



Government
of Canada

Gouvernement
du Canada

SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF

Project Number: B-BDGTN-850

March 2022

Canada



Table of Content

- Part 1 Project Conditions**
- Part 2 Architectural and Interior Design Requirements**
- Part 3 Not Used**
- Part 4 Structural Engineering**
- Part 5 Mechanical Engineering**
- Part 6 Electrical Engineering**
- Part 7 Commissioning**

Appendices

- Appendix “A”** Documentation available for consultation during pre-design/design



SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF

PART 1 PROJECT CONDITIONS

Project Number: B-BDGTN-850



Part 1 Project Conditions

I. GENERAL INFORMATION

A. Project Description

The Performance Criteria describes the requirements for the design development, working drawings and specifications for the seismic upgrade of the existing Canadian High Commission in Bridgetown, Barbados. The program is to upgrade the existing structure to meet current seismic performances for the chancery building at Bishop's Court Hill, St. Michael, Bridgetown, Barbados.

1. The existing Chancery sits within a secure compound. The building is composed of office space and has 2 stories above ground and one service basement level below ground, totalling approximately 1,800m² in floor area. In 2019, the Chancery roof structure was upgraded to provide a diaphragm system in anticipation of the seismic upgrade as part of a membrane replacement project.
2. The purposes of the Project Brief are:
 - a. To provide sufficient information to allow the Consultant to fully prepare complete contract documents including design development, construction documents, cost and Bills of Quantities;
 - b. To serve as a quality assurance document for the Departmental Representative throughout the design and construction phases.
3. The Project Brief describes the minimum acceptable quality standards. It may be necessary from time to time during the design stage to amend or supplement the information provided.
4. The Work consists of 2 packages:
 - a. Work Package 1 – Seismic Upgrades (WPG-1):
 - i. Proceed with implementation of seismic upgrades to the Chancery structural system including:
 - a. Develop methodology to implement work while the mission remains operations.
 - b. Develop swing space usage as necessary.
 - c. Study alternate interventions.
 - d. Prepare presentation of intervention options for DFATD design review.
 - e. Prepare detailed design drawings up to construction drawings and specifications for Tender including the bracing of all non-structural components to meet current seismic design requirements including but not limited to:
 - i. All infrastructure in the plenum: conduits for power and fire alarm, Heating Ventilation & Air Conditioning (HVAC) ducts, etc.
 - ii. Lighting fixtures.
 - iii. Chillers and generators.
 - iv. Artworks and art objects.
 - v. Architectural features.
 - vi. Egress route protection.
 - f. Demolition of abandoned sprinkler piping in the plenum.
 - g. Provide Contract Administration and Post Occupancy Services.
 - b. Work Package 2 – Code Risk Assessment (WPG-2):
 - i. Develop a risk assessment report from the code and life safety perspective of the existing Chancery building. This includes, but is not limited to, building code



analysis, code conflict resolution, life safety code analysis, fire suppression systems, analysis of firefighting water supply, and a multi-disciplinary review of the entire building.

- ii. Provide compliance and/or mitigation measures and costs associated.
- iii. For the recommended solutions of the life and safety, prepare detailed design drawings up to construction drawings and specifications for Tender.

The package must include the following as a minimum:

- a. Compliance of emergency egress pathways.
- b. Compliance of doors and associated hardware on the emergency egress path.
- c. Compliance of emergency signage.
- d. Compliance of smoke and heat detectors locations within the Chancery building.
- e. Fire protection of exposed steel structure.

Codes, Regulations, By-Laws

1. At minimum, the design and construction shall conform to all current and applicable laws, codes, regulations and ordinances of local authorities and the most recent edition of Canadian Codes and standards including, but not limited to:

- 1.1 Canada Labour Code, Occupational Safety & Health Regulations;
- 1.2 National Building Code of Canada 2015, (NBCC);
- 1.3 National Fire Code of Canada 2015 (NFC)
- 1.4 Seismic Risk Reduction of Operational and Functional Components, CSA S832;
- 1.5 Accessible Design for the Built Environment CAN/CSA-B651;
- 1.6 National Fire Protection Association Standards (NFPA);
- 1.7 CAN/ULC-S524 (latest edition) Standard for the Installation of fire alarm systems
- 1.8 Any applicable local requirements.

2. Any other relevant, codes, regulations by-laws and standards as stipulated in the Project Brief
3. Contact with authorities shall be coordinated with the Departmental Representative.
4. Barbadian construction safety regulations shall be applied on site.
5. In all cases where differences between the Canadian and local codes are found, the more stringent shall apply.
6. Negotiations required by municipal, regional, federal or other authorities involving such matters as jurisdiction on zoning, planning or legal matters governing the design and construction of the project will be carried out by the Consultant, with the assistance of the Departmental Representative, when appropriate. The Consultant shall fully inform the Departmental Representative of such negotiations from the initial contact and throughout the project.



B. DFATD Project Management

1. A designated Departmental Representative will manage the project on behalf of DFATD. The Departmental Representative is the official point of contact between the Consultant and the Mission.

C. Delivery

1. The project delivery method selected is Design-Bid-Build.
2. Proposed Project Milestones:

WPG-1 Seismic Upgrades	WPG-2 Code Risk Assessment
Pre Design	Technical Site Visit Report
Schematic Design	Interim Risk Assessment Report
	Final Risk Assessment Report
Design Development	Design Development
66% Working Drawings	66% Working Drawings
99% Working Drawings	99% Working Drawings
100 % Working Drawings/ Tender Package	100 % Working Drawings/ Tender Package
Tender for Construction/ Tender Award	Tender for Construction/ Tender Award
Construction Administration during Construction	Construction Administration during Construction
Post-Construction Services	Post-Construction Services

II. PRE- CONSTRUCTION SERVICES

A. Submissions and Reviews

1. The Consultant shall provide drawings, supporting specifications and reports for review and approval by the DFATD Project Team and Fire protection authorities.
2. The complete design shall be based on the requirements of this Project Brief.
 - A. WPG-1: The construction documents shall be submitted at Pre Design, Schematic Design, Design Development, 66%, 99% and 100% (Final) stages.
 - B. WPG-2: The risk assessment documents shall be submitted at technical site visit report, interim risk assessment report, final risk assessment report including class ‘D’ Rough Order of Magnitude estimate for the costs of implementing the recommendations. The construction documents of the recommended solutions shall be submitted at 66%, 99% and 100% (Final) stages
3. Review and acceptance of designs and other documents will proceed as follows:
 - A. DFATD Project team will review all submissions and provide written comments.
 - B. The Departmental Representative will return one marked-up set of documents or a written review to the Consultant. The Consultant shall provide written responses to all comments.
 - C. Reviews and detailed checks of the documents in no way relieve the Consultants of their professional responsibility for the work and the work of his Sub-Consultants.
 - D. Throughout each review period the Consultant shall, maintain full production on the project and revise documents as necessary as and when review comments are received.
4. No acceptance or approval by DFATD whether expressed or implied shall be deemed to relieve the Consultant of professional responsibility for correctness of design, details, dimensions, adherence to



all codes and by-laws. Neither does acceptance of an estimate by DFATD in any way abrogate the Consultant's responsibility to maintain the construction cost limit. If cost overruns occur the Consultant will be required to make revisions or participate in value engineering exercises in order to reduce the construction cost. Additional fees will not be considered for these services.

5. All plans, specifications and commissioning documents submitted must be in English.
6. The Consultant must use the same calendar date on all Construction Documents, drawings and specification. This is the date corresponding to the completion date of all construction documents.
7. A representative list of submission requirements is attached. The actual list of drawings to be submitted will be determined by the Departmental Representative after discussions with the Consultant.
8. As-built drawings will be submitted at the end of the Project. All As-Built submissions must bear the seal of the appropriate professional.
9. Upon final acceptance of Construction Documents provide a hard copy of all reports, design criteria and calculations for mechanical, electrical, and structural design to the Departmental Representative in the Format detailed below. Some of this information may be requested earlier during the design stages or working documents.

B. Submission Format (also applicable to submission of Record Drawings)

Drawings:

1. **Hard Copy:** four (4) bound sets.
2. **AutoCAD Format:** Release 2012-16 (.DWG) file format.
3. **AutoCAD support files:** including but not limited to drawing files (DWG), external reference (x-ref), shape files (SHX) and font files (SHX, TTF) and colour table file (CTB);
4. **PDF Format**
5. **Plotting & Layering instructions:** in hard copy (printed instructions) and electronic format (PDF, RTF or TXT);
6. **Media & Quantity:** two (2) complete sets of files copied on CD's or DVD's.

Text documents and Spread sheets:

7. **Hard Copy:** four (4) bound sets.
8. **PDF Format**
9. **Microsoft Word**, latest version.
10. **Microsoft Excel**, latest version.

Work Package 1 only –Seismic Upgrade

C. Pre Design Submission

Intent: To provide DFATD and design team with a foundation and necessary information for design decision-making and to confirm data collected and strategic analyses undertaken by DFATD prior to Consultant(s) contract award.

1. Verify accuracy of drawings and reports provided by DFATD, review drawings, visit project site and take measurements to satisfy that drawings are reasonably accurate in their representation of the existing premises.
2. Prepare and review with DFATD an initial evaluation of DFATD's program of requirements, schedule,



construction budget, project site, proposed project delivery and procurement methods, and other initial DFATD provided information.

3. Financial Feasibility Study - Analyse the reasonable probability of DFATD's objectives for the project being reached within the construction budget and advise on measures to align the project requirements with the Construction Budget.
4. Survey and analyse existing conditions of affected areas.
5. Identify any gaps that need addressing before the work can commence.
6. Provide a Pre Design Report summarizing key finding of this analysis stage.

D. Schematic Design

Intent: To prepare and present two (2) design options based on the design and program objectives in sufficient detail to illustrate the design concept and to demonstrate compliance with the project brief. Consultant to facilitate the selection of one design option for further detail development and evaluation. The intent is to analyze and develop a schematic design report for the seismic upgrade of the Chancery building. Provide the following schematic design deliverables for the two (2) options:

1. Provide a cost report.
 2. Updated project schedule.
1. Architecture Deliverables:
 1. Regulatory and building code analysis.
 2. Photographic survey of existing conditions.
 3. Schematic design drawings / report for design options.
 4. Two (2) preliminary concepts – working level documentation to facilitate selection of a final concept to be further refined and presented. The intention is to keep and/or match existing finishes.
 5. Narrative describing options including challenges and risks, access, phasing, advantage and disadvantages, with recommendation for a preferred solution.
 6. Preliminary demolition (if applicable).
 7. Class C cost estimate / schedule / risk analysis.
 2. Structural Deliverables:
 1. Structural systems analysis.
 2. Functional advantages of each option / upgrade.
 3. Design loads for all load cases.
 4. Factors that may have a bearing on the final selection of option, such as availability of material, local skilled labour in the erection systems and other concerns should explicitly be noted.
 5. Fire protection upgrading of structural elements.
 6. Bracing of all Operational Functional Components (OFCs) items such as art, architectural features, etc.
 3. Mechanical Deliverables:
 1. Outline the mechanical equipment that will be affected by the seismic upgrade, including elements that will need to be upgraded to meet current codes.
 2. Identify how the mechanical equipment will be braced to meet seismic requirements.
 3. Preliminary mechanical demolition and new mechanical layout (as applicable).
 4. Location of mechanical equipment, duct runs, pipes runs, etc.
 5. Roof plan showing mechanical equipment
 4. Electrical Deliverables:



1. Outline the electrical equipment that will be affected by the seismic upgrade, including elements that will need to be upgraded to meet current codes.
2. Identify how the electrical equipment will be braced to meet seismic requirements.
3. Preliminary electrical demolition and electrical layout (as applicable).

Work Package 2 only – Risk Assessment Study

E. Technical Site Visit Report

1. The Consultant will be required to visit the site and address code issues including resolutions for local (Barbadian) and Canadian code differences.
2. Review available, existing building documentation, perform site inspection of the building and document existing conditions of the life safety measures in the building. Provide photos and plans as needed to fully describe the conditions.

F. Interim Risk Assessment Report

1. The Consultant shall prepare a comprehensive life safety /code compliance review of the Chancery building. It shall provide a comparative analysis of all relevant provisions of Barbadian and Canadian codes and standards.
2. The review shall identify issues which may not be found to be compliant with the NBCC, NFC and/or TB policies and which will require further negotiation or discussions.
3. Make recommendations to mitigate non-conformity with the National Building Code of Canada in consultation with DFATD SMEs as well as the DFATD Departmental Fire Protection Coordinator for Canada's Federal Real Property Abroad
4. Provide ROM estimates of the cost of options and mitigation measures in consultation with Departmental Representative.
5. Attend meetings in Ottawa at the request of the Departmental Representative.

G. Final Risk Assessment Report including class 'D' Rough Order of Magnitude estimate for the costs of implementing the recommendations Design Development Submission

1. This submission represents the Final Risk Assessment Report prepared by the Consultant. All documents at this stage must include all revisions required by previous reviews.
2. Update solutions and associated costs per the previous reviews.
3. The Final Risk Assessment Report must be signed and sealed by a Professional Engineer or Architect.

Work Package 1 and 2

H. Design Development Submission

Intent: To ensure that the Design Development documents fully describe the size and character of the entire project as related to architecture, engineering, materials, etc.

1. Provide support for an updated cost report.
2. Project schedule updated.
3. Preliminary Bill of Quantities.



4. Architecture

1. Floor plans showing partition types, room numbers, door numbers, corresponding names, millwork and fire protection components, interior elevations and sections.
2. Sections and elevations.
3. Security plan identifying wall types. Details of security wall connections to ceiling and floors, fire rated wall section, acoustic wall assembly, security wall section.
4. Furniture plans using DFATD layouts and material schedule.

5. Structural drawings as required

1. Drawings, Symbols and Design: Use standard graphical symbols and provide drawings showing advanced development of the following:
Structural plans showing:
 - Foundation plans, Structural framing plans including floor, elevations, roof, etc.;
 - Detail drawing plans;
 - OFC bracing plans;
 - Legend of all symbols used;
 - All design loading criteria.
2. The construction documents shall include construction details, specifications and calculations
3. The Structural Drawings must use locally available structural steel shapes, reinforcing steel, concrete, etc.

6. Mechanical

1. Drawings, Symbols and Design: Use standard graphical symbols and provide drawings showing advanced development of the following:
Mechanical plans showing:
 - Floor plans and room identification;
 - Legend of all symbols used;
 - HVAC systems including equipment (chillers, pumps, fan coils, air handlers, etc.), duct work and associated accessories such valves, diffusers, etc.;
 - Plumbing system including water storage tanks, piping, pumps, hot water solar panels, etc.;
 - Schedule of seismic restraints, vibration isolators, etc.
2. The construction documents shall include detail drawings, construction details, specifications and calculations

7. Electrical

1. Drawings, Symbols and Design: Use standard graphical symbols and provide drawings showing advanced development of the following:
 - i. Electrical plans showing:
 - Floor elevations and room identification;
 - Legend of all symbols used;
 - Circuit numbers at outlets and control switching identified;
 - All conduit and wire sizes except for minimum sizes which should be given in the specifications;
 - A panel schedule with loadings for each panel;
 - ii. Fire Alarm riser diagram that individually shows all control panels, annunciators,



- iii. addressable devices (with address), and notification appliances
 - iii. Device typical wiring diagram drawing(s) shall be provided which depict all system components, and their respective field wiring termination points. Wire type, gauge, and jacket shall also be indicated.
 - iv. Device layout floor plan indicating accurate locations for all control and peripheral devices. All addressable devices shall be depicted with a discrete address that corresponds with that indicated on the Riser Diagram. All notification appliances shall also be provided with a circuit address that corresponds to that depicted on the Riser Diagram
 - v. Complete lighting layout and fixture schedule clearly indicating methods of supporting fixtures (if applicable after code evaluation)
8. Commissioning submission requirements as outlined in the Commissioning section.
 9. Any additional drawings or documents required to complete the Basic Design.
 10. Proposed phasing, hoarding and access diagrams.

I. 66% Construction Documents Submission

Intent: Develop the Design Development drawings and specifications into technical 'Construction Documents' for eventual use during the construction phase by the General Contractor.

1. This submission indicates the intended scope of the construction documentation and illustrates the initial progress in developing the approved design.
2. All drawings previously prepared and updated from Design Development submission.
3. Architecture
 1. Full set of co-ordinated drawings including annotated plans, elevations, sections, connection details and major wall and roof assembly details; architectural specification document with cut-sheets and product information for all pre-fabricated items.
4. Engineering
 1. Full sets of co-ordinated drawings including system layouts, line diagrams, interface details, interference plans, and specifications with cut-sheets and product information for all devices, lighting and fixtures.
5. Updated Bill of Quantities.
6. Updated Project Schedule.
7. Updated phasing, hoarding and access diagrams.
8. Commissioning submission requirements as outlined in the commissioning section.

J. 99% Construction Documents Submission

1. This submission represents the 99% completed construction documents prepared by the Consultants. All documents at this stage must include all revisions required by previous reviews. More than one 99% submission may be required as the documents must be revised to satisfy comments.
2. Re-submission of all previous drawings and documents revised as per DFATD review comments.



This submission must include all final content with addition of: construction bid documents, list of recommended contractors, Health and Safety plan to meet Canadian and local regulations.

3. Comprehensive Bill of Quantities.
4. Updated Project Schedule.
5. Drawings and specifications list.
6. Commissioning submission requirements as outlined in the commissioning section.
7. Updated phasing, hoarding and access diagrams.
8. Any additional information required for the completion of the Execution Design and/or to commence the Tender Process.

K. 100% Construction Documents Submission

1. This submission is the re-submission of all previous drawings and documents and incorporates all revisions required by the 99% review.
2. The Consultant(s) shall sign and seal all architectural and engineering drawings.

III. CONSTRUCTION GENERAL
A. Shop Drawings Review

1. The Consultant shall review all shop drawing submissions. Verify they are clearly detailed and dimensioned, and not proposing substitution of unacceptable construction or materials. Accept or reject Shop Drawings in consultation with DFATD and return promptly to the Constructor. Send copies of the stamped shop drawings to the Departmental Representative. Provide bi-weekly report indicating status of shop drawings (date submitted, date reviewed, date returned, etc.)

B. Design/Construction Changes

1. All changes, whether additions, deletions or alternate material proposals including those not affecting the construction cost, must be covered by Variation Orders in order to provide a complete record of variations from the original Construction Design Documents.
2. The cost of changes cannot be included in progress claims until the authorized Variation Order has been issued.

C. Field Review Services (Logs documenting acceptance or rejection and samples)

1. Provide written reports and record the dates of site visits and personnel involved.
2. The Consultants are expected to act promptly to resolve questions arising from site conditions, work in progress and materials that may affect the progress and cost of the Project.

D. Post-Construction Drawings

1. Prepare additional detail drawings as and when required to properly clarify, interpret or supplement the Construction Documents.
2. Review these drawings with the Departmental Representative and obtain written approval of Post-Construction Drawings prior to their release to the Constructor.



E. Testing Laboratory Services

1. Ensure that materials and assemblies are tested as required by the Construction Documents. Require tests of any material and construction on site that appears of doubtful quality or performance. Testing Laboratories must be accredited to ISO/IEC 17025 standard.

F. Interim Inspection

The Inspection and Acceptance Team will inspect the work and list all deficiencies on the standard Inspection and Acceptance form. A complete list of deficiencies is to be prepared by the Consultant. DFATD then accepts the Project from the Constructor subject to correction of the listed deficiencies and issues an Interim Certificate of Completion

G. Interim Certificate

1. As a result of the Interim Inspection and in place of a regular progress claim, DFATD makes payment to the Constructor on the basis of the Interim Certificate of Completion.
2. Payment requires completion and signing, by the parties concerned, of the following documents:
 - 2.1 Cost Breakdown;
 - 2.2 Inspection and Acceptance;
 - 2.3 Interim Certificate of Completion; and
 - 2.4 Statutory Declaration.
3. As a member of the Inspection and Acceptance Team, verify that all deficiencies are correctly recorded, and ensure that Project Record Documents, maintenance manuals, and keys have been submitted by the Constructor, and reviewed and accepted by the Departmental Representative.
4. The Consultant shall verify the proper execution of all operation and maintenance agreements by the Constructor, landlord or any specialists (e.g., for fire protection system testing)

H. Record Drawings & Manuals

1. The Constructor shall provide DFATD with a full set of Record Drawings, in English, together with the same information on USBs.
2. The Consultant shall instruct the Constructor to record, on one set of white prints, all changes, alterations and additions as covered by authorized "Variation Orders". This shall also include changes to structural elements, rerouted lines, relocated ducts, valves and equipment.
3. Following take-over, obtain marked-up As-Built Documents from the Constructor, showing all changes in construction from the original Construction Documents. Combine this information with all Post-Contract drawings, Change Orders, and other modifications, to produce a full set of Record Drawings on USBs.
4. Provide a copy of the specification, marked-up to show actual manufactured products and model numbers employed. Any schedule on the drawings should reflect actual equipment and materials installed.
5. All Record and As-Built drawings shall be marked "**REVISED AS BUILT - MONTH/YEAR**" and sealed format:
 - 5.1 **Hard Copy: one (1) bound set.**



- 5.2 **AutoCAD Format:** Release 2012-16 (.DWG) file format.
- 5.3 **AutoCAD support files:** including but not limited to drawing files (DWG), external reference (x-ref), shape files (SHX) and font files (SHX, TTF) and colour table files (CTB).
- 5.4 **PDF Format**
- 5.5 **Plotting & Layering instructions:** in hard copy (printed instructions) and electronic format.
- 5.6 **Media & Quantity: two (2)** complete sets of files copied on USBs.

6. Four (4) sets of Operation & Maintenance (O&M) manuals covering all project systems (electrical, mechanical, etc...) shall be submitted by the Constructor in English form. The Consultant shall review and approve the O&M manuals before recommending to the Departmental Representative their acceptance.

I. Final Inspection

- 1. Inform the Departmental Representative when satisfied that all work under the Construction Contract has been completed, including the correction of deficiencies listed on the Inspection and Acceptance as a result of the Interim Inspection. The Departmental Representative will make a final inspection of the project.
- 2. Accompany and assist the Departmental Representative with the final inspection of the project.

Assemble completed documents and any required supporting documents and submit to the Departmental Representative for processing.

- 3. Submit to the Departmental Representative a USB with all the Contractors correspondence, minutes of meetings, correspondence with authorities, etc.

J. Final Certificate

- 1. As a result of the Final Inspection, DFATD makes a final payment to the Contractor on the basis of the Final Certificate of Completion.
- 2. For payment to be made, all parties must complete and sign the following documents:
 - 2.1 Cost Breakdown;
 - 2.2 Inspection and Acceptance;
 - 2.3 Final Certificate of Completion; and
 - 2.4 Statutory Declaration.

Assemble completed documents and any required supporting documents and submit to the Departmental Representative for processing.

- 3. Submit to the Departmental Representative a USB with all the Contractors correspondence, minutes of meetings, correspondence with authorities, etc.

K. Take Over

The official takeover of the project from the Constructor is established by the effective date of the Interim Certificate of Completion.

IV. Post Construction Services

Warranty Period



1. 12-Month Warranty
 - 1.1 All work under the Construction Contract carries a 12-month warranty commencing on the effective date of the Interim Certificate of Completion. Certain parts of the work may have extended warranties as specified.
 - 1.2 The Constructor is responsible for correcting all defects in the work during the warranty period, except for damage caused by misuse, abuse or neglect by others including the building occupants.
 - 1.3 Investigate all defects and alleged defects in the work promptly and issue appropriate instructions to the Constructor.

2. Ten-Month Warranty Inspection
 - 2.1 Ten months after take over make arrangements with the Departmental Representative for a ten-month warranty review of the Project.
 - 2.2 Prepare deficiency lists for the Contractor's correction.
 - 2.3 Inform DFATD in writing when all items listed on the ten-month Warranty Inspection Certificate have been completed satisfactorily. DFATD then convenes a final inspection of the Project by appropriate personnel.

3. Final Warranty Review
 - 1.1 Conduct a final warranty review at the request of the Departmental Representative, prior to the expiry of the warranty period. Prepare deficiency lists for the Design Build Contractor's correction.
 - 1.2 Inform the Departmental Representative in writing when all deficiencies listed on the final warranty review deficiency list have been corrected.

END OF PART 1



SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF

PART 2 ARCHITECTURE AND INTERIOR DESIGN REQUIREMENTS

Project Number: B-BDGTN-850



PART 2 ARCHITECTURAL AND INTERIOR DESIGN REQUIREMENTS

The context of Part 2 is to guide design/specification of replacement materials and components in an event when these are disturbed by the main work of this project. Refer to section 2.2.1.2.

2.1 CODES, REGULATIONS, BY-LAWS

See **PART ONE** PROJECT CONDITIONS, I. General Information, D., Codes, Regulation, By-Laws

2.2 BUILDING PLANNING

2.2.1 Appearance and Character

- 2.2.1.1 The intention for this project is to maintain or replace and match existing finishes when the finishes have to be removed to complete the work.
- 2.2.1.2 In the unlikely event that finishes cannot be replaced, new finishes must complement the existing finishes.
- 2.2.1.3 Maintenance free or low maintenance materials should be specified.
- 2.2.1.4 Quality and appearance of finished spaces shall respond to 3 categories: Enhanced Areas, Office Standard Areas and Service Standard Areas.

Enhanced Area: for public and representational areas, specifically waiting rooms, multipurpose, quiet rooms, conference room, HOM office and meeting rooms. These areas are to be finished in high quality and durable materials. These areas are intended to showcase Canada through their use of finishes and installation of fine art (provided by DFATD).

Office Standard Area: for the general office functions of the chancery, specifically workspaces and common office areas; including kitchens and kitchenettes. These areas shall be finished in a manner consistent with the quality and appearance of a class A office space in Barbados and at minimum equal to the quality found in the existing building.

Service Standard Areas: for areas in the Chancery devoted to the operations of building and security systems specifically electrical and mechanical spaces as well as technical rooms related to chancery security and communications. These areas also include the janitor closet, washrooms and are all to be finished in a durable utilitarian manner.

2.2.2 Space Requirements

No changes in layout are anticipated at this time. All Chancery spaces and their sizes shall remain per the existing unless the upgrades necessitate changes to the layouts.

2.2.3 Security Zone and Planning

- 2.2.3.1 The Chancery is comprised five (5) distinct zones from the point of view of security and circulation control as follows:

Public-Access Zone: The area that surrounds or forms part of the Chancery. Examples include the grounds surrounding a building, and public corridors/elevator lobbies in multiple-occupancy buildings.

Reception Zone: The areas accessible to the general public and Chancery staff with



minimal restriction during normal hours of operation. This includes areas such as waiting room, screening areas and MPR areas. Access to these areas are supervised by locally engaged guards and receptionists.

Operations Zone: The area accessible to Canadian and locally engaged staff working at the Chancery. This includes workspaces, common office areas. Access from the reception zone to the operations zone is controlled by the receptionist through secure IDACS controlled doors.

Security Zone: The area accessible only to Canadian employees. This includes workspaces and common office areas. Access from the operations zone to the secure zone is managed through IDACS controlled doors.

High Security Zone: The area containing classified activities and accessible only to Canadian individuals. Fit-up of these areas is done by DFATD managed resources.

Partitions, glazing and doors separating the zones from each other have specific requirements.

2.3 BUILDING SYSTEMS

2.3.1 General

- 2.3.1.1 Standards and materials stipulated indicate the minimum acceptable.
- 2.3.1.2 All security related material and components must be approved by DFATD.
- 2.3.1.3 All building systems are to be designed utilizing a conservative interpretation of relevant codes, particularly where considering the potential of natural forces such as earthquakes, floods, tornadoes, typhoons.
- 2.3.1.4 All systems are to be designed on the basis of providing: safety to personnel during operation and maintenance; ease of maintenance of equipment and operational economy.
- 2.3.1.5 Existing building systems are to be reused where practical and protected during construction.

2.3.2 General Architectural Interior

- 2.3.2.1 The Architectural fit-up and detailing should project a professional corporate image and coordinated office environment. Special emphasis should be given to upgraded finishes to public areas, public corridors, reception areas, meeting rooms and Head of Mission (HOM) office.
- 2.3.2.2 Enclosed spaces, open workspaces and common areas shall be arranged as indicated in the existing layouts.
- 2.3.2.3 All enclosed spaces in the chancery shall be kept to the interior building core of floor areas when at all possible to allow maximum natural light penetration from perimeter windows to infiltrate into interior. Interior offices shall include glazing to allow transmission of natural daylight.
- 2.3.2.4 A finish and colour scheme will be prepared by the Consultant as part of the Construction Documents and subject to DFATD approval, and implemented by the Contractor. The



finish and colour selection will encompass all interior surfaces including the ceiling system, walls, floors, baseboards, millwork, doors, hardware, lighting and any new washroom surfaces. The DFATD interior designer and Architect will work closely with the Consultant on the coordination of all materials and colours.

2.3.2.5 All built-in millwork is the responsibility of the Consultant and general contractor. Finishes shall include cultured stone counter tops, with under-mount stainless steel sinks and laminate or wood veneered cupboards. All are to be coordinated with DFATD interior designer and design Consultant.

2.3.2.6 The facility is to be equipped with fully compliant kitchens, kitchenettes and washroom facilities.

Interior Doors

2.3.2.7 Doors for enclosed offices and other common areas in the chancery (meeting rooms, quiet rooms, etc.) may be wood veneer, glass or steel and shall be coordinated with the overall interior scheme.

2.3.2.8 Doors supplied by DFATD are to be coordinated with design Consultant as it relates to finishes of interior scheme, preparation of framed openings and fire ratings required by local code.

2.3.3 Door Hardware

2.3.3.1 Lock hardware for North American standard doors is supplied by DFATD and installed as detailed in Supplementary Instructions, refer to Security Section

2.3.3.2 The Contractor shall supply hinges, kick plates, door stops, and all cabinet hardware, refer to Security Section

2.3.3.3 DFATD will draft a hardware schedule indicating the type, make and amount of hardware DFATD will provide.

2.3.3.4 In general, mortise lock sets shall be provided for all interior doors. Where narrow style metal doors are involved, Adams Rite mortise locks shall be used. Locking panic hardware must be compatible with Medeco rim or mortise-type cylinders provided by DFATD.

2.3.3.5 All permanent key cylinders shall be supplied, pinned, coded and installed by DFATD after take-over, replacing temporary cylinders used by the Contractor during construction.

2.3.4 Floors

2.3.4.1 All floor finishes shall be coordinated with interior scheme, approved by DFATD interior designer and specified in accordance with the category of room indicated on the floor plan. Quality of finishes are:

Enhanced Areas: shall be provided with high quality durable hard finish material such as stone or tile.

Standard Office Areas: shall be finished with high quality commercial carpet tile from 100% solution died nylon with min. gauge of 50.4 rows/10cm, min. stitch 38.6 pu/10cm, max. pile height of 4.7mm. All carpet tile shall be peel and stick adhesive backed conforming to flame spread requirements as per fire safety requirements.



Service Standard Areas: shall be polished, sealed concrete, vinyl, ceramic or static dissipating vinyl.

- 2.3.4.2 All concrete floor slabs shall be leveled prior to finish material application. Any variance in level shall not exceed 12mm over a 14 meter radius.
- 2.3.4.3 Washrooms, kitchens and service areas are to be finished with appropriate high traffic, non-slip and moisture resistant hard surfaces. Acceptable materials include commercial grade ceramic / porcelain tile, vinyl tile, sheet vinyl and/or similar natural or man-made products.
- 2.3.4.4 All carpet shall be commercial high grade from 100% solution dyed nylon with minimum gauge of 50.4 rows/10cm, minimum stitch 38.6pu/10cm, and maximum pile height of 4.7mm. All carpet tile shall be peel and stick adhesive backed and conforming to flame spread requirements as per code standards.
- 2.3.4.5 The location of voice/data/power floor boxes or pedestals shall be coordinated with furniture systems to ensure no obstructions are met by furniture, panels, chair legs, file boxes, etc.
- 2.3.4.6 Technical rooms to be finished with Static Dissipative flooring.
- 2.3.4.7 Base skirting material / detail shall typically complement the selected floor finish material and be of commercial grade materials.

2.3.5 Ceilings

- 2.3.5.1 All ceiling finishes shall be coordinated with interior scheme, approved by DFATD interior designer and specified in accordance with category of room type indicated on the floor plan. Quality of finishes are:

Enhanced Areas: may be a mix of fixed hard surface ceiling finishes and coordinated access panels or ceiling tiles.

Standard Office Areas: should have a uniform drop ceiling height to provide flexibility for future floor plan changes. Enclosed spaces should have the same drop ceiling height as adjacent open office spaces. Exposed ceilings may also be considered.

Service Standard Areas: shall/may be exposed ceiling or suspended access ceiling system.

- 2.3.5.2 The suspended ceiling system shall incorporate luminaries, ceiling tiles and secondary ceiling suspension. The ceiling system shall take into consideration smoke detection devices, sound masking system, CCTV and motion detectors.
- 2.3.5.3 All interfacing systems: ceiling suspension, air handling, luminaries, in fill safety devices and walls are to be coordinated for ease of relocation, visual consistency, range of relocation and operational compatibility. Special ceiling in-fill conditions at cores, perimeter walls, partitions, columns, etc. are to be minimized.
- 2.3.5.4 All ceiling areas used for horizontal system distribution should be readily accessible, without requiring repair to interior finishes.



- 2.3.5.5 Ceiling, lighting and air handling systems shall largely remain as per the base building where ever possible.

2.3.6 Walls, Full Height Partitions

- 2.3.6.1 Partitions finishes shall be coordinated with interior scheme, approved by DFATD interior designer and specified in accordance with the category of room indicated on.
- 2.3.6.2 It is the Consultant's responsibility to verify the load bearing capacity of the existing building structure and to design all necessary structural strengthening to bear any additional load from all security rated wall assemblies.
- 2.3.6.3 Any changes to the structure shall be designed and certified by a licensed Structural Engineer.
- 2.3.6.4 All partitions will support cable enclosures for electrical and mechanical services. In the case of non-bearing masonry construction, conduits are acceptable.
- 2.3.6.5 Generally concealed spaces in interior walls, ceilings, crawl spaces, and all interconnected concealed vertical and horizontal spaces shall be separated by fire stops as required by NBC.
- 2.3.6.6 Ventilation and drainage shall be adequate to ensure that moisture, condensation or water vapour is not trapped. Water drainage shall be designed to ensure that moisture flow will not damage or stain finished materials.
- 2.3.6.7 The method of accommodating rainwater run-off shall prevent defects associated with vertical surface irregularities and joints, staining or discoloration and local stresses caused by moisture or temperature changes.

2.3.7 Millwork

- 2.3.7.1 All built-in millwork is the responsibility of the Consultant and general contractor. Finishes shall include cultured stone counter tops, with under-mount stainless steel sinks and laminate or wood veneered cupboards. All are to be coordinated with DFATD interior designer and design Consultant; to include HOM's kitchenette, kitchen lunch room, quiet rooms, conference room, reception booth, interview booths and guard booths, business centres and touchdown area.
- 2.3.7.2 Built-in counters, as well as document pass-through shall be installed where needed in receptionist, guard booth and interview booths, as well as in FAX/copier/printer/shredder areas located on floor plan.
- 2.3.7.3 Wherever possible cabinetry shall be shop fabricated and prefinished in modular units, complete with a factory laminated performed single piece counter top with back splash. Shelving to millwork shall be fully adjustable.
- 2.3.7.4 All accessory hardware shall be provided including, hinges, door and drawer pulls, and drawer catches and slides. All hardware shall be non-corrosive material

2.3.8 Window Coverings

- 2.3.8.1 Consultant shall specify manually adjustable window coverings in general office areas and representational areas. The Consultant shall consider ease of operation, sun angle, internal temperatures, cleaning, privacy requirements, maintenance, repair and



replacement.

- 2.3.8.2 For general office area, 3-5% transmittance factor will be required. For enhanced areas, a combination of black-out transmittance, sheers, and lined curtains may be required.

2.3.9 Signage

- 2.3.9.1 All required statutory, illuminated exit signs and other signs, shall be specified by the Consultant and provided by the general contractor to meet local code requirements. Where possible, use pictograms rather than text (i.e. running man to illustrate exit). Where text is required, all signage shall be at a minimum in English and French.
- 2.3.9.2 All non-statutory interior signage is to be provided under an allowance by the contractor and designed, fabricated and installed per the DFATD(GAC) Embassy Signage guideline. Signage in the public areas shall be in English and French.

2.3.10 Light Reflectance

- 2.3.10.1 General light reflectance on finished surfaces and materials shall be as listed below:

Ceilings	80%
Walls	40% to 60%
Floors	30%
Windows	40% to 60%

END OF PART TWO



SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF

PART 3 Not Used

Project Number: B-BDGTN-850



SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF

PART 4 STRUCTURAL ENGINEERING

Project Number: B-BDGTN-850



PART 4 STRUCTURAL ENGINEERING

4.1 APPLICABLE CODES AND STANDARDS

4.1.1 BUILDING CODE COMPLIANCE REQUIREMENTS

All new structural systems designed and installed shall meet all applicable codes, standards and regulations of the authority having jurisdiction or the National Building Code of Canada 2015 (NBCC 2015) and the standards specified therein, whichever is more stringent.

Refer to *Part 1: Project Conditions - 1.1.16 Codes, Standards and Regulations*, for a complete description of the code compliance requirements.

4.1.2 DESIGN, EVALUATION AND PERFORMANCE OF STRUCTURE

4.1.2.1 STRUCTURAL LOADS

4.1.2.1.1 General Considerations

- a) Unless available from record drawings, determine the capacity of structural members to withstand, within acceptable deflection limitations, all current and planned occupancy loads. Provide the most efficient and cost effective solutions for any structural reinforcing, if required.
- b) Verify that floor slabs, horizontal framing members, and beams or girders have the required capacity to carry the loads resulting from the proposed layout. Uniformly distributed live load shall not be modified by reduction factors.
- c) All verified general design load capacities shall be clearly specified within the “General Notes” on the drawings. Any locations, where design load capacity exceeds that of the general load capacity, shall be clearly identified on the drawings.
- d) Seismic and wind loads will be per DFATD requirements to be provided to the A&E Consultant.

4.1.2.1.2 Office Space – Floor loading Review

- a) Verification of the structural framing is required for all floor areas supporting storage and filing rooms, mobile shelving units, and computer rooms. Minimum superimposed live load capacity shall be:
 - Storage Areas and Server Rooms: live load 4.8 kPa
 - Mobile shelving units: live load 7.2 kPa
 - High Security Zone (HSZ): live load 7.2 kPa
 - Offices: live load 3.8 kPa

4.1.2.2 FLOOR PENETRATIONS AND TRENCHING



Floor penetrations, if required, shall be designed so as to **NOT** decrease the capacity of the Lateral Force Resistance System (LFRS).

All new openings for installation of mechanical, electrical, communication systems, connecting stairs, etc. must be reviewed by the structural engineer, and approved in writing. Cutting or coring of openings must **NOT** decrease the live load capacity of the slab or any other structural element.

All trenching required for installation of services, electrical, communication, IT, etc., must be reviewed and approved in writing by a licensed structural engineer.

4.1.2.3 SEISMIC LOADS

All existing and new operational & functional components (OFC's) identified in other sections of this brief shall be braced in compliance with the requirements of "CSA -S832 – Seismic risk reduction of operational and functional components of buildings".

4.1.3 SUBMISSIONS

4.1.3.1 CONSTRUCTION DOCUMENT PHASE

4.1.3.1.1 Deliverables

- a) Construction drawings and specifications as required for any modification to the existing structure to accommodate the new floor openings and local higher loads;
- b) Written confirmation, signed and sealed by a Professional Structural Engineer, that the floor does have the capacity to carry the superimposed live load specified in item 4.1.2.1.2.
- c) Slab reinforcing details (if required for increased load capacity).
- d) Review & written acceptance of floor penetrations and trenching for new mechanical, electrical and communication systems, or recommendation of alternate locations. Provide trenching and penetration drawings sealed and signed by a structural professional engineer.

END OF PART 4



SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF

PART 5 MECHANICAL ENGINEERING

Project Number: B-BDGTN-850



PART 5 - MECHANICAL ENGINEERING

5.1 GENERAL

5.1.1 INTRODUCTION

5.1.1.1 The Mechanical Engineering chapter identifies criteria for the design of seismic restraints to support Heating, Ventilation, and Air-Conditioning (HVAC) systems and plumbing systems.

5.1.2 SCOPE OF WORK

5.1.2.1 Provide complete mechanical systems as specified herein to meet the general and the specific facility needs in:

- a) Remove all Fire Sprinkler Piping including standpipe and valves;
- b) Seismic Restraints of Mechanical Components;
- c) System start-up, testing, adjusting and balancing, and commissioning;
- d) Administration (construction drawings, shop drawings, record drawings, samples, codes, attendance at meetings, permit fees, etc.);
- e) Certificates of Completion and performance verification;
- f) Operating and Maintenance (O&M) manuals.

5.1.2.2 Drawings

5.1.2.2.1 Layout drawings and calculations shall be certified by the Engineer (Consultant). Be responsible for all co-ordination with those of the HVAC, plumbing, electrical and other contractors.

5.1.2.3 Specifications

- a) Engineering specifications for construction of all seismic systems are to include written descriptions of materials, performance, characteristics, installation and quality of work requirements.

5.1.2.4 Training Manuals and Materials

- a) Provide training, training materials and manuals in English, if necessary.

5.1.3 BUILDING SYSTEMS ANALYSIS

5.1.3.1.1 The Canadian A&E Consultant shall survey mechanical systems and services inside and outside the Chancery, such as, but not limited to, HVAC (chillers, fan coil units, chilled water piping, etc.), domestic water and sanitary waste piping; and document the extent of the work required to seismically restrain these systems. The A&E Consultant shall provide a synopsis describing all mechanical systems and / or equipment installed that must be seismically restrained, such as, but not limited to the chiller, fuel tank, generator, domestic water storage tanks, fan coil units, ductwork, domestic water supply piping, sanitary waste piping, pumps, etc.

5.1.3.1.2 The A&E Consultant shall provide their recommendations (based on their survey) for equipment / systems that require seismic restraints.

5.1.3.1.3 The scope of work for restraining mechanical components may apply to the following:

- Anchorage of mechanical equipment



- Flexible connections to mechanical equipment
- Restrain Water Heaters and Water Softeners
- Bracing Suspended Distribution Piping
- Bracing Suspended Ductwork
- Brace Water Storage Tanks and Fuel Tanks

5.1.3.1.4 The Chancery in Bridgetown is a post disaster site, which means all mechanical systems and equipment must remain in operation during and after an earthquake or seismic event.

5.1.3.1.5 The A&E Consultant shall review the existing drawings, provided by DFATD, and confirm which mechanical systems, such as but not limited to, HVAC, plumbing piping, sanitary waste piping and domestic water supply piping will require seismic bracing.

5.1.4 GENERAL REQUIREMENTS

5.1.4.1 Provide all required documentation to authorities as required. Provide all permits, licenses and certificates, and arrange for inspection of all work by the appropriate authorities and pay all associated fees, if any.

5.1.4.2 All welding, if required, shall be done by qualified and licensed welders.

5.2 APPLICABLE CODES, STANDARDS AND GUIDELINES

5.2.1 CODE COMPLIANCE REQUIREMENTS

5.2.1.1 The latest editions of publications and standards listed here are intended as guidelines for design. They are mandatory where referenced as such in the text of this chapter or in applicable codes. The list is not meant to restrict the use of additional guides or standards. When publications and standards are referenced as mandatory, any recommended practices or features should be considered “required”. The requirements of all other authorities having jurisdiction shall apply.

5.2.1.2 All seismic restraints designed and installed shall meet all applicable codes, standards and regulations of the authority having jurisdiction.

5.2.2 CANADIAN PUBLICATIONS

- a) National Fire Code of Canada of Canada (NFCC), 2015
- b) National Building Code of Canada (NBCC), 2015
- c) Seismic Restraint Manual – Guidelines for Mechanical Systems, Sheet Metal and Air Conditioning Contractors' National Association (SMACNA); latest edition.
- d) All applicable Treasury Board Standards and Guidelines.

5.3 SEISMIC PROTECTION

5.3.1 CODES AND STANDARDS



- 5.3.1.1 All mechanical equipment is to be laterally and vertically restrained for the seismic load requirement. Refer to Part 4, Structural Engineering and the applicable codes and standards for seismic design criteria.

5.3.2 GENERAL REQUIREMENTS

- 5.3.2.1 All primary equipment, such as, the generator, chillers, air handlers, fan coil units, pumps, water storage tanks, fuel tanks, etc. shall remain fully operational during and after an earthquake (or seismic event).
- 5.3.2.2 Barbados is considered a high seismic zone area. All primary equipment is to be restrained for seismic load requirements accordingly. This shall include shock mounts for all pad mounted equipment or equipment suspended from the floor slab. Provide seismic restraints on, main ventilation ducts, water mains, standpipe and drain lines, etc., as necessary, to protect personnel and the facility from falling objects during an earthquake.
- 5.3.2.3 Brace all pipes 3-inch nominal diameter and larger.
- 5.3.2.4 Vertical risers not specifically engineered shall be laterally supported with a riser clamp at each floor.
- 5.3.2.5 The addition of snubbers prevents excessive lateral movement of mechanical equipment, that maybe installed on vibration isolators.
- 5.3.2.6 Note that the fire suppression system is inoperable due to the removal of the fire pumps. All sprinkler piping including standpipe risers, sprinkler piping, hangers and control valves shall be removed from the Chancery.
- 5.3.2.7 Mechanical air diffusers pose a falling hazard if they are not supported independently of the ceiling grid.
- 5.3.2.8 Suspended HVAC equipment which may or may not be supported with vibration isolators, needs to be restrained from swinging in all directions, including the vertical direction.
- 5.3.2.9 Calculations should include engineering sketches as an aid to understanding by reviewers.

END OF PART 5

SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF

PART 6 ELECTRICAL ENGINEERING



PART 6 ELECTRICAL ENGINEERING

6. ELECTRICAL REQUIREMENTS

6.1 Introduction

The following describes the electrical systems proposed on a conceptual basis only. These requirements are intended to set minimum criteria and provide guidance to the Consultant who is to complete the electrical design.

6.2 Codes and Standards

All new electrical systems shall meet or exceed the requirements of the following codes and standards:

- a) CAN/CSA C22.1 - 15: Canadian electrical Code, Part 1 2015
- b) CAN/ULC S524-06: Installation fire alarm system
- c) ULC-S536 Standard for the Inspection and Testing of Fire Alarm Systems
- d) ULC-C537 Standard for the Verification of Fire Alarm Systems
- e) Treasury Board Chapter 3.4 Standard for Fire Alarm Systems
- f) All applicable Treasury Board Standards and Guidelines.
- g) National Fire Code of Canada of Canada 2015 (NFC)
- h) National Building Code of Canada 2015 and supplements
- i) ASHRAE 90.1 – Energy Standard for Buildings
- j) IESNA Lighting Handbook
- k) CAN/CSA C282 – 09: Emergency Electrical Power Supply for Building

In all cases where conflicts with the codes occur, the most stringent code rule shall apply, subject to the prior approval of the Department Representative.

Installed electrical equipment shall be certified in accordance with CSA, UL, ULC, IEC, CE or BS EN-54.

6.3 General Requirement

6.3.1 The electrical systems must be responsive to each functional requirement of each area. They shall be designed, constructed to, and commissioned to ensure the following:

- Occupant safety;
- Occupant comfort;
- Reliability;
- Maintenance and operation simplicity;
- Energy conservation;
- Cost effectiveness;
- Economy of installation; and availability of spare parts



- 6.3.2 Systems shall be selected and designed to meet the requirements stipulated in this performance brief. System selection and design shall consider performance, service, and maintenance.
- 6.3.3 Electrical systems and equipment shall be fail-safe and of a quality consistent with anticipated minimum life expectancy of 25 years.
- 6.3.4 All systems shall provide pollutants-free operation. Systems shall be designed to use a minimum amount of energy consistent with required performance standards.
- 6.3.5 All electrical equipment to be located in electrical/service room and arranged so that it is readily and safely accessible for routine maintenance and repair. Space shall allow for easy removal and replacement of equipment.
- 6.3.6 Design shall be coordinated with architectural and mechanical systems. Install all concealed electrical equipment requiring adjustment or maintenance in locations easily accessible through access panels or doors.

6.4 Seismic and Critical Infrastructure Protection

- 6.4.1 All primary equipment is to be restrained for seismic load requirements and shall remain operational during and after earthquakes.
- 6.4.2 Provide seismic restraints on internal light fixtures, cable trays, conduits etc; to protect personnel and the facility from falling objects. Follow technical requirements as stated in the Structural section.
- 6.4.3 The restrainers shall by no means compromise the effect of the equipment's anti-vibration dampers. The equipment and its restrainers shall satisfy the more stringent quality and design requirements of the local and the Canadian codes and standards for protection from seismic loads.

6.5 RACEWAYS

- 6.5.1 The authorized raceway systems shall consist of Electrical Metallic Tubing (EMT) complete with manufactured couplings and connectors. Each length of conduit shall bear the UL label.
- 6.5.2 Non-metallic raceways PVC schedule 40 shall only be acceptable when installed in masonry and concrete walls and floors and embedded in a minimum of 50 mm (2 in.) of concrete.
- 6.5.3 All empty conduit systems shall be provided with nylon pull-cords and have plastic bushings.
- 6.5.4 Use of non-combustible flexible armoured conduit or flexible armoured cable shall be limited to final connections to equipment, e.g., motors, lighting, fixtures, etc. Use of flexible cable/conduit not to exceed 3 m (10 ft.) at each respective connection unless approved otherwise by Departmental Representative.

All conduit or raceway systems are to be colour coded on the exterior with colour bands indicating system type as follows:

SYSTEM	PRIMARY // SECONDARY COLOUR
Fire Alarm	Red
Normal/Emergency Power	Yellow
Clean Power (UPS)	Yellow // Red
Ground	Green
BAS/BMS	Grey
Information Technology (Level 0&1)	Orange
Information Technology (Level 2)	Orange // Red
Security	Blue
IDACS	Blue//yellow
CCTV	Blue//green
CSAS	Blue//Black

6.6 CONDUCTORS AND CABLES

- 6.6.1 All wire and cable shall be new and bear the UL label.
- 6.6.2 Power feeders will incorporate 100% neutral sized conductors. All circuit shall be provided with a separate neutral conductor. Common neutral wire is not acceptable for branch or lighting wiring.
- 6.6.3 Power conduit to have ground conductor. Conduit shall not be utilized as a ground conductor.
- 6.6.4 Branch circuit conductors shall be copper, minimum #12 AWG rated at 90°C with 0.6/1 KV insulation. Insulation to be of a minimum chemically cross-linked thermosetting polyethylene rated type XLPE, 600V.
- 6.6.5 Cable installed in open or ventilated cable tray shall have an outer jacket compliant to Canadian flame spread FT-6 standard and/or UL 1685 and UL 1666.
- 6.6.6 All 120- 600V underground cable runs to be 1000V RWU type wire or suitably equivalent.
- 6.6.7 Fire rated cables for any equipment whose operation is essential shall follow Canadian building code requirements.
- 6.6.8 Where required, dedicated outlets are stand-alone single outlet fed from their own circuit breaker.
- 6.6.9 Conductors to be colour coded according to the phases, as per NFPA 70 (NEC).
- 6.6.10 All fire alarm system wiring shall be solid copper, installed in conduit and fire rated cable with sheath having a combined 1-hour fire protection. Stranded wiring shall not be used.

6.7 EMERGENCY / EXIT LIGHTING

- 6.7.1 All emergency lighting and exit lighting shall meet the requirements of the NFPA 101 and NBCC article 3.2.7.3 whichever is more stringent. For emergency evacuation, a combination emergency lights and exit signs shall provide to an average level compliant to both NBCC article 3.2.7.3 and NFPA 101 for illumination at tread level in principal access routes to exits, corridors and stairwell.

- 6.7.2 Provide emergency lighting by means of 2-hour Self-contained Emergency Battery Unit (SEBU) in the form of Emergency Lighting Conversion Kit module for selected fixtures shall be provided in all special purpose rooms, technical area, corridors, staircases, MPR and reception area spaces. SEBU to provide an average light level not less than of 10 lux. SEBU to be provided with a self-diagnostic circuitry card (auto-test).
- 6.7.3 Overnight lighting (night light) to be pre set to a dimmed appropriate illuminance level and raise to task levels during office hours.
- 6.7.4 Exit signs to be LED illuminated complete with directional signs where required to clearly demonstrate egress and direction to egress. All exit signs to be provided with a battery pack providing a minimum of 2-hour duration service. Battery packs to be provided with a self-diagnostic circuitry card (auto-test). Exit sign in public spaces to be of the highest quality elegance.

6.8 FIRE DETECTION / ALARM SYSTEM

- 6.8.1 Wireless fire alarm detection is not acceptable.
- 6.8.2 Fire alarm detection system shall be Class A wiring, addressable and meet the requirements of the NBCC, ULC – S524 -04 and NFPA 72. In case of conflict, the most stringent code shall stringent.
- 6.8.3 The main fire detection / alarm system control panel must be located within the Operational Zone of the chancery. Remote graphic annunciators for system monitoring will be located in the main entrance lobbies guard booth and the security office.
- 6.8.4 All detector bases shall be equipped with zone isolations features or equivalent solution to have a loop configuration, ensuring to route the return path and have isolation devices in pairs.
- 6.8.5 Independent separate loop shall be provided for every security zone as described in the general requirements as well as for every fire compartment rated 1H and above.
- 6.8.6 Initiating devices located within the High Secure Zone shall be non-addressable and be connected on a Zone Addressable module located outside the High Secure Zone.
- 6.8.7 Self-Amplified Speakers and Speaker Strobes shall be suitable for Sensitive Compartmented Information Facilities (SCIF) room applications shall be provided for the Secure Zone and High Secure Zone.
- 6.8.8 Cable with sheath having a combined 1-hour fire protection shall be utilized for fire alarm detection and signalling circuits, and shall be certified for that use. Stranded wiring shall not be used.
- 6.8.9 All fire alarm system wiring shall be solid copper, installed in conduit with a minimum inside diameter of 19 mm (¾ in.)
- 6.8.10 Fire Alarm panel to be equipped with both a normally open and normally closed contacts. Provide a normally closed dry contact from the main fire alarm panel to both CESS room for connection to an auto-dialer (connection contact to auto dialer by others) and the guardhouse for the management of secure doors. The main fire alarm panel to be programmed to activate the contact in the event of a fire alarm detection device or the flow switch is activated.
- 6.8.11 Provide a normally closed dry contact from the main fire alarm panel, for elevator recall, management of fire rated doors, etc.

- 6.8.12 Interconnection from the F/A system to trip for combi oven and hood in the kitchen upon fire alarm and re-set system manually with push button
- 6.8.13 Design and installation of a fire alarm system shall be in accordance to the design builder Developer’s Canadian Code Consultant recommendations pending approval by the DFATD Fire Protection Coordinator.
- 6.8.14 System verification shall be in accordance with CAN/ULC-S537 Standard for the Verification of Fire Alarm Systems.

END OF PART 6



SIEISMIC UPGRADE FOR CANADIAN HIGH COMMISSION BRIDGETOWN, BARBADOS

PROJECT BRIEF PART 7 COMMISSIONING

Project Number: B-BDGTN-850



7 PART 7 COMMISSIONING

7.1 General

The Consultant will be responsible to prepare the documentation for the commissioning process to be followed by the contractor. The process includes construction checklists developed with the intent to convey pertinent information to the installers regarding concerns on installation and long-term operation of the facility and systems. The approach to the structure of the checklists is to keep it short and simple by focusing on key elements. Checklists span the duration from when equipment is delivered to the job site until the point that the system/component is started up and operational. Construction checklists are tools for transferring the information contained in the contract documents (drawings and specifications) to the workers in the field. This includes testing, adjusting and balancing and control system tuning.

Typically, at the construction stage, the Consultant will supervise the installation of the equipment, material and systems, and witness the commissioning performed by the contractor and by an independent certification firm when required. The two overarching goals of the Construction Phase are to assure the level of quality desired and to assure the requirements of the contracts are met.

For this project, the building systems will be commissioned by the general contractor prior to occupancy, with oversight and verification by DFATD team resources. During construction, quality assurance will be performed in collaboration with the Design Consultant, DFATD Subject Matter Experts (SME – as required) and with the aid of the Project Management Support Service (PMSS) retained, as per their scheduled visits to site. The PMSS will communicate their observations of the work completed during that week with a weekly report.

The design Consultant will be responsible to ensure that the quality of installation is in accordance to their design expectations. The design Consultant will remain responsible for the design; if changes are required due to site conditions during construction, the design Consultant will have to approve the proposed modifications.

The DFATD SME team may visit the site periodically and report to the Departmental Representative. The Departmental Representative will communicate with the Design Consultant, PMSS and the contractor to communicate expectations as required.

7.2 Life Safety Systems

The Life Safety systems certification shall be performed by the fire protection firm nominated by the contractor to design, construct, install and test the fire detection equipment within the building.

Within the tender document specification, the Consultant will identify the process, procedures, methods and documentation for each phase of the Commissioning process and describe the requirement of the verification and testing to be performed by the contractor.

Once the contractor installation, initial verification and testing is complete, the contractor will certify all of the fire protection and life safety systems installed in our floor space. The contractor must prepare a written report detailing the steps of all the verifications performed and a brief description of the process and instrumentation used and the result of the certification.

The completed Commissioning Plan and certification, including all appendices must form part of the commissioning records turned over at the end of the construction phase. All active and passive (components installed on the floor and walls and doors rating and operation) fire detection and life safety systems must be commissioned.

- Testing of safety interlocks and operations.



7.3 Electrical Functional Performance Testing

Before the performance testing of each system, the commissioning provider shall ensure that the components and systems being tested have been installed and labelled in accordance with the contract documents. The documentation shall include the following, as a minimum:

- Static verification of components: and
- Start-up of equipment and systems.

Commissioning procedures shall be carried out to ensure that electrical equipment and systems are functionally operating in accordance with contract documents and shop drawings. Functional performance testing shall include, but not be limited to, the following procedures:

- tests to ensure that equipment and systems, including components such as interlocks, conditional control logic, and control sequences, are operational under all normal operating modes (including part and full load) and abnormal or emergency conditions;
- power quality measurements;
- measurement of voltage-drop for all major equipment;
- measurement of voltage-drop at 10% of end devices (i.e., receptacles, hard-wired equipment connection points);
- receptacle testing;
- thermographic survey;
- Illumination measurements;

7.4 As Built Drawings

As-built drawings shall be provided at completion of the project and shall reflect all changes made in the working drawings during the construction process. They shall show the exact dimensions, geometry and location of all elements of the work completed under this contract.

7.5 Training

Within the specification, the Consultant shall identify the training requirements that the contractor will be responsible to provide.

For each system installed and controlled by the Tenant and the base building, training shall be provided to the property section describing the design objectives and how to operate the equipment installed in our space. In addition to the information provided in the O&M manuals, the sequence of operation and the trouble shooting guide shall be provided and posted close to the system if possible.

7.6 Spare parts

The Consultant shall include a list of spare parts within the specifications that the contractor will be responsible to provide at the end of the project. For each system installed and in addition to the final operating set, provide spare parts that are routinely changed as part of the maintenance program that may cause an interruption in the operation if not readily available.

7.7 Systems to be commissioned

The systems to be commissioned shall include but no limited to the following:



System / Equipment / Process Description	Description of Cx activities (provided by Contractor)
LIFE SAFETY SYSTEMS	
Exit Lights	
Emergency Lights	
Fire Alarm / Detection System	
Sprinkler System	
Fire / Smoke Dampers – operation and accessibility	
Fire exit and fire egress door hardware	

END OF PART 7



Appendix A

Documentation available for consultation during pre-design/design

- Building Condition Report – April 2008
- Geotechnical Investigation – April 2011
- Phase 1 and 2 Seismic Evaluation – November 2011
- Phase 1 Seismic Re-Evaluation – May 2013
- Phase 2, Component 2 Seismic Re-Evaluation – December 2013
- Existing Floor Plans – February 1991
- Original Structural drawings by CRS – May 1984.
- Existing photos - various
- GAC Mission Signage Standard – February 2009