COVER PAGE
Colorado School of Mines

FY 2019-20 CAPITAL CONSTRUCTION REQUESTS (LISTED IN OSPB PRIORITY ORDER)
NOT RECOMMENDED FOR FUNDING BY OSPB:

- Subsurface Frontiers Building
- Arthur Lakes Library Renovation

TOTAL: FY 2019-20 CAPITAL CONSTRUCTION STATE-FUNDED REQUEST AMOUNT = **11,856,741**

FY 2019-20 CONTROLLED MAINTENANCE REQUESTS (4)
RECOMMENDED FOR FUNDING BY OSPB:
LEVEL I:

- Upgrade Fire Alarm Mass Notification System
- Campus Fall Hazard Remediation

LEVEL II:

- Replace Primary Power Transformers, Five Buildings
- Replace Temperature Controls, Lakes Library

HISTORY OF STATE FUNDING

- **$36.1 million** has been appropriated on behalf of capital projects at the university since FY 2014-15. This represents **3.6 percent** of the total amount appropriated on behalf of all capital construction and controlled maintenance projects during this period.

- **$8.6 million** was appropriated in FY 2018-19, including $0.8 million authorized through Senate Bill 17-267 for controlled maintenance.

INVENTORY OF GENERAL FUND SUPPORTED FACILITIES

- The General Fund supported inventory of university facilities totals **2,146,900 GSF**. This total represents **4.4 percent** of the entire General Fund supported inventory of state buildings.

RECENT CDC VISITS

- Campus tour (May 2018)

Fiscal Year 2019-20 Capital Construction Request

Colorado School of Mines

Subsurface Frontiers Building

2020-030

PROGRAM PLAN STATUS

Approved Program Plan? Yes **Date Approved:** October 22, 2018

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 2	
CCHE	10 of 40	
OSPB	33 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$0	$1,856,741	$18,143,259	$0	$20,000,000
CF	$0	$0	$91,736,900	$0	$91,736,900
Total	$0	**$1,856,741**	$109,880,159	$0	$111,736,900

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$1,856,741	$0	$0	$1,856,741
Construction	$0	$0	$101,031,829	$0	$101,031,829
Equipment	$0	$0	$3,274,180	$0	$3,274,180
Miscellaneous	$0	$0	$171,754	$0	$171,754
Contingency	$0	$0	$5,402,396	$0	$5,402,396
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$1,856,741**	$109,880,159	$0	$111,736,900

PROJECT STATUS

This is a new, never-before-requested project. The cash funds associated with the FY 2019-20 request were approved in November 2018 as part of a Two-Year Projection of Cash Need.

PROJECT DESCRIPTION / SCOPE OF WORK

Colorado School of Mines (Mines) is requesting state funds and cash fund spending authority to construct an interdisciplinary research facility called the Subsurface Frontiers Building. In partnership with the United States Geological Survey (USGS), the building will house both organizations' mineral exploration and subsurface mineral economics programs, in order to advance worldwide knowledge of the Earth's energy and mineral resources.

The project will construct a new 155,189-GSF, five story building to house research laboratories, imaging labs, classrooms, conference rooms, offices and associated spaces. About one-third of the space will be occupied by the university and two-thirds will be occupied by USGS. Building organization for the project will focus on colocation of disciplines by common research themes. Each of the five floors will be integrated, with colocated administrative and laboratory space for the five centers of excellence (Geophysics, Mineral Resources, Microanalysis and Sample Characterization, High-Performance Computing and Visualization Lab, and Isotope Chemistry). The program net

assignable square footage (ASF) will consist of 48 percent laboratory and laboratory support spaces (46,478 ASF), 25 percent administrative and office spaces (24,239 ASF), 6 percent support and public spaces (6,248 ASF), 9 percent conference rooms and classrooms (9,123 ASF), 2 percent shop space, and 10 percent storage space (9,255 ASF).

The building will include space for electron microscopes, vibration sensitive equipment, sample receiving and preparation, and laboratory typologies including imaging, general chemistry, isotope, advanced instrumentation, and clean labs. Laboratories in the Subsurface Frontiers Building will include a substantial amount of specialized research equipment for sample preparation (mills, grinders, saws, polishers, scales, thin section samplers), analysis (mass spectrometry, electron microscopes, X-ray crystallography, optical scopes), remote sensing, and data visualization. The project will also include a high-performance computing and visualization suite with significant computing resources and support equipment.

Public-facing space will include a showcase for unique equipment and research, a shared auditorium, meeting spaces, and the High-Performance Computing and Visualization Center, which will provide 3D and immersive technologies (AR, VR) to support both Mines' and USGS' emerging requirements for data visualization.

Cost assumption. The cost assumption was determined by a third-party consultant, from comparative data from recent similar lab-intensive projects. The cost per GSF is $780. The project accounts for inflation costs at 8 percent, projected to the mid-point of construction. The project meets the Art in Public Places and High-Performance Certification Program requirements.

PROJECT JUSTIFICATION

According to the university, the project will become the nation's premiere destination for earth sciences research, due to the colocation of the university's geosciences programs with USGS, and will provide a unique opportunity to increase knowledge about earth sciences. This is a time-sensitive opportunity arising out of USGS's need to replace its aging existing facilities at the Denver Federal Center. The project will also give students employment and internship opportunities with USGS.

The university did not identify any project alternatives.

PROGRAM INFORMATION

Founded in 1874, Mines is a public teaching and research university devoted to engineering and applied science. The university's strategic plan anticipates a 1,200-student enrollment increase by 2020, and an increase in research expenditures from $60 million to $100 million. The majority of the student increase will be graduate students that support the research increase.

PROJECT SCHEDULE

	Start Date	Completion Date
Design	October 2018	October 2019
Construction	November 2019	May 2022
Equipment	May 2022	June 2022
Occupancy	June 2022	N/A

SOURCE OF CASH FUNDS

The total cash funds request is $101,105,918, including $9,369,018 shown in the two-year projection. The remaining cash funds spending authority will be requested for FY 2020-21. The source of cash funds for this project is federal funds ($3.0 million), donations ($20.0 million), and proceeds from the issuance of debt ($78.0 million). Potential

financing options include university revenue bonds, third-party financing, commercial paper, bank debt, or some combination of these sources. Debt repayment is estimated at $5.0 million per year for 30 years, and is expected to be covered by lease payments from USGS to the university. Any deficit in donation fundraising will be met with additional debt service from the university's general fund.

OPERATING BUDGET

Operating expenses are paid from institutional sources. According to the university, the operating costs for the finishing building are expected to be $1.0 million per year, of which two-thirds will be funded through USGS rental payments. The remainder will be funded through the university's general fund.

STAFF QUESTIONS AND ISSUES

All responses to staff questions were incorporated into the project write-up.

Fiscal Year 2019-20 Capital Construction Request

Colorado School of Mines

Arthur Lakes Library Renovation

PROGRAM PLAN STATUS

2011-007

Approved Program Plan? Yes **Date Approved:** October 22, 2018

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	2 of 2	
CCHE	16 of 40	
OSPB	36 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$0	$10,000,000	$0	$0	$10,000,000
CF	$0	$3,000,000	$0	$0	$3,000,000
Total	$0	**$13,000,000**	$0	$0	$13,000,000

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$1,322,825	$0	$0	$1,322,825
Construction	$0	$9,499,925	$0	$0	$9,499,925
Equipment	$0	$1,125,000	$0	$0	$1,125,000
Miscellaneous	$0	$102,250	$0	$0	$102,250
Contingency	$0	$950,000	$0	$0	$950,000
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$13,000,000**	$0	$0	$13,000,000

PROJECT STATUS

This is a new, never-before-requested project; however, the project appeared on the university's five-year projection of need between FY 2010-11 and FY 2013-14.

PROJECT DESCRIPTION / SCOPE OF WORK

Colorado School of Mines (Mines) is requesting $13,000,000 in state funds and cash fund spending authority to renovate the Arthur Lakes Library. The project will update and modernize the 76,719-GSF library, focusing on increasing student study and resource spaces, while consolidating staff workspace and the library's collections to eliminate the need to increase the building's existing footprint. The university plans to do this by:

- building a new accessible entry;
- creating a new grand staircase that will connect the levels of the library; and
- improving user space for group collaboration and individual study.

The new accessible entrance will accommodate universal access at a shared primary entry located on the most

student-trafficked side of the library and will include outdoor study spaces and a connection to the Mines Parking Garage. The project will remove a center portion of the floor structure at the two mezzanines and the second floor, which currently provides limited use as a result of low-clearance floor height. The new grand staircase will improve visibility and wayfinding between the floors of the library.

The library will seat over 960 users at a time and will include ample power outlets and computer stations throughout the building. The building will also include a multipurpose room for various programming events, Center for Academic Services Advising and Applied Mathematics and Statistics tutoring space, and an interactive classroom with seating to accommodate 40 students, or 82 percent of Mines classes.

Cost assumption. The cost assumption was determined by a third-party consultant. The cost per GSF is $169.45. The project accounts for future inflation at a rate of 4%. The project meets the Art in Public Places and High-Performance Certification Program requirements.

PROJECT JUSTIFICATION

According to the university, the existing building does not meet the needs of the campus due to a shortage of space, inadequate handicapped accessible access, and inadequate wayfinding. Mines asserts that the library's current layout does not meet today's student and staff needs, and there are inadequate spaces for students to use for study or collaborative work.

Currently library users requiring an accessible entrance may only enter at a bridge to a door on the library's second level, which is locked at all times and can only be accessed after ringing a door bell and waiting for a staff member to unlock the door.

The univiersity explains that a building physical condition audit conducted by the university in January 2014 rated the Facility Condition Index (FCI) as 73.3. The FCI is a measure of the cost of remedying building deficiencies compared to a building's current replacement value, and the state architect's target FCI for all buildings is 85.

Project alternatives. The university considered other alternatives, including postponing renovations, at an estimated cost escalation of 4 percent per year, and constructing a new building, at an estimated cost of $30.7 million.

PROGRAM INFORMATION

Founded in 1874, Mines is a public teaching and research university devoted to engineering and applied science. Current enrollment of 6,117 students is expected to increase by 1,200 students by 2020.

Arthur Lakes Library was originally constructed in 1955 and last expanded in 1979. Highlights of its collections include an extensive map collection, the Tell Ertle Oil Shale Repository, the Mining History Archive, and the Information Center for Ropeway Studies, which provides information on the history, theory, design, and operation of ropeway systems.

PROJECT SCHEDULE

	Start Date	Completion Date
Design	October 2019	April 2020
Construction	June 2020	April 2021
Equipment	Janury 2022	January 2022
Occupancy	N/A	January 2022

SOURCE OF CASH FUNDS

The source of cash funds for this project is anticipated donor contributions.

Fiscal Year 2019-20 Capital Construction Request

Colorado School of Mines

Arthur Lakes Library Renovation

OPERATING BUDGET

Operating expenses are paid from institutional sources. According to the university, this project will have no impact on or may potentially decrease its operating budget.

STAFF QUESTIONS AND ISSUES

1. The narrative states that the existing plumbing, electrical, and mechanical systems have not been replaced since the building was originally constructed, but that the proposed renovation does not make updates to these systems. When does the university anticipate that the systems will need to be updated and what is the plan for funding such updates?

Although the systems have not been replaced, they continue to function and are serviced through regular maintenance. They are also considered in our deferred maintenance program. No specific plan for replacement is in place at this time.

Colorado School of Mines
Five-Year Projection of Need
FY 2019-20 through FY 2023-24

Project Title	Fund Source	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	Totals
Capital Construction (Current Year)							
Arthur Lakes Library Renovation	CCF	10,000,000	0	0	0	0	$10,000,000
	CF	3,000,000	0	0	0	0	$3,000,000
Subsurface Frontiers Building	CCF	1,856,741	18,143,259	0	0	0	$20,000,000
	CF	0	91,736,900	0	0	0	$91,736,900
Capital Construction (Out Year)							
Mines Innovation Hub	CCF	0	5,000,000	0	0	0	$5,000,000
	CF	0	5,000,000	0	0	0	$5,000,000
Capital Construction Subtotals	**CCF**	**11,856,741**	**23,143,259**	**0**	**0**	**0**	**$35,000,000**
	CF	**3,000,000**	**96,736,900**	**0**	**0**	**0**	**$99,736,900**
Controlled Maintenance Subtotals	**CCF**	**2,275,759**		*See OSA Annual Report.*			**$2,275,759**
Total: State Funds		*14,132,500*	*23,143,259*	*0*	*0*	*0*	*$37,275,759*
Grand Total: All Fund Sources		**$17,132,500**	**$119,880,159**	**$0**	**$0**	**$0**	**$137,012,659**

Source: Department of Higher Education and Office of the State Architect