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Architectural & Engineering Services

TERMS OF REFERENCE

Building Condition Report

For:

Public Works and Government Service Canada (PWGSC)

GOCB Northern Sites

(Greenstone Building and Henry Larson Building, Yellowknife, Northwest Territories)

October 6, 2021_rev Feb 2022

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1 PROJECT DESCRIPTION

1.1 GENERAL

1.1.1 PURPOSE OF REQUEST FOR PROPOSAL (RFP)

.1 This RFP details the extent of Required Services to deliver Building Condition Reports (BCR) and related studies for Public Works and Government Services Canada facilities in the north as follows; the Greenstone building and the Henry Larson building, both in Yellowknife, Northwest Territories.

.2 This RFP has been developed to ensure that the Consultant has a clear understanding of the project scope, procedures and services required, to deliver the project within the agreed to price and schedule.

1.1.2 THE DOING BUSINESS WITH PWGSC DOCUMENTATION MANUAL

.1 The RFP describes project-specific requirements, services and deliverables while the Doing Business with PWGSC Documentation and Deliverables Manual outlines minimum standards and procedures for BCR documents, cost estimating and project schedule requirements.

.2 Document precedence:

.1 In the event of a document conflict the TOR takes precedence.

1.1.3 PROJECT INFORMATION

Project Information	
Project Title:	PSPC GOCB Northern Sites BCR (Building Condition Reporting for the Greenstone Building and the Henry Larson Building)
Project Address:	Greenstone Building (Yellowknife GOCB) 5010-50 Avenue, Yellowknife, Northwest Territories Henry Larson Building, 5010-49 Avenue, Yellowknife, Northwest Territories
PWGSC Project Number:	R.088906.016, R.084171.013
Client/User Department	Public Works and Government Services Canada
PWGSC Contracting Officer:	Daniel McRuer
PWGSC Departmental Representative (DR):	Marci Tonder

1.2 BACKGROUND INFORMATION

1.2.1 USER DEPARTMENT NEED

.1 Develop Level 2 (L2) Building Condition Reports with detailed technical and financial information to UNIFORMAT II, Level 4 for three northern PWGSC Assets. BCRs are required to facilitate the regular maintenance protocols, timely & prudent development of building management plans and asset management plans.

.1 This process will act to identify and articulate future in-depth BCR Level III studies related to the asset.

.2 In view of the age of these assets, and given the significant investments required to re-capitalize these assets, the preparation of Building Condition Reports, asset management plans, and extensive financial analysis is critical to the effective and efficient life-cycle management of this inventory.

.2 PWGSC require thermography studies to identify issues with the building envelopes and mechanical and electrical systems.

.3 Building Capacity Assessments are needed to help identify which building systems may require upgrade to ensure the buildings can achieve increased population densities related to office fit up to the new GC Workplace fit up standard.

1.2.2 USER DEPARTMENT

.1 The User Department referred to throughout the TOR is Public Works and Government Services Canada (PWGSC).

.2 PWGSC plays an important role in the daily operations of the Government of Canada as a key provider of services for federal departments and agencies. The department's vision is to excel in government operations and the strategic mission is to deliver high-quality central programs and services that meet the program needs of federal institutions and ensure sound stewardship on behalf of Canadians.

1.2.3 GREENSTONE BACKGROUND

.1 The Greenstone building is a four storey concrete building built in 2005, located at 5105-50 Avenue, Yellowknife, Northwest Territories. It is 8,165m2 over 4 floors.

.2 It is Canada's first LEED Gold buildings located north of the 60th parallel.

.3 It houses numerous Government of Canada Departments and Agencies with over 200 employees.

.4 The building has a flat roof, operable windows, and the electrical and mechanical services are located in a raised floor and displacement ventilation system.

.5 The most recent Building Performance Report (BPR for the Greenstone Building was conducted in June 2014.)

.6 The Greenstone building adheres to all performance and maintenance standards as per the Asset Management Plan.

.7 The building is deemed compliant with the Accessible Design for the Built Environment Standard CAN/CSA-B651-12.

1.2.4 HENRY LARSON BUILDING

.1 The Henry Larsen Building was constructed in 1970 (with building additions made in 1974 and 1997) The building is 2,808m2, and serves as home for the RCMP G Division Headquarters and the Yellowknife RCMP detachment.

.1 It is a single tenant Class B building utilized and operated by RCMP on a 24 hour basis. It is solely dedicated for RCMP occupancy due to the specific and secure nature of their operations.

.2 The building contains general administrative offices (located on 3 levels) and special purpose space, outdoor parking for (oversized) fleet vehicles (approximately 35), a heated warehouse (storage of equipment and includes workshops for repair and calibration of instruments), an unheated warehouse (storage of large or expensive equipment including ATV's, boats, etc.), and outdoor storage compound for storage of equipment and vehicles.

1.3 CONSTRAINTS AND CHALLENGES

1.3.1 POTENTIAL IMPACTS

.1 The Consultant will be required to become familiar with the project site and obtain local information as required.
.2 All site visits must be arranged through the DR.
.3 The Building Condition Report on site assessments will be performed during the full operation of the facilities.
.4 Cameras and other electronic equipment, such as laptops, need to be declared for approval. Electronic registry clearance forms will be provided to the Consultant by the DR.
.5 The Consultant is required to obtain security clearances for all his/her firm's personnel as well as any sub-consultants to visit the project site for reasons, such as, site reviews, attendance for meetings, etc. Security clearance checks may include credit checks.
.6 All site visits must be arranged through the Departmental Representative.
.1 Visits to the Work site may be affected by Provincial Public Health measures implemented as a result of the COVID-19 pandemic. Access may be restricted, limited, or delayed at any time.
.7 All Consultant team members are required to be escorted by a commissionaire while on site at all times. Pre-planning of site visits is required to ensure proper scheduling of commissionaires during on-site assessments.

1.4 SUMMARY OF WORK

1.4.1 GENERAL

.1 Provide Building Condition Reports and related studies for the buildings listed above:
.1 Condition Assessment based on the following inspection criteria:
.1 Visual surface inspection, history, maintenance, records, studies, and Interviews. The proceeding is to be tempered by the expertise of a certified subject matter specialist, codes, regulations, best practice, manufactures recommendations, and applicable industrial guidelines.
.2 Perform a Thermography Study for each building, reporting on building envelope and life safety systems.
.3 Building Capacity Assessment .
.1 The federal government has adopted various fit-up orientations in the past few years (WP 2.0 and ABW), and is currently transitioning towards GC workplace.
.2 The study needs to be based on the strictest fit-up standards in terms of employee capacity, namely GC workplace.
.3 Establish the populations per floor/office area to create a basis for calculations.
.2 Develop the scheduling plan in consultation with the DR.
.3 Project objectives & deliverables, project implementation plans, schedule, critical milestones, work breakdown structure, risk identification and mitigation.
.4 Lead, monitor, and control the closeout and timely provision of final project deliverables.
.5 Identify the need for BCR Level III studies, based on the on-site findings, and cite them in the reports, by building.

1.5 OBJECTIVES

1.5.1 GENERAL GOALS

.1 Report on all building systems, and assemblies regarding their condition and corrective action required in the future.
.2 Report on corrective action using a project list summary tables with associated timelines for repairs, estimates and a general Statement of Work.
.3 The objective of the thermography study is to understand the condition of the building envelope and the mechanical and electrical systems.
.4 The Building Capacity Assessment objective is to understand the building systems ability to support more concentrated population of staff in the GC Workplace environment, which are the limiting systems, to identify building systems requiring upgrade.

1.5.2 PROJECT DELIVERY

.1 Deliver the project within the key milestones in this TOR.
.2 Ensure that each Consultant team member understands the project requirements for seamless delivery of the required services.

1.6 SUMMARY OF SERVICES AND SPECIALTIES

1.6.1 GENERAL SERVICES

.1 The prime consultant will provide a full consulting team including the following consultant services and specialties:
    .1 Professional Architectural Services;
    .2 Professional Engineering;
        .1 Civil;
        .2 Structural;
        .3 Mechanical; and
        .4 Electrical
            .1 Licensed electrician to support the BCR and related investigations including thermography studies.
    .3 Vertical Transportation specialist (carried under Architectural Services).
    .4 Cost Estimating specialist;
        .1 Certified by the Canadian Institute of Quantity Surveyors.
    .5 Thermography specialist
        .1 Certified Level II Thermographer.

1.7 MILESTONES

1.7.1 GENERAL

.1 Deliver the project in accordance with the project milestone listing identified below.
.2 Completion dates shown are relative to an assumed start date of April 30, 2022.
.3 Prepare a Project Schedule in accordance with the milestone list.

1.7.2 MILESTONE LIST

BCR (Start to Finish)	Number of Weeks
Consulting Review of Existing Documentation	1 week
Consulting Formal On-Site Review and Site Assessments	2 weeks
Consulting Pilot Draft BCR Submission and 25 year requirements list report (for review & validation of format) Along with Thermography and Building Capacity Assessment - **Pilot to be Greenstone BCR**	4 weeks
Review and Feedback from Stakeholders to Pilot Draft	2 weeks
100% Submission of Pilot (Greenstone BCR) for approval	2 weeks
Review and Feedback from Stakeholders to Pilot Draft	2 weeks
Final Submission of Pilot	1 week
Submission of BCR VFA report and 25 year requirements list report, Thermography and Building Capacity Assessment for Henry Larson	4 weeks
PWGSC review of remaining BCR VFA reports Thermography and Building Capacity (Henry Larson) for Review + Approval	2 weeks
Submission of 100% remaining BCR VFA reports, Thermography and Building Capacity for approval	3 weeks
PWGSC 100% Review + Approvals	2 weeks
Submission of final BCR VFA reports, Thermography and Building Capacity for approval	3 weeks
	28 weeks

1.8 IMPLEMENTATION STRATEGY

1.8.1 GENERAL

.1 Deliver the project in accordance with the implementation strategy identified below.

.2 Prepare a Project Schedule in accordance with the strategy.

1.8.2 ANTICIPATED IMPLEMENTATION STRATEGY

	Activity Identified for Implementation	Milestone	Comments
1	Interface with the DR to co-ordinate initial start-up meeting and obtain all existing documentation from the stakeholders and PWGSC Project Authority.	**START** ***Week 1***	

2	Consultant team on-site assessments.		
3	Consultant prepare and submit to DR one pilot submission of VFA draft report and 25 year requirement data spreadsheets, complete with all building condition report information.	**FIRST DRAFT** ***Week 7***	Progress payment request #1 will be accepted upon completion and acceptance by DR
4	DR circulates draft pilot submission to the PWGSC Project Authority and PWGSC AECoE for comment and QA review. Interface with DR regarding QA review comments and required revisions.		
5	Consultant prepare and submit to DR final submission of the one pilot Building Condition Report data spreadsheets in format acceptable. (electronic submission)	**FINAL SUBMISSION** ***Week 14***	Progress payment request #2 will be accepted upon completion and acceptance by DR
6	Once the pilot submission is accepted by the DR, submit the 99% draft of the remaining buildings in PDF generated from VFA for circulation to the PWGSC Project Authority and PWGSC AECoE for comment and QA review.	**FIRST DRAFT** ***Week 18***	Progress payment request #4 will be accepted upon completion and acceptance by DR
7	Interface with the DR who compiles comments from all stakeholders and advises of needed revisions through QA review comments.		
8	Submit to DR the 100% draft PDF of the VFA uploaded BCRs who circulates to the PWGSC Project Authority and PWGSC AECoE for comment and QA review.	**SECOND DRAFT** ***Week 23***	
9	Interface with the DR who compiles comments from all stakeholders and advises of needed revisions through QA review comments.		
10	Submit to DR the Final submission who presents it to the PWGSC Project Authority for use. (electronic Submission)	**FINAL SUBMISSION** ***Week 28***	Final progress payment accepted upon completion and acceptance by DR

1.9 EXISTING DOCUMENTATION

1.9.1 AVAILABLE FOR THE CONSULTANT

.1 Condition assessments (Building Condition Reports) have been prepared for this Asset within the recent past.
  .1 The 2012 BCR and 2017 partial update BCR for the Greenstone building.
  .2 BCR available for the Henry Larson building.
.2 Existing BPRs from 2021 are available for each of the buildings.
.3 Existing Accessibility Evaluations
  .1 2020 accessibility audit of the Greenstone building.
  .2 2017 accessibility audit of the Henry Larsen building.

.4 Limited as-built drawings and Operation & Maintenance Manuals will be available.
.5 Building drawings in PDF format.
.1 The drawings will require the Consultant's verification of all critical dimensions and features.
.6 VFA System Codes Reference 2021.xls.
.1 This is for reference to show the possible available systems within VFA for selection.
.7 ASTM UNIFORMAT II Classification for Building Elements.pdf.
.1 This is for reference to show the systems and their names that are to be used for system naming.
.8 PWGSC Asset Integrity Standard: Asset Integrity Standard - Document centre - RPB - PWGSC (tpsgc-pwgsc.gc.ca).
.9 Consultant VFA BCR Information Guide.pdf complete with headings and data block information to use as a guide to create VFA reports
.10 BCR VFA Training 2021-2022.ppt and VFA Instruction - BCR and 25yr Requirement Draft Report.pdf
.11 GC Workplace Standard https://www.gcpedia.gc.ca/gcwiki/images/8/8e/Workplace_Fit-up_Standards.pdf
.12 Halocarbon lists are available for reference.

1.9.2 DISCLAIMER

.1 Reference information will be available in the language in which it is written.
.2 The documentation may be unreliable and is offered, "as is" for the information of the Consultant.

1.10 ACCESS TO THE SITE AND SECURITY REQUIREMENTS

1.10.1 REQUIREMENTS

.1 Reliability clearance of all personnel will be required on this contract.
.2 For general access, the consultant will be required to conduct site related work Monday to Friday between 8:00am and 4:00pm. All other access, times will be determined by consultation with the DR. The consultant shall pre-arrange dates & times for site access at least 72 hours in advance.
.3 The investigation/site visit at the project site will be performed during the full operation of the facilities. Project phasing must be planned to ensure that disruption to the daily operation of the facilities is kept to a minimum.

1.10.2 ADDITIONAL PWGSC SECURITY REQUIREMENTS

.1 The Consultant, including their Sub-Consultants, must, at all times during the performance of the Contract, hold a valid Designated Organization Screening (DOS) at the level of Reliability, issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).
.2 The Consultant (including all Sub-Consultants) personnel requiring access to information, assets or work site(s) must each hold a valid Reliability Status, granted or approved by the CISD/PWGSC.
.3 The Consultant must comply with the provisions of the:
.1 Security Requirements Check List and security guide (if applicable);
.2 Industrial Security Manual (Latest Edition)

.4 Additional more stringent security requirements may be required prior to site visits being permitted. To be confirmed at project award.

1.11 VFA BCR FILES USAGE

1.11.1 INSTRUCTIONS ON HOW TO ACCESS & COMPLETE VFA BCR FILES

.1 The Regional Subject Matter Experts (SME's) on VFA usage/uploads – see DR.

.2 The Regional SME will identify user accounts using a User Access Template for the creation of secure accounts.

.1 BCR survey (database) responders (Vendors and employees);

.2 PWGSC officials for acceptance by region; and

.3 New User access template.

.3 Once confirmed, the SME will proceed with assignment of BCR files to Responders.

.4 Responders (Consultant) will receive an email notice advising them they have been assigned a BCR survey to complete with instructions to proceed.

.5 Responders to complete surveys and submit for approval.

.6 The Approver will receive an email advising they have been assigned a BCR survey for review and acceptance, if accepted it will automatically be uploaded to VFA, if rejected an email will be sent to responder highlighting issues requiring correction.

.7 The Regional SME will fill out and submit the BCR Survey request template so that they can be assigned (By discipline)

.8 If assistance is required contact the PWGSC CAPS team general mailbox at: SPIB.CAPS@tpsgc-pwgsc.gc.ca

1.12 CODES, ACTS, STANDARDS, REGULATIONS

1.12.1 GENERAL

.1 A listing of Standards and Guidelines potentially applicable to this project are contained in the Doing Business with PWGSC Documentation and Deliverables Manual.

.2 Comply with the applicable Provincial Electrical, Construction, Fire Codes, Acts, Standards and Guidelines. Additionally, at all times comply with Provincial Health & Safety Acts, and Regulations unique to Federal Government buildings in Canada, in addition to the requirements of Canada Occupational Safety and Health Regulations, and Canada Labour Code.

.3 The Codes, Acts and Guidelines listed in the following articles, may apply to this project. The Consultant must identify and analyse the applicable documents in the Code Analysis. In all cases the most stringent Code or Guideline shall apply:

.1 Government of Canada Workplace Fit-Up Standards, May 2018, PSPC

.2 Occupant load calculation guide – GC Workplace, PSPC

.3 Accessible Design for the Built Environment – Standard CAN/CSA B651-18

.4 Accessibility Standard for Real Property, Treasury Board of Canada Secretariat

.5 NRC National Building Code of Canada 2015;

.6 NRC National Fire Code of Canada 2015;

.7 NRC National Plumbing Code of Canada 2015;

.8 NRC National Energy Code of Canada for Buildings 2017;

.9 ASTM UNIFORMAT II Classification for Building Elements (E1557-97);

.10 Canadian Electrical Code (Latest Addition);

.11 CSA C22.1-18 Canadian Electrical Code, Part I;

.12 CSA C282-15 Emergency electrical power supply for buildings;
.13 National Electrical Manufacturers Association (NEMA);
.14 Electrical and Electronic Manufacturers' Association of Canada (EEMAC);
.15 CSA/B561-18 Accessible Design for the Built Environment;
.16 The Canada Labour Code (CLC);
.17 The Canada Occupational Health and Safety Regulations;
.18 Technical Reference for Office Building Design, PSPC, July 2017
.19 RPB Standard MD 15000-2012 Mechanical Environmental Standard for Federal Office Buildings;
.20 ASHRAE Standard 62-2001 (excluding Addendum) Ventilation for Acceptable Indoor Air Quality;
.21 ASHRAE Standard 62.1-2016 Ventilation for Acceptable Indoor Air Quality;
.22 The Lighting Handbook, Latest Edition, Illuminating Engineering Society of North America (IESNA).

2 REQUIRED SERVICES

2.1 GENERAL REQUIREMENTS

2.1.1 SERVICES

.1 Building Condition Report including the VFA 25 year requirements list report.
.2 Thermography Study.
.3 Building Capacity Assessment.

2.1.2 OUTLINE OF GENERAL REQUIREMENTS

.1 Adhere to and implement the following services throughout the project and with all deliverables:
  .1 Provide fee submissions as per the format in the Required Services as outlined in Article 2.
  .2 Adhere to the Milestone List, and in consultation with the DR.
  .3 Adhere to the project objectives & deliverables, project implementation plans, schedule, critical milestones, and work breakdown structure.
  .4 Assist the DR in Risk identification and Mitigation.
  .5 Enter site findings into VFA software, see articles 2.3 – 2.7.
  .6 Conduct internal Quality Assurance of consultant team deliverables and continue to develop BCR and related Studies and Assessments to final stage, coordinate with DR.
  .7 Support the DR with timely provision of final project deliverables.

2.1.3 ASSET ANALYSIS

.1 General
  .1 For each building, provide an objective and subjective analysis of the asset under consideration.
.2 Scope and Activities
  .1 Surveys, reports, costing, and data entry are to be completed for Architectural, Vertical Transportation, Mechanical, Civil, Structural and Electrical.
  .2 Apply BCR services to the following five key areas to support preparation of the final reports:
    .1 Analysis Phase;
    .2 Research Phase;
    .3 Survey Phase ;
    .4 Report Development Phase; and
    .5 Database Phase.
  .3 Recommend additional studies identified for each discipline.
.3 Deliverables
.4 Fully address the requirements in the scope and activities

2.1.4 ASSET SYSTEM ORGANIZATION

.1 This Request for Proposal describes the work required to complete a Building Condition Report (BCR). In general, a BCR (PWGSC Level II inspection) is a visual assessment of the condition of the systems and recommended actions required to maintain the asset in operating condition during the next 25 years. The BCR covers all systems on the site and in the asset, organized as follows:
  .1 A – Substructure
  .2 B – Shell

.3 C – Interiors
.4 D – Services
.5 E – Equipment and Furnishings
.6 F – Special Site visit and Demolition
.7 G – Building Site work

.2 VFA provides a baseline list of Systems as determined by PWGSC, in order to guide the site assessment and reporting activities while performing a BCR.

.3 The VFA System Codes list contained within VFA Auditor, uses ASTM E1557 Building Standard UNIFORMAT II level 3 with many level 4 sub elements, to outline the list of available building systems for assessment. VFA Systems not listed, that are found on site inspection, can be entered by adding a system and modifying the name and costing calculation data. VFA data shall be entered as specific systems to the ASTM E1557 Building Standard UNIFORMAT II, level 4.

.1 System data, including lifetime and projected costs to maintain building condition, are associated with the relevant system through VFA RS Means data and are city cost adjusted after approval of the VFA survey. In rare cases, where certain very specific systems may not exist within the choices provided, the assessor must then select the closest and most appropriate system to match the site conditions, within the same Uniformat grouping. The assessor will then be able to edit the system name, associated costs as well as years remaining to reflect the site assessment findings.

.2 The VFA system codes list comprises the reporting systems available and required to be inspected and reported on during PSPC BCR activities.

.4 The objective of a Level 2 Building Condition Report is to investigate various building and site improvement factors including:

.1 System condition and assessment of remaining life,
.2 Equipment obsolescence,
.3 Design problems and deficiencies that adversely affect operation and maintenance activities,
.4 Impact of compliance with Treasury Board Secretariat temperature, humidity and ventilation standards,
.5 Compliance with the latest edition / revision of all applicable standards & codes including, but not limited to: Health, Fire, Life Safety Codes, National Building Code, Electrical Safety Program
.6 Compliance with local by-laws,
.7 Effective age and remaining economic life of building systems (Effective age must consider implications for a designated asset's, Character-Defining Elements, and heritage conservation principles found in the "Standards and Guidelines for the Conservation of Historic Places in Canada, 2nd edition"),
.8 Confirmation of regulatory testing.

.5 This RFP details the extent of work required and will indicate specific Requirement considerations that the consultant/assessor will incorporate into the 25 year plan.

.6 The intent of the level 2 BCR is to identify the Requirements required to operate and maintain the asset that is in line with all current codes and standards related to health and safety, accessibility, and other related code compliances.

.7 The concept of full life cycle costing for the facility is the basis for the development of the long-term capital plan. The 25-year capital plan should indicate the optimal timing and grouping of recommended Requirements in order to minimize overall cost and occupant disruption.

2.2 DATA COLLECTION OF SYSTEMS

2.2.1 GENERAL

.1 BCR will report on the condition of the facility(ies) and their systems for all disciplines, and provide recommended actions required to maintain the asset in operating condition. The BCR will cover all major components and systems on the site and in the building(s) generally organized, but not limited to those noted below. Confirm systems with PWGSC prior to the start of the information gathering.

2.2.2 ARCHITECTURAL ASSESSMENT

.1 This section of the condition report to include, but not limited to a visual inspection of: Building envelope: roofing systems, caulking or sealant, exterior walls system, windows, doors and frames, and door hardware. Building interiors: Ceilings, walls, floors, stairs and handrails, interior doors and frames, door hardware, cabinetry - common areas, storage lockers, corridors, and washrooms. Vertical transportation: Elevators, lifts, stairs, etc.

.2 Compliance with Code and Accessibility Standards: For each building,

.1 Identify the applicable NBCC building classification (NBCC 3.2.2.20 to 3.2.2.88) currently in force.

.2 Identify major and minor occupancy types, building height, building footprint area, extent of sprinkler protection (i.e. full, partial, none), construction type (i.e. combustible or non-combustible).

2.2.3 CIVIL ASSESSMENT

.1 Visually inspect and record all information about the site including, but not limited to: roads (vehicular, pedestrian, patrol), parking, landscaping elements, drinking water system, security walls and fences, storm water drainage systems, water treatments plants, water systems including lawn sprinkler systems if installed, if the buildings have their own main water stop valve, location and status of isolation valves, visual inspection of all water main valves, as recommended in the maintenance program, and the installation of water meters, sanitary sewer system, water treatments plants and lagoons, and valve chambers including condition of lid, rungs, rings and mortar if not pre-cast, type of valve, valve tag, valve condition, capacity, etc.

.2 Summarize all Civil work to be performed and what was evaluated in the Overview of Site Condition.

.3 If any requirements are required add them to the Grounds report for the facility.

2.2.4 STRUCTURAL ASSESSMENT

.1 The structural section of the condition report to include, but not limited to visual inspection of foundations, retaining walls, floor slabs walls, beams, columns, parapets, shear walls, structural masonry walls, trusses, floor slabs, and crawl space condition. Provide seismic screening to address the seismic resistance of buildings for older existing buildings located in zones of moderate to high seismicity that are being considered for major renovation or rehabilitation.

2.2.5 MECHANICAL SYSTEMS

.1 Inspect, evaluate, and assess the components of the Heating, Ventilation and Air-Conditioning (HVAC) systems and plumbing systems at each building based on condition indicators that are measurements and observations of conditions known to lead to equipment and system failure or performance degradation. Conduct the following inspections and procedures:

.2 Note mechanical equipment location and characteristics.

.3 Input data into VFA for each type of equipment. All units shall be in SI. Note the particular unit (and its value) for each item of information. It is expected that much of this information may be obtained from equipment nameplates, Operation and Maintenance (O&M) manuals or consultations with building staff. For each piece of equipment inventoried, the location field is to be filled in. If any of the required technical information is not readily available and cannot be found after a reasonable search, make note of it and continue on. Provide information on: location, make, model, serial number, service, equipment number or designation, power rating, date of installation and presence of maintenance plan and documentation.

.4 Fire Suppression System: Inspect, evaluate and assess the components of fire suppression systems at each building.

.1 Private Fire Service Mains, Hydrants, Water Tanks: Identify whether fire protection water is provided on the same service as domestic or if it's on a separate loop; Identify source of fire protection water (e.g. cistern, tank, municipality, etc);

.1 Identify the location and type of each fire hydrant;

.2 Identify the location and type of all Post Indicator Valves for the fire water supply lines and identify the manner by which such valves are supervised;

.3 Assess the general condition of each hydrant (visual inspection) to ensure that it is in full operating condition, free of corrosion or mechanical damage; and obtain the most recent flow testing report on all hydrants in order to identify them as per NFPA 25 and flow results (pressure and flow) to be recorded.

.2 Fire Pumps: Identify the location (building and room number), type of each fire pump and record all faceplate data.

.1 Conduct a visual inspection of each fire pump to verify that it appears to be in operating condition and is free of physical damage;

.2 Obtain the most recent pump test report and provide performance descriptions (pressure and flow characteristics) of each pump as well as the test curves for each fire pump; and

.3 Provide a photograph of each fire pump as well as a high resolution photograph of the Faceplate Label.

.3 Standpipe and Hose Connections: Record the pressure from the gauge at the top of each standpipe.

.1 Identify any hoses that exhibit signs of mildew, cuts, abrasions, deterioration, damaged couplings, missing or deteriorated gaskets, leaks, as well as any hose that is not connected to the hose valve.

.2 Identify what buildings have hose connections and identify: Number of hose cabinets; Type of hoses installed (woven vs. hard rubber); Type of nozzle (brass vs. PVC vs. other); and Age of hose.

.4 Sprinkler system(s) - for each building:

.1 Identify the type(s) of sprinkler system(s) (i.e. wet, dry, deluge, pre-action, antifreeze, etc.);

.2 Identify, if possible, the age of the system, the design principles (pipe schedule vs. hydraulic design), and the hydraulic design information using the information sign for each riser;

.3 Assess the general condition of the sprinkler risers including gauges, valves, Backflow Preventers, etc., identify any signs of leaks or damage, identify the age of gauges, , and identify when calibration of the gauges last occurred; and Identify any sprinkler heads showing signs of corrosion, soot accumulation, mechanical damage, leakage, or painting.

.5 HVAC systems consist of heating water and steam piping distributions, heating and ventilation air distribution fans and ducting, liquid-chilling and direct expansion systems for cooling. Components would include air handling equipment and fans, ducting, piping, boilers, furnaces, hydronic pumps, hydronic and steam heat exchangers, humidifiers, condensers, motors, control valves, packaged, unitary and split-system equipment, etc.

.1 Check available reference data and manufacturer's instructions for HVAC equipment. Confirm the availability of O&M and other manuals.

.2 Visually inspect boilers, hot water heaters, expansion tanks, burners, safety relief valves and other hydronic or steam heating system appurtenances. Check for code compliance. Confirm that pressure vessel relief valves are appropriately sized, in good condition, and that an inspection program is in place. Check equipment for signs of leaks or wear. Check Boiler logs for documentation on required checks, boiler servicing, and preventive maintenance.

.3 Note installation of balancing valves at pumps, coils and heat exchangers.

.4 Check pumps for leaks at seals, packing adjustment and type. Note that gauges, shut-off valve and balancing valve are installed.

.5 Check that air handling units and fan component parts operate satisfactorily and that dampers and control valves operate in accordance with the sequence of operation. Inspect filters or filter pressure gauges to ensure that filters are being changed out as required.

.6 Note whether rotating parts, such as belts, chains, sheaves, shaft couplings, etc. are covered to protect personnel.

.7 Check condensers and condensing units for unobstructed air flow and check that they are not dirty, blocked or plugged.

.8 Check that Air Handling Units (AHU) drain pans and plenums do not contain standing water. Check that the pans are piped to a drain line and that the line is not blocked or plugged.

.9 Inspect air handling system dampers and louvers for proper operation and tight damper sealing.

.10 Inspect humidifiers and dehumidifiers for condition, cleanliness, and normal operation.

.11 Inspect packaged, unitary and split-system equipment for condition, cleanliness, and normal operation.

.12 Identify any equipment containing halocarbons identified in the inventoried PWGSC Halocarbon Inventory list (to be provided to the Consultant at contract award).

.6 Plumbing systems consist of cold and hot water piping distribution, vents, sanitary and storm piping, storage tanks, and plumbing fixtures.

.1 Visually inspect heating and domestic water piping distribution for obvious leaks or conditions indicating imminent leaks. If there are exposed areas of piping where thinning or damage is suspected, make a Non-destructive Testing (NDT) thickness measurements on piping at these locations. Note missing or damaged insulation.

.2 Visually inspect the sanitary system especially parts which may not be regularly inspected, such as crawl space piping. Note any traps or other locations which show leaks or signs of damage or thinning.

.3 Check pumps for leaks at seals, packing adjustments and types. Note that gauges, shut-off valves and balancing valves are installed.

.4 Note whether rotating parts, such as belts, chains, sheaves, shaft couplings, etc. are covered to protect personnel.

.7 Fuel Systems include fuel storage tanks, supply piping, appliances, equipment, burners, regulators, venting and accessories.

.1 Check petroleum products storage tanks, supply piping, regulators and other associated equipment for condition, containment, appropriate valves, emergency fuel shut-off, as required by the code, and proper installation.

.2 Check that natural gas and propane gas appliance installation and venting complies with the code.

.3 Check that fuel oil systems installation complies with the code.

.4 Conduct an inspection and inventory of petroleum product storage tank systems registered and regulated under the Environment Canada “Storage Tank Systems for Petroleum Product and Allied Petroleum Regulations” are not included in the scope of this TOR.

.8 Controls Systems are the means by which building systems are operated. Controls include a wide variety of devices including simple on/off switches, thermostatic controls, pneumatic or electric controls, and entire building or multiple-building automation systems.

.1 Note the presence of controls and Building Automation Systems (BAS). If there are more than one type, describe which areas each serve.

2.2.6 ELECTRICAL SYSTEMS

.1 Complete an on-site inspection and review of all existing facilities related to electrical services to determine the current conditions and equipment status.

.2 Determine year of installation, condition, and collect data on equipment specifications.

.3 Visually inspect and record all major power distribution equipment and cabling, as well as all building information including, but not limited to:

.1 High Tension Service and Distribution/Main Electrical Service

.2 Work that is required to be done via the local utility or on local utility owned equipment is not required in the report as the funding for this is from a different funding mechanism.

.1 Primary Switchgear

.2 Primary Transformer and Vault

.3 Low Tension Service and Distribution/Secondary Service

.1 Secondary Switchgear

.2 Motor Control Centres (MCCs)

.3 Secondary Transformer

.4 Electric Meter

.5 Rectifiers/DC Service Battery Bank/Charger System
.6 Cabling, Raceways, and Bus Ducts
.7 Distribution Panels
.4 Lighting and Branch Wiring
.1 Branch Wiring Devices
.2 Lighting Equipment
    .1 General Lighting
    .2 Exterior Lighting
    .3 Specialty Lighting
.5 Communications and Security
.1 Public Address and Music Systems
.2 Intercommunication and Paging System
.3 Telephone System
.4 Call Systems
.5 Television Systems
.6 Clock and Program Systems
.7 Fire Alarm System
    .1 Inspect, evaluate, and assess the fire alarm systems at each building.
    .2 Identify the age and type of fire alarm in each building (i.e. single stage or two-stage), whether the system is zoned or addressable, and other relevant information, as surveyed; inspect and report on any damaged fire alarm components;
    .3 Identify any existing trouble conditions indicated on a fire alarm panel at the time of the assessment.
.8 Security and Detection Systems
    .1 Complete an on-site inspection and review including, but not limited to all existing capabilities pertaining to Electronic Security, Operational and Communications Systems to determine the current condition, equipment stats, available and used power, cabinet or rack location. Components include UPS inventory and capacity, security, communications and operational equipment, equipment rooms, radio antennas towers, fence integrity, and wall integrity from a security perspective.
.9 Local Area Networks
.10 Other Electrical System/Special Electrical Systems
    .1 Grounding Systems
    .2 Emergency Light and Power Systems
        .1 Exit Lighting
        .2 Emergency Battery Banks and Lighting
        .3 UPS System
        .4 Emergency Power System
            1. Emergency Power Generators for buildings or equipment can be diesel or electric type.
            2. Inspect emergency generators. Verify the proper operation of generator and ventilation dampers, and louvers. Note whether a regular system of testing is in place and that documentation is available.

3. Identify all the emergency generators and indicate which building each generator serves. Identify whether the generator also serves non-life-safety items and whether the generator does load-shedding.
4. Determine theoretical emergency generator load and reserve capacity based on product data (visual inspection only).
5. Identify any signs of corrosion, mechanical damage, and leakage, oil on windings, cracked belts, etc. for each emergency generator, fuel tank and day tank.
6. For each emergency generator, provide photographs and record all nameplate data including: Age of generator; Type of fuel; Rated values.
7. Review maintenance records and identify whether emergency generators are meeting the requirements of CAN/CSA-C282. Pay special attention to the following code sections: Code 6.4.1(a) with respect to starting and reaching a stabilized speed and voltage condition; Code 7.5.1 with respect to cranking cycle; Code 7.6.1.2 with respect to storage batteries capacity; Code 7.6.1.3 with respect to battery charging systems.
8. Obtain most recent records and identify any noted deficiencies that remain outstanding.
9. For each building, identify if battery lighting units are provided in addition to generator backup.
10. Identify whether buildings are provided with an external generator hook-up for the connection of portable generators.

.3 Floor Raceway Systems

.4 Other Special Systems and Devices

.1 Bird Deterrent Systems

.2 Snow Meetings Systems

.3 Capacitors/Power Correction Factor System

.5 Parking Control – Entry/Exit

.1 General Construction Items – Electrical

2.3 PREPARATION OF BUILDING CONDITION REPORTS – ASSET SECTION

2.3.1 ASSET DATA REQUIREMENTS AS THEY RELATE TO VFA

.1 Asset Details

.1 There is only one asset detail to be filled-in: “Date of Most Recent Assessment”. The date the BCR was completed shall be entered into this field.

.2 The following asset requirements and associated narratives are to be included as follows:

.1 BCR Project Team and Documentation

.1 Brief introduction identifying initiation details and requested scope.

.2 List of participants (inspection team members, asset staff, others), including name, discipline, company, and date of site visit.

.3 Limitations on liability.

.4 List of documents reviewed.

.5 List of drawings reviewed.

.6 List of other information reviewed.

.7 List of reference documents (codes, polices, standards, etc.).

.2 Building History

.1 Include the following information:

.1 Original design information, including facility type/use, size (storeys/levels), date and designer.

.2 Original construction information, including completion date, contractor, and supervision.

.3 Subsequent addition(s) information, including dates, type/use, size (storeys/levels), designer, contractor, supervision, and date(s).

.4 Major alteration/renovation information, including dates and brief scope(s).

.5 Changes in the facility use and/or occupancy.

.3 BCR Executive Summary

.1 Include the following information:

.1 A brief summary of the asset, including municipal address, name (if applicable), current use, and heritage status.

.2 A brief summary of the building, including location/orientation on the site, number of storeys above grade, other storeys (i.e., below grade and/or rooftop penthouses), construction (frame and exterior walls), and gross floor area.

.3 A brief summary of the site, including size, surrounding features (streets, development, etc.), paved vehicle areas, and other significant site improvements.

.4 List of Federal tenants occupying the building.

.5 Custodial department.

.6 Property management provider(s).

.7 An overall assessment of the condition of the asset and provide an estimate of its remaining service life.

.4 Design Parameters and Deficiencies Current and Future

.1 Review and modify as necessary preamble for design/performance – provided.

.2 If a Functionality/Serviceability assessment has been carried out since the last BCR was completed:

.1 Review the identified serviceability issues.

.2 Provide under this heading in the VFA Survey a written overview describing the issues reviewed and the recommended corrective actions.

.3 Create and enter Requirements into the BCR Survey for each recommended corrective action.

.3 If a Functionality/Serviceability Assessment has not been completed, elements that received an unsatisfactory rating during the last BPR shall be considered as the source of serviceability issues:

.1 Review the identified serviceability issues for each unsatisfactory element.

.2 Provide under this heading in the BCR Survey a written overview describing the issues reviewed and the recommended corrective actions.

.3 Create and enter Requirements into the VFA Survey for each recommended corrective action.

.4 See Building Performance Review for instructions on how to process the information provided and what to add to this narrative field.

.5 For the parameters listed below, the assessor will compare the maximum capacities against those required for the current workstation density, and any workstation density proposed for the future and make recommendations to overcome any physical or code limiting factors (excluding floor area).

.5 Overview of Architectural and Structure Condition

.1 Provide overviews of the condition and recommendations for the various architectural systems (substructure, shell, interiors, and equipment and fittings), including for each:

.1 General description.

.2 General overall condition and performance.

.3 Any notable exceptions in condition and/or performance.

.4 Any significant (high cost, health/safety, etc.) elements identified for correction in the short-term.

.5 General long-term outlook.

.6 Overview of Site Condition

.1 Provide overviews of the condition and recommendations for the various site systems (site elements, landscaping, and pavements), including for each:

.1 General description.

.2 General overall condition and performance.

.3 Any notable exceptions in condition and/or performance.

.4 Any significant (high cost, health/safety, etc.) elements identified for correction in the short-term.

.5 General long-term outlook

.2 Conduct field surveys of the facilities and hold discussions with PWGSC staff to augment base building and site information provided by PWGSC. These surveys are visual and non-destructive in nature. The survey team is to consist of a representative from the consultant as well as local PWGSC maintenance and engineering staff. Identify the scope, cost and priority of recommended corrective actions.

.3 Enter the Overview of the Civil Systems assessment in this section.

.1 The Civil Systems and possible requirements are to be added to the Grounds report when they are related to the site.

.2 For systems that are building related, they are to be entered into the Structural or Mechanical reports, as applicable,

.7 Overview of Vertical and Horizontal Transportation Condition

.1 Provide an overview of the condition and recommendations for the vertical/horizon transportation systems, including:

.1 General description,

.2 General overall condition and performance.

.3 Any notable exceptions in condition and/or performance.

.4 Any significant (high cost, health/safety, etc.) elements identified for correction in the short-term.

.5 General long-term outlook.

.8 Overview of Mechanical Systems Condition

.1 Provide an overview of the condition and recommendations for the mechanical systems, including:
  .1 General description.
  .2 General overall condition and performance.
  .3 Any notable exceptions in condition and/or performance.
  .4 Any significant (high cost, health/safety, etc.) elements identified for correction in the short-term.
  .5 General long-term outlook.

.9 Overview of Electrical Systems Condition
  .1 Provide an overview of the condition and recommendations for the electrical systems, including:
  .2 General description.
  .3 General overall condition and performance.
  .4 Any notable exceptions in condition and/or performance.
  .5 Any significant (high cost, health/safety, etc.) elements identified for correction in the short-term.
  .6 General long-term outlook.

.10 Compliance with TBS Temperature, Humidity, and Ventilation (Mechanical Environmental Standard for Federal Office Buildings)
  .1 The assessor will ensure compliance with “RPB Standard MD 15000-2012 Mechanical Environmental Standard for Federal Office Buildings” for temperature, relative humidity, and ventilation targets. If the asset meets or exceeds these targets, the assessor will describe any adverse effects on the asset’s systems if they exist. If the asset does not meet or exceed these targets, the assessor will describe why and what could be done to meet the temperature and humidity targets. Any recommended requirements shall be added to the VFA Survey.

.11 Regulatory Testing Confirmation
  .1 Provide an overview of the on-site regulatory testing and inspection, including:
    .1 Preamble for regulatory testing and inspection.
    .2 List of regulatory testing and inspection records found and reviewed on-site.
    .3 List of regulatory testing and inspection records not found on-site, and reason why.
    .4 List of regulatory testing and inspection not performed, and reason why.
    .5 Recommendations for remedial action if necessary and the reasons for omission.

.12 Compliance with Accessibility Standards
  .1 Provide an overview of the status and level of accessibility, including:
    .1 The assessor will complete this narrative field when an accessibility audit is part of the call-up or if a recent Accessibility Audit has been completed. The narrative field shall contain a summary of the results of the audit.

.13 Overview of Seismic Screening (if applicable)
  .1 This narrative shall include a seismic site review, including notable observations and any qualifications used in determining the Structural Priority Index (SPI) score.

.1 The assessor will complete this narrative field when Seismic Screening is part of the call-up or if recent Seismic Screening has been completed. The narrative field shall contain a summary of the results of the Seismic Screening.

.14 Overview of Environmental Issues

.1 The assessor will check for code compliance including, but not limited to, the following building equipment and systems:

.1 Occupancy types/loads;
.2 Ventilation;
.3 Heating;
.4 Cooling;
.5 Pressure Vessels;
.6 Fire Detection/Protection;
.7 Emergency doors/exits/lighting;
.8 Electrical power capacity;
.9 Lighting;
.10 Elevators;
.11 Washrooms.

.2 The assessor will review the latest version of the BPR (see the next heading) and review the paragraph on code compliance. The assessor will list all code infractions, categorized by:

.1 National Building Code;
.2 Provincial Building Code;
.3 Fire and Safety Code

.3 For each infraction, the assessor shall include a recommended remedy in the form of a Requirement entered into the VFA Survey and indicate if addressing the infraction could be delayed due to the age of the building.

.4 Provide an overview of the status of environmental issues, including:

.1 Identification of any previously completed environmental assessment.
.2 Identification of any suspect materials/equipment visually identified on-site. Recommendations for action if necessary.
.3 Document any visible spills or leaks from equipment containing hazardous materials, such as petroleum products, PCBs, and other chemicals used in the maintenance and operations of a building that have a potential impact on the surrounding natural environment.
.4 Record data to include, at minimum, the following: type of hazardous material, estimated quantity, source of spill or leak, location of equipment, any identification information of the equipment, safety measures taken (if applicable), and equipment photograph.

.15 Overview of Project Grouping

.1 The assessor will list, in summary format, all the “requirements” that should be grouped and implemented at the same time due to their interdependence. The assessor will provide a justification for each grouping proposed and indicate if the tenants will need to vacate the area or the whole asset during project implementation.

.2 Additional details to be provided to describe considerations, such as any potential for cost savings, increased performance, changes in function, reduction in energy consumption, greater code compliance, and increased accessibility. As well as how the requirements should be carried out/steps required.

.3 Indicate if it would be better to wait for a particular time of year. Identify potential occupant disruptions. Describe the precautions that should be adhered to, to minimize impact on the occupants and building operations.

.16 Code Compliance Summary

.1 The assessor will check for code compliance including, but not limited to, the following building equipment and systems and provide a preamble to address the following:

.1 Occupancy types/loads;
.2 Ventilation;
.3 Heating;
.4 Cooling;
.5 Pressure Vessels;
.6 Fire Detection/Protection;
.7 Emergency doors/exits/lighting;
.8 Electrical power capacity;
.9 Lighting;
.10 Elevators;
.11 Washrooms.

.2 The assessor will review the latest version of the BPR (see the next heading) and review the paragraph on code compliance. The assessor will list all code infractions, categorized by:

.1 National Building Code;
.2 Provincial Building Code;
.3 Fire and Safety Code

.3 For each infraction, the assessor shall include a recommended remedy in the form of a Requirement entered into the VFA Survey and indicate if addressing the infraction could be delayed due to the age of the building.

.3 Asset Photographs

.1 The assessor will include a recent photograph of the front of the building and a description, including building name and location.

.2 Refer to 2.4.8.1.2 for photograph specification.

.4 Asset Narratives

.1 Refer to 2.4.5.6 for asset narrative specification.

2.3.2 TWENTY FIVE YEAR WINDOW OF CAPITAL AND REPAIR REQUIREMENTS

.1 Since the PWGSC BCR data is kept up to date through yearly data entry, the 25 year horizon would only be valid for one year. The number of years of valid planning data available reduces by one year for every year since the last BCR.

2.4 PREPARATION OF BUILDING CONDITION REPORTS – SYSTEM SECTION

2.4.1 GENERAL

.1 These surveys are visual and non-destructive in nature.

.2 Testing; unless otherwise directed by the DR, all on-site investigation is to be visual only. Provide for approval, any recommendations for testing and other evaluation methods deemed necessary to suit the specific investigation objectives. These may include the following categories: Non-destructive (e.g. soundings, flashing and mirror, fiber-optic scopes, infra-red thermography, etc.); destructive testing (e.g. test cuts and borings, partial dismantling, etc.); laboratory testing; or destructive testing to obtain samples for lab analysis. For each recommended testing or evaluation method: Describe the proposed methodology to be used including the method of access with supporting rationale and provide estimated indicative cost to carry-out recommendations.

.3 Regarding service agreements, summarize all asset systems that have preventative or corrective maintenance or service contracts using the following format; system serviced, company, description of service, frequency of service, date of last inspection or services, typical cost.

.1 Identify components that require service agreements put in place that currently do not, and provide an estimated cost in the Overview.

.4 Assess the system condition and remaining useful life; utilize the full spectrum of 2.4.8.8 for the analysis of the systems. Additionally, make recommendation(s) and requirements for in-depth Level III studies (L3) where necessary.

.1 With regard to Level III studies, identify, list and prioritize systems that require more in-depth level III investigations or studies. Provide a cost estimate, and insert within the 25 year requirement spreadsheet.

.2 Ensure all Level III professional studies for any/all buildings that lead to recommendations for the client for further action are reported on in the Audit Section which is at the beginning of each discipline's report.

.3 Enter the study that is happening first, in the order of requirements. If there are two studies being done in the same year, if one is a one-time event, consider putting this one first, so there is a logical chronical order to things. Consider grouping studies that can be done concurrently in order to save costs – e.g. An Arc Flash Study could possibly be done with the Infrared scanning and cleaning and re-torquing.

2.4.2 BACKGROUND INFORMATION TO BE REVIEWED

.1 Review the previous BCR Information, as-built drawings, Operation & Maintenance Manuals, any previous projects carried out on the sites, and any other available documentation.

.2 Previous BPR Issues for Verification:

.1 If, during the last Building Performance Review (BPR), one or more Systems were considered operationally unsatisfactory, the BPR team will have given each of those Systems an "unsatisfactory" status and filled in this narrative field describing the reason why.

.2 The consultant/assessor will review this narrative field for each "unsatisfactory" system and recommend and cost a course of action to rectify the problem described in the form of a requirement.

.3 Discussions with the Property Management team to be held to ensure the consultant/assessor fully understands the problem described for each "unsatisfactory" component.

.4 Coordinate with PWGSC and obtain authorization from the DR to correspond with the client department to gather information on the asset and for discussions regarding that information. Keep the DR informed of the content and outcome of these communications and for any discussions that affect the scope, cost, or schedule of the project. Seek authorization from the DR as per the BCR-SOA.

2.4.3 INTERVIEW WITH THE BUILDING MAINTENANCE TEAM

.1 Conduct on-site inspection of the facility with a multi-discipline team; interview building management and operational maintenance staff; and review and analyze existing information in the form of reports, as-built drawings and specifications, etc.

.1 As required, access interstitial space even if you have to ask operational maintenance staff for a ladder, to verify if a system is working or its condition.

.1 E.g. Emergency Battery Bank operation verification.

.2 E.g. Branch wiring type verification and condition.

.2 During normal site operational hours, systems located outside the asset may not be operating as intended.

.1 Return to the asset after operating hours and confirm the condition of all those systems whose condition could not be assessed during normal operating/daylight hours, such as exterior lighting and parking lot lighting.

2.4.4 VFA SURVEY INSPECTION PROCESS

.1 VFA Surveys

.1 When an assessor uses a single person to enter all the data into the BCR Survey, it includes all disciplines.

.2 If each discipline lead is required to enter data, separate discipline specific VFA Surveys can be provided.

.3 The assessor can specify which approach they wish to use when requesting a Survey for a building.

2.4.5 VFA SURVEYS

.1 General

.1 In VFA, asset BCRs are kept current as yearly inflation updates to project costs and project completion information is entered. System generated reports permit the planning of projects at the portfolio level with the potential for cost savings by taking advantage of the economies of scale.

.2 To access the VFA Survey, the user enters a custom URL into either a mobile device or desktop browser.

.1 User assigned surveys can then be “checked-out” to the desired medium, completed offline, and “checked-in”.

.2 When entering information, enter as much information into the VFA data base as possible so that the client doesn’t have to refer to an attached reference document.

.3 Once a report is ready to be reviewed, generate a PDF draft report from VFA and uploaded to BIM 360 for PWGSC and DR for distribution.

.4 Once all PDF submissions are approved the VFA survey can be submitted to BIM 360.

.5 Following final approval, the asset will be updated with the BCR survey data. The National Centre of Expertise (NCOE) will selectively audit approved surveys in the VFA application to validate administrative completeness.

.3 Basic training on the use of VFA Surveys for the Consultant will be provided by PWGSC if and when required. However, it would be beneficial if the Consultants secure detailed knowledge of this software interface prior to the commencement of the contract services.

.4 Details of upcoming VFA training to be provided through PWGSC DR.

.5 Note - the approver is a PWGSC DR.

.6 VFA Asset and System Narratives

.1 Note that all VFA narrative fields are limited to 4,000 characters, which equates to around one page of text. In cases where narratives exceed this limitation, the content will be truncated, and you will receive an error message. Therefore, before the character count reaches the 4000, indicate that additional wording is available, and add a statement to advise the reader that additional information can be found in a Reference document, and refer to the document by name and location, and ensure its full content is available for review in BIM 360.

.2 Wherever possible eliminate the use of a reference document.

2.4.6 VALIDATION OF THE SYSTEM LIST

.1 All systems that contain any infrastructure within any building shall be reported on, even if maintained by a third party or if the service agreement is paid by a third party.

.2 When adding new systems not already installed in the building, into the BCRs, since the system does not exist in the building, the system should not be entered at the system level. The recommendation(s) plus estimated installation cost is to be provided in the discipline's Overview of Systems Condition narrative.

.3 For buildings that do not have any systems of a specific discipline in them, state something to that effect in that discipline's Overview.

.1 For example: Building 36 does not have an electrical service, nor are there any existing electrical systems located in the building. This is a building used solely for storage, is generally unoccupied, and is not utilized in the winter. According to the Farm Building User Guide, issued by the Manitoba Office of the Fire Commissioner in May 2017, farm buildings under 600 SM are not regulated by any building code requirements in Manitoba. Therefore, there is no immediate need to provide any new electrical systems.

.4 Systems in the building but missing from the VFA data base are to be added.

2.4.7 SYSTEM INSPECTION AND EVALUATION CRITERIA

.1 Regarding system inspection, identify deficiencies found to be present and use the System Description narrative field for further explanation.

.2 Report on, create requirements, and provide associated costs including, but not limited to, maintenance items, repairs, code violations, life safety recommendations, upgrades, Best Practices, and environmentally responsible recommendations.

2.4.8 VERIFICATION AND CREATION OF SYSTEMS WITHIN VFA

.1 Associated with each system listed, there are several system details that shall be reviewed and updated as necessary. These details are:

.1 System Properties

.1 Delete the text to the right of the camera icon, in the text box with an "Edit Description" button. Also delete the text at the bottom of the System Information in the "Comments" field. All Assessment information is to be entered into the Custom System Properties and the Custom Requirement Properties sections only.

.2 Required System Photographs

.1 All listed Systems within the report require a photograph. Photographs add value to the document and are worth a thousand words.

.2 Document all observations made during the field review with photographs and/or videos, and drawings to identify the location of the observations. Report immediately any issues noted that represent a potential health and safety risk to users in and around the immediate area of the facility. Provide recommendations on temporary measures to mitigation risks (e.g. temporary repairs, closing off access, signage notifications, etc.).

.3 To give a better understanding of the asset, the consultant/assessor will always include as many photographs (up to six) as it takes to adequately describe the condition of the component being reviewed.

.4 The Consultant shall provide, at a minimum, photographs of every system in the entire Asset. For Systems with multiple types, one photograph is inadequate e.g. one photo for an asset with stone and brick and other masonry cladding is not acceptable. Provide at least one photo for each type of cladding material which can be sub-categories to the Component/System.

.5 These photograph files, as well as those specified elsewhere in this document, must be:

.1 .JPG or .JPEG files.

.2 Less than 5 MB.

.6 VFA Auditor includes advanced Photo Management functionality allowing users to link multiple photos to an Asset, System, and Requirements. Users have the option to link photos directly from a mobile device camera or select from a camera roll or photo folder. Position the subject matter in the photo as such that it is close enough to clearly present the required details of the component and the issue, if any, yet show surrounding detail so that the photo location can be confirmed.

.3 System Name

.1 When completing a VFA Survey, the default system name is the same as the system's name in the master system list (e.g. B1015 Exterior Stairs & Fire Escapes). To help position the system within the building, its location shall be edited to suit the system being reported on.

.1 E.g. If there were two different sets of Exterior Stairs used on a building, then the assessor will adjust the name accordingly.

.2 The system name will be renamed to match the system name from Uniformat II – Level 4 numbering and not RS Means (e.g. D5012001).

.1 E.g. B2034 Overhead Doors (2002).

.2 E.g. D2013 Lavatories (1995).

.3 E.g. D5012 Low Tension Service and Distribution – Transformers (1990).

.4 E.g. D5092 Emergency Light and Power Systems – Exit Lighting.

.4 Year Installed

.1 The Year Installed for a system is the last year the system was replaced or renovated to the point where its lifetime is now as long as if it were new. The assessor will update this field for each system in the asset as part of the BCR. VFA will automatically populate the field based on the construction year of the asset determined via PSPC master inventory data sources. If the Year Installed is not known, then it shall be determined by subtracting the lifetime for that system from the year the next replacement or renewal renovation is recommended. If the system has never been replaced, the assessor will accept the Year Constructed as the Year Installed for that system.

.2 When reporting on multiple, similar pieces of equipment, group/report on this equipment via the Year Installed as this equipment will most likely have the same Lifetime and Condition Rating and will aide in future reporting.

.1 E.g. D5012 Low Tension Service and Distribution (1989), D5012 Low Tension Service and Distribution (2002).

.5 Lifetime

.1 The Lifetime/expected or theoretical life of every system is predetermined in VFA based on Industry Standard RS Means and PSPC business rule, and is the number of years a system will last, from new, before it must be replaced or rehabilitated. In the VFA Survey, the default lifetime is not editable. Assessment of the system condition is to take place referencing the stated lifetime field and adjusting the Years Remaining field in order to automatically create the desired auto renewal requirement.

.2 The Years Remaining that are shown, are based on the Year Installed (before any updates). If you've changed the Year Installed, tap on the "Calculate" button to synchronize the data

.6 Years Remaining

.1 A System's default condition is based on its age (System's Year Installed vs. Lifetime). The VFA Survey allows the assessor to accept the Years Remaining based on age or to enter a different value based on the observed condition. Once again, it is imperative to utilize this observed condition functionality to trigger renewals and NOT to create renewal requirements or requirements will be duplicated, creating false report results for PWGSC.

.2 Ensure that the Year Installed - Lifetime = Years Remaining.

.3 When extending or condensing a system's theoretical service life, ensure an explanation as to why and what was observed on site to reduce or expand the Years Remaining, when different from the theoretical service life, is detailed in the Assessed Condition and Anticipated Replacement narrative.

.4 If extending a system's life, since reassessment of the system won't occur for another five years, ensure the system can last at least this long without a Lifecycle replacement - until the next BCR cycle, or if maintenance is required to ensure the same.

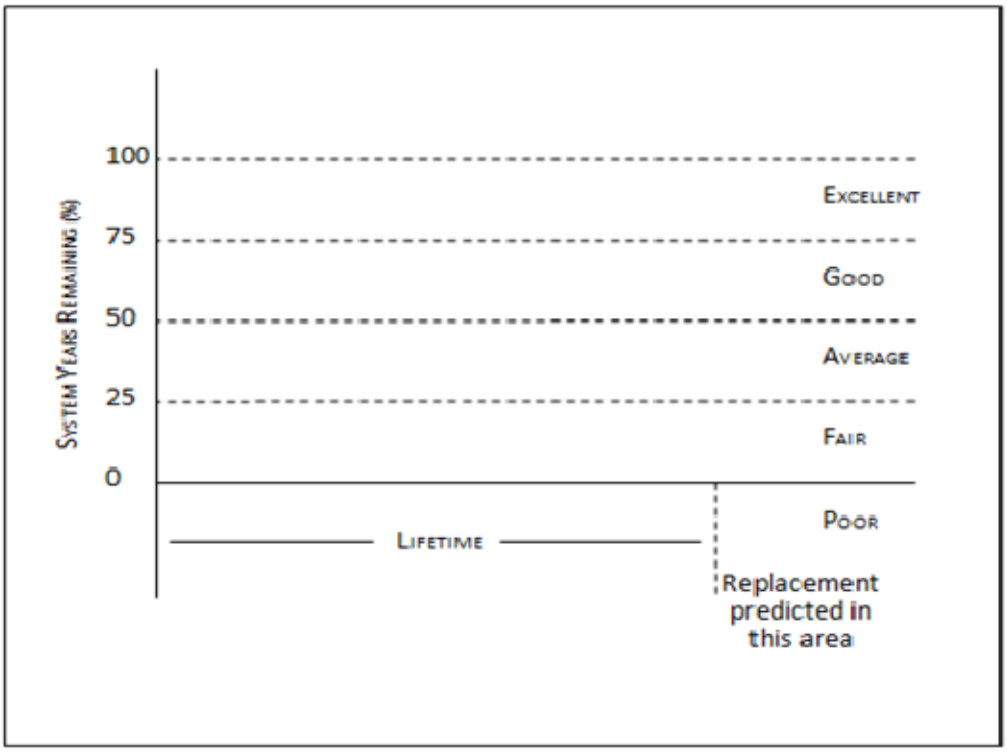
.7 Inspection Date

.1 The date the inspection was performed.

.8 Condition Rating

.1 The first step in establishing the condition of a system is to decide on a system's remaining life. The remaining life shall be determined by considering the following factors: Year Installed, Lifetime, Deficiencies, Quantity – Units of Measure, Service conditions including duty cycles, Weather conditions, hours of operation, obsolescence, and/or Operational or functional performance problems and issues

.2 Resulting from the inspection process, the condition of each system shall be determined as "excellent", "good", "average", "fair" or "poor". For purposes of consistency, each of these five possible conditions are related to the remaining life of a system divided by its lifetime and expressed as a percentage.



.1 Note: Percentages at the boundaries between two conditions shall link to the condition below the boundary. (E.g. 50% of life remaining would imply average condition).

.3 The expected or theoretical life of every system shall be assessed during the inspection process. The lifetime of every system in VFA has been pre-determined from industry standards and sources. If the assessor feels that, under the circumstances in which the system is being used, the Years Remaining shall be modified to suit the situation.

.9 Quantity– Units of Measure

.1 The quantity of the system is the unit of measure that is used to for determining replacement cost estimating purposes. Distance, area, and volume measurements shall be measured using the metric system. These values are required to calculate component replacement costs and is how it is determined which system is selected from the data base to be edited.

.2 If using the unit of measure of SM, then similar pieces of equipment shall be grouped together via their type and installations date.

.3 If using the unit of measure of each or L-Sum, then similar pieces of equipment shall be grouped together via their type – e.g. transformers will be grouped together, MCCs shall be grouped together, and/or distribution panels will be grouped together so that similar types of equipment whose cost, installation date, and condition are the same and to avoid too many systems of the same type.

.4 Where a desired unit cost and unit of measure cannot be selected within the same system, the desired unit of measure is to be the deciding factor. An adjustment factor is available to use to adjust the system cost/replacement cost to whatever is desired.

.10 Replacement Cost

.1 The Replacement Cost of each system will be automatically populated based on its Quantity and Unit Cost. The Replacement Cost of each system is based on its Quantity and Unit Cost and is the Replacement Cost of the entire system in “current time” dollars.

.2 The assessor will ensure all Replacement Cost estimates are location specific, include a construction contingency equal to 15% of the base costs, and include an amount to cover project soft costs/fees of 30%. The assessor can use the adjustment factor to modify costs.

.11 Adjustment Factor

.1 The Adjustment Factor is set to 1 and available to the assessor to modify the cost. It serves as a multiplier. Adjust this field to get the desired Replacement Cost. If the Adjustment Factor is adjusted to .01 or reaches 3 or more, refer back to the system list, review, and choose a more appropriate system so that the adjustment factor is closer to 1. Incorrect use of the adjustment factor could result in errors with costing.

.12 % Renew

.1 This field is a VFA system driven filed that can be adjusted. The % renew is the percentage of a System's Replacement Cost that is required to return the System to "like new" condition at the end, or over the course, of the System's lifetime. This percentage may exceed 100% (up to 1,000%) if the cost to renew the System is more than the cost to install the System new. This is typically due to increased costs associated with the demolition and removal of the original System prior to the installation of the new System.

.13 Set Quantity To

.1 The Set Quantity To field is a calculation field similar to the Adjustment Factor at the System level. It is useful for systems with a unit measure of each and can allow for a quantity of equipment to be entered.

.2 This field can be used to adjust the quantity of units that comprise a system and is used to calculate the renewal cost. E.g. Multiple pumping, boiler or electrical distribution nodes comprising a system. This field is useful for detailing a quantity of items when the System Quantity (Units of Measure) do not accurately correspond to the assessed system.

.3 Setting a quantity is useful, when appropriate, for the annual Building Performance Report update and aids with repair projects and VFA requirements close out, deferral, or splitting.

.14 Renewal Action Cost

.1 The Renewal Action Cost is the cost of the system replacement with inflation applied, for the replacement of the entire system, for the Year that replacement is being recommended and should match the Estimated Cost in the Requirement unless the % renewal field makes it different.

.2 Custom System Properties/System Narratives

.1 There are two system narratives associated with each system. Populate these narrative blocks as per below (or follow the blank BCR template).

.1 System Description

.1 The description of the system should include:

.1 System name

.2 Year installed

.3 Basic Description (i.e. description of wall assembly, window, roof type, make/model of equipment)

.4 The location of the system

.5 The quality of the system (excellent, good, average, fair, poor)

.6 The capacity or performance of the system

.7 The replacement cost

.8 Identification of Character Defining Elements

.2 This information is to be recorded against the system and carried forward in the executive summary.

.2 Condition and Anticipated Replacement

.1 This narrative field should include:

.1 An assessment of the impact of each of the system deficiencies on the system's remaining life

.2 Quality and service conditions that will lengthen or shorten the system's expected life span, for example:

i. Below average quality component

ii. Inappropriate system design

iii. No longer supported by the supplier

iv. Inadequate maintenance

v. Inadequate performance

vi. Damage from external sources

.3 Ensure the rationale and condition for system's condition rating (Excellent, Good, Average, Fair or Poor) and the Anticipated Replacement Date (e.g. in 2 years, in 2028, etc.) is mentioned in the Assessed Condition and Anticipated Replacement narrative.

.4 The year the system was last replaced and establishment of the next replacement or rehabilitation date.

.5 An overview of the system`s condition and the recommendations/predictions for future repair and replacement projects.

2.4.9 CREATION OF REQUIREMENTS WITHIN VFA

.1 Once the process of evaluating a system's condition has been completed, the recommended repair or replacement requirements shall be entered into the VFA Survey. A "Requirement" is the name given to a recommended action to repair or replace a system.

.2 In a BCR, requirements shall be classified by type so that various building performance metrics can be calculated and the status of government programs can be ascertained. Requirements are typically grouped together into projects that will be integrated into the AMPs strategic priorities, and implemented once funding is secured.

.3 Renewal Requirements are automatically generated by VFA facility to represent the cost and action date of a System's renewal requirement. The cost and date are read-only and are automatically populated by the System's Replacement Cost and the date is set from the System's Years Remaining and based on the timing input as detailed in article 2.4.8.1.7 Action Fiscal Year.

.4 The assessor therefore will not directly update Renewal Requirement details. However, adjusting the Years Remaining will affect the Renewal Requirement details once the survey is integrated into VFA facility. Additionally, future Renewal Requirements are automatically cycled and recreated based on the System Lifetime.

.5 Once the process of evaluating a system's condition has been completed, the recommended replacement or repair requirements shall be entered into VFA.

.6 The requirement details listed below shall be validated and entered or updated as required in the VFA Survey for all identified new requirements. These details are:

.1 Required Requirement Photographs

.1 In addition to the photographs required at the System level, a photo shall be included at the Requirement level if:

.1 There is visual evidence of damage or wear;

.2 There is a visually evident health or safety risk;

.3 There is a visually evident code or directive compliance issue;

.4 The photograph will help explain the requirement implementation strategy;

.5 Visual evidence is required to explain the requirement implementation strategy.

.2 Insert different photos for the requirement than that are used for the System level, except for the auto-generated Lifecycle requirements as photos cannot be inserted for these.

.2 Requirements/Custom Requirement Properties

.1 When making recommendations that occur multiple times during the life of a system – e.g. system component changes, such as batteries, Studies, such as Thermography, etc., these recommendations need to be entered as many times as recommended for the life of the system and/or BCR 25 year cycle – whichever occurs first.

.2 Consider recommending, where applicable, that these recommendations be done concurrently to save costs and carry this information to the Overview of Project Grouping narrative.

.3 Priority, Recommended Action Date/Override Action Date/Action FY*, and Inspection Date

.1 Recent updates to the Action FY

.1 The VFA site is configured with an April 1 start for the Fiscal Year. VFA reports Requirement Action FY based on the end of the FY pair so, a 2021/2022 action date will be a 2022 Action FY.
In the screen shot below with Recommended Action Date 7/19/2022 the fiscal year is 2022/2023 since it is after April. The Action FY will be 2023.

.2 Action FY is based off the date of the inspection and priority offset relative to April 1. If the inspection date is after March 30, it will be in the next FY.

.3 Renewals and Generated Renewal have their Action FY based on the System inspection date and years remaining (assuming the System and renewals are in sync). For renewals that are in the survey, the Override Action Date will determine the action FY if it is set.

.4 Non-Renewals are calculated based on either the Override Action Date first or the Requirement inspection date and priority offset.

.2 Each non-auto-generated renewal requirement must be assigned a Priority that indicates its time criticality. Its value will interact with the inspection date to automatically populate the “Recommended Action Date” in VFA.

.3 Renewal Requirement priorities are set as read-only, and are automatically assigned based on their parent system’s remaining life data settings, as adjusted by the consultant/responder. A renewal requirement will automatically be created within VFA when the remaining life of the system is 20 years or less.

.4 Priority values 1 to 9, indicate how many years from the last inspection that the repair/replacement will be required and the “Not time critical” value indicates that the repair to/replacement of the system will be required, but in 10 or more years.

.1 For example, a priority value of 3 will set the Recommended Action Date to three years from the “Inspection Date”. Inspection Date is a read-only field that is automatically populated when a Requirement is created or modified.

.2 If the date that gets populated into the Recommended Action Date field is not desired, the preferred date can then be entered into the Override Action Date field.

.3 Once the Override Action Date is set, it supersedes any “Recommended Action Date” that was set using the Priority and “Inspection Date”.

.4 The Recommended Action Date or the Override Action Date value is what will be populated in the Action FY* field in the requirement section of the generated reports and based on the timing input as detailed in article 2.4.8.1.7 Action Fiscal Year.

.4 Requirement Classification/Category

.1 Requirement Structure - The Requirement classification chosen shall reflect its primary justification. (E.g. if the purpose of the requirement is to remove asbestos, then the Regulatory Hazmat classification would be used, if the purpose of the requirement is to repair a system, then the Integrity-Reliability classification would be used). Examples to aid in classification are provided below within the structure.

.2 In VFA, each requirement must be categorized into a pre-defined structure that indicates the general issue. This is critical for PWGSC reporting. A requirement shall always be classified at the lowest level of this structure. Requirement categorization facilitates reporting on various government programs, and to help determine asset performance in those areas. The justification for recommending each requirement shall be used to determine its classification. The requirement structure is:

.1 Integrity

.1 Lifecycle - Components or Systems that are approaching or have exceeded their useful life. (Examples: a 25-year old chiller that is approaching the end of its useful life and is recommended to be replaced within the next 5 years; a 15 year old membrane roof that is prematurely aged and showing signs of wear and leaking)

.2 Reliability - Components or Systems that are not working as designed and/or cannot be depended upon but have not yet exceeded their useful life. (Examples: a recently installed mechanical control that is not operating properly or functioning in an unpredictable manner. Breaches in the roof membrane or deteriorated window sealants).

.2 Optimization

.1 Abandoned - Equipment or Facility Systems that have been abandoned in place. (Examples: old cooling tower abandoned on the roof; old oil storage tank abandoned in the basement)

.2 Capacity - Problems with a System's ability to meet current demand. (Examples: heating equipment that cannot adequately cover its intended area).

.3 Energy - Conditions that adversely affect energy use (Examples: single-pane windows, lack of pipe insulation).

.4 Maintenance - Components or Systems that require routine maintenance (Examples: recalibration of thermostats, cleaning of ducts, cyclical painting, other aesthetic considerations)

.5 Mission - Components or Systems that do not meet the critical standards of the organization, per the guidelines provided by the client. (Examples: the facility needs to be operational on a 24/7 basis…therefore redundancy/backup components need to be added, e.g. dual-fuel boilers; plant adaptation, e.g. required additions/alterations associated with the conversion of a classroom facility into a dormitory; client driven security vulnerabilities).

.6 Sustainability - Improvements where components and/or Systems potentially have a sustainable opportunity (other than Energy based). (Examples: water conservation measures, use of building materials and resources based on sustainable procurement and with recycled/bio-based content, improvement of indoor environmental quality and considerations that reduce the impact of the building and its operations on the surrounding site.)

.7 Technological Improvements - Conditions that need to be made modern to meet current tech standards. (Examples: pneumatic to DDC; non-energy based upgrades).

.3 Regulatory

.1 Accessibility - Conditions that violate accessibility guidelines, such as the Americans with Disabilities Act or Barrier-Free Design Standards. (Examples: non-accessible building entrances, plumbing fixtures, or door hardware).

.2 Building Code - Conditions that violate the client specified local and/or national Building codes (Examples: lack of backflow protection, insufficient ventilation, OSHA violations).

.3 HazMat - Regulatory issues associated with Asbestos, Lead, PCB, and other situations in which hazardous materials are known or suspected to be present in the Asset. (Examples: suspected asbestos pipe insulation or floor tiles).

.4 Life Safety - Conditions that pose an immediate danger to human life or safety. (Examples: blocked emergency egress, dead-end corridors, damaged and/or non-functional fire protection or emergency Systems).

.5 Quantity, Units, Unit Cost, Adjustment factor, Estimated cost

.1 For auto-generated requirements, the Unit Cost of a Requirement is a read-only field set by the Quantity and Unit Cost set at the System level. If the assessor deems this value to be inaccurate, the Requirement Adjustment Factor can be modified accordingly. This will match the information at the system level, unless the % renew is set to anything other than 100%.

.2 For new manually created Requirements the assessor will enter the Quantity, Unit, and Unit Cost. The Estimated Cost is based on the multiplication of the Quantity and Unit Cost.

.1 When manually adding a new “model” requirement, the “Units of measure” are prepopulated. The assessor will need to adjust the quantity as this new requirement will have a default quantity of 0. The Unit Cost of a requirement cannot be adjusted as it is tied to the same RS Means elements associated to the system. The adjustment factor is used to adjust the “Estimated Cost”.

.2 For manually created requirements, the assessor will ensure all cost estimates are location specific and include a construction contingency equal to 15% of the base costs, and an amount to cover project soft costs/fees of 30% that is added to the Replacement Cost. The assessor can use the adjustment factor to modify costs.

.6 The requirement details listed below shall be validated and entered or updated in the VFA Survey for all identified new or existing requirements:

.1 Custom Requirement Properties/Requirement Narratives

.1 Requirement Description - the following information shall be included in every Requirement description:

.1 A full description of what is to be done; and

.2 The expected results.

.2 Requirement Justification and Strategy - the following information shall be included in every requirement justification and strategy:

.1 Rational for why the requirement is required;

.2 List of what deficiency(ies), the requirement is correcting or enhancement(s) it is providing;

.3 Indicate any potential for cost savings, increased performance, changes in function, reduction in energy consumption, greater code compliance, and increased accessibility;

.4 How the requirement should be carried out / steps required

.5 Indicate if it would be better to wait for a particular time of year;

.6 Identify potential tenant disruptions;

.7 Describe the precautions to be adhered to, to minimize impact on the tenant and building operations;

.8 List other requirements to be grouped with this requirement and implemented together and carry this information to the Overview of Project Grouping narrative.

.3 Assessed Implication of Deferral (Risks) - include answers to the following questions in the description field:

.1 What will be the impact on asset operations if the requirement is delayed?

.2 Will there be any additional degradation (cost) if the requirement is delayed?

.3 What is the potential impact of other systems if the requirement is delayed?

.4 What is the impact on the tenant's health and working environment if the requirement is delayed?

.5 What is the impact on other related requirements/projects?

2.5 BUILDING CAPACITY ASSESSMENT

2.5.1 GENERAL

.1 Assess existing building capacity and capacity of building systems to report on impact of increasing the population to meet GC Workplace.

.2 This section describes the work that the consultant/assessor will perform as a specific Stand Alone document.

.3 The Building Capacity Assessment Report is to include the following sections:

.1 Executive Summary

.2 Building Overview

.3 Exit Systems

.4 Vertical Transportation Systems

.5 Mechanical Systems

.6 Electrical Systems

.7 Sanitary Infrastructure

.8 GC Workplace

2.5.2 SCOPE AND ACTIVITIES

.1 Each section within each Building Capacity Assessment Report is to be developed as follows:

.1 Executive Summary:

.1 The building's current and maximum occupancy;

.2 A summary table indicating the maximum occupancy supported by each of the major building systems (Exit Systems, Mechanical Systems, Electrical Systems and Sanitary Infrastructure) floor-by-floor in comparison to the building GC Workplace estimated occupancy; and

.3 A conclusion stating whether the building is capable of meeting the occupant density prescribed in the estimated Workplace 2.0 standard and a summary of the limiting factors for increased occupant load floor-by-floor.

.2 Building Overview:

.1 A brief summary of the building's physical infrastructure (e.g., number of floors, usage, etc.);

.2 The building classification as per section 3.1.2.1 of the National Building Code (NBC);

.3 Whether the high building requirements apply for any portion of the building as per section 3.2.6 of the NBC;
.4 The Occupant Load of the building as per section 3.1.17.1 of the NBC; and
.5 The Building Code Matrix as per the NBC.

.2 Exit Systems:
.1 Provide an Exit Capacity Assessment, included, but not limited to the following:
.1 Show on floor plans the exiting layout and the number and location of exits for each floor.
.2 Analyze the existing exit system infrastructure in the building and confirm whether the infrastructure – including but not limited to the exit integrity, exit through lobbies, fire exposure protection, exit corridors, etc. – meet the requirements of the 2015 National Building Code of Canada (NBCC). Summarize findings in a table and provide the details of the analysis in an appendix.
.3 Confirm that the distance between exits meet the requirements of the 2015 NBCC.
.4 Confirm that each identified exit leads from the floor area it serves to an open public thoroughfare, or an exterior open space protected from fire exposure from the building and having access to an open public thoroughfare. Summarize findings in a table and provide the details of the analysis in an appendix.
.5 Analyze travel distance from all floor areas to exits on each floor and determine if it meets the limits established in the 2015 NBCC. Summarize findings in a table and provide the details an appendix.
.2 Calculate and summarize in a table the results of the occupant load of each floor under the scenarios listed below. Provide all calculations for each scenario in the appendix, and ensure to identify, discuss and summarize any limiting factors for increased occupant load for each floor, such as sloped floors, stair rise/run, egress/exit door widths, etc.
.1 Current/Existing state. Provide a table listing the current occupancy loads for each floor.
.2 If floors are fitted up to the Workplace (WP) 2.0. Provide list of all assumptions used.
.3 Maximum occupant load permitted by the 2015 NBCC. Clearly identify the density chosen (from Section 3.1.17.1. of the NBCC) and rationale for using that density.
.4 Exit capacity of the building. Provide a table showing the measured dimensions of the exit (including stair clear width, stair rise and run; width of exit/egress door, etc.) for each floor and the resulting occupant capacity.
.5 Provide a table listing the fire resistance rating of all exit stair doors.
.3 Conduct an Exiting analysis for all floors at the following densities: current occupant load, GC Workplace load, maximum occupant load allowed by 2015 NBCC; and at exit capacity. Provide all calculation in an appendix, making sure to list/discuss all input parameters, assumptions, methodologies, etc. Summarize the results in a table and provide.

.4 Conduct a Time to Exit analysis, and ensure that the time includes time needed for occupant to reach an open public thoroughfare, or an exterior open space protected from fire exposure from the building and having access to an open public thoroughfare. List/discuss all input parameters, assumptions, methodologies, etc. Summarize the results in a table and provide all calculations in an appendix.

.5 Assess the requirements pertaining to high buildings and report on compliance of this asset. The deficiency that was noted was the lack of stairwell pressurization. The NBCC essentially requires that during a period of 2 hours after the start of a fire, each exit stair serving storeys below the lowest exit level will not contain more than 1% by volume of contaminated air from the fire floor. The analysis should compare the time required to evacuate the building vs the time that the stairwell would be contaminated by smoke (and hence no longer usable). If the evacuation time is lower than the time required to exceed the 1% by volume of contaminated air, then the existing condition is acceptable (i.e. no pressurization retrofits required).

.3 . Vertical Transportation Systems:

.1 Provide a Vertical Transportation Capacity Assessment, reviewing the existing installation to determine elevator quantity, speed, capacity and performance characteristics.

.1 Provide a listing and budget cost to comply with full accessibility compliance to latest standards.

.2 Set up an elevator simulation by computer model of the building. Input passenger density as observed, and provide a model of the performance of the elevator system including predicted average waiting times. This is to be then compared to PSPC requirements. As required, please provide several iterations with different configurations and passenger loading.

.3 Relative to the requirements pertaining to high buildings, assess the requirements and report on compliance with respect to emergency operation of elevators and firefighter elevator.

.4 . Mechanical Systems:

.1 An overview of the existing mechanical systems within the building, that includes some granular information about individual major pieces of equipment (e.g., central AHUs, chillers, etc.);

.2 The specific information sources used by the consultant for the evaluation (e.g., TAB reports, as-built drawings, shop drawings, building control systems, nameplate data, etc.);

.3 An evaluation that determines the maximum amount of outdoor air and cooling the building mechanical systems can provide. The evaluation is to be supported by building specific data;

.1 As based on the building's maximum outdoor air and cooling capacity, an evaluation that determines the maximum occupancy that can be supported. Consideration is to be given to building zoning and distribution, unique office spaces (e.g., data centres), latent and sensible heat gain, etc. Utilize the most recent version of the applicable standards and codes (e.g., ASHRAE 62.1-2013); and

.2 If a building's mechanical system capacity is unable to support the existing occupancy as per the applicable standards and code, detail where the shortfall exists (e.g., specific major pieces of equipment).

.5 Electrical Systems:
- .1 An overview of the existing electrical systems within the facilities;
- .2 Confirm the capacity of the Electrical Service supplying the facility and determine peak loading based on electricity usage records over the previous five years from the electricity supplier. Comment on the impact and cause of any upward or downward trends or shifts in usage;
- .3 Determine the percentage loading and available capacity of the electrical service;
- .4 Identify and indicate the ratings (kVA, amps, volts) of each primary transformer and where more than one primary transformer is present, estimate and tabulate the percentage draw from each of the transformers relative to the total load of the facility, based on existing occupancy, existing equipment, and available single line diagrams;
- .5 Determine the capacity of the main secondary distribution (e.g., risers) that would be impacted by an increase in occupancy;
- .6 Determine the maximum occupancy of each tower/block and for the entire facility based on the electrical systems. Include the electrical load of each FTE (e.g. work station power, task lighting, etc.) and the added mechanical loads to accommodate the FTEs; and
- .7 Determine if the potential increase in FTEs will have any impact on other electrical systems such as lighting, network/communications, and emergency power.

.6 Sanitary Infrastructure:
- .1 An overview of the existing sanitary infrastructure within the facilities, including the barrier free washrooms; and
- .2 A table showing the total existing sanitary facilities per floor and an analysis of the maximum occupant load per floor based on the existing sanitary facilities using the 2015 NBCC. The analysis should define whether the calculation is for what occupancy and should show the calculations and the table used from the 2015 NBCC.
  - .1 Compliance analysis of washroom facilities between the original NBCC that was applicable at time of construction and the 2015 NBCC.
  - .2 Show (on floor plan) and discuss washroom locations, and determine the maximum travel distance to the washrooms.
  - .3 Evaluate the adequacy of the sanitary infrastructure for the various densities, i.e. under Current/Existing state; GC Workplace; Maximum occupancy permitted by 2015 NBCC; and exit capacity. Show the details of the calculations, the reference table used from the 2015 NBCC, including any other references from codes and standards.
  - .4 Identify the number of barrier free washrooms.

.7 GC Workplace:
- .1 An overview of the building's existing occupancy per floor and for the facility as a whole (e.g., number of occupants);
- .2 An overview of the building's occupancy per floor calculated in accordance with GC Workplace;
- .3 A summary table that shows whether each of the buildings systems have the capacity to serve the estimated increased GC Workplace occupancy.

2.5.3 DELIVERABLES

.1 Provide a report addressing the requirements in the Scope and Activities Section above.

.2 Provide a cost estimate for the building to report on the impact of new building systems to suit the proposed building population (if any).

2.6 THERMOGRAPHY ASSESSMENT

.1 This section describes the work that the consultant/assessor will perform as a specific Stand Alone document.

.2 General

.1 Thermography assessments are an important inspection tool to identify issues or deficiencies in buildings that a visual inspection cannot provide. Thermography inspections are to be at minimum with thermal and digital still images and supporting narrative in a formal written report completed by a Certified Level II Thermographer (ITC).

.1 Report to include narrative and supporting images to highlight all areas of concern.

.2 Inspections are intended to;

.1 Identify all components and systems, and;

.2 Ascertain their physical and functional condition.

.3 Assessments involve;

.1 Visual inspections, and;

.2 Thermal scans of enclosures, including roofs, and electrical and mechanical components and systems using radiometric thermal imaging equipment (320w by 240h pixel image size minimum).

.4 PWGSC to provide the following;

.1 Personnel to adjust HVAC systems;

.2 Qualified electrician to remove and replace all electrical covers, and;

.3 Digital file of general report format.

.3 Purpose & Objectives of Thermography Assessment

.1 Identification of heat losses in the building envelop includes walls, windows, roofs, and top of foundation to document locations or areas of;

.1 Heat loss;

.2 Moisture damage;

.3 Air and water infiltration;

.4 Conditions likely to support growth of mould and mildew;

.5 Condensation within enclosure.

.2 Identification using a roof top infrared moisture survey to identify moisture trapped under the roofing membrane or at junctions in materials, including but not limited to;

.1 Water damaged roof membrane;

.2 Small roof integrity problems.

.3 Identification of defective electrical and mechanical components, poor connections, and overloaded circuits.

2.6.2 DELIVERABLES

.1 Submit on BIM 360;

.1 Draft and Final searchable pdf copy of thermal inspection report(s);

.2 Updated Drawings indicating location of anomalies;

.3 All original sized photographs taken during the site inspection.

2.7 QUALITY ASSURANCE REVIEW & SUBMISSIONS

2.7.1 GENERAL

.1 The preparation of the building condition report requires an objective and subjective analysis of the asset under consideration.

.2 The purpose of the consultant's Quality Assurance Review is to ensure that the Building Condition report, VFA 25 year requirements list report, thermography reports and building capacity assessment deliverables have been reviewed for quality, accuracy, consistency, and completeness.

.3 Follow the QA review process noted below for each type of report or study.

2.7.2 SCOPE AND ACTIVITIES

.1 Identify and correct, based upon discipline expertise, any technical and narrative concerns regarding qualitative merit of entered data per requirements below.

.2 Narratives for BCR Project team and documents, building history, BCR Executive summary, and all other building level narratives to be complete and reviewed for spelling, grammar and paragraph layout.

.3 Adjust narratives text for spelling, grammar and to suit particular asset and system condition.

.4 Asset Information Section;

.1 All narratives for each discipline within the Custom Properties are populated with text;

.2 Add any missing narratives, and;

.3 Correct narratives for grammar, spelling and formatting.

.5 System Information Section; narratives for all Systems are to be complete.

.1 Narratives for each System to contain relevant and up-to-date data.

.2 Ensure all Level III professional studies that lead to recommendations for the client for further action are detailed in the AUDIT section within VFA.

.6 Photos

.1 Ensure general building photo is included;

.1 Provide a photo and text description/identification for each asset, system, and requirement and general deficiencies.

.2 Photo Name, Category and Caption are supplied

.1 Where photos have been included, confirm a Caption and Category are detailed for each photo.

.3 Correct photos for size, format, and confirm each photo has a narrative.

.1 Ensure photos are cropped so that what is being described in a narrative section is of primary significance and there is no guessing of what the photo is supposed to be of.

.7 Carry out internal review of VFA generated BCR draft report and 25 year requirements list report, thermography reports and building capacity assessment to ensure that they address the requirements noted in the required services above and have been reviewed for quality and accuracy.

2.7.3 DELIVERABLE - DRAFT PILOT QA REVIEW

.1 Submit as a Draft Pilot BCR submission, for 99% QA Review, a Draft Pilot report created of one Building with a substantial amount of systems of each discipline.

.2 Submit a 99% draft pilot for each of the following: VFA 25 year requirements list report, thermography study and building capacity assessment, following the process noted above.

.3 Conduct QA review of the Draft 99% Pilot reports prior to submission.

.1 Conduct regular rigorous, in-house quality assurance reviews to ensure requirements in this TOR are addressed and so that when copying and pasting information from one system to another or from one building to another, that the section/items are corrected to suit the system/building being submitted for review.

.4 Create a PDF of the Draft Pilot report and submit survey to the DR for a QA review.

.5 If the 99% Draft Pilot Report of the one building is acceptable, the PDF can be used as the template to complete all the other reports.

.6 If 99% Draft Pilot Report of the one building is not acceptable, or if the DR feels that an internal QA was not completed (sentences not being clear, a substantial amount of misspellings, etc.) an email to the Consultant will be provided depicting this.

.1 Once the internal QA is complete and the respective report updated, the Consultant will do a resubmission and another QA Review (100% Final Pilot submission).

2.7.4 DELIVERABLE – 99% ALL REMAINING BUILDINGS DRAFT SUBMITTAL

.1 Create 99% draft reports for all the remaining buildings surveyed including all related systems.

.2 Prior to submission to DR, conduct regular rigorous, in-house quality assurance reviews to ensure requirements are addressed, and so that when copying and pasting information from one Building to another, and/or one system to another, that the section/items are corrected to suit the building/system being submitted for review.

.3 Once internal QA is complete, generate PDFs of the remaining report(s) and submit to the DR for PWGSC QA Review in BIM 360.

.4 If any/all the reports are/is not acceptable, or if the DR feels that an internal QA was not completed (sentences not being clear, a substantial amount of misspellings, etc.) then an email to the Consultant will be provided depicting this and another QA review by the consultant will be required. Once the internal QA is complete and the respective report(s) updated, the Consultant will do a resubmission for another PWGSC QA Review (100% Final submission).

.5 After internal QA review, submit each VFA 25 years requirements list report for review.

2.7.5 DELIVERABLE – 100 % BCR SUBMITTAL

.1 Once all review comments are addressed and all changes are made, submit to DR all updated files for a 100% review for completeness.

.2 Once the BCR reports are deemed 100% complete, submit BCR reports in VFA for approval and upload to BIM 360.

.3 Once the VFA 25 years requirements list report, Thermography Studies and Building Capacity Assessments are complete, upload final reports to BIM 360.

3 PROJECT ADMINISTRATION

3.1 GENERAL REQUIREMENTS

3.1.1 DOING BUSINESS WITH PWGSC

.1 The administration requirements outlined in this section are applicable to all PWGSC projects in the Western Region, unless otherwise indicated in the TOR.

.2 "Project Team" refers to key representatives involved in this project.

.3 All team members must maintain a professional, cordial and collaborative relationship.

3.2 LANGUAGE

.1 Construction documents must be prepared in English.

3.3 MEDIA

.1 The Consultant shall not respond to any media inquiry.

.2 Direct all media requests to the DR.

3.4 PROJECT MANAGEMENT

3.4.1 GENERAL

.1 Public Works and Government Services Canada administers the project on behalf of Canada and exercises continuing control over the project during all phases of development.

.2 This project is to be organized, managed and implemented in a collaborative manner.

.3 The PWGSC project management team, the Consultant team and the User Department teams are to work cooperatively at every stage of the project in order to assure a successful end result.

.4 Under the leadership of the PWGSC DR, all team members are responsible for establishing and maintaining a professional and cordial relationship.

3.4.2 NATIONAL PROJECT MANAGEMENT SYSTEM

.1 PWGSC uses the National Project Management System (NPMS) for management of its building projects in order to align with the Federal Government approvals processes. Refer to the PWGSC NPMS web site for more details.

.2 http://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/index-eng.html

3.5 LINES OF COMMUNICATION

.1 All communications will be through the DR, unless directed otherwise.

.1 This includes formal contact between the Consultant, the PWGSC Project Team and the User Department.

.2 Direct communication between members of the PWGSC Project Team on routine matters may be required for resolution of technical issues.

.1 However, this shall not alter project scope, budget or schedules, unless confirmed in writing by the DR.

3.6 MEETINGS

3.6.1 GENERAL

.1 The DR will arrange meetings throughout the project, with representatives from:

.1 The User Department; PWGSC and The Consultant team; including sub consultants as required;

.2 Standing agenda items shall include:
  .1 Project Schedule;
  .2 Cost;
  .3 Risk;
  .4 Quality;
  .5 Health and safety.
  .6 VFA Software Procurement
.3 Meetings will be held bi-weekly or as deemed suitable
.4 Meetings will be held via teleconference.
  .1 Consultant key personnel must be available to attend meetings or respond to inquiries within two working days.

3.7 CONSULTANT RESPONSIBILITIES

3.7.1 TEAM AND RESPONSIBILITIES

.1 The “Consultant Team” includes the Consultant’s staff, sub-consultants and specialists.
  .1 This team must maintain its expertise for the duration of the project.
  .2 The team must include qualified registered architectural and engineering professionals with extensive relevant experience and capable of providing all required services.
  .3 Team members may be qualified to provide services in more than one discipline.
  .4 The Consultant may expand the team to include additional disciplines.
.2 The Consultant is responsible for:
  .1 Obtaining DR acceptance for each project phase before proceeding to the next phase.
  .2 Accurately communicating budget, and scheduling issues to staff, sub-consultants and specialists.
  .3 Co-ordinating input for the DR’s Risk Management Plan
  .4 Co-ordinating the quality assurance process and ensuring that submissions of sub-consultants are complete and signed-off by reviewers;
.3 Consultant Responsibilities for Project Meetings
  .1 Attend meetings.
  .2 Record the issues and decisions.
  .3 Prepare and distribute minutes within two working days of the meeting.
  .4 Ensure all meetings are green (ie: using electronic documents or double-sided hard copies and
  .5 Ensure sub-consultants attend required meetings.
.4 The Consultant is responsible for:
  .1 Coordinating and directing the work of all team activities, sub-consultants and specialists;
  .2 Obtaining approvals on behalf of the DR from the User and other levels of government such as provincial and municipal governments;
    .1 The Consultant shall adjust the documentation to meet the requirements of these authorities.

3.8 PWGSC RESPONSIBILITIES

3.8.1 ADMINISTRATION

.1 PWGSC administers the project and exercises continuing control over the project during all phases of development.
.2 The following administrative requirements apply during all phases of the project delivery.

3.8.2 REVIEWS

.1 PWGSC will review the work at various stages and reserves the right to reject unsatisfactory work at any stage.
.2 If later reviews show that earlier acceptances must be withdrawn, the Consultant shall revise and re-submit at no extra cost.

3.8.3 ACCEPTANCE

.1 PWGSC acceptance of submissions from the Consultant simply indicates that - based on a general review - the material complies with governmental objectives and practices, and meets overall project objectives.
.2 Acceptance does not relieve the Consultant of professional responsibility for the work and for compliance with the contract.

3.8.4 PWGSC PROJECT MANAGEMENT

.1 The Project Manager assigned to the project is the DR.
.2 The DR is directly responsible for:
  .1 The progress and administration of the project, on behalf of PWGSC;
  .2 Day-to-day project management and is the Consultant's single point of contact for project direction;
  .3 Providing authorizations to the Consultant on various tasks throughout the project.
.3 Unless directed otherwise by the DR, the Consultant obtains all Federal approvals necessary for the work.

3.8.5 PWGSC ARCHITECTURE AND ENGINEERING CENTRE OF EXPERTISE (AECOE)

.1 Provides advisory services and quality assurance reviews of consultant deliverables.
.2 Participates regularly in BCR project milestones and may attend meetings as and when required.
.3 Provides a Design Manager for the project who will coordinate the services of AECOE.

3.9 USER DEPARTMENT RESPONSIBILITIES

3.9.1 USER DEPARTMENT PROJECT LEADER

.1 Is accountable for the expenditure of public funds and delivery of the project in accordance with terms accepted by the Treasury Board.
.2 Reports to senior User Department executive management.
.3 Will play several critical roles for the successful implementation of the project, including:
  .1 Coordination of the quality, timing and completeness of information and decisions relating to issues related to the functional performance of the facility.

3.10 TECHNICAL AND FUNCTIONAL REVIEWS

3.10.1 QUALITY ASSURANCE

.1 This includes both AECOE reviews and User Department reviews.
.2 The purpose of these reviews is technical and functional quality assurance.

.3 Submissions will be reviewed at the completion of specific phases as outlined in the Required Services Section of the TOR.

3.11 TECHNICAL REPORTS

.1 Technical Reports are official government documents, which are used to support an application for approval or to obtain authorization or Acceptance. Technical Reports must:

.1 Be complete, clear and professional in appearance and organization, with proper reference to related parts and contents in the report;

.2 Clearly outline the intent, objectives, process, results and recommendations;

.3 Present the flow of information and conclusions in a logical, easy to follow sequence;

.4 Be in written narrative, graphic, model (traditional and/or computer generated), and photographic format, which can be web enabled;

.5 Have all pages are numbered in sequence, and;

.6 Be printed double-sided, if hard copies are produced.

.2 Standard practice for the organization of technical reports include:

.1 A cover page, clearly indicating the nature of the report, the date, the PWGSC project number and who prepared the report;

.2 A Table of Contents;

.3 An Executive Summary;

.1 A true condensed version of the report following the identical structure, including only key points and results/recommendations requiring review and/or approval;

.4 The body of the report is to be structured such that the reader can easily review the document and locate, respond to and/or reference related information contained elsewhere in the report easily;

.5 Appendices are to be used for lengthy segments of the report, supplementary and supporting information and/or for separate related documents.

.3 The report content must:

.1 Use a proper numbering system (preferably legal numbering), for ease of reference and cross-reference;

.1 The use of ‘bullet points’ are to be avoided.

.2 Use proper grammar, including using complete sentences, for clarity, to avoid ambiguity and facilitate easy translation into French, if required;

.1 The use of undefined technical terms, industry jargon and cryptic phrases are to be avoided.

.3 Be written as efficiently as possible, with only essential information included in the body of the report and supporting information in an appendix if needed.

4 DEFINITIONS

4.1 GENERAL

4.1.1 PURPOSE

.1 Document Definitions:

.1 Definition of words and phrases in the Terms of Reference (TOR), Doing Business with PWGSC Documentation and Deliverables Manual to:

.2 Expand the detail associated with services and deliverables addressed in the above Documents, and;

.3 Ensure a clear understanding of the project scope, procedures, and Quality performance requirements.

4.1.2 DEFINITIONS

.1 Consultant Team

.1 An architectural or engineering firm and their sub-consultants (the Design Consultant), professionals and advisors with whom PWGSC has contracted to provide other services on this project.

.2 SME

.1 Subject Matter Expert.

.3 Responder

.1 The Consultant team.