



REQUEST FOR TENDER 19-039

Chase River Forcemain No. 1 Replacement and Pump Station Upgrades

Addendum 1

Issued: May 27, 2019

Closing Date & Time: before 3:00 PM (15:00 hrs) Pacific Time on June 6, 2019

This addendum shall be read in conjunction with and considered as an integral part of the Request for Tender. Revisions supersede the information contained in the original Tender or previously issued Addendum. No consideration will be allowed for any extras due to any Vendor not being familiar with the contents of this Addendum. All other terms and conditions remain the same.

Contents:

- 1. List of attendees of the Pre-Tender Meeting**
- 2. Question and Answer Log**
- 3. Updated Schedule of Materials**
- 4. Additional Reference Drawings**
- 5. Construction Schedule**
- 6. Traffic Management**

1. Pre-Tender Site Meeting Attendees
 - a. Stone Pacific
 - b. Milestone Contracting
 - c. IWC
 - d. Knappett

2. The Current Question and Answer Log is attached in Appendix A. All questions are to e received by end of business on May 30, 2019 for final release in an addendum on June 3, 2019.

3. The Updated schedule of materials is attached in Appendix B.

4. Additional reference drawings are included in Appendix C.

5. Construction Schedule.
 - a. The required completion milestone schedule for the Chase River Forcemain No. 1 Replacement and Pump Station Upgrade Project has been adjusted as follows:
 - b. Installation, commissioning and handover to RDN operations of the new 650mm Diameter Forcemain – no later than October 31, 2019
 - c. Installation and handover of the 200mm Watermain and paving and upgrades to Haliburton Street – no later than May 31, 2020

The contractor is responsible and to be diligent in maintaining the temporary restoration of the road surfaces over the winter given the truck traffic the road sees. It may be advisable to do a temporary hot mix patch on the forcemain trench before the paving plant closes at in the fall.

6. Traffic Management
 - a. Traffic management during construction is the responsibility of the contactor.
 - b. The City will not allow a complete road closure for the duration of the project. However, the city will allow temporary road closures where keeping the road open during construction would be impractical.
 - c. A one week notice period in advance of road closures will be required.
 - d. The road will need to be open and accessible after each shift and for weekends. At other times a 'soft closure' can be implemented which means local traffic only, however at these the truck traffic from the mill will be considered 'local traffic'.

Tender Clarification Log

Project Number: 19-039
Project Name: Chase River Forcemain No.1 Replacement and Pump Station Upgrade
Date:

Item No.	Date Initiated	Description	Response	Date Responded	Status
1	14-May-19	Regarding the 200mm C900 PVC watermain.. Drawings say DR14, Schedule of quantities say DR18. Can you please clarify?	DR14	15-May-19	Schedule of Quantities to be updated for Addendum 1
2	14-May-19	If the Mainline is to be C900 DR14 PVC, do the Hydrant Leads also need to be C900 DR14 PVC?	Yes	15-May-19	Closed
3	14-May-19	Pay Item 5.3 – Do all Hub Fittings & Gate Valves require restraints? If so, I believe the quantity should be: 62	Only thrust blocks are required and accounted for in Item 5.2/5.4. Additional restraint qty removed.	15-May-19	Schedule of Quantities to be updated for Addendum 1
4	14-May-19	I believe we are missing a pay item for the 200mm FxFxF Tee at Sta. 0+320	Yes, to be added	15-May-19	Schedule of Quantities to be updated for Addendum 1
5	14-May-19	Pay Item 5.4 (200mm HxF Gate Valves) – I believe this should be a quantity of 15.	Yes, to be increased to 15.	15-May-19	Schedule of Quantities to be updated for Addendum 1
6	14-May-19	Pay Item 5.8 – Drawing Notes state 25mm Services. Schedule of Quantities ask for 50mm. Please clarify	25 mm	15-May-19	Schedule of Quantities to be updated for Addendum 1
7	14-May-19	As 26" (650mm) HDPE Pipe is not a "Standard" size. Is there a chance we can look at 24" HDPE pipe? Fittings & Pipe are very hard to source for this 26" size as well. I've attached flow charts for your reference above.	24" HDPE (550 mm ID) is acceptable for the required PWWF of 540 L/s – velocity would be 2.3m/s, which is below the recommended 3 m/s. With 4 pumps in operation the pumps station discharge flowrate can reach 750 L/s increasing the velocity slightly above the recommended 3 m/s to 3.2 m/s which is why the larger size was selected. However current flowrates do not indicate the 750 L/s is encountered by the pump station. 24in provided as alternative option in provisional items.	15-May-19	Schedule of Quantities to be updated for Addendum 1
8	14-May-19	Do you have a recommended Filter Cloth Specification for the Decommissioning of the Following: Blowdown Chambers, Air Release Chambers & Existing Manholes?	permeable, nonwoven, permanent textile for separation of 2 materials. •Apparent Opening Size – 70 us sieves (212 µm) •Tensile Strength – 100 lbs Properties similar to attached TEXEL040C or equivalent.	15-May-19	Closed
9	14-May-19	What pay item should the Decommissioning of existing Manholes be paid under?	Item 6.4	15-May-19	Closed
10	14-May-19	Is a Link Seal Application required pay item 6.3?	Yes	15-May-19	Closed
11	14-May-19	For the Saddles required on the Air Valve & Blowdown Chambers.. Would Electro Fusion Saddle be acceptable? If not, What type of saddle is required here?	Electrofusion is acceptable.	15-May-19	Closed
12	14-May-19	The Contract Drawings ask for a 2200mm Precast Manhole for the Air Valve Chambers. However, Pre-Casters do not make 2200mm Manholes. Can you please confirm?	Use next size standard manhole (i.e., 2,400mm).	15-May-19	IFC Drawings to be updated .
13	14-May-19	The Drain Pipes for the Air Valve & Blowdown Chamber ask for a Sanitary DR18 Pipe. As DR18 references "Blue Water Pipe" is this correct? Would a SDR PVC DR28 work?	DR28 is acceptable.	15-May-19	IFC Drawings to be updated .
14	14-May-19	The S/S Spool inside the Blowdown Manhole.. Can this be made into two pieces with a Flange Connection on the Vertical 90*?	Yes	15-May-19	Closed
15	14-May-19	On the Plan View of the Blowdown chamber you show a Valve located inside the Manhole. Please confirm this is needed as it's not shown on the Section view.	No valve inside the manhole. The section view is correct.	15-May-19	IFC Drawings to be updated .
16	14-May-19	I do not see a specification for the Pipe Casing Spacers. Can you please provide?	Spacers sized to center and support the HDPE pipe within the casing. Steel spacers with EPDM liner or polyethylene spacers are acceptable. Spacers shall not damage the pipe during installation.	15-May-19	Closed
17	19-May-19	The watermain depth from sta 0+300 to 0+360 approaches 2.5m cover. Is there an overriding factor that governs this? I think that the depth could be pulled up significantly and still provide clearance to the other utilities being crossed. If nothing else, the new hydrant lead should be stepped up so that we can install the nominal 1.4m bury hydrant that is common practice.	Contractor can provide alternative bid to decrease depth of cover and install an additional air valve chamber as per CON STD TYP DWG W-4 at high point.	21-May-19	Closed

18	19-May-19	Regarding the 150mm AC watermain on Haliburton, north of sta 0+480. Does all of 150mm AC main need to be removed, or just whatever conflicts with the new 200mm C900 installation? There are some areas where the existing AC and the new alignment are more than 1.5m apart. Is it the intent to follow the existing AC alignment with the new main, or follow the new alignment indicated? If we have to "chase" the AC main and remove it, that becomes an entirely issue	Remove where conflicts with the new 200mm installation. Plug and cap all abandoned sections.	21-May-19	Closed
19	19-May-19	I come up with a total of 962LM of 200mm Watermain. There is 17 Lm in the crossing to connect at Chase River Road. Is that in your totals?	17m has been added to Schedule of Quantities.	21-May-19	Schedule of Quantities to be updated for Addendum 1
20	19-May-19	All 9ea of the 200Hx200Hx150F tees are really 200Hx200Fx150F tees, if you look at the drawings.	Correct.	21-May-19	Schedule of Quantities to be updated for Addendum 1
21	19-May-19	In regards to hydrant assemblies and 150mm gate valves. You reference section 5.74 in the Hydrant Assemblies item. This section is not included in the supplementary specifications. The SECTION 5 in the Supplementary specifications ends at 5.63 If you are deferring to the C.O.N., please be advised that the Hydrant Assembly payment includes the 150mm gate valve at the mainline tee. But you have all 10ea hydrant gate valves listed for separate payment.	Section 5.74 included in Section 5 Water Distribution Measurement and Payment. Valves to be removed from the Schedule of Quantities.	21-May-19	Schedule of Quantities to be updated for Addendum 1
22	19-May-19	There are at least 4 Hydro/Telus poles along the watermain installation from Chase River Road to Haliburton, that will require pole holds while the construction moves past them. One is noted in Item 3.1a), as requiring relocation of the support anchors. Which it does. But, it will also require that the pole be held by a certified company while we work past it. This isn't an insignificant cost any more. Would you consider creating a tender item to deal with this cost? Failing that please make the other bidders aware of this .	Support of existing poles added as separate line item to 3.1 (c) and Section 3 Measurement and Payment updated to outline requirements.	21-May-19	Schedule of Quantities to be updated for Addendum 1
23	19-May-19	I can only find 3ea watermain tie-ins, not the 4 in tender item 5.7. -Sta 0+000 on Island Hwy -Sta 0+320 @ Chase River Road -Sta 0+945 Haliburton. This one is actually to 200 PVC	Connection at 0.012.	21-May-19	Closed
24	19-May-19	The WATERMAIN NOTES on drawing GNINT-152 indicate that water services will be 25mm Poly. The Schedule of Quantities indicates only 50mm connections and 50mm poly pipe. Could you confirm that all new services will be 50mm connections?	Service connections to be 25mm.	21-May-19	Schedule of Quantities to be updated.
25	21-May-19	If you are mirroring a C.O.N. tender format, would you consider including an item for Import Trench Fill? That is standard operating procedure for City contracts. Trench import is paid for by the tonne.	All backfill is to be imported material and/or controlled density fill therefore price is to be included in Item 5.1 & 6.1.	22-May-19	Closed
26	21-May-19	Regarding item 4.1 temporary Surface restoration along Haliburton St , is this to include the cost of Cold Mix? Item 4.75 mentions "... and materials necessary to restore and maintain the traveled surface, as directed by the Engineer, using the materials as shown on the Tender Form." There are no specific materials mentioned on the tender form.	Yes to include cost of cold mix. Temporary restoration to be completed in compliance with Section 4 - Trench Excavation, Bedding and Backfill Specifications and Instatiion Section 4.28.4	22-May-19	Closed
27	21-May-19	It would appear that tender item 3.3 and 3.6 are connected. Is item 3.3 being used to cover the cost of delivering the salvaged items in 3.6 to the City yard?	Correct.	22-May-19	Closed

28	23-May-19	<p>Could you please provide some clarification regarding the above ground valve & meter enclosure?</p> <p>Based on the foundation design, we assume that a Self-Framing Building is required; however, section 13 34 23 does not define acceptable manufactures for the self-framing buildings.</p> <p>We would like to confirm that either one of the following is acceptable:</p> <ul style="list-style-type: none"> oAlmac Metal Industries - http://www.almacmetal.com/self_framing.html oStraight-Up Metal Buildings - VIPRE Business Agent Anti-phishing removed a known bad URL from your email message. It was deleted or quarantined and replaced with this message. 	Acceptable manufactures are listed in 13 34 23 Section 2.1.1. The manufacturers suggested appear to be equivalent and are acceptable as long as they can meet the specification requirements.	24-May-19	Closed
29		<p>1.Section 13 34 23, provision 1.1.1, states that the enclosure shall be removable in one piece and include lifting lugs and visible weight tag. A spreader bar shall not be required for the safe removal of the structure note that a steel skid base would need to be fabricated and become part of the enclosure, and that the current foundation design does not include a foundation prepared for a steel skid base. Please confirm that provision 1.1.1 does not apply to this project.</p>	Due to the large doors a steel skid base was not used for the design. The building is to be a rigid design with adequate lifting points to avoid the need for a spreader bar. A removable roof that allows complete access for the purpose of replacing piping is also acceptable	24-May-19	Closed
30	23-May-19	<p>Drawing CRPS-C-117-002 specifies Vicwest cladding note that a self-framing building uses the cladding system for its structural design, and that the cladding will be supplied by the building manufacturer. Please confirm that Vicwest cladding is not required for this project.</p>	Vicwest cladding is preferred, approved equivalent is also acceptable.	24-May-19	Closed
31	23-May-19	<p>3.Does the building require insulation? If so, please provide insulation values.</p>	Not Insulated	24-May-19	Closed
32	24-May-19	<p>Is RPVC Conduit acceptable at the pmp station as this is what is currently used on the site</p>	yes	24-May-19	closed

CHASE RIVER FORCEMAIN NO. 1 AND PUMP STATION UPGRADES
SCHEDULE OF QUANTITIES AND PRICES - PROVISIONAL ITEMS - ADDENDUM 1

Item	Description	Est.Qty.	Units	Unit Price	Total
Section 3 General Requirements					
P3.1	Grouting Existing Pipe (Section 3.77)				
	Grouting, 200mm Dia AC	100	m		
	Grouting, 150mm Dia AC	100	m		
Total Section 3 Provisional					
Section 4 Trench Excavation, Bedding and Backfill					
P4.1	Authorized Hand Excavation (Section 4.70)	100	m ³		
P4.2	Trench Rock Excavation (Section 4.71)				
	a) Volume	50	m ³		
P4.3	Over excavation (Section 4.72)	200	tonne		
P4.4	Additional Concrete and Controlled Density Fill (Section 4.73)	100	m ³		
P4.5	Trench Dams	2	ea		
Total Section 4 Provisional					
Section 6 Sanitary Sewer System					
P6.1	<u>Piping (Section 6.70)</u>				
	600mm dia. HDPE DR21 Forcemain	1031	m		
P6.2	<u>Fittings (Section 6.70)</u>				
	600 HDPE 45 Degree Fused Bends	4	ea		
Total Section 6 Provisional					

CHASE RIVER FORCEMAIN NO. 1 AND PUMP STATION UPGRADES
SCHEDULE OF QUANTITIES AND PRICES - PROVISIONAL ITEMS - ADDENDUM 1

Item	Description	Est.Qty.	Units	Unit Price	Total
Section 7 Storm Sewer System					
P7.1	<u>Piping and Fittings (Section 7.70)</u> a) 250mm dia. PVC DR35 (CB lead)	10	m	_____	_____
P7.2	Precast Manhole Sections (Section 7.71) a) 1200mm dia.	1	vm	_____	_____
P7.3	<u>Catch Basins (Section 7.72)</u> a) Catch Basin (SW-1) b) Adjust and Reinstate Existing Lawn Catch Basin	2 2	ea ea	_____ _____	_____ _____
P7.4	Manhole Frames and Covers (Section 7.73) a) 1050mm dia. a) 1200mm dia.	2 2	ea ea	_____ _____	_____ _____
P7.5	Service Connection Pipe (Section 7.74) a) 100mm dia. PVC DR35	20	m	_____	_____
P7.6	Service Connection Inspection Assembly (Section 7.75) a) Reinstate Service Connection Inspection Assembly	2	ea	_____	_____
Total Section 7 Provisional					
Section 9 Streets					
P9.1	Rock Excavation (Section 9.71)	50	m3	_____	_____
P9.2	Over Excavation (Section 9.72)	100	tonne	_____	_____
Total Section 9 Provisional					
Section 10 Roadway Lighting					
P10.1	Conduit and Wiring (Section 10.90) a) Conduit and Wiring to Replace Existing	100	m	_____	_____
P10.2	Junction Boxes (Section 10.92) a) New Junction Boxes	7	ea	_____	_____
Total Section 10 Provisional					
SUMMARY - PROVISIONAL					
SECTION 3 PROVISIONAL	GENERAL REQUIREMENTS			_____	_____
SECTION 4 PROVISIONAL	TRENCH EXCAVATION, BEDDING AND BACKFILL			_____	_____
SECTION 6 PROVISIONAL	SANITARY SEWER SYSTEM			_____	_____
SECTION 7 PROVISIONAL	STORM SEWER SYSTEM			_____	_____
SECTION 9 PROVISIONAL	STREETS			_____	_____
SECTION 10 PROVISIONAL	ROADWAY LIGHTING AND TRAFFIC SIGNALS			_____	_____
TOTAL ALL PROVISIONAL SECTIONS				_____	_____
GST				_____	_____
TOTAL PROVISIONAL				_____	_____

CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES
SCHEDULE OF QUANTITIES AND PRICES

Item	Description	Est.Qty.	Units	Unit Price	Total
Section 1 Supplemental Specifications					
1.1	Location of Works (Section 1.04)	1	lump sum	_____	_____
Total Section 1					
Section 3 General Requirements					
<u>3.1 Existing Structures and Utility Works (Section 3.70)</u>					
a)	Relocation of Support Anchors for BC Hydro/Telus Poles	1	ea	_____	_____
b)	Support Existing Piping 150mm - 200 mm dia.	7	ea	_____	_____
<u>3.2 Clearing and Grubbing (Section 3.71)</u>					
3.2		1	lump sum	_____	_____
<u>3.3 Salvaged Materials (Section 3.72)</u>					
3.3		1	lump sum	_____	_____
<u>3.4 Control of Public Traffic (Section 3.73)</u>					
3.4		1	lump sum	_____	_____
<u>3.5 Removal of Existing Pipe (Section 3.74)</u>					
	450mm dia. DI Pipe and Dispose Offsite	840	m	_____	_____
	150mm dia. AC Pipe and Dispose Offsite	465	m	_____	_____
	200mm dia. AC Pipe and Dispose Offsite	10	m	_____	_____
<u>3.6 Removal of Existing Structures (Section 3.75)</u>					
	Hydrants	6	ea	_____	_____
	Manholes incl. valve, meter, & fittings	2	ea	_____	_____
	Valves	3	ea	_____	_____
	Catch Basins	4	ea	_____	_____
<u>3.7 Plug/Cap Existing Pipe (Section 3.76)</u>					
	Concrete cap, 150mm Dia	2	ea	_____	_____
	Concrete cap, 200mm Dia	2	ea	_____	_____
	Concrete cap, 450mm Dia	4	ea	_____	_____
<u>3.8 Grouting Existing Pipe (Section 3.77)</u>					
	Grouting, 450mm Dia DI	66	m	_____	_____
Total Section 3					
Section 4 Trench Excavation, Bedding and Backfill					
<u>4.1 Surface Restoration (Section 4.75)</u>					
UNTRAVELLED					
	Top Soil & Seed	239	m2	_____	_____
TRAVELLED					
	Surface Restoration	635	m2	_____	_____
	Temporary Surface Restoration along Haliburton St.	1467	m2	_____	_____
Total Section 4					

**CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES
SCHEDULE OF QUANTITIES AND PRICES**

Item	Description	Est.Qty.	Units	Unit Price	Total
Section 5 Water Distribution System					
5.1	<u>Water Main Pipe (Section 5.70)</u> 200mm dia. PVC DR18	945	m	_____	_____
5.2	<u>Water Main Fittings (Section 5.71)</u> <u>BENDS</u>				
	200H x 200H 5 Degree	18	ea	_____	_____
	200H x 200H 11.25 Degree	7	ea	_____	_____
	200H x 200H 22.5 Degree	4	ea	_____	_____
	200H x 200H 45 Degree	2	ea	_____	_____
	<u>TEES</u>				
	200H x 200H x 150F	9	ea	_____	_____
	200H x 200H x 200F	1	ea	_____	_____
	200F X 200F X 150F	1	ea	_____	_____
5.3	<u>Flange Adaptors and Joint Restraints (Section 5.72)</u> 200mm Joint Restraint	42	ea	_____	_____
5.4	<u>Water Main Gate Valve (Section 5.73)</u> 150F x 150H 200F x 200H	10 12	ea ea	_____ _____	_____ _____
5.5	Hydrant Assemblies (Section 5.74)	10	ea	_____	_____
5.6	<u>Air Valves and Fittings (Section 5.75)</u> 25mm Air Valve	1	ea	_____	_____
5.7	<u>Connection to Existing Main Piping (5.76)</u> 200mm dia. AC	4	ea	_____	_____
5.8	<u>Connections to Existing Services (Section 5.76A)</u> 50mm PE to 20 dia incl. reducer	34	ea	_____	_____
5.9	<u>Service Connection Pipe (Section 5.77)</u> 50mm dia Polyethylene Tubing as per DWG W-1	340	m	_____	_____
5.10	Corporation Stops & Saddles (5.78)	34	ea	_____	_____
5.11	Curb Stops (5.79)	34	ea	_____	_____
5.12	Meter Service Boxes, Box Extensions, and Lids (Section 5.80)	34	ea	_____	_____
5.14	Touch Read Meters (Section 5.81 - Installation Only - City Supplied)	28	ea	_____	_____
5.15	Wrap Water Main Joints Near Sanitary and Storm Sewers (Section 5.82)	90	ea	_____	_____
5.16	Temporary Overland Service (Section 5.83)	1	lump	_____	_____
Total Section 5					

**CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES
SCHEDULE OF QUANTITIES AND PRICES**

Item	Description	Est.Qty.	Units	Unit Price	Total
Section 6 Sanitary Sewer System					
6.1	<u>Piping (Section 6.70)</u> 650mm dia. HDPE DR21 Forcemain	1031	m	_____	_____
6.2	<u>Fittings (Section 6.70)</u> 650 HDPE 45 Degree Fused Bends	4	ea	_____	_____
6.3	Rebench Existing Manholes (Section 6.72)	1	ea	_____	_____
6.4	Abandon Existing Air Release/Blowdown Chamber (in-place) (Section 6.73)	2	ea	_____	_____
6.5	Air Release Valve c/w Chamber (Section 6.74)	2	ea	_____	_____
6.6	Blowdown c/w Chamber (Section 6.75)	2	ea	_____	_____
6.7	Chase River Crossing (Section 6.76)	1	lump sum	_____	_____
Total Section 6					
Section 7 Storm Sewer System					
7.1	<u>Piping and Fittings (Section 7.70)</u> a) 200mm dia. PVC DR35 (CB lead)	20	m	_____	_____
7.2	Precast Manhole Sections (Section 7.71) a) 1050mm dia.	1	vm	_____	_____
7.3	<u>Catch Basins (Section 7.72)</u> a) Shallow Catch Basin (SW-2)	3	ea	_____	_____
	b) Relocate Existing Catch Basin	6	ea	_____	_____
	c) Adjust and Reinstate Existing Catch Basin (SW-1)	1	ea	_____	_____
Total Section 7					
Section 8 Curbs and Sidewalks					
8.1	<u>Curbs (Section 8.70)</u> Non-Mountable Curb and Gutter, "CS-1" Concrete "CS-4A"	1150 20	m m	_____ _____	_____ _____
8.2	<u>Cutting and Removal of existing Sidewalk (Section 8.71)</u> a) Cutting	2	m	_____	_____
	b) Removal	940	m2	_____	_____
Total Section 8					

CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES
SCHEDULE OF QUANTITIES AND PRICES

Item	Description	Est.Qty.	Units	Unit Price	Total
Section 9 Streets					
9.1	<u>Stripping and Common Excavation (Section 9.70)</u>				
	a) Common Excavation	530	m3		
	b) Offsite Disposal of Surplus Material	490	m3		
9.2	<u>Sub-grade Preparation (Section 9.73)</u>				
	a) Road	4270	m2		
	b) Curb & Sidewalk	2800	m2		
9.3	Sub-base (Section 9.74)	2890	tonne		
9.4	<u>Base Course (Section 9.75)</u>				
	Road, Curb, Sidewalk and Driveways	2280	tonne		
9.5	<u>Traffic Signs (Section 9.78)</u>				
	a) Reinstate Existing Signs (Single or Multiple Signs on Single Post)	11	ea		
	b) Install New Sign	10	ea		
9.6	Reinstate Street Markings, thermoplastic (Section 9.79)	1	lump sum		
Total Section 9					
Section 10 Roadway Lighting					
10.1	Poles and Luminaires (Section 10.91)				
	a) Street Light Base Extension	3	ea		
10.2	Junction Boxes (Section 10.92)				
	a) Adjust Existing Junction Boxes	7	ea		
Total Section 10					
Section 12 Asphalt Concrete Paving					
12.1	Cutting of Existing Asphalt Pavement (Section 12.70)	170	m		
12.2	<u>Removal of Existing Pavement (Section 12.71)</u>				
	a) Excavation and Dispose	5110	m2		
	b) Grinding (50mm)	510	m2		
12.3	<u>Adjustment of Services (Section 12.72)</u>				
	a) Manholes	2	ea		
	b) Manhole in Curb	2	ea		
12.4	Tack Coat (Section 12.73)	4120	m2		
12.5	<u>Asphaltic Concrete (Section 12.74)</u>				
	a) 50mm Asphalt Sidewalk	2020	m2		
	b) 75mm Thick Road Pavement	4120	m2		
	c) 50mm Thick (Driveways)	130	m2		
	d) 75mm Thick (Driveways)	70	m2		
Total Section 12					

**CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES
SCHEDULE OF QUANTITIES AND PRICES**

Item	Description	Est.Qty.	Units	Unit Price	Total
Section 15 Valve and Metering Enclosure (Division 13 & 40)					
15.1	Valve Chamber Demolition	1	lump sum	_____	_____
15.2	Pre-Fabricated Enclosure	1	lump sum	_____	_____
15.3	Enclosure Foundation and Surface Finishing	1	lump sum	_____	_____
15.4	Pipe, Valve, Fittings, and Instrumentation	1	lump sum	_____	_____
15.5	Retaining Wall	1	lump sum	_____	_____
15.6	Bollards	7	ea	_____	_____
15.7	Fencing	2.5	m	_____	_____
Total Section 15				_____	_____
SUMMARY					
SECTION 1	SUPPLEMENTAL SPECIFICATIONS			_____	
SECTION 3	GENERAL REQUIREMENTS			_____	
SECTION 4	TRENCH EXCAVATION, BEDDING AND BACKFILL			_____	
SECTION 5	WATER DISTRIBUTION SYSTEM			_____	
SECTION 6	SANITARY SEWER SYSTEM			_____	
SECTION 7	STORM SEWER SYSTEM			_____	
SECTION 8	CURBS AND SIDEWALKS			_____	
SECTION 9	STREETS			_____	
SECTION 10	ROADWAY LIGHTING AND TRAFFIC SIGNALS			_____	
SECTION 12	ASPHALT CONCRETE PAVING			_____	
SECTION 15	VALVE & METERING ENCLOSURE			_____	
TOTAL ALL SECTIONS				_____	
GST				_____	
TOTAL				_____	

SECTION 4 - TRENCH EXCAVATION, BEDDING AND BACKFILL

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENTS

Authorized Hand Excavation	4.70
Trench Rock Excavation	4.71
Over excavation and Placement of Base Gravel Material	4.72
Additional Concrete and Controlled Density Fill	4.73
Trench Dams	4.74
Surface Restoration	4.75
Imported Granular Fill	4.76

SECTION 4 - TRENCH EXCAVATION, BEDDING AND BACKFILL

MEASUREMENT AND PAYMENT

4.70 **AUTHORIZED HAND EXCAVATION** Section 4.09

Payment for authorized hand excavation will be made at the unit price per cubic metre if shown in the Tender Form and will be based on the trench depth. This price shall include supply of materials, hand excavation, hand backfilling, and all work incidental thereto.

4.71 **TRENCH ROCK EXCAVATION** Section 4.07B

Payment for trench rock excavation will be made as shown in the Tender Form:

(a) **By Volume Measurement:**

Payment will be made for excavation of single boulders, pieces of concrete, or masonry having individual volumes exceeding one cubic metre in volume.

Measurement for trench rock excavation will be calculated based on:

1. The depth from the top of the rock surface to 150 mm below the bottom of the pipe barrel.
2. The maximum allowable trench dimensions as per T-1, or for common trenches, as per T-2.
3. The length measured horizontally along the centre line of the trench.
4. Cross sectional measurements will be made at 3 m intervals or as required.
5. In the event that the average rock width is less than 600 mm in any 3 m interval, payment will be based on a 600 mm minimum rock width.

This price shall include excavation, disposal of rock, and all work incidental thereto.

4.72 **OVEREXCAVATION AND PLACEMENT OF BASE GRAVEL MATERIAL**

Section 4.07B (d) (e) and 4.14

Payment for authorized overexcavation and placement of base gravel material or other material specified will be made at the unit price per tonne of material placed as shown in the Tender Form. This price shall include supply of materials, overexcavation and disposal of the unsuitable material, placement and compaction of the specified base gravel material, special bracing and sheeting as may be required, and all work incidental thereto. Payment for this work will only be made when, in the opinion of the Engineer, it is necessitated by the natural existence of unsatisfactory soil conditions. No payment will be made for unauthorized over excavation which has resulted from acts, neglects, or delays of the Contractor.

4.73 **ADDITIONAL CONCRETE AND CONTROLLED DENSITY FILL**

- (a) Concrete Fill Section 4.21 - Standard Drawing T-5 and T-6
- (b) Controlled Density Fill - Section 4.24 - Standard Drawing T-3

Payment for additional concrete or controlled density fill for pipe base, encasement, or backfill in the trench will be made at the unit price per cubic metre shown in the Tender Form. Measurement will be

SECTION 4 - TRENCH EXCAVATION, BEDDING AND BACKFILL

MEASUREMENT AND PAYMENT

based on the design dimensions of the concrete placed. This price shall include supply of materials, concrete work, form work, curing and protection and all work incidental thereto.

4.74 **TRENCH DAMS** Section 4.18 Standard Drawing T-8

Payment for trench dams will be made at the unit price per trench dam shown in the Tender Form. This price shall include supply of materials, installation and all work incidental thereto.

4.75 **SURFACE RESTORATION** Section 4.27, 4.28 & 4.29

Payment for surface restoration will be made at the price per square metre as shown on the Tender Form for the various types of surface restoration. The permanent traveled area surface restoration for Haliburton Street will be completed under other sections as part of the road restoration.

- a) For surface restoration of untraveled areas, (boulevards, rights-of-way and private property), price shall include all labour, equipment and materials necessary to restore untraveled areas, to a condition equal to or better than existed prior to construction and in accordance with the specifications and drawings.
- b) For surface restoration of traveled areas, (roads, shoulders, driveways, sidewalks, curbs and walkways), price shall include all labour, equipment and materials necessary to restore the traveled areas, to a condition equal to or better than existed prior to construction and in accordance with the specifications and drawings. **This price shall include surface cutting and removal, supply and installation of gravel materials, and restoration of the travelled surface.**
- c) For temporary surface restoration of traveled areas, (roads, driveways, sidewalks, curbs and walkways), price shall include all labour, equipment and materials necessary to restore and maintain the traveled surface, as directed by the Engineer, using the materials as shown on the Tender Form.

Tender quantities are based on the allowable trench width limits as shown on Standard Drawings T-1 or T-2. Surface restoration beyond these limits will be at the Contractor's expense where the Contractor employs methods that damage areas beyond these limits without prior authorization from the Engineer.

4.76 **IMPORTED GRANULAR FILL** Section 4.20

Payment for imported granular fill will be made at the price per cubic metre or tonne as shown in the tender form (conversion of tonnes to cubic metres compacted will be 2.43 tonnes/cubic meter). This price shall include supplying, loading, hauling, placing, compacting imported granular material, disposal of excavated material and all work incidental thereto. Payment by weight will be based on weigh certificates for material actually incorporated into the work unless otherwise approved by the Engineer.

Tender quantities are based on the allowable trench width limits as shown on Standard Drawings T-1 or T-2, with allowances for site soil conditions. Placement of import granular fill beyond these limits will be at the Contractor's expense where the Contractor employs methods that excavate beyond these limits without prior authorization from the Engineer.

SECTION 5 - WATER DISTRIBUTION SYSTEM

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENT

Water Main Pipe	5.70
Water Main Fittings	5.71
Flange Adaptors and Joint Restraints	5.72
Water Main Gate Valves	5.73
Hydrants Assemblies	5.74
Air Valves and Fittings	5.75
Connection to Existing Main Piping	5.76
Connections to Existing Services	5.76A
Service Connection Pipe	5.77
Corporation Stops and Saddles	5.78
Curb Stops	5.79
Meter Service Boxes, Box Extensions, and Lids	5.80
Touch Read Meters	5.81
Wrap Watermain Joints	5.82
Temporary Overland Service	5.83

SECTION 5 - WATER DISTRIBUTION SYSTEM

MEASUREMENT AND PAYMENT

The Contractor will note that the tendered price for all items specified in this section will include but not be limited to the following: Please refer to Section 4 – Trench Excavation, Bedding and Backfill for further clarification of these items.

- (a) materials
- (b) excavation
- (c) dewatering
- (d) bracing & sheeting
- (e) bedding
- (f) pipe installation
- ~~(g) backfill with imported material and/or controlled density fill native fill~~
- (h) maintenance

The Contractor will note that payment for surface restoration and asphalt removal is paid in accordance with Section 4.75.

5.70 **PIPE** Section 5.43

Payment for water main pipe will be made at the unit price per linear metre shown in the Tender Form for the various sizes and class of pipe. Measurement will be made horizontally along the centreline of the installed pipe including fittings. This price shall include materials, excavation, dewatering, bracing & sheeting, bedding, pipe installation, ~~backfill with imported material and/or controlled density fill~~, and maintenance, test points and testing as specified, and all work incidental thereto except those items for which payment is specified additional to that for piping.

5.71 **FITTINGS** Section 5.48

Payment for fittings will be made at the unit price per fitting shown in the Tender Form. This price shall include supply of materials, installation of the fitting, thrust blocking, and all work incidental thereto. Payment will be in addition to that of 5.70.

5.72 **FLANGE ADAPTORS AND JOINT RESTRAINTS** Section 5.47

Where noted on the Drawings or specifically requested by the Engineer, payment for flange adaptors and joint restraints shall be made at the unit prices shown in the Tender Form. This price shall include supply of materials, bolts, installation, and all work incidental thereto. Payment will be in addition to that of 5.70.

5.73 **GATE VALVES** Section 5.50 Standard Drawing W-16

Payment for valves will be made at the unit prices shown in the Tender Form for gate valves. This price shall include supply of materials, installation of the valve and valve box, valve hood, riser pipe, asphalt apron, valve marker and thrust blocking if required, and all work incidental thereto. Payment will be in addition to that of 5.70.

SECTION 5 - WATER DISTRIBUTION SYSTEM

MEASUREMENT AND PAYMENT

5.74 HYDRANT ASSEMBLIES Section 5.52.1, 5.52.2, 5.52.3 Standard Drawings W-5

Payment for hydrant assemblies will be made at the unit price shown in the Tender Form as follows:

- a) Hydrant Assemblies
This price shall include supply of materials, installation of the hydrant, hydrant lead, valve, valve box riser pipe, tie rods, drain rock, and all work incidental thereto. Payment will be in addition to that of 5.70.

5.75 AIR VALVES AND FITTINGS Section 5.54 Standard Drawing W4

Air valves and fittings will be paid for at the unit price shown in the Tender Form. This price shall include excavation, supply of materials, piping, pipe saddle, vent piping, gate valve, air valve, manhole, manhole frame and cover, adjustment to final grade, asphalt apron and all work incidental thereto. Payment will be in addition to that of 5.70.

5.76 CONNECTION TO EXISTING MAIN PIPING Section 5.49

Payment for connections to existing piping will be made at the unit price per connection shown in the Tender Form. This price shall include supply of couplings, materials, and all work incidental thereto. Payment will be made in addition to that of 5.70.

5.76A CONNECTIONS TO EXISTING SERVICES Section 5.49

Payment for connections to existing services will be made at the unit price per connection shown in the Tender Form regardless of existing service depth. This price shall include supply of materials, and all work incidental thereto.

5.77 SERVICE CONNECTION PIPE Section 5.56

Payment for water service connection pipe will be made at the unit price per linear metre shown in the Tender Form. Measurement will be made horizontally along the centreline of the installed pipe from the centre of the main pipe to the curb stop. This price shall include supply of materials, pipe installation, testing, flushing, chlorination, and all work incidental thereto, except those items for which payment is specified additional to that for water connection pipe.

5.78 CORPORATION STOPS AND SADDLES Section 5.30.2, 5.30.6, 5.56.4 (f)

Payment for corporation stops and saddles will be made at the unit price shown the Tender Form. This price shall include supply of materials, drilling and tapping the main pipe, installation, and all work incidental thereto. Payment will be in addition to that of 5.81.

5.79 CURB STOPS Section 5.56.6 (a)

SECTION 5 - WATER DISTRIBUTION SYSTEM

MEASUREMENT AND PAYMENT

Payment for curb stops will be made at the unit price shown in the Tender Form. This price shall include supply of materials, installation of curb stop, and all work incidental thereto. No additional payments will be made for supply and installation of test points. Payment will be in addition to that of 5.81.

5.80 METER SERVICE BOXES, BOX EXTENSIONS, AND LIDS Section 5.56.6 (b)

Payment for meter service boxes, box extension, and touch read lids will be made at the unit price shown in the Tender Form. This price shall include supply of materials, installation of service boxes and all work incidental thereto. Payment will be in addition to that of 5.81.

5.81 TOUCH READ METERS Section 5.57

Payment for touch read meters will be made at the unit price shown in the Tender Form. This price shall include completion of meter cards, supply of materials (the meter will be supplied by the Corporation), installation of meter, touch read sensor and all work incidental thereto. This pay item includes installing new meters in both existing and new meter boxes. Payment will be made in addition to that of 5.81.

5.82 WRAPPING WATER MAIN JOINTS

Payment for wrapping of water main joints will be made for each joint at the unit rate shown in the Tender Form. This price shall include the supply of materials and installation as per AWWA standards.

5.83 TEMPORARY WATER SERVICES

Payment for temporary water services will be made at the lump sum price shown in the Tender Form. This price shall include supply of materials and installation of pressure caps and overland services, test, disinfect, maintain temporary overland services, valve isolations, removal, and all work incidental thereto to provide water services and protection to the existing watemain.

SECTION 6 - SANITARY SEWER SYSTEM

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENT

Piping and Fittings	6.70
Additional Excavation and Backfill	6.71
Rebench Existing Manhole	6.72
Abandon Existing Air Valve/Blowdown Chamber	6.73
Air Valve c/w Chamber	6.74
Blowdown c/w Chamber	6.75
Chase River Crossing	6.76

SECTION 6 - SANITARY SEWER SYSTEM

MEASUREMENT AND PAYMENT

The Contractor will note that the tendered price for all items specified in this section will include but not be limited to the following: Please refer to Section 4 - Trench Excavation, Bedding and Backfill for further clarification of these items.

- (a) materials
- (b) excavation
- (c) dewatering
- (d) bracing & sheeting
- (e) bedding
- (f) pipe installation
- ~~(g) backfill with imported material and/or controlled density fill~~
- (h) video inspection
- (i) maintenance

The Contractor will note that payment for surface restoration and asphalt removal is paid in accordance with Section 4.75.

6.70 PIPING AND FITTINGS Section 6.42 - 6.46

Payment for piping and fittings will be made at the unit price per linear metre shown in the Tender Form for the various sizes and class of pipe. Measurement will be made horizontally along the centreline of the installed pipe, including fittings, from centre-to-centre of manholes or to the end of the pipe, whichever is applicable. This price shall include materials, excavation, dewatering, bracing and sheeting, bedding, pipe installation, ~~backfill with imported material and/or controlled density fill~~, video inspection and maintenance, testing as specified, and all work incidental thereto.

6.71 ADDITIONAL EXCAVATION AND BACKFILL

Payment will not be made as a separate item for excavation, backfill and work applicable thereto required at any structure specified in this section. The cost of such work shall be included in the applicable prices for the various structures shown in the Tender Form.

6.72 REBENCH EXISTING MANHOLE

Payment for re-benching existing manholes includes all materials and work including dewatering and temporary water diversion to enable re-benching the existing manhole and all related work shown on the Contract Drawings.

6.73 ABANDON EXISTING AIR RELEASE/BLOWDOWN CHAMBER

Payment for abandoning existing manholes will be made at the unit price shown in the Tender Form. This price shall include draining the existing manhole, plugging existing pipes with concrete, supply and installation of drain rock and filter fabric, removal of upper section of the manhole, backfill, compaction, and all related work shown on the Contract Drawings.

SECTION 6 - SANITARY SEWER SYSTEM

MEASUREMENT AND PAYMENT

6.74 AIR RELEASE C/W CHAMBER

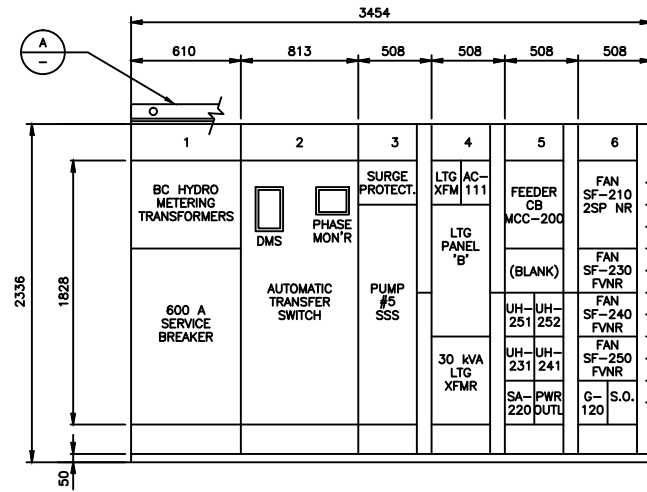
Air valves and fittings will be paid for at the unit price shown in the Tender Form. This price shall include excavation, supply of materials, piping, pipe saddle/ supports, vent piping, gate valves, air valve, small diameter valves, manhole, rock put, manhole frame and cover, adjustment to final grade, asphalt apron and all related work shown on the Contract Drawings

6.75 BLOWDOWN C/W CHAMBER

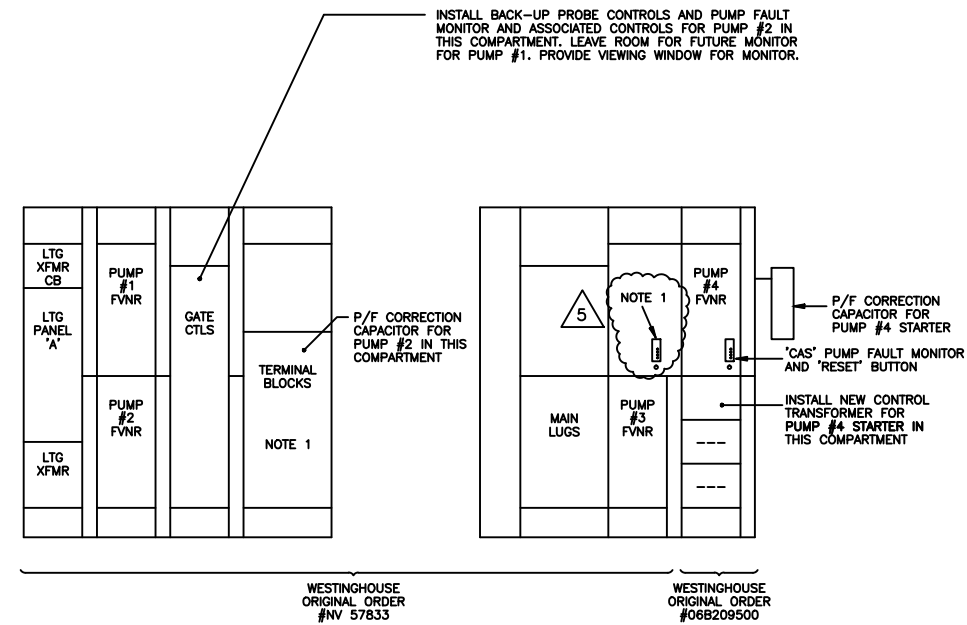
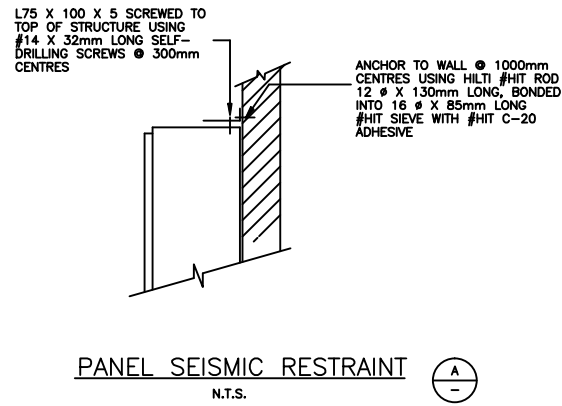
Blowdown piping and fittings will be paid for at the unit price shown in the Tender Form. This price shall include excavation, supply of materials, piping, pipe saddle/ supports, vent piping, gate valve, small diameter valves, manhole, rock put, manhole frame and cover, adjustment to final grade, asphalt apron and all related work shown on the Contract Drawings

6.76 CHASE RIVER CROSSING

Installation of the above grade Chase River crossing will be paid at the lump sum price shown in the Tender Form. Payment includes mobilization/ demobilization, piles, casing, pipe spacer, end seals, straps, pedestrian barrier forcemain installation and all related work shown on the Contract Drawings.



MOTOR CONTROL CENTRE MCC-100
(REFER TO CUTLER-HAMMER DRAWING SERIES A 385500)



LEFT-HAND SIDE
RIGHT-HAND SIDE
ORIGINAL MOTOR CONTROL CENTRE MCC-200

VERIFY SCALES
BAR IS BASED ON ORIGINAL DRAWING
0 20mm
IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

- NOTES:
- INSTALL 'CAS' PUMP FAULT MONITOR AND ASSOCIATED CONTROLS FOR P-103 IN THIS COMPARTMENT. PROVIDE A VIEWING WINDOW FOR THE MONITOR LED'S.
 - PROVIDE NAMEPLATES TO CLEARLY IDENTIFY NEW CONTROLS.

NO.	DATE	ENG.	BY	SUBJECT
6	20 JULY 2013		RS	DRAWING UP DATED
5	04 APR 2004	J.T.	J.T.	ADDED 'CAS' MONITOR FOR PUMP P-103
4	04 MAR 2003	M.L.	S.T.	SAMPLER ADDITION
3	09 JUL 2002	J.T.	J.T.	RECORD DRAWING, STAGE 3
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE ACTUATOR ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-604
SCALE	AS SHOWN
DRAWN	J.T.
DESIGNED	J.T.
CHECKED	J.G.
APPROVED	
APPROVED	
DATE	JULY 2001

PANELBOARD 'C'

DESCRIPTION	LOAD	BKR SIZE	PHASE A B C	BKR SIZE	LOAD	DESCRIPTION
KIOSK LIGHT	50 VA	15A	1	15A	500 VA	
KIOSK RECEPTACLE	1	15A	3	15A	500 VA	PINCH VALVE ACTUATOR **
KIOSK HEATER	... W	15A	5	15A	500 VA	
SAMPLER RECEPTACLE	1	15A	7	15A	50 VA	FLUSH VALVE SV-250
SPARE		15A	9	15A	500 VA	ACCESS TERMINAL, CP-250
SPARE		15A	11	15A		SPARE

* DENOTES GFCI BREAKER
** HP TO BE CONFIRMED BY EQUIPMENT SUPPLIER
• WITH PAD LOCK DEVICE IN ON/OFF POSITIONS

LUMINAIRE SCHEDULE

TYPE	LAMP	DESCRIPTION
FA	2x32W TB "COOL"	SURFACE-MOUNTED OR SUSPENDED INDUSTRIAL FLUORESCENT LUMINAIRE WITH SLOTTED REFLECTOR AND TURRET SOCKETS, PEERLESS #1ST
FB	2x32W TB "COOL"	SURFACE-MOUNTED VAPOUR TIGHT FLUORESCENT LUMINAIRE NON-METALLIC BODY WIT ACRYLIC CLEAR LENS, PEERLESS #FCC
FC	3x32W TB "COOL"	RECESSED FLUORESCENT LUMINAIRE FOR LAY-IN T-BAR CEILING, HINGED FRAME AND K12 ACRYLIC LENS, PEERLESS #LACH-24G-332-12
FD	2x32W TB "COOL"	RECESSED FLUORESCENT LUMINAIRE FOR WASHROOM DRYWALL CEILING WITH INTEGRATED HINGED FRAMED DIFFUSER PEERLESS #TL-14F
SG	70W HPS CLEAR	WALL MOUNTED OUTDOOR HPS LUMINAIRE WITH GREY BODY AND POLYCARBONATE REFRACTOR OR SHIELD, HOLOPHANE #WALLPACKETTE LARGE
EY	12W HALOGEN SEALED BEAM	BATTERY-PACK EMERGENCY LIGHT, EEMAC TYPE 12, WITH INTEGRAL HEADS; LUMACEL #LD12-100-IF-2 w) OPTIONS
EZ	12W HALOGEN SEALED BEAM	REMOTE HEAD FOR EMERGENCY LIGHT, # INDICATES BATTERY PACK IT IS SLAVED TO. LUMACELL #LH1, LH2 AND WH1 AS SHOWN ON DRAWINGS

PANELBOARD 'B'

DESCRIPTION	LOAD	BKR SIZE	PHASE A B C	BKR SIZE	LOAD	DESCRIPTION
BATTERY PACK EMERGENCY LIGHTS	300 VA	15A	1	40A	3000 W	HOT WATER TANK HWT-120 CHEMICAL ROOM
EXTERIOR LIGHTS	700 VA	15A	3		3000 W	
LIGHTS WASHROOM & OFFICE/LUNCHROOM	770 VA	15A	5			SPACE
LIGHTS CHEMICAL & COMPRESSOR ROOMS	840 VA	15A	7	15A	1250 W	WASHROOM HEATER EBH-261
LIGHTS ELECTR. ROOM	400 VA	15A	9	15A	3	RECEPTACLES CHEMICAL & COMPRESSOR ROOMS
DOMESTIC HOT WATER TANK HWT-121	2250 VA	15A	11	15A	3	RECEPTACLES CHEMICAL & COMPRESSOR ROOMS
CONTROL PANEL CP-100	1500 VA	15A	13	15A	4	RECEPTACLES WASHROOM & OFFICE / LUNCHROOM
ENGINE CONTROL PANEL ECP-100	1500 VA	30A	15	15A	4	RECEPTACLES WASHROOM & OFFICE / LUNCHROOM
WEATHER STATION	100 VA	15A	17	15A	1	SPLIT RECEPTACLES KITCHEN COUNTER
CHEMICAL METERING PUMP P-106 (UNDER STAGE 2)	FRAC HP	15A	19	15A	1	SPLIT RECEPTACLES KITCHEN COUNTER
CHEMICAL METERING PUMP P-107 (UNDER STAGE 2)	FRAC HP	15A	21	15A	3	RECEPTACLES EL. ROOM & EXTERIOR
AIR DRYER AD-114	600 VA	15A	23	15A	3	RECEPTACLES EL. ROOM & EXTERIOR
PANEL 'C' VA	40A	25	15A		SPARE
GENERATOR ROOM EXHAUST FAN EF-270	FRAC.HP	15A	27	15A		SPARE
SPARE		15A	29			
SPARE		15A	31			
SPARE		15A	33			
SPARE		15A	35			
SPARE		15A	37			
SPARE		15A	39			
SPARE		15A	41			

* DENOTES GFCI BREAKER
** HP TO BE CONFIRMED BY EQUIPMENT SUPPLIER
• WITH PAD LOCK DEVICE IN ON/OFF POSITIONS



DISTRICT PROJECT NUMBER
0810-20-CRPS-04

DISTRICT DRAWING NUMBER
CRPS-E-106

REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMPING STATION UPGRADE

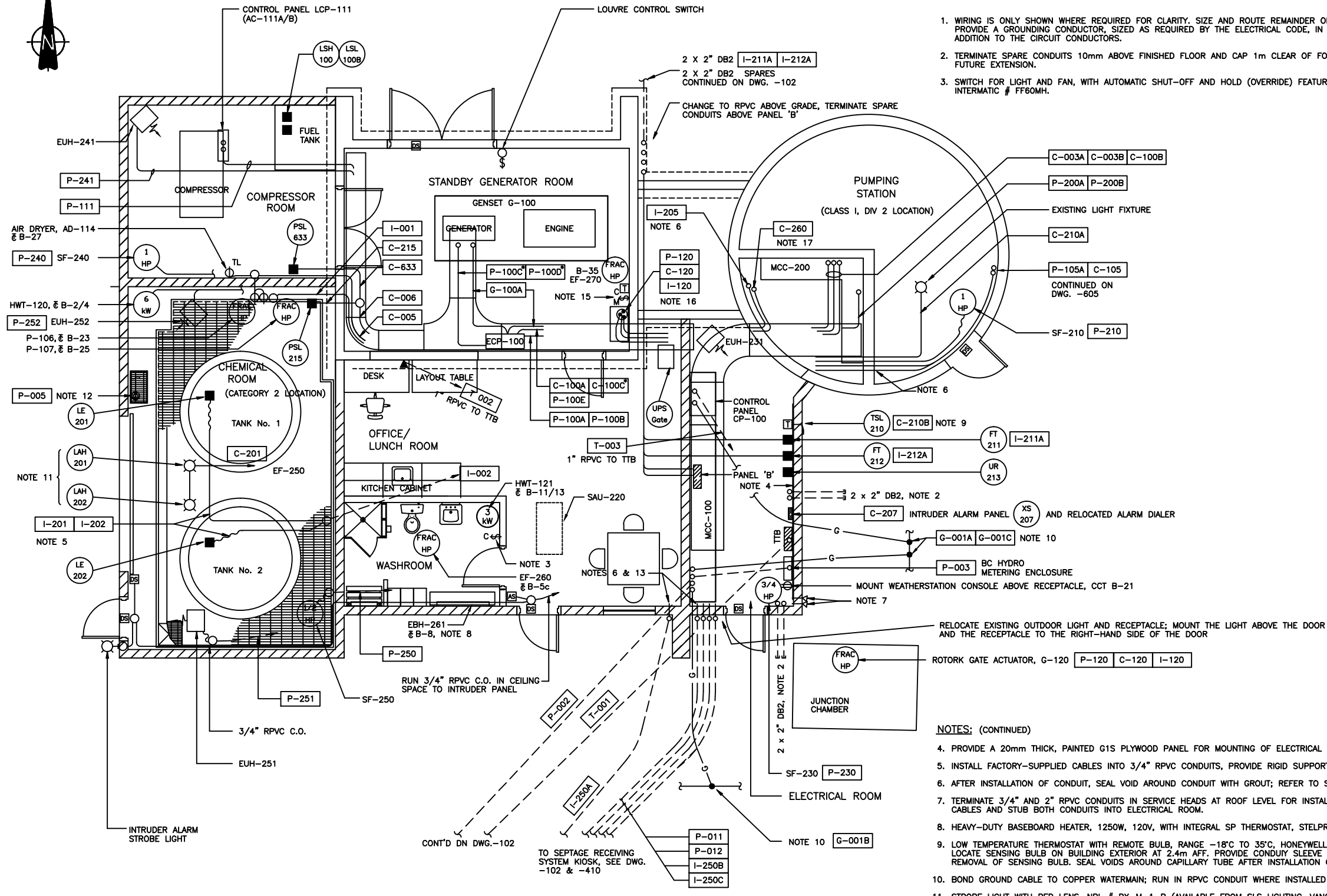
ELECTRICAL MCC LAYOUTS, SCHEDULES AND DETAILS

DRAWING NUMBER	REV. NO.	SHEET
CH-04-602	6	

RENUMBERED FROM 982819-603-3-602 TO CH-3-602 TO

DRAWING IS DATA-LINKED Time: 8:50 Date: 2004/4/21 Plot Scale: 1=1 (Paper Space) AutoCAD File: Q:\982819\CH\ELEC\CH04-602.DWG (JT)

2002/08/20 11:36:3 ST 1=1 DRAWING IS DATA-LINKED



- NOTES:**
1. WIRING IS ONLY SHOWN WHERE REQUIRED FOR CLARITY. SIZE AND ROUTE REMAINDER OF WIRING AS REQUIRED. PROVIDE A GROUNDING CONDUCTOR, SIZED AS REQUIRED BY THE ELECTRICAL CODE, IN EACH CONDUIT IN ADDITION TO THE CIRCUIT CONDUCTORS.
 2. TERMINATE SPARE CONDUITS 10mm ABOVE FINISHED FLOOR AND CAP 1m CLEAR OF FOOTINGS FOR FUTURE EXTENSION.
 3. SWITCH FOR LIGHT AND FAN, WITH AUTOMATIC SHUT-OFF AND HOLD (OVERRIDE) FEATURE, 60 MINUTE RANGE, INTERMATIC # FF60MH.

- NOTES: (CONTINUED)**
4. PROVIDE A 20mm THICK, PAINTED G15 PLYWOOD PANEL FOR MOUNTING OF ELECTRICAL AND TELEPHONE EQUIPMENT.
 5. INSTALL FACTORY-SUPPLIED CABLES INTO 3/4" RPVC CONDUITS, PROVIDE RIGID SUPPORT FOR DROP FROM CEILING.
 6. AFTER INSTALLATION OF CONDUIT, SEAL VOID AROUND CONDUIT WITH GROUT; REFER TO STRUCTURAL SPECIFICATION.
 7. TERMINATE 3/4" AND 2" RPVC CONDUITS IN SERVICE HEADS AT ROOF LEVEL FOR INSTALLATION OF WEATHERSTATION CABLES AND STUB BOTH CONDUITS INTO ELECTRICAL ROOM.
 8. HEAVY-DUTY BASEBOARD HEATER, 1250W, 120V, WITH INTEGRAL SP THERMOSTAT, STELPRO #DBS1512-T12.
 9. LOW TEMPERATURE THERMOSTAT WITH REMOTE BULB, RANGE -18°C TO 35°C, HONEYWELL #T675A, SET AT 0°C. LOCATE SENSING BULB ON BUILDING EXTERIOR AT 2.4m AFF. PROVIDE CONDUIT SLEEVE THROUGH WALL TO ALLOW REMOVAL OF SENSING BULB. SEAL VOIDS AROUND CAPILLARY TUBE AFTER INSTALLATION OF BULB.
 10. BOND GROUND CABLE TO COPPER WATERMAIN; RUN IN RPVC CONDUIT WHERE INSTALLED UNDER FLOOR SLAB.
 11. STROBE LIGHT WITH RED LENS, NRL # BX-M-1-R (AVAILABLE FROM SLS LIGHTING, VANCOUVER, B.C.).
 12. UNFUSED PIN AND SLEEVE RECEPTACLE / SWITCH ASSEMBLY, 3P + GRD, 30 A, 600 V, HUBBELL #430M15W. SUPPLY ONE LOOSE MATCHING PLUG #430P5W.
 13. STUB CONDUIT INTO DESIGNATED ROOMS. DO ABOVE-GRADE PORTION WITH RPVC CONDUIT. AFTER INSTALLATION OF CABLES SEAL VOIDS AROUND CABLES WITH RE-ENTERABLE FOAM OR DUXEAL COMPOUND.
 14. (*) INDICATES NEW WIRING. REFER ALSO TO GEN-SET SUPPLIER'S SHOP DRAWINGS FOR ADDITIONAL WIRING BETWEEN ECP AND GENERATOR, ENGINE AND FUEL TANK RESPECTIVELY. INSTALL WIRING ON EXISTING CABLE TRAY.
 15. MANUAL MOTOR STARTER WITH 'HAND-OFF-AUTO' SELECTOR SWITCH FOR EF-270, A-B #600-TAX9. WIRE COOLINGSTAT INTO 'AUTO' LEG OF SELECTOR SWITCH. CONNECT DAMPER MOTOR PARALLEL WITH FAN MOTOR.
 16. REMOVE EXISTING GATE CONTROL PANEL AND HYDRAULIC AND ELECTRICAL CONTROLS. INSTALL NEW CABLES INTO EXISTING PIPE TO JUNCTION CHAMBER. AFTER REMOVAL OF THE PANEL AND WIRING, INSTALL A SUITABLE HEAVY GAUGE STAINLESS-STEEL PLATE OVER REMAINING OPENING IN WALL.
 17. INSTALL NEW WIRING TO LSHH-206A AND LSHH-206B IN WET WELL.

FLOOR PLAN
SCALE 1:50

VERIFY SCALES				
BAR IS BASED ON ORIGINAL DRAWING				
0 20mm				
IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY				
RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OF ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.				
NO.	DATE	ENG.	BY	SUBJECT
4	20 JULY 2013		RS	DRAWING UP DATED
3	09 JUL 2002	J.T.	J.T.	RECORD DRAWING, STAGE 3
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE ACTUATOR ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER
REVISIONS				
PROJECT NO.	982819-603			
SCALE	AS SHOWN			
DRAWN	J.T.			
DESIGNED	J.T.			
CHECKED	J.G.			
APPROVED				
APPROVED				
DATE	JULY 2001			

ASSOCIATED ENGINEERING

DISTRICT PROJECT NUMBER
0810-20-CRPS-04

DISTRICT DRAWING NUMBER
CRPS-E-111

REGIONAL DISTRICT OF NANAIMO

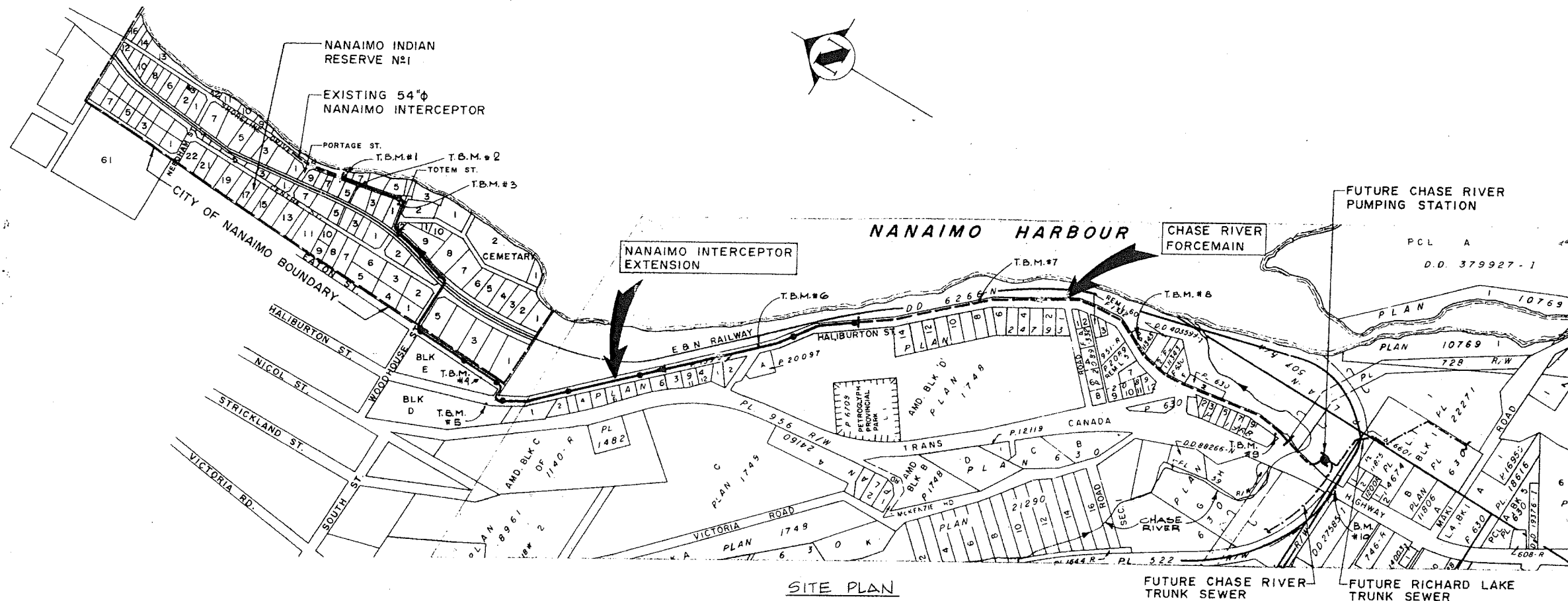
CHASE RIVER PUMPING STATION UPGRADE

ELECTRICAL POWER, CONTROL AND INSTRUMENTATION LAYOUTS

DRAWING NUMBER	REV. NO.	SHEET
CH3-603	4	

RENUMBERED FROM 982819-603-1-603 TO

N-INT-070



BENCH MARK	DESCRIPTION/LOCATION	ELEVATION
T.B.M.#1	Spike in base of pole supporting pump station control box, opposite 730 Shoreline Drive.	22.54
T.B.M.#2	Spike in base of pole at 744 Shoreline Drive.	25.19
T.B.M.#3	Spike in base of pole adjacent to hydrant at corner of Shoreline Drive and Totem Street.	24.11
T.B.M.#4	Spike in base of pole, facing on west side of Eaton Street, 100' north of gate to Mayo Lumber storage yard (Painted #5)	47.63
T.B.M.#5	Spike in base of pole opposite unit #1 of Beverly Motel on Haliburton Street (Painted #6)	72.68
T.B.M.#6	Spike in base of pole on east side of Haliburton Street at south entrance to Mayo Lumber Mill (Painted #7)	65.26
T.B.M.#7	Spike in base of pole opposite 1013 Haliburton Street (Painted #8)	55.34
T.B.M.#8	Spike in base of pole at 1114 Haliburton Street (Painted #9)	57.43
T.B.M.#9	Spike in base of pole on Haliburton Street, 20' from S.E. corner of "Bold Knight" restaurant (Painted #10)	24.22
B.M.#10	Geodetic bench mark 73-C-045, brass plate on E & N railway Tressle Pier east side of Trans-Canada Highway approx. 2 feet above ground elevation.	21.854



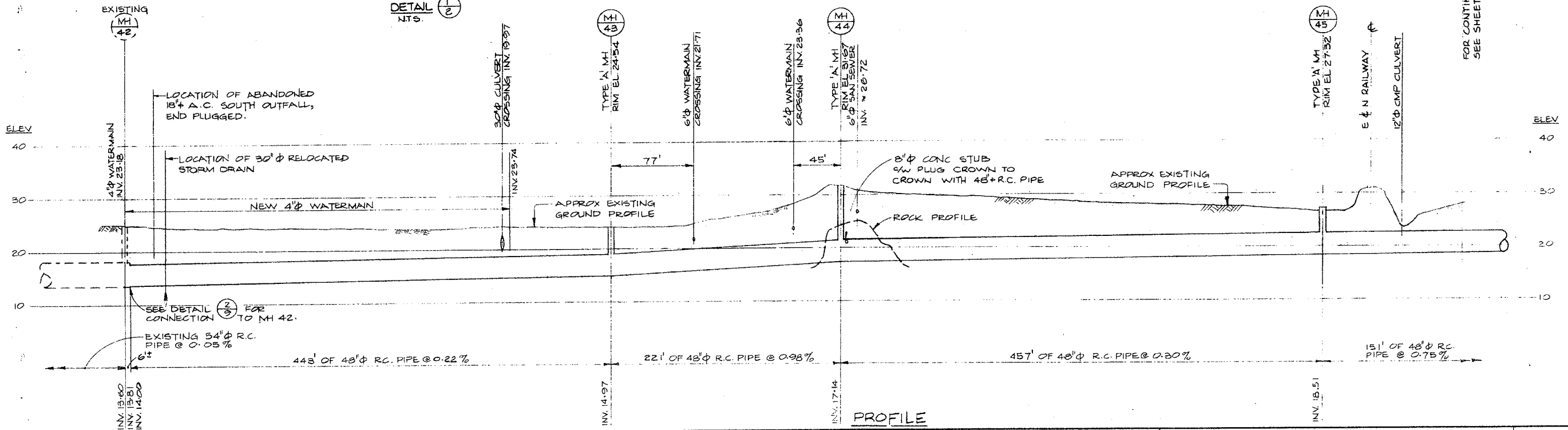
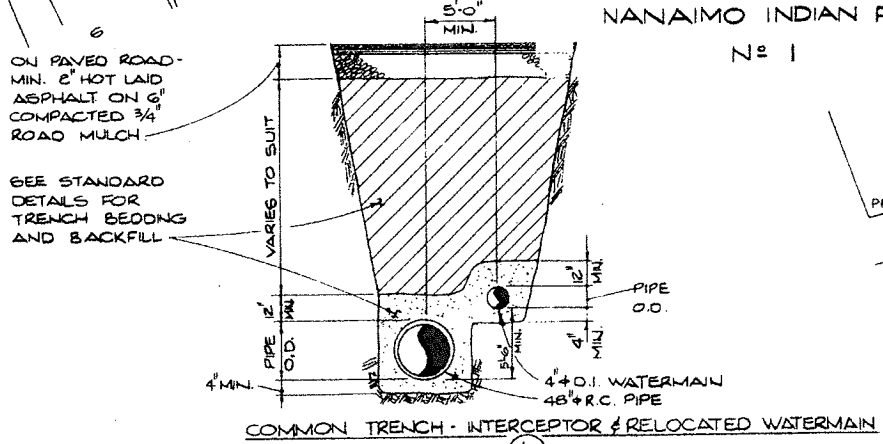
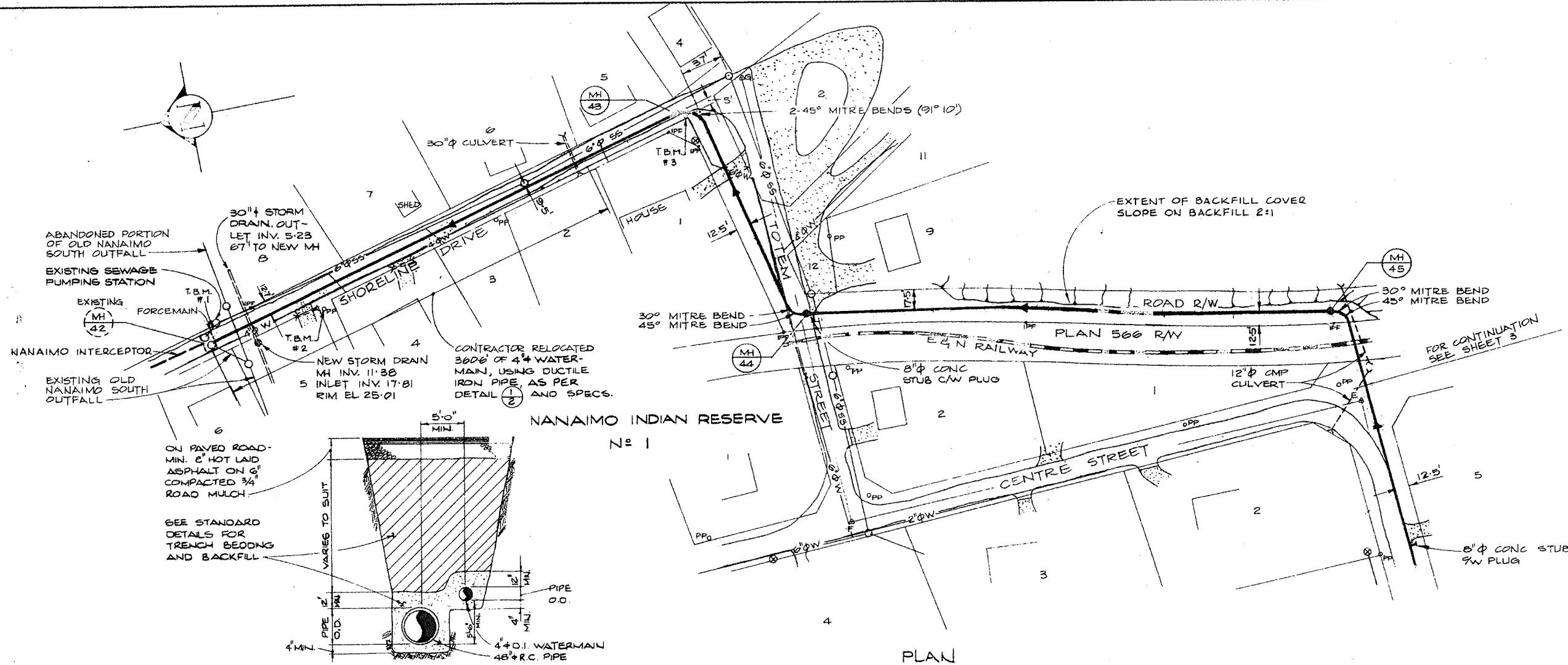
REGIONAL DISTRICT OF NANAIMO
 NANAIMO INTERCEPTOR EXTENSION
 AND
 CHASE RIVER FORCEMAIN
 CONTRACT 122.43.1

LEGEND

- NANAIMO INTERCEPTOR EXTENSION & MANHOLE
- CHASE RIVER FORCEMAIN
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER & MANHOLE
- DITCH
- FIRE HYDRANT
- POWER POLE
- CULVERT
- ASPHALT ROAD
- GRAVEL ROAD
- TOP OF BANK
- MANHOLE NUMBER
- SURVEY HUBS
- IRON PIN FOUND
- FENCE

ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	DESIGNED	DRAWN	CHECKED	DATE	SCALE:	DRAWING No.	SHEET	OF	ISSUE	
B	JAN 27/78	REL	JT	U	AS CONSTRUCTED							JT	JNG	BT	June 8 1977	1" = 400'	122.43.1	1	OF	12	ISSUE B





ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION
B	JAN 27/78	DEL	J	U	AS CONSTRUCTED

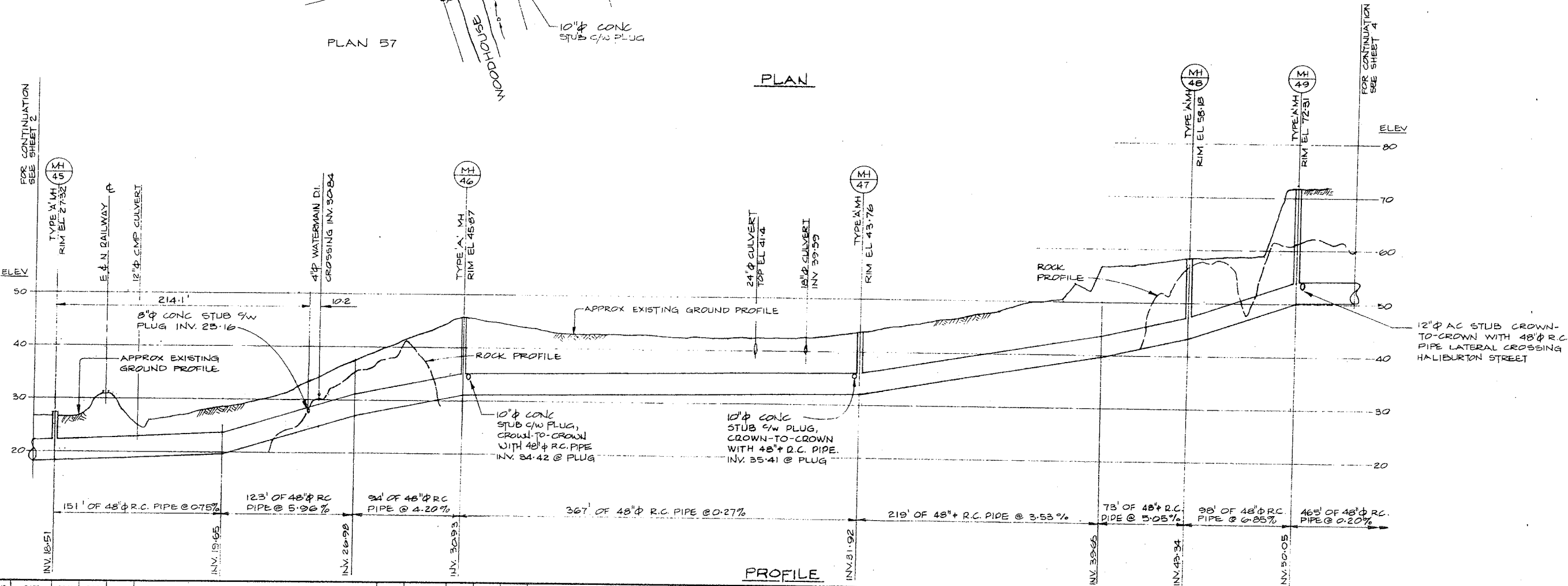
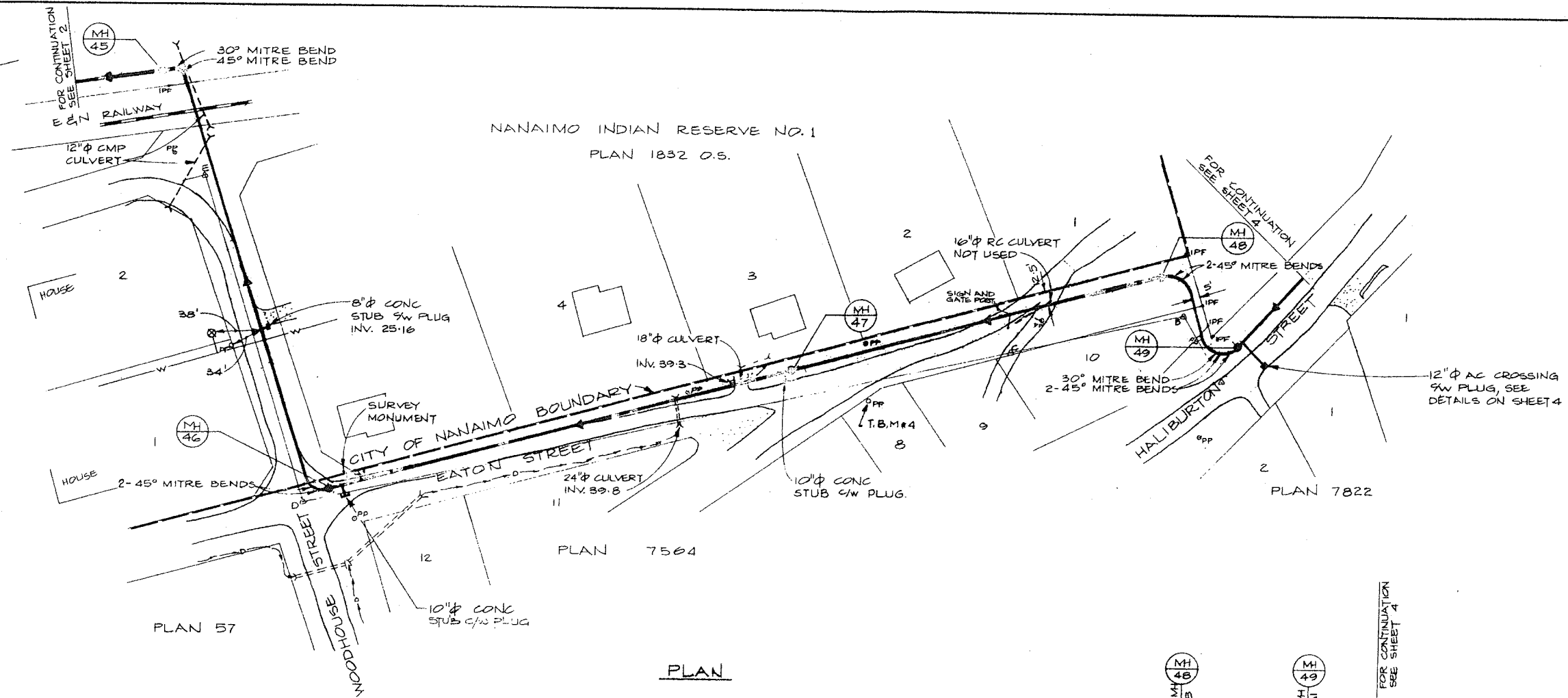
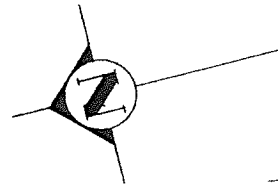
DESIGNED: J.T.
 DRAWN: DEL JS
 CHECKED: JF BW
DAYTON & KNIGHT LTD.
 CONSULTING ENGINEERS
 June 8 1977

REGIONAL DISTRICT OF NANAIMO
 NANAIMO INTERCEPTOR EXTENSION
 PLAN AND PROFILE

SCALE: HORIZ 1"=50', VERT 1"=10'
 DRAWING No. 122-43-1
 SHEET 2 OF 12 ISSUE B
N-INT-071



N-INT-072

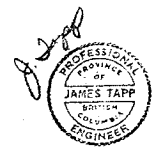


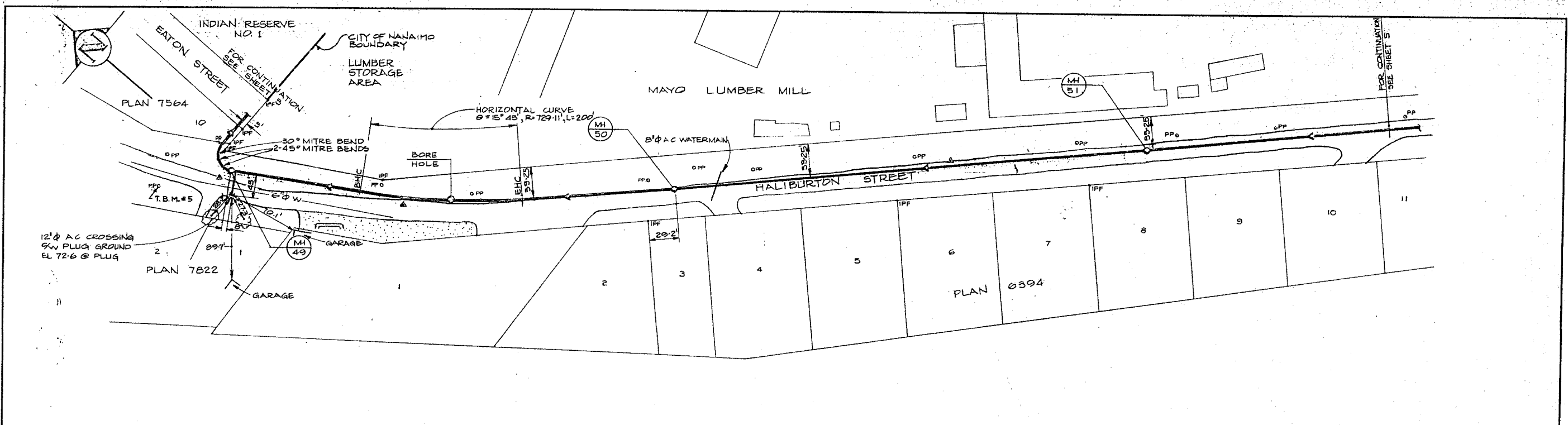
ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION
B	JAN 1978	DEL	JT	U	AS CONSTRUCTED

DESIGNED: J.T.
 DRAWN: DEL, JS
 CHECKED: JJ, BW
 DAYTON & KNIGHT LTD.
 CONSULTING ENGINEERS
 June 8 1977

REGIONAL DISTRICT OF NANAIMO
 NANAIMO INTERCEPTOR EXTENSION
 PLAN AND PROFILE

SCALE: HORIZ 1"=50', VERT 1"=10'
 DRAWING No. 122-43-1
 SHEET 3 OF 12 ISSUE B
 N-INT-072

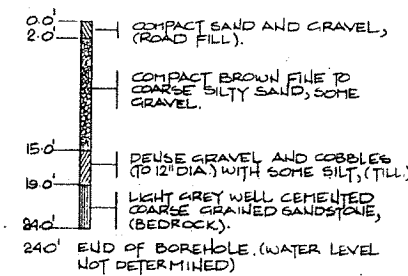




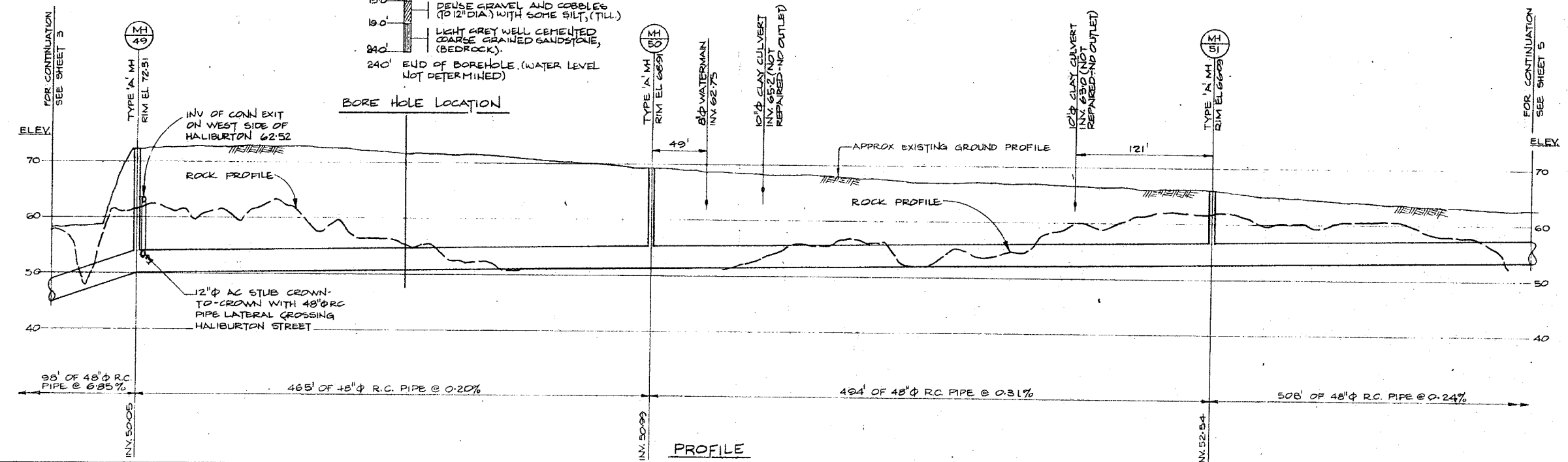
PLAN

BORE HOLE INFORMATION

ROAD SURFACE (APPROX ELEV. 72.0')



BORE HOLE LOCATION

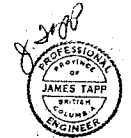


PROFILE

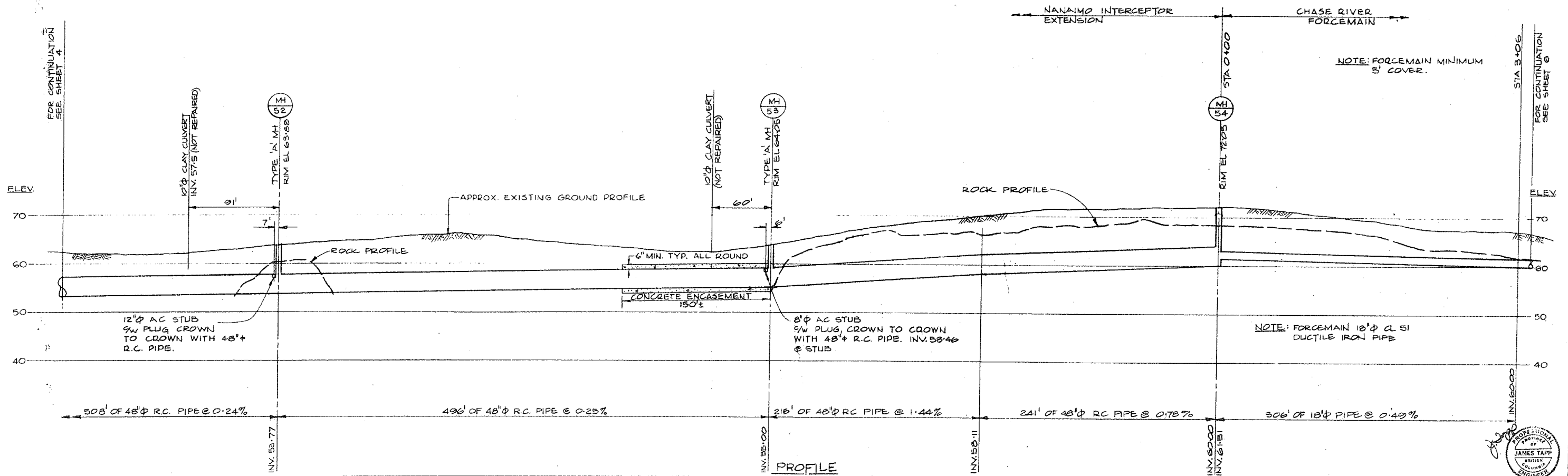
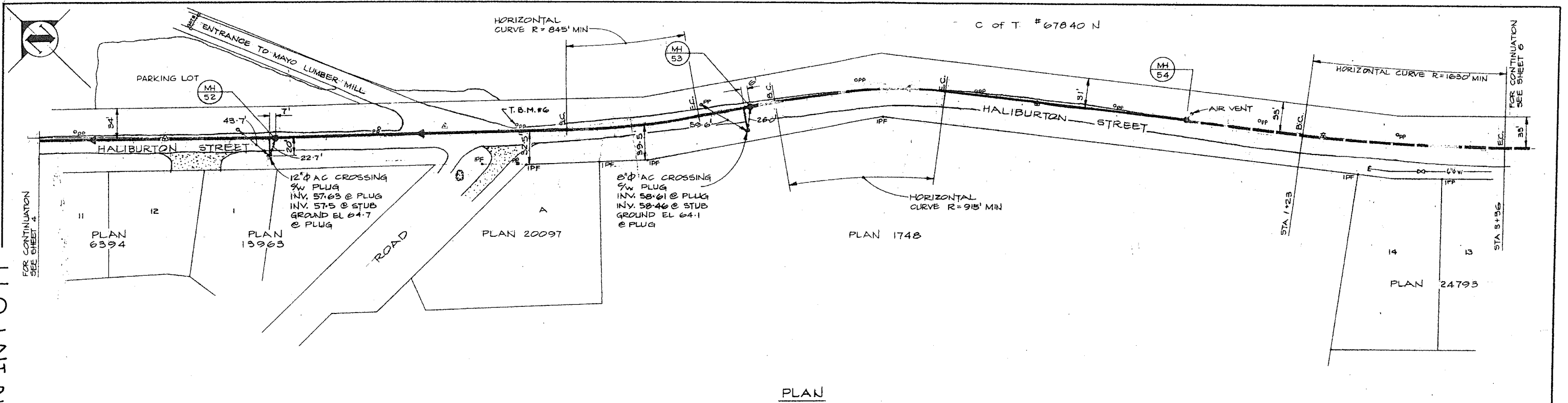
ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION
B	JAN 1978	DEL	JT	W	AS CONSTRUCTED						

DESIGNED	JT	DAYTON & KNIGHT LTD.	REGIONAL DISTRICT OF NANAIMO
DRAWN	DL, JS	CONSULTING ENGINEERS	NANAIMO INTERCEPTOR EXTENSION
CHECKED	JT, BW		PLAN AND PROFILE
		DATE 8 1977	

SCALE: HORIZ 1"=50' VERT 1"=10'
DRAWING No. 122-43-1
SHEET 4 OF 12 ISSUE B
GNINT 073



N-INT-074

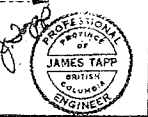


ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	DESIGNED	DRAWN	CHECKED	DATE	SCALE	DRAWING No.	SHEET	OF	ISSUE
B	JAN 1978	DEL	JT	W	AS CONSTRUCTED							JT	JS	DEL	June 8 1977	1" = 50', VERT. 1" = 10'	122.43.1	5	12	B

DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS

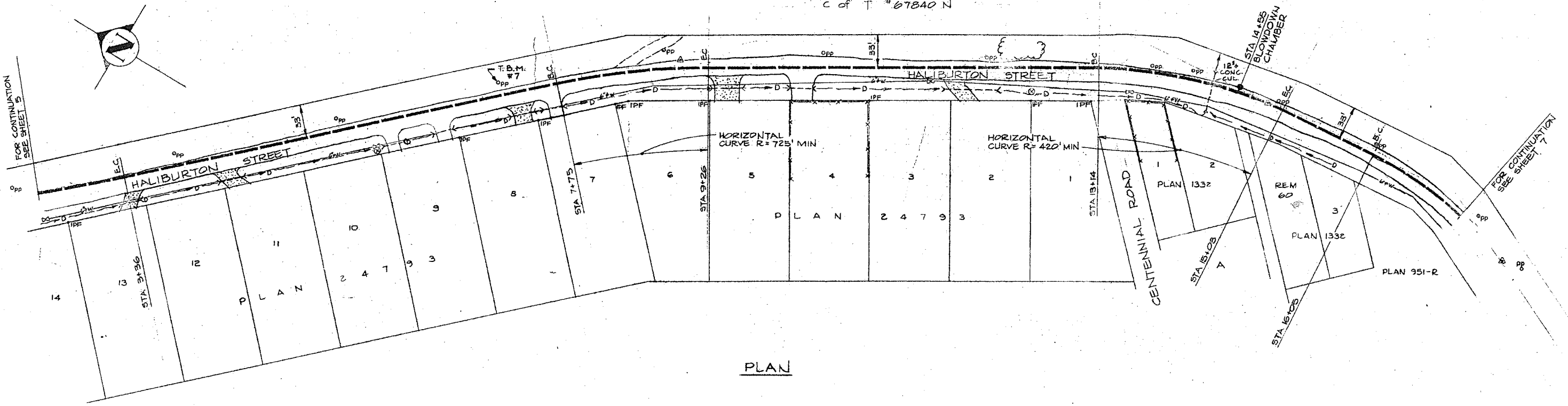
REGIONAL DISTRICT OF NANAIMO
NANAIMO INTERCEPTOR EXTENSION AND
CHASE RIVER FORCEMAIN
PLAN AND PROFILE

SCALE: HORIZ. 1" = 50', VERT. 1" = 10'
DRAWING No. 122.43.1
SHEET 5 OF 12 ISSUE B
N-INT-074



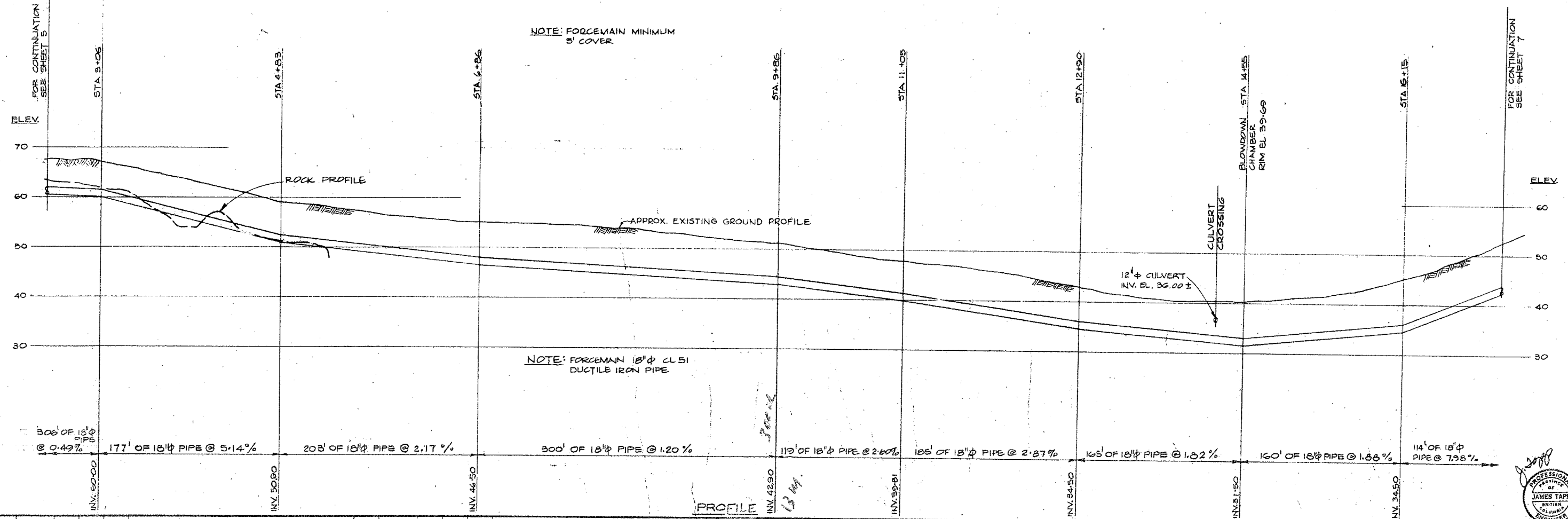
N-INT-075

C of T # 67840 N



PLAN

NOTE: FORCEMAIN MINIMUM 5' COVER



NOTE: FORCEMAIN 18" CL 51 DUCTILE IRON PIPE

PROFILE

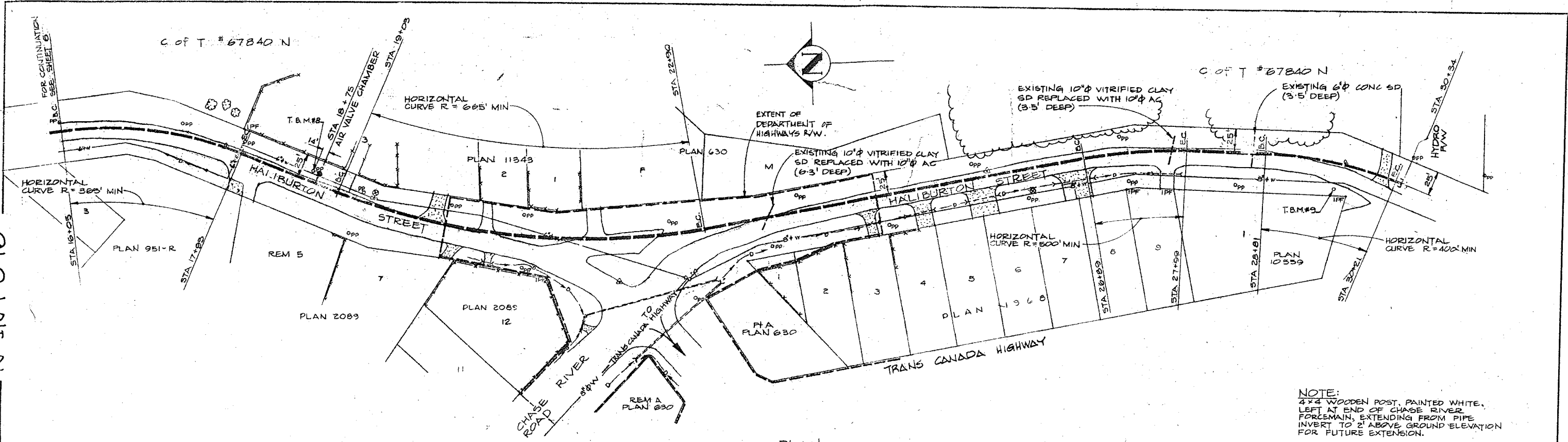
ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION	DESIGNED	DRAWN	CHECKED	DATE	SCALE: HORIZ. 1"=50', VERT. 1"=10'	DRAWING No. 122-43-1	SHEET 2 OF 12	ISSUE B
B	JAN 97	DEL	JT	W	AS CONSTRUCTED							JT	J5	SW	June 8 1977				



REGIONAL DISTRICT OF NANAIMO
CHASE RIVER FORCEMAIN
PLAN AND PROFILE

N-INT-075

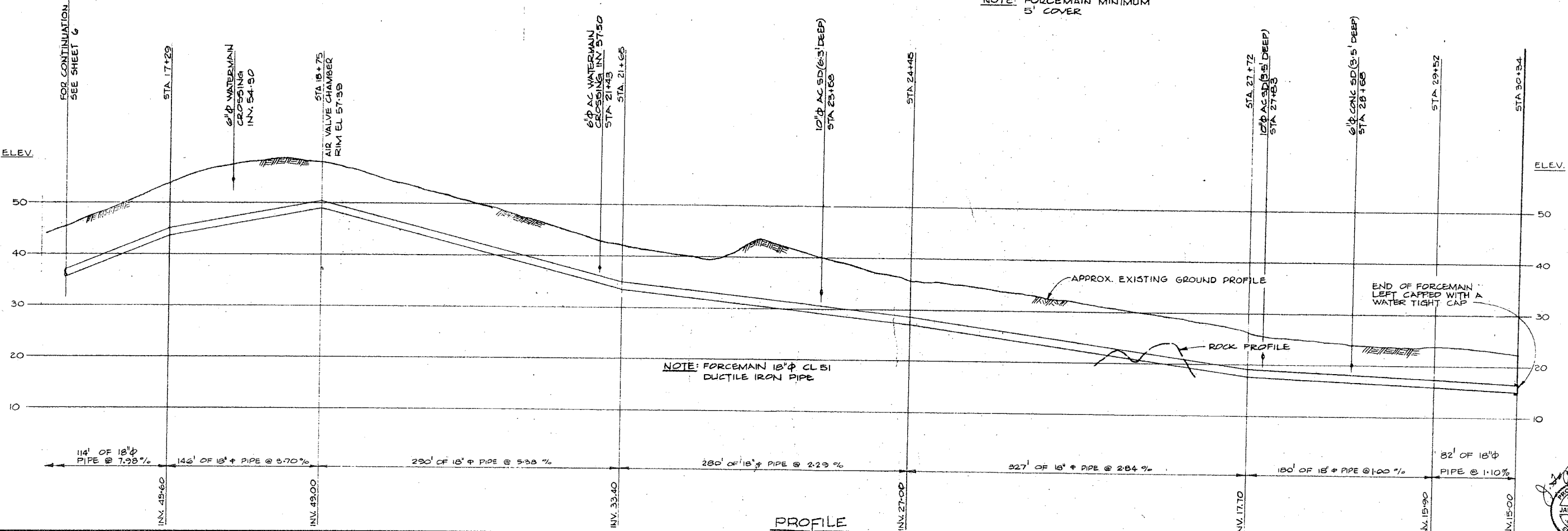
N-INT-076



PLAN

NOTE:
4x4 WOODEN POST, PAINTED WHITE,
LEFT AT END OF CHASE RIVER
FORCEMAIN, EXTENDING FROM PIPE
INVERT TO 2' ABOVE GROUND ELEVATION
FOR FUTURE EXTENSION.

NOTE: FORCEMAIN MINIMUM
5' COVER



PROFILE

NOTE: FORCEMAIN 18" CL 51
DUCTILE IRON PIPE

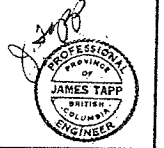
ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION
B	JAN 12/79	DEL	JT	W	AS CONSTRUCTED						

DESIGNED: JT
DRAWN: JS, RL
CHECKED: BT, BW

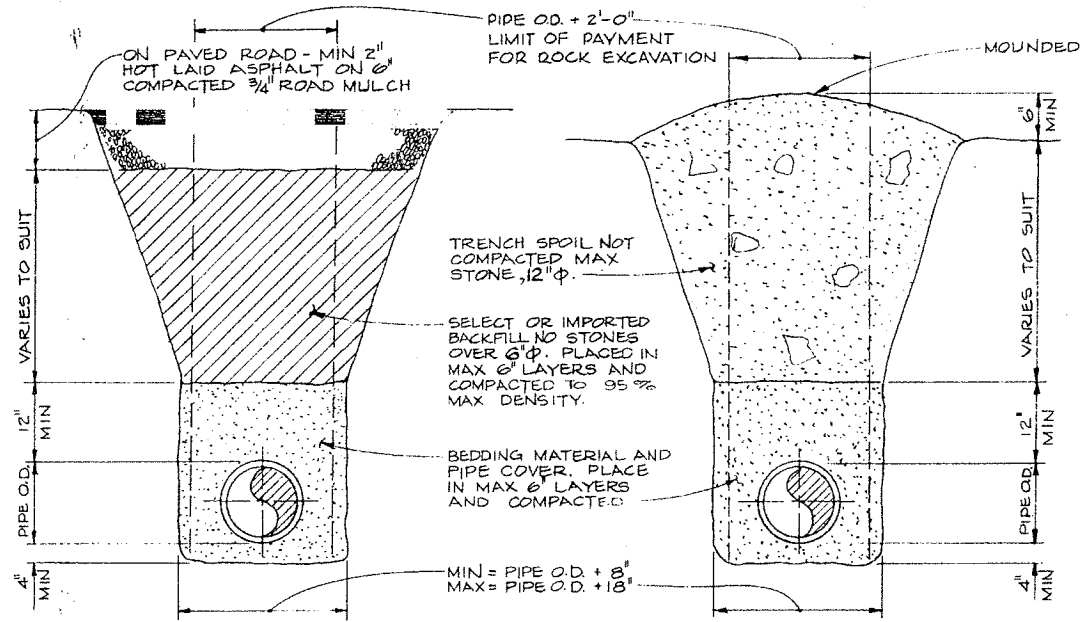
DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS

REGIONAL DISTRICT OF NANAIMO
CHASE RIVER FORCEMAIN
PLAN AND PROFILE

SCALE: HORIZ. 1" = 50', VERT. 1" = 10'
DRAWING No. 122-43-1
SHEET 7 OF 12 ISSUE B
N-INT-076

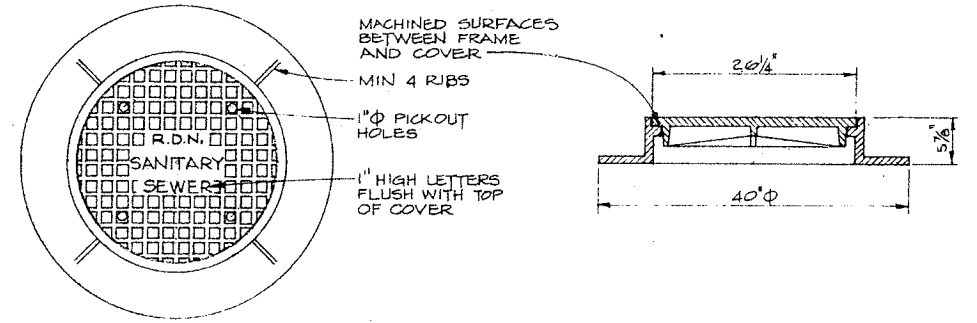
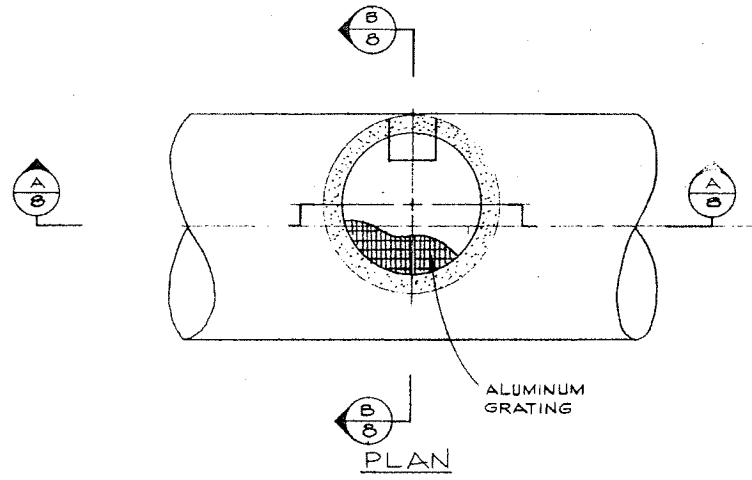


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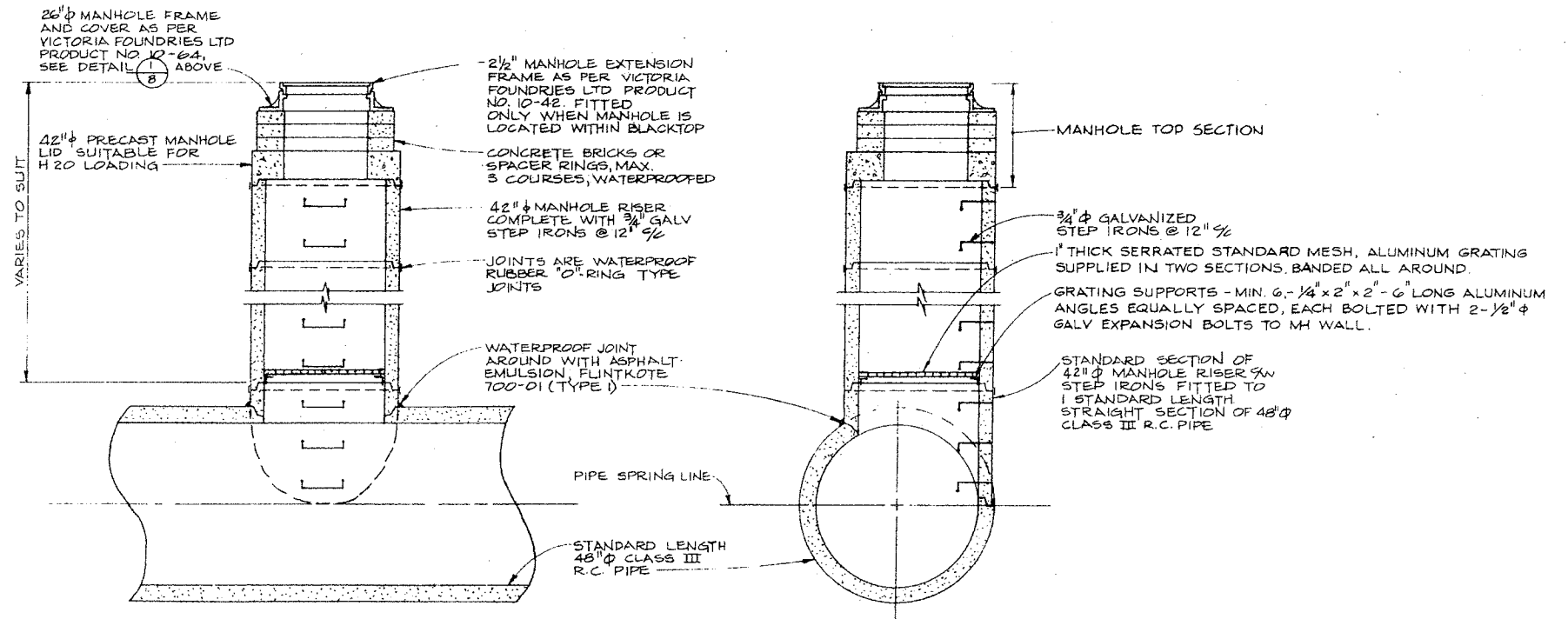


TYPE 'A' (FOR USE ON TRAVELLED ROADS) TYPE 'B' (FOR USE ON UNTRAVELLED R/W)

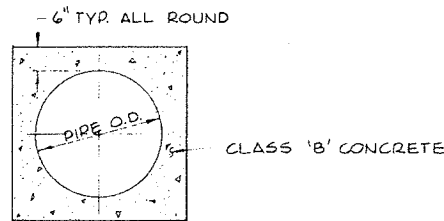
STANDARD TRENCH DETAILS



PLAN MANHOLE COVER DETAIL SECTION



TYPE 'A' MANHOLE

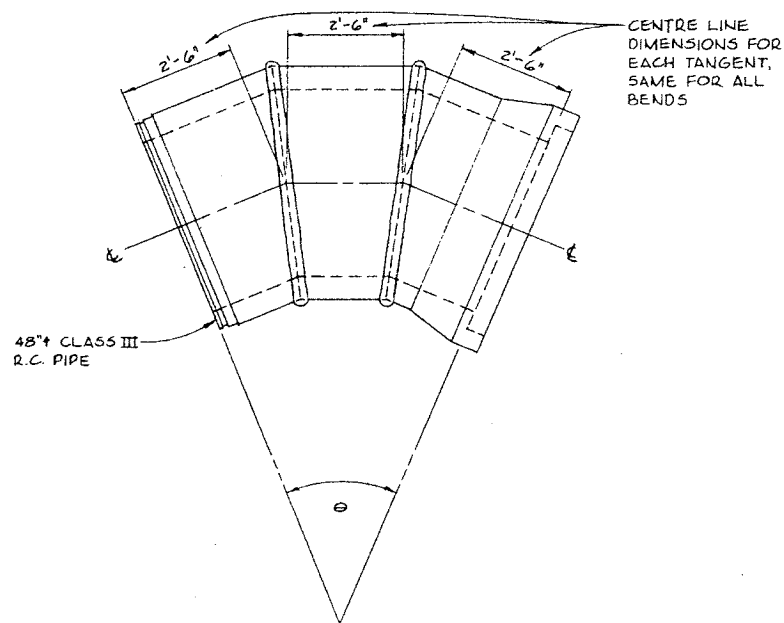


CONCRETE ENCASEMENT DETAIL TYPICAL N.T.S.

ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	DESIGNED	DRAWN	CHECKED	DATE	SCALE	DRAWING No.	SHEET	OF	ISSUE	PROJECT	
B	JAN 11/79	DEL	JT	W	AS CONSTRUCTED							JT	DEL	W	JUN 8 1977	N.T.S.	122-43-1	8	OF	12	ISSUE B	REGIONAL DISTRICT OF NANAIMO NANAIMO INTERCEPTOR EXTENSION AND CHASE RIVER FORCEMAIN TRENCH AND MANHOLE DETAILS



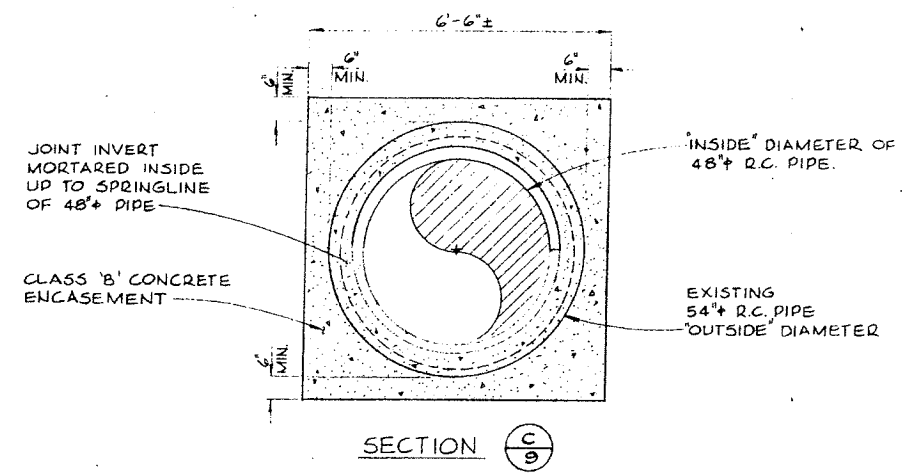
N-INT-078



48" DOUBLE MITRE BEND

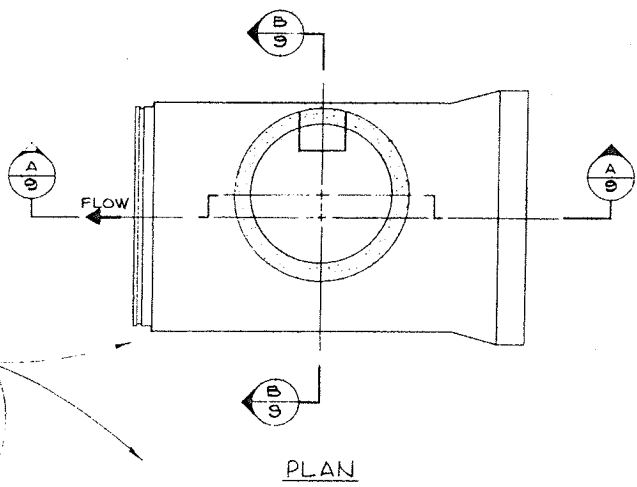
NUMBER OF DOUBLE MITRE BENDS

DEFLECTION ANGLE	NUMBER BENDS
0	NO.
45°	10
30°	3

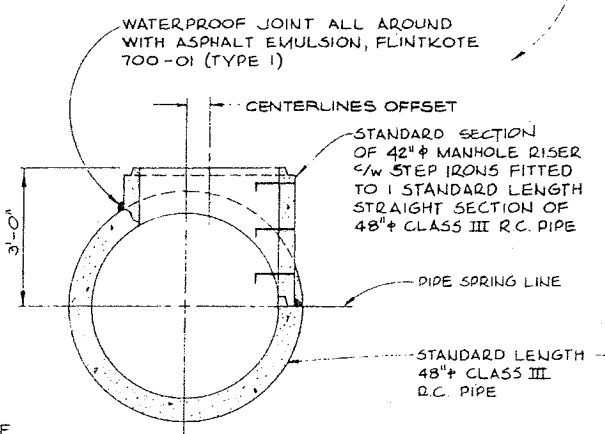


NOTE: TYPE 'A' MANHOLES ARE LOCATED ADJACENT TO THE DOUBLE MITRE BENDS IN EITHER THE DOWNSTREAM OR THE UPSTREAM POSITION, AS SHOWN ON THE PLAN & PROFILE SHEETS.

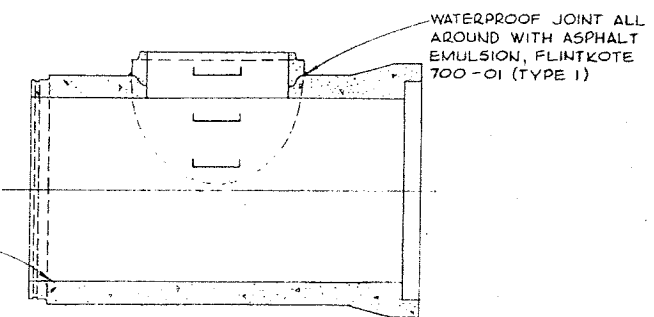
NUMBER OF MH'S
11



PLAN

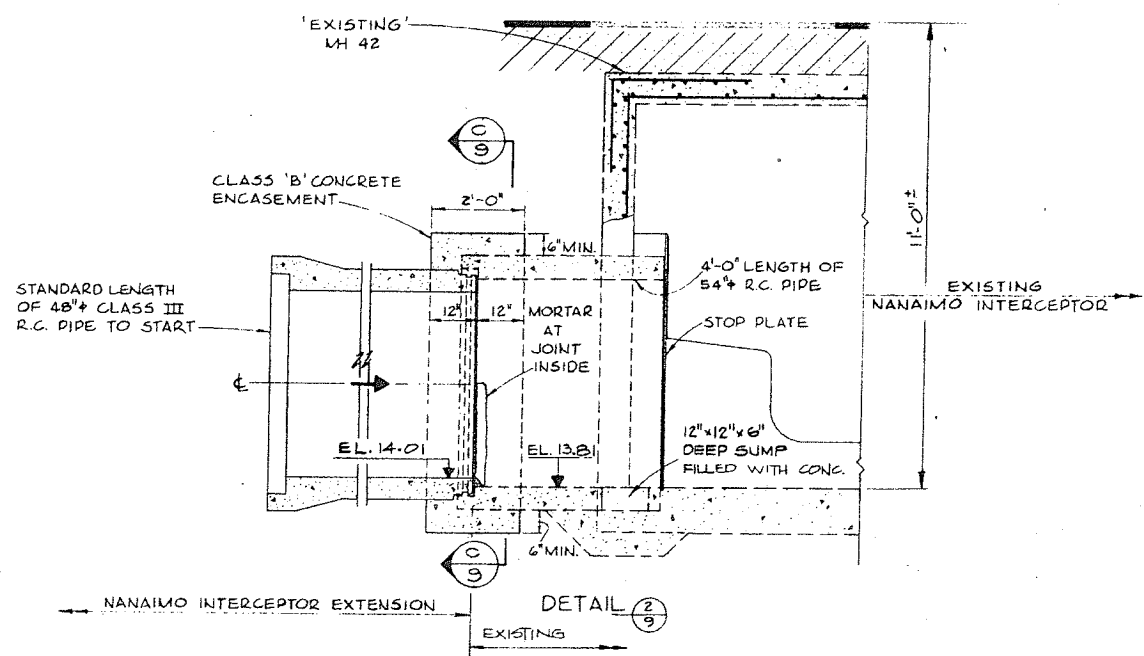


SECTION A/9
BASE SECTION - TYPE 'A' MANHOLE



SECTION B/9

NOTE: THE MANHOLE RISER CENTRE LINE IS LOCATED TO THE RIGHT SIDE OF THE PIPE CENTRE LINE WHEN LOOKING DOWNSTREAM AT MANHOLES NO. 43, 44, 45, 46, 47, 48 AND 49, AND TO THE LEFT SIDE OF THE PIPE WHEN LOOKING DOWNSTREAM AT MANHOLES NO. 50, 51, 52 AND 53.

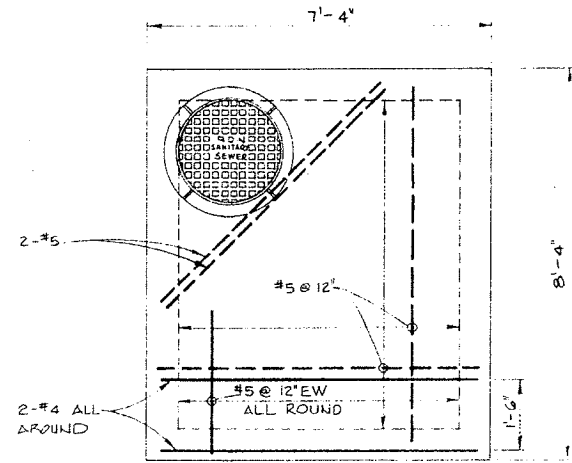


CONNECTION TO EXISTING MANHOLE 42

ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	DESIGNED	DRAWN	CHECKED	DAYTON & KNIGHT LTD. CONSULTING ENGINEERS	REGIONAL DISTRICT OF NANAIMO NANAIMO INTERCEPTOR EXTENSION MISCELLANEOUS DETAILS	SCALE: N.T.S. DRAWING No. 122-43-1 SHEET 9 OF 12 ISSUE B
B	JAN 11/79	DL	JT	W	AS CONSTRUCTED							J.T.	J.S.	97 BW	June 8 1977		N-INT-078

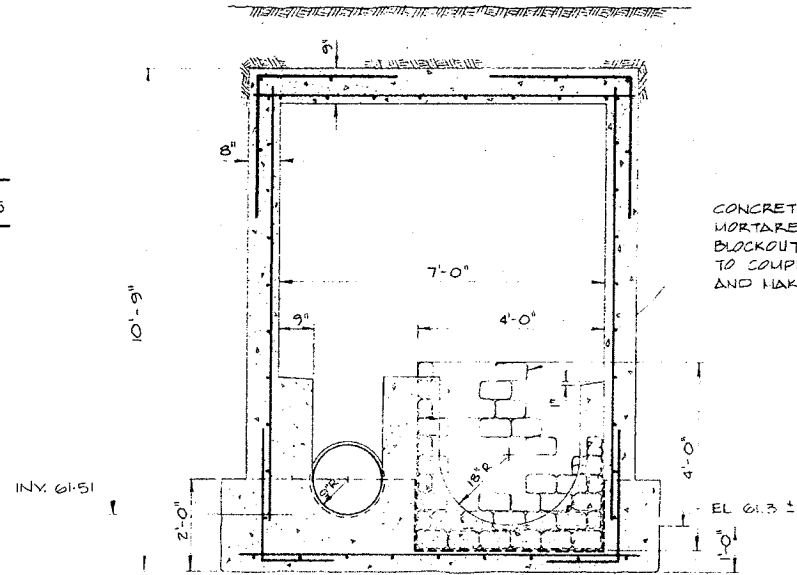


N-INT-079

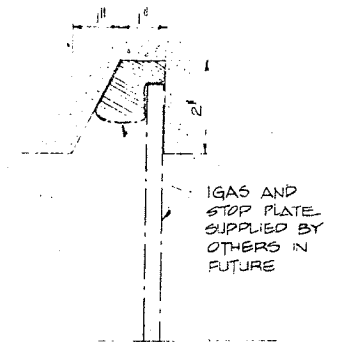


ROOF PLAN

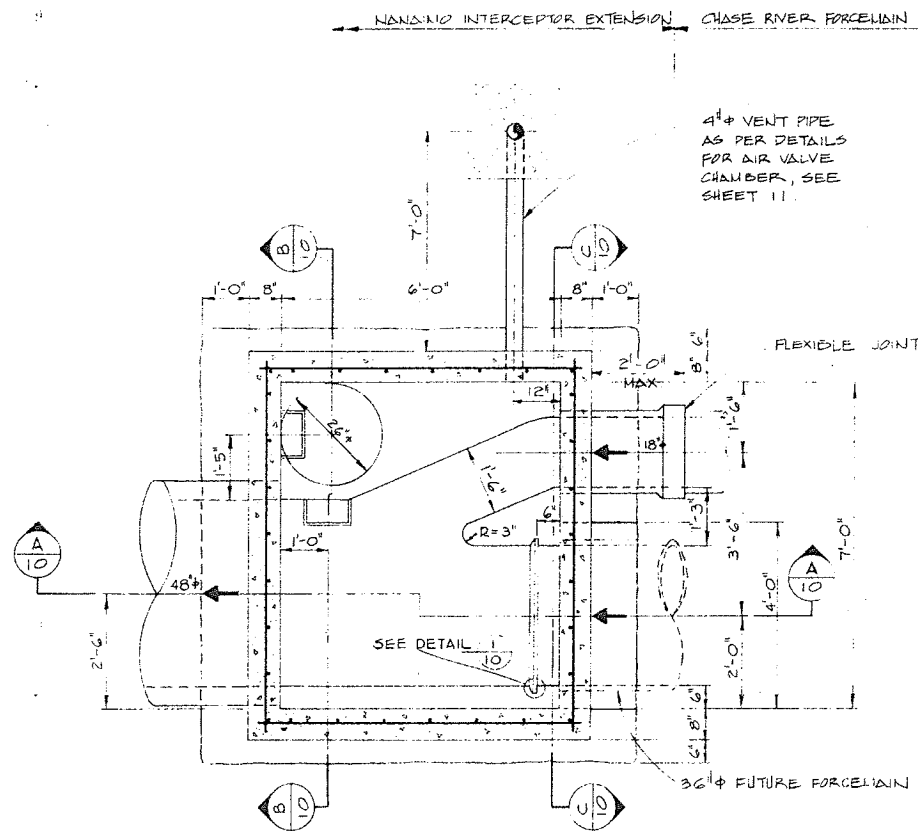
NOTE:
SLAB TOP BARS
SHOWN THUS ———
SLAB BOTTOM BARS
SHOWN THUS - - - - -



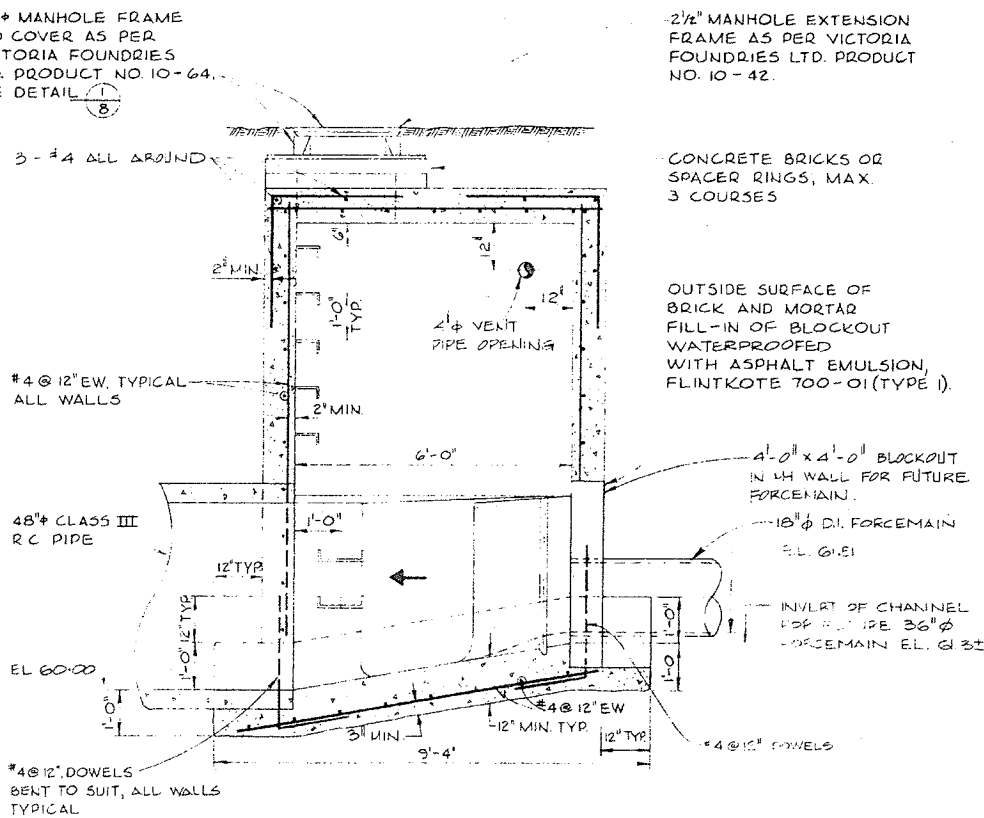
SECTION (C)



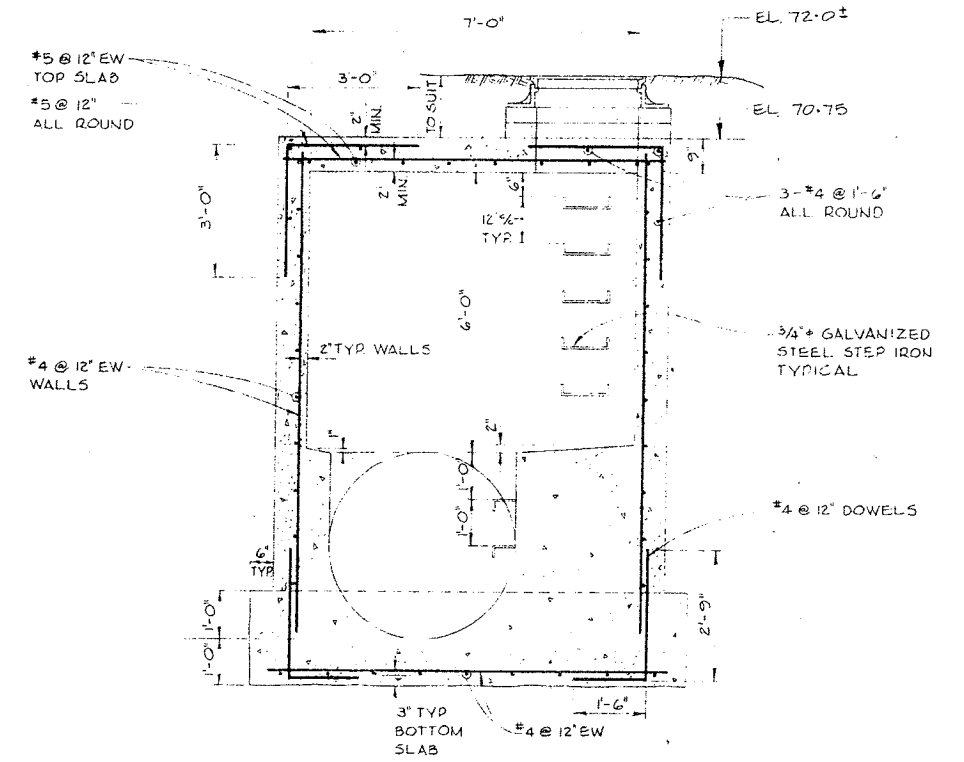
DETAIL (1)
SCALE 1/2" = 1'-0"
KEYWAY IN CHANNEL
FOR STOP PLATE



SECTIONAL PLAN



SECTION (A)



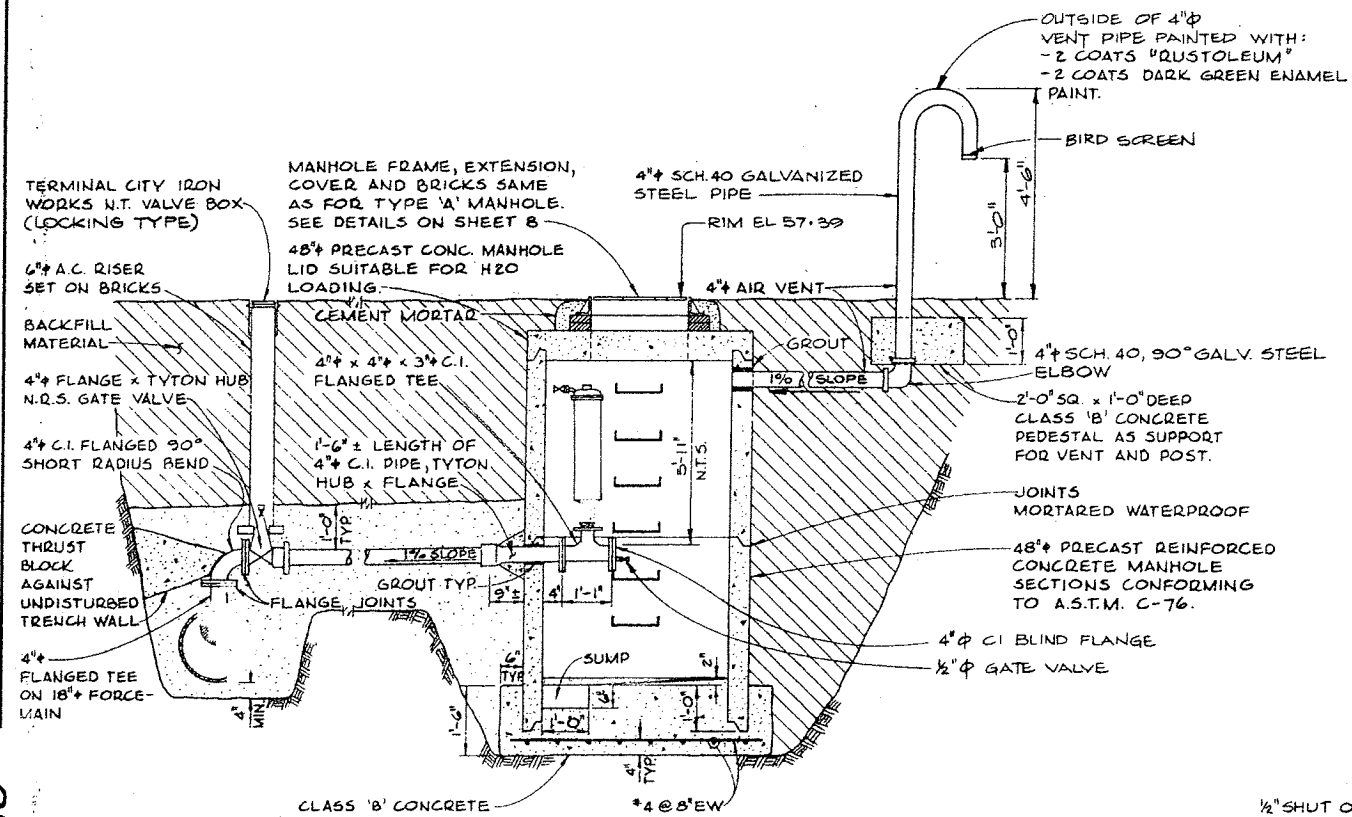
SECTION (B)

ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	DESIGNED	DRAWN	CHECKED	DATE	SCALE	DRAWING No.	SHEET	OF	ISSUE	PROJECT	
B	JAN 11/79	DEL	X	W	AS CONSTRUCTED							JT	JS	ST	3W	1/2" = 1'-0"	122-43-1	10	OF	12	ISSUE B	N-INT-079

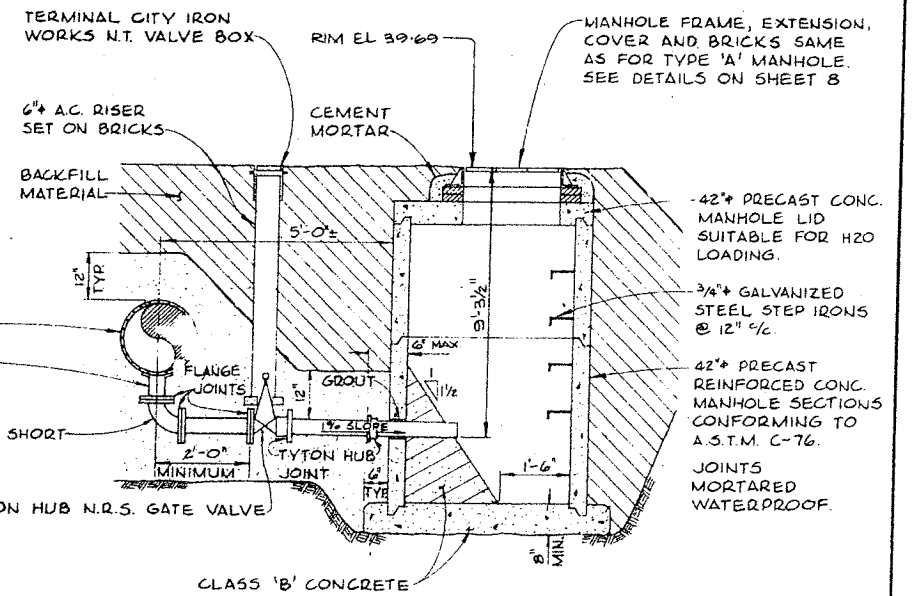


DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
REGIONAL DISTRICT OF NANAIMO
NANAIMO INTERCEPTOR EXTENSION AND
CHASE RIVER PORCELAIN
MANHOLE 54 - DETAILS
SCALE: N.T.S.
DRAWING No. 122-43-1
SHEET 10 OF 12 ISSUE B
N-INT-079

N-INT-080

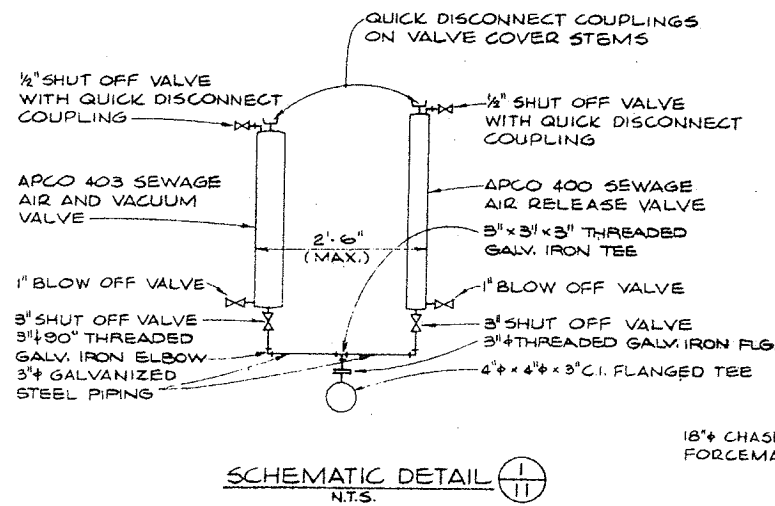


SECTION



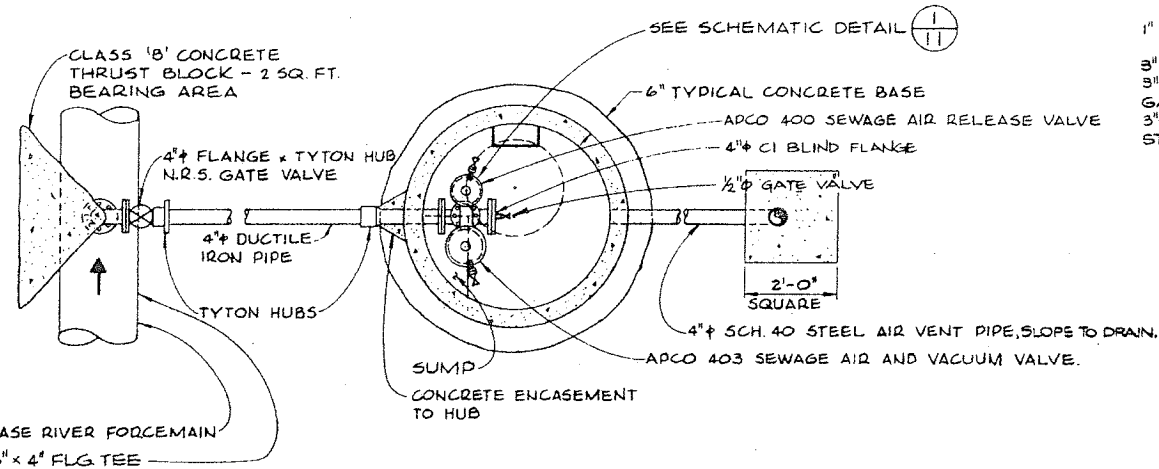
SECTION

NOTE:
 ALL BURIED PIPE AND FITTINGS ARE COATED OUTSIDE FOR CORROSION PROTECTION WITH ONE COAT OF COAL TAR EPOXY.



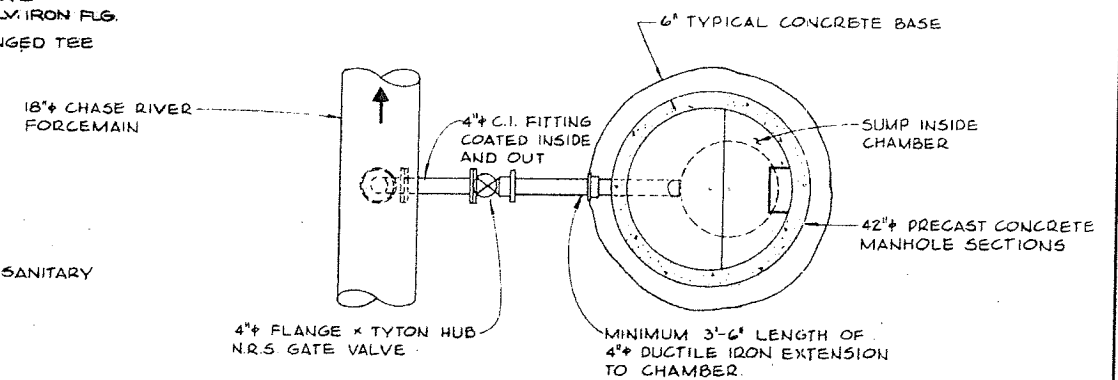
SCHEMATIC DETAIL

NOTE:
 AIR VALVE CHAMBER EQUIPPED WITH THE APCO "COMBINATION SEWAGE VALVES" WITH ACCESSORIES, FOR SANITARY SEWAGE SERVICE UP TO 150 P.S.I. AND NECESSARY PIPING AND APPURTENANCES AS DESCRIBED THIS INCLUDES:
 1) 1 APCO 400 SEWAGE AIR RELEASE VALVE, WITH 3" PIPE THREAD INLET SIZE.
 2) 1 APCO 403 SEWAGE AIR AND VACUUM VALVE, WITH 3" INLET SIZE.
 3) EACH VALVE IS EQUIPPED WITH: A 1" BRONZE BLOW OFF VALVE, A 1/2" BRONZE SHUT OFF VALVE WITH A QUICK DISCONNECT COUPLING, AND A 3" BRONZE SHUT OFF VALVE.
 4) A TOTAL OF 1-1/2" BACK FLUSHING HOSE, 6'-0" LONG, AND 1 QUICK DISCONNECT COUPLING AND VALVE COVER STEM FOR EACH VALVE.
 5) ALL PIPING FOR APCO "COMBINATION SEWAGE VALVES" ARRANGEMENT IS MINIMUM 3" SCH 40 GALVANIZED STEEL PIPE.
 6) ALL PIPING AND VALVES INSIDE OF THE AIR VALVE CHAMBER PAINTED AS DESCRIBED FOR AIR VENT PIPE ABOVE.



PLAN

AIR VALVE CHAMBER



PLAN

BLOWDOWN CHAMBER

ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION
B	JAN 11/79	DEL	JT	LJ	AS CONSTRUCTED						

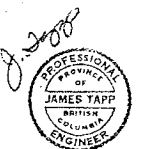
DESIGNED: JT
 DRAWN: JS
 CHECKED: JT, BW

DAYTON & KNIGHT LTD.
 CONSULTING ENGINEERS

June 8 1977

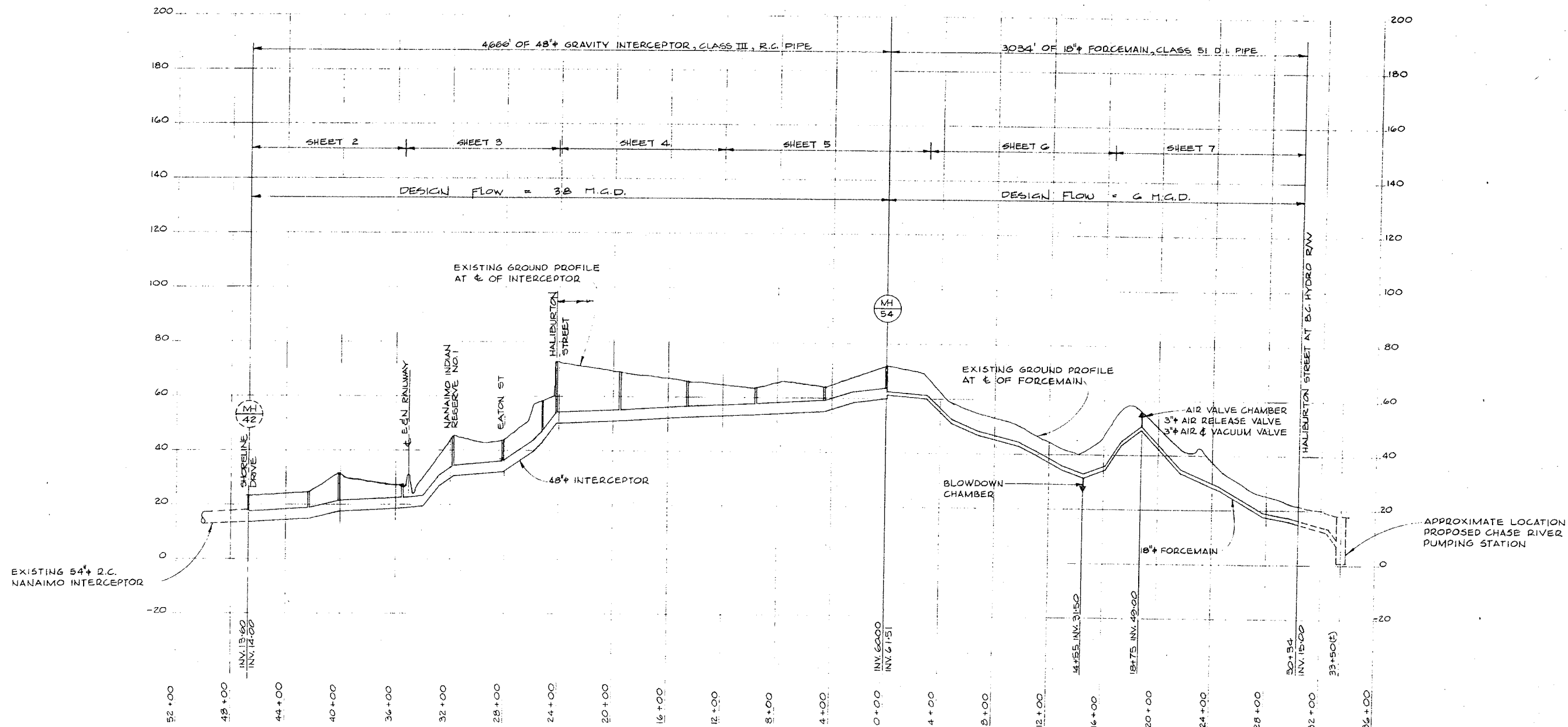
REGIONAL DISTRICT OF NANAIMO
 CHASE RIVER FORCEMAIN
 AIR VALVE AND BLOWDOWN CHAMBER DETAILS

SCALE: 1/2" = 1'-0" OR AS SHOWN
 DRAWING No. 122-43-1
 SHEET 11 OF 12 ISSUE B
N-INT-080



GEODETIC ELEVATION IN FEET

GEODETIC ELEVATION IN FEET



ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION
B	JAN 6/79	DEL	JT	W	AS CONSTRUCTED						

DESIGNED: JT
 DRAWN: JS
 CHECKED: [Signature]

DAYTON & KNIGHT LTD.
 CONSULTING ENGINEERS

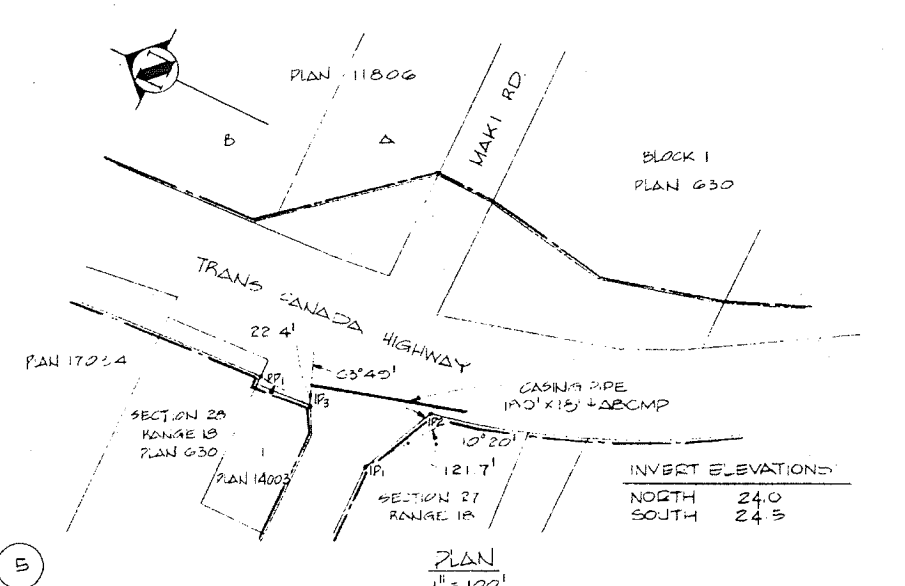
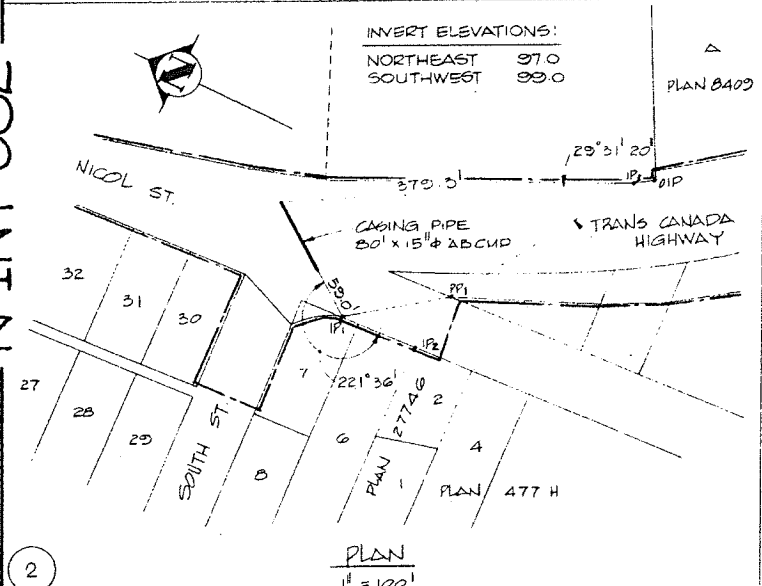
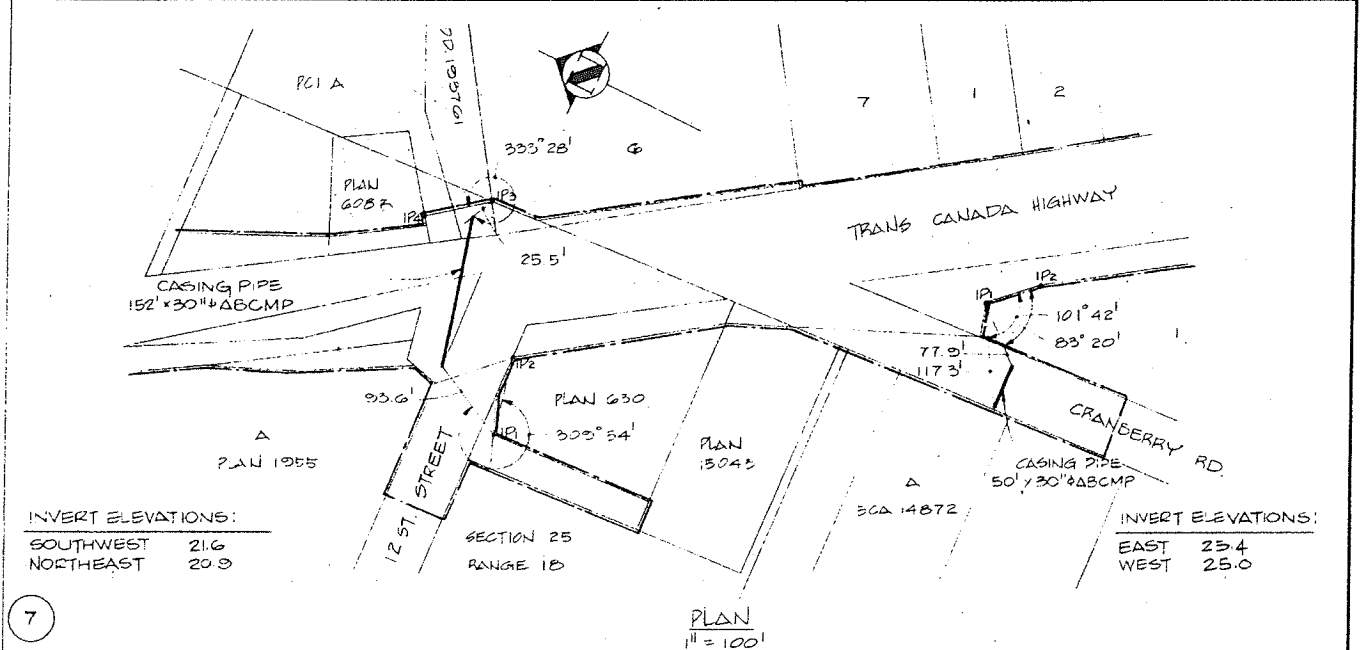
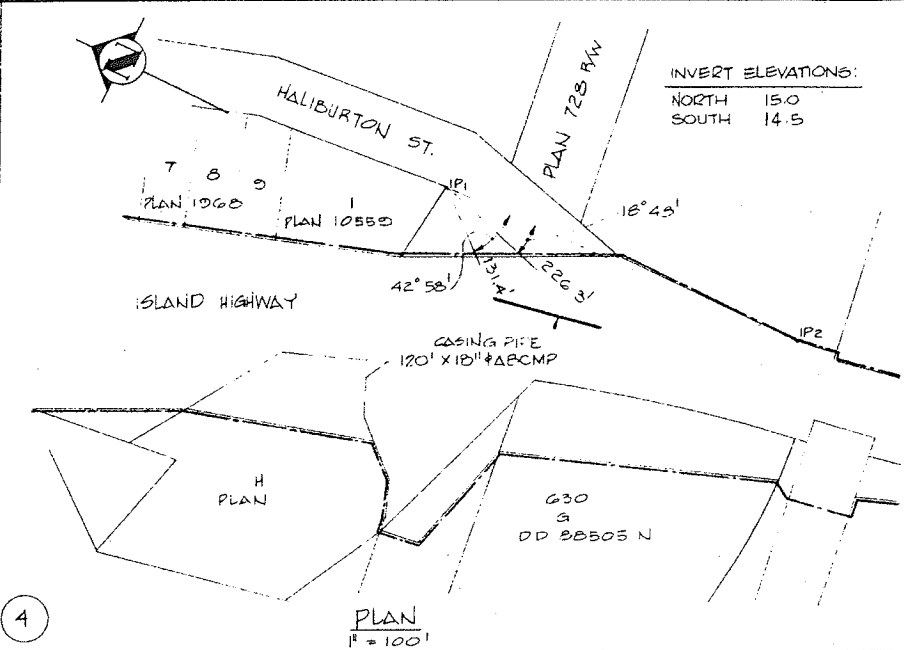
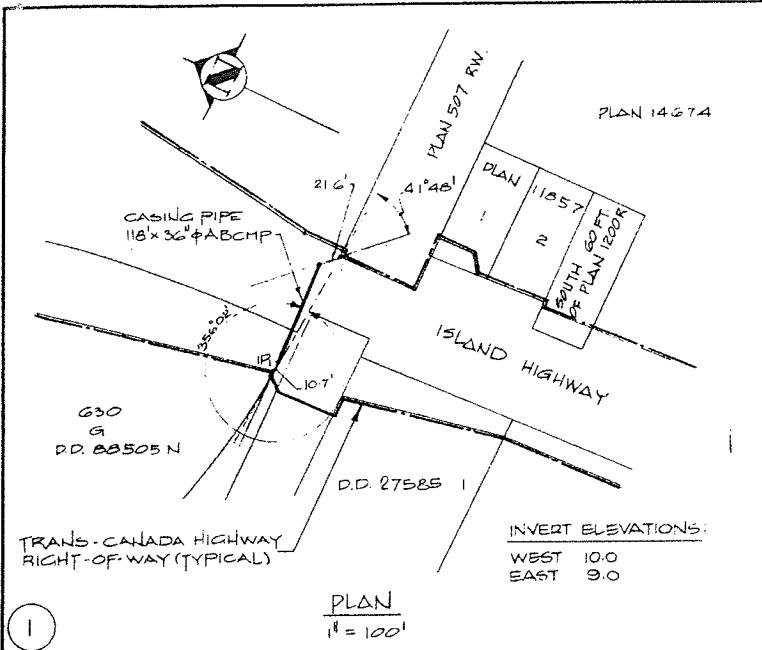
REGIONAL DISTRICT OF NANAIMO
 NANAIMO INTERCEPTOR EXTENSION AND
 CHASE RIVER FORCEMAIN
 KEY PROFILE AND DESIGN DATA

SCALE: HORIZ 1"=400', VERT. 1"=20'
 DRAWING No. 122-43
 SHEET 12 OF 12 ISSUE B

N-INT-081

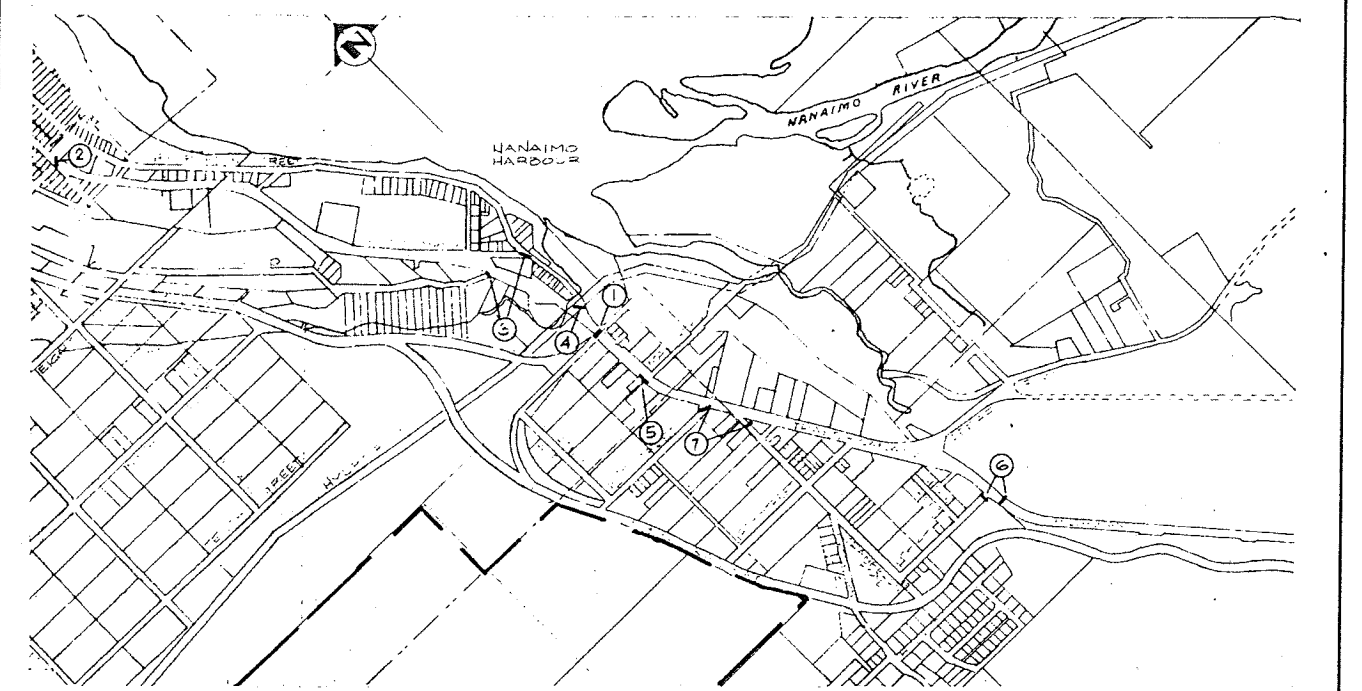
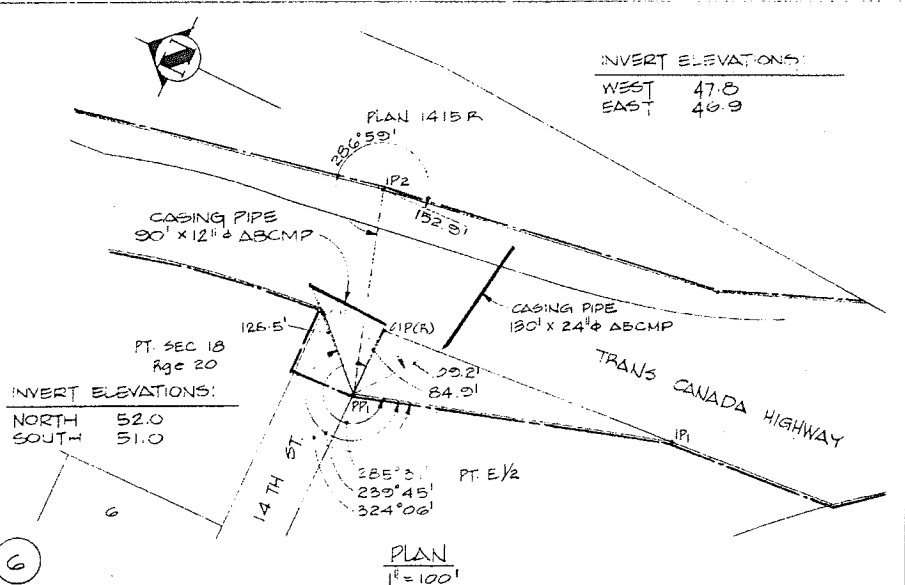
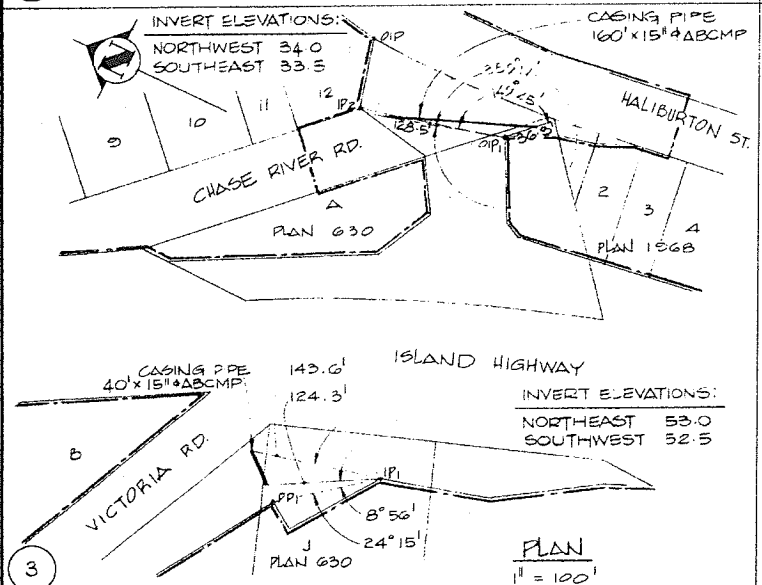


N-INT-082



NOTE: - PLAN NUMBERS AND DESIGNATED IRON PINS HAVE BEEN TAKEN FROM:
 "PLAN OF RIGHT OF WAY FOR THE TRANS-CANADA HIGHWAY THROUGH SECTION 20, RANGE 4,
 CRANBERRY DISTRICT AND SECTION 1, 2, 3, 6 & 7,
 NANAIMO DISTRICT"

AS PREPARED BY:
 C.O. SMYTHIES LAND SURVEYORS
 NANAIMO, B.C.
 DURING RECONSTRUCTION OF
 CEDAR JUNCTION - NANAIMO
 SECTION.



REGIONAL DISTRICT OF NANAIMO
 PETROGLYPH CASING PIPES

ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION	ISSUE	DATE	DRN	CHD	APPD	DESCRIPTION
B	JAN 29 79	RHE			CASING PIPE #3 LOCATION REVISED						

DESIGNED: J.T.
 DRAWN: JMG
 CHECKED:

DAYTON & KNIGHT LTD.
 CONSULTING ENGINEERS

REGIONAL DISTRICT OF NANAIMO
 PETROGLYPH CASING PIPES
 AS CONSTRUCTED

SCALE: AS SHOWN
 DRAWING NO. 122-7-1
 SHEET 1 OF 1 ISSUE B
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