Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:

Regional Manager/Real Property Contracting/PWGSC
Ontario Region, Tendering Office
12th Floor, 4900 Yonge Street
Toronto, Ontario
M2N 6A6
Ontario

REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION

Proposal To: Public Works and Government Services Canada

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

Proposition aux: Travaux Publics et Services Gouvernementaux Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Title - Sujet
CFIA GTA lab expansion

Solicitation No. - N° de l'invitation	**Date**
EQ754-141072/A	2013-11-07

Client Reference No. - N° de référence du client
R.061999.001

GETS Reference No. - N° de référence de SEAG
PW-$PWL-042-1895

File No. - N° de dossier	**CCC No./N° CCC - FMS No./N° VME**
PWL-3-36055 (042)	

Solicitation Closes - L'invitation prend fin
at - à 02:00 PM
on - le 2013-12-18

Time Zone
Fuseau horaire
Eastern Standard Time
EST

F.O.B. - F.A.B.
Plant-Usine: ☐ **Destination:** ☑ **Other-Autre:** ☐

Address Enquiries to: - Adresser toutes questions à:	**Buyer Id - Id de l'acheteur**
Correia-Reid, Vincent	pwl042

Telephone No. - N° de téléphone	**FAX No. - N° de FAX**
(416) 590-8259 ( )	(416) 512-5862

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:
CFIA
Avenue Midland
Scarborough, ON

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N° de téléphone
Facsimile No. - N° de télécopieur

Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)
Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)

Signature **Date**

Issuing Office - Bureau de distribution
Regional Manager/Real Property Contracting/PWGSC
Ontario Region, Tendering Office
12th Floor, 4900 Yonge Street
Toronto, Ontario
M2N 6A6
Ontario

Canada

THIS DOCUMENT CONTAINS A SECURITY REQUIREMENT

TABLE OF CONTENTS

The following is intended to clarify the general structure of the whole document.

SUPPLEMENTARY INSTRUCTIONS TO PROPONENTS (SI)

SI1 INTRODUCTION

1. Public Works and Government Services Canada (PWGSC) intends to retain an individual consulting firm or joint venture to provide the professional services for the project as set out in this Request for Proposal (RFP).

2. This is a single phase selection process. The nature of the requirement and the anticipated limited number of response by the industry leads PWGSC to believe that this approach will not unduly force a large number of firms to expend an overall unreasonable amount of effort in response to PWGSC.

3. Proponents responding to this RFP are requested to submit a full and complete proposal. The proposal will cover not only the qualifications, experience and organization of the proposed Consultant Team, but also the detailed approach to the work, and the pricing and terms offered. A combination of the technical and price of services submissions will constitute the proposal.

SI2 PROPOSAL DOCUMENTS

1. All instructions, general terms, conditions and clauses identified in the RFP by number, date and title, are hereby incorporated by reference into and form part of this solicitation and any resultant contract.

   All instructions, general terms, conditions and clauses identified in the RFP by number, date and title, are set out in the Standard Acquisition Clauses and Conditions Manual (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

2. The following are the proposal documents:

   (a) Supplementary Instructions to Proponents (SI);
   R1410T (2013-06-27), General Instructions to Proponents (GI);
   Submission Requirements and Evaluation (SRE);

   (b) the general terms, conditions and clauses, as amended, identified in the Agreement clause;

   (c) Project Brief;

   (d) the document entitled "Doing Business with Ontario Region";

   (e) the Security Requirements Check List (SRCL);

   (f) the proposal, Declaration/Certifications Form and Price Proposal Form.

3. Submission of a proposal constitutes acknowledgment that the Proponent has read and agrees to be bound by these documents.

SI3 QUESTIONS OR REQUEST FOR CLARIFICATION

Questions or requests for clarification during the solicitation period must be submitted in writing to the Contracting Authority named on the RFP - Page 1 as early as possible. Enquiries should be received no later than seven (7) working days prior to the closing date identified on the front page of the Request for Proposal. Enquiries received after that date may not be answered prior to the closing date of the solicitation.

SI4 CANADA'S TRADE AGREEMENTS

This procurement is subject to the provisions of the North American Free Trade Agreement (NAFTA), the World Trade Organization - Agreement on Government Procurement (WTO-AGP) the Canada-Colombia Free Trade Agreement (FTA) and the Canada-Peru FTA.

SI5 CODE OF CONDUCT AND CERTIFICATIONS - RELATED DOCUMENTATION

By submitting a bid, the Proponent certifies that the Proponent and its affiliates are in compliance with the provisions as stated in Section GI1 Code of Conduct and Certifications - Proposal of R1410T (2013-06-27) General Instructions to Proponents (GI). The related documentation therein required will assist Canada in confirming that the certifications are true.

SI6 SECURITY REQUIREMENT

1. Before award of a contract, the following conditions must be met:

   (a) the Proponent must hold a valid organization security clearance as indicated in Supplementary Conditions SC1;

   (b) the Proponent's proposed individuals requiring access to classified or protected Information, assets or sensitive work site(s) must meet the security requirement as indicated in Supplementary Conditions SC1;

   (c) the Proponent must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites.;

2. Proponents are reminded to obtain the required security clearance promptly. Any delay in the award of a contract to allow the successful bidder to obtain the required clearance will be at the entire discretion of the Contracting Authority.

3. For additional information on security requirements, proponents should consult the "Security Requirements for PWGS Bid Solicitations - Instructions for Bidders" (http://www.tpsgc-pwgsc.gc.ca/app-acq/lc-pl/lc-pl-eng.html#a31) document on the Departmental Standard Procurement Documents website.

SI7 WEB SITES

The connection to some of the Web sites in the RFP is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Employment Equity Act
http://laws.justice.gc.ca/en/E-5.401/index.html

Federal Contractors Program (FCP)
http://www.hrsdc.gc.ca/eng/labour/equality/fcp/index.shtml

Certificate of Commitment to Implement Employment Equity form LAB 1168
http://www.servicecanada.gc.ca/cgi-bin/search/eforms/index.cgi?app=profile&form=lab1168&dept=sc&lang=e

Code of Conduct for Procurement
http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/contexte-context-eng.html

Consent to a Criminal Record Verification (PWGSC-TPSGC 229 form)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html

Lobbying Act
http://laws.justice.gc.ca/en/L-12.4/?noCookie

Contracts Canada
https://buyandsell.gc.ca/

Supplier Registration Information
https://srisupplier.contractscanada.gc.ca

Consultant Performance Evaluation Report Form
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913-1.pdf

Canadian economic sanctions
http://www.international.gc.ca/sanctions/index.aspx?lang=eng

National Joint Council (NJC) Travel Directive
http://www.njc-cnm.gc.ca/directive/travel-voyage/index-eng.php

TERMS, CONDITIONS AND CLAUSES

AGREEMENT

1. The Consultant understands and agrees that upon acceptance of the offer by Canada, a binding Agreement shall be formed between Canada and the Consultant and the documents forming the Agreement shall be the following:

   (a) the Front Page and this Agreement clause;
   (b) the General Terms, Conditions and Clauses, as amended, identified as:
   R1210D (2013-06-27), General Condition (GC) 1 - General Provisions
   R1215D (2011-05-16), General Condition (GC) 2 - Administration of the Contract
   R1220D (2011-05-16), General Condition (GC) 3 - Consultant Services
   R1225D (2012-07-16), General Condition (GC) 4 - Intellectual Property
   R1230D (2012-07-16), General Condition (GC) 5 - Terms of Payment
   R1235D (2011-05-16), General Condition (GC) 6 - Changes
   R1240D (2011-05-16), General Condition (GC) 7 - Taking the Services Out of the Consultant's Hands, Suspension or Termination
   R1245D (2012-07-16), General Condition (GC) 8 - Dispute Resolution
   R1250D (2012-07-16), General Condition (GC) 9 - Indemnification and Insurance
   Supplementary Conditions
   Agreement Particulars
   (c) Project Brief;
   (d) the document entitled "Doing Business with Ontario Region";
   (e) the Security Requirements Check List (SRCL);
   (f) any amendment to the solicitation document incorporated in the Agreement before the date of the Agreement;
   (g) the proposal, the Declaration/Certifications Form and the Price Proposal Form.

2. The documents identified above by title, number and date are hereby incorporated by reference into and form part of this Agreement, as though expressly set out herein, subject to any other express terms and conditions herein contained.

   The documents identified above by title, number and date are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site: https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual

3. If there is a discrepancy between the wording of any documents that appear on the following list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

   (a) any amendment or variation in the Agreement that is made in accordance with the terms and conditions of the Agreement;
   (b) any amendment to the solicitation document incorporated in the Agreement before the date of the Agreement;
   (c) this Agreement clause;
   (d) Supplementary Conditions;
   (e) General Terms, Conditions and Clauses;
   (f) Agreement Particulars;

(g) Project Brief;
(h) the document entitled "Doing Business with Ontario Region";
(i) the document entitled "Security Requirement Check List";
(j) the proposal.

SUPPLEMENTARY CONDITIONS (SC)

The following security requirement (SRCL and related clauses) applies and form part of the Agreement.

SECURITY REQUIREMENT FOR CANADIAN SUPPLIER:
PWGSC FILE No. 400004464

1. The Contractor/Offeror must, at all times during the performance of the Contract/Standing Offer, hold a valid Designated Organization Screening (DOS), issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).

2. The Contractor/Offeror personnel requiring access to sensitive work site(s) must EACH hold a valid RELIABILITY STATUS, granted or approved by CISD/PWGSC. Until the security screening of the Contractor personnel required by this Contract has been completed satisfactorily by the CISD, PWGSC, the Contractor personnel MAY NOT ENTER sites without an escort.

3. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.

4. The Contractor/Offeror must comply with the provisions of the:

   (a) Security Requirements Check List and security guide (if applicable), attached at Appendix E;
   (b) Industrial Security Manual (Latest Edition).

AGREEMENT PARTICULARS

The Agreement Particulars will be issued at time of award of contract and will identify the fee to be paid to the Consultant for the services determined in the Price Proposal Form.

SUBMISSION REQUIREMENTS AND EVALUATION

SUBMISSION REQUIREMENTS AND EVALUATION

SRE 1 GENERAL INFORMATION

1.1 Reference to the Selection Procedure

An 'Overview of the Selection Procedure' can be found in R1410T General Instructions to Proponents (GI3).

1.2 Calculation of Total Score

For this project the Total Score will be established as follows:

Technical Rating x 90%	=	Technical Score (Points)
Price Rating x 10%	=	Price Score (Points)
Total Score	=	Max. 100 Points

SRE 2 PROPOSAL REQUIREMENTS

2.1 Requirement for Proposal Format

The following proposal format information should be implemented when preparing the proposal.

Submit one (1) bound original plus five (5) bound copies of the proposal
Paper size should be - 216mm x 279mm (8.5" x 11")
Minimum font size - 11 point Times or equal
Minimum margins - 12 mm left, right, top, and bottom
Double-sided submissions are preferred
One (1) 'page' means one side of a 216mm x 279mm (8.5" x 11") sheet of paper
279mm x 432 mm (11" x 17") fold-out sheets for spreadsheets, organization charts etc. will be counted as two pages.
The order of the proposals should follow the order established in the Request for Proposal SRE section

2.2 Specific Requirements for Proposal Format

The maximum number of pages (including text and graphics) to be submitted for the Rated Requirements under SRE 3.2 is forty (40) pages.

The following are not part of the page limitation mentioned above;
Covering letter
Cover Page
Tabs or page dividers, provided they are free of text and graphics
Consultant Team Identification (Appendix A)
Declaration/Certifications Form (Appendix B)
Code of Conduct Certifications (Appendix B - Annex BB)

- Front page of the RFP
- Front page of revision(s) to the RFP
- Price Proposal Form (Appendix C)

Consequence of non-compliance: any pages which extend beyond the above page limitation and any other attachments will be extracted from the proposal and will not be forwarded to the PWGSC Evaluation Board members for evaluation.

SRE 3 SUBMISSION REQUIREMENTS AND EVALUATION

3.1 MANDATORY REQUIREMENTS

Failure to meet the mandatory requirements will render the proposal as non-responsive and no further evaluation will be carried out.

3.1.1 Licensing, Certification or Authorization

The proponent shall be the prime architectural consultant who will render the services of this Request for Proposal in conjunction with the support of other discipline sub-consultants and/or in-house resources such as mechanical, electrical and IT/Telecommunications engineering, cost estimating, specification writing, lab move coordination advisor, planning and scheduling specialist, and consultant site representative during construction.

All disciplines and specialists must be licensed, certified or otherwise authorized to provide the necessary professional services to the full extent that may be required by provincial or territorial requirements in the province of Ontario.

The Cost Estimating Specialist shall be a member of Canadian Institute of Quantity Surveyors.

Specification Writer shall have experience with preparing specifications for projects using the NMS system format and the 50 Division format.

The proponent, project architect and his/her lead mechanical and electrical engineering disciplines, cost estimating specialist, lab move coordination advisor, planning and scheduling specialist, and consultant site representative during construction must demonstrate that they have Laboratory Containment Level CL2 experience as described in 3.2 Rated Requirements.

3.1.2 Consultant Team Identification

The consultant team to be identified must include the following:

Proponent (prime consultant)	- Architect
Key Sub-consultants / Specialists	- Mechanical Engineer - Electrical Engineer - IT / Telecommunications - Cost Estimating Specialist - Specification Writer - Lab Move Coordination Advisor - Planning and Scheduling Specialist - Consultant Site Representative during Construction

Information required - name of firm, key personnel to be assigned to the project. For the prime consultant, and all sub-consultants/specialists, indicate current license and/or how you intend to meet the provincial or territorial licensing requirements. In the case of a joint venture, identify the existing or

proposed legal form of the joint venture (refer to R1410T General Instructions to Proponents**,** GI9 Limitation of Submissions).

An example of an acceptable format (typical) for submission of the team identification information is provided in Appendix A.

3.1.3 Declaration/Certifications Form

Proponents must complete, sign and submit the following:

Appendix B, Declaration/Certifications Form as required.

3.1.4 Code of Conduct Certifications

Proponents who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Proponent. Proponents bidding as sole proprietorship, including those bidding as a joint venture, must provide the name of the owner with their bid or promptly thereafter. Proponents bidding as societies, firms, partnerships or associations of persons do not need to provide lists of names. If the required names have not been received by the time the evaluation of bids is completed, Canada will inform the Proponent of a time frame within which to provide the information. Failure to comply will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

Please see Appendix B, Annex BB for further information.

3.2 RATED REQUIREMENTS

3.2.1 Understanding of the Project:

The proponent should demonstrate understanding of the goals of the project, the functional/technical requirements, the constraints and the issues that will shape the end product.

Information that should be supplied:

The functional and technical requirements
Broader goals (federal image, sustainable development, sensitivities)
The relationship between this commission and any earlier studies or projects completed for PWGSC or other federal government departments
Significant issues, challenges and constraints
Project schedule and cost. Review schedule and cost information and assess risk management elements that may affect the project
The Client User's philosophies and values

3.2.2 Scope of Services:

The proponent should demonstrate capability to perform the services and meet project challenges and to provide a plan of action.

Information that should be supplied:

Scope of Services - detailed list of services
Work Plan identifying:
(a) detailed breakdown of work tasks and deliverables

(b) proposed major milestone schedule
Risk management strategy

3.2.3 Management of Services:

The Proponent should describe how he /she proposes to perform the services and meet the constraints; how the services will be managed to ensure continuing and consistent control as well as production and communication efficiency; how the team will be organized and how it will fit in the existing structure of the firms; to describe how the team will be managed. The proponent is also to identify sub-consultant disciplines and specialists required to complete the consultant team.

If the Proponent proposes to provide multi-disciplinary services which might otherwise be performed by a sub-consultant, this should be reflected here.

Information that should be supplied:

Confirm the makeup of the full project team including the names of the consultant sub-consultants and specialists personnel and their role on the project.
Organization chart with position titles and names (Consultant team). Joint Venture business plan, team structure and responsibilities, if applicable
What back-up will be committed
Profiles of the key positions (specific assignments and responsibilities)
Outline of an action plan of the services with implementation strategies and sequence of main activities
Reporting relationships
Communication strategies
Response time: demonstrate how the response time requirements will be met

3.2.4 Design Philosophy / Approach / Methodology

The proponent should elaborate on aspects of the project considered to be a major challenge which will illustrate design philosophy / approach / methodology. This is the opportunity for the Proponent to state the overall design philosophy of the team as well as their approach of resolving design issues and in particular to focus on the unique aspects of the current project.

Information that should be supplied:
Design Philosophy / Approach / Methodology
Describe the major challenges and how your team approach will be applied to those particular challenges.

3.2.5 Achievements of Proponent (firm) on Laboratory Projects

Describe the Proponent's accomplishments, achievements and experience as prime consultant on projects.

Select a **maximum** of three (3) laboratory CL2 or higher classification projects successfully completed within the last six (6) years that were designed and built / renovated by the firm. These built / renovated projects should be functional and occupied for at least 1 year. Maximum one (1) of the three (3) projects can be submitted as a joint venture project for consideration. Please Note: Only the first three (3) projects listed in sequence will receive consideration and any others will receive none as though not included.

Information that should be supplied:

clearly indicate how this project is comparable/relevant to the requested project
brief project description and intent. Narratives should include a discussion of design philosophy / approach to meet the intent, design challenges and resolutions. Include photographs in colour.
budget control and management - i.e. contract price & final construction cost - explain variation
project schedule control and management - i.e. initial schedule and revised schedule - explain variation
client references - name, address, phone and fax of client contact at working level - references may be checked
names of key personnel responsible for project delivery
awards received

The Proponent (as defined in R1410T General Instructions to Proponents**,** GI2 Definitions) must possess the knowledge on the above projects. Past project experience from entities other than the Proponent will not be considered in the evaluation unless these entities form part of a joint venture Proponent.

Please indicate those projects which were carried out in joint venture and the responsibilities of each of the involved entities in each project.

3.2.6 Achievements of Key Sub-consultants / Specialists (firms) on Laboratory Projects

Describe the accomplishments, achievements and experience either as prime consultant or in a sub-consultant capacity on projects. If the Proponent proposes to provide multi-disciplinary services which might otherwise be performed by a sub-consultant, this should be reflected here.

Select a **maximum** of three (3) laboratory CL2 or higher classification projects successfully completed within the last six (6) years per key sub consultant or specialist that were designed and built / renovated by the firm. These built / renovated projects should be functional and occupied for at least 1 year. Maximum one (1) of the three (3) projects can be submitted as a joint venture project for consideration.] Please Note: Only the first three (3) projects listed in sequence (per key subconsultant or specialist) will receive consideration and any others will receive none as though not included.

Information that should be supplied:

clearly indicate how this project is comparable/relevant to the requested project
brief project description and intent. Narratives should include a discussion of design philosophy / approach to meet the intent, design challenges and resolutions. Include photographs in colour.
budget control and management
project schedule control and management
client references - name, address, phone and fax of client contact at working level - references may be checked
names of key personnel responsible for project delivery
awards received

3.2.7 Achievements of Key Senior Personnel (Prime, Sub-consultants and Specialists) on Laboratory Projects

Describe the experience and performance of key senior personnel for each of the consultant team members to be assigned to this project regardless of their past association with the current proponent firm. This is the opportunity to emphasize the strengths of the individuals on the team, to recognize their past responsibilities, commitments and achievements.

Information that should be supplied for each key personnel - max one (1) page CV for each key senior personnel (Please note: if the member of the consultant team is assigned numerous roles of expertise for this project, please provide a separate CV demonstrating the specific expertise):

professional accreditation
accomplishments/achievements/awards
relevant experience, expertise, number of years experience, years with the firm
role, responsibility and degree of involvement of individual in past projects

3.2.8 Achievements of Assigned Project Personnel (Prime, Sub-consultants and Specialists) on Laboratory Projects or projects of equivalent complexity

Describe the experience and performance of assigned project personnel to be assigned to this project regardless of their past association with the current proponent firm. This is the opportunity to emphasize the strengths of the individuals on the team, to recognize their past responsibilities, commitments and achievements.

Information that should be supplied for each key personnel- max one (1) page CV for each assigned project personnel (Please note: if the member of the consultant team is assigned numerous roles of expertise for this project, please provide a separate CV demonstrating the specific expertise):

professional accreditation
accomplishments/achievements/awards
relevant experience, expertise, number of years experience, years with the firm
role, responsibility and degree of involvement of individual in past projects

3.3 EVALUATION AND RATING

In the first instance, price envelopes will remain sealed and only the technical components of the proposals which are responsive will be reviewed, evaluated and rated by a PWGSC Evaluation Board in accordance with the following to establish Technical Ratings:

Criterion	Weight Factor	Rating	Weighted Rating
Understanding of the Project	1.5	0 - 10	0 - 15
Scope of Services	1.0	0 - 10	0 - 10
Management of Services	1.0	0 - 10	0 - 10
Design Philosophy / Approach / Methodology	1.0	0 - 10	0 - 10
Achievements of Proponent	2.0	0 - 10	0 - 20
Achievements of Key Sub-consultants / Specialists	1.0	0 - 10	0 - 10
Achievements of Key Senior Personnel	1.0	0 - 10	0 - 10
Achievements of Assigned Project Personnel	1.5	0 - 10	0 - 15
Technical Rating	10.0		0 - 100

Generic Evaluation Table

PWGSC Evaluation Board members will evaluate the strengths and weaknesses of the Proponent's response to the evaluation criteria and will rate each criterion with even numbers (0, 2, 4, 6, 8 or 10) using the generic evaluation table below:

	INADEQUATE	WEAK	ADEQUATE	FULLY SATISFACTORY	STRONG
0 point	2 points	4 points	6 points	8 points	10 points
Did not submit information which could be evaluated	Lacks complete or almost complete understanding of the requirements.	Has some understanding of the requirements but lacks adequate understanding in some areas of the requirements.	Demonstrates a good understanding of the requirements.	Demonstrates a very good understanding of the requirements.	Demonstrates an excellent understanding of the requirements.
	Weaknesses cannot be corrected	Generally doubtful that weaknesses can be corrected	Weaknesses can be corrected	No significant weaknesses	No apparent weaknesses
	Proponent do not possess qualifications and experience	Proponent lacks qualifications and experience	Proponent has an acceptable level of qualifications and experience	Proponent is qualified and experienced	Proponent is highly qualified and experienced
	Team proposed is not likely able to meet requirements	Team does not cover all components or overall experience is weak	Team covers most components and will likely meet requirements	Team covers all components - some members have worked successfully together	Strong team - has worked successfully together on comparable projects
	Sample projects not related to this requirement	Sample projects generally not related to this requirement	Sample projects generally related to this requirement	Sample projects directly related to this requirement	Leads in sample projects directly related to this requirement

	Extremely poor, insufficient to meet performance requirements	Little capability to meet performance requirements	Acceptable capability, should ensure adequate results	Satisfactory capability, should ensure effective results	Superior capability, should ensure very effective results

To be considered further, proponents **must** achieve a minimum Technical Rating of fifty (50) points out of the hundred (100) points available as specified above.

No further consideration will be given to proponents not achieving the pass mark of fifty (50) points.

SRE 4 PRICE OF SERVICES

All price proposal envelopes corresponding to responsive proposals which have achieved the pass mark of fifty (50) points will be opened upon completion of the technical evaluation. An average price is determined by adding all the price proposals together and dividing the total by the number of price proposals being opened.

All price proposals which are greater than twenty-five percent (25%) above the average price will be set aside and receive no further consideration.

The remaining price proposals are rated as follows:

The lowest price proposal receives a Price Rating of 100
The second, third, fourth and fifth lowest prices receive Price Ratings of 80, 60, 40, and 20 respectively. All other price proposals receive a Price Rating of 0.
On the rare occasions where two (or more) price proposals are identical, the matching price proposals receive the same rating and the corresponding number of following ratings are skipped.

The Price Rating is multiplied by the applicable percentage to establish the Price Score.

SRE 5 TOTAL SCORE

Total Scores will be established in accordance with the following:

Rating	Possible Range	% of Total Score	Score (Points)
Technical Rating	0 - 100	90	0 - 90
Price Rating	0 - 100	10	0 - 10
Total Score		100	0 - 100

The Proponent receiving the highest Total Score is the first entity that the Evaluation Board will recommend for the provision of the required services. In the case of a tie, the proponent submitting the lower price for the services will be selected.

SRE 6 SUBMISSION REQUIREMENTS - CHECKLIST

The following list of documents and forms is provided with the intention of assisting the Proponent in ensuring a complete submission. The Proponent is responsible for meeting all submission requirements.

Please follow detailed instructions in R1410T General Instructions to Proponents**,** GI16 Submission of Proposal. Proponents may choose to introduce their submissions with a cover letter.

- ☐ Team Identification - see typical format in Appendix A
- ☐ Declaration/Certifications Form - completed and signed - form provided in Appendix B
- ☐ Code of Conduct Certifications - list of directors/owners - Appendix B, Annex BB
- ☐ Proposal - one (1) original plus five (5) copies
- ☐ Front page of RFP - Completed and signed
- ☐ Front page(s) of any solicitation amendment - Completed and signed

In a separate envelope:

- ☐ Price Proposal form - one (1) completed and submitted in a separate envelope

PROJECT BRIEF

Description of Project

PD 1 Project Information
PD 2 Project Identification
PD 3 Project Background
PD 4 Existing Documentation
PD 5 Program
PD 6 Project Objectives
PD 7 Issues
PD 8 Consultant Services

Description of Services

PA 1 Project Administration

Required Services

RS 1 Analysis of Project Requirements
RS 2 Design Concept
RS 3 Design Development
RS 4 Construction Documents
RS 5 Tender Call, Bid Evaluation & Construction Contract Award
RS 6 Construction and Contract Administration
RS 7 Commissioning the Facility
RS 8 Risk Management

Additional Services

AS 1 Project Time Planning, Scheduling and Control
AS 2 Estimating and Cost Planning
AS 3 Additional Site Services During Construction
AS 4 Lab Move Coordination Advisory Services
AS 5 Closure Report

PROJECT BRIEF

This Project Brief is divided into two sections:

Description of Project
Description of Services
Project Administration
Required Services
Additional Services

For standards relating to the service provisions herein please refer to the document “Doing Business with A&E Ontario Region”. The standards in “Doing Business with A&E Ontario Region” must be adhered to in conjunction with this scope of services.

DESCRIPTION OF PROJECT

PD 1 PROJECT INFORMATION

Public Works and Government Services Canada (PWGSC) intends to retain an architectural firm as prime consultant specializing in laboratory Containment Level CLII or higher expertise with support of same lab CLII expertise for mechanical engineers, electrical engineers and other specialized services for the provision of the services required for this project.

1.1 PWGSC Project Title: CFIA GTA Laboratory Expansion Fit-up

1.2 Location of the Project: 2301 Midland Ave.
Scarborough, Ontario

1.3 PWGSC Project Number: R.061999.001

1.4 Client / User:

Canadian Food Inspection Agency (CFIA) - Project Leader:
Christopher Dawson
Project Leader, Planning, Design & Construction
Canadian Food Inspection Agency,
1st Floor East, Room 211
59 Camelot Drive
Ottawa, Ontario, K1A 0Y9

Health Canada (HC) - Building Owner:
Tony Zilli
Regional Director, Capital Assets, Administration and Security
Health Canada
2301 Midland Avenue,
Scarborough, Ontario

SNC Lavalin - Property Manager:
Tameash Persaud
SNC Lavalin O&M
2301 Midland Avenue,
Scarborough, Ontario

SNC Lavalin - Commissioning Representative:
Frank Corcoran
SNC Lavalin O&M
55 Bay Street
Hamilton, Ontario L8R 3P7

1.5 PWGSC Team:

Project Manager: Daniella Mavroudis

(Departmental Representative)	Project Management, PTS Public Works and Government Services Canada (PWGSC) 4900 Yonge Street, Toronto, Ontario M2N 6A6
Design Manager:	Alice Da Silva Architecture and Engineering Resources Public Works and Government Services Canada (PWGSC) 4900 Yonge Street, Toronto, Ontario M2N 6A6
Commissioning Manager:	To be determined

PD 2 PROJECT IDENTIFICATION

2.1 Description

Canadian Food Inspection Agency (CFIA) requires their existing laboratory operation, located in the Health Canada (HC) facility at 2301 Midland Avenue, Scarborough, Ontario, to be renovated and expanded. This renovation project is an outcome of plans to improve lab processes, functionality and to reduce the risk of cross-contamination between lab operations.

CFIA moved from their Mississauga location and colocated with Health Canada at the existing location 5 years ago. Some functions are shared with Health Canada.

A functional program and options analysis were completed May 3, 2012 by NXL Architects/Merrick Canada to define user requirements, proposed options and project requirements; refer to the complete document in Appendix F for information.

Based on this report, a feasibility study was completed February 5, 2013 by NXL Architects and subsequently received preliminary project approval by CFIA. The feasibility study is included in its entirety in Appendix G; this document is to be the reference and starting point for all work requested in this Project Brief. All new work is expected to continue the development of the design concept described within this report, except for the satellite expansion to the west as this portion has already been implemented, and to move forward in implementing and completing the project.

The project requires professional multi-disciplinary consulting services with laboratory experience for the review of the proposed design, the development of the design through to construction completion of the proposed renovation and expansion of the existing CFIA laboratory operation.

PWGSC, on behalf of CFIA, intends to engage a Commissioning Manager to prepare the commissioning plan and oversee that it gets implemented during the design and construction. The consultant team would require to coordinate the requirements of the Commissioning Manager's commissioning plan within the scope of this project.

PWGSC, in collaboration with CFIA and HC, will coordinate the move-out of HC staff presently occupying the premises impacted by this project. PWGSC will manage this scope of the project.

The Consultant is to provide the services of a Lab Move Coordination Advisor to plan and coordinate all the complexities of decommissioning, relocating and reinstalling equipment while maintaining operation of the laboratories during construction.

PWGSC has engaged an environmental consultant to prepare a designated substances survey of the vicinity of the proposed project area. PWGSC intends to also engage an environmental consultant to prepare specifications and drawings for the removal / abatement of the designated substances, if required, and monitor the site during the construction. The Consultant is to incorporate the specifications and the drawings describing the scope of work regarding the designated substances into the construction documents for this project. The Consultant is to coordinate this scope of work with other aspects of the project including the project schedule for any impacts to the phasing of the project.

2.2 Cost

The Class C Construction Estimate was completed December 21, 2012 as part of the Feasibility Study report and estimated in 2012 dollars at $1,844,000 excluding HST.

2.3 Schedule

Key project activities with corresponding time frames are indicated below:

ACTIVITY		ESTIMATED DURATION
RS1 - and RS2 -	Analysis of Project Requirements and Design Concept (including reviews and approval)	5 weeks
RS3 -	Design Development (including reviews and approval)	8 weeks
RS4 -	Construction Documents (including reviews)	20 weeks
RS5 -	Tender Call, Bid Evaluation & Construction Contract Award	8 weeks
RS6 -	Construction and Contract Administration	52 weeks
RS7 -	Commissioning the Facility	5 weeks

Project occupancy date is to be prior to March 31, 2016. CFIA and HC are required to be operational by this date.

The above time allocations shall take into effect immediately after the award of a contract to the successful proponent. In developing a detailed schedule, the Consultant should ensure that activities are planned concurrently where no interdependencies exist.

Activity durations are preliminary, and the Consultant is responsible for verifying and confirming the above schedule dates as part of its scheduling mandate (see section AS 1 - Project Time Planning, Scheduling and Control for details).

PD 3 PROJECT BACKGROUND

3.1 Project History

- Canadian Food Inspection Agency (CFIA) moved their operation from a leased premises in Mississauga into a crown owned facility at 2301 Midland Avenue, Scarborough to colocate with Health Canada in 2008.
- As an outcome to improve lab processes, functionality and to reduce the risk of cross-contamination between lab operations, CFIA's existing operational space requires expansion.
- CFIA engaged a consultant, NXL Architects, to prepare a functional program and an option analysis of where they can expand within the building. NXL Architects report dated May 2012 (refer to Appendix F) was used in negotiations between CFIA and Health Canada to support an upgrade of mechanical and building operations and to explore renovation and expansion options.
- As a result of the discussions, CFIA and Health Canada came to an agreement on two areas of expansion: a contiguous expansion to the east, within the existing building, for some laboratory operations, and a satellite expansion to the west for office operations. NXL Architects were asked to investigate this new option and hence prepared the February 5, 2013 feasibility study (refer to Appendix G). Please note that the satellite expansion to the west has been completed to date and the scope of work for this area is not required any longer for this project.

- The recommended layout was based on NXL Architects' investigation, in conjunction with CFIA staff, and is illustrated in Drawing A-10 of the feasibility study (refer to Appendix G) and provides the detailed laboratory layouts.
- The recommended layout proposes to renovate the project into 3 phases with no swing space and to maintain the operation of the labs continuously. Refer to drawing A-17 of the feasibility study (refer to Appendix G) for highlights of the proposed phases.

3.2 Summary of Pertinent Research, Planning and Recommendations

- Functional Program - Refer to Appendix F
- Feasibility study - options analysis - Refer to Appendix F
- Final Option - Refer to Appendix G

3.3 Elaboration of Client/User Need

- CFIA is concerned with the commissioning of their laboratories and asked PWGSC to engage a Commissioning Manager to oversee the commissioning of this project to meet their interests. SNC Lavalin is responsible for the operation of the base building and will have some input into the commissioning of the facility.

3.4 Stakeholders

Project Stakeholders include representatives from the following organizations:

- Canada Food Inspection Agency - Client Department / User
- Health Canada - Building Owner
- SNC Lavalin - Property Manager of the Health Canada building, hired by PWGSC
- PWGSC - Real Property Branch, Professional and Technical Services - Project Manager and Design Manager

3.5 Site Characteristics, Challenges

- To review existing conditions and building systems to determine capacities and any HVAC upgrades required to accommodate the new renovation.
- To plan in phases the dismantling of the laboratories, relocate staff and equipment, decommission and recommission equipment
- Health Canada is renovating other areas within their building, therefore the construction activities of this project must be kept separate from the work of the other contractors within the building.
- To maintain Health Canada and CFIA laboratories operational during the construction **Construction is to occur after operational hours and on the weekends.**

3.6 Federal Objectives

- PWGSC has developed a Sustainable Building Policy that contains integrated environmental considerations into the building planning, design and construction stages of a project.
- Within a crown asset, this project must be designed and detailed with due diligence to demonstrate that long term considerations have been examined. These considerations pertain to all building systems. Life cycle analysis must be considered in design, detailing and material selection. Durability and ease of maintenance and equipment replacement must be demonstrated throughout the project.

Solicitation No. - N° de l'invitation	Amd. No. - N° de la modif.	Buyer ID - Id de l'acheteur
EQ754-141072/A		pwl042
Client Ref. No. - N° de réf. du client	File No. - N° du dossier	CCC No./N° CCC - FMS No./N° VME
R.061999.001	PWL-3-36055	

PD 4 EXISTING DOCUMENTATION

4.1 Existing Documentation - refer to Appendices F and G

- Canadian Food Inspection Agency Functional Program and Options Analysis GTA Laboratory, Final Report, prepared by NXL Architects, dated May 3 2012
- Canadian Food Inspection Agency GTA Laboratory Expansion and Renovation Feasibility Study, Final Report, prepared by NXL Architects, dated February 5 2013.

4.2 Existing Documentation - Available to the Successful Proponent (following contract award)

- Original construction documents
- Renovation of CFIA Labs record drawings (2008)
- Designated Substances Survey for Government of Canada Building located at 2301 Midland Ave., Toronto, Ontario, prepared by Advanced Environmental Corp., dated February 12, 2009
- Canadian Food Inspection Agency Functional Program and Options Analysis GTA Laboratory, Final Report, prepared by NXL Architects, dated May 3 2012 (whole document).
- Government of Canada Workplace 2.0 Fit-Up Standards
- PWGSC Commissioning Manual (CP.1), latest edition

4.3 Documentation in progress (not yet completed, but will be available to the Successful Proponent

- Building Condition Report prepared by PWGSC (2013)
- Designated Substances Survey for project specific areas
- Updated Equipment List

PD 5 PROGRAM

The gross floor area for the proposed renovation is approximately 760 m2 of which the existing CFIA occupied areas is approximately 570 m2 and the existing non CFIA occupied areas is 190 m2.

Refer to Appendix F and G for functional program requirements and feasibility study for more details.

PD 6 PROJECT OBJECTIVES

6.1 Quality

6.1.1 Design Principles - General

- The Consultant shall maintain a high standard of architectural and engineering design, based upon recognized contemporary design principles. All design elements, planning, architectural and engineering, must be fully co-ordinated, and consistent in adherence to good design principles.

- The level of quality is to be consistent with other Government of Canada Laboratory Buildings.

- The project is to be implemented in an environmentally responsible manner, providing a healthy and safe work environment that meets or exceeds all codes and supports optimum operations.

- Quality of materials, details and construction methods shall be commensurate with the type of building and the budget. The Consultant is to avoid experimental materials, to take into account the total life-cycling of the building.

- Operating costs must be kept to a minimum and reflect the projected operating costs in the cost plan. This is to be achieved by compliance with the Energy Budget, selection of equipment, requiring the minimum of operating personnel, and building finishes for easy maintenance, etc.

- The character, massing, scale, materials of this project will be compatible with its surrounding context.

- Design for maximum flexibility in immediate and future use of space.

6.1.2 Design Principles - Specific

Building Standards:

- The laboratories for CFIA are to comply to the following Canadian Biosafety Standards and Guidelines:

  Web resource: http://canadianbiosafetystandards.collaboration.gc.ca/

- The administration office area and its support office space are to comply to the Government of Canada Workplace 2.0 Fit-Up Standards. A copy of the fit-up standards will be issued to the successful proponent.

- For commissioning activities and documentation refer to PWGSC Commissioning Manual (CP.1), latest edition. Refer to the web resource:

http://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/bi-rp/tech/miseenservice-commissioning/documents/manuel-manual-eng.pdf

6.2 Sustainable Development

The Federal Sustainable Development Strategy (FSDS), developed in 2010, replaces previous departmental strategies and introduced new requirements to make environmental decision-making and performance reporting more transparent to Parliament and Canadians. The FSDS requires government-wide action to achieve common goals and targets in key areas, i.e. air and climate change, water, nature and shrinking the environmental footprint.

The 2013-14 PWGSC Report on Plans and Priorities (RPP) contains departmental sustainability goals based on the FSDS. It commits the Department to minimizing the environmental footprint of government by achieving targets on base buildings and fit-ups (including refits).

Due to the size of this lab re-fit project, it is not required to meet commitments made by PWGSC in its current and past Sustainable Development Strategies. However the building is already in accordance with the commitments contained in the 2013-14 RPP where as of April 1, 2012, existing crown buildings over 1000 m2 will be assessed for environmental performance using an industry-recognized assessment tool. In March 2013, 2301 Midland Avenue was assessed against Building Owners and Managers Association (BOMA) Building Environmental Standards (BESt), and achieved an overall rating of 73% or Level 2. This means that all of BOMA's Best Practices in environmental management have been met. As a result of the re-fit project, any improvements to the building envelope will be an improvement to the building's sustainability and an increase in the BOMA rating can be anticipated.

6.3 Waste Management

The Project will be implemented in an environmentally responsible manner.

Construction Renovation and Demolition (CRD) waste management practices are to be carried out in line with industry standards to support related and new Federal Sustainable Development Strategy (SDS) commitments (ie. with regards to LEED and the Building Owners' and Managers' Association (BOMA) BESt), and at minimum should seek to reuse and/or recycle all possible materials where local services and markets exist and should ensure that CRD waste management practices meet any provincial regulations, city and/or municipal bylaws concerning CRD waste.

The Consultant shall apply the 3R principles as outlined in the PWGSC Construction, Renovation, and Demolition (CRD) Non-Hazardous Waste Management Protocol 2002. Tender documents for this project shall call for the reuse and recycling of those products and components that can be retrieved from the waste generated by the project.

The CRD Non-hazardous Solid Waste Management Protocol, to which Real Property Branch (RPB) is bound, provides directions on the undertaking of non-hazardous solid waste management actions for CRD projects. The protocol is designed to meet the requirements of federal and provincial policies and the objectives of the Sustainable Development Strategy (SDS) as these relate to non-hazardous solid waste generated in CRD projects.

For all Real Property Branch projects greater than $1 million, a solid waste management program must be implemented to maximize reuse and recycling opportunities where the infrastructure exists. This requirement exists by regulation in the province of Ontario for projects greater than 2000 meters squared (O.Reg. 102/94 and 103/94) and by policy for the rest of Canada. It is a PWGSC best practice to achieve a minimum landfill diversion rate of 75%.

The Consultant shall develop a waste management program to comply with applicable provincial regulations and federal policies. The following is required:

1. The Consultant shall prepare NMS specifications reflecting non-hazardous waste management requirements and maximizing waste diversion potential to direct the reuse, recycling and final disposition of project waste materials . This shall include the NMS Specification 01 74 20 for Construction/Deconstrution Waste Management and Disposal

2. The Consultant shall instruct the General Contractor, in the construction documents, to prepare a waste management plan (including a waste audit and waste reduction workplan) in compliance with the PWGSC CRD Non-Hazardous Waste Management Protocol for review and approval during preparation of construction documents, prior to project start.

3. The Consultant shall instruct the General Contractor, in the construction documents, to verify the implementation of the waste management plan throughout the project by monitoring, tracking and reporting on achieved waste diversion efforts and final results. The final waste diversion results shall be reported in a Final Waste Diversion Summary Report at the end of the project, completed by the General Contractor.

6.4 Code Compliance

Codes, regulations, by laws and decisions of “authorities having jurisdiction” must be observed. National model codes, acts and standards must be observed. PWGSC and CFIA Departmental Policies, Directive and Standards must be adhered to.

The Consultant shall utilize the latest editions of the applicable codes, standards, guidelines, regulations and by-laws. Public authorities having jurisdiction shall review the design in order to obtain and apply approvals and permits required for the project. Refer to PWGSC document “Doing Business with A&E Ontario Region” attached in Appendix D for a minimal list of applicable codes, regulations, standards and guidelines.

In cases of overlap, the most stringent will apply.

The Consultant shall identify other jurisdictions appropriate to the project.

6.5 Risk Management

A risk management strategy is crucial for PWGSC Project Management and integrates project planning into procurement planning. All the stakeholders of a project will be an integral part of the risk management strategy, culminating in an integrated product team. Specific services required for project delivery are outlined in Required Services - RS8.

6.6 Health and Safety

Public Works and Government Services Canada (PWGSC), recognizes the responsibility to ensure the health and safety of all persons on Crown construction projects and the entitlement of both federal employees and private sector workers to the full protection afforded them by occupational health and safety regulations.

In keeping with the responsibility and in order to enhance health and safety protection for all individuals on federal construction sites, PWGSC will voluntarily comply with the applicable provincial/territorial

construction health and safety acts and regulations, in addition to the related Canada Occupational Safety and Health Regulations.

PD 7 ISSUES

7.1 Major Cost Issues

Effective cost estimating and cost control is of prime importance and shall be provided by professional quantity surveyors. The Class C and Class B cost estimates shall be submitted in elemental cost analysis format. The standard of acceptance for this format is the current issue of the elemental cost analysis format issued by the Canadian Institute of Quantity Surveyors.

The Class A cost estimate shall be submitted in trade cost breakdown format. Cost estimates shall have a summary plus full back-up showing items of work, quantities, unit prices and amounts.

Refer to AS2 Estimating and Cost Planning section and PWGSC document “Doing Business with A&E Ontario Region” attached in Appendix D for more detailed information.

7.2 Major Phasing Issues

Client department is concerned with phasing the work from decommissioning the equipment, moving the equipment to a temporary storage area, relocating and reinstalling the equipment in the renovated laboratories and maintaining operation of the organization throughout the duration of the construction.

The requirement of a Lab Move Coordinator Advisor will facilitate the discussions during the design development and construction to enable and organize the planning activities for the Client department to manage their operation and relocate the staff during the implementation of the project. The challenge for relocating the staff is that swing space is limited and at times not available. Other options for swing space would need to be investigated.

PD 8 CONSULTANT SERVICES

The consultant team for this project must be capable of providing the following integrated services:

- Architecture
- Mechanical engineering,
- Electrical engineering
- Laboratory expertise for architectural, mechanical and electrical engineering
- Lab move coordination advisory
- Commissioning
- Time control
- Cost control / Quantity surveying
- Risk Management
- IT and telecommunications
- Security
- Indoor air quality design, control and monitoring
- Building systems control
- Fire protection and Life Safety Systems Design

DESCRIPTION OF SERVICES

PA 1 PROJECT ADMINISTRATION

INTENT
The following administrative requirements apply during all phases of project delivery.

1.1 PWGSC Project Management

The Project Manager assigned to the project is the Departmental Representative.

The Project Manager is the Departmental Officer directly concerned with the project and responsible for its progress. The Project Manager is the liaison between the Consultant, Public Works and Government Services Canada, SNC Lavalin and the Client Departments.

Public Works and Government Services Canada administers the project and exercises continuing control over the Consultant's work during all phases of development. Unless directed otherwise by the Project Manager, the Consultant obtains all Federal requirements and approvals necessary for the work.

1.2 General Project Deliverables

Where deliverables and submissions include summaries, reports, drawings, plans or schedules, six (6) hard copies shall be provided plus two (2) copies shall be provided in electronic format unless otherwise specified.

1.3 Lines of Communication

Unless otherwise arranged with the Departmental Representative, the Consultant shall communicate with the Departmental Representative only. There shall be no direct official contact between client departments and the Consultant.

During construction tender call, Public Works and Government Services Canada conducts all correspondence with bidders and makes the contract award.

1.4 Media

The consultant shall not respond to requests for project related information or questions from the media. Such inquires are to be directed to the Departmental Representative.

1.5 Meetings

The Consultant shall arrange meetings throughout the entire project development period to occur at 2301 Midland Ave, Scarborough, as follows, for all members of project team, including representatives from:

- Canadian Food Inspection Agency (Client/User)
- Public Works and Government Services Canada
- Health Canada (Owner of facility)
- SNC Lavalin O&M (Property Manager)
- Consultants
- Commissioning Manager

Analysis of Project
Requirements and Design

Concept Phase: three (3) meetings (including start up)

Design Development Phase: every two (2) weeks

Working Drawings Phase: every three (3) weeks and after each review of submissions at 50% and 99% completion

Tender Phase: one (1) meeting during the general contractor's briefing

Contract Administration and Construction Phase: every two (2) weeks

The Consultant shall attend the meetings, record the issues and decisions and prepare and distribute minutes within 48 hours of the meeting. The Consultant shall create and maintain a list of outstanding action items and outstanding issues, and include these lists within the minutes of the meeting.

1.6 Project Response Time

It is a requirement of this project that the key senior and project personnel of the successful proponent and sub consultant and/or specialist firms be personally available to attend meetings or respond to inquiries within two (2) days.

1.7 General Project Deliverables

1. Where deliverables and submissions are required for this project, they shall be submitted in accordance with this Project Brief.
2. All specifications and drawings will be generated and distributed in the format using layering and file protocols as prescribed in the "Doing Business with A&E Ontario Region", Appendix D to the Project Brief.
3. Unless otherwise indicated in the Project Brief, provide six (6) copies of all deliverables plus one digital version in a format using PWGSC operational platforms such as: Microsoft (Word and Excel), Microsoft project, AutoCADD 2010 or latest version and NMS latest version. In addition provide a PDF electronic copy of all final reports and contract documents. All submissions and digital documents shall be stamped and signed by a Professional for their respective discipline: Licensed Architect in Ontario (OAA member), Professional Engineer (P.Eng) for engineering discipline.
4. For design, documentation and submission standards relating to the services provisions herein refer to PWGSC document "Doing Business with A&E Ontario Region" attached as Appendix D to this document. The standards in the PWGSC document "Doing Business with A&E Ontario Region" and requirements at each project delivery stage as described in the project brief must be adhered to in conjunction with this scope of services.

All documents are to be produced in the amounts and types shown below and at the project delivery stage as follows:

Design Concept Documents

No. of copies:	hard copies	CADD files	PDF File*
	.....6.....	.....1..... .	.....2.....

Design Development Documents

No. of copies:	hard copies	CADD files	PDF File*
	.....6.....	.....1.....	.....2.....

Construction Documents

No. of copies:	hard copies (drawings And Specs)	CADD files	PDF File *	NMS format (drawings and specs)
50% complete	.....6.....	.....1.....	.....2.....	.....1.....
99% complete	.....6..... .	.....1.....	.....2.....	.....1.....
100% complete	.....6.....	.....1.....	.....2.....	.....1.....

Tender Documents

No. of copies:

	hard copies	CADD files	PDF File*	NMS format
Drawings	.....6.....	.....1.....	.....2.....	
Specifications	...5 bound...	..... 1.....	.....2.....	....1.....
Specifications	..1 unbound			

Record Documents (and As builts, if applicable)

No. of copies

hard copies	CADD files	PDF File*	NMS format
.....6.....	.....1.....	.....2.....	.....1.....

* Note: Submit file in pdf format, one copy via email and another copy on a CD with the other required files.

1.8 Acceptance of Consultant Deliverables

1. While PWGSC acknowledges the Consultant's obligations to meet project requirements, the project delivery process entitles PWGSC to review work. PWGSC reserves the right to reject undesirable or unsatisfactory work. The Consultant must obtain Departmental Representative acceptances during each of the project stages.
2. Acceptances indicate that based on a general review of material for specific issues, the material is considered to comply with governmental and departmental objectives and practices, and that overall project objectives are being satisfied.
3. The acceptance does not relieve the Consultant of professional responsibility for the work and compliance with the contract.
4. PWGSC acceptances do not prohibit rejection of work, which is determined to be unsatisfactory at later stages of review. If progressive design development or time / cost / risk updates or technical investigation reveals that earlier acceptances must be withdrawn (as a result of undiscovered Consultant mistake, error or disregard of requirements/requests), the Consultant is responsible for redesigning work and resubmitting for acceptance at the Consultant's cost
5. Acceptances by the Client / Users and other agencies and levels of government must be obtained to supplement PWGSC acceptances. The Consultant shall assist the Departmental Representative in securing all such acceptances and adjust all documentation as required by such authorities when securing acceptance.

1.9 Submissions, Reviews and Approvals

Work in progress is to be reviewed by the Departmental Representative as well as the following:

PWGSC and CFIA (User) review

- Submission Format: report, drawings and specifications and samples
- Submission Schedule: Submissions are reviewed when completed work has been forwarded to the Project Manager
- Expected Turnaround Time: 2 weeks
- Number of Submissions: until approval has been received

Labour Canada - Fire Protection (FCC) or as directed by the Departmental Representative

- Submission Format: report, drawings and specifications, reviewed shop drawings related to life safety
- Submission Schedule: Submissions are reviewed completed work has been forwarded to the Project Manager
- Expected Turnaround Time: 3 weeks
- Number of Submissions: until approval has been received

Municipal authorities

- Submission Format: drawings and specifications
- Submission Schedule: Submissions are issued by general contractor after award of construction contract to the municipality for their review
- Expected Turnaround Time: to be determined by the municipality
- Number of Submissions: until permit / approval has been received

SNC Lavalin and Health Canada

- Submission Format: report, drawings and specifications
- Submission Schedule: Submissions are reviewed when completed work has been forwarded to the Departmental Representative
- Expected Turnaround Time: 2 weeks
- Number of Submissions: until approval has been received

Submit a copy of the reviewed shop drawings to each of the following:

- PWGSC - Departmental Representative
- CFIA
- SNC Lavalin
- Health Canada

Chart of Reviews and Approvals	PWGSC		CFIA		HC and SNC Lavalin		FCC	
	R	A	R	A	R	A	R	A
RS1 Analysis of Project Requirements and RS 2 Design Concept								
Review of Functional Program and Feasibility Study Report	x	x	x	x	x	x	x	
Review of Revised Final Design Option	x	x	x	x	x	x	x	

Review of Class 'C' Estimate	x	x	x	x	x			
Review of minutes of meeting	x		x		x			
RS3 Design Development								
Design Development Documents	x	x	x	x	x		x	
Class 'B' Estimate(s)	x	x	x	x	x			
Review of minutes of meeting	x		x		x			
RS4 Construction Documents / Tender Call								
50% Construction Drawings and Specs	x	x	x	x	x		x	
99% Construction Drawings and Specs	x	x	x	x	x		x	
Class 'A' Estimate(s)	x	x	x	x	x			
Final Tender Documents	x	x	x	x	x		x	
Review of minutes of meeting	x		x		x			

R = Review
A = Approval

REQUIRED SERVICES

RS 1 ANALYSIS OF PROJECT REQUIREMENTS

1.1 INTENT

The purpose of this stage is to ensure the consultant has reviewed and integrated all the project requirements, identified and evaluated conflicts or problems, provided alternative strategies, presented and received approval on a Project scope, delivery process, schedule and estimate required to deliver a cohesive quality project. This approved deliverable will become the Project Scope of Services and will be utilized throughout the project to guide the delivery.

1.2 SCOPE AND ACTIVITIES:

The Consultant shall:

Analyze the Project Brief, project requirements/program and documents received from PWGSC departmental representative and advise the departmental representative of any noted problems or the need for more information, clarification or direction
Familiarize the project design consultant team with the project requirements and proposed final design option prepared by NXL Architects
Attend project start up meeting
Review all available existing material related to the project
Prepare a list of any additional material that may assist you to expedite the project delivery
Visit the building/site and verify the availability and capacity of services needed for the project
Perform surveys and obtain local information applicable to the design, during the site visit. This includes verifying or preparing as built records as necessary
Determine and identify any potential impact of the proposed final design option with the existing building systems
Review the proposed project schedule for verification that all milestone dates are achievable
Review the cost plan/budget for verification that the costs are realistic and achievable
Identify and verify all authorities having jurisdiction over the project
Identify the codes, regulations and standards that apply
Establish a policy for the project to minimize environmental impacts consistent with the project objectives and economic constraints
Review potential for environmental impacts and application of the Environmental Effects Evaluation
Review designated substances surveys, determine the impact to the scope of the project and determine if any additional areas require to be surveyed that may impact the scope of the project
Identify additional and/or specialized services that may be required to proceed with the project but are not included in the required services of this Project Brief. Advise and recommend to the departmental representative the list of proposed services such as equipment testing, material testing or any other services that may impact the design, quality, budget or schedule of the project.

1.3 DELIVERABLES:

The Consultant shall provide the following:
Comprehensive summary of the project requirements demonstrating understanding of the scope of work including:

report on existing base building system elements that will impact the project including their condition, deficiencies and life expectancy
Designated substances survey impact to the project requirements
confirmed or adjusted project cost and time plans
written identification of the problems, conflicts or other perceived information/clarifying assumptions for the acknowledgment of the departmental representative

RS 2 DESIGN CONCEPT

2.1 INTENT

To review, in detail, the project requirements of the final proposed design option prepared by NXL Architects in their final report and to determine discrepancies and improvements to the design. Advise on potential improvements to the design and determine impact to building systems. Explore options for the improvement and analyze them against priorities and program objectives previously identified. Out of this process, one option will be recommended to proceed to Design Development

2.2 SCOPE AND ACTIVITIES:

The Consultant shall:

Review final proposed design option from NXL Architects final report dated February 5 2013 and list of equipment and their requirements; present any discrepancies and improvements to the layout of the final proposed design option
Revise final proposed design option version prepared by NXL Architects to suit improvements and get approval of the revised final design concept prior to proceeding to the next stage
Review existing building systems and compare with final design concept to determine any impacts to the base building systems and its capacities
Present alternative options to modify the existing building systems to accommodate the final design concept which are viable and have potential for development
Analyze each solution with regard to the project goals including cost and schedule
Recommend final design concept option for further development with all supporting background and technical justifications
Prepare and submit a report to the departmental representative for review and approval
Provide copies of all design concept documents in the type and number specified in PA 1.7

2.3 DELIVERABLES:

The Consultant shall provide the following:
Design Concept Drawings for all disciplines
Phasing Plans
Description of the options with recommendation of preferred solution
Class ‘C’ Estimate
Report on deviation from schedule and recommend corrective measures or updated time line, if applicable.

2.4 DELIVERABLES - DETAILS

The Consultant shall provide the following:

2.4.1 **Architectural**:
Site plan showing proposed main accesses and traffic patterns during construction to separate movement between contractors and building occupants/users/public.
Schematic floor plans of alternatives showing relative disposition of main office accommodation and laboratory areas, circulation patterns, building areas where building systems will be impacted to deliver this project, furniture and equipment layouts, etc.
Usable areas and summary of main accommodation areas required and proposed
Preliminary phasing plans identifying occupied areas and construction areas and the separation between contractors.

2.4.2 **Structural**:
Proposed or alternative structural systems where applicable.

2.4.3 **Mechanical**:
The concept submission shall include a description of specific mechanical requirements and function for each area (room) in the building that are impacted by this project. Incorporate in the submission a schedule of requirements listing all rooms and identify the mechanical building services to be provided.
Explain in the concept submission the manner in which the proposed mechanical systems correlate with user requirements.
Identify the volume of outdoor air to be supplied per person.
Identify the delivery rate of supply air to occupied spaces.
Identify whether full time operating staff will be needed for operating any of the mechanical equipment. Differentiate between staff that is needed by code requirements versus that staff which is needed because of the nature and size of the facility.
Identify location of entry point into the building of all mechanical services into the building.
Identify location of mechanical spaces in the building that are impacted by this project.
Carry out energy analysis on system alternatives.
Proposed new building systems shall maintain the energy budget for the existing building.
Establish an energy budget for the building based on the existing energy budget and compare it to energy consumption of the existing building. Total energy consumed in the building shall be expressed in kWh/sq m.
Submit a complete energy analysis as described in this section in the paragraphs under the heading Building Loads and Energy Analysis.
List non-Canadian products and materials proposed for the project with written justification.
Update equipment list with mechanical requirements

2.4.4 **Electrical**:
Proposed basic electrical systems of significance to the early design.
Site plan showing location of service entrances.
Distribution diagram showing single line diagrams to distribution centres.
Floor plans complete with locations of major electrical equipment and distribution centres, telecom rooms, that are impacted by this project
Update equipment list with power requirements
List of standard PWGSC details to be utilized.
Provide an electrical design synopsis, describing the electrical work in sufficient detail for assessment and approval by the Department. Include feasibility and economic studies of proposed systems complete with cost figures and loads.
List non-Canadian products and materials proposed for the project with written justification.

2.4.5 **Commissioning**:
Define Commissioning Requirements with the Commissioning Manager.

2.4.6 **Review of Designated Substances Survey:**
Review Designated Substances Survey for any impact to the design and performance of the building systems. Inform the Departmental Representative of any issues.
Identify areas within the project parameters where sampling of the existing materials may be required to determine if they contain designated substances. Departmental Representative will engage another consultant to prepare an additional Designated Substance Survey, if required.
If abatement is required, coordinate with project scheduler for impact to phased work and with other disciplines for impact to their scope of work.

If abatement is required, PWGSC is to engage another consultant to prepare drawings and specifications to be included into the project tender documents. Monitoring of the site will also be done by another consultant.

RS 3 DESIGN DEVELOPMENT

3.1 INTENT

To further develop the final design option and the phasing of the occupancy presented at the Design Concept stage. The Design Development documents consist of drawings and other documents to describe the size and character of the entire project as to architectural, structural (if required), mechanical and electrical systems, materials and such other elements as may be appropriate.

3.2 SCOPE AND ACTIVITIES:

The Consultant shall:

Obtain written approval from the Departmental Representative for development of the final conceptual design option;
If any alterations are demanded, document all required changes, analyze the impact on all project components, and resubmit for approval if required;
Expand and clarify the Concept Design intent for each design discipline;
Continue to review all applicable statutes, regulations, standards, guidelines, codes and by-laws in relation to the design of the project;
Present the design materials to the client, design review or other committees as indicated by the departmental representative;
Present the design to the governmental authorities having jurisdiction or local authorities where required;
Refine the approved conceptual design option to a level of detail which will facilitate Class B Cost Estimates, design review and discussions with the Client Department;
Submit to the Departmental Representative, design development documents in sufficient detail to define the size, intent and character of the entire project;
Analyze the constructabilitly of the project and advise on the construction process and duration
Based on all material available at the time, prepare a milestone schedule for the consideration with special attention to the impact on tenants;
Provide a list and draft specification sections of all NMS sections to be used. Submit outline specifications for all systems and principle components and equipment. Provide in the outline specifications manufacturers literature about principal equipment and system components proposed for use in this project;
Coordinate the scope of designated substances abatement, if applicable, with all disciplines' scope of work within the project,
Submit an updated Construction Class B Cost Estimate based on the design development documents, and an updated Cost Plan and Project Schedule; and
Provide copies of all design development documents in the type and number specified in PA 1.7.

3.3 DELIVERABLES:

The Consultant shall provide the following:

Site Plan
Phasing Plans
Demolition Plans
Floor plans including all disciplines showing all floor elements and services to detail necessary to make all design decisions and to substantially estimate the cost of the project

Architectural, structural, engineering, millwork and finishing details to determine type choice of materials and finishes
Reflected ceiling plans
Interior elevations illustrating millwork, lab casework and equipment locations
Sections and Details
Finishes and colour schemes
Schedules: Room Finish, Doors, Frames and Screens, Door Hardware
List of Equipment identifying existing or new, type, mechanical and electrical requirements, storage location and proposed final location, who will install and when.
Outline specifications for all systems and principle components or equipment, identifying all NMS divisions applicable to the project and a brief description of all systems and principle components or equipment proposed for the project
Class 'B' cost estimate
Preliminary construction schedule including long term delivery items
Fire Protection Engineers Report including requirements, strategies or interventions for protection of the building and it's occupants
Project dossier detailing the basic assumptions of the project and the justifications for all major decisions
Design Intent Brief and Commissioning Brief to be part of Commissioning Plan (prepared by Commissioning Manager)
For mechanical and electrical specific deliverables, refer to 3.4.3 and 3.4.4.

3.4 DELIVERABLES - DETAILS

The deliverables shall include the following:

3.4.1 **Architectural Drawings**:
Site Plan showing the building(s) and existing or proposed environmental items including the following:
Traffic pattern:
Pedestrian
Private Vehicles
Construction Storage Area
Service Roads.
Parking:
Employees
Visitors
Service vehicle parking and loading areas.
Phasing Plans
Demolition Plans
Floor Plans of each floor showing all office accommodation and laboratories required, including all necessary circulation areas, stairs, elevators, etc., and ancillary spaces anticipated for service use. Indicate building grids, modules, etc., and key dimensions.
Furniture, millwork, lab casework and Equipment plans.
Reflected ceiling plans coordinating all discipline items mounted or recessed in the ceiling such as air diffusers, sprinklers, smoke detectors, lighting , exhaust-arms, etc.
Interior elevations of all laboratories illustrating design requirements for lab casework and equipment to assist in identifying details and in coordinating mechanical and electrical services.
Sections and details of millwork and lab casework
Prepare finish and colour boards for proposed materials in office and laboratory areas (minimum 2 colour scheme options)
Schedules: Room Finish, Door, Frame and Screens, Hardware

List of Equipment identifying if existing or new equipment, location of where they are stored, proposed locations; new equipment to be installed by general contractor or by other contractors.

3.4.2 **Structural Drawings**:

Drawings indicating the proposed structural framing system, structural materials, and other significant or unusual details proposed. Drawings may be separate or incorporated on the Architectural sheets.

3.4.3 **Mechanical Drawings:**

Site Plan showing service entrances for water supply, sanitary and storm drains and connections to public utility services, including all key invert elevations.
Drawings showing preliminary sizing of ventilation, cooling and heating systems showing locations, and all major equipment layouts in mechanical rooms.
Drawings of plumbing system, showing routing and sizing of major lines and location of pumping and other equipment where required
Drawings of the fire protection systems showing major components.
Produce preliminary designs based on the approved concept. Update the energy analysis and energy budget established at the concept design stage.
Update the schedule of requirements.
Provide information of all internal and external energy loads in sufficient detail to determine the compatibility of the proposal with existing services, approved concept and energy budget.
Analysis of selected equipment and plant with schematics and calculations sufficient to justify the economy of the selected systems.
Describe the mechanical systems to be provided and the components of each system. Describe the perceived operation of the mechanical systems.
Explain what operating staff will be needed to operate the building systems and the expected functions of the operation staff.
Describe the building systems control architecture. Provide preliminary EMCS network architecture, mechanical control schematics, and sequence of operation.
Explain what acoustical and sound control measures are to be included in the design.
Provide Calculations and Schedules (valves, diffusers, filters, dampers, etc)
Provide air flow directions
Provide Waste and Vent Piping, Plumbing Supply Distribution
Provide details, HVAC controls, DDC Points List, Control Devices
Note routing to be shown to tie-in locations
List of equipment with mechanical requirements

3.4.4 **Electrical drawings:**

Provide drawings showing advanced development of the following:

Single line diagram of the power circuits with their metering and protection, including:

- Complete rating of equipment.
- Ratios and connections of CT's and PT's.
- Description of relays when used.
- Maximum short circuit levels on which design is based.
- Identification and size of services.
- Connected load and estimated maximum demand on each load centre.

Electrical plans with:

- Floor elevations and room identification.
- Legend of all symbols used.
- Circuit numbers at outlets and control switching identified.
- All conduit and wire sizes except for minimum sizes which should be given in the specification.

A panel schedule with loadings for each panel.
Telephone conduits system layout for ceiling/floor distribution.
Riser diagrams for lighting, power, telephone and telecommunication cable systems, fire alarm and other systems.
Elementary control diagrams for each system.
Schedule for motor and controls.
Complete lighting layout and fixture schedule clearly indicating methods of circuiting, switching and fixture mounting.
Electric heating layout and schedule.
Note routing to be shown to tie-in locations
Provide details, room access and security
List of equipment with power requirements
Provide the following data:
Total connected load.
Maximum demand and diversity factors.
Sizing of standby load.
Short-circuit requirements and calculations showing the ratings of equipment used.

3.4.5 **Commissioning**

Define operational requirements based on design intent of the facility
Define Commissioning Requirements with Commissioning Manager
Prepare a Commissioning Brief for commissioning requirements including objectives, scope, user requirements, roles and responsibilities
Prepare a design intent brief, to be included with the Commissioning Brief ,describing the building systems that will require major commissioning activities for mechanical, electrical and integrated system testing
Coordinate requirements with Commissioning Plan prepared by Commissioning Manager
Define and establish project specific archives
Coordinate commissioning requirements into the deliverables of the project 3.4.6 Designated Substances:
Based on the outcome of the review of the designated substances report, determine if abatement of designated substances is required.
If abatement of designated substances is required, identify the areas where the abatement will occur within the drawings and specifications stating that the scope of work will be prepared by another consultant, engaged by PWGSC. Coordinate the impact of this scope of work, within the project, with all disciplines. PWGSC is to engage another consultant to prepare drawings and specifications to be included into the project tender documents. Monitoring of the abatement on site will also be done by another consultant.
Coordinate with project scheduler for impact to phased work and with other disciplines for impact to their scope of work.

RS 4 CONSTRUCTION DOCUMENTS

4.1 INTENT

To prepare drawings and specifications, listed in design development documents in RS 3, setting forth in detail the requirements for the construction and final cost estimate of the project.

50% indicates substantial technical development of the project - well advanced architectural and engineering plans, details, schedules and specifications
99% is the submission of complete Construction Documents ready for tender call and submission to local authorities for pre-permit purposes
Develop project specific Standard Operating Procedures (SOP) Manual
Final Submission (100%) incorporates all revisions required in the 99% version and is intended to provide PWGSC with complete construction documents for tender call.

4.2 SCOPE AND ACTIVITIES - GENERAL

Activities are similar at all three stages; completeness of the project development should reflect the stage of a submission.

The Consultant shall:

Obtain Departmental Representative's approval for Design Development submissions (50% 99% and final (100%))
Confirm format of drawings and specifications
Coordinate with Commissioning Manager project requirements to conform to Commissioning Plan
Update and finalize design intent brief and Commissioning Brief
Implement Commissioning Plan requirements into construction documents
Coordinate scope of work for dealing with designated substances by other PWGSC's consultant into the construction documents
Clarify special procedures (i.e. phased construction)
Submit drawings and specifications at the required stages. (50%, 99% and final (100%))
Provide written response to all review comments and incorporate them into Construction Documents where required.
Advise as to the progress of cost estimates and submit updated cost estimates as the project develops
Update the project schedule
Prepare a final Class 'A' estimate
Review and approve materials and construction processes specifications to meet sustainable development objectives.
Provide copies of all construction documents in the type and number specified in PA 1.7.

4.3 SCOPE AND ACTIVITIES - DETAILS

4.3.1 **Technical and Production Meetings**

Production of construction documents will be reviewed during the meetings arranged by Departmental Representative and Consultant.
Representatives from Client Department(s) and PWGSC support staff will be present as arranged by the Departmental Representative.
Consultant shall ensure that his staff and the sub-consultant representatives attend the technical and production meetings as required.
Consultant shall arrange for all necessary data, progress prints, etc.
Consultant shall prepare minutes of the meetings and distribute copies to all participants.

4.3.2 **Progress Review**

As work progresses on construction drawings, submit drawings, schedules, details, pertinent design data and updated Cost Plan and Project Schedule as required.

Mechanical and electrical:

Flow diagrams, system layouts, equipment selections and sizes, floor plan layouts showing major equipment.

All major ductwork sized and shown on drawings including layout of all major mechanical and transformer rooms.

EMCS network architecture, mechanical control schematics, sequence of operation for each mechanical system, electrical control schematics, DDC input/output point schedules.

Update the energy analysis and energy budget.

Submit at the stipulated progress submission all calculations for mechanical design and equipment selection. These calculations shall be bound (3-ring binder) and indexed.

Calculations submitted shall not necessarily be reviewed. They are required for record purposes and in certain instances to assist in the understanding and interpretation of designs. Calculations shall be submitted in a format that is legible, neat and easily understandable.

Specifications and an index of specifications. The specifications shall consist of typed and edited PWGSC amended NMS sections, PWGSC in-house master specs sections and NMS sections.

4.3.3 **Inspection Authorities Submission**

Submit and obtain approval on plans and specifications required by Inspection Authorities before tender call.

4.3.4 **Designated Substances Abatement:**

•Incorporate the scope and specifications of the abatement of designated substances, issued by PWGSC's other consultant, within the constructions documents. Coordinate impact of this scope of work within the project with all the other disciplines.

4.4 DELIVERABLES

Deliverables are similar at all three stages; completeness of the project development should reflect the stage of a submission.

The Consultant shall provide the following:

4.4.1 **50% Submission**:

Complete working/construction drawings at 50% completion

Complete full set of specifications with all divisions edited at least 50% completion

Standard Operating Procedures (SOP) manual at 50% completion

Progress set of schedules: Room Finish; List of Materials for Finishes and Colours; Door, Frame and Screen; Door Hardware

Two copies of sample and colour boards

One copy of support data, studies, calculations, etc., required by PWGSC Engineering disciplines for review for compliance

One copy of updated Cost Plan and Project Schedule

4.4.2 **99% Submission:**

Complete working/construction drawings at 99% completion

Complete full set of specifications with all divisions edited at least 99% completion

Updated Design Intent Brief

Updated Commissioning Brief

Standard Operating Procedures (SOP) manual at 99% completion

One copy of the complete finish and colour schedules, including textures, sheens, super-graphics, colour chips and material samples.
Two copies of sample and colour boards
One copy of support data, studies, calculations, etc., required by PWGSC Engineering disciplines for final checking and record.
One copy of updated Cost Plan and Project Schedule

4.4.3 **Final (100%) Submission:**

This submission incorporates all revisions required by the review of the 99% submission. Provide the following:

Complete set of originals of the working/construction drawings.
Complete full sets of original specifications.
Class ‘A’ cost estimate
Final Design Intent Brief
Final Commissioning Brief
Complete Standard Operating Procedures (SOP) manual
Complete set of original Sample and Colour Boards - 2 sets. One set of designated substance survey reports.

4.4.4 **Originals:**

As a safeguard against loss or damage to the originals, retain a complete set of drawings in reproducible form and one copy of specification.

RS 5 TENDER CALL, BID EVALUATION & CONSTRUCTION CONTRACT AWARD

5.1 INTENT

To obtain and evaluate bids from qualified contractors to construct the project as per the Tender Documents. To award the construction contract according to government regulations, including Federal Rules for Bid Depositories.

5.2 SCOPE AND ACTIVITIES:

1. General:

The Consultant shall:

Attend tenderers briefing meeting(s)
Prepare addenda based on questions arising in such meetings for issue by the Departmental Representative
Provide the Departmental representative with all information required by tenderers to fully interpret the Construction Documents. The Departmental Representative will issue the addenda to all participants.
Keep full notes of all inquiries during the bidding period and submit same to Departmental Representative at the end, for PWGSC records.
Assist in tender evaluation by providing advice on the following:
- The completeness of tender documents in all respects.
- The technical aspects of the tenders.
- The effect of alternatives and qualifications which may have been included in the tender.
- The tenderers capability to undertake the full scope of work.
- The availability of adequate equipment to carry out the work.

If PWGSC decides to re-tender the project, provide advice and assistance to the Departmental Representative
Revise and amend, at your cost, the construction documents to bring the cost of the work within the limits stipulated
Examine and report on any cost and schedule impact created by the issue of tender / contract addenda
Provide copies of all construction documents in the type and number specified in PA 1.7.

2. **Tender Call**:

1. The Consultant shall, after acceptance of the final submission of the construction documents by the Departmental Representative, provide one (1) complete set of the approved working drawings stamped by a Professional for each respected discipline digitally, suitable for reproduction, and two (2) sets of the approved specifications, one set to be suitable for reproduction and the other set to be properly bound and covered..

2. The Consultant shall, on request:

i. provide the Departmental Representative with information required for interpretation and clarification of the construction documents;

ii. assist in the evaluation and approval of equivalent alternative materials, methods and systems;

iii. assist with the preparation of addenda;

iv. attend job or site showings as required.

3. **Bid Evaluation and Construction Contract Award**:

1. The Departmental Representative shall be responsible for assembling and issuing tender documents and arranging for the receipt of tenders and awarding of the Construction Contract.

2. The Consultant shall, on request:
   i. review and evaluate the bids received for the construction of the Project, and advise on their relative merits;
   ii. provide information to support price negotiations.

5.3 DELIVERABLES:

The Consultant shall provide the following:

Originals of drawings and specifications
Electronic copies of drawings and specifications.
Addenda as required
Changes to the documents, if re-tendering is necessary
Updated cost estimate or schedule
Issued for construction documents (drawings and specifications), as required

RS 6 CONSTRUCTION AND CONTRACT ADMINISTRATION

6.1 INTENT

To implement the project in compliance with the Contract Documents and to direct and monitor all necessary or requested changes to the scope of work during construction.

6.2 SCOPE AND ACTIVITIES:

The Consultant shall:

During the implementation of the project, act on PWGSC's behalf to the extent provided in this document
Carry out the review of the work at intervals appropriate to determine if the work is in conformity with the Contract Documents and the municipality and building code requirements
Keep PWGSC informed of the progress and quality of the work and report any defects or deficiencies in the work observed during the course of the site review
Take photographs of the progress of the work and of the deficiencies and include into the site review reports
Ensure compliance with Commissioning Plan, inform Commissioning Manager of any discrepancies
Determine the amounts owing to the Contractor based on the progress of the work and certify payments to the contractor
Act as interpreter of the requirements of the Contract Documents
Provide cost advice during construction
Advise the Departmental Representative of all potential changes to scope for the duration of the implementation
Review the Contractor's submittals
Prepare and justify change orders for issue by the Department Representative
Indicate any changes or material/equipment substitutions on Record Documents
During the twelve (12) month warranty period investigate all defects and alleged defects and issue to the instructions Contractor
Prepare and post Systems Operating Instructions
Finalize Standard Operating Procedures (SOP) Manual
Conduct a final warranty review

6.3 SCOPE AND ACTIVITIES - DETAILS

The Consultant shall:

6.3.1 **Construction Meetings**

Immediately after contract award arrange a briefing meeting with the Contractor and the Departmental Representative. Prepare minutes of the meeting and distribute copies to all participants and to other persons agreed upon with the Departmental Representative.
Call site meetings as frequently as required, commencing with the construction briefing meeting. The meetings should include the job superintendent, Inspector of Construction main sub-subcontractors, affected sub-consultants and authorities having jurisdiction representatives as necessary. Prepare minutes of the meeting and distribute copies to all participants. The Departmental Representative may invite Client Departments to attend any of these meetings.
Advise the Departmental Representative of the dates and times of the proposed meetings;
Attend all such meetings; and
Maintain a record of the proceedings of such meetings and provide the Departmental Representative with a copy thereof.

6.3.2 **Project and Construction Schedule**

As soon as possible after the award of the Construction Contract, request from the Contractor a detailed construction schedule, and, after review for conformity with the Project Schedule, forward two (2) copies of the construction schedule to the Departmental Representative;
Obtain Construction Schedule with detailed commissioning component shown separately, as soon as possible after contract award and ensure proper distribution.
Monitor the approved construction schedule, take necessary steps to ensure that the schedule is maintained and submit a detailed report to the Departmental Representative concerning any delays.
Report to the Departmental Representative the progress of the construction.
Notify the Departmental Representative of any known and anticipated delays which may affect the completion date of the Project, and keep accurate records of causes of delays. Make every effort to assist the Contractor to avoid delays.

6.3.3 **Time Extensions**

Do not approve any requests for time extensions. The Departmental Representative shall evaluate all requests from the Contractor for time extensions, and shall issue directions to the Contractor and the Consultant. Only the Departmental Representative may approve any request for Time Extensions. Approval will be issued in writing by the Departmental Representative.

6.3.4 **Cost Breakdown**

Obtain from the Contractor the detail cost breakdown on standard PWGSC form and submit to the Departmental Representative with the first Progress Claim.

6.3.5 **Changes to List of Sub-contractors**

The Contractor is required to use the sub-contractors listed on the tender form unless a change is authorized by the Departmental Representative. Changes are only considered when they involve no increase in cost. Review all requests for changes of sub-contractors, and submit recommendations to the Departmental Representative.
When sub-contractors have not been listed on the Tender Form, obtain the list from Contractors no later than 10 working days after date of award.

6.3.6 **Labour Requirements**

The Contractor is bound by the Contract to maintain competent and suitable workmen on the project and to comply with the Canada Department of Labour - Labour Conditions. Inform the Department of any labour situations that appear to require corrective action by the Department. The Consultant shall ensure that a copy of the Labour Conditions for the Contract is posted in a conspicuous place on site.

6.3.7 **Bylaw Compliance**

Ensure that construction complies with applicable bylaws and regulations.
Matters pertaining to the Department of Labour shall be referred to the Departmental Representative.

6.3.8 **Construction Safety**

All construction projects that are occupied by federal employees during construction are subject to the Canada Occupational Health and Safety Act and Regulations as administered by Health and Welfare Canada.
Fire safety provisions during construction must comply with FCC Standards 301 and 302, administered by the Fire Commissioner of Canada or as directed by the Departmental Representative.

In addition to the above, the Contractor must comply with the provincial and municipal safety laws and regulations, and with any instructions issued by the officers of these authorities having jurisdiction relating to construction safety.
Ensure the Contractor is mandated to provide all required coordination, isolation, protection and reinstatement of the fire protection and suppression systems throughout construction. Notify the Property Manager each time the fire protection and suppression systems are bypassed and advise of estimated reinstatement time. Ensure the Contractor is mandate to provide Watchman Service as defined in FCC 301 and by the Fire Commissioner of Canada or as directed by the Departmental Representative.

6.3.9 **Site Visits**

Construction is to occur after operational hours and on weekends. Consultant shall coordinate with Contractor when is the most effective time to review the site. Consultant should review the site during the construction hours, as required .
Provide basic construction site review services to meet municipal and building code obligations and ensure compliance with contract documents.
Provide additional construction site review services, as requested by the Departmental Representative, to meet requirements described in section AS 3 of Additional Services
Provide services of qualified personnel who are fully knowledgeable with technical and administrative requirements of project.
Establish a written understanding with contractors as to what stages or aspect of the work are to be inspected prior to being covered up.
Assess quality of work and identify in writing to the Contractor and to the Departmental Representative all defects and deficiencies observed at time of such inspections.
Inspect materials and prefabricated assemblies and components at their source or assembly plant, as necessary for the progress of the project.
Any directions, clarifications or deficiency list shall be issued in writing to PWGSC.
Record and report to the Departmental Representative on the progress, non-conformities and deficiencies observed during each site visit, and provide the Contractor with written progress reports and list of deficiencies observed; take digital photographs of the progress of work and work to be rectified; include photographs into the reports; and recommend the action to be taken.

- Consultant shall arrange for the Consultant's architectural, structural, mechanical, electrical and other consultants to make the periodic inspections required by the Consultant's contract, and for these inspections to be made timely with respect to the progress of the work.

6.3.10 **Clarifications and Interpretation:**

Provide clarifications and interpretation of the construction documents or site conditions, in written or graphic form, as required in order that project not be delayed, to the Contractor for the proper execution and progress of the construction as and when necessary.

6.3.11 **Progress Reports**

Report to the Departmental Representative regularly on the progress of the work. Submit bi-weekly reports including photos of progress of the work.

6.3.12 **Work Measurement**

If work is based on unit prices, measure and record the quantities for verification of monthly progress claims, Substantial Performance Certificate and the Completion Certificate of Measurement.
When Contemplated Change Notice is to be issued based on Unit Prices, keep accurate account of the work. Record dimensions and quantities.

6.3.13 **Detail Drawings**

Provide for the Departmental Representative's information any additional detail drawings as and when required to properly clarify or interpret the contract documents.

6.3.14 **Shop Drawings**

Establish and implement a shop drawing handling/distribution protocol acceptable to the Project Team. Verify the number of copies of shop drawings required. Consider additional copies for Client's departmental review.

Specify in the construction documents the shop drawings that are to be submitted by the Contractor.

Review and take other appropriate action with reasonable promptness upon such contractor submittals as shop drawings, product data, and samples, for conformance with the general design concept of the work as provided in the Contract Documents.

Review in a timely manner the shop drawings provided by the Contractor to determine conformity with the general design concept and intent of the construction documents and indicate to the Contractor such conformance with the general concept or lack thereof; and provide the Departmental Representative with one (1) copy when such conformity is confirmed.

Verify that shop drawings include the project number and are recorded in sequence.

Shop drawings shall be stamped: "Checked and Certified Correct for Construction" by the Contractor and stamped: "reviewed with comments", “reviewed” or “rejected” by the Consultant before return to the Contractor.

Expedite the processing of Shop Drawings within the five (5) working days or the number of days agreed by the Departmental Representative.

On completion of project, forward four (4) copies of reviewed shop drawings to the Departmental Representative. Ensure that shop drawings include the project number and are recorded in sequence.

6.3.15 **Inspection and Testing**

- Recommend the need for, and review, test reports of materials or construction.
- Specify in the construction documents product and performance testing to be undertaken by the Contractor.
- Recommend quality assurance testing to be undertaken during construction, evaluate the results and advise the Departmental Representative accordingly.
- Request the Contractor to take remedial action when observed material or construction fails to comply with the requirements of the Construction Contract, and advise the Departmental Representative accordingly.

Prior to tender, provide Department with recommended list of tests to be undertaken, including on site and factory testing

Ensure all testing is detailed within the commissioning plan

When contract is awarded, assist Departmental Representative in briefing testing firm on required services, distribution of reports, communication lines, etc.

Review all test reports and take necessary action with Contractor when work fails to comply with contract.

Immediately notify Departmental Representative when tests fail to meet project requirements and when corrective work will affect schedule.

Assist Departmental Representative in evaluating testing firm's invoices for services performed.

Recommend to Departmental Representative when the monitoring of the abatement of designated substances on site should be done by other consultant. Inform Contractor of when abatement consultant will be on site.

6.3.16 **Training**

Prior to tender, review the Training Plan and coordinate the requirements with the Commissioning Manager and within the project documents.

6.3.17 **Changes** to Construction Contract

The Consultant does not have authority to change the work or the price of the Contract.
Submit all requests and recommendations for changes to the Construction Contract and their implications to the Departmental Representative for approval
Changes which affect cost or design concept must be approved by the Departmental Representative.
Upon Departmental Representative's approval obtain quotations from the Contractor in detail for contemplated changes, review the prices for acceptability, assess the effect on construction progress, and submit promptly recommendations to the Departmental Representative.
The Departmental Representative will issue Consultant-prepared Change Orders to the Contractor, with a copy to Consultant. The Departmental Representative shall issue Change Orders for all approved changes.
All changes, including those not affecting the cost of the project, will be covered by Change Orders.
The practice of "trade offs" is not allowed.

6.3.18 **Contractor's Progress Claims**

- Request from the Contractor a cost breakdown of the Construction Contract Award Price in detail appropriate to the size and complexity of the Project, or as may otherwise be specified in the Construction Contract, and submit the cost breakdown to the Departmental Representative prior to the Contractor's first progress claim.
- Review the progress claim (request for progress claim), for work and materials as per the requirements of the Construction Documents, submitted each month by the Contractor.
- Examine progress claims in a timely manner and, if acceptable, certify the progress claims for work completed and materials delivered pursuant to the Construction Contract, and submit them to the Departmental Representative for approval and processing.
- If the construction is based on unit prices, measure and record the quantities of labour, materials and equipment involved for the purpose of certifying progress claims.
- Verify at each progress payment that Contractor has accurately recorded information on the site as-built set of Contract Documents.

The claims are made by completing the following forms where applicable:
Request for Progress Payment
Cost Breakdown for Unit and/or combined Price Contract
Cost Breakdown for Fixed Price Contract
Statutory Declaration Progress Claim
Review and sign designated forms and promptly forward claims to the Departmental Representative for processing.
Submit with each progress claim:
Updated schedule of the progress of the work.
Detailed photographs of the progress of the work.

6.3.19 **Materials On Site**

The Contractor may claim for payment of material on site but not incorporated in work.
Material must be stored in a secure place designated by the Departmental Representative.
Detailed list of materials with supplier's invoice showing price of each item must accompany claim; Consultant shall check and verify the list.
Items shall be listed separately on the Detail Sheet after the break-down list and total.
As material is incorporated in the work the cost must be added to the appropriate Detail item and removed from the material list.

6.3.20 **Acceptance Board**

Inform the Department when satisfied that the project is substantially completed. The Consultant shall ensure that his representative, his sub-consultant representative, Consultant On-Site Reviewer, Contractor and major sub-trades representatives shall form part of the Project Acceptance Board and attend all meetings as organized by the Departmental Representative.

6.3.21 **Substantial Performance (Interim) Inspection**

The Acceptance Board shall inspect the work and list all unacceptable and incomplete work on a designated form. The Board shall accept the project from the Contractor subject to the deficiencies and uncompleted work listed and priced.

6.3.22 **Certificate of Substantial Performance (Interim)**

- Review the construction with the Departmental Representative and the Contractor, and record all unacceptable and incomplete work detected.
- Request from the Contractor, review for completeness and adequacy and provide the Departmental Representative with all operation and maintenance manuals and any other documents or items to be provided by the Contractor, in accordance with the Construction Contract;
- Prepare and submit to the Departmental Representative for approval and processing, and as a basis for payment to the Contractor, a Certificate of Substantial Performance (Interim) as required by the Construction Contract, together with supporting documents properly signed and certified.

Payment requires completion and signing, by the parties concerned, of the following documents:

Certificate of Substantial Performance
Cost Breakdown for Fixed Price Contract
Cost Breakdown for Unit or Combined Price Contract
Inspection and Acceptance
Statutory Declaration Certificate of Substantial Performance
Workmen's Compensation Board Certificate
Progress Photos
Updated Schedule

Verify that all items are correctly stated and ensure that completed documents and any supporting documents are furnished to the Departmental Representative for processing.

6.3.23 **Building Occupation**

The Department or Client Department may occupy the building after the date of acceptance of the building by the Acceptance Board. The acceptance date is normally that of the Interim Certificate issued to the Contractor. As of the acceptance date, the Contractor may cancel the Contract Insurance, and the Department or Client Department (as the case may be) assumes responsibility for:

Security of the work(s).
Fuel and utility charges.
Proper operation and use of equipment installed in the project.
General maintenance and cleaning of the work(s).
Maintenance of the site. (Except any landscaping maintenance covered by the contract.)

6.3.24 **Operation and Maintenance Data Manual**

Operation and Maintenance Data Manual: four (4) sets of each volume produced by Contractor in accordance with Sections 01 33 01, 01 77 00, 01 78 00 of project specification and verified for completeness, relevance and format by the Architectural, Mechanical and Electrical Consultants and submitted to PWGSC Departmental Representative prior to interim acceptance or actual start of operation and instruction period, whichever occurs sooner. The Contractor shall retain one copy of each volume for his record and use during the instruction period.

6.3.25 **Instruction of Operating Personnel**

Make arrangements and ensure that Department's operating personnel is properly instructed on the operation of all services and systems using the final manuals as reference.

Consultant to provide training sessions, as required, on the subject of design intent and systems operations. Utilize Systems operations manual for training sessions.

6.3.26 **Keys**

Ensure that all keys and safe combinations are delivered to the Department and/or the Client Department as applicable.

6.3.27 **Final Inspection**

Inform the Department when satisfied that all work under the contract has been completed, including the deficiency items. Inspection and Acceptance as a result of the Substantial Performance (Interim) Inspection . The Department reconvenes the Acceptance Board which makes a final inspection of the project. If everything is satisfactory the Board makes final acceptance of the project from the Contractor.

6.3.28 **Certificate of Completion (Final)**

- Advise the Departmental Representative when the construction has been completed in general conformity with the Construction Contract.
- Make a final review of the construction with the Departmental Representative and the Contractor and, if satisfactory, prepare and submit to the Departmental Representative for approval and final payment to the Contractor, a Certificate of Completion (Final) as required by the Construction Contract, together with supporting documents properly signed and certified, including manufacturers' and suppliers' warranties.

  The final payment requires completion and signing, by the parties concerned, of the following documents:

  Certificate of Completion
  Cost Breakdown for Fixed Price Contract
  Inspection and Acceptance
  Statutory Declaration Certificate of Completion
  Cost Breakdown for Unit and/or Combined Price Contract
  Workmen's Compensation Clearance Certificate
  Certificate of Acceptance from Electrical Inspection Department
  Final photographs

  Verify that all items are correctly stated and ensure that completed documents and any supporting documents are furnished to the Department for processing.

6.3.29 **Take-over**

The official take-over of the project, or parts of the project, from the Contractor is established by the PWGSC Project Team which includes the Consultant and the Client Department. The date of Interim Certificate of Completion and the Final Certificate of Completion signifies commencement of the 12 month warranty period for work completed on the date of each certificate in accordance with the General Conditions of the Contract.

Provide Department with original copy of Contractor's warranties for all materials and work covered by an extended warranty or guarantee, according to the conditions of the specifications. Verify their completeness and extent of coverage.

6.3.30 **As-Built and Record Drawings and Specifications**

- Following the take-over and before issuance of the Certificate of Completion (Final), obtain as-built marked-up hard copy from the Contractor:

- Show significant deviations in construction from the original Contract drawings, including changes shown on Post-Contract Drawings, changes resulting from Change Orders and/or from On Site Instructions.
- Check and verify all as-built information provided by Contractor for completeness and accuracy and submit to Departmental Representative.

- Produce Record Drawings by incorporating changes shown on Post-Contract Drawings, changes resulting from Change Orders and/or from On Site Instructions and As-Built information, into project drawings and specifications.
- Verify that record drawings are suitable for digital printing or scanning, incorporating all recorded changes to the original working drawings based on as-built prints, drawings and other information provided by the Contractor, together with change orders and on site instructions.
- Verify that record drawings are labeled ‘‘Record’’, dated and signed by the Consultant, and provide also a marked-up copy of the specifications recording changes related thereto.
- Submit a complete set of Record Drawings and Specifications in number and format required by the Consultant Agreement within 8 weeks of final acceptance.
- Provide a complete set of final shop drawings.

6.4 DELIVERABLES:

The Consultant shall include the following:

Written reports from site visits including persons involved
Written reports on the progress of the work and the cost of the project at the end of each month
Additional detail drawings when required to clarify, interpret or supplement the Construction Documents
Post contract drawings
CCN’s, SI’s, CO’s, etc for signature by the Departmental Representative
Certificates of Substantial Performance and/or Completion
Debrief of Commissioning Activities
As built drawings (hard copy provided by Contractor)
Record drawings and specifications
Progress photographs during construction and final photographs (digital format)
Progress Draws Reviews
Warranty deficiency list
Report on Final Warranty Review

RS 7 COMMISSIONING THE FACILITY

7.1 INTENT

The Commissioning Team members and their roles for this project shall be as follows:

1. **Commissioning Manager**: prepare the Commissioning Plan and oversee all commissioning activities for this project (Note: PWGSC will hire the services of the Commissioning Manager separate from this contract)
2. **Consultant Representative**: liaise with the Commissioning Manager and provide all design information required for commissioning to meet CFIA's functional requirements and maintain design intent of the base building systems, prepare the Design Intent Brief and the Commissioning Brief and submit to the Commissioning Manager for coordination of the Commissioning Plan
3. **PWGSC Departmental Representative**: manage the Consultant and the Commissioning Manager
4. **SNC Lavalin Commissioning Representative**: provide all base building requirements, review impact of any changes proposed to the existing systems and provide feed back, provide operational requirements that affect base building systems.

The Consultant shall provide the commissioning services to verify that the base building and CFIA's functional requirements are correctly interpreted during the design stage and contract documents, and the building systems operate consistently at the peak efficiencies, under all normal load conditions.. The consultant will liaise with the Commissioning Manager and incorporate the commissioning requirements and standards into the design and construction contract documents.

As a member of the PWGSC team, the Commissioning Manager (hired by PWGSC) represents PWGSC and CFIA's interests, and is responsible for overseeing all commissioning activities during the development, implementation and post construction stages of the project to conform to PWGSC's Commissioning Manual, latest edition.

SNC Lavalin, as a member of the PWGSC team, represents Health Canada's (Building Owner's) base building interests, and is responsible for reviewing and providing inputs on all commissioning activities during the development, implementation and post construction stages of the project to conform to PWGSC's Commissioning Manual (CP.1), latest edition.

PWGSC, on behalf of CFIA, will engage the Commissioning Manager to represent CFIA's interests and oversee all commissioning activities during the development, implementation and post construction stages of the project to conform to CFIA's (Tenant within Health Canada's building) operational laboratory standards. The Commissioning Manager will be coordinating with SNC Lavalin for the commissioning activities and standards of the base building.

Throughout this stage, the Consultant and Consultant's representatives on site will work with the Commissioning Manager, PWGSC and the Contractor to implement commissioning activities and create useful, well integrated drawings, commissioning reports and manuals, in compliance with Contract Documents.

The Consultant and their representatives shall:

1. Define the operational and performance requirements of the base building (Health Canada's building) and the tenant (CFIA) with the Commissioning Manager.
2. Ensure that responsibility for meeting these requirements and demonstrating compliance is defined in the design and contract documents

3. Ensure that appropriate start-up and checkout procedures are employed for components, subsystems, including meaningful documentation for and certification of, quality control reports and techniques under the normal or enhanced basic services and contractual procedures.
4. Ensure that the final product meets the specified requirements and the criteria set out in the project brief.
5. Document the operations, maintenance and management requirements, and transferring the completed works to qualified facility operators.
6. Minimize the life-cycle operating and maintenance costs.
7. Verify that the department's functional requirements are correctly interpreted during the design stage, and that the building systems operate consistently at peak efficiencies, under all normal load conditions of the design intent.

7.2 SCOPE AND ACTIVITIES - GENERAL

The consultant shall provide the services that include but not limited to the following activities:

1. Provide complete documentation on the operations and maintenance requirements;
2. Prepare Systems Operating Procedures (SOP) Manual. Contents of SOP Manual and Contractor's Operation and Maintenance (O&M) manual shall be in accordance with PWGSC Commissioning Manual (CP.1) latest edition;
3. Review Product Information (PI) Forms and Performance Verification (PV) Forms and submit comments to PWGSC and Commissioning Manager.
4. Attend the commissioning testing to ensure that proper protocols are being maintained.
5. Identify Contractor and Sub-contractor commissioning, performance verification (PV) and testing responsibilities;
6. Witness the PV tests performed by the Contractor. Maintain detailed development reports and review with the Contractor for special systems such as Energy Monitoring and Control System (EMCS).
7. Review completed PV inspection forms for all components, subsystems, systems, integrated systems and final performance verification report submitted by the Commissioning Manager.
8. Ensure that the documentation and testing reports from the Commissioning Manager are submitted to the Departmental Representative in a proper, timely and organized fashion.
9. Ensure that the contractor submits a training schedule for the O&M staff to be trained on the operations of the new facilities based on the training plan prepared by the Commissioning Manager. The training plan will recognized both short-term and long term requirements and shall employ both hard copy and visual techniques.
10. Review final commissioning report, prepared by Commissioning Manager, at the end of all commissioning activities.

7.3 SCOPE AND ACTIVITIES - DETAILS:

1. The project will be accepted and the Certificate of Substantial Completion will be issued only after the Contractor meets the requirements of the contract and:
   a. Successful completion of integrated systems tests, life safety support systems tests and after meeting all requirements of the authority having jurisdiction.
   b. All test certificates, commissioning reports and commissioning documentation have been approved by the Departmental Representative.

2. During the Construction Phase, the consultant shall:

a. Monitor and report on contract commissioning activities,
b. Review and certify TAB Reports and other verification reports as they are completed by the contractor's testing agencies,
c. Review commissioning schedule and coordinate with the phasing of the project and attend commissioning meetings,
d. Witness all component, system and integrated systems tests,
e. Review and comment on commissioning test results,
f. Provide advice and recommendations for fine tuning,
g. Finalize the Design Intent Report and PWGSC/SNC Lavalin/Health Canada/CFIA O&M Manual to reflect as-commissioned operation and maintenance of each system.

7.4 DELIVERABLES:

The Consultant shall provide the following:

1. Design Intent Brief
2. Commissioning Brief
3. Commissioning Specifications in Div 01,
4. Standard Operating Procedures (SOP) Manual
5. Review and Approve Contractor's O&M Manual

The consultant shall review the following documents prepared by the Commissioning Manager and coordinate the requirements within the project:

1. Commissioning Plan
2. Product Information Forms (PI) and Performance Verification (PV) Forms to be executed by the Contractor
3. Commissioning Schedule
4. Training Plan and training materials
5. Post acceptance commissioning
6. Final Commissioning Report

RS 8 RISK MANAGEMENT

8.1 INTENT

- The consultant shall provide support to the Departmental Representative in identifying risks throughout the project life cycle.
- Refer to Appendix D "Doing Business with A&E Ontario Region" for Risk Management "Definitions" and "Checklist".

8.2 SCOPE AND ACTIVITIES:

Identify risk events based on past experience and using proposed checklist or other available lists;
Qualify/quantify probability of risk event (Low, Medium, High) and their impact (Low, Medium, High) and associated estimated impact cost;
Prioritize risk events (i.e. concentrate efforts on risk events with High probability and Medium to High impact);
Develop risk response (i.e. evaluate alternatives for mitigation. This is the real added-value of risk management); and,
Implement risk mitigation.

8.3 DELIVERABLES:

- Prepare a Risk Management Report at the 100% Construction Documents stage.
- Include input from all sub-consultants, and from Client.
- Take steps to implement risk mitigation as required. This may include (but is not limited to) further recommendations, analysis, investigations, site meetings, site review, etc.

ADDITIONAL SERVICES

AS 1 PROJECT TIME PLANNING, SCHEDULING AND CONTROL

1.1 PLANNING/SCHEDULING REQUIREMENTS & APPLICATION

Planning and Scheduling are high priorities with all Federal Government projects. The concept of planning and scheduling is to facilitate the accomplishment of objectives and should be thought of as a continuous interactive process involving planning, action, measurement, evaluations and revision.

The intent of these services for this project is to develop and coordinate with the Laboratory Move Coordination Advisor the phasing for decommissioning, relocating, reinstallation and commissioning of the equipment to maintain CFIA laboratory operation during the extent of the construction.

1.2 SYSTEM FOR PROJECT CONTROL

The Planning and Scheduling Specialist shall provide a project control system based on network techniques such as Critical Path Method (CPM) for Planning, Scheduling, Progress Monitoring and Reporting of project progress. We would recommend the Project Control System be fully computerized using one of the many commercially available software packages of which MS Project is preferred, however any compatible software version to MS Project is acceptable.

1.3 PERSONNEL

It is required that fully qualified, experienced **Planning and Scheduling** personnel play a major role in the **development and monitoring** of the project schedule. The Planning & Scheduling specialist shall provide Consultant scheduling services from commencement of the project design stage through to construction contract award. The Consultant shall provide Time Planning/Scheduling services in accordance with the following general scope and detail specific services.

1.4 SCOPE OF PROPOSAL

The general scope of work for the Design, Construction Documents, and Award Phases of Planning and Scheduling services include the following activities:

Develop a Work Breakdown Structure
Develop, monitor & maintain Detail Schedules, Bar Charts, and Milestone Listings.
Identify Project Activities.
Attend meetings as required.
Identify Major Elements/Phases of Work - Create a phasing plan for each phase of the project impacting a change to CFIA operation during construction until input from the contractor is available.
Identify design team coordination requirements for decommissioning / reinstallation / commissioning of work.
Prepare as required Progress Reports.
Prepare Pre-construction Schedule.
Review and coordinate with the Commissioning Manager the Pre-commissioning Schedule prepared by the Commissioning Manager.

1.5 PLANNING

1.5.1 PROJECT WORK BREAKDOWN STRUCTURE

Within five (5) working days after finalizing the agreement, prepare a Project Work Breakdown Structure (PWBS). A PWBS is a project oriented family tree subdivision of services and other work tasks which organizes, defines and graphically displays a project. This PWBS should be developed through at least five levels: project, stage, element, sub-element and work package.

1.5.2 PROJECT SCHEDULE AND CASH FLOW PROJECTION FOR CONSULTANT FEES

Within ten (10) working days after finalizing the agreement, the Consultant shall prepare a Project Schedule that accounts for all major project activities and costs. This will involve confirming the validity or alternates to the identified milestones in the Proposed Major Milestone Schedule. Significant phases of project development include Analysis of Project Requirements, Design Concept, Design Development, Working Drawings and Specifications, Tender, Contract Award and Construction.

Also within ten (10) working days after finalizing the agreement, the Consultant shall prepare a Cash Flow Projection of major costs for Consultant's fees, in accordance to the schedule.

Unless specified otherwise in this Section, quantified days duration refers to working days, which is based on a 5 day work week and discounts all statutory holidays (approximately 250 days/year).

The original Project Schedule will be "frozen" to provide an original Target or Baseline Schedule. This Target Plan may be revised on instruction from the Departmental Representative as conditions dictate. All revised Target Plans and Cash Flow Projections will be reconciled with previous targets to provide a continuous audit trail.

The Consultant will provide the initial and subsequent Project Schedule in the following form:

CD containing all schedule and cash flow information,
bar chart identifying activity durations, early/late dates, total float, percent complete and budget amounts,
network diagram showing all activity sequencing, and
annual and monthly actual/projected cash flow in numerical form.

1.5.3 After five (5) working days of review the Planning and Scheduling Consultant shall meet with the Project Team to finalize a mutually acceptable Project Schedule and Cash Flow Projection.

1.6 SCHEDULING

1.6.1 DETAIL SCHEDULES - DESIGN, CONSTRUCTION DOCUMENTS, TENDER & AWARD

Preparation of the Detail Schedule

The Consultant shall within twenty (20) working days from finalizing the agreement provide a Detail Project Schedule. Activities must be shown for all phases of Concept & Design Development. All necessary review and approvals must be included. Activities must also be shown for Construction Documents (Working Drawings and Specifications) leading through the key milestones of 50% and 99% approvals. This will be followed by the coordination and review activities leading to 100% Tender Documents, and then by the Tender Process leading to Award.

The Consultant shall include in the Detail Project Schedule, activities for all proposed phases of construction for each of the phases of project delivery stages mentioned above.

Prior to the completion of the Tender Documents, the initial Construction and Commissioning activities shown on the approved Project Schedule will be further broken down in order to confirm the validity of our approaches to construction and commissioning. The level of detail for project activities will be such that the sequence and interdependency of all contract tasks will be demonstrated and will make possible the coordination and control of all project activities.

In order to provide a reasonable basis for progress monitoring and control, the schedule shall be in sufficient detail to ensure adequate planning and control. It is also recommended that activity durations should not exceed five days. The Detail Activities must relate at all times to the Milestones developed and approved in the Project Schedule.

The activities with no float (start and finish on their early calculated dates) which form the "Critical Path" must be calculated and clearly indicated on the logical network as being wherever possible a continuous series of activities through the project. No more than 25 percent of the activities shall be critical, or near critical. Near critical is defined as float in the range of 1 to 5 working days.

Review and Approval of the Detail Schedule

The Consultant shall allow one week (calendar) period for the review by the Departmental Representative of the proposed Detail Schedule.

Following the review, any necessary revision to the schedule must be submitted to the Departmental Representative within one week (calendar) after his request.

The Consultant shall, at the Departmental Representatives request and without additional charges, provide all additional information required by the Departmental Representative to validate the practicality of the Consultant's work schedule.

Compliance with the Detail Schedule

The Consultant must comply with the approved Detail Schedule, direct and assist his sub-consultants in the planning and coordinating of their work with respect to this schedule.

1.6.2 PROGRESS MONITORING AND REPORTING

On a Monthly basis with status dated on the last working day of the month, the Consultant working with all responsible parties shall perform a Detail Schedule update. The Detail Schedule shall reflect the following:

progress of each activity to the date of the report;
any logic changes, both historic and planned;
projections of progress and completion;
the actual start and finish dates of all activities being monitored in the network shall be recorded and submitted; and
any potential delays, outstanding issues and concerns from the design teams point of view, and options for dealing with any serious planning and scheduling issues.

Within five (5) days of the date of the Schedule Update, the Consultant will provide the initial and subsequent Detail Schedules in the following form:

CD containing all detail schedule and cash flow information.
Detail Schedule Bar Chart identifying status to date.

Written monthly Narrative Report based on the Detail Schedule, detailing the work performed to date, comparing work progress to planned, and presenting current forecasts. This report should

summarize the progress to date, explaining current and possible deviations and delays with respect to the Detail Schedule, and Critical Paths. Include in the report any potential delays, outstanding issues and concerns from the design team's point of view, and options for dealing with any serious planning and scheduling issues.

1.6.3 TENDER & CONSTRUCTION SCHEDULE REQUIREMENTS

Construction and Commissioning Periods

As design progresses and the scope of construction work becomes more clearly defined, the Consultant will develop more detailed schedules and cash flows to illustrate the high level sequencing of work as it relates to activities and/or constraints in other contracts. This must be done in order to:

confirm or raise question of previously established construction durations and phasing;
develop more accurate cash flow projections for construction;
identify any interfaces and/or sources of potential conflicts; and
review and evaluate successful Contractor's cash loaded CPM schedule.

Before the project is tendered (at approximately the 90% drawing stage), the Consultant shall develop and present the specification section (0132 15 and 01 32 16) of the Contract Documents dealing with Construction Planning and Scheduling for review and discussion with the Departmental Representative in order to develop a comprehensive section that is consistent with other relevant areas of Contract Administration.

1.7 Deliverables

The Consultant shall provide the following:

- Project Schedule (including CPM and PWBS)
- Cash Flow Projection for Consultant Fees

AS 2 ESTIMATING AND COST PLANNING

2.1 Cost Estimating Specialist

Delivering this project on time and within budget is a high priority. A fully qualified cost estimating, cost planning and cost control team, referred to herein as the Cost Estimating Specialist, with a demonstrated record of successful cost management on phased construction projects is required. This Cost Estimating Specialist will be conversant with all aspects of construction cost estimating during the design stages including the use of Elemental Cost Analysis.

The purpose of cost planning and cost control is to assist in the accomplishment of project cost objectives. It is a continuous and interactive process involving planning, action, measurement, evaluation and revision.

2.2 Scope of Services

The Cost Estimating Specialist shall provide an interactive and continuous cost consulting service from the commencement of project design through to construction completion, including the preparation of complete estimates for all construction trades, escalation, inflation and contingency costs.

The Cost Estimating Specialist shall attend project meetings throughout the design phases as required and be prepared to present and defend the estimates directly to the Departmental Representative.

The fee proposal should be based on one lump sum fixed price construction contract. Should the Departmental Representative decide to deliver the project by project management, construction management, phased construction or other means, the Cost Estimating Specialist will negotiate any fee adjustment with the Consultant that is acceptable to PWGSC, prior to commencing adjustment of estimates and reporting systems.

Other services may be provided at additional cost, if requested.

2.3 Services - Basic Activities

The Cost Estimating Specialist shall work with and advise the Consultant team and the Departmental Representative of the costs of individual building components and costs of various design systems. Estimates should be prepared in detail and summarized using an Elemental Analysis format. Acceptable formats are noted under the **Submission Standards** section following.

The Cost Estimating Specialist shall provide continuous cost monitoring, timely identification and early warning of all changes that affect or potentially affect the estimated construction costs of the project.

If the estimate falls short of or exceeds the Construction Cost Plan due to such changes, the Cost Estimating Specialist with the Consultant team shall fully advise the Departmental Representative.

The Cost Estimating Specialist with the Consultant team shall submit to the Departmental Representative proposed alternative design solutions and revise the most recent estimate.

Refer to Appendix D - Doing Business with A&E Ontario Region for additional information.

2.3.1 Reporting

The Cost Estimating Specialist shall provide a narrative with each cost estimate deliverable, outlining sufficient description and cost detail to clearly identify:

Scope Change: Identifying the nature, reason and total cost impact of all identified and potential project scope changes affecting Construction Cost Estimate.
Cost Overruns and Underruns: Identifying the nature, the reason and the total cost impact of all identified and potential cost variations.
Options Enabling a Return to Construction Cost Estimate: Identifying the nature and potential cost effects of all identified options proposed to return the project within Construction Cost Estimate.

Refer to Appendix D - Doing Business with A&E Ontario Region for additional information.

2.3.2 Submission Standards

Summary Format

Elemental Analysis: All estimates shall be summarized in an agreed and consistent Elemental format. Several variations in format may be acceptable to PWGSC (by discussion) but those following the ASTM (USA), CIQS (CDN), CSI Uniformat II (USA) or BCIS (UK) formats are preferred.
Trade Summary: Where a trade summary is required, those following the Masterformat are preferred, except where local practice provides a more suitable alternative.
Project Cost Subdivision: The estimate shall isolate the costs of each phase of construction. All estimates within these phases shall further isolate and show separately the cost of individual building blocks and/or the accommodation sections listed here:

- Renovation;

Refer to Appendix D - Doing Business with A&E Ontario Region for additional information.

Media

Provide three (3) hard copies of all reports including estimate summaries only and one (1) additional hard copy of the full report including the additional estimate support information to the Departmental Representative.
One digital copy of the total estimate, summary and support detail, shall be provided on CD in an agreed format.

Timelag

Recognizing that estimates must follow the design decisions they represent, such estimates may lag. The cost portion of the Milestone Reports may follow, but by no more than two weeks unless otherwise determined by the Departmental Representative.

Use of all available information
The Cost Estimating Specialist is responsible for providing a complete cost estimate even though the information provided during the concept, design development and early working drawing stages is incomplete. Where requirements are not firmly defined, the Cost Estimating Specialist shall make assumptions, confirm them with the Consultant and either list them as assumptions, or have them incorporated in an outline specification modified by the Consultant.

2.3.3 Techniques
No allowance should be made for this activity in the fee proposal as payment for this activity shall be on a negotiated basis and paid separately by PWGSC.

2.4 Services - Specific Activities
Refer to Appendix D - Doing Business with A&E Ontario Region for additional information.

Project Analysis Stage
Review, report on, and propose revisions to the existing class "D" cost estimate. Do not proceed until the Cost Estimating Specialist, the Consultant and PWGSC have accepted the revised class "D" estimate.

The revised Class "D" cost estimate shall become the Construction Cost Plan.

Concept Design
A Class "C" cost estimate will be prepared at the highest level of detail commensurate with the available information using elemental and additional detailed costs.

Design Development
Upon completion of design development prepare a Class "B" cost estimate representing the increased level of design detail available. The report shall be prepared using detailed (elemental) costs i.e. measured quantities with minimal allowances or lump sums.

Upon final acceptance, the Class "B" cost estimate shall become the Construction Cost Plan.

Contract Documents
During the production of the contract documents a process of continuing cost control progressively more detailed is required. At each review of contract documents, an up-to-date estimate shall demonstrate compliance with the Construction Cost Plan. At the 50% submission stage, an updated Class “B” cost estimate is required. At the 99% submission stage, a Class “A” cost estimate is required.
Non-compliance with the Construction Cost Plan will require revisions to the contract documents.

Pre-Tender
Upon completion of the contract documents a pre-tender Class "A" cost estimate will be prepared using 100% measured quantities.

Provide a trade breakdown of the pre-tender estimate for use in reviewing the submitted bids and the successful Contractor's estimate breakdown.

Tender Stage

Tender Award During the tender period, examine and report on any cost impact created by the issue of tender/contract addenda. Incorporate the results of such addenda review into the final pre-tender estimate (both elemental and trade versions) prior to receipt of bids.
Bid Review and Analysis Assist the Departmental Representative, as required, by analyzing and reconciling any differences between the pre-tender estimate and the submitted bids.
Negotiation Should it be necessary to negotiate with any bidder prior to awarding the Contract, the Cost Estimating Specialist shall provide cost information as needed and enter into the negotiations if requested.
Reconciliation Upon the signing of a contract with the successful Contractor, the Cost Estimating Specialist if necessary, will reconcile both the elemental and trade estimates, in detail, with the agreed contract sum. These reconciled estimates will be used by the Construction Team during the construction phase of the project.

Cost Estimating Specialist Services through Construction
During construction, the Cost Estimating Specialist shall assist the Construction Team with cost advice if requested.

If required, payment will be made on an agreed, negotiated basis. Such activity may well encompass the following activities:

Evaluation of change orders;
Evaluation of claims;
Evaluation of work completed;
Evaluation of cash flow.

2.5 Responsibilities to PWGSC

PWGSC will review all aspects of the Cost Specialist's work on a continuing basis to determine the validity and completeness of the information provided. In the event PWGSC may identify areas of concern including errors and omissions as well as areas of inadequate detail or areas that require further explanation, the Cost Estimating Specialist shall re-examine the estimates provided and make such revisions as are subsequently agreed to be necessary and/or provide ample acceptable evidence that such corrections or amendments are unnecessary.

No Action Abrogates Consultant's Responsibilities

No acceptance or approval by PWGSC, whether expressed or implied shall be deemed to relieve the Cost Estimating Specialist, or the Consultant, of professional or technical responsibility for the estimates and cost reports.

Neither does acceptance of an estimate by PWGSC in any way abrogate the Consultant's responsibility to maintain the agreed Construction Cost Plan throughout the life of the project, or the requirement to redesign should the lowest acceptable bid differ significantly from the agreed Construction Cost Plan, unless and until the Departmental Representative indicates otherwise in writing.

AS 3 ADDITIONAL SITE SERVICES DURING CONSTRUCTION

3.1 **INTENT**

The purpose of the additional site services is to ensure the presence of the Consultant's representative on site, beyond the basic construction site review services, at the request of the Departmental Representative, to inspect, to co-ordinate with other disciplines, and to monitor critical aspects of the work during the construction of the facility, as well as to liaise with the Contractor, with the Departmental Representative, and with other stakeholders as appropriate to the work.

The Consultant, during the design development and preparation of the construction documents, is to determine the extent and nature of the additional site services required during construction for the Consultant Site Representative to provide, beyond the basic construction site review services.

The construction for this project will occur after operational hours and on the weekends. Therefore, more than one person may be required to suit the hours of construction, the skills required depending on the nature of the work being executed, and on the advancement phase of construction work on site.

The Consultant Site Representative is responsible for providing additional (including overtime when construction operations perform multiple shifts per day) construction site reviews, beyond the basic construction site reviews, for critical aspects of the project, maintaining records of each site visit of all construction work placed. He is to also ensure constant communication amongst the SNC Lavalin Property Manager or representative, the Departmental Representative, design agencies, Contractor, Regional Fire Commissioner, or as directed by the Departmental Representative, and the Provincial Department of Labour and other authorities of jurisdiction.

The Consultant Site Representative shall:

1. Seek authorization from the Departmental Representative prior to undertaking Additional Site Services During Construction
2. be directly responsible to the Consultant and to all members of the Consultant's team of specialist sub-consultant disciplines.
3. liaise with the Departmental Representative, the Contractor, and with other project team members and stakeholders as directed by the Departmental Representative maintaining the proper lines of communication.
4. become thoroughly familiar with the Contract documents, the National Building code and all Fire Commissioner of Canada Standards for Construction operations (incl. FCC No. 301 dated June 1982 and the Standard for Welding and Cutting FCC No. 302 dated June 1982). The Consultant Site Representative shall also be aware of all Federal, Provincial and Municipal standards for the health and safety of construction workers.
5. become thoroughly familiar with the requirements of the Consultant Project Brief and project responsibilities of others which relate to his services.

3.2 **SCOPE, ACTIVITIES AND DELIVERABLES:**

1. General:

The Consultant Site Representative(s) shall:

1. At the request of the Departmental Representative, provide additional inspection, clarification, co-ordination with other disciplines and monitoring during the construction work and be responsible to the consultant. In addition, the departmental representative may delegate additional responsibilities subject to consultants agreement.
2. Maintain records of each site visit, in a site review report, of all construction work placed and ensure constant communication amongst SNC Lavalin Property Manager, the Departmental Representative, the Regional Fire Commissioner, or as directed by the Departmental Representative, the Consultant, the Contractor and Consultants.
3. Co-ordinate and direct an assistant as approved by PWGSC.
4. In case of emergencies, the Consultant Site Representative is empowered to stop the work, or give orders to protect the safety of the workers or Crown property. The Consultant Site Representative must notify the Departmental Representative promptly (within 12 hours) following the release of these instructions.

2. **Inspection and Reporting**

The Consultant Site Representative shall inspect all phases of the work in progress, for the purpose of bringing to the attention of the Contractor, after checking with the Consultant, and Departmental Representative, any discrepancies between the work, the contract documents and accepted construction procedures. He shall keep a record of such inspections and shall issue a site review written report to the Consultant, both for distribution, in the form directed. The Consultant Site Representative shall make any other reports or surveys as may be requested by the Departmental Representative through the Consultant.

3. **Interpretation of the Contract Documents**

Interpretation of the contract documents shall be the responsibility of the Consultant. The Consultant may, however, delegate specific duties while maintaining responsibility.

It shall be the duty of the Consultant Site Representative to assist the Consultant and to further inform the Consultant of any anticipated problems which may delay the progress of the work. The method for relaying such information shall be determined by the Consultant.

4. **Changes in the Work**

The Consultant Site Representative shall not authorize or order any change in the work which will constitute a change in design or in the value of the contract except as delegated by the Departmental Representative.

The Consultant may call upon the Consultant Site Representative to assist in the evaluation of changes in the work, where a knowledge of job conditions is required.

5. **Communication & Liaison**

The Consultant Site Representative shall:

1. Verify that the work on site is in accordance with the Construction Documents, confer and obtain guidance on these findings with the Consultant. The matter is then to be brought to the attention of the Contractor's Superintendent. Although informal discussions with Sub-trade Superintendents are usually permissible, (but only with the agreement of the Contractor), the

Consultant Site Representative should not deal directly with foreman or tradesmen, or interfere with the progress of the work.

2. Communicate formally with the contractor in writing, and immediately the Departmental Representative and the Consultant.
3. Contact the Consultant immediately when it is apparent that information or action is required of the Consultant, (e.g. general instructions, clarifications, sample of shop drawing approvals, requisitions, contemplated change orders, site instructions, details, drawings, etc.)
4. Ensure that PWGSC and the Consultant are notified promptly when key pieces and/or components of materials and equipment are delivered, so that these parties can arrange for the appropriate personnel to have an opportunity to inspect same prior to installation.

The Consultant shall provide copies of the site review report to the Departmental Representative for each of the site visits.

6. **Site Review Reports**

The Consultant Site representative shall prepare a site review report for each site visit to the Consultant and the Departmental Representative in the form directed, including:

1. progress relative to schedule;
2. major activities started or completed at time of site visit; main activities in progress and major work done;
3. workforce on site: construction firms on site, work being done by each firm, number of workers per firm, equipment on site (used and unused);
4. major deliveries and removals of materials and/or equipment;
5. any instructions given to the Contractor;
6. difficulties encountered which may cause delays in completion;
7. materials and labour needed immediately;
8. cost estimates of work completed and materials delivered (for cost plus contracts) as may be requested by PWGSC;
9. presence of inspection and testing firms, tests taken, results, etc.
10. any outstanding information or action required by Consultant or PWGSC;
11. weather conditions, particularly unusual weather relative to construction activities in progress;
12. shutdowns (time start and end/firms/workers affected);
13. other remarks;
14. accidents on site;
15. life safety or building hazards caused by the work, the contractor or his agents;
16. digital photographs, taken during the site visit, that illustrate activities on site, including deficiencies, progress, special conditions, etc. Incorporate date taken onto the photographs and into file names.

7. **Inspection of the Work**

The Consultant Site Representative shall make on site observations and spot checks of the work to determine whether the work, materials and equipment conform with the contract documents and supplementary conditions. The Site Consultant's representative shall advise the Contractor of any deficiencies or unapproved deviations via memorandum and report immediately to the Consultant and Departmental Representative any of these on which the Contractor is tardy or refuses to correct.

The Consultant Site Representative shall coordinate with the other disciplines if there are any issues on site and inform the Consultant and the Departmental Representative .

The Consultant Site representative shall also report if materials and equipment are being incorporated into the project prior to approval of relative shop drawings or samples.

The Consultant Site representative shall assist in the preparation of all deficiency reports, interim, preliminary, and final, in collaboration with the Departmental Representative and Consultant's representatives.

8. **Site Meetings**

The Consultant Site Representative shall attend all job-site meetings.

9. **Inspection and Testing**

The Consultant Site Representative must see that the tests and inspections required by the contract documents are conducted, and should observe these tests and report the results in the daily log.

The Consultant should be notified if the test results do not meet the specified requirements, or if the Contractor does not have tests undertaken as required.

10. **Emergencies**

In the case of emergency where safety of persons or property is concerned, or work is endangered by the actions of the contractor of the elements, to safeguard the interests of PWGSC, the Consultant Site representative shall give immediate written notice to the Contractor of the possible hazard. He shall further, if necessary, stop the work or give orders for remedial work, and contact the Consultant immediately for further instruction.

11. **Limitations**

The Consultant Site representative shall not:

1. Authorize deviations from the contract documents.
2. Conduct tests.
3. Approve shop drawings or samples.
4. Advise the user-client in any matter without obtaining guidance from the Consultant.
5. Accept any work or portions of the building.
6. Enter into the area of responsibility of the Contractor's Field Superintendent, without the Contractor’s permission
7. Stop the work unless convinced that an emergency exists as noted above.

AS 4 LABORATORY MOVE COORDINATION ADVISORY SERVICES

4.1 INTENT

The purpose of the Laboratory Move Coordination Advisory services is to ensure that CFIA's lab operations for each phase of the construction runs smoothly throughout the duration of the project until full occupancy. Advisory services will be required through all the stages of delivery to ensure that the project team coordinates all the design requirements of the moves through each phase of the project.

4.2 SCOPE AND ACTIVITIES:

The Consultant shall:

1. Review the Feasibility Study by NXL Architects and provide recommendations for the phasing of the project
2. Provide advice to the Client and Departmental Representative on the following:
    i. Least number of moves required to maintain operation of the laboratory during the dismantling and construction of the new lab
    ii. Most effective manner of dismantling their operation with the least impact to their operation
3. Attend all project design meetings during the concept and design development stages
4. Prepare phasing schedule for the installation of all equipment
5. Coordinate with all disciplines the moving activities that impact the design to minimize delays of the construction and to meet the occupancy schedule for each phase of the construction
6. Update the phasing schedule at each stage of design and during construction
7. Coordinate with the Commissioning Manager to reduce any impacts in commissioning the equipment
8. Coordinate and review the schedule with the Planning and Scheduling Specialist and Contractor for any impacts in maintaining the operation of CFIA Laboratories.

4.3 DELIVERABLES:

The Consultant shall provide the following:

- Phasing schedule during the design concept stage
- Revised phasing schedule at each change of scope requirements

AS 5 CLOSURE REPORT

The Consultant shall submit closure reports generally comprising of the following:

1. **Introduction**:
a. Project history.
b. Scope of work.
c. Description of design intent
d. Design development.
e. Tendering process and award of contract.

2. **Project implementation**:
a. Start - up meeting.
b. Work plan and schedule of work.
c. Field testing and quality control.
d. Progress meetings and minutes.
e. Site Instructions
f. Change orders

3. **Issues and difficulties encountered during implementation**:
a. Delays in the work
b. Lessons Learned.

4. **Conclusion and Summary**.

5. **List of Appendices** :
a. Copy of specifications.
b. Contract drawings.
c. List of subcontractors and suppliers.
d. Digital photographs
e. As-built drawings (digital version)
f. Record drawings and specifications
g. Post contract drawings
h. Any other drawings related to the project
i. Any environmental report.
j. Any other report related to the project.

APPENDIX A

TEAM IDENTIFICATION FORMAT

APPENDIX A - TEAM IDENTIFICATION FORMAT

For details on this format, please see SRE in the Request For Proposal.

The prime consultant and other members of the Consultant Team shall be, or eligible to be, licensed, certified or otherwise authorized to provide the necessary professional services to the full extent that may be required by provincial or territorial law.

I. Prime Consultant (Proponent) Architect:

Firm or Joint Venture Name: .....
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

.....
.....
.....
.....
.....

II. Key Sub Consultants / Specialists:

- Mechanical Engineer
Firm Name: .....
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

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.....

- Electrical Engineer
Firm Name: .....
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.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

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.....

- IT / Telecommunications
Firm Name: .....
.....

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Key Individuals and provincial professional licensing status and/or professional accreditation:

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- Cost Estimating Specialist

Firm Name: .....
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Key Individuals and provincial professional licensing status and/or professional accreditation:

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- Specification Writer

Firm Name: .....
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Key Individuals and provincial professional licensing status and/or professional accreditation:

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.....
.....

- Lab Move Coordination Advisor

Firm Name: .....
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

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.....

- Planning and Scheduling Specialist

Firm Name: .....
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

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.....
.....
.....
.....

- Consultant Site Representative during Construction

Firm Name: .....
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

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.....
.....
.....

APPENDIX B

DECLARATION/CERTIFICATIONS FORM

APPENDIX B - DECLARATION/CERTIFICATIONS FORM

Project Title: CFIA GTA Lab Expansion

Name of Proponent:

Street Address: **Mailing Address:**

Telephone Number:( )

Fax Number: ( )

E-Mail:

Procurement Business Number:

Type of Organization:	**Size of Organization:**
_____ Sole Proprietorship _____ Partnership _____ Corporation _____ Joint Venture	Number of Employees _____ Graduate Architects / Professional Engineers _____ Other Professionals _____ Technical Support _____ Other _____

APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

Federal Contractors Program (FCP) - Certification

Pursuant to GI 12, The Proponent must complete the following certification.

1. The Proponent, or, if the Proponent is a joint venture the member of the joint venture, certifies its status with FCP, as follows:

The Proponent or the member of the joint venture

(a) ( ) is not subject to the FCP, having a workforce of less than 100 full- time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada,

(b) ( ) is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c.44;

(c) ( ) is subject to the requirements of the FCP, having a workforce of 100 or more full time or part-time permanent employees, or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC, (having not bid on requirements of $200,000 or more), in which case a duly signed certificate of commitment is attached;

(d) ( ) is subject to the FCP, and has a valid certificate number as follows: _____ (e.g. has not been declared an ineligible contractor by HRSDC).

Please check the appropriate item above. Further information on the FCP is available on the HRSDC Web site.

2. If the Proponent does not fall within the exceptions enumerated in 1. (a) or (b), or does not have a valid certificate number confirming its adherence to the FCP, the Proponent must fax (819-953-8768) a copy of the signed form LAB 1168, Certificate of Commitment to Implement Employment Equity, to the Labour Branch of HRSDC.

APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

Former Public Servant (FPS) - Certification

Contracts with former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts with FPS, proponents must provide the information required below.

Definitions

For the purposes of this clause,

"former public servant" is any former member of a department as defined in the *Financial Administration Act*, R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

(a) an individual;
(b) an individual who has incorporated;
(c) a partnership made of former public servants; or
(d) a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means, a pension or annual allowance paid under the *Public Service Superannuation Act* (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the *Supplementary Retirement Benefits Act*, R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the *Canadian Forces Superannuation Act*, R.S., 1985, c.C-17, the *Defence Services Pension Continuation Act*, 1970, c.D-3, the *Royal Canadian Mounted Police Pension Continuation Act*, 1970, c.R-10, and the *Royal Canadian Mounted Police Superannuation Act*, R.S., 1985, c.R-11, the *Members of Parliament Retiring Allowances Act*, R.S., 1985, c.M-5, and that portion of pension payable to the *Canada Pension Plan Act*, R.S., 1985, c.C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Proponent a FPS in receipt of a pension?
YES ( ) NO ( )

If so, the Proponent must provide the following information, for all FPS in receipt of a pension, as applicable:

(a) name of former public servant;
(b) date of termination of employment or retirement from the Public Service.

By providing this information, Proponents agree that the successful Proponent's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

Work Force Reduction Program

Is the Proponent a FPS who received a lump sum payment pursuant to the terms of a work force reduction program? YES ( ) NO ( )

If so, the Proponent must provide the following information:

(a) name of former public servant;
(b) conditions of the lump sum payment incentive;
(c) date of termination of employment;
(d) amount of lump sum payment;
(e) rate of pay on which lump sum payment is based;
(f) period of lump sum payment including start date, end date and number of weeks;
(g) number and amount (professional fees) of other contracts subject to the restrictions of a work force reduction program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is $5,000, including Applicable Taxes.

APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

Name of Proponent:

DECLARATION:
I, the undersigned, being a principal of the proponent, hereby certify that the information given on this form and in the attached proposal is accurate to the best of my knowledge. If any proposal is submitted by a partnership or joint venture, then the following is required from each component entity.

.....	.....
name	signature

.....
title
I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture

.....	.....
name	signature

.....
title
I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture

.....	.....
name	signature

.....
title
I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture

During proposal evaluation period, PWGSC contact will be with the following person:_____.

Telephone Number: ( ) _____ Fax Number: ( ) _____

E-mail: _____

This Appendix "B" should be completed and submitted with the proposal, but may be submitted afterwards as follows: if Appendix "B" is not completed and submitted with the proposal, the Contracting Authority will so inform the Proponent and provide the Proponent with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the proposal non-responsive.

APPENDIX B

ANNEX BB

CODE OF CONDUCT CERTIFICATIONS

Proponents who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Proponent. Proponents bidding as sole proprietorship, including those bidding as a joint venture, must provide the name of the owner with their bid or promptly thereafter. Proponents bidding as societies, firms, partnerships, or associations of persons do not need to provide lists of names. If the required names have not been received by the time the evaluation of bids is completed, Canada will inform the Proponent of a time frame within which to provide the information. Failure to comply will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

APPENDIX C

PRICE PROPOSAL FORM

APPENDIX C – PRICE PROPOSAL FORM

INSTRUCTIONS: Complete this Price Proposal Form and submit in a **separate sealed envelope** with the Name of Proponent, Name of Project, PWGSC Solicitation Number, and the words "PRICE PROPOSAL FORM" typed on the outside of the envelope. Price Proposals are not to include Applicable Taxes.

PROPONENTS SHALL NOT ALTER THIS FORM

Project Title: Scarborough, ON - CFIA GTA Lab Expansion

Name of Proponent:

_____

_____

—

The following will form part of the evaluation process:

REQUIRED SERVICES

· **Fixed Fee (R1230D (2012-07-16), GC5 Terms of Payment)**

SERVICES	FIXED FEE
RS 1 Analysis of Project Requirements	$.....
RS 2 Design Concept	$.....
RS 3 Design Development	$.....
RS 4 Construction Documents	$.....
RS 5 Tender Call, Bid Evaluation, & Construction Contract Award	$.....
RS 6 Construction and Contract Administration	$.....
RS 7 Commissioning the Facility	$.....
RS 8 Risk Management	$.....
MAXIMUM FIXED FEES	$.....

ADDITIONAL SERVICES

Fixed Fee (R1230D (2012-07-16), GC5 Terms of Payment)

AS 1 Project Time Planning, Scheduling and Control	$.....
AS 2 Estimating and Cost Planning	$.....

AS 4 Lab Move Coordination Advisory Services $.....

AS 5 Closure Report $.....

MAXIMUM FIXED FEES $.....

Time Based Fees (R1230D (2012-07-16), GC5 Terms of Payment)

Notes:

1. The Consultant Site Representative shall seek authorization from the Departmental Representative prior to undertaking Additional Site Services During Construction
2. The cost for these services shall be based on the Fixed Hourly Rates identified below for the duration of the Contract. The rates must be inclusive of overhead and profit and excluding HST.
3. Construction period is based on an estimated 57 weeks on-site.
4. No information is to be added to “not applicable” or blank price items, or the proposal will be declared non-responsive and set aside, receiving no further consideration.
5. Payment will be based on actual hours spent. Travel time and/or expenses will not be reimbursed separately.
6. All inclusive hourly rate is applicable to both normal working hours and any other shift work as required.

AS 3 ADDITIONAL SITE SERVICES DURING CONSTRUCTION				
Position	**Name**	**Fixed Hourly Rate ($/hr)**	**Estimated Hours**	**Total Amount $ (Estimated)**
Resident Supervisor			400	
MAXIMUM TIME BASED FEES				

SERVICES TIME BASED FEE

AS 3 Additional Site Services During Construction $.....

MAXIMUM TIME BASED FEES $.....

TOTAL COST OF SERVICES FOR PROPOSAL EVALUATION PROCESS

Total Fixed Fee for Required Services $.....

Total Fixed Fee for Additional Services $.....

Total Time Based Fees for Additional Services $.....

TOTAL EVALUATED FEE $.....

APPENDIX C - PRICE PROPOSAL FORM (CONT'D)

The following will NOT form part of the evaluation process

Canada may accept or reject any of the following fees, disbursements and/or hourly rates. Canada reserves the right to negotiate on these fees, disbursements and/or hourly rates.

THE FOLLOWING HOURLY RATES MAY BE USED FOR FUTURE CONTRACT AMENDMENTS

Principals

Name	$ per hour
.....	$.....
.....	$ .....
.....	$ .....
.....	$ .....
.....	$.....
.....	$ .....

Staff

Name/Position	$ per hour
.....	$.....
.....	$ .....
.....	$ .....
.....	$ .....
.....	$ .....
.....	$ .....

END OF PRICE PROPOSAL FORM

APPENDIX D

DOING BUSINESS WITH ONTARIO REGION

(See Attached)

APPENDIX E

SECURITY REQUIREMENTS CHECK LIST (SRCL)

(See Attached)

APPENDIX F

CFIA FUNCTIONAL PROGRAM AND OPTIONS ANALYSIS

GTA LABORATORY - FINAL REPORT

(See Attached)

APPENDIX G

CFIA GTA LABORATORY EXPANSION

AND RENOVATION FEASIBILITY STUDY - FINAL REPORT

(See Attached)

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
4000044648
Security Classification / Classification de sécurité

SECURITY REQUIREMENTS CHECK LIST (SRCL)
LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)

PART A - CONTRACT INFORMATION / PARTIE A - INFORMATION CONTRACTUELLE

1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine: CFIA

2. Branch or Directorate / Direction générale ou Direction: Planning , Design and Construction

3. a) Subcontract Number / Numéro du contrat de sous-traitance: TB

3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant:

4. Brief Description of Work / Brève description du travail:
2301 Midland Ave, Scarbrough Toronto

La Pension Expansion

5. a) Will the supplier require access to Controlled Goods? / Le fournisseur aura-t-il accès à des marchandises contrôlées? — [✓] No / Non [ ] Yes / Oui

5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations? / Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques? — [✓] No / Non [ ] Yes / Oui

6. Indicate the type of access required / Indiquer le type d'accès requis

6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets? / Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS? — [✓] No / Non [ ] Yes / Oui
(Specify the level of access using the chart in Question 7. c) / (Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c)

6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted. / Le fournisseur et ses employés (p. ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé. — [ ] No / Non [✓] Yes / Oui

6. c) Is this a commercial courier or delivery requirement with no overnight storage? / S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit? — [✓] No / Non [ ] Yes / Oui

7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès

Canada	NATO / OTAN	Foreign / Étranger
[ ]	[ ]	[ ]

7. b) Release restrictions / Restrictions relatives à la diffusion

Canada	NATO / OTAN	Foreign / Étranger
No release restrictions / Aucune restriction relative à la diffusion [ ]	All NATO countries / Tous les pays de l'OTAN [ ]	No release restrictions / Aucune restriction relative à la diffusion [ ]
Not releasable / À ne pas diffuser [ ]		
Restricted to: / Limité à : [ ]	Restricted to: / Limité à : [ ]	Restricted to: / Limité à : [ ]
Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :

7. c) Level of information / Niveau d'information

Canada	NATO	Foreign / Étranger
PROTECTED A / PROTÉGÉ A [ ]	NATO UNCLASSIFIED / NATO NON CLASSIFIÉ [ ]	PROTECTED A / PROTÉGÉ A [ ]
PROTECTED B / PROTÉGÉ B [ ]	NATO RESTRICTED / NATO DIFFUSION RESTREINTE [ ]	PROTECTED B / PROTÉGÉ B [ ]
PROTECTED C / PROTÉGÉ C [ ]	NATO CONFIDENTIAL / NATO CONFIDENTIEL [ ]	PROTECTED C / PROTÉGÉ C [ ]
CONFIDENTIAL / CONFIDENTIEL [ ]	NATO SECRET / NATO SECRET [ ]	CONFIDENTIAL / CONFIDENTIEL [ ]
SECRET / SECRET [ ]	COSMIC TOP SECRET / COSMIC TRÈS SECRET [ ]	SECRET / SECRET [ ]
TOP SECRET / TRÈS SECRET [ ]		TOP SECRET / TRÈS SECRET [ ]
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) [ ]		TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) [ ]

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
4000044646
Security Classification / Classification de sécurité

PART A (continued) / PARTIE A (suite)

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?
If Yes, indicate the level of sensitivity:
Dans l'affirmative, indiquer le niveau de sensibilité
☑ No Non ☐ Yes Oui

9. Will the supplier require access to extremely sensitive INFOSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?
☑ No Non ☐ Yes Oui

Short Title(s) of material / Titre(s) abrégé(s) du matériel :
Document Number / Numéro du document :

PART B - PERSONNEL (SUPPLIER) / PARTIE B - PERSONNEL (FOURNISSEUR)

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

☒ RELIABILITY STATUS / COTE DE FIABILITÉ	☐ CONFIDENTIAL / CONFIDENTIEL	☐ SECRET / SECRET	☐ TOP SECRET / TRÈS SECRET
☐ TOP SECRET – SIGINT / TRÈS SECRET – SIGINT	☐ NATO CONFIDENTIAL / NATO CONFIDENTIEL	☐ NATO SECRET / NATO SECRET	☐ COSMIC TOP SECRET / COSMIC TRÈS SECRET
☐ SITE ACCESS / ACCÈS AUX EMPLACEMENTS			

Special comments:
Commentaires spéciaux

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.
REMARQUE : Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work?
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?
☐ No Non ☑ Yes Oui

If Yes, will unscreened personnel be escorted?
Dans l'affirmative, le personnel en question sera-t-il escorté?
☐ No Non ☑ Yes Oui

PART C - SAFEGUARDS (SUPPLIER) / PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)

INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises?
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?
☑ No Non ☐ Yes Oui

11. b) Will the supplier be required to safeguard COMSEC information or assets?
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?
☑ No Non ☐ Yes Oui

PRODUCTION

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?
☑ No Non ☐ Yes Oui

INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS?
☑ No Non ☐ Yes Oui

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?
☑ No Non ☐ Yes Oui

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
4000044648
Security Classification / Classification de sécurité

For users completing the form manually use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) or premises.
Les utilisateurs qui remplissent le formulaire manuellement doivent utiliser le tableau récapitulatif ci-dessous pour indiquer, pour chaque catégorie, les niveaux de sauvegarde requis aux installations du fournisseur.

For users completing the form online (via the Internet), the summary chart is automatically populated by your responses to previous questions.
Dans le cas des utilisateurs qui remplissent le formulaire en ligne (par Internet), les réponses aux questions précédentes sont automatiquement saisies dans le tableau récapitulatif.

SUMMARY CHART / TABLEAU RÉCAPITULATIF

Category / Catégorie	PROTECTED / PROTÉGÉ			CLASSIFIED / CLASSIFIÉ			NATO				COMSEC					
	A	B	C	CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / TRÈS SECRET	NATO RESTRICTED / NATO DIFFUSION RESTREINTE	NATO CONFIDENTIAL / NATO CONFIDENTIEL	NATO SECRET	COSMIC TOP SECRET / COSMIC TRÈS SECRET	PROTECTED / PROTÉGÉ A	PROTECTED / PROTÉGÉ B	PROTECTED / PROTÉGÉ C	CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / TRÈS SECRET
Information / Assets / Renseignements / Biens																
Production																
IT Media / Support TI																
IT Link / Lien électronique																

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?
La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE?

☑ No / Non ☐ Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".
Dans l'affirmative, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.

12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?
La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?

☑ No / Non ☐ Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).
Dans l'affirmative, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquer qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat	
400004646	
Security Classification / Classification de sécurité	

PART D - AUTHORIZATION / PARTIE D - AUTORISATION

13. Organization Project Authority / Chargé de projet de l'organisme

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
Chris Dawson	Project Leader	

Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
613-773-7308	613-773-7304	christopher.dawson@inspection.gc.ca	[illegible]

14. Organization Security Authority / Responsable de la sécurité de l'organisme

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
David Dorrington	Dir. Security & Acom Servs	

Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
613-773-5761	613-773-5024		

15. Are there additional instructions (e.g. Security Guide, Security Classification Guide) attached?
Des instructions supplémentaires (p. ex. Guide de sécurité, Guide de classification de la sécurité) sont-elles jointes?

☑ No / Non ☐ Yes / Oui

16. Procurement Officer / Agent d'approvisionnement

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
Vincent Correia Reid	Intern Officer	Vincent Correia Reid

Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
416 590 8259	416 512 5652	vincent.correia-reid@pwgsc.gc.ca	Nov 6, 2013

17. Contracting Security Authority / Autorité contractante en matière de sécurité

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
		Joelle Moffatt

Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
			5/11/13

Joelle ~~Smith~~ MOFFATT
Contract Security Officer, Contract Security Division
Joelle.~~Smith~~@tpsgc-pwgsc.gc.ca
Tel/Tél - 613-948-1726 / Fax/Téléc - 613-954-4171

Canadian Food Inspection Agency
GTA Laboratory Expansion and Renovation
Feasibility Study

FINAL Report
February 5, 2013

Prepared by

nxl architects

Table of Contents

Canadian Food Inspection Agency
GTA Laboratory Renovation and Expansion Feasibility Study
Final Report - February 2013

Part 1

Architectural Report

1. Architectural Report

1.1 Executive Summary

Building on a basis of common understanding between CFIA and Health Canada, the feasibility study concludes that the program and operational workflow can be accommodated with a modest expansion, and a phased renovation at an approximate cost of $1.8M plus HST and soft costs (professional fees, permits, Landlord's facility manager SNCL, and financing) and equipment.

1.2 Project Summary

a. NXL Architects and their consultant team was retained by CFIA to develop a Functional Program for their current operations at Health Canada's Midland Avenue facility, and then propose expansion options in order to accommodate the program and operational workflow. The report was submitted in May 2012, and was used in negotiations between CFIA and Health Canada to support an upgrade of Mechanical / Utility operations, and to explore renovation and expansion options.

b. As a result of discussions, using the May 2012 report as a basis, CFIA and Health Canada came to agreement on two areas for expansion; a contiguous expansion to the east for some laboratory operations, and a satellite expansion one to the west for office operations. Because this area and approach was not one of the options investigated in the May 2012 report, a new investigation was initiated to evaluate whether this option would accommodate the program and workflow determined in the first study, and then evaluate the constructability, utility modifications and cost for that accommodation.

1.3 Scope of this Project Stage

(Refer to sheet A-10)

The investigation, in conjunction with CFIA staff, led to the recommended layout presented in Drawing A-10, highlights of which are as follows:

- CFIA expansion for sample reception, and Extraneous Microscopy lab functions (low utility impact) eastward into existing HC office area (note – deletion of racetrack circulation corridor still yields a code compliant exiting strategy, as there are 4 exit stairs – one in each corner of the floorplate) ;
- Minor expansion of CFIA laboratory westward to create a vestibule near Grid Line 4 for segregated access to lab operations south of the service spine;
- Renovation and reconfiguration of existing CFIA laboratory space to suit Program Requirements and operational workflow;
- Expansion of CFIA office area to west side of the floorplate.

Drawing A-10, attached to this report, provides the detailed laboratory layouts, while drawing A-17 highlights the proposed phases to achieve the final arrangement while in continuous operation.

1.4 Proposed Construction Phases

(Refer to sheet A-17)

Phase 1 – Expansion into HC office area East of Gridline 8. This work area would be hoarded off from the rest of the floorplate, and work would proceed without impeding CFIA operations until the end of the phase for doorway installation. This phase comprises the following operations;

- 1A: Provision of Sample reception area, currently not part of the CFIA facility, including logging in, benches, and sample storage refrigerators;
- 1B: Storage area for CFIA consumables, within easy access to the sample receipt area and staff;
- 1C: Extraneous Microscopy lab expansion with new door for direct connection to Extraneous Microscopy sample preparation;
- 1D: Manager office;
- 1E: finishes renovation to existing room which will be used as Quiet room;
- 1F : Mechanical and electrical modifications, including relocation of existing Fire Hose Cabinet (FHC) to the north outside of Sample Reception, and provision of a new FHC outside of Extraneous Sample Prep, various sprinkler modifications, and HVAC reconfiguration, including final balancing to achieve design air pressure segregation and cascade further described in the mechanical section of this report.

Phase 2 – Renovation of Existing spaces Part 1

- 2A: Demolition and removal of lab benches, construction of new wall near gridline 6 and reconfiguration of doors to create new Incubator Room; moving of the existing incubator equipment to the west side;
- 2B: Demolition of Equipment Room, and Extraneous Lab, new benching and relocation of Microbiology lab equipment to East side of the new incubator room;
- 2C: Renovation and modifications to the existing Microscopy room (337) into Extraneous Sample Prep, including the relocation of two fume hoods, new lab sink, lab benches.
- 2D: additional emergency power provision for the Extraction room Lab, Post PCR Lab and Pre PCR lab.
- 2E: Demise existing training room (312) on west side of floorplate to create new open office space for CFIA.
- 2F: Mechanical system rebalancing to achieve design air pressure segregation and cascade

Phase 3 - Renovation of Existing spaces part 2

- 3A: Demolition of Identification, Culture and Transfer rooms and construction of new Vestibule area, Biohazard Room, Method Development Room and Transfer Lab;
- 3B: Additional partition and modifications inside the existing Chemistry / Canning Lab to create two segregated areas – one for Chemistry and one for Canning;
- 3C: Modifications inside the existing Media Preparation Lab and Wash-up areas including addition of an autoclave and associated extraction hood and shroud, reconfiguration of Benches, and fume hoods cabinets, and fridges and upgrade of emergency power.
- 3D: Mechanical system rebalancing to achieve design air pressure segregation and cascade.

1.5 Cost Estimate - Comments and Observations

(Refer to Page 33 - 46 of this Report)

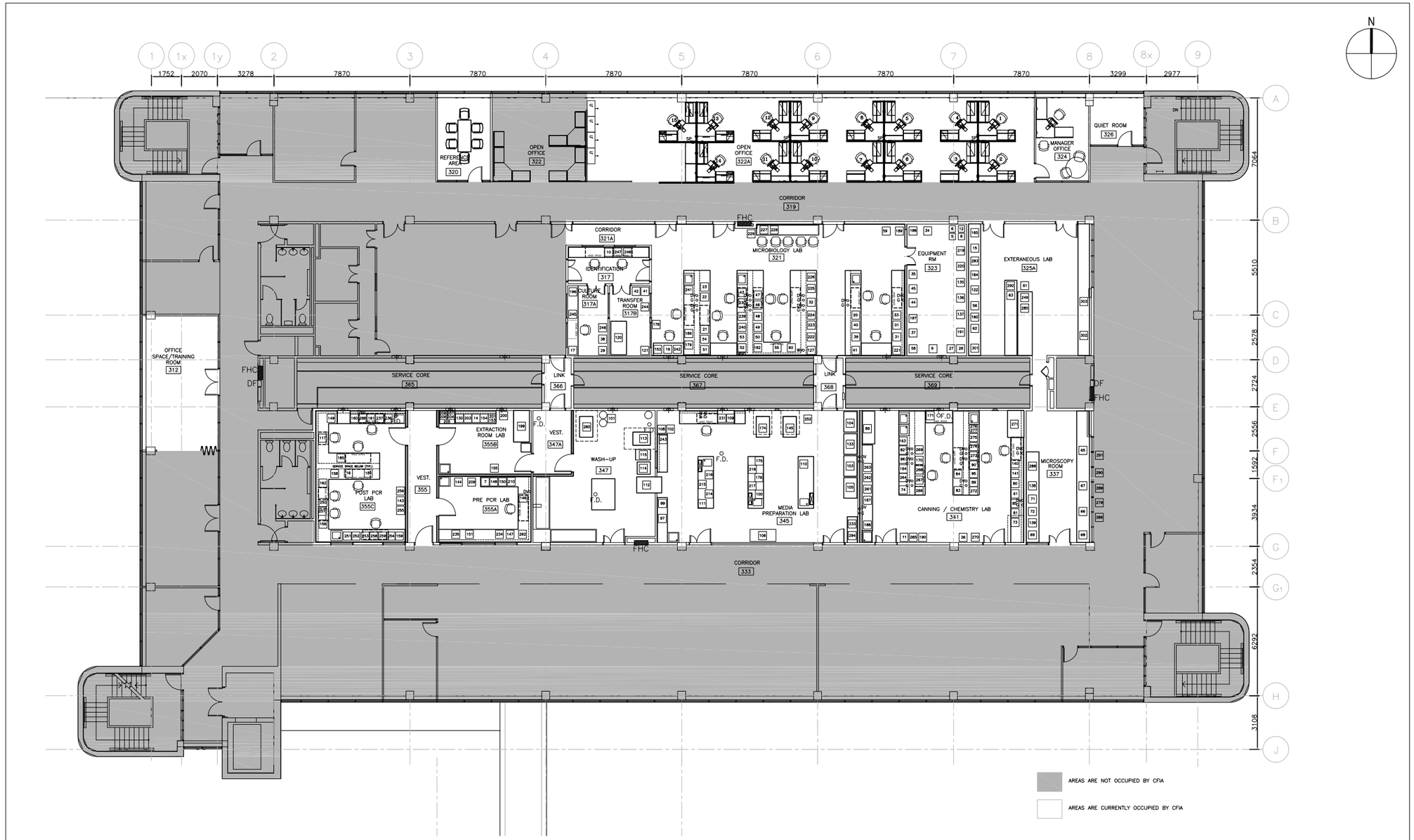
The Class C cost report from A.W. Hooker concludes that the anticipated order of magnitude cost for this renovation program is just over $1.8M, equating to $221 per square foot / $2,376 per square meter, exclusive of HST, soft costs, Landlord's facility manager SNCL, and loose furnishings and equipment.

This analysis is within expected norms for this type of work, recognizing the small areas of work, at premium time to minimize interruptions.

Given the very preliminary design work developed in this report, and recognizing that a renovation always uncovers unknown conditions, an appropriate Design and Pricing Contingency of 15%, and a Post Contract Contingency of 15% has been carried.

CFIA must add to this the cost of Professional Fees, Permit Costs, HST and purchase of loose equipment and furnishings to determine an overall project budget.

Architectural Drawings



12034: CANADIAN FOOD INSPECTION AGENCY

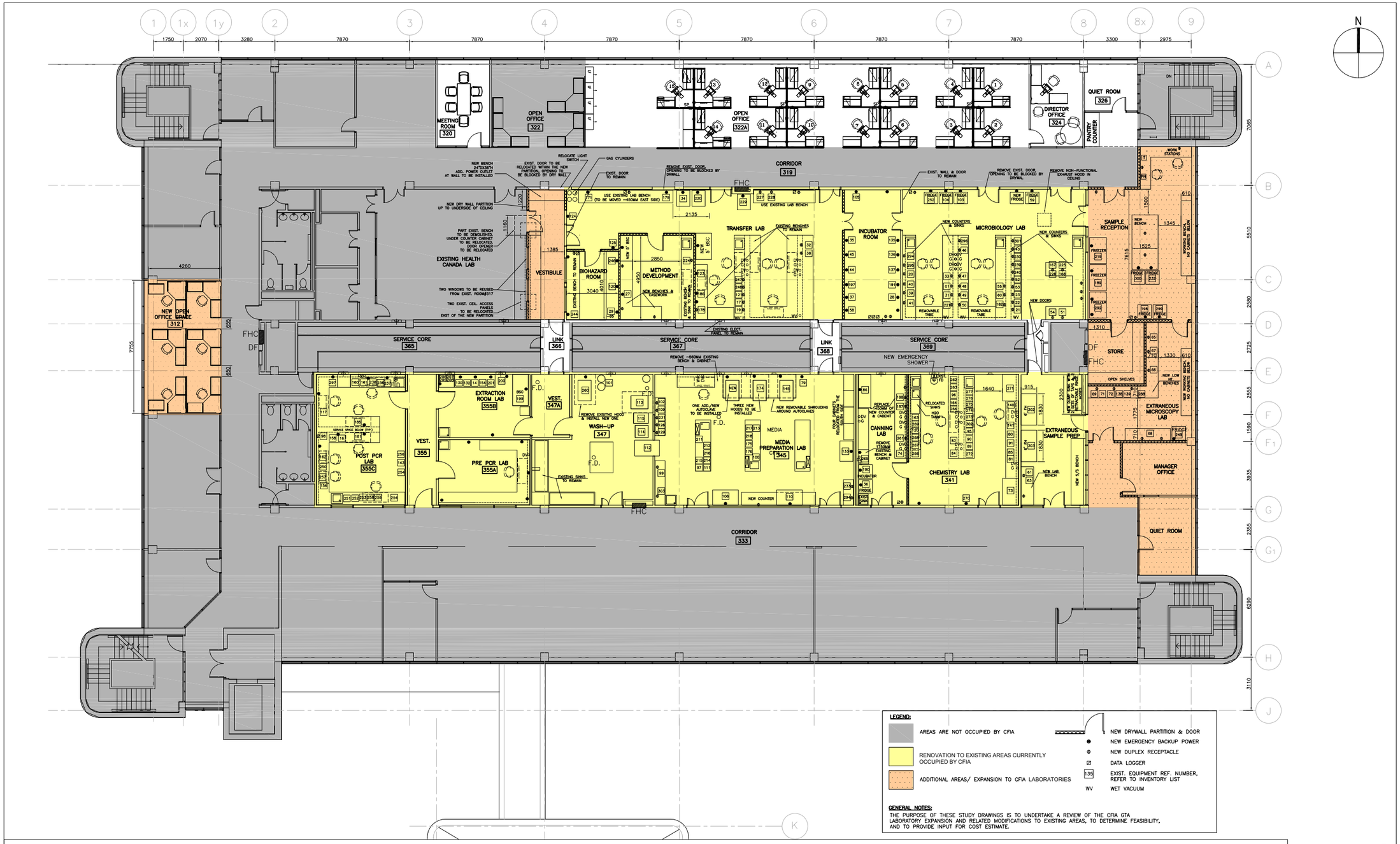
LABORATORY EXPANSION FEASIBILITY STUDY
GTA LABORATORY, 2301 MIDLAND AVE.

EXISTING LAYOUT PLAN

SCALE: 1/ 200
DATE: SEPT 25, 2012

SHEET NO.: **A-01**

www.nxl.ca nxl



12034: CANADIAN FOOD INSPECTION AGENCY

LABORATORY EXPANSION FEASBILITY STUDY
GTA LABORATORY, 2301 MIDLAND AVE.

PROPOSED GENERAL ARRANGEMENT LAYOUT PLAN

SCALE: 1/ 200
DATE: OCT 01, 2012

SHEET NO.: **A-10**

www.nxl.ca

N

LEGEND:

AREAS ARE NOT OCCUPIED BY CFIA

AREAS ARE CURRENTLY OCCUPIED BY CFIA

ADDITIONAL AREAS/ EXPANSION TO CFIA LABORATORY

NEW DRYWALL PARTITION & DOOR

NEW EMERGENCY BACKUP POWER

NEW DUPLEX RECEPTACLE

DATA LOGGER

135 EXIST. EQUIPMENT REF. NUMBER, REFER TO INVENTORY LIST

WV WET VACUUM

GENERAL NOTES:

THE PURPOSE OF THESE STUDY DRAWINGS IS TO UNDERTAKE A REVIEW OF THE CFIA GTA LABORATORY EXPANSION AND RELATED MODIFICATIONS TO EXISTING AREAS, TO DETERMINE FEASIBILITY, AND TO PROVIDE INPUT FOR COST ESTIMATE.

12034: CANADIAN FOOD INSPECTION AGENCY	GTA LABORATORY, 2301 MIDLAND AVE.	LEGEND & NOTES	DATE: OCT 01, 2012	A-05

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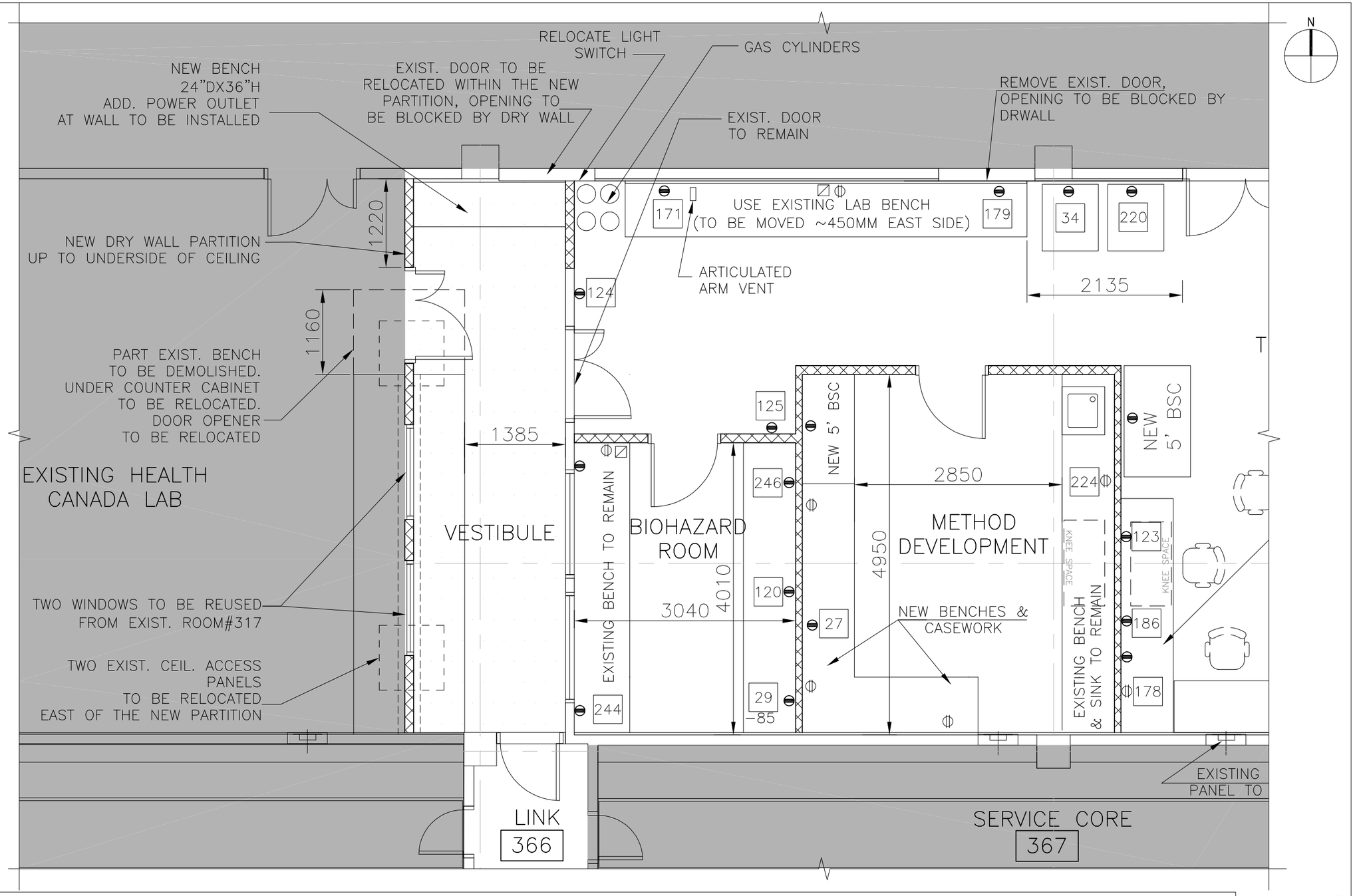

12034: CANADIAN FOOD INSPECTION AGENCY	LABORATORY EXPANSION FEASBILITY STUDY GTA LABORATORY, 2301 MIDLAND AVE.	LAYOUT PLAN - PART A VESTIBULE, BIOHAZARD RM. & METHOD DEVELOPMENT	SCALE: 1/ 50 DATE: JAN 29, 2013	SHEET NO.: **A-11**

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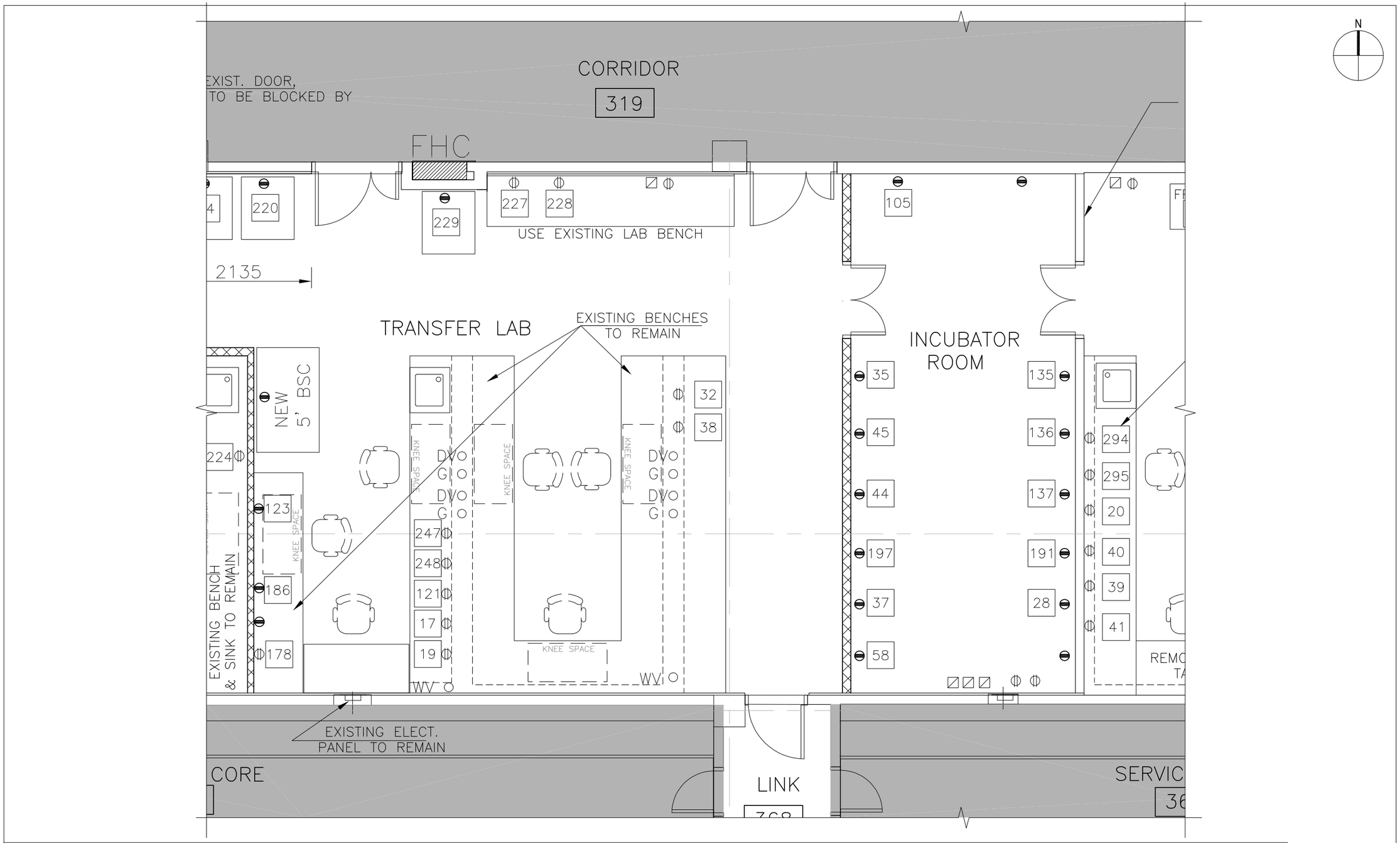

12034: CANADIAN FOOD INSPECTION AGENCY	LABORATORY EXPANSION FEASBILITY STUDY GTA LABORATORY, 2301 MIDLAND AVE.	LAYOUT PLAN - PART B TRANSFER LAB & INCUBATOR ROOM	SCALE: 1/ 50 DATE: OCT 01, 2012	SHEET NO.: **A-12**

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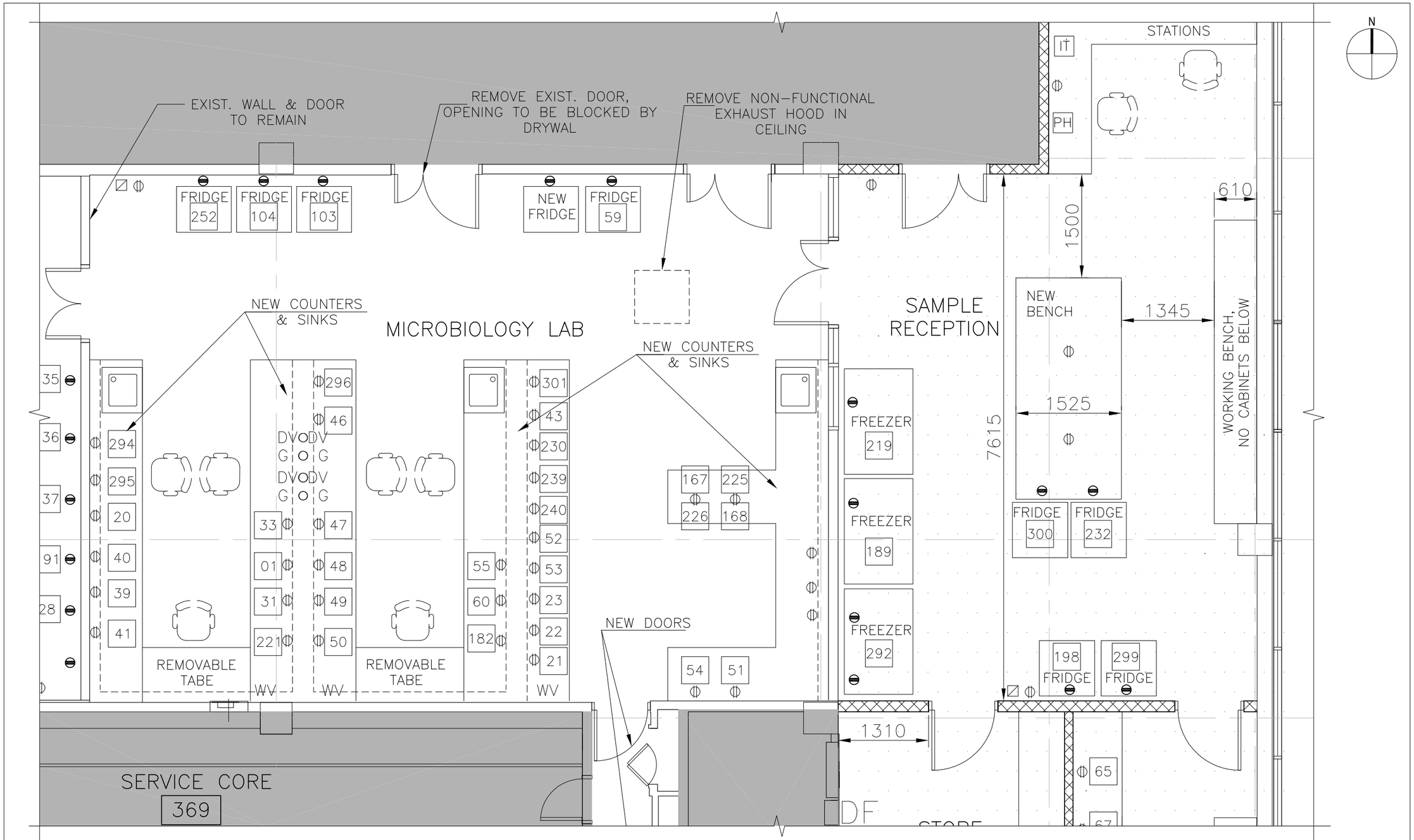
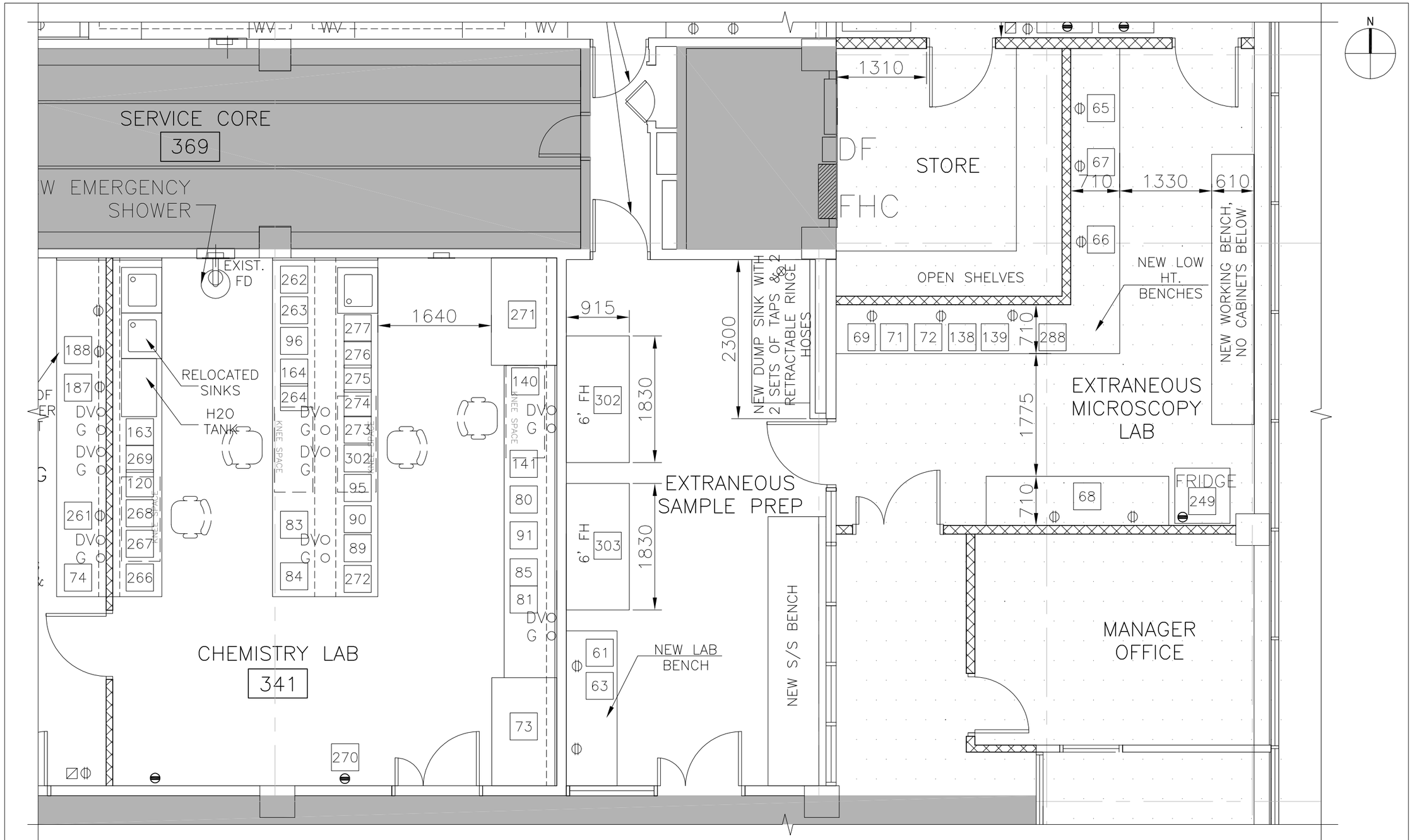


12034: CANADIAN FOOD INSPECTION AGENCY	LABORATORY EXPANSION FEASBILITY STUDY GTA LABORATORY, 2301 MIDLAND AVE.	LAYOUT PLAN - PART C MICROBIOLOGY LAB & SAMPLE RECEPTION AREA	SCALE: 1/ 50 DATE: OCT 01, 2012	SHEET NO.: A-13

www.nxl.ca nxl



12034: CANADIAN FOOD INSPECTION AGENCY	LABORATORY EXPANSION FEASBILITY STUDY GTA LABORATORY, 2301 MIDLAND AVE.	LAYOUT PLAN - PART D STORE, EXTR. MICROSCOPY LAB, OFFICES, EXTR. SAMPLE PREP & CHEMISTRY LAB	SCALE: 1/ 50 DATE: OCT 01, 2012	SHEET NO.: A-14

www.nxl.ca nxl

EXISTING ELECT. PANEL TO REMAIN

SERVICE CORE
367

LINK
368

SE

REMOVE ~560MM EXISTING BENCH & CABINET

NEW EMERGE
SHO

KNEE SPACE

NEW

174

145

79

ONE ADD./NEW AUTOCLAVE TO BE INSTALLED

THREE NEW HOODS TO BE INSTALLED

NEW REMOVABLE SHROUDING AROUND AUTOCLAVES

FOUR CABINETS RELOCATED FROM THE SOUTH SIDE

86

REPLACE ~1450MM OF NEW COUNTER & CABENIT

188

187

DV G

DV G

16

269

120

268

267

266

261

74

CANNING LAB

REMOVE 1750MM EXISTING BENCH & CABINET

F.D.

13

15

14

102

109

231

126

129

112

99

303

211

212

216

215

214

97

111

217

213

218

175

176

100

MEDIA

MEDIA PREPARATION LAB

CFIA

345

133

265

190

INCUBATOR

36

FRIDGE

EXIST SINK

233

294

106

NEW COUNTER

110

HC

N

12034: CANADIAN FOOD INSPECTION AGENCY

LABORATORY EXPANSION FEASBILITY STUDY
GTA LABORATORY, 2301 MIDLAND AVE.

LAYOUT PLAN - PART E
CANNING LAB & MEDIA PREP LAB

SCALE: 1/ 50
DATE: JAN 29, 2013

SHEET NO.: A-15

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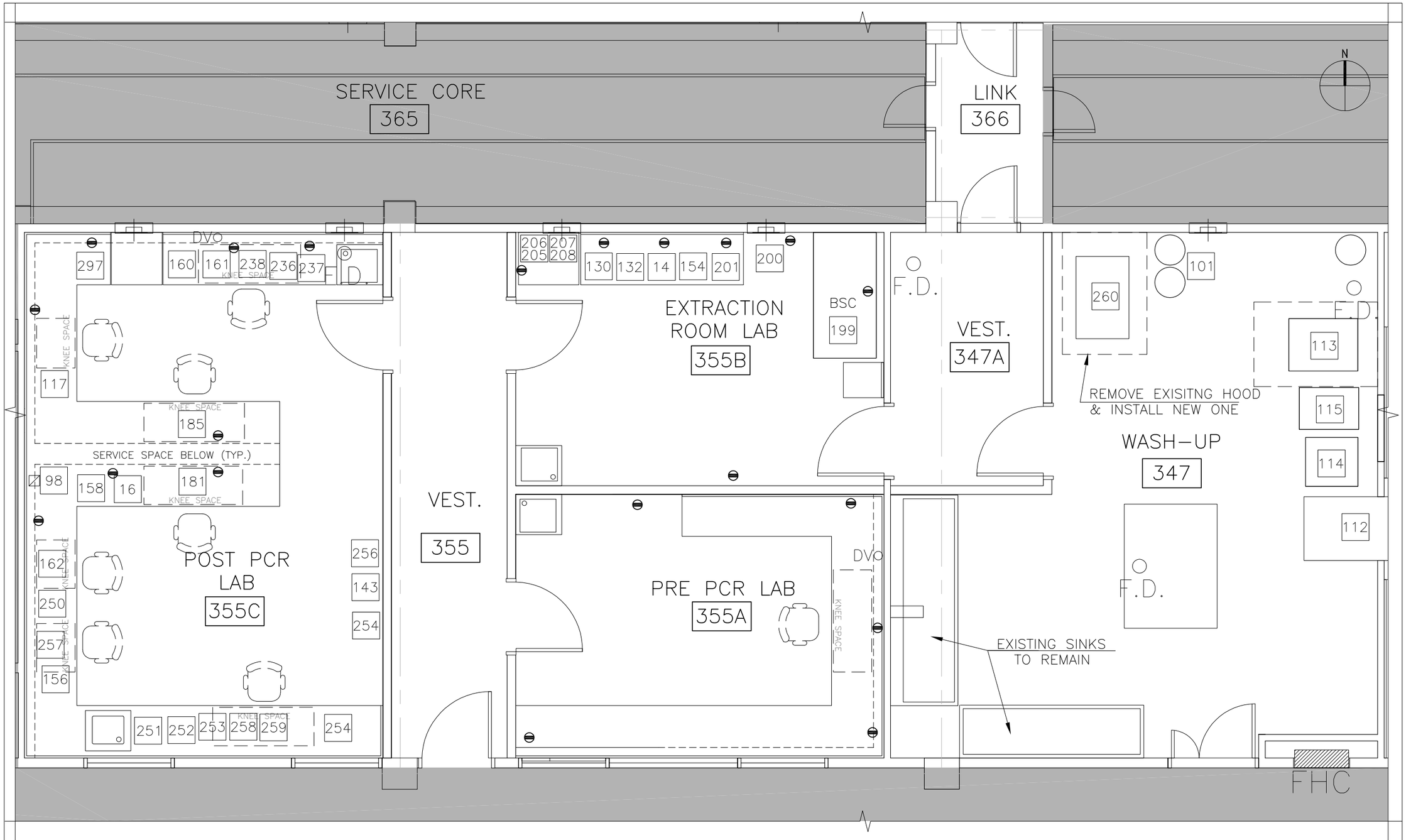

12034: CANADIAN FOOD INSPECTION AGENCY

LABORATORY EXPANSION FEASBILITY STUDY
GTA LABORATORY, 2301 MIDLAND AVE.

LAYOUT PLAN - PART F
WASH-UP AREA, EXTRACTION RM., PRE PCR LAB & POST PCR LAB

SCALE: 1/ 50
DATE: JAN 29, 2013

SHEET NO.: **A-16**

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12034: CANADIAN FOOD INSPECTION AGENCY

LABORATORY EXPANSION FEASBILITY STUDY
GTA LABORATORY, 2301 MIDLAND AVE.

PROPOSED CONSTRUCTION PHAHSES

SCALE: 1/ 200
DATE: DEC 05, 2012

SHEET NO.: **A-17**

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Part 2
Mechanical Report

2.0 Mechanical Report

TOU & ASSOCIATES LIMITED CONSULTING ENGINEERS
www.touengineering.com
220 Duncan Mill Road, Suite 309, Toronto, Ontario, M3B 3J5, tel. 416.449.9049 fax. 416.449.9091 email. info@touengineering.com

Review
of
the Mechanical Systems
for
the Proposed CFIA Laboratory Renovation & Expansion
Scarborough, Ontario

January 2013

1.0 Executive Summary

The proposed design for the laboratory expansion and related modifications to other existing areas generally is feasible and achievable based on the mechanical recommendations mentioned in this report.

2.0 Introduction

Tou & Associates Limited has been engaged by NXL Architects to conduct a review of the mechanical systems for the proposed CFIA laboratory renovation at 2301 Midland Avenue, Scarborough, Ontario

Mechanical drawings from the 2007 renovation, but not the specifications, were made available to us at the time of the study.

Previous mechanical report prepared by Merrick & Company was also provided to us during this review.

This report is limited to scope to only those building components, which are specifically referenced in the text. Any components not included have not been reviewed, and if their conditions need to be known, further study will be required.

The purpose of this report is to undertake a review of the expanded space and related modifications to determine feasibility, and to provide input for costing of mechanical works involved in achieving required installation.

No physical or destructive testing and no design calculations have been performed unless specifically recorded. Any comments and conclusions are, therefore, based on apparent physical appearances of the building components. Any design or installation deficiencies existing but not recorded in this report were not apparent given the level of the study undertaken. We can, therefore, accept no liability for any costs incurred by subsequent discovery or manifestation of such deficiencies.

3.0 Areas of Scope of Work

3.1 General

The areas of scope of work for the proposed laboratory renovation are basically divided into two main areas.

Area 1 Existing CFIA laboratory space
Area 2 Proposed sample reception/Extraneous Microscopy Lab addition (Expansion areas)

4.0 Heating, Ventilation and Air Conditioning System

4.1 Proposed Differential Pressure and Air Flow Pattern

As per standard laboratory design guidelines, the required differential pressure and air flow pattern together with the required air changes will be the primary parameters for the design of the HVAC systems. Temperature and humidity control will then be designed in association with these requirements.

In association with CFIA's input, we have established the required differential pressure/air flow pattern for the proposed laboratory layout. (Please refer to the attached sketch SKM-1.)

The general office areas surrounding the laboratory space are served by the base-building standard office HVAC system. These areas will be our reference datum as the neutral pressure zones. With the required air flow directions, a total of six pressure differential steps will be required, i.e. from -4 to +1.

With the proposed layout changes in the current CFIA laboratory space, the supply and exhaust system distribution would need to be modified with the above mentioned design parameters.

The new Sample Reception and Extraneous Microscopy Laboratory are located in the current Health Canada office areas. These areas are served by the base-building standard office HVAC system. As this system consists of supply distributions with common ceiling plenum return arrangement, differential pressure will not be attainable. These areas will be part of the neutral pressure zones and the distribution will be modified to suit the new layout accordingly.

Localized differential pressure monitoring device will be required in for the following rooms:

- Bio Hazard Room
- Method Development
- Post PCR Lab
- Extraction Room Lab
- Pre PCR Lab

Air balancing of the entered HVAC system will be required upon completion of the project.

4.2 Air Distribution and Climate Control

With the proposed layout changes, the existing supply and exhaust ductwork will have to be revised in order to provide proper air quantities for the required air flow pattern as well as temperature control.

For the laboratories north of the service cores where the layout are changed the most, i.e. the sizes and location of the each of the laboratory, the supply and exhaust will have to be re-designed so that each laboratory will have its own supply and exhaust for proper control.

For the south laboratories, ductwork changes will only be made when effected by the differential pressure requirements and dedicated equipment, i.e. new autoclave exhaust.

As mentioned, the new Sample Reception and Extraneous Lab areas are served by the base-building standard office HVAC system. The supply and return arrangement will be modified to suit the new proposed layout. Supplementary cooling , i.e. split air conditioning system may be required for the Sample Reception, due to the number of fridges and freezes, and the Media Room.

The building has a Building Automation System controlling reheat coils and volume control dampers to maintained required space set point temperature. The reheat coils and volume control dampers will need to be revised in association with the air distribution changes. Each laboratory is to have its dedicated damper/reheat coil per proper control. The BAS will then be required to be updated accordingly.

4.3 Fume Hood Exhaust

Two existing fume hoods are proposed to be relocated from the current Extraneous Lab to the new Extraneous Sample Prep Lab. Each fume hood has a 10" stainless steel exhaust duct leading to its dedicated exhaust fan in the penthouse mechanical room through the service core service shaft. New exhaust ducts will be required from the new location to the service core service shaft. Some piping changes inside the ceiling space as well as lowering of the ceiling in couple of locations will be required in order to install these two new exhaust ducts.

Exhaust for the two existing autoclaves in the Media Preparation Lab is reported to be ineffective. New exhaust arrangement will be provided for the new autoclaves as well as the two exiting ones.

Biological Safety Cabinets used are self contained units with integral HEPA filtration system and re-circulating fan. No external exhaust will be required.

5.0 Plumbing and Drainage Systems

5.1 General

The proposed layout, in general, locates equipment with plumbing requirements in the vicinity of existing plumbing services or close to the service core where services are readily available. This also applied to process piping i.e. gas, air, vacuum, R.O. water and drainage.

The new emergency shower is positioned in the Chemistry Lab where an existing floor drain is located. Therefore, only hot and cold water connections will be required.

6.0 Fire Protection systems

6.1 Sprinkler System

Existing sprinkler system will be modified to provide proper coverage for the proposed layout as per NFPA-13 requirements.

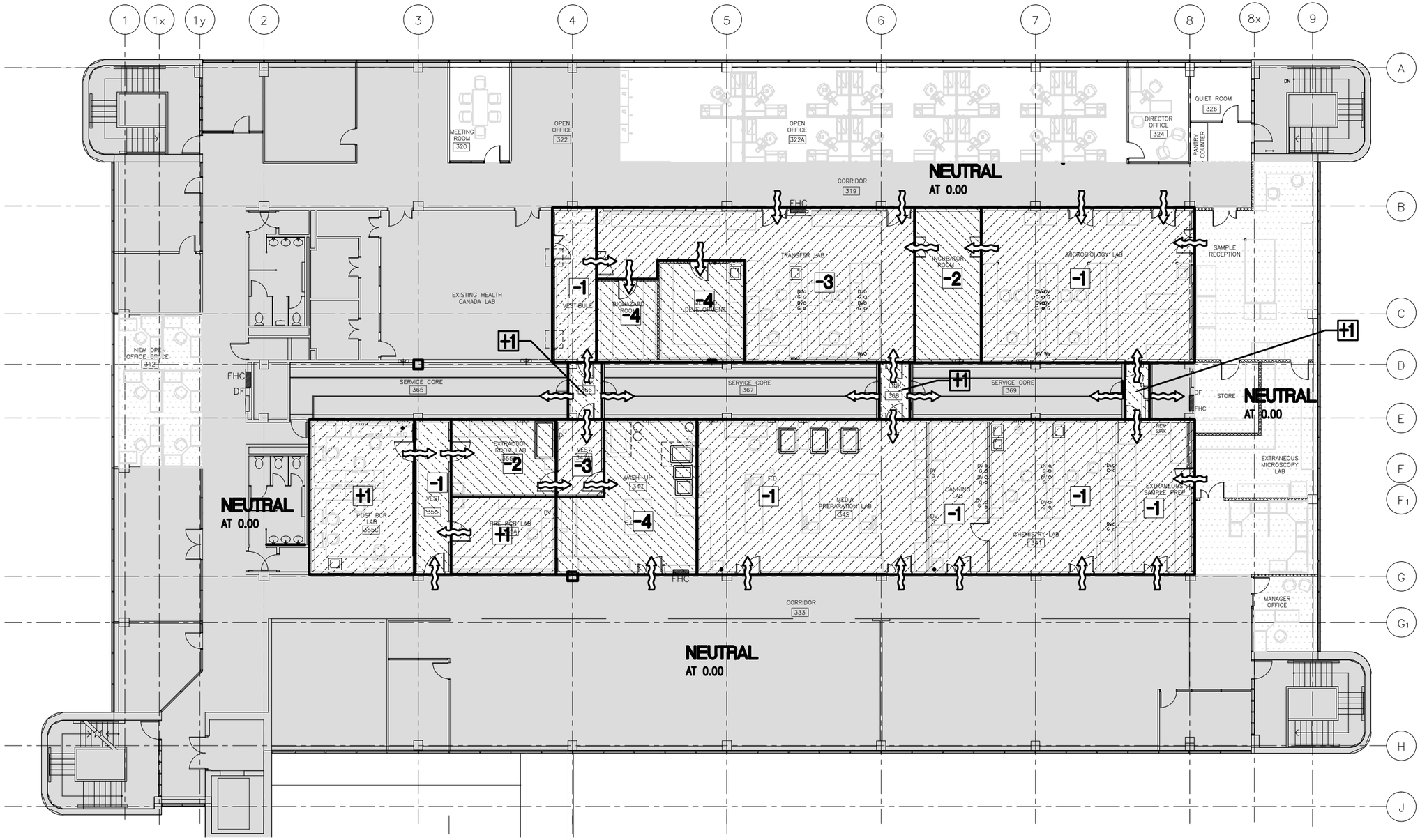
6.2 Standpipe System

One fire hose cabinet at the East side along gridline 8 will be required to be relocated. Two new fire hose cabinets will be required, one besides the North stairwell and the other besides the South stairwell.

6.3 Fire Extinguishers

Provide 5 new dry chemical fire extinguishers complete with cabinet.

SKM-1 - PROPOSED DIFFERENTIAL PRESSURE / AIR FLOW PATTERN SCHEMATIC



Part 3
Electrical Report

3.0 Electrical Report

McDONNELL ENGINEERING Inc.

1815 Ironstone Manor, Unit No. 8, Pickering, Ontario L1W 3W9

Tel. No. (416) 429-0850 - Fax No. (416) 429-0919

CFIA LAB EXPANSION
ELECTRICAL REPORT
OUR PROJECT NO.: 12151
NOVEMBER, 2012

1.0 GENERAL

The purpose of this report is to undertake a review of the expanded space and related modifications to determine feasibility, and to provide input for costing of electrical work involved in achieving required installation.

2.0 EXECUTIVE SUMMARY

The proposed design for the laboratory expansion and related modifications to other existing areas is feasible, and achievable based on the electrical recommendations mentioned in this report.

2.1 **New, 100 amp, 600 volt, emergency power should be brought from main basement electrical room to penthouse above chemistry lab no. 341.**

2.2 **Existing normal power is more than adequate. Assume two hours labour per relocate.**

2.3 **Non separate circuit emergency power (e.g., desk receptacles) can be generally supplied from existing emergency panel 3EA in service core.**

2.4 **Significant cost associated with connecting three autoclave units to emergency power. Consideration should be given to providing local UPS (i.e. battery back-up) protection for short power outages.**

3.0 GENERAL ELECTRICAL OVERVIEW

3.1 The proposed design is based on considerable relocation and addition of equipment.

Primary interest is the extent of emergency power required by the new design. As much of the proposed reconfiguration involves connecting existing normal power devices to emergency power, it is apparent that there is adequate power available in all locations. We are not providing budget numbers, but suggest that an average two hours for each normal power relocation would probably be reasonable.

4.0 EMERGENCY POWER

4.1 **Preamble**

An important distinction must be made here. Having local emergency circuitry available does not correspond with having emergency power infrastructure available, i.e., we can only accommodate a fixed amount of additional load, irrespective of the number of spare circuit breakers in the panel.

4.2 **Existing Emergency Power**

Currently, there is an existing 120/208 volt emergency panel no. 3EA located in service corridor no. 369 (between chemistry and microbiology labs). There are 11 single breaker spaces in this panel.

This panel is supplied from an emergency splitter in the penthouse above, vertically close to no. 3EA. This panel has a supply from a 30 KVA, 600-120/208 volt transformer. This panel could probably be upgraded to 45 KVA, giving an additional approximate 40 amps, three phase capability. We shall not dwell on this option, as the anticipated additional emergency load is likely to exceed this number.

More prudently, we suggest a new 600 volt, 100 amp emergency service be brought from the basement electrical room to somewhere in (or in penthouse above) service corridor no. 367 or 369. A 100 amp disconnect switch, 75 KVA transformer and a 42 circuit, 120/208 volt panel no. 3EAA be installed at this location.

4.3 **New Emergency Power Loading**

We list, on a space basis (as divided by total of six attached sketches) new emergency power requirements. A rule of thumb is that minimal load equipment can be supplied for existing panel no. 3EA and higher loading from new panel no. 3EAA.

Space	Proposed Supply
Extraction/Wash-up 347/355	3EA-27, 29, 31, 33, 35

4.3.1 General Area Transfer Lab (Drawing No. A-12)

This area includes the incubator room. All the emergency power can be taken from the adjacent room. As a result, relocation of twelve emergency circuits, an average distance of say, ten feet each, should be allowed.

In addition, two new emergency circuits (Drawing No. A-13).

Space	Proposed Supply
Transfer Lab/Incubator Area	3EAA-5 and 7

4.3.2 Sample Reception/Microbiology Area

Seven new emergency circuits are required, primarily to accommodate freezer/fridges. Please note that four of the fridge/freezers in Sample Reception are to be relocated from the Microbiology Lab.

Space	Proposed Supply
Sample Reception/Microbiology Area	3EAA-2, 4, 6, 8, 10, 12 and 14

4.3.3 Media Prep/Canning Area S41 to 343 (Drawing No. A-15)
(See 4.3.4 for autoclave connections)

Six new emergency circuits are required.

Space	Proposed Supply
Media Prep Area	3EEA-15, 17, 19, 21, 23 and 25

4.3.4 If the two existing and one new autoclave units need emergency power, a separate 300 amp/208 volt emergency services is required from Base.

4.3.5 Chemistry Lab Area (Drawing No. A-14)

Two new emergency circuits are required.

Space	Proposed Supply
Chemistry Lab	3EA-37 and 39

4.3.6 PCR Lab Area (Drawing No. A-16)

17 new emergency circuits are required.

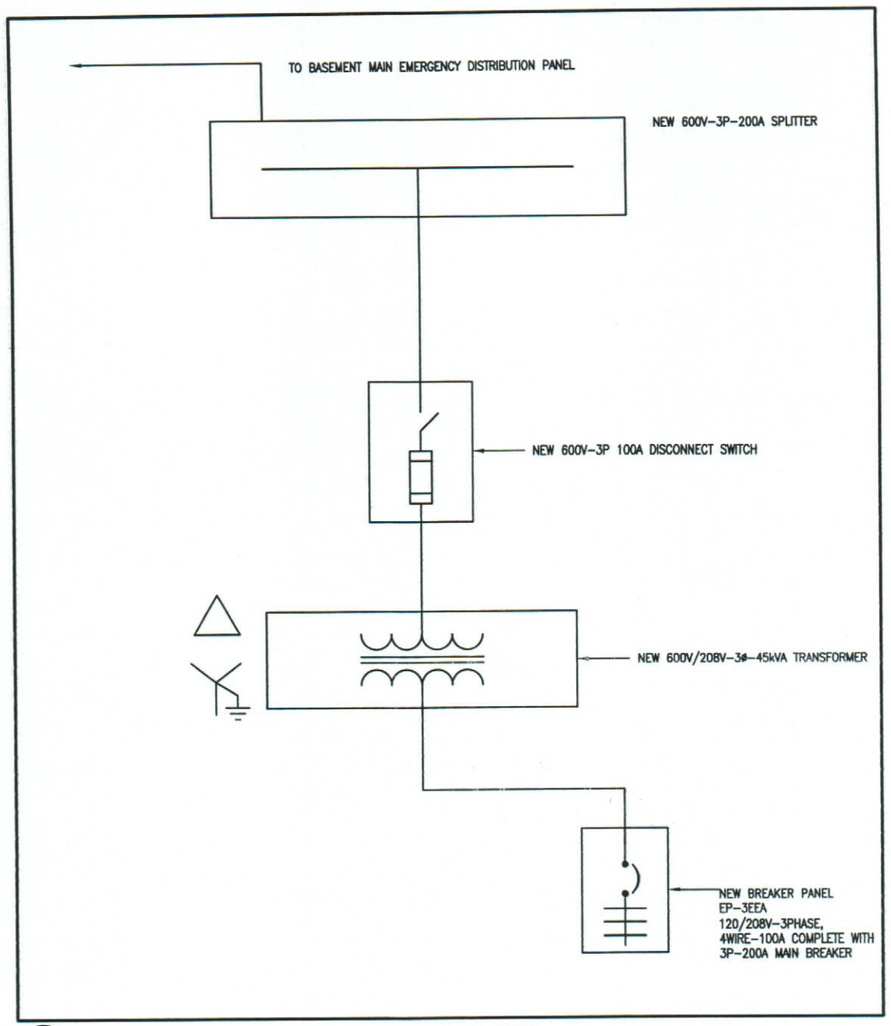
Space	Proposed Supply
PCR Lab Area	3EEA-9, 11, 13, 16, 18, 20, 22, 24 and 26 3EA-38

4.3.7 Biohazard/Method Development Area (Drawing No. A-11)

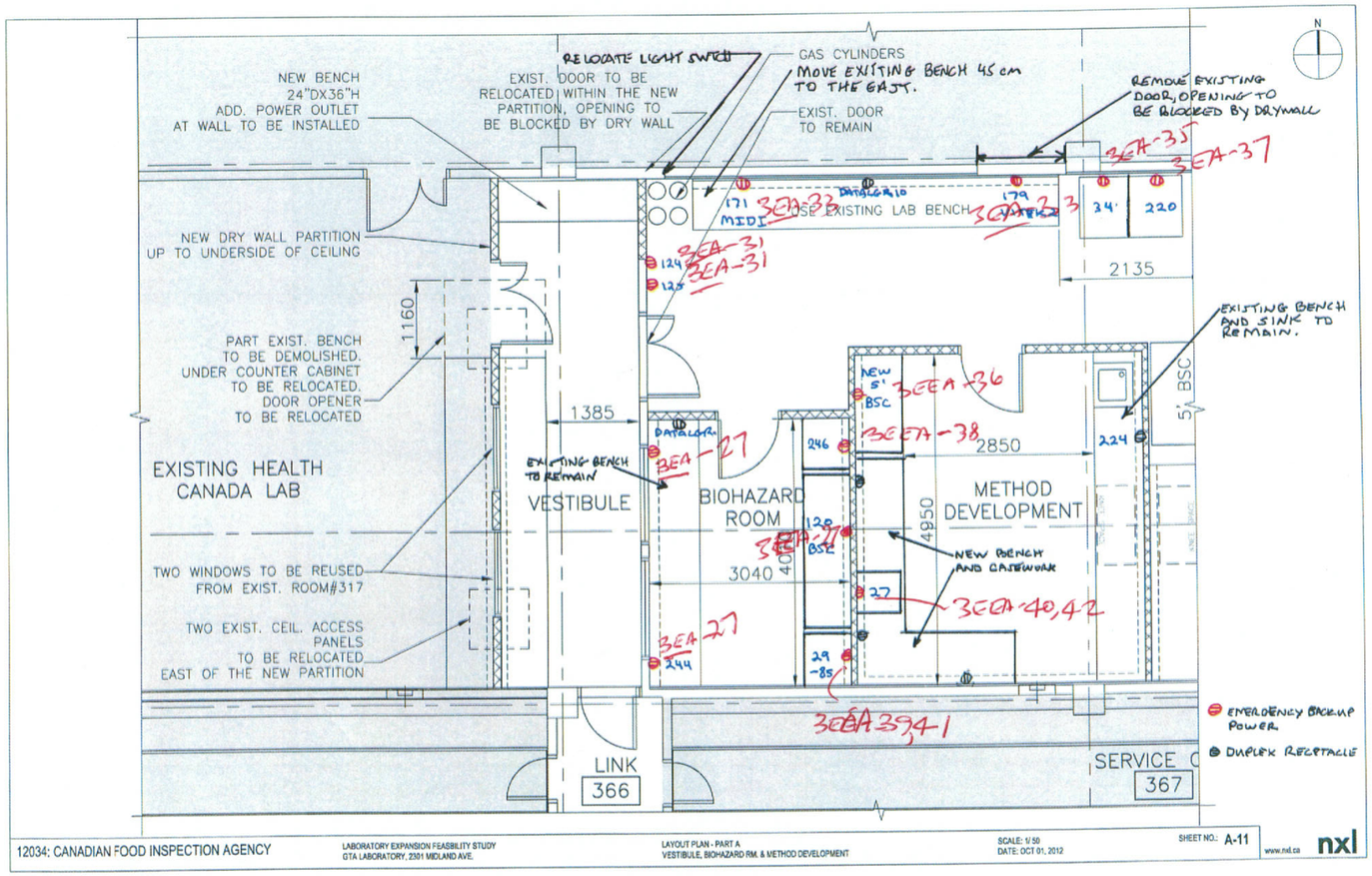
11 new emergency circuits are required.

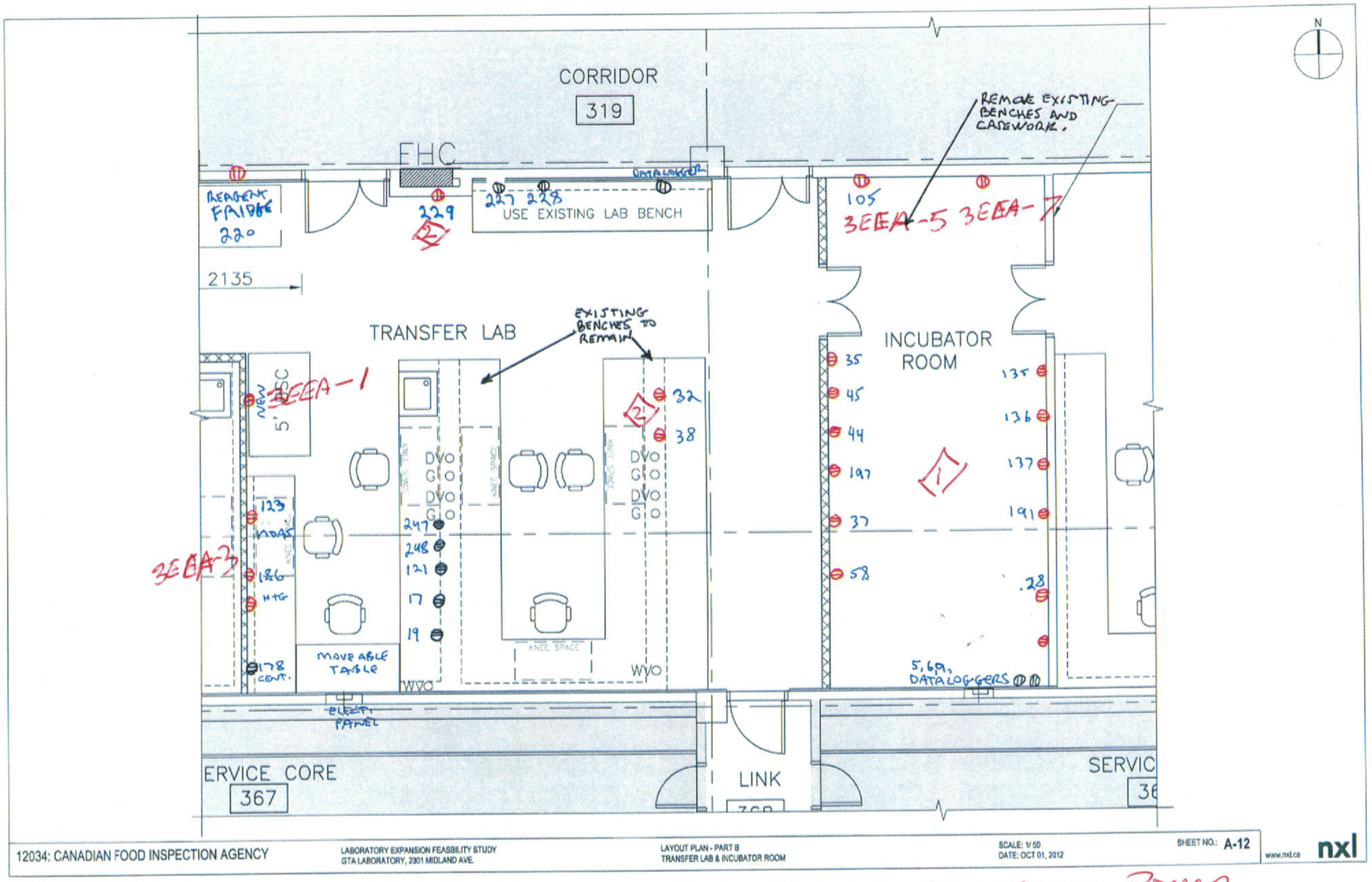
Space	Proposed Supply
Biohazard Area	3EEA-36, 38, 39, 40, 41 and 42 3EA-27, 31, 33, 35 and 37

- END -

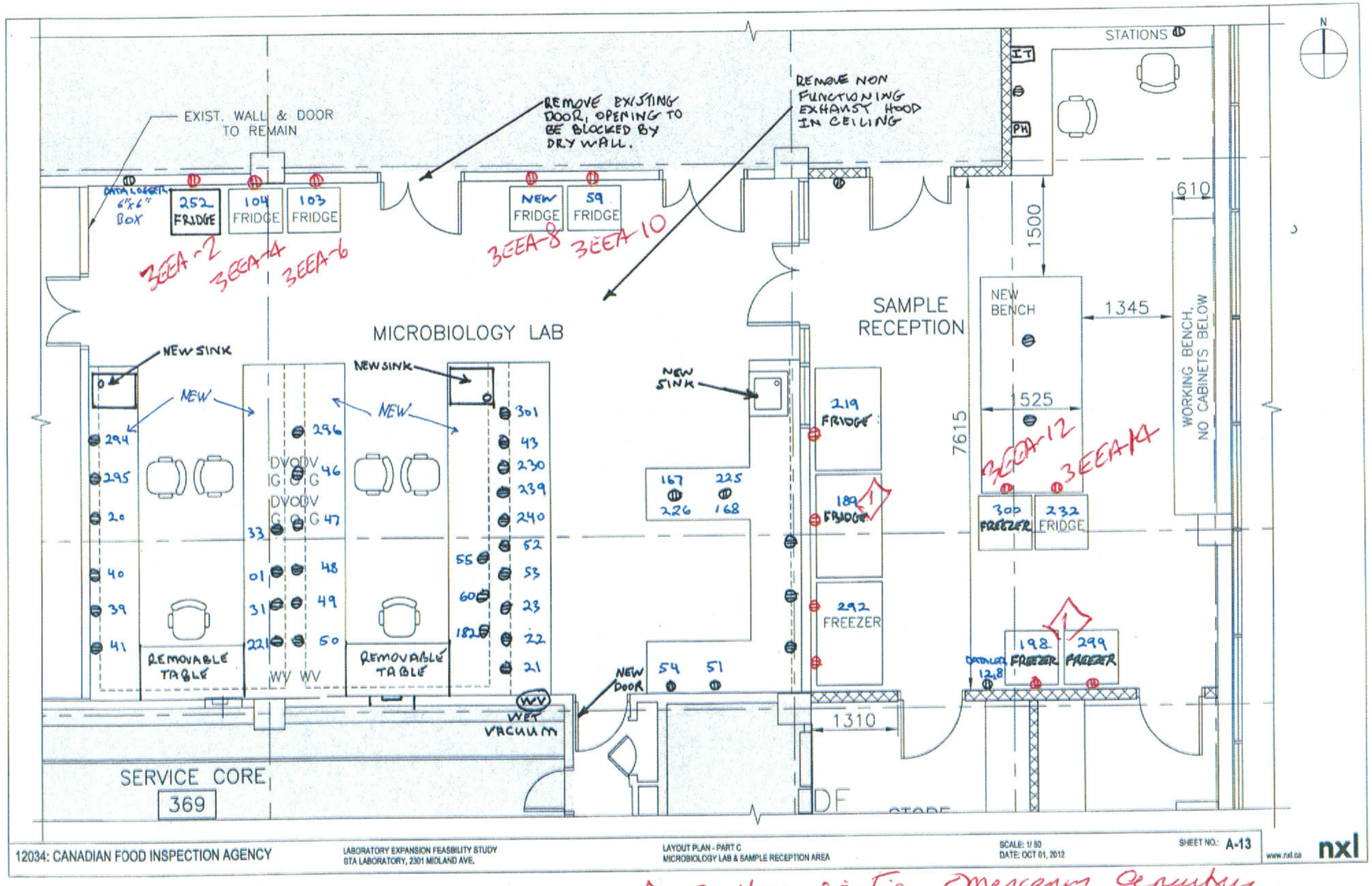


1 / E-1 ELECTRIC SUPPLY TO PROPOSED NEW PANEL 3EEA
N.T.S

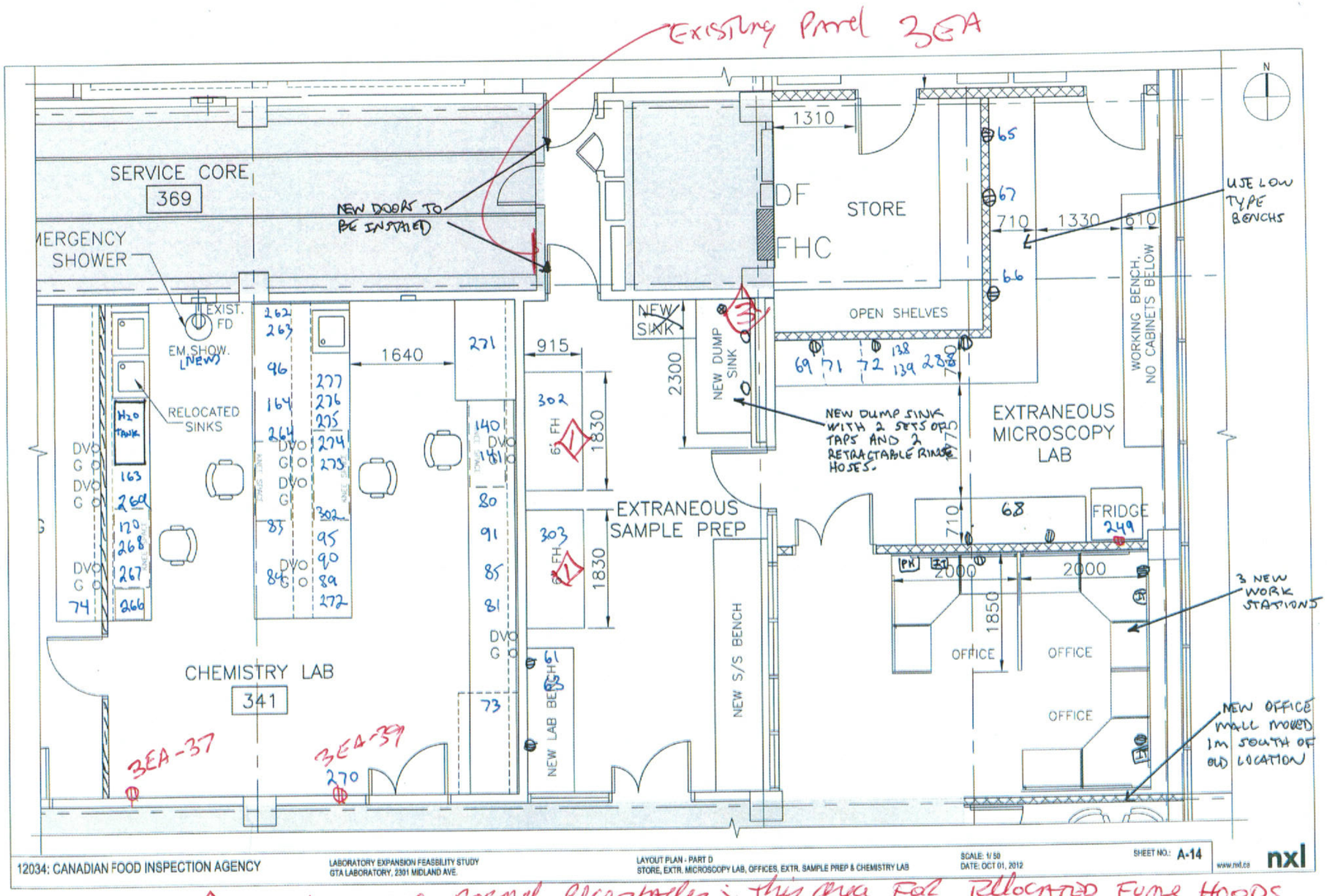




1 ROUTE ADJACENT SPACE EMERGENCY POWER.
2 RETAIN EXISTING EM. CIRCUITRY



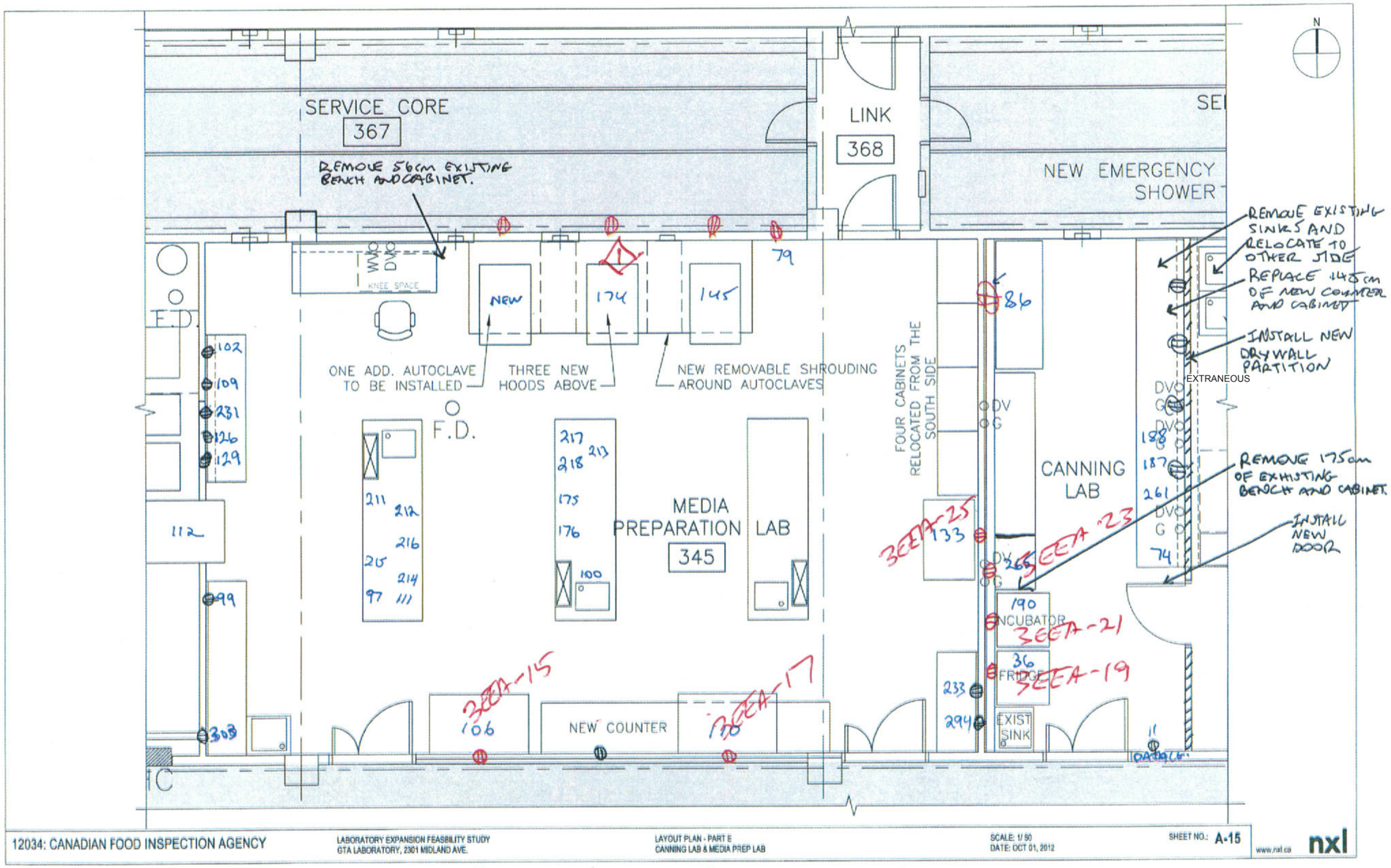
1 To use existing Emergency Generator role. & are relocated From Microbiology LAB.



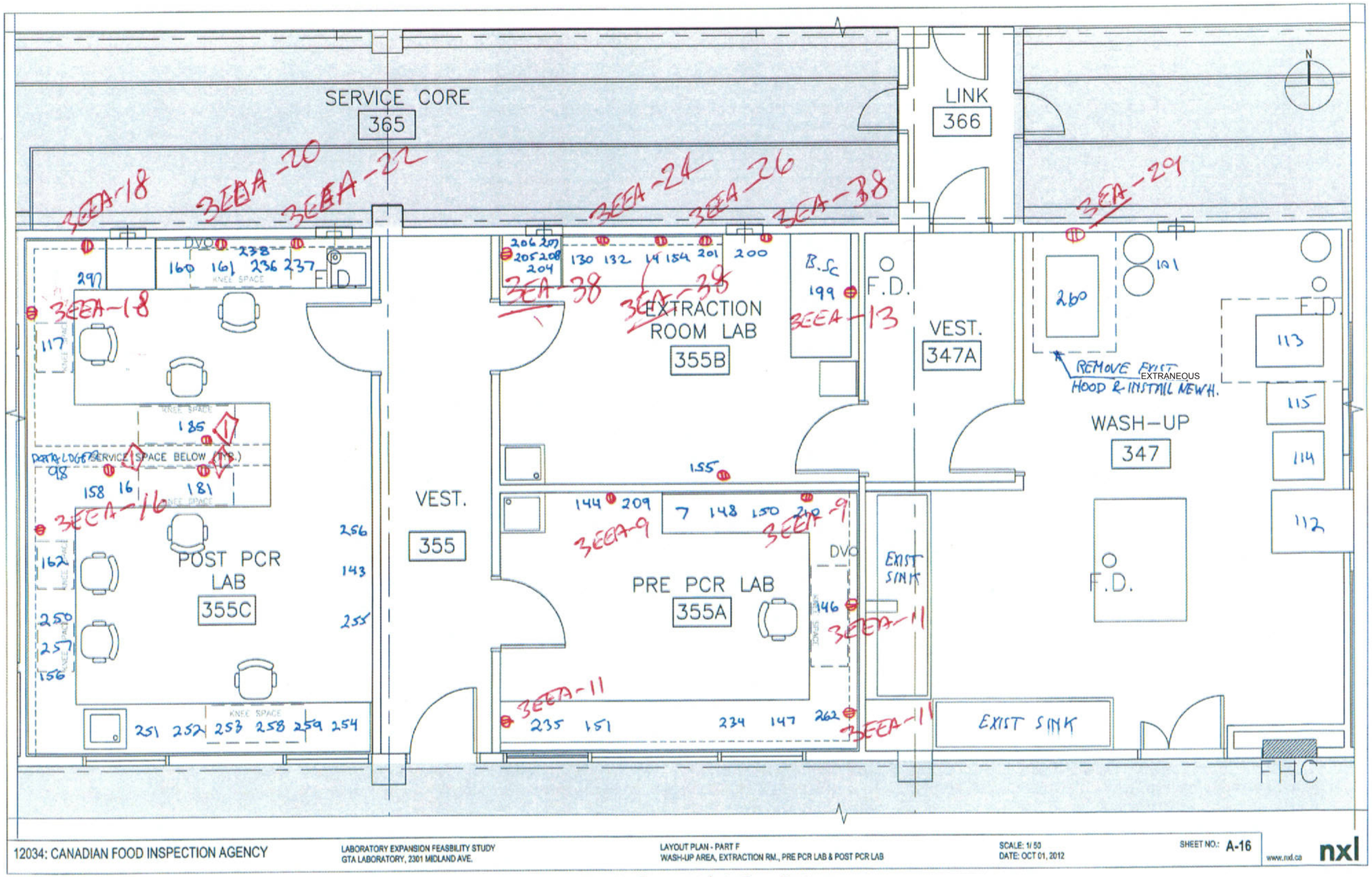
1 Re Use TWO Normal Receptacles in this area For RELOCATED FUME HOODS

2 EXISTING PANEL 3A

3 APPROX LOCATION OF PROPOSED NEW PANEL 3EEA IN PENTHOUSE ABOVE



1 See Report. Consider Local UPS



4 Retain existing emergency circuitry

Part 4
Cost Estimate

4.0 Cost Estimate

CFIA GTA LABORATORY
Class C Estimate R.1
DECEMBER 21, 2012

Report Recipient:
NXL Architects

THE PEOPLE | THE DIFFERENCE®

A.W. Hooker Associates Ltd. Cost Consultants awhooker.com

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December 21, 2012

NXL Architects
180 Lesmill Road, Studio 18
Toronto, ON M3B 2T5

Attention: Jay Levine & Sherif Saleb

Re: CFIA GTA Laboratory, Class C Cost Estimate R.1

Dear Jay and Sherif,

Please find enclosed our Class C Estimate Revision 1 for the above project.

This estimate was prepared based on drawings and information provided by NXL Architects received on December 4, 2012.

This estimate is meant to reflect the fair market value for the construction of this project; it is not intended to be the prediction of the lowest bid and should be representative of the median bid amount received.

We recommend that the owner and/or the design team carefully review the cost estimate report, including line item descriptions, unit price clarifications, exclusions, inclusions and assumptions, contingencies, escalation, and mark-ups. This is to ensure that the design intent is captured within the content of the report. This is especially important at early stage estimates which tend to be based on a lesser level of design completion.

Please refer to the preamble of our cost report for all exclusions, assumptions, and information pertaining to the estimate.

We trust our work will assist in the decision making process and look forward to our continued involvement in this important project.

Yours very truly,

A.W. HOOKER ASSOCIATES LTD.

Tim Moore, PQS
Partner

A.W. HOOKER ASSOCIATES LTD.

Malcolm Yates, PQS, CET
Senior Partner (Mechanical)

Encl: (Class C Estimate R.1, December 21, 2012)

Table of Contents

CFIA GTA LABORATORY Class C Estimate R.1 December 21, 2012

1. INTRODUCTION TO THE ESTIMATE

1.1 Project Description

This project consists of the upgrades to existing operations as well as provision for future staffing increase at the existing CFIA GTA Laboratory within 2301 Midland Avenue facility in Scarborough, Ontario. The work includes expansion of the laboratories to the East, a new vestibule to the West, conversion of existing training room into open office workstations, and renovations to the existing lab spaces.

1.2 Type of Estimate

This Class C Estimate is intended to establish a realistic elemental estimate of the hard construction costs based on the level of design information provided. Detailed quantities have been measured from drawings where possible for the proposed building and associated site development. This estimate reflects our opinion as to the fair market value for the hard construction of this project.

The accuracy of the estimate based on the documentation provided and design stage is intended to be +/- 15%. This is based on standard industry guidelines derived from the Federal Government definition of Estimate Class (A, B, C & D). Contingencies are included to offset the accuracy risk, to the extent that the estimated amount represents the current opinion of the likely fair market value at the time of tender.

The intention of the estimate is **not** to predict the low bid price received; typically based on historical tender results estimates are more likely to be towards the median value of bids received under competitive conditions. This is a deliberate methodology due to the inherent risk in attempting to predict the low bid and numerous factors which can contribute to lower than anticipated tender submissions which are beyond our control.

2. BASIS OF THE ESTIMATE

2.1 General Information

From the design information provided, we have measured quantities where possible and applied typical unit rates for each of the specific elements based on historical cost data for this type of project. In some instances where design information is limited we have made reasonable assumptions based on our experience with projects of a similar scope and design. Estimates for mechanical and electrical systems are developed based on information prepared by the project engineers (Merrick and Company' report for previous schemes used as reference), historical reference projects and experience.

Significant changes to the basis of design will impact the estimate value; this is particularly critical where changes are made after the final estimate prior to tender. We recommend that all major design or scope changes be reviewed for their cost, time and constructability impact prior to incorporation in a finalized tender package.

2.2 Location Cost Base

The location cost base for this estimate is Scarborough, Ontario.

2.3 Unit Rates

The unit rates in the preparation of the elemental estimate include labour and material, equipment, and subcontractors overheads and profits. We have assumed for pricing purposes that union contractors would perform the work. We have assumed the fair wage policy would be in effect. The unit rates for each of the elements are based on typical mid-range costs for the type of design, construction, and materials proposed.
Unit rates in all estimates combine the material, labour, and equipment components for a single unit cost for ease of presentation. This estimate is not a prediction of low bid. Pricing assumes competitive bidding for every aspect of the work.

2.4 Taxes

Harmonized Sales Tax (HST) is excluded from our estimate.

2.5 Construction Schedule

The estimate has been prepared on the assumption that the work will be performed as three distinct phases and that the majority of work will be conducted during evenings and weekends.

2.6 General Requirements and Fees

The General Requirements and Fees for the General Contractor are included as a percentage of the hard construction cost. These costs include supervision and labour, access to the site, site accommodations, site protection, temporary utilities, clean up, equipment, and other miscellaneous project requirements provided by the General Contractor.

2.7 Bonding and Insurance

We have included the median estimated costs for 50% Performance, 50% Labour and Materials, and 10% bid bonds. These are the traditional bonding requirements commonly requested by the owner. The actual final bonding costs will vary depending on the selected contractors' performance history.

The estimate includes an allowance for general liability and builder's risk insurance based on an average cost per $1,000 of estimated hard construction costs. The actual insurance costs would be subject to the insurance requirements for the project.

2.8 Procurement

It was assumed for the preparation of this estimate that the project would be tendered to a prequalified list of bidders with a standard Lumpsum contract. Pricing is based on competitive tender results with a minimum of four (preferably six tender submissions) at general contractor and major trade level. Pre-qualification with a restrictive list of contractors or subcontractors may result in a higher tendered cost due to the inherent reduction in competitiveness. Tenders receiving two or less submissions (occasionally three) historically tend to have a much higher risk of over an overrun in cost when compared to the budget established in an estimate. Ensuring adequate bonafide bidders is a prerequisite for competitive bidding scenarios, on which the estimate is predicated.

2.9 Specifications

Where detailed and complete specifications are unavailable, we have assumed that no onerous special requirements will be applicable to this project. It was assumed that all products / materials could be substituted with an alternative product to avoid sole-sourcing which results in a non-competitive market and increases costs.

2.10 Soft Costs

The estimated soft costs have been excluded from this estimate.

An itemized list of potential soft costs has been shown on the Master Estimate Summary. These costs include items traditionally funded by the owner and separate from the hard construction costs which would be applicable to the contractor. The soft costs include items such as consultant fees; disbursements; project management fees; independent inspection and testing; third party commissioning; legal fees; permits and development charges; operational and moving expenses; financing and loan fees; owner supplied furnishings, fixtures, and equipment; and Harmonized Sales Tax.

3. CONTINGENCIES

3.1 Design and Pricing Contingency

A design and pricing contingency has been included as a percentage of the hard construction costs including the general requirements and fees.

This allowance of 15% is meant to cover design and pricing unknowns in the preparation of this estimate.

The contingency where included in our estimate is **not** meant to cover significant additional program space or quality modifications, but rather to provide some flexibility as the design develops. The design contingency typically decreases as the design progresses and more definition and detail is available to refine the basis of the cost estimate. If the owner anticipates significant changes to the basis of design we recommend additional contingency be retained as a reserve for the scope modifications.

3.2 Escalation

The estimate is based on current Q4 2012 prevailing markets and an allowance has not been included for escalation beyond Q4 2012.

Escalation during construction is included in the unit rates; essentially this allowance is the risk carried by the general contractor and trades with a fixed price made years before the work is completed or carried out for some trades.

3.3 Construction Contingency (Post Contract Changes)

Contingency has been included for post contract changes that may occur after the project is tendered.

This allowance of 15% for is to provide for increases in construction costs due to Change Orders issued during construction.

This contingency where included in our estimate excludes any major program or scope requests by the client; these should form part of an overall project management reserve or be reflected in increased funding.

4. GENERAL LIABILITY

4.1 Statement of Probable Costs

A.W. Hooker Associates Ltd. (HOOKER) cannot control the cost of labour and materials, the general contractors or any subcontractors' methods of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is based on the experience, qualifications, and best judgement of the professional consultant familiar with the construction industry. HOOKER cannot and does not warranty that proposals or actual construction costs will not vary from this or subsequent estimates.

4.2 Ongoing Cost Control

A.W. Hooker Associates Ltd. **recommends** that the owner and/or the design team carefully review the cost estimate report, including line item descriptions, unit price clarifications, exclusions, inclusions and assumptions, contingencies, escalation, and mark-ups. This is to ensure that the design intent is captured within the content of the report. This is especially important at early stage estimates which tend to be based on a lesser level of design completion.

If the project is over budget or there are unresolved budget issues, alternative systems or schemes should ideally be evaluated before proceeding with the design phase. We recommend that cost control be implemented throughout the various stages of the design process to ensure the proposed design remains within the overall budget. It is recommended that the final estimate be produced by HOOKER using Bid Documents to determine overall cost changes, which may have occurred since the preparation of this estimate. The final update estimate will address changes and additions to the documents as well as addenda issued during the bidding process. HOOKER cannot reconcile bid results to any estimate not produced from bid documents including all addenda.

CFIA GTA LABORATORY Class C Estimate R.1 December 21, 2012

5. ESTIMATE SCOPE CLARIFICATIONS

5.1 List of Exclusions

1. Harmonized Sales Tax (HST)
2. Project Soft Costs (as described in item 2.10 above and shown on Master Estimate Summary)
3. Furniture, furnishings, and equipment (except as noted in the estimate)
4. Escalation allowance beyond Q4 2012
5. Procurement and lease cost for additional tenant space
6. Abatement and handling of asbestos and other hazardous materials
7. Premium for construction management or alternate approaches to procurement
8. Sole sourced equipment or sole sourced building automation control system
9. Temporary staff accommodations / swing space
10. PA Equipment & Cabling

5.2 List of Assumptions

Architectural:

1. Majority of work conducted during evenings and weekends
2. Health Canada additional space is to be acquired and used to accommodate CFIA usage

Mechanical:

3. We assume laboratory drainage & vent piping material will be Borosilicate glass
4. New lab equipment including autoclaves, fume hoods and biological safety cabinets to be supplied and installed by lab contractor. Mechanical contractor to provide only service connections.
5. We assume existing sprinkler coverage is 'wet', light or ordinary hazard type.
6. Autoclaves and fume hoods ductwork to be welded stainless steel 304L.
7. Assumed adequate steam service /capacity is available to serve new autoclave.
8. We assume existing fume hoods and roof top or air handling units are adequate in capacity to serve new additions and renovation hence our estimate does not include costs of such units.
9. We assume majority of work to be conducted during evenings and weekends.

Electrical:

10. The existing distribution equipment has sufficient capacity to accommodate the new loads.
11. Lighting will generally be provided using recessed energy efficient fluorescent clean room fixtures.
12. Existing systems (Fire Alarm, security, communications) head end equipment has the capacity to accommodate new devices.

General:

13. Various assumptions were made based on the design information available and our experience with projects of a similar nature. Please refer to the specific items within the estimate for the detailed assumptions made.

6. DOCUMENTATION RECEIVED

Architectural drawings and documentation were prepared by NXL Architects.

Reference	Document Description	Revision / Date
DWG	Architectural Drawings (9 NO)	October 1, 2012
DOC	CFIA Functional Program and Operations Analysis – Final Draft Report Dated March 30, 2012 (previous report was applied to reflect the current scope)	

7. GROSS FLOOR AREA SUMMARY

The following gross floor areas of renovation construction have been measured from floor plan drawings. The areas were measured electronically with a digitizer and checked longhand by dimensioning and scaling. The gross area calculations were performed in accordance with the Standard Method of Measurement published by the Canadian Institute of Quantity Surveyors.

GROSS FLOOR AREA TABLE (square meters)		
Area Description	**Net Floor Area**	**Gross Floor Area**
Renovations to existing CFIA occupied areas		570
Renovations to existing non CFIA occupied areas		190
TOTAL GROSS FLOOR AREA (square metres)		**760**

Note: These measurements were taken from the colour coded Proposed General Arrangement Layout Plan dated Oct 1, 2012 prepared by NXL Architects.

MASTER ESTIMATE SUMMARY
CFIA GTA LABORATORY
CLASS C ESTIMATE (Rev.1)
DECEMBER 21, 2012

A.W. HOOKER ® QUANTITY SURVEYORS

Hard Construction Costs	NFA (m2)	Unit (Cost/m2)	Sub Total	Estimated Total	% of Total
1 Building Shell	0	$0.00		$0	0.0%
- Sub Structure		$0.00	$0		
- Structure		$0.00	$0		
- Exterior Enclosure		$0.00	$0		
2 Building Interiors	760	$369.36		$280,715	15.2%
- Partitions and Doors		$89.26	$67,840		
- Finishes		$84.48	$64,205		
- Fittings and Equipment		$195.62	$148,670		
3 Mechanical	760	$604.31		$459,275	24.9%
- Plumbing and Drainage		$91.84	$69,800		
- Fire Protection		$33.39	$25,375		
- Heating, Ventilation, Air Conditioning		$393.55	$299,100		
- Controls		$85.53	$65,000		
4 Electrical	760	$395.65		$300,692	16.3%
- Service and Distribution		$148.85	$113,127		
- Lighting, Devices, and Heating		$162.94	$123,832		
- Systems and Ancillaries		$83.86	$63,733		
5 Site Work	0	$0.00		$0	0.0%
- Site Development (prep, surfaces, landscaping)		$0.00	$0		
- Mechanical Site Services		$0.00	$0		
- Electrical Site Services		$0.00	$0		
6 Ancillary Work	760	$35.71		$27,138	1.5%
- Demolition		$35.71	$27,138		
- Alterations		$0.00	$0		
7 Contractor's General Requirements	760	$342.63		$260,400	14.1%
8 Contractor's Fees (OH&P)	760	$86.84		$66,000	3.6%
9 Design Contingency	760	$275.13		$209,100	11.3%
Sub Total (current dollars)	**760**	**$2,109.61**		**$1,603,300**	
10 Escalation Contingency		Excluded			0.0%
Sub Total (Excluding Escalation)	**760**	**$2,109.61**		**$1,603,300**	
11 Construction Contingency (post contract)	760	$316.45		$240,500	13.0%
Total Estimated Hard Construction Cost	**760**	**$2,426.32**		**$1,844,000**	
Imperial Conversion	**8,181**	**$225.41**		**Per SF**	

Estimated Construction Costs (Breakdown by Major Component)	NFA m2	Unit Cost/m2	Estimated Total	% of Total
1 Building	760	$2,364.47	$1,797,000	97.5%
2 Alterations and Demolition	760	$61.84	$47,000	2.5%
3 Site Work (including M&E site services)	0	$0.00	$0	0.0%
4 Soft Costs	0	$0.00	Excluded	0.0%
Total Estimated Hard and Soft Construction Costs	**760**	**$2,426.32**	**$1,844,000**	
Imperial Conversion	**8,181**	**$225.41**	**Per SF**	

MECHANICAL ESTIMATE SUMMARY

CFIA GTA LABORATORY

CLASS C ESTIMATE (Rev.1)

DECEMBER 21, 2012

Net Floor Area 760 m2

Description Element\Sub-Element	Specialty Sub Break down	Sub Element Total	Element Total	$ per m2 Sub Element	$ per m2 Element	% Element
C1 Mechanical						
C1.1 Plumbing & Drainage			**$69,800**		**$91.84**	**15.2%**
C1.11 - Plumbing Fixtures		$45,800		$60.26		
C1.12 - Domestic Water		$0		$0.00		
C1.13 - Sanitary Waste & Vent		$0		$0.00		
C1.14 - Storm		$0		$0.00		
C1.15 - Natural Gas		$0		$0.00		
C1.16 - Specialty Systems:		$0		$0.00		
C1.17 - Miscellaneous Works and General Accounts		$24,000		$31.58		
C1.2 Fire Protection			**$25,375**		**$33.39**	**5.5%**
C1.21 - Standpipe		$7,500		$9.87		
C1.22 - Sprinklers		$7,875		$10.36		
C1.23 - Specialty Systems		$0		$0.00		
C1.24 - Fire Extinguisher		$1,000		$1.32		
C1.25 - Miscellaneous Works and General Accounts		$9,000		$11.84		
C1.3 Heating, Ventilation & Air Conditioning			**$299,100**		**$393.55**	**65.1%**
C1.31 - Liquid Heat Transfer (Heating)		$9,000		$11.84		
C1.32 - Liquid Heat Transfer (Cooling)		$5,000		$6.58		
C1.33 - Steam and Condensate		$5,000		$6.58		
C1.34 - Air Distribution		$125,100		$164.61		
C1.35 - Exhaust Systems		$30,000		$39.47		
C1.36 - Specialty Systems		$0		$0.00		
C1.37 - Support Systems and Works		$20,000		$26.32		
- C1.37.3 - Balancing and Commissioning	$20,000					
- C1.37.5 - Interim Corrective Actions	$0					
- C1.37.8 - Selective Demolition	$0					
C1.38 - Miscellaneous Works and General Accounts		$105,000		$138.16		
C1.4 Controls			**$65,000**		**$85.53**	**14.2%**
C1.41 - Controls and Automation		$42,000		$55.26		
C1.42 - Miscellaneous Works and General Accounts		$23,000		$30.26		
Total Building (C1) Mechanical			**$459,275**		**$604.31 Per m2**	
Imperial Conversion		**8,181 SF**			**$56.14 Per SF**	

ELECTRICAL ESTIMATE SUMMARY

CFIA GTA LABORATORY

CLASS C ESTIMATE (Rev.1)

DECEMBER 21, 2012

Net Floor Area 760 m2

Description Element\Sub-Element	Sub Element Total	Element Total	$ per m2 Sub Element	$ per m2 Element	% Element
C2 Electrical					
C2.1 Service & Distribution		**$113,127**		**$148.85**	**37.6%**
C2.11 - L.V. Switchboard	$0		$0.00		
C2.12 - Emergency Power	$88,871		$116.94		
C2.13 - Distribution	$0		$0.00		
C2.14 - Feeders	$3,809		$5.01		
C2.15 - Motor Controls & Wiring	$7,129		$9.38		
C2.16 - Miscellaneous	$2,000		$2.63		
C2.17 - General Requirements	$11,318		$14.89		
C2.2 Lighting, Devices & Heating		**$123,832**		**$162.94**	**41.2%**
C2.21 - Lighting	$78,782		$103.66		
C2.22 - Branch Devices & Wiring	$28,022		$36.87		
C2.23 - Heating	$0		$0.00		
C2.24 - General Requirements	$17,029		$22.41		
C2.3 Systems & Ancillaries		**$63,733**		**$83.86**	**21.2%**
C2.31 - Fire Alarm System	$4,720		$6.21		
C2.32 - Security System	$14,113		$18.57		
C2.33 - Communications	$35,172		$46.28		
C2.34 - P.A. System	$0		$0.00		
C2.35 - Miscellaneous	$0		$0.00		
C2.36 - General Requirements	$9,728		$12.80		
Total Building (C2) Electrical		**$300,692**		**$395.65 Per m2**	
Imperial Conversion	**8,181 SF**			**$36.76 Per SF**	

ELEMENTAL SUMMARY
CFIA GTA LABORATORY
CLASS C ESTIMATE (Rev.1)
DECEMBER 21, 2012

A.W. HOOKER ®
QUANTITY SURVEYORS

Net Floor Area 760 m2

Description Element\Sub-Element	Ratio	Quantity	Unit	Unit Rate	Elemental Cost Sub Element	Elemental Cost Element Total	$ per m2 Sub Element	$ per m2 Element	%
A. SHELL									
A1. Sub-Structure						**$0**		$0.00	0.0%
A1.1 Foundations	0.00	0	m2	$0.00	$0		$0.00		
A1.2 Basement Excavation	0.00	0	m2	$0.00	$0		$0.00		
A2. Structure						**$0**		$0.00	0.0%
A2.1 Lowest Floor Construction	0.00	0	m2	$0.00	$0		$0.00		
A2.2 Upper Floor Construction	0.00	0	m2	$0.00	$0		$0.00		
A2.3 Roof Construction	0.00	0	m2	$0.00	$0		$0.00		
A3. Exterior Enclosure						**$0**		$0.00	0.0%
A3.1 Walls Below Grade	0.00	0	m2	$0.00	$0		$0.00		
A3.2 Walls Above Grade	0.00	0	m2	$0.00	$0		$0.00		
A3.3 Windows & Entrances	0.00	0	m2	$0.00	$0		$0.00		
A3.4 Roof Finish	0.00	0	m2	$0.00	$0		$0.00		
A3.5 Projections	0.00	0	m2	$0.00	$0		$0.00		
B. INTERIORS									
B1 Partitions & Doors						**$67,840**		$89.26	3.7%
B1.1 Partitions	0.23	178	m2	$194.33	$34,590		$45.51		
B1.2 Doors	0.05	36	m2	$923.61	$33,250		$43.75		
B2 Finishes						**$64,205**		$84.48	3.5%
B2.1 Floor Finishes	0.95	722	m2	$20.00	$14,440		$19.00		
B2.2 Ceiling Finishes	0.95	722	m2	$47.74	$34,465		$45.35		
B2.3 Wall Finishes	1.00	760	m2	$20.13	$15,300		$20.13		
B3 Fittings & Equipment						**$148,670**		$195.62	8.1%
B3.1 Fittings & Fixtures	1.00	760	m2	$8.58	$6,520		$8.58		
B3.2 Equipment	1.00	760	m2	$187.04	$142,150		$187.04		
B3.3 Conveying Systems	0.00	0	m2	$0.00	$0		$0.00		
C. SERVICES									
C1 Mechanical						**$459,275**		$604.31	24.9%
C1.1 Plumbing & Drainage	1.00	760	m2	$91.84	$69,800		$91.84		
C1.2 Fire Protection	1.00	760	m2	$33.39	$25,375		$33.39		
C1.3 HVAC	1.00	760	m2	$393.55	$299,100		$393.55		
C1.4 Controls	1.00	760	m2	$85.53	$65,000		$85.53		
C2 Electrical						**$300,692**		$395.65	16.3%
C2.1 Service & Distribution	1.00	760	m2	$148.85	$113,127		$148.85		
C2.2 Lighting, Devices & Heating	1.00	760	m2	$162.94	$123,832		$162.94		
C2.3 Systems & Ancillaries	1.00	760	m2	$83.86	$63,733		$83.86		
D. SITE & ANCILLARY WORK									
D1 Site Work						**$0**		$0.00	0.0%
D1.1 Site Development	0.00	0	m2	$0.00	$0		$0.00		
D1.2 Mechanical Site Services	0.00	0	m2	$0.00	$0		$0.00		
D1.3 Electrical Site Services	0.00	0	m2	$0.00	$0		$0.00		
D2 Ancillary Work						**$27,138**		$35.71	1.5%
D2.1 Demolition	1.00	760	m2	$35.71	$27,138		$35.71		
D2.2 Alterations	0.00	0	m2	$0.00	$0		$0.00		
Z. GENERAL REQUIREMENTS & CONTINGENCIES									
Z1 General Requirements & Fees						**$326,400**		$429.47	17.7%
Z1.1 General Requirements	1.00	760	m2	$342.63	$260,400		$342.63		
Z1.2 Fees	1.00	760	m2	$86.84	$66,000		$86.84		
Z2 Allowances						**$449,600**		$591.58	24.4%
Z2.1 Design Contingency	1.00	760	m2	$275.13	$209,100		$275.13		
Z2.2 Escalation Contingency				Excluded			$0.00		
Z2.3 Construction Contingency	1.00	760	m2	$316.45	$240,500		$316.45		
TOTAL ESTIMATED CONSTRUCTION COST (nearest ,000)						**$1,844,000**		**$2,426.08**	**100.0%**

No.	Description	Quant.	Unit	Rate	Sub Total	Total
	B. INTERIORS					
	B1.1 PARTITIONS & DOORS - Partitions					
	B1.11 - Fixed Partitions					
1	Gypsum board partitions including:	178	m2	$95.00	$16,910	
1.1	- 16 mm gypsum board					
1.2	- 92 mm metal studs					
1.3	- batt insulation					
1.4	- 16 mm gypsum board					
2	Infill door opening with gypsum board, double	2	NO	$700.00	$1,400	
3	Tie in new partitions with existing	19	NO	$100.00	$1,900	
4	Remove and relocate existing glazing	2	NO	$350.00	$700	
5	Rough carpentry	760	m2	$10.00	$7,600	
6	Caulking, sealing, and firestopping	760	m2	$8.00	$6,080	
	B1.12 - Moveable Partitions					
7	NIL					
	B1.13 - Structural Partitions & Shear Walls					
8	NIL					
	TOTAL FOR INTERIOR PARTITIONS & DOORS - Partitions	0.23 / 178	m2	$194.33	$34,590	
	B1.2 PARTITIONS & DOORS - Interior Doors					
	B1.21 - Interior Doors & Hardware					
9	Hollow metal door and frame including installation and paint finish					
9.1	- single	9	NO	$1,000.00	$9,000	
9.2	- double	1	PR	$1,800.00	$1,800	
9.3	- double , unequal size	3	PR	$2,000.00	$6,000	
9.4	- relocate existing door, unequal	1	PR	$500.00	$500	
10	Door hardware supply allowance	17	NO	$850.00	$14,450	
11	Allowance for door glazing	1	LS	$1,500.00	$1,500	
	TOTAL FOR INTERIOR PARTITIONS & DOORS - Doors	0.05 / 36	m2	$923.61	$33,250	
	B2.1 FINISHES - Floor Finishes					
	B2.11 - Floor Finishes					
12	Allowance to patch and make good floor finishes disturbed from construction	722	m2	$20.00	$14,440	
	TOTAL FOR FINISHES - Floor Finishes	0.95 / 722	m2	$20.00	$14,440	

No.	Description	Quant.	Unit	Rate	Sub Total	Total
	B2.2 FINISHES - Ceiling Finishes					
	B2.21 - Ceiling Finishes					
13	Suspended washable acoustical tile ceiling to expanded areas	181	m2	$70.00	$12,635	
14	Allowance to make good ceilings to remain	542	m2	$20.00	$10,830	
15	Allowance for bulkheads	1	LS	$10,000.00	$10,000	
16	Remove and relocate existing ceiling access panels including make good	2	NO	$500.00	$1,000	
	TOTAL FOR FINISHES - Ceiling Finishes	0.95 722	m2	$47.74	$34,465	
	B2.3 FINISHES - Wall Finishes					
	B2.31 - Wall Finishes					
17	Epoxy paint finish to new partitions and expanded areas	515	m2	$20.00	$10,300	
18	Allowance to patch and make good wall finishes	1	LS	$5,000.00	$5,000	
	TOTAL FOR FINISHES - Wall Finishes	1.00 760	m2	$20.13	$15,300	
	B3.1 FITTINGS & EQUIPMENT - Fittings & Fixtures					
	B3.11 - Miscellaneous Metals					
19	Miscellaneous metals including lintels, bracing, and so fourth	760	m2	$2.00	$1,520	
	B3.12 - Millwork					
20	NIL					
	B3.13 - Specialties					
21	Allowance for specialties	1	LS	$5,000.00	$5,000	
	B3.14 - Furniture					
22	NIL					
	TOTAL FOR FITTINGS & EQUIP. - Fittings & Fixtures	1.00 760	m2	$8.58	$6,520	
	B3.2 FITTINGS & EQUIPMENT - Equipment					
	B3.21 - Equipment					
23	Relocate existing lab benching to accommodate work	9	m	$350.00	$3,150	
24	New plastic laminate lab benching	57	m	$1,500.00	$85,500	
25	New plastic laminate lab benching (working bench, no lower cabinets)	13	m	$1,200.00	$15,600	
26	New plastic laminate lab benching (low bench)	7	m	$1,300.00	$9,100	
27	Stainless steel lab bench	4	m	$2,500.00	$10,000	
28	Removable stainless steel encasement to autoclaves	1	LS	$15,000.00	$15,000	
29	Fume hoods			Included with Mechanical		

No.	Description	Quant.	Unit	Rate	Sub Total	Total
30	Relocate existing cabinets	4	NO	$200.00	$800	
31	Open shelving to storage	6	m	$500.00	$3,000	
32	Open office workstations				Excluded	
33	Fridges and Freezers				Excluded	
	TOTAL FOR FITTINGS & EQUIP. - Equipment	1.00 760	m2	$187.04	$142,150	
	B3.3 FITTINGS & EQUIPMENT - Conveying Systems					
	B3.31 - Elevators					
34	NIL					
	B3.32 - Escalators & Moving Walks					
35	NIL					
	B3.33 - Material Handling Systems					
36	NIL					
	TOTAL FOR FITTINGS & EQUIP. - Conveying Systems	0.00 0	m2	$0.00	$0	

C1. SERVICES - MECHANICAL

C1.1 Plumbing & Drainage

	C1.11 - Plumbing Fixtures					$45,800
	New Laboratories					
	Sample Reception Lab					
	New laboratory benchwork plumbing hook-up using borosilicate glass drainage & vent piping to existing in adjacent service core	1	NO	$5,000.00	$5,000	
	Additional condensate drains and connections to existing sanitary drainage system for new freezers	1	NO	$2,500.00	$2,500	
	Extraneous/ Microscopy Lab					
	New laboratory benchwork plumbing hook-up using borosilicate glass drainage & vent piping to existing in adjacent service core	1	NO	$7,500.00	$7,500	
	Relocated fume hoods (2 nos.) plumbing hook-up including process piping such as gas, air, vacuum, non potable / R.O. water, borosilicate glass drainage & vent piping to existing in adjacent service core	1	NO	$3,000.00	$3,000	
	Renovations Works to Existing Labs					
	Disconnect, remove and cap plumbing hook-up from lab benchwork to be removed to facilitate construction of new vestibule at the west side of the labs	1	NO	$500.00	$500	

No.	Description	Quant.	Unit	Rate	Sub Total	Total
	Transfer Lab / Method Development Lab					
	New laboratory benchwork plumbing hook-up using borosilicate glass drainage & vent piping to existing in adjacent service core	1	NO	$5,000.00	$5,000	
	Minor adjustments to existing plumbing services to laboratory benchwork to be moved east side	1	NO	$500.00	$500	
	Microbiology Lab					
	Plumbing hook-up including R.O. water and borosilicate glass drainage & vent piping to new counter sinks (3 Nos.) supplied by Lab contractor	1	NO	$3,000.00	$3,000	
	Wash-up Lab					
	Disconnect, remove and cap plumbing hook-up from existing fume hood	1	NO	$300.00	$300	
	New fume hood plumbing hook-up including process piping such as gas, air, vacuum, non potable / R.O. water, borosilicate glass drainage & vent piping to existing capped services after removal of existing fume hood	1	NO	$1,500.00	$1,500	
	Media Preparation Lab					
	New autoclave plumbing piping connection including borosilicate glass drainage & vent piping to existing in adjacent service core.	1	NO	$1,500.00	$1,500	
	Canning Lab					
	Remove laboratory benchwork plumbing services and cap off under the bench.	1	NO	$1,000.00	$1,000	
	New replaced section of laboratory benchwork plumbing hook-up using borosilicate glass drainage & vent piping to existing in adjacent service core.	1	NO	$2,000.00	$2,000	
	Chemistry Lab					
	New emergency shower c/w thermostatic mixing valve assembly and hot & cold water rough-in connections.	1	NO	$3,000.00	$3,000	
	Relocate existing sinks (2 nos.) c/w new hot & cold water rough-in connections	1	NO	$1,500.00	$1,500	
	Extraneous / Sample Lab					
	New dump sink c/w 2 sets of taps & retractable range hoses and hot & cold water rough-in connections.	1	NO	$3,000.00	$3,000	
	New laboratory benchwork plumbing hook-up using borosilicate glass drainage & vent piping to existing in adjacent service core.	1	NO	$5,000.00	$5,000	
	C1.12 - Domestic Water					$0
	Included in C1.11 above				Included	
	C1.13 - Sanitary Waste & Vent					$0
	Included in C1.11 above				Included	
	C1.14 - Storm					$0
	No work required					
	C1.15 - Natural Gas					$0
	No work required					

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No.	Description	Quant.	Unit	Rate	Sub Total	Total
	C1.17 - Miscellaneous Works and General Accounts					$24,000
	Provide clean up, submittals, supervision, overtime / weekend work, minor cutting and patching, mechanical permits, testing, site and head office overheads and profit.	1	NO	$18,000.00	$18,000	
	Mechanical system risk factor and premium for three construction phases	1	NO	$6,000.00	$6,000	
	TOTAL FOR MECHANICAL - Plumbing & Drainage	1.00	760 m2	$91.84	$69,800	
	C1.2 Fire Protection					
	C1.21 - Standpipe					$7,500
	Relocate existing fire hose cabinet to suit new architectural layout	1	NO	$1,500.00	$1,500	
	New fire hose cabinets c/w connection to existing stand pipe mains (assume existing stand pipe with-in 10 m length)	2	NO	$3,000.00	$6,000	
	C1.22 - Sprinklers					$7,875
	Adjust and supplement existing sprinkler head coverage to suit new partitioning and ceiling layouts over entire renovated and expanded area. Assume 50 % of existing sprinklers will need relocation	45	HDS	$175.00	$7,875	
	C1.24 - Fire Extinguisher					$1,000
	Fire extinguishers dry chemical type c/w cabinets	5	NO	$200.00	$1,000	
	C1.25 - Miscellaneous Works and General Accounts					$9,000
	Provide clean up, submittals, supervision, overtime / weekend work, minor cutting and patching, mechanical permits, testing, site and head office overheads and profit.	1	NO	$7,000.00	$7,000	
	Mechanical system risk factor and premium for three construction phases	1	NO	$2,000.00	$2,000	
	TOTAL FOR MECHANICAL - Fire Protection	1.00	760 m2	$33.39	$25,375	
	C1.3 Heating, Ventilation & Air Conditioning					
	C1.31 - Liquid Heat Transfer (Heating)					$9,000
	New Laboratories					
	Extend existing hot water piping from adjacent service core to new zone hot water reheat coils c/w hook up connections	6	NO	$1,500.00	$9,000	
	C1.32 - Liquid Heat Transfer (Cooling)					$5,000
	New Laboratories					
	New split air conditioning c/w remote condenser, interconnection refrigerant piping to provide supplementary cooling for Sample Reception Lab - 2 Tons	1	NO	$5,000.00	$5,000	
	C1.33 - Steam and Condensate					$5,000
	Media Preparation Lab					
	Provide steam / condensate hook-up to new autoclave from services in adjacent service core	1	NO	$5,000.00	$5,000	

No.	Description	Quant.	Unit	Rate	Sub Total	Total
	C1.34 - Air Distribution					$125,100
	New Laboratories					
	New Sample Reception and Extraneous Lab areas are served by the base building standard office HVAC system. The supply and return air ductwork will be modified to suite new lab layout c/w galvanized steel rectangular or round ductwork (thermally insulated), distribution devices such supply air diffusers/registers, return air grilles and fire/balancing dampers	139	m2	$225.00	$31,275	
	New venturi valves (Phoenix or equal) c/w reheat coils on supply and exhaust/ return air distribution system to maintain required differential air pressure in Lab areas	4	NO	$2,000.00	$8,000	
	New variable air volume (VAV) box c/w reheat coils for managers office and quiet room	2	NO	$1,000.00	$2,000	
	New Open Office Space and Vestibule					
	Relocate and supplement existing air distribution devices including supply air diffusers, return air grilles, balancing / fire dampers to suite new architectural finishes/ layout.	51	m2	$75.00	$3,825	
	Renovations Works to Existing Labs					
	For the laboratories north side of service cores the supply and exhaust duct will be redesigned to provide individual supply and exhaust for proper control	230	m2	$200.00	$46,000	
	For the laboratories south side of service cores the ductwork changes to area only affected by the differential pressure requirements and dedicated equipment such as new autoclave and fume hood exhaust.	340	m2	$100.00	$34,000	
	C1.35 - Exhaust Systems					$30,000
	New Laboratories					
	Extraneous Sample Prep. Lab					
	Provisions for relocated fume hoods (2 nos.) stainless steel 304 exhaust ducts (250 mm dia.) leading to dedicated exhaust fans located in the penthouse mechanical room through service core service shaft.	1	NO	$12,000.00	$12,000	
	Renovations Works to Existing Labs					
	Transfer Lab / Method Development Lab					
	Biological safety cabinets (BSC) are self contained units with HEPA filtration system and recirculation fan hence no external exhaust will be required				Excluded	
	Microbiology Lab					
	Remove non-functional exhaust hood from ceiling space	1	NO	$500.00	$500	
	Wash-up Lab					
	Remove exhaust duct from existing fume hood to be replaced with new and provide new stainless steel exhaust duct, connect to existing and / or leading to dedicated exhaust fan	1	NO	$2,500.00	$2,500	
	Media Preparation Lab					
	Exhaust (stainless steel) duct connections for a new autoclave and two existing ones, connect to existing in adjacent service core	1	NO	$15,000.00	$15,000	
	C1.36 - Specialty Systems					$0
	No work required					

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No.	Description	Quant.	Unit	Rate	Sub Total	Total
	C1.37 - Support Systems and Works					$20,000
	C1.37.1 - Noise and Vibration Isolation					$0
	Noise and vibration is generally included with equipment and/or hook up costs				Included	
	C1.37.2 - Mechanical Wiring and Starters					$0
	Load and line side wiring by electrical / div.16				Info only	
	C1.37.3 - Balancing and Commissioning					$20,000
	Balance air and water flow volumes to new design conditions - submit report (for entire system serving affected area)	1	NO	$20,000.00	$20,000	
	C1.38 - Miscellaneous Works and General Accounts					$105,000
	Provide clean up, submittals, supervision, overtime / weekend work, minor cutting and patching, mechanical permits, testing, site and head office overheads and profit.	1	NO	$78,000.00	$78,000	
	Mechanical system risk factor and premium for three construction phases	1	NO	$27,000.00	$27,000	
	TOTAL FOR MECHANICAL - HVAC	1.00	760 m2	$393.55	$299,100	
	C1.4 MECHANICAL - Controls					
	C1.41 - Controls and Automation					$42,000
	The building has a Building Automation System (BAS) controlling reheat coils and volume control dampers to maintain required set point temperature. Each lab. will have its dedicated damper/ reheat coil for proper control . The BAS will be updated accordingly as follows:					
	New Laboratories					
	New zone reheat coil, venturi air valve and thermostat with integration to BAS	6	NO	$2,000.00	$12,000	
	Relocate thermostats to suit new partitioning layout	1	NO	$3,000.00	$3,000	
	Renovations Works to Existing Labs					
	Upgrade, adjust and supplement existing controls on zone reheat coil, venturi air valve and thermostat with integration to BAS for north & south side labs of service cores.	16	NO	$1,000.00	$16,000	
	New localized differential pressure monitoring devices for Bio-hazard, Method Development, Post PCR lab, Extraction room lab and Pre PCR lab	5	NO	$2,200.00	$11,000	
	C1.42 - Miscellaneous Works and General Accounts					$23,000
	Provide clean up, submittals, supervision, overtime / weekend work, minor cutting and patching, mechanical permits, testing, site and head office overheads and profit.	1	NO	$17,000.00	$17,000	
	Mechanical system risk factor and premium for three construction phases	1	NO	$6,000.00	$6,000	
	TOTAL FOR MECHANICAL - Controls	1.00	760 m2	$85.53	$65,000	
				Total Mech Unit Rate	$604.31	

No.	Description	Quant.	Unit	Rate	Sub Total	Total
	C2. SERVICES - ELECTRICAL					
	C2.1 ELECTRICAL - Service & Distribution					
	C2.11 - L.V. Switchboard					$0
100	Existing to remain				Excluded	
	C2.12 - Emergency Power					$88,871
101	Add 100A 3P breaker to existing emergency panel	1	LS	$700.00	$700	
102	Emergency power 42cct, 120/208V, 400A panel	1	NO	$3,100.00	$3,100	
103	80KVA 120/208v, 3 phase, 4 wire emergency backup UPS	1	NO	$80,000.00	$80,000	
104	100A, 600v, 3 phase fused disconnect switch	1	NO	$659.32	$659	
105	75 KVA dry type transformer	1	NO	$3,411.74	$3,412	
106	200A, 600v, 3 phase, 3 wire splitter	1	NO	$1,000.00	$1,000	
	C2.13 - Distribution					$0
107	Existing to remain				Excluded	
	C2.14 - Feeders					$3,809
108	3#3/0 + 1#2 in 53mm emt	30	M	$95.12	$2,854	
109	3#3 + 1#8 in 27mm emt	12	M	$43.63	$524	
110	4#4/0 + 1#2 in 63mm emt	3	M	$144.03	$432	
	C2.15 - Motor Controls & Wiring					$7,129
111	Power connection with load and line side wiring to mechanical units	760	m2	$9.38	$7,129	
	C2.16 - Miscellaneous					$2,000
112	Extend existing grounding	1	LS	$2,000.00	$2,000	
	C2.17 - General Requirements					$11,318
113	Supervision	1	LS	$2,231.00	$2,231	
114	Premium time, etc.	1	LS	$0.00	$0	
115	Job set-up, etc.	1	LS	$5,345.00	$5,345	
116	Rentals, small tools, etc.	1	LS	$2,138.00	$2,138	
117	Permits & inspections	1	LS	$1,390.00	$1,390	
118	Insurance	1	LS	$214.00	$214	
119	Performance bond	1	LS	$0.00	$0	
120	Labour & material bond	1	LS	$0.00	$0	
121	Contingency	1	LS	$0.00	$0	
	TOTAL FOR ELECTRICAL - Service & Distribution	1.00	760 m2	$148.85	$113,127	
	C2.2 ELECTRICAL - Lighting, Devices & Heating					
	C2.21 - Lighting					$78,782
122	Lab lighting using recessed fluorescent lab fixtures	760	m2	$103.66	$78,782	

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No.	Description	Quant.	Unit	Rate	Sub Total	Total
	C2.22 - Branch Devices & Wiring					$28,022
123	15A 125V duplex receptacle for lab	82	NO	$159.50	$13,079	
124	Power connections to hard wired equipment with associated wiring	86	NO	$173.75	$14,943	
	C2.23 - Heating					$0
125	Existing to remain				Excluded	
	C2.24 - General Requirements					$17,029
126	Supervision	1	LS	$7,497.00	$7,497	
127	Premium time, etc.	1	LS	$0.00	$0	
128	Job set-up, etc.	1	LS	$5,607.00	$5,607	
129	Rentals, small tools, etc.	1	LS	$2,243.00	$2,243	
130	Permits & inspections	1	LS	$1,458.00	$1,458	
131	Insurance	1	LS	$224.00	$224	
132	Performance bond	1	LS	$0.00	$0	
133	Labour & material bond	1	LS	$0.00	$0	
134	Contingency	1	LS	$0.00	$0	
	TOTAL FOR ELECTRICAL - Lighting, Devices & Heating	1.00	760 m2	$162.94	$123,832	
	C2.3 ELECTRICAL - Systems & Ancillaries					
	C2.31 - Fire Alarm System					$4,720
135	Remedial work to the Fire Alarm system to accommodate relocated partitions	760	m2	$6.21	$4,720	
	C2.32 - Security System					$14,113
136	Security access and CCTV empty conduit system	760	m2	$6.11	$4,644	
137	Security access and CCTV empty conduit system	760	m2	$12.46	$9,470	
	C2.33 - Communications					$35,172
138	Voice/Data empty conduit outlet	82	NO	$175.36	$14,380	
139	Voice/Data CAT 6 horizontal cabling	82	NO	$253.57	$20,793	
	C2.34 - P.A. System					$0
140	PA system to be incorporated into telephone system				Excluded	
	C2.35 - Miscellaneous					$0
141	Existing to remain				Excluded	

No.	Description	Quant.	Unit	Rate	Sub Total	Total
	C2.36 - General Requirements					$9,728
142	Supervision	1	LS	$4,909.00	$4,909	
143	Premium time, etc.	1	LS	$0.00	$0	
144	Job set-up, etc.	1	LS	$2,835.00	$2,835	
145	Rentals, small tools, etc.	1	LS	$1,134.00	$1,134	
146	Permits & inspections	1	LS	$737.00	$737	
147	Insurance	1	LS	$113.00	$113	
148	Performance bond	1	LS	$0.00	$0	
149	Labour & material bond	1	LS	$0.00	$0	
150	Contingency	1	LS	$0.00	$0	
	TOTAL FOR ELECTRICAL - Systems & Ancillaries	1.00 760	m2	$83.86	$63,733	
	Total Elec Unit Rate			$395.65		
	D. SITE & ANCILLARY WORK					
	D1.1 SITEWORK - Site Development					
	D1.11 - Preparation					$0
151	NIL					
	D1.12 - Hard Surfaces					$0
152	NIL					
	D1.13 - Improvements					$0
153	NIL					
	D1.14 - Landscaping					$0
154	NIL					
	TOTAL FOR SITE WORK - Site Development	0.00 0	m2	$0.00	$0	
	D1.2 SITEWORK - Mechanical Site Services					
	D1.21 - Water					$0
	No work required					
	D1.22 - Sanitary					$0
	No work required					
	D1.23 - Storm					$0
	No work required					
	D1.24 - Natural Gas					$0
	No work required					
	D1.25 - Specialty Systems					$0
	No work required					

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No.	Description	Quant.	Unit	Rate	Sub Total	Total
	D1.26 - Miscellaneous Works and General Accounts					$0
	No work required					
	TOTAL FOR SITE WORK - Mechanical Site Services	0.00 0	m2	$0.00	$0	
	D1.3 SITEWORK - Electrical Site Services					
	D1.31 - Site - Power					$0
161	Existing to remain				Excluded	
	D1.32 - Site - Communications					$0
162	Existing to remain				Excluded	
	D1.33 - Site - Lighting					$0
163	Existing to remain				Excluded	
	D1.34 - Site - General Requirements					$0
164	Existing to remain				Excluded	
	TOTAL FOR SITE WORK - Electrical Site Services	0.00 0	m2	$0.00	$0	
	D2.1 ANCILLARY WORK - Demolition					
	D2.11 - Demolition					
165	Remove and dispose the following:					
165.1	- gypsum board partitions	85	m2	$2.50	$213	
165.2	- folding partition	10	m2	$5.00	$50	
165.3	- double doors	5	PR	$100.00	$500	
165.4	- make good where partitions removed	5	NO	$100.00	$500	
165.5	- create opening for new doors, single	1	NO	$200.00	$200	
165.6	- create opening for new doors, double	1	PR	$350.00	$350	
165.7	- remove lab benching	71	m	$75.00	$5,325	
165.8	- remove non functional exhaust hood and make good	2	NO	$500.00	$1,000	
165.9	- miscellaneous demolition including M&E	1	LS	$2,500.00	$2,500	
166	Allowance to move HC existing offices to another area within the same floor	1	LS	$10,000.00	$10,000	
167	Temporary partitions and hoarding	1	LS	$5,000.00	$5,000	
168	Garbage bins and dumping fees	1	LS	$1,500.00	$1,500	
	D2.12 - Hazardous Materials					
169	This estimate excludes allowances for asbestos abatement and the handling of hazardous materials				**Excluded**	
	TOTAL FOR ANCILLARY WORK - Demolition	1.00 760	m2	$35.71	$27,138	
	D2.2 ANCILLARY WORK - Alterations					
	D2.21 - Alterations					

No.	Description	Quant.	Unit	Rate	Sub Total	Total
170	NIL					
	TOTAL FOR ANCILLARY WORK - Alterations	0.00 / 0	m2	$0.00	$0	
	Z. GENERAL REQUIREMENTS & CONTINGENCIES					
	Z1.1 GENERAL REQUIREMENTS & FEES - General Requirements					
	Z1.11 - Supervision & Labour Expenses					
171	Allowance for the General Contractor's supervision & labour expenses as follows:	1	LS	$85,425.58	$85,400	8.0%
171.1	- supervision and coordination of subcontractors					
171.2	- site superintendent and vehicle					
171.3	- general labour expenses					
	Z1.12 - Temporary Conditions					
172	Allowance for the temporary conditions provided by the General Contractor including:					
173	Access to site					
173.1	- traffic control					
173.2	- pedestrian safety					
173.3	- removal of exterior cladding for access					
173.4	- temporary closure panels					
174	Site accommodations:					
174.1	- temporary site office					
174.2	- temporary signage					
174.3	- telephone and fax					
174.4	- stationary supplies and office equipment					
175	Site protection:					
175.1	- hoarding and gates					
175.2	- safety guard rails					
175.3	- fire extinguishers					
175.4	- first aid kits					
175.5	- temporary shoring					
175.6	- temporary stairs and ladders					
175.7	- protection for site elevators and flooring					
176	Temporary utilities:					
176.1	- temporary construction power panels					
176.2	- temporary water source					
177	Site clean up:					
177.1	- daily clean up in addition to the trades					
177.2	- final cleaning					
177.3	- dump bins					
177.4	- dumping charges					

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No.	Description	Quant.	Unit	Rate	Sub Total	Total
178	Equipment:					
178.1	- material hoisting equipment					
178.2	- cranes and operators					
178.3	- small tool rental					
178.4	- pumps and pumping equipment					
179	Miscellaneous					
179.1	- CPM scheduling					
179.2	- land surveying					
179.3	- testing and inspections					
179.4	- photography					
	Cash Allowances					$157,000
180	Independent inspection and testing				Excluded	
181	Door hardware supply				Included in B 1.2	
182	Allowance for phasing (3 stages)	1	LS	$50,000.00	$50,000	
183	Premium for evenings and after hours work	1	LS	$107,000.00	$107,000	
	Z1.13 - Permits, Insurance & Bonds					$18,000
184	Building permit				Excluded	
185	General Liability and Builder's Risk insurance	1	LS	$7,000.00	$7,000	
186	Labour & Material and Performance bonding	1	LS	$11,000.00	$11,000	
	TOTAL FOR GEN. REQ'MENTS & FEES - Gen. Req'ments	1.00 / 760	m2	$342.63	$260,400	
	Z1.2 GENERAL REQUIREMENTS & FEES - Fees					
	Z1.21 - General Contractor's Fees					
187	Allowance for the General Contractor's Fees (Overhead and Profit). (applied to measured works plus general requirements)	1	LS	$66,410.99	$66,000	5.0%
	TOTAL FOR GEN. REQ'MENTS & FEES - Fees	1.00 / 760	m2	$86.84	$66,000	
	Z2.1 ALLOWANCES - Design Contingency					
188	Design Contingency as a percentage of the above to cover increases in the overall scope of the design during the remaining stages of the design phase (applied to measured works plus general requirements and fees)					
188.1	- Architectural / Structural / Siteworks	1	LS	$60,300.00	$60,300	15.0%
188.2	- Mechanical Services	1	LS	$89,900.00	$89,900	15.0%
188.3	- Electrical Services	1	LS	$58,900.00	$58,900	15.0%
	TOTAL FOR ALLOWANCES - Design Contingency	1.00 / 760	m2	$275.13	$209,100	

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No.	Description	Quant.	Unit	Rate	Sub Total	Total
	Z2.2 ALLOWANCES - Escalation Contingency					
189	Contingency for escalation that might occur between the date of the estimate and the anticipated tender date (applied to measured works plus general requirements, fees and Design Contingency)				Excluded	0.0%
	TOTAL FOR ALLOWANCES - Escalation Contingency	0.00 0	m2	$0.00	$0	
	Z2.3 ALLOWANCES - Construction Contingency					
190	Construction Contingency for post contract changes (applied to measured works plus general requirements, fees, Design Contingency and Escalation Contingency)	1	LS	$240,500.00	$240,500	15.0%
	TOTAL FOR ALLOWANCES - Construction Contingency	1.00 760	m2	$316.45	$240,500	

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Appendix D

Doing Business with A&E

Ontario Region

Table of Contents:

SECTION 1 GENERAL DESIGN, DOCUMENTATION AND SUBMISSION STANDARDS

1.1 Introduction

The purpose of this document is to help consultants perform their work while dealing with Ontario Region of PWGSC. It is intended to complement the requirements stated in the main body of the RFP, in particular in the Project Brief and the Required Services sections. This document elaborates on specific items that are particular to the Ontario Region, but in no way does it supersede the main clauses of the RFP.

1.2 Document Management

All project documents are to be electronically distributed to project stakeholders through the use of a commercially available, secure internet, web based browser software application system similar to PWGSC's current OPROMA system. Documents must be distributed in pdf format, with an e-mail notification system to stakeholders. Individual pdf files must not exceed 4MB. Version and document control features are required to enable review of previous documents issued. The document system must be managed and operated by the consultant, who shall control secure access rights to project stakeholders identified by the PWGSC Project Manager.

To obtain access to PWGSC's OPROMA system, request an account from the departmental representative.

1.3 Sustainability

Use sustainable design principles to achieve a minimum building performance rating of:

1. New construction projects are to meet the standards of LEED Gold.
2. Major renovation projects (±5M of construction cost) are to meet the standards of LEED Silver.
3. Heritage building projects are to follow the principles of sustainability described in the "Sustainable Heritage Guide" entitled "Applying Sustainability Principles and Practices to Heritage Buildings and Projects: A Guide for Property / Project Managers and Consultants".
4. For all other projects, the principles of sustainability shall be followed.

Comply with PWGSC- Strategic Framework for Sustainability in Buildings, April 1, 2012.

1.4 Drawings

The drawings are complementary to the specification. They should describe the extent of work. Do not rely on a mandatory site visit to complete the information. Notes such as "verify on site", "as instructed","to be determined on site by Departmental Representative", will not generate accurate bids and may result in unnecessarily high bid prices. The drawings shall allow the Bidders to bid accurately and calculate all quantities. If quantities are impossible to show (i.e. cracks to be repaired) give a quantity for bid purposes.

Construction drawings should be strictly technical drawings, fully detailed and dimensioned, clearly and accurately drawn, complete with all necessary descriptive notes. On all drawings present the work to be done as clearly as possible. Draw details at sufficient scales to eliminate doubt as to the method of construction, materials and quantities required. Required sheet order: plans; elevations; main sections; and details. Avoid wasted space but ensure that sheets are not overcrowded or difficult to read.

Do not submit blank sheets in progress sets of drawings issued for review.

The terminology used should be consistent throughout the drawings and specification.

Design on a modular basis to take advantage of dimensional standardization and co-ordination.

Drawings have to be in metric only even if the project is to renovate an old building. Any references to imperial units will not be accepted.

Consultants MUST follow the “PWGSC CADD Standards” available electronically at:

• On the web, at: http://www.tpsgc-pwgsc.gc.ca/biens-property/cdao-cadd/index-eng.html
(this document refers to NCR contacts)

When prepared by Consultants, the final drawings (original) shall bear the Professional's seal and signature.

1.5 Standard Drawing Information

PWGSC will provide the following standard items to the consultants with respect to CADD

AutoCAD format Borders (14 sizes)
Site legend w/ symbols
AutoCAD plotting ctb (colour table) files
Graphic Bar Scales and North Arrow in AutoCAD format
AutoCAD template files

1.6 Detail/Section Number

Use the 3-part “bubble” provided in the supplied borders to reference details, sections, etc. The 3-part "bubble" will contain the detail / section number, the number of the drawing where it is required and the number of the drawing where it is detailed. This pattern must be adhered to.

1.7 Presentation Requirements

Present drawings in sets comprising the applicable architectural, interior design, structural, mechanical, electrical, landscaping and civil drawings in that order. All drawings shall be of uniform standard size. Print with black lines on white paper. Staple or otherwise bind prints into sets. Where presentations exceed 20 sheets, the drawings for each discipline may be bound separately for convenience and ease of handling.

1.8 Title Sheets

Title sheets may be used at the Consultant's discretion, for design presentations or on large sets of Construction drawings.

1.9 Indices

Provide an index at the front of each set of drawings. Where a large number of sheets are involved, place the index on a title sheet or at the front of each set of the various disciplines. Include drawing indices in the specifications after the Table of Contents.

1.10 Legends

Provide a legend of symbols, abbreviations, references, etc., on the front sheet of each set of drawings or, in large sets of drawings, immediately after the title sheet and index sheets. Coordinate abbreviations and

acronyms with PWGSC Section 01 42 13.

1.11 Drawing Notes

Indicate all materials, systems and products on the drawings by means of numbered notes as follows:

Demolition Notes:	note number in a 7mm square box
Deconstruction Notes:	note number in a 7mm square box
Construction Notes:	note number in a 7mm diameter circle
Revision Notes:	note number in a 7mm triangle
Assembly Notes:	note number in a 10mm hexagon

adjacent to the appropriate location on the plan, section or detail with an arrow connecting the box, circle, triangle or hexagon to the specific material, system or product indicated on the drawing. Provide a list of drawing notes relating to the sequentially numbered notes on the right hand side of the drawing sheet adjacent to the title block. Minimum text size: 2mm. Do not repeat text that is already in the SACC or specification.

1.12 North Points

On all plans include a north point. Orient all plans in the same direction for easy cross referencing. Wherever possible, lay out plans so that the north point is at the top of the sheet.

1.13 Abbreviation Standards

Use text abbreviations with discretion to ensure that there will be no misunderstanding of the drawings. Follow abbreviation list provided as part of specification standards from the ftp site. Co-ordinate with PWGSC Section 01 42 13 Abbreviations and Acronyms.

1.14 Drawing Symbols

Follow generally accepted drawing conventions, understandable by the construction trades, if more symbols are required than are provided by PWGSC.

1.15 Drawing Scale

For all drawings, including details, provide a graphic scale for each drawing and detail. PDF files shall be created to full plotted scale.

1.16 As-Built and Record Information

As-built information is received from the Contractor. It contains drawings, specifications, shop drawings, submittals, samples, etc. It is noted as such by the Contractor.

Record drawings and specifications are updated originals prepared by the Consultants based on the information supplied by the Contractor in the as-built.

1.17 Shop Drawing Submittal Log

Fill in and submit the PWGSC Ontario Region Shop Drawing Submittal Log with each application for payment. Shop Drawing Submittal Log is available in MS Excel from the PWGSC OPROMA system.

1.18 Tender Documents Format

All tender documents will be submitted by the consultant in the tender document files native electronic format as well as .pdf format, as follows:

PDF Properties:
1. Each pdf file must be of a uniform and standard pdf paper size within the contents of each file.

Drawings:
1. Each drawing is to be converted to a pdf file. One (1) drawing per file.
2. The file shall be named with the drawing number and then the title of the drawing from the drawing title block (e.g. A01 - Architectural Cover Page)

Specifications:
1. The complete Project Specification is to be converted to one PDF file, with a PDF page size of 8.5" x 11", portrait orientation. One (1) PDF per complete project specification, all Divisions. The file shall be named with the project number and then the word Specification (e.g. R.123456.001 Specification).
2. Where tables or schedules within the Specification do not conform to the 8.5" x 11" format, they are to be converted to PDF files of the appropriate sheet size and included in the submission as appendices. Identify such files as appendices in the Specification Table of Contents.
3. Any amendments shall be converted to a PDF file. Text should be converted into one file. Drawings shall be one drawing per PDF file. The name for each text file shall be "Amendment Number #." The name for each amendment drawing file shall be "Amendment Number # - Drawing XXX" (where XXX is the name of the drawing).

Creation of CD/DVDs (when specifically requested):
1. The files above shall be burned onto CD/DVD(s).
2. When the pdfs are burned onto the CD/DVD, folders shall be created. The folders will be "Drawings", "Specifications", and "Amendments". The Plans and Specifications - Table of Contents PDF will reside at the uppermost level with the three folders.
3. CD/DVDs should be labeled with the following information:
   a) Description from the Drawing Title Block
   b) Project Number
   c) Solicitation Number
   d) "Original Solicitation" OR "Amendment # X"
   e) Number of CDs in this grouping (e.g. 1 of 3)

1.19 Principles of PWGSC Contract Documents

PWGSC's contract documents are based on common public procurement principles. PWGSC does not use Canadian Construction Document Committee (CCDC) documents. The terms and conditions are prepared and issued by PWGSC as well as other related bidding and contractual documents.

For information, the clauses are available on the following web sites: SACC at https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

and the CAD standards athttp://www.tpsgc-pwgsc.gc.ca/biens-property/cdao-cadd/index-eng.html Any questions should be directed to the Project Manager.

1.20 Quality Assurance

Consultants are required to undertake their own quality control process and must review, correct and coordinate (between disciplines) their documents before sending them to PWGSC.

Submissions of the project manual that do not comply with the RFP design and submission requirements, and/or are not compliant to the current codes and standards may be subject to written complaints to the consultant's licensing and accreditation bodies such as the, OAA, AC (formerly RAIC), PEO, CIQS, AATO, OACETT, CSC - Construction Specifications Canada, consultant's liability insurance carrier, etc.

1.21 Fit-up Standards

The design for general-purpose office space accommodation for all Government of Canada departments or agencies is to follow and conform to the latest Fit-Up Standards including the selection of systems, materials, furnishings and equipment. Obtain the latest version of the "Government of Canada Workplace 2.0 Fit-Up Standards" from the PWGSC Project Manager.

Note that the breakdown of the cost estimate at each stage of delivery should reflect the funding accountabilities for the components of an accommodation project as described in the "A3.3 Fit-Up Components and Funding Accountabilities" chart in the "Government of Canada Workplace 2.0 Fit-Up Standards", i.e. Base building cost vs. Fit-Up Standard cost vs. other cost.

1.22 Heritage Value

The Treasury Board Heritage Building Policy states "Departments must manage buildings they administer so as to conserve their heritage character throughout their life cycles." Any modification considered to a Government of Canada building or site should value its architectural character, no matter how old or how new the building or site may be.

For a federal (Government of Canada) building that is designated as classified or recognized by the Federal Heritage Building Review Office (FHBRO), implement the project following a conservation approach based on accepted principles and practices as described in the "Standards and Guidelines for the Conservation of Historic Places in Canada."

1.23 Barrier Free Design for Disabled

Design buildings and grounds to make them accessible and usable by disabled persons, unless otherwise required in the Project Brief. Conform to CAN/CSA-B651-04(R2010), including making buildings and other facilities accessible to persons with a range of physical, sensory and cognitive disabilities. Adhere to specific client requirements as directed, and Correctional Service Canada (CSC) policy on accessibility for CSC projects.

Also conform to Treasury Board of Canada Secretariat Accessibility Standard for Real Property, web link: http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12044&section=text"

1.24 Minimum Codes and Standards

The most stringent requirements of the following codes and standards shall apply:

National Building Code of Canada.
National Fire Code of Canada.
National Plumbing Code of Canada.

Canada Labour Code Part II (Occupational Safety and Health).
Fire Commissioner of Canada Standards.
Federal Boiler Emission Regulations.
Federal Environment Code of Practices.
PWGSC Federal Office Building Standards.
Treasury Board of Canada Secretariat Standards and Directives.
Canadian Electrical Code.
Canadian Standards Association Specifications, Standards and Guidelines.
ANSI, ASHRAE, ASTM, AWMAC, FM, MPI, TSSA, ULC etc. Standards, Guidelines and Handbooks.
Model National Energy Code of Canada for Buildings.
Provincial Codes, Municipal Codes/By-Laws and Utility Authority Codes.

Additional codes and standards are detailed in the Sections for specific disciplines.

1.25 Operating Costs

Operating costs must be kept to a minimum and reflect the projected operating costs in the Cost Plan. This is to be achieved by compliance with the Energy Budget, selection of materials and equipment, requiring the minimum of operating personnel, and building finishes for easy maintenance, etc..

SECTION 2 ARCHITECTURAL DESIGN

2.1 Review

All designs must be reviewed by the Department and conform to the requirements of the Project Brief.

2.2 Principles

The Department expects the Consultant to maintain a high standard of architectural design, based upon recognized contemporary design principles. All design elements, planning, architectural, engineering and landscaping, must be fully co-ordinated, and consistent in adherence to good design principles.

2.3 Economy

Design strictly within the budget and in accordance with sound investment economics and operating and maintenance expenditures.

Design for the optimum ratio of net usable space to outside gross areas.

2.4 Flexibility

Design for maximum flexibility in immediate and future use of space. Where possible, devise a building grid with column spacing, fenestration and service runs suited to flexible interior space arrangements.

2.5 Future Extension

Design for future extension as determined by the Departmental Representative and ensure that permanent spaces, such as service rooms and duct spaces, etc., are sized for future additional capacity.

2.6 Quality

Quality of materials and construction methods shall be commensurate with the type of building and the budget. Avoid experimental materials. Take into account the total life-cycling of the building.

2.7 Regulations

Design shall comply with applicable Federal, Provincial and Municipal regulations and codes. In case of conflict, the most stringent requirements apply.

2.8 Design

The Department expects imaginative design and good aesthetic expression throughout all projects. Design shall be compatible with adjacent buildings, or with the existing building in extension work.

2.9 Required Space

Provide all rooms required to within 10% of the approved areas. Deviation from this requirement may entail redesign.

2.10 Ancillary Space

Provide washrooms, janitor's rooms, furnace rooms, electrical panel and transformer rooms, storage

rooms, freight and garbage holding areas, duct spaces and other building service space not specifically listed in the Project Brief, but essential to the efficient operation of the building.

2.11 Fit-up Standards

In accordance with Section 1.

2.12 Heritage Value

In accordance with Section 1.

2.13 Barrier Free Design for Disabled

In accordance with Section 1.

2.14 Colour Schemes

All colour schemes require PWGSC approval. Submit schemes in duplicate well in advance and so as not to delay the work of the Contractor. Colour schemes should include all surfaces and materials to be coloured on site, plus any items provided with a colour finish or texture during prefabrication. Indicate any untreated or natural-finish surfaces contributing to the overall aesthetic appearance of the project. To fully illustrate the scheme, provide PWGSC with actual samples (colour chips, material samples, etc.) of interior finishes that are to be installed. Revise the scheme if necessary to obtain final PWGSC approval. Ensure that the Contractor carries out the approved scheme. One copy of the approved scheme will be retained by PWGSC for verification of the final results on site.

2.15 Codes and Standards

In accordance with Section 1.

SECTION 4 SPECIFICATION BRIEF

4.1 Purpose of Section

The purpose of this document is to state specification policy and to provide a framework, format and reference information to assist the specifier in developing the project specifications. It gives additional detail to the information in the NPMS Specification Brief.

4.2 Definition

A specification is a written instruction describing type and quality of materials, products, equipment and fixtures; quality of workmanship; methods of fabrication, installation and erection; standards, test and code requirements; and specific sizes of materials. By contrast, the construction drawings present quantities of work and materials, dimensions, locations, form and building details, and show the scope of work.

4.3 Legal Status

Specifications are part of the legal contract between the Contractor and the Owner. They provide the basis for accepting or rejecting workmanship or products on site.

4.4 Division 00 - General Instructions to Bidders, General Conditions, Etc.

Read and understand the applicable General Instructions to Bidders, General Conditions and other related Division 00 contact documents listed in 4.14.

The SACC Manual references for Division 00 are available on the internet at:
https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R or
http://ccua-sacc.tpsgc-pwgsc.gc.ca/pub/rese-eng.jsp

Construction Contract Administration Forms are available at:
http://publiservice-app.tpsgc-pwgsc.gc.ca/forms/text/search_for_forms-e.html
for federal government employees; and

http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html
for the public.

See the document entitled “Construction Contract Administration Forms Real Property Contracting”.

4.5 National Master Specification

The National Master Specification (NMS) is a bilingual (English and French) database of master construction specification sections which is owned and managed by PWGSC. It was created in 1975 as a joint effort between several Government of Canada departments and Construction Specifications Canada. The text consists of wording likely to be required for a wide range of construction and/or renovation projects.

In preparing project specifications, the Consultant shall use the latest release of the NMS amended by PWGSC Ontario Region to the maximum extent to which it is applicable, as per PWGSC RPB Real Property Branch Policy on the Use of the National Master Specification NMS 2012 formerly Departmental Policy 039/2001-05-01, TB Minute 732202, subject to the Consultant's overriding responsibility for the final content of the project specification. Use PWGSC Ontario Region amended NMS sections and PWGSC Ontario Region Master Specifications: Architectural, Structural, Mechanical and Civil Minor Works and In-

House specification masters available by downloading from PWGSC's OPROMA system. The Consultant shall edit, assign new section numbers, amend, and supplement the PWGSC Ontario Region Amended NMS as the Consultant deems necessary to produce an appropriate project specification free from conflict and ambiguity, i.e. new sections not presently included in the NMS database. The Consultant shall be responsible for the cost of processing the project specifications in NMS Professional Specification Editing Software or MS Word using the Consultant's own or sub-contracted typing/word processing facilities.

The Consultant shall be responsible for all proofreading. Both the NMS and PWGSC Ontario Region Master Specifications follow CSC/CSI MasterFormat 2012 numbering. As of January 2005, the NMS renumbered the entire database in line with MasterFormat 2004 and now MasterFormat 2012 which uses 6, 8 and 10 digit section numbers instead of the previous 5 digit numbers, consisting of two numbers, a hard or connecting space, two more numbers, a hard or connecting space and two more numbers (for example, 01 11 00 instead of 01110). MasterFormat 2012, 2011, 2010 and 2004 divides the work into 50 divisions instead of the previous 16 divisions. In March 2007 the NMS began including 8 digit section numbers, consisting of two numbers, a hard or connecting space, two more numbers, a hard or connecting space, two more numbers, a period and two more numbers (for example, 01 11 00.01).

The Consultant is responsible for obtaining from any authorized supplier, the NMS User's Guide, and an updated version of the NMS specification sections that the Consultant requires in preparing the project specification. Use of the NMS system shall not relieve the Consultant of the responsibility for conforming to the approved time schedule.

4.6 Regional Guide Specifications

The Centre of Expertise, in some regions, maintains abridged versions of some NMS specifications and a number of other short form guide specifications for materials and equipment not covered by the NMS. These are available from the regional Specifications Offices.

The Consultant shall obtain the region's amended version of Division 01, which also includes requirements particular to the Region. The Consultant shall ensure that the Regional requirements of Division 01 sections appropriate to the project are incorporated into the appropriate NMS Division 01 sections. The PWGSC amended Division 01 sections on the ftp site already contain these revisions. Other regional abridged and short form specifications may be used at the Consultant's or the department's option. These are available from PWGSC's OPROMA system.

As in the case with the NMS, the Consultant shall be entirely responsible for project specification accuracy, applicability of content, completeness, and correctness, whether or not prepared using the abridged or short form guide specifications referred to herein. This includes using reference standards designations, dates, titles and technical content current as of the date of bidding. Consult the various standards writing organizations web sites.

4.7 Specification Organization

Section Titles, Numbers and Format: Since its inception, the NMS structure has been and continues to be based on the "MasterFormat 2012" Master List of Section Titles and Numbers and SectionFormat 2008 which are jointly produced by the Construction Specifications Institution of the United States and Construction Specifications Canada. The 2012 NMS is currently based on MasterFormat 2012.(50 Divisions, 6 and 8 digit Section Numbers).

Type of Section: Narrowscope sections describing single units of work are preferred for more complex work; Broadscope sections may be more suitable for less complex work.

Format: Use the NMS wide page or 1/3 - 2/3 format consistently throughout the specification.

4.8 Specifying Materials

The practice of specifying actual brand names, trade names, model numbers, etc., is against departmental policy except for very special circumstances. Some NMS sections incorporate trade names. For PWGSC delete the trade names from the NMS. The method of specifying materials and the use of trade names shall be as stated hereunder, and in the following order of preference:

.1 Specify by using recognized standards such as those produced by CGA, CGSB, CSA, and ULC, or by trade associations such as AWI/AWMAC/WI, CRCA, MPI and TTMAC. Use Canadian standards wherever possible.

.2 Where CGSB Qualified Product Lists are available that identify materials that meet requirements of relevant CGSB Standards, specify to restrict supply of materials to those on such lists.

.3 Current lists are available from: Canadian General Standards Board Sales Centre,
OTTAWA, Ontario K1A 1G6
Telephone: (613) 941-8703
Fax: (613) 941-8705

.4 Where no standards exist, specify by a non-restrictive, non-trade name "prescription" specification or by a "required performance" specification.

.5 Where no standards exist and where a suitable non-restrictive, non-trade name "prescription" specification or a "required performance" specification cannot be developed, specify by trade name. Include all trade names available under WTO, NAFTA and other trade agreements, of materials acceptable for the purpose intended, and in the case of equipment, identify by model number. The name, telephone number and web site of the manufacturer and distributor must also be included.

.6 Obtain written approval from the Departmental Representative’s designated PWGSC Project Manager before: adding or deleting from list of trade names specified in NMS sections or PWGSC master specifications; specifying trade names in lieu of "prescription" or "performance" method used in NMS sections; or specifying trade names when writing "custom" (not NMS) sections.

Additionally, use trade names:

- Where only one specific material will fulfill the exact requirements of the project.
- Where specific materials are required to match existing materials.
- On projects of a special nature due to an unusual function or timing requirement such as emergency repairs.

List all trade names of materials acceptable for the purpose and make reference to the Instructions to Bidders for the method of approving alternative materials. Where trade names are specified in an 'Acceptable material' sub-paragraph following the complete generic performance criteria specification, list all available WTO, NAFTA and other trade agreements (not just Canadian) manufacturer's, their model numbers, the distributors and the complete telephone numbers including area code, fax number and website.

The Consultant shall read and apply the trade agreement clauses applicable to the project which are listed in the NAFTA article 1007 Technical Specifications, the WTO article VI Technical Specifications, and in the Agreement on Internal Trade Chapter 4 - General Rules Article 401: Reciprocal Non-Discrimination.

On certain projects, trade names or manufacturers' numbers may be included in the Hardware Section, as specifically instructed in writing by the RCMP Security Engineering Branch or Correctional Service Canada. Use the following format as a sub paragraph following the performance criteria paragraphs. Set up trade name acceptable material specifications as follows:

Acceptable Material:
1. ABC Co. Model [___], manufactured by 123 Inc. 416-555-1234 fax 416-555-2234 www.123.com, distributed by 456 Inc 416-555-5678 fax 416-555-5566 www.456.com.
2. DEF Co. Model [___], manufactured by 123 Inc. 416-555-1234 fax 416-555-2234 www.123.com, distributed by 456 Inc 416-555-5678 fax 416-555-5566 www.456.com.
3. GHI Co. Model [___], manufactured by 123 Inc. 416-555-1234 fax 416-555-2234 www.123.com, distributed by 456 Inc 416-555-5678 fax 416-555-5566 www.456.com.
4. Alternative Materials: Approved by amendment in accordance with Instructions to Bidders. (Or instead of this wording with each list of trade names, include the following in Part 1 of Specification Sections in which trade names appear "Acceptable Materials: Where materials are specified by trade name refer to the General Instructions to Bidders for procedure to be followed in applying for approval; SACC Manual Clause ID R2410T for GI14 Approval of Alternative Materials, or, SACC Manual Clause ID R2710T for GI16 Approval of Alternative Materials.")

The reference to the General Instructions to Bidders in the above examples is necessary to remove any suggestion of partiality and to ensure that all suppliers are aware of the provision for alternative proposals during the tendering period. Do not use such phrases as "or equal", "similar to", "equivalent to","to match" to provide for alternative materials. Use language identified in the NMS User's Guide.

Identify material as in product literature. Specific types and model numbers are required.

Do not use variations on above methods of specifying by trade name. One example is use of the phrase "Acceptable Manufacturers".

While this establishes the names of manufacturers who are acceptable it does not ensure that the actual material involved will be acceptable. Moreover, it does not allow for competition because there is no tie-in with the Instructions to Tenderers which deal only with alternative "materials".

4.9 Standards

The following is a partial list of internet websites that may be used to check for the most current publications of standards that might be referenced in the construction specification document.

AA: www.aluminum.org
AAMA: www.aamanet.org
AMCA: www.amca.org
ANSI: www.ansi.org
API: www.techstreet.com/info/api.html#hist
ARI: www.ari.org
ASHRAE: www.ashrae.org
ASME: www.asme.org
ASTM: www.astm.org
AWMAC: www.awmac.com
BIFMA: www.bifma.com
CGA: www.cga.ca
CGSB: www.pwgsc.gc.ca/cgsb/home/estore-e.html
CRCA: www.roofingcanada.com
CSA: www.csa.ca
CSDMA: www.csdma.org
EIA: www.eia.org
IEEE: www.ieee.ca
ISA: www.isa.org
ISO: www.iso.ch

OPSS and OPSD: http://www.raqsa.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage
MIA: www.marble-institute.com
MPI: www.specifypaint.com
NAAMM: www.naamm.org
NEMA: www.nema.org/
NFPA: www.nfpa.org/catalog/catalog_home.asp?cookie%5Ftest=1
NLGA: www.nlga.org
NSSN: www.nssnorg
SAE: www.sae.org
SCC: www.scc.ca/indexe.html
SMACNA: www.smacna.org
SSPC: www.sspc.org
TIA: www.tiaonline.org
TTMAC: www.ttmac.com
ULC: www.ulc.ca/standards
UL: www.ul.com

General reference of standards: www.cssinfo.com/search.html and www.techstreet.com

For metal manufacturers: www.retailsource.com/index.html

For other website addresses of industry trade and manufacturer associations, use internet advanced searches.

Standards within NMS sections are not always the most current. The responsibility to ensure that the latest standards current as of the date of bidding are used remains the responsibility of the consultant; include current standard designation, date, title and technical content.

The NMS Secretariat can also be reached on the web at www.nms-ddn.ca

4.10 Canadian Materials

Specify Canadian materials to the fullest extent procurable, consistent with proper economy and the expeditious carrying out of the work. Consider km from raw material source and fabricated product source to project. Coordinate with latest LEED and Green Globes requirements, the PWGSC Green Policy and any client's green policy.

4.11 Cash Allowances

Construction contract documents should be complete and contain all of the requirements for contractual work. Cash allowances are to be used only under exceptional circumstances (i.e. utility companies) where no other method of specifying is appropriate. Obtain the Departmental Representative's designated PWGSC Project Manager's approval to use cash allowances. Use Section 01 21 00 Allowances (formerly section 01210 in MasterFormat 1995) of the NMS to specify cash allowances.

Refer to Section 6 Risk Management and Sections 11 and 12 Cost Planning and Control.

4.12 Extended Warranties

It is the policy of PWGSC's Real Property Contracting Directorate (RPCD) to avoid extending warranties more than 24 months. Where it is necessary to extend the twelve month warranty period provided for in the General Conditions of the Contract, use the following wording in Part 1 of the applicable technical sections, under the heading "Warranty":

1. "For the work of this Section [___] the 12 months warranty period prescribed in General Conditions GC3.13 Warranty and Rectification of Defects in Work is extended to 24 months."

2. Where the extended warranty is intended to apply to a particular part of a specification section modify the above as follows: "For [insulating glass units] the 12 month ... [___] months."

Parts of the work for which extended warranties may be required are those, such as roofing and waterproofing, in which, based on past performance, defects are likely to appear after the twelve month warranty period provided for in the General Conditions.

4.13 Terminology

Use the term "Departmental Representative" instead of PWGSC, Engineer, Owner, Consultant or Architect. Departmental Representative means the officer or employee of Her Majesty who is designated pursuant to the Bid and Acceptance Form and includes a person specially authorized by the Departmental Representative to perform, on the Departmental Representative's behalf, any of the Departmental Representative's functions under the contract and is so designated in writing to the Contractor. Wherever options: [Engineer], [Architect], [Consultant], [Owner], [Design Builder], [Departmental Representative] appears in NMS Sections, select the words “Departmental Representative". Use metric units.

The terminology used shall be consistent throughout the drawings and specifications.

4.14 Specification Documentation

Front and Back Cover: by Department.

Amendments (if required): by Consultant. Department to provide format, and to sign and distribute.

Special amendments: by Department, copies of the current special amendments are available from the regional Specifications Section.

Instructions to Bidders: by Department.

Bid and Acceptance Form: by Department.

Standard Construction Contract Documents for Major Works: by Department, consisting of:

General Instructions to Bidders, SACC Manual Clause ID R2710T
Bid and Acceptance Form,
GC1 General Provisions, SACC Manual Clause ID R2810D
GC2 Administration of the Contract, SACC Manual Clause ID R2820D
GC3 Execution and Control of the Work, SACC Manual Clause ID R2830D
GC4 Protective Measures, SACC Manual Clause ID R2840D
GC5 Terms of Payment, SACC Manual Clause ID R2850D
GC6 Delays and Changes in the Work, SACC Manual Clause ID R2860D
GC7 Default, Suspension or Termintion of the Contract, SACC Manual Clause ID R2870D
GC8 Dispute Resolution – Arbitration (Generally for Contracts between $100,000 and $5,000,000), SACC Manual Clause ID R2880D
GC8 Dispute Resolution – Mediation (Generally for Contracts greater than $5,000,000), SACC Manual Clause ID R2882D
GC9 Contract Security, SACC Manual Clause ID R2890D
GC10 Insurance, SACC Manual Clasue ID R2900D
Insurance Terms, SACC Manual Clause ID R2910D

Fair Wages and Hours of Labour - Labour Conditions, SACC Manual Clause ID R2940D (formerly R0203D Labour Conditions "D")

Allowable Costs for Contract Changes Under GC6.4.1, SACC Manual Clause ID R2950D
and for Minor Works: by Department, consisting of:

General Instructions to Bidders under $100,000, SACC Manual Clause ID R2410T
Bid and Acceptance Form,
GC1 General Provisions, SACC Manual Clause ID R2810D
GC2 Administration of the Contract, SACC Manual Clause ID R2820D
GC3 Execution and Control of the Work, SACC Manual Clause ID R2830D
GC4 Protective Measures, SACC Manual Clause ID R2840D
GC5 Terms of Payment under $100,000, SACC Manual Clause ID R2550D
GC6 Delays and Changes in the Work, SACC Manual Clause ID R2860D
GC7 Default, Suspension or Termination of the Contract, SACC Manual Clause ID R2870D
GC8 Dispute Resolution (Generally for Contracts under $100,000), SACC Manual Clause ID R2884D
GC9 Insurance under $100,000, SACC Manual Clause ID R2590D
Fair Wages and Hours of Labour - Labour Conditions SACC Manual Clause ID R2940D (formerly R0203D Labour Conditions "D")
Allowable Costs for Contract Changes Under GC6.4.1, SACC Manual Clause ID R2950D

The SACC Manual references for Division 00 are available on the internet at http://ccua-sacc.tpsgc-pwgsc.gc.ca/pub/rqqr.do?lang+eng&sec0=5&sec1=R

Documents listed are incorporated by reference only. The SACC Manual references for Division 00 are available on the internet as specified in clause 4.4.

New Terms:

- The term “Canada” shall henceforth be used in place of “Her Majesty”, “Minister” and “Engineer”.
- The term “Departmental Representative” is defined as the person exercising the roles and attributes of Canada under the contract and replaces the term “Engineer”.
- The term “Certificate of Substantial Performance” replaces the term “Interim Certificate of Completion”.
- The term”Certificate of Completion” replaces “Final Certificate of Completion”.

List of Contents, Index of Specification and Divisions 01 to 50 (MasterFormat 2012) (formerly 01 to 16 under MasterFormat 95) and Drawings: by Consultant based on attached examples.

4.15 Typing Format

Refer to the NMS for approved wide page and 1/3-2/3 page format and numbering method. Use consistent format throughout the project specification. Print on 216 mm x 280 mm (8-1/2” x 11”) white bond paper, 11 or 12 point TT Courier New font. Do not use smaller fonts as they are not legible.

Every page shall have the Project Number, the Section title, the six digit Section number, the page number and the project date. Obtain sample from the specification reviewer before proceeding with specifications. The header and/or footer shall not show the consultant's name and address, the project title or the project street address.

The Consultant shall hand over specifications in both hard paper copy and soft electronic copy compatible with **NMSEdit Professional version 3.01.03A** or **MS Word 2010** and **PDF** on CD/DVD/USB or secure electronic file transfer server of the project specifications, title page, amendments, etc. Verify the software version currently in use at PWGSC on award of consulting contract. Submit small drawings, i.e.

abbreviations, room, colour, door and hardware schedules, notes, unit price tables when applicable, etc. in MS Excel/MS Word or Lotus 123 as per PWGSC Ontario Region electronic masters.

4.16 Electronic File Sharing

PWGSC Ontario Region master specifications and PWGSC Ontario Region amended NMS sections are available to copy to your computer from PWGSC's OPROMA system.

All specifications are provided in NMSEdit, rtf and pdf formats.

Download the Master Specifications to create your master library. These master specifications are to be used to create your project specification document.

4.17 Printing and Binding

The Department is responsible for printing and binding. Provide Department with one sided, camera ready paper original of specification. In NMS Professional with 11 point font, use binding margins 0.75 Left and 0.75 right and page width of 6.74. With 12 point font use binding margins 0.50 Left and 0.50 right. Ensure pdf files have the correct binding margins for two sided printing.

4.18 Bidding Information

Instructions to Bidders: Provide Department with a list of significant trades including costs. The Department will then determine which trades, if any, will be tendered through the Bid Depository.

Bid and Acceptance Form: Provide Department with a list of unit, separate, and alternative prices to be included.

Amendments: Provide Department with amendment in Departmental format in MS Word and pdf. The term Addenda was discontinued in June 2007. This terminology is currently under review.

4.19 PWGSC Ontario Region Master Specifications

The PWGSC Ontario Region Master Specifications and Ontario Region amended NMS master specifications are available by downloading fromPWGSC's OPROMA system (4.16). These .spp specifications are only compatible with **NMS**Edit **Professional v3.01.03A** or later specification processing software and the **rtf** version for **MS Word** is somewhat compatible with other word processing software. Verify software version currently in use at PWGSC on award of consulting contract. Masters are also provided in **pdf**.

PWGSC Ontario Region will supply small drawing masters, i.e., abbreviations, room, colour, door and hardware schedules, notes, etc. in Lotus 123 and MS Excel/Word.

Contact PWGSC Ontario Region, Senior Specification Officer, Cathy Ferren-Palmer at 416-512-5971 or by email at Cathy.Ferren-Palmer@pwgsc-tpsgc.gc.ca or Dan Covey at 416-512-5942 or by email at Dan.Covey@pwgsc-tpsgc.gc.ca. Files are stored in NMS Professional specification writing software, rtf, pdf, and are not available in any other word processing formats. You can save the specifications in other formats but you must submit your projects specifications to PWGSC Ontario Region in file formats compatible with NMS Professional as a *.spp file, rtf or MS Word doc/docx.

4.20 Fixed/Stipulated Price Contract - Lump Sum

Use the ‘Bid and Acceptance Form - Lump Sum’. Delete all "Measurement for Payment", "Measurement Procedures" and "Payment Procedures" paragraphs from Heavy Civil Engineering sections of NMS, if such sections are used with other sections of NMS for Lump Sum Contracts.

4.21 Unit Price Contract

Use the ‘Bid and Acceptance Form - Unit Price’. The majority of Heavy Civil engineering projects are tendered as Unit Price Contracts. To accommodate this, the Heavy Civil sections of the NMS include unit price measurements under Part 1 of each section in “Measurement Procedures”.

The remaining sections of the NMS and PWGSC Ontario Region in-house masters are written for fixed price contracts and therefore do not include “Measurement and Payment” clauses. When combining both systems in a project, ensure only one method of payment is specified.

Unless otherwise instructed by the Departmental Representative’s designated PWGSC Project Manager, contracts are written for heavy civil engineering are written on the Unit Price basis and Payment Procedures paragraphs apply. Add the Measurement and Payment paragraphs to the remaining sections when combining with Heavy Civil Engineering sections.

4.22 Combined Lump Sum and Unit Price Contract

Use the ‘Bid and Acceptance Form - Combined Price’ when a portion of the work involves unit prices. The unit price table should only be used for labour, tooling or materials when the quantity cannot be accurately determined prior to execution of the work. The unit price table is not to be used to obtain a cost breakdown for lump sum work.

4.23 Fire Protection Policies and Standards

Consult and comply with the Federal Fire Protection and Standards and Other Documents as published by Human Resources and Skills Development Canada. Documents can be found at:
http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/index.shtml

4.24 Designated Substances

For existing buildings and all sites, include the Designated Substances Survey report results in Division 01. Edit the project site conditions list extensively in Section 01 35 29.06. Save the Designated Substances Survey as a separate pdf. If hardcopy is included in the project manual, bind into the specification as an appendix. This will satisfy the requirements of the Occupational Health and Safety Act and Regulations for Construction Projects, Revised Statutes of Ontario 1990, Chapter O.1 as amended, O. Reg. 213/91 as amended and O. Reg. 490/09, Designated Substances.

4.25 WHMIS

Comply with the requirements of the Workplace Hazardous Materials Information Systems (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and the provision of material safety data sheets acceptable to Labour Canada.

4.26 PCB Disposal

Comply with Ontario Regulation 309. Use PWGSC amended NMS specification Section 02 84 00 Management of Toxic Waste.

4.27 Environmental Requirements

Comply with Federal and Provincial Acts, Codes, Regulations, Guidelines and Codes of Practice including but not limited to:

- CEPA - Canadian Environmental Protection Act 1988.
- Federal Halocarbon Regulations 2003 and EPAM.
- Guidelines for Emissions from Commercial/Industrial Boilers and Process Heaters; Code of Practice for the Reduction of CFC Emissions from Refrigeration and Air Conditioning Systems 1990; New Source Performance Standards for Stationary Combustion Turbines 1990; CEPA Guidelines for Storage Tanks Containing Petroleum Products 1992; CCME Code of Practice for UST Systems Containing Petroleum Products 1989.
- FA - Fisheries Act.
- TDGA - Transportation of Dangerous Goods Act.
- NWPA - Navigable Waters Protection Act.
- MBCA - Migratory Birds Convention Act.
- PCPA - Pest Control Products Act.
- IRIA - International River Improvements Act.
- ECOLOGO - Environment Canada, Environmental Choice Program, Guidelines and Certified Products Lists.

4.28 Waste Disposal

Comply with waste reduction plans, recycling, reuse, sale to reuse stores, etc. as specified in PWGSC Ontario Region masters. Co-ordinate section 01 11 01 with 02 42 92 in MasterFormat 2012 for minor works and sections 01 74 20 etc. in MasterFormat 2012 with 02 42 92, 02 42 93 and 02 41 Series and 02 42 Series sections in MasterFormat 2012 for major works.

Use deconstruction rather than demolition to the maximum extent possible. The goal is to divert 90 to 95% of deconstruction, demolition and construction waste from landfill. Carefully deconstructed items shall be reused, recycled, sold to reuse stores, factory refurbished, etc. in accordance with the waste reduction workplan.

Specify as many details as possible of the waste reduction workplan in the Contract Documents. Do not leave it up to the Contractor to decide. Where the destination of products is known, specify where the material is going with name, complete street address, phone number and email address. Refer to PWGSC Ontario Region Sections 02 41 19 and 02 42 92 Deconstruction of Structures for detailed deconstruction specs, and Section 02 42 93 Deconstruction and Waste Products Workplan Summary.

4.29 Door Hardware

Door hardware shall be specified and scheduled using the ANSI/BHMA numbers and symbols for type, grade, function, finish, etc. in accordance with PWGSC specifications, NMS specifications, and the Door and Hardware Institute - DHI "Sequence and Format for the Hardware Schedule, June 1984". Use the Lotus 123 or MS Excel/Word small drawing files listed above. Other formats WILL NOT be accepted. Project files must be compatible with our storage and retrieval systems such as DM/EDRM.

Do not use trade names and/or manufacturer's model numbers in the hardware specifications or schedules unless directed to do so IN WRITING by the Departmental Representative for specialty hardware items.

4.30 Epoxy Coatings

Use PWGSC Ontario Region Section 09 96 00 for all epoxy and urethane floor, wall and ceiling coatings.

4.31 Painting

Specify paints using the MPI - Master Painters Institute, Architectural Painting Specification Manual, latest edition plus amendments.

Lead paint: use PWGSC amended NMS Sections 02 83 10, 02 83 11, 02 83 12, 02 83 15 or 02 83 20.

Repainting of heavy civil structures/bridges, etc., use Section 09 97 17 with MOT and SSPC/NACE standards.

4.32 Sealants

Use PWGSC Section 07 90 00 Joint Sealing and Lotus 123 or MS Excel spreadsheet. Specify Environmental Choice Program, Ecologo sealants. Use SWRI validated sealants to the maximum extent possible.

4.33 Asbestos Abatement

Comply with Ontario Regulations 278/05 for asbestos abatement and Regulation 309 to transport, deliver and deposit asbestos waste. Use PWGSC amended NMS Sections 02 82 00.01, 02 82 01.02 and 02 82 00.03 (formerly 02 82 10, 02 82 11 or 02 82 12) as required. It shall be the responsibility of the Consultant to verify that the specifications have been prepared in accordance with the Doing Business With A&E.

4.34 Projects with a 33%, 66% and 100% Submission

33% Submission: submit hard copy to Departmental Representative for:

- List of Contents for all divisions and sections in this project.

66% Submission: submit hard copy and electronic copy to the Departmental Representative for:

- List of Contents for all divisions, Division 01 sections and a rough edit of specialty sections, such as, Asbestos Abatement, Guano Removal, Removal and Disposal of Underground Fuel Oil Tanks, Lead Paint Removal, Finish Hardware, Epoxy Flooring and Automatic Controls.
- One hard copy and one pdf of the Designated Substances Survey Report.
- One copy of draft Hardware Schedule, Door and Frame Schedule, and Door and Frame Types.
- One hard copy of window calculations from AAMA/WDMA/CSA-101/I.S.2/A440-08, North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights and AAMA/WDMA/CSA-101/I.S.2/ A440S1-09, Canadian Supplement to AAMA/WDMA/CSA- 101/I.S.2/A440-08, North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights - Figure A.1 Checklist for Selecting Performance Levels for Windows, Doors, and Unit Skylights, revised July 2009.

100% Submission: submit hard copy and electronic copy compatible with NMSEDIT PROFESSIONAL or MS Word or rtf and in PDF format (one NMS Professional spp or MS Word doc/docx or rtf and one pdf for whole spec) to the Departmental Representative for:

- Final Specification Title Sheet, List of Contents and all specification sections.

4.35 Projects with a 50% and 100% Submission

50% Submission: submit hard copy to Departmental Representative for:

- List of Contents for all divisions and sections in this project, Division 01 sections and a rough edit of specialty sections, such as, Asbestos Abatement, Guano Removal, Removal and Disposal of Underground Fuel Oil Tanks, Lead Paint Removal, Finish Hardware, Epoxy Flooring and Automatic Controls. (one NMS Professional spp or MS Word doc/docx or rtf and one pdf for whole spec)

- One hard copy and one pdf of the Designated Substances Survey Report.
- One copy of draft Hardware Schedule, Door and Frame Schedule, and Door and Frame Types.
- One hard copy of window calculations from AAMA/WDMA/CSA-101/I.S.2/A440-08, North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights and AAMA/WDMA/CSA-101/I.S.2/A440S1-09, Canadian Supplement to AAMA/WDMA/CSA- 101/I.S.2/A440-05, North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights - Figure A.1 Checklist for Selecting Performance Levels for Windows, Doors, and Unit Skylights, revised July 2009.

100% Submission: submit hard copy and electronic copy compatible with NMSEDIT PROFESSIONAL or MS Word or rtf and in PDF format (one NMS Professional spp or MS Word doc/docx or rtf and one pdf for whole spec) to the Departmental Representative for:

- Final Specification Title Sheet, List of Contents and all specification sections.

4.36 As-Built and Record Specifications

Submit paper copy and electronic copy compatible with NMSEDIT PROFESSIONAL or MS Word or rtf and in PDF format to the Departmental Representative of as-built and record specifications. (one NMS Professional spp or MS Word doc/docx or rtf and one pdf for whole spec)

4.37 Specification List of Contents Example

SPECIFICATIONS: Note that NMS Edit Professional or MS Word macros create the list of contents.

DIVISION	SECTION	..... NO. OF PAGES
DIVISION 01 - GENERAL REQUIREMENTS		
01 11 00	SUMMARY OF WORK.....	15
DIVISION 02...	**List all Sections and number of pages.**	
DIVISION 03...		
DIVISION 04...		
DIVISION 05...		

...continue to DIVISION 50 The List of Contents is generated automatically by NMS Professional or MS Word macros.

4.38 Quality Assurance/Quality Control and Non-Compliant Documents

Submissions of the project manual that do not comply with the RFP design and submission requirements including Appendix D - Doing Business with A&E Ontario Region Section 4 Specification Brief, and/or are not compliant to the current codes and standards may be subject to written complaints to the consultant's licensing and accreditation bodies such as the, OAA, AC (formerly RAIC), PEO, CIQS, AATO, OACETT, CSC - Construction Specifications Canada, consultant's liability insurance carrier, etc.

Consultants shall submit the names and qualifications of all specification writers in each discipline that have worked on the project, including the total number of hours each individual has charged to the project.

SECTION 6 RISK MANAGEMENT

The Consultant will provide the necessary information required by the Departmental Representative to create and update the Risk Management Plan throughout the project.

6.1 Definitions

Procurement Plan:
Formal submission for approval to enter into a contract and composed of a (1) cost estimate of the requirement (including cash allowances, and design, estimating and inflation allowances), (2) a contingency and, (3) an anticipated amendment amount.

Allowances:
Additional resources included in an estimate to cover the cost of known but undefined requirements for an individual activity, work item, account or sub account: design allowance, estimating allowance, inflation allowance and other allowances specifically identified are part of a cost estimate

Cash Allowances:
A specific amount to be used for specific work item or service.

- Cash Allowance Construction: additional resources included in an estimate to cover the cost of known but undefined requirements whose probability of occurrence is high. This allowance is specifically identified in a cost estimate.
- Cash Allowance Consultant: additional services included in an estimate to cover the cost of known but undefined requirements whose probability of occurrence is high. This allowance is specifically identified in a cost estimate.

Risk Allowance:
Anticipated monetary value of risk events, due to the complexity of the project, market conditions, competiveness, and timing of project; contingencies are likely to happen and do not form part of cost estimates.

Anticipated Amendments:
This is basically the pre-authorization of amending authority to a certain level. Individual contract amendments within this authority must still be approved by the appropriate level of contracting authority.

The total amount of the Anticipated Amendment to a project cost estimate is determined as the summation of the Expected Monetary Value of risk events reasonably expected to occur during the life cycle of a project.

Risk Management:
The art and science of identifying, analyzing, and responding to risk factors throughout the life of a project and in the best interests of its objectives. (PMBOK)

Risk Event:
A discrete occurrence that may effect the project for better or worse (i.e. late delivery of a piece of equipment is a “risk event” that may cause a schedule delay).

Probability:
The likelihood that an event will occur (i.e. Low, Medium, High).

Impact:
The result of the occurrence of an event on the project either positive or negative. (i.e. a schedule delay as a result of late delivery of a piece of equipment may have a high negative impact on a project; increased access to a construction site due to early departure of occupants in an office space may have a positive impact on a project).

The Impact of individual Risk Events can be qualified as low, medium, high or quantified in terms of time, cost (immediate cost or in-service cost (O&M)) or performance.

High risk*: A project (or element of a project) may be assessed as high risk if one or more hazards exist in a significant way and, unless mitigated, would result in probable failure to achieve project objectives.

Medium risk*: A project (or element of a project) may be assessed as medium risk if some hazards exist but have been mitigated to the point that allocated resources and focused risk management planning should prevent significant negative effect on the attainment of project objectives.

Low risk*: A project (or element of a project) should be assessed as low risk if hazards do not exist or have been reduced to the point where routine project management control should be capable of preventing any negative effect on the attainment of project objectives.

*per Treasury Board Secretariat Manuals Chapter 2-2 Project Management

EMV: Expected monetary value of risk event (i.e. cost or saving to the project if risk event occurs)

6.2 Risk Management Checklist

Probability, impact, overall risk, risk response and risk allowance are to be determined for each item listed below which is applicable to the project. Applicable items will be identified by the Departmental Representative.

Resources External to Project Management Team

- Planning Resources and Performance
  - errors and omissions
  - low accuracy of estimates (allowances)
  - data inadequacies
  - level of liability insurance
  - potential for misinterpretation / misunderstanding of documents
  - planning inexperience
- Construction Resources Required & Performance
  - level of liability insurance
  - design versus execution methods
  - suitability of execution methods to design
  - commissioning issues (start up / turnover difficulties)
  - contractor construction strategy
  - reputation of contractor
  - contractor financial stability
  - contractor inexperience
  - resources obtained less qualified than desired
  - availability / suitability / performance of resource

Project Scope Delivery

- Delivery of Specified Requirement
  - accuracy of client requirements in terms of cost/ schedule / performance / quality and ability to interface with existing environment
  - conflicting client priorities
  - low level of client knowledge
  - Y2K compliance
- Unstated Client Requirements
  - completeness of client requirements in terms of cost/ schedule / performance / quality and ability to interface with existing environment
  - restricted working conditions
  - opportunities for changes / positive impact
- Stakeholder Requirements, Stated and Unstated
  - low involvement of user groups in scope of definition
  - interface with existing systems
  - restricted working conditions
  - operational needs

Site / Asset / Building Actual Conditions

- Actual Physical Environment
  - availability / accuracy of as built documentation and existing condition reports
  - high variability / low stability of soils
  - potential for soil contamination
  - presence of hazardous materials
  - availability / access to site
  - presence of other contractors on site
  - climate (winter conditions, rain, wind, water levels)

Government / PWGSC / Client / Context

- Impact on Adjacent Areas Actual
  - impact on adjacent areas (land / tenants/ traffic / operations)
- Impact from External Sources
  - legal lawsuits, patent rights, licensing, etc.
  - political impacts including visibility of project
  - social sensibilities
  - potential strikes
  - market risks
  - bad press (media coverage)
- Impact from Unanticipated Regulatory Change
  - environmental legislation and environmental screening
  - potential changes to Acts, Codes and Regulations
  - municipal building / occupancy permit issues
- Procedures Known
  - suitability of tender documents
  - suitability of contracting method
  - delays in tendering process
  - client internal coordination
  - change order process

Plan Approval / Design Reviews

- approvals may be required from Client, PWGSC, Treasury Board, FHBRO, Fire Commissioner, Police, Emergency Services, Municipalities, Cities, etc.
  - absence of Investment Analysis
  - unstable / changing client organization
  - heritage building issues
  - health and safety issues
  - potential for “hold orders”
  - design review delays (client / PWGSC / TBS / other)
  - approval delays (client / PWGSC / TBS / other)

SECTION 8 STRUCTURAL DESIGN GENERAL REQUIREMENTS

8.1 General

All design criteria shall be in accordance with the current edition of the National Building Code of Canada, its supplements and the relevant Canadian Standards Association Standards. If local or municipal codes and by-laws are more stringent they shall take precedence.

For material properties (both physical and chemical), methods of fabrication, tests, etc. reference should be made to the latest editions of CSA the Canadian Standards Association Standards and CGSB the Canadian General Standards Board Specifications, give the standard number and date of the issue, etc.

8.2 Design

The Consultant shall discuss design loads with Public Works and Government Services Canada Structural Engineers before formulating his proposals.

The Consultant shall submit structural system proposals for consideration and review by Public Works and Government Services Canada. These proposals shall contain the following information:

- General description of the building.
- Design loads.
- Comparative cost analysis of several alternative structural systems, comprising superstructure and foundations.
- Recommended structural systems, compatible with the other systems proposed, i.e., architectural, mechanical, electrical, etc.

Prior to commencement of working drawings, the Consultant shall submit for consideration by Government Services the following data:

- Design and location of expansion joints with temperature ranges, etc. as assumed.
- Design criteria for basement and retaining wall.
- Methods of shoring for excavations.
- Provisions for interfacing for phased construction projects.
- Other relevant information as necessary.

Government Services Structural Engineers may require the submission of detailed analysis and design of any structural components, with sufficient time allowed for their review and approval before their inclusion on the drawings.

The Consultant shall submit at the completion of the design, a legible set of neatly bound notes with contents indexed. These notes shall provide the detailed analysis and design of all the significant aspects of the structure including the following.

- Design criteria and assumptions.
- Design live loads and dead loads throughout the structure, in adequate detail to permit the check of individual areas.
- Column, elevator core and footing design gravity loads throughout the building, including separation of dead loads, live loads and reduced live loads.
- Footing loads.
- Lateral forces and lateral forces analysis.
- Torsion analysis.
- Aspects of the design, other than those listed above, which Government Services or the Consultant would place in any especially important category.

8.3 Soils Investigation

A preliminary soils report will be prepared for PWGSC and copies will be made available as soon as they are ready. PWGSC will require the structural consultant to establish what additional soil testing information is required immediately after approval of the concept design. The consultant shall arrange for final soils investigator acceptable to the Department. The cost will be borne by the Department.

The soil consultant's recommendations, discussions, considerations, requirements and conclusions shall be submitted separately from soil data.

Drawings and diagrams forming part of soil data shall not exceed 216 mm x 279 mm in size or multiples thereof.

8.4 Live Loads

Floor areas to be used for General Office purposes, whether open-landscaped or divided by moveable partitions, shall be designed for a uniformly distributed live load of 3 kPa plus a uniformly distributed 1 kPa moveable partition allowance.

In the design of any floor slab, beams or girders, the 3 kPa uniformly distributed live load shall not be modified by reduction factors based on tributary area.

In the calculation of live loads on columns, no reduction factor for tributary area shall be applied to the uniformly distributed live load, for the top two office floors of multi-storey buildings.

Basement, main floor, corridors, assembly areas and fire refuge areas shall be designed for a uniformly distributed live load of 5 kPa.

Normal file registry areas shall be designed for a uniformly distributed live load of 5 kPa.

Mechanical equipment rooms and storage areas shall be designed for a minimum of 7.5 kPa.

For roof snow loading, Wind Exposure Factor shall be taken as 1.0.

8.5 Structural Drawings

Drawings shall be fully dimensioned. Weighted lines shall be employed and sections shall be cross-referenced, using the ”PWGSC CADD Standards”.

The following drawings shall be provided:
- Foundation plan.
- Floor and Roof Framing Plans.
- Column schedules containing the following information:
- Datums as noted on structural plans.
- Column loads at footings (dead and live).
- Column sizes.
- Vertical reinforcement, ties, dowels, etc.
- Baseplate and anchor bolt details.
- Size and footings.
- Live loads, partition, ceiling, floor finish and mechanical equipment allowances.
- Type of waterproofing and details to show effectiveness of same.
- General notes, including:

Design Codes used.
- Lateral forces.
- Allowable bearing pressures.

8.6 Testing and Inspection

A resident engineer (Departmental Representative) may be appointed and paid by PWGSC to ensure that the structure is built in accordance with Plans and Specifications and to maintain records of the blow counts for each pile (if applicable).

A testing company will be engaged and paid for by PWGSC for testing concrete, soils compaction, pile load tests (if applicable) and structural steel work (e.g. bolting, welding, etc.)

The structural consultant will be expected to make periodic visits to the site, as later agreed with the Departmental Representative.

8.7 As-Built and Record Information

In accordance with Section 1.

SECTION 9 MECHANICAL DESIGN

9.1 General

Read and understand the applicable General Conditions listed in Section 4.

This section stipulates the standards for design of building HVAC, fire protection, and plumbing systems.

Provide systems to meet the design requirement with least annual owning and operating cost.

Mechanical systems shall be compatible and co-ordinated with the architectural, structural, electrical and other project systems.

Systems and equipment shall be fail-safe consistent with required reliability of service.

Provide heating, ventilation and air conditioning systems that:

- Have the flexibility and capacity required to meet the requirements of intended use of space after the premises have been occupied.
- Have individual temperature controls and start/stop schedules for each room and each zone which have unique load variations and occupied hours.
- Have the capability of introduction of 100% outside air to permit flushing out the building, dilution of contaminants, and use of "free cooling" for energy conservation.

Provide plumbing systems in compliance with the National Plumbing Code and Ontario Plumbing Code.

Provide fire protection systems to meet the requirements of the Fire Commissioner of Canada Standards, the National Fire Code and Canada Labour Code.

9.2 Project Specifics

Refer to the Project Brief.

The Consultant shall review the operational requirements and applicable code requirements.

The Consultant shall develop alternative schemes with sufficient documentation to support the recommended systems and equipment for providing mechanical services to meet the requirements.

For office renovation projects, the Consultant shall review existing mechanical installation and documentation. Assess, evaluate, and make recommendations, for the upgrade of existing mechanical systems to accommodate new office layout.

9.3 System Applications

In accordance with project requirements, justify system selection and its design on the basis of performance, service and maintenance, and the total owning and operating cost.

Systems shall be capable of automatically maintaining space comfort conditions for all building load variations during the heating and cooling seasons.

Use outdoor air as free cooling source whenever economically feasible.

Avoid recirculation of exhaust air with outside air by properly locating intakes and outlets.

Use heat recovery systems for all air exhausted when such measures prove to be economical, as determined by life cycle costing.

9.4 Building Loads and Energy Estimates

Building load calculations and energy estimates shall be carried out using a computerized load and energy simulation program. This shall be a commercially available program and approved for use by PWGSC. Refer to Required Services (RS) sections for additional requirements.

The energy analysis program shall simulate all energy consumed in the building on a hourly basis for a full year.

The building energy analysis with input and output summaries shall be submitted with the concept design submission; revise and resubmitted with the design development submission and each of the 30%, 66%, and 99% construction document submissions. The updating shall reflect all the latest architectural and engineering changes to the project.

9.5 Energy Consumption Budget

Energy consumption budgets shall be established for all building projects.

Investigate and present for review a minimum of three viable and different concept options for each project. The options shall be evaluated based on building life cycle costs which will include initial capital cost plus annual energy operation and maintenance costs.

The analyses shall be based on annual energy consumptions and take into account climatic data, building architecture, clients' operational requirements and system and equipment data. Total energy consumed in the building shall be expressed in kWh per m^2.

Design HVAC systems to exceed Model National Energy Code of Canada for Building 2011.

9.6 Codes and Standards

In accordance with Section 1.

9.7 Federal Halocarbon Regulations (FHR 2003) and Environmental Protection Alternative Measures (EPAM)

All Consultants, Contractors and Subcontractors responsible for undertaking work related to equipment containing halocarbons are to be aware of the requirements prescribed under the Federal Halocarbon Regulations, 2003, and are to ensure compliance to the FHR 2003 as part of the EPAM.

9.8 Fire Protection Requirements

In addition to the National Building Code, Ontario Building Code, National Fire Code and NFPA Standards, fire protection is subject to the requirements of Fire Commissioner of Canada Standards issued by HRDC - Labour Program/Fire Protection for general storage, fire extinguishers and sprinkler systems.

Comply with the requirements of the Fire Commissioner of Canada. Fire protection systems are to be subject to the final inspection and test of the Fire Commissioner of Canada.

9.9 Plumbing Requirements

Provide complete plumbing systems including sanitary and storm drainage, domestic hot and cold water piping, and plumbing fixtures.

Where drinking fountains are provided, they shall be bi-level and shall provide drinking water at less than 13°C and shall be located no more than 30 m from any workstation on each and every floor.

Provide adequate supply of domestic hot water at constant temperature of 38°C to lavatories, showers and sinks.

Plumbing systems shall conform to the requirements of the National Plumbing Code 2010 and Ontario Plumbing Code 2010, whichever is the most stringent.

9.10 Heating, Ventilation, and Air Conditioning (HVAC) Requirements

Outside Design Criteria: Take outside design conditions from National Building Code and base on January 1% outdoor Winter design and July 2.5% outdoor Summer design temperatures.

9.11 Space Comfort Standards

General:

- The following comfort standards apply to air conditioning in general office type occupancy where sedentary adult activity may be expected. Requirements for other types of occupancy or for environments related to standards other than for human comfort to be as per latest published data in ASHRAE handbooks.
- Outdoor air ventilation rates shall be based on the latest edition of ASHRAE Standard 62.1-2013 "Ventilation for Acceptable Indoor Air Quality" unless special requirements or regulations dictate otherwise.
- Unless noted otherwise, conform to or exceed CSA Z204-94(R1999), "Guideline for Managing Indoor Air Quality in Office Buildings".

Temperatures:

- During occupied periods, and in the occupied zone, a minimum temperature of 21°C when heating, and a maximum of 24°C when cooling shall be maintained. The rate of change of dry bulb temperature is not to exceed 2°C per hour within the specified limited. The vertical temperature difference measured from 100 mm and 1700 mm above finished floor shall not exceed 3°C.
- The occupied zone is defined as the space volume between the floor and 1800 mm from the floor and more than 600 mm from walls or perimeter heating/cooling equipment.
- The average conductive heat loss at winter design temperature combining both glass and wall heat losses from zone exterior surfaces should not exceed 25 watts/m².
- Provide wall fin radiation heaters below all exterior windows in the building.
- Floor surface temperature: between 18°C and 29°C.

Relative Humidity:

- Maintain relative humidity between 30% (winter design) and 60% (summer design) at any point in an occupied zone.
- Rate of change or relative humidity at any point in the occupied zone is not to exceed 20% RH per hour within the above specified limits.

Filtration:

- All supply air (i.e. recirculated air plus outside air) shall pass through filters having ASHRAE minimum efficiency of MERV II or better.

Ventilation:

- Ventilation is defined as the supply of clean, odour and contaminant free air to a space in sufficient quantities to dilute and remove space generated air contaminants and odours and to maintain the occupant oxygen requirements.
- Generally, outside air is considered to be contaminant free air suitable for ventilation purposes. Outside air intakes shall not be located in the vicinity of loading dock or any high pollutant area. Exhaust air outlets shall be properly located to prevent entrainment in outside air intakes.
- Except for outdoor make-up air to replace exhaust air, ventilation requirements are related to people. A ventilation rate of 10.0 L/s of outside air per person is adequate for occupant comfort, provided sufficient total air is circulated in the space to dilute contaminants. The ventilation rate calculated on a per occupant basis is not to be less than 1.0 L/s/m² of gross zone floor area.
- Measurement of CO_2 concentration: Provide CO_2 sensor in the space or in the return air stream for monitoring CO_2 concentration. CO_2 sensor shall not be used by the air flow controls to reduce the outside air flow rate to below the minimum requirement of 10 L/s per person.

Air Circulation:

- Total primary air supply for general occupancy areas to be designed at not less than 4 L/s/m² of floor area or 6 air changes per hour.
- Total primary air supply to high occupant density areas, i.e. conference rooms, board rooms, high density workstation areas (high density occupancy is defined as a workstation with its foot print being less than 10m²), etc. to be designed at not less than 7.7 L/s/m² of floor area or 10 air changes per hour.
- Maintain air motion at velocities between 0.05 m/s and 0.15 m/s during Winter heating operation, and between 0.05 m/s and 0.23 m/s during Summer cooling operation in an occupied zone unless noted otherwise.

Acoustic Duct Liner:

- The air side of duct liner shall be coated with acrylic coating treated with anti-microbial agent to resist microbial growth.

As a minimum, office areas with regular density occupancy (the net occupiable space of each workstation is greater than 10 m²) shall have HVAC zoning as follows for individual zone temperature controls:

- Each private office.
- Maximum of 50 m² perimeter area with the same load profile along the same exposure. Perimeter area is defined as an area within 5 m of the outside wall.
- Maximum of 100 m² interior area with the same load profile.

Mechanical exhaust systems shall be provided to meet the following minimum requirements:

- Washroom or Janitor Closet: 10 L/s per m² of floor area; at least 25 L/s per sanitary fixture.
- Shower Room: 10 L/s per m² of floor area; at least 20 L/s per shower head.
- Enclosed Parking Garage: 7.5 L/s per m².
- Conform to current Canada Labour Code Part II.
- Make-up air for the above exhaust systems may be obtained from the adjacent corridors and offices.
- Provide dedicated exhaust systems for photocopier areas to maintain VOCs concentration not to exceed 3mg/ m³ , and exhaust directly to the outdoors.
- Provide a separate exhaust facility with individual speed control and ON/OFF switch for the lunch room.
- Maintain negative air pressures within the garage area in relation to surrounding building areas.

Mechanical system noise shall conform to the following Noise Criteria (NC) levels:

Conference, meeting rooms	25-35 NC
Teleconference rooms	25 NC max.
Private offices	25-35 NC
General open area offices	30-40 NC
Public area, corridors	40-45 NC

- Noises shall be free from annoying, recognizable characteristics such as rumble, hiss, tones, and variability of noise patterns.

9.12 Lan Room A/C

Provide continuous air conditioning to maintain temperature in LAN rooms and telecommunication rooms not to exceed 24°C at all times (24 hours/7 days per week).

9.13 TAB

Testing, adjusting and balancing of air distribution and hydronic systems performed by the Contractor shall be verified. The Consultant shall verify the results of not less than 20% of all reported measurements.

9.14 Building Automatic Control System Requirements

The networked Building Automation Systems (BAS) including the building Energy Monitoring and Control System (EMCS) shall be designed by a qualified control systems specialist recognized in this field.

As a minimum the drawings and specifications for the controlled systems shall include:
- An English language narrative sequence of operation.
- Mechanical control schematics.
- EMCS network architecture.
- DDC Input/Output Point Schedules in PWGSC format.

At the preliminary design briefing the Consultant shall obtain a copy of the current PWGSC Automatic Control System Master Specification Sections. The Consultant shall review and edit the PWGSC Automatic Control System Master Specifications.

9.15 Commissioning

PWGSC Commissioning Manager (or its representative) will overview all commissioning activities, review and approve all commissioning documents, overview Functional Performance Testing and O&M Training, and review the accuracy of all reported results. Commissioning shall be done to the approval of the PWGSC Commissioning Manager.

Unless noted otherwise, the Design Consultant shall have an overall responsibility for preparation of design intent and design criteria documents, preparation of Commissioning Specifications, preparation of commissioning plan, system startup verification form, functional performance test forms, review of shop drawings, inspection of construction, verification of commissioning testing including installation testing, equipment starting and testing, system starting and testing, review TAB reports, review and approval of "As built" drawings and O&M Manuals, preparation of Systems Operating Manual, Maintenance Manual, and preparation of Commissioning Report.

Refer to Required Services (RS 7) for the additional commissioning responsibilities and key commissioning activities of the Design Consultant.

9.16 Drawing Requirements

Refer to PWGSC CADD Standards.

Numbering, size, symbols, title blocks, etc.:

- Number sheets consecutively, commencing with the Plot or Site Dwg. as M-1. Show the mechanical subject in the appropriate title block space, e.g. "Plumbing and Drainage", "Heating", "Air Conditioning and Ventilation", "Sprinkler System", "Details", etc.
- Do not combine Plumbing and Heating on one drawing unless the size and simplicity of the project make this feasible.
- Mechanical drawings shall be the same size as the Architectural Final Working Drawings for the project. Generally, the required size of pre-printed sheets for Working Drawings will be determined by the Departmental Representative.
- Room and area reference on mechanical drawings must in all cases show the room designation as used on "Room Finish Schedule".
- Consolidate notes on the right-hand side of the sheet.

Scale and room identification:

- Scale: All drawings must be legible and must include sufficient information to permit accurate bidding and installation.
- When the scale of plans is 1:50 all branches of the mechanical work (plumbing, air-conditioning, heating, etc.) may be shown on one plan, provided that these systems are not too complex.
- When the scale of plans is 1:100 a separate set of floor plans shall be made for each branch of the mechanical work, except that heating and air conditioning may be shown on one set of plans.
- A scale of plans smaller than 1:100 shall not be used.
- All boiler rooms, machine rooms, equipment rooms, etc. and all congested areas shall be fully detailed on the plans, and sections with all equipment that might be involved in interferences shown, and drawn to a scale not smaller than 1:50.
- Identical floors: Where floors are identical architecturally, typical floor plans may be used for mechanical work only where the complete floor is identical and riser diagrams clearly show all changes involved. Typical plans are not allowed, i.e. no "similar wings", "right-or-left-handed".
- Room numbers: Show all room numbers on mechanical drawings to facilitate co-ordination and cross-reference with those shown on architectural and electrical drawings.

Drawing Requirements:

- Each set of drawings, namely, plumbing, heating, air conditioning, etc. must give scales, floor elevations and compass points, column grids, column numbers and titles. The elevation of the lowest floor shall be shown. Drawings shall show elevation of all main pipes and ducts.
- Piping riser diagrams and system flow diagrams shall be provided for all multi-storey buildings and shall include all piping sizes not clearly indicated on floor plans and details. Single line piping diagrams shall be provided to indicate connections to all system components, together with pipe size schedules where various sizes of units employ the same diagram. Flow diagrams shall show all equipment in true sequence showing piping, valves, control valves, strainers, pressure gauges, thermostats, etc. Identify equipment on these diagrams using nomenclature corresponding to that used in the appropriate equipment schedules.
- When using three or more similar pieces of equipment, all pertinent information as to size, capacity, etc. shall be shown in a schedule.
- Cross sections of mechanical rooms shall relate to the operator's view in mechanical room. Clearly diagram each system to show intent of system and method of operation and control.

Piping and Ducting Location:

- The piping and ducting shall be shown, as nearly as possible, in the location where it is to be actually installed. Conceal all piping, ducting and other services in ceilings, chases, shafts, furred out spaces or partitions, except in basement or storage areas not occupied by personnel.
- Piping of any description shall not be located in any space used as switchboard (switch-gear) or transformer room or electrical closet.
- As far as possible, no piping or ductwork shall be run above switchboards, motor control centres or surface mounted panelboards located in mechanical equipment rooms. Where piping for any service must run above such equipment, a drip pan shall be specified.
- Water and waste pipes shall not be located in exterior walls where there is danger and freezing.
- Pipes, ducts or other utilities shall not be embedded in the fireproofing of any column or other structural member or between the fireproofing and the structural member protected.

Pipe Sleeves: The structural or the architectural drawings must show the pipe sleeves for all pipes passing through footings of exterior walls below grade. The elevations of sleeves must be given.

Waterproofed Floors:

- Where floors are waterproofed, all pits, cleanout manholes, trenches, etc. shall be kept to a minimum, i.e. thicken slab to contain waste pipes under basement or in the case of large drains, consider waterproofed trenches.
- Drainage piping required in slabs subjected to hydrostatic pressure shall be co-ordinated with the structural design.

Checking of Drawings:

- Drawings must be checked for completeness, clarity, interferences with structural features and with electrical equipment, and agreement with the architectural drawings.
- A large part of the checking, particularly the interferences between the mechanical and electrical systems and the structural features, can be made during the preparation of the drawings.

"As Built" Drawings and Specifications: Specify that each mechanical subcontractor shall record, on one set of white prints all changes, alterations, as well as any additions as covered by authorized "Change Orders" at the same time approval is received from the prime Consultant. This shall include rerouted lines, located ducts, valves and equipment.

9.17 Specification Requirements

Specifications in accordance with Section 4.

At the 33% submission of working documents, provide outline specifications for all systems and principle system components and equipment. Provide the outline specifications with manufacturers literature about principal equipment and system components proposed for use in this project.

The specifications with table of contents shall consist of typed and edited PWGSC Ontario Region amended NMS and in house specification sections.

9.18 Design Submission Requirements

Design Concept Submission:

- Submit design criteria document. Provide the following information for each room in the building:
- User's function and requirements.
- Estimated maximum occupancy.
- Indoor summer design conditions.

- Indoor winter design conditions.
- Outdoor air supply ventilation rate per person.

For mechanical options, provide a description and the following information for each proposed option:
- An economic and technical explanation of the reason for the proposed mechanical systems.
- A copy of building energy analysis with input and output summaries.

Design Development Submission:
- Produce the preliminary designs based on the approved concept.
- Provide system flow diagrams and EMCS network architecture. Describe the mechanical systems, the components of each system, the operation of each system, and the updated energy analysis summaries.
- Provide a design intent brief that describes the mechanical systems conforming to the approved design criteria document.

Submissions of Construction Documents:
- The 33% submission shall include floor plans showing routing of major HVAC, plumbing and fire protection systems, piping riser diagrams and system flow diagrams, EMCS network architecture, outline mechanical specifications, and the updated energy analysis summaries.
- The 50% submission shall include the equivalent of 33% submission plus preliminary mechanical room layout drawings, mechanical control schematics, DDC Input/Output Point Schedules, equipment schedules, and mechanical specification sections, and the updated energy analysis summaries.
- The 66% submission shall include updated 33% submission plus mechanical room layout drawings, mechanical control schematics, DDC Input/Output Point Schedules, equipment schedules, and mechanical specification sections, and the updated energy analysis summaries.
- The 99% submission shall include: Plans and Specifications detailing the requirements for the construction. Updated design intent brief and design criteria document. Updated energy analysis summaries.

Refer to Required Services (RS) for additional requirements.

9.19 As-Built and Record Information

In accordance with Section 1.

SECTION 10B GENERAL ELECTRICAL DESIGN

10B.1 Design Basis

Base the electrical design on providing the following features at the most economical cost, considering both investment and operating expenditures:

- Safety to personnel during operation and maintenance.
- Ease of maintenance for equipment maintained by non-specialized personnel.
- Flexibility and reliability of electrical services.
- Proper co-ordination of all elements of the system as to:
- Insulation levels
- Interrupting capacities
- Protective relaying
- Mechanical strength
- Energy conservation with respect to system and equipment and their operation.

10B.2 Codes and Standards

In accordance with Section 1.

Electrical work to conform with the Canadian Electrical Code CSA C22.1-2012, Part 1, Ontario Electrical Safety Code 2012 and all bulletins, Canada Labour Code Parts IV and VI and applicable local codes and regulations.

Require CSA certification on equipment.

Specify applicable standards for equipment, i.e., EEMAC, CSA, ULC, ASTM, NFPA, ANSI, etc.

10B.3 Materials and Equipment

Require Canadian products where economically feasible. Avoid specifying trade names.

Specify that within 30 days after contract award, the Contractor submits for approval of the Departmental Representative, 5 complete lists of all materials and equipment that he intends to use in the Contract.

10B.4 Fees and Permits

Specify that the Contractor pay fees and obtain permits as required by authorities having jurisdiction.

10B.5 Nameplates

For major equipment specify plastic white on black sandwich type nameplates be attached with metal screws; letters to be minimum 10 mm high.

Use plastic nameplates (adhesive-applied) for receptacle and switch cover plates in laboratories and other work areas.

Provide the Contractor with co-ordinated nameplate titles.

10B.6 Poke Through Wiring

Electrical power to any floor area is to be supplied from electrical panels on that floor to avoid the use of "poke through" wiring.

10B.7 Incoming Electrical Services

Underground: generally, underground service is preferred and use where required to conform to local practice. Cable and installation should be to the approval of the local Power and Inspection Authorities. Provide spare ducts for future additions or maintenance.

Overhead: overhead service may be economically acceptable for small buildings.

Carry out economic analysis and submit:

- An analysis of the capital investment on equipment and long-term electrical energy cost for purchasing energy at utility voltage level against purchasing energy at higher voltage levels, taking into account energy losses in equipment such as service transformers.
- An estimate of the equipment and installation cost for the proposed electrical system.
- A calculation for the interest, at the current interest rate as furnished by Bank of Canada, on the difference in investment on alternative concepts of the electrical system.

Primary service equipment: Include protective devices, instrument transformers, metering equipment and other requirements of the local Supply Authority.

Well in advance discuss with the local PUC the size and type of service required. Obtain from the PUC the three phase symmetrical short circuit fault level at the incoming end of their service to determine the interrupting capacity of their service equipment.

Obtain from the local PUC data regarding point of connection, service characteristics and requirements, extent and cost of work provided by the Authority, type of service required (overhead or underground), whether a transformer vault is required and reasons therefore, and the best method of metering (primary or secondary, etc.).

Obtain approval from the local Supply Authority and Inspection Authority having jurisdiction for the proposed service entrance equipment, switchgear, duct-maintenance hole systems, transformers, overhead systems and associated equipment.

Existing services: obtain locations of all buried service such as electrical, telephone lines, water and sewer lines, gas mains, etc. Specify that the Contractor take adequate protective measures before any digging operations commence.

Duct systems: determine the size and location of incoming ducts for electricity, telephones, fire alarms, etc., and indicate them in the working documents.

10B.8 Transformer

Dry type transformers are preferred for primary voltages of 5 kV or lower where insulation, co-ordination and protection satisfactory to the Power Supply Authority can be obtained. Provide lightning arrestors.

Liquid cooled transformers are preferable above 5 kV although dry type may be used if approved by the Power Authority. Check BIL requirements.

Establish transformer noise levels which will not cause interference in working areas.

Specify standards to establish quality, tests and performance.

10B.9 Capacity of Electrical Service

Allow for 100% lighting load plus an appropriate demand factor on the remaining load based on operating characteristics.

The main service should provide for minimum 50% expansion.

10B.10 Transformer Vaults

Allow for future expansion.

Provide an independent ventilation system (gravity where possible) with intake and exhaust direct to the outside.

10B.11 Switchgear Assemblies

Use metal-enclosed assemblies with drawout circuit breakers where current, voltage and short circuit characteristics are within their limits.

Incorporate H.R.C. current limiting fuses into circuit breakers on circuits requiring high short circuit protection.

Provide a co-ordination study to justify selection of fuses and breakers.

Specify standards to establish quality, tests and performance.

10B.12 Distribution Levels

Submit for Departmental approval a study of load requirements taking into account the overall plan.

120/240 volt power may be required to serve specific items of equipment.

A 208Y/120 volt, three-phase, four-wire system for lighting, receptacles and power is usually satisfactory for smaller buildings.

From the load and type of building make an economic study to determine if the use of a 600/347 volt system is warranted.

10B.13 Panelboards

Use circuit breaker type panelboards for motors, power equipment and lighting.

Circuit breakers to be of the bolt-on type. Multipole breakers to have single handle. Tie-bars not allowed.

Switch and fuse units may be used for high short circuit protection.

Specify standards to establish quality, tests and performance.

Mains or bussing to be made of copper.

Specify that each circuit shall be clearly labeled in a typewritten directory with a clear plastic cover.

Branch circuit panelboards to be fitted with lock type doors.

Specify minimum interrupting capacity rating.

Include a minimum of 20% spare breakers, and in laboratory and workshop areas provide space for 30% more.

Recessed panelboards should have additional spare, empty conduits extending to ceiling spaces.

Comply with PWGSC Advisory Notice on Counterfeit-Labelled Moulded Case Circuit Breakers issued June 28, 2012.

10B.14 Wiring Methods

Specify that either rigid steel or aluminum conduit be used for panel feeders, for 600 volt equipment, and in other locations required by the Canadian Electrical Code and local regulations.

PVC or FRE conduit may be used for underground work. Conduit embedded in concrete must not be aluminum.

Electrical metallic tubing, EMT, may be used in locations approved by the Canadian Electrical Code and local regulations. Provide insulated green ground conductor in EMT conduits.

For motors and equipment subject to vibrations or movement provide flexible connections of liquid-tight flexible metal conduit.

Specify conduits to be installed neatly with adequate bracing and clearances from adjacent equipment, and maintaining watertight penetration of walls and floors.

Wire size to be No. 12 AWG minimum for power or lighting circuits. Minimum conduit size for power and lighting circuits shall be 20 mm dia.

Conductors to be copper.

Conceal conduit and wiring in finished areas.

Permanent tags should be provided to feeders at pull and junction boxes.

10B.15 Ceiling Distribution System

Power System:

- Provide an electrical distribution system above the suspended T-bar ceiling with duplex receptacles to accommodate downfeed service poles. A minimum of (4) four duplex receptacles shall be spaced at 3.5 m (maximum) center to center, both ways. Connect no more than six (6) receptacles to a 15A circuit.
- Identify each receptacle with the panel and circuit number on red dymo tape.
- Receptacle boxes shall be securely fastened to the slab above and must not be installed more than 600 mm above T-bar ceiling.
- An insulated ground wire shall be installed in each conduit and grounded to the common panel ground.
- Where electrified screens are installed, provide a power distribution system in the ceiling space complete with junction boxes to Code requirement, one for each 40 square meter area with 208/120V, 3 Ph, 8 wire 4 circuit system in each box.

10B.16 Equipment Connections

Indicate on the working drawings wiring for motors, control equipment and other electrical equipment installed under other Divisions. Do not include low voltage (below 50 volts) wiring.

Extend wiring to equipment furnished by the Department.

10B.17 Switches and Receptacles

Switches for lighting to be specification grade AC rated 15/20 ampere, 120/347 volts, ganged where possible and mounted at maximum 1200 mm centre from finished floor.

Receptacles to be specification grade U-ground type, triple wiping contacts, rated 15 A, 125 volt, mounted minimum 400 mm above finished floor.

In lunch room provide above the counter two 15 A, 125 V duplex receptacles; each to be split wired and with a pilot light and switch.

In laboratory and shop areas:

- In areas where benches or counter tops may be located receptacles not part of the furniture should be mounted 1.0 m above the floor and spaced 1.5 m apart.
- Use a minimum of one 30 A, 240 volt receptacle per laboratory.
- Connect not more than 2 duplex receptacles to a circuit for bench receptacles.

Ratings of other receptacles as indicated or required.

10B.18 Corrosion Resistant Finishes

Cover plates, surface-mounted outlet boxes, etc, located in areas where corrosive materials may be used must have suitable corrosion resistance. In laboratories, ensure that finishes on electrical equipment cover plates and surface mounted outlet boxes match the finishes on mechanical fittings.

10B.19 Motor

Co-ordinate control sequences to provide starters and other auxiliary control equipment with the proper characteristics and features to obtain the performance intended.

Provide disconnect switches, starters and auxiliary control equipment which are not an integral part of packaged units described in equipment specifications but which are required for performance and sequence of operation of equipment specified under other Divisions.

Motors 400 W and over are to be three-phase.

Check that the voltage drop due to motor starting is within limits acceptable to the local utility. If required, use a reduced- voltage starter.

Provide motors with thermal-overload protection of the manual reset type. Built-in overloads in the motor are not acceptable. Specify that protection be co-ordinated with motor characteristics.

Single phase motors to be controlled by manual starters and not by tumbler switches.
Motor starters are not to be supplied from lighting panelboards if at all possible.

Automatic-control devices such as thermostats, floats or pressure switches may control the starting and stopping of motors directly, if designed and rated for that purpose, otherwise use a magnetic starter.

When a manual-automatic operation is required, use a "Manual-off-Automatic" selector switch. Connect the selector switch so that only the normal automatic regulating control devices will be bypassed when the switch is in manual position. Connect safety control devices, such as low or high pressure cutouts, high temperature cutouts, motor overload, etc, in the control circuit in both the Manual and Automatic positions of the selector switch.

For three-phase motor starters provide:
- Magnetically operated motor starter.
- Fused control transformer for all 110 volt control.
- Manual-off-Automatic selector switch where remote control is used.
- Preferred: combination starters. Acceptable: starters with separate disconnect devices.
- Motor starter disconnecting devices to be manually operated and to be load-break fused switches or air circuit breakers.

Control devices in individual special purpose enclosures should be mounted in groups.

Co-ordinate all motor controls with the Mechanical Consultant.

10B.20 Motor Control Centres

Use motor control centers where they provide an economical and practical grouping of controls. Centres should be free-standing structures. Use combination starters. Mount centres on continuous mounting channels on raised concrete pads. Wall mount type may be used for groups of up to four starters. Identify each circuit by a black laminated plastic nameplate with white letters. Specify control centres as per EEMAC Standard for class and type.

10B.21 Motor Equipment Feeders

In open equipment areas consider the advantages of running motor equipment feeders from overhead rather than up through floor slabs.

10B.22 Underfloor Ducts or Raised Floors

Underfloor duct or raised floor systems for power, telephones and intercom may be used in office areas, but not in laboratory areas. Submit a cost estimate and preliminary layout at Concept Stage Submission, if considered feasible.

10B.23 Telecommunication Systems

Provide an empty conduit system for voice and data communication systems directly from the main building communications room or the building communications riser room on the same floor to the communications room in the tenant space to suit.

Where plenum cable system is provided for voice and data communication systems in the ceiling space, ensure that these cables are properly supported from the structural ceiling slab and not laid on top of ceiling tiles.

Where required for security and/or physical protection purposes, provide an empty zone conduit system for telephone and data communication systems with each zone conduit serving a bay area of maximum 50

m². Provide 50 mm EMT conduits with plastic end bushings and nylon pull strings. Provide long radius 90a bends and pulling points as required by telecommunication systems companies.

10B.24 Intercommunication Systems

Provide an intercom system or empty conduit system only for an intercom system. Submit proposed layout at the Design Stage Submission.

10B.25 Elevators

Conform to the National Building Code, Canada Labour Code Part IV, local regulations, ASME A17.1-2010/CAN/CSA-B44-10 Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks and CAN/CSA-B651-04(R2010), Accessible Design for the Built Environment or CAN/CSA-B355-09, Lifts for Persons with Physical Disabilities.

Provide elevators, dumbwaiters, and escalators only where they can be justified as functional requirements of the building.

Where groups of units are involved, submit an elevator analysis to indicate the performance of the system proposed.

Direct plunger hydraulic elevators may be used for elevators serving 2 or 3 stops provided ground conditions do not introduce serious difficulties in installing the cylinder.

Provide fire fighters service if required by the codes.

10B.26 Clocks

Provide manual reset clocks and clock outlets in strategic areas such as main lobbies, corridors, general offices and conference rooms. Use an automatically supervised clock system in large buildings where economically justified.

10B.27 Fire Alarm System

General: Depending on the size of the building provide a fire alarm system in accordance with the National Building Code and Treasury Board Personnel Management Manual, Occupational Safety and Health, Chapter 3-4, "Standards for Fire Alarm Systems". Installation to CAN/ULC-S524-06. Verification of Alarm System to CAN/ULC-S537-04. Inspection and Testing of Alarm System to CAN/ULC-S536-04.

Fire alarm system to be multiplex or hardwired to suit the project. Submit cost comparison with preliminary layout at concept stage submission.

10B.28 Voice Communication System

Conform to requirements of the National Building Code and the Treasury Board Manual, Personnel Management Manual, Occupational Safety and Health, Chapter 3-4, “Standards for Fire Alarm Systems, 01-02-92. Depending on the size of the building, provide a voice communication system in conjunction with the fire alarm system.

The design, inspection and testing is to be subject to the approval of the FC.

10B.29 Standby Power

If a standby electrical generating set is required provide specific requirements here.

Provide a standby electrical generating set to supply emergency power for 12 hours minimum.

Emergency power supply shall be in accordance with CAN/CSA-C282-09, Emergency Electrical Power Supply for Buildings.

Enclose generator room with non-combustible materials having a 2 hour fire rating and by Underwriters Laboratories labeled 1-1/2 hour fire rated doors.

Install diesel engine in accordance with the requirements of the NFPA 37-2010.

Fuel supply and piping system is to be in accordance with National Fire Code of Canada, NFC 2010.

Standby lighting, power panels and circuits shall be provided for future connection to standby generator even if generator is not required at the design stage.

Receptacles connected to emergency system to be colour coded red for ready identification.

10B.30 Lighting General

Lighting systems to be designed to provide the required illumination levels with ease of luminaire relocation, lighting control and lighting maintenance with no damage occurring to components. Refer to PWGSC Office Lighting Design Standard & Application Guidelines, April 2012, for detailed information not contained in this section.

Ceiling surfaces to have a 80% minimum reflectance, a minimum NRC rating of 0.8 as per ASTM C423-09a test standard titled Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

Leave a minimum ceiling depth of 220 mm for ceiling recessed luminaire installation, unless otherwise determined by PWGSC.

Submit co-ordination drawings showing worst cases of ceiling space requirements and clearances for structural, mechanical and electrical components.

Provide exterior security lighting for drives, walks, parking areas, entrance/exit doors and other strategic locations. Exterior lighting to be controlled by timer or photocell. Provide manual by-pass switches.

Provide the Department with detail calculations of light intensities to support the design.

10B.31 Lighting Levels

For each room or area determine the task performed and provide minimum maintained average illumination levels to meet Labour Canada Regulations and PWGSC Standard, IESNA recommended lighting levels and Tables 1 and 2 attached at the bottom of this section. These levels may be achieved by using non-uniform task ambient lighting layouts.

In cases where visual task description, furniture layout and office layout is unavailable, a minimum base illumination level of 750 lux average maintained over the entire work space is to be used.

Minimum to average illumination ratio to be 0.8 or better over the entire working area. Provide local switching for enclosed rooms, e.g., private offices, conference rooms, training rooms, etc. For large areas provide local switching arrangements to conveniently control and conserve energy.

10B.32 Lighting Power Allowances

Conform to ANSI/ASHRAE 90.1-2010(SI) requirements.

While individual areas may deviate from the ANSI/ASHRAE recommended values, the total power budget for lighting shall not exceed 22 watts per square metre, unless otherwise determined by PWGSC.

10B.33 Energy Consumption

Conform to ANSI/ASHRAE 90.1-2010(SI) requirements.

10B.34 Luminaires

Fluorescent luminaires is preferred for indoor applications. Depending on the luminaire design, these luminaires shall be capable of accommodating up to 76 mm high metal louvres. The use of incandescent luminaires is limited to applications where questions of aesthetics, ultraviolet emission and lighting control requires it. Use compact fluorescent lamps where possible.

The use of HID luminaires is limited to support and utility spaces. Special dispensation of this use limitation can be obtained from the PWGSC Regional Electrical Engineer, provided the requirements of PWGSC requirements are met.

For outdoor applications the use of HID luminaires is preferred. See PWGSC Office Lighting Design Standard & Application Guidelines, April 2012.

Illustrate all fixtures on the working drawings or standard details sheets and specify in detail the quality of material, construction and standard of performance required. Manufacturer's name and catalogue numbers are not allowed in contract documents.

Specify fluorescent luminaires either 300 mm or 500 mm width to suit ceiling modules for recessed installation.

10B.35 Ballasts

For fluorescent fixtures, use electronic type, rapid start, energy efficient, high power factor, with THD not exceeding 15, and sound rated A ballasts, having low current crest factor (less than 1.8) and wired to maximize energy efficiency. Electronic ballasts must be the type approved by PWGSC, Provincial and local Hydro authorities for energy efficiency and harmonic criteria.

HID's ballasts to meet or exceed the performance requirements of ANSI C82.4-2002, and to be suitable for the lamp and temperature specified.

10B.36 Lamps

Provide lamps of the best quality available. Generally, fluorescent lamps to be rapid start, 32 watts T8 3500 K. Incandescent lamps are to be for 130 volt operation. Specify initial and average lumens and rated life.

Specify 3500 K fluorescent lamps for new installations and major renovations.

10B.37 Lighting Controls

Manual controls:

- These may be line switches, low voltage switches, time switches, photocontrols and contactors. They should be located to maximize convenience and load control.
- Circuit breakers and light contactors are not to be used as localized manual lighting controls.

Microprocessor lighting controls:

- May be operated from a central master control unit, have field distributed control panels for zone control and local "on-off" controls. Programming functions can be assigned from the main console unit and/or assigned from field control panels. Local control can be achieved via a wall switch or telephone line.

10B.38 Emergency Lighting

Provide sufficient emergency lighting to permit a safe evacuation. Emergency lighting systems must be installed in accordance with Canada Labour Code Part IV and PWGSC Office Lighting Design Standard & Application Guidelines, April 2012.

Emergency battery lighting units must be performance certified by CSA as meeting CSA C22.2 No. 141-10, Emergency Lighting Equipment.

10B.39 Exit Signs

Exit and paths of exit travel are to be indicated by electrically illuminated full panel bilingual exit signs. Size of lettering to meet the National Building local Fire Department and CAN/CSA-C860-11 requirements and photoluminescent exit signs to CAN/ULC-S572-10 Performance of Internally Lighted Exit Signs requirements. Connect electrified Exit Signs to emergency power system.

If there is no provision for a standby generator, connect to emergency battery units.

10B.40 Heating

Co-ordinate heating with mechanical and architectural design. If electrical heating is used, ensure that the heating units specified provide the required wattage but do not exceed specified values. Integrate the heating controls with the total environmental aspect of the building.

10B.41 Transient Voltage Surge Suppressors (TVSS)

TVSS is to be fully applicable for the purpose of protecting all facility AC electrical circuits from the hazardous effects of transient voltages. These transients may be generated externally by lightning induced energies, utility load factor corrections, and substation switching or they can be internally generated due to inductive and/or capacitive load switching.

10B.42 Lightning Protection

Determine the necessity of installing lightning protection. If required, provide protection to meet CAN/CSA-B72-M87(R2008), latest provincial Lightning Rods Act, provincial or local regulation, the requirements of Provincial Fire Marshal.

10B.43 Security System

Provide an alarm system against unauthorized entry of the premises and certain secure areas. Use door switches and alarms plus an electronic intrusion alarm system.

10B.44 Lighting Levels

Table 1 - Recommended Levels of Illumination (Interior).

TABLE 1

Illumination levels for interior office spaces, expressed as minimum acceptable values of maintained average horizontal lux levels over
a) the working plane at each work station and
b) at floor level for support spaces. Refer to IESNA Illuminance Surveying techniques for field measurements.

Description of Task	Illumination (lx) 10 lx = 1 dalx
High Contrast Visual Task (4) (7)	600
Low Contrast Visual Task (5) (7)	1,000
VDT use (3)	300-500 (1)(2)
Filing work (6)	300
Circulation areas immediate to task areas	200
Public spaces, lounges, waiting areas	100-200
Notice Boards	300
Conference, training rooms	300-600 (1)
Corridors	100
Cafeteria - dining (9)	75
Cafeteria - food display, serving, cashier (9)	300
Food preparation (9)	500
Washrooms (8)	200
Powder room - grooming (8)	300
Stairways	100

Note
(1) Provide flexible and/or dimmable lighting levels.
(2) VDT task in conjunction with paper oriented task requiring greater illumination will conform to the requirements of the latter.
(3) For guidance in lighting design for VDT spaces see publication PWGSC Design Guide "Office Lighting for Video Display Terminals".
(4) Typically found in private offices, clerical work and accounting offices.
(5) Typically found in drafting offices, mapping and artwork offices.
(6) Typically visual tasks of high contrast and large size, or tasks of intermittent visual nature.
(7) For general office spaces with undetermined task use 750 lux and a minimum to average ratio of 0.8. and is the actual sink top.
(8) The reference plane is the actual sink top.
(9) The reference plane is the actual table top, counter top or serving surface.

10B.45 Lighting Levels

Table 2 - Recommended Levels of Illumination (Exterior).

TABLE 2

Illumination levels for exterior commercial office building spaces, expressed as minimum acceptable values of maintained average horizontal lux levels over usable area and at pavement level. Refer to IESNA Illuminance Survey techniques for field measurements.

Description of Task	Illumination Level (lux) (1)	Uniformity Ratio
OPEN PARKING		
Vehicular traffic low activity	10	4:1
Vehicular traffic, moderate-high activity	20	4:1
Vehicular intersections	30	3:1
Pedestrian walkways	10	N/A
Pedestrian walkways and vehicular intersection	30	3:1
Other area	10	N/A
COVERED PARKING		
General parking and pedestrian areas	50	4:1
Ramps and corners	100	3:1
Entrance area (Note 2)	500	N/A
BUILDING FLOODLIGHTING		
Building façade (vertical illumination)	100-300	4:1

Note
1. Provide photocell control with manual bypass.

2. The entrance area is defined as the portal or physical entrance to the covered portion of the parking structure and 15 m beyond the edge of the covering into the structure.

10B.46 As-Built and Record Information

In accordance with Section 1.

SECTION 11 CONSTRUCTION COST PLANNING AND CONTROL

11.1 Agreement Requirements

The Consultant Agreement requires the Consultant to monitor the project construction cost from commencement of his work through to post- construction evaluation of the completed project.

11.2 Cost Plan

The project cost plan is an application of cost criteria to the design, establishing a reasonable economic relationship between cost, quality, utility and appearance. It confirms the feasibility of producing the required accommodation within the construction cost limit, and provides a means of subsequent checking and control of overall expenditure.

The Cost Plan defines a certain amount of money for a certain quality of project in relation to the Basic Requirements.

11.3 Cost Control

Provide cost control services during the design and construction documents development and during Bid period and initiate corrective action to ensure that the estimated project construction cost remains within the approved construction cost limit/budget.

Advise the Departmental Representative immediately if changes are required due to revised client requirements, etc. impact the Construction Cost Limit. Do not proceed with these changes until authorized by the Departmental Representative.

11.4 Classes of Estimates - Definitions

CLASSES OF CONSTRUCTION COST ESTIMATES USED BY PWGSC

A- PWGSC and Treasury Board

In its dealings with Treasury Board on matters of project approvals, PWGSC uses two classes of estimates: indicative and substantive. The indicative estimate is the first one that is used (chronology-wise) and serves as the basis of Preliminary Project Approval by the Treasury Board. This estimate is also referred, within PWGSC, as a class “D” estimate. The substantive estimate is the second one that is used (again, chronology-wise) and serves as the basis of Effective Project Approval by the Treasury Board. This estimate is also referred, within PWGSC, as a class “B” estimate.

B- PWGSC and Consultant Agreements (for architects and engineers)

In its dealings with architects and engineers, PWGSC uses four classes of estimates: classes “D”, “C”, “B” and “A”. The Class “D” estimate is the first one that is used (chronology wise) and serves as the basis of the Construction Cost Estimate upon which an agreement between PWGSC and an architectural/engineering (A&E) consulting firm is entered into. The class “D” estimate is prepared by PWGSC and is used by the A&E firm during its performance of the ‘Analysis of the Project Brief’. (This estimate compares to the indicative estimate). The Class “C” estimate is prepared by the firm as part of the ‘Design Concept’. The Class “B” estimate is prepared by the firm as part of the ‘Design Development’. (This estimate compares to the substantive estimate).

The Class “A” estimate is prepared by the firm as part of the ‘Construction Documents, Pre-Bid Construction Cost Estimate and Project Schedule’. Definitions of classes “D”, “C”, “B” and “A” are as follows.

DESCRIPTION OF THE CLASSES OF ESTIMATES USED BY PWGSC FOR CONSTRUCTION COSTING OF BUILDINGS PROJECTS

Class “D” Estimate

This estimate provides an indication of the total cost of the project, based on the user’s functional requirements to the degree known at the time. It is based on historical cost data for similar work, suitably adjusted for such factors as: effect of inflation, location, risk, quality, size, and time. All related factors affecting cost are considered to the extent possible. Such an estimate is strictly an indication (rough order of magnitude) of the project total cost and completion date. This estimate is used to establish the indicative estimate required by the Treasury Board for Preliminary Project Approval. Expected degree of accuracy: 20%.

Class “C” Estimate

This estimate is prepared at the end of the Design Concept stage and is based on updated user requirements, general description of the end built works, preliminary site information and existing conditions, production, and takes into consideration construction experience and market conditions as well as basic implementation logistics. It includes costs for design, documentation, and construction supervision. Expected degree of accuracy: 15%.

Class “B” Estimate

This estimate is prepared at the end of Preliminary Design and is based upon data (on cost, time and construction) of a level of precision as is typically available when the design of the major systems and sub-systems of the facility (including outline specifications and preliminary drawings and models), as well as when the results of all site or installation investigations are completed. This estimate also makes allowance for all costs resulting from the anticipated schedule, expected market conditions and suitable level of contingencies. This estimate is used to establish the substantive estimate required by Treasury Board for Effective Project Approval. Expected degree of accuracy: 10%.

Class “A” Estimate

This estimate is based on the “B” estimate which has been updated concurrently with the development of Construction Documents and is submitted as a final pre-bid estimate. It requires that project systems be designed and specified to near completion, and is based on a realistic construction schedule and accurate labour and material costs. This is the final estimate before bid call or construction start. Typically, the total forecast is presented in elemental format and includes all actual associated fees and costs. Expected degree of accuracy: 5%.

The Cost Plan must be within the authorized budget. Intermediate and Final Estimates should remain within the Cost Plan, unless (changes due to revised client requirements, etc., are authorized by the Department. Advise the Department immediately if such changes occur.

11.5 Construction Cost Estimate Submissions

Provide the following Construction Cost Estimate Submissions:

- A Class "C" Estimate with each Design Concept Submission. The Consultant will also submit Class 'C' estimate for various options thus facilitating Departmental Representative's decision re: selecting the best options. The Consultant's submission will include variance analysis between the construction cost limit and Consultant's Class 'C' estimate with justification/substantiation of variances.
- A Class "B" Estimate with the Design Development and Outline Specifications of Design Systems Submission. The Consultant's submission will include variance analysis between the construction cost limit and Consultant's Class 'C' estimate with justification/substantiation of variances.
- An updated Class "B" Estimate with each submission of the updated Construction Documents at each stage of production specified, i.e. at 66% completion. Each submission will include variance analysis.
- A Class "A" Estimate with the 100% complete stage Construction Document.
- Each Class "C" Estimate shall consist of a completed Elemental Cost Analysis Form.
- Each Class "A" or "B" Estimate submission shall comprise of a completed Elemental Cost Analysis Form and the back-up sheets showing each Sub-Element Item of the work quantified and priced.

11.6 Cost Advice

Provide cost advice, during the design stage, between cost estimate submissions. Evaluate cost of various options, as required, to facilitate Department's decision.

Provide cost advice during the construction stage. Prepare cost estimates for every change based on Contemplated Change Notice and submit to Departmental Representatives. This will assist in deciding on whether to proceed with a change or to assess Contractor's quotation. Evaluate Contractor's quotation and recommend for approval by Departmental Representatives.

11.7 Cost Estimating Specialist

A Cost Consultant, employing Quantity Surveyors, shall provide the cost planning and estimating service for this project.
or
On staff or sub-consultant Quantity Surveyors or other Cost Estimating Specialists shall be used to perform the cost planning service for this project.

Provide details of the Cost Estimating Specialist's qualifications and experience for approval.

11.8 Cost Plan - Definition

The Cost Plan is the construction cost estimate approved for funding for this project. This is the Class "B" Estimate that is prepared from the Preliminary Drawings and Outline of Design Systems.

The Cost Plan defines a certain amount of money for a certain quality of building in relation to the Basic Floor Area Requirements.

11.9 Classes of Estimates - Definitions

- Classes of Estimates are defined as follows:
- Class "D" Estimate: a cost estimate based upon unit costs derived from another building of similar type.
- Class "C" Estimate: a cost estimate based upon concept drawings, which represent one possible solution to the design of the project.
- Class "B" Estimate: a cost estimate based upon design development documents and an outline of design systems, or, 25%, 66%, to 95% complete Construction documents.
- Class "A" Estimate: a cost estimate based upon 100% complete construction documents, or, bid documents.

The Cost Plan must be within the authorized budget. Intermediate and Final Estimates should remain within the Cost Plan, unless (changes due to revised client requirements, etc., are authorized by the Department. Advise the Department immediately such changes occur.

11.10 Project Cost Analysis Form

Submit costing information on the standard Analysis Form Project Cost Analysis form (see Sample). Include as much detail as possible, including back-up sheets showing each Sub-Element Item of the work quantified and priced.

11.11 Outside Gross Area and Volume Measurement

To be measured in accordance with publication by the Canadian Institute of Quantity Surveyors "Measurement of Buildings by Area and Volume".

11.12 Construction Elements

The following clauses provide a brief explanation of the construction elements listed in the Project Cost form Elemental Analysis.

11.13 Element No. A1 Substructure

A11 Normal foundations: foundation walls, footings and associated items, below lowest floor level.

A12 Basement: excavation and backfill.

A13 Special foundations: foundation items of a costly or abnormal nature that are customarily kept separate from Elements 1.1 and 1.2. These include: dewatering, underpinning; shoring; sheet piling; caissons; waterproofing; extra cost for rock excavation.

11.14 Element No. A2 Structure

A21 Lowest floor: lowest structural floor construction, including supporting beds and layers.

A22 Upper floor: upper floor construction, including columns.

A23 Roof: structural roof construction, including columns.

11.15 Element No. A3 Exterior Cladding

A31 Walls below ground floor: exterior walls, from top of the normal foundations level to ground floor level. Basement walls may be taken down to footings, provided that this dimension is not more than 300 mm. below basement floor level.

A32 Walls above ground floor: exterior walls, from ground floor level to roof level. Include opening forming items. Parapet walls may be included, when materials are similar.

A33 Windows: windows and associated items, installed into openings in exterior walls.

A34 Roof covering: weatherproof roof finish and other items applied to roof structure, including parapets.

Exterior doors and screens: exterior doors, frames, hardware and associated items, together with glazed screens at entrances, installed into openings in exterior walls.

A35 Projections and recessed: items of work resulting from projections to, or recesses from, the general line of the exterior wall face. Typical items include: projecting balconies in their entirety; additional items resulting from recess balconies; canopies attached to the building; sunshades; soffits and framing to building overhangs; soffits, fascias and associated framing; eavestroughs and downpipes.

11.16 Element No. B1 Interior Partitions and Doors

B11 Permanent partitions: internal permanent walls and partitions, and the framing component of framed partitions. Include opening forming items.

Glazed partitions: interior glazed partitions and screens, including doors and frames of similar materials.

B12 Movable partitions: interior movable partitions, including doors and frames of similar materials and the same proprietary make.

B12 Interior doors: interior doors, frames, hardware and associated items, installed into openings in interior walls and partitions.

11.17 Element No. B2 Interior Finishes

B21 Floor finishes: floor finishes, other items and sleepers, applied on floor structures, in an interior space.
B22 Ceiling finishes: ceiling finishes, other items strapping and framing, applied to underside of, or beneath, structures, over an interior space.

B23 Wall finishes: wall finishes, other items and strapping, applied to exterior walls, interior walls, partitions or partition framing, in an interior space.

11.18 Element No. B3 Fittings and Equipment

B31 Fittings and fixtures: built in items of a general nature. These include: miscellaneous metal items; cabinet work; chalkboards; tackboards; toilet partitions; washroom accessories; directories; lockers; shelving; rolling shutters; loading dock devices.

B32 Equipment: built in items to provide a specialized service. These include: kitchen and cafeteria; laboratory; hospital; gymnasium; cranes and hoists.

B33 Elevators and escalators: elevators and B34 escalators and other similar devices to move people and materials within a building.

11.19 Element No. C1 Mechanical

C11 Plumbing and drainage: service systems to supply, heat, condition, distribute, use, collect and discharge water.

C12 Fire protection: service systems to provide built-in fire protection.

C13 Heating: service systems to provide heating for the building.

C13 Ventilating and air conditioning: service systems to supply, condition, distribute, ventilate and exhaust air.

C13 Refrigeration: service systems to provide refrigeration.

C13 Special equipment and piping: specialized service systems. These include: vacuum; compressed air; medical gases; fuel storage and supply; engine exhaust; central lubrication equipment; central liquid soap dispensing.

C14 Building controls: provision of controls to other service systems.

Mechanical overhead and profit: Mechanical Subcontractors's overhead and profit items, which include applicable General Conditions items.

11.20 Element No. C2 Electrical

C21 Service systems provided by the Electrical Subtrade, for a building.

C21 Electric power: service systems to generate, supply, distribute and ground electric power.

C21 Uninterrupted power: service systems to provide an uninterrupted supply of electrical power.

C22 Electric lighting: service systems to provide electric lighting.

C22 Electric heating: service systems to provide electric heating for the building.

C23 Fire alarm: service systems to provide fire detection and alarm.

C23 Communications: service systems to provide for sound, imaging and data communication by electronic means.

Electrical overhead and profit: Electrical Subcontractor's overhead and profit items, which include applicable General Condition items.

11.21 Element No. D1 Site Development

D11 Site work: development of the site, outside the building footprint area, of an Architectural or Structural nature.

D12 Mechanical site services: service systems of a Mechanical Subtrade type, including associated items, to the site, and up to one metre from the building perimeter.

D13 Electrical site services: service systems provided by the Electrical Subtrade, including associated items, to the site, and up to the exterior surface of the building.

11.22 Element No. D2 Ancillary Work

D21 Demolition: demolition of existing buildings on site to make way for new construction work.

D22 Alterations: alterations to an existing building, which will become part of, or all of, the new facility.

11.23 Element No. Z1 Overhead and Profit

Z11/Z12 General Contractor's overhead and profit items, which include General Condition items.

11.24 Element No. Z2 Contingencies

Z21 Design development contingency: an allowance to provide for changes to, and development of, the project design, from the date of the estimate to the 100% complete working drawings and specifications stage. This contingency does not include for a basic and substantial change to the project initiated by the building owner.

Z22 Escalation contingency: an allowance to provide for forecasted variation in cost due to passing of time, from the date of the estimate to the anticipated bid date.

Z23 Escalation-during Construction: Once the Contract is signed, no escalation is applied.

Z24 Permits/Approvals: Municipal Building Permit; TSSA approval; HVAC permit, etc.

Z25 Construction Contingency-during construction. Department's allowance to cover unforeseen conditions and changes occurring during construction.

Z26 LEED Gold: 12% of Construction cost.

11.25 Contact

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SECTION 12 ELEMENTAL COST ANALYSIS

Project Name: _____

_____

_____

Project Number: _____ Region: _____

Project Manager: _____

Consultants - Architectural: _____

Structural: _____

Mechanical: _____

Electrical: _____

Cost: _____

Design Stage Submission: _____

Class of Estimate: _____

Date of Cost Estimate Submission: _____

Basic Floor Area Requirements: _____

Gross Floor Area of New Construction: _____

Gross Floor Area of Renovations: _____

Project:	**PUBLIC WORKS AND GOVERNMENT SERVICES CANADA**					Report Date:		
Location:	**Ontario Region**					Page No.:		
Owner:	**ELEMENTAL CONSTRUCTION COST SUMMARY**					Bldg. Type:		
Consultant:						GFA		
	Ratio to	Elemental Cost		Elemental Amount		Rate per m2		
Element	GFA	Quantity	Unit Rate	Sub-Total	Total	Sub-Total	Total	%
A SHELL								
A1 SUBSTRUCTURE								
A11 Foundations								
A12 Basement Excavation								
A13 Special Conditions								
A2 STRUCTURE								
A21 Lowest Floor Construction								
A22 Upper Floor Construction								
A23 Roof Construction								
A3 EXTERIOR ENCLOSURE								
A31 Walls Below Grade								
A32 Wall Above Grade								
A33 Windows & Entrances								
A34 Roof Coverings								
A35 Projections								
B INTERIORS								
B1 PARTITIONS & DOORS								
B11 Partitions								
B12 Doors								
B2 FINISHES								
B21 Floor Finishes								
B22 Ceiling Finishes								
B23 Wall Finishes								
B3 FITTINGS & EQUIPMENT								
B31 Fittings & Fixtures								
B32 Equipment								
B33 Elevators								
B34 Escalators								
C SERVICES								
C1 MECHANICAL								
C11 Plumbing & Drainage								
C12 Fire Protection								
C13 HVAC								
C14 Controls								
C2 ELECTRICAL								
C21 Services & Distribution								
C22 Lighting, Devices & Heating								
C23 Systems & Ancillaries								
NET BUILDING CONSTRUCTION ESTIMATED COST - EXCLUDING SITE								
D SITE & ANCILLARY WORK								
D1 SITE WORK								
D11 Site Development								
D12 Mechanical Site Services								
D13 Electrical Site Services								
D2 ANCILLARY WORK								
D21 Demolitions								
D22 Alterations								
NET BUILDING CONSTRUCTION ESTIMATED COST - INCLUDING SITE								
Z1 GENERAL REQUIREMENTS & FEE								
Z11 General Requirements								
Z12 Fee								
TOTAL CONSTRUCTION COST ESTIMATE - EXCLUDING CONTINGENCIES								
Z2 ALLOWANCES								
Z21 Design & Pricing Allowance								
Z22 Escalation-until tender call								
Z23 Escalation-during construction								
Z24 Permits/Approvals								
Z25 Construction Contingency								
Risk Factors								
TOTAL CONSTRUCTION COST ESTIMATE -INCLUDING CONTINGENCIES + RISK FACTORS								
GOODS & SERVICES TAX								

SECTION 13 TIME MANAGEMENT

13.1 Time Management, Planning, and Control

The Time Management, Planning, and Control Specialist (scheduler) shall provide a Project Planning and Control System (Control System) for Planning, Scheduling, Progress Monitoring and Reporting and a Time Management, Planning, and Control Report (Progress Report). It is required that a fully qualified and experienced Scheduler play a major role in providing services in the development and monitoring of the project schedule.

The scheduler will follow good industry practices for schedule development and maintenance as recognized by the Project Management Institute (PMI).

PWGSC - Ontario Region, presently utilizes Microsoft Project for its current Control Systems and any software used by the consultant should be fully integrated with these, using one of the many commercially available software packages.

13.2 Schedule Design

Project Schedules are used as a guide for execution of the project as well as to communicate to the project team when activities are to happen, based on network techniques using Critical Path Method (CPM).

When building a Control System you must consider:

1. The level of detail required for control and reporting;
2. The reporting cycle- monthly and what is identified in the Terms of Reference, but also includes Exception Reports;
3. That the duration must be in days;
4. What is required for reporting in the Project Teams Communications Plan and
5. The nomenclature and coding structure for naming and reporting requirements of activities, schedules and reports.

13.3 Schedule Development

For purposes of monitoring and reporting of project progress and ease of schedule review it is important to maintain a standard for all schedules and reports starting with the Work Breakdown Structure (WBS), identification of Milestones, naming of activities as well as schedule outputs and paper sizing and orientation.

13.4 Work Breakdown Structure

When developing the schedule the consultant needs to use PWGSC standards and practices. Two basic requirements are the National Project Management System (NPMS) and a Work Breakdown Structure (WBS), structured supporting the NPMS (Levels 1-4).

The WBS is as follows:

Level 1	Project Title (NPMS)
Level 2	Project Stage (NPMS)
Level 3	Project Phase (NPMS)
Level 4	Processes to meet Deliverables/Control Points Milestones (NPMS)
Level 5	Sub-Processes and Deliverables in support of Level 4
Level 6	Discrete activities. (Work Package)

Not all the Stages, Phases and Processes in the NPMS will be required on all the projects, however the structure remains the same.

13.5 Major and Minor Milestones

The Major Milestones are standard Deliverables and Control Points within NPMS and are required in all schedule development. These Milestones will be used in Management Reporting within PWGSC as well as used for monitoring project progress using Variance Analysis. The Minor milestones are process deliverables (Level 4) or sub-process deliverables (level 5) also used in Variance Analysis.

Each Milestone will also be assigned appropriate coding for Status Reporting and Management Reporting.

Milestones must have zero duration and are used for measuring project progress.

Milestones may also be external constraints such as the completion of an activity, exterior to the project, affecting the project.

13.6 Activities

All activities will need to be developed based on Project Objectives, Project Scope , Major and Minor Milestones, meetings with the project team and the scheduler's full understanding of the project and it's processes.

Subdivide the elements down into smaller more manageable pieces that organize and define the total scope of work in Levels 5-6 that can be scheduled, costed, monitored and controlled. This process will develop the Activity List for the project.

Each activity is a discrete element of work and is the responsibility of one person to perform.

Each activity will describe the work to be performed using a verb and noun combination (i.e. Review Design Development Report).

Activities should not have durations longer that 2 update cycles, with exception of activities not yet defined in a "Rolling Wave".

Each activity will be assigned at WBS level 6 and appropriately coded for Status Reporting and Management Reporting.

These elements will become activities, interdependently linked in Project Schedules.

13.7 Project Logic

Once the WBS, Milestones and Activity List have been developed the activities and milestones can be linked in a logical manner starting with a Project Start Milestone. Every activity and milestone must be linked in a logical manner using either a Finish to Start (FS), Finish to Finish (FF), Start to Start (SS) or Start to Finish (SF) relationship. There can be no open-ended activities or milestones.

A Finish to Start (FS) is the preferred relationship.

When developing relationships avoid the use of lags and constraints in place of activities and logic.

13.8 Activity Duration

The activity duration (in days) is the estimated length of time it will take to accomplish a task.

Consideration needs to be taken in how many resources are needed and are available, to accomplish any activity. (Example: availability of Framers during a “Housing Boom”.) Other factors are the type or skill level of the available resources, available hours of work, weather etc.

There will be several types of lists and schedules produced from this process, which will form part of the Progress Report.

13.9 Activity List

An Activity List identifies all activities including milestones required to complete the whole project.

13.10 Milestone List

A Milestone List identifies all project Major and Minor milestones.

13.11 Master Schedule

A Master Schedule is a schedule used for reporting to management at WBS level 4 and 5 that identifies the major activities and milestones derived from the detailed schedule. Cash Flow projections can be assigned at WBS level 5 for monitoring the Spending Plan.

13.12 Detailed Project Schedule

A Detailed Project Schedule is a schedule in reasonable detail (down to WBS Level 6 and 7) for progress monitoring and control, this will ensure that the schedule shall be in sufficient detail to ensure adequate planning and control.

13.13 Schedule Review and Approval

Once the scheduler has identified and properly coded all the activities; put them into a logical order and then determined the appropriate durations. The scheduler can then analyze the schedule to see if the milestone dates meet the contractual requirements and then adjust the schedule accordingly by changing durations, resource leveling or changing logic.

When the schedule has been satisfactorily prepared the scheduler can present the detailed schedule to the Project Team for approval and be Baselined. There may be several iterations before the schedule meets with the Project Teams agreement and the contractual requirements.

The final agreed version must be copied and saved as the Baseline to monitor variances for reporting purposes.

13.14 Schedule Monitoring and Control

Once baselined the schedule can be better monitored, controlled and reports can be produced.

Monitoring is performed by, comparing the baseline activities % complete and milestone dates to the actual and forecast dates to identify the variance and record any potential delays, outstanding issues and concerns and provide options for dealing with any serious planning and scheduling issues in report form.

Analyze and report from early start sequence on all activities due to start, underway, or finished for the complete project.

There will be several reports generated from the analysis of the baseline schedule and will form part of the Time Management Report in the Required Services Sections (RS)

13.15 Progress Reports

A Progress Report reflects the progress of each activity to the date of the report, any logic changes, both historic and planned, projections of progress and completion the actual start and finish dates of all activities being monitored.

The Progress Report includes:

A Narrative Report, detailing the work performed to date, comparing work progress to planned, and presenting current forecasts. This report should summarize the progress to date, explaining current and possible deviations and delays and the required actions to resolve delays and problems with respect to the Detail Schedule, and Critical Paths.

Narrative reporting begins with a statement on the general status of the project followed by a summarization of delays, potential problems and project status criticality, any potential delays, outstanding issues and concerns and options for dealing with any serious planning and scheduling issues.

A Variance Report, with supporting schedule documentation, detailing the work performed to date, comparing work progress to planned. This report should summarize the progress to date, explaining all causes of deviations and delays and the required actions to resolve delays and problems with respect to the Detail Schedule, and Critical Paths.

A Criticality Report identifying all activities and milestones with negative, zero and up to five days Total Float used as a first sort for ready identification of the critical, or near critical paths through the entire project.
Included in the Progress Report as attachments are: WBS chart, Activity Lists, Milestone Lists, Master Schedules, Detailed Project Schedule

13.16 Exception Report

The Scheduler is to provide continuous monitoring and control, timely identification and early warning of all unforeseen or critical issues that affect or potentially affect the project.

If unforeseen or critical issues arise, the Scheduler will advise the Project Manager and submit proposed alternative solutions in the form of an Exception Report.

An Exception Report will include sufficient description and detail to clearly identify:

1. Scope Change: Identifying the nature, reason and total impact of all identified and potential project scope changes affecting the project.
2. Delays and accelerations: Identifying the nature, the reason and the total impact of all identified and potential duration variations.
3. Options Enabling a Return to the project baseline: Identifying the nature and potential effects of all identified options proposed to return the project within baselined duration.

13.17 Standard Submissions

At each submission or deliverable stage provide a complete and updated Progress Report, the contents of each report will vary with requirements and at each project phase. Typically a Progress Report has:

1. Executive Summary;
2. Narrative Report;
3. Variances Report;
4. Criticality Report;
5. Exception Report (as required)
6. Work Breakdown Structure Chart;
7. Activity List;
8. Milestone List;
9. Master Schedule with Cash Flow Projections;
10. Detail Project Schedule (Network Diagram or Bar Charts)

13.18 Schedule Outputs and Reporting Formats

The sheet sizing and orientation is more a suggestion that a role, changes to the paper format may vary to accommodate the information and column information required.

Progress Reports:
Paper Size: Letter
Paper Format: Portrait
Title Format: Project Title; Report Type; Print Date; Data Date; Revision Block
Body Text: Narratives for each report to match other reports generated in the D.S.S.
Variance Report Columns: Activity ID, Activity Name, Planned Finish, Revised Finish, Variance, Activity % Complete,
Criticality Report Columns: Activity ID, Activity Name, Duration, Start, Finish, Activity % Complete, Total Float.

Exception Reports:

Paper Size: Letter
Paper Format: Portrait
Title Format: Project Title; Report Type; Print Date; Data Date; Revision
Body Text: Narrative to match other reports generated in the D.S.S.

Paper Size: Letter
Paper Format: Landscape
Title Format: Project Title; Report Type; Print Date; Data Date; Revision
Columns: Activity ID, Activity Name, Duration, Remaining Duration, Start, Finish, Total Float.

Work Breakdown Structure (indent tree):

Paper Size: Letter
Paper Format: Portrait
Columns: WBS Code, WBS Name, Duration, Cost estimate, start and finish dates.
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block

Activity Lists:

Paper Size: Letter
Paper Format: Portrait
Columns: Activity ID, Activity Name, Start, Finish, Predecessor, Successor.
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block

Sort with Early Start, then Early Finish, then Activity ID and with the WBS.

Milestone Lists:

Paper Size: Letter
Paper Format: Portrait
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block
Columns: Activity ID, Activity Name, Start, Finish.

Sort with Early Start, then Early Finish, then Activity ID and without the WBS.

Master Schedule (Bar Chart):

Paper Size: 11X17
Paper Format: Landscape
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block
Columns: Activity ID, Activity Name, Duration, Activity % Complete, Start, Finish, Total Float.

Sort with Early Start, then Early Finish, then Activity ID and with the WBS.

Detailed Project Schedules (Bar Chart):

Paper Size: 11X17
Paper Format: Landscape
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block
Columns: Activity ID, Activity Name, Duration, Activity % Complete, Start, Finish, Total Float.

Sort with Early Start, then Early Finish, then Activity ID and with the WBS.

SECTION 14 DRAWING CONVERSION TO PORTABLE DOCUMENT FORMAT (PDF)

Preface

Portable Document Format (PDF) is the standard format for documents that are posted on the Government Electronic Tendering System (GETS). Architectural and Engineering Consultants shall supply, in addition to native format files, electronic copies of drawings and specifications in PDF format for tendering Government of Canada (GoC) construction projects.

Create PDF drawing and specification files derived from the native software in which they were created. Scanning is only permissible in special circumstances, such as cases where no electronic version of a drawing being included in a construction tender package exists.

The information provided in this basic reference guide does not relieve consultants from following the established standards for the production of drawings and specifications. The sole purpose of this guide is to provide basic information on the PDF conversion process, bearing in mind that additional detailed technical information is available from the various software manufacturers.

14.1 Printer Drivers

Adobe Acrobat provides two different printer drivers that are able to convert CADD drawing into PDF format; Acrobat PDF Writer and Acrobat Distiller. It is recommended that Acrobat Distiller be used to create PDF file of architectural and engineering drawings due to their size and complex graphical nature.

14.2 PDF Files Settings

Security:

Files must not be password protected and must allow printing.

Drawing Orientation:

The final PDF drawing files must be displayed on the screen in the same direction that the users are intended to view them.

Font Type:

In order to avoid any problems during the conversion and to minimize the potential for font display errors, the fonts used for the production of construction drawings must be PostScript or True Type fonts.

Resolution:

Since the PDF files will be used for printing, it is recommended to select 600 dots per inch (dpi).

Scale:

When choosing the Plot scale in Adobe, it is important to choose the 1:1 scale to ensure the integrity of the scale from which the drawings were created in the CADD software.

14.3 Scanning

Scanning is not recommended and should be done only when the drawing is not available electronically. When scanning a drawing, scan in real size (scale 1:1) to ensure that the scale remains intact in

subsequent printing. Open each scanned drawing to verify and ensure that the resolution, scale and border are of an acceptable quality.

14.4 Final Checklist

When the drawing file has gone through the PDF conversion, open and verify the following:

- That the sheet size displayed is what was intended to be created (the size is viewable in the lower left corner of the drawing).
- That the orientation of the sheet is correct.
- That the line types, line weights and fonts match the CADD drawing.
- That the PDF file is in black and white.
- That each drawing is a single PDF file.
- That the PDF file is not password protected and printable.

If all the items are verified, the PDF file is useable.

14.5 Additional Information

For more information about the creation of PostScript and EPS files please refer to the User's Guide of the CADD software being used to produce the drawings. For more information about creating PDF file please refer to the Acrobat Distiller User's Guide and/or visit the Adobe Web site at www.adobe.com.