KITAMAAT FLOAT RECONSTRUCTION

SOLICITATION NO.: F1571-155045/A

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS – PACIFIC REGION

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

Project Location

Kitamaat Village Small Craft Harbour
PO Box 1101
Kitamaat Village, BC V0T 2B0
Canada

Section 00 01 10 – Table of Contents

Section 01 11 00 – Summary of Work

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 43 – ENVIRONMENTAL PROCEDURES
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.4 Section 05 90 00 – STEEL HARDWARE
.5 Section 06 10 10 – TIMBER REPAIRS
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1.2 DEFINITIONS

.1 Throughout contract documents, the words “Owner,” “Contracting Authority,” “Harbour Authority,” “Contractor,” “Engineer,” or “Department,” shall be defined as follows:

.1 Owner and Contracting Authority
Small Craft Harbours Program of the Department of Fisheries and Oceans, 200-401 Burrard Street Vancouver B.C. V6C 3S4

.2 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.

.3 Contractor
The party accepted by the Owner with whom a formal contract is entered to complete the work of this project.

.4 Department
The Department of Fisheries and Oceans, Canada.

1.3 DRAWINGS

.1 FLOAT DRAWINGS
KM-FR 000 DRAWING LIST

KM-FR 001 GENERAL ARRANGEMENT
KM-FR 002 EXISTING FACILITIES AND DEMOLITION
KM-FR 003 NEW FLOAT PILE PLAN
KM-FR 004 PEDESTRIAN APPROACH MODIFICATION – DEMOLITION PLAN
KM-FR 005 PEDESTRIAN APPROACH MODIFICATION – GANGWAY CONNECTION
KM-FR 006 PILE MOORING BRACKET – SECTION AND DETAIL
KM-FR 007 2.743m WIDE STANDARD FLOAT MODULE ASSEMBLY
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KM-FR 009 FLOAT CONNECTION DETAILS – WALKWAY TREAD DETAIL
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KM-FR 017 STANDARD GANGWAY - UPPER TRANSITION

.2 **FIRE DRAWINGS**

FP 1 FIRE LINE – GENERAL ARRANGEMENT
FP 2 FIRE LINE – PLAN
FP 3 FIRE LINE – DETAILS 1
FP 4 FIRE LINE – DETAILS 2
FP 5 FIRE LINE – DETAILS 3

.3 **ELECTRICAL DRAWINGS**

KM-EL-001 PLAN AND DETAILS
KM-EL-002 SINGLE LINE DIAGRAM
KM-EL-003 ELECTRICAL DISTRABUTION DIAGRAM
KM-EL-004 RECEPTACLE CABINET DETAILS
KM-EL-005 RECEPTACLE CABINET DETAILS
KM-EL-006 ALUMINUM KIOSK DETAILS
KM-EL-007 ALUMINUM KIOSK DETAILS
KM-EL-008 ALUMINUM KIOSK DETAILS

1.4 LOCATION

.1 The Kitamaat Village Small Craft Harbour is located on the central coast of British Columbia in the Kitimat Arm of the Douglas channel. Kitamaat harbour is a Class “C” harbour located just outside of Kitimat, BC.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work covered in this section comprises of the receipt of the owner supply float modules and materials, installation of the float modules and decking, electrical installation, fire protection installation, pile driving, and gangway replacement at the Kitamaat Harbour (the Project Site), British Columbia.

.2 The work shall be completed no later than January 30, 2016.

.3 The following materials shall be supplied by the Owner and are available for retrieval by the Contractor from the **Kitamaat Harbour** following award:

.1 New Float A: Assembled, lashed to existing offshore floating breakwater: 41.6m x 2.73 m, timber floats, decking uninstalled and bundled on float.

.2 New Float B: Assembled, lashed to existing offshore floating breakwater: 48.3m x 2.73 m, timber floats, decking uninstalled and bundled on float.

.3 New Float C: Assembled, lashed to existing offshore floating breakwater: 34.9m x 2.73 m, timber floats, decking uninstalled and bundled on float.

.4 New Float D: Assembled, lashed to existing offshore floating breakwater: 34.9m x 2.73 m, timber floats, decking uninstalled and bundled on float.

.5 New Gangway: Assembled and stored in the dry storage area at Kitamaat Village Harbour.

.4 Contractor is responsible for confirming that all Owner supplied materials necessary for assembly have been received.

.5 An optional pre-tender meeting will be held on September 8, 2015 at 1:00pm at the Kitamaat Village Small Craft Harbour.

1.6 SCHEDULE OF QUANTITIES

.1 The following are in reference to items as detailed in section 00 10 00 Schedule of Quantities and Prices

1.0 **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 all crew and equipment to Kitamaat Harbour.

.2 Any overhead costs not covered in other items.

.3 Site clean-up and disposal of all materials not being salvaged.

2.0 **FLOATS**

.1 Float Removal

The work to be carried out under this item includes all labour, materials and equipment for the removal of timber floats

.1 This includes existing timber floats A, B, C, and D

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

.3 Protect remaining structural elements, services and equipment against damage from demolition works as identified in Section 02 41 16 – STRUCTURE DEMIOLITION

.2 New Float Connection and Installation

The work to be carried out under this item includes all labour, materials and equipment for the installation of timber float module A, B, C and D and attachment into the other floats. 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 Positioning of the new Floats A,B,C and D prior to driving of piles as shown on contract drawing KM-FR 003 – FLOAT AND PILE PLAN

.2 Final assembly of Float units to make one continuous unit with decking.
- .1 Float A - 2.74m x 41.61m
- .2 Float B - 2.74m x 48.31m
- .3 Float C - 2.74m x 34.90m
- .4 Float D - 2.74m x 34.90m

.3 Modification/removal of existing and new bullrails at interfaces between adjacent floats so as to provide a single continuous float surface with continuous bullrail across such interfaces.

.4 Trimming of existing floats for safety and to provide clearance required for new Float installation as shown on drawing KM-FR 002 - EXISTING FACILITIES AND DEMOLITION. Salvage and reinstallation of end cross-tie in new position included.

.5 Supply and installation of float connections between adjacent floats as shown on contract drawings KM-FR 009 - FLOAT CONNECTION DETAILS AND WALKWAY TREAD DETAIL including all required hardware.
- .1 Float A- two (2) Angle Float Connections
- .2 Float C- two (2) Angle Float Connections
- .3 Float D- one (1) Angle Float Connection and one (1) Straight Float Connection

.6 All field cuts and timber treatment as per Section 06 10 10 TIMBER REPAIRS.

.7 All hardware as per Section 05 90 00 STEEL HARDWARE.

.3 Decking and Finishing

.1 Installation of owner supplied decking as per drawing KM-FR 007 - 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY

.2 Installation of Owner supplied fascia timber around entire perimeter of Float A, B, C and D complete with all hardware.

.3 Installation of walkway tread including hardware as per drawing KM-FR 009 - FLOAT CONNECTION DETAILS AND WALKWAY TREAD DETAIL

.4 All field cuts and timber treatment as per Section 06 10 10 TIMBER REPAIRS.

.5 All hardware as per Section 05 90 00 STEEL HARDWARE.

3.0 PILE

.1 Existing Pile Removal

This item includes the unit rate cost for all labour, equipment, and materials for the removal and disposal of one existing timber mooring pile cluster dolphin.

.1 Items in a pile cluster dolphin for removal under this item include:
- .1 4 timber mooring piles
- .2 12”x12” creosote pile blocking at top
- .3 Steel wire wrapping and hardware

.2 Timber piles shall be completely removed. If it is not possible to remove a pile, the pile shall be broken off at or below seabed level.

.2 Steel Pile Installation

This item includes the unit rate cost for the supply of materials, equipment, tools, services, labour and all things necessary to complete the installation of a steel mooring pile and bracket as per the following:

.1 Pile to be 762mm O.D. x 12.7mm thick, painted straight seam steel pipe pile, installed to depth, location, and tolerances as shown on contract drawings KM-FR 003 -, KM-FR 006 - and as per

.2 Pile treatment as per Section 09 97 19 PAINTING and 31 62 16.19 STEEL PIPE PILES.

.3 Mooring bracket as shown on contract drawing FR 003 - FLOAT AND PILE PLAN, KM-FR 006 - PILE MOORING BRACKET SECTION AND DETAIL complete with all required hardware as per Section 05 90 00 STEEL HARDWARE.

.4 Contractor to make allowance for adjustments in pile/mooring well position to accommodate actual location of float structural timbers.

.5 Once final penetration achieved, cut pile top to final elevation, weld top plate and install bird spikes as shown on contract Drawing KM-FR 006 - PILE MOORING BRACKET SECTION AND DETAIL.

.6 Install one (1) anode as per Anode Installation Instructions shown on drawing KM-FR-011 - ANODE INSTALLTION INSTRUCTION.

.7 All field welds and miscellaneous steel to be painted as per Section 09 97 19 PAINTING.

.3 Pile Installation into Bedrock

This item includes the unit rate cost for the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Churn/drill socket into bedrock one (1) metre and drive piling into socket one (1) metre.

.2 Total socket depth to be determined as per Section 31 62 16.19 STEEL PIPE PILES, contract drawing KM-FR 006 - PILE MOORING BRACKET SECTION AND DETAIL or direction of Engineer onsite.

.3 Contractor must be capable of churning/drilling socket with pile already in place and driven through available overburden.

.4 Contractor to include allowances for probable interruptions to driving for changing/modifying/maintaining churning equipment or other pile driving or barge equipment.

.5 Contractor is to notify the Departmental Contact Immediately in writing upon encountering conditions that require churning/drilling/socketing

.1 Notice to include pile, location, and current depth reached at refusal

.6 No churning/drilling/socketing or actions towards this item are to take place without acknowledgement of this notice, and written direction to proceed.

,7 Quantities for this item reflect an estimate of bedrock conditions at the site, and no claim for additional quantities will be entertained without written direction from Departmental Contact.

4.0 GANGWAY

.1 Demolition of Existing Gangway

The work to be carried out under this item includes the lump sum cost for all labour, materials and equipment for the removal and disposal of the existing Gangway and portion of the approach at Kitamaat Harbour

.1 Removal of all decking, stringers, piles ect. in the area outlined on drawing KM-FR-004 – PEDESTRIAN APPROACH MODIFICATION – DEMOLITION PLAN to accommodate the new gangway.

.2 Timber piles shall be completely removed. If it is not possible to remove a pile, the pile shall be broken off at or below seabed level.

.2 Installation of New Gangway

The work to be carried out under this item includes all labour, materials and equipment for the installation of the new 65’ gangway and attachment to the float A. The work generally consists of, but is not limited to the following:

.1 Installation of owner supplied 65’ gangway and supporting Hardware.

.2 Orientation and installation of new gangway as per DWG KM-FR-005

.3 Existing Structure Modifications

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 Installation of stringers as outlined in drawing KM-FR-004 – PEDESTRAIN APPROACH MODIFICATION – GANGWAY CONNECTION to accommodate new gangway.

.2 Replace all removed walkway and railing as outlined in drawing KM-FR-004 – PEDESTRIAN APPROACH MODIFICATION – DEMOLITION PLAN and drawing KM-FR-005 – PEDESTRIAN APPROACH MODIFICATION – GANGWAY CONNECTION

5.0 ELECTRICAL

.1 Removal of Existing System

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 Disconnect and remove all electrical equipment from all floats.

.2 Disconnect existing main electrical panel.

.2 Installation of New Electrical System

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 Replace electrical distribution on 3 flats and lateral section after construction of new floats.

.2 Relocate existing main electrical panel.

.3 Supply and Install new lighting at top of approach gangway.

.4 Provide required electrical upgrades shown in the KM-EL-001-008 drawings.

.5 Installation of the electrical system as specified on drawings

.1	KM-EL-001	PLAN AND DETAILS
.2	KM-EL-002	SINGLE LINE DIAGRAM
.3	KM-EL-003	ELECTRICAL DISTRABUTION DIAGRAM
.4	KM-EL-004	RECEPTACLE CABINET DETAILS
.5	KM-EL-005	RECEPTACLE CABINET DETAILS
.6	KM-EL-006	ALUMINUM KIOSK DETAILS
.7	KM-EL-007	ALUMINUM KIOSK DETAILS
.8	KM-EL-008	ALUMINUM KIOSK DETAILS

.3 Supply and Fabrication of New Electrical Cabinets

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 Installation of the electrical system as specified on drawings
- .1 KM-EL-001 PLAN AND DETAILS
- .2 KM-EL-002 SINGLE LINE DIAGRAM
- .3 KM-EL-003 ELECTRICAL DISTRABUTION DIAGRAM
- .4 KM-EL-004 RECEPTACLE CABINET DETAILS
- .5 KM-EL-005 RECEPTACLE CABINET DETAILS
- .6 KM-EL-006 ALUMINUM KIOSK DETAILS
- .7 KM-EL-007 ALUMINUM KIOSK DETAILS
- .8 KM-EL-008 ALUMINUM KIOSK DETAILS

6.0 FIRE SUPPRESSION

.1 Floats A – D 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 Installation of the new fire line system as specified in Section 21 30 10 FIRE PROTECTION and shown on drawings
- .1 FP 1- FIRE LINE – GENERAL ARRANGEMENT
- .2 FP 2 - FIRE LINE – PLAN
- .3 FP 3 - FIRE LINE – DETAILS 1
- .4 FP 4 - FIRE LINE – DETAILS 2
- .5 FP 5 - FIRE LINE – DETAILS 3

.

.2 The fire protection system consists of but is not limited to:
- .1 New approach and float fire lines
- .2 Associated piping fittings, hangers, valves and auxiliary equipment
- .3 All cutting, coring, sleeving, reinforcing and making good
- .4 Painting and identification of pipe and equipment
- .5 Access panels required
- .6 Drains as required
- .7 Obtain fire department acceptance.

.2 Connection

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 Connection of the Fire Protection lines to the water distribution system.

.2 Certification of the connection and acceptance by the Municipality/District.

1.7 WORK SEQUENCE AND OWNER OCCUPANCY

.1 Owner to move existing mooring vessels to a temporary timber float prior to start of construction.

.2 Contractor to provide a minimum 7-day notice to the Owner and receive a written response from Owner that existing vessels have been relocated as per clause 1.6.1 prior to mobilization to site.

.3 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.

.4 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.8 CONTRACTOR USE OF PREMISES

.1 Co-ordinate use of premises under direction of Owner.

.2 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.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.

1.9 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

1.10 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.

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 31 19 – Project Meetings

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures
.2 Section 01 56 00 - Temporary Barriers and Enclosures.
.3 Section 01 78 00 - Closeout Submittals.

1.2 ADMINISTRATIVE

.1 Schedule and administer project meetings at the call of Owner.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to all stakeholders.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Owner, The Engineer, Contractor, major Subcontractors, will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.07 – Construction Progress Schedules - Bar (GANTT) Chart.

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.4 Delivery schedule of specified equipment.

.5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.7 Owner provided products.

.8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.11 Monthly progress claims, administrative procedures, photographs, hold backs.

.12 Appointment of inspection and testing agencies or firms.

.13 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

.1 During course of Work and 2 weeks prior to project completion, schedule progress meetings at regular intervals.

.2 Contractor, major Subcontractors involved in Work the Engineer and Owner are to be in attendance.

.3 Notify parties minimum 5 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for effect on construction schedule and on completion date.

.12 Other business.

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 32 16.07 – Construction Progress Schedule Bar (Gantt) Chart

Part 1 General

1.1 RELATED SECTIONS

.1 Not used.

1.2 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Owner to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit to Owner within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Owner within 5 working days of receipt of acceptance of Master Plan.

1.5 PROJECT MILESTONES

.1 Project milestones form interim targets for Project Schedule.

.1 Interim Certificate (Substantial Completion) within 45 working days of Award of Contract date.

1.6 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Owner will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.

.2 Shop Drawings, Samples.

.3 Permits.

.4 Mobilization.

.5 Excavation.

.6 Backfill.

.7 Electrical.

.8 Testing and Commissioning.

.9 Supplied equipment long delivery items.

1.8 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

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 33 00 – Submittal Procedures

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not used.

1.2 REFERENCES

.1 Not used.

1.3 ADMINISTRATIVE

.1 Submit to Owner submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Owner, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by any party's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by any party review.

.10 Keep one reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Submit drawings stamped and signed by professional engineer registered or licensed in British Columbia, Canada.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 5 days for review of each submission.

.5 Adjustments made on shop drawings by are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Owner prior to proceeding with Work.

.6 Make changes in shop drawings as Owner may require, consistent with Contract Documents. When resubmitting, notify Owner in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing, product data and sample.

.5 Other pertinent data.

.8 Submissions include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.9 After Owner's review, distribute copies.

.10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Owner may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Owner where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit 6 electronic copies of test reports for requirements requested in specification Sections and as requested by Owner.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within [3] years of date of contract award for project.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Owner.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit 6 electronic copies of manufacturer’s instructions for requirements requested in specification Sections and as requested by Owner.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Owner.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Owner.

.18 Delete information not applicable to project.

.19 Supplement standard information to provide details applicable to project.

.20 If upon review by Owner, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or

omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.5 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copy of colour digital photography in standard resolution monthly with progress statement and as directed by Owner.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Frequency of photographic documentation: weekly.

.1 Upon completion of: framing and services before concealment, of Work, and as directed by Owner.

1.6 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

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 35 29.06 – Health and Safety Requirements

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 11 00 – SUMMARY OF WORK
.2 Section 01 35 43 – ENVIRONMENTAL PROCEDURES
.3 Section 02 41 16 – STRUCTURE DEMOLITION
.4 Section 02 50 00 – TIMBER FLOATS
.5 Section 05 90 00 – STEEL HARDWARE
.6 Section 06 10 10 – TIMBER REPAIRS
.7 Section 06 15 00 – DECKING
.8 Section 09 97 19 – PAINTING
.9 Section 21 30 10 – FIRE PROTECTION
.10 Section 31 62 16.19 – STEEL PILES

1.2 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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 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.

.3 Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports to [Departmental Representative.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS MSDS - Material Safety Data Sheets.

.7 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 Representative5 days after receipt of comments from Departmental Representative.

.8 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.

.9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 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. Contractor to submit written acknowledgement to CSST along with Ouverture de Chantier Notice.

.3 Work zone locations include:

.1 Kitamaat Village 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.

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

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

1.7 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Haisla First Nations

.2 Kitamaat Small Craft Harbour Authority

1.8 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.

1.9 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.

1.10 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.

1.11 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.

1.12 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.

1.13 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.

1.14 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.

1.15 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 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Section 01 35 43 – Environmental Procedures

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 31 62 16.19 – STEEL PILES.

1.2 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.

1.3 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.

1.4 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 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 PILE DRIVING

.1 Pile driving 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 sub tidal 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.

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 1 General

1.1 RELATED SECTIONS

.1 Not Used.

1.2 REFERENCES

.1 Construction General Conditions

1.3 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

.3 Place of Work; allow access to such Work whenever it is in progress.

.4 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals.

.5 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.

.6 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.

1.4 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.

1.5 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.

1.6 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.

1.7 REPORTS

.1 Submit 4 copies of inspection and test reports to Owner.

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 56 00 – Temporary Barriers and Enclosures

Part 1 General

1.1 RELATED SECTIONS

.1 Not used.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-[97], Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121-[M1978(R2003)], Douglas Fir Plywood.

.3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and

.4 Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.4 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.5 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.7 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Be responsible for damage incurred due to lack of or improper protection.

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 73 00 – Execution Requirements

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

1.2 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written request in advance of cutting or alteration which affects:

.1 Structural integrity of elements of project.

.2 Integrity of weather-exposed or moisture-resistant elements.

.3 Efficiency, maintenance, or safety of operational elements.

.4 Visual qualities of sight-exposed elements.

.5 Work of Owner or separate contractor.

.3 Include in request:

.1 Identification of project.

.2 Location and description of affected Work.

.3 Statement on necessity for cutting or alteration.

.4 Description of proposed Work, and products to be used.

.5 Alternatives to cutting and patching.

.6 Effect on Work of Owner or separate contractor.

.7 Written permission of affected separate contractor.

.8 Date and time work will be executed.

1.3 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.4 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work.

1.5 EXECUTION

.1 Execute cutting, fitting, and patching, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Restore work with new products in accordance with requirements of Contract Documents.

.8 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Not used.

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 77 00 – Closeout Procedures

Part 1 General

1.1 REFERENCES

.1 Refer to Construction General Conditions for stipulated interpretation.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Owner in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Consultant's inspection.

.2 Consultant's Inspection:

.1 Consultant and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, and fully operational.

.4 Certificates required submitted.

.5 Operation of systems: demonstrated to Owner's personnel.

.6 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor.

.2 When Work incomplete according to Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 Refer to CONSTRUCTION GENERAL CONDITIONS 2: when Work deemed incomplete by Consultant, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

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 78 00 – Closeout Submittals

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 - Submittal Procedures.

1.2 REFERENCES

.1 Not Used

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative The Engineer, in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review warranty requirements.

.2 Owner to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Two weeks prior to Substantial Performance of the Work, submit to the owner, four final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.5 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses and telephone numbers of The Engineer and with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Owner.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Field changes of dimension and detail.

.2 Changes made by change orders.

.3 Details not on original Contract Drawings.

.4 References to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

.7 Provide digital photos, if requested, for site records.

1.9 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Additional requirements: as specified in individual specification sections.

1.10 MATERIALS AND FINISHES

.1 Not used.

1.11 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Owner.

1.12 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Owner approval.

.3 Warranty management plan to include required actions and documents to assure that Owner receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Owner for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.8 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Listing and status of delivery of Certificates of Warranty for extended warranty items.

.3 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.4 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.

.5 Procedure and status of tagging of equipment covered by extended warranties.

.6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.9 Respond in timely manner to oral or written notification of required construction warranty repair work.

.10 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Owner to proceed with action against Contractor.

1.13 WARRANTY TAGS

.1 Not used.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Section 02 41 16 – Structure Demolition

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 43 – ENVIRONMENTAL PROCEDURES
.2 Section 31 62 16.19 – STEEL PILES

1.2 SCOPE OF WORK

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

Part 2 Products

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 3 Execution

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 it from the site.

.2 If not specifically identified, the Engineer shall decide as to which material shall be salvaged and which materials shall be disposed of.

.3 Timber piles shall be completely removed. If it is not possible to remove a pile, the pile shall broken off at or below seabed level.

3.2 SALVAGED MATERIAL

.1 Material to be salvaged for the Owner shall be stored as directed by the Departmental Representative.

.2 Remove items to be reused, stockpile and re-install as directed by the Departmental Representative.

.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.

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.

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.

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 items affected by Work to condition which existed prior to beginning of Work.

END OF SECTION

Section 02 50 00 – Timber Floats

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 05 90 00 – STEEL HARDWARE
.2 Section 06 10 10 – TIMBER REPAIRS
.3 Section 06 15 00 – DECKING
.4 Section 21 30 10 – FIRE PROTECTION

1.2 REFERENCE DRAWINGS

.1 FM9-ST-000: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.2 FM9-ST-001: 2.742m WIDE STANDARD FLOAT MODULE
.3 FM9-ST-002: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.4 FM9-ST-003: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.5 FM9-END-200: 2.742m WIDE FLOAT MODULE 2005 REVISION
.6 FM9-END-201: 2.742m WIDE FLOAT MODULE 2005 REVISION

Part 2 Products

2.1 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.

2.2 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)

.6 Timber will be graded in the following classes:
- .1 Joists and Planks
- .2 Beams and Stringers
- .3 Posts and Timbers

.7 All timber shall be free of heart centre with no sap.

.8 All treated timber shall be S4S precut and bored, to specified dimensions, before treating.

.9 Rubboards and all timber at or above deck level shall be salt-treated. All timber below deck level, except rub boards, shall be creosote treated.

.10 All decking lumber shall be surfaced lumber meeting grading S1S2E, Surfaced on the heart side and two edges, heart side down.

2.3 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/m3 (0.40 lb. Per cubic foot) and a depth of penetration of 10mm as specified in CSA 080.14.

.3 Testing:

.1 The Engineer will carry out testing of materials including core sampling at the treatment plant. Data will be made available to the Contractor for information only.

.2 Notwithstanding the Engineer's testing program, the Contractor will ensure the materials meet the specified requirements in all respects. The Engineer reserves the right to reject materials on site.

2.4 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.

2.5 STEEL HARDWARE

.1 Contractor will supply all hardware or nails with modules.

Part 3 Execution

3.1 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.

3.2 EXISTING STRUCTURES

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

3.3 SHIPPING AND PACKAGING

.1 Bundle includes all ACZA and Creosote material for float.

.2 Float modules will be assembled, delivered and secured to the Catamaran at the Kitamaat Harbour

3.4 PATCHING AND REPAIRS

.1 All unused bolt holes or damaged areas of creosote treatment shall be patched with creosote treated dowels, mastic, ships felt and copper patches as specified.

END OF SECTION

Section 05 90 00 – Steel Hardware

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 50 00 – TIMBER FLOATS
.2 Section 06 15 00 – DECKING
.3 Section 31 62 16.19 – STEEL PILES

1.2 REFERENCE DRAWINGS

.1 FM9-ST-000: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.2 FM9-ST-001: 2.742m WIDE STANDARD FLOAT MODULE
.3 FM9-ST-002: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.4 FM9-ST-003: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.5 FM9-END-200: 2.742m WIDE FLOAT MODULE 2005 REVISION
.6 FM9-END-201: 2.742m WIDE FLOAT MODULE 2005 REVISION

Part 2 Products

2.1 STEEL

.1 Small fastenings will conform to the standard for Wire Nails, Spikes, and Staples, Canadian Standards Association (CSA) B-111-1974.

.2 Drift bolts, machine bolts, washers, and miscellaneous iron will conform to the standard for General Purpose Structural Steel of the CAN3-G40.21-M81.

.3 Items manufactured or fabricated from scrap steel of unknown chemical or physical properties are not acceptable.

.4 All bolts will be of the full dimension specified or shown on the plan. Unless otherwise specified, all machine bolts will be provided with steel DPW washers under head and nut. The steel DPW washers shall be round unless specified square.

.5 All bolts shall be 19mm (3/4”) National course thread, unless shown otherwise.(NIC)

.6 Holes for machine bolts will be bored to provide a driving fit.

2.2 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/m2 (2oz/ft2).

.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 3 Execution

3.1 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 00 99 00 Timber Repairs.

.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.

3.2 DECKING

.1 Decking will be delivered to site in a bundle.

3.3 FASCIA

.1 Secure each contact point with 2 – 100mm galvanized RDOX nails.

.2 Contact points every 500mm maximum.

END OF SECTION

Section 06 10 10 – Timber Repairs

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 50 00 – TIMBER FLOATS
.2 Section 05 90 00 – STEEL HARDWARE
.3 Section 06 15 00 – DECKING

1.2 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 2 Products

2.1 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.

2.2 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).

2.3 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/m3 (0.40 lb. Per cubic foot) and a depth of penetration of 10mm as specified in CSA 080.14.

2.4 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 3 Execution

3.1 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.

3.2 EXISTING STRUCTURES

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

3.3 SERVICES

.1 Removal

.1 All services shall be removed from the wharf as not to damage them. All service materials misc. hangers, fasteners and supplies required to reinstall the services shall be supplied by the contractor. All materials that are not reusable shall be disposed of by the contractor.

.2 Handling and Storage

.1 The contractor shall be responsible for the handling and storage of the service lines, lamp standards and other equipment during construction. All materials damaged by the contractor shall be replaced at his expense.

3.4 PATCHING AND REPAIRS

.1 All unused bolt holes or damaged areas of creosote treatment shall be patched with creosote treated dowels, mastic, ships felt and copper patches as specified.

END OF SECTION

Section 06 15 00 – Decking

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 50 00 – TIMBER FLOATS
.2 Section 05 90 00 – STEEL HARDWARE
.3 Section 06 10 10 – TIMBER REPAIRS

1.2 SCOPE OF WORK

.1 This section refers to the installation of all owner supplied decking to be installed on the Floats as outlined in the Contract drawings and related specifications.

Part 2 Products

2.1 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.

.6 All owner supplied materials are attached to the float modules on site. It is the contractors responsibility to notify the Departmental Representative if any materials are missing before the start of construction.

2.2 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 Decking has been bundeled and attached to the floats. Any additional decking will be supplied by the contractor.

.4 All additional timber shall be Coast Douglas Fir. No 1 Structural Grade or better, unless specified otherwise.

.5 All additional decking shall be S1S2E (rough cut), heart side down.

.6 All joists, cross-ties, stringers, blocking, bullrail, risers and fascia boards shall be S2E (rough cut).

Part 3 Execution

3.1 INSTALLATION

.1 Do wood deck work in accordance with CAN/CSA O86 except where specified otherwise.
.2 Install decking in accordance with CAN/CSA O86,
.3 Install decking as outlined in the drawings.
.4 Stagger end joints in adjacent planks minimum of 0.5 m. Separate joints in same area by at least two intervening courses. Avoid joints in first fifth of end spans. Minimize joints in middle third of span.
.5 Apply preservative to end cuts where pressure treated lumber is specified.

3.2 CLEANING

.1 Remove tool marks, bruises, and scratches.

END OF SECTION

Section 09 97 19 – Painting

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 05 90 00 – STEEL HARDWARE
.2 Section 31 62 16.19 – STEEL PILES

1.2 SCOPE OF WORK

.1 All ferrous surfaces except galvanised components are to be painted. This includes:
  .1 Steel pipe piles from top of pile to 6 m below seabed or ground elevation.
  .2 All structural and miscellaneous steel.

1.3 CODES

.1 CGSB Standards of the Canadian General Standards Board
.2 SSPC-SP1 Solvent Cleaning (degreasing)
.3 SSPC-SP2 Hand Tool Cleaning
.4 SSPC-SP7 Brush-off Blast Cleaning
.5 SSPC-SP10 Near White Blast Cleaning
.6 SSPC-SP11 Power Tool Cleaning to Bare Metal
.7 SSPC-GUIDE 6 Debris Containment
.8 ASTM-03276 Recommended Practice Guide for Paint Inspection
.9 ASTM-D3359 Method for Measuring Adhesion by Tape Test
.10 Work Safe BC Occupational Health and Safety Regulations
.11 BC Waste Management Act (SWEP)

Part 2 Products

2.1 PAINT SYSTEM

.1 All dry film thickness (DFT) shall be stated in Mils (thousands of an inch). The equivalent measurement and conversions are as follows:
  .1 One thousandth of an inch (1 mil) = 25 microns
  .2 The detailed requirements of the paint schedule are given below.

.2 Strip coats shall be applied to all welds, lap joints, plate edges, corners, sharp edges and any other areas where spray application of the overall coating system may result in low dry film thickness.

.3 The following paint systems shall be used for painting of steel pipe piles and miscellaneous steel attached to painted metal:

Coat No.	Type	Binder	Product Name	DFT Mil	WFT Mil	Comments

1	Full Coat	Polyamide Cured Epoxy	Interseal 670HS	8	9.7	8 to 10mils
2	Strip Coat	Polyamide Cured Epoxy	Interseal 670HS	(4)	4.9	3 to 5 mils
3	Full Coat	Polyamide Cured Epoxy	Interseal 670HS	8	9.7	8 to 10 mils
-	-	-	-	16	-	-

Note: Finished coating system DFT shall be a minimum of 16 Mil (400 microns) at each spot measurement. Strip coat not included.

.4 Top coat to be a light grey colour.

.5 All bolts, washers and nuts shall be hot dip galvanised in accordance with ASTM Specifications A-153 or A-123, or CSA Specification G 164-M (minimum zinc coating 610 g/m2).

Part 3 Execution

3.1 SURFACE PREPARATION

.1 All steel surfaces to be painted shall be prepared in accordance with the paint manufacturer's specifications.

3.2 PAINT APPLICATION

.1 Coatings shall be applied in accordance with the manufacturer's specifications. All blast cleaning and shop painting shall be carried out under cover in an area protected from weather and other detrimental effects.

3.3 WORKMANSHIP

.1 Coating shall take place as soon as practicable after inspection of cleaning, but, in any event, within two hours and before any visible or detrimental rusting or contamination occurs.

.2 All coating material shall be applied by airless spray unless otherwise allowed or specified by the manufacturer. Spray painting equipment shall be of ample capacity and suitable for the work and shall at all times be kept clean and in good working order. Air lines shall be equipped with water traps to positively remove condensed moisture.

.3 No thinner shall be added to any paint in excess of the paint manufacturer's recommendations.

.4 Coated surfaces rejected by the Engineer shall be made good by the Contractor at his own expense. The Contractor shall submit to the Engineer his proposed method of repair to the damaged surfaces.

.5 Field touch up painting shall be carried out in accordance with the paint manufacturer's specifications.

.6 The Contractor shall provide sufficient paint for field touch-up of any damaged paint surface.

END OF SECTION

Section 21 30 10 – Fire Protection

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 50 00 – TIMBER FLOATS
.2 Section 05 90 00 – STEEL HARDWARE

1.2 SPECIAL CONDITIONS

.1 The Contractor shall closely coordinate his Work with the site occupants through the Departmental Representative and other contractors who are working on site to avoid conflicts and ensure efficient installation of the fire protection system.

1.3 FIRE PROTECTION SYSTEM

.1 Installation of the new fire line system as specified in Section 21 30 10 FIRE PROTECTION and shown on drawings FP-1 to FP-5.

.2 The fire protection system consists of but is not limited to:
  .1 New approach and float fire lines
  .2 Associated piping fittings, hangers, valves and auxiliary equipment
  .3 All cutting, coring, sleeving, reinforcing and making good
  .4 Painting and identification of pipe and equipment
  .5 Access panels required
  .6 Drains as required
  .7 Obtain fire department acceptance.

1.4 SUBMITTALS

.1 As-built Drawings
  .1 The contractor will record all field alterations and additions, including access panels and drain locations on a field set of drawings.
.2 Pressure Test Certifications
  .1 Upon completion of all pressure tests and before substantial completion of the job submit one hard completed copy and one electronic copy of the "Contractor's Material and Test Certificate" to the Departmental Representative.

Part 2 Products

2.1 QUANTITIES

.1 Below is an estimate of the quantities required for the installation of the fire protection system. The contractor will be responsible for any additional materials reqired for field fit installation:

Item Number	Description	Units
1	4” x 2½” x 2½” Fire Dept Connection c/w Caps	2
2	4” x 2½” x 2½” Hydrant c/w 2 – 2½” Hose Valves c/w Caps	1
3	2 ½” Angle Hose Valves Fem NPT x make HT c/w Caps	5
4	1” Brass Ball Valve fem NPT	9
5	4” Galv. Sch 40 pipe	180ft
6	3” Galv Sch 40 pipe	10ft
7	2½” Galv Sch 40 pipe	60ft
8	1” Galv Sch 40 pipe	20ft
9	3” Sclair Pipe D-9	500ft
10	3” Sclair Tee Fuse Connection	9
11	3” Sclair Elbow 90 deg fuse connection	6
12	3” Sclair coupling victaulic style #995, galv.	10
13	3” Sclair x groove coupling victaulic style #997, galv	10
14	3” x 1” NPT galv Sclair Outlet Coupling	5
15	4” galv grooved coupling flexible	4
16	3” galv grooved coupling flexible	1
17	3” x 2½” galv grooved Reducing Coupling	6
18	3” galv grooved Elbow 90 deg	6
19	4” galv grooved tee	2
20	3” galv grooved tee	1
21	4” galv grooved cap	2
22	3” galv grooved cap	6
23	4” x1” galv grooved outlet coupling	2
24	4” NPT x 3” NPT galv Hex bushing	1
25	100ft Galv Tolco Tolstrut #B12	100ft
26	4” Galv Tolco Tolstrut pipe clamp	40
27	2½” Galv Tolco Tolstruct pipe clamp	20
28	4” Galv 2 hole pipe clamp	10
29	2½” Galv 2 hole pipe clamp	25
30	3/8” galv hanger rod	60ft
31	Galv side beam bracket 3/8” rod	12
32	4” galv HD hanger ring	12
33	3/8” x 6” galv coach screw	60
34	3/8” galv rod coupling	10
35	3/8” galv hex nut	100
36	3/8” x 2½” galv lag bolt	40
37	4” galv standard pipe clamp	10
38	4” galv riser support	1
39	2½” galv riser support	5
40	Deck Hatches	6
41	Drain & Control Valve Access Hatches	7
42	Denso Tape	bulk

2.2 MATERIALS, EQUIPMENT, VALVES AND DEVICES

.1 All materials, equipment, valves and devices installed and/or furnished under this section shall be new and be listed and/or approved for use in fire protection installation by the following authorities.

.1 Underwriters' Laboratories of Canada (ULC)

Or, if not available

.2 Underwriters' Laboratories Inc (UL)

.3 Factory Mutual Engineering Association

2.3 CONTROL VALVES

.1 Valves for the same application shall be one manufacture and bearing ULC label, manufacturer's name, valbe size and pressure rating. Unless otherwise specified, design for 175psi working pressure.

.2 Valves 3" and smaller shall be bronze construction with screwed connection , either O.S. &Y valves or ball valves.

2.4 PIPING AND FITTINGS

.1 Galvanized SCH 40 steel piping and galvanized fitting shall meet the requirements of ASTM A 795 and ANSI B 16 or as indicated. Sclair pipe to be Type D-9.

2.5 FIRE DEPARTMENT CONNECTION, WHARF HYDRENT AND HOSE VALVES

.1 Fire department connection shall be 4" x 2½" x 2½" complete with caps and plate marked "Standpipe" in 2" letters.

.2 Wharf hydrant shall be 4" x 2½" x 2½" complete with 2-2½" hose valves and caps.

.1 Hose valves shall be angle type 2½" complete with caps

.3 All threads to be compatible with the local standard.

.4 The fire department connection and hose valves should be plain bronze finish.

2.6 HANGERS, SEISMIC SWAY BRACING & PIPING RESTRAINTS

.1 Hangers shall conform to Section 2-6 and seismic sway bracing and piping restraints current NFPA No. 13.

2.7 ACCESS PANELS

.1 Install access panels as required at control and drain valve locations. Manufactured type and style to suit structural conditions. Size to be as required for intended use. Access panels to be painted fire red.

Part 3 Execution

3.1 WELDING

.1 Welding of steel pipe and fittings on the wharf and floats is phohibited

3.2 PIPE INSTALLATION

.1 Obtain consultants approval for method and type of pipe hangers to be used for each construction type prior to commencing the Work. Victaulic piping connections to be cut-grooved.

3.3 CUTTTING, CORING & PATCHING

.1 Cut or core openings in floats as required for installation of the work. Coordinate schedule and obtain the Departmental Representative's approval prior to commencement of cutting or coring. In addition to obtaining approval of coring locations, the Contractor shall take precautions during coring to avoid damaging existing services located in floats.

.2 Structures to be reinforced where weakened by cutting or coring.

.3 Contractor to make good where existing equipment removed and new equipment installed.

.4 The contractor will keep and accurate markup drawing for location of all cores.

3.4 IDENTIFICATION

.1 Provide control valves and drains with factory produced lamicoid identification tags.

.2 All Standpipe risers shall be painted fire red.

3.5 DRAINS

.1 System auxiliary drains shall be piped to drainages systems and/or to a point where they are easily accessible and equipped with a valve, nipple and cap.
.1 Access panels to be provided where necessary.

.2 A copy of the location and size of all drains and low points on all systems must be submitted with the drawings.

3.6 PROTECTION

.1 All exposed steel pipe, fittings and equipment located in the float structure is to be completely wrapped in Denso tape.

3.7 CLEANING

.1 Maintain the work in a tidy condition and free from accumulation of waste products and debris.

.2 Material accumulated by cutting and opening up shall be removed as work is performed.

.3 Unless otherwise noted, all equipment demolished or removed and not to be handed over to the Owner shall become the property of the Contractor and removed from site.

3.8 TESTING OF PIPING

.1 The Contractor shall hydrostatic pressure test the piping system as required by the Contractors Material & Test Certificate.

.1 Prior to the pressure test, all piping shall be flushed in accordance with NFPA No. 13 to ensure removal of all foreign material and debris.

.2 Tests shall involve the local Fire Department and be witnessed by the Departmental Representative.

.3 Any leaks or deficiencies found as a result of the testing shall be repaired by the contractor.

3.9 INSPECTIONS AND TESTS

.1 The Contractor shall provide field labour and equipment to facilitate all inspections, examinations and tests required by authorities and/or agencies specified in Part 1 to obtained a complete interim and final acceptance of the fire protection system.

.2 The tests required shall be in the presence of representatives of the agencies having jurisdiction.

3.10 PLACING IN SERVICE

.1 When the entire fire protection system has been completed and texting has been passed, the contractor shall demonstrate the complete operation and maintenance required to the Fire Departments and designated personnel.

3.11 CONTRACTOR'S MATERIAL AND TEST CERTIFICATE

Contractor's Material and Test Certificate for Aboveground Piping

PROCEDURE

Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by an owner's representative. All defects shall be corrected and system left in service before contractor's personnel finally leave the job.

A certificate shall be filled out and signed by both representatives. Copies shall be prepared for approving authorities, owners, and contractor. It is understood the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.

Property name	Date
Property address	

Plans

Accepted by approving authorities (names)

Address

Installation conforms to accepted plans ☐ Yes ☐ No

Equipment used is approved ☐ Yes ☐ No

If no, explain deviations

Instructions

Has person in charge of fire equipment been instructed as to location of control valves and care and maintenance of this new equipment? ☐ Yes ☐ No

If no, explain?

Have copies of the following been left on the premises?

1. System components instructions ☐ Yes ☐ No
2. Care and maintenance instructions ☐ Yes ☐ No
3. NFPA 25 ☐ Yes ☐ No

Location of system

Supplies buildings

Sprinklers

Make	Model	Year of manufacture	Orifice size	Quantity	Temperature rating

Pipe and fittings

Type of pipe _____

Type of fittings _____

Alarm valve or flow indicator

Alarm device			Maximum time to operate through test connection	
Type	Make	Model	Minutes	Seconds

Dry pipe operating test

Dry valve			O. O. D.		
Make	Model	Serial no.	Make	Model	Serial no.

	Time to trip through test connection[1]		Water pressure	Air pressure	Trip point air pressure	Time water reached test outlet[2]		Alarm operated properly	
	Minutes	Seconds	psi	psi	psi	Minutes	Seconds	Yes	No
Without O.O.D.									
With O.O.D.									

If no, explain

Deluge and preaction valves

Operation ☐ Pneumatic ☐ Electric ☐ Hydraulics

Piping supervised ☐ Yes ☐ No | Detecting media supervised ☐ Yes ☐ No

Does valve operate from the manual trip, remote, or both control stations? ☐ Yes ☐ No

Is there an accessible facility in each circuit for testing? ☐ Yes ☐ No | If no, explain

Make	Model	Does each circuit operate supervision loss alarm?		Does each circuit operate valve release?		Maximum time to operate release	
		Yes	No	Yes	No	Minutes	Seconds

Pressure reducing valve test

Location and floor	Make and model	Setting	Static pressure		Residual pressure (flowing)		Flow rate
			Inlet (psi)	Outlet (psi)	Inlet (psi)	Outlet (psi)	Flow (gpm)

Test description

Hydrostatic: Hydrostatic tests shall be made at not less than 200 psi (13.6 bar) for 2 hours or 50 psi (3.4 bar) above static pressure in excess of 150 psi (10.2 bar) for 2 hours. Differential dry-pipe valve clappers shall be left open during the test to prevent damage. All aboveground piping leakage shall be stopped.

Pneumatic: Establish 40 psi (2.7 bar) air pressure and measure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours. Test pressure tanks at normal water level and air pressure and measure air pressure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours.

Tests

All piping hydrostatically tested at ____ psi (____ bar) for ____ hours | If no, state reason

Dry piping pneumatically tested ☐ Yes ☐ No

Equipment operates properly ☐ Yes ☐ No

Do you certify as the sprinkler contractor that additives and corrosive chemicals, sodium silicate or derivatives of sodium silicate, brine, or other corrosive chemicals were not used for testing systems or stopping leaks?

☐ Yes ☐ No

Drain test	Reading of gauge located near water supply test connection: ____ psi (____ bar)	Residual pressure with valve in test connection open wide: ____ psi (____ bar)

Underground mains and lead in connections to system risers flushed before connection made to sprinkler piping

Verified by copy of the U Form No. 85B ☐ Yes ☐ No | Other | Explain

flushed by installer of underground sprinkler piping ☐ Yes ☐ No

If powder-driven fasteners are used in concrete, has representative sample testing be satisfactorily completed? ☐ Yes ☐ No | If no, explain

Blank testing gaskets

Number used	Locations	Number removed

Welding

Welding piping ☐ Yes ☐ No

If yes...

Do you certify as the sprinkler contractor that welding procedures comply with the requirements of at least AWS B2.1? ☐ Yes ☐ No

Do you certify that the welding was performed by welders qualified in compliance with the requirements of at least AWS B2.1? ☐ Yes ☐ No

Do you certify that the welding was carried out in compliance with a documented quality control procedure to ensure that all discs are retrieved, that openings in piping are smooth, that slag and other welding residue are removed, and that the internal diameters of piping are not penetrated? ☐ Yes ☐ No

Cutouts (discs)

Do you certify that you have a control feature to ensure that all cutouts (discs) are retrieved? ☐ Yes ☐ No

Hydraulic data nameplate	Nameplate provided ☐ Yes ☐ No	If no, explain
Remarks	Date left in service with all control valves open	
Signatures	Name of sprinkler contractor	
	Tests witnessed by	
	For property owner (signed)	Title / Date
	For sprinkler contractor (signed)	Title / Date
Additional explanations and notes		

END OF SECTION

Section 26 05 00 – Common Work Results for Electrical

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 - Submittal Procedures.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.1-12, Canadian Electrical Code, Part (Latest Edition), Safety Standard for Electrical Installations.

.2 CSA C22.2.

.3 CAN/CSA-C22.3 No. 1-[01(Update March 2005)], Overhead Systems.

.4 CAN3-C235-[83(R2000)], Preferred Voltage Levels for AC Systems, 0 to 50,000 V.

.2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)

.1 EEMAC 2Y-1-[1958], Light Gray Colour for Indoor Switch Gear.

.3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)

.1 IEEE SP1122-[2000], The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.3 DEFINITIONS

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.4 DESIGN REQUIREMENTS

.1 Operating voltages: to CAN3-C235.

.2 Control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

.1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

.3 Language operating requirements: provide identification nameplates for control items in English.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in British Columbia, Canada.

.2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.

.3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.

.4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.

.5 Submit 4 number of copies of 600 x 600 mm minimum size drawings and product data to authority having jurisdiction.

.6 If changes are required, notify Owner of these changes before they are made.

.7 Submit Appendix A, Hourly Rate Schedule and Unit Pricing.

.3 Quality Control: in accordance with Section 01 45 00 - Quality Control. Provide CSA certified equipment and material.

.1 Where CSA certified equipment is not available, submit such equipment to inspection authorities for special approval before delivery to site.

.2 Submit test results of installed electrical systems and instrumentation.

.3 Permits and fees: in accordance with General Conditions of contract.

.4 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Owner.

.4 Manufacturer's Field Reports: submit to Owner manufacturer's written report, within [3] days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.

1.6 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.

.2 Qualifications: electrical Work to be carried out by qualified, licensed electricians who hold valid Master Electrical Contractor license or apprentices in accordance with authorities having jurisdiction.

.1 Employees registered in provincial apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.

.2 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.

.3 Site Meetings:

.1 In accordance with Section 01 32 16.07 - Construction Progress Schedule – Bar (GANTT) Charts.

.2 In accordance with Section 01 31 19 – Project Meetings schedule site visits, to review Work, at stages listed.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Material Delivery Schedule: provide Owner with schedule within 2 weeks after award of Contract.

1.8 SYSTEM STARTUP

.1 Instruct Owner in operation, care and maintenance of systems, system equipment and components.

.2 Arrange and pay for services of manufacturer's factory service engineer to supervise start- up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

.3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant will aspects of its care and operation.

1.9 OPERATING INSTRUCTIONS

.1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.

.2 Operating instructions to include following:

.1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.

.2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.

.3 Safety precautions.

.4 Procedures to be followed in event of equipment failure.

.5 Other items of instruction as recommended by manufacturer of each system or item of equipment.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

.1 Material to be CSA certified or BC Safety Authority recognized equivalent. Where CSA certified material and equipment is not available, obtain special approval from inspection authorities before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.

.2 Factory assemble control panels and component assemblies.

2.2 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

.1 Verify installation and co-ordination responsibilities related to motors, equipment and controls, as indicated.

2.3 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of authority having jurisdiction and the Owner.

2.4 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.5 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with labels as follows:

.1 Labels: embossed weather proof plastic labels with 6mm high letters unless specified otherwise. Labels to be secured with stainless steel screws.

.2 Wording on labels to be approved by Owner prior to manufacture.

.3 Allow for minimum of twenty-five (25) characters per label.

.4 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

2.6 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, numbered, on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding throughout.

.3 Colour coding: to CSA C22.1.

.4 Use colour coded wires in communication cables, matched throughout system.

2.7 CONDUIT AND CABLE IDENTIFICATION

.1 Colour code conduits, boxes and metallic sheathed cables.

2.8 FINISHES

.1 Not used.

Part 3 Execution

3.1 INSTALLATION

.1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

3.2 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.3 FIELD QUALITY CONTROL

.1 Conduct following tests in accordance with Section 01 45 00 - Quality Control.

.1 Circuits originating from branch distribution panels.

.2 Insulation resistance testing:

.1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.

.2 Check resistance to ground before energizing.

.2 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

3.4 CLEANING

.1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

END OF SECTION

Section 26 05 21 – Wires and Cables (1-1000V)

Part 1 Products

1.1 TECK 90 CABLE

.1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical

.2 Conductors:

.1 Grounding conductor: copper

.2 Circuit conductors: copper, size as indicated.

.3 Insulation:

.1 Cross-linked polyethylene XLPE

.2 Rating: 1000 V.

.4 Inner jacket: polyvinyl chloride material.

.5 Armour: interlocking aluminum.

.6 Overall covering: thermoplastic polyvinyl chloride, compliant to applicable Building Code classification for this project. Rating: minus 40deg C, SR, FT-4

.7 Fastenings:

.1 One hole aluminum straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.

.2 Threaded rods: 6 mm diameter to support suspended channels.

.8 Connectors:

.1 Watertight approved for TECK cable, corrosion resistant.

1.2 TYPE G CABLE

.1 CSA type G round cable with ground, size as indicated.

.2 Conductor: fully Annealed stranded bare copper

.3 Insulation: Premium grade color coded 90° C EPDM

.4 Jacket: Super Vutron 90° C or approved equivalent

Part 2 Execution

2.1 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical

.2 Perform Megger tests using method appropriate to site conditions and to approval of The Engineer and local authority having jurisdiction over installation.

.3 Perform tests before energizing electrical system.

2.2 GENERAL CABLE INSTALLATION

.1 Cable Colour Coding: to Section 26 05 00 Common Work Results for Electrical.

.2 Conductor length for parallel feeders to be identical.

.3 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.

2.3 INSTALLATION OF TECK90 CABLE (0 -1000 V)

.1 Group cables wherever possible on channels.

.2 Install cable exposed, securely supported by hangers.

2.4 INSTALLATION OF NON-METALLIC SHEATHED CABLE

.1 Install cables.

.2 Install straps and box connectors to cables as required.

END OF SECTION

Section 26 05 22 – Connectors and Terminations

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for connectors and terminations.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 26 05 33 - Raceway and Boxes for Electrical Systems.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.2 No.41-M1987 (R1999), Grounding and Bonding Equipment.

1.4 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Divert unused metal and wiring materials from landfill to metal recycling facility.

Part 2 Products

2.1 CONNECTORS AND TERMINATIONS

.1 Copper compression connectors as required sized for conductors.

.2 Contact aid for aluminum cables where applicable.

Part 3 Execution

3.1 INSTALLATION

.1 Install terminations, and splices in accordance with manufacturer's instructions.

.2 Bond and ground as required to CSA C22.2No.41.

END OF SECTION

Section 26 05 28 – Grounding - Secondary

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.2 CSA C22.1-12, Canadian Electrical Code, Part (Latest Edition), Safety Standard for Electrical Installations.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for grounding equipment and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 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 2 Products

2.1 EQUIPMENT

.1 Grounding conductors: bare stranded copper, soft annealed, size as indicated.

.2 Insulated grounding conductors: green, copper conductors, size as indicated.

.3 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:

.1 Grounding and bonding bushings.

.2 Protective type clamps.

.3 Bolted type conductor connectors.

.4 Compression type conductor connectors.

.5 Bonding jumpers, straps.

.6 Pressure wire connectors.

Part 3 Execution

3.1 INSTALLATION GENERAL

.1 Install complete permanent, continuous grounding system including, electrodes, conductors, connectors, accessories.

.2 Install connectors in accordance with manufacturer's instructions.

.3 Protect exposed grounding conductors from mechanical injury.

.4 Use mechanical connectors for grounding connections to equipment provided with lugs.

.5 Soldered joints not permitted.

.6 Install flexible ground straps for bus duct enclosure joints, where such bonding is not inherently provided with equipment.

.7 Install separate ground conductor to outdoor lighting standards.

.8 Make grounding connections in radial configuration only, with connections terminating at single grounding point. Avoid loop connections.

.9 Ground secondary service pedestals.

3.2 EQUIPMENT GROUNDING

.1 Install grounding and bonding connections to typical equipment included in, but not necessarily limited to following list. Service equipment, transformers, frames of motors, starters, control panels, distribution panels, outdoor lighting and cable trays.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of the Engineer and local authority having jurisdiction over installation.

.3 Perform tests before energizing electrical system.

.4 Disconnect ground fault indicator during tests.

3.4 CLEANING

.1 Progress Cleaning: leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Section 26 50 00 – Lighting

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)

.1 ANSI C82.1-[04], Lamp Ballasts-Line Frequency Fluorescent Lamp Ballast.

.2 ANSI C82.4-[02(R2007)], Ballasts for High-Intensity-Discharge and Low- Pressure Sodium Lamps Multi Supply Type.

.2 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)

.1 ANSI/IEEE C62.41-[1991], Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.

.3 ASTM International Inc.

.1 ASTM F1137-[00(2006)], Standard Specification for Phosphate/Oil and Phosphate/Organic Corrosion Protective Coatings for Fasteners.

.4 Canadian Standards Association (CSA International)

.5 ICES-005-[07], Radio Frequency Lighting Devices.

.6 Underwriters' Laboratories of Canada (ULC)

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 QUALITY ASSURANCE

.1 Provide mock-ups in accordance with Section 01 45 00 - Quality Control

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

.2 Divert unused metal materials from landfill to metal recycling facility.

.3 Disposal and recycling of fluorescent lamps as per local regulations.

.4 Disposal of old PCB filled ballasts.

1.5 FINISHES

.1 Light fixture finish and construction to meet ULC listings and CSA certifications related to intended installation.

1.6 OPTICAL CONTROL DEVICES

.1 As indicated in on drawings.

1.7 LUMINAIRES

.1 As indicated on drawings.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 INSTALLATION

.1 Locate and install luminaires as indicated.

3.2 WIRING

.1 Connect luminaires to lighting circuits:

.1 Install flexible armoured cable or rigid conduit for luminaires as indicated.

3.3 LUMINAIRE ALIGNMENT

.1 Align luminaires mounted in continuous rows to form straight uninterrupted line.

.2 Align luminaires mounted individually parallel or perpendicular to building grid lines.

3.4 CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Section 31 62 16.19 – Steel Piles

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 43 – ENVIRONMENTAL PROCEDURES
.2 Section 02 50 00 – TIMBER FLOATS
.3 Section 05 90 00 – STEEL HARDWARE
.4 Section 09 97 19 – PAINTING

1.2 MEASUREMENT PROCEDURES

.1 Method 1:
  .1 Measure supply of steel pipe piles in metres delivered to site, in lengths indicated on Drawings and approved by Departmental Representative.
  .2 Measure installations of piles in number of piles and lengths acceptably driven,
.2 Method 2:
  .1 Measure supply and installation of piles in metres of pile acceptably incorporated into work.
.3 Mobilization of equipment: paid as lump sum item.
.4 Actual number and lengths of piles installed: established by Departmental Representative from piling records.
.5 Unit of measurement for piles: per metre measured from tip elevation (lowest point of pile) to cut off elevation at pile cap.

1.3 PILE DRIVING RECORDS

.1 The Contractor shall maintain an accurate record of pile driving. The Contractor shall submit a copy of his record to the Consultant. The Contractor shall co-operate with the Consultant in maintaining these records.

.2 The Contractor shall record for each pile:
  .1 Pile number and location.
  .2 Cut off elevation.
  .3 Date and time driven.
  .4 Soil penetration.
  .5 Length of pile driven.
  .6 Tip elevation.
  .7 Type of pile driving hammer.
  .8 Final set and hammer energy.

Part 2 Products

2.1 MATERIALS

.1 Steel pipe piles shall be 762mm O.D. x 12.7mm thick, painted straight seam steel pipe pile as shown on contract drawings KM-FR 003 - FLOAT AND PILE PLAN, KM-FR 006 – PILE MOORING BRACKET SECTION AND DETAIL

.2 Steel pipe piles shall have minimum yield strength of 310 MPa meeting the requirements of the last edition of at least one of the following specifications:

.1 ASTM A252 Grade 3
.2 API 5L Grade B
.3 ASTM A53 Grade B
.4 CSA Z245.1-M

with the following provisions:

i) Chemical analysis of material shall show an equivalent carbon content of less than 0.30%.

ii) All welds shall be full strength and shall satisfy the requirements of either ASTM A53 or CSA Z245.1-M.

iii) Flattening tests for ductility shall be conducted in accordance with the procedure and frequency stipulated in CSA Standard Z245.1-M or ASTM Standard A53.

iv) Unless longitudinal welds are certified as conforming to the requirements of ASTM A53, CSA Z245.1-M or API 5L to the satisfaction of the Consultant, welds shall be 100 percent inspected by ultrasonic or electromagnetic inspection according to the requirements of ASTM A53. This inspection shall be conducted at the Contractor's expense.

v) The Contractor shall bear the expense of repairing and re-inspecting all rejected welds.

vi) Allowable tolerance on dimensions shall meet the requirements of CSAZ245.1-M.

.3 The minimum length of a pile section used in the fabrication of piles shall be 3.0 m.

.4 Welded steel piles shall have full strength welds.

.5 The Contractor shall provide necessary certification to demonstrate that the material meets the above standards.

2.2 HANDLING

.1 Piling shall be handled and stored so as to avoid over stressing or injury, and any piles bent or damaged, or in any way made defective in the opinion of the Engineer, shall be made good to his satisfaction or replaced.

Part 3 Execution

3.1 FABRICATION

.1 Welding practice and qualifications of fabricators and erectors of welded construction shall conform to the requirements of CSA Standards W47, W48, and W59, latest editions.

.2 Piles shall be spliced to the required lengths in a workshop or similar suitable place that will ensure good quality splices.

.3 Lengths to be joined shall be manipulated in jigs so that only down-hand welding is employed.

.4 The splice shall be complete joint penetration welds and shall develop the full strength of the pile section. Splices shall be made in a manner that will ensure good alignment of the spliced parts. The number of splices shall be held to a minimum.

.5 The longitudinal welds of pipe pile lengths to be joined shall be staggered 90 degrees.

.6 The end profile of a pile section to be butt welded shall not deviate more than 1.0 - 1.6 mm from a plane perpendicular to the axis of the pile.

.7 Maximum deviation of the line of the pile at the splices shall be 3 mm when measured with a 3.0 m straight edge.

.8 All pile splices shall be 100 percent inspected and tested. This inspection shall be conducted at the Contractor's expense.

.9 Inspection of pile splices shall be by non-destructive ultrasonic tests in accordance with the requirements of AWS D1.1-75. If the inspection of a weld should indicate poor alignment of the pile sections, insufficient penetration of the weld, lack of fusion, slag inclusions, porosity or any such defects, the Contractor shall take the necessary corrective measures to provide a full strength weld to the satisfaction of the Consultant. The cost of correcting defective welds and re-testing shall be borne by the Contractor.

3.2 INSTALLATION

.1 All piles shall be driven to the pile tip elevation shown on the drawing. All piles may be installed to final tip elevation with a standard air, diesel, hydraulic, drop or vibratory hammer.

.2 All pile driving equipment shall be in good mechanical condition and shall be capable of delivering the manufacturer's rated energy output and shall be operated in accordance with the manufacturer's instructions.

.3 Pile driver leads shall be constructed in a manner which affords freedom of movement of the hammer and they shall be held in position by guys, stiff braces or by attaching to cranes or derricks so as to ensure proper support for the pile during driving. Hammer blows at all times shall be in direct line with the axis of the pile.

.4 Steel piles shall be driven without excessive deformation of the head of the pile. The head of the pile shall be cut square and a driving cap shall be provided to hold the axis of the pile in line with the axis of the hammer.

.5 The driving cap shall fit continuously over the top of the pile and shall project about 150mm down over/into the pile and shall be such that the pile is held properly in line with the leads. A cushion of hardwood, fibre, plywood or other suitable material shall be placed between the driving cap and the hammer. The cushion shall be replaced if so directed by the Consultant.

.6 Piles shall be driven in the positions shown on the drawings. Piles shall be driven and installed within a tolerance of +/- 100 mm in location and within 0.5% from the specified axial alignment. The Consultant may reject piles driven out of alignment or damaged in any way after inspection. Cost of remedial measures decided by the Consultant shall be borne by the Contractor.

3.3 PILE SOCKETING INTO BEDROCK

.1 If available overburden is less than 9m, pile will have to be socketed into bedrock as outlined in Table 1 below.

Table 1. Rock Penetration for 762 x 12.7 Pipe Piles

Penetration Obtained in Overburden	Required Additional Penetration into Bedrock
9m or more	Not Required
8m	1.5m
6m	2.0m
4m	2.5m
3m or less	3.0m

.2 Additional penetration is in addition to the overburden depth.

.3 Rock socket diameter must be approximately the same diameter as the outside diameter of the pile. The pile must be a tight fit with the hole diameter being no larger than ¼" + pile diameter.

.4 Additional rock penetration depth to start once tight hole diameter requirement achieved not at contact with rock.

3.4 STEEL PILE CUTTING SHOES

.1 Pile cutting shoes will not be required.

3.5 MOORING WELLS

.1 Pile well to consist of steel pipe ring bolted to timber deck (Supplied by Owner).

.2 Pipe ring to have an inside rub-ring of 25mm thick UHMW material.

.3 Inside diameter of the rub-ring is to be 75mm larger than outside diameter of the steel pipe pile.

.4 See Drawing 717891-30 for mooring well details.

3.6 CUT OFFS

.1 After driving, piles shall be cut off at the elevations shown on the plans. In driving, sufficient length above cut off shall be allowed so that no part of the head of the pile damaged or deformed during driving remains in the work.

.2 Piles shall be cut in a flat horizontal plane. A suitable guide shall be used to aid in cutting piles so that the cut off plane is within specified butt weld splice tolerances. If a satisfactory hand-held cut cannot be obtained, the Contractor shall cut the pile with an automatic cutter.

3.7 TEMPORARY RESTRAINT OF DRIVEN PILES

.1 Contractor shall furnish sufficient labour and materials to adequately secure the piles of any given group against motion relative to others in the group.

.2 Temporary restraints once erected and approved shall be maintained in good order until completion of the structure.

3.8 CORROSION PROTECTION

.1 The outside surface of the pipe piles shall be painted. Painting shall be in accordance with the requirements of Section 09 97 19 PAINTING.

END OF SECTION