DGS-30-456
(Rev. 10/18)

Construction Management at Risk
Procurement Review Submittal Form

General Project Information

Agency Name:	Virginia Polytechnic Institute and State University	
Is the agency a covered institution per §2.2-4379?		Yes
Project Name:	Corps Leadership and Military Science Building & New Upper Quad Residence Hall (Feymoyer Replacement)	
Project Number:	208-L00043-000 & 208-L00064-000	

Other Project Information

Advising A/E Name:	Clark Nexsen	License Number:	411001118
COV Sections: §2.2-4380.B.2, §2.2-4381.C.2			
Attach written determination for use of CM at Risk.			
COV Sections: §2.2-4380.C.2, §2.2-4380.B.1; §2.2-4381.D.2, §2.2-4381.C.1			
Is the procurement process proposed a two-step process?			Yes
COV Sections: §2.2-4380.C.2, §2.2-4380.B.7; §2.2-4381.D.2, §2.2-4381.C.7			

Agency Reasons for Use of CM at Risk

Construction Cost (COV Sections: §2.2-4381.B.1, §2.2-4380.C.3, §2.2-4381.D.3)	Yes
Building Use (COV Sections: §2.2-4381.B.1, §2.2-4380.C.3, §2.2-4381.D.3)	No
Project Timeline (COV Sections: §2.2-4381.B.1, §2.2-4380.C.3, §2.2-4381.D.3)	No
Need for Project Phasing (COV Sections: §2.2-4380.C.5, §2.2-4381.D.5)	Yes
Project Complexity (COV Sections: §2.2-4381.B.1, §2.2-4380.C.4, §2.2-4381.D.4)	Yes
Value Eng. and/or Constructability Analysis Concurrent with Design (COV Sections: §2.2-4381.A)	No
Need for Quality Control/Vendor Prequalification	Yes
Need for Cost/Design Contol (COV Sections: §2.2-4380.C.5, §2.2-4381.D.5)	No

Supporting Information for Procurement Method Selection

Project Use (i.e. lab, classroom, office, etc.): (COV Sections: §2.2-4380.C.3; §2.2-4381.D.3)

Virginia Tech's strategic growth plan includes increasing the student enrollment of the Corps of Cadets from more than 1,100 to more than 1,400, representing an increase of 300 cadets (one battalion). Essential infrastructure expansion for this effort includes creation of a Corps Leadership and Military Sciences (CLMS) building to house the Reserve Officer Training Corps (ROTC) units, education/training facilities and other administrative/support functions; and an additional 300-bed residence hall.

The CLMS building is envisioned to be a 75,460 gross square foot, three story structure, clad in a combination of Hokie Stone, precast concrete panels and trim, and a combination of curtain wall glazing and punched opening windows. The proposed location is in the northern portion of campus that has traditionally been the home of the Corps of Cadets. This building will be constructed on the existing site of the Art and Design Learning Center (circa 1931) which will be demolished as part of this project—with the exception of the basement and associated spaces. The basement underlying the Art and Design Learning Center houses critical equipment and systems supporting the campus central power plant located immediately across Old Turner Street—which is connected by a walkable tunnel. The equipment within the basement and supporting spaces includes boiler feed water treatment tanks and systems, the boiler feed water lab, campus hot water system components and controls, campus compressed air system components and controls, and other essential equipment and piping for the central power plant. The existing central boiler plant equipment underneath the Art and Design Learning Center will remain in service during construction of CLMS. To accommodate the University's boiler plant operations, significant long-span structural systems are needed for the new building.

The CLMS building will contain 9,000 assignable square feet (ASF) of office space, 1,800 ASF of testing areas, 8,000 ASF of classroom area, 1,800 ASF of Corps Museum space, 500 ASF of library space, 1,100 ASF of study area, 2,560 ASF of meeting rooms, and 7,200 ASF of area required for other programming needs. The existing basement will be partially renovated and augmented in areas which are not intended to remain intact as part of the University's ongoing central plant operations. Site development will require significant subsurface rock excavation and removal for deep foundations. Mechanical equipment and building automation systems are designed and selected to meet performance requirements and to optimize total costs of ownership. Interior glazing is incorporated for energy efficiency and lighting for academic work. Ceiling heights must be a minimum of 16 feet for sound attenuation in large lecture and assembly environments. Building structural support systems will be necessary to bridge the existing basement of the Art and Design Learning Center building and to accommodate large open and unimpeded interior spaces. Raised floor systems are included for maximum adaptation. High-capacity wireless networks to support multiple devices (laptop computer, tablet computer, smartphone, and other WIFI devices). Power outlets corresponding to the seat/station count and power outlets in common areas. Automated audiovisual and lighting controls are included for all classroom and class laboratory spaces. Climate controlled technology server rooms are 10 feet by 10 feet on each floor of the building.

Immediately adjacent to the CLMS building is Femoyer Hall—an academic building that also houses the Student Success Center for undergraduate students and the Naval ROTC unit. Intent is raze Femoyer Hall and replace it with a 300-bed residence hall with supporting battalion administrative spaces. Programmatically, it is extremely advantageous to the university to associate these two buildings into a single project as they synergistically support the strategic growth of the Corps of Cadets by an additional battalion and must be completed together. (Connecting the two buildings to optimize this programmatic association remains a possible consideration and the design process will likely look into the further development of this option). Functionally, it is also advantageous because of the intensity of critical underground utilities infrastructure that resides between and under these two buildings. The primary tunnel for steam and condensate return emanating from the nearby power plant, high voltage electrical duct bank, planned chilled water supply/return, fiber-optic telecommunications trunk lines, and extensive existing storm drainage system are all concentrated in the immediate area between/adjacent to both buildings. An section of the steam tunnel underlying Old Turner Street immediately adjacent to Femoyer Hall is damaged and won't support vehicular traffic; repairs are essential for construction activities necessary for the demolition of Femoyer Hall and construction of the new residence hall and CLMS building. Additionally, the site for both buildings is extraordinarily confined and represents a concentrated "urban setting" in which optimal scheduling would construct both buildings simultaneously. Consolidating these two projects under a single CMaR coalesces the programming, utilities infrastructure coordination, and construction under a single entity and represents the ideal means to meet the strategic growth goals of the university while limiting risk exposure during both design and construction.

Construction Cost:	$61,000,000	(COV Sections: §2.2-4380.C.3; §2.2-4381.D.3)		
Project schedule: (COV Sections: §2.2-4380.C.3; §2.2-4381.D.3)	Design Start Date	2016	Design Compl. Date	2/1/2021
	Const. Start Date	6/1/2020	Const. Compl. Date	7/1/2022
	Attach bar chart schedule to illustrate fast tracking or other schedule complexities. (COV Sections: §2.2-4380.C.3, §2.2-4380.C.4; §2.2-4381.D.3, §2.2-4381.D.4)			

Additional description to highlight key attributes that affect the project complexity, need for value engineering/constuctabilitiy analysis, qualitiy control/vendor prequalification, and cost/design control as indicated by "Yes" answers above:

Construction Cost: Collaborative involvement by the CMaR with the A/E throughout the preliminary design and working drawing phases well before construction begins will better inform design processes, enhance project cost estimation, ensure sequencing of work is efficiently planned and budgeted, and provide constructability analysis—all of which are critical to the maintaining overall project costs within budget. Value engineering and constructability analysis will enhance project quality through elimination of costly and time consuming change orders. The creation, evaluation and pricing of alternative solutions to complex technical constraints will optimize construction of the complicated and specialized systems envisioned within this building.

Project Complexity: This project is extraordinarily complex for several reasons: (1) the need to selectively demolish the upper structure of the existing Art and Design Learning Center while ensuring the critical power plant equipment within the basement remains intact and fully operational throughout the construction phase; (2) the structure of the CLMS building must essentially "bridge over" the existing basement; and (3) the underground utility distribution systems located within the footprint of the building that tie back into the adjacent campus power plant must remain fully operational during the construction phase. The utilities represent a significantly complex characteristic of the project: major campus steam system infrastructure underlie Femoyer Hall and the CLMS building inextricably linking the two buildings. The overall utilities infrastructure must be coordinated by a single construction entity to ensure necessary relocations, tie-in's and taps are managed effectively to minimize planned outages and ensure no impact to power plant operations. The Use of CMaR, particularly during the design phase, will ensure optimal construction techniques are identified early on thus optimizing cost and time. Additionally, site complexity for this project will be intense due to the urban site conditions. The site is located within the historic "Upper Quad" which is the home of the Corps of Cadets and offers continuous high volume pedestrian traffic management challenges, limited adjacent laydown area, just-in-time material deliveries, and extensive underground utilities coordination requirements.

Project Phasing: Site constraints and characteristics require a highly orchestrated schedule that optimizes the sequencing and timing of the utilities infrastructure repairs/construction, demolition of Femoyer Hall, and construction of both the 300-bed residence hall and the CLMS building. This orchestration is optimally performed by a single CMaR with responsibility for all scope items stated above. Parsing out the various scopes to a variety of construction execution agents under separate contracts procured at different points on the project timeline will make it extremely difficult to achieve the necessary sequencing essential for success of this project. Additionally, this would create significant challenges for coordinating multiple contractors operating in the same area simultaneously with very limited real estate available for laydown, site trailers and construction support activities.

Need for Quality Control/Vendor Prequalification: Use of two-step procurement procedures will help ensure selection of a CMaR with the qualifications, expertise and experience best suited for this project.
Due to budget constraints and the intense timeline associated with this project, subcontractor pre-qualification by the CMaR for certain work packages will be essential for effective financial management and cost control.

(COV Sections: §2.2-4380.C.4; §2.2-4381.D.4)

Submitted by:
Signature:
Title:

Date: 7/26/19

(Agency Head or Authorized Representative)

For DGS Use Only
Based upon the information provided by the Agency, the use of Construction Management at Risk IS recommended for this project.
Recommended by: W. M. Coppa 7/30/19
W. Michael Coppa, RA Director, Division of Engineering and Buildngs