Project Effects Assessment and Management Plan - Barge Moorage and Chip Transloading Infrastructure Upgrades

Prepared for Amix Marine Services B.C. Ltd.

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Date: September10th, 2020

Executive Summary

Amix Marine Services (the Proponent; a subsidiary of 0813985 B.C. Ltd.) is proposing to upgrade infrastructures at their barge loading facility; including installation of new structures in an over water. Weaver Technical Corp. (WeaverTech) was retained by the Proponent to provide an overview of potential environmental and socio-community effects of the proposed project.

The proposed facility upgrades include:

- Replacement of the current shore-ship woodchip conveyor within a new location (footings, framework, and in water supports).
- Removal of the current loading barge.
- Placement of new pile structures and floating platform to support moorage of a new larger non-permanent transport barge.
- A bridge ramp providing access to the platform and barge from the shore.

The only components of the proposed facility upgrades that will be placed below the high-water mark include three dolphins (~4 m^2): A pile structure consisting of 36” diameter steel pipe piles that will be individually supported by a steel framework and two stand-alone 36” steel pipe piles. There will also be a concrete footing for conveyor placed above the high-water mark with a total area of ~15 m^2. Additional considerations include shading from the new barge, floating platform, and bridge ramp. Though the new barge is larger than the existing permanently moored loading barge, it is expected to be docked temporally during loading thereby reducing the overall shading of the seabed at site.

Due to the very low loss of habitat, the assessment focused on the potential impacts from the infrastructure works. As they were deemed a more relevant risk to aquatic life (i.e. fish, marine mammals, and invertebrates). Best practices, mitigation measures, and monitoring efforts where prescribed to levels where proposed works are not expected to result in harm. The infrastructure upgrades are consistent with the works currently undergoing at the project site and within the overall industrial area and are not expected to result in any impacts to socio-economic interactions or land uses. And, based on the small scope of proposed works no impacts to archeological or heritage resources are expected, though chance find procedures will be followed. Overall, the project is not expected to result in any negative impacts.

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1. Project Overview

Amix Marine Services (the Proponent), affiliated with Riverside Ready Mix Inc. has retained Weaver Technical Corp. (WeaverTech) to provide an environmental effects assessment regarding upgrades to a barge moorage and chip transloading facility. The facility is located on the eastern side of Kaien Island, approximately 2 km from the town of Prince Rupert, BC at 200 Metlakatla Rd. (Figure 1). The facility is operated by the Proponent on an upland lot (the Site; PID: 005778956) fronted by a water lot leased from the crown (Crown Land Lease Number: 29514; PIN: 13423481). The facility receives chips by truck, then loads them onto barges where they are transported to off-site facilities. An overview of the current facility is depicted in Figure 2.

This report provides an in-depth review and assessment of the potential effects resulting from the proposed facility upgrades and outlines recommendations based on the findings by WeaverTech. Recommendations are informed by permitting requirements established by Department Fisheries Oceans Canada (DFO), Transport Canada, and other agencies as required. All recommendations are based on information collected during an onsite assessment (dive survey with videography and review of shoreline imagery) and a desktop study of the environmental and socio-economic impacts related to this project.

Figure 1. Project location on Kaien Island near Prince Rupert, BC and locations of the Upland Lot and Water Lot.

Figure 2. Site plan of the Barge Moorage and Chip Transloading Facility (pre-upgrade).

2. Proposed Construction

The changes to the facility are summarized as follows:

- Addition of a new conveyor with associated footing and support dolphin (four interconnected piles).
- Installation of additional barge mooring supports consisting of two dolphins (single piles).
- Installation of a floating platform (dock) with winch system.
- Addition of ramp to provide foot access to the dock.
- Removal of the existing permanent loading barge.

Technical drawings of the above listed items are present in Appendix A.

The conveyor structure will be 45.4 m in length by ~2.25 m in width and extend out over the water (Figure 3). The conveyor is to be supported by an onshore footing and an in-water support structure (dolphin). The entire conveyor footing will be positioned above the highwater mark (HWM) and is expected to occupy and area of ~15 m^2. The in-water support structure is to be constructed of four 36" steel pipe piles with cross frames.

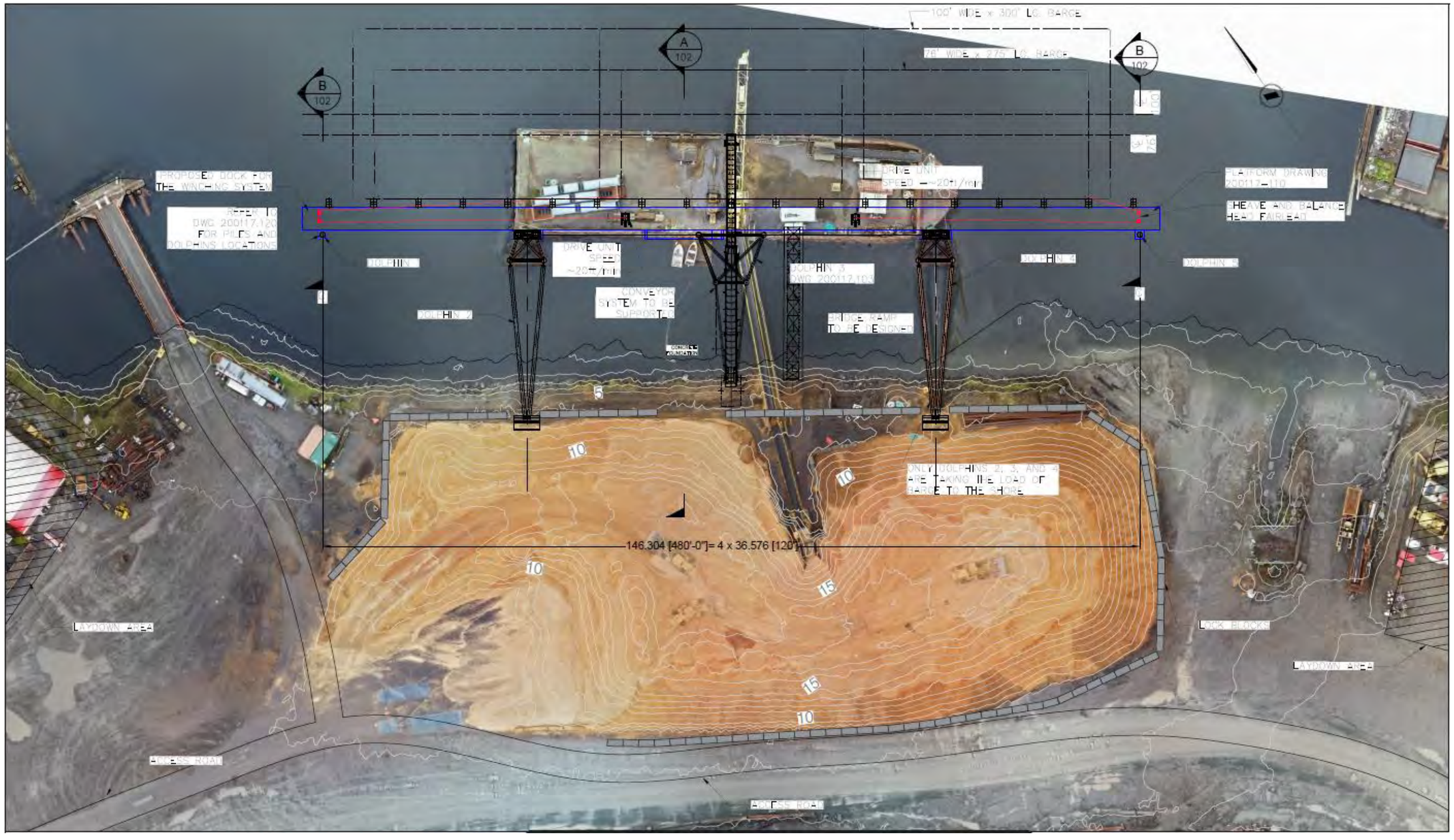
The additional mooring supports include the addition of a) two single 36-inch diameter steel pipe pile located at the outer margins of the berthing infrastructure (labelled Dolphin 1 and Dolphin 5 in Figure 3) and b) addition support arms to one of the existing dolphin structures (Dolphin 2, Figure 3). A footing located above the HWM was previously installed during initial construction for the existing Dolphin 2. As such, no new footing for this component will be required. Overall, the piles will be the only components of the upgrades placed into to substrate below the HWM and will encompass a total footprint of ~4 m^2

The installation of a floating platform (dock) will be included to facilitate lateral barge movement via a winch system to allow distributed barge loading (Figure 3). The dock will be composed of two 1.8 m diameter capped steel tubing topped with a 4.05 m wide grated platform (2"x3/16" galvanized grating) and be connected to the dolphins. It will run the full length of the moorage facility (153 m) and is main purpose is to house the winching system along with providing barge mooring points.

A hinged bridge ramp will be installed adjacent to the conveyor (east of) to provide foot access from shore to the dock and moored barges (Figure 3). The ramp will be constructed of steel grading and will be ~1.2 m wide by ~20 m in length. The ramp footing will consist of a steel plate embedded into the substrate of the shoreline and located above the HWM.

The existing permanent barge will be removed. It will be replaced by a larger transient barge that will be used during transloading operations. The dimensions of the new barge are expected to be ~30.5 m in width x ~91.5 m in length, (100 ft x 300 ft). When in use, the barge will be aligned parallel to the shoreline to maximize utilization of the proposed water lot while minimizing intrusions into the local navigable waters (i.e. Fern Passage).

Figure 3. Plan view of the current and proposed facility infrastructure, including the new woodchip conveyor (footing and supports), barge mooring supports (steel pile dolphins and platform), and docking locations of the new transload barge.



3. Site Assessment

The assessment area for the project included shoreline habitat (above HWM), intertidal habitat, and subtidal habitat, all of which may be impacted by construction and future operations. The area is located within the Fern Passage, on the east side of Kaien Island in an area of shallow waters (Figure 4). The shoreline habitat was documented via a visual assessment completed through the collection and review of photographic imagery. Photographs were collected from specific photopoint locations established to fully capture the habitats present within this area. Representative photographs from these locations are presented in Appendix B.

The intertidal and subtidal habitats were documented by a dive survey, conducted on April 16th, 2020 during a high tide period, by Adams Diving and Marine Services Ltd. This dive survey consisted of a visual assessment of the seabed and local biota as well as videography along five transects (Figure 5). The transects were established in a perpendicular direction from the shoreline, one along each of the proposed new piling locations and one along the route of the proposed conveyor over a length of 40 m.

Figure 4. Local Bathymetry of Project Site (Red Arrow) within Fern Passage. Depths within the Project area range between ~13 to 33 feet.

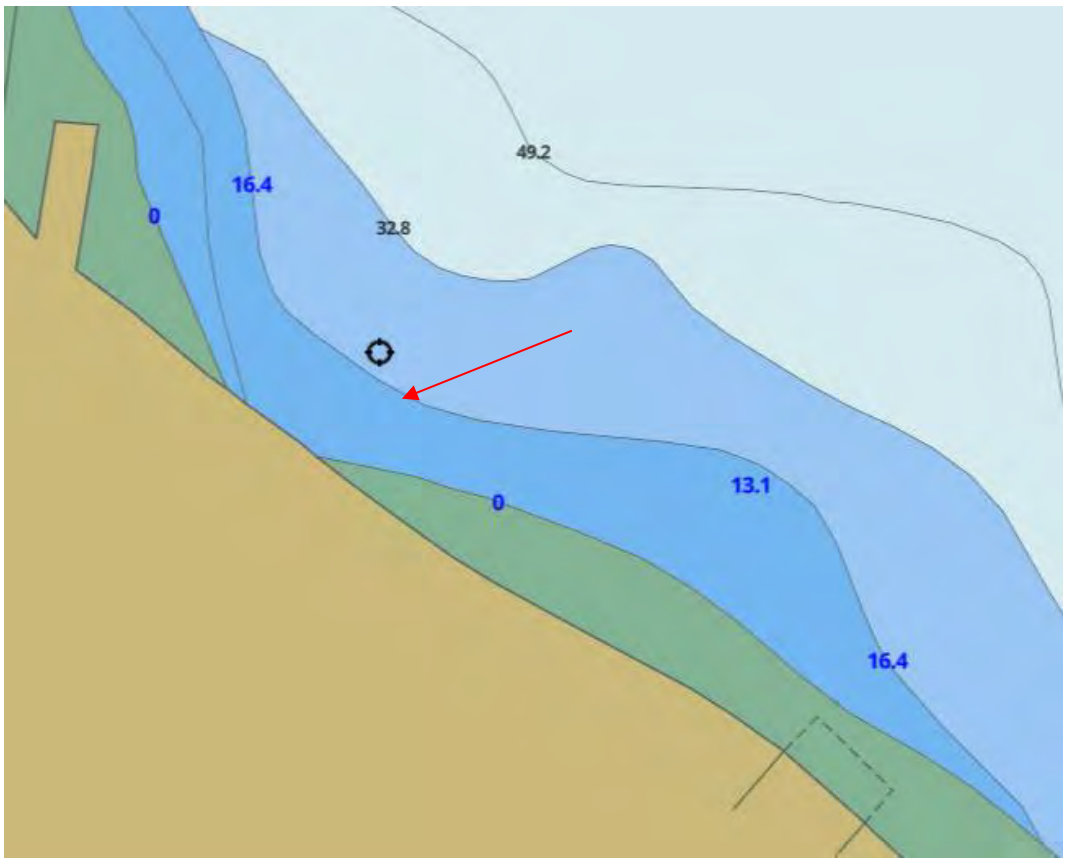
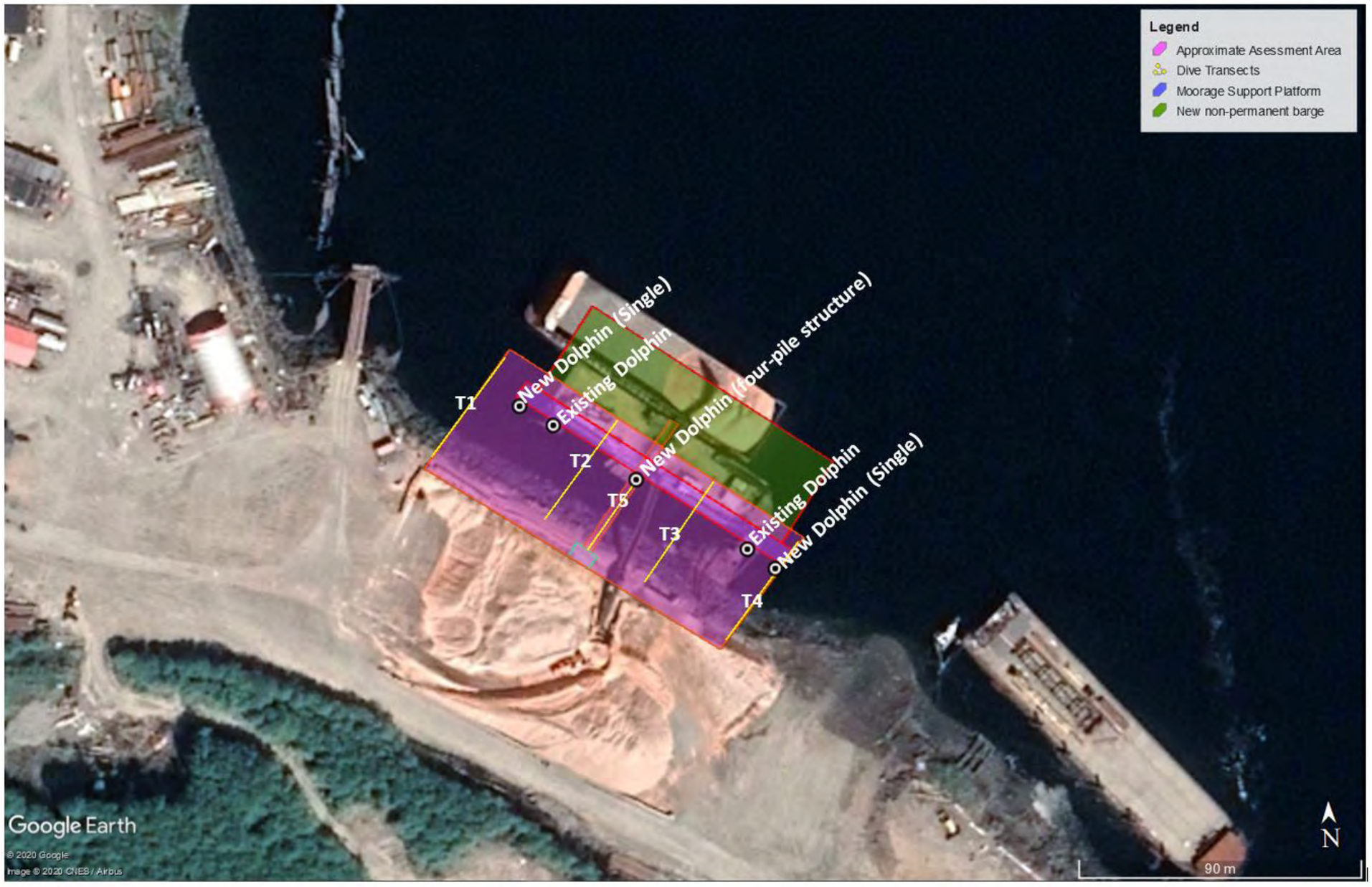


Figure 5. Aerial image showing assessment area and transects conducted during the dive survey in relation to the new infrastructure.



4. Habitat Values

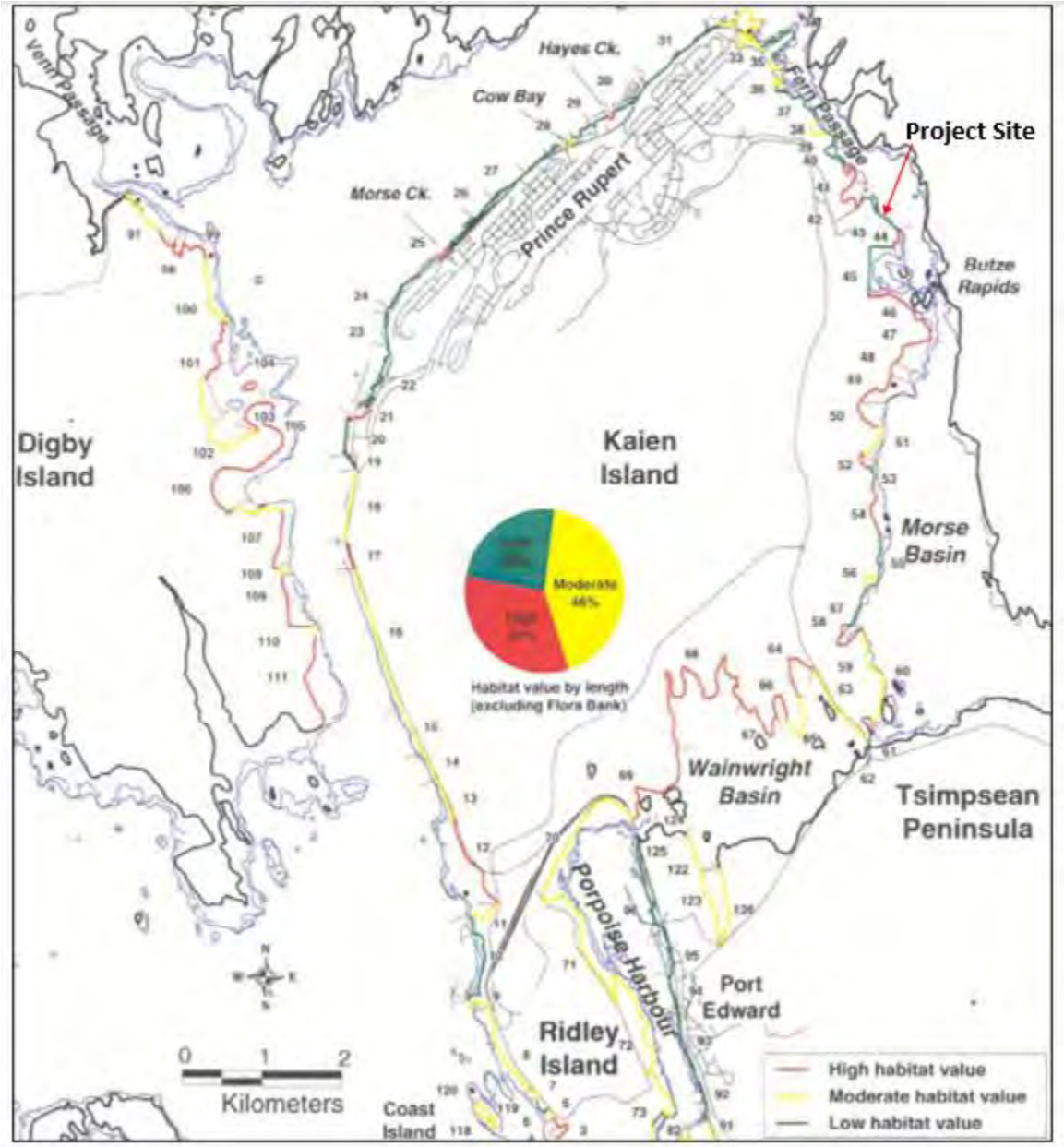
4.1. Shoreline Habitat

The shoreline habitat was observed to be typical of the kind of industrial use of the area, with modified existing shoreline and heavy presence of facility infrastructure and product. Present structures include riprap fortifications of boulders and cobbles and ~125 m of concrete retaining structures (i.e. lock blocks and poured concrete wall) along the shoreline. Photos of the shoreline indicate that the area is comprised mainly of riprap and is void of vegetation (Figure 6; additional photos are presented in Appendix B). The current habitat value was determined to be low.

A low-value habitat designation was assigned to the shoreline of the Site area once before. In 2000, a shoreline characterization and evaluation of the larger Prince Rupert area was completed using various aerial imagery and ground truthing (Ambach M., 2011). Values of High, Moderate, and Low were assigned to Kaien Island and surrounding areas (Figure 7). The Low value areas (including the project area) were described as mainly comprised of filled areas with riprap shorelines and some cobbles present.

Figure 6. Representative Photographs Indicating the Existing Condition of the Shoreline Habitat along the Project Site.

Figure 7. Depiction of the Habitat Designations within the Prince Rupert Harbour Area (Ambach M., 2011). The Habitat Classification System is Based on a High, Moderate, and Low, Designation with the Project Occurring within a Low Value (green) Area.



4.2. Intertidal and Subtidal Habitats

The intertidal habitat is comprised of a steep-sloped hard substrate surface dominated by boulder and cobbles, likely added during shoreline armouring. These hard substrate types provide both a complex physical structure with many interstitial spaces and a source of attachment surfaces for algae and various species of invertebrate. Between some of the

boulders, small patches of gravel and sand substrates have accumulated providing a small amount of meiofauna habitat.

Moving into the subtidal zone, there is a distinct transition to a soft bottom substrate composed of fines (mud and silt) with some sand and gravels. This area was mostly void of algal growth with the exception of minor kelp growth on some small rocks and shells. Invertebrate use of the subtidal area includes a variety of nudibranchs, crustaceans (shrimps and crabs), and echinoderms (sea stars). A summary of the invertebrate species observed during the dive survey is presented in (Table 1). Representative photographs are presented in Figure 8 and Appendix C. Though not observed, infauna species including annelids, bivalves, and burrowing crustaceans are expected to reside in the area. Observations of algae included Fucus, Laminar sp., Alaria sp., and both green and red filamentous algae.

Table 1. Invertebrate Species Documented from the Dive Survey Transects are as Follows:

Transect Number	Species	Number Observed
T1	White Lined-Dirona Nudibranchs (*Dirona albolineata)*.	4
	Shrimp (species unknown).	3
T2	White Lined-Dirona.	7
	Red Rock Crab **(***Cancer productus*).	2
	Sea star (species unknown).	1
T3	White Lined-Dirona.	2
	Red Rock Crab.	3
	Leather Star (*Dermasterias imbricate)*.	1
	Dungeness Crab (*Metacarcinus magister***)**.	1
T4	White Lined-Dirona.	1
	Red Rock Crab.	1

	Leather Star (*Dermasterias imbricate*).	1
T5	Kelp Crab (*Pugettia producta*).	1
	Sea Lemon (*Anisodoris nobilis*).	1
	Shrimp (species unknown).	1

Note: The above information is a summary of information presented in the Dive Survey report prepared by Adams Diving and Marine Services Ltd. included as Appendix C.

Figure 8. Still Images Captured from the Dive Survey Video Showing Rocky Substrate Habitat Near to the Shoreline (top photographs) and Soft Sediment Habitat within the Lower Intertidal and Subtidal Habitat (bottom photographs).

5. Fisheries and Wildlife Resources

5.1. **Fish**

The Prince Rupert area is home to a diverse assemblage of marine and estuarine habitats that support a wide variety of fish species. Those common to the Fern Passage include several species of rock fish, sculpin, flat fish, forage fish, and anadromous salmonids.

Rockfish are a diverse group of marine fish, adults prefer high-relief rocky bottoms in water with depths greater than 10 m (Love et al. 2002). As the habitat in the vicinity of the Site mainly consists of silt and mud with limited rocky substrate occurring with shallow waters, few adult rockfish are likely to occur within the Site area. Juvenile rockfish are known rearing within shallow water habitats (typically bays and estuaries that support large areas of Eelgrass and algal growth). As such, it is possible, that some juveniles may reside within the Site using the riprap and facility structures (barge and pilings) that offer cover.

Sculpins include a taxonomically complex and widespread family of fish in B.C. and are adapted for bottom dwelling lifestyle particularly those of nearshore shallow waters. Similarly, a variety of flatfish species (English sole, Starry flounder, etc.) inhabit coastal shallow waters and have the potential to occurring within the waters of the project area.

Several species of forage fish: Pacific Herring (*Clupea pallasii*), Pacific Sand lance (*Ammodytes personatus*) and Eulachon (*Thaleichthys pacificus*), may utilize the waters of the Site area at different times of the year for spawning and/or rearing. Pacific Herring are likely the most common forage fish species to be encountered within the Site area. The North Coast is home to one of the five major Pacific Herring Stocks in B.C. (Schwiegert et al., 2007). They tend to spawn over intertidal and subtidal vegetation along foreshore areas during March and April (Hart 1988). In the Chatham Sound, the main location for Pacific Herring spawning is on the western side of Digby Island (~44 km west of the Site), which is adjacent to Kaien Island. Recorded herring spawning activity suggests that the majority of herring spawning along the North Coast occurs in areas outside the Site (Fisheries and Oceans Canada 2006). Nevertheless, spawning locations are variable, and the Site may host occasional spawning events though habitat is limited for preferred spawning substrates. Inland waters provide rearing habitats for juvenile herring and other forage fish within surface and mid-water levels it is therefore expect that these fishes may be found at the Site, though typically during late-spring and summer months. Note: further discussion of Eulachon is provided in Section 6.

All five species of Pacific Salmon may be present periodically at the Site. There are several small to medium sized freshwater systems nearby. These include the Shawatlan River, Kloiya River, Taylor Creek, Dudley Creek, and several unnamed creeks (Habitat Wizard, 2020). In addition, the

Nass River and the Skeena River are to the north and south, respectively, and support large populations of most all salmonids. As such, the waters associated with the Site area likely provide both migratory corridors and juvenile rearing habitats.

In addition, Cutthroat Trout (*Oncorhynchus clarkia*) and to a lesser degree Dolly Varden (*Salvelinus malma*) are known to inhabit nearshore habitats. These fish have been reported within the freshwater systems of Kaien Island (Habitat Wizard, 2020) and have been included in potential impact considerations.

5.2. Wildlife - Marine Mammals

Marine mammals have high ecological and socioeconomic importance in coastal B.C. They play key roles in marine food webs and are the focal point of whale-watching and tourism activities. Species common to north coast inlets include Humpback Whales (*Megaptera novaeangliae*), Grey Whales (*Eschrichtius robustus*), Minke Whales (*Balaenoptera acutorostrata*), northern resident and transient Orca Whales (*Orcinus orca*), Harbour Porpoises (*Phocoena phocoena*), Dall's Porpoises (*Phocoenoides dalli*), Pacific White-sided Dolphins (*Lagenorhynchus obliquidens*), Steller Sea Lions (*Eumetopias jubatus*) and Harbour Seals (*Phoca vitulina*) (Spalding 1998, Baird 2001, 2003a, and 2003b). Of these species, only Harbour Seals, Stellar Sea Lions, and Harbour Porpoise are expected to be common within Fern Passage. Intermediate presence of White-sided Dolphins, Orca, Humpback Whales, and Grey Whales is also expected. Sightings of these species were made in previous surveys of the area (Stantec Consulting Ltd., 2011).

6. Species At-risk and Critical Habitats

A review of the Site and surrounding area was conducted to determine the occurrence of any at-risk species or critical habitats. Resources included iMapBC, the DFO Species at Risk Map, the Species at Risk Act data centre, and the British Columbia Conservation Data Centre Red/Blue listings. Results form the searches determined that 10 species have the potential to occur within the Site area. These species are listed and described below in Table 2. A broader list of at-risk species for the North Coast area is presented in Appendix D. No impacts to any of the identified at-risk species are expected from the proposed facility upgrades.

As for critical habitats, Marbled Murrulets (*Brachyramphus marmoratus*) habitat is reported to occur ~ 1 km from the Site area (Figure 9). Marbled Murrelets are a small marine bird that are known to forage along inshore marine environments, primarily in protected waters where both sand lance and surf smelt occur. They travel long distances between at-sea locations and nest sites and require old-growth forest for their nests, which they place high in the trees. For nesting, tree cover with small gaps in the canopy for accessing the nest is required. They do not build nests, but use large limbs covered with deep moss that serve as a platform in which they make a depression for their single egg. It is estimated that a large percentage of old-growth

forests within this species's range has been removed over the last 150 years (Nelson 1997, Campbell et al., 1990, Baicich, and Harrison, 1997). The Site area is a sufficient distance from any old-growth trees with the kind of nesting habitat described above so impacts to Marbled Murrulets are not expected to result from the project's activities.

Table 2. Aquatic Species At-risk Potentially Residing Near the Proposed Project.

Species at risk	SARA Status	Provincial Status
Stellar Sea Lion	Special Concern	--
Orca/Killer Whale	Threatened	Red
Humpback Whale	Special Concern	Blue
Harbour Porpoise	Special Concern	Blue
Northern Abalone (*Haliotis kamtschatkana*)	Endangered	Red
Yelloweye Rockfish (*Sebastes ruberrimus*)	Special Concern	--
Green Sturgeon (*Acipenser medirostris*)	Special Concern	Blue
Eulachon	Endangered/Threatened	Blue
Coastal Cutthroat Trout	--	Blue

Figure 9. Aerial Image of Marbled Murrelet Critical Habitat within the Vicinity of the Site.

7. Socio-Community Interactions and Land Use

The Site is located within an industrial area with facilities and services including: A log storage and shipping terminal, a construction company, an auto repair shop, a diesel engine dealer, a trucking company, a recycling facility, and a towing service (Figure 10). In addition, directly adjacent (south) of the Site is a paving company. The nearest residential property is ~2 km to the northwest of the property. Nearby transportation corridors include Highway 16 (Yellowhead) and the Legaic, Kaien, Metlakatla, and Mishaw roads that provide road access to the site. Marine travel to the site along Fern Passage can be gained from the Prince Rupert via the north or from Port Edward via the south, approximately 1.5 and 6 nautical miles, respectively. Though navigational passage from Port Edward is limited by restrictions in navigable waters near the Kaien island rail crossing and the Highway 16 crossing.

Overall, based on the location and size of the project, adverse effects or interactions with the community or business area are expected to be minimal. The main recipients of disturbances will be to on-site workers and those at nearby industrial facilities. Disturbances are expected to include noise and added vehicle and vessel traffic. Added noise, mainly from pile driving, to the nearby industries and potentially nearby residents will occur. However, noise impacts are expected to be similar to those commonly produced in the area and noise production activities are expected to occur over a short duration (approx. one week) thereby minimizing associated noise intrusions. As for disturbances from traffic, the proposed project is expected to result in a minor increase in local vehicle traffic and barge travel. Along with temporary occupation of waters within the water lot lease (<100 m of shore) is expected during pile installation.

Figure 10. Aerial Image Showing the Various Industries Relative to the Project Location and the Various Nearby Transportation Routes (Marine and Land Based).

8. Archeology and Heritage Resources

8.1. Soil Disturbance and Archeology

Based on the BC Treaty Map, the Site is located within the traditional lands for the Allied Tribes of the Lax Kwálaams Band. The overall Prince Rupert area is within lands that have been inhabited by First Nations people and therefore potential disturbances of Archaeology and Heritage Resources are possible. As such, caution will be employed during all in ground works. Components requiring excavations include the concrete conveyor footing and steel beam footing for the ramp. These items will only require a minor amount of excavation, ~15 m^2 x 2.2 m depth for the conveyor and <4 m^2 by 1 m of depth for the ramp. These are to occurring within a concentrated area of what appears to be infilled land. As a result, the chance of uncovering an

archaeological artifact is likely low. Though, the proponent has committed to following chance find procedures if an artifact is discovered, as outlined below.

8.2. Chance Find Procedures

If evidence of any archeological resource is encountered, the following Chance Find Procedure will be implemented to mitigate impact:

- Any activities that might disturb the potential archaeological resource or the site in which it is contained will be immediately stopped.
- The artifacts or other remains present at the site will not be moved.
- The site will be staked or flagged off to prevent additional disturbances.
- BC Heritage Branch will be notified immediately.
- A QP will be consulted.

9. Best Management Practices, Mitigation Measures, and Monitoring

9.1. Best Management Practices

The proponent will adhere to the Best Management Practices (BMPs) outlined below during the construction of the conveyor footings and in-water support structures (conveyor support pilings and barge mooring pilings). Any deviation (if required) from these BMPs will only be undertaken as per the direction of a Qualified Professional (QP) and/or with notification to appropriate agencies when applicable.

- **DFO – Measures to protect fish and fish habitat**

  http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html

- **Environmental Management Act**

  http://www.bclaws.ca/civix/document/id/lc/statreg/03053_00

- **Erosion and Sediment Control Best Practices**

  https://escabc.com/

- **Best Management Practices for Pile Driving and Related Operations**
  https://buyandsell.gc.ca/cds/public/2016/08/17/f0fcf96f5bd08535ff8e81aac62bbd74/fp802-160141_bc_pile_driving_practices.pdf

9.2. Mitigation Measures

The proponent has committed to implementing the following mitigation measures during in-water works:

- To use a vibratory hammer during pile driving whenever feasible. However, should an impact hammer be required the following items must be implemented.
    - Use of an impact hammer may only occur during daylight hours and when weather conditions (i.e. heavy rain, dense cloud, fog, etc.) permit the visual assessment of marine mammals within the exclusion zone as defined below.
    - Establish a marine mammal exclusion zone around the work area. The extent of the zone shall be determined by the distance at which sound levels above 160dB$_{RMS}$ re: 1uPa are not exceeded at the edge of the exclusion zone (i.e. determine distance at which sounds levels are measured below the specified level and create a radius around the work site using this distance).
    - Installation and use of a bubble curtain will be implemented as a tool to reduce pral sound pressure levels to those below 206 dB re:1uPa and a SEL$_{CUM}$ of 180 dB re uPa^{2}s outside of the sound attenuation device
    - Monitor for marine mammals within the exclusion zone for a minimum pof 30 minutes prior to impact pile driving. Impact hammering is to be cessed if a marine mammal is observed to enter the exclusion zone and must not occur while the individual remains within the zone or has not been sighted for 30 minutes within the exclusion zone
    - Implement the use of “soft starts” during pile driving thereby allowing pile driving energy to be gradually increased over a 10-minute period and will be required anytime there is a break in these activities of 30 minutes or more. Soft start measures have shown to encourage mobile fishes and wildlife to vacate an area prior to hydroacoustic related impacts occurring associated with full force pile driving.

- To conduct any operations requiring the use of a clam shell (if needed) will be conducted in a manner to reduce the introduction of benthic sediments into the water column. Suggested efforts include reducing the velocity of the ascending clamshell bucket.

As a commitment to mitigating environmental impacts during transloading, the Proponent has chosen a replacement conveyor design that will reduce the overall operational loading times and impact to the subtidal and intertidal habitat from wood chips. The benefits of the new conveyor design can be summarized as follows:

1. A covered/guarded conveyor system, versus the current open system, designed to prevent chips from falling off the conveyor belt, especially during windy periods.
2. A lowered operating angle, which will reduce the chips falling backward of the belt.
3. A quicker loading rate, which will reduce the period of chip movement.

4. An improved birthing system to facilitate a quicker and more efficient loading process.

9.3. Monitoring

The following environmental monitoring will be conducted during in-water works by a qualified environmental monitor:

- Hydroacoustic monitoring will be conducted during in-water works to assess impacts to fish and marine mammals. Sounds levels must remain below the threshold levels (A. 160dB$_{RMS}$ re: 1uPa at the edge to the exclusion zone and B. 206 dB re:1uPa and a SEL$_{CUM}$ of 180 dB re uPa^{2}s outside of the sound attenuation device). If these thresholds are exceeded impact hammer must be ceased and only resumed if additional mitigation measures are implanted that reduces sound level below both thresholds.
- Visual effectiveness monitoring of the mitigation measures for any impacts to fishes or marine mammals within the above mentioned exclusion zone.

10. Potential Impacts from Proposed Works

The marine waters surrounding Prince Rupert provide diverse habitats supporting a variety of species which have ecological, cultural, and economic value to the region. This section discusses potential impacts associated with the proposed facility upgrades to these habitats and species occurring within. Briefly these are:

- Construction activities:
    - Changes in sediment or water resulting from construction activities along the property foreshore and in-water works.
    - Direct mortality or physical injury to fishes or marine mammals caused by pile driving activities.
- Loss of habitat along the foreshore and the near shore habitats from placement of permanent structures (conveyor footing and pilings).

10.1. **Construction Activities**

Potential impacts from construction activities could be due to 1) acoustic and physical disturbances during pile driving activities and 2) releases of potentially toxic substances into the marine environment (e.g. sediment laden water or petroleum products).

In some cases, acoustic disturbances from pile driving activities have the potential to injure or kill fish or marine mammals. However, provided the appropriate mitigation measures are adhered to, fish and/or marine mammal injury or death is unlikely during the proposed construction. The greatest impact expected from pile driving activities to resident species (see

Section 5) is disturbances to foraging activities. Fish and marine mammals are expected to exhibit avoidance behaviour to the area because of the construction disturbances and so may miss feeding opportunities. However, such impacts to foraging opportunities will likely be spatially and temporally limited based on the indicated habitat value of the area and expected short duration of the project.

Provided the works will adhere to the relevant best management practices, impacts from construction including the potential releases of toxic materials are expected to be minimal. In addition, on-site monitoring has been proposed to assess any potential risks during in-water works as prescribed in Section 9.3. Should any harm or disturbance to fish be observed during monitoring, work will be halted and appropriate mitigation measures (i.e. sound attenuation and/or silt and sediment control measures) will be established and implemented prior to re-commencement of the associated activities.

10.2. Habitat Loss from Permanent Structure Placement

Losses of habitat resulting from the project are expected to be minimal and restricted to the installation on the conveyor footing/supports, the additional barge mooring pilings, walkway ramp, and the floating platform (dock).

The shoreline habitat fronting the property has been described as low-value and consists of a steep riprap slope devoid of vegetation (see site photographs in Appendix B). Habitat losses from conveyor footing placement will only involve a small area (~ 15 m^2) of the foreshore which will be located above the HWM. The habitat that will be displaced is a hard substrate surface formed by previously placed fill materials. As the footing will be placed above the HWM, the environmental impacts from the conveyor and walkway ramp footings are expected to be minimal to none provided the relevant best management practices are followed during the construction.

The placement of the piles is not expected to result in substantial loss of productive seabed habitat. The seabed, as described in Section 4, consists predominately of soft bottom dominated substrate composed of fines (mud and silt) with some sand and gravels. There was little presence of hard substrates observed, except for the riprap along the shoreline. As a result, potential impacts from the proposed project will mainly be to soft bottom benthic habitat. It is expected that a total of ~4 m^2 (6 x 36" dia. piles) of this habitat type will be occupied.

There are components of the infrastructure upgrades that will result in additional permanent shading including: The conveyor (~102 m^2), floating platform (~540 m^2), bridge access ramp (~24 m^2), bracing arms that need to be replaced for dolphin 2 (<10 m^2), and the intermittent presence of a larger chip barge. The Project components have been designed to limit shading

impacts using grated running surfaces and limiting the number of piles and other infrastructure components, however shading impacts are anticipated. As described above the area that will incur shading is dominated by soft bottom sediments that were observed to possess a low abundance of algal growth. As such, the expected amount of shading is not anticipated to result in a meaningful loss of productive capacity within the Site.

Overall, the subtidal and intertidal habitat observed at the Site is known to be extensive throughout the larger area (Fern Passage) and the proposed works are not anticipated to result in any loss of critical habitats or expected to impact any at-risk species. In addition, reductions in productivity from losses of soft bottom habitat and shading impacts are expected to be reduced/negated through the presence of infrastructure components (hard surfaces) that will provide surfaces for primary and secondary producers to occupy along with creating cover habitat for rearing and migratory fishes.

11. Construction Environmental Management Plan

Construction activities will be conducted safely, and measures will be taken to protect all environmental resources. In efforts to minimize disturbance of fish and marine mammal's construction activities occurring near water (i.e. conveyor footing) will be conducted at low tide.

11.1. Site Access, Mobilization and Laydown Areas

Construction events are to be planned to reduce the frequency that equipment/machinery is taken on and off the site. A laydown area or areas for equipment storage and materials will be established and located on a flat, stable area away from the shoreline. All activities in the laydown area(s) for equipment storage and materials will follow applicable Erosion and Sediment Control measures discussed below.

11.2. Erosion and Sediment Control

Erosion and sedimentation are expected to be minor for this project as the extent of excavation will be limited to the area for the conveyor footprint and soils will only be exposed for a short period. Where possible, all equipment will be operated from above the top of the HWM. Where applicable, construction in general will be managed in accordance with industry BMPs, including runoff management (i.e. filter fabric fencing etc.) to inhibit sediment entry into the marine environment. Any stockpiled material will be stored in a flat area away from foreshore.

11.3. Spill Contingency

Emergency spill procedures, spill containment supplies, and a list of emergency contacts will be kept onsite in a marked location that is easily accessible to all workers. Contractors will be required to have personnel trained in spill contingency and containment and made aware of

spill kit locations and any site-specific concerns. All fueling will be conducted at least 30 m away from the shoreline. All information regarding spill prevention and contingency measures is laid out in the Spill Response Plan (Appendix E).

11.4. Waste Management

All materials related to this project, including wastes, will be handled, transported, and/or disposed of in compliance with all applicable legislation including (but not limited to) BC Hazardous Waste Regulations. Hazardous wastes generated during works may include those generated in typical repair and maintenance of heavy equipment such as: waste petroleum products (engine oils, lubricants), spent batteries, solvents, and cleaning agents etc. All such wastes (if generated) will be handled in accordance with *BC Hazardous Waste Regulations*.

12. Closure

The permittee will adhere to applicable legislation (e.g. Fisheries Act and Environmental Management Act) and has committed to fulfilling all the suggested measures provided in this Effects Assessment. The permittee is committed to ensuring that construction is conducted in responsible manner in the best interest of the environment and in the case of any observed environmental concerns related to construction along the shoreline or in-water, will implement the advice of a qualified professional in an expedited manner.

Sincerely,
Alexander Fillo, M.Sc., B.I.T.

Review and Input by:

Arin Yeomans-Routledge, R.P.Bio., B.Sc.

13. References

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Appendices

Appendix A: Engineering Drawings

Appendix B: Site Photos

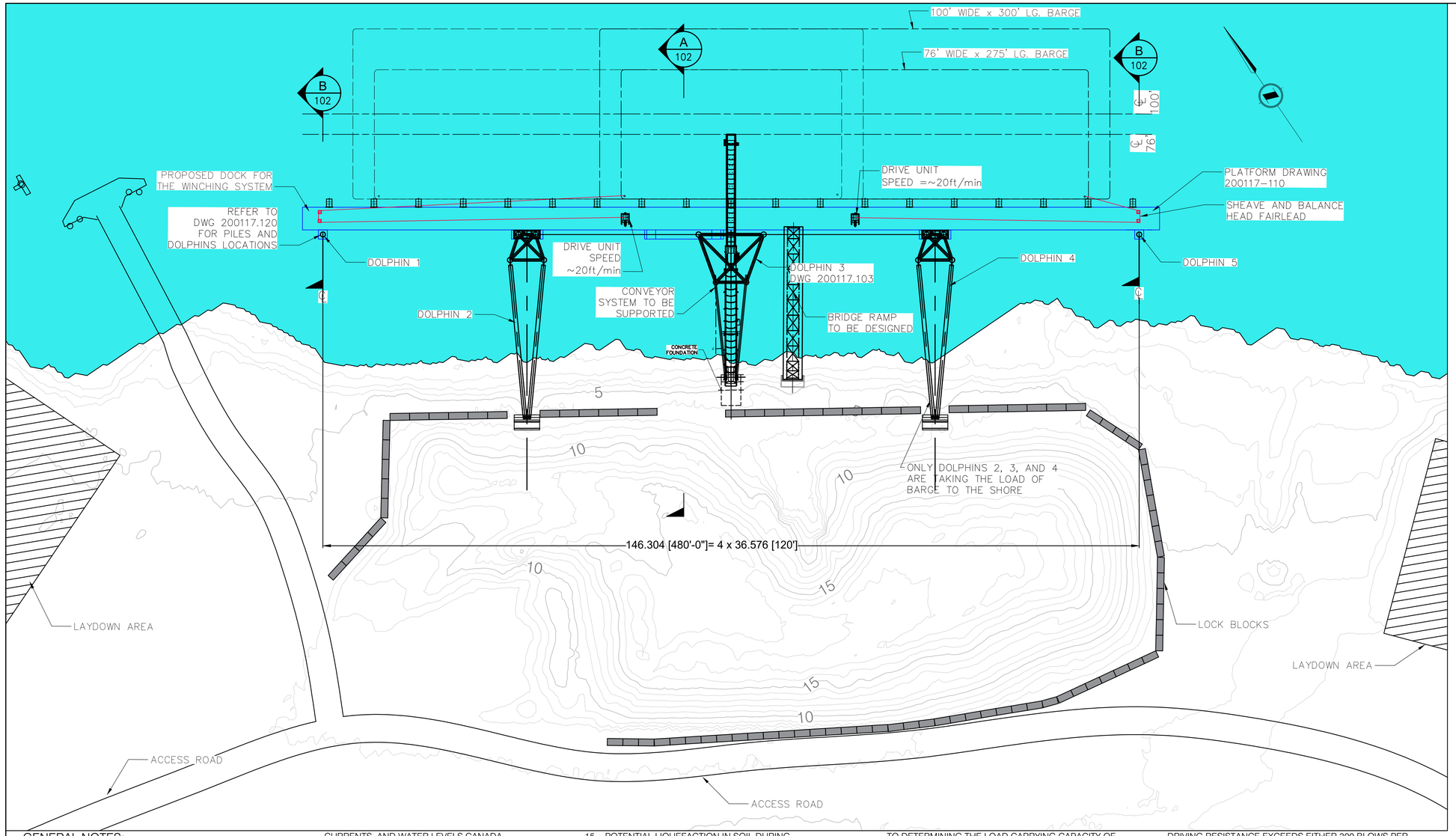
Appendix C: Dive Survey Observation Summary and Photos

Appendix D: Species At-risk List and Map

Appendix E: Spill Response Plan

Appendix A

Engineering Drawings



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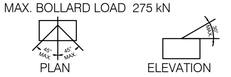

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Client: AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project: BARGE LOADING FACILITY-BUTZE TERMINAL

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
200117.DWG	AM	AT	AM	20/09/01

Title: GENERAL ARRANGMENT
BARGE POSITIONING SYSTEM
BARGE LOADING FACILITY

Project No. 200117 Scale AS NOTED

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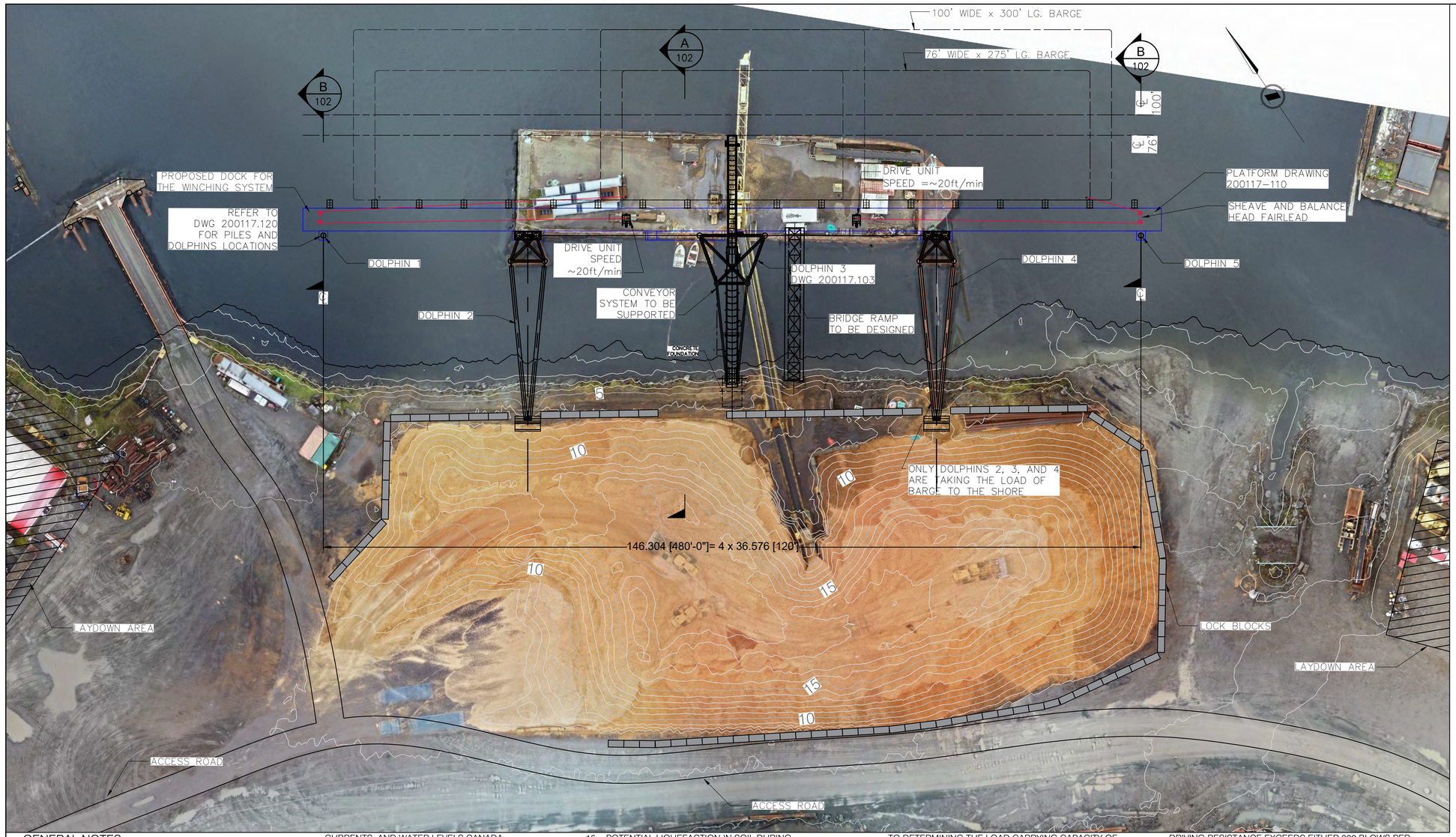

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   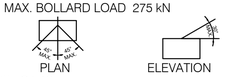

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MidSea ENGINEERING LTD

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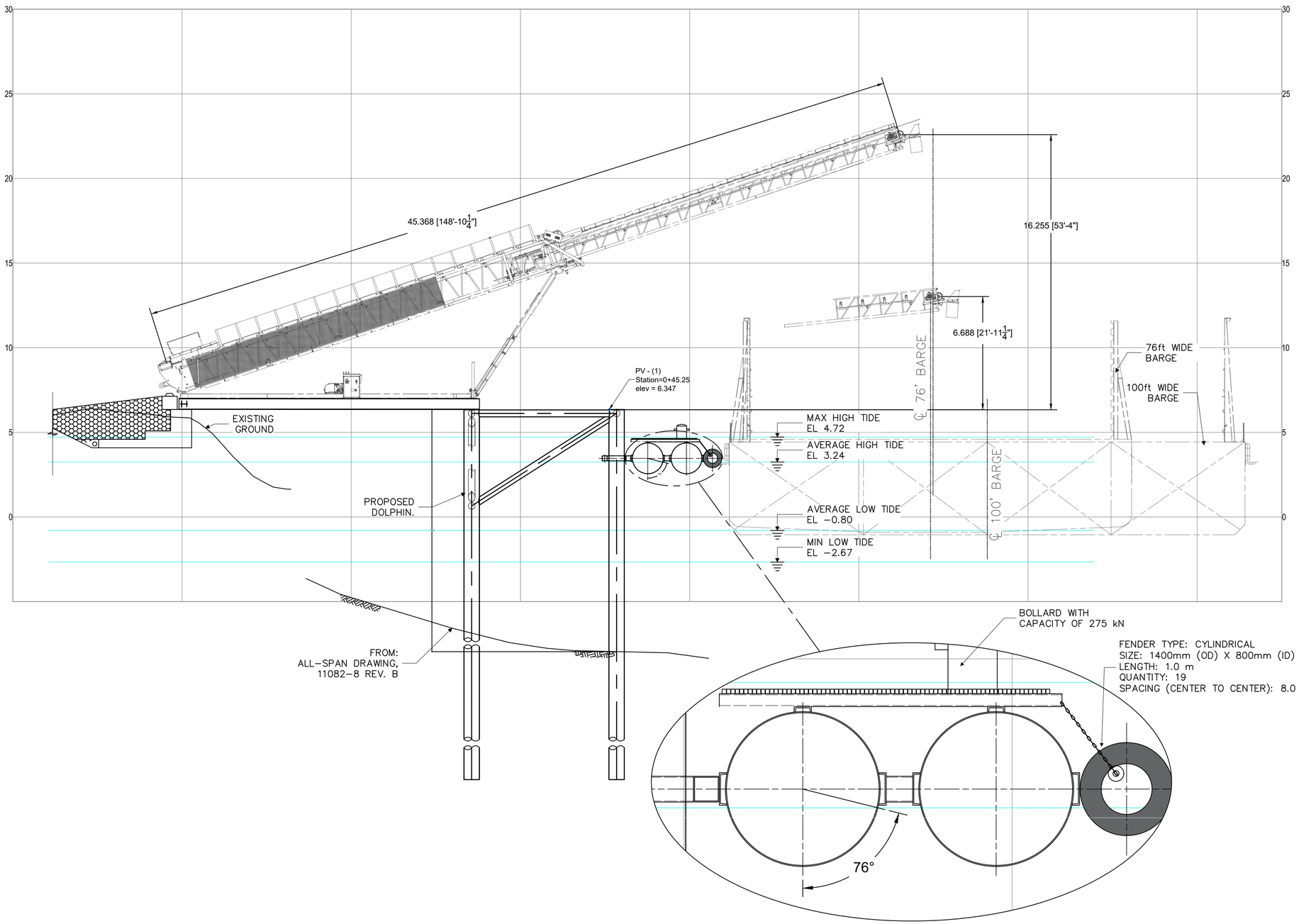

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	DIESEL	2000 MIN.	10	MAX (250R, 2.5 WP)

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WP= WEIGHT OF PILE IN lb. BASED ON PLAN HEIGHT.

22. ALL PILES SHALL BE DRIVEN TO REACH MIN. PENETRATION DEPTH OF 35' AND REFUSAL.
23. REFUSAL IS DEFINED AS THE POINT WHERE THE DRIVING RESISTANCE EXCEEDS EITHER 300 BLOWS PER FOOT FOR 1.5 CONSECUTIVE METERS OR 800 FOR 0.3m PENETRATION.
24. BOLLARDS WILL BE INSTALLED ON THE PLATFORM WITH CAPACITY OF 275kN. PILE DEFLECTION MUST BE CHECKED AND CONFIRMED BY MIDSEA ENGINEERING.
25. REPORT TO THE DESIGN ENGINEER IMMEDIATELY IF ANY OF THE DESIGN RECOMMENDATIONS, NOTES AND CRITERIA CAN NOT BE ACHIEVED DURING PILE DRIVING OPERATION.
26. BERTHING CALCULATION IS DONE BASED ON: GAYTHWAITE, JOHN W. "DESIGN OF MARINE FACILITIES: ENGINEERING FOR PORT AND HARBOR STRUCTURES." AMERICAN SOCIETY OF CIVIL ENGINEERS, 2016.

FOR INFORMATION ONLY
DATE: 20/09/01
REV: I

1:125 ANSI D (22"X34") | 2.5 0 2.5 5 7.5 10 12.5 m | 1:250 ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
I	ISSUED FOR INFORMATION	ZS	AT	20/09/01
H	ISSUED FOR INFORMATION	ZS	AT	20/08/19
G	ISSUED FOR INFORMATION	ZS	AT	20/07/30
F	ISSUED FOR INFORMATION	ZS	AT	20/07/23
E	ISSUED FOR INFORMATION	ZS	AT	20/06/23
D	ISSUED FOR INFORMATION	ZS	AT	20/06/22
C	ISSUED FOR INFORMATION	ZS	AT	20/06/22
B	ISSUED FOR INFORMATION	ZS	AT	20/06/15
A	ISSUED FOR INFORMATION	ZS	AT	20/06/08

Client: AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project: BARGE LOADING FACILITY-BUTZE TERMINAL

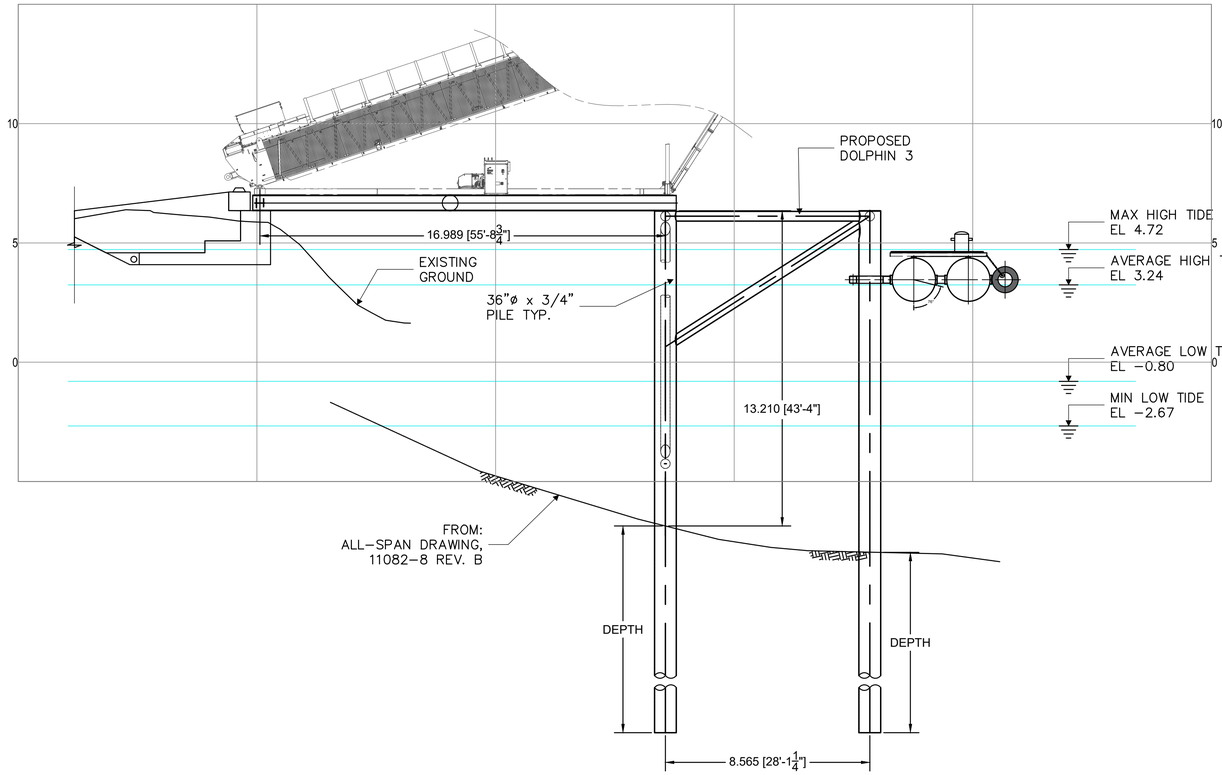
200117.DWG | ZS | AT | ZS | 20/09/01
File Name: | Dwn. | Chkd. | Dsgn. | YY.MM.DD

Title: PROFILE
BARGE POSITIONING SYSTEM
BARGE LOADING FACILITY

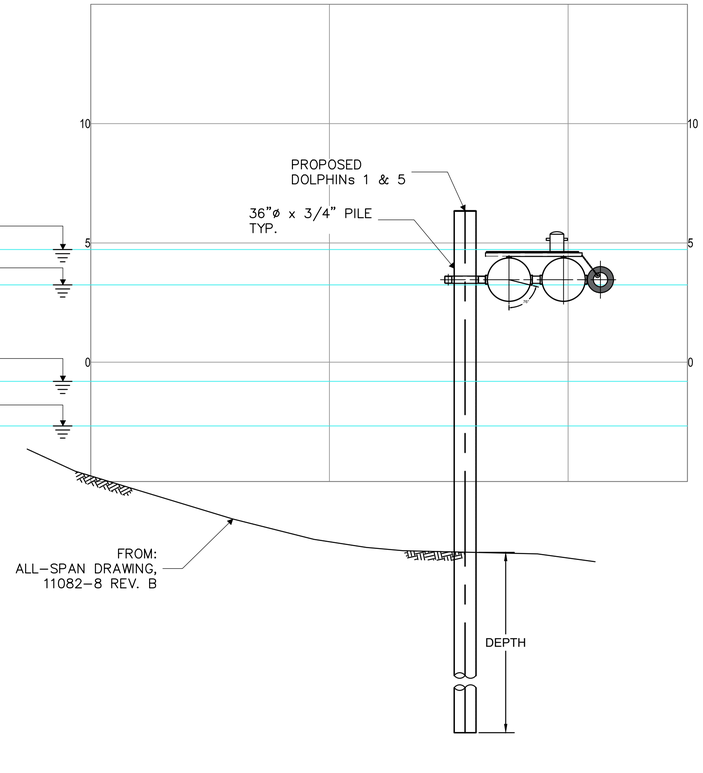
Project No. 200117 | Scale AS NOTED
Drawing No. 101 | Revision I

NOT TO SCALE IF NOT PRINTED ON ANSI D (22"X34") OR ANSI B (11"X17")

DESTROY ALL COPIES OF THIS DRAWING WITH A LOWER REV. NUMBER



A 100 SECTION 1:125



B 100 SECTION 1:125

PILE DETAILS (DOLPHINS 1, 3 AND 5)				
DOLPHIN NUMBER	SOIL TYPE	PILE TYPE	MATERIAL	DEPTH
1, 3, & 5	HIGH DENSE SANDY SOIL	36" Ø x 0.75" (914.4mm x 19mm)	ASTM A-252 Grade 3	MIN. 35 ft

GENERAL NOTES:

1. CONTOURS GENERATED FROM LIDAR POINTS, 1m MINOR CONTOURS, 5m MAJOR CONTOURS SHOWN.
2. EXISTING ROADS AND BUILDINGS SHOWN WERE ESTIMATED FROM THE LIDAR TOPOGRAPHY.
3. TOPOGRAPHY BASED ON SITE INTERPRETATION BY CLIENT.
4. ALL DIMENSIONS ARE IN METERS AND ELEVATIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
5. ALL WORK TO BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS UNLESS NOTED OTHERWISE.
6. FINAL CONFIGURATION OF THE WINCHING SYSTEM TBD.
7. TIDE ELEVATIONS ARE CALCULATED BASED ON TIDES, CURRENTS, AND WATER LEVELS CANADA HTTP://WWW.TIDES.GC.CA/
8. CONVEYOR SYSTEM DRAWING PROVIDED BY THE CLIENT.
9. SOIL IS CONSIDERED TO BE HIGH DENSE SANDY SOIL.
10. DEFLECTION OF THE PIPE AT GROUND LEVEL HIGHLY DEPENDS ON THE TYPE OF SOIL AND ITS PROPERTIES.
11. IF SOIL IS COHESIONLESS, JETTING OR PREDRILLING SHOULD BE AVOIDED.
12. ALLOWABLE GROUND DEFLECTION TO BE SPECIFIED BY THE CLIENT.
13. GEOTECHNIAL DATA FOR THE SITE WILL BE RESPONSIBILITY OF THE CLIENT.
14. FENDERS ARE DESIGNED TO TAKE 80% OF BARGE IMPACT LOAD. THE BARGE IMPACT ENERGY IS 70kJ.
15. POTENTIAL LIQUEFACTION IN SOIL DURING EARTHQUAKE SHALL BE EVALUATED BY GEOTECHNICAL ENGINEER OF THE PROJECT.
16. SEA BOTTOM LINE IS TAKEN FROM ALL-SPAN DRAWING 11082-8 REV. B.
17. THE BARGE SHALL NOT COLLIDE WITH THE PLATFORM IN THE FIRST 30 m OF EITHER OF THE SIDES WHEN BERTHING. A NOTE NEEDS TO BE INSTALLED ON THE PLATFORM.
18. PILE SPECIFICATIONS INCLUDING DEPTH, SIZES & ARRANGEMENT WILL BE SUBJECT TO CHANGES TYPE IF SOIL DEFERS FROM DESIGN ASSUMPTIONS.
19. ALLOWABLE PILE CAPACITY SHALL NOT BE LESS THAN 700kN.
20. IT IS HIGHLY RECOMMENDED TO USE PILE-DRIVING ANALYZER (PDA), FOR MONITORING PILE DRIVING AND TO DETERMINING THE LOAD CARRYING CAPACITY OF THE PILES. AT LEAST ONE OUT OF SET OF FOUR PILES FOR EACH DOLPHIN SHALL BE ANALYZED AND TESTED.
21. IN CASE OF USING HAMMER DRIVING MACHINE, SIZE OF DRIVING EQUIPMENT SHALL BE AS FOLLOW:

PILING TYPE	HAMMER TYPE	RAM WEIGHT (lb.)	MAX RAM STROKE (ft.)	MIN. HAMMER ENERGY (ft.lb.)
STEEL PIPE	AIR, HYDRAULIC	3000 MIN.	5	MAX (250R, 2.5 WP)
	DIESEL	2000 MIN.	10	MAX (250R, 2.5 WP)

R = DESIGN LOAD IN TONS = 77 TONS
WP= WEIGHT OF PILE IN lb. BASED ON PLAN HEIGHT.

22. ALL PILES SHALL BE DRIVEN TO REACH MIN. PENETRATION DEPTH OF 35' AND REFUSAL.
23. REFUSAL IS DEFINED AS THE POINT WHERE THE DRIVING RESISTANCE EXCEEDS EITHER 300 BLOWS PER FOOT FOR 1.5 CONSECUTIVE METERS OR 800 FOR 0.3m PENETRATION.
24. BOLLARDS WILL BE INSTALLED ON THE PLATFORM WITH CAPACITY OF 275kN. PILE DEFLECTION MUST BE CHECKED AND CONFIRMED BY MIDSEA ENGINEERING.
25. REPORT TO THE DESIGN ENGINEER IMMEDIATELY IF ANY OF THE DESIGN RECOMMENDATIONS, NOTES AND CRITERIA CAN NOT BE ACHIEVED DURING PILE DRIVING OPERATION.
26. BERTHING CALCULATION IS DONE BASED ON: GAYTHWAITE, JOHN W. "DESIGN OF MARINE FACILITIES: ENGINEERING FOR PORT AND HARBOR STRUCTURES." AMERICAN SOCIETY OF CIVIL ENGINEERS, 2016.

FOR INFORMATION ONLY
DATE: 20/09/01
REV: D

1:125 ANSI D (22"X34") 2.5 0 2.5 5 7.5 10 12.5 m 1:250 ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
D	ISSUED FOR INFORMATION	AM	AT	20/09/01
C	ISSUED FOR INFORMATION	AM	AT	20/08/27
B	ISSUED FOR INFORMATION	AM	AT	20/07/30
A	ISSUED FOR INFORMATION	AM	AT	20/07/23

Client: AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project: BARGE LOADING FACILITY-BUTZE TERMINAL

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
200117.DWG	AM	AT	AM	20/09/01

Title: PILE PROFILES
BARGE POSITIONING SYSTEM
BARGE LOADING FACILITY

Project No. 200117 Scale AS NOTED

Drawing No. 102 Revision D

NOT TO SCALE IF NOT PRINTED ON ANSI D (22"X34") OR ANSI B (11"X17")

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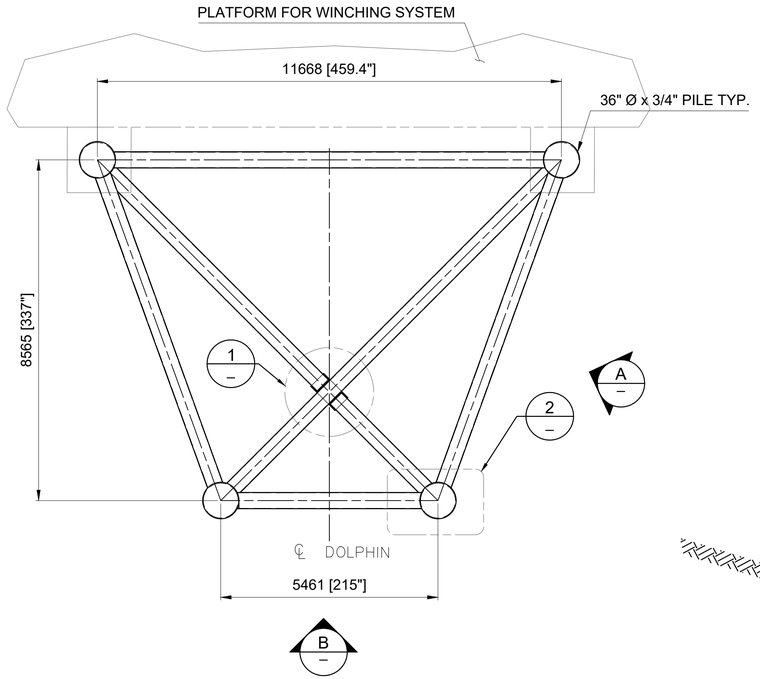
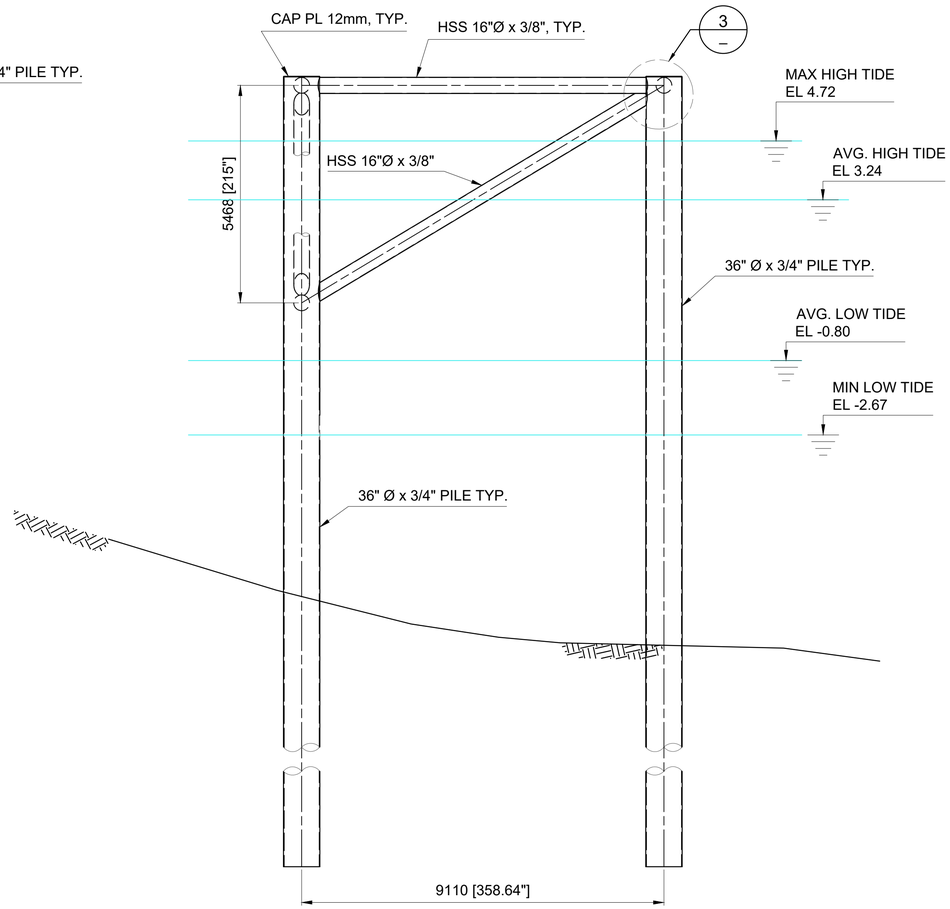
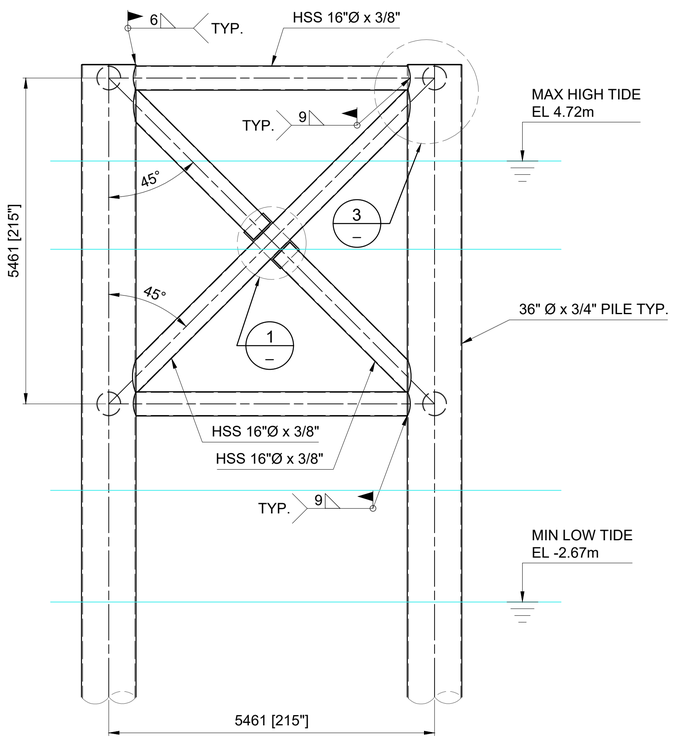
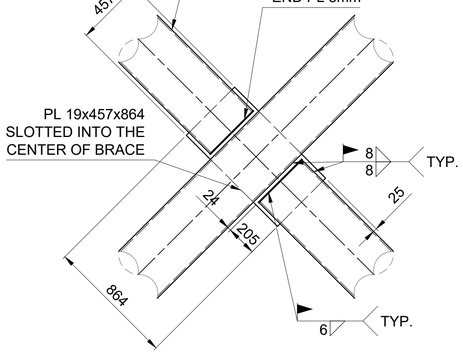




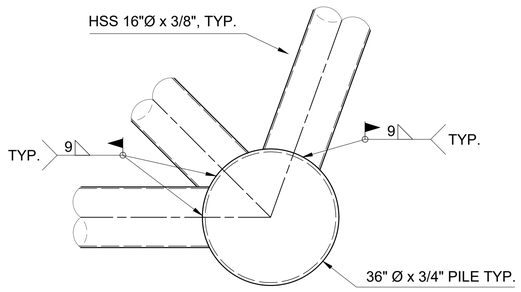


B VIEW 1:50

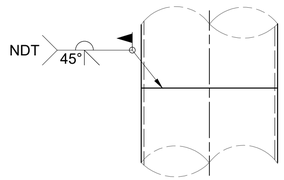
A VIEW 1:75



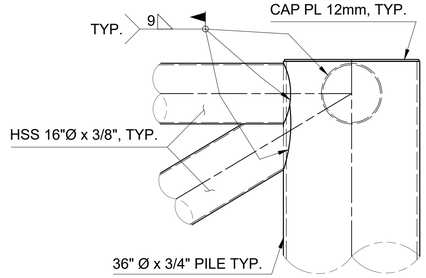
1 DETAIL 1:20



2 DETAIL 1:20



- PIPE SPLICE DETAIL 1:20



3 DETAIL 1:20

FOR INFORMATION ONLY
DATE: 20/09/01
REV: C

1:20 0.4 0.2 0 0.4 0.8 1.2 1.6 2.0 m 1:40
ANSI D (22"X34") ANSI B (11"X17")

1:75 1250 0 2500 5000 7500 mm 1:150
ANSI D (22"X34") ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
C	ISSUED FOR INFORMATION	AM	AT	20/08/28
B	ISSUED FOR INFORMATION	AM	AT	20/08/28
A	ISSUED FOR INFORMATION	AM	AT	20/07/23

Client

AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project

BARGE LOADING FACILITY-BUTZE TERMINAL

20117.103.DWG File Name: | Dwn. AM | Chkd. AT | Dsgn. AM | YY.MM.DD 20/09/01

Title

DOLPHIN 3
BARGE POSITIONING SYSTEM
BARGE LOADING FACILITY

Project No. 200117 Scale AS NOTED

Drawing No. 103 Revision C

NOT TO SCALE IF NOT PRINTED ON ANSI D (22"X34") OR ANSI B (11"X17")

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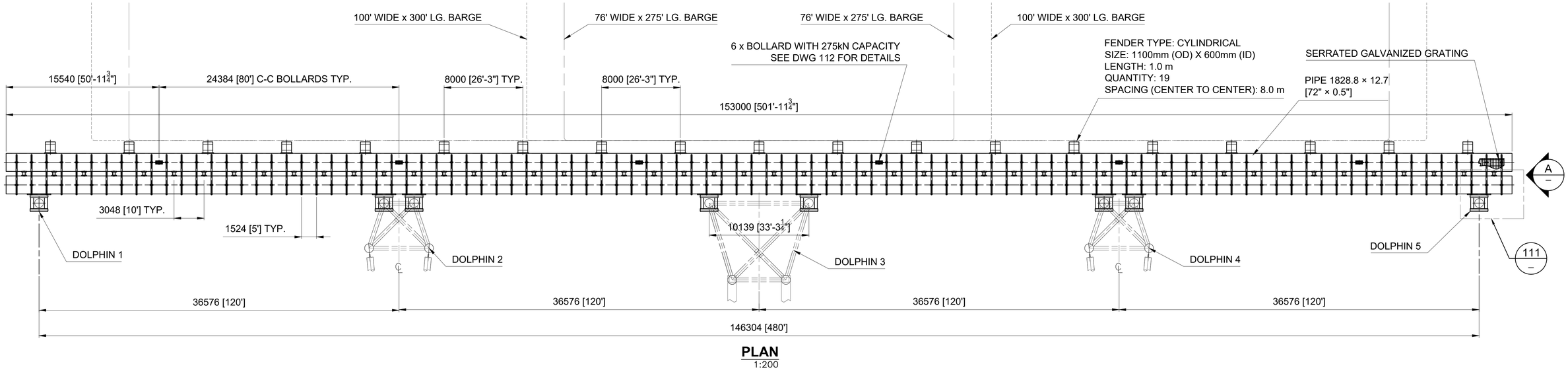
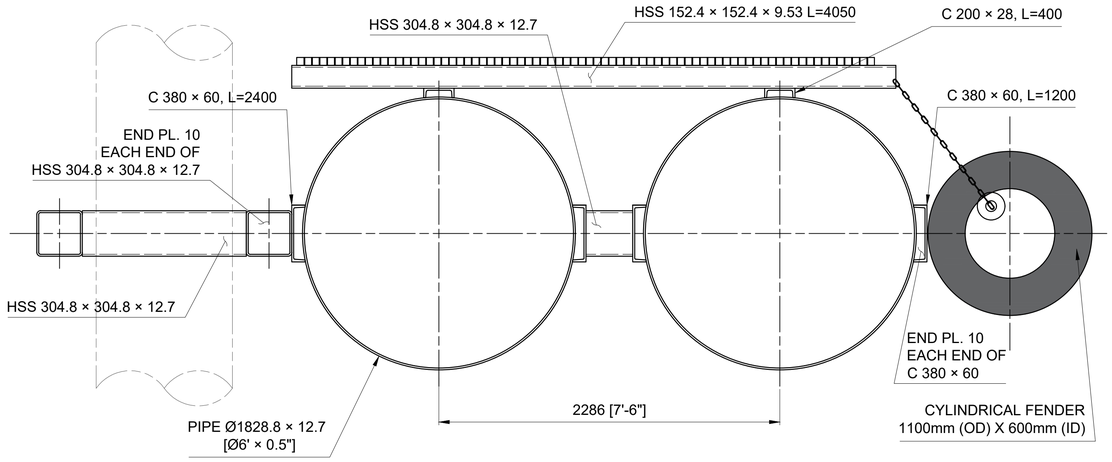


PLAN
1:200



A – VIEW
1:20

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. PLATFORM IS DESIGNED TO HOLD THE WEIGHT OF WINCHING SYSTEM, THE PIPES AND CONNECTIONS.
3. CONSIDERING APPROXIMATELY 20 EXTRA TONNES ON THE PLATFORM, AROUND 80° IS THE ANGLE FROM THE VERTICAL LINE THAT THE PIPE SINKS IN THE WATER (LESS THAN HALF THE PIPE, 90°=HALF THE PIPE).

FOR INFORMATION ONLY
DATE: 20/09/01
REV: E

1:20 0.4 0.2 0 0.4 0.8 1.2 1.6 2.0 m 1:40
ANSI D (22"X34") ANSI B (11"X17")

1:200 4 2 0 4 8 12 16 20 m 1:400
ANSI D (22"X34") ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
E	ISSUED FOR INFORMATION	AM	AT	20/09/01
D	ISSUED FOR INFORMATION	AM	AT	20/08/28
C	ISSUED FOR INFORMATION	AM	AT	20/08/07
B	ISSUED FOR INFORMATION	AM	AT	20/05/27
A	ISSUED FOR INFORMATION	AM	AT	20/04/07

Client: AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project: BARGE LOADING FACILITY-BUTZE TERMINAL

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
200117.110.DWG	AM	AT	AM	20/09/01

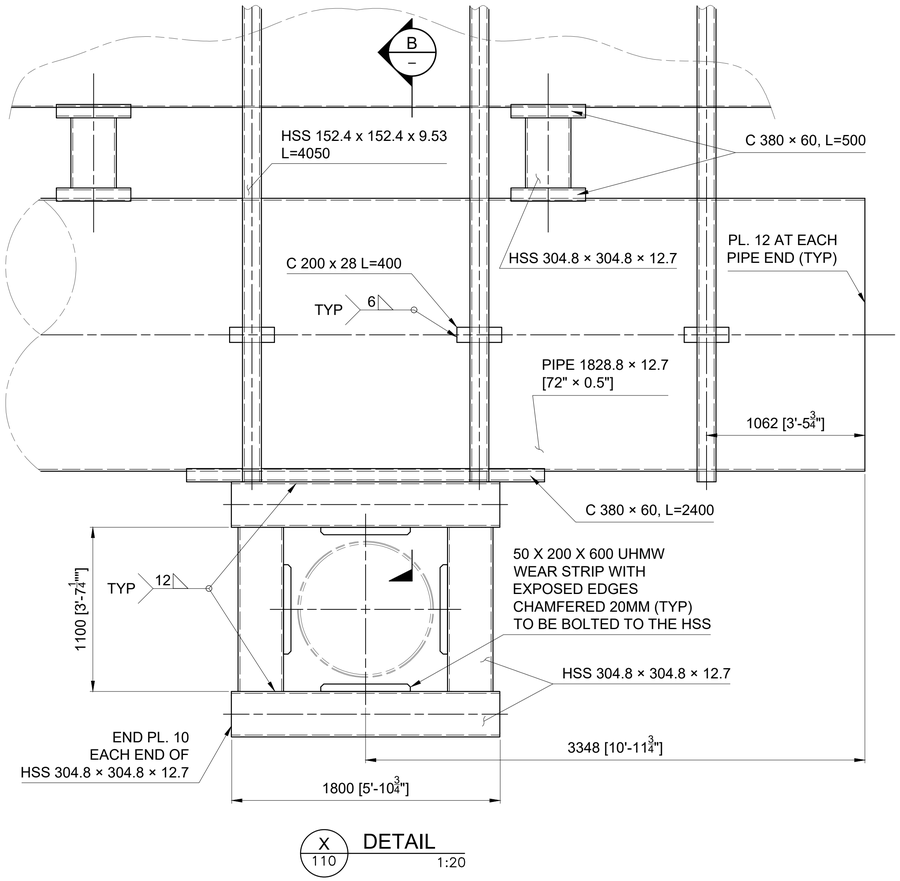
Title: PLATFORM FOR BARGE LOADING FACILITY

Project No. 200117 Scale AS NOTED

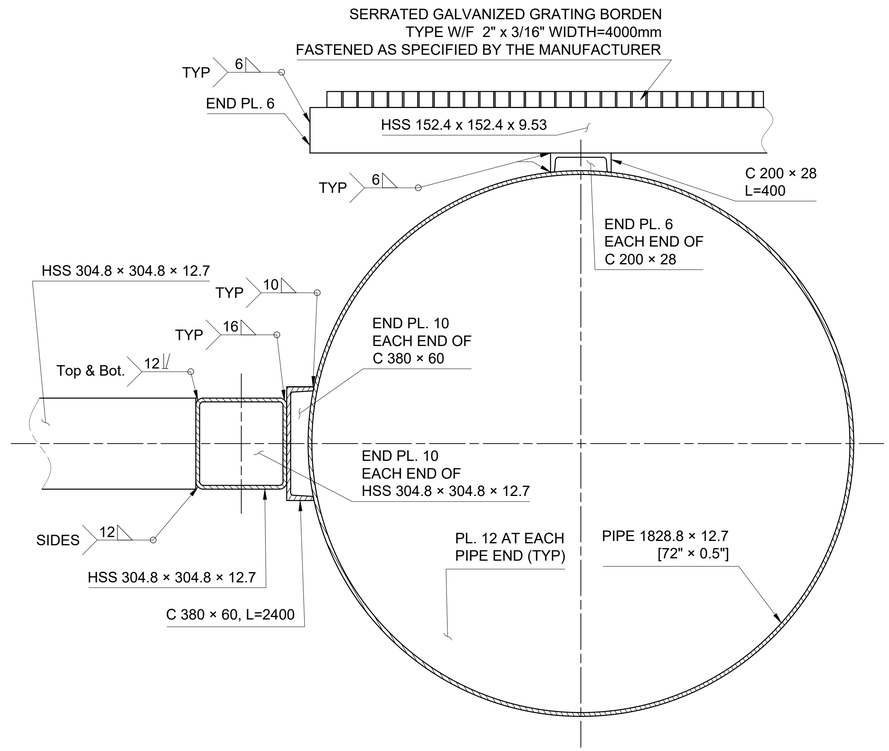
Drawing No. 110 Revision E

NOT TO SCALE IF NOT PRINTED ON ANSI D (22"X34") OR ANSI B (11"X17")

DESTROY ALL COPIES OF THIS DRAWING WITH A LOWER REV. NUMBER



X / 110 DETAIL 1:20



B / – SECTION 1:10

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. PLATFORM IS DESIGNED TO HOLD THE WEIGHT OF WINCHING SYSTEM, THE PIPES AND CONNECTIONS.
3. CONSIDERING APPROXIMATELY 20 EXTRA TONNES ON THE PLATFORM, AROUND 80° IS THE ANGLE FROM THE VERTICAL LINE THAT THE PIPE SINKS IN THE WATER (LESS THAN HALF THE PIPE, 90°=HALF THE PIPE).

FOR INFORMATION ONLY
DATE: 20/09/01
REV: A

1:20 ANSI D (22"X34") 0.4 0.2 0 0.4 0.8 1.2 1.6 2.0 m 1:40 ANSI B (11"X17")

1:10 ANSI D (22"X34") 0.2 0.1 0 0.2 0.4 0.6 0.8 1 m 1:20 ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
A	ISSUED FOR INFORMATION	AM	AT	20/09/01

Client: AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project: BARGE LOADING FACILITY-BUTZE TERMINAL

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
200117.110.DWG	AM	AT	AM	20/09/01

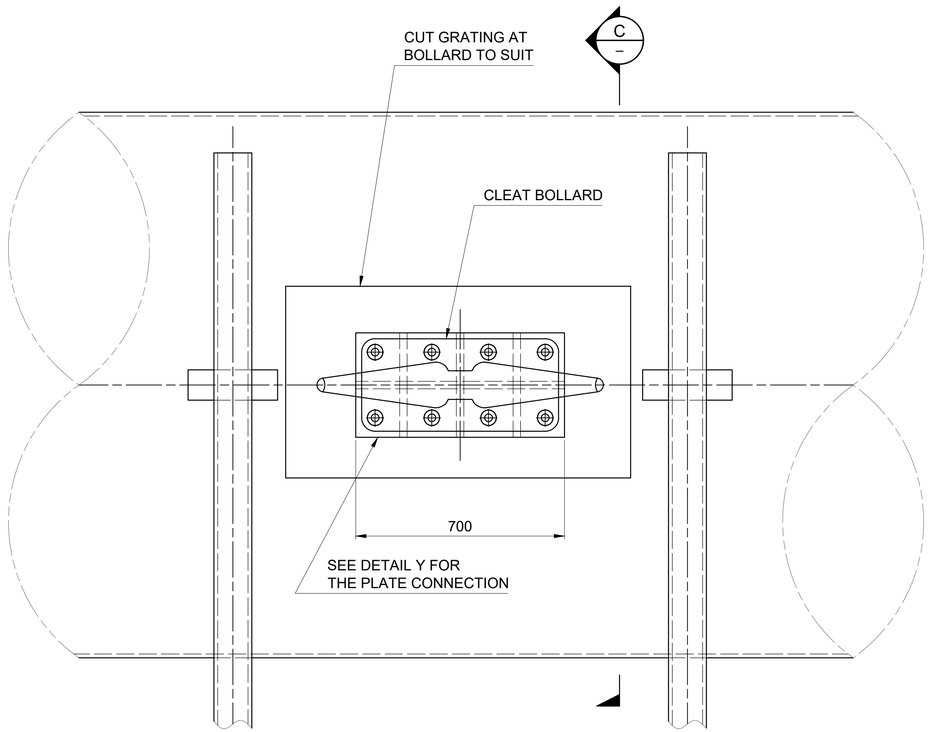
Title: DETAIL OF PLATFORM FOR BARGE LOADING FACILITY

Project No. 200117 Scale AS NOTED

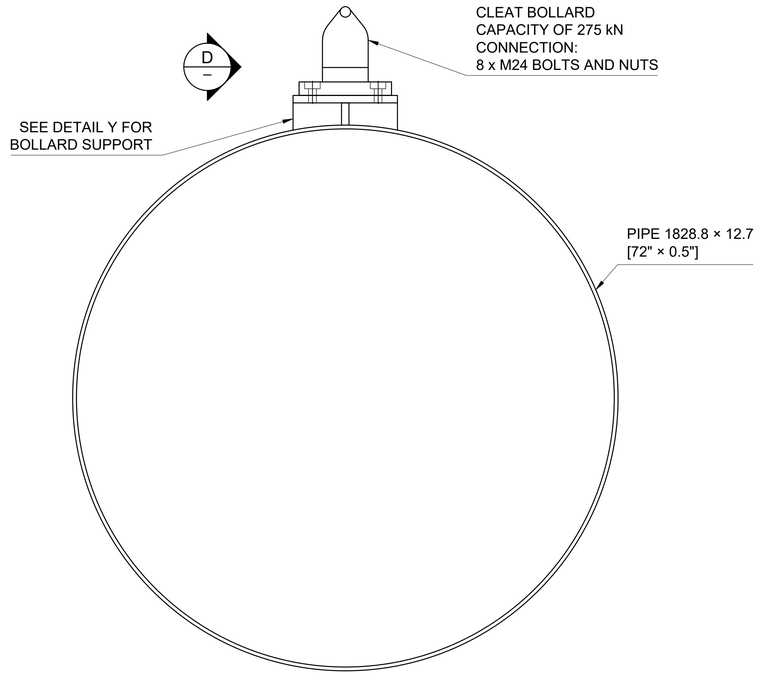
Drawing No. 111 Revision A

NOT TO SCALE IF NOT PRINTED ON ANSI D (22"X34") OR ANSI B (11"X17")

DESTROY ALL COPIES OF THIS DRAWING WITH A LOWER REV. NUMBER



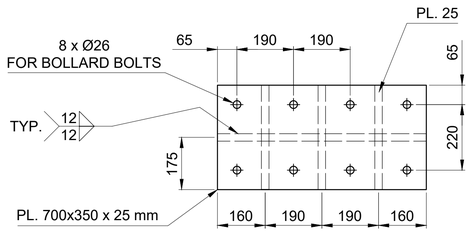
BOLLARD DETAIL PLAN
1:10



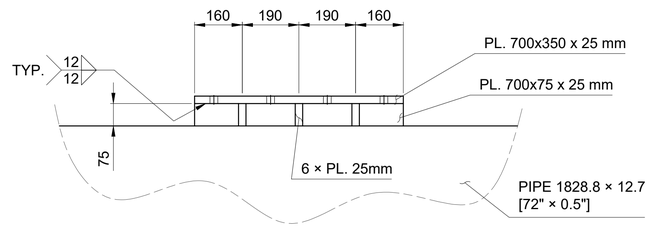
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. PLATFORM IS DESIGNED TO HOLD THE WEIGHT OF WINCHING SYSTEM, THE PIPES AND CONNECTIONS.
3. CONSIDERING APPROXIMATELY 20 EXTRA TONNES ON THE PLATFORM, AROUND 80° IS THE ANGLE FROM THE VERTICAL LINE THAT THE PIPE SINKS IN THE WATER (LESS THAN HALF THE PIPE, 90°=HALF THE PIPE).

C SECTION
1:10



Y DETAIL
1:10



D VIEW
1:10

FOR INFORMATION ONLY
DATE: 20/09/01
REV: A

1:10 0.2 0.1 0 0.2 0.4 0.6 0.8 1 m 1:20
ANSI D (22"X34") ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
A	ISSUED FOR INFORMATION	AM	AT	20/09/01

Client

Seal

Project
BARGE LOADING FACILITY-BUTZE TERMINAL

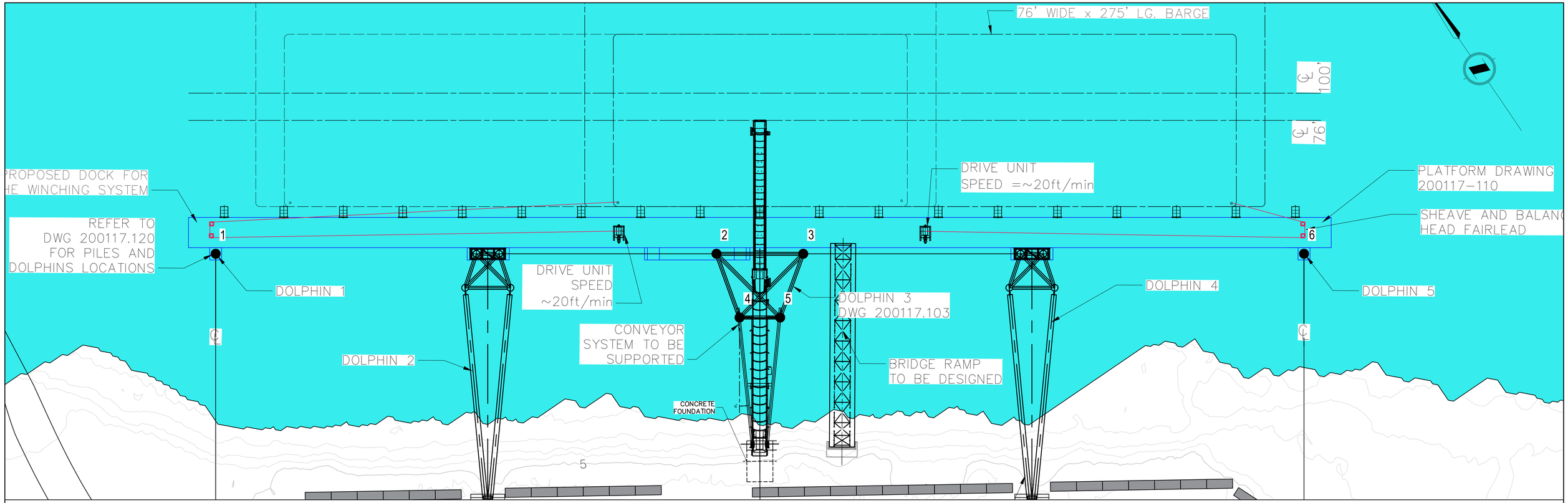
200117.110.DWG AM AT AM 20/09/01
File Name: Dwn. Chkd. Dsgn. YY.MM.DD

Title
DETAIL OF BOLLARD
CONNECTION TO THE PLATFORM

Project No. 200117 Scale AS NOTED
Drawing No. 112 Revision A

NOT TO SCALE IF NOT PRINTED ON ANSI D (22"X34") OR ANSI B (11"X17")

DESTROY ALL COPIES OF THIS DRAWING WITH A LOWER REV. NUMBER



	Point Table		
	Point #	Northing (m)	Easting (m)
DOLPHIN 1	1	6019010.146	418136.377
DOLPHIN 3	2	6018972.234	418192.005
	3	6018965.663	418201.647
	4	6018963.409	418189.746
	5	6018960.333	418194.259
DOLPHIN 5	6	6018927.751	418257.274

GENERAL NOTES:

1. CONTOURS GENERATED FROM LIDAR POINTS, 1m MINOR CONTOURS, 5m MAJOR CONTOURS SHOWN.
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3. TOPOGRAPHY BASED ON SITE INTERPRETATION BY CLIENT.
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7. TIDE ELEVATIONS ARE CALCULATED BASED ON TIDES, CURRENTS, AND WATER LEVELS CANADA HTTP://WWW.TIDES.GC.CA/
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WP= WEIGHT OF PILE IN lb. BASED ON PLAN HEIGHT.

22. ALL PILES SHALL BE DRIVEN TO REACH MIN. PENETRATION DEPTH OF 35' AND REFUSAL.
23. REFUSAL IS DEFINED AS THE POINT WHERE THE DRIVING RESISTANCE EXCEEDS EITHER 300 BLOWS PER FOOT FOR 1.5 CONSECUTIVE METERS OR 800 FOR 0.3m PENETRATION.
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25. REPORT TO THE DESIGN ENGINEER IMMEDIATELY IF ANY OF THE DESIGN RECOMMENDATIONS, NOTES AND CRITERIA CAN NOT BE ACHIEVED DURING PILE DRIVING OPERATION.

FOR INFORMATION ONLY
DATE: 20/09/01
REV: C

1:250 5 2.5 0 5 10 15 20 25 m 1:500
ANSI D (22"X34") ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
C	ISSUED FOR INFORMATION	ZS	AT	20/09/01
B	ISSUED FOR INFORMATION	ZS	AT	20/08/27
A	ISSUED FOR INFORMATION	ZS	AT	20/07/30

Client: AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project: BARGE LOADING FACILITY-BUTZE TERMINAL

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
200117_LOCATIONS.DWG	AM	AT	AM	20/09/01

Title: PILE LOCATIONS
BARGE POSITIONING SYSTEM
BARGE LOADING FACILITY

Project No. 200117 Scale AS NOTED

Drawing No. 120 Revision C

NOT TO SCALE IF NOT PRINTED ON ANSI D (22"X34") OR ANSI B (11"X17")

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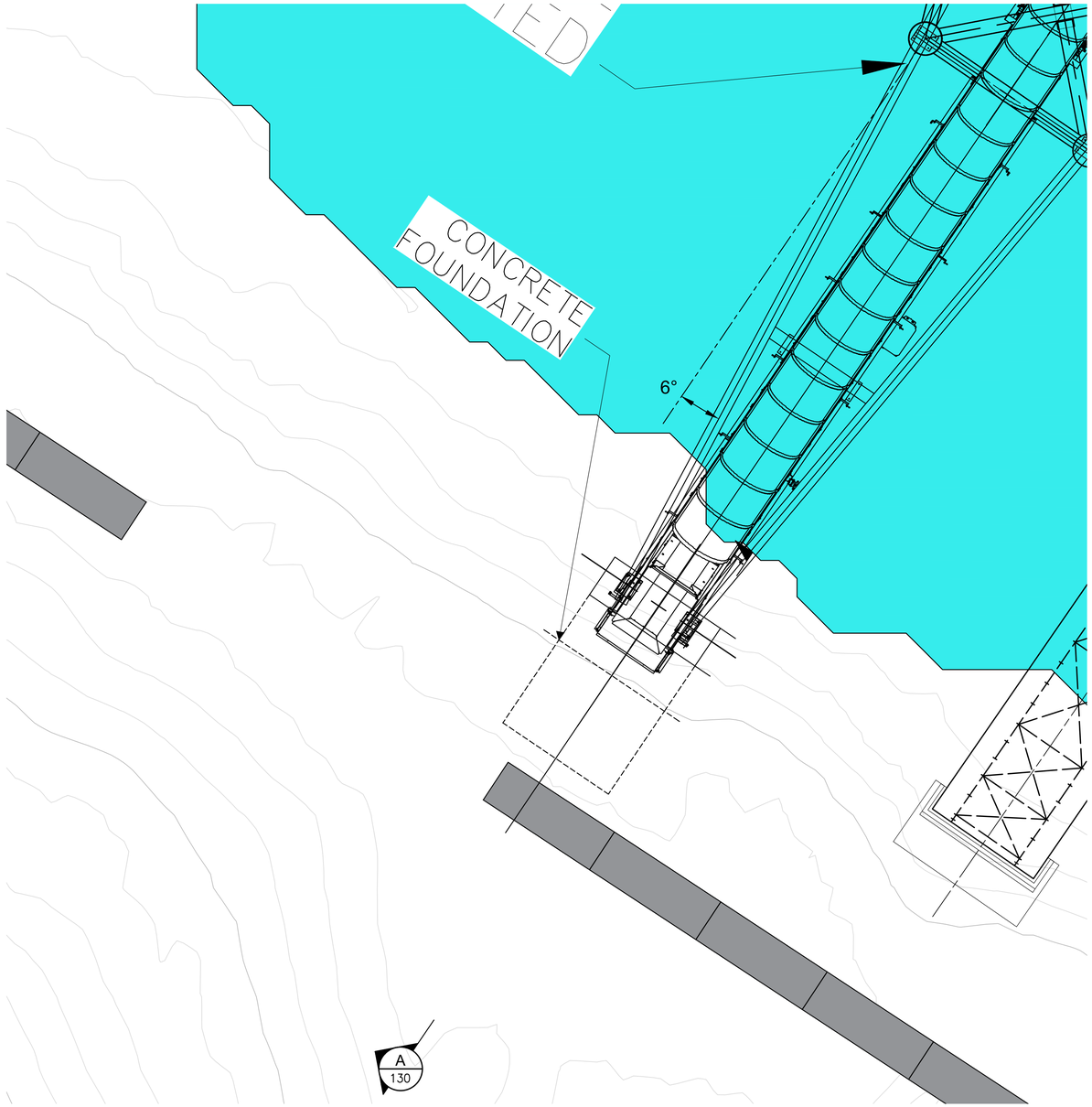

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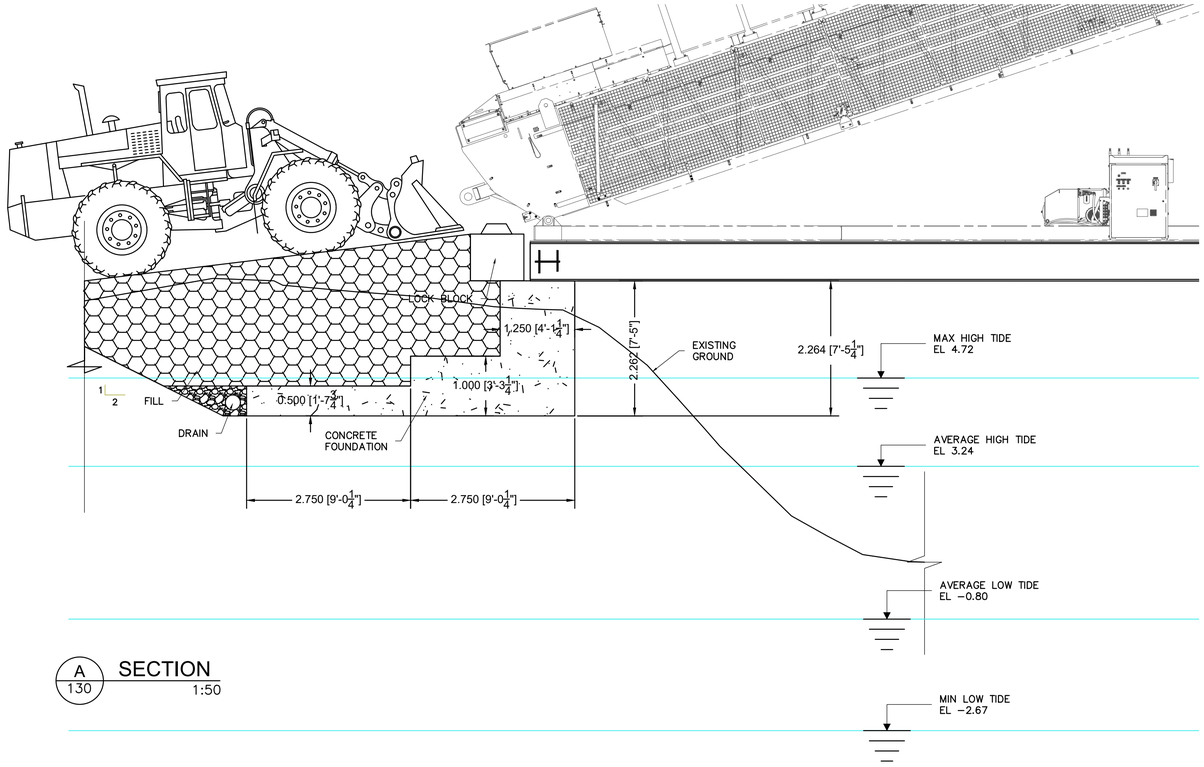
130

PLAN
1:75



A
130

SECTION
1:50

GENERAL NOTES:

1. CONTOURS GENERATED FROM LIDAR POINTS, 1m MINOR CONTOURS, 5m MAJOR CONTOURS SHOWN.
2. TOPOGRAPHY BASED ON SITE INTERPRETATION BY CLIENT.
3. ALL DIMENSIONS ARE IN METERS AND ELEVATIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
4. ALL WORK TO BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS UNLESS NOTED OTHERWISE.
5. TIDE ELEVATIONS ARE CALCULATED BASED ON TIDES, CURRENTS, AND WATER LEVELS CANADA HTTP://WWW.TIDES.GC.CA/
6. CONVEYOR SYSTEM DRAWING PROVIDED BY THE CLIENT.
7. GEOTECHNIAL DATA FOR THE SITE WILL BE RESPONSIBILITY OF THE CLIENT.
8. POTENTIAL LIQUEFACTION IN SOIL DURING EARTHQUAKE SHALL BE EVALUATED BY GEOTECHNICAL ENGINEER OF THE PROJECT.
9. SEA BOTTOM LINE IS TAKEN FROM ALL-SPAN DRAWING 11082-8 REV. B.
10. THE BEARING CAPACITY IS BASED ON COMPETENT ROCK FOUNDATION.
11. THE TERRAIN TOPOGRAPHY SHOULD BE CONFIRMED ON SITE.
12. THE GEOTECHNICAL ENGINEER SHOULD CONFIRM THE FINAL CONFIGURATION OF THE FOUNDATION.

FOR INFORMATION ONLY
DATE: 20/09/01
REV: C

1:50 ANSI D (22"X34") — 1 0.5 0 1 2 3 4 5 m — 1:100 ANSI B (11"X17")

1:75 ANSI D (22"X34") — 1250 0 2500 5000 7500 mm — 1:150 ANSI B (11"X17")

Rev	Revision Description	By	Appd.	YY.MM.DD
C	ISSUED FOR INFORMATION	ANZ	AT	20/09/01
B	ISSUED FOR INFORMATION	ANZ	AT	20/08/19
A	ISSUED FOR INFORMATION	ANZ	AT	20/08/14

Client: AMIX GROUP

MidSea ENGINEERING LTD

Seal

Project: BARGE LOADING FACILITY-BUTZE TERMINAL

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
200117.DWG	ANZ	AT	ANZ	20/09/01

Title: PLAN AND SECTION FOUNDATION BARGE LOADING FACILITY

Project No. 200117 — Scale AS NOTED

Drawing No. 130 — Revision C

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Appendix B

Site Photos

Figure 1. Photographs taken the foreshore near existing pile structure across from the south end of the barge.

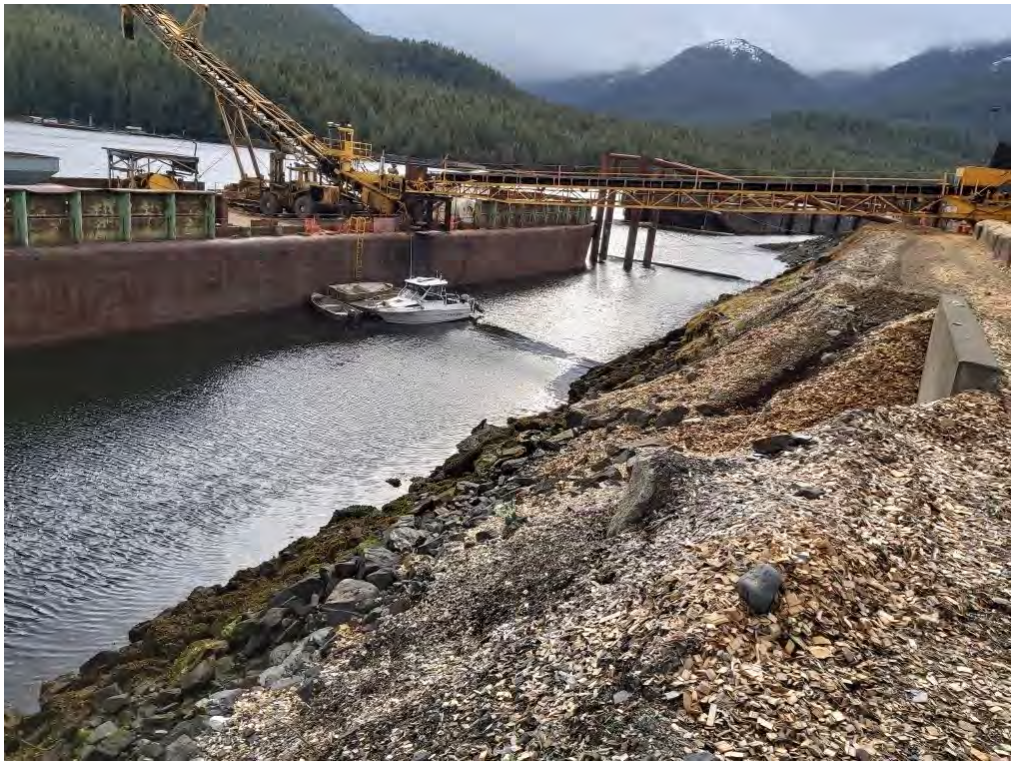


Figure 2. Photographs taken from north side of barge facing foreshore.

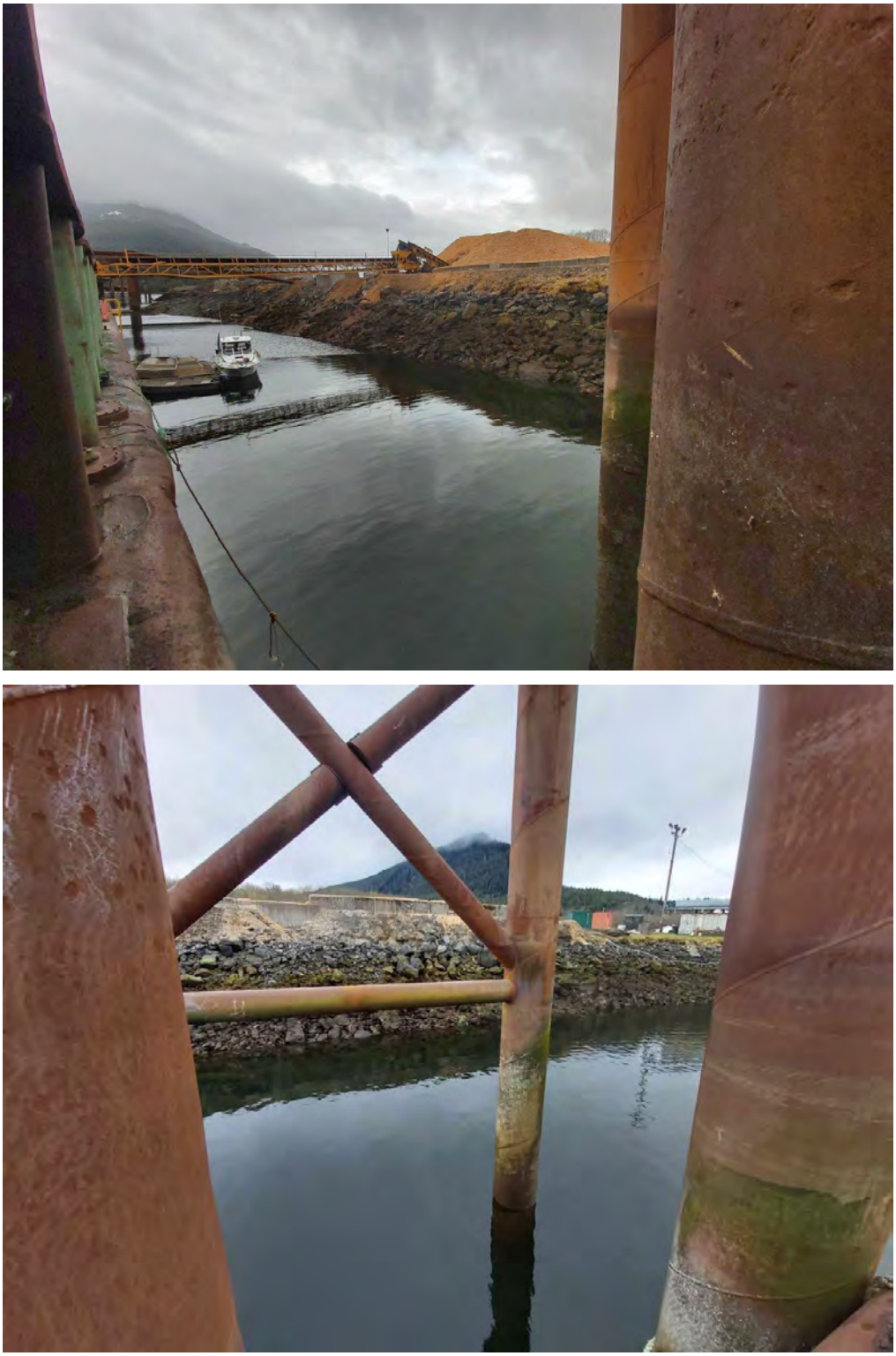


Figure 3. Photographs taken from middle of barge facing foreshore.

Figure 4. Photographs taken from south side of the barge facing the foreshore.

Figure 5. Photographs taken the foreshore near existing pile structure across from the south end of the barge.

Appendix C

Dive Survey Observation Summary and Photos

Adams
Diving
And
Marine
Services Ltd.

1029 – 6th Ave East,
Prince Rupert, BC V8J 1X7 Canada
Ph: 250-624-3088
Email: office@adamsdiving.com

April 16, 2020

Amix Marine Services Ltd.
200 Metlakatla Road
Prince Rupert, BC
V8J 2Z6

April 16, 2020 Adams Diving And Marine Services Ltd. was retained by Amix Marine Services Ltd. to carry out an underwater inspection of five transect lines for proposed pilings and barge placement. Some photographs were taken of the existing pile dolphins and of the loading ramp.

FINDINGS

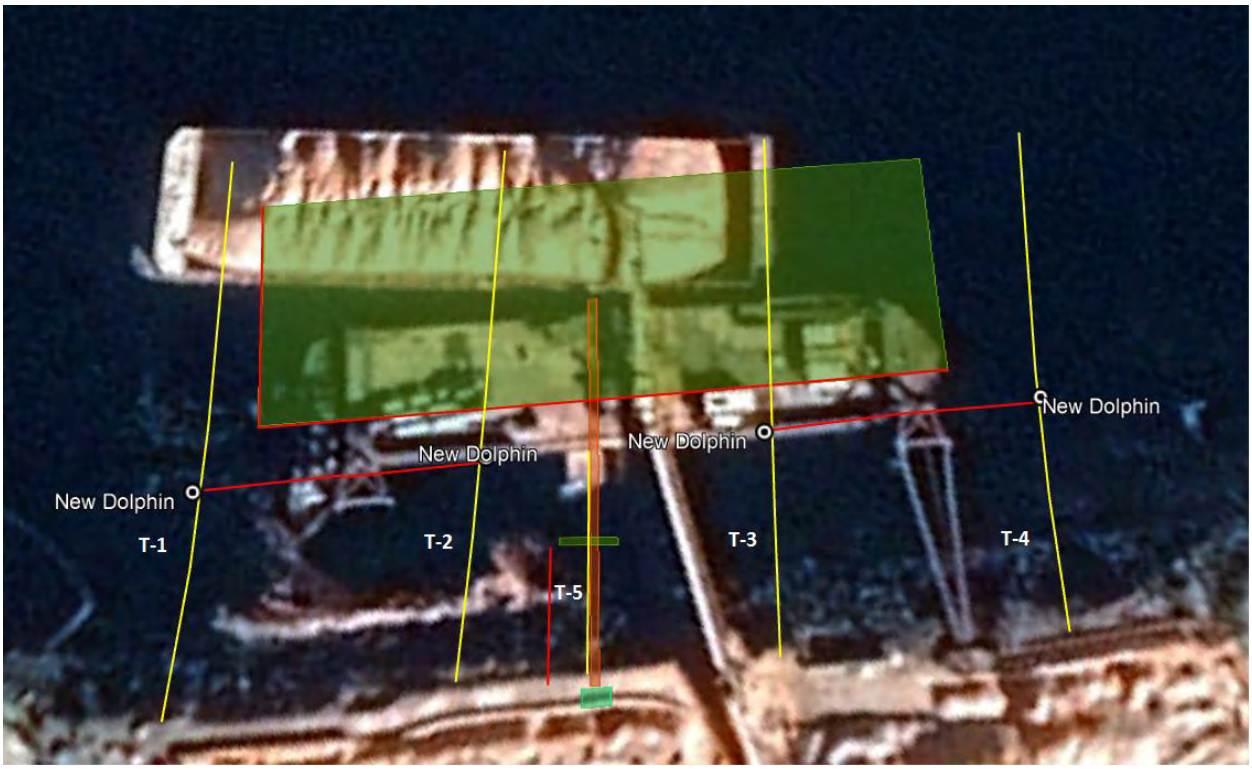
Transect 1 (T-1)
- Mud bottom with woodchips**,** poor visibility.
- Four frosted tipped nudibranchs.

Transect 2 (T-2)
- Mud bottom with woodchips.
- Seven frosted tipped nudibranchs.
- Two red rock crab.
- One starfish.
- One concrete block approximately 5 feet from shore.

Transect 3 (T-3)
- Mud bottom with woodchips.
- Two frosted tipped nudibranchs.
- Three red rock crab.
- One leather star.
- One Dungeness crab.

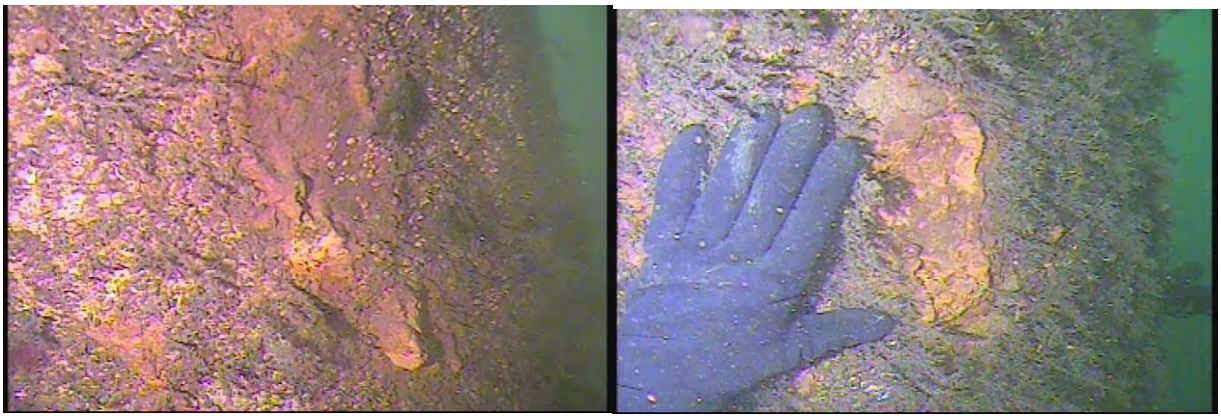
Transect 4 (T-4)
- Mud bottom with woodchips.
- One frosted tipped nudibranch.
- One red rock crab.
- One leather star.

Transect 5 (T-5)
- Mud bottom with woodchips.
- One decorator crab.
- One yellow nudibranch.

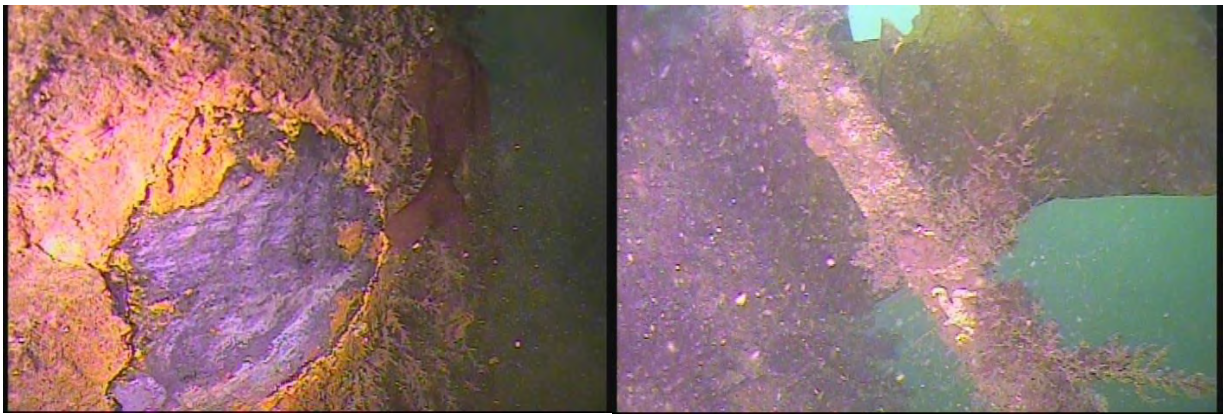


Existing berthing dolphins

All pilings are showing a high level of active corrosion, no zinc left on any of the pilings.



Typical corrosion on pilings before rust was removed.

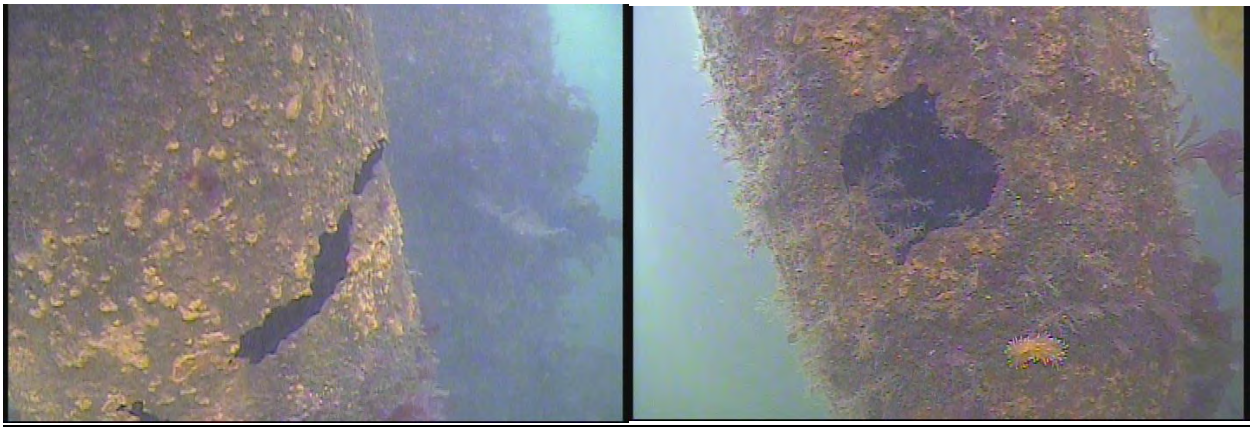


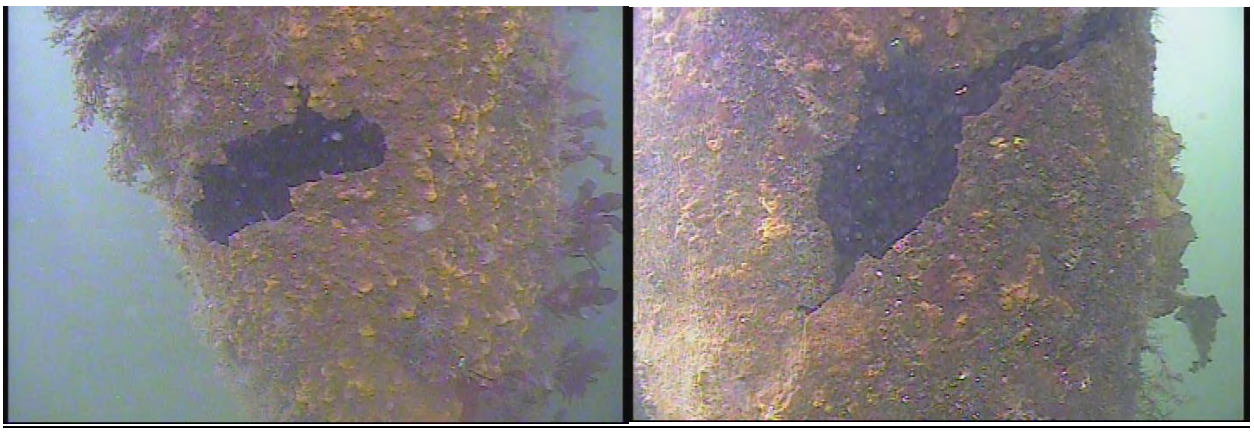
Typical corrosion after rust removed.

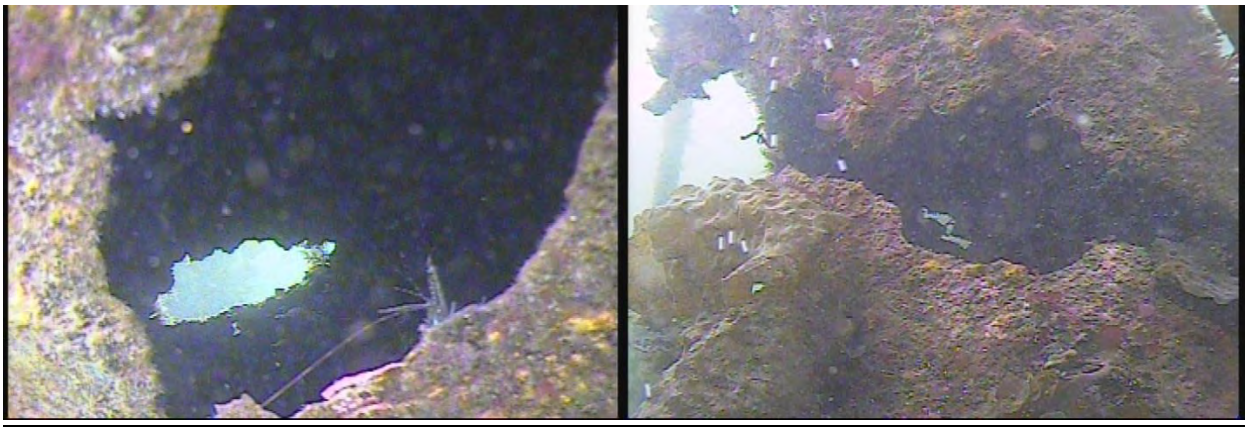
Anode strap at 0% remaining.

Adams Diving And Marine Services Ltd. Phone: 250-624-3088 Email: office@adamsdiving.com

The following photos are from the barge loading ramp structure







Adams Diving And Marine Services Ltd. Phone: 250-624-3088 Email: office@adamsdiving.com

Appendix D

Species At-risk List and Map of Marbled Murrelet Critical Habitat

English Name	Scientific Name	COSEWIC	BC List	SARA	DFO Species At-risk Status
Vascular Plants					
beach groundsel	*Senecio pseudoarnica*		Blue		
Alaska holly fern	*Polystichum setigerum*		Blue		
white-lip rein orchid	*Platanthera ephemerantha*		Blue		
redwood sorrel	*Oxalis oregana*		Blue		
western cowbane	*Oxypolis occidentalis*		Blue		
Aleutian adder's-mouth orchid	*Malaxis diphyllos*		Red		
silky beach pea	*Lathyrus littoralis*	T (Apr 2013)	Red		
Queen Charlotte avens	*Geum schofieldii*		Blue		
American glehnia	*Glehnia littoralis* ssp. *leiocarpa*		Blue		
dwarf red fescue	*Festuca rubra* ssp. *mediana*		Blue		
dwarf bog bunchberry	*Cornus suecica*		Blue		
angled bittercress	*Cardamine angulata*		Blue		
yellow sand-verbena	*Abronia latifolia*		Blue		
corrupt spleenwort	*Asplenium adulterinum*		Blue		
two-edged water-starwort	*Callitriche heterophylla* var. *heterophylla*		Blue		
beach bindweed	*Calystegia soldanella*		Blue		
Fischer's chickweed	*Cerastium fischerianum*		Blue		
Non-Vascular Plants					
Carlott's wijkia moss	*Wijkia carlottae*		Blue		
slender yokemoss	*Zygodon gracilis*	E (Nov 2019)	Red		
Brown's tetrodontium moss	*Tetrodontium brownianum*		Blue		
montane trematodon moss	*Trematodon montanus*		Red		
drooping-leaved beard-moss	*Trichostomum recurvifolium*	E (May 2019)	Blue		

Drummond's ulota moss	*Ulota drummondii*		Blue		
Aongstroem's sphagnum	*Sphagnum aongstroemii*		Blue		
Baltic sphagnum	*Sphagnum balticum*		Blue		
contorted sphagnum	*Sphagnum contortum*		Blue		
Junghuhn's sphagnum	*Sphagnum junghuhnianum* var. *pseudomolle*		Red		
sphagnum	*Sphagnum quinquefarium*		Blue		
schistidium moss	*Schistidium trichodon*		Blue		
Carey's bristle-moss	*Seligeria careyana*	E (May 2019)	Red		
small limestone moss	*Seligeria tristichoides*		Blue		
rose rhodobryum moss	*Rhodobryum roseum*		Blue		
oldgrowth specklebelly	*Pseudocyphellaria rainierensis*	SC (Apr 2010)	Blue	1-SC (Jul 2012)	
pohlia moss	*Pohlia columbica*		Blue		
Long-fruited Thread-moss	*Pohlia elongata*		Blue		
Pacific pohlia moss	*Pohlia pacifica*		Red		
octopus' matchstick	*Pilophorus robustus*		Blue		
philonotis moss	*Philonotis yezoana*		Blue		
bottlebrush frost	*Physconia detersa*		Red		
considerable gingerbread	*Pannaria rubiginosa*		Red		
snuff ruffle	*Parmotrema crinitum*		Blue		
Sendtner's molendoa moss	*Molendoa sendtneriana*		Blue		
midlife vinyl	*Leptogium californicum*		Blue		
blue-blue vinyl	*Leptogium cyanescens*		Red		
lescuraea moss	*Lescuraea saxicola*		Blue		
Hymenostylium Moss	*Hymenostylium recurvirostre* var. *insigne*		Blue		
granulating loop	*Hypotrachyna revoluta*		Blue		
Mueller’s Silk-moss	*Isopterygiopsis muelleriana*		Red		
gollania moss	*Gollania turgens*		Red		
vole felt	*Erioderma sorediatum*		Blue		
--	*Campylopus sinensis*		Red		

wideleaf crumia moss	*Crumia latifolia*		Blue		
Dalton's moss	*Daltonia splachnoides*	E (May 2019)	Red		
dicranodontium moss	*Dicranodontium asperulum*		Blue		
giant geheebia moss	*Didymodon giganteus*		Red		
didymodon moss	*Didymodon leskeoides*		Red		
didymodon moss	*Didymodon subandreaeoides*		Red		
diphyscium moss	*Diphyscium foliosum*		Blue		
discelium moss	*Discelium nudum*		Red		
entodon moss	*Entodon concinnus*		Blue		
flaking tarpaper	*Collema flaccidum*		Red		
hair-point feathermoss	*Cirriphyllum piliferum*		Blue		
claopodium moss	*Claopodium pellucinerve*		Red		
tundra lemon	*Catolechia wahlenbergii*		Blue		
Hulten's bryhnia moss	*Bryhnia hultenii*		Red		
languid horsehair	*Bryoria carlottae*		Blue		
spiny horsehair	*Bryoria cervinula*		Blue		
bryum moss	*Bryum gemmiparum*		Blue		
Schimper's campylopus moss	*Campylopus schimperi*		Red		
spiny witch's hair	*Alectoria imshaugii*		Blue		
Changeable Rock-moss	*Andreaea mutabilis*		Red		
Small-Spored Rock-Moss	*Andreaea sinuosa*		Red		
Invertebrate					
Haida Gwaii Slug	*Staala gwaii*	SC (Apr 2013)	Red	1-SC (Feb 2018)	
Amphibian					
Northern Red-legged Frog	*Rana aurora*	SC (May 2015)	Blue	1-SC (Jan 2005)	
Terrestrial Mammals					
Grizzly Bear	*Ursus arctos*	SC (May 2012)	Blue	1-SC (Jun 2018)	
Ermine, *haidarum* subspecies	*Mustela erminea haidarum*	T (May 2015)	Red	1-T (Jun 2003)	

Wolverine, *luscus* subspecies	*Gulo gulo luscus*	SC (May 2014)	Blue	1-SC (Jun 2018)	
Marine Mammals					
Grey Whale	*Eschrichtius robustus*	SC/E/NAR (May 2004)	Blue	1-SC (Jul 2005)	
Steller Sea Lion	*Eumetopias jubatus*	SC (Nov 2013)	Blue	1-SC (Jul 2005)	Special Concern
Killer Whale	*Orcinus orca*				Threatened
Humpback Whale	*Megaptera novaeangliae*				Special Concern
Harbour Porpoise	*Phocoena phocoena*				Special Concern
Birds					
Common Murre	*Uria aalge*		Red		
Ancient Murrelet	*Synthliboramphus antiquus*	SC (Nov 2014)	Blue	1-SC (Aug 2006)	
Cassin's Auklet	*Ptychoramphus aleuticus*	SC (Nov 2014)	Red	1-SC (May 2019)	
Pine Grosbeak, *carlottae* subspecies	*Pinicola enucleator carlottae*		Blue		
Band-tailed Pigeon	*Patagioenas fasciata*	SC (Nov 2008)	Blue	1-SC (Feb 2011)	
Fisher	*Pekania pennanti*		Blue		
Western Screech-Owl, *kennicottii* subspecies	*Megascops kennicottii kennicottii*	T (May 2012)	Blue	1-T (Jan 2005)	
Short-billed Dowitcher	*Limnodromus griseus*		Blue		
Barn Swallow	*Hirundo rustica*	T (May 2011)	Blue	1-T (Nov 2017)	
Tufted Puffin	*Fratercula cirrhata*		Blue		
Horned Puffin	*Fratercula corniculata*		Red		

Peregrine Falcon, *pealei* subspecies	*Falco peregrinus pealei*	SC (Dec 2017)	Blue	1-SC (Jun 2003)	
Rusty Blackbird	*Euphagus carolinus*	SC (Apr 2017)	Blue	1-SC (Mar 2009)	
Steller's Jay, *carlottae* subspecies	*Cyanocitta stelleri carlottae*		Blue		
Black Swift	*Cypseloides niger*	E (May 2015)	Blue	1-E (May 2019)	
Olive-sided Flycatcher	*Contopus cooperi*	SC (May 2018)	Blue	1-T (Feb 2010)	
Northern Saw-whet Owl, *brooksi* subspecies	*Aegolius acadicus brooksi*	T (Dec 2017)	Blue	1-T (Dec 2007)	
Marbled Murrelet	*Brachyramphus marmoratus*	T (May 2012)	Blue	1-T (Jun 2003)	
Great Blue Heron, *fannini* subspecies	*Ardea herodias fannini*	SC (Mar 2008)	Blue	1-SC (Feb 2010)	
Northern Goshawk, *laingi* subspecies	*Accipiter gentilis laingi*	T (Apr 2013)	Red	1-T (Jun 2003)	
Aquatic Life					
Green Sturgeon	*Acipenser medirostris*	SC (Nov 2013)	Blue	1-SC (Aug 2006)	
Eulachon	*Thaleichthys pacificus*	E/T (May 2011)	Blue		
Bull Trout	*Salvelinus confluentus*	SC (Nov 2012)	Blue		
Hornemann's willowherb	*Epilobium hornemannii* ssp. *behringianum*		Red		
Charlotte Unarmoured Threespine Stickleback	*Gasterosteus aculeatus* pop. 1	SC (Nov 2013)	Red	1-SC (Aug 2019)	
Giant Threespine Stickleback	*Gasterosteus* sp. 1	SC (Nov 2013)	Red	1-SC (Aug 2019)	
--	*Hageniella micans*		Blue		

Northern Abalone	*Haliotis kamtschatkana*	E (Apr 2009)	Red	1-E	Endangered
Cutthroat Trout, *clarkii* subspecies	*Oncorhynchus clarkii clarkii*		Blue		
Leatherback Sea Turtle	*Dermochelys coriacea*				Endangered
Yelloweye Rockfish	*Sebastes ruberrimus*				Special Concern
Longspine Thornyhead	*Sebastolobus altivelis*				Special Concern
Rougheye Rockfish type I	*Sebastes sp. type I*				Special Concern
Rougheye Rockfish type II	*Sebastes sp. type II*				Special Concern

Appendix E

Spill Response Plan

Table of Contents

1. Introduction

This spill response plan has been prepared by WeaverTech to specify requirements for contractors that are selected to complete the upgrades of barge loading infrastructure in Amix Marine Service's facility in Prince Rupert, BC. Procedures outlined in this document shall be followed during all operations by the contractor at the site.

2. Hazard Assessment

2.1. Description of substances

The contractor is not permitted to have more than 500L (excluding fuel stored in integral fuel tanks) of fuel on site at any point in the construction process. Fuel that may be stored onsite will be stored in purpose built double walled containers that are maintained in good condition. Containers will comply with all statutory requirements of *A Field Guide to Fuel Handling, Transportation & Storage* published by the BC Ministry of Water, Land and Air Protection in 2002 and implement recommended practices as practical.

If the contractor does bring fuel on site, it must be stored such that overland flow to a waterbody will not occur (or >30 m from waterbodies). A spill kit must be stored with any fuel stored on site.

2.2. Risk Assessment

The most likely times for a spill to occur are during fueling of vehicles/machinery. Fueling of equipment will only take place from a licensed fuel truck (or by jerry can for small pieces of equipment). During fueling the fueling companies' procedures shall be followed and spill kits must be maintained on both vehicles. Spills might also occur as a result of vehicle damage or collisions. Risks from spills as a result of collision can be mitigated by using only experienced and well-trained operators. Vehicles must be equipped with easily accessible spill kits that can be deployed in the event of a spill from mobile equipment.

It is expected that licensed fueling contractors will be experienced and trained in good fueling procedures. An example of suitable fueling procedures is included with this document in Appendix ii. Fueling will be completed at a designated re-fueling locations.

Re-fueling locations will be reviewed with contractors' personnel at the start of construction to ensure timely response in the event of a spill.

Nothing in this plan should be construed to supersede requirements under the Transportation of Dangerous Goods Act, the BC Hazardous Waste Regulation, the BC Spill Reporting Regulation or other regulations that may apply at the site. If any suggestion or procedure within this document

conflicts with requirements under applicable regulations, these suggestions should be disregarded and rather superseded by those applicable regulatory requirements.

3. Equipment, personnel and other resources

3.1. Spill Response Equipment

The main equipment for use in the event of a spill is spill response kits. These kits will be located on all mobile equipment (and near fuel storage if fuel storage is required). Spill response kits shall be inspected monthly and immediately after a spill; missing items shall be replaced as they are discovered.

Spill response kits will contain materials in appropriate quantities for the machinery on which they are stored.

On vehicles an example of a suitable spill kit is:

- PPE (Raingear, gloves, eye protection)
- Hand Tools (Shovel/Barrier Tape)
- 250 ml bentonite clay
- 1 tarp (4 m x 5 m) and rope
- 10-20 empty sandbags
- Plywood (1 m x 2 m)
- Plastic drum liners
- 25 absorbent pads
- 1 (3 m) absorbent boom

For employee safety and awareness MSDS will be available for materials stored on site in a central location and employees will be made aware of and have access to the datasheets.

Communication in the event of a spill is possible via site radio, cellphone, and landline phone (in office). Any spill will be communicated both internally and externally as laid out in this plan in a timely manner.

3.2. Personnel Training and Responsibilities

All personnel will be trained in spill response procedures outlined in this plan and the use of spill response kits. Duties will be re-assigned from day to day responsibilities as required for spill response. New personnel to the site will be informed of site-specific spill infrastructure and receptors (spill kit locations and re-fueling locations).

A designated person will be the spill response manager for the site. His/her contact information will be posted on the site and provided to all employees. In the event that the spill response

manager is absent from the site they will designate an alternate spill response manager and inform employees.

In the event of a spill that exceeds the containment abilities of the contractor's personnel, third parties may be engaged to contain a spill.

4. Human health and safety

The appropriate PPE will be made available to workers in the event of as spill. Contractors will be trained on appropriate PPE use and PPE will be stored such that is accessible by employees when required. PPE available will include:

- Gloves (Oil resistant)
- Boots
- Coveralls
- Safety glasses
- Respirators

In the event of a spill in an enclosed space additional PPE and training is required.

All PPE will be stored, inspected, and replaced according to manufacturer directions.

Personnel and spill responders shall not negate their obligations to maintain human health and safety. This includes entering confined spaces and dangers associated with flammables spills. If a spill results in an unsafe condition that presents a risk to workers, personnel will contact emergency responders, i.e. dial 911.

5. Communication procedures

In the event of a spill appropriate parties will be notified of the spill. Contact information for organizations and individuals that may need to be contacted in the event of a spill are outlined below. Depending on the size/severity of a spill contacting some or all of these bodies may be required.

Agency	**Number**
Contractors Spill Manager	TBD
Amix - Kristie Sawatzky	604-580-4206
Emergency Services	911
LOCAL Non-emergency police	250-627-0700

LOCAL Non-emergency fire	250-627-1248
Emergency Management BC	250 615-4800
Provincial Emergency Program	1-800-663-3456

6. Waste management

6.1. Waste Management Procedures

All material that comes into contact with spilled substances shall be managed as hazardous wastes unless sampling and lab work determine otherwise. Waste shall be disposed of by licensed third party contractors in a timely manner.

6.2. Temporary Storage

Prior to disposal waste shall be stored on site such that it does not contact precipitation, liquid/leachate is contained, and transport of waste or contaminants by wind does not occur. To prevent or limit the effects of spontaneous combustion storage containers will be metal and isolated from other flammable materials. Within the containers, sorbent pads will be stored within plastic bags to limit oxygen exposure. Containers will be monitored for temperature changes periodically until disposal.

7. Spill response procedures

7.1. Initial Spill Response

Immediately after identifying a spill, employees on scene will contact the spill response manager directly to initiate spill response procedures. Once notified the spill response manager will be responsible for managing the spill response process and notifying internal and external bodies as required.

Once the manager has been contacted efforts will be made to contain the spill. If the spill is within the storm water system catch basins it will be sealed with spill kit materials. If a particularly large spill occurs (i.e. >300L) efforts will be made to place the boom across the outfall of the storm water system or downstream of the Project to contain any release to the Pacific Ocean. Containment will remain in place until the spill is completely cleaned up. If contamination entered the storm water system or ditching, a qualified professional will be consulted, and the area will be monitored for residual contamination; cleaning of the system may be necessary.

At this time a determination shall be made on the size of the spill and outside bodies contacted as required.

Once cleanup is complete the spill incident reporting form (Appendix i) will be completed for internal records.

7.2. Provincial Emergency Program

The Provincial Emergency Program must be contacted immediately if

a) A spill has or is likely to enter a body of water
b) A spill has or is likely to exceed the quantities listed below

	Substances	**Quantity**
1	Class 1, Explosives as defined in section 2.9 of the Federal Regulations	50 kg, or less if the substance poses a danger to public safety
2	Class 2.1, Flammable Gases, other than natural gas, as defined in section 2.14 (a) of the Federal Regulations	10 kg
3	Class 2.2 Non-flammable and Non-toxic Gases as defined in section 2.14 (b) of the Federal Regulations	10 kg
4	Class 2.3, Toxic Gases as defined in section 2.14 (c) of the Federal Regulations	5 kg
5	Class 3, Flammable Liquids as defined in section 2.18 of the Federal Regulations	100 L
6	Class 4, Flammable Solids as defined in section 2.20 of the Federal Regulations	25 kg
7	Class 5.1, Oxidizing Substances as defined in section 2.24 (a) of the Federal Regulations	50 kg or 50 L

8	Class 5.2, Organic Peroxides as defined in section 2.24 (b) of the Federal Regulations	1 kg or 1 L
9	Class 6.1, Toxic Substances as defined in section 2.27 (a) of the Federal Regulations	5 kg or 5 L
10	Class 6.2, Infectious Substances as defined in section 2.27 (b) of the Federal Regulations	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
11	Class 7, Radioactive Materials as defined in section 2.37 of the Federal Regulations	Any quantity that could pose a danger to public safety and an emission level greater than the emission level established in section 20 of the Packaging and Transport of Nuclear Substances Regulations, 2015 (Canada)
12	Class 8, Corrosives as defined in section 2.40 of the Federal Regulations	5 kg or 5 L
13	Class 9, Miscellaneous Products, Substances or Organisms as defined in section 2.43 of the Federal Regulations	25 kg or 25 L
14	waste containing dioxin as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
15	leachable toxic waste as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L

16	waste containing polycyclic aromatic hydrocarbon as defined in section 1 of the Hazardous Waste Regulation	5 kg or 5 L
17	waste asbestos as defined in section 1 of the Hazardous Waste Regulation	50 kg
18	waste oil as defined in section 1 of the Hazardous Waste Regulation	100 L
19	waste that contains a pest control product as defined in section 1 of the Hazardous Waste Regulation	5 kg or 5 L
20	PCB wastes as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
21	waste containing tetrachloroethylene as defined in section 1 of the Hazardous Waste Regulation	50 kg or 50 L
22	biomedical waste as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
23	a hazardous waste as defined in section 1 of the Hazardous Waste Regulation and not covered under items 1 to 22	25 kg or 25 L
24	a substance, not covered by items 1 to 23, that can cause pollution	200 kg or 200 L
25	natural gas	10 kg

8. Training

Contractor personnel will receive training on spill response procedures and the correct use of spill response kits (including PPE). Employees will be given access to this plan and be given time to review it as necessary.

Appendix i: Spill Incident Reporting Form

Spill Incident Reporting Form

1. Site Name / Location:	
2. Written Report Date: **Report Made By:** **(name and title)**	
3. Initial Incident Date and	
4. Emergency Reported By:	
5. Emergency Type:	Spill Fire Other (Specify)
6. Exact Location of	
7. Duration of Emergency:	
8. Material Released:	
9. Estimate Quantity	
10. Estimate Quantity	
11. Weather Conditions: **(e.g., wind, precipitation, sky, at the time of the incident)**	
12. Recovery Method:	
13. Most Probable Cause of	

14. Response Action: **(include pictures or drawings, if necessary)**	
15. On-scene Response	
16. Method of Disposal/Storage:	
17. Receiving Environment Assessment: **(e.g., to ground, fresh/salt water, be specific)**	
18. Agencies Notified: **(e.g., government, consultant, contractor)**	**Agency Name:** **Contact Name:** **Time and Date**
19. Agencies - Incoming Calls Received	**Agency:** **Contact Name:** **Time and Date:**
20. Agency Orders:	
21. Required Follow-up Actions:	
22. Clean-up Materials Used	
23. Physical Injuries to Employees:	

24. Spill/Fire Equipment Needing Replacement:	
25. Short- and Long-term Impacts of the Incident:	
26. Recommendations for Improving Emergency Response Capabilities:	
27. Recommendations to Prevent Recurrence: (specify what, by whom and completion date)	
28. Clean-up Costs (collect receipts for labour,	
Signatures:	

Appendix ii: Fueling Procedures

Fueling Procedures

To minimize the risks of spills occurring, fueling will be undertaken on an impermeable surface (concrete/asphalt) at a designated fueling station(s) at least 30m from watercourses.

The following are required by all employees and contractors at the Site:

Employees must be familiar with the locations of these catch basins for emergency preparedness.

Employees will remain with the fuel nozzle during the entire fueling procedure so that spills or leaks (from the tank or vehicle) can be quickly noted and corrected and no smoking will occur within 15 m of fuel storage.

Spill kits will be kept next to the fueling locations to allow for a quick response in the event of a spill and must be inspected monthly for complete inventory.

To eliminate drips, absorbent wipes will be kept on hand and used if required when fueling is complete and/or fueling nozzles will be fitted with drip containment devices.

Employees will be trained on correct fueling procedures and “topping up” of fuel tanks will not be permitted.

If fuelling is undertaken from a small container (jerry can, etc.), a funnel will be used (and wiped to prevent dripping).

Finally, should a spill occur, employees must follow all appropriate procedures for containing the spill and reporting the appropriate reporting authorities.