SCIENCE ANNEX CONSTRUCTION AND WORKFORCE DEVELOPMENT PROJECT AT A GLANCE

FAIRBANKS MUSEUM & planetarium

NEXUS:
VERMONT'S DEMONSTRATION MASS TIMBER BUILDING

6,080 square feet new construction • 1,730 square feet of renovation

CORONAVIRUS

- No Touch Hygiene Features
- HVAC System
- Telepresence for Remote Learning
- Outdoor Classroom
- Healthcare Workforce Development

ECONOMIC DEVELOPMENT

- Opportunity Zone
- Leverage $1m in Other Funding
- 3,563,000 in GDP
- $343,000 in Annual Increased Tourism Spending

JOBS

- 53 construction jobs (2021-26)
- 99 jobs in 2022 from CCV and Fairbanks Museum activities

WORKFORCE DEVELOPMENT

- Mass Timber Workforce Development during construction
- Ongoing Workforce Development by CCV
- Healthcare Workforce Development

PARTNERSHIP

- Fairbanks Museum
- Community College of Vermont

Science Annex Workforce Development Project Narrative

Fairbanks Museum & Planetarium
1302 Main Street
St. Johnsbury, Vermont 05819

August 20, 2020

In support of the Fairbanks Museum's Science Annex Workforce Development Project application to the Addendum to the FY 2020 PWEAA NOFO for the Economic Development Administration's Coronavirus Aid, Relief, and Economic Security Act (CARES Act) Recovery Assistance

The Fairbanks Museum requests consideration of a $1,965,005 grant to support the Science Annex Workforce Development Project. Using the construction of Vermont's demonstration mass timber building as the project's nexus, the undertaking creates an extensive range of coronavirus resiliency and economic development-related benefits.

With the construction of Vermont's demonstration mass timber building as the nexus, there are seven interconnected results: 1) coronavirus prevention, preparedness and response; 2) mass timber workforce development; 3) healthcare workforce development; 4) manufacturing workforce development; 5) elementary education workforce development; 6) economic development within an Opportunity Zone; and 7) a public-private partnership between the Fairbanks Museum and the Community College of Vermont.

About Mass Timber

The Science Annex will be Vermont's first "mass timber" building. Mass timber is an umbrella term for engineered wood products used in commercial construction. Glue-laminated timber, cross laminated timber, nail laminated timber, heavy timber decking, and other engineered and composite systems are being used to build office spaces, hockey rinks, university buildings and other large structures, presenting a promising new market for forest products from the Northern Forest region. Due to their high strength, quick assembly, dimensional stability and positive environmental performance, mass timber building products have the potential to become the materials of choice for a wide range of construction project.

Figure 1. Mass timber building at the University of Northern British Columbia. Courtesy MGA/ Ema Peter.

The northeastern United States has lagged behind other regions of the country in the adoption of mass timber as a widespread construction technique. Despite an abundance of timber suitable for use in mass timber construction across northern

New England, and the economic development potential of using more wood products in construction, there has yet to be a mass timber building constructed in Vermont, a state that has 4.5 million acres of forest comprising 73% of the state (USDA Forest Service. Forests of Vermont, 2018).

Despite its extensive forest resources, Vermont's forest products industry has declined in recent years. In 2016 there were 6,269 jobs in the sector, down from 9,739 in 2002, a 36% decrease. Over that same period, the number of forest products businesses declined from 2,370 to 2,107, an 11% decrease (Vermont Sustainable Jobs Fund).

Nexus: Vermont's Demonstration Mass Timber Building

The Science Annex is a three story, 6,080 square foot addition onto the Fairbanks Museum's existing building. The addition contains classroom and exhibit space, a stair tower, elevator, and four restrooms. The ground floor and balcony levels will contain science exhibits designed to generate visitation to the Fairbanks Museum, while the plaza level (basement) will contain a classroom and reception for the Community College of Vermont. Adjacent to the Science Annex in the existing Museum building, an additional 1,730 square feet of basement space will be renovated to support the educational and administrative activities of the Community College of Vermont. Site work includes the installation of an outdoor classroom adjacent to the addition, and the reworking of an existing parking lot parcel to increase parking capacity.

Figure 2. Map of Vermont showing percentage of forest cover. Courtesy Vermont Department of Forest, Parks and Recreation.

The Fairbanks Museum, a 129 year-old publicly accessible educational institution, provides the ideal venue to showcase the stunning use of today's forest products. Complementing existing historic craftsmanship with the impressive spans and woodwork of mass timber is a perfect marrying of old and new. The demonstration of mass timber in a dramatic setting will encourage its widespread adoption.

The value of a mass timber demonstration project, particularly one which is in a publicly accessible location, is an important prerequisite to generating interest and support for follow-on mass timber projects. Unlike mass timber projects that are multi-unit housing or offices, the proposed Science Annex will be entirely accessible to the public and viewable by anyone interested in pursuing a mass timber project.

Figure 3. Rendering of the Science Annex, Vermont Integrated Architects.

The size of the proposed addition, at 6,080 square feet, is a valuable asset for this project. Vermont does not have now, nor is it likely to have in the near future, high-rise buildings. Demonstrating mass timber for a three-story building will showcase mass timber at a scale that can be reproduced elsewhere in Vermont and other rural areas where high-rise buildings are not needed.

The value of constructing Vermont's demonstration mass timber building to the northern forest economy is evidenced by the award of a $350,000 grant, the maximum amount allowed, from the Northern Borders Regional Commission.

Result 1: Coronavirus Prevention, Preparedness and Response

The Science Annex supports multiple coronavirus mitigation and resiliency features.

Telepresence. During the pandemic, the value and necessity of remote learning has been apparent. Within the Community College of Vermont's space, telepresence technologies will be employed to support distance learning which may include content from presenters at the Science Annex being distributed to other locations or remote content being delivered to the Science Annex.

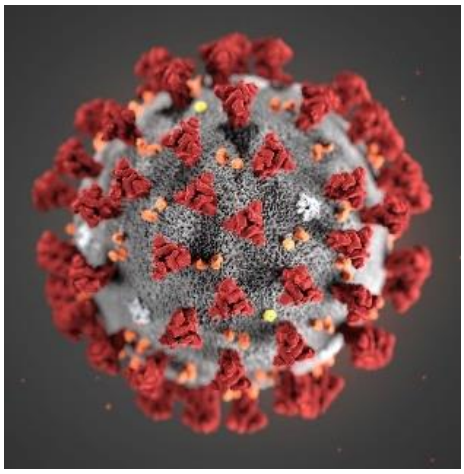

Figure 4. Illustration of the novel coronavirus.

Touchless Restrooms. The four restrooms in the Science Annex will have touchless features to support public hygiene for museum visitors and CCV students.

HVAC Filtration. The HVAC system will be equipped with a filtration system sufficient to remove virus particles from the air circulation system.

Outdoor Classroom. The site will be equipped with an outdoor classroom for use by the Fairbanks Museum or CCV. Epidemiological evidence has consistently shown that virus transmission is far lower outdoors relative to indoor environments.

Healthcare Workforce. CCV's workforce offerings will include a health care pathways program in partnership with the Vermont Department of Labor and the Northeast Vermont Regional Hospital (see Workforce Development).

Result 2: Mass Timber Workforce Development

The construction of the Science Annex is one large, extended mass timber workforce development effort. Currently, there is no mass timber production in the Northeast, ostensibly because the demand does not exist. Demand can only be filled by mass timber projects, which require trained architects, engineers, construction managers, general contractors, foremen, and builders. Subsidizing the development of the mass timber workforce will address the critical demand side of this equation. This

goal will be accomplished with WoodWorks as the nationwide expert in mass timber workforce development.

The project will focus on training for those professions which drive decision making and implementation of mass timber projects within the construction fields, to include architects, engineers, construction managers, foreman, and construction workers. As part of the bid process, the general contractor will be hold an allowance for a dedicated workforce development coordinator to ensure that workforce development is embedded in the construction project.

The project will host several professional development sessions during construction aimed at those already in the construction fields. To include:

Session 1: Design Considerations for Mass Timber
May 2021, WoodWorks, Vermont Integrated Architects and Workforce Development Coordinator
Target Audience: Architects and Engineers (30-50)
Day-long session hosted at the Fairbanks Museum contemporaneous to the construction of the Science Annex. Topics will include the design strategies for the Science Annex with a focus on the practical, environmental and structural virtues of mass timber construction. An edited version of this session will be recorded on video and hosted on the WoodWorks website.

Figure5. Mass timber building in Oregon under construction. Courtesy LEVER Architects.

Session 2: Building with Mass Timber
May 2021, WoodWorks, General Contractor and Workforce Development Coordinator
Target Audience: Construction Project Managers, General Contractors and Foreman (15-25)
Day-long session hosted at the Fairbanks Museum contemporaneous to the construction of the Science Annex. Topics will include the construction details for the Science Annex with a focus on the practical application of mass timber in construction projects. The session will explore mass timber from design through pre-construction, fabrication, erection, and project close-out, including risk analysis, cost case studies design team interaction, cost optimization, scheduling, site planning, and other logistics. This session will leave attendees with information they need to successfully bid and construct a mass timber project. An edited version of this session will be recorded on video and hosted on the WoodWorks website.

Session 3: Mass Timber for Construction Workers
June 2021, WoodWorks, General Contractor, and Workforce Development Coordinator
Target Audience: Construction Workers (30-50)
Day-long session hosted at the Fairbanks Museum. The first half of the day will be a tour of the construction site while the second will be a hand-on demonstration of mass timber material construction techniques. An edited version of this session will be recorded on video and hosted on the WoodWorks website.

Result 3: Healthcare Workforce Development
Once completed, the Science Annex will be a workforce development facility.

Working in partnership with the Vermont Department of Labor and the Northern Vermont Regional Hospital, CCV offers healthcare courses designed to provide healthcare career pathways to students in the Vermont's Northeast Kingdom. Areas of focus include Pharmacy Technician Certificate, Administrative Medical Assisting, Clinical Medical Assisting, Medical Billing and Coding, Allied Health Preparation, and a Health Science Associate Degree program. This workforce development grows the region's economic future while also training the healthcare workers who are vital to creating robust and resilient medical systems.

Result 4: Manufacturing Workforce Development
Working in partnership with local manufacturers and the U.S. Department of Labor, CCV offers certificates recognized by the Manufacturing Skills Standards Council. These stackable credentials, which include Safety, Quality, Processes, Maintenance, Green and CPT, allow for participants to acquire jobs, be promoted and/or receive wage increases. A skilled manufacturing workforce is widely understood to be in demand in Vermont.

Result 5: Elementary Education Workforce Development
At the Science Annex, CCV will grow its Northern Lights at CCV program. Northern Lights offers key professional development services for the early childhood and afterschool workforce, including high quality trainings, career advising and technical assistance and support of questions that providers have about their BFIS Quality and Credential accounts as well as general questions about professional development. CCV will offer support with competencies, credentials, career ladder level certificates, the Vermont Instructor Registry, the M.A.T.C.H. Registry (Mentoring, Advising, Teaching, Training, Coaching, Consulting, and Helping), and other career advancement services.

Result 6: Economic Development in an Opportunity Zone
The project, located in an Opportunity Zone, will spur economic development in an area experiencing both longstanding and coronavirus-specific economic dislocations.

As per the REMI analysis undertaken by the Vermont Agency of Commence and Community Development, the project will generate $3,563,000 in GDP between 2021 and 2026. Additionally, the increased tourism activity (8000 visitors/year) will result in increased spending of $343,000 annually (VT ACCD, 2017 Vermont Benchmark Tourism Study).

The project will spur investment in an Opportunity Zone. The Fairbanks Museum, at a minimum has committed $578,751 in private investment toward the project. Moreover, EDA funding will leverage other state and federal sources including a $350,000 Northern Borders Regional Commission grant and $115,750 in State of Vermont Downtown and Village Center Tax Credits.

Although not permissible in EDA's job calculations, the construction project will generate immediate employment and be an economic stimulus to the region. The REMI analysis shows the construction will generate 53 jobs between 2021 to 2026, with 48 created in 2021.

Result 7: Creation of a Public-Private Partnership to Support Job Creation

The Science Annex will catalyze the partnership between the Fairbanks Museum, a private 501(c)3, and the Community College of Vermont which is part of the Vermont State College system. These two institutions have a longstanding commitment to the well-being of their staff and constituents, and the economic development of their communities. Both industries, community colleges and museums, support robust economic activity; the process of joining them in one location will amplify those effects.

Community colleges are economic drivers. According to a 2014 economic study by EMSI, the net impact of community colleges on the U.S. economy was $809 billion in 2012, which is equal to 5.4% of U.S. GDP. The added income created in the U.S. through increased student productivity and the spending of international students supported the equivalent of 15.5 million jobs in 2012. Community Colleges add so much economic value because their students are either entering or re-entering the workforce with new skills which are then rewarded with higher incomes. Those newly skilled workers then go on to raise the profits of the companies for which they work. Moreover, EMSI found that devoting public resources to community colleges was an outstanding economic investment. Each $1 of public funds yielded $6.80 over the course of student's working lives. For students, they have a gain in future income of $4.80 for every dollar invested in their education.

The Community College of Vermont, specifically, is an engine of growth within Vermont. In 2018, CCV commissioned a study, also by EMSI, to assess the impact of CCV on the Vermont economy and its benefits to students, taxpayers and society. In summary, the analysis found that CCV spent $23.5m on payroll and benefits for its 796 employees and $9.2m on goods and services. The spending by CCV and its students and alumni generated $251.2m in added income to the Vermont economy which represents .8% of Vermont's GSP. From the student perspective each dollar spent on their CCV education equates to $5.20 in higher future earnings, which exceeds the national average, above.

Beyond their roles in the cultural life of their communities, museums are economic drivers. According to a study done by Oxford Economics for the American Alliance of Museums in 2017, each year U.S. museums host over 850 million visits and the museum sector directly supports 372,100 jobs and generates $15.9 billion in income. The total economic contribution of museums in 2016 amounted to more than $50 billion in GDP, 726,200 jobs and $12 billion in taxes to local, state and federal governments.

The cumulative efforts of CCV and Fairbanks Museum support job creation on three fronts: 1) job creation within the Fairbanks Museum; 2) local and regional job creation from increased tourism activity; and 3) job creation from CCV's operations.

Within the Fairbanks Museum, the Science Annex will support three new full time positions in facilities, administration and guest services.

The increased tourism activity at the Fairbanks Museum will support local job creation. The additional estimated 8,000 visitors create $343,000 in increased spending annually which will create 3 jobs in 2022, and 14.6 jobs between 2022 and 2026 (Vermont ACCD REMI analysis).

CCV's St. Johnsbury activities as a proportion represent approximately 2% of their operations. Using the metrics set forth in the 2018 "Analysis of the Economic Impact and Return on Investment of Education: The Economic Value of Community College of Vermont" by EMSI, CCV's activities from the Science

Annex facility will generate expenditures of $47,000 in payroll and benefits, and $18,400 on goods and services. Extending this analysis to spending from its St. Johnsbury students and alumni, those individuals will generate $5,024,000 in added income in the Vermont economy, equivalent to 93 jobs.

In summary, pairing the Fairbanks Museum with the Community College of Vermont with will bring significant economic development. This application has sought to outline the known workforce and economic development effects, however, the partnership will undoubtedly catalyze new efforts over the coming years that cannot be articulated in this application. Partnering the Fairbanks Museum with the Community College of Vermont, which is only possible with EDA's investment, will yield positive economic and societal results for decades.

Project Readiness

The Fairbanks Museum is prepared to break ground for the Science Annex in spring 2021. A significant architectural and engineering effort which began in late 2019 has brought the planning through the Design Development phase. Vermont Integrated Architects, working under contract to the Fairbanks Museum and in close collaboration with the Community College of Vermont, have designed a building that is both stunning and practical. Due to the previous investment of (non-EDA) resources into the project, construction is poised to begin in 2021 as soon as the weather allows in northern Vermont. This advance work allows for the rapid distribution of EDA funds into the project and the broader economy.

Conclusion

The Fairbanks Museum & Planetarium is grateful for your consideration of this application. We believe the Science Annex Workforce Development Project is a strongly deserving effort which meets a multitude of EDA's goals and priorities. We look forward to working with EDA on this important project.