REGIONAL DISTRICT OF NANAIMO

REQUEST FOR TENDER No. 21-054

Englishman River Hatchery Pedestrian Bridge Replacement

Addendum 1
Issued: June 28, 2021

Closing Date & Time: on or before 3:00 PM Pacific Time on July 8, 2021

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

Questions & Answers

Q1. With the regards to the material specs on the steel, note 1 indicates that all fabricated steel to be 350at. Could you accept 350w galvanized for plan bracing, intermediate bracing, and diaphragm bracing?

A1. Material for the plate girders is to be CSA G40.21 - Gr. 350W AT Category 2. Material for the diaphragms, bracing and misc. steel is to be CSA G40.21 - Gr. 350A or ASTM A588 Gr. 50.

Q2. Do the ballast walls and abutment need to be cast at a CSA certified facility?

A2. Yes.

Q3. Are the timber sizes indicated on the drawings the finish size or the rough size prior to finish?

A3. Finished Size.

Q4. With regards to the HDPE “Brown” nailer strip on the girders due to a serious lack of resin as well pigment in the market for colored product our suppliers are telling us that a brown product will take about 12 weeks at more than double the cost. Whereas a black product such as UHWPE would be half the time half the cost. Can this be considered?

A4. Nailing strips may be either HDPE or UHMWPE in brown or black.

Q5. With regards to the access road to the south side of the channel, is there enough access to drive a pickup truck with a trailer and small excavator around as well get turned around… "or" if that access is more of a service trail instead of road?

A5. The access road will accommodate a pickup truck only (not with a trailer). It is possible to walk a small excavator around to the other side using this road. Road is approximately 1km in length with a tight turn after you go over the channel.

Q6. There are two sets of HEL drawings in the tender package, package #0837-080, and package #0837-069. Could you confirm which drawing is to be used for tender?

A6. Please use 0837-080. Drawings within the EPP have been updated to reflect the latest version.

Q7. I would like to double check that bid bond and performance bond is not required for this project?

A7. Bonding is not required for this project as per Article 8: Bonding.

Q8. Is there a connection detail between concrete footing and concrete interlocking blocks?

A8. There is no connection detail between the footing and the blocks.

Tender Documents Addendum

DELETE: Aquaparian Environmental Consulting Ltd. report dated February 8, 2021 as per Question 6 above.

REPLACE WITH: Aquaparian Environmental Consulting Ltd. report revised June 2021 enclosed as per Question 6 above.

Mandatory Site Visit Attendee List

Enclosed is the list of firms that attended the mandatory site meeting on June 24, 2021 at 10:00 a.m.

End of Addendum 1

AQUAPARIAN
Environmental Consulting Ltd.

February 8, 2021

Amy Gore
Regional Parks and Trails Planner, Recreation and Parks
Regional District of Nanaimo
1490 Springhill Road
Parksville BC, V9P 2T2

Via Email: agore@rdn.bc.ca

RE: ENVIRONMENTAL IMPACT ASSESSMENT
ENGLISHMAN RIVER REGIONAL PARK BRIDGE REPLACEMENT PROJECT
REGIONAL DISTRICT OF NANAIMO

1.0 INTRODUCTION

Aquaparian Environmental Consulting Ltd. (Aquaparian) was retained by the Regional District of Nanaimo (RDN) to complete an Environmental Impact Assessment and Environmental Protection Plan for the replacement of a pedestrian bridge over the C.W. Young side channel of the Englishman River located near the fish hatchery in Englishman River Regional Park within Electoral Area G of the RDN in Parksville, BC. The subject park parcel is legally identified as the following:

LOT 1 BLOCK 602 NANOOSE DISTRICT PLAN VIP76721 (PID 025900323).

A review of the RDN website identifies the park parcel as being zoned as RM1, B, BL500 and subject to the following Development Permit Areas (DPAs):

- Eagle and Heron Nesting Trees,
- Freshwater and Fish Habitat, and
- Farmland Protection.

A site location map is included as Figure 1 and a selection of site photographs taken by Aquaparian at the time of the site visit is included as Appendix A.

As understood, the existing pedestrian foot bridge requires removal and replacement due to its deteriorating condition. The proposed new bridge is a clear span bridge design. Detailed engineering drawings for the bridge design have been provided by Herold Engineering Ltd and are included with this report as Appendix B. The site access is from the trail system that extends east of the trail head at the end of Middlegate Road.

Impacts to the environment as a result of this project are expected to be short-term and temporary if mitigation measures included in this report and the Environmental Protection Plan (EPP) which is included with this report as Appendix C are implemented. As such, the project is not expected to result in the death of fish or the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat as defined under Section 35 of the new *Fisheries Act* (2019). Based on this determination the project will not require a Fisheries and Oceans Canada (DFO) project review submission.

Clear span bridge stream crossings require that a provincial Notification under the *Water Sustainability Act* (WSA) Section 11 be submitted to the province at least 45 days prior to scheduled work to authorize "works in and around water." The Notification is to be submitted in the same calendar year as the proposed work. As understood, no in-stream work is required to install the bridge. Aquaparian submitted a Section 11 Approval in association with the proposed bridge. The province has issued an email response and a Terms and Conditions document that the work must comply with.

2.0 PROJECT DESCRIPTION

The existing bridge is a timber pedestrian bridge over a small tributary of the Englishman River. The proposed bridge replacement will first require that gravel fill be scraped off the surface of the existing bridge and the components of the bridge will be disassembled and removed. Two concrete lock blocks on site will be removed as well. A review of the drawing package provided by Herold Engineering Ltd. identifies that the new bridge is a clear span pedestrian bridge measuring 2.2 m x 13 m that will be constructed of timber decking planks, posts and rails on a steel plate girder. The bridge will be supported by precast interlocking concrete abutments (3 per side) on concrete footings that may be either cast in place or pre-cast. The bridge includes precast ballast walls on either side. The site is not expected to require vegetation clearing or tree removal beyond minor pruning of branches or shrubs.

As cost allows, a second wooden bridge located approximately 150 m downstream of the first bridge may be scheduled for removal at the same time. At this time, design plans for the replacement of the second bridge are not known. The existing bridge is a clear span wooden foot bridge that is mostly cleared on either side with embedded logs near the abutments. Vegetation composition is similar to that of the first bridge described above. Vegetation clearing is not expected for removal of this bridge.

3.0 BACKGROUND

The following section provides a general overview of biophysical attributes and land use of the site documented by government databases, crown publications and from Aquaparian's reconnaissance of the site.

3.1 BIOGEOCLIMATIC ZONE

The park parcel is located within the Moist Maritime Coastal Douglas-fir Subzone (CDFmm). The CDFmm is restricted to low elevations along southeast Vancouver Island from Bowser to Victoria, the Gulf Islands south of Cortes Island, and a narrow strip along the Sunshine Coast near Halfmoon Bay. Elevational limits range from sea level to approximately 150m. The CDFmm lies in the rainshadow of the Vancouver Island and Olympic Mountains resulting in warm, dry summers and mild, wet winters. Growing seasons are very long and feature pronounced water deficits on zonal and drier sites. The CDFmm represents the mildest climate in Canada. *(Green and Klinka).*

The CDFmm classification is dominated by Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), and western red cedar (*Thuja plicata*) trees. The understory typically includes salal (*Gaultheria shallon*), dull Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*) and Oregon beaked moss (*Kindbergia oregana*). Less prominent species include baldhip rose (*Rosa gymnocarpa*), snowberry (*Symphoricarpos albus*), western trumpet honeysuckle (*Lonicera ciliosa*), vanilla leaf (*Achlys triphylla*) and electrified cat's tail moss (*Rhytidiadelphus triquetrus*) (*Green and Klinka, 1994*).

3.2 HABITAT WIZARD

The Englishman River is a ~40 km major fish bearing river system originating on slopes of Mount Arrowsmith and discharging into the Strait of Georgia near Parksville, BC. A review of the provincial Habitat Wizard atlas identifies that the Englishman River (Watershed Code 920-462800) is known to support the following fish species:

- Coho salmon (*Oncorhynchus kisutch*),
- Chum salmon (*O. keta*),
- Pink salmon (*O. gorbuscha*),
- Chinook salmon (*O. tshawytscha*),
- Sockeye salmon (*O. nerka*),
- Residential cutthroat (*O. clarkii*),
- Coastal cutthroat (*O. clarkii clarkii*),
- Rainbow trout (*O. mykiss*),

- Steelhead (*O. mykiss*),
- Coastrange sculpin (*Cottus aleuticus*),
- Prickly sculpin (*C. asper*),
- Three-spined stickleback (*Gasterosteus aculeatus*), and
- Lamprey (general).

The proposed bridge replacement is located on the C.W. side channel which was constructed in 1990 to provide spawning and rearing habitat for coho salmon (Decker *et al.* 2002). It has since been lengthened. There is a coho salmon hatchery located at this site.

3.4 WILDLIFE TREE STEWARDSHIP ATLAS & GREAT BLUE HERON ATLAS

A review of the Wildlife Tree Stewardship Atlas (WiTS) identifies that no mapped bald eagle nests are located within or near the project area. The closest mapped eagle nest is located over 3 km away. No eagle nests were identified in or near the project area during the site visit.

A review of the Great Blue Heron Atlas did not identify any great blue heron nest trees or nest colonies within or near the project area. The nearest mapped heron nest tree is located over 1.5 km away. No heron nests were identified in or near the project area during the site visit.

3.5 BC CONSERVATION DATA CENTRE

Provincially Red-Listed species includes any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in British Columbia. Red-listed species and sub-species may be legally designated as, or may be considered candidates for legal designation as Extirpated, Endangered or Threatened under the *Wildlife Act*. Blue-Listed species include any ecological community, and indigenous species and subspecies considered to be of special concern (formerly vulnerable) in British Columbia.

A search of occurrence records for designated rare or endangered plant and animal species for the study area with the British Columbia Conservation Data Centre (BC CDC) resulted in one record of rare plant species and two records of rare ecological plant communities within or near the subject site. The BC CDC iMap has been included as Figure 2. The mapped occurrences are identified below.

- **Rough-leaved aster (*Eurybia radulina*) (ID 121811); provincially Red-listed**

  This vascular plant prefers rocky outcrops in open forested areas and is unlikely to be found near the project location as this habitat is not available where the bridge replacement is planned.

- **Douglas-fir / dull Oregon-grape (*Pseudotsuga menziesii* / *Mahonia nervosa*) ecological community (ID 52633); provincially Red-listed**
  This ecosystem consists of young second growth Douglas-fir dominated forest. Due to limited vegetation clearing required for the proposed bridge replacement, no negative impact to this ecological community is expected.

- **Black cottonwood – red alder / salmonberry (*Populus trichocarpa - Alnus rubra / Rubus spectabilis*) ecological community (ID 80012); provincially Bue-listed**
  This ecological community is dominated by shrubby, regenerating forest closely associated with the floodplain of the Englishman River from the mouth of the river to 11 km upstream. Due to limited vegetation clearing for the proposed bridge replacement, no negative impact to this ecological community is expected.

The BC Species and Ecosystems Explorer database is currently undergoing updates and generates a list based on ecoregion or ecosection which erroneously includes some species that may not actually be found on the site or even on Vancouver Island. Improvements to the area search function are ongoing. As such, the species list generated by a search of the region and habitat types has not been included; however, Aquaparian has identified that the following "at-risk" species have a reasonable potential to occur at the study site. These species are discussed briefly below:

American Water Shrew (*Sorex navigator brooksi*): Red-listed

Endemic to Vancouver Island. A relatively rare shrew dependent on suitable aquatic/riparian habitat, found over a large part of Vancouver Island. They are dependent on the presence of high-quality intact riparian systems. They live in a diverse range of stream habitats, from narrow to wide streams, from slow-moving to moderately-fast flowing waters. They are found at low elevations, in a variety of forest types and age classes, as long as the riparian corridor is intact. It is threatened by urbanization in the southeast part of the island and by forestry over much of its range. The C.W Young side channel of the Englishman River may provide suitable habitat to this elusive rodent.

Great blue heron (*Ardeaherodias fannini*): Blue-listed

Great blue heron is a large wading bird residing along the Pacific coast from southeastern Alaska south to Washington. Nests are colonially in tall Sitka spruce, western red cedar, western hemlock, pine, red alder, big leaf maple and black cottonwood. Isolation from disturbance appears to be an important factor in nest site selection. Foraging habitat includes aquatic areas generally less than 0.5 m deep, such as: marine intertidal areas, estuaries, riparian areas, wetlands, freshwater lakes, and muskegs. These areas are generally within 5 km of the nest site, although some areas have been identified up to 33 km away. (*BC CDC*). The

mature trees within the park and foraging areas along the river may provide suitable habitat for this species; however, no heron nesting trees were identified in or near the project site.

Northern red-legged frog (*Rana aurora*): Blue-listed

Range extends from southwestern British Columbia, including Vancouver Island in Canada, south along the coast of the United States. Red-legged Frogs have been observed in a variety of aquatic and terrestrial habitats typically at elevations below 500 m. They breed in shallow, littoral zones of lakes, temporary and permanent pools and wetlands, and bogs and fens regardless of size but in close proximity to forest; tadpoles associate with benthic habitats. Lotic habitats with little to no flow may be utilized by red-legged frogs, and riparian areas are important for newly metamorphosed froglets. Outside of the breeding season, red-legged frogs utilize shady cool forests as "core" habitat and primarily utilize all forest and woodland types, but individuals are occasionally found in more open and rural areas such as shrubland/chaparral, cropland/hedgerow, old fields, and suburban/orchard *(BC CDC January 2015).* The wetland pond just upstream of the project area may provide suitable habitat for this species. The typical amphibian breeding season is between late February to early April. The bridge replacement works are not expected to impact this species.

Wandering Salamander (*Aneides vagrans*): Blue-listed

This terrestrial salamander species has a widespread occurrence on Vancouver Island, including remote areas. The species can be found in moist coniferous forests and forest edges. Logs are the primary microhabitat in spring, summer and fall on Vancouver Island. They lay eggs in cavities in rotten logs, in rock crevices, under bark or among vegetation. This salamander feeds on small arthropods and is inactive in cold temperatures and hot, dry weather (*BC CDC*). The terrestrial habitat within the property is suitable for this species; much large woody debris is available along the forest floor of this moist site. The small scale bridge replacement is not expected to have a negative impact on this species.

Pacific Sideband Snail (*Monadenia fidelis*): Blue-listed

These snails are found all around the Georgia Basin, north to Growler Cove, West Cracroft Island and Broughton Archipelago. In deciduous, mixed or coniferous forests generally (i.e. fir, cedar, big-leaf maple and alders), but also sometimes in open woods and grassy places, such as Garry Oak (*Quercus garryana*) meadows and seashore sand spits. It is predominantly a species of the coastal lowlands. Adult snails are most often encountered in spring when crawling in the open on the ground or climbing up the trunks of shrubs and trees *(BC CDC).* The moist mixed canopy environment within the property may provide suitable habitat for this species. The small scale bridge replacement is not expected to negatively impact this species or its habitat.

4.0 SITE DESCRIPTION

Aquaparian completed a site assessment of the project area February 8, 2021. Aquaparian accessed the site from Allsbrook Trail off the east end of Middlebrook Road. The trails are wide and well-used so access to the site for the bridge replacement is not expected to require the removal of vegetation or to cause negative impacts to the trail system or habitat along the trail system.

The existing 8.6 m x 4.3 m timber decking bridge is located by the hatchery building just downstream of a wetland pond with a beaver dam located approximately 15 m upstream beside a small step-pool section of channel. The side channel width was measured to be 5.5 m across at the location of the bridge and had a depth of ~0.3 m at the time of the assessment. Stream bed substrate at the bridge location is comprised of cobble (60%), gravel (30%) and boulders (10%). Banks have a moderate slope and are 0.5 – 1.0 m high. The left bank is lower and has a more gradual slope.

Riparian vegetation along the stream banks is comprised of a canopy of red alder (*Alnus rubra*) with black cottonwood, bigleaf maple (*Acer macrophyllum*) and western red cedar (*Thuja plicata*) with an understory of sword fern (*Polystichum munitum*), salmonberry (*Rubus spectabilis*), trailing blackberry (*Rubus ursinus*) and moss species.

Two large concrete lock blocks were observed on the northwest side of the bridge. The area surrounding both ends of the existing bridge is mostly cleared and dominated by established trail.

5.0 IMPACT ASSESSMENT

Potential impacts include soil disturbance / excavation for bridge abutment installation with potential risk of sedimentation to the Englishman River and risk of accidental spills and/or deleterious substances being released to the watercourse. At the time of writing this report, it is unknown if concrete pouring is planned, but measures to mitigate concrete pouring have been included in the EPP in the event that it is required. No trees are to be removed for this project and a limited amount of vegetation (shrub and terrestrial) pruning or minor clearing may be necessary. As the areas surrounding the bridge are cleared and dominated by well-used trail, little to no habitat loss is expected as a result of the bridge replacement. Preservation of water quality during the construction works is the primary concern.

6.0 GENERAL RECOMMENDATIONS

- If it is necessary to remove vegetation it should be completed outside the songbird nesting season (March 15 - August 15) or, if in the nesting season as close to the end as possible (after July 15th) following an assessment for nesting activity by a qualified nest surveyor. Though no trees are scheduled for removal, nesting can occur on the ground or low amongst the understory vegetation.

- Complete site preparation (including any vegetation removal) during the dry season, or minimal rain forecast. No sediment is to be allowed to migrate into the stream. If heavy rain is forecast, install silt fencing along the work area to prevent sedimentation down the ravine slope. The disturbance areas around the bridge should be mulched or vegetated as soon as possible to prevent surface erosion.

- Due to proximity to a fish bearing stream, all work must be completed within the "least fish window" June 15 – September 15 as per the Ministry of Forests, Lands and Natural Resource Operations, *WSA* Section 11 Terms and Condition and an Environmental Monitor (Aquaparian) must be on site for all works that have the potential to impact the stream.

- Additional recommendations are included in the attached Environmental Protection Plan which is to be provided to the construction contractor for review prior to carrying out the work. A copy of the EPP and Section 11 Notification is to be kept on site by the construction contractor.

7.0 CONCLUSION

Aquaparian was retained by the RDN to complete an Environmental Impact Assessment for the proposed replacement of a small pedestrian bridge located along the C.W. Young side channel of the Englishman River in the Englishman River Regional Park located in Parksville, BC.

Based on findings in this EIA, it is Aquaparian's professional opinion that, if all mitigation measures outlined in this report and the EPP are followed, the proposed bridge replacement is not expected to have any lasting negative impacts on wildlife, wildlife habitat, fish or fish habitat. Because the work will occur around a stream, a Section 11 *Water Sustainability Act* Notification has been filed by Aquaparian on behalf of the RDN.

8.0 CLOSURE

This report has been completed in accordance with generally accepted biological practices and is based on site assessments, previous studies, background information from government databases and regulations current as of the time of writing this report. Anticipated impacts are based on the proposed development plan appended to this report provided by the client at the time of writing this report. If the design changes, Aquaparian is to be provided an opportunity to assess the proposed changes and revise the report accordingly. No other warranty is made, either expressed or implied.

Aquaparian trusts that the information provided in this report meets your requirements. Any questions regarding information provided in this document, please contact the undersigned at (250) 591-2258.

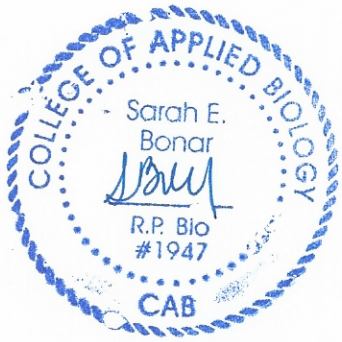
Respectfully submitted,

AQUAPARIAN ENVIRONMENTAL CONSULTING LTD.

Prepared by:

Jeni Rowell, B.Sc., BIT
Biologist-in-Training

Reviewed by:



Sarah Bonar, B.Sc. R.P.Bio
Senior Project Biologist / Principal

Z:\Projects\Projects\N709 Englishman River\Englishman River Bridge EIA.docx

8.0 REFERENCES

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Fisheries and Oceans Canada. Does DFO Need to Review My Project? 2014.
http://neia.org/wp-content/uploads/2013/07/01-Bret-Pilgrim-Does-DFO-Need-to-Review-My-Project.pdf

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FIGURE 1

SITE LOCATION MAP

FIGURE 1A &1B - SITE LOCATION MAP

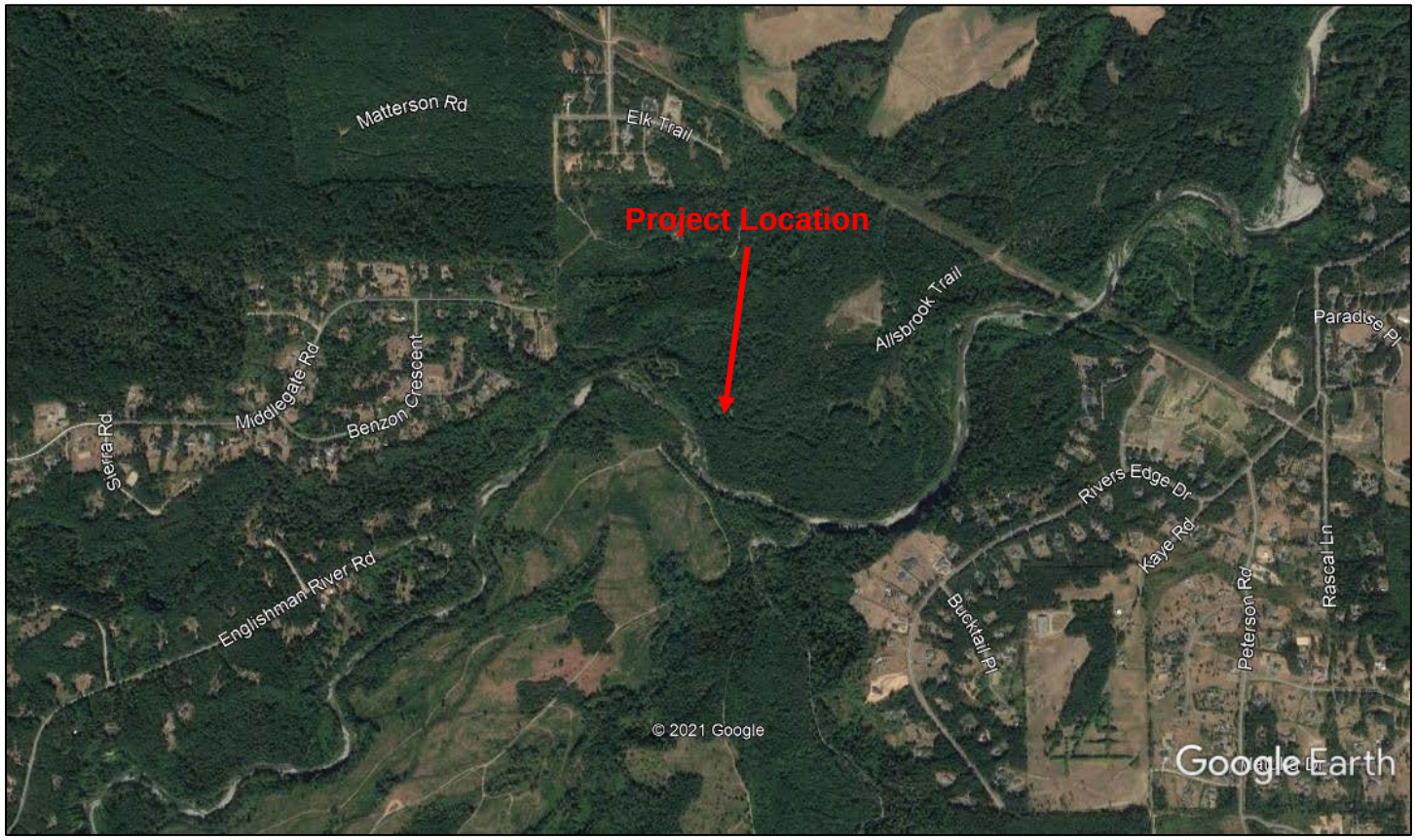
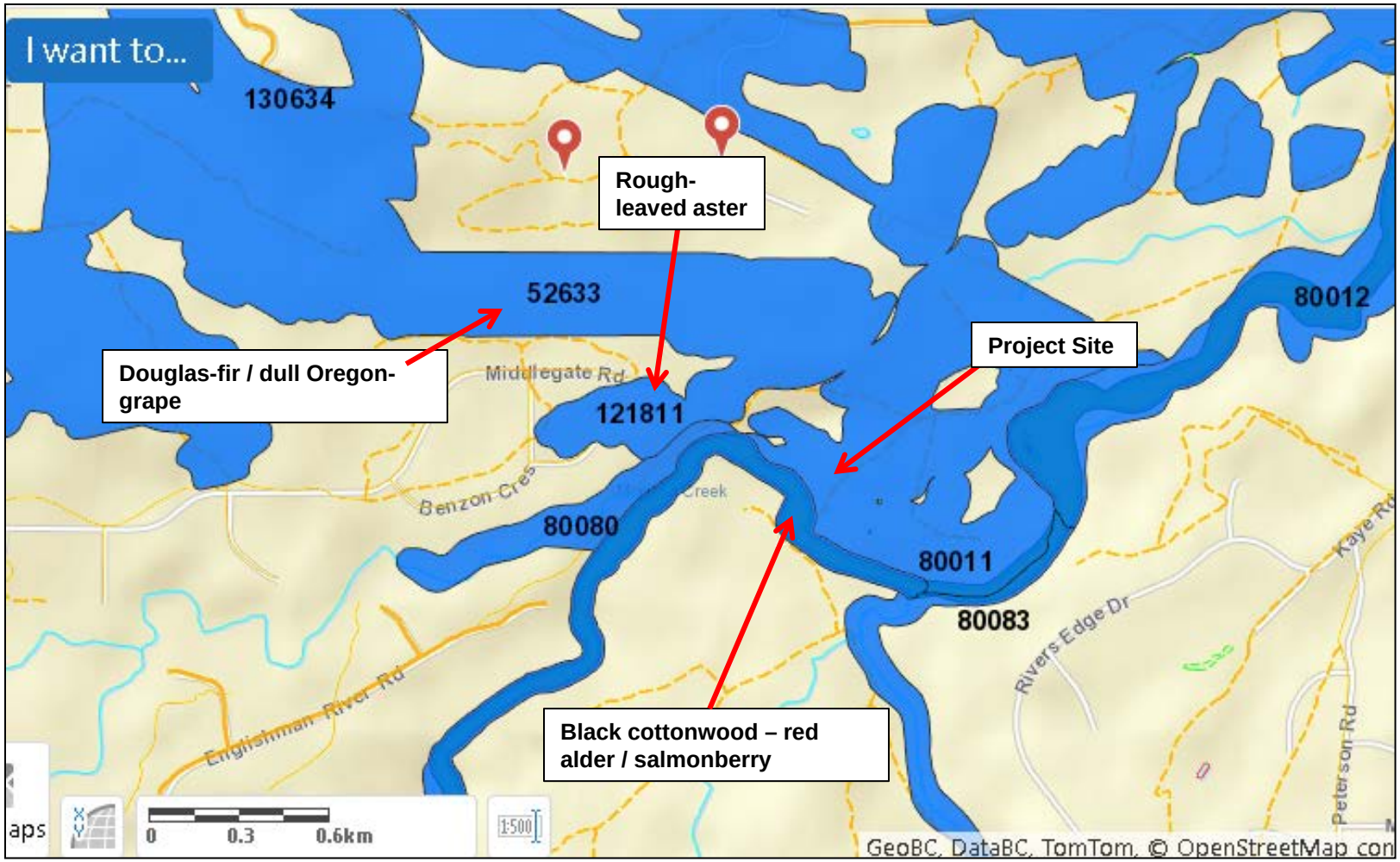


FIGURE 2

BC CDC IMAP SEARCH RESULTS

BC CONSERVATION DATA CENTRE IMAP



APPENDIX A

SITE PHOTOGRAPHS

APPENDIX A – SITE PHOTOGRAPHS

Photo 1: Facing north across the first bridge by the hatchery.

Photo 2: Facing south across the first bridge by the hatchery.

Photo 3: Looking downstream (east) towards the bridge from the side.

Photo 4: Facing upstream from the bridge towards the small step pool.

Photo 5: Facing downstream from the bridge.

Photo 6: Lock blocks to be removed.

Photos 5 & 6: The second bridge located ~150m downstream that may or may not be removed at the same time as the first bridge.

APPENDIX B

HEROLD ENGINEERING LTD. DESIGN PACKAGE

ENGLISHMAN RIVER HATCHERY
PEDESTRIAN BRIDGES

DRAWING LIST

DRAWING NUMBER	DESCRIPTION
0837-080-S00	COVER SHEET AND DRAWING LIST
0837-080-S01	GENERAL NOTES
0837-080-S02	GENERAL ARRANGEMENT – BRIDGE 1
~~0837-080-S03~~	~~GENERAL ARRANGEMENT – BRIDGE 2~~
0837-080-S04	PLAN AND ELEVATION – BRIDGE 1
~~0837-080-S05~~	~~PLAN AND ELEVATION – BRIDGE 2~~
0837-080-S06	SECTIONS AND DETAILS
0837-080-S07	GIRDERS, DIAPHRAGMS AND BRACING
0837-080-S08	PRECAST BALLAST WALLS AND MISCELLANEOUS DETAILS

NOT INCLUDED IN TENDER

HEROLD ENGINEERING
3701 Shenton Rd, Nanaimo, BC V9T 2H1
Tel: 250-751-8558 Fax: 250-751-8559
Email: mail@heroldengineering.com

HEROLD PROJECT No.
0837-080

GENERAL NOTES:

DESIGN BASIS

1. DESIGN LOADS:
 1.1. LIVE LOAD:
  1.1.1. 4.0 kPa UNIFORM LOAD
  1.1.2. KUBOTA RTV-X900 UTILITY VEHICLE
 1.2. GUARDRAILS:
  1.2.1. 1.2 KN/m PER CHBDC S6-19
  1.2.2. NOTE: GUARDRAIL DOES NOT CONFORM TO CAN/CSA S6-19 GEOMETRY REQUIREMENTS PER CLAUSE 12.4.4.2.
 1.3. WIND LOAD: .64 kPa
 1.4. SIESMIC:
  1.4.1. Sa(0.2)=0.939, Sa(0.5)=0.876, Sa(1.0)=0.527, Sa(2.0)=0..325, Sa(5.0)=0.106, Sa(10.0)=0.038
  1.4.2. PGA=.417, PGV=.654
  1.4.3. NO GEOTECHNICAL ASSESSMENT OF SITE HAS BEEN PERFORMED. SITE CLASS "E" ASSUMED.
  1.4.4. IMPORTANCE CATEGORY: OTHER
  1.4.5. SEISMIC PERFORMANCE CATEGORY: 3

2. READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS. REPORT ANY CONFLICTS TO THE ENGINEER BEFORE COMMENCING WORK.

3. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

4. THESE DRAWINGS SHOW COMPLETED STRUCTURAL COMPONENTS OF THE BRIDGES. TEMPORARY BRACING AND SHORING TO PERFORM THE WORK SAFELY IS THE RESPONSIBILITY OF THE CONTRACTOR.

5. ENVIRONMENTAL WORK PROCEDURES, TIMING, AND SPECIAL PRECAUTIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS AND LIMITATIONS OF THE FEDERAL DEPARTMENT OF FISHERIES AND OCEANS, THE PROVINCIAL MINISTRY OF ENVIRONMENT AND THE REGIONAL DISTRICT OF NANAIMO.

6. QUALITY ASSURANCE QUALIFICATION OF CONTRACTOR AND SUPERINTENDENT: THE CONTRACTOR SHALL BE FULLY CONVERSANT WITH ALL SAFETY PROCEDURES AND REGULATIONS RELATING TO CONSTRUCTION, AND SHALL EMPLOY STAGING AND OTHER SAFETY PROVISIONS AS SPECIFIED ELSEWHERE AND REQUIRED BY THE WORKERS COMPENSATION BOARD REGULATIONS.

7. ELEVATIONS IN METERS AND DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.

9. SURVEY PERFORMED BY HEROLD ENGINEERING LIMITED ON 2019.11.06, AND IS IN LOCAL DATUM.

10. NO GEOTECHNICAL DATA HAS BEEN PROVIDED FOR THIS DESIGN – SEE DRAWING FOR PROPOSED BEARING LOADS.

11. NO DETERMINATION OF Q200 FLOWS HAS BEEN PERFORMED AS WATER LEVELS IN CHANNEL ARE CONTROLLED BY HATCHERY.

12. DESIGN OF RIPRAP OR OTHER EROSION CONTROL MEASURES AT ABUTMENTS IS BY OTHERS.

DEMOLITION

1. DEMOLITION OF EXISTING STRUCTURE(S) SHALL BE PERFORMED BY CONTRACTOR PRIOR TO ERECTION OF NEW STRUCTURE.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE SITE CONDITIONS AFTER THE EXISTING STRUCTURE(S) ARE DEMOLISHED AND ACCOUNT FOR ANY ADDITIONAL WORK REQUIRED AS A RESULT OF THAT DEMOLITION.

SUBMITTALS

1. STRUCTURAL STEEL SHOP DRAWINGS MUST BE SUBMITTED FOR APPROVAL A MINIMUM OF 2 WEEKS PRIOR TO START OF FABRICATION, FABRICATION MUST NOT COMMENCE PRIOR TO APPROVAL OF THE SHOP DRAWINGS BY THE OWNER'S REPRESENTATIVE.

2. PRECAST SHOP DRAWINGS MUST BE SUBMITTED FOR APPROVAL A MINIMUM OF 2 WEEKS PRIOR TO START OF FABRICATION, FABRICATION MUST NOT COMMENCE PRIOR TO APPROVAL OF THE SHOP DRAWING BY THE OWNER'S REPRESENTATIVE.

3. STRUCTURAL STEEL MILL CERTIFICATES AND WELD INSPECTION REPORTS MUST BE SUBMITTED A MINIMUM OF 72 HOURS PRIOR TO TRANSPORTING STEEL COMPONENTS TO SITE, STEEL COMPONENTS MUST NOT BE SHIPPED PRIOR TO APPROVAL OF CERTIFICATES AND REPORT BY OWNER'S REPRESENTATIVE.

4. CONCRETE TEST REPORTS MUST BE SUBMITTED A MINIMUM OF 72 HOURS PRIOR TO TRANSPORTING PRECAST COMPONENTS TO SITE, PRECAST COMPONENTS MUST NOT BE SHIPPED PRIOR TO APPROVAL OF THE REPORTS BY OWNER'S REPRESENTATIVE.

FIELD REVIEWS

1. THE CONTRACTOR MUST PROVIDE 48 HOURS NOTICE TO THE OWNER'S REPRESENTATIVE FOR THE FOLLOWING REVIEWS TO BE PERFORMED.
 – STRUCTURAL STEEL FABRICATION REVIEW, TO BE PERFORMED ONCE FABRICATION IS SUBSTANTIALLY COMPLETE AND PRIOR TO SHIPPING OF COMPONENTS.
 – PRECAST CONCRETE PRE-POUR REVIEW, TO BE PERFORMED ONCE REINFORCEMENT IS PLACED AND PRIOR TO CASTING OF ITEMS.
 – FINAL INSTALLATION REVIEW, TO BE PERFORMED ONCE MAJORITY OF THE STRUCTURE IS INSTALLED.

2. ANY DEFICIENCIES NOTED DURING A FIELD REVIEW MUST BE CORRECTED PRIOR TO THE COMPLETION OF THE AFFECTED STAGE OF WORK.

3. ADDITIONAL FIELD REVIEWS MAY BE REQUIRED AT THE DISCRETION OF THE OWNER'S REPRESENTATIVE.

STEEL

1. ALL FABRICATED AND MISCELLANEOUS METAL TO MEET CSA G40.21 GRADE 350AT UNLESS NOTED OTHERWISE.

2. BOLTED CONNECTIONS BETWEEN STEEL COMPONENTS SHALL UTILIZE ASTM A325 TYPE 3 BOLTS OR GALVANIZED ASTM A325 TYPE 1 BOLTS COMPLETE WITH MATCHING NUTS AND WASHERS, UNLESS OTHERWISE SHOWN ON DRAWINGS.

3. FOR OTHER CONNECTIONS BOLTS, NUTS, MALLEABLE IRON WASHERS, LAG SCREWS, ARDOX SPIKES AND NAILS, SHALL BE HOT DIP GALVANIZED FOR EXTERIOR USE. NAILS AND SPIKES TO CONFORM TO CSA B111-1974, S406-92. BOLTS AND NUTS SHALL CONFORM TO ASTM A307.

4. WELDING SHALL BE IN ACCORDANCE WITH CSA W59 BY FABRICATORS AND ERECTORS CERTIFIED BY THE CANADIAN WELDING BUREAU TO CSA W47.1 (DIVISION 1 OR DIVISION 2).

5. ALL WELDS SHALL BE 6mm FILLET WELD, UNLESS NOTED OTHERWISE.

6. FLANGE TO WEB WELDS TO BE CONTINUOUS, UNINTERRUPTED, UNIFORM WELDS FREE OF ABNORMALITIES THAT COULD RESULT IN STRESS CONCENTRATIONS.

7. WEB TO FLANGE WELDS SHALL BE MADE BY MACHINE OR AUTOMATIC WELDING USING SUBMERGED ARC WELDING, FLUX CORED ARC WELDING OR METAL CORED ARC WELDING.

8. ALL WELD INSPECTIONS ARE TO BE PERFORMED BY A THIRD PARTY COMPANY RETAINED BY THE CONTRACTOR AND CERTIFIED TO CSA W178.2

9. WELDING SHALL BE INSPECTED AS FOLLOWS:
 - FILLET WELDS – MAIN GIRDER FABRICATION (SUB-ARC) – VISUAL – 100%
 - FILLET WELDS – OTHER – VISUAL – 25%
 - CP WELDS – RADIOGRAPHIC OR ULTRASONIC – 100%

10. ANY FAILURES IDENTIFIED BY INSPECTOR SHALL BE CORRECTED AND RE-INSPECTED AT THE CONTRACTORS EXPENSE.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF CAN/CSA A23.1 AND A23.2, LATEST EDITION.

2. CONCRETE MIXES SHALL CONFORM TO CAN/CSA A23.1 AND A23.2 AND SHALL HAVE THE FOLLOWING PROPERTIES:

CLASS	28 DAY STRENGTH	MAXIMUM AGGREGATE SIZE	MAXIMUM SLUMP	AIR CONTENT	EXPOSURE
BALLAST WALLS, SPREAD FOOTINGS	35 MPa	20mm	75mm	4% TO 7%	F-2
INTERLOCKING BLOCKS	25 MPa	20mm	75mm	4% TO 7%	F-2

3. CONCRETE TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH CAN/CSA A23.1 AND A23.2. THE MINIMUM NUMBER OF TESTS PERFORMED SHALL BE AS PER CSA A23.2. ADDITIONAL TESTING SHALL BE PERFORMED AT THE DIRECTION OF THE STRUCTURAL ENGINEER. CONTRACTOR SHALL INCLUDE THE COSTS OF TESTING IN BID AND SHALL RETAIN AN INDEPENDENT TESTING AGENCY, CERTIFIED BY CSA TO DO THE WORK.

4. PROVIDE A 20mm CHAMFER ON ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE.

5. CONCRETE FINISHES SHALL BE IN ACCORDANCE WITH CAN/CSA A23.1.

6. ALL CONCRETE CURING SHALL BE IN ACCORDANCE WITH CAN/CSA A23.1. SPECIAL PRECAUTIONS SHALL BE TAKEN AS NOTED IN CSA A23.1 FOR PLACING AND CURING CONCRETE ABOVE 30° C AND BELOW 5° C.

7. MINIMUM CONCRETE COVER TO REINFORCING SHALL BE 50mm, UNLESS NOTED OTHERWISE.

8. REINFORCING STEEL SHALL CONFORM TO C.S.A. SPECIFICATION G30.18-M, GRADE 400.

9. ALL LIFTING POINTS AND ANCHORS ARE TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN BRITISH COLUMBIA. DESIGN AND SUPPLY OF LIFTING POINTS AND ANCHORS IS THE RESPONSIBILITY OF THE CONTRACTOR AND ARE TO BE INDICATED ON SHOP DRAWINGS FOR APPROVAL BY THE OWNERS REPRESENTATIVE. LIFTING SHALL BE DONE ONLY BY APPROVED LIFTING ANCHORS.

10. THE CONTRACTOR SHALL ENSURE THAT ALL PRECAST MEMBERS ARE CHECKED FOR STRIPPING AND HANDLING STRESSES.

11. PRE-CAST CONCRETE SHALL BE IN ACCORDANCE WITH CSA A23.4, LATEST EDITION

12. PRECAST CONCRETE INTERLOCKING BLOCKS:
 - MUST BE CAST MONOLITHICALLY WITH NO COLD JOINTS.
 - MUST HAVE A SMOOTH FINISH ON ALL EXPOSED SURFACES IN ACCORDANCE WITH CAN CSA A23.4 SECTION 24.2.5 GRADE A.
 - SIZE: 1500mm LONG x 750mm WIDE x 750mm TALL (NOT INCLUDING SHEAR KEYS). HALF BLOCKS WILL BE 750mm LONG.
 - SHEAR KEYS WILL BE INTEGRAL ON ALL BLOCKS UNLESS NOTED OTHERWISE.
 - ALL DIMENSIONS TO BE ± 10mm. ALL EDGES TO BE SQUARE.
 - ALL SURFACES TO BE FLAT WITHIN 3mm.
 - BLOCKS MUST INCORPORATE SUITABLE LIFTING DEVICE.
 - BLOCK EDGES TO BE CHAMFERED.

TIMBER

1. ALL NEW TIMBER TO CONFORM TO CSA-O141
"SOFTWOOD LUMBER" TIMBER GRADES AND SPECIES AS FOLLOWS:

MEMBER	SPECIES	GRADE
POSTS (R4S)	DOUGLAS FIR	GROUP A No. 1, OR BETTER
RAILS (S3S)	DOUGLAS FIR	GROUP A No. 1, OR BETTER
DECKING (S1S)	CEDAR	GROUP A No. 1, OR BETTER
(NOTE FOR DECKING: SURFACED SIDE=CUP SIDE=U/S OF DECK)		

2. ALL TIMBER CONSTRUCTION, DETAILS AND FASTENINGS SHALL CONFORM FULLY TO CSA O86, CURRENT EDITION.

3. PRE-DRILL ALL BOLT AND LAG SCREW SHANK HOLES (BUT NOT LEAD HOLES). BOLT HOLES SHOULD BE FULL LENGTH AND SIZE FOR MACHINE BOLTS. LEAD HOLES FOR LAG SCREWS MUST BE PRE-DRILLED 5mm LESS THAN NOMINAL SCREW DIAMETER.

4. NAILING STRIPS TO BE HDPE MATERIAL, BROWN IN COLOR. CONTRACTOR TO SUBMIT MATERIAL SPECIFICATIONS WITH BID.

ADHESIVE ANCHORS

1. ALL ANCHORS ARE TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

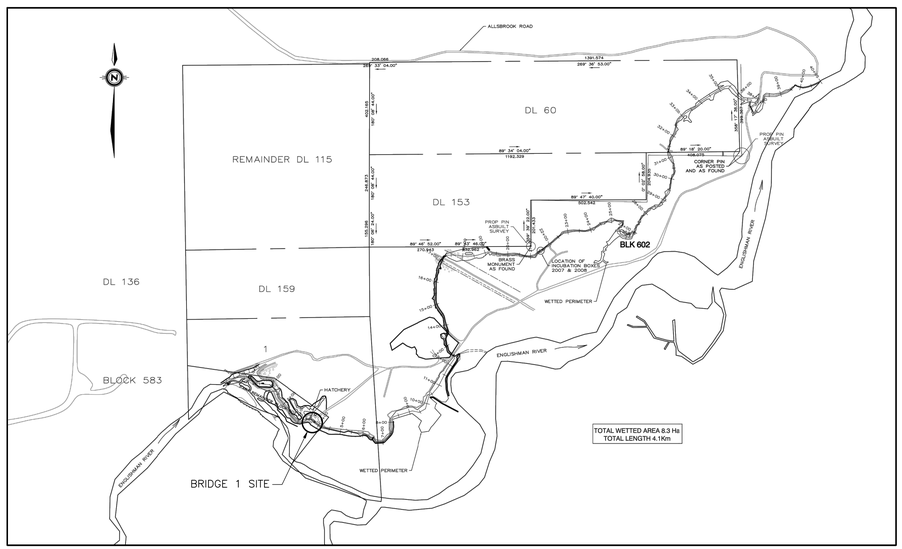
2. UNLESS NOTED OTHERWISE ADHESIVE ANCHORS SHALL BE HILTI 'HAS' ROD. REFER TO DRAWINGS FOR ANCHOR LOCATIONS, SIZES, CENTRES AND EMBEDMENT LENGTH. USE HILTI HY200 MAX OR HILTI HIT RE500 ADHESIVE AS NOTED BELOW.

 USE HILTI HIT HY200 MAX WHEN;
  A QUICK CURE IS REQUIRED, CONDITIONS ARE DRY, HOLES ARE HAMMER DRILLED, HOLES ARE NOT OVER-SIZED, BASE MATERIAL TEMPERATURE IS ABOVE 5° CELSIUS.

 USE HILTI HIT RE500 WHEN;
  EXTENDED WORKING TIME IS REQUIRED AND CURE TIME IS NOT CRITICAL, HOLES ARE DRILLED USING DIAMOND CORE, PNEUMATIC OR HAMMER DRILLS, DEEP EMBEDMENT IS SPECIFIED, THE APPLICATION IS UNDERWATER, OR HOLES ARE OVERSIZED.

3. HOLES FOR ADHESIVE ANCHORS SHALL BE CLEANED OUT WITH HIGH PRESSURE AIR AND THEN A BRUSH PRIOR TO ANCHOR INSTALLATION.

4. INSTALLERS OF HILTI PRODUCTS SHALL HAVE RECEIVED TRAINING BY HILTI (CANADA) CORP. IN THE USE OF THE SPECIFIED PRODUCTS. THE GENERAL CONTRACTOR SHALL PROVIDE THE DESIGN ENGINEER WITH A LETTER STATING THAT THIS TRAINING HAS BEEN COMPLETED.



KEY PLAN
N.T.S.

LIST OF ABBREVIATIONS

ALT	---	ALTERNATE
B/S	---	BOTH SIDES
C/W	---	COMPLETE WITH
℄	---	CENTRE LINE
CLR	---	CLEAR
CIP	---	CAST IN PLACE
CONC	---	CONCRETE
COL	---	COLUMN
CONT	---	CONTINUOUS
CP	---	COMPLETE PENETRATION
DWG	---	DRAWING
E/F	---	EACH FACE
E/S	---	EACH SIDE
ELEV	---	ELEVATION
E/W	---	EACH WAY
FF	---	FAR FACE
GALV	---	GALVANIZED
HORIZ	---	HORIZONTAL
LG	---	LONG
LL	---	LIVE LOAD
LLH	---	LONG LEG HORIZONTAL
LLV	---	LONG LEG VERTICAL
L/W	---	LONG WAY
MAX	---	MAXIMUM
MIN	---	MINIMUM
No	---	NUMBER
NTS	---	NOT TO SCALE
o/c	---	ON CENTRE
OPP	---	OPPOSITE
PL	---	PLATE
PT (LUMBER)	---	PRESSURE TREATED
REINF	---	REINFORCE(MENT)
STL	---	STEEL
SIM	---	SIMILAR
THK	---	THICK
T.O.	---	TOP OF
TYP	---	TYPICAL
U/S	---	UNDERSIDE
UNO	---	UNLESS NOTED OTHERWISE
VERT	---	VERTICAL
WP	---	WORK POINT

ISSUED FOR TENDER

ISSUES

No.	DATE YYYY.MM.DD	ISSUED FOR
A	2021.04.07	CLIENT REVIEW
B	2021.05.21	CLIENT REVIEW
C	2021.06.11	TENDER

SUB CONSULTANT

DRAFTED PHU
DRAFTING REVIEW JJMC
DESIGNED MGCS
DESIGN REVIEW CDW

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ENGINEERS SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M.C.G. SEYD #26013 REGISTERED PROFESSIONAL ENGINEER
2021/06/11

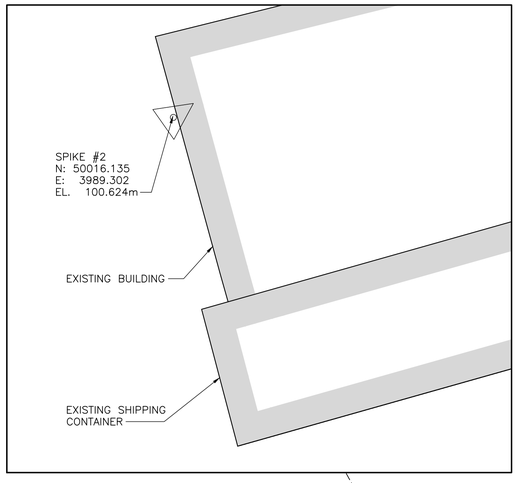
GENERAL NOTES

ENGLISHMAN RIVER HATCHERY PEDESTRIAN BRIDGES

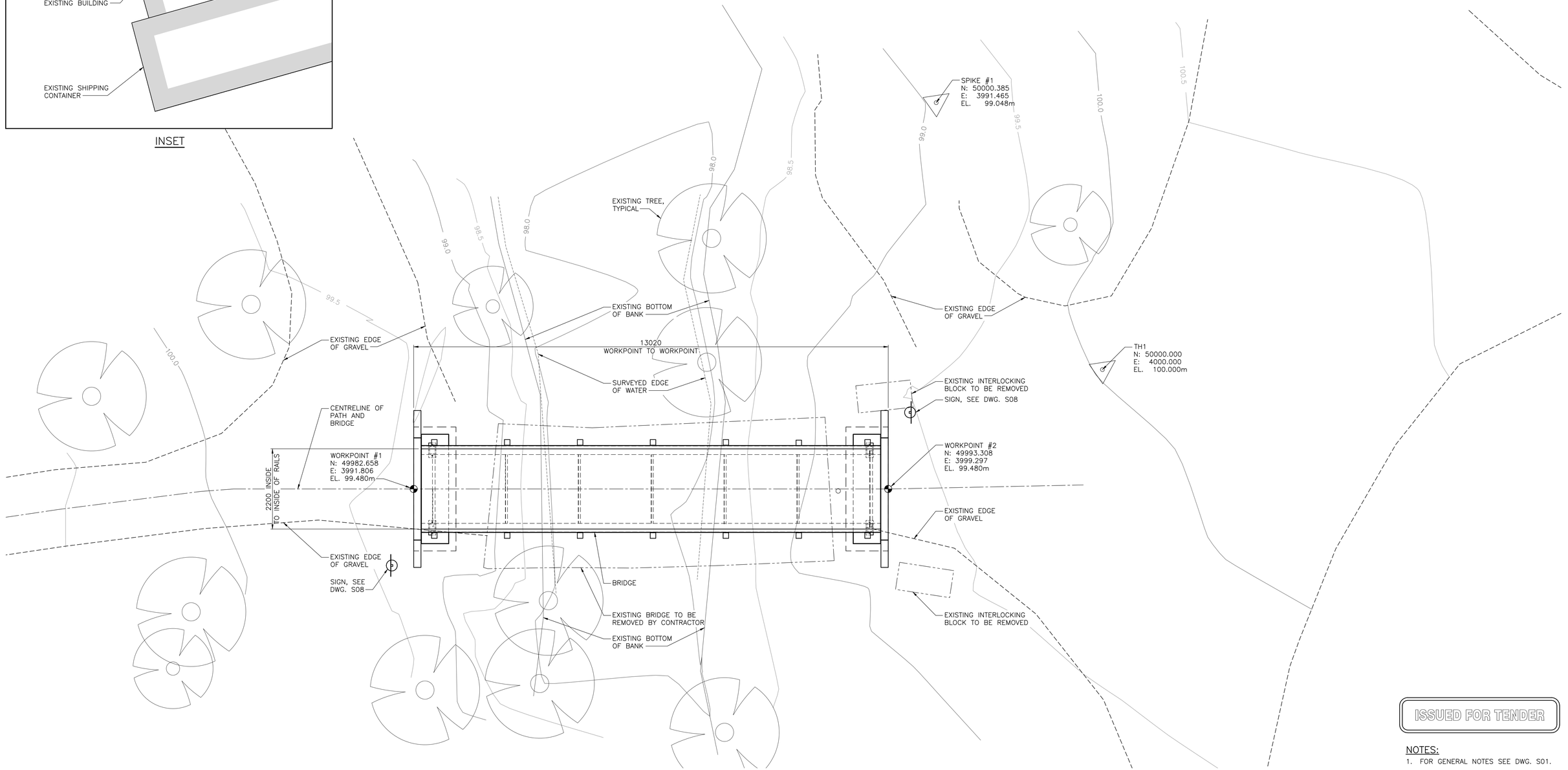
PARKSVILLE
REGIONAL DISTRICT OF NANAIMO

HEL PROJECT No. 0837-080	CLIENT DWG. No. N/A
SCALE NONE	PERMIT No. N/A
HEL DRAWING No. S01	REVISION C

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION



INSET



ISSUED FOR TENDER

NOTES:

1. FOR GENERAL NOTES SEE DWG. S01.

ISSUES								
No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR
A	2021.04.07	CLIENT REVIEW						
B	2021.05.21	CLIENT REVIEW						
C	2021.06.11	TENDER						

SUB CONSULTANT

DRAFTED: PHU
DRAFTING REVIEW: JJMC
DESIGNED: MGCS
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ENGINEERS SEAL: PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, M.C.G. SEYD, #26015, 2021/06/11

GENERAL ARRANGEMENT - BRIDGE 1

ENGLISHMAN RIVER HATCHERY PEDESTRIAN BRIDGES

PARKSVILLE

REGIONAL DISTRICT OF NANAIMO

HEL PROJECT No.	CLIENT DWG. No.
0837-080	N/A
SCALE: 1:50	PERMIT No.: N/A
HEL DRAWING No.: S02	REVISION: C

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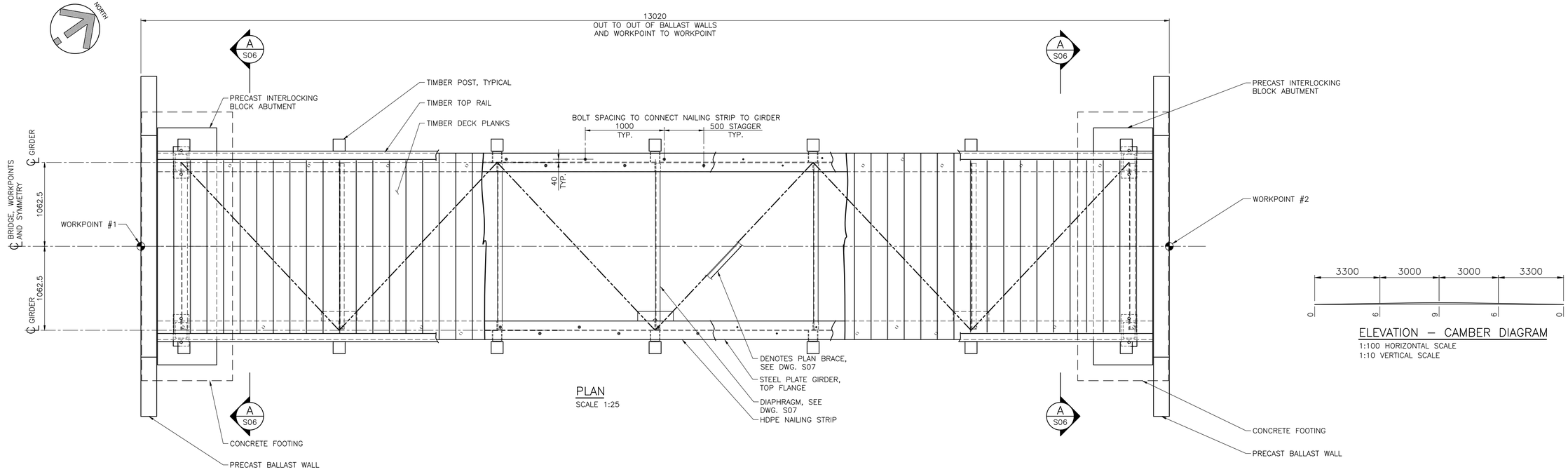

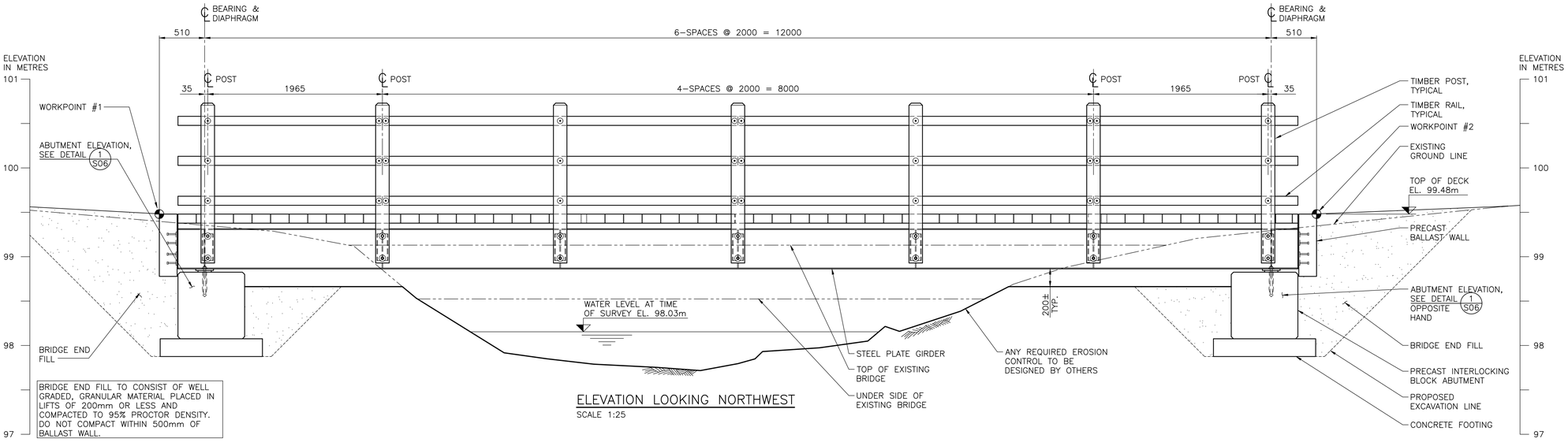

ELEVATION LOOKING NORTHWEST
SCALE 1:25

ISSUED FOR TENDER

NOTES:
1. FOR GENERAL NOTES SEE DWG. S01.

ISSUES								
No.	DATE YYY.MM.DD	ISSUED FOR	No.	DATE YYY.MM.DD	ISSUED FOR	No.	DATE YYY.MM.DD	ISSUED FOR
A	2021.04.07	CLIENT REVIEW						
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C	2021.06.11	TENDER						

SUB CONSULTANT

DRAFTED	PHU
DRAFTING REVIEW	JJMC
DESIGNED	MGCS
DESIGN REVIEW	CDW

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ENGINEERS SEAL
PROFESSIONAL ENGINEER
M.C.G. SEYD
#29013
PROVINCE OF BRITISH COLUMBIA
2021/06/11

BRIDGE 1
- PLAN AND
ELEVATION

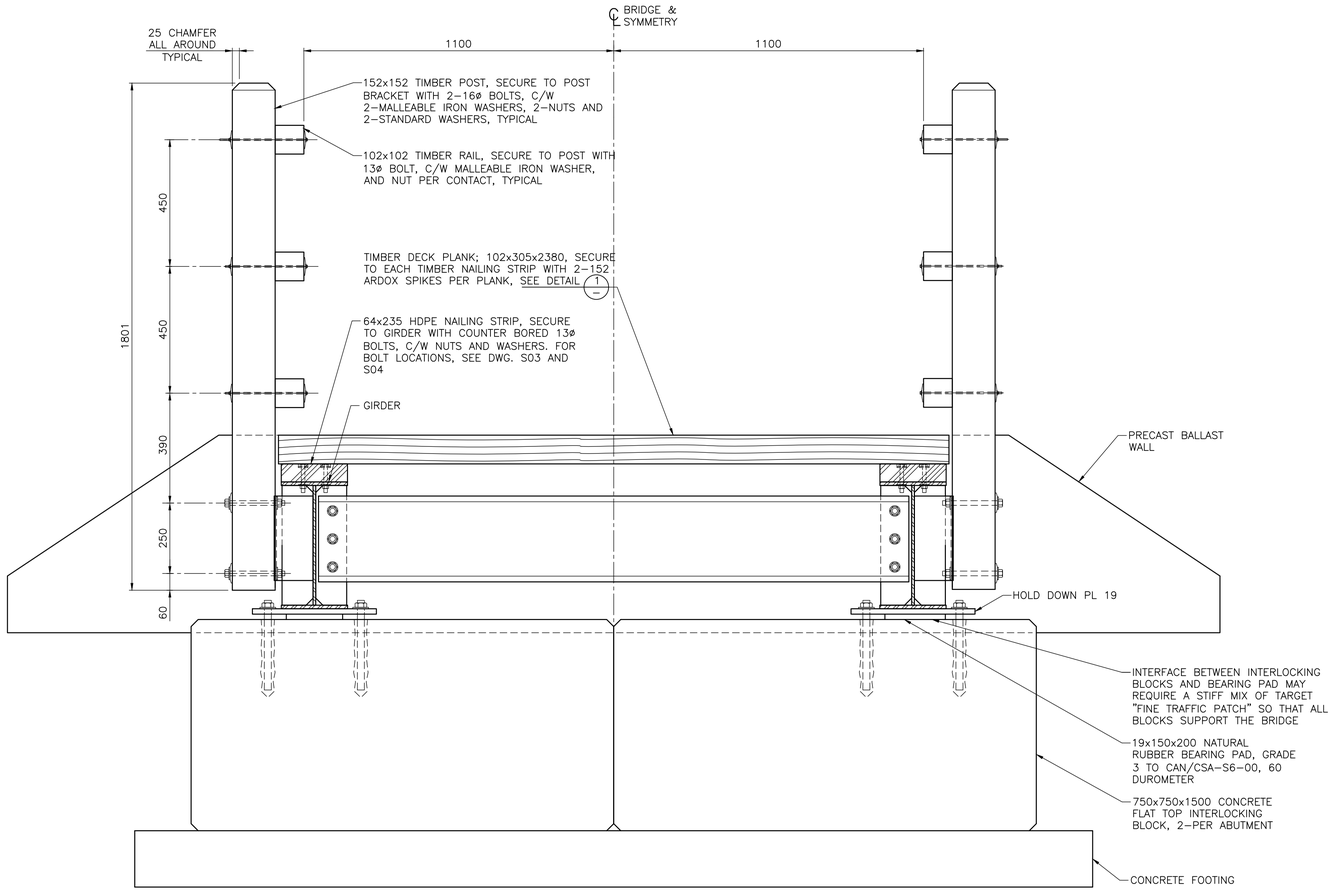
ENGLISHMAN RIVER HATCHERY PEDESTRIAN BRIDGES

PARKSVILLE

REGIONAL DISTRICT OF NANAIMO

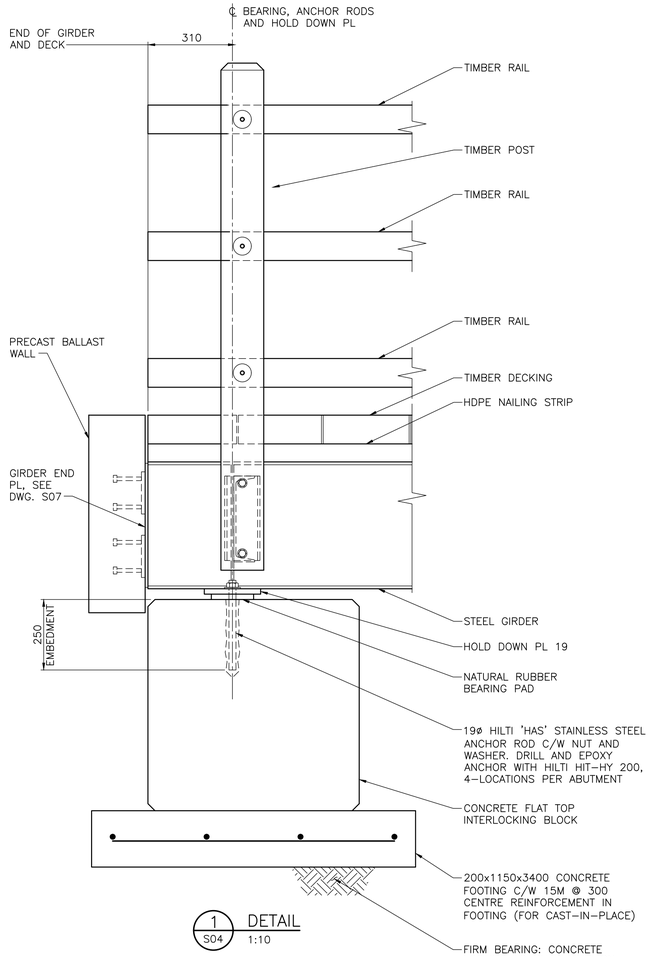
HEL PROJECT No. 0837–080	CLIENT DWG. No. N/A
SCALE AS SHOWN	PERMIT No. N/A
HEL DRAWING No. S04	REVISION C

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION

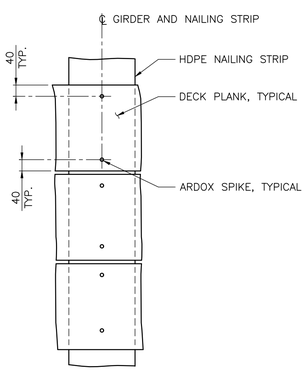


A / S04 SECTION
1:10

CONCRETE FOOTING MAY BE EITHER CAST–IN–PLACE OR PRECAST. PRECAST FOOTING TO HAVE EQUIVALENT REINFORCEMENT TO CAST–IN–PLACE FOOTING MINIMUM WITH ADDITIONAL REINFORCEMENT REQUIRED FOR LIFTING DESIGNED BY SUPPLIER.



1 / S04 DETAIL
1:10



1 / – DETAIL – PLAN
1:10

ISSUED FOR TENDER

NOTES:
1. FOR GENERAL NOTES SEE DWG. S01.

ISSUES								
No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR
A	2021.04.07	CLIENT REVIEW						
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C	2021.06.11	TENDER						

SUB CONSULTANT

DRAFTED PHU
DRAFTING REVIEW JJMC
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DESIGN REVIEW CDW

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2021/06/11

SECTIONS AND DETAILS

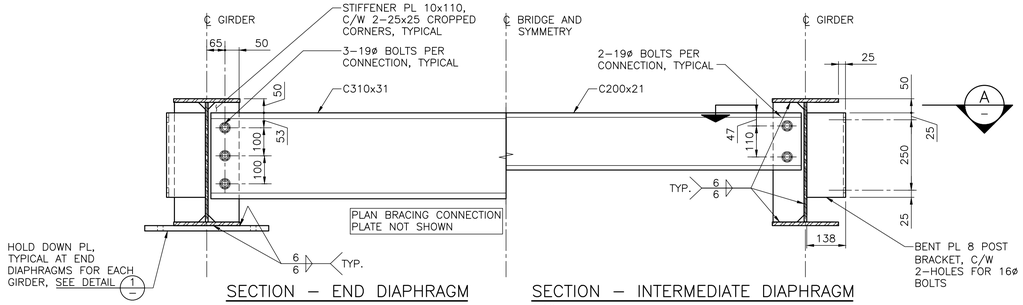
ENGLISHMAN RIVER HATCHERY PEDESTRIAN BRIDGES

PARKSVILLE

REGIONAL DISTRICT OF NANAIMO

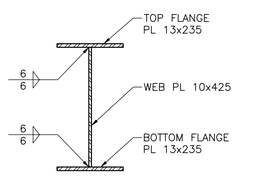
HEL PROJECT No.	CLIENT DWG. No.
0837–080	N/A
SCALE	PERMIT No.
AS SHOWN	N/A
HEL DRAWING No.	REVISION
S06	C

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION

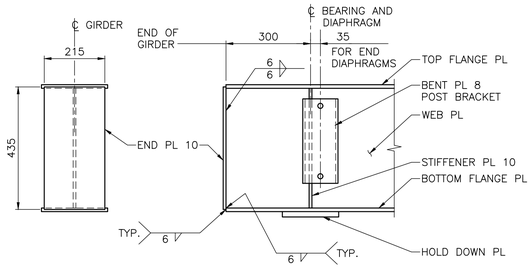


SECTION – END DIAPHRAGM
1:10
NOTE: 2–LOCATIONS AT EACH BRIDGE

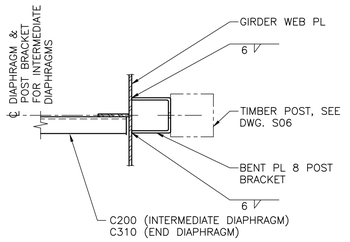
SECTION – INTERMEDIATE DIAPHRAGM
1:10
NOTE: 5–LOCATIONS AT BRIDGE 1 AND 4–LOCATIONS AT BRIDGE 2.



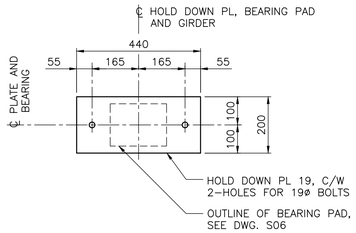
SECTION – PLATE GIRDER
1:10



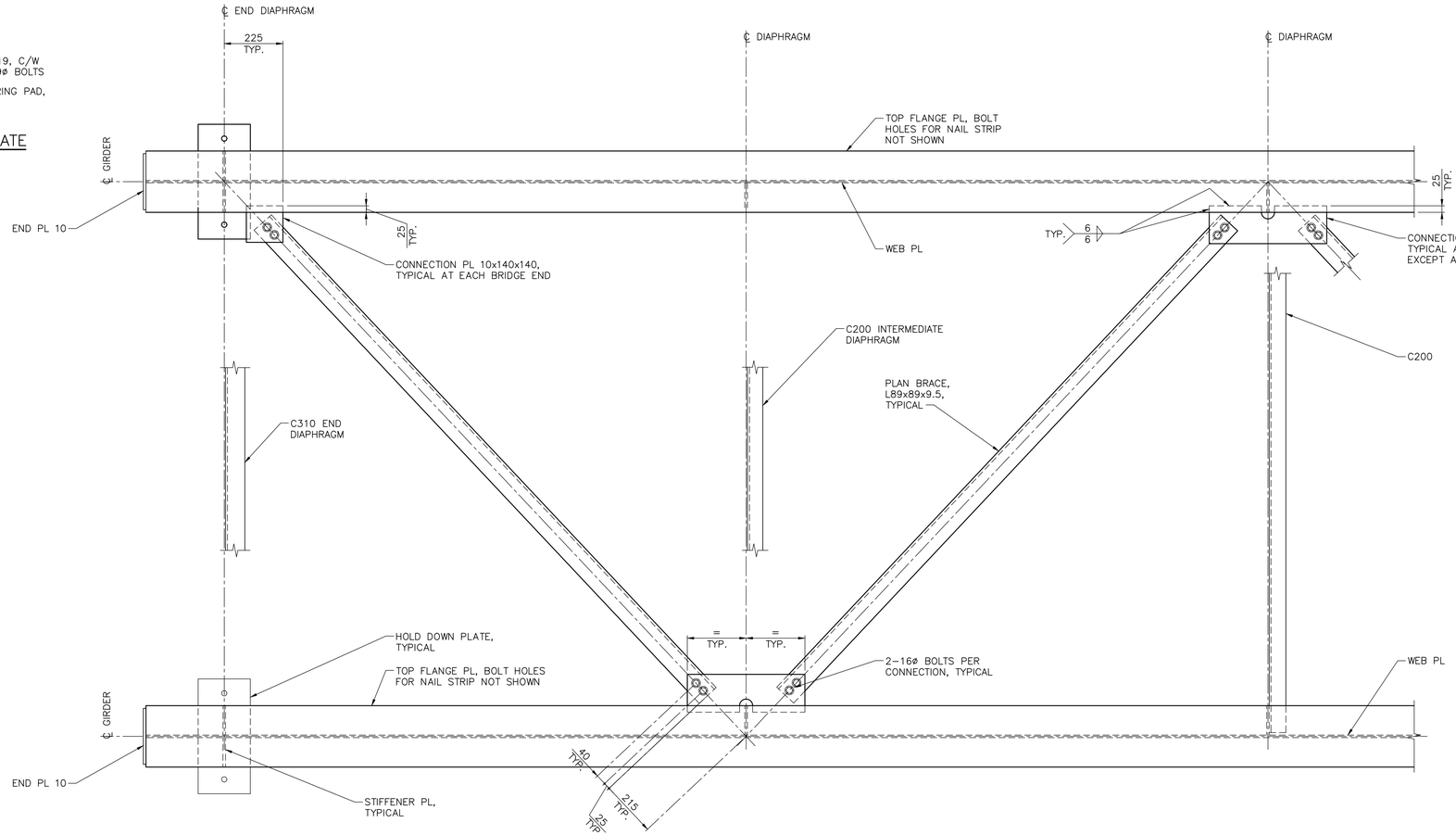
DETAIL – END PLATE
1:10

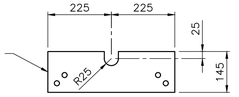


A – SECTION
1:10



1 – DETAIL – HOLD DOWN PLATE
1:10
NOTE: 4–REQUIRED FOR EACH BRIDGE. FOR LOCATIONS, SEE S06.





PARTIAL PLAN – PLAN BRACING
1:10

ISSUED FOR TENDER

NOTES:
1. FOR GENERAL NOTES SEE DWG. S01.

ISSUES								
No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR
A	2021.04.07	CLIENT REVIEW						
B	2021.05.21	CLIENT REVIEW						
C	2021.06.11	TENDER						

SUB CONSULTANT

DRAFTED: PHU
DRAFTING REVIEW: JJMC
DESIGNED: MGCS
DESIGN REVIEW: CDW

HEROLD ENGINEERING
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Tel: 250-751-8558 Fax: 250-751-8559
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ENGINEERS SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
M.C.G. SEYD
#29013
2021/06/11

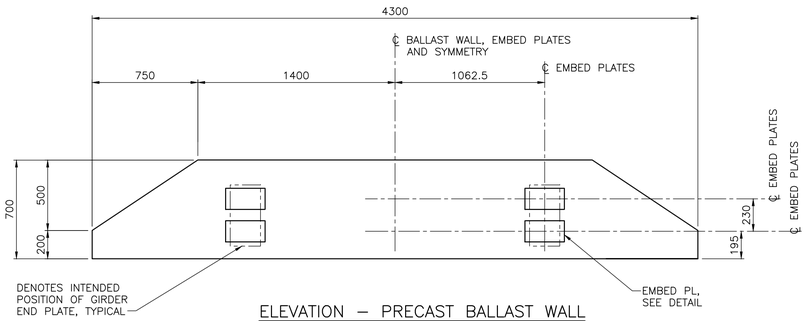
GIRDERS, DIAPHRAGMS AND BRACING

ENGLISHMAN RIVER HATCHERY PEDESTRIAN BRIDGES

PARKSVILLE
REGIONAL DISTRICT OF NANAIMO

HEL PROJECT No.	CLIENT DWG. No.
0837-080	N/A
SCALE: AS SHOWN	PERMIT No.: N/A
HEL DRAWING No.: S07	REVISION: C

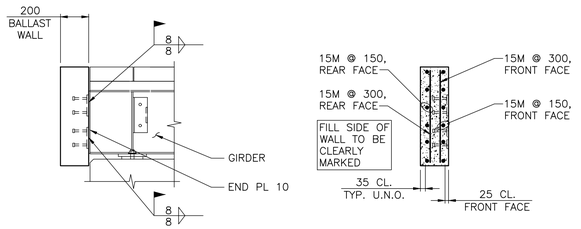
DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION



ELEVATION – PRECAST BALLAST WALL

1:20

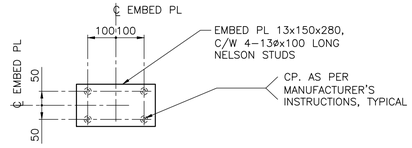
NOTE: 2–REQUIRED FOR BRIDGE 1,
2–REQUIRED FOR BRIDGE 2.



CONNECTION REINFORCEMENT

SECTIONS – BALLAST WALL

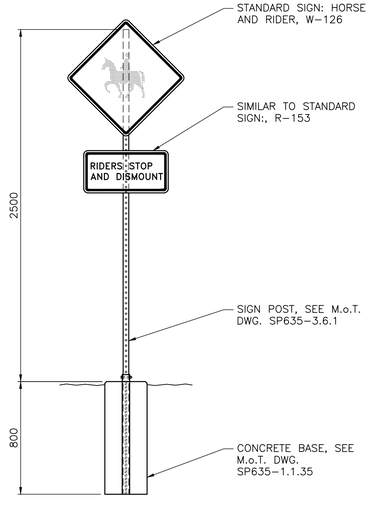
1:20



DETAIL – EMBED PLATE

1:10

NOTE: 4–REQUIRED PER BALLAST WALL.



DETAIL – SIGN

1:20

NOTE: PROVIDE 1–SIGN AT EACH END OF BRIDGE. FOR LOCATIONS, SEE DWG. S02/S03.

ISSUED FOR TENDER

NOTES:

1. FOR GENERAL NOTES SEE DWG. S01.

ISSUES								
No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR	No.	DATE YYYY.MM.DD	ISSUED FOR
A	2021.04.07	CLIENT REVIEW						
B	2021.05.21	CLIENT REVIEW						
C	2021.06.11	TENDER						

SUB CONSULTANT

DRAFTED PHU

DRAFTING REVIEW JJMC

DESIGNED MGCS

DESIGN REVIEW CDW

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ENGINEERS SEAL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M.C.G. SEYD #29013 2021/06/11

PRECAST BALLAST WALLS AND MISCELLANEOUS DETAILS

ENGLISHMAN RIVER HATCHERY PEDESTRIAN BRIDGES

PARKSVILLE

REGIONAL DISTRICT OF NANAIMO

HEL PROJECT No.	CLIENT DWG. No.
0837–080	N/A
SCALE	PERMIT No.
AS SHOWN	N/A
HEL DRAWING No.	REVISION
S08	C

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION

ARCHITECTURAL D 24" x 36"

File: \\Projects\2021-085 Englishman River Hatchery Bridges – 2021\145 Drawings\Latest\0837-080-S08.dwg Plot Time: Jun. 11, 21 8:35 AM User: Peter Lagby

APPENDIX C

ENVIRONMENTAL PROTECTION PLAN

AQUAPARIAN
Environmental Consulting Ltd.

February 9, 2021

Amy Gore
Regional Parks and Trails Planner, Recreation and Parks
Regional District of Nanaimo
1490 Springhill Road
Parksville BC, V9P 2T2

Via Email: agore@rdn.bc.ca

RE: ENVIRONMENTAL PROTECTION PLAN
ENGLISHMAN RIVER REGIONAL PARK BRIDGE REPLACEMENT PROJECT

1.0 INTRODUCTION

Aquaparian Environmental Consulting Ltd. (Aquaparian) was retained by the Regional District of Nanaimo (RDN) to complete an Environmental Impact and Remediation Assessment (EIA) for a proposed bridge replacement in the Englishman River Regional Park located in Electoral Area G of the RDN. The bridge to be replaced is located along the C.W. Young side channel of the Englishman River near the fish hatchery. The following Environment Protection Plan (EPP) is intended to provide the contractor with environmental protection measures that can avoid or mitigate accidental impacts to the stream (i.e. water quality, fish habitat) or the forest while completing specific tasks for this project. The EPP is to be considered as a living document that may need to be amended to include and/or meet any terms and conditions that may be imposed by permits, licenses, or other approvals or as a result of design changes. This document is intended to support the Environmental Impact Assessment report but has been formatted as a stand-alone document that is to be provided to the construction contractor awarded to carry out the project. The General Contractor shall be required to review and have a copy of this document on site at all times during the construction of the project. The EPP has been created to mitigate potential environmental impacts during the construction phase of the project.

2.0 ENVIRONMENTAL MONITOR ROLES AND RESPONSIBILITIES

Environmental monitoring is expected to be completed on a part time basis. High risk activities such as potential concrete pouring for bridge footings will be monitored full time during pouring while regular inspection for erosion and sediment control during construction of bridge abutments will be limited to part time inspections. The role of the Environmental Monitor (EM) is

to inspect, evaluate and report on the compliance and effectiveness of work practices and environmental protection and mitigation procedures as identified in this EPP and associated permits or approvals and to recommend and oversee improvements to the plan as necessary.

The EM shall have the authority to advise the contractor(s) to modify or halt construction operations that conflict with safe environmental practices and procedures. Mitigation measures include general objectives related to environmental protection and a site specific action plan to control impacts to fish and wildlife during construction activities.

The contractor shall review this EPP document prior to start of the project. The EM will hold a pre-construction meeting with the construction crew(s) to review environmental protection requirements identified within this document and all associated regulatory documents. During the construction phase of the project, the EM will have the primary responsibility to confirm that environmental management measures, controls and specifications are implemented in accordance with the EPP and are operating in compliance with terms and conditions of regulatory permits and approvals and Industry Best Management Practices (BMPs).

2.1 ROLES AND RESPONSIBILITIES OF THE EM

Roles and responsibilities of the EM include, but are not limited to the following:

- Have an understanding of all aspects of the project including the contract documents, project-related authorizations, agency guidelines and other documents, and confirm if all mitigation measures contained within are being appropriately implemented;
- Review the contractor's work plans to confirm if the conditions of the EPP are met, and make recommendations to address any deficiencies;
- Monitor contractor work activities as required and be on call should an emergency arise. A monitoring report is to be generated following every site inspection documenting project activities, mitigation measures and any recommendations made. Site photographs are to be included;
- Consult with the construction Project Manager should a Work Stoppage be necessary if environmental protection is compromised;
- Inventory contents of Emergency Spill Kits and confirm if they are appropriately stocked and maintained;

- Monitor on-site equipment and machinery for oil or fuel leaks and follow-up any repairs prior to machinery being mobilized on site;

- Complete Environmental Incident Reports (EIR) when required. The EM or project manager is to observe, document and report spills and spill cleanup and contact appropriate authorities (i.e. Emergency Management BC (EMBC)) in the event of an environmental incident or development of unforeseen site conditions with potential for serious environmental degradation; and,

- Review contractor final site cleanup.

2.2 CONTRACTOR ENVIRONMENTAL REPONSIBILITIES

The contractor's environmental responsibilities include:

- Be completely familiar with mitigation measures outlined in this EPP document;

- Implement and maintain mitigation measures to meet the objectives identified in this report;

- Frequent inspection of equipment for wear and leaks;

- Spill prevention and management, waste management and disposal;

- Maintain supplies of emergency spill management equipment and crew response training;

- Report spills to the EM and other relevant personnel/agencies as per the Spill Reporting Procedure (SRP); and,

- Work with the EM if additional measures are necessary to meet the guidelines set out in this report.

2.3 ENVIRONMENTAL INCIDENT REPORTS (EIR)

Spill prevention and emergency response procedures shall be communicated to all construction crew at the start of the project and thereafter at regular intervals throughout the contract. The EM will be required to report environmental incidents, including non-compliance issues to the

Project Manager and to external agencies such as EMBC if required by the nature of the incident within 24 hours.

An environmental incident is one that has caused, or has the potential to cause, one or more of the following:

- Environmental damage;
- Adverse effects to fish, wildlife or other environmental resources;
- Adverse publicity with respect to the environment; and,
- Legal action with respect to violation of statutes or environmental damage.

Examples of an environmental incident include, but are not limited to:

- Spills of oil, hydraulic fluid or other hazardous chemicals; and,
- Discharges of deleterious substances into the freshwater environment.

An emergency contact list is to be generated by the contractor at the beginning of the project and the list is to be kept onsite and available to all crew members in the event of an emergency.

For incidents that pose a threat to the environment or human safety as identified by the *Environmental Management Act* Spill Reporting Regulation, the first external call shall be made to the EMBC (formerly PEP) 1-800-663-3456 (24 hour).

The Project Manager or EM (if on site) should be notified as early as possible following an incident and the spill must be documented by Environmental Incident Report (EIR). In addition, it may be necessary in some situations for the EM to notify regulatory agencies with respect to environmental incidents. Agency reporting requirements are provided in Table 1 and shall be included in any Spill Prevention and Emergency Response documentation prepared for the project.

TABLE 1. SPILL REPORTING MATRIX

Substance	Quantity	External Reporting Requirements	Internal Reporting Requirements
Any spill into water	**Any**	**EMBC**	**EIR**
Oil & waste oil	>100L	EMBC	EIR
Oil with >50ppm PCB	>1kg	EMBC	EIR
Flammable or non- flammable gas	10kg	EMBC	EIR
Toxic or corrosive waste	>5kg	EMBC	EIR
Hazardous waste	>5L	EMBC	EIR

Where a spill occurs, the person who immediately before the spill had possession, charge or control of the spilled substance shall take all reasonable and practical action, having due regard for the safety of the public and of himself or herself, to stop, contain and minimize the effects of the spill. Environmental incidents are to be reported to the project team within 24 hours.
The incident report is to include the following information:

(a) The reporting person's name and telephone number,

(b) The name and telephone number of the person who caused the spill,

(c) The location, date and time of the spill,

(d) The type and quantity of the substance spilled,

(e) The cause and effect of the spill,

(f) Details of action taken or proposed to comply with Section 3,

(g) A description of the spill location and of the area surrounding the spill,

(h) The details of further action contemplated or required,

(i) The names of agencies on the scene, and

(j) The names of other persons or agencies advised concerning the spill.

3.0 ENVIRONMENTAL PROTECTION PLANS (EPPS)

3.1 GENERAL ENVIRONMENTAL PROTECTION MEASURES

- Aquaparian will be monitoring on a part-time basis for all activities with a risk to the freshwater environment, primarily for activities around the HWM. The EM is to conduct a project start-up meeting with the contractors to review requirements of this EPP and verify environmental protection equipment is on site including spill prevention kits, filter fabric, site safety signage, hazardous material storage, garbage storage, permits etc;

- Inspect and verify all equipment is in good working order, clean and free of leaks prior to mobilizing on site;

- Store food and food waste in a secure container during works and remove off site when personnel are not on site to prevent attracting wildlife;

- Prepare a plan to remove equipment, fuel supplies and/or waste materials from the forest and project area at night to prevent wildlife from accessing it or causing a spill;

- Complete regular inspection of the emergency response plan and spill containment / recovery equipment, and spill response training programs;

- Inspection of the effectiveness of contractor's construction waste management program;
- Completion of monitoring reports and incident reports as necessary;
- Hazardous waste material generated in the course of the project (oil adsorbent pads, oily & grease covered rags, containers, etc.) shall be disposed of in compliance with hazardous waste regulations; and,
- A Spill Response Plan and Emergency Response Plan are to be developed by the contractor and kept in the site foreman's vehicle.

3.2 EXCAVATION OF SOILS AND VEGETATION REMOVAL

- No tree clearing is planned and if vegetation removal is required, it is expected to be minimal or potentially minor pruning. If more extensive clearing is required, it should be done outside of the migratory bird nesting season (March 1 – August 15). If not, a nesting survey should be completed within a week of the proposed clearing date, preferably no more than three days prior;
- Sediment and erosion control measures are to be put in place during removal of the existing bridge as it is surfaced with fill/soils and during earthworks required to prepare the site for the bridge abutments. This includes the following measures:
  - Earthworks are to be completed in dry weather whenever possible;
  - If soil stockpiles are to be stored for periods of time, they should be positioned at least 15m away from the stream and protected from erosion during heavy rain i.e. covered with poly or tarp; and,
  - A silt fence may be necessary at the toe of slope of the stream banks where the bridge removal and abutment work will occur to prevent sediment migration into the stream. It may also be necessary to cover exposed soils on the stream bank with poly sheeting or straw overnight or over weekends if heavy rain is forecast.
  - Upon completion, exposed soils should be covered with grass seed and straw or composted bark mulch or planted with native vegetation immediately to protect the stream banks from erosion.

3.3 SPILL PREVENTION & REPORTING

Aquaparian assumes construction will require the use of heavy equipment (excavator) and potentially small power tools such as a chain saw. No equipment is to enter the stream during construction.

- The contractor is to have Spill Prevention & Reporting procedures and Emergency Response Plan in place prior to the start of works;
- All work will be conducted in a manner that does not result in the deposit of a toxic or deleterious substance into the waters frequented by fish;
- Equipment fueling (if necessary) is to be completed in the upland away from the stream;
- Gerry cans of fuel will (if used) be stored in a Rubbermaid tub with a tight-fitting lid when not in use to prevent spillage;
- The Environmental Monitor (EM) is to be made aware of all fuel, oil and */* or chemical spills that occur during the project;
- Containment, recovery and clean-up procedures are to be in place prior to the start of work;
- At least one spill containment boom should be on site for immediate deployment into the stream in case of accidental spill; and
- If a fuel or hydraulic oil spill occurs, the operator of the machine or equipment shall stop work immediately, address the immediate containment and clean-up of the spill and undertake the repair or replacement of the machinery before work is allowed to continue. The following spill response procedure is to be followed:

1. MAKE THE AREA SAFE
2. STOP THE FLOW (when possible)
3. SECURE THE AREA
4. CONTAIN THE SPILL
5. NOTIFY/REPORT
6. CLEAN-UP
7. SPILL REPORT

1. MAKE THE AREA SAFE

- Evaluate risk to Personal/Public and Environmental Safety;
- Wear appropriate Personal Protective Equipment (PPE);
- Never rush in, always determine the product spilled before taking action;

- Warn people in the immediate vicinity; and,
- Ensure no ignition sources if spill is a flammable material.

2. STOP THE FLOW (when possible and safe to do so)

- Act quickly to reduce the risk of environmental impacts;
- Close valves, shut off pumps or plug holes/leaks; and,
- Stop the flow or the spill at its source.

3. SECURE THE AREA

- Limit access to the spill area; and,
- Prevent unauthorised entry onto the site.

4. CONTAIN THE SPILL

- Prevent spilled material from entering the stream;
- Use spill sorbent material or containment boom to contain the spill;
- If necessary, use a dyke or any other method to prevent any discharge on site; and,
- Make every effort to minimize contamination.

5. NOTIFY/REPORT

- Verbally report all spills to the EM and the Project Manager immediately. All spills to the freshwater environment are to be reported to **EMBC (1-800-663-3456)**.

6. CLEAN-UP

- Determine required cleanup options;
- Mobilize recovery equipment and cleanup crew and direct cleanup activities;
- Dispose of all equipment and/or material used in clean up (e.g., used sorbent, oil containment materials, etc.) in accordance with MFLNRO requirements;
- Accidental spills may produce hazardous wastes (e.g., material with > 3% oil by mass) and contaminated soil. All waste disposals must comply with the *Environmental Management Act* and Regulations; and
- Replenish spill response kits and equipment.

7. SPILL REPORT

- Provide necessary spill details. A spill report should be completed and submitted to the Project Manager within 24 hours of the incident documenting the type and volume of spill, clean up and if external reporting was required; and,
- The EM will have the authority to shut down the work should fish or fish habitat be at risk. If directed by the project manager, the EM will make an external call to EMBC if necessary.

3.4 Concrete Management

It is unknown at this time if the footings of the bridge will require minor concrete pouring or if they will be constructed of pre-cast concrete slabs. In the case that concrete pouring is planned, the following recommendations are provided:

- No uncured concrete or concrete pour water is to enter the stream. High pH caused by uncured concrete is harmful to fish. Manage concrete pours (i.e. bridge and stair footings) to prevent spillage; ensure the concrete forms have tight fitting joints, concrete delivery hoses and chutes have adequate seals to prevent spillage, cover drying concrete with plastic when necessary to protect from rain etc;

- The contractor will be required to have a concrete pouring management plan in place before the pouring takes place in order to mitigate concrete laden pour water from being released to the freshwater environment;

- No concrete equipment / tools are to be washed down near the stream. If necessary, excavate a small pit at least 15 m away from the stream, line it with plastic for waste and wash water. Once the concrete is cured it can be removed from the site. Waste concrete will not be allowed to enter the stream and will be disposed of offsite; and

- Work in dry (no or low precipitation) weather conditions if possible during concrete pours.

4.0 CONCLUSION

This EPP has been formulated using standard environmental protection guidelines and regulations for working within and around a stream. Based on our findings in the Environmental Impact Assessment, the project is not expected to result in a negative impact to fish and fish habitat if all precautions outlined in this document are followed. Additionally, this project is not expected to affect the forest or wildlife habitat if the above precautions are followed.

The contractor(s) will be required to review this document and the Environmental Protection Measures outlined within it prior to the commencement of works. The contractor is to have a copy of this document on site at start-up.

If there are any questions regarding the content of the EPP, please contact the undersigned.

AQUAPARIAN ENVIRONMENTAL CONSULTING LTD.

Prepared by:

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Biologist-in-Training

Reviewed by:

COLLEGE OF APPLIED BIOLOGY
Sarah E. Bonar
R.P. Bio #1947
CAB

Sarah Bonar, B.Sc. R.P.Bio
Senior Biologist / Principal

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5.0 REFERENCES

B.C. Ministry of Environment's A Users Guide to Working In and Around Water - Understanding the Regulation under British Columbia's *Water Act*. 2005. http://www.env.gov.bc.ca/wsd/water_rights/cabinet/working_around_water.pdf

B.C. Ministry of Water, Land and Air Protection. Standards and Best Practices for Instream Works. 2004. http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf

Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia. 2006. http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare2006/develop_with_care_intro.html

Fisheries and Oceans Canada. Land Development Guidelines for the Protection of Aquatic Habitat. 1992. http://www.dfo-mpo.gc.ca/Library/165353.pdf

REGIONAL DISTRICT OF NANAIMO

MANDATORY SITE MEETING SIGN IN SHEET

PROJECT TITLE:	21-054 Englishman River Hatchery Pedestrian Bridge Replacement
MEETING DATE/TIME	June 24, 2021 at 10:00 a.m.
MEETING PLACE	The access gate at 246 Allsbrook Road, Parksville, BC

COMPANY NAME
1. Salish Sea Industrial Services Ltd.
2. Pacific Industrial & Marine
3. Axis Mountain Technical Inc.
4. CMF Construction Ltd.
5.
6.
7.