



COWICHAN TRIBES

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APPENDIX B: GENERAL ENGINEERING REQUIREMENTS

Lulumexun Lands Department

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Revision Date: N/A

The planning and design requirements herein are based on the MMCD-based guidelines with some modifications.

Information items to be provided at the Conceptual Design stage are indicated by **[Conceptual]**, and those to be provided at the **Final Design** stage are indicated by **[Final]**. A final design must be deemed satisfactory by Lulumexun Cowichan Tribes Council before **Consent to Construct** is issued.

It is possible that some listed requirements may be waived and other new requirements may become applicable as more information on the development is submitted. If the applicant or their consultant or agent regards any of the listed items to be not applicable, they may request a waiver and provide sufficient justification to support their request.

The applicant is further advised that a **Cowichan Tribes Consent to Construct** must be obtained before any development, improvement or construction work on Tumuhw (land) may begin, irrespective of whether these General Requirements have been complied with, or whether a lease is applicable or has been executed.

GENERAL

1. Professional Seal and Signature [Conceptual and Final]

All submission reports, designs, drawings, calculations, specifications and technical documents must bear the seal and signature of a Professional Engineer or Registered Architect qualified for the work; the seal on submitted documents will certify that the design of the proposed works is in general conformance with these Requirements. Exceptions to general conformance must be noted and documentation provided to explain the noted exceptions. Where applicable, each Professional Engineer or Registered Architect of record must submit a BC Building Code Schedule B "Assurance of Professional Design and Commitment for Field Review."

- Provided for Conceptual*
- Provided for Final*

2. MMCD [Conceptual and Final]

State on the design drawings that all work is designed to meet or exceed the MMCD standards for design drawings. If work is proposed to be designed to standards other than the MMCD standards, provide certifications of equivalence from a Professional Engineer or Registered Architect and obtain pre-

approval from Cowichan Tribes by providing justifications and a copy of the relevant section of the standard used.

- Provided for Conceptual*
- Provided for Final*

3. General Plans [Conceptual and Final]

a) Provide a Location Plan showing the geographical area of the proposed development and surrounding roads, highways and topographic features.

- Provided for Conceptual*
- Provided for Final*

b) Provide a Layout Plan showing the legal description of the lands to be developed, the boundaries of the Reserve and an outline of the footprint proposed development.

- Provided for Conceptual*
- Provided for Final*

c) Provide a detailed Site Plan showing all existing and proposed works, buildings, streets, lanes, highways, intersections, driveways, parking and loading areas, sidewalks, street lighting, utilities and utility easements, streams and other topographic features of the site.

- Provided for Conceptual*
- Provided for Final*

4. Geotechnical Assessment [Conceptual]

Provide a geotechnical assessment to verify the viability of the development on site. Include the existing and proposed grades and their relations to the elevations on adjoining properties, and details of any necessary excavations.

- Provided for Conceptual*

5. Off-Site Work [Conceptual and Final]

If work relating to the development is required to be constructed outside of the lands that are the subject of the development, or will encroach into private land, or that is subject to an exclusive interest, obtain rights-of-way or other legal permissions to accommodate the work. Show such rights-of-way or other permissions on design drawings.

- Provided for Conceptual*
- Provided for Final*

BUILDING

6. Building Plans [Conceptual and Final]

Provide conceptual plan and elevations of proposed buildings [Conceptual] and detailed design drawings of architectural, structural, mechanical, plumbing, fire protection and electrical works [Final].

- Provided for Conceptual*
- Provided for Final*

7. Time Schedule [Conceptual]

Provide a proposed schedule of construction and an estimated start and completion date.

- Provided for Conceptual*

8. Professional Certifications [Final]

Provide a copy of relevant signed and sealed B.C. Building Code Schedules A, B-1 and B-2, or equivalent letters of assurance, on architectural, structural, mechanical, plumbing, fire suppression systems, electrical and geotechnical works for the proposed buildings.

- Provided for Final*

WATER SERVICE

9. Conceptual Water Design [Conceptual]

Indicate domestic and fire flow requirements, and the proposed water source to meet these demands. Indicate the minimum fire flow available to the development and the minimum pressure available assuming maximum flow demand plus fire flow.

- Provided for Conceptual*

10. Conceptual Water Design Drawings [Conceptual]

Provide conceptual design drawings to show the existing and the proposed water works to service the development.

- Provided for Conceptual*

11. Water Supply from Own Well [Conceptual]

If water supply is to be obtained from the development's own well, provide test data from the well to show that the well water meets the Guidelines for Canadian Drinking Water Quality and that the well has sufficient yield to supply the domestic and fire flow needs.

- Provided for Conceptual*

12. Water Supply from Surface Water [Conceptual]

If water supply is to be obtained from a surface water body, the developer must obtain authorization under the *Water Sustainability Act* (British Columbia). Provide design for water treatment facilities.

- Provided for Conceptual*

13. Water Supply from Existing System [Conceptual]

If water supply is to be obtained from an existing water distribution system, verify by network analysis calculations or other means that the existing water distribution system has the capacity to deliver the required domestic and fire flow to the development.

Provided for Conceptual

14. Hydrant Locations [Conceptual]

Indicate sufficient hydrants on the conceptual design drawings such that no current or future proposed building is more than 75 m from a hydrant.

Provided for Conceptual

15. Watermain Looping [Conceptual]

Loop watermains whenever possible to provide redundancy and improve fire flow.

Provided for Conceptual

16. Water Service Agreement – where connecting to a water system other than the Cowichan Tribes water distribution system [Conceptual and Final]

Provide letter of intent or draft servicing agreement [Conceptual] and signed servicing agreement [Final] with the owner of the existing water system for providing water service to the development (either Cowichan Tribes or the adjacent municipality) where applicable.

Provided for Conceptual

Provided for Final

17. Delivery Capacity – where connecting to Cowichan Tribes water distribution system [Final]

Verify by network analysis calculations or other means that the Cowichan Tribes water distribution system has the capacity to deliver the required domestic and fire flow to the development.

Provided for Final

18. Decommissioning Plan for Abandoning Existing Well [Conceptual]

Provide a decommissioning plan if any existing well is to be abandoned.

Provided for Conceptual

19. Detailed Water Design Drawings [Final]

Provide detailed design drawings for all proposed water works and treatment facilities to service the development. In particular, show details of connection point to an off-site distribution system, horizontal and vertical profiles of watermains, offsets of watermain from reference objects, horizontal and vertical separation with a sewer, material specifications, trench details, water meters, and details of appurtenances such as valves, air valves, chambers, hydrants, thrust blocks and bearing areas.

Provided for Final

20. Disinfection of New Watermain [Final]

Indicate on design drawing method and procedure for disinfecting a new watermain. Indicate on design drawing method of disposal of chlorinated water after completing watermain disinfection such that aquatic life will not be adversely impacted. Developer must submit to the Lands and Governance Director a detailed water analysis report showing the chlorine count. Samples must be obtained from each extremity of the newly installed watermains. Samples must be obtained and tested by an approved independent testing agency or as otherwise approved by the Lands and Governance Director.

Provided for Final

21. Service Connection Details, Standards and Identification [Final]

Show on design drawings water service connection details and specify service connections to meet the Canadian Plumbing Code, in accordance with the current version of the MMCD. Specify on design drawings blue marker stakes for identification of any future water service connections.

Provided for Final

SANITARY SERVICE

22. Conceptual Sanitary Design Drawings [Conceptual]

Provide conceptual design drawings to show the existing and the proposed sanitary facilities to service the development. Developments must be serviced by an existing sanitary sewer system.

Provided for Conceptual

23. Sanitary Service from Existing System [Conceptual]

Verify, through network analysis calculations or other means, that the existing sewer system has the spare capacity to service the development.

Provided for Conceptual

24. Sanitary Service Agreement [Conceptual and Final]

Provide a letter of intent or draft servicing agreement [Conceptual] and signed servicing agreement [Final] with the owner of the existing water system (either Cowichan Tribes or the adjacent municipality) for providing sanitary service to the development.

Provided for Conceptual

Provided for Final

Provided for Final

25. In-Ground Sewage Disposal [Conceptual]

If a collection system exists, then it should be used first. If a self-contained in-ground disposal system is to be used, provide a hydro-geological assessment to verify the viability of in-ground sewage disposal in respect to Contamination impact on groundwater and any adjacent water body. Verify that the percolation rate at the disposal field location falls within the permissible range of 5 to 60 minutes per 25

mm. Provide calculations to show that the infiltration trenches have sufficient base area to dispose of all generated sewage flows. Provide evidence to show that there is a year-round minimum vertical separation of 1 m between the bottom of the infiltration trench and the elevated groundwater mound created by sewage disposal for a 1:20 year flood condition. And provide evidence to show that there is no impermeable soil layer under the disposal trench to create a perched groundwater condition.

26. Oil Separator [Conceptual]

Provide an oil separator (at a standard which meets or exceeds the requirements applicable in the adjacent municipality) for discharge to either the sanitary or the storm system from restaurant, gas station, machine shop, and anywhere where oil can be discharged or spilled.

Provided for Conceptual

27. Decommissioning Plan for Abandoning Existing Septic Facilities [Conceptual]

Provide a decommissioning plan if any existing septic facilities are to be abandoned. Plan to meet or exceed standards applicable in the adjacent municipality.

Provided for Conceptual

28. Detailed Sanitary Design Drawings [Final]

Provide detailed design calculations and drawings for all proposed sanitary works to service the development. In particular, show horizontal and vertical profiles of the sewers and forcemains, offsets of sewer and forcemain from reference objects, material specifications, sewer slopes, invert elevations, manhole rim elevations, sewer trench details, forcemain thrust block bearing areas, and details of manholes, cleanouts, oil separators, air valves and chambers.

Provided for Final

29. Effluent Permit Limits [Final]

Verify that the Effluent Quality Parameters discharged to a disposal or reclaimed water use facility do not exceed the Municipal Sewage Regulation (B.C. Environmental Management Act) limits for the particular facility.

Provided for Final

30. Service Connection Details, Standards and Identification [Final]

Show on design drawings sewer service connection details. Provide inspection chamber. Specify service connection to meet the Canadian Plumbing Code. Specify on design drawings red marker stakes for identification of any future sewer service connections.

Provided for Final

DRAINAGE

31. Stormwater Management Plan [Conceptual]

Provide a stormwater management plan showing how the post-development minor (1:2 Year) and major (1:50 Year) flows are to be managed. Show grading of lot and in-conduit, in-ditch, and overland flow paths.

Provided for Conceptual

32. Stormwater Disposal by Drywell [Conceptual]

If stormwater runoff is proposed to be disposed of by drywells, verify by calculations that the drywells have the capacity to dispose of a minor (1:2 year) storm flow.

Provided for Conceptual

33. Stormwater Disposal to Surface Water Body [Conceptual]

If any stormwater runoff is proposed to be discharged into an adjacent surface water body, provide details of sediment control devices and confirm permission with Department of Fisheries and Oceans and Environment Canada.

Provided for Conceptual

34. Stormwater Disposal to Roadside Ditch [Conceptual]

If any stormwater runoff is proposed to be discharged into an adjacent roadside ditch, confirm permission with the owner of the roadside ditch (either the Band, municipal, regional or provincial jurisdiction).

Provided for Conceptual

35. Detailed Drainage Design Drawings [Final]

Provide detailed design drawings for all proposed drainage works servicing the development. In particular, show horizontal and vertical profiles of storm sewers and ditches, offsets of storm sewer from reference objects, material specifications, sewer slopes, invert elevations, manhole rim elevations, trench details, and details of manholes, cleanouts, oil and debris separators, drywells, silt traps and detention ponds.

Provided for Final

FLOODPLAIN MANAGEMENT

36. Floodplain Management Plan [Conceptual] 200 Year Flood Level [Conceptual]

State on the conceptual design drawing that the building habitable floor slab elevation is not less than 0.6 m above the 1:200 year flood level; or that measures are in place to address the 1:200 year flood level.

Provided for Conceptual

TOTAL ESTIMATED COST OF WORKS AND SERVICES

37. Total Estimated Cost of Works and Services [Conceptual]

Provide total estimated cost of works and services excluding off-site works and services which are the subject of a servicing agreement with the relevant municipality: \$_____

Provided for Conceptual

ROADS, ACCESS AND PARKING

38. Parking [Conceptual]

Provide the estimated number of parking spaces required for the development and the plans to accommodate them.

Provided for Conceptual

39. Traffic Volume [Conceptual]

Provide the estimated volume of traffic in trips per day that will be generated by the development, and an analysis of the impact of the traffic to be generated on the use of nearby and adjacent land.

Provided for Conceptual

40. Conceptual Road Design Drawings [Conceptual]

Provide conceptual design drawings to show the existing and the proposed access and road facilities to service the development, including entry and exit routes and access by fire and emergency vehicles.

Provided for Conceptual

41. Cul-de-Sac Length [Conceptual]

Limit length of any cul-de-sac to whatever the maximum is indicated by the Fire Chief of the adjacent Municipality who is providing firefighting services under formal agreement with Cowichan Tribes in consideration of emergency access and deployment of fire-fighting equipment.

Provided for Conceptual

42. Utilities in Adjacent or Public Roads [Conceptual]

If utilities servicing the development are to be laid crossing or within the fronting road allowance, confirm permission with the owner of the fronting road (adjacent CP-holder, Cowichan Tribes, a municipality, or the provincial government).

Provided for Conceptual

43. Bridge Across Creek [Conceptual]

Provide applicable federal authorizations related to an access bridge across river or creek.

- Provided for Conceptual*

44. Access Permit [Conceptual and Final]

Provide letter of intent [**Conceptual**] and access permit, easement or right-of-way [**Final**] from the owner of the fronting road (adjacent CP-holder, Cowichan Tribes, a municipality, or the provincial government) for allowing access to the development.

- Provided for Conceptual*
 Provided for Final

45. Detailed Parking Design [Final]

Provide detailed design calculations and drawings for all proposed parking areas and spaces.

- Provided for Final*

46. Detailed Road Design Drawings [Final]

Provide detailed design calculations and drawings for all proposed road and access to service the development.

- Provided for Final*

47. Road Details [Final]

Show design speed, horizontal and vertical road profile, vertical curve data, cross sections, intersection details and pavement structure on design drawings.

- Provided for Final*

48. Signage [Conceptual and Final]

Show the proposed [Conceptual] and actual [Final] location, size, height, colour, lighting and orientation of all signs.

- Provided for Conceptual*
 Provided for Final

GREENSPACE AND AMENITIES

49. Greenspace and Public Amenities [Conceptual and Final]

Show the proposed [Conceptual] and actual [Final] location and treatment of parks, green space, common areas, open spaces, trails, landscaping, fences, recreation features and any other public amenities.

- Provided for Conceptual*
 Provided for Final

50. Community Services

Identify the local community services and public facilities that would be affected by the development, including the projected increase in users of existing community services and public facilities, potential increased costs to Cowichan Tribes, and strategies to mitigate any negative impacts to community services and public facilities.

- Provided for Conceptual*

FUEL HANDLING

51. Fuel Storage and Dispensing [Final]

For gas station development, provide details of fuel storage tanks, connection piping, dispenser pumps, spill containment, alarm system and an emergency response plan.

- Provided for Final*

52. Fuel Storage and Dispensing [Final]

For gas station development, provide details of fuel storage tanks, connection piping, dispenser pumps, spill containment, alarm system and an emergency response plan.

- Provided for Final*

FIRE PROTECTION

53. Fire Protection Service Agreement [Conceptual and Final]

Unless there is an existing fire protection service agreement in place, provide letter of intent **[Conceptual]** and service agreement **[Final]** with either Cowichan Tribes and the municipality that is providing firefighting service under a formal Agreement or regional jurisdiction for providing fire protection service to the development.

- Provided for Conceptual*
 Provided for Final

54. Cowichan Tribes's Fire Fighting Capability [Conceptual]

If fire protection service is to be obtained from Cowichan Tribes, verify the existing capability of Cowichan Tribes. If fire protection service is to be obtained by a municipality under a formal agreement, verify adequate equipment and resources to respond to and provide firefighting service to the development.

- Provided for Conceptual*

UTILITIES

55. Utility Service Agreements [Conceptual and Final]

Provide letter of intent **[Conceptual]** and service agreement **[Final]** with utility companies for electricity, telephone, gas and solid waste disposal services.

- Provided for Conceptual*

Provided for Final

COMPLETION DOCUMENTATION

56. Health Canada Permits for Individual Homes [Final]

Provide written commitment from the Professional Engineer or Registered Architect to provide Health Canada permits for in-ground sewage disposal for individual homes **[Final]**. Actual permits are to be provided as part of the completion documentation.

Provided for Final

57. Restaurant Permit [Final]

Provide written commitment from the Proponent to provide a copy of Ministry of Health Permit to Operate A Food Service Establishment if kitchen or restaurant service is proposed **[Final]**. Actual permit is to be provided as part of the completion documentation.

Provided for Final

58. Registration of Rights of Way, Permits and Easements [Final]

Provide written commitment from the Professional Engineer or Registered Architect to provide copies of all registered rights of way plans, permits and easements **[Final]**. Actual plans and proof of registration must be provided as part of the completion documentation.

Provided for Final

59. Registration of Fuel Storage Tanks [Final]

Provide written commitment from the Professional Engineer or Registered Architect to provide a copy of the registration of all underground storage tanks and exterior aboveground storage tanks larger than 4000 litres **[Final]**. Actual registration documents are to be provided as part of the completion documentation.

Provided for Final

60. Construction Supervision [Final]

Provide written commitment from the Professional Engineer to provide all necessary construction supervision, inspection, site testing and record keeping during construction of the site work **[Final]**.

Provided for Final

61. O&M Manuals [Final]

Provide written commitment from the Professional Engineer or Registered Architect to provide Operation & Maintenance Manuals for the electrical and mechanical systems upon completion **[Final]**. Actual Operation & Maintenance Manuals are to be provided as part of the completion documentation.

Provided for Final

62. As-Built Drawings [Final]

Provide written commitment from the Professional Engineer or Registered Architect to provide accurate as-built drawings upon completion **[Final]**. Actual as-built drawings are to be provided as part of the completion documentation for all buildings, structures, roads, and works.

Provided for Final

63. Completion Report [Final]

Provide written commitment from the Professional Engineer or Registered Architect to provide a completion report detailing work progress, inspection records, testing results, and problems encountered on site **[Final]**. Actual completion report is to be provided as part of the completion documentation.

Provided for Final

64. Completion Certification [Final]

- (a) Provide written commitment from the Co-ordinating Professional Engineer or Registered Architect who signed the BC Building Code Schedule A for the building to provide the BC Building Code Schedules C-A and C-B **[Final]**.

Provided for Final

- (b) Provide written commitment from the Professional Engineer submitting the supporting services plans to provide an Engineer's Certificate certifying that all work is constructed in accordance with approved drawings and specifications **[Final]**.

Provided for Final

- (c) Provide Schedules C-A and C-B and Engineer's Certificate as part of the completion documentation.

Provided for Final

GLOSSARY OF TERMS

Terms used in these Requirements have the following meanings:

“Contamination” means the presence of substances that exceed applicable standards contained in the *Contaminated Sites Regulation* (British Columbia);

“Lands and Governance Director” means the Person appointed to oversee the day to day operations of Lulumexun (Cowichan Tribes Lands Office) and the administration of the Quw’utsun Tumuhw.

“Lulumexun” means the Cowichan Tribes Lands and Governance Department, also known as the Cowichan Tribes Lands Office.

“MMCD” means the Master Municipal Specifications and Standard Detail Drawings of the latest edition of the Master Municipal Construction Documents published by the Master Municipal Construction Documents Association and incorporated by reference into and forming part of these Requirements;

“Professional Engineer” means a person registered as a professional engineer with the Association of Professional Engineers and Geoscientist of British Columbia;

“Quw’utsun Tumuhw” means the lands governance code of the Cowichan Tribes, established in accordance with the Framework Agreement and the *First Nations Land Management Act*;

“Registered Architect” means a person registered as a member or “Architect AIBC” with the Architectural Institute of British Columbia;

“Tumuhw” means any portion of a reserve that is subject to the Quw’utsun Tumuhw.