



Fisheries and Oceans
Canada

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Pêches et Océans
Canada

Région du Pacifique
Direction de la gestion des écosystèmes
3190, rue Hammond Bay
Nanaimo, (C.-B.)
V9T 6N7

October 25, 2023

Our file *Notre référence*
23-HPAC-00677

Strathcona Regional District
ATTENTION: Sheena Fisher
990 Cedar Street
Campbell River, BC V9W 7Z8

Via email: sfisher@srd.ca

Dear Sheena Fisher:

Subject: Dock Upgrades, Owen Bay, Campbell River – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on **June 29, 2023**. We understand that you propose to upgrade and expand an existing public dock in Owen Bay, BC on the southeastern shore of Sonora Island. The proposed project includes:

- Installing two additional 15.25 m x 2.4 m composite style floats with Fiberglass Reinforced Plastic (FRP) grating;
- Replacing all of the existing timber dock floats with composite style floats with FRP grating;
- Replacing all of the pier decking;
- Replacing the existing 11.0 m steel gangway ramp with a 15.25 m steel gangway;
- Replacing select pile caps;
- Removing and replacing three (3) timber piles on the pier and installing one (1) new timber pile (piles will be the same diameter as the former piles: 304.8 mm (12"));
- Relocating the pier head; and
- Removing twelve (12) existing timber mooring piles and installing nine (9) 406 mm (16") diameter steel mooring piles on the floats.

We understand the following aquatic species listed under the *Species at Risk Act* may use the area in the vicinity of where your proposal is to be located:

- Leatherback sea turtle (Pacific Population) and Northern abalone, both listed as *Endangered*;
- Killer whale (Northeast Pacific northern resident population), listed as *Threatened*; and
- Humpback whale (North Pacific population), longspine thornyhead, rougheye rockfish (Type I & II), Stellar sea lion, harbour porpoise (Pacific Ocean population) and yelloweye rockfish (Pacific Ocean inside & outside waters populations), all listed as *Special Concern*.

Our review considered the following information:

- *Request for Review Form*, signed by Monica Stewardson of Mainstream Biological Consulting Inc., received by email on June 29, 2023;

- *Environmental Management Plan (EMP) Owen Bay Public Dock Upgrades* by Mainstream Biological Consulting Inc., dated February 2023;
- *Environmental Assessment – Proposed Dock Upgrades, Owen Bay, BC*, by Mainstream Biological Consulting Inc., dated February 2023; and
- Email correspondence on September 1 and 7, 2023 between Vanessa Smith (DFO) and Mainstream Biological Consulting Inc.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned outcomes are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures listed below:

- A qualified environmental professional (QEP) should conduct environmental monitoring during all project activities that may result in potential negative effects to fish and fish habitat.
- Complete in-water work within the least risk timing windows for Area 13 E – Campbell River (Summer Window: July 1 – August 15; Winter Window: November 1 – February 15).
- Limit the duration of in-water works, undertakings and activities so that it does not diminish the ability of fish to carry out one or more of their life processes (spawning, rearing, feeding, migrating).
- Only conduct in-water works during daylight hours and weather conditions that permit visual observations of fish and marine mammals.
- If there is a risk of harm to a marine mammal from direct contact, temporarily suspend construction until there is no longer a risk of harm from direct contact or the individual has not been sighted for 30 minutes.
- Salvage motile invertebrate species in association with pile extraction and return to nearby waters outside of the project footprint.
- Ensure vessels are not operating in shallow water causing direct physical disturbance to the seabed/habitat from propeller scour.
- Water-based equipment used for demolition and construction is not to ground upon the seabed except for the use of anchors or spuds needed to keep the equipment in place.
- Minimize movements/repositioning of the barge and subsequent spudding to minimize physical disturbance to the seabed. No spudding or anchoring is to occur within sensitive habitats such as eelgrass or kelp beds.
- Vibratory extraction is the preferred method for pile extraction followed by direct pulling. Contractors should be experienced in creosote pile removal. Piles should be removed slowly to minimise turbidity in the water column as well as sediment disturbance.
- Dispose of removed creosote piles so that deleterious substances do not enter freshwater or marine environments. Deploy containment booms around creosote piles prior to removal.
- Piles should not be dragged on the seabed following removal, but lifted clear by machine.

- If piles are required to be cut and left in place, it is recommended that they are cut off below the mudline.
- Develop and implement a sediment control plan to minimize sedimentation during all phases of the work, undertaking or activity.
- Utilize a sediment curtain during pile driving if monitoring indicates that sediment mobilization is occurring.
- Manage sediment that may be adhered to removed timber piles by disposing of the sediment in an appropriate location (e.g., at an upland facility approved to take the material) rather than depositing in fish habitat or in any area where it may re-enter fish-bearing waters.
- Develop and implement a debris management plan for pile and dock removal works to address construction materials and debris (e.g., treated wood fragments, sawdust, cuttings, etc.) entering the marine environment.
- Vibratory pile driving is the preferred method for pile installation rather than impact pile driving. The following mitigation measures are applicable to pile installation by vibratory hammer only:
 - Establish a 500 m marine mammal exclusion zone around the project site prior to pile installation.
 - Monitor for marine mammals for at least 30 minutes prior to the start of pile installation by vibratory hammer. If a marine mammal enters the exclusion zone, temporarily suspend pile installation until the individual has left the exclusion zone or has not been sighted for 30 minutes.
 - An experienced QEP is to monitor the area in the vicinity of the piles for the presence of fish during all pile driving activities. If injured or dead fish are observed, pile driving must cease immediately. Pile driving should only resume after additional mitigation measures are implemented to avoid and mitigate further impacts to fish.
- If impact driving is required, complete pile installation in accordance with the following additional mitigation measures:
 - A QEP is to conduct acoustic monitoring during all impact pile driving to verify that underwater acoustic thresholds are not exceeded.
 - Install an effective sound attenuation device (e.g., bubble curtain) to be used prior to and during impact pile driving to ensure sound levels do not exceed 207 dB re: 1 μ Pa and a SEL_{cum} of 203 dB re: 1 μ Pa²s outside of the sound attenuation device.
 - Establish separate fish and marine mammal exclusion zones (e.g., perimeter) around the sound source prior to impact pile driving. The pinniped exclusion zone is to be a minimum 75 m. The cetacean exclusion zone is to be a minimum of 500 m or the distance where sound levels do not exceed 160 dB_{RMS} re 1 μ Pa during impact pile driving, whichever is greater.
 - Monitor the exclusion zones for the presence of fish for at least 10 minutes and for marine mammals for at least 30 minutes prior to the start of impact pile driving.
 - An experienced and qualified marine mammal observer(s) must monitor for marine mammals in the exclusion zone for 30 minutes prior to the start of and during all impact pile driving.
 - If fish and marine mammals are not observed in the respective exclusion zones during the prestart period, a soft start procedure is recommended where the impact energy is gradually increased over a 10 minute period. The soft start procedure is also recommended any time after there is a break of 30 minutes or more during impact pile driving.
 - If a marine mammal enters the marine mammal exclusion zone, temporarily suspend pile installation until the individual has left the exclusion zone or has not been resighted for 30 minutes.

- If hydroacoustic monitoring indicates that these thresholds are being exceeded, work must be halted and additional measures (e.g., bubble curtain) implemented to effectively reduce sound levels below the above thresholds.
- Avoid the use of expanded polystyrene (Styrofoam™) floats for docks and other floating infrastructure unless the foam is encapsulated to prevent its release into the marine environment.
- Use grated-decking dock components (or similar) wherever possible to minimize shading impacts.
- Develop and implement a response plan to avoid a spill of deleterious substances.
- Ensure equipment is in good working condition, and free of leaks prior to conducting works in or near fish habitat.

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal is not likely to result in the contravention of the above-mentioned prohibitions and requirements.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act*, the *Species at Risk Act* and the *Aquatic Invasive Species Regulations*.

It is also your Duty to Notify DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to the DFO-Pacific Observe, Record and Report phone line at 1-800-465-4336 or by email at DFO.ORR-ONS.MPO@dfo-mpo.gc.ca.

Please notify the Program by email at Vanessa.Smith@dfo-mpo.gc.ca at least 10 days before starting your project, ensuring your file number and appropriate on-site contact information is included. We recommend that a copy of this letter be kept on site while the work is in progress. It remains your responsibility to meet all other federal, provincial, and municipal requirements that apply to your proposal.

Please note that the advice provided in this letter will remain valid for a period of one year from the date of issuance. If you plan to execute your proposal after the expiry of this letter, we recommend that you contact the Program to ensure that the advice remains up-to-date and accurate. Furthermore, the validity of the advice is also subject to there being no change in the relevant aquatic environment, including any legal protection orders or designations, during the one-year period.

If you have any questions with the content of this letter, please contact Vanessa Smith at our Nanaimo office by email at Vanessa.Smith@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Michael Lockhart
A/ Senior Fisheries Biologist, Coastal Watershed Regulatory Operations
Fish and Fish Habitat Protection Program

c.c.: Monica Stewardson (Mainstream Biological Consulting Inc) at Monica@mainstreambio.ca



Environmental Management Plan (EMP) Owen Bay Public Dock Upgrades October 2024

Project Description:

This Environmental Management Plan (EMP) has been developed for proposed upgrades to the public dock facility at Owen Bay, BC on behalf of the Strathcona Regional District (SRD). The schedule of the work is currently undetermined.

Proposed work includes:

- Replacement of five pile caps along the pier.
- Relocation of the pier head from between bents 9 and 8 to bents 8 and 7.
- Removal of three piles and the pile cap at the outer edge of the existing pier head (bent 9)
- Replacement of three piles along the pier and the installation of a new pile at bent 7.
- Replacement of all decking along the pier.
- Replacement of the existing 11.0 m steel gangway ramp with a 15.25 m steel gangway ramp from the pier onto the dock float.
- Replacement of the main dock float timber mooring piles (n=12) with 406 mm steel mooring piles (n=4).
- Replacement of the existing timber dock float with a composite style float surfaced with Fiberglass Reinforced Plastic (FRP) grating.
- Installation of two additional 15.25 m x 2.4 m composite style floats surface with FRP grating anchored by 406 mm steel mooring piles (n=5).

Design details (as of February 2023) for the general arrangement and pier plan are provided at the end of the EMP.

Environmental Features:

The proposed work involves some work within the existing footprint of the dock and pier as well as work that will result in an increase of the overall footprint. Within the pier footprint, the only change that will result in an alteration to the size of the footprint will be the relocation of the pier head one segment closer to shore, involving the installation of one new pile at the new inner edge and the removal the three existing piles and pile cap at the current outer edge of the pier head. For the dock float footprint, the proposed upgrades will result in the installation of two additional float and five 406 mm steel mooring piles outside the existing footprint. The dock upgrades will involve some work within the intertidal and subtidal zone (pile removal and installation). No disturbance is proposed in the foreshore or marine riparian area.

An environmental assessment was completed for the proposed work¹. Habitat within the immediate work area consists of predominately sand in the subtidal zone and cobble in the mid-intertidal zone with moderate density and diversity of aquatic life.

No environmentally sensitive areas or critical habitat were identified within or near the project area during the site assessment.

Risk Assessment:

Potential impacts of the proposed work include:

1. Injury or disruption to fish rearing or migrating through the work area during pile driving.
2. A reduction in water quality relating to increased turbidity during pile removal or installation.
3. A reduction in water quality relating to mobilization of hydrocarbons during removal of existing pilings.
4. A reduction in water quality due to spills of other deleterious substances, including hydraulic oils or fuels used in heavy equipment.
5. Injury or disturbance to wildlife in the vicinity of the work area.
6. Intertidal and subtidal benthic habitat disturbance due to pile installation and removal.

It is expected that the above impacts can be avoided or mitigated through the implementation of the Best Management Practices and the measures outlined in this document.

The proposed work carries minimal risk to the intertidal and subtidal habitats in the project area. The construction impacts are expected to be localized to the immediate project area and short term in duration.

¹ Mainstream Biological Consulting. 2022. Environmental Assessment Proposed Dock Upgrades: Owen Bay, BC. Prepared for: Strathcona Regional District.

Regulatory Requirements:

The Federal *Fisheries Act* requires that projects avoid causing serious harm to fish unless authorized by the Minister of Fisheries and Oceans Canada. Under Section 34 – 36 of the *Fisheries Act*, no person shall carry out work, undertaking or activity that results in the death of fish (excluding fishing); harmful alteration, disruption or destruction of fish habitat; and no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish. Failure to show due diligence in the protection of fish and fish habitat could result in violations of the *Fisheries Act*. Given that the proposed work at the Owen Bay public dock included an increase of the dock footprint, project review by Fisheries and Oceans Canada (DFO) was required. The proposed work was reviewed by DFO and determined that the work is not likely to result in a contravention of the *Fisheries Act* so long as the specified avoid and mitigate measures to protect fish and fish habitat are followed (23-HPAC-00677).

The *Migratory Birds Convention Act* (1994) and its regulations protect migratory birds and prohibits the disturbance or destruction of migratory bird nests and eggs in Canada. It is unlawful to remove or destroy birds, including their eggs and nestlings during the breeding period of March 15 to August 15 for the Strathcona Regional District area. Section 34 of the *Wildlife Act* also provides protection for breeding birds and states that a person commits an offence if the person possesses, takes, injures, molests, or destroys:

- a) a bird or its egg,
- b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or
- c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

Environmental Measures:

The proposed work activities must be conducted in such a manner that potential environmental impacts are fully avoided or mitigated. The following measures are recommended:

- An Environmental Monitor (EM) will take part in a pre-work meeting with the contractor and project owner representative to review this EMP and required environmental measures.
- An EM is required on site full time during project activities below the high-water mark or with the potential to impact water quality. The EM will implement a water quality monitoring program when in-water work is occurring.
- The contractor and designated EM must maintain communication at all phases of the Project to ensure that the EM is on site at the appropriate times. This would include, but is not limited to:
 - Prior to start of work
 - During in-water work such as pile installation or removal
 - During extreme weather (heavy precipitation / high winds)
 - During or immediately following an environmental incident such as a spill of hazardous or controlled materials.
- All environmental incidents, regardless of significance, will be reported to the EM and SRD representative. Examples of incidents could include spills of hydrocarbons or other chemicals to ground or water, release of turbid water,

- violations of environmental regulations, or contraventions of this EMP. Any spills to water must be reported to Emergency Management BC (1-800-663-3456).
- ***The EM must have the authority to modify and / or halt any activity if deemed necessary for the protection of the environment, or to meet regulatory requirements.***
 - The EM will verbally communicate observations or instructions to the contractor during site visits. A monitoring report will be submitted to the Strathcona Regional District upon completion of the project.

Protection of Fish and Fish Habitat:

- Work must comply with DFO Measures to protect fish and fish habitat.
- In-water work should be completed within the recommended marine Reduced Risk Work Windows for DFO Area 13:
 - Summer Window: July 1 – September 1
 - Winter Window: November 1 – February 15
 - Work outside these windows may require additional mitigation measures such as fish surveys, exclusion areas or other containment measures, to be determined by the EM at the time of work.
- Sediment control measures will be installed as needed, and measures to protect water quality will be implemented through all stages of the work as described below.
- If heavy equipment is required to work on the intertidal zone (not expected for this project), time work to occur at low tide and in the dry whenever possible. Minimize equipment travel on the intertidal zone by restricting access to one route and only travelling where necessary to complete the work.
- Pile driving operations will adhere to the Best Management Practices for Pile Driving and Related Operations - BC Marine and Pile Driving Contractors Association, 2003.
- Ensure boats or barges used for the project maintain a minimum clearance at low tide of 1.5 m to avoid grounding.
- Ensure that pile driving equipment is positioned to avoid unnecessary disturbance to the seabed.
- Containment booms must be deployed around creosote piles prior to removal.
- The EM must be on site during in-water pile driving. Vibratory pile driving should be used if possible. Based on preliminary observations of substrate, the expectation is that a vibrating hammer will be used.
- Piles should be removed slowly and lifted clear of the seabed instead of being dragged to minimize turbidity in the water column as well as sediment disturbance.
- A sediment or bubble curtain (or other sediment control system) may be required around the active pile to contain turbid water in the work area. The EM will monitor turbidity during in-water work.
- Pile driving should be timed during low or outgoing tides when possible, to minimize the amount of turbid water and sound pressure waves generated.
- Given the small diameter of the piles to be installed and that a vibratory hammer is expected to be used, it is anticipated that work can be completed without generating pressures above 30 kPa, and no protective measures are prescribed. However, if a fish kill or behavioral changes are observed, work must stop and a

- sound attenuation device such as a bubble curtain must be implemented before further pile driving proceeds. Any such incidents must be reported to DFO.
- If an impact hammer is required for pile driving, pile installation will be completed in accordance with the following additional mitigation measures:
 - Sound pressure levels must remain below a peak of 207 dB re:1 μ Pa and a SEL_{cum} of 203 dB re: 1 μ Pa²s outside of the sound attenuation device. Hydroacoustic monitoring will occur 10 m of the noise source.
 - Cessation of pile driving activity in the event of a breach of the above threshold and DFO informed.
 - In the event of an exceedance of the acoustic noise threshold, no further pile driving activity to continue until one or a combination of the following mitigation measures are implemented:
 - Establishing a fish exclusion zone to a distance from the pile where the threshold is no longer exceeded.
 - Deployment of a physical barrier (silt curtain) to physically impede sound wave transmission and / or:
 - Deployment of a bubble curtain to disrupt sound wave transmission.
 - Deployment of alternate methods to the above acceptable to the EM to reduce the sound pressure levels.
 - If herring or juvenile salmonids are observed to be present at any time during the in-water work, appropriate mitigation measures will be implemented to protect these species or works suspended until it is safe to continue works. These measures will be determined by the EM and Site Supervisor.
 - If herring spawn occurs during the work or if any negative impacts to fish or fish habitat are noted, the work will be suspended until it is safe to continue.

Protection of Wildlife:

- While no vegetation management is expected along the foreshore during this project, any active nests encountered during project activities are to be left undisturbed. The EM is to be contacted immediately to establish a suitable buffer around the nest for the period of the work, or until the young are confirmed to have fledged.
- Feeding of wildlife is not permitted. All meals and food waste will be securely stored in vehicles or appropriate waste containers to avoid the attraction of wildlife. Food waste and other attractants are to be removed from the site at the end of each workday.
- Any animals encountered within the work area are to be allowed to relocate themselves outside the work zone. At no time should workers attempt to relocate animals. If the animals became persistent, the EM or the Site Supervisor will contact the local Conservation Officer Service or DFO to request assistance.
- Motile invertebrates should be salvaged from removed piles when possible and returned to the water, outside of the project footprint.
- To prevent trapping of small animals, excavations or open containers will be covered with plywood; lids etc. if the holes are left open for more than 12 hours. No excavation or container shall be left open overnight.

- All hollow piles must be capped immediately following installation to prevent trapping of small animals inside.
- If machinery is operated within the intertidal zone, all macroinvertebrates along the planned path must be moved out of the way prior to machinery access.
- A 500 m marine mammal exclusion zone will be setup 30 minutes prior to any pile installation or removal activities and be monitored. If fish or marine mammals are not observed during this prestart period, a soft start procedure is recommended for impact hammer where the impact energy is gradually increased over a 10-minute period. A soft start is also recommended after any break in pile driving greater than 30 minutes.
- All in water operations will stop if whales or other marine mammals enter the zone and works will only resume once the animal has left the immediate area or has not been re-sighted for 30 mins. The EM will conduct visual scans from shore using binoculars and a range finder to confirm that there are no marine mammals in the exclusion zone before in-water works begin. Repeat scans will be conducted hourly during in-water work.
- Best Management Practices (Be Whale Wise, 2021) for vessels operating near whales, dolphins, and porpoises will be adhered to if boats are utilized for any portion of the project.

Water quality, erosion, sediment and drainage control:

- The contractor / crew must conduct work in such a manner that the generation of sediment laden water is minimized. Any terrestrial areas that are disturbed during the work are to be stabilized prior to the contractor leaving site if there is a chance that the area may be influenced by tidal action or by surface water runoff due to rain.
- The EM will monitor water quality as necessary to ensure water quality guidelines are met (Table 1). The EM will use this information to implement additional water quality measures as required, (such as slowing or stopping work) to maintain turbidity at levels that will not cause harm to fish or fish habitat.
- Turbidity in the work area should not increase above background by more than 8 NTU when background turbidity is between 8 and 80 NTU.
- If the above water quality guideline cannot be consistently met, a turbidity curtain or other containment must be deployed to isolate the immediate work area (e.g., surrounding the active pile).
- Pile removal should be done in a manner that minimizes substrate disturbance.
- Cast in place concrete work is not expected for this project, but if used will require that any concrete contact water be contained from the aquatic habitat in the project area. Use of cast in place concrete is to be discussed with the EM prior to start of work to determine appropriate containment and monitoring measures.

Table 1: Summary of Water Quality Guidelines for Turbidity, Suspended and Benthic Sediments.

Parameter	Criteria
Turbidity - Nephelometric Turbidity Units (NTU) ¹	<ul style="list-style-type: none"> • Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters • Change from background of 2 NTU at any one time for a duration of 30 d in all waters during clear flows or in clear waters • Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters
Oil and grease	Not detectable by sight or smell
pH ¹	Long term chronic - Unrestricted change when pH is greater than 7 and less than 8.7 (protection of mollusc embryo development)

¹ – BC Ministry of Environment and Climate Change Strategy. Obtained online at https://bcgov-env.shinyapps.io/bc_wqg/.

Prevention and management of spills:

- All heavy equipment brought to site must be in good working order, clean and leak-free. The EM may ask that equipment not in satisfactory condition be removed from site.
- All equipment must be equipped with a spill kit with contents appropriate for the volume and type of fluids contained within the equipment. Any materials from the spill kits that are used during the course of the work must be disposed of appropriately and replaced within one working day.
- Fuels must be stored within double-walled tanks or secondary containment equal to or greater than 110 % of the total volume of the fuels.
- Due to the location of the project, all equipment used on site must be equipped with environmentally friendly fluids.
- Fueling should not be conducted at the work site. Any fueling must occur a minimum of 30 m from the foreshore.
- No servicing of equipment is to occur on-site.
- Materials or equipment left on site should be staged in the upland area of existing disturbance near the work site, as far as practicable from the shoreline.
- All work must be completed in such a manner as to prevent the introduction of deleterious substances to the marine environment.
- An absorbent sock boom may be required to contain any hydrocarbons released to water during the removal of the out of service creosote treated pilings. Sufficient booms should be on hand to fully surround the site in the event hydrocarbon sheen develops during the piling removal.
- Existing piles should be extracted whole in a manner that minimizes disturbance and disposed of at an appropriate upland disposal site. The EM may require that a silt curtain or other sediment control system be installed around the pile before removal. If on site storage is necessary, the piles should be protected from exposure and have containment in place to prevent leaching to the environment.

- In the event of a spill to ground or water, the contractor is responsible for responding to contain and / or clean-up the spill if it is deemed safe to do so. Once the crew has determined that they can work safely, the responders should follow the following steps:
 - Stop the spill (clamp hose, upright container, block hole etc).
 - When warranted, define the spill area to prevent workers from walking / driving through the released material and spreading to other areas.
 - Contain the spilled material (berms, pads, ditches etc).
 - Clean-up the spill if possible. If the spill is significant, a professional spill response contractor may be required.
 - Report the spill to the Environmental Monitor. The EM will then report the spill to the client representative and other appropriate agencies (when required). All spills to water are reportable.

Hazardous Waste Management:

- Hazardous waste is not expected within the project area but if encountered the crew must adhere to all applicable legislation with respect to handling, transportation, and / or disposal of all materials related to this project.
- Hazardous waste must be stored in appropriate containers and secured during handling and transportation. Hazardous materials are to be taken to a suitable disposal facility. Documentation confirming receipt of the hazardous and contaminated materials by the disposal facility must be provided to the EM or client.

Other Waste Management:

- The contractor is to develop a waste management plan for the removal of non-hazardous waste generated by the work for approval by the EM and the Strathcona Regional District.
- The contractor must ensure that debris or deleterious substances are not introduced to the marine environment during demolition or construction activities.
- Remove all construction materials from site upon completion, including the deactivated materials and pilings.
- Any materials that are suitable for salvage or recycling should be separated from other waste and sent to an appropriate recycling facility.
- Non-regulated contaminated waste is to be stored in separate, labeled containers and disposed of appropriately. Proof of disposal will be required. This includes used spill clean-up materials, contaminated soils etc.
- Waste must either be removed from site daily or stored in secure containers to prevent dispersion of the wastes after hours (due to weather / vandalism).
- Any portable toilets brought to site are to be placed in a location at least 30 m from the high-water mark and secured to prevent tipping. The toilets are to be removed within two days of the project being complete.
- Old timber piles should be contained, removed from site, and disposed of at a landfill facility approved to accept treated wood waste.

Environmental Management Plan Review:

Date:

Contractor Representative:

(Print name)

(Sign
name)

Strathcona Regional District
Representative:

(Print name)

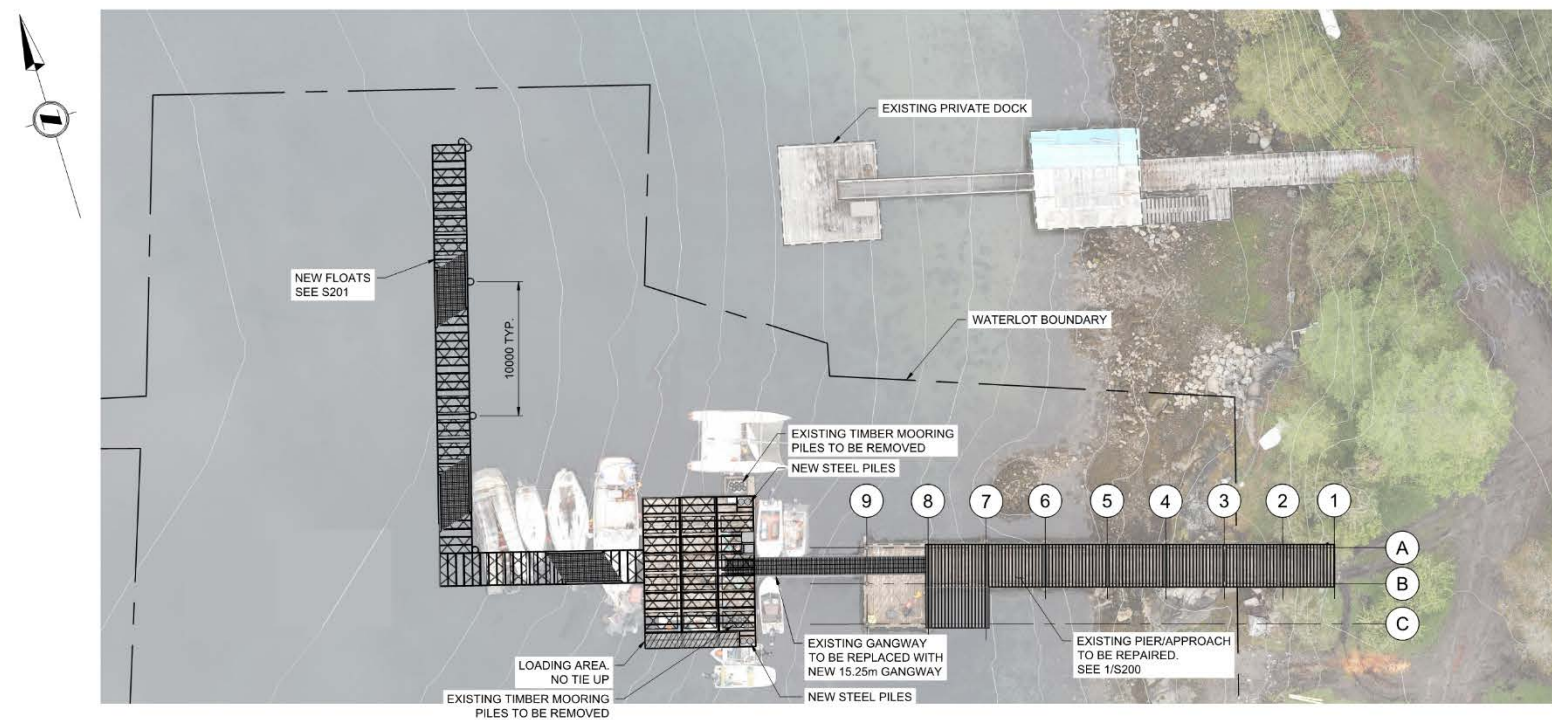
(Sign
name)

Environmental Monitor:

(Print name)

(Sign
name)

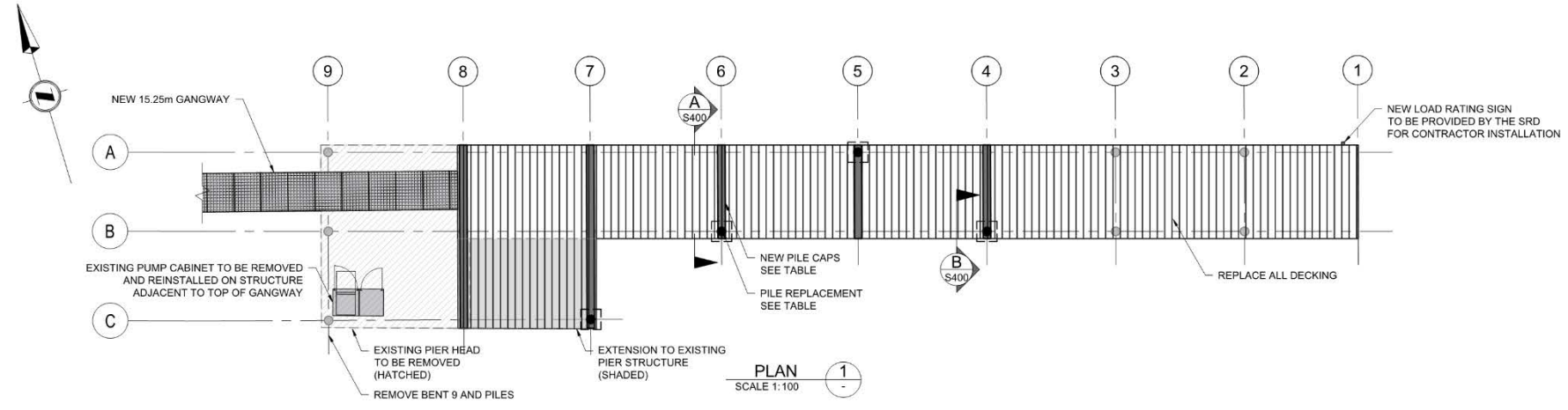
ORIGINAL DWG SIZE: ANSI D (27" x 37") McElhanney - 2019-11-10



PLAN
SCALE 1:250



KEY PLAN
NTS



PLAN
SCALE 1:100

- LEGEND**
- EXISTING TIMBER PILE
 - NEW TIMBER PILE
 - ▬ NEW TIMBER PILE CAP

PILE CAP REPAIRS	
BENT NO.	REPAIRS
4	REPLACE PILE CAP
5	REPLACE PILE CAP
6	REPLACE PILE CAP
7	REPLACE PILE CAP
8	REPLACE PILE CAP

PILE REPAIRS	
PILE NO.	REPAIRS
4B	REPLACE PILE
5A	REPLACE PILE
6B	REPLACE PILE
7C	NEW PILE

- NOTES:**
- FOR GENERAL NOTES SEE S100
 - SEE SHEET S400 FOR ALL TIMBER REPAIR DETAILS FOR PILES, PILE CAPS, AND CROSS-BRACING

Rev	Date	Description	App'd
PC	2022-12-02	ISSUED FOR 100% REVIEW	GH
PB	2022-11-11	ISSUED FOR 90% REVIEW	GH
PA	2022-09-25	ISSUED FOR CONCEPT	MF

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Drawn: JTH
Drawing Check: MF
Designed: HH
Design Check: MF
Approver: GH

PRELIMINARY
NOT FOR
CONSTRUCTION

STRATHCONA REGIONAL DISTRICT

OWEN BAY
GENERAL ARRANGEMENT
AND PIER PLAN

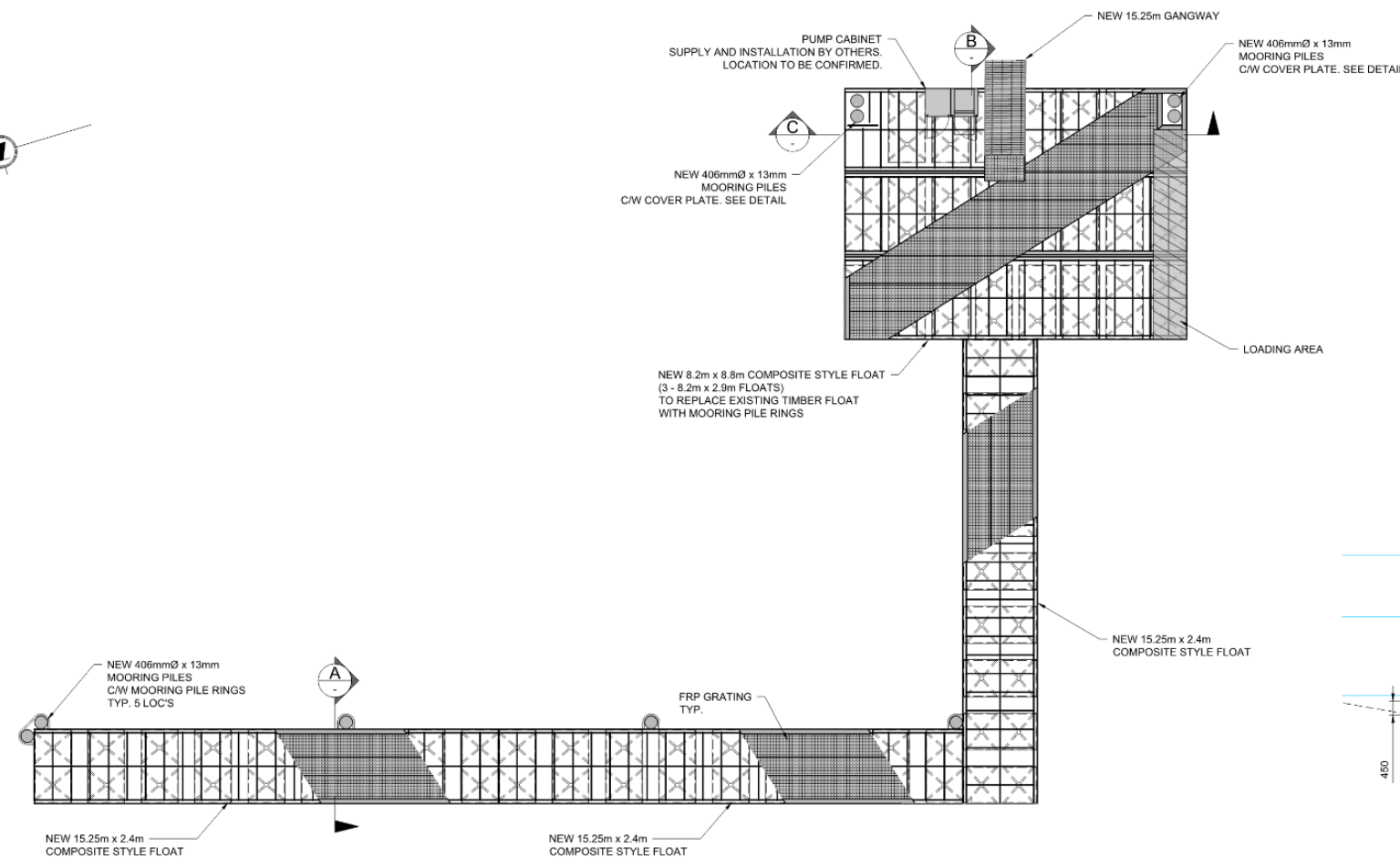
Drawing No.
S200

Project No.
2211-71343

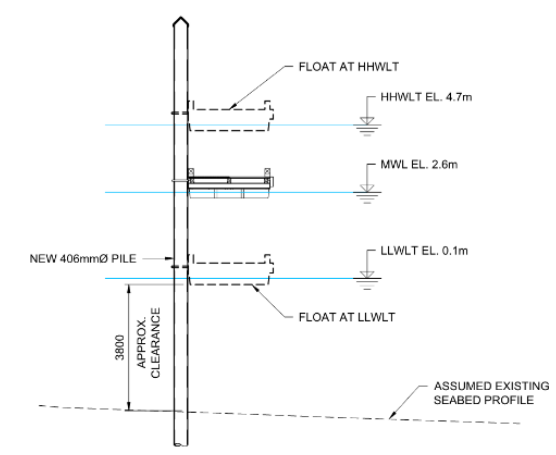
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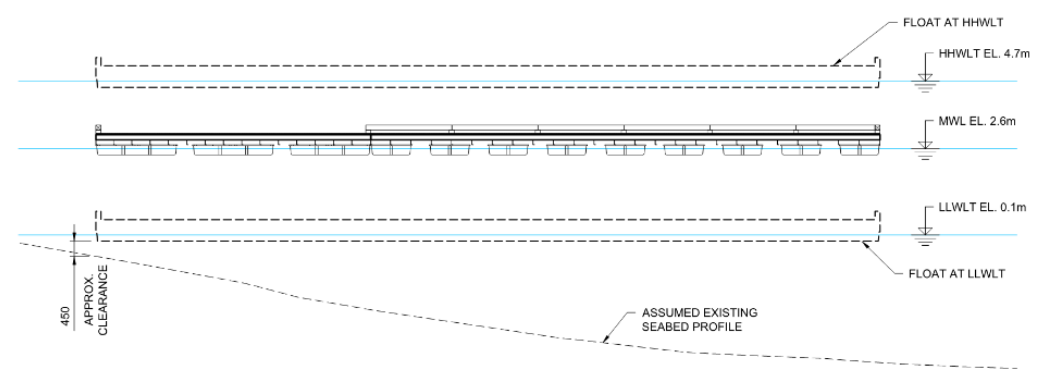
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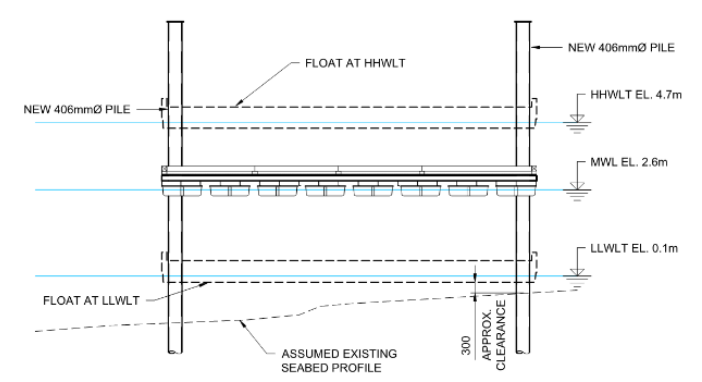
PLAN
SCALE 1:100



SECTION A
SCALE 1:100

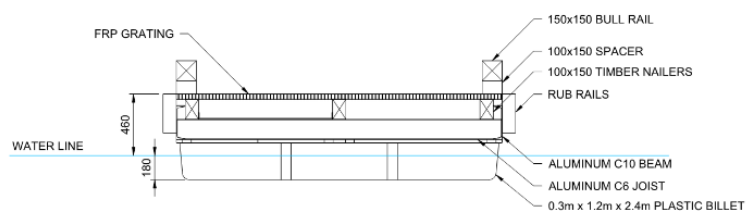


SECTION B
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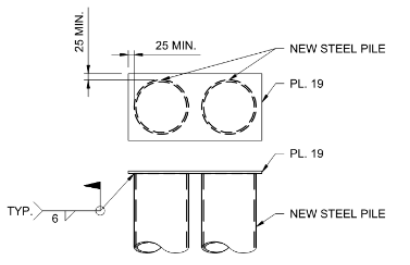


SECTION C
SCALE 1:100

NOTE:
COMPOSITE FLOAT ARRANGEMENT SHOWN IS INDICATIVE ONLY. CONTRACTOR IS RESPONSIBLE FOR THE FINAL DESIGN OF THE FLOATING DOCKS AND WILL PROVIDE SEALED SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO MATERIAL PROCUREMENT AND FABRICATION



TYP. FLOAT SECTION
SCALE 1:25



COVER PLATE DETAIL
SCALE 1:25

NOTES:
1. FOR GENERAL NOTES SEE S100

PC	2022-12-02	ISSUED FOR 100% REVIEW	GH
PB	2022-11-11	ISSUED FOR 90% REVIEW	GH
PA	2022-08-25	ISSUED FOR CONCEPT	MF
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Designed: HH
Design Check: MF
Approver: GH

PRELIMINARY
NOT FOR
CONSTRUCTION

STRATHCONA REGIONAL DISTRICT

OWEN BAY
NEW FLOAT DESIGN

Drawing No.
S201

Project No.
2211-71343

Rev.
PC

CHECK ALL DIMENSIONS AND PREVIOUS REVISIONS



Environmental Management Plan Port Neville Dock Upgrades December 2024

Project Description:

The Environmental Management Plan (EMP) has been developed for proposed upgrades to the public dock facility in Port Neville, BC on behalf of the Strathcona Regional District. The schedule of the work is currently undetermined. Proposed work includes:

- Relocating the pier head from between Bents 14 and 15 to between Bents 13 and 14.
- Installation of a new pile at Bent 13 and replacing pile caps at Bents 13 and 14 for pier head (piles at the bents may be replaced prior to installation of pile caps if required).
- Replacing five piles, upgrading three piles with new caps and corbels, and installing steel pile clamps on two piles along the pier approach.
- Replacing all decking and guardrail on the pier approach.
- Replacing the timber cross-bracing at bent 8 on the pier approach.
- Replacing the existing 11.0 m gangway ramp connecting the pier to the dock with a 15.25 m gangway ramp.
- Replacing all timber mooring piles from three locations on the outer perimeter of the dock (n=18) with 406 mm steel mooring piles (n=5).
- Removing timber mooring dolphins (n=2) from the north and south edges of the dock.
- Removing timber piles at the outer edge of the existing pier head (bent 15)
- Replacing timber dock floats 'A' and 'B' with composite style floats with FRP (Fiberglass Reinforced Plastic) grating.

Design drawings for the general arrangement and pier plan are provided at the end of the EMP.

Environmental Features:

Most of the proposed dock upgrades fall within the footprint of the existing dock structures. The only changes to the facility footprint will be the relocation of the pier head one segment closer to shore, involving the installation of one new pile at the new inner edge and the removal the three existing piles at the current outer edge of the pier head. The facility upgrades will involve some work within the intertidal and subtidal environment (pile removal and replacement). No disturbance is proposed in the foreshore or marine riparian area.

An environmental assessment was completed for the proposed work¹. Habitat within the immediate work area consists of sand and gravel substrate with a moderate density and

¹ Mainstream Biological Consulting. 2023. Environmental Assessment Proposed Dock Upgrades Port Neville BC. Prepared for: Strathcona Regional District.

diversity of aquatic life. An ROV survey of the area documented patches of eelgrass habitat extending under the pier approach parallel to the shore. The approximate extent and shape of the eelgrass bed was mapped based on analysis of video taken by the ROV.

Two Purple Martin nest boxes were also present on the mooring dolphins that are slated for removal.

A mapped stream with no reported fish records is located approximately 100 m north of the work area, and mapped kelp beds are present approximately 250 m north and 330 m south.

No other environmentally sensitive areas or critical habitat were identified within or near the project area during the assessment.



A view of the Port Neville dock, looking west along the pier approach.

Risk Assessment:

Potential impacts of the proposed work include:

1. Injury or disruption to fish rearing or migrating through the work area during pile driving.
2. A reduction in water quality relating to increased turbidity during pile removal or installation.
3. A reduction in water quality relating to mobilization of hydrocarbons during removal of existing pilings.
4. A reduction in water quality due to spills of other deleterious substances, including hydraulic oils or fuels used in heavy equipment.
5. Injury or disturbance to wildlife in the vicinity of the work area.
6. Disturbance to the eelgrass bed during pile removal or installation.
7. Intertidal and subtidal benthic habitat disturbance due to pile installation.

It is expected that the above impacts can be avoided or mitigated through the implementation of the Best Management Practices and the measures outlined in this document.

The proposed work carries minimal risk to the intertidal and subtidal habitats in the project area. The construction impacts are expected to be localized to the immediate project area and short term in duration.

Regulatory Requirements:

The Federal *Fisheries Act* requires that projects avoid causing serious harm to fish unless authorized by the Minister of Fisheries and Oceans Canada. The proposed work on the Port Neville dock can be completed incorporating measures to avoid causing death of fish or harmful alteration, disruption or destruction of fish habitat, therefore project review by Fisheries and Oceans Canada (DFO) is not required².

The *Migratory Birds Convention Act* (1994) and its regulations protect migratory birds and prohibits the disturbance or destruction of migratory bird nests and eggs in Canada. It is unlawful to remove or destroy birds, including their eggs and nestlings during the breeding period of March 15 to August 15 for the Strathcona Regional District area. Section 34 of the *Wildlife Act* also provides protection for breeding birds and states that a person commits an offence if the person possesses takes, injures, molests, or destroys:

- a) a bird or its egg,
- b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or
- c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

² DFO, Project Near Water. Accessed online at <http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>

Environmental Measures:

The proposed work activities must be conducted in such a manner that potential environmental impacts are fully avoided or mitigated. The following measures are recommended:

- An Environmental Monitor (EM) will take part in a pre-work meeting with the contractor and project owner representative to review this EMP and required environmental measures.
- An EM is required on site full time during project activities below the high-water mark or with the potential to impact water quality. The EM will implement a water quality monitoring program when in-water work is occurring.
- The contractor and designated EM must maintain communication at all phases of the project to ensure that the EM is on site at the appropriate times. This would include, but is not limited to:
 - Prior to start of work
 - During in-water work such as pile replacements or dolphin removal
 - During extreme weather that creates an environmental hazard
 - During or immediately following an environmental incident such as a spill of hazardous or controlled materials.
- All environmental incidents, regardless of significance, will be reported to the EM and SRD representative. Examples of incidents could include spills of hydrocarbons or other chemicals to ground or water, release of turbid water, violations of environmental regulations, or contraventions of this EMP. Any spills to water must be reported to Emergency Management BC (1-800-663-3456).
- ***The EM must have the authority to modify and / or halt any activity if deemed necessary for the protection of the environment, or to meet regulatory requirements.***
- The EM will verbally communicate observations or instructions to the contractor during site visits. A monitoring report will be submitted to the Strathcona Regional District upon completion of the project.

Protection of Fish and Fish Habitat:

- Work must comply with DFO Measures to protect fish and fish habitat.
- In-water work should be completed within the recommended marine Reduced Risk Work Windows for DFO Area 12:
 - Summer Window: July 1 – August 15
 - Winter Window: November 15 – February 15

Work outside these windows may require additional mitigation measures such as fish surveys, exclusion areas or other containment measures, to be determined by the EM at the time of work.

- Sediment control measures will be installed as needed, and measures to protect water quality will be implemented through all stages of the work as described below.
- It is recommended that work in the vicinity of the eelgrass bed be carried out during the winter window while the eelgrass is dormant. If this is not practical, additional mitigation measures may apply, to be confirmed by the EM at the time

of work. Examples of mitigations measures that may be implemented during the summer window (eelgrass growing season) include:

- Orientation of any barges or boats in the area in a way to prevent damaging eelgrass at low tide.
- Deployment of a sediment control system (silt curtain or bubble curtain) around the 12A pile during pile removal and installation to prevent sedimentation of the surrounding eelgrass shoots.
- Removed piles must be lifted clear of the seabed and not dragged to prevent disturbance of the adjacent eelgrass.
- If boat activity is expected around the eelgrass bed more than a single event (pile removal and installation), the seaward edge of the eelgrass bed within the expected work area should be visually delineated with floats to avoid physical disturbance and/or propeller scarring to the eelgrass bed by minimizing boat traffic in the area.
- If heavy equipment is required to work on the intertidal zone (not expected for this project), time work to occur at low tide and in the dry whenever possible. Minimize equipment travel on the intertidal zone by restricting access to one route and only travelling where necessary to complete the work. **Keep all heavy equipment out of the eelgrass bed.**
- To avoid physical disturbance or propeller scarring to the eelgrass bed, minimize boat travel within the eelgrass boundaries and do not rev boat motors.
- Ensure boats or barges used for the project maintain a minimum clearance at low tide of 1.5 m to avoid disturbing eelgrass or the seabed. When necessary, works will be timed around high tides to avoid grounding.
- Spuds and/or anchors used to secure the barge and the pile driving equipment during the pier repairs and dock upgrades will be positioned to avoid any impacts to the eelgrass bed.
- All proposed pier repairs within the mapped eelgrass bed must be limited to the existing footprint to prevent the destruction or harmful alteration of the adjacent eelgrass.
- Pile driving operations will adhere to the Best Management Practices for Pile Driving and Related Operations - BC Marine and Pile Driving Contractors Association, 2003.
- The EM must be on site during in-water pile driving. Vibratory pile driving should be used if possible. Based on preliminary observations of substrate, the expectation is that a vibrating hammer will be used.
- Containment booms must be deployed around creosote piles prior to removal.
- Existing piles should be extracted whole in a manner that minimizes disturbance and disposed of at an appropriate upland disposal site. The EM may require that a silt curtain or other barrier be installed around the pile before removal. If on site storage is necessary, the piles should be protected from exposure and have containment in place to prevent leaching to the environment.
- Piles should be removed slowly and lifted clear of the seabed instead of dragged to minimize turbidity in the water column as well as sediment disturbance.
- A sediment or bubble curtain (or other sediment control system) may be required around the active pile removal or installation to contain turbid water in the work area. The EM will monitor turbidity during in-water work.
- Pile driving should be timed during low or outgoing tides when possible.

- Given the small diameter of the piles to be installed, it is anticipated that work can be completed without generating pressures above 30 kPa, and no protective measures are prescribed.
- An experienced QEP is to monitor the area in the vicinity of the piles for the presence of fish during pile installation. If a fish kill or behavioral changes are observed, work must stop and protective measures such as a bubble curtain must be implemented before further pile driving proceeds. Any such incidents must be reported to DFO.
- If an impact hammer is required for pile driving, pile installation will be completed in accordance with the following additional mitigation measures:
 - Establishment of a fish and marine mammal (see *Protection of Wildlife* Section) exclusion zone around the pile prior to impact pile driving. Monitor for the presence of fish for at least 10 minutes and 30 minutes for marine mammals.
 - If not fish or marine mammals are observed within the exclusion zones, a soft start procedure is recommended to gradually increase impact energy over a 10 minute period. Also recommended any time after a break of 30 minutes between pile installation.
 - Installation of an effective sound attenuation device (e.g., bubble curtain) around the full wetted length of the pile prior to impact hammer use. Sound pressure levels must remain below a peak of 207 dB re:1 μ Pa and a SEL_{cum} of 203 dB re: 1 μ Pa²s outside of the sound attenuation device. Hydroacoustic monitoring will occur 10 m of the noise source.
 - Cessation of pile driving activity in the event of a breach of the above threshold and DFO informed.
 - In the event of an exceedance of the acoustic noise threshold, no further pile driving activity to continue until one or a combination of the following mitigation measures are implemented:
 - Establishing a fish exclusion zone to a distance from the pile where the threshold is no longer exceeded;
 - Deployment of a physical barrier (silt curtain) to physically impede sound wave transmission and / or:
 - Deployment of a bubble curtain to disrupt sound wave transmission.
 - Deployment of alternate methods to the above acceptable to the EM to reduce the sound pressure levels.
- If herring or juvenile salmonids are observed to be present at any time during the in-water work, appropriate mitigation measures will be implemented to protect these species or works suspended until it is safe to continue works. These measures will be determined by the EM and Site Supervisor.
- If herring spawn occurs during the work or if any negative impacts to fish or fish habitat are noted, the work will be suspended until it is safe to continue.

Protection of Wildlife:

- To meet the requirements of the *Migratory Birds Convention Act* the two nesting boxes should be relocated between August 15 and April 25, prior to the start of

work. If the boxes must be moved during the Purple Martin nesting window, a Qualified Environmental Professional should confirm that the boxes are not in use.

- If immediately reinstalled, nest boxes should be relocated at least 30 m away from the work area.
- Any active nests encountered during project activities are to be left undisturbed. The EM is to be contacted immediately to establish a suitable buffer around the nest for the period of the work, or until the young are confirmed to have fledged.
- Feeding of wildlife is not permitted. All meals and food waste will be securely stored in vehicles or appropriate waste containers to avoid attraction of wildlife. Food waste and other attractants are to be removed from site at the end of each work day.
- Any animals encountered within the work area are to be allowed to relocate themselves outside the work zone. If the animals are too young to relocate themselves, work should continue elsewhere until the EM can arrange to have the animals moved. At no time should workers attempt to relocate animals. Observations of large or problem wildlife (i.e. bears, racoons etc.) should be reported to the EM. If these animals became persistent, the EM or the Site Supervisor will contact the local Conservation Officer Service to request assistance.
- Motile invertebrates should be salvaged from removed piles when possible and returned to the water, outside of the project footprint.
- To prevent trapping of small animals, excavations or open containers will be covered with plywood; lids etc. if the holes are left open for more than 12 hours. No excavation or container shall be left open overnight.
- All hollow piles must be capped immediately following installation.
- If machinery is operated within the intertidal zone, all macroinvertebrates along the planed path must be moved out of the way prior to machinery access.
- A 500 m marine mammal exclusion zone will be setup 30 minutes prior to any pile installation or removal activities and be monitored. All in water operations will stop if whales or other marine mammals enter the zone and works will only resume once the animal has left the immediate area or has not been re-sighted for 30 mins. The EM will conduct visual scans from shore using binoculars and a range finder to confirm that there are no marine mammals in the exclusion zone before in water works begin. Repeat scans will be conducted hourly during in water work.
- Best Management Practices (Be Whale Wise 2021) for vessels operating near whales, dolphins, and porpoises will be adhered to if boats are utilized for any portion of the project.

Water quality, erosion, sediment and drainage control:

- The contractor / crew must conduct work in such a manner that the generation of sediment laden water is minimized. Any terrestrial areas that are disturbed during the work are to be stabilized prior to the contractor leaving site if there is a chance that the area may be influenced by tidal action or by surface water runoff due to rain.
- The EM will monitor water quality as necessary to ensure water quality guidelines are met (Table 1). The EM will use this information to implement additional water quality measures as required, (such as slowing or stopping work) to maintain turbidity at levels that will not cause harm to fish or fish habitat. Turbidity in the

work area should not increase above background by more than 8 NTU for extended periods (greater than 24 hours).

- If the above water quality guideline cannot be consistently met, a turbidity curtain or other containment must be deployed to isolate the immediate work area (e.g., surrounding the active pile).
- Pile removal should be done in a manner that minimizes substrate disturbance.
- Cast in place concrete work is not expected for this project, but if used will require that any concrete contact water be contained from the aquatic habitat in the project area. Use of cast in place concrete is to be discussed with the EM prior to start of work to determine appropriate containment and monitoring measures.

Table 1: Summary of Water Quality Guidelines for Turbidity, Suspended and Benthic Sediments.

Parameter	Criteria
Turbidity - Nephelometric Turbidity Units (NTU) ¹	<ul style="list-style-type: none"> • Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters • Change from background of 2 NTU at any one time for a duration of 30 d in all waters during clear flows or in clear waters • Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters • Change from background of 10% when background is >50 NTU at any time during high flows or in turbid waters
Oil and grease	Not detectable by sight or smell
pH ¹	Long term chronic – Unrestricted change when pH is greater than 7.0 and less than 8.7 (protection of mollusc embryo development)

1 - BC Ministry of Environment and Climate Change Strategy. Obtained online at https://bcgov-env.shinyapps.io/bc_wqg/.

Prevention and management of spills:

- All heavy equipment and marine vessels brought to site must be in good working order, clean and leak-free. The EM may ask that equipment not in satisfactory condition be removed from site.
- All equipment must be equipped with a spill kit with contents appropriate for the volume and type of fluids contained within the equipment / vessel. Any materials from the spill kits that are used during the work must be disposed of appropriately and replaced within one working day.
- Fuels must be stored within double-walled tanks or secondary containment equal to or greater than 110 % of the total volume of the fuels.
- Due to the location of the project, all equipment used on site must be equipped with environmentally friendly fluids.
- Fueling should not be conducted at the work site. Any fueling must occur a minimum of 30 m from the foreshore.
- No servicing of equipment is to occur on-site.

- Materials or equipment left on site should be staged in the upland area of existing disturbance near the work site, as far as practicable from the shoreline.
- All work must be completed in such a manner as to prevent the introduction of deleterious substances to the marine environment.
- An absorbent sock boom may be required to contain any hydrocarbons released to water during the removal of the out of service creosote treated pilings. Sufficient booms should be on hand to fully surround the site in the event hydrocarbon sheen develops during the piling removal.
- In the event of a spill to ground or water, the contractor is responsible for responding to contain and / or clean-up the spill if it is deemed safe to do so. Once the crew has determined that they can work safely, the responders should follow the following steps:
 - Stop the spill (clamp hose, upright container, block hole etc.).
 - When warranted, define the spill area to prevent workers from walking / driving through the released material and spreading to other areas.
 - Contain the spilled material (berms, pads, ditches etc).
 - Clean-up the spill if possible. If the spill is significant, a professional spill response contractor may be required.
 - Report the spill to the Environmental Monitor. The EM will then report the spill to the client representative and other appropriate agencies (when required). All spills to water are reportable.

Hazardous Waste Management:

- Hazardous waste is not expected within the project area but if encountered the crew must adhere to all applicable legislation with respect to handling, transportation, and / or disposal of all materials related to this project.
- Hazardous waste must be stored in appropriate containers and secured during handling and transportation. Hazardous materials are to be taken to a suitable disposal facility. Documentation confirming receipt of the hazardous and contaminated materials by the disposal facility must be provided to the EM or client.

Other Waste Management:

- The contractor must ensure that debris or deleterious substances are not introduced to the marine environment during demolition or construction activities.
- The contractor is to develop a waste management plan for the removal of non-hazardous waste generated by the work for approval by the EM and the SRD.
- Remove all construction materials from site upon completion, including the deactivated materials and pilings.
- Any materials that are suitable for salvage or recycling should be separated from other waste and sent to an appropriate recycling facility.
- Non-regulated contaminated waste is to be stored in separate, labeled containers and disposed of appropriately. Proof of disposal will be required. This includes used spill clean-up materials, contaminated soils etc.
- Domestic waste must either be removed from site daily or stored in secure containers to prevent dispersion of the wastes (due to weather, wildlife, vandalism, etc.).
- Any portable toilets brought to site are to be placed in a location at least 30 m from the high water mark and secured against tipping. The toilets are to be removed within two days of the project being complete.

Environmental Management Plan Review:

Date:

Contractor Representative:

(Print name)

(Sign
name)

Strathcona Regional District
Representative:

(Print name)

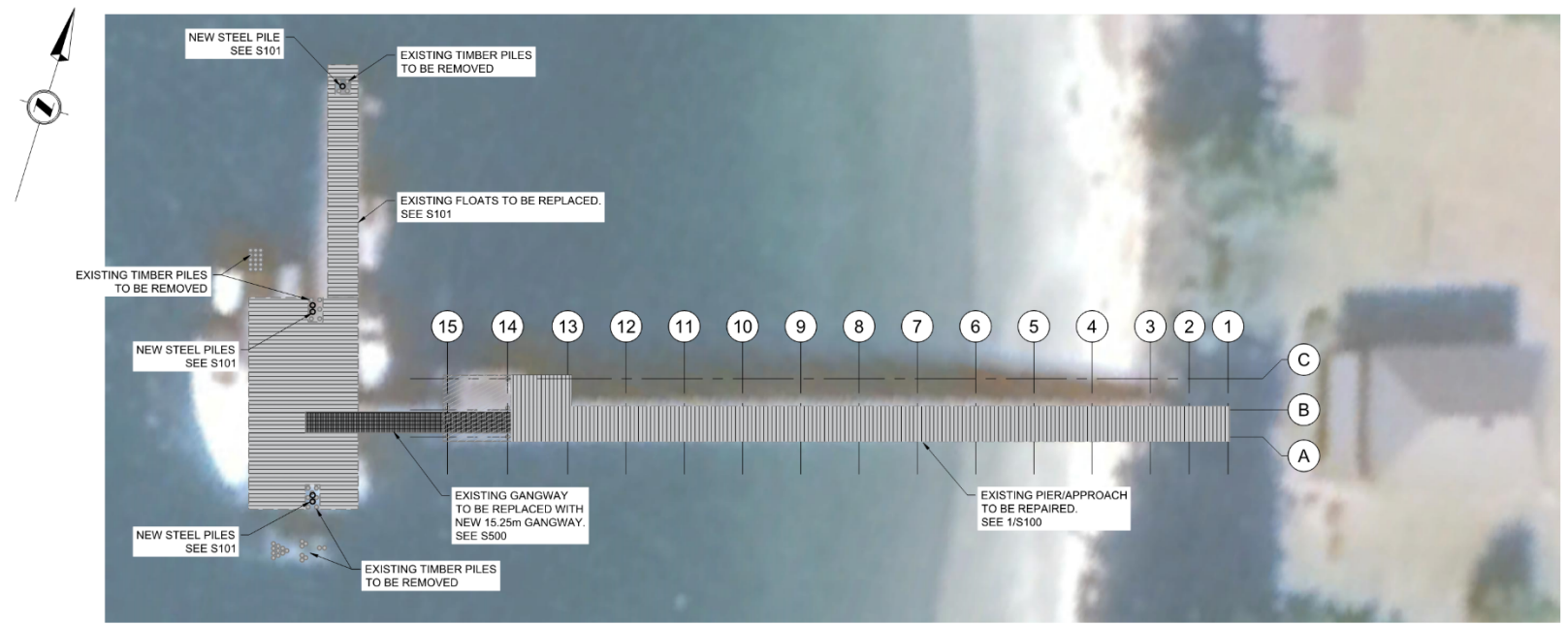
(Sign
name)

Environmental Monitor:

(Print name)

(Sign
name)

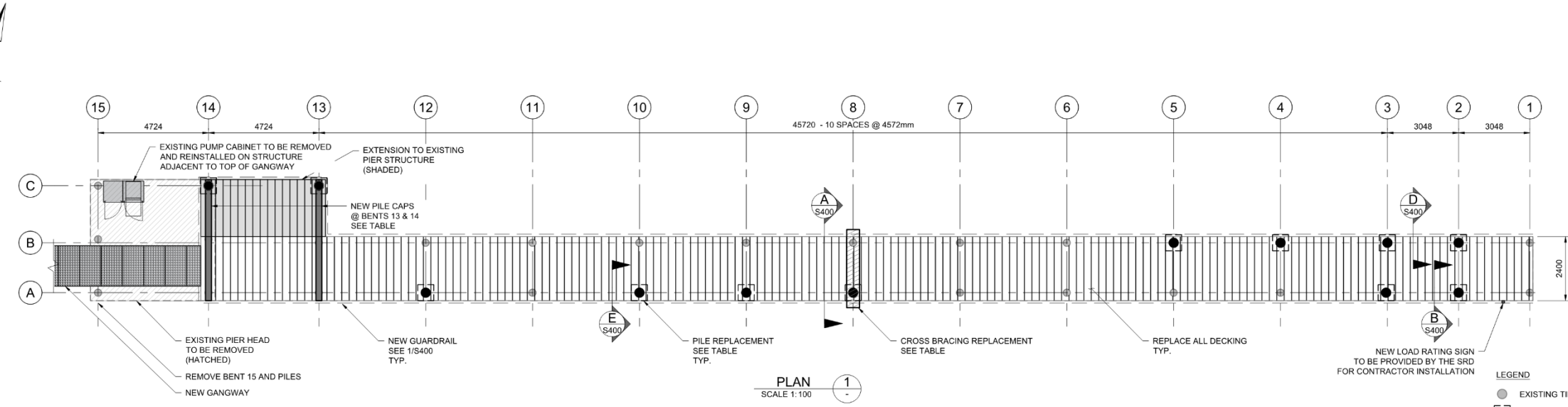
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PLAN
SCALE 1:250



KEY PLAN
NTS



PLAN
SCALE 1:100

PILE REPAIRS	
PILE NO.	REPAIRS
2A	REPLACE PILE
2B	FRESH HEAD AND INSTALL NEW SINGLE CORBEL
3A	FRESH HEAD AND INSTALL NEW SINGLE CORBEL
3B	REPLACE PILE
4B	FRESH HEAD AND INSTALL NEW SINGLE CORBEL
5B	REPLACE PILE
8A	INSTALL GALVANIZED STEEL PILE CLAMPS
9A	REPLACE PILE
10A	INSTALL GALVANIZED STEEL PILE CLAMPS
12A	REPLACE PILE
13-15	MODIFICATIONS TO TRESTLE. SEE PLAN

NOTE:
 1. CONTRACTOR TO PROVIDE 3 ADDITIONAL PILES ON SITE IF NEEDED
 2. CONDITIONS OF PILES AT BENT 13 AND 14 TO BE INSPECTED PRIOR TO INSTALLATION OF NEW PILE CAPS AND REPLACED IF REQUIRED.

PILE CAP REPAIRS	
BENT NO.	REPAIRS
13	REPLACE PILE CAP
14	REPLACE PILE CAP

CROSS BRACE REPAIRS	
BENT NO.	REPAIRS
8	REPLACE CROSS BRACE

- NOTES:
 1. FOR GENERAL NOTES SEE S100.
 2. SEE SHEET S400 FOR ALL TIMBER REPAIR DETAILS FOR PILES, PILE CAPS, AND CROSS BRACING.

Rev	Date	Description	App'd
PC	2022-12-02	ISSUED FOR 100% REVIEW	GH
PB	2022-11-11	ISSUED FOR 90% REVIEW	GH
PA	2022-08-25	ISSUED FOR CONCEPT	MF

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STRATHCONA REGIONAL DISTRICT

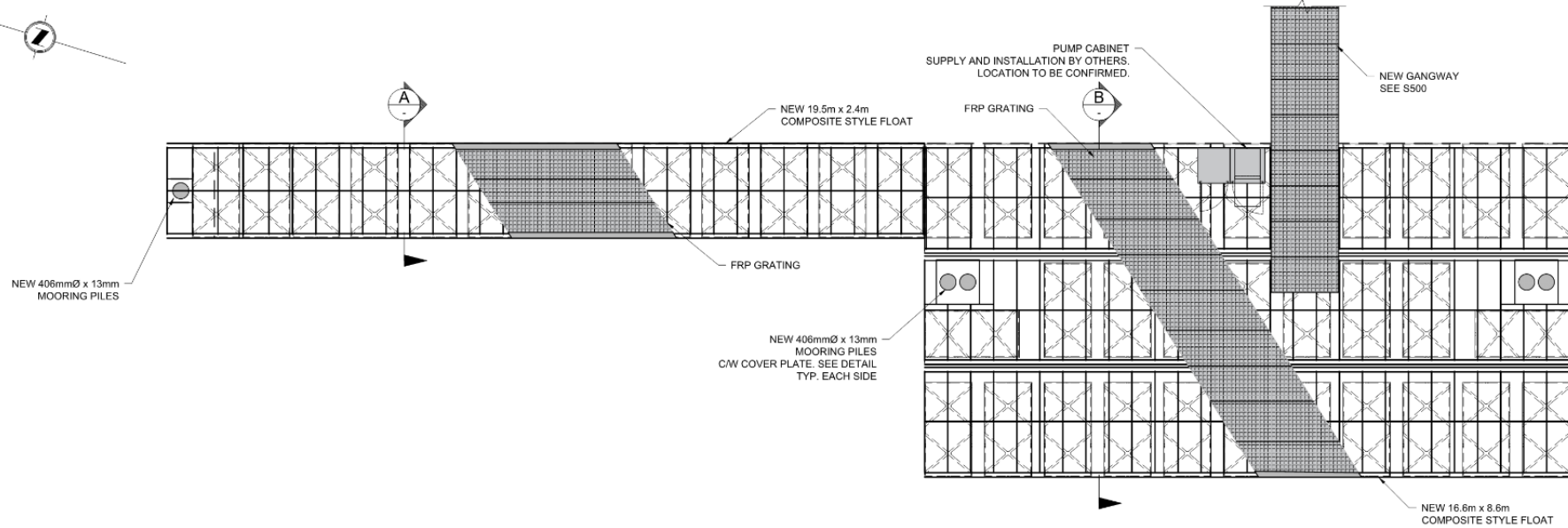
PORT NEVILLE
 GENERAL ARRANGEMENT
 AND PIER PLAN

Drawing No.
S100

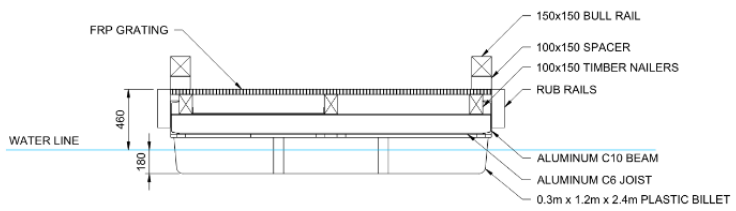
Project No.
 2211-71343

Rev.
 PC

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 PROJECT NO. 2211-71343

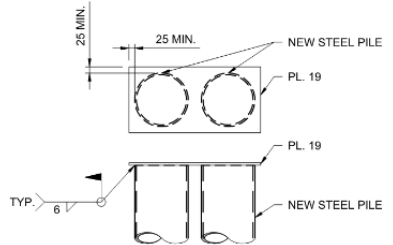


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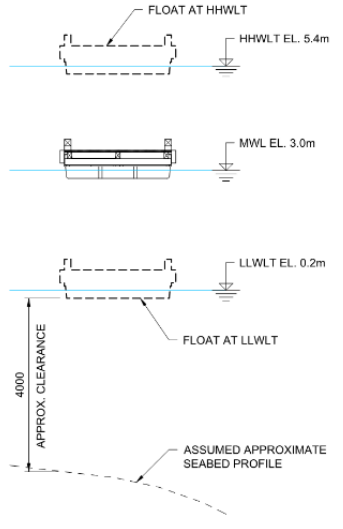


TYP. FLOAT SECTION
SCALE 1:25

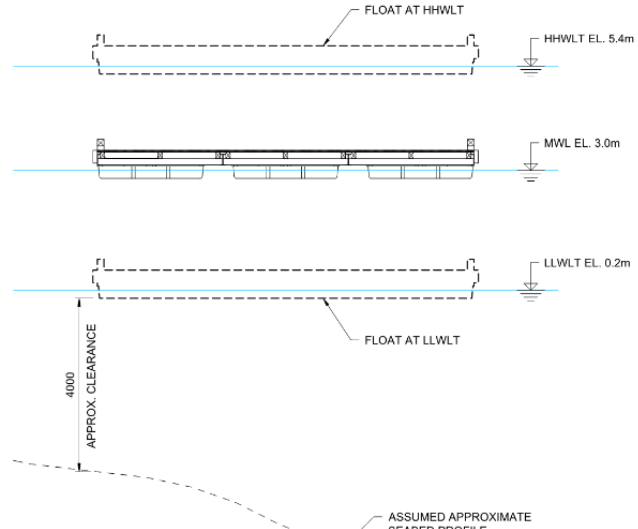
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COVER PLATE DETAIL
SCALE 1:25



SECTION A
SCALE 1:50



SECTION B
SCALE 1:50

NOTES:
1. FOR GENERAL NOTES SEE S100

Rev	Date	Description	App'd
PC	2022-12-02	ISSUED FOR 100% REVIEW	GH
PB	2022-11-11	ISSUED FOR 90% REVIEW	GH
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STRATHCONA REGIONAL DISTRICT

PORT NEVILLE
NEW FLOAT DESIGN

Drawing No.
S101

Project No.
2211-71343

Rev.
PC

CHECKED BY: JMcElhanney DATE: 2022-08-25

Environmental Management Plan Surge Narrows Dock Upgrades October 2024

Project Description:

The Environmental Management Plan (EMP) has been developed for proposed upgrades to the public dock facility in Surge Narrows, BC on behalf of the Strathcona Regional District. The schedule of the work is currently undetermined. Proposed work includes:

- Replacement of timber pile caps along the pier / approach (n=11).
- Replacement of timber piles along the pier / approach (n=4).
- Replacement of existing gangway ramp from the pier / approach to the dock float with 12.2 m gangway ramp.
- Replacement of timber mooring piles on the dock float (n= 18) with 406 mm steel mooring piles (n=6).
- Replacement of existing timber floats with composite style floats with Fiberglass Reinforced Plastic (FRP) grating.
- Replacement of existing post office structure on the dock float.
- Removal of existing anchor chains on both sides of seaplane float

Preliminary design details for the general arrangement and pier plan are provided at the end of the EMP.



A view of the Surge Narrows dock, looking west along the pier approach

Environmental Features:

The proposed dock upgrades work is mostly within the footprint of the existing dock structures. The only changes to the facility footprint will be the addition of small section of float added to brace the new seaplane float. The facility upgrades will involve some work within the intertidal and subtidal environment (pile removal and replacement). No disturbance is proposed in the foreshore or marine riparian area.

An environmental assessment was completed for the proposed work¹. Habitat within the immediate work area consists of predominately sand with some shell hash, transitioning to gravel a cobble substrate closer to shore. The habitat within the survey area has a moderate density and diversity of aquatic life.

No environmentally sensitive areas or critical habitat were identified within or near the project area during the site assessment.

Risk Assessment:

Potential impacts of the proposed work include:

1. Injury or disruption to fish rearing or migrating through the work area during pile driving.
2. A reduction in water quality relating to increased turbidity during pile removal or installation.
3. A reduction in water quality relating to mobilization of hydrocarbons during removal of existing pilings.
4. A reduction in water quality due to spills of other deleterious substances, including hydraulic oils or fuels used in heavy equipment or marine vessels.
5. Injury or disturbance to wildlife in the vicinity of the work area.
6. Intertidal and subtidal benthic habitat disturbance due to pile installation.

It is expected that the above impacts can be avoided or mitigated through the implementation of the Best Management Practices and the measures outlined in this document.

The proposed work carries minimal risk to the intertidal and subtidal habitats in the project area. The construction impacts are expected to be localized to the immediate project area and short term in duration.

Regulatory Requirements:

The Federal *Fisheries Act* requires that projects avoid causing serious harm to fish unless authorized by the Minister of Fisheries and Oceans Canada. The proposed work on the Surge Narrows dock can be completed incorporating measures to avoid causing death of fish or harmful alteration, disruption or destruction of fish habitat, therefore project review by Fisheries and Oceans Canada (DFO) is not required².

¹ Mainstream Biological Consulting. 2023. Environmental Assessment Proposed Dock Upgrades Surge Narrows, BC. Prepared for: Strathcona Regional District.

² DFO, Project Near Water. Accessed online at <http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>

Environmental Measures:

The proposed work activities must be conducted in such a manner that potential environmental impacts are fully avoided or mitigated. The following measures are recommended:

- An Environmental Monitor (EM) will take part in a pre-work meeting with the contractor and project owner representative to review this EMP and required environmental measures.
- An EM is required on site full time during project activities below the high-water mark or with the potential to impact water quality. The EM will implement a water quality monitoring program when in-water work is occurring.
- The contractor and designated EM must maintain communication at all phases of the project to ensure that the EM is on site at the appropriate times. This would include, but is not limited to:
 - Prior to start of work
 - During in-water work such as pile installation or removal
 - During extreme weather that creates an environmental hazard
 - During or immediately following an environmental incident such as a spill of hazardous or controlled materials.
- ***The EM must have the authority to modify and / or halt any activity if deemed necessary for the protection of the environment, or to meet regulatory requirements.***
- All environmental incidents, regardless of significance, will be reported to the EM and SRD representative. Examples of incidents could include spills of hydrocarbons or other chemicals to ground or water, release of turbid water, violations of environmental regulations, or contraventions of this EMP. Any spills to water must be reported to Emergency Management BC (1-800-663-3456).
- The EM will verbally communicate observations or instructions to the contractor during site visits. A monitoring report will be submitted to the Strathcona Regional District upon completion of the project.

Protection of Fish and Fish Habitat:

- Work must comply with DFO Measures to protect fish and fish habitat.
- In-water work should be completed within the recommended marine Reduced Risk Work Windows for DFO Area 13:
 - Summer Window: July 1 –September 1
 - Winter Window: November 1 – February 15

Work outside these windows may require additional mitigation measures such as fish surveys, exclusion areas or other containment measures, to be determined by the EM at the time of work.

- Sediment control measures will be installed as needed, and measures to protect water quality will be implemented through all stages of the work as described below.
- If heavy equipment is required to work on the intertidal zone (not expected for this project), time work to occur at low tide and in the dry whenever possible.

Minimize equipment travel on the intertidal zone by restricting access to one route and only travelling where necessary to complete the work.

- Ensure boats or barges used for the project maintain a minimum clearance at low tide of 1.5 m to avoid disturbing the seabed.
- Pile driving operations will adhere to the Best Management Practices for Pile Driving and Related Operations - BC Marine and Pile Driving Contractors Association, 2003.
- Ensure that pile driving equipment is positioned to avoid unnecessary disturbance of the seabed.
- Containment booms must be deployed around creosote piles prior to removal.
- The EM must be on site during in-water pile driving. Vibratory pile driving should be used if possible. Based on preliminary observations of substrate, the expectation is that a vibrating hammer will be used.
- Piles should be removed slowly and lifted clear of the seabed instead of dragged to minimize turbidity in the water column as well as sediment disturbance.
- A sediment curtain or bubble curtain may be required around the active pile to contain turbid water in the work area. The EM will monitor turbidity during in-water work.
- Pile driving should be timed during low or outgoing tides when possible, to minimize the amount of turbid water and sound pressure waves generated.
- Given the small diameter of the piles to be installed, it is anticipated that work can be completed without generating pressures above 30 kPa, and no protective measures are prescribed.
- An experienced QEP is to monitor the area in the vicinity of the piles for the presence of fish during pile installation. If a fish kill or behavioral changes are observed, work must stop and protective measures such as a bubble curtain must be implemented before further pile driving proceeds. Any such incidents must be reported to DFO.
- If an impact hammer is required for pile driving, pile installation will be completed in accordance with the following additional mitigation measures:
 - Establishment of a fish and marine mammal (see *Protection of Wildlife* Section) exclusion zone around the pile prior to impact pile driving. Monitor for the presence of fish for at least 10 minutes and 30 minutes for marine mammals.
 - If not fish or marine mammals are observed within the exclusion zones, a soft start procedure is recommended to gradually increase impact energy over a 10 minute period. Also recommended any time after a break of 30 minutes between pile installation.
 - Installation of an effective sound attenuation device (e.g., bubble curtain) around the full wetted length of the pile prior to impact hammer use. Sound pressure levels must remain below a peak of 207 dB re:1 μ Pa and a SEL_{cum} of 203 dB re: 1 μ Pa²s outside of the sound attenuation device. Hydroacoustic monitoring will occur 10 m of the noise source.
 - Cessation of pile driving activity in the event of a breach of the above threshold and DFO informed.
 - In the event of an exceedance of the acoustic noise threshold, no further pile driving activity to continue until one or a combination of the following mitigation measures are implemented:

- Establishing a fish exclusion zone to a distance from the pile where the threshold is no longer exceeded;
 - Deployment of a physical barrier (silt curtain) to physically impede sound wave transmission and / or:
 - Deployment of a bubble curtain to disrupt sound wave transmission.
 - Deployment of alternate methods to the above acceptable to the EM to reduce the sound pressure levels.
- If herring or juvenile salmonids are observed to be present at any time during the in-water work, mitigation measures will be implemented to protect these species or works suspended until it is safe to continue works. These measures will be determined by the EM and contractor and could include methods to temporarily displace the fish from the work area or exclusion barriers.
- If any negative impacts to fish or fish habitat are noted, the work will be suspended until the conditions have been investigated and appropriate mitigation measures can be installed or applied.

Protection of Wildlife:

- While no vegetation management is expected along the foreshore during this project, any active nests encountered during project activities are to be left undisturbed. The EM is to be contacted immediately to establish a suitable buffer around the nest for the period of the work, or until the young are confirmed to have fledged.
- Feeding of wildlife is not permitted. All meals and food waste will be securely stored in vehicles or appropriate waste containers to avoid attraction of wildlife. Food waste and other attractants are to be removed from site at the end of each workday.
- Any animals encountered within the work area are to be allowed to relocate themselves outside the work zone. At no time should workers attempt to relocate animals. If these animals became persistent, the EM or the Site Supervisor will contact the local Conservation Officer Service or DFO to request assistance.
- path of travel must be moved out of the way prior to machinery access.
- Motile invertebrates should be salvaged from removed piles when possible and returned to the water, outside of the project footprint.
- A 500 m marine mammal exclusion zone will be setup 30 minutes prior to any pile installation or removal activities and be monitored. All in water operations will stop if whales or other marine mammals enter the zone and works will only resume once the animal has left the immediate area or has not been re-sighted for 30 mins. The EM will conduct visual scans from shore using binoculars and a range finder to confirm that there are no marine mammals in the exclusion zone before in water works begin. Repeat scans will be conducted hourly during in water work.
- Best Management Practices (Be Whale Wise 2021) for vessels operating near whales, dolphins, and porpoises will be adhered to if boats are utilized for any portion of the project.
- All hollow piles must be capped immediately following installation to prevent trapping small animals inside.

- If machinery is operated within the intertidal zone, all macroinvertebrates along the planed

Water quality, erosion, sediment and drainage control:

- The contractor / crew must conduct work in such a manner that the generation of sediment laden water is minimized. Any terrestrial areas that are disturbed during the work are to be stabilized prior to the contractor leaving site if there is a chance that the area may be influenced by tidal action or by surface water runoff due to rain.
- The EM will monitor water quality as necessary to ensure water quality guidelines are met (Table 1). The EM will use this information to implement additional water quality measures as required, (such as slowing or stopping work) to maintain turbidity at levels that will not cause harm to fish or fish habitat. Turbidity in the work area should not increase above background by more than 8 NTU for extended periods (greater than 24 hours).
- If the above water quality guideline cannot be consistently met, a turbidity curtain or other containment must be deployed to isolate the immediate work area (e.g., surrounding the active pile).
- Pile removal should be done in a manner that minimizes substrate disturbance.
- Cast in place concrete work is not expected for this project, but if required will be done in a manner than ensures any concrete contact water will be contained from the aquatic habitat in the project area. Use of cast in place concrete is to be discussed with the EM prior to start of work to determine appropriate containment and monitoring measures.

Table 1: Summary of water quality guidelines for the protection of marine aquatic life during the Surge Narrows Dock Upgrades project.

Parameter	Criteria
Turbidity - Nephelometric Turbidity Units (NTU) ¹	<ul style="list-style-type: none"> • Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters • Change from background of 2 NTU at any one time for a duration of 30 d in all waters during clear flows or in clear waters • Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters
Oil and grease	Not detectable by sight or smell
pH ¹	Long term chronic - Unrestricted change when pH is greater than 7 and less than 8.7 (protection of mollusc embryo development)

1 – BC Ministry of Environment and Climate Change Strategy. Obtained online at https://bcgov-env.shinyapps.io/bc_wqg/.

Prevention and management of spills:

- All work must be completed in such a manner as to prevent the introduction of deleterious substances to the marine environment.
- All heavy equipment brought to site must be in good working order, clean and leak-free. The EM may ask that equipment not in satisfactory condition be removed from site.
- All equipment must be equipped with a spill kit with contents appropriate for the volume and type of fluids contained within the equipment. Any materials from the spill kits that are used during the work must be disposed of appropriately and replaced within one working day.
- Due to the location of the project, all equipment used on site must be equipped with environmentally friendly fluids.
- Fuels must be stored within double-walled tanks or secondary containment equal to or greater than 110 % of the total volume of the fuels.
- Fueling should not be conducted at the work site. Any fueling must occur a minimum of 30 m from the foreshore.
- No servicing of equipment is to occur on-site.
- Materials or equipment left on site should be staged in the upland area of existing disturbance near the work site, as far as practicable from the shoreline.
- An absorbent sock boom may be required to contain any hydrocarbons released to water during the removal of the out of service creosote treated pilings. Sufficient booms should be on hand to fully surround the site in the event hydrocarbon sheen develops during the piling removal.
- Existing piles should be extracted whole in a manner that minimizes disturbance and disposed of at an appropriate upland disposal site. The EM may require that a silt curtain or sediment control system be installed around the pile before removal. If on site storage is necessary, the piles should be protected from exposure and have containment in place to prevent leaching to the environment.
- In the event of a spill to ground or water, the contractor is responsible for responding to contain and / or clean-up the spill if it is deemed safe to do so. Once the crew has determined that they can work safely, the responders should follow the following steps:
 - Stop the spill (clamp hose, upright container, block hole etc).
 - When warranted, define the spill area to prevent workers from walking / driving through the released material and spreading to other areas.
 - Contain the spilled material (berms, pads, ditches etc).
 - Clean-up the spill if possible. If the spill is significant, a professional spill response contractor may be required.
 - Report the spill to the Environmental Monitor. The EM will then report the spill to the client representative and other appropriate agencies (when required). All spills to water are reportable.

Hazardous Waste Management:

- Hazardous waste is not expected within the project area but if encountered the crew must adhere to all applicable legislation with respect to handling, transportation, and / or disposal of all materials related to this project.
- Hazardous waste must be stored in appropriate containers and secured during handling and transportation. Hazardous materials are to be taken to a suitable disposal facility. Documentation confirming receipt of the hazardous and

contaminated materials by the disposal facility must be provided to the EM or client.

Other Waste Management:

- The contractor is to develop a waste management plan for the removal of non-hazardous waste generated by the work for approval by the EM and the Strathcona Regional District.
- The contractor must ensure that debris or deleterious substances are not introduced to the marine environment during demolition or construction activities.
- Remove all construction materials from site upon completion, including the deactivated materials and pilings. Old wooden piles are to be disposed of at a landfill facility approved to accept treated wood waste.
- Any materials that are suitable for salvage or recycling should be separated from other waste and sent to an appropriate recycling facility.
- Non-regulated contaminated waste is to be stored in separate, labeled containers and disposed of appropriately. Proof of disposal will be required. This includes used spill clean-up materials, contaminated soils etc.
- Waste must either be removed from site daily or stored in secure containers to prevent dispersion of the wastes after hours (due to weather / vandalism).
- Any portable toilets brought to site are to be placed in a location at least 30 m from the high-water mark and secured to prevent tipping. The toilets are to be removed within two days of the project being complete.

Environmental Management Plan Review:

Date:

Contractor Representative:

(Print name)

(Sign
name)

Strathcona Regional District
Representative:

(Print name)

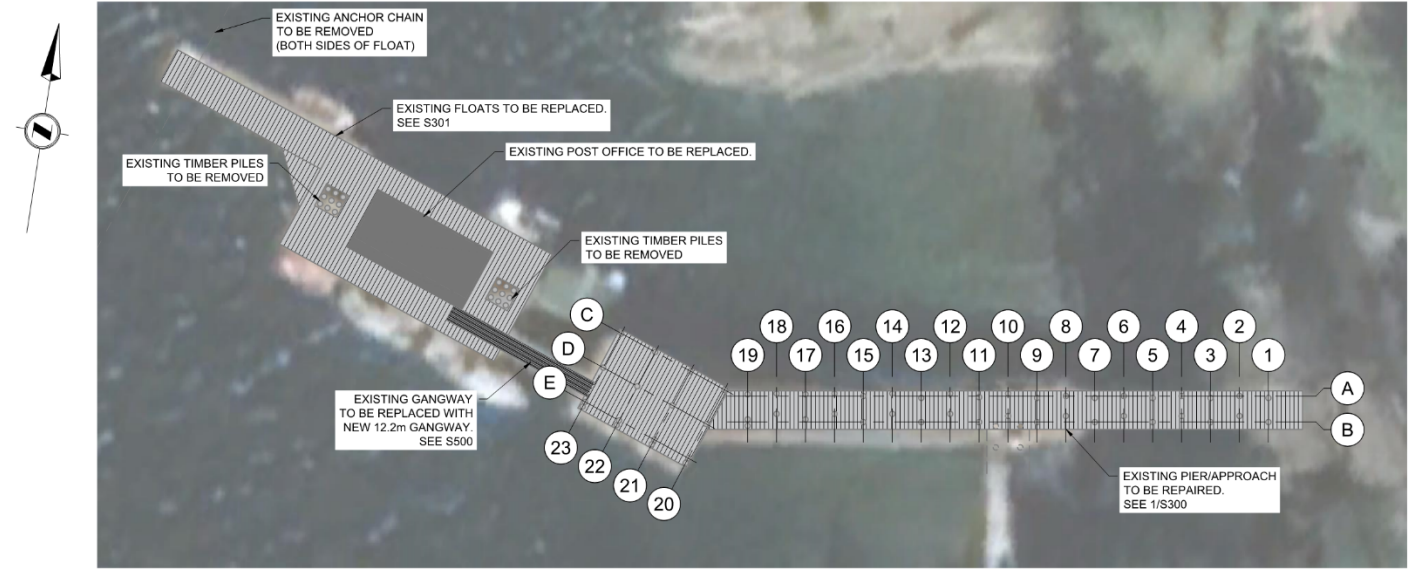
(Sign
name)

Environmental Monitor:

(Print name)

(Sign
name)

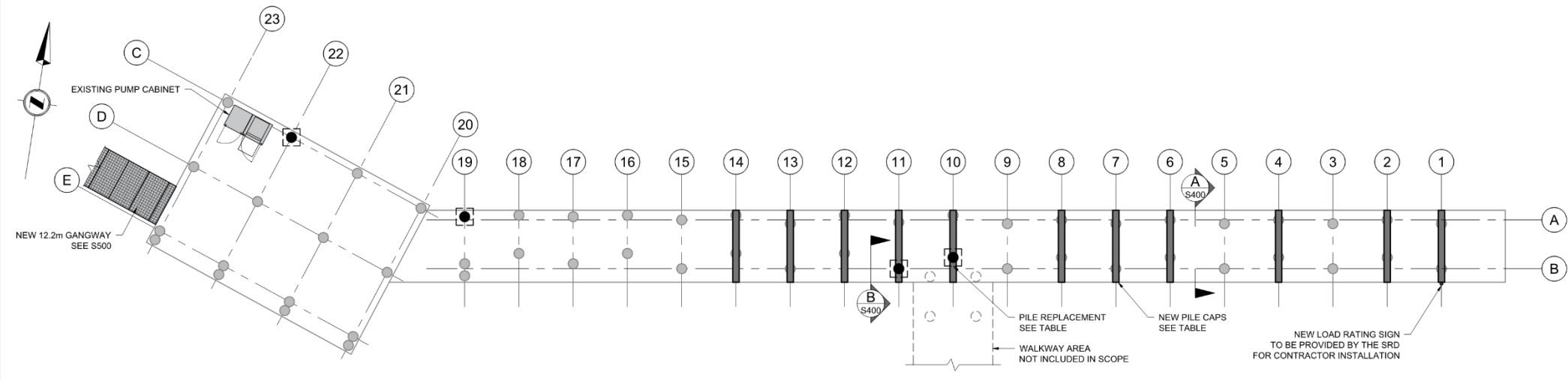
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PLAN
SCALE 1:250



KEY PLAN
NTS



PLAN
SCALE 1:100

- LEGEND
- EXISTING TIMBER PILE
 - NEW TIMBER PILE
 - NEW TIMBER PILE CAP

PILE NO.	REPAIRS
10B	REPLACE PILE
11B	REPLACE PILE
19A	REPLACE PILE
22C	REPLACE PILE

BENT NO.	REPAIRS
1	REPLACE PILE CAP
2	REPLACE PILE CAP
4	REPLACE PILE CAP
6	REPLACE PILE CAP
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8	REPLACE PILE CAP
10	REPLACE PILE CAP
11	REPLACE PILE CAP
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13	REPLACE PILE CAP
14	REPLACE PILE CAP

- NOTES:
- FOR GENERAL NOTES SEE S100.
 - SEE SHEET S400 FOR ALL TIMBER REPAIR DETAILS FOR PILES, PILE CAPS, AND CROSS-BRACING.

Rev	Date	Description	App'd
PC	2022-12-02	ISSUED FOR 100% REVIEW	GH
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SURGE NARROWS
GENERAL ARRANGEMENT
AND PIER PLAN

Drawing No.
S300

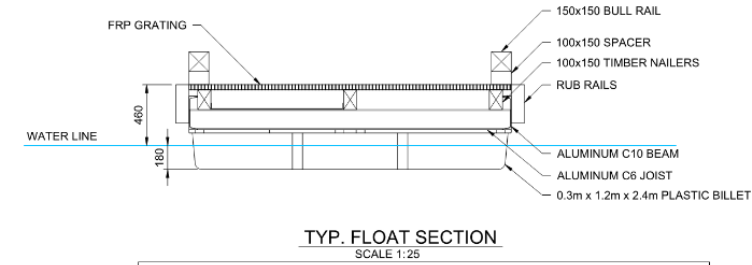
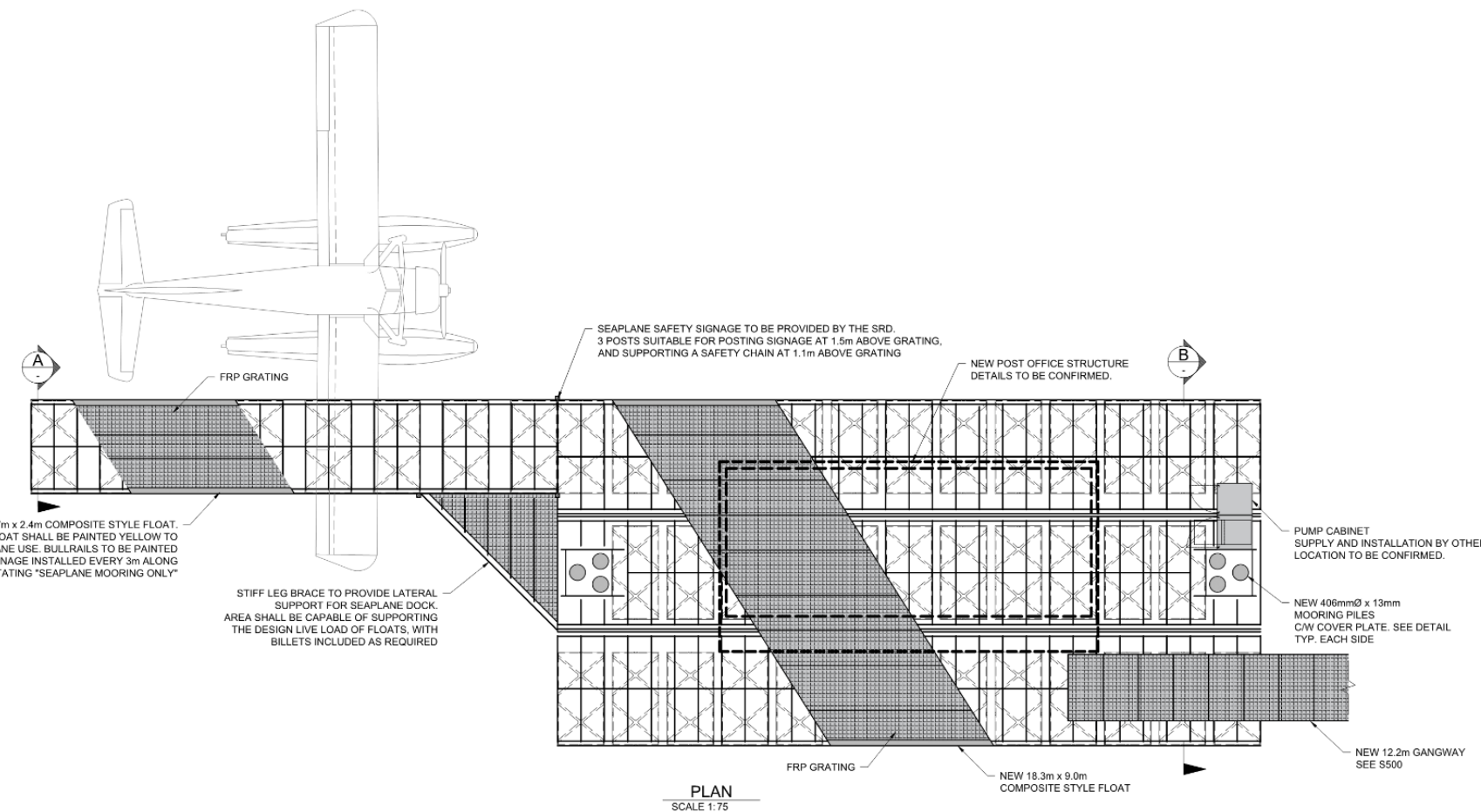
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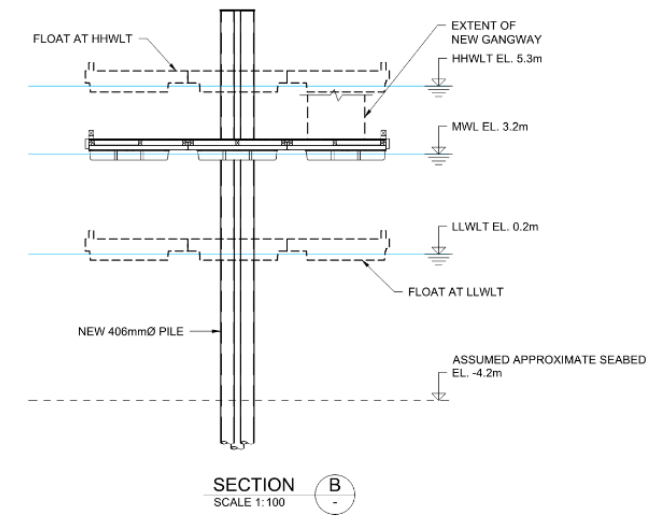
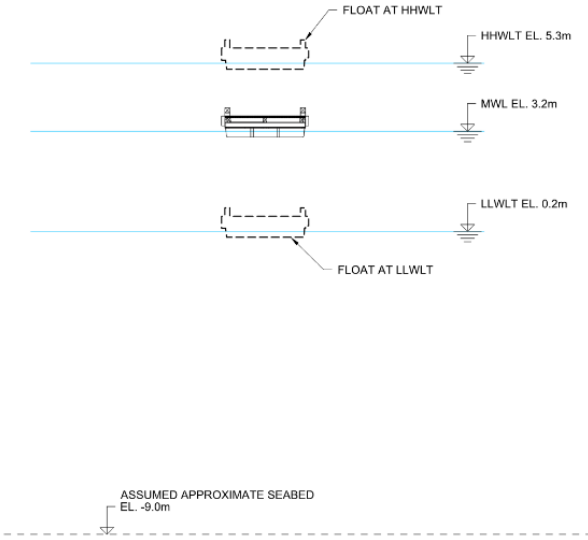
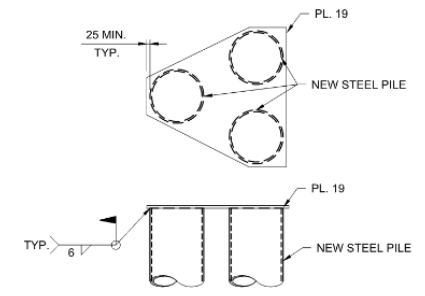
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ORIGINAL DWG SIZE: A3 (11x17) McElhanney, 2019-11-10

SAVED BY: J.McElhanney DATE: 2022-12-02 16:33 FILE: X:\2021\SR\PROJECTS\71305\71305-11\SR\11431_BCD\Drawings\11.1_Engineering\11.1_Surge Narrows New Float Design.dwg



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STRATHCONA REGIONAL DISTRICT

SURGE NARROWS
NEW FLOAT DESIGN

Drawing No.
S301

Project No.
2211-71343

Rev.
PC

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