UBC PROPERTIES TRUST RFP
BEATY BIODIVERSITY CENTRE ADDITION
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“The dance of renewal, the dance that made the world, was always danced here at the edge of things, on the brink, on the foggy coast.” — Ursula Le Guin
A. Project Understanding

UNDERSTANDING AND SCOPE
We confirm our understanding of the scope as described in the Expression of Interest and Request for Proposals. The project will achieve occupancy by November of 2024 with a construction budget of $26 million designed to be LEED Gold certified.

The Biodiversity Centre site is approximately 11,350 sm. The existing buildings occupy 2,600 sm of the site area above grade, extending to 4,600 sm below grade. The remaining unbuilt area is limited. Approximately 1,500 sm in the south court has been identified as the most suitable area for the Addition. More area (~2,000 sm) is available in the east meadow, but any new addition would connect through occupied laboratory space. The Central Court, at almost 3,000 sm, represents the largest ‘open’ area on the site, but is fully occupied below grade by collections; furthermore any development in this space would work directly against the successful ‘edge and court’ massing of the Biodiversity precinct. Fairview Grove occupies 950 sm at the southwest of the site. While this area provides a development opportunity that would support and extend the edge and court language of the precinct – by extending the Lantern south, with the strongest resulting presence on Main Mall – it is understood that preservation of these trees is a project objective.

The landscape design of these open areas provides a deliberate visual and functional representation of the principles of biodiversity. The reconfiguration of the South Court to accommodate the Addition will need to retain this character. The vertical open screens of the existing Biodiversity Centre were conceived as support trellises that would expand this habitat vertically. The loss of South Court area to the addition might be offset by a revisiting of this intention, with the benefit of lessons learned during the ten years since the original construction.

Inside, the Addition will provide office and research space to augment the existing research programs and house the new Conservation Science Initiative. Below grade, a contiguous expansion of the Collections and Museum facilities will accommodate growth and program development.

DELIVERABLES
We confirm our understanding of the deliverables as described in the “Standard Form UBCPT Architect Agreement”. We are familiar with the requirements and confirm experience at UBC, including the UBC Quantum Matter Institute, Centre for Comparative Medicine, extensive public realm work, and the design of multiple exhibitions at the Museum of Anthropology.
ISSUES & CRITICAL SUCCESS FACTORS
From the Design Brief, we confirm our understanding of the range of issues to be addressed and critical success factors, in particular below we address five primary project goals:

- Maximize the use of space
- Design for biodiversity
- Research and learning landscape
- Respect the existing building
- Enhance the building’s “publicness”

Maximizing the Use of Space
The Addition requires more space than is included in the program. To get the most of the new addition, we will look for overlap of function, shared program, and flexibility of use. When adding something new, our approach is to carefully examine what is already there. Through analysis of the existing building that the Quantum Matter Institute was added on to, for example, we found existing stair and elevator cores with sufficient capacity to carry the new addition. This savings was added to further by harvesting capacity from the existing building’s service and loading areas. The result was a leaner Quantum Matter Institute than anticipated by its initial feasibility study. Also, a portion of its site to the south was able to be preserved as a greenfield for a future addition.

Supporting Biodiversity and Researchers
Urban ecology as it relates to architecture is both ancient and new. How can contemporary architecture circle back to ancient models of building that supported multi-species habitats while still protecting the contents and activities of the Beaty Biodiversity Centre and Museum? Can new, net-zero, mutualistic models reimagine the campus and change the focus of urban form and experience?

While the intersection of architecture and ecology begins by accommodating nesting (of birds, bats, and the insects that feed them), green and brown roofs, and bioswales, is there a way we can push this further. Perhaps UBC PT may wish to engage an urban ecologist as a member of the design team. Better still, the design team may be able to work with Biodiversity researchers to embed elements of research into the building itself. We have a history in buildings linked to academic pedagogy:

The Sechelt Water Resource is a water recycling facility and education centre. Water recovery from effluent is accomplished with a rich ecosystem of microorganisms and plants housed in a greenhouse. The experience of the greenhouse is unexpectedly rich: The space bubbles, burps, and gurgles. Its latent heat is comforting. In short it is a process that is immediately understandable and accessible to planners, politicians, and the public.

The UBC Skeena Residences is a Living Laboratory. PUBLIC worked with UBC researchers to outfit the building with a comprehensive measurement system that will gather data for an ongoing research project to compare Skeena’s energy use and occupant comfort. In addition, every year students provide post-occupancy surveys, a qualitative assessment to complement the quantitative data. The project team have presented the Skeena Residence story at the Passive House Canada Conference, EcoCity World Summit, WoodTALKS at the Global Buyer’s Mission, and ZBex, at UBC Okanagan won the Net-Zero Energy-Ready (NZER) Challenge, a provincial CleanBC incentive program aimed at the celebration and promotion of innovative and energy-efficient projects.
Conference, EcoCity World Summit, WoodTALKS at the Global Buyer’s Mission, and ZBex, at UBC Okanagan won the Net-Zero Energy-Ready (NZER) Challenge, a provincial CleanBC incentive program aimed at the celebration and promotion of innovative and energy-efficient projects.

For Quantum Matter researchers, communicating their findings to peers, industry, and students (current and future) is essential. We understand that a working research lab may need a public face, which allows it to promote the work being carried on within to prospective students as well as funding providers. We worked closely with QMI’s research community to find opportunities to display their work throughout their new building. Collaboration hubs feature vitrines displaying microscopic phenomena as well as giant carbon fibre aircraft components.

**What Do Fossils Want?**

Natural History collections must be protected from degradation caused by light, temperature, humidity, and dust. Our primary question will be that of scale: Will safe storage encompass a cabinet, a room, or the entire facility? The answer will be determined by factors such as budget, collection size, and access frequency. Through our museum work, we are familiar with the preservation of artifacts at a variety of scales. As an example, the entire New Westminster Museum and Archives met Class A museum requirements using centrally-controlled mechanical systems, and stringent envelope standards with continuous air barriers and air-locked entrances.

Museum environmental standards are more energy- and cost-intensive compared with conventional construction. When we designed the Vancouver Holocaust Education Centre, a Class A standard was highly desirable but not feasible within the project constraints. Our approach focused on conditioned casework fitted with appropriate lighting and environmental controls for the collection, an approach similar to the Biodiversity Centre.

**Respect for and Response to Existing & Feasibility Work**

While respecting the work that has been invested in the feasibility study, we see value in casting a wide net in the initial design-phase to capture the range of potentially viable options. We feel this is particularly important for this project given that site constraints are the significant driver of the Addition’s form, with direct impacts on cost, schedule, and functional relationships.

In revisiting the project, all options are worth discussing. What about a vertical expansion of the Lantern? Two additional floors of office and laboratory use could be provided, contiguous with the existing third floor, while respecting the scale and massing of neighbours along Main Mall, and preserving solar access to the central courtyard. Our team has experience with long-span structures which could allow the vertical expansion to sit lightly (particularly if constructed from steel or timber) on the Lantern below. This approach might have further advantages in achieving the expansion space needs while limiting excavation and costly below-grade construction.
Part of the design intelligence invested in the Biodiversity precinct is an imaginative repurposing of cost-effective industrial metal fabrications to provide a layered and texturally complex surface to a conventional building envelope. Office and laboratory masses are treated differently but with a masonry veneer vocabulary, which fundamentally respects the Thompson Berwick and Pratt building legacy found across campus. The precinct contributes to the campus in a quiet and supportive way while also providing a visual presence for the Museum on Main Mall.

Research and Learning Landscape & Public-ness
In a similar way, interior activities could be the public face of the Centre – revealing the work that goes on in the labs to the wider campus population as well as visitors, similar to our Quantum Matter Institute. This will also help to enhance the public character of the building. The Addition will have an opportunity to present this work to Main Mall, mediated by the retained Fairview Grove and further describing the relationship between collections and research established by the Museum’s lantern.

We understand how to engage audiences with vibrant and thoughtful public realm pieces, weaving cultural and brand visual messaging into the built environment. PUBLIC Principal Susan Mavor is currently working on “Walk Through Time”, an outdoor exhibit between the Beaty Biodiversity Museum and Pacific Museum of the Earth. We have proven excellence in highly successful public realm pieces at Point Grey campus such as the UBC Gateway signage and Buchanan Courtyard.

As part of our research into the Biodiversity’s users, we’ve noted that while some researchers’ offices are located in close proximity to their labs, in other cases they are separated by a floor. We will be interested to learn how these relationships impact the daily experience of using the building, as lessons learned will inform the approach for the Addition’s design. We know the circulation patterns of the existing building were carefully considered during its design, with the central convenience stair placed and sized to support casual interaction – so often a welcome source of inspiration and cross-polination. The Biodiversity Centre’s Board 4 Report remarked on the serendipitous encounters of users in the project’s stairs. Through our work with the Quantum Matter Institute and Adler University we have learned to enhance exit stairs to become communication stairs, seeing frequent use. We understand that form and connectivity of the interior program is critical to the success of an academic facility like Biodiversity.

Building Edges and Spaces
Prior to the development of the Biodiversity Centre the site was home to prewar Huts, Fisheries Institute and Chemical Engineering buildings. Campus planning studies of the area performed by Patkau Architects during the initial design phases of the AERL building identified a series of massing strategies for the site. The strategies studied sought to preserve and enhance the quality of campus connections through the site, and to deploy building masses to define new exterior spaces.

Like our work on the Buchanan complex to the north, the Biodiversity precinct buildings form a series of edges defining a series of exterior spaces. The Biodiversity Addition form and massing should continue this strategy. The project goal of supporting biodiversity makes the character of these exterior spaces a key consideration for assessing proposed designs.
Beneath the Surface

The feasibility studies identified the potential need for significant areas of the program below grade. The existing Biodiversity Museum and Research Centre, which are expressed as separate buildings above grade, connect below grade through a series of complex connections. Based on our experience with the Quantum Matter Institute, we understand below grade construction connecting to occupied research buildings is a disruptive activity. Adjacencies and construction activities will need to be planned carefully in coordination with user requirements.

The existing building connections include seismic slip joints where the south wing of offices connects to the east lab wing. We can anticipate that the addition will need to be similarly seismically separated from the existing building. Envelope detailing in particular receives special attention to accommodate air and water tightness where there is differential movement above and below grade as well as between new and old.

Codes and Constraints

The elegant assembly of uses that come together in the Biodiversity Centre required a carefully prepared building code analysis developed with Gage Babcock Associates. Museum public assembly occupancy is adjacent to laboratories and collections that include specimens in flammable preservation fluids, considered a hazardous occupancy by code. Above grade, laboratory occupancies have functional adjacencies to office uses, with assembly occupancies along Main Mall.

Within the laboratories are fume hoods linked to rooftop strobic fans, including some ceramic lined flues to accommodate the use of fluorine compounds. Laboratory casework is assembled from a prefabricated kit of parts identical to the system provided in the Quantum Matter Institute. While no new wet lab space is anticipated by the functional program, our familiarity with the systems and code solutions in place at the Beaty Research Centre will allow us to move forward efficiently in designing the Addition.

Adding to the Precinct

The configuration of the buildings that form the Biodiversity Precinct arose from an early study by Patkau Architects that considered new exterior spaces and routes in parallel with building form. The final built form defined four exterior spaces: Main Mall frontage, Central Court, South Court and East Meadow. The latter three play an important role as learning landscapes and demonstrations of biodiversity principles.

A starting point for the Beaty Addition will be to perform a similar assessment of its resulting exterior spaces, their relationship to the continuing coherent development of the Precinct, and advancement of the objectives of the Beaty Biodiversity Centre Addition project.
Massing Reviews
The identified project site is not large compared to the target program. Below grade expansion suits program elements contiguous with the Collections that don't desire daylighting, but can be expensive and slow to build. Tall masses that extend above the existing building could no longer rely on existing vertical circulation to provide one of the two required egress routes and may lose program efficiency. A vertical expansion of the Main Mall frontage could establish a consistent street wall with AERL and Fred Kaiser but would impinge on Fairview Grove.

Internal Connections
The vertical interplay between floors and related program elements is a noted success of the existing building. Where possible (and desirable!), office spaces are paired with lab work areas using asymmetrically loaded corridors. These strategies may inform the initial program blocking strategies assessed by the design team and users.
TEAM QUALIFICATIONS

Brian Wakelin will serve as the overall Project Lead and be responsible for the total delivery of the project. Brian will manage the administrative and contract-related requirements for the team and lead all client meetings. His relevant experience uniquely overlaps the Biodiversity program types including the UBC Quantum Matter Institute, Centre for Comparative Medicine, Buchanan Courtyards Renewal, Vancouver Holocaust Education Centre, and New Westminster Museum and Archives. Brian is a past chair of the UBC Advisory Urban Design Panel.

Project Architect Shane O’Neill will be the tactical boots on the ground and will work closely with Brian to move the project forward effectively. Shane brings significant experience in the design and delivery of complex facilities for institutional clients and expertise in building envelope design. He also brings a thorough familiarity with the Beaty Biodiversity Centre from Patkau Architects, where he was a member of the original design team from design development through to field reviews during construction. Subsequently he was project architect for the award-winning Goldring Centre at the University of Toronto, which required deep excavations on a constrained infill site and a program which included dry lab research workspaces.

Martina Caniglia will be responsible for consultant coordination, building assembly design, technical drawings, and presentation materials. For the past two years, she has acted as project architect of SFU Plaza Renewal, a comprehensive urban design and public realm renewal. One of Canada’s most significant pieces of architecture, the SFU Plaza is a complex rehabilitation of the existing campus fabric.

Susan Mavor will advise on exhibition space design. Susan is currently working on the “Walk Through Time”, an outdoor exhibit between the Beaty Biodiversity Museum and Pacific Museum of the Earth. She has been invited to speak internationally on Storytelling in the Landscape. She has designed multiple exhibitions for the Museum of Anthropology, the New Westminster Museum and Archives, and the Governor General–award winning čəsnaʔəm, the city before the city. She is leading the design of a major Class A gallery for UBC Rare Books.

David Cunningham will help with the design and sourcing of museum grade casework. Internationally recognized, he has been asked to speak and consult worldwide on MOA’s approach to artifact display—“visible storage”, now known as the Multiversity Gallery. He has designed for the Canadian Museum of Civilization, the National Gallery of Canada, Glenbow Museum, and the Vancouver Art Gallery.

DESIGN PHILOSOPHY

PUBLIC believes that design has the potential to inspire and shape understanding. Through our work, we create spatial experiences—beyond buildings—capable of spurring transformation, engagement, and renewal. Like the academic work conducted with the walls of the Beaty Biodiversity Centre, we too conduct research (Passive House, mass-timber structure, prefabrication, social housing models, public realm) in pursuit of the question: how design can produce more intelligent, integrated, and generative spaces? Also like the Beaty Biodiversity Museum and Centre, the other half of our research is dissemination, education, and engagement of audiences. Our museum and exhibition work demonstrates our ability to transform discoveries and research into relevant and compelling stories.

We like to work with people who are as passionate about finding solutions (and recognising them when they appear as accidents) and who are committed to research directed at achieving a better world. This is in alignment with UBC’s vision of a sustainable and just society and with that of the Beaty Biodiversity Centre “to promote a greater sense of collective responsibility for the biodiversity of British Columbia, Canada, and the world.”
Every team says that they listen carefully, but what does that mean?

PUBLIC PROCESS
We have a series of tools and processes to pull user groups into the process and to have uninhibited fun. The process remains the same whether it happens in person, online, or in combination. Engaging tools for distributed public engagement, programming, and design phases encourage stakeholders to get involved and have a voice, to participate in the creative process. This participation leads to greater ownership of a project and a greater level of support as we move forward.

Connecting with people personally and allowing them the space to comment openly – whether anonymously by ballot, in one-on-one interviews, or in a group setting – reliably leads to valuable feedback and insights. We have found that it is often the most critical voices who later – after careful listening and addressing of concerns – become the most zealous advocates of a project.

Like any research challenge, the right questions lead the charge. Too broad, and we get mired in data gathering, too narrow, and we risk missing valuable connections.

Clear questions allow for bold hypotheses. Questions we think may be helpful for the Beaty Addition are:

- What configuration offers the most amount of space?
- What is least disruptive to the existing building?
- What offers the most daylight (or least for certain spaces) and existing views to the existing building and the new addition.
- What do the experts say, or, which Structural, Mechanical, Electrical, and Plumbing systems best support the addition?

Equipped with these questions, we would test the criteria, analyze the data, and present the findings. This process is energetic. We move through options quickly. Dead ends are productive, as they lead to a more straightforward path and help to define user group values objectively. This is one of our favourite phases of design.
TOP: THE UBC STEWART BLUSSON QUANTUM MATTER INSTITUTE REQUIRED HIGHLY FLEXIBLE LABS TO ACCOMMODATE CHANGING RESEARCH PROGRAMS, EQUIPMENT, AND PERSONNEL. THE DESIGN RESULTED IN RE-CONFIGURABLE STAGES UPON WHICH NEW RESEARCH ACTIVITIES CAN UNFOLD. BOTTOM: TRANSPARENCY BETWEEN PROGRAM AREAS AND THE STREET LITERALLY OPENS A WINDOW ON THE SECHELT WATER RESOURCE CENTRE’S ACTIVITIES AND ENHANCES ITS PUBLIC INTERFACE.
PUBLIC fully appreciates the value of close relationships among client, stakeholder, designer, and builder.

Close relationships among client, stakeholder, designer, and builder allow for the emergence of an inspiring vision and a transformative project. Our team envisions a lively and involved project start up that will include visioning sessions to establish the project priorities, program verification and a full discovery period to establish the project values, criteria, and constraints. Our team imagines that these early Discovery weeks will be critical before the massing is explored. Soon after, as soon as a CM is identified it would be important to have a Values Workshop or session to bring the CM into the conversation and establish a joint list of project Goals and Priorities.

We envision these workshops as:

a) Visioning Workshops with the user group, representatives of Campus & Community Planning to establish the project design priorities at the campus and building levels

b) A Values Workshop to combine the Design Priorities with the overall priorities to create a balanced project charter

Virtually all of PUBLIC’s work utilizes the CM delivery process. Working within the context of the CM procurement process has taught our team a great deal about meeting schedules and strict budget requirements, particularly for renovations and additions where means and methods play an essential role. We have developed an Approach and Methodology to CM that involves:

· Workflow Management: Managing multiple critical paths and timelines is crucial in managing a rigid schedule. Workflow must be carefully thought through and maintained during the entire process.

· User Group management and timely decisions are critical in keeping the project on-track and on budget. We would ensure that effective management tools are in place to ensure quick decisions.

· Streamlined Decision-Making Protocol: Individuals named to the Project Steering Committee must have full decision-making authority and a commitment to the schedule.

· Availability of Key Participants: It is important that key decision makers both on the design team and the client team are present at meetings. As the first phases of the project will be during the summer months, during our first meeting together, we will review the project schedule and map out all key meetings.

· Future-proof Design: Laboratory areas are dynamic structures that undergo continual renewal as research priorities evolve. The Quantum Matter Institute underwent its first renovation before construction was complete to suit the requirements of new faculty. PUBLIC have been renovating AMPEL research laboratories since 2017 as part of the existing space lab backfill process from the expansion. Through this experience we learned tactics and skills to overcome base building limitations and obstacles. Consequently we approach all primary mechanical, electrical and plumbing systems with an eye to renovation.

· Anticipating Lead Times: Major building components, particularly laboratory mechanical systems, laboratory equipment, and exhibition casework often have long lead times for delivery. Critical path items with long lead times and seasonal supplier shut downs are identified early on and corrective measures can be made before the completion date is at risk.

· Multi-phased Construction Plans: This will be implemented where phasing makes sense in order to expedite the schedule.
We are comfortable with the approach of engaging a Construction Manager early, PUBLIC as an interdisciplinary firm is inherently collaborative. We understand that even the smartest individual cannot match the collective intelligence of a united team.

**3D COORDINATION / CLASH DETECTION**

PUBLIC uses Navisworks clash-detection software in-house and has experience working with a variety of 3D Coordination consultants such as Cadmakers, Summit AEC and BIM One. Working with a third-party conflict detector will reduce risks on site. The advantage of a third-party review is, like a commissioning agent, they are a second set of impartial eyes on the project documentation that consider sequencing and constructability. In our experience their involvement in renovations or additions where ceiling heights may be less than optimal for servicing.

There is an inherent risk in a process where architectural and structural consultants provide 3D BIM project documentation while mechanical and electrical consultants typically provide 2D CAD documentation that is more schematic in nature as the equipment and layout is not finalized until construction. While mechanical consultants are now moving to 3D BIM documentation, it is widely acknowledged that most coordination errors are associated with mechanical scope for this reason. Structural and mechanical consultants working in BIM would be preferable for this project.

Based on our experience working with CADMakers in the past, we would start their process with a kick off meeting. At the end of the Schematic Design phase, they would review all discipline’s architectural and structural documentation for conflicts. At the end of Design Development, they would pick up mechanical and major electrical and civil systems. And, before going to tender, they would conduct a final review.

As the project moves into construction, 3D Coordination consultants offer value by precisely modelling all equipment with service tie-ins as soon as the cut sheets and shop drawings are available. In particular, they have an ability to work shoulder-to-shoulder with the Construction Manager to detect and solve conflicts before the real-world materials come together. Additionally, if the project has a heavy-timber structure, they can pre plan and track all pipe penetrations.
C. Prefabrication

With an active campus, a constrained site, and a competitive construction market, prefabricated components may offer advantages.

Prefabrication offers potential advantages such as reduced site schedule, cost savings, less lay down area, and minimized disruption on what will be a constricted site. We will consider, where appropriate, the opportunity for prefabricated building components. PUBLIC has experience with a range of prefabricated elements: mass-timber and steel structures; cladding, mechanical systems; and exhibition casework.

Prefabri cated structures offer quality and schedule advantages. The heavy timber structure in the KPU Wilson School of Design, for example, provides a robust and carbon neutral framework for the building. The precision of the exposed timber connections are widely recognized and allowed for smooth installation of subsequent partitions and systems. The aggressive schedule for Adler University could only be met if the steel staircases that interconnect all five floors were sequentially tendered and constructed offsite. The final stairs were flown in through an opening in the L5 curtain wall before being lowered into position floor by floor.

Our Process

While stories like these are popular, in our process schedule and quality advantages need to be balanced with other project risks. For example, Skeena Residence was recently completed at the UBCO campus. While the configuration of the building suited structural prefabrication and required a high degree of precision to meet Passive House standards, working closely with the construction and project management team, we chose to proceed with conventional timber construction to encourage competitive pricing. In the end the structure was completed with exceptional quality (Skeena Residence is one of the most airtight buildings in Canada) and exceeded all schedule and cost criteria.

It is also worth noting that Skeena Residence met these objectives during the COVID pandemic. If, for any reason, the framing contractor was unable to complete the work, it would have been possible for another contractor to complete the project on site because of the choice of conventional timber construction. In contrast, the Acadia Childcare project we recently completed on campus in 2019 was entirely prefabricated offsite. Here the possibility of disruption to schedule—due to COVID, bankruptcy of the fabricator (which unfortunately did happen after this project was complete), or other—was greater as it relied on a single supplier. While this project was delivered on-time, when considering prefabricated elements, our goal is not to sole-source suppliers whenever possible.

Because prefabrication accelerates the design schedule, it is important that users are involved in the decision making process. Users are required to make decisions about the project requirements early in the process and changes can be costly. The museum casework we designed for the Vancouver Holocaust Education Centre for example, was a long lead item. To meet the project schedule the integrated design team accelerated the casework design ahead of the rest of the museum design. It was treated like a separate project, requiring coordination with fire projection, power and lighting systems, within the larger project. This required the exhibition designers and curators to make decisions about exhibition content before the entire museum was designed.
The exposed timber skeleton was pre-planned with CNC-cut service penetrations. Plumb, straight, and true, these large timbers offer a structural precision not possible with concrete or steel. Three floors of timber were erected quickly, followed by floor panels and building services, allowing multiple trades to start work on different floors of the project at the same time. The precise wood structure allowed for an efficient installation of partitions, services, and envelope; reduced changes; and advanced the schedule, resulting in less construction waste and fewer deficiencies. The concrete stair and elevator cores were built while the timber was in the shop drawing and manufacturing stages.
The UBC Okanagan Skeena Residence objectively weighed the benefits and drawbacks of various prefabrication methods before deciding that conventional timber construction best-served project goals. The wood-framed walls were prefabricated off-site and craned into place.

Drawing from the local trade pool encouraged competitive pricing, exceptional quality and acceleration of schedule – the project was completed ahead of schedule.
The Vancouver Holocaust Education Centre (VHEC) is a ‘working collection’, which allows the process of accession, preservation, and interpretation to be part of the museum visitor experience. Views of this work can be seen through the display cases. Further, the VHEC is equipped to respond to various social, political, and cultural stimuli, keeping the museum current and relevant.

To serve the VHEC’s collection and mandate, prefabricated casework provided the best balance of project objectives. Because it is a long-lead item, this casework required availability of decision-makers, especially in the early phases, due to the accelerated process. We treated it like a separate project within the larger project.
We support UBCPT’s proposed design sprints. The integration of the design coordination sprints will be instrumental to achieving design excellence and maintaining the schedule and budget.

The Beaty Biodiversity Centre Addition project schedule is reasonable. We have outlined a process that includes three design sprints, three sustainability workshops, a Design Panel Preapplication Workshop with a follow-up presentation before the final development permit application submission, life-cycle costing, and a final application presentation.

**SCHEMATIC DESIGN**

- **Discovery Workshop:** Campus and Community Planning, Steering Committee (Infrastructure Development), UBC PT Project Manager, Stakeholder Working Group, and Design Team to discuss:
  - Application approval process and timelines; Alignment with policy UBC Vancouver Campus Plan, planning guidelines and University Architect’s Design Brief; Contextual issues; Project challenges/issus;
  - Sustainability expectations: Utility requirements and encumbrances, eg. stormwater management; FF+E; review and discussion of regulatory matters; Key processing dates and submission requirements for AUDP, DRC, BoG; Exploring configuration strategies for the addition.

- **Biweekly meetings:** with the stakeholder committee will be used throughout this phase to track the project progress.

- **Review documentation:** Gather all site related documentation including geotechnical investigation report, site survey, and site servicing as built.

- **Design Coordination Sprint 1:** Here, we will confirm the aspirational project goals, conduct a focused review of massing in context (how it relates to the Biodiversity precinct), develop the Project Charter and review the program to look for ways to maximize space with stakeholders. This sprint aligns with Sustainability Workshop 1.

- **Sustainability Workshop 1:** Provides early focus on building massing, orientation, sustainable energy and water systems. We can begin to look at stormwater management options.

- **DP / Advisory Urban Design Panel 1:** Massing Review. At about the 90% point of the SD Phase, the Design Team submits a booklet form of its DP application to the C+CP for AUDP consideration. The design team will participate in a presentation of the project to the AUDP.

- **Design Coordination Sprint 2:** Consultation with UEL. Review from a programming perspective and insight into how the faculty currently operates, and the introduction of sustainability concepts. This sprint aligns with Sustainability Workshop 2. Look at the addition in context, how it relates to the campus.

- **Sustainability Workshop 2:** Investigates design synergies to achieve the goals of the Design Brief (designing for biodiversity, maximizing use of space, enhancing publicness).

- **Revit Model & Specifications:** Document all Schematic Design deliverable drawings in Revit. Create outline specifications in MS Word.

- **Peer Review:** All documentation will be peer reviewed for quality control purposes.

- **Work with the CM to develop a Class C cost estimate.**

- **Refine the design as required to align with the cost estimate before proceeding to the next phase.**

**DESIGN DEVELOPMENT**

- **Design Development startup meeting to update schedule and review phase objectives and milestones.**

- **Advisory Urban Design Panel 2:** Pre-DP Application Meeting

- **Adjust the design as required to accommodate the advisory committees’ comments.**

- **Continue to document all Design Development deliverable drawings in Revit. Update outline specifications in MS Word in accordance with UBC Technical Guidelines.**

- **All documentation will be peer reviewed for quality control purposes.**

- **Work with the CM to develop a Class B cost estimate.**

- **Sustainability Workshop 3:** Uses energy modelling to determine optimal balance of energy performance, life cycle cost and system complexity.

- **Biweekly meetings:** with the stakeholder committee
will be used throughout this phase to track the project progress and to refine design sketches and provide greater detail.

- **Design Coordination Sprint 3**: The Addition. Follow up with meetings 1 & 2 the addition in context. During Design Development involves a focused collaboration with all stakeholders.

- **Prepare DP submission**: with presentation booklet, Revit drawings, project renderings and physical model as required to convey the design attributes. At the 90% point of the DD Phase, the Design Team submits the Development Permit application to Campus and Community Planning.

- **Public Open House (TBC)**: Public Comment (open for ~2 weeks) if required

- **Advisory Urban Design Panel / DP Application**: Coinciding with the public process, the Design Team submits a booklet form of its DP application to the C+CP for AUDP consideration. The design team will present the project to the AUDP.

- **Development Review Committee Review**: Coinciding with the AUDP review, the C+CP also circulates the Development Permit application to the DRC for their consideration.

- **Feedback to Applicants**: C&CP summarizes feedback identifying any outstanding issues requiring resolution prior to DP issuance.

- **Board of Governors’ Board 2 Review and Approval**: Development Permit issued by the Director of Planning

**CONSTRUCTION DOCUMENTS AND TENDER**

- Contract Documents startup meeting to update schedule and review phase objectives and milestones.

- Meetings with the stakeholder committee every three weeks will be used throughout this phase to track the project progress.

- Stakeholder Meetings continue to finalize designs.

- Work with the CM to identify and resolve constructability issues, long lead items such as exhibition casework etc.

- Finalize the sustainability performance of the project with the key UBC stakeholders.

- Prepare BP submission with Revit drawings and all required submittals.

- Continue to document all Contract Documents deliverable drawings in Revit. Finalize the specifications in MS Word.

- All documentation will be peer reviewed for quality control purposes.

- Work with the CM to develop a Class A cost estimate.

- Refine the design as required to align with the cost estimate before proceeding to tender.

- **Assist the CM with the tender process**: Respond to contractor enquiries in writing through the CM; Issue addenda as required by the CM; Review submitted tenders and make recommendations for award.

- UBCPT requires bid results to present to the Board of Governors for approval.

- **Board of Governors’ Board 3 Review and Approval**: Required for the construction contracts to be awarded.

- **Construction Contract Administration**

- Attend CM site meetings

- Review the work, shop drawing and submittals, issue site instructions and changes to the contract in a timely manner as required.

- Determine the date of Substantial Performance.

- Prepare record drawings based on CM markups.

- Prepare LEED documentation

- Prepare Sustainability Report.

- **Occupancy Process**: In the lead-up to occupancy we need to allow the commissioning process. In addition to commissioning (1 month) we should also indicate a training period (1 week) and furniture move (2 weeks).

- **Closeout Process**: Handover of the Maintenance Manual, submission of the LEED application, 1 year warranty review

- **UBC Board of Governors’ Board 4 Review**: UBCPT presents the final project performance metrics.
Our proposed 40-month schedule assumes a start in July of 2021 and completion by the end of October 2024. We built the schedule around the UBC Board of Governors and AUDP meetings. We have assumed two tender packages and an Issued-for-Construction package.
WE DESIGN FOR CHANCE RUN-INS, MICRO-ENCOUNTERS, AND CROSS-POLLINATION
E. Efficiency & Adjacency

Working together with the CM and the Consultant Team, we will look for ways to increase efficiencies using repetition where possible to optimize the design in order to balance up-front capital costs with operational efficiencies.

According to our contacts, the lower mainland concrete formwork industry is tapped out for the next three years. This means formworkers of inferior quality and dependability are being engaged. Additionally, the cost of formwork has soared due to global pricing issues and amount of building in the Lower Mainland. While steel structures are built on campus occasionally, we believe steel may be an unlikely option because there isn’t sufficient capacity in the market for it.

With this information in mind, we recommend minimizing concrete and steel use and building wherever possible in wood or heavy timber. This will give the best cost and overall value to UBC. Labs and offices lend themselves to wood very well due to the repetitive room spans. PUBLIC have experience with heavy timber panels and walls on KPU Wilson School of Design and the transit shelter at Whistler.

The site conditions are of some concern, UBC campus is a spaghetti field of below grade pipes that have gobbled up contingencies on several of our projects before the structure has reached grade. For example we understand that district energy services run along the south edge of the proposed site. Because this is a disturbed site, we recommend careful as-built and geotechnical investigation takes place early in the process.

The existing building’s lower level is 4.2m below grade generally, extending to 5.5m at the museum auditorium. Site investigations prior to the original construction encountered silty sand to 7.6m below grade at the auditorium, and 6.1m elsewhere. This suggests a single level of below grade accommodation is achievable for the Addition, but a deeper excavation to allow two below grade floors may encounter additional challenges. PUBLIC has experience of deep excavation adjacent to existing and occupied facilities at UBC through the Quantum Matter Institute.

Students are UBC’s core business and with an active construction site, the noise of construction is a real issue. We will need to take care to communicate with the CM from the beginning to negotiate appropriate schedules for noisy work (if noise is only considered later it will create additional construction costs to UBC). A prefabricated timber structure can reduce site disruption as it is typically quieter to erect than concrete or steel, and completed floors provide a full-strength working platform to further speed assembly.

**PROJECT MASS & EFFICIENCIES**

Offices and dry labs are well suited to standardization and economies of scale for both designer and builder. As described on previous pages we believe there is an ability to leverage economies of scale with a prefabricated structure, MEP systems, envelope and finishes.

**Structural Optimization**

In a project of this scale a range of opportunities exists for grouping programs according to structural and programmatic logic, similar to the Quantum Matter Institute. In that project offices are located on one side of the corridor and labs are conveniently located on the other. Column spacing and program are closely coordinated so two offices equals one lab bay. Social spaces used by an entire floor are located at the ends of corridors in conjunction with support services such as washrooms and stairs. This simple planning principle reduced the overall project cost because all structural and MEP systems were used efficiently and it created democratic access to light and views as well as operational efficiencies for building management.

**Construction Efficiencies**

Working together with the CM we will look for ways to increase efficiencies using repetition where possible.
Modularity and Flexibility
If each room module is identical, designed to optimize structural spans, create democratic spaces, allow a wide range of furniture configurations, and provide universally accessibility, greater capital and operational savings will be achieved.

PROJECT MASS & ADJACENCIES
Both the feasibility study and our own preliminary investigations suggest that the Addition’s floor plate might only be 400 sq m for the above grade levels, to both preserve the maximum extent of South Court and moderate the relationship between Addition and the existing buildings. This is approximately one sixth of the existing buildings’ apparent footprint. There may be advantages in locating the Addition as far to the west as possible:

- Forming a new west edge to a minimally reduced South Court
- Taking advantage of the greater available site dimension where the current fire route angles south
- Establishing a more immediate presence for the Addition from Main Mall, while still moderated by the trees of Fairview Grove
- Reducing the number of existing offices displaced by the new construction
- Connecting to the existing building’s interior circulation at logical point, adjacent to a vertical circulation core.

The feasibility report suggests maintaining a 4m setback between the Addition’s lower level and the existing building to preserve daylight to existing offices and meeting rooms that face the South Court. The windows to these spaces are sized to the CEME building to the south, and may require additional protection measures to allow a 4m ‘lightwell’. An alternative approach might be to infill the entire south court at the lower level. Daylight could then be strategically reintroduced to spaces below that would benefit from it, and the additional floor area of the lightwell (approximately 350 sqm) becomes usable for program, equivalent to one floor of above-grade construction. As noted in the Design Brief, many of the new Collections related spaces do not require daylight, and a contiguous connection between the Addition and existing below-grade collections spaces may offer beneficial adjacencies.
This proposal has been prepared in compliance with the AIBC Bylaws, including especially but not limited to Bylaw 28: Professional Engagement and Bylaw 34.16: Tariff of Fees for Architectural Services, and the Code of Ethics.

Thank you for inviting us to submit a fee proposal for the Beaty Biodiversity Centre Addition. We believe that transparency in determining fair and equitable fees contributes to the strength of the project and the Owner and Architect relationship through a thorough understanding of the scope of work. We offer our fee submission as an invitation to engage in discussions to review our fee proposal and confirm alignment with UBC PT’s vision, the expected level of service, and the project budget.

Using our pricing methodology, we determined a fee for Basic Services as 6% of the Construction Cost ($26,000,000) supported by expected level of effort and schedule.

Basic Services include Architectural services and coordination of UBC PT-retained engineers and specialty consultants.

Our fee assumes a 40-month schedule (July 2021 through Oct 2024) with regular meetings (remote as required by Provincial Health Authority) during the design process and site visits during construction.

**Scope of Work**

Program and Budget Verification Schematic Design – We understand that UBC PT has a functional project program. Our scope of work includes program verification.

Design Coordination Sprints – We have included up to three Design Coordination Sprints. Additional Design Coordination Sprints will be quoted for fee and expenses, on request.

Concept Design – We will work with you to develop an acceptable concept through integrated design process (IDP). One concept will be developed for cost and program comparison. The concept design will be supported by diagrams and three in-house renderings – two exterior views and one interior view.

Design and Documentation – Documentation will be prepared in Revit (Building Information Modeling).

Construction Administration Services – Our fee includes regular site visits to be performed every two weeks by Martina Caniglia, a senior member of our staff experienced in Construction Administration.

FF+E – The development of an FF+E plan and additional services required for the selection and procurement of furniture is included in the fee.

Any work that falls out of scope and approved in advance by the Client will be charged at the hourly rates below.

<table>
<thead>
<tr>
<th>Hourly Rates</th>
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<tr>
<td>Principal Architect</td>
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<td>Senior Architect</td>
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<td>Technician / Designer</td>
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<td>Intermediate Designer</td>
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<td>Junior Communication Designer</td>
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**F. Fees**

Our fee is 6% based on a construction budget of $26,000,000 and includes FF+E.

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<tr>
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<tr>
<td>Schematic Design</td>
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<td>Design Development</td>
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<td>Construction Documents</td>
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<td>Tender</td>
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<td>Contract Administration</td>
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</tbody>
</table>

F. Fees

Our fee is 6% based on a construction budget of $26,000,000 and includes FF+E.
Thank you for your interest. For more information, please contact us at our studio.

PUBLIC: ARCHITECTURE + COMMUNICATION INC

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VANCOUVER BC V5L 1Z1
TEL 604 738 4323

PUBLIC would like to acknowledge that the land on which we gather is the unceded, traditional, and ancestral territories of the Musqueam, Squamish, and Tsleil-Waututh Nations.

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