

# **KLEMTU FLOAT RECONSTRUCTION 2019**

FISHERIES AND OCEANS CANADA  
SMALL CRAFT HARBOURS – PACIFIC REGION

200 – 401 Burrard Street  
Vancouver, British Columbia  
V6C 3S4



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## Section 01 11 00 – Summary of Work

### PART 1 PART 1 GENERAL

#### 1.1 1.1 RELATED REQUIREMENTS

Section 01 20 60	DEMOLITION OF STRUCTURES
Section 01 35 29.06	HEALTH AND SAFETY REQUIREMENTS
Section 01 35 43	ENVIRONMENTAL PROCEDURES
Section 01 45 00	QUALITY CONTROL
Section 01 51 00	STEEL HARDWARE
Section 01 99 00	TIMBER REPAIRS AND ASSEMBLY

#### 1.2 1.2 DEFINITIONS

- .1 Throughout contract documents, the words "Owner," "Contracting Authority," "Engineer/Departmental Representative," "Contractor," or "Department," shall be defined as follows:

- .1 Owner  
Small Craft Harbours Program of the Department of Fisheries and Oceans 200-401 Burrard Street Vancouver B.C. V6C 3S4
- .2 Contracting Authority  
Public Works and Government Services Canada  
800 Burrard Street, Room 219 Vancouver BC V6Z 0B9
- .3 Engineer/Departmental Representative  
An employee of the Owner or Engineer assigned by the Owner as the Engineer for this project, or the Engineer's representative assigned by the Engineer as his representative for the project.
- .4 Contractor  
The party accepted by the Owner with whom a formal contract is entered to complete the work of this project.
- .5 Department  
The Department of Fisheries and Oceans, Canada.
- .6 Site  
Klemtu Small Craft Harbours site  
Latitude: 56° 35' 30"  
Longitude: 128° 31' 30"



### 1.3 1.3 DRAWINGS

#### .1 FLOAT ASSEMBLY

FM9-END-200	2.743m WIDE FLOAT MODULE 2011 REVISION
FM9-END-201	2.743m WIDE FLOAT MODULE 2011 REVISION
FM9-ST-000	'2011 REVISION' 2.743m WIDE STANDARD FLOAT MODULE
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FM12-ST-001	'2011 REVISION' 3.657m WIDE STANDARD FLOAT MODULE
FM12-ST-002	'2011 REVISION' 3.657m WIDE STANDARD FLOAT MODULE ASSEMBLY
FM12-ST-003	'2011 REVISION' 3.657m WIDE STANDARD FLOAT MODULE ASSEMBLY

#### .2 FLOAT INSTALLATION

722835-001-001	DEMOLITION GENERAL ARRANGEMENT
722835-001-002	CONSTRUCITON GENERAL ARRANGEMENT
722835-001-003	FLOAT ASSEMBLY DETAILS
722835-001-004	DETAILS

#### .3 REFERENCE DRAWINGS

091151	CONSTRUCITON DETAILS
100557-K	ELECTRICAL LAYOUT

### 1.4 PROJECT SITE

- .1 Klemtu Small Craft Harbours site is located in Trout Bay adjacent to Swindle Island in the coastal fjords of British Columbia, Canada approximately 50 kilometers north of Bella Bella .

### 1.5 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. All replaced items, cut-offs and waste material shall be disposed by the contractor in strict accordance with provincial, local, and municipal regulations and Part 8 of the National Building Code and with the Canadian Construction Safety Code.



- .2 The work to be carried out under this contract includes the removal and disposal of existing timber floats and installation of new timber floats at Klemtu Small Craft Harbours Site.

## **1.6 COMMENCEMENT AND COMPLETION**

- .1 Off site work is to begin upon award
- .2 On Site work may begin July 1, 2019 with completion no later than September 30, 2019

## **1.7 OWNER SUPPLIED MATERIALS**

- .1 The following Owner Supplied materials may be received by the Contractor at French Creek Harbour, 1055 Lee Rd, Parksville, BC V9P 2E1 following award:
  - .1 2.743m Wide Standard Float Module – Qty 7
  - .2 2.743m Wide Standard Back End Module – Qty 2
  - .3 2.743m Wide Standard Front End Module – Qty 2
  - .4 3.657m Wide Standard Float Module – Qty 7
  - .5 3.657m Wide Standard Back End Module – Qty 2
  - .6 3.657m Wide Standard Front End Module – Qty 2
  - .7 6.705m long 152mm x 203mm creosote treated timber beams – Qty 4

**All other materials required to complete the work outlined in the contract documents must be supplied by the contractor**

## **1.8 UNIT PRICE ITEM DESCRIPTIONS**

The following are in reference to items as detailed in Appendix 1 – Price Form

### **MANDATORY WORK ITEMS**

#### **.1 MOBILIZATION/ DEMOBILIZATION**

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

- .1 Mobilization/Demobilization of crew and equipment necessary to complete site work to the Project Site.
- .2 All crew living expenses and other associated costs.
- .3 Any overhead costs not covered in other items.
- .4 Site clean-up and disposal of all demolished materials, including but not limited to: timber piles, blocking, cut-offs, hardware etc.

#### **.2 ASSEMBLY OF OWNER SUPPLIED 3.657M WIDE FLOATS**

The per linear metre cost for this item includes supply all equipment, materials, labour and all things necessary to complete the following:



- .1 Take delivery of Owner supplied float module kits at location specified under Owner Furnished Items.
- .2 The Contractor must providing written confirmation that all Owner Supplied materials outlined in the contract documents have been received.
- .3 Assembly of Owner supplied float materials as shown on the drawings

**.3 ASSEMBLY OF OWNER SUPPLIED STANDARD 2.743M WIDE FLOATS**

The per linear metre cost for this item includes supply all equipment, materials, labour and all things necessary to complete the following:

- .1 Take delivery of Owner supplied float module kits at location specified under Owner Furnished Items.
- .2 The Contractor must providing written confirmation that all Owner Supplied materials outlined in the contract documents have been received.
- .3 Assembly of Owner supplied float materials as shown on the drawings

**.4 FLOAT DEMOLITION AND DISPOSAL**

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

- .1 Removal and disposal of Float A, Float B, and Float C as shown on the drawings including:
- .2 Remove and salvage of all electrical equipment for reinstallation.
- .3 Removal and salvage of existing steel pile mooring brackets for reinstallation. All existing mooring piles shall remain in place.

**.5 FLOAT INSTALLATION**

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

- .1 Delivery to Site and Installation of new timber floats as shown on the drawings
- .2 Reinstallation of all electrical equipment with new Contractor supplied mounting hardware and blocking.
- .3 Reinstallation of steel pile mooring brackets with new Contractor supplied hardware.
- .4 Supply and install two new sets of float connectors as shown on the drawings

**OPTIONAL WORK ITEMS**

**.1 FLAOT ANCHOR UPGRADE**

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:



- .1 Supply and Install eight (8) new 0.762m x 0.762m x 1.524m concrete anchors complete with four (4) new 27.4m long,  $\frac{3}{4}$ " long link galvanized mooring chains and connections as shown on the drawings.

## **1.9 CONTRACTOR USE OF PREMISES**

- .1 Co-ordinate use of premises under direction of Owner.
- .2 Protect existing structures from damage during the course of work.
- .3 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Engineer.
- .4 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

## **1.10 EXISTING SERVICES**

- .1 Notify Engineer and utility companies of intended interruption of services and obtain required permission.
- .2 Establish location and extent of service lines in area of work before starting Work. Notify Engineer of findings which conflict with scope of work.
- .3 Where unknown services are encountered, immediately advise Engineer and confirm findings in writing.
- .4 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .5 Record locations of maintained, re-routed and abandoned service lines.
- .6 Construct barriers around existing services as necessary.

## **1.11 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings, Specifications and any Addenda.
  - .2 Change Orders and other Modifications to Contract.
  - .3 Copy of Approved Work Schedule.



- .4 Health and Safety Plan and Other Safety Related Documents.
- .5 All regulatory permits required for the work.
- .6 Associated Best Management Practices documentation.

#### **1.12 Barriers, lights and watching**

- .1 The Contractor shall provide all requisite barriers, fences, warning signs, lights and watching for the protection of persons and property on or adjacent to the Site. Other protective devices may be required for prevention of theft or damage of goods and protection of the public and workmen, or if so ordered by the Owner.

#### **1.13 Construction area**

- .1 The Contractor shall regulate construction traffic on public areas and comply with all local ordinances in connection therewith, including load limitation and removal of debris.
- .2 The Contractor shall confine his operations on the Site to those areas actually required for the work including routes and regulations approved by the Owner for haulage of materials.

#### **1.14 Work Schedule**

- .1 Within 7 working days after Contract award, provide a schedule showing anticipated progress stages and final completion of the work within the time period required by Contract documents.
- .2 Interim reviews of work progress based on work schedule will be conducted as decided by Engineer and schedule updated by Contractor in conjunction with and to approval of Engineer.
- .3 The Contractor shall keep a daily record of progress of the work available for inspection by the Engineer.
- .4 The daily record shall include particulars of weather conditions, number of men working, plant and equipment working and work performed.
- .5 The Contractor shall work whatever shifts required in order to ensure the work meets regulatory windows and is completed by the completion date of the contract.





- .6 The Contractor shall normally perform all work within the hours of daylight except in instances where the Contractor has requested and received approval for shift changed from the Owner.
- .7 The Contractor must notify the Owner immediately whenever a variation from the construction schedule is expected to occur.

**PART 2 PRODUCTS**

- 2.1 **NOT USED**
  - .1 Not used.

**PART 3 EXECUTION**

- 3.1 **NOT USED**
  - .1 Not used.

**END OF SECTION**



## Section 01 20 60 – Demolition of Structures

### PART 4 GENERAL

#### 4.1 1.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS
- .3 Section 01 35 43 ENVIRONMENTAL PROCEDURES

#### 4.2 1.2 SCOPE OF WORK

- .1 This sections refers to all demolition and removal of existing structural timbers and hardware including, rubstrips and any other items identified for removal in the course of completing float reconstruction work.

### PART 5 PRODUCTS

#### 5.1 2.1 EQUIPMENT

- .1 Furnish all labour, materials, tools, plant and services required incidental to the completion to the full extent of the drawings and specifications for execution of all demolition salvage and protection work specified herein.

### PART 6 EXECUTION

#### 6.1 3.1 REMOVAL OF DEMOLISHED MATERIAL

- .1 All materials, which are not to be salvaged for the Owner, shall become the Contractor's property and the Contractor must remove them from the site.
- .2 If not specifically identified, the Engineer shall decide as to which material shall be salvaged for the Owner and which shall become the property of the Contractor.

#### 6.2 3.2 SALVAGED MATERIAL

- .1 Material to be salvaged for the Owner shall be stored as directed by the Engineer.
- .2 Remove items to be reused, stockpile and re-install as directed by Engineer.
- .3 Designate appropriate security resources/measures to prevent vandalism, damage and theft of salvaged items.
- .4 Contractor is responsible for lost, stolen or damaged materials.

#### 6.3 3.3 PROTECTION OF STRUCTURES TO REMAIN

- .1 Protect remaining structural elements, services and equipment against damage from demolition works.
- .2 Contractor is liable for any damage caused to structures not specified for removal as a result of completing work.



**6.4**

**3.4 SERVICES**

- .1 All services that must be removed from existing structures in order to perform work must be removed so as not to damage them.
- .2 All service materials including miscellaneous hangers, fasteners and supplies required to reinstall the services shall be supplied by the Contractor and will be of equivalent quality to the new conditions of such materials being replaced.
- .3 All materials that are not reusable shall be disposed of by the Contractor.
- .4 The Contractor shall be responsible for the handling and storage of services lines, lamps standards and other equipment during construction. All materials damaged by the Contractor shall be replaced at the Contractor's expense.

**6.5**

**3.5 CLEANING AND RESTORATION**

- .1 Keep site clean and organized throughout demolition procedure.
- .2 Upon completion of project or as appropriate, reinstate floats, walkways, light standards, electrical and water services and other items affected by Work to condition which existed prior to beginning of Work.

**END OF SECTION**



## Section 01 35 29.06 – Health and Safety Requirements

### PART 7 GENERAL

#### 7.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 20 60 DEMOLITION OF STRUCTURES
- .3 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .4 Section 01 99 00 TIMBER REPAIRS AND ASSEMBLY

#### 7.2 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).
- .4 Province of British Columbia
  - .1 Workers Compensation Act, RSBC 1996 - Updated 2012.

#### 7.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operations.
- .2 Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
- .3 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .4 Submit copies of incident and accident reports.
- .5 Submit WHMIS MSDS - Material Safety Data Sheets.
- .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative 5 days after receipt of comments from Departmental Representative.
- .7 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

#### 7.4 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award.



- .3 Work zone locations include:
  - .1 Klemtu Small Craft Harbour.
- .4 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

## **7.5 SAFETY ASSESSMENT**

- .1 Perform site specific safety hazard assessment related to project.

## **7.6 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

## **7.7 PROJECT/SITE CONDITIONS**

- .1 Work at site will involve contact with:
  - .1 Kitasu First Nation.

## **7.8 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.

## **7.9 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.

## **7.10 COMPLIANCE REQUIREMENTS**

- .1 Comply with Workers Compensation Act, B.C. Reg.
- .2 Comply with R.S.Q., c. S-2.1, an Act respecting Health and Safety, and c. S-2.1, r.4 Safety Code for the Construction Industry.
- .3 Comply with Occupational Health and Safety Regulations, 1996.
- .4 Comply with Occupational Health and Safety Act, General Safety Regulations, O.I.C.
- .5 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

## **7.11 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 of the Province having jurisdiction and advise  
Departmental Representative verbally and in writing.
- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur  
during performance of Work, advise the Health and Safety co-  
ordinator and follow procedures in accordance with Acts and  
Regulations of the Province having jurisdiction and advise  
Departmental Representative verbally and in writing.

## **7.12 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.
- .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.

## **7.13 POSTING OF DOCUMENTS**

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

## **7.14 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.

## **7.15 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.

# **PART 8 PRODUCTS**

## **8.1 NOT USED**

# **PART 9 EXECUTION**

## **9.1 NOT USED**



**END OF SECTION**



## Section 01 35 43 – Environmental Procedures

### PART 10 GENERAL

#### 10.1 RELATED REQUIREMENTS

- .1 Section 01 20 60 DEMOLITION OF STRUCTURES
- .2 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS
- .3 Section 01 45 00 QUALITY CONTROL
- .4 Section 01 99 00 TIMBER REPAIRS AND ASSEMBLY

#### 10.2 REFERENCES

- .1 Definitions:
  - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
  - .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

#### 10.3 IN WATER WORKS

- .1 Construction equipment to be operated on land or from floating barge equipment.
- .2 Waterways to be kept free of excavated fill, waste material and debris.
- .3 Do not skid logs or construction materials across waterways.

#### 10.4 NOTIFICATION

- .1 Engineer will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, Engineer of proposed corrective action and take such action for approval by Engineer.
  - .1 Take action only after receipt of written approval by Engineer.
- .3 Engineer will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.





## **PART 11 PRODUCTS**

### **11.1 NOT USED**

## **PART 12 EXECUTION**

### **12.1 EQUIPMENT OVER WATER**

- .1 Use of equipment over water shall be conducted in accordance with the following Best Management Practices:

- .1 Machinery is to arrive on site in a clean, washed condition and be free of fluid leaks.
- .2 Complete works using appropriate timing windows related to species that may be affected by the works and or methods used.
- .3 Underwater pressure waves not to exceed 30 kPa during driving.
- .4 A vibratory hammer is to be used if driving conditions permit.
- .5 Any water- based equipment or machinery moored or used during the Project must not ground on the intertidal foreshore or subtidal river or sea bed. The only exception to this condition is that use may be made of vertical spuds or other anchors to hold the water- based machinery or equipment in place.
- .6 Wash, refuel and service machinery and store fuel and other materials for the machinery at least 30 metres away from the water in order to prevent any deleterious substance from entering the water.
- .7 Pile cut- offs, waste or any miscellaneous unused materials must be recovered for either disposal in a designated facility or placed in storage.
- .8 Report any incidents of habitat damage to the Environmental Monitor or DFO to ensure that appropriate action (restoration) is taken.
- .9 If fish spawn in the area or on equipment all work should stop and the Environmental Monitor or DFO notified.

### **12.2 3.2 CLEANING**

- .1 Leave work area clean at end of each day.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment to the approval of the Owner.

**END OF SECTION**



## Section 01 45 00 – Quality Control

### PART 13 GENERAL

#### 13.1 RELATED REQUIREMENTS

- .1 Not Used.

#### 13.2 REFERENCES

- .1 Construction General Conditions

#### 13.3 INSPECTION

- .1 Refer to Construction General Conditions for stipulated interpretation.
- .2 Allow Owner access to Work. If part of Work is in preparation at locations other than Place of Work; allow access to such Work whenever it is in progress.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals.
- .4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .5 Owner will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

#### 13.4 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

#### 13.5 PROCEDURES

- .1 Notify appropriate agency in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

#### 13.6 REJECTED WORK

- .1 Refer to Construction General Conditions for stipulated interpretation.
- .2 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected as failing to conform to



- Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .3 Make good other Contractor's work damaged by such removals or replacements promptly.
- .4 If in opinion of Owner it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by The Engineer.
- 13.7 REPORTS**
- .1 Submit 4 copies of inspection and test reports to Owner.
- PART 14 PRODUCTS**
- 14.1 NOT USED**
- .1 Not used.
- PART 15 EXECUTION**
- 15.1 3.1 NOT USED**
- .1 Not Used.

**END OF SECTION**



## Section 01 51 00 – Steel Hardware

### PART 16 GENERAL

#### 16.1 RELATED REQUIREMENTS

- .1 Section 01 99 00 TIMBER REPAIRS AND ASSEMBLY
- .2 Section 01 45 00 QUALITY CONTROL
- .3 Section 31 62 16.19 STEEL PIPE PILES

#### 16.2 SCOPE OF WORK

- .1 This section refers to the steel fastenings and hardware indicated in the Contract Drawings and related specifications.

### PART 17 PRODUCTS

#### 17.1 STEEL

- .1 Small fastenings will conform to the standard for Wire Nails, Spikes, and Staples CSA B111.
- .2 Drift bolts, machine bolts, washers and miscellaneous iron will conform to the standard for General Purpose Structural Steel CAN3 G40.21-M81.
- .3 Items manufactured or fabricated from scrap steel of unknown chemical or physical properties will not be accepted for use in the work.

#### 17.2 HARDWARE

- .1 All hardware including bolts, drift bolts, carriage bolts, lag bolts, pipe sleeves, nuts and washers etc. will be hot dipped galvanized in accordance with the ASTM A153. Galvanize to 610g/m<sup>2</sup> (2oz/ft<sup>2</sup>).
- .2 All bolts will be of the full dimension specified or shown on the plan.
- .3 Unless otherwise specified, all machine bolts will be provided with round steel plate washers under head and nut.
- .4 All bolts shall be 19mm (3/4") National course thread, unless shown otherwise.
- .5 All 19mm washers shall be 6mm thick and 75mm diameter galvanized steel.
- .6 All 25mm washers shall be a minimum of 8mm thick and 100mm diameter galvanized steel.
- .7 All bolts to have 100mm (4") of thread unless shown otherwise.

### PART 18 EXECUTION

#### 18.1 ASSEMBLY

- .1 All bolts shall be tightened to 100 Newton Meters (80 ft/lbs).
- .2 Care shall be taken not to damage the treated wood finish. All treatment damaged by the Contractor shall be repaired at the Contractor's expense as per Section 01 99 00 TIMBER REPAIRS AND ASSEMBLY.
- .3 Pre-drilling:



- .1 All ends of timbers not fastened by bolts shall be predrilled prior to installation to prevent splitting.
- .4 Holes for machine bolts will be bored to provide a driving fit.

**18.2 DECKING**

- .1 Lay boards heart side down, spaced 6 mm apart.
- .2 Secure each contact point with 2 – 100mm galvanized RDOX nails.
- .3 Pre-drill deck boards for spikes nearest to both board ends.

**18.3 FASCIA**

- .1 Secure each contact point with 2 – 100mm galvanized RDOX nails.
- .2 Contact points every 500mm maximum.

**END OF SECTION**



## Section 01 99 00 – Timber Repairs and Assembly

### PART 19 GENERAL

#### 19.1 RELATED REQUIREMENTS

- .1 Section 01 51 00 STEEL HARDWARE
- .2 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS
- .3 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .4 Section 01 45 00 QUALITY CONTROL

#### 19.2 SCOPE OF WORK

- .1 This section refers to the supply, modification and field treatment of all timbers indicated in the Contract drawings and related specifications.

### PART 20 PRODUCTS

#### 20.1 GENERAL

- .1 Except as otherwise noted, only new materials will be used in, and remain an integral part of the structures.
- .2 The Engineer may inspect materials and products at all stages of manufacture and transportation to the Project Site. Satisfactory inspection at any stage does not preclude future rejection if the materials or products are subsequently found to lack uniformity or fail to conform to the requirements specified.
- .3 Acceptance will not be made until the materials or products are satisfactorily installed in the completed structures specified.
- .4 The Contractor shall be responsible to repair all materials damaged through their handling, storage and/or installation.
- .5 Except as otherwise noted, salvaged materials deemed to be reusable by the Owner shall remain property of the Owner.

#### 20.2 TIMBER

- .1 All timber for the purpose intended shall conform to the requirements of the N.L.G.A. Standard Grading Rules for Canadian Lumber.
- .2 Refer to drawings and specifications for timber dimensions and treatment.
- .3 All timber shall be Coast Douglas Fir. No 1 Structural Grade or better, unless specified otherwise.
- .4 All decking shall be S1S2E (rough cut), heart side down.
- .5 All joists, cross-ties, stringers, blocking, bullrail, risers and fascia boards shall be S2E (rough cut).

#### 20.3 TREATMENT OF MATERIAL

- .1 Creosote-treated Materials:
  - .1 All creosote treated timber will be treated in accordance with CSA 080 and will follow the Best Management Practices for Creosote as outlined in



“Best Management Practices for the use of Treated Wood in Aquatic Environments”.

- .2 All creosote treated materials will have a minimum retention of 225kg per cubic metre (14lb. Per cubic foot).
- .2 Salt-treated Materials:
  - .1 All salt-treated timber to be treated in accordance with CSA 080-1989, “Wood Preservation”, and its current amendments CSA 080.14, for materials in contact with ground or water. (Only non-leachable ACA salts will be accepted).
  - .2 All salt treatment will follow the Best Management Practices for ACA and ACZA as outlines in “Best Management Practices for the use of Treated Wood in Aquatic Environments”.
  - .3 All salt-treated timber will have a minimum retention of 6.4 kg/m<sup>3</sup> (0.40 lb. Per cubic foot) and a depth of penetration of 10mm as specified in CSA 080.14.

## 20.4

### FIELD TREATING

- .1 Creosote-treated timber members that have fresh cut surfaces exposed in the structure shall be treated as specified:
  - .1 All cuts or breaks in the surfaces shall be treated with two (2) separate coats of creosote oil.
  - .2 Where bolt holes must be bored through creosote treated piles, the holes shall be filled with creosote oil and the bolts shall be dipped in hot creosote oil before bolts are placed.
  - .3 Alternative field wood treatment to be approved by the Engineer before application.
  - .4 Ensure preservatives are properly stored and protected in case of spillage.
- .2 Salt-treated timber members that have fresh cut surfaces exposed in the structure shall be treated as specified:
  - .1 All field cut surfaces to be treated with two (2) coats of Copper Naphthenate.
  - .2 When field treating by brushing, spraying, dipping or soaking do so in such a manner that the preservative does not drip into the water or onto the ground.
  - .3 Ensure preservatives are properly stored and protected in case of spillage.

## PART 21 EXECUTION

### 21.1 HANDLING OF MATERIALS

- .1 Treated material will not be accepted if damaged in any manner in handling, including damage from strapping or slings.
- .2 The Contractor shall be responsible to repair or replace all materials damaged by handling, storage and/or installation of materials.



**21.2 EXISTING STRUCTURES**

- .1 Any structures damaged by the Contractor during Work shall be repaired and made good at the Contractor's expense to the satisfaction of the Engineer.

**END OF SECTION**





## Section 03 20 00 – Concrete Reinforcing

### PART 22 GENERAL

#### 1.1 RELATED REQUIREMENTS

- .1 Section 03 41 00 Structural Concrete.

#### 22.1 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:

- .1 No measurement will be made under this Section.

- .1 Include reinforcement costs in items of concrete work in Section 03 30 00 - Cast-In-Place Concrete.

#### 22.2 REFERENCES

- .1 American Concrete Institute (ACI)
  - .1 SP-66-[04], ACI Detailing Manual 2004.
- .2 ASTM International
  - .1 ASTM A82/A82M-[07], Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - .2 ASTM A143/A143M-[07], Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
  - .3 ASTM A185/A185M-[07], Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
  - .4 ASTM A775/A775M-[07b], Standard Specification for Epoxy-Coated Steel Bars.
- .3 CSA International
  - .1 CSA-A23.1-[09]/A23.2-[09], Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
  - .2 CAN/CSA-A23.3-[04(R2010)], Design of Concrete Structures.
  - .3 CSA-G30.18-[09], Carbon Steel Bars for Concrete Reinforcement.
  - .4 CSA-G40.20/G40.21-[04(R2009)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .5 CAN/CSA-G164-[M92(R2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.



- .6 CSA W186-[M1990(R2007)], Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .4 Reinforcing Steel Institute of Canada (RSIC)
  - .1 RSIC-[2004], Reinforcing Steel Manual of Standard Practice.
- 22.3 ACTION AND INFORMATIONAL SUBMITTALS**
  - .1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice [SP-66].
  - .2 Shop Drawings:
    - .1 Submit drawings stamped and signed by Professional Engineer registered or licensed in the Province of British Columbia Canada.
    - .1 Indicate placing of reinforcement and:
      - .1 Bar bending details.
      - .2 Lists.
      - .3 Quantities of reinforcement.
      - .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings.
- 22.4 QUALITY ASSURANCE**
  - .1 Submit in accordance as described in PART 2 - SOURCE QUALITY CONTROL.
- 22.5 DELIVERY, STORAGE AND HANDLING**
  - .1 Storage and Handling Requirements:
    - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
    - .2 Replace defective or damaged materials with new.
- PART 23 PRODUCTS**
  - 23.1 MATERIALS**
    - .1 Substitute different size bars only if permitted in writing by Departmental Representative.
    - .2 Reinforcing steel: billet steel, grade 300, deformed bars to CSA-G30.18, unless indicated otherwise.
    - .3 Reinforcing steel: weldable low alloy steel deformed bars to CSA-G30.18.
    - .4 Cold-drawn annealed steel wire ties: to [ASTM A82/A82M].



- .5 Deformed steel wire for concrete reinforcement: to [ASTM A82/A82M].
- .6 Welded steel wire fabric: to [ASTM A185/A185M].
- .7 Welded deformed steel wire fabric: to [ASTM A82/A82M].
- .8 Epoxy Coating of non-prestressed reinforcement: to ASTM A775/A775M.
- .9 Galvanizing of non-prestressed reinforcement: to CAN/CSA-G164, minimum zinc coating [610] g/m<sup>2</sup>.
- .10 Plain round bars: to CSA-G40.20/G40.21.

## **23.2 FABRICATION**

- .1 Fabricate reinforcing steel in accordance with [CSA-A23.1/A23.2] [SP-66] [Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada].
  - .1 [SP-66] unless indicated otherwise.
  - .2 Obtain [Departmental Representative's] [DCC Representative's] [Consultant's] written approval for locations of reinforcement splices other than those shown on placing drawings.

## **PART 24 EXECUTION**

### **24.1 FIELD BENDING**

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which develop cracks or splits.

### **24.2 PLACING REINFORCEMENT**

- .1 Place reinforcing steel as indicated on placing drawings in accordance with [CSA-A23.1/A23.2].
- .2 Use plain round bars as slip dowels in concrete.

## **END OF SECTION**



## Section 03 41 00 – Structural Concrete

### PART 25 GENERAL

#### 25.1 RELATED REQUIREMENTS

- .1 Section 03 88 00 – Anchor Installation

#### 25.2 MEASUREMENT PROCEDURES

- .1 Measure precast elements in units supplied, delivered, stored and erected.
- .2 Precast elements measured as individual units, will include cost, supply, delivery, storage and installation of anchors as directed in Section 03 88 00 – Anchor Installation

#### 25.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A185/A185M-[05a], Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
  - .2 ASTM A775/A775M-[04a], Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
  - .3 ASTM C260-[01], Standard Specification for Air-Entraining Admixtures for Concrete.
  - .4 ASTM D412-[98a(2002)e1], Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
  - .5 ASTM D2240-[05], Standard Test Method for Rubber Property - Durometer Hardness.
- .2 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-[1994], Stipulated Price Contract.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.40-[97], Anticorrosive Structural Steel Alkyd Primer.
  - .2 CAN/CGSB-1.181-[99], Ready Mixed Organic Zinc-Rich Coating.
- .4 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1/A23.2-[2004], Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA-A23.3-[04], Design of Concrete Structures.
  - .3 CSA-A23.4-[05], Precast Concrete - Materials and Construction.
  - .4 CAN/CSA-A3000-[03], Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
    - .1 CSA-A3001-[03], Cementitious Materials for Use in Concrete.
  - .5 CAN/CSA-G30.18-[M92(R2002)], Billet-Steel Bars for Concrete Reinforcement.
  - .6 CAN/CSA-G40.20/G40.21-[2004], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.



- .7 CAN/CSA-G164-[M92(R2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .8 CAN/CSA-S6-[2005], Canadian Highway Bridge Design Code.
  - .9 CSA-W47.1-[03], Certification of Companies for Fusion Welding for Steel.
  - .10 CAN/CSA W48-[01(R2006)], Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .11 CSA-W59-[03], Welded Steel Construction (Metal Arc Welding) (Metric version).
  - .12 CSA-W186-[M1990(R2002)], Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .5 The Master Painters Institute (MPI) - Architectural Painting Specification Manual (ASM) - [February 2004]
- .1 MPI # 18, Organic Zinc Rich Primer.
  - .2 MPI # 23, Oil Alkyd Primer.
- .6 Underwriters' Laboratories of Canada (ULC)
- .1 CAN/ULC-S701-[05], Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

#### **25.4 PERFORMANCE REQUIREMENTS**

- .1 Tolerance of precast elements to CSA-A23.4.
- .2 Length of precast elements not to vary from design length by more than plus (+) or minus (-) 100 mm.
- .3 Cross sectional dimensions of precast elements not to vary from design dimensions by more than plus (+) or minus (-) 100 mm.
- .4 Deviations from straight lines not to exceed 10 mm in 1 m.
- .5 Precast elements not to vary by more than plus (+) or minus (-) 100 mm from true overall cross sectional shape as measured by difference in diagonal dimensions.
- .6 Precast elements not to vary by more than plus (+) or minus (-) 500kg from true overall weight.

#### **25.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit shop drawings in accordance with [CSA-A23.3] [CSA-A23.4] and include following items:
  - .1 Design calculations for items designed by manufacturer.
  - .2 Details of prestressed and non-prestressed members, reinforcement and their connections.
  - .3 Camber.
  - .4 Finishing schedules.
  - .5 Methods of handling and erection.
  - .6 Openings, sleeves, inserts and related reinforcement.



- .2 Shop Drawings: submit drawings stamped and signed by qualified Professional Engineer registered or licensed in Province of British Columbia, Canada.

## **25.6 QUALIFICATIONS**

- .1 Fabricate and erect precast concrete elements by manufacturing plant certified in appropriate category[ies] according to CSA-A23.4 or Departmental Representative approved facility.
- .2 Precast concrete manufacturer to be certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting bid and to specifically verify as part of tender that plant is currently certified in appropriate category, Structural or Departmental Representative approved facility..
- .3 Only precast elements fabricated in such certified plants to be acceptable to Departmental Representative and plant certification to be maintained for duration of fabrication, erection until warranty expires.
- .4 Welding companies certified to CSA-W47.1 or Departmental Representative approved company.

## **25.7 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, handle and store precast units according to manufacturer's instructions.
- .2 Protect unit corners.

## **25.8 WARRANTY**

- .1 Contractor warrants that precast element will not spall or show visible evidence of corrosion of embedded steel and cracking, except for normal hairline shrinkage cracks, in accordance with General Conditions (GC) - [CCDC GC 12.3], but for 5 years.
- .2 Contractor warrants that precast elements will not spall or show visible evidence of cracking, except for normal hairline shrinkage cracks, in accordance with subsection [GC32.1] of General Conditions "C", but for 12 months warranty period, which is extended to 60 months.

# **PART 26 PRODUCTS**

## **26.1 MATERIALS**

- .1 Cement to CAN/CSA-A3001, Type [GU].
- .2 Blended hydraulic cement: type GU to [CAN/CSA-A3001].



- .3 Water: to [CSA-A23.1/A23.2].
- .4 Reinforcing steel: to CAN/CSA-G30.18.
- .5 Hardware and miscellaneous materials: to CSA-A23.1/A23.2.
- .6 Forms: to CSA-A23.4.
- .7 Anchors and supports: to CAN/CSA-G40.21
- .8 Welding materials: to [CSA W48].
- .9 Welding electrodes: to [CSA W48]certified by Canadian Welding Bureau.
- .10 Air entrainment admixtures: to [ASTM C260].

## **26.2 MIXES**

- .1 Concrete:
  - .1 Alternative 1 - Performance Method for specifying concrete: to meet Departmental Representative performance criteria in accordance with CAN/CSA-A23.1/A23.2.
    - .1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as described in PART 3 - VERIFICATION.
    - .2 Provide concrete mix to meet following hard state requirements:
      - .1 Durability and class of exposure: C-XL.
      - .2 Minimum compressive strength at 28 age: 30 MPa.
      - .3 Intended application: Anchors.

## **26.3 MANUFACTURED UNITS**

- .1 Manufacture units in accordance with CSA-A23.4.
- .2 Mark each precast unit to correspond to identification mark on shop drawings for location with date cast on part of unit not be exposed.
- .3 Provide hardware suitable for handling elements.
- .4 Shop prime steel inserts after fabrication and touch up primer on anchors after welding. Do not apply primer to embedded portion of anchor or inserts.
- .5 Galvanize steel embedments after fabrication and touch up with zinc-rich primer after welding.



**26.4 SOURCE QUALITY CONTROL**

- .1 Provide Departmental Representative with certified copies of quality control tests related to this project as specified in [CSA-A23.4] [CSA-G279].
- .2 Inspect prestressed concrete tendons in accordance with CSA-G279.
- .3 Provide records from in-house quality control programme based upon plant certification requirements to Departmental Representative for inspection and review.

**PART 27 EXECUTION**

**27.1 INSTALLATION**

- .1 Do precast concrete work in accordance with [CSA-A23.4] [CSA-A23.3] [CAN/CSA-S6].
- .2 Do welding in accordance with CSA-W59, for welding to steel structures and CSA-W186, for welding of reinforcement.
- .3 Install precast elements within allowable tolerances as specified on drawings.

**END OF SECTION**

