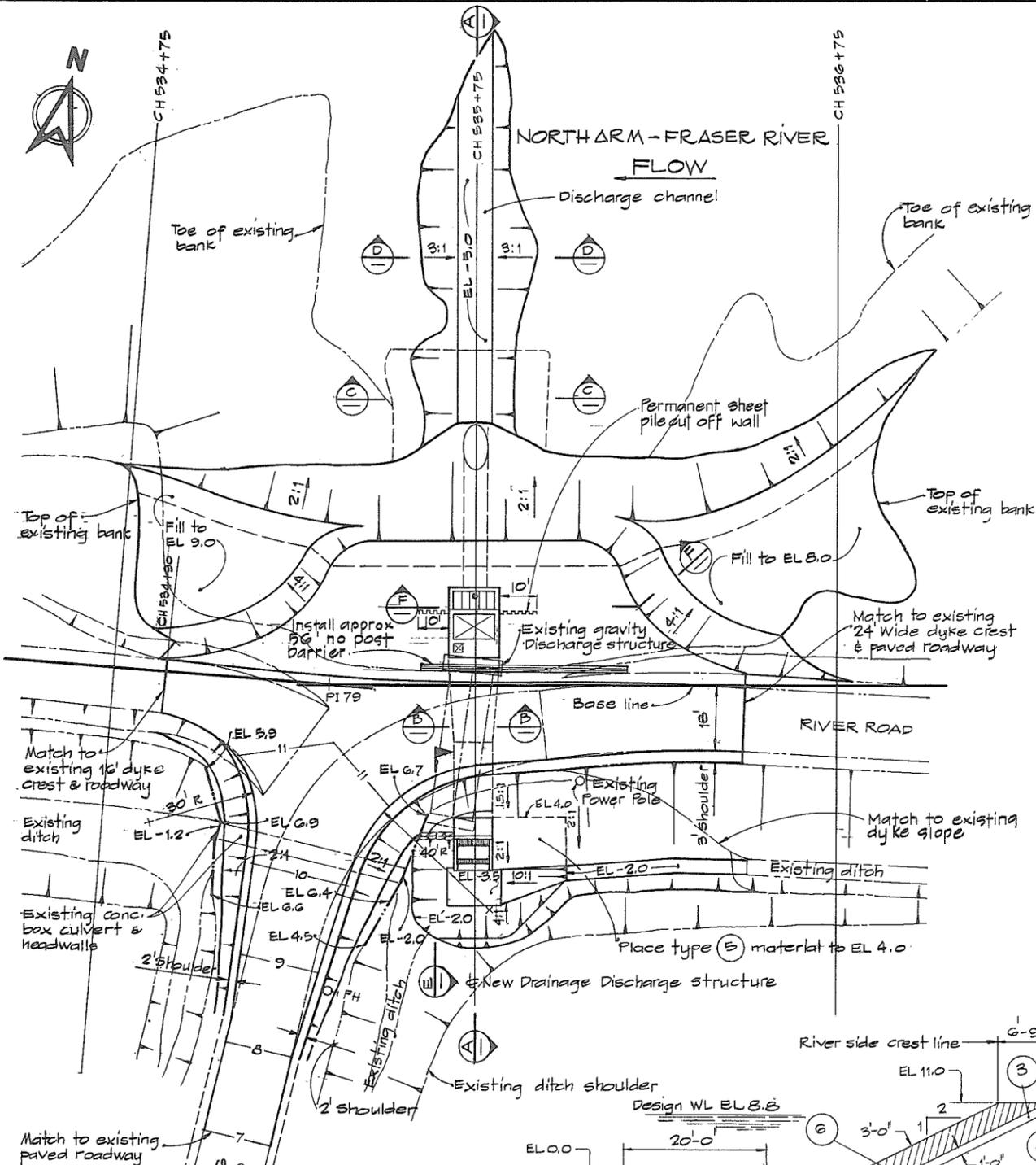
NO.	BY	REVISIONS	DATE

RECOMMENDED *R.H. Cameron*  
 PROJECT MANAGER  
 DATE *June 2, 1981*  
 APPROVED *W. Fuller*  
 DIRECTOR  
 DATE *June 3/81*

BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
 NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 14  
 GENERAL ARRANGEMENT SECTIONS

DESIGNED	SURVEYED
DRAWN <i>SP</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-15 C</i>	SHEET <i> </i> OF <i> </i> SHEETS

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**MATERIAL LEGEND**

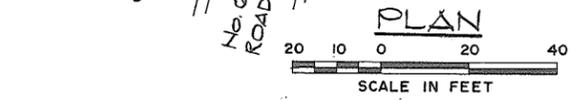
- ① silt-clay
- ② sand
- ③ sand, gravel, cobbles
- ④ crushed gravel
- ⑤ light rip-rap
- ⑥ rip-rap

**LEGEND**

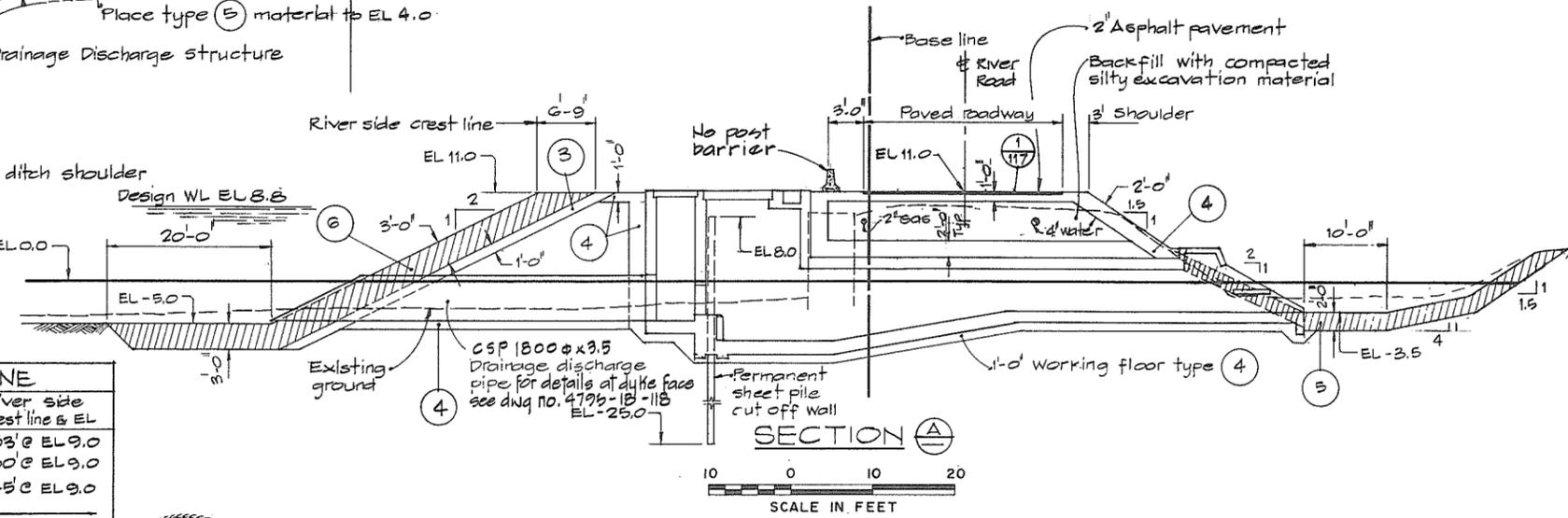
- Existing ground surface (section).
- - - Existing ground & structures (Plan).
- (R) Section identification letter.
- (18) Drawing No. on which the section is drawn (ie) 4795-18-118J.
- (3) Detail identification number.
- (18) Drawing No. on which the detail is drawn (ie) 4795-18-118J.

**NOTES**

- Elevations refer to the Geodetic Survey of Canada.
- A smooth alignment shall be maintained over the entire length of the dyke.
- Offset distances from base line to crest lines are taken at the design crest elevation.
- The angle of offset is 90° to base line, unless otherwise indicated.
- Terminal parts of the work shall be constructed to blend with the existing ground.



OFFSET DIMENSIONS FROM BASE LINE				
Chainage	Land side Crest line	River side Pavement edge	River side Crest line EL 11.0	River side Crest line & EL
534+90	Exist 12'	5'	3'	53' @ EL 9.0
535+00	—	3'	6'	50' @ EL 9.0
535+25	—	2.5'	20'	45' @ EL 9.0
535+50	—	1.5'	40'	—
535+75	25'	1.0'	40'	—
536+00	23'	1.0'	40'	—
536+25	22'	0.5'	40'	45' @ EL 8.0
536+50	21'	0	15'	51' @ EL 8.0
536+75	—	—	—	67' @ EL 8.0



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NO.	BY	REVISIONS	DATE
1	ER		
2	RA		
3	AA		

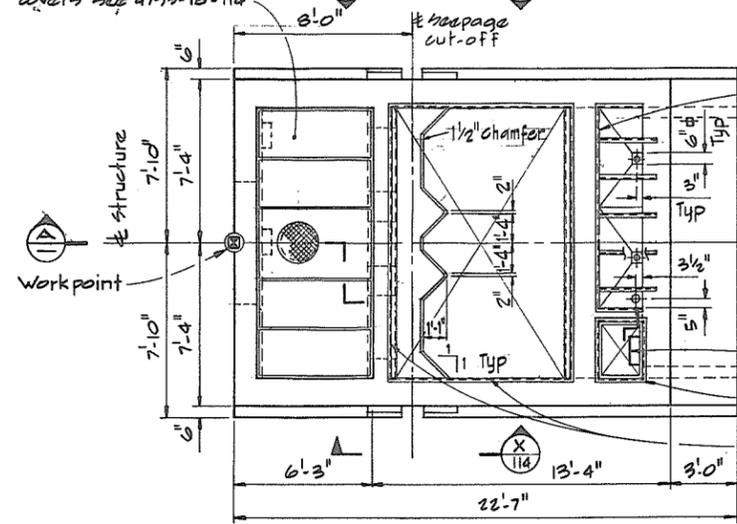
RECOMMENDED *P. N. Cameron*  
PROJECT MANAGER  
DATE *June 2, 1981*  
APPROVED *John Miller*  
for DIRECTOR  
DATE *June 3/81*

DESIGNED	SURVEYED
DRAWN <i>L. Stone</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-16</i>	SHEET <i>OF</i> SHEETS

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For precast concrete covers see 4795-18-114



PLAN

For M.C.C frame see 4795-18-115

For typical rung detail see 4795-18-116  
 For pump sump access frame see 4795-18-115  
 For embedded L 2x2x1/4 frame see 4795-18-115

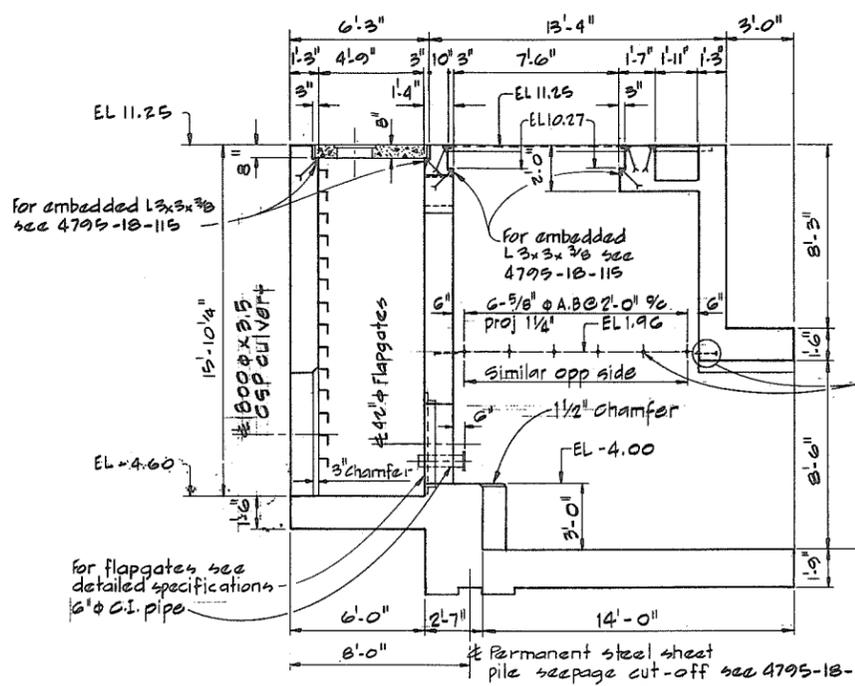
NOTE  
 Provide temporary timber deck.  
 For details see 4795-18-107.

GENERAL NOTES-STRUCTURAL

- Design is in accordance with CSA A23.3-1973, Code for the Design of Plain or Reinforced Concrete Structures.
- Construction shall be in accordance with CSA A23.1-1973, Specifications for Structural Concrete for Buildings.
- Specified strength of concrete  $f_c$  4000psi
- Reinforcing steel shall be deformed bars conforming to CSA A30.12-1972, Grade 40 or 60.
- Cover over reinforcing steel to be 2" to all faces except 3" for the underside of the footings.
- Reinforcing to be of lengths indicated with construction joints as shown unless otherwise approved by the Engineer.
- CONCRETE FINISHES :-  
 - Floors and base slabs - steel trowel  
 - Exposed horizontal surfaces - broom  
 - Interior, exterior exposed walls and beams - rubbed  
 - see specs for details.  
 CHAMFER -  $\frac{3}{4} \times \frac{3}{4}$  for all exposed corners.  
 • If metric reinforcing steel is used, the spacing shall be changed to provide equal cross-sectional area of steel.

NOTES

- For location of embedded electrical conduit see 4795-18-102
- For location of workpoint see 4795-18-14
- Install Ufer ground electrode, and leave both ends in MOC trough for future connection.

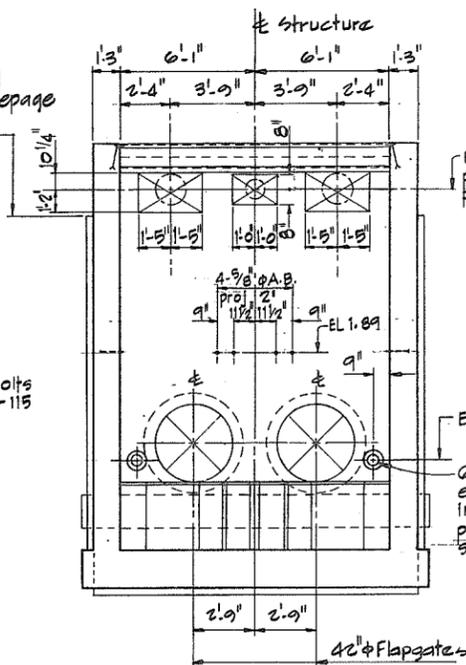


SECTION A-A

Top of steel sheet pile seepage cut-off @ EL 8.00

For anchor bolts see 4795-18-115

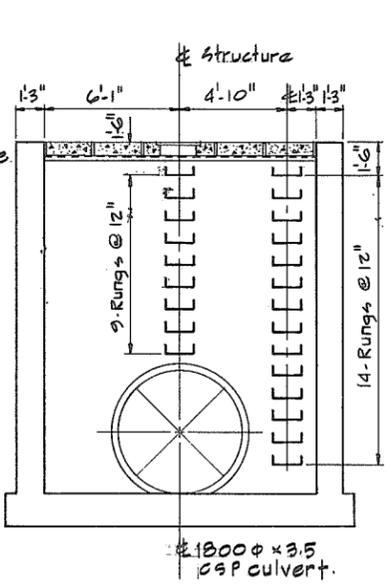
Permanent steel sheet pile seepage cut-off see 4795-18-114



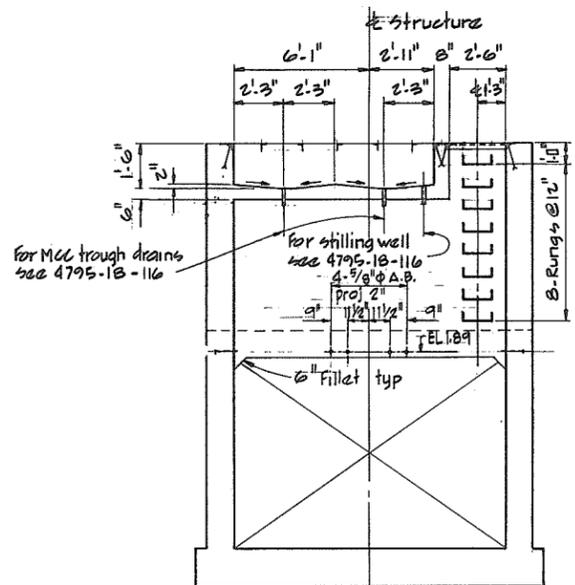
SECTION B-B

EL 9.17 center of future pump discharge piping

6" x 6" x 3/8" pipe embedment for irrigation control piping for details see 4795-18-116



SECTION C-C



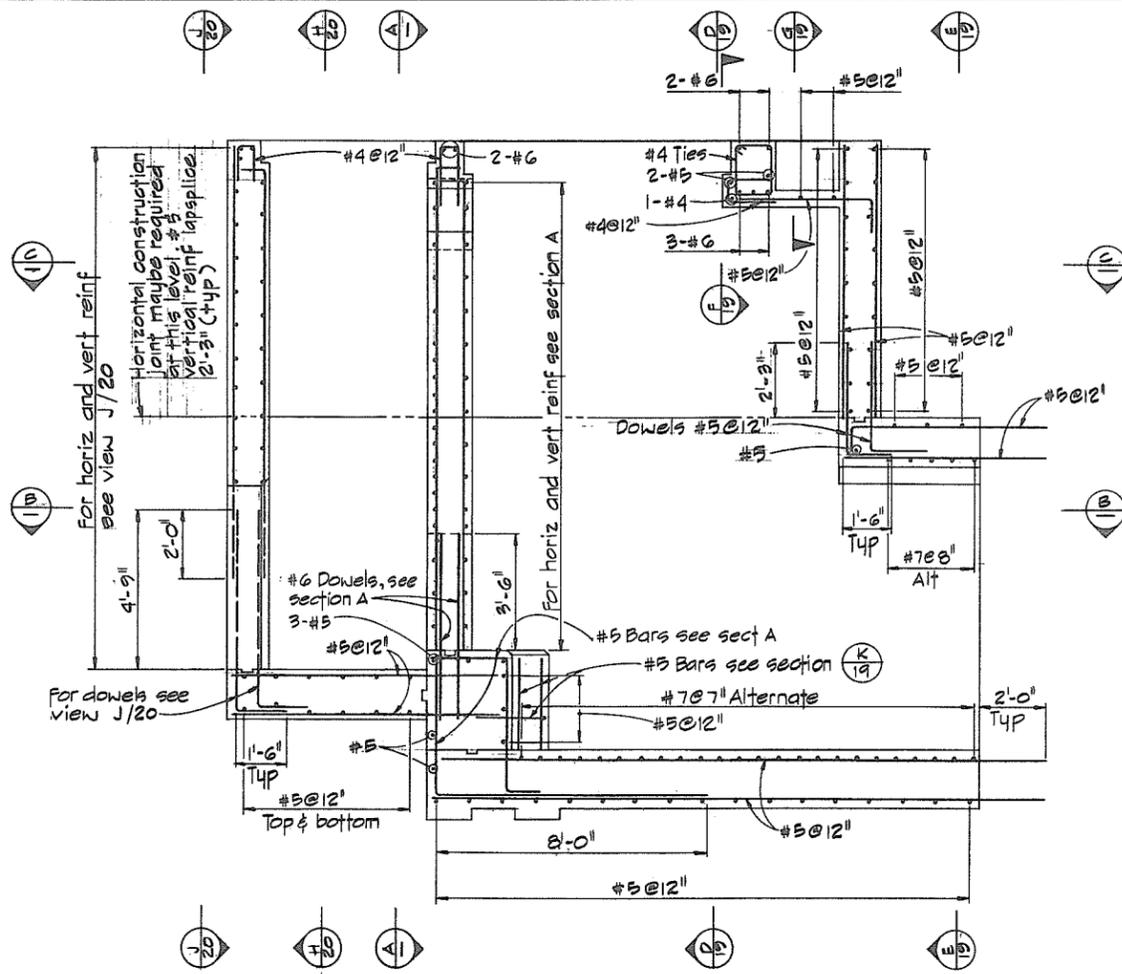
SECTION D-D

SCALE IN FEET

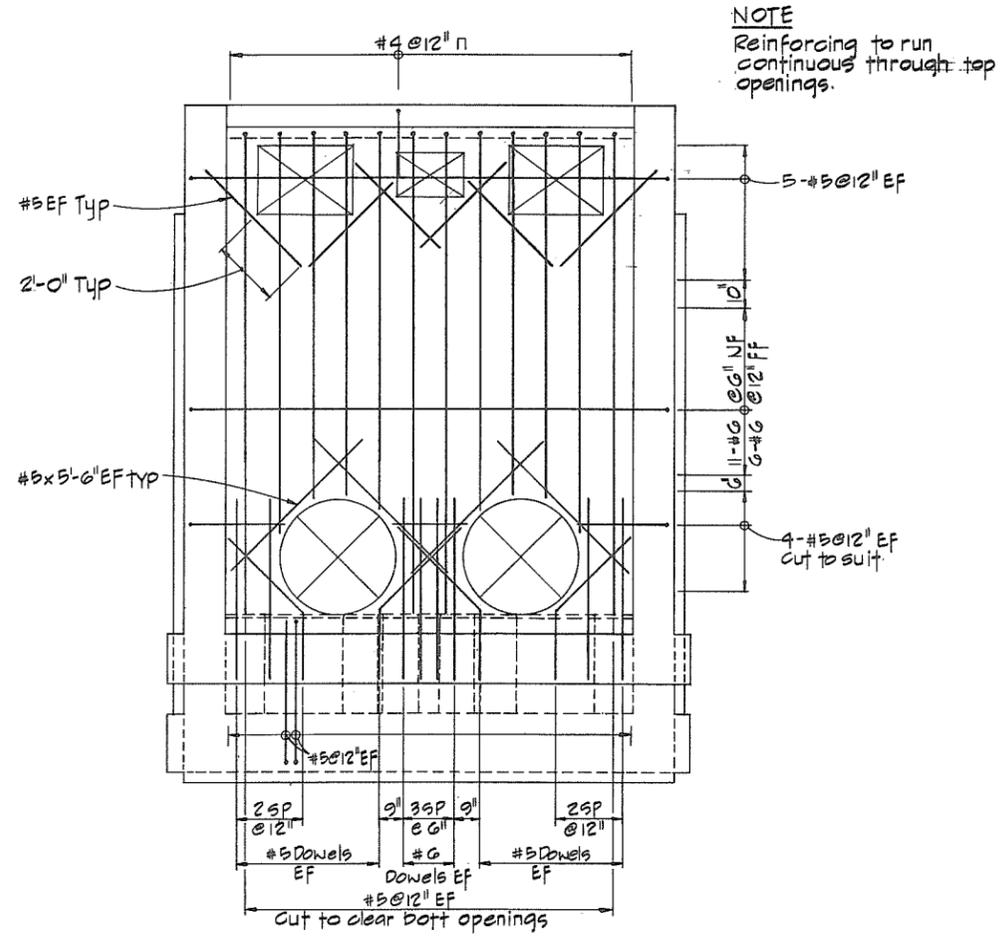


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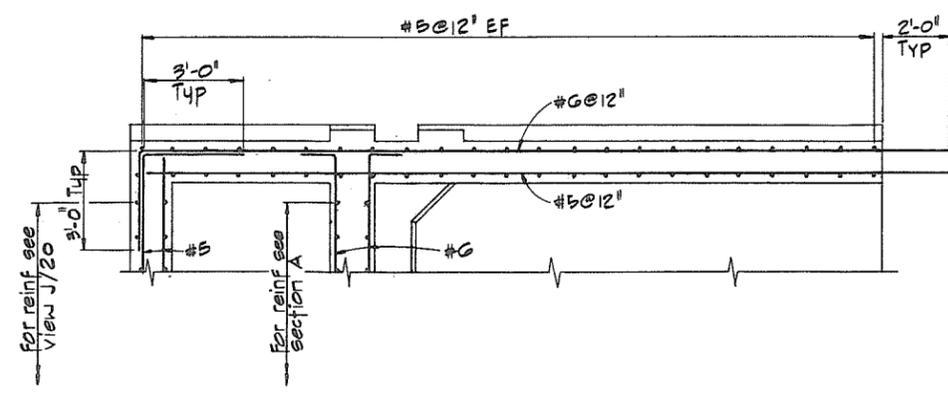
RECOMMENDED <i>R. H. Cameron</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1968 AGREEMENT	DESIGNED <i>T. C.</i>	SURVEYED
DATE <i>June 2, 1981</i>	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B.	DRAWN <i>AR</i>	DATE
APPROVED <i>John Fuller</i> DIRECTOR	NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 14	CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
DATE <i>Jun 3/81</i>	MAIN STRUCTURE - CONCRETE OUTLINE	SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
		DWG. NO. <i>4795-18-17</i>	SHEET <i>609</i> OF <i>609</i> SHEETS



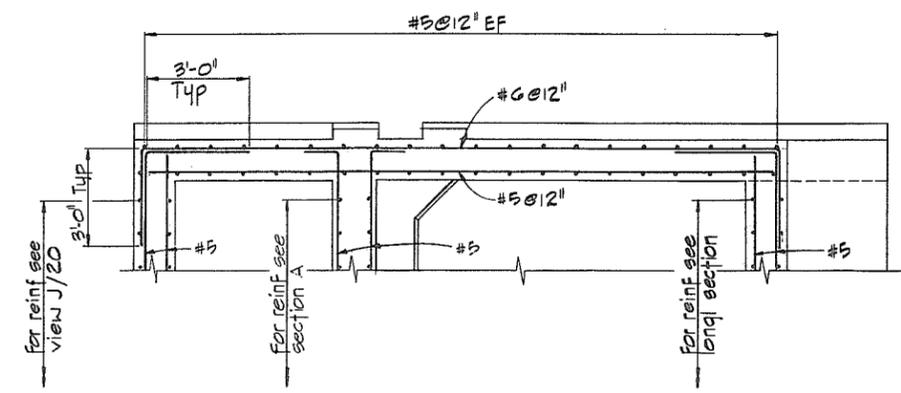
LONGITUDINAL SECTION



SECTION A-A

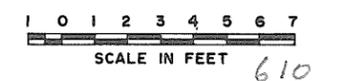


SECTION B-B



SECTION C-C

NOTES  
For General Notes see 4795-18-17

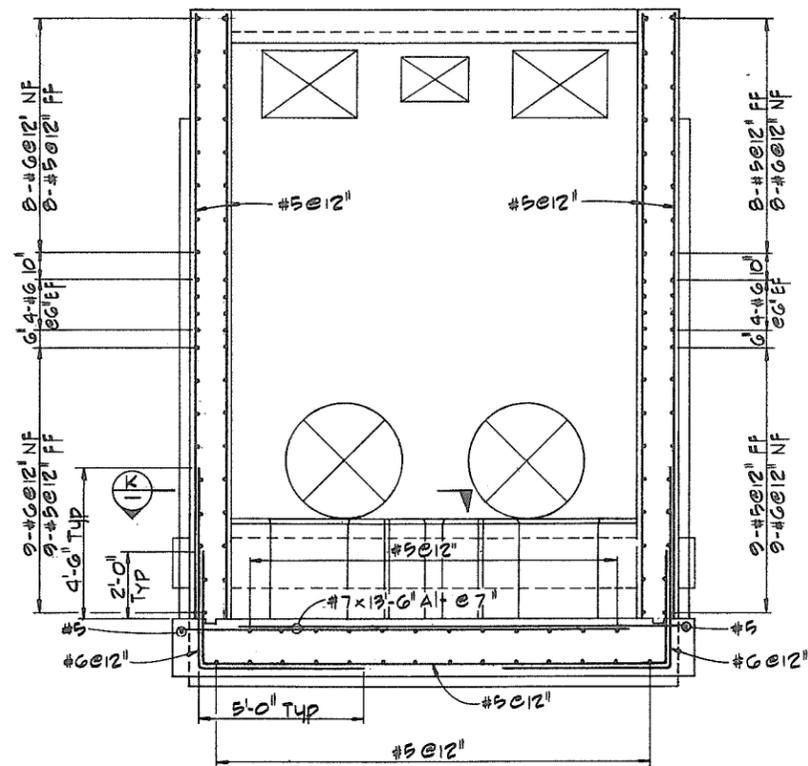


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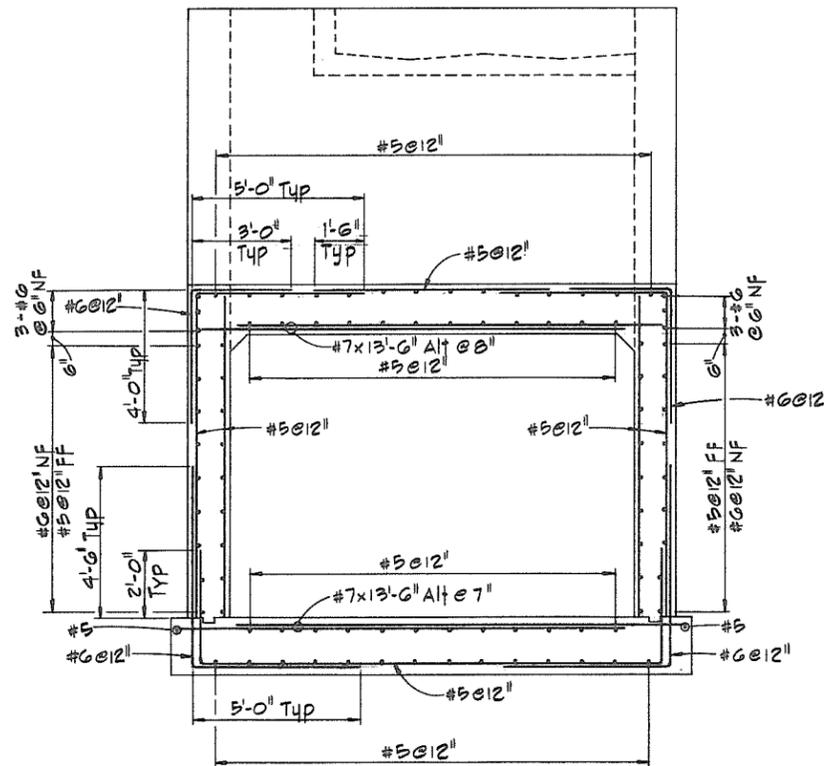
RECOMMENDED <i>R. H. Cameron</i> PROJECT MANAGER
DATE <i>June 2, 1981</i>
APPROVED <i>W. J. Miller</i> DIRECTOR
DATE <i>June 3/81</i>

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B  
NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 14  
MAIN STRUCTURE REINFORCING

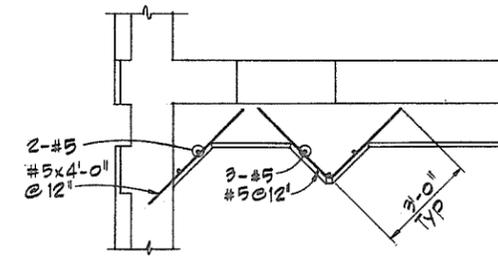
DESIGNED T.P.	SURVEYED
DRAWN W.M.	DATE
CHECKED T.P.	FILE NO. 0281550 - C10-18
SCALE AS SHOWN	DATE July 1981
DWG. NO. 4795-18-18 C	SHEET 1 OF 3 SHEETS



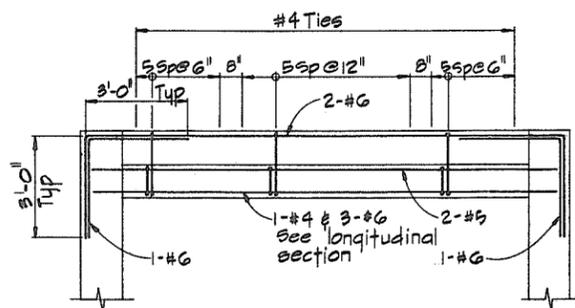
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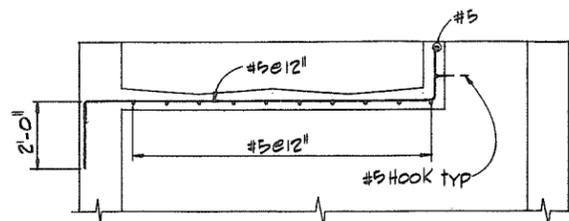
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SECTION K



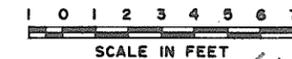
SECTION F



SECTION G

NOTES

• For General Notes see 4795-18-17



SCALE IN FEET 611



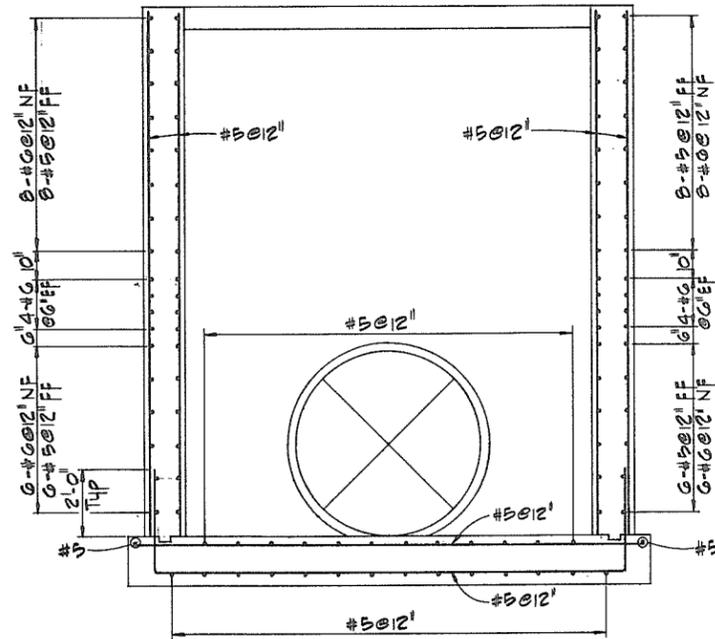
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CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE

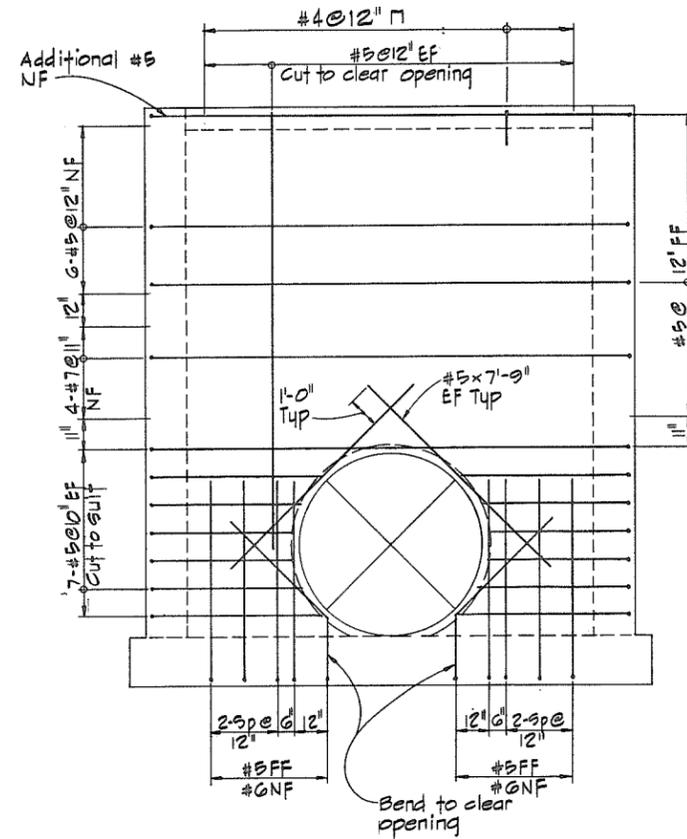
RECOMMENDED *R.H. Condon*  
PROJECT MANAGER  
DATE *June 2, 1981*  
APPROVED *John Miller*  
DIRECTOR  
DATE *June 3/81*

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18.B  
NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 14  
MAIN STRUCTURE REINFORCING

DESIGNED	TP	SURVEYED	
DRAWN	WN	DATE	
CHECKED	TP	FILE NO.	0281550-C10-18
SCALE	AS SHOWN	DATE	July 1981
DWG. NO.	4795-18-19C	SHEET	2 OF 3 SHEETS



SECTION  $\text{H-18}$



VIEW  $\text{J-18}$

NOTES  
 For General Notes see 4795-18-17.



**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

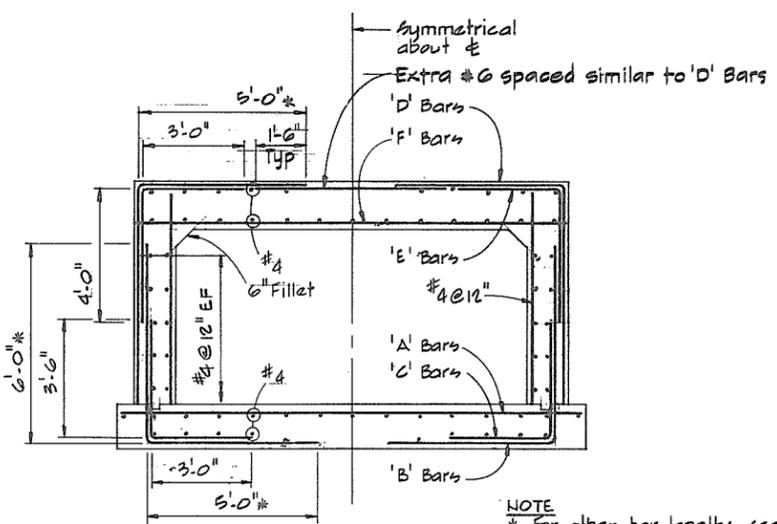
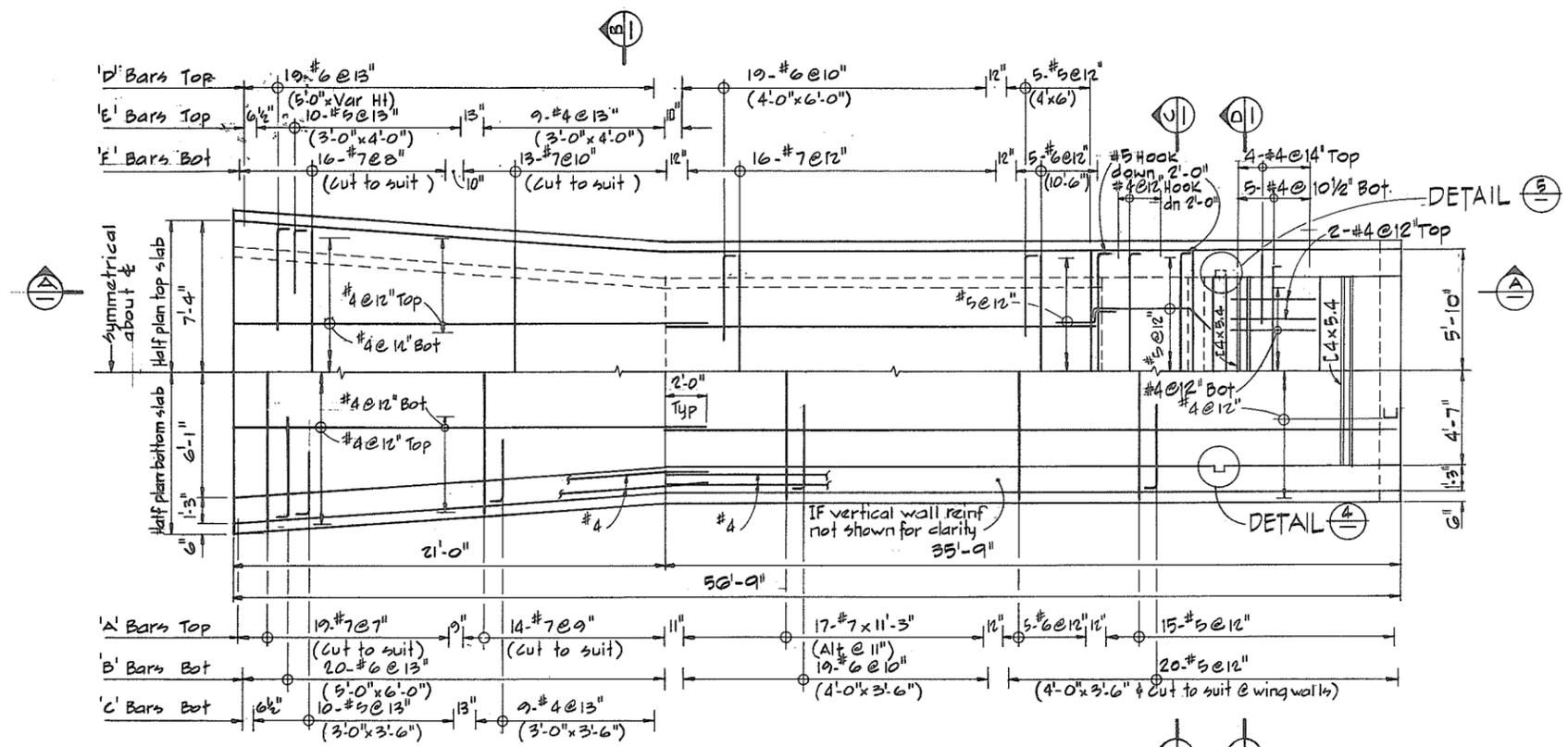
NO.	BY	REVISIONS	DATE

RECOMMENDED *R. H. Cameron*  
 PROJECT MANAGER  
 DATE *June 2, 1981*  
 APPROVED *W. J. Fuller*  
 DIRECTOR  
 DATE *June 3, 1981*

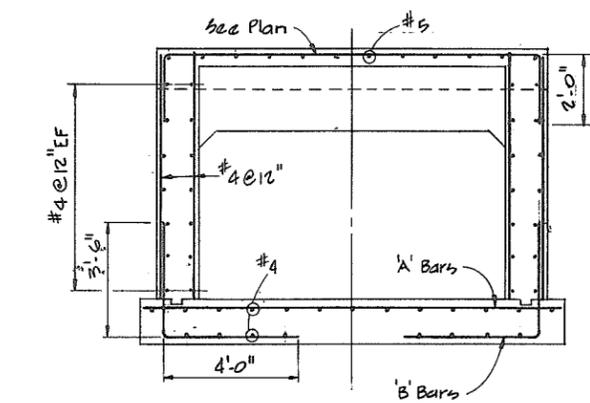
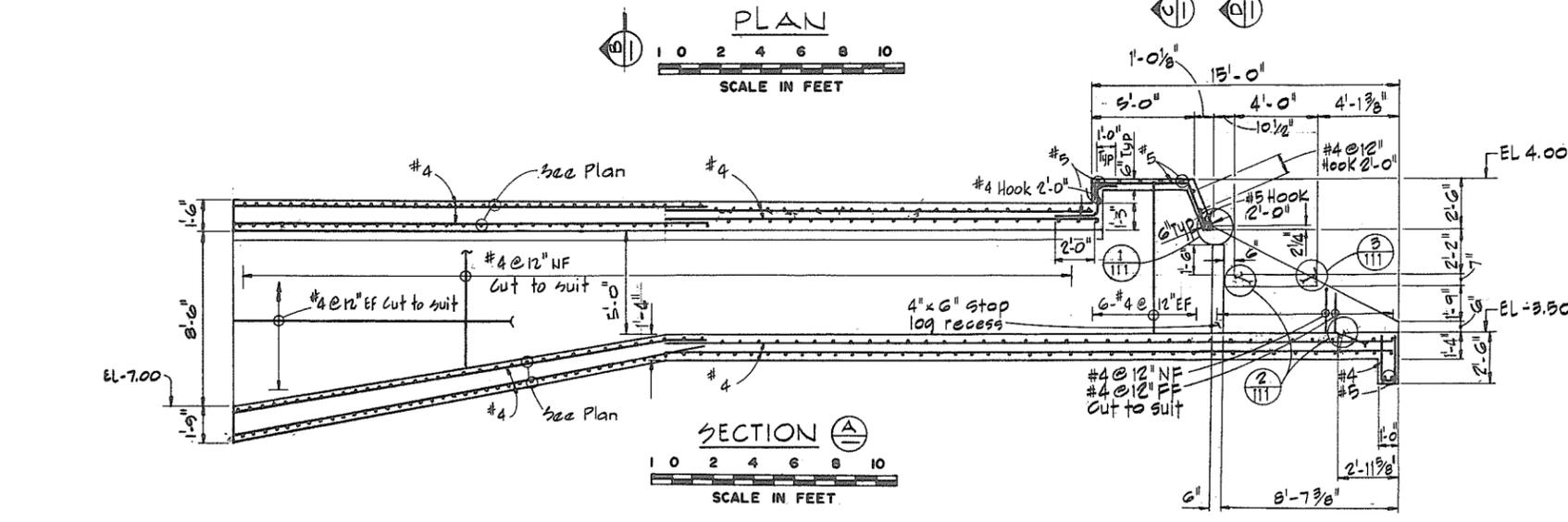
BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B  
 NO. 6 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 14  
 MAIN STRUCTURE REINFORCING

DESIGNED	SURVEYED
<i>T. P.</i>	
DRAWN <i>W. J.</i>	DATE
CHECKED <i>TP</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-20.1</i>	SHEET <i>3</i> OF <i>3</i> SHEETS

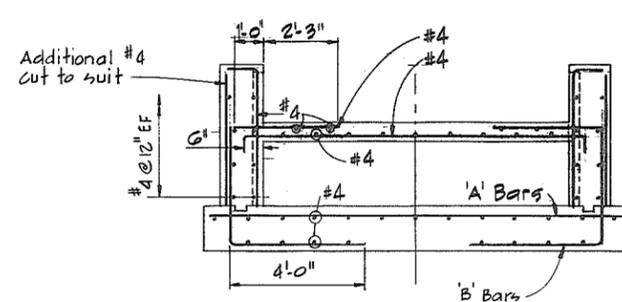
612



SECTION B



SECTION C



SECTION D

DETAIL 4 SHOWN  
 DETAIL 5 SIMILAR  
 BUT OPP HAND

NOTES  
 • For General Notes see 4795-18-17.



**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

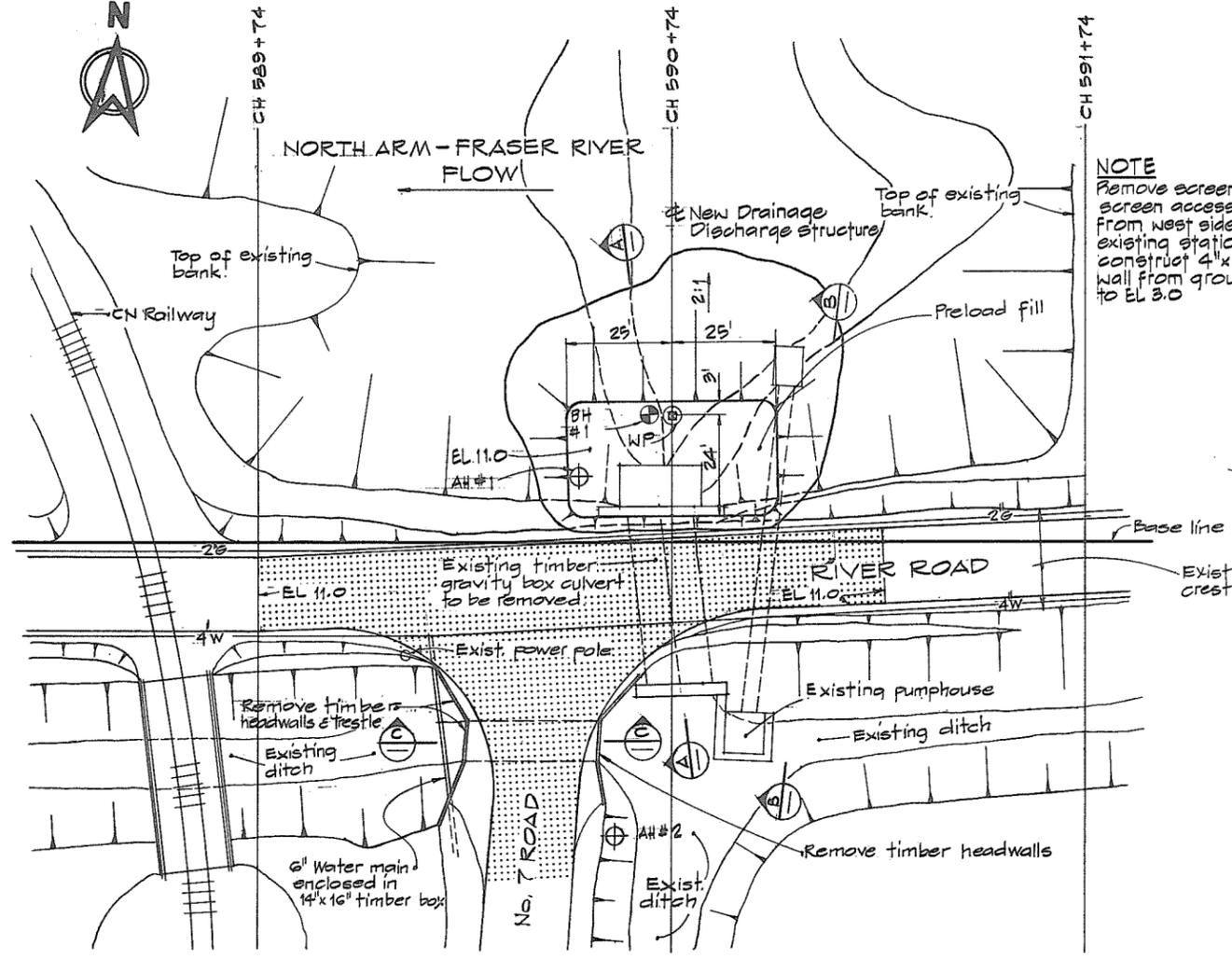
RECOMMENDED	R. N. Cameron PROJECT MANAGER
DATE	June 2, 1981
APPROVED	J. J. Fuller DIRECTOR
DATE	June 3/81

BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1988 AGREEMENT

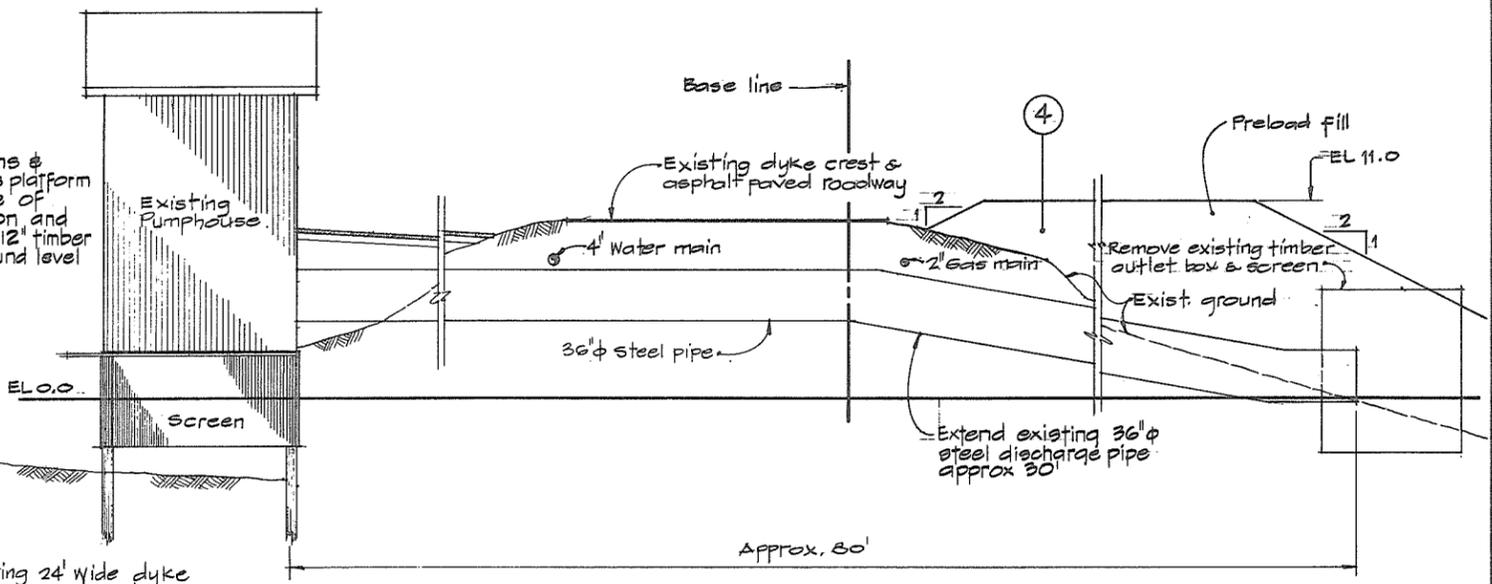
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
 NO. 6 ROAD NORTH-DRAINAGE DISCHARGE STRUCT NO. 14  
 ENTRY CULVERT AND BOX CULVERT  
 CONCRETE OUTLINE AND REINFORCING

DESIGNED	SURVEYED
DRAWN	DATE
CHECKED	FILE NO.
SCALE	DATE
DWG. NO.	SHEET

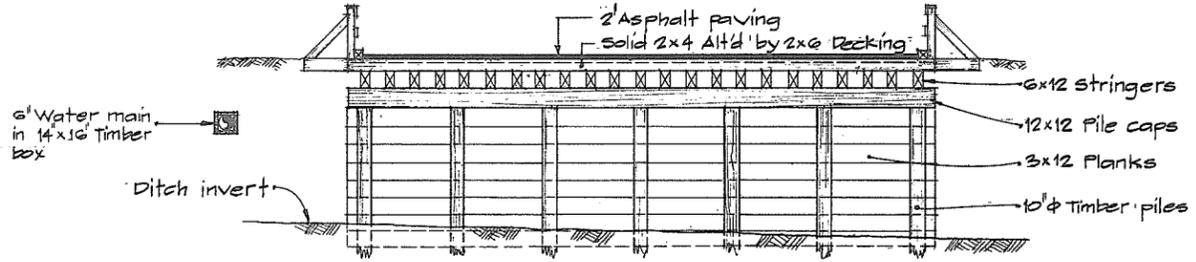
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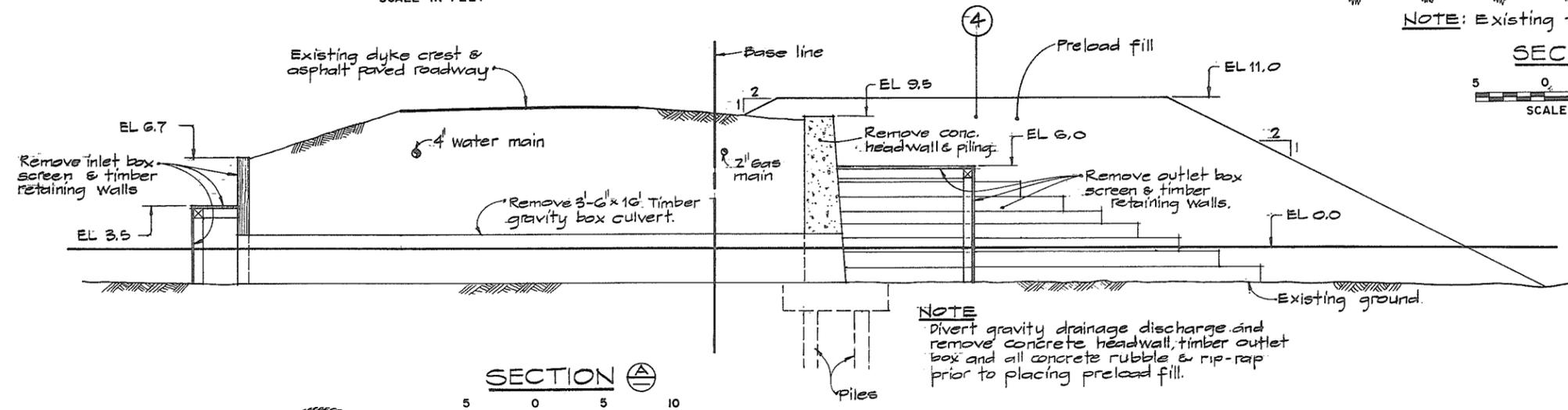
**PLAN**  
SCALE IN FEET



**SECTION B-B**  
SCALE IN FEET



**SECTION C-C**  
SCALE IN FEET



**SECTION A-A**  
SCALE IN FEET

- LEGEND**
- Remove existing asphalt pavement.
  - BH# 1 - Borehole #1
  - AH# 1 - Augerhole #1
- NOTES**
- All elevations refer to the Geodetic Survey of Canada.
  - For location of workpoint see dwg. 4795-18-23

266614



**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED	<i>R. H. Cameron</i>	PROJECT MANAGER
DATE	June 2, 1981	
APPROVED	<i>W. J. Fuller</i>	DIRECTOR
DATE	June 3, 1981	

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B  
NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 15  
PLAN SHOWING EXISTING DRAINAGE STRUCTURES TO BE REMOVED, PRELOAD FILL AND UTILITIES

DESIGNED	L. Grave	SURVEYED	
CHECKED	DLC	DATE	July 1981
SCALE	AS SHOWN	FILE NO.	0281550-C10-18
DWG. NO.	4795-18-22	SHEET	OF SHEETS



C.N. Railway

Discharge channel

NORTH ARM FRASER RIVER  
FLOW

11-2" x 6-7" CGP  
drainage discharge pipe

FLOW

Workpoint

Permanent sheet pile  
cut off wall

Pumphouse substructure

no post barrier

30" steel pump  
discharge pipe

Future location  
of electrical kiosk

Gravel shoulder

Entry culvert

90°

Base line

RIVER ROAD

24' Dyke crest &  
paved roadway @ EL 11.0

18' Paved roadway

Gravel shoulder

Existing power pole

Concrete retaining wall

Concrete  
bag wall

New 48" Precast  
concrete culvert  
inlet screen

Existing pumphouse

Existing ditch

Existing ditch

NO. 7 ROAD

Concrete  
bag wall

CH 590+74  
Existing  
ditch

New drainage discharge structure

NOTES

For location of works see 4795-18-1A

LEGEND

Property line



6/5



CBA ENGINEERING LTD.  
CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE

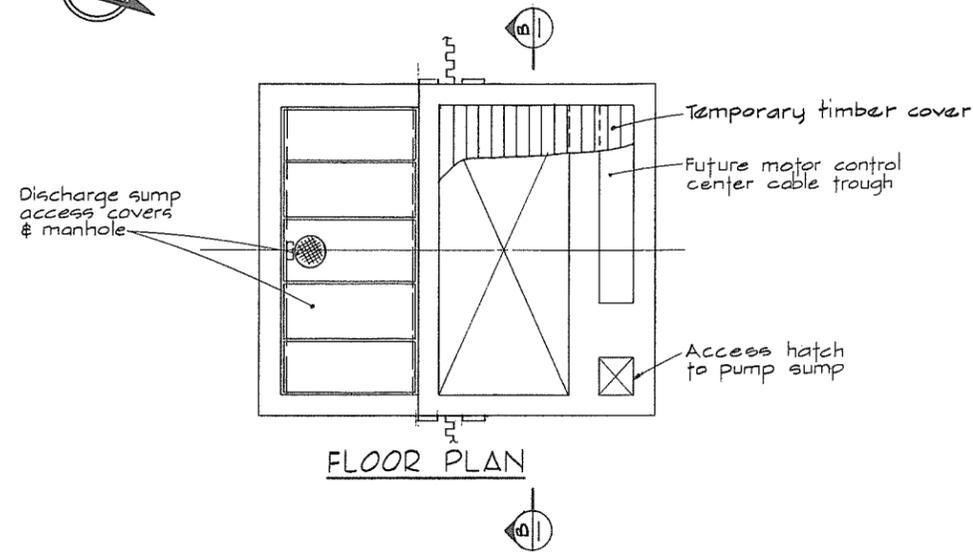
RECOMMENDED *R. N. Cameron*  
PROJECT MANAGER  
DATE *June 2, 1981*

APPROVED *W. J. Fuller*  
DIRECTOR  
DATE *Jun 3/81*

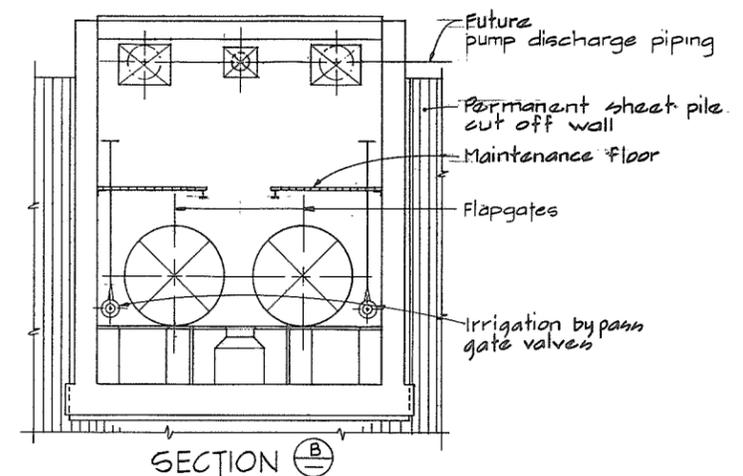
BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 188  
NO. 7 ROAD NORTH-DRAINAGE DISCHARGE STRUCT NO. 15  
GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY  
AND PROPERTY REQUIREMENTS

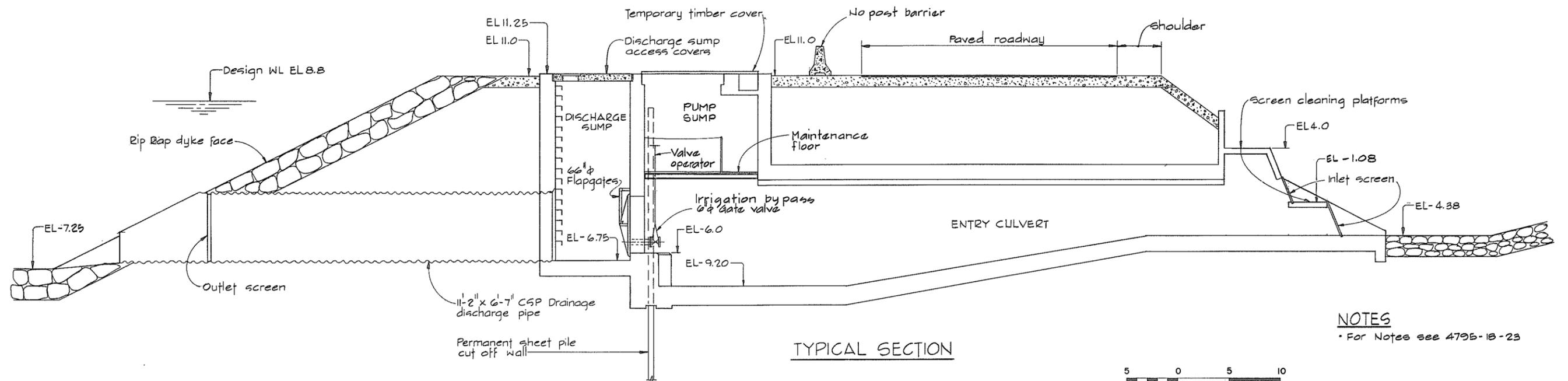
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DRAWN <i>SP</i>	DATE
CHECKED <i>DLG</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-23 C</i>	SHEET <i>  </i> OF <i>  </i> SHEETS



FLOOR PLAN



SECTION B



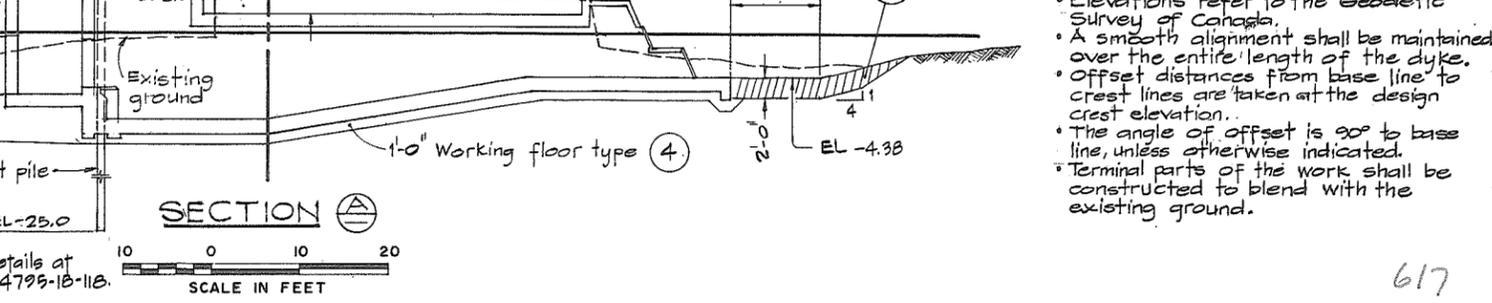
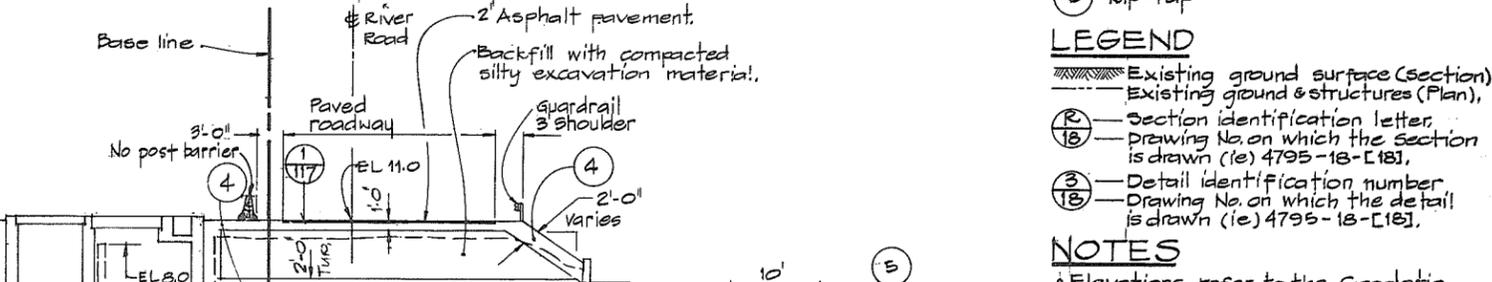
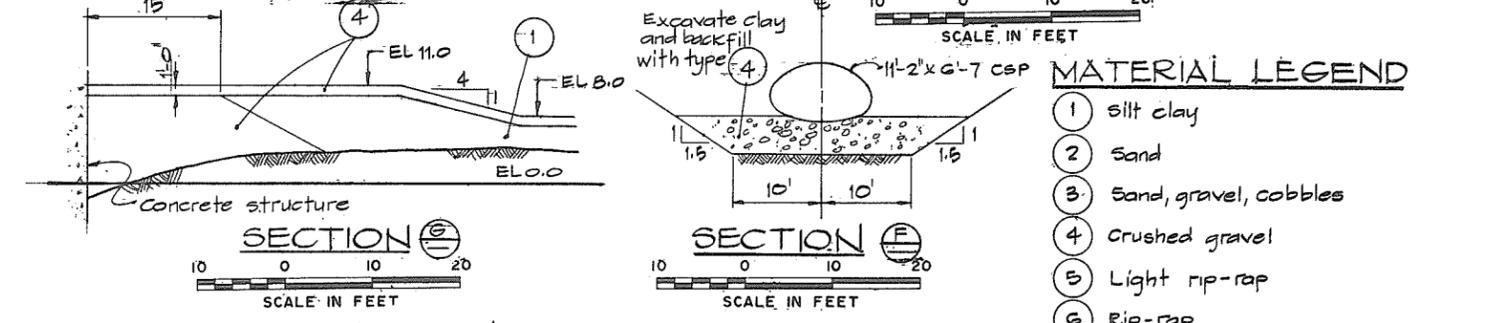
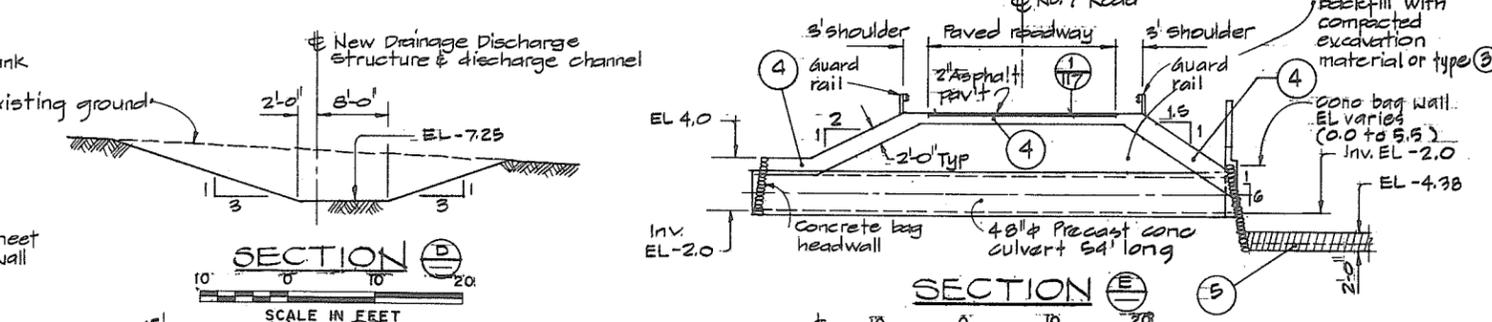
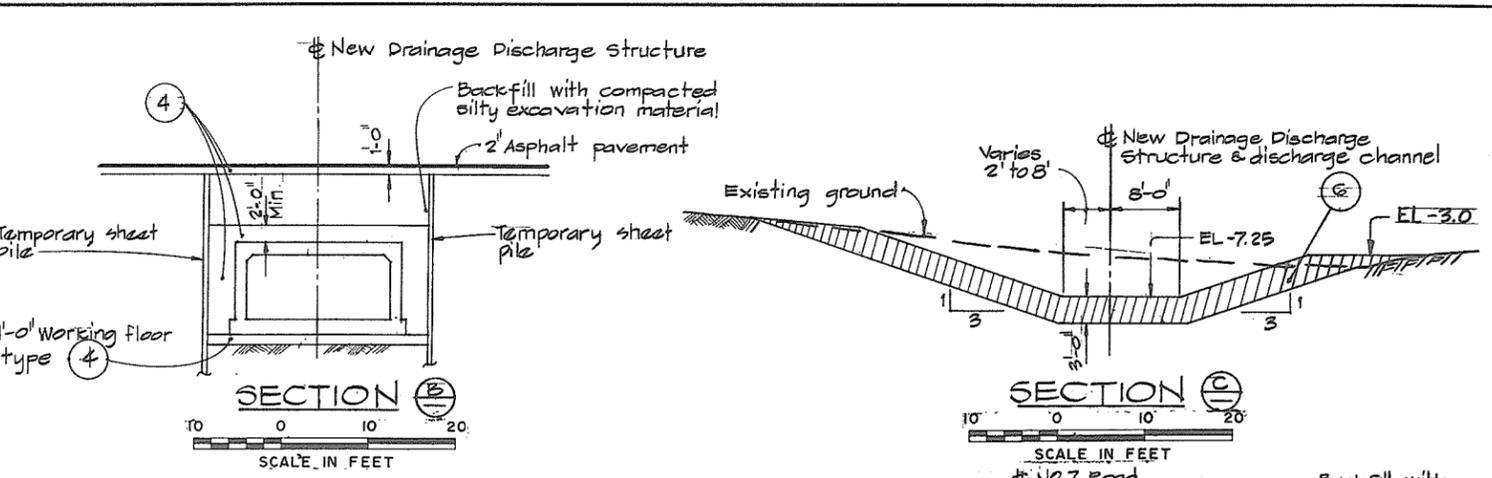
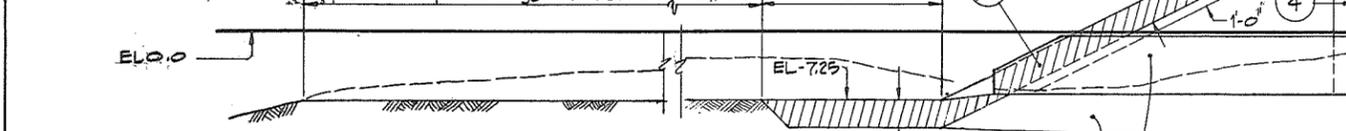
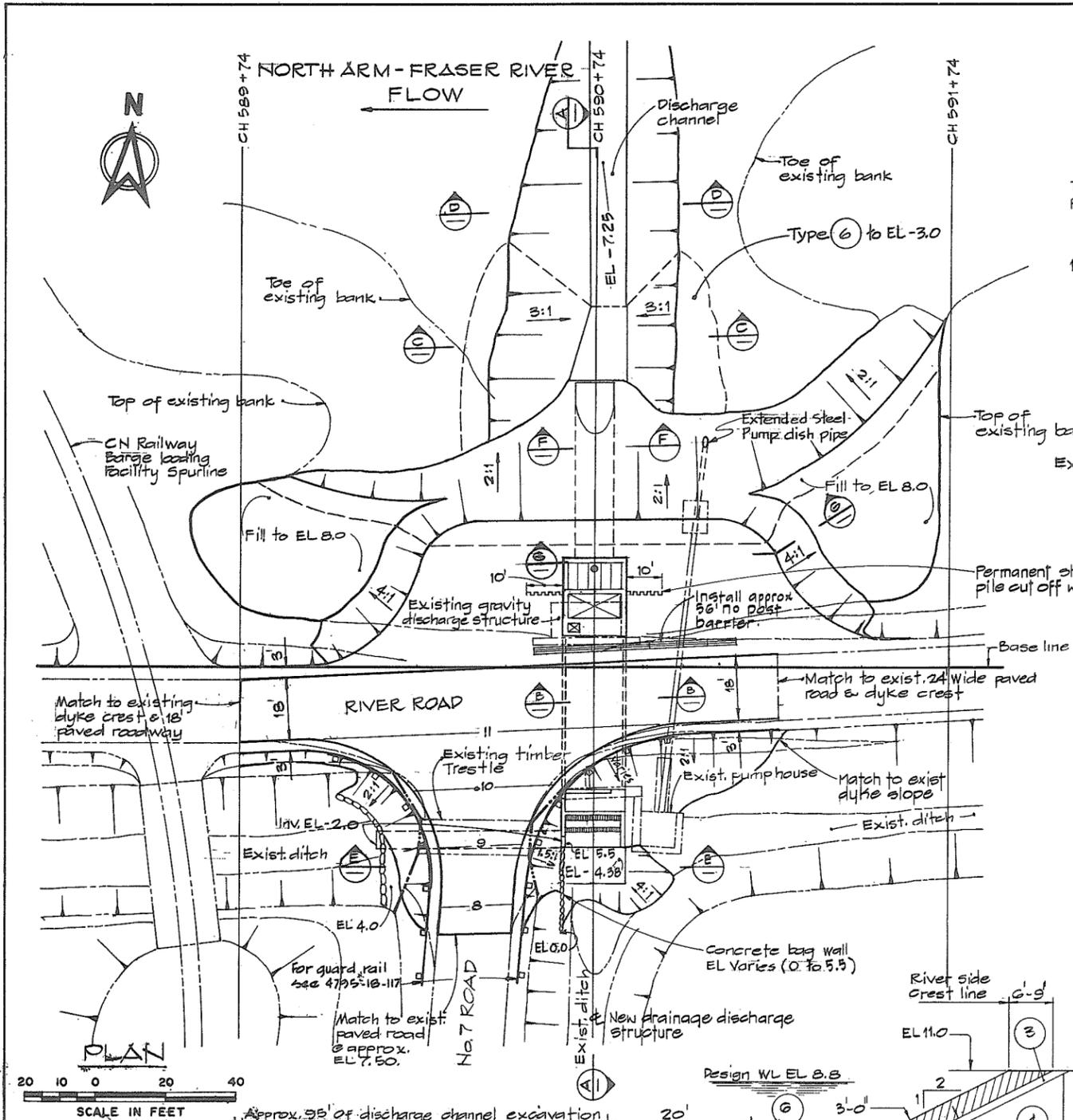
TYPICAL SECTION

NOTES  
 • For Notes see 4795-18-23



**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

C B A	RECOMMENDED <i>R. H. Cameron</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH	DESIGNED	SURVEYED
	DATE <i>June 2, 1981</i>	CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1988 AGREEMENT	DRAWN <i>SP</i>	DATE
	APPROVED <i>John Fuller</i> DIRECTOR	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 188	CHECKED <i>DLC</i>	FILE NO. <i>0281550-C-10-18</i>
	DATE <i>Jun 3/81</i>	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 15 GENERAL ARRANGEMENT SECTIONS	SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
NO. BY	REVISIONS	DATE	DWG. NO. <i>4795-18-24</i>	SHEET <i>616</i> OF <i>616</i> SHEETS



- MATERIAL LEGEND**
- (1) Silt clay
  - (2) Sand
  - (3) Sand, gravel, cobbles
  - (4) Crushed gravel
  - (5) Light rip-rap
  - (6) Rip-rap

- LEGEND**
- Existing ground surface (Section)
  - Existing ground & structures (Plan),
  - (R) Section identification letter, drawing No. on which the section is drawn (i.e. 4795-18-[18]),
  - (18) Detail identification number, Drawing No. on which the detail is drawn (i.e. 4795-18-[18]).

- NOTES**
- Elevations refer to the Geodetic Survey of Canada.
  - A smooth alignment shall be maintained over the entire length of the dyke.
  - Offset distances from base line to crest lines are taken at the design crest elevation.
  - The angle of offset is 90° to base line, unless otherwise indicated.
  - Terminal parts of the work shall be constructed to blend with the existing ground.

**OFFSET DIMENSIONS FROM BASE LINE**

Chainage	Land side Crest line	River side Pavement edge	River side Crest line @ EL 11.0	River side Crest line @ EL 8.0
589+74	24	3	0	—
589+99	24	2.5	1	50
590+24	—	1.5	27	47
590+49	—	0	41	—
590+74	27.5	1.5	41.5	—
590+99	19	2.5	42	—
591+24	17.5	3.5	34	51
591+49	Existing	Existing	9	68



**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED *A. R. Cameron* PROJECT MANAGER  
DATE *June 2 1981*

APPROVED *John Fuller* DIRECTOR  
DATE *June 3/81*

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1980 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B  
NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 15  
- DETAILS OF EARTHWORKS

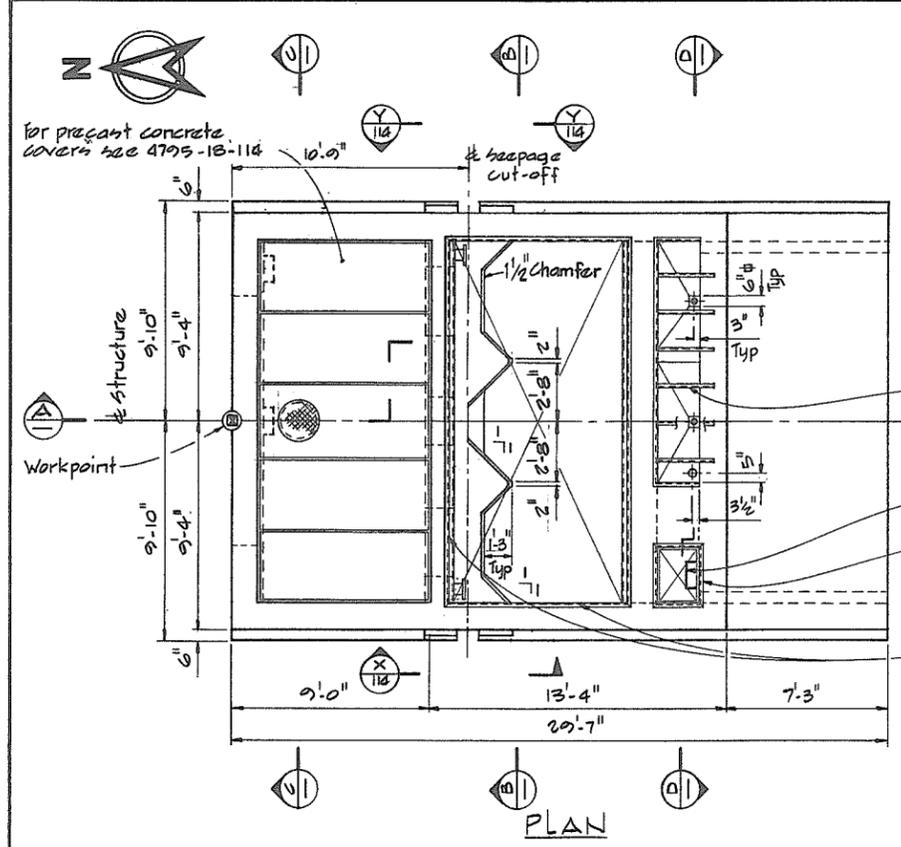
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DRAWN <i>L. Grave</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-25</i>	SHEET <i>OF</i> SHEETS

**GENERAL NOTES - STRUCTURAL**

- Design is in accordance with CSA A23.3-1973, Code for the Design of Plain or Reinforced Concrete Structures.
- Construction shall be in accordance with CSA A23.1-1973, Specifications for Structural Concrete for Buildings.
- Specified strength of concrete f'c 4000 psi.
- Reinforcing steel shall be deformed bars conforming to CSA G30.12-1972, Grade 40 or 60.
- Cover over reinforcing steel to be 2" to all faces, except 3" for the underside of the footings.
- Reinforcing to be of lengths indicated with construction joints as shown unless otherwise approved by the Engineer.
- CONCRETE FINISHES :-  
 - Floors and base slabs - steel trowel  
 - Exposed horizontal surfaces - broom  
 - Interior, exterior exposed walls and beams rubbed.  
 - see specs for details.
- CHAMFER - 3/4 x 3/8 for all exposed corners.
- If metric reinforcing steel is used, the spacing shall be changed to provide equal cross-sectional area of steel.

**NOTES**

- For location of embedded electrical conduit see 4795-18-102
- For location of workpoint see 4795-18-23
- Install U for ground electrode and leave both ends in MCC trough for future connection.



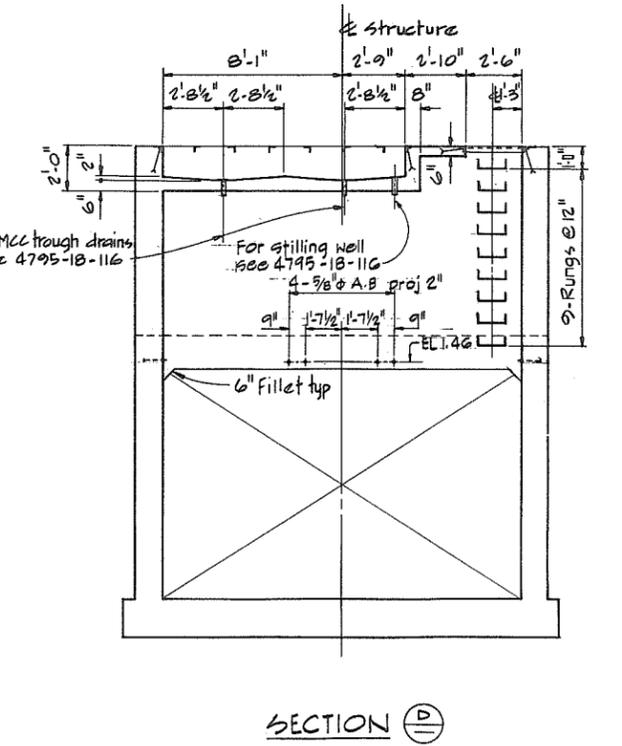
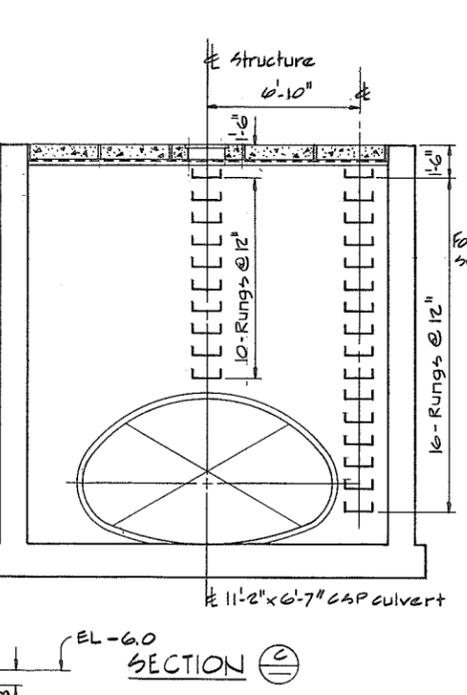
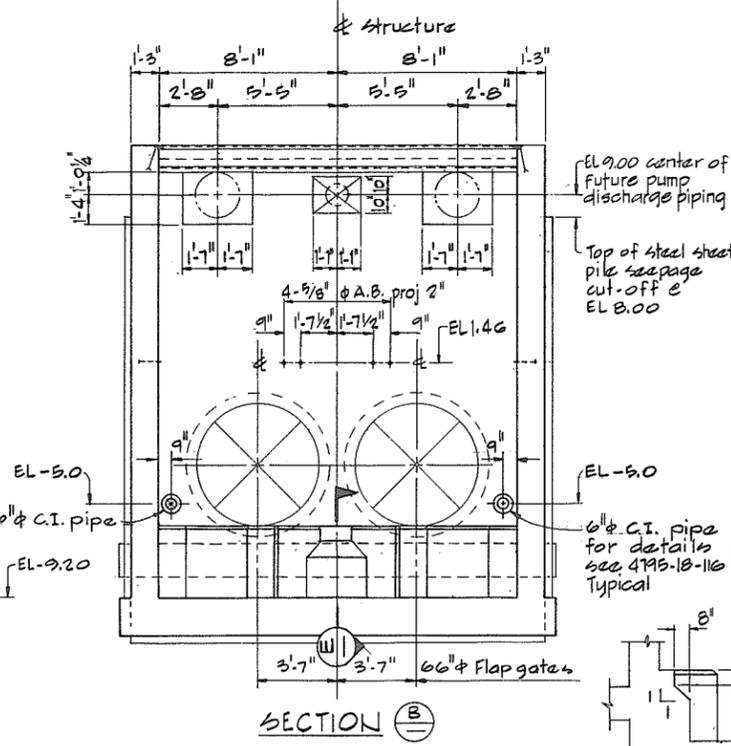
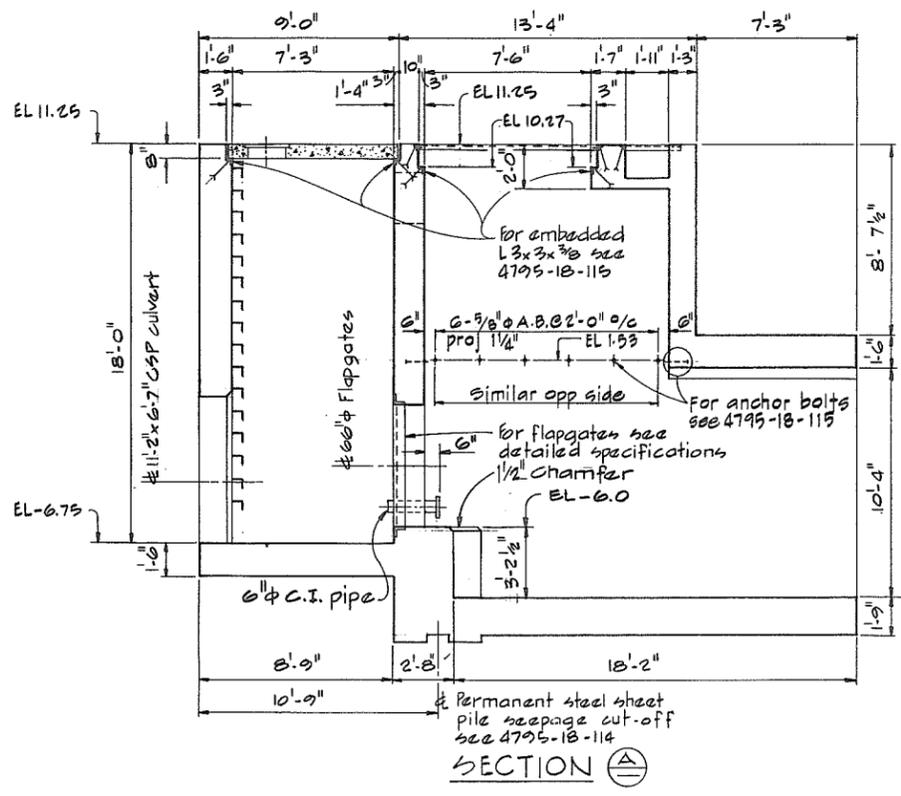
For M.C.C. frame see 4795-18-115

For typical rung detail see 4795-18-116

For pump sump access frame see 4795-18-115

For embedded L 2x2 x 1/4 frame see 4795-18-115

**NOTE**  
Provide temporary timber deck for details see 4795-18-107.



**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

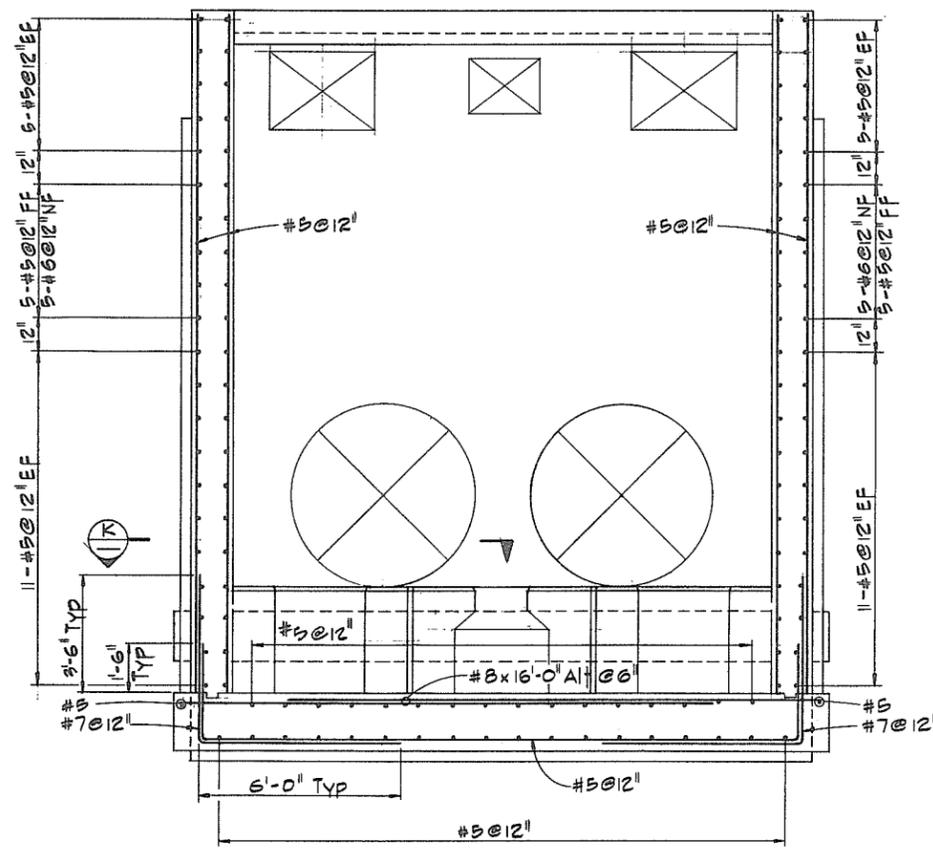
RECOMMENDED	<i>A.H. Camlin</i>	PROJECT MANAGER
DATE	<i>June 2 1981</i>	
APPROVED	<i>Jbb Fuller</i>	PROJECT DIRECTOR
DATE	<i>June 3/81</i>	

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT

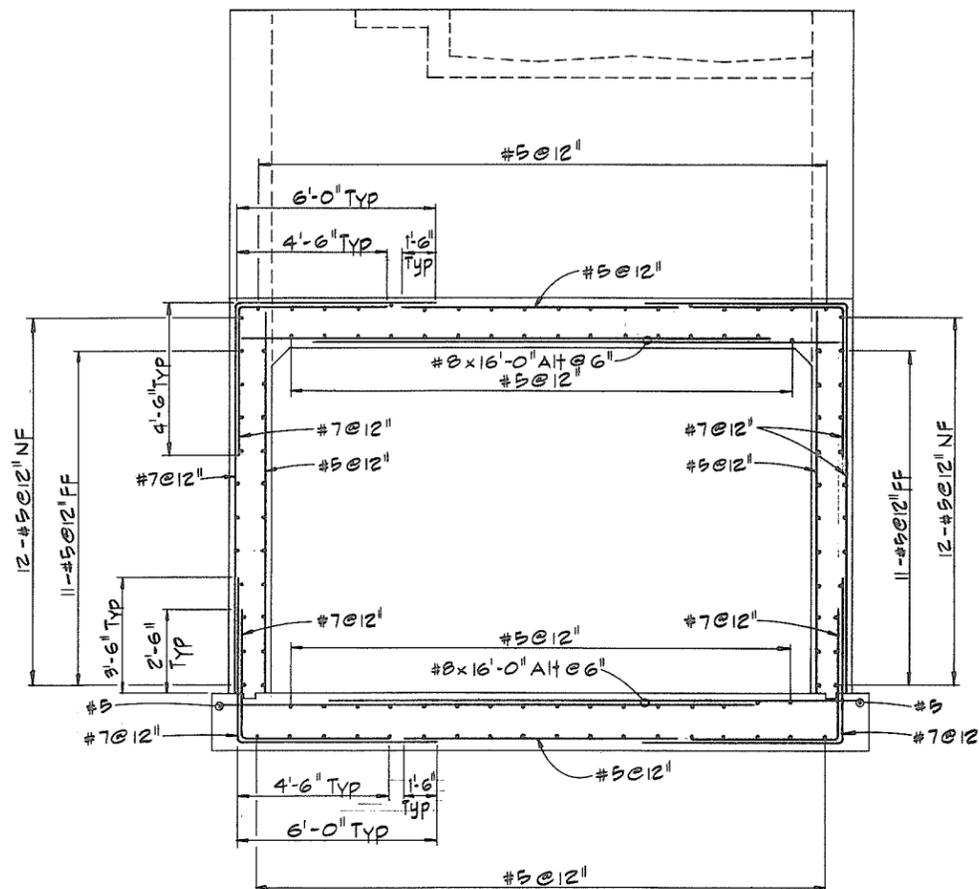
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 15  
MAIN STRUCTURE - CONCRETE OUTLINE

DESIGNED	<i>J.L.V.</i>	SURVEYED	
DRAWN	<i>AR</i>	DATE	
CHECKED	<i>DLC</i>	FILE NO.	<i>0281550-C10-18</i>
SCALE	<i>AS SHOWN</i>	DATE	<i>July 1981</i>
DWG. NO.	<i>4795-18-26 D</i>	SHEET	OF SHEETS

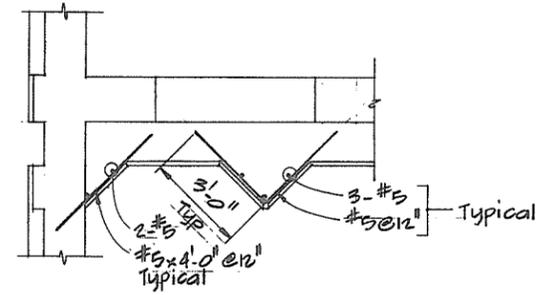




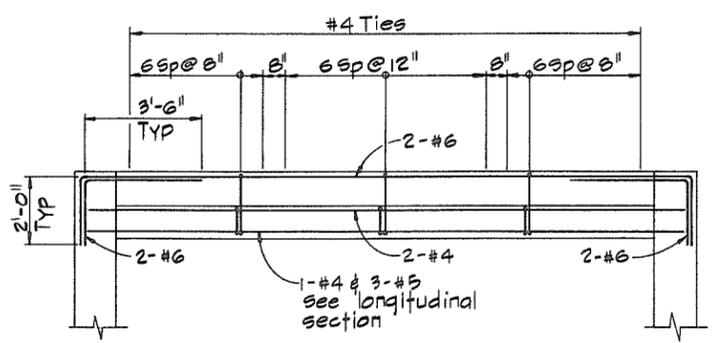
SECTION D



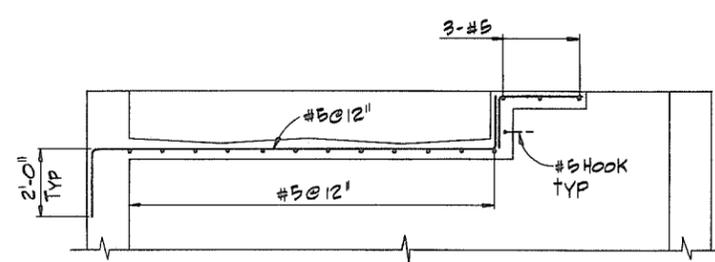
SECTION E



SECTION K

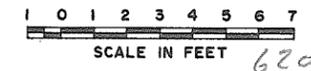


SECTION F



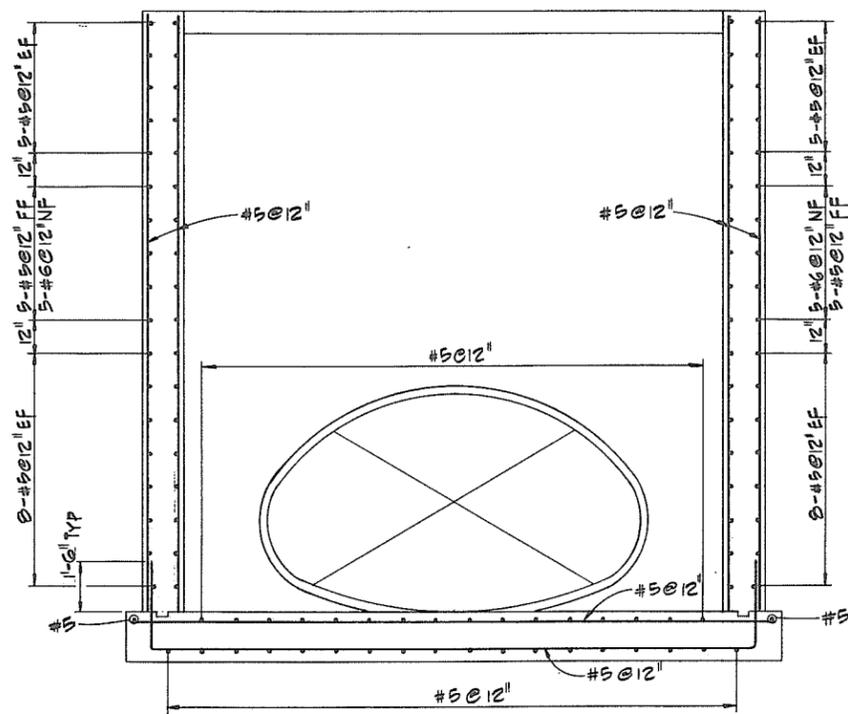
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NOTES  
 For General Notes see 4795-18-26

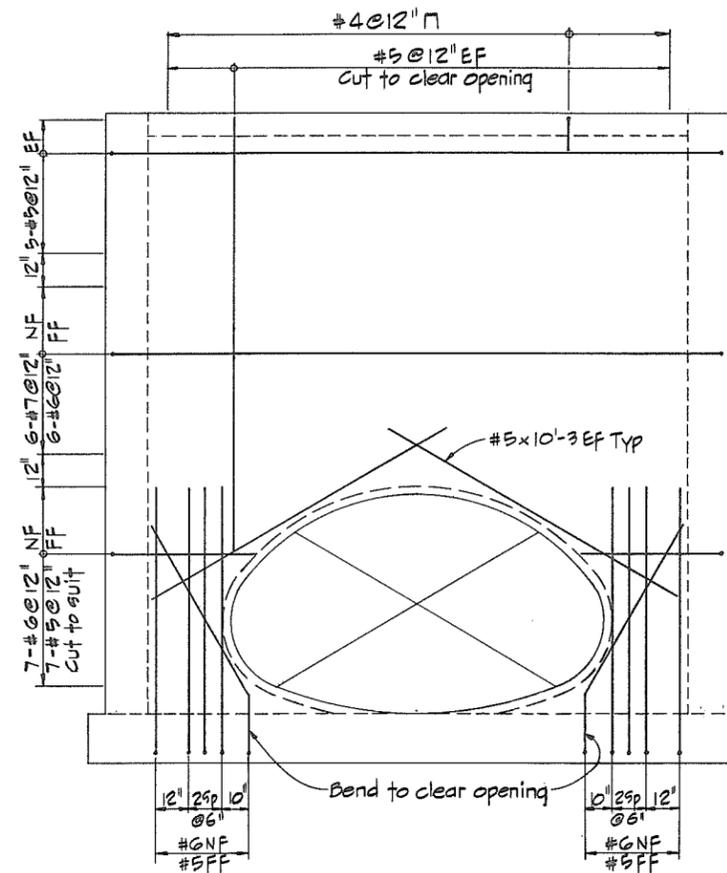


**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE	RECOMMENDED <i>R.H. Cameron</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1988 AGREEMENT	DESIGNED <i>Wn</i>	SURVEYED
				DATE <i>June 2, 1981</i>		CHECKED <i>TP</i>	DATE
				APPROVED <i>[Signature]</i> FOR DIRECTOR	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B	SCALE AS SHOWN	FILE NO. 0281550-C10-18
				DATE <i>June 2/81</i>	NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCTURE NO. 15	DWG. NO. 4795-18-28	DATE July 1981
						SHEET 2 OF 3 SHEETS	

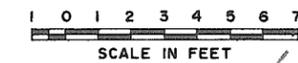


SECTION 27



VIEW 27

NOTES  
 • For General Notes see 4795-1B-26



SCALE IN FEET 621



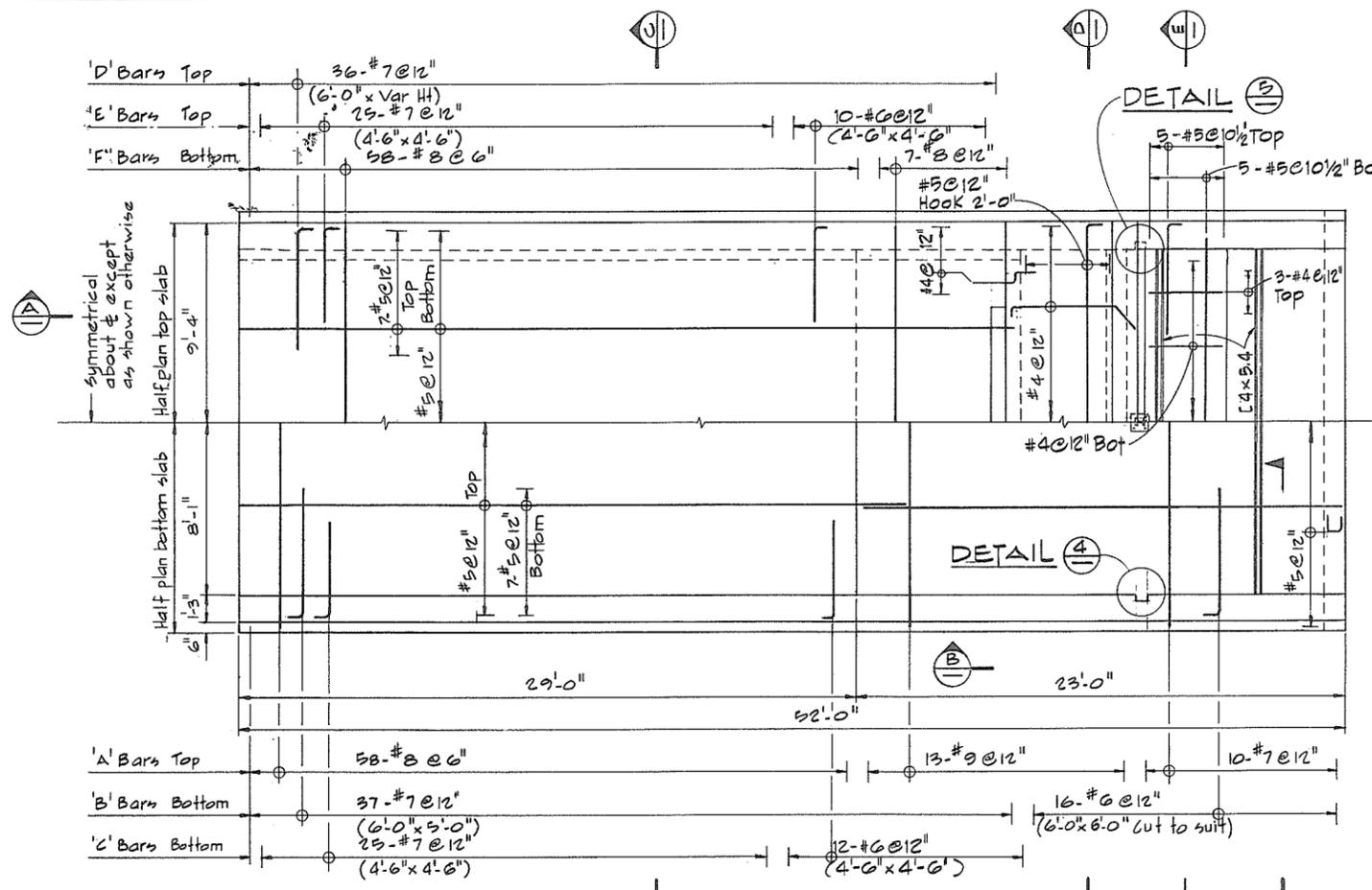
**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE

RECOMMENDED *R. H. Cameron*  
 PROJECT MANAGER  
 DATE *June 2, 1981*  
 APPROVED *[Signature]*  
 DIRECTOR  
 DATE *June 3, 1981*

BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B  
 NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 15  
 MAIN STRUCTURE REINFORCING

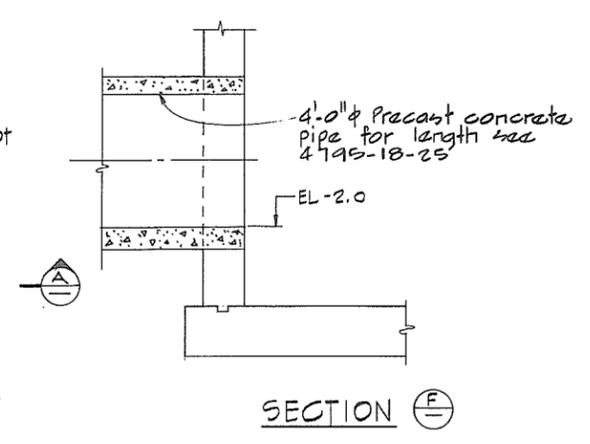
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DRAWN <i>Wn</i>	DATE
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SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-29B</i>	SHEET <i>3</i> OF <i>3</i> SHEETS



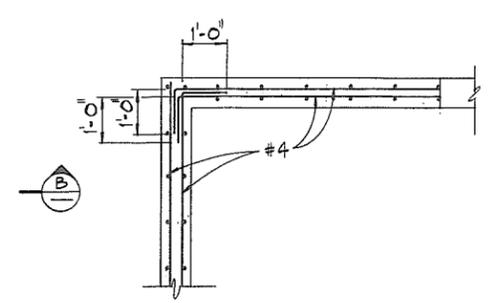
PLAN  
SCALE IN FEET

DETAIL 3

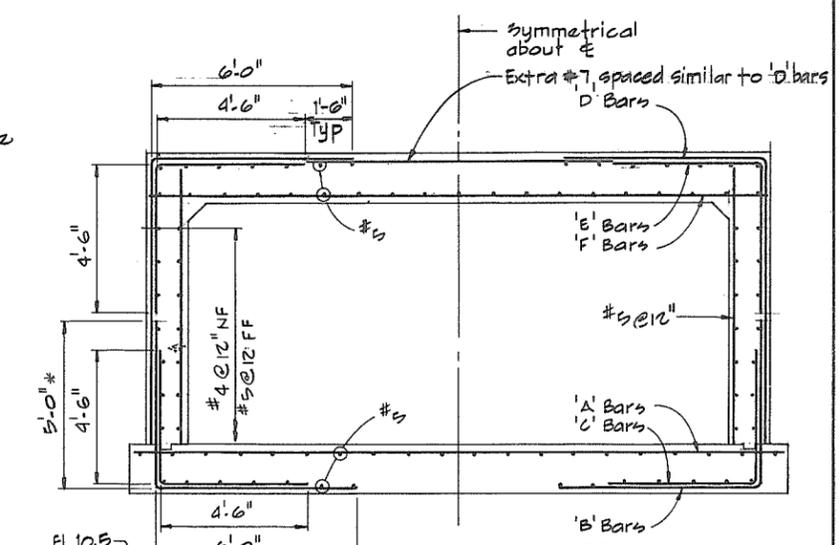
DETAIL 4



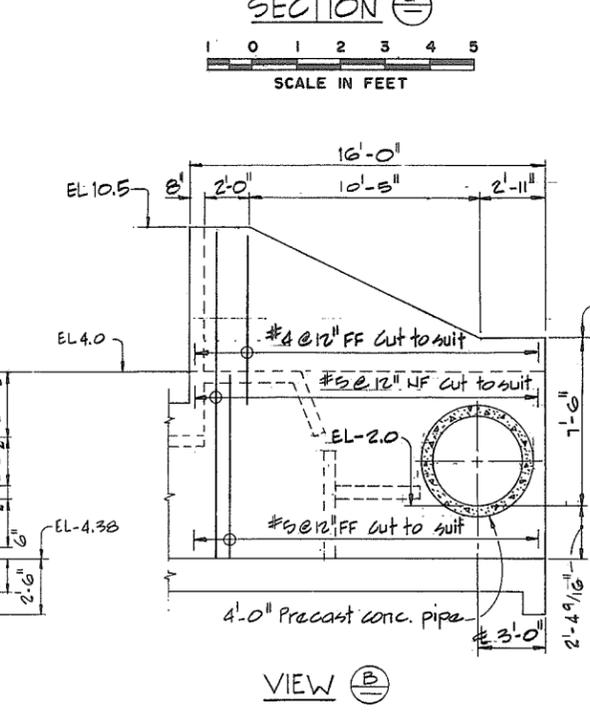
SECTION F



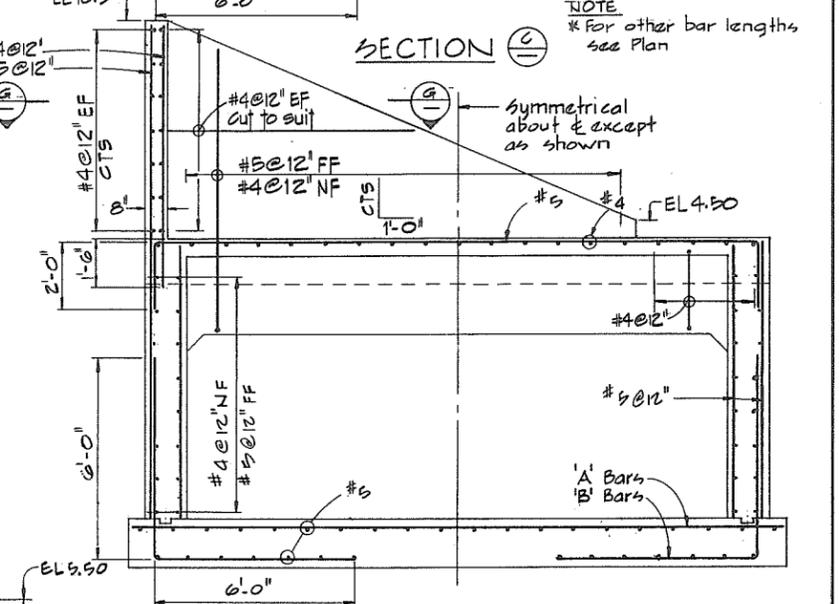
SECTION G  
SCALE IN FEET



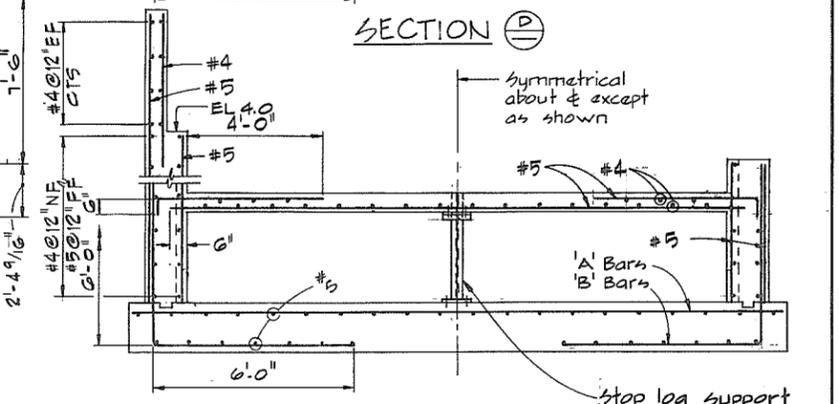
SECTION C



VIEW B



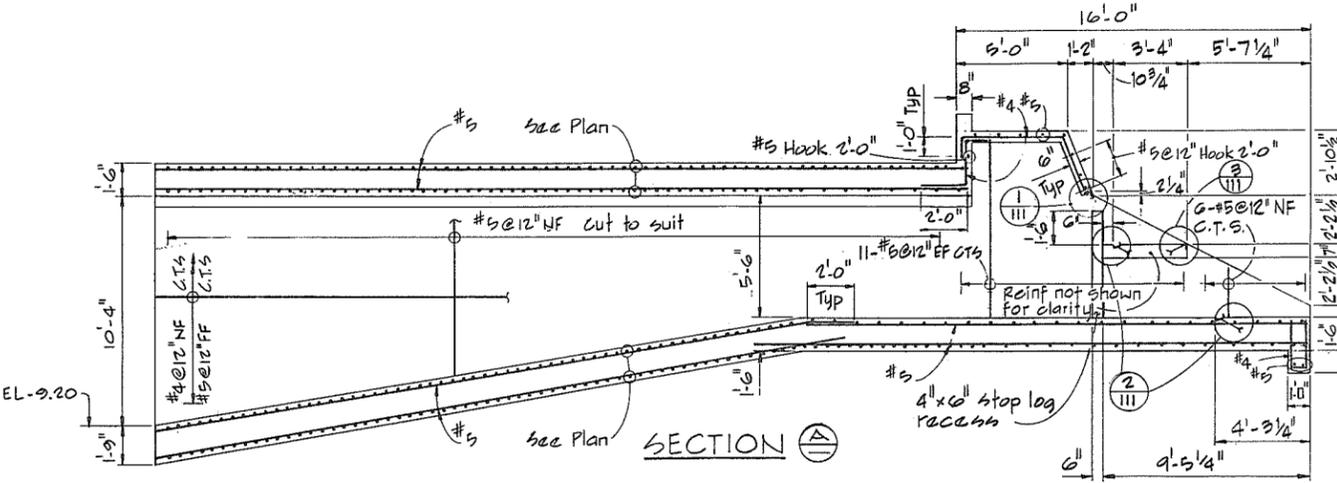
SECTION D



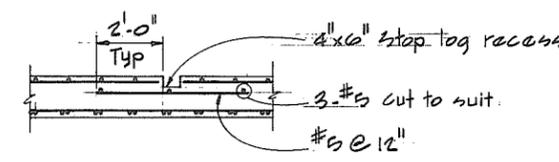
SECTION E

SCALE IN FEET

622



SECTION A



DETAIL 4 SHOWN  
DETAIL 5 SIMILAR  
BUT OFF HAND

NOTES  
For General Notes see 4795-18-26



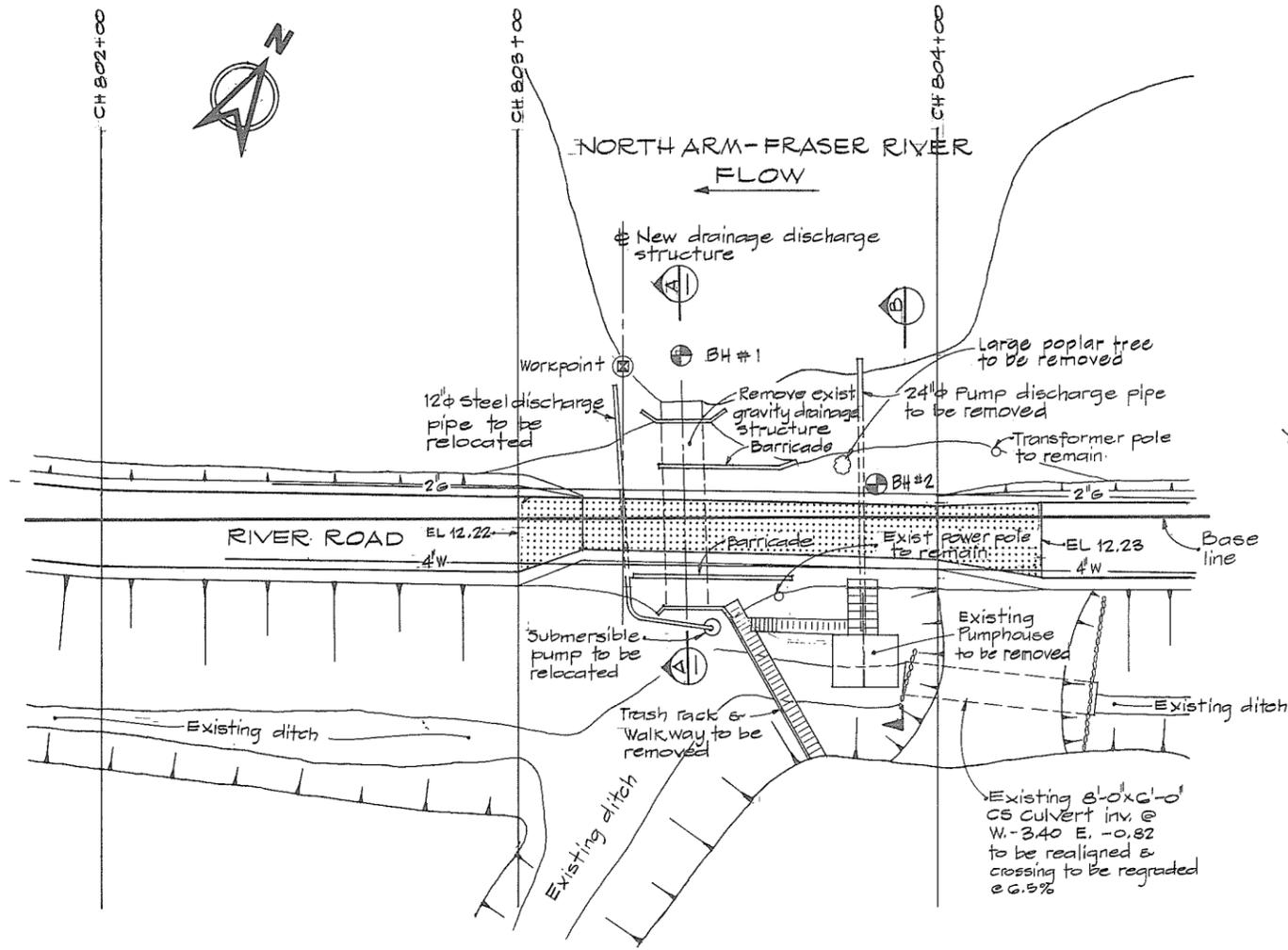
**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED	<i>R. N. Cameron</i> PROJECT MANAGER
DATE	June 2, 1981
APPROVED	<i>John Fuller</i> DIRECTOR
DATE	June 3, 1981

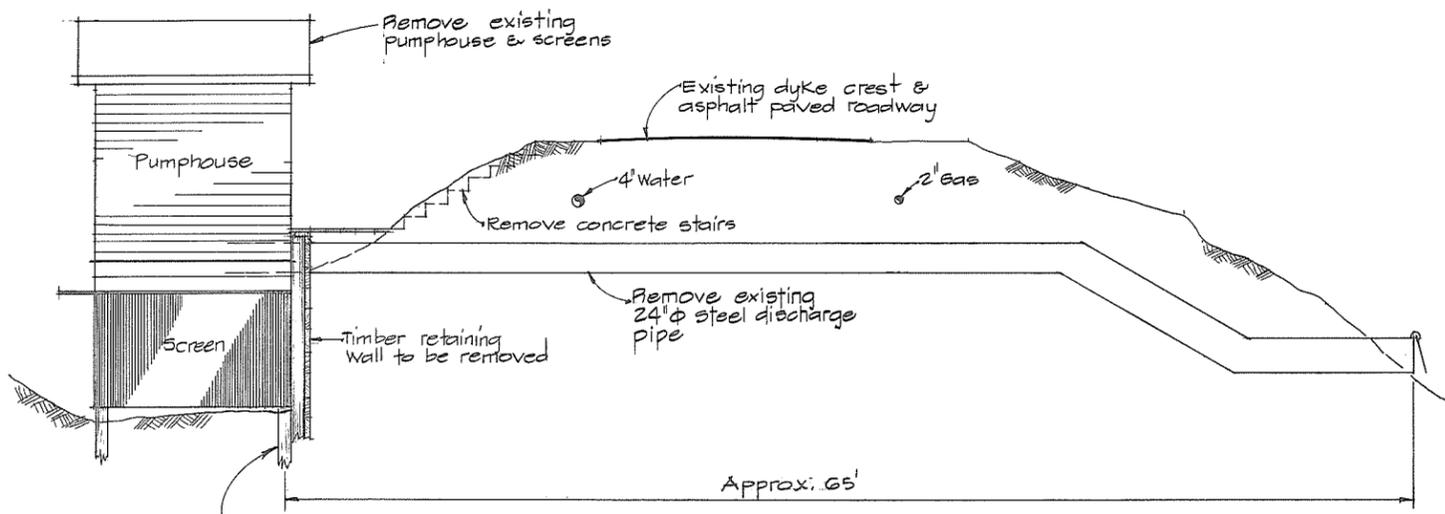
BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1968 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
NO. 7 ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 15  
ENTRY CULVERT AND BOX CULVERT  
CONCRETE OUTLINE AND REINFORCING

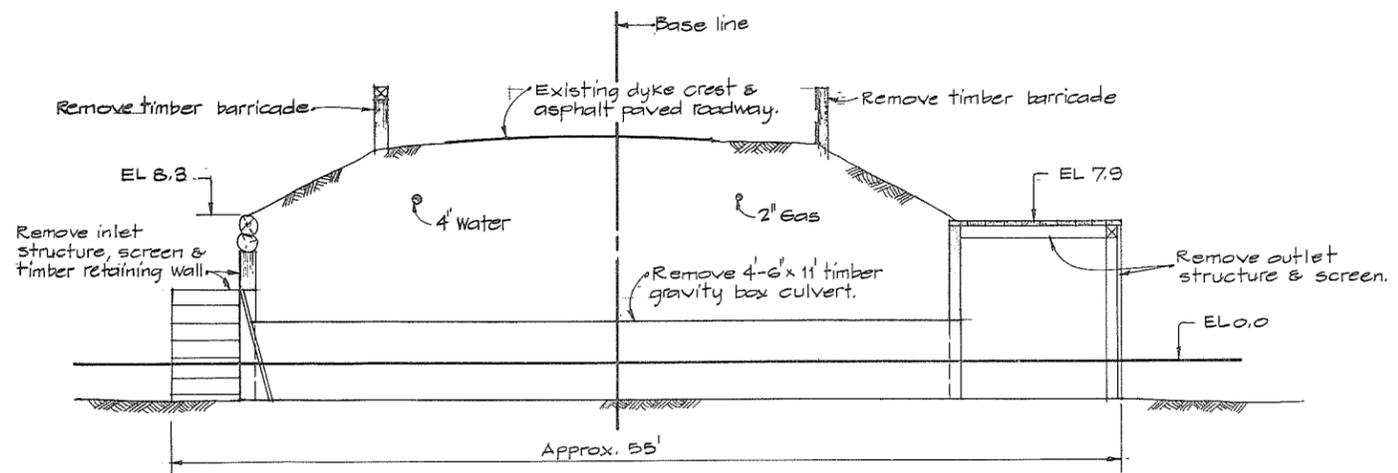
DESIGNED	SURVEYED
DRAWN AR	DATE
CHECKED TP	FILE NO. 0281550-C10-18
SCALE AS SHOWN	DATE July 1981
DWG. NO. 4795-18-30	SHEET OF SHEETS



PLAN  
SCALE IN FEET  
20 10 0 20 40



SECTION B  
SCALE IN FEET  
5 0 5 10



SECTION A  
SCALE IN FEET  
5 0 5 10

**LEGEND**  
 [Pattern] Remove existing asphalt pavement.  
 ⊕ BH #1 - Borehole #1

**NOTES**  
 • All elevations refer to the Geodetic Survey of Canada.  
 • For location of Workpoint see dwg. 4795-18-33

266 623

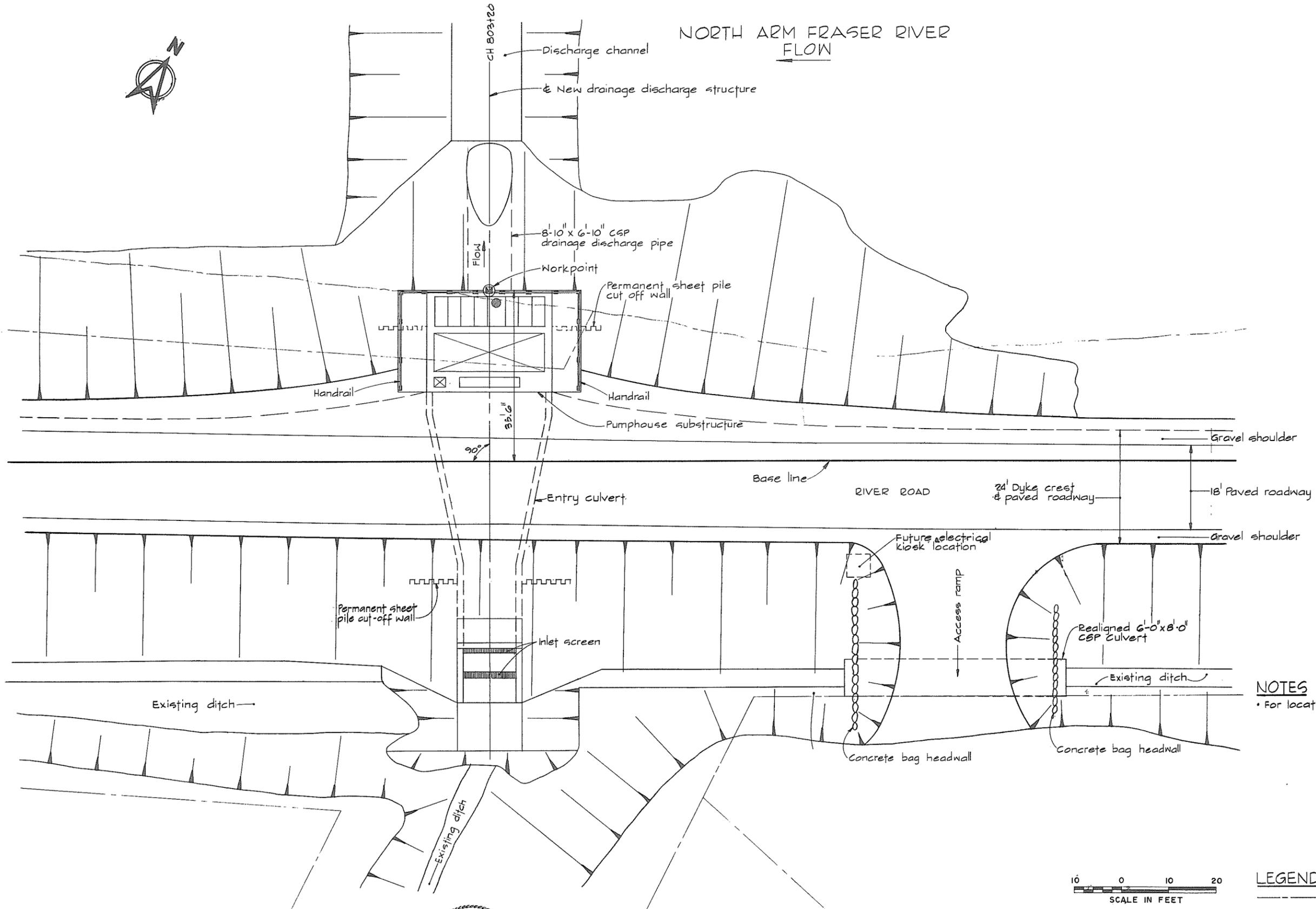


**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED <i>B. H. Cameron</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1983 AGREEMENT	DESIGNED	SURVEYED
DATE <i>June 2 1981</i>	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 18 PLAN SHOWING EXISTING DRAINAGE STRUCTURES TO BE REMOVED AND UTILITIES	DRAWN <i>L. Grave</i>	DATE
APPROVED <i>G. D. Akins</i> DIRECTOR		CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
DATE <i>Jun 3/81</i>		SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
		DWG. NO. <i>4795-18-32A</i>	SHEET <i>266</i> OF <i>623</i> SHEETS



NORTH ARM FRASER RIVER  
FLOW



NOTES

• For location of works see 4795-18-1A



LEGEND

----- Property line

624



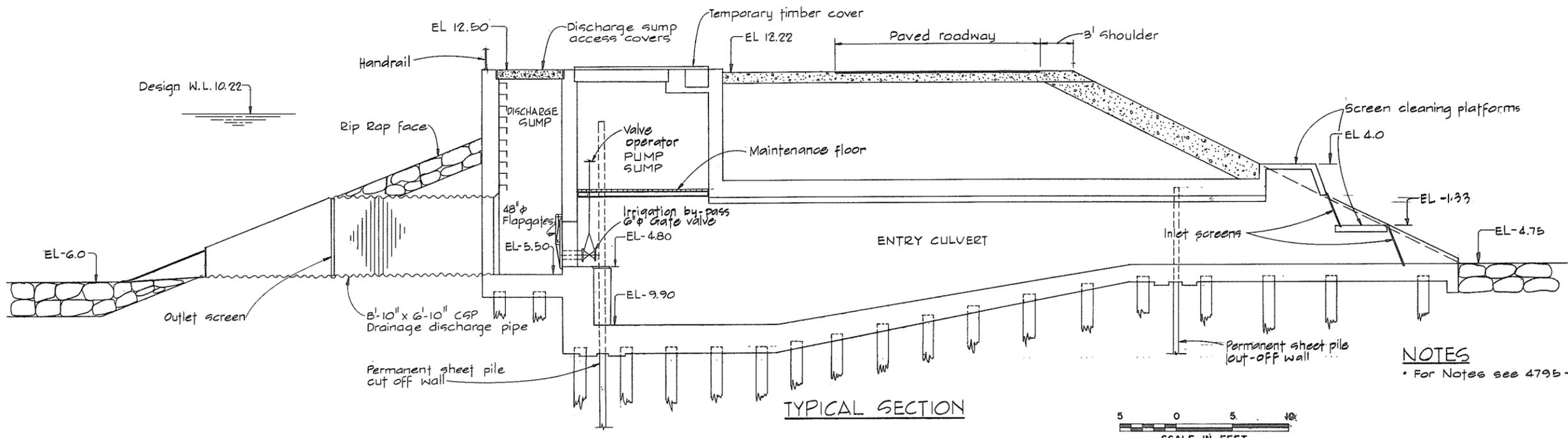
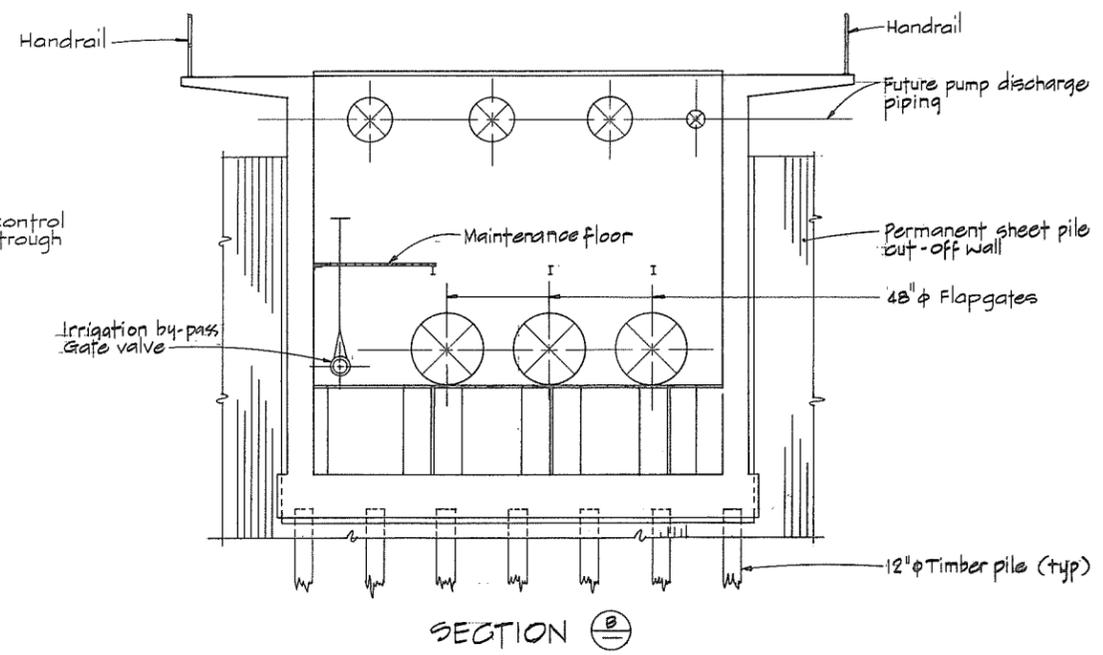
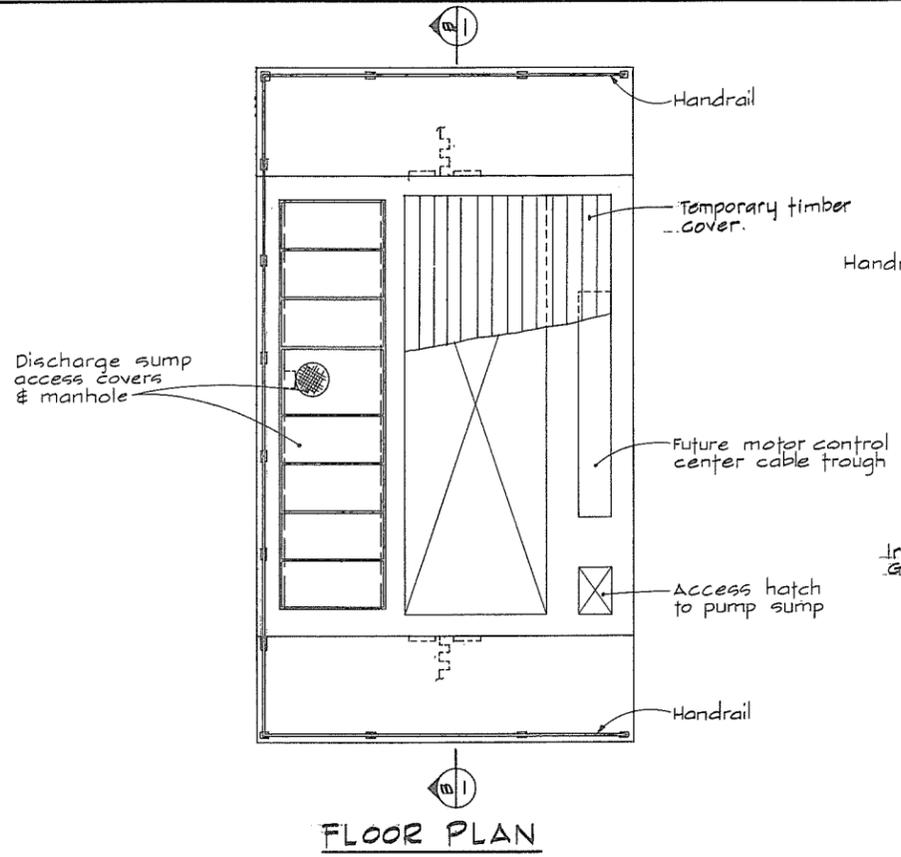
**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

C			
B			
A			
NO.	BY	REVISIONS	DATE

RECOMMENDED *B. H. Cameron*  
PROJECT MANAGER  
DATE *June 2 1981*  
APPROVED *[Signature]*  
DIRECTOR  
DATE *Jan 27 81*

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B  
QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT. NO. 18  
GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY  
AND PROPERTY REQUIREMENTS

DESIGNED	SURVEYED
DRAWN <i>GP</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-33 C</i>	SHEET <i>   </i> OF <i>   </i> SHEETS



**NOTES**  
 • For Notes see 4795-18-23



**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

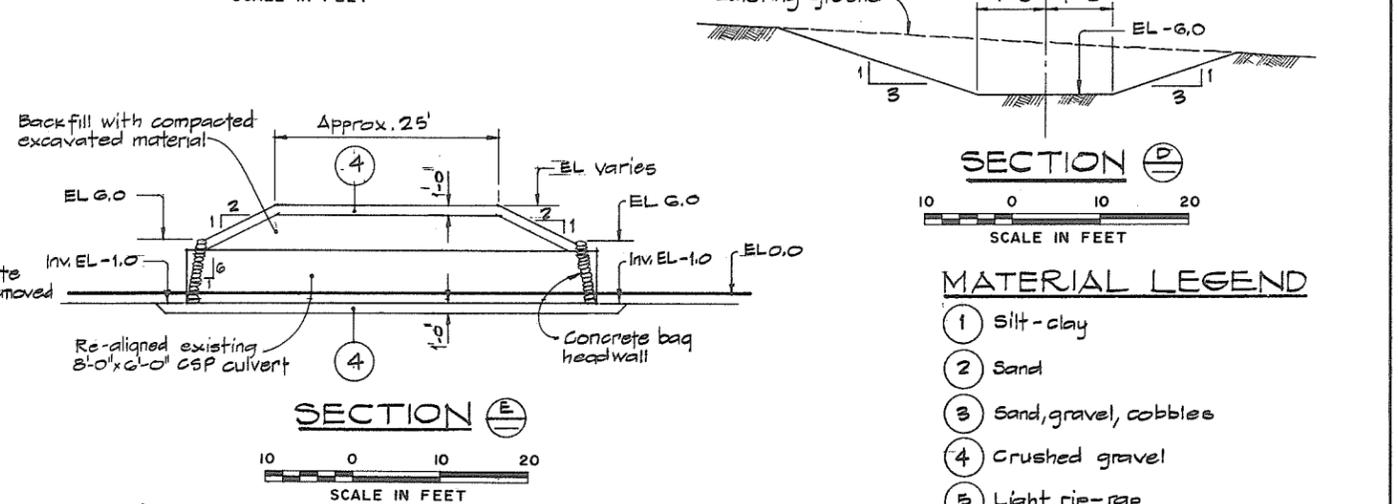
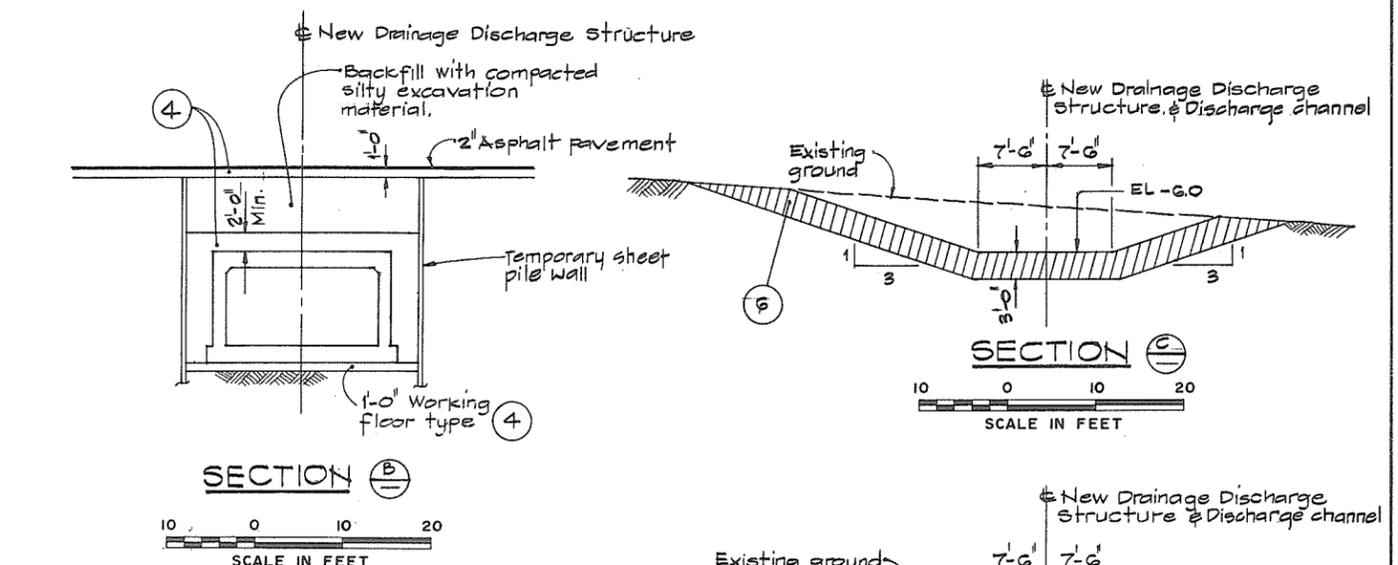
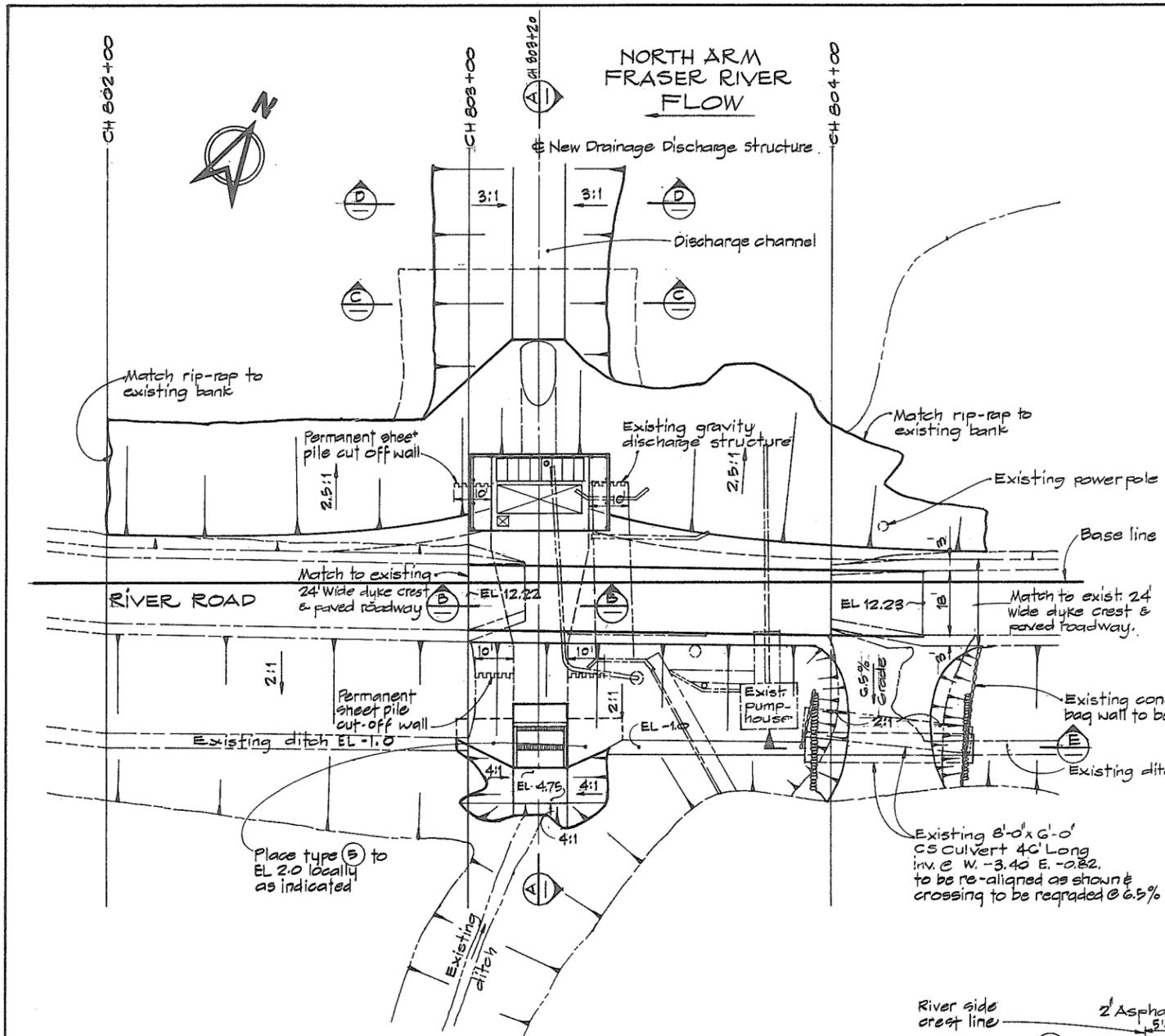
NO.	BY	REVISIONS	DATE

RECOMMENDED *B. M. Cameron*  
 PROJECT MANAGER  
 DATE *June 2 1981*  
 APPROVED *John Miller*  
 DIRECTOR  
 DATE *Jan 31 81*

BRITISH COLUMBIA -  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 188  
 QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 18  
 GENERAL ARRANGEMENT SECTIONS

DESIGNED	SURVEYED
DRAWN <i>SP</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-CIO-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-34</i>	SHEET <i>  </i> OF <i>  </i> SHEETS

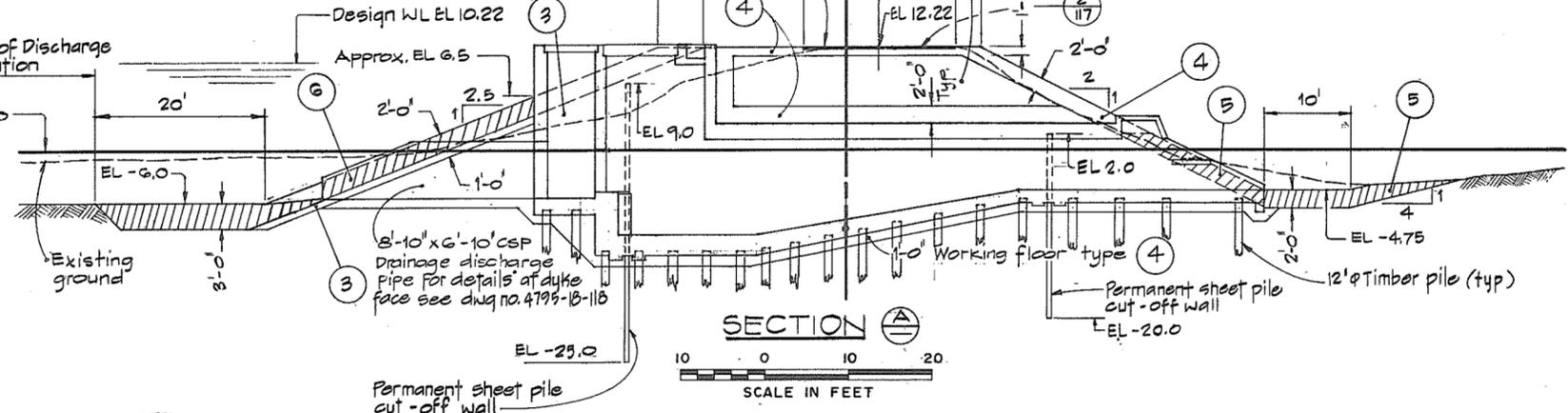
625



- MATERIAL LEGEND**
- (1) Silt-clay
  - (2) Sand
  - (3) Sand, gravel, cobbles
  - (4) Crushed gravel
  - (5) Light rip-rap
  - (6) Rip-rap
- LEGEND**
- Existing ground surface (section)
  - Existing ground & structures (Plan)
  - (B) Section identification letter, drawing No. on which the section is drawn (ie 4795-18-L181)
  - (3/18) Detail identification number, drawing No. on which the detail is drawn (ie 4795-18-L181)

- NOTES**
- Elevations refer to the Geodetic Survey of Canada.
  - A smooth alignment shall be maintained over the entire length of the dyke.
  - Offset distances from base line to crest lines are taken at the design crest elevation.
  - The angle of offset is 90° to base line, unless otherwise indicated.
  - Terminal parts of the work shall be constructed to blend with the existing ground.

OFFSET DIMENSIONS FROM BASE LINE			
Chainage	Land side crest line	River side pavement line	River side crest line
802+25	Existing	Existing	Existing
802+50	"	"	13
802+75	"	"	15
803+00	"	5	18
803+20	16.33	4.67	—
803+50	16.67	4.33	16
803+75	17.0	4.0	12
804+00	—	3.67	10
804+25	—	3.33	9
804+50	Existing	Existing	Existing

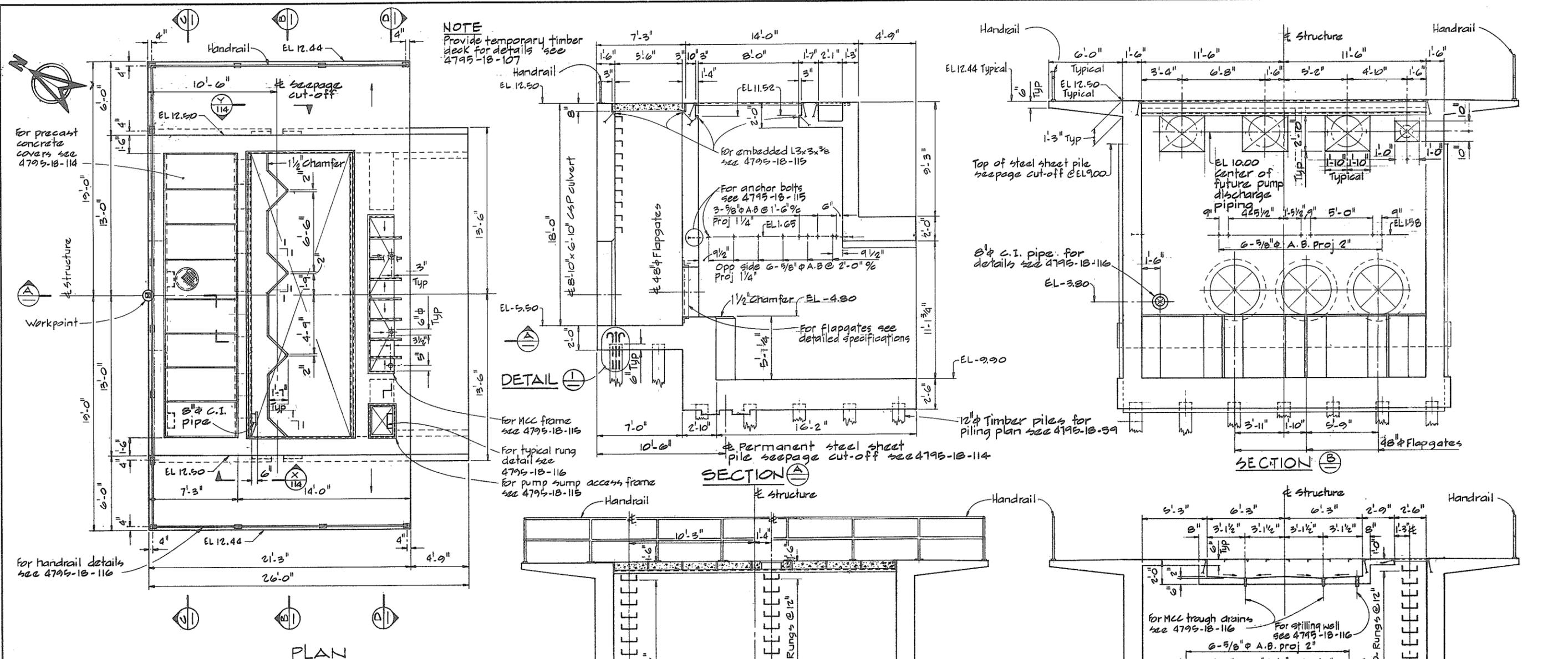


**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED	R. J. Cameron	PROJECT MANAGER
DATE	June 3, 1981	
APPROVED	John Fuller	DIRECTOR
DATE	June 3/81	

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 18  
DETAILS OF EARTHWORKS

DESIGNED	L. Grave	SURVEYED	
DRAWN	L. Grave	DATE	
CHECKED	DLC	FILE NO.	0281550-C10-18
SCALE	AS SHOWN	DATE	July 1981
DWG. NO.	4795-18-35 C	SHEET	OF SHEETS



**NOTE**  
Provide temporary timber deck for details see 4795-18-107

For precast concrete covers see 4795-18-114

For handrail details see 4795-18-116

For MCC frame see 4795-18-115

For typical rung detail see 4795-18-116

For pump access frame see 4795-18-115

**SECTION A**

**SECTION B**

**SECTION C**

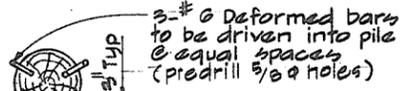
**SECTION D**

**GENERAL NOTES - STRUCTURAL**

- Design is in accordance with CSA A23.3-1973 Code for the Design of Plain or Reinforced Concrete Structures.
- Construction shall be in accordance with CSA A23.1-1973 Specifications for Structural Concrete for Buildings.
- Specified strength for concrete is 4000psi.
- Reinforcing steel shall be deformed bars conforming to CSA A30.12-1972 Grade 40 or 60.
- Cover over reinforcing steel to be 2" to all faces, except 3" for the underside of the footings.
- Reinforcing to be of lengths indicated with construction joints as shown unless otherwise approved by the Engineer.
- CONCRETE FINISHES:**
  - Floors and base slabs - steel trowel
  - Exposed horizontal surfaces - broom
  - Interior, exterior exposed walls and beams - rubbed
  - See specs for details.
- CHAMFER** - 3/4" x 3/4" for all exposed corners.
- If metric reinforcing steel is used, the spacing shall be changed to provide equal cross-sectional area of steel.

**NOTES**

- Install Ufer ground electrode and leave both ends in MCC trough for future connection.
- For location of embedded electrical conduit see 4795-18-102.
- For location of workpoint see 4795-18-33
- For pile layout see 4795-18-39



**DETAIL TYPICAL**

Pile tip @ EL-62.0 typ



SCALE IN FEET 0 2 4 6 8 10

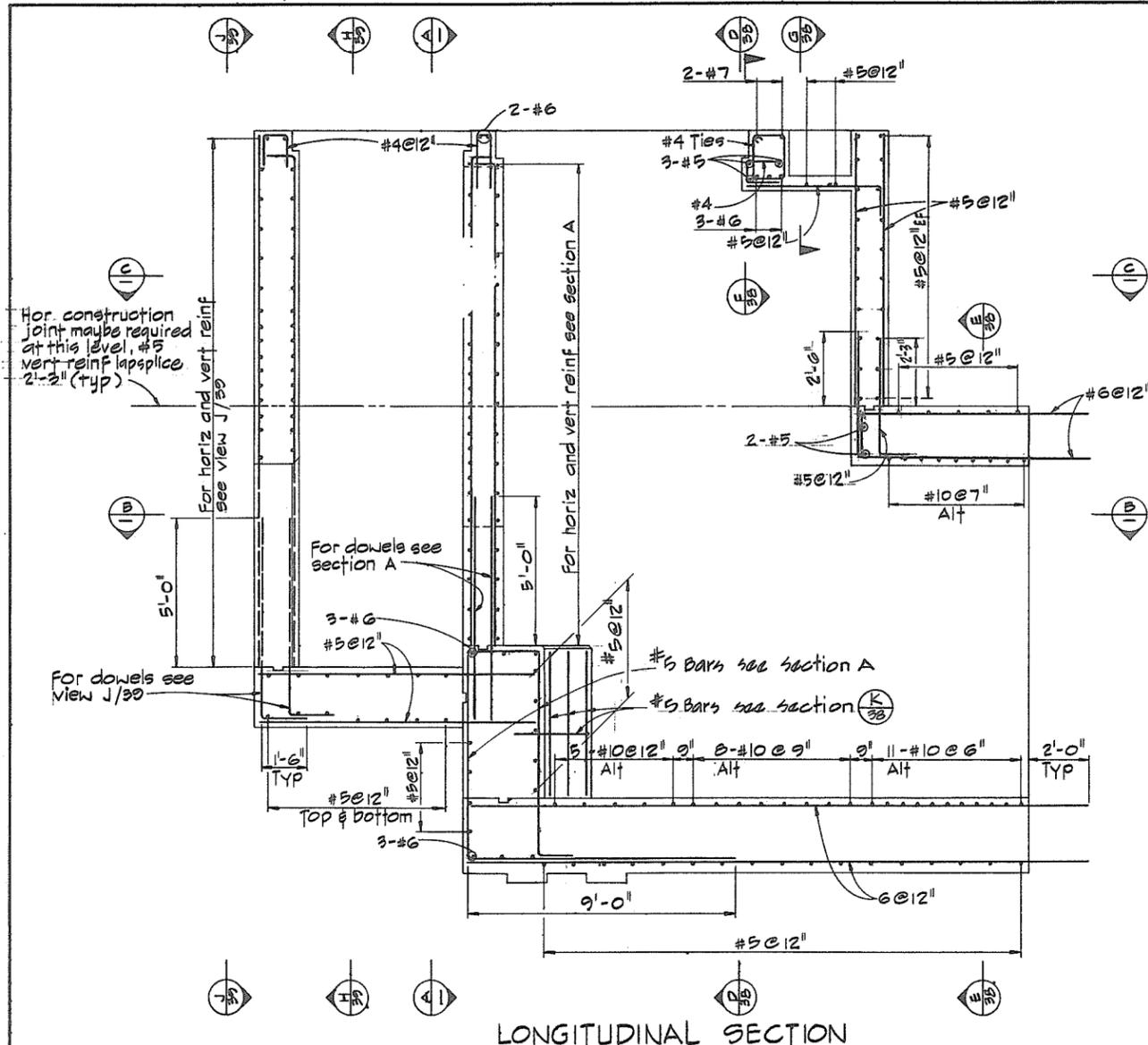


**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

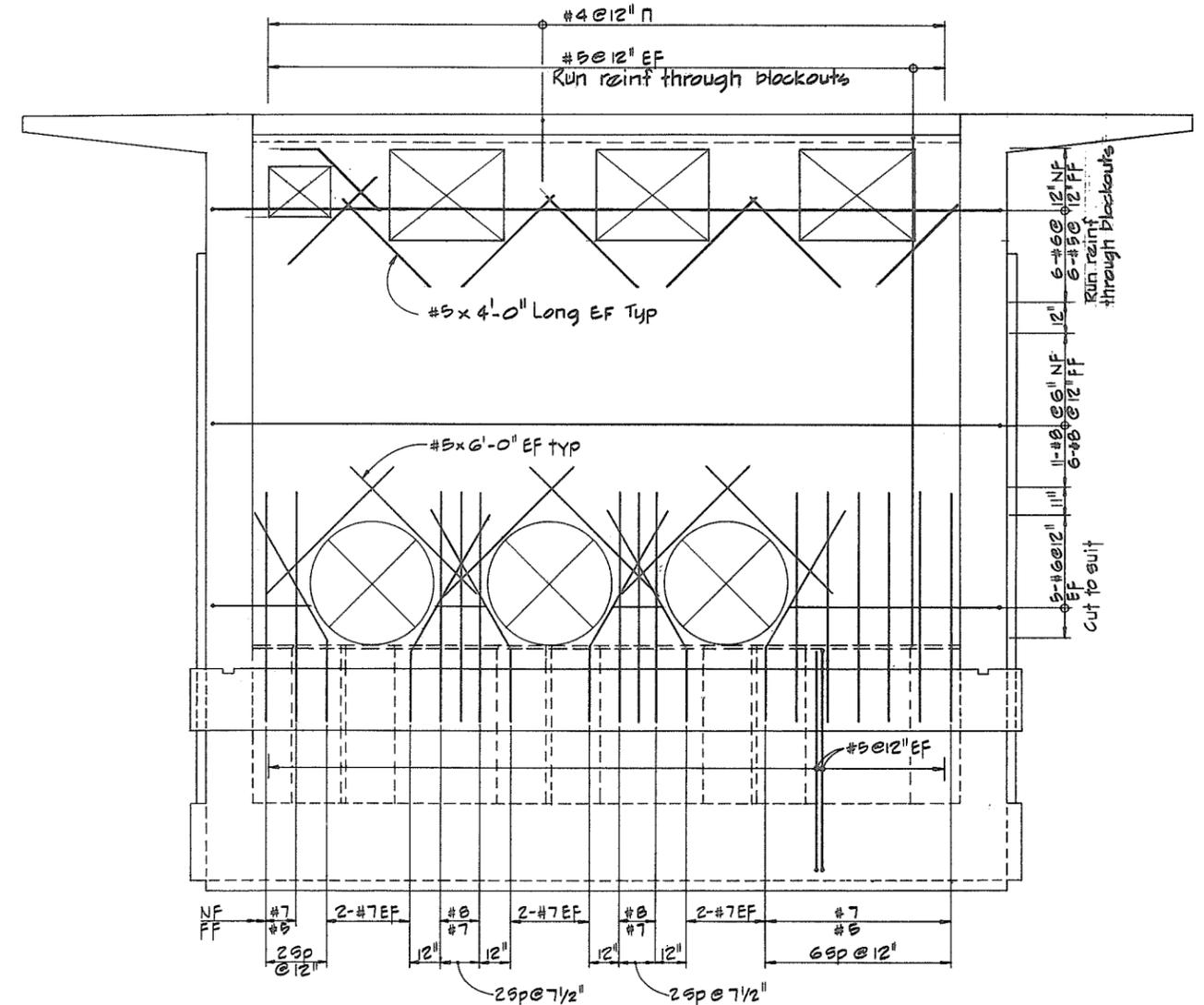
RECOMMENDED *R. H. Cameron*  
PROJECT MANAGER  
DATE *June 2, 1981*  
APPROVED *John Fuller*  
DIRECTOR  
DATE *June 3, 1981*

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1980 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 188  
QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 18  
MAIN STRUCTURE - CONCRETE OUTLINE

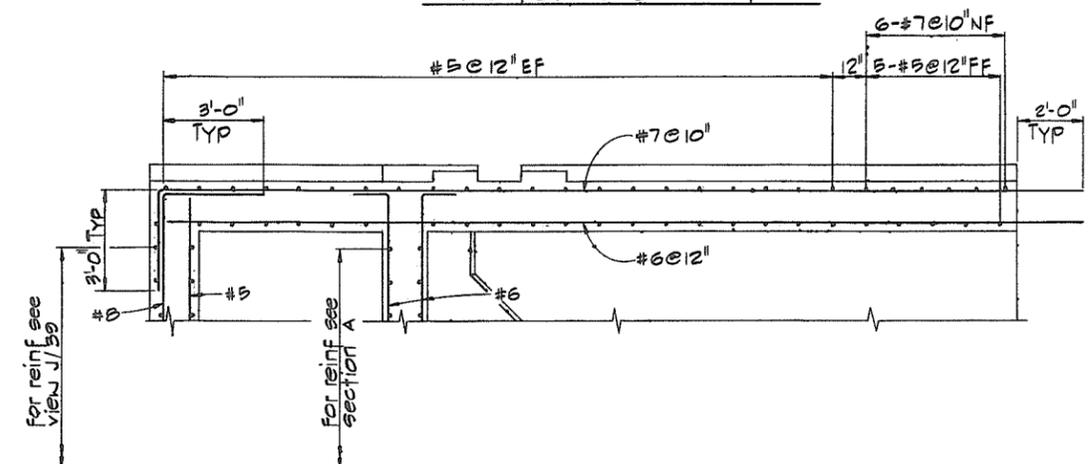
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DRAWN	AR	DATE	
CHECKED	DLC	FILE NO.	0281550-C10-18
SCALE	AS SHOWN	DATE	July 1981
DWG. NO.	4795-18-36	SHEET	OF SHEETS



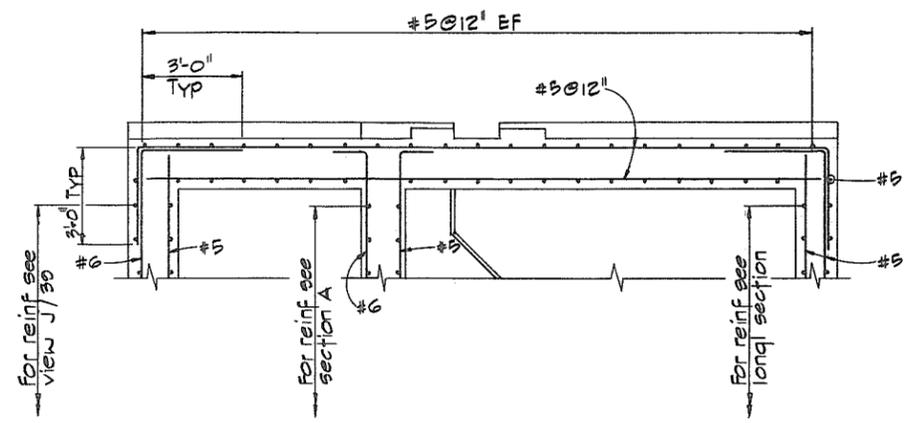
LONGITUDINAL SECTION



SECTION A-A

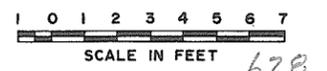


SECTION B-B



SECTION C-C

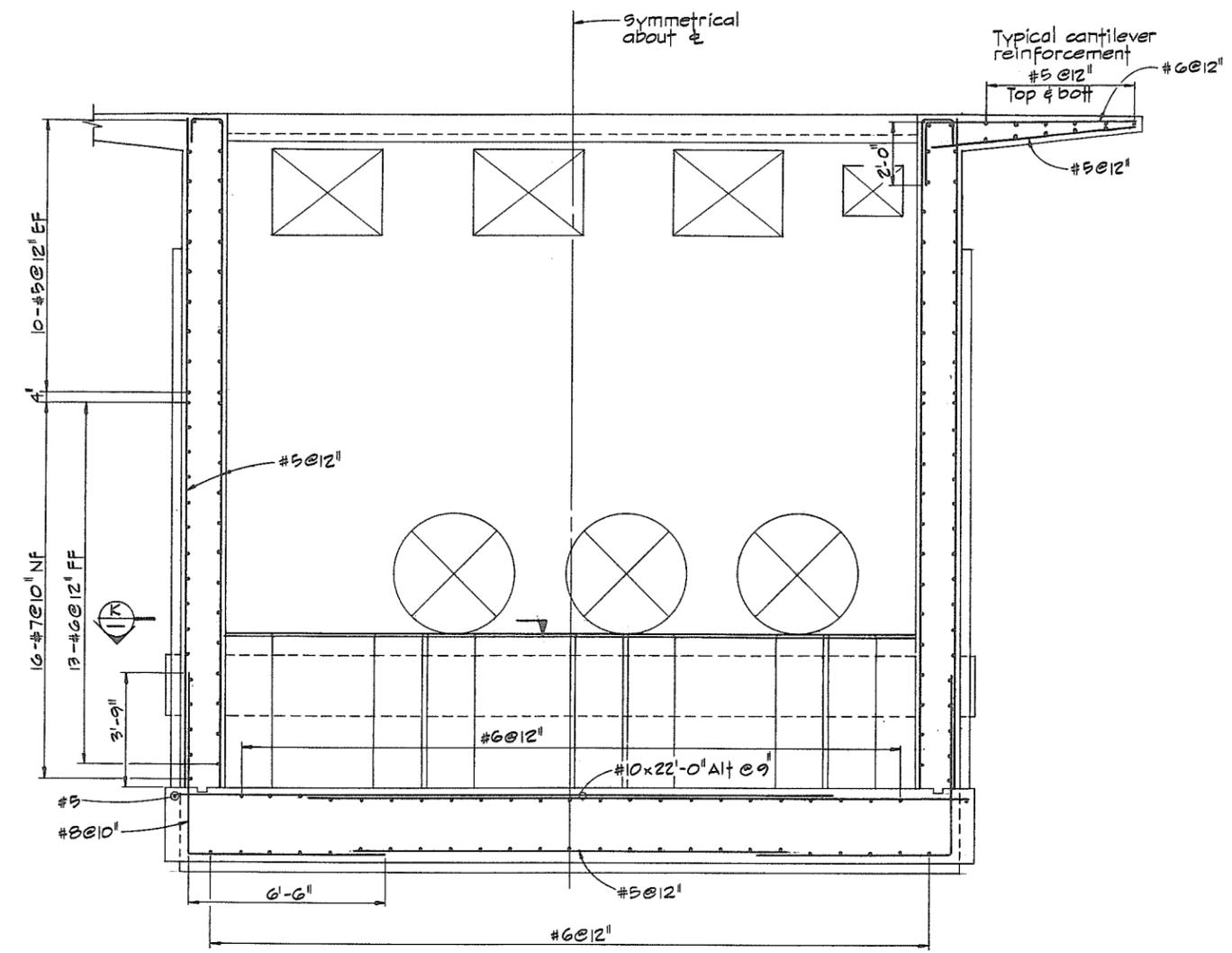
NOTES  
 \* For General Notes see 4795-18-36



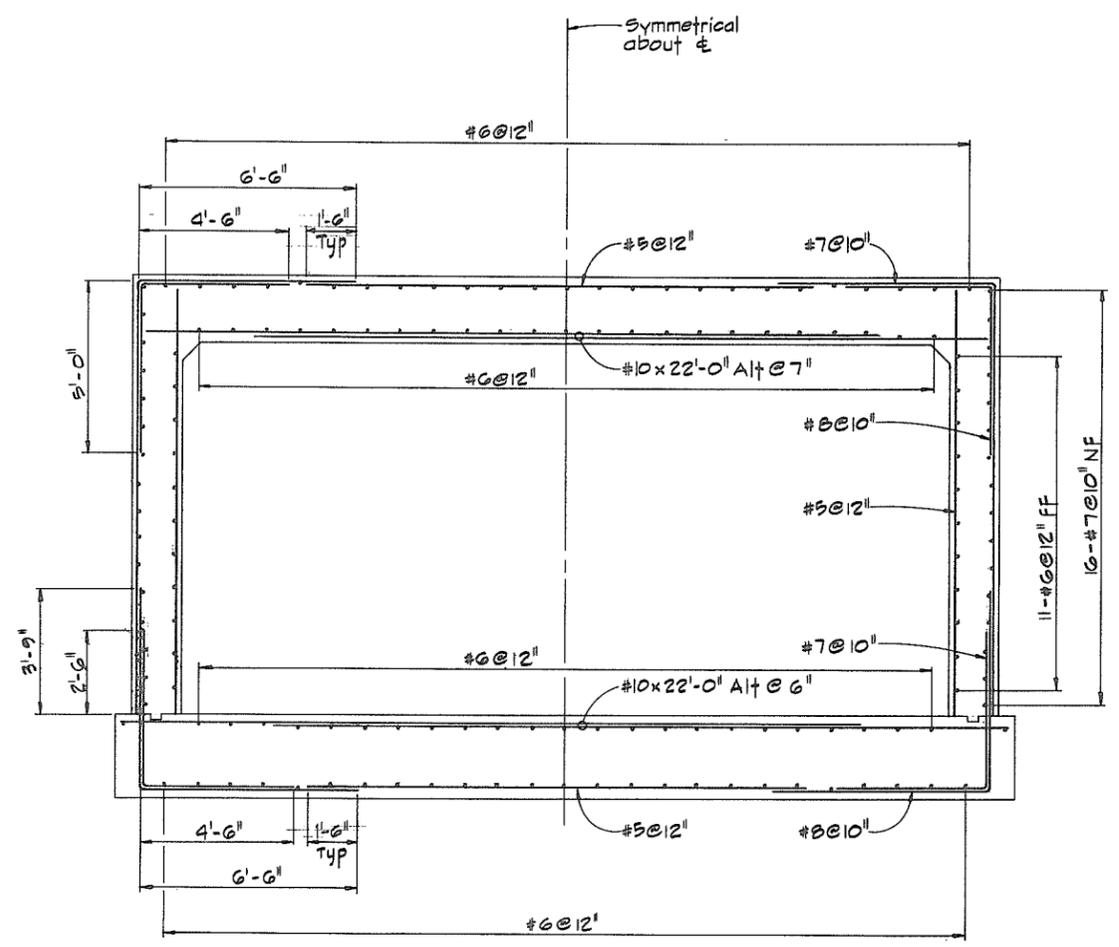
**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE	RECOMMENDED <i>P. H. Cameron</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1988 AGREEMENT	DESIGNED <i>T. K.</i>	SURVEYED
				DATE <i>June 2 1981</i>		DRAWN <i>W. N.</i>	DATE
				APPROVED <i>W. J. Fuller</i> DIRECTOR	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B	CHECKED <i>TP</i>	FILE NO. <i>0281550-C10-18</i>
				DATE <i>Jun 3/81</i>	QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 18	SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
					MAIN STRUCTURE REINFORCING	DWG. NO. <i>4795-18-37 B</i>	SHEET <i>1</i> OF <i>3</i> SHEETS

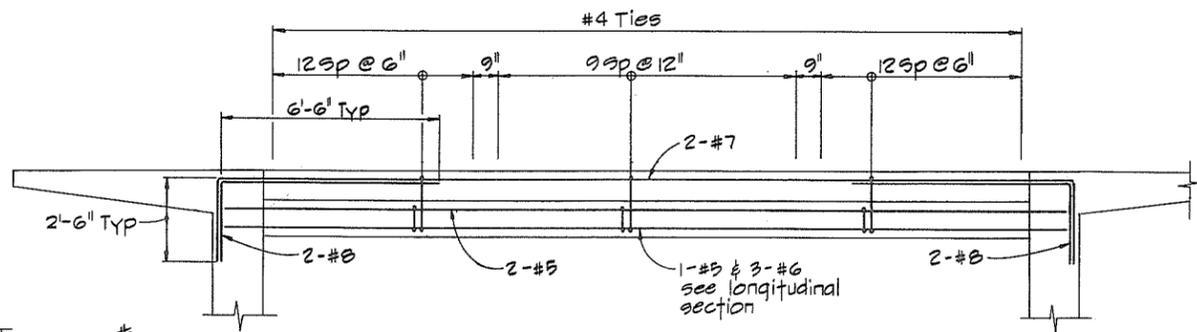
**NOTES**  
 For General Notes see 4795-18-36.



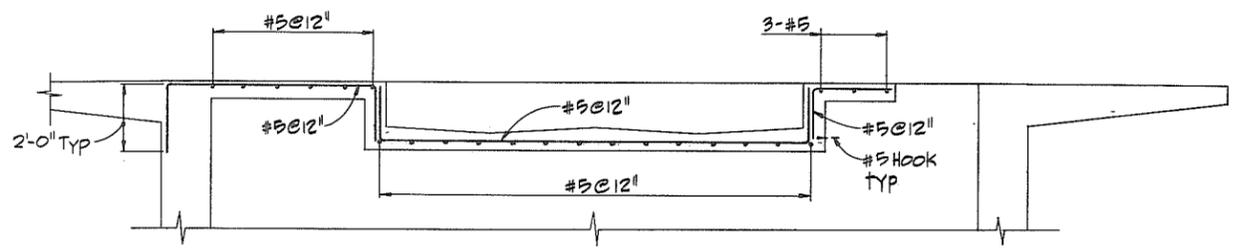
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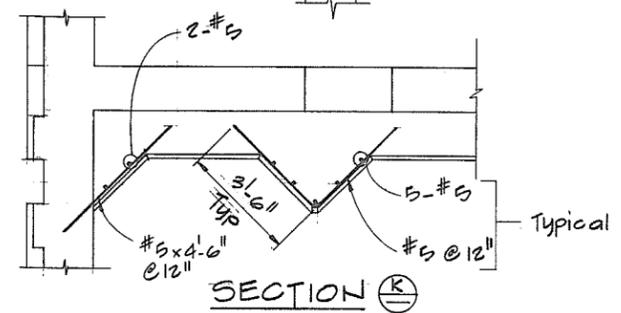
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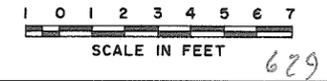
SECTION F



SECTION G



SECTION K



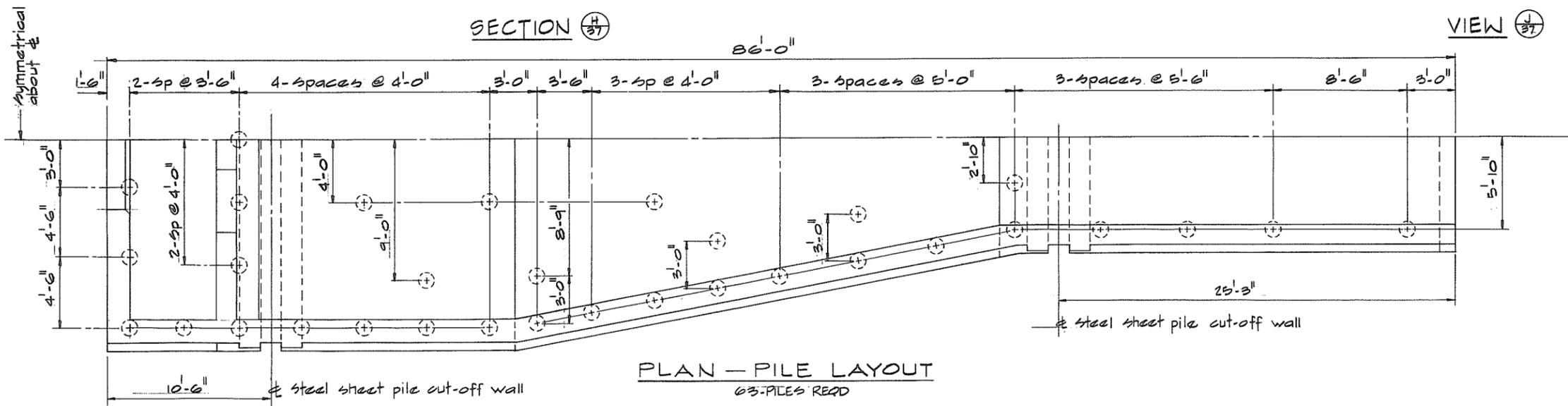
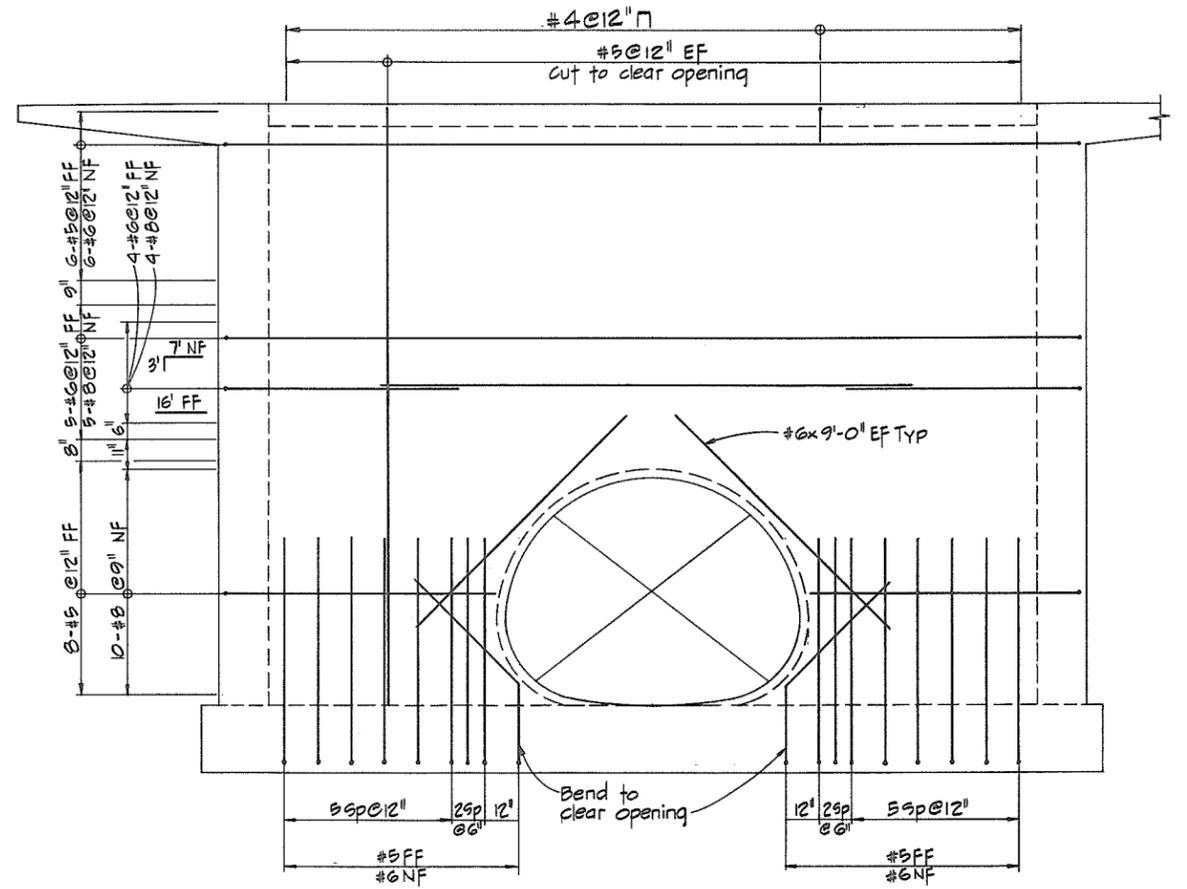
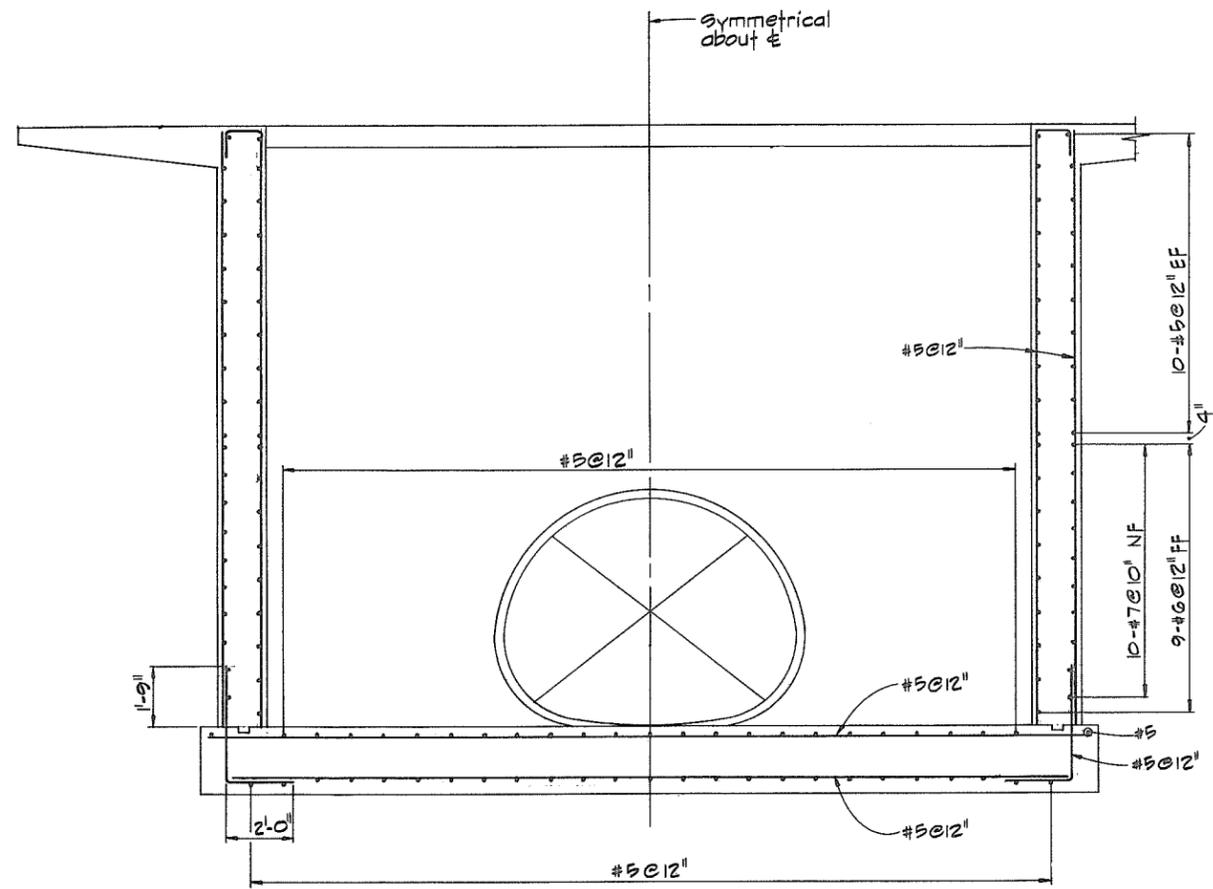
**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED <i>R. R. Cameron</i> PROJECT MANAGER	DATE <i>June 2, 1981</i>
APPROVED <i>John Fuller</i> DIRECTOR	DATE <i>Jun 3/81</i>

BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1988 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
 QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 18  
 MAIN STRUCTURE REINFORCING

DESIGNED <i>T.P.</i>	SURVEYED
DRAWN <i>W.N.</i>	DATE
CHECKED <i>T.P.</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-38B</i>	SHEET <i>2</i> OF <i>3</i> SHEETS



**NOTES**  
 • For General Notes see 4795-18-36  
 • For pile details see 4795-18-36



**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE

RECOMMENDED *P. N. Cameron*  
 PROJECT MANAGER  
 DATE *June 2 1981*  
 APPROVED *[Signature]*  
 DIRECTOR  
 DATE *June 3/81*

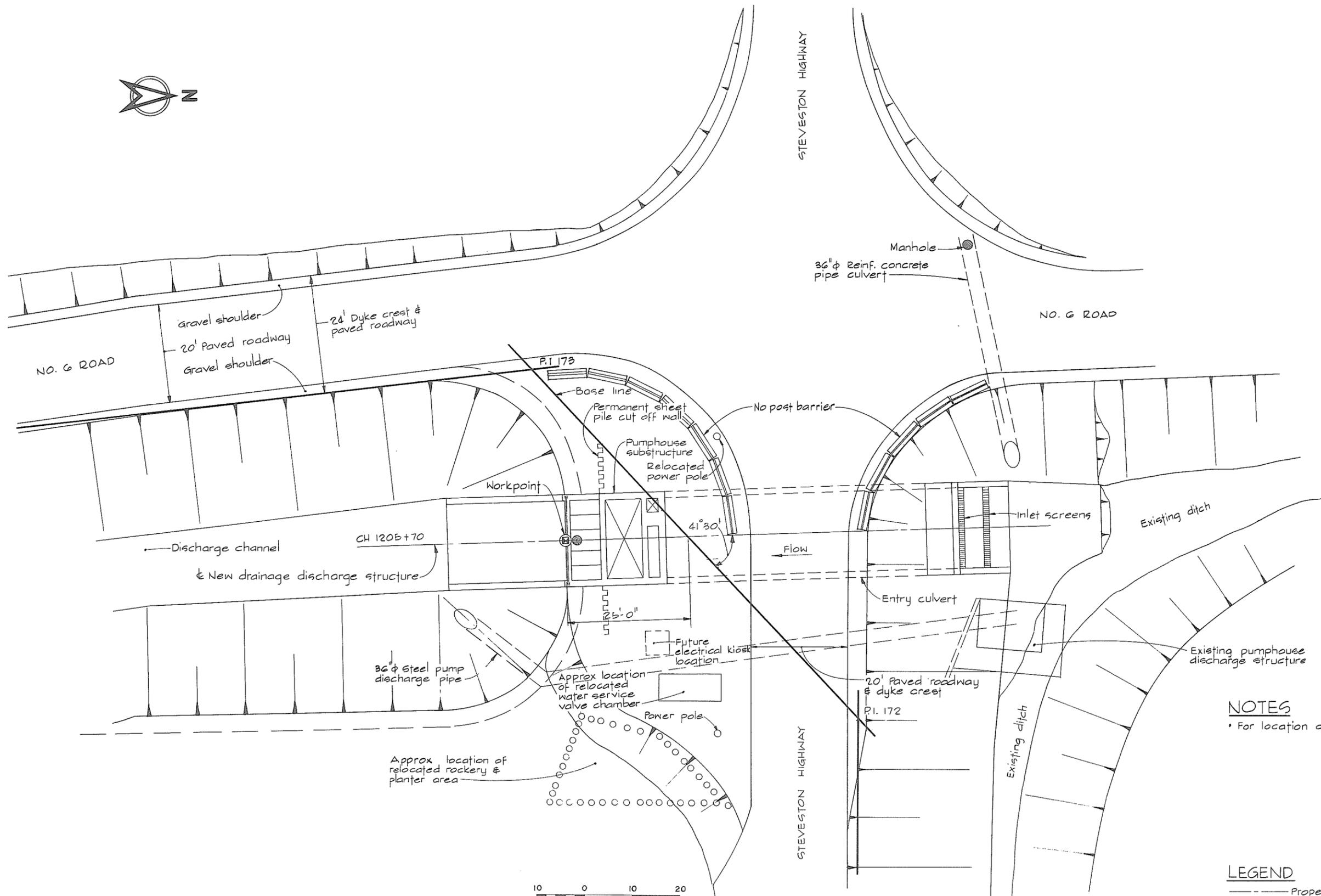
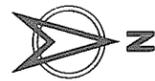
BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1968 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 189  
 QUEEN ROAD NORTH - DRAINAGE DISCHARGE STRUCT NO. 18  
 MAIN STRUCTURE REINFORCING

DESIGNED <i>TP</i>	SURVEYED
DRAWN <i>WM</i>	DATE
CHECKED <i>TP</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-39</i>	SHEET <i>3</i> OF <i>3</i> SHEETS

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**NOTES**  
 • For location of works see 4795-18-1A

**LEGEND**  
 - - - - - Property line

266 633



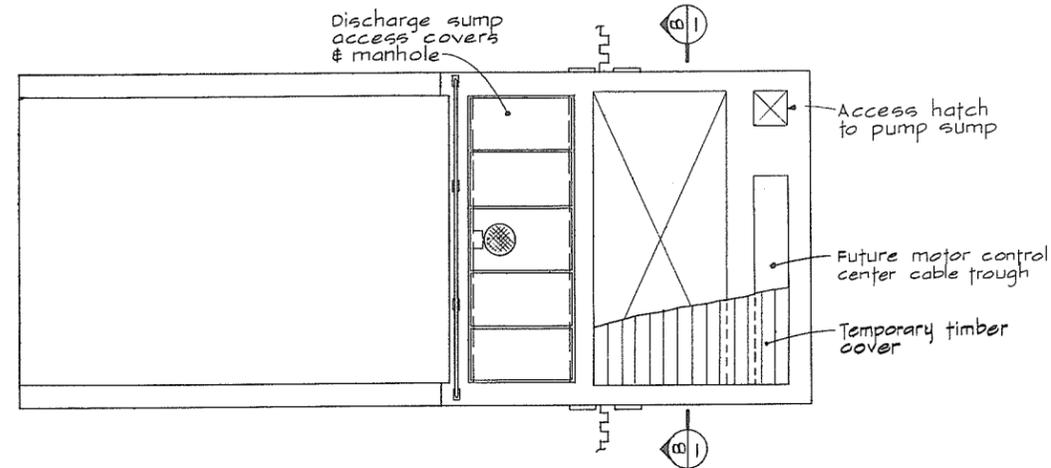
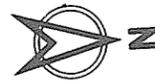
**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE

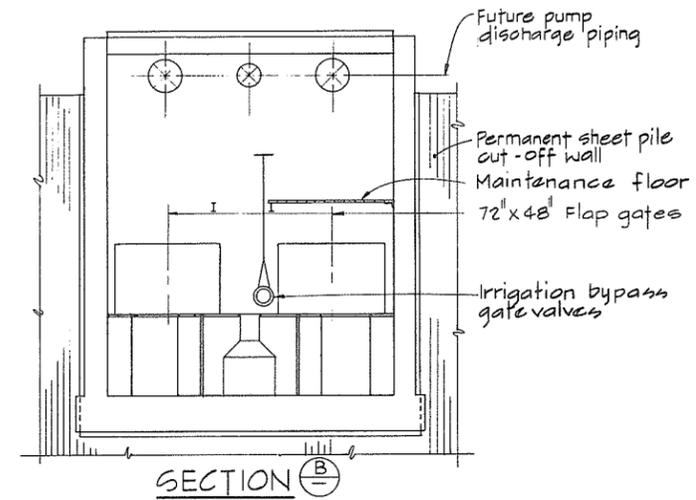
RECOMMENDED *P. H. Cameron*  
 PROJECT MANAGER  
 DATE *June 2, 1981*  
 APPROVED *W. B. Cullen*  
 DIRECTOR  
 DATE *June 3, 1981*

DESIGNED	SURVEYED
DRAWN <i>SP</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-42</i>	SHEET <i>  </i> OF <i>  </i> SHEETS

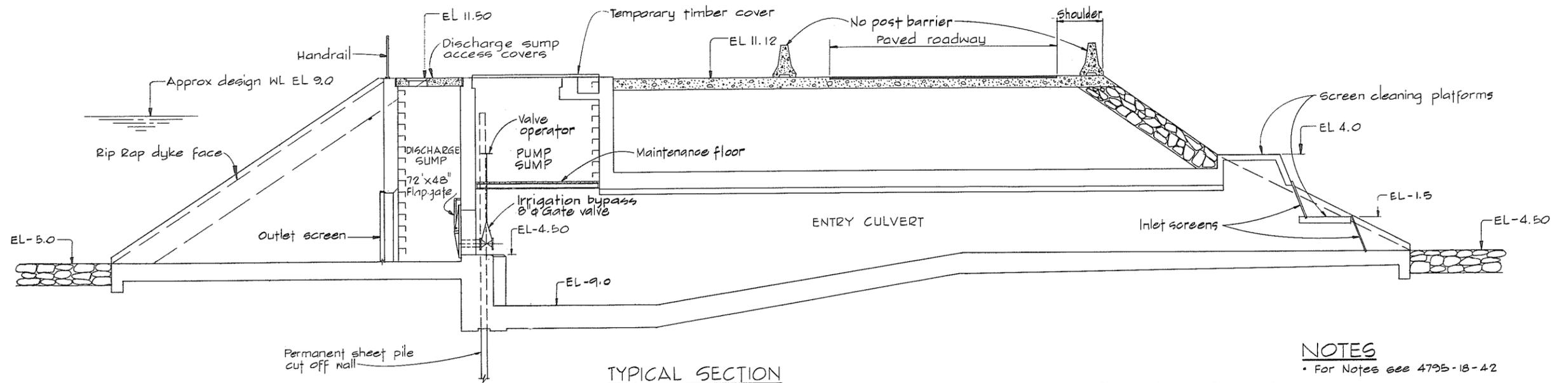
BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1968 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
 NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCT. NO. 25  
 GENERAL ARRANGEMENT PLAN SHOWING POWER SUPPLY  
 AND PROPERTY REQUIREMENTS



FLOOR PLAN



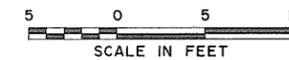
SECTION B-B



TYPICAL SECTION

NOTES

• For Notes see 4795-18-42



266634



**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE

RECOMMENDED *P.H. Cameron*  
PROJECT MANAGER  
DATE *June 2, 1981*  
APPROVED *John Kulla*  
DIRECTOR  
DATE *Jun 3/81*

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCT NO. 25  
GENERAL ARRANGEMENT SECTIONS

DESIGNED	SURVEYED
DRAWN <i>SP</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-43C</i>	SHEET <i>  </i> OF <i>  </i> SHEETS



Install new 36" φ RC pipe culvert, approx. 45' long @ invert EL -2.0

2' Shoulders (typ)

Install approx 40' no post barrier

Existing MH

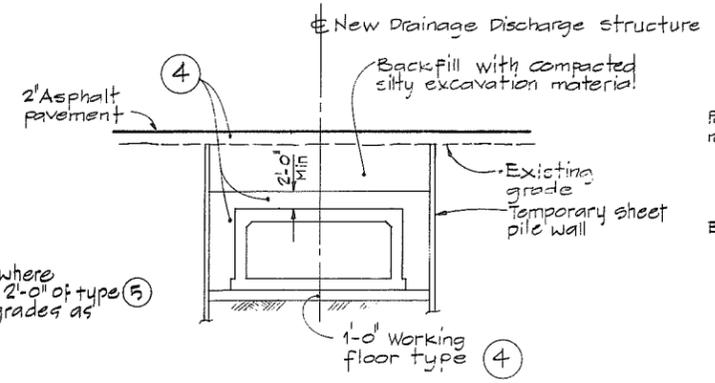
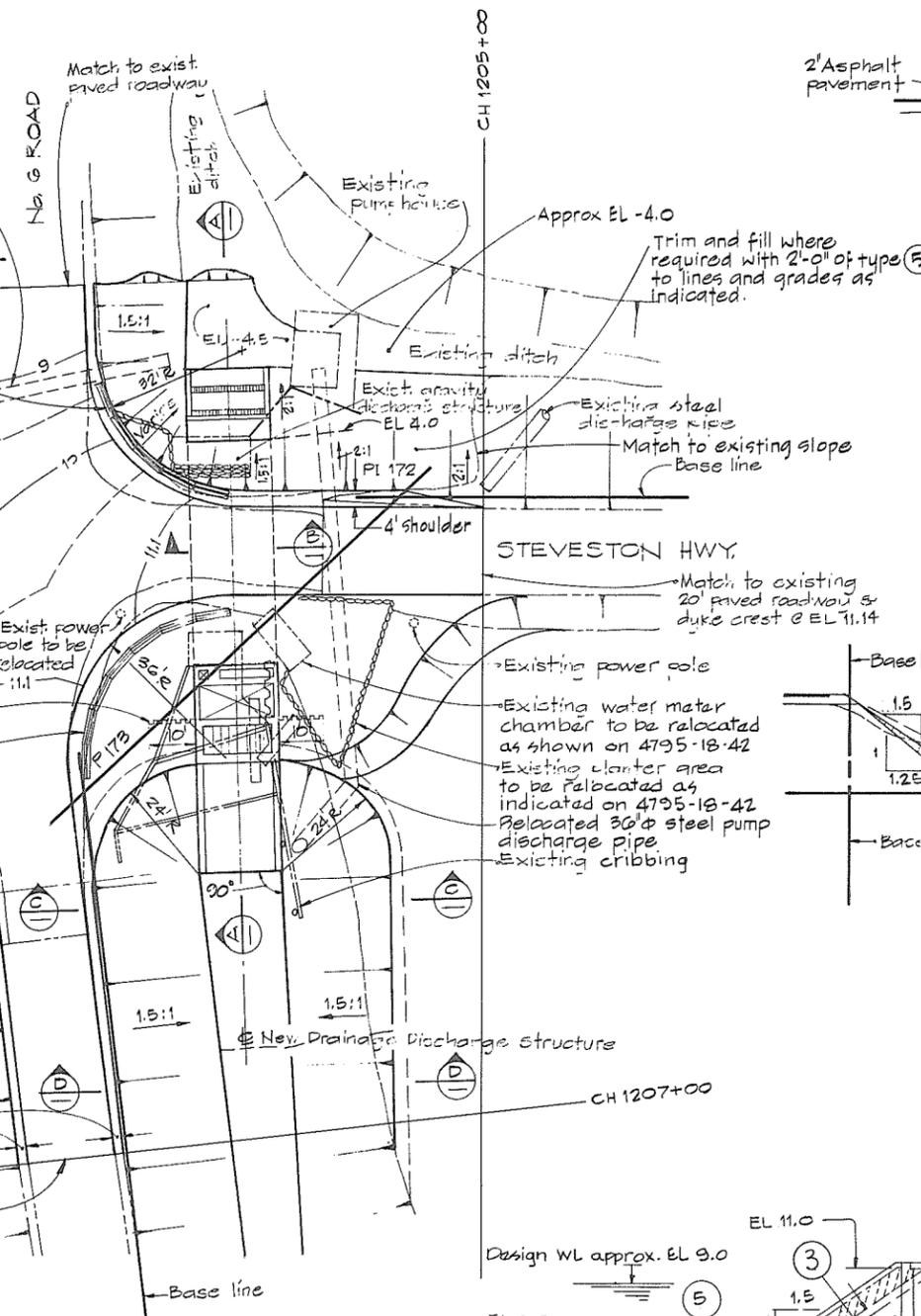
Match to existing paved roadway

Permanent sheet pile cut off wall

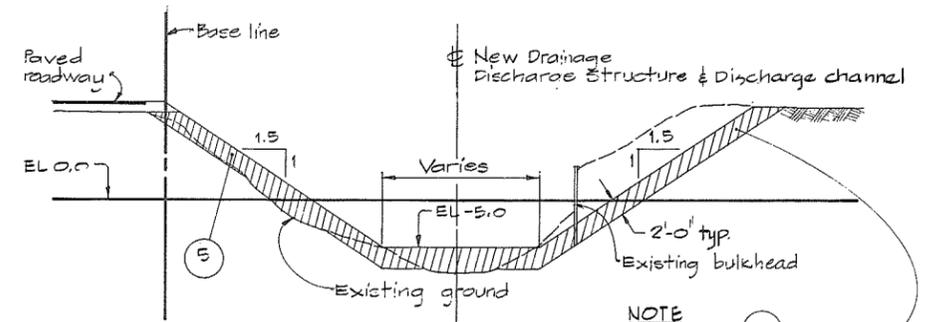
Install approx 50' no post barrier

CH 1206+30

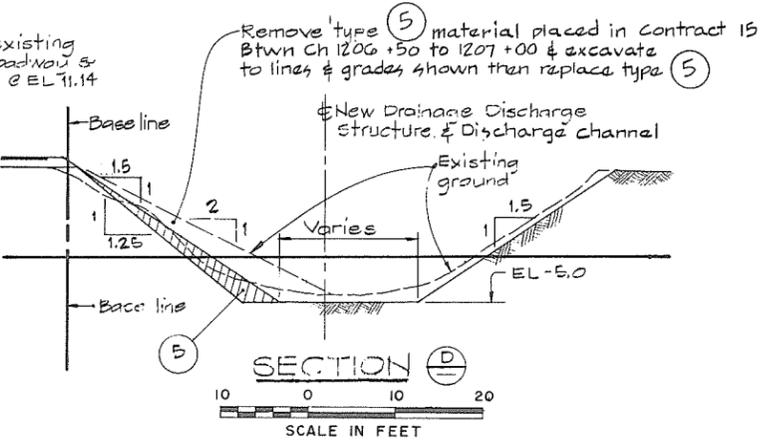
Match to existing 20' paved roadway & dyke crest @ EL 11.13



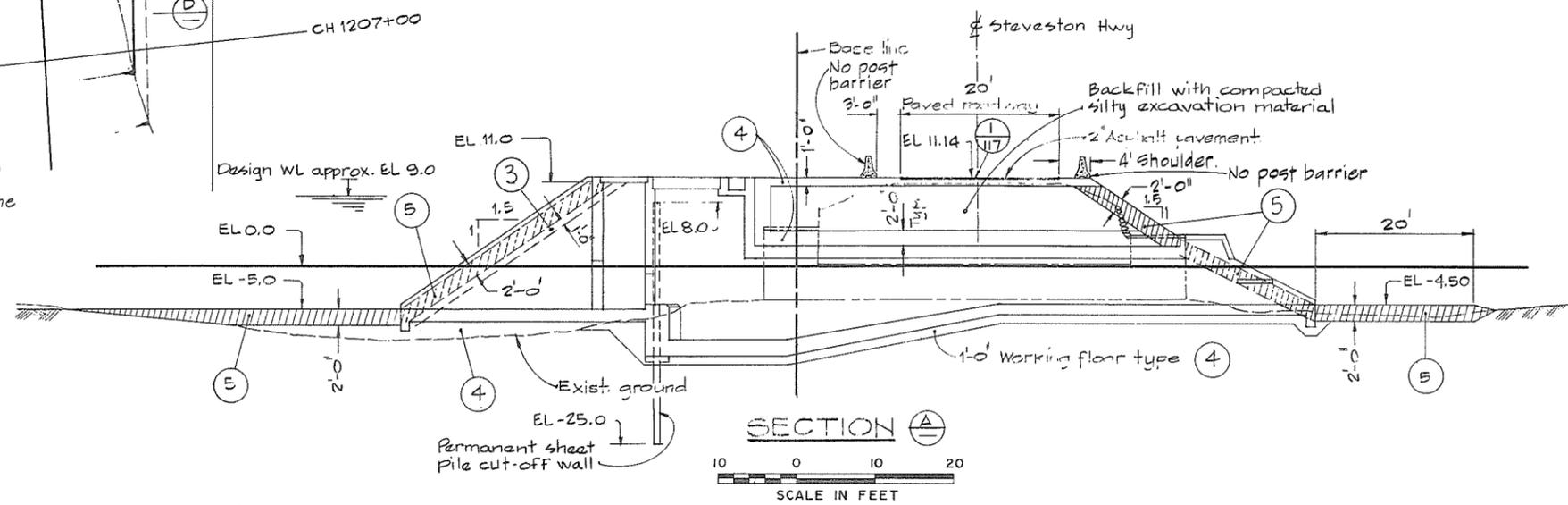
SECTION B SCALE IN FEET



SECTION C SCALE IN FEET



SECTION D SCALE IN FEET



SECTION A SCALE IN FEET

NOTE Place type (5) material on east slope of channel to ch. 1206+80

**MATERIAL LEGEND**

- ① silt-clay
- ② sand
- ③ sand, gravel, cobbles
- ④ crushed gravel
- ⑤ light rip-rap
- ⑥ rip-rap

**LEGEND**

- Existing ground surface (Section)
- Existing ground & structures (Plan)
- Section identification letter
- Drawing No. on which the section is drawn (ie) 4795-18-116J
- Detail identification number, drawing No. on which the detail is drawn (ie) 4795-18-116J

**NOTES**

- Elevations refer to the Geodetic Survey of Canada.
- A smooth alignment shall be maintained over the entire length of the dyke.
- Offset distances from base line to crest lines are taken at the design crest elevation.
- The angle of offset is 90° to base line, unless otherwise indicated.
- Terminal parts of the work shall be constructed to blend with the existing ground.

266 63 J



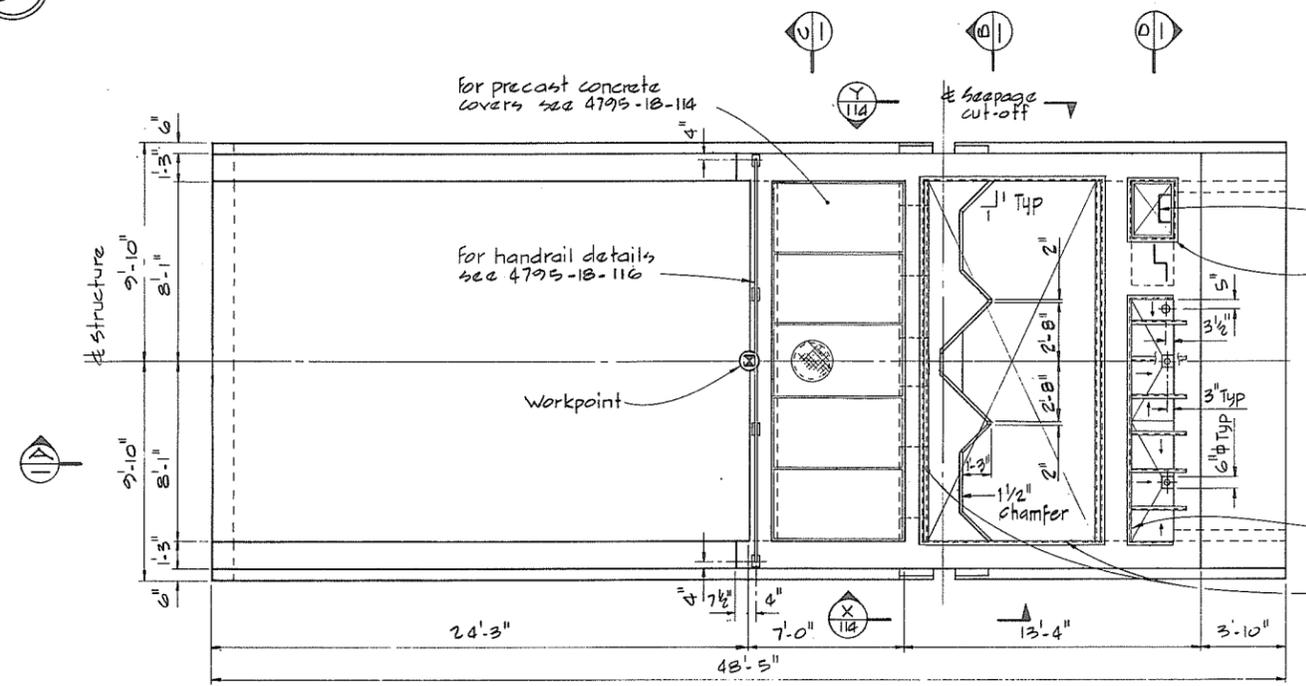
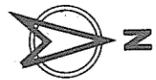
**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE

RECOMMENDED *R.H. Cameron*  
PROJECT MANAGER  
DATE: *June 2 1981*  
APPROVED *John Fuller*  
DIRECTOR  
DATE: *June 3/81*

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCT NO. 25  
DETAILS OF EARTHWORKS

DESIGNED	SURVEYED
DRAWN <i>L. Grave</i>	DATE
CHECKED <i>DLG</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-44 B</i>	SHEET <i>  </i> OF <i>  </i> SHEETS

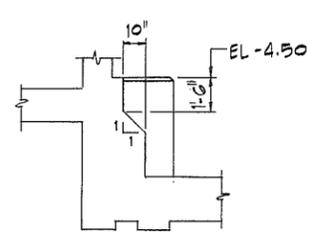


PLAN

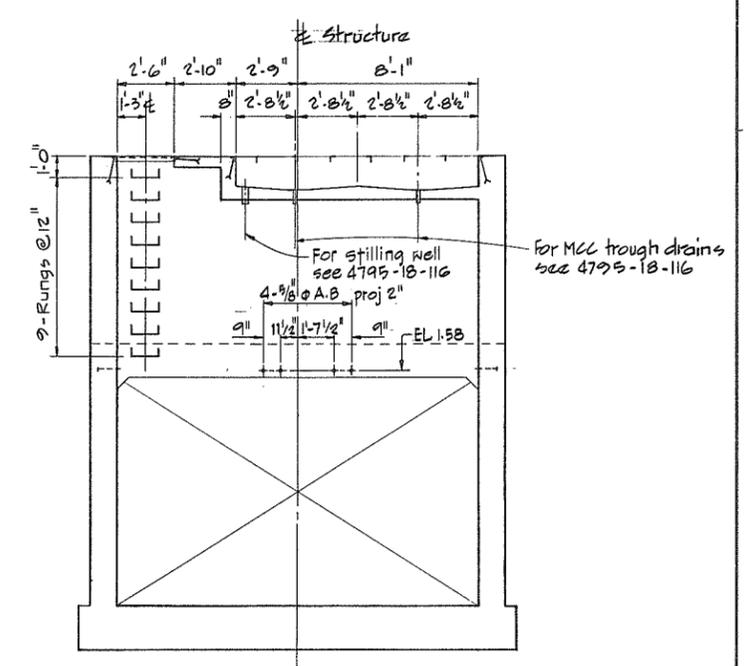
NOTE  
Provide temporary timber  
deck. For details see 4795-18-107

for typical rung detail  
see 4795-18-116  
for pump sump access frame  
see 4795-18-115

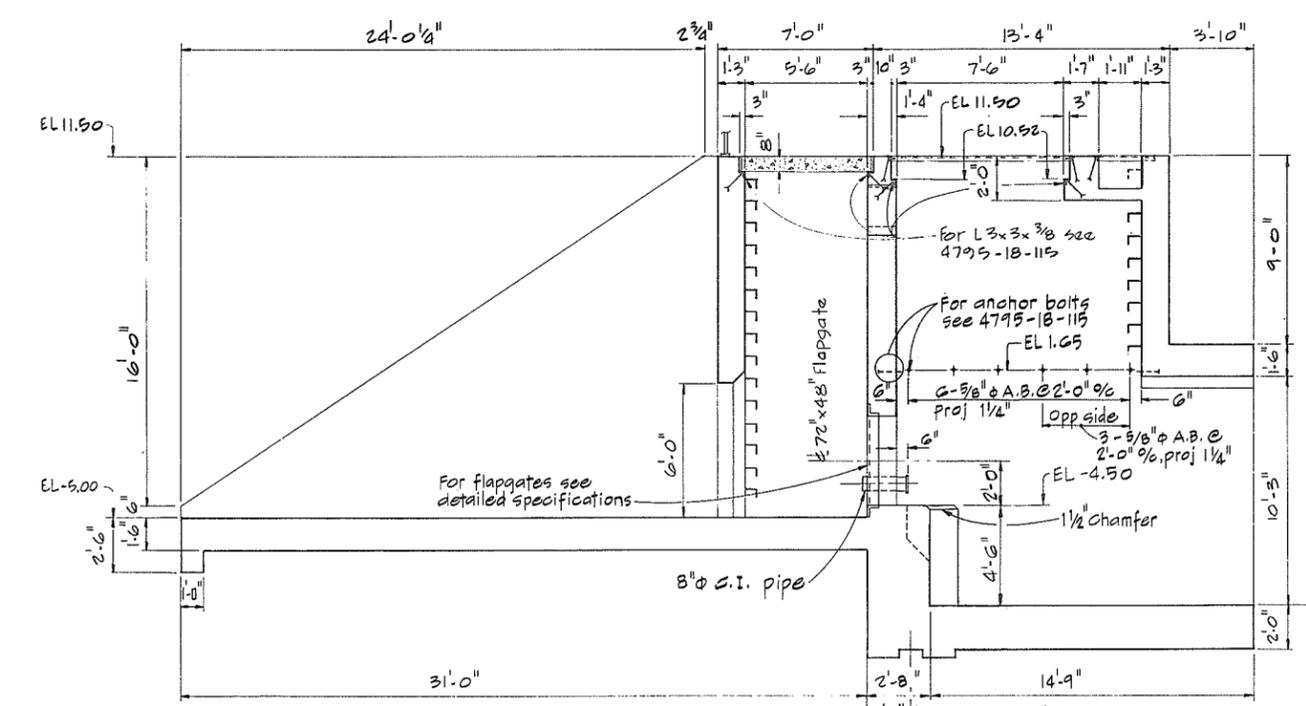
for M.C.C. frame  
see 4795-18-115  
for embedded L2x2x1/4  
frame see 4795-18-115



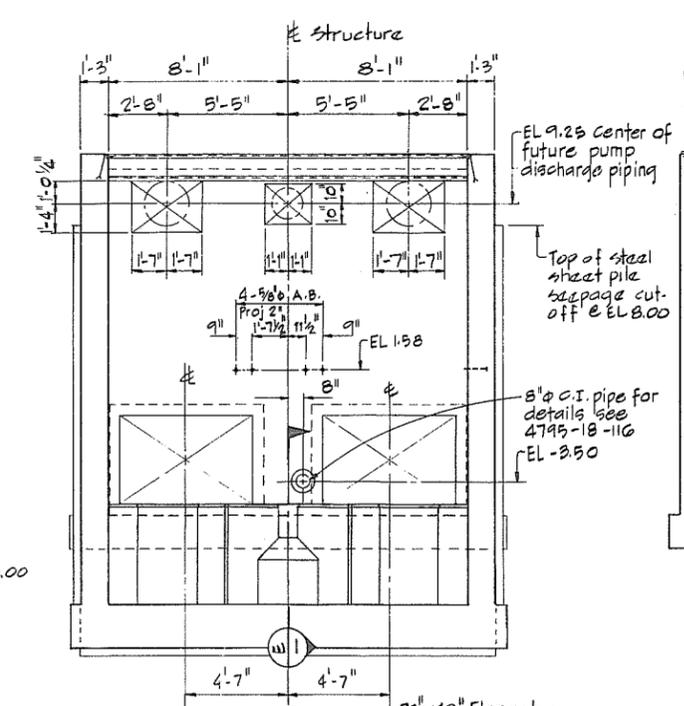
SECTION E



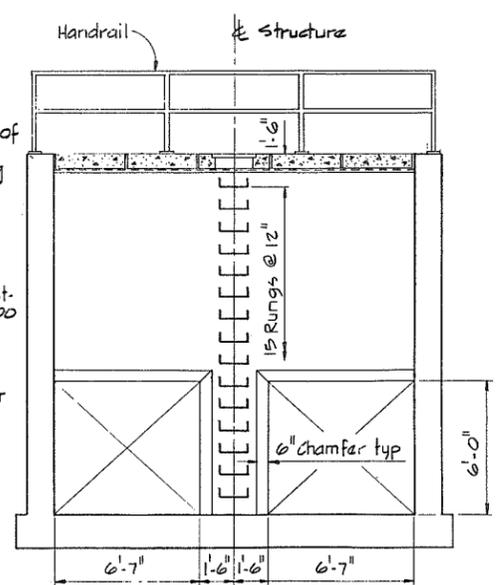
SECTION D



SECTION A



SECTION B



SECTION C

NOTES  
For General Notes see 4795-18-46.

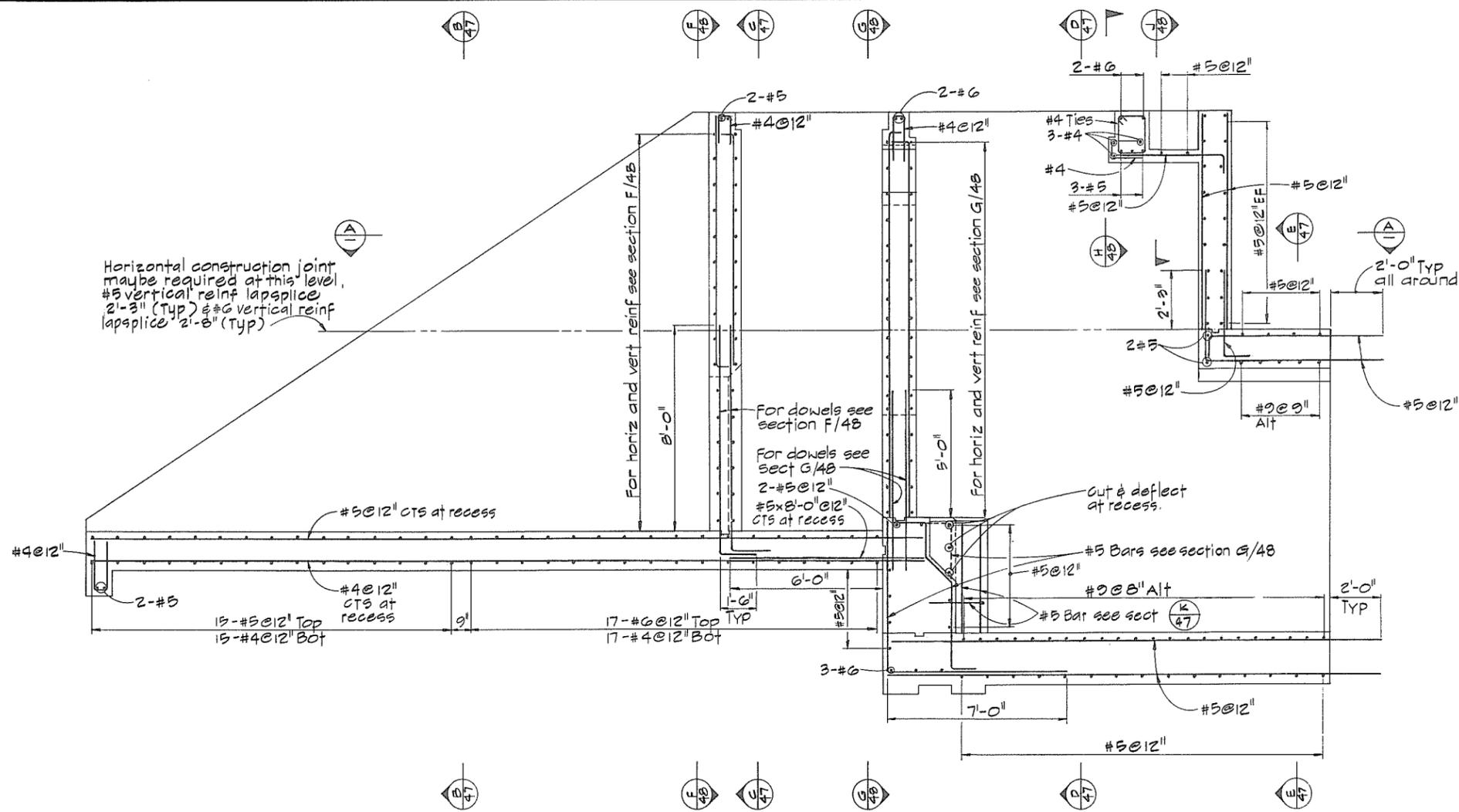


**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

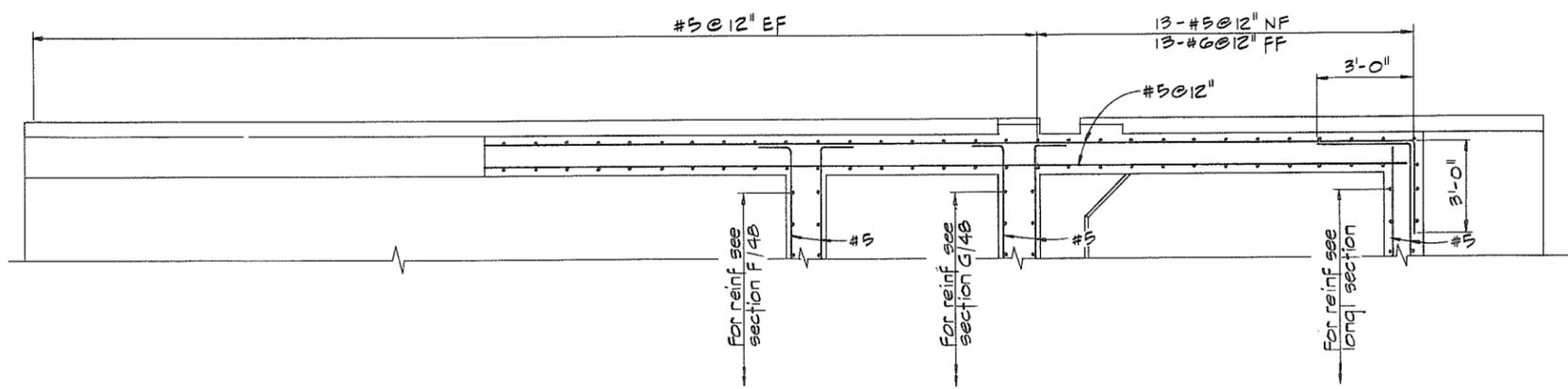
RECOMMENDED <i>P.R. Cameron</i> PROJECT MANAGER	DATE <i>June 2, 1981</i>
APPROVED <i>W. Fuller</i> DIRECTOR	DATE <i>June 2/81</i>

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1968 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCT NO. 25  
MAIN STRUCTURE - CONCRETE OUTLINE

DESIGNED <i>AR</i>	SURVEYED
DRAWN <i>AR</i>	DATE
CHECKED <i>DLC</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-45</i>	SHEET <i>676</i> OF <i>45</i> SHEETS



LONGITUDINAL SECTION



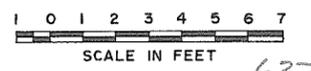
SECTION A-A

GENERAL NOTES - STRUCTURAL

- Design is in accordance with CSA A23.3-1973, Code for the design of Plain or Reinforced Concrete Structures.
- Construction shall be in accordance with CSA A23.1-1973, specification for structural concrete for Buildings.
- Specified strength of concrete F'c 4000 p.s.i.
- Reinforcing steel shall be deformed bars conforming to CSA G 30.12-1972, Grade 40 or 60.
- Cover over reinforcing steel to be 2" to all faces, except 3" for the underside of the footings.
- Reinforcing to be of lengths indicated with construction joints as shown unless otherwise approved by the Engineer.
- CONCRETE FINISHES: -  
 - Floors and base slabs - steel trowel  
 - Exposed horizontal surfaces - broom  
 - Interior, exterior exposed walls and beams - rubbed  
 - See specs for details.
- CHAMFER - 3/4 x 3/4 for all exposed corners.
- If metric reinforcing steel is used, the spacing shall be changed to provide equal cross sectional area of steel.

NOTES

- For location of embedded electrical conduit see 4795-18-102
- For location of workpoint see 4795-18-42.
- Install ufer ground electrode and leave both ends in Mee trough for future connections



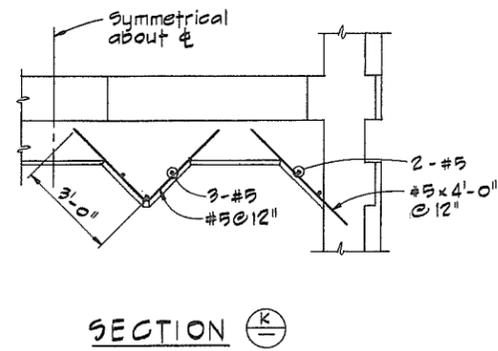
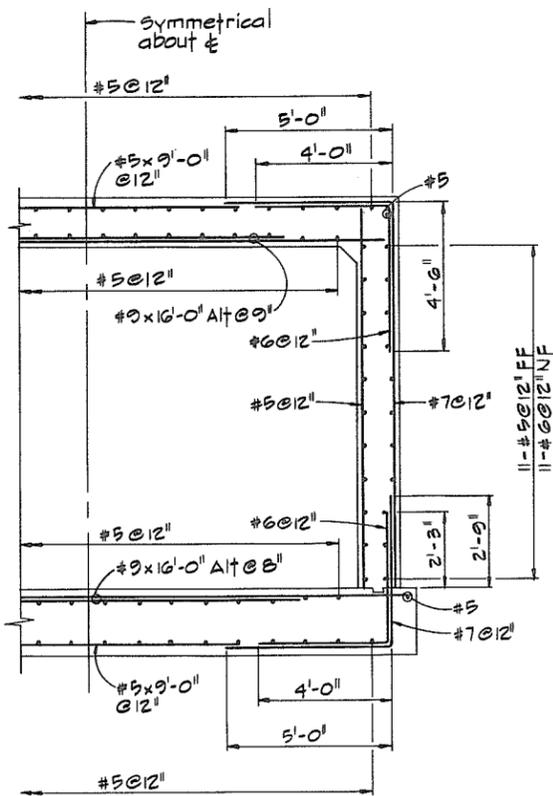
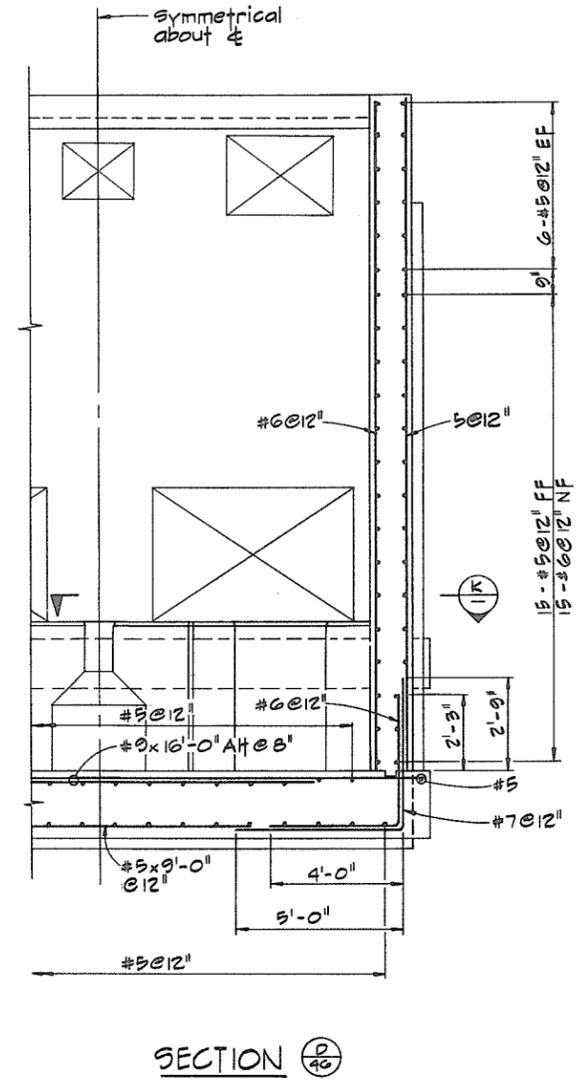
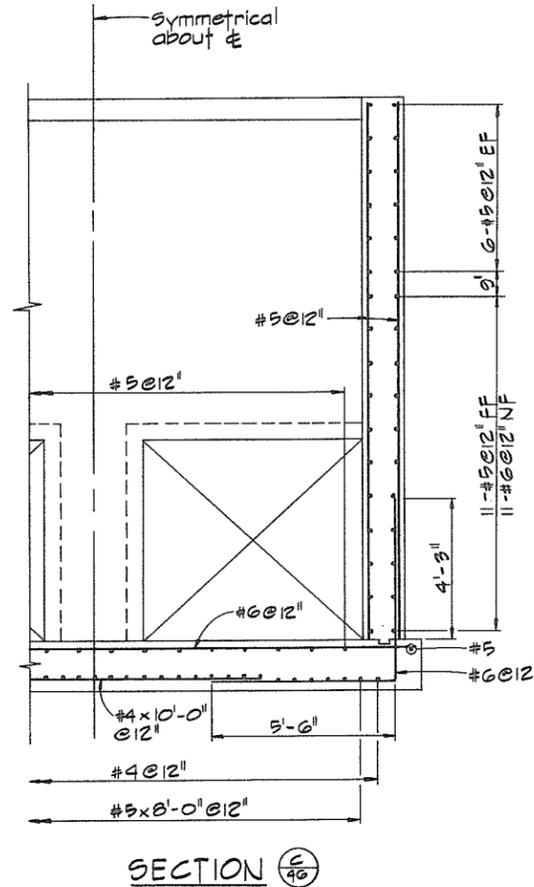
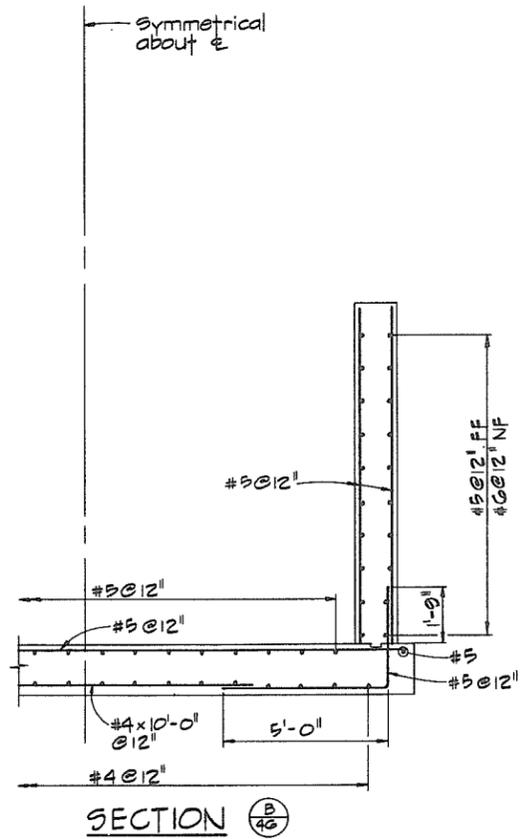
**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED <i>P.H. Cameron</i> PROJECT MANAGER	DATE <i>June 2, 1981</i>
APPROVED <i>John Fuller</i> DIRECTOR	DATE <i>June 3, 1981</i>

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCT NO. 25  
MAIN STRUCTURE REINFORCING

DESIGNED	SURVEYED
DRAWN <i>WJ</i>	DATE
CHECKED <i>TP</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-46 C</i>	SHEET <i>1</i> OF <i>3</i> SHEETS



**NOTES**  
 \* For General Notes see 4795-18-46

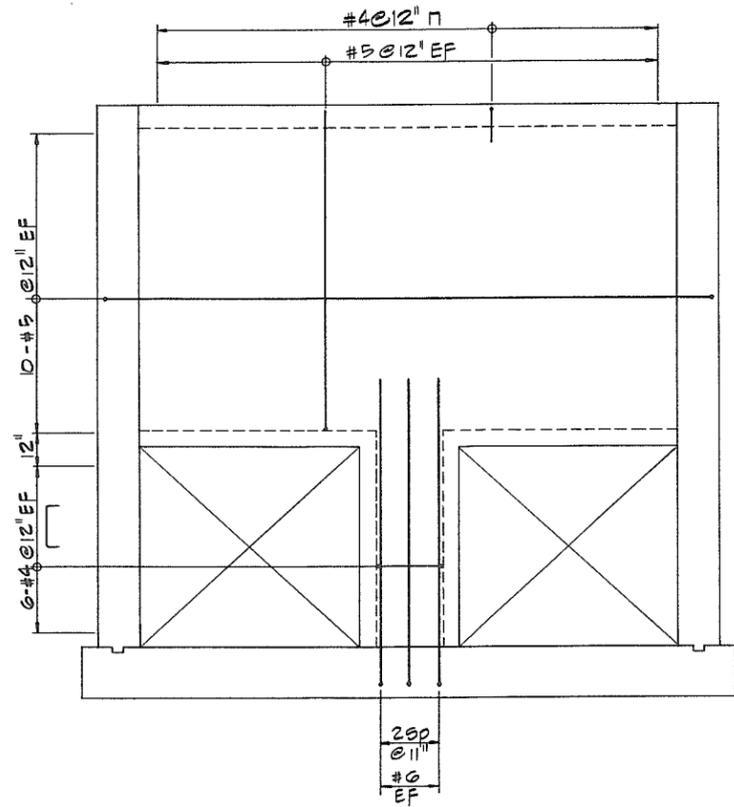


SECTION  $\frac{E}{46}$

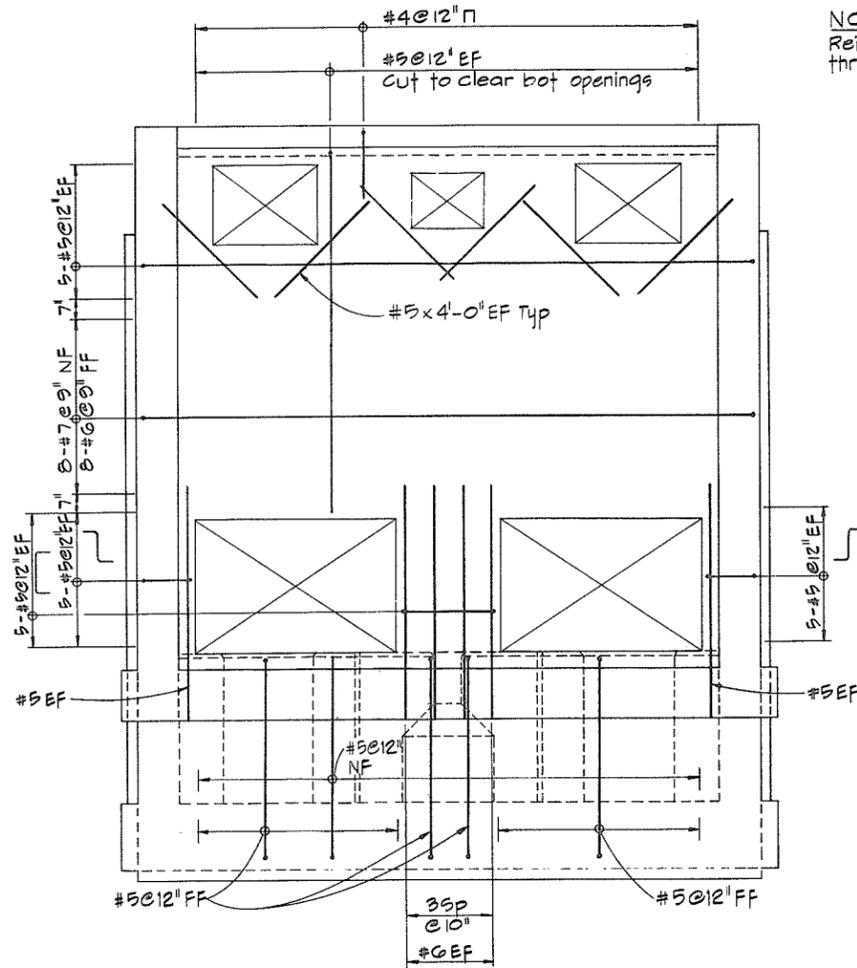


**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE	RECOMMENDED <i>P.H. Cameron</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1988 AGREEMENT	DESIGNED	SURVEYED
				DATE <i>June 2 1981</i>		DRAWN <i>Wn</i>	DATE
				APPROVED <i>G.D. Akins</i> DIRECTOR	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B	CHECKED <i>TP</i>	FILE NO. 0281550-C10-18
				DATE <i>Jun 3/81</i>	NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCT NO. 25	SCALE AS SHOWN	DATE July 1981
					MAIN STRUCTURE REINFORCING	DWG. NO. 4795-18-47B	SHEET 2 OF 3 SHEETS

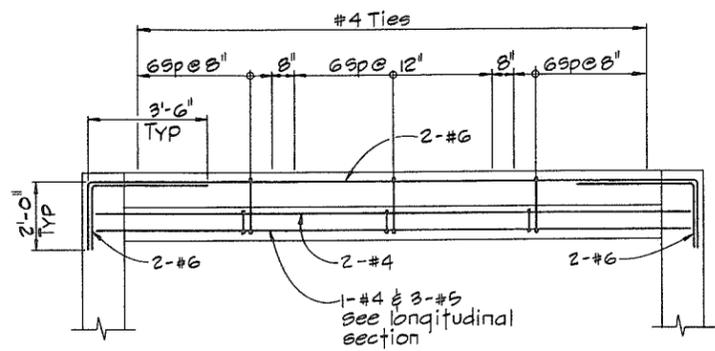


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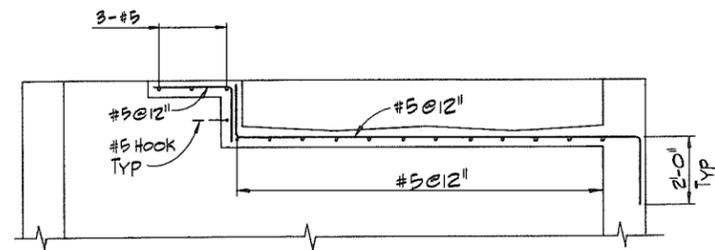


SECTION  $\frac{G}{46}$

NOTE  
Reinforcing to run continuous through top openings.

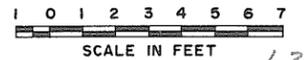


SECTION  $\frac{H}{46}$



SECTION  $\frac{J}{46}$

NOTES  
for General Notes see 4795-18-46



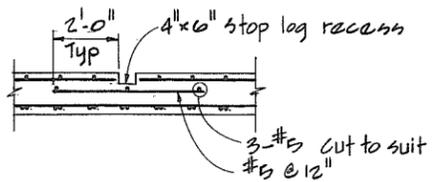
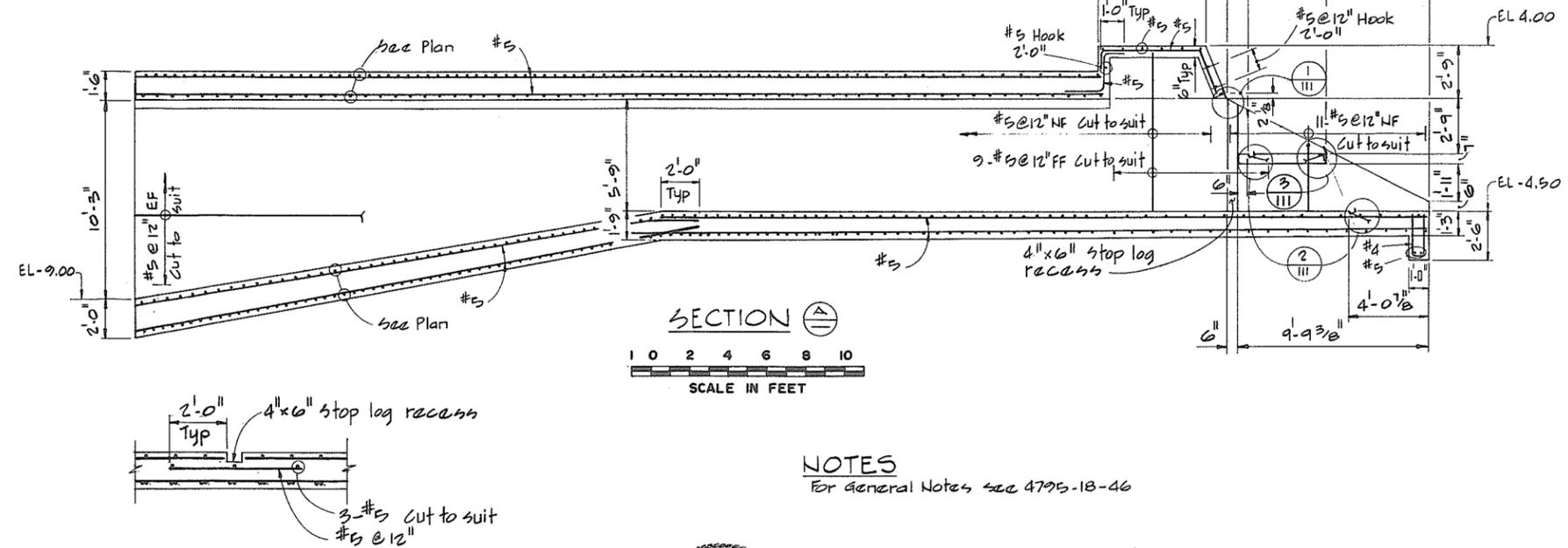
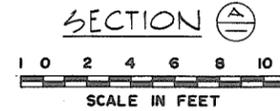
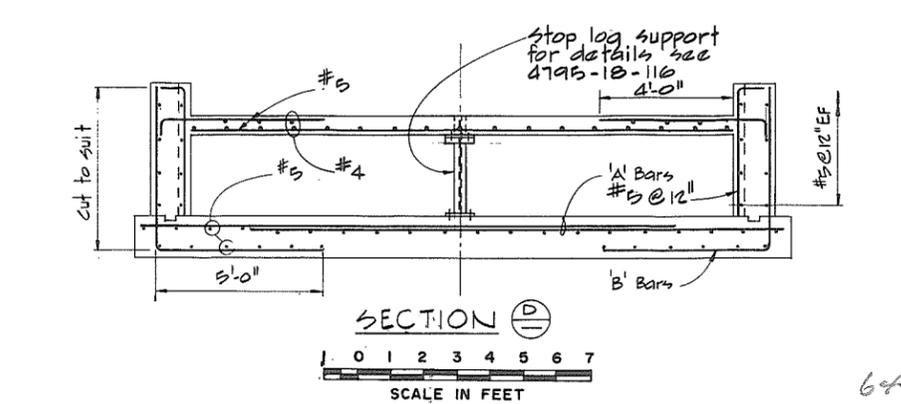
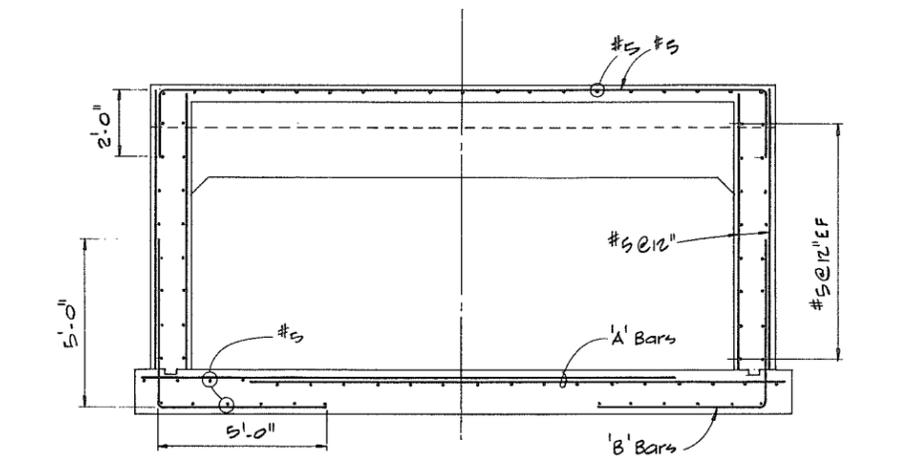
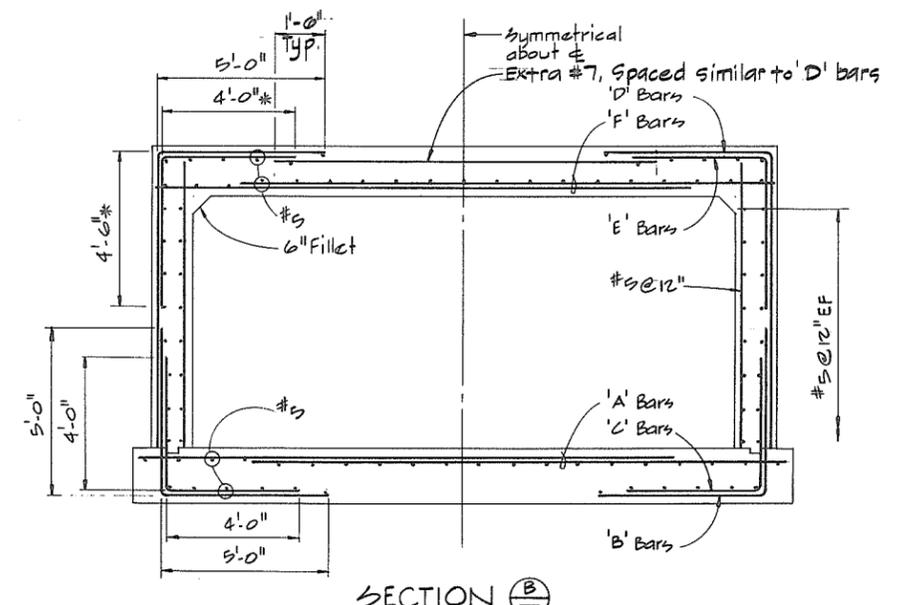
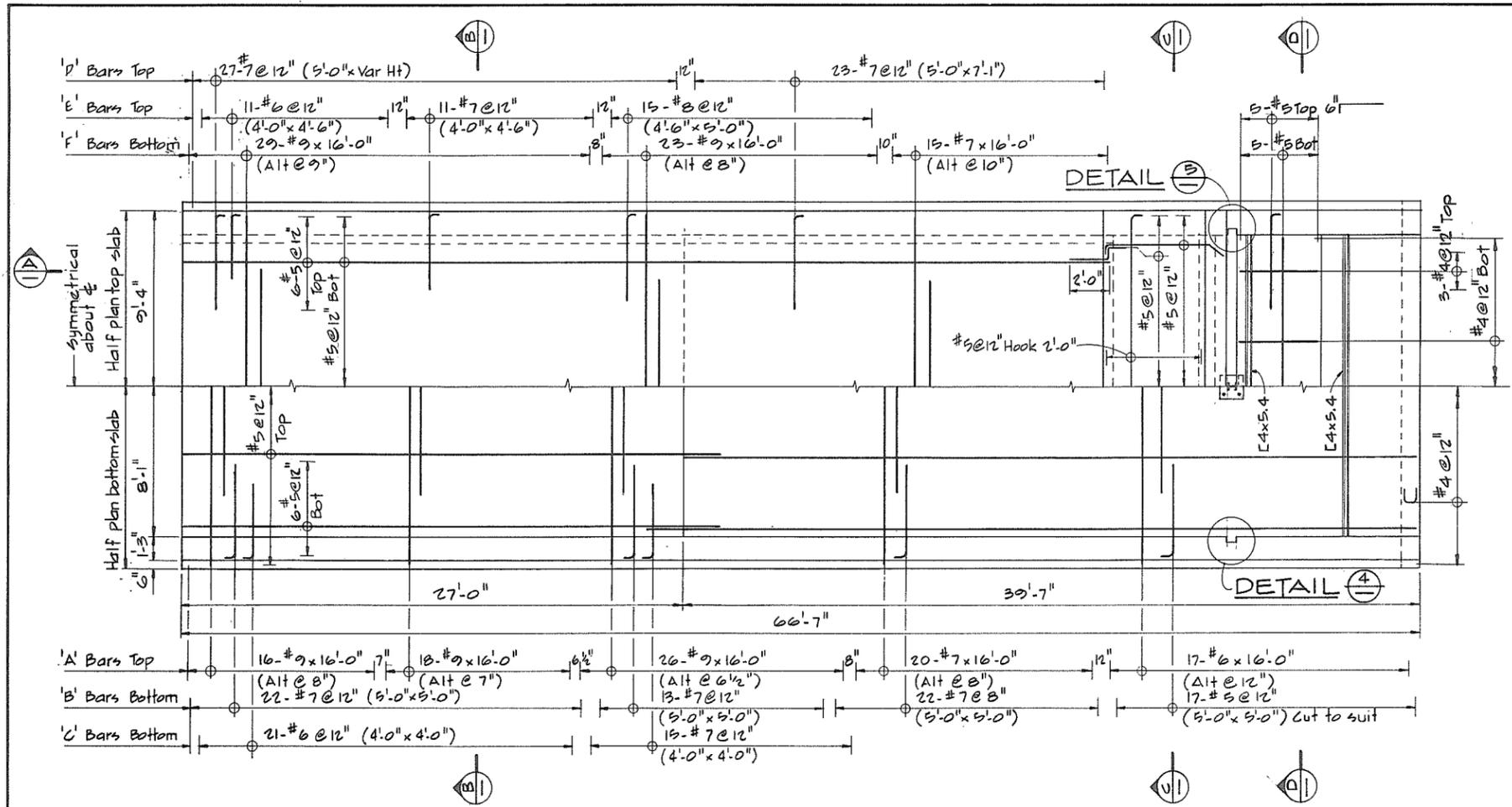
**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED	<i>P. H. Cameron</i> PROJECT MANAGER
DATE	<i>June 2, 1981</i>
APPROVED	<i>John Pella</i> DIRECTOR
DATE	<i>June 3, 1981</i>

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B  
NO. 6 ROAD SOUTH-DRAINAGE DISCHARGE STRUCT NO. 25  
MAIN STRUCTURE REINFORCING

DESIGNED	SURVEYED
DRAWN <i>Wn</i>	DATE
CHECKED <i>TP</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-48</i>	SHEET <i>3</i> OF <i>3</i> SHEETS

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**NOTES**  
For general Notes see 4795-18-46

DETAIL 4 SHOWN  
DETAIL 5 SIMILAR  
BUT OPP HAND



**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

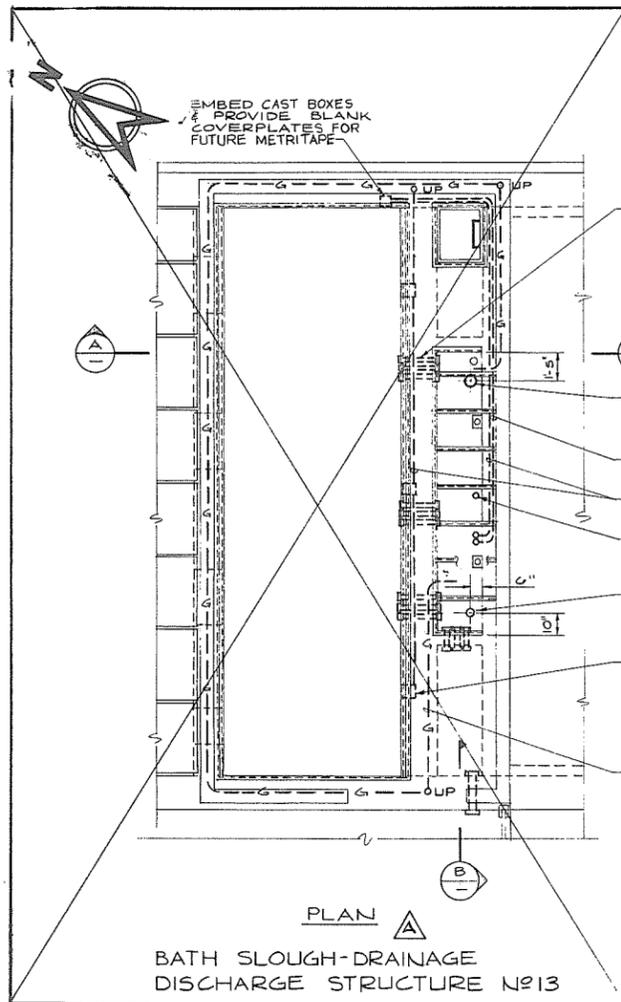
NO.	BY	REVISIONS	DATE

RECOMMENDED *P. H. Cameron*  
PROJECT MANAGER  
DATE *June 2 1981*  
APPROVED *John Fuller*  
DIRECTOR  
DATE *Jun 3/81*

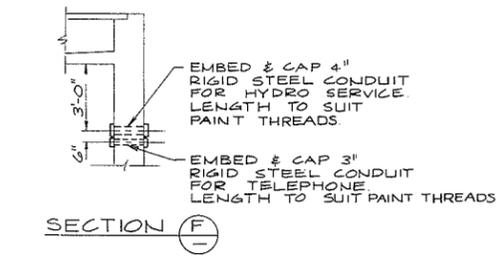
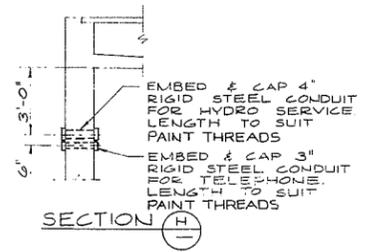
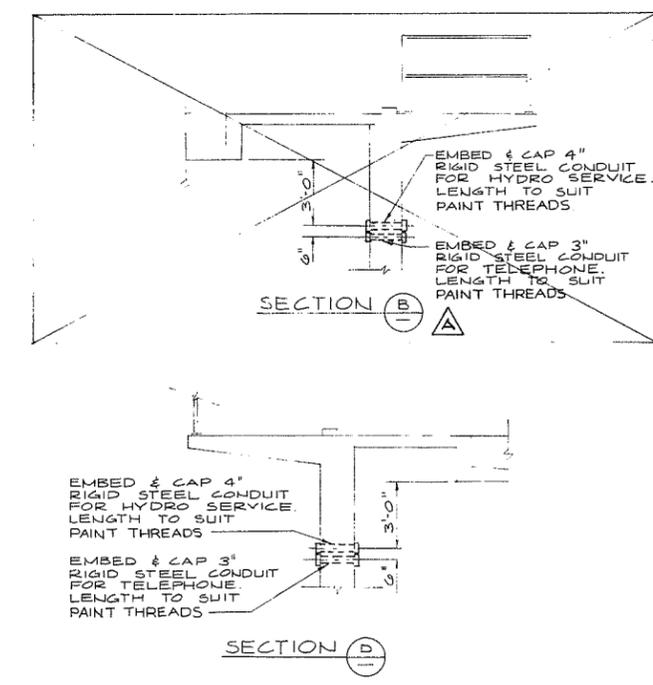
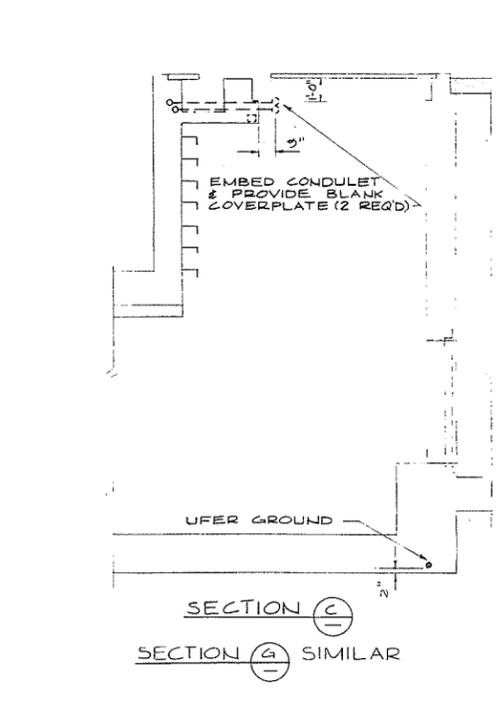
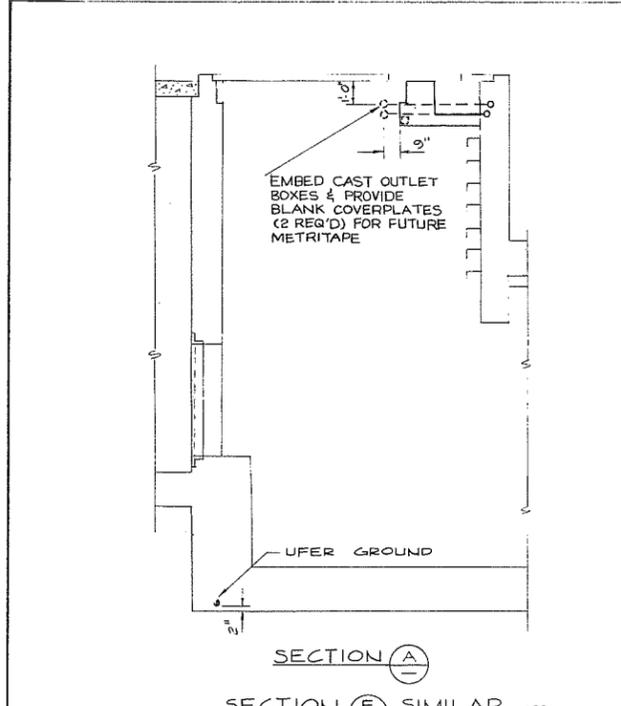
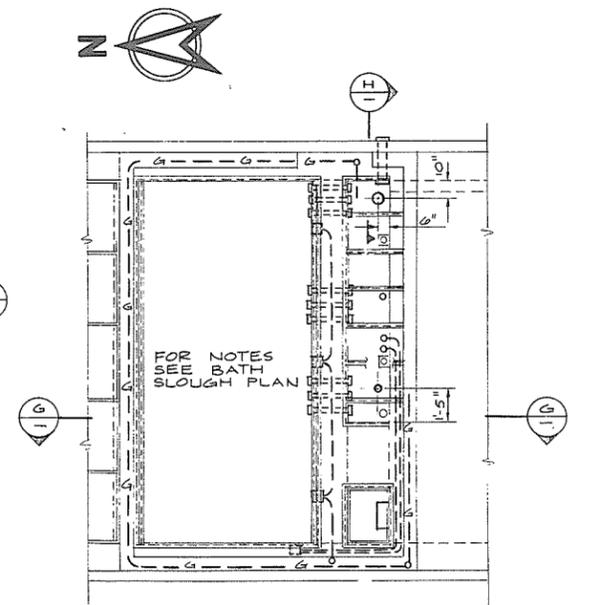
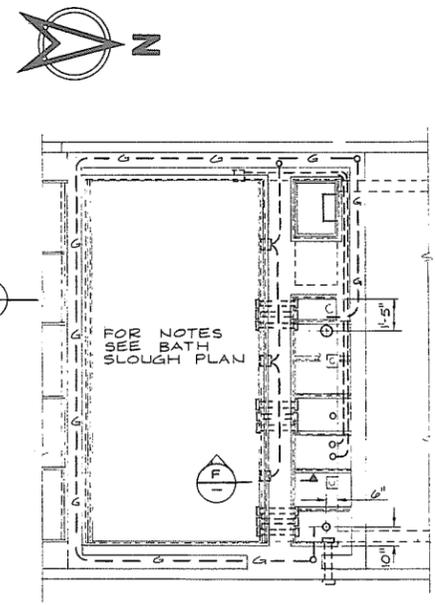
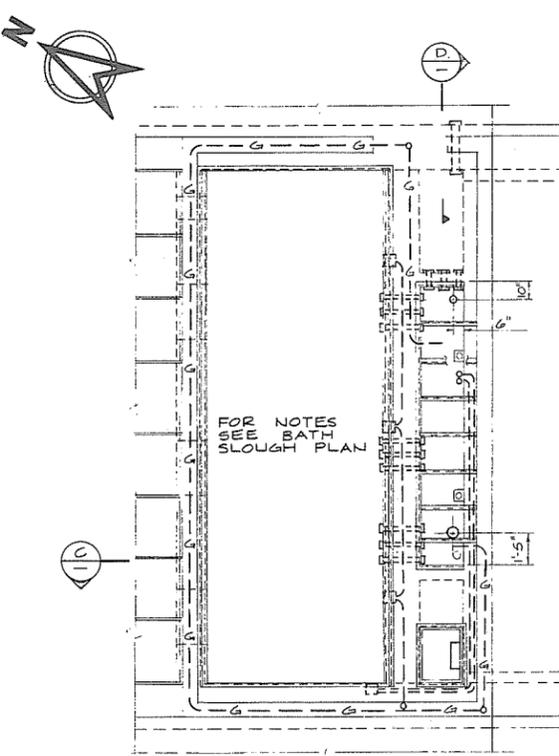
BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
NO. 6 ROAD SOUTH - DRAINAGE DISCHARGE STRUCT NO. 25  
ENTRY CULVERT AND BOX CULVERT  
CONCRETE OUTLINE AND REINFORCING

DESIGNED <i>T.P.</i>	SURVEYED
DRAWN <i>AR</i>	DATE
CHECKED <i>TP</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>July 1981</i>
DWG. NO. <i>4795-18-49A</i>	SHEET <i> </i> OF <i> </i> SHEETS

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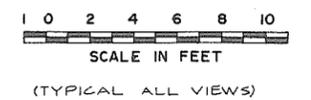


- 1-3" & 2-2" RIGID PVC CONDUIT SLEEVES C/W BUSHINGS - INSTALL ON 8" CENTERS (TYP)
- EMBED & CAP 4" RIGID GALV. STEEL CONDUIT, LENGTH TO SUIT FOR FUTURE POWER PAINT THREADS
- 3/4" RIGID STEEL CONDUIT
- 1/2" RIGID STEEL CONDUIT
- 3/4" GALV. STEEL CONDUIT, LENGTH TO SUIT, FOR GAS DETECTOR
- EMBED & CAP 3" RIGID GALV. STEEL CONDUIT, LENGTH TO SUIT FOR FUTURE TELEPHONE PAINT THREADS.
- OUTLET BOX (1/2" HUBS) CROUSE-HIND OR APPROVED EQUIVALENT FOR VAPOUR-TIGHT ENCLOSED AND GASKETTED INCANDESCENT LIGHTING FIXTURE. PROVIDE BLANK COVERPLATE. (3 REQ'D)
- UFER GROUND ELECTRODE #2/0 BARE COPPER WITHIN BOTTOM 2" OF FOOTING



NOTES

1. INSTALL UFER GROUND ELECTRODE AND LEAVE BOTH ENDS IN MCC TROUGH FOR FUTURE CONNECTION. FOR DETAILS REFER TO DWG. #4795-18-58 AND SPECIFICATIONS FOR SAME



PREPARED BY:  
M.A. THOMAS & ASSOCIATES LTD.  
CONSULTING ENGINEERS  
VANCOUVER, B.C. - CANADA.

REFERENCE: 1292

**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE
A	AR	Path slough deleted	July 1981

RECOMMENDED *P. H. Cameron*  
PROJECT MANAGER

DATE *Nov. 29/79*

APPROVED *[Signature]*  
DIRECTOR

DATE *Nov. 29/79*

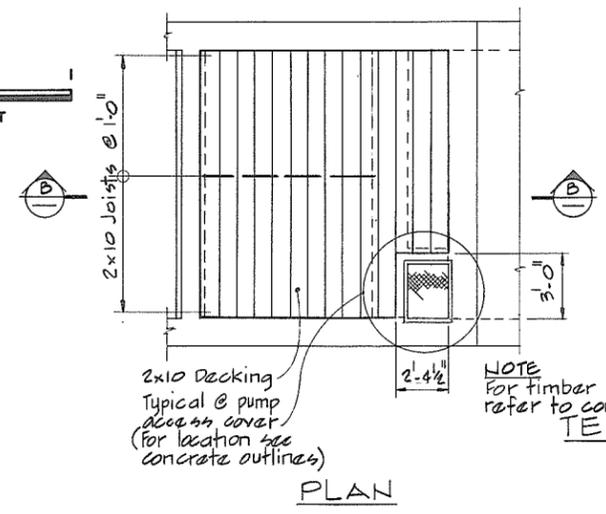
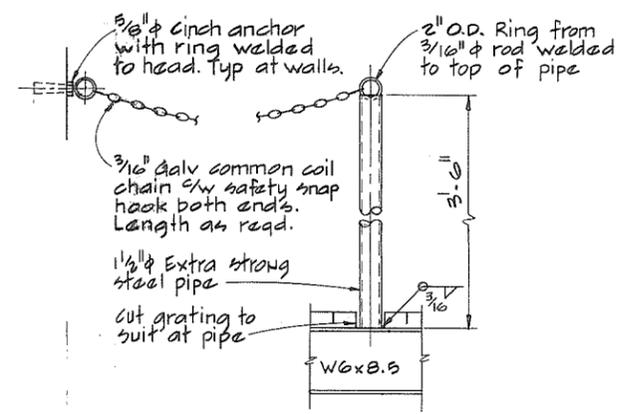
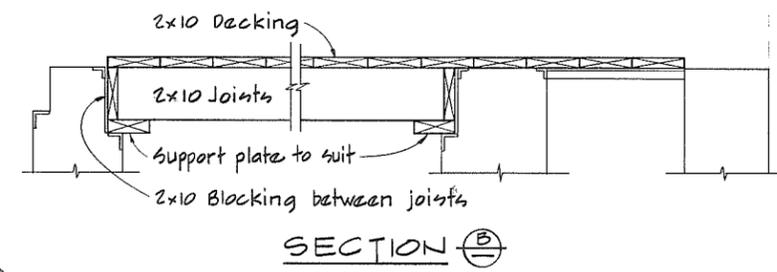
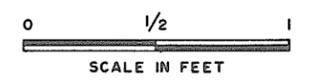
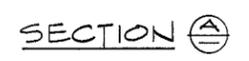
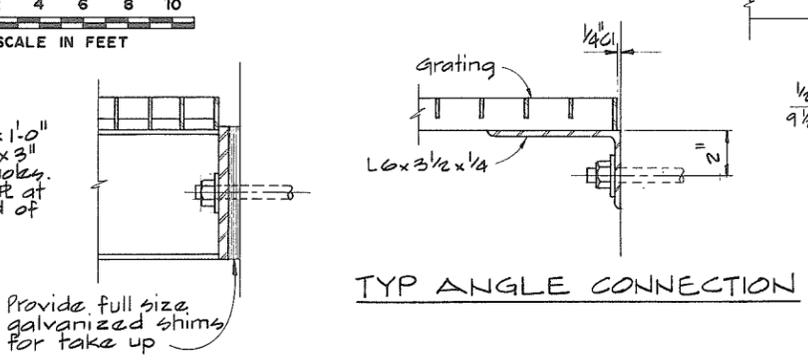
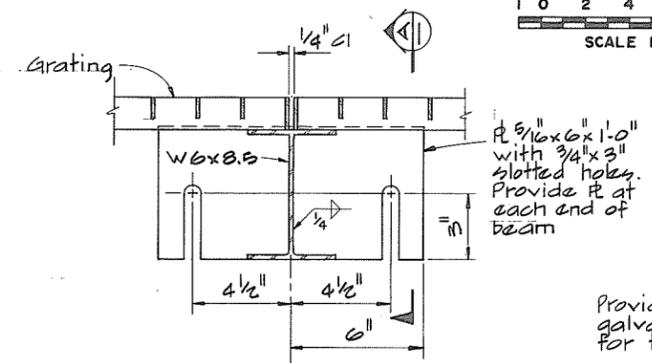
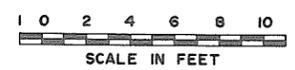
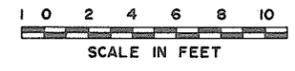
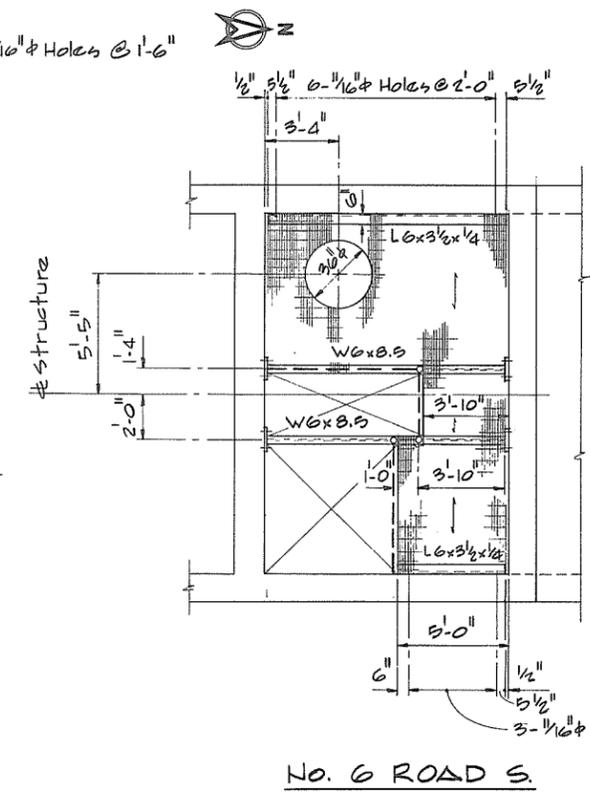
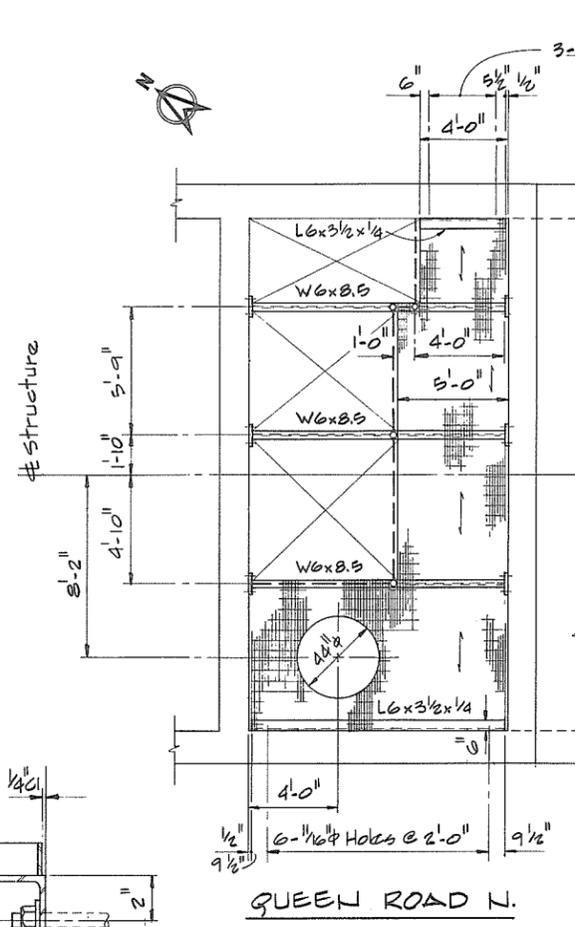
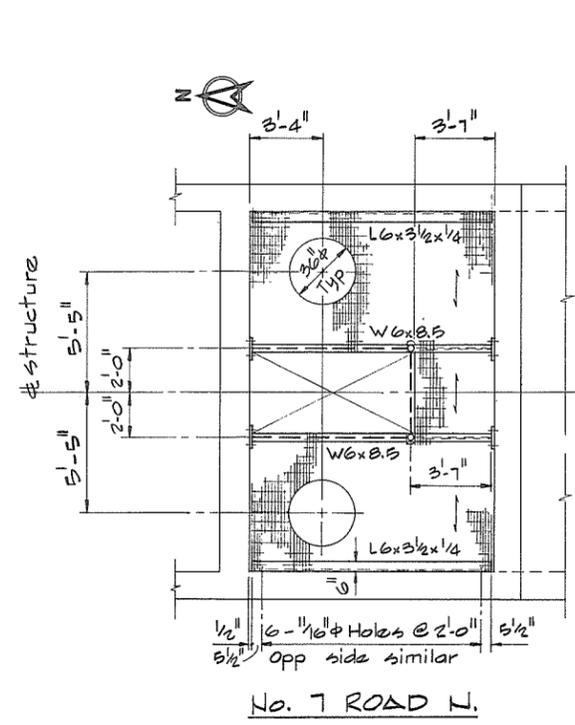
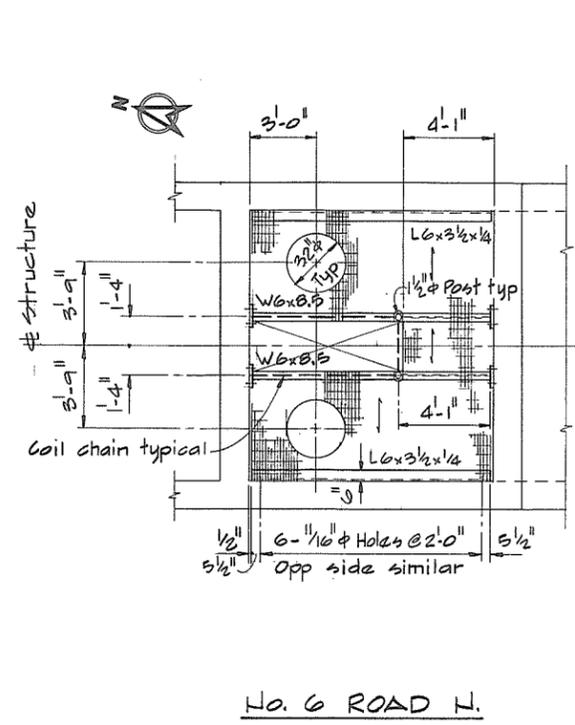
BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1968 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B

EMBEDDED ELECTRICAL CONDUIT  
DRAINAGE DISCHARGE STRUCTURES 14, 15, 18 & 25

DESIGNED	HO	SURVEYED	
DRAWN	SEO	DATE	
CHECKED	WNB	FILE NO.	0281550-C10-18
SCALE	AS SHOWN	DATE	Dec. 1979
DWG. NO.	4795-18-102A	SHEET	OF SHEETS

641



NOTE: For timber lengths refer to conc outlines  
 one reqd per station  
 NTS

- NOTES**
- For corrosion protection see detailed specifications.
  - Grating to be sized to suit the maximum span and 100#/sq ft live loading with 1/4" maximum deflection.
  - Timber shall be treated, see detailed specifications.
  - Joints shall be species group A, grade No. 1.
  - Plank decking shall be species group A, select grade.



**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

RECOMMENDED	R. N. Cameron PROJECT MANAGER
DATE	June 2 1981
APPROVED	John Fuller DIRECTOR
DATE	June 3/81

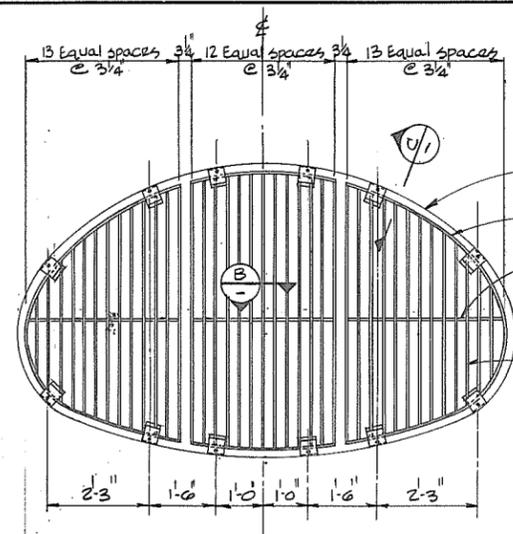
BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1980 AGREEMENT

PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
 MAINTENANCE FLOOR AND  
 TEMPORARY TIMBER COVER DETAILS

DESIGNED	SURVEYED
DRAWN AR	DATE
CHECKED DLC	FILE NO. 0281550-C10-18
SCALE AS SHOWN	DATE July 1981
DWG. NO. 4795-18-107	SHEET OF SHEETS

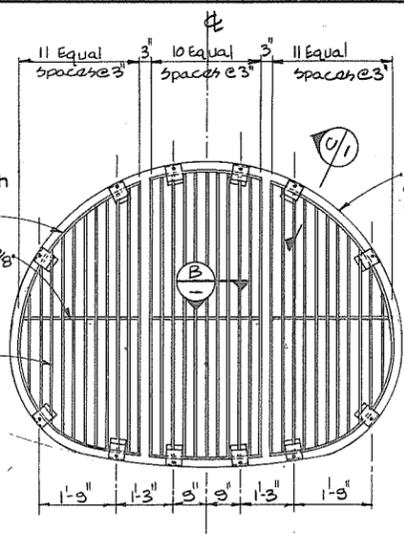
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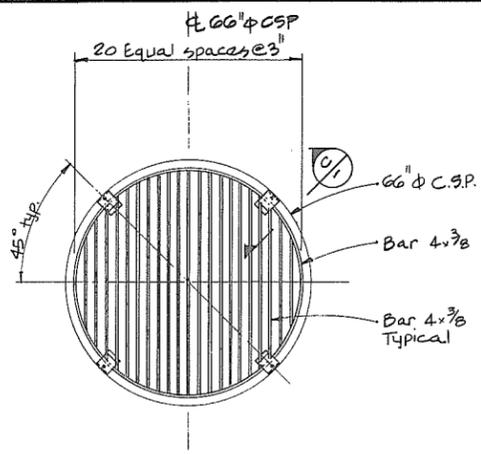
OUTLET SCREEN (3 PANELS)

1- Req'd @ N° 7 Rd. North  
 SCALE IN FEET



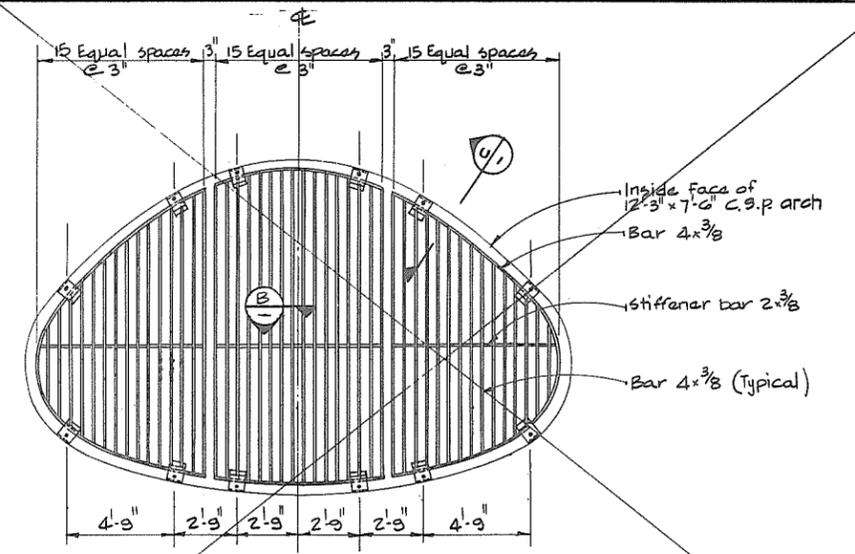
OUTLET SCREEN (3 PANELS)

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 SCALE IN FEET



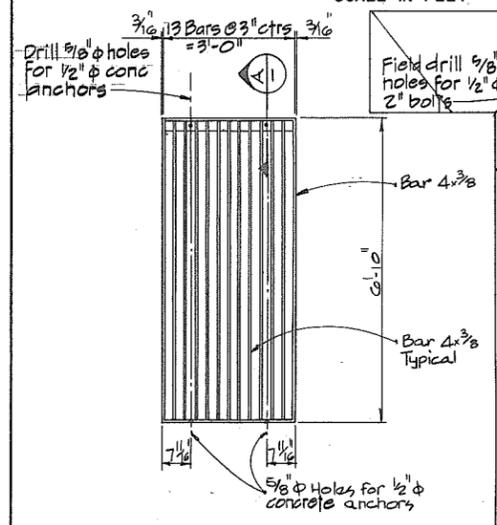
OUTLET SCREEN

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 SCALE IN FEET



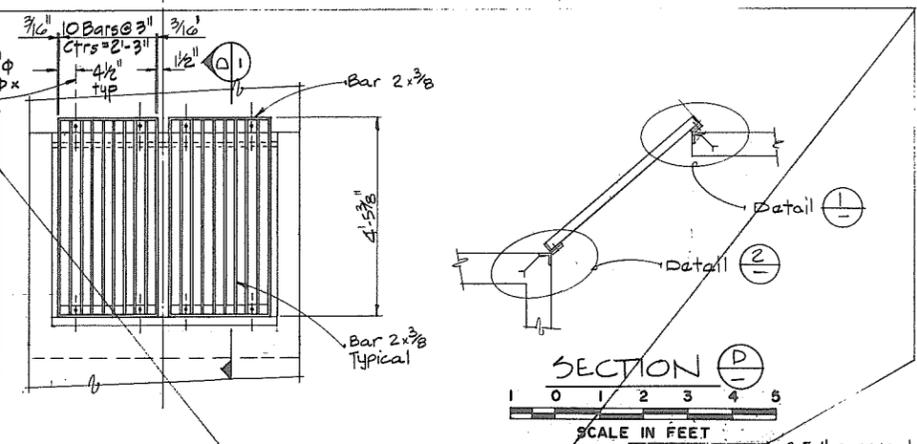
OUTLET SCREEN (3 PANELS)

1- Req'd @ Bath Slough  
 SCALE IN FEET



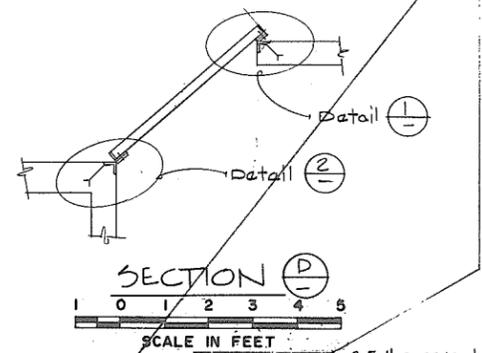
OUTLET SCREEN

4- Req'd @ N° 6 Rd. South  
 SCALE IN FEET



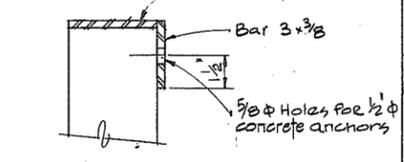
OUTLET SCREEN

1- Req'd @ Staveston Hwy. West  
 SCALE IN FEET



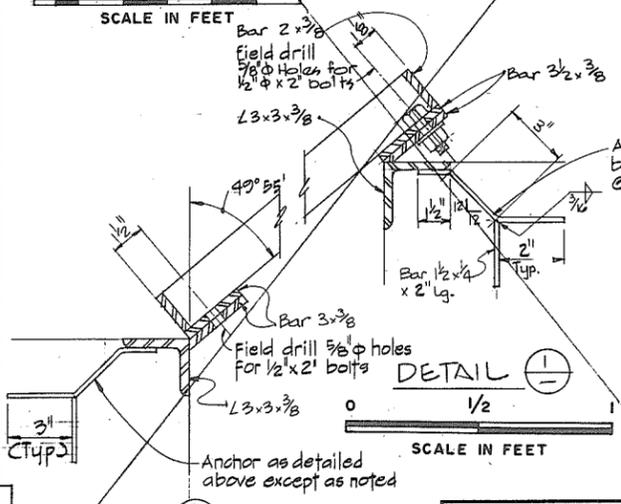
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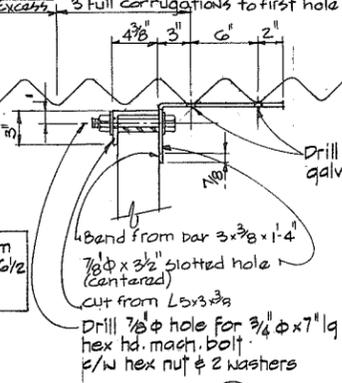
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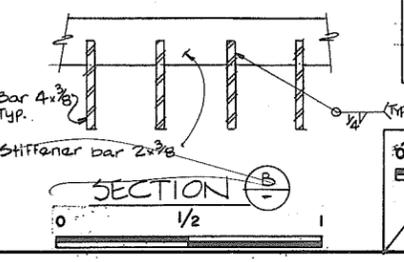
DETAIL

SCALE IN FEET



SECTION

SCALE IN FEET



SECTION

SCALE IN FEET

DETAIL

SCALE IN FEET

**CBA ENGINEERING LTD.**  
 CONSULTING ENGINEERS - VANCOUVER - CANADA

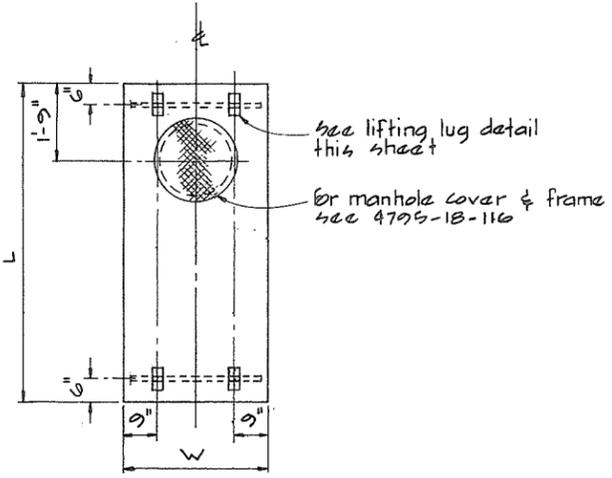
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DRAWN	DATE	DATE	Nov. 29/79
CHECKED	APPROVED	APPROVED	[Signature]
SCALE	DATE	DATE	Nov. 29/79
DWG. NO.	REVISIONS	DATE	

BRITISH COLUMBIA  
 MINISTRY OF THE ENVIRONMENT  
 WATER INVESTIGATIONS BRANCH  
 CANADA - BRITISH COLUMBIA  
 FRASER RIVER FLOOD CONTROL 1968 AGREEMENT  
 PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
 DISCHARGE SCREEN DETAILS

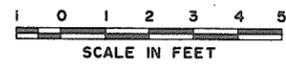
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DRAWN	DATE
CHECKED	FILE NO.
SCALE	DATE
DWG. NO.	SHEET



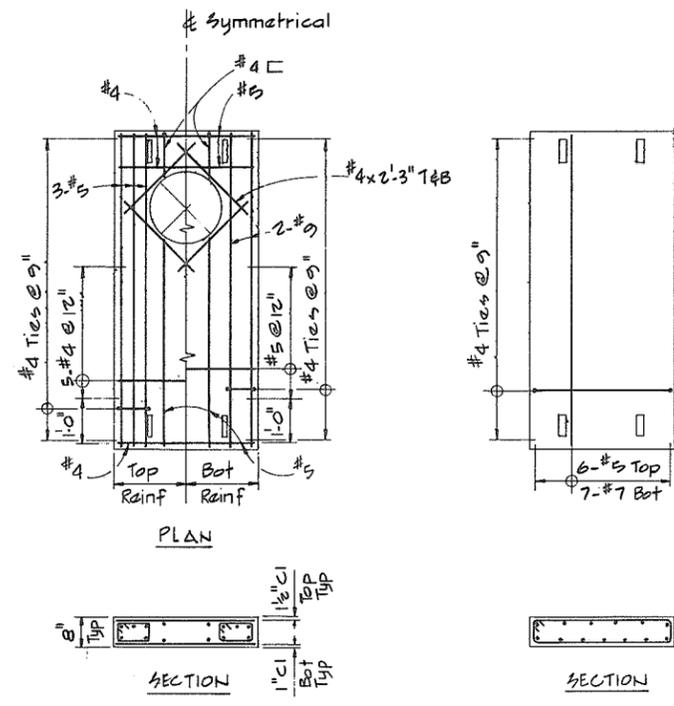
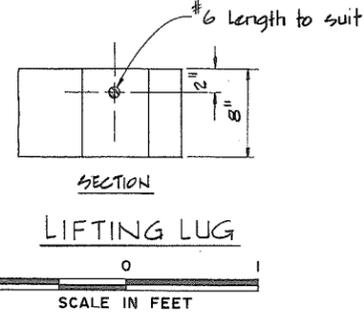
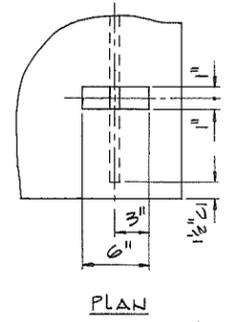
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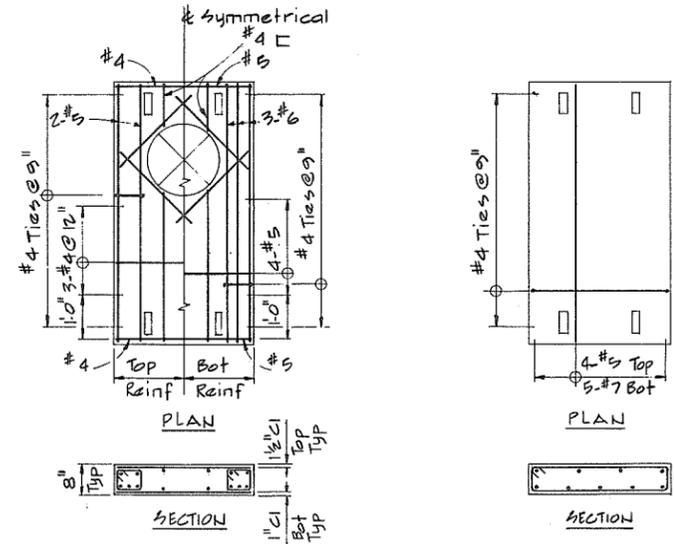
**PRECAST CONCRETE COVERS**



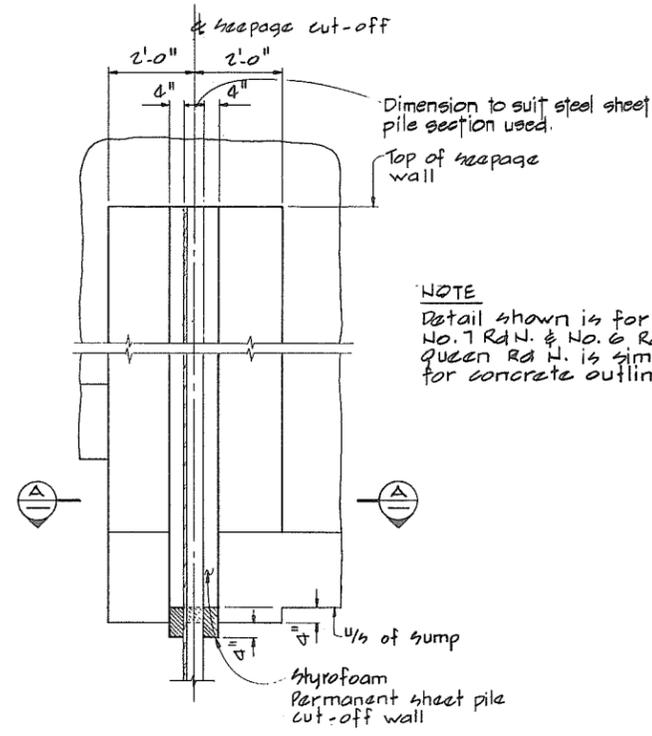
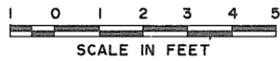
DRAINAGE DISCHARGE STRUCTURE	WITH MANHOLE			WITHOUT MANHOLE		
	L	W	REQD	L	W	REQD
No. 6 Road N	5'-2"	3'-3"	1	5'-2"	2'-2"	4
No. 7 Road N	7'-8"	3'-3"	1	7'-8"	3'-2"	4
Queen Road N	5'-11"	3'-3"	1	5'-11"	2'-9 1/4"	7
No. 6 Road S.	5'-11"	3'-3"	1	5'-11"	3'-2"	4



**PRECAST CONCRETE COVER REINFORCEMENT - No. 7 RD N.**

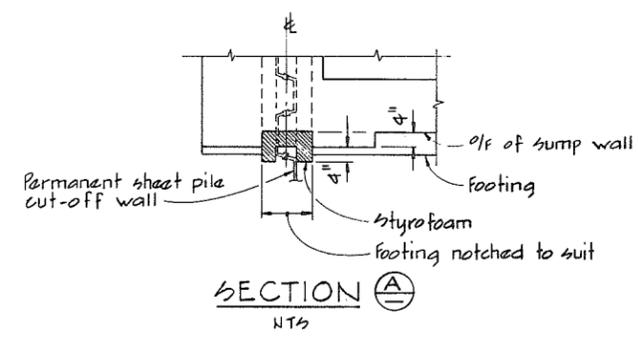


**PRECAST CONCRETE COVER REINFORCEMENT - TYPICAL**



NOTE  
Detail shown is for No. 6 Rd N,  
No. 7 Rd N. & No. 6 Rd S.  
Queen Rd N. is similar except  
for concrete outline.

VIEW X 17 X 26 X 36 X 40 X 45  
VIEW Y 17 Y 26 Y 36 Y 40 Y 45  
BUT OPPOSITE HAND  
NTS

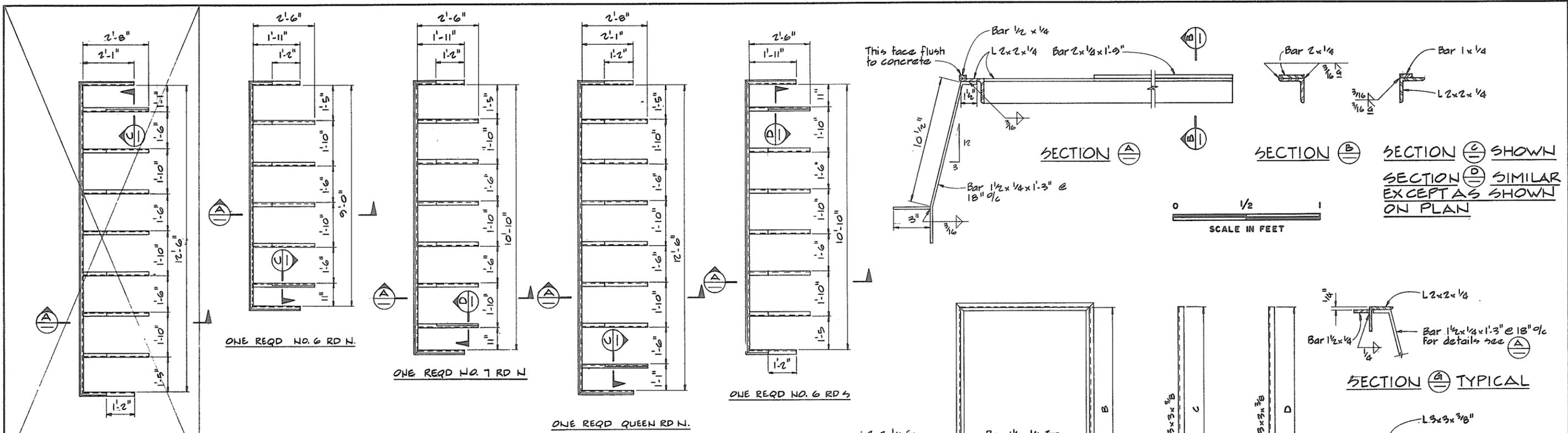


**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

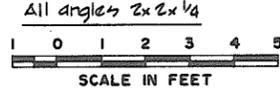
RECOMMENDED <i>R. D. Cameron</i> PROJECT MANAGER	DATE <i>Nov. 29/79</i>
APPROVED <i>G. M. Fuller</i> DIRECTOR	DATE <i>Nov. 29/79</i>
NO. BY	REVISIONS
A	AR General revision
	July 1981

BRITISH COLUMBIA  
MINISTRY OF THE ENVIRONMENT  
WATER INVESTIGATIONS BRANCH  
CANADA - BRITISH COLUMBIA  
FRASER RIVER FLOOD CONTROL 1988 AGREEMENT  
PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18 B  
MISCELLANEOUS CONCRETE DETAILS

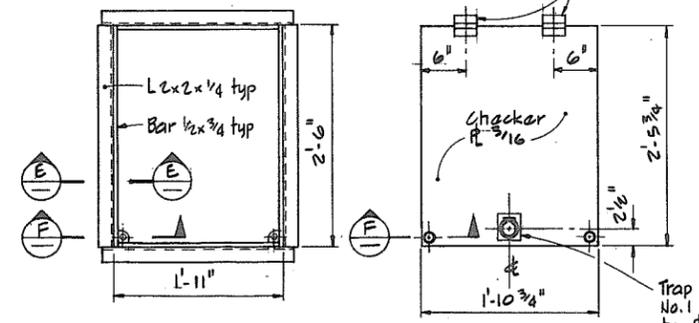
DESIGNED	SURVEYED
DRAWN <i>AR</i>	DATE
CHECKED <i>GCW/TP</i>	FILE NO. <i>028155 - C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>Dec. 1979</i>
DWG. NO. <i>4795-18-114</i>	SHEET <i>645</i> OF <i>645</i> SHEETS



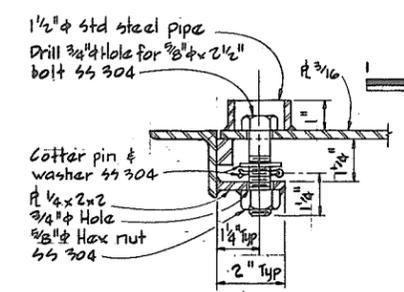
**PLAN**  
**M.C.C. SUPPORT FRAMES**



1 Pair 3 1/2 x 3 1/2 extra-heavy hinges  
STANLEY WORKS OF CANADA #850  
or approved equal. Hinges to be  
shop welded to cover and frame  
and supplied with removable hinge pins

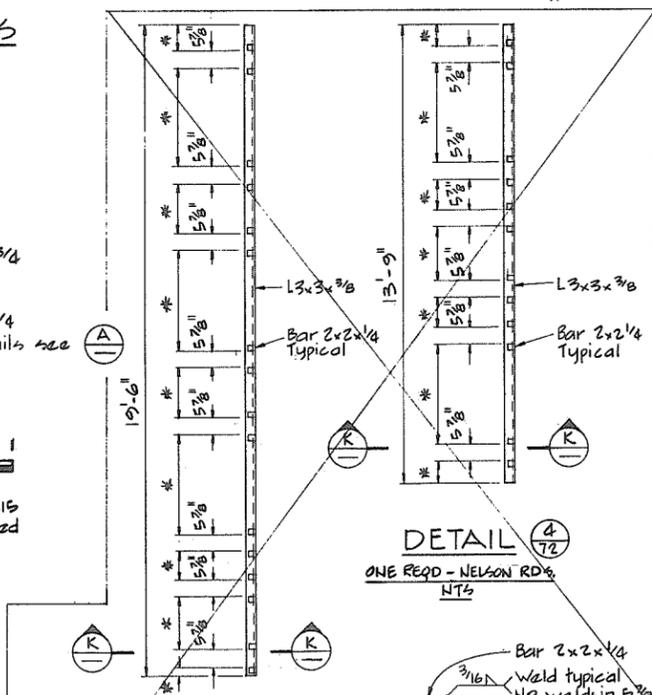


**PUMP SUMP ACCESS FRAME & COVER**  
4- REQD



**SECTION F**  
NTS

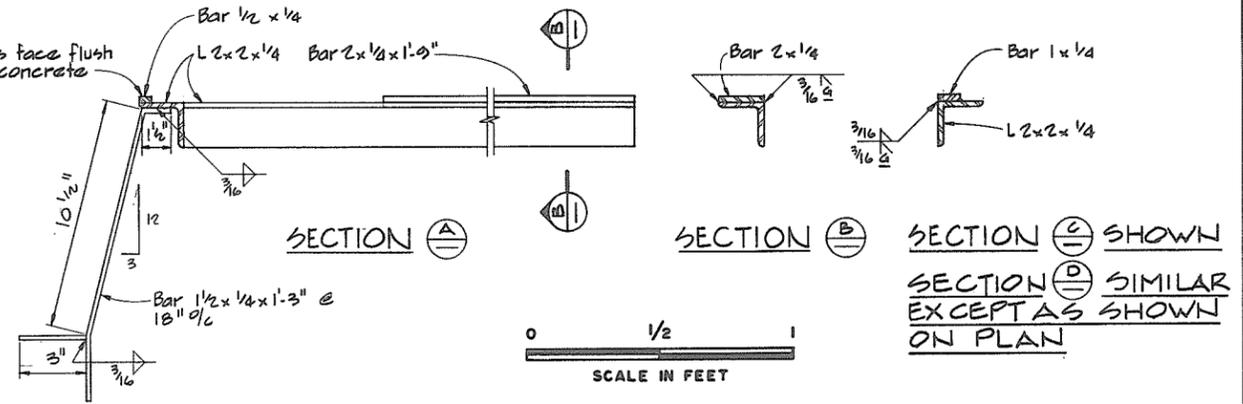
**ANCHOR BOLT**  
78 REQD



**DETAIL 4/72**  
ONE REQD - NELSON RD NTS

**DETAIL 3/53**  
ONE REQD - EWEN RD NTS

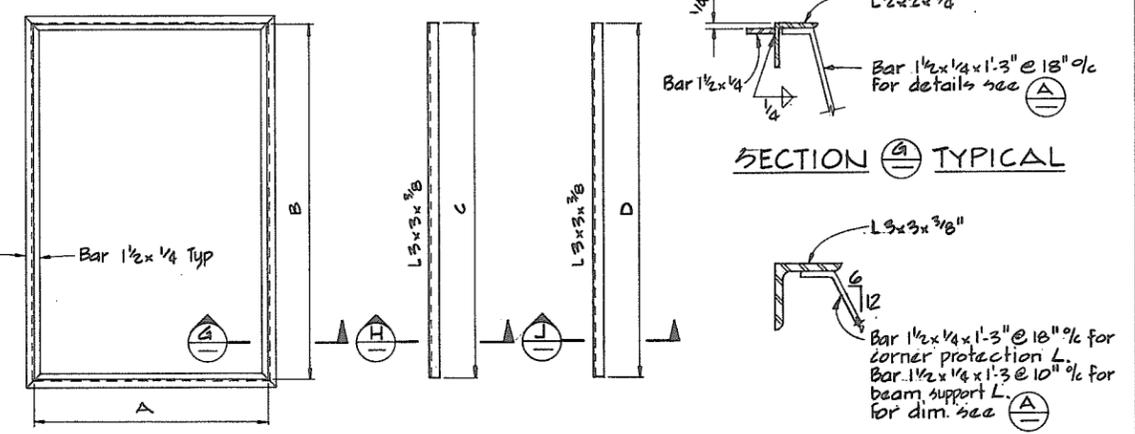
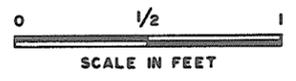
**NOTE**  
Dimension \* to be supplied from  
pump manufacturers drawing



**SECTION A**

**SECTION B**

**SECTION C SHOWN**  
**SECTION D SIMILAR**  
**EXCEPT AS SHOWN**  
**ON PLAN**



**FRAME**  
NTS

**CORNER PROTECTION**  
**BEAM SUPPORT**

Drainage Discharge Structure	L2x2x1/4 Frame		L3x3x3/8 Corner protection		L3x3x3/8 Beam support	
	A	B	C	REQD	D	REQD
No. 6 Road N.	8'-0"	12'-2"	1	2	12'-2"	2
No. 7 Road N.	8'-0"	16'-2"	1	2	16'-2"	2
Queen Road N.	8'-6"	23'-0"	1	2	23'-0"	2
No. 6 Road S.	8'-0"	16'-2"	1	2	16'-2"	2

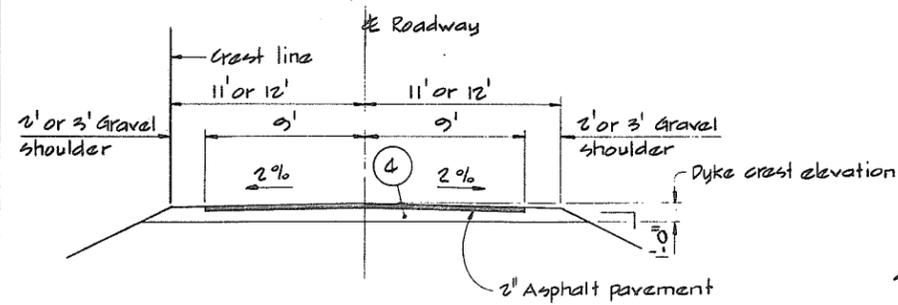
**SECTION H SHOWN**  
**SECTION J SIMILAR**  
**EXCEPT AS NOTED**



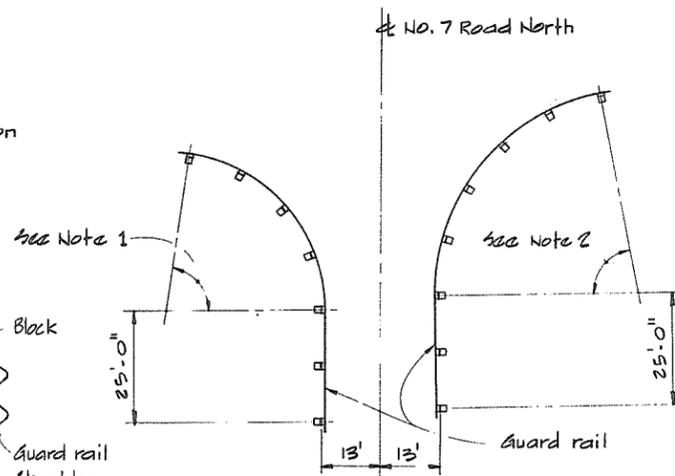
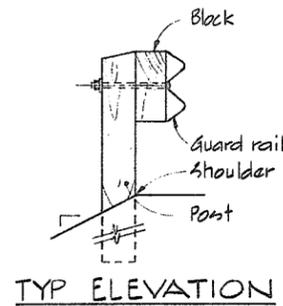
**NOTES**  
• for corrosion protection see Detailed Specifications.  
• for location of embedded steel work see appropriate concrete outline drawings.

<p><b>CBA ENGINEERING LTD.</b> CONSULTING ENGINEERS - VANCOUVER - CANADA</p>	<p>RECOMMENDED <i>P.R. Cameron</i> PROJECT MANAGER</p>	<p>BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1988 AGREEMENT</p>	<p>DESIGNED _____ DRAWN <i>AR</i> CHECKED <i>GA DLC</i> SCALE AS SHOWN DWG. NO. 4795-18-115A</p>
	<p>DATE <i>Nov. 29/79</i></p>	<p>PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B</p>	<p>FILE NO. 028155-C10-18 DATE <i>Dec. 1979</i></p>
<p>APPROVED <i>[Signature]</i> DIRECTOR</p>	<p>MISCELLANEOUS STEEL DETAILS</p>	<p>SHEET 1 OF 2 SHEETS</p>	
<p>NO. BY _____ REVISIONS _____ DATE _____</p>	<p>DATE <i>Nov 29/79</i></p>		

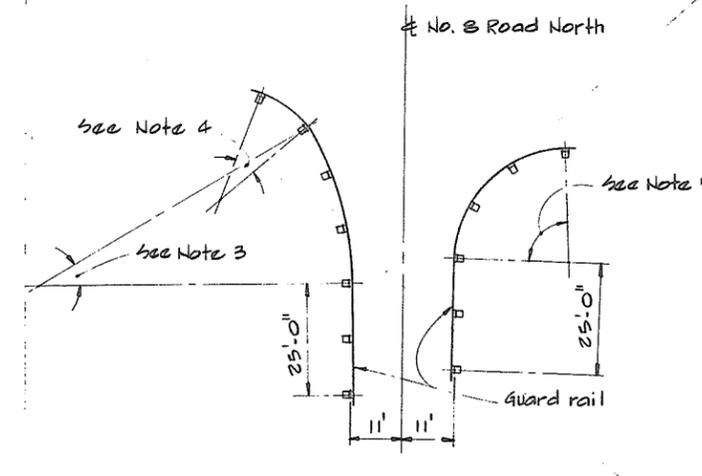




TYPICAL PAVED ROAD DETAIL



GUARD RAIL GEOMETRY FOR No. 7 ROAD NORTH



GUARD RAIL GEOMETRY FOR No. 8 ROAD NORTH



GUARD RAIL NOTES

- Guard rail to be installed in accordance with the Government of British Columbia - Department of Highways Drawing No. 186-15 A-1
- Posts to be located on the ditch side of the road shoulder.
- Note 1 - 50' of guard rail installed on a 35' radius with the posts at approx 12'-4 3/4" centers.
- Note 2 - 62'-6" of guard rail installed on a 45' radius with the posts at approx 12'-5" centers.
- Note 3 - 37'-6" of guard rail installed on a 70' radius with the posts at approx 12'-5 5/8" centers.
- Note 4 - 12'-6" of guard rail installed on a 25' radius with the posts at approx 12'-4 3/8" centers.
- Note 5 - 37'-6" of guard rail installed on a 25' radius with the posts at approx 12'-4 3/8" centers.



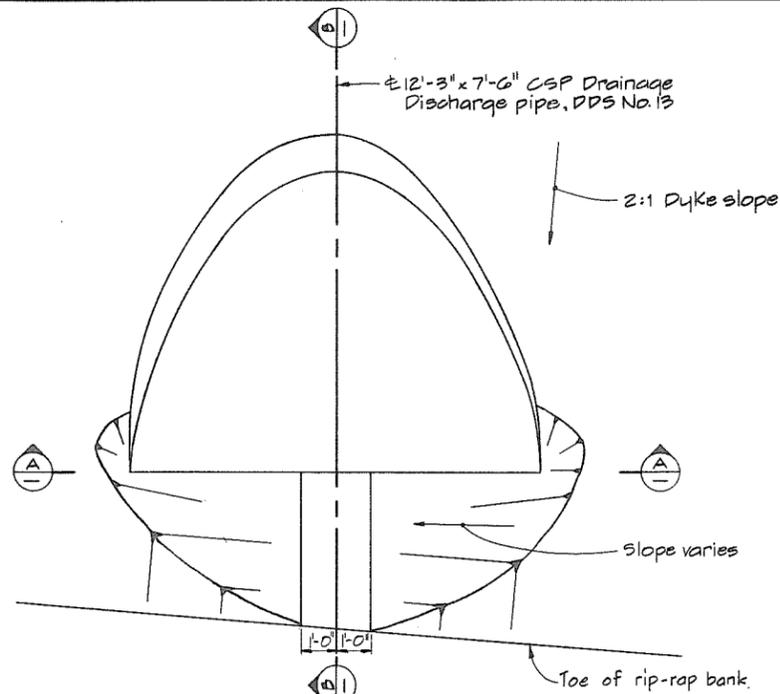
CBA ENGINEERING LTD.  
CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE
A	AR	No. 8 Road guard rail geometry deleted	July 1981

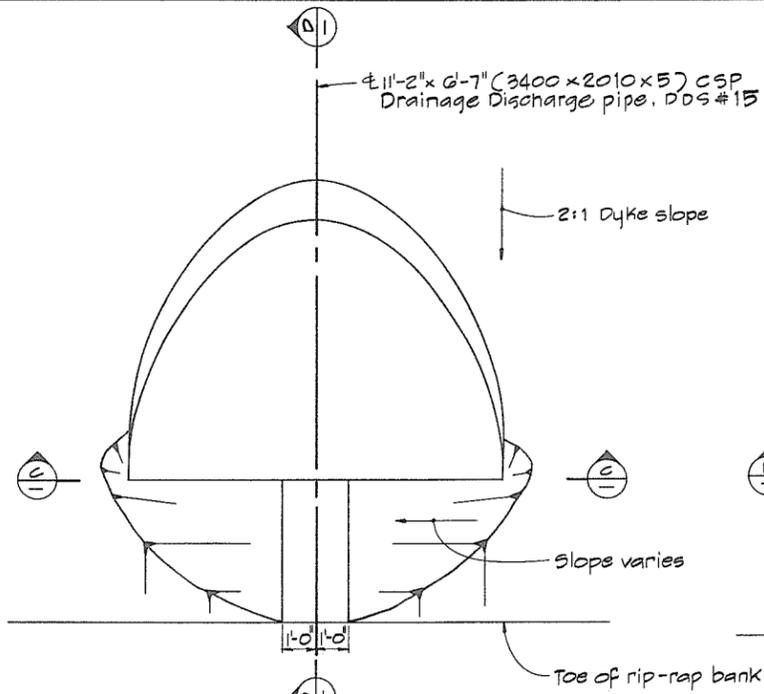
RECOMMENDED <i>R. M. Prescott</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1985 AGREEMENT
DATE <i>Nov. 29/79</i>	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B
APPROVED <i>[Signature]</i> DIRECTOR	MISCELLANEOUS EARTHWORKS DETAILS
DATE <i>Nov 29/79</i>	

DESIGNED	SURVEYED
DRAWN <i>AR</i>	DATE
CHECKED <i>EMH</i>	FILE NO. <i>0281550-C10-18</i>
SCALE <i>AS SHOWN</i>	DATE <i>Dec. 1979</i>
DWG. NO. <i>4795-18-117A</i>	SHEET <i>8</i> OF <i>8</i> SHEETS

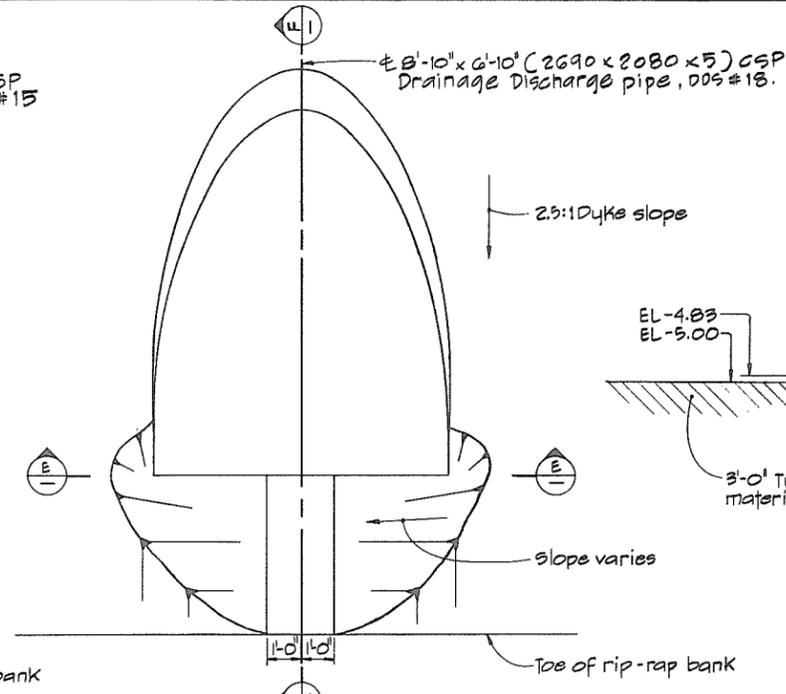
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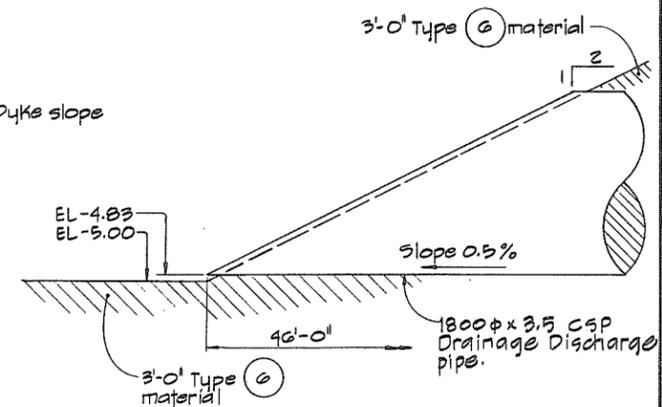
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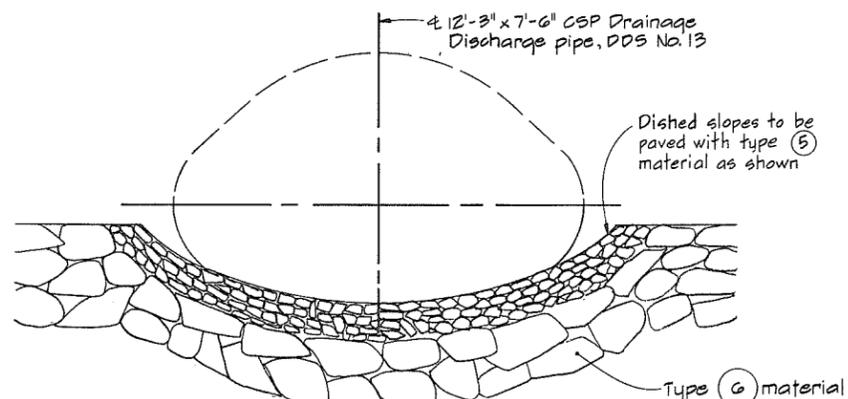
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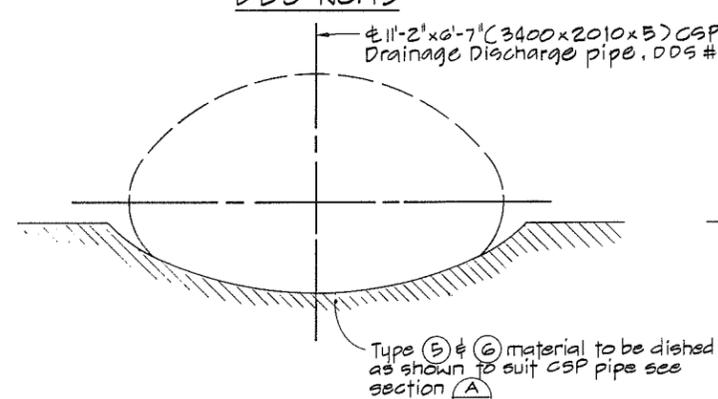
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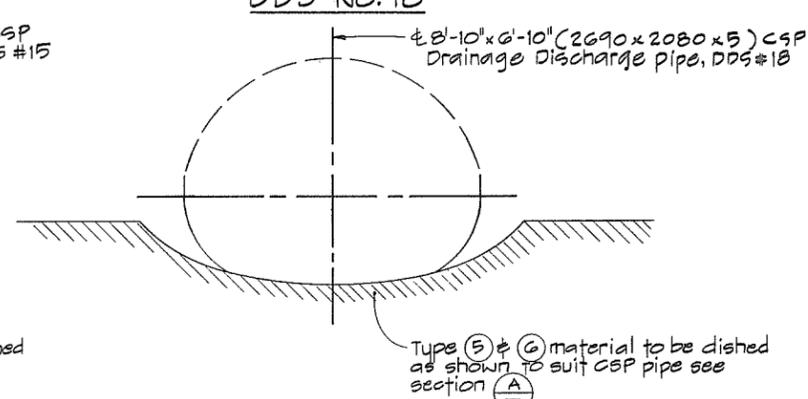
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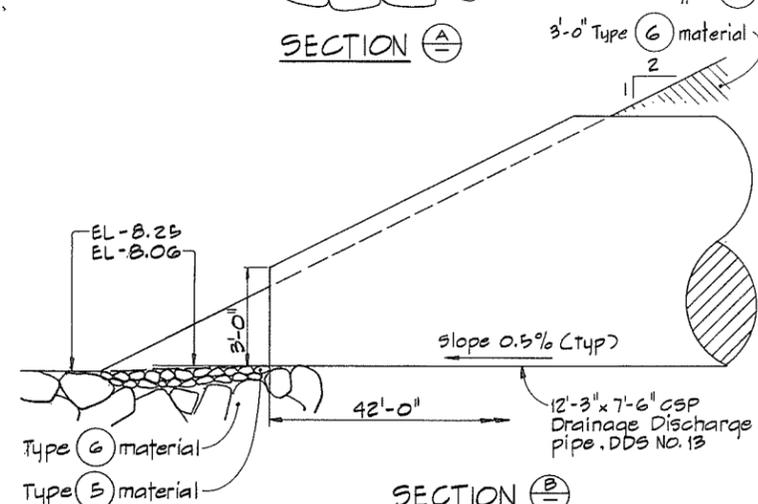
SECTION A-A



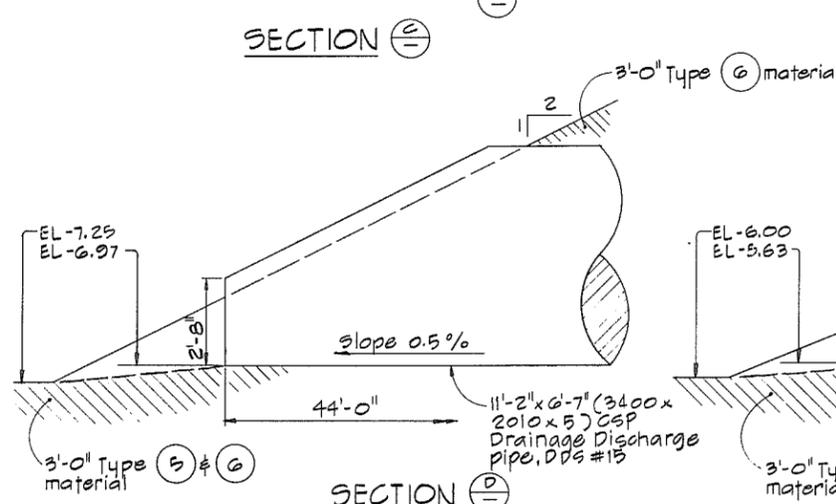
SECTION C-C



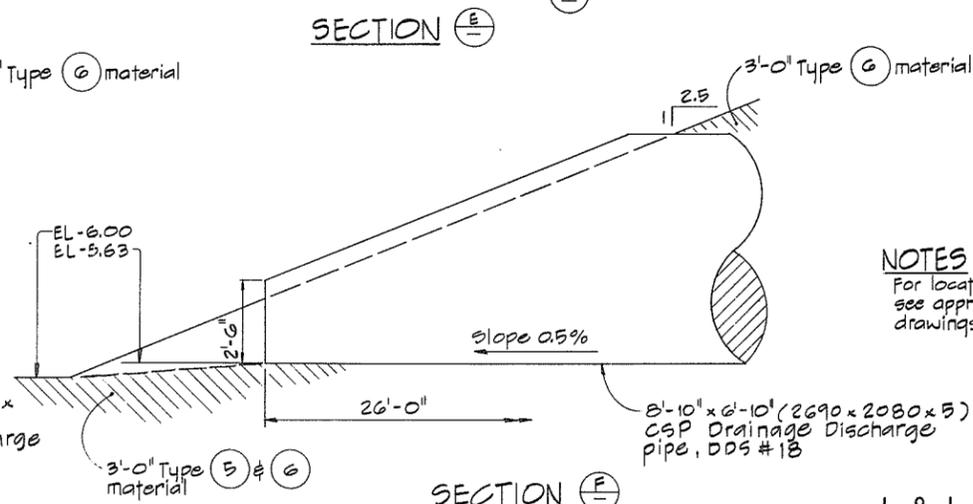
SECTION E-E



SECTION B-B

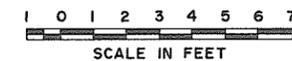


SECTION D-D



SECTION F-F

**NOTES**  
For locations of CSP discharge pipes see appropriate earthworks detail drawings.



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**CBA ENGINEERING LTD.**  
CONSULTING ENGINEERS - VANCOUVER - CANADA

NO.	BY	REVISIONS	DATE	RECOMMENDED <i>R.A. Cameron</i> PROJECT MANAGER	BRITISH COLUMBIA MINISTRY OF THE ENVIRONMENT WATER INVESTIGATIONS BRANCH CANADA - BRITISH COLUMBIA FRASER RIVER FLOOD CONTROL 1968 AGREEMENT	DESIGNED	SURVEYED
				DATE <i>Nov. 29 1979</i>		DRAWN <i>Wm</i>	DATE
A	AR	DDS No 13 details deleted	July 1981	APPROVED <i>G.A. DLG</i> DIRECTOR	PROJECT NO. 3 TOWNSHIP OF RICHMOND CONTRACT NO. 18B	CHECKED <i>G.A. DLG</i>	FILE NO.
				DATE <i>Nov 29 1979</i>	INSTALLATION DETAILS OF CS DRAINAGE DISCHARGE PIPES	SCALE AS SHOWN	DATE Dec. 1979
						DWG. NO. 4795-18-118	SHEET OF SHEETS