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VIRGINIA MILITARY INSTITUTE

Conceptual Design Study

Leadership Development Facility and Parking Structure

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I. EXECUTIVE SUMMARY

INTRODUCTION

The conceptual design study for the Leadership Development Facility and New Parking Structure at Virginia Military Institute (VMI) was developed over the course of six months, starting in July 2019. During this time, the Design Team engaged in numerous site visits, programming meetings, concept development workshops and design presentations, and review meetings with the VMI Project Team and Senior Leadership. This collaborative effort resulted in the development of design concepts, which will serve as an integral part of the Corps' education and leadership development. The design also considers the outreach impact to both VMI Alumni and the community at large.

Presented herein is a summary of the concept development for the identified, proposed facilities including descriptive narratives and cost estimates.

The entire Project Team worked in congruence to successfully develop a concept and program, which will support the academic and civic programs of the Cadet Corps on Post.

Project Team:

Virginia Military Institute

Wiley|Wilson
Architecture
Civil Engineering
Structural Engineering
MEP/FP Engineering

Downey & Scott
Cost Estimating

Wiley|Wilson worked closely with VMI to develop design concepts for new facilities to support the Post's academic and civic programs. ►

I. EXECUTIVE SUMMARY

A conceptual design study for the Leadership Development Facility and New Parking Structure at Virginia Military Institute was undertaken to develop a facility programmed to provide leadership education and development through instructional space for the leadership, civics, and history programs serving the VMI Cadet Corps.

STATEMENT OF PROGRAM

VMI presented the design team a preliminary program outline, which expressed a goal for development of a new 30,000 square foot instructional facility and teaching museum in addition to a 250-car parking structure located in the existing Marshall Hall parking lot. The program outline was refined following planning meetings associated with the 2019 six-year capital planning process. The result was an academic building uniquely suited for teaching VMI's growing leadership, civics, and history programs that incorporates the artifacts of the VMI museum into the curricula, and a parking structure, which maximizes capacity based upon the site constraints.

Using the VMI outline as a foundation, the design team developed a preliminary space program that took into account the programmatic requirements for the academic components and their associated operational needs to support the Cadet Corps. The space program also incorporated a large lecture hall (150 seats), which can house a secondary function accommodating smaller theater performances. The new facility would be referred to as the Leadership Development Facility to reflect its educational and community involvement.

The proposed Leadership Development Facility will specifically facilitate the growth of the civics curriculum, leadership education program, history studies, and community involvement/interaction. An additional objective of the project is serving to support leadership training programs offered across Post as VMI continues moving toward its goal of strengthening its national presence as a center for leadership and ethics.

▲ *The proposed new Leadership Development Facility and parking structure will be located adjacent to the existing Marshall Hall and address Post's needs for both educational space and parking capacity.*

The parking structure program was refined to not only serve the needs of the new facility, but also allow for the growing needs on post for cadets, faculty, and alumni/visitors. The need for additional parking will also be compounded by the City of Lexington's plans to eliminate parking along Main Street, which currently supports the parking on Post.

The result is a 62,500 gross square foot facility adjacent to the existing Marshall Hall (Center for Leadership and Ethics) and a 444 car parking structure with six parking levels.

In addition to the specific program requirements and challenges identified in this document, it was determined that the new construction would benefit the needs of the Institute and community as a whole.

The following drove the decision:

- Future growth in the Cadet corps population
- Increased program/academic needs
- Limited availability of classroom space
- Need for right sized lecture hall space
- Ongoing and growing community involvement by Cadet Corps

SITE ANALYSIS

The Design Team worked with VMI stakeholders to further refine the outline program relative the site development. The primary program elements, which would be placed in the area of the current Marshall Hall Parking Lot, are:

- Place for new educational/museum building
- Place for new parking structure
- Expand the existing lawn
- Create a place for bus drop-off/ pick-up
- Establish a sense of arrival/entrance from North Post
- Create a visual connection to Parade Ground

The design analysis involved a review of several options, which could take advantage of the site characteristics and architectural context.

Opportunities:

- Adjacency to the Center for Leadership and Ethics and associated programs
- Adjacency to the Alumni Center for support and mutual involvement
- Adjacency to the George C. Marshall Museum
- Creation of a new statement of entrance from North Post
- Location creates more integration between leadership and cadet daily activities

Challenges:

- Dynamic site topography, including the steep grades toward the ballfields and Washington and Lee University
- Limited site access and staging area during construction
- Extensive utility relocation required

▲ *The proposed new facility and its suggested location would provide a sense of arrival for those entering from North Post.*

▲ *This location for the new facility will create more integration between leadership and daily activities.*


MARSHALL HALL
CENTER FOR LEADERSHIP AND ETHICS

CONCEPT DESIGN

In keeping with the desire of VMI to maintain a cohesive, recognizable visual image for the Post, the design team took cues from the existing Gothic Revival architecture present on Post. Additionally, consideration was given to location and desire to fit contextually within the site while also acknowledging the close proximity and view corridors to the historic parade field.

The concept design takes full advantage of the available site for placement of the buildings. The placement allows for an expanded green space in front of the building, which may serve as an organizational element, as well as programmable space.

The primary directives provided to the Design Team were as follows:

- A building that exemplifies the architectural language of VMI
- A large green space in front of the new academic building which expands the current lawn in front of Marshall Hall
- A parking structure that maximizes capacity based upon site constraints
- Development that creates a statement of entrance from North Post

COST ESTIMATE

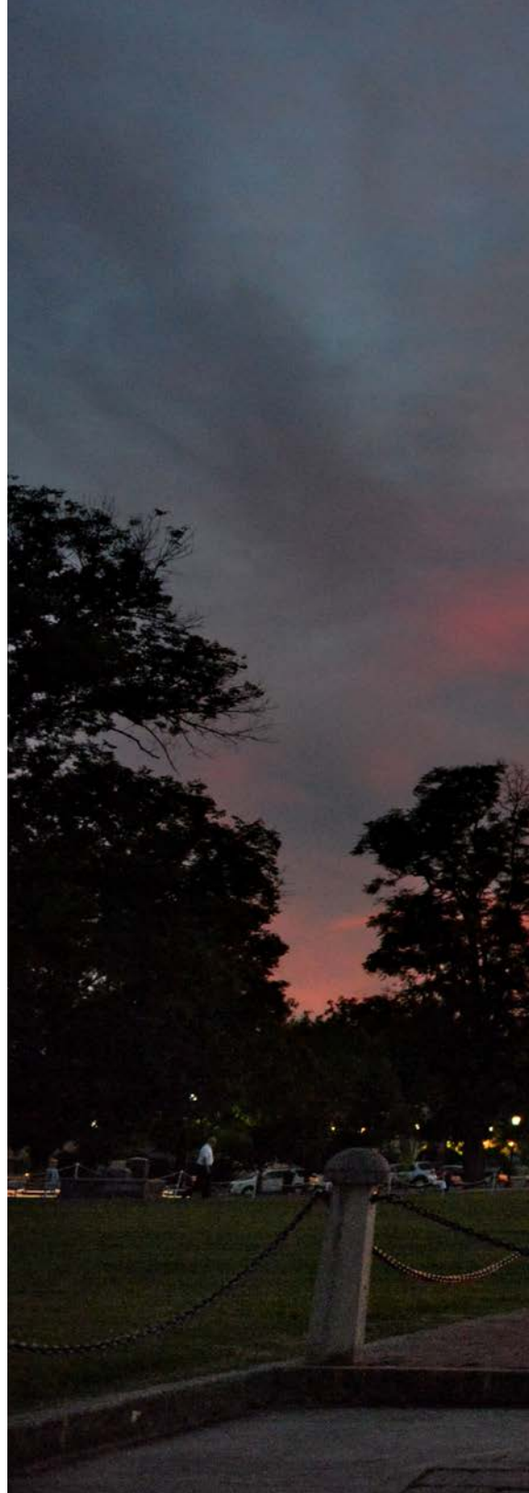
The Cost Estimate for the 62,500 gross square foot Leadership Development Facility and 444-car parking structure includes total cost of the project, including all consultants, construction cost for the project, total cost per square foot, and construction cost per square foot.

In addition to the site and utility challenges unique to this project, which affect overall project costs, project considerations accounted for in the Cost Estimate include, but are not limited to the following:

- Building on a steep slope along with removal of heavy vegetation
- Excavation of rock to accommodate building and foundations
- Two building projects located on limited site needing to accommodate laydown and staging areas
- Additive Alternate for a terrace over a portion of the top parking deck
- Additive Alternate for a second entry/exit point on the west side of the Parking Structure accessing Anderson Drive

Also included in the estimate is limited renovation cost within Marshall Hall to accommodate offices, which will serve needs within the Center for Leadership and Ethics.

▲ *In 1845 Superintendent Smith integrated the museum into the academic mainstream as a primary method of leadership instruction.*



II. PROGRAM SUMMARY

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LEADERSHIP DEVELOPMENT FACILITY

The new Leadership Development Facility serves to facilitate the expansion of the academic programs at the Institution. Specifically they are the following:

- **Civics**
- **History**
- **Leadership**

A new course is being developed as part of the Institute's Core Curriculum, which will ensure appropriate coverage of the "American Civics Experience" consistent with the Institute's Mission Statement. This course will only be offered within this educational building. The building's other functions will support the American Civics Program through planned community involvement/activity together serving as a nexus to the community.

The History program has two supporting elements – the rigorous curriculum and the educational museum resources. As an educational museum, the artifacts and exhibits are utilized by instructors, both in the classroom and the museum itself, to capitalize on the immense value found within the collection.

The academic component of the Institute's Leadership Program currently consists of two required courses that are embedded within the Core Curriculum: a leadership theory course and a leadership lab. The leadership theory course, currently taught by the Psychology Department, is being revised to include variations of the course tailored to different academic disciplines and taught by faculty within those disciplines. Additional classroom space will be needed to support these new courses, and all the leadership labs will be offered exclusively within this new building.

Lastly, the large Lecture Hall will fill an Institute capacity void for mid-size leadership lectures and panel instruction. Instructional space encompasses the majority of the program offering.

To accommodate these programmatic needs, the program of the building incorporates a variety of classrooms as well as meeting spaces. To support the classroom function, offices and workrooms are provided for the instructional staff. A resource classroom and seminar room are provided in the Museum to augment this classroom offering. To fill a void on Post, a 150-seat Lecture Hall is planned to expand the Institute's capacity for larger instructional space. Lastly, the VMI instructional museum will be moved to the Leadership Development Facility in support of VMI's Historical Curriculum. Support spaces such as offices, audio/visual support, workrooms, and other related spaces bring the total gross square footage to approximately 62,500 square feet.

In addition to the specific special requirements identified within the building, the early planning also developed underlying principles, which should guide the building's development. Programs resident in the new building should educate, engage, and inspire the Corp of Cadets, faculty, staff and alumnus.

- **Educate**
- **Engage**
- **Inspire**

▲ *19th century image of VMI classroom.*

▲ *The new Leadership Development Facility will continue VMI's rich educational legacy, housing a new civics program and expanded history and leadership curricula.*

Virginia Military Institute - Leadership Development Facility					
Program Space	**Qty**	**Net Area**	**Total Net Area**		**Comments**
Academic				**19355**	
Classrooms				4785	
Classroom	4	500	2000		25 Cadets at 20sf per cadet
Tiered Classroom	2	1000	2000		50 Cadets at 20sf per cadet
Seminar Room	1	300	300		10-15 Cadets
Resource Classroom	1	485	485		Multi-use Classroom with direct artifact use
Lecture				5590	
Lecture Hall	1	2000	2000		150 seats - Secondary use is Theater
Stage	1	400	400		Thrust type - for speakers and panels
Backstage	1	1100	1100		
Control	1	200	200		
Control Storage Room	1	70	70		
Green Room with Restroom	1	320	320		
Pre-function	1	1500	1500		
Educational Exhibit Space				7450	
Instructional Exhibits	1	7200	7200		
Instructional Exhibit Storage	1	250	250		
Faculty Space				680	
Faculty Offices	2	120	240		
Hot Desk Offices	2	120	240		
Work Room	1	200	200		
Storage	1	850	850		General bldg storage (tables, chairs, easles)

Virginia Military Institute - Leadership Development Facility					
Program Space	**Qty**	**Net Area**	**Total Net Area**		**Comments**
Museum				**19355**	
Display				12900	
Exhibits	1	7200	7200		
Cadet Exhibits	1	2000	2000		
Travelling Exhibits	1	1500	1500		
Exhibit Storage	1	1200	1200		
Art Storage	1	500	500		
Historic Weapons Storage	1	500	500		
Support				2185	
Director's Office	1	200	200		
Museum Staff Office	2	120	240		
Administrative Assistant	1	110	110		
Office Reception	1	120	120		
Work Room	1	180	180		
Break Room	1	200	200		
Staff Restroom	1	65	65		
Docent Lounge	1	120	120		
Library	1	500	500		
Museum Shop	1	450	450		
Curation				400	
Curator Office	1	150	150		
Curator Work Room	1	250	250		
Promotions				1470	
Store	1	1150	1150		
Store Manager Office	1	120	120		
Storage	1	200	200		

Virginia Military Institute - Leadership Development Facility					
Program Space	**Qty**	**Net Area**	**Total Net Area**		**Comments**
Administrative				**1640**	
General				1300	
LDF Audio Visual Office	1	150	150		
Audio Visual Storage	2	200	400		
Building lounge and reception	1	250	250		
Loading and Staging Area	1	500	500		
Center for Leadership and Ethics				1640	
CLE Director	1	150	150		
CLE Audio Visual Office	1	150	150		
Staff Offices	4	110	440		
Collaboration Space	1	250	250		
Conference Room	1	275	275		
Storage	1	200	200		
Restrooms w/ Showers	1	175	175		
Hospitality				**1855**	
Dining Room	1	550	550		
Pre-Function Room	1	285	285		
Prep Kitchen	1	350	350		
Pantry Storage	1	120	120		
Catering Staging Area	1	350	350		
Hospitality Station	1	200	200		

Virginia Military Institute - Leadership Development Facility					
Program Space	**Qty**	**Net Area**	**Total Net Area**		**Comments**
Theater				**2700**	
Rehearsal Space	1	850	850		Similarly size of actual stage
Storage and Set Production	1	1200	1200		
Dressing Rooms	2	200	400		
Storage for costumes	1	250	250		
Net Assignable Square Footage				**43805**	
Total Building Gross Square Feet				**62413**	
Lower Level			20570		
Main Level			21619		
Upper Level			17472		
Building Connector			685		
Existing Building Renovation			1710		
Covered Area - Loading Dock			105.5		
Covered Area - Terrace			252		
Efficiency of Building				**70.2%**	

NEW PARKING STRUCTURE

The established programmatic goal for the project was to maximize the number of parking spaces within the constrained site. The process began with a review of not only the available space on the site but also parking across Post. The steps included the following:

- First, the Design Team accounted for the parking requirements of the new Leadership Development Facility as a new facility on Post.
- Secondly, the parking spaces lost in the Marshall Hall Parking Lot were accounted for in the parking need.
- Lastly, the Parking Structure should provide additional parking due to the potential loss of parking along Main Street as well as the need for additional parking during large events hosted on Post.

Parking spaces within the new parking structure break down:

- 8′-6″ x 18′-0″ standard size parking stall
- 9′-0″ x 18′-0″ parking stalls for larger vehicles
- 10′-0″ x 18″-0″ for handicap accessible parking

The result is a New Parking Structure project consisting of 165,500 gross square feet on six parking levels. It is located to the north of the current Marshall Hall parking lot (which is being removed) and also located between Anderson Drive and the Washington & Lee property line.

The final design of the parking structure will be required to account for ADA accessible parking spaces as well as Level II Electric Vehicle (EV) charging stations serving the staff and general public. The number of spaces provided in these categories will be based upon the grand total of parking spaces provided.

▲ *Existing Marshall Hall Parking Lot*

Parking Spaces

Description	Calculation	# Spaces
Additional Parking Required for New Leadership Development Facility		187
LDF: A-1 (Auditorium)	1 space per 4 people	38
LDF: A-3 (Museum)	1 space per 4 people	51
LDF: B (Business-Higher Education)	1 space per 100 gsf	98
Replace the Current Parking from Marshall Hall Lot	(replace in kind)	149
Sub-Total of Required Parking		**336**
Added Parking	(spaces above requirement)	108
Grand Total of Parking Spaces Provided		**444**

▲ *The table above illustrates the calculations used to determine the number of parking spaces.*

III. CONCEPTUAL DESIGN

III. CONCEPTUAL DESIGN

SITE

The Design Team was challenged by VMI stakeholders to accomplish the following site program in the location of the existing Marshall Hall parking lot on Main Post.

- Create a place for new educational/ museum building
- Develop a place for new parking structure
- Expand the existing lawn in front of Marshall Hall to the North
- Create a place for bus drop off/pick up to accommodate visitors to Post
- Allow space for car drop off/pick up
- Establish a sense of arrival/entrance from North Post
- Consider visual connection to Parade Ground
- Consider handicap accessibility

The overall site, which is offered for the new development is approximately four (4) acres, which includes lawns, sidewalks, parking lots, roadways, moderate to steep terrain, and heavy woods.

This includes a gas sub-station, overhead electrical utility line, underground utilities, fire hydrant, and a pad-mounted generator (currently being installed).

The site is also located along a shared property line with Washington and Lee University and a steep slope, which feeds Woods Creek below the site. The property is zoned R-1, General Residential by the City of Lexington zoning maps.

The Conceptual Site Planning effort began with a holistic review/study of the overall site. Considerations were:

- Locations for development opportunities
- Architectural context
- Existing overhead electrical utilities
- Existing gas sub-station
- Location of property lines
- Evaluation of the existing topography
- Study of the view corridors to and from Parade Ground
- Study of the views to and from ballfields
- Vehicular traffic patterns and speeds around the site
- Pedestrian movement through and around the site

▲ *The new parking structure will address the parking needs presented by the City of Lexington's decision to eliminate parking on Main Street.*

▲ *Approach from parade field toward the roundabout.*

SITE OPTIONS – THE PROCESS

The study began with investigating three possible scenarios to approach roadway and vehicular movement in order to determine the remaining buildable area with respect to project goals. The three options were:

#1 *Leave General's Way in its current location, which would continue to bisect the site and create vehicular/pedestrian conflicts*

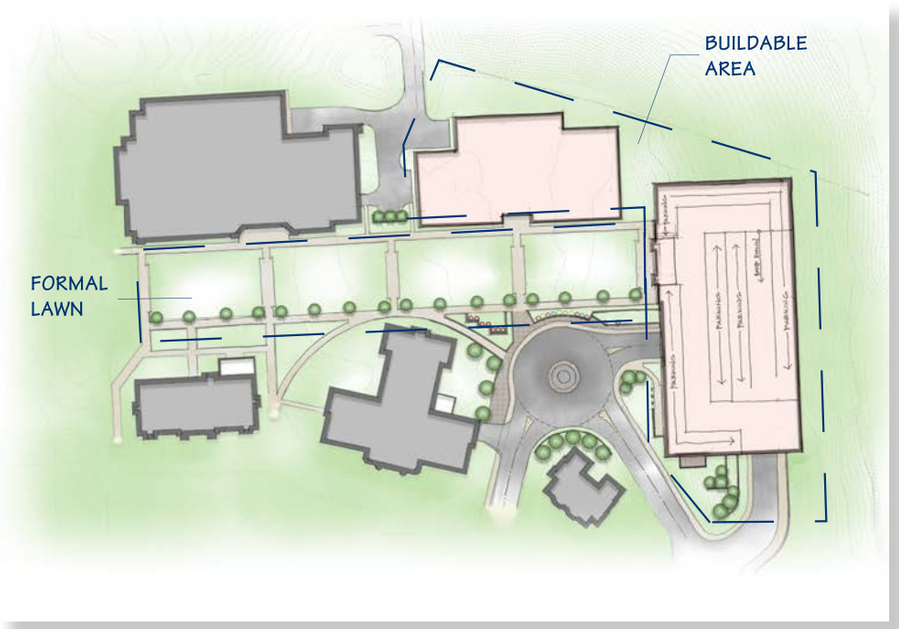
#2 *Move the location of General's Way such that it would travel around the perimeter of the site, which would require extensive earthwork/ retaining walls*

#3 *Remove General's Way from the site altogether, which would require new traffic patterns by service personnel and bus traffic – stopping it at the loading dock for Marshall Hall.*

SITE DECISION

Ultimately, the decision was made to remove General's Way from the site to both maximize the buildable area and to improve safety by eliminating cross pedestrian/vehicular traffic.

This decision also resulted in an opportunity to create a "mall style lawn" reminiscent of the Washington Mall in Washington, D.C. having long connecting sidewalks with trees and gracious lawn areas for programmed activities.



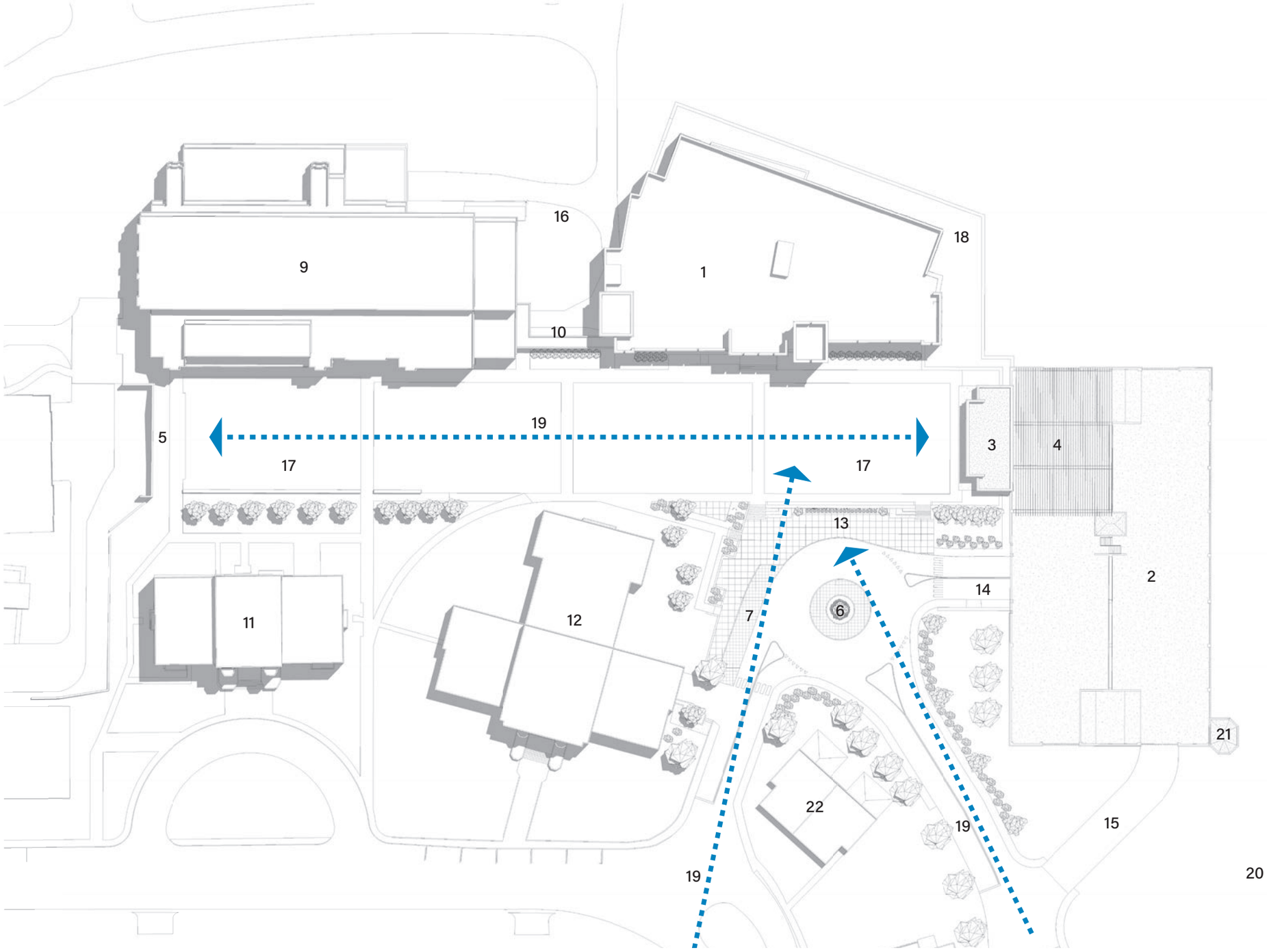
Following the site study, several potential building locations and orientations were explored with the goal of maximizing a building footprint, respecting the architectural context, and leaving space for a parking structure. Key factors in the final design solution:

- Placement of the new building and its entrance on a view corridor to Parade Ground
- Orientation to provide a sense of greeting and arrival
- Rectilinear or “formal” lawn which could maximize use as programmable space
- Building location(s) that can take advantage of the terrain to either promote scale of the building or conceal service elements

The final conceptual site plan placed the building directly adjacent to Marshall Hall with a nominal space of relief between the two buildings, which will promote a sense of scale and contextual reference/balance. The buildings will be connected by an enclosed walkway having the appearance of an arcade.

The footprint of the new building is maximized by fronting the mall lawn and then angling the back of the building in relation to the property line and sloping terrain to the west and north. The result is an overall footprint of 21,620 square feet. This design approach – responding to context and terrain - is a common theme among many VMI buildings as the natural terrain on Main Post falls off dramatically from the buildings near the Parade Ground.

Placing the building on relatively steep terrain allows a two-story façade on the lawn/entrance side of the building to align with the scale of adjacent buildings. Additionally, it allows a three-story façade at the rear of the building, which hides the service entrance and utility functions of the building



LEGEND

1. Leadership Development Facility
2. Parking Structure
3. Pavilion
4. Pergola Structure Above Parking
5. Focal Wall
6. Roundabout
7. Bus Drop-Off
8. Parade Field
9. Marshall Hall
10. Connector Between Buildings
11. Smith Hall
12. George C. Marshall Museum
13. Focal Entry Wall with “Virginia Military Institute” Lettering
14. Parking Structure Entrance
15. Secondary Parking Structure Entrance
16. Service Area
17. Formal Lawn
18. Terrace
19. View Corridor
20. Ball Fields
21. Stair
22. Residence

The placement of the building in line with Marshall Hall, continues an ordered, rectilinear edge along the planned formal lawn (extended Marshall Hall lawn). This ordered edge is juxtaposed to an implied landscape edge on the opposite side of the mall. The formal lawn is further ordered by concrete walkways on each side and then bisected into four (4) equal lawn areas. The resulting landscape development is a 70-foot wide by 440-foot long, mall-style lawn to order and soften the entrances to the building(s). It also provides an additional programmable space for the many events conducted at VMI.

▲ *View of existing lawn looking north.*

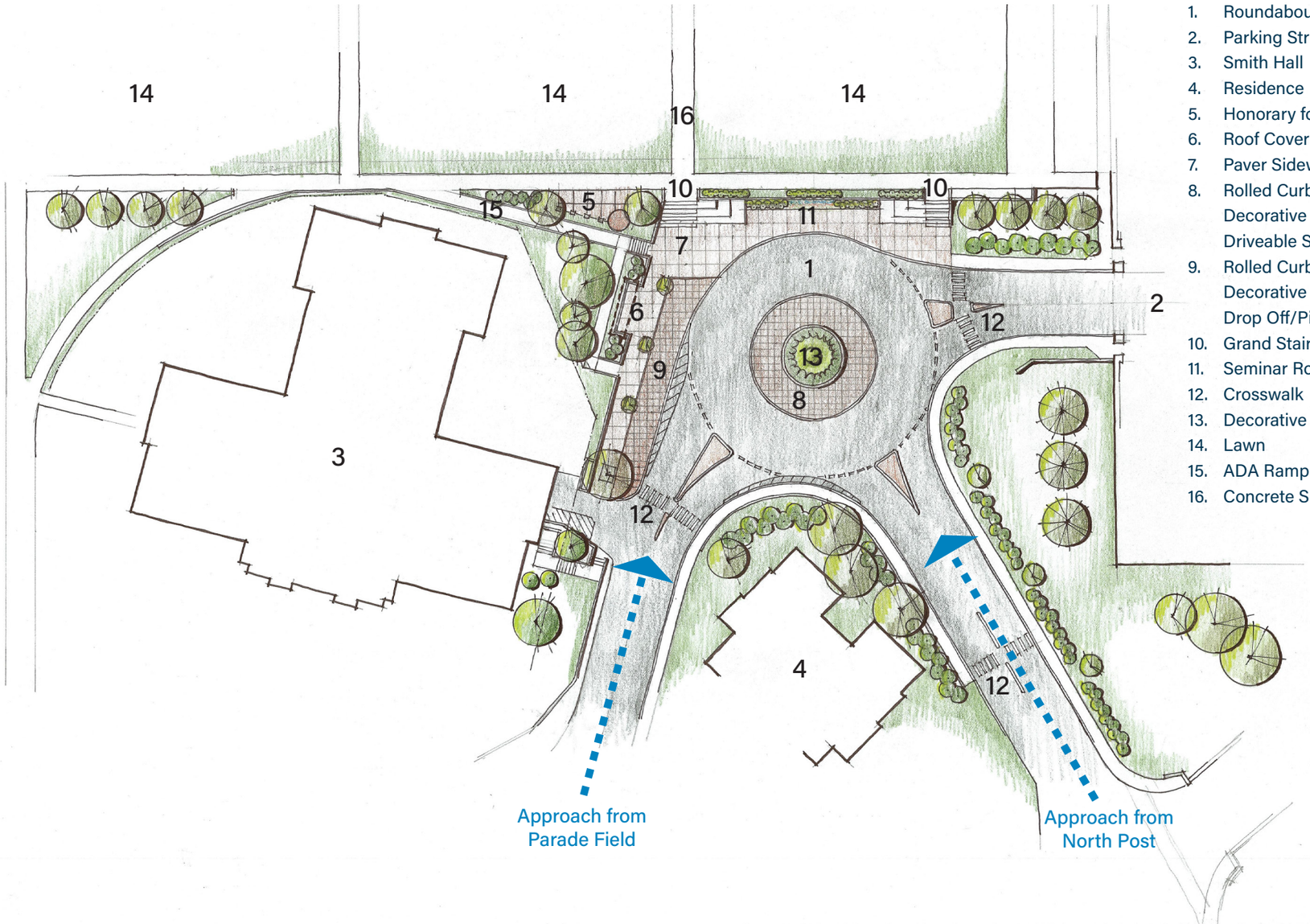
▲ *The expanded, mall-style lawn will provide additional programmable space for on-Post events.*

Additional site challenges

- Address the heavy traffic on Anderson Drive
- Create a place for bus drop off/pick up
- Increase safety by separating vehicular and pedestrian traffic flows

To address these site challenges, the Design Team incorporated a roundabout at Anderson Drive, which sweeps past the George C Marshall Museum and down the hill to North Post. The roundabout works to accomplish the following tasks:

- Slow the vehicular traffic movement at a key location where pedestrians and vehicles converge
- Create a statement of entrance to Main Post by creating a sense of arrival as vehicles approach from North Post
- Establish a safe location for drop off and pick up by both personally owned vehicles and busses/vans with a pull-off area having differing color paver stones
- Provide an efficient, recognizable entrance/exit to and from the parking structure through Gothic Revival gate at the primary entrance
- Become an identifiable marker on Post for wayfinding – "meet at the roundabout"



LEGEND

1. Roundabout
2. Parking Structure
3. Smith Hall
4. Residence
5. Honorary for Citizen Soldier
6. Roof Covering/Bus Waiting
7. Paver Sidewalk
8. Rolled Curb and Colored Decorative Concrete Driveable Surface
9. Rolled Curb and Colored Decorative Concrete for Bus Drop Off/Pick Up
10. Grand Stair
11. Seminar Room
12. Crosswalk
13. Decorative Landscaping
14. Lawn
15. ADA Ramp
16. Concrete Sidewalk

In order to facilitate the concept plan, several key site utilities will be moved or modified:

» The gas service located on Anderson Drive will be moved closer to the property line between Virginia Military Institute and Washington & Lee University. A small retaining wall will be installed to create a level spot north of General's Way for the relocation.

» The overhead electrical service, which currently crosses the current Marshall Hall Parking Lot will be placed below grade and routed around the new building development.

LEADERSHIP DEVELOPMENT FACILITY

Located adjacent to and in line with Marshall Hall (Center for Leadership and Ethics) the Leadership Development Facility building proudly faces the new landscape mall. The entrance to the building is located on a direct axis from the roundabout and grand stair with direct visibility from the Parade Ground. A large arched entry with oversized wood doors and glass sidelights create a grand entrance statement while also following a patterning of wood entry doors across Post.

The overall design of the exterior exemplifies the history and tradition of VMI with a Gothic Revival interpretation, using similar features typically found in this architectural style in a predominantly spartan manner. The primary finish is stucco with cast stone trim/water table and limited crenulations at the parapet wall.

A tower element is located adjacent to the grand entrance as a nod to the Gothic Revival features employed by AJ Davis during the mid-1800s on Post. It functionally serves as a grand interior stair connecting all three levels of the instructional museum. The upper most level of the stair serves as an observation point with views available to Parade Ground and North Post. The new educational building concept is a total of three levels with one level down and two levels up from the main entrance.

The new building will be mixed use with the following breakdown:

- Business (B) for the Higher Educational Components within the building;
- Assembly (A-1) for the Large Lecture Hall
- Assembly (A-3) for the Educational Museum related components

The overall construction of the building is planned as Type 2B (Unprotected Non-Combustible) with concrete masonry units as the primary material at the exterior building envelope. The interior partitions will be a combination of concrete masonry units and metal framing and gypsum board.

▲ *The large arch, oversized wood doors, and glass sidelights create a grand entrance to the LDF.*

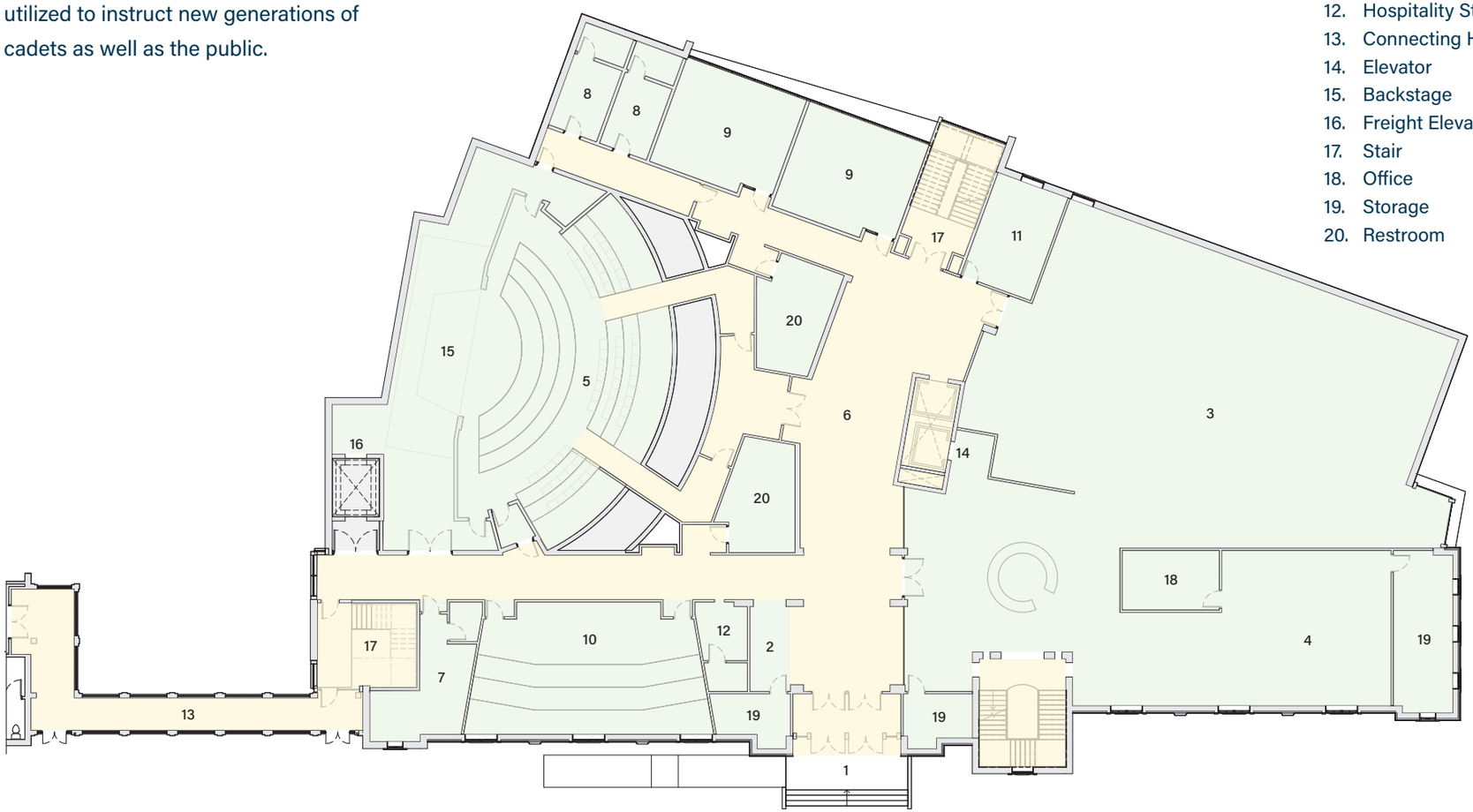
▲ *Sections of floor to ceiling glass allow views to nature.*

The main level of the building has a grand entrance with a two-story space serving as pre-function space for both the Lecture Hall and the Museum. The Lecture Hall is entered off the pre-function space through a sound/light vestibule to a circular seating layout around a thrust stage. The stage is designed to host a variety of events in an intimate setting:

- Guest lecturer/speaker
- Panel discussions
- Video presentations
- Theater productions

Two standard classrooms, one resource classroom and a tiered seating classroom are accessed on the main level, directly off the main entrance and pre-function space. A hospitality station is also provided on the main level for general coffee and beverage service on a daily basis. Larger events would be catered in the pre-function area on the Main Level outside the Museum and Lecture Hall.

The VMI Museum is accessed directly from the Pre-Function space off the main building entrance. Originally formed in 1856 by Superintendent Smith, following the acceptance of a Revolutionary War musket, this Teaching Museum continues as an important resource for the Institute. Since its creation, more than 15,000 artifacts have been collected and utilized to instruct new generations of cadets as well as the public.



LEGEND

1. Building Entrance
2. Reception
3. Museum
4. Store
5. Lecture Hall
6. Pre-FunctionBuilding
7. Green Room
8. Dressing Room
9. Classroom
10. Tiered Classroom
11. Seminar Room
12. Hospitality Station
13. Connecting Hallway
14. Elevator
15. Backstage
16. Freight Elevator
17. Stair
18. Office
19. Storage
20. Restroom

The museum traces the amazing civilian and military careers of many of these alumni. Among the ranks of alumni are Nobel Prize recipients, Pulitzer Prize winners, explorers, film stars, national, state and local political and civic leaders. This teaching museum endeavors to work with the Institute to educate the next generation(s).

Within the building, the Museum expands over three floors, which are internally connected by a dedicated grand stair and a dedicated elevator. This allows the museum to have one entrance/exit point for security related to the many artifacts on display.

A museum staff member located at a generously sized, round reception desk, greets visitors and patrons upon entry. They assist visitors and guide them as necessary through the museum's many educational exhibits as well as library. There is also a museum store, which celebrates the rich history and tradition of the Virginia Military Institute. The Cadet Corps will dedicate space on the lower level to travelling exhibits and specific exhibits.

▲ *Ring Case*

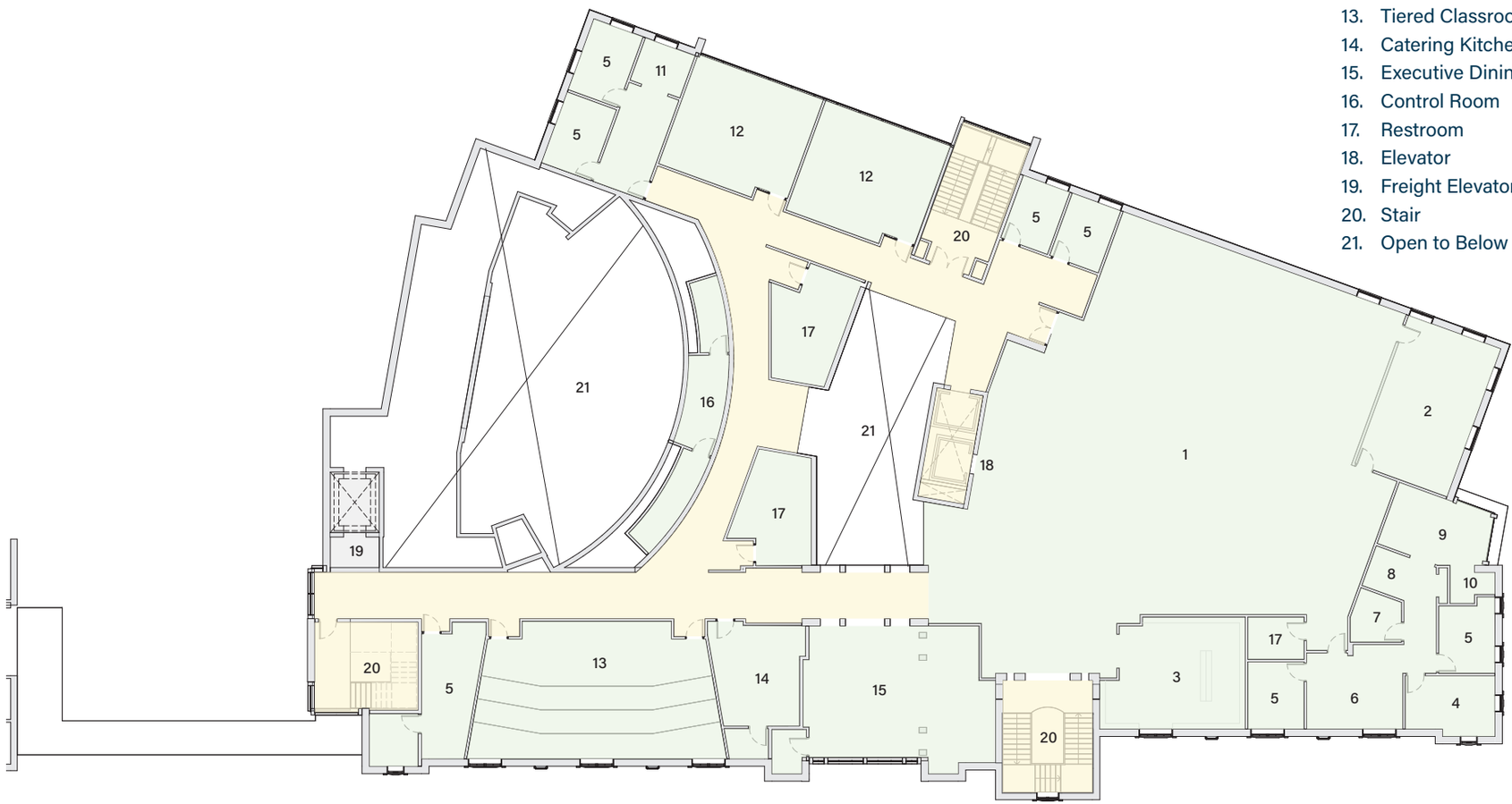
▲ *Military Weapons*

Located on the upper level of the structure are two additional classrooms, a tiered classroom and seminar room to continue support of the growing academic curriculum. Faculty are provided two dedicated offices and two hot desks along with a workroom and small conference room. The Museum offices as well as resource library are located on this level.

Special hospitality events occur at a variety of locations across Post. The need for a smaller, more intimate venue will be met in the new building through a new Executive Dining Room on the second level. A small pre-function space will be provided adjacent to the Dining Room, which also functions as a serving area. A catering kitchen is adjacent to the dining room for easy service and staging room is provided on the lower level where hot and cold boxes may be brought in to the building in preparation for an event.

LEGEND

1. Museum
2. Resource Classroom
3. Library
4. Director's Office
5. Office
6. Administrative/Reception
7. Storage
8. Workroom
9. Break Room
10. Docent Lounge
11. Conference
12. Classroom
13. Tiered Classroom
14. Catering Kitchen
15. Executive Dining Room
16. Control Room
17. Restroom
18. Elevator
19. Freight Elevator
20. Stair
21. Open to Below

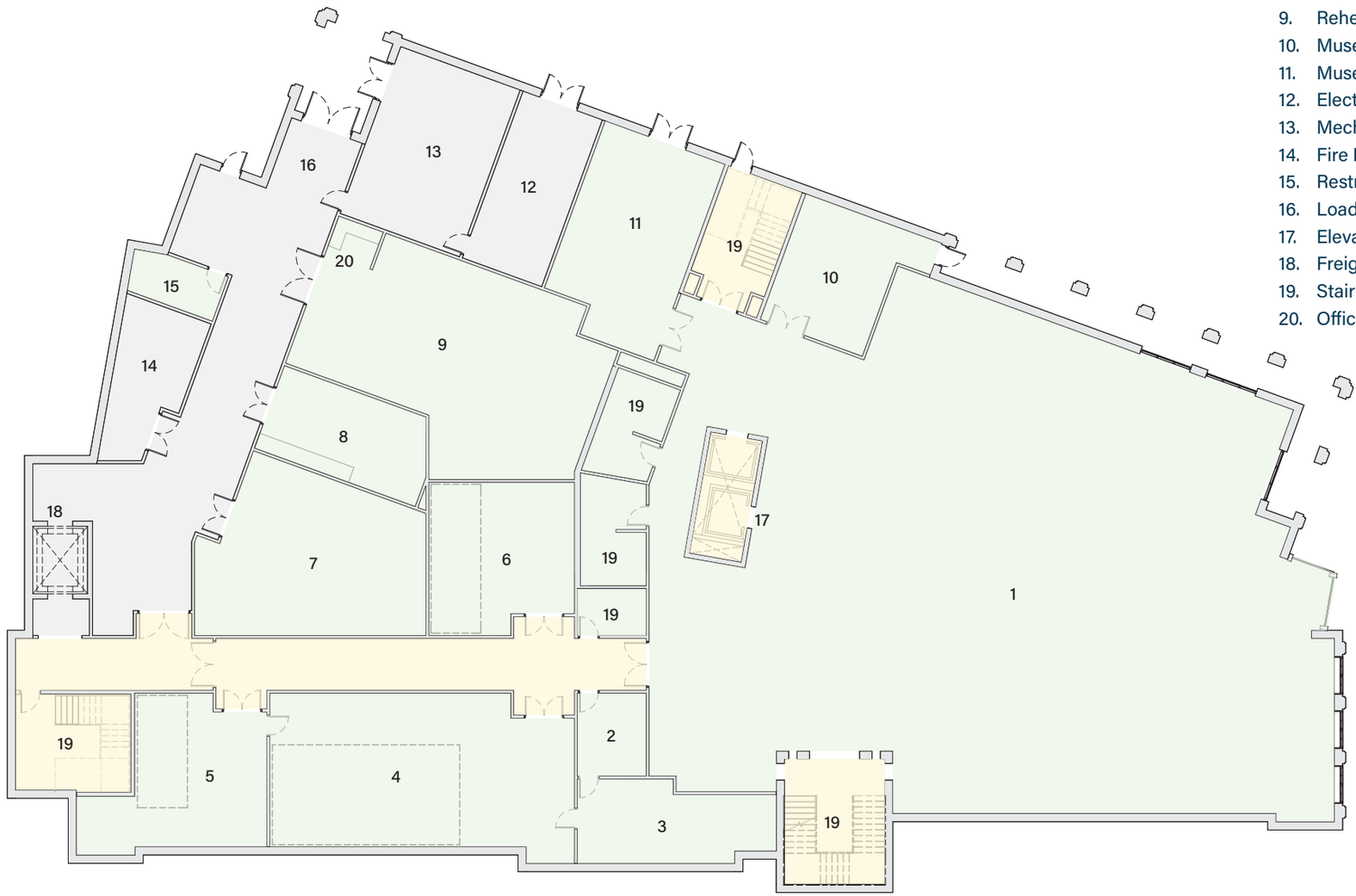


The lower level of the building is primarily dedicated to the Museum functions and associated artifact storage/curator work areas. The loading dock is located on the south end of the building and offers a freight elevator, which accesses all levels of the building.

A terrace surrounds the Leadership Development Facility on the west and north sides of the building. This terrace serves two functions:

» Allows lower level activity to flow outdoors for outdoor activity, exhibits, or work

» Serves as a structured access lane for the local fire department



LEGEND

1. Museum
2. Curator
3. Curator Workroom
4. Artifact Storage
5. Historic Weapons Storage
6. Art Storage
7. Building General Storage
8. Catering Staging Area
9. Rehearsal
10. Museum General Storage
11. Museum Workshop
12. Electrical Room
13. Mechanical Room
14. Fire Protection Room
15. Restrooms
16. Loading/Unloading
17. Elevator
18. Freight Elevator
19. Stair
20. Office

The new building also connects to the existing Marshall Hall/Center for Leadership and Ethics by means of a heated and cooled hallway. This allows the building's functions to support one another and provide expanded break-out/educational space to various programmed functions.

A portion of the first floor of Marshall Hall will be renovated to serve as offices. To accommodate the growing staffing needs, two new offices and an open office space for four cubicles are provided within the Center for Leadership and Ethics. In addition to specific staff spaces, a small open collaboration space and storage room are provided to serve the growing needs. The current restrooms are renovated as part of the work to accommodate restrooms with showers as well as dressing areas.

The building's structure begins with a poured in place concrete footing on native soils and rock with steel frame. The steel frame consists of two rectilinear frames offset from one another and at a 20-degree angle to one another.

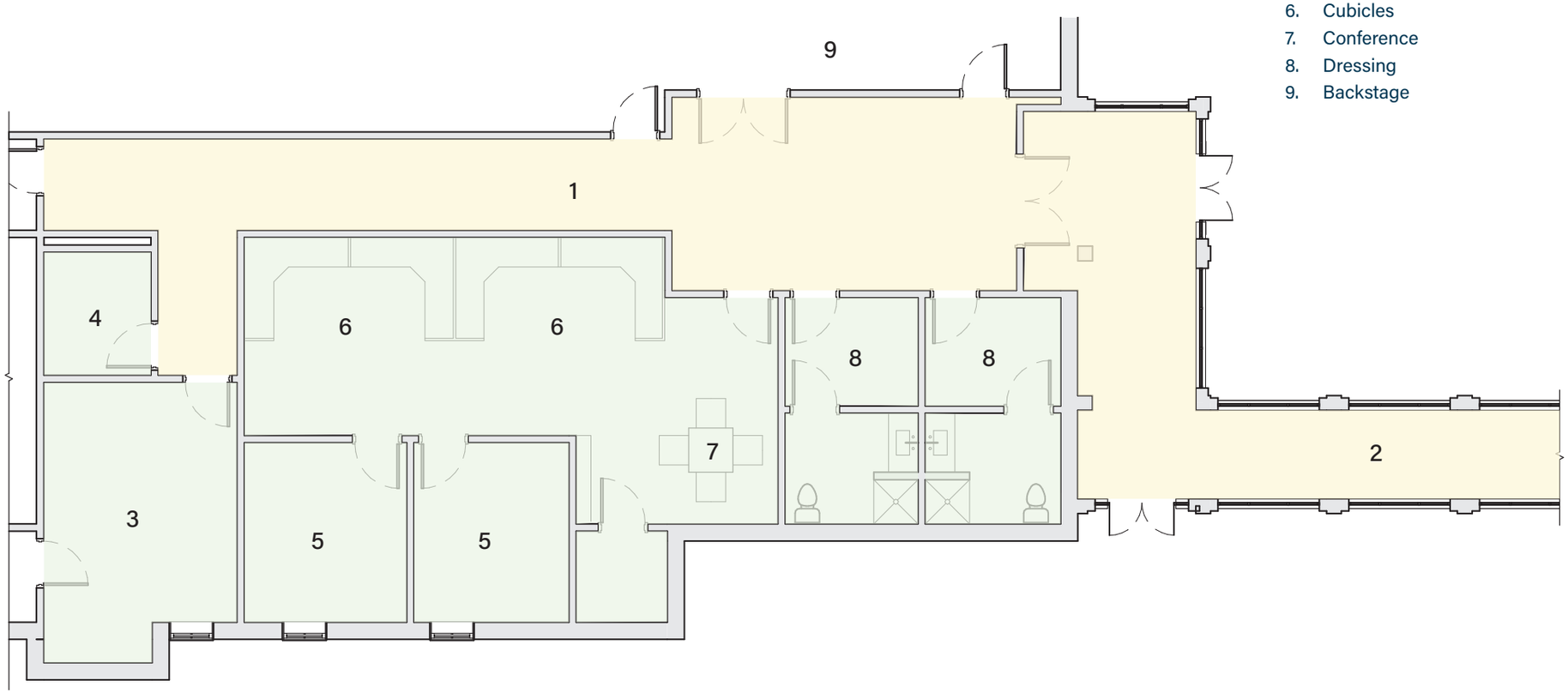
The space between each of the rectilinear "boxes" is then infilled with a steel frame. The site development includes a number of retaining walls ranging in height from one-foot to 10-feet (above the lower grade).

The educational components of the building include the following:

- Four (4) new 25-seat classrooms
- One (1) new 25-seat resource classroom
- One (1) new 12-seat seminar room
- Two (2) new 50-seat tiered layout classrooms
- One (1) new 150-seat, large format, lecture hall
- Approximately 8,000 square feet of educational exhibits

LEGEND

1. Corridor
2. Corridor to LDF
3. Green Room
4. Restroom
5. Office
6. Cubicles
7. Conference
8. Dressing
9. Backstage



PARKING STRUCTURE

The site, like the majority of the VMI Post, is topographically dynamic and will require significant site work. The parking structure is proposed to the north of the current Marshall Hall parking lot, which has an approximately 75-foot change in elevation from top to bottom. Having an approximate 28,000 square foot footprint, the parking structure is recessed into the hillside in manner to potentially balance the cut and fill, while visually screening the majority of the building below much of the adjacent grade to the south.

The structure is sited to place the upper-most parking level (P1) at the level of entry of the roundabout. Parking levels P2 through P6 continue down from that point. Portions of the south, east and west sides of the structure will be below grade with the remaining portions and the north façade being above grade. The south and east facades of the parking structure are block construction with stucco finish – along with open windows with diamond shaped mullions similar to those at Old Barracks. The north and west facades are mostly open with aluminum fins, which shield the view of cars and headlights within the parking structure.

An elevator and stair tower are located at the southwest corner of the building to provide access/egress to/from all levels. The upper-most level is one level above the top parking deck, providing direct access to the new mall lawn. The upper-most level takes the form of an open sided pavilion.

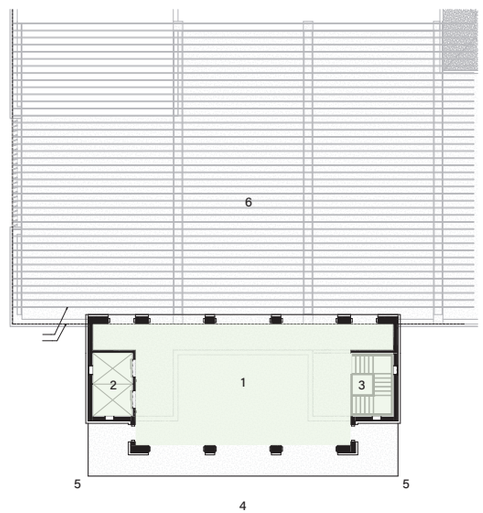
The Pavilion becomes a visual focal point at the end of the new, formal lawn, opposite the George C. Marshall quote wall. Designed as an arcade, the arches and tablature are formed with Gothic Revival detailing with respect to the arches and stone trim. The arches are fully open on the north and south sides of the building allowing views through the building to the hillside beyond the site. Beyond and below the pavilion is the parking structure itself. Views to the vehicles below are screened by a built trellis, which extends over the first bay of the parking structure behind the pavilion.

▲ *The arches on the Pavilion are fully open to allow views through to the hillside beyond the site.*

▲ *The upper-most parking level entry will be at the level of the roundabout and continue down from that point.*

LEGEND

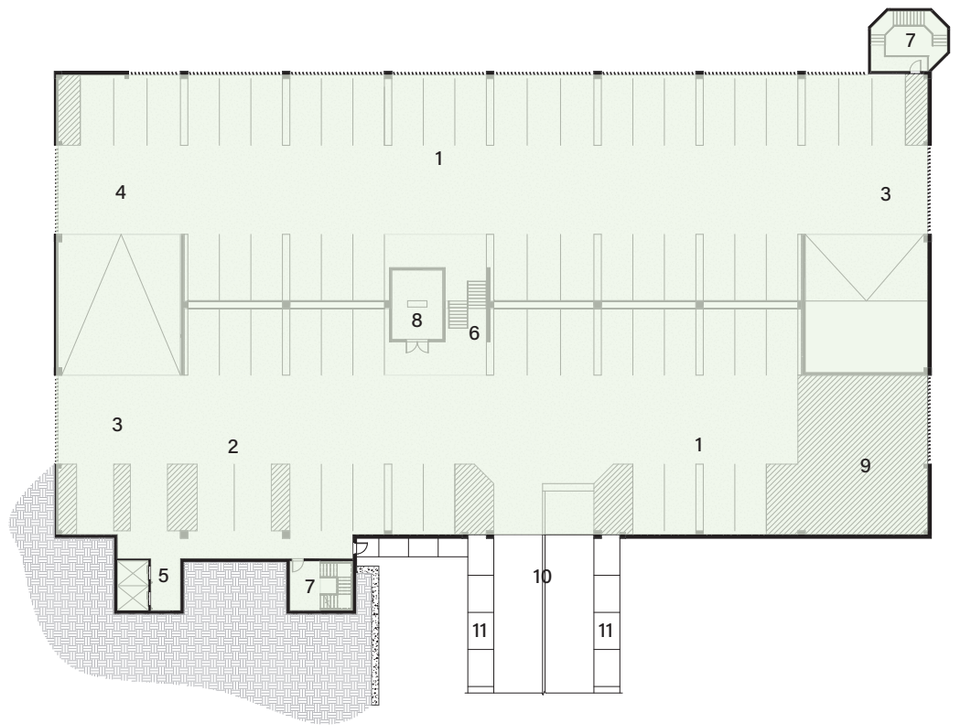
1. Pavilion
2. Elevator
3. Stair
4. Mall Lawn
5. Sidewalk
6. Pergola Structure over Parking Deck (Screens Views to Vehicles)



Pavilion

LEGEND

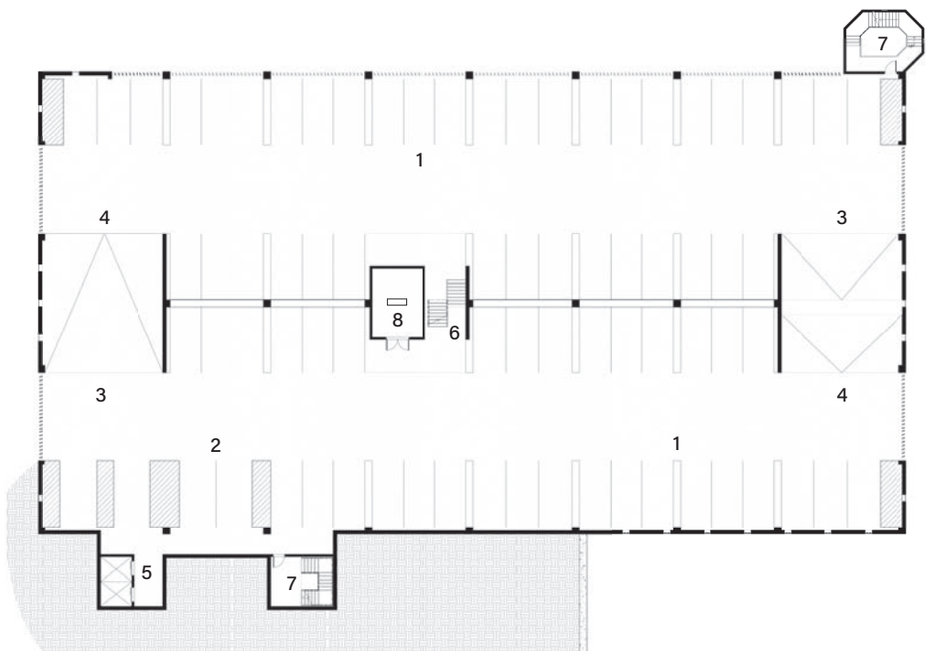
1. General Parking
2. ADA Parking
3. Ramp Down
4. Ramp Up
5. Elevator
6. Stair Between Levels
7. Exit Stair
8. Mechanical
9. No Parking - Turn-Around
10. Entrance/Exit to Parking Structure
11. Sidewalk



P1 - Parking Level One

LEGEND

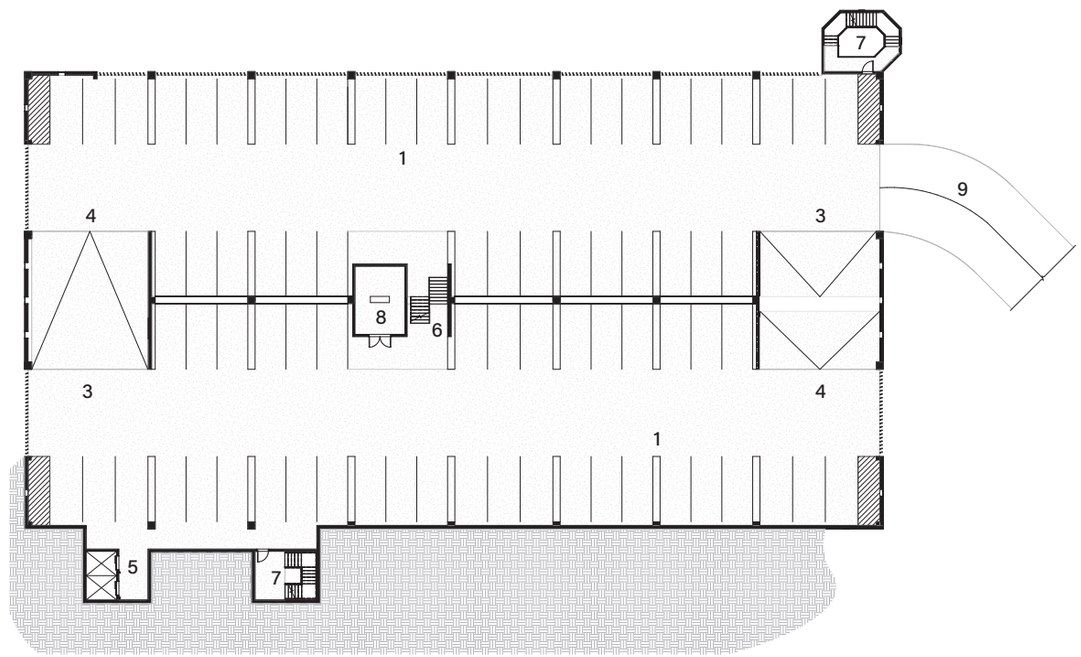
1. General Parking
2. ADA Parking
3. Ramp Down
4. Ramp Up
5. Elevator
6. Stair Between Levels
7. Exit Stair
8. Mechanical



P2 - Parking Level Two

LEGEND

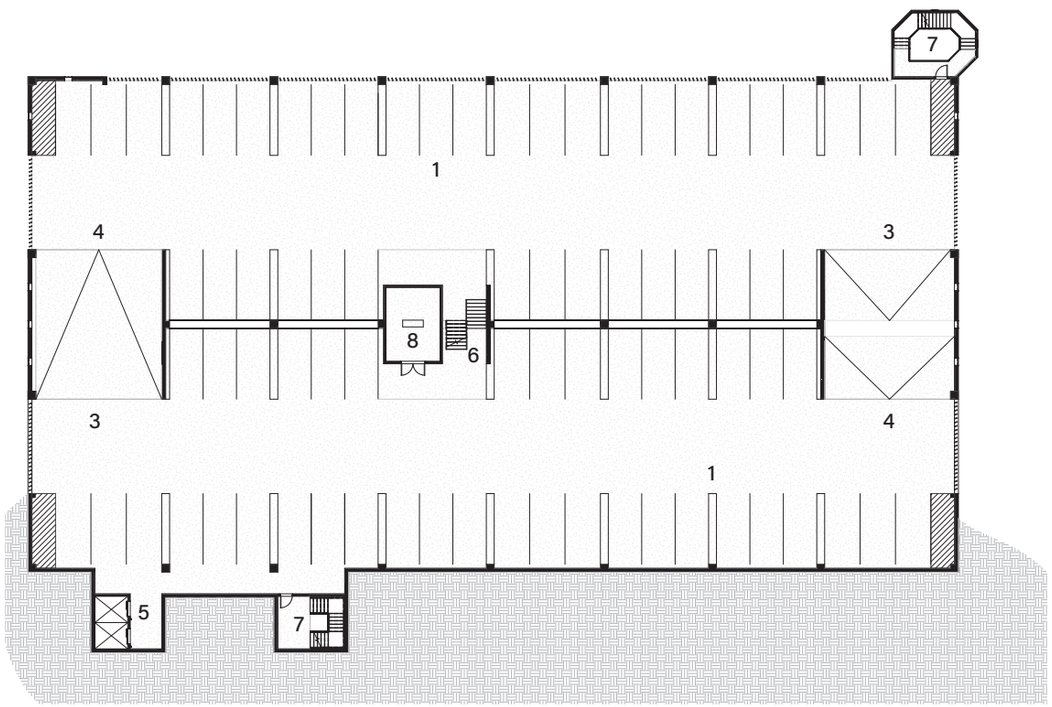
1. General Parking
2. ADA Parking
3. Ramp Down
4. Ramp Up
5. Elevator
6. Stair Between Levels
7. Exit Stair
8. Mechanical
9. Alternate #2 - Second Entry/Exit



P3 - Parking Level Three

LEGEND

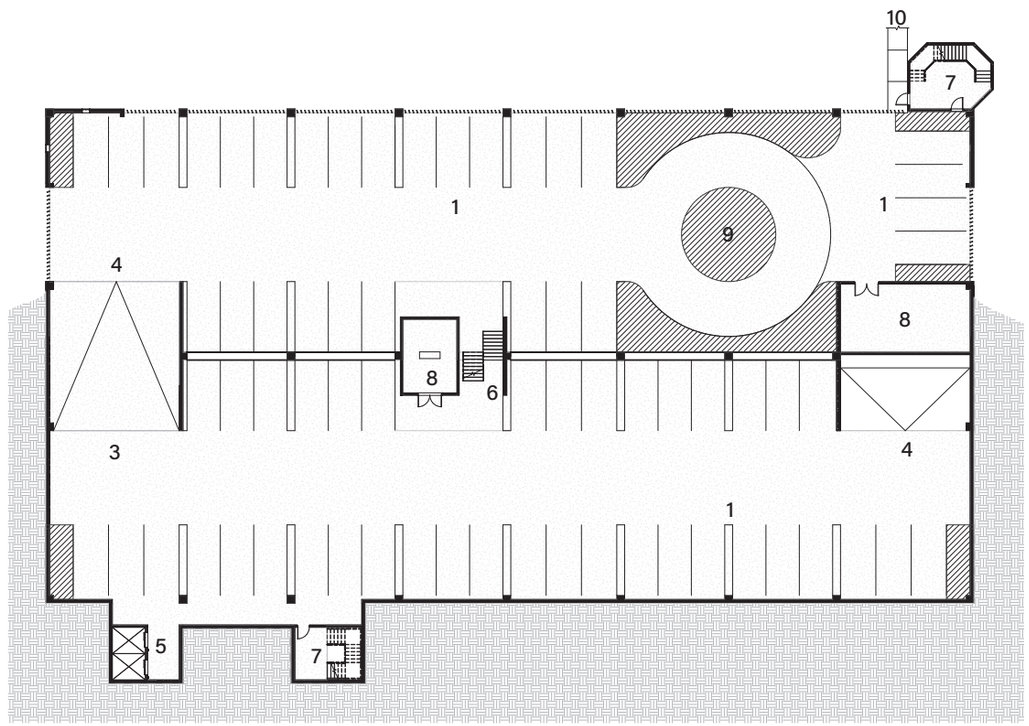
1. General Parking
2. ADA Parking
3. Ramp Down
4. Ramp Up
5. Elevator
6. Stair Between Levels
7. Exit Stair
8. Mechanical



P4/P5 - Parking Level Four/Parking Level Five

LEGEND

1. General Parking
2. ADA Parking
3. Ramp Down
4. Ramp Up
5. Elevator
6. Stair Between Levels
7. Exit Stair
8. Mechanical
9. Turn-Around
10. Access to Ballfields



P6 - Parking Level Six

Two additive alternates are suggested for the parking structure:

» **Alternate # 1 :** The first alternate is a 5,000 square foot upper level terrace located above a limited portion of the uppermost level of the parking structure and directly behind the Pavilion. The terrace would be provided in lieu of the pergola structure. The terrace will consist of precast concrete panel sub-structure with 50-percent paver panels and 50-percent potted plants/grasses. The terrace would serve to host special events and gatherings acting as an extension of the pavilion.

» **Alternate # 2 :** The second alternate consists of a second entrance/exit point to the new parking structure off Anderson Drive at the third level (P3). The structure for this entrance is a cast in place concrete bridge, which spans above the steep slope below. The additional access point functions to allow greater exiting capacity during times of heavy use such as a home football game. The added entrance/exit point could reduce wait times by nearly 50-percent.

The Parking Structure is classified as an open garage with a Use Group of S. The Construction type is classified as 1 – Fire Resistive.

The egress stair located at the northeast corner of the building is located outside of the parking structure itself and is encased within a Gothic Revival tower element, which stands proud above the ballfields. The stair also serves as access to the ballfields below from the parking garage.

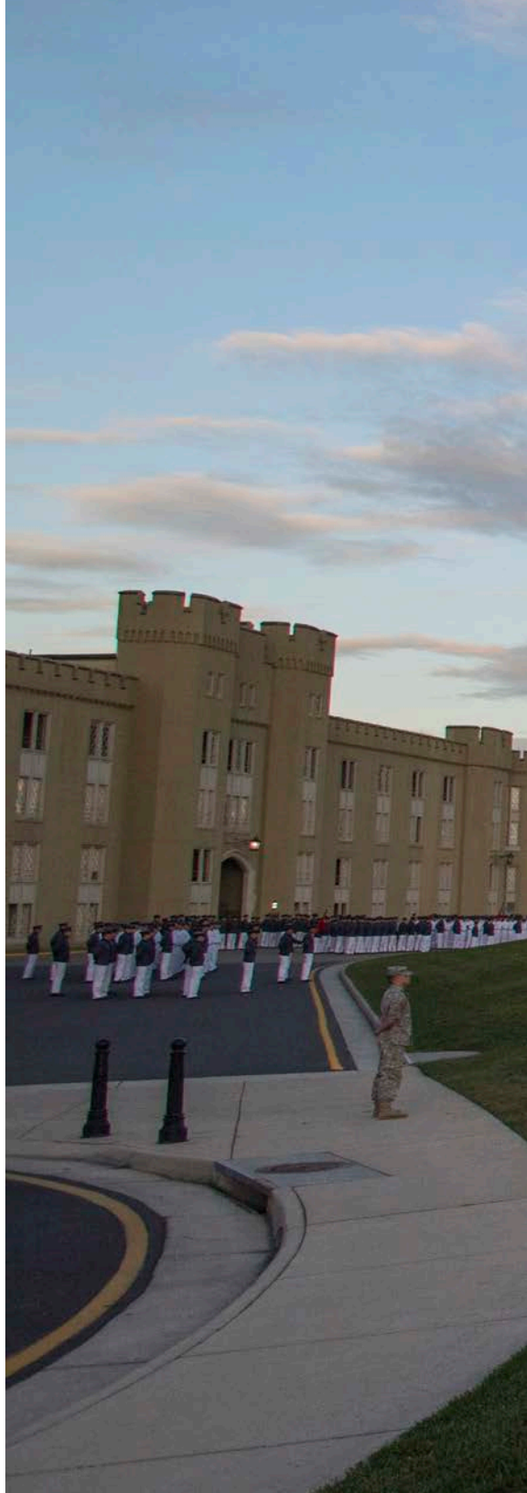
Structure

The parking structure rests on a poured in place concrete footing and is a combination of poured in place retaining walls/columns and precast panels. The overall structure would be characterized as precast concrete. The stair and elevator towers are constructed of multi-wythe concrete masonry units.

▲ *The upper-most parking level entry will be at the level of the roundabout and continue down from that point.*

▲ *Pergola structure behind Pavilion would become a terrace under Alternative #1*

▲ *An additional access point in the parking structure will allow for greater exiting capacity during times of heavy use.*



IV. COST ESTIMATE

IV. COST ESTIMATE

GENERAL DATA

The cost estimate is based upon a cost modeled higher education building. All costs are factored to Lexington, Virginia, and escalated for a period of two years, January 2022. The cost models provide the scope per uniformat system based on the concept design and data provided in this study.

The cost estimate for the Leadership Development Facility and the Parking Structure include all anticipated construction trades; direct construction costs for the project; bonds and insurance; program/design contingency; and two years of cost escalation.

Building Gross Square Footage

Leadership Development Facility

- Lower Level: 20,570
- Main Level: 21,619
- Upper Level: 17,472
- Connection to Marshall Hall: 685
- Marshall Hall Renovations: 1,710
- Covered Area at Loading Dock: 106
- Covered Area at Terrace: 252

Total: 62,414

Building Gross Square Footage

Parking Structure

- P-1 through P-6: 173,032
- Pavilion: 1,750

Total: 174,782

Virginia Military Institute - Leadership Development Facility

New Building

Direct Construction Costs		$21,635,523
General Conditions	6.00%	$1,298,131
CM Fee	4.00%	$917,346
Bonds, Insurance	1.20%	$286,212
Design/Program Estimate Contingency	15.00%	$3,620,582
CM Contingency	3.00%	$832,734
Escalation	8.88%	$2,539,792
City of Lexington BPOL Tax	0.16%	$49,809
	Sub-Total of Construction Costs	**$31,180,129**
Soft Costs & Allowances		
A/E Basic Services	6.54%	$2,038,874
A/E Reimbursables	0.16%	$49,609
CM Design Phase Services	2.50%	$779,503
Value Engineering Services	0.32%	$98,787
Cost Estimating Services	0.17%	$51,596
	Sub-Total of Soft Costs & Allowances	**$3,018,369**

Project Management & Other Costs		
BCOM Services	1.25%	$389,752
Advertisements	0.25%	$77,950
Printing and Reproduction	0.75%	$233,851
Moving and Relocation Expsnses	1.00%	$311,801
Data and Voice Communications	2.03%	$632,413
Signage	0.25%	$77,950
Demolition	0.00%	$-
Hazardous Material Abatement	0.00%	$-
Utility Connection Fees	0.99%	$308,697
Utility Relocations	0.50%	$154,349
Commissioning	0.25%	$77,174
Misc Other Costs	0.00%	$-
	Sub-Total of Project Management & Other Costs	**$2,263,937**
Furnishings and Movable Equipment		
Furnishings	8.07%	$2,517,037
Movable Equipment	1.25%	$389,626
Construction Contingency		
Construction Contingency	8.00%	$2,494,410
Totals		
Acquisition Costs		$-
Construction Costs		$31,180,129
Soft Costs (less FFE & Acquisition Costs)		$7,776,717
FFE and Movable Equipment		$2,906,663
	Total Costs	**$41,863,508**

Virginia Military Institute - Leadership Development Facility

Parking Structure

Direct Construction Costs		$19,315,318
General Conditions	6.00%	$1,158,919
CM Fee	4.00%	$818,969
Bonds, Insurance	1.20%	$255,518
Design/Program Estimate Contingency	15.00%	$3,232,309
CM Contingency	3.00%	$743,431
Escalation	8.88%	$2,267,423
City of Lexington BPOL Tax	0.16%	$44,467
	Sub-Total of Construction Costs	**$27,836,355**
Soft Costs & Allowances		
A/E Basic Services	6.50%	$1,809,363
A/E Reimbursables	0.15%	$42,479
CM Design Phase Services	2.50%	$695,909
Value Engineering Services	0.20%	$90,434
Cost Estimating Services	0.10%	$41,596
	Sub-Total of Soft Costs & Allowances	**$2,679,781**

Project Management & Other Costs		
BCOM Services	1.25%	$347,954
Advertisements	0.25%	$69,591
Printing and Reproduction	0.75%	$208,773
Moving and Relocation Expsnses	1.00%	$278,364
Data and Voice Communications	1.95%	$542,243
Signage	0.25%	$69,591
Demolition	0.00%	$-
Hazardous Material Abatement	0.00%	$-
Utility Connection Fees	0.24%	$67,780
Utility Relocations	0.49%	$135,561
Commissioning	0.10%	$27,112
Misc Other Costs	0.00%	$-
	Sub-Total of Project Management & Other Costs	**$1,746,969**
Furnishings and Movable Equipment		
Furnishings	4.37%	$1,215,556
Movable Equipment	0.00%	$-
Construction Contingency		
Construction Contingency	8.00%	$1,874,385
Totals		
Acquisition Costs		$-
Construction Costs		$23,429,811
Soft Costs (less FFE & Acquisition Costs)		$5,576,295
FFE and Movable Equipment		$1,171,491
	Total Costs	**$30,177,596**

Project considerations accounted for in the Cost Estimate include, but are not limited to:

- Leadership Development Facility
- Parking Structure
- Earthwork/Lawn/Landscape
- Terrace
- Bridge element
- Roundabout
- Limited site access and staging area during construction
- Construction inside the Lexington Historical District
- Utility relocation
- Extensive site excavation and fill
- Construction adjacent to buildings that will remain in use during construction
- Furniture, Fixtures and Equipment (FFE)
- Moving or Storage Costs
- Temporary Facilities
- Design/Consulting Fees
- Promotional Costs

▲▼ *With more than 15,000 artifacts and exhibits, the instructional museum celebrates the unique life of Cadets at VMI.*

V. APPENDIX

V. APPENDIX

A-1: 95-Percent Review Comments

A-2: Cost Estimate Detail

A-1: 95-PERCENT REVIEW COMMENTS

Virginia Military Institute - Leadership Development Facility and Parking Structure
Pre-Final - Concept Design Study
Comment Review Sheet - 30 January 2020

Comment #	Location	Comment	Reviewer	Responder	Response
Draft Study					
1	General	Marshall Hall is referred to as the “Center for Leadership Excellence” in several places throughout; should read “Center for Leadership and Ethics.”	CAPT Sebastino	Architecture/ Planning	Text to be updated on pages - 6, 7, 9, 15, 32 to read "Center for Leadership and Ethics".
2	pg 6, 4th para	I recommend adding the highlighted language: “The proposed Leadership Development Facility program will specifically facilitate the growth of the Civics Curriculum, leadership education program, History Studies, and Community Involvement/Interaction.	CAPT Sebastino	Architecture/ Planning	Text "leadership education program" will be added to the DRAFT sentence.
3	pg 12	I recommend the following language for the second paragraph: A new course is being developed as part of the Institute’s Core Curriculum, which will ensure appropriate coverage of the “American Civics Experience” consistent with the Institute’s Mission Statement. This course will only be offered within this educational building. The building’s other functions will support the American Civics Program through planned community involvement/activity together serving as a nexus to the community.	CAPT Sebastino	Architecture/ Planning	Text within the second paragraph will be replaced "in kind" as suggested.
4	pg 12	I recommend the following paragraph be inserted after the third paragraph and prior to the paragraph describing the lecture hall as there is no mention of the Leadership Program’s use of the new classrooms: The academic component of the Institute’s Leadership Program currently consists of two required courses that are embedded within the Core Curriculum: a leadership theory course and a leadership lab. The leadership theory course, currently taught by the Psychology Department, is being revised to include variations of the course tailored to different academic disciplines and taught by faculty within those disciplines. Additional classroom space will be needed to support these new courses, and all the leadership labs will be offered exclusively within this new building.	CAPT Sebastino	Architecture/ Planning	The suggested text will be added following the third paragraph.

5	General	Do we know how many parking spaces will be lost from Main St.? If so, should that number be used in the table of parking spaces as additional, quantitative support for the parking garage?	CAPT Sebastino	TBD	During our team's survey of existing parking areas, it was determined that approximately 120 parking spaces occur on Main Street. It is our understandiing that the City anticipates the removal of on-street parking along Main Strett. Note: Should these spaces be added to the current parking structure design, two additional levels would be required bringing the total parking to approximately 596.
6	Pg 5, Intro, 1st para	"will serve as an integral part of the Corps Training Facilities" – sounds too much like the CPFT. Recommend changing to "Corps education and leader development"	COL Looney	Architecture/ Planning	Text will be modified to read: "…integral part of the Corp education and leadership development. The design also considers the outreach impact to both VMI Alumni…"
7	Pg 6 1st para Exec Sum	Add "leadership education and/or development"	COL Looney	Architecture/ Planning	Text will be modified to read: "A conceptual Design Study for the Leadership Development Facility and New parking Structure at Virginia Military Institute was undertaken to develop a facility programmed to provide leadership education and development through educational space for the Civics and History programs serving the Cadet corps on Post."
8	Pg 6 Statement of Program, 1st para	"development of new 30,000 sq ft museum building" -- Recommend: "development of a new 30,000 sq ft instructional facility co-located with a museum"	COL Looney	Architecture/ Planning	Text will be replaced "in kind" as suggested.
9	Pg 6 4th para	An additional goal of the project… goal as a National Center for Leadership Development" Recommend: delete one of the two uses of "goal" "additional objective / intent" "VMI moves toward its goal of establishing a world class interdisciplinary leadership center." Or. "… toward its goal of establishing a Center for Leadership of Ethics of national renown."	COL Looney	Architecture/ Planning	Text will be modified to read: "An additional objective of the project is serving to support leadership -training programs offered across Post as VMI continues moving toward its goal of establishing a Center for Leadership and Ethics of national renown."
10	Pg 7. Opp.	Currently reads: "Adjacent to Center for Leadership Excellence Change to "Center for Leadership and Ethics"	COL Looney	Architecture/ Planning	Text being updated - see also Comment 1.
11	Pg 12	Currently reads: "building and site should accomplish" Recommend "programs resident in new building should educate, engage, and inspire the Corps of Cadets, faculty and staff, and alumnus."	COL Looney	Architecture/ Planning	Text will be modified to read: "Programs resident in the new building should educate, engage, and inspire the Corp of Cadets, faculty, staff and alumnus."
12	Pg 32	Currently reads: "Marshall Hall/Center for Leadership Excellence Change to "Marshall Hall/Center for Leadership and Ethics"	COL Looney	Architecture/ Planning	Text being updated - see also Comment 1.
13	General	Will want to discuss in more detail the aspects of the turn-around area. Perhaps too much concrete & pavers…will need extensive landscaping.	GEN Peay	Architecture/ Planning	Agreed. The rendering has been further refined to include more landscaping.

14	General	Not sure of roll–curb and bus waiting area. It is a military school so we don't have a bus schedule as such.	GEN Peay	Architecture/ Planning	The intent of the design is have an inconspicuous space that would allow for a bus to pull to the side - temporarily/short term - for loading/unloading of passengers attending events at the CLE or the Museum. We understand and agree that this area wouold not serve as a public transportation hub - nor be a place for busses/other to linger for an extended period of time. The manner in which this area is developed can be further developed during schematic design - to include standard curbs, which would discourage a vehicle from pulling to the side.
15	General	Current transportation plan and reunion classes, etc. will remain as principal.	GEN Peay	Architecture/ Planning	It is our understanding that the current transportation plan would remain in place. The roundabout and related drop off area would support group activity and larger Post events - not specific Cadet activity.
16	General	I'd like to think thru the museum area to be sure it has size (for some time) to accommodate the VMI story and separate galleries for VMI notables. Is it large enough? While I like the open ceiling concepts…will that accommodate the footage we need for the next 100 years.	GEN Peay	Architecture/ Planning	1) The current exhibit space for the VMI Story occupies approx 2,215 square feet; the VMI Alumni Story occupies approx 1,920 square feet; and the Weapons Display occupies approx 1,530 square feet for a total of 5,665 square feet. The new design nearly triples the amount of exhibit space. Following conversation with COL Gibson, we collectively feel confident that there is more than enough space to accomodate the anticipated growth in the VMI story in addition to growth in the other separate galleries; 2) The open ceilings have been removed from the concept design in favor of a full floor plan which may be developed for exhibits. The only open ceilings are found in the grand stair within the tower element on the front of the building and in the main entrance of the building.
17	General	I'd like to re-visit the front of this Phase 2 building again and see some detail and weigh it against current CLE. Is it too modern? The lines?	GEN Peay	Architecture/ Planning	The conceptual design illustrated represents a modern interpretation of gothic revival architecture which intends to blend with not only the buildings surrounding the Parade Grounds but also the adjacent structures. All of the building elevations will be explored and designed further during the schematic design phase of the Leadership Development Facilty.
18	General	Dave Gray has placed 4 posters in the current CLE to attempt to tell the 4 year journey. Keith Gibson has seen a similar, but in much greater detail at USAA. So design of the entrance to museum and what visitors see in telling the VMI leadership story /sequence is a third addition to the	GEN Peay	Architecture/ Planning	Agreed. The design of the entrance to the museum is crtical in carefully telling the VMI Leadership Story/Sequence to the visitor, cadet, or alumni. The visuals, traffic patterns, and exhibits will be explored and designed further during the schematic design phase

19	General	As we earlier discussed -- need to very rough look at routes thru out North Post…steps to/from road networks, etc. and think cadet and people flow routes as important to this new area.	GEN Peay	Architecture/ Planning	Agreed. There are some exciting opportunities to create logical routes for pedestrians, vehicles, and staff/cadre/maintenance personnel. These networks will be reviewed/explored during planning efforts related to North Post.
20	TOC	Typo on Section numbers for Cost Estimate and Appendix	LTC Caruthers	Architecture/ Planning	Will be updated to read "IV. Cost Estimate" and "V. Appendix"
21	Pg 34-36	There are no labels identifying the parking deck levels.	LTC Caruthers	Architecture/ Planning	The plan diagrams will be updated with labels reading "Pavilion, P1, P2, P3, P4, P5, and P6" respectively
22	Pg 37	Alternate #1 terrace description: does not include reference to the pergola that is shown in the lower right corner 3D raster and on page 23	LTC Caruthers	Architecture/ Planning	Text will be modified to read: "…upper level terrace located above a limited portion of the uppermost level of the parking structure and directly behind the Pavilion. The terrace would be provided in lieu of the pergola structure. The terrace will consist of...."
23	Pg 37	Alternate #2 secondary garage entrance: suggest including info on time benefit received from additional entrance. i.e. time to exit garage with one entrance versus two entrances in worst case scenario and typical use.	LTC Caruthers	Architecture/ Planning	Text will be modified to read: "…heavy use such as a home football game. The added entrance/exit point could reduce wait times by nearly 50-percent."
Cost Estimate					
1	Estimate	No need to include in Study, but for reference: DGS has published average construction costs from their database of past projects. https://dgs.virginia.gov/globalassets/business-units/bcom/documents/budget-development---cost-database/cost-database-summary.pdf: 1. Parking structures - $71/sf. (Study estimates garage cost of $96/sf) 2. New office building - $320/sf (Study estimates CLE II cost of $353) 3. New museum building - $364/sf 4. New classroom building - $361/sf	LTC Caruthers	Cost Estimator	The site requirements for this project are somewhat unique. There are large amounts of rock excavation, undercutting, soil import, retaining walls and pavers that are skewing the costs per square foot higher.
2	Estimate	My review of the draft feasibility study is limited to the cost estimate as the full programming is somewhat beyond my purview. I believe these should be reviewed in detail with the A/E as there are significant items missing from their estimates. While you've said previously these estimates are preliminary and the costs I've noted are covered elsewhere, I believe if we can include this level of detail now then we should especially when the estimator is excluding items like sales tax. i. Cost Estimate should also include: 1. Sales tax – Unsure if it is included. 2. FFE. 3. Moving costs. 4. Owner contingency. 5. New utility connections (gas, power) 6. Data/Fiber connections	COL Jarvis	Cost Estimator	Our estimate does include sales tax; however we did not include soft costs. We will issue a revised cost report to include allowances for soft costs.

A-2: COST ESTIMATE DETAIL

BUILDING COST SUMMARY

DGS-30-224
(Rev. 08/19)

Project Code:		**Current Date / Date Est. Prepared:**	1/20/2020
Institution/Agency:	Virginia Military Institute		
Project Title:	Leadership Development Facility	**For questions regarding this estimate, contact:**	
Project Location	Lexington, VA	Name:	Joe Adams
Architect/Engineer:	Wiley Wilson	Phone:	540 347-5001
Cost Consultant:	Downey & Scott	E-mail:	jadams@downeyscott.com

Stage of Design
- [X] Conceptual/Preplanning
- [ ] Schematic Design
- [ ] Preliminary Design
- [ ] Working Drawings
- [ ] Other (describe in remarks)

Type of Estimate
- [X] A/E's Estimate
- [ ] Owner's Independent Estimate

Procurement Method: CM at Risk

Prepared By
- [ ] A/E
- [X] Cost Consultant

# of New Parking Spaces
Surface Lot:
Parking Deck:

Building Use

Primary	MUSEUM
Secondary	CLASSROOM / ASSEMBLY

Project Schedule

Construction Start Date	3/25/2021
Length of Construction (in months)	18
Date of Mid-Point of Construction	12/24/2021
Escalation incl'd at annual rate of:	4.5%

Project Gross Area (gross square feet):

New Construction Area	60,037
Renovated Area	1,710
TOTAL GROSS AREA	**61,747**

LEVEL II COST SUMMARY

Building Element	COST AS OF CURRENT DATE: New Construction	Renovation	Combined Total	COST ESCALATED TO MID-POINT OF CONSTRUCTION: New Construction	Renovation	Combined Total	% of Total Const. Costs	Cost Per Sq. Ft.
A10 Foundations	$ 504,824		$ 504,824	$ 549,592		$ 549,592	1.8%	$ 8.90
A20 Basement Construction	$ 140,496		$ 140,496	$ 152,955		$ 152,955	0.5%	$ 2.48
B10 Superstructure	$ 2,683,349	$ 12,107	$ 2,695,456	$ 2,921,307	$ 13,180	$ 2,934,487	9.4%	$ 47.52
B20 Exterior Enclosure	$ 2,006,459	$ 21,655	$ 2,028,114	$ 2,184,391	$ 23,575	$ 2,207,966	7.1%	$ 35.76
B30 Roofing	$ 441,180	$ 750	$ 441,930	$ 480,303	$ 817	$ 481,120	1.5%	$ 7.79
C10 Interior Construction	$ 2,923,569	$ 49,084	$ 2,972,653	$ 3,182,829	$ 53,437	$ 3,236,265	10.4%	$ 52.41
C20 Stairs	$ 376,040		$ 376,040	$ 409,387		$ 409,387	1.3%	$ 6.63
C30 Interior Finishes	$ 1,152,334	$ 32,832	$ 1,185,166	$ 1,254,522	$ 35,744	$ 1,290,266	4.1%	$ 20.90
D10 Conveying	$ 306,000		$ 306,000	$ 333,136		$ 333,136	1.1%	$ 5.40
D20 Plumbing	$ 853,726	$ 24,316	$ 878,042	$ 929,434	$ 26,473	$ 955,906	3.1%	$ 15.48
D30 HVAC	$ 3,201,773	$ 91,194	$ 3,292,968	$ 3,485,704	$ 99,281	$ 3,584,985	11.5%	$ 58.06
D40 Fire Protection	$ 231,142	$ 6,584	$ 237,726	$ 251,640	$ 7,167	$ 258,807	0.8%	$ 4.19
D50 Electrical	$ 2,473,446	$ 66,184	$ 2,539,630	$ 2,692,790	$ 72,053	$ 2,764,843	8.9%	$ 44.78
E10 Equipment	$ 138,500	$ 6,720	$ 145,220	$ 150,782	$ 7,316	$ 158,098	0.5%	$ 2.56
E20 Furnishings	$ 501,720	$ 11,222	$ 512,942	$ 546,212	$ 12,217	$ 558,429	1.8%	$ 9.04
F10 Special Construction			$ -			$ -		$ -
F20 Selective Building Demolition	$ -	$ 12,756	$ 12,756	$ -	$ 13,888	$ 13,888	0.0%	$ 0.22
Building Cost	**$ 17,934,560**	**$ 335,404**	**$ 18,269,964**	**$ 19,524,983**	**$ 365,147**	**$ 19,890,130**	**63.8%**	**$ 322.12**
G10 Site Preparation	$ 621,168		$ 621,168	$ 676,253		$ 676,253	2.2%	$ 10.95
G20 Site Improvements	$ 1,434,800		$ 1,434,800	$ 1,562,037		$ 1,562,037	5.0%	$ 25.30
G30 Site Mechanical Utilities	$ 375,000		$ 375,000	$ 408,255		$ 408,255	1.3%	$ 6.61
G40 Site Electrical Utilities	$ 502,361		$ 502,361	$ 546,910		$ 546,910	1.8%	$ 8.86
G90 Other Site Construction			$ -			$ -		$ -
Sitework Cost	**$ 2,933,329**	**$ -**	**$ 2,933,329**	**$ 3,193,454**	**$ -**	**$ 3,193,454**	**10.2%**	**$ 51.72**
Z General Requirements and OH&P*			$ 7,437,033			$ 8,096,543	26.0%	$ 131.12
TOTAL CONSTRUCTION COST	**$ 20,867,890**	**$ 335,404**	**$ 28,640,327**	**$ 22,718,437**	**$ 365,147**	**$ 31,180,128**		**$ 504.97**

*** This form must be submitted with either the General Requirements Detail or the General Requirements Detail (CM) sheet.**

REMARKS:

Building Design Analytics

Building Element	Quantity	Unit of Measurement (U.O.M.)	Ratio	Comments
A10 Foundations	20,946	Ground Floor Area SF	0.34	
A20 Basement Construction	20,570	Basement Floor Area SF	0.33	
B20 Exterior Enclosure	15,176	Wall Surface Area SF	0.25	
B2020 Exterior Windows	5,220	Glazing Area SF	0.08	
B30 Roofing	22,059	Roof Surface Area SF	0.36	
C1010 Partitions	12,710	Partition Area SF	0.21	
C20 Stairs	110	Total No. of Risers	$3,722	
D10 Conveying	9	Total No. of Stops	$37,015	
D20 Plumbing		No. of Fixtures		
D30 HVAC		System Capacity in Tons		
F20 Selective Bldg. Demo	1,710	Affected Area SF	$8	

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BUILDING COST SUMMARY

General Requirements Detail Sheet

Return to Instructions Sheet

General Requirements and Fees Detail for CM at Risk Projects

Description	Cost	Rate	Unit of Measurement	Cost Per Key Quantity Unit	Cost Per Gross Sq. Ft.
CM00 General Staging Requirements	$ 432,229	1	LS	$ 432,229.00	$ 7.00
Subtotal	**$ 432,229**				
CM10 Construction Contingency	$ 832,734	3.00	%		$ 13.49
CM20 Design Contingency	$ 3,620,572	15.00	%		$ 58.64
Subtotal	**$ 4,885,535**				**$ 72.12**
CM30 General Conditions Fee	$ 1,298,131		Days	$ -	$ 21.02
CM40 Insurance and Taxes Fee	$ 336,021	1.32	%		$ 5.44
CM50 CM Fee	917,347	2.10	%		$ 14.86
Z General Requirements and OH&P	$ 7,437,033	Carried forward to Z on cover page			$ 113.44

Total Burden Multiplier: 1.51

Definitions:

General Conditions Fee:	General Conditions are defined as supervision and general facilities necessary to support a project that are not attributable the work items identifies in BCS items A-G. For Construction Mangagement Contracts this is to correspond to the items identified to be inlcuded in the General Conditions during the selection and included in the Construction Manager "At Risk" Construction Contract.
General Staging Requirements:	General Staging Requirements: Any items that are generally related to the work of all trades (A-G) or responsible site management, but are not part of the definition of General Conditions above.
Contractor's Construction Contingency:	Funds set aside to address cost of the work or other items that were reasonably unforseen at the time the estimate was developed such as refinements related to the continuing development of the design, scope gaps between trade contractors, default by subcontractors, cost of corrective work not provided for elsewhere, constructability issues, etc. The contractor's construction contingency is not intended for increases in project scope.
Design Contingency:	Funds set aside to address cost of the work or other items that were the result of continuing development of the design related to functional or code compliance and constructability constraints. This contingency typically diminishes as design progresses.
Insurance and Taxes Fee:	The Insurance and Taxes fee is generally defined as the total of all insurance costs such as general liability insurance, builder's risk insurance, payment and performance bonds, and any other insurance costs that are required by the contract and any taxes such as local business licenses or other taxes that are required for the completion of the work expressed as a percentage. The Insurance and Taxes Fee is to be inclusive of all items, other than design or CM contingencies, CM Fee, or General Conditions Fee, that will be included in addition to the cost of the work in establishing the Guaranteed Maximum Price and the final contract value.
CM Fee:	CM Fee or Contractor's Fee is generally defined as the sum included for home office expenses, overhead, profit, and general management of the Contract during the construction phase of the Contract, subject to modification by Change Order.
Total Burden Multiplier	A measure of non-construction items (General Conditions, insurance, etc..) relative to direct construction costs.

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(01/20)

Description	Total Amounts (current date)	Total Amounts (mid-construction)	Amount	Unit Price (@ Current Date)	Comments
Site Acquisition					
Site Acquisition Total	-	-			
		(same)			
Construction					
Total From Blender	31,180,128	31,180,128	31,180,128		
Construction Total	31,180,128	31,180,128	31,180,128	$504.97	
Design & Related Services					
A/E Basic Services	2,038,874	2,038,874	2,038,874		
A/E Additional Services	-	-			
A/E Reimbursables	49,609	49,609	49,609		
Specialty Consultants (Food Services, Acoustics, etc.)	-	-			
CM Design Phase Services	779,503	779,503	779,503		
Subsurface Investigation (Geotech, Soil Borings)	-	-			
Land Survey	-	-			
Archeological Survey	-	-			
Hazmat Survey & Design	-	-			
Value Engineering Services	98,787	98,787	98,787		
Cost Estimating Services	51,596	51,596	51,596		
Other Design & Related Services (list):					
Environmental Impact Report (EIR)	-	-			
	-	-			
Design & Related Services Total	3,018,369	3,018,369	3,018,369	9.7%	
Inspection & Testing Services					
Project Inspection Services (in-house or consultant)	-	-			
Project Testing Services (conc. Steel, roofing, etc.)	-	-			
Inspection & Testing Services Total	-	-	-	0.0%	
Project Management & Other Costs					
Agency Project Management	-	-			
Work By Owner (List):					
	-	-			
	-	-			
DEB Services	389,752	389,752	389,752		
Advertisements	77,950	77,950	77,950		
Printing & Reproduction	233,851	233,851	233,851		
Moving & Relocation Expenses	311,801	311,801	311,801		
Data & Voice Communications	632,413	632,413	632,413		
Signage	77,950	77,950	77,950		
Demolition	-	-	-		
Hazardous Material Abatement	-	-	-		
Utility Connection Fees	308,697	308,697	308,697		
Utility Relocations	154,349	154,349	154,349		
Commissioning	77,174	77,174	77,174		
Miscellaneous Other Costs (List):					
	-	-			
	-	-			
Project Management & Other Costs Total	2,263,937	2,263,937	2,263,937	7.3%	
Furnishings & Movable Equipment (FF&E)					
Furnishings		-			
	2,517,037	2,630,303	2,517,037		
Movable Equipment		-			
	389,626	407,159	389,626		
Furnishings & Movable Equipment (FF&E) Total	2,906,663	3,037,463	2,906,663	$47.07	
Construction Contingency					
Construction Contingency Total	2,494,410	2,494,410	2,494,410	8.0%	
Totals					
Acquisition Costs	-	-	-		
Construction Costs	31,180,128	31,180,128	31,180,128		
Soft Costs (less FF&E and Acquisition Costs)	7,776,716	7,776,716	7,776,716	24.9%	
Furnishings & Movable Equipment (FF&E)	2,906,663	2,906,663	2,906,663		
Total Costs	41,863,507	41,863,507	41,863,507	$677.98	

BUILDING COST SUMMARY

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Project Code:
Institution/Agency: Virginia Military Institute
Project Title: Parking Structure
Project Location Lexington, VA
Architect/Engineer: Wiley Wilson
Cost Consultant: Downey & Scott

Current Date / Date Est. Prepared: 1/20/2020

For questions regarding this estimate, contact:
Name: Joe Adams
Phone: 540 347-5001
E-mail: jadams@downeyscott.com

Stage of Design
- [X] Conceptual/Preplanning
- [ ] Schematic Design
- [ ] Preliminary Design
- [ ] Working Drawings
- [ ] Other (describe in remarks)

Type of Estimate
- [X] A/E's Estimate
- [ ] Owner's Independent Estimate

Procurement Method: CM at Risk

Prepared By
- [ ] A/E
- [X] Cost Consultant

# of New Parking Spaces
Surface Lot
Parking Deck

Building Use
Primary: PARKING STRUCTURE
Secondary:

Project Schedule

Construction Start Date	3/25/2021
Length of Construction (in months)	18
Date of Mid-Point of Construction	12/24/2021
Escalation incl'd at annual rate of:	4.5%
Project Gross Area (gross square feet):	
New Construction Area	178,080
Renovated Area	-
TOTAL GROSS AREA	**178,080**

LEVEL II COST SUMMARY

Building Element	COST AS OF CURRENT DATE: New Construction	Renovation	Combined Total	COST ESCALATED TO MID-POINT OF CONSTRUCTION: New Construction	Renovation	Combined Total	% of Total Const. Costs	Cost Per Sq. Ft.
A10 Foundations	$ 829,178		$ 829,178	$ 902,709		$ 902,709	3.2%	$ 5.07
A20 Basement Construction	$ 65,088		$ 65,088	$ 70,860		$ 70,860	0.3%	$ 0.40
B10 Superstructure	$ 9,496,804	$ -	$ 9,496,804	$ 10,338,970	$ -	$ 10,338,970	37.1%	$ 58.06
B20 Exterior Enclosure	$ 1,570,005	$ -	$ 1,570,005	$ 1,709,231	$ -	$ 1,709,231	6.1%	$ 9.60
B30 Roofing	$ 37,520	$ -	$ 37,520	$ 40,847	$ -	$ 40,847	0.1%	$ 0.23
C10 Interior Construction	$ 209,309	$ -	$ 209,309	$ 227,870	$ -	$ 227,870	0.8%	$ 1.28
C20 Stairs	$ 385,000		$ 385,000	$ 419,141		$ 419,141	1.5%	$ 2.35
C30 Interior Finishes	$ 222,477	$ -	$ 222,477	$ 242,206	$ -	$ 242,206	0.9%	$ 1.36
D10 Conveying	$ 762,000		$ 762,000	$ 829,573		$ 829,573	3.0%	$ 4.66
D20 Plumbing	$ 735,427	$ -	$ 735,427	$ 800,644	$ -	$ 800,644	2.9%	$ 4.50
D30 HVAC	$ 606,297	$ -	$ 606,297	$ 660,063	$ -	$ 660,063	2.4%	$ 3.71
D40 Fire Protection	$ 829,035	$ -	$ 829,035	$ 902,553	$ -	$ 902,553	3.2%	$ 5.07
D50 Electrical	$ 1,086,269	$ -	$ 1,086,269	$ 1,182,599	$ -	$ 1,182,599	4.2%	$ 6.64
E10 Equipment	$ -	$ -	$ -	$ -	$ -	$ -		$ -
E20 Furnishings	$ -	$ -	$ -	$ -	$ -	$ -		$ -
F10 Special Construction			$ -			$ -		$ -
F20 Selective Building Demolition	$ -	$ -	$ -	$ -	$ -	$ -		$ -
Building Cost	**$ 16,834,409**	**$ -**	**$ 16,834,409**	**$ 18,327,265**	**$ -**	**$ 18,327,265**	**65.8%**	**$ 102.92**
G10 Site Preparation	$ 878,609		$ 878,609	$ 956,523		$ 956,523	3.4%	$ 5.37
G20 Site Improvements	$ 880,203		$ 880,203	$ 958,259		$ 958,259	3.4%	$ 5.38
G30 Site Mechanical Utilities	$ 180,000		$ 180,000	$ 195,962		$ 195,962	0.7%	$ 1.10
G40 Site Electrical Utilities	$ 54,912		$ 54,912	$ 59,781		$ 59,781	0.2%	$ 0.34
G90 Other Site Construction			$ -			$ -		$ -
Sitework Cost	**$ 1,993,724**	**$ -**	**$ 1,993,724**	**$ 2,170,525**	**$ -**	**$ 2,170,525**	**7.8%**	**$ 12.19**
Z General Requirements and OH&P*			$ 6,740,799			$ 7,338,565	26.4%	$ 41.21
TOTAL CONSTRUCTION COST	**$ 18,828,134**	**$ -**	**$ 25,568,933**	**$ 20,497,791**	**$ -**	**$ 27,836,356**		**$ 156.31**

*** This form must be submitted with either the General Requirements Detail or the General Requirements Detail (CM) sheet.**

REMARKS:

Building Design Analytics

Building Element	Quantity	Unit of Measurement (U.O.M.)	Ratio	Comments
A10 Foundations	28,125	Ground Floor Area SF	0.16	
A20 Basement Construction	-	Basement Floor Area SF	0.00	
B20 Exterior Enclosure	18,667	Wall Surface Area SF	0.10	
B2020 Exterior Windows	-	Glazing Area SF	0.00	
B30 Roofing	1,876	Roof Surface Area SF	0.01	
C1010 Partitions	-	Partition Area SF	0.00	
C20 Stairs	209	Total No. of Risers	$2,005	
D10 Conveying	12	Total No. of Stops	$69,131	
D20 Plumbing		No. of Fixtures		
D30 HVAC		System Capacity in Tons		
F20 Selective Bldg. Demo	-	Affected Area SF		

BUILDING COST SUMMARY

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General Requirements Detail Sheet

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General Requirements and Fees Detail for CM at Risk Projects

Description	Cost	Rate	Unit of Measurement	Cost Per Key Quantity Unit	Cost Per Gross Sq. Ft.
CM00 General Staging Requirements	$ 487,185	1	LS	$ 487,185.00	$ 2.74
Subtotal	**$ 487,185**				
CM10 Construction Contingency	$ 743,431	3.00	%		$ 4.17
CM20 Design Contingency	$ 3,232,309	15.00	%		$ 18.15
Subtotal	**$ 4,462,925**				**$ 22.33**
CM30 General Conditions Fee	$ 1,158,919		Days	$ -	$ 6.51
CM40 Insurance and Taxes Fee	$ 299,986	1.32	%		$ 1.68
CM50 CM Fee	818,970	2.04	%		$ 4.60
Z General Requirements and OH&P	$ 6,740,799	Carried forward to Z on cover page			$ 35.12

Total Burden Multiplier: 1.50

Definitions:

General Conditions Fee:	General Conditions are defined as supervision and general facilities necessary to support a project that are not attributable the work items identifies in BCS items A-G. For Construction Mangagement Contracts this is to correspond to the items identified to be inlcuded in the General Conditions during the selection and included in the Construction Manager "At Risk" Construction Contract.
General Staging Requirements:	General Staging Requirements: Any items that are generally related to the work of all trades (A-G) or responsible site management, but are not part of the definition of General Conditions above.
Contractor's Construction Contingency:	Funds set aside to address cost of the work or other items that were reasonably unforseen at the time the estimate was developed such as refinements related to the continuing development of the design, scope gaps between trade contractors, default by subcontractors, cost of corrective work not provided for elsewhere, constructability issues, etc. The contractor's construction contingency is not intended for increases in project scope.
Design Contingency:	Funds set aside to address cost of the work or other items that were the result of continuing development of the design related to functional or code compliance and constructability constraints. This contingency typically diminishes as design progresses.
Insurance and Taxes Fee:	The Insurance and Taxes fee is generally defined as the total of all insurance costs such as general liability insurance, builder's risk insurance, payment and performance bonds, and any other insurance costs that are required by the contract and any taxes such as local business licenses or other taxes that are required for the completion of the work expressed as a percentage. The Insurance and Taxes Fee is to be inclusive of all items, other than design or CM contingencies, CM Fee, or General Conditions Fee, that will be included in addition to the cost of the work in establishing the Guaranteed Maximum Price and the final contract value.
CM Fee:	CM Fee or Contractor's Fee is generally defined as the sum included for home office expenses, overhead, profit, and general management of the Contract during the construction phase of the Contract, subject to modification by Change Order.
Total Burden Multiplier	A measure of non-construction items (General Conditions, insurance, etc..) relative to direct construction costs.

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(01/20)

Description	Total Amounts (current date)	Total Amounts (mid-construction)	Amount	Unit Price (@ Current Date)	Comments
Site Acquisition					
Site Acquisition Total	-	-			
		(same)			
Construction					
Total From Blender	27,836,356	27,836,356	27,836,356		
Construction Total	27,836,356	27,836,356	27,836,356	$154.58	
Design & Related Services					
A/E Basic Services	1,809,363	1,809,363	1,809,363		
A/E Additional Services	-	-			
A/E Reimbursables	42,479	42,479	42,479		
Specialty Consultants (Food Services, Acoustics, etc.)	-	-			
CM Design Phase Services	695,909	695,909	695,909		
Subsurface Investigation (Geotech, Soil Borings)	-	-			
Land Survey	-	-			
Archeological Survey	-	-			
Hazmat Survey & Design	-	-			
Value Engineering Services	90,434	90,434	90,434		
Cost Estimating Services	41,596	41,596	41,596		
Other Design & Related Services (list):					
Environmental Impact Report (EIR)	-	-			
	-	-			
Design & Related Services Total	2,679,781	2,679,781	2,679,781	9.6%	
Inspection & Testing Services					
Project Inspection Services (in-house or consultant)	-	-			
Project Testing Services (conc. Steel, roofing, etc.)	-	-			
Inspection & Testing Services Total	-	-	-	0.0%	
Project Management & Other Costs					
Agency Project Management	-	-	-		
Work By Owner (List):					
	-	-			
	-	-			
DEB Services	347,954	347,954	347,954		
Advertisements	69,591	69,591	69,591		
Printing & Reproduction	208,773	208,773	208,773		
Moving & Relocation Expenses	278,364	278,364	278,364		
Data & Voice Communications	542,243	542,243	542,243		
Signage	69,591	69,591	69,591		
Demolition	-	-	-		
Hazardous Material Abatement	-	-	-		
Utility Connection Fees	67,780	67,780	67,780		
Utility Relocations	135,561	135,561	135,561		
Commissioning	27,112	27,112	27,112		
Miscellaneous Other Costs (List):					
	-	-			
	-	-			
Project Management & Other Costs Total	1,746,969	1,746,969	1,746,969	6.3%	
Furnishings & Movable Equipment (FF&E)					
Furnishings		-			
	1,215,556	1,270,256	1,215,556		
Movable Equipment		-			
	-	-			
Furnishings & Movable Equipment (FF&E) Total	1,215,556	1,270,256	1,215,556	$47.07	
Construction Contingency					
Construction Contingency Total	2,226,908	2,226,908	2,226,908	8.0%	
Totals					
Acquisition Costs	-	-	-		
Construction Costs	27,836,356	27,836,356	27,836,356		
Soft Costs (less FF&E and Acquisition Costs)	6,653,658	6,653,658	6,653,658	23.9%	
Furnishings & Movable Equipment (FF&E)	1,215,556	1,215,556	1,215,556		
Total Costs	35,705,570	35,705,570	35,705,570	$200.54	