



**FISHERIES AND OCEANS CANADA  
REAL PROPERTY AND SAFETY AND SECURITY  
PACIFIC REGION**

**ROBERTSON CREEK HATCHERY - CONCRETE FIBREGLASS  
REARING PONDS 6-10  
CONTRACT NO. F1700-130411**

**SPECIFICATIONS  
November 2013**





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**END OF SECTION**





## SUMMARY OF WORK

### *Part 1 General*

#### 1.1 RELATED SECTIONS

- .1 Not Used

#### 1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises the abrasive blast cleaning of each channel, power washing each channel, repairing damaged concrete, routing and filling all cracks in the concrete, filling eroded concrete surfaces, repairing and rebuilding expansion joints, provide treatment to all embedded metalwork in channels and coating the ponds after filling to resurface six (6) steelhead rearing channels A B C D E and F, including the inlet/outlet structures, ,
- .2 Scope of Work:
  - .1 Abrasive blast clean each channel
  - .2 Power wash each channel
  - .3 Repair Damaged concrete
  - .4 Grout and fill all cracks in the concrete
  - .5 Fill the eroded concrete surfaces
  - .6 Repair and rebuild the expansion joints
  - .7 Coat the ponds after filling
- .3 This is an operating hatchery production hatchery that must remain operational during the entire construction project.
- .4 All any work that is outside the scope of the contract documents must be proposed and submitted in writing to the Departmental Representative.
  - .1 All submittals must be in accordance with Section 01 33 00 – Submittal Procedures.
  - .2 All extra work must be approved by the Departmental Representative
    - .1 If work is done that has not been approved it will be at the contractors expense.

#### 1.3 LOCATION AND CONTACT

- .1 Robertson Creek Hatchery
  - .1 Address: 10333-BCentral Lake Road, Port Alberni, B.C. V9Y 8Z2
  - .2 Phone: - 250-724-6521
  - .3 Contact: Steven C. Emmonds, Hatchery Manager, or Harley Gaetz 250-724-6521.
- .2 The Robertson Creek Hatchery is located NW of Port Alberni . Take highway #4 for 8km then turn right on great central lake road for approx 4 km.





#### **1.4 ENQUIRES**

- .1 For technical enquiries call Harold Beardmore, Senior Engineer at (604) 666-2035.
- .2 For site enquires call Steven Edmonds, Hatchery Manager at (250) 283-7148 or Harley Gaetz, at (250) 724-6521.
- .3 For site access information contact the Hatchery Manager of the Robertson Creek Hatchery.

#### **1.5 CONTRACT METHOD**

- .1 Construct Work under single, stipulated price contract.

#### **1.6 WORK SEQUENCE**

- .1 Construct Work in stages to accommodate Department Representative's continued use of premises during construction.
- .2 Co-ordinate Progress Schedule with Owner Occupancy during construction.

#### **1.7 CONTRACTOR USE OF PREMISES**

- .1 Limit use of premises for Work, for storage, and for access, to allow:
  - .1 Owner occupancy of adjacent areas that will remain in use.
  - .2 Work by other contractors.
- .2 Co-ordinate use of premises under direction of Departmental Representative.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

#### **1.8 ESTIMATES**

- .1 Locate and provide estimate to Departmental Representative as part of the bid documents.
- .2 Additional work and repair over the estimate in the bid documents will be the at the contractors expense.





### **1.9 OWNER OCCUPANCY**

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

### **1.10 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to hatchery operations and normal use of premises. Arrange with Departmental Representative and Hatchery Manager to facilitate execution of work.

### **1.11 EXISTING SERVICES**

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours' notice, in writing, for necessary interruption of mechanical, electrical, or alarm system service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to hatchery operations.
- .3 Provide alternative routes for personnel and vehicular traffic.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .5 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including water supply, power and alarm services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary service to maintain critical hatchery systems and operations.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.
- .11 Construct temporary barriers and enclosures as required.





## **1.12 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders.
  - .5 Other Modifications to Contract.
  - .6 Copy of Approved Work Schedule.
  - .7 Health and Safety Plan and Other Safety Related Documents.
  - .8 Other documents as specified.

## ***Part 2 Products***

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**





## **WORK RESTRICTIONS**

### ***Part 1 General***

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 ACCESS AND EGRESS**

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

#### **1.3 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises and hatchery operations. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Departmental Representative will not assign sanitary facilities for use by Contractor's personnel.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

#### **1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to building operations and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

#### **1.5 EXISTING SERVICES**

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for personnel, pedestrian and vehicular traffic.





- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

## **1.6 HOURS OF WORK**

- .1 The site of concrete channels in hatchery is open from 8:00 am to 4:00 pm.
- .2 Extended hours are available on arrangement with the Hatchery Manager and Departmental Representative.

## **1.7 SPECIAL REQUIREMENTS**

- .1 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
- .2 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

## ***Part 2 Products***

### **2.1 NOT USED**

Not Used.

## ***Part 3 Execution***

### **3.1 NOT USED**

Not Used.

**END OF SECTION**





## **PROJECT MEETINGS**

### ***Part 1 General***

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 ADMINISTRATIVE**

- .1 Schedule and administer project meetings throughout the progress of the work and at any time at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.
- .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 3 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 PRETENDER SITE INSPECTION**

- .1 There will be a MANDATORY formal pre-tender site inspection for this project. The pre-tender site inspection will be held on 4th December, 2013 at 10:30 AM, at the Robertson Creek Hatchery.
- .2 The bidding contractors are strongly encouraged to visit the site prior to tender closing to examine closely all local and existing conditions which may affect the application, installation and performance of the work.
- .3 Where existing conditions are evident during the tendering period and will affect the work, it will be assumed that the Contractor's price includes the costs to implement the work and make a complete and operational system.
- .4 Where existing conditions are found by the bidding Contractor that in their opinion, will adversely affect the contract, the Contractor shall report the finding to the Engineer and request further instructions, prior to submitting tender price. If this is not done, increase to the Contract will not be considered where the conditions were evident during the tendering period.





- .5 At least one of the channels of each type will be empty for inspection before tender closes.
- .6 Contractors can have additional access to the channels if arranged with Departmental Representative and Hatchery Manager.
- .7 Non-destructive concrete testing may be undertaken to assess concrete surface quality for surface preparation.
  - .1 All tests must not hinder a successful bidders ability to prepare the concrete for resurfacing.
  - .2 A Departmental Representative must be present during testing period.

#### **1.4 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 Departmental Representative, Contractor, major Subcontractors, and field inspectors 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 Schedule.
  - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5 Delivery schedule of specified equipment in accordance with Section 01 32 16.07 – Construction Progress Schedule.
  - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, administrative requirements.
  - .7 Owner provided products.

#### **1.5 PROGRESS MEETINGS**

- .1 During course of Work and weeks prior to project completion, schedule progress meetings monthly.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance. Parties may attend via teleconference with Departmental Representatives approval.





- .3 Notify parties minimum 3 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.

### ***Par 2 Products***

#### **2.1 NOT USED**

Not Used.

### ***Part 3 Execution***

#### **3.1 NOT USED**

Not Used.

**END OF SECTION**





## 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 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 Project Schedule to Departmental Representative within 10 working days of Notice to Proceed

### **1.5 PROJECT MILESTONES**

- .1 Project milestones form interim targets for Project Schedule..1 All ponds are to be resurfaced, to the satisfaction of the engineer or his representative, work can commence on the project upon award of contract and completion by 31 March 2014.

### **1.6 PROJECT SCHEDULE**

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Develop detailed Project Schedule derived from Master Plan.
- .5 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  - .1 Award.
  - .2 Samples.
  - .3 Permits.
  - .4 Mobilization.
  - .5 Hoarding
  - .6 Surface Prep.
  - .7 Cleaning





- .8 Drying.
- .9 Application.
- .10 Curing.
- .11 Painting.
- .12 Inspection Points.
- .13 Final Cleanup and Commissioning.

.6 Project must be completed by March 31<sup>st</sup>, 2014.

## 1.7 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.

## 1.8 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 at the contractors expense.

## ***Part 2 Products***

### **2.1 NOT USED**

- .1 Not used.

## ***Part 3 Execution***

### **3.1 NOT USED**

- .1 Not used.

END OF SECTION





## SUBMITTAL PROCEDURES

### *Part 1 General*

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 REFERENCES**

- .1 Not Used.

#### **1.3 ADMINISTRATIVE**

- .1 Submit to Departmental Representative 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 to Departmental Representative. 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 Departmental Representative, 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 Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.





#### **1.4 SAMPLES**

- .1 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's business address.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

#### **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**





## HEALTH AND SAFETY REQUIREMENTS

### *Part 1*      *General*

#### **1.1 SECTION INCLUDES**

- .1 Health and safety considerations required to ensure that PWGSC shows due diligence towards health and safety on construction sites, and meets the requirements laid out in PWGSC/RPB Departmental Policy DP 073 - Occupational Health and Safety - Construction.

#### **1.2 RELATED SECTIONS**

- .1 Not Used.

#### **1.3 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 Province of British Columbia
  - .1 Workers Compensation Act, RSBC 1996 - Updated 2006.

#### **1.4 SUBMITTALS**

- .1 Make submittals 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 operation found in work plan.
- .3 Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
- .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 7 days after receipt of





plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 7 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.

## **1.5 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 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

## **1.8 PROJECT/SITE CONDITIONS**

- .1 Work at site will involve contact with but not limited to:
  - .1 Glass FRP and Paint products.
  - .2 Aluminum.
  - .3 Steel and Iron
  - .4 Concrete

## **1.9 GENERAL REQUIREMENTS**

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

## **1.10 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 the 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.

### **1.11 COMPLIANCE REQUIREMENTS**

- .1 Comply with Workers Compensation Act, B.C.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

### **1.12 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 Province having jurisdiction and advise Departmental Representative verbally and in writing.

### **1.13 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 PVC pipe, cutting and welding and concrete work.
  - .2 Have working knowledge of occupational safety and health regulations.
  - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
  - .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

### **1.15 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.

### **1.16 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**

Not used.

***Part 3 Execution***

**3.1 NOT USED**

Not used.

**END OF SECTION**





## REGULATORY REQUIREMENTS

### *Part 1 General*

#### 1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

#### 1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative.

### *Part 2 Products*

#### 2.1 NOT USED

- .1 Not Used.

### *Part 3 Execution*

#### 3.1 NOT USED

- .1 Not Used.

END OF SECTION





## QUALITY CONTROL

### *Part 1 General*

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-[94], Stipulated Price Contract.

#### **1.3 INSPECTION**

- .1 Refer to CCDC 2, GC 2.3.
- .2 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .5 Departmental Representative 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. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.
- .6 The Department may hire an inspector on site for the duration of the contract. The inspector will have the authority to make recommendations to the Departmental Representative to accept or reject the Contractors methods and results.
- .7 The inspector may ensure adherence to the specification requirements for surface temperature, ambient air temperature, relative humidity and dew point throughout surface preparation, coating applications and curing. The inspector will notify Departmental Representative immediately if not.
- .8 The Departmental Representative will approve each stage of the work before the Contractor will be allowed to proceed to the next stage.





- .9 The finished work will be measured for the dry film thickness, pinholes and voids, other film defects, degree of cure and adhesion. Defects and shortages will be indicated to the Contractor for repair.
- .10 The hatchery staff members will act as environmental monitor.
- .11 The Department reserves the right to inspect any portion of the work at any time for the duration of this contract, and to make such tests, inspections and surveys as are necessary to check general conformity with the specifications. No payment will be made for the cost to the Contractor of any work or delay occasioned by the Department's inspection or checking.

#### **1.4 INDEPENDENT INSPECTION AGENCIES**

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

#### **1.5 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.

#### **1.6 PROCEDURES**

- .1 Notify appropriate agency and Departmental Representative 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.





## **1.7 REJECTED WORK**

- .1 Refer to CCDC, GC 2.4.
- .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 by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .3 If in opinion of Departmental Representative 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 Departmental Representative.

## ***Part 2 Products***

### **2.1 NOT USED**

- .1 Not Used.

## ***Part 3 Execution***

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**





## TEMPORARY UTILITIES

### *Part 1 General*

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 REFERENCES**

- .1 U.S. Environmental Protection Agency (EPA) / Office of Water
  - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

#### **1.3 SUBMITTALS**

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

#### **1.4 INSTALLATION AND REMOVAL**

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

#### **1.5 DEWATERING**

- .1 Provide temporary drainage and pumping facilities to keep excavations and site free from water.

#### **1.6 WATER SUPPLY**

- .1 Departmental Representative will provide continuous supply of water for construction use.
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- .3 Departmental Representative will pay for utility charges at prevailing rates.

#### **1.7 TEMPORARY HEATING AND VENTILATION**

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
  - .1 Facilitate progress of Work.
  - .2 Protect Work and products against dampness and cold.
  - .3 Prevent moisture condensation on surfaces.





- .4 Provide appropriate temperatures and humidity levels for storage, installation and curing of materials.
- .5 Provide adequate ventilation to meet health regulations for safe working environment.
  
- .4 Maintain temperatures as specified by glass FRP manufacturer in areas where construction is in progress.
  
- .5 Ventilating:
  - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
  - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
  - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
  - .4 Ventilate storage spaces containing hazardous or volatile materials.
  - .5 Ventilate temporary sanitary facilities.
  - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
  
- .6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
  - .4 Prevent damage to finishes.
  - .5 Vent direct-fired combustion units to outside.
  
- .7 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

## **1.8 TEMPORARY POWER AND LIGHT**

- .1 Departmental Representative will pay for temporary power during construction for temporary lighting and operating of power tools, to a maximum supply of 120 volts provided it can be connected to existing services and not compromise hatchery operations.
  - .1 All connections must be approved by the Departmental Representative and Hatchery Manager before installation.
  
- .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
  
- .3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contractor.
  
- .4 Provide and maintain adequate temporary lighting throughout project.
  
- .5 Make good damage to electrical system caused by use under this Contract.





- .6 If the connection to existing site services impedes the hatchery operations in any way the contractor will have to pay for their own power generation.

## **1.9 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

## ***Part 2 Products***

### **2.1 NOT USED**

Not Used.

## ***Part 3 Execution***

### **3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed.

**END OF SECTION**





## CONSTRUCTION FACILITIES

### *Part 1 General*

#### 1.1 RELATED SECTIONS

- .1 Not Used.

#### 1.2 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-(latest), Stipulated Price Contract.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1/A23.2-[04], Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA-0121-[M1978(R2003)], Douglas Fir Plywood.
  - .3 CAN/CSA-S269.2-[M1987(R2003)], Access Scaffolding for Construction Purposes.
  - .4 CAN/CSA-Z321-[96(R2001)], Signs and Symbols for the Occupational Environment.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.
- .4 U.S. Environmental Protection Agency (EPA) / Office of Water
  - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

#### 1.3 SUBMITTALS

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

#### 1.4 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Indicate use of supplemental or other staging area.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from site all such work after use.





## **1.5 SITE CONDITIONS**

- .1 The concrete ponds are at ground level. The contractor must work through the available entrances unless alternate arrangements are made with the Departmental Representative.
- .2 The concrete ponds are drained, but they are below grade and the amount of moisture in the surrounding ground will be weather dependant.
- .3 The concrete ponds are outdoors and are not covered.

## **1.6 SITE STORAGE/LOADING**

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

## **1.7 CONSTRUCTION PARKING**

- .1 Parking will be permitted on site provided it does not disrupt performance of Work or ongoing hatchery operations.
  - .1 Obtain Hatchery Manager permission before parking on site.
- .2 Provide and maintain adequate access to project site.

## **1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with hatchery activities.

## **1.9 SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

## **1.10 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.





- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.
- .5 Prior to completion of the contract the contractor shall completely clean the work site and dispose of all wasted materials in the correct manner.

## ***Part 2 Products***

### **2.1 NOT USED**

- .1 Not Used.

## ***Part 3 Execution***

### **3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction. Prior to the Work the Contractor shall prepare an Erosion and Sediment Control Plan to be adhered to for the duration of the work. The Erosion and Sediment Control Plan shall be submitted in accordance with Section 01 33 00.
- .2 Contractor shall perform the construction activities such that deleterious substances do not enter the river. Deleterious substance typical to this type of construction are silt from excavation and overland runoff, and contaminates from heavy equipment, fuels ect.
- .3 Equipment shall be fuelled away from any contact with the water courses and all equipment shall be in good repair and not leaking fluids. All equipment must be power washed prior to work on the site.
- .5 A spill kit must be on site and any spills must be reported to the Provincial Emergency Program (1 800 663-3456) and the Departmental Representative.
- .6 Inspect, repair, and maintain erosion and sedimentation control measures during.
- .7 Remove erosion and sedimentation controls and restore and stabilize areas disturbed.

**END OF SECTION**





## **TEMPORARY BARRIERS AND ENCLOSURES**

### ***Part 1 General***

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-O121-[M1978(R2003)], Douglas Fir Plywood.
- .2 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and 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 HOARDING**

- .1 Erect temporary enclosure to contain debris from abrasive blast cleaning and prevent airborne contaminants from entering fish rearing and holding ponds currently in use.
- .2 If necessary hoard area to control glass FRP curing conditions.
- .3 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.
- .4 Design enclosures to withstand wind, rain and snow loadings.

#### **1.5 ACCESS TO SITE**

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

#### **1.6 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 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

### **1.7 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

### **1.8 LOCAL DEWATERING**

- .1 The channels to be resurfaced will be drained and the water supplies shut off by the Hatchery staff. The surrounding grounds around the concrete channels may be saturated with water, also some channels will be full of water and will be in operation. All the channels share a common drain channel and this will be stoplogged off but some seepage onto the slab may occur. Some valves may not be water tight and have been known to leak slightly. The contractor may have to do some local dewatering during the resurfacing operation. It is understood that the slab resurfacing may be compromised by water. The Contractor and the Departmental Representative shall observe and discuss the site condition prior to the resurfacing.
- .2 Channels that are still in operation will contain rearing salmon. It is important not to allow any contaminants from either the surface preparation or coating operations to enter the operational ponds.
- .3 All costs of local dewatering will be at the contractors expense.
- .4 It is the contractors responsibility to ensure that the methods used for dewatering do not fail. Any costs or delays incurred by the failure of the dewatering process will be incurred by the contractor.

## ***Part 2 Products***

### **2.1 NOT USED**

- .1 Not Used.

## ***Part 3 Execution***

### **3.1 NOT USED**

- .1 Not Used.





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**CONCRETE FIBREGLASS  
LINER**

**Section 01 56 00  
TEMPORARY  
BARRIERS AND  
ENCLOSURES  
3 - 3**

**END OF SECTION**



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Canada

**Canada**



## COMMON PRODUCT REQUIREMENTS

### *Part 1 General*

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-[94], Stipulated Price Contract.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

#### **1.3 QUALITY**

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.





#### **1.4 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

#### **1.5 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber ect. on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.
- .10 Follow manufacturer's instructions when storing handling and protecting the product.





## **1.6 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.

## **1.7 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

## **1.8 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

## **1.9 CO-ORDINATION**

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

## **1.10 CONCEALMENT**

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.





### **1.11 REMEDIAL WORK**

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

### **1.12 LOCATION OF FIXTURES**

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

### **1.13 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

### **1.14 EXISTING UTILITIES**

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work,
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

## ***Part 2 Products***

### **2.1 NOT USED**

Not Used.

## ***Part 3 Execution***

### **3.1 NOT USED**

Not Used.

**END OF SECTION**





## **EXECUTION**

### ***Part 1 General***

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of an 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 Departmental Representative or separate contractor.
  - .6 Work outside the contract documents.
- .3 Include in request:
  - .1 Identification of project.
  - .2 Location and description of affected Work.
  - .3 Statement on necessity for alteration.
  - .4 Description of proposed Work, and products to be used.
  - .5 Alternatives.
  - .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 alteration.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of alteration 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; maintain excavations free of water.





## **1.5 EXECUTION**

- .1 Execute alteration, including cutting, fitting, patching, excavation, cleaning, surface preparation, drying, glass FRP application, painting, and crack preparation/filling, 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 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Restore work with new products in accordance with requirements of Contract Documents.
- .9 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .10 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .11 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

### ***Part 2 Products***

#### **2.1 NOT USED**

Not Used.

### ***Part 3 Execution***

#### **3.1 Not Used**

Not Used.

**END OF SECTION**





## **CLEANING**

### **Part 1 General**

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-[94], Stipulated Price Contract.
- .2 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions "C", In Effect as Of: May 14, 2004.

#### **1.3 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Departmental Representative or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.





#### **1.4 FINAL CLEANING**

- .1 Refer to CCDC 2, GC 3.14.
- .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .4 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .5 Remove waste products and debris including that caused by Departmental Representative or other Contractors.
- .6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .8 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .9 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .10 Remove dirt and other disfiguration from exterior surfaces.
- .11 Sweep and wash clean paved areas.

#### **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

### ***Part 2 Products***

#### **2.1 NOT USED**

Not Used.

### ***Part 3 Execution***

#### **3.1 NOT USED**

Not Used.

**END OF SECTION**





## **CONSTRUCTION/ DEMOLITION WASTE MANAGEMENT AND DISPOSAL**

### ***Part 1 General***

#### **1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss DFO's Waste Management Plan and Goals.
- .2 Accomplish maximum control of solid construction waste.
- .3 Preserve environment and prevent pollution and environment damage.

#### **1.2 RELATED SECTIONS**

- .1 Not Used.

#### **1.3 REFERENCES**

- .1 LEED Canadian Green Building Council (CGBC), Green Building Rating System, For New Construction and Major Renovations LEED Canada-NC, Version 1.0.

#### **1.4 DEFINITIONS**

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Inert Fill: inert waste - exclusively asphalt and concrete.
- .3 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .4 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .5 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .7 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:





- .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
- .2 Returning reusable items including pallets or unused products to vendors.
- .8 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .9 Separate Condition: refers to waste sorted into individual types.
- .10 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .11 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

## **1.5 DOCUMENTS**

- .1 Maintain at job site, one copy of following documents:
  - .1 Material Source Separation Plan.

## **1.6 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)**

- .1 Prepare MSSP and have ready for use prior to project start-up.
- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
  - .1 Transport to approved and authorized recycling facility.
- .8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
  - .1 Ship materials to site operating under Certificate of Approval premises of Departmental Representative.





- .2 Materials must be immediately separated into required categories for reuse or recycling.

### **1.7 WASTE PROCESSING SITES**

- .1 Province of: British Columbia.

- .1 Name: \_\_\_\_\_

- .2 Telephone: \_\_\_\_\_

- .3 Fax: \_\_\_\_\_

### **1.8 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal do not become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .7 Protect surface drainage, mechanical and electrical from damage and blockage.
- .8 Separate and store materials produced during dismantling of structures in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.
  - .3 Provide waybills for separated materials.

### **1.9 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner or any other harmful substance into waterways, storm, or sanitary sewers.





- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

### **1.10 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility.

### **1.11 SCHEDULING**

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

## ***Part 2 Products***

### **2.1 NOT USED**

Not Used.

## ***Part 3 Execution***

### **3.1 APPLICATION**

- .1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

### **3.2 CLEANING**

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

### **3.4 DIVERSION OF MATERIALS**

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.
  - .1 Mark containers or stockpile areas.
  - .2 Provide instruction on disposal practices.
- .2 On-site sale of salvaged materials is not permitted.





**3.9 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF  
RESPONSIBILITY FOR THE ENVIRONMENT**

.1 Schedule E - Government Chief Responsibility for the Environment:

Province	Address	General Inquires	Fax
British Columbia	Ministry of Environment Lands and Parks 810 Blanshard Street, 4 <sup>th</sup> Floor Victoria BC V8V 1X4	604-387-1161	604-356-6464
	Waste Reduction Commission Soils and Hazardous Waste 770 South Pacific Blvd, Suite 303 Vancouver BC V6B 5E7	604-660-9550	604-660-9596

**END OF SECTION**





## CLOSEOUT PROCEDURES

### *Part 1 General*

#### **1.1 RELATED SECTIONS**

- .1 Not Used

#### **1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-[latest], Stipulated Price Contract.

#### **1.3 INSPECTION AND DECLARATION**

- .1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2 Request Departmental Representative's Inspection.
- .2 Departmental Representative Inspection:
  - .1 Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies.
  - .2 Contractor to correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
  - .1 Work has been completed and inspected for compliance with Contract Documents.
  - .2 Defects have been corrected and deficiencies have been completed.
  - .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
  - .4 Operation of systems have been demonstrated to Owner's personnel.
  - .5 Work is complete and ready for final inspection.
  - .6 Attach final invoice to this certificate for original contract amount and approved change orders.
- .4 Final Inspection:
  - .1 When items noted above are completed, request final inspection of Work by Departmental Representative and Contractor.
  - .2 If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

#### **1.4 CLEANING**

- .1 In accordance with Section 01 74 11 - Cleaning.
- .2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.





***Part 2 Products***

**2.1 NOT USED**

Not Used.

***Part 3 Execution***

**3.1 Not Used**

Not Used.

**END OF SECTION**





## PREPERATION FOR RESURFACING CONCRETE

### *Part 1 General*

#### **1.1 RELATED SECTIONS**

- .1 Not Used.

#### **1.2 REFERENCES**

- .1 ASTM C778-06 - Standard Sand.
- .2 ASTM C1059-99(2008) - Latex Agents for Bonding Fresh To Hardened Concrete.
- .3 ASTM D4381-06 - Test Method for Sand Content by Volume of Bentonitic Slurries.
- .4 CSA-A23.1-04/A23.2-04 - Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

### *Part 2 Products*

#### **2.1 MATERIALS**

- .1 Approved Abrasive Blast Cleaning Materials
  - .1 OCL recycled glass abrasive (white only)
  - .2 Green Diamond (Nickel Slag)
  - .3 Barshot #50
  - .4 Emerald Creek Garnet (OCL)
  - .5 Black Pearl Slag Abrasive (Target)
  - .6 Lane Mountain 20/30 Silica Sand (in total containment)
  - .7 Ruby Garnet (Target)
  - .8 Other abrasives may be approved if submitted
- .2 Use of Copper Slag abrasives will not be permitted

### *Part 3 Execution*

#### **3.1 EXAMINATION**

- .1 Departmental Representative to verify that surfaces are ready to receive work.

#### **3.2 LOCAL DEWATERING**

- .1 Section 01 56 00: Temporary Barriers and Enclosures
- .2 The channels to be resurfaced will be drained and the water supplies shut off. The surrounding grounds around the concrete channels may be saturated with





water. All the channels share a common drain channel and this will be stoplogged off but some seepage onto the slab may occur. Some valves may be not being water tight and have been known to leak slightly. The contractor will have to do some local dewatering during the resurfacing operation. It is understood that a small part of the slab resurfacing may be compromised by water. The Contractor and a Departmental Representative shall observe and discuss the site condition prior to the resurfacing.

- .3 Channels that are still in operation will contain rearing salmon. It is important not to allow any contaminants from either the surface preparation or coating operations to enter the operational ponds.

### 3.3 ABRASIVE BLAST CLEANING

- .1 All surfaces to be coated must be abrasive blast cleaned in accordance with SSPC-SP 13 /NACE No. 6. A minimum surface texture similar to that of medium-coarse (80 grit) sandpaper shall be attained. A list of approved abrasive materials is included in this specification.
- .2 Abrasive blast cleaning shall remove all existing paint, laitance, efflorescence, surface hardeners, curing compounds, and loose concrete from the concrete surfaces in order to produce a clean substrate for the resurfacing to follow. The choice of abrasive can be determined on site based on the condition of the concrete.
- .3 Protect attached metalwork that is not to be coated from the damage of abrasive blast cleaning.
- .4 Remove existing joint filler and form backer rod from the expansion joints. Such areas shall be included with the abrasive blast cleaning.
- .5 The compressed air supply shall be completely free of all oil, water and other contaminants and provide the required volume of air at 100 psi or greater.
- .6 Abrasives used shall be clean, a uniform grade and of an appropriate size to obtain the specified surface finish and profile. Do not use contaminated abrasive.
- .7 Thoroughly clean all blasted surfaces to remove all dust and debris after dry blasting, or to remove all water, sludge and debris after wet blasting.
- .8 Grind all form ties or other metallic protrusions below the surface.
- .9 After abrasive blast cleaning the Inspector will inspect the surface and must approve the results prior to proceeding.
- .10 Hoard the area to contain dust and debris.





- .11 Immediately prior to application of primer, coatings or fillers thoroughly vacuum-clean all surfaces to be coated, effectively removing all remaining dust. Vacuum cleaning a roughened concrete surface is the only known effective method of removing dust from deep pits, cracks, crevices, bug holes, etc. and is considered a mandatory procedure.
- .12 Control the dust during the abrasive blast cleaning operation. All dust control measures must be employed up to but not including negative pressure capture.
- .13 An alternative method of achieving the required surface quality may be used if requested in writing and approved by the Departmental Representative.
  - .1 Submissions must be in accordance with Section 01 33 00 – Submittal Procedures.
  - .2 Any alternative method approved will be completed at the Contractors expense.

### **3.4 POWER WASHING**

- .1 All interior concrete surfaces and embedded metalwork to be coated shall be power washed with water after abrasive blast cleaning.
- .2 The power washing equipment shall be capable of at least 3000 psi at the head.
- .3 Power washing shall clean all the dust, fines, dirt, organics and other contaminants from the concrete surface. Surface shall be allowed to dry and inspection prior to coating operation.
- .4 Effluent from the power washing operation can exit through the pond drains.
- .5 Check for excess moisture in accordance with ASTM D 4263 – Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

### **3.5 PREPARATION**

- .1 Prepare and protect adjacent work from damage.
- .2 Hoard area before abrasive blast cleaning.

### **3.6 CLEANING**

- .1 Clean concrete surfaces of dirt or other contamination; rinse surface and allow to dry.
- .2 Flush out cracks and voids with water to remove laitance and dirt.

**END OF SECTION**





## CONCRETE RESTORATION

### *Part 1*     *General*

#### **1.1 SECTION INCLUDES**

- .1     Sealing cracks.
- .2     Epoxy repair of cracks.
- .3     Repair of deteriorated and spalled concrete.

#### **1.2 RELATED SECTIONS**

- .1     Not Used.

#### **1.3 REFERENCES**

- .1     ASTM C150-07 - Portland Cement.
- .2     ASTM C1059-99(2008) - Latex Agents for Bonding Fresh To Hardened Concrete.
- .3     CSA-A23.1-09/A23.2-09 - Concrete Materials and Methods of Concrete Construction / Methods of Test for Concrete.
- .4     CAN/CSA-A3001-08 - Cementitious Materials for Use in Concrete.

#### **1.4 SUBMITTALS FOR REVIEW**

- .1     Section 01 33 00: Submission procedures.
- .2     Product Data: Product descriptions, application procedures, and precautions in use or application of products.

#### **1.5 SUBMITTALS FOR INFORMATION**

- .1     Section 01 33 00: Submission procedures.
- .2     Test Reports: Existing concrete analysis.
- .3     Qualification Statement: Installer qualifications, including previous projects.

#### **1.6 QUALITY ASSURANCE**

- .1     Installer Qualifications: Company specializing in performing the work of this section with:
  - .1     Minimum 3 years documented experience and approved by the manufacturer.





- .2 Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

### **1.7 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Protect materials from moisture absorption and damage; reject damaged containers.
- .3 Store sand to prevent inclusion of foreign matter.

### **1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Section 01 35 26: Environmental conditions affecting products on site.
- .2 Do not apply repair materials during inclement or freezing weather, or if such conditions are anticipated within material curing period.

## ***Part 2 Products***

### **2.1 MATERIALS**

- .1 Expansion Joint replacement: Use Ethafoam 'SB' 220 followed by Sikaflex sealant or approved equivalent.
- .2 Concrete Materials:
  - .1 Portland cement:
    - .1 Type: CSA-A3001, Type GU.
    - .2 Colour: Gray.
  - .3 Sand: colour, size, and type to match existing concrete

## ***Part 3 Execution***

### **3.1 PREPARATION**

- .1 Clean surfaces to be repaired; remove loose and foreign matter which could interfere with application of sealers and coatings.

### **3.2 EXPANSION JOINTS**

- .1 Once Ponds and Channels have been coated with epoxy sealant and coating has cured, install new ¾" Ethafoam 'SB' 220 and apply Sikaflex '1a' or '2c' sealant over expansion joints. Note – Sikaflex '1a' and '2c' sealants require the use of primer for immersion service.

### **3.3 REPAIR OF CRACKS**

- .1 Seal cracks with concrete.





- .2 Repair cracks over in width with concrete:
  - .1 Remove loose and deteriorated concrete back to a point at which sound material is reached.
    - .1 Cracks shall be routed and filled to a minimum 3/8" wide by a minimum 1/2" depth with concrete
    - .2 Include routed cracks with abrasive blasting to roughen cut surfaces.

### **3.4 REPAIR OF DAMAGED CONCRETE**

- .1 Remove loose and deteriorated concrete back to a point at which sound material is reached. Undercut surfaces to form key with new material.
- .2 Remove concrete around and below exposed portions of reinforcing bars.
- .3 Sandblast or wire brush rusted or corroded reinforcing bars to expose sound, clean metal.
- .4 Bend reinforcing bars projecting above level of adjacent surfaces down to at least 6 mm below adjacent surface.
- .5 Lightly wet areas to be patched.
- .6 Coat exposed reinforcing bars with corrosion inhibitor.
- .7 Fill voids with patching mix; finish flush with adjacent surfaces.
- .8 Finish exposed surfaces to match adjacent existing concrete in color and texture.

### **3.5 BONDING AGENTS**

- .1 Apply bonding agent to CSA-A23.1/A23.2 and manufacturer's instructions.

### **3.6 CLEANING**

- .1 Protect adjacent and underlying surfaces from damage.
- .2 Install temporary dams and containment devices to collect runoff water.
- .3 Clean existing concrete surfaces to remove dirt, hydrocarbons, grease, oil, environmental pollutants, and residues.
- .3 Sandblasting is prohibited.
- .5 Follow manufacturer's instructions and procedures established during preparation of mock-up.
- .6 Do not damage existing surfaces. Leave surfaces uniform in appearance.
- .7 Wet surfaces with clean water.





- .8 Apply cleaning solution by low pressure spray, brush or roller to uniform coverage.
- .9 Rinse surfaces with low pressure water. Hold nozzle perpendicular to surface; work at uniform rate and uniform distance from surface.
- .10 Work from bottom of wall up. Continue washing until sudsing has ceased.
- .11 Repeat process if required until concrete is clean.
- .12 Dispose of all cleaning water off site unless approved by Departmental Representative.

**END OF SECTION**





## GLASS FIBRE REINFORCED PLASTIC (FRP) LINING

### *Part 1 General*

#### 1.1 SUMMARY

- .1 This specification pertains to the application and process of resurfacing an aged concrete rearing pond with a glass fibre reinforced plastic (FRP) lining. This system, along with the appropriate materials, is used to renew and correct problematic surface damage on a concrete rearing pond. This system will greatly reduce excessive aggradations due to the concrete's degraded surface as well as serve to protect the surface from further damage. This system will also aid in facilitating the regular cleaning and maintenance processes used in the proper function of the cement rearing ponds. Once installed, alkalinity fluctuations caused by the concrete's contact with water will be virtually eliminated. When applied using best practices, this system will protect and greatly reduce surface damage caused by power washing and interval cleaning, thus lengthen the life expectancy of the ponds in general.

#### 1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C307-[03], Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
  - .2 ASTM C413-[01], Test Method for Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing and Polymer Concretes.
  - .3 ASTM C79/C79M-[04a], Specification for Gypsum Sheathing Board.
  - .4 ASTM C580-[02], Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
  - .5 ASTM D638-[03], Test Method for Tensile Properties of Plastics.
  - .6 ASTM D1044-[99], Test Method for Resistance of Transparent Plastics to Surface Abrasion.
  - .7 ASTM D2047-[99], Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
  - .8 ASTM D4541-[02], Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
- .2 Architectural Painting Specification Manual, Master Painters Institute (MPI)
- .3 National Association of Corrosion Engineers (NACE)
  - .1 NACE RP 01 88-[99], Discontinuity (Holiday) Testing of Protective Coatings.
- .4 Underwriters' Laboratories of Canada (ULC)





- .1 CAN/ULC-S102.2-[03], Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous.
- .5 United States Military Standards (MIL)
  - .1 MIL D 3134-[1989], Deck Covering Materials.

### **1.3 PERFORMANCE REQUIREMENTS**

- .1 Glass Fibre Reinforced coating components to form integral, seamless wall coating. The recommended product list is as follows:
  - .1 Vinyl ester fairing compound manufactured by ATC Formulated Polymers or Hawkeye Industries
  - .2 Vinyl ester resin manufactured by CCP Polymers
  - .3 Isophthalic polyester resin manufactured by CCP Polymers
  - .4 Elastomer modified epoxy vinyl ester resin manufactured by Ashland; specifically Derakane 8084
  - .5 Chopped strand mat manufactured by Jushi or Owens Corning
  - .6 Isophthalic polyester gelcoat manufactured by CCP Polymers, Ashland or Vengar Colours and Coatings
- .2 This product list or an approved equivalent product list is acceptable.
  - .1 Equivalent products must be submitted during the tender process.

### **1.4 QUALITY ASSURANCE**

- .1 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Installer Qualifications: company or person experienced in performing work of this section specializing in installation of work similar to that required for this project, with minimum five years documented experience and approved by glass fibre reinforced plastic (FRP) manufacturer or manufacturer's representative.

### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 The batch coating material must be within its shelf life and shall not be older than one year.
- .2 All containers shall be labelled showing the exact title of the coating, manufacturer's name, date of manufacture, the manufacturer's batch number and the specification number and lot number appropriate.
- .3 Precautions concerning the handling and application of coating shall be on the materials container.
- .4 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling





## 1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

## 1.7 WARRANTY

- .1 For epoxy wall coating materials the 12 month warranty period prescribed in subsection GC 32.1 of General Conditions "C" is extended to 60 months.
  - .1 Extended warranty period must include warranty against delamination of FRP coating system from substrate, and other failure of system to provide complete, integral, seamless wall covering meeting specified performance requirements, for specified time period.

## Part 2 Products

### 2.1 MANUFACTURER

- .1 Ensure compatibility for FRP materials including primers, resins, hardening agents, finish coats and sealer coats.

### 2.2 MATERIALS

- .1 Materials: as required to achieve specified performance criteria; functionally compatible with adjacent materials and components.
- .2 Fisheries and Oceans Canada has identified an FRP based lining system that has demonstrated successful application in providing practical long-term immersion service.
  - .1 An approved equivalent is acceptable if approved by departmental representative at the time of the tendering process.
- .3 The finishing color shall be, match the color of the existing system in pond 1a or approved by the Departmental Representative. Field tinting is prohibited.
- .4 Acceptable FRP Products used will be needed to be submitted with the bid at the time of tender.

### 2.3 MATERIAL SPECIFICATIONS

- .1 **Preparation Layer** – A premium marine grade vinyl ester fairing compound that has been manufactured for below waterline use.
- .2 **Barrier Layer** – An industrial grade elastomer modified epoxy vinyl ester resin that has been manufactured to conform to ASTM C581 and that has not been





modified with fillers except as required and performed by the manufacturer for viscosity control.

- .3 **Seal Layer** – A premium grade industrial vinyl ester resin that has not been modified with fillers except as required and performed by the manufacturer for viscosity control.
- .4 **Laminate Layer - Resin Component** – A premium grade industrial isophthalic unsaturated polyester resin that has not been modified with fillers except as required and performed by the manufacturer for viscosity control.
- .5 **Laminate Layer - Reinforcement Component** – An industrial grade 1.5 ounce chopped strand mat glass fibre having a coupling agent suitable to bond with the resin.
- .6 **Finish Layer** – A premium grade industrial isophthalic unsaturated polyester resin gelcoat which may include fillers for UV inhibition and pigmented to a color that is approved by the hatchery manager.

### ***Part 3 Execution***

#### **3.1 EXAMINATION**

- .1 Site Verification of Conditions: verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
- .2 A Departmental Representative reserves the right to inspect construction methods and reserves the right to accept or reject construction methods and results.
- .3 The Departmental Representative will approve each stage of work before the contractor will be allowed to proceed to the next stage.
- .4 The finished work will be measured for dry film thickness, pinholes and voids, other defects, degree of cure and adhesion. Defects and shortages will be indicated to the contractor for repair.

#### **3.2 PREPARATION**

- .1 Prepare substrate surfaces in accordance with FRP lining material manufacturer's instructions.
- .2 Thoroughly vacuum clean all surfaces to be coated, removing all remaining dust
- .3 The temperature and humidity conditions of the concrete and surrounding environment during application and curing shall be within the manufactures specifications.





- .4 If temperature and humidity condition do not meet manufactures conditions for application and curing, the area must be hoarded and temperature and humidity must be controlled at contractor's expense.
- .5 Concrete surface must be dry before preceding – Departmental Representative to approve before proceeding.
- .6 Comply with manufacturer's written installation instructions. Unless directed otherwise by specification.
- .7 Install FRP lining material at the rate and to thickness required to achieve complete conformance with the specified performance requirements.
- .9 Apply in compliance with manufacturer's product data, including product technical bulletins, application and installation instructions. Unless directed otherwise by specification

### 3.3 INSTALLATION

- .1 Comply with manufacturer's written installation instructions.
- .2 To minimize outgassing problems all coatings should be applied when the surface temperature of the concrete is stable and regulated
- .3 All concrete surfaces must be dry and free of dust and debris prior to coating.
- .4 **Preparation Layer** – Tape and mask seal lines along the pond's upper perimeter and around all fittings, pipes, channels and grids. The fairing compound shall be applied to fill the voids and irregularities on all concrete vertical surfaces to within 6 inches from the top. Best practices application of the fairing compound is necessary to avoid excessive bleeding of resin during the application of the laminate layer. Large depressions and voids on the floors that will cause excessive air entrapment during the laminate phase shall be faired as well.
- .5 **Barrier Layer** – The Barrier layer shall comprise of no less than 20 mils thick of an elastomer modified epoxy vinyl ester resin over the entire pond.
- .6 **Laminate Layer** – The laminate applied shall be no less than 90 mils thick and comprise of a minimum 1.5 ounce chopped strand mat saturated to a minimum content ratio of 50 percent with an isophthalic unsaturated polyester resin. The chopped strand mat should be of uniform thickness, be hand laid and have a minimum overlap of ½". The laminate should be installed to within 1/8" of any below waterline fitting, pipe, channel or grid and to within ¼" of the perimeter top edges.





- .7 **Seal Layer** – The seal layer applied shall be no less than 20 mils thick and comprise of vinyl ester resin and cover all areas where the laminate terminates to at least 6 inches in from the edges of the upper perimeter and 6” in from of all fittings, pipes, channels and grids.
- .8 **Finish Layer** – The finish layer shall be no less than 24 mils thick and comprise of an isophthalic gelcoat system containing a surfacing agent to assist in maximum degree of cure of the surface.
  - .1 Finish should be such that no outline of underlying concrete aggregate can be seen.
  - .2 Finish shall be a smooth and even.
- .8 Apply in compliance with manufacturer's product data, including product technical bulletins, application and installation instructions.

### **3.4 PROTECTION**

- .1 Protection: protect installed product and finish surfaces from damage during construction.

### **3.5 DEFECTS**

- .1 **Air Pockets and Voids** – Defects in the laminate layer such as air pockets caused by concrete outgassing or entrapment shall be removed, scarfed and re-laminated using vinyl ester resin and 1.5 ounces chopped strand mat with a minimum overlap of ½” and allowed to cure before proceeding with the application of the finish layer.
- .2 **Resin Bleed** – Defects in the laminate layer such as resin bleed shall be drilled and flooded with vinyl ester resin and allowed to cure before proceeding with the application of the finish layer.
- .3 **Resin Starved Laminate** – Resin starved laminate shall be removed, scarfed and re-laminated as outlined in Section 3.3 - Installation
- .4 **Uncured Laminate** – Uncured laminate due to water run-off or moisture/temperature control problems shall be removed and re-laminated as outlined in Section 3.3 - Installation

### **3.6 REMARKS**

- .1 **Delamination** – For quality reasons and to minimize delamination, the laminate layer should be installed by hand lay-up and not by spray-up techniques.
- .2 **Postcure** – As a general rule and as a result of the low exotherm exhibited with thin polymerized laminates, linings and coatings, a postcure, although not necessary, is recommended.

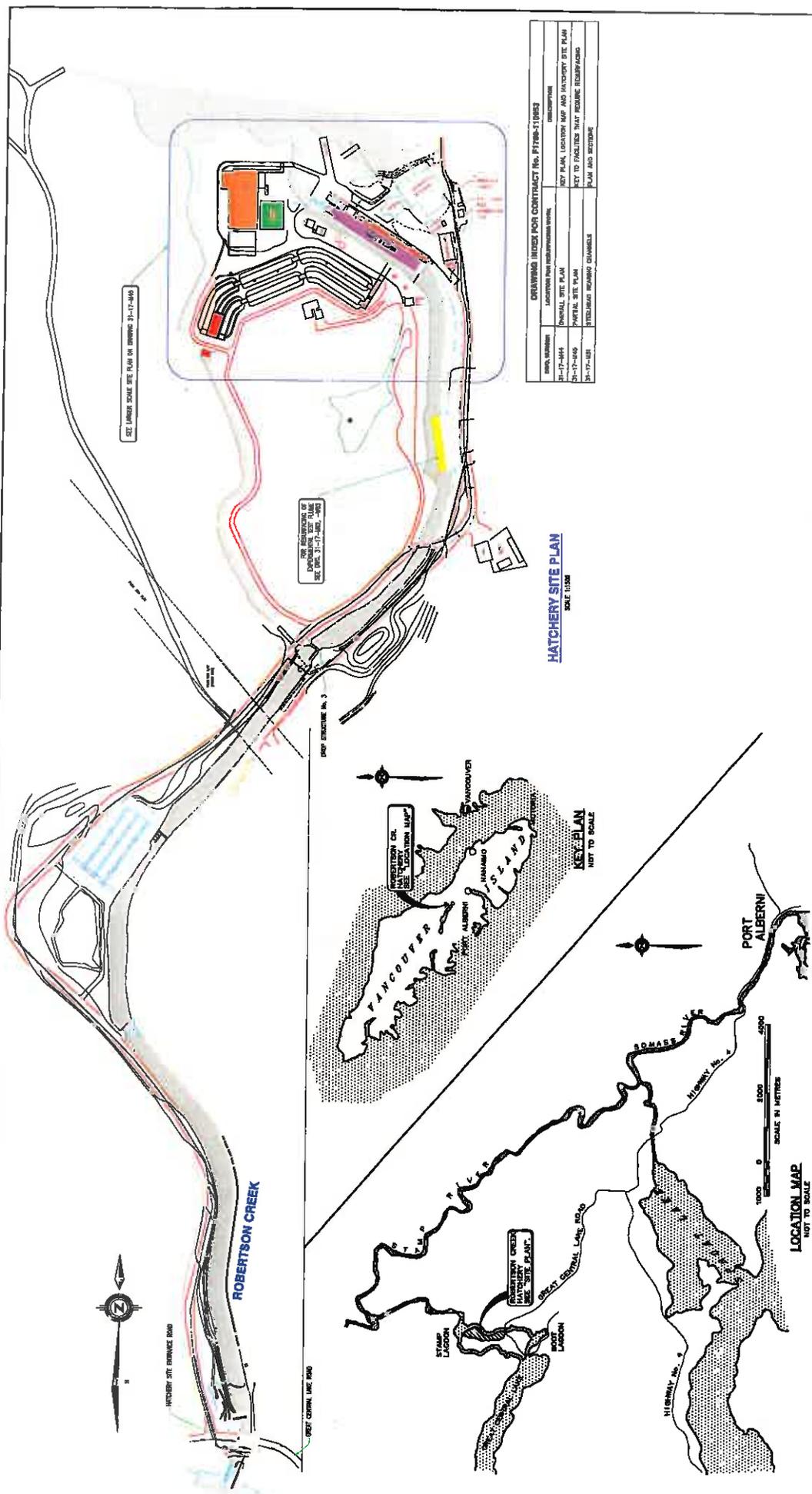




- .3 **Catalysts** – BPO catalyzed materials including but not limited to the fairing compound are not recommended for use in any part of this system.
- .4 **Heating** – The use of direct fired propane heaters to maintain appropriate heat levels is highly discouraged due to the adverse effect the exhaust moisture has on the system during its application.

END OF SECTION





SEE LARGER SCALE SITE PLAN ON DRAWING 31-17-M445

SEE REVISIONS OF DRAWING FOR THIS DRAWING SEE Dwg. 31-17-M445

DRAWING INDEX FOR CONTRACT NO. F1700-130410	
DWG. NUMBER	DESCRIPTION
31-17-M444	GENERAL SITE PLAN
31-17-M445	HATCHERY SITE PLAN
31-17-M446	KEY PLAN, LOCATION MAP AND HATCHERY SITE PLAN
31-17-M447	NOT TO FACILITIES THAT REQUIRE REVISIONS
31-17-M448	STREETS, ROADWAYS, CHANNELS, PAVES AND SIDEWALKS

**HATCHERY SITE PLAN**  
SCALE 1:1500

**KEY PLAN**  
NOT TO SCALE

**LOCATION MAP**  
NOT TO SCALE

**FISHERIES AND OCEANS CANADA**  
REAL PROPERTY AND TECHNICAL SUPPORT

**ROBERTSON CREEK HATCHERY**  
CONTRACT NO. F1700-130410  
RESURFACING CONCRETE CHANNELS  
KEY PLAN, LOCATION MAP  
AND HATCHERY SITE PLAN

SCALE: AS NOTED  
DATE: 30-04-13  
DRAWING NUMBER: 31-17-M444  
REVISION:

NO.	DATE	REVISIONS

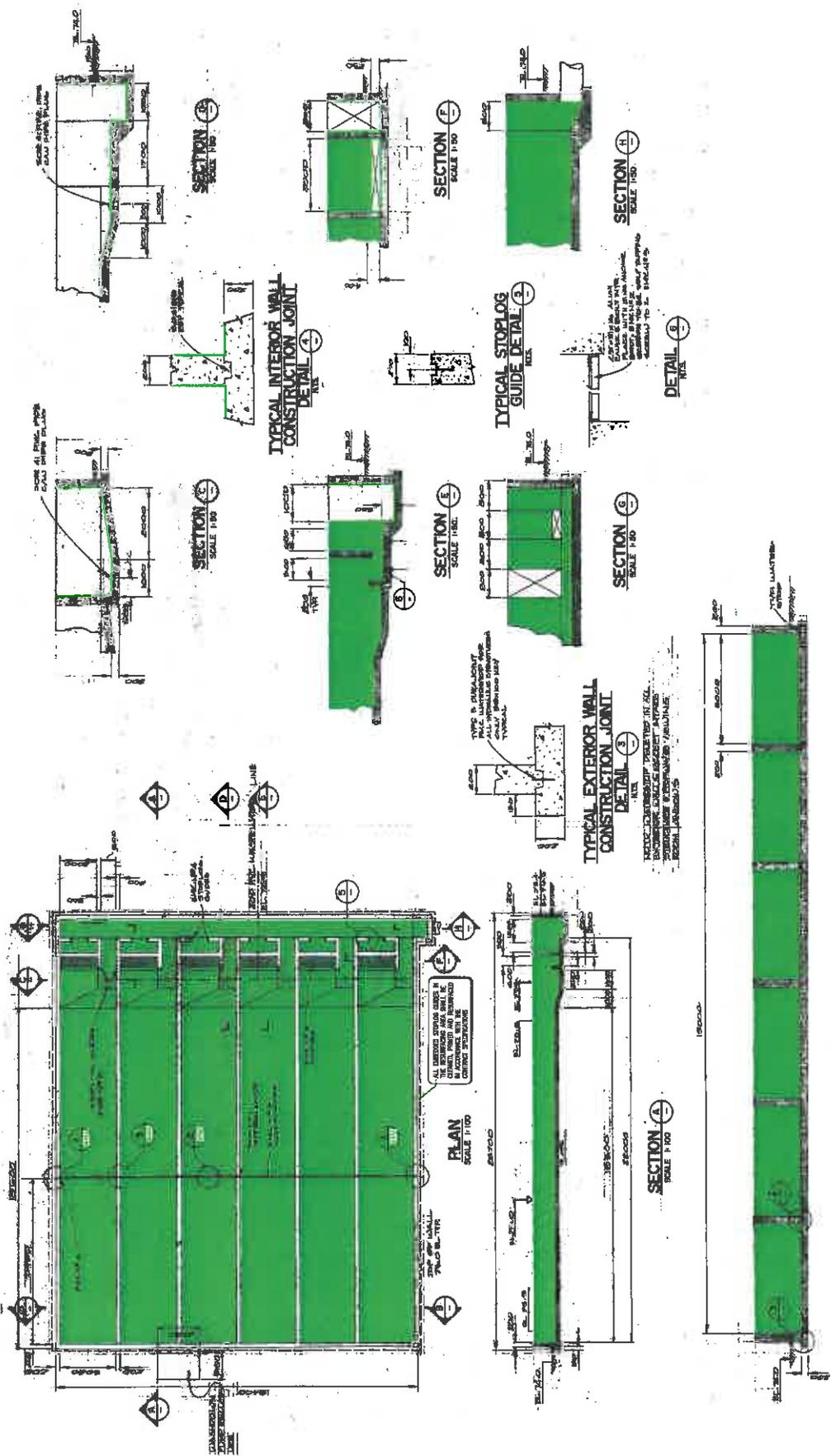
**ALL FACILITIES SHOWN ON THIS DRAWING ARE EXISTING. COLOUR CODED ITEMS AND NOTES THAT ARE HIGHLIGHTED BY A BOUNDING BOX AS SHOWN HERE ARE FOR WORK INTENDED UNDER CONTRACT NO. F1700-130410**

NOTES

DRAWING REFERENCES

DWG. NO.





**FISHERIES AND OCEANS CANADA**  
 REAL PROPERTY AND TECHNICAL SUPPORT

**ROBERTSON CREEK HATCHERY**  
 CONTRACT NO. F1700-130410  
 RESURFACING CONCRETE CHANNELS  
 STEELHEAD REARING  
 PLAN AND SECTIONS

SCALE AS NOTED  
 DATE 30-JUL-13  
 DRAWING NUMBER 31-17-M51  
 REVISION

NO.	DATE	REVISIONS

**ALL FACILITIES SHOWN ON THIS DRAWING ARE EXISTING. COLOUR CODED ITEMS AND NOTES THAT ARE HIGHLIGHTED BY A BOUNDING BOX AS SHOWN HERE ARE FOR WORK INTENDED UNDER CONTRACT NO. F1700-130410**

**WORK FLOW TIME LINE**

COLOR CODE	SCALE	DATE

DWG NO.	DRAWING REFERENCES	NO.	DATE	REVISIONS

NOTES