TETRA TECH

TECHNICAL MEMO

STUDY ISSUED FOR USE

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c:	Amy Gore (RDN)	**Memo No.:**	001
From:	O. Sayao and M. Redmond (Tetra Tech)	**File:**	704-ENG.ACLE03142
Subject:	Descanso Bay Regional Park, Accessible Beach Access Feasibility Study		

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by the Regional District of Nanaimo (RDN) to conduct an Accessible Beach Access Feasibility Study for the Descanso Bay Regional Park, on Gabriola Island. Figure 1 shows the existing site conditions: the Day Use Area including a picnic area and a parking lot, where presently the beach is not readily and easily accessible for users.

Figure 1: Day Use Area, Descanso Beach Regional Park (Source: RDN, 2024)

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2.0 SITE DESCRIPTION

The objective of this feasibility study is to develop a concept for an accessible beach access ramp located in the Day Use Area of Descanso Bay Regional Park.

Descanso Bay Regional Park is located at 595 Taylor Bay Road on Gabriola Island. The park contains a day use area, trails, campground, and public beaches. The day use area includes a parking lot, a picnic area, and a beach (Figure 1). Figure 2 shows the location of the day use area within the Descanso Bay Regional Park and the access roads to the site.

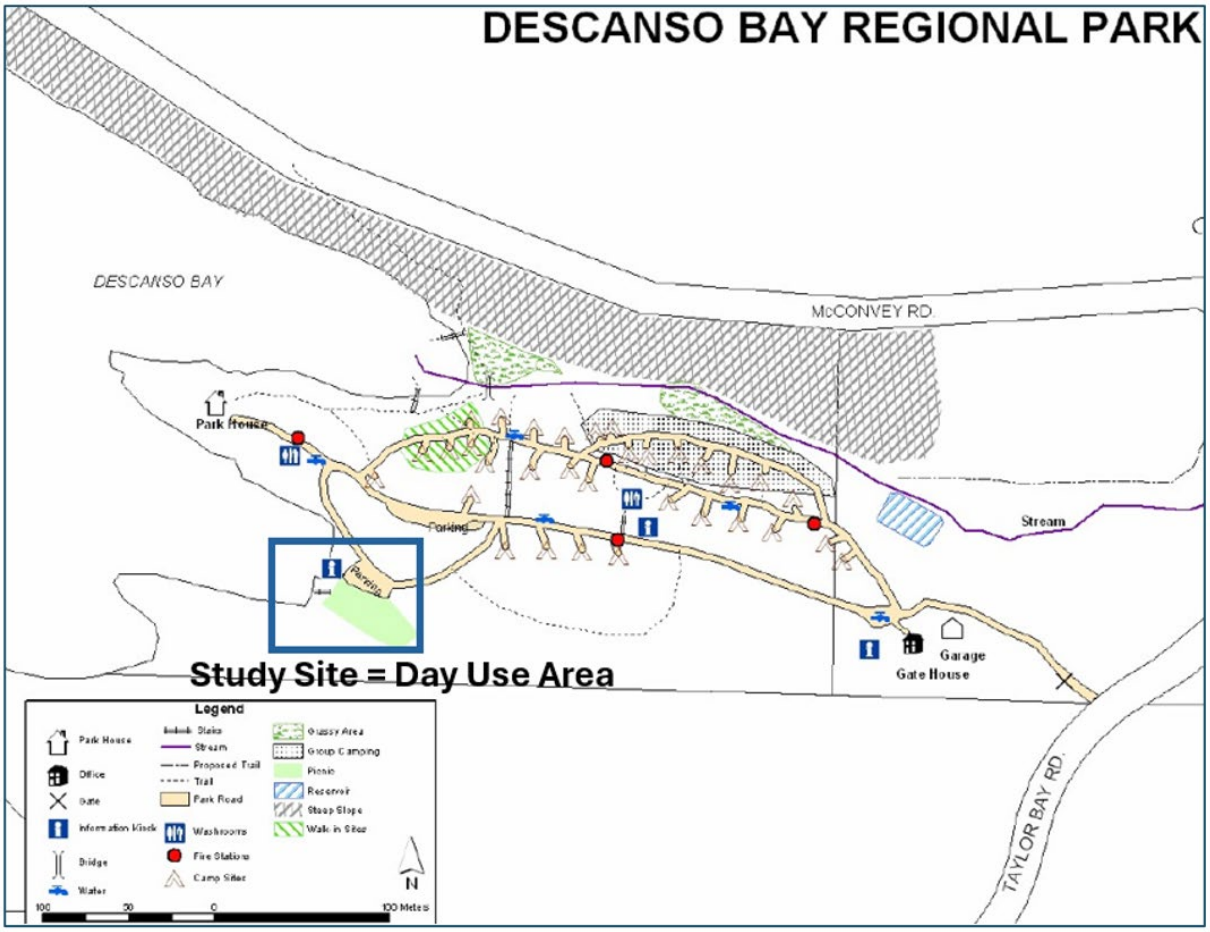

Figure 2: Day Use Area, Descanso Beach Regional Park Site

2.1 Tides and Water Levels

Tide levels are referred to Chart Datum (CD), and/or to Geodetic Datum (GD). Table 1.1 gives the Tide Levels for the Nanaimo Harbour, from CHS Station 7917, relative to both CD and GD. For this Nanaimo Station 07917, the Highest Recorded Water Level (the highest water level recorded over the period of record) was +5.7 m CD (on 2022-12-27). The Highest Astronomical Tide (HAT)[1] is +5.08 m CD. The Lowest Astronomical Tide (LAT) is -0.17m CD.

[1] HAT is the highest tidal level, and LAT is the lowest tidal level, which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions.

Table 1.1: Tide Levels at Nanaimo Harbour, CHS Station 07917, relative to CD

Height Above CD	Nanaimo Harbour (07917)	Tide Information relative to GD
Higher High Water Large Tide (HHWLT)	5.01 m CD	1.99 m
Higher High Water Mean Tide (HHWMT)	4.5 m CD	1.48 m
Mean Water Level (MWL)	3.02 m CD	0.0 m
Lower Low Water Mean Tide (LLWMT)	1.2 m CD	-1.82 m
Lower Low Water Large Tide (LLWLT)	0.02 m CD	-3.0 m

2.2 Site Visit

The site visit to the Descanso Bay Regional Park was carried out on January 14, 2025, by Jonathan Behnke (RDN), Monica Redmond and Otavio Sayao (Tetra Tech). The tide level during the site inspection (14/1/2025, 11 AM to noon) was +3.4 m CD, near MWL. Figure 3 and Figure 4 show the beach areas and a 1 m erosion escarpment at the shoreline. Appendix A presents photographs taken during the site inspection, January 14, 2025.

Figure 3: View to the North of the Main Beach and the rocky outcrops and some logs (14/1/25)

Figure 4: View to the Northeast of the 1 m elevation drop between the parking lot and the beach (14/1/25)

2.3 Topographic Survey

A topographic survey of the Descanso Bay Regional Park, at the day use area, was carried out on February 3, 2025. The tide level during the topographic survey (03/2/2025, 4 PM) was +1.75 m CD, between MWL and LLWMT. Thus, the survey data extended beyond into the nearshore waters, giving more information than what was visualized during the January site inspection. The survey drawing is included in Appendix B.

2.4 Wind Waves Erosive Potential

Wind data available from Environment Canada at the Nanaimo Harbour is from Station 7917 and from the Nanaimo Airport. Figure 5 shows the nearshore area at the Descanso Bay Regional Park Day Use Area. Winds have an open fetch from the West-Northwest (W-NW) direction, and waves generated by winds may reach the beaches at the Day Use Area site. Wind waves and surge were estimated using the Coastal Engineering Manual (USACE, 2003).

Assuming high winds of 30 km/h and above, blowing from W-NW at a HHWLT level, a storm surge (increase in water level resulting from winds blowing towards onshore) of about 10 cm may occur, such that the storm water level becomes about +5.1 m CD at HHWLT. Near the beach at depths of less than 2.4 m (Figure 5), wind waves of 0.3 m to 0.5 m height may occur, which could potentially cause the 1 m erosion escarpment seen in Figure 4 and in the beach photos during the site inspection (14/1/2025; Appendix A).

The topographic survey data (03/02/2025) shows elevations at the beach shoreline near the 1 m erosion scarp (Figure 4) of between +2 m GD (+5.1 m CD) and +3 m GD (+6.1 m CD). It is also noted that logs at the beaches were brought in during high tides levels and strong windstorms from the W-NW and reached these elevations, near the erosion scarp.

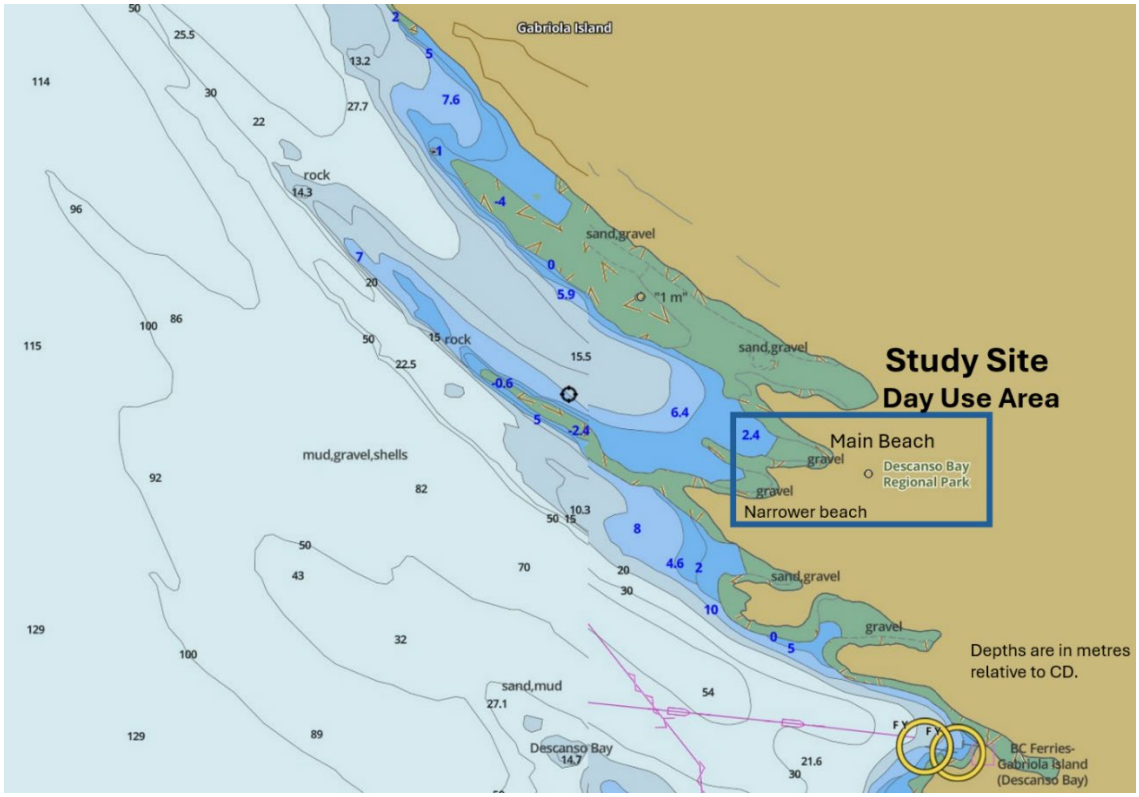

Figure 5: View to the nearshore beach areas showing depth contours (relative to CD)

3.0 ACCESSIBILITY CONSIDERATIONS

The Descanso Beach Regional Park Ramp Accessibility Considerations were discussed with Karin Pasqua of Meaningful Access Consulting, after the site visit information as well as the topographic survey results were gathered. The conceptual idea is to ensure that an accessible route from the parking area to the water's edge is feasible.

The initial report from Meaningful Access Consulting providing conceptual ideas for the ramp is included in Appendix C. Figure 6 shows a sketch of the initial ramp concept.

Other alternatives for the ramp access provided by RDN, based on a 2023 study from Gabriola Land & Trails Trust (GaLTT, 2023), were discussed with the Tetra Tech team and Meaningful Access Consulting. An example is shown in Figure 7. However, the 2023 alternatives do not follow the Meaningful Access Consulting guidelines (Appendix B) for an accessible beach access ramp.

The GaLTT (2023) report discusses the management of logs brought to the beach by winter storms by GaLTT volunteers, which is important for improving access to the beach during the summer season. Tetra Tech considers the use of wooden logs as part of coastal protection for the ramp concept during storms and high-water tides, as presented and discussed in Chapter 6.0.

Figure 6: Initial concept of ramp for the Day Use Area Main beach

Figure 7: Artistic concept of ramp for Descanso Bay beach (Ref.: GaLTT, 2023)

4.0 ENVIRONMENTAL OVERVIEW ASSESSMENT

A Qualified Environmental Professional (QEP; Monica Redmond, Tetra Tech) was on site on January 14, 2025, to conduct a site reconnaissance and conduct a preliminary assessment of the environmental conditions at site. The site was assessed for presence of freshwater watercourses, wildlife habitat features (nests with year-round protection, dens, roosts, and habitat for species at risk), and ecosystems that may represent environmental constraints, or have risks, costs, or impacts associated with the accessible beach access ramp.

4.1 Relevant Environmental Legislation

This section describes the environmental regulatory requirements and permits that may be applicable to the Site. A summary of permits will be compiled and issued in a comprehensive Environmental Overview Assessment once the detail design has been finalized.

4.1.1 Local Government

4.1.1.1 Gabriola Island Official Community Plan

The Gabriola Island Official Community Plan (OCP) sets out community objectives and policies to guide council decisions on planning, land use, and development (GILTC 2019). Land Use Designations are described in Schedule B of the OCP and identify that the Project Site comprises Marine and Parkland use. Marine foreshore is considered an Environmentally Sensitive Area (ESA), which are areas noted for high biotic capability for flora and fauna and are particularly vulnerable to indiscriminate forms of development (GILTC 2019). ESAs may be regulated with development permits.

- Development within environmentally sensitive areas may be regulated with development permits.
- With respect to an area identified as being environmentally sensitive, the use of a development permit shall be required as a condition of rezoning so as to ensure the long-term protection of environmental features.
- Trees bearing the nests of great blue heron, bald eagle, osprey and other raptors shall not be cut in accordance with provincial legislation.

The Gabriola Island OCP outlines the marine shorelands and foreshore as important economic resources that are highly vulnerable to the effects of development. Applicable marine resource policies require amendments, which include:

- The foreshore is zoned Water General, and a pedestrian access ramp is not a permitted use in this zone, so an amendment to the Gabriola Island Land Use Bylaw No. 177 will be required.
- Natural coastal processes shall be left undisturbed to the maximum extent possible and there shall be no deposition of material below the natural boundary of the sea unless a permit is issued by the Ministry of Environment and DFO authorizing a breakwater or a seawall to be constructed. An amendment to the Gabriola Island Land Use Bylaw No. 177 will be required such that it is not only limited to construction of breakwaters or seawalls.

Under the OCP, the District has established Development Permit Areas (DPAs) to ensure that new development minimizes impact to the environment and reduces risk to people. This includes environmental DPAs such as the five Protection of the Natural Environment DPAs, Environmental Protection DPA, and Riparian Areas DPA. No DPAs intersect with the Project Site. A Development Variance Permit and an amendment to the Gabriola Official

Community Plan under the Gabriola Island Land Use Bylaw No. 177 will be required to build a ramp or walkway that exceeds 1.0 m width within the lot line setback area of the park property (see B.2.1.4(c). in Bylaw No, 177).

4.1.2 Provincial

4.1.2.1 BC Wildlife Act

The British Columbia (BC) *Wildlife Act* protects most vertebrate animals from direct harm or harassment except as allowed by regulation (e.g., hunting or trapping). Section 34 of the *Wildlife Act* specifically protects the nests of eagles, Peregrine Falcon, Gyrfalcon, Osprey, herons, and Burrowing Owl year-round. This means that a tree or other structure containing such a nest must not be felled, even outside of the breeding season. Section 34 of the *Wildlife Act* also protects the nests of all species of birds when birds or eggs are present in the nest. If a heron or raptor nest, active wildlife den, or species at risk habitat is identified within the Site, mitigation and/or compensation plans will need to be developed under the direction of the BC Ministry of Water, Land and Resource Stewardship (BC MWLRS).

Vegetated areas within the Site will provide habitat for breeding birds during the General Nesting Period, which extends from March 12 to August 17 for the region (ECCC 2018). To avoid harm to birds and their nests, tree and vegetation removal (including pruning activities) that may be required for the Site should be conducted outside of the General Nesting Period. If vegetation removal cannot be avoided during the General Nesting Period, pre-clearing nest surveys must be conducted by a Qualified Environmental Professional (QEP) in advance of clearing to identify any breeding, nesting, roosting or rearing birds and determine the appropriate Best Management Practices (BMPs), such as establishing work exclusion buffers around detected nests. It should be noted that certain raptor species may begin nesting prior to the General Nesting Period, as early as January.

The potential for suitable wildlife habitat at the proposed beach access location (Figure 6) is low due to the low number of trees and shrubs that may provide cover and habitat. Denning animals may use the exposed and eroded bank, but this is unlikely due to seasonal high-tide wave activity and the general human disturbance of park visitors Clearing and brushing activities are not planned as Project construction activities, and no harm to wildlife is expected. In the unlikely event that clearing or brushing activities are required that may include the need for wildlife salvages, salvages must be completed prior to construction to remove animals from the work area to avoid undue harm to wildlife under the *Wildlife Act*. If wildlife salvages are required, a General Wildlife Permit can be obtained through FrontCounter BC to allow for the capture and relocation of wildlife species, including amphibians.

4.1.2.2 BC Water Sustainability Act

The BC *Water Sustainability Act* (WSA) is the main provincial statute regulating water resources in British Columbia. The WSA is administered by the BC MWLRS. Under the WSA, it is an offence to divert or use water, or alter a stream, without formal approval from the Province of BC. The WSA defines “stream” as a natural watercourse or source of water supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp, or gulch. “Stream” is used to describe any watercourse that is considered to be fish habitat, including channelized streams, and ditches that provide fish habitat. Under the WSA, the *Water Sustainability Regulation* addresses the requirements to allocate both ground and surface water and identifies the requirements for using water or making changes to a stream.

Change Approvals, issued under Section 11 of the WSA, are written authorization required for complex works with substantial impacts. Change Approvals review timelines are influenced by project complexity, agency workload, and Indigenous review/engagement requirements, among other reasons. Notifications are typically used for low-risk works that do not include permanent water diversion, can be completed in a short period of time, and have minimal impacts. Notifications must meet the requirements of Section 39 of the *Water Sustainability Regulation* and comply with any additional conditions set out by a habitat officer. Notifications are issued following a 45-day review period.

No freshwater streams, wetlands, or waterbodies are located within the Project Site, and no riparian exclusion buffers under the WSA apply to this Project. Therefore, a Notification or Change Approval is not required based on the proposed activity.

If at any time during development, the pumping and discharging of groundwater is required (i.e., excavations are below the ground water table), a Temporary Use Approval may be required under Section 10 of the WSA. This Temporary Use Approval allows for the diversion and use of water from an aquifer for up to 24 months. If the excavation does not intercept the local water table and the dewatering system is solely for removing rainwater and surface runoff, a Temporary Use Approval is not required.

4.1.2.3 BC Weed Control Act

The BC *Weed Control Act* defines a list of invasive plants as “noxious weeds” at the regional and provincial level. These species are non-native plants that create problems for agriculture and/or natural habitats. Private property owners and government agencies are required to control these species that occur on their property or jurisdiction. Contractors must ensure that any invasive species that are identified are controlled and not allowed to spread. Information related to the control and management of invasive species can be found on the Invasive Species Council of BC’s website (https://bcinvasives.ca/).

Under the *Weed Control Act*, Schedule A of the *Weed Control Regulation* designates 39 plant species as noxious weeds within all regions of the province (Table 4-1) and a further 28 are classified as noxious within the boundaries of specific regional districts.

Table 4-1: Noxious Weeds Regulated in all Regions of Province

Annual Sow-thistle (*Sonchus oleraceus)*	Bohemian Knotweed (*Fallopia bohemica)*	Bur Chervil (*Anthriscus caucalis*)	Canada Thistle (*Cirsium arvense*)
Common Crupina (*Crupina vulgaris)*	Common Reed (*Phragmites australis subsp. australis*)	Common Toadflax (*Linaria vulgaris)*	Dalmatian Toadflax (*Linaria dalmatica*)
Dense Flowered Cordgrass (*Spartina densiflora)*	Diffuse Knapweed (*Centaurea diffusa*)	Dodder (*Cuscuta spp.*)	English Cordgrass (*Spartina angelica)*
Flowering Rush (*Butomus umbellatus*)	Garlic Mustard (*Alliaria8etiolatea*)	Giant Hogweed (*Heracleum mantegazzianum*)	Giant Knotweed (*Fallopia sachalinensis*)
Giant Mannagrass/ Reed Sweetgrass (*Glyceria maxima*)	Gorse (*Ulex europaeus*)	Himalayan Knotweed (*Polygonum polystachyum*)	Hound’s-tongue (*Cynoglossum officinale*)
Japanese Knotweed (*Fallopia japonica*)	Jointed Goatgrass (*Aegilops cylindrica*)	Leafy Spurge (*Euphorbia esula*)	Milk Thistle (*Silybum marianum*)
North Africa Grass (*Ventenata dubia*)	Perennial Sow-thistle (*Sonchus arvensis*)	Purple Loosestrife (*Lythrum salicaria*)	Purple Nutsedge (*Cyperus rotundus*)
Rush Skeletonweed (*Chondrilla juncea*)	Saltmeadow Cordgrass (*Spartina patens*)	Scentless Chamomile (Matricaria maritima)	Smooth Cordgrass (*Spartina alterniflora)*
Spotted Knapweed (*Centaurea stoebe*)	Tansy Ragwort (*Senecio jacobaea*)	Velvetleaf (*Abutilon theophrasti*)	Wild Oats (*Avena fatua*)
Yellow Flag Iris (*Iris pseudacorus*)	Yellow Nutsedge (*Cyperus esculentus)*	Yellow Starthistle (*Centaurea solstitialis*)	

This Site is located in the Nanaimo Regional District, which have listed the following species in Table 4-2 as top priority invasive species to manage:

Table 4-2: Top Priority Invasive Species for the Nanaimo Regional District

Daphne (Spurge) Laurel (*Daphne laureola*)	Himalayan Blackberry (*Rubus armeniacus*)	English Holly (Ilex aquifolium)	English Ivy (*Hedera helix)*
Poison Hemlock (*Conium maculatum*)	Scotch Broom (*Cytisus scoparius*)		

4.1.2.4 BC Environmental Management Act

The BC *Environmental Management Act* (EMA) was enacted in July 2004 and combined the Waste Management Act and Environment Management Act. The EMA governs solid waste and manages introduction of waste into the environment by providing an authorization framework and environmental management tools to protect human health and environmental quality.

Under the *Waste Discharge Regulations* of the EMA, certain industries, trades, businesses and operations require authorization to discharge waste into the environment. However, even if an industry, trade, business or operation does not require an authorization, waste discharge must not cause pollution.

The *Spill Reporting Regulations* of the EMA establishes a protocol for reporting the unauthorized release of substances into the environment as well as a schedule detailing reportable amounts for certain substances.

The *Hazardous Waste Regulations* of the EMA ensures that the generators, carriers and receivers of hazardous waste handle, store, transport, treat and dispose of hazardous waste in a safe manner. Hazardous wastes must be disposed of properly to ensure human health and environmental protection.

4.1.3 Federal

4.1.3.1 Fisheries Act

The *Fisheries Act* is the main federal legislation providing protection for all fish, fish habitat, and water quality. The Act is administered federally by Fisheries and Oceans Canada (DFO) and Environment Canada. This Act provides protection against the ‘death of fish, other than by fishing’ and the ‘harmful alteration, disruption or destruction of fish habitat’ (HADD), unless authorized by DFO.

Fish habitat is defined as spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly to carry out their life processes. This definition indicates that a watercourse (which includes but is not limited to streams, ditches, ponds, and wetlands), which provides water, food, or nutrients to a fish-bearing stream, is considered fish habitat even if it does not contain fish and/or if it only has temporary or seasonal flows. The definition also indicates that not only the watercourse itself but also the vegetated stream side or riparian areas which provide nutrients and shade to the stream are considered fish habitat.

DFO encourages all project proponents to avoid and mitigate the impacts of projects to fish. As part of the professional reliance model, projects near water should be evaluated by an QEP and include documentation of common and site- and construction-specific measures and best practices to avoid or minimize impacts to fish and fish habitat. If a project cannot fulfill DFO’s *Measures to Protect Fish and Fish Habitat* or the scope of the project is not entirely covered under DFO’s *Codes of Practice,* proponents are asked to submit a Request for Review and DFO will work with the proponent to find additional ways to reduce those impacts. If the project cannot be designed to avoid a HADD, a *Fisheries Act* authorization is required.

Timing windows are used to protect fish and fish habitat when carrying out a project near water, and protect fish including their eggs, juveniles, spawning adults, and organisms upon which they feed and migrate. Both summer

(June 1 to September 1) and winter (December 1 and February 15) marine and estuary timing windows for this region apply to this Project.

If works can be completed during the window and provided that suitable mitigation measures are implemented, is Tetra Tech's opinion that the project will not cause death of fish or HADD if, at a minimum, guidance under a QEP has been provided and standard BMPs and mitigation measures are implemented. If development activities cannot be completed within the timing windows, a pre-works marine intertidal salvage may be required, and a Request for Review should be submitted to DFO.

4.1.3.2 Species at Risk Act

The *Species at Risk Act* (SARA) prohibits the killing, harming, harassing, capturing, or taking of species at risk, or destruction of their critical habitats. Species are designated 'at risk' by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), an independent body of experts that assesses species according to a broad range of scientific data. The federal Cabinet then decides whether those species should receive legal protection under the Act.

The SARA protects listed mammals, reptiles, amphibians, mollusks, lepidopterans, and plants on federally managed areas, and migratory birds (as listed under the *Migratory Birds Convention Ac*t [MBCA]) and fish are protected in all jurisdictions within Canada. Species that are legally protected under SARA are those listed as Endangered or Threatened and are listed in Schedule 1 of the Act. Those species listed as Special Concern and all species listed in Schedule 3, regardless of their status, are not legally protected by SARA. A permit is required when works either affect a migratory bird or aquatic species or its residence, which is listed as 'Endangered' or 'Threatened' or 'Extirpated' on Schedule 1 of SARA; or affect any Schedule 1 'Endangered' or 'Threatened' or 'Extirpated' species or its residence on federal land.

The preliminary desktop study did not include a comprehensive search for species protected under SARA. Tetra Tech recommends further investigation prior to the construction phase to determine whether species listed as 'Endangered' or 'Threatened' under the SARA have been documented within the Site. Should a SARA-listed species be identified on site and may be affected by project works, DFO and the Canadian Wildlife Service should be notified immediately for direction on appropriate action as measures employed would vary greatly with the species encountered, its sensitivity to the project and its proximity to the works.

4.1.3.3 Migratory Birds Convention Act

The MBCA is administered federally by Environment and Climate Change Canada (ECCC). The MBCA prohibits the disturbance or destruction of (1) a migratory bird, (2) the eggs of a migratory bird, (3) the occupied nests and shelters of any migratory bird, and (4) provides year-round protection to the unoccupied nests of the 18 bird species listed in Schedule 1 of the Migratory Birds Regulations, 2022. Under the regulation, most unoccupied nests may be removed without a permit, unless it is a nest of a species listed in Schedule 1 of the regulation, such as herons or Pileated Woodpecker, as these species tend to re-use their nests year after year. To destroy or disturb a nest of a bird listed in Schedule 1, the nest needs to be submitted to the online Abandoned Nest Registry, and the nest must be monitored to ensure it remains unused throughout the designated wait time set out in Schedule 1 for that species (between one to three years). According to ECCC's nesting calendar for Zone A1 (2018), the general nesting period begins on March 12th and ends on August 17th.

4.2 Methodology

The EOA is based on a preliminary desktop review of existing information, select online databases, and a field reconnaissance conducted on January 15 -17, 2025, to assess environmental conditions within the Site.

4.2.1 Preliminary Desktop Study

Tetra Tech conducted a preliminary desktop study that included the review of select environmental and biophysical data related to the Site and surrounding area to determine known environmental conditions and potentially sensitive features at the Site including soils and landforms, terrestrial vegetation, watercourses, and fish habitat. Tetra Tech recommends that a comprehensive desktop study is conducted in advance of the construction phase to determine known wildlife and wildlife habitat, ecologically sensitive areas, and Species of Management Concern (SOMC) that may be at the Site.

4.2.2 Field Reconnaissance

On January 14, 2025, a Tetra Tech biologist conducted a site visit to identify existing site features that will or may be affected if the Site is developed.

The Tetra Tech biologist conducted a wildlife and Species of Management Concern (SOMC) habitat assessment within the Site. The Site was surveyed for protected wildlife features including wildlife trees, potential bat roosts, dens, nests, and Pileated Woodpecker nest cavities. Vegetation and wildlife and/or wildlife sign were identified and documented throughout the site.

Watercourses identified at or near the Site during the desktop study were visited to determine if they were present, and if so, accurately mapped. Watercourses were assessed following the methods outlined in the *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory* (RIC 2001) and modified for the scale of the project.

Descanso Beach intersects with marine habitat. The foreshore was considered where accessibility features may be constructed.

4.3 Existing Environmental Conditions

The following sections describe the existing environment conditions at the Site. Representative photographs of current site conditions are included as Appendix A.

4.3.1 Soils and Landforms

The Site is located within the Nanaimo Lowlands, a low-lying area (below 600 m elevation) which extends along the east coast of Vancouver Island from Sayward in the north to Jordan River in the south (Jungen 1985). The Nanaimo Lowlands are underlain by sedimentary rocks formed during the Upper Cretaceous age, and the surface is dominated by undulating topography and sharp crests separated by narrow valleys (Jungen 1985). Gabriola Island is part of the De Courcy Group (including Mudge and Link islands) and is primarily a syncline complicated by thrust and cross faults (Kenney et al. 1990).

A query of the BC Soil Information Finder Tool (SIFT) identified one soil polygons within the Site (Government of British Columbia 2018). The site is composed of Saturna soils, which are well-drained, sandy loam. This soil is in native condition, and its parent materials are colluvial in the uppermost layer, overtopping sandstone bedrock.

4.3.2 Vegetation

The Biogeoclimatic Ecosystem Classification is a land classification system that groups similar ecosystems based on climate, soils and vegetation. This classification system was developed in British Columbia and is widely used as a framework for resource management as well as for scientific research. The Biogeoclimatic Ecosystem

Classification emphasizes vegetation of mature ecosystems as this is considered the best indicator of the combined influence of the environmental factors affecting a site.

The Site is located within the Coastal Douglas-fir Moist Maritime (CDFmm) biogeoclimatic zone (BC CDC 2025a). The Coastal Douglas-fir zone is limited to a small part of southern Vancouver Island, several islands in the Gulf of Georgia and a narrow strip of the adjacent mainland. It is confined to elevations mostly below 150 m. It has warm, dry summers and mild, wet winters. The coastal variety of Douglas-fir (*Pseudotsuga menziesii var. menziesii*) is the most common tree species in upland forests. Western redcedar (*Thuja plicata*), grand fir (*Abies grandis*), arbutus (*Arbutus menziesii*), Garry oak (*Quercus garryana*) and red alder (*Alnus rubra*) frequently accompany Douglas-fir, depending on site moisture and nutrient regime (Nuszdorfer et al. 1991). Common understory plants include salal (*Gaultheria shallon*), dull Oregon-grape (*Mahonia nervosa*), ocean-spray (*Holodiscus discolor*), and Oregon beaked-moss (*Kindbergia oregana*).

In January 2025, Tetra Tech conducted a site assessment to record general observations of the vegetation communities on the Site.

- **Picnic and Day-Use Area**: The picnic and day-use area at Site includes the non-vegetated parking lot, landscaped picnic area, gravel driveway, and maintained trails (Photos 1, 2, 3, and 15; Appendix A). The grass lawn is bordered by natural vegetation such as salal and Douglas-fir.
- **Douglas-fir Forest:** The Site is bordered by mature, coniferous forest. The forest is dominated by Douglas-fir, with a lesser amount of western red cedar, bigleaf maple (*Acer macrophyllum*), and arbutus (Photos 6, 8, and 11). Common understory species included dull Oregon-grape, salal, bracken fern (*Pteridium aquilinum*; Photos 4 and 5), and mosses such as step moss (*Hylocomium splendens*) and electrified cat's tail (*Rhytidiadelphus triquetrus*).
- **Marine Foreshore:** The shoreline was evident by drop of approximately 1.0 m from a vegetated grassy field to a sandy beach. Roots of Douglas Fir and Western Redcedar trees slow the erosion of the shoreline from high tidal activity (Photos 6, and 16). Macroalgae is attached to granular substrate material in the mid- and low-tide areas of Table 5-1 below provides a list of all vegetation species observed at the Site during the January 2025 site visit. None of the vegetation species identified are listed as 'Noxious' under the *Weed Control Act*. Only perennial species were able to be documented during the site visit because it occurred when many plant species are dormant. No rare plants were identified; however, non detection does not imply absence.

Table 5-1: Vegetation Species Observed at the Site during the January 2025 Site Visit

Common Name	Scientific Name	BC List	Provincial Priority Invasive Species[2]	BC *Weed Control Act* [3]
Trees				
bigleaf maple	*Acer macrophyllum*	Yellow	-	-
red alder	*Alnus rubra*	Yellow	-	-
arbutus	*Arbutus menziesii*	Yellow	-	-
Douglas-fir	*Pseudotsuga menziesii*	Yellow	-	-
western redcedar	*Thuja plicata*	Yellow	-	-
Shrubs				
salal	*Gaultheria shallon*	Yellow	-	-
dull Oregon-grape	*Mahonia nervosa*	Yellow	-	-

[2] As designated by the BC Inter-Ministry Invasive Species Working Group (2023). Available at: https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/publications/provincial_priority_is_list.pdf

[3] Weeds classified as noxious according to Schedule A of the BC Weed Control Regulation under the BC Weed Control Act.

Common Name	Scientific Name	BC List	Provincial Priority Invasive Species[2]	BC *Weed Control Act* [3]
Trees				
Himalayan blackberry	*Rubus armeniacus*	Exotic	Yes - Regional Containment/Control	N/A
Herbs				
sword fern	*Polystichum munitum*	Yellow	-	-
bracken fern	*Pteridium aquilinum var. pubescens*	Yellow	-	-
rush sp.	*Juncus* sp.	-	-	-
grass spp.	-	-	-	-
Clover sp.	*Trifolium spp.*	Yellow	-	-
Moss				
electrified cat's-tail moss	*Hylocomiadephus triquetrus*	Yellow	-	-
step moss	*Hylocomium splendens*	Yellow	-	-

4.3.3 Wildlife

The diversity of wildlife in the CDF zone is influenced by the mild, maritime climate and the geography of the CDF zone. Because most of the wildlife habitat within the CDF zone occurs on Vancouver Island and the Gulf Islands, this zone will have fewer wildlife species than mainland biogeoclimatic zones (Nuszdorfer et al. 1991). Common wildlife to Gabriola Island includes Black-tailed Deer (*Odocoileus hemionus*) and Wild Turkey (*Meleagris gallopavo*).

The Site was characterized as marine foreshore and picnic/day-use areas with a mature coniferous forest surrounding the site and would provide suitable habitat for a variety of species. Forest habitats provide food and cover elements to a range of wildlife species, including birds and large and small mammals. The forested areas surrounding the Site likely support Black-tailed Deer and Common Raccoon (*Procyon lotor*). Mature coniferous trees are often utilized by both songbirds and raptors for feeding and nesting. Mature trees also often form cavities that are used by various birds for nesting, as well as by bats for roosting and nursery colonies. The herb and shrub understory, in conjunction with woody debris and leaf litter, provides cover and foraging opportunities for small mammals such as rodents.

Several species were detected during the site visit (Table 5-2). All of the species detected are considered relatively tolerant to human presence and are often found in rural and urban areas.

Table 5-2: Wildlife Observed During the January 2025 Site Visit

Common Name	Scientific Name	Sign	BC List	COSEWIC Status	SARA Status
Birds					
Brown Creeper	*Certhia americana*	Sound	Yellow	-	-
Common Raven	*Corvus corax*	Sound	Yellow	-	-
Golden-crowned Kinglet	*Regulus satrapa*	Sound	Yellow	-	-
Chestnut-backed Chickadee	*Poecile rufescens*	Sound	Yellow	-	-
Red-breasted Nuthatch	*Sitta canadensis*	Sound	Yellow	-	-
Pine Siskin	*Spinus pinus*	Sound	Yellow	-	-
Pileated Woodpecker	*Dryocopus pileatus*	Visual	Yellow	-	-

The Site is in Bird Conservation Region 5 – Northern Pacific Rainforest, and ECCC nesting zone A1 (ECCC 2018). According to ECCC's nesting calendar for Zone A1, the general nesting period begins on March 12th and ends on August 17th. During the general nesting period forested and vegetated habitats within the Site will be utilized by numerous bird species for nesting. Depending on the species, birds can nest in trees, shrubs, grasses or even on bare ground.

For records of Bald Eagle nests are present within 1,000 m of the Site, two records of which are within 150 m of Site (CMN 2024a; CMN 2024b). No Great Blue Heron colonies are recorded within 1,000 m of Site. Tetra Tech did not identify any conspicuous bird nests or Pileated Woodpecker nest cavities during the January 2025 site visit, although multiple Pileated Woodpeckers were observed feeding in the coniferous forest surrounding Site (Photo 13; Appendix A). Should trees or brush clearing be required, a pre-clearing nest sweep should be conducted in advance of works. If a Pileated Woodpecker nesting cavity is identified within the Project Site, a no-entry buffer may be installed to reduce interaction between workers and the cavity.

4.3.4 Fish and Aquatic Habitat

A freshwater drainage and the tidal foreshore of Descanso Bay make up the aquatic habitats at Site.

Freshwater Habitat: Freshwater sourced from a small overland catchment approximately 120 m east of site flows to the Picnic/Day-use Area where it passes under the parking lot in a 180 mm culvert and is discharged to the marine foreshore just north of the footpath to the Main beach (Photo 2; Appendix A). The channel was followed upstream of the culvert for approximately 110 m and was moderately confined with intermittent scour. Granular substrate was not evident in the upper 90 m of the channel, and a mix of terrestrial and aquatic plants were prevalent (Photo 14). For approximately 20 m upstream of the culvert inlet the channel was well-scoured and soil and granular substrate was evident. At the culvert outlet the poorly defined and poorly confined channel conveyed flow for approximately 2 m where it discharged to the marine foreshore. The average bankfull width was 80 cm, the average wetted width was 34 cm, and the average depth was 5 cm. One pool with a wetted width of 42 cm was located just upstream of the culvert inlet. No suitable fish habitat was available, as the watercourse did not contain sustained flow, depth, or cover.

In BC, 'streams' are defined as a watercourse with a continuous channel of more than 100 m in length that exhibits evidence of scouring or alluvial deposition" (BC ENV 1998). The drainage at site does not meet the definition of a watercourse due to poor evidence of scour and lack of alluvial deposition and is not protected under the *Water Sustainability Act*. This riparian zone of drainage would receive protection under the *Fisheries Act* and DFO by being located within the 30 m riparian exclusion zones of the Marine environment.

Marine Foreshore Habitat: The shoreline was evident by drop of approximately 1.0 m from a vegetated grassy field to a sand and gravel beach. Roots of Douglas Fir and Western Redcedar trees slow the erosion of the shoreline from high tidal activity (Photo 6). Large woody debris and milled logs washed up from the ocean are present throughout the high tideline of the sandy beach areas along with washed up unidentified macroalgae (Photos 8 and 10). Macroalgae that remained attached to granular substrate material in the mid- and low-tide areas of the beach was unidentified due to being outside of the growing season. Evidence of shellfish was observed by crushed shells mixed in with the granular foreshore substrate. The main beach and the southern beach are separated by the same exposed bedrock that line the northern-most and southern-most shorelines of the bay (Photos 7, 9 and 12). Boulders are evident in the medium- and low-tide sections of the beach and provide habitat for encrusting invertebrates.

4.4 Potential Environmental Impacts

Should the Regional District of Nanaimo proceed with developing a beach access ramp at Site, a comprehensive Environmental Overview Assessment should be conducted to determine any uncaptured potential adverse effects and develop associated mitigation measures. Potential environmental impacts related to the development of the Site

and general mitigation measures to minimize those effects should be developed and presented as part of the comprehensive EOA, which will be required in support of any required environmental permits.

Presently, the ramp concept does not consider footings and excavations, and pile driving and related operations.

4.5 Summary and Recommendations

Based on the results of this assessment, Tetra Tech makes the following recommendations regarding the future development of the Site:

- If development details become available for this Site, the Regional District of Nanaimo should retain a QEP to prepare a comprehensive Environmental Overview Assessment specific to the proposed development. The EOA should include a desktop survey of SOMCs to determine whether there is potential risk of overlap with the Site.
- Depending on future development plans, there is potential for temporary or permanent impacts to some of the marine foreshore area. The exact extent of marine foreshore impacts would be determined during the final detailed design phase, but some general guidance is provided below:
  - **Avoidance:** Wherever possible, development plans should aim to avoid the marine foreshore. To protect sensitive marine foreshore habitats and to avoid or minimize provincial and federal permitting requirements, at minimum, a 30 m riparian exclusion buffer should be established from the natural boundary of the marine foreshore. No development activities should take place within this setback/buffer.
  - **Minimization:** In the event avoidance is not possible, the preference would be to minimize the workspaces and footprints within the marine foreshore and riparian buffer wherever feasible. Permits will need to be obtained by DFO under the *Fisheries Act*, and a Development Variance Permit and an amendment to the Gabriola Official Community Plan under the Gabriola Island Land Use Bylaw No. 177 will be required for works conducted within the riparian area and the marine foreshore.
  - **Mitigation:** Potential Effects should be described, and general mitigation measures should be developed in advance of works. Suitable mitigation measures are required for environmental protection and to progress environmental permitting requirements.
  - **Compensation:** As works to the marine foreshore and riparian zone are unavoidable, habitat compensation may be required. Compensation can be developed on-site (within the Site boundaries) or off-site, depending on the availability of areas to complete restorative compensation.
- Suitable Pileated Woodpecker habitat is present surrounding Site. If possible, development activities should avoid the removal of trees or vegetation. If clearing activities are required, a QEP will be required to conduct a pre-clearing nest and cavity sweep with special attention for Pileated Woodpecker nesting cavities.
- The general nesting period for Zone A1 begins on March 12th and ends on August 17th (ECCC 2018). In the case that clearing of trees or brush be required, clearing activities should take place outside of this period; otherwise, a pre-clearing nest sweep conducted by a QEP is required.
- Invasive plant species are present within the Site (e.g., Himalayan blackberry). If the development footprint overlaps with invasive plants, the invasive plants should be removed and disposed of at approved facilities.
- Marine invertebrate and mollusk species can utilize the marine foreshore on-site. If development activities will involve disturbance in marine foreshore, a pre-development intertidal species salvage may be conducted as necessary to remove individuals from the work area.
- Works in the marine foreshore should occur during the winter marine and estuarine timing windows for the Project's region is between June 1 to September 1 and between December 1 and February 15. If works cannot be avoided during marine and estuarine timing windows, a Request for Review to DFO may be required.

5.0 ARCHAEOLOGICAL CONSIDERATIONS

In 2022, RDN retained an archaeologist to carry-out a preliminary field reconnaissance (PFR) for a couple projects in the park, including a future “floating aluminum beach access ramp”, which has evolved into the present conceptual ramp study.

The Archaeologists’ PFR (Aquilla Archaeology, 2022) suggested that an Archaeological Impact Assessment (AIA) will have to be completed prior to any excavation for footings.

In order to minimize potential environmental impacts and archeological impacts, the current ramp concept design does not consider footings, excavations, pile driving, or related operations.

6.0 RAMP CONCEPT LAYOUT AND MATERIALS

6.1 ACCESSIBLE RAMP CONCEPT

The accessible ramp concept idea shown in Figure 6 was created such that it integrates with the beauty of the Regional Park site and to allow people with mobility disabilities to have access to the main beach area. The ramp was further developed into a conceptual design, where the ramp spans across the site from the parking lot over the erosion scarp to the beach.

Following the ramp guidelines by Meaningful Access Consulting (Appendix B), a ramp concept using an available marine gangway design was considered, from an USA manufacturer (Topper Industries, Woodland, WA), as shown in Figure 8. The conceptual design drawings are included in Appendix D.

Several alternatives for ramp materials were discussed by the Tetra Tech team, including compacted soil, treated wood, concrete and aluminum. The compacted soil alternative would include excavation and could be impacted and damaged by wave action. A treated wood ramp would potentially become slippery and could decay when exposed to weather and temperature variations. A concrete ramp was not considered due to aesthetics and costs. Thus, the selected alternative was the use of an aluminum ramp.

Figure 8: Impression of proposed ramp for Descanso Bay beach

6.2 RAMP CONCEPT DESIGN AND MAINTENANCE

A typical ramp concept cross-section is shown in Figure 9, including coastal protection materials, such as anchored wooden logs bundled together and riprap stones to resist wave action during storms.

During winter seasons the beach is subject to wave action that brings in logs during storms. During construction, some logs should be selected for use in the coastal protection design. After the construction of the ramp, some operational considerations will need to be contemplated by RDN Operations and may involve considerable oversight and time, including the removal of new logs that land on the beach; the removal of any slippery seaweed washed up so that no safety hazards are left on the beach; and maintenance of mobi mats (landing mat and path mat) that will need to be removed at the end of summer and cleaned every winter before they may be put back in place for the subsequent summer season.

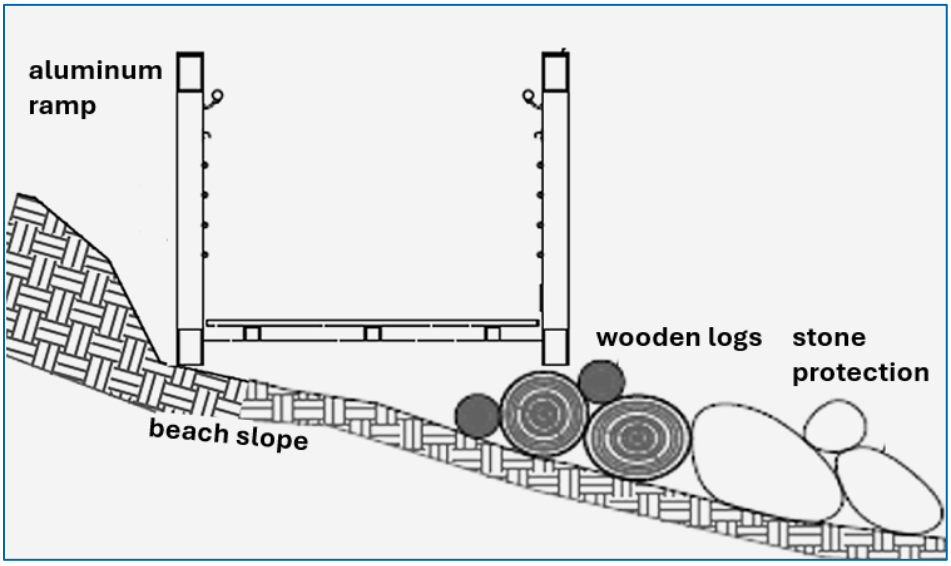

Figure 9: Section of proposed ramp with coastal protection

6.3 PRELIMINARY COST ESTIMATES

The estimated total cost for construction of an accessible ramp for the Descanso Bay beach is CAD**$380,000.00**, as per itemization shown in Table 6.1.

Table 6.1: Preliminary Estimate of Probable Costs

Construction Item	Estimated Quantity	Estimated Cost (CN$)
Detailed Engineering	Lump Sum	60,000
Mob / Demob	Lump Sum	30,000
Environmental Applications	Lump Sum	15,000
Pre-Construction Survey	Lump Sum	5,000
Aluminum Ramp (Gangway)	Lump Sum	100,000
Mobi Mats	For 20 m	30,000
Ramp Protection (Greenshoring)	For 30 m	40,000
Project Contingencies	40%	100,000

7.0 FINDINGS AND RECOMMENDATIONS

The Accessible Beach Access Feasibility Study findings and recommendations are as follows:

1. An initial accessible ramp concept is shown in Figure 6 and Figure 9; the ramp concept drawings and details are included in Appendix D.

2. The ramp will be subject to high tides, wave action, and potential impact from woody debris. Given that the ramp is a coastal structure, the detailed design must consider these factors and outline the design criteria for tides, surge, wave storms and consider local sea level rise (SLR) due to climate change.

3. The 1 m erosion scarp is subjected to wave actions during high tide levels, when waves may reach the new ramp elevations.

4. To protect the ramp against wave action, coastal protection measures are included in the conceptual design, such as the use of anchored wooden logs and riprap stones.

5. Additional work to be considered during detailed design includes the anchoring method for the ramp and the mobi mats; ground preparation for the mobi landing mat and the mobi mat path; the anchoring design for the logs and design criteria and specifications for the riprap protection.

6. At the west of the ramp entrance, on the top of the existing bank, Tetra Tech proposes to include 4-step stairs down to the beach for access during the year. This will be considered during detailed design (not currently shown on the concept drawings).

7. All environmental recommendations are given in Section 4.5 above. Detailed design influences the requirements for specific environmental permits; therefore, a comprehensive list of environmental permits will be provided in the final version of the Environmental Overview Assessment Report following detailed design. Environmental permits may include: a DFO Request for Review, and an Islands Trust Development Variance Permit. An amendment to the Gabriola Official Community Plan under the Gabriola Island Land Use Bylaw No. 177 will also be required for works in the marine foreshore area. Further permitting requirements may come to light following detailed design.

8. A seasonal, retractable ramp as proposed by the GaLTT's Accessibility Committee is not feasible at this site because it would not follow the accessible ramp guidelines (Appendix B) in terms of a running slope grade for independent access.

9. The nearshore area at the beach is potentially archaeologically significant. The ramp should be designed to minimize impacts on existing soils. For this reason, along with environmental considerations, the concept design has purposely minimized/avoided the need for excavations, pile driving, or deep foundations.

10. Thus, future detailed design work for the ramp concept needs to consider any potential archaeological implications.

8.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Regional District of Nanaimo and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Regional District of Nanaimo. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

9.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,

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PERMIT NUMBER: 1001972

Tetra Tech Canada Inc.

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APPENDIX A SITE VISIT PHOTOGRAPHS (14/01/2025)

Photo 1: The Project Site includes a landscaped picnic area, parking area, and driveway. January 2025.

Photo 2: A drainage pipe has been installed below the parking area that conveys water from upstream drainage to the foreshore area. January 2025.

Photo 3: A western view of the upstream drainage pipe (foreground) and the parking lot (background) leading to the main beach access point (far background). January 2025.

Photo 4: An eastern view of Coastal Douglas Fir (moist maritime) forest with salal and dull Oregon grape along the forest floor. The picnic area can be viewed through the trees to the left of the photo. January 2025.

Photo 5: A southern view of the Coastal Douglas Fir (moist maritime) forest from the picnic area near the southern beach access area. January 2025.

Photo 6: A southern view from the main beach towards the southern beach. The center of the photo shows Douglas Fir trees growing overtop of exposed bedrock. Shoreline erosion of the main beach is evident by exposed roots vegetation overhanging the foreshore.

Photo 7: A southwestern view of the bedrock outcrop separating the south and main beaches. January 2025.

Photo 8: A southeastern view of the south beach shoreline. January 2025.

Photo 9: A southwestern view of the bedrock southern beach shoreline, looking towards Nanaimo. January 2025.

Photo 10: A northern view of the main beach shoreline from the just in front of the current access path. Evidence of macroalgae deposition and large woody debris. January 2025.

Photo 11: A southern view of the main beach from the trail along the adjoining hill. An Arbutus tree and Douglas Fir tree are in the foreground. January 2025.

Photo 12: A view of the main beach towards the Northwest showing the wind fetch over water. January 2025.

Photo 13: Evidence of woodpecker activity at site. January 2025.

Photo 14: Water draining from a nearby catchment towards Descanso Beach. January 2025.

Photo 15: View to the East from the beach towards the parking lot. January 2025.

Photo 16: View to the East of the elevation drop and the erosion scarp near the main beach where the ramp would be conceived. January 2025.

APPENDIX B MEANINGFUL ACCESS CONSULTING MEMO

Descanso Beach Regional Park. Ramp Accessibility Considerations. February 23, 2025. By Karin Pasqua, Meaningful Access Consulting, BC

Descanso Beach Regional Park
Ramp Accessibility Considerations
February 23, 2025

MEANINGFUL
ACCESS CONSULTING

www.meaningfulaccess.com info@meaningfulaccess.com

Ramp Best Practices

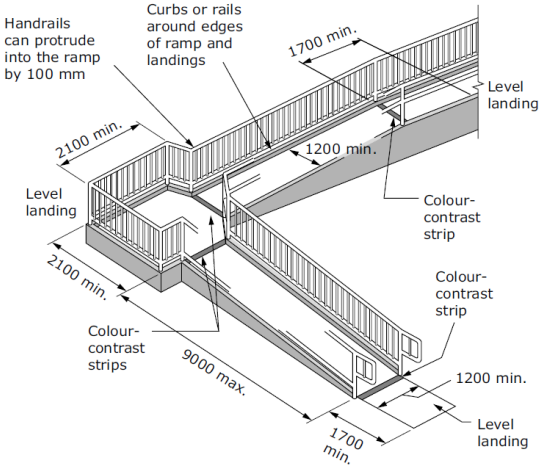
Ramps, regardless of being indoor or outdoor, should have a running slope of between 1:12 (8.33%) and 1:20 (5%) with 1:20 being best practice for independent access. The cross slope should not be steeper than a ratio of 1:50 (2%).

The width of the ramp should be at least 1200 mm to allow someone assistance and to allow people to pass each other.

The ramp should have level thresholds and level landings.

Contrast is recommended across the width of the ramp of at least 50% wherever it meets a slope change, located on the flat surface before the level change.

Considerations need to also include edge protection that is white cane detectable (for example, a curb with a minimum height of 100 mm) and/or a raised barrier or rail with its lower edge of not more than 100 mm. Edge protection is also important to ensure that wheels or walking aids do not slip off the ramp surface.

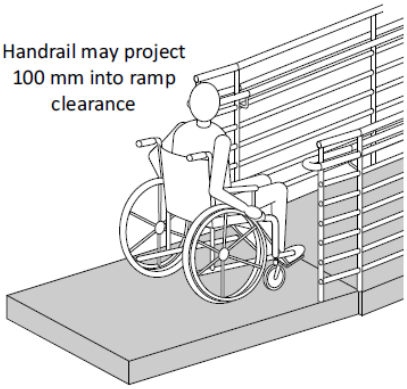


Reference: CSA B652-23, Figure 34A

Handrails

Handrails should have a height of between 860 mm and 920 mm with an additional lowered handrail for children may be worth considering.

Handrails should be round, graspable and have horizontal extensions beyond the ramp and bottom of the ramp of at least 300 mm long which return to the post. Another option would be to have the handrails which project back into the ramp.



Reference: CSA B652-23, Figure 36B

Did you know?

Handrail extensions at the top and bottom of ramps offer essential support and guidance for users as they approach or exit the ramp.

For instance, individuals who are blind use the handrail extension to be aware of the end of the level change.

Ramp Best Practices

Curved Ramps

Curved ramps are often used for their aesthetic purposes and to prevent significant amounts of switchbacks.

Cons of curved ramps:

- Can be hazardous for people who are blind or have low vision, as the curve makes it harder to navigate and detect changes in slope
- Difficult for people with mobility disabilities and those using wheeled mobility devices like wheelchairs or scooters to maneuver around the bend
- Unsafe for people using walking aids like canes or crutches, as the curve reduces stability
- Can cause wheeled mobility devices to tip if the cross-slope is not even throughout the curve
- More complex to design and construct with proper drainage and handrails that follow the curve

Pros of curved ramps:

- May allow a ramp to fit into a constrained space where a straight run is not possible
- Could provide a more aesthetically pleasing look than a switchback ramp with 180° turns
- Might feel more natural to navigate for some ambulatory people
- However, the cons seem to outweigh any minimal pros when it comes to accessibility and inclusive design. The documents consistently recommend straight ramps, 90° turns, or switchbacks instead of curves wherever possible.

Signage

Signage is also a consideration to help people identify the route of access to the beach. Signage from the parking lot is recommended as well as at key decision points.

Proper signage helps people identify the shortest route of travel, preventing additional fatigue of having to double back.

Photo of signage located at Rathtrevor Provincial Park
Photo credit: Karin Pasqua

Ramp Examples at other Beaches

Concrete Ramps

The adjacent photos are examples of a low-grade ramp that is found in Rathtrevor Provincial Park. In the summer, the ramp is extended with the use of a mobi-mat for greater access to the beach floor.

This ramp connects directly into the path of travel.

Concrete ramps are sturdy and can include artistic elements that can invite nature into the design with stonework and other creative applications, such as in the examples below.

Photo of beach access ramps located at Rathtrevor Provincial Park
Photo credit: Karin Pasqua

Photo of beach access ramp located at Rocky Point Park
Photo credit: Michael Russell Photography

Photo of beach access ramp located at Altona Beach in Australia
Photo credit: AW Maritime

Ramp Examples at other Beaches

Composite and Wood

The adjacent photos are examples of a implementing wood and/or composite ramps, managing significant grade changes.

Photo of beach access ramp
Photo Credit: naturetread.com

Photo of beach access ramp in Tasmania
Photo Credit: https://aprcomposites.com.au/

Maintenance and Mobi Mats

Mobi Mats

A mobi mat, short for mobility mat, is a portable rollout pathway designed to create a stable, non-slip surface over sand, grass, gravel or other uneven terrain. It's usually made of a durable mesh material that allows water, sand and grass to filter through, while still providing a firm base for wheels and feet.

Mobi mats provide an accessibility solution for beaches and rough because they open up spaces like beaches, parks and trails to a wider range of users. People with mobility devices like wheelchairs, walkers, canes and strollers can navigate the mats more easily than loose surfaces. The mats also provide sure footing for people who are unsteady on their feet, like some older adults or people with balance disabilities. (Plus, they make hauling gear like coolers and umbrellas a breeze for everyone.)

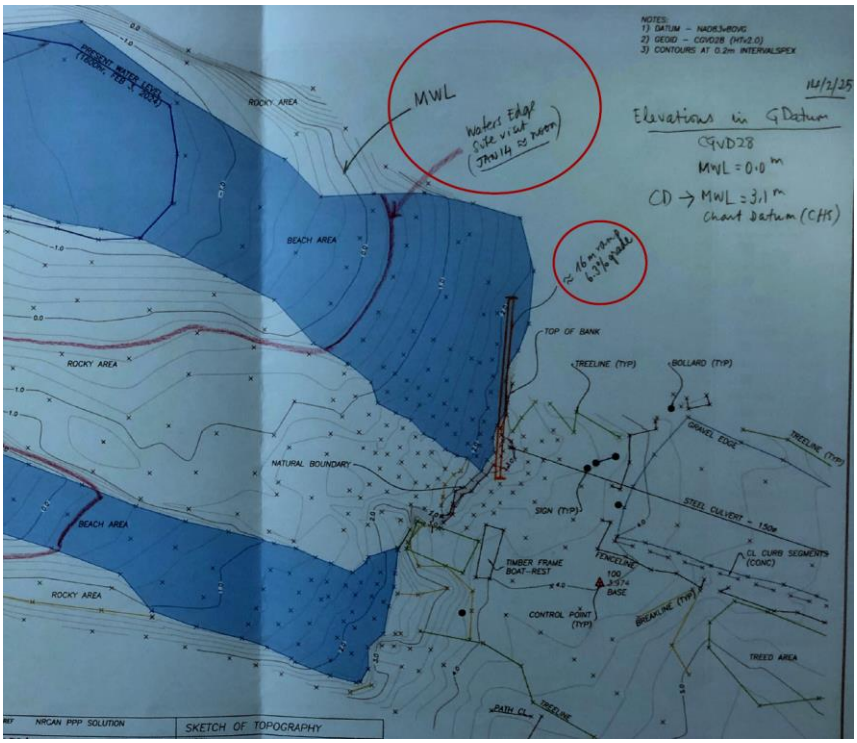
They are available in a number of colours, allowing for visibility and/or to integrate with the natural environment.

Maintenance for mobi mats throughout the season will need to be considered as they can become covered in sand or debris, resulting in reduced accessibility.

Photo of beach access ramp and mobi mat located at Miami Beach
Photo credit: Karin Pasqua

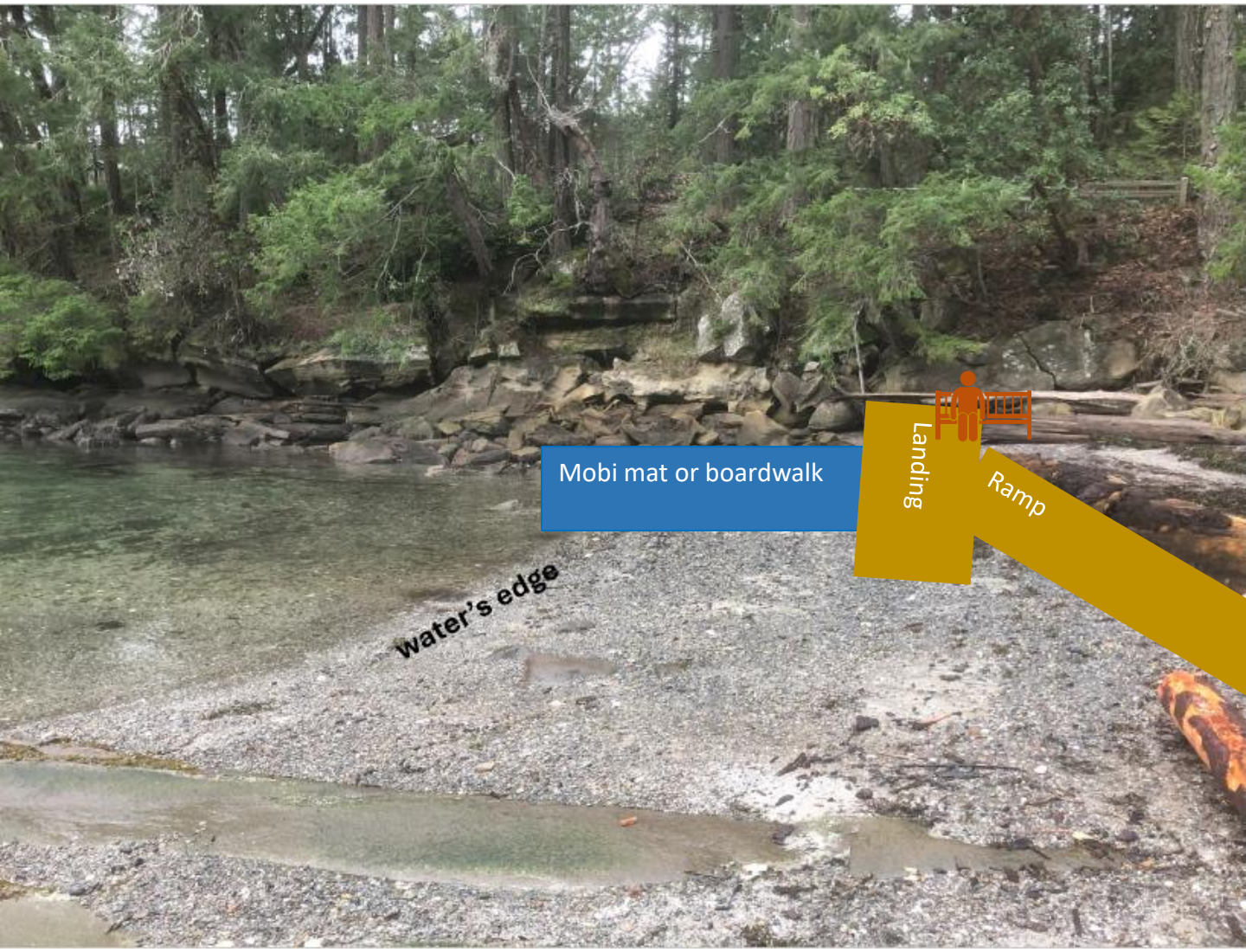
DESIGN RECOMMENDATIONS

- The route of access needs to be considered from the parking lot site to the main beach site, creating a complete and meaningful path of access. This means that the trail from the parking lot to the water's edge should be upgraded and widened to accommodate best practices for mobility device users.
- The ramp should extend meaningfully so that people using mobility devices can be close to the water and where their family is engaging with the park.
- Consider having a bench or seating area near bottom of the ramp for people to enjoy the views.
- Extend access to the water's edge with the use of a boardwalk or mobi mat.



- The drawing above would provide a good example of ramp placement to make this park meaningfully accessible.


Ramp
Landing/platform area connecting to the path of travel.
Ramp extends along shoreline with a possible landing and angling towards the water.
Connects to a mobi mat or boardwalk
Steps down to the beach


Mobi mat or boardwalk
Landing
Ramp
water's edge

WHY IS CONTRAST SO IMPORTANT?

Contrast to support people with Low Vision

- Contrast makes things easier to identify and distinguish. High contrast between an object and its background helps those with low vision better perceive shapes, edges, and boundaries.
- It improves legibility and readability. When there is strong contrast between text and its background, it is easier for people who have low vision to read and interpret letters, words, and symbols.
- Contrast provides visual orientation. Things like doorways, handrails, and signage stand out better when there is significant contrast with surroundings. This aids navigation and independence.
- Reduced contrast contributes to eye strain and fatigue. Insufficient contrast makes visual tasks more difficult and tiring for those with low vision.

Contrast for Balance

- Contrast highlights edges and boundaries. When moving from seated to upright, high contrast along the edges of steps, floors, and thresholds makes these changes in level clearly visible. This prepares the body for adjustments.
- It defines spatial orientation. Contrast provides visual cues that help the brain orient itself in space, allowing for better balance control such as knowing where a wall, handrail or counter is helps stabilize our vision.
- Distinct edges guide movement. Clear definition where surfaces change, facilitated by contrast, guides body motions like getting up from a chair or exiting a vehicle.
- It draws attention to tripping hazards. Significant contrast makes irregularities in floors, pavements, ramps readily apparent so they can be navigated safely.
- Low contrast obscures surroundings. With inadequate contrast, visual environment blends together, depriving brain of key reference points needed to maintain equilibrium.

THANK YOU

for choosing Meaningful Access Consulting

We are pleased to work with you and to present these insights on the application of a ramp with recommendations from mobility, hearing, cognitive and sight perspectives to support everyone of all ages and abilities in being able to meaningfully access the beach at Descanso Beach Regional Park.

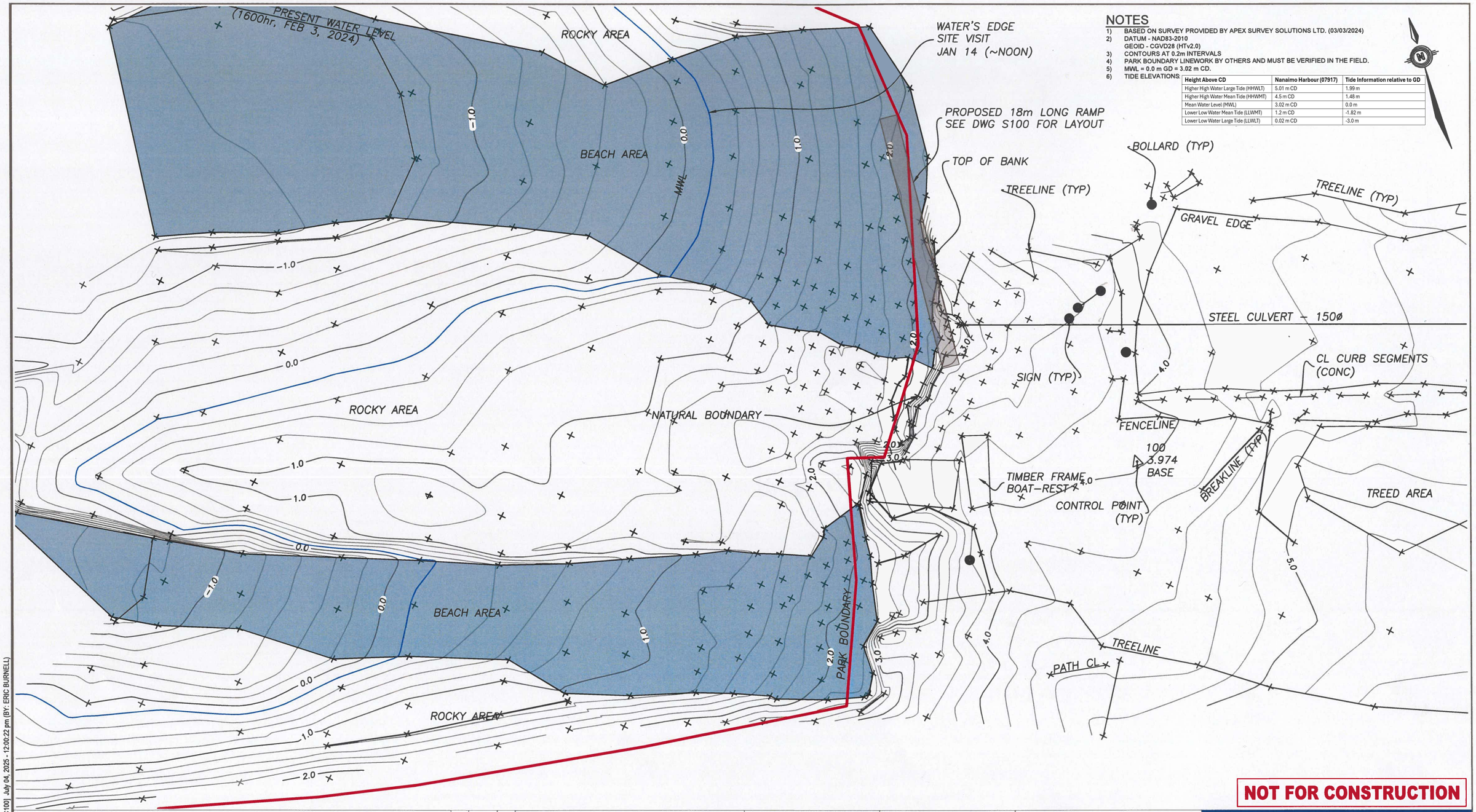
We applaud the Regional District of Nanaimo and your efforts in working towards universal design and better understanding the needs of individuals with disabilities in our communities.

If there are any questions, please do not hesitate to reach out! We are here to help.

Thank you again,

Marco & Karin Pasqua
Universal Design Accessibility Consultants
www.meaningfulaccess.com

APPENDIX C SURVEY DRAWING (3/2/2025)



NOTES

1) BASED ON SURVEY PROVIDED BY APEX SURVEY SOLUTIONS LTD. (03/03/2024)
2) DATUM - NAD83-2010
   GEOID - CGVD28 (HTv2.0)
3) CONTOURS AT 0.2m INTERVALS
4) PARK BOUNDARY LINEWORK BY OTHERS AND MUST BE VERIFIED IN THE FIELD.
5) MWL = 0.0 m GD = 3.02 m CD.
6) TIDE ELEVATIONS

Height Above CD	Nanaimo Harbour (07917)	Tide Information relative to GD
Higher High Water Large Tide (HHWLT)	5.01 m CD	1.99 m
Higher High Water Mean Tide (HHWMT)	4.5 m CD	1.48 m
Mean Water Level (MWL)	3.02 m CD	0.0 m
Lower Low Water Mean Tide (LLWMT)	1.2 m CD	-1.82 m
Lower Low Water Large Tide (LLWLT)	0.02 m CD	-3.0 m

NOT FOR CONSTRUCTION

0 10m
Scale: 1:250 @ 11"x17"

NUM	DATE	APR	DESCRIPTION
0	07/07/25	OS	ISSUED FOR USE
A	30/05/25	OS	ISSUED FOR REVIEW

REVISIONS

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
PERMIT NUMBER: 1001972

PERMIT

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
F. J. SAYAO
15831
7/7/25

PROFESSIONAL SEAL

CLIENT
REGIONAL DISTRICT OF NANAIMO

TETRA TECH

Descanso Bay Regional Park Beach Access
Descanso Beach, Gabriola Island, BC

BASE PLAN - DESCANSO BEACH RAMP FEASIBILITY STUDY

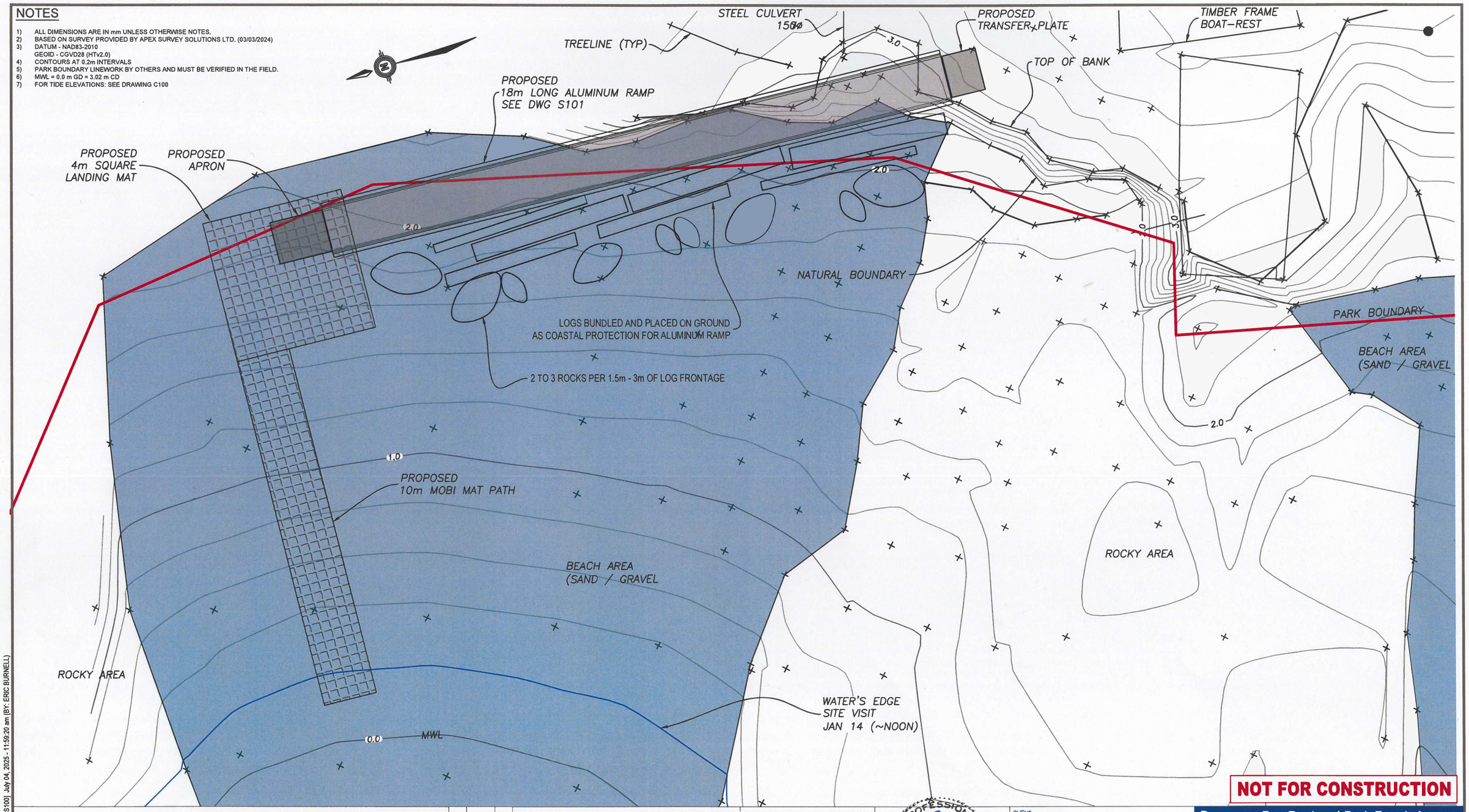
PROJECT NO.	OFFICE	DES	CKD	REV	DRAWING
704-ENG.ACLE03142-01	VANC	OS	CY	0	C100
DATE	SHEET No.	DWN	APP	STATUS	
July 07, 2025	1 of 1	WSL	OS	IFU	

R:\files\Tetra Tech\Descanso Beach\C100.dwg [C100] July 04, 2025 - 12:00:22 pm (BY: ERIC BURNELL)

APPENDIX D RAMP CONCEPTUAL DESIGN DRAWINGS

NOTES

1) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTES.
2) BASED ON SURVEY PROVIDED BY APEX SURVEY SOLUTIONS LTD. (03/03/2024)
3) DATUM - NAD83-2010
   GEOID - CGVD28 (HTv2.0)
4) CONTOURS AT 0.2m INTERVALS
5) PARK BOUNDARY LINEWORK BY OTHERS AND MUST BE VERIFIED IN THE FIELD.
6) MWL = 0.0 m GD = 3.02 m CD
7) FOR TIDE ELEVATIONS: SEE DRAWING C100



NOT FOR CONSTRUCTION

0 5m
Scale: 1:100 @ 11"x17"

NUM	DATE	APR	DESCRIPTION
0	07/07/25	OS	ISSUED FOR USE
A	30/05/25	OS	ISSUED FOR REVIEW

REVISIONS

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
PERMIT NUMBER: 1001972

PERMIT

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
O. S. F. J. SAYAO
15831
7/7/25

PROFESSIONAL SEAL

CLIENT
REGIONAL DISTRICT OF NANAIMO

TETRA TECH

Descanso Bay Regional Park Beach Access
Descanso Beach, Gabriola Island, BC

DESCANSO BEACH RAMP FEASIBILITY STUDY
PROPOSED CONCEPTUAL ARRANGEMENT

PROJECT NO.	OFFICE	DES	CKD	REV	DRAWING
704-ENG.ACLE03142-01	VANC	OS	CY	0	S100
DATE	SHEET No.	DWN	APP	STATUS	
July 07, 2025	1 of 4	WSL	OS	IFU	

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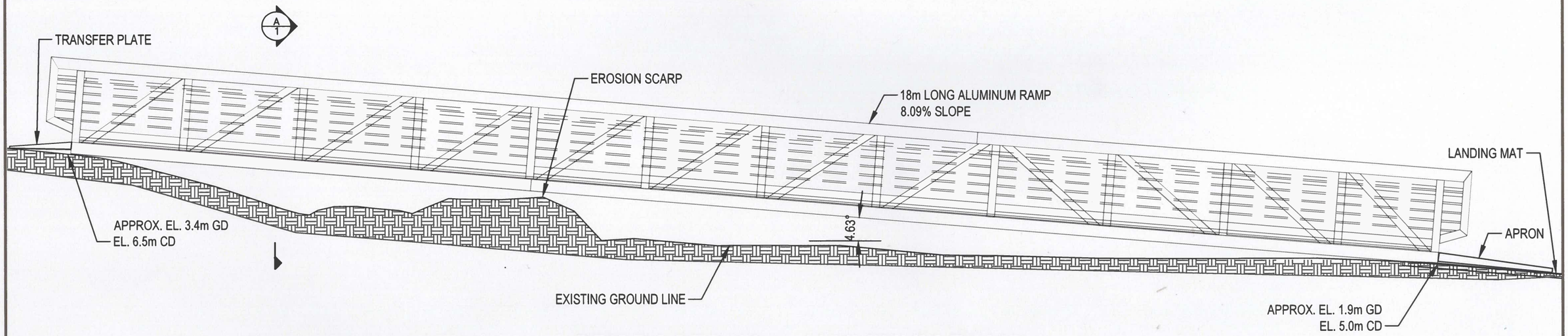
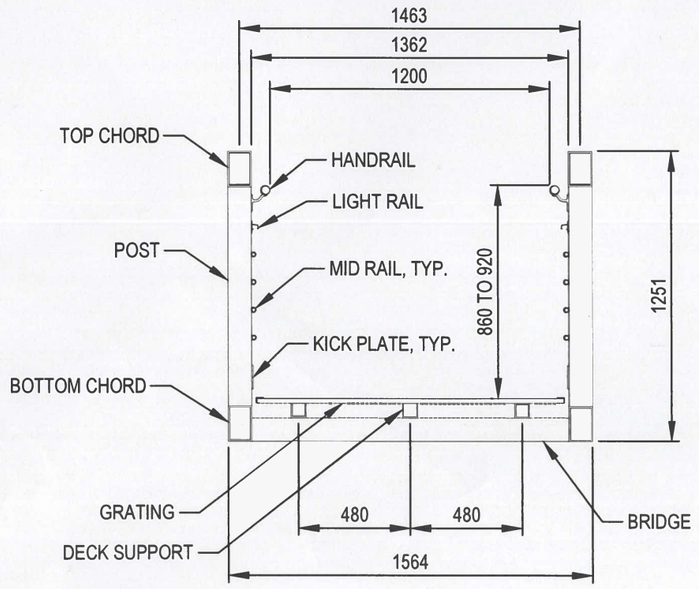


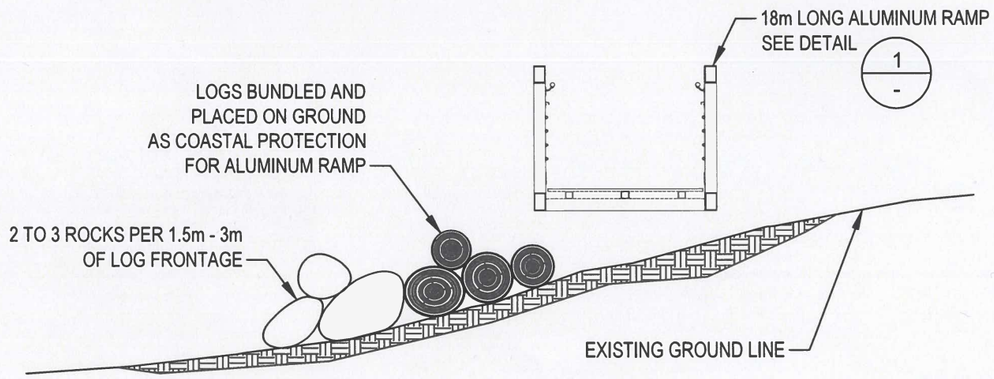
PROPOSED 18 m ALUMINUM RAMP

SCALE: 1:50



DETAIL 1/- PROPOSED RAMP SECTION

SCALE: 1:25



SECTION A/- EROSION PROTECTION

SCALE: 1:50

NOT FOR CONSTRUCTION

NOTES

1) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTES.
2) BASED ON SURVEY PROVIDED BY APEX SURVEY SOLUTIONS LTD. (03/03/2024)
3) DATUM - NAD83-2010
   GEOID - CGVD28 (HTv2.0)
4) CONTOURS AT 0.2m INTERVALS
5) PARK BOUNDARY LINEWORK BY OTHERS AND MUST BE VERIFIED IN THE FIELD.
6) MWL = 0.0 m GD = 3.02 m CD
7) FOR TIDE ELEVATIONS: SEE DRAWING C100

NUM	DATE	APR	DESCRIPTION
0	07/07/25	OS	ISSUED FOR USE
A	30/05/25	OS	ISSUED FOR REVIEW

REVISIONS

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
PERMIT NUMBER: 1001972

PERMIT

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
O. S. F. J. SAYAO
L5831
7/3/25

PROFESSIONAL SEAL

CLIENT

REGIONAL DISTRICT OF NANAIMO

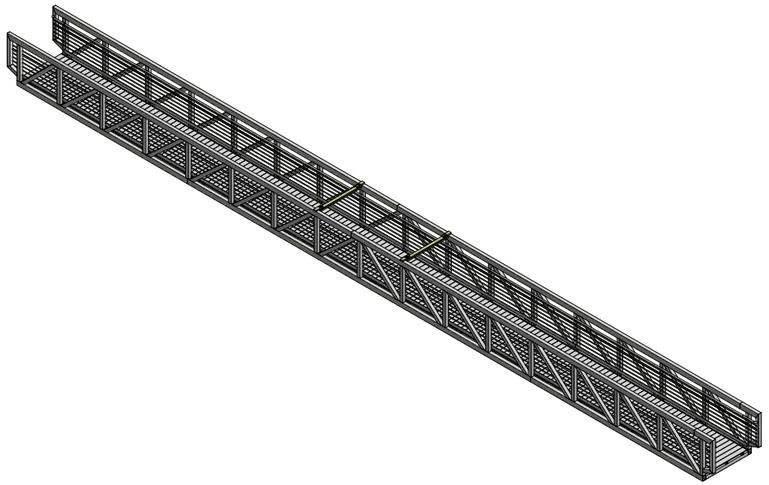
TETRA TECH

Descanso Bay Regional Park Beach Access
Descanso Beach, Gabriola Island, BC

DESCANSO BEACH RAMP FEASIBILITY STUDY
PROPOSED ALUMINUM RAMP - SECTION AND DETAILS

PROJECT NO.	OFFICE	DES	CKD	REV	DRAWING
704-ENG.ACLE03142-01	VANC	OS	CY	0	S101
DATE	SHEET No.	DWN	APP	STATUS	
July 07, 2025	2 of 4	WSL	OS	IFU	

R:\files\Tetra Tech\Descanso Beach\S100.dwg [S101] July 04, 2025 - 11:58:51 am (BY: ERIC.BURNELL)



A. _____ OUTSIDE WIDTH

B. _____ CLEAR INSIDE GUARDRAIL

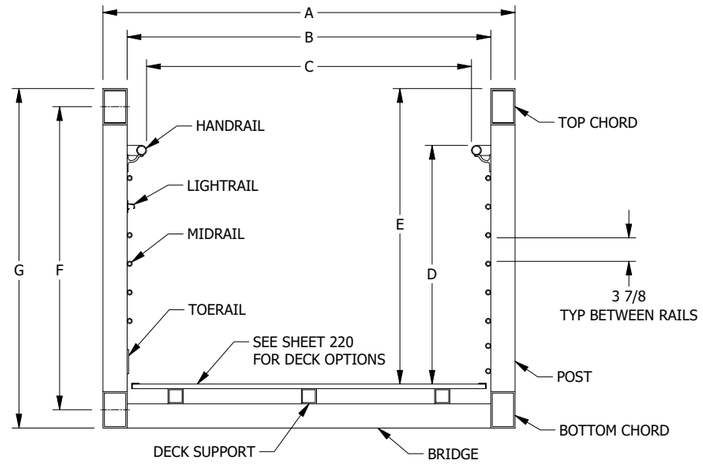
C. _____ CLEAR INSIDE HANDRAILS - ADA = MIN 36"

D. _____ HANDRAIL HEIGHT - CODE = 34"-38"

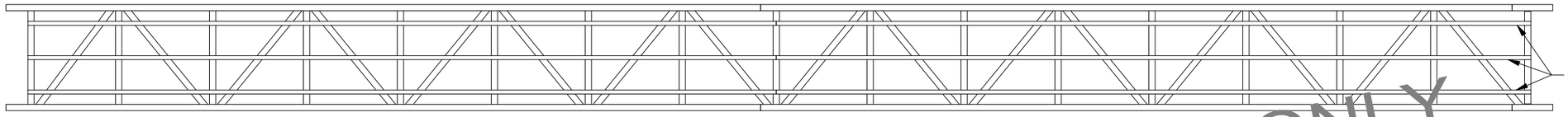
E. _____ DECK TO TOP RAIL - CODE = MIN 42"

F. _____ CENTERLINE CHORD HEIGHT

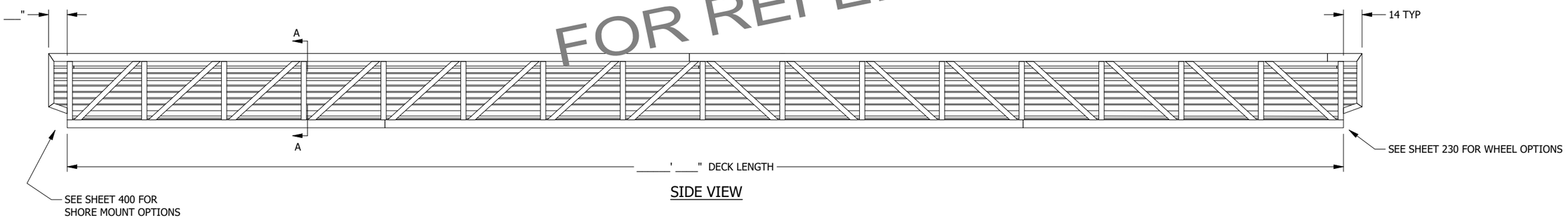
G. _____ OVERALL HEIGHT



END VIEW



TOP VIEW (DECK AND RAILS NOT SHOWN)



SIDE VIEW

GANGWAY LIVE LOAD: _____

DEFLECTION: _____

WIND LOAD: _____

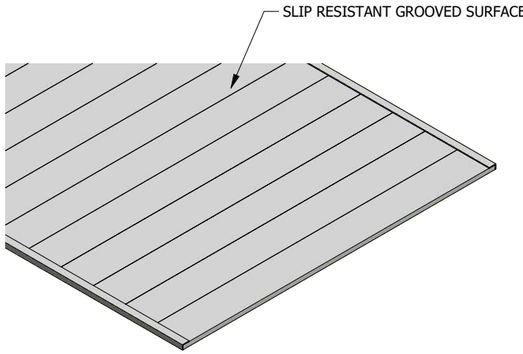
SEISMIC: _____

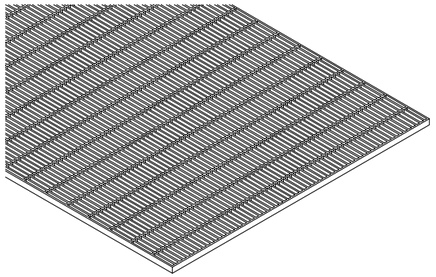
NO.	DATE	BY	CHK	REVISION DESCRIPTION
0	3/25/2020	JJV	BA	FOR APPROVAL

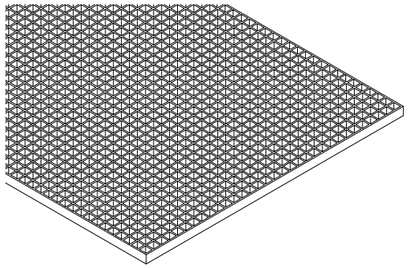
TOPPER INDUSTRIES INC.
PO BOX 2050
WOODLAND, WA 98674
(360) 841-8320 (800) 332-DOCK 3625
FAX (360) 841-8021

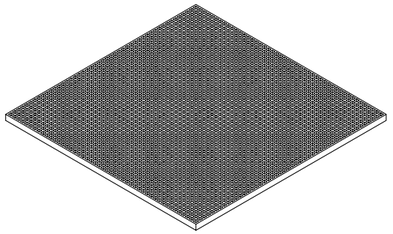
SITE ELEVATIONS
SALES DRAWINGS
CUSTOMER NAME
CUSTOMER LOCATION

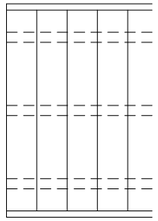
SIZE	DWG NO.	JOB NO.
B	-A100	####



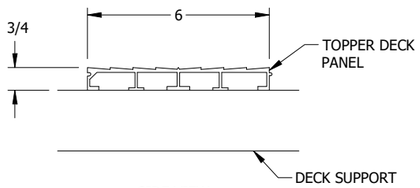








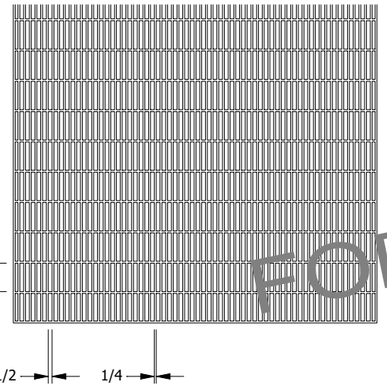
TOP VIEW



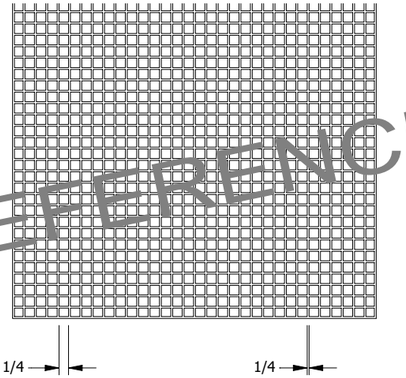
SIDE VIEW

DECK ATTACHMENT DETAILS

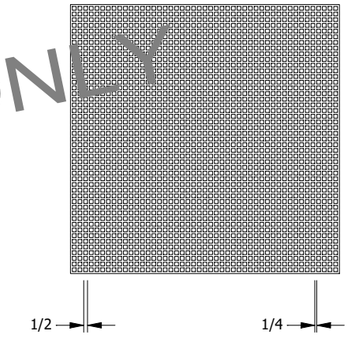
TOPPER® DECK
#DK-01



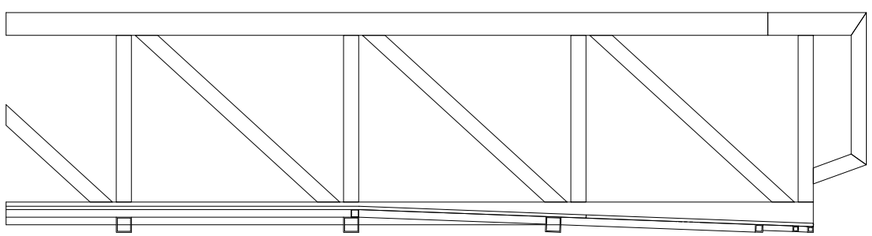
62% OPEN
#DK-02
COMPLIES WITH WASHINGTON AND OREGON
LIGHT PENETRATION REQUIREMENTS.



69% OPEN MAXIGRID FIBERGLASS
#DK-03
COMPLIES WITH WASHINGTON AND OREGON
LIGHT PENETRATION REQUIREMENTS.



44% OPEN MINI GRID FIBERGLASS
#DK-04



SLOPED DECK OPTION
#DKS
FOR LARGE, ADA COMPLIANT GANGWAYS

NO.	DATE	BY	CHK	REVISION DESCRIPTION
0	3/25/2020	JJV	BA	FOR APPROVAL

TOPPER INDUSTRIES INC.
PO BOX 2050
WOODLAND, WA 98674
(360) 841-8320 (800) 332-DOCK 3625
FAX (360) 841-8021

DECK OPTIONS
SALES DRAWINGS
CUSTOMER NAME
CUSTOMER LOCATION

SIZE	DWG NO.	JOB NO.
B	-A220	####