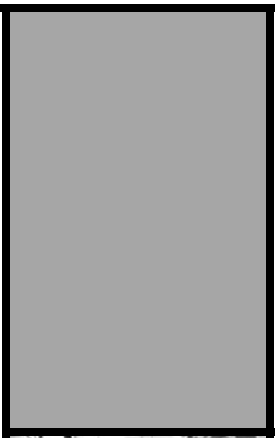

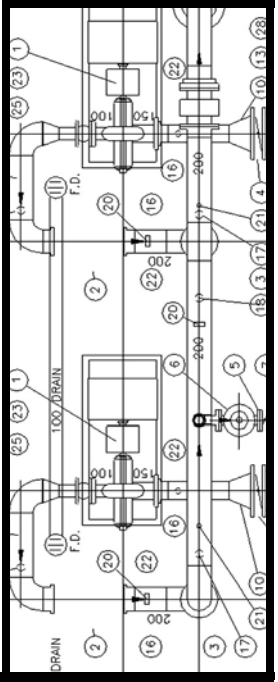

Tender Documents

Village of Pemberton

March 2018

Friendship Pedestrian Bridge

Contract No. 2018-03

ISL Engineering and Land Services

Set # _____

Village of Pemberton

PROJECT TENDER DOCUMENT

CONTRACT #2018-03

Friendship Pedestrian Bridge

Table of Contents

Invitation to Tender

Village of Pemberton
(NAME OF OWNER)

Contract: Friendship Pedestrian Bridge
(TITLE OF CONTRACT)

Reference No.: 2018-03
(OWNER'S CONTRACT REFERENCE NO.)

The *Owner* invites tenders for:

New Bridge Construction-Friendship Pedestrian Bridge
The work in this contract will consist of the construction of a new 117m, 4span, steel girder and precast concrete deck superstructure founded on driven steel piling, cap and associated new approaches. This new structure shall consist of steel piling, prefabricated steel pile caps, precast concrete ballast walls, steel bearing assembly, steel girder splices, precast concrete deck panels, pedestrian and bicycle steel fencing on the main bridge and the approaches coupled with common excavation. The limits of contract for bridge construction will extend 15 meters past the ends of the bridge.

This tender is being issued electronically through the BC Bid website (www.bcbid.gov.bc.ca) where any interested party may download the tender documents directly from the aforementioned website. No registration, tracking or other recording of tender document holders will be performed by the *Owner*. All addenda, amendments or further information will be published on the BC Bid website. It is the sole responsibility of the tenderer to monitor the website regularly to check for updates.

Mandatory Pre-tender Meeting
A mandatory pre-tender meeting is scheduled for this project. Refer to Instructions to Tenderers Part I, Section 4.10 for details.

Tenders will not be accepted by the Village of Pemberton (the "Owner") from any person, corporation or other legal entity (the "Party") if the Party, or any officer or director of a corporate Party, is, or has been within a period of two years prior to the tender closing date, engaged either directly or indirectly through another corporation or legal entity in a legal proceeding initiated in any court against the Owner in relation to any contract with, or works or services provided to, the Owner; and any such Party is not eligible to submit a tender.

The *Contract* is based on the MMCD Platinum Edition.

Tenders are scheduled to close at:

Tender Closing Time: 2:00pm local time
Tender Closing Date: Tuesday April 17, 2018

Tenders will be opened at the above time, date and place in accordance with the tender documents.

Address: Village Office, PO Box 100, 7400 Prospect Street,
Pemberton, BC V0N 2L0
(ADDRESS WHERE TENDERS MUST BE SUBMITTED)

Tim Harris
(NAME OF OWNER'S REPRESENTATIVE)
604-894-6135
(PHONE)

INSTRUCTIONS TO TENDERERS
PART I

TABLE OF CONTENTS Page

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Instructions to Tenderers - Part I

(FOR USE WHEN UNIT PRICES FORM THE BASIS OF PAYMENT – TO BE USED ONLY WITH THE GENERAL CONDITIONS AND OTHER STANDARD DOCUMENTS OF THE UNIT PRICE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS.)

(TO BE READ WITH "INSTRUCTIONS TO TENDERERS - PART II" CONTAINED IN THE EDITION OF THE PUBLICATION "MASTER MUNICIPAL CONSTRUCTION DOCUMENTS" SPECIFIED IN ARTICLE 2.2 BELOW)

Village of Pemberton
(NAME OF OWNER)

Contract: Friendship Pedestrian Bridge
(TITLE OF CONTRACT)

Reference No. 2018-03
(OWNER'S CONTRACT REFERENCE NO.)

1.0 Introduction

1.1 These instructions apply to and govern the preparation of tenders for this *Contract*. The *Contract* is generally for the following work:

New Bridge Construction-Friendship Pedestrian Bridge
The work in this contract will consist of the construction of a new 117m, 4span, steel girder and precast concrete deck superstructure founded on driven steel piling, cap and associated new approaches. This new structure shall consist of steel piling, prefabricated steel pile caps, precast concrete ballast walls, steel bearing assembly, steel girder splices, precast concrete deck panels, pedestrian and bicycle steel fencing on the main bridge and the approaches coupled with common excavation. The limits of contract for bridge construction will extend 15 meters past the ends of the bridge.

1.2 Tenders will not be accepted by the Village of Pemberton (the "*Owner*") from any person, corporation or other legal entity (the "Party") if the Party, or any officer or director of a corporate Party, is, or has been within a period of two years prior to the tender closing date, engaged either directly or indirectly through another corporation or legal entity in a legal proceeding initiated in any court against the *Owner* in relation to any contract with, or works or services provided to, the *Owner*; and any such Party is not eligible to submit a tender.

1.3 Direct all inquiries regarding the *Contract*, to:

Tim Harris
Manager of Operations and Development Services
(NAME AND POSITION OF INDIVIDUAL WHO WILL ANSWER INQUIRIES)

Address: Village Office, PO Box 100, 7400 Prospect Street, Pemberton, BC V0N 2L0

Phone: 604 894 6135
Fax: 604 894 6136

2.0 Tender Documents

2.1 The tender documents which a tenderer should review to prepare a tender consist of all of the *Contract Documents* listed in Schedule 1 entitled "Schedule of Contract Documents". Schedule 1 is attached to the Agreement which is included as part of the tender package. The *Contract Documents* include the drawings listed in Schedule 2 to the Agreement, entitled "List of Drawings".

2.2 A portion of the *Contract Documents* are included by reference. Copies of these documents have not been included with the tender package. These documents are the Instructions to Tenderers - Part II, General Conditions, Specifications and Standard Detail Drawings. They are those contained in the publication entitled "Master Municipal Construction Documents - General Conditions, Specifications and Standard Detail Drawings". The MMCD Platinum Edition is applicable to this *Contract* plus all MMCD Supplemental Updates up to and including 2016-11-18. All sections of this publication are by reference included in the *Contract Documents*.

2.3 Any additional information made available to tenderers prior to the *Tender Closing Time* by the *Owner* or representative of the *Owner*, such as geotechnical reports or as-built plans, which is not expressly included in Schedule 1 or Schedule 2 to the Agreement, is not included in the *Contract Documents*. Such additional information is made available only for the assistance of tenderers who must make their own judgement about its reliability, accuracy or completeness and neither the *Owner* nor any representative of the *Owner* gives any guarantee or representation that the additional information is reliable, accurate or complete.

3.0 Submission of Tenders

3.1 Tenders must be submitted in a sealed envelope, marked on the outside with the above *Contract* Title and Reference No., and must be received by the office of:

Manager of Operations and Development Services
(TITLE OF POSITION)

on or before:
Tender Closing Time: 2:00pm local time

Tender Closing Date: Tuesday April 17, 2018

at
Address: Village of Pemberton
PO Box 100, 7400 Prospect Street,
Pemberton, BC V0N 2L0

3.2 Late tenders will not be accepted or considered, and will be returned unopened.

4.0 Supplemental Instructions to Tenderers

4.1

Par. #	Title	Action
12.1	Amendment of Tenders	Change "hand, mail or fax" to "hand" and add "An amendment by email or fax will not be accepted."
15.4	Award	Insert the following clause: "The lowest or any tender will not necessarily be accepted. Without limiting the generality of the foregoing, any tender which is incomplete, obscure or irregular may be rejected, any tender having erasures or corrections in the Form of Tender: Appendix 1, *Schedule of Quantities & Prices* may be rejected, any tender in which unit prices are omitted or in which unit prices are obviously unbalanced may be rejected, any tender accompanied by an insufficient bond may be rejected, any tender that has any deletions, alterations, or changes in the *Contract Documents* as listed in Schedule 1 and 2 of the *Agreement* may be rejected." Basis of Contract Award & Acceptance In reviewing tenders and awarding the *Contract* for this project the *Owner* may consider not only the tendered prices but the overall value that the tender represents to the *Owner* based on quality, service and price, and the tenderer's experience and qualifications considered essential by the *Owner* for

the satisfactory completion of this type and size of project, including:

a) Bonding capability.

b) Financial capability.

c) Previous completed projects of this type and/or size.

d) Major projects now being undertaken by the tenderer.

e) Key office and site personnel to be assigned by the tenderer to this project.

f) Time for completion of the *Work*.

g) The past experience of the *Owner* and/or other project owners with respect to the tenderer's performance in completing projects in a timely, efficient and satisfactory manner, the tenderer's methods of doing business and the tenderer's ability to establish and maintain a good working relationship with a project owner.

The *Owner* reserves the right to award the *Contract* based on the above pre-requisites and to reject without further consideration, any tender which in its opinion, does not meet the criteria it considers essential for this project.

The tenderer, by submitting a tender, agrees that it will not make a claim against the *Owner*, for whatever reason, relating to the tender, the tender documents, or the competitive tender process. The tenderer, by submitting a tender, waives any claim or recovery for loss of profits or any prospective damages whatsoever if no *Contract* is entered into with the tenderer.

4.2 Form of Submission

The tenderer must submit their pricing on the Form of Tender provided in this document.

4.3 Note that the Master Municipal Construction Document must be purchased separately from:

MMCDA
102-211 Columbia St
Vancouver BC V6A 2R5
Phone: 604-681-0295
Fax: 604-681-4545
admin@mmcd.net

4.4 Optional Work

Clause 17.0 Optional Work – Instructions to Tenderers. Change "GC 1.41" to "GC 1.48".

4.5 Contract Award

Award of this *Contract* is subject to availability of funding. The *Owner* may choose to construct all, portions or none of the project.

4.6 **The Village of Pemberton requires that all excavations utilize proper shoring procedures as per Part 20 of the Occupational Health and Safety Regulation to the Workers Compensation Act for all excavation depth of 1.2 metres and over. Trench certification by a qualified professional will not be acceptable.**

4.7 Contractor is to familiarize himself/herself with IT Part II – Section 10.0

4.8 **Hours of Work**

The work shall take place during the hours of 8:00 AM to 6:00 PM, Monday through Friday.

No work on Saturdays, Sundays or Statutory Holidays will be permitted except in case of emergency and then only with written permission of the Contract Administrator and to such extent as he deems necessary.

4.9 **Overtime Work**

The Contractor should not schedule construction work requiring inspection in excess of the standard 40-hour working week.

With approval of the Contract Administrator, extended working hours on working days will be permitted for operations which must reasonably be completed on that date. The Contractor will be charged for the costs of inspection required during overtime hours, during weekends and during statutory holidays. Overtime hours will be determined in accordance with the Employment Standards as set by the Province of B.C.

4.10 Mandatory Pre Tender Meeting

A **mandatory** pre-tender meeting is scheduled for 10:00am, Wednesday March 28, 2018. Attendees are to meet at the Friendship Bridge Site.

Form of Tender

(FOR USE WHEN UNIT PRICES FORM THE BASIS OF PAYMENT - TO BE USED ONLY WITH THE GENERAL CONDITIONS AND OTHER STANDARD DOCUMENTS OF THE UNIT PRICE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS.)

Village of Pemberton
(NAME OF OWNER)

Contract: Friendship Pedestrian Bridge
(TITLE OF CONTRACT)

Reference No. 2018-03
(OWNER'S CONTRACT REFERENCE NO.)

TO OWNER:

1 WE, THE UNDERSIGNED:

1.1 have received and carefully reviewed all of the *Contract Documents*, including the Instructions to Tenderers, the specified edition of the "Master Municipal Construction Documents - General Conditions, Specifications and Standard Detail Drawings" and the following Addenda:

_____

_____

_____
(ADDENDA, IF ANY)

1.2 have full knowledge of the *Place of the Work*, and the *Work* required; and

1.3 have complied with the Instructions to Tenderers; and

2 ACCORDINGLY WE HEREBY OFFER:

2.1 to perform and complete all of the *Work* and to provide all the labour, equipment and material all as set out in the *Contract Documents*, in strict compliance with the *Contract Documents*; and

2.2 to achieve *Substantial Performance* of the *Work* on or before October 15, 2018; and

2.3 to do the *Work* for the price, which is the sum of the products of the actual quantities incorporated into the *Work* and the appropriate unit prices set out in Appendix 1, the "*Schedule of Quantities and Prices*", plus any lump sums or specific prices and adjustment amounts as provided by the *Contract Documents*. For the purposes of tender comparison, our offer is to complete the *Work* for the "*Tender Price*" as set out on Appendix 1 of this Form of Tender. Our *Tender Price* is based on the estimated quantities listed in the *Schedule of Quantities and Prices*, and excludes *GST*.

3 WE CONFIRM:

3.1 that we understand and agree that the quantities as listed in the *Schedule of Quantities and Prices* are estimated, and that the actual quantities will vary.

3.2 that we understand and agree that the *Owner* is in no way obligated to accept this tender.

4 WE CONFIRM:

4.1 that the following Appendices are attached to and form a part of this tender:

4.1.1 the Appendices as required by paragraph 5.3 of the Instructions to Tenderers - Part II; and

4.1.2 the *Bid Security* as required by paragraph 5.2 of the Instructions to Tenderers - Part II.

4.1.3 the *Consent of Security* - Performance, Labour and Materials Payment filled and signed.

5 WE AGREE:

5.1 that this tender will be irrevocable and open for acceptance by the *Owner* for a period of 60 calendar days from the day following the *Tender Closing Date and Time*, even if the tender of another tenderer is accepted by the *Owner*. If within this period the *Owner* delivers a written notice ("*Notice of Award*") by which the *Owner* accepts our tender we will:

5.1.1 within 15 *Days* of receipt of the written *Notice of Award* deliver to the *Owner*:

a) a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the *Contract Price*, covering the performance of the *Work* including the *Contractor's* obligations during the *Maintenance Period*, issued by a surety licensed to carry on the business of suretyship in the province of British Columbia, and in a form acceptable to the *Owner*;

b) a *Construction Schedule*, as provided by GC 4.6.1;

c) a "clearance letter" indicating that the tenderer is in WSBC compliance;

d) a copy of the insurance policies as specified in GC 24 indicating that all such insurance coverage is in place and;

5.1.2 within 2 *Days* of receipt of written "*Notice to Proceed*", or such longer time as may be otherwise specified in the *Notice to Proceed*, commence the *Work*; and

5.1.3 sign the *Contract Documents* as required by GC 2.1.2.

6 WE AGREE:

6.1 that, if we receive written *Notice of Award* of this *Contract* and, contrary to paragraph 5 of this Form of Tender, we:

6.1.1 fail or refuse to deliver the documents as specified by paragraph 5.1.1 of this Form of Tender; or

6.1.2 fail or refuse to commence the *Work* as required by the *Notice to Proceed*,

then such failure or refusal will be deemed to be a refusal by us to enter into the *Contract* and the *Owner* may, on written notice to us, award the *Contract* to another party. We further agree that, as full compensation on account of damages suffered by the *Owner* because of such failure or refusal, the *Bid Security* shall be forfeited to the *Owner*, in an amount equal to the face value of the *Bid Security*.

7 OUR ADDRESS is as follows:

_____

_____

_____

Phone: _____

Fax: _____

Attention: _____

Email Address: _____

This tender is executed this _____ day of _____, 2018.

Contractor:

_____

(FULL LEGAL NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL)

_____

(AUTHORIZED SIGNATORY)

_____

(AUTHORIZED SIGNATORY)

Form of Tender - Appendix 1
Village of Pemberton

Friendship Pedestrian Bridge
2018-03

SCHEDULE OF QUANTITIES AND PRICES - TENDER
(All prices and *Quotations* inlcuding the *Contract Price* shall include all *Taxes* except GST)

Tender Summary Sheet

		Amount
1.0	New Bridge Construction - Friendship Pedestrian Bridge	

Subtotal	$	-
GST @ 5%	$	-
TENDER PRICE INCLUDING GST	$	-

New Bridge Construction - Friendship Pedestrian Bridge

ITEM NO.	MMCD REF.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	**01 20 01S**	**MOBILIZATION AND DEMOBILZATION**				
1.1	1.1.1S	Mobilization & Demobilization	L.S.	1		$ -
2	**01 52 01S**	**TEMPORARY STRUCTURES**				
2.1	1.6.1S	Site Office	L.S.	1		$ -
3	**01 54 00S**	**GENERAL REQUIREMENTS**				
3.1	4.1S	Contract Documentation Submissions	L.S.	1		$ -
3.2	24.2S	Bridge End Fills	cu.m.	100		$ -
4	**01 55 00S**	**TRAFFIC CONTROL, VEHICLE ACCESS AND PARKING**				
4.1	1.5.1S	Traffic Management Plan & Traffic Control Plan	L.S.	1		$ -
5	**01 57 01S**	**ENVIRONMENTAL PROTECTION**				
5.1	1.6.2S	Construction Environmental Management Plan Submission	L.S.	1		$ -
5.2	1.6.3S	Tree and Vegetation Removals	L.S.	1		$ -
6	**03 30 53S**	**CAST-IN-PLACE CONCRETE**				
6.1	1.5.6S	Supply, Reinforcement & concrete for the 16 Sona tubes at the approaches	cu.m.	1.0		$ -
7	**03 41 00S**	**PRECAST STRUCTURAL CONCRETE MEMBERS**				
7.1	1.11S	Supply & Fabricate of Precast Concrete Deck Panels	L.S.	1		$ -
7.2	1.11S	Supply & Fabricate of Precast Concrete Ballast Wall	L.S.	1		$ -
7.3	1.12S	Shipping & Erection of Precast Concrete Deck Panels	L.S.	1		$ -
7.4	1.12S	Shipping & Erection of Precast Ballast Wall	L.S.	1		$ -
8	**05 12 33S**	**STRUCTURAL STEEL FOR BRIDGES**				
8.1	1.2.4S	Steelwork for Substructures (Piers & Abutments)	L.S.	1		$ -
8.2	1.2.4S	Steelwork for Substructures (Girders, Splices,Diaphragms, Stiifeners, Gusset Plates & Bracing)	L.S.	1		$ -
8.3	1.2.5S	Steelwork for Deck Joints	m	20		$ -
8.4	1.2.6S	Steelwork for Deck Railing/Fencing	L.S.	1		$ -
8.5	1.2.6S	Steelwork for Deck Railing/Fencing anchored to precast concrete deck	L.S.	1		$ -
9	**05 12 24S**	**BEARING ASSEMBLIES**				
9.1	1.2	Bearing Assemblies	L.S.	1		$ -
10	**31 37 10**	**RIPRAP**				
10.1	1.4.1S	Supply and place Class 250kg Rip Rap, c/w geotextile and related excavation and disposal	cu.m.	200		$ -

New Bridge Construction - Friendship Pedestrian Bridge

ITEM NO.	MMCD REF.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11	**31 62 16.19S**	**STEEL PILES**				
11.1	1.1S	Mobilization & Fixed Costs	L.S.	1		$ -
11.2	1.1S	Supply & Transport 406 diam. x 12.7 Piling	m	264.00		$ -
11.3	1.1S	Install of 406 diam x12.7 Piling	m	264.00		$ -
11.4	1.1S	**OPTIONAL:** Additional Piling Splices	each	1		$ -
11.5	1.1S	**OPTIONAL:** Additional Pile Supply & Transport	m	1		$ -
11.6	1.1S	**OPTIONAL:** Additional Pile Installation	m	1		$ -
12	**32 11 16.1**	**GRANULAR SUBBASE**				
12.1	1.4.2	75mm minus select granular sub base at the approaches	tonne	100		$ -
13	**32 11 23**	**GRANULAR BASE**				
13.1	1.4.1	19mm minus granular base (surfacing material)	tonne	120		$ -
					Subtotal Amount	

Form of Tender - Appendix 2

CONTRACT #2018-03

Friendship Pedestrian Bridge

PRELIMINARY CONSTRUCTION SCHEDULE

(See paragraph 5.3.2 of the Instructions to Tenderers - Part II)

INDICATE SCHEDULE WITH BAR CHART WITH MAJOR ITEM DESCRIPTIONS AND TIME

MILESTONE DATES: Substantial Performance by October 15, 2018

ACTIVITY	CONSTRUCTION SCHEDULE									

Tenderer's Initials _____

Form of Tender - Appendix 3

CONTRACT #2018-03

Friendship Pedestrian Bridge

EXPERIENCE OF SUPERINTENDENT

(See paragraph 5.3.3 of the Instructions to Tenderers - Part II)

Name: _____

Experience:

Dates: _____
Project Name: _____
Responsibility: _____
_____
_____
References: _____

Dates: _____
Project Name: _____
Responsibility: _____
_____
_____
References: _____

Dates: _____
Project Name: _____
Responsibility: _____
_____
_____
References: _____

Form of Tender - Appendix 4

CONTRACT #2018-03

Friendship Pedestrian Bridge

COMPARABLE WORK EXPERIENCE

(See paragraph 5.3.4 of the Instructions to Tenderers - Part II)

PROJECT	OWNER/ CONTRACT NAME	PHONE NUMBER	WORK DESCRIPTION	VALUE ($)

Form of Tender - Appendix 5

CONTRACT #2018-03

Friendship Pedestrian Bridge

SUBCONTRACTORS

(See paragraph 5.3.5 of the Instructions to Tenderers - Part II)

TENDER ITEM	TRADE	SUBCONTRACTOR NAME	PHONE NUMBER

Agreement

Between Owner and Contractor

(FOR USE WHEN UNIT PRICES FORM THE BASIS OF PAYMENT - TO BE USED ONLY WITH THE GENERAL CONDITIONS AND OTHER STANDARD DOCUMENTS OF THE UNIT PRICE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS.)

THIS AGREEMENT made in duplicate this _____ day of _____, 2018.

Contract: Friendship Pedestrian Bridge
(TITLE OF CONTRACT)

Reference No. 2018-03
(OWNER'S CONTRACT REFERENCE NO.)

BETWEEN:

The Village of Pemberton
(NAME OF OWNER)

(the "*Owner*")

AND:

_____

_____

_____
(NAME AND OFFICE ADDRESS OF CONTRACTOR)

(the "*Contractor*")

The *Owner* and the *Contractor* agree as follows:

1 THE WORK - START/COMPLETION DATES

1.1 The *Contractor* will perform all *Work* and provide all labour, equipment and material and do all things strictly as required by the *Contract Documents*.

1.2 The *Contractor* will commence the *Work* in accordance with the *Notice to Proceed*. The *Contractor* will proceed with the *Work* diligently, will perform the *Work* generally in accordance with the *Construction Schedules* as required by the *Contract Documents* and will achieve *Substantial Performance* of the *Work* on or before October 15, 2018 subject to the provisions of the *Contract Documents* for adjustments to the *Contract Time*.

1.3 Time shall be of the essence of the *Contract*.

2 CONTRACT DOCUMENTS

2.1 The "*Contract Documents*" consist of the documents listed or referred to in Schedule 1, entitled "Schedule of Contract Documents", which is attached and forms a part of this Agreement, and includes any and all additional and amending documents issued in accordance with the provisions of the *Contract Documents*. All of the *Contract Documents* shall constitute the entire *Contract* between the *Owner* and the *Contractor*.

2.2 The *Contract* supersedes all prior negotiations, representations or agreements, whether written or oral, and the *Contract* may be amended only in strict accordance with the provisions of the *Contract Documents*.

3 CONTRACT PRICE

3.1 The price for the *Work* ("*Contract Price*") shall be the sum in Canadian dollars of the following:

a) the product of the actual quantities of the items of *Work* listed in the *Schedule of Quantities and Prices* which are incorporated into or made necessary by the *Work* and the unit prices listed in the *Schedule of Quantities and Prices*; plus

b) all lump sums, if any, as listed in the *Schedule of Quantities and Prices,* for items relating to or incorporated into the *Work*; plus

c) any adjustments, including any payments owing on account of *Changes* and agreed to *Extra Work*, approved in accordance with the provisions of the *Contract Documents*.

3.2 The *Contract Price* shall be the entire compensation owing to the *Contractor* for the *Work* and this compensation shall cover and include all profit and all costs of supervision, labour, material, equipment, overhead, financing, and all other costs and expenses whatsoever incurred in performing the *Work*.

4 PAYMENT

4.1 Subject to applicable legislation and the provisions of the *Contract Documents*, the *Owner* shall make payments to the *Contractor*.

4.2 If the *Owner* fails to make payments to the *Contractor* as they become due in accordance with the terms of the *Contract Documents* then interest calculated at 2% per annum over the prime commercial lending rate of the Royal Bank of Canada on such unpaid amounts shall also become due and payable until payment. Such interest shall be calculated and added to any unpaid amounts monthly.

5 RIGHTS AND REMEDIES

5.1 The duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

5.2 Except as specifically set out in the *Contract Documents*, no action or failure to act by the *Owner*, *Contract Administrator* or *Contractor* shall constitute a waiver of any of the parties' rights or duties afforded under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach under the *Contract*.

6 NOTICES

6.1 Communications among the *Owner*, the *Contract Administrator* and the *Contractor*, including all written notices required by the *Contract Documents*, may be delivered by hand, or by email or fax, or by pre-paid registered mail to the addresses as set out below:

The *Owner*:

Village of Pemberton
PO Box 100,
7400 Prospect Street
Pemberton, BC
V0N 2L0

Email: tharris@pemberton.ca
Fax: 604 894 6136
Attention: Tim Harris

The *Contractor*:

_____
_____
_____
Email: _____
Fax: _____ Attention: _____

The *Contract Administrator*:
ISL Engineering and Land Services Ltd
#101-38026 Second Ave.
Squamish B.C. V8B 0C3
Email: gschulz@islengineering.com
Fax: 604-815-4647 Attention: Graham Schulz

6.2 A communication or notice that is addressed as above shall be considered to have been received:

a) immediately upon delivery, if delivered by hand; or

b) immediately upon transmission if sent and received by email; or

c) after 5 *Days* from date of posting if sent by registered mail.

6.3 The *Owner* or the *Contractor* may, at any time, change its address for notice by giving written notice to the other at the address then applicable. Similarly if the *Contract Administrator* changes its address for notice then the *Owner* will give or cause to be given written notice to the *Contractor*.

6.4 The sender of a notice by email or fax assumes all risk that the email or fax will be received by the *Owner*.

7 GENERAL

7.1 This *Contract* shall be construed according to the laws of British Columbia.

7.2 The *Contractor* shall not, without the express written consent of the *Owner*, assign this *Contract*, or any portion of this *Contract*.

7.3 The headings included in the *Contract Documents* are for convenience only and do not form part of this *Contract* and will not be used to interpret, define or limit the scope or intent of this *Contract* or any of the provisions of the *Contract Documents*.

7.4 A word in the *Contract Documents* in the singular includes the plural and, in each case, vice versa.

7.5 This Agreement shall enure to the benefit of and be binding upon the parties and their successors, executors, administrators and assigns.

IN WITNESS WHEREOF the parties hereto have executed this Agreement the day and year first written above.

Contractor:

_____
(FULL LEGAL NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL)

_____
(AUTHORIZED SIGNATORY)

_____
(NAME AND TITLE)

Owner:

Village of Pemberton
(FULL LEGAL NAME OF OWNER)

_____
(AUTHORIZED SIGNATORY)

_____
(NAME AND TITLE)

Schedule 1

Schedule of Contract Documents

(INCLUDE IN LIST ALL DOCUMENTS INCLUDING, IF ANY, SUPPLEMENTARY GENERAL CONDITIONS, SUPPLEMENTARY SPECIFICATIONS, SUPPLEMENTARY STANDARD DETAIL DRAWINGS)

#2018-03

Friendship Pedestrian Bridge

The following is an exact and complete list of the *Contract Documents*, as referred to in Article 2.1 of the Agreement.

NOTE: The documents noted with "*" are contained in the "Master Municipal Construction Documents - General Conditions, Specifications and Standard Detail Drawings", Platinum Edition dated 2009. All sections of this publication are included in the *Contract Documents* including all Platinum Supplementary Updates published by MMCD up to and including 2016-11-18.

1 Agreement, including all Schedules;
2 Supplementary General Conditions, if any;
3 General Conditions*;
4 Supplementary Specifications, if any;
5 Specifications*;
6 Supplementary Standard Detail Drawings, if any;
7 Standard Detail Drawings*;
8 Executed Form of Tender, including all Appendices;
9 Drawings listed in Schedule 2 to the Agreement –"List of Drawings";
10 Instructions to Tenderers - Part I;
11 Instructions to Tenderers - Part II*;
12 The following Addenda: _____
_____
_____
_____

13 MMCD Supplementary Updates
2016-11-18
2015-11-02
2014-09-19
2014-07-15
2014-02-28
2013-06-13
2012-08-07
2012-06-08
2012-05-30
2011-08-08
2011-08-04
PVC C900 Pipe Specification Clarification
2010-05-18
2010-03-25
2009-11-19
As provided on website as of tender closing date: www.mmcd.net

Schedule 2

List of Drawings

(COMPLETE LISTING OF ALL DRAWINGS, PLANS AND SKETCHES THAT ARE PART OF THE CONTRACT DOCUMENTS)

#2018-03

Friendship PedestrianBridge

TITLE	DRAWING NO.	DATE	REVISION DATE	REVISION NO.
FRIENDSHIP TRAIL PEDESTRIAN BRIDGE COVER SHEET				A
SPECIFICATION NOTES	17133-450-01	03/13/2018	06/2017	A
SITE PLAN & PROFILES	17133-450-02	03/13/2018	06/2017	A
SITE SECTIONS	17133-450-03	03/13/2018	06/2017	A
GENERAL ARRANGEMENT PLAN, PROFILES & SECTIONS	17133-450-04	03/12/2018	06/2017	A
STEEL GIRDER DETAILS	17133-450-05	03/13/2018	06/2017	A
SPLICE & BEARING DETAILS	17133-450-06	03/13/2018	06/2017	A
PILE DETAILS	17133-450-07	03/13/2018	06/2017	A
CONCRETE PLAN AND DETAILS	17133-450-08	03/13/2018	03/2018	A
CONCRETE DECK PLAN AND DETAIL	17133-450-09	03/13/2018	03/2018	A
CONCRETE PLANS AND DETAIL SHEET 2	17133-450-10	03/13/2018	03/2018	A
CONCRETE SECTIONS	17133-450-11	03/13/2018	03/2018	A
BALLAST WALL SECTIONS AND DETAILS	17133-450-12	03/13/2018	03/2018	A
SIEVE ANALYSIS REPORTS	17133-450-13	03/13/2018	03/2018	A

Supplementary Specifications

These Supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents, Volume II, Platinum Edition 2009.

Reference No.

SUPPLEMENTARY SPECIFICATIONS INDEX

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 03 – CONCRETE

DIVISION 05 – METALS

DIVISION 31 – EARTHWORKS

1.0 Reference Specifications for Bridge Construction

.1S The Provincial Ministry of Transportation and Infrastructure has produced a 2016 Standard Specifications for Highway Construction (Volume 1 & 2), which applies to heavy civil materials and bridge construction and will be referenced in this document as SS. Description of the supply, shipping, installation and payment of the structural materials are described in this publication. To view or to obtain a digital copy of theses specifications go to:

http://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/standard-specifications-for-highway-construction

END OF SECTION

1.1 Measurement and Payment

.1S Payment for all work related to mobilization and demobilization, including trucking, staging to complete all work under this Contract will be on a lump sum basis. The Contractor will be entitled to 50% of the payment item on the first progress payment. On award of Substantial Performance, the Contractor will be entitled to the remaining 50% of the payment item.

END OF SECTION

1.7 Recording Actual Site Conditions .5S

The Contractor will keep one set of drawings on-site that will be marked up in red ink identifying all work completed and any changes made during the construction. This copy will be turned over to the Contract Administrator within 5 days of completion of all works.

The Contractor shall be responsible for the detailed setting out of the work and recording all data required to compile record drawings. All test results and reports shall be sent to the Contract Administrator no more than five (5) days after the tests have been performed.

Payment for recording data for record drawings shall be considered incidental to the work performed and no additional payment will be made to the Contractor.

END OF SECTION

1.3	**Site Office**	.2S	The Contractor will provide a site office near the bridge location. The Site Office will provide a designated meeting space for the Owner, the Contractor and the Contract Administrator. The Contractor shall supply, maintain and remove a Type A Site Office in accordance with SS 145.18.01.
1.6	**Payment**	.1S	***(replace with)***
			Payment for the Site Office will be made at the Lump Sum Price bid in accordance with SS 145.18.01.
		.2S	All required temporary structures during construction shall be considered as incidental to work being performed under this Contract and no separate payment will be made for this work.
1.7	**Temporary Structures into the Waterway**	.1S	A Temporary structure may be required to install the in-stream piling. The Contractor will be responsible for submitting a Temporary Access Structure Plan to access the piers for pile driving and erection procedures. The Temporary Access Structure Plan will be submitted to the Contract Administrator and the Environmental Monitor 14 days prior to installation for review and approval.
			The Temporary Structure Plan will include the description and details for the intended use, time required for operation or use, structure details, the erection procedure and the dismantling process and procedure

END OF SECTION

1.0 Master Municipal Construction Documents

.1S The Supplementary Specifications contained herein must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents, Volume II (**Platinum Edition 2009**) as identified in the Instructions to Tender article 2.2.

2.0 Format and Numbering System

.1S The Supplementary Contract Specifications follow the same format and numbering system as the Master Municipal Specifications, but is differentiated from it by having the letter "S" placed after the section number.

3.0 Construction Survey Layout

.1S The Contract Administrator will provide survey control CAD files for this Contract. The Contractor shall be responsible for the detailed setting out of the work and recording all data required to compile record drawings. The Contractor will be responsible for the detailed survey of the site to execute construction. A preliminary site plan has been provided as a guide only.

.2S Payment for survey layout shall be considered incidental to the work performed and no additional payment will be made to the contractor.

.3S All monuments, iron pins and wooden witness posts, disturbed by the Contractor shall be re-established by Registered British Columbia Land Surveyors, at the Contractor's cost, and the appropriate authorities advised of the revised elevation and coordinates. Contractors are advised that the Contract Administrator will monitor construction to ensure that disturbed pins are replaced at the Contractor's expense prior to completion of the Contract.

4.0 Description of Work

.1S The work can be described as follows:

New Bridge Construction-Friendship Pedestrian Bridge:
This portion of the work will consist of the construction of a new 117m, 4span, steel girder and precast concrete deck superstructure founded on driven steel piling, cap and associated new approaches. This new structure shall consist of steel piling, prefabricated steel pile caps, precast concrete ballast walls, steel bearing assembly, steel girder splices, precast concrete deck panels, pedestrian and bicycle steel fencing at the approaches coupled with common excavation. The limits of contract for bridge construction will extend 15 meters past the ends of the bridge.

Bridge Construction to include:

- Providing Construction Safety Management Plan;
- Construction Environmental Management Plan (CEMP);
- Traffic Management Plan; Quality Management Plan;
- Temporary Access Structure Plan;

- Pile Driving Equipment & Scheme;
- Steel Erection Scheme;
- List of Key Construction Team Members and Subcontractors;
- Construction Schedule;
- Site security measures;
- Implementation of the traffic and public safety control and signage;
- Primary survey control;
- Obtain all necessary BCMoTI permit applications for working in the Ministry RoW;
- Construction access plan for the new construction;
- Installation of piling substructure;
- Installation of steel pile cap;
- Rip-rap of the abutment fill slopes at the abutments;
- Installation of bearings assembly;
- Supply, transport and erect the steel superstructure girders;
- Installation of precast concrete ballast wall & deck panels;
- Installation of the steel railing onto the deck;
- Installation of 450mm Sonotubes in the Approaches to support the fencing;
- Reconstruction of the approaches to include road widening for pedestrian pathways; and
- Site restoration, clean-up and demobilization from the site.

The Contractor is responsible for visiting the site and making himself/herself familiar with all aspects of this project, including such items as: utilities, private property, and access surrounding the project.

5.0 Safety Procedures .1S All works shall be in strict compliance with WorkSafe BC Industrial and Safety Regulations Section 24 when working near or under any overhead power lines.

The Contractor must be fully aware of the danger to workers and shall take all necessary safety precautions when working near to existing utilities, such as high pressure gas, water line and BC Hydro lines.

The Contractor must be fully aware of the danger to workers and shall take all necessary safety precautions when working by water.

6.0 Testing & Inspections .1S The Contractor will perform all Quality Control (QC) testing to the satisfaction of the Contract Administrator to ensure that the requirements of the Contract are being met.

All QC testing and verification shall be incidental to the work performed and no additional payment will be made to the Contractor.

Any independent testing for quality assurance carried out by the Contract Administrator will be paid for by the Village.

Where initial tests fail and subsequent testing is deemed necessary by the Contract Administrator, the cost of the subsequent testing shall be the responsibility of the Contractor.

If the Contact Administrator requests additional tests on the project by the Contractor's appointed testing agency, the Contractor shall not claim for any cost associated with the delay of testing i.e. standby or return trips.

0.2S Fabrication Inspection and Quality Control will be carried out by the Contractor for the preparation and fabrication of the steelwork in the certified fabrication shop. The inspection and QC reports for the fabricated steelwork shall be delivered to the Contract Administrator for approval prior to the steelwork leaving the fabrication facility.

0.3S Concrete Quality Control strength testing will be carried out by a qualified testing agency and shall be the Contractor's cost.

0.4S A compaction testing plan shall be submitted by the Contractor to the Contract Administrator for review prior to construction. All results from compaction testing shall be provided to the Contract Administrator.

7.0 Dust and Mud Control

.1S The Contractor shall make every reasonable effort to minimize the creation of dust or mud by his/her operations. Special measures may include, but shall not be limited to, construction of a 30 m long, rock armored truck egress pad(s); control of traffic speeds; frequent watering of dirt access and egress routes; watering of the construction areas; re-routing of traffic; modification of construction procedures; and cleaning of off-site haul routes on a regular basis as required by the Village. Refer to MMCD Section 31 15 60, Dust Control, for General Products and Execution.

Payment for the above items will be considered to be incidental to the work performed and no additional payment will be made to the Contractor.

8.0 Grassed Areas Disturbed to be Seeded or Sodded

.1S All grassed areas disturbed by the construction shall be reinstated with 100mm compacted depth topsoil and sodded.

No additional payment will be made to the Contractor for this work.

9.0 Coordination & Connection .1S

The Contractor shall be responsible for coordinating the Work, where necessary, with third parties, including, but not limited to B.C Hydro, TELUS, telecommunication companies, Fortis BC, Owner forces or other utility corporations, and neither the Owner nor the Contract Administrator shall be liable for any delays caused by such third parties or Owner forces.

10.0 Optional Work .1S

All items included in the Schedule of Quantities and Prices, which shall be stated to be Optional Work, shall be installed only as directed and at the sole discretion of the Contract Administrator.

All or any unused portion of these sums shall revert to the Village and shall be deducted from the Contract Price before final payment is made.

11.0 Lane Closures

The Contractor is responsible for the physical closure of existing roadways or bridge lanes when working on near the Red Bridge No.443. Full closure of the Red Bridge will not be permitted.

The Contractor is responsible for obtaining all permits and approvals from the Village and MoTI for the physical lane closures and removals, construction of the required widening, installation of appropriate signage, installation of barricades and disposal of all materials and restoration of the lane closed to a natural landscaped area, including the restoration of drainage to its original lines.

The Contractor is responsible for coordination of all removals and lane closures with the Village and MoTI. The Contractor shall apply to the Local Authority for lane closure permits a minimum three weeks prior to the planned date of the closure. The Contractor will be responsible for obtaining legal lane closure and shall cooperate with the MoTI and Village regulations on legal lane closure.

Appendix 3 provides As-built drawings of the existing Red Bridge No.443 for information and reference only.

12.0 Interfering Services .1S

1. Within the terms of this clause, the Contractor is responsible for the protection of existing power and telephone poles, fiber optic lines and other facilities of utility companies during the term of the Contract.
2. The Contractor shall, at his/her own expense, provide for the uninterrupted flow of all watercourses, drains, and any other utility encountered during the work.
3. It is the Contractor’s responsibility, wherever necessary, to determine the location of existing underground structures. No underground structures are anticipated on this project.

4. Where gas mains and/or service lines exist in the vicinity of the proposed work, the Contractor shall consult the officers of the gas company prior to commencing operations and arrange for a mutually agreeable procedure for their protection.
5. When existing poles conflict with the proposed works, the Contractor shall consult B.C. Hydro and Telus prior to commencing operations and advise the Contract Administrator of the works to be undertaken. Costs associated with pole holding/support are incidental to the work.

14.0 Geotechnical Information

.1 Geotechnical information on the soils condition surrounding the Red Bridge is attached as Appendix 1 for information only and additional information on test pits are available on the IFT drawings provided in Appendix 2. Contractors are to use the information provided at his/her own risk. The Village will provide a geotechnical engineer on the project during the pile driving phase of the project to verify the capacity of the piling. A PDA test will be performed during this phase of construction.

Test pit information has been provided by DWB in the drawing set (Drawing 1762-147-13) to assist the Contractor in evaluating the site specific material available. This material posted on the drawing is for information only and the Contractor shall use this information at his/her own risks.

15.0 Metric Units of Measurement

.1S All the units of measurement for payment in this Contract are metric units as modified by the internationally agreed S.I. Units (System International).

However, as the construction industry is not entirely converted to S.I. Units, some conversions will need to be made for purpose of month end and Final Progress Estimates.

The following conversion factors will be used in this Contract:

1 ton	=	0.907 tonnes
1 cubic yard	=	0.765 cubic metres
1 foot	=	0.3048 metres
Moist Earth	=	1442 kg/m3
Wet Gravel (1/2-2”)	=	2002 kg/m3
Loose Sand	=	1442 kg/m3
Broken granite	=	1650 kg/m3

16.0	**Weigh Ticket Control**	.1S	Items in the Schedule of Quantities and Prices measured by weight will be paid for as stipulated in the appropriate section of the Specific Provisions or the Specifications of the Contract. In addition, the Contractor will adhere to the following conditions: 1. Payment will be made only for material completely incorporated into the works as witnessed by the Contract Administrator's representative. 2. Weigh tickets shall be received by the Contract Administrator's representative immediately preceding the placement of the material in the works. 3. The Contractor is to arrange for material supply in such a manner that weigh tickets can be collected and verified at specific locations on the project as arranged with and approved by the Contract Administrator. 4. The Contract Administrator shall have the right to refuse approval of tickets received after the day of placement. If the Contractor fails to meet any of these conditions, then the Contract Administrator shall have the right to refuse approval of weigh tickets presented.
17.0	**Earthwork & Rip Rap Volume Calculations**	.1S	All the units of measurement for payment on earthwork and rip-rap volumes in this Contract are metric units and represent bank cubic meters (geometrical volume only). The Contractor is to make the necessary adjustments for expansion factors in the price bid. The Contractor shall be compensated for geometrical volumes only.
18.0	**Disposal Site**	.1S	The Contractor is responsible for the provision of all off-site disposal sites for materials that are to be removed from the construction sites in this Contract. The Contractor is responsible for all fees, permits and costs associated with the off-site disposal of materials.
19.0	**Quantity Variations**	.1S	***Add:*** A revised unit price shall not exceed the corresponding tendered unit price by an amount greater than 10% of the original tendered unit price.
20.0	**Temporary Drainage Facilities**	.1S	All required temporary drainage facilities, measures for control of ground water during construction and restoration of temporary drainage ditches after construction shall be considered as incidental to work being performed under this Contract and no separate payment will be made for this work.
21.0	**Permits from Outside Agencies**	.1S	The Contractor is responsible to obtain and pay for all permits required from outside agencies which are not provided by the Village.

22.0 Notice to Residents

.1S The Contractor shall deliver a letter produced by the Village to all the properties which may be affected by the construction not less than one week (5 days) and not more than two weeks (10 days) prior to commencing construction. The Contractor shall notify all the residents/landowners directly affected by the work 72 hours in advance of commencement of construction.

Costs of notifying the residents and delivery of notice letters shall be considered as incidental to work being performed under this Contract and no separate payment will be made for this work.

23.0 Foreign Utility Adjustments

.1S The Contractor will be responsible for adjusting all foreign utilities, unless noted otherwise on the drawings. All adjustments to foreign utilities must be completed to the satisfaction of the Utility Owner. The Contractor should note that certain Utility Owners may decide, after tender closing, to complete their own adjustments, if personnel are available. If the Utility Owner decides to complete their own adjustments, the Contractor will not be compensated for these utility adjustments but Contractor will coordinate the adjustments with the Utility Owner

Utility adjustment is not forecasted at this time. Payment for any third party utility work will be negotiated at the time of construction.

24.0 Bridge End fill

.1S Bridge end fill shall be constructed as shown on the Drawings and in accordance with the material, placement and compaction requirements of the SS 201.40 “Bridge End Fill” The Contractor shall perform all quality control, sampling and testing required to verify that the completed bridge end fill meets the specified requirements. Sampling and testing shall include but may not necessarily be limited to; materials sampling, sieve analyses, laboratory proctor density testing and in-situ density testing.

.2S Payment for bridge end fill will be made at the Unit Price per cubic metre bid. Payment for bridge end fill shall include quality control, supply, hauling, placing, watering if required, compaction of the material and supply and installation of perforated drain pipe, filter cloth and drain rock. Payment will cover all material and compaction tests. The volume will be measured in place to the neat lines shown on the Drawings.

25.0 Pedestrian/Bicycle Steel Fence at the approaches

.1S The Pedestrian/bicycle MoTI fencing (Standard MoTI Drawing 2891-2) will be used on the bridge (fastened to the deck panels) and at the approaches at each of the flares. One panel of the fencing (3.048m) will extend past the end of the bridge and follow the flares. The fence at the flares will require four 406mm dia. Sonotubes, 1000mm deep filled with concrete to anchor the four points of each steel fence panel. The Sonotube will be reinforced with four vertical 15M bars and 10m spiral ties for 75% of the

column. The two approaches will require 16 concrete filled Sonotubes buried into the approaches. Refer to the Supplemental Drawing to MoTI Standard Drawing 2891-2.

END OF SECTION

1.4 Traffic Control

.14S The Contractor will be allowed to close only one lane at a time while executing the work required under this agreement. The Contractor will be responsible for providing their own staging drawing and a written Traffic Management Plan.

No work that affects traffic will be permitted until the Village of Pemberton and BCMoTI accepts the Traffic Management Plan. The Village will not control or direct the traffic control or direct the traffic control activities of the Contractor, but may require an immediate stop to any work where, in the Contract Administrator's opinion, the provided traffic control does not meet the requirements of the Agreement.

The traffic management plan(s) require a seal by a BC Registered Professional Engineer.

The Contractor will prepare and submit a written Traffic Management Plan to the Village of Pemberton a minimum of ten (10) working days prior to commencement of any work affecting traffic. The Contractor will update and resubmit that plan for review as necessary for acceptance by the Village.

.15S Contractor shall provide advance information signs regarding road construction details and changeable message sign (CMS) boards. The Contractor shall supply the Contract Administrator with the proposed commencement dates in advance to allow for advertisement and proper public notice. The signage must meet the specifications and must be approved by the Village of Pemberton prior to installation.

1.5 Payment

.1S ***(replace with):***

Payment for all work performed under this section will be made at the Lump Sum Price shown on the Schedule of Quantities and Prices. This work shall include all traffic control/ regulation work such as: coordinating with the Village and the detour routes, preparing and modifying traffic management and detour plans for approval by the Village of Pemberton.

END OF SECTION

1.4 Environmental Protection

.4S The Contractor is advised that he is responsible for all necessary measures required to prevent the transportation of any silt or other deleterious material from the site into any fish bearing watercourses or their tributaries. All requirements of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRRD), Ministry of Environment, and Fisheries & Oceans Canada, with respect to air, earth and water pollution, must be strictly adhered to.

The Contractor shall submit a Construction Environmental Management Plan (CEMP) to the Contract Administrator 2 weeks prior to start of construction. The CEMP provided by the Contractor must be prepared by a qualified environmental professional (QEP), and signed by a Registered Professional Biologist (RPBio) or Registered Biology Technologist (RBTech)

The project Environmental Monitor shall report status of CEMP implementation to the Village every four weeks, starting from the date of Execution of the Construction Agreement until 1 month after commissioning of the project. The Contractor is not required to provide an Environmental Monitor (EM) for this project, the EM will be provided by ISL. All reports shall detail, to a level of detail and in a form satisfactory to the Village, acting reasonably, the Contractor's progress as it relates to the CEMP implementation and performance.
ISL Engineering and Land Services Ltd. (ISL) has prepared the following Environmental Protection Specifications for the project. The specifications have been submitted to Fisheries and Oceans Canada (DFO), and MFLNRORD as part of approval documents. The CEMP represents the Village of Pemberton's commitment to regulatory agencies to complete the project in a manner that is consistent with federal and provincial law, regulation and best practice. Therefore commitments made at the time of application for project approval, require that the Prime Contractor and subcontractor(s) must adhere to these environmental specifications and all approvals or authorizations issued by environmental regulatory agencies (DFO LOA, Ministry Change Approval, and Dikes Approval).

Should environmental specifications listed herein be in conflict with specifications set out in the regulatory approvals or authorizations issued by the provincial and federal regulatory agencies, then the conditions and measures specified in approval documents will take precedence. The Contractor will at all times undertake work in a manner that it does not contravene federal or provincial law.

The following requirements outline the minimum mandatory, environmental specifications and Best Management Practices (BMP's) for addressing construction related impacts. It will be the responsibility of the contractors awarded the works to ensure BMP's are in place prior to and during construction to

prevent erosion and the transport of sediment into adjacent watercourses during construction activities and to prevent transport of soils onto roads. The contractor must be familiar with erosion and sediment control BMP's.

Bidding contractors must cost the job in a manner that fully accounts for deploying the required erosion and sediment control BMP's. Should the construction contractors bidding this job, require clarification regarding the erosion and sediment control provisions that are required, prior to issuing a response to tender, they should contact ISL for clarification of this matter.

Environmental Monitoring

The Contractor is not required to provide an Environmental Monitor (EM) for this project. The EM will be provided by the Owner. ISL will provide an Environmental Monitor (EM) for the project. In Summary:

- The Contractor is required to work cooperatively and closely with the EM to ensure that disturbance to instream and riparian fish habitat is minimized.
- The EM will provide monitoring of environmentally sensitive construction works to ensure the Contractor is undertaking the work in compliance with environmental regulatory approvals and in conformance with the Contractor's own CEMP.
- The EM will also monitor the implementation and effectiveness of erosion and sediment control measures deployed by the contractor.
- Prior to any work on the site, an onsite pre-construction meeting will be held amongst the EM, contract administrator, contractor and site supervisor to ensure an understanding of the mitigative best practices for the project.
- The EM will be notified a minimum of 5 days prior to the start of the ground disturbing activities.
- The EM will require that the site supervisor and/or contractors have onsite all documentation regarding environmental mitigation and environmental approvals (i.e. the CEMP must be kept onsite with any environmental approvals issued for the project).
- The EM will forward inspection memoranda to the site supervisor and ISL. These will be copied to the appropriate Village representative and will indicate whether work is compliant with the environmental protection specifications, regulatory approvals, Village environmental bylaws, and the CEMP.
- The EM will not consider the project to be complete and in compliance with best practices for mitigating the works if there are any outstanding proposed mitigative measures.

If the proposed works are not conducted in a manner compliant contract environmental specifications, environmental regulatory approvals or in conformance with the CEMP, then the EM is required to inform the Project Manager, Project Engineer, the Village of Pemberton and environmental regulators.

The Village will grant the Contract Administrator with the written authority to shut down the works in the event the EM reports contractor non-compliance with regulatory approvals, regulatory approvals, or conformance with the CEMP, and the non-compliance threatens harm to fish or the environment.

Works may remain shut down until such time as the compliance issue has been addressed. If the EM is required to shut down the works due to non-compliance by the prime contractor or subcontractors, then the costs to the prime contractor associated with that shutdown are the sole responsibility of the prime contractor.

In the event of repeat non-compliance with environmental specifications, environmental regulatory approvals or conformance with the CEMP, the contractor may be penalized per Contract stipulations.

At the completion of this project, the EM will complete and submit a copy of a post construction report consistent with the recommended standard format to the contractor, ISL, DFO, Ministry and Village. The report will document that construction has been completed and will document any difficulties encountered during the project.

Environmental Least Risk Scheduling
Instream work of all kind must be undertaken within the prescribed least risk instream work window August 1-September 15, 2018.

Should the Contractor anticipate that they anticipate that a wider instream work window is required they must inform the Contract Administrator of this schedule concern not later than 30 days before August 1st and 15 days prior to September 15th.

Upon the Contractor's request, the Contract Administrator will inform the EM of the proposed schedule change and the EM will apply to the environmental regulatory agencies for a wider instream work window.

It is anticipated that an extension of up to 2 weeks on either end of the window could be granted by the environmental regulatory agencies.

A wider instream work window is at the discretion of the

approving agencies and is based on prevailing weather conditions; schedule risk with respect to the fish window extension rests with the Contractor.

Regardless of any potential fish window extension request, the Contractor is required to deploy appropriate resources and equipment to meet the conditions of the core instream work window (August 1 – September 15).

Mitigative items pertaining to riparian disturbance
Riparian clearing is limited to that necessary to construct the bridge and access to the bridge and danger trees as prescribed by a certified danger tree assessor, provided by the Contractor.

The clearing limits will be surveyed on the ground and flagged in the field by the contractor prior to vegetation removal.

The contractor will inform the Contract Administrator a minimum of 5 days before scheduled vegetation clearing. Vegetation clearing will be undertaken only after completion of a nesting bird survey by the EM.

Trees shall not be allowed to fall into a water body, and there will be no cross stream yarding of felled trees.

Burning of cleared vegetation is not be permitted.

Mitigative items pertaining to pile driving
Construction requires pile driving within a sensitive fish bearing stream. Instream pile driving is scheduled for the period of least risk to juvenile and adult salmonids - **August 1 – September 15, 2018.**

Acoustics and overpressures generated from the contractor's pile driving activities must not exceed the following thresholds:

- Maximum negative pressure: -12 kPa
- Maximum positive pressure: 20 kPa
- Cumulative sound exposure level (SELcum) = 187 dB re: 1 µPa(10 m from the pile driving location).

The contractor will deploy a bubble curtain concurrent with pile driving activity.

The EM will be onsite full-time during pile driving and will be responsible for monitoring acoustics and overpressure generated by pile driving activity.

If the acoustics exceeds the threshold, all work will immediately cease and one or more of the following additional mitigation will be deployed by the Contractor:

- Develop a fish exclusion zone at a distance from the pile where the thresholds outlined above are longer exceeded, with fish salvage within the exclusion zone undertaken by the fish salvage crew.
- Install a physical barrier (i.e. silt curtain) to physically impede/refract sound wave transmission.

Prior to commencement of work the contractor will be required to have onsite, in case it needs to be deployed to mitigate soundwave overpressures sediment a 'silt curtain(s)'.

The silt curtain(s) will have the following specifications:

- Float Size 4" x 4"
- Buoyancy 7 lbs/ft
- Float Covers 10 oz yellow
- Body Fabric 10 oz yellow
- Grab Tensile 105 lb
- Tear Strength 23 lb
- AOS (Sieve) Impermeable
- Bottom Chain ¼"
- Chain Weight 65 lb/100ft
- Standard size 10' x 50' **
- Durability Reusable
- Seaming Heat Sealed
- **Alternate silt curtain specifications may be considered "an approved equivalent" upon discussion with the Environmental Monitor.

The Contractor may be required to deploy, weight and secure this silt curtain if directed by the EM to mitigate risk to fish.

Mitigative items pertaining to erosion and sediment control

- Effective sediment and erosion control measures are to be installed before starting work to prevent the entry of sediment into the watercourse.
- The specifications assume that the contractor will install the piles from temporary span or existing span and that river infill (i.e. temporary instream causeway construction is not required).
- Prior to commencement of the works the contractor must obtain sufficient quantities of silt fence, straw bales, coastal reclamation seed mix, sandbags, erosion control blanketing, plastic sheeting etc. necessary to stabilize disturbed ground. These materials must be onsite, available for inspection and installation prior to the commencement of any ground disturbance.

- Should the EM identify a deficiency in the contractor's erosion and sediment control measures, the EM will make the necessary repairs identified by the EM within 1 business day.
- Turbidity limits for the discharge of sediment, sediment-laden water, and turbid water are as follows:
    - Suspended solids should not exceed **25 milligrams per litre** (mg/L).
    - Turbidity should not exceed **25 nephelometric turbidity units** (NTU).
- Contractors are fully responsible for developing a plan to discharge trash pump water, or concrete washwater to adjacent lands with land owner's permission.
- There is no direct discharge of sediment laden water to ditches or watercourses leading to fish habitat.
- For erosion and sediment control to be effective, the following important erosion and sediment control measures will meet or exceed the standards outlined in the Ministry of Water Land and Air Protection *"Best Practices For Urban and Rural Development" and the DFO "Land Development Guidelines for the protection of Aquatic Habitat".*
- All works will be conducted in a manner that will prevent the release of sediment or sediment laden waters to watercourses, ditches, stormsewers and swales draining to fish habitat.
    - All efforts will be made to leave undisturbed native vegetation where possible.
    - All disturbed slopes, watercourse banks, and ground surfaces that may contribute sediment-laden water into sensitive fish habitats during precipitation events must be stabilized through application of organic (i.e. straw) or inorganic (i.e. plastic) mulches over the course of the project.
    - Work will be pursued to completion as quickly as possible once started.
    - Disturbed areas are to be revegetated with an appropriate reclamation seed mix and the covered with mulch or straw to prevent erosion and to help seeds germinate.
    - Effective sediment and erosion control measures are to be maintained until revegetation of disturbed areas is achieved.
    - All work which involves heavy machinery that is disturbing earth material must be suspended during substantial rainfall (substantial rainfall will be determined by the EM after a review of weather conditions and existing ground saturation).
- No debris is to remain below the high water mark or placed into the stream.

- Any debris removed from the work site are to be stabilized to prevent them from entering the watercourse (i.e. covering spoil piles with secured tarps).
- Avoid soil handling during very windy > (40 km/h winds) and/or rainy conditions >25 mm/24hr.
- Suspend construction activities during rainfall periods >25 mm/24hour.

Mitigative items pertaining to operation of machinery

- With the exception of the pile driver, machinery shall be operated on land (above the high water mark) and in a manner that minimizes disturbances to the banks of the watercourse.
- No equipment is allowed to cross any waterbody during clearing operations unless there is an Environmental Monitor, who is a qualified environmental professional (QEP) who will draft a written stream crossing plan and deploy appropriate mitigation (location for crossing, analysis of risk, identification of alternative access, etc.)
- Banks are to be restored to their original or better condition if any disturbance occurs.
- Silt fence will be established on slopes subject to machine disturbance that have transport potential to fish habitat.
- Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
- An emergency spill kit (including booms) must be kept onsite in case of fluid leaks or spills from machinery.

Mitigative Items pertaining to fuel and spill mitigation

- Oil, grease, or any other substance deleterious to aquatic life will be prevented from entering into any watercourse, ditch or storm sewer.
- Operators will be held responsible to ensure that oil, grease or other deleterious substances do not enter any environmentally sensitive areas. Emergency clean up equipment will be kept on site in case of a spill or leak.
- Any spill of a substance toxic to aquatic life of reportable quantities will be immediately reported to the Provincial Emergency Program 24 hour phone line at 1-800-663-3456.
- The Contractor shall prepare a spill response plan as part of the CEMP.
- Each machine working within 15 m of fish habitat will have on board a spill containment kit, with sufficient capacity to clean-up a spill should it occur. The spill kits must include at least 60 m of spill boom.
- All machine refueling will be permitted only under direct observation of the EM.

- Appropriate measures must be taken to prevent fuels, lubricants, or construction wastes, from entering watercourses.
- Secondary containment will be required for all fuel tanks and gasoline or diesel powered pumps.

Mitigative items pertaining to the management of concrete

- Pre-cast concrete material that is cured and dried will be used to prevent deleterious substances from entering the watercourse.
- Cast-in-place concrete, if utilized, or grout work will be fully contained to prevent entry of concrete leachate or grouts to nearby watercourses.
- If cast-in-place concrete work is required along the foreshore or overtop of water, a CO_2 tank with hose and sparge valve will be kept onsite and be deployed if an accidental release of concrete to fish habitat occurs.

.6S Immediately contain and clean up any leaks and spills of prohibited materials on the job site.

.7S Ensure that a well-stocked spill kit is on-site at all times and that the Contractor's employees are familiar with appropriate spill response techniques.

.8S Immediately notify the Contract Administrator and the Director of any leaks or spills of prohibited materials that occur on the job site.

1.6 Payment

.2S Payment for all work related to Environmental Protection, as set out in the Contract Documents will be on a lump sum basis. Payment item includes all work related to management of creek flows (by-pass pumping, isolation, blocking, diverting, etc.), including supply, installation and removal of temporary system.

The Contractor will be entitled to 50% of the payment item on the first Progress Payment. On award of Substantial Performance, the Contractor will be entitled to the remaining 50% of the payment item.

.3S Payment for tree removal and clearing and grubbing required for construction of the works including construction access and staging will be on a lump sum basis. Payment will include all costs associated with felling of trees, stump removal (including excavation and backfilling with imported granular base) and tree protection, where applicable.

1.9S Archaeological / Historical Resources

.1S Immediately cease work and inform the Contract Administrator and the Director, if any archaeological or historical resources are encountered during construction. Leave these resources in-place and do not disturb them in any way.

END OF SECTION

1.0 General

.5S Formwork shall be in accordance with SS 211.

.6S Formwork for the cast-in-place concrete work will be included in the price per cubic meter for cast-in-place concrete. No payment will be made under this Item for reinforcing steel required as part of another Item. Payment shall be considered incidental to the concrete work being considered.

END OF SECTION

1.0	**General**	.1S	***(replace with):*** Section 03 20 01 refers to those portions of the work that require nominal reinforcement such as cast-in-place products for any structural facilities requiring site specific structural engineering design. This section includes the supply, fabrication and installation of reinforcing for concrete structures as specified in SS412.
1.3	**Certification**	.2S	***(replace with):*** All certificates for the reinforcement steel shall be provided to the Contract Administrator.
1.5	**Measurement and Payment**	.1S	***(replace with):*** Reinforcing steel for the cast-in-place concrete work will be included in the price per cubic meter for cast-in-place concrete. No payment will be made under this Item for reinforcing steel required as part of another Item. Payment shall be considered incidental to the concrete work being considered.
2.0	**Products**		
2.1	**Materials**	.1S	***(replace with):*** Reinforcing steel shall comply with CAN/CSA G30.18, 400W unless otherwise specified on the Drawings.
3.0	**Execution**		
3.2	**Placing Reinforcement**	.1S	***(replace with):*** Reinforcing steel shall be supplied and installed in accordance with MoTI Standard Specifications SS412 unless otherwise specified on the Drawings. Welding of reinforcing steel shall be permitted only where shown on the Drawings or when acceptable to the Contract Administrator and shall be in accordance with CSA W186-M.

END OF SECTION

1.0 General .1S ***(replace with):***

The concrete work shall be in accordance with MoTI Standard Specifications SS 211, 413, 931 and 933, and the general notes and Specifications shown on the drawing 31742-101.

This section will apply to the Sonotubes required on the approaches.

1.4 Construction Quality Control .2S

The Contractor shall be responsible for the design and quality control for all concrete used on this project. All concrete materials and admixtures for concrete shall conform to the requirements of SS 211.04, unless otherwise specified in these Provisions and the Drawings.

1.5 Measurement and Payment .6S

Payment for cast-in-place concrete will be made in accordance with MoTI Standard Specifications SS 211.21.02 at the applicable all found Unit Price per cubic metre as listed in the Schedule of Approximate Quantities and Unit Prices. No payment will be made under this Item for concrete supplied as part of another Item.

Payment for concrete will also include the preparation of all foundation, formwork or Sonotubes and reinforcing steel. All concrete work shall be in accordance with MoTI Standard Specifications SS 211 and 933, unless otherwise specified in these Special Provisions. Payment shall also include quality control, submissions and any falsework and bracings for the formwork as required.

2.0 Products

2.2 Concrete Mixes .1S ***(replace with):***

Hand-formed and hand-placed concrete:

Slump:	50+/- 20 mm.
Air entrainment:	5 +/- 1%
Maximum aggregate size:	20 mm.
Minimum cement content:	335 kg/m3.
Minimum 28 day compressive strength:	35 MPa.
Maximum water/cement ratio:	0.38

2.3 Forms .1S ***(replace with):***

Formwork and falsework shall be in accordance with MoTI Standard Specifications SS 211.

All formwork or falsework for any cast-in-place components will be considered as formwork.

3.0 Execution

3.4 Inspection .1S Immediately prior to placement of concrete, carefully inspect all formwork to ensure forms are properly set at required horizontal and vertical alignment, sufficiently rigid, clean, surface treated and ready for placement of concrete. Obtain Contract Administrator's approval of formwork and compacted base.

END OF SECTION

1.0 General

.11S Supply, manufacture and quality control of prestressed concrete stringers shall be in accordance with SS415 – "Manufacture and Erection of Precast and Prestressed Concrete Members".

Payment for supply, manufacture and quality control of prestressed concrete stringers will be in accordance with SS415.91

.12S Shipping and erection of prestressed concrete stringers shall be in accordance with SS 415 - "Manufacture and Erection of Precast and Prestressed Concrete Members".

Payment for shipping and erection of prestressed concrete stringers will be in accordance with SS 415.92

END OF SECTION

1.0 General

.1 The Contractor shall supply and install bearing assemblies in accordance the Drawings.

.2 Payment for bearing assemblies will be made at the Lump Sum Price(s) bid. Payment shall include quality control, all necessary materials, submission of shop drawings, test results and certificates of compliance, supply, fabrication, transport and installation of bearing assemblies.

END OF SECTION

1.0	**General**	.1S	Section 05 12 33 refers to those portions of the work that are unique to the supply, transport and installation of structural steel members. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein.
1.1	**Related Requirements**	.1	Project Record Documents Section 01 33 01
1.2	**Price and Payment Procedures**	.4S	Payment for supply, fabrication, shipping and erection of structural steelwork shall be made at the lump sum price bid for the various types of steelwork components listed in the Schedule of Approximate Quantities and Prices.
		.5S	Payment for deck joints will be made at the Unit Price(s) per meter bid. Payment shall include quality control, all necessary material, shop drawings, supply, fabrication, galvanizing of steel components, as required, formwork for blockouts, epoxy bonding agent and installation of the steelwork, anchors, reinforcement and elastomeric and compression seals.
		.6S	Payment for supply, fabrication, shipping and installation of all miscellaneous steelwork shall be made at the at the lump sum price bid for the various types of miscellaneous steelwork components as noted on the Schedule of Approximate Quantities and Unit Prices.
1.3	**References**	.5S	The abbreviated standard specifications for testing, materials, fabrication, supply and installation, referred to herein, are fully described in Section 01 42 00 – Reference Specifications.
1.9	**Supply, Fabrication, Shipping and Erection – Structural Steelwork**	.1S	Structural steelwork shall be supplied, fabricated, shipped and erected in accordance with MoTI Standard Specifications SS 421. The Owner may require an acceptable declaration from the Contractor transferring ownership of materials to The Owner.
1.5	**Shop Drawings**	.1	Submit shop drawings including fabrication and erection documents and materials list in accordance with Section 01 33 00 – Project Record Documents.
		.5S	Erection drawings: indicate details and information necessary for assembly and erection purposes including: • Description of methods. • Sequence of erection. • Type of equipment used in erection. • Temporary bracings (if required).

		.6S	Ensure Fabricator drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in the province of BC, Canada.
1.8	**Quality Assurance**	.3S	Submit [1] copy of mill test reports [4] weeks prior to fabrication of structural steel. Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project. Provide mill test reports certified by metallurgists qualified to practice in province of BC, Canada.
2.0	**Products**		
2.1	**Materials**	.1	Structural steel: to CAN/CSA-G40.20/G40.21 Grade 350A.
		.2	Bolts, nuts and washers: to ASTM A325, Type 3.
		.9S	Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
3.0	**Execution**		
3.6	**General**	.1S	Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.
3.7	**Erection**	.1S	Clean with mechanical brush and touch up shop primer to bolts, welds and burned or scratched surfaces at completion of erection
		.2S	Continuously seal members by continuous welds where indicated. Grind smooth.
3.4	**Field Quality Control**	.2S	Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by the Contractor. Quality Assurance will be performed by the Owner as required.
		.3S	Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Contract Administrator.
		.4S	Submit test reports to Contract Administrator within one week of completion of inspection.
4.0	**Deck Joints**		
	General	.1S	Deck joints shall be fabricated and installed by the Contractor as shown on the Drawings and in accordance with the 2016 Standard Specifications for Highway Construction Section 422.

Steel components shall be hot-dipped galvanized in accordance with CAN/CSA G164, after fabrication.

Deck Joint Steelwork .4S Structural steelwork shall be painted in accordance with SS 421 and as specified on the drawings. The steel portions of the deck joint shall be galvanized and the joint armouring shall be installed 5 mm below the finished concrete nosing surface. Galvanized surfaces damaged by welding shall be touched up with two coats of an approved zinc rich coating.

Welding

All electrodes shall match the base metal specified in accordance with CSA W59, Table 12.1. The deposited weld metal shall provide strength, ductility, impact toughness and corrosion resistance equivalent to the base metal. Welding consumables for all processes shall be certified by the Canadian Welding Bureau (CWB) as complying with the requirements of CSA W48.

The Contractor shall produce evidence that all welders and welding operators to be employed on the Work are currently qualified by the CWB at the time of fabrication in the processes in which they are to be employed on the Work.

The Contractor shall also produce evidence relative to each welder and welding operator, that they have been executing satisfactory welding in the required processes within the six-month period previous to the award of this Contract.

Deck Joint Galvanized Steel Coating .5S All steel components of the Deck Joint assembly shall be hot-dipped galvanized as illustrated on the drawings. Coatings shall be applied in a generally accepted methods and with equipment to clean, contain and coat industrial structures in a safe, practical, environmentally sensitive manner resulting in a long lasting quality protective coating system. The galvanized coating process includes pre-cleaning, surface preparation, coating, and curing of coatings.

Deck Joint & Compression Seal .6S Each joint seal shall be supplied in a single length, without splices (curb to cub & sidewalks). Before the joint seal is installed, the joint shall be thoroughly cleaned with a wire brush and all moisture removed from the joint. The seal shall be installed in accordance with all of the Manufacturer's recommendations.

Compression seals shall be installed almost fully compressed and shall be 5 mm below the surface of the deck, unless shown otherwise on the Drawings.

5.0 Miscellaneous Steelwork .1S Miscellaneous steelwork shall be supplied, fabricated and installed as shown on the Drawings and in accordance with

MoTI Standard Specifications SS 422. All miscellaneous steelwork shall be galvanized after fabrication unless otherwise noted on the drawings. Miscellaneous steelwork will also include anchors, bolts and insert as required to fasten the miscellaneous steelwork.

.2S Payment for supply, fabrication, shipping and installation of all other miscellaneous steelwork shall be made at the unit price for the various types of miscellaneous steelwork components as noted on the Schedule of Approximate Quantities and Unit Prices.

END OF SECTION

1.0 General .1S ***(replace with):***

The Contractor shall supply and place riprap in accordance with SS 205 and as shown on the Drawings. Measurement and Payment shall be in accordance with this clause.

Supply and installation of riprap shall be carried out in accordance with SS 165 and shall meet the requirements of the environmental agencies as listed in these Special Provisions.

All material excavated in order to facilitate the placement of riprap shall be disposed of by the Contractor in a manner satisfactory to the Contract Administrator. Any excavated material, if suitable for riprap protection, may be used with the acceptance of the Contract Administrator.

1.4 Measurement and Payment .1S ***(replace with):***

Payment for riprap will be made at the Unit Price per cubic meters bid as specified in the Schedule of Approximate Quantities and Unit Prices. Payment shall include quality control, excavation and disposal of material as required to accept the riprap, supply and placement of filter fabric(if required) and the supply, transportation and placing of the riprap.

The volume of Class 250kg riprap will be measured in place within the neat lines shown on the Drawings or as ordered by the Contract Administrator using truck weigh slips for measurement and payment. The rip-rap on the East abutment of the existing Red Bridge will be used for bank protection but also to stabilize the future pathway to be constructed under the structure. The construction of the path is not part of this contract.

END OF SECTION

1.0 General

.1 **Open Ended Pipe Piles at the Abutments and Close Ended Pipe Piles at the Piers**

a) Mobilization for Pile Installation

The Contractor shall provide equipment that is capable of installing the piles and with adequate capacity to complete the pile driving analysis (PDA) in accordance with this clause.

b) Supply

Material for end plates for pipe piles shall conform to CAN/CSA-G40.21-M, Grade 300W. Steel pipe for pipe piles shall conform to ASTM Specification A252, Grade 3. Previously used pipe piling will not be accepted. Pipes fabricated with seams shall be fabricated with full penetration butt welds. Mill certificates and nondestructive testing records, confirming seam weld quality, shall be submitted to the Village Representative. Manufacturer's identification marks on the pile shall be readily identifiable on Site and shall match the heat numbers on the mill certificates provided. Sections of piling shorter than 3 m, shall not be used except to finish a pile to final cut off elevation.

c) Splicing and Pile Tip Modification

Piling shall be spliced if necessary in accordance with the details shown on the Drawings. Piling shall be aligned so that the finished piles are straight from end to end.

Pile tips and/or end plates shall be installed as shown on the Drawings.

All welding shall conform in quality and workmanship to the latest CSA W59. The weld area shall be dry and wind free during welding and shall cool without chilling following welding.

Welding shall be undertaken by a company approved by the Canadian Welding Bureau (CWB) to the requirements of CSA W47.1, Division 3 or better. Prior to commencement of welding, the Contractor shall submit welding procedures and data sheets, approved by the CWB, for the type of weld being performed and copies of welding certificates for all welders confirming that the individuals are currently certified by the CWB in the processes in which they a

d) Installation

Piles shall be installed in the locations shown on the Drawings.

Maximum horizontal tolerances from locations shown on the Drawings shall be as follows:

- at ground line or water line 75 mm
- at cut off for extended piles 25 mm

Maximum deviation from plumb or specified batter, below water or ground line shall be 20 mm per metre.

The Contractor shall maintain pile driving records (Ministry form H0053 is recommended) as directed by the Contract Administrator.

At least four (4) weeks prior to installing piles, the Contractor shall submit to the Contract Administrator, for the Village's record only, the details and specifications of the proposed pile installation equipment to be used for the project.

Pile installation equipment shall be capable of installing the pile to the anticipated pile tip elevations and to a resistance of at least 2.5 times the maximum factored load as shown on the Drawings. A vibratory hammer or jetting shall not be used unless approved by the geotechnical engineer on the project.

Piles shall be installed to such depths as ordered by the Contract Administrator or the Geotechnical Engineer representing the Village. The tip elevations shown on the Drawings are preliminary estimates of the depths required. The Geotechnical Engineer will establish the final tip elevations based on factored loads and minimum penetrations for fixity, safety against scour and resistance to installation. The anticipated pile tip elevations, pile depth and maximum factored loads are noted on the Drawings.

Where obstruction(s) make it impossible to install piles in the locations shown on the Drawings, the Contract Administrator may direct the Contractor to install additional pile(s). The Contractor will be paid for such pile(s) in accordance with the Unit Prices in the Schedule of Approximate Quantities and Unit Prices. Alternatively, the Village Representative may direct the Contractor to remove the obstruction(s). In this case the Contractor will be paid for this work on a Force Account Basis, in accordance with the Construction Agreement.

Piles shall be installed without causing damage to the pile. The top of piles shall be protected by a suitable driving cap to prevent damage to the piles. Any pile so damaged as to be unfit for the use for which it is intended, or any pile that cannot be brought within tolerance for location will be rejected. A rejected pile shall be extracted and replaced by a new pile. Costs associated with rejected piles shall be for the Contractor's account. Sufficient lengths of pile above cut-off shall be allowed so that no part of the head of the pile damaged during installation remains in the work.

All steel pipe piles shall be temporarily capped after installation for safety reasons.

f) Pile Testing

At the Contract Administrator's option the pile driving analyzer (PDA) may be used to evaluate hammer efficiency and pile resistance for final acceptance.

For the purpose of pile driving analysis, resistance of the pile shall not be less than twice the maximum factored load for the pile as shown on the Drawings and mobilization of the pile is defined as either a penetration of 3 mm or more per blow or a resistance of greater than twice the maximum factored load.

The Contractor shall cooperate to expedite this operation and accept the cost of each pile test up to two (2) hours to a total of four (4) hours for the Project. The actual time spent by the piling crew and associated equipment beyond eight (8) hours will be paid for as Extra Work. Additionally, subsequent to reaching the anticipated pile tip elevation or the pile resistance as determined by blow counts, the Contractor shall allow in the Construction Schedule for a waiting period of up to seventy-two (72) hours for the Village's PDA personnel and equipment to be mobilized to the Site.

Crew and equipment costs associated with the remobilization of pile installation equipment for the purpose of pile testing or for repeated pile analysis on the same pile will be borne by the Contractor. Costs to the Village for pile analyses resulting from delays due to the Contractor's operation or repeated pile analysis performed on the same pile will be back charged to the Contractor. Such costs will be recovered by the Village via deductions to payments on the progress estimate.

The Contract Administrator may require the Contractor to re-drive one or more piles in each group after a waiting period, in order to assess any increase in resistance.

The top of piles shall be protected by a suitable driving cap to prevent damage to the piles.

g) Payment

Payment for supply and installation of piles will be made under the following items:

1. Mobilization and Fixed Costs for Pile Installation

Payment for mobilization and fixed costs for pile installation will be made at the Lump Sum Price bid.

Payment for mobilization of 37½% of the Lump Sum will be authorized when work on piling has commenced. Payment of 50% of the Lump Sum will be made as a series of monthly payments, calculated on the basis of the expected pile installation schedule. If the work falls behind or gets ahead of schedule, these payments will be adjusted accordingly.

Payment of the remaining 12½% will be authorized when all piling is installed and the associated cleanup completed.

2. Supply
Payment for supply of piling will be made at the Unit Price(s) per metre bid for the length of accepted piling in the completed structure.

3. Restocking Allowance
If the length of any type of piling is less than anticipated, the Village will pay the Contractor a restocking allowance. The rate of this allowance will be 20% of the Supply price. The quantity will be the difference between the length paid for under the Supply Item and the length indicated by the anticipated tip and cut-off elevations shown on the Drawings, less a minimum 300 mm allowance for fresh heading at each splice location and at each pile cut-off or any quantity of waste pile in excess thereof. This allowance will be deemed to cover return freight costs, if any, and all other costs of restocking piles. Only piling actually delivered to Site will be considered.

4. Delivery of Additional Piling
If the length of piling is more than anticipated, the Village will pay documented costs of delivery of less than full loads of additional piling, without markup.

5. Installation
Payment for installation of piling will be made at the Unit Price(s) per meter bid for each pile installed up to 20% of pile length (from cut-off to pile tip elevation) below the anticipated pile tip elevation. Payment shall include submission of mill certificates, welding procedures, pile driving records (Form H0053) and any other installation details as called for in sub-section (d). Payment for driving time beyond the 20% incremental depth will be paid for as Extra Work.

6. Extra Splices
If the lengths of piling are as shown on the Drawings, no separate payment will be made for splices.

If the Village orders variations in pile lengths, payment will be made for each extra splice at the Unit Price bid.

If the Contractor uses sections of piles shorter than 12.2 m, no payment will be made for splices that would not have been required for 12.2 m length piles.

7. PDA Testing
Payment for PDA testing of piling will be made at the Lump Sum Price pile bid.

Payment under the above Items shall be for mobilization, fixed costs, supply, delivery, splicing and installation of piling. Payment shall cover the supply and installation of end plates, driving shoes and/or form support plates, if any. Payment shall also cover partial filling with sand (if required), removal of concrete splatter and provision of a uniform appearance on exposed surfaces of steel pipe piles above ground level, temporary structures, cleanup and any other costs of piling.

END OF SECTION

Owner: Village of Pemberton
(NAME OF OWNER)

Contract: Friendship Pedestrian Bridge
(TITLE OF CONTRACT)

Reference No. 2018-03
(OWNER'S CONTRACT REFERENCE NO.)

General Conditions #	Paragraph #	Title	Action
3	.2	Authority	Delete GC3.2.2 and replace with: "Nothing contained in the *Contract Documents* shall create any contractual relationship or other relationship recognized by law between the *Contract Administrator* and the *Contractor*, subcontractors, suppliers, or their agents, employees or other persons performing any of the *Work*.
4.3	.1	Protection of *Work*, Property and the Public	Add: Within the terms of this clause, the *Contractor* is responsible for the protection of existing power and telephone poles during the term of the *Contract*.
	.4		Delete GC 4.3.4 and replace with the following: Before commencing any *Work* at the *Place of the Work*, the *Contractor* shall be responsible to locate in three dimensions all underground utilities and structures indicated on the *Contract Documents* as being at the *Place of the Work*. The *Contractor* shall also be responsible to consult with all utility corporations that provide electrical, communication, gas or other utility services in the area of the *Place of the Work*, to locate in three dimensions all underground utilities for which they have records. The *Contractor* shall also locate in three dimensions any other utilities or underground structures that are reasonably apparent in an inspection of the *Place of the Work*. The *Contractor* shall contact BC One Call at least 48 hours prior to excavating to advise of the Work.
4.5	.1	Errors, Inconsistencies or Omissions in the *Contract Documents*	GC4.5.1 are amended: (i) by deleting "or omission" wherever it appears and substituting "omission or any incorrect, inaccurate or misrepresented fact", and (ii) by deleting "or omissions" wherever it appears and substituting "omissions or incorrect, inaccurate or misrepresented facts".

	.4		Add GC4.5.4: "If Additional Instructions are required to address any error, inconsistency, omission or incorrect, inaccurate or misrepresented facts, the Contractor's inefficiencies or mismanagement, if any, shall not be taken into account when determining any impact of those Additional Instructions on the Contract Price or the Contract Time."
4.6	.1	Construction Schedule	GC4.6.1 is amended by replacing "baseline construction schedule" with "baseline construction schedule in form of a Gantt chart".
4.6	.2		GC4.6.2 is amended by deleting "monthly" and substituting "monthly or within a shorter time period specified in the *Contract Documents*".
4.12	.5	Tests and Inspections	GC4.12.5 (1) and (2) are amended by deleting "timely notice" and substituting "not less than two days".
6.2	.1	Coordination and Connection	**Add:** The *Owner* or *Contract Administrator* will not be liable for claims for delay caused by applicable third parties, including, but not limited to BC Hydro, TELUS, Fortis BC, Shaw Cable, BC Transit, or Village forces for work required to be undertaken on this *Contract*.
7.4	.2	Optional Work	**Add GC 7.4.2:** All items included in the *Schedule of Quantities and Prices* which shall be stated to be Optional Work shall be used only as directed and at the sole discretion of the *Contract Administrator*.
	.3		**Add GC 7.4.3** All or any unused portion of these sums shall revert to the Village and shall be deducted from the Contract Price before final payment is made. No claim for lost profit shall be made by the *Contractor* for the deletion of any or all of these optional items.
9.2	.4	Valuation Method	GC9.2.4 is amended by deleting "unless at the time of the agreement the *Contractor* expressly reserved in writing the right to claim for additional payment or Contract Time adjustments."
11.1	.1	Definition	GC 11.1.1(3) is deleted and the following substituted: "(3) differs materially and substantially from: i. the conditions of the Place of the Work that would have been evident to or reasonably foreseeable by a Contractor who was qualified to undertake the Work, and ii. any information in the Tender Documents or otherwise made available by the Owner with respect to any conditions of the Place of the Work that would not have been evident to or reasonably foreseeable by a contractor who was qualified to undertake the Work".

13.1	.1	Delay by *Owner* or *Contract Administrator*	**Add:** (3) The *Owner* or *Contract Administrator* will not be liable for claims for delay caused by applicable third parties, including, but not limited to BC Hydro, TELUS, Fortis BC, Shaw Cable, BC Transit or Village forces for work required to be undertaken on this *Contract*.
13.9	.1	Liquidated Damages for Late Completion	GC 13.9.1.1 is amended by deleting "$500 per day" and substituting "$1,500 per day".
15.3	.1	Termination	GC 15.3.1 (1) is deleted and the following substituted: "(1) be entitled to: (i) take possession of the *Place of the Work* and the materials to be incorporated into the *Work* wherever they are located including materials ordered for the *Work* but not yet delivered, (ii) utilize the construction machinery and equipment, subject to the right of third parties, and (iii) complete the *Work* by whatever method the *Owner* may consider expedient, and
18.2	.1	Supporting Documentation	**Add:** The *Contractor* shall not work on the *Site* or deliver materials for which delivery slips submitted to the *Owner* are the basis of payment unless the *Site Inspector* is present. However, if the *Contract Administrator* deems these requirements inappropriate then this requirement may be waived.
18.9	.1	Waiver of Claims	GC18.9.1 is amended by deleting the last sentence and substituting the following: This waiver of claims shall include without limitation those claims that might arise from: 1) the negligence or breach of contract by the *Owner*, its employees, agents or officials, or 2) the negligence or wrongful acts of the *Owner*'s consultants or the *Contract Administrator,* but does not include claims made by *the Contractor* in writing prior to such application in accordance with the provisions of the *Contract*
	.2		Documents and delivered to the *Contract Administrator* prior to date of Substantial Performance and still unsettled. GC 18.9.2 is amended by deleting the last sentence and substituting the following: This waiver of claims shall include without limitation those claims that might arise from: 1) the negligence or breach of *Contract* by the *Owner*, its employees, agents', or officials, or 2) the negligence or wrongful acts of the *Owner*'s consultants or *Contract Administrator*, but does not include claims made by the. *Contractor* in writing prior to such application in accordance with the provisions of the *Contract Documents* and delivered to the *Contract Administrator* and still unsettled.

20.4	.2	Environmental Laws	GC20.4 is amended by adding the following: 20.4.2 The *Contractor* shall indemnify the *Owner* for any costs, fines, expenses and penalties that the *Owner* is required to pay on account of the *Contractor* performing the *Work* in breach of any applicable Federal or Provincial or municipal environmental laws, regulations, or orders.
24	.1	Required Insurance	In addition to the MMCD insurance requirements, the *Contractor* shall also comply with the following requirements of the Village, which will take precedence: "The *Contractor* shall insure and keep insured while this contract is in force, with such companies and on such forms as are acceptable to the Village, at the *Contractor*'s expense, Comprehensive General Liability Insurance covering premises and operations liability; *Contractor*'s Contingency Liability with respect to the operations of Subcontractor's Completed Operations Liability, Contractual Liability and Non-Owned Automobile Liability Insurance. The limits of liability for Personal Injury and Property Damage combined shall be for not less than $5,000,000 each occurrence. The Village and Contract Administrator shall be added as additional named insured under the Comprehensive General Liability. A Cross Liability Clause shall be made part of the Comprehensive General Liability Insurance. All policies shall provide that they cannot be cancelled, lapsed, or materially changed without at least thirty (30) days notice to the Village by Registered Mail. Prior to the commencement of any work hereunder, the *Contractor* shall file with the Village a certificate of insurance for each policy required. All such insurance shall be maintained until final completion of the work, including the making good of faulty work or materials, except that coverage for completed operations liability shall in any event be maintained for twelve (12) months from date of final acceptance. Should the *Contractor* neglect to obtain and/or maintain insurance as aforesaid, or deliver such policy or policies to the Village, then it shall be lawful for the Village to obtain and/or maintain such insurance and the *Contractor* hereby appoints the Village his true and lawful attorney to do all things necessary for this purpose. All monies expended by the Village for insurance premiums under the provisions of this clause shall be charged to the *Contractor*."

25.1	.2	Correction of Defects	**Add to Clause:** "Where in the opinion of the *Owner,* delay would cause serious loss or damage, repairs may be made without notice being sent to the *Contractor* and all expenses incurred will be charged to the *Contractor*."
	.3		GC25. 1.3 is deleted and the following substituted: 25.1.3 The Owner shall provide the *Contractor* with access, at all reasonable times, to the location of any defect or deficiency described in this GC to enable the *Contractor* to correct the defect or deficiency but the *Contractor* shall be responsible for 1) exposure of the defect or deficiency in order to correct or repair the defect, deficiency, 2) the restoration of the *Work* or other property that is disturbed or damaged in the course of (i) exposing the defect or deficiency, or (ii) correcting or repairing the defect or deficiency, and 3) all risks associated with any activity described in paragraphs (1) and (2).
26.1	.1	Partial Use	GC26. 1. 1 is amended by deleting "on written approval of the *Contract Administrator*" and substituting "with prior written notice to the *Contract Administrator*".

ISSUE FOR TENDER INFORMATION:

FRIENDSHIP TRAIL BRIDGE PROJECT

Appendix 1-MoTI Red Bridge No. 443 Bore Hole Logs

April 2018

ISL Engineering and Land Services

BOREHOLE LOG — Hole No. 79-1 (Sheet 1 of 2)

Ministry of Transportation and Highways — Geotechnical and Materials Branch

Project: PEMBERTON - PORTAGE ROAD, RED BRIDGE
Location: STA 5+84 m, 4 m LT
Elevation: 206.41 m
Driller: B. LINTOTT
Method: DIAMOND DRILL
Dates: 79-8-2/7

Depth (m)	Sample Type	Blowcount	Recovery m	Gravel	Sand	Fines	W_L	W_P	W	Classification	Description	Other Tests
1.5	S	6	.15		10	90			27	ML	firm sandy SILT	
2.1–2.7										SP	SAND and GRAVEL (drillers interp.) 2.1 m – 2.7 m	
3	S	8	.20	15	40	35				SM	10% ORGANIC	
4.5	S	3	.20			75	[illegible]	[illegible]	[illegible]	OH	25% ORGANIC	
6	S	5	.25		7	87			45	OL	10% ORGANIC	
7.5	S	7	.25		5	90	40	25	40	ML	5% ORGANIC	
9	S	13	.20	5	83	12				SM	8.5 m — compact SAND traces of gravel and silt	M
10.5	S	14	.15	15	80	5				SP		
12	S	14	.25	1	93	6				SP		M
13.5	S	12	.25	10	85	5				SP		
15	S	10	.01	1	96	2				SP		M
18	S	16	.30	5	90	5				SP		

Description (3–7.5 m): soft and firm silty SAND and organic SILT

File No. 01-13-09 — Drawn BK-DHA — Sheet 1 of 2

BOREHOLE LOG — Hole No. 79-3 (Sheet 1 of 2)

Ministry of Transportation and Highways — Geotechnical and Materials Branch

Project: PEMBERTON - PORTAGE ROAD, RED BRIDGE
Location: STA 6+69 m, 1 m LT.
Elevation: 206.36 m
Driller: B. LINTOTT
Method: DIAMOND DRILL
Dates: 79-7-27/2

Drilling details: QUICK-GEL USED IN DRILLING FLUID

Depth (m)	Sample Type	Blowcount	Recovery m	Gravel	Sand	Fines	W_L	W_P	W	Classification	Description	Other Tests
0–1.2										(GP)	loose GRAVEL, drillers inter. 1.2 m	
1.5	S	8	.20	40	5	60	34	27	26	ML	5% organic	
3	S	2	.35			80	77	55	67	OH	20% organic	
4.5	S	2	.20		13	80			34	ML	5% organic	
6	S	9	.30		45	55			30	ML		
7.5	S	3	.30		9	90			44	ML	5% organic	
9	S	16	.30		60	40				SM	8.2 m — compact silty SAND slightly organic	M
10.5	S	21	0							(SP)	drillers interpretation	
12	S	16	.20	1	93	6				SP	compact SAND some with fine gravel some silt	M
13.5	S	19	.20	15	80	5				SP		
15	S	14	.20	5	90	5				SP		M
18	S	40	.25	5	85	10				SP-SM	dense layer	

Description (3–6 m): soft to firm sandy SILT

File No. 01-13-09 — Drawn BK-DHA — Sheet 1 of 2

BOREHOLE LOG — Hole No. 86-0 (Sheet 1 of 2)

Ministry of Transportation and Highways — Geotechnical and Materials Branch

Project: PEMBERTON - PORTAGE RD, RED BRIDGE
Location: STA 5+56.2 m, 6.0 m LT
Elevation: 207.63 m
Driller: M. SMALLWOOD
Method: DIAMOND DRILL
Dates: 86/05/9-10

Depth (m)	Sample Type	Blowcount	Recovery (m)	Gravel	Sand	Fines	W_L	W_P	W	Classification	Description	Other Tests
0–1.5										(GP)	Driller reports sandy GRAVEL 1.5 m	
1.5	S	10	.05	15	15	65				OH	5% ORGANIC firm sandy organic CLAY 2.1 m	
3	S	9	.20		75	25				SM	loose silty SAND 4.3 m	
4.5	S	10	0							(SP)	Driller reports sandy GRAVEL 5.3 m	
6	S	4	.35		10	85			61	OH	5% Organic soft sandy organic CLAY 7.0 m	
7.5	S	4	.35		9	55	57	36	39	ML	soft to firm sandy SILT and sandy organic CLAY	
9	S	6	.30		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	OH / ML	9.3 m — very sandy SILT	
10.5	S	11	23	10	85	5				SP	loose to compact silty, gravelly SAND	
12	S	9	.20	9	90	5				SP		
13.5	S	15	.20	5	85	10				SP-SM		
15	S	14	.20	5	85	10				SP-SM		
18	S	18	.25		95	5				SP	compact silty SAND	

File No. 01-13-09 — Drawn BK-DHA — Sheet 1 of 2

SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOL	SOIL TYPE
COARSE GRAINED SOILS	GRAVEL & GRAVELLY SOILS	GW	WELL-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GP	POORLY-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GM*	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		GC*	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND & SANDY SOILS	SW	WELL-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SP	POORLY-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SM*	SILTY SANDS, SAND-SILT MIXTURES
		SC*	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS L.L.<50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS L.L.>50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS
TOPSOIL		TS	TOPSOIL WITH ROOTS, ETC.
COBBLES		SB	ROCK FRAGMENTS AND COBBLES, PARTICLE SIZE 75 mm TO 300 mm DIAMETER
BOULDERS		LB	BOULDERS, PARTICLE SIZE OVER 300 mm IN DIAMETER

*					
GM_1;	GC_1;	SM_1;	SC_1;	12 – 20%	passing No. 200 sieve
GM_2;	GC_2;	SM_2;	SC_2;	20 – 30%	
GM_3;	GC_3;	SM_3;	SC_3;	30 – 40%	
GM_4;	GC_4;	SM_4;	SC_4;	40 – 50%	

BOREHOLE LOG — Hole No. 79-1 (Sheet 2 of 2)

Ministry of Transportation and Highways — Geotechnical and Materials Branch

Project: PEMBERTON - PORTAGE ROAD, RED BRIDGE
Location: STA 5+84 m, 4 m LT
Elevation: 206.41
Driller: B. LINTOTT
Method: DIAMOND DRILL
Dates: 79-8-2/7

Depth (m)	Sample Type	Blowcount	Recovery m	Gravel	Sand	Fines	W_L	W_P	W	Classification	Description	Other Tests
18.5	S	16	.30	5	90	5				SP	compact SAND traces of gravel and silt	
22	S	15	.30	2	92	6				SP		M
25	S	21	.30	5	90	6				SP		
28	S	19	.30		94	6				SP		M
31	S	20	.61		95	5				SP		
34	S	20	.30	10	85	6				SP		
36.5	S	39	.30		91	9				SP-SM		M

END OF HOLE 37.0 m

File No. 01-13-09 — Drawn BK-DHA — Sheet 2 of 2

H161 (REV 84 08) — DK 377

BOREHOLE LOG — Hole No. 79-5 (Sheet 2 of 2)

Ministry of Transportation and Highways — Geotechnical and Materials Branch

Project: PEMBERTON - PORTAGE ROAD, RED BRIDGE
Location: STA 6+69, 1 m LT
Elevation: 206.36 m
Driller: B. LINTOTT
Method: DIAMOND DRILL
Dates: 79-7-27/2

Depth (m)	Sample Type	Blowcount	Recovery m	Gravel	Sand	Fines	W_L	W_P	W	Classification	Description	Other Tests
18.5	S	40	.25	5	85	10				SP-SM	dense layer; compact SAND some with fine gravel, some silt	
22	S	18	.25	3	91	6				SP		M
25	S	21	.20		95	5				SP		
28	S	18	.35	1	94	5				SP		M
31	S	27	.30	10	85	5				SP		
34	S	44	.20	9	73	18				SM	dense layer	M
36.5	S	22	.61		95	5				SP		

END OF HOLE 37.0 m

File No. 01-13-09 — Drawn BK-DHA — Sheet 2 of 2

H181 (REV 84 08) — DK 377

BOREHOLE LOG — Hole No. 86-0 (Sheet 2 of 2)

Ministry of Transportation and Highways — Geotechnical and Materials Branch

Project: PEMBERTON - PORTAGE RD, RED BRIDGE
Location:
Elevation:
Driller:
Method:
Dates:

Depth (m)	Sample Type	Blowcount	Recovery m	Gravel	Sand	Fines	W_L	W_P	W	Classification	Description	Other Tests
18.5	S	18	25		95	5				SP		
21.5	S	12	.20		95	5				SP	compact silty SAND	
24.5	S	17	.20		95	5				SP		
28	S	16	.20		95	5				SP		
31	S	19	.20		95	5				SP		
34	S	24	.20		95	5				SP		
36.5	S	27	.25		65	35				SM		

36.9 — END OF HOLE 36.9 m

File No. 01-13-09 — Drawn BK-DHA — Sheet 2 of 2

181 (REV 84 08)

Legend (each log):
SAMPLE TYPE: A - Auger; C - Core; D - Denison; S - Split Spoon; T - Shelby Tube; W - Wash
SHEAR STRENGTH: U - Unconfined Compression; L_v - Lab Vane; F_v - Field Vane; R - Remoulded
TESTS: M - Mechanical Analysis; Q,R,S - Triaxial Compression; C - Consolidation; DS - Direct Shear; W_L, W_P - Liquid, Plastic Limits; W - Moisture Content
Blowcount - Standard Penetration Test (ASTM 1586)

SAMPLE TYPE	SHEAR STRENGTH	TESTS
A - Auger	U - Unconfined Compression	M - Mechanical Analysis
C - Core	L_v - Lab Vane	Q R S - Triaxial Compression
D - Denison	F_v - Field Vane	C - Consolidation
P - Pitcher Sampler	R - Remoulded	D S - Direct Shear
S - Split Spoon		W_L W_P - Liquid Plastic Limits
T - Shelby Tube		W - Moisture Content
W - Wash		

Blowcount - Standard Penetration Test (A S T M 1586)

PREPARED BY:
GEOTECHNICAL & MATERIALS BRANCH

DRAWING NO.		
INDEX	NEG. NO.	SHT. NO.
R	92091	1 of 1

REVISIONS

Date	Description	Initial

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

NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD
RED BRIDGE
BOREHOLE DATA - SHEET 1

PREPARED UNDER THE DIRECTION OF	DATE	SCALE		NEG No	
86-06-06 (SUPERVISING GEOTECHNICAL ENGINEER)		DRAWN DHA 86/06/06		CHECKED	
RECOMMENDED: L. C. Johnson (DIRECTOR OF BRIDGE ENGINEERING)	DATE 86.07.14	ACCEPTED FOR CONSTRUCTION: MGElcton (EXECUTIVE DIRECTOR OF ENGINEERING)		DATE 1986 07 14	DRAWING No. 443-27

Ministry of Transportation and Highways

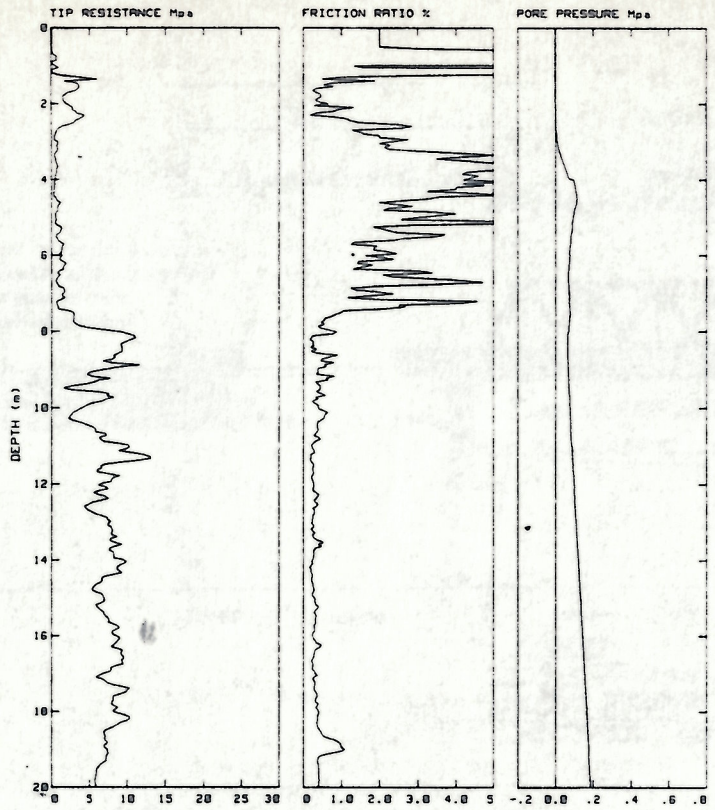
CONE PENETROMETER LOG

Geotechnical and Materials Branch

HOLE NO 86-01

Project RED BRIDGE
Location STN: 5 + 63 O/S: 0.4m RT
Engineer TOM OXLAND

File No
Elevation 205.985
Date 04/21/86 14:37



Ministry of Transportation and Highways

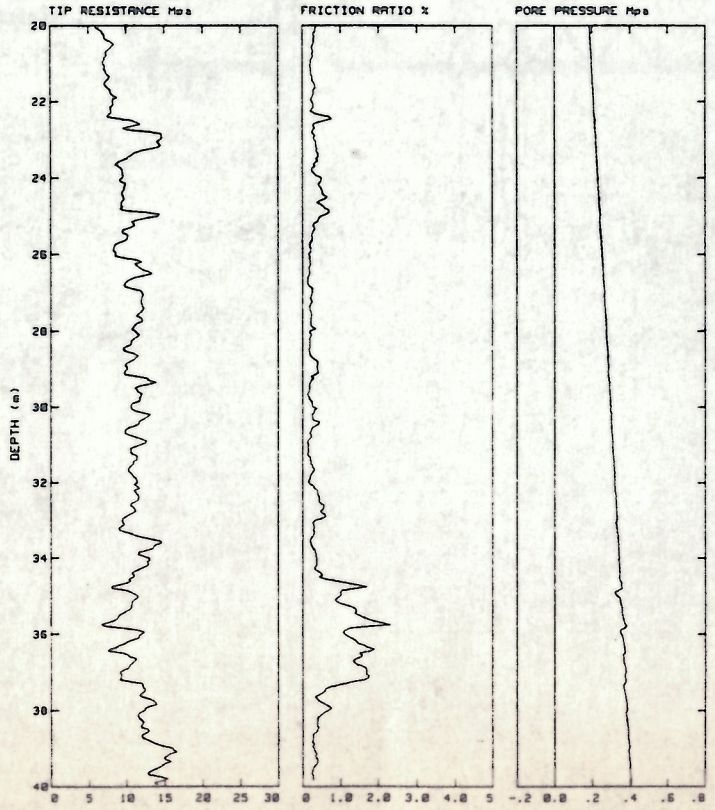
CONE PENETROMETER LOG

Geotechnical and Materials Branch

HOLE NO 86-01

Project RED BRIDGE
Location STN: 5 + 63 O/S: 0.4m RT
Engineer TOM OXLAND

File No
Elevation 205.985
Date 04/21/86 14:37



SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOL	SOIL TYPE
COARSE GRAINED SOILS	GRAVEL & GRAVELLY SOILS	GW	WELL-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GP	POORLY-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GM*	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		GC*	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND & SANDY SOILS	SW	WELL-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SP	POORLY-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SM*	SILTY SANDS SAND-SILT MIXTURES
		SC*	CLAYEY SANDS SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS LL <50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LL >50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS
TOPSOIL		TS	TOPSOIL WITH ROOTS, ETC.
COBBLES		SB	ROCK FRAGMENTS AND COBBLES, PARTICLE SIZE 75 mm TO 300 mm DIAMETER
BOULDERS		LB	BOULDERS, PARTICLE SIZE OVER 300 mm IN DIAMETER

* GM_1:	GC_1:	SM_1:	SC_1:	12 – 20%	passing No. 200 sieve
GM_2:	GC_2:	SM_2:	SC_2:	20 – 30%	
GM_3:	GC_3:	SM_3:	SC_3:	30 – 40%	
GM_4:	GC_4:	SM_4:	SC_4:	40 – 50%	

SAMPLE TYPE	SHEAR STRENGTH	TESTS
A - Auger	U - Unconfined Compression	M - Mechanical Analysis
C - Core	L_v - Lab Vane	$\bar{Q}\bar{R}S$ - Triaxial Compression
D - Denison	F_v - Field Vane	C - Consolidation
P - Pitcher Sampler	R - Remoulded	D S - Direct Shear
S - Split Spoon		W_L W_p - Liquid Plastic Limits
T - Shelby Tube		W - Moisture Content
W - Wash		

Blowcount - Standard Penetration Test (A S T M 1586)

PREPARED BY:
GEOTECHNICAL & MATERIALS BRANCH

DRAWING NO.

INDEX	NEG. NO.	SHT. NO.
R	92092	1 of 2

REVISIONS

Date	Description	Initial

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

NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD
RED BRIDGE
BOREHOLE DATA - SHEET 2

PREPARED UNDER THE DIRECTION OF	DATE	SCALE	NEG No
SUPERVISING GEOTECHNICAL ENGINEER	86-06-06	DRAWN DHA 86/04/06	CHECKED
RECOMMENDED: L. E. Johnson, DIRECTOR OF BRIDGE ENGINEERING	DATE 86.07.16	ACCEPTED FOR CONSTRUCTION: M.G. Elston, EXECUTIVE DIRECTOR OF ENGINEERING	DATE 1986 07 16 / DRAWING No. 443-28

ISSUE FOR TENDER INFORMATION:

FRIENDSHIP TRAIL BRIDGE PROJECT

Appendix 2-IFT Drawings for the Friendship Trail Pedestrian Bridge

April 2018

ISL Engineering and Land Services

Village of PEMBERTON

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE

HIGHWAY 99, PEMBERTON, BC

Description	*Drawing No.*	*Description*	*Drawing No.*
Specifiation Notes	17133-450-01	Concrete Deck Plan and Detail	17133-450-09
Site Plan & Profiles	17133-450-02	Concrete PlanS and Detail Sheet 2	17133-450-10
Site Sections	17133-450-03	Concrete Sections	17133-450-11
General Arrangement Plan, Profiles & Sections	17133-450-04	Ballast Wall Sections and Details	17133-450-12
Steel Girder Details	17133-450-05	Sieve Analysis Reports	17133-450-13
Splice & Bearing Details	17133-450-06	Reference Drawing: MOTI - Standard Steel Bicycle Fence	2891-2
Pile Details	17133-450-07	Reference Drawing: MOTI - Standard Steel Bicycle Fence	SP741-05.01 to 05.04
Concrete Plan and Details	17133-450-08	Reference Drawing: MOTH - Red Bridge	#O443

PROFESSIONAL ENGINEER
A. A. J. ALWAILY
37[illegible]
PROVINCE OF BRITISH COLUMBIA

INTENDED TO BE PLOTTED ON 22"x34"
ANY COPIES or PDFS MAY NOT BE TO SCALE

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE (U.N.O.).
2. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL BENCHMARKS
3. REFER TO GEOTECHNICAL REVIEW REPORT.
4. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING SAFETY IN & AROUND THE WORK SITE. PROPER & SAFE METHODS OF CONSTRUCTION SHALL BE USED AT ALL TIMES. AS A MINIMUM, THE REQUIREMENTS OF THE LATEST EDITION OF WORK SAFE BC'S HEALTH & SAFETY REGULATIONS PUBLICATION, CANADIAN CONSTRUCTION SAFETY CODE & THE PROVINCIAL GOVERNMENT SHALL BE ADHERED TO. WHERE THERE ARE ANY DISCREPANCIES BETWEEN THE ABOVE, THE MOST STRINGENT SHALL APPLY.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DIMENSIONS IN THE FIELD TO SUIT EXISTING CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD MEASUREMENTS & CONTROL PRODUCTION OF WORK ON SITE & ELSEWHERE TO FULFILL THE INTENT OF THE DRAWINGS.

DESIGN SPECIFICATION:

1. THIS PERMANENT BRIDGE HAS BEEN DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENCED TO PRACTICE IN BRITISH COLUMBIA. THE BRIDGE HAS BEEN DESIGNED IN ACCORDANCE TO CAN/CSA-S6 & THE FOLLOWING LOAD DIAGRAM:

   MAINTENANCE TRUCK (GVW 8,158kg):

   PEDESTRIAN LOAD: 4.0kPa

2. THERMAL ACTION:

MAXIMUM DAILY TEMPERATURE:	+32°C
MINIMUM DAILY TEMPERATURE:	-21°C

3. WIND LOAD (DESIGN WIND PRESSURE Q50 = 560Pa):

ON STRUCTURE:	2.46kN/m^2
ON LIVE LOAD:	1.48kN/m^2

4. CONSTRUCTION LIVE LOAD SHALL BE ACCORDING TO CAN/CSA-S6-14 SECTION 3.16.4.2.

   CONSTRUCTION LIVE LOAD 0.5kPa

5. SNOW LOAD: 5.3kPa
6. SEISMIC LOADS ARE BASED ON THE 2014 CANADIAN HIGHWAYS BRIDGE DESIGN CODE FOR AN EARTHQUAKE WITH A PROBABILITY OF EXCEEDANCE OF 2% IN 50 YEARS, WITH THE FOLLOWING SEISMIC DATA:

LOCATION	Sa(0.2)	Sa(0.5)	Sa(1.0)	Sa(2.0)
PEMBERTON, BC (ZONE 3)	0.621	0.464	0.279	0.280

7. DESIGN SPEED: 30km/hr
8. ICE LOADING CRITERIA: 700kPa

BEARING ASSEMBLIES:

1. ALL BEARING PAD MATERIAL SHALL BE OZONE RESISTING NATURAL RUBBER (NATURAL POLYISOPRENE) IN ACCORDANCE WITH CAN/CSA-S6-14 WITH A DUROMETER HARDNESS OF 50.
2. ALL BEARING PAD STEEL SHIMS SHALL BE ROLLED STEEL WITH A MINIMUM Fy = 230MPa.
3. STEEL COMPONENTS OF BEARING SHALL CONFORM TO CSA G40.21-M, PLATE GRADE OF 350AT OR GALVANIZED.
4. MAXIMUM EXPANSION JOINT MOVEMENT OF 25mm.
5. ALL BEARING PAD CERTIFICATES SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL.

PIPE PILE NOTES:

1. STEEL PIPE FOR THE PILES SHALL CONFORM TO ASTM A252, GRADE 3 (fy=310MPa MINIMUM), DIAMETER & WALL THICKNESS AS INDICATED ON THE DRAWINGS. MILL CERTIFICATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO DRIVING PILES.
2. PILES SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE DRAWINGS. MAXIMUM TOLERANCE FROM LOCATIONS SHOWN ON THE DRAWINGS SHALL BE 75mm AT GROUND & 25mm AT CUT-OFF ELEVATIONS.
3. PILES SHALL BE SPLICED, IF NECESSARY, IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS. PILING SHALL BE ALIGNED SUCH THAT PILES ARE STRAIGHT FROM END TO END.
4. ALL WELDING SHALL CONFORM IN QUALITY & WORKMANSHIP TO CURRENT CSA W59. WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED FOR DIVISION 1 OR DIVISION 2 OF CSA W47.1 & APPROVED BY DWB Consulting Services Ltd. CERTIFICATION SHALL BE IN EFFECT THROUGHOUT THE CONSTRUCTION PERIOD.
5. FOR DESIGN PARAMETERS, REFER TO DWB CONSULTING'S "GEOTECHNICAL REVIEW REPORT" FOR THE "Village of Pemberton Friendship Trail Bridge Project".
6. PILE DRIVING EQUIPMENT SPECIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF PILE DRIVING. PILES SHALL BE DRIVEN AS SHOWN IN THE FOLLOWING TABLE:

	ABUTMENTS		
	ABUTMENTS	PIER 1	PIER 2 & 3
SERVICE LOAD (SLS)	234kN	697kN	697kN
ULTIMATE LOAD (ULS)	330kN	980kN	980kN
PILE DEPTH	20m	30m	26m
PILE END	OPEN	CLOSED	CLOSED

STRUCTURAL STEEL:

1. SUPERSTRUCTURE MEMBERS SHALL BE GRADE 350AT. BRACING MEMBERS SHALL BE GRADE 350A.
2. STRUCTURAL BOLTS SHALL BE ASTM A325, TYPE 3 M22 U.N.O. INSTALLED IN ACCORDANCE WITH CAN/CSA-S6-14. ALL BOLTS SHALL BE PREVIOUSLY UNUSED. BOLTS SHALL HAVE SUFFICIENT LENGTH SUCH THAT THE FULL THREAD IS EXCLUDED FROM SHEAR PLANES BETWEEN CONNECTED PARTS.
3. NELSON STUDS SHALL BE IN ACCORDANCE WITH ASTM A108, GRADE 1015, 1018, OR 1020. SHEAR STUDS SHALL MEET THE REQUIREMENTS OF CAS W59 APPENDIX H FOR TYPE A & B STUDS.
4. NELSON STUDS SHALL BE 22ø x150mm U.N.O.
5. FLANGE TO WEB FILLET WELD SHALL USE A SUBMERGED ARC WELD PROCESS AS PER CSA W59, CLAUSE 4.3.2.4.

FABRICATION SPECIFICATIONS:

1. ALL DIMENSIONS ARE CORRECT AT 15°C, GIRDER LENGTHS ARE MEASURED ALONG THE CENTRELINE OF GIRDER.
2. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION (MIN. TWO WEEK REVIEW PERIOD).
3. ALL MATERIALS OR MATERIAL COMBINATIONS SHALL CONFORM TO APPLICABLE CSA OR ASTM STANDARDS & SHALL HAVE THE APPROPRIATE SUPPORTING IDENTIFICATION.
4. GIRDERS SHALL MEET THE CAMBER REQUIREMENTS AS SHOWN ON 17133-540-05.
5. ALL WELDING SHALL CONFORM TO CURRENT CSA W59. WELDING ELECTRODES SHALL BE COMPATIBLE WITH BASE METALS. ALL WELDS SHALL BE 8mm U.N.O.
6. THE FABRICATOR RESPONSIBLE FOR WELDED CONSTRUCTION SHALL BE CERTIFIED FOR DIVISION 1 OR 2 OF CSA W47.1-09 – CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES. CERTIFICATION SHALL BE IN EFFECT THROUGHOUT THE MANUFACTURING PERIOD.
7. FIELD WELDING SHALL BE COMPLETED BY A COMPANY CERTIFIED TO CSA W47.1 DIVISION 3 OR BETTER.
8. ALL WELDS SHALL BE VISUALLY INSPECTED.
9. CONTACT THE ENGINEER FOR FABRICATION INSPECTIONS A MINIMUM OF TWO WEEKS PRIOR TO SHIPPING OF FABRICATED ITEMS.

CONCRETE NOTES:

1. PRECAST CONCRETE SHALL CONFORM TO CSA A23.1 EXPOSURE CLASS C1, f'c=35MPa AT 28 DAYS. PRECAST CONCRETE SHALL BE FABRICATED IN ACCORDANCE WITH CSA A23.4 BY A PLANT CERTIFIED IN ACCORDANCE WITH CSA A23.4. FABRICATION TOLERANCES TO CSA A23.4. FINISH SHALL BE TRANSVERSE BROOM TO TOP OF DECK PANELS, OTHERWISE TO CSA A23.1 & A23.4. ALL CORNERS SHALL COME WITH 20x20 CHAMFER U.N.O. ON THE APPLICABLE DRAWINGS.
2. THE CONCRETE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO CASTING.
3. THE ADDITION OF FLY ASH SHALL NOT EXCEED 15% BY MASS OF PORTLAND CEMENT IN SUBSTRUCTURE CONCRETE.
4. ALL CONCRETE IN CONTACT WITH NATURAL SOIL SHALL BE MADE ACCORDING TO THE CSA SPECIFICATION FOR EXPOSURE CLASSIFICATION S-2, THIS WILL REQUIRE A 56 DAY COMPRESSIVE STRENGTH OF 35MPa, A WATER CEMENT RATIO NO HIGHER THAN 40, & THE USE OF TYPE HS OR HSb PORTLAND CEMENT.

REINFORCING STEEL:

1. ALL REINFORCING STEEL SHALL HAVE A MINIMUM GRADE OF fy=400MPa.
2. TOP MAT OF DECK SHALL BE EPOXY COATED STEEL (CAN/CSA-G30.18).
3. REINFORCING SHALL CONFORM TO CAN/CSA G30.18M GRADE 400R. REINFORCING STEEL SHALL NOT BE WELDED/TACK WELDED.

GROUT NOTES:

1. GROUT SHALL BE NON-SHRINK PORTLAND CEMENT BASED WITH A MINIMUM COMPRESSIVE STRENGTH OF 35MPa AT 28 DAYS, INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. GROUT SHALL BE A MIXTURE OF FINE & COARSE GROUT DEPENDING ON APPLICATION, SEE DRAWINGS FOR DETAILS.
2. FIELD SAMPLING OF GROUT PROCEDURES SHALL CONFORM WITH DESIGN REQUIREMENTS.

DECK & RAIL NOTES:

1. STEEL RAILS SHALL BE CSA G40.21M GRADE 350W (POWDER COATED BLACK) OR ASTM A500 GRADE C (POWDER COATED BLACK).
2. STEEL POSTS & PLATE SHALL BE CSA G40.21M GRADE 350W (POWDER COATED BLACK).
3. SHOP WELDING SHALL BE IN ACCORDANCE WITH CSA W59. FABRICATOR SHALL BE CERTIFIED FOR DIVISION 1, 2 OR 3 IN ACCORDANCE WITH CSA W47.1. FIELD WELDING (IF ANY) SHALL BE DONE BY COMPANY CERTIFIED TO CSA W47.1 DIVISIONS 1, 2 OR 3. MINIMUM 6mm FILLET WELD UNLESS NOTED OTHERWISE.
4. INSERTS SHALL BE GALVANIZED TO CSA G164, MINIMUM 610g/m^2 AFTER FABRICATION.
5. GUARDRAIL BRACKETS & POST SHALL BE GALVANIZED TO CSA G164, MINIMUM 610g/m^2 AFTER FABRICATION.

ERECTION SPECIFICATIONS:

1. ERECTION PROCEDURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. GIRDERS SHALL BE SUPPORTED BY TEMPORARY BRACING TO PREVENT DAMAGE DURING TRANSPORTATION & ERECTION.
3. ALL PRECAST COMPONENTS SHALL UTILIZE RECESSED LIFTING INSERTS AS LIFTING DEVICES. GROUT RECESSES AFTER INSTALLATION.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING GIRDERS IN CORRECT ALIGNMENT UNTIL THE DECK HAS BEEN GROUTED IN PLACE.
5. ONLY LOW IMPACT LIFTS ARE PERMITTED. THE ANGLE OF LIFT SHALL NOT EXCEED 30° FROM VERTICAL.

CERTIFICATION & QUALITY CONTROL:

1. CONCRETE TEST RESULTS BY AN APPROVED TESTING LABORATORY FOR ALL PRECAST CONCRETE COMPONENTS & FIELD GROUTING SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
2. MILL CERTIFICATES FOR ALL STEEL INCORPORATED INTO THE STRUCTURE SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
3. CERTIFICATION TO CSA STANDARDS FOR THE STEEL & PRECAST CONCRETE MANUFACTURERS SHALL BE IN EFFECT AT THE TIME OF TENDER OPENING & THROUGHOUT THE MANUFACTURING PERIOD.

ENDFILL NOTES:

1. BRIDGE ENDFILL SHALL CONSIST OF WELL GRADED, SELECT, GRANULAR MATERIAL (<75mm), FREE OF UNSUITABLE MATERIALS, FROZEN MATERIAL, & ORGANICS. BRIDGE ENDFILL SHALL BE CONSTRUCTED IN SUCCESSIVE HORIZONTAL LAYERS NOT EXCEEDING 200mm IN LOOSE THICKNESS, EACH LAYER SHALL BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DRY DENSITY. THE FINAL TWO LAYERS OF ENDFILL SHALL BE COMPACTED TO 100% STANDARD PROCTOR DRY DENSITY.
2. HEAVY EARTH COMPACTING EQUIPMENT OR OTHER HEAVY CONSTRUCTION EQUIPMENT SHALL NOT BE USED WITHIN 2.0m OF THE ABUTMENT & WALLS, WITH THE EXCEPTION OF A 10 TON VIBRATORY ROLLER FOR BASE PREPARATION.

RIPRAP NOTES:

1. CLASS 250kg RIPRAP SHALL BE HARD, DURABLE, ANGULAR ROCK AND IN ACCORDANCE TO THE "MoTI STANDARD SPECIFICATIONS" APPROXIMATE AVERAGE DIMENSION OF SPECIFIED ROCK CLASS MASS (Sg=2.640).

   CLASS 250kg AVERAGE SIZE ROCK RIPRAP, 1000mm THICK, WITH THE FOLLOWING ROCK GRADATION:

	DIAMETER
15% AVERAGE DIMENSION	260ø
50% AVERAGE DIMENSION	565ø
85% AVERAGE DIMENSION	815ø
<100% AVERAGE DIMENSION	965ø

   RIPRAP VOLUME: 390m^3 (EAST SIDE)

2. CLASS 100kg RIPRAP SHALL BE HARD, DURABLE, ANGULAR ROCK AND IN ACCORDANCE TO THE "MoTI STANDARD SPECIFICATIONS" APPROXIMATE AVERAGE DIMENSION OF SPECIFIED ROCK CLASS MASS (Sg=2.640).

   CLASS 100kg AVERAGE SIZE ROCK RIPRAP, 700mm THICK, WITH THE FOLLOWING ROCK GRADATION:

	DIAMETER
15% AVERAGE DIMENSION	195ø
50% AVERAGE DIMENSION	415ø
85% AVERAGE DIMENSION	600ø
<100% AVERAGE DIMENSION	715ø

   RIPRAP VOLUME: 15m^3 (WEST SIDE)
   15m^3 (EAST SIDE)

GEOTEXTILE NOTES:

1. LINE EXCAVATION & ROCK WITH NON-WOVEN GEOTEXTILE, MINIMUM CBR PUNCTURE STRENGTH (ASTM D6241) SHOULD BE 2220N (Armtec 250/Geotex 801 or APPROVED EQUIVALENT).

   APPROXIMATE GEOTEXTILE: 400m^2

HYDROLOGY NOTES:

1. REFER TO DWB CONSULTING'S "HYDROTECHNICAL SUMMARY REPORT" FOR THE "Village of Pemberton Friendship Trail Bridge Project".
2. HYDRAULIC DATA:

– Q200 FLOOD ELEVATION:	207.607m
– EXTREME HWL ELEVATION:	205.921m
– MEASURED STREAM VELOCITY:	2.0m/s
– MINIMUM CLEARANCE ABOVE Q200:	1.5m

PROFESSIONAL ENGINEER — A. J. ALWAILY — #17761 — PROVINCE OF BRITISH COLUMBIA

2018

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ISSUED FOR TENDER

DWB Consulting Services Ltd.
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Village of PEMBERTON

SCALE

CAD FILENAME 17133-540 Rev F
DATE 2018-03-13

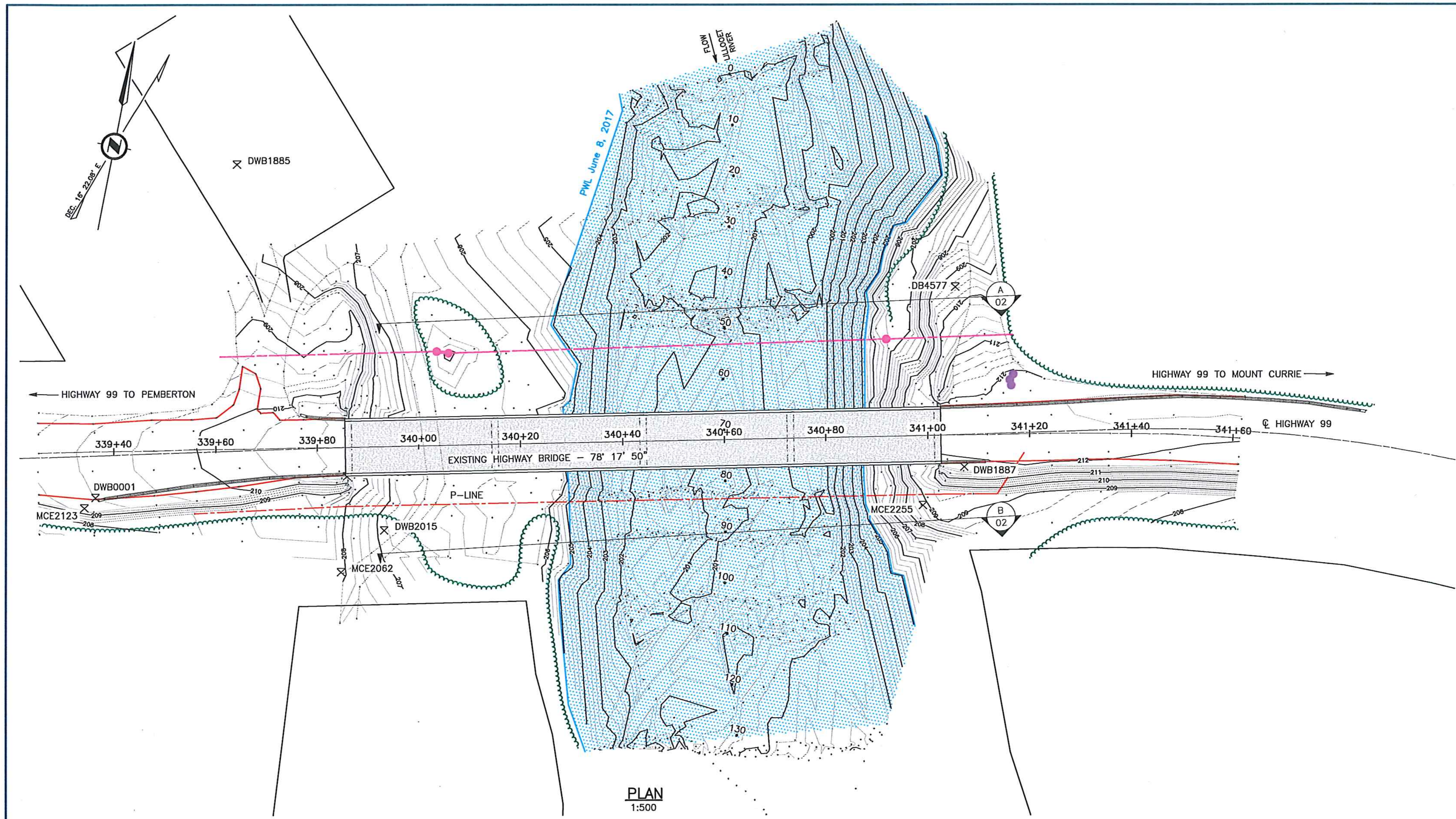
REV	DATE	REVISIONS	SIGNATURE
A	Jun 17	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC
Specification Notes

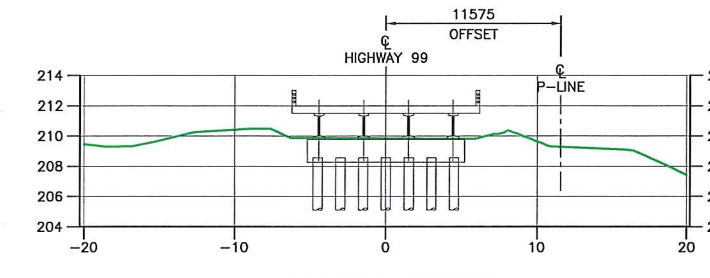
SENIOR DESIGNER
DATE 2018-03-13

DESIGNED A. Alwaily DATE 2017-06-30
QUALITY CONTROL E. Cheung DATE 2017-06-30
QUALITY ASSURANCE DATE
DRAWN W. Gibbons/KD DATE 2018-03-13

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-540-01	A



PLAN
1:500



ABUTMENT SECTION
1:250

CONTROL POINTS:

PROJECT:	17133–450 PEMBERTON BRIDGE		
DATE:	2017–06–13		
ZONE:	NAD83, UTM Z10, CGVD28 (HT2.0)		
	GROUND		
POINT ID	PROJECT NORTHING	PROJECT EASTING	ORTHO HEIGHT
DWB0001	5573790.383	516410.125	209.518
DWB1885	5573859.865	516424.715	207.202
DWB1887	5573828.823	516576.556	212.028
DWB2015	5573794.917	516467.086	206.876
MCE2026	5573785.238	516460.268	207.995
MCE2123	5573787.947	516408.342	209.420
MCE2255	5573819.877	516570.030	208.832
DB4577	5573863.131	516567.929	209.562
GCM93C033	5573803.907	516457.798	210.637

1. THE HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY WAS ESTABLISHED BY STATIC OBSERVATIONS, USING A CSRS–PPP SOLUTION ON DWB 1885.

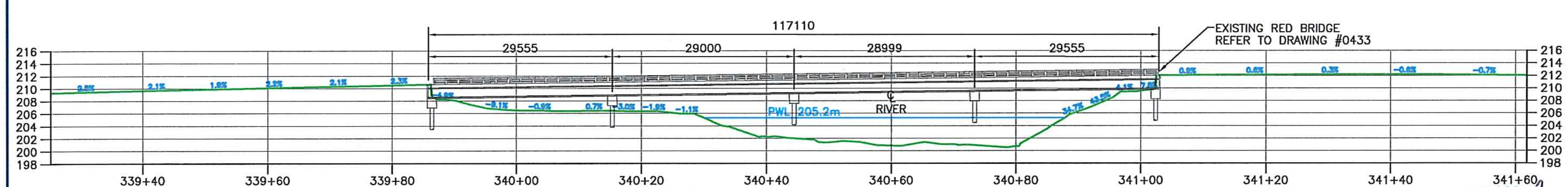
2. THE COORDINATES ARE SCALED FROM the UTM TACK POINT DWB1885.

3. THE PROJECT AVERAGE COMBINED SCALE FACTOR IS 0.99957307.

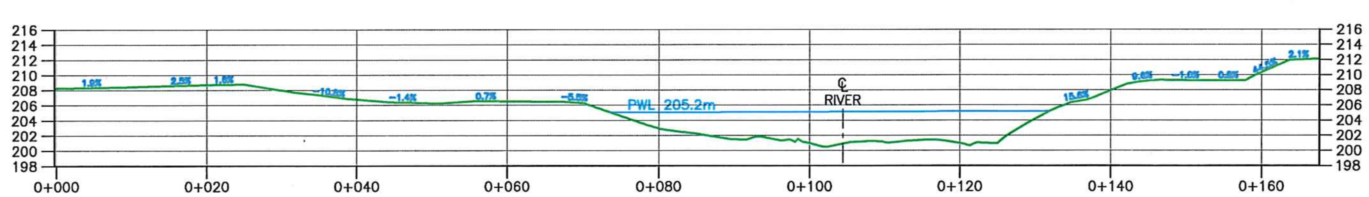
4. THE GRID REPRESENTS TRUE GROUND DISTANCES.

5. THE PLANIMETRIC DATA IS A COMBINATION OF RTK AND TOTAL STATION SURVEYS.

6. EXISTING UTILITY INFORMATION MAY NOT BE COMPLETE OR ACCURATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE OR EXPOSE THE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND ADVISE THE OWNER OF POTENTIAL CONFLICTS.



HIGHWAY 99 PROFILE
1:500



CENTRELINE PROFILE PEDESTRIAN BRIDGE
1:500

LEGEND:

- Bench Mark
- Survey Point
- Existing Road
- Centreline Highway 99
- Surveyed Line (P–LINE)
- Present Water Level
- Treeline
- Power Line
- Power Pole
- Man Hole/Sewer Pipe
- Property Line
- Trail

GENERAL NOTES:

1. SITE PLAN SURVEY WAS PERFORMED ON June 8, 2017 AND UNDER THE FOLLOWING CONDITIONS:
   - GENERAL WEATHER CONDITIONS: RAIN
   - SITE SUPERVISOR: D.K.
   - RODMAN: B.T.

2. RIPARIAN STREAM ASSESSMENT:
   - CLASSIFICATION: S1
   - AVERAGE WIDTH: 50.2m

3. HYDROLOGICAL DATA:
   - Q200 FLOW: $2177m^3/s$
   - DRAINAGE AREA: $2113km^2$
   - MEASURED STREAM VELOCITY: 2m/s

FOR ADDITIONAL INFORMATION REFER TO HYDROLOGY NOTES ON DRAWING 17133–450–01.

4. FOR SOILS DATA REFER TO DRAWING 17133–450–13.

5. SURVEY ESTABLISHED USING NO DECLINATION.

(DATA CORRECTED TO GRID DECLINATION)

7. CONTOURS SHOWN AT 0.25m INTERVALS.

8. LKI SEGMENT ID: 33405, ON HWY 99, Km 33.98.

PROFESSIONAL ENGINEER
A. J. ALWAILY
BRITISH COLUMBIA
Mar 13, 2018

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ISSUED FOR TENDER

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Village of PEMBERTON

SCALE As Noted

CAD FILENAME 17133-450 Rev A
DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Jun 17	Issued For Tender	A. Alwaily

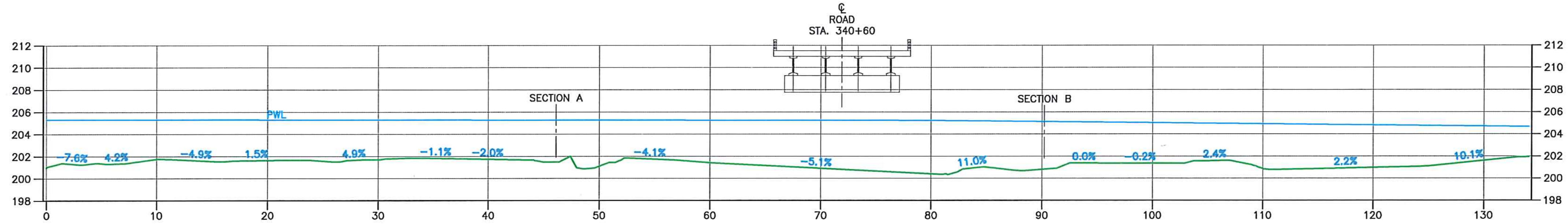
FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

Site Plan & Profiles

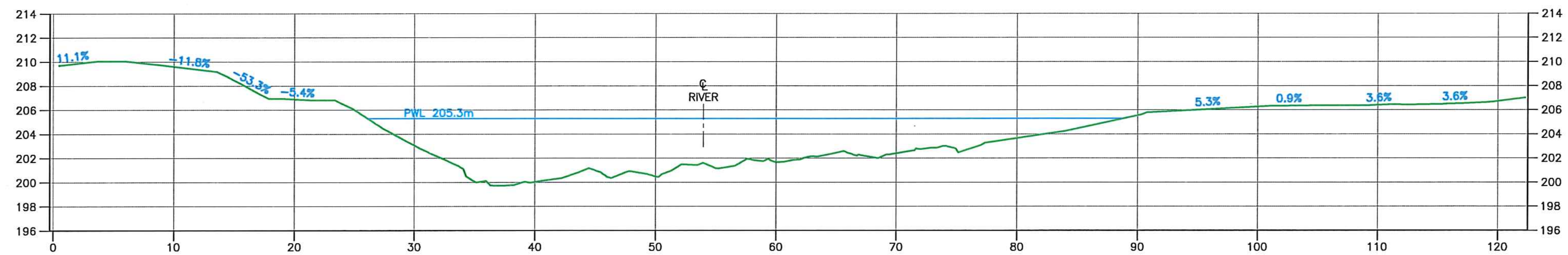
SENIOR DESIGNER
DATE 2018-03-13

DESIGNED A.Alwaily DATE 2016-06-08
QUALITY CONTROL E.Cheung DATE 2017-06-30
QUALITY ASSURANCE DATE
DRAWN SN/WG/KD/JCP DATE 2018-03-13

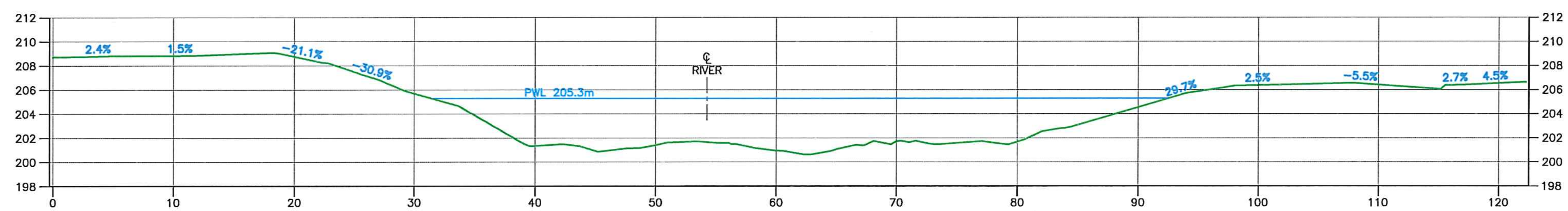
FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-450-02	A



RIVER PROFILE



(A/01) SECTION



(B/01) SECTION

LEGEND:

- Existing Ground
- Present Water Level

NOTES:

1. FOR GENERAL NOTES REFER TO 17133-450-02.
2. FOR SPECIFICATION NOTES REFER TO 17133-450-01.

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Village of PEMBERTON

SCALE 0 2 1:250 12m

CAD FILENAME 17133-450 Rev A

DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Jun 17	Issued For Tender	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE

HIGHWAY 99, PEMBERTON, BC

Site Sections

DESIGNED A.Alwaily DATE 2016-06-08

QUALITY CONTROL E.Cheung DATE 2017-06-30

QUALITY ASSURANCE DATE

DRAWN SN/WG/KD/JCP DATE 2018-03-13

SENIOR DESIGNER

DATE 2018-03-13

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-450-03	A

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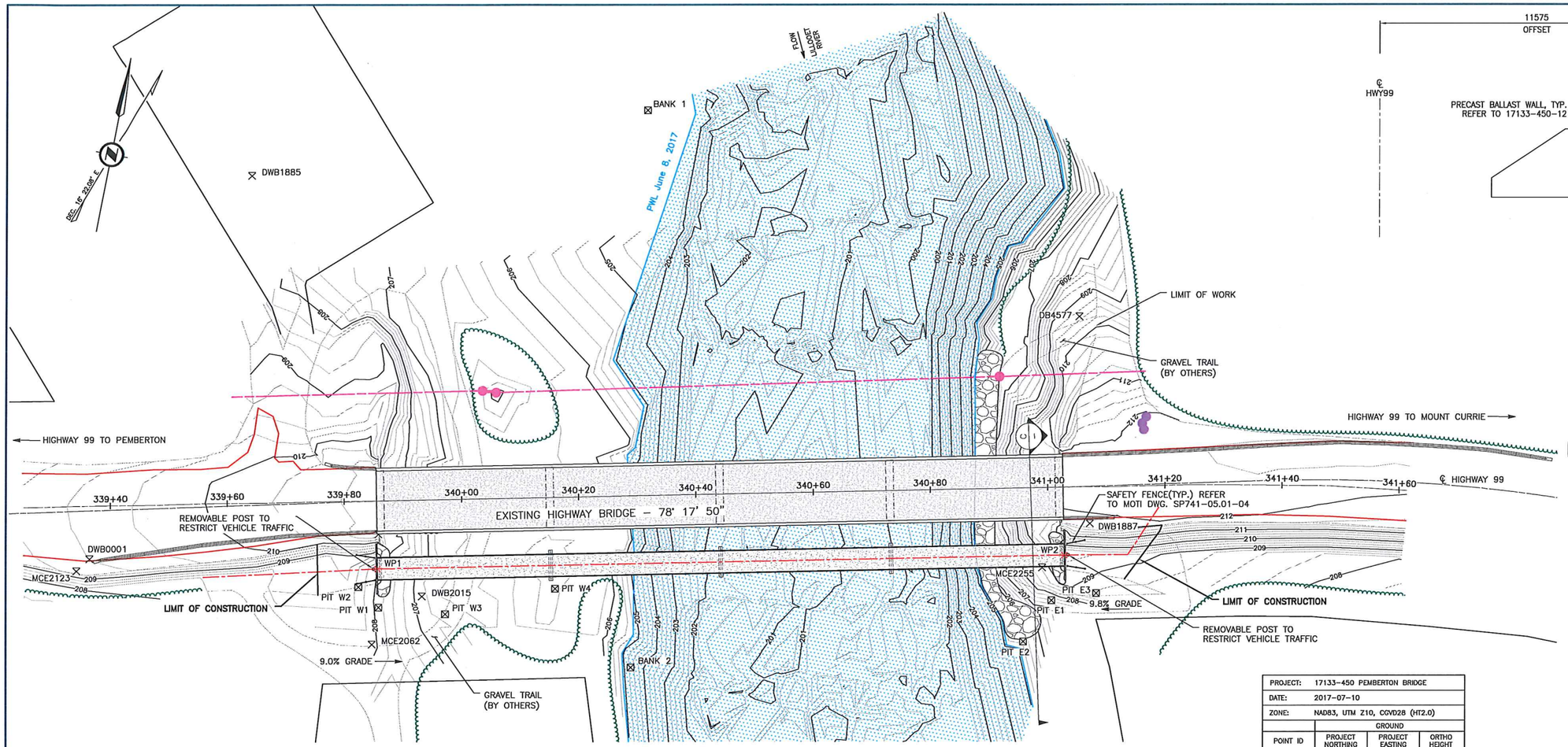
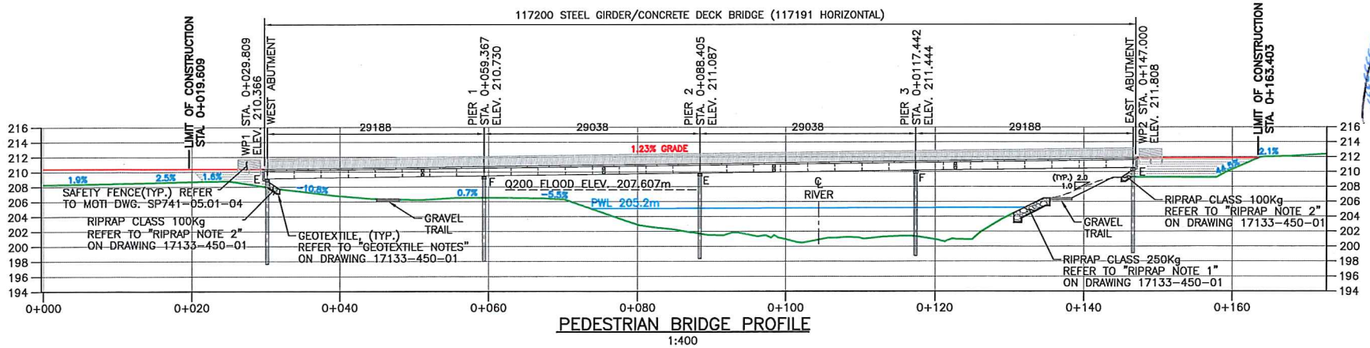


PLAN
1:400

℄ ABUTMENT SECTION
1:50

TYPICAL PIER SECTION (2,3)
1:50

PROJECT:	17133-450 PEMBERTON BRIDGE		
DATE:	2017-07-10		
ZONE:	NAD83, UTM Z10, CGVD28 (HT2.0)		
	GROUND		
POINT ID	PROJECT NORTHING	PROJECT EASTING	ORTHO HEIGHT
WP1	5573798.109	516458.733	210.366
WP2	5573822.722	516573.310	211.808



PEDESTRIAN BRIDGE PROFILE
1:400

INTENDED TO BE PLOTTED ON 22"x34"
ANY COPIES or PDFS MAY NOT BE TO SCALE

ISSUED FOR TENDER

LEGEND:

- Bench Mark
- Existing Road
- Centreline Highway 99
- Pedestrian Bridge Road Centreline
- Present Water Level
- Treeline
- Power Line
- Power Pole
- Man Hole/Sewer Pipe
- Property Line
- Trail
- Soil Sample Location

NOTES:

1. FOR SPECIFICATION NOTES REFER TO 17133-450-01.
2. THE CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL DITCHLINES.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL BENCHMARKS & ANY UTILITIES.
4. FOR SOILS DATA REFER TO DRAWING 17133-450-13.
5. FOR ADDITIONAL PIER DETAILS REFER TO DRAWING 17133-450-07.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. J. ALWAY
31764
Nov 13, 2018

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Village of PEMBERTON

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE

HIGHWAY 99, PEMBERTON, BC

General Arrangement Plan, Profiles & Sections

REV	DATE	REVISIONS	SIGNATURE
A	Jun 17	Issued For Tender	A. Alway

SCALE As Noted

CAD FILENAME 17133-450 Rev A

DATE 2018-03-12

DESIGNED A.Alway DATE 2016-06-08

QUALITY CONTROL E.Cheung DATE 2017-06-30

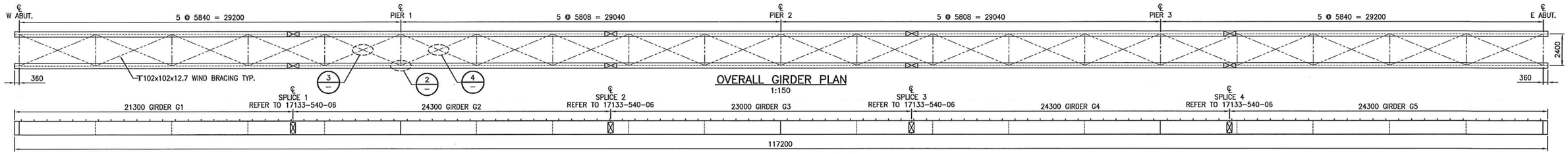
QUALITY ASSURANCE DATE

DRAWN SNWG/KDV/JCP DATE 2018-03-12

SENIOR DESIGNER

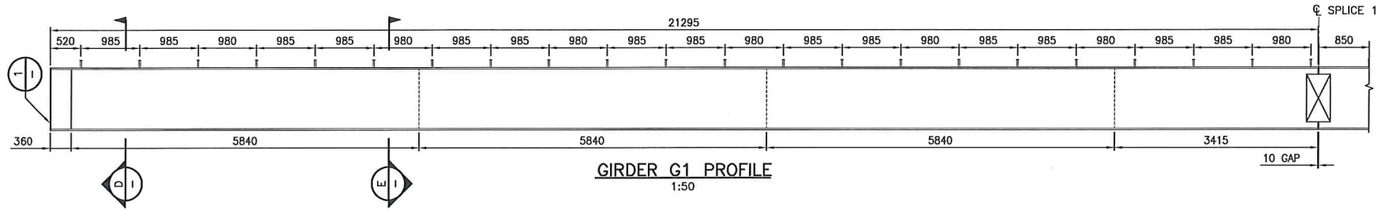
DATE 2018-03-13

FILE NUMBER | PROJECT NUMBER | REG LM | DRAWING NUMBER 17133-450-04 | REV A



OVERALL GIRDER PLAN
1:150

OVERALL GIRDER PROFILE
1:150



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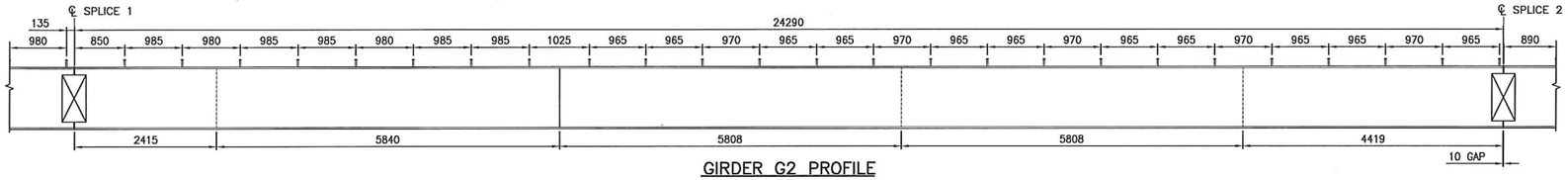

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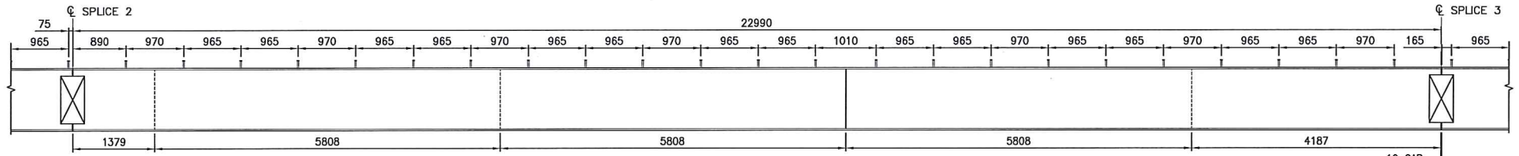

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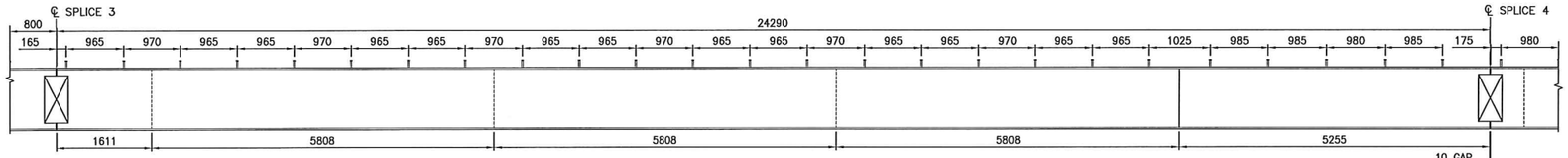

GIRDER G4 PROFILE
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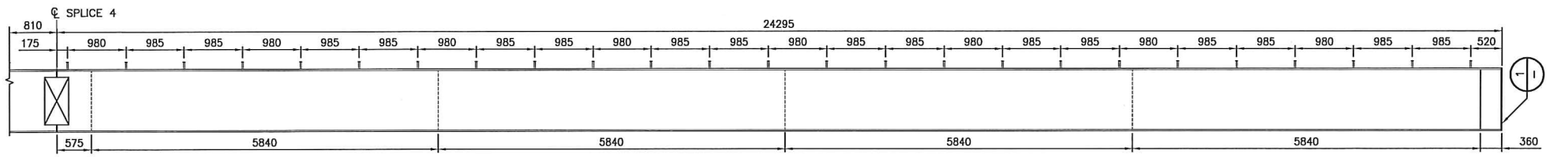

GIRDER G5 PROFILE
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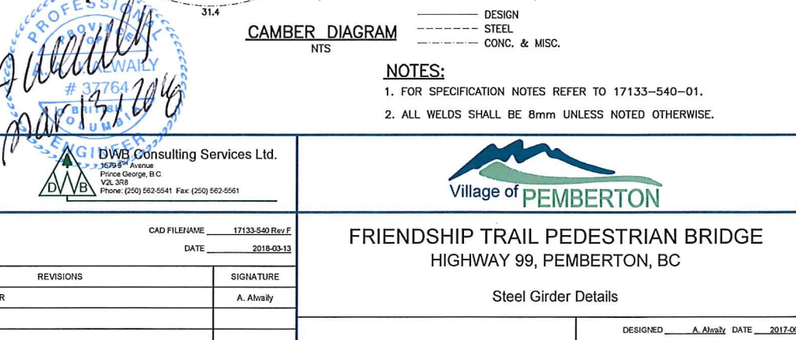
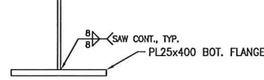


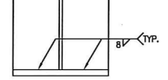
D BEARING DIAPHRAGM

BRIDGE HALF SECTIONS
1:12.5

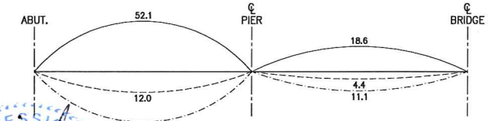
E INTERIOR DIAPHRAGM



TYPICAL GIRDER SECTION
1:12.5



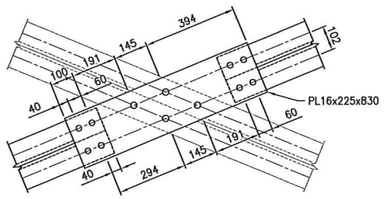
1 BULKHEAD DETAIL
1:12.5



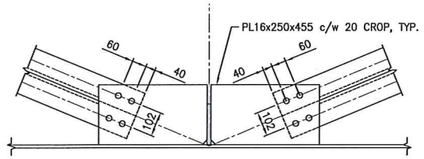
CAMBER DIAGRAM
NTS

NOTES:

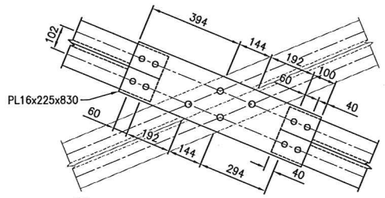
1. FOR SPECIFICATION NOTES REFER TO 17133-540-01.
2. ALL WELDS SHALL BE 8mm UNLESS NOTED OTHERWISE.



3 EXTERIOR BRACING CONNECTION
1:12.5



2 BRACING DIAPHRAGM CONNECTION
1:12.5



4 INTERIOR BRACING CONNECTION
1:12.5

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. ALWAILY # 37764 ENGINEERING

Jun 13 2017

DWB Consulting Services Ltd.
3679-5th Avenue
Prince George, B.C.
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Phone: (250) 562-5541 Fax: (250) 562-5561

Village of PEMBERTON

SCALE As Noted

CAD FILENAME 17133-540 Rev F

DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Jun 17	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE

HIGHWAY 99, PEMBERTON, BC

Steel Girder Details

SENIOR DESIGNER

DATE 2018-03-13

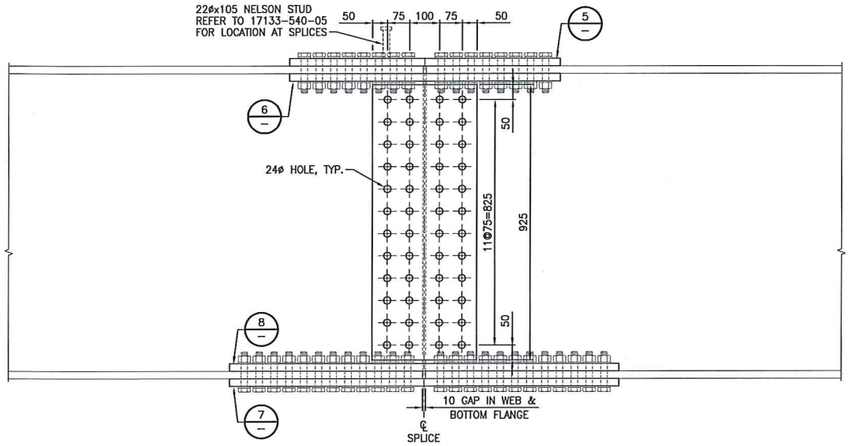
DESIGNED A. Alwaily DATE 2017-06-25

QUALITY CONTROL E. Cheung DATE 2017-06-25

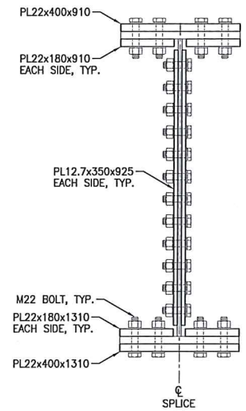
QUALITY ASSURANCE DATE

DRAWN W. Gibbons/KD DATE 2018-03-13

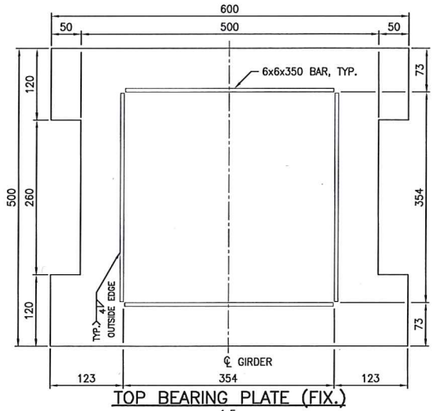
FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-540-05	A



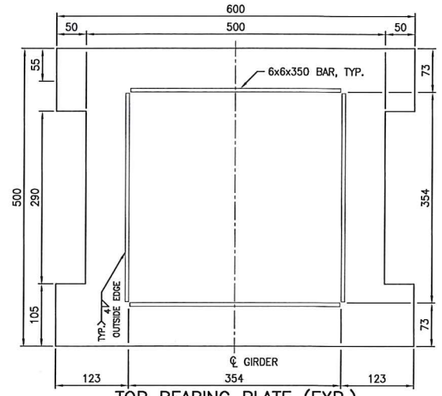
TYPICAL SPLICE ELEV.
1:10



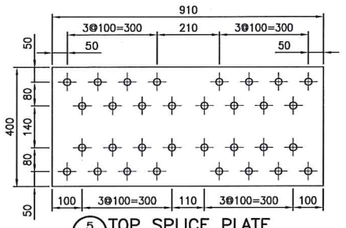
TYPICAL SPLICE SECTION
1:10



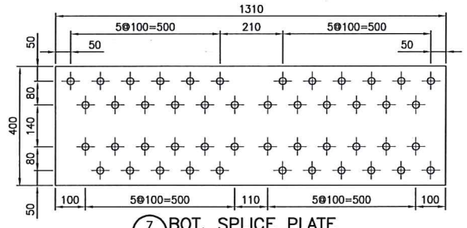
TOP BEARING PLATE (FIX.)
1:5
(4 REQ.)



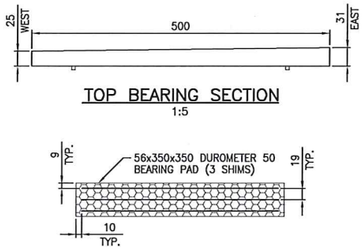
TOP BEARING PLATE (EXP.)
1:5
(6 REQ.)



5 TOP SPLICE PLATE
1:10
(8 REQUIRED)

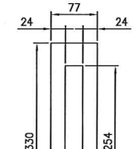


7 BOT. SPLICE PLATE
1:10
(8 REQUIRED)

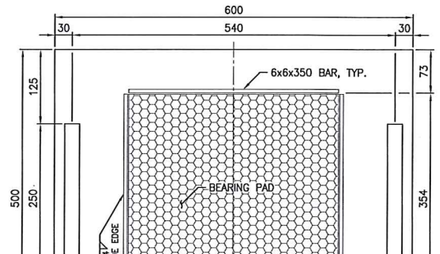


TOP BEARING SECTION
1:5

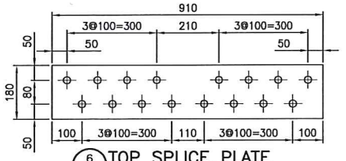
PIER BEARING PAD DETAIL
1:5
(6 REQ.)



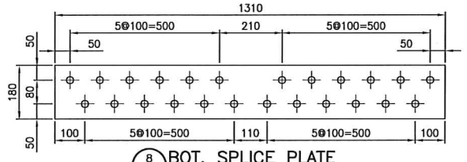
9 CLIP DETAIL
1:5



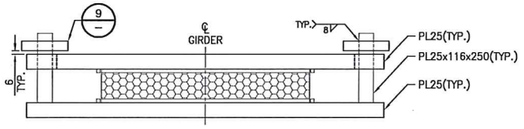
BOT. BEARING PLATE
1:5
(10 REQ.)



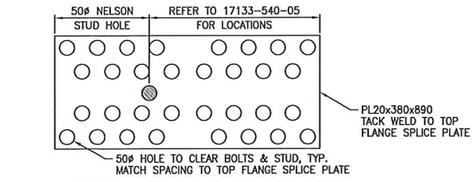
6 TOP SPLICE PLATE
1:10
(16 REQUIRED)



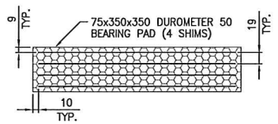
8 BOT. SPLICE PLATE
1:10
(16 REQUIRED)



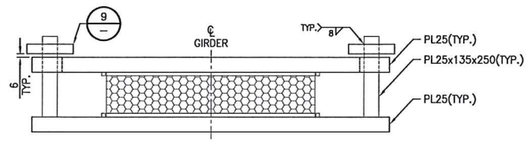
PIER BEARING ASSEMBLY
1:5
(6 REQ.)



TOP SPLICE COVER PLATE
1:10
(8 REQUIRED)



ABUT. BEARING PAD DETAIL
1:5
(4 REQ.)



ABUT. BEARING ASSEMBLY
1:5
(4 REQ.)

NOTES:

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Village of PEMBERTON

SCALE As Noted

CAD FILENAME 17133-540 Rev.F
DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Jun 17	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

Splice & Bearing Details

SENIOR DESIGNER
DATE 2018-03-13

DESIGNED A. Alwaily DATE 2017-06-25
QUALITY CONTROL E. Cheung DATE 2017-06-25
QUALITY ASSURANCE DATE
DRAWN W. Gibbons DATE 2018-03-13

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-540-06	A

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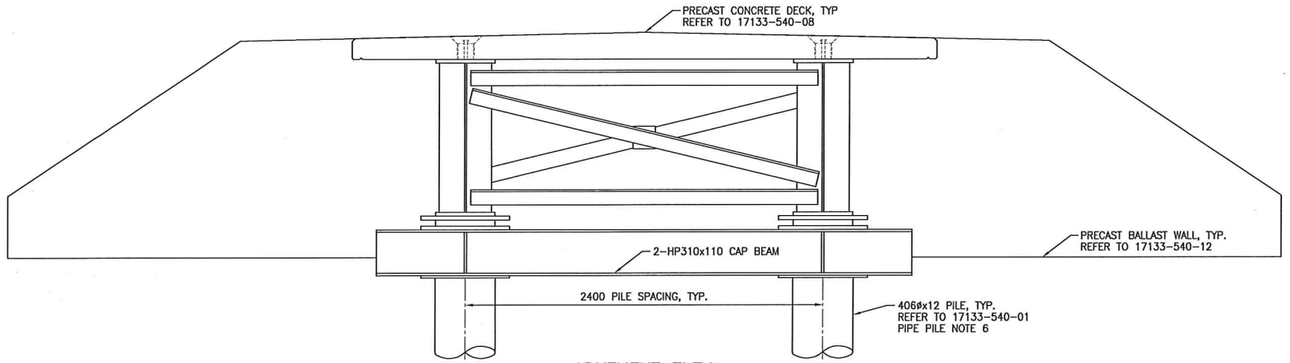
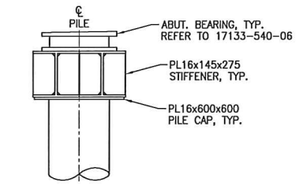


ABUTMENT ELEV.
1:20



ABUTMENT CAP SECTION
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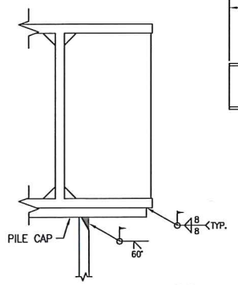
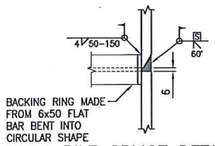
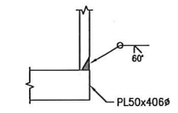


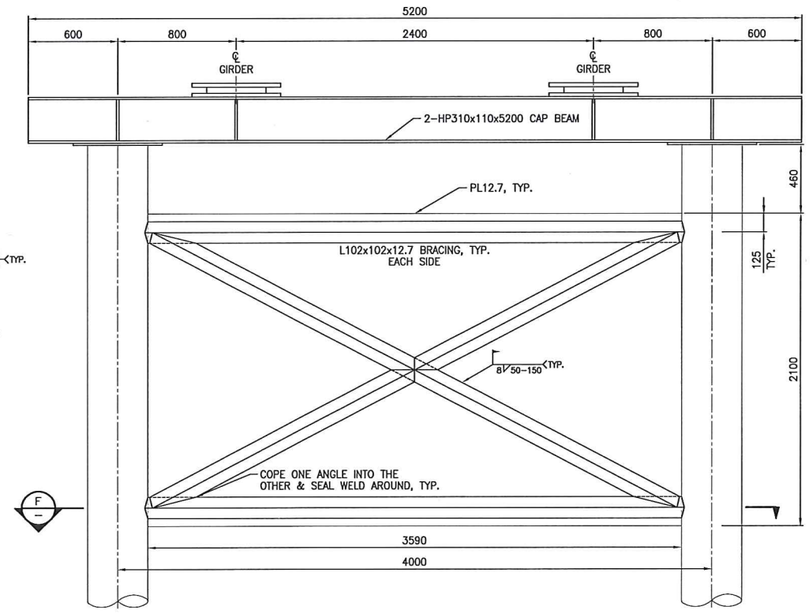
PILE CAP WELDING DETAIL
1:5



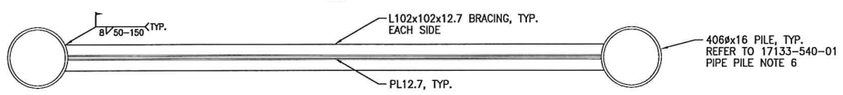
PILE SPLICE DETAIL
1:5



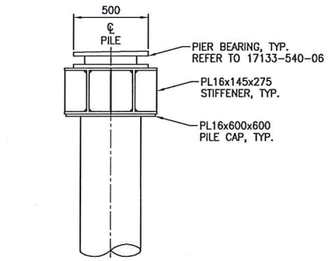
CLOSED PILE END DETAIL
1:5



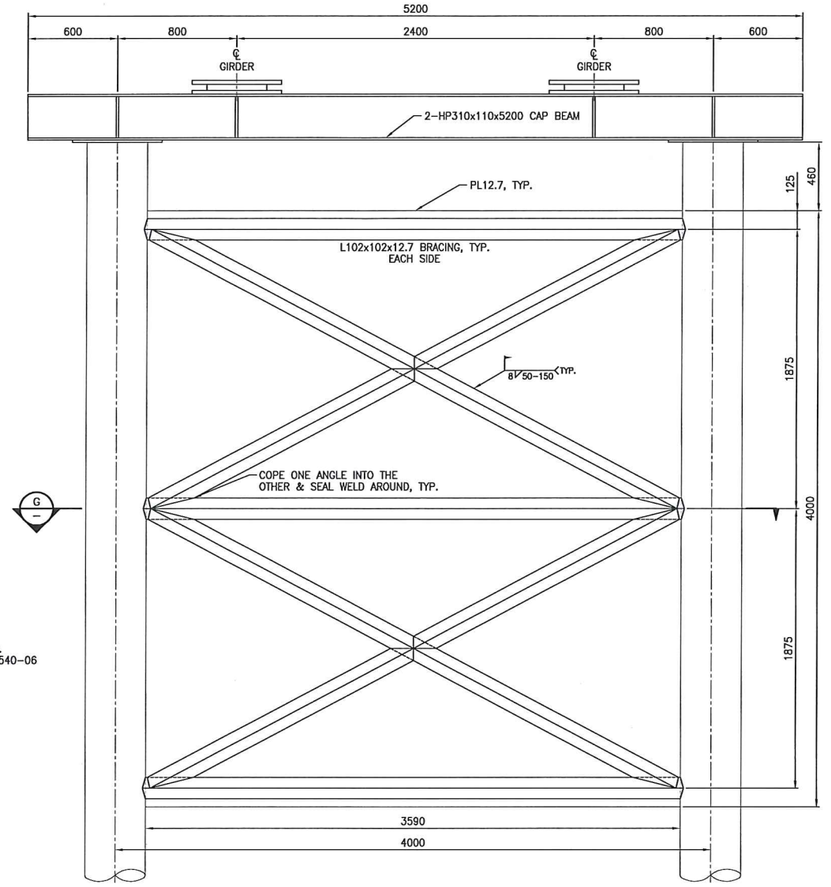
PIER 1 ELEV.
1:20



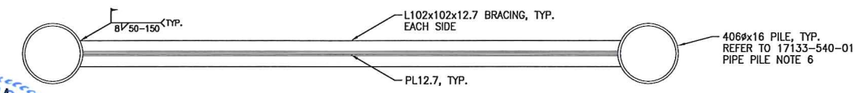
F PIER 1 PLAN
1:20



TYP. PIER CAP SECTION
1:20



PIERS 2 & 3 ELEV.
1:20



G PIERS 2 & 3 PLAN
1:20

NOTES:

1. FOR SPECIFICATION NOTES REFER TO 17133-540-01.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
ANDREW J. ALWAILY
37713
MAY 13 2018

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Phone: (250) 562-5541 Fax: (250) 562-5551

Village of PEMBERTON

SCALE As Noted

CAD FILENAME 17133-540 Rev F

DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Jun 17	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

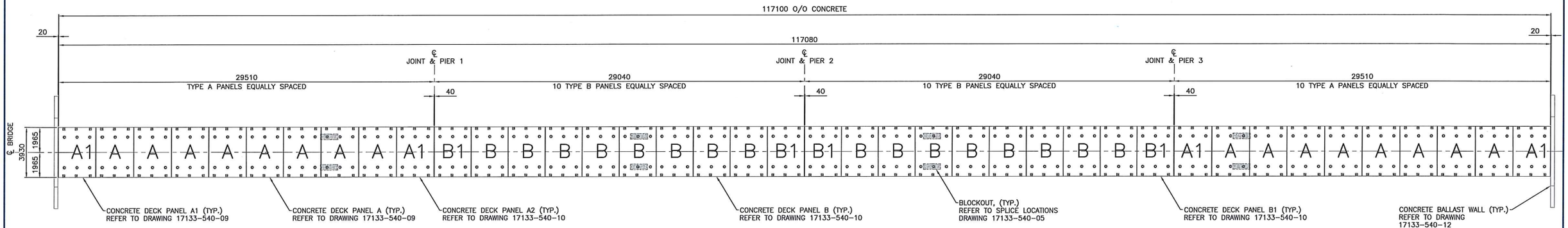
Pile Details

SENIOR DESIGNER

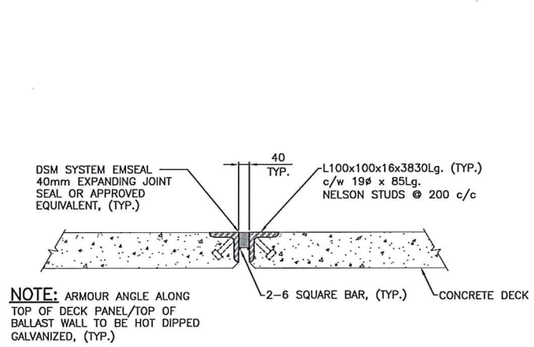
DATE 2018-03-13

DESIGNED A. Alwaily DATE 2017-06-30
QUALITY CONTROL E. Cheung DATE 2017-06-30
QUALITY ASSURANCE DATE
DRAWN W. Gibbons/KD DATE 2018-03-13

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-540-07	A

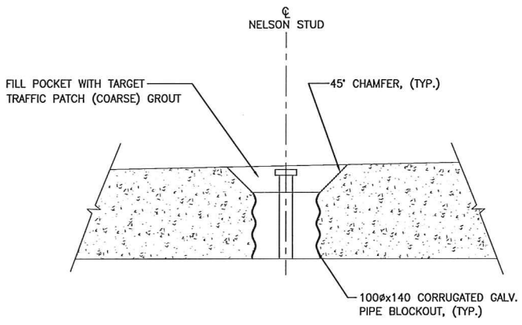


DECK PLAN
1:150

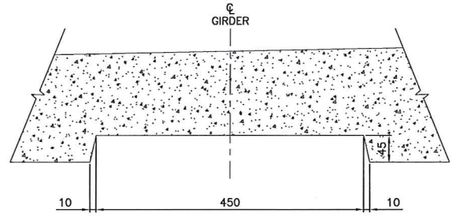


NOTE: ARMOUR ANGLE ALONG TOP OF DECK PANEL/TOP OF BALLAST WALL TO BE HOT DIPPED GALVANIZED, (TYP.)

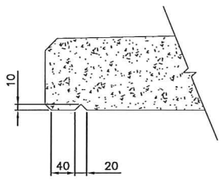
DECK JOINT PIER CONNECTION DETAIL
1:10



POCKET DETAIL
NTS



BLOCKOUT DETAIL
NTS
BLOCKOUT 450X950Lg, (TYP.)



DRIP GROOVE DETAIL
NTS

DSM SYSTEM SIZING			
NOMINAL MAERIAL SIZE (Joint Size at Mean T°F)	DEAPTH OF SEAL	MIN. JOINT (Closes to)	MAX. JOINT (Opens to)
1-1/2" (40mm)	2-1/2" (65mm)	3/4" (20mm)	1/4" (55mm)

NOTES:
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Village of PEMBERTON

SCALE As Noted
CAD FILENAME 17133-540 Rev A
DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Mar 18	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

Concrete Plan and Details

SENIOR DESIGNER
DATE 2018-03-13

DESIGNED A. Alwaily DATE 2017-06-30
QUALITY CONTROL E. Cheung DATE 2017-06-30
QUALITY ASSURANCE A. Alwaily DATE 2017-06-30
DRAWN K. Dean DATE 2018-03-13

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-540-08	A

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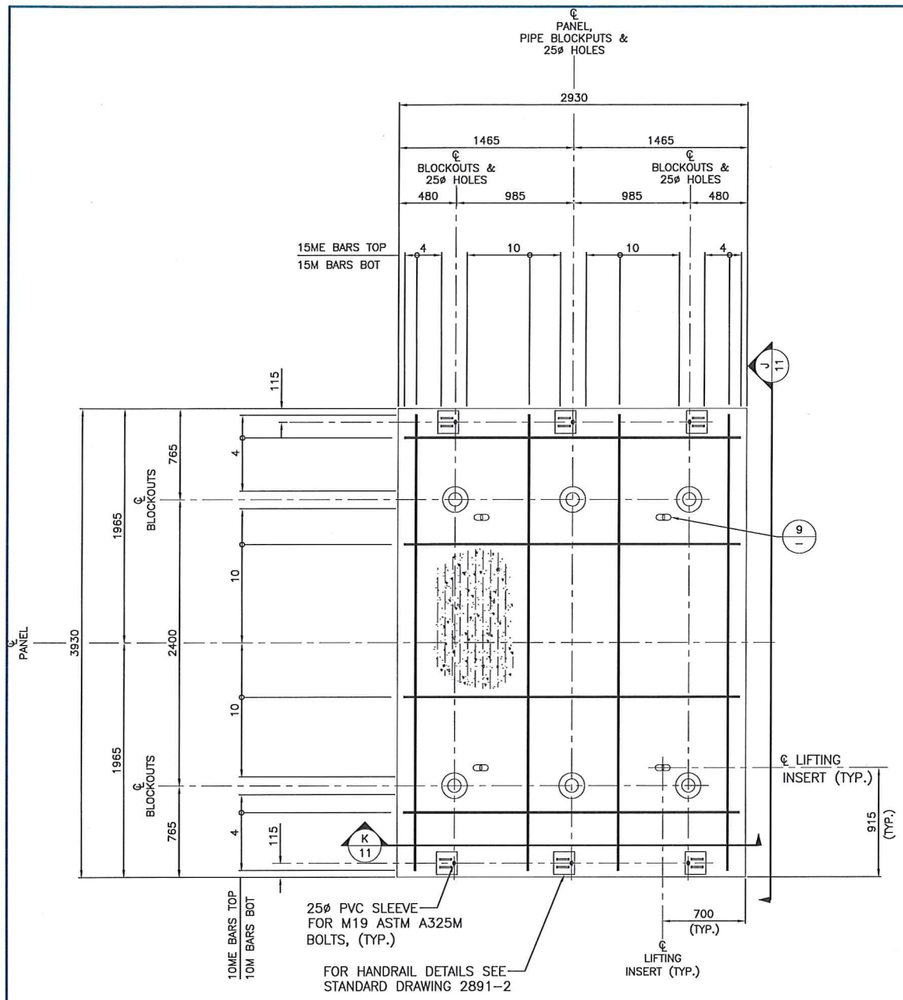
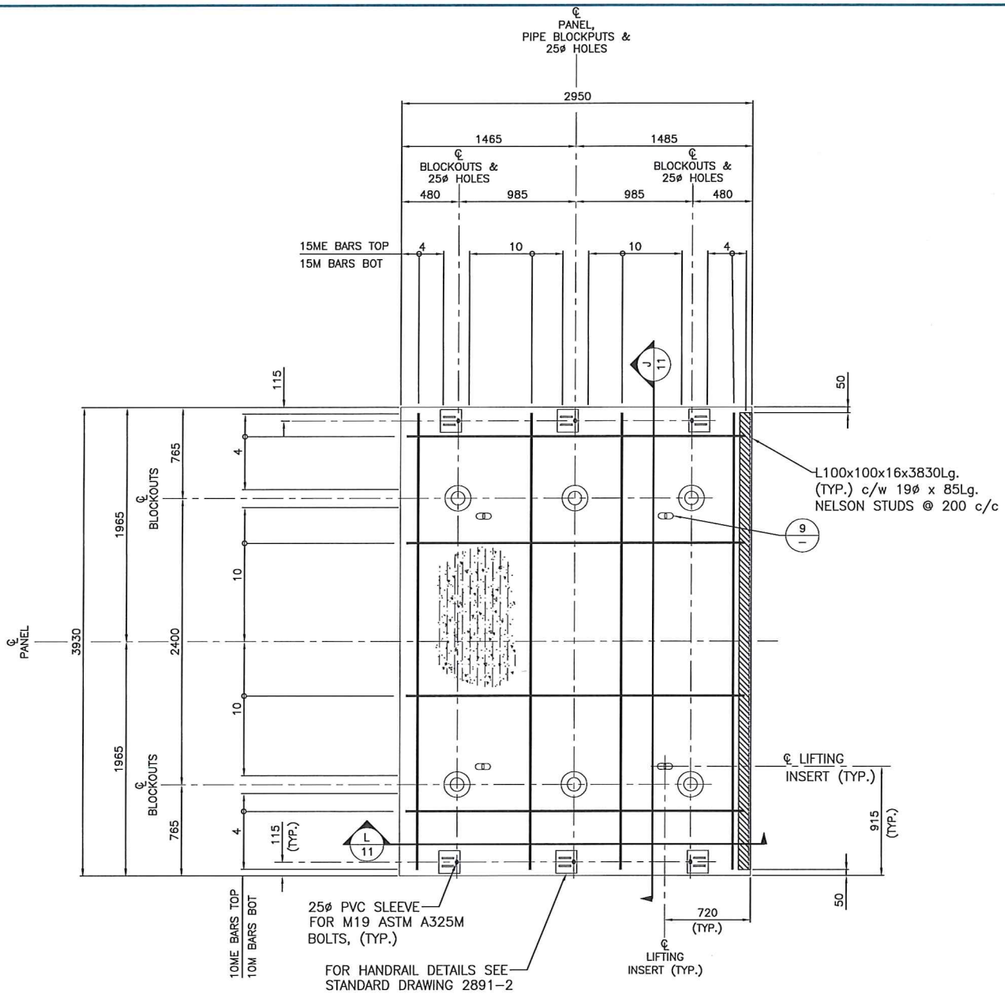
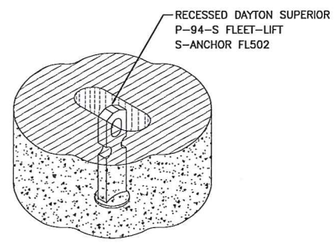


TYPICAL DECK PANEL A
1:25
16 REQUIRED



TYPICAL DECK PANEL A1
1:25
4 REQUIRED



FILL INSERT WITH TARGET TRAFFIC PATCH (FINE) GROUT AFTER INSTALLATION

9 – 10 DETAIL
NTS
4 PER PANEL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. J. ALWAILY # 37754
Mar 13 2018

NOTES:
1. FOR SPECIFICATION NOTES REFER TO 17133–540–01.

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Village of PEMBERTON

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CAD FILENAME 17133-540 Rev A
DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Mar 18	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

Concrete Deck Plans and Detail

DESIGNED A. Alwaily DATE 2017-06-30
QUALITY CONTROL E. Cheung DATE 2017-06-30
QUALITY ASSURANCE A. Alwaily DATE 2017-03-30
DRAWN K. Dean DATE 2018-03-13
SENIOR DESIGNER
DATE 2018-03-13

FILE NUMBER | PROJECT NUMBER | REG LM | DRAWING NUMBER 17133-540-09 | REV A

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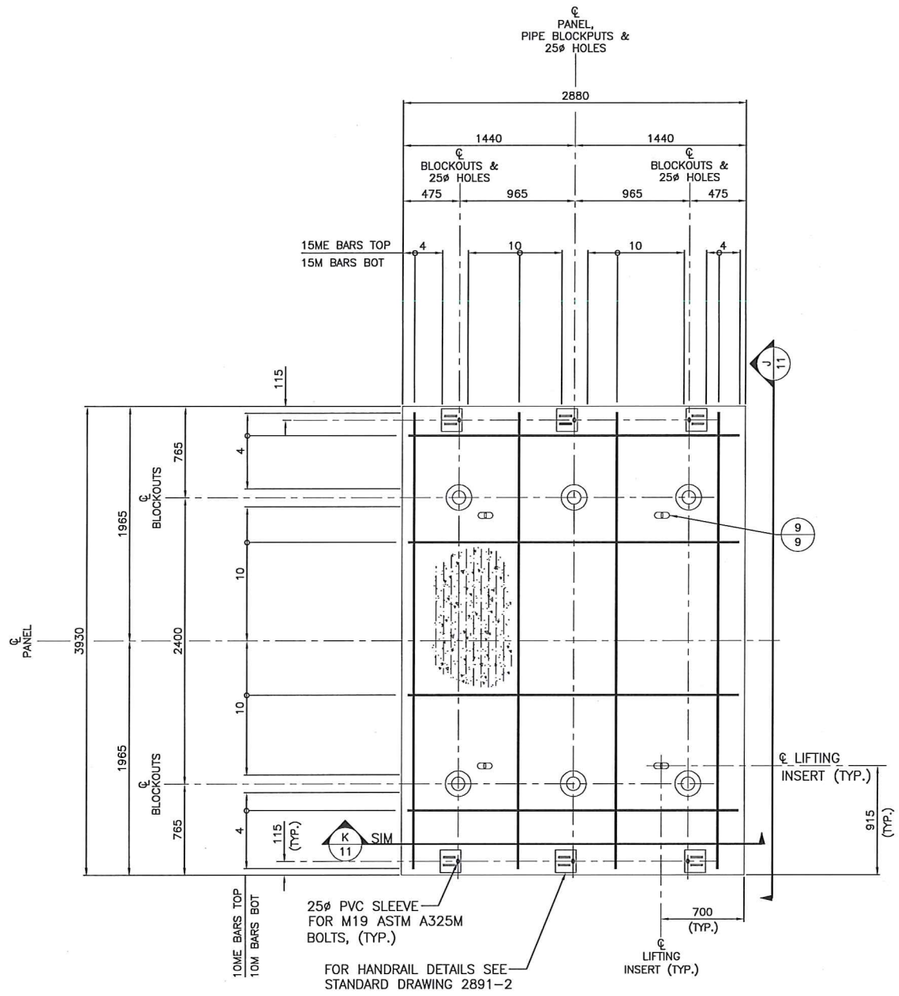
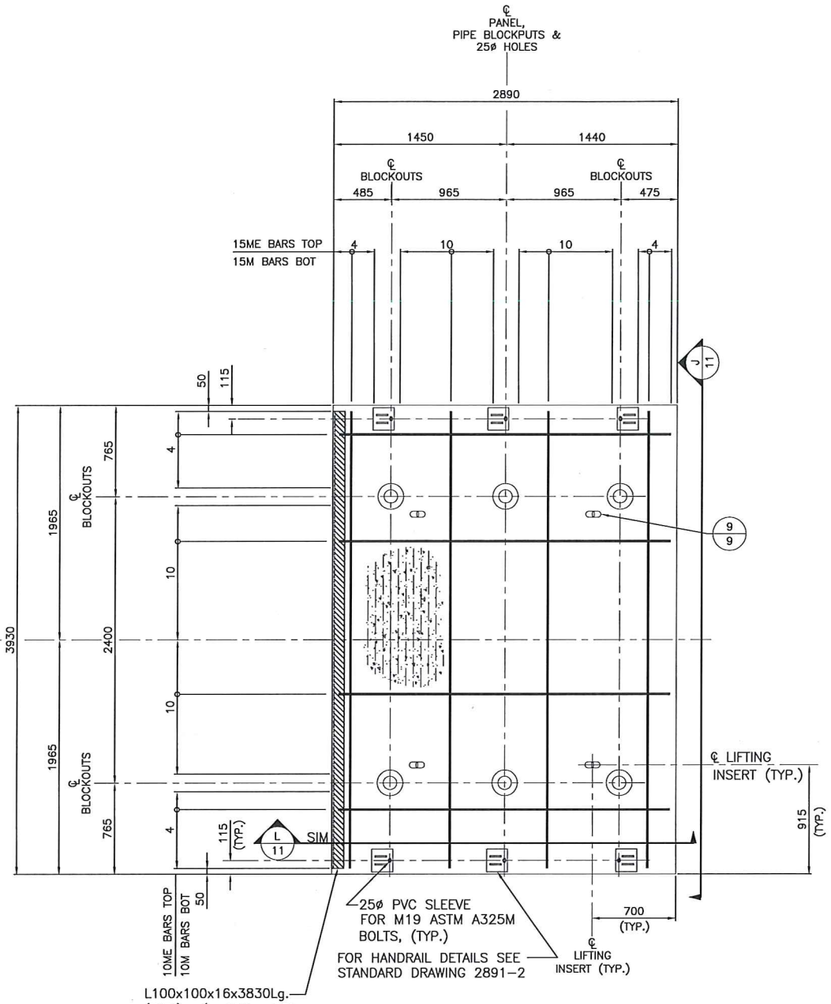
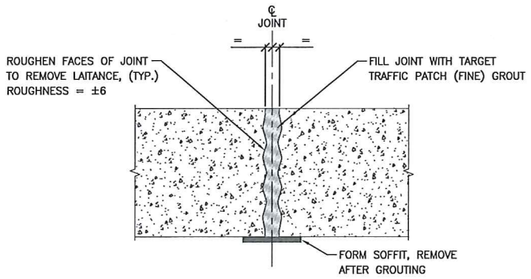


TYPICAL DECK PANEL B
1:25
18 REQUIRED



TYPICAL DECK PANEL B1
1:25
4 REQUIRED



DECK JOINT DETAIL
NTS

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. ALWAILY # 37764

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Village of PEMBERTON

SCALE As Noted

CAD FILENAME 17133-540 Rev A

DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Mar 18	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE

HIGHWAY 99, PEMBERTON, BC

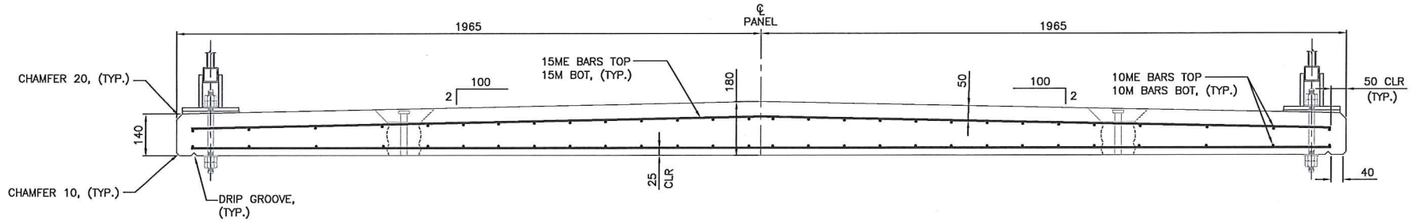
Concrete Plans and Detail Sheet 2

SENIOR DESIGNER

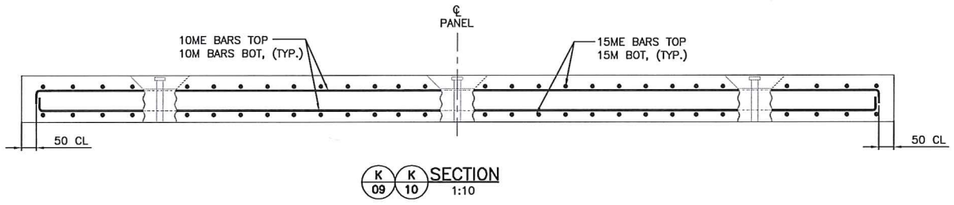
DATE 2018-03-13

DESIGNED A. Alwaily DATE 2017-06-30
QUALITY CONTROL E. Cheung DATE 2017-06-30
QUALITY ASSURANCE A. Alwaily DATE 2017-06-30
DRAWN K. Dean DATE 2018-03-13

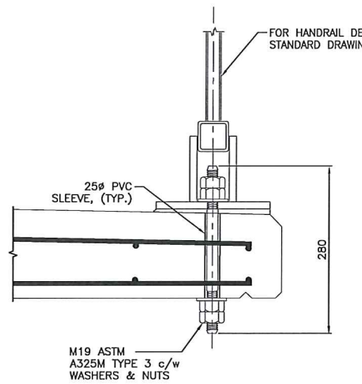
FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-540-10	A



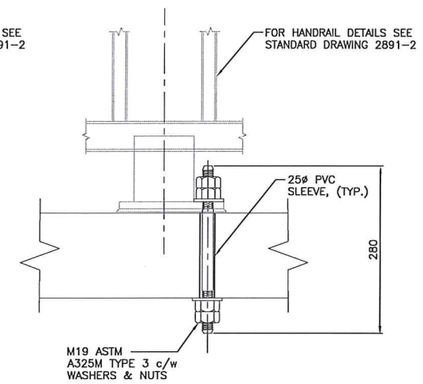
J/09 J/10 SECTION
1:10



K/09 K/10 SECTION
1:10

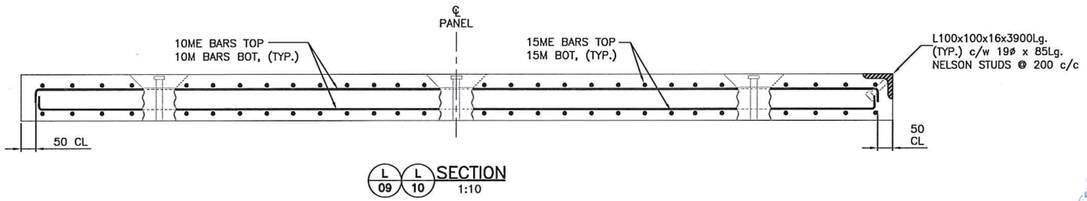


END VIEW



SIDE VIEW

TYPICAL DETAIL AT FENCE BRACKET
1:5



L/09 L/10 SECTION
1:10

Mar 13, 2018

NOTES:

1. FOR SPECIFICATION NOTES REFER TO 17133–540–01.

INTENDED TO BE PLOTTED ON 22"x34"
ANY COPIES or PDFS MAY NOT BE TO SCALE

ISSUED FOR TENDER

DWB Consulting Services Ltd.
1579 5TH Avenue
Prince George, B.C.
V2L 3R8
Phone: (250) 562-5541 Fax: (250) 562-5561

Village of PEMBERTON

SCALE As Noted

CAD FILENAME 17133-540 Rev A

DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Mar 18	ISSUED FOR TENDER	A. Alwaily

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

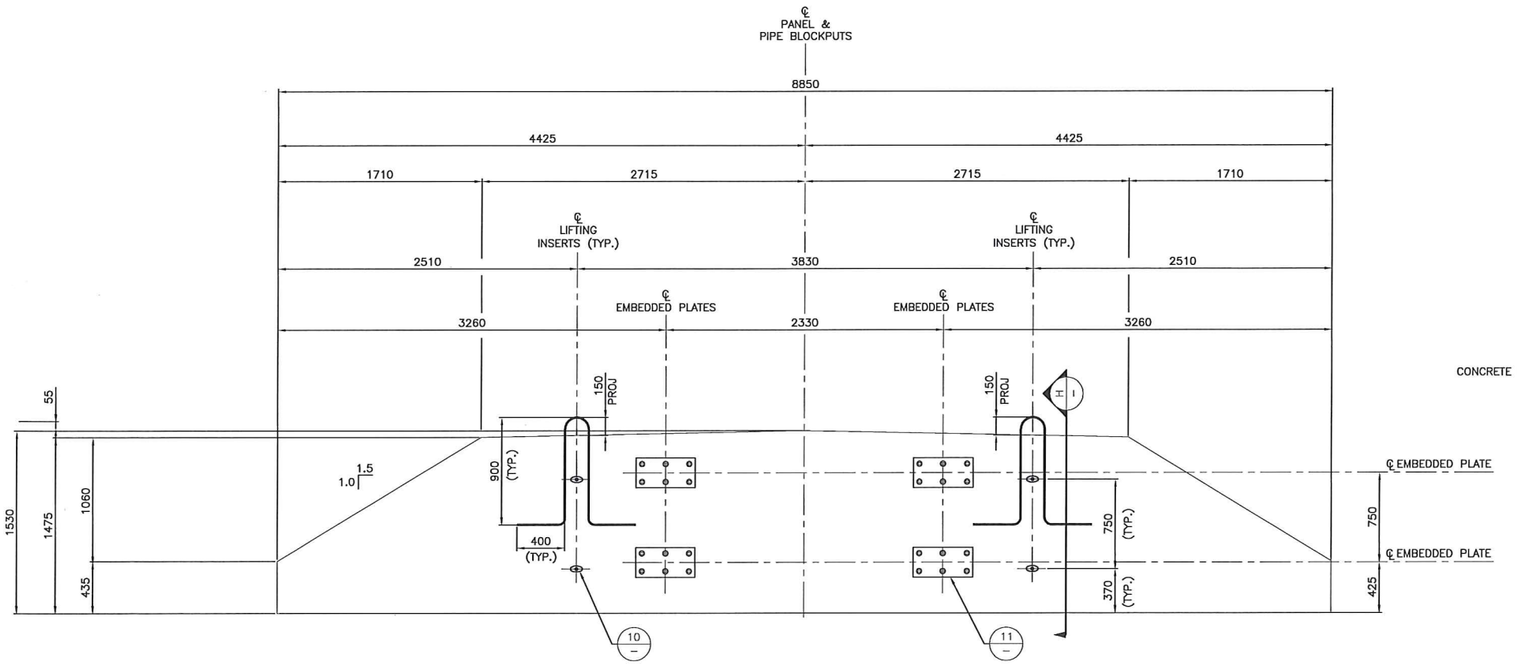
Concrete Sections

SENIOR DESIGNER

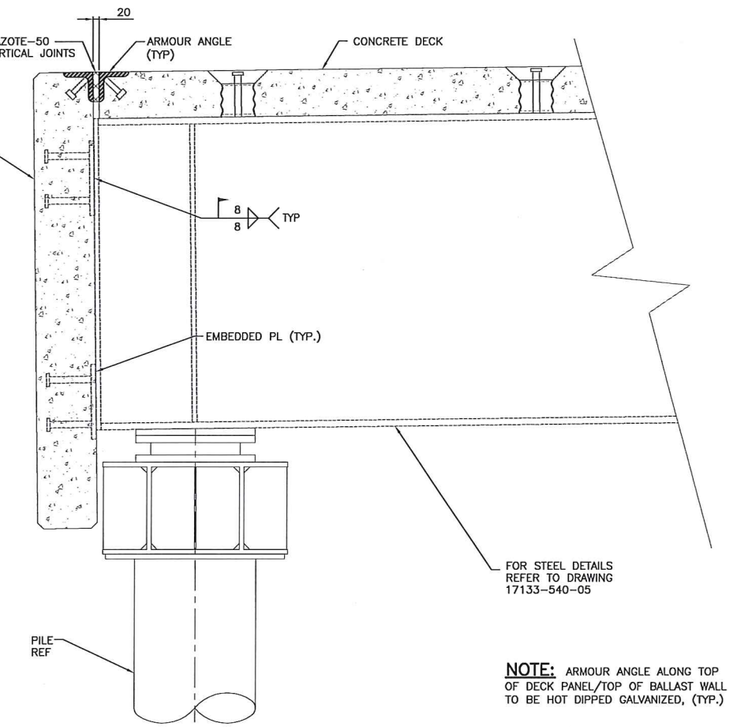
DATE 2018-03-13

DESIGNED A. Alwaily DATE 2017-06-30
QUALITY CONTROL E. Cheung DATE 2017-06-30
QUALITY ASSURANCE A. Alwaily DATE 2017-06-30
DRAWN K. Dean DATE 2018-03-13

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-540-11	A

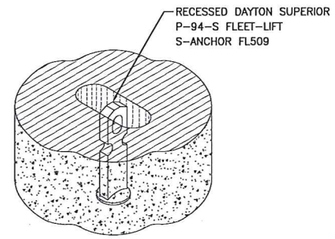


BALLAST WALL
1:25
2 REQUIRED



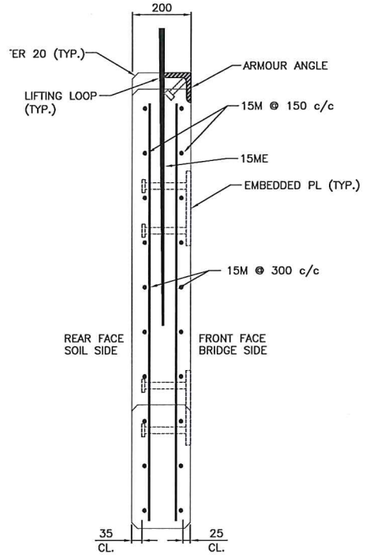
NOTE: ARMOUR ANGLE ALONG TOP OF DECK PANEL/TOP OF BALLAST WALL TO BE HOT DIPPED GALVANIZED, (TYP.)

DECK/BALLAST CONNECTION DETAIL
1:10

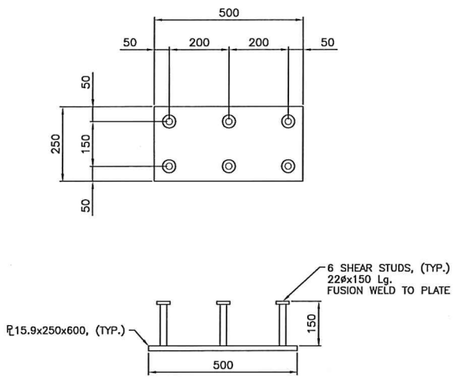


FILL INSERT WITH TARGET TRAFFIC PATCH (FINE) GROUT AFTER INSTALLATION

10 DETAIL
NTS
6 PER BALLAST WALL



H SECTION
1:10



11 DETAIL
1:10

NOTES:
1. FOR SPECIFICATION NOTES REFER TO 17133-540-01.

DWB Consulting Services Ltd.
1579 5TH Avenue
Prince George, B.C.
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Phone: (250) 562-5541 Fax: (250) 562-5561

Village of PEMBERTON

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

Ballast Wall Sections and Details

SCALE As Noted
CAD FILENAME 17133-540 Rev A
DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Mar 18	ISSUED FOR TENDER	A. Alwaily

DESIGNED A. Alwaily DATE 2017-06-30
QUALITY CONTROL E. Cheung DATE 2017-06-30
QUALITY ASSURANCE A. Alwaily DATE 2017-06-30
DRAWN K. Dean DATE 2018-03-13
SENIOR DESIGNER
DATE 2018-03-13

FILE NUMBER | PROJECT NUMBER | REG LM | DRAWING NUMBER 17133-540-12 | REV A

ISSUED FOR TENDER

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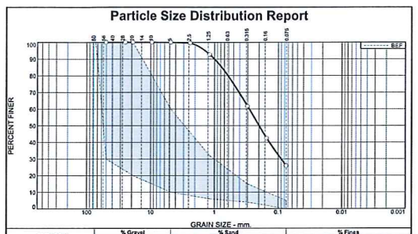
BANK 1

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	1.3	27.6	45.2	25.8	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
50 mm	100.0	30.0 - 100.0	
25mm	100.0		
19mm	100.0	20.0 - 100.0	
9.5mm	100.0		
4.75mm	99.9	10.0 - 60.0	X
2.36mm	99.5		
1.18mm	92.7	6.0 - 32.0	X
0.3mm	61.6	4.0 - 15.0	X
0.15mm	42.3		
0.075mm	25.8	0.0 - 5.0	X

Material Description

silty SAND

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 1.6031 D_{85}= 0.7703 D_{60}= 0.2837
D_{50}= 0.1931 D_{30}= 0.0103 D_{15}=
D_{10}= C_u= C_c=

Remarks

Natural Moisture 15.0%

Date Received: June 25, 2017 Date Tested: June 26, 2017
Tested By: JZ
Checked By:
Title:

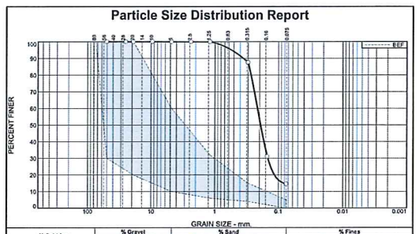
Location: Side-bar 50m U/S Date Sampled: June 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

BANK 2

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	7.7	77.7	14.5	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
50 mm	100.0	30.0 - 100.0	
25mm	100.0		
19mm	100.0	20.0 - 100.0	
9.5mm	100.0		
4.75mm	100.0	10.0 - 60.0	X
2.36mm	100.0		
1.18mm	99.9	6.0 - 32.0	X
0.3mm	87.5	4.0 - 15.0	X
0.15mm	31.0		
0.075mm	14.5	0.0 - 5.0	X

Material Description

SAND with some fines

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 0.3532 D_{85}= 0.2693 D_{60}= 0.2150
D_{50}= 0.1923 D_{30}= 0.1475 D_{15}= 0.0822
D_{10}= C_u= C_c=

Remarks

Natural Moisture 22.8%

Date Received: June 25, 2017 Date Tested: June 26, 2017
Tested By: JZ
Checked By:
Title:

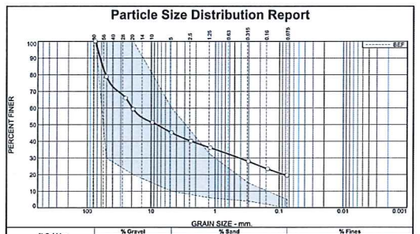
Location: Bed Materials #2, Boat Launch, W side Date Sampled: June 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

PIT W1

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	40.7	14.2	6.0	9.0	10.7	19.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
75 mm	100.0	100.0	
50 mm	78.7	30.0 - 100.0	
25 mm	65.9		
19 mm	59.2	20.0 - 100.0	
9.5 mm	51.2		
4.75 mm	45.1	10.0 - 60.0	
2.36 mm	40.1		
1.18 mm	36.1	6.0 - 32.0	X
0.3 mm	27.8	4.0 - 15.0	X
0.15 mm	23.3		
0.075 mm	19.4	0.0 - 5.0	X

Material Description

sandy GRAVEL with some fines

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 63.2795 D_{85}= 37.6342 D_{60}= 19.6258
D_{50}= 8.1423 D_{30}= 0.4211 D_{15}=
D_{10}= C_u= C_c=

Remarks

Natural Moisture: 6.6%
Sampling Location: 10U 516459 5573792

Date Received: June 25, 2017 Date Tested: June 26, 2017
Tested By: JZ
Checked By:
Title:

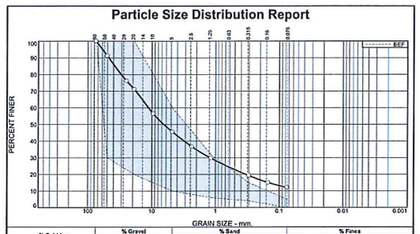
Location: West Abutment Pit W1 Date Sampled: June 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

PIT W2

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	28.9	25.5	10.8	13.2	9.6	12.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
75 mm	100.0	100.0	
50 mm	91.2	30.0 - 100.0	
25 mm	76.1		
19 mm	71.1	20.0 - 100.0	
9.5 mm	56.4		
4.75 mm	45.6	10.0 - 60.0	
2.36 mm	36.6		
1.18 mm	29.7	6.0 - 32.0	
0.3 mm	19.2	4.0 - 15.0	X
0.15 mm	15.1		
0.075 mm	12.0	0.0 - 5.0	X

Material Description

sandy GRAVEL with some fines

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 47.4329 D_{85}= 35.1183 D_{60}= 11.2920
D_{50}= 6.4916 D_{30}= 1.2159 D_{15}= 0.1484
D_{10}= C_u= C_c=

Remarks

Moisture Content: 5.7%
Sampling Location: 10U 516455 5573795

Date Received: Jun 23, 2017 Date Tested: Jun 25, 2017
Tested By: JZ
Checked By:
Title:

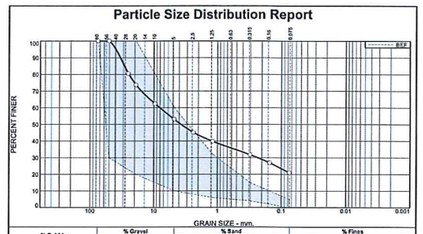
Location: West Abutment Pit W2 Date Sampled: Jun 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

PIT W3

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	26.3	20.8	9.3	9.9	12.8	20.9	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
75 mm	100.0	100.0	
50 mm	100.0	30.0 - 100.0	
25 mm	89.5		
19 mm	73.7	20.0 - 100.0	
9.5 mm	62.3		
4.75 mm	52.9	10.0 - 60.0	
2.36 mm	45.1		
1.18 mm	39.7	6.0 - 32.0	X
0.3 mm	31.6	4.0 - 15.0	X
0.15 mm	26.8		
0.075 mm	20.9	0.0 - 5.0	X

Material Description

sandy gravel with some fines

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 33.5308 D_{85}= 28.8705 D_{60}= 8.6495
D_{50}= 3.7365 D_{30}= 0.2325 D_{15}=
D_{10}= C_u= C_c=

Remarks

Natural moisture 5.8% Location coordinates 516470, 5573793

Date Received: June 24, 2017 Date Tested: June 26, 2017
Tested By: JZ
Checked By:
Title:

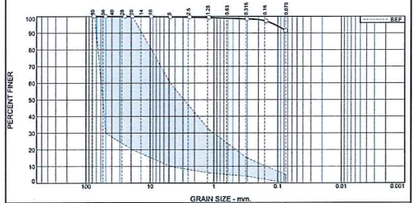
Location: W Abutment Pit W3 Date Sampled: June 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

PIT W4

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.2	0.8	7.3	91.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
75 mm	100.0	100.0	
50 mm	100.0	30.0 - 100.0	
25 mm	100.0		
19 mm	100.0	20.0 - 100.0	
9.5 mm	99.9		
4.75 mm	99.7	10.0 - 60.0	X
2.36 mm	99.5		
1.18 mm	99.3	6.0 - 32.0	X
0.3 mm	98.5	4.0 - 15.0	X
0.15 mm	97.1		
0.075 mm	91.4	0.0 - 5.0	X

Material Description

FINES with trace of gravel and sand

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Moisture Content: 14.8% Sampling Location: 10U 516488 5573001

Date Received: Jun 24, 2017 Date Tested: Jun 26, 2017
Tested By: JZ
Checked By:
Title:

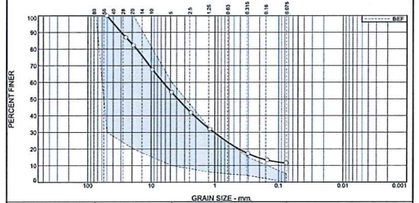
Location: West Pier Pit W4 Date Sampled: Jun 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

PIT E1

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	17.8	28.3	14.8	19.0	8.6	11.5	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
50 mm	100.0	30.0 - 100.0	
25mm	86.9		
19mm	82.1	20.0 - 100.0	
9.5mm	67.6		
4.75mm	53.9	10.0 - 60.0	
2.36mm	41.7		
1.18mm	31.8	6.0 - 32.0	
0.3mm	17.1	4.0 - 15.0	X
0.15mm	13.2		
0.075mm	11.5	0.0 - 5.0	X

Material Description

gravel and sand with some fines

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 29.8092 D_{85}= 22.4021 D_{60}= 6.5392
D_{50}= 3.8324 D_{30}= 1.0267 D_{15}= 0.2179
D_{10}= C_u= C_c=

Remarks

Natural Moisture 8.6%
Location Coordinates 10U 516571 5573815

Date Received: June 26, 2017 Date Tested: June 27, 2017
Tested By: JZ
Checked By:
Title:

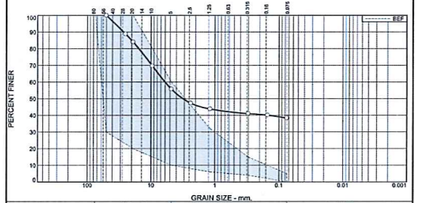
Location: E Abutment Pit E1 Date Sampled: June 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

PIT E2

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	15.9	28.4	9.6	4.6	3.2	38.3	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
50 mm	100.0	30.0 - 100.0	
25mm	88.8		
19mm	84.0	20.0 - 100.0	
9.5mm	69.6		
4.75mm	55.7	10.0 - 60.0	
2.36mm	47.2		
1.18mm	43.8	6.0 - 32.0	X
0.3mm	41.0	4.0 - 15.0	X
0.15mm	40.1		
0.075mm	38.3	0.0 - 5.0	X

Material Description

gravel and silt with some sand

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 26.8942 D_{85}= 20.0358 D_{60}= 6.0242
D_{50}= 3.1607 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Natural Moisture 9.9%
Location Coordinates 10U 516509 5573808

Date Received: June 26, 2017 Date Tested: June 27, 2017
Tested By: JZ
Checked By:
Title:

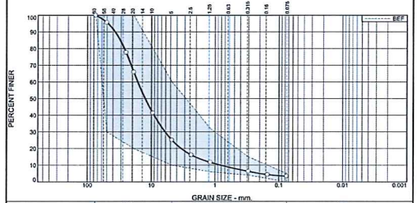
Location: E Abutment Edge Row/Toe of Fill Pit 2 Date Sampled: June 21, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

PIT E3

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	34.0	40.9	10.3	7.3	4.1	3.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
75 mm	100.0	100.0	
50 mm	95.7	30.0 - 100.0	
25 mm	77.6		
19 mm	65.9	20.0 - 100.0	
9.5 mm	41.3		
4.75 mm	25.1	10.0 - 60.0	
2.36 mm	16.1		
1.18 mm	11.7	6.0 - 32.0	
0.3 mm	6.3	4.0 - 15.0	
0.15 mm	4.3		
0.075 mm	3.4	0.0 - 5.0	

Material Description

sandy GRAVEL with trace fines

Atterberg Limits (ASTM D 4318)
PL= LL= PI=

Classification
USCS (D 2487)= AASHTO (M 145)=

Coefficients
D_{90}= 37.0321 D_{85}= 30.8187 D_{60}= 16.4513
D_{50}= 12.5465 D_{30}= 6.0942 D_{15}= 2.0643
D_{10}= 0.8118 C_u= 20.30 C_c= 2.78

Remarks

Natural Moisture 2.3%

Date Received: June 24, 2017 Date Tested: June 26, 2017
Tested By: JZ
Checked By:
Title:

Location: E Abutment Pit- E3 Date Sampled: June 20, 2017
Sample Number: 1

DWB Consulting Services Ltd.
Prince George, BC

Client: SURESPAN
Project: Pemberton Pedestrian Bridge
Project No: 1762-147 Figure

CONTROL POINTS:

PROJECT: 17133-450 PEMBERTON BRIDGE		
DATE: 2017-06-20		
ZONE: NAD83, UTM Z10, CGVD28 (HT2.0)		
POINT ID	PROJECT NORTHING	PROJECT EASTING
BANK 1	5573883.730	516488.939
BANK 2	5573789.820	516504.467
PIT W1	5573791.680	516460.177
PIT W2	5573794.450	516456.181
PIT W3	5573792.720	516471.565
PIT W4	5573800.560	516489.126
PIT E1	5573814.720	516572.667
PIT E2	5573806.920	516569.274
PIT E3	5573817.410	516579.921

NOTES:

1. FOR SPECIFICATION NOTES REFER TO 17133-450-01.
2. FOR SOIL SAMPLE LOCATION REFER TO DRAWING 17133-450-04.

INTENDED TO BE PLOTTED ON 22"x34"
ANY COPIES or PDFS MAY NOT BE TO SCALE

ISSUED FOR TEMPLATE

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. ALWAILY — # 37704

DWB Consulting Services Ltd.
1579 9TH Avenue
Prince George, B.C.
V2L 3R8
Phone: (250) 562-5541 Fax: (250) 562-5561

CAD FILENAME 17133-450 Rev F
SCALE
DATE 2018-03-13

REV	DATE	REVISIONS	SIGNATURE
A	Mar 18	Issued For Tender	A. Alwaily

Village of PEMBERTON

FRIENDSHIP TRAIL PEDESTRIAN BRIDGE
HIGHWAY 99, PEMBERTON, BC

Sieve Analysis Reports

SENIOR DESIGNER
DATE 2018-03-13

DESIGNED A.Alwaily DATE 2016-06-08
QUALITY CONTROL E.Cheung DATE 2017-06-30
QUALITY ASSURANCE DATE
DRAWN SH/WG/KD/JCP DATE 2017-07-24

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		LM	17133-450-13	A

ISSUED FOR TENDER

ISSUE FOR TENDER INFORMATION:

FRIENDSHIP TRAIL BRIDGE PROJECT

Appendix 3-As-Builts for the Red Bridge No. 443 (For Reference Only)

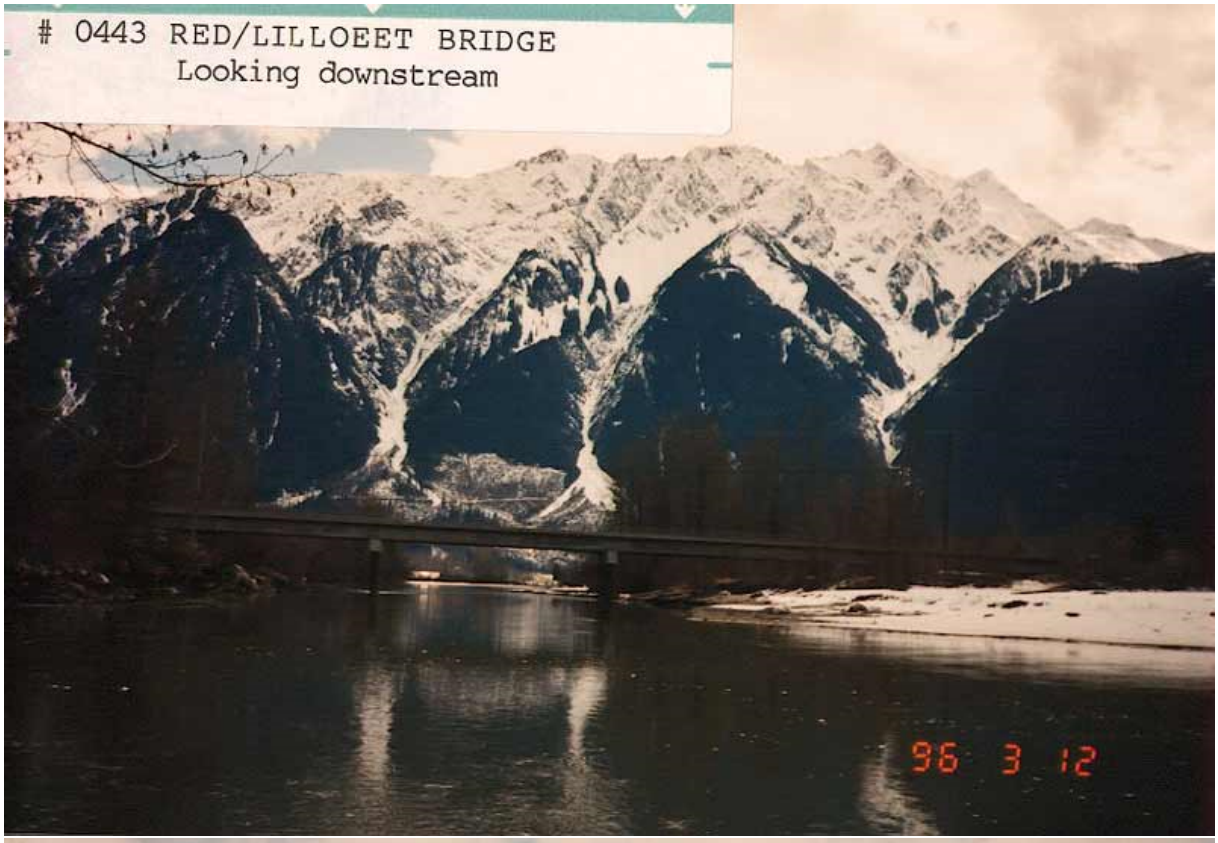
April 2018

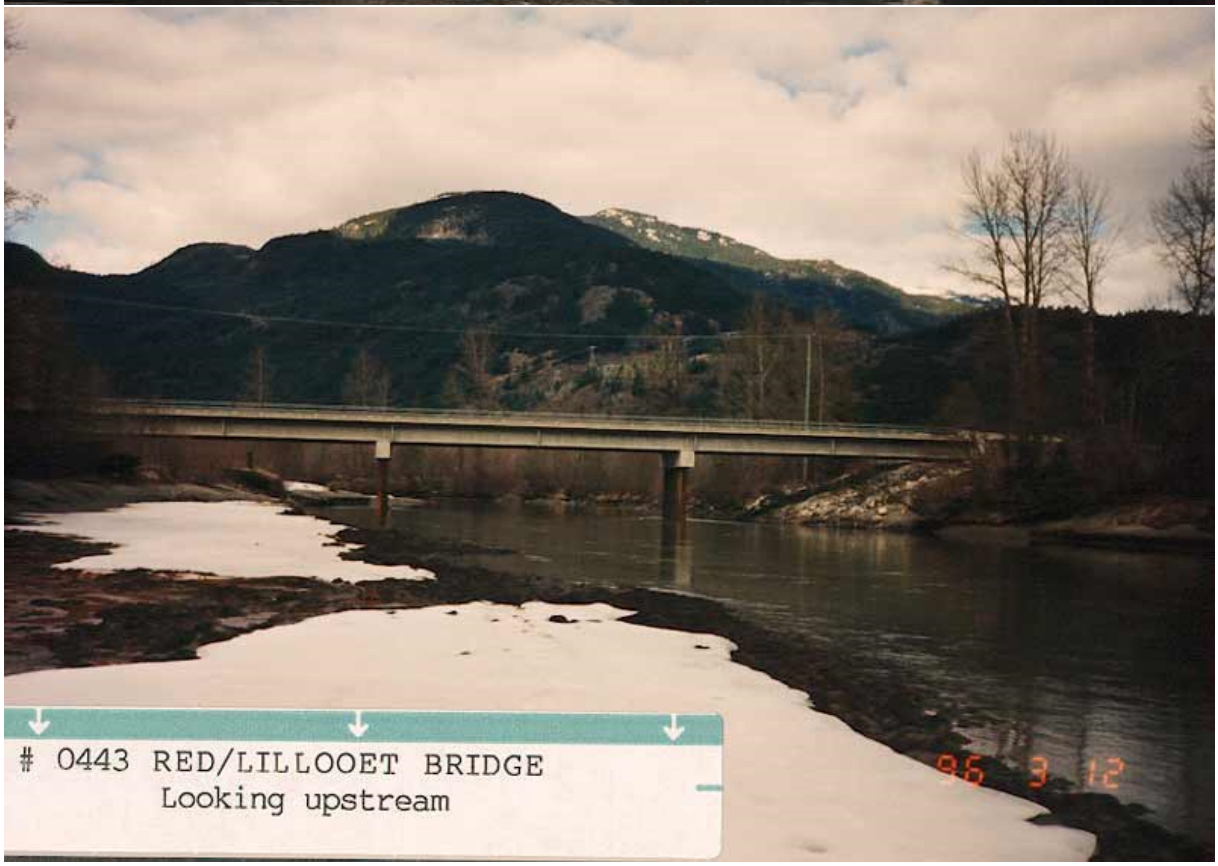
ISL Engineering and Land Services


0443 RED/LILLOOET BRIDGE
Looking West
96 3 12

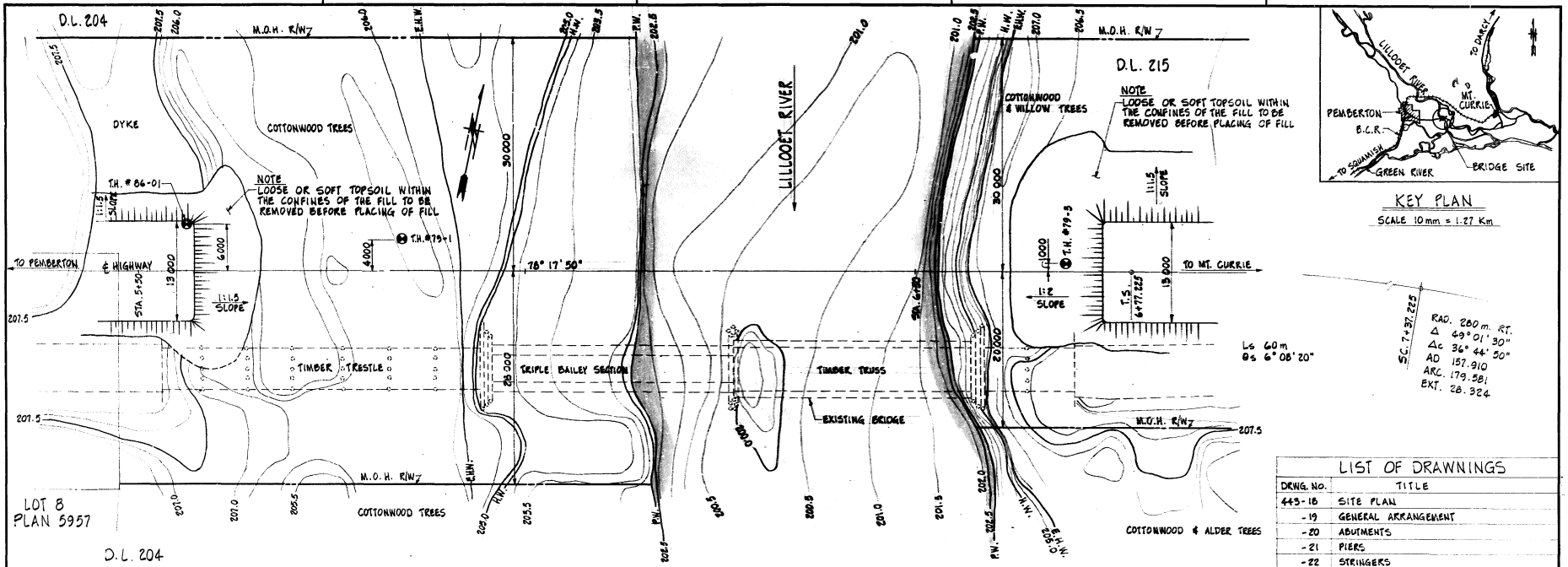

0443 RED/LILLOOET BRIDGE
Looking East
96 3 12

0443 RED/LILLOEET BRIDGE
Looking downstream





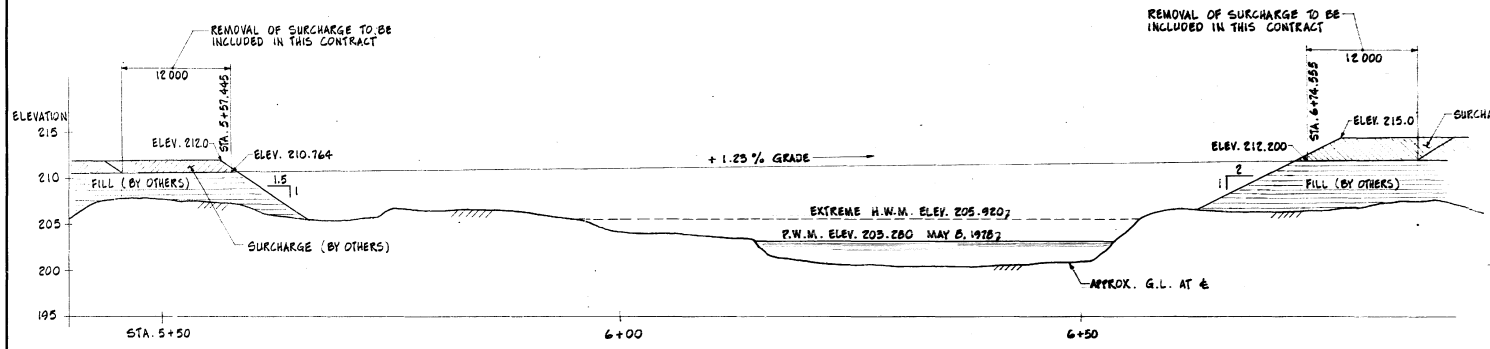
0443 RED/LILLOOET BRIDGE
Looking upstream



KEY PLAN
SCALE 10mm = 1.27 Km

Ls 60 m
Θs 6° 08' 20"
SC. 7+37.225
RAD. 280 m. RT.
Δ 49° 01' 30"
Δc 36° 44' 30"
AD 157.910
ARC. 179.581
EXT. 28.324

LIST OF DRAWNINGS	
DRNG. No.	TITLE
443-18	SITE PLAN
-19	GENERAL ARRANGEMENT
-20	ABUTMENTS
-21	PIERS
-22	STRINGERS
-23	DECK DETAILS
-24	DIAPHRAGMS
-25	MISCELLANEOUS DETAILS
-26	STANDARD BRIDGE END DETAILS
-27	BOREHOLE DATA - SHEET 1
-28	BOREHOLE DATA - SHEET 2
2890-1A	STANDARD STEEL TUBULAR BRIDGE RAILING



PROFILE

NOTES
SURVEY BY : DESIGN & SURVEYS
DATUM GEODETIC
L.B.M. #2 ELEV. 207.204 SPIKE IN TOP OF 20 cm ϕ ALDER STUMP 35 m RT. OF STA. L-5+87.5

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

NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD
RED BRIDGE
SITE PLAN

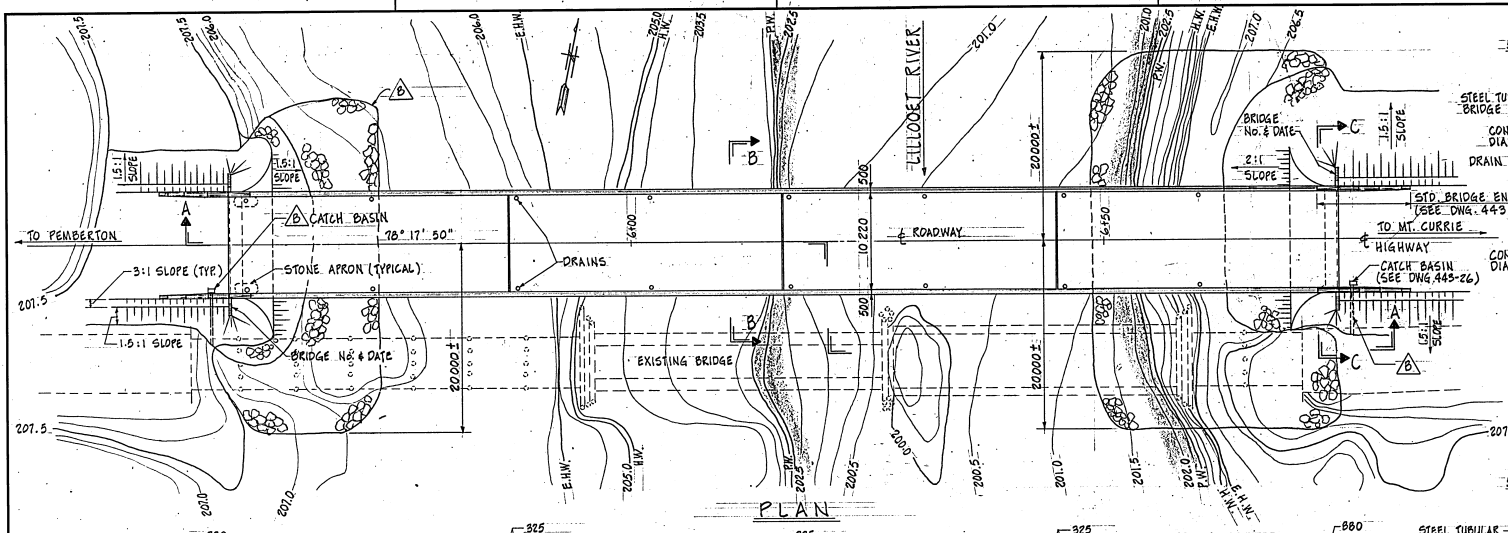
295477

REVISIONS			
D			
C			
B			
A	AS BUILT - NO CHANGE	K.L.	MAR. 86

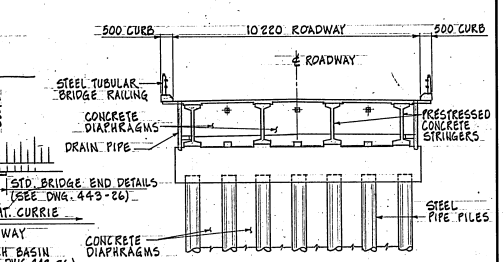
PREPARED UNDER THE DIRECTION OF — SENIOR BRIDGE DESIGN ENGINEER — DATE
RECOMMENDED — DIRECTOR OF BRIDGE ENGINEERING — DATE 86.07.11
ACCEPTED FOR CONSTRUCTION — EXECUTIVE DIRECTOR OF ENGINEERING — DATE

SCALE: 1:250 & AS NOTED | NEG. No.
DRAWN K.L. MAY 86 | CHECKED G.P./K.L. JULY/86
DRAWING No. 443-18 A

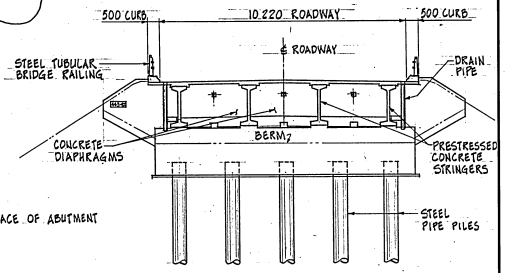
CANCL. PRINTS BEARING EARLIER LETTER



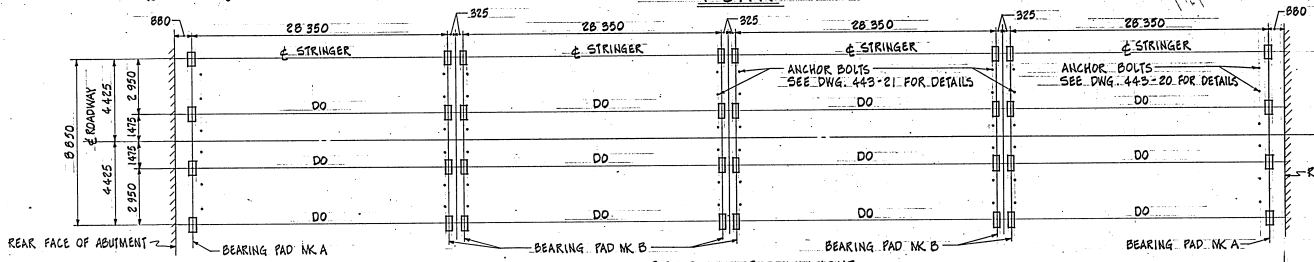
PLAN



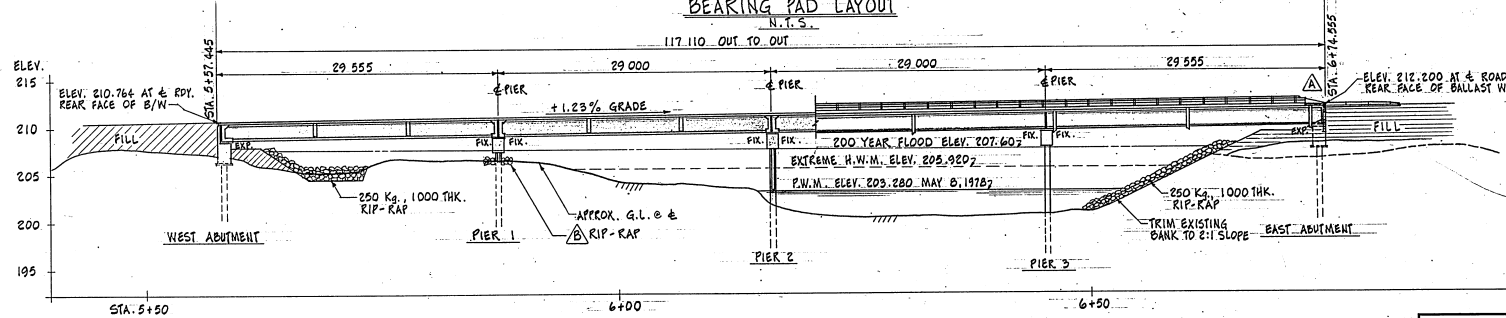
SECTION B-B
SCALE 1:100



SECTION C-C
SCALE 1:100



BEARING PAD LAYOUT
N.T.S.

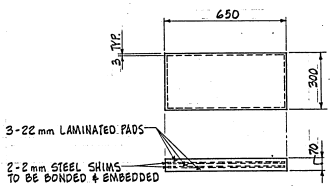


SECTION A-A

NOTES

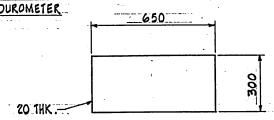
1. SPECIFICATIONS : (a) C.S.A. - CAN 3-S6-M78
(b) APPLIED TECHNOLOGY COUNCIL (A.T.C.) SEISMIC DESIGN GUIDLINES FOR HIGHWAY BRIDGES (1981)

2. LIVE LOADS : M.S. 250 AS IN C.S.A.-CAN 3-S6-M78 EXCEPT THAT 25% OF THE DESIGN TRUCK LOAD WAS USED IN THE LONGITUDINAL LOAD CALCULATIONS.



BEARING PAD MK A - 8 REQ'D
SCALE 1:12.5

NOTE
ALL BEARING PADS TO BE NEOPRENE OF 60 DUROMETER HARDNESS



BEARING PAD MK B - 24 REQ'D
SCALE 1:12.5

D			
C			
B	AS BUILT	K.L.	MAR.86
A	STD. STEEL FENCE TRANSITION	K.L.	DEC.84

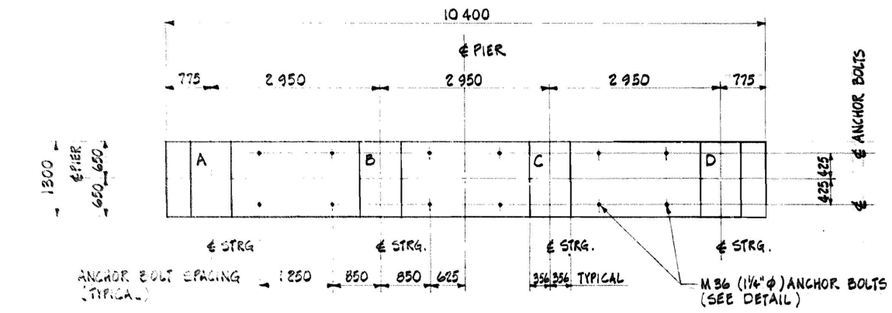
REVISIONS

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

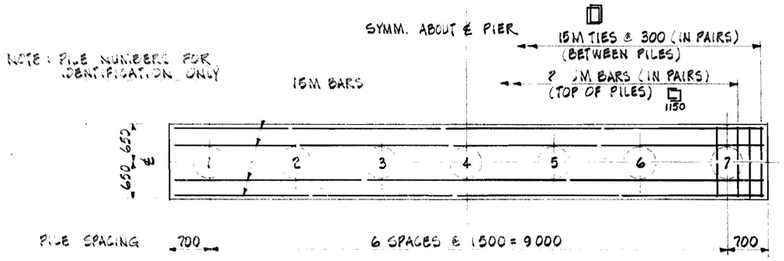
NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD
RED BRIDGE 295478
GENERAL ARRANGEMENT

PREPARED UNDER THE DIRECTION OF SENIOR BRIDGE DESIGN ENGINEER	DATE	SCALE: 1:250 & AS NOTED	NEG. No.
		DRAWN K.L. JUNE 86	CHECKED G.P./R.L. JULY/86
RECOMMENDED DIRECTOR OF BRIDGE ENGINEERING	DATE 86.07.14	ACCEPTED FOR CONSTRUCTION EXECUTIVE DIRECTOR OF ENGINEERING	DATE 1986 07 14
			DRAWING No. 443-19 B

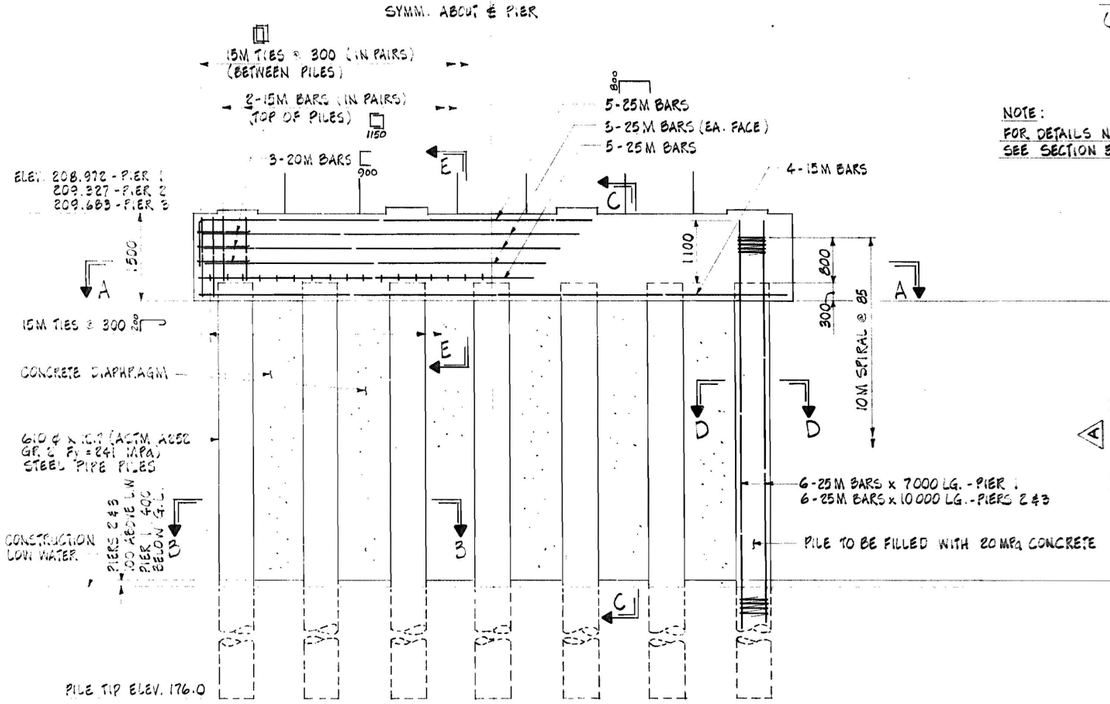
CANCEL PRINTS BEARING EARLIER LETTER



PLAN



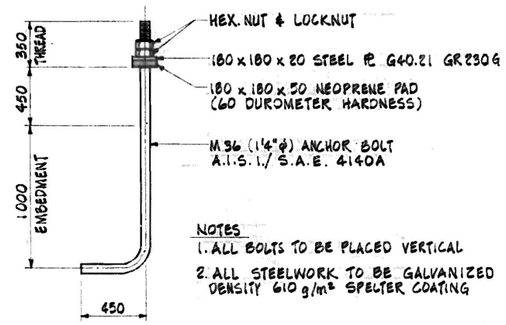
SECTION A-A



ELEVATION - PIER 3

PIERS 1 & 2 SIMILAR UNLESS NOTED OTHERWISE

TABLE OF ELEVATIONS			
	PIER 1	PIER 2	PIER 3
A	208.997	209.352	209.731
B	209.056	209.411	209.775
C	209.056	209.411	209.767
D	208.997	209.352	209.708

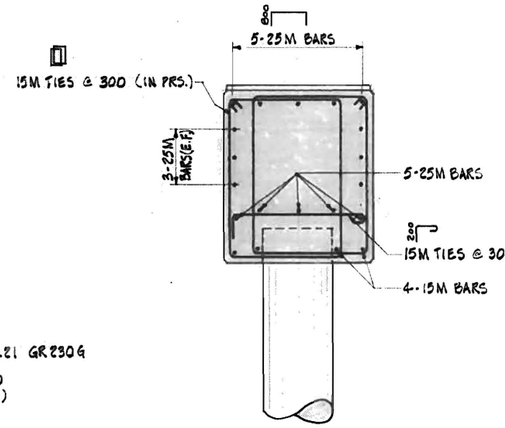


NOTES
1. ALL BOLTS TO BE PLACED VERTICAL
2. ALL STEELWORK TO BE GALVANIZED OBNSITY 610 g/m² SPELTER COATING

DETAIL OF ANCHOR BOLTS

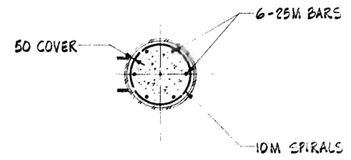
SCALE 1:20

(36 REQUIRED)



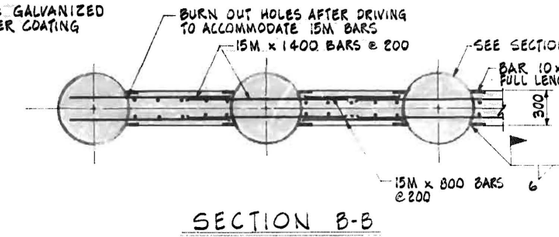
SECTION E-E

SCALE 1:25



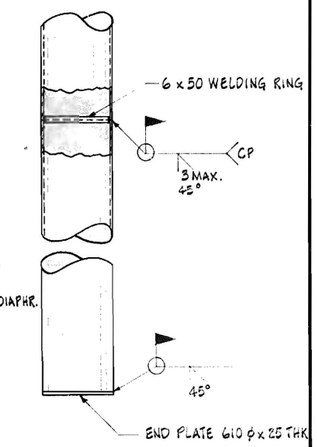
SECTION D-D

SCALE 1:25



SECTION B-B

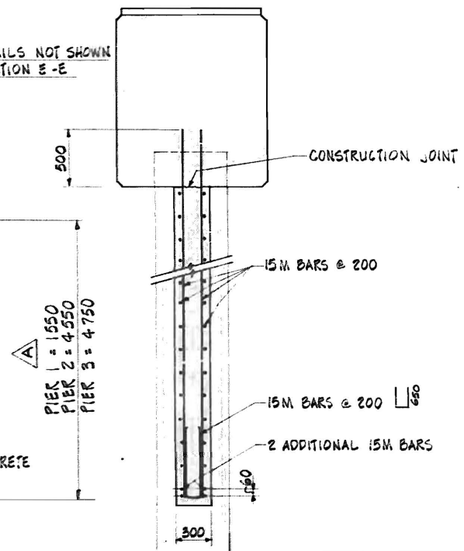
SCALE 1:25



PILE SPLICE & END PLATE DETAILS

SCALE 1:25

NOTE:
FOR DETAILS NOT SHOWN SEE SECTION E-E



SECTION C-C

SCALE 1:25

NOTES

1. ALL CONCRETE FOR PIERS TO BE CLASS 'A' f'c = 30MPa, FOR ABUTMENT f'c = 25 MPa AT 28 DAYS EXCEPT AS NOTED.
2. EXPOSED EDGES TO BE CHAMFERED 25 mm UNLESS NOTED OTHERWISE.
3. REINFORCING STEEL TO CONFORM TO CSA SPECIFICATION G30.12M YIELD STRENGTH = 400 MPa.
4. PRINCIPAL REINFORCING STEEL TO HAVE 50mm COVER UNLESS NOTED OTHERWISE
5. LAP FOR REINFORCING STEEL TO BE IN ACCORDANCE WITH CSA STANDARD CAN 3-S6-M78 CLAUSE 8.3. SPLICES TO BE STAGGERED.
6. REINFORCING BARS FOR SPIRAL REINFORCEMENT TO BE SUPPLIED IN COILS SO AS TO MINIMIZE THE USE OF MECHANICAL SPLICES. NO MORE THAN ONE MECHANICAL SPLICE TO BE USED PER 20 SPIRAL TURNS, NO LAP SPLICES ALLOWED ON SPIRALS.
7. ALL MECHANICAL COUPLERS TO BE APPROVED BY THE DESIGN ENGINEER. MECHANICAL COUPLERS SHALL DEVELOP NOT LESS THAN 125% OF THE YIELD STRENGTH OF THE BAR.

ESTIMATED QUANTITIES			
FORMWORK	CONCRETE-20MPa	CONCRETE-30MPa	REINF. STEEL
235 m²	180 m³	85 m³	16,150 Kg.

610 ϕ x 12.7 PIPE PILE			
LOCATION	No.	LENGTH	TOTAL LENGTH
PIER 1	7	31 772	222 404
PIER 2	7	32 127	224 889
PIER 3	7	32 483	227 381

A

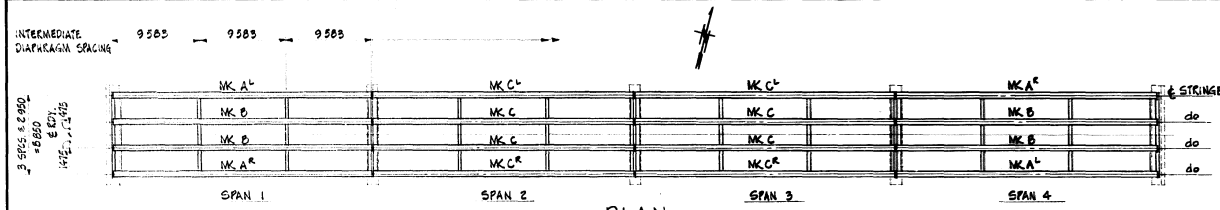
D			
C			
B			
A	AS BUILT	K.L.	MAR.86
	REVISIONS		

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

NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD 295480
RED BRIDGE
PIERS

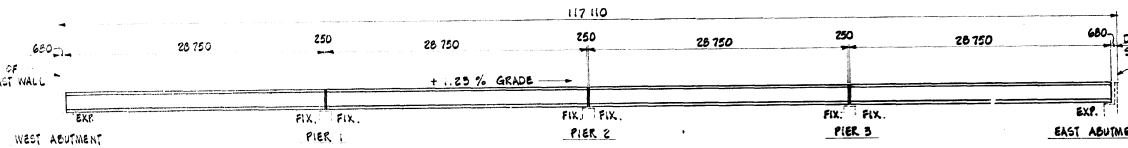
PREPARED UNDER THE DIRECTION OF SENIOR BRIDGE DESIGN ENGINEER	DATE	SCALE: 1:50 & AS NOTED	NEG. No.
		DRAWN K.L. MAY 86	CHECKED GP/RL JULY 86
RECOMMENDED DIRECTOR OF BRIDGE ENGINEERING	DATE 86.07.10	ACCEPTED FOR CONSTRUCTION EXECUTIVE DIRECTOR OF ENGINEERING	DATE 1986 07 14
			DRAWING No. 443-21 A

CANCEL PRINTS BEARING EARLIER LETTER



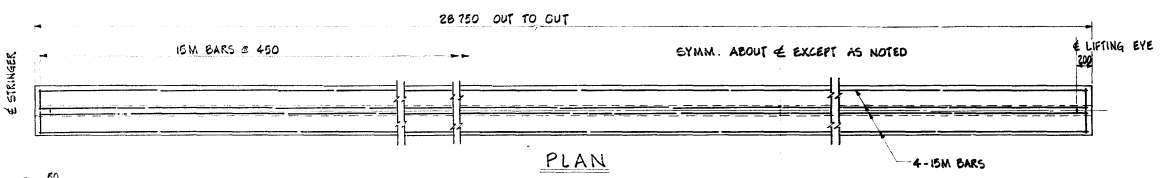
PLAN

SCALE 1:250

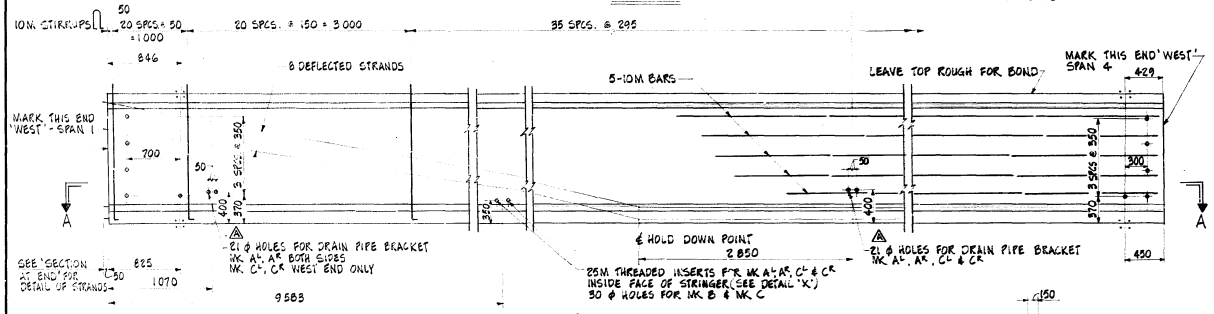


ELEVATION

SCALE 1:250



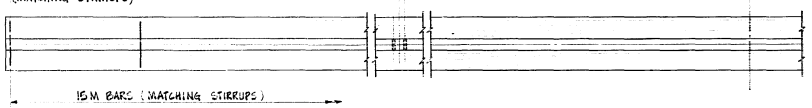
PLAN



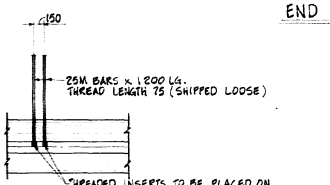
ELEVATION

SPAN 1 - AS SHOWN, SPAN 4 - SIMILAR BUT OPPOSITE HAND

75 @ 75 INTERMEDIATE DIAPHRAGM SPACING



SECTION A-A

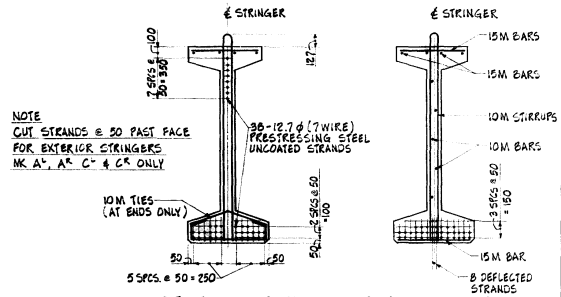


DETAIL 'X'

STRINGER MK B & MK C AS SHOWN - 4 EACH REQ'D

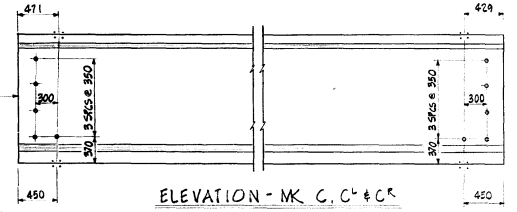
STRINGER MK A^L & MK A^R SIMILAR EXCEPT AS NOTED - 2 EACH REQ'D

STRINGER MK C^L & MK C^R SIMILAR EXCEPT AS NOTED - 2 EACH REQ'D

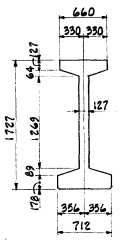


SECTION AT ENDS SECTION AT ℄

SCALE 1:20



ELEVATION - MK C, C^L & C^R



END VIEW

NOTES

1. PRESTRESSING STRANDS TO BE 13 ø (7 WIRE) UNCOATED LOW RELAXATION STRANDS, CSA G279 - 1975 1862 MPa GRADE OR EQUIVALENT. MIN. ULTIMATE TENSILE STRENGTH = 184 KN / STRAND. TENSILE LOAD IMMEDIATELY BEFORE RELEASE = 138 KN / STRAND.
2. CONCRETE : MIN. COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF RELEASE OF STRANDS = 35 MPa. MIN. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS = 52 MPa.
3. ALL EXPOSED EDGES TO HAVE 19 mm CHAMFER.
4. REINFORCING STEEL TO CONFORM TO CSA SPEC. G30.12M GRADE 400. LAP OF BARS FOR SPLICES TO BE IN ACCORDANCE WITH CSA SPECIFICATION CAN 3-S6-M78. SPLICES TO BE STAGGERED. MIN. COVER FOR REINFORCING STEEL TO BE 25 mm.
5. PRESTRESSING STRANDS TO HAVE 38 mm MIN. COVER.
6. LIFTING DEVICES SATISFACTORY TO ENGINEER SHALL BE PROVIDED OVER THE BEARINGS ONLY VERTICAL LIFTS WILL BE PERMITTED CARE SHALL BE TAKEN TO PREVENT ANY SUDDEN IMPACT LOAD ON THE STRINGERS.
7. PAINT ENDS OF STRANDS WITH TWO COATS OF AN APPROVED GALVANIZING AGENT.
8. PRESTRESSED CONCRETE STRINGERS TO BE FABRICATED TWO MONTHS PRIOR TO ERECTION.

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

NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD
RED BRIDGE
STRINGERS

295481

D				
C				
B	AS BUILT - NO CHANGE	K.L.	MAR. 87	
A	HOLES FOR DRAIN BRACKETS	K.L.	AUG. 84	
	REVISIONS			

PREPARED UNDER THE DIRECTION OF SENIOR BRIDGE DESIGN ENGINEER — DATE

RECOMMENDED — DIRECTOR OF BRIDGE ENGINEERING — DATE 86.07.10

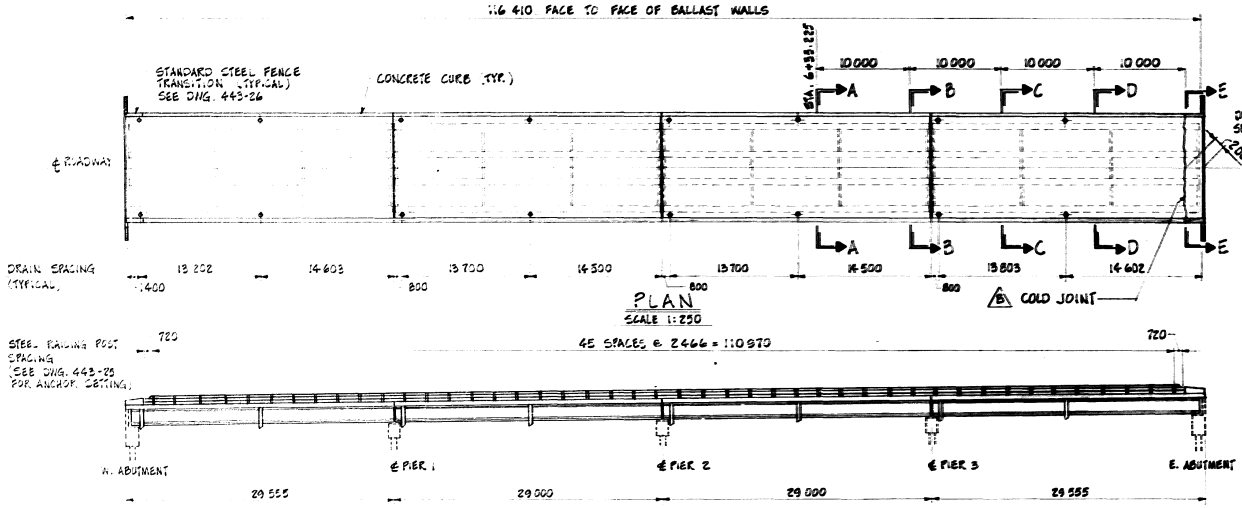
ACCEPTED FOR CONSTRUCTION — M.G. Eleton, EXECUTIVE DIRECTOR OF ENGINEERING — DATE 1986 07 16

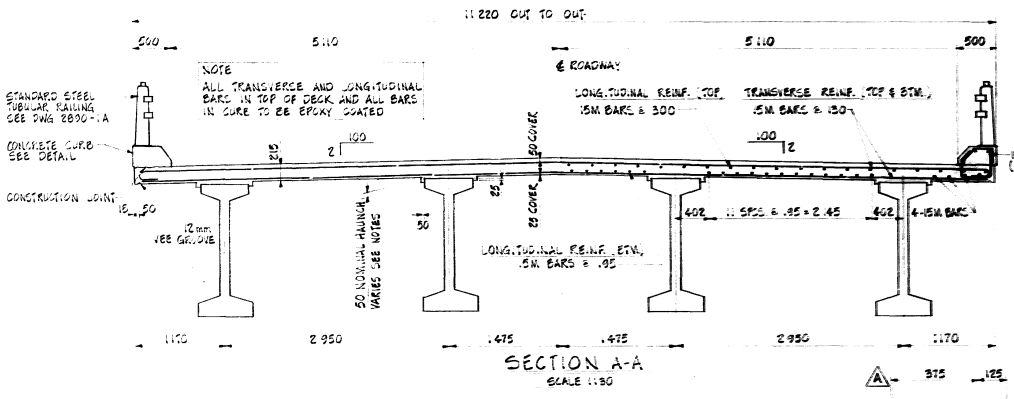
SCALE: 1:30 & AS NOTED — NEG. No.

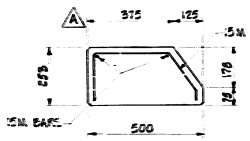
DRAWN K.L. APRIL 86 — CHECKED G.P./R.L. JULY/86

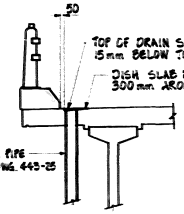
DRAWING No. 443-22 B

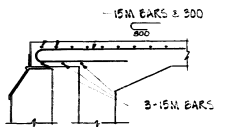
CANCEL PRINTS BEARING EARLIER LETTER





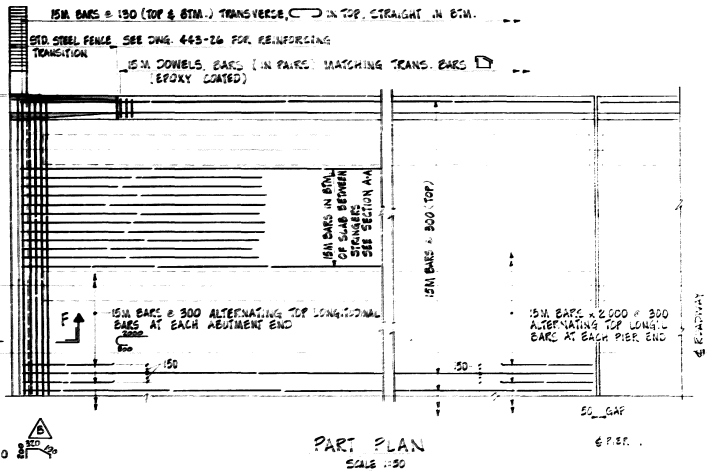






NOTES

1. ALL CONCRETE TO BE CLASS 'A' f'c = 30MPa
2. CONCRETE FOR EACH SPAN TO BE PLACED IN ONE CONTINUOUS OPERATION.
3. EXPOSED EDGES TO BE CHAMFERED 15mm EXCEPT AS NOTED.
4. REINFORCING STEEL TO HAVE 40mm MINIMUM COVER EXCEPT AS NOTED.
5. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CSA SPECIFICATION G30.12 M, GRADE 400.
6. SPLICING OF TRANSVERSE BARS NOT PERMITTED. LONGITUDINAL BARS MAY BE SPLICED; SPLICES ARE TO BE STAGGERED SO THAT NOT MORE THAN EVERY THIRD BAR IS SPLICED AT ANY CROSS-SECTION OF THE DECK.
7. DEFLECTION AND DIFFERENCE IN CAMBER WILL BE ACCOMMODATED BY DECK SCREED ELEVATIONS SUPPLIED BY THE MINISTRY. HAUNCH HEIGHTS WILL VARY AS REQUIRED TO MAINTAIN CONSTANT DECK THICKNESS.
8. LAP FOR REINFORCING STEEL TO BE IN ACCORDANCE WITH CSA STANDARD CAN S-S6-M78 CLAUSE 8.8 LAP FOR EPOXY COATED BARS TO BE INCREASED BY 50%.



ESTIMATED QUANTITIES
(INCLUDING DIAPHRAGMS)

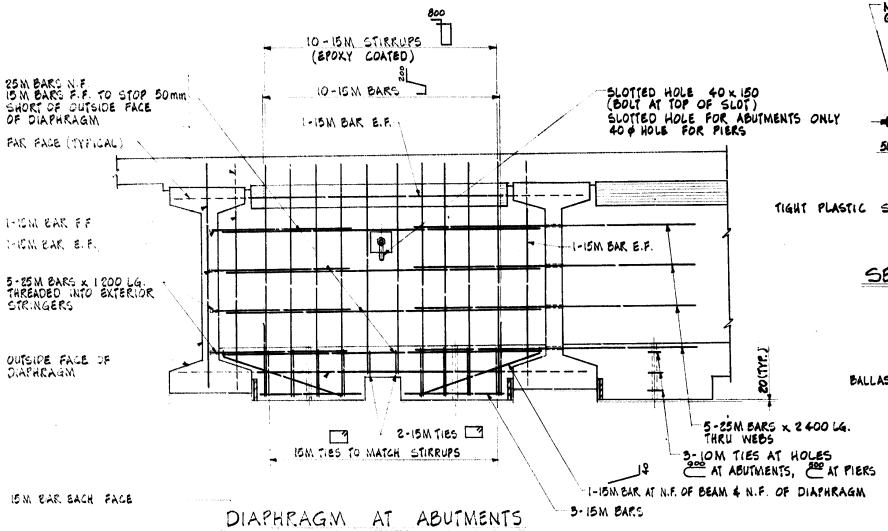
FORMWORK	2,235 m²
CONCRETE	460 m³
REINFORCING STEEL	31,810 Kg
REINFORCING STEEL - EPOXY COATED	31,600 Kg

D			
C			
B	AS BUILT	K.L.	MAY 86
A	CURB DIMENSIONS	GP/KL	JULY/86
REVISIONS			

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

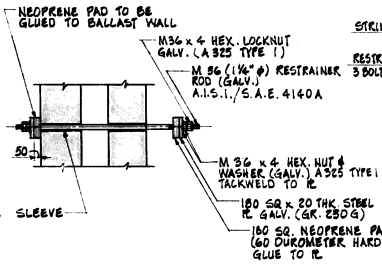
NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD 295482
RED BRIDGE
DECK DETAILS

PREPARED UNDER THE DIRECTION OF	DATE	SCALE: AS NOTED	NEG No
		DRAWN K.L. MAY 86	CHECKED GP/KL JULY/86
RECOMMENDED	DATE	ACCEPTED FOR CONSTRUCTION	DATE
	86.07.11		DRAWING No. 443-23 B

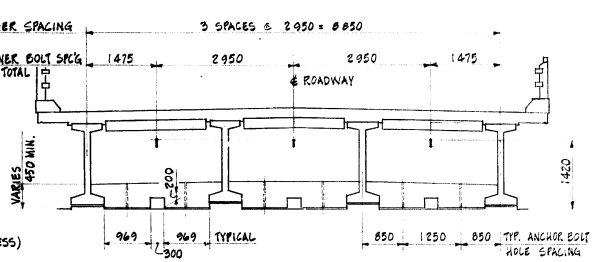


DIAPHRAGM AT ABUTMENTS

(DIAPHRAGM AT PIERS SIMILAR UNLESS OTHERWISE NOTED)

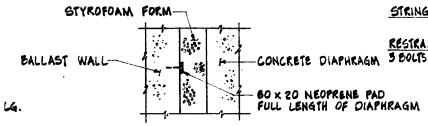


SECTION AT RESTRAINER BOLT

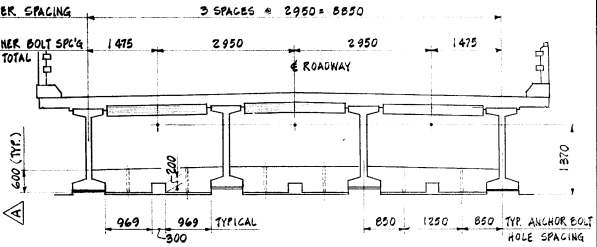


END DIAPHRAGM AT WEST ABUTMENT (LOOKING WEST)

(EAST ABUTMENT SIMILAR EXCEPT DIFFERENCE IN CROWNING)



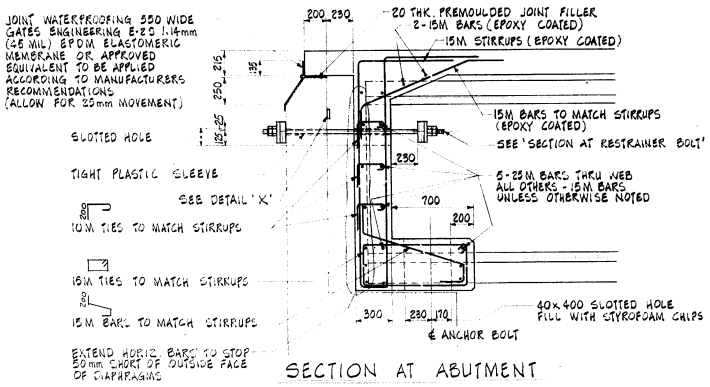
DETAIL 'X'



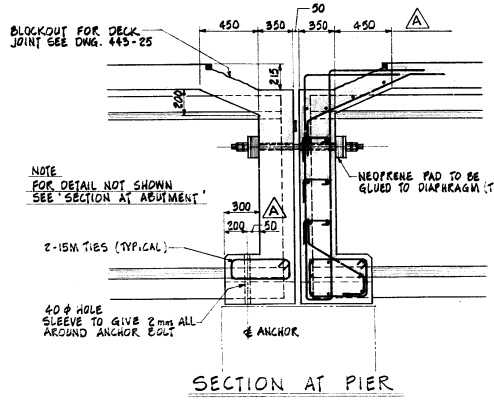
END DIAPHRAGM AT PIERS 1 & 2

(PIER 3 SIMILAR EXCEPT DIFFERENCE IN CROWNING)

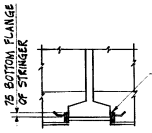
SCALE 1:50



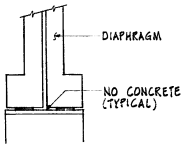
SECTION AT ABUTMENT



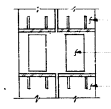
SECTION AT PIER



TYPICAL BEARING ELEVATION

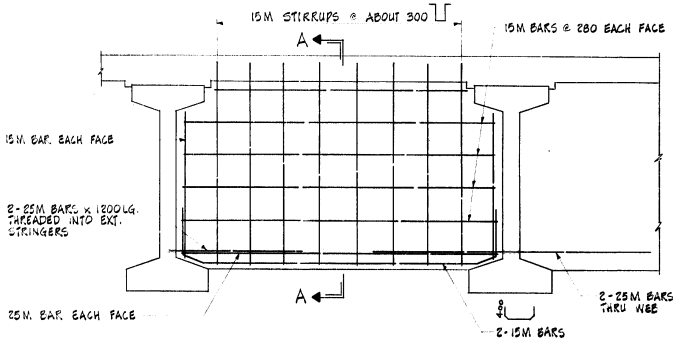


SECTION THRU BRIDGE SEAT

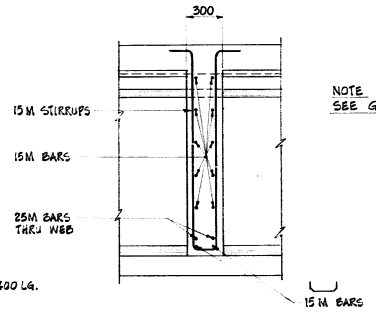


PLAN

SCALE 1:40



INTERMEDIATE DIAPHRAGM



SECTION A-A

NOTE
SEE GENERAL NOTES ON DWG. 443-23

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

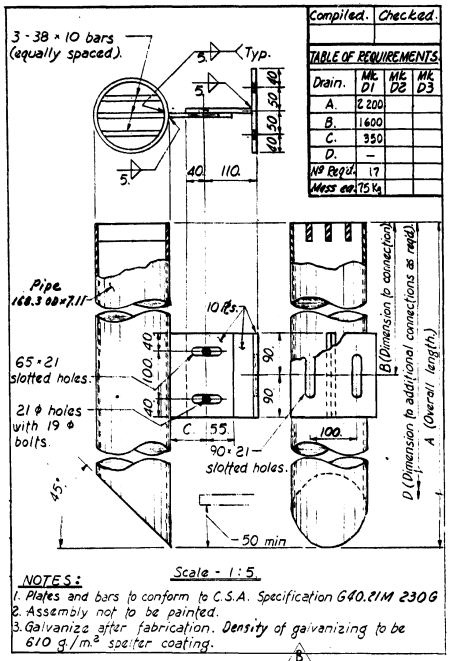
NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD
RED BRIDGE
DIAPHRAGMS

295483

D			
C			
B			
A	AS BUILT	K.L.	MAR.86
	REVISIONS		

PREPARED UNDER THE DIRECTION OF — SENIOR BRIDGE DESIGN ENGINEER — DATE
RECOMMENDED — DIRECTOR OF BRIDGE ENGINEERING — DATE 16.07.14
SCALE: 1:20 & AS NOTED — NEG. No.
DRAWN K.L. APR. 86 — CHECKED G.P./K.L. JULY/86
ACCEPTED FOR CONSTRUCTION — EXECUTIVE DIRECTOR OF ENGINEERING — DATE
DRAWING No. 443-24 A

CANCEL PRINTS BEARING EARLIER LETTER



Compiled.	Checked.

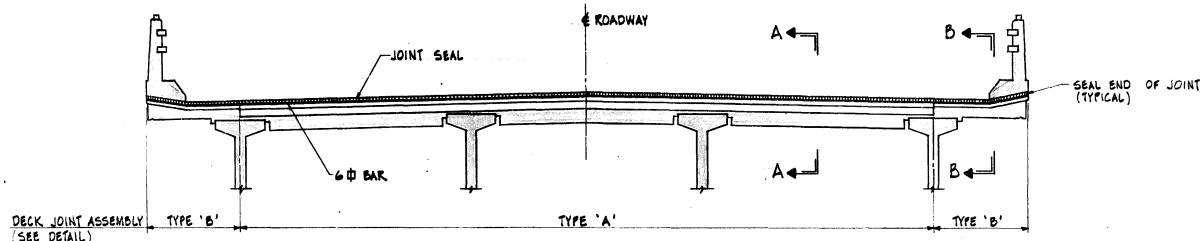
TABLE OF REQUIREMENTS

Drain.	Mk. D1	Mk. D2	Mk. D3
A.	2 200		
B.	1600		
C.	350		
D.	–		
No Req'd.	17		
Mass each	75 kg		

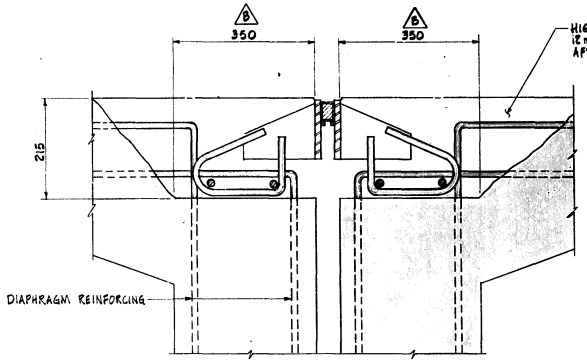
Scale - 1:5.

NOTES:
1. Plates and bars to conform to C.S.A. Specification G40.21M 230G
2. Assembly not to be painted.
3. Galvanize after fabrication. Density of galvanizing to be 610 g./m.² spelter coating.

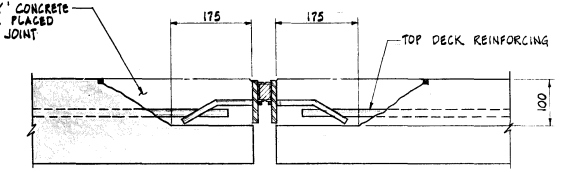
DRAIN DETAIL (16 REQ'D) B



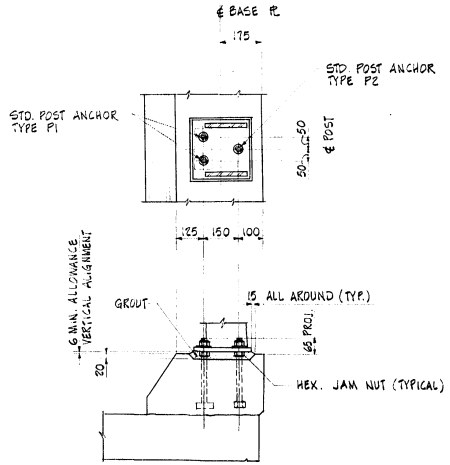
DECK JOINT ASSEMBLY
SCALE 1:30



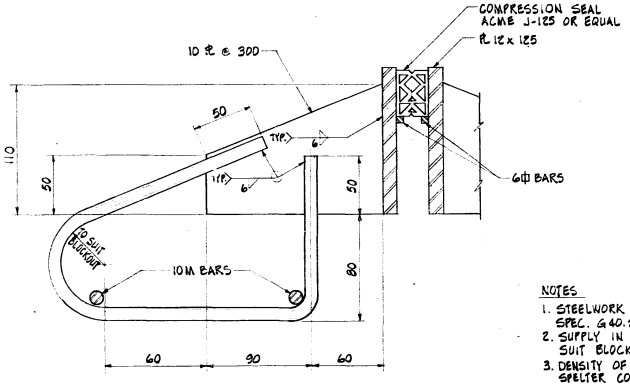
SECTION A-A
SCALE 1:5



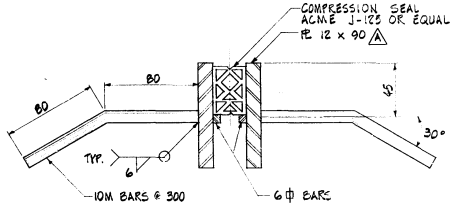
SECTION B-B
SCALE 1:5



POST ANCHOR SETTING
SCALE 1:10



JOINT TYPE 'A'
SCALE 1:2



JOINT TYPE 'B'
SCALE 1:2

NOTES
1. STEELWORK TO CONFORM TO CSA SPEC. G40.21 M GRADE 300W
2. SUPPLY IN CONVENIENT LENGTHS TO SUIT BLOCKOUT AND FIELDWELD.
3. DENSITY OF GALVANIZING TO BE 610g/m² SPELTER COATING.

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

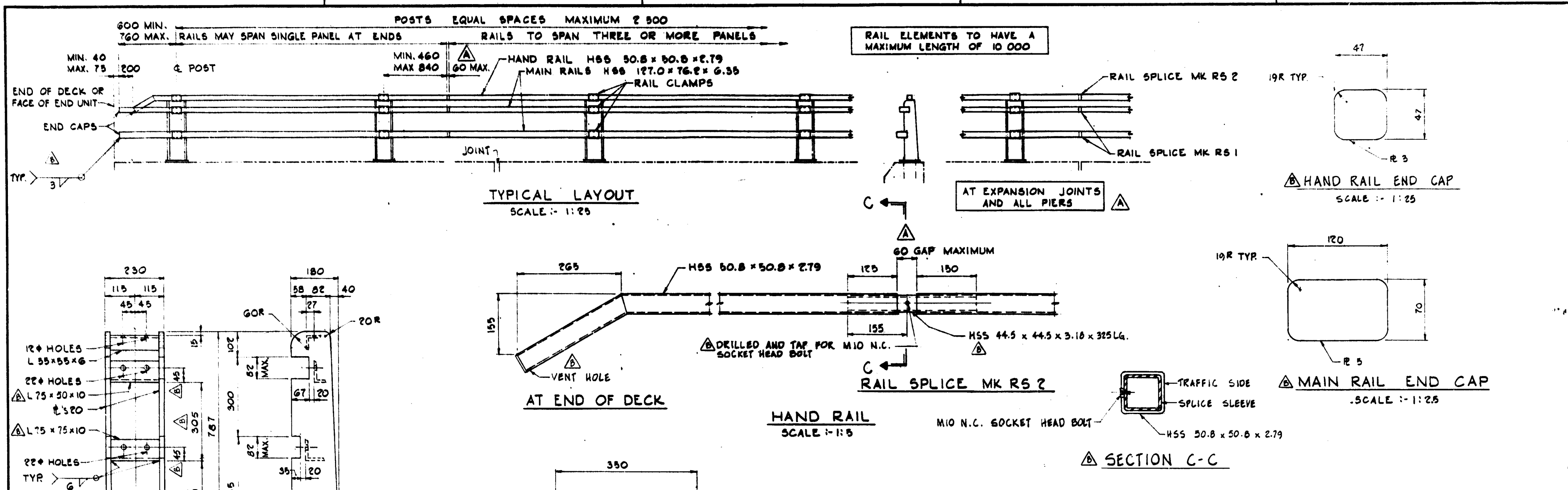
NORTH VANCOUVER DISTRICT
PEMBERTON PORTAGE ROAD
RED BRIDGE
MISCELLANEOUS DETAILS

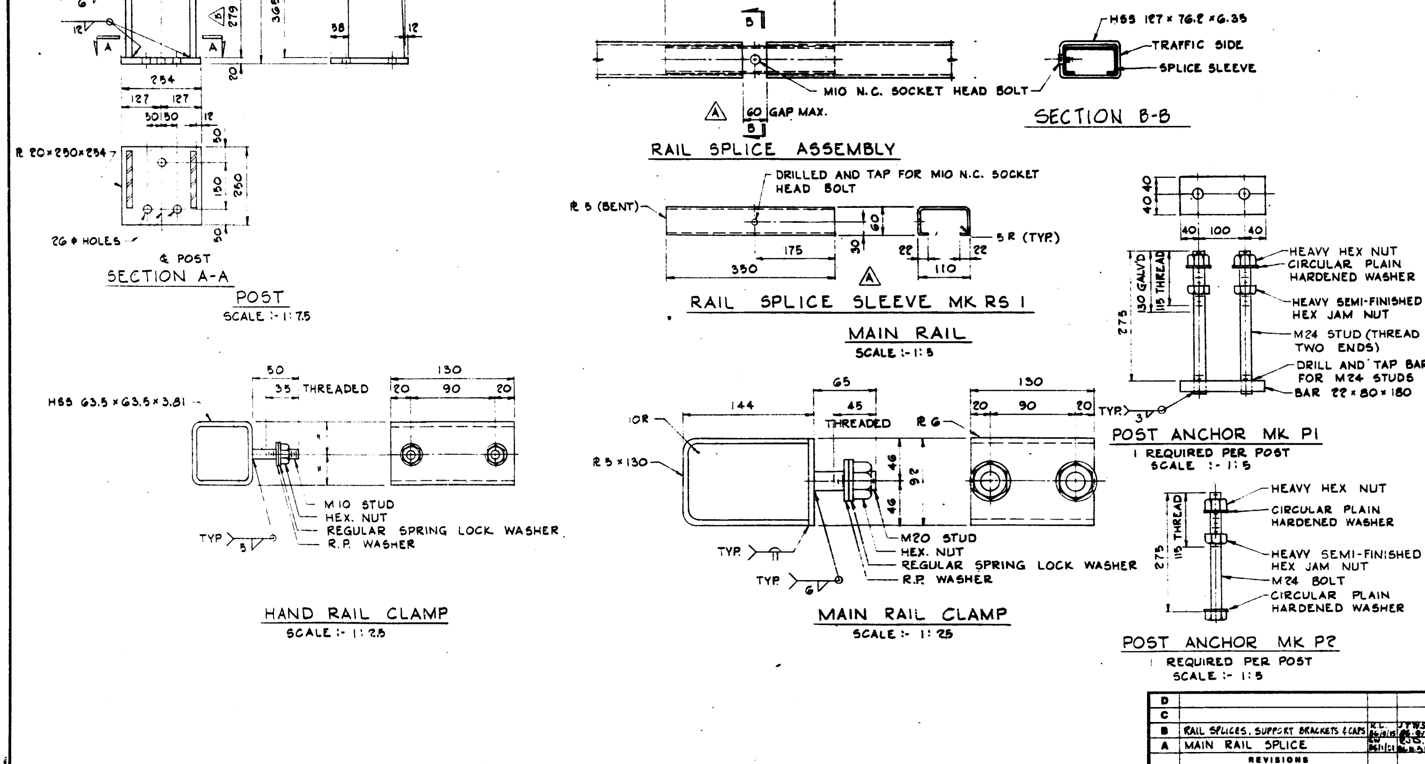
D			
C			
B	AS BUILT	K.L.	MAR 86
A	JOINT SEAL PL TYPE 'B' CHANGED	K.L.	DEC 84
	REVISIONS		

PREPARED UNDER THE DIRECTION OF — DATE
SENIOR BRIDGE DESIGN ENGINEER
RECOMMENDED — DATE
DIRECTOR OF BRIDGE ENGINEERING — 86.07.14
ACCEPTED FOR CONSTRUCTION — DATE
EXECUTIVE DIRECTOR OF ENGINEERING

SCALE: AS NOTED — NEG. No. 295484
DRAWN: K.L. JUNE 86 — CHECKED GP/RL JULY/86
DRAWING No. 443-25 B

CANCEL PRINTS BEARING EARLIER LETTER





NOTES

1. STEELWORK MATERIAL TO CONFORM TO SPECIFICATIONS AS FOLLOWS.
   - C.S.A. G40.21M 260W : POST ASSEMBLIES, RAIL SPLICES, RAIL CAPS AND RAIL CLAMPS
   - C.S.A. G40.21M 350W : RAILS
   - A.S.T.M. A325 GRADE B : ANCHOR BOLTS
   - A.S.T.M. A307 : SPLICE BOLTS AND RAIL CLAMP STUDS
   - A.S.T.M. A563 GRADE A : NUTS FOR ANCHOR BOLTS, RAIL SPLICES AND RAIL CLAMPS
   - ANSI B27.2 TYPE A : PLAIN WASHERS FOR ANCHOR BOLTS, RAIL SPLICES AND RAIL CLAMPS.
   - ANSI B27.1 : REGULAR SPRING LOCK WASHERS FOR RAIL CLAMPS
2. ALL MATERIAL TO BE GALVANIZED (EXCEPT AS NOTED) AFTER FABRICATION. AREA DENSITY OF GALVANIZING TO BE 610 g/m² SPELTER COATING
3. EXPANSION RAIL SPLICE IS DESIGNED FOR A TOTAL MOVEMENT OF 100. BRIDGES WITH GREATER EXPANSION WILL REQUIRE A LONGER RAIL SPLICE SLEEVE. DETAILS OF SPLICE WILL BE SHOWN ON DECK OR SUPERSTRUCTURE DRAWING.
4. RAIL ELEMENTS TO BE USED IN CURVES HAVING RADII OF 300 000 OR LESS SHALL BE SHOP FORMED TO THE REQUIRED CURVATURE.

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

STANDARD STEEL TUBULAR BRIDGE RAILING

D			
C			
B	RAIL SPLICES, SUPPORT BRACKETS & CAPS		
A	MAIN RAIL SPLICE		
	REVISIONS		

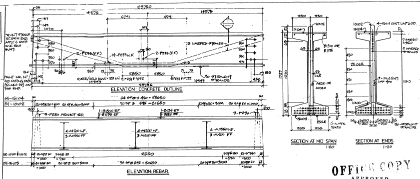
PREPARED UNDER THE DIRECTION OF	DATE	SCALE: AS NOTED				NEG No	295488
T.V.E. Vickers, SENIOR BRIDGE DESIGN ENGINEER		DRAWN	G.W.		CHECKED	R.J.D.	07.13.85
APPROVED FOR USE IN CONSTRUCTION	DATE				DATE	DRAWING No.	
DIRECTOR OF BRIDGE ENGINEERING	25.07.85	EXECUTIVE DIRECTOR OF ENGINEERING				2890-1	B

CANCEL PRINTS BEARING EARLIER LETTER

RELEASED FOR

OCT 10 1986

PRODUCTION



ELEVATION: CONCRETE OUTLINE

ELEVATION: REBAR

SECTION AT MID SPAN 1:20

SECTION AT ENDS 1:20

OFFICE COPY

APPROVED

SR. BRIDGE DESIGN ENGINEER DEPT. OF HIGHWAYS

OCT 17 1986

REINFORCEMENT							GRADE 400 MPa
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (kg)	SHAPE
10100	10	0.51	52	52	660	27	
10101	10	1.07	52	52	1370	56	
10102	10	3.09	151	151	3964	466	
15103	15	0.96	151	151	640	145	
15104	15	0.93	65	65	590	60	
A1200	10	9.36	14	14	12000	131	
A0550	10	4.29	7	7	5500	30	
B1800	15	28.26	4	4	1800	113	
B1135	15	17.82	4	4	1135	71	
				TOTAL		1099 kg	

HANDLING: 15751 15751 500 YARDING 500 2000 2000

FINISH: CLASS 1 CLASS 2 SECTION 1

CONCRETE		STRAND	
f'c TRANSFER	35 MPa	DIAMETER	13 mm
f'c 28 DAYS	52 MPa	GRADE LOW RELAXATION	1860 MPa
MAX' AGG' SIZE	20 mm	STRND FORCE @ Release	138 kN
CEMENT TYPE	10	TOTAL QUANT / UNIT	38
AIR ENTRAINMENT	5 ± 1 %	NEAT LENGTH / BEAM	1.093 m

CAST IN MATERIAL					
MARK	QUANT / UNIT	TOTAL QUANT	MARK	QUANT / UNIT	TOTAL QUANT
P230	6	6			
P231	2	2			
P232	2	2			
P233	14	14			
E234	14	14			
P235	4	4			

UNIT QUANTITIES

Vol / m	Vol/unit	Mass	TOTAL QUANTITY MK Nº 520 REQ'D.
0.43 m³	12.36 m³	31500 kg	

LENGTH DETAILS		
LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	±20
CROSS SECTION	±6
END SQUARE	1:165
DIAPHRAGM INSERTS	±25
HOLD DOWN LOCATION	±500

rev	Description	By	Date	Chkd

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.
SHIP E234 LOOSE WITH BM

MK Nº LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 2190
VANCOUVER, B.C.

ENGINEER	DRN.	TITLE. 1727 DP I GIRDERS.
	DATE. 860909	ENG: M.O.T.H.
	CHKD.	CNTRCTR: B.G.M. Construction
	W.O. V.P. 1900	DWG Nº. 1900-520

PROJECT. PEMBERTON RED BRIDGE. **295490**

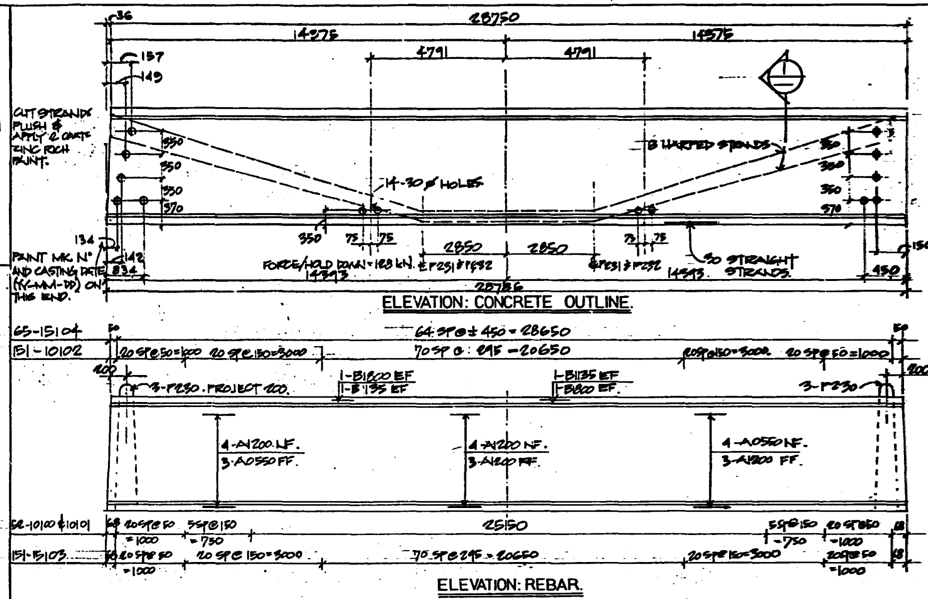
precast details only.

RELEASED FOR

OCT -6 1986

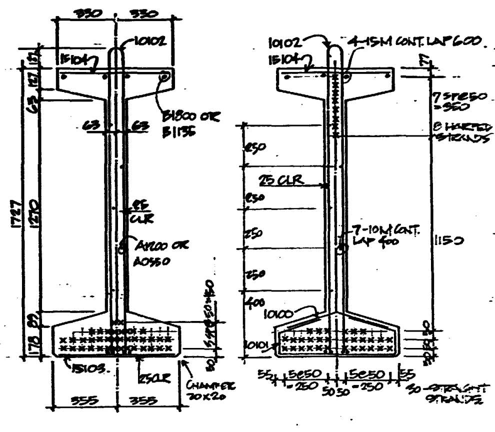
APPROVAL

RELEASED FOR
OCT 10 1986
PRODUCTION



ELEVATION: CONCRETE OUTLINE.

ELEVATION: REBAR.



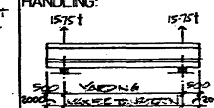
SECTION AT MID SPAN
1:20

SECTION AT ENDS
1:20

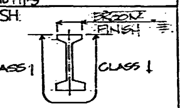
OFFICE COPY
APPROVED
SR. BRIDGE DESIGN ENGINEER
DEPT. OF HIGHWAYS
OCT 1 (1986

REINFORCEMENT.					GRADE		400 MPa
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (kg)	SHAPE
10100	10	0.51	52	104	660	27	330 / 330 / 100
10101	10	1.07	52	104	1370	56	240 / 70 / 125 / 640
10102	10	3.09	151	302	3964	466	76 / 1814 / 120
15103	15	0.96	151	302	640	145	
15104	15	0.93	65	130	590	60	
A1200	10	9.36	14	28	12000	131	
A0550	10	4.29	7	14	5500	30	
B1800	15	28.26	4	8	1800	113	
B1135	15	17.82	4	8	1350	71	
				TOTAL		1099 kg	

HANDLING:



FINISH:



SECTION 1

CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	13 mm
f'c 28 DAYS.	52 MPa	GRADE LOW RELAXATION	1860 MPa
MAX' AGG' SIZE.	20 mm	STRND FORCE @ Release	138 kN
CEMENT TYPE.	10	TOTAL QUANT / UNIT.	38
AIR ENTRAINMENT.	5 ± 1 %	NEAT LENGTH / BEAM.	1093 m

CAST IN MATERIAL.

MARK	QUANT / UNIT.	TOTAL QUANT.	MARK	QUANT / UNIT.	TOTAL QUANT.
P230	6	12			
P231	2	4			
P232	2	4			

LENGTH DETAILS

LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	± 20
CROSS SECTION	± 6
END SQUARE	1:65
DIAPHRAGM INSERTS	± 25
HOLD DOWN LOCATION	± 500

UNIT QUANTITIES.

Vol / m.	Vol/unit.	Mass.		TOTAL QUANTITY MK N° 521 REQ'D. 2
0.43 m³	12.36 m³	31500 kg		

rev	Description.	By	Date	Chkd.

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.

520	523	523	526
521	524	524	527
521	524	524	527
522	525	525	528

MK N° LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 3590
VANCOUVER, B.C. V6B 3Y6
(604) 270-6579

PROJECT.
PEMBERTON RED BRIDGE.
295491

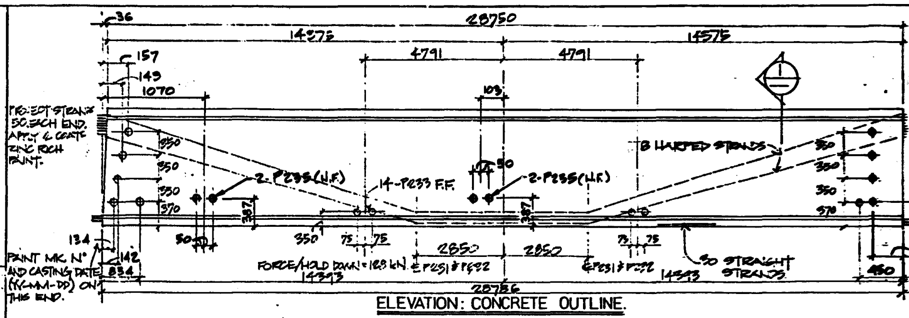
ENGINEER
PROFESSIONAL ENGINEER 86-10-06

DRN. [signature]	TITLE. 1727 DP I GIRDERS.
DATE. 860909	ENG: M.O.T.H.
CHKD. PAL	CNTRCTR: B.G.M. Construction.
W.O. V.P. 1900	DWG N°. 1900-521

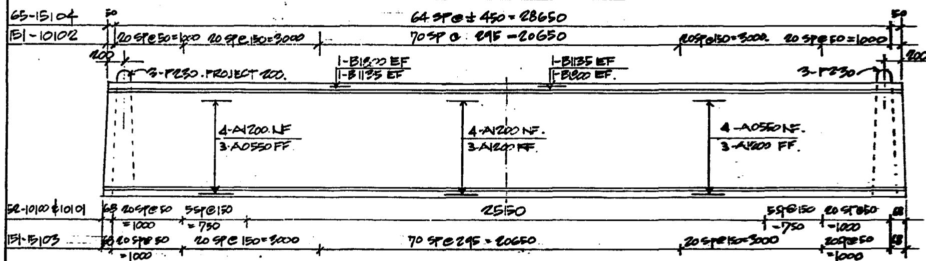
precast details only.

RELEASED FOR
OCT -6 1986
APPROVAL

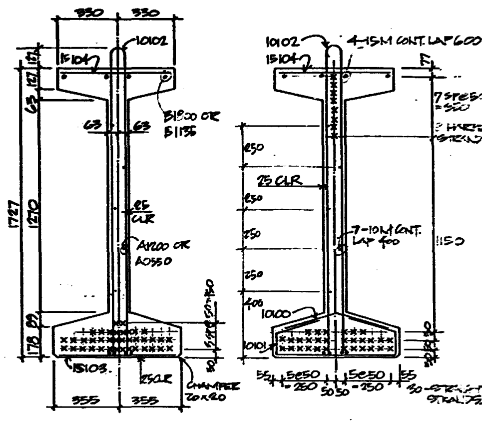
RELEASED FOR
OCT 10 1986
PRODUCTION



ELEVATION: CONCRETE OUTLINE.



ELEVATION: REBAR.



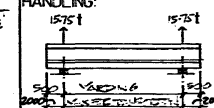
SECTION AT MID SPAN
1:20

SECTION AT ENDS
1:20

OFFICE COPY
APPROVED
SR. BRIDGE DESIGN ENGINEER
DEPT. OF HIGHWAYS
OCT 17 1986

REINFORCEMENT.					GRADE		400 MPa
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (kg)	SHAPE
10100	10	0.51	52	52	660	27	330 / 330 / 100
10101	10	1.07	52	52	1370	56	245 / 70 / 125 / 625
10102	10	3.09	151	151	3964	466	1814
15103	15	0.96	151	151	640	145	
15104	15	0.93	65	65	590	60	
A1200	10	9.36	14	14	[illegible]	131	
A0550	10	4.29	7	7	5500	30	
B1800	15	28.26	4	4	1800	113	
B1135	15	17.82	4	4	1350	71	
				TOTAL		1099 kg	

HANDLING:



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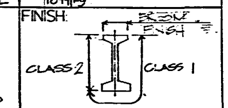


SECTION 1

CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	13 mm
f'c 28 DAYS.	52 MPa	GRADE LOW RELAXATION	1860 MPa
MAX' AGG' SIZE.	20 mm	STRND FORCE @ Release	135 kN
CEMENT TYPE.	10	TOTAL QUANT / UNIT.	39
AIR ENTRAINMENT.	5 ± 1 %	NEAT LENGTH / BEAM.	1093 m

CAST IN MATERIAL.

MARK	QUANT / UNIT.	TOTAL QUANT.	MARK	QUANT / UNIT.	TOTAL QUANT.
P230	6	6			
P231	2	2			
P232	2	2			
P233	14	14			
E234	14	14			
P235	4	4			

UNIT QUANTITIES.

Vol / m.	Vol/unit.	Mass.		TOTAL QUANTITY MK Nº 522 REQ'D.	
0.43 m³	12.35 m³	31500 kg			1

LENGTH DETAILS		
LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	± 20
CROSS SECTION	± 6
END SQUARE	1:65
DIAPHRAGM INSERTS	± 25
HOLD DOWN LOCATION	± 500

rev	Description.	By	Date	Chkd.

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.
SHIP E234 LOOSE WITH BM

520	523	522	526
521	524	524	527
521	524	522	527
522	525	525	528

MKNº LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 3590
VANCOUVER, B.C.
(604) 270-6579

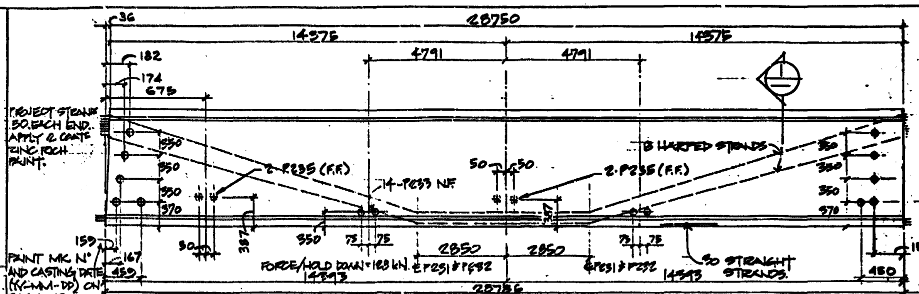
PROJECT.
PEMBERTON
RED BRIDGE.
295492

ENGINEER
PROFESSIONAL ENGINEER

DRN.	TITLE. 1727. DP I GIRDERS.
DATE. 860909	ENG: M.O.T.H.
CHKD.	CNTRCTR: B.G.M. Construction.
W.O. V.P. 1900	DWG Nº. 1900-522

precast details only.

RELEASED FOR
OCT - 6 1986
APPROVAL



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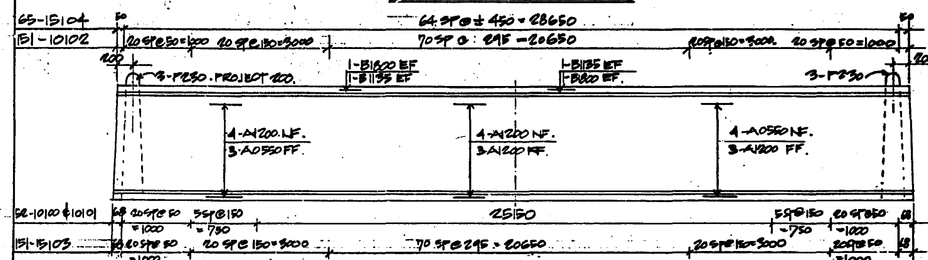

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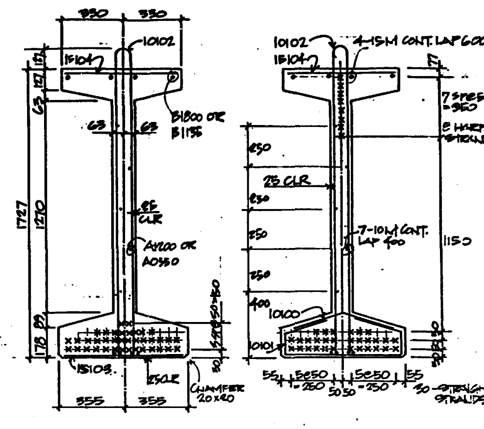
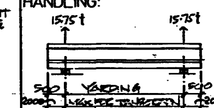


SECTION AT MID SPAN 1:20

SECTION AT ENDS 1:20

REINFORCEMENT.					GRADE		400 MPa
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (kg)	SHAPE
10100	10	0.51	52	104	660	27	330 / 330 / 100
10101	10	1.07	52	104	1370	56	240 / 70 / 125 / 640
10102	10	3.09	151	302	3964	466	1814
15103	15	0.96	151	302	640	145	——
15104	15	0.93	65	130	590	60	——
A1200	10	9.36	14	28	12000	131	——
A0550	10	4.29	7	14	5500	30	——
B1800	15	28.26	4	8	1800	113	——
B1135	15	17.82	4	8	11350	71	——
				TOTAL		1099 kg	

HANDLING:



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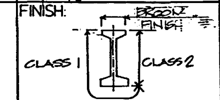


SECTION 1

CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	13 mm
f'c 28 DAYS.	52 MPa	GRADE. LOW RELAXATION	1860 MPa
MAX' AGG' SIZE.	20 mm	STRND FORCE @Release	138 kN
CEMENT TYPE.	10	TOTAL QUANT / UNIT.	38
AIR ENTRAINMENT.	5 ± 1 %	NEAT LENGTH / BEAM.	1093 m

CAST IN MATERIAL.

MARK	QUANT / UNIT.	TOTAL QUANT.	MARK	QUANT / UNIT.	TOTAL QUANT.
P230	6	12			
P231	2	4			
P232	2	4			
P233	14	28			
E234	14	28			
P235	4	8			

UNIT QUANTITIES.

Vol / m.	Vol/unit.	Mass.		TOTAL QUANTITY MK N° 523 REQ'D.	2
0.43 m³	12.36 m³	31500 kg			

LENGTH DETAILS

LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES

LENGTH	±20
CROSS SECTION	±6
END SQUARE	1:65
DIAPHRAGM INSERTS	±25
HOLD DOWN LOCATION	±500

REV	Description.	By	Date	Chkd.

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.
SHIP E234 LOOSE WITH BM

MK N° LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM.

SUPERCRETE
A DIVISION OF CONFANCE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS

PROJECT: PEMBERTON RED BRIDGE.
295493

ENGINEER
DRN
DATE. 860909
CHKD.
W.O. V.P. 1900

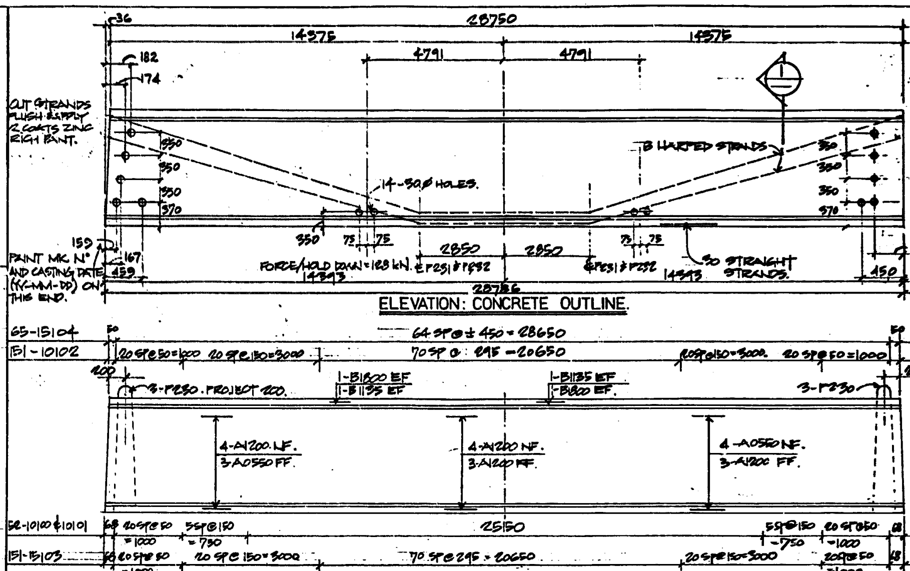
TITLE. 1727 DP I GIRDERS.
ENG: M.O.T.H.
CNTRCTR: B.G.M. Construction
DWG N°. 1900-523

precast details only.

RELEASED FOR

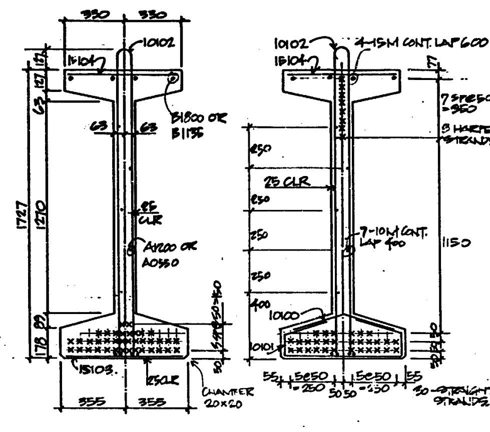
OCT 10 1986

PRODUCTION



ELEVATION: CONCRETE OUTLINE.

ELEVATION: REBAR.



SECTION AT MID SPAN 1:20

SECTION AT ENDS 1:20

OFFICE COPY

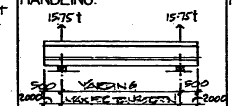
APPROVED

SR. BRIDGE DESIGN ENGINEER
DEPT. OF HIGHWAYS

OCT 1 4 1986

REINFORCEMENT.					GRADE		400 MPa
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (kg)	SHAPE
10100	10	0.51	52	208	660	27	330 / 330 / 100
10101	10	1.07	52	208	1370	56	240 / 70 / 125 / 640
10102	10	3.09	151	604	3964	466	76 / 1814
15103	15	0.96	151	604	640	145	——
15104	15	0.93	65	260	590	60	——
A1200	10	9.36	14	56	12000	131	——
A0550	10	4.29	7	28	5500	30	——
B1800	15	28.26	4	16	1800	113	——
B1135	15	17.82	4	16	1350	71	——
				TOTAL		1099 kg	

HANDLING:



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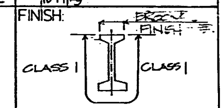

SECTION 1

CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	13 mm
f'c 28 DAYS.	52 MPa	GRADE LOW RELAXATION	1860 MPa
MAX' AGG' SIZE.	20 mm	STRND. FORCE @ Release	138 kN
CEMENT TYPE.	10	TOTAL QUANT / UNIT.	38
AIR ENTRAINMENT.	5 ± 1 %	NEAT LENGTH / BEAM.	293 m

CAST IN MATERIAL.

MARK	QUANT / UNIT.	TOTAL QUANT.	MARK	QUANT / UNIT.	TOTAL QUANT.
P230	6	24			
P231	2	8			
P232	2	8			

LENGTH DETAILS		
LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	± 20
CROSS SECTION	± 6
END SQUARE	1:65
DIAPHRAGM INSERTS	± 25
HOLD DOWN LOCATION	± 500

UNIT QUANTITIES.

Vol / m.	Vol / unit.	Mass.		TOTAL QUANTITY MK Nº 524 REQ'D.	4
0.43 m³	12.36 m³	31500 kg			

rev	Description.	By	Date	Chkd.

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.

520	523	523	526
521	524	524	527
521	524	527	527
522	525	525	528

MK Nº LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 3590
VANCOUVER, B.C. V6B 3Y6
(604) 270-6579

PROJECT.
PEMBERTON
RED BRIDGE.
295494

ENGINEER.
PROFESSIONAL ENGINEER
P. A. R. LOWE
86-10-06

DRN.

DATE. 860909

CHKD. PARL

W.O. V.P. 1900

TITLE. 1727 DP I GIRDERS.

ENG: M.O.T.H.

CNTRCTR: B.G.M. Construction.

DWG Nº. 1900-524

precast details only.

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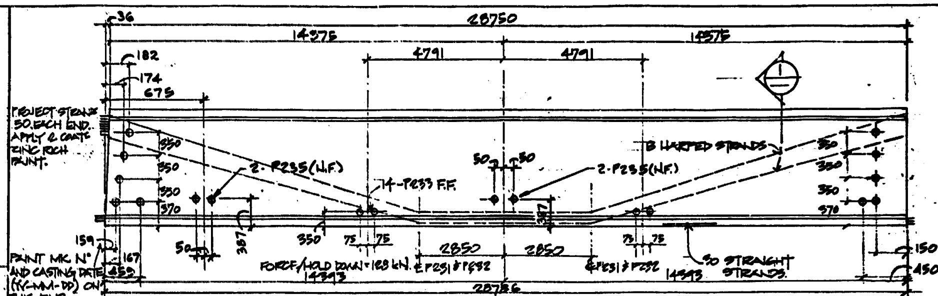
PRODUCTION



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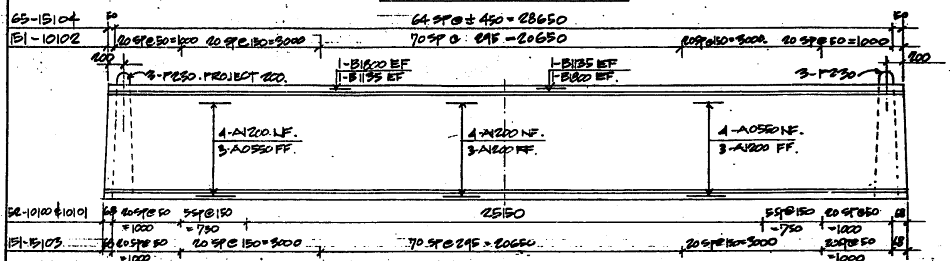
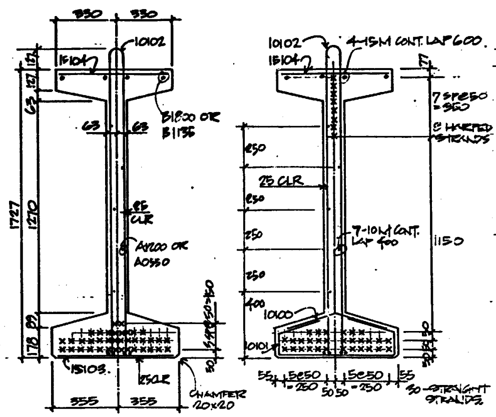


ELEVATION: REBAR.



SECTION AT MID SPAN
1:20

SECTION AT ENDS
1:20

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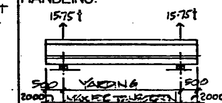
APPROVED
SR. BRIDGE DESIGN ENGINEER
DEPT. OF HIGHWAYS
OCT 17 1986

REINFORCEMENT.					GRADE	400 MPa	
BAR MARK	SIZE	WT (Kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (Kg)	SHAPE
10100	10	0.51	52	104	660	27	330 / 330 / 100
10101	10	1.07	52	104	1370	56	240 / 70 / 125 / 640
10102	10	3.09	151	302	3964	466	1814
15103	15	0.96	151	302	640	145	
15104	15	0.93	65	130	590	60	
A1200	10	9.36	14	28	12000	131	
A0550	10	4.29	7	14	5500	30	
B1800	15	28.26	4	8	1800	113	
B1135	15	17.82	4	8	11350	71	
				TOTAL		1099 Kg	

HANDLING:



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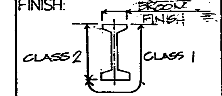


SECTION 1

CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	13 mm
f'c 28 DAYS.	52 MPa	GRADE. LOW RELAXATION	1860 MPa
MAX' AGG' SIZE.	20 mm	STRND. FORCE @ Release	138 kN
CEMENT TYPE.	10	TOTAL QUANT / UNIT.	38
AIR ENTRAINMENT.	5±1 %	NEAT LENGTH / BEAM.	1093 m

CAST IN MATERIAL.

MARK	QUANT / UNIT.	TOTAL QUANT.	MARK	QUANT / UNIT.	TOTAL QUANT.
P230	6	12			
P231	2	4			
P232	2	4			
P233	14	28			
E234	14	28			
P235	4	8			

UNIT QUANTITIES.

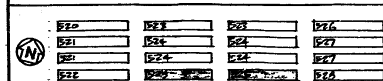
Vol / m.	Vol/unit.	Mass.		TOTAL QUANTITY MK N° 525 REQ'D.
0.43 m³	12.36 m³	31500 Kg		2

LENGTH DETAILS		
LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	±20
CROSS SECTION	±6
END SQUARE	1:65
DIAPHRAGM INSERTS	±25
HOLD DOWN LOCATION	±500

rev	Description.	By	Date	Chkd.

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.
SHIP E234 LOOSE WITH BM



MK N° LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 3590
VANCOUVER, B.C.
(604) 270-6379

PROJECT.
PEMBERTON
RED BRIDGE.
295495

ENGINEER
PROFESSIONAL ENGINEER
PAUL R. R. LOWE
86-10-06

DRN.
DATE. 860909
CHKD.
W.O. V.P. 1900

TITLE. 1727 DP I GIRDERS.
ENG: M.O.T.H.
CNTRCTR: B.G.M. Construction.
DWG N°. 1900-525
REV.

precast details only.

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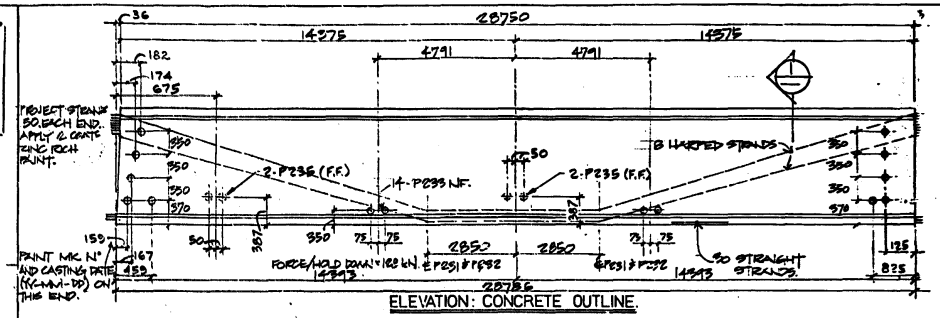
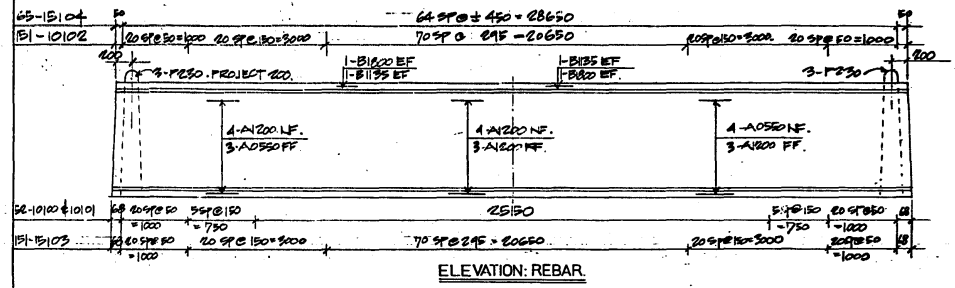
OCT 10 1986
PRODUCTION



ELEVATION: CONCRETE OUTLINE.



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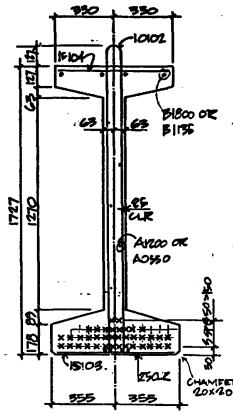
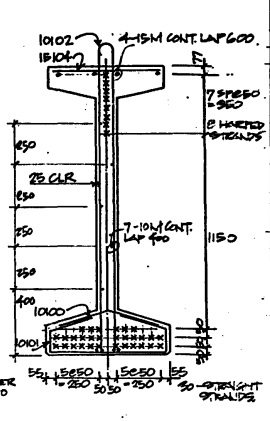


SECTION AT MID SPAN
1:20



SECTION AT ENDS
1:20

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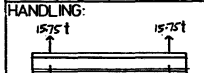
APPROVED
[signature]
ENGINEER

OCT 17 1986

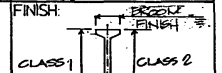
RELEASED FOR :
OCT - 6 1986
APPROVAL

REINFORCEMENT.					GRADE 400 MPa		
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WEIGHT (kg)	SHAPE
10100	10	0.51	52	52	660	27	
10101	10	1.07	52	52	1570	56	
10102	10	4.19	151	151	3944	460	
15103	15	0.96	151	151	6400	145	
15104	15	0.93	65	65	8960	60	
A1200	10	9.36	14	14	12000	131	
A0550	10	4.29	7	7	5500	30	
B1800	15	28.74	4	4	11900	113	
B1135	15	17.82	4	4	11350	71	
				TOTAL		1099	kg

HANDLING:



FINISH:



SECTION 1

CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	15 mm
f'c 28 DAYS.	52 MPa	GRADE: LOW RELAXATION	1860 MPa
MAX' AGG' SIZE.	20 mm	STRND FORCE @ Release	158 kN
CEMENT TYPE	10	TOTAL QUANT / UNIT.	33
AIR ENTRAINMENT.	5 ± 1 %	NEAT LENGTH / BEAM	1093 m

CAST IN MATERIAL.

MARK	QUANT / UNIT.	TOTAL QUANT.	MARK	QUANT / UNIT.	TOTAL QUANT.
P230	6	6			
P231	2	2			
P232	2	2			
P233	14	14			
P234	14	14			
P235	4	4			

LENGTH DETAILS		
LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	± 20
CROSS SECTION	± 6
END SQUARE	1:65
DIAPHRAGM INSERTS	± 25
HOLD DOWN LOCATION	± 500

UNIT QUANTITIES.

Vol/m.	Vol/unit	Mass.	TOTAL QUANTITY MK N° 526 REQ'D.
0.43 m³	12.9 m³	31500 kg	

rev	Description	By	Date	Chkd.

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.
SHIP E234 LOOSE WITH BM.

BM	520	523	525	526
	521	524	526	527
	522	524	526	527
	522	524	526	528

MK N° LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 2590
VANCOUVER, B.C. V6B 3W6
(604) 270-6570

PROJECT
PEMBERTON
RED BRIDGE.
295496

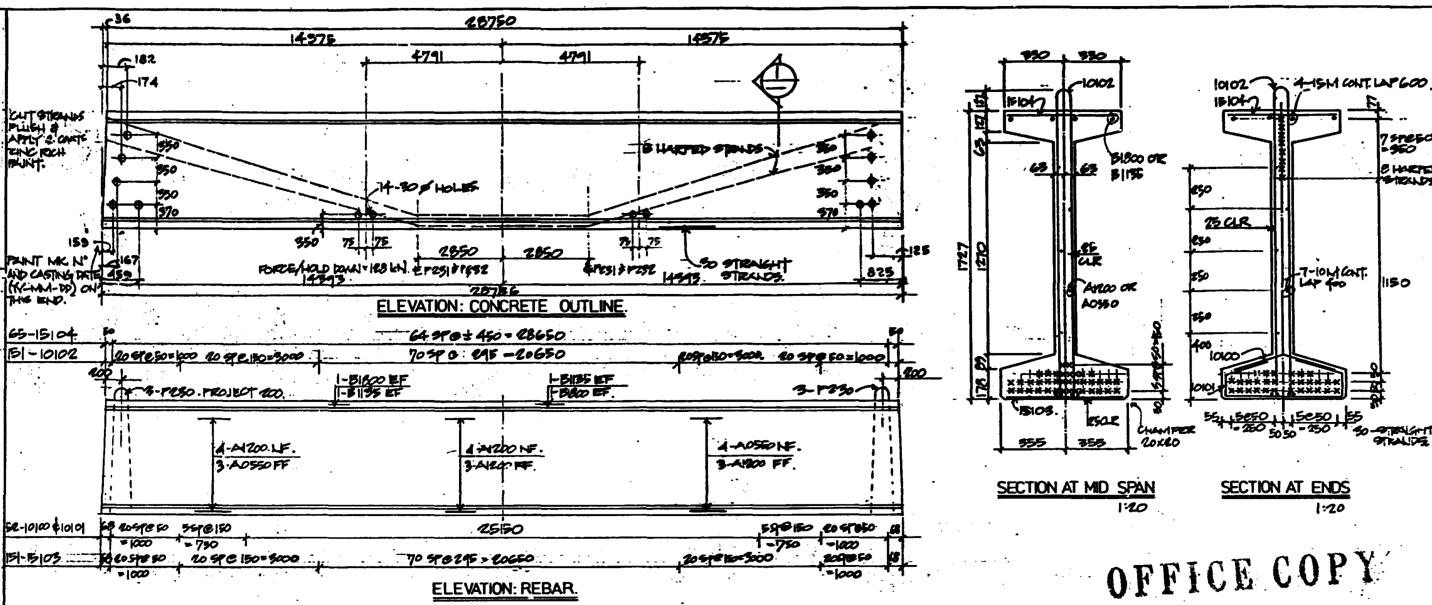
ENGINEER
PROFESSIONAL ENGINEER
PAUL A. F. LOCKE
86-10-06
ENGINEER

DRN	[signature]
DATE	860909
CHKD.	PAL
W.O. V.P.	1900

TITLE. 1727 DP I GIRDERS.
ENG: M.O.T.H.
CNTRCTR: B.G.M. Construction.
DWG N°. 1900-526

precast details only.

RELEASED FOR
OCT 10 1986
PRODUCTION



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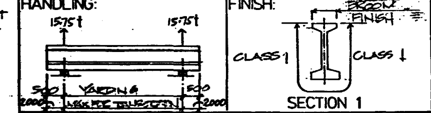
APPROVED
SR. BRIDGE DESIGN ENGINEER
OCT 17 1986

REINFORCEMENT.					GRADE		400 MPa
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (kg)	SHAPE
10100	10	0.51	52	104	660	27	
10101	10	1.07	52	104	1370	56	
10102	10	3.09	151	302	3964	466	
15103	15	0.96	151	302	640	145	
15104	15	0.93	65	130	590	60	
A1200	10	9.36	14	28	12000	131	
A0550	10	4.29	7	14	5500	30	
B1800	15	28.26	4	8	1800	113	
B1135	15	17.82	4	8	1135	71	
				TOTAL	1099 kg		

HANDLING:

FINISH:



CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	13 mm
f'c 28 DAYS.	57 MPa	GRADE. LOW RELAXATION	1860 MPa
MAX' AGG' SIZE.	20 mm	STRND. FORCE @Release	138 kN
CEMENT TYPE.	10	TOTAL QUANT / UNIT.	35
AIR ENTRAINMENT.	5±1.%	NEAT LENGTH / BEAM.	1093 m

CAST IN MATERIAL.

MARK	QUANT / UNIT.	TOTAL QUANT.	MARK	QUANT / UNIT.	TOTAL QUANT.
P230	6	12			
P231	2	4			
P232	2	4			

LENGTH DETAILS		
LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	±20
CROSS SECTION	±6
END SQUARE	1:65
DIAPHRAGM INSERTS	±25
HOLD DOWN LOCATION	±500

UNIT QUANTITIES.

Vol / m.	Vol/unit	Mass.		TOTAL QUANTITY MK Nº 527 REQ'D.
0.43 m³	12.36 m³	31500 kg		2

rev	Description.	By	Date	Chkd.

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.

MKN° LOCATION CORRESPONDS TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 3590
VANCOUVER, B.C.
(604) 270-6579

PROJECT. PEMBERTON RED BRIDGE.
295497

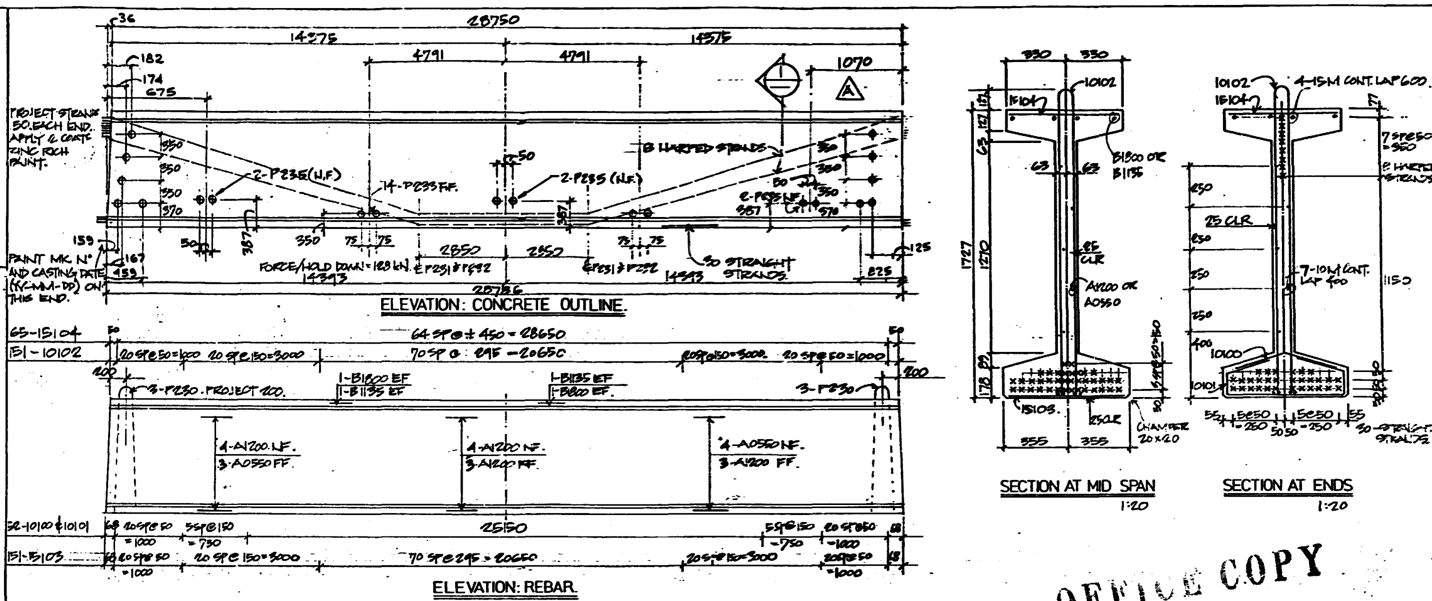
ENGINEER.
PROFESSIONAL ENGINEER
86-10-06

DRN.	TITLE. 1727 DP I GIRDERS.
DATE. 860909	ENG: M.O.T.H.
CHKD.	CNTRCTR: B.G.M. Construction.
W.O. V.P. 1900	DWG Nº. 1900-527

precast details only.

RELEASED FOR
OCT - 6 1986
APPROVAL

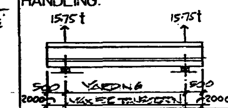
RELEASED FOR
OCT 10 1986
PRODUCTION



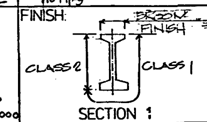
OFFICE COPY
APPROVED
SR. BRIDGE DESIGN ENGINEER
DEPT. OF HIGHWAYS
OCT 7 1986

REINFORCEMENT					GRADE		400 MPa
BAR MARK	SIZE	WT (kg)	QUANT /UNIT	TOTAL QUANT	LENGTH	TOTAL WT/UNIT (kg)	SHAPE
10100	10	0.51	52	52	660	27	330 / 330 / 100
10101	10	1.07	52	52	1370	56	240 / 70 / 125 / 640
10102	10	3.09	151	151	3964	466	76 / 1814 / 100
15103	15	0.96	151	151	640	145	———
15104	15	0.93	65	65	590	60	———
A1200	10	9.36	14	14	12000	131	———
A0550	10	4.29	7	7	5500	30	———
B1800	15	28.26	4	4	1800	113	———
B1135	15	17.82	4	4	1350	71	———
				TOTAL		1099 kg	

HANDLING:



FINISH:



CONCRETE		STRAND	
f'c TRANSFER.	35 MPa	DIAMETER.	13 mm
f'c 28 DAYS.	52 MPa	GRADE LOW RELAXATION	1860 MPa
MAX. AGG. SIZE.	20 mm	STRND FORCE @ Release	138 kN
CEMENT TYPE.	10	TOTAL QUANT/UNIT.	38
AIR ENTRAINMENT.	5 ± 1 %	NEAT LENGTH/BEAM.	1093 m

CAST IN MATERIAL					
MARK	QUANT /UNIT.	TOTAL QUANT.	MARK	QUANT /UNIT.	TOTAL QUANT.
P230	6	6			
P231	2	2			
P232	2	2			
P233	14	14			
E234	14	14			
P235	6	6			

UNIT QUANTITIES.			
Vol/m.	Vol/unit.	Mass.	TOTAL QUANTITY
0.43 m³	12.35 m³	31500 kg	MK N° 528 REQ'D.

LENGTH DETAILS		
LENGTH	TOP	BOTTOM
CASTING	28750	28786
AFTER TRANSFER	28750	28766
ERECTION	28750	28750

TOLERANCES	
LENGTH	± 20
CROSS SECTION	± 6
END SQUARE	1:65
DIAPHRAGM INSERTS	± 25
HOLD DOWN LOCATION	± 500

Rev	Description.	By	Date	Chkd.
A	2-P235 ADDED R/H END		861010	

NOTES:
ALL BMS ARE IDENTICAL EXCEPT FOR DIAPHRAGM HOLES, INSERTS & FINISH.
SHIP E234 LOOSE WITH BM.

MK N° LOCATION CORRESPOND TO ACTUAL LOCATION ON BEAM

SUPERCRETE
A DIVISION OF CANFARGE LTD.
MANUFACTURERS OF CONCRETE PRODUCTS
P.O. BOX 3590
VANCOUVER, B.C.
(604) 270-6579

PROJECT.
PEMBERTON RED BRIDGE.
295498

ENGINEER
PAUL A. R. LONG
DRN.
DATE. 860909
CHKD. PALL
W.O. V.P. 1900
TITLE. 1727 DP I GIRDERS.
ENG: M.O.T.H.
CNTRCTR: B.G.M. Construction.
DWG N°. 1900-528
REV. A

precast details only.

RELEASED FOR
OCT -6 1986
APPROVAL

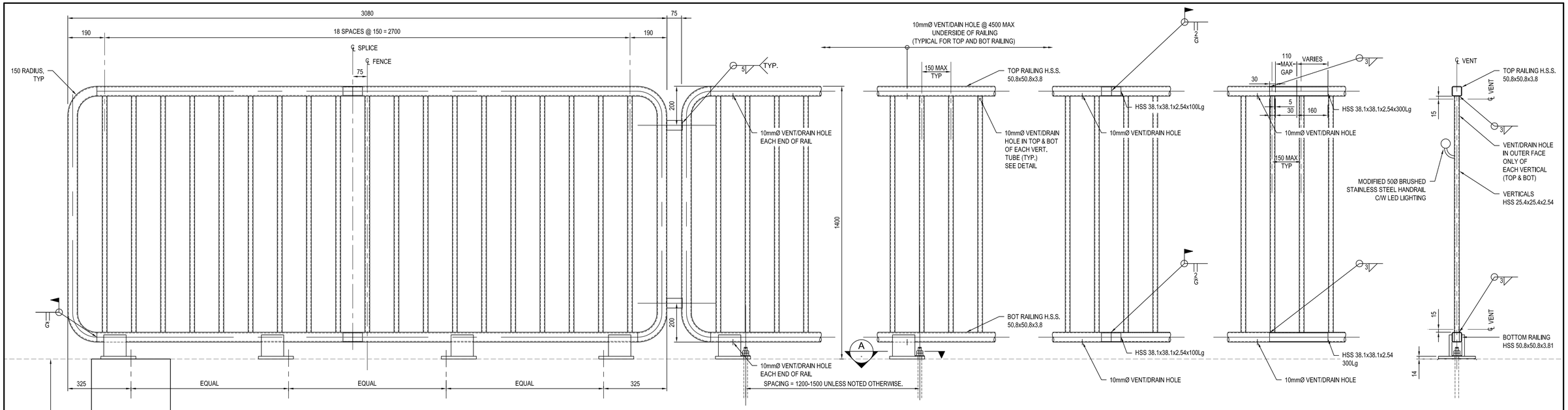
ISSUE FOR TENDER INFORMATION:

FRIENDSHIP TRAIL BRIDGE PROJECT

Appendix 4 – Supplemental Drawing

April 2018

ISL Engineering and Land Services



OFF BRIDGE END PANEL (RAILING TYPE A) 1/-
1:10

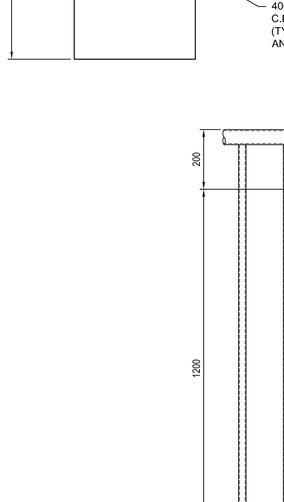
END DETAIL
1:10

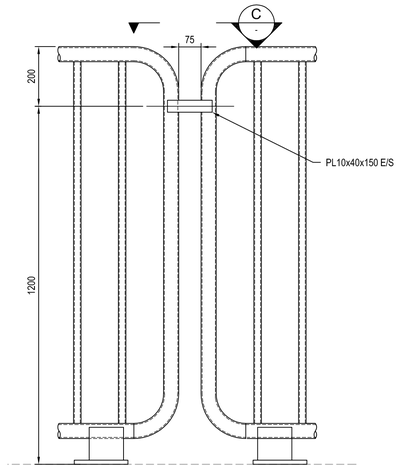
TYPICAL DETAIL
1:10

TYPICAL RAIL SPLICE
1:10

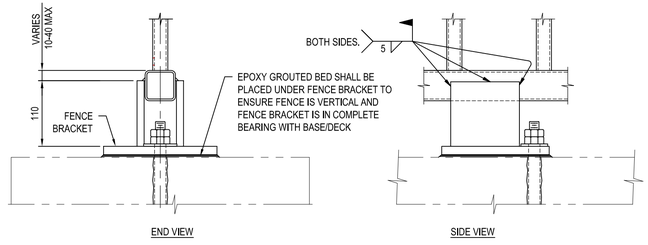
RAIL EXPANSION JOINT
1:10

TYPICAL SECTION
1:10

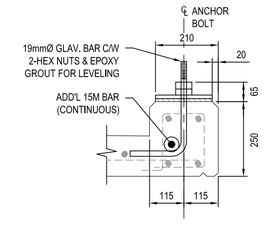




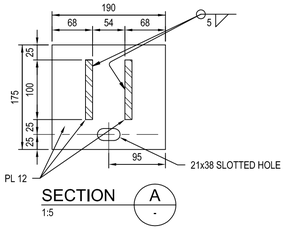
CONNECTION BETWEEN PANELS
1:10



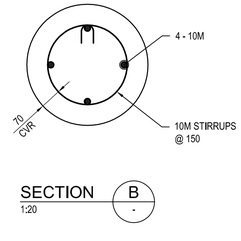
TYPICAL DETAILS AT FENCE BRACKET
1:5



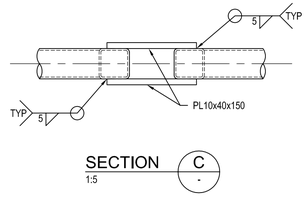
FENCE ANCHOR DETAIL
1:10



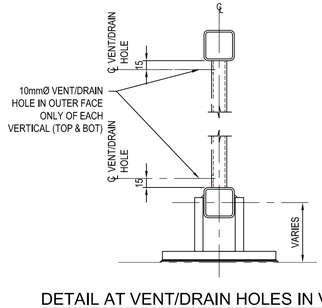
SECTION A -
1:5



SECTION B -
1:20



SECTION C -
1:5



DETAIL AT VENT/DRAIN HOLES IN VERTICALS
1:5

NOTES :

1. CONTRACTOR TO INSTALL ONE PANEL OFF-BRIDGE @ EACH END.
2. STEEL SHALL CONFORM TO:
   - ALL HSS TUBING TO BE CAN/CSA G40.21, GRADE 350W.
   - ALL OTHER STEEL WORK TO BE CAN/CSA G40.21, GRADE 300W.
3. FENCE SECTIONS, BRACKETS AND ANCHORS TO BE GALVANIZED AFTER FABRICATION.
4. GALVANIZING SHALL CONFORM TO CSA SPECIFICATION G164.
5. FIELD CONNECTIONS TO BE WELDED EXCEPT AS NOTED.
6. RAIL ELEMENTS TO BE USED IN CURVES HAVING RADII 300m OR LESS SHALL BE SHOPPED FORMED TO THE REQUIRED CURVATURE.
7. FENCE BRACKETS ARE TO BE INSTALLED ON A 5mm NOMINAL THICK THIXOTROPIC EPOXY LEVELING COURSE TO ENSURE A COMPLETE BEARING SURFACE.

NOTE: ALL DRAWINGS ARE PRINTED AT HALF SCALE WHEN IN 11" x 17" FORMAT

No.	DESCRIPTION	BY	DATE
1	ISSUED FOR TENDER	DRE	2018.03.16
	REVISIONS		

P.Eng.

Permit

Scale: AS SHOWN

ISL Engineering and Land Services

VILLAGE OF PEMBERTON

FRIENDSHIP PEDESTRIAN BRIDGE

Drawn: JD	Design Checked: JCT	Date: 2018.02.14
Designed: DRE	Discipline Review:	Date:

SUPPLEMENTAL DRAWING TO MOTI STANDARD DRAWING 2891-2

Drawing No. 31529 STR 01

1 Revision No.

Joel Demuynck / Mar. 14, 18 / C:\Users\jdemuynck\Desktop\Railing Details.dwg