



Public Works and Government Services Canada

Requisition No. EZ899-150873/A

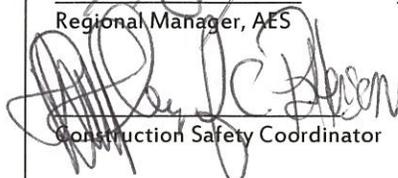
MERX I.D. No. _____

SPECIFICATIONS
for
PERIMETER FENCE REPLACEMENT
SANDSPIT, B.C.

Project No. R. 070274.001
September 2014

APPROVED BY:


Regional Manager, AES 2/15/2014 SEPT. 10/2014
Date


Construction Safety Coordinator 2014-09-10.
Date

TENDER:


Project Manager 14/09/25
Date

SPECIFICATIONS

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PART 1 - GENERAL

1.1	<u>Location of Site</u>	.1	The work is located at the Transport Canada Airport Facility located in Sandspit, Haida Gwaii, BC.
		.2	The site of work is on the federally owned land on which the airport facilities are located.
1.2	<u>General Description of Work</u>	.1	The principal works to be executed and for which all materials, plant and labour are to be supplied by the Contractor as shown in the plans and specifications: <ul style="list-style-type: none"> .1 Replacement of approximately 874 linear metres of existing page wire fencing with 1.2 m high chain link fencing. .2 Installation of frangible, composite fencing at each end of the runway, per the supplied contract drawings.
1.3	<u>Related Sections</u>	.1	Section 01 35 13 – Special Procedures.
		.2	Section 01 35 33 – Health and Safety Requirements.
1.4	<u>Codes and Standards</u>	.1	Operate in accordance with the <i>Wildlife Act</i> and the <i>National Airports Policy</i> and any regulations or standards made under those acts.
		.2	Meet or exceed requirements of specified standards, codes and referenced documents.
1.5	<u>Required Documents</u>	.1	Maintain one copy at job site: <ul style="list-style-type: none"> .1 Contract drawings, Safety Plan and Waste Reduction Workplan. .2 Specifications. .3 Addenda .4 Change orders .5 Other modifications to contract

			.6 Copy of approved work schedule
			.7 Health and Safety plan.
			.8 Environmental Emergency Response Plan (including Spill Response Plan)
<u>1.6 Drawings</u>	.1	Contract Drawings:	
		.1	Following contract award, four (4) full size sets of the drawings will be provided.
	.2	Record Drawings:	
		.1	As work proceeds, maintain accurate records to show all deviations from the contract drawings. Note on as-built drawings as changes occur and at completion supply one set of all drawings and specifications clearly marked.
<u>1.7 Site Condition</u>	.1	Make inquiries or investigations necessary to become thoroughly acquainted with site, soil, surface, stream and road access conditions, and the nature and extent of the work.	
	.2	Submission of a tender will be deemed confirmation that the Contractor is acquainted with the site and is conversant with all relevant conditions.	
<u>1.8 Ground Condition Data</u>	.1	The Departmental Representative has no detailed ground condition data for this site.	
<u>1.9 Layout of Work</u>	.1	Construction layout is the responsibility of Contractor.	
	.2	Point Files and survey data will be made available by the Departmental Representative.	
	.3	Notify Departmental Representative immediately if the work cannot be completed as shown in the plans and specifications.	
<u>1.10 Assistance by the Contractor</u>	.1	Provide access to the work areas as required for the Departmental Representative to perform their duties.	

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| <u>1.11 Time of Completion</u> | .1 | Complete all work under the contract within eight (8) weeks of award. |
| <u>1.12 Work Schedule</u> | .1 | <p>Within 5 days of Contract award, provide a schedule of work. Observe the following requirements:</p> <p>.1 Whenever a variation from the schedule in excess of 5 working days occurs or is expected to occur, notify Departmental Representative of the change.</p> |
| <u>1.13 Use of Site</u> | .1 | Entry by crew or equipment to the air-side / flight deck areas is prohibited. |
| | .2 | All personnel and equipment operators working within airport property require a safety briefing. Vehicles will require lights and all personnel will require high visibility vests. |
| | .3 | Use of site is limited to work areas required for the work, including the storage of materials and equipment and to the access routes assigned by Transport Canada required for the completion of work as specified. Access keys will be provided to the contractor as required. |
| | .4 | Hours of work to comply with local airport authority. |
| | .1 | Perform work between normal hours of 08:00 to 16:00, Monday to Friday, except holidays. |
| | .2 | Work may be performed after working hours, on weekends and holidays as approved by Departmental Representative. |
| | .5 | An escort will be required only when working with runway restricted areas, and will be provided by airport personnel. The requirements and timings for work in restricted areas will be established at the pre-construction site safety. |

<u>1.14 Project Meetings</u>	.1	The Departmental Representative will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.
<u>1.15 Location of Equipment and Fixtures</u>	.1	Location of existing equipment and fixtures indicated or specified is to be considered as approximate.
<u>1.16 Inspection Services</u>	.1	Inspections will be carried out by Departmental Representative.
	.2	Where inspections reveal that work is not in accordance with the contract requirements, additional inspections to confirm acceptability of the corrected work will be conducted at the expense of the Contractor.
<u>1.17 Interpretation</u>	.1	In interpreting the Contract, in the event of discrepancies or conflicts between anything in the Plans and Specifications and the General Conditions, the General Conditions govern.
	.2	In interpreting the Plans and Specifications, in the event of discrepancies or conflicts between: <ul style="list-style-type: none"> .1 the Plans and Specifications, the Specifications govern; .2 the Plans, the Plans drawn with the largest scale govern; and .3 figured dimensions and scaled dimensions, the figured dimensions govern.
<u>1.18 Safe Companies Certification</u>	.1	The Contractor must ensure that all works are performed by contractors who are one of the following: <ul style="list-style-type: none"> .1 Have current WCB registration and clearance; .2 Have required WHIMIS training;

END OF SECTION

PART 1 - GENERAL

1.1 Administrative

- .1 Submit to Departmental Representative submittals listed under each Section 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 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 coordinated 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.
- .5 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify field measurements and affected adjacent Work are co-ordinated.
- .7 The review of the Environmental Emergency Response Plan by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
- .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.

1.2 Submittals

- .1 Allow 5 days for Departmental Representative's review of each submission.
- .2 Adjustments made to submitted plans 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.
- .3 Make changes to submitted plan as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .4 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .5 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents.

- .5 Details of appropriate portions of work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions (including identified field dimensions) and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
- .6 After Departmental Representative's review, distribute copies.
- .6 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, Work may proceed. If submitted plan is rejected, noted copy will be returned and resubmission of corrected plan, through same procedure indicated above, must be performed before Work may proceed.
- .7 All submissions to be made electronically in Adobe Acrobat ".PDF" format.
- 1.3 Certificates and Transcripts
 - .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- 1.4 Shop Drawings
 - .1 Shop drawings: original drawings or modified standard drawings provided by Contractor to illustrate details of portions of work which are specific to project requirements.
 - .2 Maximum sheet size: 850 X 1050 mm.
 - .3 Submit 6 prints of shop drawings for each requirement requested in the specification sections and/or as requested by the Departmental Representative.
 - .4 Cross-reference shop drawing information to applicable portions of the Contract documents.

1.5 Shop Drawings
Review

- .1 Review of shop drawings by Public Works and Government Services Canada is for the sole purpose of ascertaining conformance with the general concept.
- .2 This review shall not mean that Public Works and Government Services Canada approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same.
- .3 This review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and Contract documents.
- .4 Without restricting the generality of the foregoing, the Contractor is responsible for:
 - .1 Dimensions to be confirmed and correlated at the job site.
 - .2 Information that pertains solely to the fabrication processes or to techniques of construction and installation.
 - .3 Coordination of the work of all the sub-trades.

1.6 Product Data

- .1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.
- .2 Delete information not applicable to project.
- .3 Supplement standard information to provide details applicable to project.
- .4 Cross-reference product data information to applicable portions of Contract documents.
- .5 Submit 6 copies of product data.

1.7 Samples

- .1 Samples: examples of materials, equipment, quality, finishes and workmanship.
- .2 Reviewed and accepted samples will become the standard of workmanship and material against which installed work will be verified.

END OF SECTION

PART 1 - GENERAL

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| 1.1 | Summary | .1 | The work is located at the Transport Canada Airport Facility located in Sandspit, Haida Gwaii, BC. |
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| 1.2 | References | .1 | Manual of Uniform Traffic Control Devices for Streets and Highways - 2002. |
| <hr/> | | | |
| 1.3 | Related Sections | .1 | Section 01 35 33 – Health and Safety Requirements. |
| <hr/> | | | |
| 1.4 | General Protection | .1 | Do not disrupt airport business except as permitted by the Departmental Representative. |
| | | .2 | Provide temporary protection for safe handling of public, personnel, pedestrians and vehicular traffic. |
| | | .3 | Provide barricades and lights where directed. |
| | | .4 | Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment. |
| | | .5 | When working on travelled way: <ul style="list-style-type: none"> .1 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way. .2 Do not leave equipment on travelled way overnight. |
| | | .6 | Do not close any lanes of road without approval of the Departmental Representative. Before re-routing traffic erect suitable signs and devices in accordance with instructions contained in Part D of UTCD. |
| | | .7 | Open flames and inflammable fuels are not permitted. |
| | | .8 | Park equipment not in use and stockpile materials so that stockpile tops are below 50 to 1 ratio from ends of useable landing strip and below 20 to 1 ratio from sides of aircraft traffic areas. Mark tops with red lights as directed by the Departmental RepresentativeProvide. |

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| 1.5 | Underground
Facilities | .1 | The Departmental Representative will stake or indicate location of underground facilities such as cables, pipes and ducts. |
| | | .2 | Notify the Departmental Representative of work areas sufficiently in advance of operations so that underground facilities can be located. |
| 1.6 | Information and
Warning Devices | .1 | Provide and maintain signs and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response. |
| | | .2 | Supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in Part D, Temporary Conditions Signs and Devices, of UTCD manual. |
| | | .3 | Place signs and other devices in locations recommended in UTCD manual. |
| | | .4 | Meet with the Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If the situation on site changes, revise list to approval of the Departmental Representative. |
| | | .5 | Continually maintain traffic control devices in use by: <ul style="list-style-type: none"> .1 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance. .2 Removing or covering signs which do not apply to conditions existing from day to day. |
| 1.7 | Movement of
Equipment and
Personnel | .1 | Access to the operational areas of the airport will be restricted. All travel by the contractor in executing the work will be under an escort provided by the airport. |

END OF SECTION

- 1.1 References**
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- .1 Government of Canada.
 - .1 Canada Labour Code - Part II
 - .2 Canada Occupational Health and Safety Regulations.
 - .2 National Building Code of Canada (NBC):
 - .1 Part 8, Safety Measures at Construction and Demolition Sites.
 - .3 Canadian Standards Association (CSA) as amended:
 - .1 CSA Z797-2009 Code of Practice for Access Scaffold
 - .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes
 - .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
 - .4 Province of British Columbia:
 - .1 Workers Compensation Act Part 3-Occupational Health and Safety.
 - .2 Occupational Health and Safety Regulation
- 1.2 Related Sections**
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- .1 Refer to the following sections as required:
 - .1 General Instructions: Section 01 11 05
 - .2 Earthworks for Minor Works: Section 31 00 99
 - .3 Fences and Gates: Section 32 31 13
- 1.3 Workers' Compensation Board Coverage**
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- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
 - .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

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

- 1.5 Submittals
 - .1 Submit to Departmental Representative submittals listed for review in accordance with Section 01 33 00.
 - .2 Work effected by submittal shall not proceed until review is complete.
 - .3 Submit the following:
 - .1 Health and Safety Plan.
 - .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .3 Copies of incident and accident reports.
 - .4 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .5 Emergency Procedures.
 - .4 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.
 - .5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

- .6 Submission of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:
 - .1 Be construed to imply approval by the Departmental Representative.
 - .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
 - .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.6 Responsibility

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial, Territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 The Contractor is to assume the role of the "prime contractor" for the duration of the job

1.7 General Conditions

- .1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
 - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

1.8 Project/ Site Conditions

- .1 Work at site will involve contact with:
 - .1 Unknown buried utilities and infrastructure.
 - .2 Tree and brush being cut / cleared.
 - .3 Excavations.

- .4 Heavy machinery (if necessary).
- .5 Live electrical equipment.

- 1.9 Regulatory Requirements
 - .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
 - .2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

- 1.10 Filing of Notice
 - .1 The Contractor is to complete and submit a Notice of Project as required by Provincial authorities.
 - .2 Provide copies of all notices to the Departmental Representative.

- 1.11 Health and Safety Plan
 - .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.
 - .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
 - .1 Primary requirements:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 General safety rules for project.
 - .5 Job-specific safe work, procedures.

- .6 Inspection policy and procedures.
- .7 Incident reporting and investigation policy and procedures.
- .8 Occupational Health and Safety Committee/ Representative procedures.
- .9 Occupational Health and Safety meetings.
- .10 Occupational Health and Safety communications and record keeping procedures.
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
- .3 List hazardous materials to be brought on site as required by work.
- .4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
- .5 Identify personal protective equipment (PPE) to be used by workers.
- .6 Identify personnel and alternates responsible for site safety and health.
- .7 Identify personnel training requirements and training plan, including site orientation for new workers.
- .3 Develop the plan in collaboration with all subcontractors. Ensure that work/ activities of subcontractors are included in the hazard assessment and are reflected in the plan.
- .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
- .5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.12 Emergency
Procedures

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
 - .1 Designated personnel from own company.
 - .2 Regulatory agencies applicable to work and as per legislated regulations.
 - .3 Local emergency resources.
 - .4 Departmental Representative.
- .2 Include the following provisions in the emergency procedures:
 - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
 - .2 Evacuate all workers safely.
 - .3 Check and confirm the safe evacuation of all workers.
 - .4 Notify the fire department or other emergency responders.
 - .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
 - .6 Notify Departmental Representative.
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:
 - .1 Work at high angles.
 - .2 Work in confined spaces or where there is a risk of entrapment.
 - .3 Work with hazardous substances.
 - .4 Underground work.
 - .5 Work on, over, under and adjacent to water.
 - .6 Workplaces where there are persons who require physical assistance to be moved.
- .4 Design and mark emergency exit routes to provide quick and unimpeded exit.
- .5 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

1.13 Hazardous Products	1	Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
	.2	Where use of hazardous and toxic products cannot be avoided:
	.1	Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 33 00.
	.2	In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.
	.3	Provide adequate means of ventilation in accordance with Section 01 51 00.
1.14 Fire Safety Requirements	.1	Store oily/ paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
	.2	Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.
1.15 Unforeseen Hazards	.1	Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.
1.16 Posted Documents	.1	Post legible versions of the following documents on site:
	.1	Health and Safety Plan.
	.2	Sequence of work.
	.3	Emergency procedures.
	.4	Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.

- .5 Notice of Project.
- .6 Floor plans or site plans.
- .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
- .8 Workplace Hazardous Materials Information System (WHMIS) documents.
- .9 Material Safety Data Sheets (MSDS).
- .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.
- 1.17 Meetings
 - .1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.
- 1.18. Correction of Non-Compliance
 - .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
 - .2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
 - .3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/ subcontractors will be responsible for any costs arising from such a "stop work order".

END OF SECTION

PART 1 - GENERAL

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| 1.1 | Environmental
Factors | .1 | Ensure that operations meet all applicable environmental regulations and standards. |
| | | .2 | Ensure no storm water runoff from the site of a deleterious nature is released into any storm sewers or water courses. |
| 1.2 | Disposal of
Wastes | .1 | Do not bury rubbish on site. |
| 1.3 | Fires | .1 | Fires and burning on site are not permitted. |
| 1.4 | Work Adjacent to
Waterways | .1 | Do not operate construction equipment in waterways. |
| | | .2 | Do not dump any waste material or debris in waterways. |
| 1.5 | Pollution Control | .1 | Ensure all equipment is in proper working order. |
| | | .2 | Control emissions from equipment to local authorities' emission requirements. |
| | | .3 | Spill kits and containment materials must be maintained on-site and ready for deployment in case of spills. |
| | | .1 | Spills kits are to contain sufficient quantities of absorbent material on site in close proximity to working machinery. |
| | | .2 | During the work, there is to be trained and qualified personnel on site that ready to deploy spill kits when necessary. |

- 1.6 Submittals
- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
 - .2 Submit an Environmental Emergency Response Plan including spill response plan.

PART 2 - EXECUTION

- 2.1 Work Procedures
- .1 Prior to the start of the work, the Environmental Response Plan is to be submitted to the Departmental Representative as note in Section 01 33 00.
 - .2 Work on site will be conducted in accordance with the plans and specifications, the Environmental Response Plan and all other applicable regulations.

END OF SECTION

1.1	Related Sections	.1	Section 01 33 00 – Submittal Procedures.
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1.2	References	.1	Canadian Construction Documents Committee (CCDC)
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.1	CCDC 2-2008, Stipulated Price Contract.		
1.3	Inspection	.1	Allow the 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.
<hr/>			
.2			Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by the Departmental Representative instructions, or law of Place of Work.
.3			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.
.4			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.
1.4	Independent Inspection Agencies	.1	Independent Inspection/ Testing Agencies will be engaged by the Departmental Representative for purpose of inspecting and/ or testing portions of Work. Cost of such services will be borne by Departmental Representative.
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.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 the Departmental Representative at no cost to the Departmental

		Representative. Pay costs for retesting and reinspection.
<u>1.5</u>	<u>Access to Work</u>	
		.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
		.2 Co-operate to provide reasonable facilities for such access.
<u>1.6</u>	<u>Procedure</u>	
		.1 Notify appropriate agency and the 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.
<u>1.7</u>	<u>Rejected Work</u>	
		.1 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 the Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
		.2 Make good other Contractor's work damaged by such removals or replacements promptly.
		.3 If in opinion of the 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 the Departmental Representative.
<u>1.8</u>	<u>Reports</u>	
		.1 Submit four (4) copies of inspection and test reports to the Departmental Representative.

END OF SECTION

PART 1 - GENERAL

1.1	Related Sections	.1	Section 01 33 00 – Submittal Procedures.
		.2	Section 01 35 43 – Environmental Procedures.
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1.2	Submittals	.1	Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
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1.3	Installation and Removal	.1	Provide temporary utilities controls and trailers necessary in order to execute work expeditiously.
		.2	Remove from site all such work after use.
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1.4	Dewatering	.1	Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.
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1.5	Water Supply	.1	Potable water for construction use will not be provided by PWGSC.
		.2	Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
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1.6	Temporary Communication Facilities	.1	Provide and pay for temporary telephone, fax, data hook up, lines, equipment necessary for own use.
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1.7	Fire Protection	.1	Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
		.2	Burning rubbish and construction waste materials is not permitted on site.
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1.8	Sanitary Facilities	.1	Provide, pay, and maintain for sanitary facilities for the duration of the work.

PART 2 - EXECUTION

2.1 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.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

PART 1 - GENERAL

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| <p>1.1 Waste Management Goals</p> <hr/> | <p>.1</p> <p>.2</p> <p>.3</p> | <p>Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.</p> <p>Accomplish maximum control of solid construction waste.</p> <p>Preserve environment and prevent pollution and environment damage.</p> |
| <p>1.2 Related Sections</p> <hr/> | <p>.1</p> <p>.2</p> <p>.3</p> | <p>Section 03 30 00 – Cast in place Concrete</p> <p>Section 31 00 99 – Earthworks for Minor Works</p> <p>Section 32 31 13 – Fences and Gates</p> |
| <p>1.3 Definitions</p> <hr/> | <p>.1</p> <p>.2</p> <p>.3</p> <p>.4</p> <p>.5</p> <p>.6</p> <p>.1</p> <p>.2</p> | <p>Inert Fill: inert waste – exclusively asphalt and concrete.</p> <p>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.</p> <p>Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.</p> <p>Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.</p> <p>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.</p> <p>Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:</p> <p>.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.</p> <p>.2 Returning reusable items including pallets or unused products</p> |

to vendors.

- .7 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .8 Separate Condition: refers to waste sorted into individual types.
- .9 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .10 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.
- .11 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (schedule A).

1.4 Documents

- .1 Maintain at job site, one copy of following documents:
 - .1 Waste Audit
 - .2 Waste Reduction Workplan
 - .3 Material Source Separation Plan.
 - .4 Schedules A & B completed for project

1.5 Submittals

- .1 Submittals in accordance with Section 01 33 00 – Shop Drawing, Product Data and Samples.
- .2 Prepare and submit following prior to project start up:
 - .1 Submit 2 copies of completed Waste Audit (WA): Schedule A.
 - .2 Submit 2 copies of completed Waste Reduction Workplan (WRW): Schedule B.
 - .3 Submit 2 copies of Materials Source Separation Program (MSSP) description.

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| 1.6 | <u>Waste Audit (WA)</u> | .1 | Conduct WA prior to project start-up. |
| | | .2 | Prepare WA: Schedule A. |
| | | .3 | Record, on WA – Schedule A, extent to which materials or products used consist of recycled or reused materials or products. |
| 1.7 | <u>Waste Reduction Workplan (WRW)</u> | .1 | Prepare WRW prior to project start-up. |
| | | .2 | WRW should include but not limited to: <ul style="list-style-type: none"> .1 Destination of materials listed. .2 Deconstruction/disassembly techniques and sequencing. .3 Schedule for deconstruction/disassembly. .4 Location. .5 Security. .6 Protection. .7 Clear labelling of storage areas. .8 Details on materials handling and removal procedures. .9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill. |
| | | .3 | Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle. |
| | | .4 | Describe management of waste. |
| | | .5 | Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA. |
| | | .6 | Post WRW or summary where workers at site are able to review content. |
| | | .7 | Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers. |
| | | .8 | Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project. |

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| 1.8 | 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 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 material[s] in area[s] 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. |
| 1.9 | 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 become Contractor's property. |
| | | .3 | Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility. |
| | | .4 | Protect structural components not removed for demolition from movement or damage. |
| | | .5 | Protect surface drainage, mechanical and electrical from damage and blockage. |
| | | .6 | 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 | Provide waybills for separated materials. |

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| 1.10 Disposal Of Wastes | .1 | Do not bury rubbish or waste materials. |
| | .2 | Do not dispose of waste into waterways, storm, or sanitary sewers. |
| | .3 | Keep records of construction waste including: <ul style="list-style-type: none"> .1 Number and size of bins. .2 Waste type of each bin. .3 Total tonnage generated. .4 Tonnage reused or recycled. .5 Reused or recycled waste destination. |
| | .4 | Remove materials from deconstruction as deconstruction/ disassembly Work progresses. |
| | .5 | Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit. |
| 1.11 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. |
| 1.12 Scheduling | .1 | Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work. |
| 1.13 Application | .1 | Do Work in compliance with WRW. |
| | .2 | Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes. |
| 1.14 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. |

1.15 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 materials IS NOT permitted.
- .3 Demolition Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Metals	100	
Rubble	100	
Wood (uncontaminated)	100	
Other		

.4 Construction Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100	
Plastic Packaging	100	
Rubble	100	
Steel	100	
Wood (uncontaminated)	100	
Other		

1.17 Waste Reduction .1 Schedule B.
Workplan

(1) Material Category	(2) Person(s) Responsible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected Actual	(5) Recycled Amount (unit) Project Actual	(6) Material Destination
Wood and Plastics Material Description					
Chutes					
Warped Pallet Forms					
Plastic Packaging					
Cardboard Packaging					
Wood					
Metal					
Other					

END OF SECTION

1.1	Related Sections	.1	Section 01 33 00 – Submittal Procedures.
		.2	Section 32 31 13 – Fences and Gates.
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1.2	References	.1	Canadian Construction Documents Committee (CCDC)
		.1	CCDC 2-2008, Stipulated Price Contract.
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1.3	Administrative Requirements	.1	Acceptance of Work Procedures:
		.1	Notify the Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
		.2	Request the Departmental Representative's inspection.
		.2	Completion Tasks: submit written certificates in English that tasks have been performed as follows:
		.1	Work: completed and inspected for compliance with Contract Documents.
		.2	Defects: corrected and deficiencies completed.
		.3	Operation of systems: demonstrated to Owner's personnel.
		.4	Work: complete and ready for final inspection.
		.3	Final Inspection:
		.1	When completion tasks are done, request final inspection of Work by the Departmental Representative, and Contractor.
		.2	When Work incomplete according to Owner and Departmental Representative, complete outstanding items and request re-inspection.
		.3	Declaration of Substantial Performance: when the Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

1.4 Final Cleaning

- .1 Clean in accordance with Section 32 31 13 – Fences and Gates.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling.

END OF SECTION

PART 1 - GENERAL

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| 1.1 | Related Requirements | .1 | 01 74 21 – Waste Management and Disposal |
| | | .2 | 32 92 19.16 – Hydraulic Seeding |
| | | .3 | 32 31 13 – Fences and Gates |
| <hr/> | | | |
| 1.2 | Administrative Requirements | .1 | Pre-warranty Meeting: |
| | | .1 | Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative to: |
| | | .1 | Verify Project requirements. |
| | | .2 | Review manufacturer's installation instructions and warranty requirements. |
| | | .2 | Departmental Representative to establish communication procedures for: |
| | | .1 | Notifying construction warranty defects. |
| | | .2 | Determine priorities for type of defects. |
| | | .3 | Determine reasonable response time. |
| | | .3 | Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action. |
| | | .4 | Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action. |

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| 1.4 | Action and Informational Submittals | .1 | Provide submittals in accordance with Section 01 33 00 Submittal Procedures. |
| | | .2 | Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals in English. |
| | | .3 | Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work. |
| | | .4 | Provide evidence, if requested, for type, source and quality of products supplied. |
| 1.5 | Format | .1 | Organize data as instructional manual. |
| | | .2 | Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets. |
| | | .3 | When multiple binders are used correlate data into related consistent groupings. |
| | | .1 | Identify contents of each binder on spine. |
| | | .4 | Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents. |
| | | .5 | Arrange content by systems (i.e. utilities, controls) under Section numbers and sequence of Table of Contents. |
| | | .6 | Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment. |
| | | .7 | Text: manufacturer's printed data, or typewritten data. |
| | | .8 | Drawings: provide with reinforced punched binder tab. |
| | | .1 | Bind in with text; fold larger drawings to size of text pages. |
| | | .9 | Provide scaled CAD files in dxf and/or dwg format on CD. |

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| <p>1.6 <u>Contents – Project Record Documents</u></p> | <p>.1</p> | <p>Table of Contents for Each Volume: provide title of project;</p> <ul style="list-style-type: none"> .1 Date of submission; names. .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties. .3 Schedule of products and systems, indexed to content of volume. |
| | <p>.2</p> | <p>For each product or system:</p> <ul style="list-style-type: none"> .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts. |
| | <p>.3</p> | <p>Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.</p> |
| | <p>.4</p> | <p>Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.</p> |
| | <p>.5</p> | <p>Typewritten Text: as required to supplement product data.</p> <ul style="list-style-type: none"> .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions. |
| <p>1.7 <u>As Built Documents And Samples</u></p> | <p>.1</p> | <p>Maintain, in addition to requirements in General Conditions, at site for the Departmental Representative one record copy of:</p> <ul style="list-style-type: none"> .1 Contract Drawings. .2 Specifications. .3 Addenda. .4 Change Orders and other modifications to Contract. .5 Reviewed shop drawings, product data, and samples. .6 Field test records. .7 Inspection certificates. .8 Manufacturer's certificates. |

- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
 - .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
 - .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
 - .5 Keep record documents and samples available for inspection by Departmental Representative.
- 1.8 Recording Information On Project Record Documents
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- .1 Record information on set of black line opaque drawings, provided by Departmental Representative.
 - .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
 - .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
 - .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to geodetic datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Field changes of dimension and detail.
 - .4 Changes made by change orders.
 - .5 Details not on original Contract Drawings.
 - .6 References to related shop drawings and modifications.

- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
 - .6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.
 - .7 Provide digital photos for site records.
 - .8 Verify location of all water system components on Port Hardy airport property on the as-built drawing.
- 1.9 Final Survey
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- .1 Submit final site survey certificate certifying that elevations and locations of completed Work are in conformance, or non conformance with Contract Documents.
- 1.10 Equipment And Systems
-
- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
 - .2 Maintenance Requirements: include routine procedures and guide for trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - .3 Include manufacturer's printed operation and maintenance instructions.
 - .4 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - .5 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

	.6		Additional requirements: as specified in individual specification sections.
1.12 Maintenance Materials	.1		Spare Parts: <ul style="list-style-type: none"> .1 Provide spare parts, in quantities specified in individual specification sections. .2 Provide items of same manufacture and quality as items in Work. .3 Deliver to site; place and store. .4 Receive and catalogue items. <ul style="list-style-type: none"> .1 Submit inventory listing to Departmental Representative. .2 Include approved listings in Maintenance Manual. .5 Obtain receipt for delivered products and submit prior to final payment.
	.2		Special Tools: <ul style="list-style-type: none"> .1 Provide special tools, in quantities specified in individual specification section. .2 Provide items with tags identifying their associated function and equipment. .3 Deliver to site; place and store. .4 Receive and catalogue items. <ul style="list-style-type: none"> .1 Submit inventory listing to Departmental Representative. .2 Include approved listings in Maintenance Manual.
1.13 Delivery, Storage And Handling	.1		Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
	.2		Store in original and undamaged condition with manufacturer's seal and labels intact.
	.3		Store components subject to damage from weather in weatherproof enclosures.
	.4		Store paints and freezable materials in a heated and ventilated room.

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- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.
- 1.14 Warranties And Bonds
- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative.
- .3 Warranty management plan to include required actions and documents to assure that the Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to the Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 12 month warranty inspection, measured from time of acceptance, by Departmental Representative.

- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.

- .3 Contractor's plans for attendance at 12 month post-construction warranty inspections.
- .4 Procedure and status of tagging of equipment covered by extended warranties.
- .5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/ or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.15 Warranty Tags

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

PART 2 - PRODUCTS

2.1 Not Used .1 Not used.

PART 3 - EXECUTION

3.1 Not Used .1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1	Related Sections	.1 .2	Section 31 00 99 Earthworks for Minor Works. Section 32 31 13 Fences and Gates
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1.2	Price and Payment Procedures	.1	Cast-in-place concrete will be measured by lump sum based on the requirements of the Contract Drawings.
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1.3	References	.1 .2 .3 .4 .5 .6 .7 .8 .9 .10	CAN/ CSA-A23.1 Concrete Materials and Methods of Concrete Construction (Including Notes and Appendices in the Standard) CAN/ CSA-A23.2 Test methods and standard practices for Concrete CAN/ CSA-S269.3 Concrete Formwork CAN/ CSA A3000 Supplementary Cementing Materials, Building Materials and Products ACI 305R Hot weather concreting ACI 306R Cold weather concreting ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete ASTM C494 Standard Specification for Chemical Admixtures for Concrete Additional material and testing standards listed in CAN/ CSA-A23.1.
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1.4	Submittals	.1 .2 3 .4	Submit concrete mix designs of any mix designed by the Contractor to the Departmental Representative for review 14 days prior to placement. Concrete mix design submittals shall include the mass in kilograms of fine aggregate, coarse aggregate, cement, fly ash, silica fume and water in each cubic metre of concrete. Concrete mix design submittals shall specify the properties of the concrete. Submit copies of all test results to the Departmental Representative for review. Submission of test results will not relieve the Contractor from his obligation to interpret the test results and make necessary corrections or adjustments to his construction procedures or mix designs. At least four weeks prior to commencing work of this section, inform the Departmental Representative of proposed source of aggregates and provide access for sampling. Submit a letter of assurance that the proposed aggregate source will

			not produce concrete that will be compromised by deleterious effects from alkali-aggregate reaction.
1.5	Quality Control Submittals	.1	Provide proof of certification that plant, equipment, and materials including aggregates to be used in concrete comply with requirements of CAN/ CSA-A23.1.
		.2	Submit test results based on trial mixes showing that concrete mix designs will produce concrete meeting the requirements of this section and that strength will comply with CAN/ CSA-A23.1.
		.3	Submit manufacturer's datasheets and printed instructions for joint sealant and primer proposed for use in the Work.
1.6	Quality Assurance	.1	Perform all concrete Work in accordance with the requirements of CAN/ CSA A23.1.
		.2	Concrete testing shall be performed by the Contractor, and results submitted to the Departmental Representative.
 PART 2 - PRODUCTS			
2.1	Concrete Materials	.1	Portland Cement and Supplementary Cementing Material : Type GU Portland cement to CAN/ CSA-A3000
		.2	Water: to CAN/ CSA-A23.1.
		.3	Aggregates: to CAN/ CSA-A23.1, normal density.
		.4	Air Entraining Admixtures: to ASTM C260.
		.5	Chemical Admixtures: to ASTM C494. Departmental Representative to approve type and use of accelerating or set-retarding admixtures during cold and hot weather placing.
		.6	Curing Compound: to CSA A23.1 and ASTM C309
2.2	Formwork Materials	.1	Formwork materials shall meet the requirements of CAN/ CSA-S269.3 and this section.
		.2	Contact surfaces or lining of formwork shall be suitably smooth to provide finished concrete surfaces meeting the requirements of this section.
		.3	Form Ties: threaded internal disconnecting type, leaving no holes larger than 1 in. diameter in concrete surface.
		.4	Form Release Agent: non-staining chemically active release agent, compatible with form material which will prevent adherence of concrete to forms.
2.3	Concrete Mixes	.1	Select concrete mix proportions in accordance with CAN/ CSA-A23.1 to give the following properties for all cast-in-place concrete unless specified otherwise on design Drawings:

		.1	Minimum Compressive Strength at 28 Days: 35 MPa (30 MPa for fences and gates).
		.3	Maximum Water/Cementing Materials Ratio: 0.40.
		.4	Exposure Class: C-1.
		.5	Nominal Maximum Size of Coarse Aggregate: 20 mm.
		.6	Slump at Time and Point of Discharge: 130 mm ± 25 mm.
		.7	Air Content: 5% to 8%.
		.2	Do not change concrete mix without prior approval of the Departmental Representative. Should change in material source be proposed, new mix design to be approved by the Departmental Representative.
2.4	Concrete Production	.1	Measure, batch and mix concrete in accordance with CAN/CSA-A23.1.
		.2	Before unloading concrete at the Site, furnish the Departmental Representative with a delivery ticket for each batch of concrete in accordance with CAN/CSA-A23.1.
PART 3 - EXECUTION			
3.1	General	.1	Prior to placing concrete, ensure that all reinforcing and other items to be embedded in concrete are in place, properly oriented, located, and secured. Verify that concrete may be placed to the lines and elevations shown on the Drawings with all required clearances and cover for reinforcement. Ensure that forms are clean and absolutely all debris has been removed.
		.2	Obtain the Departmental Representative's approval before placing concrete. Provide 48 hours notice prior to placing of concrete.
		.3	Prior to placing concrete, obtain the Departmental Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather.
		.4	Maintain accurate records of poured concrete items to indicate date, location of pour, quantity, air temperature and any Contractor's test samples taken.
3.2	Formwork	.1	Construct and erect formwork in accordance with CAN/CSA-S269.3.
		.2	Assemble forms to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1.
		.3	Align form joints and make watertight. Use minimum number of form joints.
		.4	Clean formwork in accordance with CAN/CSA-A23.1 before placing

			concrete.
<u>3.3</u>	<u>Preparation</u>	.1	Set sleeves, anchor bolts and other inserts as indicated or specified elsewhere. Sleeves and openings greater than 100 mm and not indicated on structural Drawings must be approved by the Departmental Representative.
		.2	Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of all modifications from the Departmental Representative before placing of concrete.
<u>3.4</u>	<u>Placing of Concrete – General</u>	.1	Handle, deposit and consolidate concrete in accordance with CAN/ CSA-A23.1 and ACI A309R. Take care not to disturb forms or reinforcing steel when depositing and consolidating concrete.
		.2	Ensure that spare internal vibrators or external form vibrators are on hand during placing of concrete.
		.3	Unless specified otherwise, where fresh concrete will be placed against hardened concrete, bond the fresh concrete to the hardened concrete in accordance with CAN/ CSA-A23.1.
<u>3.5</u>	<u>Construction Joints</u>	.1	Make construction joints in accordance with CAN/ CSA-A23.1.
		.2	Locate construction joints as indicated on the Drawings or as approved by the Departmental Representative. Construction joints not indicated on the Drawings will not be permitted without the prior authorization of the Departmental Representative.
<u>3.6</u>	<u>Finishing Unformed Surfaces</u>	.1	Top surfaces of concrete which will ultimately receive additional concrete: <ol style="list-style-type: none"> .1 Screed the surface across the grade strips or forms so that the resulting surface will have no irregularities greater than the maximum size aggregate. .2 Roughen the surface with 6 mm amplitude. .3 Prior to placing additional concrete, clean the surface of: laitance, dirt, excess water, and other deleterious material. Do not use hydro-milling until sufficient time has elapsed to prevent loosening of the top aggregate.
		.2	Top Surface of Exposed Concrete: <ol style="list-style-type: none"> .1 Initial Finishing: immediately after placing concrete, screed the surface to the indicated grade and Work the surface with a bull float, or with a darby and highway straight edge, in accordance with CAN/ CSA-A23.1. Complete initial finishing before any

			bleeding or free water is present on the concrete surface.
	.2		Begin final finishing operations after the bleed water has disappeared and the concrete has stiffened sufficiently to prevent the working of excess mortar to the surface. Do not add water to facilitate finishing. Carry out final finishing operations in accordance with CAN/ CSA-A23.1.
	.3		Unless noted otherwise, exterior surfaces shall receive a light broom finish, with broom striations approximately 2 mm deep.
	.3		Finished surfaces shall conform to the slopes specified on the Drawings.
3.7		Finishing Formed Surfaces	
	.1		Finish formed surfaces in accordance with CAN/CSA-A23.1 and as specified below.
	.2		Formed surfaces which may ultimately serve as forms for additional concrete pour or which will remain unexposed:
	.1		The surface may contain shear keys, reinforcing steel, anchor bolts, or other embedments as indicated on the Drawings.
	.2		Repair honeycomb concrete and fill form-tie holes. Remove fins and ridges from concrete surfaces.
	.3		Clean the surface of laitance, dirt, excess water, and other deleterious material prior to applying waterproofing treatment or placing additional concrete.
3.8		Curing And Protection	
	.1		Cure and protect concrete in accordance with CAN/ CSA-A23.1 and as specified below.
	.2		Cure topping concrete by the application of wetted burlap immediately after completion of finishing operations. Maintain burlap in a saturated condition using soaker hoses wrapped in burlap and installed on top of the deck surface. When the daily mean ambient temperature is above 5 deg. C, curing shall be continuous for a minimum of seven days or for the time necessary to attain 70% of the specified 28 day compressive strength.
	.3		When the air temperature is at or above 27 deg. C, or when there is a probability of it rising to 27 deg. C during the placing period (as forecast by the nearest official meteorological office), conform also to the requirements of ACI 305R - Hot Weather Concreting.
	.4		When the air temperature is at or below 5 deg. C, or when there is a probability of it falling below 5 deg. C within 24 hours of placing (as forecast by the nearest official meteorological office), conform also to the requirements of ACI 306R - Cold Weather Concreting.
3.9		Tolerances	
	.1		Tolerances for concrete Work as built shall conform to CAN/

3.10 Field Quality Control

- CSA-A23.1 unless indicated otherwise.
- .2 Finish tolerances for concrete topping shall meet the requirements for the conventional (non-slip) Class B surface of CAN/ CSA-A23.1 Table 16.
 - .3 The flatness of the topping surface will be determined by the straightedge method as outlined in CAN/ CSA-A23.1.
 - .1 Inspection and testing of concrete and concrete materials shall be carried out by a Testing Laboratory approved by Departmental Representative, engaged and paid for by the Contractor, in accordance with CAN/ CSA A23.1.A "test" shall consist of a slump test, an air entrainment test, and samples collected for compression testing.
 - .2 Pumped concrete shall be sampled both at the truck discharge and at the point of final placement to determine if any changes in the slump, air content or other significant mix characteristics occur. The concrete at the forms shall meet all the requirements of this section.
 - .3 Additional test cylinders shall be taken during cold weather concreting. Cure cylinders on job Site under same conditions as concrete which they represent.
 - .4 Inspection or testing by Departmental Representative will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.

END OF SECTION

PART 1 - GENERAL

1.1 References

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C88, Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
 - .2 ASTM C136, Method for Sieve Analysis of Fine and Coarse Aggregate.
 - .3 ASTM C117, Test Method for Material Finer than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .4 ASTM D1557, Specification for Test Methods for Aggregate Mixtures using 10 lb (4.54 kg) Rammer and 18 inch (457 mm) Drop.
 - .5 ASTM D698, Standard Test Methods for Moisture Density Relations of Soils and Soil Aggregate Mixtures using 2.49 kg Rammer and 304.8 mm Drop.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA A23.1/ A23.2 09, Concrete Materials and Methods of Concrete Construction.

1.2 Regulations

- .1 Shore and brace excavations, protect slopes and banks and perform all work in accordance with Provincial and Municipal regulations whichever is more stringent.
- .2 Not later than one week before backfilling or filling, provide to designated testing agency, 23 kg sample of backfill or fill materials proposed for use.
- .3 Do not begin backfilling or filling operations until material has been approved for use by the Departmental Representative.
- .4 Not later than 48 hours before backfilling or filling with approved material, notify the Departmental Representative so that compaction tests can be carried out by designated testing agency.
- .5 Before commencing work, conduct, with the Departmental Representative, condition survey of existing structures, trees and other plants, lawns, fencing, service poles, wires, rail tracks and

			paving, survey bench marks and monuments which may be affected by work.
1.3	Tests and Inspections	.1	Testing of materials and compaction of backfill and fill will be carried out by a certified testing firm, retained by the Contractor and approved by the Departmental Representative.
1.4	Buried Services	.1	Before commencing work, verify the location of all buried services on and adjacent to the site using ground penetrating radar.
		.2	Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.
		.3	Remove obsolete buried services within 2 m of foundations. Cap cut offs.
1.5	Protection	.1	Protect excavations from freezing.
		.2	Keep excavations clean, free of standing water, and loose soil.
		.3	Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative's approval.
		.4	Protect natural and manmade features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
		.5	Protect buried services that are required to remain undisturbed.
 PART 2 - PRODUCTS			
2.1	Materials	.1	Gravel to be composed of inert, durable material, reasonably uniform in quality and free from soft or disintegrated particles. In absence of satisfactory performance records over a five year period for particular source of material, soundness to be tested according to ASTM test procedure C-88 or latest revised issue. Maximum weight average losses for course and fine aggregates to be 30% when magnesium sulphate is used after five cycles.

- .2 All crushed gravel when tested according to ASTM C-136 and ASTM C-117, or latest revised issue, to have a generally uniform gradation and conform to following sieve must have one or more fractured faces. Determination of the Ministry of Transportation and Highways' Specification I-11, Fracture Count for Coarse Aggregate, Method "A", which determines fractured faces by count. The Plasticity Index for crushed gravel to not exceed 6.0.
- .3 Native material to be any workable soil free of organic or foreign matter; any material obtained within limits of Contract may be deemed native material for purposes of payment if it is approved by the Contract Administrator. Native material is not acceptable if it is impracticable to control its water content or compact to specified density.
- .4 Top Soil for seeded areas: mixture of articulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth.
 - .1 Soil texture: The Canadian System of Soil Classification, to consist of 20 to 70 % sand, minimum 7 % clay, and contain 2 to 10 % organic matter by weight.
 - .2 Contain no toxic elements or growth inhibiting materials.
 - .3 Finished surface free from:
 - .1 Debris and stones over 50 mm diameter.
 - .2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
 - .4 Consistency: friable when moist.

PART 3 - EXECUTION

3.1 Site Preparation

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

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|--|--------------------------|----|---|
| 3.2 | Clearing and
Grubbing | .1 | Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings and a minimum of 1 m on the outside of the fence line and 3 m inside the fence line. |
| | | .2 | Remove stumps and tree roots below footings, slabs, and paving, and to not less than 200 mm below finished grade elsewhere. |
| | | .3 | Dispose of cleared and grubbed material off site daily to disposal areas acceptable to authority having jurisdiction. |
| <hr style="border: 0.5px solid black;"/> | | | |
| 3.3 | Excavation | .1 | Topsoil stripping |
| | | .1 | Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected. |
| | | .2 | Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil. |
| | | .3 | Dispose of topsoil as directed by the Departmental Representative. |
| | | .2 | Excavate as required to carry out work, in all materials met. Do not disturb soil or rock below bearing surfaces. Notify the Departmental Representative when excavations are complete. If bearings are unsatisfactory, additional excavation will be authorized in writing and paid for as additional work. Excavation taken below depths shown without Departmental Representative's written authorization to be filled with concrete of same strength as for footings at Contractor's expense. |
| | | .3 | Excavate trenches to provide uniform continuous bearing and support for 100 mm thickness of pipe bedding material on solid and undisturbed ground. Trench widths below point 300 mm above pipe not to exceed diameter of pipe plus 600 mm. |
| | | .4 | Excavate for slabs and paving to subgrade levels. In addition, remove all topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level. |

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- 3.4 Backfilling
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- .1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by the Departmental Representative.
 - .2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
 - .3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.
 - .4 Compaction: place backfill to underside of required sub-base and base layers, and compact to following Modified Proctor densities in compliance with ASTM D1557. (All densities in compliance with ASTM D1557).
 - .1 Boulevards and easements to minimum 90%
 - .2 Roads, driveways, shoulders, re-shaped ditches and sidewalks to minimum 95%.
 - .3 Use caution in pipe zone to ensure no damage to pipe.
 - .5 Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.
 - .6 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.
 - .7 Against foundations (except as applicable to trenches and under slabs and paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.
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- 3.5 Contaminated Materials
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- .1 If contaminated materials are detected during excavation operations, immediately notify the Departmental Representative. Any contaminated materials to be disposed of using methods approved by the Departmental Representative.
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- 3.6 Grading
-
- .1 Grade so that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by the Departmental Representative. Grade to be gradual between finished spot elevations shown on drawings.
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- 3.7 Topsoil Placement
- .1 Place a minimum of 150 mm of top soil under all areas where grass seeding is indicated on the contract drawings.
 - .2 The Departmental Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.
- 3.8 Shortage and Surplus
- .1 Supply all necessary fill to meet backfilling and grading requirements and with minimum and maximum rough grade variance.
 - .2 Dispose of surplus material off site.

END OF SECTION

PART 1 - GENERAL**1.1 References**

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A53/A53M- Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A121- Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
 - .3 A653/A653M- Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .4 ASTM F1664- Standard Specification for Poly(Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain-Link Fence.
 - .5 ASTM F2453/F2453M Standard Specification for Welded Wire Mesh Fence Fabric (Metallic-Coated or Polymer Coated) for Meshes of 6 in.2 [3871 mm²] or Less, in Panels or Rolls, with Uniform Meshes.
 - .6 ASTM B209M-07, Standard Specification for Aluminium and Aluminium Alloy Sheet and Plate.
- .2 Canadian Standards Board (CGSB)
 - .1 CAN/CGSB-138.1- Fabric for Chain Link Fence.
 - .2 CAN/CGSB-138.2- Steel Framework for Chain Link Fence.
 - .3 CAN/CGSB-138.3- Installation of Chain Link Fence.
 - .4 CAN/CGSB-1.181- Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA A23.1/ A23.2 09, Concrete Materials and Methods of Concrete Construction/Methods of test for Concrete.
 - .2 CAN/CSA-G164- Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA G42-1964(R1998), Galvanized (Zinc-Coated) Steel Farm-Field Wire Fencing.
 - .4 CAN/CSA-A3000- Cementitious Materials Compendium. Includes:

		.1	CAN/CSA-A23.5- Supplementary Cementing Materials.
	.4		The Master Painters Institute (MPI):
		.1	Architectural Painting Specification Manual - 2010.
	.5		International Civil Aviation Organization (ICAO):
		.1	Aerodrome Design Manual – 1 st Edition - 2006.
		.2	Aerodrome Design / Operations – volume 1– 4 th Edition - 2004.
1.2	Related Sections	.1	Section 01 11 05 - General Instructions.
		.2	Section 01 33 00 - Submittal Procedures.
		.3	Section 01 35 29 - Health and Safety Requirements.
		.4	Section 31 00 99 – Earthworks for Minor Works.
1.3	Submittals	.1	Submittals to be in accordance with Section 01 33 00.
		.2	Manufactures specifications for all proposed fence materials to be submitted to departmental representative prior to construction.
		.3	Manufacturer's instructions, printed product literature and data sheets for signage, including product characteristics, performance criteria, physical size, finish and limitations.
		.4	Shop drawings or product information depicting all signs required for the project.
		.5	Submittal for frangible fencing to include design shop drawings, bill of materials, detailed installation drawings, warranty information, and technical data.
1.4	Health and Safety	.1	Do construction occupational health and safety in accordance with Section 01 35 33.
1.5	Waste Management and Disposal	.1	Remove from site and dispose of packaging materials at appropriate recycling facilities.
		.2	Collect and separate materials for disposal or recycling in accordance with the Waste Management Plan.
		.3	Place materials defined as hazardous or toxic in designated

		containers.
	.4	Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Departmental Representative.
	.5	Divert unused concrete materials from landfill as approved by Departmental Representative.
	.6	Unused paint or coating material must be disposed of at official hazardous material collections site as approved by Departmental Representative.
	.7	Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
	.8	Fold up metal banding, flatten and place in designated area for recycling.
1.6	Storage and Protection	
	.1	Prevent damage to fencing, natural features, water courses, bench marks, lighting systems, roadways and all other airport equipment encountered during the completion of the work.
	.2	Repair any damages to original condition.
1.7	Measurement Procedures	
	.1	Measurement units within work limits are as indicated.
	.1	1.2 m chain link fence including removal of existing fence: lin.m.
	.3	1.2 m frangible / radio transparent fence: lin.m.
	.4	Required fence signage: lump sum.
	.5	Site Mobilization: lump sum.
	.6	Site Demobilization: lump sum.

PART 2 - PRODUCTS**2.1 Chain Link Fence
Products**

- .1 Materials:
 - .1 Concrete mixes and materials: in accordance with CAN/CSA-A23.1.
 - .1 Nominal coarse aggregate size: 20-5
 - .2 Compressive strength: 30 MPa minimum at 28 days.
 - .3 Additives: fly ash to CAN/CSA-A23.5
 - .2 Chain link fence fabric: to CAN/CGSB-138.1.
 - .1 Type 1, Class B, Style 1, Grade 3 (woven mesh acceptable)
 - .2 Height of fabric: as indicated.
 - .3 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated.
 - .1 End posts – 73mm DIA galvanized steel (S40)
 - .2 Line Posts - 60mm DIA galvanized steel (S40)
 - .3 Rails and braces - 41mm DIA galvanized steel (S40)
 - .4 Top and bottom tension wire: to CAN/CGSB-138.2, single strand, galvanized steel wire.
 - .5 Tie wire fasteners: steel wire or 9 gauge aluminum.
 - .6 Tension bar: to ASTM A653/A653M, 5 x 20 mm minimum galvanized steel.
 - .7 Fittings and hardware: to CAN/CGSB-138.2, galvanized steel.
 - .1 Tension bar bands: 5 x 16 mm minimum galvanized steel or 5 x 20 mm minimum aluminium.
 - .2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.
 - .3 Overhang tops to provide waterproof fit, to hold top rails and an outward projection to hold barbed wire overhang.
 - .4 Provide projection with clips or recesses to hold 3 strands of barbed wire spaced 125 mm apart.

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- .5 Projection of approximately 300 mm long to project from fence at 45 degrees above horizontal.
 - .6 Turnbuckles to be drop forged.
 - .8 Organic zinc rich coating: to CAN/CGSB-1.181.
 - .9 Barbed wire: to CAN/CGSB-138.2, 2.5 mm diameter.
 - .1 12.5 gauge wire, 4 point at 125mm spacing
 - .10 Gates: to CAN/CGSB-138.4.
 - .11 Gate frames: to ASTM A53/A53M, galvanized steel pipe, standard weight 41mm outside diameter pipe for outside frame, 27mm outside diameter pipe for interior bracing.
 - .1 Fabricate gates as indicated with electrically welded joints, and paint with zinc pigmented paint after welding.
 - .2 Fasten fence fabric to gate with twisted selvage at top.
 - .3 Furnish gates with galvanized malleable iron hinges, latch and latch catch with provision for padlock which can be attached and operated from either side of installed gate.
 - .4 Furnish double gates with chain hook to hold gates open and centre rest with drop bolt for closed position.
 - .2 Finishes:
 - .1 For chain link fabric: to CAN/CGSB-138.1 Grade 3.
 - .2 For pipe: 550 g/m² minimum to ASTM A90.
 - .3 For barbed wire: to CAN/CGSB-138.2.
 - .4 For other fittings: to CAN/CSA-G164.

2.2 Frangible / Radio
Transparent Fence
Products

- .1 Materials:
- .1 Concrete mixes and materials: in accordance with CAN/CSA-A23.1.
 - .1 Nominal coarse aggregate size: 20-5
 - .2 Compressive strength: 30 MPa minimum at 28 days.
 - .3 Additives: fly ash to CAN/CSA-A23.5
 - .2 Radio-transparent mesh: to ICAO Aerodrome Design / Operations, Volume I, 4th Edition – July 2004 airport infrastructure recommendations. Also, to meet the following:
 - .1 Will maintain structural integrity in wind blasts up to 195 km/hour - design wind load of 1.93 kN/m².
 - .2 Will be transparent to electro-magnetic signals.
 - .3 Non-interfering with respect to ILS or MLS systems.
 - .4 UV-resistant and non-corrodible.
 - .3 Posts, braces and rails: to ICAO Aerodrome Design Manual, Part 6 – Frangibility and the following:
 - .1 Will maintain structural integrity in wind blasts up to 195 km/hour – design wind load of 1.93 kN/m².
 - .2 Will be transparent to electro-magnetic signals.
 - .3 Non-interfering with respect to ILS or MLS systems.
 - .4 UV-resistant and non-corrodible.
 - .4 Warranty: minimum 1 year warranty for manufacturers defects is required.
 - .5 Spare Parts: Additional frangible fence materials are to be supplied sufficient to build a minimum of 70 lin m of additional fencing.

- 2.3 Signs
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- .1 Signs: "Restricted Area" signs to be painted aluminium signs of sheet aluminium to ASTM B209M pre-cut to required dimensions with thickness of 1.6 mm minimum.
 - .1 Connecting straps and brackets for signs to ATSM B209M.
 - .2 Signs on the main fence line and vehicle gates to be 750 mm wide by 600 mm high.
 - .3 Signs on pedestrian gates to be 400 mm wide by 140 mm high.
 - .4 Signs to be lettered with "Authorised Persons Only – Restricted Area" in both English and French.
 - .5 Sign design and colouring to match existing signs at the Sandspit Airport.
 - .6 Sign finish to be a minimum of two coats of baked enamel per MPI EXT 5.4A.

PART 3 - EXECUTION

- 3.1 Temporary Erosion and Sediment 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.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- 3.2 Order of Replacement
-
- .1 Complete all work as shown in the plans and specifications.
 - .2 Work to be completed in the following order:
 - .1 Sections 5, 6, and 7 – replace existing page wire fencing with chain link fencing.

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| | | | .2 | Install frangible fence sections 1 through 4. |
| | | | .3 | Install frangible fence sections 8 and 9. |
| 3.3 | Existing Fence Removal | .1 | .1 | Existing fencing to be removed and disposed of as directed in an approved landfill location. Concrete foundations to be removed. |
| 3.4 | Fence and Sign Execution | .1 | .1 | Grading: |
| | | | .1 | Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts. |
| | | | .2 | Trench along the proposed fence line to a depth of 500 mm to allow for buried installation of the wire mesh. |
| | | | .3 | Clear and grub where required per Section 31 00 99. |
| | | .2 | .2 | Erection of Chain Link Fence: |
| | | | .1 | Erect fence along lines as indicated by the contract drawings, the Departmental Representative and to CAN/CGSB-138.3. |
| | | | .2 | Excavate post holes as shown on contract drawings and as directed by the Departmental Representative. |
| | | | .3 | Space line posts 3m apart, measured parallel to ground surface. |
| | | | .4 | Space straining posts at equal intervals not to exceed 150m if distance between end or corner posts on straight continuous lengths of fence over reasonably smooth grade, is greater than 150m. |
| | | | .5 | Install additional straining posts at sharp changes in grade and where directed by the Departmental Representative. |
| | | | .6 | Install corner post where change in alignment exceeds 10 degrees. |
| | | | .7 | Install end posts at end of fence and at buildings. |
| | | | .8 | Place concrete in post holes then embed posts into concrete to depths indicated. |
| | | | .1 | Extend concrete 50mm above ground level and slope to drain away from posts. |

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- .2 Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.
 - .9 Do not install wire mesh or fence fabric until concrete has cured minimum of 5 days.
 - .10 Install brace between end posts and nearest line post, placed in centre of panel and parallel to ground surface.
 - .1 Install braces on both sides of corner and straining posts in similar manner.
 - .11 Install overhang tops and caps.
 - .12 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.
 - .13 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.
 - .14 Lay out wire mesh and install in trench and affix to tension wire and posts. Backfill trench around wire mesh to original grade.
 - .15 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300mm intervals.
 - .1 Knuckled selvedge at bottom.
 - .2 Twisted selvedge at top.
 - .16 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450mm intervals.
 - .1 Give tie wires minimum two twists.
 - .17 Install barbed wire strands and clip securely to lugs of each projection.
 - .18 Repair deficient sections of fence as indicated to meet specifications.

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- .3 Installation of Frangible / Radio Transparent Fence:
 - .1 Install in locations as shown on the contract drawings and as indicated by the Departmental Representative.
 - .2 Install per manufacturers' recommendations.
 - .3 Repair deficient sections of fence as indicated to meet specifications.
 - .4 Installation of Signs:
 - .1 Install "Restricted Area" signs every 150 m along the fence line (25 in total).
 - .2 Install "Restricted Area" signs on all gates (18 in total).
- 3.5 Touch-Up
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- .1 Clean all damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas of chain link fence.
 - .1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.
 - .2 Touch up frangible / radio transparent fence per the manufacturers' instructions.
- 3.6 Cleaning
-
- .1 Clean and trim areas disturbed by operations.
 - .1 Dispose of surplus material and replace damaged turf with sod and restore areas adjacent to the new fence with native top soil and hydraulic seeding as directed by the Departmental Representative.
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END OF SECTION

PART 1 - GENERAL

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| 1.1 | Related Sections | .1 | Section 01 33 00 - Submittal Procedures. |
| | | .2 | Section 01 74 21 - Construction/ Demolition Waste Management And Disposal. |
| | | .3 | Section 31 00 99 – Earthworks for Minor Works. |
| 1.2 | Measurement Procedures | .1 | Measure hydraulic seeding in square metres of actual surface area for: |
| | | .1 | Grass mixture including fertilizer. |
| | | .2 | Measure maintenance during establishment period and warranty period of areas seeded in square metres. |
| 1.3 | Submittals | .1 | Product Data. |
| | | .1 | Submit product data in accordance with Section 01 33 00 - Submittal Procedures. |
| | | .2 | Provide product data for: |
| | | .1 | Seed. |
| | | .2 | Mulch. |
| | | .3 | Tackifier. |
| | | .4 | Fertilizer. |
| | | .3 | Submit in writing to Departmental Representative 5 days prior to commencing work: |
| | | .1 | Volume capacity of hydraulic seeder in litres. |
| | | .2 | Amount of material to be used per tank based on volume. |
| | | .3 | Number of tank loads required per hectare to apply specified slurry mixture per hectare. |

1.4	Quality Assurance	.1	Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
		.2	Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
		.3	Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.
1.5	Scheduling	.1	Schedule hydraulic seeding to coincide with preparation of soil surface.
1.6	Waste Management And Disposal	.1	Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/ Demolition Waste Management And Disposal.
		.2	Divert unused fertilizer from landfill to official hazardous material collections site approved by Departmental Representative.
		.3	Do not dispose of unused fertilizer into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 Materials

- .1 Seed: "Canada pedigreed grade" in accordance with Government of Canada Seeds Act and Regulations.
 - .1 Grass mixture: "Certified", "Canada No. 1 Lawn Grass Mixture" in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
 - .1 26% Perennial Ryegrass.
 - .2 24% Creeping Red Fescue.
 - .3 14 % Aliske Clover.
 - .4 13% Hard Fescue.
 - .5 9% White Clover
 - .6 8% Timothy
 - .7 4% Canada Bluegrass
 - .8 2% Redtop
 - .2 Mulch: specially manufactured for use in hydraulic seeding equipment, non toxic, water activated, green colouring, free of germination and growth inhibiting factors with following properties:
 - .1 Type I mulch:
 - .1 Made from wood cellulose fibre.
 - .2 Organic matter content: 95% plus or minus 0.5%.
 - .3 Value of pH: 6.0.
 - .4 Potential water absorption: 900%.
 - .3 Tackifier: water soluble vegetable carbohydrate powder.
 - .4 Water: free of impurities that would inhibit germination and growth.
 - .5 Fertilizer:
 - .1 To Canada "Fertilizers Act" and "Fertilizers Regulations".
 - .2 Complete synthetic, slow release with 16% of nitrogen content in water insoluble form – 16-32-6.

PART 3 - EXECUTION

- | | | |
|--|----|---|
| 3.1 Workmanship <hr/> | .1 | Do not spray onto structures, signs, guide rails, fences, plant material, utilities and other than surfaces intended. |
| | .2 | Clean up immediately, any material sprayed where not intended, to satisfaction of the Departmental Representative. |
| | .3 | Do not perform work under adverse field conditions such as wind speeds over 10 km/h, frozen ground or ground covered with snow, ice or standing water. |
| | .4 | Protect seeded areas from trespass until plants are established. |
| 3.2 Preparation Of Surfaces <hr/> | .1 | Fine grade areas to be seeded free of humps and hollows. Ensure areas are free of deleterious and refuse materials. |
| | .2 | Cultivated areas identified as requiring cultivation to depth of 25 mm. |
| | .3 | Ensure areas to be seeded are moist to depth of 150 mm before seeding. |
| | .4 | Obtain Departmental Representative approval of grade and topsoil depth before starting to seed. |
| 3.3 Fertilizing Program <hr/> | .1 | Fertilize prior to fine grading incorporating fertilizer equally distributed in accordance with manufacturers recommendations. |
| | .2 | Fertilize twice during establishment and warranty periods. |
| 3.4 Preparation Of Slurry <hr/> | .1 | Measure quantities of materials by weight or weight calibrated volume measurement satisfactory to Departmental Representative. Supply equipment required for this work. |
| | .2 | Charge required water into seeder. Add material into hydraulic seeder under agitation. Pulverize mulch and charge slowly into seeder. |
| | .3 | After all materials are in the seeder and well mixed, charge tackifier into seeder and mix thoroughly to complete slurry. |

3.5 Slurry Application

- .1 Hydraulic seeding equipment:
 - .1 Slurry tank.
 - .2 Agitation system for slurry to be capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and/ or mechanical agitation method.
 - .3 Capable of seeding by 50 m hand operated hoses and appropriate nozzles.
- .2 Slurry mixture applied per hectare to be per manufacturers recommendations.
- .3 Apply slurry uniformly, at optimum angle of application for adherence to surfaces and germination of seed.
 - .1 Using correct nozzle for application.
 - .2 Using hoses for surfaces difficult to reach and to control application.
- .4 Blend application 300 mm into adjacent grass areas or sodded areas and previous applications to form uniform surfaces.
- .5 Re-apply where application is not uniform.
- .6 Remove slurry from items and areas not designated to be sprayed.
- .7 Protect seeded areas from trespass satisfactory to the Departmental Representative.
- .8 Remove protection devices as directed by the Departmental Representative.

3.6 Maintenance
During
Establishment
Period

- .1 Perform following operations from time of seed application for a minimum of two months or until acceptance by Departmental Representative .
- .2 Grass Mixture:
 - .1 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.
 - .2 Mow grass to 50 mm whenever it reaches height of 70 mm.

Remove clippings which will smother grass.

- .3 Fertilize seeded areas after first cutting in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles.
- .4 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.
- .5 Water seeded areas to maintain optimum soil moisture level for germination and continued growth. Control watering to prevent washouts.

3.7 Acceptance

- .1 Seeded areas will be accepted by Departmental Representative provided that:
 - .1 Plants are uniformly established. Seeded areas are free of rutted, eroded, bare or dead spots.
 - .2 Areas have been mown at least twice.
 - .3 Areas have been fertilized.
- .2 Areas seeded in fall will achieve final acceptance in following spring, one month after start of growing season provided acceptance conditions are fulfilled.

3.8 Maintenance During Warranty Period

- .1 Perform following operations from time of acceptance until end of the one year warranty period:
 - .1 Repair and reseed dead or bare spots to satisfaction of the Departmental Representative.
 - .2 Mow areas seeded, remove clippings, as directed by Departmental Representative, a minimum of four times during the warranty period.
 - .3 Fertilize seeded areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.

3.9 Cleaning

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

Perimeter Fence Replacement

32 92 19.16

Sandspit, BC

HYDRAULIC SEEDING

Project No. R. 070274.001

Page 7 of 7

END OF SECTION

Restricted Area sign example



Perimeter Fence Replacement

Sandspit, BC

Project No. R. 070274.001

APPENDIX

Plan of Construction Operation (Draft)

PLAN OF CONSTRUCTION OPERATIONS

Perimeter Fence Replacement

Transport Canada Airport (YZP)

Sandspit, BC

Submitted by:

WEDLER ENGINEERING LLP

101-2155 Douglas Ave.
Courtenay, B.C. V9A 1W6
250-344-2700

Andrew Gower, P.Eng., PE



Wedler File No: V14-0180/A | September 9, 2014

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Figure 1: Project Communication Chart

Appendix A: Contract Drawings



1 Introduction

1.1 Background

Aerodrome security and the risk posed by wildlife on the runway are a continuing issue at the Sandspit Airport. Existing fencing was built at different times, to different standards and much is deteriorated. A plan and specification for replacing the fence around the airport has been prepared and Transport Canada is proposing to construct new fencing including chain-link and frangible sections.

The scope of work associated with the construction removal of the existing fencing, and replacement with appropriate types of fence. The work will include the following:

- Excavation for fence pole footings and grading between poles.
- Placing fence poles in concrete foundations.
- Erection of fence fabric between poles.
- Installation of a gate in the new fence.
- Installation of "Restricted Area" signs on new and existing fence.
- Removal of old fencing upon completion of new fencing.
- Restoration of disturbed areas at completion of construction.

1.2 The Airport Environment

The airport environment is dynamic and involves various stakeholders, including Transport Canada, the users, airlines, Nav Canada, the operator, airport staff, security, etc. The airport environment is highly regulated in the interest of public safety, and as such, any deviations from standard operating procedure are carefully considered and subject to detailed review and input from the stakeholders and regulators.

This construction project is very important to Sandspit Airport in order to ensure the security and continued usage of runway 12-30. It is expected that construction will impact normal operation of the facility and will require temporary operational changes. The cooperation of all parties, including the Contractor, will be paramount in the success of this project.



1.3 Purpose of the Plan of Construction

The primary purpose of the Plan of Construction Operations (PCO) is to provide a notification of deviation from the certification standards and the Aerodrome Operations Manual (AOM) for the Sandspit Airport. The PCO is a statement of the approved operational procedures to be employed to maintain the certification criteria of the airport during the implementation of the construction project planned for 2014. Airport Management will be required to file this PCO with the AOM while the project is in progress.

The secondary purpose of the Plan of Construction Operations (PCO) is to formulate, in advance, the coordination required to implement this construction project with a minimum of interruptions and conflict with airport operations and ensure that airport security and flight safety are not compromised by the construction operations.

The third purpose of the plan is to inform all airport users, tenants, Transport Canada, Nav Canada and air carriers of the project, so that they may appreciate and plan for the project's potential implications to their operations. Further, the PCO is important to summarize the information gathered through consultation with the stakeholders.

2 Construction Operations Plan and Schedule

2.1 Scope of Work and Scheduling

This section is intended to outline the proposed construction operations and planned schedule for the work. Appendix A contains design drawings providing a graphical description of the work. The drawings contained in Appendix A include:

V14-0180/A – C0	Cover Sheet / Location Plan
V14-0180/A – C1	Existing Fence
V14-0180/A – C2	Key Plan / Proposed Fence
V14-0180/A – C3	Fence and Gate Details

Construction could proceed up to seven (7) days a week and at any time of day or night throughout the dates of September 1, 2014 and March 31, 2015, as scheduled to most efficiently work with scheduled flights. The exact construction dates and times will be confirmed through coordination between the Departmental Representative, Contractor, and Sandspit Airport prior to the commencement of construction activities.



Work hours of 0800 to 1600 have been stipulated in the contract for this work, however some flexibility with timing is necessary. Any variation to work hours will be determined following contract award. The onsite construction is expected to take up to 35 days.

All local Emergency Services in Sandspit, including Medevac operations, to be advised of the upcoming construction work and approximate durations as the Contractor may require time to clear the runway area if work is proceeding during a time with no scheduled flights.

Airline schedule and permitted working times to be confirmed prior to construction.

2.2 Fence Construction

Work to include all items noted in Section 1.1. During the course of the work, the following will be in effect:

Construction

- Construction to take place at most favorable hours, as determined in coordination with Sandspit Airport and taking into account scheduled flights.
- Access to the construction area to be via the access route through Gate 1 for the north end and gate #13 or the electric slide gate for the south end and along existing access track paralleling the fence as shown in Appendix A. Keys for the lock on gates will be provided to the Contractor by Sandspit Airport following the Contractor's completion of airside training and acquiring of all required permits.

2.3 Construction Access Roads

Construction access roads will be the existing traveled areas and existing tracks at the airport.

The Contractor will be required to restore the existing access roads and tracks to preconstruction conditions upon completion of the project, if any damage occurs.

The Contractor will coordinate with the Sandspit Airport during construction to ensure safe construction access routes are clearly defined to avoid confusion and possible incursions. The Contractor will conduct at minimum, weekly safety briefings for all construction personnel, and all new personnel operating at the site.



2.4 Construction Equipment Usage

When building fence sections 1, 2, 3, 4, 5, 8 and 9, construction equipment may penetrate the obstacle limitation surfaces for active runways during construction. For a time period of 15 minutes prior to flight landing or takeoff and 5 minutes after landing or takeoff, construction equipment is required to clear the site either by moving on access path clear of the flight glide path, or by moving all equipment to either side of the runway, and lowering all equipment below the elevation of 5.1 meters.

2.5 Construction Equipment Storage and Stockpiling Area

No construction equipment storage or material stockpiling will be allowed on airport property. There will be no deviation from this requirement without prior approval from Sandspit Airport and the Departmental Representative.

2.6 Security and Escorting Requirements

If personnel and vehicle operators are required to operate within airside facilities, both within and outside of defined project areas, they will require training to be provided by the Airport. Travel across active aircraft movement areas to access construction work sites will not be permitted without prior coordination with Airport staff, and will be limited to a maximum of four (4) vehicles per escort.

The access gate to airside construction will be securely locked and closed at all times after each use.

Access gates to the airside will require security personnel to inspect all personnel and equipment entering the site. These security personnel would not be required if the gates are locked. The Contractor will be responsible to post security personnel as appropriate at each entrance gate when required. These security personnel will be periodically inspected by the Airport staff and the engineer's site representative for compliance.

All Airside access will be coordinated through the Sandspit Airport. It will be the responsibility of the Contractor to coordinate with Sandspit Airport sufficient lead time for all airside security escorting training and permit requirements.



2.7 Temporary Barricades

Temporary barricades are not expected to be required.

2.8 Underground Utility Locations

Underground utilities are expected in some areas of excavation, specifically for fence and gate replacements along the east side of the aerodrome. Runway lighting and other structures in the area of work have been identified on the drawings in Appendix A.

Contractor is required to identify any underground utilities in the area of work to avoid damage, and protect it during construction operations.

2.9 F.O.D. Control Program

The Airport has a stringent Foreign Object Debris (F.O.D.) control protocol in place. Under no circumstances will the Contractor be permitted to dispose of any F.O.D. while onsite. F.O.D. will be monitored by the Airport and the Departmental Representative. Any F.O.D. observed must be removed immediately in accordance with the F.O.D. control program. Details of the F.O.D. control program will be provided to all parties prior to construction and commencement of the work.

3 Airport Operations and Procedures

3.1 Communication Protocols and Responsibilities

During construction, communication protocols and responsibilities must be clearly understood, practiced and enforced. Figure 1 shows the general communication flow during the project. The following provides additional details as to the responsibilities of the major project participants.

3.1.1 Airport Operator/ Transport Canada

Transport Canada operates the airport. Sandspit Airport refers to Airport Management.

Sandspit Airport is responsible for enforcing Transport Canada's Aerodrome Safety procedures, and coordinating with Nav Canada

Sandspit Airport will liaise with the Departmental Representative during construction.



3.1.2 Departmental Representative

The Departmental Representative will retain a Site Representative to act as site reviewer during the construction.

The Site Representative will monitor the progress of the work and provide a full-time onsite reviewer during construction. The Departmental Representative will communicate with the Contractor and site personnel and provide updates to stakeholders as construction proceeds.

The Departmental Representative will interact with Airport Management as required to ensure the safe and efficient execution of the work.

The Departmental Representative will coordinate all technical issues during construction with the Contractor.

3.1.3 Contractor

The Contractor will be responsible for the construction of the proposed works. The Contractor will also designate a Contractor Superintendent to be responsible for the overall coordination of their site activities and to act as a Safety Superintendent and Site Foreman during construction.

The Contractor Superintendent will communicate through the Site Representative. The Contractor's administrative office staff will communicate through the Departmental Representative.

3.1.4 Transport Canada Aerodrome Safety

Transport Canada Aerodrome Safety is interested in ensuring the continued safe operation of the airport and that all applicable regulations, standards and recommended practices are complied with. Periodic inspections may be conducted during the construction period to ensure the intent of this PCO is followed.

Only Sandspit Airport, or if directed, the Departmental Representative, is to communicate with Transport Canada Aerodrome Safety on matters related to this project.



3.1.5 Nav Canada

Nav Canada provides Air Traffic Advisory Services and Vehicle Control Services at the Sandspit Airport. Nav Canada personnel require a clear understanding of the project status at all times.

Only Sandspit Airport, or if directed, the Departmental Representative, to communicate with Nav Canada on matters related to this project.

3.2 Aerodrome Standards and Recommended Practices

Sandspit Airport is a certified airport and must comply with Aerodrome Standards and Recommended Practices TP312, and a number of other regulations and standards. This PCO has been prepared based on recommended practices to accommodate temporary deviations from these standards in order to allow the proposed construction activity.

The following outlines the aeronautical safety measures implemented:

- All construction equipment to be removed clear of any airport obstacle limitation surfaces during flight arrival and departure.
- No storage or stockpile areas will be located on airport property as noted in Item 2.5.
- Airside facilities (runways, aprons) will be closed while construction operations are in process. The Contractor is required to clear the site for all incoming and outgoing flights, at which time airside facilities will be open.
- The Contractor is required to clear the site for all scheduled flights.
- The Contractor is required to clear the site within 15 minutes following request by the Sandspit Airport.

3.3 Instrument Approach Procedures and Nav Aid Electronic Interference

All construction equipment and material storage areas will remain clear of any onsite navigational aid protection areas. At the end of the project, all equipment is to be removed from the site and the areas are to be restored to their original condition.



3.4 Vehicle Safety Requirements

Vehicles and equipment operators will not be permitted to go outside the specified working areas. Any requirement to travel outside these areas will require approval from the Sandspit Airport.

All vehicles that will be operated or driven on the aircraft manoeuvring areas of the aerodrome (open or closed) will be equipped with an amber warning beacon that will be turned on while the vehicle is on these areas. If equipped with headlights, these will also be turned on.

An amber warning beacon will be mounted on each vehicle in a location that will permit the beam to be seen by aircraft or surface traffic from any position within 360 degrees. If a rotating beacon is used, the light beam is to be set at an angle of 6 degrees above the horizontal and it shall rotate at a constant speed of 35 rpm. The enclosing globe of the warning light is to be amber for all vehicles.

3.5 General Site Procedures

3.5.1 General

The Contractor Superintendent will be responsible for ensuring that all construction personnel at the aerodrome operate construction equipment and service vehicles in a safe manner in accordance with the procedures outlined in this document and the Contract Plans and Specifications.

Prior to the start of construction the Contractor Superintendent in conjunction with the Sandspit Airport and the Departmental Representative to brief all key project/construction personnel on:

- a) The procedures for the movement of equipment and personnel working on site,
- b) Security regulations, and
- c) Other applicable aerodrome directives.

The Contractor Superintendent to ensure that all new personnel to the project are briefed by Sandspit Airport staff.

When required, the Sandspit Airport to advise Nav Canada of any deviations to construction activities at the airport relative to this approved PCO.

Nav Canada is responsible for providing cautionary advisories to aircraft and the Sandspit Airport. The Sandspit Airport will then be responsible for forwarding cautionary advisories to the Airside Escort.



A NOTAM will be issued for the duration of the construction project indicating construction activities and closures for all stages of the project. NOTAM coordination to be the responsibility of the Sandspit Airport.

Notwithstanding any of the above, all equipment to depart all, or portions of, the construction areas for operational reasons if requested to do so by the Sandspit Airport, the Departmental Representative or their designates. This requirement will normally apply during inclement weather when limited visibility on the ground could create hazardous conditions for aircraft and construction equipment, and for unscheduled or emergency flights.

3.5.2 Scheduled Flights

Scheduled air service to the Sandspit Airport is presently provided by Air Canada (Air Jazz). It is not anticipated that construction will affect regularly scheduled flights.

3.5.3 Unscheduled Flights

Construction may affect unscheduled flights if no advance notice is received. Operators may be required to delay takeoff or landing until the Contractor can clear the zone. In accordance with the Contract, the Contractor will have 15 minutes to clear the zone from time of notification by Sandspit Airport.

3.5.4 Daily Start-up and Shutdown Procedures for Construction Activities Requiring an Airside Escort

Construction Start-up

At the start of each construction shift, the Contractor Superintendent, Sandspit Airport and the Site Representative to gather in the Contractor's site office to confirm the shift's planned activities its impact on airport operations, and escort requirements.

The Departmental Representative will coordinate the work with an airside escort. The airside escort will advise Nav Canada as required that personnel and equipment are working in the construction areas and confirm that all required NOTAMs are in place.

The Airside Escort will supervise construction activities and will monitor the tower frequencies during construction.



Construction Shutdown

At the end of the shift, the Contractor to ensure that all equipment is parked in a designated safe area, all airside surfaces are clear of FOD and that the work and pedestrian areas are safe, secured and all required barricades are in place and hazard lights functioning properly. After this is complete, the Contractor's representative to vacate the site and ensure all gates are securely locked.

3.5.5 Regular Construction Progress Meetings

Regular construction meetings are to be held throughout the construction period. The purpose of the meetings will be to review construction progress and schedule, and to address construction issues of concern.

3.5.6 Final Inspection/ Runway Opening

Once construction is completed including final grading of disturbed areas and sweeping of airside surfaces, a final inspection will be completed by the Departmental Representative and the Sandspit Airport. Upon the approval of the inspection by both parties, the Sandspit Airport will notify Nav Canada.

3.6 NOTAMs and Responsibility

The Sandspit Airport will be responsible for the origination, revision and cancellation of NOTAMs. The NOTAM will advise the aviation community of the establishment, condition or change in any aeronautical facility, service, procedure or hazard as well as the approximate time period involved.

The Sandspit Airport will work with the Departmental Representative to coordinate the NOTAMs if required. Forty-eight (48) hours prior notification must be provided to Sandspit Airport and should include all relevant details. The Sandspit Airport will then coordinate publishing of the NOTAM with Nav Canada.

Situations may arise where an urgent NOTAM is required at the Airport and the Sandspit Airport cannot be contacted. Under these circumstances the Departmental Representative will be responsible to contact Nav Canada advising of the current situation at the airport.

Sample NOTAM:

"CYZP RUNWAY 12/30 CLSD DUE CONST AVBL 15 MIN PN YXT FSS MF 122.3 YYMMDDHHMM
TIL YYMMDDHHMM"



3.7 Incident Reporting Procedures

If an "Aviation Occurrence" accident or incident occurs onsite during the construction, the incident will be reported as per onsite procedures through the Departmental Representative to the Sandspit Airport. The Sandspit Airport will be responsible for initiating and carrying out this work.

3.8 Stakeholder Consultation

The Departmental Representative will send a copy of the PCO to the Sandspit Airport for their review, approval and endorsement. Once the PCO is approved, the Airport will forward copies to all applicable parties.

During the construction period, communications with the airlines and tenants will be the responsibility of the Sandspit Airport. The Departmental Representative will be responsible for the coordination of information between the Sandspit Airport and the Contractor. Any changes to the plan as outlined within this document will be communicated as required by Transport Canada.

The Departmental Representative will distribute a copy of the approved PCO to the Contractor prior to construction.



4 Endorsements

Project: Transport Canada Airport (YZP) – Perimeter Fence Replacement

Airport Name/ Operator and Certificate Holder: Sandspit Airport

*This Plan of Construction Operations (PCO) has been prepared and reviewed by the following persons. This PCO documents a coordinated approach to completing the construction Project **in the years 2014 and 2015 at the Sandspit Airport** while maintaining a reasonable level of safety for those involved in the construction project and the aviation community.*

I undertake to meet the obligations set out in this plan of construction operations; and I hereby certify that the information in this plan is complete and accurate and no relevant information has been omitted,

2014-

Date (Y-M-D)

Signature of Airport Operator/ Certificate Holder

This Plan of Construction Operations was prepared in consultation with the Airport Operator and the Schedule of Service Providers by:

2014-

Date (Y-M-D)

Signature of Andrew Gower, Wedler Engineering LLP

This Plan of Construction Operations Manual / Amendments is approved:

2014-

Date (Y-M-D)

Signature of Aerodrome Safety / Transport Canada

This Plan of Construction Operations has been reviewed and its implications on construction efficiency and the roles and responsibility of the Contractor understood by:

2014-

Date (Y-M-D)

Signature of Contractor



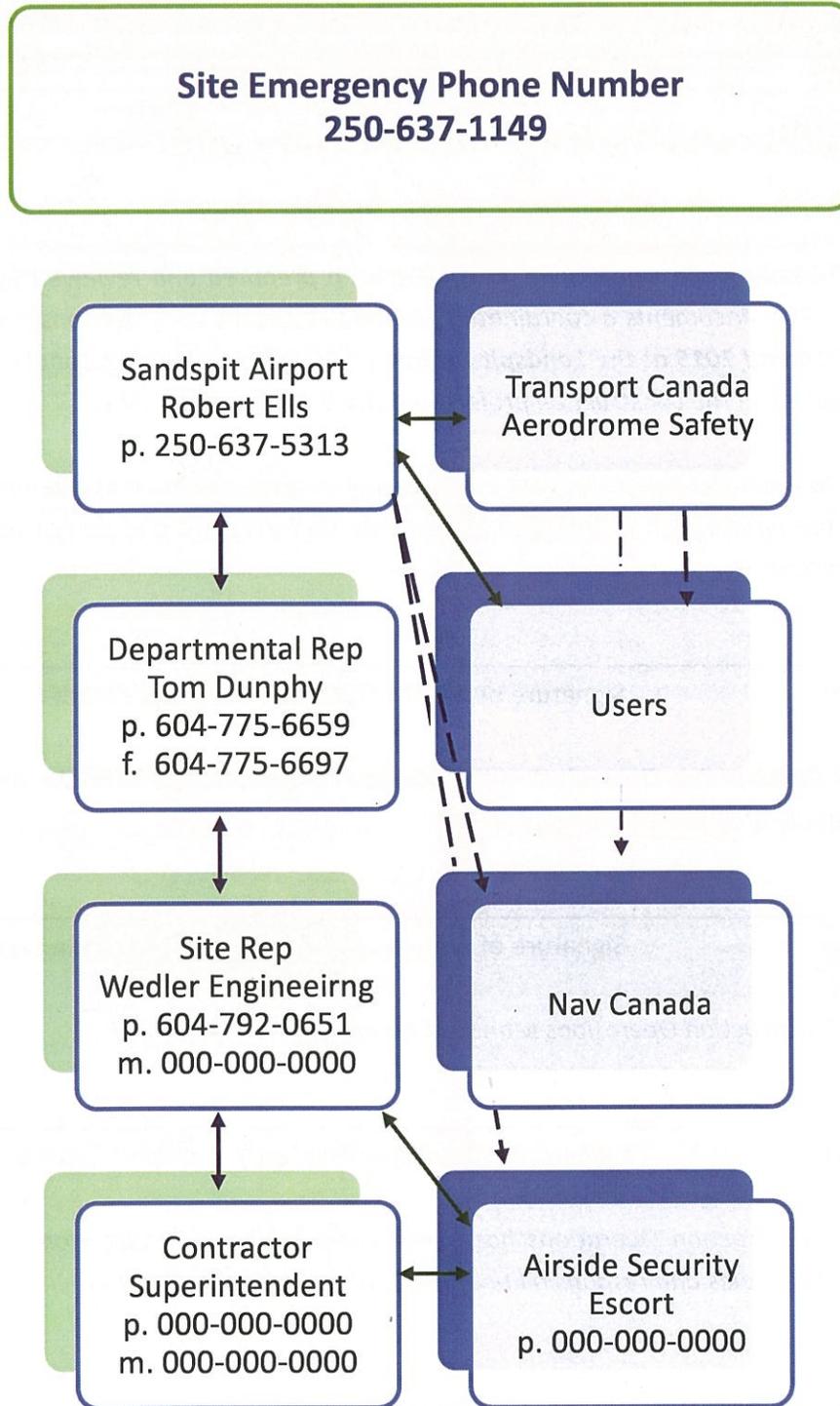


Figure 1: Project Communication Chart



Appendix A: Contract Drawings



Perimeter Fence Replacement

Sandspit, BC

Project No. R. 070274.001

APPENDIX

Letter from Nav Canada – September 8, 2014



September 8, 2014

Your file
CYZP R.070274.001 - PO Box 439
Our file
14-2436

Mr. Andrew Gower
Wedler Engineering
#211-2459 Cousins Avenue
Courtenay, BC
V9N 3N6

RE: Airport Project: Fence - Sandspit, BC
Centred (N53° 15' 19.28" W131° 48' 39.19" / 4' AGL / 19.0131' AMSL)

Mr. Gower,

We have evaluated the captioned proposal and NAV CANADA has no objection to the project as submitted.

In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications. To assist us in that end, we ask that you notify us upon completion of construction. This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form by e-mail at landuse@navcanada.ca or fax at 613-248-4094. In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

If you have any questions, contact the Land Use Department by telephone at 1-866-577-0247 or e-mail at landuse@navcanada.ca.

NAV CANADA's land use evaluation is valid for a period of 12 months. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, Industry Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Industry Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA engineering as deemed necessary.

Yours truly,

A handwritten signature in black ink, appearing to be "DL" or similar initials.

David Legault
Manager, Data Collection
Aeronautical Information Services

cc PACR - Pacific Region, Transport Canada
CYZP - SANDSPIT