INTEGRATED INFRASTRUCTURE SERVICES
Facility Engineering Services
Facility Planning & Design
Facility Infrastructure Delivery

Facility Design & Construction Consultant Manual

Volume 1

COE-IM-GUIDE-0001

Design Process
and
Guidelines
v09

Edmonton

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1. Introduction

1.1. Purpose and Scope

1.1.1. This document is intended to be used for the following purposes:

1.1.1.1. A reference for Consultants providing services for new building Projects and renovations to existing facilities owned or operated by the City of Edmonton (City).

1.1.1.2. A resource for the City when reviewing and evaluating the work performed by architectural and engineering firms on City facility Projects.

1.1.2. Facility Design & Construction Consultant Manual (this document) is Volume 1 of 2 and is divided into the following sections:

1.1.2.1. **Section 1 – Introduction:** Establishes the scope of the document and gives general contact information.

1.1.2.2. **Section 2 – Design Process:** Describes the information flow on a typical Project, standard deliverables expected at each milestone, and an overview of minimum document and CAD standards to be followed.

1.1.2.3. **Section 3 – Design Guidelines and Reference Standards:** Describes City policies and design guidelines and their relative administrative procedures specific to the City that are to be considered when designing buildings.

1.1.3. Facility Design & Construction Consultant Manual—Volume 2 of 2 contains the following section:

1.1.3.1. **Section 4 – Technical Guidelines:** Discipline-specific guidelines to consider for the design and construction of facilities for the City.

1.1.4. These guidelines include both mandatory requirements and non-mandatory recommendations. Applications of these guidelines are based on the use of the following terminology:

1.1.4.1. Must and/or Shall - denotes a mandatory City of Edmonton requirement,

1.1.4.2. Should - denotes a recommended but non-mandatory City of Edmonton requirement,

1.1.4.3. May - denotes an optional City of Edmonton requirement.

1.1.5. The Consultant is expected to follow professional judgment as well as all applicable codes and regulations. Projects may have specific requirements that supersede some material presented in this document. These requirements will be communicated to the Consultant at the outset of the Project or during design as the need arises. When a deviation from these guidelines is required, City approval shall be documented in writing.

1.1.6. Content from this manual must not be copied directly into any Project deliverables, unless noted otherwise.

1.1.7. Request the latest versions of the standard documents and templates from the City Project Manager.

1.2. Definitions

Unless otherwise specified, words used in this document have the same meaning as defined in the Professional Service Agreement. Definition terms are italicized throughout the text.

1.2.1. Professional Services Agreement (PSA): The agreement the Consultant enters into with the City to perform the Work. This document includes all documents listed within the Contract Form.

1.2.2. Technical Review: The process in which the Project Manager circulates Consultant deliverables for review, markup, or comment from internal City Project stakeholders. Technical reviewers typically include the Commissioning Agents, Construction Managers and the City of Edmonton (City) Project Business Area, Architectural Services, Engineering Services, and Facility Maintenance Services - Project Review Team (PRT). Reviews may include other City stakeholders including Open Spaces - Landscape Architects, Heritage Planning, Corporate Security, and others.

1.3. Contact Information

1.3.1. The latest version of this document may be obtained in electronic format from the City Design and Construction Standards website, the Project Manager, or by contacting the individual below.

1.3.2. Please note all additions and changes made to the Consultant Manual Volumes 1 have been highlighted in light blue.

1.3.3. Consultant input for updating this document is welcome. Please direct comments to the Supervisor of Facility Engineering, including feedback regarding CAD Drawing standards:

Supervisor, Facility Engineering
Facility Engineering Services
Infrastructure Planning & Design
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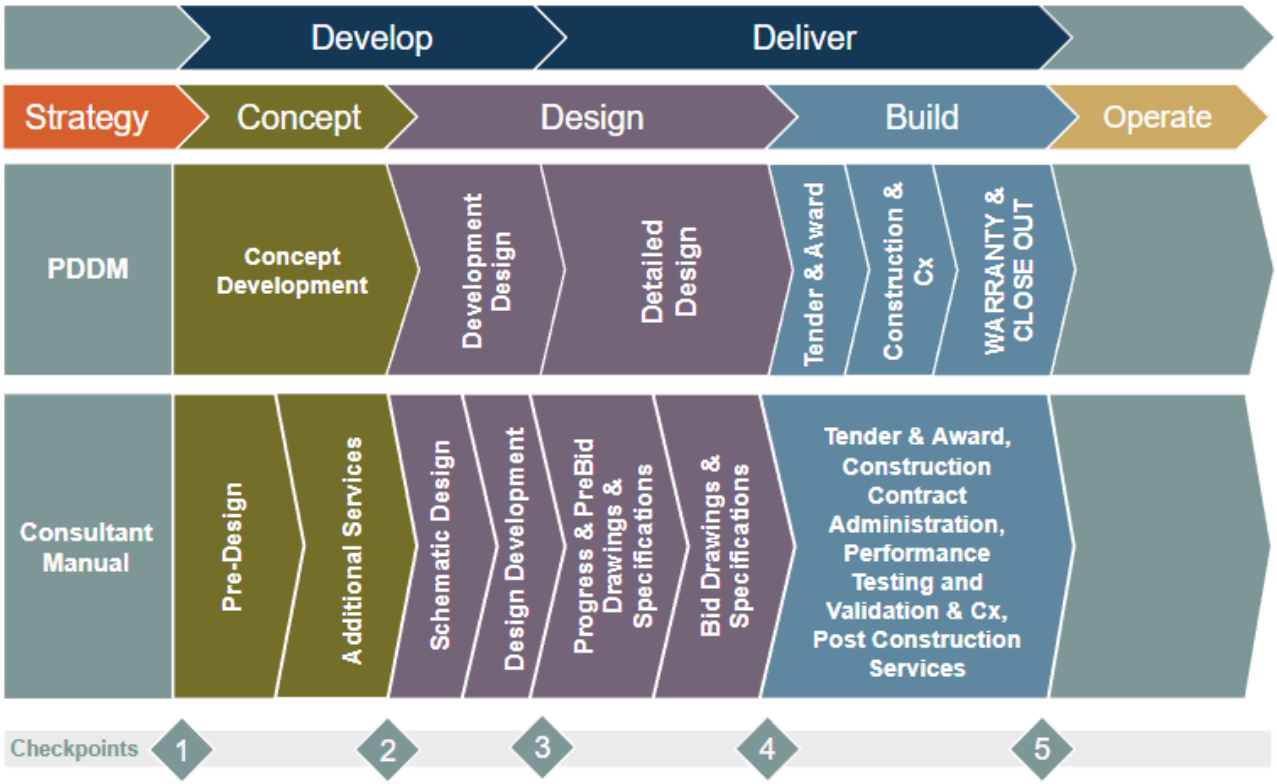
VER	Date	Revision Summary
09	2026-04-02	Additions / revisions highlighted in light blue
08	2022-11-21	Updated formatting
07	2022-11-02	Additions / revisions highlighted in orange
07		Additions / revisions not highlighted • Defined terms capitalized (not italicized) • Use of defined terms from the PSA • Removing trade-specific language, or adding definition e.g. Basis of Design • Use of abbreviations after 1st instance e.g. City of Edmonton = CoE • Remove conflict between different sections of the manual and the PSA • Keeping consistent (ie) definition of "what" services required located in the PSA, and process, "how" or "why" in the Consultant Manual • Eliminate redundant information

		• Use of clear, concise language (i.e.) removing emphasis unless absolutely required etc. • Additions / revisions highlighted in
06	2021-11-02	Updated section 3 numbering
05	2021-09-10	Additions / revisions highlighted in green
04	2019-07-26	Additions / revisions highlighted in yellow
Printed or downloaded copies of this document are not controlled and may not be the current version.		

2. Design Process

2.1. Project Development and Delivery Model (PDDM)

2.1.1. The Project Development and Delivery Model (PDDM) is the approach that the City takes to enhance capital infrastructure project oversight. This process involves structured reviews of projects at key points throughout the Project life cycle. Below is an illustration of the approximate alignment of Consultant deliverables with the City's internal PDDM checkpoint system.



2.2. Project Communication

2.2.1. General

2.2.1.1. The City will assign a Project Manager for deliverables up to the end of Design Development (Checkpoint 1 to 3) and a Project Manager for Working Drawings to Post Construction

(Checkpoint 3 to 5). At the end of Design Development, a transition will occur in which the Project Manager assigned will switch as the Consultant's single point of contact within the City.

2.2.1.2. The Prime Consultant is to appoint one person to be the primary contact on the design team. If the design team consists of multiple sub-consultants in multiple firms, all official correspondence and submissions to the City should be through the Prime Consultant.

2.2.1.3. Any discussion between members of the design team that affects the Project design, cost, or schedule should be recorded in writing by the Prime Consultant and forwarded to all relevant team members, including the Project Manager. Internal discussions between the Consultant and their sub-consultants are to be documented internally. It is the responsibility of the Consultant to alert the Project Manager of any internal discussions that may affect the Project scope, budget, schedule, etc.

2.2.1.4. The City uses the Google ecosystem for email, calendaring, and most documents. The Consultant will make every effort to use Google for file transfers to, and developing collaborative documents with, the City.

2.3. Project Delivery Models

2.3.1. The scope and language within the Facility Design & Construction Consultant Manuals are written to reflect a traditional Project delivery method, and portions may not suit all delivery methods of Project delivery, or contractual relationships. The Consultant should refer to their *Professional Service Agreement (PSA)* and/or standing arrangement Project call-up for more information and is encouraged to seek clarification on any deliverables which they feel should be excluded from the Project for consideration. The City will review any comments provided and may issue a change incorporating these considerations.

The City may elect to use any of the following methods for Project delivery:

.1 Design Bid Build
.2 Construction Management
.3 Integrated Project Delivery
.4 Progressive Design-Build
.5 Standard Design-Build (with Bridging Consultant)
.6 Public Private Partnership
.7 Other

2.4. Consultant Deliverables

2.4.1. Introduction

2.4.1.1. This section outlines typical deliverables at key Project milestones. It is understood that all Projects are different and the contents of this section may not wholly apply to all Projects. For example, smaller Projects may consist of scaled-down reports, renewals may remove deliverables unrelated to the Project, or a larger Project may be phased in such a way that more or less is required from the Consultant at each phase.

Modifications to Consultant deliverables required for Projects are identified in the *Professional Services Agreement (PSA)*, or in the case of a standing arrangement, in the Project Call-Up request for proposal.

2.4.1.2. The Consultant shall submit an electronic copy of all Consultant deliverables for the City's review and approval. Following the review and completion of any required corrections, the final deliverable shall be submitted via electronic PDF version. Confirm with the Project Manager if hard copies are required.

2.4.1.3. All submissions will be subject to a *Technical Review*.

.1 The Consultant is to respond to all *Technical Review* comments in writing to the Project Manager within two weeks of receiving them. These written responses and the reviewer acknowledgments are to be included in the next submission in an appendix.
.2 In some cases, the Consultant may be required to re-submit based on the nature of the comments.
.3 Comments received from the City do not absolve the Consultant of their responsibility to comply with all applicable codes and regulations and the Consultant remains professionally responsible for the work submitted.

2.4.1.4. Typically, a *Technical Review* will be completed once per milestone. Additional submissions may be requested in the *PSA* or provided by the Consultant to demonstrate progress. These will not normally be subject to a *Technical Review*. Extraordinarily large Projects or major revisions may be an exception and require an extra *Technical Review*.

2.4.1.5. Report Format

.1 All reports shall include an executive summary, recommendations, and a conclusion.

2.4.2. Functional Programming

2.4.2.1. In preparing a functional program, the Consultant's main task is to examine the stakeholder's facility and operations in detail so as to define their needs and objectives. These requirements will establish criteria for evaluating potential design solutions or other strategic alternatives. This phase typically consists of a functional programming report explaining the guiding principles for future work, defining zones and individual spaces to be developed, the planned operational model, relationship diagrams as necessary to show working and physical relationships, the total gross area, and a construction estimate.

.1 The report is to include the following:

.1 A written description of the goals and objectives of the facility

.1 What is the nature and scope of the Project parameters, needs, and opportunities?
.2 What information is required to develop an appropriate architectural response?

.2 Description of desirable activities and operations to be included, and divided into regularly occurring, seasonal, or occasional. Include interior and exterior activities.
.3 Description of spaces required to support those chosen activities and operations

.1 How much and what type of space is needed?
.2 What space will be needed in the future to operate efficiently and/or meet the needs of the community?

.4 Description of how the building will be operated and by whom, including hours of operation, maintenance, security, and shipping, building access/control, garbage, and recycling and receiving requirements.
.5 Requirements from internal and external stakeholders.
.6 Summary of public/stakeholder engagement and how results impacted the program.
.7 Description of the existing site conditions(if a site is selected) or criteria for future site selection, including any restrictions on how the site can be used, such as zoning restrictions, community concerns, and transportation access.
.8 Cost-sensitive items that the design team must respond to during the design phase, and any elements with significant impacts for funding of construction and/or operating costs.
.9 An explanation of the strategy for determining what spaces can or cannot be shared between user groups, or spaces that will have multiple uses, where applicable. This explanation shall consider whether service spaces, such as network activity rooms or mechanical spaces, can be shared between different business areas or with tenants.
.10 A complete list of participants including advisory committees who were consulted during the programming process.
.11 Risks related to the Project.

.2 Attachments must include:

.1 Preliminary room data sheets for major space types, where sizing is furniture or equipment dependent. Consultants may use their typical room data sheet template and circulate a copy to the Project Manager for review and approval for use.
.2 Space list spreadsheet including unit net areas and projected gross up factor, for a total area in square meters.
.3 Space adjacency diagrams, either for groups of spaces or for individual spaces, depending on the size of the facility. For facilities with occupants from different business areas or tenants, include diagrams indicating spaces used by each group.

.3 This submission must include a Class 5 cost estimate. Refer to Appendix A - Construction Cost Estimates.
.4 Grossing factors should be justified with an explanation of their comparative source. If the building has individual ‘suites’ or independent zones, then a grossing factor should be applied to each of those identified zones, and a separate grossing factor applied to the building as a whole.
.5 Refer to Facility Design & Construction Consultant Manual—Volume 2, Mechanical and Electrical sections, for descriptions of space requirements for service spaces.
.6 Where the sizes of certain building systems components can be determined during programming, include those as individual spaces rather than as part of a percentage grossing, e.g., Network Access Rooms (NARs), janitor closets, and public washrooms should be itemized within the program.

.7 All office spaces for City facilities need to be programmed and sized in accordance with the Corporate Space Guidelines, as outlined in Administrative Directive A1407B: Provision of Office and Special Purpose Accommodation for Civic Staff. Contact Workspace Accommodations for the most recent space standard.

2.4.2.2. Functional Program Validation

.1 Verify the accuracy of the decisions made in the original functional program including, but not limited to, number and size of individual spaces, overall size, operational model, growth model, and cost estimates.
.2 Where a conflict between the functional program and current industry standards and/or City/stakeholder input occurs, provide a brief summary of the required changes which can be appended to the functional program for future reference.

2.4.3. Concept Design

2.4.3.1. Confirm with the Project Manager what City-supplied information is available, such as site survey, geotechnical studies, environmental site assessments, parking studies, etc.

2.4.3.2. The Concept Design Report must include the following:

.1 Preliminary design and construction schedule
.2 Authentication & validation of the Concept Design Report in accordance with the AAA/APEGA practice standards.
.3 Interface Management Process as defined In APEGA's practice standard, Relying on the Work of Others and Outsourcing, if multiple entities are providing engineering services.
.4 Architectural
    .1 Review the site of the Project and assess the suitability of the site to accommodate the City's Project. Comment on site constraints, ability to support future additions and alterations, and potential impact of proposed developments in the vicinity of the site
    .2 Building massing studies (provide minimum three (3) options)
    .3 Architectural parti diagrams

.5 Structural

    .1 List of applicable codes including building importance factor
    .2 Use and occupancy loading
    .3 Environmental loading forming the basis of design

.6 Mechanical and Electrical

    .1 Outline of proposed systems
    .2 Innovative mechanical and electrical systems should be considered

.7 Sustainability

    .1 Preliminary review of Council Policy C627 Climate Resilience and related procedures refer Sustainable Design for further information

.2 Preliminary review of the City's specific LEED requirements and discussion of sustainable design strategies
.3 Building Energy Modelling:
.1 Refer to Section - Sustainable Design for building energy modelling guidelines

.8 Class 4 cost estimate. Refer to Appendix A - Construction Cost Estimates

2.4.4. Schematic Design (*Technical Review*)

2.4.4.1. This phase typically consists of a Schematic Design Report with drawings as necessary to illustrate the designs presented. Note that if no prior submission has occurred, then the deliverables from the previous phase are to be included at this time.

2.4.4.2. If applicable, the Project Manager will initiate percent for art process, as described in Percent for Art Process.

2.4.4.3. If applicable, the Consultant will complete Edmonton Design Committee informal (pre-consultation) documentation and review process as defined in Edmonton Design Committee.

2.4.4.4. **Land Survey:** Assist the City in identifying information required from the survey, using a City-supplied checklist.

2.4.4.5. **Soils Investigation:** Coordinate with the City's geotechnical and engineering consultants as to the identification of information required from the report, including proposed borehole locations to suit the Project. The Consultant shall incorporate the soil investigation requirements into their work.

2.4.4.6. **Toxic and Hazardous Materials Information:** Coordinate with the City and the City's toxic and hazardous waste and engineering consultants to identify the scope, work area, and information required from the testing report. The Consultant shall incorporate the City's toxic and hazardous waste and engineering consultants' testing reports and abatement specifications into their work.

2.4.4.7. The Schematic Design Report must include the following:

.1 Project background, site information, context plan, aerial photos, existing site photos, and zoning plan.
.2 Changes to the Project since previous submissions (if applicable) or as a result of subsequent discussions.
.3 Preliminary design and construction schedule.
.4 A detailed Work Breakdown Schedule to implement the recommended design option.
.5 Specifications: The identification of product / equipment which shall be single sourced due to Project-specific needs, operational constraints, or compatibility issues with existing systems already present on site.
.6 Written summary of which design guidelines and standard documents were considered, in addition to the Facility Design & Construction Consultant Manual—Volume 2. List any limitations or assumptions that influenced the design decisions.The summary shall also

include the identification of design elements that deviate from requirements found in all relevant guiding documents. Refer to Design Guidelines and Reference Standards.

.7 Authentication & validation in accordance with the AAA/APEGA practice standards.

.8 Interface Management Process as defined In APEGA's practice standard, Relying on the Work of Others and Outsourcing, if multiple entities are providing engineering services.

.9 Architectural

.1 Building code summary and occupant load calculation, including a discussion on any anticipated problems and solutions.

.2 Zoning bylaw compliance review.

.3 Review the site of the Project and assess the suitability of the site to accommodate the City's Project.

.1 Comment on site constraints, ability to support future additions and alterations, and potential impact of proposed developments in the vicinity of the site.

.2 Identify any off-site improvements that may be required to support the project development, considering both the needs of the facility (eg. new road signals) and improvements that may be required by Development Services (eg. bus shelters, sidewalks, and roadway improvements).

.4 Description and elaboration of the three (3) architectural designs, including a recommendation for one of the design options. Show locations for future expansion if required.

.5 Update any room data sheets that were required in the programming document.

.1 Updates should consider how building zones are secured. For multi-tenant spaces, metering strategies need to be developed to properly separate utility cost, if required.

.6 Area and space comparison table showing deviations from site and building functional program requirements, and a written description of any deviations that are not 'space-based', such as Project goals and objectives, etc.

.1 Grossing factors must be justified with an explanation of their comparative source. If the building has individual 'suites' or independent zones, then a grossing factor should be applied to each of those identified zones, and a separate grossing factor applied to the building as a whole.

.7 Written summary on any outcomes from meetings with; City development permit pre-application meeting, transportation, and/or drainage departments that will be required to be incorporated into the design.

.8 Written summary of barrier-free design for the Project. All renovations and upgrades shall strive to achieve the highest level of universal accessibility feasible for that Project.

.9 Summary and responses to the GBA+ fundamental questions.

.10 Concept of building envelope to be provided.

.10 Structural

.1 General description of the proposed foundation system based upon the geotechnical report.
.2 General description of the proposed structural system and materials to be used.
.3 Discussion, cost benefit analysis, and recommendation of slab on grade vs. structural slab.
.4 Discussion on the re-use of any existing structure, complete with assumptions and limitations associated with reuse.
.5 Discussion on any items requiring City direction, with advantages and disadvantages, risks, and estimated financial costs for each, to allow for an informed decision to be made.
.6 Cost benefit analysis, with the aid of an assigned geotechnical engineer, to determine if pile load testing is suitable.
.7 Written summary of effects of differential movement of slabs placed on grade, specifically potential effects on serviceability and finishes. Tolerance for any accepted risk should be clearly communicated.
.8 Discussion of corrosion mitigation measures for parkades and pool systems.

.11 Mechanical

.1 Design criteria for outdoor air temperatures, relative humidity, etc..
.2 Applicable codes and regulations.
.3 Discussion of proposed utility services.
.4 Description of proposed mechanical systems and approximate system-level heating, cooling, and ventilation design loads in the report.
.5 Discussion of mechanical equipment efficiencies, including, but not limited to, boiler efficiency, domestic hot water heater efficiency, chiller Coefficient of Performance (COP), fan and pump efficiencies, motor efficiencies, and heat recovery efficiency (provide justification if heat recovery is not included).
.6 Discussion of the suitability of the space allocated for mechanical systems.
.7 Details of any existing equipment or systems intended to be reused.

.12 Electrical

.1 General description of proposed electrical systems.
.2 Consideration for power quality related issues originating from the installation of multiple non-linear loads.
.3 Discussion of proposed utility services. This discussion shall include the expected installed load in kW / kVA. For existing buildings, utility transformer capacity to be determined and identified. Preliminary service calculations to be provided.
.4 Discussion of the site's emergency generator.
.5 Discussion of the site's electrical redundancy requirements.
.6 Discussion of the suitability of the space allocated for electrical systems.
.7 Description of the security system operation and related site specific security requirements.
.8 Description of the Audio Visual (A/V) system operation.
.9 If required: Description of renewable energy systems such as photovoltaic (PV) solar arrays, distributed generator systems, etc.

.13 Landscape

.1 General description of proposed landscape design.
.2 Discussion of sustainable, low impact design features or systems being considered e.g., avoiding irrigation, rainwater collection, use of native species of trees, shrubs or plants.

.14 Sustainability

.1 Building Energy Modelling: Refer to Section - Sustainable Design for building energy modelling guidelines
.2 Preliminary LEED scorecard.
.3 justification where LEED credits identified in the Section - Specific LEED Credit Requirements may not be pursued
.4 Emissions Neutral Objectives: Discuss how the Project will meet the requirements of the C627 Climate Resilience Council Policy. Identify the means and methods of achieving the policy relevant to the applicable Procedure.
.5 Tabulated list of Energy Conservation Measures (ECMs) to support the City with creation of the Project's Measurement and Verification Plan (if in Project scope).
.6 Provide Life Cycle Costing Evaluation (if in Project Scope).
.7 Provide Embodied Carbon Analysis (if in Project scope).
.8 Provide Greenhouse Gas tracking report (if in Project scope).
.9 Provide Climate Risk and Vulnerability Assessment, with updated costing per resiliency measure (if in Project Scope)

2.4.4.8. Drawing(s) are to include the following but are not limited to:

.1 Architectural

.1 Location plan, site plan, schematic floor plans, schematic building sections, conceptual envelope assembly (roof, walls, and floor), details, and specific details to Project
.2 Consultants shall include drawings or details required to explain the concept of the Project.

.2 Structural

.1 Layout of foundation plans (complete with grid lines) with respect to the existing structure and/or plot of land.
.2 Preliminary framing plan with proposed lateral restraint locations.

.3 Mechanical

.1 Site Plan: existing and proposed utility services.
.2 Plumbing Plan: domestic, storm, and sanitary mains.
.3 Heating/Cooling Plan: hydronic mains.
.4 Ventilation Plan: ductwork mains.
.5 Fire Protection Plan: fire mains.

.6 Locations of major pieces of mechanical equipment.
.7 Developed schematics of the following systems:

.1 Heating
.2 Cooling
.3 Ventilation
.4 Plumbing
.5 Pool Systems
.6 Arena Refrigeration System

.8 Gas Detection Connection Diagram showing:

.1 Anticipated gas detection equipment
.2 Communication paths between equipment, to BAS, and to security

.9 Mechanical schematics shall indicate design parameters for anticipated inlet and outlet temperatures, pressure, and flow rates where feasible.
.10 Mechanical room plan with major equipment positioned and service clearances shown (equipment maintenance and walking paths to access all equipment with a dolly).

.4 Electrical

.1 Location and general single-line arrangement of:

.1 major distribution equipment
.2 site generation
.3 utility connections
.4 installing a distributed generator system
.5 installing level 2 or level 3 electric vehicle charger
.6 installing an energy storage system

.2 Electrical room plan with major equipment positioned and service clearances shown.
.3 Details of any existing equipment or systems intended to be reused.
.4 Site plan with existing and proposed utility services (including City of Edmonton Fibre and if required, telephone line) routing, outdoor transformers, generators, energy storage system as applicable.
.5 Electrical raceways between service rooms.
.6 Preliminary layout of NAR to ensure adequate equipment space. Refer to Facility Design & Construction Consultant Manual—Volume 2 Appendix B - IT Infrastructure Design Guideline for more information.
.7 Preliminary layout and riser of Security and Card Access devices with intrusion zone(s) identified. Refer to Facility Design & Construction Consultant Manual—Volume 2 Appendix C - Security and Card Access Design Guideline for more information.
.8 Layout shall be informed by a coordination meeting to determine securing methodology and identify the necessary door access and CCTV devices. City's

Corporate Security, Operations, FMS Security, FES, and necessary consultant disciplines should be involved

.5 Civil / Landscaping / Site Plan

.1 Preliminary site location of the building and surrounding facilities.

2.4.4.9. This submission shall include a Class 3 cost estimate. Refer to Appendix A: Construction Cost Estimates.

2.4.5. Design Development (*Technical Review*)

2.4.5.1. This phase typically consists of a report and drawings. The Consultant develops the approved option in the Schematic Design Report into a submission that provides sufficient detail on how all building components are incorporated to satisfy the City's Project requirements.

2.4.5.2. If applicable, at the beginning of Design Development, the Project Manager will re-initiate the percent for art process, as defined in the Percent for Art Process section, by arranging a meeting with the Edmonton Arts Council.

2.4.5.3. If applicable, the Consultant will complete the development permit application and Edmonton Design Committee formal consultation review process as defined in Edmonton Design Committee.

2.4.5.4. The Design Development Report must include the following:

.1 Changes to the Project requirements as a result of the Schematic Design submission, or subsequent discussions.
.2 Description of the systems mentioned in previous reports, revised and expanded upon to provide a more detailed description. Unapproved options are discarded and approved alternative(s) are discussed in greater detail.
.3 An outline specification containing all design disciplines. The outline specification shall include an itemized list, using brief, concise statements, of significant materials, systems, and equipment and their criteria and levels of quality. Any criteria having a special cost impact must be included.
.4 Specifications: The identification of product / equipment which shall be single sourced due to either Project-specific needs, operational constraints, or compatibility issues with existing systems already present on site.
.5 Authentication & validation in accordance with the AAA/APEGA practice standards.
.6 Interface Management Process as defined In APEGA's practice standard, Relying on the Work of Others and Outsourcing, if multiple entities are providing engineering services.
.7 Preliminary design and construction schedule.
.8 In consultation with the City, a section titled, "Work At Height & Prevention through Design" will be completed to explore how the completed building will be operated and maintained over its expected lifetime and explore how to reduce hazards and improve efficiency and well-being for building operations and maintenance personnel This section shall discuss and graphically show the following in plan and section:

.1 Roof systems: Clearly show the intended rooftop working zone(s) on the roof plan. Assess how personnel will access the roof for operations, inspection, and maintenance; the distance of equipment and feature locations (including some types of cool roofs, vegetated roofs and solar panel installations) to roof edge; equipment installation and replacement access (including point loading); water and power access for vegetated roofs; and method of fall protection. Refer to Facility Design & Construction Consultant Manual—Volume 2—Roof section for rooftop work zone minimum requirements.
.2 Equipment rooms and systems: Assess how personnel will access equipment and controls needing servicing; any work at height or in confined spaces and restricted space locations as defined by the Alberta Occupational Health and Safety Act; need for sufficient clearances to electrical or other equipment; equipment installation inspection and replacement access; chemical storage needs; and fall protection, eye wash, or other safety feature needs.
.3 Building exterior enclosure and daylighting systems: Assess how personnel will clean exterior (e.g., cladding including windows and exterior shading devices) skylights and interior atria features.
.4 Special features: If applicable, assess rainwater management cisterns, energy recovery wheels, or geothermal wells for confined space hazards. Assess access to confined space, and fall exposures for underfloor air distribution systems.
.5 Special Equipment and Materials: Access how equipment and materials will move through the facility: i.e., fitness equipment, appliances, furniture, pool chemicals, food services, shipping receiving
.6 Equipment and Fixtures: Identify equipment and fixtures requiring mobile lifts or scaffolding for maintenance and repair.
.7 Risk: Methods on controlling risks to be incorporated into the final design.
.8 Refer to Facility Design & Construction Consultant Manual—Volume 2 - Facility Maintenance Equipment for lift specifications currently used by Facility Maintenance Services . These are to be used as the basis of design to access equipment.

.9 Written summary of which design guidelines and standard documents were considered, in addition to the Facility Design & Construction Consultant Manual−Volume 2. The summary shall also include the identification of design elements that deviate from requirements found in all relevant guiding documents.

.10 Updated Work Breakdown Schedule.

.11 Architectural

.1 Summary of applicable code requirements including any responses to comments raised by Authorities Having Jurisdiction (AHJ).
.2 Description of design features.
.3 Area and space comparison table showing deviations from site and building functional program requirements and a written description of any deviations that are not ‘space-based’, such as Project goals and objectives, etc.

.4 Update of any room data sheets that were required in the functional program document.
.5 Summary of approaches for acoustic separation or isolation for acoustically sensitive spaces.
.6 Summary of approaches for Crime Prevention Through Environmental Design (CPTED) principles and active building security systems
.7 Summary and responses to the GBA+ fundamental questions.
.8 Interior and Exterior Colour Boards. Alternatives should be presented to the City in advance and final selections shown in the report.
.9 Building Code Review:

.1 Building Code analysis
.2 Fire/Smoke separations
.3 Exiting requirements
.4 Floor separation requirements
.5 Hazardous area locations (coordinated with electrical and mechanical disciplines for the identification of any required toxic fumes extraction systems, explosive atmosphere mitigation systems, and intrinsically safe equipment requirements)

.10 Written summary of barrier-free design elements in the Project.
.11 Provide a description of the proposed building envelope systems and explanation of any proposed deviations from the Facility Design & Construction Consultant Manual−Volume 2 “Building Envelope”.

.1 Describe where water, snow, and ice shed safely.
.2 Indicated any internal environmental separations which will be required.
.3 Indicate minimum thermal resistance (RSI) effective values for each building envelope system (entire wall).

.12 If applicable, a written summary documenting any developments regarding the Percent for Art Process.
.13 If applicable, a written summary of the Edmonton Design Committee process as defined in the Edmonton Design Committee section.

.12 Structural

.1 All loading requirements listed in general notes, including but not limited to:

.1 Dead load
.2 Use and occupancy live load, with special attention to file storage and computer server room requirements
.3 Environmental, base snow, and rain loading will be indicated in the general notes. Snow drift diagrams must be provided on appropriate plans.
.4 Vehicular loading (including axle load & spacing, wheel spacing & type, and vehicle model forming the basis of design), including lift requirements as defined in Facility Design & Construction Manual—Volume 2
.5 Soil surcharge for below grade structure
.6 Indicate if the backfill forming the basis of design is clay or free-draining granular

.7 Notable and outstanding items from mechanical & electrical

.2 Foundation system described in detail.
.3 Subgrade preparation is described and finalized. Predicted movement (if slab on grade) must be identified.
.4 Framing system described in detail.
.5 Locations requiring special attention and/or unusual loading requirements described in detail.
.6 Confirm or discuss changes to previously made assumptions.

.13 Mechanical

.1 Design criteria for outdoor air temperatures, relative humidity, etc..
.2 Applicable codes and regulations.
.3 Detailed discussion of proposed utility services.
.4 Complete description of all mechanical systems, equipment, and their associated capacities.
.5 Present the final system-level heating, cooling and ventilation design loads in the report.
.6 Discussion of the suitability of the space allocated for mechanical systems.
.7 Details surrounding mechanical equipment efficiencies including, but not limited to, boiler efficiency, domestic hot water heater efficiency, chiller Coefficient of Performance (COP), heat pump COP, fan and pump efficiencies, motor efficiencies, and heat recovery efficiency (provide justification if heat recovery is not included).
.8 Details of any existing equipment or systems intended to be reused.
.9 Discussion of Building Automation System.
.10 Description of proposed plumbing fixture types.
.11 Description of acoustic treatment, duct configuration, and roof penetration seals for any rooftop installations or spaces that require acoustic separation.
.12 List of all mechanical equipment to be serviced by emergency power.

.14 Electrical

.1 Complete description of all electrical systems. This includes transformer and distribution system electrical loading as well as physical space in designed equipment or for new equipment.
.2 Product data sheets on all major components and luminaires.
.3 Discussion of energy efficient concepts and energy efficiency initiatives.
.4 Utility service, site generation and major feeder load calculations.
.5 Review exterior lighting scope to identify security or street lighting assets. Discuss appropriate standards and guidelines for the specific lighting asset. Contact Facility Engineering for additional details.
.6 Refine security door access and CCTV system requirements, exercise to include the assessment of existing system capacities, coordination of door hardware, and customization of City of Edmonton specifications and templates to align with project needs.

.15 Landscape / Civil / Site

.1 Complete description of landscape design strategy, including outdoor amenity spaces, parking island development, species selection, site furniture, and lighting.
.2 Complete description of civil/site design strategy.

.16 Environmental

.1 Completed "Design Environmental Permit Approval Checklist". Note all outstanding items that must be determined during detailed design. Refer to section – Environmental Management (Enviso) for more information.

.17 Sustainability

.1 Building Energy Modelling: Refer to section - Sustainable Design for building energy modelling guidelines.

.2 Updated LEED scorecard.
.3 Include justification where LEED credits identified in section Specific LEED Credit Requirements may not be pursued. Identify requirements for credits that will primarily be the City's responsibility to achieve.
.4 Discuss how the Project will meet the requirements of the C627 Climate Resilience Policy. Identify the means and methods of achieving the policy relevant to the applicable Procedure.
.5 Update list of ECMs to support the City with the creation of the Project's Measurement and Verification Plan, if required (if in Project scope).
.6 Provide any changes/updates to Life Cycle Costing Evaluation (if in Project scope).
.7 Provide any changes/updates to the Embodied Carbon Analysis(if in Project scope).
.8 Provide Greenhouse Gas tracking report (if in Project scope).
.9 Provide any implemented risk mitigation strategies and/or changes to Climate Risk and Vulnerability Assessment, along with updated costing per resilience measure (if in Project scope).

2.4.5.5. Drawings are to include the following:

.1 Architectural

.1 Proposed envelope assemblies and effective RSI values
.2 Site plan
.3 Floor plan(s), roof plan(s), reflected ceiling plan(s), Work at Height Plan(s)
.4 Building sections
.5 Typical wall section(s), including any typical conditions which may affect environmental separation performance
.6 Interior elevations of major spaces
.7 Room finishes schedule
.8 Door and window schedule
.9 Furniture layout
.10 Exterior elevations

.11 Site details; fencing, gates, paving patterns, screening elements, etc.

.2 Structural

.1 General notes
.2 Foundation plan
.3 Floor framing plan (all elevations)
.4 Wall framing plan
.5 Roof framing plan
.6 Lateral bracing is located on plans

.3 Mechanical

.1 Site Plan: utility service connections, utility service sizes, utility meter, and fire department connections
.2 Roof Plan: locations of drains, rooftop equipment, and air intake and exhaust locations
.3 Plumbing Plan: fixtures, floor drains, cleanouts, plumbing, and drainage mains
.4 Heating / Cooling Plan: hydronic mains, branch lines, and layout of any terminal units
.5 Ventilation Plan: single line distribution mains and layout of terminal units
.6 Fire Protection Plan: fire mains, fire protection zone boundaries, and sprinkler tree location
.7 Show locations of major pieces of mechanical equipment
.8 Developed mechanical system schematics

.1 Heating
.2 Cooling
.3 Ventilation
.4 Plumbing
.5 Pool Systems
.6 Arena Refrigeration System

.9 Gas Detection Diagram:

.1 Show all sensors, controllers, strobes, horns, etc.
.2 Communication path between gas detection equipment
.3 Communication path to BAS and Security
.4 Coordinate with Electrical consultant to support creation of wiring diagram for later deliverables

.10 Mechanical schematics shall indicate design parameters for inlet and outlet temperatures, pressure, and flow rates where feasible.
.11 Mechanical schematics to show all building automation system devices including those that measure air and water flow, temperature, and pressure along with any control devices such as control valves or balancing dampers.
.12 Mechanical room drawings shall show the items specified below:

.1 Mechanical room plans shall have a minimum scale of 1:50 with equipment, piping, ductwork, and service access clearances (equipment maintenance and

walking paths to access all equipment with dolly). Provide lower level and upper level plans with minimum of two (2) section views to clearly illustrate equipment heights, pipe and duct heights and clearances, vertical clearances, etc.

.2 Where mechanical room drawings are modelled in three dimensions (3D), isometric views shall be shown on drawings.

.3 Any piping or ductwork in the mechanical room larger than 4" shall be shown as a double line to indicate true size.

.13 Pool Design: Coordinate and show all main piping and equipment, including pumps, filters, surge tank, chemical treatment, and pool inlets and outlets.

.14 Arena Design: Coordinate and show all main piping and equipment including pumps, chillers, cooling towers, fluid coolers, etc.

.4 Electrical

.1 Electrical site plan identifying type and route of power & low tension services, and location of major equipment such as utility transformers.

.2 Site lighting plan identifying preliminary locations of exterior luminaires. May be included on electrical site plan. Include photometric, isolux layout.

.3 Preliminary electrical and communication room(s) plan with major equipment (including any future planned equipment) positioned and service clearances shown.

.4 Location and preliminary size of site generation and associated equipment (i.e., Automatic Transfer Switch (ATS), load bank, etc.)

.5 Preliminary Security and Card Access riser diagram. Show all intrusion zones, devices, and panels both on floor plan and in tabular format. Refer to Facility Design & Construction Consultant Manual—Volume 2 Appendix C - Security and card Access System Design Guidelines for more information. Preliminary security camera layout. Indicate proposed location of headend equipment.

.6 Gas Detection:

.1 Develop a full wiring diagram in coordination with mechanical, showing terminal-to-terminal connections of all gas detection equipment and interconnections to other systems (i.e. security, HVAC control, BAS). Typical schematics will not be accepted. If the project team intends to carry a subconsultant to complete this work contact Facility Engineering Services.

.7 Typical room layout(s). Preliminary electrical rooms and space layout including spare space(s) for future expansion(s) and clearance around equipment for maintenance and code compliance.

.8 Typical site layout including service entrance cable routing, pad mounted equipment (generators, transformers, fuel tanks), EV chargers including spare space(s) for future expansion(s) and clearance around equipment for maintenance and code compliance.

.9 Preliminary single line diagram. Include load calculation and expected fault levels. For any Project, a complete facility single line diagram shall be provided. Partial documentation will not be accepted.

.10 Riser diagrams for all building systems, including structured wiring (IT), security, Closed Circuit Television System (CCTV), fire alarm, Audio Visual systems public

address, etc. Factor additional conditions as stipulated in the police, ETS/LRT, and fire rescue functional programs.

.11 Preliminary audio visual system paging zone layout.

.12 Preliminary structured wiring riser diagram that clearly demonstrates all major components and their interrelation.

.13 Preliminary plan layouts of the NAR(s) showing all major equipment.

.14 Illumination levels and uniformity calculations for all interior spaces; include photometric, isolux layout in drawings.

.15 Target interior and exterior lighting power densities.

.16 Service drawing indicating lift path from outside through building and reviewed by a structural engineer for floor loading.

.17 Lightning protection risk assessment. The assessment shall be based on the methodology prescribed by the CSA B72: 20 Installation code for lightning protection systems.

.18 Submit applicable deliverables for the PV system in compliance with the latest version of the City of Edmonton Solar Photovoltaic Program Design Guideline.

.5 Landscape / Civil / Site

.1 Landscape plan and site details as per development permit application requirements.

2.4.5.6. This submission shall include a Class 3 cost estimate. Refer to Appendix A: Construction Cost Estimates.

2.4.6. Working Documents – Progress Submission (*Technical Review*)

2.4.6.1. In this phase, the Consultant further develops the approved Design Development submission into a complete set of in-progress drawings and specifications. This submission is reviewed to ensure the documents have incorporated all approved elements from previous submissions to the City's satisfaction. This allows for the identification of issues at an early stage, minimizing re-work and helping to keep the Project on schedule.

2.4.6.2. The use of a percentage value to describe the overall submission is discouraged. It is expected that disciplines such as civil, structural, and architectural will work ahead of other disciplines to ensure information necessary to maintain the design schedule is available and not subject to significant changes.

2.4.6.3. The progress submission(s) are to include the following:

.1 Architectural & Interior Design

.1 Zoning and code summary.

.2 Fire separations to be indicated on plans.

.1 Acoustic separation to be indicated on plans

.2 Indicate minimum effective RSI values required by code for each building envelope system

.3 General notes.

.4 Partition assembly legend. Exterior and interior wall types are listed.

.1 Indicate minimum effective RSI value

.5 Site plan.
.6 All plans included and are to be substantially complete. This includes floor plans, reflected ceiling plans, roof plan, and updated Work at Height Plan(s) - see below.
.7 All equipment and furniture locations are shown for coordination. If furniture selection is within the Consultant's scope, preliminary furniture selections shall be provided for review by the City Accommodations team
.8 Exterior elevations, all located and drawn. Notes to be substantially complete.
.9 Building sections, all located and drawn. Notes to be substantially complete.
.10 Wall sections, all located and drawn. Notes to be substantially complete.
.11 Enlarged plans for areas such as bathrooms, kitchens, and other specialty areas, all located and drawn.
.12 Plan details: Typical shown. Atypical located but may not be detailed.
.13 Section details: Typical shown. Atypical located but may not be detailed.
.14 Room finishes schedule/drawing to be substantially complete. Show patterns for finishes in drawing, if applicable.
.15 Door, door hardware, and window schedule to be substantially complete.
.16 Interior elevations, all located and drawn.
.17 Millwork plans, elevations, and sections. Millwork details are located but may not be complete.
.18 All work by other disciplines presented in this submission has been coordinated.
.19 Specification sections for all building materials, systems and assemblies must be included.

.20 Submission of list of miscellaneous metal elements within the (Metal Fabrication 05 50 00) requiring fabrication. This section shall be coordinated with all sub disciplines on the team.
.21 Reflected ceiling plan drawings should identify the locations of all equipment mounted within or concealed above finished ceiling space and must identify proposed maintenance access locations directly on the drawing. These locations and access requirements should be coordinated with the applicable discipline drawings.
.22 Work at Height Plan

.1 The Consultant shall provide a drawing(s) titled "Work At Height Plan". The drawing(s) will depict the following:

.1 All falling risk zones.
.2 Location of rooftop equipment, including clearance envelope, deemed necessary to maintain equipment.
.3 Location of access points, roof hatches, fixed ladders, ladder guides, etc.
.4 Location of guard rails, travel restraint, and fall arrest anchors (if approved for use, see Facility Design & Construction Manual—Volume 2).
.5 Locations of signage.

.2 The Work at Height Plan will be a coordinated effort of the Consulting team and representatives of the City Facility Maintenance Team.
.3 Work to be completed at height, at a minimum, will be governed by the current version of the Alberta Occupational Health and Safety Act and the associated Occupational Health and Safety Code Explanation Guide.
.4 Operation and maintenance of equipment will be considered when determining the location of said equipment. Refer to Facility Design & Construction Manual—Volume 2 - Design Loads for commonly used City Equipment.
.5 The result of this effort is the minimization of exposure to the risks of falling by:

.1 Eliminating risk by placing equipment at grade or within dedicated rooms.
.2 Placing equipment in locations not requiring guardrails, travel restraint, or fall arrest equipment.
.3 Understanding that the use of travel restraint and rooftop anchors will only be considered if all other methods of risk management have been determined to be impossible.

.2 Structural

.1 General notes with Project specific categories added, categories not pertaining to the Project are deleted.
.2 Foundation layout is set, complete with schedules and sections have been partially detailed.
.3 Type of pile caps, where applicable, identified and sections have been partially detailed.
.4 Schedules created and sections have been partially detailed.
.5 Slab on grade and structural slabs created and sections have been partially detailed.
.6 Base plate and anchor bolt schedules have been created and sections have been partially detailed.
.7 Column schedule created and elevations/sections have been identified and partially detailed.
.8 Framing plans are complete.
.9 Wall elevation plans are complete.
.10 Lateral bracing locations have been identified and partially detailed.
.11 Sections and details have been cut and partially detailed.
.12 Steel sections and connections that will be delegated to the Structural Steel Fabricator have been identified and loading provided.
.13 Snow load drifts identified and located on drawings.
.14 Draft revision of all relevant specification sections. Sections may still need to be edited, but all necessary sections have been provided.

.3 Mechanical

.1 Title page and list of mechanical drawings.
.2 Mechanical Legend.
.3 Site Plan: utility service connections and sizes, pertinent inverts, and natural gas schedule showing all loads.

.4 Roof Plan: locations of all roof top equipment, drains, plumbing vents, air intakes, and exhausts, etc.
.5 Plumbing Plan**:** fixtures, floor drains, cleanouts, plumbing and drainage mains with sizes. Also plumbing fixture tags.
.6 Heating / Cooling Plan: hydronic mains, branch lines, valves, and layout of any terminal units with sizes. Include terminal unit tags.
.7 Ventilation Plan: ductwork distribution mains and branches and layout of terminal units with sizes. Also diffuser and register locations and tags and dampers.
.8 Fire Protection Plan: fire mains, fire protection zone boundaries, and sprinkler tree location with sizes. Sprinkler head locations if needed.
.9 Developed mechanical system schematics (to be separate from the plan drawings).

.1 Heating
.2 Cooling
.3 Ventilation
.4 Plumbing
.5 Pool Systems
.6 Arena Refrigeration System
.7 Gas Detection

.10 Mechanical schematics shall indicate design parameters for inlet and outlet temperatures, pressure, and anticipated flow rates.
.11 Mechanical schematics to show all Building Automation System devices including those that measure air and water flow, temperature, and pressure along with any control devices such as control valves or balancing dampers.
.12 Riser diagrams for piping and ventilation systems for any building with four or more levels (above or below ground).
.13 Mechanical room drawings shall show the following:

.1 Plan layouts shall have a minimum scale of 1:50 with equipment, piping, ductwork, and service access clearances (equipment maintenance and walking paths to access all equipment with dolly).
.2 Provide lower lever and upper level plans with a minimum of two (2) section views to clearly illustrate equipment heights, pipe and duct heights and clearances, vertical clearances, etc.

.1 Layouts and elevations including duct shaft layouts and pipe routing. Include sufficient sections to show the elevations of all equipment, piping, ductwork, and structural supports.
.2 Equipment service space requirements are to be shown on the drawings and there shall be notes indicating that no other equipment or piping is allowed in these spaces.

.3 Where mechanical room drawings are modelled in three dimensions (3D), isometric views shall be shown on drawings.

.14 Gas detection:

.1 Provide a plan drawing showing locations of all sensors, controllers, strobes, horns, and signage.
.2 Provide details showing the verbiage to be included in all signage
.3 Update gas detection diagram as required
.4 Coordinate with electrical consultants for the development of full wiring diagram, including connections to other systems (i.e. security, mechanical, etc..)
.5 Provide a controls narrative for the gas detection system including ventilation and alarm activation levels.

.15 Proposed standard details for the Project.
.16 Complete and detailed control systems sequence of operations for all mechanical equipment to be included. Sequence to include which mechanical equipment is to be turned off in a fire alarm.
.17 Equipment schedules including basic equipment design parameters to show type, configuration, and service of systems with sufficient detail for structural and electrical coordination. Equipment schedules shall be located on drawings and not embedded within specifications.
.18 Coordinate location and access requirements for maintenance of equipment mounted within or concealed above finished ceiling space with architectural Consultant.
.19 If access panels are required, recommend minimum size, quantity, and approximate location to ensure the equipment can be accessed as per the manufacturer's recommendations.
.20 Large units, such as fan coils, should be aligned with finished ceiling orientation to avoid clashes with regards to maintenance access and ceiling framework. Coordinate orientation with architectural Consultant as appropriate.
.21 Draft revision of all relevant specification sections. Sections may still need to be edited, but all necessary sections have been provided.

.4 Electrical

.1 Electrical site plan indicating the location of power and low tension services, utility transformer, utility service boxes, site lighting, power, and parking pedestals.
.2 Lighting plan, including emergency and exit lighting. Indicate luminaire types, mounting height, and lighting control types & locations.
.3 Power and distribution plan, including:

.1 All major equipment shown to scale.
.2 Indicating clearances in front of/around equipment.
.3 As applicable: installation path for redundant distribution system which shall be segregated (mission critical facilities only).

.4 Indicate all site generation, including emergency/standby power systems, renewable energy systems, and others as applicable.
.5 Low tension system plan(s), including fire alarm, structured wiring, sound. If necessary to increase clarity, separate low tension systems on different drawings.

.6 Provide elevations for equipment installed in:

.1 Electrical room(s)
.2 NARs
.3 Details to include backboards and free-standing racks. Show all major equipment, equipment mounted to backboards, main ground bus bars, and receptacles (data and power)

.7 Security and Door Access:
.1 Operational usage of the facility and its spaces to be developed with City Stakeholders. The key operational parameters and narrative required for CCURE programmers to be included.
.2 Plan drawings showing all devices, raceways, panel(s) and zoning. Design to modify provided template details and template specifications to suit the project requirements.
.3 Develop a riser showing all CCURE panel(s) and connected end device by zone (if applicable). Topology to allow for programming of the devices to match the developed operational usage of the space.
.4 Develop a full wiring diagram showing terminal-to terminal connection for CCURE enclosure components and a typical for each type of end device included in the project (i.e. elevator, powered door, gate operator, card readers, etc..).
.5 Information to also be captured in tabular form to include the following:
.1 Panel name(s)
.2 Door or equipment name
.3 Associated end devices (i.e. REX, powered door relay, door contact, card reader/arming, strike, etc.). Device count should be totalized at the bottom of the table
.4 Associated zones, Video surveillance system drawings indicating location of all devices, raceways, head-end equipment and view angles.

.8 Gas Detection:

.1 Progress full wiring diagram, showing terminal-to-terminal connections of all gas detection equipment and interconnections to other systems (i.e. security, HVAC control, BAS).

.2 Develop division of labour (i.e. raceway, cabling, termination, and programming) into corresponding mechanical and electrical specification divisions for integrated systems such as gas detection, BAS, and, CCURE.

.9 Single-line diagram. Include:

.1 rating of all protection devices
.2 bus bracing rating of all distribution centers
.3 as/if applicable: information on advanced protective scheme such as Zone Interlocking Scheme (ZIS), differential protection

.10 Grounding and bonding:

.1 Provide a dedicated grounding and bonding single line diagram identifying ground electrode, neutral grounding resistor (if any); clearly identify neutral connection to transformers (both 3 phase and single/split phase), to inverters, and alternators (generators) as applicable.

.11 Riser diagrams for all electrical systems, including fire alarm, audio visual system(s), security, low voltage/lighting controls, and structured wiring.
.12 Preliminary A/V system design calculations. Provide network bandwidth and Power over Ethernet (PoE) power budget calculations.
.13 Electrical details, including utility transformer installation details, trenching/underground installations, equipment installation details, grounding/bonding details, and control diagrams.
.14 Preliminary panel schedules. Final circuiting is not required in this submission.
.15 Luminaire schedule.
.16 Preliminary low voltage panel schedules.
.17 Preliminary motor schedule, coordinated to the same progress level as the mechanical submission.
.18 Equipment schedule for all hard-wired electrical equipment and electrical equipment with a dedicated receptacle served by a branch circuit greater than 120V, 20A, 1phase.
.19 Working specification, edited to include only those products and methods applicable to the Project.
.20 Schedules may appear in either the drawings or specifications.

.5 Landscape / Civil / Site

.1 Site plan indicating: major grade elevations, land contours, material, and dimensioned locations of primary site features.
.2 Planting Plan.
.3 Site Materials Plan.
.4 Details of key site design elements.
.5 Site Demolition and Removals Plan.
.6 Site Grading and Storm Drainage Plan.
.7 Site Lighting and Site Electrical Plan (or coordinate with Electrical design).
.8 Site Irrigation Plan.
.9 Utility Connections Plan and Municipal Improvement Agreement (MIA) coordination (where required).

.6 Sustainability

.1 Refer to Section - Sustainable Design for Building Energy Modelling guidelines.

.2 Provide Greenhouse Gas tracking report (if in Project scope).

.7 Specifications: Provide a preliminary outline including a table of contents and the identification of all required key systems.

.8 This submission must include a Class 2 cost estimate. Refer to Appendix A - Construction Cost Estimates.

2.4.7. Working Documents – Pre-Bid Submission (*Technical Review*)

2.4.7.1. In this phase, the Consultant prepares drawings and specifications intended to convey all information necessary to allow a contractor to bid and construct the Project. The information contained in the pre-bid submission is to be complete with no further work intended and is submitted to allow the City a final chance to review if all requirements and comments from previous submission are addressed.

2.4.7.2. Project Construction Phasing & Temporary Services:

.1 The drawing package shall clearly identify all construction and demolition phases as applicable including but not limited to:

.1 Temporary service / connection, if any required. Confirm if site utility supply is shared between different facilities and if operational constraints of one facility may negatively impact construction activities of other facilities. This includes shared utility connections, shared transformers, and shared cables.
.2 Rental equipment required to maintain an appropriate service level.
.3 Provisions to facilitate some commissioning activities, if required / practical.

.2 The construction phasing, if required, shall be site specific and discussed with site operators, city representatives, and possibly with the City's preferred third party commissioning agent to identify all Project specific requirements which should be accommodated by design. This includes but is not limited to:

.1 Multi-phase commissioning matching the construction phasing.
.2 Securing temporary service / equipment to facilitate said multi phased commissioning.

2.4.7.3. The pre-bid submission is to include the following:

.1 All requirements of the Progress Submission and;

.2 Architectural & Interior Design

.1 The updated Work at Height Plan is to be included in the pre-bid submissions for "information only"; the intention is for this plan to be included in the final operation and maintenance manuals turned over to the City.
.2 All furniture, equipment, and fixtures shall be coordinated to ensure appropriate backing and power supply. Consultant work shall clearly indicate which items are:

.1 owner supplied and installed (not in contract)
.2 owner supplied, contractor, installed.
.3 contractor supplied and installed (in contract).

.3 Structural

.1 All requirements of the Progress Submission, and:
.2 General notes are fully edited and are Project specific. All extraneous and non-applicable notes have been removed.
.3 All schedules are 100% complete.
.4 All specifications are 100% complete.

.5 All drawings are 100% complete.

.4 Mechanical

.1 All requirements of the Progress Submission, and:
.1 General notes are Project specific.
.2 All drawings are fully complete with all sizes and technical information.
.3 Roof Plan: All roof mounted piping and ductwork shown and sized.
.4 Plumbing Plan**:** All plumbing pipes shown and sized.
.5 Heating / Cooling Plan**:** Include thermostats.
.6 Mechanical schematics to show the required manufacturer's recommended diameters of pipe both before and after any flow meter.
.7 Equipment, components, piping and ductwork shall be arranged to accurately reflect the physical (on-site) configuration including equipment connections, valves and dampers.
.8 Standard details edited and project specific. There shall be details for every piece of terminal equipment including VAV boxes, fan coils, radiant panels, etc. There shall be a detail for every major piece of equipment including boilers, chillers, air handling units, etc. There shall be a detail for all relevant control and balancing devices. Details to include piping and ductwork connections.
.9 Mechanical room drawings shall show the full coordination of mechanical details with architectural, civil, structural, and electrical design elements clearly identified.
.10 Equipment schedules included and fully complete.
.11 Schedule of control valves complete with Cv, install location, size, and service.
.12 Provide a list of all basis-of-design gas detection equipment
.13 Update gas detection controls narrative as required
.14 Complete and detailed control systems sequence of operations for all mechanical equipment to be included. List of BAS control points has been included, complete with input/output type.
.15 Complete, fully edited, set of specifications.

.5 Electrical

.1 Finalize all requirements of the Progress Submission and:
.2 Complete circuiting of all devices.
.3 Completed panel schedules indicating connected load, total connected load per phase, and total panel load.
.4 Finalize division of labour (i.e. raceway, cabling, termination, and programming) into corresponding mechanical and electrical specification divisions for integrated systems such as gas detection, BAS, and, CCURE.
.5 Completed motor schedule, 100% coordinated with final mechanical documents.
.6 Power and energy final calculations including power demand for the site in kW and kVA:
.7 Provide complete Preliminary Arc Flash & Coordination Study as per Facility Design & Construction Manual—Volume 2 - Appendix E - Arc Flash Design Guideline.

.6 Landscape / Civil / Site

.2 All requirements of the Progress Submission, and:

.3 Final documents for Municipal Improvement Agreement (MIA) utility connections or roadway work, submitted for City approval (if required).

.7 Environmental

.1 All requirements of the Progress Submission, and:
.2 Final "Design Environmental Permit Approval Checklist", incorporating all outstanding items from the design development submission. This checklist is for the City's records and is not required to be included in the bid documentation. Refer to section – Environmental Management (Enviso) for more information.

.8 Sustainability

.1 Refer to Section - Sustainable Design for building energy modelling guidelines.

.2 Updated list of ECMs to support the creation of the Project's Measurement and Verification Plan (if in Project scope)

.3 Updated Greenhouse Gas and Cost Tracking (if in Project scope)

2.4.7.4. Specifications: The specification document shall be finalized and define the performance of all equipment scheduled for procurement, provide clear instruction on acceptable installation practices, and outline any required equipment specific conditions for commissioning and for O&M manual requirements. The Consultant shall also include all required commissioning specifications prepared either by said Consultant or third party commissioning specialists selected by the City. The Consultant will prepare all specifications required for LEED administration/certification.

2.4.7.5. The pre-bid submission should include a Class 1 cost estimate. Refer to Appendix A - Construction Cost Estimates.

2.4.8. Bid and Construction Documents

2.4.8.1. The bid documents consist of a complete set of drawings, specifications, and control narratives intended to convey all information necessary to allow a contractor to bid and construct, and program the systems forming an integral part of the Project. These documents shall incorporate all review comments from the pre-bid submission review, and use the title "Issued for Tender"

2.4.8.2. When modifying existing equipment or adding onto an existing building system, provide all necessary details on the existing equipment required for the bidders to accurately assess the cost. Include model name, number, vendor information, etc., as appropriate.

2.4.8.3. The Consultant must:

.1 Coordinate with the Project Manager to include provisions for alternate pricing where conditions affecting scope remain unknown. Alternate pricing will not be allowed in situations where an inspection of the existing building, as-built drawings, or review of operation and maintenance manuals would clarify any unknowns.
.2 Describe products and processes, using terms that are standard in the industry, and are consistent between the drawings and specifications.

.3 Advise the City of any adjustments to previous estimates of construction cost and schedule due to changes in requirements or general market conditions.
.4 obtain contract document sign-off by the City prior to the construction contract documents being issued for bids.
.5 Manage the authentication & validation of “Issued for Tender” and “Issued for Construction” drawings and specifications in accordance with the AAA/APEGA practice standards.
.6 Follow the Interface Management Process as defined In APEGA's practice standard, Relying on the Work of Others and Outsourcing, if multiple entities are providing engineering services.
.7 Provide the City with an electronic copy of the specifications and drawings in PDF format for bidding purposes. The City will electronically distribute the bid documents via posting on SAP Ariba or via a Call-up using either the General Contractor or Construction Manager process.
.8 “Issued for Construction” documents are required when changes occur to the bid documents, by addendum during the bidding process, that impact the integrity of the design and/or require input and approval from the authenticating professional. “Issued for Construction” documents are to incorporate all addenda and revision items up to the date, and be authenticated in accordance with the AAA/APEGA practice standards.

2.4.9. IPD Validation Report

2.4.9.1. Description of Validation Analysis Report

2.4.9.1.1. The Validation Analysis Report will consist of a written report, including content for the following developed by the Validation Parties, in consultation with the City. The Validation Parties shall review the following and provide the City with recommendations for reductions or additions to the validation report as necessary to suit the project.

.1 Executive Summary

.2 Project Definition
  .1 Project Background
  .2 Scope of the Project
  .3 Objectives
  .4 Owner Requirements, goals and constraints
  .5 Project Values
  .6 Summary of Stakeholders

.3 Project Program and Planning Summary
  .1 Site Plan, aerial photos, existing site photos
  .2 Function Programming verification;
  .3 Sustainability

.4 Design:
  .1 Process and Management
    .1 Document Control

.2 Roles & Responsibilities
.3 Stakeholder Engagement & Management
.4 Safety in Design Process
.5 Design Compliance Process
.6 BIM Protocol
.7 Description of Detailed Design and Design Document Services and Deliverables to be provided post validation.

.2 The Validation Parties shall identify all submittals required by authorities having jurisdiction

.3 Design Narrative and Drawings - set out a summary of all design documentation and drawings. The following components provide a suggested outline of content which shall be documented and confirmed within the Project Management Team (PMT) prior to submission:

.1 Predesign and Additional Services;
.1 Functional Programming Validation as described in "Facility Design & Construction Consultant Manual Volume 1, Design Process and Guidelines", Article 2.2.2.2
.2 Climate Risk and Vulnerability Assessment as described in "Facility Design & Construction Consultant Manual Volume 1, Design Process and Guidelines", Article 2.2.2.4.1.3
.3 Embodied Carbon Analysis as described Facility Design & Construction Consultant Manual Volume 1, Design Process and Guidelines", Article 2.2.2.4.2.1
.4 Life Cycle Costing Evaluation as described Facility Design & Construction Consultant Manual Volume 1, Design Process and Guidelines", Article 2.2.2.4.2.2
.2 Schematic Design deliverables as described in "Facility Design & Construction Consultant Manual Volume 1, Design Process and Guidelines", Article 2.2.3 – Schematic Design.

.3 Design Development deliverables as described in "Facility Design & Construction Consultant Manual Volume 1, Design Process and Guidelines", Article 2.2.4 – Design Development.

.4 Solar Concept Design Package with drawings as recommended in "City of Edmonton Solar Photovoltaic Program Design Guideline"

.5 Risk
.1 Process and Management
.2 Summary of Key Risks
.3 Risk Register

.6 Financial
.1 Target Cost: attach the estimated Target Cost as agreed with the City, including all risk and contingency provisions, the Cost of the Work (as defined in the Integrated

Project Delivery Contract) and applicable Value Added Taxes, and profit for each Validation Party (with the exception of the Project Facilitator if the Project Facilitator will may not be carried forward to the Integrated Project Delivery Contract). For clarity, the Target Cost shall, at a minimum, contain the elements set forth in the General Conditions of the Integrated Project Delivery Contract.The submission of the Target Cost shall also outline the following information:

.2 Cash Flow and Forecasting;
.3 Wish list and quantitative values for each wish list item
.4 Target Cost breakdown, itemizing the estimated Project costs at an element level.
.5 Incentive Compensation Layer
  .1 Incentive Compensation percentages, and Shareable Amount percentages (each as contemplated for use under the Integrated Project Delivery Contract).
.6 Profit Payment Milestones

  .1 Profit payment milestones complete with description for use under the Integrated Project Delivery Contract at which times accrued profit will be eligible to be paid.

  .2 Potential payment milestones may include the following:
    .1 completion of the Design Documents phase;
    .2 achievement of substantial performance of the Contract; and
    .3 issuance of the Final Acceptance Certificate.

.7 Schedule

  .1 Schedule Management Plan
    .1 Process
    .2 Ownership
    .3 Potential impacts to schedule and how these will be addressed, such as long lead items
    .4 Quantitative schedule risk analysis report
    .5 Staging approach
    .6 key works activities;
    .7 primary works milestones;
    .8 primary works activities;
    .9 reviews and approvals from the City and Authorities Having Jurisdiction and;
    .10 any other activities required by the Parties to fulfill the requirements for the Project.
    .11 Narrative

.8 Risk or Reward Regime

  .1 attach a risk or reward regime to be utilized for the Integrated Project Delivery Contract.

.9 Project Management System:

  .1 attach a project management system which includes:

.1 reporting requirements, including:

.1 key results performance report template;
.2 health & safety report template;
.3 draft cash flow statements;
.4 work status report template; and
.5 retention of records requirements;

.2 contracting and subcontracting strategy, including any pre-qualification criteria, such as with respect to requirements for bonding, and selection protocols to facilitate the selection of subcontractors and suppliers who can successfully perform within a collaborative environment;
.3 BIM execution plan/drawing sharing management plan;
.4 project office arrangement;
.5 quality management plan;
.6 stakeholder management plan;
.7 change management plan; and
.8 project controls plan.

2.4.9.2. The Validation Parties shall submit an electronic copy of all Validation Analysis deliverables for the City's review and acceptance. Following the City's review and completion of any required additions or corrections, the final deliverable shall be submitted via electronic PDF version. The Validation Parties shall provide hard copies if requested by the City's Project Manager.

2.4.9.3. The Validation Analysis Report will be reviewed by City staff and/or external consultants associated with the Project. This may include a Project Review Team-Facility Maintenance Services, the City's Project Managers, City Architects, Facility Engineering, Technical Services (IT, Security), client groups, Commissioning Authority (CxA), Building Envelope Commissioning Authority (BECA), Construction Managers/Consultants, etc. All review comments will be forwarded to the Validation Parties' primary contact(s) by the City's Project Manager.

.1 Responses to all review comments on the Validation Analysis Report progress submission must be provided by the relevant Validation Party, in writing, to the City's Project Manager prior to issuance of the Validation Analysis final submission.

.2 In some cases, re-submission may be required, based on the nature of the comments.

2.4.10. Additional Services

2.4.10.1. Sustainable Design

.1 Introduction

Council Policy C627 Climate Resilience aligns with the strategic goals of Climate Resilience in ConnectedEdmonton, the Big City Move of Greener as we Grow in City Plan, and the City leadership actions that are set out in the Revised Energy Transition Strategy.

The procedures include requirements for emission neutral buildings for all new construction at the City, development of an emissions neutral building framework for our existing building portfolio, requirements for programs and projects that support the continued improvement of the climate resilience of City buildings through operation and maintenance, clarity on roles, responsibilities, and expectations for all procedures but most specifically with regards to the way we purchase and lease buildings.

The goal of transforming the City's building stock to be emissions neutral is stated in the policy as follows:

> *The City of Edmonton will ensure proactive leadership in climate solutions by taking a lead role in promoting and supporting Edmonton's climate resilience efforts and leading by example in its own civic operations*. For Buildings, this means, *immediately adopting sustainable and resilient building practices for the buildings it owns, leases and funds, over the course of their entire lifecycle through: 1) the design and construction of Emission Neutral, climate ready buildings; 2) monitoring, benchmarking, operating, and maintaining City buildings, and 3) proactively retrofitting existing City buildings to reduce their carbon emissions and to prepare for a changing climate.*

The implementation of this policy will be realized through a collaborative and holistic planning approach to the development of a Project's scope, program, and its current condition (if it's a renewal project).

The City of Edmonton website provides the latest adopted edition of the Council Policy C627 Climate Resilience and associated procedures:

- Climate Resilient Design and Construction of City Buildings
- Climate Resilient Existing City Buildings
- Climate Resilient Acquisition of City Buildings
- Climate Resilient Building Leasing - City as Landlord
- Climate Resilient Building Leasing - City as Tenant
- Climate Resilient City-Funded, Non-City Owned Buildings

.2 References

.1 Latest adopted edition of the Canadian Green Building Council, *LEED Canada NC (New Construction) Green Building Rating System.*
.2 Climate Resilient Edmonton Adaptation Strategy and action plan, 2018
.3 Community Energy Transition Strategy Implementation progress report, April 2021
.4 Latest adopted Infrastructure Asset Management Policy C598 and associated procedure and 2024-2028 Strategic Infrastructure Asset Management Plan, which can be found on the City Website.
.5 City, Technical Memorandum, Climate Resilience Technical Specifications Sheet, Version 2, 2025-07-07.
.6 '*City of Edmonton, Technical Memorandum, Climate Risk Assessment Technical Guidelines, Version 1, 2026-02-06*.

.7 *CSA A123.26:21* Performance requirements for climate resilience of low slope membrane roofing systems
.8 *CSA S37-18* Antennas, towers, and antenna-supporting structures
.9 CSA Z800, *Guideline on basement flood protection and risk reduction*. (Part 9 buildings)
.10 *CSA Z240.10.1:19* Site preparation, foundation, and installation of buildings
.11 *Thermally comfortable playgrounds*: A review of literature and survey of experts, standards council of Canada, 2020.
.12 National Research Council "Guide for design of flood-Resistant buildings"

.3 Emissions Neutral Building Requirements

.1 This section outlines the recommended procedure for demonstrating that a building is emissions neutral:

.1 Utilizing the building energy model, determine the amount of annual greenhouse gases (in tonnes CO2) produced by the building from electricity end uses. This value is determined by taking the annual electricity consumption of the building and multiplying it by the estimated electricity grid emissions factor provided by the City for the year the project is expected to become operational.

.2 Utilizing the building energy model, determine the amount of annual greenhouse gases (in tonnes CO2) produced by the building from fossil fuel end uses (if applicable). This value is determined by taking the annual natural gas consumption of the building and multiplying it by the natural gas emissions factor found in the energy modelling guidelines section of the Facility Design &Construction Consultant Manual—Volume 2.

.3 Combine the values from step 1 and step 2 above, to determine the total annual greenhouse gas emissions generated by the building.

.4 Determine the amount of greenhouse gas emissions that can be offset by on site renewable energy systems (e.g., photovoltaics). This value is determined by taking the annual electricity generated by on-site renewable energy system(s) and multiplying by the current electricity grid emissions factor.

.5 Subtract the amount of annual greenhouse gases offset by the renewable energy system from the total annual greenhouse gas emissions generated from the building. The result must be less than or equal to zero (0) to meet the emissions neutral requirement.

.2 If there is not enough on-site renewable energy to offset the annual emissions generated from the building, confirm with the City that the utilities provided to the building are 100% renewable.
.3 Do not include emergency or backup systems in greenhouse gas emissions calculations.
.4 Verify the design is emissions neutral at the design development stage before construction documents begin.

.5 Verify the design is emissions neutral at the final construction documents progress review.

.4 Energy Modelling

.1 **Concept Design**

.1 Assess the impact of up to three massing options presented by the Architect and provide feedback on the following metrics:

.1 Relative energy use, broken down by end-uses heating, cooling, lighting, and ventilation.
.2 Renewable energy potential, as applicable from the Project's RFP.
.3 Alignment of City goals as defined in the RFP (NECB energy and GHG savings, Thermal Energy Demand Intensity, etc.)

.2 To reduce the number of variables that differentiate between each iteration of the model, plug loads, ventilation rates, and schedules (occupancy, lighting, plug, fans, thermostatic setpoints) are to be kept constant between options and are to be appropriate for the building based on occupancy.

.3 If mechanical systems are known at this stage, they shall be modeled directly. However, the absence of mechanical information shall not hold up this phase. In lieu of actual HVAC design parameters at conceptual design, mechanical systems are to be modeled as heating, cooling, and ventilation delivered directly to the zones (i.e. 100% OA with terminal heating and cooling).The intent of this phase is to comment only on the impact of architecture on indicative building performance metrics.

.4 Based on the findings from the analysis conducted above, the Building Energy Consultant will work with the Architect to recommend strategies around massing, location, and amount of glazing, and shading to improve the outcome based on the metrics identified above. Allow for an additional round of energy modeling to assess the impact of resulting recommendations for only one of the massing options.

.5 The Building Energy Consultant shall prepare a report that clearly identifies the energy modeling strategy employed, a summary of key inputs used, a summary of results based on the above metrics, and any recommendations. Units shall be reported in kWh for electricity and GJ for natural gas, as well as an ekWh and ekWh/m2 for total energy and GHG emissions in kg/m2 as well as the annual heating demand in kWh/m2. Refer to the City's Climate Resilience Technical Specifications Sheet for current utility costs and GHG emissions factors. Please include a detailed account of the calculation for annual heating demand specifically identifying all heat sources used in the calculation and how these were extracted from the energy modelling software.

.2 **Schematic Design**

.1 The Building Energy Consultant shall create an energy model as per the description provided in Concept Design above. Or, as applicable, update the model and the report prepared during the concept design phase with any additional information that has become available since that time. The updated report completed during the Schematic Design phase shall also include:

.1 Relative peak heating and cooling loads for the building and for the worst performing zones (on a W/m2 or Btu/h/sq ft basis)
.2 Daylight potential and excessive illuminance levels (i.e. glare) in zones of interest, as determined by the City and/or Architect
.3 The model shall also take into account the daylighting potential of the building by directly modeling the impact of daylight sensors in applicable zones.
.4 Energy use, broken down by end uses (at minimum heating, cooling, lighting, plug loads, fans, and pumps). Also provide total annual electricity and natural gas use.
.5 Energy Cost, broken down by end uses and Utility (including utility rates used). Also provide total annual electricity and natural gas costs.
.6 Peak delivered heating and cooling for the building and for the worst performing zones
.7 City compliance metrics and targets (NECB savings, LEED, Energy Usage Intensity (EUI), GHG emissions)
.8 Window performance, based on Solar Heat Gain Coefficient, Visible Transmittance, and overall U-value (including framing)
.9 Roof performance
.10 Lighting power density ranges, as appropriate, but not less than 3 levels
.11 Up to 2 mechanical system types (i.e. Air-based heating and cooling with recirculation versus 100% OA with Radiant Heating)
.12 List of equipment efficiencies for mechanical equipment.
.13 Impact of potential renewable energy options, as applicable in the RFP
.14 Building-type specific innovative measures (i.e. Chiller heat recovery for data centre spaces or specialized refrigeration such as ice rinks or innovative dehumidification and reheat strategies in swimming pools, etc.)

.3 **Design Development**

.1 The building energy model and report shall be updated with all subsequent changes made since Schematic Design, including details to address potential thermal bridging as required by NECB 2017.

.4 **Working Documents - Progress Reviews**

.1 Building Energy Consultant to review drawings and specifications and update model and associated energy report with any subsequent changes.

.5 **Facility In-Service Date**

.1 Building Energy Consultant to review changes during construction and update model and associated energy report with any subsequent changes.

.5 Life Cycle Cost Analysis (LCCA)

.1 LCCA includes an assessment of all in-scope building components on a 30-year lifespan. This assessment will:

.1 involve a comparison of all in-scope building components for two options that will be identified by the City:

.1 apply:

.1 net present value or present value methodology;
.2 a City-approved discount rate and utility pricing; and
.3 a City-approved price of carbon;

.2 include:

.1 initial capital cost (including any required spares inventory);
.2 annual utility costs
.3 annual maintenance costs (including any consumables);
.4 periodic element replacement costs over the 30 year lifespan; and
.5 annual greenhouse gas emissions.

.3 Annual maintenance and element replacement costs to be analysed at an equipment level using a UNIFORMAT or similar system.

.4 Some maintenance costs (FMS) and some predicted element lifespans (LCM) may be provided by the City.

.5 Description of the architectural, mechanical, electrical systems in each of the options.

.6 Greenhouse Gas (GHG) Energy and Cost Tracking - Existing Buildings

.1 Within the scope of work that is identified for the Project, the Consultant shall support the City in determining the energy, cost, and greenhouse gas impacts. This will occur at the following stages: concept design (if applicable), Schematic Design, Design Development, Working Drawings, Pre-Bid, and at the facility in-service date.
.2 The GHG Energy and Cost Tracking Report shall include the following information:

.1 Calibrated Energy Model which shall include:

.1 The emissions factors used.
.2 The utility rates used.
.3 Price of Carbon.
.4 Model calibration information and where it was gathered from.

.5 Graphs of the calibrated model's consumption vs. the last three years of utility data.

.2 Cost Tracking:

.1 The Consultant shall work in partnership with their cost Subconsultant, GHG Subconsultant and the construction manager(if applicable) to develop the cost assessment.
.2 Construction Cost estimates shall align with the formatting and accuracy levels published in Consultant Manual Vol 1 - Design Process and Guidelines, Appendix C - Construction Cost Estimates.
.3 Provide detailed information on any costing assumptions made.

.3 Tabulated List of Energy Conservation Measures

.1 Provide a list of each individual energy conservation measure in the same format as the summary table below.

.4 Summary Table:

.1 The following table provides an example of how the City would like the information presented. Further breakout of detailed options can be provided as applicable.

	Annual Natural Gas (GJ)	Annual Electrical (kWh)	Estimated Year One GHG (tonnes of CO2e) savings	Total Capital Cost($)	Total Annual Utility Savings ($)
Calibrated Model (current base building)				N/A	N/A
Building With All Renewal Scope Completed					

.7 Embodied Carbon Analysis (ECA)

.1 Embodied Carbon Analysis (ECA) - Embodied carbon analysis should analyze the initial embodied carbon of the building for new construction projects and renewals, and use Environmental Product Declaration (EPD) life cycle "product stage (A)" (EN 15978 modules A1 through A5).

.1 The analysis shall include all envelope and structural elements (including parking structure), including footings and foundations, and complete structural wall assemblies (from cladding to interior finishes, including basement), structural floors and ceilings (not including finishes), roof assemblies, and stairs

construction, but exclude excavation and other site development, partitions, building services (electrical, mechanical, fire detection, alarm systems, elevators, etc.), and parking lots.

.2 Study to utilize valid Type III EPD sheets for products where available and provide each EPD used in digital, machine-readable, format if available.

.3 All New Construction must consider using the material with the lowest embodied carbon for an otherwise equivalent material. This review and consideration must be documented alongside the Embodied Carbon analysis.

.8 Measurement and Verification Plan

.1 The City will provide a project specific measurement and verification plan for the renewal project, if applicable.
.2 The Consultant shall support the creation of the M&V plan by listing all individual ECMs included in the project along with their associated energy savings as described in Greenhouse Gas (GHG) Energy and Cost Tracking - Existing Buildings section above.

.1 The updated table of ECMs shall be provided at Design Development, Working Drawing - PreBid, and at the facility in-service date.

.9 Climate Risk and Vulnerability Assessments

.1 The purpose of this assessment is to provide an understanding of what a facility project could face due to climate change. Identifying the key climate-based risks, and vulnerability to those risks will assist the City in making decisions regarding infrastructure planning and design.
.2 Using the Engineers Canada's PIEVC (Public Infrastructure Engineering Vulnerability Committee) protocol is seen as an asset.
.3 Methodology

.1 The climate risk assessment process is shown below;

.1 Define Infrastructure/elements
.2 Identify Climate Risks
.3 Conduct Risk and Vulnerability Assessment
.4 Risk Evaluation and Recommendations for project planning and design

.4 New Construction

.1 Climate Risk Assessment

.1 This scope of work is to complement the work required for LEED and must be substantially complete in concept design.
.2 Conduct the climate risk assessment using standard methodology such as the full PIEVC Protocol (including engineering analysis) and provide a written report with project specific climate risk ratings as it relates to its site

features, building materials and systems. Response shall identify the low, medium and high climate risk ratings for 2050 and 2080.

.3 Obtain the climate projection and Climate Risk data from the CoE.

.4 Obtain a flood map from the Project Manager via EPCOR to evaluate site specific risk of flooding. Identify flood risks specific for the building including identification of low grading, natural topography.

.5 Identify wildfire risk, by obtaining Wildfire Risk Assessment rating from City Project Manager.

.2 Climate Vulnerability Assessment

.1 "Vulnerability refers to the susceptibility of assets and services to be impacted by climate change; it is the function of the nature and magnitude of the impact the asset or service is exposed to, the sensitivity to that exposure, and the adaptive capacity of the asset or service" (Climate Resilient Edmonton Adaptation Strategy and action plan)

.2 Conduct a charette to solicit input from the City to identify the degree, likelihood, and consequences should the built infrastructure and/or system be unable to cope with climate change impacts, variability, and extremes over time. Climate resilient building team to be included in charette. Consequences shall consider project goals, program, and intended service for the life of the building and be quantified across different categories and consider:

.1 Built Infrastructure Assets
.2 Human Wellbeing
.3 Health and Safety
.4 Economy
.5 Social Wellbeing
.6 Natural Environment

.3 The vulnerability assessment should address any climate-related impacts the Project may face throughout its long term service life (including Construction Phase and Operation). The assessment must also address the consequences of inaction.

.5 Risk Evaluation and Recommendations Report

.1 Provide site specific options for how the facility could be designed, constructed or operated to resist, with minimal damage, reasonably expected climate risks.

.2 This scope of work is to complement the work required for LEED and shall address the following topics as applicable:

.1 Project location and elevation
.2 Adjacent site features and development
.3 Availability of and access to services and infrastructure
.4 Building envelope performance requirements
.5 Building materials
.6 Passive systems
.7 Site design

.8 Passive survivability
.9 Other systems.

.3 The Consultant should provide a written report with a 1-2 page executive summary of the climate risk vulnerability findings, including cost of these measures and Project specific resiliency recommendations to be executed within the next phases.

.6 Renewal Projects
.1 Renewal projects will provide a PIEVC high level screening guide (HLSG) assessment also referred to as, Climate Risk & Vulnerability Assessment Lite.
.2 The Consultant shall prepare a brief commentary on Climate Risk & Vulnerability, describing how the Consultant is considering the risks associated with climate change to building components and incorporate recommendations for design and construction into the rehab project. Recommendations can also include back-up power priorities among other adaptation actions. The climate risk assessment should cover all climate hazards applicable to Edmonton and the analysis would be site-specific to the location.
.3 Obtain the climate projection and Climate Risk data from the CoE.
.4 Obtain a flood map from the Project Manager via EPCOR to evaluate site specific risk of flooding. Identify flood risks specific for the building including identification of low grading, natural topography.
.5 Identify wildfire risk, by obtaining Wildfire Risk Assessment rating from City Project Manager.
.6 Provide site specific options for how the facility could be designed, constructed or operated to resist, with minimal damage, reasonably expected climate risks.
.7 The Consultant shall provide a written report with a 1-2 page executive summary of the climate risk vulnerability findings and identify the Project specific resiliency recommendations, classify recommendations as renewal or growth scope, and provide the renewal and growth costs of these measures that are added to the Project scope. All high priority resiliency measures which shall be incorporated into the Project Scopes.

.10 Specific Leadership in Energy and Environmental Design (LEED) Credit Requirements

.1 Mandatory Credits: On Projects required to achieve LEED certification, the following credits shall be implemented. Provide written explanation to the City if any of these credits cannot be pursued:
.1 SSc4 Enhanced Resilient Site Design
.2 EAc3 Enhanced Energy Efficiency
.3 EAc4 Renewable Energy
.4 EAc5 Enhanced Commissioning
.5 MRc5 Construction and Demolition Waste Diversion
.6 EQc1 Enhanced Air Quality

2.4.10.2. Measured Drawings

.1 Ascertain the purpose of the measured drawings and the accuracy required. After confirming the purpose with the City, coordinate measurements, augment with photographs and field notes, and prepare drawings.

.2 The Consultant shall use any information provided by the City, the measured drawings, and/or the 3D scans to prepare drawings required for the scope of work, in electronic (AutoCAD) and PDF formats to the City. These may include a basic site plan, floor plan(s), roof plan, exterior elevations, and building sections.

2.4.10.3. Accessibility Assessment (Renewal Projects)

.1 A full facility accessibility assessment is generally required for Renewal Projects of existing City-Owned buildings.

.2 The purpose of the accessibility assessment is to determine the current level of accessibility for people with disabilities. The assessment will be based on a checklist and is intended to identify deficiencies and provide a high-level cost estimate for improvements. This assessment is intended as a starting point to address current deficiencies in the facility. Renovations to address deficiencies may not be included in the scope of the Project, but may inform future funding requests. When completing an accessibility assessment, the Consultant's scope of work shall include the following:

.1 **Accessibility Assessment:** Conduct an accessibility assessment on the facility based on the checklist and prepare an audit report to include the following:

.1 Assessment of existing scenario to identify deficiencies
.2 High-level recommendations to address deficiencies
.3 High-level cost estimate (Class 4) for each recommendation

.2 **Accessibility Assessment Report:** A report capturing findings of the assessment and recommendations to address deficiencies with a high-level cost estimate. At a minimum, the report must contain the following information:

.1 Executive summary
.2 Accessibility assessment checklist with photographs, recommendations to address deficiencies, and cost estimate (Class 4) for each recommendation
.3 Cost summary

.3 The City will provide a checklist template for Consultants conducting facility accessibility assessments of existing buildings.

2.4.10.4. Public Engagement Material

.1 The public needs key information to support effective engagement. Communication strategies and tactics that support broad understanding and awareness of the Project, and

its relationship to the City strategies, will build capacity within the public, promote higher-quality informed input, and shape how the Project is perceived.

.2 Public engagement and communication materials may include event advertising, roadside information signs, roll plans, display boards, videos, fact sheets, information pamphlets, invitations, letters, mailouts, postcards, email updates, City of Edmonton Project web content, and City of Edmonton Project newsletter content.

.3 Communication materials requested from the Consultant to support the public engagement activities shall:

.2 Follow City of Edmonton Visual Identity Standards
.3 Follow City of Edmonton's Public Engagement Spectrum found on Vision, Definition and Spectrum website
.4 Follow Public Engagement Language guidelines and Writing Standards
.5 Include messaging and key communication points addressed in a consistent manner with stakeholder conversations
.6 Include demonstration on how the design addresses City strategies including, but not limited to, universal accessibility and climate resiliency
.7 Integrate technical content (such as drawings, renderings, and fly-throughs) where possible
.8 Be "print-ready" size and/or appropriate graphic quality

.4 All materials must be reviewed and approved by the City of Edmonton Communications and Engagement team

2.4.10.5. *Edmonton Design Committee*

.1 General

.1 The Edmonton Design Committee (EDC) reviews presentations from both Civic Departments and the public in regards to major developmental applications, direct control rezoning applications, and public projects with a predetermined downtown and surrounding neighbourhood geographical area.
.2 The Consultant will be required to give an informal (pre-consultation) and formal presentation to the EDC for all new buildings, although an exemption can be requested for new City facility projects of a utilitarian nature and lacking a strong public realm interface.
.3 For addition and renovation projects, the Consultant may be required to participate in an informal and formal presentation to the EDC, as directed by the Project Manager on a case-by-case basis. In general, interior renovation projects are not required to be presented to EDC, while renovations that affect the site, the exterior of the building, and require a development permit are required to be presented to the committee.
.4 All information regarding the EDC can be accessed from the City webpage.

.5 The deliverables required for presentations to the EDC are available on the City Edmonton Design Committee website with their timing within the design process outlined in the section Consultant Deliverables of this manual.

.2 Process

.1 Between the midpoint and end of Schematic Design, the Consultant will prepare a presentation for an informal presentation to the Edmonton Design Committee (EDC). This meeting is not public. Refer to City Edmonton Design Committee Bylaw 20673. The work includes:

.1 The minimum requirements for an informal submission are a site plan, building elevations, a context plan, and a preliminary design narrative referencing the EDC Principles of Urban Design as appropriate.
.2 Informal submissions shall be provided in digital format not exceeding 50 MB in size.
.3 A 10 minute (Maximum) presentation to EDC by the design team, followed by 25 minutes of questions and comments from the Committee.
.4 All of the above is to be prepared in advance of each deadline so that the drafts can be reviewed with the City architects prior to submission.
.5 Feedback from the Committee at the pre-consultation stage is verbal. It is the Consultant's responsibility to record the questions and comments from this discussion and determine how to address them in the next stage of work.

.2 Between the midpoint and end of design development, the Consultant will prepare presentations for a formal consultation with the EDC as per the requirements listed on the Edmonton Design Committee website. This stage of the process is tied to the issuance of the development permit for the Project. The requirements are the same as for the pre-consultation, with the following exceptions:

.1 The development permit application is to be submitted to the Development Services, Urban Planning and Economy Department at least one week prior to the formal consultation with EDC.
.2 The presentation content shall show how the comments from the pre-consultation were addressed.
.3 Design reports prepared by the Consultants may be appropriate for a formal submission IF the applicable requirements of an Urban Design Brief can be met; however, Consultants are strongly discouraged from submitting design reports in their entirety.
.4 The meeting is public.
.5 The committee will ask questions and may make comments on some areas for design improvement.

.3 Formal response from the committee is given within 48 hours of the presentation in the form of a letter. The response will be either support, support without conditions, or non-support. In the case of non-support or support with conditions, the EDC comments and conditions become part of the development permit response and will need to be

addressed with the development officers of the Development Services, Urban Planning and Economy Department.

2.5. Drawing and Document Standards

2.5.1. References

2.5.1.1. National Research Council Canada. *Canadian National Master Construction Specification (NMS)*. Canadian National Master Construction Specification, accessed April 12, 2022.

2.5.2. General

2.5.2.1. Follow a consistent format throughout entire drawing and document submissions. This includes header, footer, title block, font, type size, and section numbering.

2.5.2.2. All drawing submissions under 50 pages shall be in one combined PDF, all other submissions shall be split into discipline or combined volumes.

2.5.2.3. All written reports shall be in one combined PDF, or in combined volumes.

2.5.2.4. Use of colour in printed deliverables:

.11 Consideration for colour vision deficiency or colour blindness shall be made for drawing and document deliverables:

.1 Colour alone should not be used to convey information, instead use both colour and symbols.

.2 Use different textures, as opposed to multiple colours. If multiple colours are used, the information should also be conveyed in another format (text or textures).

.3 Drawings should generally be produced in monochrome format, with legible line types, so that the information can be legible when reproduced by a black and white printer/plotter.

.4 While photos are generally discouraged, if they are used in a drawing any photos should be high quality grayscale or colour and must print out clearly in both black and white and colour.

.5 If drawings are produced in colour, a disclaimer shall be added to every page in the title block noting that the drawing was produced in colour format and is intended to be read in colour.

2.5.2.5. Wording in documents that provide direction to the contractor, e.g. specifications, drawings, site instructions, are to be directed to the General Contractor, and not distinguish between subcontractors. It is the responsibility of the General Contractor to manage their own forces as necessary.

2.5.3. Specifications:

2.5.3.1. Specifications shall describe the material, quality and workmanship, requirements and the criteria and methods to be used to validate acceptance of the work upon completion in written form.

2.5.3.2. Specifications shall describe a system performance, architecture, topology, functionality, build, and provide clarification regarding acceptable installation practices and commissioning requirements.

2.5.3.3. Specifications may include schedules in tabular form to communicate detailed information about systems and elements, such as: building code compliance; door and frame design, dimensions and materiality; floor, wall and ceiling finishes; electrical panel configuration; or air handling unit capacity and configuration details.

2.5.3.4. In general, specifications shall not be located on the drawings. Exceptions may be made for small drawing packages. Confirm with Project Management and Facility Engineering Services prior to implementation of drawing-specifications.

2.5.3.5. Format:

.1 Numbering and naming of specification sections shall follow the latest adopted edition of MasterFormat™.
.2 Sections are to be formatted in three-part format in accordance with SectionFormat™/PageFormat™.
.3 Use the same formatting as the City provided specification.
.4 The construction specification is to contain all divisions in one PDF document, with individual sections bookmarked, text to be fully searchable. If specification is over 25 MB, combined volumes are preferred.
.5 Written material shall employ correct syntax, grammar and spelling and use of appropriate terminology and phrasing, consistent across all documents. Editorial defects such as those noted above may impact the interpretation of documents by various users and contribute to misunderstandings, disagreements, or disputes.

2.5.3.6. The City will provide one copy of the City's Division 00 and Division 01 Specification in electronic format for coordination.

.1 Ensure duplicate or conflicting information is eliminated. Specific attention should be given to coordinating allowances, separate & alternate pricing, submittals (shop drawings, samples, mock-ups, O&M manuals, as-built drawings, etc.), training, testing, and commissioning requirements.
.3 Product or Brand Names and Equivalents:

.1 Generally, specifications may only specify a product or brand name where use of the specific product is a legitimate operational requirement.
.2 By specifying a product or brand name, the City would not be meeting its obligations under the trade agreements, and may not meet the requirements to run a fair procurement process.

.1 If, for operational reasons, a business area has determined that only one specific product can meet the City's needs, there will still be a requirement to consider equivalent products.
.2 A good example is where a piece of equipment is subject to a manufacturer's warranty and the use of non original equipment manufacturer parts will invalidate that warranty. As part of the test for equivalence, the City could require that

bidders provide documentation from the manufacturer indicating that the use of the bidder's proposed alternate part will not invalidate the warranty. If the bidder is not able to provide the documentation, the proposed alternate part will not be equivalent.

.3 If the only sufficiently precise or intelligible way of describing a component is to use the brand name, the brand name may be used, but the specification must still include “or equivalent”.
.4 Consultants shall avoid Basis-of Design specifications, or drafting a specification to match a specific product (even if the product name is excluded), as this effectively the same as asking for the specific product, and as a result, the City could still be found to have breached its trade agreement obligations.
.5 Consultants shall avoid specifying from a list of specific products unless there is a justification for why only certain products are acceptable, i.e.:

.1 Legitimate operational requirements: If a list of specific products is used, then the phrase “or equivalent” is to be included in the specification.
.2 Expansion of a system: If a system comprising brand specific/proprietary/copyrighted technologies is present at a site, single sourcing the components required to expand said system is permissible if:
.3 The original manufacturer is still in business; and

.1 No other equivalent / alternate / compatible system can be sourced from other brands / manufacturers; and/or

.2 The required new components are based on proprietary technologies (e.g.: control system, communication system) which are either brand specific or not available with other manufacturers

.6 When a specific product is required, the Project team must clearly define the criteria for determining the equivalence of proposed alternatives. While this may differ per product or contract, bidders must always understand the equivalency testing requirements and how the City will determine acceptance.
.7 Consultants shall coordinate language around equivalents, acceptable materials and substitutions with the City’s Sourcing Event front end for substitutions during tender and City’s “01 25 00 Substitution Procedures” during construction.

2.5.4. Addenda

2.5.4.1. All Requests For Information (RFIs) that may result in issuing of addendum must be issued by the consultant in a timeline agreed upon with the City Project Manager.

2.5.4.2. Prior to issuing an addendum, the Prime Consultant is to obtain the current addendum number from the Project Manager. All addendum documents are to include this number.

2.5.4.3. Each addendum item must make reference to a specific drawing detail, drawing note, or specification article in the contract documents.

2.5.4.4. Each addendum item must indicate whether the item referenced is to be added, deleted, or revised, with further clarification(s) as required.

2.5.4.5. Include sketches with addenda, where necessary. Sketches issued with addenda are to be incorporated into the construction drawing set.

2.5.4.6. Use the City's addendum format for all addenda. A copy of the City's addendum format may be requested from the Project Manager. An example of an addendum using the City's format is included in the appendices.

2.5.4.7. Addenda that do not follow these requirements will be returned for resubmittal.

2.5.5. Submittals Registry

2.5.5.1. Prepare a submittals registry prior to construction start-up, to be handed over to the Prime Contractor. The Consultant shall distribute the submittals registry at the construction start-up meeting, and review the status of all submittals in the registry at all regular construction meetings.

2.5.5.2. This registry is to include a list of all submittals (bid submittals, shop drawings, samples, mock-ups, O&M manuals, spare parts and maintenance materials, etc.) to be submitted by the contractor. Include reference to the specification section where the item is defined.

2.5.6. Meeting Minutes

2.5.6.1. Record the minutes for Project (design and construction) meetings.

2.5.6.2. Include a list of attendees with contact information, location, and time of the meeting.

2.5.6.3. Meeting minutes are to include all outstanding items carried forward from previous meetings and any updates discussed in subsequent meetings. All unresolved items noted in the minutes are to be assigned to a responsible party.

2.5.6.4. Distribute meeting minutes within three (3) Working Days after each meeting. Transmit to meeting participants, affected parties, not in attendance, and the City. The City will distribute the design and construction start-up meeting minutes.

2.5.6.5. Construction meeting agendas and the subsequent minutes shall include the following attachments. Any outstanding items shall include review/commentary from the Consultant:

.1 Two (2) week look/ ahead (supplied by contractor)
.2 Six (6) week look ahead (supplied by contractor)
.3 Safety and Environmental stats (supplied by contractor)
.4 Submittals registry
.5 Shop drawing log
.6 SI log
.7 RFI log
.8 CCO, CO, and CD log
.9 Commissioning issues and resolution log (if required)
.10 Progress claim status

2.5.7. Field Reviews

2.5.7.1. General Field Reviews Reports

.1 Include date, time, weather conditions, the person(s) performing inspection, and date of the previous review.
.2 Indicate system(s) being reviewed.
.3 Note the reason for review (progress, mock-up, rough-in, substantial completion, occupancy, warranty, etc.).
.4 Give a description of construction progress, as it relates to the system(s) being reviewed. Indicate progress since the previous review.
.5 Note specific deficiencies (deviations from original work product) and action items. Include a description of item, relevant background information, and party(s) responsible for next steps.
.6 Record details of any discussions held on site between Consultant and contractor, City, etc.
.7 Field review Reports are not a substitute for a Site Instructions or Contemplated Change Order. Issues identified during inspections are to be followed up with Site Instructions or Contemplated Change Orders as required.
.8 The frequency of field reviews should occur at regular intervals and at specific milestones as defined in the *PSA*.
.9 Field review reports are to be distributed within three business days of the date of site review. Time-sensitive review items are to be addressed verbally to the Project Manager at the time of field review.

2.5.7.2. Construction Contract - Substantial Performance Review & Report

.1 include all information from a general field review report, and,
  .1 Include the following information at the top of each page:

- Project name
- Date
- City's project number
- Name of Consultant
- Name of [Contractor] [Construction Manager]
- Page number

  .2 Organized list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  .3 Organized items applying to each area by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  .4 Accurate values for each item on the list.
  .5 Blank spaces for verification notes, and any additional notes of contract deficiencies that may be added during subsequent reviews.
  .6 Prepare list on letterhead. A suggested format follows:

Item Number	Room Number	Location / Area	Description	Value	Date to be Corrected by	Consultant's Verification
1	201	Lobby	(Description of incomplete work)	(Value to complete item)		

.7 Descriptions shall avoid the use of general or all encompassing references and shall focus on specific items remaining to be completed within each room or area reviewed. The Consultants shall avoid general corrective actions such as "paint touch ups throughout". The Consultant's descriptions should be specific, such as "paint touch-up required on north wall or Room 103, as identified with green painters tape in 6 locations".

.8 Shall combine the reviews or reports from all sub-consultants into a single, uniformly formatted and comprehensive submission. Separate or independent review submissions or reports by sub-consultants will not be accepted by the City.

.9 Recommend compliance with substantial completion of the construction contract.

2.5.7.3. Construction Completion Review & Report

.1 Include all information from a general field review report.

2.5.7.4. Final Acceptance Review

.1 Include all information from a general field review report and a detailed report to the City on all deficiencies, providing recommendations for City's action.

2.5.8. Drawing Quality Guidelines

2.5.8.1. Submissions will be reviewed to ensure they meet the Project requirements and clearly convey the entire scope of work to bidders. Submissions not meeting these criteria will be returned for resubmittal.

2.5.8.2. The following are suggestions to help minimize errors and increase the clarity of drawings:

.1 Utilize the same floor/room names, numbers, gridlines, etc., on the entire drawing set, including sub-disciplines.

.1 City Facility Inventory Management (CAFM) group shall be contacted to secure approved floor naming and room numbering scheme; email "fim@edmonton.ca" or "cafm@edmonton.ca".

.2 To minimize errors where a change is made on one drawing but not on the others, do not duplicate specific information on multiple sheets or details. For example, while the electrical service feeder will be drawn physically on the electrical site plan and schematically on the single line diagram, the specific cable and conduit size should be written on only one of those details with a keynote on the other detail(s) referring the reader where to find the information.

.3 Include a key plan for drawings containing a partial floor plan.

.4 Notes and legends:

.1 Place notes, legends, and frequently referenced details on the right side of the drawing, or opposite the side on which the drawing set will be bound.
.2 Place general notes and legends on the first drawing sheet for each discipline, or on each drawing in the set. If general notes and legends are placed on each drawing, include only those notes and symbols that apply to that drawing.
.3 Use general notes for information that applies to the entire drawing or group of drawings.
.4 Text notes should be preferentially used for plans and details. When the amount of description or number of notes suggests the use of callouts and keynotes for clarity, the list of keynotes shall be sheet or detail specific and complete. That list shall include all callouts, and only those callouts, relevant to that sheet or detail. Each keynote must be referenced by a consistent callout symbol and numbering system specific to that sheet or detail. Skipped numbers, “note not used”, and unreferenced or unmatched callouts-keynotes links are unacceptable.
.5 When using standard details or drawing templates, delete all notes that do not apply to the specific project.
.6 Keep notes on drawings concise and specific. Do not include notes when the same information is explained graphically in a plan or detail.

.5 Separate densely packed information into multiple drawings to improve readability. For example, separate different building systems onto different drawings or reduce the number of details placed on each sheet.
.6 For projects involving demolition, clearly indicate equipment to be demolished, relocated, or refurbished, as well as all information needed to convey the scope of the demolition to the bidders. Include a demolition plan for each discipline, clearly identifying all equipment and materials to be demolished, relocated or refurbished. Provide separate plans for demolition and new construction.
.7 Drawings based on existing on site conditions:

.1 Any drawings, if developed from an existing record document package supplied by the City shall be updated to accurately reflect all actual conditions PRIOR to the implementation of any changes.
.2 Existing record drawings available only in formats other than the latest version of AutoCAD (e.g., PDF, other drafting format, hard copies) shall be converted in AutoCAD and shall follow the latest City’s CAD standard.
.3 For sites devoid of any record documentation, the Consultant shall prepare a document package capturing the “as-found” conditions.The package shall be sufficient to clearly identify the existing state of the site and the condition of its system.

2.5.9. CAD Drawing Standards

2.5.9.1. Drawings shall generally be prepared for A1 (841 x 594 mm) sheet size. The following alternate drawing sizes may be used, with the approval of the Project Manager:

.1 A0: (1189 x 841 mm)
.2 ANSI B (Ledger/Tabloid): (432 x 279 mm aka 11” x 17”)

2.5.9.2. Drawing units:

.1 All drawings (including equipment schedules) are to be created using metric units using the millimetre as the standard unit of measurement (1 unit = 1 mm). Draw all objects in model space 1 to 1 scale.
.2 All dimensions and measurements are to be in metric units. Do not round numbers on drawings when converting imperial measurements to metric.

2.5.9.3. Title blocks:

.1 Use an approved City CAD template for all drawings. A copy of the CAD template and prototype CTB files are located here:
  .1 Technical Template
  .2 Visual Template
  .3 AutoCAD CTB File plot style template
.2 Version control shall follow the Issue and Revision scheme defined in the referenced City CAD Template.
.3 Include the Consultant Logo(s) on all title blocks.
.4 Consultants’ CTB files must be adjusted so that they are congruent with the intended lineweights on the City title block template. While consultants are free to use their own CTB file, the City title block must render/plot in the same manner as in the supplied template.

2.5.9.4. Layers:

.1 Overall CAD structure should follow the American Institute of Architects (AIA) standards.

2.5.9.5. Plans, details, and related text are to be created in model space. Paper space is to be used for laying out the drawing sheet and defining views. Title blocks, general notes, schedules, charts, and other non-graphic information may be placed in paper space. All viewports in paper space should be locked.

2.5.9.6. Use only standard AutoCAD font styles. Do not use third party fonts. Text height shall be between 2.0 and 3.0 mm for the final plot. Use a consistent text height throughout submission.

2.5.10. Drawing Submission Requirements

2.5.10.1. Drawings not complying with the following requirements will be returned for resubmission.

2.5.10.2. All CAD drawing submissions are to be provided in the latest Adobe PDF format.

.1 All drawings and elements thereof must *exactly* match the native CAD design documents in page format, size, line weight, etc.
.2 All drawing PDFs must be of the vector type format; bitmap or scanned drawings are unacceptable.
.3 Submissions prior to record drawings shall generally be in the form of a single PDF file bookmarked by discipline. In cases where aggregate PDF file size may be an issue, separating into one file per discipline is acceptable.

2.5.10.3. Drawings in AutoCAD format may be requested, prior to the Record Drawing stage, for use by the City.

2.5.10.4. Record drawings

.1 The City requires record drawings to be submitted as per PDF requirements above, and as one PDF file per drawing sheet. The matching CAD source files must also be submitted in AutoCAD DWG format, one file per drawing sheet.

.1 Any individual drawing file names must comply with the drawing naming convention.

.2 If drawings were converted from other CAD software or exported from Building Information Modelling (BIM) software, the Consultant is responsible for ensuring the accuracy of the final AutoCAD files.

.3 Submitted AutoCAD files are to have only one drawing sheet in paper space per DWG file and must be self-contained, and independently viewable without a supporting x-ref file structure.

.1 Bind all xrefs in all DWG files submitted to the City using the “bind” option (not “insert”). Purge all unused blocks, dimstyles, layers, styles, linetypes, and shapes.
.2 When simple monochrome bitmap images, such as logos, are used in drawings, they are to be inserted as OLE objects to ensure they are attached to the drawing file.
.3 While detailed bitmap images, such as digital photos or underlays, are generally discouraged, these type of supporting files may be provided as x-refs provided they are relative pathed to the same directory as the DWG file and clearly named with the same file name + suffix(es) “XREF[1,2,etc.]”.
.4 DWG files that require MEP, AEC or similar extensions to load or view correctly are unacceptable.

.4 Submitted AutoCAD files must include the corresponding CTB file used to plot/print. One CTB file per drawing set is preferable, but at most one CTB file per discipline subset will be acceptable.

.5 Consultants are required to submit a metadata table in spreadsheet format for drawing classification in the City Electronic Document Management System. Contact the Project Manager to secure the latest version and referral for assistance.

.6 If BIM software was used, provide a digital copy of the building model in its native format.

.1 In particular, the City expects accurate parametric equipment data export tables congruent with CoBIE standards. Currently, any model(s) must also be supplied in Industry Foundation Class format. Note that this is in addition to the CAD & PDF 2D sheets.

.7 Record drawings are to be authenticated and validated prior to submission.

.8 Submit all files on an optical disc, memory stick, portable drive, or via file sharing system for City download to edms@edmonton.ca.

.9 Confirm with the Project Manager if any supplementary hard copies are required.

3. Design Guidelines & Reference Standards

3.1. Percent for Art Process

3.1.1. General

3.1.1.1. The latest adopted version of the Percent for Art City Policy C458d is available on the City website. The City will provide separate public art project funding to qualifying eligible projects. The previous iteration of the policy used 1% of the eligible project's construction budget for public art.

3.1.1.2. The Public Art procurement process is managed by the Edmonton Arts Council (EAC). The process for commissioning an artwork varies depending on the capital project scope and available art budget.

3.1.1.3. Should public art be part of a project, the Project Manager will arrange an introductory meeting between the consultant and the Edmonton Arts Council at the beginning of the Schematic Design to discuss the public art approach in the context of the capital project scope and timeline. Another meeting should be arranged with the consulting team at the end of Schematic Design to discuss the budget for art on the project and the process that will be used to select the artist and/or artwork.

3.1.1.4. Typically, the consultant, EAC, Project Manager, and CityProject Architect will work together to develop site location alternatives for public art pieces (typically three locations). The consultant shall produce a narrative and drawings showing these locations for the purpose of the consultative meetings with EAC

3.1.1.5. The Consultant shall provide general information on the project, including project description and suggested art locations, to the EAC for the Call to Artists. This information may also include restrictive criteria for the artworks as the consultant sees fit, such as maximum size and weight. The consultant may be required to answer questions during the proposal call. The consultant shall participate in either one or two juries to select the artist and/or final artwork. A typical jury session is a half day commitment.

3.1.1.6. Once the artist and/or artwork is selected, the Consultant shall coordinate as necessary with the artist and may be asked to make minor provisions for the art piece, such as providing power in a specific location or considering structural elements related to the public art, e.g. foundations, or coordinating the art installation with the overall project delivery schedule. The Edmonton Arts Council will continue to be the primary contact for the artist through the project duration.

3.2. Crime Prevention through Environmental Design (CPTED)

3.2.1. References

3.2.1.1. Business Safety Matters Guide - City
3.2.1.2. Crime Prevention Through Environmental Design Guide - City

3.2.1.3. Safer Business Spaces - City
3.2.1.4. Crime Prevention through Environmental Design - Edmonton Police Service

3.2.2. General

3.2.2.1. CPTED is a proactive design philosophy built around a core set of principles that is based on the belief that *the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime as well as an improvement in the quality of life.* CPTED is part of a community approach to crime prevention that complements community-based policing.

3.2.2.2. CPTED goes beyond conventional approaches of target hardening and active systems (cameras, locks, onsite security personal, etc.) to safeguarding the environment by exploiting: natural forms of surveillance, access control, and territorial reinforcement in a deliberate attempt to present a psychological deterrent for the purpose of positively influencing human behaviour as people interact with the environment.

3.2.2.3. Consultants should request documentation of any previous CPTED audits of the existing facility or CPTED audits of similar facility types to help inform their design.

3.2.2.4. Consultants shall engage and comment on all three CPTED design principles within their designs.

.1 Natural Forms of Surveillance
.2 Access Control
.3 Territorial Reinforcement

3.2.2.5. Where indicated in the project professional service agreement, CPTED audits shall be performed by an agent with an CPTED Enhanced Training Certificate provided by Edmonton Police Service or a pre-approved equivalent. Confirm requirements with the CityProject Manager.

3.3. Environmental Management (Enviso)

3.3.1. References

3.3.1.1. CityEnviso Website: www.edmonton.ca/enviso

3.3.1.2. Contractor Environmental Responsibilities Website

3.3.1.3. Contractors Environmental Responsibilities Package for: Construction, Operation, Maintenance & Service Activities, Hired Equipment and Consultants, version October 2022.

3.3.2. General

3.3.2.1. Enviso is the name of the City's environmental management system.

3.3.2.2. The Consultant is to identify and understand the potential environmental implications of the Project. Environmental considerations include, but are not limited to, spills and releases,

contamination discovery, noise, erosion and sedimentation control, water conservation & efficiency, drainage of wastewater & stormwater, energy conservation & efficiency, tree protection, natural area protection, wildlife, waste management, and material & resource conservation.

3.3.2.3. The Consultant may be required to sign an Environmental Acknowledgement Form (included as an appendix in the Consultant's Environmental Responsibilities Package: Engineering Design & Architectural Services document) prior to commencing work on the Project. When required, this will be identified in the *PSA*.

3.3.3. Environmental Permits/Approvals Checklist

3.3.3.1. The Consultant is required to complete the "Design Environmental Permits/Approvals Checklist" during design for all projects involving construction of new buildings, building demolitions with site disturbance, or hazardous material remediation affecting the site. This form is to ensure environmental permits, approvals and restrictions are identified and in place before construction.

3.3.3.2. The City requires up-to-date copies of this checklist to be submitted with the Design Development submission and pre-bid submission, however, it is the Consultant's responsibility to ensure the process of identifying requirements and seeking approvals happens as early as necessary in design to ensure the project schedule is not impacted. The Checklist User Guide indicates typical approval timelines.

3.3.3.3. Obtain a copy of the most recent version of the Checklist and the Checklist User Guide from the Project Manager at the start of every project.

3.4. Gender Based Analysis + (GBA+)

3.4.1. References

3.4.1.1. City. (2018, April, 12) *Gender-Based Analysis +: What is it and Why* [video] YouTube.

3.4.1.2. City. (2019) *The Art of Inclusion: Our Diversity & Inclusion Framework.*

3.4.1.3. Social Vulnerability Map, Alberta Capital Region (2018, June)

3.4.1.4. Government of Canada. Gender-based Analysis Plus course [online course]

3.4.1.5. City. *The Process of Inclusion: GBA+ tool*

3.4.1.6. GBA+ reporting Template - Sample

3.4.1.7. Canadian Human Rights Act - Bill C-16 (Prohibit Discrimination - Gender Identity or Gender Expression

3.4.1.8. Cities Alive: Designing cities that work for women

3.4.1.9. Proximity of Care: Design Guide (The guide is designed specifically to respond to the needs of three groups of people: children 0-5 years old, their caregivers, and pregnant women living in urban contexts.)

3.4.2. General

3.4.2.1. The City's goal is to create an environment in which all individuals feel like they belong and have equal access to opportunities and resources. Inclusion is fundamental to the way we work. We are diverse and embrace differences with empathy and curiosity.

3.4.2.2. Gender-Based Analysis Plus (GBA+) is a tool to identify and address how people from diverse backgrounds experience policies, programs, and initiatives. The goal of GBA+ is to reduce or eliminate inequality and discrimination and ensure equality of outcomes for all Edmontonians.

3.4.2.3. Consultants are not expected to be experts on equity and diversity but can contribute to developing ways to improve outcomes for all community members through the use of GBA+. Consultants shall endeavour to research and address three fundamental GBA+ questions within their designs.

.1 Who is excluded or differentially impacted?
.2 What contributes to this exclusion or impact?
.3 What will we do about it?

3.4.2.4. Consultants shall endeavour to review their designs from multiple perspectives.

.1 Race, Colour, place of origin, ethnicity
.2 immigration status
.3 language
.4 religious beliefs
.5 gender, gender identity, and gender expression
.6 appearance
.7 physical and mental disability
.8 political viewpoint
.9 marital and family status
.10 occupation, source of income, employment status
.11 sexual orientation
.12 age
.13 poverty
.14 houselessness

3.4.2.5. Consultants should request documentation of any previous GBA+ analysis of similar facility types to help inform their design. These are encouraged to be reminders so that Consultants can keep the principles of GBA+ and inclusivity in general at the top of mind when doing their work.

3.4.2.6. Advanced GBA+: Where indicated in the Project's *PSA*, an advanced GBA+ analysis shall be performed by an agent with GBA+ training and experience with various intersectionalities.

.1 Advanced GBA+ analyses shall

- use the City's *The Process of Inclusion: GBA+ tool* to form a basis of the analysis
- use the GBA+ reporting Template
- engage with internal City stakeholders as required to ensure diverse voices and needs are identified
- where noted in the Consultant's *PSA*, engage with external public

APPENDIX A - CONSTRUCTION COST ESTIMATES

1. Construction Cost Estimates

1.1 The Consultant is required to provide the estimates stated below to the accuracies shown. All Construction Cost Estimates shall be presented in UNIFORMAT II elemental format and all quantities shall be reported and organized in accordance with the latest edition of ASTM International Standards E1557-09(2015) Standard Classification for Building Elements and related Site Work - UNIFORMAT II; E2516-11 Standard Classification for Cost Estimate Classification System and E2514-15 Standard Practice for Presentation Format of Elemental Cost Estimates, Summaries and Analysis. In the event of uncertainty over the category of any element, the Consultant shall obtain clarification from the City.:

Project Phase	Level of Accuracy
Programming	Class 5 (- 30% to +50%)
Concept	Class 4 (- 20% to +30%)
Schematic Design	Class 3 (- 15% to +20%)
Design Development	Class 3 (- 15% to +20%)
Working Drawing (Progress Submission)	Class 2 (- 10% to +15%)
Working Drawing (Pre-Bid Submission)	Class 1 (- 5% to +10%)

References:

ASTM E 2516-11 TABLE X1.1 Illustrative Example of Typical Accuracy Ranges for General Building Construction Industries.