

DESIGN-BUILD AGREEMENT

for the Wood Innovation Design Centre

**Her Majesty the Queen in Right of the Province of British Columbia, as
represented by the Ministry of Jobs, Tourism and Skills Training**

and

PCL Constructors Westcoast Inc.

Dated: March 27, 2013

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DESIGN-BUILD AGREEMENT

THIS AGREEMENT dated for reference as of March 27, 2013 (the “Effective Date”) is entered into:

BETWEEN:

Her Majesty the Queen in Right of the Province of British Columbia, as represented by the Ministry of Jobs, Tourism and Skills Training (the “Owner”)

AND:

PCL Constructors Westcoast Inc. (the “Design-Builder”)

WHEREAS:

- A. The Owner has selected the Design-Builder to perform all Work for the Project referred to as the “Wood Innovation Design Centre”, as further described in this Agreement; and
- B. The parties wish to enter into this Agreement to set out their respective rights and obligations.

NOW THEREFORE in consideration of the premises and the mutual obligations contained in this Agreement, the parties hereby agree as follows:

PART A – DEFINITIONS AND INTERPRETATION

1. DEFINITIONS AND INTERPRETATION

1.1 In this Agreement, the following words and expressions have the following meanings:

“Agreement” means this agreement, including the documents referred to in Section 1.2;

“Archaeological Items” has the meaning set out in Section 27.1;

“Architect” means a professional architect registered and in good standing under the *Architects Act* (British Columbia);

“Bonds” has the meaning set out in Section 58.1;

“Business Day” means a day other than a Saturday, Sunday or statutory holiday in British Columbia;

“CaGBC” means the Canada Green Building Council;

“Change” means a change in the Work, including any addition, deletion, alteration, revision or substitution;

“Change Directive” means a written instruction referenced as a “Change Directive” executed by the Owner and directing the Design-Builder to proceed with a Change;

“Change Order” means a written document referenced as a “Change Order” executed by the Owner and the Design-Builder and setting out a Change and the value or method of valuation of a Change and any adjustments to the Contract Price and Contract Time;

“Commissioning Plan” has the meaning set out in Section 31.1;

“Confidential Information” means information of a party that the party has designated as confidential at the time of disclosure and which is supplied, or to which access is granted, to or on behalf of the other party (whether before or after the Effective Date), either in writing, or in any other form, directly or indirectly pursuant to discussions with the other party and includes all analyses, compilations, studies and other documents whether prepared by or on behalf of a party which contain or otherwise reflect or are derived from such designated information;

“Construction” means all things, other than Design, necessary to complete the Work;

“Contaminants” means any materials, substances or hazardous wastes, the storage, manufacture, disposal, treatment, generation, use, transport, remediation or release into the environment of which is now or hereafter prohibited, controlled or regulated under the *Environmental Management Act* (British Columbia) and regulations;

“Contract Price” means the price set out in Section 2.1;

“Contract Time” means the time within which the Design-Builder will achieve Substantial Completion of the Work as set out in Section 3.1;

“Design” means the design for the Project;

“Design-Builder” has the meaning set out on the first page of this Agreement;

“Design-Builder’s Consultant” means Michael Green Architecture Inc. as the principal Architect and coordinating professional and any other architectural or engineering firm or person, including any Architect or Professional Engineer, engaged by the Design-Builder to prepare the Drawings and Specifications, or to otherwise consult to the Design-Builder on the Project;

“Design-Builder Contaminants” means any Contaminants and other goods or items containing Contaminants, brought onto, used at or released at or from the Site by the Design-Builder or anyone for whom the Design-Builder is responsible;

“Design-Builder’s Representative” has the meaning set out in Section 5.2;

“Disclosed Data” means any information, data and documents (including in PLS-CADD or any other electronic format) made available or issued to the Design-Builder or any Subcontractor or other person on behalf of the Design-Builder or any Subcontractor in connection with the Project by or on behalf of the Owner, including any information relating to the Land or the requirements of any governmental authority, whether before or after the Effective Date;

“Dispute” means any disagreement, failure to agree or other dispute between the Owner and the Design-Builder arising out of or in connection with this Agreement, including in respect of the interpretation, breach, performance, validity or termination of this Agreement, whether in the law of contract or any other area of law;

“Drawings” means all drawings for the Project that are prepared by or for the Design-Builder and submitted to the Owner under the Review Procedure and that the Design-Builder is entitled to proceed with under the Review Procedure;

"Effective Date" has the meaning set out on the first page of this Agreement;

"End Date" means the date described in Section 4.1;

"Environmental Report" has the meaning set out in Section 28.1(a);

"Facility" means the buildings, related structures, utility connections, landscaping and other improvements to be constructed by the Design-Builder pursuant to this Agreement;

"FIPPA" means the *Freedom of Information and Protection of Privacy Act* (British Columbia)

"Force Majeure" means labour disputes, strikes, lock-outs, fire, unusual delay by common carriers or unavoidable casualties or, without limiting any of the foregoing, by a cause beyond the Design-Builder's reasonable control, but excludes:

- (i) any event that is the result of breach of this Agreement or Law;
- (i) economic hardship or lack of financing;
- (ii) equipment failure;
- (iii) unavailability of personnel, labour or Subcontractors;
- (iv) unavailability of materials;
- (v) labour disputes, strikes or lock-outs of the personnel of the Design-Builder or the Subcontractors;
- (vi) delays resulting from adverse weather conditions; and
- (vii) unsuitable or unanticipated Site conditions, including subsurface conditions.

"Health and Safety Plan" has the meaning set out in Section 29.5;

"HST" means the tax imposed pursuant to Section IX of the *Excise Tax Act* (Canada) commonly referred to as the harmonized sales tax, and upon the coming into effect of the PST means such tax commonly referred to as the goods and services tax or GST;

"Indemnified Parties" has the meaning set out in Section 56.1;

"Insurance Conditions" means the terms and conditions set out in Schedule 3 – Insurance Conditions;

"Key Individuals" means the persons identified in Schedule 5 – Key Individuals;

"Land" means the lands located at:

- i. Parcel Identifier: 007-807-279
Lot 5 Block 150 District Lot 343 Cariboo District Plan 1268;
- ii. Parcel Identifier: 007-807-287
Lot 6 Block 150 District Lot 343 Cariboo District Plan 1268;

- iii. Parcel Identifier: 007-807-295
Lot 7 Block 150 District Lot 343 Cariboo District Plan 1268; and
- iv. Parcel Identifier: 007-807-317
Lot 8 Block 150 District Lot 343 Cariboo District Plan 1268;

"Laws" means the common law and any and all laws, statutes, enactments, by-laws, regulations, rules, orders, directives, policies, permits, licences, codes and rulings of any government, and any ministries, agencies, board, commission or tribunal of any government, including SSR;

"LD Holdback" has the meaning set out in Section 41.1(a);

"LEED Gold Certification" means the award of a LEED Gold certification from the CaGBC under the LEED Rating System;

"LEED Holdback" has the meaning set out in Section 41.1(b);

"LEED Rating System" means CaGBC's Leadership in Energy & Environmental Design (LEED) Green Building Rating System LEED Canada;

"Lien Holdback" means the 10% holdback required under the *Builders Lien Act* (British Columbia);

"Other Contractor" means any person employed by or having a separate contract directly or indirectly with the Owner for work related to the Project other than the Work;

"Owner" has the meaning set out on the first page of this Agreement, and is equivalent to the term "Authority" where used in this Agreement;

"Owner's Consultant" means CEI Architecture unless replaced in accordance with Section 5.6;

"Owner's Representative" has the meaning set out in Section 5.1;

"Notice to Proceed" means a notice to proceed with Construction on Site.

"Performance Holdbacks" has the meaning set out in Section 41.1;

"Pre-Existing Contaminants" means any Contaminants present on the Site as at the Effective Date;

"Professional Engineer" means a professional engineer registered and in good standing under the *Engineers and Geoscientists Act* (British Columbia);

"Project" means the design, construction, testing and commissioning of the Facility and all other works in accordance with this Agreement;

"Project Binder" has the meaning set out in Section 43.1;

"Project Management Plan" means the management plan that (i) sets out a high level workplan to describe the manner in which the Design-Builder will manage the Project, including to address related matters such as traffic management and communications, (ii) is prepared by or for the Design-Builder and submitted to the Owner;

"Proposal Extracts" means Schedule 7 – Proposal Extracts;

“PST” means the tax under the Provincial Sales Tax Act (British Columbia) and any regulation thereunder, including any transition provisions.

“Quality Management Plan” means the plan for quality management including quality control and quality assurance with respect to the Work, a draft of which is included in the Proposal Extracts, together with such changes to the plan that are prepared by the Design-Builder and submitted to the Owner under the Review Procedure and that the Design-Builder is entitled to proceed with under the Review Procedure;

“Record Drawings” means the as-built Drawings and Specifications that record the completed Facility;

“Review Procedure” means Schedule 2 – Review Procedure;

“Schedule of Values” means the schedule to be provided by the Design-Builder pursuant to Section 38.4 and reviewed by the Owner under the Review Procedure that allocates the Contract Price set out in Schedule 6 – Schedule of Prices over the course of the Project and that is the basis for monthly payments by the Owner for Work properly performed pursuant to this Agreement;

“Site” means the place where the Work is to be performed on the Land and aligns with the area indicated on the Site Plan;

“Site Occupation Date” means the date that is the third Business Day after the Effective Date unless otherwise agreed by the Owner and the Design-Builder;

“Site Plan” means the plan of the Site included in the Disclosed Data;

“Site Reports” means the following reports:

- i. “Preliminary Geotechnical Report – Proposed Wood Innovation Centre, 487 Georges Street, Prince George, B.C.” prepared by GeoNorth Engineering Ltd., June 15, 2012
- ii. “487 George Street, Prince George, BC – Contaminated Sites Assessment Summary and Expected Redevelopment Process and Construction Consequences” prepared by AMEC Environmental and Infrastructure, September 17, 2012”

“Specifications” means all construction and other specifications for the Project prepared by or for the Design-Builder and submitted to the Owner under the Review Procedure and that the Design-Builder is entitled to proceed with under the Review Procedure;

“SSR means the site specific regulations attached as Schedule 9 – Site Specific Regulations;

“Standards” means any and all Laws, building codes (including the SSR), professional standards and specifications applicable to the Work, or to work such as the Project, as they are in force from time to time in the latest current version thereof;

“Statement of Requirements” means Schedule 1 – Statement of Requirements;

“Subcontract” means a subcontract with a Subcontractor;

“Subcontractor” means a person or entity, including the Design-Builder’s Consultant, having a subcontract with the Design-Builder or with a subcontractor of any tier to perform a part or parts of the Work or to supply products or materials for the Work;

“Submittal” means any and all items, documents and anything else required or specified by this Agreement (including Section 17 (Design Process) and anything identified in Schedule 1 as being subject to the Owner’s review, approval, acceptance or similar term), and any and all subsequent revisions, amendments and changes thereto, in respect of the Design and the Construction to be submitted to, reviewed, accepted or otherwise processed or considered by the Owner;

“Submittal Schedule” has the meaning set out in Section 1.1 of Schedule 2 – Review Procedure;

“Substantial Completion” has the meaning set out in Section 42.2;

“Substantial Completion Certificate” means the certificate issued to the Design-Builder by the Owner’s Consultant upon the achievement of Substantial Completion as described in this Agreement;

“Substantial Completion Date” means the date that Substantial Completion has been achieved, as set out in the Substantial Completion Certificate;

“Target Substantial Completion Date” has the meaning set out in Section 3.1; “Term” means the period commencing on the Effective Date and ending on the End Date;

“Time Schedule” means the general schedule for timing of the Work as set out in the Proposal Extracts and as updated pursuant to Section 3;

“Total Completion” has the meaning set out in Section 42.11;

“Total Completion Certificate” means the certificate issued to the Design-Builder by the Owner’s Consultant upon the achievement of Total Completion;

“Total Completion Date” means the date that Total Completion has been achieved, as set out in the Total Completion Certificate;

“Warranty Holdback” has the meaning set out in Section 41.1;

“Warranty Period” means the period defined in Section 36.1 during which the Design-Builder is required to repair any deficiencies or defects that arise in the Work;

“Work” means everything to be undertaken by the Design-Builder under this Agreement; and

“Workers’ Compensation Board” or “WorkSafe BC” means the board constituted pursuant to the *Workers Compensation Act* (British Columbia).

1.2 This Agreement includes the following schedules and all sub-schedules, appendices and attachments to those schedules.

(a) Schedule 1 – Statement of Requirements;

(b) Schedule 2 – Review Procedure;

(c) Schedule 3 – Insurance Conditions;

- (d) Schedule 4 – Communications Roles;
- (e) Schedule 5 – Key Individuals;
- (f) Schedule 6 – Schedule of Prices;
- (g) Schedule 7 – Proposal Extracts;
- (h) Schedule 8 – Cash Allowance and Statement of Work; and
- (i) Schedule 9 – Site Specific Regulations.

1.3 This Agreement will be interpreted according to the following provisions, except to the extent the context or the express provisions of this Agreement otherwise require:

- (a) no rule of law will apply that would construe this Agreement or any part of it against the party who (or whose counsel) drafted, prepared or put forward the Agreement or any part of it;
- (b) the table of contents, headings and sub-headings, marginal notes and references to them in this Agreement are for convenience of reference only, do not constitute a part of this Agreement and will not be taken into consideration in the interpretation or construction of, or affect the meaning of, this Agreement;
- (c) neither the organization of the Statement of Requirements, the Proposal Extracts or any other documents included in this Agreement into divisions, sections and parts, or the arrangement of drawings or specifications included in this Agreement will control the Design-Builder in dividing the Work among Subcontractors or in establishing the Work to be performed by a trade;
- (d) each reference to a Section or Schedule is a reference to a Section of or Schedule to this Agreement;
- (e) a Schedule includes all of the sub-schedules, appendices and other attachments attached to that Schedule;
- (f) each reference to an agreement, document, standard, principle or other instrument includes (subject to all relevant approvals and any other provisions of this Agreement expressly concerning such agreement, document, standard, principle or other instrument) a reference to that agreement, document, standard, principle or instrument as amended, supplemented, substituted, novated or assigned;
- (g) each reference to a statute or statutory provision (including any subordinate legislation) includes any statute or statutory provision which amends, extends, consolidates or replaces the statute or statutory provision or which has been amended, extended, consolidated or replaced by the statute or statutory provision and includes any orders, regulations, by-laws, ordinances, orders, codes of practice, instruments or other subordinate legislation made under the relevant statute;
- (h) each reference to time of day is a reference to Pacific Standard time or Pacific Daylight Saving time, as the case may be;
- (i) words importing the singular include the plural and vice versa;

- (j) words importing a particular gender include all genders;
- (k) each reference to a public organization is deemed to include a reference to any successor(s) to such public organization or any organization or entity or organizations or entities which has or have taken over the functions or responsibilities of such public organization;
- (l) unless the context otherwise requires, each reference to “parties” means the parties to this Agreement and each reference to a “party” means any one of the parties to this Agreement, provided however that a reference to a third party does not mean a party to this Agreement;
- (m) all monetary amounts are expressed in Canadian Dollars;
- (n) whenever this Agreement obliges a party (the “Payor”) to pay any amount to the other party (the “Payee”) in respect of any costs, expenses, fees, charges, liabilities, losses, claims or other sums incurred by the Payee:
 - (i) such obligation will be construed as applying only to so much of such sums as have been properly incurred on an arm’s length commercial basis or, where not incurred on an arm’s length commercial basis (including when the payment is made to an affiliate of the Payee), so much of them as are proper and reasonable; and
 - (ii) the Payee will, when requested by the Payor, provide supporting evidence of such costs, expenses, fees, charges, liabilities, losses, claims or other sums;
- (o) the Owner will not be imputed with knowledge of any fact, matter or thing unless that fact, matter or thing is within the actual knowledge of those of its employees or agents (including the Owner’s Representative) who have responsibilities in connection with the conduct of the Work;
- (p) without limiting the extent of its actual knowledge, the Design-Builder will for all purposes of this Agreement be deemed to have such knowledge in respect of the Work as is held (or ought reasonably to be held) by all persons involved in carrying out the Work including the Design-Builder and the Subcontractors (including the Design-Builder’s Consultant) and the officers, agents, employees or workers of any of them;
- (q) each requirement for a thing or action to be “in accordance with” or “in compliance with” any standard, code or specification or other requirement or stipulation means that such thing or action is to exceed or at least equal that standard, code, specification or other requirement or stipulation;
- (r) the words “include”, “includes” and “including” are to be construed as meaning “include without limitation”, “includes without limitation” and “including without limitation”, respectively;
- (s) the terms “will”, “shall” and “must” are synonymous and when used in relation to the Design-Builder they will be construed and interpreted as an obligation of the Design-Builder;
- (t) the Statement of Requirements includes provisions written in the imperative, and all such provisions will be construed as obligations of the Design-Builder;

- (u) when a party has “discretion”, it means that party has the sole, absolute and unfettered discretion, with no requirement to act reasonably or provide reasons unless specifically required under the provisions of this Agreement;
- (v) any consent contemplated to be given under this Agreement must be in writing;
- (w) general words are not given a restrictive meaning:
 - (i) if they are introduced by the word “other”, by reason of the fact that they are preceded by words indicating a particular class of act, matter or thing; or
 - (ii) by reason of the fact that they are followed by particular examples intended to be embraced by those general words;
- (x) words or abbreviations which have well-known technical or trade meanings are used in accordance with those meanings;
- (y) the expression “all reasonable efforts” and expressions of like import, when used in connection with an obligation of the Design-Builder, means taking in good faith and with due diligence all commercially reasonable steps to achieve the objective and to perform the obligation, including doing all that can reasonably be done in the circumstances taking into account each party’s obligations hereunder to mitigate delays and additional costs to the other party, and in any event taking no less steps and efforts than those that would be taken by a commercially reasonable and prudent person in comparable circumstances but where the whole of the benefit of the obligation and where all the results of taking such steps and efforts accrued solely to that person’s own benefit, provided that the foregoing will not require the Owner to:
 - (i) take any action which is contrary to the public interest, as determined by the Owner in its discretion; or
 - (ii) undertake any mitigation measure that might be available arising out of its status as a public body that would not normally be available to a private commercial party;
- (z) the expressions “by the Design-Builder” and “by or through the Design-Builder” and expressions of like import are synonymous and mean by the Design-Builder or by anyone employed by or through the Design-Builder, including the Design-Builder and all Subcontractors and their respective officers, agents, employees and workers;
- (aa) all accounting and financial terms used herein are, unless otherwise indicated, to be interpreted and applied in accordance with IFRS, consistently applied;
- (bb) if the time for doing an act falls or expires on a day that is not a Business Day, the time for doing such act will be extended to the next Business Day;
- (cc) each provision of this Agreement will be valid and enforceable to the fullest extent permitted by law. If any provision of this Agreement is held to be invalid, unenforceable or illegal to any extent, such provision may be severed and such invalidity, unenforceability or illegality will not prejudice or affect the validity, enforceability and legality of the remaining provisions of this Agreement. If any such provision of this Agreement is held to be invalid, unenforceable or illegal, the parties will promptly endeavour in good faith to negotiate new provisions to eliminate such invalidity, unenforceability or illegality and to restore this Agreement as nearly as possible to its original intent and effect; and

(dd) each release, waiver of liability and indemnity in this Agreement expressed to be given in favour of a party is and will be interpreted as having been given in favour of and may be enforced by that party and, in the case of the Owner, by the Indemnified Parties.

1.4 All documents forming this Agreement are complementary, and what is required by any one will be as binding as if required by all.

1.5 If there is a conflict within the documents forming this Agreement:

(a) the provisions establishing the higher quality, manner or method of performing the Work, using the more stringent standards, will prevail, with the intent that the provisions which produce the higher quality with the higher levels of safety, reliability, durability, performance and service will prevail;

(b) the order of priority of documents from highest to lowest will be:

(i) the part of this Agreement from the first page to the page with the signatures of the persons executing this Agreement;

(ii) the schedules (including appendices, sub-schedules and attachments to the schedules), except Schedule 7 – Proposal Extracts, in the order in which they are listed in Section 1.2;

(iii) Schedule 7 - Proposal Extracts;

(c) specifications will govern over drawings;

(d) drawings of a large scale will govern over those of a smaller scale of the same date;

(e) dimensions shown in drawings will govern over dimensions scaled from drawings; and

(f) later dated documents will govern over earlier dated documents of the same type.

PART B – PRICE, TIME, TERM

2. CONTRACT PRICE

2.1 The Owner will pay the Contract Price of \$ 25,100,000 plus applicable HST to the Design-Builder for performance of the Work.

2.2 The Contract Price is the entire compensation to the Design-Builder for performance of the Work.

2.3 The Contract Price is subject to adjustments as provided in this Agreement.

2.4 The Owner will pay the Contract Price to the Design-Builder as provided in this Agreement.

3. CONTRACT TIME

3.1 The Design-Builder will commence the Work within 7 days after the Effective Date and will thereafter diligently perform the Work in accordance with this Agreement and achieve Substantial Completion on or before July 29, 2014 (the "Target Substantial Completion Date") and Total Completion on or before October 14, 2014.

- 3.2 The Design-Builder will perform the Work in compliance with the time schedule set out in Proposal Extracts (the "Time Schedule") as may be modified in accordance with the terms of this Agreement.
- 3.3 If the Design-Builder fails to achieve Substantial Completion on or before the Target Substantial Completion Date and the Owner has not extended the Time Schedule in accordance with this Agreement, the Design-Builder will pay to the Owner by way of liquidated damages and not as a penalty the sum of ██████ per day for each and every day after the Target Substantial Completion Date that Substantial Completion is not achieved (or if the Owner has extended the Time Schedule in accordance with this Agreement, such other date established for the Target Substantial Completion Date). The maximum aggregate amount of such liquidated damages will be ██████ of the Contract Price. If this Agreement is terminated, the reference in this Section 3.3 to the "Contract Price" will be deemed only for purposes of this Section 3.3 to be the amount to which the Design-Builder would have been entitled if the Design-Builder had properly performed and completed the Work and this Agreement had not been terminated. The liquidated damages will be the Owner's sole claim for damages against the Design-Builder for failure to achieve Substantial Completion by the Target Substantial Completion Date. The liquidated damages will not relieve the Design-Builder from its obligation to complete the Work or from any other duties, obligations or responsibilities of the Design-Builder under this Agreement, and will not limit the Owner's rights to terminate this Agreement for default of the Design-Builder under this Agreement.
- 3.4 The Owner and the Design-Builder agree that the amount in Section 3.3 represents a genuine pre-estimate of the damages and expenses that the Owner is likely to incur for such failure to meet the Target Substantial Completion Date for the Work and both parties expressly agree that such amount is not a penalty. The Owner may in its discretion either deduct the daily sums in respect of liquidated damages from the Performance Holdbacks or any amounts payable to the Design-Builder under this Agreement or may require payment thereof by the Design-Builder on demand.

4. TERM

- 4.1 With the exception of provisions that are expressly stated to survive the End Date, this Agreement is effective for the period commencing on the Effective Date and ending on the date (the "End Date") that all of the following conditions are fulfilled:
- (a) the Design-Builder and the Owner have performed all obligations required under this Agreement;
 - (b) the Total Completion Certificate has been issued in accordance with Section 42.12; and
 - (c) the Design-Builder has fulfilled all of its obligations pursuant to Section 36 (Warranty).

5. REPRESENTATIVES, KEY PERSONNEL AND OWNER'S CONSULTANT

- 5.1 Within 7 days after the Effective Date, the Owner will give written notice to the Design-Builder designating its representative for the purposes of this Agreement (the "Owner's Representative"). The Owner will give written notice to the Design-Builder of any change of the Owner's Representative. The Owner or the Owner's Representative may by written notice delegate any or all of the functions of the Owner's Representative to any other person, including for a specified period of time in the absence of the Owner's Representative.
- 5.2 The representative of the Design-Builder for the purposes of this Agreement (the "Design-Builder's Representative") will be the person designated as such in Schedule 5 – Key Individuals, unless otherwise agreed by the Owner. The Design-Builder's Representative may by written

notice delegate any or all of the functions of the Design-Builder's Representative to any other person, including for a specified period of time in the absence of the Design-Builder's Representative.

- 5.3 The Design-Builder's Representative will represent the Design-Builder at the Site and written notices and instructions given to the Design-Builder's Representative by the Owner will be deemed to have been given to the Design-Builder.
- 5.4 With respect to each of the Key Individuals, including the Design-Builder's Representative:
- (a) the Design-Builder will use all reasonable efforts to retain the Key Individual to perform the role described in Schedule 5 – Key Individuals; and
 - (b) if for any reason any Key Individuals resigns or is otherwise unavailable to perform the role described in Schedule 5 – Key Individuals then the Design-Builder will use all reasonable efforts to retain a replacement with similar expertise and experience to the unavailable Key Individuals, satisfactory to the Owner acting reasonably, and the Design-Builder will not replace such Key Individual without the Owner's consent, acting reasonably.
- 5.5 The Owner will engage the Owner's Consultant and the Owner's Consultant's services, duties and responsibilities will include:
- (a) the determining of amounts owing to the Design-Builder based on the Owner's Consultant's observations and evaluations of the Design-Builder's applications for payment;
 - (b) the issuance of certificates of payment;
 - (c) the interpretation, in the first instance, of the requirements of this Agreement and the making of findings as to the performance hereunder by both the Owner and the Design-Builder without showing partiality to either the Owner or the Design-Builder, and in no event incurring liability for the result of such interpretations or findings rendered in good faith in such capacity;
 - (d) the interpretation and finding, in the first instance, of Disputes;
 - (e) assisting the Owner with compliance team services, including assisting with review of the Design;
 - (f) the rejecting of Work which does not conform to the requirements of this Agreement;
 - (g) the requiring of testing and inspection of the Construction by the Owner's Consultant, whether or not such Construction has been fabricated, installed, or completed;
 - (h) the determining of the dates of substantial performance under the *Builders Lien Act* (British Columbia), Substantial Completion and Total Completion and the issuing of certificates for same;
 - (i) the verification of the Design-Builder's applications for release of the Performance Holdbacks;

- (j) the reviewing of any defects or deficiencies in the Work at Substantial Completion and during the Warranty Period and the issuance of appropriate instructions for the correction of same; and
- (k) such other work that may be required by the Owner from time to time and that is acceptable to the Owner's Consultant.

5.6 If the Owner's Consultant's engagement is terminated, the Owner will engage a new Owner's Consultant to provide the Owner's Consultant's services. The Owner will notify the Design-Builder in writing before appointing a new Owner's Consultant and the Owner will not appoint any person to be the new Owner's Consultant to whom the Design-Builder may reasonably object.

PART C - THE WORK

6. GENERAL

- 6.1 The Design-Builder will perform the Work in accordance with the requirements of this Agreement, including Schedule 1 – Statement of Requirements.
- 6.2 The Design-Builder will perform and provide all professional design services, construction administration and construction work and all labour, services, products, materials, tools, water, heat, light, power, transportation, equipment, machinery and other facilities and services and everything else necessary for the performance of the Work.

7. TIME SCHEDULE

- 7.1 The Design-Builder will submit for review by the Owner, by no later than 14 days after the Effective Date and, in any event, before the Owner is required to make the first payment, a Time Schedule consistent with the form of Time Schedule included in the Proposal Extracts.
- 7.2 The Design-Builder will ensure that the Time Schedule will be consistent with and meet all applicable requirements of this Agreement, including the Target Substantial Completion Date and the date required for Total Completion.
- 7.3 The Design-Builder will submit for review by the Owner an updated Time Schedule at intervals of 1 month, reflecting progress to date and including a comparison to the previously submitted Time Schedule, the reasons for any changes from the previous Time Schedule and a forecast to achieving Substantial Completion of the Work and Total Completion of the Work.
- 7.4 If, at any time the actual progress of the Work does not materially conform with the Time Schedule, the Design-Builder will:
 - (a) submit to the Owner a report identifying the reasons for such non-conformity; and
 - (b) submit to the Owner a revised Time Schedule, that meet all applicable requirements of this Agreement and provide for the Work to be pursued diligently to Substantial Completion and Total Completion.

8. CONTROL AND SUPERVISION OF THE WORK

- 8.1 The Design-Builder will effectively direct and supervise the Work using its best skill and attention. The Design-Builder will be solely liable and responsible for all design and all construction means, methods, techniques, sequences and procedures with respect to the Work, and for coordinating all parts of the Work under this Agreement and for coordinating the Work with work of

Subcontractors and of Other Contractors and in accordance with generally accepted management and supervisory practices in British Columbia.

- 8.2 The Design-Builder will have the sole responsibility for the design, erection, operation, maintenance and removal of temporary structures and other temporary facilities and the design and execution of construction methods required in their use. The Design-Builder will engage and pay for Professional Engineers and Architects to perform these functions where required by Law, and in all cases where such temporary facilities and their method of construction are of such a nature that the education, training and qualifications of the Architect or Professional Engineer are required to produce safe and satisfactory results.
- 8.3 The Design-Builder will execute the Work in a continuous and diligent manner, and perform all its obligations in conformance with this Agreement, including the Project Management Plan and the Time Schedule.
- 8.4 Unless otherwise stated in this Agreement, the Design-Builder will perform the Work at the times, in the order of procedure and in the manner and method that the Design-Builder considers appropriate provided such Work is in conformance with this Agreement, including the Project Management Plan, Site Plan and the Time Schedule.
- 8.5 The Design-Builder will employ a competent construction manager, and necessary assistants, at the Site at all times during the progress of the Work.
- 8.6 The Design-Builder will employ or cause the Subcontractors to employ a sufficient number of sufficiently skilled workers to perform the Construction in compliance with this Agreement.
- 8.7 The Design-Builder will at all times maintain good order and discipline among its employees engaged on the Work.
- 8.8 Before commencing the Work, the Design-Builder will:
- (a) purchase and deliver the Bonds as set out in Section 58 (Bonds) to the Owner; and
 - (b) file with the Owner certificates of all insurance policies and necessary endorsements to comply with the Insurance Conditions.
- 8.9 The Design-Builder will not perform any Construction on the Site prior to the Site Occupation Date and will not commence any Construction until the Design-Builder has submitted a Design for that portion of the Work to be constructed that is in conformance with this Agreement, submitted to the Owner under the Review Procedure and that the Design-Builder is entitled to proceed with under the Review Procedure.
- 8.10 If agreed to in writing by the Owner, the Design-Builder may perform necessary limited investigative and preparatory activities on the Site prior to the Site Occupation Date.

9. QUALITY MANAGEMENT

- 9.1 The Design-Builder is solely responsible for the quality of the Work and will diligently implement its Quality Management Plan.
- 9.2 The Design-Builder will establish, implement and submit for the review by the Owner, by no later than 30 days after the Effective Date, a Quality Management Plan consistent with the form of Quality Management Plan included in the Proposal Extracts and the requirements of this Section 9. The Design-Builder will perform the Work in accordance with, and meet the requirements of, the Quality Management Plan.

- 9.3 The Quality Management Plan will:
- (a) meet all applicable requirements of this Agreement;
 - (b) outline the procedures to be implemented to ensure robust and thorough quality control and quality assurance by the Contractor and its Subcontractors;
 - (c) clearly indicate the processes, testing, certification and auditing that will be performed to verify all parts of the Work comply with this Agreement;
 - (d) clearly indicate the timing of the elements of the Quality Management Plan and the documentation to demonstrate compliance that will be obtained by the Contractor and its Subcontractors and provided to the Owner;
 - (e) include all processes, testing, certification, auditing and documentation reasonably required by the Owner's Consultant; and
 - (f) ensure that the Work will meet the requirements of this Agreement;
- 9.4 The Design-Builder will not commence any Construction until:
- (a) the quality control and quality assurance procedures applicable to that part of the Work have been developed and included in the Quality Management Plan and the Design-Builder is entitled to proceed with the Quality Management Plan in accordance with the Review Procedure; and
 - (b) such quality control and quality assurance procedures are fully implemented by the Design-Builder.
- 9.5 The Design-Builder will not commence any Construction until the quality control and quality assurance procedures applicable to that part of the Work have been developed and included in the Quality Management Plan and are fully implemented by the Design-Builder.
- 9.6 The Owner may at any time audit the Quality Management Plan and its implementation and may, at the Owner's expense, carry out independent quality control testing at any time.
- 9.7 Nothing in this Section 9 and no review, audit, inspection, acceptance, comment, approval, action or inaction by the Owner, the Owner's Representative, the Owner's Consultant or any person on behalf of the Owner or by or on behalf of any governmental authority will derogate from or relieve the Design-Builder from its obligations under this Agreement including sole responsibility for the quality of the Work, the Quality Management Plan and implementation of the Quality Management Plan.
- 9.8 The Owner, the Owner's Representative, the Owner's Consultant and other persons designated by the Owner will have access to the Work at all times at the Site and wherever the Work is in preparation or progress and the Design-Builder will provide reasonable facilities for such access.
- 9.9 If any of the Work requires tests, inspections or approvals by this Agreement, or by the written instructions of the Owner or the Owner's Consultant, or by applicable Laws, the Design-Builder will give the Owner reasonable notice of when such Work is ready for review and inspection. The Design-Builder will arrange for and will give the Owner reasonable notice of the date and time of inspections by any governmental authorities.

- 9.10 The Design-Builder will furnish promptly to the Owner, on request, a copy of certificates and inspection reports relating to the Work.
- 9.11 If the Design-Builder covers, or permits to be covered, Work that has been designated for tests, inspections or approvals before such tests, inspections or approvals are made, given or completed, the Design-Builder will, if so directed, uncover such Work, have the inspections or tests satisfactorily completed, and make good the covering work at the Design-Builder's expense.
- 9.12 Subject to Section 9.11, the Owner may order any portion or portions of the Construction to be examined to confirm that such Construction is in accordance with the requirements of this Agreement. If the Construction is not in accordance with the requirements of this Agreement, the Design-Builder will correct the Construction and pay the cost of examination and correction. If the Construction is in accordance with the requirements of this Agreement, the Owner will pay all costs incurred by the Design-Builder as a result of such examination and the restoration of the Construction.
- 9.13 If the results of any testing or other aspect of the Quality Management Plan or implementation of the Quality Management Plan disclose that any part of the Work is incomplete or defective in any way, the Design-Builder will immediately complete that part of the Work or correct the defect at its own expense.
- 9.14 Prior to Total Completion, the Design-Builder will deliver to the Owner all tests and results taken and generated by the implementation of the Quality Management Plan.
- 9.15 The Design-Builder will permit access to the Site and to the Design and the Construction to persons designated by the Owner including persons representing other governmental authorities.

10. LEED GOLD CERTIFICATION

- 10.1 The Design-Builder will obtain LEED Gold Certification of the Facility in accordance with the following:
- (a) The Design-Builder will register the Facility with the CaGBC by or on behalf of the Owner.
 - (b) The Design-Builder will, subject to this Section 10, achieve all necessary prerequisites, credits and points under the LEED Rating System required to achieve the LEED Gold Certification and may in its discretion determine which of the credits and points to pursue, except that the Design-Builder will achieve the following LEED credits/points:
 - (i) Water Efficiency Credit 3 – Water Use Reduction: Use 40% Less Water Than The Baseline For The Building (4 Points);
 - (ii) Energy and Atmosphere Credit 1 – Optimize Energy Performance: 38% Energy Cost Savings Relative To ASHRAE 90.1 2007 Baseline (14 points);
 - (iii) Energy & Atmosphere Credit 3 – Enhanced Commissioning (2 points);
 - (iv) Energy & Atmosphere Credit 5 – Measurement And Verification: Base Building (3 points);
 - (v) Materials and Resources Credit 4 – Recycled Content: Sum Of Post-Consumer Recycled Content Plus ½ Of The Pre-Consumer Content Constitutes At Least 10% Based On Costs (1 point);

- (vi) Materials and Resources Credit 5 – Regional Materials: 20% Of Building Materials Or Products Have Been Extracted, Harvested, Recovered And Possessed Within 800km (2,400 km If Shipped By Rail Or Water) Of The Final Manufacturing Site (1 point);
 - (vii) Indoor Environmental Quality Credit 4.1-4.4 – Low-Emitting Materials: Adhesives And Sealants, Paints And Coatings, Flooring Systems, Composite Wood And Agrifiber Products (4 points); and
 - (viii) Regional Priority Credit 1 Durable Building (1 point).
- (c) If at any time after the Effective Date the requirements to achieve LEED Gold Certification under the LEED Rating System change and the Design-Builder is required to comply with such change in order to achieve LEED Gold Certification for the Facility, then the Design-Builder will forthwith notify the Owner of such change and such change will be a Change. For greater certainty, the Design-Builder will not be entitled to a Change for a change at the option of the Design-Builder from version LEED Canada 2009 to another version of the LEED Rating System.
- (d) The Design-Builder will compile and submit the required documents for certification.
- (e) If for any reason the Design-Builder fails to achieve 14 points in Energy and Atmosphere Credit 1 as required by Section 10.1(b)(ii) for the Facility within 24 months of the Substantial Completion Date (subject to any delays caused by Force Majeure), then the Design-Builder will, upon written demand from the Owner, and in addition to any payment owing under Section 10.1(f), immediately pay to the Owner [REDACTED];
- (f) If for any reason the Design-Builder fails to obtain LEED Gold Certification for the Facility within 24 months of the Substantial Completion Date (subject to any delays caused by Force Majeure), then the Design-Builder will, upon written demand from the Owner, and in addition to any payment owing under Section 10.1(e), immediately pay to the Owner [REDACTED].
- (g) Upon payment of amounts, if any, owing under this Section 10 the Design-Builder will have no further obligations in respect of obtaining LEED Gold Certification, except to provide the Owner with such information and administrative assistance as the Owner may reasonably require in relation to obtaining LEED Gold Certification, and for greater certainty the failure to obtain LEED Gold Certification will not be a default by the Design-Builder under this Agreement.
- (h) The Owner and the Design-Builder expressly agree that the amounts payable from the Design-Builder in this Section 10 are liquidated damages that represent a genuine pre-estimate of the damages and expenses that the Owner is likely to incur for such failure to achieve the LEED credits/points specified in Section 10.1(b) and LEED Gold Certification and both parties expressly agree that such amounts are not a penalty.
- 10.2 As a condition of Substantial Completion the Design-Builder will deliver to the Owner:
- (a) a LEED project checklist, generally in accordance with CaGBC requirements, together with a written confirmation that, in the Design-Builder's judgment:
 - (i) the LEED credits/points specified in Section 10.1(b) will be achieved for the Facility; and

(ii) LEED Gold Certification will be achieved for the Facility as required by Section 10; and

(b) a written opinion from a LEED accredited professional supporting the confirmation described in Section 10.2(a) above.

11. NOT USED

12. NOT USED

13. PRE-CONSTRUCTION SURVEY

13.1 The Design-Builder will:

(a) prior to the start of any Construction, conduct a pre-Construction survey of existing buildings, roadways, services, infrastructure and adjacent properties, in a form and detail satisfactory to the Owner, acting reasonably, which will without limitation include field observations and photographs of existing conditions, with spot elevations by a British Columbia Land Surveyor (BCLS) registered surveyor at locations that will be accessible throughout and following Construction for ongoing settlement monitoring, and deliver a copy of the pre-Construction survey report to the Owner; and

(b) re-survey the spot elevations at regular intervals throughout Construction and at 24 months following Substantial Completion to determine ongoing long-term settlement effects, and deliver monitoring surveys to the Owner in a form and detail satisfactory to the Owner, acting reasonably.

13.2 The Design-Builder will protect the Work, the Site and property adjacent to the Site from settlement, will be responsible for all settlement caused by the Work, by the Design-Builder and the Subcontractors and the Facility from and after the Effective Date and will make good all damage to the Work, the Site and property adjacent to the Site at its own expense or pay all costs incurred by the Owner or others in making good such damage. Nothing in this Section 13.2 limits the responsibility of the Design-Builder to take into account in the Design and Construction possible post-Warranty Period settlements and to take measures to minimize such settlement.

14. EQUIPMENT & FURNISHINGS

14.1 Without limiting the requirements of the Statement of Requirements in respect of equipment and furnishings, the Design-Builder will complete the Design and Construction to integrate and accommodate all equipment in the Facility, including all required electrical and plumbing connections, structural support, seismic restraints and space for efficient access, all to the tolerances and specifications as may be specified and required by the manufacturers or vendors of the equipment (which may be of a higher standard than specified in this Agreement). The Design-Builder will include equipment and furnishings as part of the development of Design under this Agreement.

15. REVIEW PROCEDURE

15.1 The Review Procedure will apply to all Submittals and the parties will comply with the requirements of that Schedule.

16. GENERAL DESIGN REQUIREMENTS

- 16.1 The Design-Builder is responsible for the means, methods, techniques, sequences and procedures necessary to properly complete the Design in conformance with this Agreement, including the Project Management Plan and the Time Schedule.
- 16.2 The Design-Builder:
- (a) will ensure that the Work including the Design is fully compliant with all requirements of this Agreement and all Laws; and
 - (b) will perform and complete the Design and the Work so as to provide the completed Project that is fit for the intended uses as described in the Statement of Requirements.
- 16.3 The Design-Builder will:
- (a) cause all portions and aspects of the Drawings and Specifications to be prepared under the direction of, and to be sealed under the professional seal of, the Design-Builder's Consultant;
 - (b) cause the Design-Builder's Consultant to confirm to the Owner, under his or her professional seal (if applicable), that in the opinion of the Design-Builder's Consultant:
 - (i) the Drawings and Specifications implement and otherwise conform to the Statement of Requirements;
 - (ii) the Drawings and Specifications implement and otherwise conform to the Proposal Extracts;
 - (iii) the Drawings and Specifications have been prepared in accordance with, and substantially comply with, all Standards; and
 - (iv) the Design-Builder's Consultant has carried out the general reviews of the progress of the Construction, to the extent necessary, in order to determine to the Design-Builder's Consultant's satisfaction that the Construction is performed in general conformity with the requirements of the Agreement, the Drawings and Specifications and applicable Laws; and
 - (c) provide the Owner and all applicable governmental authorities with all letters of professional assurance as required pursuant to applicable Laws.
- 16.4 The Design-Builder will not construct any part of the Work that is not based on the most recent Drawings and Specifications or that does not meet the Statement of Requirements and other requirements of this Agreement. To the extent that the Drawings and Specifications conflict with, modify or deviate from the Statement of Requirements and other requirements of this Agreement, the Design-Builder will revise the Drawings and Specifications and submit them to the Owner under the Review Procedure.
- 16.5 The Design-Builder will make, or cause the Design-Builder's Consultant to make, any revisions to the Drawings or Specifications as are necessary from time to time due to Changes and, for clarity, the Design-Builder will comply with Section 16.3 with respect to any such revisions.
- 16.6 Nothing in this Section 16, or otherwise in or under this Agreement, makes the Owner, the Owner's Representative, the Owner's Consultant or any other person on behalf of the Owner

responsible for the Design of the Project, including compliance of the Drawings and Specifications with the Statement of Requirements and all Standards, and the Design-Builder will, notwithstanding any review or acceptance under the Review Procedure or this Section 16 or other act of the Owner, remain solely liable and responsible for compliance of the Drawings and Specifications with the Statement of Requirements and all Standards.

16.7 Without limiting any of the obligations of the Design-Builder under this Agreement, the duties and responsibilities of the Design-Builder with respect to the Design include:

- (a) review of the documents, reports, drawings, Statement of Requirements and other information provided by the Owner and reporting promptly to the Owner any error, inconsistency or omission the Design-Builder may discover;
- (b) preparation of a Design that meets the Statement of Requirements, all Standards, all Laws, and all terms of this Agreement;
- (c) the coordination required to integrate all parts of the Design in the Work;
- (d) preparation of all reports, documents, information, schemes and presentation materials as required by this Agreement;
- (e) inspecting the progress of the Construction in order to determine that the Work is in compliance with the requirements of the Design, Specifications, all Standards and all terms of this Agreement;
- (f) liaising with the Owner and local authorities having jurisdiction as required during the Design and Construction and providing copies of all correspondence with such local authorities to the Owner; and
- (g) providing all required assurances to local authorities having jurisdiction respecting substantial conformance of the Design with all Standards and as may be required for the issuance of or compliance with any permits, licenses or approvals.

16.8 The Design-Builder will ensure that the Design-Builder's Consultant and all other architects, engineers and other professionals performing professional services related to the Design fulfill their duties and responsibilities to the standard of diligence, skill and care that such persons would customarily provide in accordance with their professional and legal obligations in similar circumstances and in the same general geographic location as the Site. Any failure by any of the Design-Builder's Consultants or other architects, engineers or professionals performing professional services in relation to the Design will not relieve the Design-Builder of any responsibility for ensuring that the Work is carried out in conformance with this Agreement including the Statement of Requirements, the Design and all Standards.

16.9 If the Design-Builder's Consultant's engagement is terminated, the Design-Builder will engage a new Design-Builder's Consultant to provide the Design. The Design-Builder will notify the Owner in writing before appointing or re-appointing the Design-Builder's Consultant, and the Design-Builder will not appoint any Design-Builder's Consultant to whom the Owner may reasonably object.

17. DESIGN PROCESS

17.1 Unless otherwise agreed by the Owner, the Design-Builder will submit Drawings and Specifications and supporting information to the Owner for review under the Review Procedure at the following Design stages:

- (a) schematic design;
 - (b) design development;
 - (c) pre-tender Drawings and Specifications; and
 - (d) 100% "issued for construction" Drawings and Specifications.
- 17.2 Within 30 days after the Effective Date, the Design-Builder will deliver to the Owner the schematic design Drawings and Specifications for the Project.
- 17.3 After review of the Submittal at the pre-tender Drawings and Specifications stage by the Owner, the Design-Builder will finalize and complete "issued for construction" Drawings and Specifications. The Design-Builder will provide 5 copies of the final "issued for construction" Drawings and Specifications, and any revisions, to the Owner together with a certificate from the Design-Builder's Consultant that the "issued for construction" Drawings and Specifications conform to the requirements of this Agreement and Submittals from the pre-tender Drawings and Specifications stage (including to address comments received from the Owner). The Design-Builder will provide the Drawings and Specifications on CD in AutoCAD DXF, AutoCAD DWG and Adobe PDF format acceptable to the Owner, acting reasonably.
- 17.4 Without limiting the generality of Section 17.1, each of the Submittals in this Section 17 must be formatted in a manner and contain detail that is satisfactory to the Owner. The Submittals must have clearly identified sections for:
- (a) architectural design;
 - (b) site development and landscaping;
 - (c) structural design;
 - (d) mechanical design;
 - (e) code equivalences
 - (f) electrical design; and
 - (g) sustainable design.
- 17.5 Each of the Submittals in this Section 17 must contain:
- (a) 5 sets of Drawings at 50% scale and 1 set of Drawings at full scale;
 - (b) 5 sets of Specifications;
 - (c) 5 sets of supporting material (such as: code analysis, energy cost models, acoustic design reports, correspondence, etc.);
 - (d) relevant design calculations and material specifications;
 - (e) reports showing the Design decision process, criteria and assumptions used to develop the Design;
 - (f) at the schematic design stage, exterior perspectives;

- (g) at the design development stage, interior perspectives;
 - (h) at the design development stage, all drawings and design;
 - (i) any other information the Design-Builder determines will assist the Owner (such as: models or three-dimensional renderings);
 - (j) a certificate from the Design-Builder's Consultant that the Drawings and Specifications conform to the requirements of this Agreement; and
 - (k) any other information that the Owner may reasonably request.
- 17.6 The Design-Builder will also comply with any requirements set out in the Statement of Requirements in relation to the stages and process for Design, including with respect to meetings, presentations, mock-ups and user groups.

18. OWNERSHIP OF DOCUMENTS

- 18.1 The Design-Builder acknowledges and agrees that this Agreement contains intellectual property that is protected by copyright and that this intellectual property is intended to be used solely for the purposes of the Project. The Design-Builder will obtain prior written permission and will require the Design-Builder's Consultant and any other Subcontractors to obtain prior written permission for any other use.
- 18.2 Copyright for the Design and Drawings belongs to the Design-Builder, the Design-Builder's Consultant or other consultants who prepared them.
- 18.3 Plans, sketches, Drawings, graphic representations and Specifications, including computer generated designs, when prepared by the Design-Builder's Consultant or other consultants are instruments of their service and will remain their property whether the construction for which they are made is executed or not.
- 18.4 Submission or distribution of the Design-Builder's Consultants' or other consultants' plans, sketches, Drawings, graphic representations and Specifications to meet official regulatory requirements or for other purposes in connection with the Work is not to be construed as publication in derogation of their reserved rights.
- 18.5 The Owner may retain copies, including reproducible copies, of all plans, sketches, Drawings, graphic representations and Specifications and other material including the Record Drawings. The Design-Builder hereby grants to the Owner an irrevocable licence to use the Design and any and all such material for any purpose related to the use and ownership of the Facility, including any renovations, additions or alterations to the Facility) , for completion of any Work in the event of termination of this Agreement and for reference purposes in connection with other operations, projects and facilities of the Owner. Such licence may be sublicensed or assigned, at the discretion of the Owner, to any third party who has or may acquire an interest or obligation related to the Facility, including for any facilities maintenance, life cycle repair/replacement or other services to the Owner or others in relation to the Facility. The Design-Builder at the Owner's request, and prior to any payment after such request is made, will deliver to the Owner a consent and acknowledgement signed by the Design-Builder's Consultant confirming such licence.
- 18.6 Models and renderings furnished by the Design-Builder are the property of the Owner.

19. ERRORS IN DESIGN

- 19.1 The Design-Builder is responsible for the Design, including all errors, omissions or deficiencies in the Design.
- 19.2 The Design-Builder will give written notice to the Owner immediately upon becoming aware of any error, omission or deficiency in the Design.
- 19.3 The Design-Builder will remedy at its own cost any error, omission or deficiency identified in the Design, including any resulting error, omission or deficiency in the Design that results in defects or deficiencies in any part of the Construction that has been commenced or completed. The Design-Builder will ensure that such remediation will conform to the requirements of this Agreement.

20. LABOUR AND PRODUCTS

- 20.1 Unless otherwise expressly provided in this Agreement, the Design-Builder will provide and pay for all labour, products, materials, tools, equipment, machinery, water, heat, light, power, transportation and all other facilities, things and services (including services for Design) necessary for the performance of the Work in accordance with this Agreement.
- 20.2 All products, materials, equipment and machinery provided will be new unless otherwise expressly specified in this Agreement.

21. SUBCONTRACTS

- 21.1 The Design-Builder will preserve and protect the rights of the Owner under this Agreement with respect to any Work to be performed by a Subcontractor, so that the subcontracting does not prejudice the Owner's rights under this Agreement.
- 21.2 The Design-Builder will be responsible to the Owner for the performance of all Subcontractors and will require the Subcontractors to perform their work in accordance with the terms and conditions of this Agreement.
- 21.3 The Design-Builder will be as fully responsible to the Owner for acts and omissions of Subcontractors and of persons directly or indirectly employed by them as for the acts and omissions of persons directly employed by the Design-Builder.
- 21.4 Nothing contained in this Agreement will create any contractual relationship between the Owner and any Subcontractors or their officers, agents, employees or workers.
- 21.5 The Design-Builder will require every Subcontractor to observe the terms of this Agreement so far as they apply to that portion of the Work to be performed directly or indirectly by that Subcontractor. The Design-Builder will require that the terms of this Agreement that are applicable to the portion of the Work to be performed by a Subcontractor will form part of that Subcontract.
- 21.6 The Design-Builder will require that every Subcontract for designers and Subcontractors require such designers and Subcontractors, where requested by either the Owner or the Design-Builder, to attend any Dispute resolution process including discussions, negotiations, mediation or arbitration between the Design-Builder and the Owner; provide frank, candid and timely disclosure of relevant information and documentation; and, bona fide negotiations to resolve such Disputes.

22. OTHER CONTRACTORS

- 22.1 The Owner reserves the right to enter into separate contracts with Other Contractors in relation to the Project or to perform work itself. The Design-Builder will cooperate with and coordinate the Work with all concurrent construction activities by the Owner or Other Contractors on the Site or adjacent to the Site. Work by the Owner or Other Contractors may include utilities and municipal services construction that may be undertaken by another agency within or adjacent to the Site.
- 22.2 The Design-Builder will:
- (a) coordinate the Work with that of Other Contractors and connect the Work with the work of Other Contractors as applicable; and
 - (b) ensure that performance of the Work is carried out in accordance with the Time Schedule so that Other Contractors are not delayed in their work
- 22.3 The Design-Builder will promptly report to the Owner any apparent deficiencies in Other Contractors' work that could affect the Work as soon as they come to the Design-Builder's attention, and will confirm such report in writing promptly.
- 22.4 Where a Change is required as a result of the coordination and connection of the work of Other Contractors or the Owner with the Work, the Changes will only be made as provided in Section 45 (Changes).
- 22.5 The Owner will require Other Contractors to coordinate and schedule their construction activities at the Site in accordance with the reasonable instructions of the Design-Builder acting as prime contractor that are applicable to health and construction safety at the Site and that are in accordance with the *Workers Compensation Act* (British Columbia).
- 22.6 The Design-Builder acknowledges that other persons working at the Site may be union or non-union. The Design-Builder will comply with all requirements of the Owner in respect of labour relations and the Design-Builder will take all reasonable precautions to avoid labour disruptions caused or contributed to by the Design-Builder, its Subcontractors or any persons performing the Work.
- 22.7 The Owner will assure, where possible, that Other Contractors are bound to equivalent terms as those found in Section 21.

23. ACCESS TO AND USE OF SITE

- 23.1 Subject to the Site Plan, the Phasing Plan and any limitations in this Agreement, the Owner grants to the Design-Builder a licence to enter and be upon the Site from the Site Occupation Date until Substantial Completion to perform the Work that is required to be performed on the Site, provided however that for Construction, the Design-Builder shall not proceed on Site until issuance of the Notice to Proceed (excluding limited ability to proceed with investigation and preparatory activities as permitted by the Owner, acting reasonably). After Substantial Completion, the Owner will provide access to the Site as reasonably required for completion of the Work, taking into account the Owner's use and occupancy of the Facility.
- 23.2 The Design-Builder will:
- (a) limit its activities to within the Site unless the Design-Builder obtains permission to occupy or use other lands; and

- (b) obtain any construction easements and permits that may be required for construction of the Project. When requested to do so by the Design-Builder, the Owner may at its discretion provide reasonable assistance to the Design-Builder in obtaining such construction easements and permits required for the construction of the Project but, in no circumstance will the Owner be required to incur any costs or make any payments pursuant to this section.

23.3 The Design-Builder will:

- (a) not remove or disturb trees or other vegetation for purposes of the Work, including for the purpose of providing a lay down area unless the trees and other vegetation are restored with trees and other vegetation of similar size and kind and in accordance with any applicable City of Prince George Bylaws, regulations, or instructions and the Statement of Requirements. The Design-Builder will obtain any required tree cutting permits; and
- (b) rehabilitate all construction lay down areas to a standard not less than that observed for pre-existing conditions before Site Occupation Date and recorded in the pre-construction survey to be prepared in accordance with Section 13.1(a).

23.4 The Design-Builder acknowledges that no parking is available at the Site and agrees that the Design-Builder, the Subcontractors and their respective workers will not park on public streets within a 1km radius of the Site. The Design-Builder will use reasonable efforts to provide temporary parking or other alternate transportation solutions for workers.

24. SIGNAGE

24.1 The Design-Builder may erect signage at the Site during Construction to identify the Design-Builder and Subcontractors provided such signs are acceptable to the Owner, acting reasonably.

25. USE OF SITE

25.1 The Design-Builder will confine its construction machinery and equipment, tools, storage of materials and products, and the operations of workers to limits indicated in the Site Plan or by or under all Laws, and will not unreasonably encumber the Site or other activities on the Site.

25.2 The Design-Builder will enforce the Owner's policies, procedures and instructions, including regarding parking, safety, harassment, fires, smoking, signs and advertisements.

25.3 The Design-Builder will not load or permit to be loaded any part of the Construction with a weight or force that endangers the safety of the Project.

25.4 The Design-Builder will ensure that the Work does not adversely impact the ongoing operations of the Owner, or any person on behalf of the Owner, near or adjacent to the Site.

25.5 The Design-Builder will confirm the location of all utilities and ensure that all of its labour force, employees, Subcontractors and any other workers at the Site:

- (a) are made aware of the location of all utilities in connection with the Project and the importance of avoiding damage to those underground utilities;
- (b) observe any instructions in connection with those utilities issued by the Owner on behalf of any applicable utility owners; and
- (c) protect all such utilities.

26. CONDITIONS AT SITE/DISCLOSED DATA

26.1 The Design-Builder acknowledges and agrees that:

- (a) it has received a copy of all Site Reports;
- (b) it has had the opportunity to undertake examinations and investigations of the Site in order to satisfy itself as to Site conditions and the impact they could have on any or all of the Work (including Design and Construction), Contract Time and Contract Price;
- (c) only objective geotechnical data provided in the Site Reports can be relied upon for accuracy (subject to any qualifications or conditions set out in such information or this Agreement) but such data cannot be relied upon for sufficiency, relevancy or interpretation;
- (d) neither the Owner, the Owner's Representative, the Owner's Consultant nor any other person on behalf of the Owner is in any way responsible or liable for the completeness, interpretation or accuracy of the Site Reports (except accuracy of objective geotechnical data identified in Section 26.1(c)) or for any variation between Site conditions actually encountered by the Design-Builder and those set out in the Site Report; and
- (e) subject to Sections 26.3, 27 and 28, the Design-Builder is not entitled to any adjustment in the Contract Time or Contract Price, or to any other remuneration, compensation or damages whatsoever, in any way connected with Site conditions.

26.2 It is the Design-Builder's responsibility to have conducted its own analysis and review of the Project and, before the execution of this Agreement, to have taken all steps it considers necessary to satisfy itself as to the accuracy, completeness and applicability of any Disclosed Data upon which it places reliance and to assess all risks related to the Project. Except with respect to the accuracy of objective geotechnical data identified in Section 26.1(c), the Design-Builder will not be entitled to and will not make (and will ensure that no Subcontractor makes) any claim against the Owner or any Indemnified Party, whether in contract, tort or otherwise including any claim in damages for extensions of time or for additional payments under this Agreement on the grounds:

- (a) of any misunderstanding or misapprehension in respect of the Disclosed Data;
- (b) that the Disclosed Data was incorrect or insufficient; or
- (c) that incorrect or insufficient information relating to the Disclosed Data was given to it by any person other than the Owner,

nor will the Design-Builder be relieved from any obligation imposed on or undertaken by it under this Agreement on any such ground.

26.3 If the Design-Builder is delayed in performing the Work as a result of inaccuracy in the objective geotechnical data provided in the Site Report, the Design-Builder's entitlement to an extension of the Contract Time and reimbursement of costs will be determined in accordance with Section 49. If the Design-Builder is not delayed in performing the Work but incurs additional costs as a result of inaccuracy in the objective geotechnical data provided in the Site Report, adjustment in the Contract Time or the Contract Price will be agreed upon or determined in accordance with Section 46 (Valuation and Certification of Changes).

27. ARCHAEOLOGICAL ITEMS

- 27.1 Upon discovery at the Site of any fossils, remains, coins, articles of value or antiquity, including all heritage objects (as defined in the *Heritage Conservation Act* (British Columbia)), the Design-Builder will:
- (a) immediately notify the Owner;
 - (b) take all steps not to disturb the item Items and, if necessary, stop Construction to the extent required if performing the Construction would endanger the object or prevent or impede its excavation;
 - (c) take all necessary steps to preserve the item in the same position and condition in which it was found; and
 - (d) comply with all Laws and regulations and all requirements of governmental authorities with respect to such discovery including pursuant to the *Heritage Conservation Act* British Columbia).
- 27.2 If the Design-Builder is delayed in performing the Work taking steps required under Section 27.1, the Design-Builder's entitlement to an extension of the Contract Time and reimbursement of costs will be determined in accordance with Section 49. If the Design-Builder is not delayed in performing the Work but incurs additional costs as a result of taking steps required under Section 28.1, adjustment in the Contract Time or the Contract Price will be agreed upon or determined in accordance with Section 46 (Valuation and Certification of Changes).

28. CONTAMINANTS AND ENVIRONMENTAL MANAGEMENT

- 28.1 The Design-Builder acknowledges and agrees:
- (a) it has received and reviewed a copy of the following:
 - (i) **SUPPLEMENTAL STAGE 2 PRELIMINARY SITE INVESTIGATION
487 GEORGE STREET AND 1142 5TH AVENUE
PRINCE GEORGE, BC**

Submitted by: **AMEC Environment & Infrastructure
A Division of AMEC Americas Limited**

8 February 2012 (the "Environmental Report");
 - (ii) [not used]; and
 - (b) it has had the opportunity to undertake examinations and investigations of the Site in order to satisfy itself as to Site conditions and the impact they could have on any or all of the Work (including Design and Construction), Contract Time, and Contract Price.
- 28.2 If the Design-Builder, after commencing the Work, encounters or has reason to believe in the existence of any Contaminant on, in or under the Site, the Design-Builder will at once take all reasonable steps, including suspension of the Work, as necessary to ensure that no person or property suffers injury, sickness, death, damage or destruction as a result of exposure to, or the presence of, any Contaminant, and the Design-Builder will immediately report such Contaminant to the relevant governmental authorities and to the Owner.

- 28.3 Without limiting the obligations of the Design Builder under any other provision of this Agreement, the Design-Builder shall as part of the Work promptly at any time, if requested by the Owner or by any relevant governmental authorities, remove all Design-Builder Contaminants from the Site and any adjacent lands and waters in accordance with the requirements of this Agreement and the requirements of any relevant governmental authorities and all applicable Laws. Notwithstanding the foregoing, the Design-Builder shall, as part of the Work and prior to the Total Completion Date, remove from the Site and any adjacent lands and waters all Design-Builder Contaminants.
- 28.4 If the Design-Builder is delayed in performing the Work due to taking steps required under Sections 28.2 and 28.3 as a result of the discovery of Pre-existing Contaminants, the Design-Builder's entitlement to an extension of the Contract Time and reimbursement of costs will be determined in accordance with Section 49. If the Design-Builder is not delayed in performing the Work but incurs additional costs due to discovery of Pre-existing Contaminants, adjustment in the Contract Time or the Contract Price will be agreed upon or determined in accordance with Section 46 (Valuation and Certification of Changes).

29. SITE SAFETY

- 29.1 The Design-Builder agrees to be the "prime contractor" for the purposes of all applicable occupational health and safety Laws, including the *Workers Compensation Act* (British Columbia), and the Design-Builder is responsible for filing any documents necessary to comply with the *Workers Compensation Act* (British Columbia), including a notice of project. The Design-Builder will comply with all requirements of the *Workers Compensation Act* (British Columbia) and any other occupational health and safety Laws, applicable to the Project, the Work or to the Site.
- 29.2 Prior to commencing the Work and as a condition of receiving payment on Substantial Completion and on Total Completion, the Design-Builder will provide the Owner with satisfactory written evidence of compliance by the Design-Builder with all requirements under the *Workers Compensation Act* (British Columbia), including payments of assessments due under it to the Workers' Compensation Board. Without limiting the foregoing, the Owner may at any time require the Design-Builder to provide evidence of compliance with all requirements under the *Workers Compensation Act* (British Columbia), or payment of assessments due under it to the Workers' Compensation Board, or both.
- 29.3 When required to do so by the Owner, the Design-Builder will provide the Owner with evidence of its compliance and compliance of any or all of its Subcontractors under Section 29.2.
- 29.4 Following the Notice to Proceed and for any investigation and preparatory activities permitted under Section 23.1, the Design-Builder will coordinate health and safety for the Site for all activities performed by its workers as well as those of Subcontractors, utilities, inspectors, the Owner, Other Contractors and any others performing any activities at the Site.
- 29.5 The Design-Builder will establish, implement and provide for the review by the Owner, by no later than 30 days after the Effective Date, a plan (the "Health and Safety Plan") that meets all applicable requirements of this Agreement with respect to health and safety at the Site and that addresses the safety of the Owner, users who may be on the Site or property in the vicinity of the Site. The Design-Builder will provide safety fencing and hoarding as necessary to limit access to the Site in accordance with the Health and Safety Plan.
- 29.6 The Design-Builder will ensure that its Health and Safety Plan is consistent with, and accommodates any requirements of, the Owner's policies regarding safety and that it specifically addresses the safety of the Owner, users who may be on the Site or property in the vicinity of the Site.

29.7 The Design-Builder will maintain and comply with the Health and Safety Plan in all material respects during execution of the Work.

29.8 Prior to any person accessing the Site pursuant to this Agreement, the Design-Builder will provide health and safety orientation and information to such person in accordance with its Health and Safety Plan.

30. DUST, NOISE, VIBRATION

30.1 The Design-Builder will carry out its Construction to minimize dust and noise and vibration.

30.2 Without limiting Section 30.1, the Design-Builder will discuss with the Owner any expected vibration from the Construction activities, will plan operations to minimize disruption to activities, and will carry out its Construction activities so that vibration transfer does not unreasonably and adversely affect use of properties in the vicinity of the Site.

31. TESTING AND COMMISSIONING

31.1 The Design-Builder will prepare and deliver to the Owner, not less than 120 days before the Target Substantial Completion Date, for review under the Review Procedure, a detailed testing and commissioning plan (the "Commissioning Plan") setting out the commissioning activities the Design-Builder intends to carry out to commission the Facility, including:

- (a) a description of the specific equipment and systems to be tested and commissioned and the associated commissioning requirements;
- (b) a schedule, related to the Time Schedule, showing the timing of all testing and commissioning; and
- (c) supporting documentation, including as appropriate:
 - (i) design calculations and/or assumptions; and
 - (ii) manufacturer's specifications.

32. DOCUMENTS AT THE SITE

32.1 The Design-Builder will keep at least 1 copy of the following documents at the Site in good order and available to the Owner:

- (a) a copy of this Agreement;
- (b) a copy of all development, building, electrical and plumbing permits and inspection reports;
- (c) all Drawings and Specifications, including any shop drawings prepared or obtained in respect of the Work;
- (d) a current and up-to-date set of Record Drawings;
- (e) the Project Management Plan;
- (f) the Time Schedule;

- (g) the Quality Management Plan; and
- (h) the Health and Safety Plan.

33. CLEANUP AND FINAL CLEANING OF WORK

- 33.1 The Design-Builder will maintain the Work in a tidy condition and free from the accumulation of waste products and debris, other than that caused by the Owner, Other Contractors or their employees.
- 33.2 The Design-Builder will promptly remove all surplus products, tools, construction machinery and equipment, and any waste and debris.
- 33.3 The Design-Builder will leave the Work and Site clean and suitable for occupancy and use by the Owner by the Substantial Completion Date.
- 33.4 In connection with any Work after the Substantial Completion Date, the Design-Builder will at all times leave the Work and Site clean and suitable for occupancy and use by the Owner , but is not required to remove waste caused by the Owner.

34. REMEDIAL WORK

- 34.1 The Design-Builder will do all remedial work that may be required to make the several parts of the Work comply with the Statement of Requirements.
- 34.2 The Design-Builder will coordinate the Time Schedule for the Work to ensure that the requirement under Section 34.1 is kept to a minimum.
- 34.3 Remedial work will be performed by specialists familiar with the materials affected and will be performed in a manner to neither damage nor endanger any Work.

35. REJECTED WORK

- 35.1 Defective Work, whether the result of poor design, poor workmanship, use of defective equipment or materials, or damage through carelessness, default or other acts of the Design-Builder or any Subcontractor, and whether incorporated in the Work or not, which has been rejected by the Owner as failing to conform to any of the Statement of Requirements, the Design or the Standards, will be removed promptly by the Design-Builder and replaced and re-executed promptly and properly at the Design-Builder's expense.
- 35.2 If the Design-Builder does not remove such defective Work within the time fixed by written notice by the Owner, the Owner may remove such and store any materials, all at the expense of the Design-Builder.
- 35.3 Other Contractor's work destroyed or damaged by such removals or replacements will be made good by the Design-Builder promptly at the Design-Builder's expense.

36. WARRANTY

- 36.1 The Design-Builder will promptly correct, at its own expense, any Work that is not in accordance with this Agreement and any defects or deficiencies in the Work that appear during the period of 24 months after the Substantial Completion Date (the "Warranty Period").

- 36.2 The Design-Builder will correct defects or deficiencies at times and in a manner which causes as little inconvenience to the occupants of the Facility and the Owner's operations on and adjacent to the Site as is reasonably possible.
- 36.3 The Owner may carry out, or have others carry out, rectification work at the Design-Builder's cost if:
- (a) the Owner gives notice to the Design-Builder of a defect or deficiency and the Design-Builder does not correct the defect or deficiency within a reasonable time, not to exceed 14 days, unless the nature of the defect or deficiency is such that it cannot be corrected within such time and the Owner, acting reasonably, agrees to an extension of such time; or
 - (b) the nature of the defect is such that it creates a risk to the health or safety of any occupant or user of the Facility, or risk of damage to the Facility, the environment or any property and the Owner gives notice to the Design-Builder within a reasonable time after the commencement or completion of the rectification work.
- 36.4 If the Owner carries out or has others carry out the rectification work pursuant to Section 36.3 the Design-Builder remains responsible for the Work (including the rectification work).
- 36.5 The Design-Builder will provide to the Owner extended warranties from Subcontractors where required by the Proposal Extracts or other provisions of this Agreement and any other extended warranties provided by Subcontractors.
- 36.6 The Design-Builder will correct, at its own cost, or pay the Owner for any damage resulting from the defects or deficiencies and the corrections required under Section 36.1.
- 36.7 Issuance of the Substantial Completion Certificate and the Total Completion Certificate, and final payment to the Design-Builder, do not relieve the Design-Builder from its responsibility under this Section 36.

37. TITLE AND RISK

- 37.1 Title to the Work will vest only in the Owner. Without prejudice to any of the rights of the Owner under this Agreement, title to the Work or any part of the Work will vest in the Owner at the earliest of:
- (a) the time that the Work or part of it is at the Site;
 - (b) the time that the Owner has paid for the Work or part of the Work; and
 - (c) the time of installation or construction of the Work or part of the Work.
- 37.2 The Work remains under the care, custody and control of the Design-Builder and at the risk of the Design-Builder until the Substantial Completion Date or until such earlier date determined by the Owner, and notified in writing to the Design-Builder, for occupancy and use by the Owner. The Design-Builder will exercise all reasonable care to avoid loss of, or damage to, the Work.
- 37.3 The Design-Builder represents and warrants that title to the Work and any part of the Work will pass to the Owner free and clear of all liens, charges and encumbrances.

PART D - PAYMENT AND COMPLETION

38. APPLICATIONS FOR PAYMENT

38.1 The Design-Builder will make applications for payment in accordance with this Section 38.

38.2 Applications for payment will be:

- (a) Submitted to the Owner's Consultant;
- (b) dated the last day of the monthly period;
- (c) for the value, proportionate to the amount of the Contract Price, of Work performed and material delivered to the Site to and at the date of submission; and
- (d) Submitted no more than once per month during the performance of the Work.

38.3 Pending determination of the final result of any Change, the undisputed value of the Work performed as a result of a Change is eligible to be included with payment applications.

38.4 The Design-Builder will submit to the Owner's Consultant for review, at least 14 days before the first application for payment, a Schedule of Values of the various parts of the Work, aggregating to the total amount of the Contract Price and divided so as to facilitate evaluation of applications for payment. The Schedule of Values will be consistent with the information set out in the breakdown of the Contract Price set out in Schedule 6 – Schedule of Prices and made out in such form and supported by such evidence as to its correctness as the Owner may reasonably require. The Owner's Consultant will provide comments to the Design-Builder on the Schedule of Values, the Design-Builder will revise the Schedule of Values to address the comments, and so on, until such time as the Owner's Consultant is satisfied with the Schedule of Values. The Schedule of Values will be used as the basis for all applications for payment, unless it is found at any time to be in error, in which case it will be corrected in accordance with the Owner's directions. If the Schedule of Values is not finalized prior to an application for payment, the Owner's Consultant may consider the applications for payment on the basis of the Schedule of Values under review and the Owner's Consultant's comments on such Schedule of Values or such other basis as determined by the Owner's Consultant.

38.5 When making applications for payment, the Design-Builder will submit a statement based upon the Schedule of Values. Claims for material delivered to the Site but not yet incorporated into the Work will be supported by such evidence as the Owner may reasonably require to establish the value and their delivery.

38.6 Subject to any further information that may be required by the Owner, the application for payment will include:

- (a) the amount applied for in the application;
- (b) the value of Work performed and material delivered to the Site;
- (c) payment amounts in respect of any Changes to which the Design-Builder is entitled under this Agreement, including under Section 38.3;
- (d) any adjustments to the Contract Price under this Agreement;
- (e) the balance of the Contract Price to complete the Work;

- (f) the amount of Lien Holdback;
- (g) the amount of Performance Holdbacks;
- (h) the amount of any withholding or amount to be released under Section 38.8;
- (i) certification by the Design-Builder that the Project Binder includes documentation current to within at least 30 days prior to the application, including all inspection reports;
- (j) a statutory declaration of an officer or senior management employee of the Design-Builder stating that all accounts for labour, subcontracts, materials, construction machinery and equipment and other indebtedness which may have been incurred by the Design-Builder in performing the Work and for which the Owner might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute; and
- (k) a clearance letter from the Workers' Compensation Board indicating that all current assessments due from the Design-Builder and all Subcontractors with subcontracts larger than \$50,000 in value have been paid.

38.7 Applications for release of the Lien Holdback will be made under Section 40 (Lien Holdback) and applications for any payment at Substantial Completion or Total Completion will be made under Section 42 (Substantial Completion and Total Completion).

38.8 It is a condition of payment that the following, and all documentation, certification and requirements of the following, are complete and up to date as of the date of each application for payment:

- (a) Health and Safety Plan;
- (b) Project Management Plan;
- (c) Time Schedule;
- (d) Quality Management Plan;
- (e) Project Binder updated as described in Section 43.3;
- (f) issued for construction Drawings and Specifications, commencing with the first application for payment 120 days prior to the Target Substantial Completion Date; and
- (g) Commissioning Plan commencing with the first application for payment 180 days prior to the Target Substantial Completion Date.

The Design-Builder will not be required to re-submit documentation previously provided. The Design-Builder will identify any changes to previously submitted documentation and at the Owner's request submit revised documentation.

The Owner acknowledges that the requirement in Section 38.8(f) for issued for construction Drawings and Specifications does not require the Design-Builder to provide such Drawings and Specifications prior to the date such Drawings and Specifications are required to perform the Work and in accordance with the other provisions of this Agreement.

If any of the foregoing listed items, including the required certification, documentation and certification for each listed item, is not complete and up to date, then the Owner may for each

listed item that is not complete and up to date withhold from payment the amount of 3% of the total application for payment. This withholding will apply to each month for which such item or items is not complete and up to date. The applicable withholding will be released with the next monthly payment when such item is completed and up to date. In addition, in relation to the Quality Management Plan the Owner's Consultant may consider that the Contractor has not demonstrated that the Work to which the Quality Management Plan relates has not been satisfactorily performed and in accordance with Section 38.10 may adjust the amount of the payment by reducing the payment by the amount of such Work and by the cost of the required processes, testing, certification, auditing and documentation required to ensure compliance with the Quality Management Plan.

38.9 Notwithstanding the actual progress, the following will apply:

- (a) payment of the cost of the Bonds and cost of insurance will be made to the Design-Builder upon presentation of all bonding and insurance documentation required by this Agreement and upon presentation of satisfactory proof of payment of related fees or premiums; and
- (b) payment for mobilization identified in the Schedule of Values will be a maximum 5% of the Contract Price and payment will be made in two parts: 25% when the Design-Builder occupies the Site, and 75% when the Design-Builder has established a fully functional site office, construction equipment is on site and construction has commenced.

38.10 The Owner's Consultant will, within 10 days of receipt of the Design-Builder's application for payment, either:

- (a) accept the amount set out in the application for payment; or
- (b) adjust the amount of any payment to reflect the Owner's estimate of Work satisfactorily performed as of the date of the application for payment.

If the Owner's Consultant amends the application for payment, the Owner's Consultant will promptly notify the Design-Builder in writing and give reasons for the amendment.

38.11 Provided the Design-Builder is not in material default of any provision in this Agreement, the Owner will pay the Design-Builder within 15 days of the Owner's Consultant approving or adjusting the Design-Builder's application for payment in accordance with Section 38.10 and the Schedule of Values.

38.12 Whenever any sum of money is recoverable from or payable by the Design-Builder pursuant to this Agreement or is an amount for which the Owner may be liable on account of a default by the Design-Builder, the Owner may deduct such sum from, or may reduce, any amounts then due or that may thereafter become due to the Design-Builder under this Agreement. Without limiting the generality of the foregoing, the Owner may set-off any amounts for liquidated damages set out in this Agreement.

39. TAXES AND DUTIES

39.1 The Contract Price is inclusive of all applicable customs duties and taxes (including the proposed PST), other than the GST or HST, in effect at the Effective Date.

39.2 The Design-Builder will remit all customs duties and taxes to the applicable governmental authority as and when required by the relevant Law and will without limiting Section 56 (Indemnification), indemnify and hold the Indemnified Parties harmless from and against any

customs duties and taxes that the Design-Builder fails to remit as and when due, and from and against any costs and penalties and interest that may be levied against the Indemnified Parties.

- 39.3 The Design-Builder acknowledges and agrees that despite the proposed implementation and coming into effect of the PST after the Effective Date, the Contract Price has been established taking into account the PST and there will be no adjustments to the Contract Price for the PST or the change in the HST related to the coming into effect of the PST.
- 39.4 Subject to Section 39.3, any increase or decrease in costs to the Design-Builder due to changes in taxes or duties that are in effect at the Effective Date of this Agreement will increase or decrease the Contract Price accordingly.
- 39.5 Where an exemption or refund of taxes, customs duties or excise taxes is applicable to this Agreement by way of the Design-Builder filing claims for, or cooperating fully with the Owner and the proper authorities in seeking to obtain such exemption or refund, the Design-Builder will make such applications and provide such cooperation.
- 39.6 Refunds that are properly due to the Owner and have been recovered by the Design-Builder will be promptly refunded to the Owner.

40. LIEN HOLDBACK

- 40.1 The Owner will retain and release the Lien Holdback in accordance with the provisions of the *Builders Lien Act* (British Columbia).
- 40.2 For purposes of the *Builders Lien Act* (British Columbia), the Owner's Consultant will be the payment certifier for this Agreement.
- 40.3 For purposes of progressive release of portions of the Lien Holdback in respect of Subcontracts, the Owner's Representative will be the payment certifier under the *Builders Lien Act* (British Columbia).
- 40.4 The Design-Builder will make application to the Owner's Consultant for certification under the *Builders Lien Act* (British Columbia). As a condition of making any application and as a condition of any certification, the Design-Builder will provide the Owner's Consultant with all information required by the Owner's Consultant.
- 40.5 Without limiting Section 56 (Indemnification), the Design-Builder will, at its sole risk and expense, do everything necessary, including through the institution, prosecution or defence of legal proceedings, to promptly discharge from title to the Site any claims of builder's lien, builder's liens or certificates of pending litigation by any Subcontractor or other person claiming under or through the Design-Builder or a Subcontractor. If the Owner becomes aware that a claim of builder's lien, builder's liens or certificate of pending litigation is threatened or has been registered against title to the Site, the Owner may withhold out of the Lien Holdback or any other monies payable to the Design-Builder such amounts as the Owner reasonably considers necessary in order to secure the discharge of the claim of builder's lien, builder's liens or certificate of pending litigation. The Owner will cooperate with the Design-Builder in securing the discharge of any of the foregoing, subject to such arrangements being made as the Owner reasonably considers necessary before any such additional holdback monies are paid to any person or into court.

41. PERFORMANCE HOLDBACKS

- 41.1 In addition to the Lien Holdback and any amount retained under this Agreement (including for deficiencies under Section 42.4), the Owner will retain:

- (a) a holdback of [REDACTED] of the Contract Price (the "LD Holdback"), if at any time after the date that is 6 months before the Target Substantial Completion Date (or if the Owner has extended the Time Schedule in accordance with this Agreement, such other date established for the Target Substantial Completion Date), the Owner's Consultant determines that the Substantial Completion Date is not reasonably likely to occur on or before the Target Substantial Completion Date (or if the Owner has extended the Time Schedule in accordance with this Agreement, such other date established for the Target Substantial Completion Date);
 - (b) a holdback of [REDACTED] (the "LEED Holdback"); and
 - (c) a holdback of [REDACTED] (the "Warranty Holdback")
- (collectively, the "Performance Holdbacks")

- 41.2 The LD Holdback will be calculated as a percentage of the Contract Price and that percentage will be withheld from all payments due by the Owner. The percentage will be adjusted from time to time if the Contract Price is adjusted.
- 41.3 The Owner will release the LD Holdback, less liquidated damages payable by the Design-Builder under Section 3.3, upon the achievement of Substantial Completion of the Project.
- 41.4 The Owner will release the LEED Holdback, less liquidated damages payable by the Design-Builder under Section 10 (LEED Gold Certification), upon the achievement of the points, credits or LEED Gold Certification, as applicable.
- 41.5 The Owner will release the Warranty Holdback, less deductions for amounts owing to the Owner, upon the completion of the Warranty Period and all obligations of the Design-Builder under Section 36 (Warranty).
- 41.6 The Owner may apply the Performance Holdbacks against any amount owing by the Design-Builder to the Owner either prior to the Substantial Completion Date or during the Warranty Period, including under Section 10 (LEED Gold Certification). If any amount is applied against the Performance Holdbacks, the Design-Builder will at the Owner's option, acting reasonably, either pay such amount to the Owner to replenish the Performance Holdbacks then required to be withheld, or the Owner may withhold such amount from the next payment or payments due to the Design-Builder.
- 41.7 The Design-Builder will apply for payment of the applicable Performance Holdback and payment will be made in accordance with Section 38 (Applications for Payment).
- 41.8 The Performance Holdbacks are not held in trust for the Design-Builder, property of the Design-Builder, earned by the Design-Builder or due and payable by the Owner until the conditions for release of the Performance Holdbacks are satisfied.
- 41.9 The Design-Builder as an alternative to the retention of the Performance Holdbacks may propose to the Owner to provide either a clean irrevocable standby letter of credit from a financial institution in Canada acceptable to the Owner, or another form of performance security acceptable to the Owner. If the Owner accepts the proposal, the Owner will upon receipt of the performance security release the Performance Holdbacks to the Design-Builder.

42. SUBSTANTIAL COMPLETION AND TOTAL COMPLETION

- 42.1 The Design-Builder may make application to the Owner for the Substantial Completion Certificate at any time after it has achieved Substantial Completion.

42.2 "Substantial Completion" of the building means that all of the following have been achieved:

- (a) the Owner's Consultant has certified that substantial performance of the Work under the *Builders Lien Act* (British Columbia) has been achieved;
- (b) the Building is ready for use by the Owner or is being used by the Owner for the purpose intended, and the following items have been submitted to the Owner or completed by the Design-Builder:
 - (i) all equipment included in the Work, and mechanical and other building systems are in place, commissioned, received required certifications, and are fully operational;
 - (ii) a complete Project Binder, provided that:
 - (A) the commissioning reports may be preliminary; and
 - (B) the inspections, certificates, guarantees and warranties, and certifications may exclude only the items of Work that remain to be completed;
 - (iii) issued for construction Drawings and Specifications;
 - (iv) maintenance and operating tools, replacement parts or products as specified in the Statement of Requirements;
 - (v) a clearance letter from the Workers' Compensation Board indicating that all current assessments due from the Design-Builder and all Subcontractors have been paid;
 - (vi) a statement reconciling all Change Orders and claims under this Agreement with respect to the Work to the date of the application for Substantial Completion;
 - (vii) all approvals necessary for the Project from local authorities having jurisdiction;
 - (viii) an occupancy permit as required from local authorities having jurisdiction;
 - (ix) a statutory declaration of an officer or senior management employee of the Design-Builder stating that all accounts for labour, subcontracts, materials, construction machinery and equipment and other indebtedness which may have been incurred by the Design-Builder in performing the Work and for which the Owner might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute;
 - (x) demonstration and training to the Owner's satisfaction of all mechanical and electrically operated devices to the Owner's operating and maintenance staff
 - (xi) all training required by the Statement of Requirements;
 - (xii) the LEED Project Checklist and written opinion as required by and in accordance with Section 10.2;
 - (xiii) the requirements of Section 33 (Cleanup and Final Cleaning of Work) have been fulfilled to the extent required by the Substantial Completion Date;

- (xiv) any other conditions specified in this Agreement with respect to achieving Substantial Completion;
 - (c) a comprehensive deficiency list, including an estimated value for each item, has been submitted to the Owner's Consultant by the Design-Builder and agreed to by the Owner's Consultant, acting reasonably; and
 - (d) a schedule for completion of all remaining Work has been submitted to the Owner by the Design-Builder.
- 42.3 The Owner's Consultant with input from the Design-Builder's Consultant will, not later than 14 days after the receipt of an application from the Design-Builder for the Substantial Completion Certificate, review and assess the Work to verify that the application and the Work conform to the requirements set out in Section 42.2 or 42.4, as the case may be. The Owner's Consultant will, not later than 7 days after the review, notify the Design-Builder of approval, or the reasons for disapproval, of the application. In the event of a disapproval, the Design-Builder will rectify all matters that prevent the issuance of the Substantial Completion Certificate and the Owner's Consultant will within 7 days after notice from the Design-Builder of rectification, approve or disapprove of the application, and so on, until such time as the Owner's Consultant determines that Substantial Completion has been achieved. When the Owner's Consultant determines that Substantial Completion has been achieved, the Owner's Consultant will issue the Substantial Completion Certificate. The date of Substantial Completion will be as stated in the Substantial Completion Certificate. Following the issuance of the Substantial Completion Certificate, the Owner's Consultant, with input from the Design-Builder, will establish a reasonable date for work still to be satisfactorily performed or replaced as specified in the list of deficiencies and for Total Completion.
- 42.4 The Owner may retain out of the amount due and owing to the Design-Builder upon Substantial Completion:
- (a) any sums required by law to satisfy any liens against the Work;
 - (b) an amount determined by the Owner's Consultant to be equal to 2 times the estimated value of the Work still to be satisfactorily performed or replaced to address the issues as specified in the list of deficiencies; and
- any amount withheld pursuant to Section 40.5 .
- 42.5 No payment will be made to the Design-Builder from amounts withheld under 42.4(b) until the completion or correction of all the deficiencies specified in the deficiency list.
- 42.6 The Design-Builder will perform the work specified in the list of deficiencies at times and in a manner which causes as little inconvenience to the occupants of the Facility and the Owner's operations on and adjacent to the Site as is reasonably possible.
- 42.7 The Owner may carry out, or have others carry out, the work specified in the list of deficiencies at the Design-Builder's cost if:
- (a) the Design-Builder does not complete the work by the date established in Section 42.3 and if the Owner gives notice to the Design-Builder and the Design-Builder does not correct the defect or deficiency within a reasonable time, not to exceed 14 days, unless the nature of the defect or deficiency is such that it cannot be corrected within such time and the Owner, acting reasonably, agrees to an extension of such time; or

- (b) the nature of the work is such that it creates a risk to the health or safety of any occupant or user of the Facility, or risk of damage to the Facility, the environment or any property and the Owner gives notice to the Design-Builder within a reasonable time after the commencement or completion of the rectification work.
- 42.8 If the Owner carries out or has others carry out the work pursuant to Section 42.7 the Design-Builder remains responsible for the work.
- 42.9 The Design-Builder will correct, at its own cost, or pay the Owner for any damage resulting from the work specified in the list of deficiencies.
- 42.10 The Design-Builder may make application to the Owner for the Total Completion Certificate at any time after it has achieved Total Completion.
- 42.11 "Total Completion" means that all of the following have been achieved:
- (a) the entire Work has been performed to the requirements of this Agreement, other than:
 - (i) work required to be performed under Section 36 (Warranty); and
 - (ii) achievement of the LEED credits/points and LEED Gold Certification from CaGBC under Section 10 (LEED Gold Certification);
 - (b) all deficiencies specified in the deficiency list have been rectified or completed to the Owner's satisfaction;
 - (c) the requirements of Section 33 (Cleanup and Final Cleaning of Work) have been fulfilled; and
 - (d) the following items have been submitted by the Design-Builder and are acceptable to the Owner:
 - (i) all Submittals, including certified Record Drawings in accordance with Section 43 (Project Binder and Record Drawings)
 - (ii) the final Project Binder, including final commissioning reports, final inspections (structural, environmental, etc.) and deficiency reports;
 - (iii) a statutory declaration of an officer or senior management employee of the Design-Builder stating that all accounts for labour, subcontracts, materials, construction machinery and equipment and other indebtedness which may have been incurred by the Design-Builder in performing the Work and for which the Owner might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute, dated at least 45 days after the date of substantial performance under the *Builders Lien Act* (British Columbia);
 - (iv) a written statement of the Design-Builder that all claims for payment for Work done under this Agreement as of the date of the Design-Builder's application for a Substantial Completion Certificate including claims and Change Orders have been presented to the Owner;

- (v) a clearance letter from the Workers' Compensation Board indicating that all current assessments due from the Design-Builder and all Subcontractors have been paid; and
- (vi) certification, acceptable to the Owner, that all taxes, employment assistance payments, Canada Pension Plan contributions, duties, royalties and all other monies required to be paid by law or statute have been paid in full.

42.12 Upon receipt by the Owner of the Design-Builder's application for the Total Completion Certificate:

- (a) The Owner's Consultant will, subject to the conditions contained in Section 42.10 , and not later than 10 days after the receipt of an application from the Design-Builder for the Total Completion Certificate, review and assess the Work to verify that the application and the Work conform to the requirements set out in Section 42.11.
- (b) The Owner's Consultant will, and not later than 7 days after the review contemplated in Section 42.12(a), notify the Design-Builder of approval, or the reasons for disapproval, of the application. In the event of a disapproval, the Design-Builder will rectify all matters that prevent the issuance of the Total Completion Certificate and the Owner's Consultant will within 7 days after notice from the Design-Builder of rectification, approve or disapprove of the application, and so on, until such time as the Owner's Consultant determines that Total Completion has been achieved.
- (c) The Design-Builder will be responsible for all costs of additional reviews contemplated by Section 42.12(b), such costs to be deducted from the monies due to the Design-Builder, where any additional review undertaken by the Owner's Consultant pursuant to this section reveals that previously identified deficiencies have not been corrected in a manner satisfactory to the Owner's Consultant.

When the Owner's Consultant determines that Total Completion has been achieved, the Owner's Consultant will issue the Total Completion Certificate and certify for payment the monies due to the Design-Builder under this Agreement, less any amount still retained for the Lien Holdback or the Performance Holdbacks, amounts withheld under Section 40.5 or any amount set-off in accordance with this Agreement. The date of Total Completion will be as stated in the Total Completion Certificate.

42.13 No payment made by the Owner under this Agreement, or partial or entire use or occupancy of the Work by the Owner, will constitute an acceptance of Work not in accordance with the requirements of this Agreement.

42.14 By issuing any certificate, the Owner and the Owner's Consultant do not guarantee, or otherwise become liable or responsible in any way for, the correctness or completeness of the Work, including the Design, and no certificate makes the Owner or Owner's Consultant in any way responsible or liable for adequacy of the Design or for the Work, all of which remain the responsibility of the Design-Builder.

42.15 As of the date of Total Completion, the Design-Builder expressly waives and releases the Owner from all claims against the Owner, including those that might arise from the negligence or breach of this Agreement by the Owner, except those made in writing prior to the Design-Builder's application for payment upon Total Completion and still unsettled and those arising in connection with the obligations of either party to be performed after Total Completion.

42.16 In the event of conflict between the provisions of this Section 42 and any other Section of this Agreement, the provisions of this Section 42 govern.

42.17 Without limiting any other withholding or set-off under this Agreement, the Owner may deduct from any payment to the Design-Builder under this Agreement the amount paid by the Owner to put the Design-Builder into compliance with the Insurance Conditions if the Design-Builder has defaulted in complying with the Insurance Conditions.

43. PROJECT BINDER AND RECORD DRAWINGS

43.1 The Design-Builder will prepare and provide to the Owner a set of documentation that is bound in one or more binders (the "Project Binder").

43.2 The Project Binder will include the following:

- (a) commissioning reports satisfactory to the Owner;
- (b) all inspections, certifications, guarantees and warranties;
- (c) maintenance manuals and operating instructions;
- (d) certification by all testing, cleaning or inspection authorities or associations;
- (e) confirmation of the Design-Builder's Consultant in accordance with Section 16.3(b);
- (f) copies of all warranties and guarantees from Subcontractors; and
- (g) all other documentation that is reasonably required by the Owner or by any party on behalf of the Owner to operate and maintain the Facility.

43.3 The Project Binder will be updated on a monthly basis with all documentation related to Work completed up to the date it is updated. The Design-Builder will provide and update 3 copies of the Project Binder, and will include 1 electronic file on a flashdrive, unless directed to use a different format by the Owner, acting reasonably.

43.4 Within 60 days after issuance of the Substantial Completion Certificate, the Design-Builder will provide to the Owner the following:

- (a) 2 complete sets of paper print Record Drawings, signed and sealed by the Design-Builder's Consultant, showing the as-built Work and identified in bold letters with the words "CERTIFIED AS-BUILT"; and
- (b) 2 complete copies of the Record Drawings on CD in AutoCAD DXF, AutoCAD DWG and Adobe PDF format acceptable to the Owner, acting reasonably.

44. CASH ALLOWANCES

44.1 This Section 44 applies to the cash allowances for:

- (a) landscaping of adjacent City of Prince George lands: [REDACTED]
- (b) tenant improvements: [REDACTED]
- (c) rough in and coordination of lab equipment [REDACTED]
- (d) General cash allowance for Authority's use at its discretion [REDACTED]

A general description of the cash allowances and responsibilities is attached as Schedule 8 – Cash Allowance Statement of Work.

- 44.2 The Contract Price includes cash allowances stated in this Agreement. The allowances will be expended, if at all, only as the Owner authorizes. The scope of work or costs included in such cash allowances will be as described in this Agreement.
- 44.3 Cash allowances cover the net cost to the Design-Builder of services, materials, products, construction machinery and equipment, freight, unloading, handling, storage, installation and other expenditures authorized by the Owner that are incurred in performing the work stipulated under the cash allowances.
- 44.4 The Contract Price, and not the cash allowances, includes the Design-Builder's overhead and profit in connection with such cash allowances.
- 44.5 Where the actual costs expended by the Design-Builder for work under a cash allowance exceed the amount of the cash allowance, the Design-Builder will be compensated for any excess incurred and substantiated plus an amount for overhead and profit as set out in this Agreement. Where the actual costs expended by the Design-Builder for work under a cash allowance is less than the amount of the cash allowance, the Owner will be credited for the unexpended portion of the cash allowance, but not for the Design-Builder's overhead and profit on such amount. Multiple cash allowances will not be combined for the purpose of calculating the foregoing.
- 44.6 The Contract Price will be adjusted to provide for any difference between the amount of each cash allowance and the actual cost of the work under that cash allowance.
- 44.7 The value of the work performed under a cash allowance is eligible to be included in the monthly applications for payment.
- 44.8 The Design-Builder and the Owner will jointly prepare a schedule that shows when the Owner, through the Owner, must authorize the ordering of items called for under cash allowances to avoid delaying the progress of the Work.

PART E – CHANGES

45. CHANGES

- 45.1 The Owner, without invalidating this Agreement, may require Changes, with the Contract Price and Contract Time adjusted in accordance with Section 46 (Valuation and Certification of Changes). The Owner may issue any Change Order or Change Directive, which can include a stop Work order or resume Work order, to the Design-Builder's Representative or to any other person authorized by the Design-Builder to receive a Change Order.
- 45.2 No Change will be made without a Change Order or Change Directive from the Owner.
- 45.3 The Design-Builder will not be entitled to a Change Order or Change Directive, or to any adjustments to the Contract Price or the Contract Time, for any Change for which the Design-Builder has not, prior to commencing the performance of a Change, obtained from the Owner a Change Order or Change Directive, except where expressly allowed in this Agreement at Sections 27.2 and 28.4.
- 45.4 The Owner may, at any time, require the Design-Builder to assess the impact of a proposed Change on the Contract Price and the Contract Time and the Design-Builder will provide the Owner with such assessment within 7 days after the Owner's request or such other time as may be agreed by the Owner, acting reasonably.

46. VALUATION AND CERTIFICATION OF CHANGES

- 46.1 The value of any Change will be determined by one or more of the following methods:
- (a) by estimate and acceptance of a lump sum; or
 - (b) by unit prices or fee rates agreed upon (and which may include a maximum upset price).
- 46.2 The following process will be followed for Changes:
- (a) Where a Change is proposed or required by the Owner, the Design-Builder will promptly, and in any case within 10 days after the Change is proposed or required by the Owner, present to the Owner its claims for any adjustment to the Contract Price or the Contract Time that arise from the Change.
 - (b) Where the Design-Builder claims a Change in Contract Time, the Design-Builder will provide a full breakdown of labour, material and other cost information.
 - (c) Where the Owner and Design-Builder agree to the Change, including adjustments in the Contract Price and Contract Time, or to the method to be used to determine the adjustments, such Change will be effective when recorded in a Change Order.
 - (d) The value of the Work performed as the result of a Change Order will be included in payment applications.
- 46.3 In the case of Changes to be paid for under Section 46.2(c), the form of presentation of costs and methods of measurement will be agreed to by the Owner and the Design-Builder before proceeding with the Change. The Design-Builder will keep accurate records of quantities or costs as agreed upon and will present an account of the costs of the Change, together with vouchers where applicable, at least once each month during performance of the Change, and will present a final account upon completion of the Change.
- 46.4 If the methods of valuation, measurement and value of any Change or any adjustment to the Contract Time cannot be promptly agreed upon, and in any case within 7 days after the proposed Change, and the Change is required by the Owner to be proceeded with, then the Change will be performed by the Design-Builder and the value of the Change and adjustment to the Contract Time will be determined in accordance with the Dispute resolution process described in Section 61 (Dispute Resolution).
- 46.5 It is intended in all matters involving Changes that both the Owner and the Design-Builder will act promptly and in accordance with the times set out in this Section 46.

47. DETERMINATION OF COST

- 47.1 Subject to Section 47.2 whenever it is necessary for the purposes of this Agreement to determine the cost of a Change, the cost will be the amount agreed upon by the Design-Builder and the Owner from time to time within a reasonable time after the issue arises in any given instance.
- 47.2 If the Design-Builder and the Owner cannot agree as to the cost of the Change as contemplated in Section 47.1, the sole cost to which the Design-Builder will be entitled for the Change will be equal to the aggregate of:
- (a) all reasonable and proper amounts actually expended by or legally payable by the Design-Builder in respect of the labour, equipment or material that are directly attributable

to the subject matter of the Change and that are within one of the classes of expenditures described in Section 47.3; plus

- (b) subject to Section 47.3(a):
 - (i) for a Change or a series of related Changes with an aggregate cost (prior to applying a markup) less than \$1,000,000, a markup for overhead of 10% and a markup for profit of 5%; and
 - (ii) for a Change or a series of related Changes with an aggregate cost (prior to applying a markup) equal to or greater than \$1,000,000, a markup for overhead of 5% and a markup for profit of 5%.

47.3 Classes of expenditure that are allowable for the purposes of Section 47.2 are:

- (a) payments to Subcontractors but notwithstanding the markups specified in Section 47.2(b), the markups applied to such payments to the Design-Builder's Consultant and the first level Subcontractors that subcontracted directly with the Design-Builder will for the purposes of Section 47.2(b) be no greater than 5% for overhead and 5% for profit.
- (b) wages, salaries and traveling expenses of employees of the Design-Builder while they are actually and properly engaged on the Work, other than wages, salaries, bonuses, living and travelling expenses of personnel of the Design-Builder generally employed at the head office, or at a general office, of the Design-Builder unless such personnel is engaged at the site of the Work, with the approval of the Owner;
- (c) payments for materials necessary for and incorporated in the Work or necessary for and consumed in the performance of the Work;
- (d) payment for equipment necessary for and incorporated in the Work;
- (e) payments for tools, other than tools customarily provided by tradespersons, necessary for and used in the performance of the Work;
- (f) payments for preparation, inspection, delivery, installation, commissioning and removal of equipment and materials necessary for the performance of the Work;
- (g) assessments payable under any statutory scheme relating to workers compensation, unemployment insurance or holidays with pay;
- (h) payments for renting equipment (but not tools) and allowances for equipment (but not tools) owned by the Design-Builder, necessary for the performance of the Work, provided that such payments or allowances are reasonable or have been agreed to by the Design-Builder and the Owner; and
- (i) other payments made with the prior approval of the Owner that are necessary for the performance of the Work as determined by the Owner,

and such expenditures are not the subject matter of the markups in Section 47.2(b).

47.4 If the Design-Builder and the Owner cannot agree as to the cost of labour, equipment or material as contemplated in Section 47.1, and the Owner considers that a Change or series of related Changes may exceed \$100,000, the Owner may require the Design-Builder, and the Design-

Builder will, obtain a minimum of 3 competitive quotations or tenders for all or any part of such Change or Changes as directed by the Owner.

- 47.5 The applicable markups set out in this Section 47 will apply to the credit of the Owner for reductions in the costs relating to a Change. Where both increases and reductions in costs relate to a Change, the applicable markups will apply to the net increase or reduction in costs.

48. CHANGE DIRECTIVE

- 48.1 The Owner may issue a Change Directive to the Design-Builder directing the Design-Builder to proceed with a Change. The Design-Builder will proceed with the Change and the valuation and adjustments to the Contract Price and the Contract Time will be made as soon as reasonably possible after the implementation of the Change in the same manner as a Change for which a Change Order would be issued under this Agreement.
- 48.2 The Owner may issue Change Directives at any time, including prior to commencing the process for a Change Order or if there is a Dispute in relation to a Change or Change Order (including a Dispute as to whether there is a Change).

PART F – DELAYS

49. DELAYS

- 49.1 If the Design-Builder is delayed in performing the Work as a direct result of a failure of the Owner to provide access to the Site by providing a Notice to Proceed on or before June 30, 2013, or a material breach by the Owner of the terms of this Agreement or by an order issued by any court or public authority having jurisdiction (providing that such order was not issued as the result of any act or fault of the Design-Builder or a Subcontractor), or the events referred to in Section 26.3, 27.2 or 28.4, then:
- (a) the Contract Time will be extended for such reasonable time, taking into account the critical path, as agreed by the Owner and the Design-Builder, acting reasonably, and the Design-Builder will be reimbursed for any costs directly incurred by it as the result of such delay, determined in accordance with Section 47 (Determination of Cost); or
 - (b) if the Owner determines that the Target Substantial Completion Date can still be met and requests in writing that the Design-Builder accelerate the Work, the Design-Builder will accelerate its efforts to meet the Target Substantial Completion Date. The Design-Builder will be reimbursed for all reasonable and direct costs incurred by it as a result of undertaking such acceleration efforts.
- 49.2 If the Design-Builder is delayed in performing the Work by an event of Force Majeure, then:
- (a) the Contract Time will be extended for such reasonable time, taking into account the critical path, as agreed by the Owner and the Design-Builder, acting reasonably; or
 - (b) if the Owner determines that the Target Substantial Completion Date can still be met and requests in writing that the Design-Builder accelerate the Work, the Design-Builder will accelerate its efforts to meet the Target Substantial Completion Date as directed by the Owner. The Design-Builder will be reimbursed for all reasonable and direct costs incurred by it as a result of undertaking such acceleration efforts.

Except as provided in Section 49.2(b) for acceleration of the Work required by the Owner, the Design-Builder will not be entitled to any costs incurred in relation to the Force Majeure or delays arising from the Force Majeure.

- 49.3 If the Design-Builder is delayed in the performance of the Work for any reason other than that for which an extension of time is permitted under this Section 49 or if the Design-Builder does not perform the Work substantially in accordance with the Time Schedule to meet the Target Substantial Completion Date, the Design-Builder will at its cost accelerate the Work to meet the Target Substantial Completion Date.
- 49.4 The Design-Builder is not entitled to any extension of time or any reimbursement of costs for delay under this Section 49 unless written notice is given to the Owner not later than 7 days after the date that the Design-Builder becomes aware of the event causing the delay. In the case of a continuing cause of delay only one notice is necessary.
- 49.5 In the case of any delay under Section 49.1 or Section 49.2 the Design-Builder will use commercially reasonable efforts to mitigate the costs and impacts of the delay including removing the cause of the delay as promptly as practicable such that the Time Schedule is maintained and that acceleration efforts, if requested by the Owner, are minimized.

PART G – SUSPENSION AND TERMINATION

50. NON-DEFAULT SUSPENSION/TERMINATION

- 50.1 Notwithstanding that the Design-Builder may not be in default of the terms of this Agreement, if conditions arise which in the Owner's reasonable opinion make it necessary, the Owner may suspend performance of the Work or terminate this Agreement by giving 5 days' written notice to that effect to the Design-Builder and the suspension or termination is effective in the manner specified in the notice.
- 50.2 Without limiting Section 50.1, the Owner may, if it determines that there is an emergency, by notice to the Design-Builder, do either or both of the following:
- (a) suspend the Work whenever in its opinion such suspension may be necessary to ensure the safety or life of others or of the Work or neighbouring property; or
 - (b) make Changes, and order, assess and award the cost of such Changes that are extra to the Contract Price in accordance with Section 46 (Valuation and Certification of Changes) and Section 47 (Determination of Cost) as determined to be necessary.
- 50.3 The Owner will within 2 Business Days after a Change under Section 50.2(b) confirm in writing any Change instructions and if a Change has been performed by order of the Owner, the Design-Builder retains its right to claim the value of such Change.
- 50.4 The Design-Builder upon receiving notice of suspension or termination from the Owner will immediately suspend all operations except those, which, in the Design-Builder's reasonable opinion, are necessary to ensure the safety of personnel and the public or for the care and preservation of the Work and materials. Subject to any directions in the notice of suspension or termination, the Design-Builder will discontinue ordering materials, will not enter into any further Subcontracts (except such Subcontracts as are necessary for the safety of personnel or for the care and preservation of the Work) and will make every reasonable effort in the event of termination to cancel existing Subcontracts and orders on the best terms available.
- 50.5 During the period of suspension the Design-Builder will not remove from the Site any of the Work, or any material, without the prior written consent of the Owner.
- 50.6 If the period of suspension is 30 days or less, the Design-Builder, upon the expiration of the period of suspension, will resume the performance of the Work and will be paid for all costs reasonably incurred by the Design-Builder in complying with the suspension, determined in

accordance with Section 47 (Determination of Cost) and for costs reasonably incurred for acceleration of the Work so that Substantial Completion of the Work is achieved by the Target Substantial Completion Date where the Owner requires such acceleration by written notice to the Design-Builder. If the Owner does not require the acceleration of the Work, or if it is not possible for the Design-Builder using all reasonable efforts to achieve Substantial Completion of the by the Target Substantial Completion Date despite an intended acceleration of the Work, the Owner and the Design-Builder will, acting reasonably, agree on a new Target Substantial Completion Date.

- 50.7 If the period of suspension is greater than 30 days and, before 120 days after the date of the notice of suspension, the Owner and the Design-Builder agree to continue with and complete the Work, the Design-Builder will resume operations and complete the Work in accordance with any terms and conditions agreed upon by the Owner and the Design-Builder and the Design-Builder will be paid for all costs reasonably incurred by the Design-Builder in complying with the suspension, determined in accordance with Section 47 (Determination of Cost).
- 50.8 If the period of suspension is greater than 30 days and the Owner and the Design-Builder do not agree to continue with and complete the Work, or they fail to agree on the terms and conditions upon which the Design-Builder is to resume operations and complete the Work, before 120 days after the date of the notice of suspension, this Agreement will be deemed to have been terminated.
- 50.9 If this Agreement is terminated pursuant to this Section 50, the Owner will pay the Design-Builder:
- (a) in accordance with this Agreement, for all Work performed and for all of the Design-Builder's obligations under Subcontracts that it was unable to cancel, or asked by the Owner not to cancel, less any payments made by the Owner prior to termination; and
 - (b) all costs reasonably incurred by the Design-Builder in complying with the suspension or termination order, determined in accordance with Section 47 (Determination of Cost), less any costs already paid to the Design-Builder pursuant to Section 50.6.
- 50.10 The Design-Builder's obligations as to quality, correction and warranty of any Work performed continue in force after termination under this Section 50.
- 50.11 The Design-Builder, by giving written notice to the Owner, may suspend performance of the Work to the extent the Work is stopped for a period in excess of 30 days by an order of any court or public authority having jurisdiction through no act or fault of the Design-Builder or of anyone employed by it.

51. DEFAULT AND TERMINATION OF AGREEMENT

- 51.1 The Owner may give written notice to the Design-Builder of default under this Agreement if the Design-Builder:
- (a) is adjudged bankrupt, makes a general assignment for the benefit of creditors, or a receiver is appointed on account of its insolvency;
 - (b) abandons the Work;
 - (c) breaches a material term of this Agreement
 - (d) makes a material misrepresentation of a representation or warranty set out in this Agreement;

- (e) has delivered a statutory declaration in support of application for a payment under this Agreement that was false or materially inaccurate; or
 - (f) has made an assignment of this Agreement without the required consent of the Owner.
- 51.2 If a default occurs, other than a default referred to in Section 51.1(a) or 51.1(b), the Owner may specify in writing a 7 day rectification period within which the Design-Builder will remedy the default. If the nature of such default is that it cannot be corrected within such 7 day period, the Design-Builder will within such period provide the Owner with a schedule acceptable to the Owner for rectification of the default and correct the default in accordance with that schedule.
- 51.3 If a default referred to in Section 51.1(a) or 51.1(b) occurs or if the Design-Builder does not rectify any other default within the rectification period described in Section 51.2 or in accordance with the schedule acceptable to the Owner, the Owner may without prejudice to any other right or remedy exercise any or all of the following:
- (a) suspend all or part of the Work;
 - (b) terminate the Design-Builder's right to continue with the Work in whole or in part;
 - (c) correct the default and deduct the cost thereof from any payment then or thereafter due to the Design-Builder; and
 - (d) terminate this Agreement.
- 51.4 If the Owner terminates the right to continue with all or part of the Work or terminates this Agreement, the Owner will be entitled to:
- (a) take possession of the Work or any part of the Work;
 - (b) take possession of the Drawings and Specifications and make use of them in accordance with the rights granted under this Agreement;
 - (c) use construction machinery and equipment, subject to the rights of third parties;
 - (d) finish the Work or any part of the Work by whatever reasonable method the Owner may consider expedient;
 - (e) charge the Design-Builder the amount by which the full cost of finishing the Work and a reasonable allowance to cover the cost of corrections to Work performed by the Design-Builder that may be required under Section 36 (Warranty) exceeds the unpaid balance of the Contract Price; and
 - (f) on expiry of the Warranty Period, charge the Design-Builder the amount by which the cost of corrections to Work under Section 36 (Warranty) exceeds the allowance provided for such corrections.
- 51.5 The termination of the right to continue with part of the Work does not relieve or discharge the Design-Builder from any obligations under this Agreement, except the obligation to perform the part of the Work removed from the Design-Builder.
- 51.6 The rights, powers and remedies conferred on the Owner under this Agreement are not intended to be exclusive but are cumulative, are in addition to, do not limit and are not in substitution for any other right, power and remedy existing under this Agreement, under any other agreement, at

law or in equity. The exercise by the Owner of any right, power or remedy does not preclude the simultaneous or later exercise by the Owner of any other right, power or remedy.

52. TERMINATION BY THE DESIGN-BUILDER

52.1 The Design-Builder may by giving written notice to the Owner declare the Owner in default of this Agreement for any of the following reasons:

- (a) the Owner has failed to pay the Design-Builder within 45 days of the date that any payment becomes due to the Design-Builder in accordance with the terms of this Agreement, unless the Owner is bona fide disputing liability to make such payment and has provided notice to the Design-Builder of the basis for its dispute before the time provided in Section 38.10 for payment of invoices;
- (b) the Owner has failed to substantially supply the Site to the Design-Builder, subject to any property availability restrictions identified in this Agreement, within 180 days following the Site Occupation Date; or
- (c) substantially all of the Work is stopped by an order of any court or public authority having jurisdiction (providing that such order was not issued as the result of any act or fault of the Design-Builder or a Subcontractor) for a period of 90 days.

52.2 On the happening of a default by the Owner referred to in Section 52.1, the Design-Builder may specify in writing a 21 day rectification period within which the Owner will remedy the event of default.

52.3 If the Owner fails to remedy the default within the rectification period or any extension thereof established in accordance with Section 52.2, the Design-Builder may:

- (a) waive the default;
- (b) further extend the rectification period;
- (c) suspend the Work; or
- (d) terminate this Agreement.

52.4 If the Design-Builder terminates this Agreement in accordance with Section 52.3(d), the Design-Builder is entitled to be paid:

- (a) in accordance with the terms of this Agreement for all Work satisfactorily performed to the date of termination; and
- (b) expenses of the Design-Builder that are directly related to the termination and reasonable in the circumstances including the Design-Builder's obligations to other parties.

PART H – REPRESENTATIONS AND WARRANTIES

53. REPRESENTATIONS AND WARRANTIES

53.1 The Design-Builder represents and warrants to the Owner:

- (a) as of the Effective Date that:

- (i) all necessary proceedings have been taken to authorize the Design-Builder to enter into this Agreement and to execute and deliver this Agreement;
 - (ii) this Agreement has been properly executed by an authorized signatory of the Design-Builder and is enforceable against the Design-Builder in accordance with its terms;
 - (iii) the Design-Builder has had sufficient time, opportunity and resources to investigate and has investigated and satisfied itself of every condition and risk relating to, affecting or that may affect the Project and the Work, or either of them, including the Site conditions, and the labour, equipment, material and other resources that may be necessary for the performance of the Work in a manner that will meet or exceed all requirements of this Agreement, to the satisfaction of the Owner;
 - (iv) the Design-Builder's investigations and assessments described in Section 53.1(a)(iii), including of the Site conditions (such conditions including for greater certainty geotechnical conditions, subsurface conditions, bearing pressure, settlement characteristics and nature and consistency of soil), and any conclusions reached in such investigations and assessments, including any conclusions as to the effect, if any, on the Design, Construction, Substantial Completion Dates and Contract Price, (or any of them), except for objective geotechnical information that can be relied upon for accuracy but not interpretation, sufficiency or relevance, are based on the Design-Builder's own experience, examination, knowledge, information, interpretation, assessment, analysis and judgment and not upon any statement, representation or information, whether oral or written, made, produced or provided by, through or on behalf of the Owner or its advisors;
 - (v) subject to Section 26.1 in respect of the accuracy of objective geotechnical data identified in Section 26.1(c), the Design-Builder acknowledges that the investigations made by the Owner of the conditions of the Site, including subsurface conditions, are of a preliminary nature and are made for the purpose of study and preliminary design for the sole benefit of the Owner only except for objective geotechnical data that can be relied upon by the Design-Builder for accuracy but not interpretation, sufficiency or relevance;
 - (vi) the Design-Builder has no knowledge of any fact that materially adversely affects or, so far as it can foresee, might materially adversely affect either its financial condition or its ability to fulfill its obligations under this Agreement;
 - (vii) there is no bona fide proceeding pending or threatened against the Design-Builder, which would, if successful, materially adversely affect the ability of the Design-Builder to fulfill its obligations under this Agreement; and
 - (viii) the Design-Builder acknowledges that it has the responsibility for informing itself of all aspects of the Project and all information necessary to perform the Work and
- (b) as of the Effective Date (to the extent applicable as of the Effective Date) and at all times throughout the Term that:
- (i) the Design-Builder has filed all tax, corporate information and other returns required to be filed by all Laws, has complied with all workers' compensation legislation and other similar legislation to which it is subject, and has paid all

taxes, fees and assessments due by the Design-Builder under those laws as of the Effective Date, except for Lien Holdback monies properly retained, payments deferred by agreement and accounts withheld by reason of legitimate dispute;

- (ii) the Design-Builder holds all permits, licences, consents and authorities issued by any level of government, or any agency of any level of government, that are required by all Laws to perform the Work;
- (iii) the Design-Builder has paid, as they became due, all accounts, expenses, wages, salaries, taxes, rates, fees and assessments required to be paid by it in respect of the Work and fulfillment of its obligations under this Agreement;
- (iv) the Design-Builder is not in breach of any Law that is material to performance of the Design-Builder's obligations under this Agreement;
- (v) the Key Individuals or any substitute with equivalent qualifications proposed by the Design-Builder who have first been expressly accepted in writing by the Owner will be available and fully involved in the performance of the Work; and
- (vi) the Design-Builder is registered for the purposes of the HST.

53.2 The Owner represents and warrants to the Design-Builder as of the Effective Date that:

- (a) it has been properly constituted pursuant to applicable legislation;
- (b) it has been properly authorized to fulfill the obligations of the Owner under this Agreement; and
- (c) it has the power, capacity and authority to enter into this Agreement and to carry out its obligations under this Agreement.

PART I – PROTECTION AND INDEMNITY

54. PROTECTION OF WORK AND PROPERTY

- 54.1 The Design-Builder will protect the Work, the Site and property adjacent to the Site from damage that may arise as the result of the Design-Builder's operations under this Agreement, and will be responsible for such damage, except damage that occurs as the result of actions of the Owner, its agents, employees or Other Contractors.
- 54.2 Should any damage occur to the Work, the Site and property adjacent to the Site for which the Design-Builder is responsible as provided in Section 54.1, the Design-Builder will make good such damage at its own expense or pay all costs incurred by the Owner or others in making good such damage.
- 54.3 Should any damage occur to the Work, the Site and property adjacent to the Site for which the Design-Builder is not responsible as provided in Section 54.1, the Design-Builder will at the Owner's direction and expense make good such damage. The Contract Price and Contract Time will be adjusted in accordance with Section 46 (Valuation and Certification of Changes) and Section 47 (Determination of Cost).

55. EXCLUSIONS OF LIABILITY

55.1 Neither the Design-Builder nor the Owner will be liable to the other for any consequential or indirect damages in connection with this Agreement, whether based in contract, tort (including negligence), strict liability or otherwise and including loss of use, loss of revenues or profits and loss of opportunity. This Section 55.1 will not limit any liability the Design-Builder may have under this Agreement to pay liquidated damages. Subject to Section 55.2 the maximum amount of the total aggregate liability of the Design-Builder to the Owner in connection with this Agreement, whether based in contract, tort (including negligence), strict liability or otherwise, is:

- (a) in respect of a loss by the Indemnified Parties for which insurance is to be provided by the Owner under Section 1 (Wrap-up Liability Insurance) or Section 3 (Property Coverage Insurance) of Schedule 3 (Insurance Conditions), the applicable limit or sub-limit of the Wrap-up Liability coverage or the course of construction coverage, whichever is applicable to the loss, with such limit or sub-limit calculated without reduction for the amount of any deductible; or
- (b) in respect of any liability other than a loss referred to in Section 55.1(a) above, 50% of the Contract Price.

If this Agreement is terminated, the reference in this Section 55.1 to the "Contract Price" will be deemed only for purposes of this Section 55.1 to be the amount to which the Design-Builder would have been entitled if the Design-Builder had properly performed and completed the Work and this Agreement had not been terminated.

55.2 Section 55.1 will not limit the Design-Builder's liability in connection with:

- (a) fraud, gross negligence or wilful, fraudulent or criminal misconduct;
- (b) bodily injury, sickness, disease or death
- (c) liability to third parties in respect of tangible personal or real property;
- (d) breach by the Design-Builder of its obligations of confidentiality under this Agreement; and
- (e) penalties, fines or other liability imposed by a governmental authority, an administrative tribunal or a court of competent jurisdiction for breach of applicable Law.

55.3 Nothing in this Section 55 will be construed to limit the liability of an insurer under the insurance required to be maintained under this Agreement.

56. INDEMNIFICATION

56.1 The Design-Builder will indemnify and save harmless the Owner and its officers, employees, representatives, consultants and agents (collectively the "Indemnified Parties") from and against any and all losses, claims, damages, actions, causes of action, costs and expenses that any of the Indemnified Parties may sustain, incur, suffer or be put to at any time either before or after the expiration or termination of this Agreement, where the same or any of them are based upon, arise out of or occur, directly or indirectly, by reason of any act or omission of the Design-Builder or of any representative, agent, employee, officer, director, consultant of the Design-Builder or of any Subcontractor,, excepting only liability to the extent arising out of the independent acts of the Indemnified Parties.

- 56.2 The obligations of the Design-Builder under Section 56 (Indemnification) will not be affected by completion or termination of this Agreement, whether for default or otherwise, or suspension of the Work or any withdrawal of services or labour from the Project.
- 56.3 Neither the requirement of the Design-Builder to purchase and maintain insurance as described in the Insurance Conditions nor the acceptance of evidence of such insurance by the Owner will, in any manner, limit or qualify the right of the Owner to make a claim and recover insurance proceeds under the insurance policies described in the Insurance Conditions or the liability and obligations otherwise assumed by the Design-Builder under this Agreement.

57. DESIGN-BUILDER'S DISCHARGE OF LIABILITY

- 57.1 The Design-Builder will discharge all liabilities incurred by it, including for labour, equipment, materials or services used or reasonably required for use, in the performance of this Agreement, on or before the date each becomes due. In the case of bona fide disputed payments, the Design-Builder will discharge such liabilities when legally obliged to do so.
- 57.2 The Design-Builder will include as a condition of every Subcontract that the Subcontractor discharge all liabilities incurred by it, including for labour, equipment, materials, supplies or services used or reasonably required for use, in the performance of the Subcontract, on or before the date upon which each becomes due. In the case of bona fide disputed payments, the Design-Builder will discharge such liabilities when legally obliged to do so.
- 57.3 The Design-Builder will furnish the Owner with satisfactory evidence that its liabilities and those of Subcontractors have been discharged, such satisfactory evidence to be a statutory declaration in the form of CCDC 9A sworn by a knowledgeable officer or senior management employee of the Design-Builder or Subcontractor, as the case may be, or such other evidence as the Owner may require.
- 57.4 The Design-Builder will not directly or indirectly create, incur, assume or allow to be created by any of its Subcontractors or workers any lien, charge or encumbrance on the Site, Project or any part thereof or interest therein. The Design-Builder will immediately notify the Owner of any lien, charge or encumbrance asserted upon the Site, Project or any part thereof.

PART J - SECURITY, RECORDS, REPORTS AND AUDIT

58. BONDS

- 58.1 Before commencing the Work, the Design-Builder will purchase and deliver to the Owner an executed performance bond and an executed labour and materials payment bond (the "Bonds"). The form of the Bonds will be in accordance with the latest edition of the CCDC approved bond form or in substantially equivalent form acceptable to the Owner.
- 58.2 Each Bond under Section 58.1 will be in the amount of 50% of the Contract Price and will be issued by a surety licensed to transact the business of a surety in British Columbia and acceptable to the Owner, acting reasonably.
- 58.3 Upon entering into a Subcontract with a Subcontractor, the Design-Builder will advise the Subcontractor that a labour and materials payment Bond is in effect and will supply a copy of that Bond to the Subcontractor on request.
- 58.4 The Design-Builder will pay for and maintain the Bonds.
- 58.5 If the surety notifies either party that the Bonds are or are going to be terminated or cancelled for any reason whatsoever, the Design-Builder will obtain and provide the Owner with valid bonds

effective from the date of termination or cancellation of the original bonds that comply with the bonding requirements of this Agreement.

- 58.6 The Design-Builder will, if required by the surety, to obtain the written consent of the surety to any Change and will upon request by the Owner provide confirmation from the surety of such consent or confirmation from the surety that such consent is not required.

59. INSURANCE

- 59.1 The Owner and the Design-Builder will obtain and maintain during the Term the insurance specified for each of them under the Insurance Conditions, and will otherwise comply with the Insurance Conditions.
- 59.2 Before beginning the Work, the Design-Builder will deliver to the Owner certified copies of all insurance coverage obtained by the Design-Builder in accordance with the Insurance Conditions, or such other proof of that insurance as is satisfactory to the Owner, acting reasonably.

60. RECORDS AND AUDIT

- 60.1 The Design-Builder will, in connection with this Agreement, retain for a minimum of 6 years after the expiry of the Warranty Period, all records, reports and other documentation required under this Agreement and the following records, reports and other documentation relating to the Project whether or not required under other provisions of this Agreement:
- (a) all documents relating to permits;
 - (b) all notices, reports, results and certificates relating to completion of the Design and Construction and completion of all commissioning activities;
 - (c) all records relating to any inspections of the Facility conducted under applicable Laws or by or for any governmental authority;
 - (d) all orders or other requirements issued to the Design-Builder by any governmental authority in connection with the Work;
 - (e) all documents relating to applications for payment, Changes or delay or other claims by the Design-Builder.

The Design-Builder will permit the Owner and its consultants and representatives to inspect and copy any or all such records, reports and other documentation.

- 60.2 Without limiting the other provisions of this Agreement, the Design-Builder will provide to the Owner and its consultants and representatives all records, reports and other documentation reasonably required by the Owner to support any applications for payment, Changes or delay or other claims by the Design-Builder.
- 60.3 The Owner and its consultants and representatives may audit all books and records of the Design-Builder that relate to any applications for payment, Changes or delay or other claims by the Design-Builder.
- 60.4 The Design-Builder will fully cooperate with the Owner to conduct an audit pursuant to this Section 60.

PART K - DISPUTE RESOLUTION

61. DISPUTE RESOLUTION

- 61.1 If a Dispute arises, the Design-Builder will diligently proceed with the Work and closely track all costs and impacts associated with the Dispute while reserving its rights concerning the Dispute.
- 61.2 Disputes will in the first instance be referred to the Owner's Consultant by notice in writing to both the Owner's Consultant and to the other party for the Owner's Consultant's decision which will be given by the Owner's Consultant in writing and within a reasonable period of time. Both parties reserve their rights to dispute the decision of the Owner's Consultant.
- 61.3 Where either or both parties dispute the Owner's Consultant's decision made pursuant to Section 61.2 the parties will abide by the Owner's Consultant's decision until such time as the Dispute is finally resolved under the other provisions of this Section 61.
- 61.4 The Owner and the Design-Builder will:
- (a) make bona fide efforts to resolve any Dispute arising between them by amicable negotiations; and
 - (b) provide frank, candid and timely disclosure of all relevant facts, information and documents to facilitate the resolution of any claim or Dispute.
- 61.5 In order to facilitate the negotiations in Section 61.4(a), each party will provide full written particulars of the nature, entitlement and magnitude of any Dispute, including the provisions of this Agreement relied upon and any relevant facts, information and documents.
- 61.6 Within 7 days of a Dispute arising, the Design-Builder's Representative or the Owner's Representative, as the case may be and provided the parties have received all information requested pursuant to Section 61.4(b) and Section 61.5, will give the other party written notice of the Dispute and the Design-Builder's Representative and the Owner's Representative will use bona fide efforts as identified by Section 61.4(a) to resolve the Dispute.
- 61.7 If the Owner's Representative and the Design-Builder's Representative fail to resolve the Dispute within 10 days after receipt of the notice pursuant to Section 61.6, the parties will refer the Dispute and all information to the nominated senior officer of the Owner and the nominated senior officer of the Design-Builder for resolution.
- 61.8 If the nominated senior officer of the Owner and the nominated senior officer of the Design-Builder fail to resolve the Dispute within 10 days after the Dispute has been referred to them, either party may elect to give notice of its intention to submit the Dispute to binding arbitration. If within 10 days of such notice the other party does not give a notice of objection to arbitration, the Dispute will be resolved by arbitration. The Dispute will be referred to a single arbitrator and finally resolved by binding arbitration under the rules of the British Columbia International Commercial Arbitration Centre.
- 61.9 The arbitrator will be chosen by mutual agreement between the Design-Builder and the Owner. If an arbitrator has not been appointed within 14 days of the date that the Dispute has been referred to an arbitrator pursuant to Section 61.8, the arbitrator will be appointed by the British Columbia International Commercial Arbitration Centre.
- 61.10 Prior to receiving a notice of intention to submit a Dispute to binding arbitration or after giving a notice of objection to arbitration in accordance with Section 61.8 a party may commence

proceedings in respect of the Dispute in the courts of British Columbia and serve the other party as required in respect of such proceedings.

- 61.11 Any of the times specified in this Section 61 may be varied by mutual agreement between the Design-Builder's Representative and the Owner's Representative.
- 61.12 Pursuit of the resolution of a Dispute under any part of this Section 61 does not relieve either party of its responsibility to ensure timely performance of its obligations under this Agreement.

PART L - GENERAL PROVISIONS

62. LAWS, NOTICE, PERMITS AND FEES

- 62.1 The Design-Builder will perform the Work in accordance with all Laws and Standards and will comply with all Laws and Standards that may affect or relate to the Work.
- 62.2 The Design-Builder will apply for, pay for and obtain the building permit and all other permits, licences and approvals required for the performance of the Work. When requested to do so by the Design-Builder, the Owner may at its discretion provide reasonable assistance to the Design-Builder in obtaining permits, licences, and approval required for the performance of the Work but, in no circumstance will the Owner be required to incur any costs or make any payments pursuant to this section.
- 62.3 All Laws in force in British Columbia, as amended from time to time, govern the Work.
- 62.4 Except for PST as provided in Section 39 or as otherwise provided in this Agreement, if after the Effective Date changes are made to the applicable Laws and Standards, either party will be entitled to make a claim an adjustment in the Contract Price or the Contract Time as a Change as provided in Section 45 (Changes).

63. INTELLECTUAL PROPERTY FEES

- 63.1 The Design-Builder will obtain and pay for all intellectual property rights (including of any patent, copyright, industrial design, trademark or trade secret), all royalties and licence fees required for the performance of the Work and will, without limiting Section 56 (Indemnification), indemnify and hold the Owner harmless from and against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the Design-Builder's performance of the Work under this Agreement that are attributable to infringement or an alleged infringement of any intellectual property right by the Design-Builder or its Subcontractors or anyone for whose acts the Design-Builder may be liable.

64. CONFIDENTIALITY AND COMMUNICATIONS

- 64.1 Subject to Section 64.2, each party will hold in confidence any Confidential Information received from the other party, except that this Section 64 will not restrict:
 - (a) the Design-Builder from disclosing or granting access to such information to its professional advisers and consultants, to the extent necessary, to enable it to perform (or to cause to be performed) or to enforce its rights or obligations under this Agreement and provided further that the Design-Builder may, subject to obtaining confidentiality restrictions similar to those set out in this Agreement, provide to a Subcontractor and its advisors, or provide or cause to be provided to other third parties, Confidential Information which is necessary to enable the Design-Builder to perform (or to cause to be performed) its obligations under this Agreement; and

- (b) the Owner from disclosing or granting access to such information to any provincial ministry, Partnerships British Columbia Inc. and any other governmental authority which require the information in relation to the Project;
- 64.2 Subject to any restrictions on the Confidential Information which are imposed by a third party that may own any Confidential Information, the obligation to maintain the confidentiality of the Confidential Information does not apply to:
- (a) Confidential Information which the party that disclosed the Confidential Information confirms in writing is not required to be treated as Confidential Information;
 - (b) Confidential Information which is or comes into the public domain otherwise than through any disclosure prohibited by this Agreement;
 - (c) Confidential Information to the extent any person is required to disclose such Confidential Information by Law, including a disclosure required under FIPPA;
 - (d) Confidential Information to the extent consistent with any Owner's policy concerning the Owner's Confidential Information, the details of which have been provided to the Design-Builder in writing prior to the disclosure; or
 - (e) the material referred to in Section 18.5 and any Confidential Information that the Owner is entitled to receive from the Design-Builder pursuant to this Agreement.
- 64.3 Without prejudice to any other rights and remedies that the other party may have, each of the parties agrees that damages may not be an adequate remedy for a breach of Section 64.1 and that the other party will, in such case, be entitled to the remedies of injunction, specific performance or other equitable relief for any threatened or actual breach of Section 64.1, subject, in the case of a claim for any such remedy against the Owner, to the provisions of the *Crown Proceeding Act* (British Columbia).
- 64.4 Unless required by any Law, neither party will make or permit to be made any public announcement or disclosure whether for publication in the press, radio, television or any other medium of any Confidential Information without the consent of the other party (which will not be unreasonably withheld or delayed).
- 64.5 Except to the extent required for compliance with any applicable securities laws, the Design-Builder will not make any public announcement relating to the Project or this Agreement without the prior written consent of the Owner. The Design-Builder, with the prior written consent of the Owner, may include the Project in its promotional materials.
- 64.6 The Design-Builder acknowledges that the Owner may, in its discretion and without consultation with the Design-Builder, make any public announcement relating to the Project.
- 64.7 The parties will comply with Schedule 4 – Communication Roles.

65. NOTICE

65.1 Any notice or communication required or permitted to be given under this Agreement will be in writing and will be considered to have been sufficiently given if delivered by hand or transmitted by facsimile or electronic transmission to the address, facsimile number or electronic mail address of each party set out below:

(a) if to the Owner:

Address: 1810 Blanshard Street, 8th floor
Deputy Minister's office
Victoria BC

Attention: Dave Byng, Deputy Minister

Facsimile: 250-952-0113

Email: trish.sterloff@gov.bc.ca

(b) if to the Design-Builder:

PCL Constructors Westcoast Inc.
13911 Wireless Way, Suite 310
Richmond, BC V6V 3B9

Attention: Les Krusel

Facsimile: (604) 241-5301

Email: LKrusel@pcl.com

or to such other address, facsimile number or electronic mail address as any party may, from time to time, designate in the manner set out above.

65.2 Any such notice or communication will be considered to have been received:

(a) if delivered by hand during business hours (and in any event, at or before 5:00 pm local time in the place of receipt) on a Business Day, upon receipt by a responsible representative of the receiver, and if not delivered during business hours, upon the commencement of business hours on the next Business Day;

(b) if sent by facsimile transmission during business hours (and in any event, at or before 5:00 pm local time in the place of receipt) on a Business Day, upon the sender receiving confirmation of the transmission, and if not transmitted during business hours, upon the commencement of business hours on the next Business Day following confirmation of the transmission; and

(c) if sent by electronic transmission during business hours (and in any event, at or before 5:00 pm local time in the place of receipt) on a Business Day, upon receipt, and if not delivered during business hours, upon the commencement of business hours on the next Business Day, provided that:

(i) the receiving party has, by electronic transmission, by hand delivery or by facsimile transmission, acknowledged to the notifying party that it has received such notice; or

- (ii) within 24 hours after sending the notice, the notifying party has also sent a copy of such notice to the receiving party by hand delivery or facsimile transmission.

65.3 Delivery by mail will not be considered timely notice under this Agreement.

65.4 In the event of an emergency or urgent matter, in addition to the notice required by this Section 65, a verbal notice will be given as soon as the party giving the notice becomes aware of any material event or circumstance that gives rise to the requirement for a written notice being given.

66. LEGAL RELATIONSHIP

66.1 The Design-Builder is an independent contractor and not the servant, employee, partner or agent of the Owner.

66.2 The Design-Builder will not commit the Owner to the payment of any money to any person.

66.3 No partnership, joint venture or agency involving the Owner is created by this Agreement or under this Agreement.

66.4 All personnel engaged by the Design-Builder to design and construct the Project are at all times the employees or Subcontractors of the Design-Builder and not of the Owner. The Design-Builder is solely responsible for all matters arising out of the relationship of employer and employee.

67. ASSIGNMENT

67.1 The Design-Builder will not, without the prior written consent of the Owner, assign, either directly or indirectly, any right or obligation of the Design-Builder under this Agreement.

67.2 The Owner may, upon notice to the Design-Builder, assign any or all of its rights or obligations under this Agreement to any other agency or organization that will assume responsibility for operation of the Facility. Subject to the right of assignment of the licence referred to in Section 18.5, the Owner will not, without the prior written consent of the Design-Builder, assign, either directly or indirectly, any right or obligation of the Owner under this Agreement.

68. INTEREST

68.1 If payment by either party of any amount payable under this Agreement is not made when due, interest will be payable on such amount at [redacted] per annum over the prime rate, calculated from the date due under this Agreement until paid, compounded monthly. The party to whom payment is owed and overdue will notify the other party at least monthly of the overdue amount and the accrued interest on that amount. The prime rate is the annual rate of interest announced by Royal Bank of Canada (or its successor), or any other Canadian chartered bank agreed to by the parties, as its "prime" rate then in effect for determining interest rates on Canadian dollar commercial loans made by it in Canada.

69. WAIVER

69.1 No waiver by either party of a right of that party or any breach by the other party in the performance of any of its obligations under this Agreement is effective unless it is in writing.

69.2 No waiver of any right or obligation is a waiver of any other right or obligation under this Agreement.

- 69.3 Failure or delay to complain of an act or failure of the other party or to declare the other party in default, irrespective of how long the failure or delay continues, does not constitute a waiver by the party of any of its rights against the other party.
- 69.4 The duties and obligations imposed by this Agreement and the rights and remedies available hereunder will be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

70. ASSUMPTION OF RISK

- 70.1 Except to the extent expressly allocated to the Owner or otherwise provided for under this Agreement, all risks, costs and expenses in relation to the performance by the Design-Builder of its obligations under this Agreement are allocated to, and accepted by, the Design-Builder as its entire and exclusive responsibility.

71. GENERAL DUTY TO MITIGATE

- 71.1 In all cases where the Design-Builder is entitled to receive from the Owner any additional compensation or any costs, damages or extensions of time, the Design-Builder will use all reasonable efforts to mitigate such amount required to be paid by the Owner to Design-Builder under this Agreement, or the length of the extension of time. Upon request from the Owner, the Design-Builder will promptly submit a detailed description, supported by all such documentation as the Owner may reasonably require, of the measures and steps taken by Design-Builder to mitigate and meet its obligations under this Section 71.

72. OTHER PROVISIONS

- 72.1 The exclusions, waivers and limitations of liability, representations and warranties and indemnities in this Agreement, the provisions of Sections 60 (Records and Audit), 61 (Dispute Resolution), 63 (Intellectual Property Fees), 64 (Confidentiality and Communications) and rights accrued prior to completion or termination of this Agreement will survive the completion or termination of this Agreement.
- 72.2 This Agreement constitutes the entire agreement between the parties, expressly superseding all prior agreements and communications (both oral and written) between any of the parties hereto with respect to all matters contained herein or therein, and except as stated herein or the instruments and documents to be executed and delivered pursuant hereto, contains all the representations and warranties of the respective parties.
- 72.3 No waiver of any provision of this Agreement and no consent required pursuant to the terms of this Agreement is binding or effective unless it is in writing and signed by the party providing such waiver or consent.
- 72.4 No failure to exercise, and no delay in exercising, any right or remedy under this Agreement will be deemed to be a waiver of that right or remedy. No waiver of any breach of any provision of this Agreement will be deemed to be a waiver of any subsequent breach of that provision or of any similar provision.
- 72.5 This Agreement enures to the benefit of and binds the Owner, its successors and its assigns and the Design-Builder and its successors and permitted assigns.
- 72.6 The parties must do everything reasonably necessary to give effect to the intent of this Agreement, including execution of further instruments.

- 72.7 The Design-Builder and the Owner will take all reasonable and necessary steps to minimize and avoid all costs and impacts arising out of the performance of the Work and this Agreement.
- 72.8 Neither the Owner nor the Design-Builder will take advantage of any apparent discrepancy, ambiguity, error or omission in this Agreement and will notify the other party forthwith following the detection of anything it suspects may be an ambiguity, discrepancy, error or omission.
- 72.9 Each Schedule attached to this Agreement is an integral part of this Agreement as if set out at length in the body of this Agreement.
- 72.10 This Agreement may only be amended by an agreement of the parties in writing. No such amendments will be valid unless executed by the Owner and the Design-Builder.
- 72.11 This Agreement will be deemed to be made pursuant to the Laws of the Province of British Columbia and the Laws of Canada applicable therein and will be governed by and construed in accordance with such Laws.
- 72.12 For the purposes of any legal actions or proceedings brought by any party hereto against the other party, the parties hereby irrevocably submit to the exclusive jurisdiction of the courts of the Province of British Columbia and acknowledge their competence and the convenience and propriety of the venue and agree to be bound by any judgment thereof and not to seek, and hereby waive, review of its merits by the courts of any other jurisdiction.
- 72.13 Where the Design-Builder is a joint venture, partnership or consortium, each member agrees to be jointly and severally liable for the obligations of the Design-Builder.
- 72.14 Time is of the essence of this Agreement.
- 72.15 This Agreement may be executed in any number of counterparts, each of which will be deemed to be an original, and this has the same effect as if the signatures on the counterparts were on a single copy of this Agreement so that it will not be necessary in making proof of this Agreement to produce or account for more than one such counterpart.
- 72.16 A party may deliver an executed copy of this Agreement by facsimile or other electronic means but that party will immediately deliver to the other parties an originally executed copy of this Agreement.

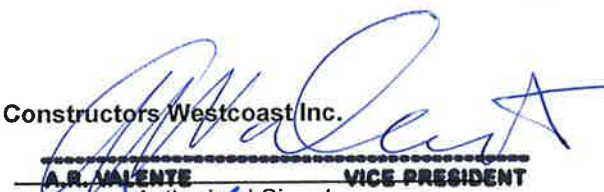
IN WITNESS WHEREOF the parties have executed this Agreement as of the Effective Date.

**Her Majesty the Queen in Right of the
Province of British Columbia, as represented
by the Ministry of Jobs, Tourism and Skills
Training**

Per:


Authorized Signatory

PCL Constructors Westcoast Inc.

Per: 
~~A.R. VALENTE~~ ~~VICE PRESIDENT~~
Authorized Signatory

Per: 
Authorized Signatory

SCHEDULE 1
STATEMENT OF REQUIREMENTS

See separate document

SCHEDULE 1

STATEMENT OF REQUIREMENTS

**WOOD INNOVATION DESIGN
CENTRE**

Prince George, British Columbia

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SCHEDULE 1**STATEMENT OF REQUIREMENTS****PART 1. INTERPRETATION****1.1 Definitions**

In this Schedule, unless the context indicates a contrary intention, terms which are defined in the Agreement (and not otherwise defined in this Schedule) will have the meanings given to them in the Agreement and the following terms will have the following meanings:

“BC Building Code” means the 2006 British Columbia Building Code, as modified by the Site Specific Regulation or the version of the BC Building Code current at the time of the issuance of a building permit for the project as directed by the Building Department of the City of Prince George;

“Communication Systems” has the meaning set out in [Section 7.6.14.1\(1\)](#) of this Schedule;

“CPTED” means Crime Prevention Through Environmental Design;

“Facility Space Requirements” has the meaning set out in [Section 2.2.2](#) of this Schedule; Appendix 1D.

“Indicative Design” has the meaning set out in [Section 2.2](#) of this Schedule;

“Program Requirements” has the meaning set out of this Schedule;

“Room Data Sheets” has the meaning set out in [Section 2.2.1](#) of this schedule;

“Lecture Theatre” is a large lecture space that allows for multiple cohorts to assemble for presentations and special events.

“Research Lab” is a wet lab for research on wood structures and related materials and attachment systems, as appropriate to the research interests of the faculty teaching in the Master’s of Engineering program.

“Research Lab Prep Areas” is a wet lab for research on wood structures and related materials and attachment systems, as appropriate to the research interests of the faculty teaching in the Master’s of Engineering program.

1.2 Overview

1.2.1 Wood Innovation Design Centre Project

The Working Roundtable on Forestry (the “Roundtable”) was formed in 2008, and was tasked with identifying key issues and opportunities facing the forest sector in British Columbia (B.C.), and making recommendations to ensure a strong, vibrant, sustainable forest industry in B.C. for this and future generations. Through the work of the Roundtable, discussions with industry, and future economic indicators for export opportunities, it is apparent that there is a need for a building that fosters collaboration between industry, academia and government.

The Wood Innovation Design Centre Project, from this point forward referred to as “the Facility” will be located in downtown Prince George, B.C. and will promote expertise in advanced building systems, engineered wood products, interior wood design and applications, and other value-added wood products. The Facility will house academic and research programs focused on advancing British Columbia’s expertise in wood-related products, and highlight new and innovative wood building products and techniques.

The University of Northern British Columbia is developing an academic program with an emphasis on wood design and Construction to be housed in the Facility. The remaining space in the Facility will be allocated for complementary provincial and municipal economic development and related industry use.

1.2.2 The Facility shall be designed and constructed so as to realize the following objectives:

- 1.2.2.1 Develop capacity for building large, non-residential and multi-use buildings utilizing wood and innovative wood products;
- 1.2.2.2 Bring together builders, architects, designers and engineers to advance the commercialization of innovative wood products, technologies and building processes;
- 1.2.2.3 Strengthen B.C.’s expertise and global reputation as leaders in wood-based Construction and design and engineered wood products;
- 1.2.2.4 Contribute to the revitalization of downtown Prince George;
- 1.2.2.5 Foster collaboration between post-secondary institutions, industry and governments.

1.3 Acronym List:

- AAS – Aluminum Association Standards
- AAMA – American Architectural Manufacturers Association
- ANSI – American National Standards Institute
- ASHRAE – American Society of Heating, Refrigerating and Air-Conditioning Engineers
- ASME – American Society of Mechanical Engineers
- ASPE – American Society of Plumbing Engineers
- ASTM – American Society for Testing and Materials
- AWS – American Welding Society
- AWMAC – Architectural Woodwork Manufacturer’s Association of Canada
- BAS – Building Automation Systems
- BCBC – British Columbia Building Code
- BCICA – British Columbia Insulation Contractors Association
- BCLNA – British Columbia Landscape & Nursery Association
- BCSA – British Columbia Safety Authority
- BCSLA – British Columbia Society of Landscape Architects
- BMS – Building Management System
- CACF – Central Alarm and Control Facility
- CBU – Cemetitious Backer Unit
- CCTV – Closed Circuit Television
- CGA – Compressed Gas Association
- CISCA – Ceiling Interior Systems Construction Association
- CFC – Chlorofluorocarbon
- CFM – Cubic Feet per Minute
- CMCA – Canadian Masonry Contractors Association

- CMHC – Canadian Mortgage and Housing Corporation
- CPU – Central Processing Unit
- CPTED – Crime Prevention through Environmental Design
- CSA – Canadian Standards Association
- DDC – Direct Digital Controls
- DDES – Downtown District Energy System
- DHI – (Door Hardware Institute)
- EPA – Environmental Protection Agency
- FCL – Flood Construction Level
- FPI – FP Innovations
- FPM- Feet Per Minute
- HCFC – Hydrochlorofluorocarbons
- HVAC – Heating, Ventilating and Air-Conditioning
- HP – Horse Power
- IAO – Insurers’ Advisory Organization
- IEEE – Institute of Electrical and Electronic Engineers
- IESNA – Illuminating Engineering Society of North America
- MCC – Motor Control Center
- MPI – Master Painters Institute
- NEMA – National Electrical Standards Association
- NFPA – National Fire Protection Association
- NVR – Network Video Recorder
- OS&Y – Open Stem and Yoke
- RH – Relative Humidity
- RCABC – Roofing Contractors Association of British Columbia
- RDS – Room Data Sheets

- RGC – RCABC Guarantee Corporation.
- SBC – Styrene Butadiene Styrene
- SDL – Superimposed Dead Loads
- SOR – Statement of Requirements
- SPD – Surge Protector Device
- STC – Sound Transmission Class
- TAB – Testing, Adjusting, Balancing
- TAC – Transportation Association of Canada
- TTMAC – Terrazzo and Tile Manufacturers Association of Canada
- TVOC – Total Volatile Organic Compounds
- ULC – Underwriters’ Laboratories of Canada
- UNBC – University of Northern British Columbia
- VFD – Variable Frequency Drive
- VOC – Volatile Organic Compounds
- WIDC – Wood Innovation Design Center

PART 2. GENERAL

2.1 Standards

General Standard of Design and Construction

- 2.1.1 The Design and Construction is to be completed:
 - 2.1.1.1 in accordance with all applicable laws and good industry practice and the standards set out in this Schedule;
 - 2.1.1.2 in accordance with the version of the BCBC current at the time of the issuance of a building permit for the Project, and as modified through the Site Specific Building Regulation.
 - 2.1.1.3 in accordance with the requirements of all relevant CSA standards.
 - 2.1.1.4 having regard for the concerns, needs and interests of all authorities having jurisdiction.
- 2.1.2 If the Design-Builder wishes to make reference to a code or standard from a jurisdiction outside of Canada, then the Design-Builder will demonstrate to the Authority' satisfaction that such code or standard meets or exceeds the requirements of this Schedule and other applicable governing bodies.
- 2.1.3 The Design and Construction is to be performed in compliance with all applicable standards regardless of whether they appear in the document or not, including:
 - 2.1.3.1 BCICA Quality Standards Manual for Mechanical Insulation, latest edition.
 - 2.1.3.2 ANSI / ASHRAE
 - 2.1.3.2(1) 52.2-1999: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size;
 - 2.1.3.2(2) 55-2004: Thermal Environmental Conditions for Human Occupancy;
 - 2.1.3.2(3) 62.1-2004:-Ventilation for Acceptable Air Quality;
 - 2.1.3.2(4) 111-1988:-Practices for Measurement, Testing, Adjusting & Balancing of Building HVAC Systems;
 - 2.1.3.2(5) 129-1997:-Measuring Air Change Effectiveness;

- 2.1.3.2(6) 135-2004:-Data Communication Protocol for Building Automation & Control Networks; and
- 2.1.3.2(7) 0-2005 – The Commissioning Process.
- 2.1.3.3 ASHRAE:
 - 2.1.3.3(1) Handbooks: 2003 HVAC Applications, 2004 HVAC Systems and Equipment, 2005 Fundamentals, 2006 Refrigeration;
 - 2.1.3.3(2) Design of Smoke Control Systems;
 - 2.1.3.3(3) ASHRAE Guideline 1-1996 – The HVAC Commissioning process.
 - 2.1.3.3(4) ASHRAE 90.1 - 2007: Energy Efficient Design for New Buildings;
- 2.1.3.4 ANSI / ASME:
 - 2.1.3.4(1) B31.1 Power Piping Code, for steam systems;
 - 2.1.3.4(2) Section IX: Welding Qualifications;
 - 2.1.3.4(3) AWS D1.3-98 - Structural Welding Code - Sheet Steel.
- 2.1.3.5 ASPE Plumbing Engineering Design Handbook, Volumes 1-4.
- 2.1.3.6 ASTM:
 - 2.1.3.6(1) BCSLA and BCLNA - BC Landscape Standard – Current Edition.
- 2.1.3.7 CSA
 - 2.1.3.7(1) A440-00(R2005): Windows;
 - 2.1.3.7(1) B52HB-05: Mechanical Refrigeration Code;
 - 2.1.3.7(2) B149.1-00: Natural Gas and Propane Installation Code;
 - 2.1.3.7(3) B651-04(R2010): Barrier Free Design;
 - 2.1.3.7(4) 09 R2012(2009),A23.1-09/A23.2-09, - Concrete Materials and Methods of Concrete Construction /

- Methods of Test and Standard Practices for Concrete; and
- 2.1.3.7(5) CAN/ CSA B651-04: Accessible Design for the Built Environment;
- 2.1.3.7(6) S832-06 (R2011), – Seismic Risk Reduction of Operational and Functional Components (OFCS of buildings).
- 2.1.3.8 MPI
- 2.1.3.8(1) Master Painters Institute (MPI) Architectural Specification Standards Manual.
- 2.1.3.9 NFPA
- 2.1.3.9(1) 10-2010: Standard for Portable Fire Extinguishers;
- 2.1.3.9(2) 13-2010: Standard for the Installation of Sprinkler Systems;
- 2.1.3.9(3) 80-2010: Standard for Fire Doors and Fire Windows;
- 2.1.3.9(4) 90A - Current Edition: Standard for Installation of Air Conditioning and Ventilation Systems;
- 2.1.3.9(5) 92A - Current Edition: Standard for Smoke-Control Systems Utilizing Barriers and Pressure Differences; and
- 2.1.3.9(6) 101 - Current Edition: Life Safety Code.
- 2.1.3.9(7) 252-2012: Standard Methods of Fire Tests of Door Assemblies.
- 2.1.3.10 City of Prince George Subdivision and Development Servicing Bylaw No. 7652, 2004;
- 2.1.3.11 City of Prince George Design Guidelines, 2001; and
- 2.1.3.12 BC Supplement to TAC Geometric Design Guide latest edition

2.2 Indicative Design and Design Requirements

- 2.2.1 The Authority and its consultants prepared the Room Data Sheets (“RDS”) for the educational component of the Project. The RDS are included as Appendix 1E. The RDS describe the conditions of workload, user

requirements and other factors which must be addressed in order for the Project to successfully serve the needs of the Authority today and in the future.

- 2.2.2 In addition to the RDS, the Authority has developed a schedule of Facility Space Requirements, located in Appendix 1D, that summarize the types of rooms or spaces, the minimum number and size of rooms or spaces, and some contents of some rooms which the Authority has identified as being necessary so that the Facility can accommodate the Program Requirements.
- 2.2.3 The RDS are to be read in conjunction with the UNBC Adjacency Matrix, included as Appendix 1B.
- 2.2.4 The Indicative Design has been drawn to reflect program areas and significant design features as required by the Facility Space Requirements, the RDS, and the UNBC Adjacency Matrix. Functionality has been tested with UNBC users who have confirmed the general layout and adjacencies. Structural, Mechanical and Electrical consultants have contributed a review and overlay of their requirements consistent with and forming part of the Indicative Design.
- 2.2.5 The RDS, and this Schedule must be read together. The design-builder will work with UNBC to finalize the location of the equipments on site and responsible for layout, infrastructure and rough in for the equipments.
- 2.2.6 Vehicular servicing is to be achieved in the existing lane and is required to be in direct grade adjacency with the lab. The Design-Builder is required to work with the City of Prince George and the Authority to develop a mutually satisfactory solution for this servicing requirement in the context of traffic flow patterns and the needs of neighbouring users. All meetings with the City of Prince George must be arranged through the Authority and will be held with a representative of the Authority in attendance.
- 2.2.7 The Design-Builder will work with the City of Prince George's various planning and building departments regarding the design of the Facility and its conformance with City of Prince George regulations and by-laws.
- 2.2.8 The Design-Builder will be completely responsible for all aspects of the Design and Construction whether or not it uses all or any part of the Indicative Design, and the Design-Builder will be responsible to independently verify the accuracy of any information contained in or inferred from the Indicative Design or the Facility Space Requirements if the Design-Builder uses any of such information in its design. The Authority makes no representation as to the accuracy or completeness of any aspect of the Indicative Design.

PART 3. DESIGN PRINCIPLES

3.1 The Site

- 3.1.1 The Site is approximately 1170 square metres in area and is defined as indicated on the Site Plan included in the Indicative Design.
- 3.1.2 A Geotechnical Report has been completed for the Site and is included in the Disclosed Data.
- 3.1.3 The Design and Construction of the Facility shall enable connectivity of the Site with the surrounding neighbourhood.
- 3.1.4 Attenuate noise from roof-top mechanical equipment.
- 3.1.5 Visually shield rooftop mechanical and electrical equipment. The environment for mechanical and electrical equipment and structures on the roof is at the discretion of the Design-Builder but, in any case, mechanical and electrical equipment must be screened.
- 3.1.6 Address the following within and around the Facility:
 - 3.1.6.1 Physical safety and security;
 - 3.1.6.2 Way-finding and legible connections around the Facility;
 - 3.1.6.3 Pedestrian and vehicular access and parking; specifically the desire to utilize parking areas separate from, but in close proximity to, the Site;
 - 3.1.6.4 The need for visual access to daylight from work areas ;
 - 3.1.6.5 Sheltering of walkways and Facility entrances;
 - 3.1.6.6 Access to natural light throughout the year in outdoor spaces;
 - 3.1.6.7 The requirements for snow dump and snow storage areas;
 - 3.1.6.8 Security shall follow modern principles of CPTED, that include the creation of welcoming environments that establish a sense of ownership among residents and Facility users;
 - 3.1.6.9 Access to the Site to meet the needs of the Facility user traffic and service and delivery vehicles as per this SOR and the RDS; delivery zones around and within the Facility shall be provided such that service and delivery vehicles will not need to back-up and disrupt neighbouring residents;

- 3.1.6.10 Design shall support informal surveillance of the laneway from behind the Facility to help create a safer public space;

3.2 Architecture

- 3.2.1 Design and construct an iconic Facility, incorporating innovative wood products (e.g., CLT (cross-laminated timber)) and design;
- 3.2.2 The Facility will be six storeys in height with a mechanical penthouse and will:
 - 3.2.2.1 Showcase British Columbia's expertise and global reputation as a leader in wood construction and design, and engineered wood products.
 - 3.2.2.2 Incorporate streetscape and a Facility design that honours the past, respect the present, and contributes to the unique identity and sense of place of Prince George's downtown.
 - 3.2.2.3 Be part of the revitalization of the historic downtown of Prince George that will showcase building innovation while recalling the past— particularly with a focus on the wood resource industry and fostering a culture of wood for architectural expression throughout the downtown.
- 3.2.3 The construction will highlight new and innovative wood building products and techniques and the intent of the Facility is to catalyze new wood product development, commercialization and adoption.
 - 3.2.3.1 The Facility is intended to serve as a tool for learning and therefore must demonstrate the use of wood both in the basic structure and, equally as important, in visually accessible areas.
 - 3.2.3.2 The Facility will be durable, designed for a 75-year functional life span which considers full life cycle costing through consultation with the Authority. The design of the Facility's structure will be in accordance with the BCBC and the applicable material and CSA standards including CSA S478 Guideline on Durability of Buildings.
- 3.2.4 Ensure a Facility design that is sensitive to Prince George's distinct and contrasting seasons and northern climate.
 - 3.2.4.1 The entrance vestibules:
 - 3.2.4.1(1) Will be protected from snow and rain by canopies;
 - 3.2.4.1(2) Will deal effectively with mud, sand and dirt;

- 3.2.4.1(3) Will be barrier free design in accordance with CAN/CSA B651-04; and
- 3.2.4.1(4) Will accommodate and facilitate ease of deliveries.
- 3.2.4.2 Site and orient the Facility so that the majority of spaces receive direct sunlight (for the daylight hours at equinox).
- 3.2.5 The building materials and finishes found in the UNBC spaces will reflect a sense of permanence and quality. They will reinforce the desired cohesive nature of UNBC engineering program with that of the rest of the existing UNBC Prince George campus.
 - 3.2.5.1 The use of indigenous materials such as wood, shall be expressed, both structurally and through the use of interior finishes and components.
 - 3.2.5.2 The use of stone such as tyndall stone, sandstone, slate, river rock and bluestone shall be investigated both as a surface finish material and in the landscaping concept.
- 3.2.6 The building materials and finishes utilized for any other tenant improvements will be informed by the SSBC Technical Standards and Government Office Space Standards included as Disclosed Data.

3.3 Sustainable Design

- 3.3.1 The Project will be designed to achieve LEED Canada 2009 Gold Certification, with specific achievement in these areas;
 - 3.3.1.1 Water Use Reduction
 - 3.3.1.2 Optimize Energy Performance
 - 3.3.1.3 Enhanced Commissioning
 - 3.3.1.4 Measurement and Verification
 - 3.3.1.5 Recycled Content
 - 3.3.1.6 Regional Materials
 - 3.3.1.7 Low Emitting Materials
 - 3.3.1.8 Durable Building
- 3.3.2 The Design is to ensure the safety and the well-being of users. The Design and Construction will therefore include the following characteristics:

- 3.3.2.1 Ease of access – both to the Facility and within the Facility for all users and delivery of materials and equipment;
 - 3.3.2.2 Efficient - reducing the Facility users' distances to travel within the functional departments;
 - 3.3.2.3 Flexible - to accommodate continuous programmatic change and growth through the use of modular, office furniture and the provision of unassigned spaces;
 - 3.3.2.4 Benign – the Facility will be energy efficient, water balanced, toxin free, with minimal and well-managed waste consistent with the spirit and intent of LEED or equivalent
 - 3.3.2.5 Secure - ensure security for users who will occupy parts of the Facility 24 hours per day while permitting public access to designated spaces during working hours.
 - 3.3.2.6 Where at-grade space is limited, deck areas shall be developed to increase access to semi-private outdoor amenity space.
 - 3.3.2.7 Incorporate green roofs, where appropriate, to help absorb stormwater and provide outdoor amenity space for staff, students and visitors.
 - 3.3.2.8 Retention and infiltration best management practices for rainwater shall be used wherever possible.
 - 3.3.2.9 Minimize light pollution through the use of full cut-off lighting, avoiding light reflectance, and directing lighting downwards. Exceptions may be made for signage and architectural lighting.
- 3.3.3 Design the Facility to include the use of alternate energy sources such as passive solar water heating and alternate heating and cooling sources such as ground source heat pumps where possible.

3.4 Safety and Security

- 3.4.1 Incorporate the following into the Design:
 - 3.4.1.1 CPTED principles in Site layout, Facility design, landscape development and lighting; and
- 3.4.2 Incorporate the following in the exterior Design:
 - 3.4.2.1 Provide exterior lighting levels near Facility entrances, exits, walkways, public areas, and parking areas. Lighting will not cause glare, shadow, or high contrast with surrounding areas;

- 3.4.2.2 Provide video surveillance of all exterior entrances and exits, sidewalks and rear laneway as further described in Section 7.8.3
- 3.4.3 Incorporate the following in the Interior Design:
 - 3.4.3.1 Video surveillance at all main entrances to the Facility so that surveillance equipment is visible to people entering the area. Cameras shall be positioned to provide identification surveillance of persons entering the Facility;
 - 3.4.3.2 Card access control of the Facility and all tenant spaces. The Card Access System will have multiple zones to distinguish access between the different, configurable categories of tenants
 - 3.4.3.3 Lobbies and main Facility entries shall be clearly visible from the street, and have direct sight lines into them. Seating in the lobby shall be provided to ensure people with mobility issues have a comfortable and secure place to sit.

3.5 Flexibility

- 3.5.1 Design and construct the Facility within the City of Prince George zoning setbacks for the Site.
- 3.5.2 It is critical that the Design accommodate future changes and that such accommodation be clearly articulated and illustrated:
 - 3.5.2.1 Allow for additions, deletions and relocations of services to the building over the life of the Facility, including consolidating risers and hubs in strategically accessible and expandable locations and planning closets, cabinets, chases and shafts for access and growth:
 - 3.5.2.1(1) Locate permanent Facility elements such as stair, elevator and duct shafts to minimize constraints on configurational change;
 - 3.5.2.1(2) Minimize interior columns for ease of planning;
 - 3.5.2.1(3) Provide a non-restrictive fenestration pattern;
 - 3.5.2.2 Facilitating future flexibility by providing the ability to reconfigure different spaces and programs. The Design-Builder may use movable/demountable walls in the appropriate areas.

3.6 Use of Wood

3.6.1 Wood content is to be maximized throughout the exterior and interior construction and finishes and will be measured in accordance with the Wood Calculator Tool developed by FPI and included as Disclosed Data.

3.6.1.1(1) The volume of wood content must achieve a minimum of 800 cubic metres

3.6.2 As contemplated by the *Wood First Act* (British Columbia), the Design-Builder will incorporate wood products into the design of the Facility to the extent that the use of wood products is consistent with the requirements of this Schedule.

3.6.2.1 The use of wood in the façade design and architectural expression of the Facility will celebrate the important role the forestry industry has played in the evolution of the City of Prince George.

3.6.3 The Facility will incorporate natural building materials into façades to avoid a “thin veneer” look and feel, incorporated with more modern treatments.

3.6.4 The use of wood shall reflect the project’s intent to demonstrate innovation in the application of “next generation” wood products and within wood-based structural systems. Wood will be a predominant material in both the interior and exterior as well as main structural systems of the Facility.

3.6.5 Wood technologies and techniques used within the Facility shall be transferable to future projects around the Province of British Columbia, Canada and the world subject to similar code variances.

3.6.6 Wood will be the preferred material where indicated as “Appropriate” in Table 1 and will not be used where indicated as “Inappropriate”. Wood will be used in both interior and exterior applications where products are exposed to view.

3.6.7 Table 1. Wood First - Appropriate Use

Area of Usage	Appropriateness	Justification
Substructure		
Forming/ Shutter (temporary)	Appropriate	The use of wood in this process is a traditional method within the construction process
Structure		
Slab on grade	Inappropriate	Wood is considered to be inappropriate for this usage.
Floors	Appropriate	Subject to code fire rating requirements, acoustic and vibration control requirements, heavy timber construction can be used
Beams	Appropriate	Subject to code fire rating requirements, acoustic and vibration control requirements, heavy timber construction can be used
Columns	Appropriate	Subject to code fire rating requirements, heavy timber construction can be used
Below Grade and Elevator Pit Walls	Not Appropriate	Wood is not considered appropriate for this usage.
Walls	Appropriate	For both structural and non-structural applications and subject to code fire rating requirements, acoustic and vibration control requirements, heavy and conventional timber construction can be used
Upper Flooring	Appropriate	Subject to code fire rating requirements, heavy timber construction can be used
Roof	Appropriate	Heavy timber construction could be used in this location
Exterior Cladding		
Roof Finish (Flat Roof)	Inappropriate	There is no known wood product for this application
Walls above ground level	Appropriate	Wood can be used as: Facing material and Studding. Must be non-combustible or meet requirements of BCBC 3.1.5.5
Exterior Windows	Inappropriate	Ability to clean and water/chemical resistance are paramount in this location
Curtain Walling	may be appropriate	Known wood products for this application are limited – hybrid systems of wood and aluminum are appropriate
Exterior Doors and Screens	Appropriate	Wood doors and screens can be used in low traffic areas
Interior Partitions and Doors		
Partition Studding	Appropriate	Support studs used for the framing of the walls and acoustic STC ratings must be met with construction used.
Interior Doors	Appropriate for	Framing, core and facing of door can be wood

Area of Usage	Appropriateness	Justification
	offices	for locations not requiring greater than a 90 minute fire resistance rating. Wood doors in high metal cart and material transport traffic areas like the Research Lab would be inappropriate
Vertical Movement		
Stairs (Structural)	May be appropriate	Wood is a possible option depending on span and structural concept, provided all code and fire rating requirements are met.
Stairs (treads, risers, handrail and infill)	Appropriate for non-exit stairs	Use of wood can be utilised in the aesthetic completion of the staircase
Guardrails	Appropriate for non-exit stairs	Wood can be used in these locations where there is a low to medium risk of impact
Fittings and Equipment		
Hardwood Floor	Appropriate	Wood could be used in certain, non-Research Lab locations as a floor finish; this would be limited to high end finished areas which are not subject to low acoustic or high usage requirements
Ceiling Tiles	Appropriate	Wood could be used in ceiling tiles for aesthetic requirements in certain, non-Research Lab areas within the Facility. This would be limited to high end finished areas which are not subject to acoustic or high usage requirements
Wall Finish	Appropriate	Wood could be used as a wall finish for aesthetic and acoustic requirements in certain, non-Research Lab areas within the Facility. This would be limited to high end finished areas which are not impaired by acoustic and high usage
Toilet Partitions	Appropriate	The core material for the partitions can be made from wood particles
Signs	Appropriate	The base material on which the sign is mounted can be of wood
Loose Equipment (Desks, chairs, etc)	Appropriate	The core material for the desks, chairs, etc can be made from particles and complete wood substrate
Fixed Equipment (Millwork)	Appropriate	The carcass, core material and substrate for millwork can be constructed with wood
Modular Lab Benches	Appropriate	The carcass, core material and substrate for modular Research Lab benches can be constructed with wood
Mechanical		
None Known		

Area of Usage	Appropriateness	Justification
Electrical		
None Known		
Site Development		
Landscaping (Architectural, decorative, Site furnishings, etc)	Appropriate	Wood could be used in landscaped areas for the arts, architectural features/Site furnishings; seats, pagodas, etc.
Contractor		
Site establishment		Where appropriate the Design Builder is to endeavour to utilise materials of wood and wood derivative for their Site establishment

3.7 Mechanical Engineering

3.7.1 General standard of design principles:

- 3.7.1.1 This section is accompanied by and shall be read in conjunction with the RDS.
- 3.7.1.2 The HVAC, plumbing, fire protection, speciality systems and gas systems will be designed to provide comfortable and productive environment for users.
- 3.7.1.3 All mechanical systems, equipment, material and installation shall conform to the latest version of all the applicable codes, standards, regulations and guidelines. The codes, standards and regulations shall include, but not be limited to the following:

3.7.1.3(1) Codes:

- 3.7.1.3(1)(a) B.C. Building Code;
- 3.7.1.3(1)(b) National Building Code (NBC);
- 3.7.1.3(1)(c) Model National Energy Code (MNECB);
- 3.7.1.3(1)(d) Canadian Electrical Safety Code;
- 3.7.1.3(1)(e) B.C. Fire Code;
- 3.7.1.3(1)(f) National Fire Code (NFC);
- 3.7.1.3(1)(g) B.C. Plumbing Code;

- 3.7.1.3(1)(h) City of Prince George Bylaws;
- 3.7.1.3(1)(i) Ministry of Environment – Environment Protection Act – Regulation 346 (MOE);
- 3.7.1.3(1)(j) Natural Gas Utilization Code; and
- 3.7.1.3(2) Organizations:
 - 3.7.1.3(2)(a) Canadian Standards Association (CSA);
 - 3.7.1.3(2)(b) National Fire Protection Agency (NFPA);
 - 3.7.1.3(2)(c) American Standards for Testing and Materials (ASTM);
 - 3.7.1.3(2)(d) American National Standards Institute (ANSI);
 - 3.7.1.3(2)(e) American Water Works Association (AWWA);
 - 3.7.1.3(2)(f) Underwriters Laboratories of Canada (YLC);
 - 3.7.1.3(2)(g) Institute of Electrical and Electronic Engineers (IEEE) Inc. Standards; ASHRAE/IES 90.1 “Energy Standards for Buildings Except Low-Rise Residential Buildings”;
 - 3.7.1.3(2)(h) Z316.5 Fume Hoods and Associated Exhaust System
- 3.7.1.3(3) Guidelines:
 - 3.7.1.3(3)(a) American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Handbooks;
 - 3.7.1.3(3)(b) Sheet Metal and Air Conditioning Contractors National Association Inc. (SMACNA) Manuals;
 - 3.7.1.3(3)(c) Industrials Ventilation Manual;

- 3.7.1.3(3)(d) Hydronics Institute Manuals;
 - 3.7.1.3(3)(e) Factory Mutual (FM)
 - 3.7.1.3(3)(f) Associated Air Balance Council (AABC);
 - 3.7.1.3(3)(g) National Environmental Balancing Bureau (NEBB); and
 - 3.7.1.3(3)(h) Institute of Electrical and Electronic Engineers (IEEE) Inc. publications;
- 3.7.1.4 The mechanical, plumbing, fire protection, speciality and gas systems will minimize impact on the natural and physical environment, through energy efficiency, optimization of resource use, and simplification of the systems.
- 3.7.1.5 The mechanical, plumbing, fire protection, and speciality and gas systems component selection, system design, and installation will incorporate the flexibility and adaptability for future expansion without major disruption or alteration to the facilities infrastructure.
- 3.7.1.6 The mechanical, plumbing, fire protection, speciality and gas systems will provide reliability of continual operation. Include standby capacity and redundancy in system design.
- 3.7.1.7 Provide water, sanitary, storm and gas utilities as required and sized to suit the consumption and discharge needs of the Facility.
- 3.7.1.8 Water, glycol and other fluids used within mechanical systems will be treated to prevent corrosion, algae growth, build up of deposits, disease, bacteria and to prolong the equipment life.
- 3.7.1.9 All mechanical, HVAC, plumbing, fire protection, speciality systems and gas systems will be vibration isolated to minimize noise and vibration through the structure or other components of the Facility.
- 3.7.1.10 All mechanical, HVAC, plumbing, fire protection, speciality systems and gas systems will comply with standard acoustic requirements as per applicable CSA standards.
- 3.7.1.11 All pipes, ducts and fittings will be insulated to conserve energy, prevent condensation, attenuate noise as per the project

acoustical performance requirements and prevent accidental burns.

- 3.7.1.12 Speciality systems will include acid waste and vent, natural gas as required by the Building Codes and Standards. Refer to the RDS for specific requirements.
- 3.7.1.13 All entrances to the Facility will be protected by vestibules and air curtain heaters.
- 3.7.1.14 Utilize the City of Prince George's Downtown District Energy System (DDES) as the primary source of heat. The corresponding Facility mechanical systems are to be designed to fully integrate with the DDES and follow all applicable design guidelines to ensure compatibility including heating water temperatures, pressures, pressure drops, flowrates, connection locations, metering.
- 3.7.1.15 The project is not required to provide a back-up source of heat to the DDES system connection. No other source of space heating or domestic hot water heating (other than the DDES) shall be utilized. The only exception to this is the use of renewable energy with no associated carbon emissions (i.e. solar thermal).

3.8 Electrical Engineering

Electrical design principles:

- 3.8.1 Provide lighting that is energy efficient and environmentally friendly and attenuates noise as per the project acoustical performance requirements and in accordance with the BCBC and in addition LEED or equivalent.
- 3.8.2 Provide electrical systems which promote energy efficiency and adhere to LEED or equivalent for New Construction principles.
- 3.8.3 Ensure a safe environment for users by proper utilization of access control, video monitoring, and lighting.
- 3.8.4 Design systems to support architectural and structural innovations in wood construction.
- 3.8.5 Design systems to demonstrate their applicability across the full range of possible tenant types for buildings of similar construction to visitors as this building is to be a showcase for innovative technology.

3.9 Structural Engineering

3.9.1 Structural Design Principles

- 3.9.1.1 The structural engineer of record will be a professional engineer registered in the Province of B.C. experienced in the design of institutional and commercial buildings and shall have designated structural engineer 'StructEng' standing with APEGBC.
- 3.9.1.2 The structural design shall meet the minimum requirements of the current edition of the B.C. Building Code (BCBC) and all other applicable codes, material standards, and local by-laws and the loading and performance requirements detailed in this section.
- 3.9.1.3 Ensure that field reviews are performed by the structural engineer of record at a sufficient frequency and review shop drawings and reports of inspection and testing agencies to verify that the Facility structure has been built in substantial conformance with the approved issued for construction drawings and specifications.
- 3.9.1.4 Regional wood products will be used in the design of the Facility as referenced in Section 3.6 and Section 6.1.1.
- 3.9.1.5 The seismic parameter for the Facility shall be as per the latest edition of the BCBC.

3.9.2 Structural Systems

- 3.9.2.1 The structural system for the suspended floors and main roof is to be wood-based. Acceptable systems include but are not limited to laminated mass timber panels or hybrid systems on heavy timber beams or other timber steel/ hybrid structural systems that will provide the required performance for ductility, flexibility for change, vibration resistance, fire rating, acoustic separation, adequate space for services, and overall Facility height.
- 3.9.2.2 Reinforced cast-in-place concrete construction will be used for raft slabs or slabs on grade.
- 3.9.2.3 Lateral seismic and wind loads on the Facility will be resisted by reinforced concrete shear walls or heavy timber bracing or other systems located at stair and elevator cores and at exterior walls. Mass timber forming a structural core may be considered if structural compliance can be demonstrated. Shear walls and bracing shall be avoided within interior spaces in order to leave flexibility for future changes.

- 3.9.2.4 Post tensioned or precast concrete structural systems shall not be used.
- 3.9.2.5 Roofs will be timber or heavy timber construction. Structural steel open web joists shall not be used for roofs or floors.
- 3.9.2.6 All timber structures meet fire protection requirements in the BCBC proven by a recognized testing method subject to the Authority's approval. (Such as accounting for charring of wood or encapsulating wood structures with finishes). Ensure all metal connections, fasteners, mechanical and electrical chases, conduits and penetrations through timber elements meet fire protection requirements.

3.9.3 Design Loads

3.9.3.1 Performance criteria:

- 3.9.3.1(1) , the following minimum floor design live loads will apply:
 - 3.9.3.1(1)(a) main (ground) floor and second floor: 4.8 kPa (100 psf);
 - 3.9.3.1(1)(b) upper floors: 2.4 kPa (50 psf); and
 - 3.9.3.1(1)(c) mechanical/electrical service rooms and penthouse: 3.6 kPa (75 psf) at upper floors; 4.8 kPa (100 psf) at ground and second floors
- 3.9.3.1(2) upper floors will be designed to accommodate concentrated loads from equipment, fixtures, and machinery, whether floor, wall, or ceiling-mounted;
- 3.9.3.1(3) floors will be designed for superimposed dead loads (SDL) due to partitions, ceilings and suspended mechanical equipment; a minimum SDL of 1 kPa is to be used.
- 3.9.3.1(4) roofs will be designed for the minimum wind, snow and rain loads required by the BCBC and the local building by-laws. Notwithstanding other requirements, the minimum live load for design of roofs will be 2.4 kPa (50 psf) and roofs will be designed to accommodate concentrated loads from equipment, machinery and features, whether roof or ceiling-mounted;

3.9.3.1(5) roofs will be designed for the superimposed dead load of roofing materials, green roofs, ceilings and mechanical equipment, Floors and roofs above mechanical and electrical service rooms and penthouses will be designed for the appropriate superimposed suspended equipment dead loads in addition to the minimum dead load allowances specified above; and

3.9.3.1(6) floors for rooms designated for records storage or compact mobile shelving and floors of storage rooms or library stacks will be designed for a minimum live load of 7.2 kPa (150 psf);

3.9.4 Importance Factor

3.9.4.1 The Facility's structures, structural components, and non-structural components and equipment restraint will be designed using a Normal Importance Factor in accordance with the BCBC.

3.9.5 Flexibility for future change

3.9.5.1 The Facility will be designed to readily accommodate renovations for changes in tenancy use and occupancy and changing technology, equipment, and laboratory techniques, and building services.

Performance criteria:

3.9.5.1(1) the selection of a structural system that will readily accommodate future changes for similar design load parameters without the addition of structural members, welding, noise, dust, or demolition shall be a structural design consideration

3.9.6 Deflection and movement limitations

3.9.6.1 The structure will be designed to minimize the effects of deflection and long-term creep.

3.9.6.2 Ensure shrinkage, creep and consolidation effects of timber structures are accounted for in terms of structural integrity, serviceability, access and integration with finishes, mechanical/plumbing/electrical services and elevator services.

3.9.6.3 The design of the structure is to meet the deflection limits of the BCBC, and applicable CSA standards as a minimum and as

required for the non-structural components of the Facility.
Notwithstanding the above, the deflection limit will not exceed the levels specified in this section.

3.9.6.4 Performance criteria:

- 3.9.6.4(1) for concrete floor and timber floor construction, the maximum deflection occurring after the installation of non-structural elements due to all sustained loads, including long-term creep deflection, plus immediate deflection due to additional live load, will not exceed span/360;
- 3.9.6.4(2) Timber floor construction to be designed to meet vibration performance requirements appropriate for the intended use or function of each floor space.
- 3.9.6.4(3) for timber roof construction, the maximum live load deflection will not exceed span/360 with the total load deflection not exceeding span/240;
- 3.9.6.4(4) for roofs over penthouses, the maximum allowable deflection limits will be span/360 for Live Load and span/240 for Total Load;
- 3.9.6.4(5) the floor and roof perimeter edge will be designed to limit short and long term deflection occurring after the installation of exterior wall components, including effects of creep, to a maximum of 15mm.

3.9.7 Vibration limitations

- 3.9.7.1 Prevent transition of vibration to occupied spaces from sources of vibration, particularly the Research Lab, mechanical and electrical rooms.
- 3.9.7.2 The vibration limit for teaching labs is 4000 micro-inch/sec (100 micro-m/sec) and 2000 micro-inch/sec (50 micro-m/sec) for research labs
- 3.9.7.3 Whenever possible, isolate the major sources of vibration at the source. Machinery that could be a source of vibration will be mounted using vibration isolation techniques.

3.9.8 Durability

- 3.9.8.1 The Facility structure and structural components will be designed for a minimum 75-year functional life span

- 3.9.8.2 Design of the Facility structure and structural components will minimize effects of corrosion and deterioration due to the environment and use in accordance with the following:
- 3.9.8.2(1)(a) adequate concrete crack control, reinforcement and movement joints. Caulk exposed joints with waterproof elastic material;
 - 3.9.8.2(1)(b) high strength concrete mixes proportioned to CSA durability requirements for exposure class;
 - 3.9.8.2(1)(c) reinforce concrete for crack control and repair exposed cracks;
 - 3.9.8.2(1)(d) chamfer sharp corners of exposed concrete where feasible;
 - 3.9.8.2(1)(e) hot-dip galvanize exterior exposed steel;
 - 3.9.8.2(1)(f) Reinforcement, mix proportions and required curing for concrete toppings;
 - 3.9.8.2(1)(g) corrosion protection measures for concrete exposed to moisture in accordance with CSA S413, including application of sealers to vertical concrete surfaces in splash zones and slopes for drainage; and
 - 3.9.8.2(1)(h) wood structural elements will be adequately protected from exposure to the weather. Provide protective cap flashings and drips, sealers, raised concrete pedestals at grade supports, and roof overhangs. Protection shall account for wind driven rain exposure and direct sunlight. Exposed wood products shall be treated against biological and natural decay.

3.9.9 Equipment supports

- 3.9.9.1 Design will provide for support/anchorage of equipment. Equipment will be supported, anchored, and braced to resist gravity, operational, and seismic loads in a manner required for the functional and service requirements for the specific equipment.
- 3.9.9.2 The design for the Research Lab equipment supports, anchorage, and bracing will be carried out by a suitably qualified professional engineer registered in the Province of British Columbia. Installations will be field reviewed by the design engineer.
- 3.9.9.3 Performance criteria:
 - 3.9.9.3(1) floor and roof assemblies will be designed to support the gravity and seismic loads for floor, wall, or ceiling-mounted equipment;
 - 3.9.9.3(2) the structure will be designed for the vibration response limitations specified by the manufacturer of the specified equipment. Carry out in-situ vibration testing when specified by the equipment manufacturer;

3.9.10 Research Lab Requirements

- 3.9.10.1 The Research Lab space shall be designed for floor loads in accordance with the WIDC Research Lab Specifications included in the Disclosed Data. The columns in the Research Lab space shall be designed for potential future crane loads assuming a bridge crane with a lifting capacity of 10 tons.
- 3.9.10.2 Provide anchor points at 4' on centre, in both directions, with structural tensile capacity to be determined during design development of the Research Lab facility.
- 3.9.10.3 Provide levels of acoustical and vibrational separation between the Research Lab and the adjacent spaces (both on the same floor and above the Research Lab) identified in Appendix 1B.

PART 4. SITE DEVELOPMENT REQUIREMENTS

4.1 Exterior Spaces

4.1.1 Provide exterior public spaces including areas that:

- 4.1.1.1 Welcome and engage users;
- 4.1.1.2 Provide protection from sun, wind, rain and polluted air produced by roadways and parking areas;
- 4.1.1.3 Have visual appeal throughout the year;
- 4.1.1.4 Are low maintenance;
- 4.1.1.5 Provide physical separation between Site and residential neighbours;
- 4.1.1.6 Provide visual privacy for residential neighbours and other outdoor spaces;
- 4.1.1.7 Ensure minimal intrusion of the Facility's activities on neighbours. Particular attention shall be given to the routes of late night and early morning users around the Site.
- 4.1.1.8 Are safe, with visible areas with adequate lighting and seating for visitors waiting for transportation;
- 4.1.1.9 Locate trees or shrubbery, lighting and other elements to support way-finding with particular emphasis on Facility entrances; and
- 4.1.1.10 Incorporate principles of Crime Prevention through Environmental Design (CPTED).
- 4.1.1.11 Have drainage.
- 4.1.1.12 Comply with local zoning bylaws including Section 6: Landscaping and Screening which is included as Disclosed Data.

4.1.2 The Facility User's Amenities

Provide the Facility users with sheltered outdoor spaces that:

- 4.1.2.1 Provide shelter from sun, rain and wind;
- 4.1.2.2 Offer views of trees and plants that reflect seasonal change;

4.1.2.3 Are located to minimize noise which could disturb neighbours.

4.2 Circulation and Adjacencies (Pedestrian and Vehicular)

4.2.1 General

Circulation will co-ordinate the movements of vehicles, bicycles, pedestrian and wheelchairs. The design will emphasize safety, while providing opportunities for interaction and social contact.

4.2.2 Pedestrian Walkways

4.2.2.1 Integrate pedestrian circulation throughout the Site that minimizes conflict with vehicles and bicycle zones between the following areas:

4.2.2.1(1) the surrounding roads and major entrances;

4.2.2.1(2) the adjacent downtown lots; and

4.2.2.1(3) the Facility;

4.2.2.2 Design pathways to provide universal access to all entrances and exits;

4.2.2.3 Pathways and sidewalks will be configured to provide maximum amount of natural visual surveillance; and

4.2.2.4 Have adequate drainage.

4.2.3 Vehicular Access & Parking

4.2.3.1 Integrate vehicular circulation with layout of pedestrian and bicycle zones to provide visible connections, to promote safe travel, and to minimize conflict between vehicles and other modes of travel.

4.2.3.2 The City of Prince George has waived any onsite parking requirements, relaxed the requirement for bus parking and reduced the number of loading docks down to one. These provisions will be discussed further and confirmed through the collaborative working sessions with the municipality.

4.2.3.3 Have adequate drainage.

4.2.4 Bicycle access & storage

4.2.4.1 Provide well-lit secure bicycle locking/parking facilities under cover for a minimum of sixteen (16) bicycles;

- 4.2.4.2 Bicycle locking/parking facilities must conform with City of Prince George requirements Section 7.4 of the Parking & Loading bylaw.

4.3 Site Infrastructure

- 4.3.1 All municipal services shall conform to the City of Prince George Subdivision and Development Servicing Bylaw and service the Site use with reliable infrastructure. Work of this section will be carried out in accordance with the City of Prince George Design Guidelines, the City of Prince George Infrastructure Specifications and the City of Prince George Standard Infrastructure Drawings.
- 4.3.2 On-Site Services Infrastructure
- 4.3.2.1 All on-site servicing shall meet the quality requirements for the corresponding municipal off-site services. On-site services shall be designed and constructed to meet proposed development and BCBC requirements.
- 4.3.3 Off-Site Services Infrastructure
- 4.3.3.1 All off-site servicing shall meet the quality requirements as per the City of Prince George Subdivision and Development Servicing Bylaw. Road and utility construction design, construction supervision, and quality control supervision of all off-site and site services including on-site ground recharge drainage collection and disposal systems, must be performed by an approved consulting civil engineer. Off-site designs must be submitted by the Design-Builder to the City Engineering Department for review and marked "issued for construction" by the City Engineer before any off-site construction may begin.
- 4.3.3.2 Offsite service connections will be provided by the Municipality and these costs are to be carried by the Design-Builder.
- 4.3.3.3 George Street and 5th Avenue: Complete the urbanisation of George Street and 5th Street fronting the Facility, including reconstruction of the concrete sidewalk with boulevard landscaping.
- 4.3.3.4 Public Lane: The Public Lane behind the Facility serves as a utility corridor (Utilidor). Upgrade and reconstruct the lane to the City of Prince George commercial paved standard for the full length, from 4th Avenue to 5th Avenue, complete with new driveway ramps at each end. Determine if any upgrades, removals, re-location or adjustment of existing utility

appurtenances are required to accommodate the Facility and carry out, or make arrangements with the affected utility company to carry out any such works required to facilitate connecting the Facility to the service.

4.3.4 Sanitary Sewers

- 4.3.4.1 The Design-Builder will determine the development requirements of the Facility and establish the service needs; and
- 4.3.4.2 Provide sanitary sewer to the Facility which has sufficient capacity.

4.3.5 Storm Sewers and Drainage

- 4.3.5.1 Ensure the existing storm sewers and drainage network is adequate to safely convey all storm water from the Site;
- 4.3.5.2 Confirm whether a Site storm water storage and attenuation is required for the Facility.
- 4.3.5.3 The Design-Builder must engage a consulting civil engineer to provide a storm water management plan for the Site.
- 4.3.5.4 The Facility is located within a designated flood plain and is subject to the City of Prince George Flood Plain Regulation Bylaw No. 8285, 2010. The Flood Construction Level (FCL) for the Site has been determined at 570.6 metres (slightly below existing ground elevation). The top of the main ground floor slab, and the slabs for generator and electrical transformer, shall be located at or above the FCL; and
- 4.3.5.5 There are piped storm drainage facilities within George Street and 5th Avenue. The on-site drainage system may be connected to the existing service connection off 5th Avenue, or a new service connection may be constructed, if required.

4.3.6 Watermain and Appurtenances

- 4.3.6.1 Confirm the existing watermain system is capable of providing domestic and fire fighting flow volume capacity for the Facility. A water booster pump and fire pump will be required to provide the required pressure for the Facility;
- 4.3.6.2 The watermain system shall provide redundancy;

- 4.3.6.3 The watermain system shall include backflow preventers, to protect the municipal system and on Site facilities from contaminants, as per City of Prince George Bylaw requirements;
 - 4.3.6.4 The watermain system shall include a flow meter as per the City of Prince George Bylaw requirements;
 - 4.3.6.5 The Design-Builder will determine the domestic and fire protection requirements of the Facility and establish pumping needs to produce required pressure.
- 4.3.7 Electrical, Telecommunications, Gas Services
- 4.3.7.1 Provide electrical and telecommunications services to support the Facility;
 - 4.3.7.2 The existing power line in the back lane / utilidor will be relocated to the other side of the lane by the City of Prince George;
 - 4.3.7.3 The Design-Builder shall make all necessary servicing applications with the respective electric power, telephone, cable transmission and natural gas companies to arrange for these services, and provide all service connection to the Facility
 - 4.3.7.4 The City of Prince George has a municipal Fibre Optic ("Black Fibre") cable located along the lane (Utilidor) behind the Facility. Cable connection is available from this Fibre Optic cable;

PART 5. ARCHITECTURAL

5.1 Location and Siting

- 5.1.1 Locate the Facility within the designated Site as illustrated by the Indicative Design Siteplan so as to satisfy all City of Prince George zoning requirements.
- 5.1.1.1 All of the Facility facades will be given equal consideration with a minimum transparency of 50%.
- 5.1.1.2 The project will be sited to address the pedestrian on the street level and must dedicate open space abutting George St. or 5th Ave.
- 5.1.1.3 The project must be sited to allow for the generator, transformer and loading space in an unobtrusive location off the lane.
- 5.1.1.4 Provide one loading bay accessible from the lane.

5.2 Facility Configuration and Global Circulation

- 5.2.1 Separate UNBC circulation from public circulation within the building, including elevators, through card access.
- 5.2.2 Physical separation of back of house / service circulation from public circulation within the building, including elevators is required.

5.3 Quality of Space/Interior Design

- 5.3.1 Maximize opportunities for access to natural light and views and attenuates noise as per the project acoustical performance requirements.
- 5.3.2 Employ materials and detail surfaces to absorb and minimize sound transmission throughout user work areas as is identified in Appendix 1B.
- 5.3.3 Maximize opportunities for user empowerment through control of lighting, sound and daylight as defined in section 7.6.11.
- 5.3.4 Create visual interest within public areas by varying colours, textures, lighting and by employing wood finishes.
- 5.3.5 Within the UNBC areas, the use of color and interior finishes will reinforce the desired cohesive nature of UNBC engineering program with that of the rest of the existing UNBC Prince George campus.
- 5.3.5.1 The choice of colour should be expressive of the saturated colour found in the flora of the region and in the quality of the

sky and forest during different times of the day and different times of the year. Examples from flora include the Indian paintbrush, yellow daisy, purple lupus.

- 5.3.6 Avoid 'blank' hallways with solid-coloured end walls wherever possible: provide views and/or direct or borrowed natural light at ends of hallways.
- 5.3.7 Design Facility access and interior circulation systems that support the security needs of occupants at all hours of the day.
- 5.3.8 Design workplaces so that they are flexible and adaptable to change in program or personnel and promote user safety.
- 5.3.9 Design of workspaces will be ergonomic and conducive to workflow and processes.
- 5.3.10 Include and indentify suitable spaces in public areas of the Facility for the display of exhibits complete with wall backing for mounting and donor recognition systems.

5.4 Signage (4.2.5 Site Signage)

5.4.1 Wayfinding and Signage

5.4.1.1 Overriding Principles

- 5.4.1.1(1) Provide simple circulation systems and functions so that way finding is inherently easy;
- 5.4.1.1(2) Locate major destinations along primary circulation paths for easy access. Make public areas as open as possible to build confidence in way finding;
- 5.4.1.1(3) Locate and design Facility entrances to create an urban identity and to distinguish between individually programmed spaces.
- 5.4.1.1(4) Recess entrances to Facility from the sidewalk or property line in order to provide for door swings, to protect the entrance from rain or snow, and to emphasize Facility entrances.
- 5.4.1.1(5) Landscape treatment must emphasize primary entrances.
- 5.4.1.1(6) Design public elevator and stair lobbies and public circulation routes to be distinct from service and from other non-public routes;

- 5.4.1.1(7) Provide all signage required for Facility operations;
- 5.4.1.1(8) Design signage such that the materials, colours, letter fonts, sizes and other aesthetic and functional considerations, such as Braille, conform to a conceptually coherent overall way finding design system;
- 5.4.1.1(9) Provide signage that is resistant to graffiti and physical damage;
- 5.4.1.1(10) Provide signage that is easy to replace;
- 5.4.1.1(11) Use international symbols as required;
- 5.4.1.1(12) Orient all Facility plan directories to reflect the direction from which they are viewed;
- 5.4.1.1(13) Provide signage that directs visitors to departments and rooms within the Facility;
- 5.4.1.1(14) Provide signage that is clearly visible day or night;
- 5.4.1.1(15) Avoid multi-layered naming hierarchies and complex numbering systems.
- 5.4.1.1(16) Illuminate the Facility façades and features by providing architectural lighting on the face.
- 5.4.1.1(17) Clear sight lines from inside the Facility to open public spaces must allow for casual surveillance of the street and sidewalk, and Research Lab interiors must be visible from the street.

5.4.2 Design Requirements

5.4.2.1 Design the internal directional signs to include:

- 5.4.2.1(1) a main directory, installed at the main public entrances to the Facility, that indicates the Facility tenancy.
- 5.4.2.1(2) installation of signage at each point at which a directional decision is required;
- 5.4.2.1(3) consistent terminology;
- 5.4.2.1(4) door signage to indicate restrictions on entry and warn of hazards;

- 5.4.2.1(5) door signage will not be obscured by emergency systems or other functional elements of the Facility;
- 5.4.2.1(6) door signage that will identify every space (e.g. rooms, alcoves, corridors and stairwells) in the Facility;
- 5.4.2.1(7) door signage that will be located in a consistent location for every room in the Facility;
- 5.4.2.1(8) door signage that is consistent with the following room numbering protocol:
 - 5.4.2.1(8)(a) each room has a unique identifier number;
 - 5.4.2.1(8)(b) rooms are numbered in a manner that reflects normal movement through the building;
 - 5.4.2.1(8)(c) labelling anticipates a person attempting to follow numbering along corridors in sequence;
 - 5.4.2.1(8)(d) blocks of numbers are periodically skipped to allow for future expansion of the numbering system if rooms are added through renovations;
 - 5.4.2.1(8)(e) the Design-Builder will review with, and obtain approval from, the Authority for the door/room numbering system.
- 5.4.2.1(9) each UNBC room requires a number for service reasons and since many rooms will not have formal wall numbering panels, each room will be equipped with a lamacoid number plate approximately 178 mm high by 178 mm long, attached to the adjacent wall; the room numbers shall be determined early in design. Follow the same numbering system on design and construction documentation for all disciplines (architectural, mechanical, electrical, etc.).

5.4.2.2 External directional signage will:

- 5.4.2.2(1) clearly indicate access for the public;
- 5.4.2.2(2) clearly indicate restrictions to 'after-hours' access and closest accessible entrance; and;
- 5.4.2.2(3) be well illuminated, backlit, reflective or high contrast and easily visible at night; and
- 5.4.2.2(4) ensure that illuminated external Facility signage:
 - 5.4.2.2(4)(a) clearly identifies the Facility;
 - 5.4.2.2(4)(b) indicates the accesses, parking and restrictions for various vehicle types, as required.

5.4.3 Site Signage

5.4.3.1 Signage will be designed and located to satisfy the Authority's requirements for Site identification. There will be two (2) large signs identifying the Facility located at the main entrances. Signage will be designed and constructed to withstand typical weather conditions experienced in Prince George. Signage will be provided with lighting after dark so that major signs are legible at all times. Ensure that views to important signs, Site and Facility entrance are not obstructed by trees or shrubs. Wayfinding design must assist users to:

- 5.4.3.1(1)(a) Know the Facility name;
- 5.4.3.1(1)(b) Know how to find the correct destination; and
- 5.4.3.1(1)(c) Know where adjacent streets are relative to each exit.

5.5 Building Envelope

- 5.5.1 Complete all Design and Construction so as to prevent the accumulation and stagnation of rain, snow, ice and dirt on the horizontal and vertical surfaces of the envelope for the climate the Facility is situated in.
- 5.5.2 Design exterior walls in accordance with rain-screen principles. Include a continuous air space of minimum 25 mm clear width located within the exterior wall assembly.

- 5.5.3 Ensure that materials and systems employed in wall and roof assemblies contribute to reducing heat gain and loss with minimal decline in performance.
- 5.5.4 Ensure continuation of the air barrier, vapour barrier, thermal barrier and rain barrier across the entire envelope including foundations, walls and roofs.
- 5.5.5 Design building envelope details to avoid thermal bridging.
- 5.5.6 Engage a building envelope consultant through design and construction.

5.6 Exterior Building Component - Form and Character

- 5.6.1 Overriding Principles
 - 5.6.1.1 The Facility is sited at the corner of a prominent intersection of George Street and 5th Avenue and as such must respond to the City of Prince George Design Guidelines, located in Disclosed Data, and develop street-facing façades for both streets.
 - 5.6.1.2 The elevations must have pronounced entrances oriented to the corner and/ or primary streets.
 - 5.6.1.3 Main Facility entries will be clearly visible from the fronting street with direct sight lines into them.
 - 5.6.1.4 The Facility's projecting upper storeys and overhangs, canopies, and awnings are all measures for providing necessary weather protection along public streets.
- 5.6.2 Ground Level Architectural Articulation and Transparency
 - 5.6.2.1 Ensure a minimum glazing area of 75% for frontages at grade along all commercial streets.
 - 5.6.2.2 Expansive blank walls (over 5 m in length) and retaining walls adjacent to public streets are not permitted.
 - 5.6.2.3 Provide transparency from the public sidewalk through to the demonstration space; high bay exterior daylighting and interior viewing opportunities to the Research Lab and Research Lab Prep Areas.
 - 5.6.2.4 Placement of awnings and canopies will balance weather protection with daylight penetration. Opaque canopies that run the full length of façades are not permitted.

5.6.2.5 Canopies will be wood and glass.

5.6.3 The Laneway

5.6.3.1 Vehicular and service functions and other “back of house” activities shall be designed to remain in the lane with appropriate landscape screening so as not to conflict with pedestrian oriented street activity.

5.6.4 The Mechanical Penthouse

5.6.4.1 Full perimeter screening is required for the mechanical penthouse level.

5.7 Interior Building Components

Design and build the Facility’s interior building components in accordance with the following:

5.7.1 Interior Walls and Partitions

5.7.1.1 The interior walls and partition systems will:

5.7.1.1(1) provide acoustic separations as required for the specific functions to be carried out in the spaces affected. In accordance with Appendices 1B; and

5.7.1.1(2) provide all separations required for fire safety and protection.

5.7.1.2 Seismic resistance capabilities will conform to the requirements of CSA S832-06 (R2011) Guidelines for Seismic Risk Reduction of Operational and Functional Components of Buildings.

5.7.1.3 Design and select interior walls and partitions, partition systems and interior finishes to comply the following criteria as may be relevant for the particular or specific functions enclosed:

5.7.1.3(1) easily cleanable and maintained systems and finishes;

5.7.1.3(2) permanence and durability including impact resistance;

5.7.1.3(3) flexibility and adaptability of services;

- 5.7.1.3(4) low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality; and
- 5.7.1.3(5) aesthetic and design qualities to provide a positive environment for users.

5.7.2 Ceilings

- 5.7.2.1 The ceiling system will be considered to be a part of the interior spaces of the Facility and may be accessible or inaccessible where appropriate.
- 5.7.2.2 Accessible ceiling systems will provide access to the ceiling spaces throughout the system or at specific and particular locations.
- 5.7.2.3 Ceiling systems will comprise a major component of the acoustic or sound attenuation function of the spaces in which they are installed and will conform to the STC ratings specified in Appendix 1B.
- 5.7.2.4 The ceiling systems are part of the sound isolation requirements in that they need specific NRC ratings. The STC ratings apply to the walls or to the wall/ceiling systems overall.
- 5.7.2.5 Ceiling systems can form a component of fire resistance rated separations for areas requiring such separation.
- 5.7.2.6 Ceiling height will not be less than 2.7 metres above the finished floor in all areas except for the following:
 - 5.7.2.6(1) ceiling heights in corridors, storage rooms and toilet rooms will be not less than 2.4 metres except that ceiling heights in small, normally unoccupied spaces such as storage closets may be reduced to a minimum of 2.1 metres; and
 - 5.7.2.6(2) ceiling heights in Research Lab and Research Lab Prep Areas will be no less than 5.0 metres floor-to-floor.
 - 5.7.2.6(3) ceiling heights in the Lecture Theatre will be no less than 5.0 metres floor-to-floor.
- 5.7.2.7 Design and select ceiling systems and ceiling finishes to comply with the following criteria as may be relevant to the particular or specific functions of the space:

- 5.7.2.7(1) easily cleanable and maintained systems and finishes;
- 5.7.2.7(2) flexibility and access to the spaces above;
- 5.7.2.7(3) compatibility with mechanical, plumbing, electrical, communications services and fixtures;
- 5.7.2.7(4) low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality; and

5.7.3 Floor Finishes

- 5.7.3.1 The floor and floor systems will be considered to be a part of the interior spaces of the Facility and will be finished to be complementary and integral to the functional and aesthetic requirements of the applicable interior space.
- 5.7.3.2 Floor finishes will be selected to suit types and concentration of pedestrian and/or vehicular/wheel traffic.
- 5.7.3.3 Flooring designs and patterns may comprise a component of the "way-finding" system of the Facility. Refer to Part 5.4.
- 5.7.3.4 The following criteria will govern and be integral to the selection of floor finishes:
 - 5.7.3.4(1) will be easily cleanable and maintained finishes;
 - 5.7.3.4(2) minimize the frequency while maximizing the quality of joints so as to ensure ease of replacement if and when required;
 - 5.7.3.4(3) ensure imperviousness to concentrations of moisture anticipated to be on the floors for the anticipated duration of that moisture's presence;
 - 5.7.3.4(4) maximize permanence and durability and resistance to concentrated service traffic both pedestrian and vehicular;
 - 5.7.3.4(5) low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality;

PART 6. FACILITIES CONSTRUCTION SUBGROUP SPECIFICATIONS

6.1 Procurement and Contracting Requirements (Division 1)

- 6.1.1 The Facility shall attain at least 1 point in each of the LEED Canada 2009 Materials & Resources credits; Mrc4 Recycled Content and MRC5 Regional Materials; or by an equivalent calculation and methodology to the satisfaction of the Authority in advance of Substantial Completion.

6.2 Existing Conditions (Division 02)

- 6.2.1 Basic requirements
- 6.2.1.1 Site specific geotechnical investigations including subsurface drilling and sampling, material testing, exploratory excavations, and pre-construction monitoring shall be performed prior to construction at the Design-Builder's expense.

6.3 Concrete (Division 03)

- 6.3.1 Basic Requirements
- 6.3.1.1 Design and construction will comply with all applicable standards and practices whether listed in Section 2.1.3 or not.
- 6.3.1.2 Concrete left exposed, with no finish materials, shall be sealed. Two primary options include:
- 6.3.1.2(1) Curing: Wet cure concrete for 3 days. Prevent drying for additional 4 days. Protect for 28 days total or longer if required until compressive strength tests show compliance with structural design requirements.
- 6.3.1.2(2) Silicate-based sealers: At areas of exposed concrete, provide sodium or potassium silicate products that react chemically with the calcium in the concrete to densify, seal, and dustproof the concrete at the end of the 3 day wet cure period. Manufacturer shall certify compatibility with finishes or other products to be applied over the concrete substrate.
- 6.3.1.3 Inspection and testing of cast in place concrete and concrete materials will be carried out by a testing laboratory in accordance with CAN/CSA A23.1-09. Non-destructive methods for testing concrete will comply with CAN/CSA A23.2-09.

6.3.2 Overriding Principles

- 6.3.2.1 Design and construct cast in place concrete of required properties for the intended use in accordance with the requirements of all applicable codes and specifications.

6.3.3 Quality Requirements

6.3.3.1 Performance Criteria:

- 6.3.3.1(1) Concrete floors and floor toppings will be finished with a smooth, dense, steel trowel finish with a Class A Flatness Classification in accordance with CSA A23.1. Cracks in concrete floors and walls will be repaired to suit the floor finish and long-term serviceability requirements of the floor;
- 6.3.3.1(2) Elevator core walls below grade to be water-proofed to prevent groundwater ingress. Construction joints to have purpose-made water stops. A perimeter draining system to be installed as necessary. Exposed architectural concrete will comply with CAN/CSA A23.1-09 Section 8.3.

6.4 Masonry (Division 04)

6.4.1 Basic Requirements

- 6.4.1.1 Masonry shall not be used except where necessitated by priorities such as permanence and maintenance, sound transmission control, fire resistance and separation requirements and security. Masonry design and construction to meet or exceed current Canadian standards and practices.
- 6.4.1.2 Design and construction will comply with all applicable standards and practices whether listed in Section 2.1.3 or not.
- 6.4.1.3 Masonry design and construction will comply with all applicable codes and standards including, but not limited to, CSA S304.1-04 (R2010), the BCBC, and the standards listed in Section 2.1.3 for Technical References; and
- 6.4.1.4 Concrete unit masonry practices and work standards will comply with Canadian Masonry Contractors Association (CMCA) Masonry Practices Manual, CSA-S304.1-04 (R2010), and CSA-A371-04 (R2009).

6.4.2 Concrete Masonry Units

6.4.2.1 Quality Requirement:

- 6.4.2.1(1) Painted or unpainted concrete unit masonry will not be permitted as an exposed finish.

6.5 Metals (Division 05)

6.5.1 Basic Requirements

- 6.5.1.1 Structural steel that meets or exceeds current Canadian standards and practices as set out in this section, may be considered for building elements and systems.
- 6.5.1.2 Design and construction will comply with applicable standards and practices whether listed in Section 2.1.3 or not.

6.5.2 Quality Requirement:

- 6.5.2.1 Structural steel will be designed to comply with the deflection and vibration criteria outlined in the structural Sections 3.9.6 and 3.9.7.
- 6.5.2.2 Erection tolerances for steel construction will be in accordance with CSA S16-09 Clause 29.7
- 6.5.2.3 Structural steel members will be fire-proofed to meet the BCBC fire rating requirement.

6.5.3 Structural Steel

6.5.3.1 Quality Requirements:

- 6.5.3.1(1) Quality of workmanship will be inspected by an approved testing laboratory. Testing procedures as specified in CSA S16-09 to verify soundness of representative shop and field welds will be used. All full strength welds shall be tested;
- 6.5.3.1(2) Material quality including sourcing and welding quality to be monitored by independent testing agency; and
- 6.5.3.1(3) Preparation and painting of structural steel components will conform to the Master Painters' Institute (MPI) Standards.

6.6 Wood, Plastics and Composites (Division 06)

6.6.1 Basic requirements

- 6.6.1.1 Wood and plastic products and procedures required in the construction process and as integral components of the building fabric, including but not limited to fabrication, assemblies, surfaces, and finishes, will conform to requirements outlined in Section 2.1 and to those set out in this division.
- 6.6.1.2 Added urea formaldehyde will not be permitted.
- 6.6.1.3 Finish carpentry and architectural woodwork, including but not limited to cabinets, casework (excluding Research Lab casework, which is included in Division 12), frames, panelling, trim, installation of doors and hardware, and other wood-related products and applications will be provided as required and referenced in Section 3.6.6 Table 1 Wood First, Appropriate Use, for wood products exposed to view in finished interior and exterior installations.
- 6.6.1.4 Plastic laminate surfacing and/or solid polymer fabricated surfacing will be provided as required to create surfaces that require antiseptic or clean characteristics, special or regular maintenance, and resistance to caustic action of chemicals or agents.
- 6.6.1.5 Acrylic plastic products will be provided as required for wall cladding, wall protection, corner protection, casework finishing, trims, ornamental elements, and other applications to achieve a quality of interior finish suitable for use by users.
- 6.6.1.6 Glued-laminated structural units to meet the requirements of CAN/CSA-0122 and CAN/CSA-0177. All timber connector hardware exposed to the exterior will be hot dipped galvanized. All other nuts, washers and bolts will be galvanized.
- 6.6.1.7 Cross Laminated Timber Panels to meet the requirements of ANSI/APA PRG 320-2011.

6.6.2 Overriding Principles

- 6.6.2.1 Innovative use of wood-based products and systems will be required, where their usage falls outside current provincially adopted codes and practices, to demonstrate compliance with code intent through the Site Specific Building Regulation.

- 6.6.2.2 Concrete topping slabs on timber floor structures will be finished with a smooth, dense, steel trowel finish with a Class A Flatness Classification in accordance with CSA A23.1. Thin overlay toppings to level floors will not be permitted.
 - 6.6.2.3 Special attention will be paid to crack control in the use of concrete topping slabs. As a minimum, the following details and procedures will be implemented:
 - 6.6.2.3(1) minimize wet weight deflections of supporting structure;
 - 6.6.2.3(2) where practical, place concrete in alternate bays. Avoid placing large areas at one time;
 - 6.6.2.3(3) use concrete topping with a low design slump. Add superplasticizer to increase slump for placing and finishing;
 - 6.6.2.3(4) use 14mm or larger aggregate topping mix;
 - 6.6.2.3(5) avoid placing topping slabs on hot or windy days;
 - 6.6.2.3(6) reinforce topping slabs with welded wire mesh or reinforcing steel as appropriate
 - 6.6.2.3(7) provide extra topping slab reinforcement around openings, columns, and at corners; and
 - 6.6.2.3(8) wet cure topping slabs for a minimum of three days using soaked burlap covered with polyethylene or similar methods.
 - 6.6.2.4 Cracks in concrete topping slabs will be repaired to suit the floor finish and long-term serviceability requirements of the floor.
- 6.6.3 Performance Criteria
- 6.6.3.1 Structural/Engineered Wood Members/Assemblies
 - 6.6.3.1(1) Assemblies for floor and wall systems shall achieve the required STC and fire performance ratings. An indicative floor assembly is included in the Disclosed Data. Alternative assemblies are permitted. It is the responsibility of the Design Builder to demonstrate achievement of the

required structural, acoustical, fire and vibrational performances.

6.6.3.2 Finish carpentry and architectural woodwork:

- 6.6.3.2(1) Design, fabrication, materials, installation, and workmanship of finish carpentry and architectural woodwork will conform to quality standards outlined in 6.6.1.1., the Architectural Woodwork Manufacturer's Association of Canada (AWMAC) Architectural Woodwork Standards (AWS) (First Edition) for minimum "Custom Grade," and Door and Hardware Institute (DHI) standards;
- 6.6.3.2(2) VOC emission levels will be in accordance with CaGBC (Canada Green Building Council) to minimize adverse impact on indoor environmental and air quality;
- 6.6.3.2(3) Adhesives will be non-toxic, non-solvent glue to comply with AWMAC Architectural Woodwork Standards, Canadian 'Eco-Logo' program, and CaGBC (Canada Green Building Council); and
- 6.6.3.2(4) Marine-grade plywood substrate will be used for countertops and wood bases at cabinets.

6.7 Thermal and Moisture Protection (Division 07)

6.7.1 Basic requirements

- 6.7.1.1 Construction assemblies will be designed according to the building envelope principles outlined in Section 5.5 Building Envelope and the CMHC technical guidelines.
- 6.7.1.2 Construction assemblies will prevent the ingress of moisture or water vapour from the exterior into the Facility and the passage of air through the building envelope from the interior spaces to the exterior and vice versa.
- 6.7.1.3 Construction assemblies will prevent the ingress of moisture through foundation walls below grade, both subject and not subject to hydrostatic pressure.
- 6.7.1.4 Comfortable, liveable interior environments will be created by providing protection such as insulation to resist the transfer of heat through exterior walls and roofs in accordance with Section 7.3.1.1 (8).

- 6.7.1.5 Resistance to the propagation and spread of fire will be provided for exterior walls and interior walls designated as fire-resistant rated separations.

6.7.2 Performance criteria

6.7.2.1 Waterproofing

- 6.7.2.1(1) Waterproofing will be provided to prevent water ingress to occupied spaces below grade at below-grade vertical concrete walls.
- 6.7.2.1(2) Sheet or fluid-applied membrane waterproofing will be used to prevent water ingress over suspended slabs and decks and associated walls over habitable spaces where water collection is anticipated; and
- 6.7.2.1(3) Waterproof membranes in the form of air barriers will be provided in exterior walls as part of the building envelope and integral with rain screen assemblies.

6.7.2.2 Vapour Barriers

- 6.7.2.2(1) A continuous vapour barrier membrane will be provided to prevent water vapour transmission and condensation in wall assemblies, roofing assemblies, and under concrete slabs-on-grade within the Facility perimeter.

6.7.2.3 Air barriers

- 6.7.2.3(1) Air barrier assemblies will be designed to limit air ex-filtration and infiltration through materials of the assembly, joints in the assembly, joints in components of the wall assembly, and junctions with other Facility elements including the roof; and
- 6.7.2.3(2) Air barrier assemblies will prevent air leakage caused by air pressure across the wall and roof assembly, including interruptions to the integrity of wall and roof systems such as junctions with dissimilar constructions.

6.7.2.4 Thermal protection

- 6.7.2.4(1) Thermal insulation will be provided as part of the building envelope to prevent the transfer of heat both from the interior to the exterior and vice versa, dependent on seasonal conditions, and to resist the absorption of water;
 - 6.7.2.4(2) Thermal protection materials will be of a type and quality that will provide consistent environmental quality to enclosed spaces.
 - 6.7.2.4(3) Foamed plastic insulation will be CFC and HCFC free and in compliance with the Province of British Columbia Ozone Depleting Substances Regulations.
 - 6.7.2.4(4) Minimum insulation values will be R20 (U-Value 0.05) for exterior walls and R30 (U-Value 0.033) for roof areas.
- 6.7.2.5 Roofing
- 6.7.2.5(1) Materials and workmanship for roofing will conform to the Roofing Contractors Association of British Columbia Guarantee Corp (RGC) latest Standards and a minimum ten (10) year Guarantee, as published in the RGC Roofing Practices Manual.
 - 6.7.2.5(2) Roof materials will comply with RGC Roofing Practices Manual "Acceptable Materials List."
 - 6.7.2.5(3) Roof assembly design including deck, vapour barrier, insulation, board stock, and membranes shall comply with British Columbia Building Code for fire classifications and with RGC requirements with wind uplift requirements, as well as structural requirements for live loads, dead loads, snow loads, and wind uplift. Comply with ULC Class 60 wind uplift classification.
 - 6.7.2.5(4) Perform quality of roofing inspections as required by the RCABC;
 - 6.7.2.5(5) Foamed plastic insulation will be CFC and HCFC free and in compliance with the Province of British Columbia Ozone Depleting Substances Regulations;

- 6.7.2.5(6) A complete horizontal barrier to weather and climate will be provided.
 - 6.7.2.5(7) Roofing systems will include:
 - 6.7.2.5(7)(a) Flashings and sheet metal;
 - 6.7.2.5(7)(b) Thermal insulation;
 - 6.7.2.5(7)(c) Roofing specialties and accessories required for completion;
 - 6.7.2.5(7)(d) Interior access systems to roof areas;
 - 6.7.2.5(7)(e) Protection from pedestrian traffic and solar radiation in accordance with 6.7.2.6(1);
 - 6.7.2.5(7)(f) Roof drainage, including overflow scuppers.
 - 6.7.2.5(8) Sheet metal flashings will be designed to divert water away from membrane flashing termination and protect the membrane from deterioration due to the elements and mechanical damage. The roofing membrane will be continuous under the metal. Ensure that sheet metal components comply with wind uplift requirements established for roofing system
 - 6.7.2.5(9) Roofing systems will provide clear internal paths of drainage to allow any trapped moisture to drain to the exterior and avoid the staining of architectural finishes, forming of puddles, forming of icicles, and dripping on pedestrians.
 - 6.7.2.5(10) Facility design and roof systems will ensure that entrance ways are protected from sliding snow and ice and will ensure that there are no accumulations of snow and ice in roof valleys.
- 6.7.2.6 Fire and Smoke Protection
- 6.7.2.6(1) Spray-applied cementitious fire proofing will conform to standards of Warnock-Hersey (WH) Certification, ULC and cUL listings. Typically, cementitious fireproofing will be nominal 240 kg/m³

(15 pound) density unless otherwise required by BCBC.

- 6.7.2.6(2) Barriers will be integrated into vertical and horizontal space separations to protect against the spread of fire and smoke, and protection will be applied to exposed building elements (structural and non-structural) susceptible to fire and subsequent damage.
 - 6.7.2.6(3) Penetrations of vertical and horizontal fire-resistance rated separations will be protected.
 - 6.7.2.6(4) Fire-stopping and smoke seal systems will consist of asbestos-free materials and systems, capable of maintaining an effective barrier against flame, smoke, and gases.
 - 6.7.2.6(5) Fire-stopping materials will:
 - 6.7.2.6(5)(a) Be compatible with substrates;
 - 6.7.2.6(5)(b) Allow for movement caused by thermal cycles;
 - 6.7.2.6(5)(c) Prevent the transmission of vibrations from pipe, conduit or duct to structure and structure to pipe, conduit or duct.
 - 6.7.2.6(6) When more than one product is required for an assembly, all products will be compatible and shall comply with requirements established by ULC tested assemblies. Note that damming materials, such as mineral fibre insulation, are usually not manufactured by the firestopping product manufacturer.
 - 6.7.2.6(7) Fire stopping sealants and coatings will be silicone-based or urethane-based and guaranteed not to re-emulsify if subject to wetting or standing water; acrylic-based coatings and sealants are not permitted.
- 6.7.2.7 Sealants
- 6.7.2.7(1) Sealant materials will be applied to achieve:

- 6.7.2.7(1)(a) Seals to the building envelope systems or around openings in the building envelope systems as required to prevent water ingress;
- 6.7.2.7(1)(b) Sealed joints between dissimilar or similar materials to allow a smooth or even transitions;
- 6.7.2.7(1)(c) Sealed expansion or control joints in the building envelope systems or structural systems to allow movement.
- 6.7.2.7(2) Exterior sealants will completely and continuously fill joints between dissimilar and/or similar materials.
- 6.7.2.7(3) Interior sealant (at frames such as those at doors, windows and skylights) will completely fill joints between dissimilar materials and will be one component, acrylic emulsion type.
 - 6.7.2.7(3)(a) Silicone caulking to washroom plumbing fixtures will be mildew-resistant and impervious to water.
- 6.7.2.7(4) Sealants applied to expansion and control joints in concrete floors requiring self-levelling properties will be two-component, traffic-grade urethane sealants for horizontal surfaces.
- 6.7.2.7(5) Sealants will allow for minimum 25% movement in joint width.

6.8 Openings (Division 08)

6.8.1 Basic requirements

- 6.8.1.1 Except where wire glass is required in accordance with the BCBC, interior windows and sidelights will be constructed of tempered glass. Exterior glazing at doors and sidelights will be laminated. Where required by BCBC, label as safety glass.
- 6.8.1.2 Installation methods and locations for doors, frames, and hardware will conform to Door and Hardware Institute (DHI) standards.

6.8.1.3 Doors

6.8.1.3(1) Doors will be sized, fabricated, and installed to suit the intended function of spaces or rooms requiring acoustic or visual privacy, security, special HVAC requirements, fire-resistance rated separations or other closures. They shall be constructed out of solid wood unless stated or required otherwise.

6.8.1.3(2) Size Requirements for Doors

6.8.1.3(2)(a) Door openings will be of adequate width to suit the intended purpose of rooms on either side of the doors and allow the movement of people and equipment associated with those rooms.

6.8.1.3(2)(b) Double doors will be provided into rooms where large pieces of equipment will be moved in or out during the lifetime of the Facility and where such equipment cannot pass through 1200 mm single door openings.

6.8.1.3(2)(c) Door openings must accommodate movement of equipment.

6.8.1.3(2)(d) No single door will be less than 750 mm wide.

6.8.1.3(2)(e) No door or door leaf will be less than 2032 mm high, unless specifically required for access to services or other purposes where height is restricted.

6.8.1.3(3) Acoustic Requirements for doors:

6.8.1.3(3)(a) The door systems must be upgraded in terms of sound isolation for sensitive rooms as required in Appendix 1B.

6.8.1.3(4) Door sizes and designs will be applied consistently to rooms of similar use, location, and configuration.

- 6.8.1.3(5) Doors will not swing into corridors in a manner that may obstruct traffic flow or reduce the corridor width, except doors to spaces that are used infrequently and not subject to occupancy such as small closets.
 - 6.8.1.3(6) Doors may swing into washrooms, provided they allow for ease of use. Such doors will be equipped with hardware to allow the door to be opened out of the room in an emergency situation.
 - 6.8.1.3(7) Doors will have required hinges, edge protection, and face protection to minimize damage and resultant disruptive maintenance.
 - 6.8.1.3(8) Doors and frames will have a suitable finish that prevents dirt and fingerprint accumulation, and can be easily cleaned and disinfected.
 - 6.8.1.3(9) Where possible, provide glazing in an adjacent sidelight rather than within the door itself.
 - 6.8.1.3(10) Blinds or window coverings suitable for the level of functional and operational requirements will be provided for UNBC space.
 - 6.8.1.3(11) Doors and door frames will have the capability to withstand the varying and high levels of humidity and impact that occur typically in the spaces they serve and maintain their inherent aesthetic and functional capacities.
- 6.8.1.4 Windows
- 6.8.1.4(1) Windows will be sized, configured, and constructed to suit rooms that require daylight, views and/or natural ventilation.
 - 6.8.1.4(2) Provide 'borrowed light' through interior windows to occupied rooms that do not have exterior windows. The intent is to borrow light from areas that have windows and consequently create a more comfortable and less closed-in atmosphere.
 - 6.8.1.4(3) Glazing heights will be coordinated with door hardware, and other accessories to achieve functional and aesthetic cohesiveness.

6.8.2 Performance Criteria

6.8.2.1 Hollow Metal Doors and Frames

- 6.8.2.1(1) Materials and manufacture of metal doors and frames will conform to the requirements of the Canadian Steel Door and Frame Manufacturer's Association (CSDFMA).
- 6.8.2.1(2) Interior metal doors will have flush faced construction. Provide continuously welded, seamless edge construction using steel sheet; 16 gauge (1.6 mm) typically
- 6.8.2.1(3) Exterior Metal Doors will have
 - 6.8.2.1(3)(a) Flush faced construction. Provide steel sheet; minimum 16 gauge (1.6 mm).
 - 6.8.2.1(3)(b) Edge seams to correspond with door function and minimize maintenance needed. Provide with continuously welded, seamless edge construction.
 - 6.8.2.1(3)(c) Prepare surfaces to receive finishes that resist corrosion from exposure to weather. Provide with ZF180 coating.
- 6.8.2.1(4) Pressed Metal Frames will have
 - 6.8.2.1(4)(a) Fully welded construction. Provide same gauge at frames as at doors to improve performance of assembly, including hardware.
 - 6.8.2.1(4)(b) Thermally-broken door frames at exterior, non-fire-rated openings.
 - 6.8.2.1(4)(c) Anchors to each jamb to suit wall type and receive the frame.

6.8.2.1(5) Door Glazing

- 6.8.2.1(5)(a) Exterior glazing will be sealed units in thermally-broken frames to prevent heat loss.

6.8.2.2 Wood Doors

- 6.8.2.2(1) Wood doors will conform to the Architectural Woodwork Standards (First Edition) published by the Architectural Woodwork Manufacturer's Association of Canada (AWMAC).
- 6.8.2.2(2) Wood doors will be sized, constructed and be provided with hardware and finishes to suit the intended function and aesthetics of the Facility and its program.
- 6.8.2.2(3) Wood doors will be flush custom grade quality, solid particleboard core. Reference Appendix 1F for UNBC requirements.
- 6.8.2.2(4) Fire-resistance rated doors will be constructed with a homogeneous incombustible mineral core and AWMAC Quality Standards Option 5 blocking.
- 6.8.2.2(5) Finish hardware will be installed securely to resist loosening over time and fastened to solid wood backing, except where hardware is designed to be through-bolted.
- 6.8.2.2(6) Stiles, rails and faces will be glued to the core with Type II water-resistant adhesive to minimize delamination or disassembly as a result of moisture ingress.
- 6.8.2.2(7) Face veneer will be A-Grade hardwood veneer with AWMAC No. 3 edge clear urethane factory finish and finished to suit the intended use.

6.8.2.3 Aluminum Entrances and Storefronts

- 6.8.2.3(1) Aluminum entrances and storefront framing and doors may form part of the exterior envelope of the Facility or provide glazed interior partitions as required.

- 6.8.2.3(2) Aluminum doors will be used within aluminum entrances and storefront. Provide with offset pivots or with heavy duty butt hinges to accommodate expected traffic.
- 6.8.2.3(3) Frames will be thermally-broken, flush glazed, aluminum sections, to accept insulating glass units at exterior openings.
- 6.8.2.3(4) Frames will incorporate drained and vented system (rain screen) with a complete air and vapour seal, allowing any moisture entering the frame to drain to the exterior and allowing air into the pressuring chamber.
- 6.8.2.3(5) Aluminum swing entrance doors will be heavy-duty commercial or institutional grade and shall be automatically operated, motion-detector controlled.
- 6.8.2.3(6) Aluminum finish for exposed aluminum surfaces will be applied in the manufacturing process and will be permanent and resistant to corrosion caused by weather exposure and climate.

6.8.2.4 Specialty Doors

6.8.2.4(1) Overhead Rolling Service Doors

- 6.8.2.4(1)(a) Lateral movement of door curtain slats will be restrained. Windlocks will be provided as required by door size or wind load requirements.
- 6.8.2.4(1)(b) Curtain slats will be interlocking flat slats, complete with bottom bar and contact type bottom astragal.
- 6.8.2.4(1)(c) Manual operation will be provided with inside lift handle and locking bar or chain hoist. Chain operation will be by means of reduction gears and galvanized hand chain. Motor operation will be provided on doors requiring frequent usage.
- 6.8.2.4(1)(d) For fire doors, automatic closing device will be operated by fire door release device connected to fire alarm system.

6.8.2.4(2) Interior Aluminum Sliding Doors and Sidelights

- 6.8.2.4(2)(a) Interior sliding doors and sidelights will have recessed mounted track with sliding and fixed panel(s), and suitable for single glazing with 6 mm clear fully tempered float glass.

6.8.2.4(3) Automatic Swing Doors

- 6.8.2.4(3)(a) Automatic swing doors will be used for interior and exterior locations as designated in RDS, Appendix 1E.
- 6.8.2.4(3)(b) Door equipment will accommodate medium to heavy pedestrian traffic.
- 6.8.2.4(3)(c) Directional motion sensor control device, if used, will be unaffected by ambient light or ultrasonic frequencies.
- 6.8.2.4(3)(d) All in-swing doors that are required exits will be equipped with an emergency breakaway switch that internally cuts power to the operator. No external power switch will be allowed
- 6.8.2.4(3)(e) Use of delayed panic hardware to meet exit route requirements is discouraged.

6.8.2.4(4) Aluminum Curtain Walls

- 6.8.2.4(4)(a) Aluminum curtain walls will conform to the Aluminum Association Standards (AAS), and the American Architectural Manufacturers Association (AAMA) field testing specifications.
- 6.8.2.4(4)(b) Curtain wall framing will incorporate a drained and vented system with a complete air and vapour seal, allowing any water entering the framing/system and the glazing detail cavities to drain to the exterior and also allow air into the pressuring chamber.
- 6.8.2.4(4)(c) The design of the curtain wall framing will incorporate a thermal-break system.
- 6.8.2.4(4)(d) Aluminum finish for exposed aluminum surfaces will be permanent and resistant to corrosion resulting from weather exposure and climate.
- 6.8.2.4(4)(e) The assembly will resist climatic loads as defined by the BCBC.

6.8.2.5 Aluminum Windows

- 6.8.2.5(1) Aluminum windows will conform to the Aluminum Association Standards (AAS), and the American Architectural Manufacturers Association (AAMA) field testing specifications.
- 6.8.2.5(2) Windows will incorporate a drained and vented system with a complete air and vapour seal, allowing any water entering the framing/system and the glazing detail cavities to drain to the exterior and also allow air into the pressuring chamber.
- 6.8.2.5(3) The design of the curtain wall framing will incorporate a thermal-break system.

- 6.8.2.5(4) Aluminum finish for exposed aluminum surfaces will be permanent and resistant to corrosion resulting from weather exposure and climate.
- 6.8.2.5(5) The window assembly will resist climatic loads as defined by the BCBC.
- 6.8.2.6 Skylights
 - 6.8.2.6(1) Skylights will conform to the Aluminum Association Standards (AAS), and the American Architectural Manufacturers Association (AAMA) field testing specifications.
 - 6.8.2.6(2) Roof or skylight glazing may be provided where natural light is required in interior spaces to augment or complement interior ambient lighting.
 - 6.8.2.6(3) Aluminum finish for exposed aluminum surfaces will be permanent and resistant to corrosion resulting from weather exposure and climate.
- 6.8.2.7 Glass and Glazing
 - 6.8.2.7(1) Glass and glazing materials and workmanship will conform to the Insulating Glass Manufacturers Association of Canada (IGMAC) Guidelines, and the Glazing Contractors Association of B.C. (GCA) Glazing Systems Specifications Manual.
 - 6.8.2.7(2) Exterior and/or interior glass and glazing may be provided as integral components of the exterior building envelope, interior partitions and screens, exterior and interior doors, handrail balustrades, skylights and decorative and ornamental glazing.
 - 6.8.2.7(3) The assembly will resist climatic loads as defined by the BCBC.
 - 6.8.2.7(4) Laminated safety glass will be used in single-glazed skylights, entry doors and sidelights, or as the inboard light of a double-glazed skylight.
 - 6.8.2.7(5) Mirrors
 - 6.8.2.7(5)(a) Mirrors will be provided in public amenity spaces where required and in accordance with BCBC

accessibility requirements and the SSBC Technical Standards which are included in the Disclosed Data.

6.8.2.8 Finish Hardware

- 6.8.2.8(1) Finish hardware materials and workmanship will conform to quality standards of the Door and Hardware Institute (DHI).
- 6.8.2.8(2) Finishes will be selected to provide maximum longevity and preservation of the finish.
- 6.8.2.8(3) Hardware, where applicable, will be ULC-listed for fire rating for all functions up to 2-hour doors.
- 6.8.2.8(4) Hardware will be heavy-duty commercial quality. Locksets and latchsets will be fully mortised type and lever handles will be solid material.
- 6.8.2.8(5) Keying
 - 6.8.2.8(5)(a) Level 2 Cylinders will be supplied and installed.
 - 6.8.2.8(5)(b) 4-level system will be implemented.
 - 6.8.2.8(5)(c) Keying groups will be assigned by the Authority.
 - 6.8.2.8(5)(d) New key fittings will be given to and controlled by the Authority.
 - 6.8.2.8(5)(e) Keys from factory will be given to the Authority.
 - 6.8.2.8(5)(f) Four (4) keys will be supplied for each lock cylinder.

6.9 Finishes (Division 09)

6.9.1 Basic Requirements

- 6.9.1.1 For finished areas where water is anticipated to be present as part of cleaning or other procedures, water must be allowed to collect and exist without causing damage to the finishes or substrate.

- 6.9.1.2 For areas of high use traffic finish materials must be durable to withstand damage and easily replaceable in sections.
 - 6.9.1.3 Acoustic characteristics of finish materials will be a priority consideration and must relate the STC ratings identified in Appendix 1B.
 - 6.9.1.4 Wherever possible, visible wood finishes shall be selected to reinforce the nature of the Facility
- 6.9.2 Performance Criteria
- 6.9.2.1 All interior finishes will comply with the low emitting material requirements for LEED Canada 2009 IEQ credits 4.1-4.4 or equivalence. These include adhesives and sealants; paints and coatings; flooring systems and composite wood and agrifibre products.
 - 6.9.2.2 Interior Wall Framing
 - 6.9.2.2(1) Wall partitions must meet the acoustical performance requirements outlined in Appendix 1B.
 - 6.9.2.2(2) Materials and workmanship for interior walls, including steel studs and furring and gypsum board ceiling suspension systems, will conform to the Canadian Sheet Steel Building Institute Standards (CSSB1), and the Association of Wall and Ceiling Contractors of B.C. (AWCC) Wall & Ceiling Specification Standards Manual (latest edition).
 - 6.9.2.2(3) Wood studs for interior partitions and furring will be non-load bearing, with no axial load other than its own weight, the weight of attached finishes, and lateral loads of interior pressure differences and seismic loads.
 - 6.9.2.2(4) Where required by the BCBC, steel stud framing construction will accommodate electrical, plumbing and other services in the partition cavity, and support fixtures, wall cabinets and other such wall-mounted items with reinforcement and backing.
 - 6.9.2.2(5) Design will account for the differences in air pressure that may result on opposite sides of the wall or partition due to factors such as wind and

other lateral pressures, stack effects, and mechanically-induced air pressurization.

6.9.2.3 Gypsum Board

- 6.9.2.3(1) Materials and workmanship for gypsum board and accessories will conform to the Association of Wall and Ceiling Contractors of B.C. (AWCC) Wall & Ceiling Specification Standards Manual (latest edition). Finish exposed gypsum board surfaces to Level 3 finish. Provide Level 3 finish at long walls, walls with wall washing lighting fixtures (downlights or sconces), walls with wall coverings or gloss paint, and walls with a light source at the end.
- 6.9.2.3(2) Thickness of gypsum board will be no less than 5/8" (16 mm).
- 6.9.2.3(3) Except for Section 6.9.2.2(4), glass mat water-resistant gypsum backing panels (tile backer board) will be used behind ceramic wall tile in showers, behind sinks, and in other wet areas.
- 6.9.2.3(4) Reinforced cementitious board or cementitious backer unit (CBU) may be used as an alternative to glass mat water-resistant gypsum backing panels in Section 6.9.2.2(3).
- 6.9.2.3(5) Abuse-resistant gypsum board will be provided where required in the RDS for increased resistance to abrasion, indentation, and penetration of interior walls and ceilings.
- 6.9.2.3(6) Glass mat surfaced gypsum sheathing board will be used wherever exterior gypsum sheathing is required at exterior walls.
- 6.9.2.3(7) Airborne sound insulation will be provided for gypsum board/steel stud assembly to close off air leaks and flanking paths by which noise can go around the assembly. Assemblies will be airtight. Recessed wall fixtures such as cabinets or electrical, telephone and television outlets, which perforate the gypsum board surface, will not be located back-to-back. In addition, any opening for fixtures will be carefully cut to the proper size and penetrations will be sealed. Conduit/duct/piping

penetrations will be sealed with tape and filled at the plenum barrier. Active pipes and ducts will not contact gypsum wall board in acoustically critical walls (ie STC 45 or higher). There will be a 6mm gap which in turn is sealed with an acoustic caulk.

- 6.9.2.3(8) The entire perimeter of a sound insulating assembly will be made airtight to prevent sound flanking. An acoustic caulking compound or acoustical sealant will be used to seal between the assembly and all dissimilar surfaces (including at window mullions).

6.9.2.4 Ceramic Tilework -

- 6.9.2.4(1) Materials and workmanship for ceramic tilework will conform to the Terrazzo Tile and Marble Association of Canada (TTMAC) Tile Guide Specification Section 09 30 00 Tile (latest edition).
- 6.9.2.4(2) Floor tile installed on wet or exterior surfaces will have the following static coefficients of friction as per the American Society for Testing and Materials International (ASTM):
- 6.9.2.4(2)(a) Level Surfaces: Not less than 0.50 for wet and dry conditions.
 - 6.9.2.4(2)(b) Stair Treads: Not less than 0.60 for wet and dry conditions.
 - 6.9.2.4(2)(c) Ramp Surfaces: Not less than 0.60 for wet and dry conditions.
- 6.9.2.4(3) Exterior tiles will be frost-resistant and have a moisture absorption rating of 3.0% or less.
- 6.9.2.4(4) Control joints and expansion joints will be provided in conformance with the recommendations of the TTMAC Tile Installation Manual.
- 6.9.2.4(5) A waterproof membrane will be provided under ceramic floor tile in showers and other wet areas. The membrane may be trowel-applied, built-up, liquid-applied or sheet-applied.
- 6.9.2.4(6) Crack isolation membranes will be provided to resist crack transmission from the substrate due to

lateral movement and designed for use in thin-set applications of tile over a cracked substrate. Materials used will be elastomeric sheets or trowel-applied materials suitable for subsequent bonding of ceramic tile.

6.9.2.4(7) Ceramic tile will be set and grouted with epoxy setting and grouting materials.

6.9.2.5 Acoustic Ceilings

6.9.2.5(1) Interior sound levels will be controlled to facilitate a comfortable working environment for the Facility users.

6.9.2.5(2) Acoustic ceiling tiles in a suspension system will be installed only where necessary to provide the levels of sound attenuation identified in the RDS to suit the intended function of the room with a minimum NRC 0.70 and CAC 35.

6.9.2.5(3) Ceiling tiles in a suspension system will provide access to the ceiling spaces where required for mechanical, electrical or other service systems.

6.9.2.5(4) Special surface-treated ceiling tiles, such as wood, mylar or metal-faced tiles, may be installed where maintenance, ease of cleaning, accessibility and acoustics are priorities.

6.9.2.5(5) Standard acoustical panels and tiles will be designed for installation within the normal occupancy condition range of 15°C - 29°C and maximum 70% relative humidity. When the service, use, temperature or RH are expected to exceed these ranges, use of acoustical units specifically designed for such applications.

6.9.2.5(6) In any area where lay-in ceiling panels frequently need to be removed for plenum access, tiles will be provided with scratch-resistant surfaces and sealed edges.

6.9.2.6 Flooring

6.9.2.6(1) Flooring Types

There may be floor surfaces that require specialized application such as poured epoxy, painted concrete. These applications will be reviewed on a per application basis with the Authority.

For all areas except wet rooms or as identified in the RDS provide:

- Wood laminate flooring or approved equal
- Flooring adhesive that is water soluble, low odour product.
- Flooring that will not be finished with sealer and/or wax, but that must be finished with high speed buffing as per manufacturers specification.

For Wet Rooms

- Provide sheet rubber or polished concrete, as identified in the RDS.
- All sheet rubber flooring joints will be hot welded seam.

For Stair Covering

- Stair treads will be one piece solid vinyl Johnsonsite VIRTR (visually impaired roundel tread riser) with carborundum strip.
- Adhesive to be water soluble, low odour product.

6.9.2.6(2) Materials and workmanship for flooring will conform to the National Floor Covering Association (NFCA) (<http://www.nfcaonline.ca/>) Specification Standards Manual. US Federal Specification RR-T-650e.

<http://www.wbdg.org/cdb/FEDMIL/rrt650e.pdf>

6.9.2.6(3) The selection process for flooring materials will include considerations of cleaning and maintenance, pedestrian and rolling traffic, acoustics, infection control, and aesthetics.

- 6.9.2.6(4) Flooring in washrooms will be impervious to water and have a slip-resistant finish.
- 6.9.2.6(5) Resilient Flooring
- 6.9.2.6(5)(a) Resilient tile products will be vetted with the Authority for flooring in service corridors and service areas.
 - 6.9.2.6(5)(b) Slip-resistant sheet vinyl will have a static coefficient of friction of 0.6 on level surfaces and 0.8 on ramps.
 - 6.9.2.6(5)(c) Linoleum sheet flooring will be a homogenous sheet linoleum of primarily natural materials, consisting of linseed oil, wood flour, and resin binders mixed and calendared onto a natural jute backing. All seams will be welded. Areas surfaced in sheet flooring will have integral cove bases.
 - 6.9.2.6(5)(d) Linoleum sheet flooring will be a homogenous sheet linoleum of primarily natural materials, consisting of linseed oil, wood flour, and resin binders mixed and calendared onto a natural jute backing. All seams will be welded. Areas surfaced in sheet flooring will have integral cove bases.
 - 6.9.2.6(5)(e) Rubber flooring tile will be formulated with 100% virgin elastomers, reinforcing agents, soil-resisting agents, and migrating waxes compounded to create durability, excellent cleaning characteristics, and exceptional slip resistance. Stud designs will have chamfered edges with a sharply-defined edge at the top for higher slip resistance, easier cleaning, superior maintenance and low vibration design to minimize vibration and noise. Areas surfaced

with resilient tile flooring will have rubber bases.

6.9.2.6(5)(f) Tactile warning strips and stair nosings will be provided to assist the visually impaired.

6.9.2.6(5)(g) Adhesive for resilient flooring will meet or exceed EPA Standards for acceptable VOC concentration and emission rates.

6.9.2.7 Acoustic Treatment

6.9.2.7(1) Acoustic treatment will be provided where sound attenuation, soundproofing or other sound control measures are necessary to create a comfortable environment for users.

6.9.2.7(2) For STC ratings, refer to Appendix 1B.

6.9.2.7(3) Sound control will include:

6.9.2.7(3)(a) Attenuation of sound throughout the Facility;

6.9.2.7(3)(b) Sound isolation between the exterior and interior spaces;

6.9.2.7(3)(c) Sound isolation between interior spaces within the Facility at both horizontal and vertical separations;

6.9.2.7(3)(d) Sound and vibration isolation of building service noises and sound isolation of building service rooms.

6.9.2.7(4) Partition and ceiling construction will provide approximately the same degree of sound control through each assembly. When a partition is used for sound isolation, the sound control construction will extend from floor to floor.

6.9.2.7(5) Sound isolation requires that the integrity of gypsum board partitions and ceilings (mass) never be violated by vent or grille cut-outs or by recessed cabinets, light fixtures, etc. Refer to Appendix 1B.

- 6.9.2.7(6) Where penetrations are necessary, placing them back-to-back within the same stud cavity is not acceptable. Electrical boxes are to be staggered by at least one stud space. Mineral fibre insulation will be used to seal joints around all cut-outs such as electrical and telephone outlets, plumbing escutcheons, recesses and cabinets.
- 6.9.2.7(7) Constructions such as ducts, rigid conduits, or corridors that act as speaking tubes to transmit sound from one area to another will be minimized. Common supply and return ducts will have sound attenuation liners at the diffuser and/or grill to maintain assemblies' STC. Conduit will be sealed.
- 6.9.2.7(8) To isolate structure-borne vibrations and sound, vibrating equipment will have resilient mountings to minimize sound and vibration transfer to structural materials. Ducts, pipes, and conduits will have resilient, non-rigid boots or flexible couplings where they leave vibrating equipment; and they will be isolated from the structure with resilient gaskets and sealant where they pass through walls, floors, or other building surfaces.
- 6.9.2.7(9) Acoustic screens, vibration isolators, and carefully selected exterior equipment will be used in order to minimize exterior noise.

6.9.2.8 Painting and Protective Coatings

6.9.2.8(1) Paints

Walls, doors and shelving

- Use eggshell or semi gloss.
- Application: brush, roller or spray
- Clean up: warm water
- Thinner if needed: water
- Colour selection / patterning will be at the discretion of the Authority

Door frames and metal doors

- Use semi gloss
- Application: brush, roller or spray
- Clean up: warm water

- Thinner: water
- Colour selection / patterning will be at the discretion of the Authority

Wood finish doors

- Use clear coat interior varnish
- Application: brush, roller or spray
- Clean up: mineral spirits
- Thinner: mineral spirits

Paint Grade Doors

- Use semi gloss
- Application: brush, roller or spray
- Clean up: warm water
- Thinner if needed: water
- Colour selection / patterning will be at the discretion of the Authority

Ceilings

- Use flat
- Application: brush, roller or spray
- Clean up: warm water
- Thinner: water
- Colour selection will be at the discretion of the Authority

New wall / product finish

- Use latex sealer
- Application: brush, roller or spray
- Clean up: warm water
- Colour selection will be at the discretion of the Authority

Exterior walls

- Use exterior semi gloss latex
- Application: brush, roller or spray
- Clean up: warm water
- Thinner: up to 10% water for spraying applications
- Colour selection will be at the discretion of the Authority

Floors, concrete

- Use 2 part finish equal to Cloverdale Paints ClovaCoat 300, base component A, curing agent B
- Primer if needed will be equal to Preptech 83020, base component A, curing agent B
- Application: brush, roller, spray (preferred)
- Thinner: C70 or C25
- Colour selection will be at the discretion of the Authority

- 6.9.2.8(2) Materials and workmanship will conform to Master Painters Institute (MPI) Architectural Painting Specification Manual.
- 6.9.2.8(3) Exterior paints and painting will protect the substrate materials from weather and climate conditions.
- 6.9.2.8(4) A visually harmonious and aesthetically coordinated appearance will be achieved across all areas of the Facility.
- 6.9.2.8(5) Exterior and interior finish materials will have surface finishes either as manufactured and integral to the finish material or as applied to the surface of the finish material by paint or special coating.
- 6.9.2.8(6) Exterior and interior structural, galvanized, and miscellaneous steel will receive a special protective coating. Such materials include exterior and interior structural galvanized, and miscellaneous steel.
- 6.9.2.8(7) In interior areas, indoor air quality will be a priority, and paints and paint materials will have a minimal volatile organic compound level.
- 6.9.2.8(8) Interior paint materials will withstand regular or repeated cleaning as the function of the area dictates.
- 6.9.2.8(9) Parking area, stair wells, walls and ceilings shall be painted white.
- 6.9.2.8(10) Materials used will be lead and mercury-free.

- 6.9.2.8(11) Seamless epoxy wall coatings will be a two-component, high solids, zero or low VOC, solvent-free, epoxy glaze wall coating, and will be seamless and abrasion, chemical, and UV-resistant.
 - 6.9.2.8(12) Paint materials will be rated under Environmental Notation System (ENS) with acceptable VOC ranges as listed in the MPI Approved Product List under "E" ranges.
 - 6.9.2.8(13) Only materials having a minimum MPI "Environmentally Friendly" E2 rating based on VOC (EPA Method 24) content levels will be used.
- 6.9.2.9 Special Wall Coverings
- 6.9.2.9(1) Materials and workmanship will conform to the Master Painters Institute (MPI) Architectural Painting Specification Manual.
 - 6.9.2.9(2) Wall coverings may be required on interior walls to satisfy aesthetic considerations beyond the application of paint and create a comfortable working environment in user work areas, and a safe and inviting environment in public areas.
 - 6.9.2.9(3) Wall coverings will not be used in areas that may have excessive moisture present or require high or frequent maintenance.
 - 6.9.2.9(4) Sealers and adhesives will be non-toxic, water-based type and meet requirements of Canadian "Eco Logo" program or equivalent. TVOC emissive content will not be more than 20 grams per litre.

6.10 Specialties (Division 10)

6.10.1 Basic Requirements

- 6.10.1.1 Specialty products will be manufactured for the specific purposes and intended, installed in strict accordance with the manufacturer's directions.

6.10.2 Performance Criteria

- 6.10.2.1 Provide tack boards and writing boards to match specifications found in Appendix 1F.

6.10.2.2 Compartments and Cubicles

- 6.10.2.2(1) Compartments and cubicles will include toilet partitions, change cubicles, shower partitions, and other compartments and cubicles requiring privacy and security.
- 6.10.2.2(2) Exposed surfaces will be permanent, water-resistant, corrosion-proof, and readily cleaned and maintained.
- 6.10.2.2(3) Partitions and standards will be secured to the floor or ceiling structure, and resistant to lateral loading and impact.
- 6.10.2.2(4) Compartment/cubicle doors will be of material matching the partitions and include permanent, purpose-made hardware. Doors and hardware will provide privacy and security and be handicap accessible where required in accordance with BCBC.
- 6.10.2.2(5) Change compartments will be complete with a mirror.
- 6.10.2.2(6) Toilet Partitions
 - 6.10.2.2(6)(a) Sheet metal will be galvanized steel conforming to ASTM A653 with minimum ZF001 (A01) zinc coating. Finish for steel surfaces will be polyester, baked enamel.

6.10.2.2(6)(b) Stainless steel will be Type 304 conforming to ASTM A240 with No. 4 finish.

6.10.2.2(6)(c) Fibre-reinforced plastic (fibreglass) will be moisture resistant.

6.10.2.2(7) Change Cubicle Partitions

6.10.2.2(7)(a) Where not adjacent to showers, partitions will conform to quality assurance requirements specified for toilet partitions.

6.10.2.2(8) Shower Partitions

6.10.2.2(8)(a) Partitions will be solid phenolic laminated thick stock, factory-laminated with decorative finish both faces of core and conforming to CAN3-A172 or NEMA LD3.

6.10.2.3 Elevated Access Flooring

6.10.2.3(1) Materials, workmanship, and test methods will conform to quality standards outlined in 6.10.1.1 and the "Recommended Test Procedures for Access Floors" as published by the Ceilings and Interiors Systems Construction Association (CISCA).

6.10.2.3(2) The electrical resistance of the access floor system will be tested in accordance with NFPA 99.

6.10.2.3(3) Elevated access flooring may be considered where electronic and data cabling, outlets, junctions, etc., in the floor are in heavy concentration and must be regularly serviced, added to or altered.

6.10.2.3(4) Elevated access flooring may be considered where flexibility of access points over a floor area, or part thereof, is required rather than a focused or distributed single access point.

6.10.2.3(5) Panel-to-understructure (metal-to-metal) connections will provide less than 10 ohms resistance without grounding clips.

- 6.10.2.3(6) The access floor system assembly will consist of modular floor panels laid out on a grid system, supported by and secured to the understructure. Panels will be supported by an adjustable pedestal base that positively locates, engages, and secures panels, and that accommodates horizontal grid members only as required.
- 6.10.2.3(7) All components of the access floor system will be of steel construction with manufacturer's standard corrosive-resistant finishes, except for panel-cementitious core.
- 6.10.2.3(8) Panels will be easily removable by one person with standard tools and a lifting device and will be interchangeable, except for cut-outs for special conditions. Cable cut-out panels will be interchangeable with solid panels.
- 6.10.2.3(9) The completed surface of floor system will provide a continuous smooth floor surface and under-floor space to accommodate electrical, communication, computer service lines and mechanical ducting, and may serve various areas as air supply or return plenums. The area below the raised access floor system may be a pressurized area.
- 6.10.2.3(10) Panels will be square, of welded steel components with an enclosed galvanized steel bottom pan formed in a flat or uniform pattern of square or round pockets. The unitized panels will be internally filled with lightweight concrete to improve sound characteristics and provide performance value.
- 6.10.2.3(11) Panels may be surfaced with resilient floor tiles.
- 6.10.2.3(12) Pedestals, when secured to subfloor, will be capable of supporting a minimum axial load without deformation.
- 6.10.2.3(13) Panels will support a minimum concentrated load of 566 kg on a 25 mm square point anywhere on the panel, with a deflection not to exceed 2.5 mm.

6.10.2.3(14) Panels will support a rolling load of 453 kg on a 75 mm x 20.6 mm wheel at 10 passes, and 363 kg on a 150 mm x 38 mm wheel at 10,000 passes.

6.10.2.3(15) Ultimate load will be 1721 kg.

6.10.2.4 Facility Signage

6.10.2.4(1) Facility signage will be highly visible, clear, concise, and well-differentiated from surrounding information, notices, advertising, etc.

6.10.2.4(2) Materials, colours, letter fonts, sizes, and other aesthetic and functional considerations will conform to the overall 'way finding' design

6.10.2.4(3) International symbols will be used where and as applicable.

6.10.2.5 Storage Shelving Systems

6.10.2.5(1) Storage systems for materials will be provided in storage areas as identified by the Authority.

6.10.2.5(2) Adjustable shelving systems may be specifically manufactured for storage purposes, such as plywood or steel-slotted angle industrial shelving for bulk materials of plastic laminate-faced plywood for clean storage as determined by the Authority.

6.10.2.6 Washroom, Shower and Hand Wash Sink Accessories

6.10.2.6(1) Accessories in washrooms, showers and at hand wash sinks will be supplied and installed by the Design-Builder in all public service spaces unless otherwise noted. Type, size, and number of accessories will be determined by the Authority and BCBC requirements.

6.10.2.6(2) Washroom accessories will include but are not limited to the following:

6.10.2.6(2)(a) Soap dispensers

6.10.2.6(2)(b) Toilet paper dispensers

6.10.2.6(2)(c) Paper towel dispensers

6.10.2.6(2)(d) Paper towel waste bin

- 6.10.2.6(2)(e) Mirrors
 - 6.10.2.6(2)(f) Angled mirrors as required by BCBC
 - 6.10.2.6(2)(g) Handicap grab bars (with integral tactile grip finish)
 - 6.10.2.6(2)(h) Coat hooks
 - 6.10.2.6(2)(i) Sanitary napkin dispensers
 - 6.10.2.6(2)(j) Sanitary napkin disposals
 - 6.10.2.6(2)(k) Baby change tables
 - 6.10.2.6(2)(l) 'In-Use' indicators
- 6.10.2.6(3) Shower rooms or showers in washrooms will include but are not limited to the following accessories:
- 6.10.2.6(3)(a) Shower curtain track or rod
 - 6.10.2.6(3)(b) Handicap grab bars
 - 6.10.2.6(3)(c) Coat hooks
- 6.10.2.6(4) Hand wash sink accessories will include but are not limited to the following:
- 6.10.2.6(4)(a) Soap dispensers
 - 6.10.2.6(4)(b) Paper towel dispensers
 - 6.10.2.6(4)(c) Paper towel disposals
- 6.10.2.6(5) Recessed dispensers (such as those for paper towels, soap, and waste receptacles) will not be permitted..
- 6.10.2.6(6) Accessories will be commercial grade and free from imperfections in manufacture and finish.
- 6.10.2.6(7) Washroom accessory and installation will allow cleaning and maintenance of the accessory and surrounding wall area.
- 6.10.2.6(8) Fittings will have concealed fastening for security and discouragement of tampering.

6.11 Equipment (Division 11)

- 6.11.1 The Design-Builder is responsible for providing the rough-in and coordination of lab equipment.
- 6.11.2 The Design-Builder is responsible for providing all fixed furniture and equipment including lecture theatre desks, , lecturn, lab benches, fume hoods,.

6.12 Furnishings (Division 12)

6.12.1 Basic Requirements

- 6.12.1.1 Window coverings will allow control of exterior light entering the room during daylight hours and provide privacy during daylight and non-daylight hours.
- 6.12.1.2 Window coverings will be designed to minimize light spillage into adjacent areas.
- 6.12.1.3 In the rooms requiring black-out blinds as defined in Appendix 1E, functions, materials, tracks, seals, and operation will be suited to the purpose.
- 6.12.1.4 Window coverings will be designed and manufactured using materials and mechanisms that minimize cleaning and maintenance operations.
- 6.12.1.5 Provide window coverings as follows:
 - 6.12.1.5(1) to all exterior windows, vertical blinds but other products will be considered providing they provide privacy, sun and heat control consistent with the energy management plan;
 - 6.12.1.5(2) all window coverings must be easy to remove and clean.

6.12.2 Performance Criteria

6.12.2.1 Window Shade Systems

- 6.12.2.1(1) Will be waterproof, washable, rot-proof, flame-resistant, fungal and bacteria-resistant, colourfast to light, glare-reducing, and able to control heat gain and provide external visibility.
- 6.12.2.1(2) Will pass Small Scale Vertical Burn requirements in accordance with CAN/ULC-S109 or NFPA-701.

- 6.12.2.1(3) Will be tested in accordance with ASHRAE Standard 74073 for shading coefficient, fungal resistance in accordance with ASTM G21, and bacterial resistance.

6.13 Conveying Equipment (Division 14)

6.13.1 Basic Requirements

- 6.13.1.1 The elevator systems will be designed to accommodate the requirements / needs of the Facility in a manner which contributes to the overall efficiency and effectiveness of the Facility operations.
- 6.13.1.2 Elevator systems will be designed to ensure there is sufficient capacity to accommodate the wide range of user and functionality requirements, in a manner which satisfies expectations for safety, reliability, responsiveness, accessibility and operational efficiency.
- 6.13.1.3 Provisions will be considered for persons with special mobility needs.
- 6.13.1.4 Elevators will support access provisions, for people and materials, to all functional areas. Elevator access to all Facility levels, including mechanical levels, will be provided by at least one elevator.
- 6.13.1.5 Equipment provided will have a proven track record of at least five years field operation in Canada in similar environments and of similar configuration.
- 6.13.1.6 Durable elevator cab finishes (including stainless steel fronts as well as hand and bumper rails) will be provided.

6.13.2 Performance Criteria for Elevators

6.13.2.1 Scope of Work

- 6.13.2.1(1) Supply and install a minimum of two (2) elevators, with equipment and performance characteristics as required. Provide all necessary components to make elevator systems fully operational and functional, whether or not specifically referenced in this SOR.
- 6.13.2.1(2) Provide all permits, labour, materials, products, equipment, services and all else necessary for the

design, manufacture, delivery, installation and services required for a complete and fully functioning elevator system.

- 6.13.2.1(3) Obtain and pay for governmental design submission, registration, inspection and permit, as required (except for ownership and operation license), and make such tests as required by the British Columbia Safety the Authority prior to licensing.

6.13.2.2 Codes, By-laws, and Regulations

- 6.13.2.2(1) Provide equipment and perform work in accordance with all local, provincial and federal codes, by-laws, and regulations.
- 6.13.2.2(2) Provide equipment and perform work in accordance with the latest edition of the B44 Safety Code for Elevators and any other code which may govern the installation.

6.13.2.3 Wiring Diagrams and Manuals

- 6.13.2.3(1) Prior to substantial completion, supply to the Authority, three sets of elevator manuals which include the information itemized below.
 - 6.13.2.3(1)(a) Design submission documents submitted to BCSA for permit
 - 6.13.2.3(1)(b) Final shop drawings
 - 6.13.2.3(1)(c) Description of special features such as firefighters emergency operation, independent service, emergency power operation, two-way voice communication, and security operation
 - 6.13.2.3(1)(d) As-built wiring and schematic diagrams
 - 6.13.2.3(1)(e) Schedule of recommended routine maintenance procedures
 - 6.13.2.3(1)(f) Description of diagnostic procedures, including complete fault code listing and troubleshooting instructions

6.13.2.4 Training

- 6.13.2.4(1) At completion of the Project provide a training session for the Authority, consisting of a review of the documentation and operation of the equipment and features.

6.13.2.5 Barrier-Free Access

- 6.13.2.5(1) Arrange the controls and fixtures to meet barrier-free access requirements of the B44 Safety Code for Elevators and any other code which may govern the installation.

6.13.2.6 Fixtures

- 6.13.2.6(1) Provide buttons with LED illumination and stainless steel targets.

6.13.2.7 Operating Conditions

- 6.13.2.7(1) Provide elevating equipment that will operate normally when the machine room and hoistway temperature is between 5 and 35 degrees Celsius.
- 6.13.2.7(2) Provide elevating equipment that will operate normally when the power supply is within 10 percent of its rated voltage.
- 6.13.2.8 Seismic requirements
 - 6.13.2.8(1) Comply with Section 4.1.8.18 of the BCBC, CSA B44 Safety Code for Elevators and any other code which may govern the installation.
- 6.13.2.9 Maintainability
 - 6.13.2.9(1) Arrange the elevating equipment such that there are no times, dates, trips, or other counters that would shut down the equipment or change its operation.
 - 6.13.2.9(2) Elevator equipment provided shall not contain proprietary features which limit the Authority's ability to engage a registered elevator maintenance contractor, other than the original manufacturer / installer, to provide routine maintenance services.
 - 6.13.2.9(3) In the event specialized tools or software are required to perform routine maintenance services, such tools shall be either provided as "on board" equipment, or as separate devices. Such tools or software shall be provided with the equipment and shall become the property of the Authority.
- 6.13.2.10 Operational Features
 - 6.13.2.10(1) Provide electronic card access to all elevators.
 - 6.13.2.10(2) Provide for installation of security cameras in the elevators. Install and wire the security cameras provided by another trade. Provide the required wiring in the travelling cable run between the car top and the controller as well as power to the car top for the camera.
 - 6.13.2.10(3) Provide equipment and labour for installation of a card reader security system. Provide the required

wiring between the card reader and the elevator security box in the machine room along elevator controller connections and circuits for the security system (including floor tracking).

6.13.2.11 Operating Performance

- 6.13.2.11(1) Levelling – Car shall stop within 3 mm (1/8") of the floor level.
- 6.13.2.11(2) Operating time - The operating time between 2 floors shall be 17.0 seconds or less (based on 4'0" wide two speed side opening doors and a speed of 45.7 mpm and travel of 4.5m (14'-9")). Measure the operating time from the time that the doors begin to close until they are 3/4 open at the next floor.
- 6.13.2.11(3) Ride quality - Lateral acceleration (front to rear and side to side) measured during express runs shall be less than 150 mm/s/s (0.5 f/s/s) peak to peak.
- 6.13.2.11(4) Door equipment noise level shall be less than 62 decibels during a full door open and door close operation. Measure the noise levels using a sound level meter set to the "A" scale for a fast response.
- 6.13.2.11(5) Machine room equipment shall be arranged so that the noise level with the elevator running is less than 80 decibels. Measure the noise levels using a sound level meter set to the "A" scale for a fast response.

PART 7. FACILITIES SERVICES SUBGROUP SPECIFICATIONS**7.1 Fire Suppression (Division 21)**

7.1.1 Fire Protection

7.1.1.1 Basic Requirements:

- 7.1.1.1(1) Provide a sprinkler system and equipment that will be designed to the occupancy classification that it protects.
- 7.1.1.1(2) Provide on the sprinkler system take-off from water supply a detector type double check valve assembly with listed OS&Y gate valves on both sides complete with tamper switches approved by UL, ULC FM or other regulatory organizations listed in NFPA Codes and Standards.
- 7.1.1.1(3) Provide a fire pump with emergency power supply and a transfer switch which is part of the fire pump controller, package mounted in separate mechanically attached enclosure to form one assembly, specifically approved for the purpose as a complete unit. The fire pump shall have 20% spare capacity at design flow approved by Building Code authorities.
- 7.1.1.1(4) Sprinklers subject to freezing temperatures will be supplied by a dry system. This shall include all relevant components related to a dry system such as, but not limited to, an air compressor, automatic air maintenance device, and control power.
- 7.1.1.1(5) Quick response sprinklers will be provided throughout.
- 7.1.1.1(6) Provide a double interlocked, cross zoned supplied sprinkler system to all rooms with sensitive equipment and/or records.
- 7.1.1.1(7) Provide fire extinguishers located per relevant codes and to the satisfaction of the authority having jurisdiction and approved by UL, ULC FM or other regulatory organizations listed in NFPA Codes and Standards for the hazard and classification of the space it serves.

7.1.1.1(8) Should the design of the Facility allow combustible construction (as determined by the Design Builder's code consultant in agreement with the authority having jurisdiction), associated products relating to the mechanical systems may be of construction as allowed by the applicable code (as determined by the Design Builder's code consultant in agreement with the authority having jurisdiction). All other performance requirements within this document are to remain. An example of this may be the use of cast iron drainage piping versus PVC drainage piping.

7.1.1.2 Performance Criteria:

- 7.1.1.2(1) All fire protection systems will be hydraulically sized to NFPA standards. Including NFPA 45 where applicable.
- 7.1.1.2(2) All equipment and installation will be in accordance with manufacturers' requirements.
- 7.1.1.2(3) All equipment will be ULC approved.
- 7.1.1.2(4) All fire protection systems and equipment shall be installed by a qualified contractor licensed and regularly engaged in such installations.
- 7.1.1.2(5) Provide backflow protection on all fire protection systems in accordance with CSA requirements.
- 7.1.1.2(6) Locate zone shut-off valves so they are visible and accessible from the floor. Do not conceal from view: do not locate in janitor rooms or storage rooms. All valves controlling water flow will be monitored.
- 7.1.1.2(7) Fire department connection will be installed at a location approved by the local authorities having jurisdiction.
- 7.1.1.2(8) Install fire extinguishers in a semi or fully recessed cabinet.

7.2 Plumbing (Division 22)

7.2.1 Site Services:

- 7.2.1.1 All materials will be in accordance with CSA standards.

- 7.2.1.2 Provide individual water, fire protection, gas, sanitary, and storm services as required and sized to suit the usage needs of the Facility.
- 7.2.1.3 Basic Requirements:
- 7.2.1.3(1) Washrooms fixtures will be supplied and installed by the Design-Builder in all public service spaces unless otherwise noted. Type and size of fixtures to be confirmed with the Authority. Number of fixtures as required by the BCBC.
 - 7.2.1.3(2) No plumbing service shall be run into any electrical or communication room unless it is serving equipment in that room. No plumbing service shall be run through any electrical or communication room
 - 7.2.1.3(3) Domestic water systems shall be to the National and Provincial Plumbing Standards. Provide water treatment, as required by BCBC on-site for service to special equipment, which will be treated through a reverse osmosis water treatment system prior to downstream use. These requirements are detailed further in the RDS.
 - 7.2.1.3(4) Provide utilities-commission approved meters for domestic water and fire services. Meters will be used to measure water consumption.
 - 7.2.1.3(5) The HVAC, plumbing, fire protection and natural gas systems will be designed to avoid disruption to the operation of the occupants during maintenance or repairs. All isolation, maintenance, balancing, and other service valves located in the corridor ceiling spaces will be accessible from standing or when using a maximum 8-foot tall ladder.
 - 7.2.1.3(6) The design shall incorporate flexibility for future alterations.
 - 7.2.1.3(7) All systems will be clearly labelled. Labelling will include, but not be limited to, painting and labelling of all pipes, ceiling identification dots, valve tagging, emergency valve identification signage and flow direction. Each system shall be labelled or identified at least once in each room and at maximum 15 m

intervals. Identify systems where they pass through walls, partitions and floors.

- 7.2.1.3(8) All fixtures and equipment will be designed and installed to manufacturer's specifications and standards.
- 7.2.1.3(9) All fixtures and equipment will be provided by manufacturers with supply and service forces capable of maintenance response within 24 hours.
- 7.2.1.3(10) The water systems will ensure delivery of water supplies at the pressure required by the BCBC to all water outlets.
- 7.2.1.3(11) Consideration shall be given to easy access and serviceability and avoiding interference with other services.
- 7.2.1.3(12) Provide floor drains with trap primers on all mechanical floors and where required for equipment drainage.
- 7.2.1.3(13) Floor drains located in chemical storage areas shall not be connected to the drainage system.
- 7.2.1.3(14) Equipment drains may require hub drains or elevated hubs complete with air gaps as required by the BCBC.
- 7.2.1.3(15) Provide backflow preventers on the incoming water service as well as at equipment source connections where required by BCBC.
- 7.2.1.3(16) Provide interceptors as required by the authority having jurisdiction guidelines to intercept oil, grease, dirt, and solids. Provide acid neutralization tanks at drains where acid neutralization is required by the authority having jurisdiction.
- 7.2.1.3(17) Provide a water booster pump designed with 100% redundancy and standby power capability to provide uninterrupted water service and pressure in the event of malfunction, maintenance, or power loss.
- 7.2.1.3(18) All eyewash stations shall be accessible within 10 seconds from any of the Research Lab work

stations. All emergency shower assemblies shall be combination shower and eye wash.

7.2.1.3(19) Should the design of the Facility allow combustible construction (as determined by the Design Builder's code consultant in agreement with the authority having jurisdiction), associated products relating to the mechanical systems may be of construction as allowed by the applicable code (as determined by the Design Builder's code consultant in agreement with the authority having jurisdiction). All other performance requirements within this document are to remain. An example of this may be the use of cast iron drainage piping versus PVC drainage piping.

7.2.1.4 Performance Criteria:

7.2.1.4(1) All drainage systems will be designed such that the system connects to the Site services. Designs will utilize gravity drainage where possible.

7.2.1.4(2) If a pumping system is required for subsurface, storm, or sanitary drainage, then the design will include 100% redundancy. The sump will have twin compartments: a settling and a pumping compartment, and will be sized to prevent short cycling of the pump. Provide alarm points for high water and pump failure.

7.2.1.4(3) Insulate interior storm drainage, domestic water piping, and exposed p-traps throughout the Facility as per BCICA quality standards. Where piping and / or piping components are subject to freezing, provide insulation and heat tracing on life-safety systems, the heat trace system will be monitored and alarmed for malfunction or service disruption.

7.2.1.4(4) All plumbing drainage designated as requiring acid waste system will be 'acid' or equivalent to a point such that dilution renders discharge ineffective or upstream of 'acid neutralizer tanks'. Acid neutralizer tanks shall be located and installed such that removal, maintenance and servicing are reasonably achieved.

- 7.2.1.4(5) Provide flushing and disinfection of domestic water systems. Provide independent testing of piping systems once flushing and cleaning has been completed.
- 7.2.1.4(6) Provide automatic trap primers in floor drains. Trap primers shall be connected to a control valve and set to run every 24 hours by the DDC system. Trap primers that rely on fixture are not permitted. Provide adequate backflow prevention for the water supply to the trap primers.

7.2.2 Plumbing Fixtures:

7.2.2.1 Basic Requirements:

- 7.2.2.1(1) All plumbing fixtures to be suitable for a commercial office and Research Lab facility.
- 7.2.2.1(2) Barrier-free plumbing fixtures and fittings will be suitable for a commercial office and Research Lab facility.
- 7.2.2.1(3) Public toilets will be elongated and low-consumption. They will have an open front seat with electronic hands-free flush valve operation.
- 7.2.2.1(4) Urinals will be wall-hung and low-consumption. They will have electronic hands-free flush valve operation.
- 7.2.2.1(5) Public washroom lavatory fixtures will be made of an impervious, durable material. They will have electronic hands-free type faucets with single temperature supply.
- 7.2.2.1(6) Handwash sinks will be porcelain. They will have electronic hands-free type faucets with single temperature supply and gooseneck spouts.
- 7.2.2.1(7) Handwash sinks shall have domestic hot water recirculation connection within 50 mm of thermal mixing valve serving the fixture.
- 7.2.2.1(8) Showers will have slip resistant flooring and pressure compensated thermostatically controlled valves.

- 7.2.2.1(9) Provide suitable quantities of janitors' sinks, hose bibs, eye wash stations, and drinking fountains to provide sufficient service to the Facility and in accordance with ANSI Z358.1-1998.
 - 7.2.2.1(10) Research Lab water faucets with goosenecks must be protected by vacuum breakers.
 - 7.2.2.1(11) Fixture and faucet combinations for sinks and handwash basins shall be selected to ensure the faucet water stream does not fall directly into fixture drain opening to prevent contaminated trap water splashing out.
- 7.2.2.2 Performance Criteria:
- 7.2.2.2(1) Provide isolation valves for all floors for all plumbing services. Clearly identify all valves. Locate valves in corridors.
 - 7.2.2.2(2) Provide accessible clean-outs for all sinks and lavatories minimum 150 mm above the flood-level rim of the sink.
 - 7.2.2.2(3) Flush valves will be suitably sized for the water consumption of the bowl. Toilet bowls will not splash or spray water onto the toilet rim or anywhere outside of the toilet bowl and will be designed to minimize the aerosolization of the toilet contents.
 - 7.2.2.2(4) All electronic sensor-activated fixtures will be hardwired or regenerative type
 - 7.2.2.2(5) Provide pressure reducing valves with 100% redundancy in accessible locations if system pressure exceeds acceptable delivery pressure based on the codes and standards outlined by the BCBC.
 - 7.2.2.2(6) Water conserving fixtures are to be used such that a minimum of 40% potable water conservation is obtained per LEED Canada 2009 WEc3, or equivalent. Note that this does not include any irrigation systems. Follow LEED Canada 2009 requirements for tenant spaces.
 - 7.2.2.2(7) It is the Authority's intent that the Design-Builder provides a summary of their Facility's water

efficiency performance. As such, provide a copy of the LEED Canada 2009 letter template for WEC3. This is to be provided as part of the Proposal documentation.

7.2.3 Domestic Hot Water Systems:

7.2.3.1 Basic Requirements:

- 7.2.3.1(1) Domestic hot water demand will be calculated in accordance with ASPE Plumbing Engineering Design Handbook and the National and Provincial Plumbing Codes.
- 7.2.3.1(2) Domestic hot water will be stored at adequate temperature to serve the needs of the Facility at not less than 60°C. Provide mixing valves with thermal safety (fail safe) shut-off valves where temperatures are required to be less than 60°C at point of use. Generally piping distribution is 60°C and client/public outlets shall be 43°C.
- 7.2.3.1(3) Utilize instantaneous or semi-instantaneous domestic hot water heater configuration as part of the Downtown District Energy System (DDES) heating system connection if recommended by the DDES guidelines.
- 7.2.3.1(4) Domestic hot water system will be designed with sufficient capacity and recovery rate for the Facility hot water requirements as set out by BCBC.
- 7.2.3.1(5) Domestic hot water system will be designed with a recirculation system to ensure timely delivery of hot water to all fixtures as permitted by the BCBC.
- 7.2.3.1(6) Domestic hot water system will be designed to prevent growth and spread of Legionella bacteria within the tanks, piping, fixtures, or any other component.
- 7.2.3.1(7) Hands free fixture mixing valves shall have hot water recirculation connection within 50 mm of thermal mixing device.

7.2.3.2 Performance Criteria:

- 7.2.3.2(1) Generate and store domestic hot water at 60°C to minimize Legionella.
- 7.2.3.2(2) Distribute domestic hot water at 60°C.
- 7.2.3.2(3) Recirculate domestic hot water from the distribution system(s) back to the generating and/or storage equipment.
- 7.2.3.2(4) The domestic hot water generating equipment will meet the energy efficiency requirements of ASHRAE 90.1 2007

7.2.4 Natural Gas System

7.2.4.1 Basic Requirements:

- 7.2.4.1(1) This section applies to all natural gas piping systems.
- 7.2.4.1(2) Submit to the authority having jurisdiction, drawings, applicable sections of specifications and detailed drawings as required to obtain approval for the gas installation before the work commences.
- 7.2.4.1(3) Approvals must be received prior to commencing work.
- 7.2.4.1(4) The Design-Builder is responsible for connecting the natural gas connection to the gas utility's distribution system.
- 7.2.4.1(5) Provide chain link enclosure around gas meter with locking access door.
- 7.2.4.1(6) Below ground exterior piping shall be polyethylene pipe, CSA certified.
- 7.2.4.1(7) Above ground piping shall be Schedule 40 seamless Carbon Steel to ASTM A53 and CSA B-63.
- 7.2.4.1(8) Fittings shall be: Screwed and shall be malleable iron with beaded ends. Dielectric type shall be used where a buried service enters and connects to Facility piping; Welded and shall be forged steel

of the same weight as the connecting pipe; Unions shall be malleable iron with ground joints.

7.2.4.1(9) Joint Materials: Screwed: Thread lubricant;
Flanged: Full faced gasket materials, flanged steel weld neck, raised face type, carbon steel (ASTM A307) square headed bolts with hexagon nuts, bolts bull diameter of bolt holes.

7.2.4.1(10) Valves shall be:

7.2.4.1(10)(a) Provincial Gas Department approved and suitable for temperature to which they are exposed.

7.2.4.1(10)(b) Provide seismic actuated automatic shut-off valves, 20 to 150 mm [3/4" to 6"]]: C.G.A., UL and State of California certified seismic gas shut-off check valve with acceleration trigger mechanism, soft seat construction, visual open/close indicator and a manual reset capable of operating between -23°C to 66°C [-10°F to 150°F]; The sensing means of the valve shall actuate the shut off within 5 seconds when subjected to a horizontal sinusoidal oscillation having a peak acceleration of 0.3 G (2.94 m/s^2 [9.65 ft/s^2]) and a period of 0.4 seconds;

7.2.4.1(11) Master Gas Shut Off (for Research Lab):

7.2.4.1(11)(a) Valve: Ball type, full line size minimum 2065 kPa [300 psi] ULC listed with locking handle.

7.2.4.1(11)(b) Box: Flush mounted box to accommodate one master gas shut off valve.

7.2.4.1(12) Gas pressure reducing valves shall be: Corrosion resistant; High performance reducing pounds to inches.

7.2.4.1(13) Gas meters shall conform to the following:

- 7.2.4.1(13)(a) Positive Displacement Meters:
Natural gas meter for up to 42.5 m³/hr [1,500 cfh] at 34.5 kPa [5 psi], non-temperature compensated; 12 mm [1/2"] threaded connections; Low frequency pulsed output (4-20 mA) for monitoring by the BAS.
- 7.2.4.1(13)(b) Rotary Meters: Natural gas meter for up to 11.8 m³/hr [415 cfh] at 34.5 kPa [5 psi], non-temperature compensated; 30 mm [1-1/4"] threaded connections; Low frequency pulsed output (4-20 mA) for monitoring by the BAS.
- 7.2.4.1(14) Interior gas service – Utilize screw or weld fittings up to 50 mm [2"], and welded for 65 mm [2-1/2"] piping and larger.
- 7.2.4.1(15) Interior gas service in unvented space, in supply or return air ceiling plenum, or operating at 35 kPa [5 psi] pressure - weld all sizes.
- 7.2.4.1(16) Exterior gas service - weld all sizes except for polyethylene pipe which shall have no joints other than those allowed in NSC CAN/CGA-B149.1.
- 7.2.4.1(17) All branch connections except those less than half diameter of main shall be made with welding tees.
- 7.2.4.1(18) Branch connections less than half diameter of main may be made with weldolets or thredolets.
- 7.2.4.1(19) Do not paint dielectric isolating couplings.
- 7.2.4.1(20) Provide pressure regulator and lockable shut-off at discharge of gas meter before entry into the Facility.
- 7.2.4.1(21) Heat shrink factory extruded polyethylene sleeves over bare metallic pipe at weld.
- 7.2.4.1(22) Employ an independent testing agency to test the continuity of the polyethylene jacket, when metallic piping is buried, using a 12,000 volt Holiday Detector. Repair any breaks in polyethylene jacket with two layers of polyken tape. Submit report from

testing agency certifying continuity of polyethylene jacket.

- 7.2.4.1(23) Install unions or flanges in connections to all equipment and specialty components.
- 7.2.4.1(24) Arrange piping connections to allow ease of access and for removal of equipment.
- 7.2.4.1(25) Align and independently support piping connections to prevent piping stresses being transferred to equipment.
- 7.2.4.1(26) Install gas shut-off valves complete with handle at the following locations:
 - 7.2.4.1(26)(a) At the service entry point to the Facility immediately prior to entry.
 - 7.2.4.1(26)(b) At each branch to an individual item of equipment or appliance.
 - 7.2.4.1(26)(c) At each service to each Research Lab bench (install valve in readily accessible location).
 - 7.2.4.1(26)(d) At each individual outlet in all fume hoods.
- 7.2.4.1(27) All Facility isolation valves shall possess locking lugs. Provide seismic valve at Facility main.
- 7.2.4.1(28) Terminate vent outlets to atmosphere at the following minimum lateral distances:
 - 7.2.4.1(28)(a) 1.5 m [5 ft] from any door, operable window or building opening.
 - 7.2.4.1(28)(b) 3.0 m [10 ft] from any forced air intake.
- 7.2.4.1(29) Allow for expansion with suitable anchors, guides and expansion loops to prevent undue stress on any part of the system. Such anchors and guides shall be rigidly fastened to structural members through the roof deck. Supports shall be set in sheet metal gum pans wrapped into the roofing.

- 7.2.4.1(30) All piping shall be welded with flexible connectors at point of connection to gas fired equipment.
- 7.2.4.1(31) Apply one coat of damp proof red primer, one coat of zinc chromate and one finish coat to piping.
- 7.2.4.1(32) Test piping in accordance with the National Standard of Canada "Natural Gas Installation Code" CAN/CGA-B149.1.

7.2.5 Specialty Systems

7.2.5.1 Basic Requirements:

- 7.2.5.1(1) Supply and install all specialty systems as required to provide a complete installation. These systems include, but are not limited to:

- 7.2.5.1(1)(a) Acid waste, venting, and neutralization. Point-of-use acid neutralizers are required for each of the fume hood locations within the Research Lab area. Coordinate requirements with the RDS.
- 7.2.5.1(1)(b) Oil, grease, dirt, and solids interceptors. An oil interceptor is required for all floor drains in the Research Lab area. Oil from hydraulic equipment is a potential hazard. Maximum anticipated volume of oil in equipment is 40 litres unless specified elsewhere in the RDS.
- 7.2.5.1(1)(c) Compressed Air System. Provide complete compressed air system consisting of duplex air compressor, receiver, air dryer, filters, pressure regulators, automatic drain-down, distribution piping and quick-connect locations for Research Lab shop air system.

7.2.5.2 Performance Criteria:

- 7.2.5.2(1) Filtration system must be sized to handle 120% design flow rate with redundant filters piped in parallel to allow for cleaning and repair.
- 7.2.5.2(2) Provide and install cross-connection capability including valves and piping on domestic water service.
- 7.2.5.2(3) Acid waste, vent piping, and fittings will be suitable for the pH levels of the waste system.
- 7.2.5.2(4) Interceptors will be designed to manufacturer's specifications.
- 7.2.5.2(5) Compressed air system shall be sized to meet Room Data Sheet requirements (minimum of 8 drop locations within UNBC Research Lab area with quick-connect and pressure regulator connections). Compressor to be duplex type with minimum 20 gallon receiver.

7.3 Heating, Ventilating and Air Conditioning (Division 23)

7.3.1 Heating

7.3.1.1 Basic Requirements

- 7.3.1.1(1) Space heating and cooling capacity will be sufficient to meet the required indoor design temperatures as per Section 7.3.1.1(8) using the 1% January and 2 1/2% July design temperatures as listed in Appendix C of the BCBC.
- 7.3.1.1(2) No HVAC service shall be run into any electrical or communication room unless it is serving equipment in that room. No HVAC service shall be run through any electrical or communication room
- 7.3.1.1(3) Utilize the City of Prince George's Downtown District Energy System (DDES) as the primary source of heat. The corresponding Facility mechanical systems are to be designed to fully integrate with the DDES and follow all applicable design guidelines to ensure compatibility including heating water temperatures, pressures, pressure drops, flowrates, connection locations, metering, etc.

- 7.3.1.1(4) The project is not required to provide a back-up source of heat to the DDES system connection. No other source of space heating or domestic hot water heating (other than the DDES) shall be utilized. The only exception to this is the use of renewable energy with no associated carbon emissions (i.e. solar thermal).
- 7.3.1.1(5) Energy consumption of the HVAC system shall be metered via energy metering equipment with full DDC system monitoring for pursuit of LEED Measurement and Verification credit (EA C5) or equivalent. Provide segregation of UNBC energy consumption via separate energy meters. Provide all DDC controls system monitoring and software to support storage of sufficient data for 2 years of energy data monitoring.
- 7.3.1.1(6) An energy model shall be completed to demonstrate anticipated building energy performance in compliance with LEED EA Credit requirements (or equivalent). A minimum of 38% energy cost savings relative to ASHRAE 90.1 2007 baseline is mandatory. Meet the requirements stated in Appendix 1A Energy Model.
- 7.3.1.1(7) Base building systems shall be sized to support full fit-out of all spaces to anticipated office occupancy. Provide cap-offs for tenant equipment such as HVAC system terminal units. Cap-offs shall enable connection to hydronic heating and cooling systems as well as HVAC ventilation air.
- 7.3.1.1(8) Interior Temperatures
- 7.3.1.1(8)(a) The HVAC systems shall be capable of maintaining the indoor space temperatures at the values in Table 7.3.1.1(8) when the outdoor temperature is at the relevant design value as listed in Table 7.3.1.1(8). In addition the HVAC systems shall have the capacity to restore the building from the unoccupied temperature to the occupied

temperature prior to the occupied hour start time.

Table 7.3.1.1(8) – Interior Temperatures

	Occupied Hours:	Unoccupied Hours:
Heating	22°C	15°C
Cooling	23°C	not to exceed 27° C

- 7.3.1.1(9) The mechanical cooling system shall be capable of providing cooling 24hrs/day, 365/366 days/year. Seasonal operation of the cooling system is not allowed
- 7.3.1.1(10) The HVAC systems serving the occupied space shall maintain the indoor relative humidity at a level above 20% RH to below 60% RH at 22°C indoor temperature.
- 7.3.1.1(11) Apply energy recovery systems to offset plant heating requirements. These shall be glycol heat exchanger loops or similar means to prevent cross contamination or mixing of exhaust flows.
- 7.3.1.1(12) Provide a perimeter heating system for the entire Facility. This is to be provided for all areas of the Facility (includes all shell space for future fit-out).
- 7.3.1.1(13) Should the design of the Facility allow combustible construction (as determined by the Design Builder's code consultant in agreement with the authority having jurisdiction), associated products relating to the mechanical systems may be of construction as allowed by the applicable code (as determined by the Design Builder's code consultant in agreement with the authority having jurisdiction). All other performance requirements within this document are to remain. An example of this may be the use of cast iron drainage piping versus PVC drainage piping.

7.3.1.2 Performance Criteria

- 7.3.1.2(1) Thermal Variations During Occupied Hours:

- 7.3.1.2(1)(a) The temperature fluctuation shall not exceed $\pm 1^{\circ}\text{C}$ from setpoint.
- 7.3.1.2(1)(b) The vertical temperature gradient between 200 mm and 1700 mm above the floor at any point more than 300 mm from the exterior wall shall not exceed 3°C .
- 7.3.1.2(1)(c) The air velocity shall not exceed 0.15 m/s (30 ft./min.) when heating and 0.25 m/s (50 ft./min.) when cooling.
- 7.3.1.2(2) Provide adequate expansion compensation for heating piping throughout. Location of anchors and guides, design of expansion compensation loops and selection of expansion compensation devices will be based upon a thorough review of piping layout, and piping stress analysis.
- 7.3.1.2(3) All high points in piping will be equipped with automatic air removal devices such as air collection chambers and air vents.
- 7.3.1.2(4) Equipment and piping will be installed with adequate service space, access panels and ability to remove equipment from the Facility for servicing or replacement.
- 7.3.1.2(5) Isolation valves, unions and bypass piping will be provided to allow for equipment isolation and removal without unduly affecting the system operation or major drain down.
- 7.3.1.2(6) Balancing valves, flow-measuring devices, temperature and pressure sensors will be provided throughout the system to facilitate system balancing.
- 7.3.1.2(7) Pumps will be selected to operate at the system fluid temperature without vapour binding and cavitation, will be non-overloading in parallel or individual operation, and will operate within 25% of the mid point of published maximum efficiency curve.
- 7.3.1.2(8) Pump construction and installation will permit complete pump servicing without breaking piping or motor connections.

7.3.1.2(9) Perimeter Heating Systems

7.3.1.2(9)(a) Allowable perimeter heating systems are defined as follows:

(a).1 modular radiant panels. Heating from modular radiant ceiling panels. Modulating control of heating output is mandatory. Controls shall schedule the water supply temperature with outdoor air temperature.

(a).2 Heating from convectors/radiators installed at floor level under the windows. Modulating control, either from a local sensor/thermostat or scheduled from outdoor air temperature is mandatory.

(a).3 Building envelope design requirements related to perimeter heating systems: Heating from in-floor hydroid tubing. Floor surface temperature shall be sensed and controlled per ASHRAE 55 standards. In-floor water supply temperature shall be controlled and scheduled.

7.3.1.2(10) Locate services that require regular maintenance access above non-critical spaces such that there is minimal to no disruption to the Research Lab spaces.

7.3.1.2(11) Insulate all heating water piping, equipment and accessories to BCICA and ASHRAE Standards.

7.3.1.2(12) Utilize screw fittings for 50mm piping and smaller and welded fittings for 65mm piping and larger.

7.3.2 Air Conditioning

7.3.2.1 Design Principles:

7.3.2.1(1) Utilize 100% outdoor air for free cooling as the first means of space cooling.

7.3.2.1(2) Utilize heat recovery chillers where there is demand for cooling all year round to offset plant heating requirements.

7.3.2.1(3) Cooling will be provided for all electrical and communication rooms to ensure a room ambient temperature no greater than 30°C

7.3.2.2 Performance Criteria

7.3.2.2(1) Ensure no air within the air conditioning system, outside of the central air handling equipment, drops below its dew point temperature.

7.3.2.2(2) CFC and HCFC based refrigerants will not be used in the refrigeration equipment.

7.3.2.2(3) Piping will be installed in an orderly manner. Slope piping to permit complete drainage of the system.

7.3.2.2(4) All high points in the closed loop piping will be equipped with automatic air removal devices, such as air collection chambers and air vents.

7.3.2.2(5) Equipment and piping will be installed with adequate service space, access panels and ability to remove equipment from Facility for servicing or replacement.

7.3.2.2(6) Isolation valves, unions and bypass piping will be provided to allow for equipment isolation and removal without unduly affecting the system operation or major drain down.

7.3.2.2(7) Pumps will be selected to operate without vapour binding or cavitations, will be non-overloading in parallel or individual operation, and will operate within 25% of the mid-point of published maximum efficiency curve.

7.3.2.2(8) Pump construction and installation will permit complete pump servicing without breaking piping or motor connections.

7.3.2.2(9) Locate services that require regular maintenance access above non-critical spaces such that there is minimal disruption to occupants.

7.3.2.2(10) Insulate all chilled water and condenser water piping, equipment and accessories to BCICA and ASHRAE Standards.

- 7.3.2.2(11) Utilize screw fittings, welded fittings or roll grooved mechanical couplings for all piping.

7.3.3 Ventilation

7.3.3.1 Design Principles:

- 7.3.3.1(1) Heating, ventilation and air conditioning (HVAC) system will provide a comfortable internal environment for users and will meet the required environmental conditions for the equipment.
- 7.3.3.1(2) The HVAC system will maintain required pressure relationships between various spaces and will provide necessary air filtration, cleansing and exhaust to control the transmission of contamination.
- 7.3.3.1(3) Air handling units will be provided with sectional heating and cooling coils with manual isolation valves, enabling isolation of damaged sections of the coils.
- 7.3.3.1(4) Design the ventilation system and all components in accordance with ASHRAE Standards and CSA Standards.
- 7.3.3.1(5) Ventilation system design and documentation shall be in accordance with ASHRAE Standard 62.1-2004 except as noted herein.
- 7.3.3.1(6) At a minimum, ventilation rates for all spaces will meet the design requirements described in CSA Standards. If a space is not listed, ventilation rates will comply with the applicable standards and codes. Comparisons shall be made to applicable laboratory standards and make-up air requirements for hoods etc. and provide the greater ventilation rate.
- 7.3.3.1(7) Provide ducted cap-offs for all shell spaces for connection to future tenant improvement equipment. Anticipated occupancy for shell space is traditional office space. Ensure that adequate allowances have been provided per ASHRAE 62.1 2004 standards.
- 7.3.3.1(8) Provide the minimum filtration levels as described in CSA and all other appliance standards.

- 7.3.3.1(9) Spaces will maintain pressurization requirements described in ASHRAE standards.
 - 7.3.3.1(10) Air handling equipment will be factory fabricated to ensure the highest construction standard. No Site built-up units will be allowed.
 - 7.3.3.1(11) Fans will be designed with Variable Frequency Drives (VFDs) for energy savings under part-load conditions.
 - 7.3.3.1(12) Provide an indirect and/or direct heat recovery system on the general exhaust air systems.
 - 7.3.3.1(13) Provide supply and exhaust filtration as required by the manufacturer of the specific equipment / hoods. Research Lab exhaust shall not be mixed with exhaust from other spaces.
 - 7.3.3.1(14) The entire UNBC Research Lab area shall be provided with a minimum of 10 air changes of outside air, filtered to minimum MERV 13. This system shall be segregated from all remaining Facility ventilation systems such that equipment can be independently operated.
 - 7.3.3.1(15) The UNBC Research Lab area shall have dedicated general exhaust as well as fume hood exhaust systems per Room Data Sheet requirements. Heat recovery is to be installed on the dedicated general exhaust system. Fume hood exhaust shall be directed to the roof with "stack" style discharge to prevent outside air intake contamination.
 - 7.3.3.1(16) The UNBC Lecture Theatre shall have independent ventilation control for demand control ventilation. Provide an independent air handling system for this space to allow separate occupancy schedule.
- 7.3.3.2 Performance Criteria
- 7.3.3.2(1) Locate fans, common filters, and other equipment in the central mechanical rooms. Allow for adequate clearance for service access.
 - 7.3.3.2(2) All supply air, return air and general exhaust air systems will be located in interior mechanical rooms free from exposure to the elements. No rooftop units

are allowed. Only cooling towers, fluid coolers, and condensing units may be located outdoors.

- 7.3.3.2(3) Design the fresh air intakes, cooling coil drain pans, air handling units, duct mounted humidifiers, ductwork, and all other interconnected components to prevent moisture or contaminants from collecting within the system. Utilize double sloped drain pans to eliminate standing water. Provide sufficient access panels to allow for inspection and cleaning.
- 7.3.3.2(4) Fresh air intakes will be located to not entrain contaminants from outdoor sources.
- 7.3.3.2(5) All supply and exhaust air will be fully ducted to the space being served.
- 7.3.3.2(6) Locate services that require regular maintenance access above non-critical spaces such that there is minimal to no disruption to the occupants.

7.3.4 Sound Attenuation and Vibration Isolation

7.3.4.1 Design Principles:

- 7.3.4.1(1) Design all mechanical systems to prevent sound and vibration transmission between spaces, and transmission from mechanical equipment to the spaces and maintain sound to levels standards as per Appendix 1B. Design mechanical systems located at or near the Facility's exterior to minimize sound transmission to the neighbouring community and shall comply with any applicable municipal noise bylaws.
- 7.3.4.1(2) Provide vibration isolation devices on all equipment with rotating components.
- 7.3.4.1(3) All hung equipment will utilize spring isolators designed for the weight and vibration characteristics of the equipment.
- 7.3.4.1(4) Provide flexible connectors on all pump, duct, and wiring connections to isolated equipment.

7.3.4.2 Performance Criteria

- 7.3.4.2(1) Acoustic criteria

- 7.3.4.2(1)(a) Background noise in the occupied space from any component of the HVAC systems shall not exceed the values in the following Table 7.3.4.2(1)
- 7.3.4.2(1)(b) A specialty acoustical consultant shall be retained to demonstrate compliance with these criteria.
- 7.3.4.2(1)(c) Mechanical system penetrations of acoustic separations shall not degrade their specified ratings.

Table 7.3.4.2(1) – Allowable Background Noise Levels, HVAC System

SPACE TYPE	MAX. SOUND POWER LEVEL, RC MARK II METHOD, DB
Open office/reception areas	RC 40(N)
Private offices	RC 35(N)
Conference, interview & meeting rooms	RC 30(N)
Circulation and lobbies	RC 45(N)
Washrooms, service and storage areas	RC 50(N)
Classrooms / Lecture Theatres	RC 30 (N)
NOTE: (N) refers to a neutral sound spectrum	

7.3.4.2(2) Ensure duct silencers meet or exceed the requirements of the ductwork for cleanliness and inspection.

7.3.4.2(3) Duct silencers shall be manufactured, engineered devices not fabricated built-up devices.

7.3.5 Testing, Adjusting, Balancing and Commissioning:

7.3.5.1 Demonstrate to the Authority that the mechanical systems are substantially operational by testing, adjusting, balancing, and Commissioning the systems in accordance with Good Industry Practice.

7.3.5.2 Retain complete records of all TAB and Commissioning data; and provide the Authority with a copy of the final documents for review.

7.4 Major Equipment – Performance Specification

7.4.1 Any electrical connections provided for mechanical equipment, whether provided by the electrical contractor or not shall conform to the electrical (Division 26) requirements.

7.4.2 Motors, Drives and Variable Frequency Drives

7.4.2.1(1) All VFD drives will be provided complete with line side harmonic filters.

7.4.2.1(2) All motors 10HP or greater will be provided with power factor correction capacitors.

7.4.3 Fume Hood Controller Display

7.4.3.1(1) The fume hood controller shall provide a 4-digit display to indicate the calculated face velocity and actual exhaust airflow in CFM, plus setpoint parameters. Energy use meters shall not be acceptable alternatives to the digital display of the above parameters.

7.4.3.1(2) A green LED shall indicate a safe condition at the fume hood. A red LED indicator shall display either a high or low face velocity alarm condition. When an alarm condition occurs, the alarm LED shall flash and the alarm beeper shall sound. The operator shall be able to silence the beeper through a mute button located on the face of the controller.

7.4.3.1(3) The display shall provide the option to read in “Alpha” mode instead of numeric. The “Parameters” button on the face of the display shall allow the operator to scroll through all operating parameters and alarm setpoints, which shall be displayed on the LCD, including but not limited to:

- 7.4.3.1(3)(a) Controller Software Revision Number.
- 7.4.3.1(3)(b) Controller Output Level, %.
- 7.4.3.1(3)(c) Sash Position, %
- 7.4.3.1(3)(d) Calculated Face Velocity, FPM
- 7.4.3.1(3)(e) Exhaust Airflow Measurement, CFM
- 7.4.3.1(3)(f) High Airflow Alarm Setpoint, CFM
- 7.4.3.1(3)(g) Low Airflow Alarm Setpoint, CFM
- 7.4.3.1(3)(h) Low-Low Airflow Alarm Setpoint, CFM

7.5 Integrated Automation (Division 25)

7.5.1 Controls:

7.5.1.1 Design Principles:

7.5.1.1(1) The Building Management System (BMS) will perform the following functions:

- 7.5.1.1(1)(a) Meter and trend data related to flow of electrical power as required to monitor energy performance.
- 7.5.1.1(1)(b) The BMS will control all public area lighting such as parking lots, walkways, exterior signage, and corridor and lobby lights located in common areas. Exterior lighting will include an input for photocell override.

7.5.1.2 Performance Criteria

- 7.5.1.2(1) Zoning for HVAC systems will be based on occupancy, room location within the Facility, room orientation, and thermostatic room loads.
- 7.5.1.2(2) Failsafe components will be hard-wired to provide reliable operation in all circumstances.
- 7.5.1.2(3) The BMS will meter and trend all data related to the flow of services into and out of the Facility including, but not limited to, domestic water and electricity.
- 7.5.1.2(4) The BMS will meter and trend all data related to the flow of services within the Facility, including but not limited to, chilled water, heating water.
- 7.5.1.2(5) The BMS will monitor, control, indicate alarms, and provide trending where applicable for all connected sensors and control points.
- 7.5.1.2(6) The BMS will be connected to emergency power.
- 7.5.1.2(7) The BMS will monitor critical alarms for essential building and life safety systems. These alarms will notify the Authority as well as the Facility's master control centre. These critical alarms include, but are not limited to:
 - 7.5.1.2(7)(a) Fire alarm system for alarm, supervisory and trouble;
 - 7.5.1.2(7)(b) All temperature alarms resulting from setpoint deviations;
 - 7.5.1.2(7)(c) All alarms relating to the fire protection system.
- 7.5.1.2(8) Provide BMS documentation with a detailed narrative description of the sequence of operation of each system.
- 7.5.1.2(9) User interface will be graphical in nature with animated graphics to indicate equipment operation. Graphics will be grouped in systems and in departments.
- 7.5.1.2(10) Provide twelve (12) hours in two (2) sessions (introductory and follow-up) of training to Site personnel in the use and maintenance of the

Research Lab airflow controls. Training shall be conducted during normal working hours and shall consist of both hands-on and classroom training at the Site.

7.6 Electrical (Division 26)

7.6.1 Electrical General

7.6.1.1 Basic Requirements

- 7.6.1.1(1) All electrical systems and equipment required for the function of each identified program will be provided and configured with due regard for the details of delivery of the programs, including requirements as outlined in the RDS.
- 7.6.1.1(2) All tenant sub-systems shall be delineated from base building systems through a clear demarcation point. Each tenant space shall have a single demarcation point for each system type.
- 7.6.1.1(3) Every electrical system will be installed in a fixed and permanent manner. The installation will be planned to facilitate easy access to other systems and equipment, including but not limited to mechanical equipment, building systems access ways, and architectural building components which may require periodic inspection or maintenance.

7.6.2 Wiring Methods and Materials

7.6.2.1 Basic Requirements

- 7.6.2.1(1) Wiring methods will accommodate additions, removals and relocations within the Facility for the projected working life of the Facility.

7.6.2.2 Performance Criteria

- 7.6.2.2(1) Wiring and wiring support systems will be concealed from public view unless specific exemption is noted otherwise.
- 7.6.2.2(2) All wiring will be protected from mechanical damage throughout each wiring system. Entry or accumulation of moisture into any wire, cable, or

wire way will be prevented. Final connection to motorized devices to be flexible.

- 7.6.2.2(3) Where multiple cables are run in a common pathway, cables will be clearly labelled at both ends.
- 7.6.2.2(4) All pull boxes, junction boxes and conduits will be identified with durable and clearly legible marking to identify the function and voltage of the system.

7.6.3 Raceways and Pathways

7.6.3.1 Basic Requirements

- 7.6.3.1(1) For the purpose of this specification, the word "raceway" will have the same meaning as defined in the Canadian Electrical Code, Section 0.
- 7.6.3.1(2) For the purpose of this specification, the word "pathway" will mean any system designed to support, protect and organize wiring and cabling systems, including raceways.
- 7.6.3.1(3) Pathways for wiring and cabling will be provided to support, protect and organize wiring and cabling systems throughout the Facility. Any wiring or cabling installed in a pathway that is not a raceway, shall be of a type approved for installation in free air.
- 7.6.3.1(4) Pathways will be designed and installed in such a way to provide ease of access.

7.6.3.2 Performance Criteria

- 7.6.3.2(1) Pathways serving the Research Lab space, other than pathways dedicated to a single feeder or branch circuit, will have space for installation of a minimum of 50% additional capacity in future.
- 7.6.3.2(2) Provide minimum 50% spare pathways from the main electrical room to all sub-electrical rooms.

7.6.4 Electrical Utilities

7.6.4.1 Basic Requirements

- 7.6.4.1(1) The existing high voltage transmission lines currently run down the west side of the back alley on the east side of the property. This will be relocated to the east side of the alley by the City of Prince George prior to construction of this Facility.
- 7.6.4.2 Performance Criteria
 - 7.6.4.2(1) One BC Hydro pad-mount transformer service to the Facility is anticipated.
 - 7.6.4.2(2) Performance of offsite civil work related to servicing this Facility from BC Hydro will be in the Work.
- 7.6.5 Backup Generator
 - 7.6.5.1 Basic Requirements
 - 7.6.5.1(1) Provide a backup generator as a source of power to all standby and emergency systems within the Facility. The emergency power system will be available 100% of the time.
 - 7.6.5.1(2) Within these specifications, "emergency" power shall refer to power as required by the electrical and building codes for life safety systems (such as fire alarm or emergency lighting), and "standby" power shall refer to backup power not required for life safety (such as security and Research Lab loads).
 - 7.6.5.1(3) The generator installation will comply with CAN/CSA-C282, Emergency Electrical Power Supply for Buildings,
 - 7.6.5.2 Performance Criteria
 - 7.6.5.2(1) The backup generator will be supplied with automatic transfer between normal and emergency sources, and automatic transfer between normal and standby sources.
 - 7.6.5.2(2) Generator will be fuelled with commercial grades of fuel readily available locally to ensure a continuous fuel supply as in the case of an extended power outage.

- 7.6.5.2(3) Generator set will be capable of undergoing testing each week for at least 1/2 hour with actual standby and emergency load of the building.
- 7.6.5.2(4) The generator loads and alarms will be annunciated and recorded on an engine-mounted digital control system panel which will also be interfaced to the Building Management System and fire alarm system.
- 7.6.5.2(5) In addition to any system requiring energy power pursuant to the BCBC requirements, the following areas will be supplied with emergency power:
 - 7.6.5.2(5)(a) security / access control systems;
 - 7.6.5.2(5)(b) DDC/BMS control systems.
 - 7.6.5.2(5)(c) Elevators. A minimum of one elevator shall be operational during an outage.
 - 7.6.5.2(5)(d) UNBC classroom lighting.
 - 7.6.5.2(5)(e) 25% of receptacles in UNBC Research Lab

7.6.6 Distribution

7.6.6.1 Basic Requirements

- 7.6.6.1(1) Electrical power of the voltage, current, and phase(s) required will be provided, from the main sources of supply, to each load requiring supply of power, and to convenience and special purpose outlets designed to meet all requirements of Facility operation and tenant functions.
- 7.6.6.1(2) Distribution equipment and feeder systems form the backbone of all electrical operation of the Facility. The capacity for each distribution equipment and feeder will be proven through sizing calculations submitted during the design stage.
- 7.6.6.1(3) Distribution equipment will be of a "commercial grade" quality.

7.6.6.2 Performance Criteria

- 7.6.6.2(1) Major electrical equipment will be located in rooms dedicated to electrical equipment so as to provide a clean, dry, safe, accessible installation protected from unauthorized access.
- 7.6.6.2(2) All components of transmission and distribution systems will be selected, configured, located, and installed so as to minimize the transmission of noise, vibration and unwanted heat into other parts of the Facility.
- 7.6.6.2(3) The following engineering studies will be provided to the Design-Builder and Authority for review prior to starting the installation:
 - 7.6.6.2(3)(a) Facility power load demand calculations, separate for normal, standby, and emergency branches.
 - 7.6.6.2(3)(b) Tenant power load demand calculations based on the Canadian Electrical code and all relevant equipment lists.
- 7.6.6.2(4) Provide harmonic device filters on the line side of variable-frequency drives to limit the input current harmonic distortion to less than 3% of the full-load fundamental current. Devices to be filters for any motors larger than 10 HP and line reactors for motors 10 HP and smaller.
- 7.6.6.2(5) Provide minimum 20% spare space in MCCs and distribution centres fully equipped to permit addition of circuit breakers in the future. For example, if a CDP contains 4 breakers, taking up 12x, 6x, 1x, and 1x of space (20x total), then there must be an additional 4x of additional space in the CDP at a minimum.
- 7.6.6.2(6) Provide minimum 15% spare for each type and rating of breaker in each panel. For example if a panel has thirty 15A breakers, two 15A, 2 pole breakers, and seven 20A breakers, then the spare breakers required will be five 15A, one 15A, 2 pole, and one 20A.

- 7.6.6.2(7) Provide a minimum of three 100A, 3 pole breakers and three 60A, 3 pole breakers, all with individual revenue meter points on the main distribution panel for feeding tenant fit out spaces. In addition, provide three 100A, 2 pole breakers with individual revenue meter points on the main distribution panel for feeding future tenants..
- 7.6.6.2(8) Receptacle types for the purpose of this specification shall be defined as follows:
- 7.6.6.2(8)(a) Workstation receptacle: duplex 5-20R, maximum 3 per circuit.
Receptacle to be complete with lamicoid label to read " CPU".
 - 7.6.6.2(8)(b) Convenience receptacle: duplex 5-15R, maximum 6 per circuit.
 - 7.6.6.2(8)(c) Housekeeping receptacle: duplex 5-20R, maximum 6 per circuit, circuits may not span floors
 - 7.6.6.2(8)(d) Communication receptacle: quad 5-20R, , dedicated circuit per quad.
 - 7.6.6.2(8)(e) Workbench receptacle: quad 5-20R, , dedicated circuit per quad.
 - 7.6.6.2(8)(f) GFCI receptacle: duplex 5-15R, ground fault circuit interrupter type.

- 7.6.6.2(9) Unless otherwise noted on the RDS, provide the following minimum receptacle requirements in addition to those required for equipment provided under this Agreement:
- 7.6.6.2(9)(a) Lobby: one housekeeping receptacle.
 - 7.6.6.2(9)(b) Electrical rooms: one convenience receptacle per every 3m portion of wall.
 - 7.6.6.2(9)(c) Mechanical rooms: one convenience receptacle per every 5m of wall.
 - 7.6.6.2(9)(d) Corridor: one convenience receptacle per 10m portion of corridor
 - 7.6.6.2(9)(e) Communication backboards: three (3) communication receptacles.
 - 7.6.6.2(9)(f) Offices: one workstation receptacle and one convenience receptacle per workstation.
 - 7.6.6.2(9)(g) Washrooms: one GFCI receptacle for every two sinks, minimum one circuit per washroom.
 - 7.6.6.2(9)(h) Lab: one workbench receptacle per every 1.5m portion of work bench, minimum one convenience receptacle per every 3m of wall.
- 7.6.6.2(10) Receptacles conforming to CSA Configuration 5-15R or 5-20R (T-Slot) are to be provided at each location where a receptacle is part of the Program Requirements unless otherwise noted.
- 7.6.6.2(11) Back to back devices will be staggered by a minimum of one stud space to prevent noise transfer.
- 7.6.6.2(12) Devices (switches, receptacles, etc) in all areas will be commercial grade. Residential grade devices will not be permitted. Grouped devices will have a

single cover plate covering the whole group.
Receptacles on emergency power circuits will be red, receptacles on standby power circuits will be grey.

- 7.6.6.2(13) All receptacles will be permanently marked with lamicaid labels identifying the circuit and panel number.
- 7.6.6.2(14) A complete enlarged single line schematic diagram of the electrical distribution will be framed and wall mounted in the main electrical room.

7.6.7 Metering

7.6.7.1 Basic Requirements

- 7.6.7.1(1) Digital revenue metering will be "revenue certified" and will be supplied by the Design Builder to provide detailed information about power quality and power consumption for the following key points in the Facility:
 - 7.6.7.1(1)(a) Main switchboard (revenue)
 - 7.6.7.1(1)(b) Tenant feeders (revenue)
- 7.6.7.1(2) Digital information metering will be supplied to provide detailed information about power consumption for the points in the Facility required for LEED or equivalent green building standard.
- 7.6.7.1(3) The metering system will be a networked system, with terminals for maintenance and plant administration, and data transfer to the Building Management System.

7.6.7.2 Performance Criteria

- 7.6.7.2(1) The metering system will provide easily read information for all meter points. Revenue meters will provide locally displayed information for all meter points.
- 7.6.7.2(2) Historical data from the metering system network will be stored for a minimum of 5 years and will be capable of generating user configurable electronic and printed reports on demand.

- 7.6.7.2(3) The revenue metering points will, at a minimum, provide the following information about each metered circuit: Phase-to-Phase Voltage (all phases), Line-to-Neutral Voltage (all phases), Phase Current (all phases and neutral), KW, KVA, Power Factor, KWH, KVAR hours. The revenue meters will also be power quality type able to monitor harmonics.
- 7.6.7.2(4) The information metering points as required for LEED Measurement and Verification, or equivalent, will at a minimum, provide the following information about each metered circuit: KW, KWH, kVA.

7.6.8 Power Quality

7.6.8.1 Basic Requirements

- 7.6.8.1(1) A wide variety of electrical and electronic equipment types will be in use in the Facility. Equipment and systems which assure that electrical equipment and systems will not be harmed or impaired either by external events or conditions, such as lightning and disturbances on the utility service, or by internal events or conditions generated within the Facility are to be provided.
- 7.6.8.1(2) Provide a Type 1 surge protective device (SPD) on the service entrance equipment, and Type 2 SPD's on all switchboards and panel boards over 400A, and all switchboards and panel boards serving lab areas, lab equipment, and data/communication rooms. All SPD's shall:
- 7.6.8.1(2)(a) be listed to UL 1449, Third Edition,
 - 7.6.8.1(2)(b) be wye connected with protection in all modes,
 - 7.6.8.1(2)(c) be provided with status LEDs for each protected phase and alarm indicator,
 - 7.6.8.1(2)(d) have a Nominal Discharge Current Rating of 20kA,
 - 7.6.8.1(2)(e) have a Voltage Protection Rating of 1200 for L-N, N-G, L-G, and L-L,

7.6.8.1(2)(f) be rated for Maximum Single Impulse Surge Current Rating of 80kA.

7.6.8.1(2)(g) and be fused to permit the rated Maximum Single Impulse Surge Current Rating to flow without premature fuse operation.

7.6.8.1(3) A lightning risk assessment has been conducted and it has been determined that this Facility is at moderate risk for lightning strikes. A lightning protection system is to be provided. The lightning protection system is to be designed as per CAN/CSA B72-M87 (R2008).

7.6.8.2 Performance Criteria

7.6.8.2(1) Demonstrate to the Authority during the Commissioning phase that there are no potentially harmful power conditions present and that equipment intended to guard against such conditions is in proper working order. This shall be achieved by metering the power quality relative to IEEE 519 at the service entrance and at each point of tenant connection.

7.6.9 Lighting

7.6.9.1 Basic Requirements

7.6.9.1(1) Lighting in technology conference rooms and video conferencing facilities will maximize viewing of monitors and screens and will provide suitable illumination of people being viewed.

7.6.9.1(2) Lighting will optimize use of daylight and will be achieved through a combination of natural light, luminaires and controls.

7.6.9.1(3) Provide lighting as required for illuminated external signage that minimizes light spillage.

7.6.9.2 Performance Criteria

7.6.9.2(1) Selection of luminaires and light sources will meet the stated energy efficiency and quality and quantity requirements, but will also meet the

objective of providing a comfortable working environment. This will be achieved by meeting the latest IESNA guidelines.

- 7.6.9.2(2) Exterior lighting will be provided for security at Facility entrances, exits, walkways, and public areas
- 7.6.9.2(3) Exterior luminaires will be vandal resistant, and will be rated for starting in -40°C.
- 7.6.9.2(4) Lighting energy consumption will comply with ASHRAE Standard 90.1 - 2007 and will consume less than that standard by a minimum of 20% while still meeting program requirements,

7.6.10 Lighting Standards

7.6.10.1 General

- 7.6.10.1(1) All interior luminaires shall utilize LED or fluorescent technology.
- 7.6.10.1(2) All exterior lamps shall utilize LED, fluorescent, or Pulse Start Ceramic Metal Halide technology.
- 7.6.10.1(3) Lamps
 - 7.6.10.1(3)(a) Interior: 3500°K, minimum CRI 85
 - 7.6.10.1(3)(b) Exterior: 4100°K, minimum CRI 85
- 7.6.10.1(4) All ballasts and drivers will have the following characteristics:
 - 7.6.10.1(4)(a) Sound Rating of 'A'.
 - 7.6.10.1(4)(b) Maximum Total Harmonic Distortion of 10%.
 - 7.6.10.1(4)(c) High frequency electronic.
- 7.6.10.1(5) In order to reduce glare, specular reflectors will not be used. All reflectors will be haze, semi-specular, or matte.
- 7.6.10.1(6) See the RDS for program specific requirements.

- 7.6.10.1(7) All LEDs shall be listed to LM79 and LM80, with L70 lamp life of 50,000 hours and color consistency with a 2-step MacAdams ellipse.
- 7.6.10.1(8) All linear fluorescent lamps shall have a minimum rated lamp life of 35,000 hours.

7.6.11 Lighting Control

7.6.11.1 Basic Requirements

- 7.6.11.1(1) All of the lighting in a space will be capable of being switched at each entrance to the space.
- 7.6.11.1(2) The BMS will be used for timed and remote control of the lighting.
- 7.6.11.1(3) Occupancy sensors and daylight control systems will be utilized where appropriate to maintain light levels at levels based upon the occupancy of the room and the quantity of daylight.

7.6.11.2 Performance Criteria

- 7.6.11.2(1) All lighting controls are to be wired. No wireless controls will be allowed.
- 7.6.11.2(2) Control of lighting in the Lecture Theatre will be integrated with the equipment controls and control stations in the room so as to permit the presenter to vary the lighting as required for different activities. The Design-Builder shall provide communication interface to dimming ballasts as described in the Project Videoconference Room Guidelines.
- 7.6.11.2(3) The Lecture Theatre luminaires will be provided with dimming down to 5%. Lighting will have control zones as described in the project videoconferencing standards..
- 7.6.11.2(4) Controls for all corridor, circulation and atrium areas will be located in electrical rooms and interfaced to the BMS to provide zone control of lighting. Zoning control to include floor by floor and separate tenant spaces as a minimum and provide automatic night setback with sweep "off" per programmable time (ie. 1/2 hour) throughout the

night to turn off lights that may have been manually turned on by users via a local light control.

- 7.6.11.2(5) Unless otherwise noted in the RDS, occupancy sensors will be provided in all locker rooms, storage rooms, waiting areas, and washrooms. Occupancy sensors will be automatic on/off type.
- 7.6.11.2(6) Unless otherwise noted in the RDS vacancy sensors, a subset of occupancy sensors, will be provided in all offices, demonstration spaces, staff rooms, lounges, and classrooms. Vacancy sensors will be manual on/off, automatic off type.
- 7.6.11.2(7) Daylighting controls will be provided where appropriate in areas adjacent to exterior glazing and provide dimming down to 10% of lamp output. Provide combination daylight harvesting and occupancy control to the rooms requiring occupancy sensors.
- 7.6.11.2(8) Occupancy sensors and daylighting controls will be located on ceilings to avoid interference with furniture. Occupancy sensors will be dual technology (PIR and ultrasonic) type.
- 7.6.11.2(9) Exterior lighting will be controlled via BMS and photocell.
- 7.6.11.2(10) Lighting control schedules will respond to occupancy/use. Design will include a schedule of lighting control and be included in the design specifications.
- 7.6.11.2(11) Provide dimming down to 10% within all rooms designated to have dimming capability.
- 7.6.11.2(12) Each lighting control panel will have programmable switches to allow relays which are 'soft wired' into groups to be controlled while retaining individual relay control. Master switches will be capable of direct on/off control or on/flick-then-off control ('flick-then-off' function is that the lights will flicker prior to turning completely off). Any master switch which could cause an occupant to be left in the dark shall have the 'flick-then-off' warning function.

7.6.12 Major Research Lab Equipment

7.6.12.1 Basic Requirements

- 7.6.12.1(1) Provide all electrical requirements for connection, operation and monitoring and control of all supplied Research Lab equipment.

7.6.12.2 Performance Criteria

- 7.6.12.2(1) Each item of equipment will be installed and electrically connected for proper and full operation.
- 7.6.12.2(2) Electrical characteristics of this equipment, including but not limited to voltage, wattage, phase, demand, inrush, frequency, connection method and control and monitoring requirements will be confirmed by the designer and provided for.
- 7.6.12.2(3) Any motorized equipment is to be equipped with a local lockable disconnect switch.

7.6.13 Mechanical Equipment Connections

7.6.13.1 Basic Requirements

- 7.6.13.1(1) Electrical power control and monitoring connections will be provided to all mechanical equipment as required for proper operation, protection and maintenance of the equipment. Materials and installation methods will result in safe reliable and serviceable mechanical equipment and systems in the Facility.

7.6.13.2 Performance Criteria

- 7.6.13.2(1) Connections made to motors and/or motor driven equipment with noticeable levels of vibration will be of a type specifically designed to accommodate the vibration.
- 7.6.13.2(2) Provide labelling on MCC's and starters to match motors.
- 7.6.13.2(3) Provide wiring diagrams of each starter type.
- 7.6.13.2(4) Provide individual control transformers for each starter.

7.6.14 Building Control Systems Interface

7.6.14.1 Basic Requirements

7.6.14.1(1) A fully functional BMS whose primary function will be to control the mechanical systems within the Facility will be provided by the Integrated Automation Division Section 7.5. The BMS will interface with Facility electrical and Communication Systems. This system is to be utilized to annunciate security alarms, Research Lab alarms, generator alarms, and control the Facility lighting and Site lighting (for energy management reasons) via its software program.

7.6.14.1(2) The BMS is to be used for energy management functions as well as energy related data acquisition and trending. The digital meters monitoring the electrical power systems are to be connected to this system.

7.6.14.2 Performance Criteria

7.6.14.2(1) Refer to Integrated Automation Division Section 7.5 for details of the Building Management System.

7.7 Communications (DIVISION 27)

7.7.1 Basic Requirements

7.7.1.1(1) Provide a commissioning report from a 3rd party commissioning agent to confirm the integration of the communications systems. Commissioning will confirm that systems such as fire alarm, access control, CCTV, and intrusion systems will produce the specified signal on all required output devices. Conversely, Commissioning will confirm that each output device can be activated by all specified input devices. A minimum of 10% of input and output devices of each type will be tested except for exterior security devices of which 100% will be tested.

7.7.1.2 Performance Criteria

7.7.1.2(1) Provide training sessions for the Facility maintenance staff on the proper maintenance of all systems.

7.7.2 Communications General

7.7.2.1 Basic Requirements

7.7.2.1(1) The communications systems will be easy to operate, easy to maintain, adaptable to change, and expandable to accommodate growth.

7.7.2.1(2) Provide a communication riser rooms as required to service voice/video/data requirements of the Facility. A ground bus will be provided in each riser room for grounding of Communication Systems.

7.7.2.1(3) The communication riser system shall include space for a minimum of 3 communication utility providers for connection to tenants.

7.7.2.1(4) See Appendix 1G for the UNBC network and cabling requirements.

7.7.3 Network Equipment

7.7.3.1 Basic Requirements

- 7.7.3.1(1) Provide supporting infrastructure that will support redundant and secure network design.
- 7.7.3.1(2) UNBC will be supplying and installing all the required network equipment for their spaces, excluding appropriate wiring.
- 7.7.3.1(3) The other network equipment will be open architecture, supplied by the Authority and installed and commissioned by the Design-Builder.
- 7.7.3.1(4) The network equipment will be provided by Authority to support the wired and wireless infrastructure and the Authority supplied end-use equipment.

7.7.4 Structured Cabling

7.7.4.1 Basic Requirements

- 7.7.4.1(1) The cabling infrastructure will not differentiate on the type of end-use device that connects to it. The cabling infrastructure will be universal and allow all currently available forms of end-use devices access to the different system types.
- 7.7.4.1(2) All cables are to terminate in communication rooms. Maximum cable distance from room outlet to communication room will be 70 meters.
- 7.7.4.1(3) The structured cabling component will be of the same manufacturer and will be supplied by a recognized industry leader. The system will be installed by a contractor who is certified by the manufacturers of the cabling; consistent with the manufacturer's best warranty of 25 years performance to the applicable standard.

7.7.4.2 Performance Criteria

- 7.7.4.2(1) Provide and install a complete riser conduit system throughout the Facility.
- 7.7.4.2(2) Provide and install a complete category 6A structured cabling solution for all base building systems (such as backbone, perimeter security, fire alarm, DDC, and elevator communications) throughout the Facility. A star wired cabling

approach will be utilized to wire all outlet locations back to the base building communication room.

- 7.7.4.2(3) Provide and install a complete category 6A structured cabling solution throughout the UNBC tenant space. A star wired cabling approach will be utilized to wire all outlet locations back to the UNBC communication room.
- 7.7.4.2(4) UNBC space shall have drops for wireless data throughout.
- 7.7.4.2(5) All conduit pathways will have maximum 30% fill.
- 7.7.4.2(6) All cabling will be run in conduit or cable tray in open ceilings. J-hooks will only be permitted in accessible ceiling spaces.
- 7.7.4.2(7) All cable drops will be terminated at both ends. The proper flame spread rating will be provided for the cabling system as determined by the Site Specific Building Regulation and the building code that it is based on.
- 7.7.4.2(8) Patch cables for all end-use devices will be provided in sufficient quantity to make each device operational. Patch cable will allow complete connection from end to end.
- 7.7.4.2(9) A cable management labelling software and electronic drawing system will be implemented by the Design-Builder to track and manage the cable plant.
- 7.7.4.2(10) Specialized systems such as AV, elevator, or fire alarm, requiring multiple drops will have sufficient drops at each location to ensure system operation.
- 7.7.4.2(11) Provide cable for all public phones, Allow for a minimum of one (1) in the main lobby.

7.7.5 Telephones

7.7.5.1 Basic Requirements

- 7.7.5.1(1) A telephone system infrastructure will be provided for UNBC as part of the structured cabling system.

- 7.7.5.1(2) (1) Provide desktop telephone outlet for every workstation. See the RDS for additional requirements.

7.7.5.2 Performance Criteria

- 7.7.5.2(1) Design and construct the Facility to support UNBC's IP and TDM phone technology, both wired and wireless
- 7.7.5.2(2) Voice equipment will be fully integrated and will operate seamlessly with UNBC's existing voice network.

7.7.6 Video Conferencing

7.7.6.1 Basic Requirements

- 7.7.6.1(1) Provide infrastructure for full video conferencing systems and video conferencing Facility infrastructure in all rooms requiring audio / video conferencing as identified in the accompanying the RDS.
- 7.7.6.1(2) The audio / video conferencing systems will comply with the latest IP based video conferencing standards.
- 7.7.6.1(3) The location of microphones, video cameras, video monitors, and the design of the lighting systems will be optimize for the performance of the video conferencing system.
- 7.7.6.1(4) Integrate the lighting dimming system with the AV control system.
- 7.7.6.1(5) The Lecture Theatre shall be provided with dedicated AV control system infrastructure requiring additional structured cabling runs. See UNBC Videoconference Room Guidelines included in Disclosed Data for details.

7.7.6.2 Performance Criteria

- 7.7.6.2(1) Video conferencing systems will be supplied and installed by the Authority in locations as per the Equipment Schedule.

- 7.7.6.2(2) Video conference systems for conference rooms will be complete with monitors, cameras, microphones, automatic microphone controllers, amplifiers, speakers, video controllers, remote controls, and network connections or as per the Equipment Schedule. Wiring infrastructure, connectors and any miscellaneous equipment required to make the video conference system functional not listed in the equipment schedule is the responsibility of the Design-Builder.
- 7.7.6.2(3) Provide detail drawings showing all supporting infrastructure and components that can be used for implementation of AV systems.

7.7.7 TV System

7.7.7.1 Basic Requirements

- 7.7.7.1(1) Provide TV outlets in all reception areas, in each floor communication room, and in the Lecture Theatre.

7.8 Electronic Safety and Security (Division 28)

7.8.1 Access Control Systems

7.8.1.1 Basic Requirements

- 7.8.1.1(1) Provide an access control system and an intrusion detection system. The system will use the Chubb system currently used by UNBC in accordance with Appendix 1F. Any additional tenants can have the option of using Chubb or another security provider.
- 7.8.1.1(2) Determine security needs through a comprehensive threat and risk assessment and consultation with the Authority. Programming of photo ID cards, location of all security devices and monitoring requirements to be identified by the threat and risk assessment. All alarm annunciation requirements are to be identified by the threat and risk assessment.
- 7.8.1.1(3) All security systems will connect to the structured cabling system and network devices to allow the Authority the opportunity to review events and monitor the status of these systems from off-site locations.
- 7.8.1.1(4) The Facility maintenance staff is to be fully trained on the use, operation, and location of all security devices.

7.8.1.2 Performance Criteria

- 7.8.1.2(1) Card access control of all Facility entrances and elevators will be provided on the base building system.
- 7.8.1.2(2) Card access control of UNBC tenant space entrances. The Card Access System will have multiple zones to distinguish access between departments.
- 7.8.1.2(3) The access control systems will match the existing Chubb system at UNBC. The UNBC system shall be capable of remotely adding users from the campus system. 50 cards pre-programmed for the

Authority's use will be provided for operations and maintenance personnel.

7.8.1.2(4) Location of access control doors and door alarms will be coordinated with the Facility layout. Areas to be included are:

7.8.1.2(4)(a) Tenant spaces

7.8.1.2(4)(b) Elevators

7.8.1.2(4)(c) Exterior entrances

7.8.2 Intrusion Detection

7.8.2.1 Basic Requirements

7.8.2.1(1) Intrusion detection systems will be part of the access control system and installed in all UNBC areas.

7.8.2.2 Performance Criteria

7.8.2.2(1) The intrusion detection system will utilize industry proven devices for intrusion detection. These devices include motion detectors, magnetic door contacts, and glass breakage detectors. The system will be connected to a phone line for monitoring by an external monitoring agency.

7.8.3 CCTV

7.8.3.1 Basic Requirements

7.8.3.1(1) Provide CCTV cameras in locations as determined by the threat and risk assessment. In addition, at a minimum, provide surveillance of the following locations:

7.8.3.1(1)(a) All exterior entrances and exits

7.8.3.1(1)(b) sidewalks

7.8.3.1(1)(c) rear laneway

7.8.3.1(1)(d) at main entrance. Cameras in this location shall be visible to people entering the area and shall be

positioned to provide identification of persons entering the Facility.

- 7.8.3.1(2) Areas which have CCTV cameras installed will have signage posted at the main entrances to the Facility. The signage will notify the public that this area is under video surveillance.
- 7.8.3.1(3) CCTV processes will be governed by and comply with the Public Surveillance System Privacy Guidelines for the province of BC as well as the Freedom of Information and Protection of Privacy Act.
- 7.8.3.2 System(s) will be a software-based virtual matrix using the structured cable plant for transmission and recording of images.
- Performance Criteria
- 7.8.3.2(1) The system must be able to record clear images of individuals, with sufficient quality to be used as court evidence in Canada.
- 7.8.3.2(2) Provide digital PC based video recorder (network video recorder) complete with software that controls all parameters of each individual camera, pan tilt zoom functionality, frame by frame recording, pre and post alarm recording, motion detection, sequence switching, multiplexing, adjustable frame speeds, and will record all cameras 24-hours per day, 7 days a week in real time (30 frames per second). All cameras will be IP addressable.
- 7.8.3.2(3) Provide video storage capacity for minimum of 30 days at 30 frames per second, minimum D1 resolution. Provide NVR's, workstations and connect to network. System will have the ability to choose recording rates and quality for each camera, have activity detection and incorporate smart search capabilities.
- 7.8.3.2(4) CCTV system will integrate with access control and intrusion detection to allow for higher recording rates during alarm conditions.
- 7.8.3.2(5) CCTV display and review system will be network based application allowing for authorized users to

remotely view, control and manage all aspects of the CCTV system across the network. System will have network and web access for remote monitoring, using predefined user authentication.

- 7.8.3.2(6) Mounting will be unobtrusive with hidden cabling. Housing to match color of surrounding. Fixed cameras will be vandal resistant wall mounted and / or mounted at protective locations and heights.
- 7.8.3.2(7) Outdoor cameras will be complete with weatherproof housing and internal heater/ defroster/blower/wiper as required for suitable operation under varying environmental conditions.

PART 8. SITE AND INFRASTRUCTURE SUBGROUP SPECIFICATIONS**8.1 Earthwork (Division 31)**

8.1.1 Clearing and Grubbing

8.1.1.1 Performance Criteria

8.1.1.1(1) Prevent damage to trees, benchmarks, existing curbs and subsurface utilities to remain. Remove cleared and grubbed materials off-site to disposal area as directed by the Authority.

8.1.1.1(2) Remove cleared and grubbed materials off-site to disposal area as per City of Prince George Soil Deposit Bylaw requirements.

8.2 Exterior Improvements Division (32)

8.2.1 Aggregate Base Courses

8.2.1.1 Basic Requirements

8.2.1.1(1) Granular sub-base will be utilized for stability of surface treatment through freeze thaw cycles and for its ability to store rainwater

8.2.1.2 Performance Criteria

8.2.1.2(1) The depth of aggregate base courses will be designed to exceed limits defined by regional average freeze thaw cycles averaged over a twenty year period.

8.2.2 Asphalt Paving

8.2.2.1 Basic Requirements

8.2.2.1(1) Asphalt paving will be utilized in areas where vehicle traffic or snow clearing equipment require a smooth surface for travel.

8.2.2.2 Performance Criteria

8.2.2.2(1) Asphalt mix will be designed for use in climatic conditions found on the Site.

8.2.3 Unit Paving on Sand Bed

- 8.2.3.1 Basic Requirements
 - 8.2.3.1(1) Unit pavers will be utilized in areas where a high level of finish is desired and/or a requirement for removal and replacement of paved surface in the future.
- 8.2.4 Concrete Paving
 - 8.2.4.1 Basic Requirements
 - 8.2.4.1(1) Concrete paving will be utilized in areas that require firm, long lasting hard surfaces for activities such as pedestrian pathways, loading docks and Facility entrances.
- 8.2.5 Fences and Gates
 - 8.2.5.1 Performance Criteria
 - 8.2.5.1(1) Fence materials will be designed and fabricated to guarantee a minimum 5-year lifetime.
 - 8.2.5.1(2) Fences will be installed as per manufacturer's directions, or custom designed with footings to withstand freeze thaw cycles in the region averaged over the last twenty years.
- 8.2.6 Exterior Site Furnishings
 - 8.2.6.1 Basic Requirements
 - 8.2.6.1(1) Site furnishings will consist of benches, garbage containers, tables and chairs, and umbrellas, to provide seating for a minimum of eight (8) people in any outdoor area adjacent to the Facility. Products will be selected on the basis of safety, comfort, design and materials that relate to the Facility architecture and landscape design, durability and to minimize required maintenance.
 - 8.2.6.2 Performance Criteria
 - 8.2.6.2(1) Products will be selected for their ability to withstand freeze thaw cycles in the region averaged over the last twenty years.
- 8.2.7 Growing Medium
 - 8.2.7.1 Basic Requirements

- 8.2.7.1(1) Growing medium will be a mixture of mineral particulates, micro organisms and organic matter which will provide a suitable medium for supporting plant growth.

8.2.8 Sodding

8.2.8.1 Basic requirements

- 8.2.8.1(1) Sod will be located in areas near Facility entrances, and outdoor patio spaces to provide a usable surface for staff breaks, visiting, passive recreation and occupational therapy.

8.2.8.2 Performance criteria

- 8.2.8.2(1) Number one turf grass nursery sod has been sown and cultivated in nursery fields as turf grass crop in climatic zone comparable to the Site of the work.

8.2.9 Trees, Shrubs and Ground Cover Planting

8.2.9.1 Basic requirements

- 8.2.9.1(1) Planting will support the landscape design by reinforcing spatial relationships and way-finding. The plant selection and placement will address micro-climates surrounding the Facility, and will mitigate heating and cooling loads as well as providing a comfortable exterior environment for users.

8.2.9.2 Performance criteria

- 8.2.9.2(1) Planting design will emphasize species that are either indigenous or adapted to the region.
- 8.2.9.2(2) Trees, shrubs and ground covers will be selected and placed to mitigate temperature fluctuations and winds.
- 8.2.9.2(3) Trees, shrubs and ground covers will be selected from species and varieties that are either indigenous or adapted to the region.
- 8.2.9.2(4) Plants will comply with the current edition of the BC Landscape Standard, published by the BC Society of Landscape Architects and the BC Landscape and Nursery Association.

- 8.2.9.2(5) Plant material will be grown in Zone 2B in accordance with Plant Hardiness Zones in Canada.

8.3 Utilities (Division 33)

The utility works must service the Facility and the expected land use with a reliable infrastructure that is maintainable and conforms to the City of Prince George Subdivision and Development Servicing Bylaw.

8.3.1 Manholes and Catch Basins

8.3.1.1 Basic requirements

8.3.1.1(1) Section Includes

8.3.1.1(1)(a) Monolithic concrete manholes with transition to lid frame, covers, anchorage, and accessories.

8.3.1.1(1)(b) Modular precast concrete manhole sections with tongue and groove joints with masonry transition to lid frame, covers, anchorage, and accessories.

8.3.1.2 Performance criteria

8.3.1.2(1) Work of this section will be carried out in accordance with the City of Prince George Subdivision and Development Servicing Bylaw, the City of Prince George Infrastructure Specifications and the City of Prince George Standard Infrastructure Drawings.

8.3.2 Site Water Utility Distribution Piping

8.3.2.1 Basic requirements

8.3.2.1(1) Section Includes

8.3.2.1(1)(a) Pipe and fittings for Site water line including domestic water line and fire water line.

8.3.2.1(1)(b) Valves, fire hydrants and domestic water hydrants.

8.3.2.2 Performance criteria

- 8.3.2.2(1) Work of this section will be carried out in accordance with the City of Prince George Subdivision and Development Servicing Bylaw, the City of Prince George Infrastructure Specifications and the City of Prince George Standard Infrastructure Drawings.

8.3.3 Site Sanitary Sewerage Piping

8.3.3.1 Basic requirements

8.3.3.1(1) Section includes

- 8.3.3.1(1)(a) Sanitary sewerage drainage piping, fittings, accessories, and bedding.
- 8.3.3.1(1)(b) Connection of Facility sanitary drainage system to municipal sewers.
- 8.3.3.1(1)(c) Clean out access.

8.3.3.2 Performance criteria

- 8.3.3.2(1) Work of this section will be carried out in accordance with the City of Prince George Subdivision and Development Servicing Bylaw, the City of Prince George Infrastructure Specifications and the City of Prince George Standard Infrastructure Drawings.

8.3.4 Storm Sewer Water Drains

8.3.4.1 Basic requirements

8.3.4.1(1) Section includes

- 8.3.4.1(1)(a) Site storm sewerage drainage piping, fittings and accessories, and bedding.
- 8.3.4.1(1)(b) Connection of drainage system and stormwater retention facility.
- 8.3.4.1(1)(c) Catch basins, plant area drains, paved area drainage, and Site surface drainage.

8.3.4.2 Performance Criteria

- 8.3.4.2(1) Work of this section will be carried out in accordance with the City of Prince George Subdivision and Development Servicing Bylaw, the City of Prince George Infrastructure Specifications and the City of Prince George Standard Infrastructure Drawings.

8.3.5 Foundation Drainage

8.3.5.1 Basic requirements

8.3.5.1(1) Section includes

8.3.5.1(1)(a) Building perimeter, retaining wall and under slab on fill weep drainage system.

8.3.5.1(1)(b) Filter aggregate, fabric and bedding.

8.3.5.1(2) Pipe materials will be

8.3.5.1(2)(a) Polyvinyl Chloride pipe: to ASTM D2729, with required fittings or;

8.3.5.1(2)(b) Concrete pipe: to ASTM C412, with required fittings.

8.3.5.1(3) Accessories will be

8.3.5.1(3)(a) Pipe coupling: solid.

8.3.5.1(3)(b) Joint cover: No. 15 or 30 asphalt saturated roofing felt or polyethylene.

8.3.5.1(3)(c) Filter Fabric: Water pervious type, black polyolefin or polyester.

8.3.5.2 Performance criteria

8.3.5.2(1) Foundation drainage will carry all sub-surface ground water away from footings and foundation walls and into the onsite storm drainage system.

8.3.5.2(2) Installation will meet the requirements of the B.C. Building Code, and all applicable municipal codes and bylaws.

8.3.6 Natural Gas Site Piping

8.3.6.1 Basic requirements

- 8.3.6.1(1) Section includes
 - 8.3.6.1(1)(a) Pipe and fittings for Site utility natural and propane gas distribution.
 - 8.3.6.1(1)(b) Propane storage tanks.
- 8.3.6.1(2) Quality Requirements
 - 8.3.6.1(2)(a) ANSI B31.2 Fuel Gas Piping
 - 8.3.6.1(2)(b) NFPA 54 National Fuel Gas Code
 - 8.3.6.1(2)(c) NFPA 58 Liquefied Petroleum Gas Code
- 8.3.6.2 Performance Criteria
 - 8.3.6.2(1) Perform work in accordance with the requirements of the gas transmission utility, and all local governing codes and bylaws.
 - 8.3.6.2(2) Welding Materials and procedures: Conform to ASME Boiler and Pressure Vessel Code and applicable provincial regulations.
 - 8.3.6.2(3) Welders Certification: In accordance with ASME SEC IX.
 - 8.3.6.2(4) Conform to NFPA 54, NFPA 58, ANSI B31.2, ANSI B31.8.

APPENDICES

APPENDIX 1A: ENERGY MODEL

APPENDIX 1A: ENERGY MODEL

Basic Requirements:

- As per Section 7.3.1.1(6) An energy model shall be completed to demonstrate anticipated energy performance in compliance with LEED EA Credit requirements (or equivalent).
- A minimum of 38% energy cost savings relative to ASHRAE 90.1 2007 baseline is mandatory.

Performance Criteria:

- A single energy modelling software will be used at all stages of the design and certification or equivalency process and submitted to the Compliance Team as part of the proposal.
- Eligible energy modelling software shall be in accordance with LEED Canada NC 2009.
- It is the Authority's intent that the Proponents provide a summary of their building's performance, as determined by the energy model, using the LEED Canada NC 2009 letter template for energy and atmosphere credit 1. This template provides a breakdown of the building's energy performance by end use and also identifies the non-regulated loads. The energy model is to include a non-regulated plug loads, occupancies, and all relevant default values per ASHRAE 90.1 2007 relating to LEED Canada NC 2009.

APPENDIX 1B: UNBC ROOM ADJACENCY MATRIX

APPENDIX 1D: FACILITY SPACE REQUIREMENTS

AREA SUMMARY

NET AND GROSS AREA SUMMARY

Function	Net Area		Gross Area
	Net	Total	Gross Total
PROGRAM AREA		3120.5 m²	4018.0 m²
Academic Component	961.5 m ²		
Office Component	1934.0 m ²		
Shared Component	225.0 m ²		
BUILDING SUPPORT		261.0 m²	
Total Area	Net	3381.5 m²	4559.0 m²

UNBC ACADEMIC

MASTER'S ENGINEERING PROGRAM		961.5 m²		
Rm No.	Engineering Program - Classrooms	Area m ²	No.	Total Area m ²
A.1	Lecture Theatre	131.0	1	131.0
A.1.1	Projection Room, Vestibule, Storage	20.0	1	20.0
A.2	Classroom	42.0	1	42.0
A.3	Project Room	55.0	1	55.0
A.4	Design/Classroom	109.0	1	109.0
	Engineering Program - Labs			
A.5	Research Lab (Wet)	150.0	1	150.0
A.6	Research Lab Prep Area (Wet)	75.0	1	75.0

	Lounge / Resource Centre			
A.7	Student Lounge	25.0	1	25.0
A.7.1	Student Lounge Storage	2.5	1	2.5
A.8	Meeting Room	18.0	1	18.0
A8.1	Meeting Room Storage	2.0	1	2.0
A.9	Learning Resource Centre	61.0	1	61.0
A.9.1	Support Space	30.5	1	30.5
	Administration / Faculty Office			
A.10	General Office	18.0	1	18.0
A.11	Chair Office	12.0	1	12.0
A.12	Administrative Assistant Office	11.0	1	11.0
A.13	Program Administrator Office	8.5	1	8.5
A.14	Technicians Office	15.0	1	15.0
A.15	Staff Room	10.0	1	10.0
A.16	Faculty Offices	11.0	5	55.0
A.17	Technical Support	6.0	1	6.0
A.18	Teaching Assistants/ Grad. Student Offices	32.0	2	64.0
A.19	Supplemental Area	19.0	1	19.0
A.20	Administrative Storage	22.0	1	22.0

OFFICE COMPLEMENT

WIDC – OFFICE COMPONENT		1934 m ²		
Rm No.	Civic / Provincial/ Industry Supporting Agency Offices	Area m ²	No.	Total Area m ²
B.1	Class 'A' Offices	1934.0		1934.0

WIDC – SHARED COMPONENT

		225 m ²		
Rm No.		Area m ²	No.	Total Area m ²
C.1	Demonstration / Technology Centre	225.00		225.00

BUILDING SUPPORT

		261m2		
Rm No.		Area m ²	No.	Total Area m ²
D.1	Receiving/ Bldg. Maintenance/ End of Trip	27.0		27.0
D.2	Mechanical / Electrical	234.0		234.0

APPENDIX E: UNBC ROOM DATA SHEETS

WOOD INNOVATION DESIGN CENTRE

Prince George, British Columbia

Specification Legend:

UNBC- UNBC Design and Technical Guidelines (Available in the Data Room)

SUPP- UNBC Supplemental Construction Specifications (Appendix 1F)

*** All security and locks are intended to be electronic card readers. There is a non electric alternative identified.**

A. ACADEMIC COMPONENT

Activity/Functions: Large lecture space, allows for multiple cohorts to assemble for presentations/ special events.
Teaching/ presentation environment, tiered seating Shared space:
Flexible use through community activities.
This space will connect to remote sites for the purposes of distance education.

A.1

LECTURE THEATRE

Occupancy:

Staff/Student: Capacity: **75**

Visitors:

ADJACENCY

Relationship: **see Appendix 1B**

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

See UNBC Videoconference Rooms

Guidelines

Floors: **Carpet; concrete aisles & back rows**
UNBC 9680 / SUPP 9600

Walls: **SUPP 9700 with acoustic panels**

Ceilings: **UNBC 9120 with Acoustic Rating**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **SUPP 6200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 131.0m²

CRITICAL DIMENSIONS

See UNBC Videoconference Rooms Guidelines

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks: **See UNBC Videoconference Rooms Guidelines**

SANITARY FITTINGS

WC/Lav. Normal Special

A. ACADEMIC COMPONENT

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (e.g. eye wash station, H/C access):

PLUMBING DATA

Water:

Dom. HW Temp.

Dom. CW Temp.

Special Water

Individual/Area Shutoff

Gases:

Natural Gas

Shop Compressed

Air

Drainage:

Sanitary

Grease

Acid

Oil

Floor Drain

Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other: **Task Lighting above writing boards**

Lux Level:

See UNBC Videoconference Rooms

Guidelines and UNBC Equipment List

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight **2 windows 3'x6'**

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: (e.g. special voltage)

See UNBC Videoconference Rooms

Guidelines and UNBC Equipment List

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

See UNBC Videoconference Rooms

Guidelines and UNBC Equipment List

ACOUSTICAL

Isolated STC Other

STC 55 walls, STC 50 doors, STC 50 floor/ceiling,
IIC 65 from floor above, Reverberation time: 0.45 to
0.55 seconds in the mid and high frequencies.

See Appendix 1B

FITTINGS

Rails (*grab or towel*):

Racks (*wall mounted, fixed open storage*)

Curtain Tracks (*window, shower, other*)

Hooks (*clothes, ceiling or wall mounted*)

Screens (*projection, acoustic, other*) **Motorized Ceiling
Mounted Concealed Projection Screen**

Blinds (*window, black-out, other*) **Blackout**

Boards (no. & size) [*bulletin, chalk, whiteboard,
magnetic, peg, key, other*] **Chalk – SUPP 10110**

NOTES/REMARKS/OTHER

CONSIDERATIONS

**Wireless and physical data drops as req'd by
A/V & IT design.**

**Provide AV/IT for full distributed education
through video teleconference, as per UBC
AV/IT specifications.**

**Refer to UNBC Videoconference Rooms
Guidelines and UNBC Equipment List**

A. ACADEMIC COMPONENT

Activity/Functions: (Describe/List Prime Activities)	A.1.1 PROJECTION ROOM, VESTIBULE, STORAGE
Occupancy: Staff/Student: _____ Capacity: _____ Visitors: _____	

ADJACENCY

Relationship: **see Appendix 1B**
 Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet; concrete aisles & back rows
UNBC 9680 / SUPP 9600**
 Walls: **SUPP 9700 with acoustic panels**
 Ceilings: **Suspended acoustic tile ceiling with
minimum NRC 0.70 and CAD 35-39
ratings.**
 Doors: **UNBC 8710 / SUPP 8210**
 Millwork: **UNBC 6200 / 6400**
 Windows: **3 windows into the lecture theatre.
450mm high x 750 mm wide each.**
 Special Req.:

See UNBC Videoconference Rooms
Guidelines and UNBC Equipment List

WOOD CONTENT

Priority:
 Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **SUPP 6200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 20.0 m²

CRITICAL DIMENSIONS

- Length m
- Width m
- Ceiling Height m

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**
 Lockset Control: **SUPP 08710**

Elect Lock ████████████████████
████████████████████
████████████████████
████████████████████

AIR QUALITY

Ventilation Normal Special
 Purity Normal Special
 Temperature Normal Special
 Humidity Normal Special
 Room Pressurization Normal Special

Can air be returned to system? **Yes**
 Remarks: **Special cooling required for
projection room. See UNBC Videoconference
Rooms Guidelines and UNBC Equipment
List**

SANITARY FITTINGS

WC/Lav. Normal Special
 Urinal Normal Special
 Sink Normal Special
 Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other: Task Lighting

Lux Level:

**See UNBC Videoconference Rooms
Guidelines and UNBC Equipment List**

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: (e.g. special voltage)

**See UNBC Videoconference Rooms
Guidelines and UNBC Equipment List**

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

**See UNBC Videoconference Rooms
Guidelines and UNBC Equipment List**

ACOUSTICAL

Isolated STC- Other

STC 55 walls, STC 50 doors, STC 50 floor/ceiling,

See Appendix 1B

FITTINGS

Rails (*grab or towel*):

Racks (*wall mounted, fixed open storage*) **3 equipment racks for videoconferencing and AV system equipment**

Curtain Tracks (*window, shower, other*)

Hooks (*clothes, ceiling or wall mounted*)

Screens (*projection, acoustic, other*)

Blinds (*window, black-out, other*)

Boards (no. & size) [*bulletin, chalk, whiteboard, magnetic, peg, key, other*]

NOTES/REMARKS/OTHER

CONSIDERATIONS

**Wireless and physical data drops as req'd by
A/V & IT design.**

**Provide AV/IT for full distributed education
through video teleconference, as per UBC
AV/IT specifications.**

**Refer to UNBC Videoconference Rooms
Guidelines and UNBC Equipment List**

A. ACADEMIC COMPONENT

Activity/Functions: Main classroom, multipurpose, multidiscipline for teaching into the MEng program
Teaching environment, tables facing front instructional area.
Room for 1 class/cohort to attend classes and Observe limited demonstrations.

A.2 CLASSROOM

Occupancy:

Staff/Student: Capacity: **20**
Visitors:

ADJACENCY

Relationship: see **Appendix 1B**

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700 with acoustic panels**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

See UNBC Videoconference Rooms Guidelines

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **Lectern SUPP 12000
SUPP 6200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 42.0m²

CRITICAL DIMENSIONS: See UNBC Videoconference Rooms Guidelines and UNBC Equipment List

See UNBC Videoconference Rooms Guidelines

ACCESS * student/staff/faculty – not public

General* Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (Card Reader): **Chubb**

Lockset Control: [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks: **Special cooling required for projector room**
See UNBC Videoconference Rooms Guidelines

SANITARY FITTINGS

WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other (e.g. eye wash station, H/C access):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

See UNBC Videoconference Rooms Guidelines

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

See UNBC Videoconference Rooms Guidelines

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

See UNBC Videoconference Rooms Guidelines

ACOUSTICAL

Isolated STC Other

STC 50 walls, NC 30-35, Reverberation time 0.75 seconds in mid and high frequencies.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)* **Projection screen**

Blinds *(window, black-out, other)* **Blackout**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER

CONSIDERATIONS

Wireless and physical data drops as req'd by A/V & IT design.

Provide AV/IT for full distributed education through video teleconference, as per UBC AV/IT specifications.

Refer to UNBC Videoconference Rooms Guidelines and UNBC Equipment List

APPENDIX 1E: UNBC ROOM DATA SHEETS

A. ACADEMIC COMPONENT

Activity/Functions: Instructional space for student project work, including creation of scaled mock-ups, associated with the MEng program. Flexible work space for changing group and project sizes.

A.3

PROJECT ROOM

Occupancy:

Staff/Student: Capacity: **20**

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

See UNBC Videoconference Rooms Guidelines

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA **55.0m²**

CRITICAL DIMENSIONS:

See UNBC Videoconference Rooms Guidelines

ACCESS * student/staff/faculty – not public

General* Private Restricted

TIME IN USE Day

Evenings

Weekends

SECURITY

Doors (Card Reader): **Chubb**

Lockset Control:

Elect Lock [REDACTED]

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (e.g. eye wash station, H/C access):

PLUMBING DATA

Water:

A. ACADEMIC COMPONENT

- Dom. HW Temp.
- Dom. CW Temp.
- Special Water
- Individual/Area Shutoff

Gases:

- Natural Gas
- Shop Compressed
- Air

Drainage:

- Sanitary
- Grease
- Acid
- Oil
- Floor Drain
- Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet spaced at 5m around perimeter.

COMMUNICATIONS

- Telephone Intercom
- Public Address Multi-Media
- Clock

COMPUTER

- Internal Network External Network
- Computer Terminal

Drops spaced at 5m around perimeter, wireless access point in ceiling.

ACOUSTICAL

Isolated STC Other

STC 50 walls, NC 30-35, Reverberation time 0.75 seconds in mid and high frequencies.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)* **Projection**

Blinds *(window, black-out, other)* **window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER CONSIDERATIONS

Wireless and physical data drops as req'd by A/V & IT design.

A. ACADEMIC COMPONENT

Activity/Functions: Computer equipped classroom for engineering design components of classes and projects
Room provides creative stimulus through flexible group work areas, whiteboards on all walls, etc. Dividable room for flexible use of space by more than one group.

A.4 DESIGN / CLASSROOM

Occupancy:

Staff/Student: Capacity: **32**

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700 with acoustic panels**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

See UNBC Videoconference Rooms Guidelines

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **Lectern SUPP 12000
SUPP 6200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 109.0m²

CRITICAL DIMENSIONS

See UNBC Videoconference Rooms Guidelines

ACCESS * student/staff/faculty – not public

General* Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks: **Special cooling required for projector room**

See UNBC Videoconference Rooms Guidelines

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other: Task Lighting above writing boards

Lux Level:

See UNBC Videoconference Rooms Guidelines

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: (e.g. special voltage)

See UNBC Videoconference Rooms Guidelines

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

See UNBC Videoconference Rooms Guidelines

ACOUSTICAL

Isolated STC Other

Standard Classrooms with A/V only: STC 50 walls, NC 30-35, Reverberation time 0.75 seconds in mid and high frequencies.

See Appendix 1B

FITTINGS

Rails (*grab or towel*):

Racks (*wall mounted, fixed open storage*)

Curtain Tracks (*window, shower, other*)

Hooks (*clothes, ceiling or wall mounted*)

Screens (*projection, acoustic, other*) **Projection screen**

Blinds (*window, black-out, other*) **Blackout**

Boards (no. & size) [*bulletin, chalk, whiteboard, magnetic, peg, key, other*] **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER

CONSIDERATIONS

Wireless and physical data drops as req'd by A/V & IT design.

Provide AV/IT for full distributed education through video teleconference, as per UBC AV/IT specifications.

Refer to UNBC Videoconference Rooms Guidelines and UNBC Equipment List

A. ACADEMIC COMPONENT

Activity/Functions: Wet lab for research on wood structures and related materials and attachment systems, as appropriate to the research interests of the faculty teaching into the MEng program. Designed for maximal flexibility.

A.5

RESEARCH LAB (WET)

Occupancy:

Staff/Student: Capacity: **30**

Visitors:

ADJACENCY

Relationship: see **Appendix 1B**

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **UNBC 9680 / SUPP 9600**

Sheet rubber (40%) or polished concrete

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment: **Eye wash station, emergency shower station with drain.**

-Fume hoods (3): one 3' unit located in the Wet Lab Prep Area, one 4' and one 6' unit located in the main Research Lab

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 150.0m²

CRITICAL DIMENSIONS

- Length **Minimum 7.62m**
- Width **Minimum 7.62m**
- Ceiling Height **Minimum 5.00m Flr to Flr**

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special
Can air be returned to system? **No**

Remarks:

No air recirculation. Requires 10 air changes per hour.

A. ACADEMIC COMPONENT

SANITARY FITTINGS

- WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other: **Eye wash station, emergency shower**

PLUMBING DATA

Water:

-
- Dom. HW Temp. **52 C**
 - Dom. CW Temp. **Supply temp**
 - Special Water
 - Individual/Area Shutoff

Gases:

-
- Natural Gas
 - Shop Compressed
 - Air

Drainage:

-
- Sanitary
 - Grease
 - Acid
 - Oil (**Hydraulic fluids**)
 - Floor Drain
 - Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

- Wall Switch Occupancy Sensor
 Daylight Sensor Dimmer
 Controlled by Staff Controlled by Anyone

DAYLIGHTING

-
- Direct Sun Daylight
 - Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: **2 – circuits of 120v essential power**

1 – circuit of 220v essential power

400 amp supply to research lab

**Quad outlets spaced at 1.5m on workbenches
convenience outlets spaced at 3m around
perimeter.**

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

1 telephone drop at staff workstation.

COMPUTER

Internal Network External Network

Computer Terminal

**1 network drop at staff workstation, wireless
access point in ceiling.**

ACOUSTICAL

Isolated STC Other

STC 50, NC 35-40, Reverberation time 0.75 to 0.85

See Appendix 1B

FITTINGS

Rails (*grab or towel*):

Racks (*wall mounted, fixed open storage*)

Curtain Tracks (*window, shower, other*)

Hooks (*clothes, ceiling or wall mounted*)

Screens (*projection, acoustic, other*)

Blinds (*window, black-out, other*)

+Boards (no. & size) [*bulletin, chalk, whiteboard,
magnetic, peg, key, other*] **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER

CONSIDERATIONS

Refer to lab requirements document.

**Wireless and physical data drops as req'd by
A/V & IT design.**

**Refer to UNBC Research Lab specification
for additional requirements.**

**Strong floor of 3' of concrete under
the research lab.**

A. ACADEMIC COMPONENT

Activity/Functions: Wet lab for research on wood structures and related materials and attachment systems, as appropriate to the research interests of the faculty teaching into the MEng program. Designed for maximal flexibility.

A.6

RESEARCH LAB PREP AREAS (WET)

Occupancy:

Staff/Student: Capacity: 10

Visitors:

ADJACENCY

Relationship: **see Appendix 1B**

Sits alongside A.14 with partial height partitions delineating the different programs.

Direct Access to Outside: Yes No

4400mm x 6000mm Large Overhead Bay

Door

ARCHITECTURAL

Room Requirements:

Floors: **UNBC 9680 / SUPP 9600**

Sheet rubber (40%) or polished concrete

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture:

FLOOR AREA 75.0 m²

CRITICAL DIMENSIONS

- Ceiling Height **Minimum 5.0m Flr to Flr**

ACCESS

Public Private Restricted

TIME IN USE Day

Evenings

Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock

Cameras **Not Req'd** 630

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special

Room Pressurization Normal Special

Can air be returned to system? **No**

Remarks: **No air recirculation. Requires 10 air changes per hour.**

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other: **Eye wash station, emergency shower**

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp. **52 C**
 - Dom. CW Temp. **Supply temp**
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil (**Hydraulic fluids**)
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: (*e.g. special voltage*)

Quad outlets spaced at 1.5m on workbenches
convenience outlets spaced at 3m around
perimeter.

WIDC

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

1 telephone drop at staff workstation.

COMPUTER

Internal Network External Network

Computer Terminal

1 network drop at staff workstation, wireless
access point in ceiling

ACOUSTICAL

Isolated STC- Other

STC 50, NC 35-40, Reverberation time 0.75 to 0.85

See Appendix 1B

FITTINGS

Rails (*grab or towel*):

Racks (*wall mounted, fixed open storage*)

Curtain Tracks (*window, shower, other*)

Hooks (*clothes, ceiling or wall mounted*)

Screens (*projection, acoustic, other*)

Blinds (*window, black-out, other*)

Boards (no. & size) [*bulletin, chalk, whiteboard,
magnetic, peg, key, other*]

NOTES/REMARKS/OTHER

CONSIDERATIONS

Refer to lab requirements document.

**Wireless and physical data drops as req'd by
A/V & IT design.**

**Refer to UNBC Research Lab specification
for additional requirements.**

**Strong floor of 3' of concrete under the
research lab prep area.**

A. ACADEMIC COMPONENT

Activity/Functions: Area for student interaction, both related to course work and social interaction
Equipped with large tables and peripheral comfortable seating (couches)

A.7 STUDENT LOUNGE

A.7.1 S.L. Storage

Occupancy:

Staff/Student: Capacity: **10**

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **SUPP 06200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment: **Microwave and Refrigerator**

Shelving:

Furniture: **Sofa(s) and Chairs SUPP 12000**

FLOOR AREA A.7 25.0m²

FLOOR AREA A.7.1 2.5m²

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special
Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp. **52 C**
 - Dom. CW Temp. **Supply Temp**
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary (Kitchen Sink)
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

convenience outlets spaced at 5m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

1 telephone drop

COMPUTER

Internal Network External Network

Computer Terminal

wireless access

ACOUSTICAL

Isolated STC Other

STC 50, NC 35-40, Reverberation time 0.90 seconds

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)*

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin**

NOTES/REMARKS/OTHER

CONSIDERATIONS

Wireless and physical data drops as req'd by A/V & IT design.

A. ACADEMIC COMPONENT

Activity/Functions: Space appropriate for meetings
Central boardroom table. Is equipped with A/V & IT

A.8 MEETING ROOM

A.8.1 M. R. Storage

Occupancy:

Staff/Student: Capacity: **12**

Visitors:

ADJACENCY

Relationship: **see Appendix 1B**

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

See UNBC Videoconference Rooms Guidelines

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA A.8 18.0m²

FLOOR AREA A.8.1 2.0m²

CRITICAL DIMENSIONS

- Length
- Width **Minimum 3.05m**
- Ceiling Height

See UNBC Videoconference Rooms Guidelines

ACCESS * student/staff/faculty – not public

General* Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special
Can air be returned to system? **Yes**

Remarks:

See UNBC Videoconference Rooms Guidelines

SANITARY FITTINGS

WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other (e.g. eye wash station, H/C access):

WIDC

*Design Requirements
Room Data Sheets*

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: (e.g. special voltage)

See UNBC Videoconference Rooms

Guidelines

Quad outlet for table top, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock Video Conf

1 telephone drop

COMPUTER

Internal Network External Network

Computer Terminal

See UNBC Videoconference Rooms

Guidelines

ACOUSTICAL

Isolated STC Other

STC 50 walls, NC 30-35, Reverberation time 0.55 seconds in mid and high frequencies.

See Appendix 1B

FITTINGS

Rails (*grab or towel*):

Racks (*wall mounted, fixed open storage*)

Curtain Tracks (*window, shower, other*)

Hooks (*clothes, ceiling or wall mounted*)

Screens (*projection, acoustic, other*) **Projection**

Blinds (*window, black-out, other*) **Blackout**

Boards (no. & size) [*bulletin, chalk, whiteboard, magnetic, peg, key, other*] **Bulletin, Whiteboard**
SUPP10110

NOTES/REMARKS/OTHER

CONSIDERATIONS

Wireless and physical data drops as req'd by A/V & IT design.

Provide AV/IT for full distributed education through video teleconference, as per UBC AV/IT specifications.

Refer to UNBC Videoconference Rooms Guidelines and UNBC Equipment List

A. ACADEMIC COMPONENT

Activity/Functions: Central repository for reference materials suitable for Engineering
Electronic access to reference material

A.9 LEARNING RESOURCE CENTRE

A.9.1 Support Space

Occupancy:

Staff/Student: Capacity: **18**

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **SUPP 12000**
UNBC 6200

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving: **Metal Library Style Flat Tray**
Adjustable Shelf Book Shelving

Furniture: **SUPP 12000**

FLOOR AREA A.9 61.0m²

FLOOR AREA A.9.1 30.5m²

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS * student/staff/faculty – not public

General* Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras Not Req'd

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (e.g. eye wash station, H/C access):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
- Dom. CW Temp.
- Special Water
- Individual/Area Shutoff

Gases:

- Natural Gas
- Shop Compressed
- Air

Drainage:

- Sanitary
- Grease
- Acid
- Oil
- Floor Drain
- Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstations, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

1 network drop per workstation, wireless access.

ACOUSTICAL

Isolated STC- Other

NC 30-35, Reverberation time 0.75 seconds (like a classroom)

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)* **Projection screen**

Blinds *(window, black-out, other)* **window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER CONSIDERATIONS

Wireless and physical data drops as req'd by A/V & IT design.

A. ACADEMIC COMPONENT

Activity/Functions: Administrative activity area, for the administration of the MEng program
Central liaison with UNBC campus, Open reception area

A.10 GENERAL OFFICE

Occupancy:

Staff/Student:

Capacity:

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **SUPP 06200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment: **Photocopy/fax/scanner**

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 18.0m²

CRITICAL DIMENSIONS

- Length
- Width **Minimum 3.05m**
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock **[REDACTED]**

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special
Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

**Floor mount data & electrical for front desk.
Quad outlet for workstations, convenience
outlets spaced at 3m around perimeter.**

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC- Other

NC 35-40, Acoustic tile ceiling, carpet preferably.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER CONSIDERATIONS

**Include 4 data, 2 voice, and 2 electrical
circuits.**

**Refer to UNBC Office, Research, and Storage
Space Policy.**

A. ACADEMIC COMPONENT

Activity/Functions: Faculty office for an MEng Chair or senior faculty member associated with the MEng program. See Faculty Offices (A.16) for description of activities.

A.11 CHAIR OFFICE

Occupancy:

Staff/Student: Capacity: **1**

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 12.0m²

CRITICAL DIMENSIONS

- Length
- Width **Minimum 3.05m**
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
- Dom. CW Temp.
- Special Water
- Individual/Area Shutoff

Gases:

- Natural Gas
- Shop Compressed
- Air

Drainage:

- Sanitary
- Grease
- Acid
- Oil
- Floor Drain
- Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC Other

STC 50 walls, NC 30-35, ACT and carpet.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER CONSIDERATIONS

Include 4 data, 2 voice, and 2 electrical circuits.

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions:

Office for the administrative assistant of the program

A.12

ADMIN ASST OFFICE

Occupancy:

Staff/Student:

Capacity: 1

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **NO WALLS**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA **11.0 m²**

CRITICAL DIMENSIONS

- Length
- Width **Minimum 3.05m**
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (Card Reader): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock **[REDACTED]**

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special
Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other (e.g. eye wash station, H/C access):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC- Other

STC 50 walls, NC 30-35, ACT and carpet.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER

CONSIDERATIONS

Include 2 data, 1 voice, and 1 electrical circuit.

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions:

Office for the program administrator

A.13

PROGRAM ADMINISTRATOR
OFFICE

Occupancy:

Staff/Student: Capacity: 1

Visitors:

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA **8.5 m²**

CRITICAL DIMENSIONS

- Length
- Width **Minimum 3.05m**
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (Card Reader): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other (e.g. eye wash station, H/C access):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC Other

STC 50 walls, NC 30-35, ACT and carpet.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER

CONSIDERATIONS

Include 2 data, 1 voice, and 1 electrical circuit.

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions:

Office space for 2 technicians

A.14 TECHNICIANS OFFICE

Occupancy:

Staff/Student: Capacity: 2

Visitors:

ADJACENCY: Sits alongside A.6 with partial height partitions delineating the different programs.

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **SUPP 06200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 15.0 m²

CRITICAL DIMENSIONS

- Length
- Width **Minimum 3.05m**
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (Card Reader): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special
Urinal Normal Special
Sink Normal Special
Shower Normal Special

Other (e.g. eye wash station, H/C access):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC Other

STC 50 walls, NC 30-35, ACT and carpet.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER

CONSIDERATIONS

Include 4 data, 2 voice, and 2 electrical circuits.

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions: Central area for use by staff, for staff material and food storage, refrigeration and preparation of food
Location for office organizational aids

A.15 STAFF ROOM

Occupancy:

Staff/Student: Capacity: **20**

Visitors:

ADJACENCY

Relationship: see **Appendix 1B**

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Resilient flooring:**
UNBC 9680 / SUPP 9600

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces: **SUPP 06200**

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment: **Microwave and Refrigerator**

Shelving:

Furniture: **Sofa(s) and Chairs SUPP 12000**

FLOOR AREA 10.0m²

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp. **52 C**
- Dom. CW Temp. **Supply temp**
- Special Water
- Individual/Area Shutoff

Gases:

- Natural Gas
- Shop Compressed
- Air

Drainage:

- Sanitary (Kitchen Sink)
- Grease
- Acid
- Oil
- Floor Drain
- Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC Other

STC 45 walls, NC 35-40, ACT.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)*

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin**

NOTES/REMARKS/OTHER

CONSIDERATIONS

Wireless and physical data drops as req'd by A/V & IT design.

A. ACADEMIC COMPONENT

Activity/Functions: Office space for faculty teaching into the MEng program, performing research related to the MEng program, and delivering material to distant partner institutions.

A.16 FACULTY OFFICE

Occupancy:

Staff/Student: Capacity: **1 (X5)**

Visitors:

ADJACENCY

Relationship: *see Appendix 1B*

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpets UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 11.0 m²

CRITICAL DIMENSIONS

- Length
- Width **Minimum 3.05m**
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **
Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (e.g. eye wash station, H/C access):

WIDC

*Design Requirements
Room Data Sheets*

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

- Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

- LED** Direct Indirect
Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

- Wall Switch Occupancy Sensor
 - Daylight Sensor Dimmer
 - Controlled by Staff Controlled by Anyone
-

DAYLIGHTING

- Direct Sun Daylight
 - Skylight None
-

POWER

- Wall Normal Special
Floor Normal Special
GFI Normal Special
UPS Tie-in
Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

- Telephone Intercom
 - Public Address Multi-Media
 - Clock
-

COMPUTER

- Internal Network External Network
 - Computer Terminal
-

ACOUSTICAL

- Isolated STC Other
-

General Office: NC 35-40, ACT and carpet

See Appendix 1B:

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER CONSIDERATIONS

Include 2 data, 1 voice, and 1 electrical circuit.

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions:	A.17	TECHNICAL SUPPORT
Occupancy:		
Staff/Student:	Capacity:	
Visitors:		

ADJACENCY

Relationship: *see Appendix 1B*

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA **6.0 m²**

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? **Yes**

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC Other

STC 45 walls, NC 35-40, ACT.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER CONSIDERATIONS

Include 2 data, 1 voice, and 1 electrical circuit.

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions:

Office for grad students supported by the MEng faculty and whose research is conducted primarily in the research lab

Occupancy:

Staff/Student: Capacity: 4 (X2)

Visitors:

A.18 TEACHING ASSISTANTS/ GRAD STUDENT OFFICES

ADJACENCY

Relationship: see Appendix 1B

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: Carpet UNBC 9680 / SUPP 9600

Walls: SUPP 9700

Ceilings: UNBC 9120

Doors: UNBC 8710 / SUPP 8210

Millwork: UNBC 6200 / 6400

Windows: UNBC 8500

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: SUPP 12000

FLOOR AREA 32.0 m²

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (Card Reader): Chubb

Lockset Control: SUPP 08710

Elect Lock

Cameras Not Req'd

AIR QUALITY

Ventilation Normal Special
Purity Normal Special
Temperature Normal Special
Humidity Normal Special **

Room Pressurization Normal Special

Can air be returned to system? Yes

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (e.g. eye wash station, H/C access):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
- Dom. CW Temp.
- Special Water
- Individual/Area Shutoff

Gases:

- Natural Gas
- Shop Compressed
- Air

Drainage:

- Sanitary
- Grease
- Acid
- Oil
- Floor Drain
- Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

LED Direct Indirect

Fluorescent Direct Indirect

Other:

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC Other

STC 45 walls, NC 30-35, ACT.

See Appendix 1B

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)* **Window**

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]* **Bulletin, Whiteboard**

SUPP 10110

NOTES/REMARKS/OTHER CONSIDERATIONS

Include 8 data, 4 voice, and 2 electrical circuits.

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions:	A.19	SUPPLEMENTAL AREA
Occupancy:		
Staff/Student:	Capacity:	
Visitors:		

ADJACENCY

Relationship:

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture: **SUPP 12000**

FLOOR AREA 19.0 m²

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE

- Day
 Evenings
 Weekends

SECURITY

Doors (Card Reader): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special

Room Pressurization Normal Special

Can air be returned to system?

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (e.g. eye wash station, H/C access):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
 - Dom. CW Temp.
 - Special Water
 - Individual/Area Shutoff
-

Gases:

- Natural Gas
 - Shop Compressed
 - Air
-

Drainage:

- Sanitary
 - Grease
 - Acid
 - Oil
 - Floor Drain
 - Solvents
-

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

Incandescent Direct Indirect

Fluorescent Direct Indirect

Other: Task Lighting

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC- Other

STC 45 walls, NC 30-35, ACT.

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)*

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]*

NOTES/REMARKS/OTHER

CONSIDERATIONS

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions: Contains storage space for UNBC faculty and staff.	A.20	ADMINISTRATIVE STORAGE
Occupancy: Staff/Student: Capacity: Visitors:		

ADJACENCY

Relationship:

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors: **Carpet UNBC 9680 / SUPP 9600**

Walls: **SUPP 9700**

Ceilings: **UNBC 9120**

Doors: **UNBC 8710 / SUPP 8210**

Millwork: **UNBC 6200 / 6400**

Windows: **UNBC 8500**

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture:

FLOOR AREA 22.0 m²

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Card Reader*): **Chubb**

Lockset Control: **SUPP 08710**

Elect Lock [REDACTED]

Cameras **Not Req'd**

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special

Room Pressurization Normal Special

Can air be returned to system?

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
- Dom. CW Temp.
- Special Water
- Individual/Area Shutoff

Gases:

- Natural Gas
- Shop Compressed
- Air

Drainage:

- Sanitary
- Grease
- Acid
- Oil
- Floor Drain
- Solvents

LIFE SAFETY

Fire Suppression Sprinkler System

Other Extinguishing Systems

LIGHTING

Incandescent Direct Indirect

Fluorescent Direct Indirect

Other: Task Lighting

Lux Level:

LIGHTING CONTROL

Wall Switch Occupancy Sensor

Daylight Sensor Dimmer

Controlled by Staff Controlled by Anyone

DAYLIGHTING

Direct Sun Daylight

Skylight None

POWER

Wall Normal Special

Floor Normal Special

GFI Normal Special

UPS Tie-in

Other: *(e.g. special voltage)*

Quad outlet for workstation, convenience outlets spaced at 3m around perimeter.

COMMUNICATIONS

Telephone Intercom

Public Address Multi-Media

Clock

COMPUTER

Internal Network External Network

Computer Terminal

ACOUSTICAL

Isolated STC- Other

STC 45 walls, NC 35-40, ACT.

FITTINGS

Rails *(grab or towel)*:

Racks *(wall mounted, fixed open storage)*

Curtain Tracks *(window, shower, other)*

Hooks *(clothes, ceiling or wall mounted)*

Screens *(projection, acoustic, other)*

Blinds *(window, black-out, other)*

Boards (no. & size) *[bulletin, chalk, whiteboard, magnetic, peg, key, other]*

NOTES/REMARKS/OTHER CONSIDERATIONS

Refer to UNBC Office, Research, and Storage Space Policy.

A. ACADEMIC COMPONENT

Activity/Functions:	C.1	DEMONSTRATION SPACE
Occupancy:		
Staff/Student:	Capacity:	
Visitors:		

ADJACENCY

Relationship:

Direct Access to Outside: Yes No

ARCHITECTURAL

Room Requirements:

Floors:

Walls:

Ceilings:

Doors:

Millwork:

Windows:

Special Req.:

WOOD CONTENT

Priority:

Low Medium High

Remarks:

FURNITURE/EQUIPMENT FIXED

Work Surfaces:

Storage Components:

Equipment:

FURNITURE/EQUIPMENT MOVEABLE

Equipment:

Shelving:

Furniture:

FLOOR AREA 225 m²

CRITICAL DIMENSIONS

- Length
- Width
- Ceiling Height

ACCESS

Public Private Restricted

TIME IN USE Day
 Evenings
 Weekends

SECURITY

Doors (*Intercom/Card Reader*):

Lockset Control (*Passage/Privacy*):

Cameras (*Required or Not/Sound Capable/Other*):

AIR QUALITY

Ventilation Normal Special

Purity Normal Special

Temperature Normal Special

Humidity Normal Special

Room Pressurization Normal Special

Can air be returned to system?

Remarks:

SANITARY FITTINGS

WC/Lav. Normal Special

Urinal Normal Special

Sink Normal Special

Shower Normal Special

Other (*e.g. eye wash station, H/C access*):

A. ACADEMIC COMPONENT

PLUMBING DATA

Water:

- Dom. HW Temp.
- Dom. CW Temp.
- Special Water
- Individual/Area Shutoff

Gases:

- Natural Gas
- Shop Compressed
- Air

Drainage:

- Sanitary
- Grease
- Acid
- Oil
- Floor Drain
- Solvents

LIFE SAFETY

- Fire Suppression Sprinkler System
- Other Extinguishing Systems

LIGHTING

- Incandescent Direct Indirect
Fluorescent Direct Indirect

Other: Task Lighting

Lux Level:

LIGHTING CONTROL

- Wall Switch Occupancy Sensor
- Daylight Sensor Dimmer
- Controlled by Staff Controlled by Anyone

DAYLIGHTING

- Direct Sun Daylight
- Skylight None

POWER

- Wall Normal Special
Floor Normal Special
GFI Normal Special
UPS Tie-in
Other: (e.g. special voltage)

COMMUNICATIONS

- Telephone Intercom
- Public Address Multi-Media
- Clock

COMPUTER

- Internal Network External Network
- Computer Terminal

ACOUSTICAL

- Isolated STC- Other

FITTINGS

Rails (*grab or towel*):

Racks (*wall mounted, fixed open storage*)

Curtain Tracks (*window, shower, other*)

Hooks (*clothes, ceiling or wall mounted*)

Screens (*projection, acoustic, other*)

Blinds (*window, black-out, other*)

Boards (no. & size) [*bulletin, chalk, whiteboard, magnetic, peg, key, other*]

NOTES/REMARKS/OTHER CONSIDERATIONS

This area can be split into two spaces with a minimum of 75 m² existing on the ground level with the remainder of the area located on the top level.

WIDC

*Design Requirements
Room Data Sheets*

APPENDIX 1F: UNBC SUPPLEMENTAL CONSTRUCTION SPECS

Introduction

This document provides references and supplemental specifications related to construction of UNBC campus facilities. The referenced sections are located in the specifications from three separate UNBC construction projects:

- Original campus construction
- Teaching and Learning Building
- Bioenergy Facility

These specifications have been uploaded to the UNBC file transfer portal and are available to the project team for download. This information is provided for reference only in relation to facilities that have previously been constructed to UNBC standards. Due to the specific requirements of this building, its shared nature, and the fact that it will be operated independent of UNBC's main campus, the specifications have been drawn from a number of sources as we try to address only those that are applicable.

Classification of Specifications

UNBC has provided a number of specifications to assist in specifying the proposed building. To aid in the interpretation of these specifications, the following convention has been adopted to indicate the level of importance placed on each specification by UNBC:

- [M]Mandatory –things that are required for UNBC to occupy the building
- [P] Preferred – Would be in keeping with other UNBC space, maintain a common look
- [R] Reference – Information that UNBC has available, and is providing as a resource for the development of the building, but is only a suggestion

Operations and Maintenance

Specific concerns that have been raised through consultation with the Facilities Management Department at UNBC include:

- Lecture theatre adjacency: due to the shared functionality of this room, it should be located in a common area that provides access independent of UNBC Space;
- Computer network: require a separate physical network within the program area used by UNBC;
- Access control: card (electronic) access control will be required, elevator to include card access to floors, Chubb AFX;
- Lighting: reference LED rather than incandescent or halogen;
- Public address: needed for emergency notification;
- Hydronic heating: secondary loop required for hot water distribution within the building.

Specification References

06200 Cabinet Millwork [P]

Plastic laminate tops with 100mm splash guard.
White birch veneer exterior.
Melamine interior surfaces.
Brushed nickel pulls with 96mm screw centres.
Brushed nickel 170 degree concealed hinges.
Recessed brushed nickel shelf pilasters.
Brushed nickel full extension drawer slides.

08210 Doors [M]

Rotary cut birch veneer.
Clear finish.
44mm thick with solid core.
Bonded, sanded core frame assembly.
Welded steel frame

08710 Hardware [P]

Hardware:

- | | |
|--|---|
| - Hinges | McKinney T2714 or PeeBee BB81 |
| - Cylinders | Corbin Russwin 6 pin I/C 59C2 no substitutions |
| - Locksets | Corbin Russwin ML2200 no substitutions |
| - Electronic Mortise Lock | Corbin Russwin ML20905 LWA C6 59C2 M92 630 12VDC |
| - Classroom/Lecture | Corbin Russwin ML2002 LWA C6 59C2 630(If Electronic Not Used) |
| - HC washrooms | Corbin Russwin ML2030 LWA 630 |
| - Lock Trim | Corbin Russwin LWA no substitutions |
| - Closers | Norton 8500 or LCN 4040 |
| - Panics | Detex Advantex no substitutions |
| - Coordinators | Rixon or Glynn Johnson |
| - Weather Strip,
Thresholds | Pemco or AK Draftseal |
| - Push Plates, Pulls,
Protective Plates | Gallery or Standard Metal |
| - Overhead Stops | Norton or Rixon |
| - Electric Strikes | HES no substitutions |
| - Flush Bolts | Gallery or Standard Metal |
| - Auto Operators | Stanley Magic Force no substitutions |

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09600 Floor Finishes

Carpet [R] - Install in traffic areas such as halls and offices to reduce noise. Dominator 3G colour 176809 Florite - by Kraus.

Carpet Tile [R] - InterFace Flor – colour 2927 Arc, 2929 Contour or 3066 Optical
Forbo Flotex Flocked Flooring -color: Penang 382037 for VC enabled rooms,
all other areas are Architect's choice.

Resilient Flooring [R] – Forbo Marmoleum/Artoleum/Walton -color: Architects choice

Baseboards [R] – 4" Vinyl medium grey.

Concrete[P]:

Non slip finish.

Hardener – mineral 2 shake application mineral hardener – Diamag 7 by Sika Canada.

Floor Sealer – medium gloss acrylic resin compound – Flortec 22 by Sika Canada.

Slate Tile [P]: Vermont custom gauged slate, as distributed by Pamas Slate and Stone Supplies

- Grade A unfading slate
- 305mm x 305mm x 6mm
- Square edge
- Cleft finish
- Jade Green Dark
- Located on floors; field and inset with polished concrete

09700 Walls [R]

Interior Partition – Wood 2x4 stud @ 600mm O.C. with 16mm gypsum board each side. Add fiberglass insulation and additional layers of 16mm gypsum board for sound reduction.

10110 Writing Boards and Tack Boards [R]

Writing Boards

- Sheet steel, magnetic surface with zinc coating.
- Sliding panel frames to be Shanahan's or equivalent complete system.
- Map rails – Shanahan's Series 100, extruded aluminum profile continuous across to of writing board, complete with 6mm cork insert and plastic ends.
- Chalk troughs – Shanahan's series 100, extruded aluminum profile continuous along bottom of writing board, open ends.
- Clean anodic finish on all exposed aluminum surfaces.
Porcelain enamel is washable surface for chalk use: black colour, surface for dry marker use: low glare white.
- Panels to allow handling and installation without field joining.

Tack Boards

- Tackboards to be natural fine grained cork laminated to fiberboard.
- Remainder of materials to match writing boards above.

10220 Operable Walls [R]

Panel Construction:

- Panel frames 83mm thick by maximum 1220mm wide. All framing elements made from formed steel. Fabricate frame with overlapped and welded corners to create rigid structure independent of panel skin. Skin panel construction to be “wrap around” style without vertical trim on panel face and astragal seal, provide a minimum groove appearance at vertical panel joints. Insulate panels to provide acoustical performance and rigid backing for skin.
- Provide vertical interlocking sound seals between the panels at each panel edge with a reversible tongue and groove configuration to permit universal panel operation. Astragals shall be constructed of steel, no plastic astragals are permitted.
- Horizontal top seals to be continuous extruded vinyl bulb type with pairs of non contacting vinyl fingers.
- Horizontal floor seals to be mechanical edge operable with a 64mm operating clearance with a range of + 13mm to – 38mm. Seals shall drop when panels are positioned.
- Provide standard expanding closure panel and stowaway type non-acoustically rated type III pocket door.

Operation:

- Operable walls shall consist of groups in pairs of top supported, hinged, and manually operated steel panels. Panel wall to have manually operated bottom seal mechanism.
- Panel pairs to be equipped with full leaf butt hinges attached directly to the panel frame. Support hinge mounting to frames with welded hinge anchor plates within the panels. Do not mount hinges into panel edge or vertical astragal.

Acceptable Types:

- Acousti-seal paired panel model 932 by Modernfold.
- Model 6563 paired panel by Hufcor.

12000 Furniture [M]

Desks:

Manufactured by Calstone Inc.
Greenguard certified.
High percentage recycled content.
Modular furniture system.
UNBC green colour plastic laminate tops with black hardware.
Attached underdesk office supply/filing cabinet.
Adjustable ergonomic keyboard tray and mouse tray.

Tables:

Manufactured by Calstone Inc.
Greenguard certified.
High percentage recycled content.
UNBC green colour plastic laminate tops with black hardware.

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Chairs:

Meeting Room: Manufactured by American Seating. Purchased through Gunnar Pacific. Complete with arms, carpet casters and pneumatic hardware, low back style, height adjustable, black fabric upholstery with black fittings.

Guest Chair: Manufactured by American Seating. Purchased through Gunnar Pacific. No arms, sled base non adjustable, low back style, black fabric upholstery with black fittings.

Classroom Chair: Manufactured by American Seating. Purchased through Gunnar Pacific. Non adjustable, stackable, low back style, UNBC green PVC seat and back, chrome fittings.

Special Occasion/Conference Services Chair: Manufactured by American Seating. Purchased through Gunnar Pacific. Non adjustable, stackable, low back style, UNBC green fabric seat and back, chrome fittings.

Cafeteria Chair: Manufactured by American Seating. Purchased through Gunnar Pacific. Non adjustable, stackable, low back style, black PVC seat and back, chrome fittings.

Task Chair: Manufactured by and ordered from Ardent Manufacturing, model 8612-CSX with height adjustable t-arms, carpet casters, adjustable for back height, back tilt angle, seat angle, seat height and seat slider. Mid back (16"), lumbar support. UNBC green fabric seat and back, black fittings.

Office Chair: Manufactured by and ordered from Ardent Manufacturing, model 8662-CSX with height and width adjustable t-arms, carpet casters, adjustable for back height, back tilt angle, seat angle, seat height, and seat slider. Mid back (17.5"), lumbar support. UNBC green fabric seat and back, black fittings.

Bookcase:

80" tall x 30" wide x 12" deep.
5 shelves ¾" thick, 4 adjustable and one fixed.
Birch veneer with matching birch backing board.

Filing Cabinets:

9100 Plus Lateral Cabinet by Office Plus.
36" wide, 18" deep, height varies dependant on number of drawers.
Steel with black finish.

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Lecterns:

- White birch veneer exterior with adjustable height top.
- Integral A/V rack with conduits for A/V.
- Top will have power point with A/V connection panel.
- User adjustable task lights.

Standard Office Furniture:

Typical office furniture includes:

- 1 – desk
- 1 – two drawer filing cabinet
- 1 – bookcase for staff (or 2 bookcases for faculty)
- 1 – office chair
- 1 – guest chair
- 1 – bulletin board
- 1 – white board
- 1 – trash bin

Department heads may also receive a small meeting table with 2 to 4 additional guest chairs.
Admin areas may also receive extra 4 drawer cabinets as required.

Standard Classroom Furniture:

- Tables to be minimum 24" deep by 72" long with two student chairs.
- Computer tables to include integral cable tray c/w cover with brush type cable slot and adjustable mouse/keyboard tray.

15410 Backflow Preventer Assemblies [R] UNBC and [M] City of PG

- Provide backflow preventer assembly complete with shut-off valves before and after check valves and test cocks. Assembly shall meet current AWWA requirements and CSA B64 standards.
- Provide complete reduced pressure principle type assembly, consisting of pressure differential relief valve, located between two (2) positive seating replaceable check valves with stainless steel or bronze seats Watts No. 909. Provide strainer between gate valve and first check valve on units 50 mm 2 in. and smaller.
- Provide complete double check valve type assembly consisting of two (2) positive sealing replaceable check valves with stainless steel or bronze seats. Provide check valve on units 50 mm 2 in. and smaller. Watts No. 709.
- Provide complete atmospheric vent backflow preventer assembly, consisting of two (2) positive sealing replaceable check valves with bronze seats, integral strainer and threaded vent connection. Watts No. 9D.

May 3, 2012

15450 Sinks for Labs and Lounges [R]

Stainless steel with ledge.
Chrome deck mounted faucet with gooseneck spout.
Chrome Vandal resistant outlet.
Chrome lever handles at 200mm centers, 2.0 gpm.
Stainless steel strainer basket.
Chrome quarter turn mini valves, wall escutcheons, and supply tubes.

16231 Engine Generator [M]

See BIO 16231 specification

16721 Fire Alarm System [P]

See BIO 16721 specification.

16810 Building Management System [P]

See BIO 16810 specification.

UNBC Recycling Program [M]

See the Recycling Narrative document created for the UNBC Bioenergy Building.

UNBC Lecture Theatre Audio Visual [R]

See UNBC Lecture Theatre Audio Visual specifications document which includes technical information on:

- JVC SR-DVM700U DVD Recorder
- RGB-DVI 300, RGB-HDMI 300 A
- Panasonic Large Venue Projectors
- FOXBOX DVI Plus Series

SCHEDULE 2

REVIEW PROCEDURE

1. SUBMITTAL SCHEDULE

- 1.1 The parties agree that the preliminary schedule for Submittals (the "Submittal Schedule") is included in the Proposal Extracts. The Submittal Schedule may be amended by agreement of the parties in accordance with the terms of this Section 1. Any amendment to the Submittal Schedule will provide for a progressive and orderly flow of Submittals from the Design-Builder to the Owner as appropriate to allow sufficient time for review of each Submittal by the Owner, taking into account both the resources necessary to be available to the Owner to conduct such review and any user group consultations.
- 1.2 Unless a longer period is required by this Agreement or is otherwise reasonably required by the Owner, the Submittal Schedule will allow a minimum of:
- (a) 15 Business Days for review of Submittals submitted in relation to the Design pursuant to this Schedule, or
 - (b) 10 Business Days for other Submittals,
- from the date of receipt for review of and response to each Submittal, provided that if the Design-Builder has made major changes to the grouping and volume of Submittals, such period of time will be adjusted, acting reasonably, taking into account the factors set forth in this Section 1.
- 1.3 The Design-Builder will in scheduling Submittals and in the performance of the Design and the Construction, allow adequate time prior to performing the Design and the Construction that are the subject of the Submittals, for review of the Submittals and for the Design-Builder to make changes to the Submittals, the Design and the Construction that may be required if comments are received on the Submittals.
- 1.4 If the Submittal Schedule indicates that a large number of Submittals will be made at one time, the Owner may request a longer period for review or a staggering of the Submittals, and the Design-Builder will revise the Submittal Schedule accordingly, taking into account both the availability of resources required by the Owner to conduct such review and whether delay in the review of the subject matter of the Submittal will have a material impact on the Design-Builder's ability to progress future anticipated Submittals and the Design or Construction in accordance with the Time Schedule.
- 1.5 The Design-Builder will submit the current Submittal Schedule, including amendments, to the Owner on a monthly basis until the Substantial Completion Date of the Project is achieved.
- 1.6 All amended Submittal Schedules will be required to meet all the requirements of this Section 1.
- 1.7 The Design-Builder will submit all Submittals to the Owner in accordance with the current amended Submittal Schedule.
- 1.8 The Design-Builder will bear the risk of delays and additional costs caused as a result of the late submission of Submittals to the Owner, by Submittals which are rejected and required to be re-submitted in accordance with the terms of this Schedule 2 – Review Procedure, or by changes in the Design and Construction required as a result of comments made pursuant to this Schedule 2 – Review Procedure.

2. GENERAL REQUIREMENTS FOR SUBMITTALS

- 2.1 Unless otherwise specified by this Agreement or by the Owner, the Design-Builder will issue 5 printed copies of all Submittals to the Owner, together with an electronic copy in a format agreed by the parties acting reasonably.
- 2.2 The Design-Builder will compile and maintain a register of the date, contents and status of the submission of all Submittals, including the date of receipt and content of all returned Submittals and comments thereon.
- 2.3 All Submittals will be in English.
- 2.4 All Submittals required by this Agreement or by applicable Law to be signed or sealed by persons with professional designations (including where applicable by registered professional architects or engineers) will be so signed and, where applicable, sealed, and will include confirmation by such person or persons that the Work proposed by the Submittal meets the requirements of the Agreement, including the Statement of Requirements.
- 2.5 All Submittals will include all documents to be reviewed and will clearly identify the purpose of the Submittal, the Design-Builder's proposed course of action relating to the Submittal and the Design and the Construction that are the subject of the Submittal.
- 2.6 All Submittals will refer to the relevant provisions of Schedule 1 – Statement of Requirements and to any matter that has previously been subject to review.
- 2.7 All Submittals will be clearly identified as a Submittal and will be delivered with appropriate covering documentation, which will include a list of all attached Submittals and for each Submittal: the document number(s) or drawing number(s); revision numbers (if applicable); document or drawing title(s); name of entity that prepared the Submittal; the Submittal history showing date and delivery information and/or log number of all previous submissions of that Submittal; identification of any previous Submittal superseded by the current Submittal; and a description of the portions of the Submittal that are the subject of review.

3. COMMENTS

- 3.1 The Owner will review and respond to each Submittal in accordance with the applicable time periods for the Submittal.
- 3.2 The Owner will return Submittals to the Design-Builder and assign one of the following 3 comments:
 - (a) "REVIEWED";
 - (b) "CORRECT DEFICIENCIES"; or
 - (c) "REJECTED".
- 3.3 The comment "REVIEWED" will be assigned to those Submittals that, in the opinion of the Owner, acting reasonably, conform to the requirements of this Agreement. The Design-Builder will comply with and implement such Submittals.
- 3.4 The comment "CORRECT DEFICIENCIES" will be assigned to those Submittals that, in the opinion of the Owner, acting reasonably, generally conform to the requirements of this Agreement, but in which minor deficiencies have been found and identified by the Owner's

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review. The Design-Builder will to the extent necessary correct these Submittals and provide a copy of such Submittals to the Owner before the Design-Builder implements the portions of such Submittals that have received comments, but may proceed on the portions of such Submittals that have not received comments. The Design-Builder will comply with and implement such corrected Submittals. If at any time it is discovered that the Design-Builder has not corrected the deficiencies on Submittals that were correctly stamped "CORRECT DEFICIENCIES", then the Design-Builder will be required to modify the Submittals and the relevant Design and the Construction as required to correct the deficiencies and the Design-Builder may be required, at the Owner's discretion, acting reasonably, to resubmit relevant Submittals.

- 3.5 The comment "REJECTED" will be assigned to those Submittals that, in the opinion of the Owner, acting reasonably, contain significant deficiencies or do not conform with the requirements of this Agreement, including this Schedule 2 – Review Procedure. The Design-Builder will correct and re-submit these Submittals within 10 Business Days after the comment has been provided to the Design-Builder. The Owner will then review such corrected Submittals and assign a comment to the corrected Submittal. The Submittals will be corrected, revised and resubmitted as often as may be required to obtain a comment that permits the Design-Builder to proceed. Except with the written consent of the Owner, the Design-Builder will not proceed with any Construction to which such Submittals receiving the comment "REJECTED" relate until the Design-Builder obtains a comment that permits the Design-Builder to proceed.
- 3.6 The Owner may request additional time for the review of any Submittal, including where the Submittal is voluminous or requires extensive review by representatives (including consultants) of the Owner, and the Design-Builder will extend such time for any reasonable requests by the Owner.
- 3.7 If the Owner does not respond to a Submittal within the applicable time periods for the Submittal, the Submittal will be deemed "REVIEWED" and the Design-Builder may proceed with and implement the Design and the Construction on the basis set forth in the applicable Submittal without any further action or documentation required.
- 3.8 Where the Owner issues the comment "CORRECT DEFICIENCIES" or "REJECTED", the Owner will provide reasons for the comment, referencing the particulars of the Section(s) of the Agreement (including the Statement of Requirements) that the Submittal fails to satisfy, and if requested by the Design-Builder, the Owner will meet with the Design-Builder to discuss the reasons for the comment.
- 3.9 If at any time after assigning any comment to a Submittal or where Section 3.7 of this Schedule has applied, the Owner or the Design-Builder discovers deficiencies or any failure to conform to the requirements of this Agreement, the Owner may revise the comment assigned to any Submittal. If the parties agree or it is determined in accordance with Section 61 (Dispute Resolution) that the revised comment is correct, the Design-Builder will make all such corrections to the Submittals and the Design and the Construction.
- 3.10 For the purpose of facilitating and expediting the review and correction of Submittals, the Owner's Representative and the Design-Builder's Representative will meet as may be mutually agreed to discuss and review any outstanding Submittals and any comments thereon.
- 3.11 In lieu of returning a Submittal, the Owner may by letter notify the Design-Builder of the comment assigned to the Submittal and if such comment is "CORRECT DEFICIENCIES" or "REJECTED" the letter will contain comments in sufficient detail for the Design-Builder to identify the correction sought.

4. DISPUTES

- 4.1 If the Design-Builder disputes any comment issued by the Owner in respect of a Submittal, including on the basis that the comment is or would result in a Change, the Design-Builder will promptly notify the Owner of the details of such Dispute and will submit the reasons why the Design-Builder believes a different comment should be assigned, together with appropriate supporting documentation. The Owner will review the Submittal, the reasons and supporting documentation and within 7 Business Days after receipt thereof will either confirm the original comment or notify the Design-Builder of a revised comment. Nothing in this Section 4 will limit either party's right to refer a Dispute for resolution in the first instance to the Owner's Consultant under Section 61 (Dispute Resolution).

5. EFFECT OF REVIEW

- 5.1 Any review of and comment by the Owner on any Submittals are for general conformity to the obligations and requirements of this Agreement, and any such review and comment will not relieve the Design-Builder of the risk and responsibility for the Design and the Construction and for meeting all of its obligations and requirements of this Agreement, and will not create any new or additional obligations or liabilities for the Owner. Without limiting the generality of the foregoing any and all errors or omissions in Submittals or of any review and comment will not exclude or limit the Design-Builder's obligations or liabilities in respect of the Design or the Construction under this Agreement or exclude or limit the Owner's rights in respect of the Design and the Construction under this Agreement.

6. SUBMITTAL EXPLANATION

- 6.1 At any time, the Owner may, acting reasonably, require the Design-Builder, including the Design-Builder's Consultant, Subcontractors and any other relevant personnel, at no additional cost to the Owner, to explain to the Owner and the Owner's advisors the intent of the Design-Builder's Submittals, including in relation to any design and any associated documentation and as to its satisfaction of the Statement of Requirements.

7. REVISIONS

- 7.1 The Design-Builder will ensure that Submittals keep the same, unique reference number throughout the review process, and that all subsequent revisions of the same Submittal are identified by a sequential revision number. Correspondence related to such Submittal will reference the reference number and revision number.
- 7.2 Re-submittals will clearly show all revisions from the previous Submittal. Bound documents, including reports and manuals, will contain a preface that clearly states how revisions are marked and the previous revision number against which the revisions have been marked. A consistent format for mark-ups of documents will be used (e.g. deletions struck out and additions underscored). Revised portions of drawings will be clearly marked (with appropriate means to visually distinguish between the parts of the drawing that are revised and the parts that are not revised) and the revision number and description of the revision will be included on the drawing.
- 7.3 All revisions on print media will be initialled by hand by the individual designer, design checker and, where applicable, by the drafter and the drafting checker and will identify the persons who initialled the Submittal. Electronic versions of the Submittal will identify the persons who initialled the revisions to the printed version of the Submittal.
- 7.4 The Design-Builder will keep all Drawings and Specifications current. If any Drawings and Specifications are revised as part of a Submittal, all other Drawings and Specifications relying on

or based on those Drawings and Specifications will also be revised accordingly. All such revised Drawings and Specifications will also be submitted with the Submittal to which it relates.

8. AUDIT BY THE OWNER

- 8.1 Without limiting any other right under the Agreement, the Owner will have the right to audit all Submittals, including comparing all Submittals to previous Submittals.
- 8.2 If during an audit or at any other time it is discovered by the Owner or the Design-Builder that any Submittals were not correctly implemented, the Design-Builder will at its sole cost immediately take all necessary steps to correct and modify the applicable Submittals and the Design and Construction to which they relate and will advise the Owner of all such corrections and modifications.

SCHEDULE 3

INSURANCE CONDITIONS

Without restricting the generality of the indemnification provisions in Section 56 (Indemnification), insurance and coverage will be arranged and paid for as follows:

1. WRAP-UP LIABILITY INSURANCE

- 1.1 The Owner will provide, maintain and pay for Wrap-up Liability Insurance with a limit of [REDACTED] inclusive per occurrence, [REDACTED] general aggregate for bodily injury, death, and damage to property including loss of use thereof, product/completed operations liability with a limit of [REDACTED] aggregate.
- 1.2 This insurance will cover the Owner, Design-Builder & Subcontractors, Architects, Professional Engineers, consultants and anyone employed by them to perform a part or parts of the Work (includes both Construction and Design services, but excludes all professional services, under this Agreement) but excluding suppliers whose only function is to supply and/or transport products to the project site or security protection persons or organizations providing site protection on or at the insured project. The insurance does not extend to any activities, works, jobs or undertakings of the insureds other than those directly related to the Work of this Agreement.
- 1.3 The insurance will preclude subrogation claims by the insurer against anyone insured hereunder.
- 1.4 The insurance will include coverage for:
- (a) Products or Completed Operations Liability [REDACTED]
 - (b) Cross Liability (or Severability of Interests);
 - (c) Limited Pollution Liability [REDACTED];
 - (d) Broad Form Tenants Legal Liability [REDACTED]
 - (e) Operation of Attached Machinery; and
 - (f) Forest Fire Fighting Expenses [REDACTED])
- 1.5 Any applicable deductibles will not exceed [REDACTED] except with respect to loss or damage arising from hot roofing operations where the deductible will not exceed [REDACTED].
- 1.6 This insurance will be maintained continuously from commencement of the Work until the date of final certificate for payment is issued or when the insured project is completed and accepted by or on behalf of the Owner, whichever occurs first, plus with respect to completed operations cover a further period of [REDACTED].

2. PROFESSIONAL LIABILITY INSURANCE

- 2.1 The Design-Builder or the Design-Builder's Consultant during the term of this Agreement will provide and maintain continuously from the commencement of the Work, until 2 years after the

Substantial Completion Date, the following insurance which will be placed with such company or companies and in such form and amounts and with such deductibles as may be acceptable to the Owner:

- (a) Professional Errors and Omissions Liability Insurance protecting the Design-Builder or the Design-Builder's Consultant, sub-consultant(s) and their respective servant(s), agent(s) or employee(s) against any loss or damage arising out of the Design services under this Agreement. Such insurance will be for the adequate amount acceptable to the Owner and will in any event be not less than:
 - (i) For construction valued at \$0.00 to \$2.5 million: [REDACTED] per claim;
 - (ii) For construction valued at \$2.5 million to \$7.5 million: [REDACTED] per claim;
 - (iii) For construction valued at \$7.5 million to \$15.0 million: [REDACTED] per claim;
 - (iv) For construction valued over \$15.0 million to \$30.0 million: [REDACTED] per claim; and
 - (v) For construction valued over \$30.0 million to \$75.0 million: [REDACTED] per claim.

Structural, mechanical, electrical and civil sub-consultants coverage is to be based on the value of their scope of work. All other specialty Consultants to carry a minimum [REDACTED] Errors and Omissions Insurance despite the value of their scope of work.

2.2 If coverage is provided by the Design-Builder's Consultant, then such Professional Errors and Omissions Liability Insurance will not contain a "Design-Build" exclusion.

3. PROPERTY COVERAGE INSURANCE

3.1 The Owner shall provide, maintain and pay for Course of Construction coverage, against "All Risks" of physical loss or damage, and will cover all materials, property, structures and equipment purchased for, entering into, or forming part of the Work whilst located anywhere within Canada and continental United States of America (excluding Alaska) during construction, erection, installation and testing, but such coverage shall not include coverage for Design-Builder's equipment of any description. Such coverage shall be maintained until Substantial Completion Date. There will be a deductible of [REDACTED] for each and every loss on projects valued at less than Ten Million Dollars (\$10,000,000.00) and a deductible of [REDACTED] on projects valued at more than Ten Million Dollars (\$10,000,000.00) except for earthquake which shall have a five percent [REDACTED] (subject to minimum [REDACTED] deductible based upon the total project value insured. A one day waiting period for each month of the project subject to a minimum waiting period of 30 days shall apply with respect to soft costs.

3.2 The coverage will include as insureds the Design-Builder, Subcontractor, Architect, Professional Engineer or other consultants who are engaged in the Project.

3.3 The coverage will contain a waiver of the Owner's rights of subrogation against all insureds except where a loss is deemed to have been caused by or resulting from any error in design or any other professional error or omission, or manufacturers (not employees of the Owner).

3.4 The Design-Builder will, at his own expense, take special precaution to prevent fires occurring in or about the Work and will observe, and comply with, all insurance policy warranties and all laws and regulations in force respecting fires.

4. AUTOMOBILE LIABILITY INSURANCE

- 4.1 The Design-Builder will provide, maintain and pay for, and require all Subcontractors to provide, maintain and pay for Automobile Liability Insurance in respect of all owned or leased vehicles, subject to limits of not less than [REDACTED] inclusive per occurrence. The insurance will be placed with such company or companies and in such form and deductibles as may be acceptable to Owner.

5. AIRCRAFT AND/OR WATERCRAFT LIABILITY INSURANCE

- 5.1 The Design-Builder will provide, maintain and pay for liability insurance with respect to owned or non-owned aircraft and watercraft if used directly or indirectly in the performance of the Work, subject to limits of not less than [REDACTED] inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof and including Aircraft Passenger Hazard where applicable. The insurance will name the Owner as an additional insured, include a cross liability clause, be endorsed to provide the Owner with 30 days' advance written notice of cancellation and be placed with such company or companies and in such form and deductibles as may be acceptable to Owner.

6. CONTRACTORS POLLUTION LIABILITY INSURANCE

- 6.1 When applicable, the Design-Builder (or Design-Builder's Subcontractors) will require all Subcontractors to provide, maintain and pay for:

- (a) Contractors Pollution Liability insurance with limits not less than [REDACTED] per occurrence for bodily injury, death, and damage to property including loss of use thereof. Such insurance will include all operations associated with hazardous materials clean-up, removal and/or containment, transit and disposal; or
- (b) Asbestos Abatement Liability coverage stated under the Design-Builder's or Subcontractor's Commercial General Liability insurance coverage with limits no less than [REDACTED] per occurrence for bodily injury, death, and damage to property including loss of use thereof. Such insurance will include all operations associated with hazardous materials clean-up, removal and/or containment, transit and disposal.

- 6.2 Any insurance required under this Section 6 must name the Owner as an additional insured, include a cross liability clause and be endorsed to provide the Owner with 30 days' advance written notice of cancellation. If any such insurance is provided on a claims-made basis and that insurance is cancelled or not renewed, such policy must provide a 24 month extended reporting period. The Design-Builder must cause all Subcontractors to provide to the Owner a Certificate of Insurance confirming all policies and endorsements necessary to comply with the insurance requirements outlined herein, or upon request, provide a certified copy of the required insurance policy.

7. GENERAL

- 7.1 The description of the Owner arranged insurance described herein is provided on a summary basis only and is not a statement of the actual policy terms and conditions. The Owner does not represent or warrant that the Owner arranged insurance contains insurance for any and all losses. It is the Design-Builder's responsibility to ascertain the exact nature and extent of coverage provided by the Owner arranged insurance, to review all policies pertaining thereto and to obtain any other insurance that it may be prudent for the Design-Builder to obtain.

- 7.2 The Design-Builder will also provide, maintain and pay for any other insurance that the Design-Builder is required by law to carry, or which the Design-Builder considers necessary.
- 7.3 Unless specified otherwise, the duration of each coverage and insurance policy will be from the date of commencement of the Work until the date of final certificate for payment.
- 7.4 The Owner will, upon request, provide the Design-Builder with proof of insurance of those coverages and insurances required to be provided by the Owner prior to commencement of the Work and subsequent certified copy of policies within a reasonable time period thereafter.
- 7.5 The Design-Builder and/or its Subcontractors, Design-Builder's Consultants and sub-consultants as may be applicable, will be responsible for any deductible amounts under the policies of coverage and insurance except for perils of flood and earthquake.
- 7.6 The Design-Builder will provide the Owner with proof of insurance for those insurances required to be provided by the Design-Builder (or Design-Builder's Consultant) prior to the commencement of the Work in the form of a completed Certificate of Insurance and will also provide a certified copy of any required policies upon request.
- 7.7 The Owner will not be responsible for injury to the Design-Builder's employees or for loss or damage to the Design-Builder's or to the Design-Builder's employees' machinery, equipment, tools or supplies which may be temporarily used or stored in, on or about the premises during construction and which may, from time to time, or at the termination of this Agreement, be removed from the premises. The Design-Builder hereby waives all rights of recourse against the Owner or any other contractor with regard to damage to the Design-Builder's property.

SCHEDULE 4

COMMUNICATION ROLES

The Owner and the Design-Builder will share responsibilities for communications, including community relations, stakeholder consultation, media relations and emergency communications on the terms set out in this Schedule.

1. GENERAL

- 1.1 The Design-Builder will be guided by the Owner's best practices regarding communications. Unless otherwise specified by the Owner, the governing document relating to best practices will be the disclosure guidance document entitled "Procurement Related Disclosure for Public Private Partnerships" posted at www.Partnershipsbc.ca.
- 1.2 The Design-Builder will consult and cooperate with the Owner regarding communications activities relating to the Project.
- 1.3 The desired outcome of communications activities is to inform and involve the public and other stakeholders about the progress, value and benefits of the Project and to develop and maintain support for the Project.
- 1.4 Communications strategies and plans involving the interests of both parties are to be prepared on a joint basis, with one party taking a lead role and the other a supporting role, as described in this Schedule.
- 1.5 Where communications strategies and plans involve the interests of both parties, each party will give the other a reasonable opportunity (taking into account the need for timely communications) to consider communications strategies and plans initiated by the other and, if information is supplied by a party, it should include or be accompanied by sufficient explanatory or other material to enable the information to be properly considered.
- 1.6 The Design-Builder will consider and, acting reasonably, take into account, public and other stakeholder input in regard to its plans for the Design and Construction.
- 1.7 This Schedule is a guideline and may be amended by mutual agreement. Non-compliance with this Schedule by either party will not constitute a breach of this Agreement.
- 1.8 No communication regarding the subject matter of a Dispute, including one resolved under Section 61 (Dispute Resolution), will be made without the prior written consent of the Owner or the Design-Builder, as the case may be, unless otherwise ordered under the Dispute resolution procedure.
- 1.9 The Design-Builder acknowledges that FIPPA applies to the Owner, that nothing in this Schedule limits any requirements for compliance with FIPPA and that the Owner may be required to make disclosure of information under FIPPA.
- 1.10 The Design-Builder acknowledges that the Owner will be free to disclose (including on Websites) this Agreement and any and all terms hereof, except for those portions that would not be required to be disclosed under FIPPA. The Owner will consult with the Design-Builder prior to such disclosure.

- 1.11 Except for Section 1.10, this Schedule is subject to the parties' obligations in respect of Confidential Information pursuant to Section 64 (Confidentiality and Communications) of this Agreement.

2. CATEGORIES OF COMMUNICATIONS

The following categories of communications are covered by this Schedule and each category applies during the Construction period:

- (a) Communications Planning: the Design-Builder will be provided with a copy of parts of the plan applicable to this project and will support the implementation of the strategies and activities listed in it;
- (b) Community Relations: keeping all key audiences (as identified in communications plans) informed, including providing overall Project information, including information about schedule, design, construction (including traffic management), facilities management and other services, using any and all appropriate communications tools and tactics;
- (c) Consultation: engaging in discussions with Project stakeholders;
- (d) Media Relations: providing media with Project updates and responding to issues raised by the media; and
- (e) Emergency Communications: preparing and implementing crisis communications planning and preparedness.

3. LEAD AND SUPPORTING ROLES

- 3.1 Within each category of communications set out in Section 2 of this Schedule, the Design-Builder will play either a lead or supporting role, working with the Owner to achieve the desired communications outcomes.
- 3.2 For all categories of communication, and whether communication occurs as part of a lead or supporting role, no advertising that involves payment, by the Design-Builder, to a third party may include the Owner or the Project unless the Design-Builder obtains the prior consent of the Owner, not to be unreasonably withheld or delayed.

4. LEAD RESPONSIBILITIES

The following is an overview of the responsibilities associated with lead roles:

- (a) developing an overall strategic communications plan for the Project, that includes plans for communications, community relations, consultation, media relations and emergency communications;
- (b) having regard for the input of the supporting party, approving communication plans and tactics in response to specific circumstances, unless otherwise indicated in this Schedule;
- (c) implementing its role in approved plans;
- (d) achieving the outcomes set out in the strategic communication plan;
- (e) maintaining constructive and positive relationships with the public and other stakeholders;

- (f) providing information, as required by the supporting party and its team members, to support communication and consultation activities;
- (g) as relevant to its lead role, organizing, attending and participating in community and other stakeholder consultation meetings and carrying out other communication activities to consult with and report back to the community and other stakeholders, including open houses, information updates, public displays, advertising, website creation, maintenance updates, construction notices, milestone celebration events, news releases and tours, and directing inquiries to the supporting party as appropriate;
- (h) assuming responsibility for costs related to carrying out lead responsibilities to a standard acceptable to the Owner, in the amounts and in the manner approved by the Owner;
- (i) monitoring whether the Design and Construction are conducted in a manner consistent with strategic communication plans and advising the parties of any material inconsistency; and
- (j) having a trained media relations spokesperson available 24/7 to respond to media requests.

5. SUPPORTING RESPONSIBILITIES

The following is an overview of the responsibilities associated with supporting roles:

- (a) assisting with the implementation of plans, including drafting of other communication documents, as directed by the lead party;
- (b) implementing its role in approved plans;
- (c) maintaining constructive and positive relationships with the public and other stakeholders;
- (d) providing information, as required by the lead party and its team members, to support communication and consultation activities;
- (e) as relevant to its supporting role, organizing, attending and participating in community and other stakeholder consultation meetings and carrying out other communication activities to consult with and report back to the community and other stakeholders, including open houses, information updates, public displays, advertising, website creation, maintenance updates, construction notices, milestone celebration events, news releases and tours, and directing inquiries to the lead party as appropriate;
- (f) assuming responsibility for costs related to carrying out supporting responsibilities to a standard acceptable to the Owner, in amounts and in a manner approved by the Owner; and
- (g) having a local, trained media relations spokesperson available 24/7 to respond to media requests.

6. ALLOCATION OF LEAD AND SUPPORTING ROLES

The lead and supporting roles will be allocated as set out in the following table, unless otherwise required by the Owner in consultation with the Design-Builder:

CATEGORY	LEAD	SUPPORTING
Communications Planning	Owner	Design-Builder
Community Relations	Owner	Design-Builder
Consultation	Owner	Design-Builder
Media Relations	Owner	Design-Builder
Emergency Communications	Owner	Design-Builder
Construction	Design-Builder	Owner
Traffic	Design-Builder	Owner
Noise	Design-Builder	Owner

7. OWNER RIGHT TO STEP IN AT DESIGN-BUILDER'S COST

If the Design-Builder is required to take a lead role but fails to comply with its obligations under this Schedule in any material respect, the Owner may give reasonable notice to the Design-Builder that it intends to undertake and assume the lead role obligations of the Design-Builder, at the expense of the Design-Builder, including all direct costs of engaging third party assistance with communication responsibilities and all direct costs of the Owner in connection with fulfilling the Design-Builder's obligations under this Schedule.

SCHEDULE 5

KEY INDIVIDUALS

NAME	ADDRESS	KEY INDIVIDUAL
PCL Constructors Westcoast Inc.	#310 - 13911 Wireless Way Richmond, BC V6V 3B9	Les Krusel Construction Lead
Michael Green Architecture Inc.	57 E Cordova St, Vancouver, BC V6A 1K3	Michael Green Design Lead
RDH Building Engineering Ltd.	224 West 8th Avenue, Vancouver, BC V5Y 1N5	Warren Knowles Building Envelope Specialist
B.R. Thorson Consulting Ltd.	769 Roslyn Blvd., North Vancouver, B.C., V7G 1P4	Barry Thorson Certified Professional
Equilibrium Consulting Inc.	Suite 202 - 388 West 8th Avenue Vancouver, BC V5Y 3X2	Eric Karsh Structural Engineer
PCL Constructors Westcoast Inc.	#310 - 13911 Wireless Way Richmond, BC V6V 3B9	Chris Rasmussen Project Manager

SCHEDULE 6

SCHEDULE OF PRICES

The Contract Price represents the entire compensation to the Design-Builder by the Owner for any and all costs related to the Work, including but not limited to all fees, cash allowances, contingencies and all duties and taxes, excluding HST payable by the Owner to the Design-Builder.

The following schedule is a breakdown of the Contract Price solely for the purpose of assisting the parties to develop the Schedule of Values, and will not be used or relied upon by the Design-Builder for any purpose.

Form A1 - Breakdown of Contract Price	
	Value
<u>HARD COSTS</u>	
Division 1 - General Requirements	
Division 2 - Existing Conditions	
Division 3 - Concrete	
Division 4 - Masonry	
Division 5 - Metals	
Division 6 - Wood, Plastics, and Composites	
Division 7 - Thermal and Moisture Protection	
Division 8 - Openings	
Division 9 - Finishes	
Division 10 - Specialties	
Division 12 - Furnishings	
Division 13 - Special Construction	
Division 14 - Conveying Equipment	
Division 21 - Fire Suppression	
Division 22 - Plumbing	
Division 23 - Heating, Ventilating, and Air Conditioning (HVAC)	
Division 25 - Integrated Automation	
Division 26 - Electrical	
Division 27 - Communications	
Division 28 - Electronic Safety and Security	
Division 31 - Earthwork	
Division 32 - Exterior Improvements	
Division 33 - Utilities On Site	
Division 33 - Utilities Off Site	
Other (Specify)	
Other (Specify)	
Hard Costs Sub total	

VAN01: 3079710: v10

SOFT COSTS	
Architectural Design Fees	
Structural Design Fees	
Mechanical Engineering Design Fees	
Electrical Engineering Design Fees	
Civil Engineering Design Fees	
Geotechnical Engineering Design Fees	
Building Envelope Consultants Fees	
Landscape Architect Fees	
Code Consultant Fees	
Legal Advisor Fees	
Other Consultant - Acoustics/Vibration	
Other Consultant - Fire, Security, Traffic	
Other Consultant - LEED	
Insurances - Subtrade Bonds, L&M and Performance Bonds, Design-Build E&O, Preferred Proponent Security Deposit, Performance Holdbacks	
Insurances - Specify	
Development Permit	
Building Permit	
Development Cost Charges	
Other - Pursuit Costs	
Other - District Energy Charges	
<i>Other - Owner Directed Enhancements Cash Allowance (for use by Authority)</i>	
Cash Allowance for Landscaping Adjacent City Lot (<i>Specified in RFP</i>)	
Cash Allowance for Tenant Improvements (<i>Specified in RFP</i>)	
Cash Allowance for Rough-in and Coordination of Lab Equipment (<i>Specified in RFP</i>)	
Soft Costs Sub total	
Nominal Cost of the Proposal (Contract Price)	\$25,100,000

SCHEDULE 7

PROPOSAL EXTRACTS

**Schedule 8
Cash Allowance Statement of Work**

(a) Landscaping of adjacent City lands: [REDACTED]

Any landscaping for areas other than for the Land and its frontages on 5th Avenue and George Street, will be by cash allowance.

(b) Tenant improvements: [REDACTED]

This cash allowance is for tenant improvements other than those for the UNBC spaces. The scope of the base building and the scope for these tenant improvements is per below:

Base Building:

The base building includes the building foundations and structure, exterior envelope and the electrical and mechanicals systems that provide the full services to the common areas of the building (entries, lobbies, washrooms etc) and sufficient services for tenants in a D Occupancy.

The remaining leasable floor areas will be a multi-tenant floor where the Design Builder will build finished elevator lobbies and completed washrooms (male, female and accessible) as required for a D Occupancy of this type. The Design Builder will build the finished corridor (floor, walls, ceilings, power, HVAC and controls) from the elevator lobbies that provides access to each demised tenant space (assuming 2 tenants per floor of equal size including Level 3 which shares space with UNBC), and will provide each Tenant space with a standard entry door to their space. The Design Builder will provide an unfinished demising wall between tenant spaces and will provide a ceiling grid (installed), with ceiling tiles in packages on the floor ready for a tenant to install. Also provided will be fire sprinklers based upon an open unoccupied floor; and lights, based upon an open unoccupied floor to provide sufficient light for emergency purposes required by code. The balance of the standard light fixtures will be provided in packages on the floor ready for the tenant to install. Basic light switching will be provided. Power will be available, ready for a D Occupancy, but at a panel in the electrical room. All distribution will be for the Tenant to provide. HVAC will be provided as a basic service only, but the capacity will be available for a D Occupancy for the Tenant to install his own ducts, diffusers, controls etc.

Tenant Improvements:

The scope of work estimated in the cash allowance includes finishing the demised spaces including:

- Partitions and doors.
- Floor finishes
- Wall finishes
- Ceiling finishes (including installation of ceiling tiles provided as part of the base building)
- Specialty ceilings
- Millwork and cabinetry
- Lighting and power devices and distribution
- Data devices and distribution
- HVAC ducts, diffusers and controls
- Tenant plumbing and drainage
- Design Fees associated with the Tenant Improvements
- The cost of the Authority's Base Building Design consultants to review the Tenant Design to ensure that it is compatible with the base building systems.
- Permits for the Tenant Improvement work

- Authority's markup or Project Management Charge to ensure the work complies with the Authority's standards.

The UNBC spaces are to be finished to the full extent specified elsewhere in the Statement of Requirements and accompanying Appendices.

(c) Rough in and coordination of lab equipment:

(d) General cash allowance for Authority's use at its discretion:



SCHEDULE 9
Site Specific Regulations

PROVINCE OF BRITISH COLUMBIA

REGULATION OF THE MINISTER OF ENERGY, MINES AND NATURAL GAS
AND MINISTER RESPONSIBLE FOR HOUSING AND DEPUTY PREMIER

Local Government Act

Ministerial Order No. M 203

I, Rich Coleman, Minister of Energy, Mines and Natural Gas and Minister Responsible for Housing and Deputy Premier, order that the attached Wood Innovation Design Centre Regulation is made.

DEPOSITED

September 19, 2012

B.C. REG. 271/2012

SEP 18 2012

Date



Minister of Energy, Mines and Natural Gas
and Minister Responsible for Housing and
Deputy Premier

(This part is for administrative purposes only and is not part of the Order.)

Authority under which Order is made:

Act and section: Local Government Act, R.S.B.C. 1996, c. 323, s. 692

Other: _____

September 13, 2012

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R/812/2012/17

WOOD INNOVATION DESIGN CENTRE REGULATION

Definition

- 1 In this regulation, "Wood Innovation Design Centre" means the building constructed or to be constructed on Lots 5 to 8, Block 150, District Lot 343, Cariboo District, Plan 1268.

Exemption from building code; regulation by modified building code

- 2 For so long as the Wood Innovation Design Centre satisfies section 3,
 - (a) subject to paragraph (b), the Wood Innovation Design Centre is exempt from the British Columbia Building Code, and
 - (b) the British Columbia Building Code established by the British Columbia Building Code Regulation, B.C. Reg. 264/2012, as that regulation read on September 7, 2012, with the amendments set out in the attached Schedule, applies to the Wood Innovation Design Centre.

Duration of exemption and regulation

- 3 (1) For the purposes of section 2, the Wood Innovation Design Centre must
 - (a) have a building area of not more than 1 125 m², a building height of 6 storeys and floor areas that together total not more than 4 800 m²,
 - (b) be not more than 30 m in height measured from grade to the highest point of the uppermost roof, and
 - (c) have the following major occupancy classifications:
 - (i) the first storey must be a Group A, Division 2 assembly occupancy or a Group D business and personal services occupancy;
 - (ii) the second storey must be a Group A, Division 2 assembly occupancy or a Group D business and personal services occupancy;
 - (iii) the third to sixth storeys must be Group D business and personal services occupancies.
- (2) The definitions in the British Columbia Building Code established by the British Columbia Building Code Regulation, B.C. Reg. 264/2012, as that regulation read on September 7, 2012, with the amendments set out in the attached Schedule, apply to this section.

SCHEDULE

1 For the purposes of section 2 of this regulation, the British Columbia Building Code established by the British Columbia Building Code Regulation, B.C. Reg. 264/2012, as that regulation read on September 7, 2012, is amended as set out in this Schedule.

Division 1 – Amendments to Book I (General)

2 Division A of Book I (General) is amended

(a) by repealing Sentence 1.2.1.1.(1) and substituting the following:

- 1) Compliance with this Code shall be achieved by
 - a) complying with the applicable acceptable solutions in Division B (see Appendix A), or
 - b) using alternative solutions,
 - i) before initial occupancy, that have been accepted by the minister responsible for this Code or, through a process approved by that minister, the authority having jurisdiction, or
 - ii) after initial occupancy, that have been accepted by the authority having jurisdiction and will achieve at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the applicable acceptable solutions (see Appendix A), and

(b) in Sentence 1.4.1.2.(1) in the definition of "Assembly occupancy" by striking out "civic, political, travel, religious, social, educational, recreational or like purposes, or for the consumption of food or drink." and substituting "educational or like purposes."

3 Table 1.3.1.2. in Division B is amended

(a) by repealing the following rows:

ASTM	D 2898-08	Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing	3.1.5.5.(5) 3.1.5.21.(1) 3.2.3.7.(4) 9.10.14.5.(3) 9.10.15.5.(3)
ULC	CAN/ULC-S102-07	Test for Surface Burning Characteristics of Building Materials and Assemblies	3.1.6.21.(1) 3.1.12.1.(1) 3.2.2.50.(3)
ULC	CAN/ULC-S134-92	Fire Test of Exterior Wall Assemblies	3.1.6.5.(1) 3.2.3.7.(3) 3.2.2.50.(3) 9.10.14.5.(2) 9.10.15.5.(2) 9.10.15.5.(3)

, and

(b) by substituting the following:

ASTM	D 2898-08	Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing	3.1.5.5.(5) 3.1.5.21.(1) 3.2.2.24.(3) 3.2.2.50.(3) 3.2.2.57.(3) 3.2.3.7.(4) 9.10.14.5.(3) 9.10.15.5.(3)
ULC	CAN/ULC-S102-07	Test for Surface Burning Characteristics of Building Materials and Assemblies	3.1.5.21.(1) 3.1.12.1.(1) 3.2.2.24.(3) 3.2.2.50.(3) 3.2.2.57.(3)
ULC	CAN/ULC-S134-92	Fire Test of Exterior Wall Assemblies	3.1.5.5.(1) 3.2.2.24.(3) 3.2.2.50.(3) 3.2.2.57.(3) 3.2.3.7.(3) 9.10.14.5.(2) 9.10.15.5.(2) 9.10.15.5.(3)

4 Article 3,2,2,24. is repealed and the following substituted:

3.2.2.24. Group A, Division 2, up to 6 Storeys, Sprinklered

1) A building classified as Group A, Division 2 is permitted to conform to Sentence (2) provided

- a) the building is sprinklered throughout,
- b) it is not more than 6 storeys in building height, and
- c) it has a building area not more than 1 125 m² and floor areas that together total not more than 4 800 m².

2) The building referred to in Sentence (1) is permitted to be of combustible construction or noncombustible construction used singly or in combination, and

- a) floor assemblies shall be fire separations with a fire-resistance rating not less than 1 h,
- b) mezzanines shall have a fire-resistance rating not less than 1 h, and
- c) loadbearing walls, columns and arches shall have a fire-resistance rating not less than that required for the supported assembly.

3) Except as required by Sentence (4), a building referred to in Sentence (1) shall have an exterior wall assembly

- a) protected by noncombustible cladding,
- b) protected by fire-retardant-treated wood cladding that has been conditioned in conformance with ASTM D 2898, "Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing," before being tested in accordance with

CAN/ULC-S102, "Test for Surface Burning Characteristics of Building Materials and Assemblies," or

- c) the interior surfaces of which are protected by a thermal barrier conforming to Sentence 3.1.5.12.(3) and that satisfies the criteria of Sentences 3.1.5.5.(3) and (4) when subjected to testing in conformance with CAN/ULC-S134, "Fire Test of Exterior Wall Assemblies."

4) The solutions described in Clauses (3)(b) and (c) are not permitted where an *exposing building face* is required by Article 3.2.3.7. to have *noncombustible* cladding.

5 *Article 3.2.2.57. is repealed and the following substituted:*

3.2.2.57. Group D, up to 6 Storeys, Sprinklered

- 1) A *building* classified as Group D is permitted to conform to Sentence (2) provided
 - a) except as permitted by Sentences 3.2.2.7.(1) and 3.2.2.18.(2), the *building* is *sprinklered* throughout,
 - b) it is not more than 6 *storeys* in *building height*, and
 - c) it has a *building area* not more than 1 125 m² and *floor areas* that together total not more than 4 800 m².
- 2) The *building* referred to in Sentence (1) is permitted to be of *combustible construction* or *noncombustible construction* used singly or in combination, and
 - a) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
 - b) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
 - c) *loadbearing walls*, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.
- 3) Except as required by Sentence (4), a *building* referred to in Sentence (1) shall have an exterior wall assembly
 - a) protected by *noncombustible* cladding,
 - b) protected by *fire-retardant-treated wood* cladding that has been conditioned in conformance with ASTM D 2898, "Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing," before being tested in accordance with CAN/ULC-S102, "Test for Surface Burning Characteristics of Building Materials and Assemblies," or
 - c) the interior surfaces of which are protected by a thermal barrier conforming to Sentence 3.1.5.12.(3) and that satisfies the criteria of Sentences 3.1.5.5.(3) and (4) when subjected to testing in conformance with CAN/ULC-S134, "Fire Test of Exterior Wall Assemblies."
- 4) The solutions described in Clauses (3)(b) and (c) are not permitted where an *exposing building face* is required by Article 3.2.3.7. to have *noncombustible* cladding.

6 Article 3.2.4.12. is amended by adding the following Sentence:

8) In addition to the requirements of Sentence (1), *smoke detectors* shall be installed throughout all *floor areas*.

7 Sentence 3.2.5.1.(1) is repealed and the following substituted:

1) Except for *storeys* below the *first storey*, direct access for firefighting shall be provided from the outdoors to every *storey* whose floor level is less than 25 m above *grade*, by at least one unobstructed window or access panel for each 15 m of wall in at least one wall that faces a *street* or *lane*.

8 Table 3.9.1.1. is amended

(a) by repealing the following rows:

3.2.2.24. Group A, Division 2, up to 6 Storeys, Any Area, Sprinklered	
(1)	[F02,F04-OS1.2,OS1.3] Applies to portion of Code text: "... a) ... the <i>building</i> is <i>sprinklered</i> throughout ..."
	[F02,F04-OP1.2,OP1.3] Applies to portion of Code text: "... a) ... the <i>building</i> is <i>sprinklered</i> throughout ..."
(2)	[F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..."
	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..."
	(a),(c) [F03-OS1.2] [F04-OS1.2,OS1.3]
	(a),(c) [F03-OP1.2] [F04-OP1.2,OP1.3]
	(b),(c) [F04-OS1.3]
	(b),(c) [F04-OP1.3]

3.2.2.57. Group D, up to 4 Storeys, Sprinklered	
(1)	[F02,F04-OS1.2,OS1.3] Applies to portion of Code text: "... a) ... the <i>building</i> is <i>sprinklered</i> throughout ..."
	[F02,F04-OP1.2,OP1.3] Applies to portion of Code text: "... a) ... the <i>building</i> is <i>sprinklered</i> throughout ..."
(2)	(a),(c) [F03-OS1.2] [F04-OS1.2,OS1.3]
	(a),(c) [F03-OP1.2] [F04-OP1.2,OP1.3]
	(b),(c) [F04-OS1.3]
	(b),(c) [F04-OP1.3]

, and

(b) by substituting the following:

3.2.2.24. Group A, Division 2, up to 6 Storeys, Sprinklered	
(1)	{F02,F04-OS1.2,OS1.3} Applies to portion of Code text: "... a) ... the <i>building</i> is sprinklered throughout ..."
	{F02,F04-OP1.2,OP1.3} Applies to portion of Code text: "... a) ... the <i>building</i> is sprinklered throughout ..."
(2)	[F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..."
	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..."
	(a),(c) [F03-OS1.2] [F04-OS1.2,OS1.3]
	(a),(c) [F03-OP1.2] [F04-OP1.2,OP1.3]
	(b),(c) [F04-OS1.3]
	(b),(c) [F04-OP1.3]
(3)	[F02-OS1.2]
	[F02-OP1.2]
(4)	[F02-OS1.2]
	[F02-OP1.2]

3.2.2.57. Group D, up to 4 Storeys, Sprinklered	
(1)	{F02,F04-OS1.2,OS1.3} Applies to portion of Code text: "... a) ... the <i>building</i> is sprinklered throughout ..."
	{F02,F04-OP1.2,OP1.3} Applies to portion of Code text: "... a) ... the <i>building</i> is sprinklered throughout ..."
(2)	(a),(c) [F03-OS1.2] [F04-OS1.2,OS1.3]
	(a),(c) [F03-OP1.2] [F04-OP1.2,OP1.3]
	(b),(c) [F04-OS1.3]
	(b),(c) [F04-OP1.3]
(3)	[F02-OS1.2]
	[F02-OP1.2]
(4)	[F02-OS1.2]
	[F02-OP1.2]

4.3.1.4. Cross-Laminated Timber	
(1)	[F20,F22-OS2.1]
	[F20,F22-OP2.1,OP2.3]

9 Sentence 4.1.8.9.(1) is repealed and the following substituted:

1) Except as provided in Sentence (6), the values of R_d and R_o and the corresponding system restrictions shall conform to Table 4.1.8.9. and the requirements of this Subsection.

6) Where the SFRS is cross-laminated timber panels with ductile connections, R_d shall be 2.0 and R_o shall be 1.5.

10 *The following Article is added:*

4.3.1.4. Cross-Laminated Timber

1) Cross-laminated timber products shall conform to ANSI/APA PRG 320-2011, "Standard for Performance-Rated Cross-Laminated Timber."

11 *Division C is amended*

(a) *by repealing Article 2.3.1.1. and substituting the following:*

2.3.1.1. Application

- 1) For the purposes of Clause 1.2.1.1.(1)(b) of Division A, on written request by the owner of a *building* or an authorized agent of that owner,
- a) the following persons may accept a measure, for use before the initial *occupancy* of the *building*, as an alternative solution to an acceptable solution for that *building*:
 - i) the minister responsible for this Code, or
 - ii) through a process approved by that minister, the *authority having jurisdiction*, and
 - b) the *authority having jurisdiction* shall accept a measure, for use after the initial *occupancy* of the building, as an alternative solution to an acceptable solution for that *building* if satisfied that
 - i) the measure will achieve at least the level of performance required by Subclause 1.2.1.1.(1)(b)(ii) of Division A, and
 - ii) the acceptable solution does not expressly require conformance to a provincial enactment other than the British Columbia Building Code. , and

(b) *in Sentence 2.3.1.2.(1)*

- (i) *by adding "or the minister responsible for this Code, as applicable," after "The authority having jurisdiction", and*
- (ii) *by striking out "an" before "a person".*

Division 2 -- Amendments to Book II (Plumbing Systems)

12 *Division A of Book II (Plumbing Systems) is amended by repealing Sentence 1.2.1.1.(1) and substituting the following:*

- 1) Compliance with this Code shall be achieved by
 - a) complying with the applicable acceptable solutions in Division B (see Appendix A), or
 - b) using alternative solutions,
 - i) before initial *occupancy*, that have been accepted by the minister responsible for this Code or, through a process approved by that minister, the *authority having jurisdiction*, or

- ii) after initial *occupancy*, that have been accepted by the *authority having jurisdiction* and will achieve at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the applicable acceptable solutions (see Appendix A).

13 *Division C is amended*

(a) *by repealing Article 2.3.1.1. and substituting the following:*

2.3.1.1. Application

- 1) For the purposes of Clause 1.2.1.1.(1)(b) of Division A, on written request by the owner of a *building* or an authorized agent of that owner,
 - a) the following persons may accept a measure, for use before the first *occupancy* of the *building*, as an alternative solution to an acceptable solution for that *building*:
 - i) the minister responsible for this Code, or
 - ii) through a process approved by that minister, the *authority having jurisdiction*, and
 - b) the *authority having jurisdiction* shall accept a measure, for use after the first *occupancy* of the *building*, as an alternative solution to an acceptable solution for that *building* if satisfied that
 - i) the measure will achieve at least the level of performance required by Subclause 1.2.1.1.(1)(b)(ii) of Division A, and
 - ii) the acceptable solution does not expressly require conformance to a provincial enactment other than the British Columbia Building Code., *and*

(b) *in Sentence 2.3.1.2.(1)*

- (i) *by adding "or the minister responsible for this Code, as applicable," after "The authority having jurisdiction", and*
- (ii) *by striking out "an" before "a person".*