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Dalhousie FAMIS Project Number: _____

Consultant Name Consultant Signature Date YYYY MM DD

Project Manager Name Project Manager Signature Date YYYY MM DD

Note: If the Guidelines or part of cannot be attained or fulfilled (i.e. NC or NA) during the design process, the Consultant should provide reason(s) why such Guidelines are not met. Any modification or alterations to the design guidelines will need to be agreed/accepted by Facilities Management prior to inclusion in the design.

PREAMBLE

Dalhousie University Design Guidelines aid consultants during the planning, and design phases of the University's expansion and renovations. The Guidelines do not relieve a consultant from any professional responsibility, duty, or due diligence to design elegant, functional, efficient and low maintenance facilities.

Facility owners have preferred materials and requirements that make the task of maintaining facilities less costly. Dalhousie understands this is a balance between capital and operating cost. The Guidelines are not intended to be the only acceptable solution. Dalhousie expects consultants to bring modern and innovative ideas, materials, and methods to the University. If these Guidelines do not allow these new ideas, then the consultant is to make a request in writing to the Dalhousie Project Manager for an exception to the Guidelines. Reasoning and or calculations for variances shall accompany such requests. The requested variance will be reviewed internally and either rejected or accepted. The consultant will document this rational and/or justification for each variance in the Basis of Design. The University Guidelines may be updated subsequently.

These documents provide design guidelines only, and are not intended for use, in whole or in part, as a specification. Do not copy the guidelines verbatim in specifications or in notes on drawings. Refer questions and comments regarding the content and use of these documents to the Dalhousie University Project Manager. The Guidelines are intended to be read in conjunction with the local codes and regulations, and in no way are to be considered as a code replacement. The codes and regulations represent the minimum acceptable standard. Where the technical design requirements differ from the building codes and other applicable codes and standards, the more stringent of the codes shall be applied.

Maintaining the Standards/Guidelines

The Design Guidelines are created and maintained by Dalhousie's Facilities Management Department. Any enquiries about the Guidelines should be directed to Facilities Management, Director of Projects, Central Services Building. Dalhousie encourages design specialists and other interested parties to provide their input and suggestions based on their experience.

DESIGN DELIVERABLES

Dalhousie University's construction and renovation projects are executed through five (5) standard design phases. Appendix 1, at the end of this document, outlines the default submittal requirements at each design phase. This list – and the quantity and timing of each design phase – shall be adjusted as needed for the demands and particulars of the project being executed. This document shall be reviewed with the design consultant team at the start up meeting. Appendix 2, also at the end of this document, contains a list of all design guidelines. Appendix 2 shall be completed at the start up meeting identifying all guidelines applicable to the subject project.

Factors that may impact the quantity, timing, and duration of design phases – and the deliverable requirements for each – include:

1. Facility type (research/lab, classroom, library, office, housing, sports/recreation, etc.)
2. Magnitude of project. Scope complexity and size.
3. Location (main campus vs. off campus)
4. Project delivery method (CM, D/B, Design-Bid-Build)
5. Schedule requirements or constraints
6. Accuracy and completeness of the Facilities Program, OPR, and other pre-design information

SECTION 1: DELIVERABLE REQUIREMENTS COMMON TO ALL DESIGN PHASES

A. BASIS OF DESIGN (BOD)

The BOD is essentially the design team's translation of the project's goals and requirements – first into design concepts, then design documents, then construction documents. The BOD is drafted and maintained by the Consultant throughout design and construction, while the Owner's Project Requirements (OPR) document is drafted by the Owner during programming and maintained throughout design and construction by the Commissioning Authority (CxA). The OPR describes the owner's functional goals & requirements, while the BOD expresses how those requirements will be met.

The BOD records the concepts, assumptions, calculations, decisions, rationale(s), and product selections used to satisfy applicable regulations, standards, and guidelines and to otherwise meet the owner's goals and requirements. It is a "living document" that must be updated throughout design and construction by the Consultant so that an "as-built" version of the document can accompany the record drawings, operation & maintenance manuals, and other documents provided during project closeout to substantiate what was designed and built, and why.

See Appendix 1 for a template list of specific components of the Basis of Design document.

B. UNITS OF MEASUREMENT

Units of Measurement for all disciplines shall be Metric. Space calculation of areas shall be provided in both Metric and Imperial units (m2 and ft2)

C. SPACE SUMMARY & AREA CALCULATION

At the end of each phase of design, the Consultant shall calculate the area of the facility to be constructed or renovated using AutoCAD or Revit as outlined below. Space quantities shall be tabulated to allow for a comparison at each phase to the original Facilities Program and prior design submittals.

1. Gross Area: The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas, for circulation and shaft areas that connect one floor to another. (In addition to all the internal floored spaces Gross Area should include the following: excavated basement areas; interstitial space (i.e., mechanical floor or walkways), mezzanines, penthouses, attics, garages, covered porches—whether walled or not, inner or outer balconies to the extent of a drip line from a roof or balcony immediately above. The footprints of stairways, elevator shafts, and vertical duct shafts are to be counted as gross area on each floor through which they pass.
2. Net Assignable Area: The sum of room areas excluding non-assignable areas. Room area is defined as the net area of the room in square metres, measured

between the inside surfaces of walls and partitions. Non-assignable areas include interior circulation space (including stairs), custodial areas, mechanical and electrical rooms, structural areas, public rest rooms, exterior circulation space (including stairs), elevators, elevator machine rooms, elevator shafts, and telecommunications & security equipment areas.

3. Non-Assignable Area: Determine the net room area of all non-assignable spaces as defined in Item #2 above.
4. Structural Area: The sum of all areas on all floors of a building that cannot be occupied or put to use because of structural building features. (Exterior walls, fire walls, permanent partitions, unusable areas in attics or basements, or comparable portions of a building with ceiling height restrictions.)
5. Roof Areas: Determine the gross area of each surface receiving horizontal waterproof membranes. These areas are not included in definitions .1 thru .4 above

Gross Area = Net Assignable + Non-Assignable + Structural areas

D. QUALITY CONTROL

The Consultant shall thoroughly review, check, and coordinate all elements of each submittal, including those of consultants, to eliminate errors, omissions, and conflicts. These checks shall be made by persons other than those preparing the material. The name of the reviewer shall be indicated on all drawings, computations, and other submittals. If design reviews indicate a lack of such quality assurance & control, such materials may be rejected and returned for revision.

Each design submittal shall include a statement confirming that the design:

1. meets the requirements of the facilities program, the Owner's Project Requirements (OPR), the Basis of Design (BOD), or approved updated versions of the same
2. has been coordinated between disciplines for consistency, quality, and constructability
3. complies with the Dalhousie University Design Guidelines. NOTE: Compliance checklists are included with each Guideline. Consultant to indicate if each section is compliant or non-compliant or not applicable. Proposed non-

compliances shall be submitted in writing by the Consultant, with justification and other background information as necessary to explain the variance and gain approval.

E. SURVEY INFORMATION

The Consultant is responsible to site the proposed design feature (i.e. building) with the proper coordinate referencing system based on land survey information provided from Owner. North American Datum of 1983 (NAD83 CSRS) will be the horizontal reference system for all documents. The vertical reference system used for illustrating elevations will be based on the Canadian Geodetic Vertical Datum of 2013 (CGVD2013).

Record documentation of new infrastructure provided shall also conform to these standards. New infrastructure includes underground services/structures both under a building or outside the footprint (tunnels, watermains, ductbanks, sanitary and storm lines, sump pits within buildings, conduit, gas lines, etc)

Building scans (internal and external point cloud surveys, models, etc.) to be referenced for horizontal and vertical reference.

All legal and site surveys shall conform to the standards above.

F. RENDERINGS, MODELS, AND ANIMATIONS

Particularly during the early stages of design, the Consultant shall utilize interior and exterior renderings, sketches, perspectives, models, and other means as needed to illustrate design options, concepts, and solutions. The means for providing these deliverables – including, but not limited to AutoCAD, Revit, and Sketchup – are considered standard design tools and are inherently to be included as a Basic Service.

The Consultant shall provide electronic copies of such deliverables – both in their native format(s) and in a readily-usable form (JPG, PDF, etc.) – to the University for its official use.

SECTION 2: DELIVERABLES BY PHASE

See Appendix 1 for a template list of requirements at each phase. This list shall be adjusted as needed for the demands of each project.

A. PROGRAM VERIFICATION

Prior to selection of the Consultant the University will fully or partially develop a project-specific Facilities Program (or "Program") to explain, outline, and justify the project. The Program conveys general and specific pre-design information such as:

1. background on both the project/facility and the users/occupants
2. anticipated project delivery method (Construction Management, Design/Build, or Design-Bid-Build)
3. design goals
4. quantification of space in terms of type, net and gross areas, adjacency, and finishes
5. relationship of the project & site to the adopted Campus Master Plan
6. site and utilities infrastructure information
7. applicable codes
8. overall project schedule
9. funding source(s) and budget data
10. a draft form of the Owner's Project Requirements (OPR) document NOTE: The OPR is updated as needed and maintained by the University until selection of the Commissioning (Cx) consultant, at which point the OPR becomes a "living document" that is updated throughout design and construction by the CxA.

As the initial step in translating such goals and pre-design assumptions into design and construction documents, the design team shall meet with the user group, and other University officials to review and confirm or adjust the assumptions outlined in the Program and OPR. The primary objectives of this effort include:

1. Development of a clear understanding of the needs of the facility, its occupants/users, and their academic & operational mission(s)
2. Verification that all spaces essential to the function, operation, and support of the facility are accounted for and properly sized

3. Identification of the relationship of spaces to and with each other and the general character, finish, and furnishing of each space
4. Review and confirmation of site development strategies and constraints, utility infrastructure assumptions, and the project-specific Campus Master Plan checklist
5. Discussion of primary building systems – mechanical, electrical, plumbing & fire protection, telecommunications, audio/visual, and security
6. Discussion of energy efficiency, sustainability, and LEED certification goals
7. Review of Operation & Maintenance considerations and goals
8. Review of applicable codes, standards, and guidelines
9. Review of special considerations where applicable such as historic preservation, vibration or acoustic sensitivities, hazardous materials, etc.
10. Finalization of the detailed design schedule, including key milestones and meetings
11. Review of the construction budget and programmatic estimating assumptions

The Program Verification effort leads to the Design Professional's production of an initial Basis of Design (BOD) document, which is to be provided as part of the Concept Design submittal. See above and Appendix 1 for specific BOD requirements.

In cases where the Program was only partially developed by the University, the BOD – coupled with information or data that was incomplete or absent in the original Program – may be required as a separate deliverable in advance of Concept Design.

During Program Verification, the Consultant shall call attention to the need for topographical, geotechnical, existing conditions, or other surveys that were not provided by the University or included in the consultant's Basic Services.

B. CONCEPT DESIGN

This deliverable shall convey the Consultant's understanding of the confirmed program and OPR with both narratives and illustrations. Typically, computer-generated exterior and interior 3D perspectives and mass models are used to fully present the concept(s). Such illustrations are considered basic design tools and are inherently part of basic services.

The Concept Design deliverable shall illustrate and/or describe fundamental design parameters such as functional organization; building footprint; site development; massing, scale, and context of the building; basic exterior and interior finish materials; and major building systems.

Interactive design workshops (or “charettes”) may be employed during this phase to allow the User Group and other University entities to participate in the design process. At the conclusion of the conceptual design charrette(s), the Consultant shall make a presentation to explain the design and the influences that led to the proposed solution(s). Upon consideration by those in attendance, if a consensus can be reached, a concept will be selected for further development in the Schematic Design phase. Otherwise, multiple solutions may be developed further Schematic Design.

C. SCHEMATIC DESIGN (SD)

The SD submittal shall fully convey the design intent by explaining and/or illustrating these fundamental concepts or systems:

1. site development, circulation, and contextual relationships with neighboring facilities
2. site infrastructure – particularly the routes, sizes, and impacts of distributed utilities
3. building exterior massing, scale, materials, appearance, and contextual relationship
4. building egress, ingress, and life safety provisions
5. functional organization of the interior spaces
6. interior finishes
7. building systems, including building envelope, structural, mechanical, plumbing & fire protection, electrical, telecommunications, audio/visual, security, and conveying systems

This phase usually represents the final opportunity to significantly alter the program, floor plan(s), major building systems, and the footprint and orientation of the building without impacting cost and/or schedule.

D. DESIGN DEVELOPMENT (DD)

All significant design decisions should be captured in the DD submittal, as these documents will provide the basis for the detailed Construction Documents. At the completion of this phase, all major design, technical, logistic, procurement, and cost challenges should be resolved to

eliminate carryover of research or exploration of alternatives to the next phase. The Consultant shall present enough documentation to fully explain the quality level decisions and solutions that have been reached. This documentation shall consist of drawings, outline specifications, 2D elevations, 3D perspectives, models, material samples, and design documentation such as calculations, notes, and economic or engineering analysis. Cut sheets for lighting, plumbing, hardware, HVAC equipment, architectural specialties, special equipment, and other key elements are to be included, along with preliminary equipment schedules for mechanical, electrical, plumbing, and fire protection systems.

Immediately following the DD stage – or prior to DD if floor plans are mostly settled – the Consultant shall assign room numbers to spaces as outlined in the Room Numbering Guideline. Subsequent modifications to the floor plans shall be accompanied by confirmation from Space Planning that the revisions still meet the Room Numbering Guideline.

E. 60% CONSTRUCTION DOCUMENTS (60% CDs)

This submittal should include sufficient detail to construct the facility, including complete draft specifications, dimensioned architectural floor plans, reflected ceiling plans, finishes schedule, door/window schedules, refined mechanical/electrical/plumbing and fire protection equipment schedules, scaled layouts of major equipment in mechanical, electrical, plumbing, fire protection, and telecommunication rooms.

If the 60% CDs deliverable is to be the basis for competitive bidding, certain key systems or trades should be further developed to minimize the risk of changes and additional construction costs.

F. 100% CONSTRUCTION DOCUMENTS (100% CDs)

This submittal is typically the basis for competitive bids. As such, plans and specifications must be finalized, fully detailed, and coordinated with each other.

The Consultant shall recommend to the Owner’s Project Manager any alternatives as needed to ensure a complete and usable facility within the budget. Alternatives will be awarded as funds allow, but the base bid must be structured so that the facility will function as intended if the alternatives cannot be funded and awarded.

G. EARLY RELEASE PACKAGES

For Construction Management or Design/Build projects, certain scopes of work may be procured (bid) and executed in advance of the balance of work. Common examples include sitework, site utilities, demolition, and building foundations. In such cases, the Consultant shall develop a stand-alone, biddable set of plans and specifications (including non-technical specifications) for the targeted “early release” scope of work.

APPENDIX 1
Deliverable Requirements

The following tables itemize the minimum requirements for different size projects and for each significant design deliverable. This list shall be reviewed and adjusted as needed for the needs and demands of each project.

L = Large Projects (>$5M),
M = Medium Project (<$5M and/or with some complexity),
S = Small Project (<$1M and/or of minimal complexity)

Basis of Design (BOD)

NOTE: Since the BOD is a "living document" that is to be updated at each phase of design, and throughout construction as needed. See "Basis of Design Format and Expected Content"

	Administrative/General	**L**	**M**	**S**
	General project description, including functions and users to be housed in the facility	X		
	Relevant user and occupancy data - # of occupants, # of users, hours of operation, special needs, etc.			
	Acknowledgement of relevant Campus Master Plan elements & policies and site/building design strategies for compliance therewith			
	Itemization of applicable codes & standards			
	Summary of the means and strategies for maximizing energy conservation, efficiency, and cost savings; implementing sustainable design measures; and obtaining LEED certification … including ideas considered, but not pursued or implemented			
	Special needs or conditions related to the facility's use, function, or performance and the means of meeting those needs or dealing with those conditions			
	Future expansion or construction to be accommodated, if any			
	Other narratives, data, or other documentation as needed to convey design strategies that will satisfy the goals & requirements outlined in the Facilities Program and OPR			
	Listing of all building elements or systems proposed to be design-delegated or partially design-delegated to the Builder.			
	Sitework and Distributed Utilities			
	Qualitative and quantitative description of existing site conditions and constraints	X		
	Design strategies for sitework, traffic & circulation, parking, site utilities, landscaping, hardscape, exterior lighting			

	Utilities demand schedule that indicates the design (maximum) demand, estimated peak demand, and estimated daily usage (as applicable) for the following utilities, using the units indicated: ▪ Electricity KVA and estimated monthly consumption ▪ Steam kg/hr ▪ Chilled Water LPM and kW ▪ Natural Gas LPM ▪ Fire Flow (interior) LPM ▪ Fire Flow (exterior) LPM ▪ Sanitary LPM (peak flow and average daily flow) ▪ Domestic Water LPM (peak flow and average daily flow) ▪ Storm m2 or hectares of net new impervious area			
	Also provide: ▪ confirmation of sufficient source and distribution capacity & pressure to serve the facility being designed ▪ supporting documentation, such assumptions, calculations, and load analysis table(s)	X		
	General design approach for serving the building with chilled water, steam and/or heating hot water, potable and fire water, sanitary sewer, telecommunications (copper and/or fiber), and cable TV, as needed			
Architectural and Building Envelope				
	Description of the style and character of the exterior architecture	X		
	Description of building envelope system types & materials – including walls, roofs, and floors-at-grade – with associated R-values for each			
	Narrative overview of the interior architectural character, including a description of major interior architectural materials, assemblies, and finishes			
	General description of building circulation, egress, and means of horizontal & vertical conveyance			
	Complete listing of – and strategies for compliance with – applicable building, life safety, and accessibility codes, standards, and restrictions			
Structural				
	Outline of existing conditions, design loads, and other relevant assumptions, information, or special conditions or requirements	X		
	Description of major structural systems – foundations, slabs, framing, roof, etc. – and their respective materials and components			
	Analysis of geotechnical survey results and design strategies for adhering to the survey's findings and recommendations.			

Systems – M/E/P, Fire Protection, BAS				
	Descriptions of – and design parameters for – heating, air conditioning, ventilation/exhaust, piping, plumbing, waste, fire sprinkler, power (primary and emergent), fire alarm, lighting (interior and exterior), grounding, and lightning protection systems. For example: ▪ indoor and wet/dry bulb design temperatures (summer and winter) ▪ relative humidity requirements ▪ outdoor air requirements ▪ ventilation, filtration, and dehumidification requirements ▪ watts per M2 for lighting ▪ KJ per M2 for overall energy consumption ▪ electric load and characteristics for building equipment, lighting, convenience outlets, special tools & equipment ▪ essential or emergency power loads, requirements ▪ uses and demand for hot water ▪ water supply and demand figures for fire sprinkler system ▪ "U" / "R" factor for building envelope components	X		
	General design approach for each system. For example: ▪ medium and means for building heating (steam, hot water, forced warm air, unit heaters, etc.) and cooling (chilled water, direct expansion, etc.) ▪ description of proposed air conditioning system(s), such as custom air handling units, variable air volume (VAV), fan coil units, etc. ▪ HVAC zoning requirements ▪ means of supplying hot water (steam conversion, HHW, solar, etc.) ▪ fire detection and alarm system(s)	X		
	Assumptions and strategies for usage, demand, diversification, energy efficiency, and acoustic control			
	Strategies for efficiently cooling elevator equipment rooms, telecomm/server rooms, and other spaces with unusual cooling or heating demands			
	Narrative summary of the requirements and strategies for metering and Building Automation System controls, including reporting, measurement & verification, sequence(s) of operations, and estimated # of points	X		
	Narrative description of sprinkler system type (wet or dry), plus volume & pressure criteria and identification of special systems (carbon dioxide, foam, etc.)			
	Special needs – grease traps, e.g.			
Systems – Telecommunications, Audio/Visual, Security				
	Narrative summary of needs for voice and data outlets for both occupants & users and building systems; wireless access goals & requirements; confirmation of VOIP versus non-VOIP	X		

	Narrative description of the structured cabling system; general strategies and requirements for entrance and "satellite" telecomm rooms; delineation of contractor-furnished and Owner-furnished equipment			
	Outline of CATV needs and available/proposed source(s)			
	Narrative description of audio/visual requirements, equipment, and controls by space type, along with confirmation of equipment & systems to be provided and installed as part of construction			
	Narrative description of security needs, including access control, CCTV, intrusion alarm and other special requirements			
Laboratory / Research Specialties				
	Narrative explanation of each research space type (general lab, process-specific lab, cleanroom, vivarium, etc.), with a summary of the science and research each is intended to support	X		
	List(s) of the tools and equipment to be used in each research space type, along with explanations of their utilities or process systems demands and delineation of each as Owner Furnished Owner Installed, Owner Furnished Contractor Installed, or Contractor Furnished Contractor Installed			
	Description of the sensitivity of the research to be performed and/or the tools & equipment supporting such research to "contaminants" (e.g., vibration, noise, electromagnetic or radio frequency interference) and the proposed means & measures for mitigating or eliminating same			
	Identification and quantification (sizing) of house utilities and other piped gases to be provided in labs			
	Identification of lab exhaust systems (including chemical fume hoods), characterized as general, solvent, or hazardous			
	General descriptions of the lab casework to be provided (a) as part of construction and (b) by the Owner			
	Hazardous materials inventory (complete listing of all hazardous chemicals, gases, and other materials to be used)			
	Special needs or considerations such as acid waste neutralization			

Concept Design

	Administrative/General *(see "Requirements Common to All Design Phases)*	**L**	**M**	**S**
	Basis of Design (*initial or updated from previous phase*)	**X**		
	Space Summary and Area Calculation including roof areas			
	Quality Control statement			
	A listing of codes with which the project design will comply			
	Data, reports, drawings, and other documents related to environmental permitting requirements			
	Geotechnical survey			
	Current design schedule and project team roster			
	Owner's Design Guideline Consultant Sign-off Sheets			
	Initial or updated Estimate of Probable Construction Cost	X		
	Site / Utilities			
	Survey shall illustrate and identify: ▪ existing benchmarks and horizontal control on site referenced to horizontal and vertical datum monuments. Horizontal and vertical control to be established in areas that are not likely to be disturbed by proposed construction. ▪ adjacent buildings with and entries noted, streets, circulation paths, curb & gutter, hardscape, light fixtures, site furnishings, signage, and other above-ground structures and features within survey project limits or that are anticipated to effect design of the project site ▪ location, size, type, structure name, and invert elevations (as appropriate) of all piping, mains, sewers, poles, wires, hydrants, and manholes upon, over, or beneath the site (or adjacent to the site if within the limits of the survey) as identified by the University prior to starting survey; utilize as-built drawings, and line locates. ▪ existing trees 75mm or more in diameter, with size (DBH in mm), species by common and botanical name, and relative health/condition as supplied by University Horticultural expert and **illustrate full canopy to "drip line."** (a single canopy line is sufficient for tree groupings with a continuous canopy around the perimeter of the grouping) ▪ areas of significant landscaping	X		
	Conceptual site plan, including: ▪ (for each preliminary concept) building footprint and orientation, or alternatives for same that illustrate optimization of accessibility, shading, and other building performance measures ▪ conceptual provisions for accessibility, circulation of pedestrians and bicycles, service & emergency access, parking (if any), and waste management & recycling facilities	X		

	▪ projected paths for utilities infrastructure and stormwater management structures			
Building / Architecture				
	For each preliminary concept, floor plans – or floor plan options – for each level *NOTE: For renovations, illustrate existing to remain and existing to be removed or renovated*	X		
	For each preliminary concept, identification of all stairs, elevators, and equipment/support spaces			
	For each preliminary concept, at least two sections, perpendicular to each other at same scale as plan/block diagrams, to establish vertical control			
	Exterior elevations and/or renderings to illustrate massing, scale, and context			
	For additions or renovations, measured drawings showing existing and proposed facilities in their relative arrangement and relationship	X		
Structural				
	Concept Design requirements covered by BOD	X		
Systems – M/E/P, Fire Protection, BAS				
	Concept Design requirements covered by BOD	X		
Systems –Telecommunications, Audio/Visual, Security				
	Concept Design requirements covered by BOD	X		
Laboratory / Research Specialties				
	Concept Design requirements covered by BOD	X		
Furnishings				
	Tabular or narrative description of the types of furnishings & equipment to be: ▪ furnished & installed by the builder OR Owner-furnished, builder-installed ▪ Owner-furnished and Owner-installed	X		

Schematic Design (SD)

	Administrative/General *(see "Requirements Common to All Design Phases)*	**L**	**M**	**S**
	Basis of Design (*initial or updated from previous phase*)	X		
	Space Summary and Area Calculation including roof areas			
	Energy models for baseline and proposed facility, including executive summary and all output & input data			
	Quality Control statement			
	Current design schedule and project team roster			
	Owner's Design Guideline Consultant Sign-off Sheets			
	Initial or updated Estimate of Probable Construction Cost	X		
	Specifications			
	Table of Contents identifying all contemplated technical and non-technical specs in CSI Masterformat	X		
	Draft technical specifications for materials, systems, and equipment known to be settled.			
	Site / Utilities			
	Topographic and geotechnical surveys if not included with Concept Design submittal – see above	X		
	Updated site plan, including: ▪ building footprint & orientation ▪ existing and proposed grades/contours ▪ provisions for accessibility, circulation, and parking (if any) ▪ site development work related to service & loading; traffic, circulation, and parking of emergency, service, and other vehicles; pedestrian & bicycle facilities; accessibility; and waste management ▪ relevant information from the survey, including existing trees and utilities *NOTE: Illustrate existing features with different tonal qualities or line types from new*			
	Schematic site demolition and tree impact plans, if applicable, that illustrate all removals of natural or manmade features; include a tree removal table that itemizes the quantity, species, size, and health of all trees proposed to be removed			
	Schematic site utilities plan(s) to illustrate the routing, size, and types of utility distribution and stormwater collection structures			
	Schematic landscaping/planting plan			
	Building / Architecture			
	Updated floor plans for each level indicating all net assignable and net non-assignable spaces, including horizontal and vertical circulation, M/E/P/FP/T support spaces, janitorial and waste/recycling areas, and loading areas/docks	X		

	Preliminary roof plan(s) to generally illustrate slopes, materials, drainage, etc.			
	Preliminary life safety plans (no smaller than 1:200 scale) indicating class of construction, occupancy classification(s), paths of egress, exit widths, smoke partitions, fire ratings for walls, doors, and other openings, smoke control systems, rated assembly details, and a listing of codes with which the design will comply			
	At least two sections, transverse and longitudinal at same scale as floor plans, to establish vertical control and illustrate interior spaces and volumetric proportions			
	Preliminary definition of interior partition types and materials			
	Exterior elevations of all building sides to establish vertical control and illustrate materials, fenestrations, and openings			
	Updated exterior renderings and/or perspectives to illustrate massing, scale, context, materials, and general appearance	X		
	Schematic demolition plans for renovation/rehabilitation projects			
Structural				
	Structural framing plans at the same scale as floor plans that indicate primary vertical and horizontal structure, including schematic foundation plan	X		
Systems – M/E/P, Fire Protection, BAS				
	Mechanical plans at the same scale as the floor plans showing the size, material, and routing of HVAC and piping systems, plus the schematic layout of primary equipment and mechanical rooms			
	Preliminary/outline sequence(s) of operations for BAS/ controls			
	Electrical (power) plans at the same scale as floor plans showing primary and secondary power distribution, locations and schematic arrangement of primary equipment (transformers, switchgear, etc.), and location and layout of electrical rooms and panelboards			
	Schematic electrical plans for fire alarm and lighting systems	X		
	Plumbing plans at same scale as floor plans showing horizontal and vertical collection and distribution systems (including roof drains), primary equipment, and chases			
	Fire protection plans at same scale as floor plans showing pipe entry to building and major equipment, such as fire pump and backflow preventers *NOTE: Design Professional shall determine adequacy of fire protection water supply by obtaining test data from Halifax Water flow tests showing flow and pressure of existing water supply systems*			
	Sprinkler system design criteria			

Systems – Telecommunications, Audio/Visual, Security				
	Telecommunications floor plans showing primary (entrance) and secondary telecomm rooms, vertical and horizontal distribution, and work area outlets	X		
	Preliminary audio/visual plans and equipment schedules/details			
	Preliminary security plans and equipment schedules/details			
Laboratory / Research Specialties				
	Schematic lab floor plans and lab casework schedules	X		
	Schematic illustrations of lab exhaust strategies, house gas/utility storage and distribution, and a draft hazardous materials inventory where such will be used			
Furnishings				
	Preliminary furnishings plan(s)	X		
	Updated tabular or narrative descriptions of F&E to be contractor-installed and those to be Owner-installed			

Design Development (DD)

	Administrative/General *(see "Requirements Common to All Design Phases)*	**L**	**M**	**S**
	Basis of Design (*initial or updated from previous phase*)	X		
	Space Summary and Area Calculation including roof areas			
	Life-Cycle Cost Analysis			
	Quality Control statement			
	Current design schedule and project team roster			
	Owner's Design Guideline Consultant Sign-off Sheets			
	Initial or updated Estimate of Probable Construction Cost	X		
	Specifications			
	Updated Table of Contents identifying all contemplated technical and non-technical specs	X		
	Draft (outline) technical specifications in 3-part, CSI Masterformat			
	Site / Utilities			
	Updated site plan, including: ▪ building footprint & orientation ▪ provisions for pedestrian & bicycle circulation and facilities; accessibility; traffic, circulation, and parking of emergency, service, and other vehicles; building service & loading; and waste management ▪ hardscaping (sidewalks, pavers, etc.), seatwalls, and other site amenities & furnishings ▪ relevant information from the survey, including existing trees and utilities *NOTE: Illustrate existing features with different tonal qualities or line types from new*	X		
	Site demolition and tree impact plans, if applicable, that illustrate all removals of natural or manmade features; include an updated tree removal table that itemizes the quantity, species, size, and health of all trees proposed to be removed			
	Site utilities plan(s) to illustrate the routing from point of connection, size, and types of utility distribution structures, including fire protection specialties (hydrants, post indicator valves, fire department connections, etc.)			
	Preliminary site lighting plan			
	Schematic paving, grading, and drainage plan			
	Updated landscaping/planting plan			
	Building / Architecture			
	Updated floor plans for each proposed level with preliminary room numbers.	X		
	Roof plans showing all slopes, drainage, materials, and roof-mounted equipment (if any)			
	Updated life safety plans – see above			
	Updated exterior elevations of all building sides			

	Updated exterior renderings, perspectives, and/or models			
	Renderings of all significant public spaces, including exterior public plazas and primary entry lobbies to accurately portray scale, context, finishes, and light sources			
	Transverse and lateral building sections indicating finished floor elevation of each level, floor-to-floor heights, vertical circulation, and interior space relationships			
	Preliminary sections through stairs and elevator shafts			
	Preliminary roof details			
	Preliminary wall sections and details as needed to identify building envelope materials, waterproofing and fireproofing, and construction			
	Updated and refined details & definitions for interior partitions			
	Preliminary schedules and details for interior and exterior openings (windows, doors, louvers)			
	Preliminary reflected ceiling plans to illustrate ceiling heights and materials			
	Preliminary finish schedule to identify wall, ceiling, floor, and base materials by room	X		
	Preliminary color/finishes boards to illustrate the color and type of interior finishes			
	Updated demolition plans for renovation/rehabilitation projects			
Structural				
	Structural “title sheet” with design criteria and loads, construction notes, etc.			
	Revised and further detailed foundation plan, including preliminary schedule(s) for footings, grade beams, stem walls, piles, etc.			
	Revised and further detailed horizontal framing/slab plans that indicate type, size, length, and spacing of principal members; size and elevation of slabs; size and framing details for slab openings, etc.			
	Revised and further detailed vertical framing plans that indicate type, size, length, and spacing of principal members and components	X		
	Preliminary roof framing plans, including draft truss schedule if applicable			
	Preliminary structural building sections, transverse and longitudinal			
	Schedules for columns, beams, shear walls			
	Typical/standard construction details for structural systems, components, connections			
Systems – M/E/P, Fire Protection				
	Revised and further detailed mechanical plans for HVAC and piping systems, equipment, and mechanical rooms			
	Preliminary riser diagrams			
	Preliminary mechanical schedules for equipment (AHUs, FCUs, fans, etc.) and fixtures (diffusers, louvers, etc.)	X		
	Refined sequence(s) of operations for BAS controls			

	Revised and further detailed electrical (power) plans and riser diagrams to illustrate primary and secondary power distribution, equipment, panelboards, and electrical rooms			
	Preliminary power plans to indicate convenience, equipment, floor boxes, and special-purpose receptacles			
	Revised and further detailed electrical plans for fire alarm, lighting, and lighting control systems			
	Preliminary schedules for panelboards, lighting fixtures, other electrical equipment			
	Preliminary details for grounding, lightning protection, and emergency power systems			
	Revised and further detailed plumbing plans illustrating waste, domestic hot and cold water, (roof) stormwater, equipment, and chases			
	Revised and further detailed fire sprinkler plans, including fire pump, backflow preventer(s), risers, standpipes, hose cabinets			
	Revised sprinkler system design criteria and preliminary hydraulic calculations			
Systems – Telecommunications, Audio/Visual, Security				
	Revised and further detailed telecommunications floor plans, including layout of telecomm rooms, vertical and horizontal distribution, work area outlets, and floor boxes *NOTE: Identify work area outlets to be installed at or within fixed furnishings, or floor boxes for fixed or moveable furnishings (classroom seating, modular office furniture, etc.)*	X		
	Updated and further detailed audio/visual plans and equipment schedules/details	X		
	Updated and further detailed security plans and equipment schedules/details			
Laboratory / Research Specialties				
	Revised and further detailed lab floor plans	X		
	Plans illustrating lab exhaust equipment, ductwork, and load/capacity parameters			
	Preliminary fume hood schedule with location, size, type of hood, etc.			
	Preliminary P&ID drawings for distributed gases and utilities (de-ionized water, clean dry air, vacuum, etc.)			
	Lab casework schedule(s)			
	Revised and further detailed hazardous materials inventory correlated with life safety plans and occupancy classifications			
Furnishings				
	Updated furnishings plan(s), with distinctions made between fixed and moveable, and between those to be provided and installed (or Owner-furnished, builder-installed) as part of construction and those provided by the Owner after construction	X		

60% Construction Documents (60% CDs)

	Administrative/General *(see "Requirements Common to All Design Phases)*	**L**
	Basis of Design (*updated from previous phase*)	X
	Space Summary and Area Calculation, including roof areas	
	Quality Control statement	
	Finalized project-specific list of closeout deliverables, including O&M documents, Owner training, Project Record Documents and Warranties	
	Owner's Design Guideline Consultant Sign-off Sheets	
	Initial or updated Estimate of Probable Construction Cost	X
Specifications		
	Table of Contents identifying all contemplated technical and non-technical specs	X
	Project-specific technical and non-technical specs, including identification of proposed additive and deductive alternates	
Site / Utilities		
	Finalized site plan with xyz axis tied to closest survey monument for geo referencing. Additions to existing facilities to tie vertical connection points at each level of connection to ensure smooth transitions.	X
	Site demolition and tree impact plans, if applicable, that illustrate all removals of natural or manmade features; include an updated tree removal table that itemizes the quantity, species, size, and health of all trees proposed to be removed	
	Updated site utilities plan(s) that indicate material/structure type, size, depth, and conflicts. Complex areas with multiple utilities, stacked piping, and/or conflicts shall be illustrated using plan & profile drawings.	
	Updated site lighting plan, coordinated with landscape plan	
	Updated paving, grading, and drainage plan, including schedule of stormwater structures (new and existing)	
	Updated landscaping/planting plan, with hardscape materials and site features & fixtures indicated	
Building / Architecture		
	Updated floor plans for each proposed level with room numbers. Summarize any room numbering changes made since DD submission.	X
	Dimensioned roof plans showing all slopes, drainage, materials, roof-mounted equipment (if any), penetrations, hatches or ladders	
	Updated life safety plans – see above	
	Updated exterior elevations of all building sides	
	Updated exterior renderings, perspectives, and/or models	

	Renderings of all significant public spaces, including exterior public plazas and primary entry lobbies to accurately portray scale, context, finishes, and light sources	
	Transverse and lateral building sections indicating finished floor elevation of each level, floor-to-floor heights, vertical circulation, and interior space relationships	
	Updated sections through stairs and elevator shafts (both directions), plus floor-by-floor plans for each stair	
	Updated roof details	
	Updated building envelope sections and details as needed to identify the composition, dimensions, and construction of all exterior walls	
	Details for flashing, waterproofing, dampproofing, and fireproofing	
	Details and enlarged elevations for cast stone or architectural precast, stucco, metal wall panels, and other exterior finishes	
	Updated schedules and details for openings (windows, doors)	
	Updated and refined details & definitions for interior partitions	
	Updated reflected ceiling plans to illustrate ceiling heights, materials, and M/E/P/AV fixtures	
	Updated finish schedule to identify wall, ceiling, floor, and base materials by room	
	Dimensioned interior elevations and fixture/accessory schedules for all restrooms	X
	Casework and millwork details	
	Updated color/finishes boards to illustrate the color and type of interior finishes	
	Finalized demolition plans for renovation/rehabilitation projects	
Structural		
	Structural “title sheet” with design criteria and loads, construction notes, etc.	
	Revised and further detailed foundation plan, including schedule(s) for footings, grade beams, etc.	
	Revised and further detailed horizontal framing/slab plans that indicate type, size, length, and spacing of principal members; size and elevation of slabs; size and framing details for slab openings, etc.	
	Revised and further detailed vertical framing plans that indicate type, size, length, and spacing of principal members and components	X
	Updated roof framing plans, including truss schedule if applicable	
	Updated structural building sections, transverse and longitudinal	
	Updated schedules for columns, beams, shear walls	
	Refined construction details for structural systems, components, connections	
Systems – M/E/P, Fire Protection		
	Revised and further detailed mechanical plans for HVAC and piping systems, equipment, and mechanical rooms, including ductwork	X

	Updated mechanical schedules for equipment (AHUs, FCUs, fans, etc.) and fixtures (diffusers, louvers, etc.)	
	Above-ceiling sections for typical and congested areas to illustrate ceiling, structure (including fireproofing), piping (including insulation), ductwork, and other utilities and systems	
	Refined sequence(s) of operations for BAS controls	
	Revised and further detailed electrical (power) plans and riser diagrams to illustrate primary and secondary power distribution, equipment, panelboards, and electrical rooms	
	Preliminary power plans to indicate convenience, equipment, and special-purpose receptacles *NOTE: Identify rough-ins or receptacles at or within fixed furnishings, or floor boxes for fixed or moveable furnishings (classroom seating, modular office furniture, etc.)*	
	Details, enlarged plans, and schedules as needed to illustrate circuitry, pathways, wiring system(s), conductors, receptacles, switches, and exit signs	
	Revised and further detailed electrical plans for fire alarm, lighting, and lighting control systems	
	Updated schedules for panelboards, lighting fixtures, other electrical equipment	
	Refined details for grounding, lightning protection, and emergency power systems	
	Revised and further detailed plumbing plans illustrating waste, domestic hot and cold water, (roof) stormwater, equipment, and chases	
	Plumbing fixture schedule	
	Revised and further detailed fire sprinkler plans, including fire pump, backflow preventer(s), risers, standpipes, hose cabinets, sprinkler coverage, and protection for sprinkler pipes and heads located in unconditioned spaces	X
	Illustration(s) showing typical mounting heights for switches, receptacles, alarm devices, card readers, thermostats, and other wall-mounted devices	
	Updated hydraulic calculations	
Systems – Telecommunications, Audio/Visual, Security		
	Revised and further detailed telecommunications floor plans, including layout of telecomm rooms, vertical and horizontal distribution, floor boxes, and work area outlets *NOTE: Identify work area outlets to be installed at or within fixed furnishings, or floor boxes for fixed or moveable furnishings (classroom seating, modular office furniture, etc.)*	X
	Updated and further detailed audio/visual plans and equipment schedules/details	
	Updated and further detailed security plans and equipment schedules/details	

Laboratory / Research Specialties		
	Revised and further detailed lab floor plans	X
	Plans illustrating lab exhaust equipment, ductwork, and load/capacity parameters	
	Updated fume hood schedule with location, size, type of hood, etc.	
	Updated P&ID drawings for distributed gases and utilities (de-ionized water, clean dry air, vacuum, etc.)	
	Lab casework schedule(s)	
	Revised and further detailed hazardous materials inventory correlated with life safety plans and occupancy classifications	
Furnishings		
	Updated furnishings plan(s), with distinctions made between fixed and moveable, and between those to be provided and installed (or Owner-furnished, builder-installed) as part of construction and those provided by the Owner after construction	X
	For lab/research spaces, clear indication of research/lab tools and equipment	

100% Construction Documents (100% CDs)

	Administrative/General *(see "Requirements Common to All Design Phases)*	**L**
	Basis of Design (*updated from previous phase*)	X
	Space Summary and Area Calculation, including roof areas	
	Quality Control statement	
	Draft Commissioning Plan	
	AutoCAD (DWG) copies of the site plan and floor plans	
	Owner's Design Guideline Consultant Sign-off Sheets	
	Initial or updated Estimate of Probable Construction Cost	X
	Specifications	
	Table of Contents identifying all technical and non-technical specs	X
	Revised and finalized technical and non-technical specs, including identification of closeout deliverable requirements.	
	Identification of proposed additive and deductive alternates	
	Finalized project-specific list of O&M documents, Owner training, list of turn-over stock, and other closeout requirements specified in the Construction Documents.	
	Site / Utilities	
	Finalized site plan with xyz axis tied to closest survey monument for geo referencing. Additions to existing facilities to tie vertical connection points at each level of connection to ensure smooth transitions.	X
	Finalized site demolition and tree impact plans, if applicable (see previous phase)	
	Finalized site utilities plan(s) – (see previous phase)	
	Finalized site lighting plan, plus photometric analysis	
	Finalized paving, grading, and drainage plan (see previous phase)	
	Finalized landscaping/planting plan, with hardscape materials and site features & fixtures indicated	
	Building / Architecture	
	Finalized dimensioned floor plans (see previous phase)	X
	Finalized roof plans (see previous phase)	
	Finalized life safety plans (see previous phase), along with ULC or CSA listed fire rating details	
	Finalized exterior elevations	
	Finalized exterior renderings, perspectives, and/or models	
	Finalized renderings of all significant public spaces, including exterior public plazas and primary entry lobbies to accurately portray scale, context, finishes, and light sources	
	Finalized building sections (see previous phase)	

	Finalized sections through stairs and elevator shafts	
	Finalized floor-by-floor stair plans, dimensioned	
	Finalized roof details	
	Final exterior wall sections and details, fully dimensioned	
	Finalized details and enlarged elevations for all exterior finishes, such as cast stone, architectural precast, stucco, and metal wall panels	
	Finalized details for flashings, waterproofing, dampproofing, and fireproofing	
	Finalized schedules and details for openings (windows, doors)	
	Finalized details & definitions for interior partitions	
	Finalized reflected ceiling plans (see previous phase)	
	Finalized finish schedule to identify wall, ceiling, floor, and base materials by room	
	Finalized dimensioned interior elevations and fixture/accessory schedules for all restrooms	
	Finalized casework and millwork details	
	Finalized color/finishes boards to illustrate the color and type of interior finishes	
	Finalized demolition plans for renovation/rehabilitation projects	X
	Finalized signage and graphics plans including room identification and numbering, directional, way-finding, or other signage required by code	X
Structural		
	Structural “title sheet” with design criteria and loads, construction notes, etc.	
	Finalized foundation plan, including complete schedule(s) for footings, grade beams, etc.	
	Finalized horizontal framing/slab plans that indicate type, size, length, and spacing of principal members; size and elevation of slabs; size and framing details for slab openings, etc.	
	Finalized vertical framing plans and details that indicate type, size, length, and spacing of principal members and components	X
	Finalized roof framing plans, including draft truss schedule if applicable	
	Finalized schedules for columns, beams, shear walls	
	Finalized structural building sections, transverse and longitudinal	
	Finalized construction details for structural systems, components, connections	
	Finalized illustration of control joints	
	Finalized detailing of sleeves through structure, if any	
Systems – M/E/P, Fire Protection		
	Finalized mechanical plans for HVAC and piping systems, equipment, and mechanical rooms, including ductwork	X
	Finalized mechanical schedules for equipment (AHUs, FCUs, fans, etc.) and fixtures (diffusers, louvers, etc.)	

	Finalized above-ceiling sections for typical and congested areas (see previous phase)	
	Refined sequence(s) of operations for BAS controls	
	Finalized electrical (power) plans and riser diagrams to illustrate primary and secondary power distribution, equipment, panelboards, and electrical rooms	
	Finalized power plans to indicate convenience, equipment, and special-purpose receptacles *NOTE: Identify rough-ins or receptacles at or within fixed furnishings, or floor boxes for fixed or moveable furnishings (classroom seating, modular office furniture, etc.)*	
	Finalized details, enlarged plans, and schedules as needed to illustrate circuitry, pathways, wiring system(s), conductors, receptacles, switches, and exit signs	
	Finalized and further detailed electrical plans for fire alarm, lighting, and lighting control systems	
	Finalized schedules for panelboards, lighting fixtures, other electrical equipment	
	Finalized details for grounding, lightning protection, and emergency power systems	
	Finalized plumbing (see previous phase)	
	Finalized plumbing fixture schedule	
	Complete and finalized fire sprinkler plans, plus finalized hydraulic calculations	
Systems – Telecommunications, Audio/Visual, Security		
	Finalized telecommunications floor plans, including layout of telecomm rooms, vertical and horizontal distribution, and work area outlets *NOTE: Location of wireless access points shall be determined by Dal ITS group.* *NOTE: Identify work area outlets to be installed at or within fixed furnishings, or floor boxes for fixed or moveable furnishings (classroom seating, modular office furniture, etc.)*	X
	Finalized audio/visual plans and equipment schedules/details	
	Finalized security plans and equipment schedules/details	
Laboratory / Research Specialties		
	Finalized lab floor plans	
	Finalized plans illustrating lab exhaust equipment, ductwork, and load/capacity parameters	
	Finalized fume hood schedule with location, size, type of hood, etc.	X
	Finalized P&ID drawings for distributed gases and utilities (de-ionized water, clean dry air, vacuum, etc.)	
	Finalized lab casework schedule(s)	

	Finalized hazardous materials inventory correlated with life safety plans and occupancy classifications	
Furnishings		
	Finalized furnishings plan(s), with distinctions made between fixed and moveable, and between those to be provided and installed (or Owner-furnished, builder-installed) as part of construction and those provided by the Owner after construction	X
	For lab/research spaces, clear indication of research/lab tools and equipment	

APPENDIX 2

This APPENDIX is to be completed and signed off at the Start up meeting between Owner and Dalhousie Project Manager.

Part 1		Applicable to Project?
Item 1	Design Services General Guide	**Mandatory**
Item 2	CAD Standard	**Mandatory**
Item 2a	CAD Template	**Mandatory**
Item 2b	CAD Plotstyle	**Mandatory**
Item 2c	BIM Specifications	
Item 3	Life Cycle Standards	
Item 4	Active Transportation	
Item 5	Space Guidelines	
Item 6	Custodial Guidelines	
Item 7	Laboratory Design Standard	
Item 8	Certificate of Substantial Performance Template	
Item 9	Room Numbering Guideline	
Part2		
Div 01	General Requirements	
Div 01(b)	Responsibility Matrix Data-Comm-Security	
Div 01 91 13	General Commissioning	
Div 01 91 14	Mechanical Commissioning	
Div 01 91 15	Electrical Commissioning	
Div 01 91 19	Envelope Commissioning	
Div 08	Door Hardware	
Div 10	Specialties	
Div 14	Conveying Equipment	
Div 21	Fire Suppression	
Div 22	Plumbing	
Div 23(a)	HVAC	
Div 23(b)	Mechanical Identification	
Div 25(d)	Lab and Fume Hood Controls System	
Div 26	Electrical	
Div 27	Communications	
Div 28(a)	Dal SAC Building Security Performance	
Div 28(b)	Dal SAC Application Guideline	
Div 28(c)	Heartland Technical Guideline	
Div 28(d)	Genetec Technical Guideline	
Div 32	Natural Environment Policy and Guideline	