

SEAL COVE COAST GUARD BASE

NEW FLOATS

SPECIFICATIONS



INDEX:

- SECTION 01000: GENERAL INSTRUCTIONS**
- SECTION 01010: SUMMARY OF WORK**
- SECTION 013529.06: HEALTH AND SAFETY REQUIREMENTS**

CONSTRUCTION SPECIFICATIONS

- SECTION 02351: PILE INSTALLATION, GENERAL**
- SECTION 03300: CONCRETE**
- SECTION 03400: CONCRETE FLOAT**
- SECTION 03500: CONCRETE REINFORCING**
- SECTION 05120: STEEL PIPE PILES & STRUCTURAL STEEL**
- SECTION 06100: ROUGH CARPENTRY**

APPENDIX:

STANDARD MITIGATION, ORGANIZED BY PROJECT ACTIVITY

DRAWINGS:

- E968-01, NEW FLOATS – GENERAL ARRANGEMENT**
- E968-02, NEW FLOATS – PLANS: NEW VS EXISTING**
- E968-03, NEW FLOAT FOR MSPV – SECTION A, NOTES**
- E968-04, NEW FLOATS #2 AND #10 – SECTION B**
- E968-05, NEW FLOATS – PLAN DETAILS**
- E968-06, NEW FLOAT FOR MSPV – FLOAT AND PILE WELL DETAILS**
- E968-07, NEW FLOAT FOR MSPV – CLEAT REINFORCEMENT DETAILS, SHEET 1**
- E968-08, NEW FLOAT FOR MSPV – CLEAT REINFORCEMENT DETAILS, SHEET 2**
- E968-09, NEW CONCRETE FLOAT (FLOAT #2) – PLANS**
- E968-10, NEW CONCRETE FLOAT (FLOAT #2) – REINFORCING DETAILS**

REFERENCE DRAWINGS:

- FM12-HV-000, 2011 REVISION 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY**
- FM12-HV-001, 2011 REVISION 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY**
- FM12-HV-002, 2005 REVISION 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY**
- FM12-HV-003, 2005 REVISION 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY**
- FM12-HV-END-000, 3.65m WIDE FLOAT MODULE 2011 REVISION**
- FM12-HV-END-001, 2011 REVISION 3.657m WIDE HEAVY END MODULES ASSEMBLY**

PART 1 General

1.1 Description of Work

- .1 The work involves the removal of old floats and the supply and installation of new timber and concrete floats, with new steel mooring piles drilled into bedrock.

1.2 Related Sections

not used

1.3 Site Conditions

- .1 All known discrepancies are to be brought to the attention of the Departmental Representative and are to be accounted for in the Contractor's Bid Price.

1.4 Work Covered by Contract Documents

- .1 Work of this Contract comprises supply and installation of floats and mooring piles with associated work as described in this document and on the drawings.

1.5 Location of Site

- .1 The work is at the Canadian Coast Guard Base located at Seal Cove, 1 Seal Cove Way, Prince Rupert, BC.

1.6 Work Sequence

- .1 Coordinate Progress Schedule with Departmental Representative's timeline.
- .2 Final Completion of work to be before February 28, 2021

1.7 Documents Required

- .1 Maintain one copy of each of the following documents at the fabrication site:
 - 1. Contract drawings.
 - 2. Contract specifications.
 - 3. Addenda to Contract documents.
 - 4. Reviewed shop drawings.
 - 5. Change orders.
 - 6. Other modifications to Contract.
 - 7. Professional Compliance test reports.
 - 8. Product data sheets.
 - 9. Supplier / Manufacturer's instructions / directions / application information.
 - 10 Material / Product Warranty information / agreements.

1.8 Work Schedule

- .1 Within five (5) working days after contract award, provide a schedule showing anticipated progress stages and final completion of the work within the time period required by the Contract documents.
- .2 Complete Performance and Acceptance - Refer to clause 1.17.

1.9 Setting Out of Work

- .1 The Contractor shall provide survey of existing structures, and layout and measurements for the new floats and piles to comply with the design drawing and confirm all necessary clearances. Any interference between piles and/or structures shall be reported and resolved before ordering materials. Exact pile locations may be adjusted slightly to suit final float configuration.

1.10 Measurement for Payment

- .1 Payment will be Lump sum and/or per the unit prices in the contract.

1.11 Project Meetings

- .1 The Departmental Representative may arrange for project meetings from time to time.
- .2 The Departmental Representative may furnish additional drawings to assist proper execution of work. These drawings will be issued for clarification only, and will have the same meaning and intent as if they were included with drawings referred to in the Contract documents.

1.12 Record Documents

- .1 The contractor shall be responsible for compliance test reports by independent professional testing companies to inspect the work in accordance with the technical specifications that form a part of this contract document.
- .2 The compliance inspections must be carried out regularly, both before and after parts are covered up or embedded. The inspection reports and certificates must be copied to the Departmental Representative regularly and must be readily available for the Departmental Representative's review from time to time.
- .3 At completion, supply one complete set of as-built drawings and specifications with all deviations clearly marked and a complete document of professional certifications.
- .4 At completion provide all product, material and equipment warranties by the suppliers and manufacturers.

1.13 Codes and Standards

- .1 Perform work in accordance with the Standards and codes identified in the technical specifications. Related Codes are CSA, National Building Code, and the National Fire Code.
- .2 The manufacturer must have good standing with the Work Safe B.C. and all federal, provincial and local regulators.
- .3 In any case of conflict or discrepancy between referenced codes, standards and regulations, the most stringent requirements shall apply.
- .4 Meet or exceed the requirements of specified standard, codes and referenced documents.

1.14 Environmental Protection

- .1 Comply with federal, provincial and municipal laws, orders and regulations concerning protection of the environment and the control and abatement of soil, water and air pollution at the manufacturers' facility during execution of this contract.
- .2 Do not dispose of debris, contaminated water or volatile materials such as oil, paint thinner or mineral spirits into waterways, storm or sanitary sewers, or the sea. Comply with all environmental regulations concerning the proper disposal of these materials and products.
- .3 Fires and burning of rubbish on site are not permitted unless proper permission by regulators has been granted to the manufacturer at his site.
- .4 Do not bury or dispose of rubbish and waste materials on site unless approved by the appropriate regulators.
- .5 The mitigation measures outlined in the 'Standard Mitigation Organized by Project Activity' will form part of the specification. The Contractor will keep a copy of the report on site

1.15 Use of Site

- .1 Site use and closures to be coordinated with Departmental Representative.
- .2 Keep facility closure to a minimum.
 - .1 Notice of site work must be posted on a clearly visible sign, such that facility users can readily see it.
- .3 Hours of Work
 - .1 Perform work between normal hours of 07:00 to 16:00, Monday to Friday, except holidays and in accordance with local noise bylaws.
 - .2 Work may be performed after working hours, on weekends and holidays as approved by Departmental Representative.
- .4 Use of site: limited to immediate area of the work and areas assigned by the engineer for office storage, equipment, stock piles, sanitary facilities, etc.
- .5 As there will be NO ACCESS to any of the buildings, Contractor will provide sanitary facilities for the work force in accordance with governing regulations and ordinances.
- .6 Vehicles entering and left in designated work area must have Contractor's logo/name clearly marked on the vehicle.
- .7 Arrange parking in areas directed by Departmental Representative. Maintain construction parking area clean and free of construction related debris. Make good damage resulting from Contractor use of parking areas, at no cost to the Contract.
- .8 Confine work and operations of employee to areas defined by the Contract Documents unless directed otherwise in writing by the Departmental Representative. Do not unreasonably encumber premise with products.

1.16 Permits and Notifications

- .1 Obtain and pay for all permits that may be required.

-
- .2 Conform to the noise by-laws and requirements of local authorities impacted by the work on this float.
 - .3 Notify Environmental Protection Service and the local Fisheries Officer at least five days before the work commences.

1.17 Complete Performance

- .1 Provide a minimum of 5 days' notice to the Departmental Representative of the date of completion.
- .3 Markup the drawing to confirm as-built pile locations.
- .4 Final Acceptance:
 - .1 All work shall have been completed, including repair of deficiencies a minimum of 5 working days before the requested date of inspection pursuant to the General Conditions. Real Properties and Technical Support and their representatives require time and effort to pre-plan acceptance inspection. Incurred costs resulting from cancellation or delay notice by the contractor may be assessed against the contract.

1.18 Material and Equipment

- .1 General:
 - .1 Use new material unless otherwise specified.
 - .2 Record the following information for any or all materials and products proposed for supply:
 - .1 Name and address of manufacturer.
 - .2 Trade name, model and catalogue number.
 - .3 Performance, descriptive and test data.
 - .4 Manufacturer's installation/application instructions.
 - .5 Evidence of arrangements to procure.
 - .3 Provide equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
 - .4 Use products of 1 manufacturer for equipment or material of the same type or classification unless otherwise specified.
 - .2 Metric sized products:
 - .1 SI metric units of measurement are used exclusively on the drawings and in the specifications for the project.
 - .2 The manufacturer is required to provide metric products where specified in the sizes called for in the contract documents, except where a valid claim can be made that a particular product is not available on the Canadian market.
 - .3 Difficulties caused by the manufacturer's lack of planning and effort to obtain modular metric sized products which are available on the Canadian market will not be considered sufficient reason for claiming they cannot be provided.
 - .4 Claims for additional costs due to provision of specified modular metric sized products will not be considered.
 - .3 Substitution after Contract award:
 - .1 No substitutions will be permitted without prior written approval of the Departmental Representative and the Contracting Authority
 - .2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution.
-

-
- .3 Proposals will be considered by the Departmental Representative if:
 - .1 Materials selected by tenderer from those specified are not available;
 - .2 Delivery date of materials selected from those materials specified would unduly delay completion of Contract, or
 - .3 Alternative materials to that specified, which is brought to the attention of and considered by the Departmental Representative as equivalent to the material specified, and will result in a credit to the Contract amount.
 - .4 Should the proposed substitution be accepted whether in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as a result of substitution.
 - .5 Amounts of all credits arising from approval of substitutions will be determined by Departmental Representative and the Contract price will be reduced accordingly.
 - .4 Manufacturer's instructions:
 - .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
 - .2 Notify Departmental Representative in writing of any conflict between these specifications and the manufacturer's instructions. The Departmental Representative will designate which document is to be followed.
 - .5 Delivery and storage:
 - .1 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.
 - .2 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site.
 - .3 Store material and equipment in accordance with suppliers' instructions.
 - .4 Touch-up damaged factory finished surfaces to comply with the specifications. Use coatings in accordance with the specifications. Do not paint over nameplates.
 - .5 Maintain fabrication equipment and plant in good operating order.

1.19 Interpretation

- .1 In interpreting the Contract, in the event of discrepancies or conflicts between anything in the Plans and Specifications and the General Conditions, the General Conditions govern.
- .2 In interpreting the Plans and Specifications, in the event of discrepancies or conflicts between:
 - .1 The Plans and Specifications: the Specifications govern;
 - .2 The Plans: the Plans drawn with the largest scale govern;
 - .3 Figured dimensions and scaled dimensions: the figured dimensions govern; and
 - .4 Specifications, Plans & Appendices: the Specifications & Plans govern over the Appendices.

1.20 Requirements of Regulatory Agencies

- .1 Ensure work meets all applicable environmental regulations.
- .2 The contractor shall comply with municipal, provincial, and national regulatory agency regulations relating to the project.
- .3 Claims for extra costs resulting from all regulatory agency requirements including those referenced in Clause 1.22.2 will not be entertained by the Department.
- .4 The Contractor shall mark floating equipment with lights in accordance with Notice to Mariners CCG regulations.

-
- .5 The Contractor will ensure that a fuel / oil spill emergency action plan is in place at all times.
 - .6 The Contractor shall comply with the "BC Marine and Pile Driving Contractors Association, Best Management Practices for Pile Driving and Related Operations".

1.21 Temporary Facilities

- .1 Provide temporary facilities in order to execute work expeditiously.
- .2 Water is available for construction use at no cost. Department Representative will determine delivery points . Provide all equipment and temporary hoses to bring water to work, at no additional cost to the Contract. Exercise conservation whenever using water supply. Do not leave water running unattended.
- .3 Electrical power is available for construction purposes at no cost. Department Representative will determine delivery points. Connect to existing power supply in accordance with Canadian Electrical Code . Provide all equipment and temporary lines to bring power to work, at no additional cost to the Contract. Exercise conservation whenever using temporary electrical power supply.
- .4 Provide and maintain temporary fire protection equipment during performance of work required by governing codes, bylaws, and regulations. Conform to site plan where in effect.
- .5 Provide sanitary facilities for work force in accordance with governing regulations and ordinances. Locate where directed by Department Representative.
- .6 Remove any temporary services or facilities after completion of the work and make good any damage to conditions previously existing or to match new work as acceptable to the Engineer.

1.22 Material Disposal

- .1 All material designated to be removed will become the property of the Contractor and will be disposed of in an environmentally acceptable manner so that they neither become a menace to marine navigation nor a nuisance to the public on adjacent or any other property.
- .2 Unless otherwise specified, all existing material to be replaced or removed will be disposed of in accordance with .1 above.
- .3 Conduct cleanup and disposal operations to comply with local ordinances and anti-pollution laws.

1.23 Cutting, Fitting and Work Fit Patching

- .1 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.

1.24 Other Contracts

- .1 Other contracts may be in progress or be awarded while this contract is in progress.
- .2 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.
- .3 Co-ordinate work with other Contractors. If any part of the work under this contract depends upon work of another Contractor, report promptly in writing any defects or conflicts which may interfere with the proper execution of the work.

PART 2 Products

Not Used

PART 3 Execution

Not Used

END OF SECTION

SECTION 01010: SUMMARY OF WORK

The work consists of marine construction include the following:

- .1 Mobilization, including transport of all materials, plant, equipment and labour, to the site
- .2 Provision of temporary services and preparatory work.
- .3 Protection of existing utilities
- .4 Demobilization: including dismantle and ship out of all excess materials, plant, equipment and labour from the site, removal of temporary services and clean up and restoration of the site.

The work is divided into 2 Parts, having separate cost proposals. These are as follows:

Part 1: Replace Floats for MSPV Moorage

- remove existing concrete Floats # 4, #5 and #6 alongside the main Coast Guard dock, and dispose of off site (incl brackets around timber piles),
- Temporarily disconnect power and remove electrical components on these floats,
- supply and install new Heavy Timber Float, 3.66 m wide x 60 m long, along the east side of the main Coast Guard dock to replace the old Floats #4, #5 and #6,
- supply and install galvanized steel frames inside the timber floats to reinforce cleat locations,
- supply and install 6 new steel mooring piles inside pile wells in the new timber MSVP mooring float; steel piles to be drilled into bedrock,
- reinstall electrical equipment and water and communication lines
- supply and install transition plates, cleats, etc.

Part 2: Replace Ramp Landing Float and Float #10

- temporarily support ramp and electrical conduits, communication lines, water line, etc
- remove existing Float #2 and install new concrete float,
- new concrete float to have pile wells and guide rails for ramp,
- supply and install (drill into bedrock) 2 new steel mooring piles for concrete float,
- place bottom of ramp back on new float,
- reconnect electrical, water, communication lines,
- remove existing concrete Float #10,
- install new Heavy Timber Float to replace Float #10, using existing piles for moorage,
- provide additional price to pull and redrive mooring pile at south side of Float #10 (if necessary),
- supply and install transition plates between ramp landing (concrete) float and other float(s)
- note that the sequence of the work may vary from that indicated above

END OF SECTION

Part 1 GENERAL**1.1 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of British Columbia
 - .1 Workers Compensation Act, RSBC 1996 - Updated 2006.
 - .2 Occupational Health and Safety Regulation.
- .4 National Building Code of Canada (NBC)
 - .1 Part 8, Safety Measures at Construction and Demolition Sites.

1.2 WORKERS COMPENSATION BOARD COVERAGE

- .1 Comply fully with Workers' Compensation Act, regulations, and orders made pursuant thereto and any amendments up to the completion of work
- .2 Maintain Workers' Compensation Board coverage during term of Contract, until and including date that Certificate of Final Completion is issued.

1.3 COMPLIANCE WITH REGULATIONS

- .1 DFO may terminate Contract without liability to Canada where Contractor, in the opinion of DFO, refuses to comply with a requirement of Workers' Compensation Act or Occupational Health and Safety Regulations.
- .2 Contractor is responsible to ensure that all workers are qualified, competent and certified to perform work as required by Workers' Compensation Act or Occupational Health and Safety Regulations.

1.4 SUBMITTALS

- .1 Submit to Department Representative submittals listed for review.
- .2 Work effected by submittal will not proceed until review is completed.
- .3 Submit the following:
 - .1 Health and Safety Plan.
 - .2 Copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
 - .3 Copies of incident and accident reports.

-
- .4 Copies of Material Safety Data Sheets and all other documents required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .5 Emergency procedures
 - .4 Submission of Health and Safety Plan and any revised version to the Departmental Representative is for information and reference purpose only. It will not:
 - .1 Be construed to imply as approval by Department Representative
 - .2 Be interpreted as warranty of being complete, accurate, and compliant.
 - .3 Relieve the Contractor of his legal obligations for provision of health and safety for the project.
 - .5 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- 1.5 WORK PERMITS**
- .1 Obtain speciality permit(s) related to the project before start of work
- 1.6 FILING OF NOTICE**
- .1 Complete and submit Notice of Project as required by Provincial authorities.
 - .2 Provide copies of all notices to Department Representative.
- 1.7 SAFETY ASSESSMENT**
- .1 Perform site specific safety hazard assessment related to project.
- 1.8 MEETINGS**
- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- 1.9 GENERAL REQUIREMENTS**
- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
 - .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.10 GENERAL CONDITIONS

- .1 Provide safety barricades and lights at work site as required to provide safe working environment for workers
- .2 Ensure that non-authorized persons are not allowed in designated construction areas and work site.
 - .1 Provide appropriate means by use of barricades, fences, and warning signs.

1.11 REGULATORY REQUIREMENTS

- .1 Comply with specified codes, acts, bylaws, standards, and regulations to ensure safe operations at site.
- .2 In the event of conflict between any provision of above authorities, the most stringent provision will apply.

1.12 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.13 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations having jurisdiction and advise Departmental Representative verbally and in writing.

1.14 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with the work outlined in the Contract.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of work.

1.15 HAZARDOUS PRODUCTS

- .1 Comply with the requirements of Workplace hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Departmental Representative and in accordance with Canada Labour Code.

1.16 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations having jurisdiction, and in consultation with Departmental Representative.

1.17 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected. The Contractor will be responsible for costs arising from such "stop work order".

1.18 CONFINED SPACES

- .1 Carry out work in confined spaces in compliance with Provincial regulations.

1.19 OVERLOADING

- .1 Ensure no part of the work is subject to a load which will endanger its safety or will cause permanent deformation

1.20 FIRE SAFETY REQUIREMENTS

- .1 Store oily/paint soaked rags, waste products, and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis
- .2 Handle, store, use and dispose of inflammable and combustible materials in accordance with the National Fire Code of Canada.

1.21 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

END OF SECTION

SECTION 02351: PILE INSTALLATION, GENERAL

1 GENERAL

1.1 Related Work

- .1 Related sections of the work include:
Steel Pipe Piles & Structural steel Section 05120

This section of the Specifications is not necessarily complete in itself and must be read in conjunction with the other sections of the Contract Documents.

1.2 Protection

- .1 Protect public and construction personnel, adjacent structures, services and work of other sections from hazards due to pile driving operations.

1.3 Delivery and Handling,

- .1 Protect piles from damage due to excessive bending stresses, impact, abrasion or other causes during delivery, storage and handling.
- .2 Replace damaged piles to satisfaction of Departmental Representative.

2 PRODUCTS

2.1 Materials

- .1 Material requirements for piles are specified in Section 05120.

3 EXECUTION

3.1 Equipment

- .1 Prior to commencement of pile installation operation, submit to Departmental Representative for review, details of equipment for installation of piles. Provide weights and specifications for equipment as requested including: floating equipment, crane capacity, hammer weight, drilling equipment, etc.
- .2 Provide detailed methodology for installation of piles for review by Departmental Representative..

3.2 Field Measurement

- .1 Maintain accurate records of driving and/or drilling for each pile, including:
 - .1 Type and make of hammer, stroke or related energy.
 - .3 Pile size and length, location of pile in pile group, location or designation of a pile group
 - .4 Sequence of driving piles
 - .5 Number of blows per 300 mm for entire length of pile and number of blows per 25 mm for last 100 mm, or appropriate blow counts at the end of driving when refusal is reached at a rock surface.
 - .6 Other pertinent information such as interruption of continuous driving or drilling, rate of drilling, pile damage, etc.
 - .7 For drilling provide rate of advancement of bit for entire length of hole, changes in rate over depth, etc.
 - .8 Final tip and cutoff elevations.

- 3.3 Provide Departmental Representative with two copies of records.

- 3.4 Pile Location Tolerances
- .1 Piles shall be driven to their intended locations as shown on the drawings.
 - .2 Pile heads to be within 50mm of locations as indicated on drawings.
 - .3 Piles not to be more than 0.5% of length out of alignment.
 - .4 Pile cut off elevations to be within 25 mm of elevations shown in drawings.

END OF SECTION

SECTION 03300: CONCRETE

1 GENERAL

1.1 References

- .1 The minimum standards for all work shall be the requirements of the latest edition of the following standards except where specified otherwise:

CAN/CSA-A23.1	Concrete Materials and Methods of Concrete Construction
CAN/CSA-A23.2	Methods of Test & standard Practices for Concrete
CAN3-A23.3	Design of Concrete Structures
CAN/CSA-A5	Portland Cement
CAN/CSA A23.4	Precast Concrete – Materials and Construction
CAN/CSA-A251	Qualification Code for Architectural and Structural Precast Concrete Products
CAN/CSA S6-00	Design of Highway Bridges

1.2 Samples

- .1 Submit samples if requested.
- .2 At least 4 weeks prior to commencing work, inform Engineer of proposed source of aggregates and provide access for sampling.

1.3 Source Quality Control

The following shall be submitted to the Departmental Representative for review, at least 10 working days prior to commencing the Work:

- .1 Proposed concrete design mix, indicating material contents in weight per cubic metre of concrete.
- .2 Manufacturer's name and specifications for all admixtures, including bonding agents and curing compounds.
- .3 Shop drawings showing details of reinforcement, surface finishes and methods of handling and installation. Details of lifting inserts shall also be included.
- .4 Provide Departmental Representative with certified copies of all quality control tests as specified in CSA A23.4 and CSA A251
- .5 Test certificates for strength, air content, and slump of the proposed concrete mixes.

2 PRODUCTS

2.1 Materials

- .1 All materials must meet the requirements of CSA A23.1.
- .2 Cement: Except where specified otherwise on the Drawings cement shall be Normal Portland Cement, Type 10.
- .3 Aggregates: Fine and coarse aggregate shall meet the requirements of CAN/CSA-A23.1.
- .4 Water: Water for concrete and curing shall be clear and free from injurious amounts of oil, acid, alkali, organic matter, sediment, or any other deleterious substances.
- .5 Admixtures: Admixtures shall conforming to the requirements of CAN/CSA-A23.1. Admixtures containing calcium chloride shall not be used.
- .6 Supplementary cementing materials: Silica Fume and/or fly ash to CAN/CSA-A23.5, 15 % by weight (to be confirmed).
- .7 Reinforcing steel: billet steel deformed bars to CAN/CSA G30.18, grade 400.

2.2 Mix Proportions

- .1 Contractor shall be responsible for concrete mix proportioning.

- .2 Proportion normal density concrete to CAN/CSA-A23.1, to meet the strength and class of exposure given in these specifications.
- .3 The nominal maximum size of aggregate shall not exceed the limits in CAN/CSA-A23.1-M Clause 14.2.2. If required, the Contractor shall provide certification that all aggregates conform to the requirements of CSA A23.1, Appendix B (reactive aggregates).
- .4 The Contractor shall submit his proposal for minimizing concrete shrinkage to the Engineer for review. These proposals should include details of concrete pouring sequences and arrangements of construction joints; additives to reduce the water/cement ratio; proposals for replacing the cement content with other approved products.
- .5 Concrete mixes shall meet the requirements given in the following table:

Table 1:

A23.1 Classification	Minimum Compressive Strength (at 28 days)	Maximum Nominal aggregate size	Air Content	Maximum Slump	Maximum water/cement ratio (by mass)
	(MPa)	(mm)	(%)	(mm)	
C1	40	10	5 to 8	To suit	0.40

3 EXECUTION

3.1 Workmanship

- .1 Obtain approval from Departmental Representative before placing concrete. Provide 24 hours notice to the Departmental Representative prior to placing of concrete.
- .2 Place concrete in accordance with CAN/CSA-A23.1.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Obtain approval from Departmental Representative for proposed method of protection for concrete during placing and curing in adverse weather, prior to placing of concrete.
- .5 Maintain accurate records of poured concrete to indicate date, location of pour, quality, air temperature and test samples taken.

3.2 Construction Joints

- .1 Joints shall be located as indicated on the Drawings or as approved by the Departmental Representative. Where additional joints are required to suit construction, they shall be located and designed so that the strength and appearance of the structure are least impaired.
- .2 Joints shall be in accordance with CAN/CSA-A23.1.

3.3 Curing and Protection:

- .1 Curing and protection shall be in accordance with CAN/CSA-A23.1. Attention is drawn to the requirements for Hot Weather and Cold Weather Protection.

3.4 Finishing of Surfaces

- .1 Finish all surfaces in accordance with CAN/CSA-A23.1, with final finish as noted on Drawings.
- .2 Concrete shall be cured and finished to satisfy the intended use of the surface.

3.5 Defective Concrete

- .1 Remove defective concrete, blemishes and embedded debris and repair as directed by the Departmental Representative.

3.6 Inspection and Testing

- .1 Sampling and quality control of concrete shall be the responsibility of the Contractor. All concrete testing shall be completed by a testing agency certified to CSA A283.

-
- .2 The Contractor shall retain and pay for the services of an independent Testing Agency who will continuously supervise the mixing and handling of concrete, take slump tests, and check all matters affecting quality control of the concrete.
 - .3 Three (3) test cylinders will be taken for each concrete pour. One cylinder will be broken at the age of 7 days, at which time it should show a compressive strength of not less than 60% of the 28 day strength. A second cylinder will be broken at the age of 28 days. If this cylinder does not meet the required compressive strength, a third cylinder shall be broken at the age of 35 days. If this cylinder 35 day compressive strength is less than the required 28 day compressive strength, the Engineer may require the Contractor to remove and replace the section of concrete which fails to meet this required strength.
 - .5 The Contractor shall make, identify, cure and ship the cylinders as instructed by the Departmental Representative. The test cylinders shall be made, cured and tested in accordance with the requirements of CAN/CSA Standard A23.2.
 - .6 Every load of air entrained concrete shall be tested for air content until such time as satisfactory control of the air content is demonstrated to the Departmental Representative. When such control is achieved, the Departmental Representative may reduce the frequency of the air tests. Whenever a test falls outside the specified air content limits, the testing frequency will revert to one test per load until satisfactory control is achieved.
 - .7 Concrete shall meet the compressive test requirements contained in CAN/CSA-A23.2. If unsatisfactory trends become evident in test results the Contractor shall immediately take action to correct the deficiency by adjusting the mix design. If improvement is not achieved, the Departmental Representative shall have the right to order one or more of the following at no additional cost to the Owner:
 - Non-destructive testing (CAN/CSA A23.2)
 - Accelerated curing of Test Cylinders
 - Cores be drilled from portions of the structure in question and tested in accordance with CAN/CSA A23.2.
 - Such other tests as the Departmental Representative may specify
 - Removal and replacement of all defective concrete.
- 3.7 Manufacture
- .1 Manufacture according with the requirements in CSA A23.4 and A251
 - .2 Placement of reinforcing, development lengths, laps, cover, etc to meet the requirements of CSA A23.1 and CSA A23.3
 - .3 Tolerances for manufacture of units and placement of rebar to meet requirements of CSA A23.4
 - .4 Cure units in accordance with CSA A23.4
- 3.8 Clean-up / environmental
- .1 Ensure that no concrete products are spilled into the water. Adhere to guidelines of government Environmental agencies regarding concrete work in marine environments
 - .2 As the Work progresses, all concrete spill or splash shall be removed from finished surfaces before such spill or splash has hardened or set.
 - .3 At the conclusion of the Work, all surplus material, form material, equipment and debris occasioned by the Work shall be removed from the premises, and the site left broom clean, or its equivalent insofar as the Work herein is concerned.

END OF SECTION

SECTION 03400: CONCRETE FLOAT

1 GENERAL

1.1 References

- .1 The minimum standards for all work shall be the requirements of the latest edition of the following standards except where specified otherwise:

CAN/CSA-A23.1	Concrete Materials and Methods of Concrete Construction
CAN/CSA-A23.2	Methods of Test for Concrete
CAN3-A23.3-M	Design of Concrete Structures for Buildings
CAN/CSA-A5-M	Portland Cement

1.2 Source Quality Control

Detailed drawings of float shall be submitted for review before ordering any materials or starting construction. These drawings must include all dimensions, rebar, clearances, inserts, material specifications, etc. If requested, the following shall be submitted for review by the Departmental Representative, prior to commencing work:

- .1 concrete mix design.
- .2 manufacturer's name and specifications for all admixtures, including bonding agents and curing compounds, proposed for use in the Work.
- .3 test certificates for strength, air content, and slump of the proposed concrete mixes from at least five separate sets of tests for each design mix.
- .4 strength results from cylinders
- .5 embedded metal shop drawings.

1.3 Design Criteria – New Concrete Float:

Design loads to include:

- .1 Dead load of ramp plus live load of 2.4 kPa (50 psf) on entire ramp,
- .2 Snow load
- .3 Live load of 2.4 kPa on full and on ½ of float area (2 separate load cases)
- .4 Lateral loading (wave + wind) of 2 kN/m

1.4 Performance Criteria – New Concrete Float:

- .1 freeboard of float (with ramp dead load reaction) shall be 450 mm, min.
- .2 freeboard under full live loading or snow loading shall be 100 mm, min.
- .3 draft under normal loading shall be 1200 mm, max.

1.5 General Requirements – New Concrete Float:

- .1 float deck to be sloped for drainage and to have broomed finish
- .2 consult electrical drawings for conduits and/or fixtures on the float,
- .3 new floats to have rub boards and tie-up rails installed – float fabricator to coordinate and allow review by Departmental Representative.

2 PRODUCTS

2.1 New Float:

- .1 Concrete 28 day strength shall be minimum 40 MPa, Exposure class C1.
- .2 Concrete shall have an air content of 6 % by volume and shall have a maximum water cement ratio of 0.4
- .3 Max aggregate size shall be 10 mm (3/8").
- .4 Mix design to be formulated to minimize permeability and contain silica fume and/or fly ash.
- .5 Concrete mix to be submitted for review by engineer.

-
- .6 All hardware, including bolts, nuts, washers, etc. shall be stainless or hot dip galvanized to CAN/CSA-G 164, minimum zinc coating of 600 g/m².
 - .7 Foam floatation billets to be made of expanded polystyrene bead or foam, using 100 % virgin material, EPS type 1. Polystyrene to have the following properties:
 - a. Minimum compressive strength = 76 kPa
 - b. Minimum density = 16 kg/m³ (1 pcf)
 - c. Maximum water absorption: 6% (by volume)
 - .8 Rub boards to be continuous around float perimeter: either pressure treated (ACZA) Doug Fir # 2 or untreated yellow cedar. See section 06100 of these specifications for treatment
 - .9 Tie-up rails to be 89 x 140 Doug Fir #2, ACZA or untreated Yellow cedar. Risers 89 mm high x 400 long, spaced at 1200 o/c.

3 EXECUTION

3.1 New Concrete Floats:

- .1 Float contractor must be experienced in the construction of concrete floats and have produced floats that have been in service in salt water exposure for more than 5 years.
- .2 Clear cover to reinforcing steel to be 60 mm on exterior exposed surfaces (above and below the water line), 30 mm on interior surfaces against foam billets (ie where not exposed to seawater).
- .3 All exterior corners to be chamfered 20 mm
- .4 Top surface of float to be sloped 1 % from centreline down to each side for drainage

END OF SECTION

SECTION 03500: CONCRETE REINFORCING

1 GENERAL

1.1 References

- .1 The minimum standards for all work shall be the requirements of the latest edition of the following standards except where specified otherwise:

CSA-G390.15	Welded Deformed Steel Wire Fabric for Concrete Reinforcement
CAN/CSA-G30-18	Billet Steel Bars for Concrete Reinforcement
CAN/CSA-A23.1	Concrete materials & methods of concrete construction
CAN/CSA-A23.2	Methods of test & standard Practices for concrete
CAN3-A23.3-M	Design of Concrete Structures

1.2 Samples

- .1 Submit mill certificates for steel reinforcement if requested.

1.3 Source Quality Control

The following shall be submitted to the Owner for review by the Departmental Representative, at least 10 working days prior to commencing the Work:

- .1 Manufacturer's name
- .2 Shop drawings showing details of reinforcement, methods of handling and installation. Details of lifting inserts shall also be included, if any.
- .3 Provide certified copies of all quality control tests as specified in CSA

2 PRODUCTS

2.1 Materials

- .1 Reinforcing steel: billet steel deformed bars to CAN/CSA G30.18, grade 400, bearing marks indicating size and grade.

3 EXECUTION

3.1 Fabrication

- .1 Fabricate reinforcing in accordance with CSA A23.1, clause 6
- .2 Placement of reinforcing, development lengths, laps, cover, etc to meet the requirements of CSA A23.1 and CSA A23.3
- .3 Tolerances for manufacture of units and placement of rebar to meet requirements of CSA A23.1

END OF SECTION

SECTION 05120: STEEL PIPE PILES AND STRUCTURAL STEEL

1 GENERAL

1.1 References

CAN/CSA-G40.20	General Requirements for Rolled or Welded Structural Quality Steel
CAN/CSA-G40.21	Structural Quality Steels
CAN/CSA-G164	Hot Dip Galvanizing of Irregularly Shaped Articles
CAN/CSA-S16.1	Limit States Design of Steel Structures
CSA W59	Welded Steel Construction, (Metal Arc Welding)
ASTM A252	Standard Specifications of Welded & Seamless Steel Pipe Piles

1.2 Source Quality Control

- .1 Provide copies of steel producer certificates, in accordance with CAN/CSA-G40.20.

1.3 Delivery and Storage

- .1 Provide protective blocking for lifting, transportation and storing. Exercise care during fabrication, transportation and erection so as not to damage steel members. Do not notch edges of members.

2 PRODUCTS

2.1 Materials

- .1 Pipe Piles:
Steel pipe for pipe piles shall conform to ASTM Specification A252, Grade (2 or 3). Previously used or coated pipe will not be accepted. Pipes fabricated with seams shall be fabricated with full penetration butt welds. Mill certificates and non-destructive testing records, confirming seam weld quality, shall be submitted. Manufacturer's identification marks on the pile shall be readily identifiable on Site and shall match the heat numbers on the mill certificates provided. Sections of piling shorter than 3 m, shall not be used, except to finish a pile to final cut off elevation.
- .2 Structural steel: plate and structural sections to CAN/CSA-G40.21, grade 300W, HSS sections grade 350 W
- .3 Bolts, washers and nuts: to ASTM A307 Grade A unless noted otherwise on drawings.
- .4 Welding electrodes: to CSA W48 series.
- .5 Hot dip galvanizing: galvanize steel, where indicated, to CAN/CSA-G 164, minimum zinc coating of 600 g/m². All hardware, including bolts, nuts, drifts, washers, nails, etc. shall be hot dip galvanized. Miscellaneous steel shall be hot dip galvanized where indicated on the drawings. Avoid damage to coating by rough handling.

3 EXECUTION

3.1 General

- .1 Welding to be done in accordance with CSA W59.

3.2 Fabrication

- .1 Welding: Weld only at locations indicated.
- .2 Finish members true to line, free from twists, bends, open joints, sharp corners and sharp edges.
- .3 maximum deviation of the line of the pile at the splices shall be 3 mm when measured with a 3.0 m straight edge.

3.3 Protection from Corrosion:

- .1 The outside surface of all pipe piles to be painted from the top of the pile to a minimum of 2 m below the seabed elevation.
- .2 Damaged areas of pile coating to be repaired metal using solvent cleaning if required, and then power tools to the requirements of SSPC SP-3. Apply two coats of approved coating product, in accordance with manufacturer's instructions. Ensure minimum 4" overlap with shop applied coating and allow to cure as required by manufacturer.
- .3 After field welding of structural steel, clean the burn-back areas of the welds to bare metal using solvent cleaning if required, and then power tools to the requirements of SSPC SP-3. Apply two coats of approved coating product, in accordance with manufacturer's instructions. Ensure minimum 4" overlap with shop applied coating. Allow to cure as required by manufacturer.
- .4 All structural steel (other than piles) to be hot dip galvanized.
- .5 For damage to galvanized coating, clean and touch up with two coats of Zinga, or approved equal, to the satisfaction of the Departmental Representative.
- .6 All hardware to be hot dip galvanized.

END OF SECTION

SECTION 06100: ROUGH CARPENTRY

1 GENERAL

1.1 References:

CAN/CSA-O86	Engineering Design in Wood
CAN/CSA-O80 series	Wood Preservation
CAN/CSA-G164	Hot Dip Galvanizing of Irregularly Shaped Articles

1.2 Quality Assurance

- .1 Lumber shall bear a grading stamp of an agency certified by Canadian Lumber Standards Administration Board.

2 PRODUCTS

2.1 Lumber Materials for Marine Works

- .1 Lumber Grades to conform: to CSA O141 and species group to CSA O86 as listed and to National Lumber Grades Authority Standard Grading Rules.
- .2 Structural sawn timber to be Coast Douglas Fir, No. 1 grade or better.
- .3 All lumber unless otherwise specified to be properly air dried and seasoned to contain no more than 20% moisture. Lumber with excessive shakes, knots, warps and cracks shall not be used.

2.2 Preservative Treatment

- .1 All treated timbers 75 mm or over to be incised before treatment.
- .2 All timbers for Flanges, Cross ties and Stringers shall have full cell creosote treatment to a minimum net retention of 225 kg/m³ (14 lb/ft³), meeting the requirements of CAN/CSA O80.
- .3 All treated timber in tidal zone shall be treated using "Best Management Practices for the Use of Treated Wood in Aquatic environments".
- .4 All creosote timbers must be cut to size and countersunk before pressure treatment.
- .5 Deck and rail timbers on float to be pressure-treated with ACZA to CAN/CSA O80, with a minimum retention of 6.4 kg/m³ (0.4 pcf) and a minimum penetration of 10 mm (0.4")

2.3 Accessories

- .1 Hardware: all bolts, nuts, washers, lags, pin screws and all other miscellaneous hardware shall be hot dip galvanized with zinc coating 600 g/m² to CAN/CSA G164-M.
- .2 Bolts, nuts and washers to ASTM A307.
- .3 Wire nails, spikes, staples: to CSA B111.

3 EXECUTION

3.1 Handling

- .1 Treated timber to be carefully handled without dropping to avoid breaking through treated surfaces. Peavies, canthooks, pile hooks or other pointed tools shall not be used for handling timber.

3.2 Installation

- .1 Avoid cutting treated timbers whenever possible. Any field cutting of treated timber must be approved by Departmental Representative before cutting.
- .2 Treat exposed ends of approved cuts and bolt holes in treated timbers with two generous coats of preservative. For ends of timbers this shall be followed by an application of coal tar pitch. Allow a sufficient interval between preservative applications to permit total absorption.

-
- .3 All timber shall be accurately cut and framed to a close fit in a manner such that the joints will have even bearing over the entire contact surfaces.
 - .4 Holes for bolts to be drilled same size as bolts. All bolts to have galvanized plate washers between bolt heads and nuts that bear against timber.

END OF SECTION

APPENDIX

Standard Mitigation Organized by Project Activity

PROJECT ACTIVITY	MITIGATION
<p>GENERAL (to be incorporated into all activities below)</p>	<ol style="list-style-type: none"> 1. Ensure all personnel involved with activities are adequately trained and utilize appropriate personal protective equipment. 2. Storage of fuels and petroleum products will comply with safe operating procedures, including containment facilities in case of a spill. 3. Waste or any miscellaneous unused materials will be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown into the marine or terrestrial environment. 4. Onsite crews will have emergency spill equipment available. 5. All activities should be completed in such a way as to minimize stress and disturbance to resident flora and fauna. 6. Operations should only operate where entirely necessary to complete the works to reduce effects to nearby soils, vegetation, and resident species. Respect should be given to the natural environment to minimize the footprint of the project. 7. Aesthetic effects created by activities will be short-term and localized. Sites should be kept in a tidy manner during activities and left in a good condition at the end of the project. 8. Archaeological sites in remote locations are not likely to have been previously identified. Care should be taken to observe archaeological deposits while work is being completed. Work must be stopped if evidence shows a potential archaeological artifact or deposit.
<p>MACHINERY OPERATION</p>	<ol style="list-style-type: none"> 1. All equipment will be maintained in proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline and other petroleum products. 2. Vehicles should not be operated below the line of Highest High Water in the intertidal zone. 3. Operations should only operate where entirely necessary to complete the works to reduce effects to nearby soils, vegetation, and resident species. Respect should be given to the natural environment to minimise the footprint of the project. 4. Machinery must be operated efficiently, to ensure that noise and air quality issues are short-term and local.
<p>POWER-WASHING</p>	<ol style="list-style-type: none"> 1. Activities should be completed in such a way as to minimise the amount of fines and organic debris that may enter nearby aquatic environments.
<p>EXCAVATION/ROCK DRILLING</p>	<ol style="list-style-type: none"> 1. Rock drilling and excavation activities must be conducted conservatively so that physical changes to rock remain small and localized. 2. Dust and fines entering the water must be avoided. 3. Archeological sites in remote locations are not likely to have been previously identified. Care should be taken to observe archaeological deposits while work is being completed. Work must be stopped if

Standard Mitigation Organized by Project Activity

PROJECT ACTIVITY	MITIGATION
EXCAVATION/ROCK DRILLING continued	<p>evidence shows a potential archaeological artifact or deposit.</p> <ol style="list-style-type: none"> 4. Loose material at excavation sites should be managed to avoid excessive migration of silt and debris to nearby waters, especially during heavy rainfall events. 5. All excavation below Highest High Water should be completed by hand, as no vehicles should be operated in the intertidal zone. 6. Any blasting will follow the Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.
PILE INSTALLATION	<ol style="list-style-type: none"> 1. All equipment will be maintained in proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline and other petroleum products. 2. Contractors where possible will position their water borne equipment in a manner that will minimize damage to identified fish habitat (e.g. eel grass). Where possible, alternative methods will be employed (e.g. use of anchors instead of spuds). 3. Proper notice should be given to transportation authorities to warn of potential disruptions to navigability during works. 4. Whenever Contractors are working in areas where spawning is present, appropriate monitoring by a qualified person will be undertaken and activities ceased if spawn disruption is apparent. 5. Where possible, new timber piles will comply with the BMP for the use of treated wood in aquatic environments as developed by the Canadian Institute of Treated Wood and the Western Wood Preservers Institute. 6. Where the BMP pilings are not available, creosote piling will stand for a minimum of 45 days prior to installation. These requirements are for new pilings only and will not restrict the use of re-used timber pilings. Reused pilings will not be subject to any additional treatments. 7. If pile installation activities are causing fish kill, work must cease immediately and contractors will be responsible for introducing effective means of reducing the level of shock waves or introduce measures that will protect fish from entering the potentially harmful shock wave area. For example, appropriate mitigating measures would include the deployment a bubble curtain over the full length of the wetted pile that would defuse the shock waves to an acceptable level. 8. If, after preventive measures are introduced, visual monitoring reveals unacceptable conditions (fish kill), then work will stop immediately and the system reviewed and corrected. 9. Any instances of fish kill must be reported to the appropriate agencies (DFO). 10. When cleaning out pipe piles (i.e. air lifting), if the material that is to be removed inside the pipe is non-toxic, then it shall be redistributed in a manner that will minimize damage to the surrounding aquatic fish habitat.

Standard Mitigation Organized by Project Activity

PROJECT ACTIVITY	MITIGATION
CONCRETE WORKS	<ol style="list-style-type: none"> 1. When pouring concrete all spills of fresh concrete must be prevented. If concrete is discharged from the transit mixer directly to the form work or placed by wheelbarrow, proper sealed chutes must be constructed to avoid spillage. If the concrete is being placed with a concrete pump, all hose and pipe connections must be sealed and locked properly to ensure the lines will not leak or uncouple. Crews will ensure that concrete forms are not filled to overflowing. 2. All concrete forms will be constructed and sealed in a manner which will prevent fresh concrete or cement laden water from leaking into the surrounding water. 3. All tools, pumps, pipes, hoses and trucks used for finishing, placing or transporting fresh concrete must be washed off in such a way as to prevent the wash off water from entering the marine environment. The wash water will be contained and disposed of upland in an environmentally acceptable manner.
SITE ACCESS	<ol style="list-style-type: none"> 1. Site access practices must be undertaken with regard to resident flora and fauna, especially during times of the year when they are most sensitive.
AID MAINTENANCE	<ol style="list-style-type: none"> 1. Equipment maintenance activities must be completed in a manner that prevents the deposit of foreign materials to the environment. 2. Power washing activities must follow mitigation provided under “POWER-WASHING” 3. An approach of “contain and recover” should be adopted. Drop sheets or other means should be used to prevent paint chips and other debris from entering the surrounding environment. Refuse should be disposed of properly. 4. Painting activities should be completed in such a way as to minimise the amount of fumes that may enter the environment. The amount of paint used should be minimized and unused containers must be covered.
PILE REMOVAL	<ol style="list-style-type: none"> 1. Contractors will position their water borne equipment in a manner that will minimize damage to identified fish habitat (e.g. eel grass). Where possible, alternative methods will be employed (e.g. use of anchors instead of spuds). 2. When demolition is required on timber pile structures, the contractor will remove the piling by mechanical means and avoid breaking the piling at the mud line or below. All demolition operations should be monitored in order to control and contain the construction debris.
CONCRETE BASE REMOVAL	<ol style="list-style-type: none"> 1. Contractors where possible will position their water borne equipment in a manner that will minimize damage to identified fish habitat (e.g. eel grass). Where possible, alternative methods will be employed (e.g. use of anchors instead of spuds). 2. All debris deposited throughout the life of the aid should be removed from the site.
CONCRETE BASE ABANDONMENT	<ol style="list-style-type: none"> 1. Care should be taken to remove all components of the Fixed Aid that are not incorporated into the concrete base.

Standard Mitigation Organized by Project Activity

PROJECT ACTIVITY	MITIGATION
CONCRETE BASE ABANDONMENT continued	<ol style="list-style-type: none">2. All debris deposited throughout the life of the aid should be removed from the site.3. Areas near the base should be protected from excessive disturbance.4. Concrete base abandonment will be conducted only in remote sites, where aesthetic effects are not a concern.