San Luis Valley Potato Research and Storage Facility
Feb 2026 (Updated)

Table of contents

1. Executive Summary

In 2017, the San Luis Valley Research Center lost its potato storage facility to a wind microburst exceeding 80 mph. This phased project will eventually construct a replacement 15,000gsf fresh market potato research, breeding, certified seed and production storage building in multiple phases. The entire project is estimated at $12-15M in cost, phase 1 is $3M of this. CSU has been awarded a federal grant to be used for the initial $1M towards this project and is asking for state funding for the remaining $2M that is needed to complete a functional space in phase 1. The remaining phases will be funded via university resources as funds are made available and needs prioritized.

The program is currently leasing low quality space nearly nine miles from the site. The current request focuses on the highest need as a phase one request for an anticipated 5,000 – 8,000 sf facility with a total development cost budget of $3M.

The primary aim of the potato research program is to help the Colorado Potato industry in the areas of breeding for potatoes adapted to the San Luis Valley, long-term storage strategies, and maintaining quality for new lines of certified seed in the proposed storage facility.

The San Luis Valley Research Center is an anchor enterprise in the local community. Local, rural communities are significant beneficiaries of Colorado's potato production.

In addition, the facility itself can be used for other crops that will need to be stored for research purposes. This is an investment that can nimbly be adjusted to address any number of crops and enterprises requiring climate-controlled storage. This Colorado State University asset has become a welcoming and engaging

fixture determined to educate the local community, to host visitors from all over the world, and to serve the agricultural industry in southern Colorado.

The estimated budget of the full project is $12M-15M, Phase 1 is $3M of this. We are requesting state capital construction funding of $2M with $1M provided by University Resources.

The project has been identified as the number two priority for facility development across the CSU System.

2. Justification

2.1 History, Role, and Mission

Colorado has a long rich tradition of growing potatoes dating from the early 1880's and is one of the top production areas in the US today. The San Luis Valley is unique in that it is one of the largest, high altitude (7,600 ft.), irrigated crop production areas in the United States, surrounded by 12,000-14,000 foot mountains. Geography, climate, and water supply make it the United States' premier location for raising potatoes. In response to these drivers, the SLVRC has become a vertically integrated research site addressing national and world-wide challenges to potato production.

The first San Luis Valley Research Center was established in 1888 (the same year the main station at Fort Collins was established) on 200 acres of state land near the Rio Grande River, seven miles east of Del Norte. Beginning in 1940, the principal research activity was focused on selecting potato varieties adaptable to the region. In 1979 a potato breeding program was initiated to complement the selection activity. Research on cultural practices including disease and pest studies was also conducted. In the early 1920s, the Colorado Certified Seed Growers Association initiated a seed certification program located on the Colorado State University campus which was co-located at the SLVRC in 1964.

2.2 Program Needs and Trends/Future Opportunities

The major objectives of the Colorado Potato Breeding and Selection Program are: (1) to develop new potato cultivars with increased yield, improved quality, improved nutritional and health characteristics, resistance to diseases and pests, and tolerance to environmental stresses; (2) to collaborate with growers, shippers, processors, and research/extension personnel to assess the production, adaptability, marketability, and other characteristics of advanced selections from the Colorado program; (3) to provide a basic seed source of selections to growers for seed increase and commercial testing; (4) to evaluate promising selections for possible export (interstate and international).

2.3 Benefits of Project

As the second largest research center off-campus, the SLVRC would re-establish the program as a leader in the industry.

The Colorado State University potato program is committed to developing research-based information and extension education programs to support the Colorado potato production and marketing system and

consumers alike. The research center has a continuing commitment to the people of the San Luis Valley (SLV) and the State of Colorado to provide research information, conduct extension education and seed certification programs.

2.4 Relation to Academic or Institutional Strategic Plans

Inspired by its land-grant heritage, Colorado State University (CSU) is committed to excellence, setting the standard for public research universities in teaching, research, service and extension for the benefit of the citizens of Colorado, the United States and the world. All aspects of the land grant mission – discovery, learning and engagement – are manifested at the facility. The investment of the facility is symbolic of the renewal of CSU's commitment to its mission-based activities.

2.5 Relation to Other Programs or Agencies

Local, rural communities are significant beneficiaries of Colorado's potato production:

- The Colorado potato industry *annually contributes ~$600M to Colorado's economy* with the San Luis Valley region representing ~97% of that market share.
- More than 4,000 jobs are supported by the 120+ San Luis Valley farms making the San Luis Valley Potato industry the region's largest employer.
- This industry's viability hinges on the farmers' and associated support services' ability to adequately store more than 2.1 billion pounds of potatoes each year.
- An investment in the SLVRC is also an investment in the economic development of the San Luis Valley. In the Valley, roughly 50% of the value of goods and services is directly tied to agriculture, as is much of the non-urban tax base. Potatoes are a high input crop where much of the labor and supplies are sourced locally, so the economic multiplier of the investment is significant relative to other opportunities. It fits importantly into CSU's commitment to rural Colorado.

The San Luis Valley Research Center is an anchor enterprise in the local community:

- This facility is important in the broader context of the research center – it is an update to facilities that are sorely needed to accomplish our mission, attract talented employees, and provide basic services.
- The *Colorado Potato Administrative Committee allocates $250,000 annually* to CSU faculty from assessments on Potato sales. Their support has assisted CSU participation in national research collaboration and win federal grants exceeding $500,000.

2.6 Existing Programmatic/Operational Deficiencies

Since the destruction of the potato storage facility, staff has rented temporary space off site. They have encountered the following challenges:

- Inability to provide adequate protection to the novel potato varieties
- Inability to maintain consistency in research methods
- Inability to participate in national variety trials

- Inability to provide reliable and scalable storage management recommendations
- Inability to attract research collaboration and awards that address potato disease
- Inability to attract new potato research talent
- Inability to handle any quantity of potatoes in safe manners throughout a calendar year
- Inability to effectively prepare for seasonal milestones without adequate workspace
- Inability to adequately support research requests due to inefficient staff labor demands
- Inability to realize maximum net profits from operations due to low-quality local space available to rent

2.7 Current Enrollment/Caseload

The SLVRC employs 29 fulltime personnel and educates 30+ CSU graduate-candidates, Adams State University undergraduates, and local high school students.

2.8 Physical Condition/Functionality of Space

As noted above, SLVRC has encountered several challenges since the destruction of the potato storage facility. Other existing facilities that would be impacted by this development include two labs in the processing building and three cold storage rooms with humidity control, shared by Potato Physiology and Potato Pathology/Seed Certification.

The limitations of the current laboratory and cold storage space include:

- Cold rooms have a low ceiling and limited space allows only 1 or 2 storage cribs.
- Seed storage sanitation restrictions prohibit moving material from the processing building into seed storage, creating logistical issues.
- There is no way to scale up pressure bruise experiments without a bulk storage facility.
- The facility is not ideal to study the sprout inhibitors for cross contamination limitations.

2.9 Total New Space Requirements/Equipment

The Full project scope will include the following spaces. Of these spaces the items italicized are included in the proposed initial phase:

1. *HD pallet potato storage w/ passive temp,-humidity and ventilation control (initial phase)*
2. *Horizontal macro potato storage w/passive temp, humidity and ventilation control (initial phase)*
3. Open workspace (future phase)
4. Research bulk storage w/temp, humidity and ventilation control (future phase)
5. Additional bulk storage w/misters (future phase)
6. Workspace adjacent to that area (future phase)
7. Loading dock (future phase)
8. Shipment room (future phase)
9. Restroom facilities (future phase)

Cost estimates for the initial phase indicate a projected building size of between 5,000 – 8,000 gross square feet to be generally programmed per the table below

Initial Phase		
Room type	**Number**	**Total GSF**
HD pallet storage	1	800
Macro bin storage	1	4,000
Open workspace	1	1,200

Future Phases		
Room type	**Number**	**Total GSF**
HD pallet storage	1	800
Macro bin storage	1	2,140
Open workspace	1	4,100
Research bulk storage	1	2,100
Bulk storage	1	4,200
Shipment	1	900
Building support		1,460

Example of bulk storage pile of potatoes with ventilation piping beneath.

Example of crib storage of potatoes

Equipment List

Electric Forklift	
Tomra FPS	
Macro Bin Filler	
Skid Steer	
Telescoping Conveyor	
1-Row Harvester	
Utility Piler	
Small Conveyor	
Scissor Lift	
2 Fixed Conveyors	(for Bulk Storage only)
LP Fork Lift	(for Bulk Storage only)
Spudnik Air Sep	(for Bulk Storage only)
Telescoping / Arcing Piler	(for Bulk Storage only)
Dirt Eliminator	(for Bulk Storage only)
Even-Flow Tub	(for Bulk Storage only)

2.10 Alternate Analysis

The available rental options are inadequate for research and threaten the SLVRC's highly successful potato seed crop program. Daily travel to rented storage for quality checks diverts valuable labor resources and adds risk to employee operations.

3. Design criteria

3.1 Structural and Architectural Narrative

The project is anticipated to be a pre-engineered metal building braced frame or rigid bent steel framing on a 3' reinforced stem wall foundation distributing vertical and lateral loads to spread footings and/or mat foundation systems. The floor system is anticipated to be a reinforced concrete slab on washed gravel on compacted structural fill as recommended and specified in the geotechnical report. The pre-engineered metal building and stem wall system will require durable insulation to accommodate the potato storage and research. The architectural character of the building will be in keeping with surrounding agricultural buildings and detailed for low-maintenance and ease of operations with focused considerations around roof drainage and conveyance away from the building structure. The design team should meet early in the design process with the CSU Building Department to determine strategy and approach to thermal envelope design around the International Energy Conservation Codes (IECC). Where the initial phase building is prescribed to be largely unconditioned, code modifications may need to be documented and approved early in the design process.

- *Sample Storage areas* to have a smooth finish, sealed and centrally drained concrete floor. Capacity of the reinforced flooring ~4,000psi.
- An Over-the-top "catwalk" style access to the stored potatoes can be considered and prioritized during the initial design phase. This access is only relevant to the two bays: *Large Crib Room* and *Bulk Potato Storage.* Macro Bins will be stacked at no more than 7 units high, and bulk piles will not exceed 13' feet in height. Thus "catwalk" solutions should be placed, modified and installed appropriately.

3.2 Mechanical and Electrical Narrative

Mechanical Narrative

For the initial phase, passive cooling via natural and fan forced ventilation is anticipated utilizing the cool evening and night air which is traditionally drawn across the potato storage bins to accommodate the short term and long term potato and seed potato storage.

For future phase climate control, ventilation serving the larger storage bays should be outfitted with evaporative cooling pads and supplemental spinning disk humidifiers. The minimum target temperature for the bays is no less than 36°F. A heating system will only be required in future phases within the workstations and bathrooms.

In addition, cooling can be integrated into ventilation control systems for the potato storage bays in following prioritized order with future phase work:

1. *Macro-Bin Storage*
2. *Faculty Sample Storage Area(s)*
3. *Vertically Stacked Area*
4. *Bulk Potato Storage*

The ventilation controls (such as agri-stor controls) must have the following features:

- The ability to be integrated into the existing WIFI infrastructure,
- Remote access that enables real-time viewing of panel settings,
- Remote access that enables the user to manipulate any function within the storage and ventilation control panel,
- Remote access must have permission settings that limits each user's accessibility based on their role at the San Luis Valley Research Center,
- Ventilation controls must accommodate refrigeration, automated heating, humidicell evaporative cooling function, extra humidity control, bay lights, sensing (CO_2, Ethylene correlation, c.f.m., humidity, temperature, etc.) at a minimum,
- Data from the ventilation system is appropriately warehoused and timestamped for recall purposes.

Plumbing (In future phases) - Service stations at maximum 20 to 25' spacings (or where it is intuitive) that supply:

- Static compressed air = 110psi air via 3/8" female fittings that delivers no less than 8.5cfm,
- Water taps with vacuum breakers that deliver a minimum 10gpm flow rate,

Electrical Narrative

Data connectivity and wireless fidelity shall be readily available throughout the entire Research and Production Storage Facility. Certain areas will understandably be inaccessible; however, the workspaces and storage spaces shall have full broadband internet connection through WIFI distribution. However, to mitigate breaks in connection a wireless mesh network shall be created to help cover and pass data. The SLVRC presently uses the provider Ciello for data connectivity, and the facility in question shall be integrated into that existing service. The minimum connection established in the prioritized workspace shall be no less than the FCC minimums; 25 MBPS for download speed and 3 MBPS for upload.

Full coverage LED lighting of workspace with a temperature range between 4,500-5,500K.

Service stations at maximum 20 to 25' spacings for 1 &3 Φ, 110 & 220-volt, 20-50A electricity receptacles.

The workspaces and other areas of the Research and Production Storage Facility need to adhere to OSHA Standard 1910 Laws and Regulations.

3.3 Telecom Narrative

Minimal telecom is needed on site; the future temperature controls will need remote monitoring capabilities via telecom.

3.4 Utilities Narrative

Minimal Utilities will be required for the initial phase, future phase planning for water service, sewer, and storm systems should be considered but no plumbing is needed within the initial phase. Existing site power will be extended to the new facility.

3.5 Site Improvements Narrative

Minimal site-work is needed as the site is the location of the previous storage barn. Grading work and drainage are to be minimal only as required for a smooth and level slab. New walkways connecting adjacent buildings will be included in the scope of the project.

3.6 LEED Goal

Senate Bill 07-051 directs that state buildings undergoing substantial renovation or new construction conform to the High-Performance Certification Program. The Office of the State Architect has stated that USGBC LEED-NC Gold is the targeted standard of this program, or at a minimum, the highest obtainable LEED standard. The most current LEED publication at the time of design will be used. The inclusion of high-performance standards is an integral part of the project, beginning at the program plan stage.

The initial phase facility is largely unoccupied and unconditioned and does not lend itself to LEED certification when compared to a fully conditioned occupied facility. Discissions and associated strategies around the High-Performance Certification Program, the IECC and integration of sustainable building systems where possible with this building type should be codified early in the design process with the CSU delegate for the Office of the State Architect (OSA).

3.7 CSU Standards

The CSU Facilities Planning, Design and Construction Standards are available at:

http://www.fm.colostate.edu/constr_standards

The CSU Standards are to be used as guidelines for design. They are divided into 3 parts for use by Architects and Engineers: the first part is administrative; the second part discusses requirements for design and deliverables at each stage of the design process; the third part consists of the technical standards arranged by CSI division. The Standards are a work in progress, and as such, any question about the applicability of a standard should be discussed with the project manager. The Standards should not be referenced or copied in Contract Documents – the design is expected to embody and conform to the

Standards. Contractors should not be directed to review the Standards as a contract requirement, but instead the design and specifications should embody the CSU standards.

Colorado State University requires all capital construction projects to provide inclusive facilities. These facilities are consistent with CSU Strategic Plan, Climate Action Plan (CAP) and the Principles of Community that “create and nurture inclusive environments,” and “welcome, value and affirm members of our community, including their various identities, skills, ideas, talents, and contributions.”

Standards for each room type are located at: https://www.fm.colostate.edu/sites/default/files/standards/II-Chapter- 34.Requirements_By_Space_Type.pdf.

3.8 Code Analysis Narrative

The following approved building codes and standards have been adopted by State Buildings Program (SBP) and other state agencies as identifies below as the minimum requirements to be applied to all state-owned buildings and physical facilities including capital construction and controlled maintenance construction projects.

The 2024 edition of the International Building Code (IBC)

(As adopted by the Colorado State Buildings Program as follows: Chapter 1 as amended, Chapters 2-35 and Appendices C and I).

The 2024 edition of the International Mechanical Code (IMC)
(As adopted by the Colorado State Buildings Program as follows: Chapters 2-15 and Appendix A)

The 2024 edition of the International Energy Conservation Code (IECC)
(As adopted by the Colorado State Buildings Program and Colorado Energy Office)

Colorado Model Electric Ready and Solar Ready Code

(Published by the Colorado Energy Office) Effective July 1, 2023. Where conflicts exist between Section 1 of this code and the attached Amendments to Chapter 1 of the IBC, the Amendments take precedence.

The 2023 edition of the National Electrical Code (NEC) (NFPA 70®)

(As adopted by the Colorado State Electrical Board Effective August 1, 2024) For amendments refer to the Secretary of State Code of Colorado Regulations 3 CCR 710-1

The 2021 edition of the International Plumbing Code (IPC), first printing (March 2020)
(As adopted by the Colorado State Plumbing Board of Plumbers Effective April 30, 2025) For amendments refer to the Secretary of State Code of Colorado Regulations 3 CCR 720-1

The 2021 edition of the International Fuel Gas Code (IFGC) first printing (August 2020)
(As adopted by the Colorado Examining Board of Plumbers Effective May 15, 2023)

The National Fire Protection Association Standards (NFPA)
(As adopted by the Department of Public Safety/Division of Fire Prevention and Control)

The 2024 edition of the International Fire Code (IFC)

(As adopted by the Department of Public Safety/Division of Fire Prevention and Control (DFPC). Projects requiring DFPC review should be designed with the most restrictive requirements) Exh-A-BldgCodes Rev. 7/2025 1CODE COMPLIANCE POLICY EXHIBIT A

The 2015 edition of the ASME Boiler and Pressure Vessel Code
(As adopted by the Department of Labor and Employment/Boiler Inspection Section) Effective July 1, 2017.

The 2017 edition of the National Boiler Inspection Code (NBIC)
(As adopted by the Department of Labor and Employment/Boiler Inspection Section) Effective July 1, 2017.

The 2015 edition of the Controls and Safety Devices for Automatically Fired Boilers CSD-1
(As adopted by the Department of Labor and Employment/Boiler Inspection Section) Effective July 1, 2017.

The 2015 edition of the Boiler and Combustion Systems Hazards Code, NFPA 85
(As adopted by the Department of Labor and Employment/Boiler Inspection Section) Effective July 1, 2017.

The 2019 edition of ASME A17.1 Safety Code for Elevators and Escalators
(As adopted by the Department of Labor and Employment/Conveyance Section) Effective January 1, 2021.

The 2005 edition of ASME A17.3 Safety Code for Existing Elevators and Escalators
(As adopted by the Department of Labor and Employment/Conveyance Section Effective January 1, 2021.

The 2017 edition of ASME A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts
(As adopted by the Department of Labor and Employment/Conveyance)

The Current edition of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities
(As referenced in the adopted edition of the International Building Code)

The Secretary of the Interior's Standards for Rehabilitation
(As required by the Colorado State Historic Preservation Office for designated historic properties)

Note: Additional codes, standards, and appendices may be adopted by time of design in addition to or replacement of the minimum codes and standards listed.

4. Project Schedule, Cost Estimates, Financing

4.1 Project Schedule and Phasing

The project will be completed in multiple phases over several years as funding allows. The primary focus based on available resources is the initial phase of the project.

The initial phase is estimated to take 12-18 months to complete.

4.2 Financing

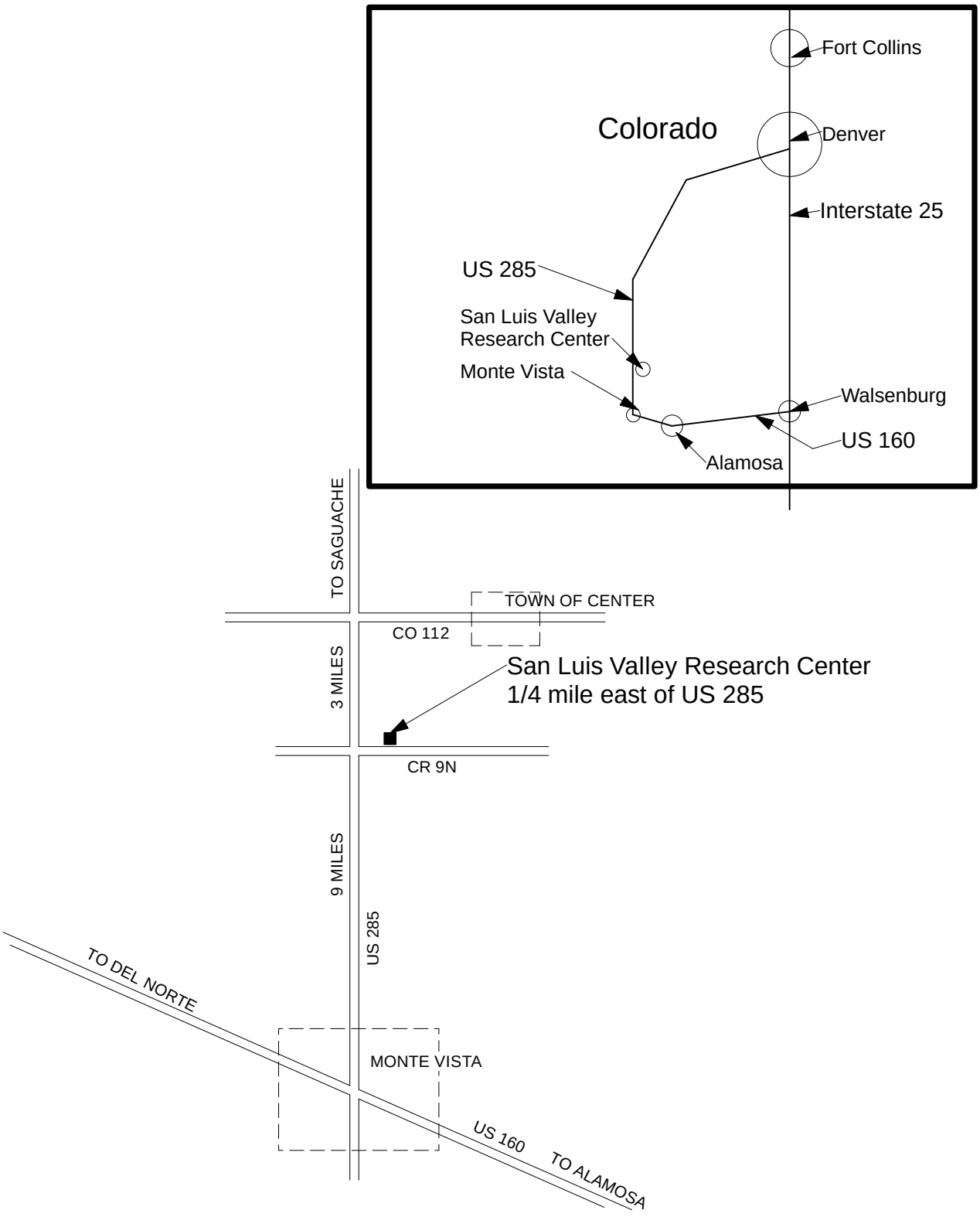
The entire project is estimated at $12-15M in cost, phase 1 is $3M of this. CSU has been awarded a federal grant to be used for the initial $1M towards this project and is asking for state funding for the remaining $2M that is needed to complete a functional space in phase 1. The remaining phases will be funded via university resources as funds are made available and needs prioritized.

4.3 Cost Estimate

Cost estimates were developed by a third-party cost estimator. CSU standards specify that the A/E document 20% of the construction budget in bid alternates, to cover potential volatility in the construction market as the project progresses.

Appendices

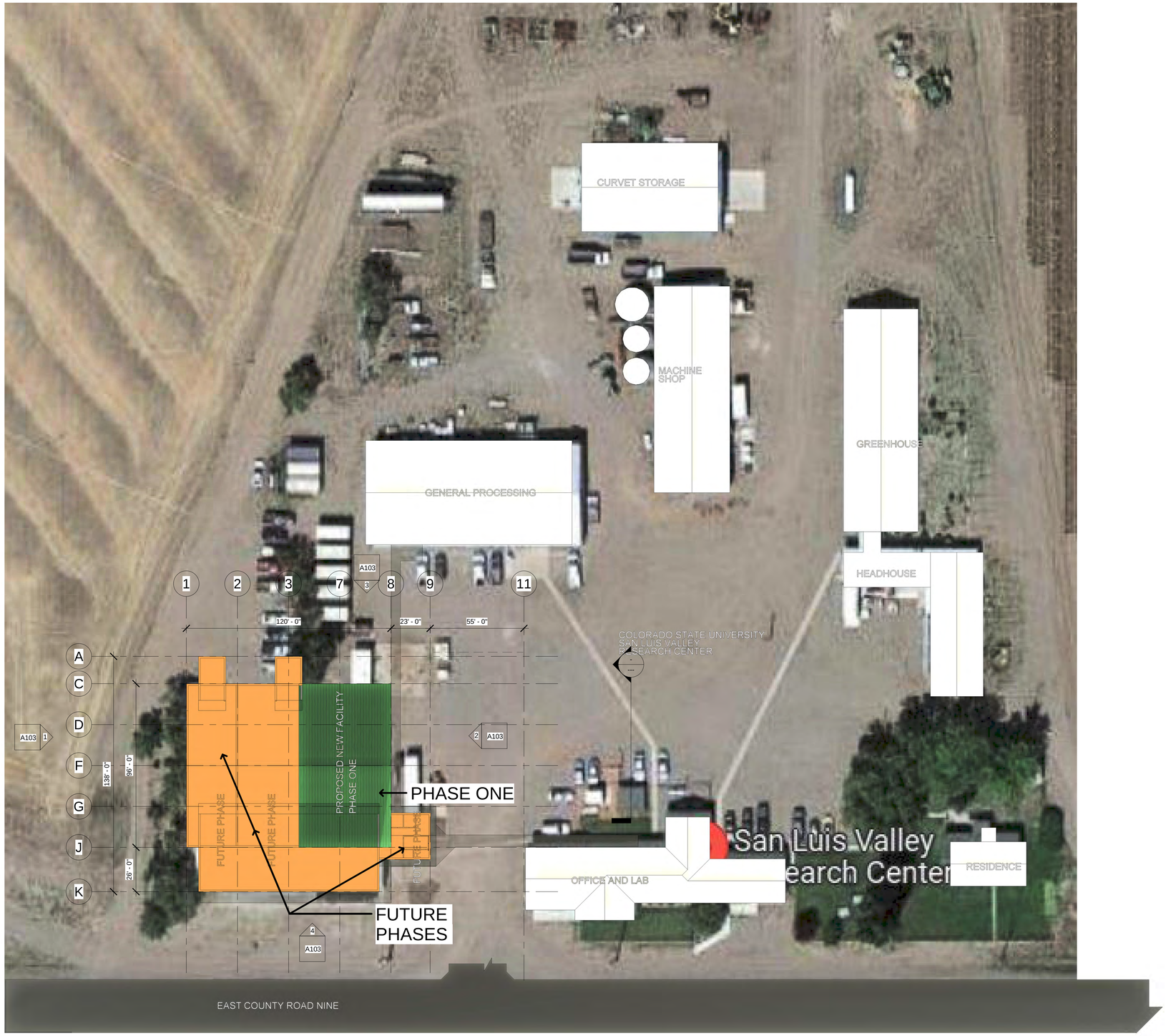
a. Vicinity map
b. Phasing Plan
c. Total Development Cost Budget



North

VICINITY MAP SAN LUIS VALLEY RESEARCH CENTER

NO SCALE

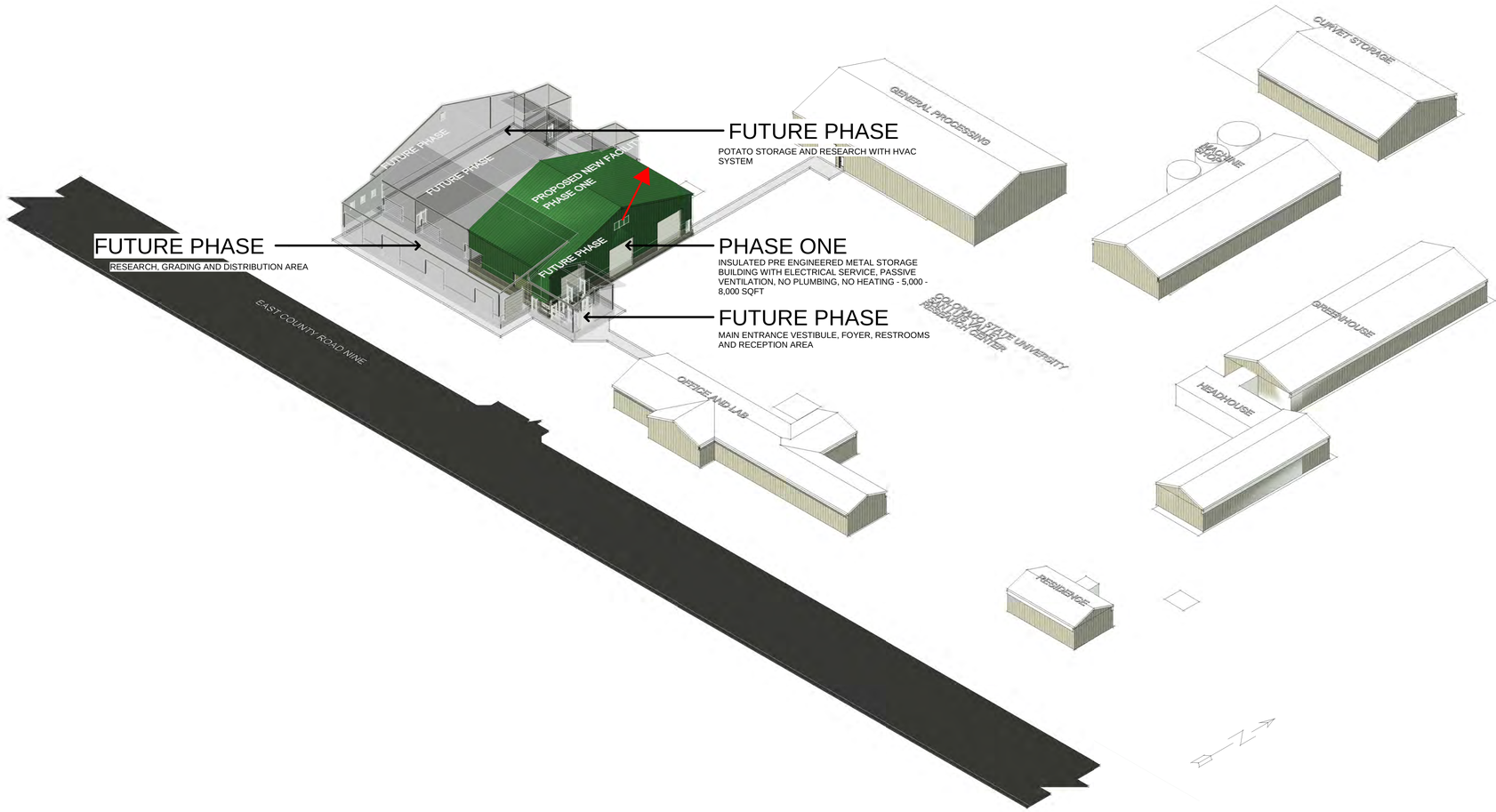


1 Site
1" = 30'-0"

Colorado State University
San Luis Valley Research Center

NEW POTATO STORAGE AND RESEARCH FACILITY - SLVRC

Colorado State University
FACILITIES MANAGEMENT
AT COLORADO STATE UNIVERSITY



Colorado State University
San Luis Valley Research Center

NEW POTATO STORAGE AND RESEARCH FACILITY - SLVRC

Colorado State University
FACILITIES MANAGEMENT
AT COLORADO STATE UNIVERSITY

San Luis Valley Potato Research and Storage

updated 4/22/2022

Project Budget		low	medium	high	Remarks
Professional Services					
	Site Survey, Geotechnical	$ 4,000	$ 4,000	$ 4,000	
	Consultants - Architects, Engineers, Vibration, Acoustics	$ 1,157,033	$ 1,217,930	$ 1,278,826	15% of subtotal construction costs
	Advertisements	$ 750	$ 750	$ 750	
	CSU Facilities Project Management	$ 236,000	$ 236,000	$ 236,000	for $11.8M project
	Independent Code Review, code insp, material tests, commissioning	$ 10,000	$ 10,000	$ 10,000	
	Fire Authority Plan Review	$ 2,500	$ 2,500	$ 2,500	allowance
	Total Professional Services	**$ 1,410,283**	**$ 1,471,180**	**$ 1,532,076**	$ -
Land Acquisition					
	purchase and closing costs		$ -		
	Total Land Acquisition		**$ -**		20% range at conceptual design
Construction					
	New Space - 27,255 gsf@ $295.89/gsf	$ 7,258,079.70	$ 8,064,533.00	$ 8,870,986	RLB conceptual cost estimate
	Site Work /utilities	$ 45,000	$ 50,000	$ 55,000	
	Site Improvements/Landscaping	$ 4,500	$ 5,000	$ 5,500	
	Parking			$ -	
	Subtotal Construction Costs	**$ 7,307,580**	**$ 8,119,533**	**$ 8,931,486**	
Equipment & Furnishings					
	Fixed Equipment				
	Moveable Equipment-	$ 1,595,000	$ 1,595,000	$ 1,595,000	per program plan
	CSU Communications	$ 1,500	$ 1,500	$ 1,500	allowance
	CSU Notifyer system	$ 1,500	$ 1,500	$ 1,500	CSU alarms
	Total Equipment and Furnishings Costs	**$ 1,598,000**	**$ 1,598,000**	**$ 1,598,000**	$ -
Miscellaneous					
	Relocation Costs-				
	Artwork /signage				
	Total Miscellaneous Costs		**$ -**		$ -
Subtotal Project Cost		**$ 10,315,863**	**$ 11,188,713**	**$ 12,061,563**	$ -
Project Contingency					
	Project Contingency 5% for New	$ 515,793	$ 559,436	$ 603,078	
	Project Contingency 10% for Renovation				
	Total Contingency	$ 515,793	$ 559,436	$ 603,078	
Total Project Development cost to Qtr 1 2023 construction		**$ 10,831,656**	**$ 11,748,149**	**$ 12,664,641**	$ -
Project escalation @7%	to 3/22/2024	**$ 11,589,872**	**$ 12,570,519**	**$ 13,551,166**	
Project escalation @7%	to 3/22/2025	**$ 12,401,163**	**$ 13,450,455**	**$ 14,499,747**	
Project escalation @7%	to 3/22/2026	**$ 13,269,245**	**$ 14,391,987**	**$ 15,514,730**	

This opinion of probable cost is made on the basis of experience, qualifications and best judgement of a professional cost consultant familiar with the construction industry, combined with the professional experience of Facilities Management. FM cannot guarantee that proposals, bids or actual construction costs will not vary from this cost estimate due to market conditions at the time of the bid.

27255	**Total Development Cost/sf**	**$ 397**	**$ 431**	**$ 465**	

COLORADO STATE UNIVERSITY

Facilities Planning Design and Construction

PROGRAM DESIGN ESTIMATE

CSU POTATO STORAGE BARN

CENTER, CO

Prepared For
Colorado State University

Submitted On
22 April 2022

Prepared By
Rider Levett Bucknall
RLB.com

Our Ref
1

Project Number
DEN10177

RLB Rider Levett Bucknall

CSU POTATO STORAGE BARN

PROGRAM DESIGN ESTIMATE

PROJECT DETAILS

Basis of Estimate

This estimate has been prepared at the request of Colorado State University to provide a Program Design Estimate for the CSU Potato Storage Barn project located in Center, CO.

This estimate is based upon measured quantities and built-up rates based on the '27K SLVRC Potato Compile' program drawings prepared by Colorado State University.

Where information was insufficient, assumptions and allowances were made based wherever possible.

Unit pricing is based on 2nd Quarter 2022. Design and Estimating Contingency has been included at 10%. Escalation has been included at 4.5% for an assumed 1st Quarter 2023 construction start.

Please note that the estimate includes for those additional costs arising from the typical on-site measures implemented to curb the transmission of the COVID-19 virus (such as daily temperature checks, health questionnaires, mask wearing, provision of hand sanitizer, procedures to maintain social distancing, etc.). However, the estimate does not include any allowance for future cost impacts resulting from the evolution of the pandemic, such as those that may arise from disruptions to the supply chain or that may increase the cost of labor, materials, equipment, subcontractors, general conditions, etc.

Items Specifically Excluded

. Hazardous materials abatement
. Furniture, Fittings and Equipment (FF&E)
. Murals and works of art
. Mock-ups
. Work outside the site boundaries unless noted otherwise
. Costs associated with phasing the construction work
. Out of hours working
. Special testing & inspections
. Utility tap fees and charges
. Permits & plan review fees
. Owner's contingency
. Land and legal costs
. Architectural, Engineering and other professional fees
. Geotechnical, traffic and all other studies
. Items marked as "Excl." in the estimate
. Escalation beyond a 1st quarter 2023 construction start

CSU POTATO STORAGE BARN

PROGRAM DESIGN ESTIMATE

Rider Levett Bucknall

ELEMENTS SUMMARY

Gross Floor Area: 27,255 SF
Rates Current At April 2022

Ref	Description	GFA USD/SF	Total Cost USD
A1010	Standard Foundations	8.03	218,916
A1030	Slab on Grade	11.80	321,553
B1020	Roof Construction	90.00	2,452,950
B2010	Exterior Walls	0.29	7,800
B2020	Exterior Windows		Incl.
B2030	Exterior Doors	4.22	115,000
B3010	Roof Coverings	1.00	27,255
C1010	Partitions	9.45	257,474
C1020	Interior Doors	3.45	94,000
C1030	Fittings	0.25	6,814
C3010	Wall Finishes	0.09	2,380
C3020	Floor Finishes	2.99	81,476
C3030	Ceiling Finishes	0.05	1,336
D2010	Plumbing Fixtures	0.71	19,428
D2020	Domestic Water Distribution	2.50	68,138
D2030	Sanitary Waste	3.50	95,393
D2090	Other Plumbing Systems	2.87	78,257
D3040	Distribution Systems	29.40	801,316
D3060	Controls & Instrumentations	4.00	109,020
D3070	Systems Testing & Balancing	0.50	13,628
D3090	Other HVAC Systems & Equipment	3.39	92,396
D4010	Sprinklers		Excl.
D5010	Electrical Service & Distribution	6.00	163,530
D5020	Lighting and Branch Wiring	14.74	401,866
D5030	Communications & Security	7.00	190,785
D5090	Other Electrical Systems	3.01	82,118
E2010	Fixed Furnishings	0.50	13,628
G1020	Site Demolition and Relocations	5.32	145,000
G1030	Site Earthwork	0.50	13,628
G2040	Site Development	0.55	15,000
G4010	Electrical Distribution	1.83	50,000

CSU POTATO STORAGE BARN

PROGRAM DESIGN ESTIMATE

ELEMENTS SUMMARY

Gross Floor Area: 27,255 SF
Rates Current At April 2022

Ref	Description	GFA USD/SF	Total Cost USD
G4020	**Site Lighting**	**0.55**	**15,000**
ESTIMATED NET COST		**218.50**	**5,955,085**
MARGINS & ADJUSTMENTS			
General Conditions and General Requirements - 10%			595,509
Insurances and Bonds - 2%			131,012
Design and Estimating Contingency - 10%			668,161
Overhead and Profit - 5%			367,489
Escalation to Start of Construction - assuming Q1 2023 - 4.5%			347,277
ESTIMATED TOTAL COST		**295.89**	**8,064,533**

ELEMENTS ITEM

Gross Floor Area: 27,255 SF
Rates Current At April 2022

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
A1010	**Standard Foundations**				
1	Budget allowance for additional foundations including excavation and backfill	SF	27,255	2.50	68,138
13	Stem wall to Potato Storage Barn - 6'-8" x 1'	CY	211	650.00	137,150
2	Waterproofing to standard foundations	SF	27,255	0.50	13,628
	A1010 - Standard Foundations			**8.03/SF**	**218,916**
A1030	**Slab on Grade**				
3	Slab on grade	SF	27,255	10.00	272,550
4	Basecourse to slab on grade	SY	3,029	7.00	21,203
34	Concrete paving to loading dock	SF	556	50.00	27,800
	A1030 - Slab on Grade			**11.80/SF**	**321,553**
B1020	**Roof Construction**				
67	Pre-engineered metal building with sloped roof	SF	27,255	90.00	2,452,950
27	Structural steel framing to roof (included in pre-engineered metal building)	SF	27,255		Incl.
6	Metal deck to roof (included in pre-engineered metal building)	SF	27,255		Incl.
10	Metal catwalk at Large Crib Room and Bulk Potato Storage including supporting steel (included in pre-engineered metal building)	LF	210		Incl.
	B1020 - Roof Construction			**90.00/SF**	**2,452,950**
B2010	**Exterior Walls**				
7	Insulated metal wall panel system to potato storage barn (included in pre-engineered metal building)	SF	16,293		Incl.
12	Louvers	SF	104	75.00	7,800
	B2010 - Exterior Walls			**0.29/SF**	**7,800**
B2020	**Exterior Windows**				
22	Exterior glazing (included in pre-engineered metal building)	SF	141		Incl.
	B2020 - Exterior Windows				**Incl.**
B2030	**Exterior Doors**				
14	Exterior door - single	EA	1	2,500.00	2,500
15	Exterior door - double	EA	1	4,500.00	4,500
16	Overhead door - 12' x 12'	EA	9	12,000.00	108,000
	B2030 - Exterior Doors			**4.22/SF**	**115,000**
B3010	**Roof Coverings**				
17	Membrane roof system (included in pre-engineered metal building)	SF	27,255		Incl.

ELEMENTS ITEM

Gross Floor Area: 27,255 SF
Rates Current At April 2022

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
18	Allowance for snow guards, gutters, and downspouts	SF	27,255	1.00	27,255
	B3010 - Roof Coverings			**1.00/SF**	**27,255**
C1010	**Partitions**				
20	Double-sided gypsum board partition	SF	851	12.00	10,212
21	Interior metal wall panel system	SF	8,061	30.00	241,830
26	Furring to inner face of exterior wall	SF	679	8.00	5,432
	C1010 - Partitions			**9.45/SF**	**257,474**
C1020	**Interior Doors**				
23	Single interior door	EA	3	2,000.00	6,000
24	Pair of interior doors	EA	4	4,000.00	16,000
29	Overhead door - 12' x 12'	EA	6	12,000.00	72,000
	C1020 - Interior Doors			**3.45/SF**	**94,000**
C1030	**Fittings**				
25	Allowance for specialties	SF	27,255	0.25	6,814
	C1030 - Fittings			**0.25/SF**	**6,814**
C3010	**Wall Finishes**				
30	Paint to gypsum board	SF	2,380	1.00	2,380
	C3010 - Wall Finishes			**0.09/SF**	**2,380**
C3020	**Floor Finishes**				
31	Sealed concrete to sample storage areas	SF	22,099	2.00	44,198
62	Tile flooring to restrooms	SF	163	16.00	2,608
63	Resilient flooring	SF	3,467	10.00	34,670
	C3020 - Floor Finishes			**2.99/SF**	**81,476**
C3030	**Ceiling Finishes**				
32	Gypsum board ceiling	SF	167	8.00	1,336
68	Paint to exposed structure	SF	27,089		Excl.
	C3030 - Ceiling Finishes			**0.05/SF**	**1,336**
D2010	**Plumbing Fixtures**				
35	Water closet	EA	2	1,600.00	3,200
36	Lavatory	EA	2	1,300.00	2,600
69	Plumbing fixture scope completion including storage water taps	SF	27,255	0.50	13,628
	D2010 - Plumbing Fixtures			**0.71/SF**	**19,428**
D2020	**Domestic Water Distribution**				
38	Domestic water distribution	SF	27,255	2.50	68,138
	D2020 - Domestic Water Distribution			**2.50/SF**	**68,138**

CSU POTATO STORAGE BARN

PROGRAM DESIGN ESTIMATE

Rider Levett Bucknall

ELEMENTS ITEM

Gross Floor Area: 27,255 SF
Rates Current At April 2022

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
D2030	**Sanitary Waste**				
39	Sanitary waste and vent	SF	27,255	3.50	95,393
	D2030 - Sanitary Waste			**3.50/SF**	**95,393**
D2090	**Other Plumbing Systems**				
40	Compressed air distribution	SF	27,255	2.00	54,510
80	Subcontractor GCs/GRs	Sum			23,747
	D2090 - Other Plumbing Systems			**2.87/SF**	**78,257**
D3040	**Distribution Systems**				
50	HVAC Distribution - ventilation, humidification, ductwork, GRDs, etc. - non-storage areas	SF	3,681	30.00	110,430
51	HVAC Distribution - ventilation, humidification, ductwork, GRDs, etc. - Storage Type I	SF	4,373	32.00	139,936
52	HVAC Distribution - ventilation, refrigeration, ductwork, GRDs, etc. - Storage Type II	SF	3,301	50.00	165,050
53	HVAC Distribution - ventilation, humidification ductwork, GRDs, etc. - Storage Type III	SF	9,915	28.00	277,620
74	HVAC Distribution - ductwork, GRDs, etc. - Work Area	SF	5,414	20.00	108,280
	D3040 - Distribution Systems			**29.40/SF**	**801,316**
D3060	**Controls & Instrumentations**				
48	Controls to distribution system	SF	27,255	4.00	109,020
	D3060 - Controls & Instrumentations			**4.00/SF**	**109,020**
D3070	**Systems Testing & Balancing**				
79	Testing, balancing, and commissioning	SF	27,255	0.50	13,628
	D3070 - Systems Testing & Balancing			**0.50/SF**	**13,628**
D3090	**Other HVAC Systems & Equipment**				
81	Subcontractor GCs/GRs	Sum			92,396
	D3090 - Other HVAC Systems & Equipment			**3.39/SF**	**92,396**
D4010	**Sprinklers**				
49	Fire suppression system	SF	27,255		Excl.
	D4010 - Sprinklers				**Excl.**
D5010	**Electrical Service & Distribution**				
56	Electrical service and distribution	SF	27,255	6.00	163,530
	D5010 - Electrical Service & Distribution			**6.00/SF**	**163,530**
D5020	**Lighting and Branch Wiring**				
57	Light fixtures, controls, and wiring - Storage Type I	SF	4,373	10.00	43,730
70	Light fixtures, controls, and wiring - Storage Type II	SF	3,301	12.00	39,612
71	Light fixtures, controls, and wiring - Storage Type III	SF	9,915	10.00	99,150

ELEMENTS ITEM

Gross Floor Area: 27,255 SF
Rates Current At April 2022

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
75	Light fixtures, controls, and wiring - Work Area	SF	5,414	14.00	75,796
77	Light fixtures, controls, and wiring - remaining areas	SF	3,681	12.00	44,172
58	Branch power devices and wiring - Storage Type I	SF	4,373	3.00	13,119
72	Branch power devices and wiring - Storage Type II	SF	3,301	4.50	14,855
73	Branch power devices and wiring - Storage Type III	SF	9,915	3.00	29,745
76	Branch power devices and wiring - Work Area	SF	5,414	6.00	32,484
78	Branch power devices and wiring - remaining areas	SF	3,681	2.50	9,203
	D5020 - Lighting and Branch Wiring			**14.74/SF**	**401,866**
D5030	**Communications & Security**				
59	Low voltage systems (communications, Wifi Infrastructure, etc.)	SF	27,255	3.00	81,765
60	Fire alarm systems	SF	27,255	2.00	54,510
61	Security systems	SF	27,255	2.00	54,510
	D5030 - Communications & Security			**7.00/SF**	**190,785**
D5090	**Other Electrical Systems**				
82	Subcontractor GCs/GRs	Sum			82,118
	D5090 - Other Electrical Systems			**3.01/SF**	**82,118**
E2010	**Fixed Furnishings**				
28	Allowance for fixed furnishings	SF	27,255	0.50	13,628
	E2010 - Fixed Furnishings			**0.50/SF**	**13,628**
G1020	**Site Demolition and Relocations**				
64	Demolish existing potato storage	LS	1	125,000.00	125,000
65	Demolish existing pesticide storage	LS	1	20,000.00	20,000
	G1020 - Site Demolition and Relocations			**5.32/SF**	**145,000**
G1030	**Site Earthwork**				
66	Fine grade site	SF	27,255	0.50	13,628
	G1030 - Site Earthwork			**0.50/SF**	**13,628**
G2040	**Site Development**				
33	Budget allowance for site paving	LS	1	15,000.00	15,000
	G2040 - Site Development			**0.55/SF**	**15,000**
G4010	**Electrical Distribution**				
83	Site electrical distribution	LS	1	50,000.00	50,000
	G4010 - Electrical Distribution			**1.83/SF**	**50,000**

CSU POTATO STORAGE BARN

PROGRAM DESIGN ESTIMATE

Rider Levett Bucknall

ELEMENTS ITEM

Gross Floor Area: 27,255 SF
Rates Current At April 2022

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
G4020	**Site Lighting**				
84	Allowance for site lighting	LS	1	15,000.00	15,000
	G4020 - Site Lighting			**0.55/SF**	**15,000**
ESTIMATED NET COST				**218.50/SF**	**5,955,085**