



## **REQUEST FOR PROPOSALS No. 25-012**

### **Arbutus Reservoir Repair: Nanoose Bay Peninsula Water Service Area**

**ISSUED: February 21, 2025**

#### **CLOSING DATE AND TIME:**

Submissions must be received on or before:  
**3:00 PM (15:00 hrs) Local Time on March 20, 2025**

#### **Submissions and Questions are to be directed to:**

Rocky Chowdhury, M.Sc., P.Eng.  
Project Engineer, Water Services  
Email: [rchowdhury@rdn.bc.ca](mailto:rchowdhury@rdn.bc.ca)

Questions need to be requested at least five (5) business days before the closing date.

#### **Proponent's Non-Mandatory Information Meeting:**

Date: March 6, 2025

Time: 11:00am – 12:00pm (Local time)

Location: 2976 Link Pl, Nanoose Bay, BC V9P 9G2.

Note: Proponents must bring high vis vests and safety boots for the site meeting

Proposals will not be opened in public



## **1. Instructions to Proponents**

### **1.1 Closing Date/Time/Submission Method**

Submissions must be received on or before 3:00 PM (15:00 hrs), Local Time, on March 20, 2025.

Submission Method:

By Email: In PDF format with "25-012 Arbutus Reservoir Repair: Nanoose Bay Peninsula Water Service Area" as the subject line at this electronic address:

[rchowdhury@rdn.bc.ca](mailto:rchowdhury@rdn.bc.ca)

Please note: Maximum email file size limit is 20MB, or less. The RDN will not be liable for any technological delays of submissions.

Submissions received in any other manner will not be accepted.

### **1.2 Amendment to Proposals**

Proposals may be amended in writing and sent via email to the RDN contact person identified on the cover page on or before the closing. Such amendments should be signed by the authorized signatory of the Proponent.

### **1.3 Addenda and Questions & Answers**

If the RDN determines that an amendment or questions & answers are required for this RFP, the RDN will post the Addendum on the RDN ([www.rdn.bc.ca/current-bid-opportunities](http://www.rdn.bc.ca/current-bid-opportunities)) and BC Bid ([www.bcbid.gov.bc.ca](http://www.bcbid.gov.bc.ca)) websites. Each addendum will be incorporated into and become part of the RFP. No amendment of any kind to the RFP is effective unless it is contained in a written addendum issued by the RDN. It is the sole responsibility of the Proponent to check and ensure all amendments are included prior to submitting their final Proposal submission.

### **1.4 Withdrawal of Proposals**

The Proponent may withdraw their Proposal at any time by submitting a written withdrawal email to the RDN contact person identified on the cover page on or before the closing.

### **1.5 Unsuccessful Vendors**

The Regional District will offer debriefings to unsuccessful Proponents, on request, at a mutually agreeable time.

## **2. INTRODUCTION**

The purpose of this Request for Proposal is to solicit submissions from experienced and qualified contractors to design and repair the potable water reservoir (aka Arbutus Reservoir) located at 2976 Link Pl, Nanoose Bay, BC

The work includes replacing the plastic liner inside the reservoir, replacing the roof, install roof guardrail, and install new exterior steel ladder and cage.

The desired completion date of this project is September 30, 2025.

## **3. BACKGROUND**

The Arbutus Reservoir, constructed in 1982, is made of precast concrete walls, plastic liner and timber roof. The reservoir has 570 m<sup>3</sup> storage capacity with 12.4 m diameter and 4.88 m height. The roof structure consists of treated plywood on treated joists. Both the roof and liner are in poor condition and need replacement. The external ladder and cage are not code compliant and in poor condition as well. Since this reservoir is an integral component for ensuring continuous water supply in the Arbutus neighbourhood of Nanoose Bay, the RDN needs to refurbish this reservoir to ensure its reliable service as part of the water distribution system.

## **4. SCOPE OF SERVICES**

The overall scope of the project is to complete necessary repair works for the Arbutus Reservoir. The specific scopes are –

### ***Design:***

1. Attend a kick-off meeting with RDN staff and attend two other meetings during design stage.
2. Review of the existing As-built drawings and reports on the reservoir.
3. Roof replacement –
  - Fieldwork to check the existing roof and joints to assist in the design.
  - Review the existing record drawings, as necessary
  - complete the design of the roof.
  - Include roof access hatch, roof vent, guardrail, anchor points etc, in the roof design
  - Submit the signed and sealed engineered drawing of the new roof to RDN and assist RDN to obtain Island Health Construction Permit.
4. Interior Liner:
  - Check liner anchorages.
  - Design mechanical attachment for the geomembranes as per ASTM D6497-02. Mechanical anchorage will need to be submitted as signed and sealed engineered drawing.

- Check the inlet, outlet and overflow pipe locations for liner placement.
  - Propose a liner material for selection to RDN. The liner material will adhere to the following criteria, at a minimum, -
    - o NSF 61 rated, suitable for potable water containments.
    - o Follow “ANSI/AWWA D130-11(R19): Geomembrane Materials for Potable Water Applications”.
    - o Must provide resistance to high concentration chlorinated water used for disinfection as well as long term resistance to regular low concentration of chlorine in potable water.
    - o Sufficiently flexible for mechanical anchorage around irregular shaped surface, such as inlet, outlet, overflow pipe etc.
    - o High tensile strength and long-term durability.
    - o Submit the specification and material safety data sheet of the selected liner material to submit to the Island Health as part of the construction permit application.
5. Others
- Propose an external ladder and cage that complies with WorkSafe regulations.

### ***Permitting***

1. Assist RDN with construction permit application to Island Health.
2. Answer any questions from Island Health on the design during the construction permit application review process.

### ***Construction***

The Contractor must provide all labor, material and equipment needed for the construction.

1. Follow the predetermined schedule for construction and inform promptly to RDN regarding any schedule changes during construction.
2. Attend a preconstruction site meeting.
3. RDN Operations will set up alternate temporary measures to ensure continuous water supply while the existing reservoir is offline for construction. The contractor is to coordinate with RDN operations with construction schedule so that the alternate measures are set up before construction.
4. Coordinate with RDN operations on draining the existing tank before construction.
5. Dismantle the existing timber roof of the reservoir and dispose of all materials, except the roof beams that are in good condition. The good condition roof beams will be set aside beside the reservoir. RDN Operations will pick up the good condition beams to reuse in other sites.
6. Remove the existing liner from inside of the reservoir and dispose of the liner materials.

7. Remove internal ladder, pipes and other fittings, as necessary, to install the new liner.
8. Re-install the internal ladder, pipes, and other fittings that were removed. If existing materials are in such a condition that they cannot be reused or get damaged, please install new ladder, pipes etc.
9. Install roof to the reservoir, as designed.
10. Install guardrail, access hatch and vent on the roof.
11. Install external ladder and cage.
12. Repair concrete spalling on the exterior side of the wall with mortar.
13. Coordinate with RDN Operations to disinfect the reservoir. RDN Ops will disinfect the reservoir and get samples tested at external lab. However, if any concerns or defects appear during disinfection and sampling that relate to the construction or contractor's work, the contractor must be available to rectify those issues.
14. Conduct hydrostatic test on the reservoir and liner to check for any leakage. The hydrostatic test shall include filling the reservoir up to the overflow level, checking any noticeable leakage through the liner and checking the water level after 24 hours. There should not be any drop in water level in 24 hours. In case of leakage, the contractor will promptly repair the leak.
15. The Contractor must be registered with WorkSafe BC and be in good standing with remittance up to date throughout the agreement and is designated as the Prime Contractor and shall fulfill the Prime Contractor responsibilities as defined in:
  - a) WorkSafeBC Occupational Health and Safety Regulation, Notice of Project, Section 20.2, and Coordination of multiple employer workplaces, Section 20.3;
  - b) Workers Compensation Act (BC), Coordination at multiple-employer workplaces, Section 118, Subsections (1) & (2); and
  - c) General Requirements, Section 3.10 WorkSafe BC.

## **5. DELIVERABLES AND OUTCOMES**

The followings are the deliverables –

1. Signed and Sealed design drawing for the roof replacement and liner replacement and all specifications.
2. Island Health Construction Permit
3. Reservoir Repair, as per Section 4 – Scope of Services

## **6. CONTRACT SECURITY**

If the *Owner* delivers a written notice ("*Notice of Intent to Award*") by which the *Owner* accepts the proposal, the proponent will, within 15 *Days* of receipt of the written *Notice of Intent to Award*, deliver to the *Owner*:

- a copy of the insurance certificates as specified in, Section 7 – Insurance, indicating that all



such insurance coverage is in place.

- a “clearance letter” indicating that the proponent is in Worksafe BC compliance.
- a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the Proposed Price, covering the performance of the Work including the Contractor’s obligations during the Maintenance Period, issued by a surety licensed to carry on the business of suretyship in the province of British Columbia, and in a form acceptable to the Owner.

After receiving these documents, RDN will provide the contract agreement to the contractor for signing and returning to the RDN.

## **7. INSURANCE**

Insurance requirement will be as per, CCDC 41 – CCDC Insurance Requirement, Publication Date: January 21, 2008.

## **8. REFERENCE/BACKGROUND INFORMATION**

The following reference information is included, as part of the RFP package –

- a. Arbutus reservoir condition assessment
- b. As-built drawing
- c. Supplementary general conditions.
- d. CCDC 41: CCDC Insurance Requirements 2008

## **9. SITE CONDITIONS, INFORMATIONAL MEETINGS AND SITE VISITS**

Proponents, either personally or through a representative, have the responsibility to be knowledgeable of the Site. In submitting a Proposal a Proponent will be deemed to have made allowance for all factors relating to the Site that might affect the performance of the work, that would be apparent to a knowledgeable and experienced contractor from a visual inspection of the Site and a review of available materials and information, including the location of the Site, local conditions related to the work, geotechnical and subsurface conditions, Site drainage, Site access, local weather, availability of labour, equipment and materials and any other relevant matters. (For clarity, except as may be expressly permitted in the Contract Documents, such required inspection will not include subsurface geotechnical investigations.) By submitting a Proposal, a Proponent will be deemed to have undertaken any required inspection and to have taken account of all such factors in the preparation of its Proposal. No additional payments or time extensions shall be claimable or due because of difficulties relating to conditions at the Site or factors as described in this Section which were reasonably foreseeable by a contractor qualified to undertake the work that was knowledgeable of, and had inspected, the Site and considered the factors listed in this Section.

Proponent will need to make arrangements for power, water and portable washrooms during construction.

The reservoir will be ready for inspection for the proponents during the site meeting before the Proposal submission deadline.

**10. OTHER INFORMATION**

Please provide the project cost breakdown in the following format:

**Table 1: Project Cost Breakdown**

Sl#	Item	Deliverables	Unit	Cost (include all taxes except GST)
<b>1.0</b>	<b>Design</b>			
1.1	Design	Signed and sealed engineered design drawings and liner specification	Lump sum	
1.2	Permitting	Island Health Construction Permit	Lump sum	
Subtotal for Design				
<b>2.0</b>	<b>Construction</b>			
2.1	Roof:  <b>Proposed material for the new roof: _____</b>	All labor and material for the dismantle and disposal of the existing roof and construct a new roof. Includes hatch, vent, guardrail etc.	Lump Sum	
2.2	Liner:  <b>Proposed material for the new Liner: _____</b>	(a) Liner Material Supply*	1	\$125,000*
		(b) - All labor and material to remove and dispose of the existing liner. -All labor and material, except the liner material which is include in item#2.2(a), to install a new liner. - All labor and material to reinstall the internal ladder and restore the inlet, outlet, drain and overflow pipe inside the reservoir. - All labor material for any Quality Assurance testing	Lump Sum	
2.3	External Cage and Ladder	Labor and material to get WorksafeBC compliant cage and ladder	Lump Sum	
2.4	Spalling concrete Repair	Labor and material	Lump Sum	
Subtotal for Construction				
Total Cost (without GST) for Design and Construction				
5% GST				
Total Cost (with GST)				



\* \$125,000 for Liner material supply cost is for bid comparison purposes only and is kept as a tentative allowance to include with the Total Cost. The liner material selection will be finalized at the design stage. Based on the selected Liner Material at that time, **the actual payment for Item# 2.2(a), i.e. Liner Material Supply, will be the actual supply cost of the selected liner material + 10% markup/overhead.** The actual cost for Liner material supply will need to be proven with an invoice from Supplier and will include shipping cost and taxes as well. The difference between actual dollar amount for item #2.2(a) and \$125,000 will be adjusted through a change order in the contract.

Please note the followings –

- a. Table1: Project Cost Breakdown should include all costs for the scope of work, mentioned in Section 4. Any works that are part of the project scope, but not included in the Table1: Project Cost Breakdown, should be considered associated with one of the listed items in the table or cost for those works may be distributed proportionally among the listed items in the table.
- b. Payments, less holdback, will be made only after the deliverables are received for each item.
- c. Mob/demob, site clean up, bonds and insurance costs, coordination with RDN staff, meeting attendance, scheduling updates etc. are considered subsidiary work and no separate additional payment will be made for these works.

#### **11. PROPOSAL SUBMISSION AND EVALUATION**

To assist in receiving similar and relevant information, and to ensure your Proposal receives fair evaluation, the RDN asks Proponents to provide the following information.

Please include with your proposal:

- a) Corporate background, history, areas of expertise and practice of any corporate sustainability. (5 Point)
- b) At least two (2) but no more than five (5) written references involving similar work. The references of the highest ranked proponent may be contacted for confirmation. (10 Point)
- c) Layout the plan to accomplish the project including method and sequence to complete the work on or before September 30, 2025 (30 Point)
- d) Provide overall cost breakdowns in the format given in Table 1. (10 Point)
- e) Proposed schedule of the work. (5 Point)

Proposals will be evaluated on the following basis 60% Technical, 40% Financial

The lowest price proposal will receive full marks. Other proposals will receive reduced scores based on the proportion higher than the lowest price. i.e.  $\text{Score} = \text{Min Cost}/\text{Cost} \times \text{Fee Points}$ .

Proposals submitted should be in enough detail to allow the RDN to determine the Proponent's qualifications and capabilities from the documents received. The selection committee, formed at the RDN's sole discretion, will score the Proposals in accordance with the criteria provided.

The RDN may evaluate proposals on a comparative basis by comparing one proponent's proposal to another proponent's proposal. The RDN reserves the right to not complete a detailed evaluation if the





RDN concludes the proposal is materially incomplete or, irregular or contain any financial or commercial terms that are unacceptable to the RDN.

The selection committee may proceed with an award recommendation or the RDN may proceed to negotiate with the highest evaluated proponent with the intent of developing an agreement. If the parties after having bargained in good faith are unable to conclude a formal agreement, the RDN and the Proponent will be released without penalty or further obligations other than any surviving obligations regarding confidentiality and the RDN may, at its discretion, contact the Proponent of the next best rated Proposal and attempt to conclude a formal agreement with it, and so on until a contract is concluded or the proposal process is cancelled.

The RDN reserves the right to award the assignment in whole or in part or to add or delete any portion of the work. Throughout the evaluation process, the evaluation committee may seek additional clarification on any aspect of the Proposal to verify or clarify the information provided and conduct any background investigation and/or seek any additional information it considers necessary.

## **12. PROPOSED PURCHASE CONTRACT**

The RDN's preferred form of Contract is CCDC14-2013 Design Build Stipulated Price Contract included by reference only as amended by the enclosed Supplementary General Conditions. Proponents should carefully review this form of Contract. Should any vendors request that RDN consider revisions to the form of Contract, Proponents should include any clauses of concern in their proposal submission and suggest replacement language.

## **13. GENERAL CONDITIONS**

### **13.1 No Contract**

By submitting a Request for Proposal and participating in the process as outlined in this RFP, proponents expressly agree that no contract of any kind, including any "Contract A" obligations is formed until a fully executed contract is in place.

### **13.2 Privilege Clause**

The lowest or any proposal may not necessarily be accepted.

### **13.3 Acceptance and Rejection of Submissions**

This RFP does not commit the RDN, in any way to select a preferred Proponent, or to proceed to negotiate a contract, or to award any contract. The RDN reserves the right in its sole discretion cancel this RFP, up until award, for any reason whatsoever

The RDN may accept or waive a minor and inconsequential irregularity, or where applicable to do so, the RDN may, as a condition of acceptance of the Submission, request a Proponent to correct a minor or inconsequential irregularity with no change in the Submission.



#### ***13.4 Conflict of Interest***

Proponents shall disclose in their Proposals any actual or potential Conflict of Interest and existing business relationships it may have with the RDN, its elected officials, appointed officials or employees.

#### ***13.5 Solicitation of Board Members and RDN Staff***

Proponents and their agents will not contact any member of the RDN Board or RDN Staff with respect to this RFP, other than the RDN Contact named in this document.

#### ***13.6 Litigation Clause***

The RDN may, in its absolute discretion, reject a Proposal submitted by Proponent, if the Proponent, or any officer or director of the Proponent is or has been engaged either directly or indirectly through another corporation in legal action against the RDN, its elected or appointed officers and employees in relation to:

- (a) any other contract for works or services; or
- (b) any matter arising from the RDN's exercise of its powers, duties, or functions under the Local Government Act, Community Charter or another enactment within five years of the date of this Call for Proposals.

In determining whether to reject a Proposal under this clause, the RDN will consider whether the litigation is likely to affect the Proponent's ability to work with the RDN, its consultants and representatives and whether the RDN's experience with the Proponent indicates that the RDN is likely to incur increased staff and legal costs in the administration of this Contract if it is awarded to the Proponent.

#### ***13.7 Exclusion of Liability***

Proponents are solely responsible for their own expenses in preparing and submitting a Proposal and for any meetings, negotiations, or discussions with the RDN. The RDN will not be liable to any Proponent for any claims, whether for costs, expense, losses or damages, or loss of anticipated profits, or for any other matter whatsoever, incurred by the Proponent in preparing and submitting a Proposal, or participating in negotiations for a Contract, or other activity related to or arising out of this RFP. Except as expressly and specifically permitted in these Instructions to Proponents, no Proponent shall have any claim for compensation of any kind whatsoever, because of participating in this RFP, and by submitting a Proposal each Proponent shall be deemed to have agreed that it has no claim.


#### ***13.8 Ownership of Proposals***

All Proposals, including attachments and any documentation, submitted to and accepted by the RDN in response to this RFP become the property of the RDN.

#### ***13.9 Freedom of Information***

All submissions will be held in confidence by the RDN. The RDN is bound by the Freedom of Information and Protection of Privacy Act (British Columbia) and all documents submitted to the RDN will be subject to provisions of this legislation. The successful vendor and value of the award is routinely released.

<b>CLIENT:</b>	<b>REGIONAL DISTRICT OF NANAIMO – WATER SERVICES DEPARTMENT</b>
<b>SERVICE AREA:</b>	<b>NANOOSE BAY PENINSULA WATER SERVICE AREA</b>

A. GENERAL DATA				
Reservoir Name	Arbutus Park			
Location	2976 Link Place			
Inspection Date	June 12, 2019			
Inspected by	D. Harrison, P.Eng.			
Year Constructed	1982			
Configuration	Circular at Grade			
Material	Precast Concrete Walls/Plastic Liner/Timber Roof			
Dimensions	L:	W:	H: 4.88 m	D: 12.4 m O.D.
Storage Capacity	570 m <sup>3</sup>		Cells: One	
Record Drawings	Willis Cunliffe Tait		Geotechnical: Not available	

B. SEISMIC ASSESSMENT		
Item	Risk Factor	Comments
Seismic Design Code	Unknown	Not noted on record drawings
Soil Classification	Rock Site	Rock cut is visible on uphill side of reservoir
Construction Type	Precast Concrete	
Global Stability-Sliding	Unknown	See note 1
Global Stability -Overturning	Unknown	See note 2
Structural Elements	Unknown	See note 3
Connection Details	Needs Investigation	Roof/Wall & Wall/ Footing Connections need Investigation. See note 4
Reinforcing Details	Not Applicable	See note 5
Freeboard	530 mm (U/S plywood roof)	<b>Sloshing:</b> Unknown, if sloshing exceeds freeboard may damage roof
ACCESSORIES & PIPING		
Overflow Restraint	Adequate	Overflow consists of slots in center column.
Piping Flexibility	Adequate	Rock site demands are low. See note 7.
Vent Capacity	Inadequate	Needs upgrading. See condition deficiencies note 1

<b>CLIENT:</b>	<b>REGIONAL DISTRICT OF NANAIMO – WATER SERVICE DEPARTMENT</b>
<b>SERVICE AREA:</b>	<b>NANOOSE BAY PENINSULA WATER SERVICE AREA</b>
<b>RESERVOIR:</b>	<b>ARBUTUS PARK RESERVOIR</b>

### Notes (Seismic):

1. Global - Sliding - Unknown, capacity depends on wall to floor detail. See Note 3 and Cost Estimate for Seismic Deficiencies.
2. Global - Overturning - Unknown, see Engineering Fees for Seismic Deficiencies.
3. Precast Wall Element Capacity to resist static plus dynamic hoop tension is unknown.
4. Connection detail at junction of floor slab and wall foundation is critical for seismic performance. Detail on drawing is incomplete. Investigate curb detail by emptying tank, cut hole in “bag liner” at curb, measuring concrete curb and determining if it has any reinforcement. Repair bag liner and return to service. See Engineering Fees for Seismic Deficiencies.
5. Reinforcing Details need investigation, see Engineering Fees for Seismic Deficiencies.
6. Sloshing Freeboard to be calculated based on ACI 350/ASCE 7. See Engineering Fees for Seismic Deficiencies.
7. Piping and piping connections must be flexible enough to accommodate differential movements due to tank sliding and/or overturning. PVC piping is likely adequate because rock site will have low seismic movement demands.

C. STRUCTURAL CONDITION							
	Item	Material	Condition				Comments
			Good	Fair	Poor	N/A	
1.	Roof	Treated Timber					Roof membrane with lots of debris. Timber condition is unknown. See note 1.
2.	Walls	Precast Concrete		X			No visible leaks or significant cracks.
3.	Column	Steel					No access; reservoir full at time of inspection.
4.	Floor	Concrete					No access; reservoir full at time of inspection.
5.	Foundation	See Floor		X			Visible Portion outside wall has minor deterioration
6.	Other	Bag Liner					No access; reservoir full at time of inspection.

### Notes: (Structural):

1. The roof structure consists of treated plywood on treated wood joists. The condition is unknown, because inspection access requires scaffold in an empty tank.

D. ACCESSORY CONDITION							
	Item	Material	Condition				Comments
			Good	Fair	Poor	N/A	
1.	External Ladder	Galv. Steel			X		Ladder cage does not comply with WorkSafe regulations, too large
2.	Internal Ladder	Aluminum	X				

<b>CLIENT:</b>	REGIONAL DISTRICT OF NANAIMO – WATER SERVICE DEPARTMENT
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<b>RESERVOIR:</b>	ARBUTUS PARK RESERVOIR

D. ACCESSORY CONDITION							
	Item	Material	Condition				Comments
			Good	Fair	Poor	N/A	
3.	Roof Access Hatch	Stainless Steel	X				Size: 550 mm square
	.1 Raised Curb						Height: 75 mm
4.	Roof Vent	Stainless Steel	X				Size: 150 mm
	.1 Screen	Stainless Steel			X		Poor capacity. Mesh Size: ~ 20- 6 mm diameter holes. See condition deficiencies note 1.
	.2 Clearance						1100 mm
5.	Roof Guardrail	Steel			X		Height: < 42" (Not WorkSafe Compliant)

Condition	Definition	Notation	Definition
Good	Element is sound, no identified defects	N	No Access
Fair	Element is adequate, deficiencies identified but no remedial action required.	N/ A	Not Applicable
Poor	Element is deficient, major items in need of repair or replacement		

### GENERAL COMMENTS:

1. Tall Trees on all sides, roof was damaged in 2018 wind storm. (See photos)
2. Condition of treated wood roof plywood and roof joists are unknown.
3. The structural condition of the roof of this 33 year old tank is unknown. The condition of the bag liner is also unknown. Roof maintenance has been limited due to concerns about safety of the roof. There is good access on two sides and limited access to the other sides of the reservoir for Operations & Maintenance work.

### CONDITION DEFICIENCIES:

1. Vent screen condition is good, but inadequate free air space. (See photos)
2. Plywood roof flexibility makes operator nervous.
3. Roof guardrail height and exterior ladder cage do not comply with Work Safe regulations.



# Condition Summary & Seismic Assessment

<b>CLIENT:</b>	<b>REGIONAL DISTRICT OF NANAIMO – WATER SERVICE DEPARTMENT</b>
<b>SERVICE AREA:</b>	<b>NANOOSE BAY PENINSULA WATER SERVICE AREA</b>
<b>RESERVOIR:</b>	<b>ARBUTUS PARK RESERVOIR</b>

## SEISMIC DEFICIENCIES:

1. Seismic deficiencies are unknown. The most important missing detail is the connection of the wall to the foundation. No dimensions or reinforcing are shown for this critical detail. Obtaining information on this detail will be costly as it requires cutting a hole in the bag liner to access the interior curb detail.

## FURTHER INVESTIGATION AND RECOMMENDATIONS:

1. Connection of roof to walls and walls to foundation may be inadequate. Recommend investigation and seismic assessment.
2. Geotechnical investigation not required due to presence of rock at site.
3. Assess sloshing height if tank is to remain in service.
4. Detailed seismic assessment is high priority if tank is to remain in service.
5. Recommend upgrade vent capacity.

## COST ESTIMATES FOR CONDITION DEFICIENCIES:

Priority	Item	Cost Estimate	Comments
Immediate	Replace screen with screen with larger free area. – URGENT	\$1,000	
	Install New Exterior Galvanized Steel Ladder & Cage & Extend guardrail	\$20,000	Budget price from Alliance Engineering Works + Contingency
2- 5 years	Replacement of wood roof or installation of new bag liner have not been costed.		Reservoir is scheduled for removal and replacement at an alternate site.
10 years			

- Note:
1. Cost estimates are in 2020 dollars with no allowance for escalation due to inflation.
  2. Cost estimates are limited to deficiencies observed during June 12, 2019 exterior inspection.
  3. Cost estimates do not include seismic upgrading.
  4. Cost estimates are for construction prices only using contractors unless noted otherwise.
  5. Cost estimates do not include engineering or project management.

## ENGINEERING FEES FOR SEISMIC ASSESSMENTS:

Item	Cost Estimate	Comments
Roof condition and structural assessment	\$20,000	Empty tank and inspect underside of roof with rolling scaffold. Bag liner would have to be protected from damage during this operation. Assess roof structural capacity based on existing condition.
Bag Liner Condition Assessment	\$10,000	If reservoir is to remain in service, recommend condition assessment and hydrostatic test of the bag liner by lining expert.



## Condition Summary & Seismic Assessment

<b>CLIENT:</b>	<b>REGIONAL DISTRICT OF NANAIMO – WATER SERVICE DEPARTMENT</b>
<b>SERVICE AREA:</b>	<b>NANOOSE BAY PENINSULA WATER SERVICE AREA</b>
<b>RESERVOIR:</b>	<b>ARBUTUS PARK RESERVOIR</b>

Seismic Assessment	\$25,000-30,000	Investigate the wall/foundation connection by cutting inspection hole in bag liner. Detailed seismic stability and element capacity evaluation including sloshing height.
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- Note:
1. The Engineering Fee Estimates are in 2020 dollars and do not include Goods and Services Tax.
  2. Western Tank & Lining could be retained to inspect the bag liner and cut & repair inspection holes if required.
  3. Engineering Fee Estimates assume RDN provides confined spaced safety procedure, air quality monitoring, standby rescue personnel & equipment, ventilation, and lighting for confined space inspection.
  4. Engineering Fee Estimates assume RDN empty, clean (as required), disinfect and return tank to service.



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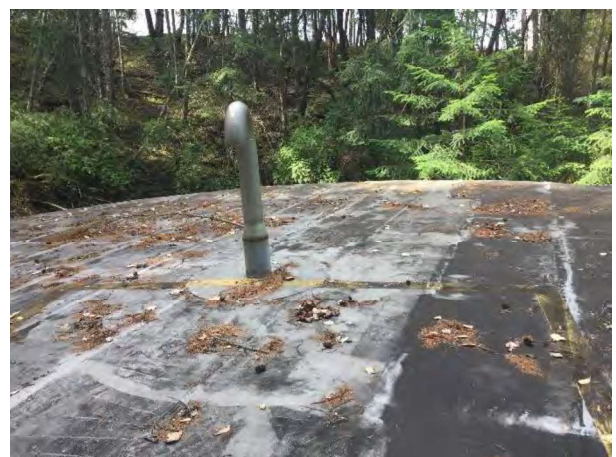
**Elevation**



**Exposed Site Rock**



**Exterior Ladder at Roof**



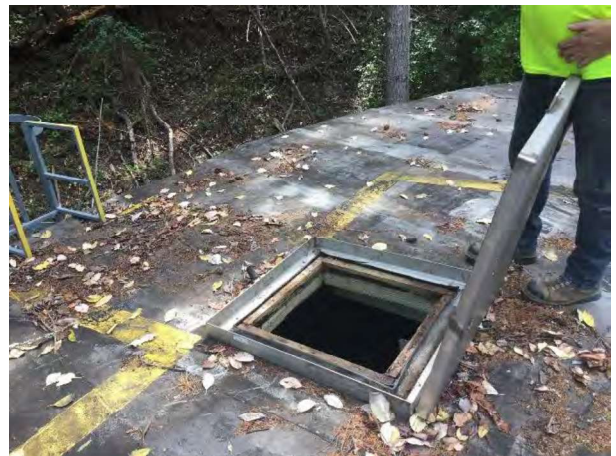
**Exterior Roof Membrane & Roof Vent**



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Interior showing bag liner, wood roof joists, and underside of wood roof



Roof Hatch – 550 mm Square

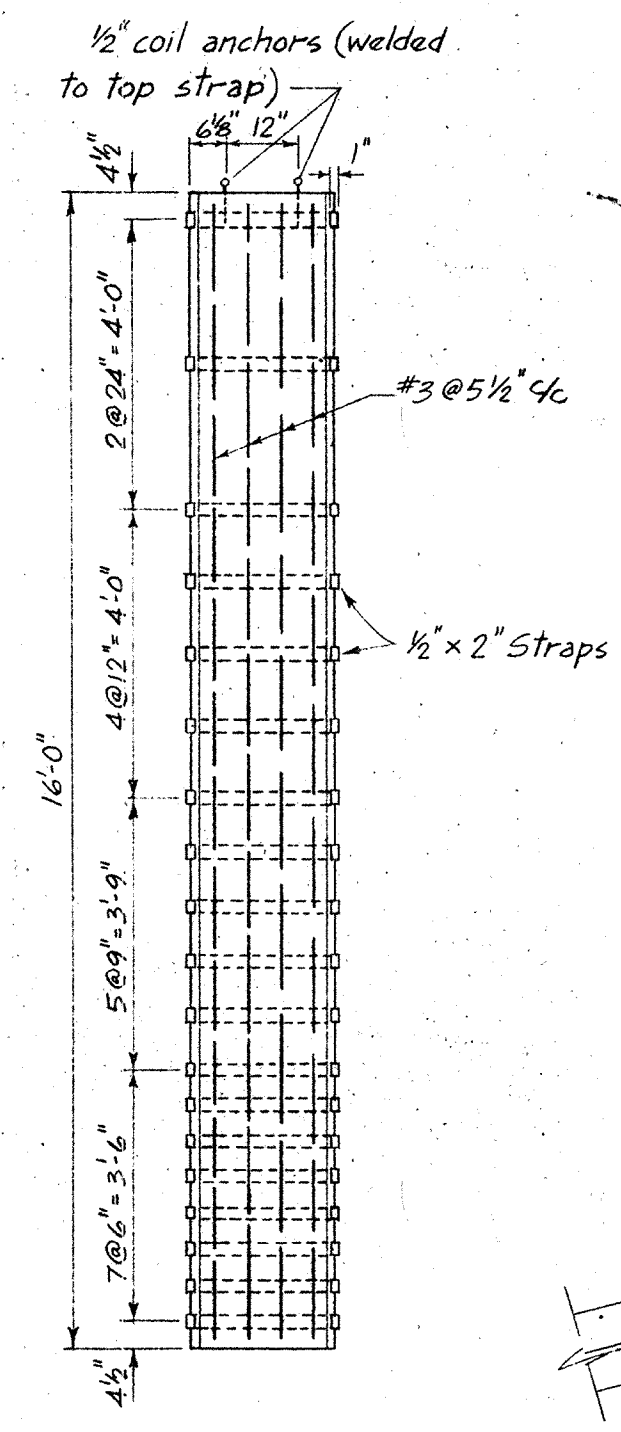


Roof Overhang Damage from 2018 Windstorm

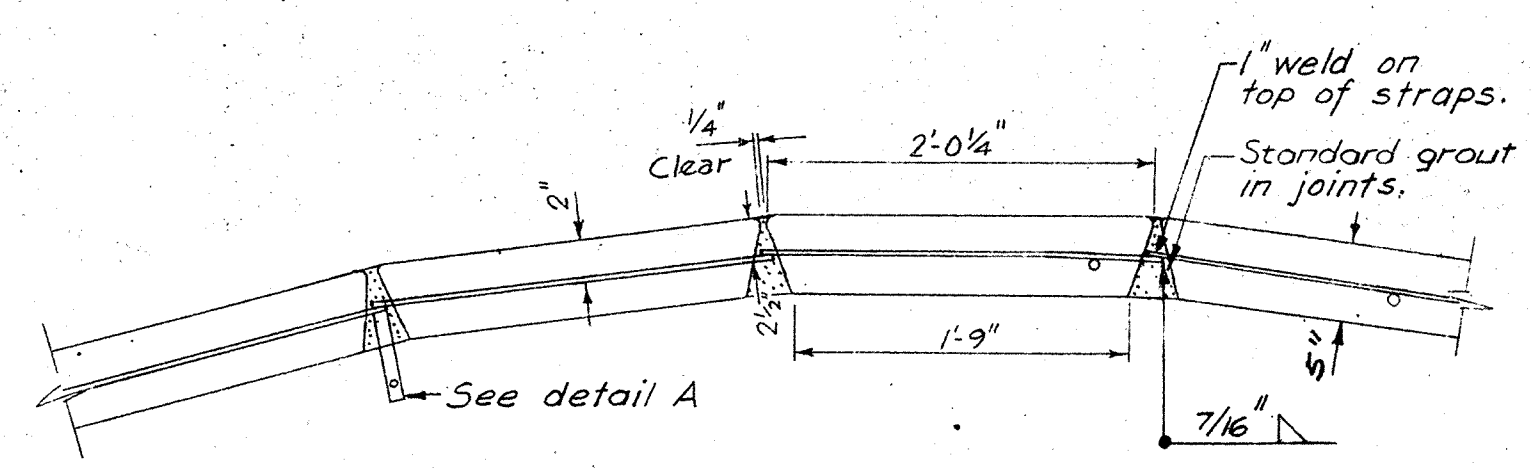


Minor Wall Damage from 2018 Windstorm

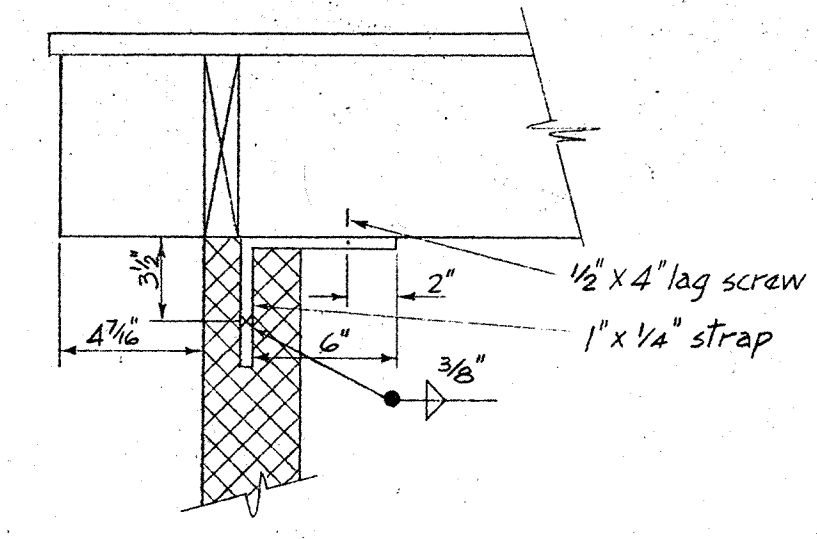




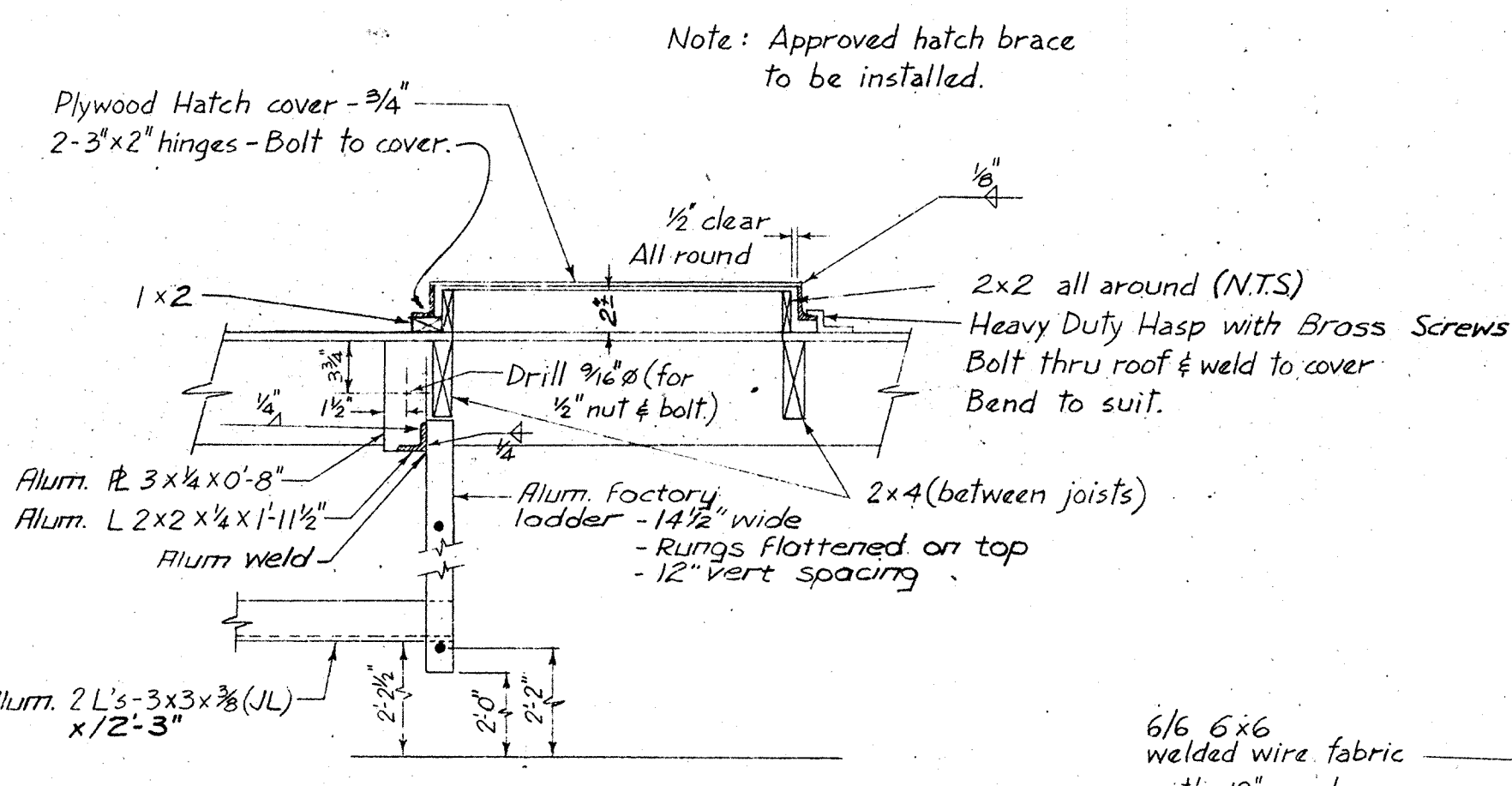
STAVE ELEVATION  
Scale: 3/8"=1'-0"



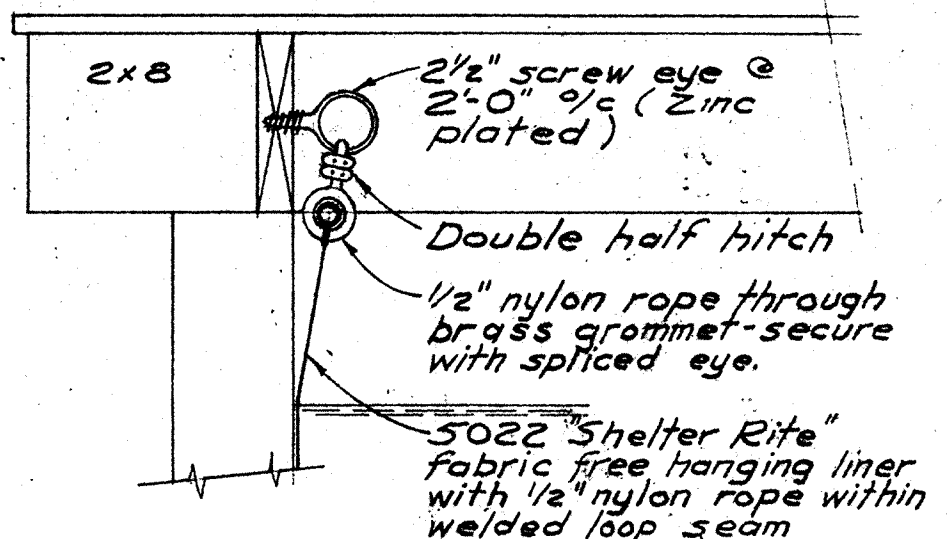
STAVE SECTION  
Scale: 1"=1'-0"



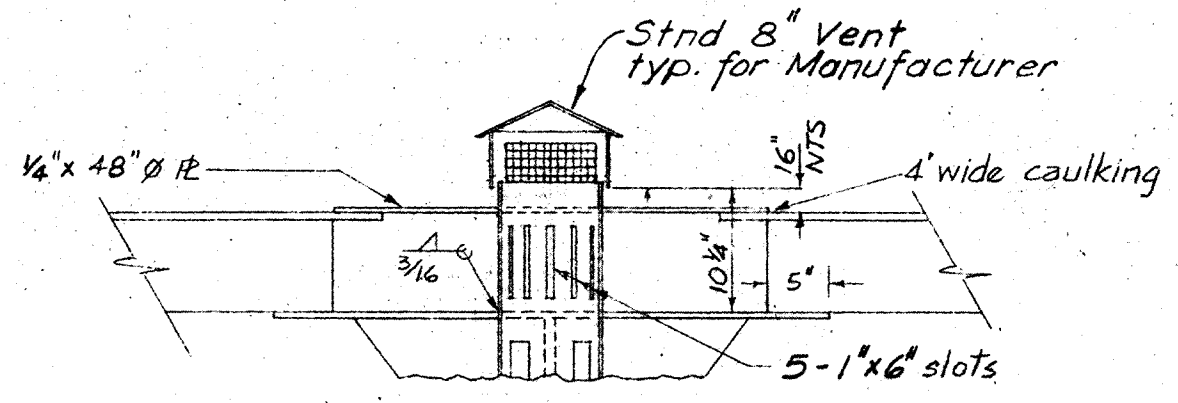
DETAIL 'A'  
Scale: 1 1/2"=1'-0"



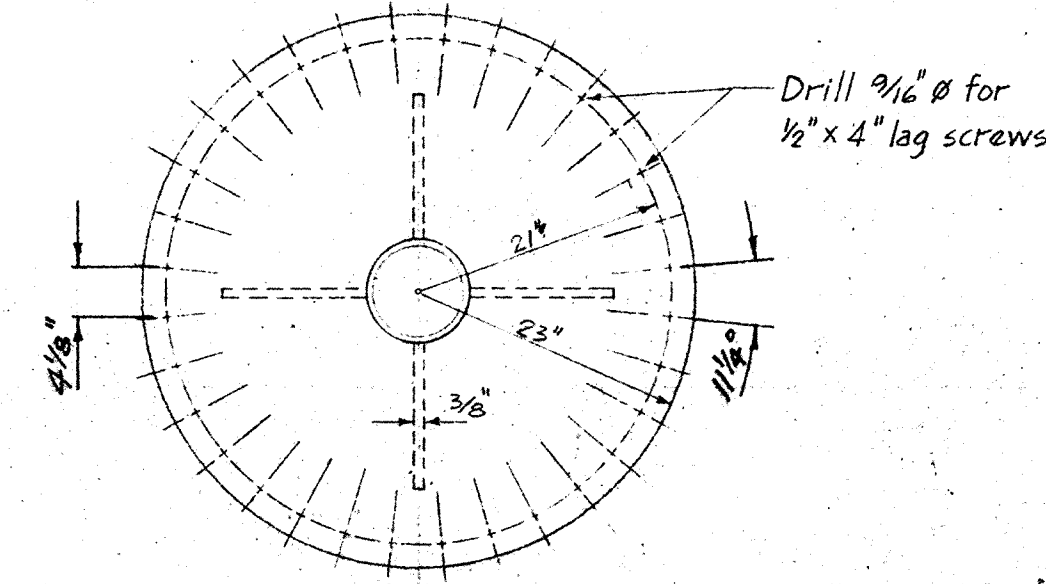
SECTION 2  
Scale: 1"=1'-0"



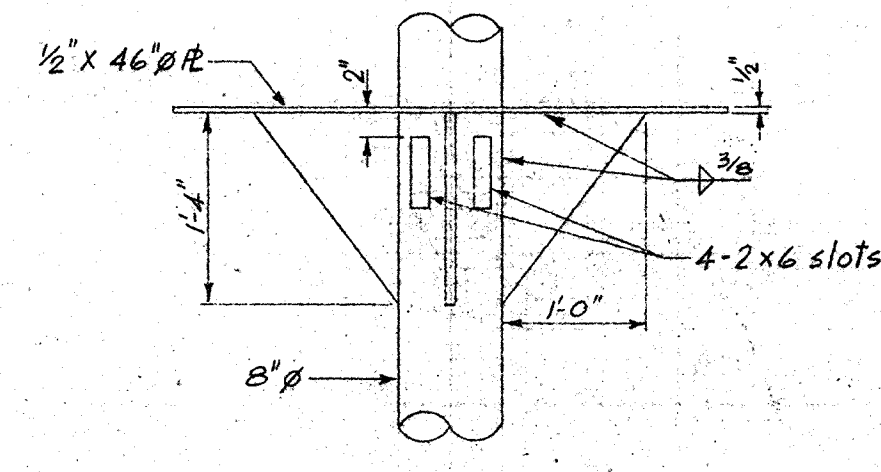
LINER FASTENING DETAIL  
Scale: 1/4"=1'-0"



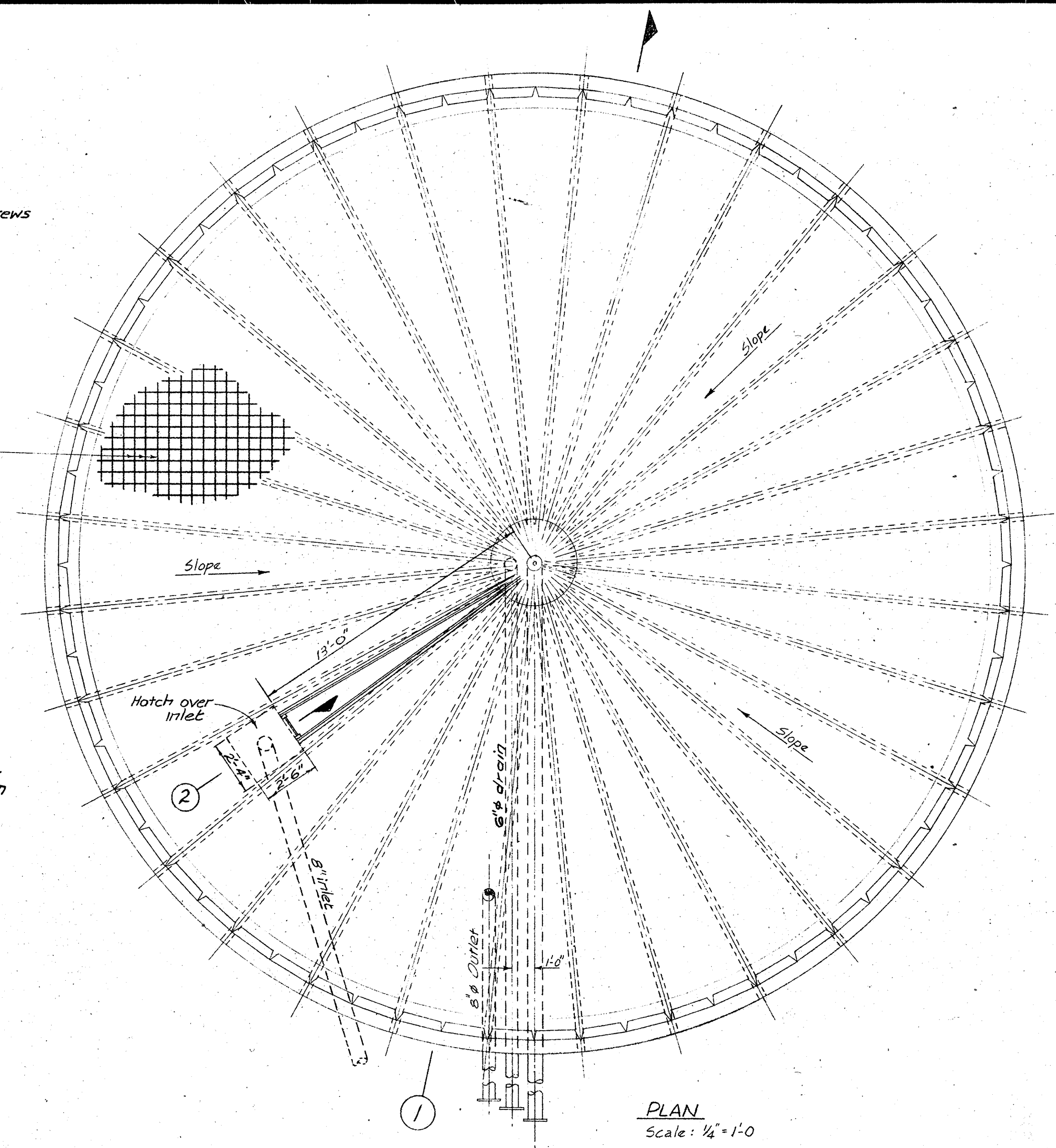
VENT DETAIL  
Scale: 3/4"=1'-0"



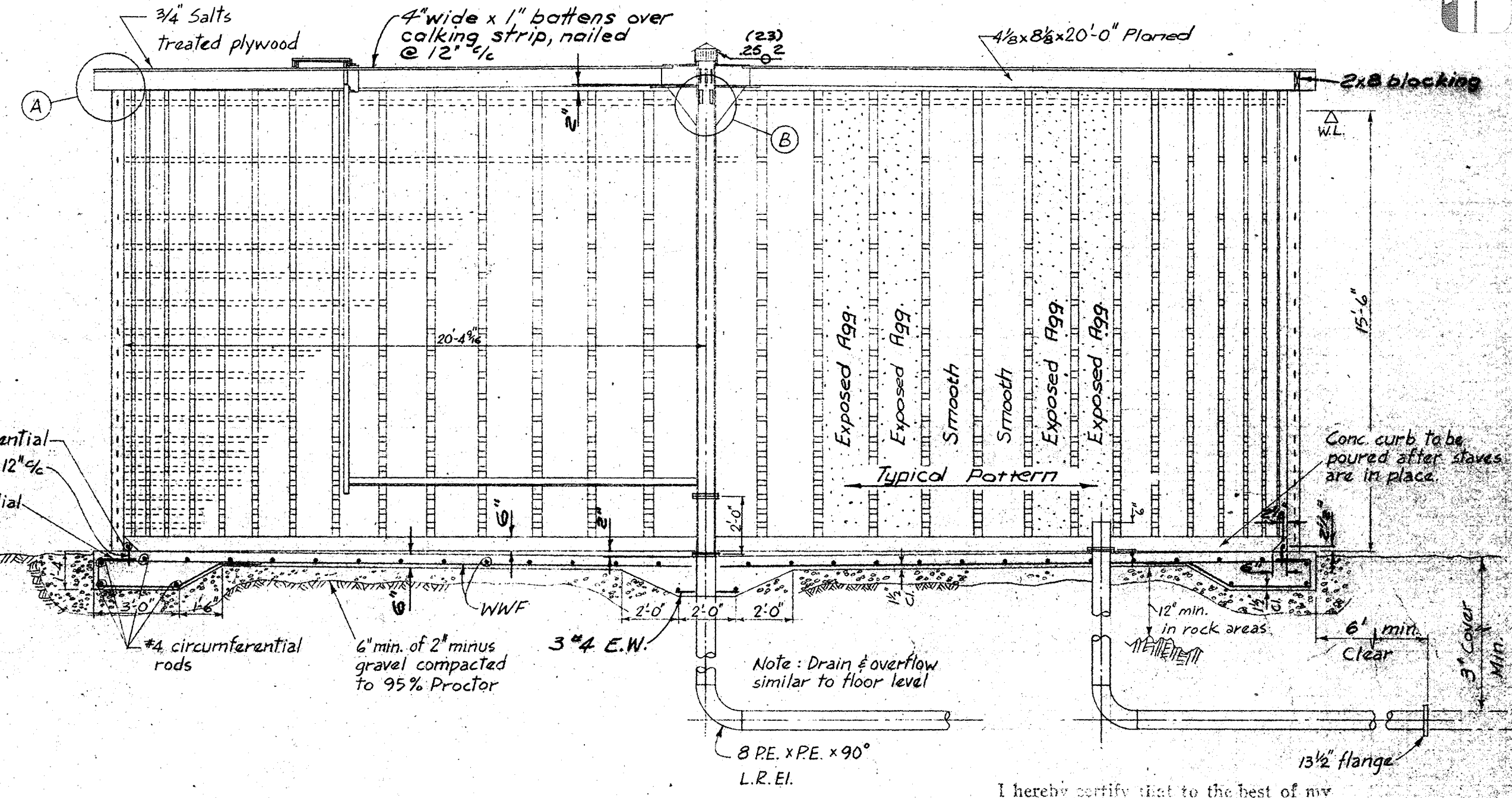
PLAN  
Scale: 3/4"=1'-0"



ELEVATION DETAIL 'B'  
Scale: 3/4"=1'-0"



PLAN  
Scale: 1/4"=1'-0"



SECTION 1

- NOTES
- All concrete is to be 3000 PSI @ 28 days, 3/4" maximum aggregate, (20 MPa)
  - All reinforcing steel to be intermediate grade deformed bars, or equal.
  - All wood members are to be construction grade Douglas fir, rot proof treated.
  - All exposed steel is to be coated with galvacon or equal.
  - Structural steel is to be in accordance with specifications of C.S.A. G40.21-33W or ASTM A36.
  - Welding rod is to be E6010.
  - Welding is to be incorporated thru-out unless otherwise noted.
  - Snow load design — 50 ps.f.
  - All piping 6" and 8" steel Schedule 40. Piping exposed within tank to be Galvanized or Galvacon. Piping buried to be bitumastic coated or wrapped.
  - Tank may be backfilled to 14' depth subject to engineers specifications.

I hereby certify that to the best of my knowledge these works are completed and constructed in accordance with this As-Constructed Drawing. APR 14 1982

DESIGN	D.T.
DRAWN	EWBR
CHECKED	D.T.
APPROVED	
DATE	15 April 1981
SCALE	
FIELD BOOK No.	
No.	REVISION DESCRIPTION
DATE	BY
DATE	BY
DATE	BY

**WILLIS CUNLIFFE TAIT**  
Company Ltd.

VANCOUVER ISLAND TANK ASSEMBLERS LTD.  
PROPOSED 125,000 IMPERIAL GALLON PRECAST TANK  
MODEL No. 64-16  
ARBUTUS PARK ESTATES LTD.  
NANOOSE, B. C. AB-002

SHEET No.	1
OF	REV
DRAWING No.	34-3959-A/48



## **CCDC 14 – 2013 Design-Build Stipulated Price Contract**

### **Supplementary General Conditions**

#### **DEFINITIONS**

Delete: "Owner's Advisor"

#### **GC 3.4 OTHER CONSULTANT, SUBCONTRACTORS, AND SUPPLIERS**

3.4.1 – Add:

"5 maintain good order and discipline among the Subcontractor's employees engaged on the Work and shall ensure that the Subcontractor shall not employ on the Work anyone not skilled, experienced, capable, and qualified to perform the Work."

#### **GC 3.11 NON-CONFORMING DESIGN AND DEFECTIVE WORK**

3.11.2 – Delete item in its entirety and replace with the following:

"If for any reason, including poor workmanship, defective Products or materials, and damage to completed Work, the Owner, or its appointed representative rejects Work because it fails to conform to the Contract Documents, then the Design-Builder shall at the Design- Builder's expense promptly remove such Work from the Place of the Work and replace it in accordance with the requirements of the Contract Documents. Such remedial Work shall include any re-testing reasonably required to establish that the completed Work complies with the Contract Documents. This provision applies to all materials, Products, and portions of the Work whether or not incorporated into the Work as a whole."

New GC 3.11.5 - Add:

"The Design-Builder shall complete the deficient and incomplete Work speedily and at the discretion and convenience of the Owner. Acceptance of the Work or occupancy of the Project, or any portion thereof, by the Owner or the Consultant, shall not relieve the Design-Builder from the obligation of correcting deficiencies which are missed at the time of drawing up the list of deficient and incomplete items."





### **NEW GC 3.12 CLEAN-UP**

New GC 3.12.1 – Add:

“The Design-Builder shall ensure the worksite remains free of all rubbish, waste, debris and waste products at the end of each business day”

New GC 3.12.2 – Add:

“The Design-Builder shall remove all equipment, barricades, hoarding, temporary bracing, walkways, temporary services, and surplus materials, and leave the worksite in a condition satisfactory to the Owner.”

New GC 3.12.3 – Add:

“The Owner shall have the right to back charge cleaning to the Design-Builder if not done by the Design-Builder within 24 hours of written notice to clean.”

New GC 3.12.4 – Add:

“The Owner shall have the right to back charge the Design-Builder for cost of damage to the site in relation to transportation in and out of the site caused by the Design-Builder or any Contractor, agent, employee or licensee of the Design-Builder, or by any other person or company authorized by the Design-Builder to be on the site, in the event such damage is not repaired by the Design-Builder before final payment.”

### **GC 5.7 FINAL PAYMENT**

5.7.4 – Revise “5 calendar days” to “30 calendar days”

### **GC 9.1 PROTECTION OF WORK AND PROPERTY**

9.1.1 – Delete item in its entirety and replace with the following:

“The Design-Builder shall protect the Work and the Owner’s property and property adjacent to the Place of the Work from damage which may arise as a result of the Design-Builder’s operations under the Contract, and the Design-Builder shall be responsible for such damage as provided for in the Contract.”

NEW GC 9.1.5 – Add:

“Security at the Place of the Work during non-working hours will be solely the responsibility of the Design-Builder. The Owner will not be liable for any loss or damage of any kind except as provided for in GC. 11.1 INSURANCE.”



#### **GC 9.4 CONSTRUCTION SAFETY**

NEW GC 9.4.1.3 – Add:

1. The Contractor must be registered with WorkSafe BC and be in good standing with remittance up to date throughout the agreement and is willing and qualified to be designated as the Prime Contractor and shall fulfill the Prime Contractor responsibilities as defined in:
  - a) WorkSafeBC Occupational Health and Safety Regulation, Notice of Project, Section 20.2, and Coordination of multiple employer workplaces, Section 20.3;
  - b) Workers Compensation Act (BC), Coordination at multiple-employer workplaces, Section 118, Subsections (1) & (2); and
  - c) General Requirements, Section 3.10 WorkSafe BC.

#### **GC 10.1 TAXES AND DUTIES**

10.1.2 – At the end of the paragraph, add:

“The Design-Builder shall not be entitled to overhead and profit mark-up due to any such increase. The Design-Builder must provide a detailed breakdown of additional taxes if requested by the Owner, in a form satisfactory to the Owner. Profit and overhead shall not be included in the increase or decrease of costs incurred by the Design-Builder due to changes in the aforementioned taxes and duties.”

#### **GC 11.1 INSURANCE**

Delete:

11.1.1 Without restricting the generality of GC 12.2 – INDEMNIFICATION, the *Design-Builder* shall provide, maintain and pay for the following insurance coverages, the minimum requirements of which are specified in CCDC 41 – CCDC INSURANCE REQUIREMENTS in effect at the time of proposal closing or bid closing except as hereinafter provided:

Add:

11.1.1 Without restricting the generality of GC 12.2 – INDEMNIFICATION, the *Design-Builder* shall provide, maintain and pay for the following insurance coverages, the minimum requirements of which are specified in CCDC 41 – 2008 INSURANCE REQUIREMENTS except as hereinafter provided:



#### **GC 12.5 WARRANTY**

New GC 12.5.9 – Add:

“Any Product, material or equipment requiring excessive servicing during the warranty period (or free maintenance period if applicable) shall be considered defective and the warranty (or free maintenance period) shall be deemed to take effect from the time the excessive servicing defect has been corrected.”

New GC 12.5.10 – Add:

“The Design-Builder shall, upon correction of any defects which it is obligated to correct, extend its warranty for the Work which has been corrected, and for any related Work which the corrections have affected, for a period of six months from the time of delivery of a certificate of acceptance by the Owner of the corrected Work, or until the end of the original Contract warranty period, whichever is longer.”

**CCDC 41**  
**CCDC INSURANCE REQUIREMENTS**

**PUBLICATION DATE: JANUARY 21, 2008**

1. General liability insurance shall be with limits of not less than \$5,000,000 per occurrence, an aggregate limit of not less than \$5,000,000 within any policy year with respect to completed operations, and a deductible not exceeding \$5,000. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 (including an extension for a standard provincial and territorial form of non-owned automobile liability policy) and IBC Form 2320. To achieve the desired limit, umbrella or excess liability insurance may be used. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.
2. Automobile liability insurance in respect of vehicles that are required by law to be insured under a contract by a Motor Vehicle Liability Policy, shall have limits of not less than \$5,000,000 inclusive per occurrence for bodily injury, death and damage to property, covering all vehicles owned or leased by the *Contractor*. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor*.
3. Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft (if used directly or indirectly in the performance of the *Work*), including use of additional premises, shall have limits of not less than \$5,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than \$5,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*.
4. "Broad form" property insurance shall have limits of not less than the sum of 1.1 times *Contract Price* and the full value, as stated in the *Contract*, of *Products* and design services that are specified to be provided by the *Owner* for incorporation into the *Work*, with a deductible not exceeding \$5,000. The insurance coverage shall not be less than the insurance provided by IBC Forms 4042 and 4047 (excluding flood and earthquake) or their equivalent replacement. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.
5. Boiler and machinery insurance shall have limits of not less than the replacement value of the permanent or temporary boilers and pressure vessels, and other insurable objects forming part of the *Work*. The insurance coverage shall not be less than the insurance provided by a comprehensive boiler and machinery policy.
6. "Broad form" contractors' equipment insurance coverage covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* may agree to waive the equipment insurance requirement.
7. Standard Exclusions
  - 7.1 In addition to the broad form property exclusions identified in IBC forms 4042(1995), and 4047(2000), the *Contractor* is not required to provide the following insurance coverage:
    - Asbestos
    - Cyber Risk
    - Mould
    - Terrorism