DISTRICT OF SUMMERLAND

Construction Services Tender

FOR INSTALLATION OF 750MM AND 1050MM DIAMETER BUTTERFLY VALVES

Tender Documents

District of Summerland Contract No. 5330-139

January, 2017

Agua Consulting Inc

Agua Project No. : 023-11

DISTRICT OF
SUMMERLAND

Sealed Tenders clearly marked

"District of Summerland
CONSTRUCTION SERVICES TENDER FOR
INSTALLATION OF 750mm & 1050mm BUTTERFLY VALVES

will be received at the offices of the District of Summerland Works & Utilities office at 9215 Cedar Avenue Summerland, British Columbia, V0H 1Z0 until 2:00 pm, local time, Tuesday, January 24, 2017. The received Tenders will be opened thereafter on that date.

The work consists of:

- The removal of the existing 750mm diameter butterfly valve, coupling and small diameter pipeworks in the vault at Morrow Avenue and Prairie Valley Road and installation of the District-supplied 750mm butterfly valve and coupling including coring hole in roof for butterfly valve extension. Work includes supply and installation of small diameter piping within the vault;
- Excavation on Prairie Valley Road near Sinclair Road to to install a new District-supplied 1050mm butterfly valve and Ford Meterbox coupling for steel, welded joint restraint. Watermain depth is approximately 4.5m to pipe invert. It is noted that the coating of the 1050mm diameter steel main has asbestos fibres and that an Asbestos Exposure Control Plan will be required when cutting into the steel transmission main;
- Excavation of a 3,000 m^3 temporary water storage pond at a 40m x 90m site at the location of northeast corner of Kelly Avenue and Brown Street in Summerland. The pond will be approximately 2.0 – 2.25 metres deep below existing grade. Include for Moduloc perimeter fencing during course of construction, with restoration of the site to original after the water storage area has drained. Include for snow clearing and snow removal for site as per snow depth at date of tender close;
- Prairie Valley Road work includes excavation, stockpiling of excavated materials, road closure, traffic control and barricades, backfilling, compaction, road subbase and base construction, and asphalt pavement to match existing grades;
- Please note that the works involve a major shut-down of the primary water supply to the majority of the District of Summerland and that the shut-down work is scheduled to occur on the weekend of March 3-5, 2017;

Each Tender must have enclosed a Security Deposit (certified cheque) or Bid Bond in the amount of 10% of the Tendered Price. A Bid Bond or certified cheque will be acceptable. A mandatory site inspection is scheduled for Tuesday Jan. 17, 2017 starting at 1:00 p.m. at the Public Works & Utilities office at 9215 Cedar Avenue in Summerland.

Tender documents will be available in digital format only and will be available at the Summerland municipal website and at BC Bid website on or after January 5, 2017. This tender is directed to Contractors that have demonstrated a high level of competency and attention to maintaining community services. Any updates or Addenda related to the project will be available at the aforementioned websites.

General enquiries related to the project can be directed to the Devon Van der Meulen. Technical enquiries can be directed to Mr. Bob Hrasko.

The lowest or any Tender may not necessarily be accepted.

Mr. Devon Van der Meulen
Manager of Utilities
9215 Cedar Avenue
Summerland, BC
V0H 1Z0
Phone (250) 404-4075
Fax (250) 494-3399
Email dvandermeulen@summerland.ca

Mr. Bob Hrasko, P.Eng.
Agua Consulting Inc.
3660 Anderson Road
Kelowna, BC
V1X 7V8
Cell/Text (250) 212-3266
Email rhrasko@shaw.ca

1. TENDER CALL

.1 Sealed Tenders fully executed, dated and endorsed will be received at the offices of the District of Summerland at 9215 Cedar Avenue, Summerland, BC, V0H 1Z0 up to 2:00 pm, local time, on Tuesday, 24th day of January, 2017.

The intent of this Tender is to obtain a formal offer to construct and complete the:

"Construction Services Tender
for Installation of 750mm & 1050mm diameter Butterfly Valves"
for the District of Summerland
Contract # 5330-139

herein referred to as the "Works" which are located at three locations, two along the water transmission main on Prairie Valley Road and a third at a flat area at the north-east corner of Kelly Avenue and Brown Street in Summerland.

.2 Submit one copy of the Tender as set out in Section 00300 of this document, signed and sealed together with the required securities in an opaque sealed envelope, clearly identified with the Tenderer's Name and Contract Name on the outside.

.3 The work will require a contract to be formed between the Contractor and the District of Summerland (Owner).

.4 Tender Documents are supplied in digital format by the District of Summerland and are available on their web site and at the BC Bid website.

.5 Amendments to a submitted Tender will be permitted if received in writing prior to Tender closing and if endorsed by the same party or parties who signed and sealed the Tender. The Consultant cannot guarantee that the District of Summerland's fax machine will be available to receive revisions prior to tender closing. The fax machine number is (250) 494-3399.

.6 Tenders will be opened after 2:00 P.M. on Tuesday the 24th day of January, 2017 at the District of Summerland Works and Utilities Office located at 9215 Cedar Avenue, Summerland, BC V0H 1Z0.

2. SECURITY DEPOSIT

.1 A security deposit is required with this submission in the form of a Bid Bond or a certified cheque in the amount of 10% of the Tender Price.

3. CURRENCY

.1 All Prices shall be in Canadian Dollars.

4. TAXES

.1 Except where noted, the Tender Price is to include all applicable taxes, duties and brokerage fees. The successful Tenderer will be required to provide sufficient detail and documentation as may be required by the Owner for exemption or for rebates on exempt items. The Goods and Services Tax shall **not** be included in the separate line items of the Tender Form but is to be provided separately at the bottom of the Tender Form.

5. CONSENT OF SURETY

.1 A "Consent of Surety" is required for this submission.

6. BONDS

.1 Bonding is required for this submission. A 50% Performance Bond and 50% Labour and Materials Payment bond will be required for the contract.

7. COMMENCEMENT AND COMPLETION OF WORK

.1 The Tenderer, in submitting the Tender, agrees that the Work can be completed in the time frame limitations as set out in the Summary of Work and as presented in their proposed Work Plan.

8. TENDER SIGNING

.1 The Tender must be executed under seal by the Tenderer.

.2 If the Tenderer is an individual or a partnership, the Tender shall be executed and sealed by the individual or a partner in the presence of a witness and the signer must show the capacity in which he signs (eg: "Partner" or "Proprietor").

.3 If the Tenderer is a limited company or corporation, the Tender shall be executed under the seal of the company, affixed in the presence of the authorized officers or two directors.

.4 If the Tenderer is a joint venture, each party to the joint venture shall execute the Tender under seal in the manner appropriate to such party.

9. TENDER INELIGIBILITY

.1 Tenders that are unsigned, improperly executed, incomplete, conditional, illegible, obscure, contain arithmetical errors or additions not called for, reservations, erasures, alterations or irregularities of any kind, may be rejected as incomplete.

10. TENDER AMENDMENTS AND/OR WITHDRAWAL

.1 A Tenderer who has already submitted a Tender may submit amendments to the originally submitted Tender in writing or by fax at any time before the official closing time, provided that the Tender amendments are endorsed by the same party or parties who signed and sealed the Tender. The last Tender received shall supersede and invalidate all Tenders previously submitted by the Tenderer.

.2 A Tender may be withdrawn by the Tenderer by written notice delivered to the District of Summerland Manager of Works and Utilities prior to the time fixed for opening Tenders.

11. SCHEDULES TO TENDER FORM

.1 Tenderers shall complete all Schedules and submit same with the Tender;

.2 Submit a List of Hourly Rates for Labour and Equipment (Schedule A) as itemized;

.3 Submit a Project Schedule and Work Plan (Schedule B). The contractor must provide his intended approach, to install the butterfly valves and equipment provided by the District of Summerland and listed within Schedule B;

.4 Submit Tenderers Qualifications (Schedule C). Provide qualifications of the staff coordinating and directing contractors forces and coordinating subcontractors. Include names and experience;

.5 Provide a List of Subcontractors (Schedule D). Provide the names of the Subcontractors for each designated part of the Work;

12. DURATION OF OFFER

.1 Tenders shall be open for acceptance and irrevocable for a period of thirty (30) days after the Tender closing date, regardless of the acceptance of another Tender.

13. ACCEPTANCE OF TENDER

.1 The Owner reserves the right to accept the Tender which is deemed most advantageous. The lowest or any Tender will not necessarily be accepted.

.2 After acceptance, the Owner, or the Consultant on behalf of the Owner, will issue to the successful Tenderer a written Notice of Acceptance.

14. SITE EXAMINATION

.1 The Tenderer shall examine the Place of the Work before submitting a Tender and shall satisfy himself as to the nature and location of the Work, the means of access to the site and shall obtain all necessary information as to risks, contingencies and circumstances which may affect his Tender. The Tenderer is responsible for obtaining all information required for the preparation of the Tender.

.2 A mandatory site visit to the place of the Work has been arranged for the General Contractors and their Sub Contractors as follows:

Date: Tuesday, January 17, 2017
Time: 1:00 P.M.
Meeting Place: District of Summerland Works & Utilities Office, 9215 Cedar Avenue;

.3 Claims for additional costs will not be entertained with respect to conditions which would reasonably have been ascertained by an inspection of the site prior to the Tender closing date.

15. SOILS INVESTIGATION PROCEDURE

.1 Soils Investigation information for the Sinclair Avenue site is available and is included as Appendix C. The information from the Beacon Geotechnical is from earlier work and is representative of ground conditions near the proposed excavation site.

16. CONFIDENTIALITY

.1 The Tenders shall be made without any connection, comparison of figures, or arrangement with or knowledge of any other person or persons making a Tender for the same work and shall be, in all respects, fair and without collusion or fraud.

17. OMISSIONS / DISCREPANCIES / INTERPRETATIONS

.1 Tenderers finding discrepancies or omissions in the Tender Documents or having doubt as to the meaning or intent thereof shall at once notify the District of Summerland Manager of Works and Utilities who will, if necessary, send written instructions or explanations to all Tenderers.

.2 Oral interpretations made to any Tenderer shall not effect a modification of any provision of the Tender Documents.

.3 Technical questions arising during the bidding period should be directed to the Consultant

Agua Consulting Inc.
Attention: Bob Hrasko, P.Eng., Phone: (250) 212-3266

.4 During the tendering period Tenderers may be advised by Addenda of any alterations to the Tender Documents. All such changes will become part of the Contract and the effects shall be included in the Tender Price.

.5 It is the responsibility of the Bidders to check the websites for Addenda prior to Tender closing;

.6 The Owner will not issue any Addenda later than two (2) working days, (48 hours) prior to the Tender closing date.

18. WORKING HOURS

.1 During the period that the transmission main is shut down, the contractors forces will be expected to work continuously on shifts no longer than 12 hours. Timing of the works is critical in order that full water service can be restored as quickly as possible.

.2 Working hours for set-up and project preparation, and post-construction clean-up and restoration, to be carried out between the hours of: 7:00 A.M. and 7:00 P.M. on weekdays.

19. BUILDERS LIEN ACT

.1 The Builders Lien Act, as revised in 1997, shall apply to this Project. All items affected by the Act, including the filing of times for certification, payment and holdback amounts, shall be carried out in accordance with the requirements of the Builders Lien Act (1997).

.2 The Consultant is to be the certifier for this Project, as required to provide Certificates of Completion for the contract and subcontracts.

.3 The Contractor will be required to assess the contract and subcontracts for Certification of Completion.

END OF SECTION

DATE: _____

Submitted by: _____
(Legal Name)

_____
(Address)

Fax: (_____) _____ Telephone: (_____) _____

To: **District of Summerland**
9215 Cedar Avenue
PO Box 159
Summerland, BC, V0H 1Z0

Hereinafter called the "Owner"

Project: Construction Services for Installation of 750mm & 1050mm Butterfly Valves

District of Summerland Contract # 5330-139

1. OFFER

.1 We, the undersigned, having examined and read Addenda No. _____to No. _____ and the Tender Documents inclusive, all as issued by Agua Consulting Inc., and having visited the Project Site, we hereby offer to enter into a Contract to perform the Work required by the Tender Documents for the stipulated price of:

_____
(Total in Words)

_____Dollars $_____
in Canadian funds, which price includes all specified cash and contingency allowances and the applicable taxes in force at this date except as may be otherwise provided in the Tender Documents.

.2 We have included herewith the security deposit and Consent of Surety as required by the Instructions to Tenderers.

2. ACCEPTANCE

.1 This Tender shall be open for acceptance and is irrevocable for a period of thirty (30) days from the Tender date regardless of the acceptance of another Tender.

.2 If this Tender is accepted by the Owner within thirty (30) days of the Tender closing date and we receive written notice of this acceptance, we will:

- Execute the "Agreement" within seven (7) days of receipt of the form for execution.
- Furnish the required Bonds within seven (7) days of the date of the Notice of Acceptance.
- Commence preparation work within seven (7) days after the date of the Notice of Acceptance in conformance with schedule submitted in Schedule B;
- Substantially complete the Work within the working time frame required to minimize water disruption to the residents of Summerland;

.3 If this Tender is accepted within the time stated herein, and we fail to execute the Agreement and provide the required Bonds, or we request to withdraw, the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the deposit or the difference between this Tender and the Tender for which the Contract is signed.

.4 In the event our Tender is NOT accepted within the time stated herein the required security deposit shall be returned to the undersigned in accordance with the provisions in the Instructions to Tenderers, unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

3. SCHEDULES

The schedules listed shall be read with and form part hereof of the Tender.

Schedule "A" List of Unit Rates and Prices

Schedule "B" Project Schedule & Workplan

Schedule "C" Tenderers Qualifications

Schedule "D" List of Sub-Contractors & Suppliers

4. DECLARATIONS

We hereby declare that:

i) We agree to perform the work in compliance with the required completion schedule stated in the Tender Documents.

ii) No person, firm, or corporation other than the undersigned has any interest in this Tender or in the proposed Contract for which this Tender is made.

iii) We agree that Subcontractors shall not be changed unless permission of the Consultant and Owner is obtained.

iv) This Tender is open for a period of 30 days from the date of Tender closing.

5. ADDENDA

.1 The following Addenda have been received. The modification to the Tender Documents noted therein have been considered and the effects are included in the Tender Price:

Addendum #_____ Dated _____

Addendum #_____ Dated _____

Addendum #_____ Dated _____

6. SIGNATURES

SIGNED AND SUBMITTED for and on behalf of:

_____

(Corporate Name of Tenderer)

_____ _____

(Authorized Signatory) (Witness signature)

_____ _____

(Name and Title of Person Signing) (Name and Title of Witness)

_____

(Date)

SCHEDULE "A" LIST OF UNIT RATES AND PRICES

Herewith is the Schedule of Unit Rates and Prices which is an integral part of the Tender. Provide unit prices for the following items.

DESCRIPTION **EXTENSION**

Section 1 – General Requirements

No.	Item	No. of Units	Unit	Unit Rate	Extension
1.0	**General Items**				
1.1	General Reqts, Bonding, Insurance	1	Lump Sum	$	$
1.2	Mobilization - Demobilization	1	Lump Sum	$	$
2.0	**750mm Butterfly Valve**				
2.1	Cutting walls / Coring Roof of Vault		Lump Sum		$
2.2	Supply of Small Dia. Piping Materials for vault		Lump Sum		$
2.4	Superintendence w / truck (reg hrs)		$ / hour	$	$
2.5	Superintendence w / truck (OT hrs)		$ / hour	$	$
2.6	Labour		$ / hour	$	$
2.7	Labour (OT hours)		$ / hour	$	$
2.8	Equipment (equip. used, hours and rate)				$
2.8.1	Backhoe		$ / hour	$	$
2.8.2	Service Truck		$ / hour	$	$
2.8.3	Loader		$ / hour	$	$
2.8.4	Trucking		$ / hour	$	$
2.8.5	Other -				$
2.8.6	Other -				$
2.9	Other Items (List hours, rate)				$
2.9.1	Other -		$ / hour	$	$
2.9.2	Other -		$ / hour	$	$

3.0	**1050 mm Butterfly Valve**				
3.1	Supply of Hardware, Materials		Lump Sum		$
3.2	Traffic Control (daily rate, no. of days)		$ / day	$	$
3.3	Traffic Detour - Island Removal / reinstatement at Jubilee Rd & Cartwright Ave.		Lump Sum		
3.4	Fencing / Security		$ / day		$
3.5	Dewatering		$ / hour		$
3.6	Superintendence w / truck (reg hrs)		$ / hour	$	$
3.7	Superintendence w / truck (OT hrs)		$ / hour	$	$
3.8	Labour		$ / hour	$	$
3.9	Labour (OT hours)		$ / hour	$	$
3.10	Equipment (list equip. used and rate)		$ / hour	$	$
3.10.1	Backhoe		$ / hour	$	$
3.10.2	Service Truck		$ / hour	$	$
3.10.3	Loader		$ / hour	$	$
3.10.4	Trucking		$ / hour	$	$
3.10.5	Other -		$ / hour	$	$
3.10.6	Other -				$
3.11	Pipe Assembly				$
3.11.1	Asbestos Control Plan		Lump Sum		$
3.11.2	Asbestos Coating Removal		$ / hour		$
3.11.2	Welding – pipe cutting (daily rate)		$ / hour	$	$
3.11.3	Welding (OT rate)		$ / hour	$	$
3.12	Air Release valve supply and install		Lump Sum	$	$
3.13	Corrosion – Cathodic Continuity		Lump Sum		$
3.14	Subbase, base gravels, Cold Mix		$ / m^3	$	$
3.15	Asphalt Paving		$ / m^3		$

4.0	**Water Pond Storage**				
4.1	Fencing (moduloc style)		$ / day	$	$
4.2	Snow Removal		LS	$	$
4.3	Pond Excavation 3000 m^3		LS	$	$
4.4	Pond area restoration and grading		LS	$	$
5.0	**PRV 10 External Work**				
5.1	Remove / reinstall new 450mm blind flange outside PRV 10		LS	$	$
5.2	Traffic Control (daily rate, no. of days)		$ / day	$	$
	Subtotal of Extension				**$**
	GST 5%				$
	TOTAL TENDER				$

SCHEDULE "B" PROJECT SCHEDULE and WORK PLAN

The Tenderer shall complete a construction schedule that they propose to use in the completion of the project. The form below or a similar form generated through project management software is acceptable:

ACTIVITY Sept.-Oct. Week ending dates	Feb 6 - 10	Feb 13 - 17	Feb 20 - 24	Feb 27 – March 5	Mar 6 - 10	Mar 13 – 17
Remove traffic island at Cartwright Ave & Jubilee Road						
Excavate pond storage at Kelly Ave. & Brown Street;						
Excavation and preparation at Sinclair Avenue						
Prepare for 900mm blind flange removal at PRV 10						
Morrow Avenue Preparation, remove vault lid						
Butterfly Valve installations and Process piping				FIXED DATE		
PRV 10 – External Pipeworks remove blind flange						
Excavation Backfilling						
Restoration of Pond storage area						
Roadworks, Paving						

Provide general work approach: i.e. in general conformance with overall plan, water shut-down and other contractors work.

WORK PROCEDURE

Insert procedure and approach here

SCHEDULE "C" TENDERERS QUALIFICATIONS

The Tenderer shall provide a summary of recent previous experience comparable to the proposed work, and the name of the responsible reference for each project (owner or their agent).

YEAR	OWNER / REFERENCE (c/w Contact No.)	NAME AND DESCRIPTION OF WORK	VALUE ($ Cdn)

Herewith is a list of the key Personnel and their experience referred to in Article 3 of the Tender Form submitted:

NAME	PROJECT ROLE	QUALIFICATIONS AND EXPERIENCE

SCHEDULE "D" LIST OF SUBCONTRACTORS & SUPPLIERS

Herewith is the list of "Subcontractors and Suppliers" which is an integral part of the Tender. Provide Subcontractors for the following areas of work or stipulate own forces if carrying out that portion without a Subcontractor.

Work Discipline	Subcontractor Name or Own Forces
EXCAVATION AND HEAVY CIVIL	_____
VALVE ASSEMBLY	_____
TRAFFIC CONTROL	_____
STEEL PIPE CUTTING / WELDING	_____
PAVING	_____
CATHODIC CONTINUITY INSTALLATION	_____
CUTTING AND CORING	_____
OTHER	_____

END OF TENDER FORM

1) GENERAL

The Canadian Construction Documents Committee, Standard Construction Document CCDC 2 – Stipulated Price Contract, 2008, is hereby modified as follows:

B.C. BUILDERS LIEN LEGISLATION

Wherever the *General Conditions* of the Contract refer to "applicable lien legislation", it shall mean the *BC Builders Lien Act* as revised by Bill C38 in 1997. If there is any disagreement between the *General Conditions* of the *Contract* and the *BC Builders Lien Act*, the latter shall govern.

2) GENERAL CONDITIONS

ARTICLE A-5

Revise Section 5.1. Add subsection 5.1.4 as follows:

"5.1.4 withhold ten percent (10%) of each progress payment to be held in a holdback trust account."

DEFINITIONS

Definition No. 19 is deleted and replaced with:

Subcontractor A person, firm, or corporation undertaking the execution of a part of the Work by virtue of an agreement with the Contractor, whom has been approved by the Owner.

Definition No. 20 is deleted and replaced with:

Substantial Performance of the Work

.1 The work is substantially performed when:

"when the Work, or a substantial part thereof, has passed inspection and testing and is ready for use or is being used for the intended purposes, and:

.2 For the purposes of this Contract where the Work or a substantial part thereof is ready for use or is being used for the purposes intended and the remainder of the Work cannot be completed expeditiously for reasons beyond the control of the Contractor or, where the Owner and the Contractor agree not to complete the Work expeditiously, the price of the services or materials remaining to be supplied and required to complete the work shall be deducted from the Contract price in determining Substantial Performance."

ADD TO DEFINITIONS

Addendum *Addendum* means an addition to or a change in the Contract Documents that is issued by the Consultant prior to the tender closing.

Payment Certifier The Consultant is the *Payment Certifier* for this project, as required by the Builder's Lien Act.

Place of Work Add "The place of work is defined as
" District of Summerland public right of way locations at or near Morrow Avenue-Prairie Valley Road intersection, at or near Sinclair Avenue-Prairie

Valley Road intersection, at Victoria Road South-Prairie Valley Road intersection, and at the District of Summerland owned lot located at the northeast corner of Kelly Avenue - Brown Street intersection

Subconsultant The *Subconsultant* is the person or entity retained directly by the *Owner* that is licensed to practice in the Province of BC. The *Subconsultant* provides specialized advice and support to the *Consultant* in a specialized discipline of the work.

Total Performance of the Work *Total Performance of the Work* means when the entire Work, except those items arising from the provisions of GC 12.3 – WARRANTY, have been performed to the requirements of the Contract Documents and is certified by the Consultant.

GC 1.1.9 CONTRACT DOCUMENTS

.1 Amend Clause 1.1 by the addition of the following:

1.1.7.5 Constructed works take precedence over drawing dimensions and details. Prior to fabrication of any item dependent upon accurate dimensions of details or the constructed works, the Contractor shall take field measurements of such constructed works.

GC 3.11 USE OF THE WORK

.1 Add the following clauses

3.11.3 The Contractor shall maintain the Working Area in a tidy condition and free from the accumulation of debris.

3.11.4 Should night work be required to take place, the Contractor shall ensure that the site of the Work shall have sufficient illumination.

3.11.5 Streets adjacent to and beyond the limits of the work shall be kept clean. Dusty or loose materials shall be transported in covered haulage vehicles.

3.11.6 The Contractor shall take steps as may be required to prevent dust nuisance resulting from its operations either within the limits of the work or elsewhere or by public traffic where it is the Contractor's responsibility to maintain road access through or adjacent to the Work.

3.11.7 The Contractor shall maintain the access road to provide reliable access to the satisfaction of the owner. Grade and compact the access road as necessary.

GC 5.3 PROGRESS PAYMENT

.1 Replace 5.3.1 with the following clause below.

The Owner shall make payment to the Contractor on account as provided in Article A-5 of the Agreement – Payment no later than 30 days after the date of Certificate for Payment issued by the Consultant.

.1 The Contractor shall provide the Consultant with satisfactory evidence in the form of a WCB Certificate of Clearance that they have made suitable provision for meeting the liability under the Workman's Compensation Act of BC, prior to the release of any monthly progress payment.

.2 The Contractor shall provide the Consultant with a Statutory Declaration that all liabilities incurred by the Contractor and its Subcontractors in carrying out the Contract have been discharged and that all liens in respect of the Contract have expired or have been satisfied, discharged or provided for by payment. The Statutory Declaration shall be provided prior to all monthly progress payments except the first one.

.3 In addition to any other holdback required by statute or otherwise agreed by the Parties, the Owner will retain, until expiry of the warranty referred to in GC 12.3, money in the amount calculated pursuant to paragraphs (1) and (2) hereof which money may be applied by the Owner in whole or in part in order to reimburse the Owner for losses, costs incurred or funds expended by the Owner as a result of default by the Contractor respecting the warranty obligations of the Contractor.

.4 The maintenance period obligations will be maintained in the form of extension of the Performance Bond for the duration of the warranty period.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

.1 *Add GC 5.4.4 as follows:*

Concurrently with the issuance of the certificate of Substantial Performance of the Work, the Consultant will prepare a written list of items of the work to be corrected and/or completed that were apparent to him in his inspection and assessment of the work. The issuance of this list does not relieve the Contractor from his obligation to correct and/or complete all deficiencies in the performance of the Contract except as provided by GC 2.4 DEFECTIVE WORK. In addition with the monies held back in accordance with the applicable lien legislation, the Owner may hold back monies equal to two (2) times the cost, as estimated by the Consultant, to correct and/or complete the items appearing in the said list from the next payment to be made following the issuance of the Certificate of Substantial Performance. If the Contractor should fail to complete and/or correct such items within a reasonable time not to exceed a maximum of sixty (60) days, the Owner may use the monies held back to complete and/or correct such items.

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

.1 *Add GC 5.5.6 as follows:*

The holdback amount shall be paid into a holdback account which shall be administered in accordance with Section 5 of the Builders Lien Act (1997), British Columbia.

GC 5.7 FINAL PAYMENT

.1 *Revise GC 5.7.4 with the following:*

"Subject to the provision of paragraph 10.4.1 of GC 10.4 – WORKERS COMPENSATION, and any lien legislation applicable to the Place of Work, the Owner shall no later than thirty (30) days after the issuance of a final certificate of payment, pay the Contractor as provided in Article A-5 of the Agreement – PAYMENT."

GC 5.10 COMPENSATION TO OWNER FOR EXTENSION OF TIME

.1 *Add new clause GC 5.10.1 as follows:*

"In the case the Work is not completed within the Contract Time, the Owner may extend the date of Substantial Performance of the Work. If the time limit is extended, and it is determined that the reasons for delays are solely due to the responsibilities of the Contractor, the Owner shall have the right to charge the Contractor and to deduct from the final payment the actual costs to the Owner for additional engineering, inspections, superintendence and other overhead expenses as set out in the Contract Documents."

PART 6 CHANGES IN THE WORK

Throughout Part 6, Changes in Work, "Change Directive" shall have the same meaning as "Field Order".

.1 *Add new clause GC 6.1.3 as follows:*

When the valuation of a change in the work is to be determined either by estimate and acceptance in a lump sum, or by cost and fixed, or percentage fee, the valuation shall be in accordance with the following:

6.1.3.1. Mark-Up
The actual cost of net increases or decreases to the Contract Value due to changes in the work shall be marked up as follows:

Contractor's own work	10 %
Sub-Contractor's own work	10 %
Sub-Contractor's Work: Contractor's mark-up	5%

GC 6.5 DELAYS

.1 *Add clause GC 6.5.8 as follows:*

The Contractor shall complete this Contract in its entirety by the completion date specified in the Tender Form.

If the time limit specified is not sufficient to permit completion of the Work by the Contractor the contractor will provide sufficient resources to complete the work in the shortest possible time frame. Any additional costs occasioned by compliance with these provisions will be considered to be included in the prices bid for the various items of Work. No additional compensation will be allowed for those works that have been identified as within these documents. For unforeseen works, beyond the initial scope, time and/or additional costs will be considered.

.2 *Add clause GC 6.5.11 as follows:*

Immediately upon signing the Contract, the Contractor must review product requirements and anticipate foreseeable delivery delays in any items. If delays in deliveries of material, equipment or articles are foreseeable, propose substitutions or other remedial actions in ample time to prevent delay in performance of the Work.

If such proposal is not given to the Consultant by the Contractor, the Consultant reserves the right to substitute more readily available products later in order to prevent delays at no additional cost to the Owner.

No substitution of any item will be permitted unless the specified item cannot be delivered to the job site in time to comply with the Schedule and the Consultant has approved the substitutes.

To receive approval, proposed substitutes must equal or exceed the quality, finish, and performance of those products specified and/or shown, and must not exceed the space requirements allotted on the drawings. The Contractor must provide documentary proof of equality.

.3 *Add clause GC 6.5.12 as follows:*

The Contractor shall not be assessed with Liquidated Damages for any delay caused by Acts of God, or of the Public Enemy, Act of the Owner, the Consultant, or of any Foreign State, Fire Epidemics, Quarantine restrictions, embargoes, or delays of Sub-contractors or suppliers due to such causes. If the Contractor is delayed by reason of alterations or changes made under GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT, PART 6, GC 6.1 CHANGES, the time of completion shall be extended as determined by the Consultant in his sole discretion.

GC 9.1 PROTECTION OF WORK AND PROPERTY

.1 Add the following clauses to GC 9.1:

9.1.5 When carrying out excavation work, the Contractor may encounter underground utilities such as power cables, ducting and water mains. The Contractor shall be fully responsible for any breakage or damage to such utilities, and the Contractor shall pay the full cost of repairing such damages and making good any losses or damages which are caused as a result of his operation in carrying out this Contract.

9.1.6 It shall be the Contractor's responsibility to obtain written permission and to make any required arrangements with the Owners of any adjacent properties upon which the Contractor may encroach.

9.1.7 The Contractor shall furnish and bear the cost of any watchman he may require for protection to perform this Contract except as provided in paragraph GC 10.2.6.

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

.1 *Subsection GC 10.2 is amended by the addition of:*

10.2.7 The Contractor will notify, obtain inspections and approvals from, and co-operate with other organizations involved or affected by the Work, such as telephone, light and power, gas, rail and government agencies for Environmental Approvals if required.

GC 11.2 CONTRACT SECURITY

.1 *Section GC 11.2 is amended with the addition of the following:*

11.2.1 The Contractor, together with the Surety Company approved by the Owner and authorized by law to carry on business within this Province, shall furnish a "Performance Bond" in the name of the Owner for Fifty (50) percent of the Contract Price to assure the Contractor completes performance of the Work on the standard bond form, Canadian Construction Documents Committee, Document No. 22, latest

edition. The bond shall remain in effect until 12 months after the date the Consultant accepts the entire work.

11.2.2 The Contractor, together with the Surety Company approved by the Owner and authorized by law to carry on business within this Province, shall furnish a "Labour and Material Payment Bond" in the name of the Owner for Fifty (50) percent of the Contract Price to assure the Contractor makes payment to all parties directly contracted to him on the standard bond form, Canadian Construction Documents Committee, Document No. 22, latest edition. The bond shall remain in effect until 12 months after the date the Consultant accepts the entire work.

GC 12.3 WARRANTY

.1 *Add the following Clause to Subsection 12.3:*

12.3.7 Any defective item of equipment necessitating substantial repairs or replacement within the Warranty Period shall be subject to further Warranty Period of 12 months from the time of repair completion and accepted commissioning of the replacement parts. The cost associated with the extended warranty shall be borne by the Contractor.

END OF SECTION

END OF TENDER FORM

1.0 GENERAL

1.1 General

.1 In order to renew critical aging components of the District of Summerland water system, the District will be replacing a 750mm diameter butterfly valve at Morrow Avenue and Prairie Valley Road, and installing a new 1050 mm diameter butterfly valve and bypass piping at Sinclair Avenue along Prairie Valley Road. The transmission main on Prairie Valley Road is the primary water supply conduit for the majority of Summerland.

.2 These butterfly valves are required for distribution system isolation so that Summerland can safely service Pressure Reducing Valve Stn No. 10, which is their largest station. In order to install the valves, the 4 kilometer transmission main must be drained. The draining of the transmission main will be carried out by District of Summerland staff on the Friday night prior to when the installation work is scheduled to occur. The draining of the main will take 10 to 12 hours and is a substantial amount of work.

.3 In conjunction with the installation of line valves, work on Pressure Reducing Station No. 10 will also be underway to replace isolation valves and pressure reducing valves within the station. That station is located at the intersection of Victoria Road South and Prairie Valley Road.

.4 The District intends to retain a qualified Civil Contractor to carry out the butterfly valve installation works once the transmission main is drained. The valve installations are to occur on the weekend of March 5-7, 2016. Preparation work is required to occur in the weeks prior to March 5-7, 2017 weekend. Water supply to Summerland will be severely restricted due to the transmission main shut down.

.5 Once installation of the valves in complete and water is brought back into the transmission main, the main will be visually checked for leaks. The main will be monitored until the pipe is full and brought to full pressure. At that time, upon visual inspection, the large diameter 1050 main at Sinclair and Prairie Valley Road can be backfilled. In the following days, the sites can be cleaned up and normal traffic access restored.

.6 The District has pre-purchased the materials listed within this section and Appendix A of this document.

.7 The scope of work of the various components is included in excerpts from the Implementation Plan included in Appendix B.

.8 Expected soils conditions at the intersection of Sinclair Avenue and Prairie Valley Road is included In Appendix C.

.9 Drawings for the Morrow Avenue vault and the blind flange to be removed from the vault at PRV 10 are included in Appendix D.

.10 Pipe coating test results from Caro Labs is included in Appendix E.

1.2 Scope of Work

.1 The work will take place at several sites as described in Appendix B. Appendix B provides the implementation plan for the work.

.2 Work by others includes the supply of specified project materials by the District of Summerland as listed in Appendix A, and valve installation works within PRV 10 that will be carried out by Mearl's Machine Ltd staff from Kelowna. Their work will be carried out simultaneously with replacement of isolation valves within PRV 10;

.3 Work is to occur at several sites prior to and during the March 5-7, 2017 weekend as described below.

Morrow Avenue Butterfly Valve Replacement Works: Work at the Morrow Avenue vault includes:

- Review all owner supplied materials list and order and obtain all parts required for job not supplied by owner;
- Site security and fencing around perimeter of working site;
- Signage and barrier of construction ahead;
- Traffic control as required for those times when work may interfere with traffic;
- Excavate around vault to allow for cutting and coring access;
- Cut the vault walls within 150mm of vault ceiling for roof removal. Utilize jacking posts and cut the wall to allow for future permanent reinstallation;
- Attach lifting devices as per Structural Drawing provided in Appendix D;
- Coring of roof slab for butterfly valve stem extension. Core hole sufficient size for nelson box to be inserted into the hole;
- Removal of roof lid with crane;
- Removal of small diameter valves and piping from main, reinstallation of owner supplied 300mm butterfly valve, 150mm diameter butterfly valve and 150mm gate valve
- Removal of existing 750mm butterfly valve and coupling;
- Installation of owner supplied 750mm butterfly valve and coupling;
- Installation of new 150mm diameter piping within station. Piping is to be coated steel with flange adapters to connect to the new 90 degree bends and to the valves;
- Check for leaks and visible seepage. Confirm with Summerland water staff that the installation is water tight;
- Replacement of roof lid with rubber gasket around ceiling perimeter to seal off from moisture;

Sinclair Avenue New Butterfly Valve Installation: Work at the Sinclair Avenue site includes:

- Review Owner supplied materials and order materials not supplied by Owner;
- Traffic detour around the site with Prairie Valley Road closure between Sinclair Avenue and Victoria Road South except for local traffic with access from the east;
- Removal of island at Jubilee Road East and Cartwright Avenue to allow for higher traffic flow at this intersection;
- Utility locates for shallow utilities;
- Site security and fencing around perimeter of working site;
- Traffic control as required for those times when work may interfere with traffic;

- Excavation to pipe invert and uncover pipe sections. Locate excavate at a distance approximately 15 metres from the 400mm tee to Sinclair Avenue. Centre the excavation on the welded pipe joint if found at that length;
- Consult with Occupational Specialist to determine the state and how to safely deal with the pipe coating containing asbestos. Develop Asbestos Exposure Control Plan. Submit to Consultant for review and then submit to WorkSafeBC;
- Excavate sump adjacent to pipe to drain water when pipe is cut;
- Dewater excavation as required to keep groundwater below pipe invert at all times;
- Remove pipe coating at the two cut locations in accordance with Asbestos Exposure control plan and remove coatings and dispose of materials by approved methods;
- Cut pipe in two locations and remove spool piece;
- Drain pipe, drain water from trench to be pumped to safe overland flow route, excavate / remove wet materials from trench and excavate weld hole sufficient to allow welders safe access at the determined cut point locations;
- Installation of owner supplied 1050mm butterfly valve and coupling. Install as per diagram in the Implementation Plan, Appendix C or provide alternate proposal with certification of thrust force capacity;
- Welding procedure for pipe connection and for slip-on flange weld will be provided by Structural Engineer retained directly by the Owner;
- Install butterfly valve and coupling as per manufacturers recommendations. Tighten bolts to required torque for gaskets, check for gasket seal around flanged connections;
- Once all installations are completed main will be recharged. Monitor exposed pipe connection during transmission main recharging procedure for leaks or seepage. If noted, advise Owner to stop main filling. Tighten or reassembly connections as required;
- Once at main is fully charged, backfilling procedure can begin;
- Install air release valve assembly. Locate weldolet on the east side of the butterfly valve. Run the service line to the curb and install the ARV within a chamber at the property line;
- Reconstruct street subgrade, sub base, and base gravels, surface repair with cold mix asphalt;
- Pave street in late April/early May when Asphalt plants are running.

PRV 10 Support Works: Work at PRV 10 located at the intersection of Prairie Valley Road and Victoria Avenue South

- Provide traffic control support for work near and around PRV 10 as required through the March 5-7, 2017 weekend to support work by Mearls Machines;
- Expose the manhole to access the 1050mm main inspection tee. Excavation may be required to get to the top of the transmission main. When the main has be drawn down substantially, remove the tee so that the water lowest in the main can be pumped out from this location.
- Provide new hardware and gasket for 450mm tee to reattach to transmission main at completion of work;
- Reconstruct manhole above tee so that access is possible in the future.

Water Storage Pond: Excavation and construction of berm and containment for water storage is proposed at a District owned site northeast of the intersection of Brown Street and Kelly Ave. The storage pond is to be utilized by Summerland works staff to act as a storage pond for the water that will be drained from the steel transmission main.

Work includes:

- Clearing of snow from the site and removal to Summerland provided snow clearing area (if applicable);
- Installation of moduloc fence around the perimeter of the site for public safety. Fence is to remain until the site is decommissioned and restored to original condition;
- Conduct utility locates for shallow utilities;
- Excavate the center of the lot to a depth of 2.0 to 2.50 meters below existing grade. Stockpile excavated materials around the perimeter of the site. Wheel and tread pack the materials. The berms will not be used as water retaining soil structure
- At completion of main draining, Summerland will hold the water in the pond for a period of up to three weeks. Once residual chlorine levels in the water have dropped to safe levels and the water is safe to release it may be pumped out. Alternately Summerland may let the water seep into the ground;
- Once the water level to bottom of excavation level, the site can be backfilled. Backfill and tread/wheel pack the materials;
- Restore site to original condition and remove moduloc fencing.

Additional information on the work is provided in the Implementation plan in Appendix B.

1.3 Work Sequencing

.1 The time for the District water supply to be down is to be minimized.

.2 Work between the sites is to be coordinated to occur simultaneously. The valve is expected to be installed on the Saturday with recharging and pressurization of the transmission main once all works underway are completed to a safe and sealed level. The recharging of the transmission main is expected to start some time late Saturday or early Sunday when the work within PRV 10, the Sinclair Valve and the Morrow Avenue valve are all secured. Visible inspection of drips will be undertaken prior to backfilling. Visible inspection will start with the work locations at the lowest elevations first and will proceed from PRV 10 to Sinclair Avenue to Morrow Avenue vault as the water fills.

Once the main is charged to working pressure and it is confirmed that all installations are water tight, drip proof, and do not leak, then backfilling operations may proceed. Road reconstruction is to be scheduled for this site as soon as possible after backfilling is completed. Compaction testing will be performed on the compacted backfilled soils.

.7 Backfilling, leveling and compaction of the water storage pond area can take place at such time that the storage area is drained and is sufficiently dry.

.8 Refer to the Implementation Plan for details on all sites under construction for the water transmission main shut-down and construction at the PRV 10 site.

1.4 Project Constraints

.1 Confined space and WCB requirements apply for vault access and transmission main excavation access. An entry plan must be prepared by the Contractor for entering the work areas.

.2 Timing is the critical constraint. The expectation by the District is that the contractor will have two crews available to carry out the works so that work can progress at the sites continuously. Shifts are expected to be no longer than 12 hours for labour and equipment operators.

.3 Time to fill the water transmission main is limited by the slowest progressing work between the three sites: the 750mm butterfly valve at Morrow; the 1050mm butterfly valve at Sinclair; and the work within PRV No. 10 by others. If issues are found at the PRV 10 site that are out of control of the Contractor that delay refilling of the transmission main, then standby time may be awarded to the Contractor.

.4 Noise and working times are to be discussed with the District. The District will allow a variance in these requirements for this project;

.5 See Section 01099, Asbestos General Requirements related to the works for removal of the protective coating on the steel transmission main pipe.

1.5 Water Main Contamination Issues

.1 The water system components are to be kept in clean condition at all times. The system supplies potable water and any debris could compromise the health of the residents of Summerland.

.2 Any debris or soil is to be managed so as not to enter the pipe.

.3 The inside of the pipe and new internal waterworks components are to be swab disinfected with a 100 ppm chlorine solution prior to installation.

1.6 Owner Supplied Materials

.1 The Owner has ordered only those materials that are known to have long delivery times;

.2 The Owner has ordered 750mm diameter butterfly valve and coupling and hardware for the Morrow Vault connection, plus the 1050mm diameter butterfly valve and closure coupling kit as set out in the materials list in Appendix A

.2 The Contractor is expected to provide all materials not listed on the materials list in Appendix A in order to complete the work;

1.7 Quality Assurance and Materials Testing

.1 The District will have Works & Utilities staff and engineering support on stand-by and available throughout the course of the shut-down. Work quality will be inspected by District staff throughout the installations;

.2 All installation works will be to industry standards. Concrete testing, soils compaction testing will be to subdivision bylaw standards. Testing of the new butterfly valves will be by visual inspection of the installation for drips. No drips will be permitted.

.3 Weld testing will be carried out for the Sinclair Valve installation. Testing will be in field through magnetic particle or X-ray testing paid for by the District.

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1.0 GENERAL

1.1 INTENT

.1 The coating on the existing 1050mm diameter steel pipe at Sinclair Avenue which was found to have a corrosion resistant coating with asbestos fibres present. Refer to test results in Appendix E. The total volume of asbestos to be removed is relatively small and the methods will be dependent on the integrity of the coating once the pipe is uncovered.

.2 This Section specifies general requirements common to all asbestos control work. Read this section in conjunction with related reference documentation that specifies procedures and methods for asbestos control.

.3 Retain an Occupational Health and Safety specialist qualified in asbestos removal and handling for direction and advice for conforming with Worksafe BC safe practices.

1.2 REFERENCE DOCUMENTS

.1 Asbestos Safe Practices Manual, Current Edition, 2012, available from: WorkSafeBC or available in pdf format on-line;

.2 Occupational Health and Safety Requirements - WorkSafeBC, B.C. Reg. 188/2011, Specifically Section 6;

.3 Occupational Health and Safety Regulation, BC Reg. 296/97, Part 6 – Substance Specific Requirements – Asbestos;

.4 CAN/CGSB-1.205-94, Sealer for Application to Asbestos-Fibre Releasing Materials.

.5 CAN/CGSB-43.150-97, Performance Packagings for Transportation of Dangerous Goods.

1.3 DEFINITIONS

.1 Asbestos Control Work: means asbestos containment procedures, removal or encapsulation, and disposal of asbestos or materials containing asbestos, as specified.

.2 Asbestos Control Area: means space in which asbestos control work is being performed and to which general access is prohibited.

.3 Asbestos Waste: means removed contaminant and contaminated materials or products.

.4 Contaminant: means asbestos material.

.5 Contaminated: describes products, by-products, or material containing, or affected by, asbestos or removal thereof.

.6 Full Containment Procedures: means construction of temporary facilities and following of procedures to contain asbestos fibres”

.7 HEPA Filter: high efficiency particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for powered respirators, vacuums, vacuum trucks and negative air units.

.8 P100 Filter: high efficiency, oil proof, particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for non powered air purifying respirators.

1.4 WORKER QUALIFICATIONS

.1 Workers used for handling, removal, and packaging for disposal of asbestos waste, shall have completed an asbestos control course acceptable to WorkSafeBC and be certified to remove asbestos.

.2 At least one employee who will be performing the work shall have completed a first aid course as required by WorkSafeBC.

.3 Persons involved in loading, transportation, uploading, and disposal of asbestos waste shall have been trained in accordance with the Dangerous Goods Transportation and Handling Act.

.4 Workers shall have attended an asbestos awareness session prior to the start of asbestos control work, to obtain:

- .1 information describing the medical effects of asbestos exposure,
- .2 information regarding the proper use of respirators and other personal protection equipment, and
- .3 instructions as to the proper asbestos removal and disposal procedures for this project.

.5 Non-certified workers such as heavy equipment operators may be used for loading and transporting the asbestos containing debris to an approved sanitary landfill site. These workers require dangerous goods training as specified in this Section.

.6 Workers are required to have attended an asbestos awareness session conducted by WorkSafeBC designated air testing consultant prior to start of asbestos control work. The purpose of this session is to educate workers about the medical effects of asbestos exposure, provide instructions on the proper use of respirators and other personal protection equipment and on proper asbestos removal and disposal procedures for this project.

1.5 SUBMITTALS

.1 Comply with requirements of this Section. Provide submittals prior to start of asbestos control work.

.2 Submit disposal procedure for contaminant and contaminated waste.

.3 Develop and submit a copy of "Asbestos Exposure Control Plan" for the work, recommended within the Occupational Health and Safety guidelines. Submit proof that WorkSafeBC has reviewed the plan.

.4 Submit a copy of worker protection information which will be provided to employees.

.5 If utilized, submit copy of test results documenting Dioctylpthalate (DOP) testing of HEPA filtered vacuums and negative air units.

.6 If utilized, submit certification that HEPA filtered vacuums required for this contract meet specified HEPA filter designation for component filter assemblies.

.7 Submit plan for air monitoring to ensure use of proper respirators within work area.

.8 Submit proof that WorkSafeBC, has been notified of the asbestos control work to be performed.

.9 Submit proof that all persons involved in the handling, packing, loading, transportation,

unloading, and disposal of asbestos waste are trained in accordance with the Dangerous Goods Transportation and Handling Act.

.10 Provide sub-schedule for asbestos control work.

.11 Prior to commencement of work on site, submit an Asbestos Control Plan. Include the following information:

1. Locations of:
   - .1 Asbestos control areas
   - .2 Change rooms
   - .3 Isolation/Containment barriers (if required)
   - .4 Decontamination facilities (if required)
   - .5 Negative air units (if required)
   - .6 Exhaust for negative air units (if required)

.2 Layout of change rooms.

.3 Sequencing of asbestos related work.

.12 Prior to start of asbestos removal, submit product data for proposed surfactant.

.13 Submit product data for proposed encapsulating sealant.

1.6 REGULATORY REQUIREMENTS

.1 Comply with the following legislation and regulations:

- .1 Environmental Protection Act (Canada).
- .2 Environmental Protection and Enhancement Act (Alberta).
- .3 Occupational Health and Safety Act (Alberta).
- .4 Chemical Hazards Regulation (Alberta).
- .5 Transportation of Dangerous Goods Act, 1992 (Canada).
- .6 Dangerous Goods Transportation and Handling Act (Alberta) and regulations.
- .7 Other legislation and regulations which apply to the performance of asbestos control work.

1.7 MONITORING AND INSPECTION

.1 District of Summerland will appoint and pay for services of testing agency to perform the following:

- .1 Measure asbestos fibre levels inside and outside asbestos control area prior to commencement of asbestos control work.
- .2 Inspect negative air units and HEPA vacuums prior to commencement of asbestos control work.
- .3 Monitor air outside asbestos control area and where glovebag removal method is used. Monitor air prior to, during, and after asbestos control work.
- .4 Monitor asbestos fibre levels inside asbestos control area prior to removal of barriers.

.2 Testing agency engaged by Summerland to perform air monitoring is authorized to identify deficiencies in the asbestos control work and provide site instructions to ensure compliance with Contract requirements.

.3 In the event that airborne asbestos fibres exceed acceptable level, Minister may stop work until corrective actions have been taken and airborne fibres return to acceptable level.

.4 Minister may stop work where he has reasonable cause to believe that:
- .1 fibre levels inside asbestos control area are unacceptable, or
- .2 work conditions and practice may lead to:
  - .1 contamination of building with asbestos,
  - .2 asbestos exposure to building occupants, or
  - .3 release of asbestos fibres into the environment.

1.8 MONITORING BY CONTRACTOR

.1 Contractor to retain Occupational Health and Safety specialist trained in handling asbestos on project sites for monitoring, development of Asbestos Exposure Control Plan, and monitoring of site during work and during asbestos removal;

.2 Testing requirements are dependent on whether volume and condition of asbestos found on the pipe wall coating is in friable or non-friable form and on recommendations made by the Contractor's specialist.

.3 Test prior to commencement of asbestos removal.

.4 Use only negative air units and HEPA vacuums tested and inspected as specified.

.5 Monitor air inside asbestos control area to ensure that fibre levels are within acceptable limits required by Alberta Occupational Health and Safety Act and Chemical Hazards Regulation for type of respirators being used.

1.9 AIRBORNE FIBRE LEVELS

.1 In areas outside asbestos control area and where full containment procedures are not required, airborne fibre levels shall not exceed 0.01 fibers per cubic centimeter of air.

.2 In areas inside asbestos control area where full containment procedures are followed, airborne fibre levels shall not exceed acceptable limits for type of respirators being used.

1.10 PROTECTION OF PERSONNEL

.1 Provide workers with respirators and hooded disposable coveralls conforming to Occupational Health and Safety Regulations for the airborne asbestos fibre levels that are present during asbestos control work.

.2 Do not permit smoking, eating or drinking in work area.

.3 Provide the following to employees involved in asbestos control work:
- .1 Written information describing potential health hazards related to exposure to asbestos fibre.
- .2 Written instructions describing safe work procedures.

.4 Where full containment procedures are not required, do the following:
- .1 Comply with regulatory requirements.
- .2 Provide workers with not less than a non-powered half-mask respirator equipped with P100 filters and hooded disposable coveralls. Coveralls shall fit snugly around neck, wrists and ankles.
- .3 Allow no one in the removal area during asbestos control work unless wearing

disposable coveralls and respirator equipped with P100 filters.

.5 Provide the following safety equipment for Minister's representatives, as required to permit ready and safe access to the work:

.1 Disposable or cloth coveralls.
.2 Rubber boots or easily decontaminated footwear.
.3 Caps.
.4 Eye protection.
.5 Gloves.
.6 Hard hats.
.7 Non-powered half mask respirator equipped with P100 filters (minimum).

2. Products

2.1 MATERIAL AND EQUIPMENT

.1 Asbestos Sealer: to CAN/CGSB-1.205-94, Sealer for Application to Asbestos-Fibre-Releasing Materials, Class A - water-based, for spray application, and as follows:

.1 Type 1 – Penetrating. Acceptable products: American Coating “CC-22P”, Better Working Environments “BWE 3000”, Certified Technologies “Undercoat 2050” Childers “Chil-Abate CP-210”, Fiberlock Technologies “ABC”, Foster “32-20 (yellow), 32-21(blue), 32-22(undyed)”, International Protective Coatings “Serpilock, Serpiflex Shield”.
.2 Type 2 - Surface Film Forming. Acceptable products: American Coating “CC-2B”, Certified Technologies “Overcoat 2000”, Childers “Chil-Bridge CP-211”, Fiberlock Technologies “ABC”, Foster “32-32”, International Protective Coatings “Serpiflex Shield”.

.2 Vacuums: HEPA filtered wet/dry type, with accessories adequate to perform removal and cleanup work.

2.2 ASBESTOS DISPOSAL CONTAINERS

.1 Plastic Bags: to CAN/CGSB-43.150, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50kg.

.2 Drums: to CAN/CGSB-43.150, sturdy non-reusable, steel (1A2), aluminum (1B2), or plastic (1H2), with tight fitting lids.

.3 Sheet Polyethylene: two separate layers, minimum 150 micrometer thick, each layer sealed with water-resistant plastic duct tape.

.4 Label containers with labels stating "CONTAINS ASBESTOS, CANCER HAZARD, AVOID BREATHING DUST".

2.3 WARNING SIGNS

.1 Provide warning signs which state that:

.1 Asbestos is present in the area.
.2 Access to the area is prohibited, except to authorized personnel.
.3 Drinking, eating and smoking are prohibited in the area.

.2 Obtain Consultant's approval of warning sign wording, legibility and location.

3. Execution

3.1 PREPARATION

.1 Asbestos control work may commence only after the following have been completed:

.1 Barriers are in place and work area has been isolated.
.2 Warning signs have been placed around perimeter of asbestos control area and at each potential entrance to the area.
.3 The Consultant has inspected and approved preparations.

3.2 ASBESTOS REMOVAL

.1 Follow procedures recommended from Contractors Occupational Health and Safety specialist retained to deal with Asbestos;

.2 Utilize industry approved products for containment, handling and removal;

3.3 PREPARATION FOR ASBESTOS DISPOSAL

.1 Prepare contaminant and contaminated materials for disposal as follows:

.1 Place in double bagged plastic asbestos disposal bags or inside disposable drums with tight fitting lids.

.2 Wrap bulk materials that do not lend themselves to disposal in plastic bags or drums, in sheet polyethylene. (2 separately sealed layers)

.3 The resulting package must be constructed, filled and closed so that, under normal conditions of handling and transport, there will be no discharge, emission or escape of the dangerous goods form the package or small container that could constitute a danger to public safety.

.2 Transfer asbestos waste containers and normal construction waste from asbestos control area for disposal, in accordance with procedures acceptable to WorkSafeBC

.3 Treat contaminated water as asbestos waste.

3.4 DISPOSAL OF NORMAL CONSTRUCTION WASTE

.1 This article applies to materials not readily prepared for asbestos disposal as specified, and being capable of thorough cleaning, for example, bulky mechanical equipment.

.2 Clean materials until free of visible asbestos, wash, and dip in or spray with asbestos sealer.

.3 Dispose of as normal construction waste.

3.5 TRANSPORTATION AND PERMANENT DISPOSAL OF ASBESTOS WASTE

.1 Transport asbestos waste in accordance with Alberta and Federal legislation and regulations.

.2 Ensure that all materials are properly packaged and labeled prior to transportation. Each container must be marked in accordance with the Dangerous Goods Transportation and Handling Act showing the shipping name [(Blue or Brown Asbestos)] [(White Asbestos)] and product identification number [(UN2212)] [(UN2590)].

.3 Transport hazardous waste materials in properly placarded vehicles.

.4 Transport asbestos waste in a manner which will prevent asbestos fibres from becoming airborne.

.5 Each load shall be accompanied by a properly completed manifest satisfactory to the authority having jurisdiction.

.6 Dispose of asbestos waste in a supervised, approved sanitary landfill site.

.7 Make arrangements with operator of landfill site in advance to receive asbestos waste material.

.8 In event of leakage or spillage enroute, repackage material before continuing transport to landfill.

.9 If spill, emission or discharge of waste asbestos is in excess of 50 kg from the transport unit, immediately report the incident to the local police.

.10 Place asbestos waste containers intact in excavated area. Do not dump or throw containers from truck. Repackage contents of containers that have broken open, in accordance with requirements for preparation for asbestos disposal.

.11 Arrange for asbestos waste to be covered with soil.

.12 Provide the Consultant with a copy of each waste manifest once asbestos waste has been disposed of at a supervised, approved landfill site.

3.6 WORKER DECONTAMINATION

.1 Workers shall follow decontamination procedures as outlined in the "Manual of Safe Practice" [and as specified].

.2 Prior to leaving area where asbestos has been removed by method not requiring full containment, vacuum using HEPA filtered vacuum or wet wipe in coveralls. Dispose of coveralls and wiping rags into polyethylene bags as asbestos waste.

.3 Immediately upon leaving area where asbestos has been removed by method not requiring full containment, perform the following:

.1 Proceed to nearest shower outside work area and, with respirator in place, shower head and face prior to removal of respirator. If a shower is not available, wash head thoroughly, including exterior of respirator, prior to removing respirator.

.2 Dispose of respirator filters as asbestos waste.

3.7 DAILY CLEANING

.1 Progressively containerize contaminant and contaminated material as removal work progresses. Do not permit asbestos waste to accumulate.

.2 Keep contaminant and contaminated material damp to minimize generation of airborne asbestos fibres.

.3 Remove asbestos waste from asbestos control area at least once per day.

.4 Regularly check, clean and replace filters as necessary.

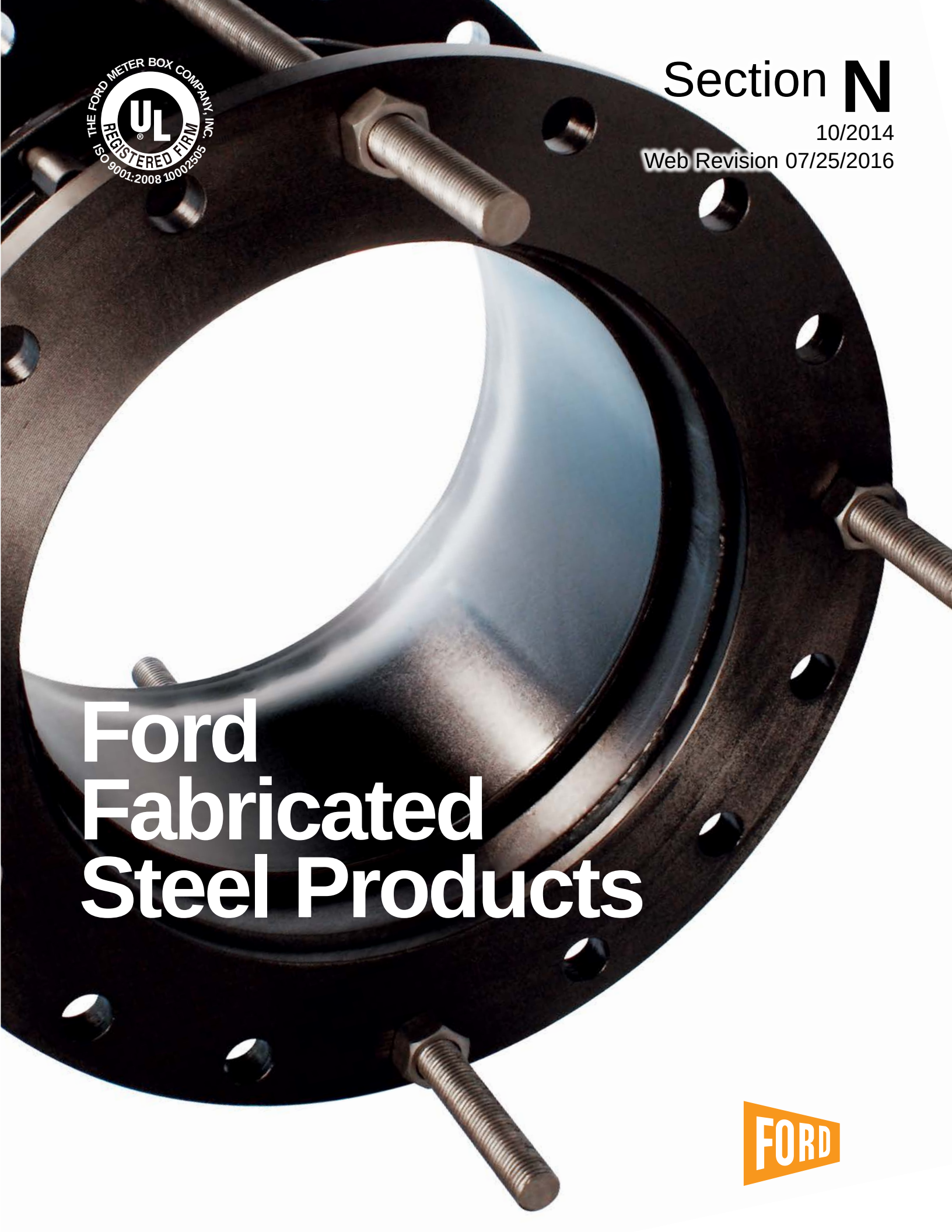
3.8 FINAL CLEANING

.1 Upon completion of asbestos control work, perform the following:

.1 Remove asbestos waste from work site.
.2 Vacuum and wash contaminated tools and equipment.
.3 Dispose of non-reusable materials and contaminated materials as asbestos waste.
.4 Clean site to original condition.
.5 Make good any damage resulting from the asbestos control work, to the satisfaction of the Minister.

END OF SECTION

APPENDIX A
LIST OF PURCHASED MATERIALS



Section **N**

10/2014

Web Revision 07/25/2016

Ford Fabricated Steel Products

Contents

The information in this catalog is correct at the time of publication. Item and option availability, including specifications are subject to change without notice. ***Items in this catalog section are not returnable and are subject to cancellation charges.***

The Ford Meter Box Company, Inc. manufacturing facilities are at the following locations:

1. The Ford Meter Box Company, Inc. - Main Office
   775 Manchester Avenue, P.O. Box 443
   Wabash, Indiana 46992-0443
   Phone: 260-563-3171 FAX: 800-826-3487

2. The Ford Meter Box Company, Inc. - Pipe Products Division
   815 Miles Parkway
   Pell City, Alabama 35125
   Phone: 205-884-4480 FAX: 205-884-4484

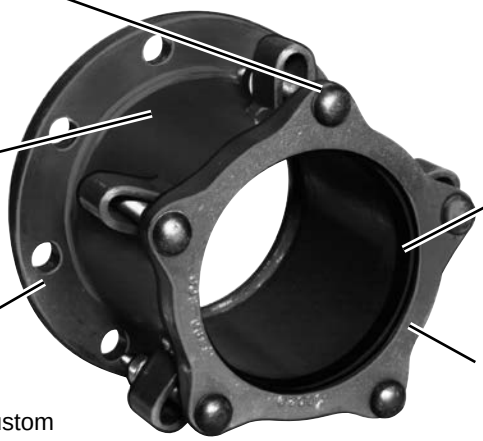
Ford Steel Flange Coupling Adapters

Style FCA

Ford Steel Flange Coupling Adapters are used to connect plain end pipe to flanged fittings such as meters or valves. Thrust protection must be provided to prevent the pipe from blowing out of the adapter. Optional restrainers or anchor studs are offered as thrust protection. Fabricated steel flange coupling adapters are normally furnished with flange size matching the nominal pipe size; however, reduced flange sizes are available. For example, a 16" FCA may be ordered with a 12" flange.

Bolts and Nuts - High strength low alloy steel per ASTM A242 and AWWA C111
Optional: - Type 304 stainless steel
- Type 316 stainless steel
- Electro-galvanized steel
- Blue Fluorocarbon coating

Finish - Black shop coat
Optional: - Epoxy coating



Body Sleeve - ASTM A36 carbon steel

Gasket - SBR rubber
Optional: - Buna-N
- EPDM

Anchor Studs *(Optional)* - Cold rolled steel per AISI 1141

Flange - AWWA C207 class D flange. Optional: Other AWWA, ISO, DIN or custom flanges are available

End Ring - 4" - 20" per ASTM A536 Ductile iron; 24" - 60" AISI 1018-1020 cold rolled or extruded carbon steel

Caution: Flexible couplings do not restrain axial pipe movement. Unbalanced forces created by internal water pressure or external forces must be restrained. Restrained couplings using Uni-Flange restraints can be found in Catalog Section U. Contact factory for details.

How to order FCA couplings:

Orders may be placed by using catalog numbers from pages 24 and 25, which designate the pipe O.D. and flange size. If the pipe size or desired options are not listed, use the code system detailed below to create the catalog number. Each field of the number is significant in determining exactly how the coupling will be manufactured. The example shown below is an FCA-1780-D12R-AS4. This steel reducing flanged coupling adapter is made to fit a range of pipe sizes from 17.40" to 17.80" and has a 12" AWWA Class D flange. The four anchor studs on this unit will prevent pipe movement up to a maximum operating pressure of 100 psi.

FCA-1780-D12R-AS4

- **FCA** — Product Identification: Fabricated Flange Coupling Adapter
- **1780** — Pipe O.D.
- **D** — Flange: D = Class D \ 150 pound drilling; F = Class F \ 250 pound drilling
- **12** — Nominal Flange Size in Inches
- **R** — Optional Anchor Type: AS = Anchor Studs (requires drilling of pipe); *R2 = Restrainer Lugs and Harness; R3 = Restrainer Lugs (field welded to pipe)
- **AS** — Number of Optional Studs or Tie Rods: A minimum of 2 are required. The total needed is determined by the force to be restrained and the size of the pipe.
- **4** — Tie Rod Size (not applicable to anchor studs): A = 5/8", B = 3/4", C = 1"

COATING, BOLTS AND GASKET OPTIONS				
	COATING AND BOLT COMBINATIONS			
GASKET MATERIAL	Standard Alloy Bolts	304 Stainless Steel Bolts	316 Stainless Steel Bolts	Electro Galvanized Bolts
	Standard Shop Coat			
SBR Rubber	R	X	Q	G
Buna-N Rubber	N	H	J	F
EPDM Rubber	S	M	V	W
	Epoxy Coated			
SBR Rubber	E	Y	Z	K
Buna-N Rubber	C	P	T	O
EPDM Rubber	A	B	D	L
Note: See item listings in catalog section to assure that desired sizes and options are available				

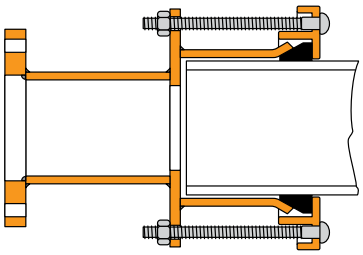
Please contact the Ford Customer Service Department for information about anchor studs or other restraint requirements for your specific application.

* Restrainer harness assemblies are manufactured to a specific pipe O.D. **Please include the specific pipe O.D. on order.** See Ford Restrainer Assemblies (page 30) for more information.

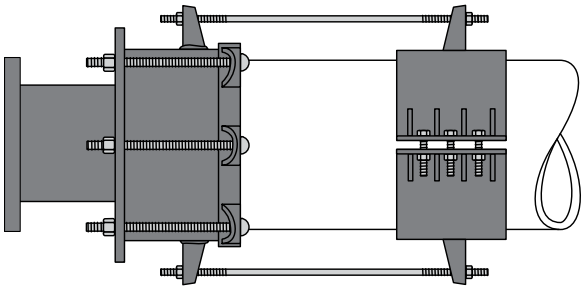
Ford Steel Flange Coupling Adapters

Style FCA

Example of Part Number System

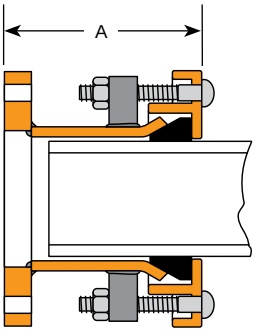


FCA-1146-D8R
Reducing FCA Coupling



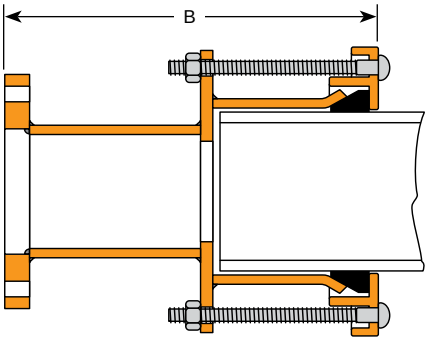
FCA-1110-D8R-R22A
Reducing FCA Coupling with optional restrainer lug and harness assembly
Note: Exact pipe O.D. is required to ensure proper harness size.

Dimension Chart



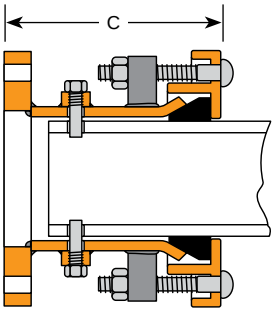
Standard FCA Coupling

Pipe Size	"A" Dimension
4" - 6"	8.5"
8" - 48"	11.5"



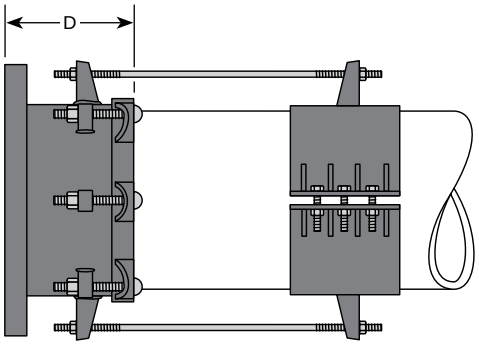
Reducing FCA Coupling

Pipe Size	"B" Dimension
4" - 48"	13.5"



FCA Coupling with (AS) Optional anchor studs (for ductile iron or steel pipe, anchor studs require drilling of pipe)

Pipe Size	"C" Dimension
4" - 6"	11.5"
8" - 48"	13.5"



FCA Coupling with (R2) Optional Restrainer Lug and Harness Assembly

Pipe Size	"D" Dimension
4" - 6"	13.5"
8" - 48"	15.5"

Ford Steel Flange Coupling Adapters

Style FCA

Listed below are the common sizes of FCA couplings.

If your pipe O.D. is not in the listed ranges, use the code system to *create* your catalog number. (See page 22). Ductile iron flange coupling adapters are detailed in catalog section M.

Nom. Pipe Size	Pipe O.D.	Flange Size	Range (Coupling End)	Catalog Number	Rated Working Pressure	Number of End Ring Bolts	Approx. Wt. Lbs.
4"	4.00	4"	4.00	**FCA-400-D4R**	175	3	26
	4.50	4"	4.50-4.80	**FCA-480-D4R**	175	3	26
	4.80	4"	4.50-4.80	**FCA-480-D4R**	175	3	26
6"	6.00	4"	6.00	**FCA-600-D4R**	175	4	40
	6.00	6"	6.00	**FCA-600-D6R**	175	4	36
	6.63	4"	6.63-6.90	**FCA-690-D4R**	175	4	40
	6.63	6"	6.63-6.90	**FCA-690-D6R**	175	4	36
	6.90	4"	6.63-6.90	**FCA-690-D4R**	175	4	40
	6.90	6"	6.63-6.90	**FCA-690-D6R**	175	4	36
8"	8.63	4"	8.63-9.05	**FCA-905-D4R**	175	5	46
	8.00	6"	8.00	**FCA-800-D6R**	175	5	48
	8.00	8"	8.00	**FCA-800-D8R**	175	5	49
	8.63	6"	8.63-9.05	**FCA-905-D6R**	175	5	53
	8.63	8"	8.63-9.05	**FCA-905-D8R**	175	5	49
	9.05	4"	8.63-9.05	**FCA-905-D4R**	175	5	46
	9.05	6"	8.63-9.05	**FCA-905-D6R**	175	5	53
	9.05	8"	8.63-9.05	**FCA-905-D8R**	175	5	49
10"	10.00	8"	10.00	**FCA-1000-D8R**	175	6	60
	10.00	10"	10.00	**FCA-1000-D10R**	175	6	64
	10.75	6"	10.75	**FCA-1075-D6R**	175	6	66
	10.75	8"	10.75	**FCA-1075-D8R**	175	6	70
	10.75	10"	10.75	**FCA-1075-D10R**	175	6	63
	11.10	6"	11.10-11.46	**FCA-1146-D6R**	175	6	62
	11.10	8"	11.10-11.46	**FCA-1146-D8R**	175	6	71
	11.10	10"	11.10-11.46	**FCA-1146-D10R**	175	6	62
12"	12.00	10"	12.00	**FCA-1200-D10R**	175	7	78
	12.00	12"	12.00	**FCA-1200-D12R**	175	7	81
	12.75	8"	12.75	**FCA-1275-D8R**	175	7	82
	12.75	10"	12.75	**FCA-1275-D10R**	175	7	92
	12.75	12"	12.75	**FCA-1275-D12R**	175	7	89
	13.20	8"	13.20-13.56	**FCA-1356-D8R**	175	7	80
	13.20	10"	13.20-13.56	**FCA-1356-D10R**	175	7	91
	13.20	12"	13.20-13.56	**FCA-1356-D12R**	175	7	87
14"	14.00	10"	13.69-14.04	**FCA-1404-D10R**	175	9	92
	14.00	12"	13.69-14.04	**FCA-1404-D12R**	175	9	114
	15.30	10"	15.30-15.70	**FCA-1570-D10R**	175	9	131
	15.30	12"	15.30-15.70	**FCA-1570-D12R**	175	9	151
	15.30	14"	15.30	**FCA-1530-D14R**	150	9	121
16"	16.00	12"	16.00-16.35	**FCA-1635-D12R**	175	10	152
	16.00	14"	16.00-16.35	**FCA-1635-D14R**	150	10	166
	16.00	16"	16.00	**FCA-1600-D16R**	150	10	138
	17.40	12"	17.40-17.80	**FCA-1780-D12R**	175	10	176
	17.40	14"	17.40-17.80	**FCA-1780-D14R**	150	10	170
	17.40	16"	17.40	**FCA-1740-D16R**	150	10	144
	17.80	16"	17.80	**FCA-1780-D16R**	150	10	145

Ford Steel Flange Coupling Adapters

Style FCA

Listed below are the common sizes of FCA couplings.

If your pipe O.D. is not in the listed ranges, use the code system to *create* your catalog number. (See page 22). Ductile iron flange coupling adapters are detailed in catalog section M.

Nom. Pipe Size	Pipe O.D.	Flange Size	Range (Coupling End)	Catalog Number	Rated Working Pressure	Number of End Ring Bolts	Approx. Wt. Lbs.
18"	18.00	14"	18.00	**FCA-1800-D14R**	150	11	195
	18.00	16"	18.00	**FCA-1800-D16R**	150	11	203
	18.00	18"	18.00	**FCA-1800-D18R**	150	11	151
	19.50	14"	19.50-20.00	**FCA-2000-D14R**	150	11	194
	19.50	16"	19.50-20.00	**FCA-2000-D16R**	150	11	210
	19.50	18"	19.50	**FCA-1950-D18R**	150	11	154
20"	20.00	16"	19.50-20.00	**FCA-2000-D16R**	150	11	210
	20.00	18"	19.50-20.00	**FCA-2000-D18R**	150	11	194
	20.00	20"	20.00	**FCA-2000-D20R**	150	12	175
	21.60	16"	21.60-22.06	**FCA-2206-D16R**	150	12	202
	21.60	18"	21.60-22.06	**FCA-2206-D18R**	150	12	195
	21.60	20"	21.60	**FCA-2160-D20R**	150	12	180
	22.06	24"	22.06	**FCA-2206-D20R**	150	12	180
24"	24.00	18"	24.00	**FCA-2400-D18R**	150	14	369
	24.00	20"	24.00	**FCA-2400-D20R**	150	14	300
	24.00	24"	24.00	**FCA-2400-D24R**	150	14	226
	25.80	18"	25.80	**FCA-2580-D18R**	150	14	278
	25.80	20"	25.80	**FCA-2580-D20R**	150	14	250
	25.80	24"	25.80	**FCA-2580-D24R**	150	14	233
30"	30.00	20"	30.00	**FCA-3000-D20R**	150	16	320
	30.00	24"	30.00	**FCA-3000-D24R**	150	16	376
	30.00	30"	30.00	**FCA-3000-D30R**	150	16	314
	32.00	20"	32.00	**FCA-3200-D20R**	150	16	323
	32.00	24"	32.00	**FCA-3200-D24R**	150	16	323
	32.00	30"	32.00	**FCA-3200-D30R**	150	16	323
36"	36.00	24"	36.00	**FCA-3600-D24R**	150	18	400
	36.00	30"	36.00	**FCA-3600-D30R**	150	18	435
	36.00	36"	36.00	**FCA-3600-D36R**	150	18	472
	38.30	24"	38.30	**FCA-3830-D24R**	150	18	439
	38.30	30"	38.30	**FCA-3830-D30R**	150	18	420
	38.30	36"	38.30	**FCA-3830-D36R**	150	18	411
42"	42.00	30"	42.00	**FCA-4200-D30R**	150	20	550
	42.00	36"	42.00	**FCA-4200-D36R**	150	20	600
	42.00	42"	42.00	**FCA-4200-D42R**	150	20	628
	44.50	30"	44.50	**FCA-4450-D30R**	150	20	600
	44.50	36"	44.50	**FCA-4450-D36R**	150	20	630
	44.50	42"	44.50	**FCA-4450-D42R**	150	20	658
48"	48.00	36"	48.00	**FCA-4800-D36R**	150	24	700
	48.00	42"	48.00	**FCA-4800-D42R**	150	24	750
	48.00	48"	48.00	**FCA-4800-D48R**	150	24	768
	50.80	36"	50.80	**FCA-5080-D36R**	150	24	700
	50.80	42"	50.80	**FCA-5080-D42R**	150	24	750
	50.80	48"	50.80	**FCA-5080-D48R**	150	24	766

Fred Surridge Ltd
1245 Industrial Rd
West Kelowna, B.C. V1Z 1G4
Phone: (250) 769-9000
Fax: (250) 769-9041

To: **District of Summerland**
Attention: **Dave Hill**

Fax:
Phone:

Date: Thursday September 13th, 2012

Prepared by: Matt Stoltz

Quote # SUM-091312

We are pleased to quote on your requirements:

Qty.	Description	U/M	Unit Price	Ext. Price
1	42" GA Figure 804 Class 150B AWWA C504 Flanged Butterfly Valve with Buried Service Traveling Nut and Handwheel actuator. Features include ASTM A126 ClassB Cast Iron body, field adjustable and replaceable Buna N seat with 316 actuator Stainless Steel retainers, NSF-61 epoxy coated ASTM A536 Grade 65-45-12 Ductile Iron disc with 316 Stainless Steel seat edge, 304 Stainless Steel shaft, U-cup self adjusting shaft seals, ANSI Class 125 flanged ends, and NSF-61 approved exterior 2 part epoxy coating.	ea	$ 13,100.00	$ 13,100.00
2	Ford Meter Box 42" Steel Flange Coupling Adapter FCA-4200-D42R	ea	$ 2,462.75	$ 4,925.49
2	Stainless Steel Nuts, Bolts & Flange Gaskets	ea	$ 1,440.00	$ 2,880.00
Subtotal:				$ 20,905.49
			HST	$ 2,508.66
			Total	$ 23,414.15

Notes for Above Pricing Schedule:
1. FOB District of Summerland
2. Pricing valid for 30 days
3. Delivery of valve is currently quoted at 24 weeks

APPENDIX B
TECHNICAL MEMORANDUM EXCERPTS

PRV 10 RENEWAL AND BUTTERFLY VALVE INSTALLATIONS IMPLEMENTATION PLAN

1.0 INTRODUCTION

This document presents the plan to retrofit the pressure reducing valves within Pressure Reducing Valve (PRV) Station No. 10. At the same time as the PRV 10 upgrade the existing 750mm diameter butterfly valve at Morrow Avenue will be replaced. In addition, a new 1050mm butterfly valve will be installed on the 1050mm transmission main at Sinclair Avenue and Prairie Valley Road. These works are necessary to provide isolation of the water system in order to improve the flexibility and integrity of key water infrastructure of the District of Summerland.

PRV 10 Renewal: PRV 10 is Summerland's largest pressure reducing station, located between the Water Treatment Plant and the downtown core on the 1050mm diameter water transmission line. The system components within this station are aging and measures must be taken to renew the components before a major failure occurs. There is no means for water supply to bypass the station should it fail. If the valves within this station fail, a large part of the community, including the downtown core, would be out of water for a significant period of time. In order to replace the valves within the station, the water transmission main must be drained for a period of time sufficient to allow replacement of the pressure reducing valves within the station. The upgrade is critical to maintaining the integrity of the greater water system. PRV 10 replacement will be by specialized contractor. Traffic detour work around PRV 10 at intersection will be by Civil Contractor.

Morrow Ave. 750mm Butterfly Valve: Maintenance of the PRV 10 station is difficult due to only one 750mm diameter isolation valve on the transmission main that was installed in the mid-1970s. This valve is located at Morrow Ave. - Prairie Valley Road intersection in a vault. It is in need of replacement. Piping within the station is also to be replaced including the isolation valves within the vault. Work will be by Civil Contractor.

Sinclair 1050mm Butterfly Valve: To provide additional system isolation, and reduced down-time when working on PRV 10, a new 1050mm diameter butterfly valve and coupling will be installed on the 1050mm steel transmission main along with an Air Release valve and a bleed off point to manhole so that a double-block and bleed is in place above the PRV station. Detour set up and Valve installation will be by Civil Contractor.

Water Storage Pond - A water storage pond is to be excavated northeast of the Brown Street – Kelly Avenue intersection. The pond is to be utilized by the District when draining the transmission main. The pond will hold in the range of 3,000 m^3, with all storage required to occur below existing lot grade so that berms are not required to hold back water. The berms created by excavation of the middle of the lot are not structural and not to be used to retain storage water. All water will be stored below existing ground elevation. Work will be by Civil Contractor.

This report is presented in the following sections:

1.0 **Introduction:** Provides context for why the water system upgrades are necessary. The organizational structure of the implementation plan is provided in Section 1.0;

2.0 **Public Communications Plan:** As this work will impact on the greater community, a plan for communications for how, when and where to inform the residents is presented. The plan should consist of social media, internet, and radio information. In addition, the type of information communicated will also be important. A tone of reassurance is essential for all communications;

3.0 **Alternate Water Supply:** Options for temporary supply of water to the downtown core and lower areas of the distribution system was considered and is summarized in Section 3.0. A plan for the temporary supply of water from Garnett Valley is presented;

4.0 **Schedule:** Preliminary Scheduling is presented in Section 4.0. The schedule includes what can be done immediately, what needs to be done in the weeks and days immediately prior to the shut down and during the shutdown;

5.0 **Implementation:** Provides a detailed description of the work at the three project sites, Morrow Avenue, Sinclair Avenue and PRV 10. Information for drawdown of the 1050mm diameter transmission main is provided;

Closure: End of report

This memorandum is a guideline document to assist the project team in addressing all of the known issues and reduce overall disruption to the District.

2.0 PUBLIC COMMUNICATIONS PLAN

A public communications plan is necessary to inform the public of the inconvenience created by the work. Communications with the public should present the following concepts:

- Substantial planning is required and have been carried out with this plan;
- It should reassure the public that the required inconvenience is necessary to improve reliability and reduce future emergency shutdowns;
- All water use must be minimized through the critical days;
- No outdoor water use of any kind is permitted during the shutdown period;
- Messaging should subtlety reinforce how water is taken for granted and that it underappreciated until it is missing;
- Messaging should be clear, brief and in simple language;

Timing for Messaging

Messaging should be scheduled for release of information at appropriate times. The information should not be too soon or people will forget about the message. If too late, then there is insufficient time for the people to react and take appropriate steps for the messaging.

Medium of Communication

With the varying age groups in the community, a range of communication tools should be used to convey messaging. Communications medium include TV, Radio, newspaper and local town flyers, posters around town, the District of Summerland Municipal Website, social media;, word of mouth, telephone to critical facilities, etc.;

- Older population: TV, radio, newspaper, posters around town, word of mouth;
- Middle Age Internet, TV, Radio, newspapers, etc.
- Under 25: Internet, Social media, facebook, twitter

Items to be communicated

- Time of shut down, days, duration
- All irrigation must be off and water use must be minimized or fines may apply;
- Which areas of town where there will be reduced water or no water in the water mains;
- Community available facilities for showers, bathrooms, drinking water, fill stations
- How to store drinking water, how to store water for flushing toilets;
- What to do to avoid damage to your water system components in your home;
- Where updates will be available and posted during the nights and days;
- Other items….

Communications with Critical Facilities

Direct communication will be necessary with the critical facilities which include the Hospital, the Summerland's Seniors Centre,
add others here…

See Section 4.0 for schedule for messaging and Website updates

3.0 ALTERNATE WATER SUPPLY

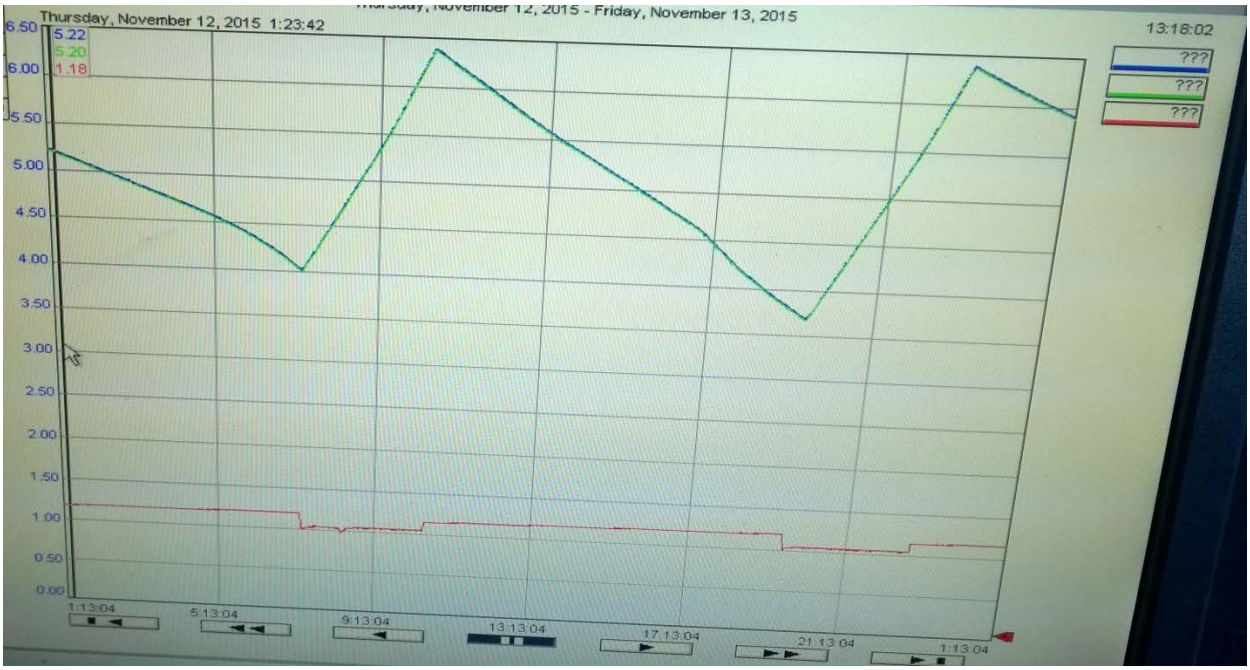
Options for an alternate supply of water to the downtown core are presented in this section. Alternate sources of water considered included groundwater, water via another route from Trout Creek and the Summerland Water Treatment plant, water from Okanagan Lake, and water from Garnett Reservoir.

All means were checked and reviewed in terms of viability and cost. The only viable means for an alternate supply is from Garnett Reservoir. The water quality is reasonable; it is chlorinated, and although not filtered there is significant storage volume in Garnett Reservoir. The hydraulic grade line is suitable for a gravity feed. A water quality advisory may need to be called if this source is used.

Water is fed from Garnett Reservoir down Garnett Valley Road through an extended length of water mains that reduce in size from 450mm diameter down to as small as 150mm diameter.

The domestic water demand to Summerland from the Water Treatment plant in the winter months was estimated to be 3.8 ML/day (3,800,000 L/day) or a flow of 44 L/s. The daily water demand for the winter months is illustrated in Figure 3.1.

Figure 3.1 - Summerland Daily Winter Water Use - Calculated 3,689 m3/day



Based on the information above, the volume of water that will be needed from Garnett Reservoir to maintain system pressure to the downtown core is approximately 44 L/s.

The Summerland computer model was used to estimate flow from Garnett Reservoir to the intersection of Garnett Valley Road and Jones Flat Road with varying hydraulic grade lines. The results are presented in Table 3.1.

Table 3.1 - Residual HGLs for flow from Garnett Valley source

Residual HGL (m)	Est. Flow through PRV 1 (L/s)	Flow at Midpoint	Flow at Int.
585	25.8	22.4	3.2
575	32.7	29.2	10.1
565	38.4	35.3	15.7
555	43.3	40.2	20.6
545	47.8	44.7	25.1
535	51.9	48.8	29.2

The Hydraulic Grade Line in column one is set at the Garnett Valley Road - Jones Flat Road intersection. The current operating HGL for the downtown core is approximately 585 to 589 metres. Our conclusion from this analysis is that there may be up to 35 L/s available from Garnett Valley to feed the downtown core. As demands increase, the system HGL will drop and more flow with the lower HGL would be available.

4.0 SCHEDULING

High attention to scheduling is necessary to minimize the time that the water transmission main is down. The work is scheduled to occur after irrigation connections have been turned off, but before ground freeze up. Implementation dates are as follows:

- Set-up and preparation tasks — weeks prior to Feb 27-Mar. 3, 2017
- Main will be drained down — Friday March 3, 2017
- Fixed Weekend work — March 3 – 5th , 2017
- 1050 Transmission Main refilling — Sunday, March 5, 2017
- Clean-up and Restoration — March 6 – 20th, 2017
- Paving — April, 2017, weather permitting

Scheduling Tasks - 1 month prior to Drawdown

1. Test out PRV settings with irrigation on and flow meter measurements for pressures in Garnett Valley
2. Preliminary notification to residents of upcoming shut-down
3. Develop detailed literature and website for residents to access during water outage
4. Set up Domestic water access locations for residents
5. Retain contractors for the upgrades/ new installations
6. Sort out isolation valving downtown and from 42" main
7. Check out all air release valves near and above the 1050mm main that they are fully functional
8. Coordinate with Fire Department regarding fire protection plan and procedures
9. Political support confirmed

Scheduling Tasks - 3 weeks prior to Drawdown

1. Draw down chlorine levels at the WTP clear well and set up town on Boil Water Notice (for dumping water)
2. Summarize and review-confirm all materials are on-site
3. Website on-line for information during shut down
4. Set up special call centre
5. Schedule water trucks (where necessary)
6. Confirm emergency contact list persons availability (rental companies, regulator, contractors, parts suppliers have 24 on-call availability)
7. Media releases
8. Excavate water storage pond at Brown Street and Kelly Avenue and install perimeter fencing.
9. Excavate Morrow Avenue Vault and cut wall perimeter around the vault for removal of vault roof. Core bolt holes in four locations for eye-bolts and lifting plates for roof removal.

Scheduling Tasks Days prior to Drawdown

1. Remove island at Jubilee Road West, Re-route traffic around PRV 10, around Sinclair Avenue – PV Road intersection. Set up truck traffic diversion onto Cartwright Avenue;
2. Excavate Sinclair valve location. Expose pipe, review condition with Summerland. Confirm O.D. of existing steel pipe at the location. Excavate bell hole for welders to weld below pipe;
3. Remove roof off of Morrow Avenue Valve chamber vault;
4. Move all materials in place;

5.0 WORK SITES

The major components of water infrastructure that are addressed in this section include:

1. Information on the 1050mm diameter transmission main that requires draining and refilling;
2. 750mm butterfly valve replacement - Morrow Avenue Vault;
3. 1050mm butterfly valve new installation - Sinclair Avenue Intersection, including traffic detour set up;
4. PRV 10 pressure reducing valve and isolation valve replacement, blind flange on 750m main off of 1050main – PV Road round-about
5. Construction of water storage at Brown Street – Kelly Avenue lot;
6. Interconnections for temporary water supply (by Summerland).

5.1 1050MM TRANSMISSION MAIN INFORMATION

The spine of the domestic water system is a large diameter transmission main that runs from the Water Treatment Plant to PRV 10 and further into the downtown core. The length of transmission main and volume of water held in the main is summarized as follows:

- 480m of 1350mm (54") diameter steel main (approx. volume = 687 m^3);
- 2475m of 1200mm (48") diameter steel main (approx. volume = 2,799 m^3);
- 595m of 1050mm (42") diameter steel main (approx. volume = 515 m^3).

The total volume of water within the transmission main is 4,000 m^3 .

Figure 5.1 - Main Profile - WTP to PRV 10

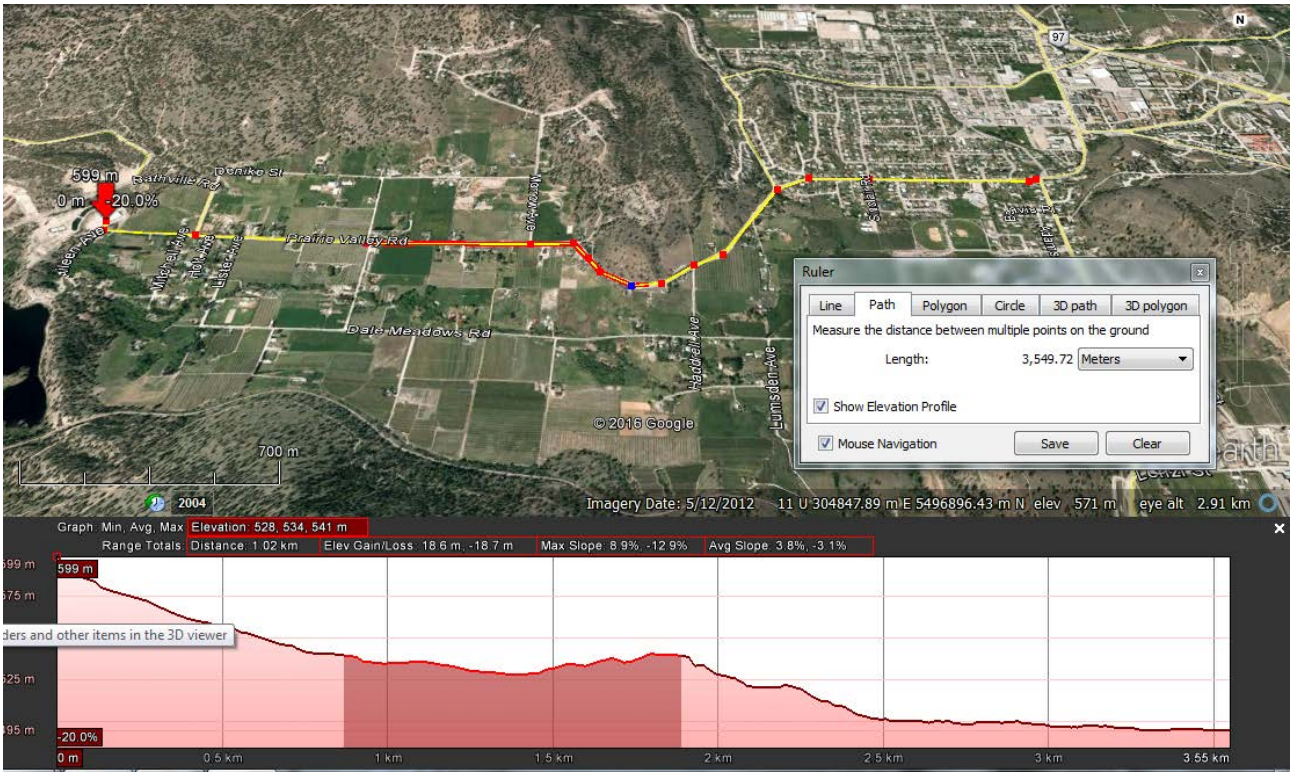


Figure 5.1 shows the main profile from the WTP to PRV 10. The elevation difference is 595m to 495 metres. The majority of the main can be drained to the Brown Street – Kelly Avenue pond. The dark red section in the Figure 5.1 profile shows the 968m length of 1200mm diameter of main that has to be drained at the Morrow Avenue vault location as that location is the low point on the transmission main upstream of the rock knob outcrop on Prairie Valley Road. The volume of water held back by the hillside and bend in Prairie Valley Road is 1,100 m^3. Although only 2,900 m^3 of water will have to be drained to install the Sinclair Road valve, Morrow Avenue requires work so the entire volume will have to be drained. The majority of water, 2,900m3 can be drained at the base, however 1,100m3 will have to be drained at the Morrow Ave. site. Once the Sinclair Road valve is installed in the future work can take place on PRV 10 with valve isolation from above.

Draining of the transmission main would be safest and best served if the chlorine levels at the WTP were allowed to be drawn down to low levels (< 0.05 mg/L) and dechlorination of the water being dumped not required.

5.2 MORROW AVENUE - 750MM BUTTERFLY VALVE REPLACEMENT

The Morrow Avenue 750mm valve is the only valve on the 3,500 metre length of transmission main between the WTP and PRV 10. The existing valve must be replaced as it no longer closes. The transmission main is reduced down to a 750mm valve size. Having a functional valve on the 1200 mm diameter transmission main will allow for quicker isolation of the water system in the event of a major waterline break. At this site, the larger 1200 mm main reduces down to 750mm just outside of the vault.

A replacement wafer-style valve and coupling has been purchased. The valve to be replaced is shown on the adjacent photo. A new 750mm butterfly valve would be installed within the same space on the main as the existing valve.

The components purchased to date include:

- 30" wafer style butterfly valve with gaskets
- Hardware, stainless steel bolts, nuts for installation;
- One 150mm gate valve and one 150mm butterfly valve to replace the bypass valve in the foreground (lower left in the photo) and for the air valve (upper centre in the photo)
- One 300mm butterfly valve to replace the supply line valve shown on the left side of the above photo.

Please note that process piping and a flexible coupling is to be provided by the Civil Contractor.

The work for this valve replacement includes the following:

1. Excavate around chamber two weeks before shut down. Install perimeter security fence;
2. Cut the walls of the chamber at a location within 150mm from the ceiling of the vault. Utilize cutting and coring company to run around the concrete perimeter wall with a concrete wet saw;
3. Install lift anchors in vault roof slab as per structural engineer drawing or provide engineered alternative;
4. Removal of the concrete roof / lid to allow unimpeded vertical access to the valves ;

5. Once main is drained down, Unbolt and removal / lifting of existing butterfly valves;
6. Slide in new butterfly valve and gaskets. Valve box and stem should be on the horizontal plain mounted at 3:00 o`clock on the valve, not at the top as shown in the photo. Core hole (Nelson Box size) to be provided in roof to allow for butterfly valve stem and turning of valve from valve stem above.
7. Utilize feeler gauge to ensure that butterfly valve is seated and gaskets are set flat to flange faces;
8. Replace the 150mm bypass gate-valve.
9. Replace the 150mm air release valve and the 300mm butterfly line valve;
10. Install small diameter bypass piping;
11. Recharge main once all valves are installed;
12. Visually inspect for drips and /or leaks once main is recharged. Tighten / adjust as required.
13. Replace roof onto new 12mm thick rubber gasket to seal.

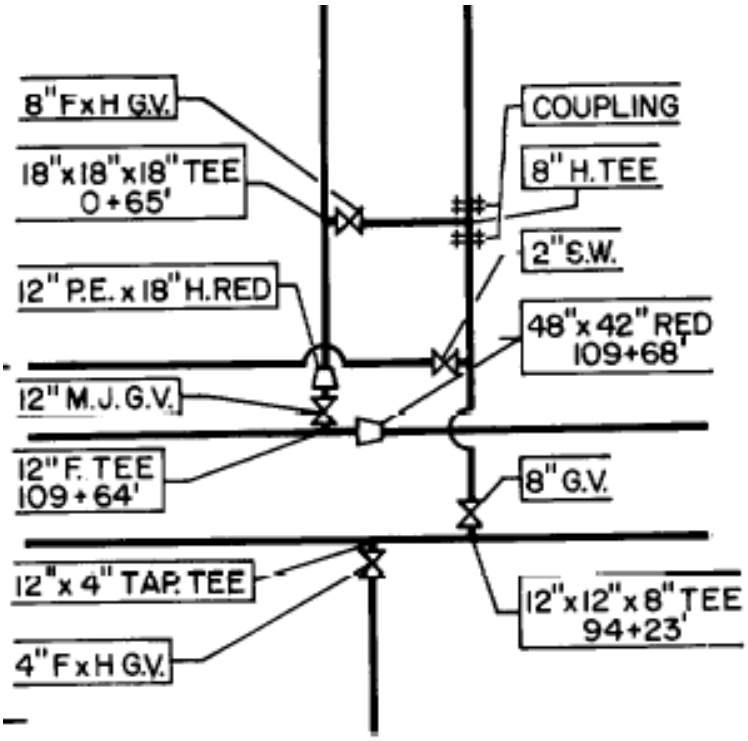
Potential issues that may be encountered:

- Valve may be wedged within the steel pipe and room is limited making for difficult valve and gasket reinstall
- Damage to existing components if too much force used in pulling valve
- Bolts on wafer valve are seized and need to be cut off,

5.3 SINCLAIR AVENUE BUTTERFLY VALVE INSTALLATION

A 1050mm diameter butterfly valve is recommended to be installed at the intersection of Prairie Valley Road and Sinclair Avenue. The valve arrangement at the intersection includes a 450mm diameter valve on the Sinclair leg of the tee, but no valving on the larger 1050 mm and 1200mm diameter mains. At the Sinclair Avenue intersection, the 1200mm main reduces to a 1050mm diameter main. The reducer is expected to be an in-line welded section that cannot be connected to without welding.

Figure 5.2 - Schematic of Water Mains – Sinclair Ave Intersection



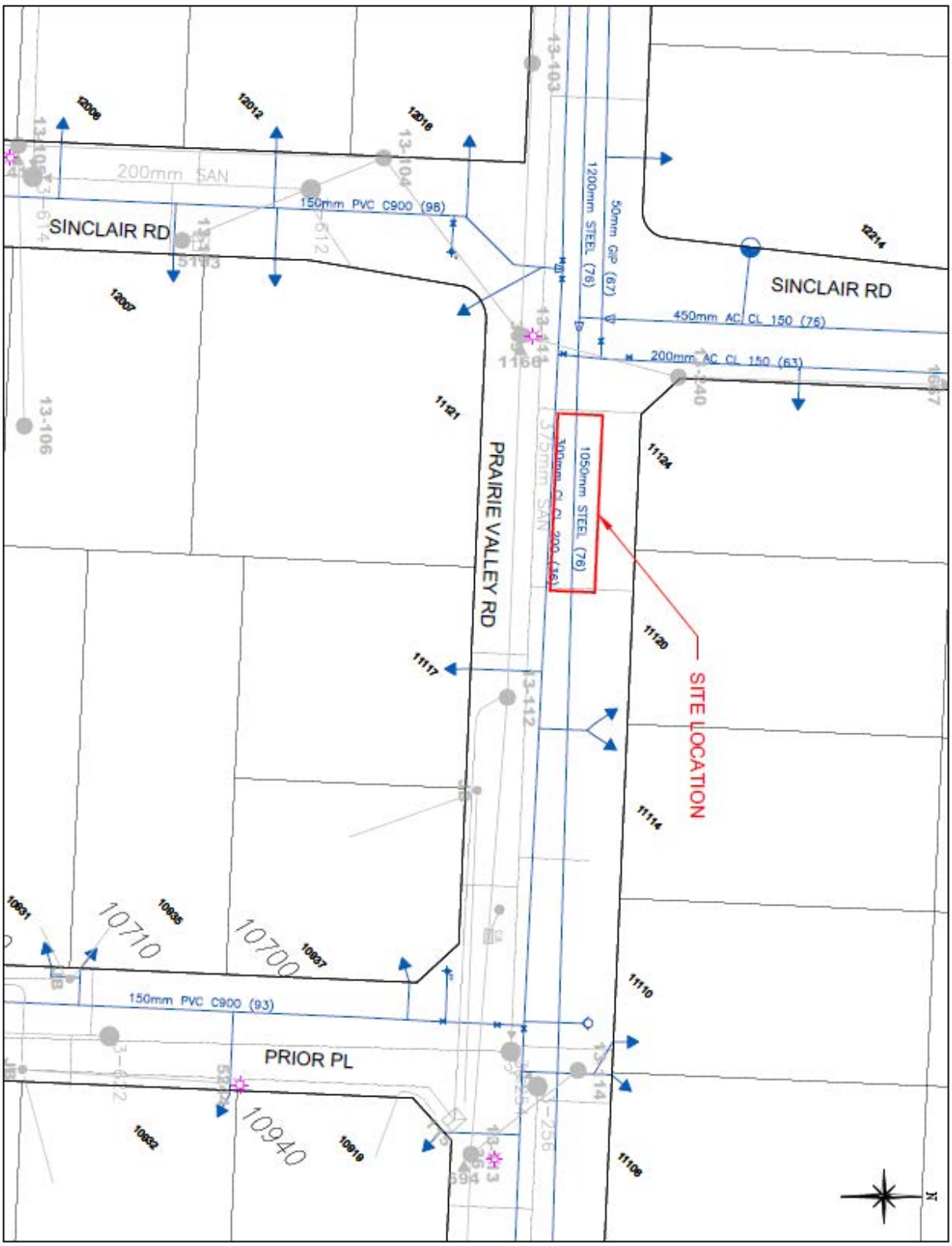
A butterfly valve is to be installed at this site upstream of PRV 10, which allows PRV 10 isolation while still allowing water supply to the south and to the north, including part of the downtown core of Summerland. The butterfly valve is to be installed at location approximately 20m east of the centreline of the Sinclair Avenue – Prairie Valley Road intersection as shown in the Figure on the following page.

Valve configuration at the intersection is provided in the adjacent figure. Because of the existing mains, installation is recommended at a location approximately 25m east of the tee to the 450mm main. Final location will be as permitted by existing infrastructure, driveways and overhead services. This will allow sufficient room to clear the mains in the intersection and will allow traffic onto Sinclair Avenue.

The transmission main is relatively deep in this location. The estimated depth is 3.5m to pipe invert. All smaller diameter mains are expected to cross over the larger transmission main.

On the following page is a plan view of the location with existing District infrastructure identified. Note that there is other infrastructure such as gas, CATV, street lights etc. that may be present. The contractor will be required to contact BC One for utility locates.

Figure 5.3 - Proposed Location for Valve Installation - Prairie Valley Rd- Sinclair Ave.



The components purchased to date include the following (refer to Appendix A):

1. 42" AWWA flanged butterfly valve with buried service travelling nut and hand wheel actuator. NSF 61 rated. Class 125 flanges, gaskets
2. Two Ford Meterbox 42" steel flange restraining coupling adapters.
3. Hardware, stainless steel bolts, nuts for installation.
4. 42" STEEL SPOOL PIECE, 3.0 m length provided by District of Summerland. Coating required

The work for this new valve installation includes the following list:

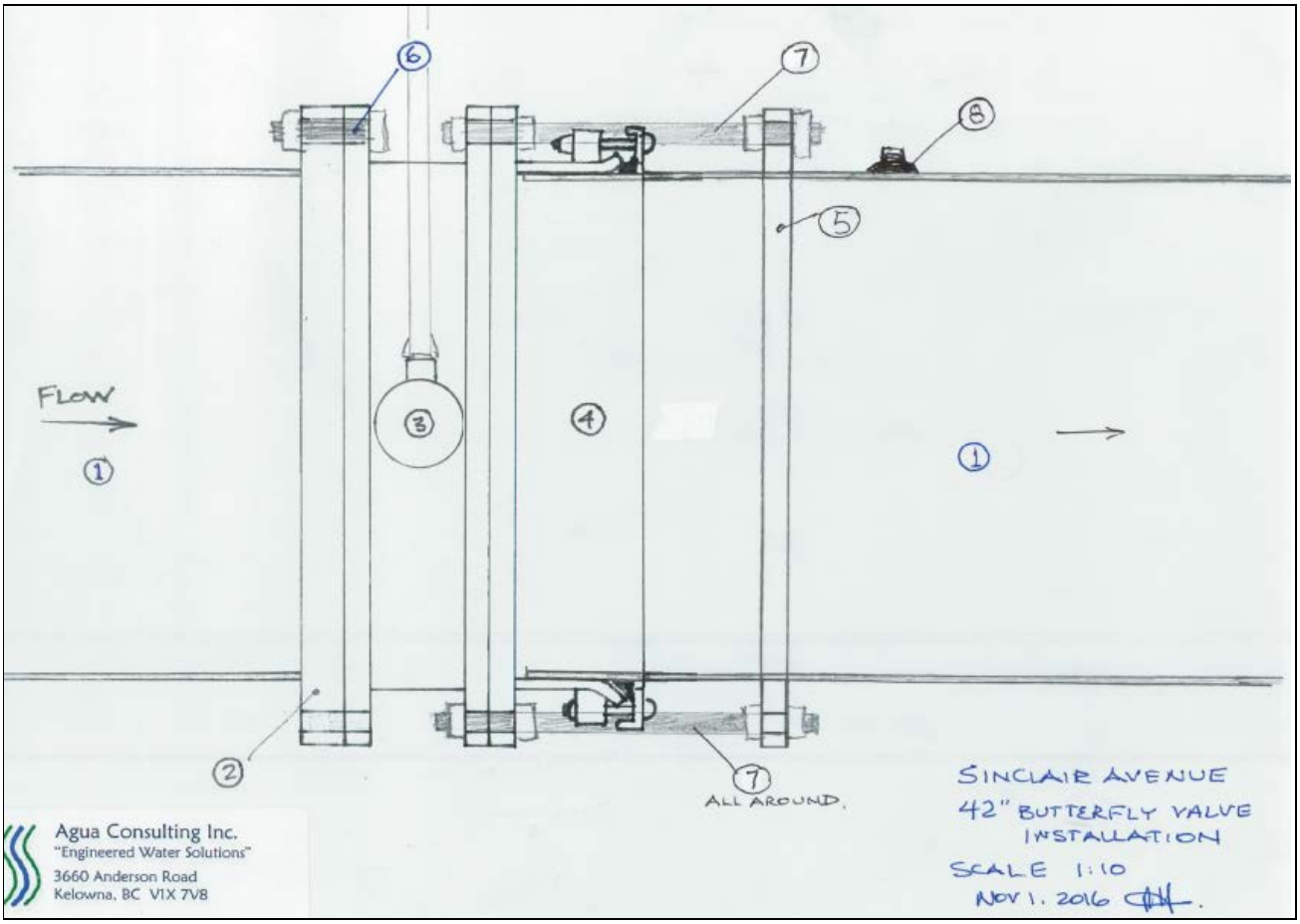
1. Prefabrication: Fabricate both AWWA valves, spool pieces and couplings within Summerland works yard to get exact field measurement for cut length in ditch. See Figure 5.2 for profile view.
2. Set up Asbestos Control Plan: Steel pipe coating has asbestos fibers present and special handling procedures are necessary for safety and to conform to Provincial regulations.
3. Traffic Detour: Set up detours and traffic control for rerouting traffic completely away from the intersection;
4. Island at Cartwright Avenue and Jubilee Road W: Island is to be removed temporarily to allow for easier turning at intersection;
5. Excavation: Dig the intersection several days ahead of scheduled shut down to confirm pipe outside diameter several days before shut down. This will confirm that materials in stock will fit;
6. Secure the site excavation and perimeter with security fencing around entirety;
7. Prepare steel pipe and mark out cut area. Determine steel material grade utilizing non-destructive testing procedures;
8. Peel-off coating which has asbestos fibers present, from steel pipe in location where pipe is to be cut. Depending on whether coating material is intact or crumbling, utilize appropriate asbestos handling procedures in accordance with Asbestos Control Plan. Dispose of materials by means of approved materials handling methods;
9. MEASURE PIPE O.D. as soon as possible and inform Summerland of any discrepancies
10. Address groundwater so that it is dealt with in a secure and reliable method for construction period and no trench water enters the transmission main. Water is also expected out of the main when cut. Dispose of water to safe drainage course;
11. Excavate sump at pipe cut location to allow water from within pipe to be pumped out without re-entering pipe;
12. Retain welders with proper banding and cutting tools, plus high-low adjustments and installation tools for steel pipe welding;
13. Cut gap with sufficient width to allow restrained coupling adapter to slide onto the main
14. Loose fit adapters to proper location on each side of valve location;
15. Drop in AWWA flanged butterfly valve with gaskets;
16. Bolt up valve to coupling adapter in true vertical/centered alignment. Achieve manufacturer's torqueing recommendations for the bolts and gaskets. Use feeler gauge to push into flange – gasket area to see if any gaps remain. View gaskets around to ensure gasket has fattened/widened due to pressure by flange;
17. Bolt on the restrained coupling to the steel pipe to ensure that the couplings are aligned and sealed to steel pipe;

18. Refer to O & M Manual for flange adapter installation
19. Add extended stainless steel redi-rod as per diagram in Figure 5.4 and materials list;
20. Cathodic integrity of pipe to be maintained to resist corrosion
21. Leave excavation open prior to refilling main. Refill slowly. Monitor for drips and-or leaks. Once main is full and pressurized ensure that there are no leaks.
22. Backfill at even heights both sides of pipe.
23. Backfll to road surface. Repave. Clean up

Issues that may be encountered:

- Pipe is oval/not round, welders to have high-low equipment to assist in pipe adjustment to get restraining coupling to slide on
- Pipe outside diameter (OD) is not 42 inches. If pipe is not 42" diameter, record measurement and advise District staff.
- Gasket seal. Proper gaskets and proper seal between valve and coupling components;
- Water / groundwater levels are higher than normal due to wet season

Figure 5.4 - Connection and Fittings - 1050mm diameter Butterfly Valve and Coupling



The critical issue for the installation is to install the slip-on flange onto the existing 42" diameter steel pipe. If the pipe isn't perfectly round there may be some work by the welders to make the pipe round.

Pieces illustrated in Figure 5.4 are defined as follows:

1. Right side pipe - Existing 42" steel pipe, 0.375" standard wall thickness, 42" O.D.
   Left side pipe - New 42" steel spool piece. Supplied by Owner, Coated by contractor to potable standard. Cut to length by Contractor. Field coated for band where welding occurs;
2. 1 - New 42" Class E, 275 psi Slip-on flange (can be type with insert) - 36 bolt holes, 3 3/8" flange thickness, 49 ½" dia.bolt hole centre
3. *42" AWWA flanged butterfly valve, 36 bolt holes, 49 ½" dia bolt hole centre, Owner supplied*
4. *1 - Ford Meter Box Coupling assembly - Owner supplied*
5. 1 - Slip on Flange: 42" diameter Class D, 150-175psi rated, 36 bolt holes, 53" outside diameter, 49 ½ inch bolt circle, 1 ¾" thick;
6. 36 - 1 ½" diameter s/s hardware, length to suit longer bolt requirement with thicker flange. 9" bolt minimum length, 10" recommended
7. 36 - 1 ½" diameter s/s hardware redi-rod, 32" length, double nut on both connection ends to go from Butterfly valve flange to 42"
8. 1 - 50mm diameter weldolet – complete with 50mm diameter stainless steel nipple. Locate on downstream side butterfly valve for Air Release. Weld onto the top of the existing 42" main.

For welding onto the existing cut pipe end, a thicker Class E, 275 psi flange is recommended rather than the Class D, 150-175psi flange. The Class E flange will have less chance of warping and/or disfigurement during welding, thus ensuring better chance for sealing of the gasket between the flanges as both are to be flat. Higher surge pressures are possible on the upstream side of the valve. The Class E measurement should be same size as your purchased 42" butterfly valve. For the slip on flange, the welding procedure and materials are to be checked by a structural engineer retained by Summerland, to ensure that the stress forces can handle the thrust design forces both in compression and tension.

Items that require verification by Contractor

1. Ensure that the bolt pattern is 36" diameter, bolt hole diameter is 1 5/8" to match the Class E flanges.
2. Confirm bolts and hardware to be provided, how many, lengths, stainless steel is required. Diameter = 1 ½".
3. Contractor may preassemble equipment prior to installation so that it is known that everything fits together.
   If preassembled, the length of pipe to cut out to get the coupling in will be known exactly.

5.4 WATER STORAGE POND - BROWN STREET – KELLY AVENUE

A water storage basin is to be constructed on the lot immediately to the northeast of the Brown Street – Kelly Avenue intersection. A plan view is included below in Figure 5.5.

Figure 5.5 - Kelly Avenue – Brown Street Water Storage Site

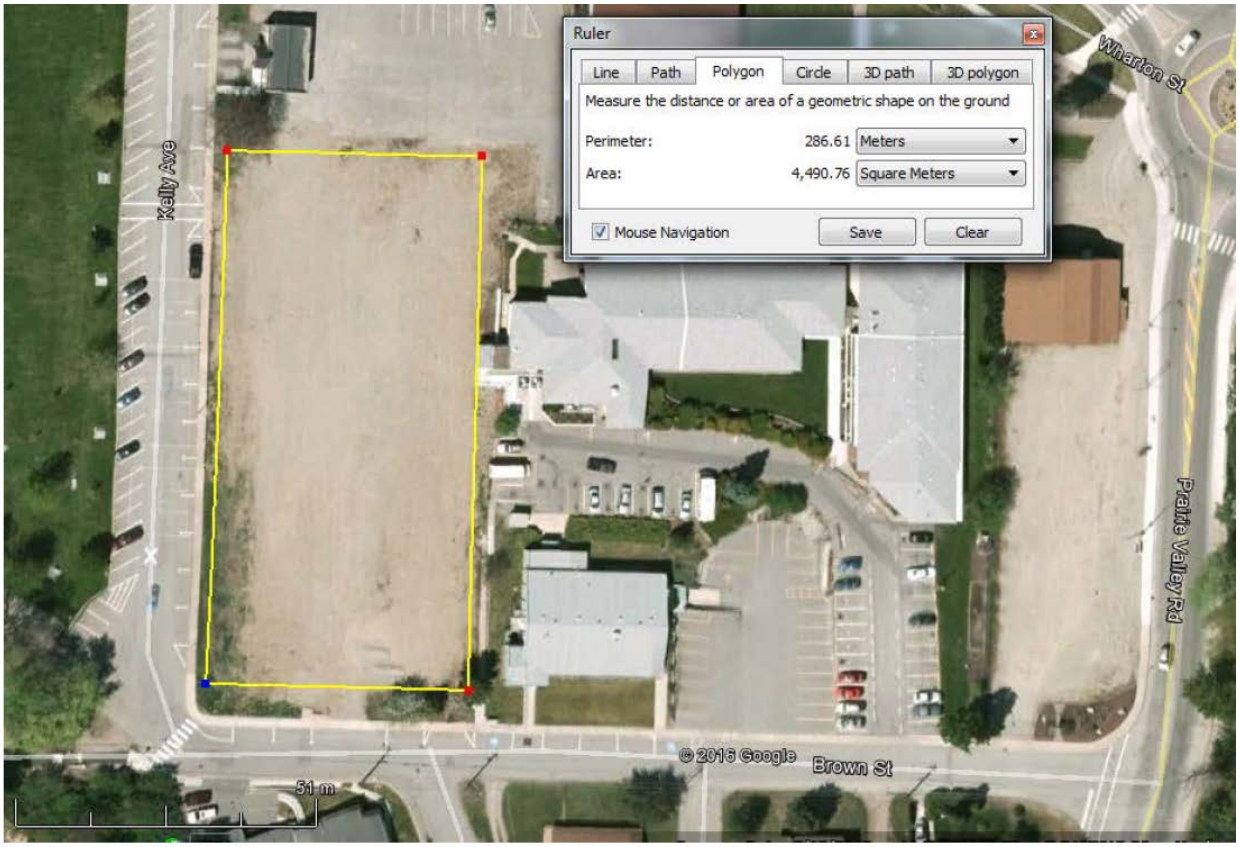
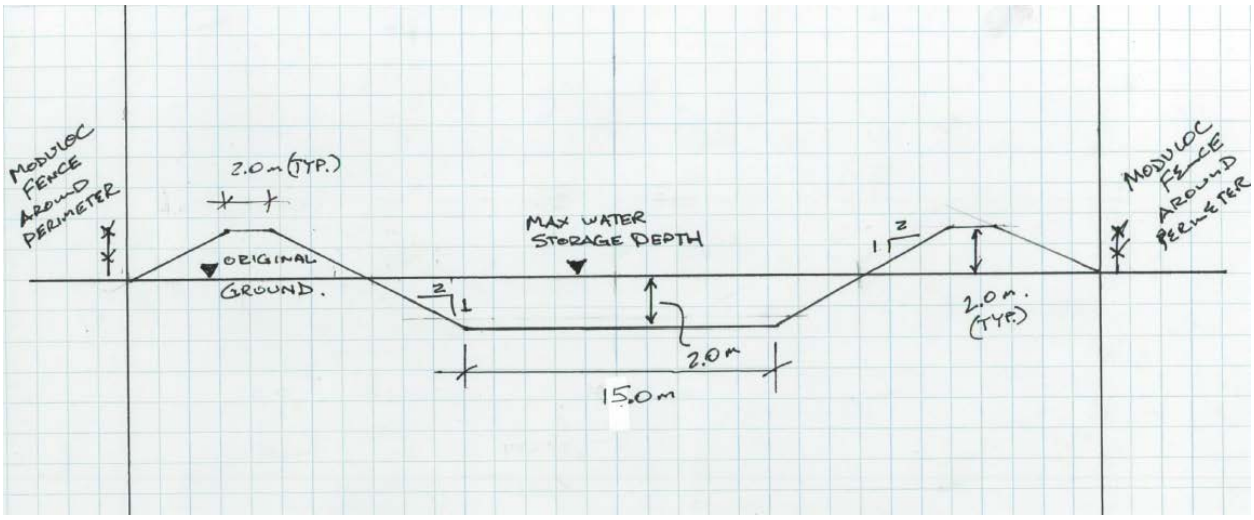


Image – Google Earth

The land is owned by the District of Summerland. The yellow boundary shows the location of where the work is to take place. The dimensions of the area are approximately 90m x 50m. A moduloc fence is required around the perimeter. Side slopes are to be kept to a maximum level of 2H to 1V. Maximum depth of water is to be 2.0m and must be in the excavated locations of the lot.

A section view of the mid location of the pond is included on the following page.

Figure 5.6 - Water Storage Pond Section



The estimated volume of storage that can be generated below existing ground level is in the range of 2,500 m^3. It is estimated that 3,000 m3 of material will have to be moved and/or excavated.

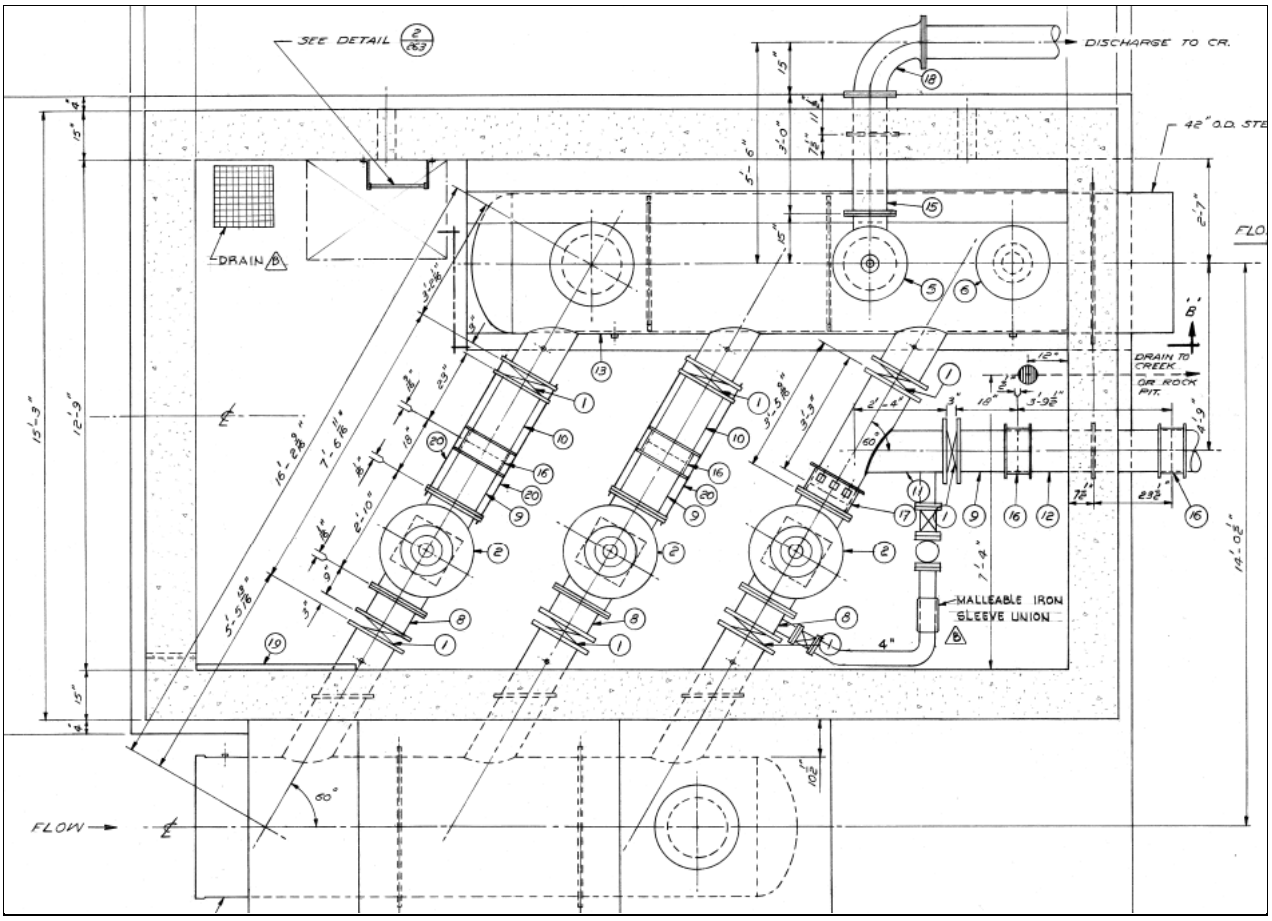
The area is to be excavated and monitored once excavated. Once filled with water, the pond will be left to infiltrate over time and once chlorine levels are no measureable so that the water can be released and the site reinstated.

5.5 PRV 10 - PRESSURE REDUCING VALVE AND ISOLATION VALVE REPLACEMENT

The PRV 10 pressure reducing station reduces pressures from the transmission main from 140 psi down to 100 psi. Water flows through the station to the downtown core and all service areas below. The isolation valves and pressure reducing valves are in need of replacement as some do not seal and isolation of the pressure reducing valves is not possible.

The station is located at the Prairie Valley Road – Victoria Road south intersection in the northwest boulevard. The station is within a buried concrete chamber. The footprint of that chamber is illustrated in Figure 5.7. PRV 10 utilizes 3 – 300mm Clayton pressure reducing valves and a smaller bypass valve to reduce pressures from 140 psi down to 100 psi.

Figure 5.7 - Plan View – PRV 10



PRV 10 improvements and valve installation upstream at Sinclair Avenue is needed to provide isolation so that new valves can be installed.

The components purchased to date include:

1. 3 – Cla-Val 100mm diameter PRV valves , Model 94-01BVY combination pressure reducing and downstream surge control valve;
2. 3 – Clayton 300mm diameter butterfly valves , Model 100-20BVY full port main valve changed (spec changed);
3. 3 – Cal-Val Insertion flow meter for 300mm valve

4. 1 – 250mm Pressure Relief Valve, Model 50-01BV
5. 2 – Cla-Val 19mm dia CFD-L Direct acting pressure reducing valve c/w Threaded ends, bronze body
6. 1 – Cla-Val VC-22D controller w/Custom ValveApp to bring 12" valves on-line based on total flow input and to slowly control valves to close in the event of a major water main break, includes limit switches;
7. Spool pieces for 300mm lines, for 100mm bypass line, for 300mm bypass discharge and for steel walkways within room- have quote – don't know if PO was issued and these are made or not by Mearl's
8. 7 - 300mm diameter High Quality butterfly isolation valves – Bray high quality valves;
9. 1 - 100mm diameter isolation valve

The work for this new valve installation includes the following list:

1. Day prior, Transmission main being drawn down;
2. Day prior; Traffic detours to set up at site to direct all traffic around the far side of traffic circle;
3. Day prior: Materials and equipment brought to site , run through confined space procedures, preparation.
4. Day prior: Removal of all loose items within the vault such as metal railings, abandoned piping, etc.
5. Day 1: Drain down and ensure all water is out of station piping;
6. Day 1: Disassemble all 300mm piping, jackhammer out concrete PRV bases,
7. Day 1: Weld repair damaged ports behind inlet isolation bases
8. Day 1: Clean flange faces and install 300mm inlet isolation valves and discharge isolation valves
9. Day 1: Assemble Run "B" (Middle 300mm PRV) process piping and PRV and allow station and water to start being brought back on line by end of day;
10. Day 1: verify no leaks in equipment and valving

Closure

Please review the information provided and contact us if you have any questions regarding this report.

R. Hrasko, P.Eng.
Principal
Agua Consulting Inc.

APPENDIX C
SOIL PROFILE AT SINCLAIR

BEACON GEOTECHNICAL LTD.

GEOTECHNICAL INVESTIGATION

PRAIRIE VALLEY ROAD UPGRADE

DARKE ROAD TO VICTORIA ROAD SOUTH

SUMMERLAND, B.C.

Submitted to:

The Corporation of the District of Summerland
Summerland, B.C.

Submitted by:

Beacon Geotechnical Ltd.
Kelowna, B.C.

August 5, 2010

10-J1141

#201 – 1889 Spall Road, Kelowna, British Columbia V1Y 4R2
Phone: (250) 861-6859 Fax: (250) 762-8073 e-mail: beacongeo@telus.net

TABLE OF CONTENTS

PAGE

APPENDICES

Beacon geotechnical

LEGEND:

LOCATION OF BOREHOLE

PROJECT: PRAIRIE VALLEY ROAD ROAD CROSS SECTION

CLIENT: DISTRICT OF SUMMERLAND

LOCATION: SUMMERLAND, BC

SITE PLAN

DATE: JUNE 2010	DRAWN BY: CCW	FILE NO: 10-J1141
SCALE: 1:3,000	CHECKED BY: CCW	FIGURE NO: A-01

Project: Prairie Valley Road Upgrade
Location: Darke Road to Victoria Road S, Summerland, B.C.
Client: The District of Summerland
Beacon Project No: 10-J1141

Log of Borehole 02

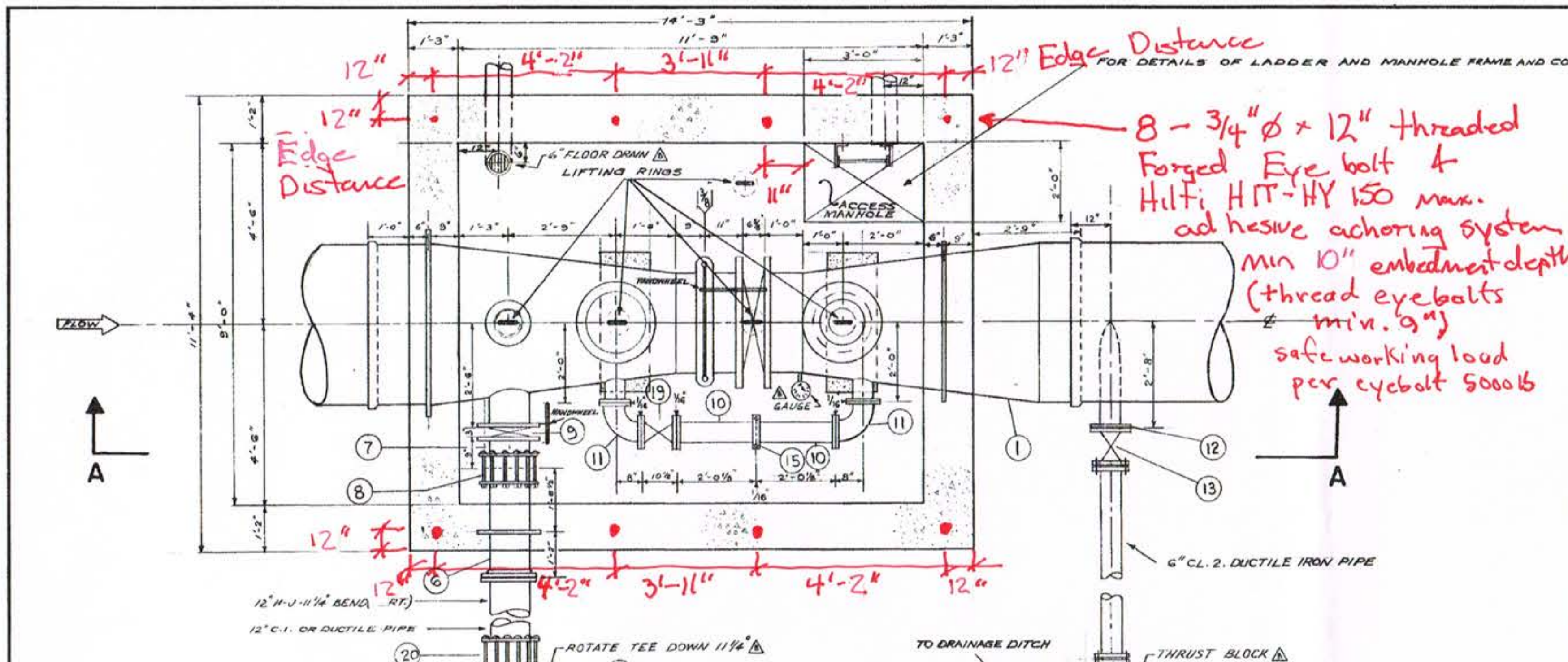
Depth (ft)	Depth (m)	Description	Number	Type	Moisture Content Percent (20 40 60 80)
0	0	Ground Surface			
0	0	***TOPSOIL - SOD*** silty, firm, damp, dark brown.			
3	1	***SAND and GRAVEL (SM)*** well graded sand, rounded gravel, some silt, dense, damp, medium tan brown.			
4			2-1	G	●
5		***SAND and GRAVEL (SM-SP)*** well graded sand, rounded gravel, trace silt, dense, moist, medium tan brown with some rust staining.			
9			2-2	G	●
10	3	***END OF BOREHOLE @ 3.0 METRES*** NO GROUNDWATER ENCOUNTERED. NO SLOUGHING.			

Investigation Date: June 17, 2010
Contractor: Beck Drilling & Environmental Services
Equipment: Truck Mounted Solid Stem Auger
Logged By: HF

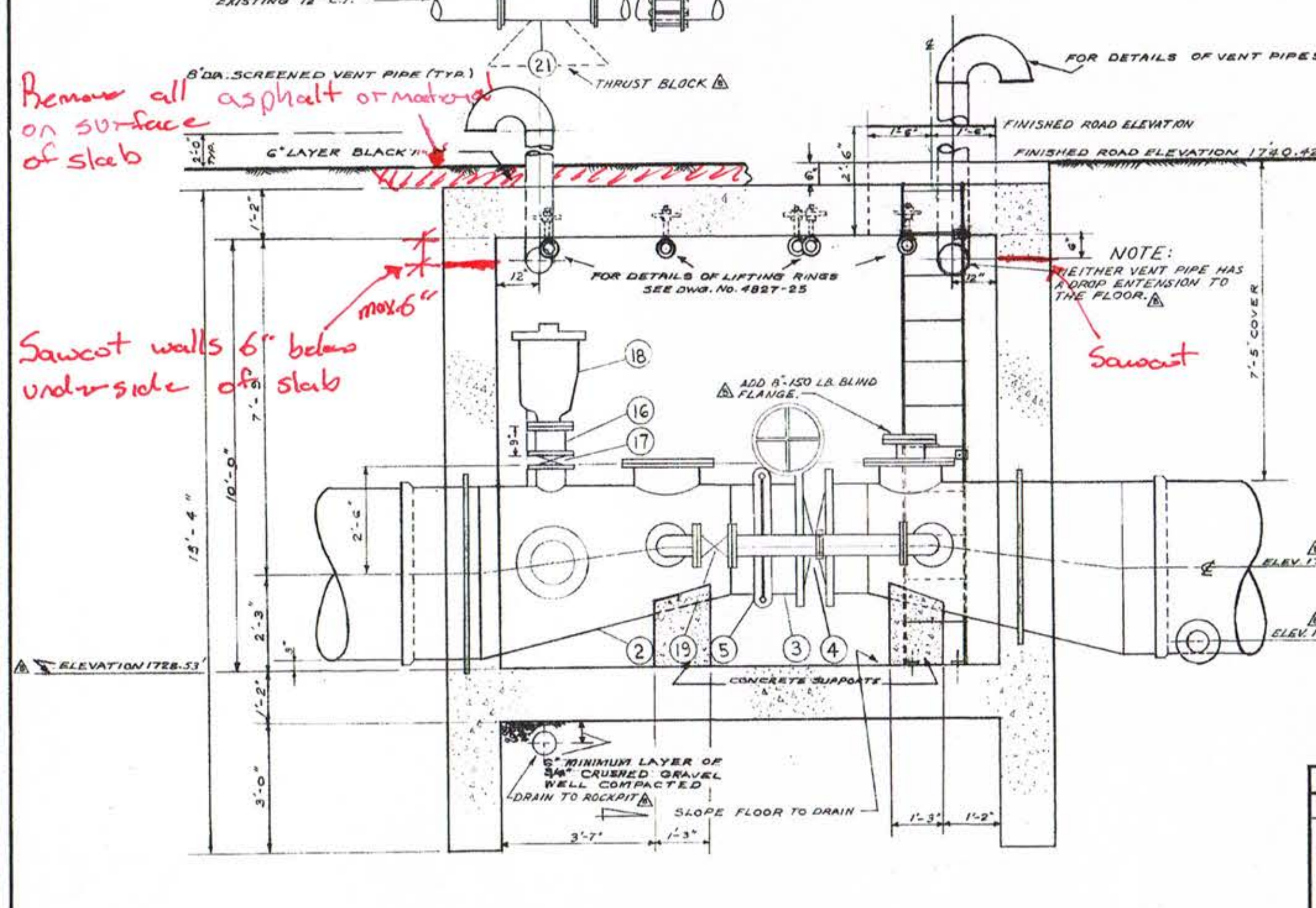
Northing: 0
Easting: 0
Address: 11124 Prairie Va
Figure No: B-02

Beacon Geotechnical Ltd.
#201-1889 Spall Road
Kelowna, B.C.
V1Y 4R2

APPENDIX D
MORROW AVE. VAULT DETAILS



PLAN



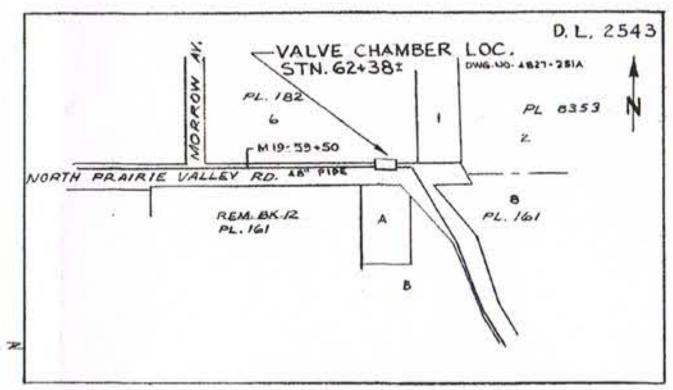
SECTION A - A

SCHEDULE OF FITTINGS

ITEM No.	No. REQ'D	DESCRIPTION
1	1	48" TO 30" STEEL REDUCER C.W. 18" 150 LB. BLIND FLANGE WITH 8" 150 LB. FLANGE ATTACHED, ONE 6" 150 LB. FLANGED OUTLET AND ONE 4" × 1" THK ANCHOR RING.
2	1	48" TO 30" STEEL REDUCER C.W. 18" 150 LB. FLANGED OUTLET WITH BLIND FLANGE ONE 8" 150 LB. FLANGED OUTLET, 12" 150 LB FLANGED OUTLET, 6" 150 LB. FLANGED OUTLET, AND ONE 4" × 1" ANCHOR RING.
3	1	30" 150 LB. FLANGE × PLAIN END STEEL SPOOL 11" LONG.
4	1	30" 150 LB. WAFER BODY. RUBBER SEATED BUTTERFLY VALVE C.W. H.D. WORM GEAR OPERATOR HANDWHEEL AND ONE SET OF GALVANIZED NUTS & BOLTS.
5	1	30" STYLE 55 VICTAULIC COUPLING (TO SUIT PLAIN END PIPE)
6	1	12" TEK MECH × PLAIN END CAST IRON SPOOL, 2'-8½" LONG C.W. WALL RING
7	1	12" - 125 LB. FLANGE × PLAIN END CAST IRON SPOOL, 9" LONG.
8	1	12" S-B No 438-1320 INSULATING COUPLING (FOR 13.20 O.D. CAST IRON PIPE)
9	1	12" 200 LB. WAFER BODY RUBBER SEATED BUTTERFLY VALVE, C.W. H.D. WORM GEAR OPERATOR, HANDWHEEL AND ONE SET OF GALVANIZED NUTS AND BOLTS.
10	2	6" - 125 LB. FLANGE × VICTAULIC GROOVE CAST IRON SPOOL 2'-0⅛" LONG.
11	2	6" - 125 LB. FLANGE CAST IRON 30° BEND.
12	1	6" - 125 LB. FLANGE INSULATING GASKET KIT
13	1	6" - 125 LB FLANGE × MECH JOINT GATE VALVE I.B.B.M. N.R.S.
14	1	6" - 125 LB. MECH JOINT CAST IRON 30° BEND
15	1	6" VICTAULIC STYLE No 31 COUPLING TO SUIT GROOVE END PIPE
⚠ 16	1	8" - 125 LB FLANGE × FLANGE SPOOL, 9" LONG.
⚠ 17	1	8" 200 LB. WAFER BODY RUBBER SEATED HEAVY DUTY BUTTERFLY VALVE C.W. H.D. WORM GEAR OPERATOR HANDWHEEL AND ONE SET OF GALVANIZED NUTS & BOLTS.
⚠ 18	1	8" CRISPIN UBI 125 LB. FLANGED INLET COMBINATION AIR RELEASE VALVE
19	1	6" 125 LB. FLANGE GATE VALVE, I.B.B.M., N.R.S. C.W. HANDWHEEL
20	2	S-B. No 441-0000 1350 FLEXIBLE COUPLING
21	1	12" TER-MECH CAST IRON TEE

NOTE

BACKFILLING AND COMPACTION AROUND THE CHAMBER TO BE COMPLETED TO THE TOP OF THE ROOF SLAB BEFORE MAINLINE IS FILLED AND TESTED.



SITE PLAN
SCALE: 1" = 200'

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — L.L. RIDING #31678

- lifting eyebolts only

AS BUILT

REFERENCES

DWG. No.	DESCRIPTION	DATE
4827-24	MAINLINE VALVE CHAMBER	FEB. 1976
4827-25	DITTO-MECHANICAL DETAILS	" "
4827-26	RE-BAR DETAILS	" "
4827-27	"	" "
4827-28	"	" "
4827-25A	PL. & PROFILE OF ML	SEPT. 1975

REVISIONS

No.	DESCRIPTION	DATE
1	AS BUILT ⚠	AUG., 1979

SURVEYED
DATE
DESIGNED R.R. & N.J.M.
DRAWN G.H.R.
TRACED
CHECKED
DATE FEB. 1976

BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
WATER RESOURCES SERVICE
WATER INVESTIGATIONS BRANCH

THE CORPORATION OF THE DISTRICT OF SUMMERLAND
A.R.D.A. PROJECT No. 89044

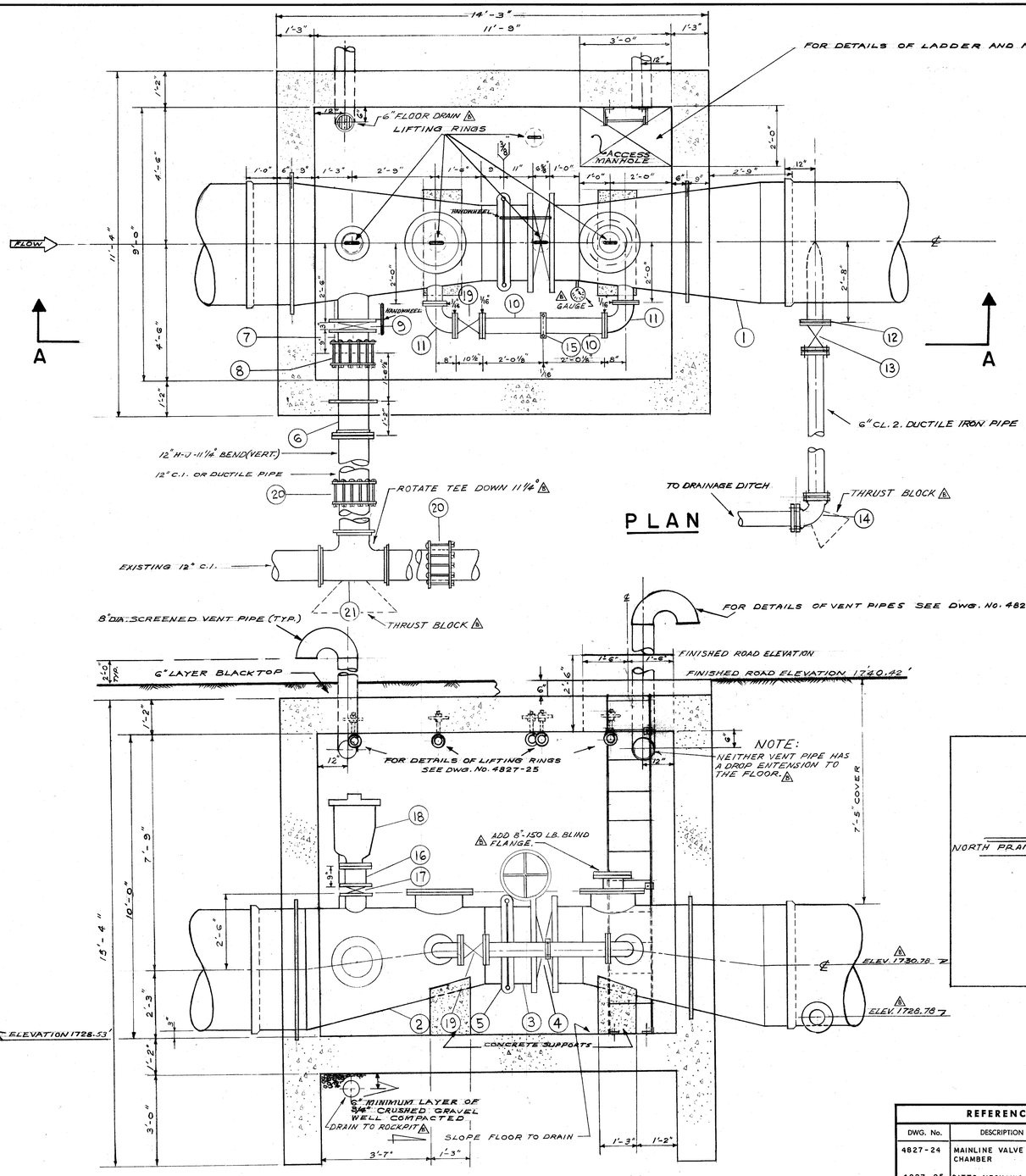
MAINLINE
MORROW AVE. VALVE CHAMBER
VALVE CHAMBER & MECHANICAL INTERCONNECTION
(STATION 62 + 38 ±)

ENGINEER [signature] APPROVED DIV. CHIEF [signature]

263 430
FILE No. 0242512-19
SCALE 1/2" = 1'
DWG. No. 4827-24
SHEET 1 OF 5

D

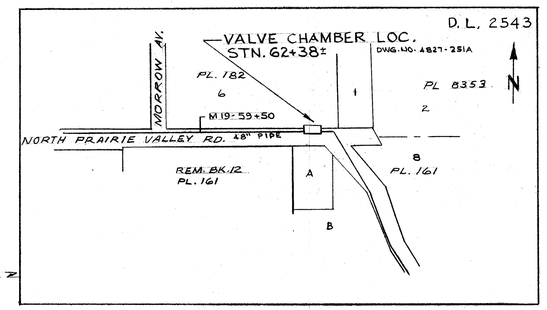
16-00 439



SCHEDULE OF FITTINGS		
ITEM No.	No. REQ'D	DESCRIPTION
1	1	48" TO 30" STEEL REDUCER C.W. 18" 150 LB. BLIND FLANGE WITH 8" 150 LB. FLANGE ATTACHED, ONE 6" 150 LB. FLANGED OUTLET AND ONE 4" x 1" THK ANCHOR RING.
2	1	48" TO 30" STEEL REDUCER C.W. 18" 150 LB. FLANGED OUTLET WITH BLIND FLANGE ONE 8" 150 LB FLANGED OUTLET, 12" 150 LB FLANGED OUTLET, 6" 150 LB. FLANGED OUTLET, AND ONE 4" x 1" ANCHOR RING.
3	1	30" 150 LB. FLANGE x PLAIN END STEEL SPOOL 11" LONG.
4	1	30" 150 LB. WAFER BODY RUBBER SEATED BUTTERFLY VALVE C.W. H.D. WORM GEAR OPERATOR HANDWHEEL AND ONE SET OF GALVANIZED NUTS & BOLTS.
5	1	30" STYLE 55 VICTAULIC COUPLING (TO SUIT PLAIN END PIPE)
6	1	12" TER MECH X PLAIN END CAST IRON SPOOL, 2'-8 1/2" LONG. C.W. WALL RING
7	1	12" - 125 LB. FLANGE x PLAIN END CAST IRON SPOOL, 9" LONG.
8	1	12" S-B No 438-1320 INSULATING COUPLING (FOR 13.20 O.D. CAST IRON PIPE)
9	1	12" 200 LB. WAFER BODY RUBBER SEATED BUTTERFLY VALVE, C.W. H.D. WORM GEAR OPERATOR, HANDWHEEL AND ONE SET OF GALVANIZED NUTS AND BOLTS.....
10	2	6" - 125 LB. FLANGE X VICTAULIC GROOVE CAST IRON SPOOL 2'-0 1/8" LONG.
11	2	6" - 125 LB. FLANGE CAST IRON 90° BEND.
12	1	6" - 125 LB. FLANGE INSULATING GASKET KIT
13	1	6" - 125 LB FLANGE x MECH JOINT GATE VALVE I.B.B.M. N.R.S.
14	1	6" - 125 LB. MECH JOINT CAST IRON 90° BEND
15	1	6" VICTAULIC STYLE No 31 COUPLING TO SUIT GROOVE END PIPE
Δ 16	1	8" - 125 LB. FLANGE x FLANGE SPOOL, 9" LONG.
Δ 17	1	8" 200 LB. WAFER BODY RUBBER SEATED HEAVY DUTY BUTTERFLY VALVE C.W. H.D. WORM GEAR OPERATOR HANDWHEEL AND ONE SET OF GALVANIZED NUTS & BOLTS.
Δ 18	1	8" CRISPIN U 81 125 LB. FLANGED INLET COMBINATION AIR RELEASE VALVE
19	1	6" 125 LB. FLANGE GATE VALVE, I.B.B.M., N.R.S. C.W. HANDWHEEL.
20	2	S-B. No 441-0000 1350 FLEXIBLE COUPLING.
21	1	12" TER-MECH CAST IRON TEE

NOTE

BACKFILLING AND COMPACTION AROUND THE CHAMBER TO BE COMPLETED TO THE TOP OF THE ROOF SLAB BEFORE MAINLINE IS FILLED AND TESTED.



SITE PLAN
SCALE: 1"=200'

AS BUILT

REFERENCES			REVISIONS			SURVEYED	BRITISH COLUMBIA DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES WATER RESOURCES SERVICE WATER INVESTIGATIONS BRANCH	263 430 FILE No. 0242512-19
DWG. No.	DESCRIPTION	DATE	No.	DESCRIPTION	DATE	DATE		
4827-24	MAINLINE VALVE CHAMBER	FEB. 1976	1	AS BUILT Δ	AUG., 1979	DESIGNED R.R. & N.J.M.	THE CORPORATION OF THE DISTRICT OF SUMMERLAND A.R.D.A. PROJECT No. 89044	SCALE 1/2" = 1'
4827-25	DITTO-MECHANICAL DETAILS	" "				DRAWN G.H.R.	MAINLINE MORROW AVE. VALVE CHAMBER VALVE CHAMBER & MECHANICAL INTERCONNECTION (STATION 62 + 38 ±)	DWG. No. 4827-24
4827-26	RE-BAR DETAILS	" "				TRACED		
4827-27	" "	" "				CHECKED		
4827-28	" "	" "				DATE FEB. 1976.	ENGINEER R. Rommens APPROVED DIV. CHIEF	SHEET 1 OF 5
4827-25M	PL. & PROFILE OF ML	SEPT. 1975						

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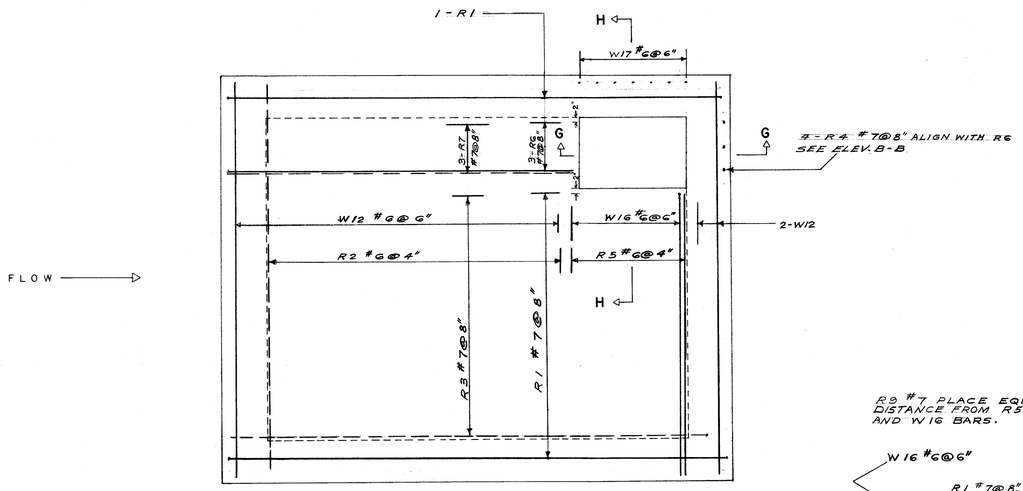
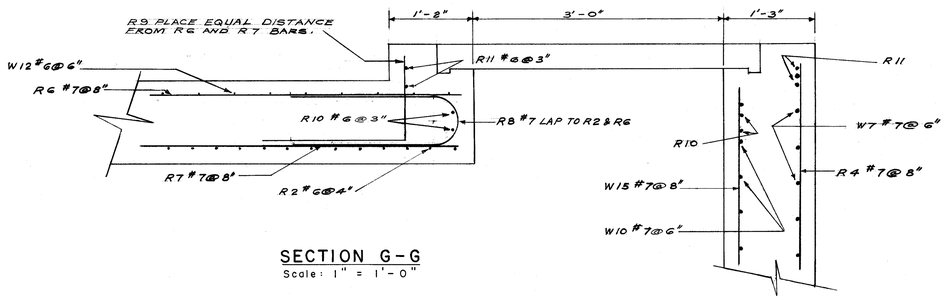
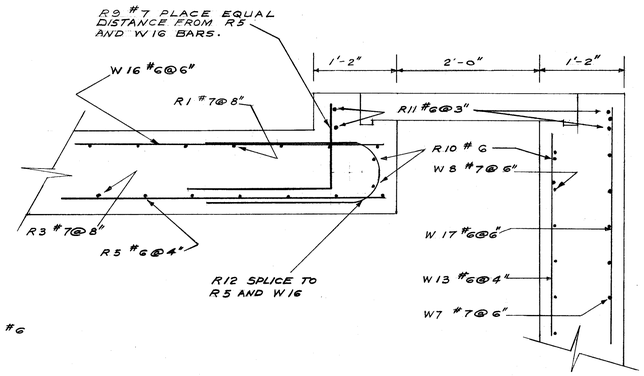


ROOF SLAB
Scale: 1/2" = 1-0"

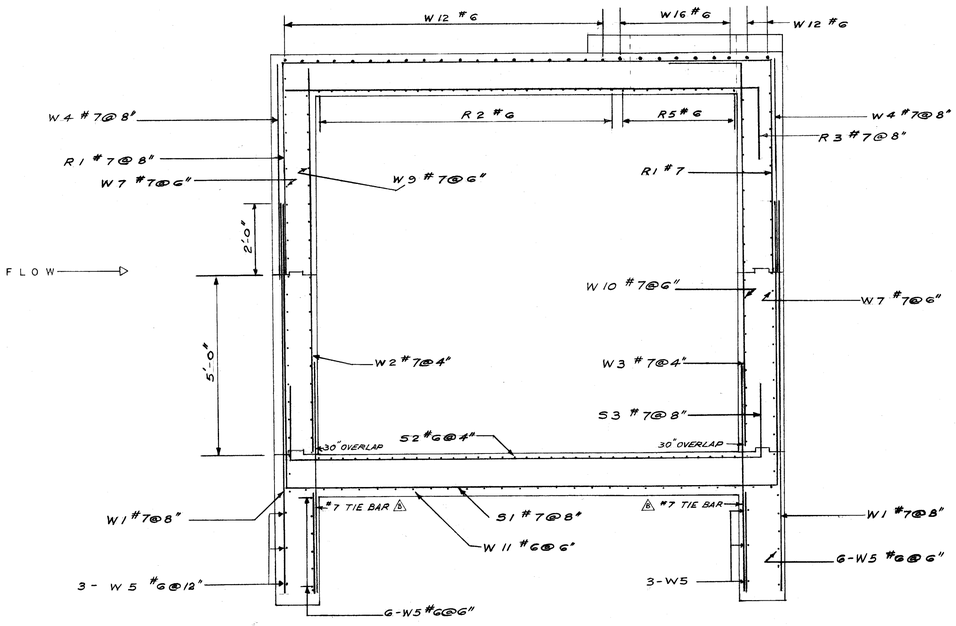


SECTION G-G
Scale: 1" = 1'-0"

SECTION H-H
Scale: 1" = 1'-0"



⚠ NOTE:
W2, W3, W15 TO BE SPLICED TO 6'-5" TIE BARS(#7) AS SHOWN.
① 54 #7 TIE BARS 6'-5" REQ'D
10 ORDERED PRECUT TO LENGTH
44 TO BE CUT FROM 22-W2 BARS (12" WASTE)
54 TOTAL
② W2 BARS - 22 ORDERED AT 10'-11" LENGTH,
5 TO BE FIELD CUT TO 10'-11"
27 TOTAL
③ W3 BARS - CUT 'A' DIMENSION TO 10'-11" (21 BARS)
④ W15 BARS - CUT TO 11'-1" STR. (6 BARS)



SECTION F-F
Scale: 1/2" = 1-0"

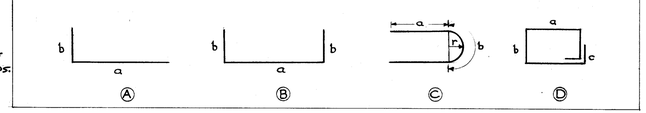
NOTES
① All BAR DIMENSIONS SHALL BE OUT TO OUT UNLESS OTHERWISE SHOWN.
② REINFORCING STEEL SHALL BE NEW BILLET STOCK OF INTERMEDIATE GRADE AND SHALL CONFORM TO A.S.T.M. A615-SPECIFICATION YIELD POINT 60,000 P.S.I.
③ REINFORCING STEEL SHALL BE DEFORMED ACCORDING TO A.S.T.M. A-305 SPECIFICATIONS.
④ MINIMUM LAP LENGTHS SHALL BE AS FOLLOWS: #6 - 18"; #7 - 24"
⑤ FIELD CUT AND BEND REINFORCING BARS TO SUIT ALL OPENINGS.
⑥ COVER TO REINFORCING STEEL SHALL BE AS FOLLOWS:
(a) WHERE CONCRETE IS DEPOSITED AGAINST GROUND
i.e. UNDERSIDE KEY WALL AND FLOOR SLABS - 3"
b) WHERE CONCRETE IS EXPOSED TO WEATHER OR GROUND AFTER REMOVAL OF FORMS.
i.e. OUTSIDE FACES OF WALLS AND ROOF - 2"
(c) WHERE CONCRETE IS NOT EXPOSED DIRECTLY TO GROUND OR WEATHER
i.e. INSIDE FACES OF WALLS, FLOOR AND ROOF - 1 1/2"
⑦ CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. AT 28 DAYS WHEN TESTED UNDER STANDARD METHODS.
⑧ MAXIMUM AGGREGATE SIZE SHALL BE 3/4"

CONCRETE VOLUME	
KEY WALLS	3.15 CU YDS.
FLOOR SLAB	6.38 CU YDS.
WALLS	19.58 CU. YDS.
ROOF SLAB (Includes Manhole)	6.97 CU. YDS.
TOTAL	36.58 CU. YDS.

STEEL SCHEDULE

LOCATION	MARK NO.	No REQ'D	BAR SIZE	SHAPE	DIMENSIONS a	b	r	c		LENGTH	TOTAL LENGTH	WEIGHT
FLOOR SLAB	S1	16	7	B	13-11	7-10				29-7	473-4	967.49
	S2	36	6	B	11-0	2-0				15-0	540-0	811.08
	S3	14	7	B	13-4	2-0				17-4	242-8	496.00
WALLS	W1	34	7	STR.	10-11					10-11	371-2	758.67
SEE NOTE ⚠	W2	27	7	STR.	14-10					14-10	400-6	818.60
	W3	21	7	A	10-11	1-6				16-4	343-0	701.09
	W4	28	7	STR.	6-0					6-0	168-0	343.4
	W5	18	6	STR.	11-0					11-0	198-0	297.40
	W6	12	7	STR.	5-0					5-0	60-0	122.64
	W7	48	7	B	10-10	7-10				26-6	1272-0	2599.97
	W8	40	7	B	13-9	2-0				17-9	710-0	1451.24
	W9	20	7	B	10-10	1-0				12-10	256-8	524.63
	W10	20	7	B	10-10	2-0				14-10	296-8	606.39
	W11	28	6	B	11-0	8-0				27-0	756-0	1135.51
	W12	21	6	B	11-0	6-0				23-0	483-0	725.43
	W13	72	6	A	11-8	2-0				13-8	984-00	1477.37
	W14	6	7	STR.	6-4					6-4	38.0	77.67
SEE NOTE ⚠	W15	6	7	STR.	11-1					15-0	90-0	184.0
	W16	7	6	A	7-10	6-0				13-10	96-10	145.44
	W17	7	6	STR.	6-6					6-6	45.6	68.34
	W18	64	7	STR.	8-0					8-0	512-0	1046.53
ROOF	R1	13	7	B	13-11	5-11				25-9	334-9	684.23
	R2	26	6	STR.	10-10					10-10	281.67	423.06
	R3	11	7	A	13-4	2-0				15-4	168-8	344.75
	R4	3	7	STR.	6-4					6-4	19-0	38.84
	R5	10	6	STR.	7-8					7-8	76-8	115.15
	R6	3	7	A	9-8	5-11				15-7	46.9	95.56
	R7	3	7	STR.	9-8					9-8	29-0	59.28
	R8	4	7	C	2-0	1-0½	0-4			5-0½	20-2	41.22
	R9	14	7	A	2-0	1-2				3-2	44-4	90.62
	R10	2	6	D	3-3	2-3			1-0	15-0	30-0	45.06
	R11	2	6	D	5-0	3-10			1-0	19-8	39-4	59.08
	R12	10	7	C	2-0	1-3¾	0-5			5-3¾	53-1½	108.53
	M1	64	7	STR	6-0					6-0	384-0	784.83
	M2	12	6	A	1-0	1-6				2-6	30-0	45.06
	TOTAL WEIGHT (LBS.)											18295

BAR SHAPES



AS BUILT

REFERENCES			REVISIONS		
DWG. No.	DESCRIPTION	DATE	No.	DESCRIPTION	DATE
4827-24	MAINLINE VALVE CHAMBER	FEB. 1976	1	AS BUILT ⚠	AUG., 1979.
4827-25	DITTO MECHANICAL DETAILS	" "			
4827-26	RE-BAR DETAILS	" "			
4827-27	" "	" "			
4827-28	" "	" "			

SURVEYED
DATE
DESIGNED R.R.
DRAWN G.H.R.
TRACED
CHECKED
DATE FEB. 1976

BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
WATER RESOURCES SERVICE
WATER INVESTIGATIONS BRANCH

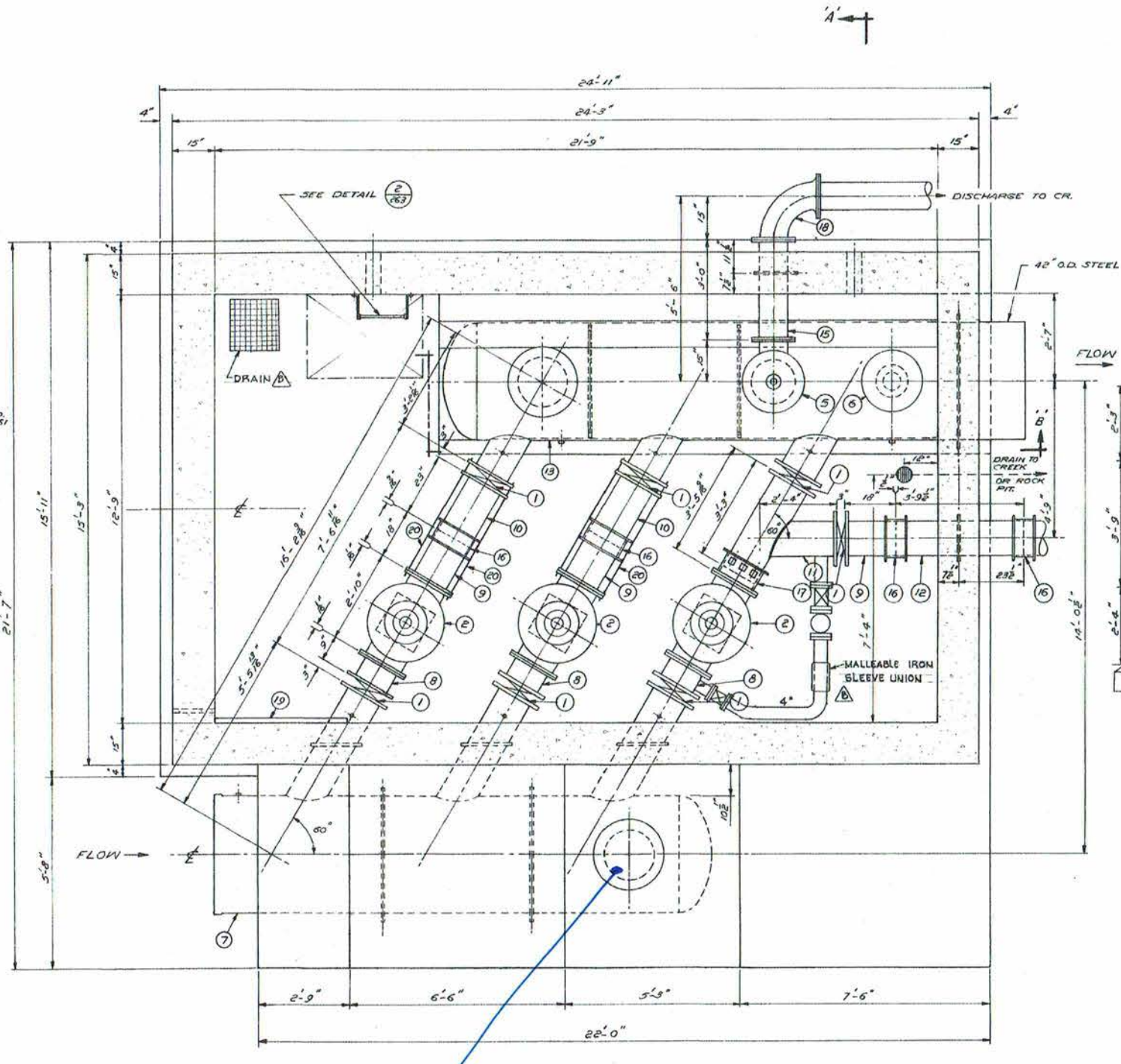
THE CORPORATION OF THE DISTRICT OF SUMMERLAND
A.R.D.A. PROJECT No. 89044
MAINLINE
MORROW AVE. VALVE CHAMBER
REINFORCING STEEL DETAILS
(STATION 62 + 38±)

ENGINEER R. Reid
APPROVED DIV. CHIEF

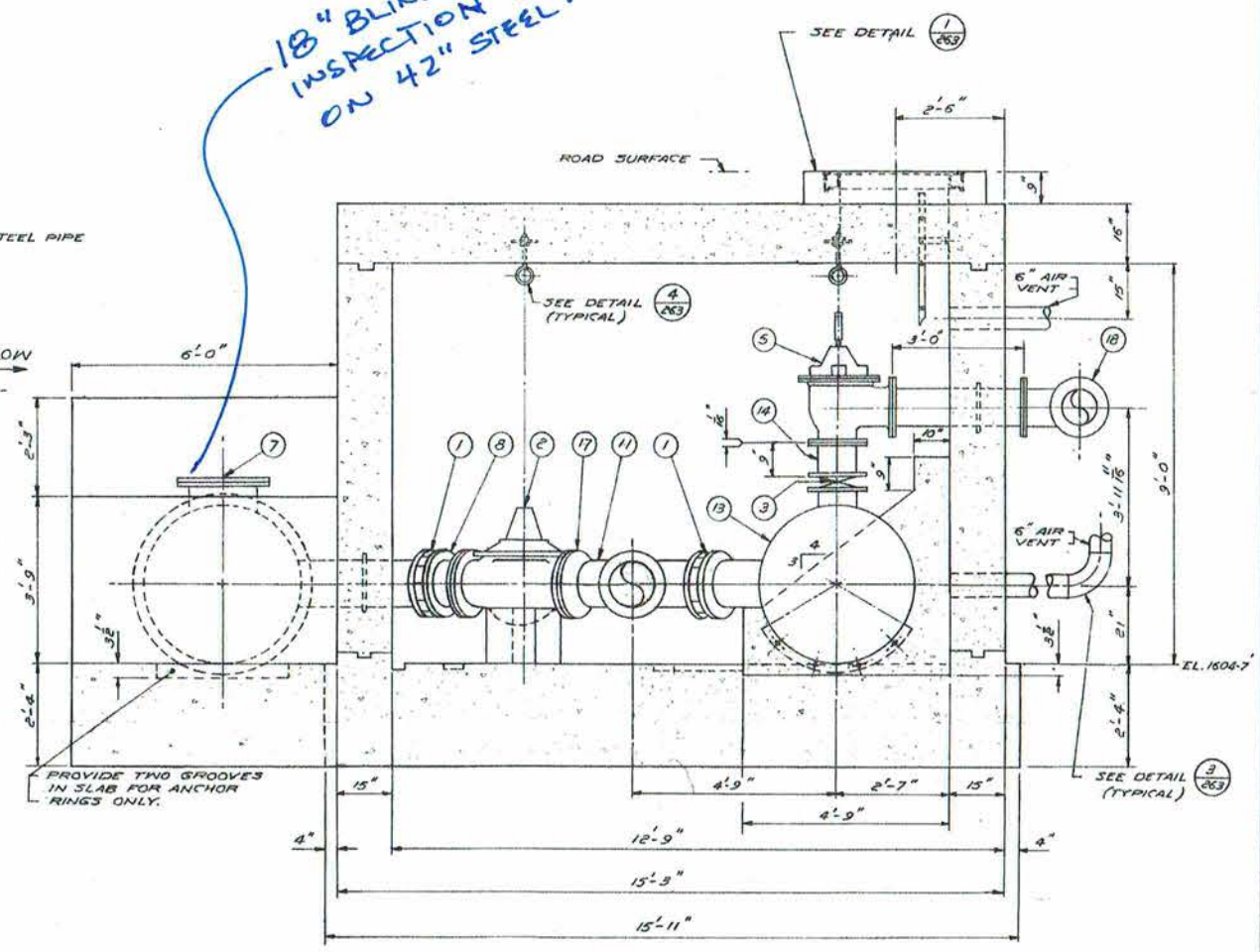
263 434
FILE No.
0242512 - 19
SCALE
as shown
DWG. No.
4827-28
SHEET
5 OF 5

D

18" BLIND FLANGE INSPECTION TEE ON 42" STEEL MAIN.



PLAN



SECTION A-A

18" BLIND FLANGE INSPECTION TEE

263538

REFERENCES			REVISIONS		
DWG. No.	DESCRIPTION	DATE	No.	DESCRIPTION	DATE
4827-261	STRUCTURAL & PIPING DETAILS.		A		Dec 21, 1977
4827-262	HYDRAULIC SENSING LINES DETAILS.		(B)	AS CONSTRUCTED	AUG. 7, 1979.
4827-263	STRUCTURAL DETAILS				
4827-264	SITE PLAN & MATERIAL LIST.				

SURVEYED DATE
DESIGNED N.J.M. J.K.
DRAWN N.F.A.
TRACED
CHECKED JR
DATE FEB. 1976.

BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
WATER RESOURCES SERVICE
WATER INVESTIGATIONS BRANCH

THE CORPORATION OF THE DISTRICT OF SUMMERLAND

A.R.D.A. PROJECT No. 890-46

PRESSURE REDUCING STATION No. 10

STRUCTURAL AND PIPING DETAILS

ENGINEER _____ APPROVED DIV. CHIEF _____

FILE No. 0242512 — 19
SCALE 1/2" = 1'-0"
DWG. No. 4827-260
SHEET OF

D

APPENDIX E
PIPE COATING TEST RESULTS

CERTIFICATE OF ANALYSIS

REPORTED TO ABK Restoration Services
103-197 Warren Avenue East
Penticton, BC V2A 8N8

TEL (250) 493-6623
FAX (250) 493-6603

ATTENTION	Jeff Dolan	**WORK ORDER**	6110663
PO NUMBER	P11972JD	**RECEIVED / TEMP**	2016-11-08 16:30 / NA
PROJECT	P11972JD	**REPORTED**	2016-11-09
PROJECT INFO	9215 Cedar Ave, Summerland	**COC NUMBER**	No Number

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Authorized By: **Ed Hoppe, B.Sc., P.Chem.**
Division Manager, Kelowna

If you have any questions or concerns, please contact your Account Manager:
Kristin McKeown (kmckeown@caro.ca)

ANALYSIS INFORMATION

REPORTED TO	ABK Restoration Services	**WORK ORDER**	6110663
PROJECT	P11972JD	**REPORTED**	2016-11-09

Analysis Description	Method Reference	Technique	Location
Asbestos in Bulk Materials in Solid	EPA 600/R-93/116	Polarized Light Microscopy (PLM)	Kelowna

Method Reference Descriptions:

EPA	United States Environmental Protection Agency Test Methods

Glossary of Terms:

MRL	Method Reporting Limit
<	Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences
%	Percent

SAMPLE ANALYTICAL DATA

REPORTED TO	ABK Restoration Services	**WORK ORDER**	6110663
PROJECT	P11972JD	**REPORTED**	2016-11-09

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: 1 - 1976 Steel Pipe Coating (6110663-01) [Solid] Sampled: 2016-11-08 00:00						
Polarized Light Microscopy Analysis						
Chrysotile Asbestos	**1 - 5 %**	0.5	%	2016-11-09	2016-11-09	
Non-Asbestos Fibres	**1 - 5 %**		%	2016-11-09	2016-11-09	
Non-Fibrous Materials	**90 - 95 %**		%	2016-11-09	2016-11-09	